



LINED PIPES & FITTINGS
ANSI STANDARD

ENGINEERING PLASTICS

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Engiplas – A recognized European leader in the field of fluoropolymer and thermoplastic liners, offers a unique complete design, manufacture and installation package for fluoropolymer lined steel pipe systems and vessels.

The combination of relatively expensive, high performance fluoropolymer materials such as PTFE with an economical high strength carbon steel pipe or vessel structure, results in an overall economical solution to many problems concerning the handling and storage of a wide range of aggressive fluids or ultra-pure liquids.

The range of materials used as a liner include :

PTFE – (Polytetrafluoroethylene), the oldest fluorocarbon resin, discovered in 1938, with exceptional resistance to practically all chemicals, but requiring an extremely high level of expertise in welding and thermoforming technologies.

PFA – (Perfluoro-alkoxy), a more recent development, having a similar chemical resistance to that of PTFE, but offering improved welding, thermoforming and High purity properties.

MFA - is a copolymerization of tetrafluoroethylene and perfluoromethylvinylether.

MFA is a new fluoropolymer, with outstanding physical and chemical properties similar to those of other totally fluorinated polymers. It is similar to PFA.

FEP – (Fluorinated ethylene propylene), with similar chemical resistance to that of PTFE but with improved welding and forming properties. FEP has lower operating temperatures than PTFE and PFA, but meets the requirements for maximum operating temperatures of both bonded and non-bonded liners.

ECTFE – is a melt processible fluoropolymer with a 1:1 alternate copolymer structure of Ethylene and Chlorotrifluoroethylene. ECTFE combines superior mechanical toughness with an outstanding chemical inertness.

ETFE - Is a related copolymer to ECTFE, consisting of ethylene and tetrafluoroethylene , combines superior mechanical toughness with an outstanding chemical inertness.

PVDF – Polyvinylidene Fluoride, has excellent mechanical properties and is resistant to most chemicals. Generally offers improved welding and forming properties

PP – (Polypropylene), offers a reasonable level of chemical and temperature resistance, combined with excellent working properties.

XLPE – (cross linked polyethylene) offers an excellent abrasion resistance and mechanical strength combined with chemical resistance equivalent to polyethylene.

With more than 25 years of experience in this field, Engiplas is well known as a leader in the field of welding, thermoforming and lining with the full and ever expanding range of fluoropolymer and high performance thermoplastic materials, and is in the enviable position to offer not only steel lined pipe systems and structures with common materials, but wider range from PVC or PVC-C pipe systems or vessels, through structures using polypropylene or polyethylene liners, up to the high performance PVDF based products, and finally the fluoropolymers such as E-CTFE, ETFE, FEP, MFA, PFA, PTFE and TFM.

No other European company is in a position to offer this unique range of products, nor the capacity to handle projects involving both vessels and pipe systems, working with the client to evaluate the performance of the different materials, designing the vessel and the detailed configuration of the pipe system, manufacturing the equipment and handling the installation on any site in the world, and finally testing and handing over the finished project.

This specification covers materials, manufacturing, testing, inspection and packaging standards for Engiplas's standard and custom made ANSI lined pipe system.

Materials of construction

All materials used shall be traceable to origin and records shall be maintained for a minimum of three years. When specified, material and/or test certificates shall be supplied.

Lining

As standard, Pipe spools shall be lined with PTFE, if requested other materials are available according to Engiplas manual.

As standard, Fittings shall be lined with PTFE or PFA, if requested other materials are available according to Engiplas manual.

PTFE

PTFE lining shall be made from resin conforming to the requirements of ASTM D1457 types I, III, IV or VI, ASTM D4894 or ASTM D4895.

The PTFE resin shall be virgin material. Reworked material is not permitted.

When tested in accordance with the specification, the minimum tensile strength and elongation at break shall be:

20.7 N/mm² and 250 per cent for extruded material.

17.2 N/mm² and 250 per cent for isostatically moulded material.

The SG of the PTFE material shall be in the range 2.15 to 2.19 when tested to ASTM D792 or D1505.

PFA

PFA lining shall be made from resin conforming to the requirements of Type II materials as defined in ASTM specification D3307.

The lining shall be made from virgin resin meeting the requirements of ASTM D3307 or clean reworked resin capable of meeting the requirements of this specification.

When tested in accordance with ASTM D3307, the minimum tensile strength shall be 26.2 N/mm² and the minimum elongation shall be 300 per cent.

FEP

FEP lining shall be made from resin conforming to the requirements of materials as defined in ASTM specification D2116-02.

The lining shall be made from virgin resin meeting the requirements of ASTM D2116-02 or clean reworked resin capable of meeting the requirements of this specification.

When tested in accordance with ASTM D638, the minimum tensile strength shall be 20 N/mm² and the minimum elongation shall be 300 per cent.

ETFE

ETFE lining shall be made from resin conforming to the requirements of materials as defined in ASTM specification D3159.

The lining shall be made from virgin resin meeting the requirements of ASTM D3159 or clean reworked resin capable of meeting the requirements of this specification. When tested in accordance with ASTM D638, the minimum tensile strength shall be 47 N/mm² and the minimum elongation shall be 300 per cent.

PVDF

PVDF lining shall be made from resin conforming to the requirements of materials as defined in ASTM specification D3222.

The lining shall be made from virgin resin meeting the requirements of ASTM D638. When tested in accordance with ASTM D638, the minimum tensile strength shall be 40 N/mm² and the minimum elongation shall be 200 per cent.

PP

PP lining shall be made from resin conforming to the requirements of materials as defined in ASTM specification D4101.

The lining shall be made from virgin resin meeting the requirements of ASTM D4101. When tested in accordance with ASTM D638, the minimum tensile strength shall be 25 N/mm² and the minimum elongation shall be 300 per cent.

XLPE

XLPE lining shall be made from resin conforming to the requirements of materials as defined in ASTM specification D1998-04.

The lining shall be made from virgin resin meeting the requirements of ASTM D1998-04.

When tested in accordance with ASTM D638, the minimum tensile strength shall be 23 N/mm² and the minimum elongation shall be 300 per cent.

PE

PE lining shall be made from resin conforming to the requirements of materials as defined in ASTM specification D1998-04.

The lining shall be made from virgin resin meeting the requirements of ASTM D1998-04.

When tested in accordance with ISO 527, the minimum tensile strength shall be 9 N/mm².

Pipe

Pipe shall be carbon steel to API 5L grade B, ASTM A106 grade B or BS 3601/BS 3602: part 1, EN 10219-1/2 or equivalent.

Flanges and welding-neck collars shall be forged steel to ASTM A105 N

Slip on welding collars shall be steel plate to BS1501-161-430A, DIN 17100 grades RSt 37-2 or NF A 35-501 grade E24, EN 10025 or equivalent

Fittings

Fabricated fittings shall be manufactured from the materials stated above.

Cast fittings shall be manufactured from the following:

Ductile Iron – ASTM A395, BS2789 grade 420/12 or DIN 1693 Part 1 GGG40.

Cast steel – ASTM A216 WCB or equivalent

Fabrication standards

Qualification of welding procedures, welders and welding operators shall be in accordance with section IX of the ASME Boiler and Pressure Vessel Code or BS 4870 : Part 1 and BS 4871 :

Part 1, DIN 8560 or EN-288-3.

All welds shall be visually examined and assessed in accordance with ASME B31.3 or relevant code.

Dimensional standards

Flanged cast steel fittings shall be in accordance with ANSI B16.5 Class 150.

Flanged Ductile Iron fittings shall be in accordance with ANSI B16.42 Class 150.

Fabricated fittings shall be in accordance with the dimensions shown in Engiplas manual.

Pipe diameters and wall thicknesses shall be in accordance with the dimension table 1.

Flanges for pipe and fittings

Flanges for pipe and fittings shall be in accordance with ANSI B16.5 Class 150.

Flanges shall be slip on welding, socket welding or welding neck types.

Loose backing flanges shall be suitable for use with welding collars.

All relevant dimensions and tolerances shall be in accordance with ANSI B16.5 Class 150.

Threaded bolt holes are not permitted except for reducing flanges. Threaded bolt holes in reducing flanges shall be UNC unless specified otherwise.

Welding collars for use with loose backing flanges shall be slip on welding, socket welding or welding neck type.

The diameters and thicknesses shall be as given in dimension table 1. Spacers shall be either solid PTFE or lined steel. The outside diameters shall be as given in dimension table 1.

The outside diameter of instrument tee bodies shall be the same as lined spacers. The lining on the faces of flanges shall have uniform thickness and shall not be less than 80 per cent of the actual wall thickness.

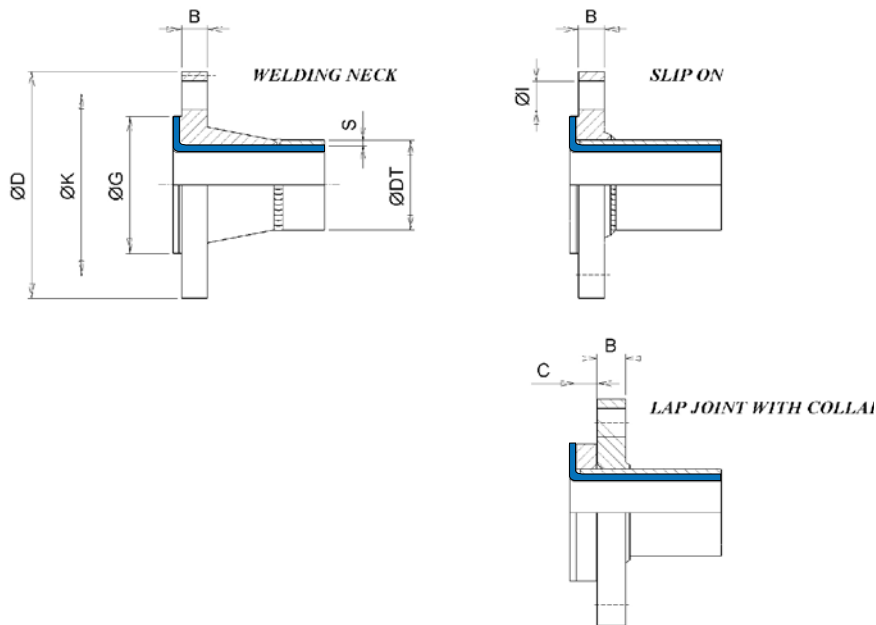


Table 1

Nom Size	DT Mm	D mm	G mm	I n X i	B mm	C mm	S mm
1/2"	21,3	88,9	35,1	4X15,7	11,2	10	2.77
3/4"	26,7	98,6	42,9	4X15,7	12,7	12	2.87
1"	33,5	108	50,8	4X15,7	14,2	12	3.38
1 1/4"	42,2	117,3	63,5	4X15,7	15,7	12	3.56
1 1/2"	48,3	127	73,2	4X19,1	17,5	12	3.68
2"	60,5	152,4	91,9	4X19,1	19,1	14	3.91
2 1/2"	73,2	177,85	104,6	4X19,1	22,4	14	5.16
3"	88,9	190,5	127,0	4X19,1	23,9	16	5.49
3 1/2"	101,6	215,9	139,7	8X19,1	23,9	16	5.74
4"	114,3	228,6	157,2	8X22,4	23,9	16	6.02
5"	141,3	254	185,7	8X22,4	23,9	18	6.55
6"	168,4	279,4	215,9	8X22,4	25,4	18	7.11
8"	219,2	342,9	269,7	8X22,4	28,4	20	8.18
10"	273,1	406,4	323,9	12X25,4	30,2	22	9.27
12"	323,9	482,6	381,0	12X25,4	31,8	22	9.53
14"	355,6	533,4	412,8	12X25,4	35,1	25	9.53
16"	406,4	596,9	469,9	12X28,4	36,6	25	9.53
18"	457,2	635	533,4	16X31,8	39,6	25	9.53
20"	508	698,5	584,2	20X31,8	42,9	25	9.53
24"	609,6	812,8	269,2	20X35,1	47,8	25	9.53

Construction

Pipe spools

Each flanged length shall have a fixed welded flange at one end and a welding collar with a loose backing flange at the other.

Where vent bosses are not provided, a stop shall be provided on all spool lengths greater than 500mm. The stop is to prevent travel of the loose flange and shall be located within 150mm from the back of the collar. The stop shall be oriented so that it is on the centerline approximately opposite the vent hole.

Flanged fittings.

Completed fittings shall be one piece construction. Flanges shall be fixed. The preparation and assembly of welded branch connections shall be in accordance with BS 2633 or ASME B31.3., loose flanges are available on request.

Attachment of flanges and collars.

The attachment of flanges and collars shall be by both back fillet and bore welds.

The transition from the bore to the flanged face shall incorporate a radius to prevent undue stressing of the liner.

Fabrication dimensional tolerances.

Tolerances for flanges and fittings shall be in accordance with the relevant standards.

Fabricated pipework shall be in accordance with the following tolerances:

- Straightness of pipes. No deviation of straightness greater than 1/500th of the length.
- Squareness of flanges. Square to the axis of the pipe or fitting to within 0.05mm per 25mm measured across the face.
- Flange faces. Faces shall not be uneven or concave. Convexity from the bore to the periphery shall not exceed 0.4mm per 25mm width of face.
- Flange drilling. PCD +/- 1.5mm. c/c of bolt holes +/- 0.8mm. Eccentricity between PCD and RFD up to 2-1/2" +/- 0.8mm, 3" and greater +/- 1.5mm.
- Bolt holes. Bolt holes shall be off centers and equally spaced about the centerline to an accuracy of 1.5mm.
- Linear and angular dimensions. Linear dimensions +/- 1.5mm Angular dimensions +/- 0.25 Degrees.

Venting

Vent holes shall be provided in all pipe spools and shall be 3mm diameter.

Pipe lengths up to 500mm shall have one vent PTFE vented plug.

Fittings with injection bosses shall be fitted at mid point.

Lengths between 500mm and 6000mm shall have two vents, one at each end within approx 100mm of the back of the flange.

The vents shall be on the same longitudinal centre line which shall be opposite the flange stops where fitted.

Internal finish of housings

The interior surfaces and flange faces shall be clean and free of sharp corners, burrs, rust, scale, weld spatter or other protrusions that could adversely affect the lining.

Lining

The method of lining and the fit of the lining shall ensure that the lining is capable of withstanding the temperature, pressure and vacuum ratings of the system.

All interference fit linings in straight pipes shall be normalized prior to flaring.

Completed linings shall show no evidence of pinholes, porosity, cracks or bad workmanship. Sealing surfaces shall be free of surface defects that could impair sealing effectiveness. Scratches, dents, nicks or tool marks on the sealing face shall not be deeper than 0.15mm. Any of these defect types less than 0.15mm but extending across the face shall cause the product to be rejected.

Blind flanges shall have linings firmly attached.

Production testing

PTFE tube tests

For each sinter batch, at least one representative sample of each nominal size of tube shall be selected and tests carried out to determine mechanical properties and SG.

Where samples do not comply with the requirements stated in this specification, each tube in the batch shall have samples cut from each end and the samples shall be subjected to the same tests. Any sample not meeting the specified requirements shall lead to rejection of the whole tube.

The outside diameter and wall thickness shall be measured. Tubes not complying with the standard shall be rejected.

Cracks found at the ends of tubes shall be cut off along with at least 50mm of adjacent material.

When specified, each liner tube shall be subjected to a flattening test. Each length of tube shall be passed through a pre-set gap between two powered rollers. The gap shall be set at 50 per cent of the outside diameter of the tube. The tube shall then be rotated about the longitudinal axis through 90 degrees and then passed back through the roller gap.

The tube shall be examined for cracks and any cracks along with at least 50mm of adjacent material shall be cut out.

PFA Lining tests.

Regular production checks shall be carried out to determine mechanical properties and Melt flow rate of the material. Where the results do not comply with the requirements of this specification, the linings shall be rejected.

Hydrostatic pressure test

Hydrostatic pressure test is carried out at 16 Barg water in air. Any evidence of leakage shall be cause for rejection.

Electrostatic test

Electrostatic testing shall be carried out at a minimum voltage of 20,000 V. The full surface of every lining shall be tested. Any pinholes shall be cause for rejection.

Final examination

Each item shall be examined visually. Following satisfactory completion, the outside edge of the flange shall be stamped with a letter "I" to indicate compliance.

External finish

The outside surface of all pipe and fittings shall be finished as follows.

Shotblast SA 2-1/2 and coat with one coat zinc phosphate , zinc epoxy or zinc silicate primer. After painting, bolt holes and vents which become blocked shall be cleared.

Marking and identification

The following information shall be marked permanently on each pipe and fitting either by casting into the body or by hard stamping the flange edge in letters at least 6mm high:

- Manufacturer's sign
- Lining material

In the case of pipe spools, the length shall be indelibly marked on the pipe body.

Packaging

All flanges shall be fitted with protective covers. These covers shall only be removed just prior to installation.

Straight pipe spools shall be fitted with water resistant medium density fiberboard blanks using a minimum of 4 x M6 bolts.

Fittings shall be fitted with medium density fiberboard blanks as above or alternatively, snap on proprietary plastic blanks may be used.

Performance

All lined pipe and fittings shall be capable of meeting the temperature, pressure, and vacuum ratings stated in Engiplas Lined pipes and fittings manual

Service limitations.

For positive and negative pressure limitations versus temperature, see tables 2 and 3. Service temperature limits, subject to compatibility with the fluid being handled are;

- PTFE & PFA - minus 60° to +200°C
- FEP - minus 40° to +170°C
- ETFE - minus 20° to +145°C
- PVDF - minus 20° to +115°C
- XLPE - minus 20° to +85°C
- PE & PP - minus 20° to +65°C

When Lined tube and fittings are exposed to very low temperatures (less than minus 20°C) consideration must be given as to the suitability of the material used for the housings. See section 5 below for further information.

Chemical resistance.

PTFE ,PFA and FEP can be regarded for all intents and purposes as being totally resistant to all chemical solutions except for;

- molten alkali metals and their solutions
- very strong fluorinating agents such as elemental fluorine and chlorine trifluoride.

The question of vapor permeation of PTFE can be important with some chemicals under certain operating conditions and this phenomenon should be considered when selecting the lining material.

For further information on permeation, as well as on the chemical resistance of other lining materials, please contact our technical services department.

PTFE, PFA and FEP linings are normally non-pigmented, whereas ETFE, PVDF, XLPE and PP may be pigmented, either for material identification or to facilitate a particular production process.

Anti static PTFE and PFA are modified versions of the specifications mentioned above, with volume sensitivities less than 106 ohm-cm, and are black in color.

Table 2
Pressure / temperature rating

Temperature	Pressure			
	ANSI 150#		ANSI 300#	
	PSI	BAR	PSI	BAR
20° C	250	17.2	450	31.0
50° C	244	17	425	29.3
100° C	235	16	390	26.9
150° C	215	14.8	345	23.8
200° C	200	13.9	295	20.3

• Table 2 - valid for series PTFE-PFA up to 200°C / ETFE up to 150°C, PVDF up to 115°C , XLPE up to 85°C and PP & PE up to 70°C. The pressure ratings for ANSI 150# and PN16 dimensioned fittings are based on ratings in ANSI B 16.5.

• The pressure ratings for ANSI 300# dimensioned fittings are based on the rating in ANSI B 16.5 300#, down rated to compensate for the decrease in mechanical properties at elevated temperatures of the lining materials.

Table 3
Vacuum / temperature rating

Liner	Temp	Diameter											
		25	40	50	80	100	150	200	250	300	350	400	
PTFE HD	20° C	Full	Full	Full	Full	Full	Full	Full	Full	Full	Full	Full	Full
	50° C	Full	Full	Full	Full	Full	Full	Full	Full				
	100° C	Full	Full	Full	Full	Full	Full						
	150° C	Full	Full	Full	Full	Full							
	200° C	Full	Full	Full	Full								
PTFE SHD	20° C	Full	Full	Full	Full	Full	Full	Full	Full	Full	Full	Full	Full
	50° C	Full	Full	Full	Full	Full	Full	Full	Full	Full	Full	Full	Full
	100° C	Full	Full	Full	Full	Full	Full	Full	Full	Full	Full	Full	Full
	150° C	Full	Full	Full	Full	Full	Full	Full	Full	Full	Full	Full	Full
	200° C	Full	Full	Full	Full	Full	Full	Full	Full	Full	Full	Full	Full
PFA HD	20° C	Full	Full	Full	Full	Full	Full	Full	Full	Full			
	50° C	Full	Full	Full	Full	Full	Full	Full	Full	Full			
	100° C	Full	Full	Full	Full	Full	Full						
	150° C	Full	Full	Full	Full	Full							
	200° C	Full	Full	Full	Full								
PFA Roto	20° C	Full	Full	Full	Full	Full	Full	Full	Full	Full	Full	Full	Full
	50° C	Full	Full	Full	Full	Full	Full	Full	Full	Full	Full	Full	Full
	100° C	Full	Full	Full	Full	Full	Full	Full	Full	Full	Full	Full	Full
	150° C	Full	Full	Full	Full	Full	Full	Full	Full	Full	Full	Full	Full
	200° C	Full	Full	Full	Full	Full	Full	Full	Full	Full	Full	Full	Full
FEP	20° C	Full	Full	Full									
	50° C	Full	Full	Full									
	100° C	Full	Full	Full									
	150° C	Full	Full	Full									
ETFE Roto	20° C	Full	Full	Full	Full	Full	Full	Full	Full	Full	Full	Full	Full
	50° C	Full	Full	Full	Full	Full	Full	Full	Full	Full	Full	Full	Full
	100° C	Full	Full	Full	Full	Full	Full	Full	Full	Full	Full	Full	Full
	120° C	Full	Full	Full	Full	Full	Full	Full	Full	Full	Full	Full	Full
PVDF HD	20° C	Full	Full	Full	Full	Full	Full	Full	Full	Full	Full	Full	Full
	50° C	Full	Full	Full	Full	Full	Full						
	100° C	Full	Full	Full	Full	Full							
PVDF Roto	20° C	Full	Full	Full	Full	Full	Full	Full	Full	Full	Full	Full	Full
	50° C	Full	Full	Full	Full	Full	Full	Full	Full	Full	Full	Full	Full
	100° C	Full	Full	Full	Full	Full							
XLPE Roto	20° C	Full	Full	Full	Full	Full	Full	Full	Full	Full	Full	Full	Full
	50° C	Full	Full	Full	Full	Full	Full	Full					
	80° C	Full	Full	Full	Full								
PP HD	20° C	Full	Full	Full	Full	Full	Full	Full	Full	Full	Full	Full	Full
	50° C	Full	Full	Full	Full	Full	Full	Full	Full	Full	Full	Full	Full
	80° C	Full	Full	Full	Full	Full	Full	Full					

System design and supports

Due to the nature of the dual system of a metallic structure and a thermoplastic inner liner, the potential risk of leakage is situated at flange assemblies, especially if the system is installed without gaskets. The risk of leakage due to difficulties in assembly without gaskets is covered in the following section.

Flanges may also leak because of high stress levels imposed on flanges due either to poor installation, lack of supports or non containment of forces and movements due to thermal expansion.

Whilst it may not be necessary to run a stress analysis on every system, the designer should make every effort to avoid undue stress and movement due to thermal expansion, either by incorporating directional changes or expansion bellows.

Stress analysis of systems working at high temperature is recommended.

Pipe systems should be adequately supported in order to avoid excessive deflection of flanged joints, and supports should be installed preferably close to flanges.

The requirement for adequate support is critical in areas of high levels of concentration of valves and fittings.

Butterfly valves are usually designed for straight metallic or thermoplastic systems, with the diameter of the vane being defined as a function of the inner diameter of the pipe system in question. The inner diameter of lined steel pipe is considerably smaller than the actual steel pipe, and inner diameters of thermoplastic pipes tend to be considerably smaller due to their heavy wall thickness. For these reasons some interference between the inner liner of a lined pipe and the valve vane may be experienced.

The designer should consider this possibility early in the selection process for pipe systems and valves, and if required, incorporate adequate conical spacers between the flanges of plastic lined pipe or fittings and the valve.

Installation and maintenance instructions for lined pipes & fittings

- Lined products must not be welded, brazed or torch cut since this will damage the lining.
- The material should also be handled with due care and attention, avoiding all mechanical shocks.
- All flanges are covered to protect them from damage during shipment, storage and handling on site. Should covers be removed for inspection purposes prior to installation, they should be replaced immediately after the inspection of each item is completed.
- Under normal conditions, covers should only be removed immediately prior to installation. As gaskets are often not required (see below), utmost attention should be made to avoid scratching or otherwise damaging the lining on flange faces.

When jointing PTFE/PFA lined pipe and / or fittings together it is generally unnecessary to use gaskets between the sealing faces. On the other hand, when connecting to other materials (steel, thermoplastics, glass fiber reinforced plastic etc)

gaskets are mandatory. Gaskets are also required, on both sides, when solid spacers are used. Gaskets may also be used where flange faces are not absolutely parallel or where a gasket will act as a very thin spacer. When pipe work is dismantled and then re-assembled it may be necessary to install gaskets prior to re-assembly.

When joining PVDF or PP lined pipe systems Engiplas recommend that gaskets should be used, although with correct installation it is possible to obtain perfect sealing without them.

Torque ratings to achieve sealing of PVDF and PP lined systems without the use of gaskets are relatively high (see below), and lined flange faces may be deformed to the extent that should pipework be dismantled for servicing, the deformation may inhibit subsequent sealing when the pipework is re-assembled.

A gasket may be used at this stage in order to obtain sealing, but in the case that several contiguous fittings have been dismantled, the subsequent introduction of gaskets may cause overall dimensional problems. The operator should also pay attention to modify torque ratings for the assembly of joints subsequently using a gasket.

Replacement of existing gaskets on an installation which has used gaskets as from the original assembly is, in many cases where PVDF or PP is concerned, a more economic and practical solution.

As mentioned above, relatively high torque values are required to obtain sealing without gaskets, but excessive torque can deform the flange face to the extent that a gasket will be required. To avoid this situation as much as possible, the following torque ratings are recommended for jointing lined pipe and fittings for operations at maximum operating temperatures.

Note that for pipe systems working at ambient temperature these torque ratings may be increased by 50%, in increments of 10%, should any initial leakage occur.

If a flanged connection assembled without a gasket starts to leak even though all the bolts have been tightened to the maximum torque rating, **DO NOT CONTINUE TO TIGHTEN THEM ANY MORE**. Instead, loosen slightly the bolts opposite the leak, and then tighten up the bolts in the area of the leakage.

If leakage persists, the sealing faces of both components should be inspected for groves or chips. Groves or nicks not deeper than approximately 15% of the flare thickness can be removed with a fine grade abrasive paper.

Note also that for bolting up joints with a gasket, or when bolting up to vessels or non-lined in line equipment, the operator should respect the torque rating specified for the gasket or for the other equipment or material, as this will generally be significantly lower than the rating required for lined pipe.

Installation instructions specific to pipe systems without gaskets.

All bolts should be tightened using a torque wrench, gradually tightening opposite bolts in order to ensure uniform stress, increasing torque by approximately 20% of the required torque in 5 sequential operations.

All joints should be re-torqued after an initial period of at least 24 hours and/or after an initial thermal cycle which has taken the system to the defined service temperature.

The following torque ratings are established for 3 different lining materials, for ANSI Class 150 systems, using A193 B7 bolts and A194 2H nuts as a minimum requirement for the determination of minimum mechanical properties.

Please contact our technical services for torque ratings to be applied for higher pressure ratings.

Table 4
Bolt dimensions and torque ratings for ANSI 150# range

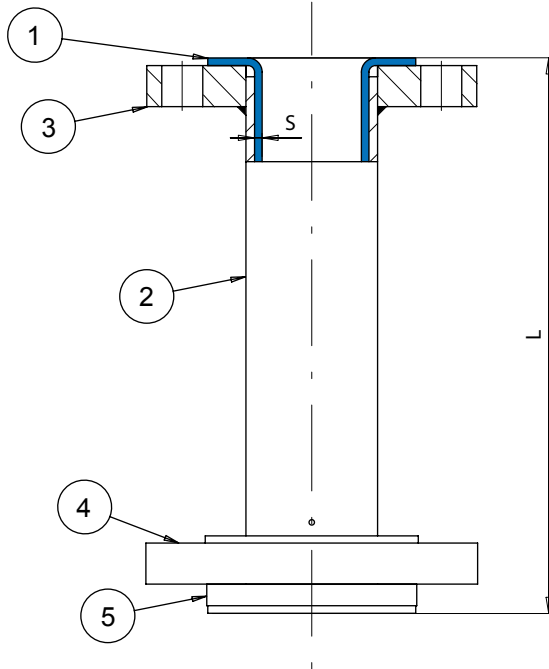
Nominal Bore	N° and diameter of bolts	PTFE, PFA, FEP Bolt Torque		ETFE , PVDF Bolt Torque		XLPE , PP Bolt Torque	
		Ft/ Lb	N/m	Ft/ Lb	N/m	Ft/ Lb	N/m
25	4 x 12	12	17	15	21	8	11
40	4 x 12	30	41	40	55	20	28
50	4 x 12	60	83	80	110	40	55
65	4 x 16	80	110	100	138	50	69
80	4 x 16	100	138	130	179	60	83
100	8 x 16	65	90	90	124	40	55
125	8 x 20	90	124	120	166	65	90
150	8 x 20	110	152	160	221	75	104
200	8 x 20	140	193	210	290	100	138
250	12 x 22	140	193	200	276	90	124
300	12 x 22	170	235	250	345	120	166

Please note that all threads should be clean and lightly lubricated, and that the use of standard washers under both bolt head and nut is strongly recommended.

In order to avoid causing damage to the sealing faces, flanges on pipes and fittings working at temperatures above 40°C should only be dismantled once the temperature of the system has been reduced to this temperature level.

All PTFE/PFA lined products have small vent holes in the steel housing. It is important that these holes are not blocked by insulation or plugged by paint, as this may cause the lining to collapse.

PTFE Lined Pipes



Materials

- 1.1 PTFE Paste white ASTM – D4895/D4894.
- 1.2 PTFE Granular white ASTM – D4895.
- 2 St 37.0 - DIN 1629
- 3 ASTM A 105 SLIP-ON
- 4 ASTM A 105 LAP-JOINT
- 5 St 37.0 - DIN 17100



ANSI B16.5 - Class 150#

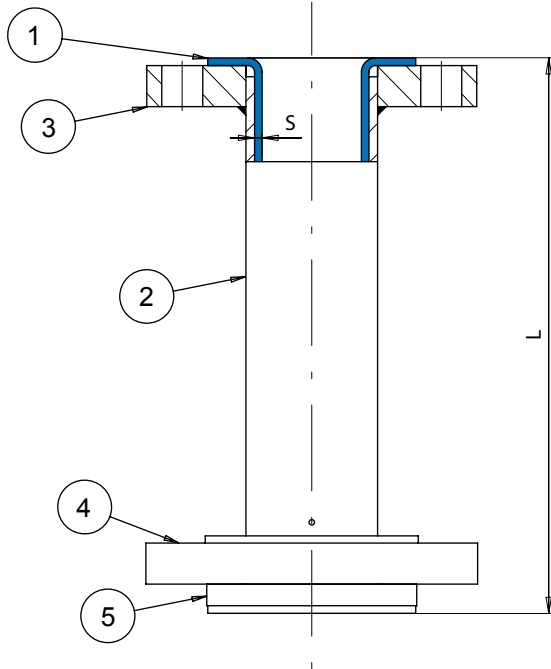
DN	PTFE LINING							WEIGHT	
	L min mm	SD s ± 10% mm	L max s ± 10% mm	HD s ± 10% mm	L max s ± 10% mm	SHD s ± 10% mm	L max s ± 10% mm	Line Pipe Kg/m	2 Flanges Kg
1/2"	80	1,5	6,000	2.5	6,000	×	×	1.2	2.0
3/4"	80	1,5	6,000	3.0	6,000	×	×	1.6	2.0
1"	100	1,6	6,000	3.0	6,000	4	6,000	3.0	2.3
1 1/4"	100	1,7	6,000	3.0	6,000	4.0	6,000	4.0	3.0
1 1/2"	100	1,7	6,000	3.0	6,000	4.5	6,000	4.8	3.3
2"	100	1,8	6,000	3.0	6,000	4.5	6,000	6.3	5.3
2 1/2"	110	2,2	6,000	3.0	6,000	4.5	6,000	10.0	7.3
3"	110	2,5	6,000	3.5	6,000	6.0	6,000	13.0	8.4
4"	120	3,2	6,000	4.5	6,000	6.5	1,500	19.0	13.0
5"	120	3,4	6,000	4.5	6,000	6.5	1,500	24.5	15.6
6"	130	4.0	6,000	5.0	6,000	7.5	1,500	32.0	19.5
8"	150	5.0	6,000	6.2	3,500	10.0	1,500	48.0	30.0
10"	150	4,0 w	3,500	6.8	3,500	11.0	1,000	69.0	43.0
12"	180	4,0 w	3,500	8.0	3,500	12.0	1,000	87.0	63.0
14"	180	4,0 w	3,500	9.0	3,500	12.0	1,000	95.0	89.0
16"	200	4,0 w	3,500	10.0	1,000	12.0	1,000	108.0	97.0
18"	200	4,0 w	3,500	10.0	1,000	12.0	1,000	123.0	128.0
20"	250	4,0 w	3,500	10.0	1,000	12.0	1,000	137.0	163.0
24"	250	4,0 w	3,500	10.0	1,000	12.0	1,000	167.0	215.0

Standard Version: one fixed flange one loose (lap joint)

Part Number: PLPxxx-xxxx - Where XXX are Dia – Length (in mm)

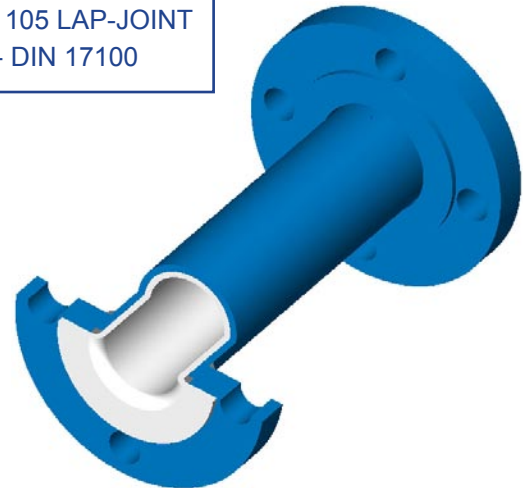
- Available on request:
- Two fixed or two loosed flanges
 - ANSI B16.5 Class 300 flanges
 - Stainless steel body and flanges 304/316
 - Longer lengths than 6000 mm

Custom lined pipespools



Materials

- 1.1 PFA ASTM D3307
- 1.2 ETFE ASTM D3159
- 1.3 PVDF ASTM D3222
- 1.4 PP ASTM D4101
- 1.5 XLPE ASTM D1998-04
- 1.6 PE ASTM D1998-04
- 2 APL 5 L Gr.B
- 3 ASTM A 105 SLIP-ON
- 4 ASTM A 105 LAP-JOINT
- 5 St 37.0 - DIN 17100



ANSI B16.5 - Class 150#

DN	Lining materials							WEIGHT		
	L min	PFA	ETFE	PVDF	PP	XLPE	PE	L max	PIPE	2 FLANGES
	mm	s ± 10% mm	s ± 10% mm	s ± 10% mm	s ± 10% mm	s ± 10% mm	s ± 10% mm	mm	Kg/m	Kg
1/2"	x	x	x	x	x	x	x	x	x	x
3/4"	x	x	x	x	x	x	x	x	x	x
1"	x	x	x	x	x	x	x	x	x	x
1 1/4"	x	x	x	x	x	x	x	x	x	x
1 1/2"	100	3.0	3.0	3.0	3.0	3.0	3.0	1,000	4.8	3.3
2"	100	3.0	3.0	3.0	3.0	3.0	3.0	1,000	6.3	5.3
2 1/2"	110	3.0	3.0	3.0	3.0	3.0	3.0	1,200	10.0	7.3
3"	110	4.5	4.5	4.5	4.5	4.5	4.5	2,000	13.0	8.4
4"	120	4.5	4.5	4.5	4.5	4.5	4.5	2,250	19.0	13.0
5"	120	4.5	4.5	4.5	4.5	4.5	4.5	2,250	24.5	15.6
6"	130	6.0	6.0	6.0	6.0	6.0	6.0	2,250	32.0	19.5
8"	150	6.0	6.0	6.0	6.0	6.0	6.0	2,250	48.0	30.0
10"	150	6.0	6.0	6.0	6.0	6.0	6.0	2,250	69.0	43.0
12"	180	8.0	8.0	8.0	8.0	8.0	8.0	2,250	87.0	63.0
14"	180	8.0	8.0	8.0	8.0	8.0	8.0	2,250	95.0	89.0
16"	200	8.0	8.0	8.0	8.0	8.0	8.0	2,250	108.0	97.0
18"	200	8.0	8.0	8.0	8.0	8.0	8.0	2,250	123.0	128.0
20"	250	8.0	8.0	8.0	8.0	8.0	8.0	2,250	137.0	163.0
24"	250	8.0	8.0	8.0	8.0	8.0	8.0	2,250	167.0	215.0

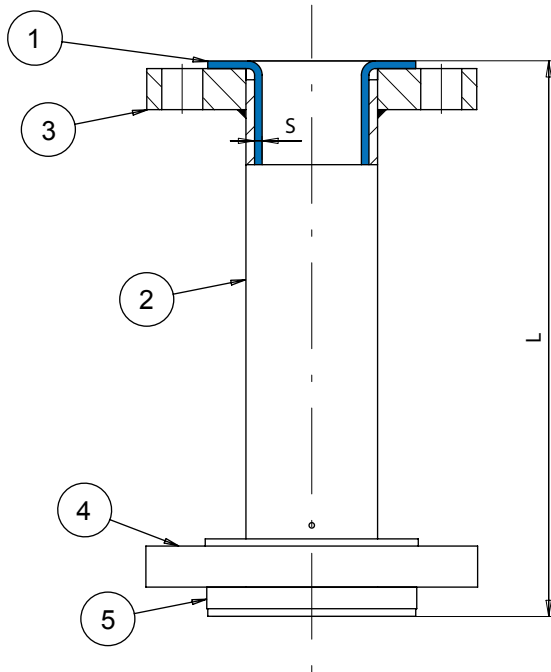
Standard Version: one fixed flange one loose (lap joint)

Part Number: PLPxxx-xxxx - Where XXX are Dia – Length (in mm)

Available on request:

- Two fixed or two loosed flanges
- ANSI B16.5 Class 300 flanges
- Stainless steel body and flanges 304/316

Standard lined pipes/pools



Materials

1.1	PFA ASTM D3307
1.2	FEP ASTM D2116-02
1.3	PVDF ASTM D3222
1.4	PP ASTM D4101
1.5	PE ASTM D1998-04
2	APL 5 L Gr.B
3	ASTM A 105 SLIP-ON
4	ASTM A 105 LAP-JOINT
5	St 37.0 - DIN 17100



ANSI B16.5 - Class 150#

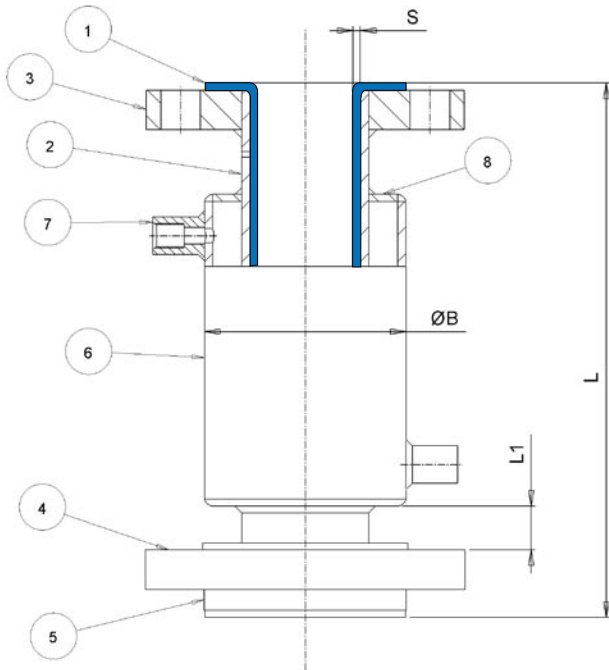
DN	L min mm	Lining materials					L max mm	WEIGHT	
		PFA s ± 10% mm	FEP s ± 10% mm	PVDF s ± 10% mm	PP s ± 10% mm	PE s ± 10% mm		PIPE Kg/m	2 FLANGES Kg
1/2"	x	1.5	1.5	1.5	-	-	4,500	x	x
3/4"	x	1.9	1.9	1.9	3.0	3.0	4,500	x	x
1"	x	1.9	1.9	1.9	3.0	3.0	4,500	x	x
1 1/4"	x	2.4	2.4	2.4	3.0	3.0	4,500	x	x
1 1/2"	100	2.4	2.4	2.4	3.0	3.0	4,500	4.8	3.3
2"	100	3.0	3.0	3.0	3.0	3.0	4,500	6.3	5.3
2 1/2"	110	3.0	3.0	3.0	3.0	3.0	4,500	10.0	7.3
3"	110	3.6	3.6	3.6	4.0	4.0	4,500	13.0	8.4
4"	120	5.3	5.3	5.3	5.0	5.0	4,500	19.0	13.0
5"	120	3.9	3.9	3.9	5.0	5.0	4,500	24.5	15.6
6"	130	4.4	4.4	4.4	5.0	5.0	4,500	32.0	19.5
8"	150	3,0 w	3,0 w	3,0 w	4,0 w	4,0 w	3,000	48.0	30.0
10"	150	3,0 w	3,0 w	3,0 w	4,0 w	4,0 w	3,000	69.0	43.0
12"	180	3,0 w	3,0 w	3,0 w	4,0 w	4,0 w	3,000	87.0	63.0
14"	180	3,0 w	3,0 w	3,0 w	4,0 w	4,0 w	3,000	95.0	89.0
16"	200	3,0 w	3,0 w	3,0 w	4,0 w	4,0 w	3,000	108.0	97.0
18"	200	3,0 w	3,0 w	3,0 w	4,0 w	4,0 w	3,000	123.0	128.0
20"	250	3,0 w	3,0 w	3,0 w	4,0 w	4,0 w	3,000	137.0	163.0
24"	250	3,0 w	3,0 w	3,0 w	4,0 w	4,0 w	3,000	167.0	215.0

Standard Version: one fixed flange one loose (lap joint)

Part Number: PLPxxx-xxxx - Where XXX are Dia – Length (in mm)

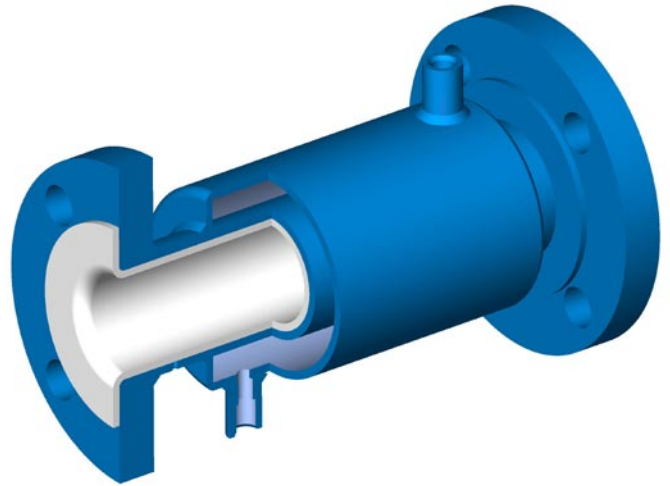
- Available on request:
- Two fixed or two loosed flanges
 - ANSI B16.5 Class 300 flanges
 - Stainless steel body and flanges 304/316

Lined Pipe with Steam Jacket



Materials

1.1	PTFE Paste white ASTM – D4895/D4894
1.2	PTFE Granular white ASTM – D4895
1.3	PFA ASTM D3307
1.4	ETFE ASTM D3159
1.5	PVDF ASTM D3222
2	St 37.0 - DIN 1629
2.1	APL 5 L Gr.B
3	ASTM A 105 SLIP-ON
4	ASTM A 105 LAP-JOINT
5	St 37.0 - DIN 17100
6	St 37.0 - DIN 1629
6.1	APL 5 L Gr.B
7	St 37.0 - DIN 17100
8	St 37.0 - DIN 17100



ANSI B16.5 - Class 150#

DN	L min	L max	B Jacket OD	L1	LINING MATERIALS				Part. No
					PTFE	PFA	ETFE	PVDF	
					s ± 10%	s ± 10%	s ± 10%	s ± 10%	
Inch	mm	mm	Inch	mm	mm	mm	mm	mm	
1"	250	6000	2	40	3.0	3.5	3.0	3.0	LSP-15025
1 1/2"	250	6000	2 1/2	40	3.0	4.0	3.0	3.0	LSP-15038
2"	250	6000	3	40	3.0	4.0	3.5	3.5	LSP-15050
3"	300	6000	5	50	3.5	5.0	4.0	4.0	LSP-15080
4"	300	6000	6	50	4.5	5.0	4.5	4.5	LSP-150100
6"	300	6000	8	50	5.0	5.0	5.0	5.0	LSP-150150
8"	300	6000	10	50	6.5	5.0	5.0	5.0	LSP-150200
10"	300	3500	12	50	6.5	5.0	5.0	5.0	LSP-150250

Standard Version: One fixed flange one loose (lap joint)

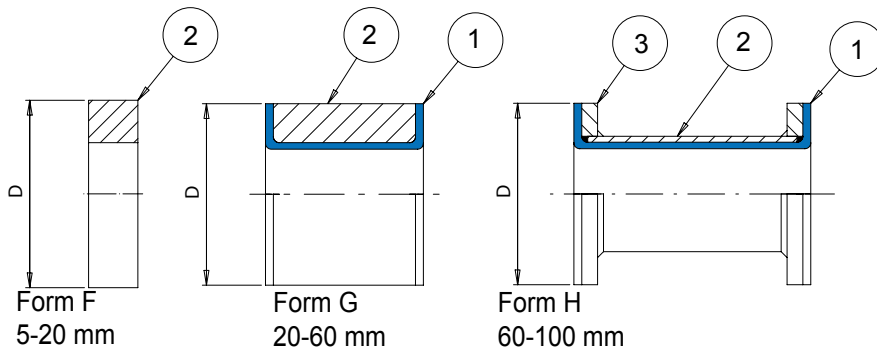
Available on request:

- Loosed flanges
- ANSI B16.5 Class 300 flanges
- Stainless steel body and flanges 304/316

Solid And Lined Spacers

Materials

1.1	PTFE Granular white ASTM – D4895
1.2	PVDF ASTM D3222
1.3	PP ASTM D4101
2	St 37.0 - DIN 1629
2.1	APL 5 L Gr.B
3	St 37.0 - DIN 17100

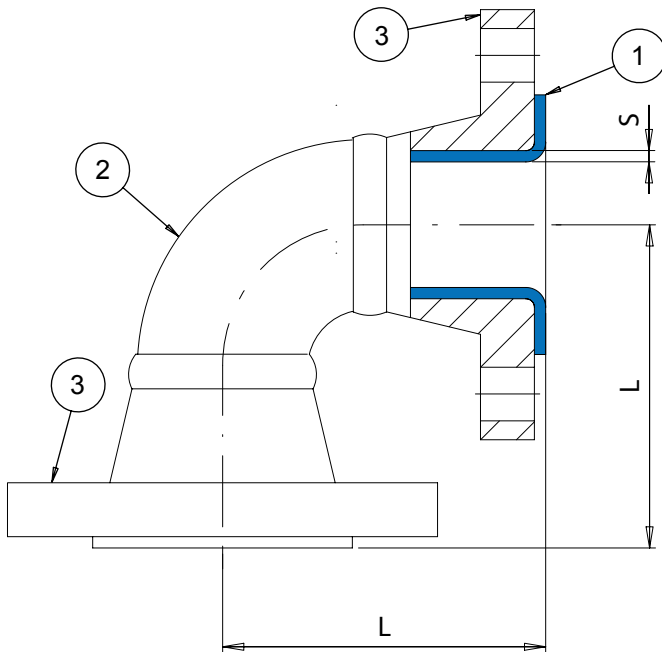


ANSI B16.5 - Class 150#

DN	D	PTFE s ± 10% mm	PVDF s ± 10% mm	PP s ± 10% mm	Part. No
1/2"	40	4	4	4	SPC-15012
3/4"	50	4	4	4	SPC-15019
1"	55	4	4	4	SPC-15025
1 1/4 "	68	4	4	4	SPC-15032
1 1/2 "	75	4	4	4	SPC-15038
2"	95	4	4	4	SPC-15050
2 1/2 "	108	4	4	4	SPC-15062
3"	130	4	4	4	SPC-15080
4"	162	5	5	5	SPC-150100
5"	190	5	5	5	SPC-150125
6"	218	5	5	5	SPC-150150
8"	273	5	5	5	SPC-150200
10"	336	5	5	5	SPC-150250
12"	406	5	5	5	SPC-150300
14"	447	5	5	5	SPC-150350
16"	511	5	5	5	SPC-150400
18"	546	5	5	5	SPC-150450
20"	603	5	5	5	SPC-150500
24"	714	5	5	5	SPC-150600

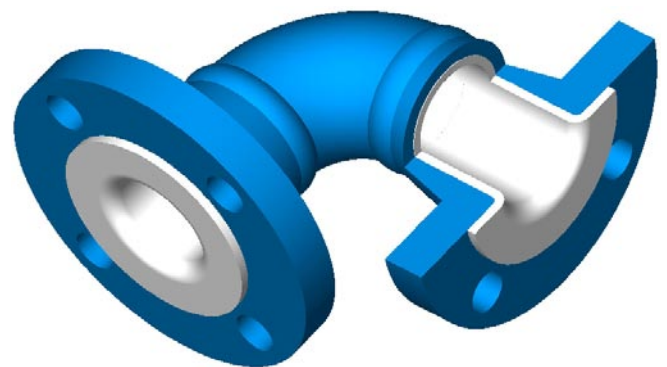
Available on request: • Stainless steel body and flanges 304/316
• Different Lengths (L)

Lined Elbows 90°



Materials

- 1.1 PTFE Paste white ASTM – D4895/D4894
- 1.2 PTFE Granular white ASTM – D4895
- 1.3 PFA ASTM D3307
- 1.4 ETFE ASTM D3159
- 1.5 PVDF ASTM D3222
- 1.6 PP ASTM D4101
- 1.7 XLPE ASTM D1998-04
- 1.8 PE ASTM D1998-04
- 2 St 37.0 - DIN 1629
- 2.1 A 234 WPB
- 3 ASTM A 105 SLIP-ON
- 3.1 ASTM A 105 WELD-NECK



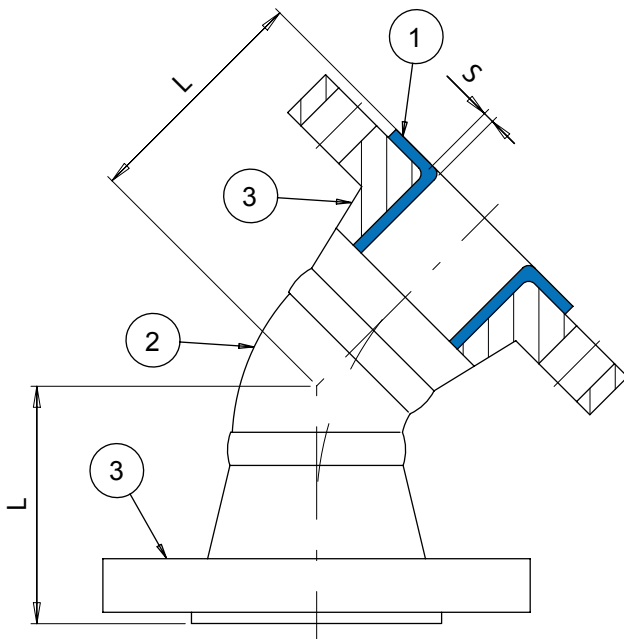
ANSI B16.5 - Class 150#

DN	L	LINING MATERIALS							Weight	Part. No
		PTFE s ± 10%	PFA s ± 10%	ETFE s ± 10%	PVDF s ± 10%	XLPE s ± 10%	PE s ± 10%	PP s ± 10%		
Inch	mm	mm	mm	mm	mm	mm	mm	mm	Kg	
1/2"	65	2.5	x	x	3.0	x	x	x	1.5	LE90-15013
3/4"	75	3.0	x	x	3.0	x	x	x	2.0	LE90-15019
1"	89	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.1	LE90-15025
1 1/4"	95	3.0	3.0	3.0	3.0	3.0	3.0	3.0	4.0	LE90-15032
1 1/2"	102	3.0	3.0	3.0	3.0	3.0	3.0	3.0	4.5	LE90-15038
2"	114	4.0	3.5	3.5	3.5	3.5	3.5	3.5	6.5	LE90-15050
2 1/2"	127	4.0	3.5	3.5	3.5	3.5	3.5	3.5	9.0	LE90-15063
3"	140	4.0	4.0	4.0	4.0	4.0	4.0	4.0	12.0	LE90-15080
4"	165	4.5	4.0	4.0	4.0	4.0	4.0	4.0	19.0	LE90-150100
5"	190	5.5	4.0	4.0	4.0	4.0	4.0	4.0	22.0	LE90-150125
6"	203	6.5	6.0	6.0	6.0	6.0	6.0	6.0	34.0	LE90-150150
8"	229	7.0	6.0	6.0	6.0	6.0	6.0	6.0	57.0	LE90-150200
10"	279	8.0	6.0	6.0	6.0	6.0	6.0	6.0	82.0	LE90-150250
12"	305	8.0	7.0	7.0	7.0	7.0	7.0	7.0	115.0	LE90-150300
14"	546	x	7.0	7.0	7.0	7.0	7.0	7.0	150.0	LE90-150350
16"	610	x	7.0	7.0	7.0	7.0	7.0	7.0	192.0	LE90-150400
18"	673	x	7.0	7.0	7.0	7.0	7.0	7.0	225.0	LE90-150450
20"	737	x	7.0	7.0	7.0	7.0	7.0	7.0	280.0	LE90-150500
24"	864	x	7.0	7.0	7.0	7.0	7.0	7.0	395.0	LE90-150600

Standard Version: Two fixed flanges

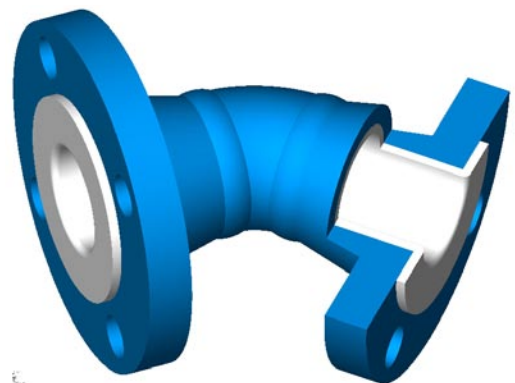
- Available on request:
- One or Two loosed flanges
 - ANSI B16.5 Class 300 flanges
 - Stainless steel body and flanges 304/316
 - Different Lengths (L)

Lined Elbows 45°



Materials

- 1.1 PTFE Paste white ASTM – D4895/D4894
- 1.2 PTFE Granular white ASTM – D4895
- 1.3 PFA ASTM D3307
- 1.4 ETFE ASTM D3159
- 1.5 PVDF ASTM D3222
- 1.6 PP ASTM D4101
- 1.7 XLPE ASTM D1998-04
- 1.8 PE ASTM D1998-04
- 2 St 37.0 - DIN 1629
- 2.1 A 234 WPB
- 3 ASTM A 105 SLIP-ON
- 3.1 ASTM A 105 WELD-NECK

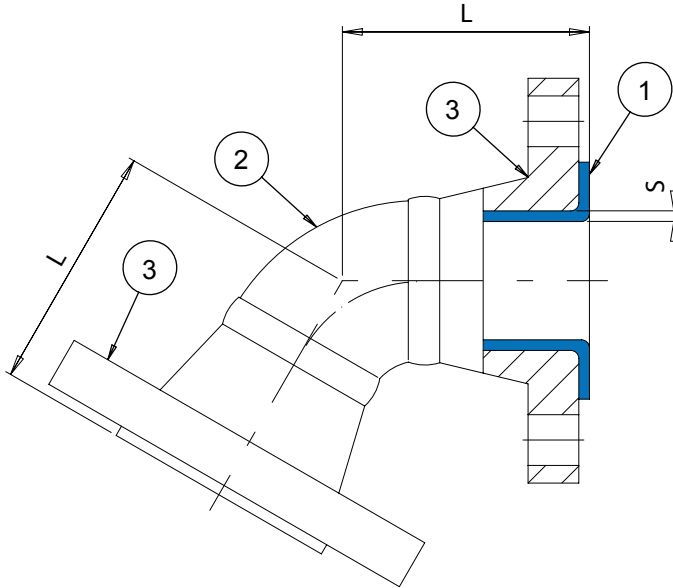


ANSI B16.5 - Class 150#

DN	L	LINING MATERIALS							Weight	Part. No
		PTFE s ± 10%	PFA s ± 10%	ETFE s ± 10%	PVDF s ± 10%	XLPE s ± 10%	PE s ± 10%	PP s ± 10%		
Inch	mm	mm	mm	mm	mm	mm	mm	mm	Kg	
1/2"	45	2.5	x	x	3.0	x	x	x	1.8	LE45-15013
3/4"	45	3.0	x	x	3.0	x	x	x	2.0	LE45-15019
1"	45	3.0	3.0	.0	3.0	3.0	3.0	3.0	3.0	LE45-15025
1 1/4"	51	3.0	3.0	3.0	3.0	3.0	3.0	3.0	4.0	LE45-15032
1 1/2"	57	3.0	3.0	3.0	3.0	3.0	3.0	3.0	6.0	LE45-15038
2"	64	4.0	3.5	3.5	3.5	3.5	3.5	3.5	9.0	LE45-15050
2 1/2"	76	4.0	3.5	3.5	3.5	3.5	3.5	3.5	13.0	LE45-15063
3"	76	4.0	4.0	4.0	4.0	4.0	4.0	4.0	15.0	LE45-15080
4"	102	4.5	4.0	4.0	4.0	4.0	4.0	4.0	20.0	LE45-150100
5"	114	5.5	4.0	4.0	4.0	4.0	4.0	4.0	26.0	LE45-150125
6"	127	6.5	6.0	6.0	6.0	6.0	6.0	6.0	33.0	LE45-150150
8"	140	7.0	6.0	6.0	6.0	6.0	6.0	6.0	54.0	LE45-150200
10"	165	8.0	6.0	6.0	6.0	6.0	6.0	6.0	75.0	LE45-150250
12"	190	8.0	7.0	7.0	7.0	7.0	7.0	7.0	110.0	LE45-150300
14"	190	x	7.0	7.0	7.0	7.0	7.0	7.0	117.0	LE45-150350
16"	203	x	7.0	7.0	7.0	7.0	7.0	7.0	145.0	LE45-150400
18"	216	x	7.0	7.0	7.0	7.0	7.0	7.0	165.0	LE45-150450
20"	241	x	7.0	7.0	7.0	7.0	7.0	7.0	210.0	LE45-150500
24"	279	x	7.0	7.0	7.0	7.0	7.0	7.0	290.0	LE45-150600

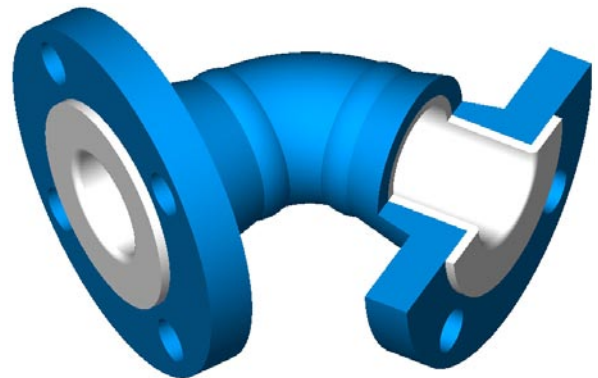
- Standard Version:** Two fixed flanges
- Available on request:**
- One or Two loosed flanges
 - ANSI B16.5 Class 300 flanges
 - Stainless steel body and flanges 304/316
 - Different Lengths (L)

Lined Elbows 60°



Materials

- 1.1 PTFE Paste white ASTM – D4895/D4894
- 1.2 PTFE Granular white ASTM – D4895
- 1.3 PFA ASTM D3307
- 1.4 ETFE ASTM D3159
- 1.5 PVDF ASTM D3222
- 1.6 PP ASTM D4101
- 1.7 XLPE ASTM D1998-04
- 1.8 PE ASTM D1998-04
- 2 St 37.0 - DIN 1629
- 2.1 A 234 WPB
- 3 ASTM A 105 SLIP-ON
- 3.1 ASTM A 105 WELD-NECK



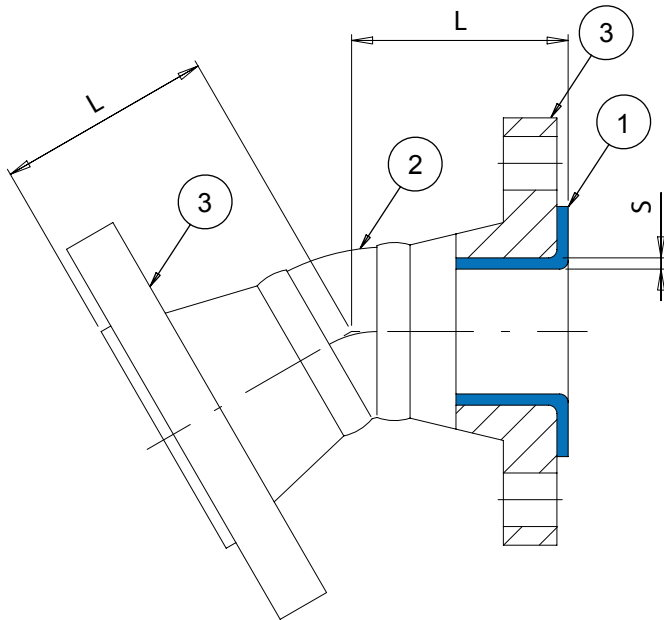
ANSI B16.5 - Class 150#

DN	L	LINING MATERIALS							Weight	Part. No
		PTFE s ± 10%	PFA s ± 10%	ETFE s ± 10%	PVDF s ± 10%	XLPE s ± 10%	PE s ± 10%	PP s ± 10%		
Inch	mm	mm	mm	mm	mm	mm	mm	mm	Kg	
1/2"	45	2.5	x	x	3.0	x	x	x	1.6	LE60-15013
3/4"	45	3.0	x	x	3.0	x	x	x	1.8	LE60-15019
1"	45	3.0	3.0	3.0	3.0	3.0	3.0	3.0	2.7	LE60-15025
1 1/4"	51	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.6	LE60-15032
1 1/2"	57	3.0	3.0	3.0	3.0	3.0	3.0	3.0	5.4	LE60-15038
2"	64	4.0	3.5	3.5	3.5	3.5	3.5	3.5	8.1	LE60-15050
2 1/2"	76	4.0	3.5	3.5	3.5	3.5	3.5	3.5	11.7	LE60-15063
3"	76	4.0	4.0	4.0	4.0	4.0	4.0	4.0	13.5	LE60-15080
4"	102	4.5	4.0	4.0	4.0	4.0	4.0	4.0	18.0	LE60-150100
5"	114	5.5	4.0	4.0	4.0	4.0	4.0	4.0	20.5	LE60-150125
6"	127	6.5	6.0	6.0	6.0	6.0	6.0	6.0	26.1	LE60-150150
8"	140	7.0	6.0	6.0	6.0	6.0	6.0	6.0	42.7	LE60-150200
10"	165	8.0	6.0	6.0	6.0	6.0	6.0	6.0	59.3	LE60-150250
12"	190	8.0	7.0	7.0	7.0	7.0	7.0	7.0	86.9	LE60-150300
14"	190	x	7.0	7.0	7.0	7.0	7.0	7.0	92.4	LE60-150350
16"	203	x	7.0	7.0	7.0	7.0	7.0	7.0	114.6	LE60-150400
18"	216	x	7.0	7.0	7.0	7.0	7.0	7.0	130.4	LE60-150450
20"	241	x	7.0	7.0	7.0	7.0	7.0	7.0	165.9	LE60-150500
24"	279	x	7.0	7.0	7.0	7.0	7.0	7.0	229.1	LE60-150600

Standard Version: Two fixed flanges

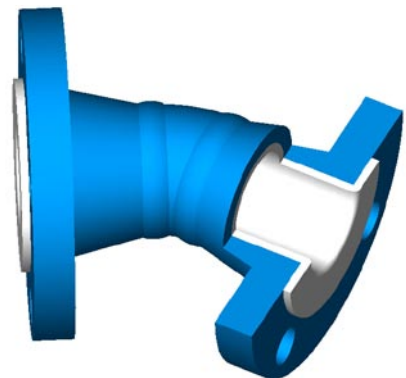
- Available on request:
- One or Two loosed flanges
 - ANSI B16.5 Class 300 flanges
 - Stainless steel body and flanges 304/316
 - Different Lengths (L)

Lined Elbows 30°



Materials

- 1.1 PTFE Paste white ASTM – D4895/D4894
- 1.2 PTFE Granular white ASTM – D4895
- 1.3 PFA ASTM D3307
- 1.4 ETFE ASTM D3159
- 1.5 PVDF ASTM D3222
- 1.6 PP ASTM D4101
- 1.7 XLPE ASTM D1998-04
- 1.8 PE ASTM D1998-04
- 2 St 37.0 - DIN 1629
- 2.1 A 234 WPB
- 3 ASTM A 105 SLIP-ON
- 3.1 ASTM A 105 WELD-NECK



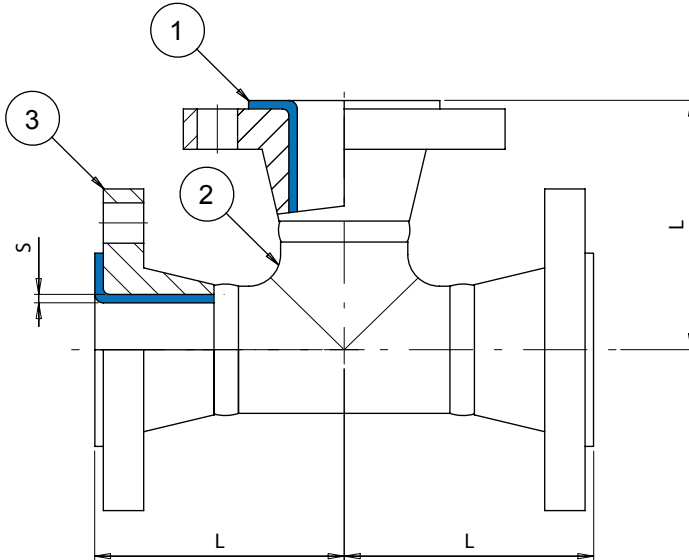
ANSI B16.5 - Class 150#

DN	L	LINING MATERIALS							Weight	Part. No
		PTFE s ± 10% mm	PFA s ± 10% mm	ETFE s ± 10% mm	PVDF s ± 10% mm	XLPE s ± 10% mm	PE s ± 10% mm	PP s ± 10% mm		
Inch	mm								Kg	
1/2"	45	2.5	x	x	3.0	x	x	x	1.6	LE30-15013
3/4"	45	3.0	x	x	3.0	x	x	x	1.8	LE30-15019
1"	45	3.0	3.0	3.0	3.0	3.0	3.0	3.0	2.7	LE30-15025
1 1/4"	51	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.6	LE30-15032
1 1/2"	57	3.0	3.0	3.0	3.0	3.0	3.0	3.0	5.4	LE30-15038
2"	64	4.0	3.5	3.5	3.5	3.5	3.5	3.5	8.1	LE30-15050
2 1/2"	76	4.0	3.5	3.5	3.5	3.5	3.5	3.5	11.7	LE30-15063
3"	76	4.0	4.0	4.0	4.0	4.0	4.0	4.0	13.5	LE30-15080
4"	102	4.5	4.0	4.0	4.0	4.0	4.0	4.0	16.0	LE30-150100
5"	114	5.5	4.0	4.0	4.0	4.0	4.0	4.0	20.8	LE30-150125
6"	127	6.5	6.0	6.0	6.0	6.0	6.0	6.0	26.4	LE30-150150
8"	140	7.0	6.0	6.0	6.0	6.0	6.0	6.0	43.2	LE30-150200
10"	165	8.0	6.0	6.0	6.0	6.0	6.0	6.0	56.3	LE30-150250
12"	190	8.0	7.0	7.0	7.0	7.0	7.0	7.0	82.5	LE30-150300
14"	190	x	7.0	7.0	7.0	7.0	7.0	7.0	87.8	LE30-150350
16"	203	x	7.0	7.0	7.0	7.0	7.0	7.0	108.8	LE30-150400
18"	216	x	7.0	7.0	7.0	7.0	7.0	7.0	123.8	LE30-150450
20"	241	x	7.0	7.0	7.0	7.0	7.0	7.0	157.5	LE30-150500
24"	279	x	7.0	7.0	7.0	7.0	7.0	7.0	217.5	LE30-150600

Standard Version: Two fixed flanges

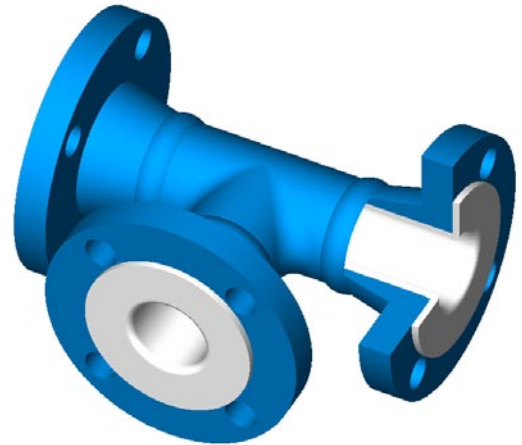
- Available on request:
- One or Two loosed flanges
 - ANSI B16.5 Class 300 flanges
 - Stainless steel body and flanges 304/316
 - Different Lengths (L)

Lined Equal Tee



Materials

- 1.1 PTFE Granular white ASTM – D4895
- 1.2 PFA ASTM D3307
- 1.3 ETFE ASTM D3159
- 1.4 PVDF ASTM D3222
- 1.5 PP ASTM D4101
- 1.6 XLPE ASTM D1998-04
- 1.7 PE ASTM D1998-04
- 2 St 37.0 - DIN 1629
- 2.1 A 234 WPB
- 3 ASTM A 105 SLIP-ON
- 3.1 ASTM A 105 WELD-NECK



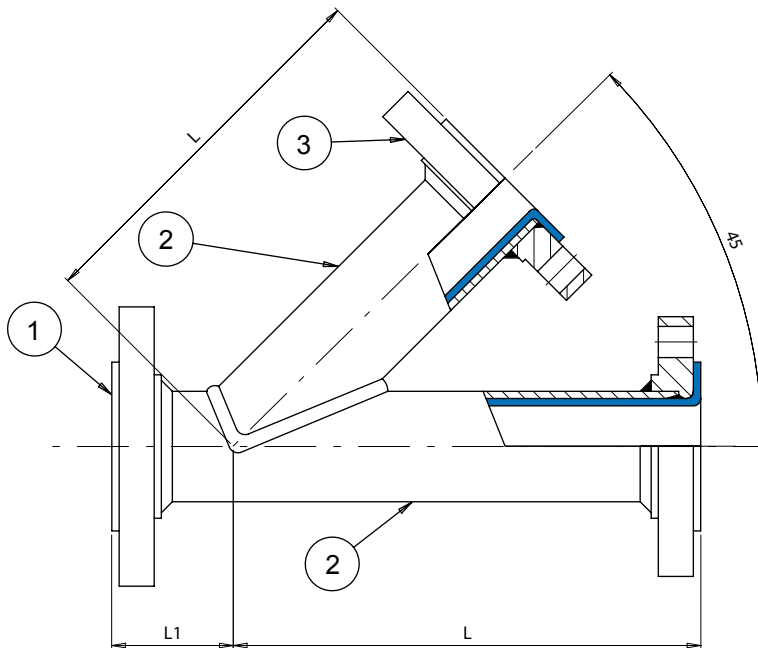
ANSI B16.5 - Class 150#

DN	L	LINING MATERIALS							Weight	Part. No
		PTFE s ± 10% mm	PFA s ± 10% mm	ETFE s ± 10% mm	PVDF s ± 10% mm	XLPE s ± 10% mm	PE s ± 10% mm	PP s ± 10% mm		
1/2"	65	x	3.0	3.0	3.0	X	X	X	2.3	LET-15013
3/4"	75	x	3.0	3.0	3.0	X	X	X	3.3	LET-15019
1"	89	x	3.5	3.0	3.0	3.0	3.0	3.0	3.5	LET-15025
1 1/4"	95	x	3.5	3.0	3.0	3.0	3.0	3.0	4.6	LET-15032
1 1/2"	102	4.0	4.0	3.0	3.0	3.0	3.0	3.0	6.5	LET-15038
2"	114	4.0	4.0	3.5	3.5	3.5	3.5	3.5	10.0	LET-15050
2 1/2"	127	4.5	4.5	3.5	3.5	3.5	3.5	3.5	13.7	LET-15063
3"	140	5.7	5.7	4.0	4.0	4.0	4.0	4.0	21.0	LET-15080
4"	165	5.7	5.7	4.5	4.5	4.5	4.5	4.5	36.0	LET-150100
5"	190	6.0	6.0	4.5	4.5	4.5	4.5	4.5	43.0	LET-150125
6"	203	6.5	6.5	6.0	6.0	6.0	6.0	6.0	49.0	LET-150150
8"	229	7.0	7.0	6.0	6.0	6.0	6.0	6.0	75.0	LET-150200
10"	279	8.0	8.0	6.0	6.0	6.0	6.0	6.0	113.0	LET-150250
12"	305	6.5 *	7.0	7.0	7.0	7.0	7.0	7.0	153.0	LET-150300
14"	356	6.5 *	7.0	7.0	7.0	7.0	7.0	7.0	197.0	LET-150350
16"	381	6.5 *	7.0	7.0	7.0	7.0	7.0	7.0	263.0	LET-150400
18"	419	6.5 *	7.0	7.0	7.0	7.0	7.0	7.0	303.0	LET-150450
20"	457	6.5 *	7.0	7.0	7.0	7.0	7.0	7.0	330.0	LET-150500
24"	559	6.5 *	7.0	7.0	7.0	7.0	7.0	7.0	397.0	LET-150600

Standard Version: Three fixed flanges

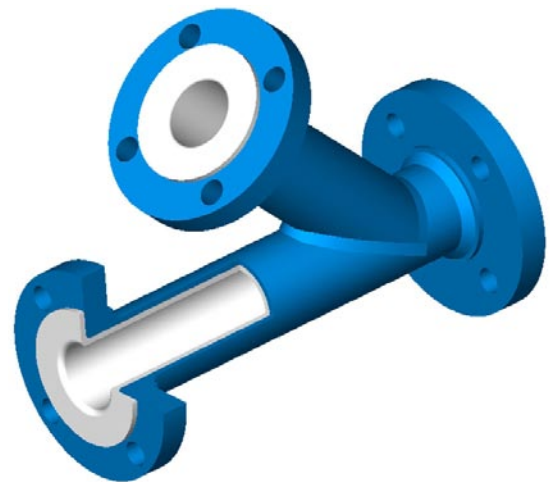
- Available on request:
- Loosed flanges
 - ANSI B16.5 Class 300 flanges
 - Stainless steel body and flanges 304/316
 - Different Lengths (L)

Lined Lateral Tee



Materials

1.1	PTFE Granular white ASTM – D4895
1.2	PFA ASTM D3307
1.3	ETFE ASTM D3159
1.4	PVDF ASTM D3222
1.5	XLPE ASTM D1998-04
1.6	PE ASTM D1998-04
2	St 37.0 - DIN 1629
2.1	APL 5 L Gr.B
3	ASTM A 105 SLIP-ON
3.1	ASTM A 105 WELD-NECK

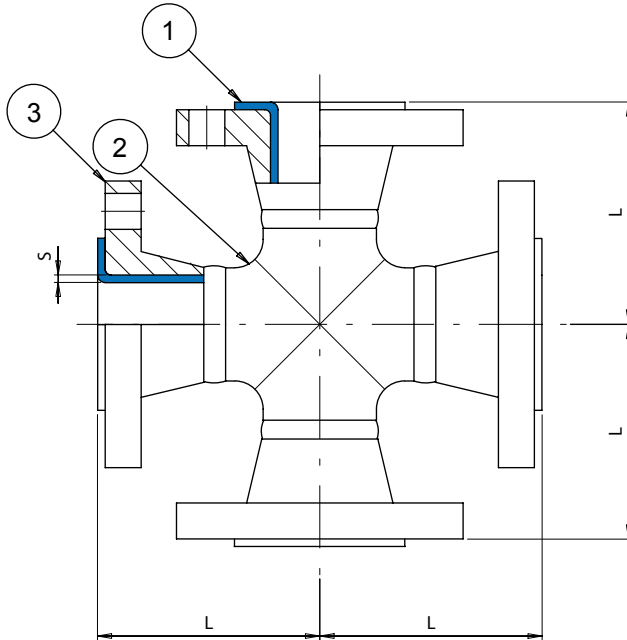


ANSI B16.5 - Class 150#

DN	L	L1	LINING MATERIALS						Weight	Part. No
			PTFE s ± 10%	PFA s ± 10%	ETFE s ± 10%	PVDF s ± 10%	XLPE s ± 10%	PE s ± 10%		
Inch	mm	mm	mm	mm	mm	mm	mm	mm	Kg	
1"	146	45	x	3.5	3.0	3.0	3.0	3.0	4.0	LLT-15025
1 1/2"	178	51	4.0	4.0	3.0	3.0	3.0	3.0	7.0	LLT-15038
2"	203	64	4.0	4.0	3.5	3.5	3.5	3.5	9.0	LLT-15050
3"	254	76	5.7	5.7	4.0	4.0	4.0	4.0	19.5	LLT-15080
4"	305	76	5.7	5.7	4.5	4.5	4.5	4.5	36.0	LLT-150100
6"	368	89	x	6.5	6.0	6.0	6.0	6.0	53.0	LLT-150150
8"	445	115	x	7.0	6.0	6.0	6.0	6.0	80.0	LLT-150200

- Standard Version:** Three fixed flanges
- Available on request:**
- Loosed flanges
 - ANSI B16.5 Class 300 flanges
 - Stainless steel body and flanges 304/316
 - Different Lengths (L)

Lined Equal Cross



Materials

- 1.1 PTFE Granular white ASTM – D4895
- 1.2 PFA ASTM D3307
- 1.3 ETFE ASTM D3159
- 1.4 PVDF ASTM D3222
- 1.5 PP ASTM D4101
- 1.6 XLPE ASTM D1998-04
- 1.7 PE ASTM D1998-04
- 2 St 37.0 - DIN 1629
- 2.1 A 234 WPB
- 3 ASTM A 105 SLIP-ON
- 3.1 ASTM A 105 WELD-NECK



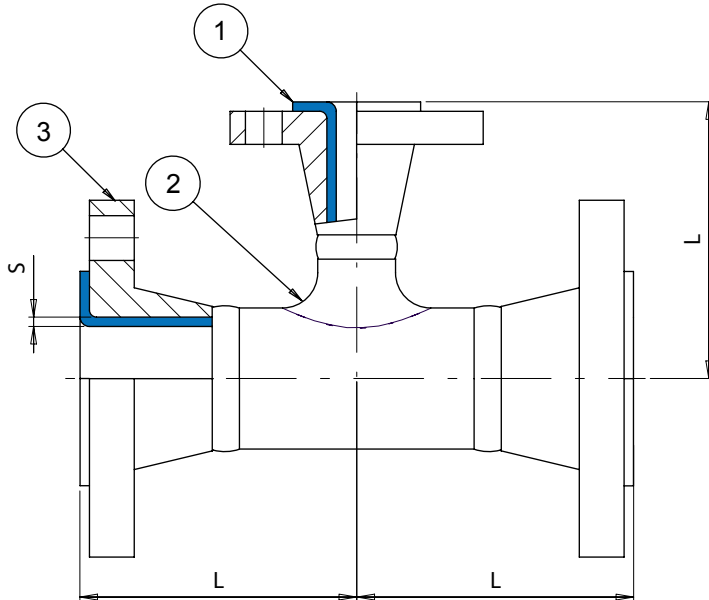
ANSI B16.5 - Class 150#

DN	L	LINING MATERIALS							Weight	Part. No
		PTFE s ± 10% mm	PFA s ± 10% mm	ETFE s ± 10% mm	PVDF s ± 10% mm	XLPE s ± 10% mm	PE s ± 10% mm	PP s ± 10% mm		
1/2"	65	x	3.0	3.0	3.0	X	X	X	3.1	LC-15013
3/4"	75	x	3.0	3.0	3.0	X	X	X	4.0	LC-15019
1"	89	x	3.5	3.0	3.0	3.0	3.0	3.0	5.5	LC-15025
1 1/4"	95	x	3.5	3.0	3.0	3.0	3.0	3.0	6.5	LC-15032
1 1/2"	102	4.0	4.0	3.0	3.0	3.0	3.0	3.0	8.2	LC-15038
2"	114	4.0	4.0	3.5	3.5	3.5	3.5	3.5	13.6	LC-15050
2 1/2"	127	4.5	4.5	3.5	3.5	3.5	3.5	3.5	16.5	LC-15063
3"	140	5.7	5.7	4.0	4.0	4.0	4.0	4.0	23.6	LC-15080
4"	165	5.7	5.7	4.5	4.5	4.5	4.5	4.5	33.0	LC-150100
5"	190	6.0	6.0	4.5	4.5	4.5	4.5	4.5	43.0	LC-150125
6"	203	6.5	6.5	6.0	6.0	6.0	6.0	6.0	52.3	LC-150150
8"	229	7.0	7.0	6.0	6.0	6.0	6.0	6.0	86.3	LC-150200
10"	279	6.5 *	8.0	6.0	6.0	6.0	6.0	6.0	124.0	LC-150250
12"	305	6.5 *	7.0	7.0	7.0	7.0	7.0	7.0	169.0	LC-150300
14"	356	6.5 *	7.0	7.0	7.0	7.0	7.0	7.0	300.0	LC-150350
16"	381	6.5 *	7.0	7.0	7.0	7.0	7.0	7.0	372.0	LC-150400
18"	419	6.5 *	7.0	7.0	7.0	7.0	7.0	7.0	427.0	LC-150450
20"	457	6.5 *	7.0	7.0	7.0	7.0	7.0	7.0	547.0	LC-150500
24"	559	6.5 *	7.0	7.0	7.0	7.0	7.0	7.0	713.0	LC-150600

Standard Version: Four fixed flanges

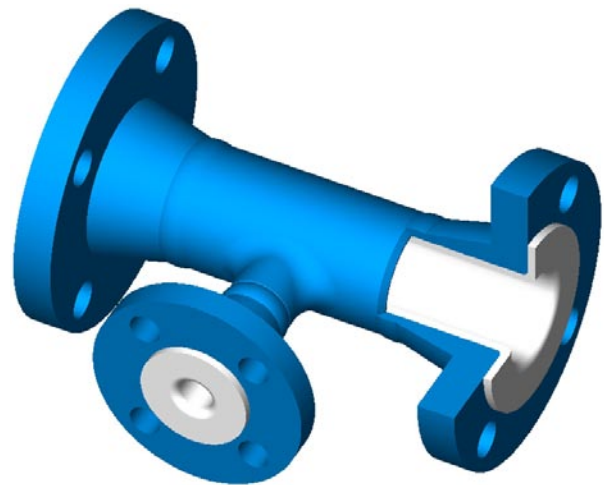
- Available on request:
- Loosed flanges
 - ANSI B16.5 Class 300 flanges
 - Stainless steel body and flanges 304/316
 - Different Lengths (L)

Lined Reducing Tee



Materials

- 1.1 PTFE Granular white ASTM – D4895
- 1.2 PFA ASTM D3307
- 1.3 ETFE ASTM D3159
- 1.4 PVDF ASTM D3222
- 1.5 PP ASTM D4101
- 1.6 XLPE ASTM D1998-04
- 1.7 PE ASTM D1998-04
- 2 St 37.0 - DIN 1629
- 2.1 A 234 WPB
- 3 ASTM A 105 SLIP-ON
- 3.1 ASTM A 105 WELD-NECK

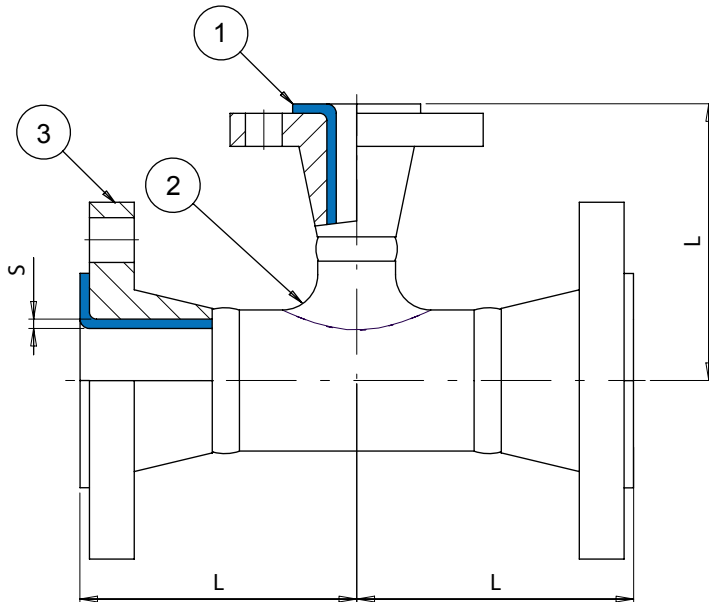


ANSI B16.5 - Class 150#

DN 1	DN 2	L	LINING MATERIALS							Weight ** Kg	Part. No
			PTFE s ± 10% mm	PFA s ± 10% mm	ETFE s ± 10% mm	PVDF s ± 10% mm	XLPE s ± 10% mm	PE s ± 10% mm	PP s ± 10% mm		
3/4"	1/2"	75	x	3.0	x	x	x	x	x	3.0	LRT-15019-12
1"	1/2"	89	x	3.0	x	x	x	x	x	3.7	LRT-15025-12
	3/4"				x	x	x	x	x	3.9	LRT-15025-19
1 1/4"	3/4"	95	3.0		x	x	x	x	x	5.3	LRT-15032-19
	1"				3.0					5.5	LRT-15032-25
2 1/2"	3/4"	127	4.0 / 3		x	x	x	x	x	5.3	LRT-15062-19
	1"				3.0					5.5	LRT-15062-25
5"	1"	190	4.5 / 3							19.0	LRT-150100-25
	1 1/2"									19.8	LRT-150100-38
	2"									21.5	LRT-150100-50
	3"									23.5	LRT-150100-80
1 1/2"	1/2"	102	3.0		x	x	x	x	x	5.1	LRT-15038-12
	3/4"				x	x	x	x	x	5.3	LRT-15038-19
	1"				3.0					5.5	LRT-15038-25
2"	1/2"	114	4.0 / 3		x	x	x	x	x	7.5	LRT-15050-12
	3/4"				x	x	x	x	x	7.7	LRT-15050-19
	1"				3.0					7.9	LRT-15050-25
	1 1/2"									9.4	LRT-15050-38

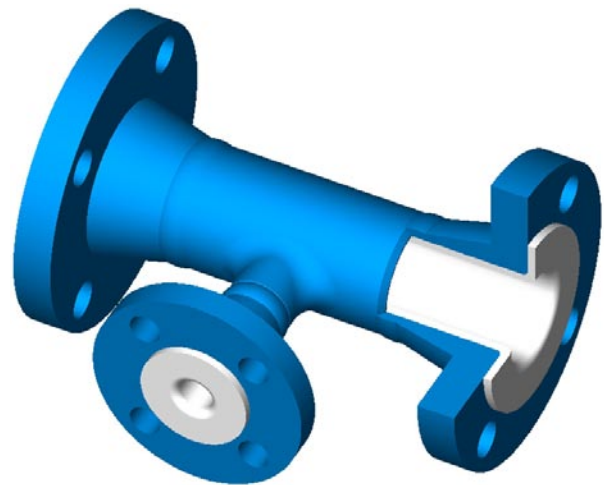
- Standard Version:** Three fixed flanges
- Available on request:**
- Loosed flanges
 - ANSI B16.5 Class 300 flanges
 - Stainless steel body and flanges 304/316
 - Different Lengths (L)

Lined Reducing Tee



Materials

- 1.1 PTFE Granular white ASTM – D4895
- 1.2 PFA ASTM D3307
- 1.3 ETFE ASTM D3159
- 1.4 PVDF ASTM D3222
- 1.5 PP ASTM D4101
- 1.6 XLPE ASTM D1998-04
- 1.7 PE ASTM D1998-04
- 2 St 37.0 - DIN 1629
- 2.1 A 234 WPB
- 3 ASTM A 105 SLIP-ON
- 3.1 ASTM A 105 WELD-NECK

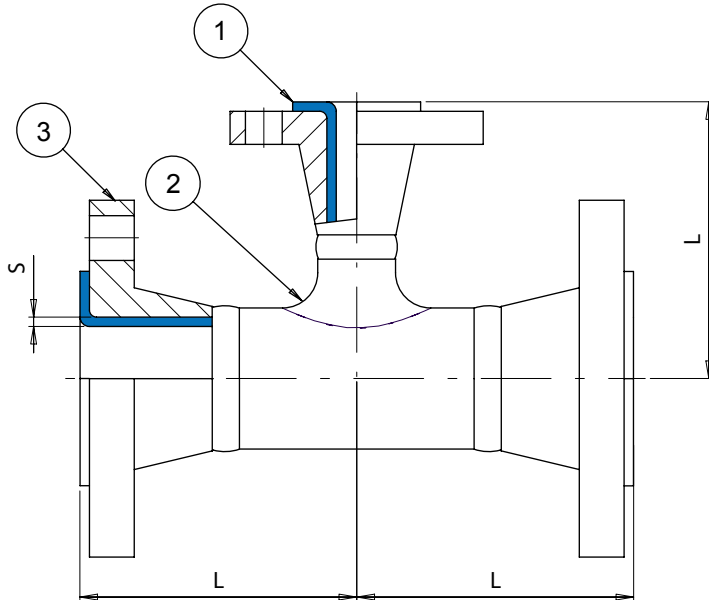


ANSI B 16.5 - Class 150#

DN 1	DN 2	L	LINING MATERIALS							Weight ** Kg	Part. No
			PTFE s ± 10% mm	PFA s ± 10% mm	ETFE s ± 10% mm	PVDF s ± 10% mm	XLPE s ± 10% mm	PE s ± 10% mm	PP s ± 10% mm		
3"	1"	140	4.0 / 3							13.8	LRT-15080-25
	1 1/2"									14.0	LRT-15080-38
	2"									15.0	LRT-15080-50
4"	1"	165	4.5 / 3							19.0	LRT-150100-25
	1 1/2"									19.8	LRT-150100-38
	2"									21.5	LRT-150100-50
	3"									23.5	LRT-150100-80
6"	1"	203	6.0 / 3		4.5 / 3					28.2	LRT-150150-25
	1 1/2"									30.7	LRT-150150-38
	2"		32.0	LRT-150150-50							
	3"		35.2	LRT-150150-80							
	4"		37.0	LRT-150150-100							
8"	1"	229	6.0 / 3		6.0 / 3					42.5	LRT-150200-25
	1 1/2"									45.6	LRT-150200-38
	2"									47.0	LRT-150200-50
	3"		54.0	LRT-150200-80							
	4"		57.0	LRT-150200-100							
	6"		63.0	LRT-150200-150							

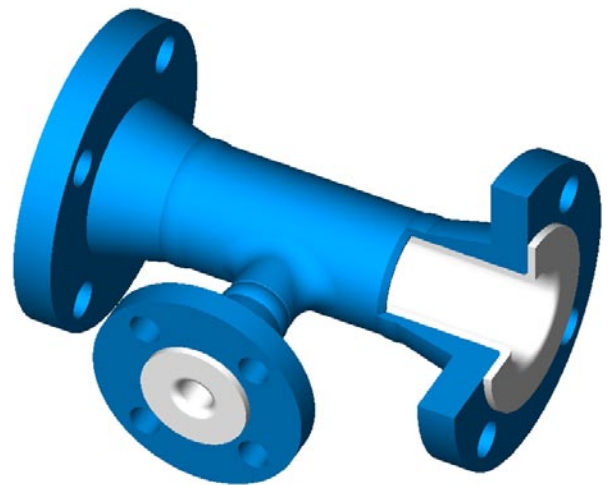
- Standard Version:** Three fixed flanges
- Available on request:**
- Loosed flanges
 - ANSI B16.5 Class 300 flanges
 - Stainless steel body and flanges 304/316
 - Different Lengths (L)

Lined Reducing Tee



Materials

1.1	PTFE Granular white ASTM – D4895
1.2	PFA ASTM D3307
1.3	ETFE ASTM D3159
1.4	PVDF ASTM D3222
1.5	PP ASTM D4101
1.6	XLPE ASTM D1998-04
1.7	PE ASTM D1998-04
2	St 37.0 - DIN 1629
2.1	A 234 WPB
3	ASTM A 105 SLIP-ON
3.1	ASTM A 105 WELD-NECK



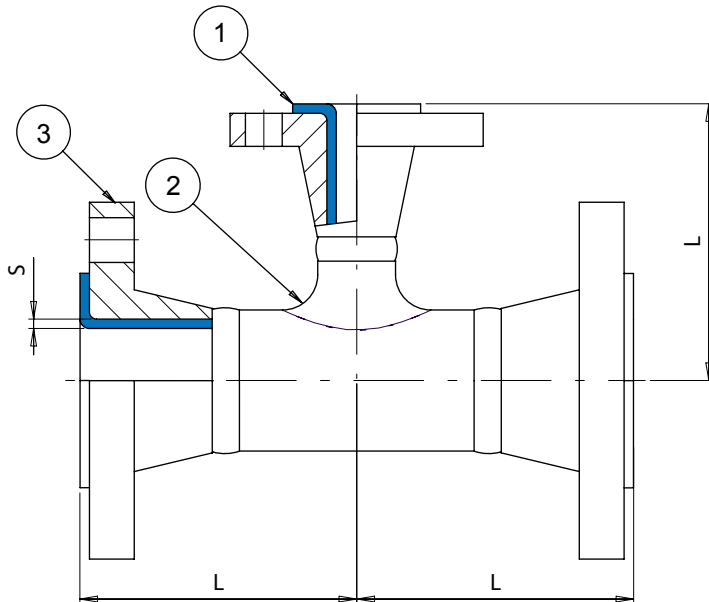
ANSI B16.5 - Class 150#

DN 1	DN 2	L	LINING MATERIALS							Weight ** Kg	Part. No		
			PTFE s ± 10% mm	PFA s ± 10% mm	ETFE s ± 10% mm	PVDF s ± 10% mm	XLPE s ± 10% mm	PE s ± 10% mm	PP s ± 10% mm				
10"	1"	280	6.5 / 3	6.0 / 3			6.0 / 3				64.6	LRT-150250-25	
	1 1/2"										66.3	LRT-150250-38	
	2"										68.3	LRT-150250-50	
	3"		6.5 / 4	6.0 / 4			6.0					75.3	LRT-150250-80
	4"											79.3	LRT-150250-100
	6"											83.0	LRT-150250-150
	8"											94.0	LRT-150250-200
12"	1"	305	6.5 / 3 *			6.0 / 3					127.0	LRT-150300-25	
	1 1/2"										133.0	LRT-150300-38	
	2"										136.0	LRT-150300-50	
	3"		6.5 / 4 *			6.0						146.0	LRT-150300-80
	4"											152.0	LRT-150300-100
	6"											165.0	LRT-150300-150
	8"											219.0	LRT-150300-200
10"	6.5 / 4.5 *			6.0						223.0	LRT-150300-250		
	6.5 / 6 *			7.0									

Standard Version: Three fixed flanges

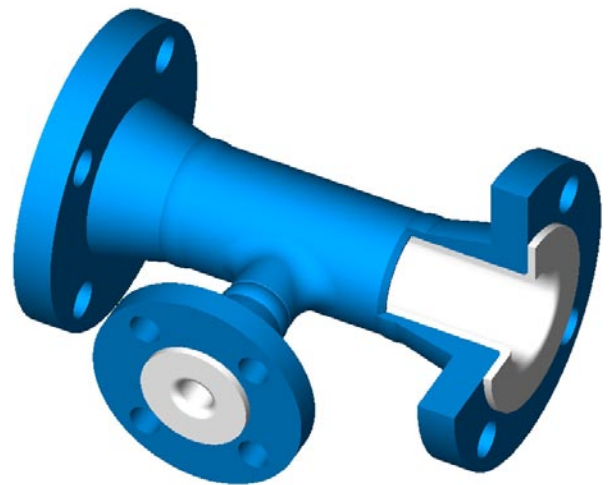
- Available on request:
- Loosed flanges
 - ANSI B16.5 Class 300 flanges
 - Stainless steel body and flanges 304/316
 - Different Lengths (L)

Lined Reducing Tee



Materials

- 1.1 PTFE Granular white ASTM – D4895
- 1.2 PFA ASTM D3307
- 1.3 ETFE ASTM D3159
- 1.4 PVDF ASTM D3222
- 1.5 PP ASTM D4101
- 1.6 XLPE ASTM D1998-04
- 1.7 PE ASTM D1998-04
- 2 St 37.0 - DIN 1629
- 2.1 A 234 WPB
- 3 ASTM A 105 SLIP-ON
- 3.1 ASTM A 105 WELD-NECK



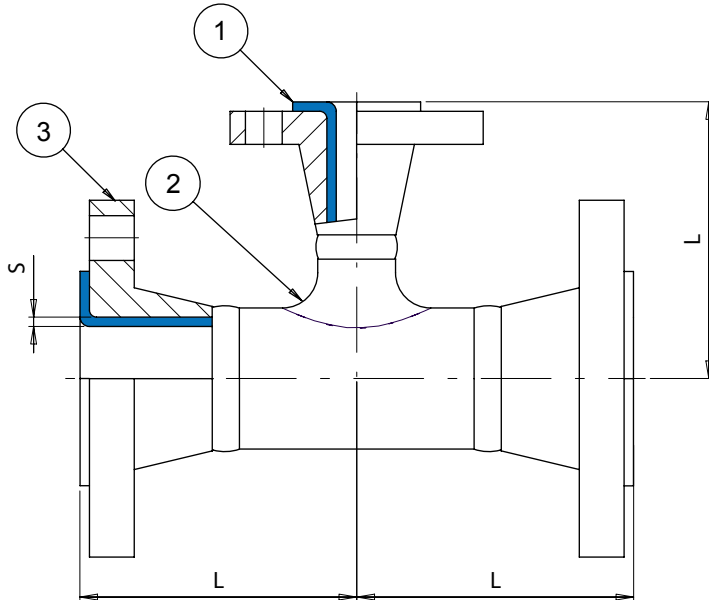
ANSI B16.5 - Class 150#

DN 1	DN 2	L	LINING MATERIALS							Weight ** Kg	Part. No
			PTFE s ± 10% mm	PFA s ± 10% mm	ETFE s ± 10% mm	PVDF s ± 10% mm	XLPE s ± 10% mm	PE s ± 10% mm	PP s ± 10% mm		
Inch	Inch	mm									
14"	1"	356	6.5 / 3 *				6.0 / 3			169.0	LRT-150350-25
	1 1/2"									173.0	LRT-150350-38
	2"									175.0	LRT-150350-50
	3"		186.0							LRT-150350-80	
	4"		191.0							LRT-150350-100	
	6"		204.0							LRT-150350-150	
	8"		293.0							LRT-150350-200	
	10"		299.0							LRT-150350-250	
	12"		307.0							LRT-150350-300	
16"	1"	381	6.5 / 3 *				6.0 / 3			227.0	LRT-150400-25
	1 1/2"									231.0	LRT-150400-38
	2"									233.0	LRT-150400-50
	3"		244.0							LRT-150400-80	
	4"		250.0							LRT-150400-100	
	6"		263.0							LRT-150400-150	
	8"		291.0							LRT-150400-200	
	10"		355.0							LRT-150400-250	
	12"		359.0							LRT-150400-300	
	14"		373.0							LRT-150400-350	

Standard Version: Three fixed flanges

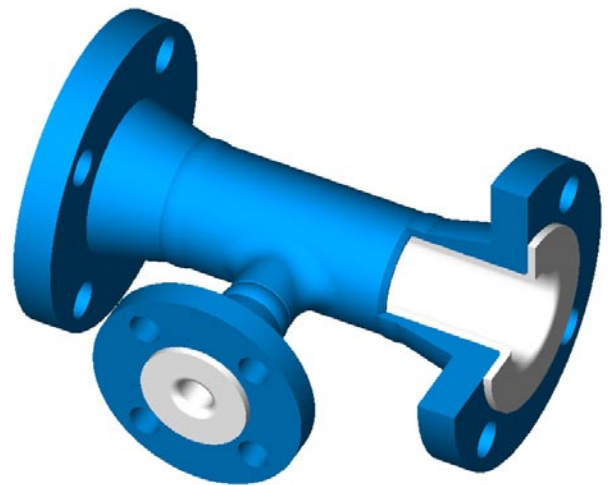
- Available on request:
- Loosed flanges
 - ANSI B16.5 Class 300 flanges
 - Stainless steel body and flanges 304/316
 - Different Lengths (L)

Lined Reducing Tee



Materials

- 1.1 PTFE Granular white ASTM – D4895
- 1.2 PFA ASTM D3307
- 1.3 ETFE ASTM D3159
- 1.4 PVDF ASTM D3222
- 1.5 PP ASTM D4101
- 1.6 XLPE ASTM D1998-04
- 1.7 PE ASTM D1998-04
- 2 St 37.0 - DIN 1629
- 2.1 A 234 WPB
- 3 ASTM A 105 SLIP-ON
- 3.1 ASTM A 105 WELD-NECK

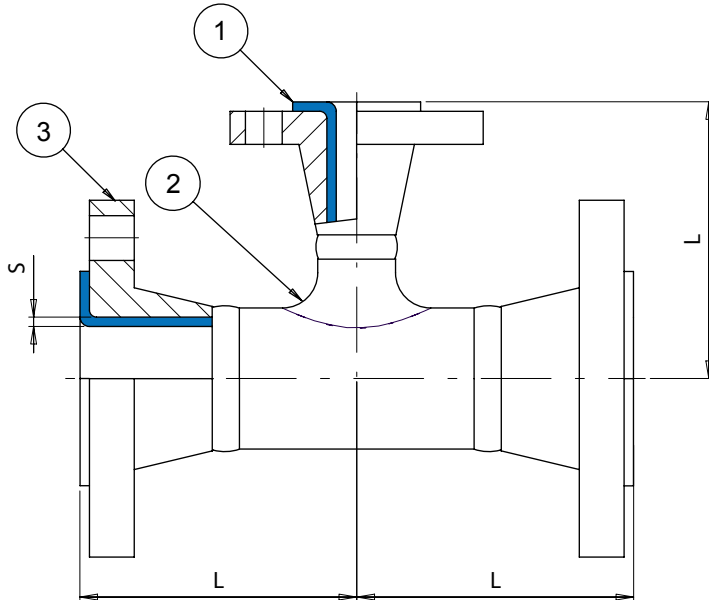


ANSI B16.5 - Class 150#

DN 1	DN 2	L	LINING MATERIALS							Weight ** Kg	Part. No
			PTFE s ± 10% mm	PFA s ± 10% mm	ETFE s ± 10% mm	PVDF s ± 10% mm	XLPE s ± 10% mm	PE s ± 10% mm	PP s ± 10% mm		
18"	1"	419	6.5 / 3 *				6.0 / 3			303.0	LRT-150450-25
	1 1/2"									307.0	LRT-150450-38
	2"									309.0	LRT-150450-50
	3"		6.5 / 4 *							319.0	LRT-150450-80
	4"		6.5 / 4.5 *							323.0	LRT-150450-100
	6"								338.0	LRT-150450-150	
	8"						6.0		372.0	LRT-150450-200	
	10"		6.5 / 6 *							443.0	LRT-150450-250
	12"								455.0	LRT-150450-300	
	14"						7.0		465.0	LRT-150450-350	
	16"								473.0	LRT-150450-400	

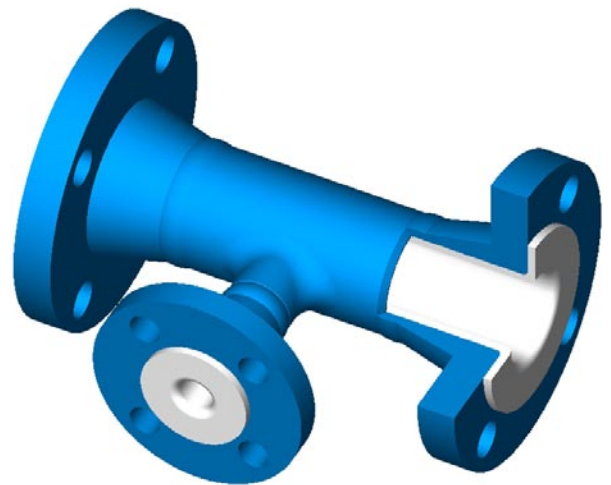
- Standard Version:** Three fixed flanges
- Available on request:**
- Loosed flanges
 - ANSI B16.5 Class 300 flanges
 - Stainless steel body and flanges 304/316
 - Different Lengths (L)

Lined Reducing Tee



Materials

1.1	PTFE Granular white ASTM – D4895
1.2	PFA ASTM D3307
1.3	ETFE ASTM D3159
1.4	PVDF ASTM D3222
1.5	PP ASTM D4101
1.6	XLPE ASTM D1998-04
1.7	PE ASTM D1998-04
2	St 37.0 - DIN 1629
2.1	A 234 WPB
3	ASTM A 105 SLIP-ON
3.1	ASTM A 105 WELD-NECK

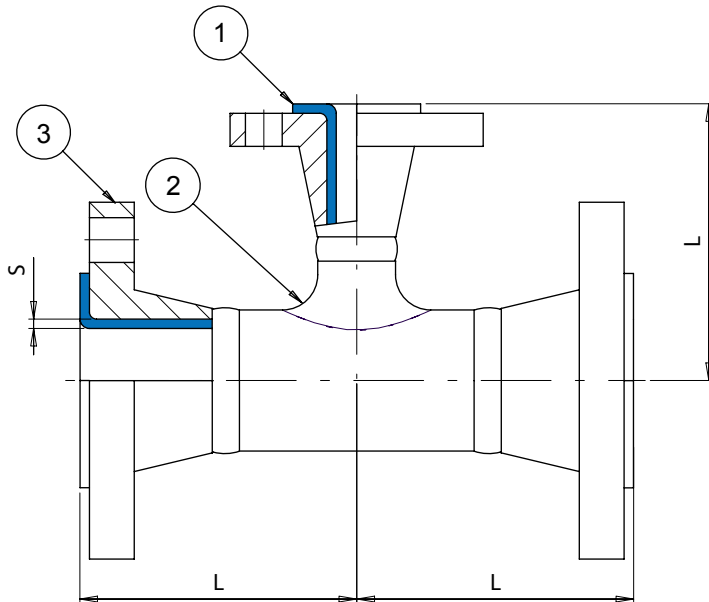


ANSI B16.5 - Class 150#

DN 1	DN 2	L	LINING MATERIALS							Weight ** Kg	Part. No
			PTFE s ± 10% mm	PFA s ± 10% mm	ETFE s ± 10% mm	PVDF s ± 10% mm	XLPE s ± 10% mm	PE s ± 10% mm	PP s ± 10% mm		
Inch	Inch	mm									
20"	1"	457	6.5 / 3 *			6.0 / 3				279.0	LRT-150500-25
	1 1/2"									283.0	LRT-150500-38
	2"									286.0	LRT-150500-50
	3"									294.0	LRT-150500-80
	4"									299.0	LRT-150500-100
	6"									313.0	LRT-150500-150
	8"		343.0	LRT-150500-200							
	10"		413.0	LRT-150500-250							
	12"		421.0	LRT-150500-300							
	14"		429.0	LRT-150500-350							
	16"		439.0	LRT-150500-400							
	18"		447.0	LRT-150500-450							

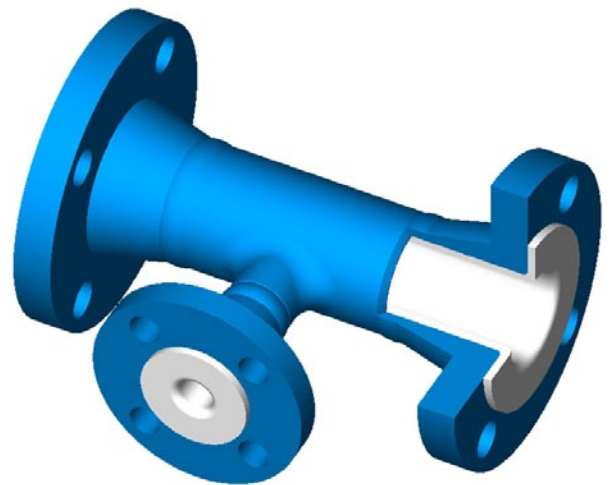
- Standard Version:** Three fixed flanges
- Available on request:**
- Loosed flanges
 - ANSI B16.5 Class 300 flanges
 - Stainless steel body and flanges 304/316
 - Different Lengths (L)

Lined Reducing Tee



Materials

- 1.1 PTFE Granular white ASTM – D4895
- 1.2 PFA ASTM D3307
- 1.3 ETFE ASTM D3159
- 1.4 PVDF ASTM D3222
- 1.5 PP ASTM D4101
- 1.6 XLPE ASTM D1998-04
- 1.7 PE ASTM D1998-04
- 2 St 37.0 - DIN 1629
- 2.1 A 234 WPB
- 3 ASTM A 105 SLIP-ON
- 3.1 ASTM A 105 WELD-NECK

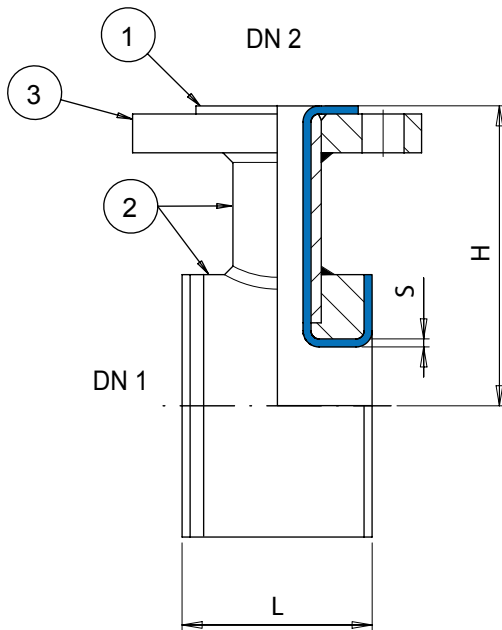


ANSI B16.5 - Class 150#

DN 1	DN 2	L	LINING MATERIALS							Weight ** Kg	Part. No
			PTFE s ± 10% mm	PFA s ± 10% mm	ETFE s ± 10% mm	PVDF s ± 10% mm	XLPE s ± 10% mm	PE s ± 10% mm	PP s ± 10% mm		
24"	1"	500	.5 / 3 *			6.0 / 3				363.0	LRT-150600-25
	1 1/2"									367.0	LRT-150600-38
	2"									370.0	LRT-150600-500
	3"									377.0	LRT-150600-80
	4"									383.0	LRT-150600-100
	6"									396.0	LRT-150600-150
	8"		427.0	LRT-150600-200							
	10"		533.0	LRT-150600-250							
	12"		543.0	LRT-150600-300							
	14"		553.0	LRT-150600-350							
	16"		567.0	LRT-150600-400							
	18"		577.0	LRT-150600-450							
	20"		589.0	LRT-150600-500							

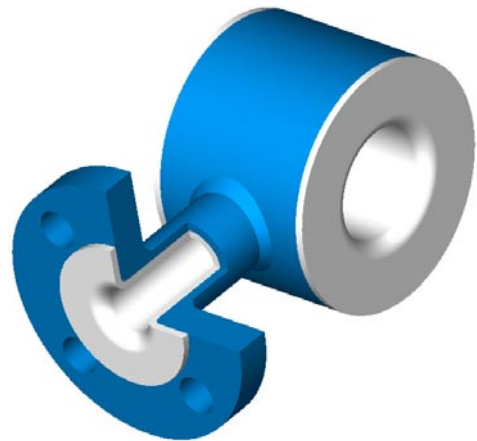
- Standard Version:** Three fixed flanges
- Available on request:**
- Loosed flanges
 - ANSI B16.5 Class 300 flanges
 - Stainless steel body and flanges 304/316
 - Different Lengths (L)

Lined Instrument Tee



Materials

- 1.1 PTFE Granular white ASTM – D4895
- 1.2 PFA ASTM D3307
- 1.3 ETFE ASTM D3159
- 1.4 PVDF ASTM D3222
- 1.5 PP ASTM D4101
- 1.6 PE ASTM D1998-04
- 2 St 37.0 - DIN 1629
- 3 ASTM A 105 SLIP-ON
- 3.1 ASTM A 105 WELD-NECK

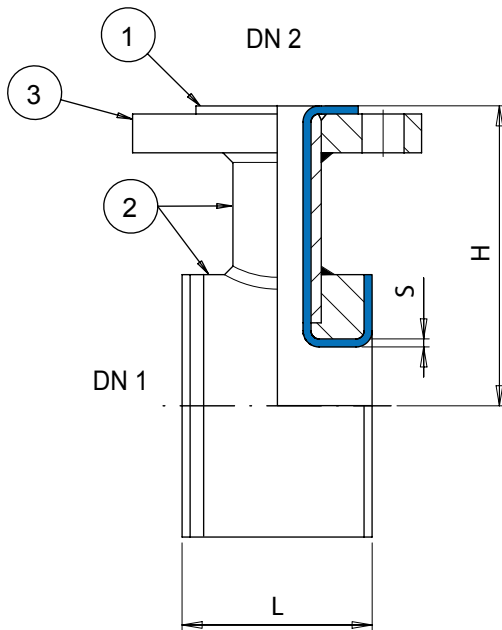


ANSI B16.5 - Class 150#												
DN 1	DN 2	L	H	LINING MATERIALS						Weight ** Kg	Part. No	
				PTFE s ± 10% mm	PFA s ± 10% mm	ETFE s ± 10% mm	PVDF s ± 10% mm	PE s ± 10% mm	PP s ± 10% mm			
Inch	Inch	mm	mm	mm	mm	mm	mm	mm	mm	mm		
1"	1/2"	50	90	x				4.0			1.9	LIT-15025-12
	3/4"										2.0	LIT-15025-19
	1"										2.2	LIT-15025-25
1 1/4"	1/2"	50	100	x				4.0			2.1	LIT-15032-12
	3/4"										2.3	LIT-15032-19
	1"										2.5	LIT-15032-25
1 1/2"	1/2"	50		x				4.0			2.4	LIT-15038-12
	3/4"										2.6	LIT-15038-19
	1"										2.8	LIT-15038-25
	1 1/2"	75									4.4	LIT-15038-38
2"	1/2"	50	115	x				4.0			3.2	LIT-15050-12
	3/4"			3.0							3.4	LIT-15050-19
	1"										3.6	LIT-15050-25
	1 1/2"	75		3.5							6.2	LIT-15050-38
	2"	90									8.1	LIT-15050-50
2 1/2"	1/2"	50	115	x				4.0			3.7	LIT-15062-12
	3/4"			3.0							3.8	LIT-15062-19
	1"										3.9	LIT-15062-25
	1 1/2"	75		3.5							7.2	LIT-15062-38
	2"	90									9.8	LIT-15062-50

Standard Version: Fixed flanges

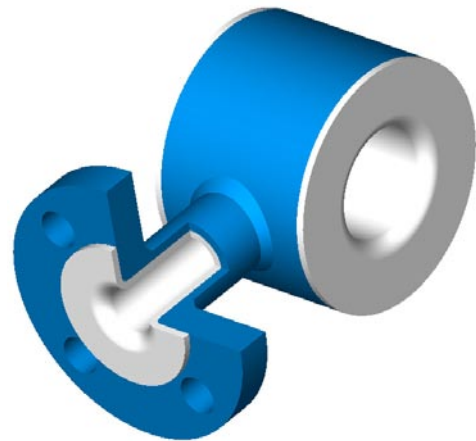
- Available on request:
- Loosed flanges
 - ANSI B16.5 Class 300 flanges
 - Stainless steel body and flanges 304/316
 - Different Lengths (L)

Lined Instrument Tee



Materials

- 1.1 PTFE Granular white ASTM – D4895
- 1.2 PFA ASTM D3307
- 1.3 ETFE ASTM D3159
- 1.4 PVDF ASTM D3222
- 1.5 PP ASTM D4101
- 1.6 PE ASTM D1998-04
- 2 St 37.0 - DIN 1629
- 3 ASTM A 105 SLIP-ON
- 3.1 ASTM A 105 WELD-NECK

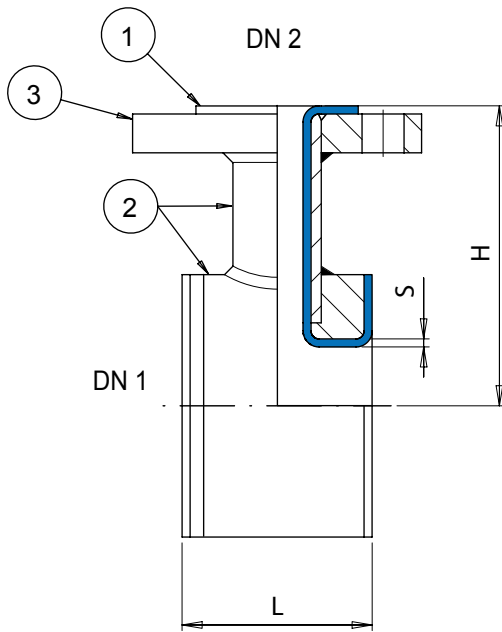


ANSI B16.5 - Class 150#												
DN 1	DN 2	L	H	LINING MATERIALS						Weight ** Kg	Part. No	
				PTFE s ± 10% mm	PFA s ± 10% mm	ETFE s ± 10% mm	PVDF s ± 10% mm	PE s ± 10% mm	PP s ± 10% mm			
Inch	Inch	mm	mm	mm	mm	mm	mm	mm	mm	mm		
3"	1/2"	50	135	x	4.0	4.0	4.0	4.0	4.0	4.0	4.3	LIT-15080-12
	3/4"			4.5							LIT-15080-19	
	1"			4.7							LIT-15080-25	
	1 1/2"			8.3							LIT-15080-38	
	2"			12.6							LIT-15080-50	
4"	1/2"	50	150	x	4.0	4.0	4.0	4.0	4.0	4.0	5.5	LIT-150100-12
	3/4"			5.7							LIT-150100-19	
	1"			5.9							LIT-150100-25	
	1 1/2"			8.9							LIT-150100-38	
	2"			16.0							LIT-150100-50	
	3"			24.5							LIT-150100-80	
6"	1/2"	50	180	x	4.0	4.0	4.0	4.0	4.0	4.0	7.7	LIT-150150-12
	3/4"			7.9							LIT-150150-19	
	1"			8.2							LIT-150150-25	
	1 1/2"			14.7							LIT-150150-38	
	2"			21.8							LIT-150150-50	
	3"			30.1							LIT-150150-80	
8"	1/2"	50	210	x	4.0	4.0	4.0	4.0	4.0	4.0	9.9	LIT-150200-12
	3/4"			10.3							LIT-150200-19	
	1"			10.5							LIT-150200-25	
	1 1/2"			17.8							LIT-150200-38	
	2"			23.3							LIT-150200-50	
	3"			33.3							LIT-150200-80	

Standard Version: Fixed flanges

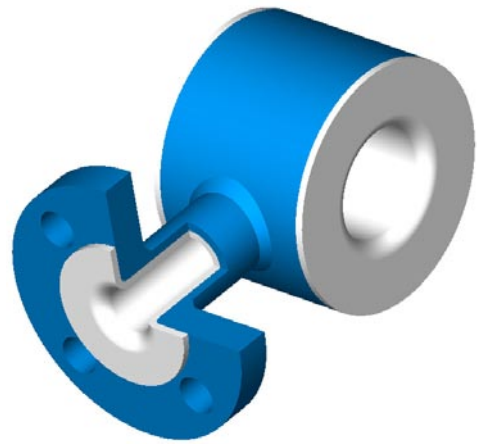
- Available on request:
- Loosed flanges
 - ANSI B16.5 Class 300 flanges
 - Stainless steel body and flanges 304/316
 - Different Lengths (L)

Lined Instrument Tee



Materials

1.1	PTFE Granular white ASTM – D4895
1.2	PFA ASTM D3307
1.3	ETFE ASTM D3159
1.4	PVDF ASTM D3222
1.5	PP ASTM D4101
1.6	PE ASTM D1998-04
2	St 37.0 - DIN 1629
3	ASTM A 105 SLIP-ON
3.1	ASTM A 105 WELD-NECK



ANSI B16.5 - Class 150#

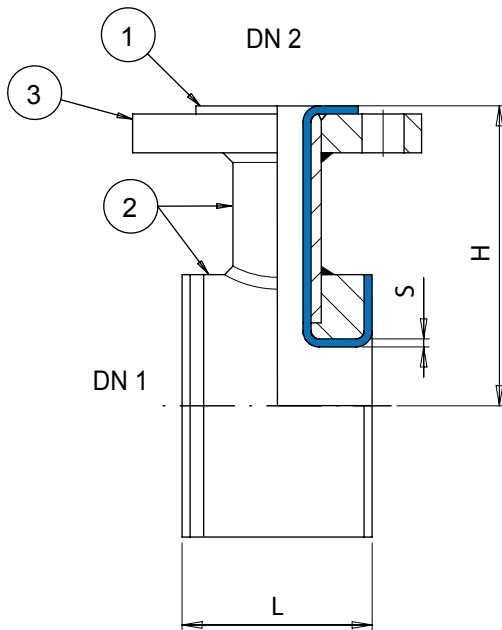
DN 1	DN 2	L	H	LINING MATERIALS						Weight ** Kg	Part. No	
				PTFE s ± 10% mm	PFA s ± 10% mm	ETFE s ± 10% mm	PVDF s ± 10% mm	PE s ± 10% mm	PP s ± 10% mm			
Inch	Inch	mm	mm	mm	mm	mm	mm	mm	mm	mm		
10"	1/2"	50	240	x	4.0	4.0	4.0	4.0	4.0	13.3	LIT-150100-12	
	3/4"			3.0						13.5	LIT-150100-19	
	1"			3.5						13.7	LIT-150100-25	
	1 1/2"			3.5						23.3	LIT-150100-38	
	2"			3.5						26.0	LIT-150100-50	
	3"			3.5						36.7	LIT-150100-80	
12"	1/2"	90	340	x	4.0	4.0	4.0	4.0	4.0	41.4	LIT-150100-12	
	3/4"			3.0						41.6	LIT-150100-19	
	1"			3.5						43.0	LIT-150100-25	
	1 1/2"			3.5						55.5	LIT-150100-38	
	2"			3.5						62.0	LIT-150100-50	
	3"			3.5						69.0	LIT-150100-80	
14"	1/2"	90	375	x	4.0	4.0	4.0	4.0	4.0	51.4	LIT-150100-12	
	3/4"			6.5 / 3 *						52.7	LIT-150100-19	
	1"			6.5 / 3 *						53.1	LIT-150100-25	
	1 1/2"			6.5 / 4 *						66.5	LIT-150100-38	
	2"			6.5 / 4 *						73.7	LIT-150100-50	
	3"			6.5 / 4 *						103.0	LIT-150100-80	

Standard Version: Fixed flanges

Available on request:

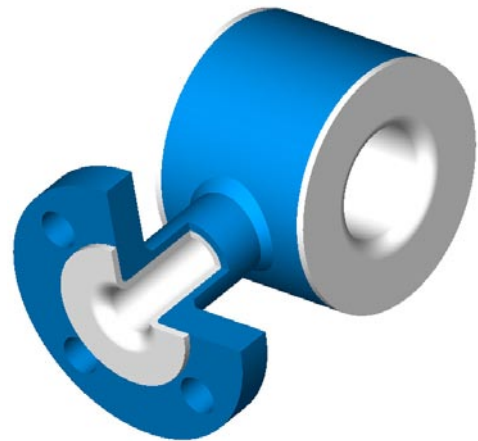
- Loosed flanges
- ANSI B16.5 Class 300 flanges
- Stainless steel body and flanges 304/316
- Different Lengths (L)

Lined Instrument Tee



Materials

- 1.1 PTFE Granular white ASTM – D4895
- 1.2 PFA ASTM D3307
- 1.3 ETFE ASTM D3159
- 1.4 PVDF ASTM D3222
- 1.5 PP ASTM D4101
- 1.6 PE ASTM D1998-04
- 2 St 37.0 - DIN 1629
- 3 ASTM A 105 SLIP-ON
- 3.1 ASTM A 105 WELD-NECK

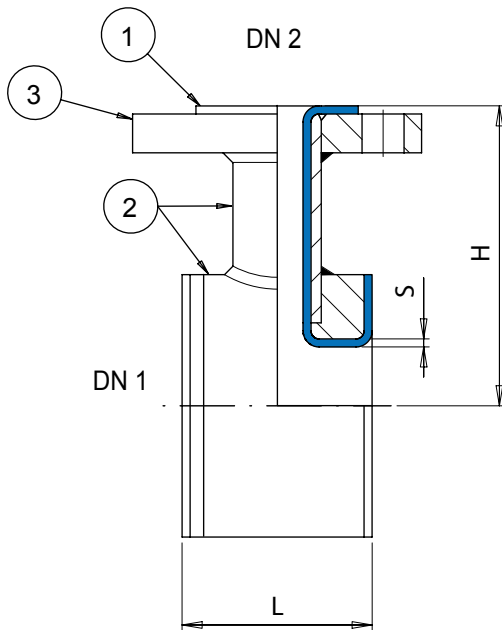


ANSI B16.5 - Class 150#											
DN 1	DN 2	L	H	LINING MATERIALS						Weight **	Part. No
				PTFE s ± 10% mm	PFA s ± 10% mm	ETFE s ± 10% mm	PVDF s ± 10% mm	PE s ± 10% mm	PP s ± 10% mm		
Inch	Inch	mm	mm	mm	mm	mm	mm	mm	mm	Kg	
16"	1/2"	90	390	x						58.3	LIT-150100-12
	3/4"						x		58.7	LIT-150100-19	
	1"			6.5 / 3 *					59.0	LIT-150100-25	
	1 1/2"	110							74.0	LIT-150100-38	
	2"	120		6.5 / 4 *			4.0		83.0	LIT-150100-50	
	3"	160							116.7	LIT-150100-80	
18"	1/2"	90	425	x						66.3	LIT-150100-12
	3/4"						x		66.3	LIT-150100-19	
	1"			6.5 / 3 *					68.5	LIT-150100-25	
	1 1/2"	110						90.5	LIT-150100-38		
	2"	120		6.5 / 4 *			4.0		93.7	LIT-150100-50	
	3"	160							129.7	LIT-150100-80	
20"	1/2"	90	450	x						70.1	LIT-150100-12
	3/4"						x		70.3	LIT-150100-19	
	1"			6.5 / 3 *					72.0	LIT-150100-25	
	1 1/2"	110						89.7	LIT-150100-38		
	2"	120		6.5 / 4 *			4.0		100.0	LIT-150100-50	
	3"	160							137.0	LIT-150100-80	

Standard Version: Fixed flanges

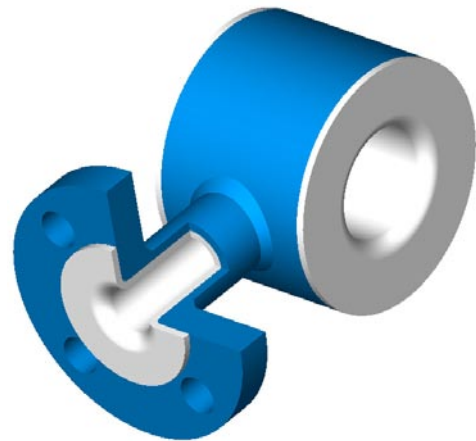
- Available on request:
- Loosed flanges
 - ANSI B16.5 Class 300 flanges
 - Stainless steel body and flanges 304/316
 - Different Lengths (L)

Lined Instrument Tee



Materials

1.1	PTFE Granular white ASTM – D4895
1.2	PFA ASTM D3307
1.3	ETFE ASTM D3159
1.4	PVDF ASTM D3222
1.5	PP ASTM D4101
1.6	PE ASTM D1998-04
2	St 37.0 - DIN 1629
3	ASTM A 105 SLIP-ON
3.1	ASTM A 105 WELD-NECK

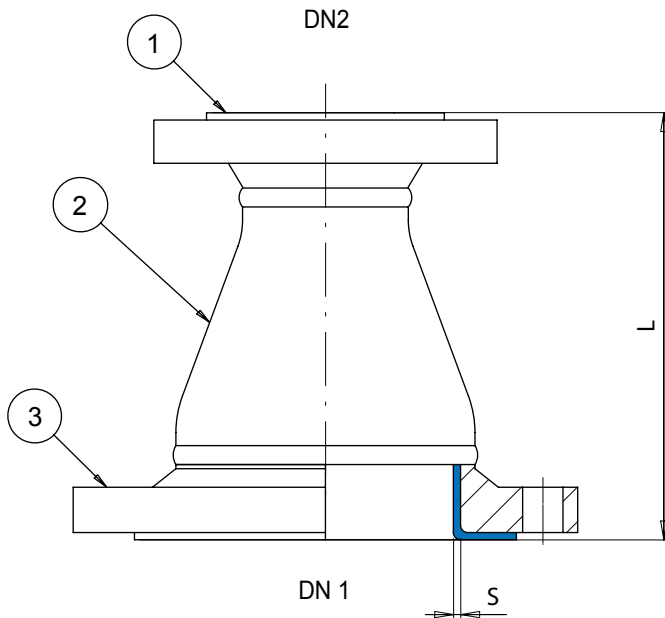


ANSI B16.5 - Class 150#

DN 1	DN 2	L	H	LINING MATERIALS						Weight	Part. No
				PTFE	PFA	ETFE	PVDF	PE	PP		
Inch	Inch	mm	mm	s ± 10% mm	s ± 10% mm	s ± 10% mm	s ± 10% mm	s ± 10% mm	s ± 10% mm	Kg	
24"	1/2"	90	510	x	x				78.3	LIT-150100-12	
	3/4"			78.4	LIT-150100-19						
	1"			6.5 / 3 *	79.1	LIT-150100-25					
	1 1/2"	110		6.5 / 4 *	4.0		94.5	LIT-150100-38			
	2"	120			107.5	LIT-150100-50					
	3"	160			150.0	LIT-150100-80					

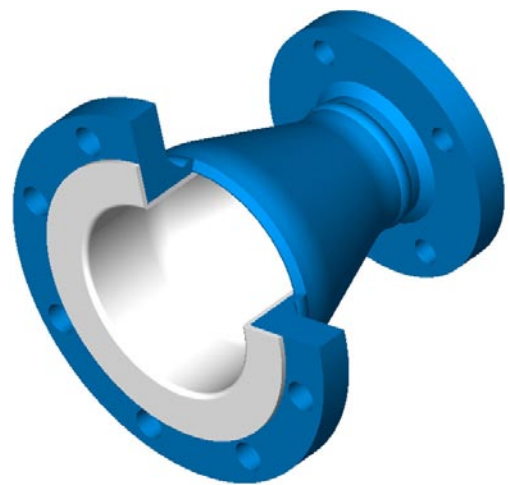
- Standard Version:** Fixed flanges
- Available on request:**
- Loosed flanges
 - ANSI B16.5 Class 300 flanges
 - Stainless steel body and flanges 304/316
 - Different Lengths (L)

Lined Concentric Reducer



Materials

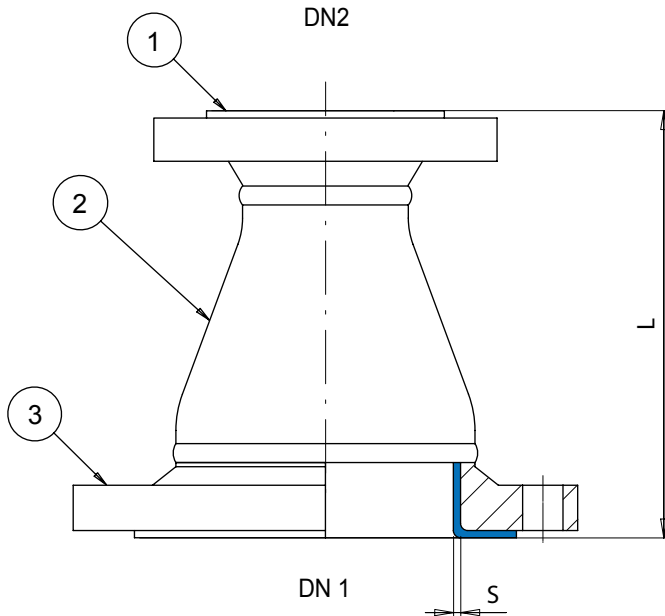
- 1.1 PTFE Paste white ASTM – D4895/D4894
- 1.2 PTFE Granular white ASTM – D4895
- 1.3 PFA ASTM D3307
- 1.4 ETFE ASTM D3159
- 1.5 PVDF ASTM D3222
- 1.6 PP ASTM D4101
- 1.7 XLPE ASTM D1998-04
- 1.8 PE ASTM D1998-04
- 2 St 37.0 - DIN 1629
- 2.1 A 234 WPB
- 3 ASTM A 105 SLIP-ON
- 3.1 ASTM A 105 WELD-NECK



ANSI B16.5 - Class 150#											
DN 1	DN 2	L	LINING MATERIALS							Weight	Part. No
			PTFE s ± 10% mm	PFA s ± 10% mm	ETFE s ± 10% mm	PVDF s ± 10% mm	XLPE s ± 10% mm	PE s ± 10% mm	PP s ± 10% mm		
3/4"	1/2"	114	2.0	2.0	x	x	x	x	x	2.1	LCR-15019-12
1"	1/2"	114	3.0	x	x	x	x	x	x	2.3	LCR-15025-12
	3/4"			x	x	x	x	x	x	2.3	LCR-15025-19
1 1/4"	3/4"	114	3.0	x	x	x	x	x	x	2.7	LCR-15032-19
	1"			x	3.0				3.0	LCR-15032-25	
1 1/2"	3/4"	114	3.0	x	x	x	x	x	x	3.1	LCR-15038-19
	1"			3.0				3.3	LCR-15038-25		
2"	1"	127	4.0 / 3	3.0				4.1	LCR-15050-25		
	1 1/2"			4.8	LCR-15050-38						
2 1/2"	1"	140	4.0 / 3	3.0				5.8	LCR-15062-25		
	2"			6.9	LCR-15062-50						
3"	1"	152	4.0 / 3				6.7	LCR-15080-25			
	1 1/2"		6.2	LCR-15080-38							
	2"		6.9	LCR-15080-50							
4"	1"	178	4.5 / 3.5				9.9	LCR-150100-25			
	1 1/2"		9.3	LCR-150100-38							
	2"		9.8	LCR-150100-50							
	3"						12.4	LCR-150100-80			

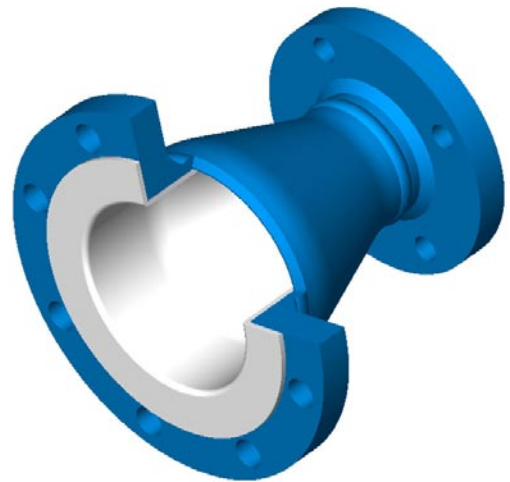
- Standard Version:** Two fixed flanges
- Available on request:**
- One or Two loosed flanges
 - ANSI B16.5 Class 300 flanges
 - Stainless steel body and flanges 304/316
 - Different Lengths (L)

Lined Concentric Reducer



Materials

- 1.1 PTFE Paste white ASTM – D4895/D4894
- 1.2 PTFE Granular white ASTM – D4895
- 1.3 PFA ASTM D3307
- 1.4 ETFE ASTM D3159
- 1.5 PVDF ASTM D3222
- 1.6 PP ASTM D4101
- 1.7 XLPE ASTM D1998-04
- 1.8 PE ASTM D1998-04
- 2 St 37.0 - DIN 1629
- 2.1 A 234 WPB
- 3 ASTM A 105 SLIP-ON
- 3.1 ASTM A 105 WELD-NECK



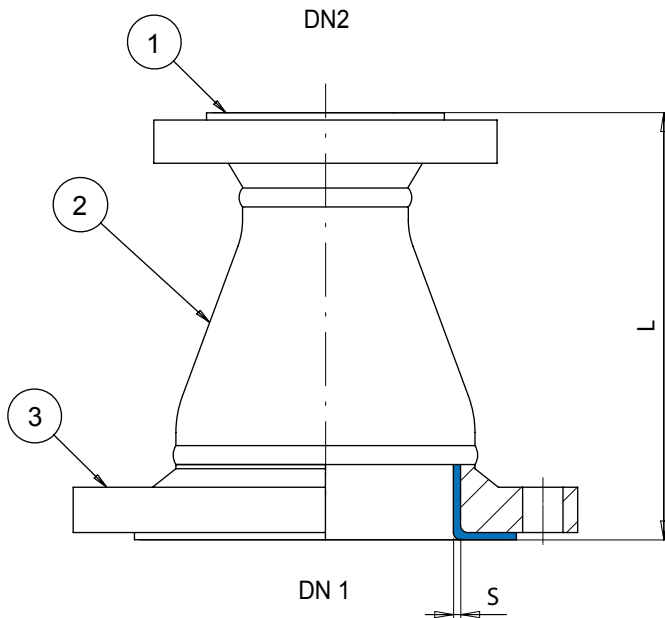
ANSI B16.5 - Class 150#

DN 1	DN 2	L	LINING MATERIALS							Weight	Part. No
			PTFE s ± 10% mm	PFA s ± 10% mm	ETFE s ± 10% mm	PVDF s ± 10% mm	XLPE s ± 10% mm	PE s ± 10% mm	PP s ± 10% mm		
Inch	Inch	mm								Kg	
5"	2"	203	4.5 / 3.5							10.5	LCR-150125-50
	3"									12.7	LCR-150125-80
	4"									15.0	LCR-150125-100
6"	1"	229	4.5 / 3.0							18.9	LCR-150150-25
	2"									19.9	LCR-150150-50
	3"		5.0 / 4.0							17.4	LCR-150150-80
	4"									18.3	LCR-150150-100
8"	4"	279	7.0	6.0						22.0	LCR-150200-100
	6"		25.3	LCR-150200-150							
10"	4"	305	7.0	6.0						33.0	LCR-150250-100
	6"		37.5	LCR-150250-150							
	8"		44.7	LCR-150250-200							
12"	6"	356	7.0							45.9	LCR-150300-150
	8"									47.8	LCR-150300-200
	10"									52.5	LCR-150300-250
14"	8"	406	7.0							69.0	LCR-150350-200
	10"									73.5	LCR-150350-250
	12"									80.0	LCR-150350-300

Standard Version: Two fixed flanges

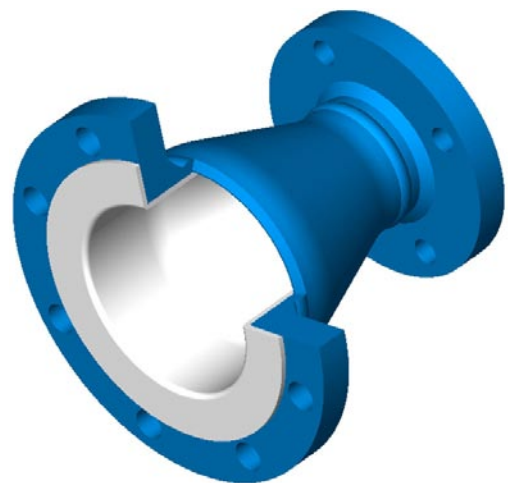
- Available on request:**
- One or Two loosed flanges
 - ANSI B16.5 Class 300 flanges
 - Stainless steel body and flanges 304/316
 - Different Lengths (L)

Lined Concentric Reducer



Materials

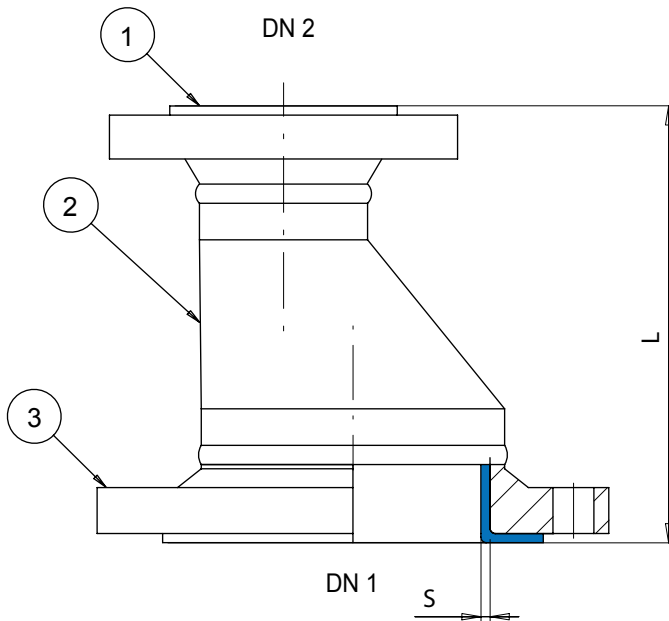
- 1.1 PTFE Paste white ASTM – D4895/D4894
- 1.2 PTFE Granular white ASTM – D4895
- 1.3 PFA ASTM D3307
- 1.4 ETFE ASTM D3159
- 1.5 PVDF ASTM D3222
- 1.6 PP ASTM D4101
- 1.7 XLPE ASTM D1998-04
- 1.8 PE ASTM D1998-04
- 2 St 37.0 - DIN 1629
- 2.1 A 234 WPB
- 3 ASTM A 105 SLIP-ON
- 3.1 ASTM A 105 WELD-NECK



ANSI B16.5 - Class 150#												
DN 1	DN 2	L	LINING MATERIALS							Weight	Part. No	
			PTFE s ± 10% mm	PFA s ± 10% mm	ETFE s ± 10% mm	PVDF s ± 10% mm	XLPE s ± 10% mm	PE s ± 10% mm	PP s ± 10% mm			
Inch	Inch	mm								Kg		
16"	10"	457								7.0	98.0	LCR-150400-250
	12"										105.0	LCR-150400-300
	14"										115.0	LCR-150400-350
18"	12"	483								7.0	135.0	LCR-150450-300
	14"										148.0	LCR-150450-350
	16"										157.0	LCR-150450-400
20"	12"	508								7.0	185.0	LCR-150500-300
	14"										198.0	LCR-150500-350
	16"										210.0	LCR-150500-400
	18"										218.0	LCR-150500-450
24"	16"	610								7.0	272.0	LCR-150600-400
	18"										282.0	LCR-150600-450
	20"										291.0	LCR-150600-500

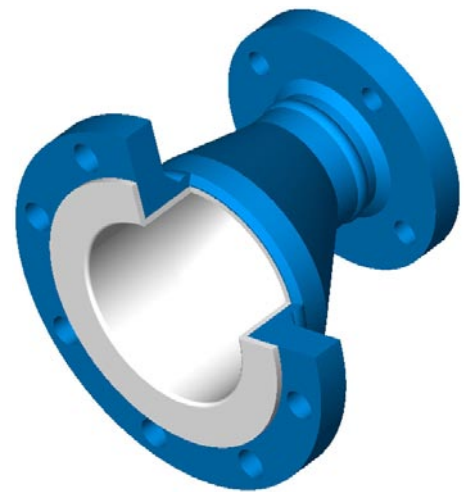
- Standard Version:** Two fixed flanges
- Available on request:**
- One or Two loosed flanges
 - ANSI B16.5 Class 300 flanges
 - Stainless steel body and flanges 304/316
 - Different Lengths (L)

Lined Eccentric Reducer



Materials

- 1.1 PTFE Granular white ASTM – D4895
- 1.2 PFA ASTM D3307
- 1.3 ETFE ASTM D3159
- 1.4 PVDF ASTM D3222
- 1.5 PP ASTM D4101
- 1.6 XLPE ASTM D1998-04
- 1.7 PE ASTM D1998-04
- 2 St 37.0 - DIN 1629
- 2.1 A 234 WPB
- 3 ASTM A 105 SLIP-ON

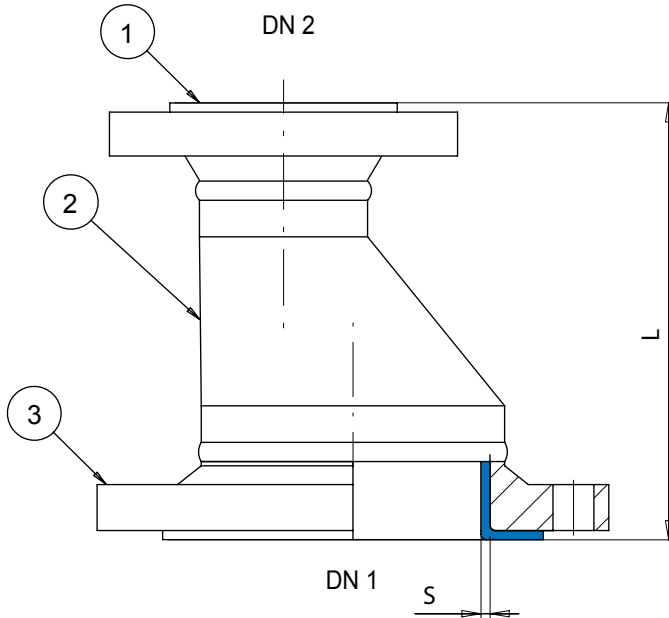


ANSI B16.5 - Class 150#

DN 1	DN 2	L	LINING MATERIALS							Weight	Part. No
			PTFE s ± 10% mm	PFA s ± 10% mm	ETFE s ± 10% mm	PVDF s ± 10% mm	XLPE s ± 10% mm	PE s ± 10% mm	PP s ± 10% mm		
Inch	Inch	mm								Kg	
10"	4"	305	7.0	6.0						33.0	LECR-150250-100
	6"									37.5	LECR-150250-150
	8"									44.7	LECR-150250-200
12"	6"	356	7.0						45.9	LECR-150300-150	
	8"								47.8	LECR-150300-200	
	10"								52.5	LECR-150300-250	
14"	8"	406	7.0						69.0	LECR-150350-200	
	10"								73.5	LECR-150350-250	
	12"								80.0	LECR-150350-300	
16"	10"	457	7.0						98.0	LECR-150400-250	
	12"								105.0	LECR-150400-300	
	14"								115.0	LECR-150400-350	
18"	12"	483	7.0						135.0	LECR-150450-300	
	14"								148.0	LECR-150450-350	
	16"								157.0	LECR-150450-400	

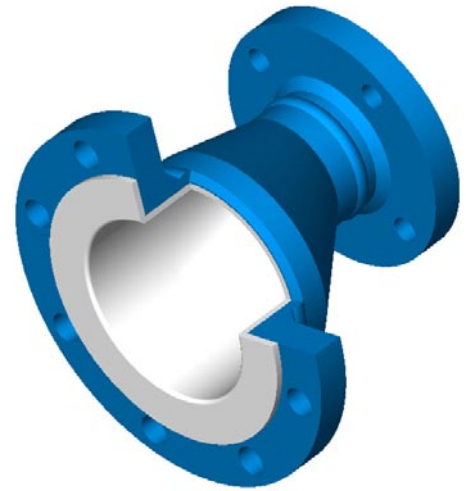
- Standard Version:** Two fixed flanges
- Available on request:**
- One or Two loosed flanges
 - ANSI B16.5 Class 300 flanges
 - Stainless steel body and flanges 304/316
 - Different Lengths (L)

Lined Eccentric Reducer



Materials

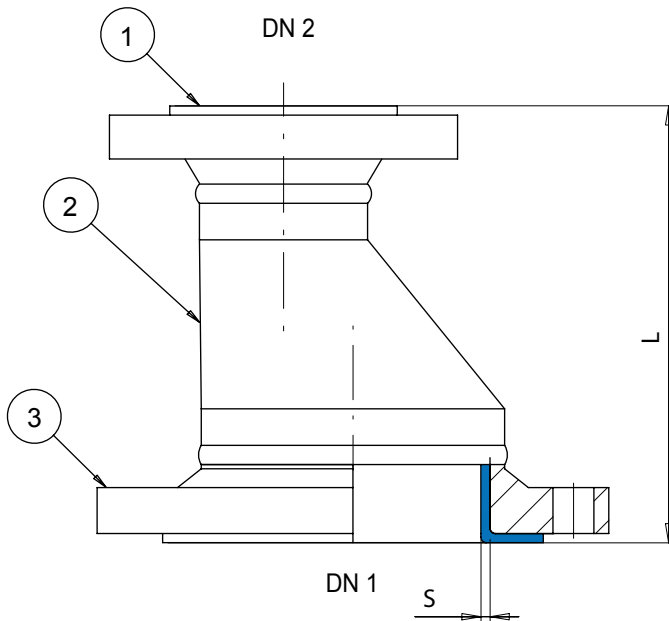
- 1.1 PTFE Granular white ASTM – D4895
- 1.2 PFA ASTM D3307
- 1.3 ETFE ASTM D3159
- 1.4 PVDF ASTM D3222
- 1.5 PP ASTM D4101
- 1.6 XLPE ASTM D1998-04
- 1.7 PE ASTM D1998-04
- 2 St 37.0 - DIN 1629
- 2.1 A 234 WPB
- 3 ASTM A 105 SLIP-ON



ANSI B16.5 - Class 150#											
DN 1	DN 2	L	LINING MATERIALS							Weight	Part. No
			PTFE s ± 10% mm	PFA s ± 10% mm	ETFE s ± 10% mm	PVDF s ± 10% mm	XLPE s ± 10% mm	PE s ± 10% mm	PP s ± 10% mm		
Inch	Inch	mm								Kg	
1 1/2"	1"	114	3.0				3.0			3.0	LECR-15038-25
2"	1"	127	4.0 / 3				3.0			4.0	LECR-15050-25
	1 1/2"								4.3	LECR-15050-38	
3"	1"	152				4.0 / 3				6.7	LECR-15080-25
	1 1/2"							6.2	LECR-15080-38		
	2"							6.9	LECR-15080-50		
4"	1 1/2"	178				4.5 / 3.5				9.3	LECR-150100-38
	2"							9.8	LECR-150100-50		
	3"							12.4	LECR-150100-80		
6"	2"	229				5.0 / 4.0				15.6	LECR-150150-50
	3"							17.0	LECR-150150-80		
	4"							18.7	LECR-150150-100		
8 "	4"	279	7.0			6.0				22.0	LECR-150200-100
	6"								28.0	LECR-150200-150	

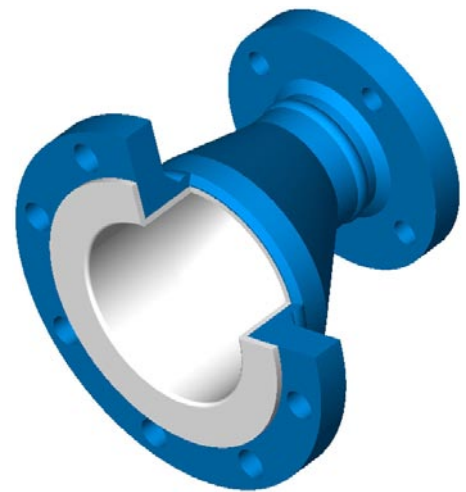
- Standard Version:** Two fixed flanges
- Available on request:**
- One or Two loosed flanges
 - ANSI B16.5 Class 300 flanges
 - Stainless steel body and flanges 304/316
 - Different Lengths (L)

Lined Eccentric Reducer



Materials

1.1	PTFE Granular white ASTM – D4895
1.2	PFA ASTM D3307
1.3	ETFE ASTM D3159
1.4	PVDF ASTM D3222
1.5	PP ASTM D4101
1.6	XLPE ASTM D1998-04
1.7	PE ASTM D1998-04
2	St 37.0 - DIN 1629
2.1	A 234 WPB
3	ASTM A 105 SLIP-ON



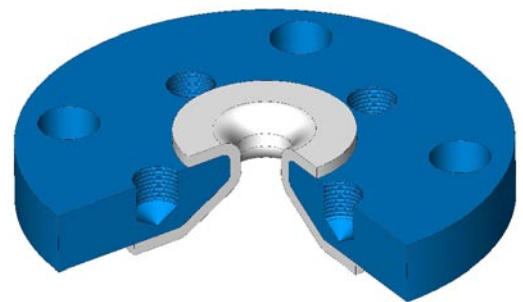
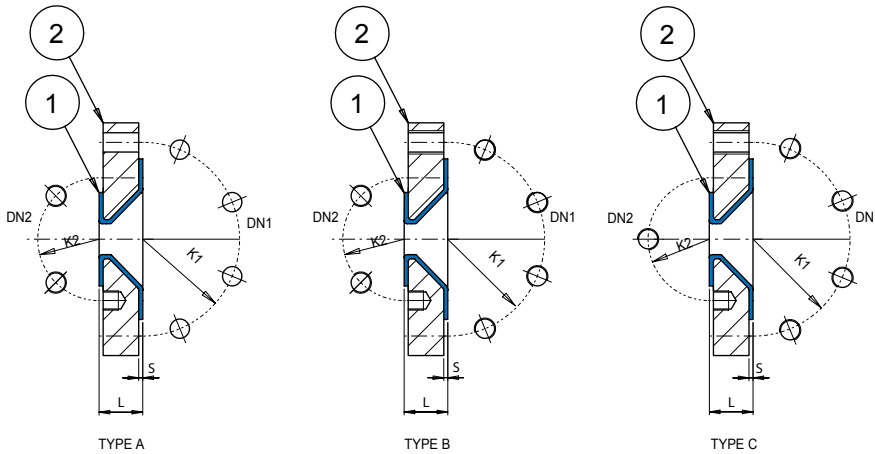
ANSI B16.5 - Class 150#											
DN 1	DN 2	L	LINING MATERIALS							Weight	Part. No
			PTFE s ± 10% mm	PFA s ± 10% mm	ETFE s ± 10% mm	PVDF s ± 10% mm	XLPE s ± 10% mm	PE s ± 10% mm	PP s ± 10% mm		
Inch	Inch	mm									Kg
20"	12"	508	7.0							185.0	LECR-150500-300
	14"									198.0	LECR-150500-350
	16"									210.0	LECR-150500-400
	18"									218.0	LECR-150500-450
24"	20"	610	7.0							291.0	LECR-150600-500

- Standard Version:** Two fixed flanges
- Available on request:**
- One or Two loosed flanges
 - ANSI B16.5 Class 300 flanges
 - Stainless steel body and flanges 304/316
 - Different Lengths (L)

Lined Reducing Flange

Materials

1	PTFE white ASTM – D4894/5
2	ASTM A 105
2.1	St 37.0 - DIN 17100



ANSI B16.5 - Class 150#

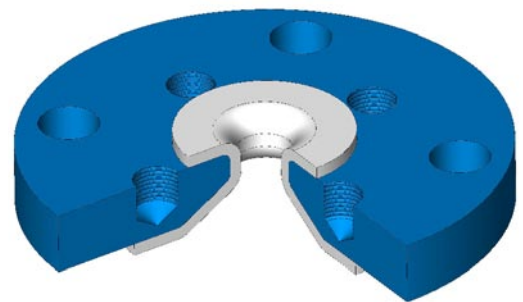
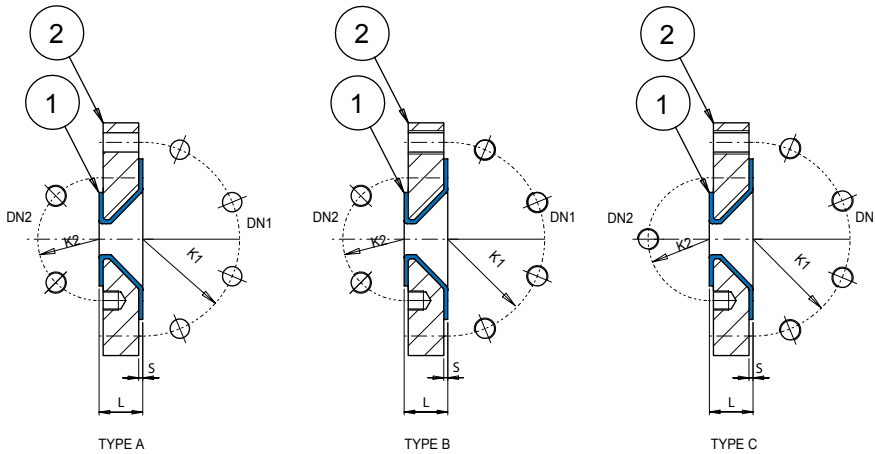
DN 1	DN 2	L	LINING MATERIALS						Form	Weight	Part. No
			PTFE s ± 10% mm	PFA s ± 10% mm	ETFE s ± 10% mm	PVDF s ± 10% mm	PE s ± 10% mm	PP s ± 10% mm			
Inch	Inch	mm	mm	mm	mm	mm	mm	mm	Kg		
3/4"	1/2"	35	3.0			3.0			C	1.7	LCRF-15019-12
1"	1/2"	35	3.0			3.0			C	2.1	LCRF-15025-12
	3/4"								C	2.4	LCRF-15025-19
1 1/4"	3/4"	35	3.0			3.0			C	3.9	LCRF-15032-19
	1"								C	3.5	LCRF-15032-25
1 1/2"	1/2"	35	3.0			3.0			C	4.1	LCRF-15038-12
	3/4"								C	4.0	LCRF-15038-19
	1"								C	4.1	LCRF-15038-25
2"	3/4"	35	3.0			3.0			B	5.0	LCRF-15050-19
	1"								B	4.9	LCRF-15050-25
	1 1/2"								C	5.1	LCRF-15050-38
2 1/2"	1"	35	3.5			3.0			B	5.9	LCRF-15062-25
	1 1/2"								C	5.6	LCRF-15062-38
	2"								C	5.6	LCRF-15062-50
3"	1"	35	3.5			3.0			A	6.8	LCRF-15080-25
	1 1/2"								B	6.6	LCRF-15080-38
	2"								B	6.4	LCRF-15080-50

Available on request: • ANSI B16.5 Class 300 flanges
• Stainless steel body and flanges 304/316

Lined Reducing Flange

Materials

1	PTFE white ASTM – D4894/5
2	ASTM A 105
2.1	St 37.0 - DIN 17100



ANSI B16.5 - Class 150#

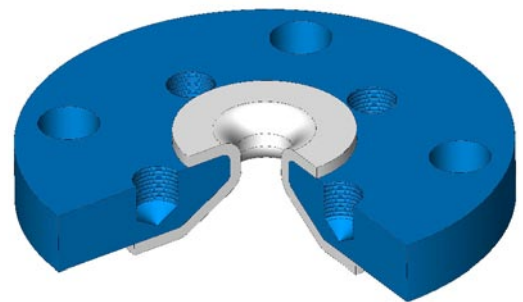
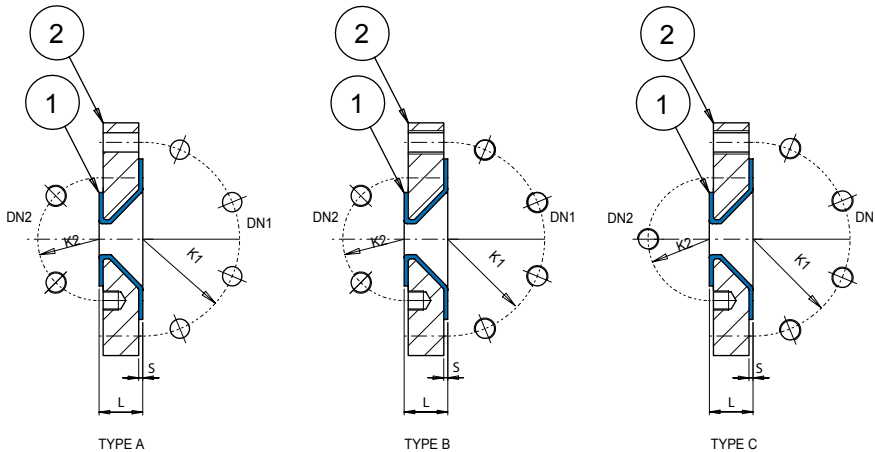
DN 1	DN 2	L	LINING MATERIALS						Form	Weight	Part. No
			PTFE s ± 10% mm	PFA s ± 10% mm	ETFE s ± 10% mm	PVDF s ± 10% mm	PE s ± 10% mm	PP s ± 10% mm			
Inch	Inch	mm							Kg		
4"	1"	45	3.5						A	12.0	LCRF-150100-25
	1 1/2"								A	12.0	LCRF-150100-38
	2"		4.0				3.5		B	12.0	LCRF-150100-50
	3"								C	10.0	LCRF-150100-80
5"	1"	45	3.5						A	16.0	LCRF-150125-25
	1 1/2"		4				3.0		A	15.0	LCRF-150125-38
	2"								A	14.0	LCRF-150125-50
	3"		5				4.0		B	13.0	LRCF-150125-80
	4"								C	13.0	LCRF-150125-100
6"	1"	45	3.5						A	22.0	LCRF-150150-25
	1 1/2"		4				3.0		A	20.0	LCRF-150150-38
	2"								A	19.0	LCRF-150150-50
	3"		5				4.0		A	18.0	LCRF-150150-80
	4"								B	17.0	LCRF-150150-100

Available on request: • ANSI B16.5 Class 300 flanges
• Stainless steel body and flanges 304/316

Lined Reducing Flange

Materials

1	PTFE white ASTM – D4894/5
2	ASTM A 105
2.1	St 37.0 - DIN 17100



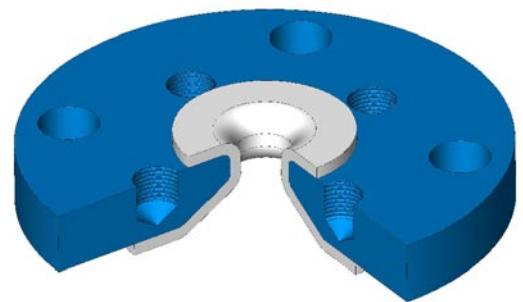
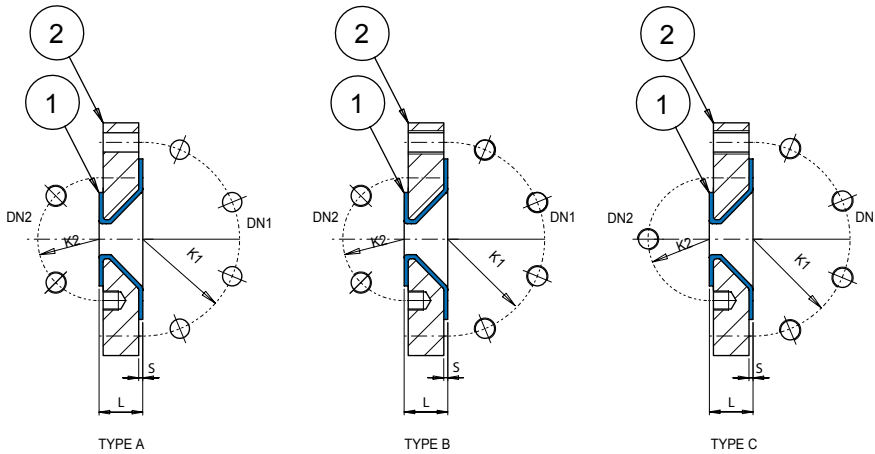
ANSI B16.5 - Class 150#												
DN 1	DN 2	L	LINING MATERIALS						Form	Weight	Part. No	
			PTFE s ± 10% mm	PFA s ± 10% mm	ETFE s ± 10% mm	PVDF s ± 10% mm	PE s ± 10% mm	PP s ± 10% mm				Kg
Inch	Inch	mm	mm	mm	mm	mm	mm	mm	mm			
8"	1"	45	3.5	3.0						A	29.0	LCRF-150200-25
	1 1/2"		4	3.0						A	28.5	LCRF-150200-38
	2"		5	4.0						A	28.0	LCRF-150200-50
	3"									A	27.0	LCRF-150200-80
	4"									A	25.0	LCRF-150200-100
	6"									B	23.0	LCRF-150200-150
10	2"	45	5.0	4.5						A	28.0	LCRF-150250-50
	3"									A	24.0	LCRF-150250-80
	4"									A	22.0	LCRF-150250-100
	6"									A	19.0	LCRF-150250-150
	8"									B	16.0	LCRF-150250-200
12"	2"	50	5.0	4.5						A	44.0	LCRF-150300-50
	3"									A	38.0	LCRF-150300-80
	4"									A	36.0	LCRF-150300-100
	6"									A	31.0	LCRF-150300-150
	8"									A	28.0	LCRF-150300-200
	10"									B	24.0	LCRF-150300-250

Available on request: • ANSI B16.5 Class 300 flanges
• Stainless steel body and flanges 304/316

Lined Reducing Flange

Materials

- 1 PTFE white ASTM – D4894/5
- 2 ASTM A 105
- 2.1 St 37.0 - DIN 17100



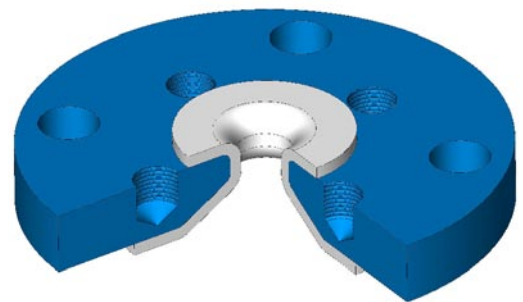
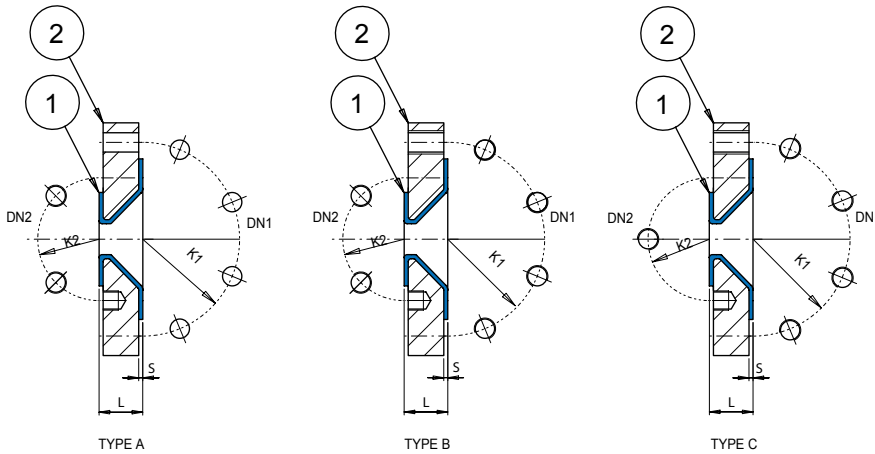
ANSI B16.5 - Class 150#												
DN 1	DN 2	L	LINING MATERIALS						Form	Weight	Part. No	
			PTFE s ± 10%	PFA s ± 10%	ETFE s ± 10%	PVDF s ± 10%	PE s ± 10%	PP s ± 10%				
Inch	Inch	mm	mm	mm	mm	mm	mm	mm	Kg			
14"	2"	50	5.0				4.5		A	56.0	LCRF-150350-50	
	3"								A	50.0	LCRF-150350-80	
	4"								A	47.0	LCRF-150350-100	
	6"								A	42.0	LCRF-150350-150	
	8"								A	38.0	LCRF-150350-200	
	10"								A	35.0	LCRF-150350-250	
	12"								B	33.0	LCRF-150350-300	
16"	3"	50	5.0				4.5		A	71.0	LCRF-150400-80	
	4"								A	68.0	LCRF-150400-100	
	6"								A	62.0	LCRF-150400-150	
	8"								A	60.0	LCRF-150400-200	
	10"								A	55.0	LCRF-150400-250	
	12"								A	49.0	LCRF-150400-300	
	14"								B	40.0	LCRF-150400-350	

Available on request: • ANSI B16.5 Class 300 flanges
• Stainless steel body and flanges 304/316

Lined Reducing Flange

Materials

1	PTFE white ASTM – D4894/5
2	ASTM A 105
2.1	St 37.0 - DIN 17100



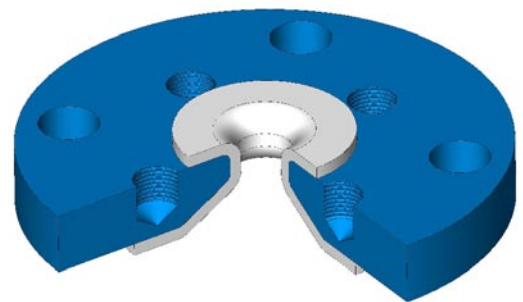
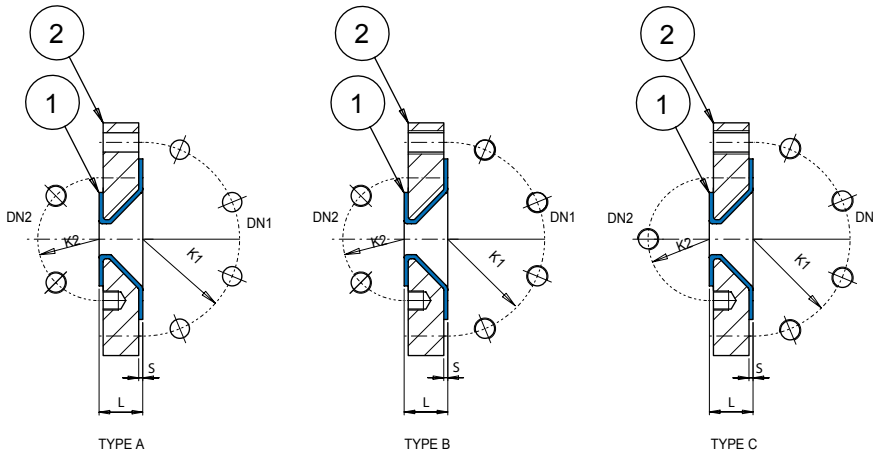
ANSI B16.5 - Class 150#												
DN 1	DN 2	L	LINING MATERIALS						Form	Weight	Part. No	
			PTFE s ± 10%	PFA s ± 10%	ETFE s ± 10%	PVDF s ± 10%	PE s ± 10%	PP s ± 10%				
Inch	Inch	mm	mm	mm	mm	mm	mm	mm	Kg			
18"	4"	50	5.0				4.5		A	77.0	LCRF-150450-100	
	6"								A	72.0	LCRF-150450-150	
	8"								A	70.0	LCRF-150450-200	
	10"								A	66.0	LCRF-150450-250	
	12"								A	58.0	LCRF-150450-300	
	14"								A	49.0	LCRF-150450-350	
	16"								B	44.0	LCRF-150450-400	
20"	4"	50	5.0				4.5		A	93.0	LCRF-150500-100	
	6"								A	87.0	LCRF-150500-150	
	8"								A	86.0	LCRF-150500-200	
	10"								A	85.0	LCRF-150500-250	
	12"								A	77.0	LCRF-150500-300	
	14"								A	70.0	LCRF-150500-350	
	16"								A	62.0	LCRF-150500-400	

Available on request: • ANSI B16.5 Class 300 flanges
• Stainless steel body and flanges 304/316

Lined Reducing Flange

Materials

1	PTFE white ASTM – D4894/5
2	ASTM A 105
2.1	St 37.0 - DIN 17100

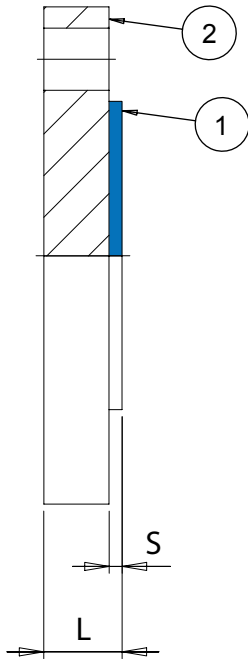


ANSI B16.5 - Class 150#

DN 1	DN 2	L	LINING MATERIALS						Form	Weight	Part. No
			PTFE s ± 10% mm	PFA s ± 10% mm	ETFE s ± 10% mm	PVDF s ± 10% mm	PE s ± 10% mm	PP s ± 10% mm			
Inch	Inch	mm							Kg		
24"	6"	50	5.0				4.5		A	139.0	LCRF-150600-150
	8"								A	131.0	LCRF-150600-200
	10"								A	128.0	LCRF-150600-250
	12"								A	121.0	LCRF-150600-300
	14"								A	105.0	LCRF-150600-350
	16"								A	93.0	LCRF-150600-400
	18"								A	84.0	LCRF-150600-450
	20"								B	78.0	LCRF-150600-500

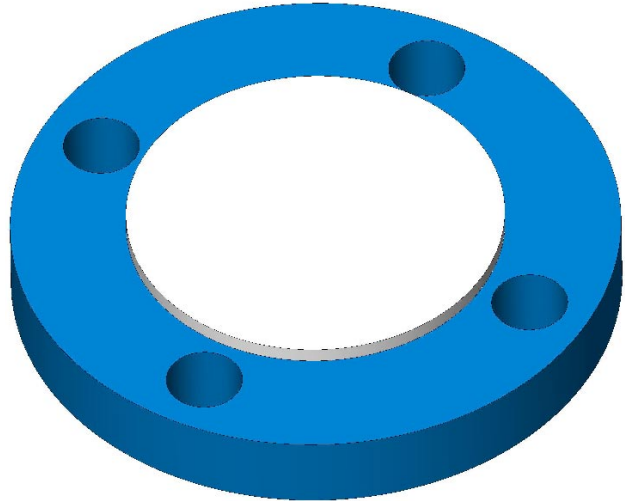
Available on request: • ANSI B16.5 Class 300 flanges
• Stainless steel body and flanges 304/316

Lined Blind Flange



Materials

1	PTFE white ASTM – D4894/5
2	ASTM A 105
2.1	St 37.0 - DIN 17100



ANSI B16.5 - Class 150#				
DN 1	L	PTFE s ± 10% mm	Weight Kg	Part. No
1/2"	14	4	0.8	LBF-15012
3/4"	16	4	0.9	LBF-15019
1"	17	4	1.2	LBF-15025
1 1/4 "	19	4	1.8	LBF-15032
1 1/2 "	20	4	2.1	LBF-15038
2"	22	4	3.0	LBF-15050
2 1/2 "	25	4	4.0	LBF-15062
3"	28	4	5.0	LBF-15080
4"	28	5	6.0	LBF-150100
5"	28	5	9.1	LBF-150125
6"	30	5	11.8	LBF-150150
8"	33	5	18.0	LBF-150200
10"	35	5	26.0	LBF-150250
12"	37	5	35.0	LBF-150300
14"	40	5	45.0	LBF-150350
16"	42	5	60.0	LBF-150400
18"	45	5	70.0	LBF-150450
20"	48	5	85.0	LBF-150500
24"	50	5	150.0	LBF-150600

Available on request: • ANSI B16.5 Class 300 flanges
• Stainless steel body and flanges 304/316