

ARMYLOR®

PTFE / PFA LINED PIPES AND FITTINGS DIN 2848

TECHNICAL GUIDE



PTFE / PFA lined pipes and fittings are recognized as the ideal solution for conveying or treating highly corrosive fluids using severe service conditions.

PTFE / PFA lining is chemically inert facing the majority of corrosive fluids up to 230°C.

MERSEN masters 3 lining manufacturing technologies :

- Extrusion of PTFE fine powders
- PFA injection
- PTFE isomoulding

Thus MERSEN offers a large product range with high performances.

Our PTFE & PFA lined products show several advantages :

- High resistance to thermal shocks
- PTFE / PFA linings are seamless
- Possibility for custom made pieces (complex geometry)
- Easy installation, no gasket required
- Low natural permeability rate

MERSEN also manufactures PTFE bellows and PTFE lined columns.

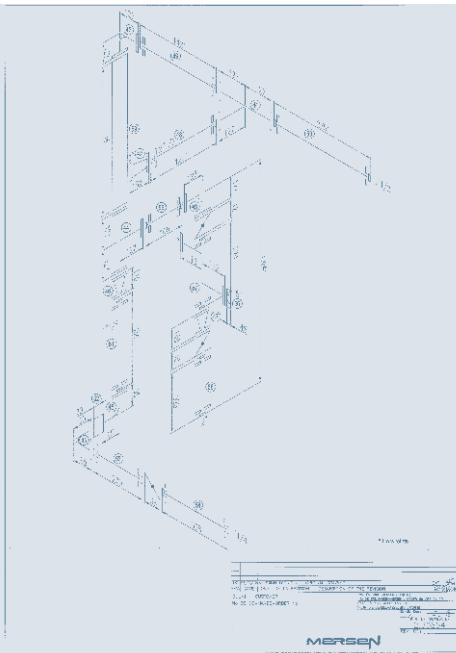
MERSEN

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EXPERTISE

Mersen has an engineering team dedicated for customer assistance.
Our experts help to study the best technical & economical solutions for your projects.
This team can also help customers to establish take-off from isometric drawings.



Mersen is a global expert in materials and equipment used in extreme environment, and safety / reliability of electrical equipment.

One of the 4 Mersen activity consists in process equipment designed and compliant for hot and corrosive applications.

We design and manufacture in Europe, USA, China & India equipment such as heat exchangers, anti-corrosion systems, pressure vessels, agitators in a wide range of materials (Graphite, silicon carbide, reactive metals, fluoropolymers...)

Since 1964, Mersen offers an exhaustive range of PTFE / PFA lined pipe and fittings especially designed for conveying corrosive fluids in both chemical and pharmaceutical industries.

Armylor® is the trademark for Mersen PTFE / PFA lined pipes and fittings.

The product range shows as follows :

- PTFE / PFA lined pipe and fittings
- PTFE bellows (expansion joints) and compensators
- Manifolds
- Dip pipes
- Jacketed pipes
- Custom made parts

Thanks to its international network, Mersen keeps a safety stock of half-finished products in all subsidiaries allowing a very short delivery time. Pagny-Sur-Moselle plant is ISO 9001, ISO 140001, ISO 18000 OHAS certified.



PTFE / PFA POLYMER

DEFINITION

Available lining materials for our product range are as follows :

▶ Virgin or anti-static* PTFE (polytetrafluorethylene), in accordance with the ASTM D4894 & 4895

▶ Virgin or anti-static* PFA (perfluoroalkoxy), according to ASTM D3307** standards.

*Conductive black PTFE or PFA

** Also on request according to DIN 53455 standard

GENERAL CHARACTERISTICS

Values indicated in the following table are given for virgin PTFE.

These characteristics can vary depending on raw material received, the transformation processes and their components.

PROPERTIES	UNITS	PTFE	PFA
Physical			
Density	g/cm ³	2.13 - 2.19	2.12 - 2.17
Water absorption : 24h thickness 3,2 mm	%	<0.01	0.03
Mechanical			
Tensile strenght	Mpa	20 - 40	27 - 32
Elongation at break	%	250 - 500	300 - 500
Modulus of elasticity under elongation	Mpa	350 - 750	650 - 700
Modulus of elasticity under flexural stress	Mpa	440 - 670	590 - 700
Hardness shore D method		50 - 72	60 - 65
Thermal			
Flame propagation		hard	hard
Melting point	°C	327 and 342	300 to 310
Other transitions	°C	-90*, +123, * +27**	-80*, 90*
Maximum service temperature	°C	-200/+260	-150/+260
Temperature of deflection under load (1.82Mpa)	°C	50 - 60	50
Linear elongation coefficient	10-5 / °C	10 - 25	12
Thermal conductivity	Ω / m.K	0.24	0.25
Electrical			
Dielectric constant from 60 Hz to 107 Hz		2.2	2.1
Volume resistivity	Ω.cm	10 ¹⁸	10 ¹⁸
Surface resistivity	Ω	10 ¹⁷	10 ¹⁷
Spark test (thick.mm)	KV / mm	36(1)	80(2.3)

* amorphous phase, ** crystal phase

CONTROLLED CHARACTERISTICS AT RECEIPT

Material certificates of PTFE powders manufacturers are checked at receipt and identified as batches.

On request, FDA certificates (Food and Drug Administration) can be supplied.

NOMINAL THICKNESSES

Mersen proposes 3 ranges

- ARMYLOR® G to operate under pressure
- ARMYLOR® V to operate under pressure and vacuum
- ARMYLOR® S for special applications.

Thicknesses G and V are indicated in the chart below

Ask us

PTFE / PFA NOMINAL THICKNESS

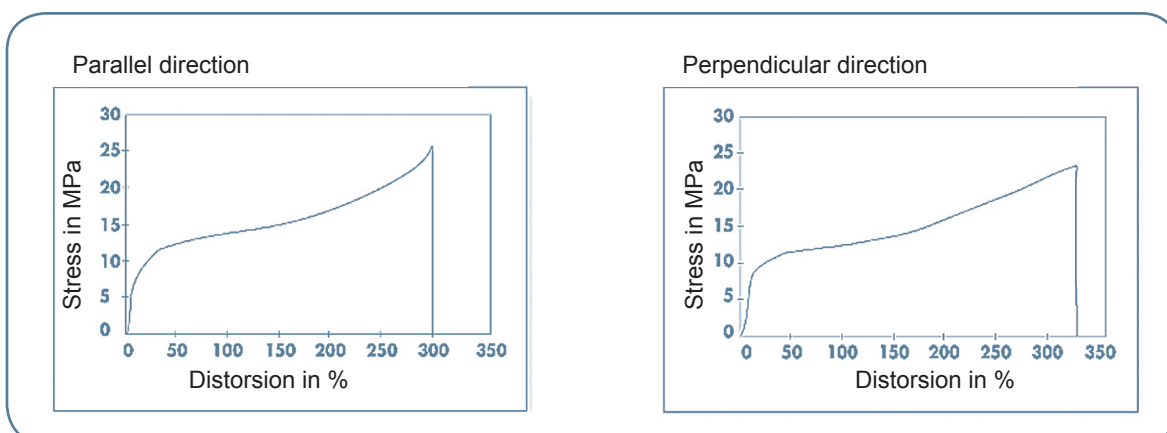
DN	SPOOLS		ELBOWS		TEES		CONC. / EXC. RED.		INSTRUMENT TEES		MANIFOLDS	
	G	V	G	V	G	V	G	V	G	V	G	V
15		3.0		3.0		3.0		3.0		3.0		3.0
20		3.0		3.0		3.0		3.0		3.0		4.0
25		3.0		3.3		3.0		3.5		3.0		4.0
32		3.0		4.0		3.3		3.5		3.3		5.0
40		3.0		4.0		3.5		3.5		3.5		6.0
50		3.0		4.0		3.5		3.5		3.5		7.0
65		3.0	3.5	4.0		4.0		3.5		4.0		7.0
80	3.0	3.5	3.5	4.5		4.5		4.0		4.0		9.0
100	3.0	4.2	4.0	7.5		5.0		5.0		5.0	5.0	10.0
125	3.0	5.0	4.8	8.0	5.0	9.0		5.0		5.0	6.0	10.0
150	4.0	5.3	5.0	9.5	6.0	10.0	5.0	5.3		6.0	6.0	11.0
200	4.0	6.2	7.0	10.0	6.0	12.0	6.0	6.2		8.0	7.0	12.0
250	4.0	7.0	7.0	11.0	7.0	12.0	6.5	7.0	7.0	12.0	7.0	12.0
300	4.0	8.0	7.0	12.0	7.0	12.0	6.5	8.0	7.0	12.0	7.0	12.0
350	4.5		8.0		8.0		8.0		8.0			
400	4.5		6		6		6		6			
450	4.5		6		6		6		6			
500	4.5		6		6		6		6			
600	4.5		4.5		4.5		4.5		4.5			

The minimal thickness of the PTFE tube is equal to the nominal minus 10%.
The thickness of the flare cannot be lower than 20% of the nominal thickness.

TESTS ON PTFE / PFA

On each manufacturing batch, Mersen checks mechanical & physical properties.

Values for elongation at break and tensile strength, together with regularity of the graph confirms that the liner sintering has re-established the isotropy of PTFE, which guarantees a low level of permeability.



Optimal density ensures a balance between a low permeability level and a good distortion during temperature cycles.

	MECHANICAL PROPERTIES		PHYSICAL PROPERTIES	
	Tensile strenght	Elongation of break	Density	
PTFE Extruded Virgin <i>Test according standard</i>	$\pm 21 \text{ N/mm}^2 \leq (// \text{ wise})$ $\pm 17 \text{ N/mm}^2 \leq (\perp \text{ wise})$ <i>ASTM D4895</i>	$\pm 250\% (// \text{ wise})$ $\pm 200\% (\perp \text{ wise})$ <i>ASTM D4895</i>	2.14 - 2.19 <i>ASTM D792</i>	2.13 - 2.19 <i>DIN 53749</i>
Anti static <i>Test according standard</i>	$\pm 21 \text{ N/mm}^2 \leq (// \text{ wise})$ $\pm 17 \text{ N/mm}^2 \leq (\perp \text{ wise})$ <i>ASTM D4895</i>	$\pm 250\% (// \text{ wise})$ $\pm 200\% (\perp \text{ wise})$ <i>ASTM D4895</i>	2.13 - 2.19 <i>ASTM D792</i>	2.12 - 2.18 <i>DIN 53749</i>
PTFE Molding Virgin <i>Test according standard</i>	$\pm 21 \text{ N/mm}^2$ <i>ASTM D4894</i>	$\pm 250\%$ <i>ASTM D4894</i>	2.14 - 2.19 <i>ASTM D792</i>	2.13 - 2.19 <i>DIN 53749</i>
Anti static <i>Test according standard</i>	$\pm 21 \text{ N/mm}^2$ <i>ASTM D4894</i>	$\pm 250\%$ <i>ASTM D4894</i>	2.14 - 2.19 <i>ASTM D792</i>	2.12 - 2.18 <i>DIN 53749</i>
PFA Virgin <i>Test according standard</i>	$\pm 26 \text{ N/mm}^2$ <i>ASTM D3307</i>	$\pm 300\%$ <i>ASTM D3307</i>	2.12 - 2.17 <i>ASTM D792</i>	2.12 - 2.17 <i>DIN 53749</i>
Anti static <i>Test according standard</i>	$\pm 26 \text{ N/mm}^2$ <i>ASTM D3307</i>	$\pm 300\%$ <i>ASTM D3307</i>	2.11 - 2.17 <i>ASTM D792</i>	2.11 - 2.16 <i>DIN 53749</i>

The results comply with the ASTM F1545 standard.

• ANTI STATIC PTFE / PFA ELECTRICAL PROPERTIES

Transverse resistivity : $< 10^7$ ohm based on the BS 2050 standard

Surface resistivity : $< 10^8$ ohm based on the BS 2782-230A standard

Volume resistivity : $< 10^8$ ohm.cm based on the BS 2782-231A standard



Thanks to mastered manufacturing technologies (PFA injection, extrusion of fine PTFE powders, Isomoulding) Mersen optimised PTFE lining thickness and manufacturing procedures to limit permeability rate.

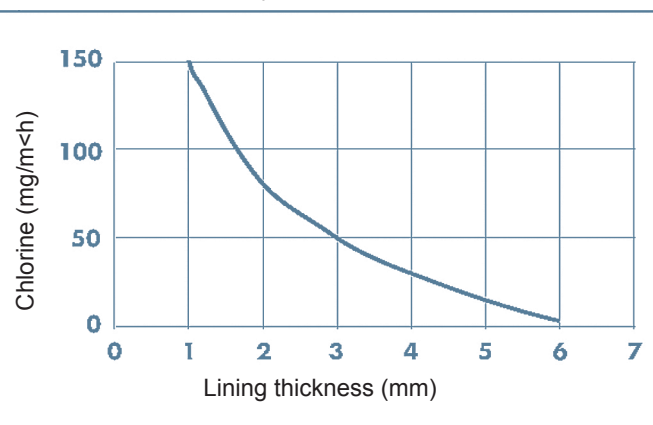
PERMEABILITY

Several factors have an influence:

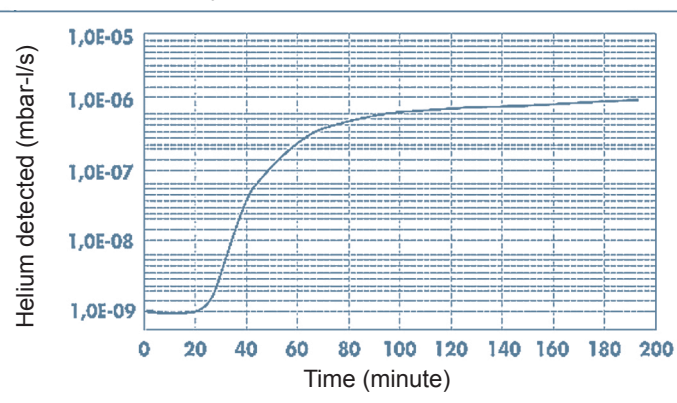
- ▶ **Thickness of the lining is the most significant factor.** The curve below shows the sharp decrease in permeability level according to thickness.
Size of the ions or molecules. This Helium permeability curve shows the ability of a very small molecule such as helium to pass through the PTFE / PFA.
- ▶ **Chemical nature of the product :** any chemical similarity between the material passing through and the material passed through increases permeability.
- ▶ **Temperature and pressure :** permeability increases with growth of temperature and pressure.

Examples of permeability curves:

PTFE / PFA permeability curve



Helium permeability PTFE / PFA curve



COMPONENTS

The table below shows the various steel components used for manufacturing of our standard pieces.
3.1 mill certificates in accordance with EN 10204 are available on request.

ASTM or JIS standards compliant steel grades, low temperature or stainless steel grades can be supplied on request.
Please contact us for more information.

DESCRIPTION	TUBES / BODIES		FLANGES	
	STANDARD DIMENSIONAL	MIN. GRADE	STANDARD DIMENSIONAL	MIN. GRADE
SPOOLS	EN 10216	P 235 GH / EN 10216	EN 1092	P 245 GH / EN 10222 C22.8 / DIN 17243
ELBOWS 90° AND 45°	DIN 2605 & 2606	ST 35.8 / DIN 17175 ST 37.0 / DIN 1629	EN 1092	P 245 GH / EN 10222 C22.8 / DIN 17243
ELBOW AND TEES CAST STEEL		GP 240GH		
EQUAL TEES OR REDUCED EQUAL CROSSES/REDUCED	EN 10216	P 235 GH / EN 10216	EN 1092	P 245 GH / EN 10222 C22.8 / DIN 17243
CONCENTRIC REDUCERS	DIN 2616	ST 35.8 / DIN 17175 ST 37.0 / DIN 1629		P 245 GH / EN 10222 C22.8 / DIN 17243
REDUCING FLANGES			EN 1092	P 245 GH / EN 10028
SPACERS				P 245 GH / EN 10028
INSTRUMENT TEES	EN 10216	P 235 GH / EN 10216 / EN 10028	EN 1092	P 245 GH / EN 10222 C22.8 / DIN 17243

CONTROL DURING MANUFACTURE

The dimensional inspection is always completed by the following additional checks :

- ▶ Straightness and positioning of flanges.
- ▶ Thickness of painting.
- ▶ Absence of any protruding element inside the parts that might damage the lining.

Mersen offers certain optional non- destructive test :

- ▶ X-rays on butt-welds (as per code)
- ▶ Die penetrant tests (by COFREND II qualified personnel)

WELDING

Mersen is qualified in accordance with the European standards EN 288.3 (for operational modes) and EN 287.1 (for welders) regarding the A.A.G., M.I.G. & T.I.G., A.D.M. HP 5.3 and ASME IX processes. These qualifications are regularly renewed, either internally by using an external independent organism. External audits are carried out in order to ensure that our suppliers meet the same requirements. Mersen is also HPO, SQLO, and ASME Stamp 'U' certified.

FLARED STUB END

Regarding spools, Mersen builds them with 2 loose flanges on collars obtained by cold forming of the steel tube, from DN 15 to DN 350. This process is in conformity with PED and has been validated by T.Ü.V. A loose flange stop can be supplied on request.

VENT HOLES

Vent holes are drilled PTFE and PFA lined piping steel shells to :

- ▶ Prevent any back pressure between the metallic housing and the lining.
- ▶ Detect any possible leaks during pressure tests.
- ▶ Quickly detect any sign of corrosion.

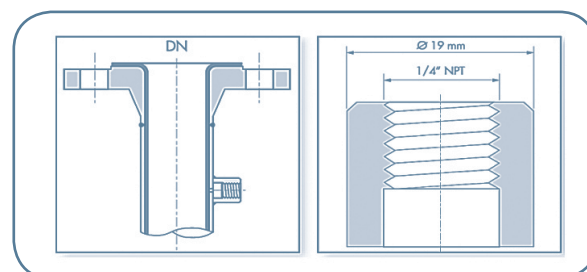
Spools with length below 500 mm have one 3 mm diameter vent hole in the middle of the piece. Those above 500 mm are fitted with two vent holes located about 150 mm from each end.

The fittings have at least one 3 mm diameter vent hole. Reducing flanges, blind flanges and spacers do not have any vent holes.

In the case of particular specifications or pipe lagging, 1/4" NPT vent bosses can be welded to the vent holes.

VENT BOSSES

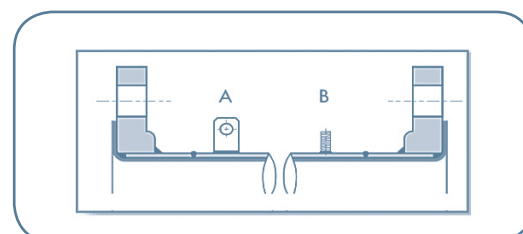
If vent holes must be identified quickly or when the line is lagged, a coupling can be welded at the vent holes levels. In the case of different lagging thicknesses, an extension to achieve the size required can be screwed on to the coupling.



ELECTRICAL CONTINUITY

The electrical continuity of lined piping can be ensured by connecting each individual component together by using conductors linked to earth. Regarding fitting and spools below 500 mm, these are welded in the middle of the steel piece and at about 150 mm from the back side of each flange. in case of above 500 mm long spools. Mersen supplies two types of earthing lugs. The standard earthing lugs are in AISI 304 or 316 stainless steel.

Other materials can be supplied on request.



PAINTING

The standard coating is a 40 micron thick zinc epoxy primer coating on sand blasted steel, in accordance with the S.A 2.5 cleanliness level. Other surface preparations, undercoats or topcoats can be applied on request.

LINES COMPONENTS

DIMENSIONAL TOLERANCES

The lined pieces and their dimensions are indicated in pages 17 to 35.
All the lined pieces are built using following tolerances :

	TOLERANCE	DIMENSIONAL TOLERANCE	ANGULAR TOLERANCE
LENGHTS	0-315 mm	+0; -3 mm	±0.5°
	315-1000 mm	+0; -4 mm	±0.5°
	1000-6000 mm	+0; -5 mm	±0.5°
DIAMETERS	DN 25-100	+0; -3 mm	±0.5°
	DN 125-200	+0; -4 mm	±0.5°
	DN 250-600	+0; -5 mm	±0.5°

Tolerance for PTFE / PFA : 5%

TEMPERATURE CYCLE TESTS

The pieces tested undergo 100 alternate steam / cold water cycles, according to the ASTM F1545 standard.
Steam is absorbed by the lining under the influence of both temperature and pressure.
Lining vacuum resistance is then proved thanks to significant mechanical stresses due to the sudden pressure drop combined with fast cooling.

VACUUM RESISTANCE

DN	15	20	25	32	40	50	65	80	100	125	200	250	300	350	400
ARMYLOR® G	Vacuum 2 Torr 150° C														
ARMYLOR® V	Vacuum 2 Torr 230° C								Vacuum 2 Torr 150° C						
ARMYLOR® S									Vacuum according to particular specifications						

Conversion Unités : 760 Torr = 760 mmHg = 1 bar = 1 kg/cm² = 10 Pa = 14.5 Psi



CHARACTERISTICS CONTROLLED DURING MANUFACTURE

Mersen manufacture the PTFE lined pipe and fittings in accordance with DESP 97/23 CE.

In addition to the numerous internal checks carried out throughout the entire manufacturing process acceptance of powders, physical properties of the lining, etc.) all piping is subject to the following inspections ;

- **Dimensional and visual check :**

the overall dimensions of the spools, the size of the collars, the lining thickness of moulded pieces and the absence of surface defects are checked once the pieces have been produced.

- **Spark test :**

each piping element undergoes the electrostatic check in the following condition : PTFE/PFA : potentials test in V : $5000 \cdot E$ V (E = thickness of liner en mm) with a maximum of 25000 V.

- **Hydraulic test :**

this check is only carried out on pieces equipped with vent holes, injected or produced from tubes. The standard test pressure is 1.5 times the operational pressure. This test can also be carried out in other conditions (pressure, time, number of cycles) on request.

- **Pneumatic check :**

a hot pneumatic test is carried out on isomolding pieces and on some pieces produced from extruded liners.

TRACEABILITY AND MARKING

- **Traceability**

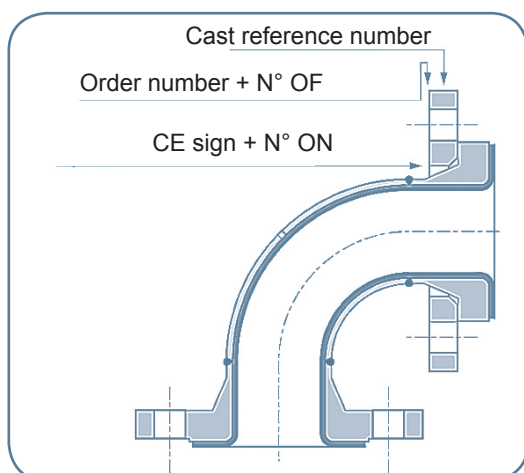
In addition to hydrostatic and electrostatic tests records, traceability is a key issue for our Quality insurance system : it is achieved as follows:

▶ **Steel :** the heat number is cold stamped on each steel piece. Mersen is approved by the TÜV to stamp heat numbers on steel pipes cuts.

▶ **Finished product :** the following information is stamped on the finished piece :

- The initials of Mersen, the order number and the piece number (O.F. number)
- The C€ + O.N. (notified body)

▶ **Traceability of documents :** total traceability is ensured with the same method for both metallic components and lining materials.



- **Marking**

Additional marking can be done.

On request, each part can be identified thanks to a heat transfer printed sticky label that shows piece reference and isometrics number.

PACKAGING

Spools can be packed on floor-mounted loads or in wooden crates.

Fittings are packed in wooden crates or in cardboards on pallets.

INSTALLATIONS PROCEDURE

PRECAUTIONS

The lined steel components are delivered with wooden or plastic plugs installed to protect the PTFE collars. Remove these protective plugs when the components are about to be connected only : they shall be refitted after each inspection and when the piece is withdrawn from the installation. Once the plugs have been removed, the greatest care is required : no contact with the floor, absence of any sharp object that could damage the lining.

CLEANING

Flared surface must be carefully cleaned prior to connection.

BOLT TIGHTENING

For assembling of PTFE / PFA lined piping components together, no gaskets are needed except when materials of different natures are being coupled or during successive assembling and dismantling operations.

Tightening bolts :

- ▶ **Insert** the washers
- ▶ **Clean** and grease the bolts
- ▶ **Tighten** nuts by hands
- ▶ **Tighten** each bolt using a torque wrench, keeping to the torque values specified in the right table
- ▶ Tightening “opposites” as with any flange connection

Tightening torque values are given for PTFE / PFA and may vary depending on greasing, condition of the threaded holes, and so on.

Values are given for PN 10 flanges. They are indicated for ambient conditions and must always be checked in cold condition, after 24 hours of installation; they should also be checked periodically.

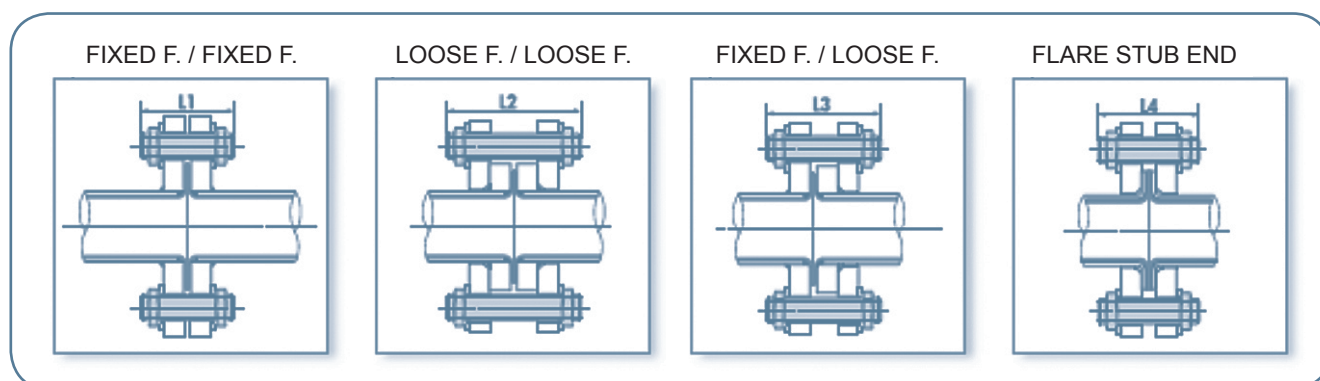
The tightening torque values indicated apply to :

- **Class 8.8 steel nuts** (resistant to 800 N/mm rupture, elasticity limit of 640 N/mm)
- 0.12. nut friction **coefficient**

DN	NUTS mm	TIGHTENING N.m
DN 25	4xM12	30
DN 32	4xM16	45
DN 40	4xM16	60
DN 50	4xM16	80
DN 65	4xM16	100
DN 80	8xM16	60
DN 100	8xM16	70
DN 125	8xM16	90
DN 150	8xM20	130
DN 200	8xM20	180
DN 250	12xM20	160
DN 300	12xM20	210
DN 350	16xM20	260
DN 400	16xM24	330
DN 450	20xM24	290
DN 500	20xM24	330
DN 600	20xM27	460

BOLT LENGTHS

The table below sets out the recommended screwed rod lengths for the various assemblies.



The dimensions indicated refer to :

- ▶ **A coupling** equal to 1/3 the diameter of the screwed rod.
- ▶ **A nut height** equal to the diameter of the screwed rod.

VENT HOLES

Vent holes must not be obstructed by lagging or painting. Where lagging is fitted, vent extensions should be provided. When pipes are in service for the first time, air or water trapped inside at the moment of assembling may escape through the vent holes. It is recommended, when undertaking periodic inspections of installation, to check that no leak has occurred out of the vent holes. The latter also act as corrosion indicators.

WEIGHT

The weight (kilograms) of each piece is indicated on the corresponding tables. Due to the various construction methods, the weights are theoric values only. The tolerance is +/- 10%.

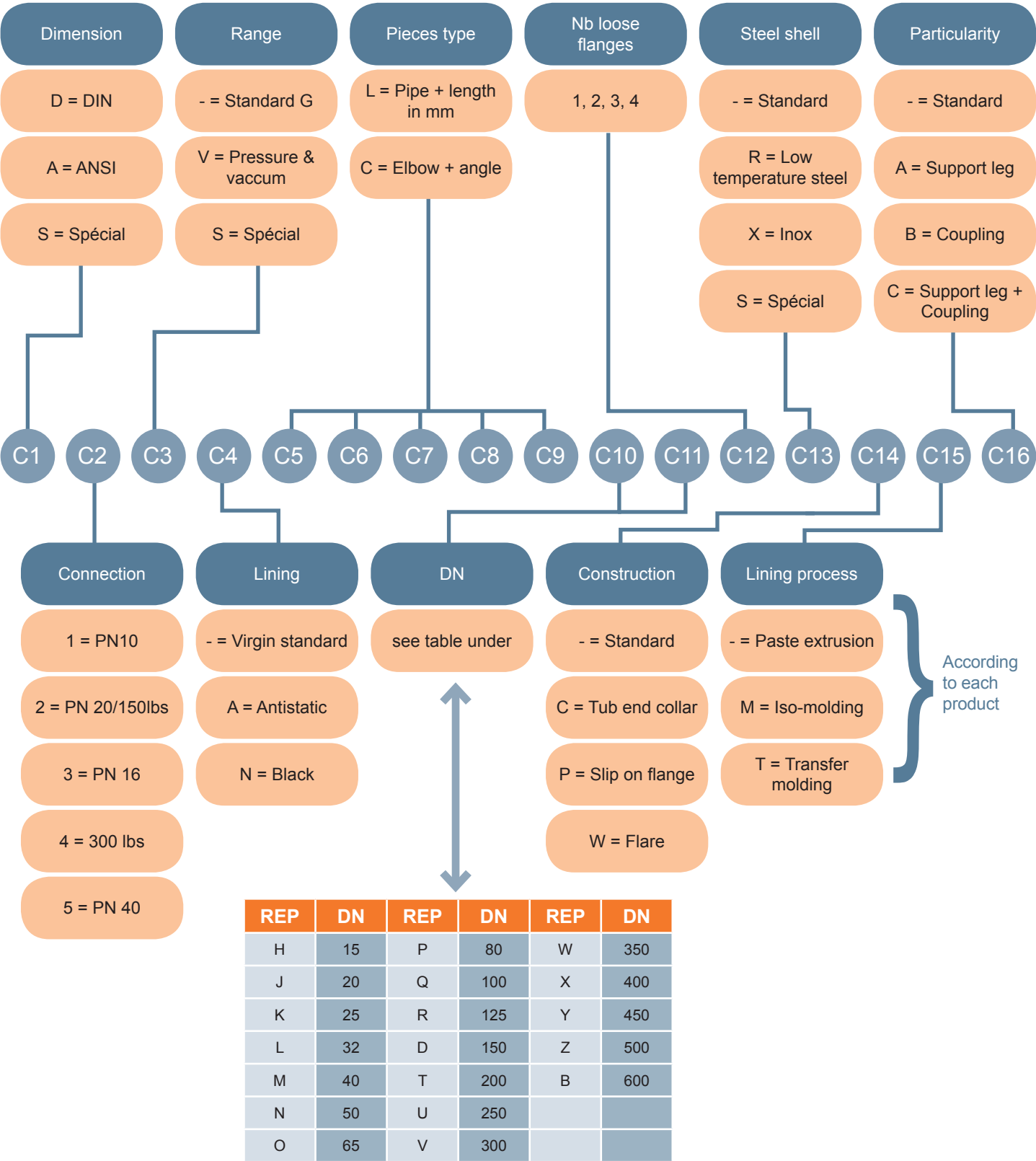
SUPPORTS

Elements must be supported using rings that are independent of the lined pipe. **No welding should be performed on lined elements.** However, supporting elements may be welded prior to lining.

DN	L1 mm	L2 mm	L3 mm	L4 mm
DN 15	75	95	85	
DN 20	80	100	90	
DN 25	80	105	90	85
DN 32	90	115	105	95
DN 40	90	115	105	95
DN 50	95	120	105	95
DN 65	95	125	110	100
DN 80	100	130	115	105
DN 100	105	130	115	115
DN 125	110	135	120	
DN 150	120	150	135	120
DN 200	125	155	140	140
DN 250	130	165	145	145
DN 300	130	175	150	150
DN 350	135	180	155	155
DN 400	160	205	175	
DN 450	170	205	175	
DN 500	170	230	190	
DN 600	170	235	190	

REFERENCES

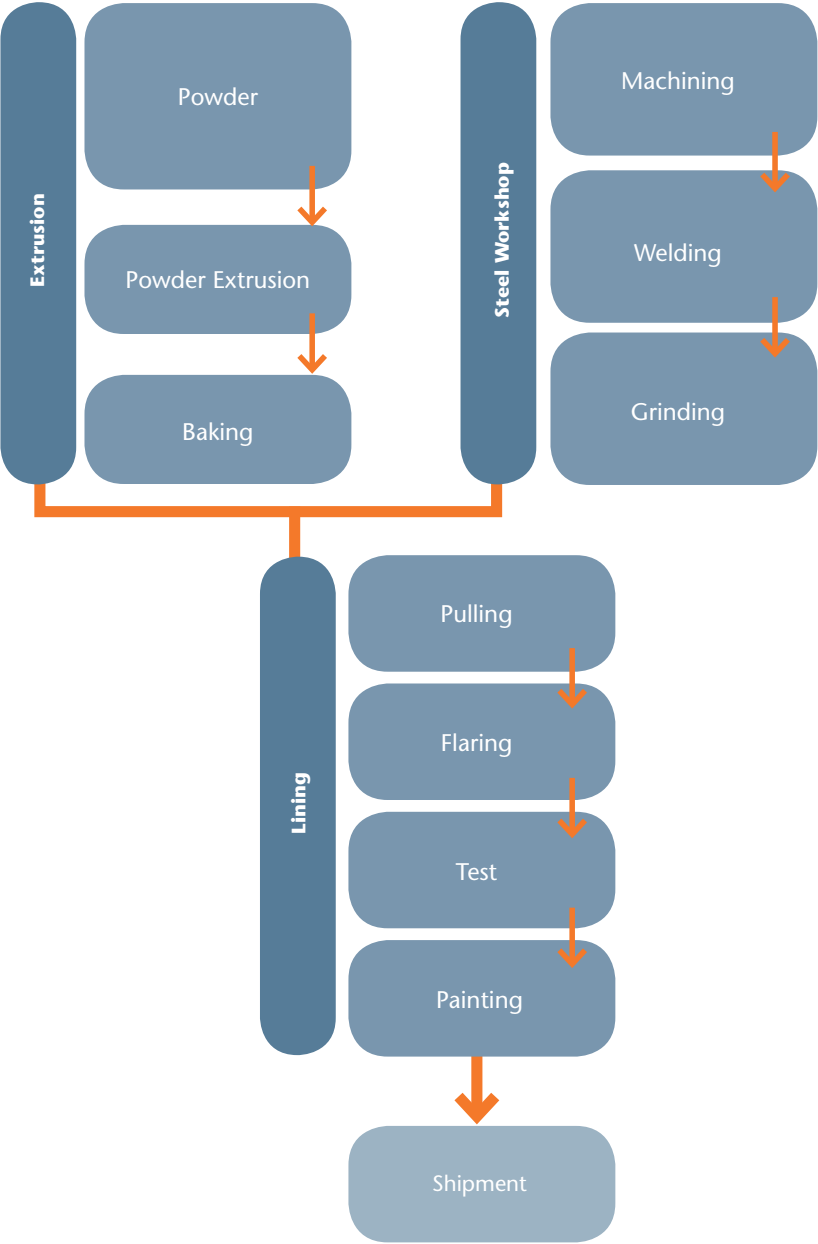
Each part has a reference composed with 16 characters



Examples :

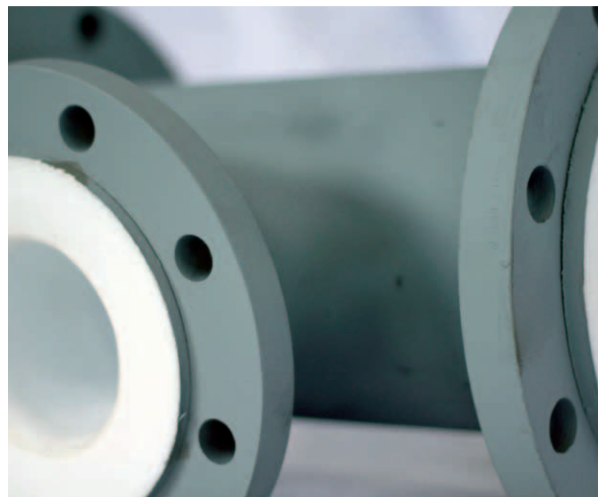
D3V-L1234T--XW-A : DIN, PN16, vacuum range, 1234 mm straight length, DN200, inox steel, welding neck, earthing lug.
D1--C45--P-1 : DIN, PN10, 45° elbow, DN80, 1 BT.

MANUFACTURE PROCESS

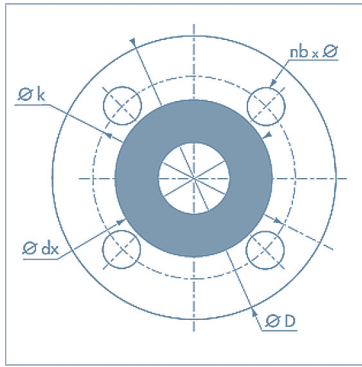


PRODUCTS DATA SHEETS

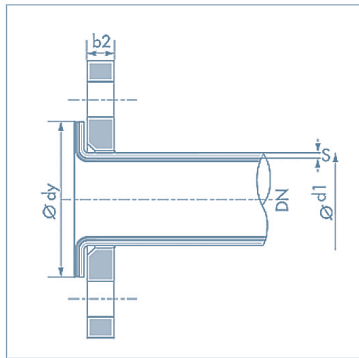
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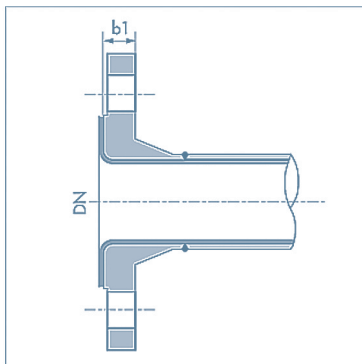
DIN FLANGES PN 10 AND TUBES



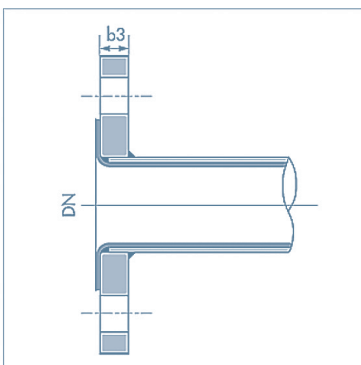
Flange (front view)



Flared stub end type C (loose)



Din 2632 Welding neck type W
(Fixed)

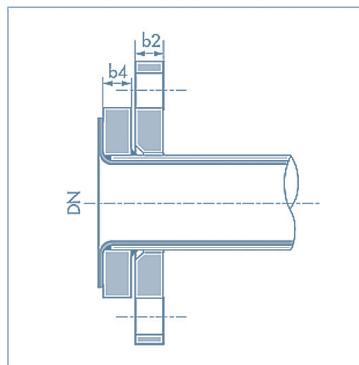


Din 2576 Slip-on Type P (Fixed)

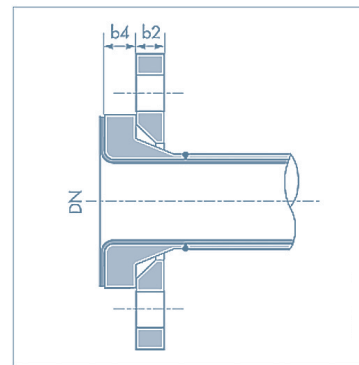
Entire flanged products range can be equipped with loose or fix flanges on request.

	DIAMETERS				THICKNESS				DRILLING PN10				STEEL TUBES	
	D	dx*	dy	k	b1	b2	b3	b4	holes			bolting	d1	s
	mm	mm	mm	mm	mm	mm	mm	mm	nb	x	Ø		mm	mm
15	95	45	45	65	14	14	14	10	4	x	14	M12	26.9	2.3
20	105	58	55	75	16	14	16	12	4	x	14	M12	26.9	2.3
25	115	68	55	85	16	16	16	12	4	x	14	M12	33.7	2.6
32	140	78	67	100	16	16	16	12	4	x	18	M16	42.4	2.6
40	150	88	80	110	16	16	16	12	4	x	18	M16	48.3	2.6
50	165	102	95	125	18	16	18	14	4	x	18	M16	60.3	2.9
65	185	122	118	145	18	16	18	14	4	x	18	M16	76.1	2.9
80	200	138	130	160	20	18	20	16	8	x	18	M16	88.9	3.2
100	220	158	158	180	20	18	20	16	8	x	18	M16	114.3	3.6
125	250	188	188	210	22	18	22	18	8	x	18	M16	139.7	4.0
150	285	212	212	240	22	18	22	18	8	x	22	M20	168.3	4.5
200	340	268	268	295	24	20	24	20	8	x	22	M20	219.1	6.3
250	395	320	320	350	26	22	26	22	12	x	22	M20	273.0	6.3
300	445	370	370	400	26	26	26	22	12	x	22	M20	323.9	7.1
350	505	430	430	460	26	28	28	22	16	x	22	M20	355.6	8.0
400	565	482		515	26	32	32	24	16	x	26	M24	406.4	8.5
450	615	532		565	/	/	38	24	20	x	26	M24	457.2	9.5
500	670	585		620	28	38	38	26	20	x	26	M24	508.0	9.5
600	780	685		725	28	44	40	26	20	x	30	M27	609.6	9.5

* Tolerance 5%



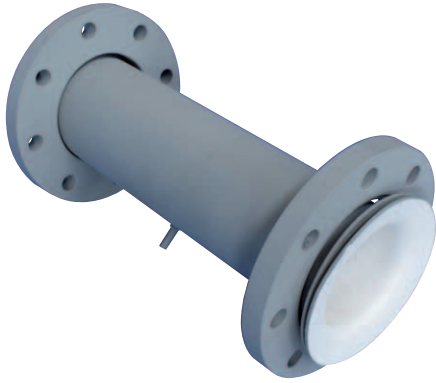
Din 2642 Collar + slip-on type P
(loose)



Din 2673 Collar + slip-on type W

PN 6/16/20/25...on request

FLANGED SPOOLS



LINING

VIRGIN PTFE ::

DN 15 – DN 600

ANTI STATIC PTFE (Black), C4 = A

DN 15 – DN 400

Standard construction : 2 loose flanges

• Type C : DN 15 to DN 300, C14 = C

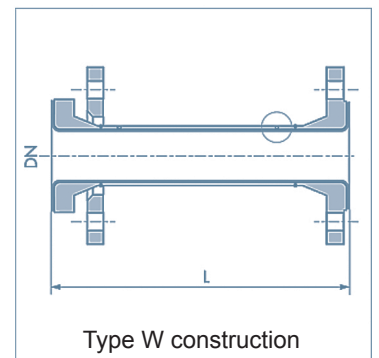
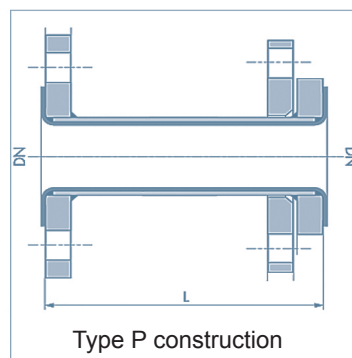
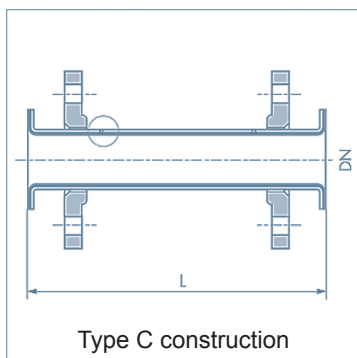
On request : 1 fix flange, 1 loose flange

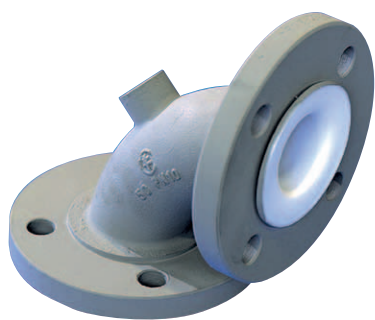
• Type P : DN 15 to DN 350

• Type W : C14 = W

DN	L mini	L maxi	Weight kg/m	Pair flanges weight	REFERENCE															
	mm	mm			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
15	85	6000	1.8	1.4	D	1	-	-	L	x	x	x	x	H						
20	85	6000	1.8	7.9	D	1	-	-	L	x	x	x	x	J						
25	85	6000	2.8	2.5	D	1	-	-	L	x	x	x	x	K						
32	85	6000	3.2	3.7	D	1	-	-	L	x	x	x	x	L						
40	90	6000	3.9	4.2	D	1	-	-	L	x	x	x	x	M						
50	100	6000	5.3	5.5	D	1	-	-	L	x	x	x	x	N						
65	100	6000	6.7	6.7	D	1	-	-	L	x	x	x	x	O						
80	110	6000	9.2	8.4	D	1	-	-	L	x	x	x	x	P						
100	120	6000	12	10	D	1	-	-	L	x	x	x	x	Q						
125	120	6000	16	13	D	1	-	-	L	x	x	x	x	R						
150	120	6000	21	16	D	1	-	-	L	x	x	x	x	S						
200	130	6000	41	23	D	1	-	-	L	x	x	x	x	T						
250	150	6000	56	31	D	1	-	-	L	x	x	x	x	U						
300	150	6000*	63	38	D	1	-	-	L	x	x	x	x	V						
350	150	3000	78	51	D	1	-	-	L	x	x	x	x	W						
400	150	3000	97	65	D	1	-	-	L	x	x	x	x	X						
450	150	3000	104	85	D	1	-	-	L	x	x	x	x	Y						
500	160	3000	133	90	D	1	-	-	L	x	x	x	x	Z						
600	180	1500	161	134	D	1	-	-	L	x	x	x	x	B						

* For vacuum thickness, L max = 4500 xxxx : length in mm





LINING

VIRGIN PTFE :
DN 15 – DN 600

ANTI STATIC PTFE, C4 = A
DN 15 – DN 400

Standard construction : 2 fixed flanges

- Type K : DN 25 to DN 100, C13 = K
- Type W : superior DN 100

On request : 1 fix flange + 1 loose flange
C12 = 1

DN	L (mm)				WEIGHT (kg)				REFERENCE															
	$\alpha=90^\circ$	$\alpha=45^\circ$	$\alpha=60^\circ$	$\alpha=30^\circ$	90°	45°	60°	30°	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
15	85	59			1.7	1.5	1.6	1.5	D	1	-	-	C	•	•	-	-	H						
20	95	65	75	70	2.1	2.2	2.2	2.1	D	1	-	-	C	•	•	-	-	J						
25	110	70	80	60	2.9	2.6	2.7	2.6	D	1	-	-	C	•	•	-	-	K						
32	130	80	95	65	4.2	3.9	4.0	3.8	D	1	-	-	C	•	•	-	-	L						
40	150	90	110	75	4.9	4.5	4.6	4.3	D	1	-	-	C	•	•	-	-	M						
50	120	80	90	65	6.3	5.8	5.9	5.6	D	1	-	-	C	•	•	-	-	N						
65	140	85	100	70	8.1	7.2	7.5	6.9	D	1	-	-	C	•	•	-	-	O						
80	165	100	120	80	10	9.3	9.7	8.9	D	1	-	-	C	•	•	-	-	P						
100	205	115	140	95	13	11	11	10	D	1	-	-	C	•	•	-	-	Q						
125	245	135	170	110	19	15	16	14	D	1	-	-	C	•	•	-	-	R						
150	285	150	190	120	25	20	21	18	D	1	-	-	C	•	•	-	-	S						
200	365	190	240	145	45	33	37	28	D	1	-	-	C	•	•	-	-	T						
250	450	225	285	165	65	46	52	39	D	1	-	-	C	•	•	-	-	U						
300	525	260	330	185	89	60	69	50	D	1	-	-	C	•	•	-	-	V						
350	600	290	375	210	126	86	120	74	D	1	-	-	C	•	•	-	-	W						
400	680	325	425	235	175	119	160	102	D	1	-	-	C	•	•	-	-	X						
450	680	350	415	205	179	139	169	125	D	1	-	-	C	•	•	-	-	Y						
500	830*	390	795*	275	376	188	230	162	D	1	-	-	C	•	•	-	-	Z						
600	974**	412	950**	325	567	292	550	212	D	1	-	-	C	•	•	-	-	B						

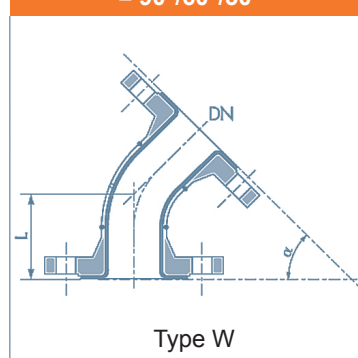
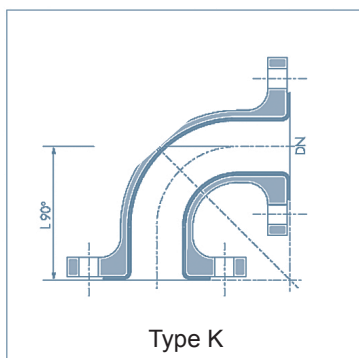
• : Angle in degree : 90, 45, 60 or 30

* : 2 parts construction

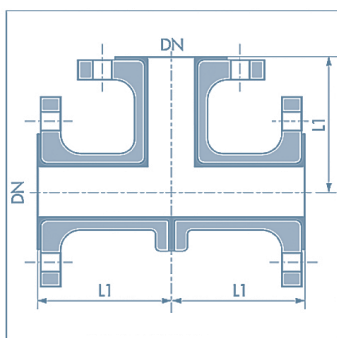
** : 3 parts construction

The 30 ° and 60 ° elbows are not included in the DIN 2848 standard

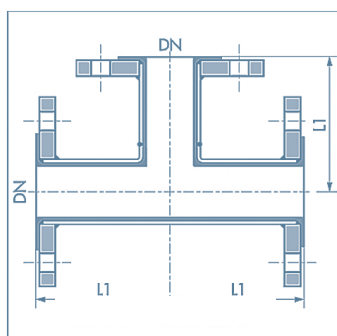
Standard fixed flanges elbow
= 90°/60°/30°



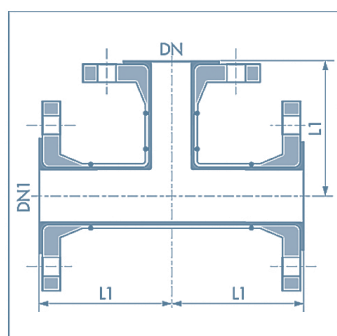
EQUAL TEES



Type K



Fix flanges type P



Fix flanges type W

LINING

VIRGIN PFA : DN 15 – DN 80

ANTI STATIC PFA : DN 15 – DN 80, C4 = A

VIRGIN PTFE : DN 100 – DN 600

ANTI STATIC PTFE : DN 100 – DN 400, C4 = A

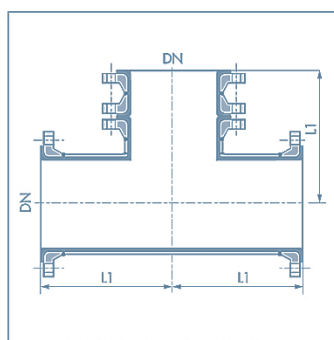
DN	L1 mm	Weight kg	REFERENCE															
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
15	85	2.6	D	1	-	-	T	E	-	-	-	H	-	-	-	-	T	
20	95	3.6	D	1	-	-	T	E	-	-	-	J	-	-	-	-	T	
25	110	4.5	D	1	-	-	T	E	-	-	-	K	-	-		-	T	
32	130	6.6	D	1	-	-	T	E	-	-	-	L	-	-		-	T	
40	150	7.7	D	1	-	-	T	E	-	-	-	M	-	-		-	T	
50	120	9.7	D	1	-	-	T	E	-	-	-	N	-	-		-	T	
65	140	12	D	1	-	-	T	E	-	-	-	O	-	-		-	T	
80	165	16	D	1	-	-	T	E	-	-	-	P	-	-		-	T	
100	205	20	D	1	-	-	T	E	-	-	-	Q	-	-		-	M	
125	245	30	D	1	-	-	T	E	-	-	-	R	-	-		-	M	
150	285	40	D	1	-	-	T	E	-	-	-	S	-	-		-	M	
200	365	74	D	1	-	-	T	E	-	-	-	T	-	-	-	-	M	
250*	450	120	D	1	-	-	T	E	-	-	-	U	-	-	-	-	M	
300*	525	162	D	1	-	-	T	E	-	-	-	V	-	-	-	-	M	
350**	600	231	D	1	-	-	T	E	-	-	-	W						
400**	680	320	D	1	-	-	T	E	-	-	-	X						
450**	680	385	D	1	-	-	T	E	-	-	-	Y						
500**	830	473	D	1	-	-	T	E	-	-	-	Z						
600**	830	552	D	1	-	-	T	E	-	-	-	B						

Standard construction

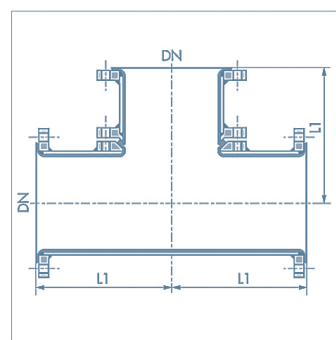
- Type P : DN 15 to DN 80 and DN 350 to DN 600
- Type K : DN 25 to DN 100, C13 = K
- Type W : DN 100 to DN 300

On request :

- 3 loose flanges : C12 = 3

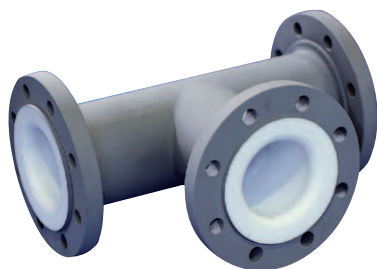


* Fix flanges type W



** Fix flanges type P

REDUCING TEES



LINING

VIRGIN PFA : DN 20 – DN 80

ANTI STATIC PFA : DN 20 – DN 80, C4 = A

VIRGIN PTFE : DN 100 – DN 125

ANTI STATIC PFA : DN 100 – DN 125, C4 = A

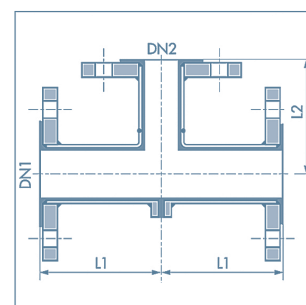
DN1	DN2	L1 mm	L2 mm	Weight kg	REFERENCE															
					1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
20	15	95	85	3.2	D	1	-	-	T	R	-	-	-	J	H	-	-	-	T	
25	15	110	85	3.8	D	1	-	-	T	R	-	-	-	K	H	-	-	-	T	
	20	110	95	4.1	D	1	-	-	T	R	-	-	-	K	J	-	-	-	T	
32	15	130	85	5.3	D	1	-	-	T	R	-	-	-	L	H	-	-	-	T	
	20	130	95	5.6	D	1	-	-	T	R	-	-	-	L	J	-	-	-	T	
	25	130	110	5.9	D	1	-	-	T	R	-	-	-	L	K	-	-	-	T	
40	15	150	85	6.0	D	1	-	-	T	R	-	-	-	M	H	-	-	-	T	
	20	150	95	6.4	D	1	-	-	T	R	-	-	-	M	J	-	-	-	T	
	25	150	110	6.7	D	1	-	-	T	R	-	-	-	M	K	-	-	-	T	
	32	150	130	7.4	D	1	-	-	T	R	-	-	-	M	L	-	-	-	T	
50	15	120	85	7.4	D	1	-	-	T	R	-	-	-	N	H	-	-	-	T	
	20	120	95	7.8	D	1	-	-	T	R	-	-	-	N	J	-	-	-	T	
	25	120	110	8.0	D	1	-	-	T	R	-	-	-	N	K	-	-	-	T	
	32	120	130	8.7	D	1	-	-	T	R	-	-	-	N	L	-	-	-	T	
65	40	120	150	9.1	D	1	-	-	T	R	-	-	-	N	M	-	-	-	T	
	25	140	110	9.9	D	1	-	-	T	R	-	-	-	O	K	-	-	-	T	
	32	140	130	10	D	1	-	-	T	R	-	-	-	O	L	-	-	-	T	
	40	140	150	11	D	1	-	-	T	R	-	-	-	O	M	-	-	-	T	
80	50	140	120	11	D	1	-	-	T	R	-	-	-	O	N	-	-	-	T	
	25	165	110	12	D	1	-	-	T	R	-	-	-	P	K	-	-	-	T	
	32	165	130	13	D	1	-	-	T	R	-	-	-	P	L	-	-	-	T	
	40	165	150	13	D	1	-	-	T	R	-	-	-	P	M	-	-	-	T	
100	50	165	120	14	D	1	-	-	T	R	-	-	-	P	N	-	-	-	T	
	65	165	140	15	D	1	-	-	T	R	-	-	-	P	O	-	-	-	T	
	40	205	150	16	D	1	-	-	T	R	-	-	-	Q	M	-	-	-	M	
	50	205	120	17	D	1	-	-	T	R	-	-	-	Q	N	-	-	-	M	
125	65	205	140	18	D	1	-	-	T	R	-	-	-	Q	O	-	-	-	M	
	80	205	165	19	D	1	-	-	T	R	-	-	-	Q	P	-	-	-	M	
	40	245	150	23	D	1	-	-	T	R	-	-	-	R	M	-	-	-	M	
	50	245	120	23	D	1	-	-	T	R	-	-	-	R	N	-	-	-	M	
	65	245	140	24	D	1	-	-	T	R	-	-	-	R	O	-	-	-	M	
125	80	245	165	25	D	1	-	-	T	R	-	-	-	R	P	-	-	-	M	
	100	245	205	27	D	1	-	-	T	R	-	-	-	R	Q	-	-	-	M	

Standard construction :

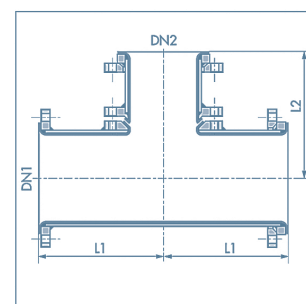
- Type K: fix flanges, DN 25 to DN 80, C13 = K
- Type P: fix flanges

On request :

- 3 loose flanges C12=3



Construction type K



Construction type P

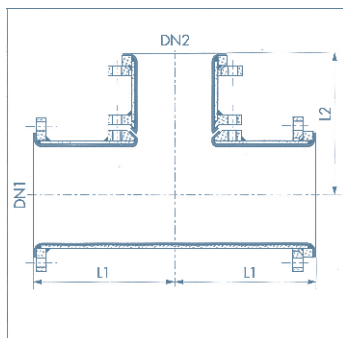
REDUCING TEES



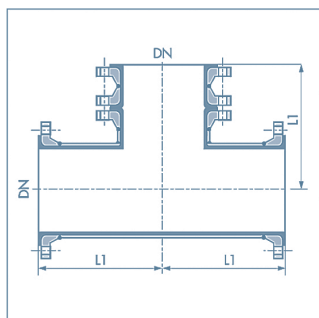
LININGS

VIRGIN PTFE :
DN 150 – DN 600

ANTI STATIC PTFE, C4 = A
DN 150 – DN 400



Type P



Type W

DN1	DN2	L1 mm	L2 mm	Weight kg	REFERENCE															
					1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
150	40	285	150	30	D	1	-	-	T	R	-	-	-	S	M	-	-	-	M	
	50	285	120	31	D	1	-	-	T	R	-	-	-	S	N	-	-	-	M	
	65	285	140	32	D	1	-	-	T	R	-	-	-	S	O	-	-	-	M	
	80	285	165	33	D	1	-	-	T	R	-	-	-	S	P	-	-	-	M	
	100	285	205	34	D	1	-	-	T	R	-	-	-	S	Q	-	-	-	M	
	125	285	245	37	D	1	-	-	T	R	-	-	-	S	R	-	-	-	M	
200	80	365	165	57	D	1	-	-	T	R	-	-	-	T	P	-	-	-	M	
	100	365	205	58	D	1	-	-	T	R	-	-	-	T	Q	-	-	-	M	
	125	365	245	60	D	1	-	-	T	R	-	-	-	T	R	-	-	-	M	
	150	365	285	64	D	1	-	-	T	R	-	-	-	T	S	-	-	-	M	
250	100	450	205	81	D	1	-	-	T	R	-	-	-	U	Q	-	-	-	M	
	125	450	245	84	D	1	-	-	T	R	-	-	-	U	R	-	-	-	M	
	150	450	285	87	D	1	-	-	T	R	-	-	-	U	S	-	-	-	M	
	200	450	365	96	D	1	-	-	T	R	-	-	-	U	V	-	-	-	M	
300	100	525	205	113	D	1	-	-	T	R	-	-	-	V	Q	-	-	-	M	
	150	525	285	116	D	1	-	-	T	R	-	-	-	V	S	-	-	-	M	
	200	525	365	125	D	1	-	-	T	R	-	-	-	V	V	-	-	-	M	
	250*	525	450	148	D	1	-	-	T	R	-	-	-	V	U					
350	100	600	205	156	D	1	-	-	T	R	-	-	-	W	Q					
	150	600	285	159	D	1	-	-	T	R	-	-	-	W	S					
	200*	600	365	178	D	1	-	-	T	R	-	-	-	W	V					
	250*	600	450	191	D	1	-	-	T	R	-	-	-	W	U					
	300*	600	525	205	D	1	-	-	T	R	-	-	-	W	V					
400*	200	680	365	234	D	1	-	-	T	R	-	-	-	X	V					
	250	600	450	247	D	1	-	-	T	R	-	-	-	X	U					
	300	680	525	261	D	1	-	-	T	R	-	-	-	X	V					
	350	680	600	287	D	1	-	-	T	R	-	-	-	X	X					
450*	300	680	525	324	D	1	-	-	T	R	-	-	-	Y	V					
	350	680	600	357	D	1	-	-	T	R	-	-	-	Y	W					
500*	200	830	365	258	D	1	-	-	T	R	-	-	-	Z	V					
	250	830	450	270	D	1	-	-	T	R	-	-	-	Z	U					
	300	830	525	282	D	1	-	-	T	R	-	-	-	Z	V					
	350	830	600	308	D	1	-	-	T	R	-	-	-	Z	W					
	400	830	680	340	D	1	-	-	T	R	-	-	-	Z	X					
	450	830	680	368	D	1	-	-	T	R	-	-	-	Z	Y					
600*	250	830	450	412	D	1	-	-	T	R	-	-	-	B	U					
	300	830	525	425	D	1	-	-	T	R	-	-	-	B	V					
	350	830	600	440	D	1	-	-	T	R	-	-	-	B	W					
	400	830	680	465	D	1	-	-	T	R	-	-	-	B	X					
	450	830	830	495	D	1	-	-	T	R	-	-	-	B	Y					
	500	830	830	525	D	1	-	-	T	R	-	-	-	B	Z					

* 2 parts construction

Standard construction :

- Type P: fix flanges
- Type W: fix flanges

On request :

- loose flange : C12 = 3

CONCENTRIC & EXCENTRIC REDUCERS

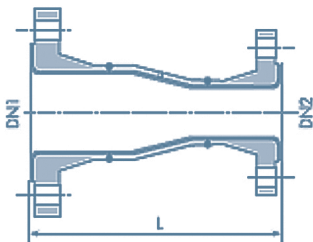


LININGS

VIRGIN PTFE :
DN 20 – DN 600

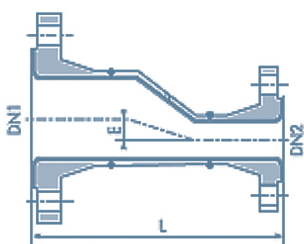
ANTI STATIC PTFE, C4 = A :
DN 20 – DN 400

Concentric reducer



Type W

Eccentric reducer



Type W

Standard construction :

- Type W : fix flanges

On request :

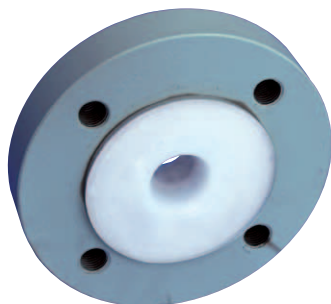
- 1 fix flange / 1 loose flange, C12 = 1

() Dimension non available in eccentric reducer

• = C : Concentric Reducer
= E : Eccentric Reducer

DN1	DN2	L1 mm	E mm	Weight kg	REFERENCE															
					1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
20	(15)	115		1.9	D	1	-	-	R	C	-	-	-	J	H					
25	15	120	3.4	2.2	D	1	-	-	R	•	-	-	-	K	H					
	20	125	3.4	2.5	D	1	-	-	R	•	-	-	-	K	J					
32	(15)	130		2.8	D	1	-	-	R	C	-	-	-	L	H					
	20	130	7.5	3.1	D	1	-	-	R	•	-	-	-	L	J					
	25	130	4.0	3.4	D	1	-	-	R	•	-	-	-	L	K					
40	15	130	10	3.1	D	1	-	-	R	•	-	-	-	M	H					
	20	145	10	3.4	D	1	-	-	R	•	-	-	-	M	J					
	25	145	7.0	3.7	D	1	-	-	R	•	-	-	-	M	K					
	32	150	3.0	4.3	D	1	-	-	R	•	-	-	-	M	L					
50	25	160	13	4.5	D	1	-	-	R	•	-	-	-	N	K					
	32	165	8.7	5.1	D	1	-	-	R	•	-	-	-	N	L					
	40	165	5.7	5.4	D	1	-	-	R	•	-	-	-	N	M					
65	25	180	21	5.3	D	1	-	-	R	•	-	-	-	O	K					
	32	180	17	5.9	D	1	-	-	R	•	-	-	-	O	L					
	40	180	14	6.2	D	1	-	-	R	•	-	-	-	O	M					
	50	185	7.9	7.1	D	1	-	-	R	•	-	-	-	O	N					
80	(25)	185		6.3	D	1	-	-	R	C	-	-	-	P	K					
	(32)	185		7.0	D	1	-	-	R	C	-	-	-	P	L					
	40	185	20	7.3	D	1	-	-	R	•	-	-	-	P	M					
	50	190	14	8.1	D	1	-	-	R	•	-	-	-	P	N					
100	65	190	6.1	8.8	D	1	-	-	R	•	-	-	-	P	O					
	40	200	32	8.2	D	1	-	-	R	•	-	-	-	Q	M					
	50	200	26	8.9	D	1	-	-	R	•	-	-	-	Q	N					
	65	200	19	9.7	D	1	-	-	R	•	-	-	-	Q	O					
	80	205	13	10	D	1	-	-	R	•	-	-	-	Q	P					
125	65	230	31	12	D	1	-	-	R	•	-	-	-	R	O					
	80	235	25	13	D	1	-	-	R	•	-	-	-	R	P					
	100	235	12	14	D	1	-	-	R	•	-	-	-	R	Q					
150	(50)	250		14	D	1	-	-	R	C	-	-	-	S	N					
	80	250	40	15	D	1	-	-	R	•	-	-	-	S	P					
	100	250	26	16	D	1	-	-	R	•	-	-	-	S	Q					
	125	250	14	18	D	1	-	-	R	•	-	-	-	S	R					
200	100	270	52	22	D	1	-	-	R	•	-	-	-	T	Q					
	125	270	40	24	D	1	-	-	R	•	-	-	-	T	R					
	150	270	25	26	D	1	-	-	R	•	-	-	-	T	S					
250	(100)	305		28	D	1	-	-	R	C	-	-	-	U	Q					
	125	305	67	30	D	1	-	-	R	•	-	-	-	U	R					
	150	305	52	32	D	1	-	-	R	•	-	-	-	U	S					
	200	310	27	38	D	1	-	-	R	•	-	-	-	U	T					
300	150	330	78	29	D	1	-	-	R	•	-	-	-	V	S					
	200	335	52	44	D	1	-	-	R	•	-	-	-	V	T					
	250	340	25	50	D	1	-	-	R	•	-	-	-	V	U					
350	200	465	68	63	D	1	-	-	R	•	-	-	-	W	T					
	250	465	41	69	D	1	-	-	R	•	-	-	-	W	U					
	300	465	14	74	D	1	-	-	R	•	-	-	-	W	V					
400	250	495	64	84	D	1	-	-	R	•	-	-	-	X	U					
	300	495	39	90	D	1	-	-	R	•	-	-	-	X	V					
	350	495	25	102	D	1	-	-	R	•	-	-	-	X	W					
450	300	495	64	101	D	1	-	-	R	•	-	-	-	Y	V					
	350	495	49	112	D	1	-	-	R	•	-	-	-	Y	W					
	400	495	24	125	D	1	-	-	R	•	-	-	-	Y	X					
500	400	650	49	135	D	1	-	-	R	•	-	-	-	Z	X					
	450	650	24	146	D	1	-	-	R	•	-	-	-	Z	Y					
600	(500)	720		270	D	1	-	-	R	C	-	-	-	B	Z					

REDUCING FLANGES

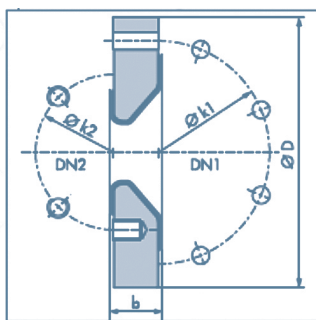


LININGS

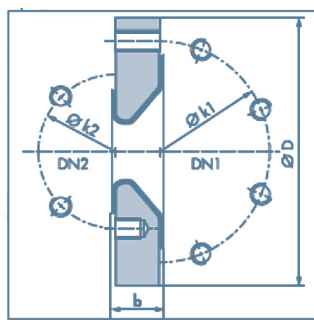
VIRGIN PTFE :
DN 20 – DN 80

ANTI STATIC PTFE, C4 = A :
DN 20 – DN 80

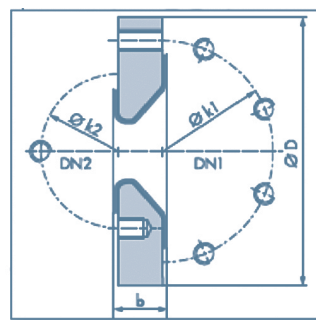
DN1	DN2	ØD mm	b mm	DN1			DN2			Type	Weight kg	REFERENCE																
				Ø k1 mm	Holes			Ø k2 mm	Holes																			
					nb	Ø	Bolting		nb			Bolting	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
20	15	105	35	75	4 x		M12	65	4 x	M12	C	1.9	D	1	-	-	B	R	-	-	-	J	H					
25	15	115	35	85	4 x		M12	65	4 x	M12	C	2.1	D	1	-	-	B	R	-	-	-	K	H					
	20	115	35	85	4 x		M12	75	4 x	M12	C	2.0	D	1	-	-	B	R	-	-	-	K	J					
32	15	140	35	100	4 x		M16	65	4 x	M12	C	3.3	D	1	-	-	B	R	-	-	-	L	H					
	20	140	35	100	4 x		M16	75	4 x	M12	C	3.2	D	1	-	-	B	R	-	-	-	L	J					
	25	140	35	100	4 x		M16	85	4 x	M12	C	3.1	D	1	-	-	B	R	-	-	-	L	K					
40	15	150	35	110	4 x		M16	65	4 x	M12	B	4.1	D	1	-	-	B	R	-	-	-	M	H					
	20	150	35	110	4 x		M16	75	4 x	M12	B	4.0	D	1	-	-	B	R	-	-	-	M	J					
	25	150	35	110	4 x		M16	85	4 x	M12	C	3.9	D	1	-	-	B	R	-	-	-	M	K					
	32	150	35	110	4 x		M16	100	4 x	M16	C	3.8	D	1	-	-	B	R	-	-	-	M	L					
50	15	165	35	125	4 x		M16	65	4 x	M12	B	4.8	D	1	-	-	B	R	-	-	-	N	H					
	20	165	35	125	4 x		M16	75	4 x	M12	B	4.8	D	1	-	-	B	R	-	-	-	N	J					
	25	165	35	125	4 x		M16	85	4 x	M12	B	4.7	D	1	-	-	B	R	-	-	-	N	K					
	32	165	35	125	4 x		M16	100	4 x	M12	C	4.6	D	1	-	-	B	R	-	-	-	N	L					
	40	165	35	125	4 x		M16	110	4 x	M16	C	4.5	D	1	-	-	B	R	-	-	-	N	M					
65	20	185	35	145	4 x		M16	75	4 x	M12	B	5.8	D	1	-	-	B	R	-	-	-	O	J					
	25	185	35	145	4 x		M16	85	4 x	M12	B	5.7	D	1	-	-	B	R	-	-	-	O	K					
	32	185	35	145	4 x		M16	100	4 x	M16	B	5.6	D	1	-	-	B	R	-	-	-	O	L					
	40	185	35	145	4 x		M16	110	4 x	M16	C	5.4	D	1	-	-	B	R	-	-	-	O	M					
	50	185	35	145	4 x		M16	125	4 x	M16	C	5.3	D	1	-	-	B	R	-	-	-	O	N					
80	15	200	35	160	8 x	18		65	4 x	M12	A	6.7	D	1	-	-	B	R	-	-	-	P	H					
	20	200	35	160	8 x	18		75	4 x	M12	A	6.6	D	1	-	-	B	R	-	-	-	P	J					
	25	200	35	160	8 x	18		85	4 x	M12	A	6.5	D	1	-	-	B	R	-	-	-	P	K					
	32	200	35	160	8 x		M16	100	4 x	M16	B	6.4	D	1	-	-	B	R	-	-	-	P	L					
	40	200	35	160	8 x		M16	110	4 x	M16	B	6.2	D	1	-	-	B	R	-	-	-	P	M					
	50	200	35	160	8 x		M16	125	4 x	M16	B	6.0	D	1	-	-	B	R	-	-	-	P	N					
	65	200	35	160	8 x		M16	145	4 x	M16	B	5.7	D	1	-	-	B	R	-	-	-	P	O					



Tapped hole / through hole
Type A



Tapped hole
Type B



Tapped holes on center-line/
off center-line Type C

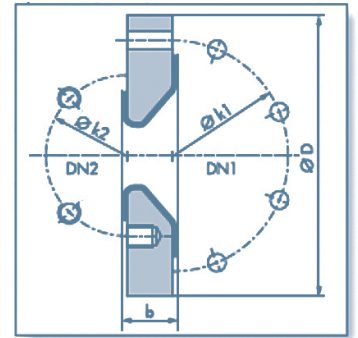
REDUCING FLANGES



LININGS

VIRGIN PTFE :
DN 100 – DN 250

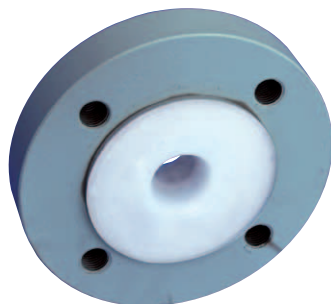
ANTI STATIC PTFE, C4 = A :
DN 100 – DN 250



Tapped hole / through hole
Type A

DN1	DN2	ØD mm	b mm	DN1				DN2					REFERENCE															
				Ø k1 mm	Holes			Ø k2 mm	Holes				Type	Weight kg	1	2	3	4	5	6	7	8	9	10	11	12	13	14
					nb	Ø	Bolting		nb	Bolting																		
100	15	220	45	180	8 x	18		65	4 x	M12	A	11	D	1	-	-	B	R	-	-	-	Q	H					
	20	220	45	180	8 x	18		75	4 x	M12	A	11	D	1	-	-	B	R	-	-	-	Q	J					
	25	220	45	180	8 x	18		85	4 x	M12	A	11	D	1	-	-	B	R	-	-	-	Q	K					
	32	220	45	180	8 x	18		100	4 x	M16	A	11	D	1	-	-	B	R	-	-	-	Q	L					
	40	220	45	180	8 x	18		110	4 x	M16	A	11	D	1	-	-	B	R	-	-	-	Q	M					
	50	220	45	180	8 x		M16	125	4 x	M16	B	10	D	1	-	-	B	R	-	-	-	Q	N					
	65	220	45	180	8 x		M16	145	4 x	M16	B	10	D	1	-	-	B	R	-	-	-	Q	O					
	80	220	45	180	8 x		M16	160	8 x	M12	C	10	D	1	-	-	B	R	-	-	-	Q	P					
125	32	250	45	210	8 x	18		100	4 x	M16	A	13	D	1	-	-	B	R	-	-	-	R	L					
	40	250	45	210	8 x	18		110	4 x	M16	A	13	D	1	-	-	B	R	-	-	-	R	M					
	50	250	45	210	8 x	18		125	4 x	M16	A	12	D	1	-	-	B	R	-	-	-	R	N					
	65	250	45	210	8 x		M16	145	4 x	M16	B	12	D	1	-	-	B	R	-	-	-	R	O					
	80	250	45	210	8 x		M16	160	8 x	M16	B	12	D	1	-	-	B	R	-	-	-	R	P					
	100	250	45	210	8 x		M16	180	8 x	M16	C	12	D	1	-	-	B	R	-	-	-	R	Q					
150	25	285	45	240	8 x	22		85	4 x	M12		17	D	1	-	-	B	R	-	-	-	S	K					
	32	285	45	240	8 x	22		100	4 x	M16	A	17	D	1	-	-	B	R	-	-	-	S	L					
	40	285	45	240	8 x	22		110	4 x	M16	A	17	D	1	-	-	B	R	-	-	-	S	M					
	50	285	45	240	8 x	22		125	4 x	M16	A	17	D	1	-	-	B	R	-	-	-	S	N					
	65	285	45	240	8 x	22		145	4 x	M16	A	17	D	1	-	-	B	R	-	-	-	S	O					
	80	285	45	240	8 x	22		160	8 x	M16	A	16	D	1	-	-	B	R	-	-	-	S	P					
	100	285	45	240	8 x		M20	180	8 x	M16	B	15	D	1	-	-	B	R	-	-	-	S	Q					
	125	285	45	240	8 x		M20	210	8 x	M20	B	14	D	1	-	-	B	R	-	-	-	S	R					
200	25	340	45	295	8 x	22		85	4 x	M12	C	25	D	1	-	-	B	R	-	-	-	T	K					
	32	340	45	295	8 x	22		100	4 x	M16	A	25	D	1	-	-	B	R	-	-	-	T	L					
	40	340	45	295	8 x	22		110	4 x	M16	A	25	D	1	-	-	B	R	-	-	-	T	M					
	50	340	45	295	8 x	22		125	4 x	M16	A	25	D	1	-	-	B	R	-	-	-	T	N					
	65	340	45	295	8 x	22		145	4 x	M16	A	25	D	1	-	-	B	R	-	-	-	T	O					
	80	340	45	295	8 x	22		160	8 x	M16	A	24	D	1	-	-	B	R	-	-	-	T	P					
	100	340	45	295	8 x	22		180	8 x	M16	A	23	D	1	-	-	B	R	-	-	-	T	Q					
	125	340	45	295	8 x	22		210	8 x	M20	B	22	D	1	-	-	B	R	-	-	-	T	R					
	150	340	45	295	8 x		M20	240	8 x	M20	B	20	D	1	-	-	B	R	-	-	-	T	S					
250	40	395	45	350	12 x	22		110	4 x	M16	A	34	D	1	-	-	B	R	-	-	-	U	M					
	50	395	45	350	12 x	22		125	4 x	M16	A	34	D	1	-	-	B	R	-	-	-	U	N					
	65	395	45	350	12 x	22		145	4 x	M16	A	34	D	1	-	-	B	R	-	-	-	U	O					
	80	395	45	350	12 x	22		160	8 x	M16	A	33	D	1	-	-	B	R	-	-	-	U	P					

REDUCING FLANGES

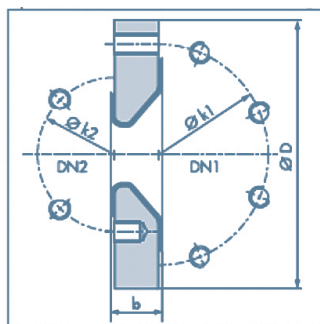


LININGS

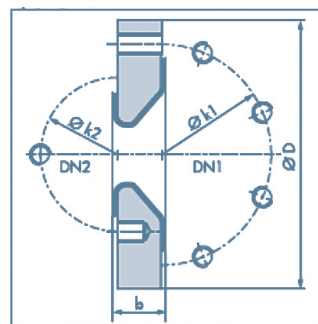
VIRGIN PTFE :
DN 250 – DN 600

ANTI STATIC PTFE, C4 = A :
DN 250 – DN 400

DN1	DN2	Ø D mm	b mm	DN1			DN2			Type	Weight kg	REFERENCE															
				Ø k1 mm	Holes		Ø k2 mm	Holes				1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
					nb	Ø		Bolting	nb																		
250	100	395	45	350	12 x	22		180	8 x	M16	A	33	D	1	-	-	B	R	-	-	-	U	Q				
	125	395	45	350	12 x	22		210	8 x	M20	A	32	D	1	-	-	B	R	-	-	-	U	R				
	150	395	45	350	12 x	22		240	8 x	M20	A	30	D	1	-	-	B	R	-	-	-	U	S				
	200	395	45	350	12 x		M20	295	8 x	M20	B	27	D	1	-	-	B	R	-	-	-	U	T				
300	50	445	50	400	12 x	22		125	4 x	M16	A	55	D	1	-	-	B	R	-	-	-	V	N				
	80	445	50	400	12 x	22		160	8 x	M16	A	54	D	1	-	-	B	R	-	-	-	V	P				
	100	445	50	400	12 x	22		180	8 x	M16	A	54	D	1	-	-	B	R	-	-	-	V	Q				
	125	445	50	400	12 x	22		210	8 x	M20	A	54	D	1	-	-	B	R	-	-	-	V	R				
	150	445	50	400	12 x	22		240	8 x	M20	A	49	D	1	-	-	B	R	-	-	-	V	S				
	200	445	50	400	12 x	22		295	8 x	M20	A	44	D	1	-	-	B	R	-	-	-	V	T				
	250	445	50	400	12 x		M20	350	12 x	M20	C	43	D	1	-	-	B	R	-	-	-	V	U				
350	150	505	50	460	16 x	22		240	8 x	M20	A	60	D	1	-	-	B	R	-	-	-	W	S				
	200	505	50	460	16 x	22		295	8 x	M20	A	56	D	1	-	-	B	R	-	-	-	W	T				
	250	505	50	460	16 x	22		350	12 x	M20	A	53	D	1	-	-	B	R	-	-	-	W	U				
	300	505	50	460	16 x		M20	400	12 x	M20	B	50	D	1	-	-	B	R	-	-	-	W	V				
400	200	565	50	515	16 x	26		295	8 x	M20	A	75	D	1	-	-	B	R	-	-	-	X	T				
	250	565	50	515	16 x	26		350	12 x	M20	A	71	D	1	-	-	B	R	-	-	-	X	U				
	300	565	50	515	16 x	26		400	12 x	M20	A	67	D	1	-	-	B	R	-	-	-	X	V				
	350	565	50	515	16 x		M24	460	16 x	M20	B	64	D	1	-	-	B	R	-	-	-	X	W				
450	250	615	50	565	20 x	26		350	12 x	M20	A	78	D	1	-	-	B	R	-	-	-	Y	U				
	300	615	50	565	20 x	26		400	12 x	M20	A	75	D	1	-	-	B	R	-	-	-	Y	V				
	350	615	50	565	20 x	26		460	16 x	M20	A	73	D	1	-	-	B	R	-	-	-	Y	W				
	400	615	50	565	20 x		M24	515	16 x	M24	B	71	D	1	-	-	B	R	-	-	-	Y	X				
500	150	670	50	620	20 x	26		240	8 x	M20	A	124	D	1	-	-	B	R	-	-	-	Z	S				
	200	670	50	620	20 x	26		295	8 x	M20	A	114	D	1	-	-	B	R	-	-	-	Z	T				
	250	670	50	620	20 x	26		350	12 x	M20	A	107	D	1	-	-	B	R	-	-	-	Z	U				
	300	670	50	620	20 x	26		400	12 x	M20	A	98	D	1	-	-	B	R	-	-	-	Z	V				
	350	670	50	620	20 x	26		460	16 x	M20	A	93	D	1	-	-	B	R	-	-	-	Z	W				
	400	670	50	620	20 x	26		515	16 x	M24	A	88	D	1	-	-	B	R	-	-	-	Z	X				
	450	670	50	620	20 x		M24	565	20 x	M24	C	83	D	1	-	-	B	R	-	-	-	Z	Y				
600	500	780	50	725	20 x	30		620	20 x	M24	A	78	D	1	-	-	B	R	-	-	-	B	Z				



Tapped holes
Type B



Tapped holes on center-line/
off center-line Type C

INSTRUMENT TEES



LININGS

VIRGIN PFA :

DN 15 – DN 200

ANTI STATIC PFA, C4 = A :

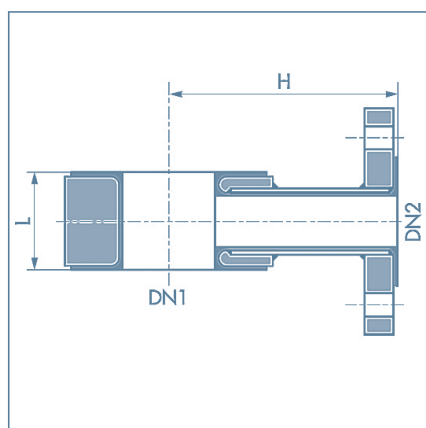
DN 15 – DN 200

VIRGIN PTFE :

DN 250 – DN 600

ANTI STATIC PTFE, C4 = A :

DN 250 – DN 400



Fix flanges

* Assembly only possible using 4 bolts

** In 2 parts

DN1	DN2	L mm	H mm	Weight kg	REFERENCE															
					1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
25	15	50	90	1.9	D	1	-	-	P	I	-	-	-	K	H					
	20	50	90	1.9	D	1	-	-	P	I	-	-	-	K	J					
	25	50	90	2.0	D	1	-	-	P	I	-	-	-	K	K					
32	15	50	100	2.6	D	1	-	-	P	I	-	-	-	L	H					
	20	50	100	2.7	D	1	-	-	P	I	-	-	-	L	J					
	25	50	100	2.8	D	1	-	-	P	I	-	-	-	L	K					
40	15	50	110	2.7	D	1	-	-	P	I	-	-	-	M	H					
	20	50	110	2.8	D	1	-	-	P	I	-	-	-	M	J					
	25	50	110	3.0	D	1	-	-	P	I	-	-	-	M	K					
	40	75	110	4.6	D	1	-	-	P	I	-	-	-	M	M					
50	15	50	115	4.7	D	1	-	-	P	I	-	-	-	N	H					
	20	50	115	4.8	D	1	-	-	P	I	-	-	-	N	J					
	25	50	115	5.0	D	1	-	-	P	I	-	-	-	N	K					
	40	75	115	8.4	D	1	-	-	P	I	-	-	-	N	M					
	50	90	115	9.9	D	1	-	-	P	I	-	-	-	N	N					
65	15	50	125	5.0	D	1	-	-	P	I	-	-	-	O	H					
	20	50	125	5.1	D	1	-	-	P	I	-	-	-	O	J					
	25	50	125	5.5	D	1	-	-	P	I	-	-	-	O	K					
	40	75	125	9.2	D	1	-	-	P	I	-	-	-	O	M					
	50	90	125	11	D	1	-	-	P	I	-	-	-	O	N					
80	15	50	135	5.7	D	1	-	-	P	I	-	-	-	P	H					
	20	50	135	5.8	D	1	-	-	P	I	-	-	-	P	J					
	25	50	135	6.0	D	1	-	-	P	I	-	-	-	P	K					
	40*	75	135	11	D	1	-	-	P	I	-	-	-	P	M					
	50*	90	135	12	D	1	-	-	P	I	-	-	-	P	N					
100	15	50	150	6.7	D	1	-	-	P	I	-	-	-	Q	H					
	20	50	150	6.8	D	1	-	-	P	I	-	-	-	Q	J					
	25	50	150	7.0	D	1	-	-	P	I	-	-	-	Q	K					
	40*	75	150	12	D	1	-	-	P	I	-	-	-	Q	M					
	50*	90	150	13	D	1	-	-	P	I	-	-	-	Q	N					
125	25	50	160	8.6	D	1	-	-	P	I	-	-	-	R	K					
	40	75	160	13	D	1	-	-	P	I	-	-	-	R	M					
	50	90	160	21	D	1	-	-	P	I	-	-	-	R	N					
150	15	50	180	8.9	D	1	-	-	P	I	-	-	-	S	H					
	20	50	180	9.0	D	1	-	-	P	I	-	-	-	S	J					
	25	50	180	10	D	1	-	-	P	I	-	-	-	S	K					
	40	75	180	15	D	1	-	-	P	I	-	-	-	S	M					
	50	90	180	16	D	1	-	-	P	I	-	-	-	S	N					
200	15	50	210	10	D	1	-	-	P	I	-	-	-	T	H					
	20	50	210	10	D	1	-	-	P	I	-	-	-	T	J					
	25	50	210	10	D	1	-	-	P	I	-	-	-	T	K					
	40	75	210	16	D	1	-	-	P	I	-	-	-	T	M					
	50	90	210	17	D	1	-	-	P	I	-	-	-	T	N					
250	25	90	240	24	D	1	-	-	P	I	-	-	-	U	K					
	40	110	240	26	D	1	-	-	P	I	-	-	-	U	M					
	50	120	240	27	D	1	-	-	P	I	-	-	-	U	N					
300	25	90	340	26	D	1	-	-	P	I	-	-	-	V	K					
	40	110	340	29	D	1	-	-	P	I	-	-	-	V	M					
	50	120	340	30	D	1	-	-	P	I	-	-	-	V	N					
350	25	90	375	41	D	1	-	-	P	I	-	-	-	W	K					
	40	110	375	44	D	1	-	-	P	I	-	-	-	W	M					
	50	120	375	45	D	1	-	-	P	I	-	-	-	W	N					
400	25	90	390	46	D	1	-	-	P	I	-	-	-	X	K					
	40	110	390	48	D	1	-	-	P	I	-	-	-	X	M					
	50	120	390	50	D	1	-	-	P	I	-	-	-	X	N					
450	25	90	419	51	D	1	-	-	P	I	-	-	-	Y	K					
	40	110	419	54	D	1	-	-	P	I	-	-	-	Y	M					
	50	120	419	55	D	1	-	-	P	I	-	-	-	Y	N					
500	25**	90	450	60	D	1	-	-	P	I	-	-	-	Z	K					
	40**	110	450	63	D	1	-	-	P	I	-	-	-	Z	M					
	50**	120	450	64	D	1	-	-	P	I	-	-	-	Z	N					
600	25**	90	559	69	D	1	-	-	P	I	-	-	-	Z	K					
	40**	110	559	72	D	1	-	-	P	I	-	-	-	Z	M					
	50**	120	559	73	D	1	-	-	P	I	-	-	-	B	N					

CROSSES



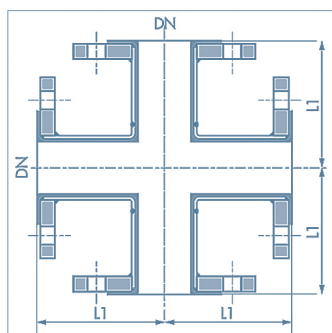
LININGS

VIRGIN PFA :
DN 15 – DN 80

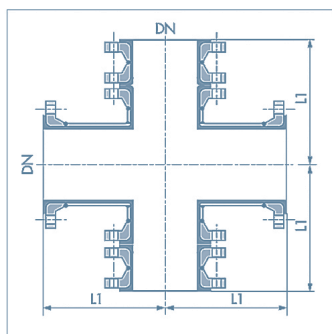
ANTI STATIC PFA :
DN 15 – DN 80

VIRGIN PTFE :
DN 100 – DN 600

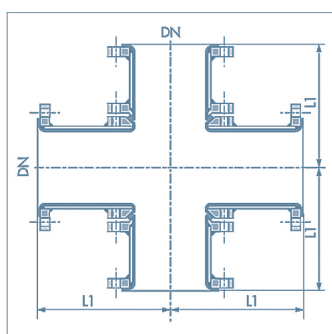
ANTI STATIC PTFE :
DN 100 – DN 400



Fix flanges
Type P



* Fix flanges
Type W



** Fix flanges
Type P

DN	L1 mm	Weight kg	REFERENCE															
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
15	85	3.4	D	1	-	-	X	E	-	-	-	H						
20	95	4.7	D	1	-	-	X	E	-	-	-	J						
25	110	5.9	D	1	-	-	X	E	-	-	-	K						
32	130	8.8	D	1	-	-	X	E	-	-	-	L						
40	150	10	D	1	-	-	X	E	-	-	-	M						
50	120	12	D	1	-	-	X	E	-	-	-	N						
65	140	16	D	1	-	-	X	E	-	-	-	O						
80	165	21	D	1	-	-	X	E	-	-	-	P						
100	205	27	D	1	-	-	X	E	-	-	-	Q						
125	245	39	D	1	-	-	X	E	-	-	-	R						
150	285	53	D	1	-	-	X	E	-	-	-	S						
200	365	116	D	1	-	-	X	E	-	-	-	T						
250*	450	165	D	1	-	-	X	E	-	-	-	U						
300*	525	219	D	1	-	-	X	E	-	-	-	V						
350*	600	315	D	1	-	-	X	E	-	-	-	W						
400*	680	435	D	1	-	-	X	E	-	-	-	X						
450**	680	525	D	1	-	-	X	E	-	-	-	Y						
500**	830	590	D	1	-	-	X	E	-	-	-	Z						
600**	830	720	D	1	-	-	X	E	-	-	-	B						

Standard construction :

- Type P: DN 15 to DN 80 and DN 450 to DN 600
- Type W : DN 100 to DN 400

On request :

- 4 loose flanges : C12 = 4

REDUCING CROSSES

LININGS

VIRGIN PFA : DN 20 – DN 80

ANTI STATIC PFA, C4 = A :
DN 20 – DN 80

VIRGIN PTFE : DN 100 – DN 600

ANTI STATIC PTFE, C4 = A :
DN 100 – DN 600

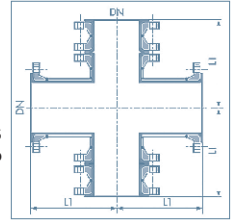
Standard construction :

- Type P : fix flanges

On requests :

- 4 loose flanges : C12 = 4

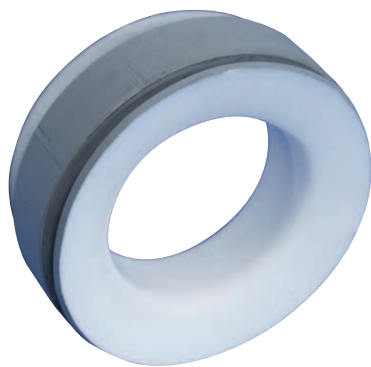
Fix flanges
Type P



DN1	DN2	L1 mm	L2 mm	Weight kg	REFERENCE															
					1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
20	15	95	85	4.1	D	1	-	-	X	R	-	-	-	J	H					
25	15	110	85	4.7	D	1	-	-	X	R	-	-	-	K	H					
	20	110	95	5.3	D	1	-	-	X	R	-	-	-	K	J					
32	15	130	85	6.1	D	1	-	-	X	R	-	-	-	L	H					
	20	130	95	6.8	D	1	-	-	X	R	-	-	-	L	J					
40	25	130	110	7.3	D	1	-	-	X	R	-	-	-	L	K					
	15	150	85	6.9	D	1	-	-	X	R	-	-	-	M	H					
40	20	150	95	7.5	D	1	-	-	X	R	-	-	-	M	J					
	25	150	110	8.1	D	1	-	-	X	R	-	-	-	M	K					
50	32	150	130	9.5	D	1	-	-	X	R	-	-	-	M	L					
	15	120	85	8.2	D	1	-	-	X	R	-	-	-	N	H					
50	20	120	95	8.9	D	1	-	-	X	R	-	-	-	N	J					
	25	120	110	9.5	D	1	-	-	X	R	-	-	-	N	K					
65	32	120	130	10	D	1	-	-	X	R	-	-	-	N	L					
	40	120	150	11	D	1	-	-	X	R	-	-	-	N	M					
65	25	140	110	11	D	1	-	-	X	R	-	-	-	O	K					
	32	140	130	12	D	1	-	-	X	R	-	-	-	O	L					
80	40	140	150	13	D	1	-	-	X	R	-	-	-	O	M					
	50	140	120	14	D	1	-	-	X	R	-	-	-	O	N					
80	25	165	110	13	D	1	-	-	X	R	-	-	-	P	K					
	32	165	130	15	D	1	-	-	X	R	-	-	-	P	L					
80	40	165	150	16	D	1	-	-	X	R	-	-	-	P	M					
	50	165	120	17	D	1	-	-	X	R	-	-	-	P	N					
100	65	165	140	19	D	1	-	-	X	R	-	-	-	P	O					
	40	205	150	19	D	1	-	-	X	R	-	-	-	Q	M					
100	50	205	120	20	D	1	-	-	X	R	-	-	-	Q	N					
	65	205	140	22	D	1	-	-	X	R	-	-	-	Q	O					
125	80	205	165	24	D	1	-	-	X	R	-	-	-	Q	P					
	40	245	150	25	D	1	-	-	X	R	-	-	-	R	M					
125	50	245	120	26	D	1	-	-	X	R	-	-	-	R	N					
	65	245	140	28	D	1	-	-	X	R	-	-	-	R	O					
150	80	245	165	30	D	1	-	-	X	R	-	-	-	R	P					
	100	245	205	33	D	1	-	-	X	R	-	-	-	R	Q					
150	40	285	150	33	D	1	-	-	X	R	-	-	-	S	M					
	50	285	120	34	D	1	-	-	X	R	-	-	-	S	N					
150	65	285	140	35	D	1	-	-	X	R	-	-	-	S	O					
	80	285	165	38	D	1	-	-	X	R	-	-	-	S	P					
150	100	285	205	40	D	1	-	-	X	R	-	-	-	S	Q					
	125	285	245	46	D	1	-	-	X	R	-	-	-	S	R					

DN1	DN2	L1 mm	L2 mm	Weight kg	REFERENCE															
					1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
200	80	365	165	82	D	1	-	-	X	R	-	-	-	T	P					
	100	365	205	84	D	1	-	-	X	R	-	-	-	T	Q					
	125	365	245	90	D	1	-	-	X	R	-	-	-	T	R					
	150*	365	285	96	D	1	-	-	X	R	-	-	-	T	S					
250	100	450	205	86	D	1	-	-	X	R	-	-	-	U	Q					
	125	450	245	92	D	1	-	-	X	R	-	-	-	U	R					
	150*	450	285	98	D	1	-	-	X	R	-	-	-	U	S					
	200*	450	365	117	D	1	-	-	X	R	-	-	-	U	T					
300	100	525	205	120	D	1	-	-	X	R	-	-	-	V	Q					
	150*	525	285	126	D	1	-	-	X	R	-	-	-	V	S					
	200*	525	365	144	D	1	-	-	X	R	-	-	-	V	T					
	250*	525	450	191	D	1	-	-	X	R	-	-	-	V	U					
350	100	600	205	163	D	1	-	-	X	R	-	-	-	W	Q					
	150*	600	285	169	D	1	-	-	X	R	-	-	-	W	S					
	200*	600	365	207	D	1	-	-	X	R	-	-	-	W	T					
	250*	600	450	233	D	1	-	-	X	R	-	-	-	W	U					
400	300*	600	525	260	D	1	-	-	X	R	-	-	-	W	V					
	250	680	450	525	D	1	-	-	X	R	-	-	-	Y	U					
	300	680	525	351	D	1	-	-	X	R	-	-	-	Y	V					
	350	680	600	409	D	1	-	-	X	R	-	-	-	Y	W					
450	400	680	680	421	D	1	-	-	X	R	-	-	-	Y	X					
	200	830	365	266	D	1	-	-	X	R	-	-	-	Z	T					
500	250	830	450	291	D	1	-	-	X	R	-	-	-	Z	U					
	300	830	525	316	D	1	-	-	X	R	-	-	-	Z	V					
550	350	830	600	367	D	1	-	-	X	R	-	-	-	Z	W					
	400	830	680	431	D	1	-	-	X	R	-	-	-	Z	X					
600	450	830	680	488	D	1	-	-	X	R	-	-	-	Z	Y					
	250	830	450	510	D	1	-	-	X	R	-	-	-	B	U					
600	300	830	525	530	D	1	-	-	X	R	-	-	-	B	V					
	350	830	600	550	D	1	-	-	X	R	-	-	-	B	W					
600	400	830	680	590	D	1	-	-	X	R	-	-	-	B	X					
	450	830	680	610	D	1	-	-	X	R	-	-	-	B	Y					
600	500	830	830	690	D	1	-	-	X	R	-	-	-	B	Z					
	350	830	600	550	D	1	-	-	X	R	-	-	-	B	W					
600	400	830	680	590	D	1	-	-	X	R	-	-	-	B	X					
	450	830	680	610	D	1	-	-	X	R	-	-	-	B	Y					
600	500	830	830	690	D	1	-	-	X	R	-	-	-	B	Z					

SPACERS



Shape G

LININGS

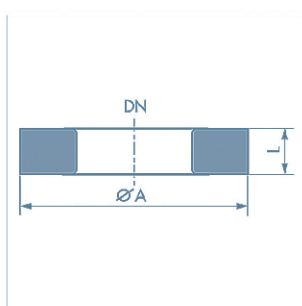
VIRGIN PTFE :
DN 15 – DN 600

ANTI STATIC PTFE, C4 =A :
DN 15 – DN 400

DN	ØA	F (mm)	G (mm)			H (mm)		REFERENCE															
			L	L mini	L maxi	L mini	L maxi	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
15	51	20	15	50	50	85	85	D	1	-	-	•	-	x	x	x	H						
20	60	20	15	50	50	85	85	D	1	-	-	•	-	x	x	x	J						
25	70	20	15	50	50	85	85	D	1	-	-	•	-	x	x	x	K						
32	82	20	15	60	60	85	85	D	1	-	-	•	-	x	x	x	L						
40	92	20	15	60	60	90	90	D	1	-	-	•	-	x	x	x	M						
50	107	20	15	60	60	100	100	D	1	-	-	•	-	x	x	x	N						
65	127	20	15	60	60	100	100	D	1	-	-	•	-	x	x	x	O						
80	142	20	15	60	60	110	110	D	1	-	-	•	-	x	x	x	P						
100	162	20	15	60	60	113	113	D	1	-	-	•	-	x	x	x	Q						
125	192	20	15	60	60	117	117	D	1	-	-	•	-	x	x	x	R						
150	218	20	20	60	60	117	117	D	1	-	-	•	-	x	x	x	S						
200	273	20	20	70	70	130	130	D	1	-	-	•	-	x	x	x	T						
250	328	20	20	70	70	143	143	D	1	-	-	•	-	x	x	x	U						
300	378	20	20	70	70	143	143	D	1	-	-	•	-	x	x	x	V						
350	438	20	20	70	70	143	143	D	1	-	-	•	-	x	x	x	W						
400	488	20	20	80	80	147	147	D	1	-	-	•	-	x	x	x	X						
450	539	20	20	80	80	147	147	D	1	-	-	•	-	x	x	x	Y						
500	594	20	20	80	80	156	156	D	1	-	-	•	-	x	x	x	Z						
600	695	20	20	80	80	172	172	D	1	-	-	•	-	x	x	x	B						

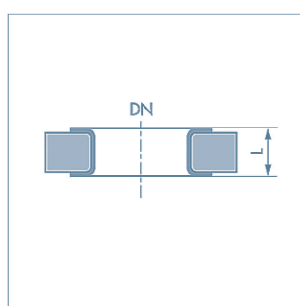
- = F : Spacers shape F
- = G : Spacers shape G
- = E : Spacers shape H
- xxxx : length in mm

Massive PTFE spacer



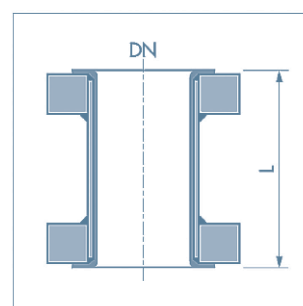
Shape F

Steel lined spacer



Shape G

Tube lined spacer



Shape H

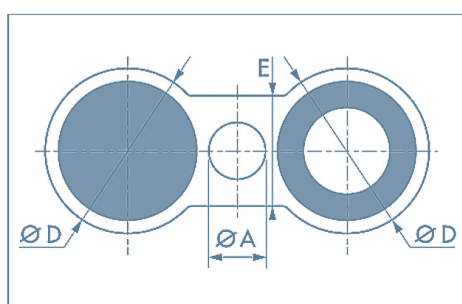
LININGS

VIRGIN PTFE :
DN 20 – DN 600

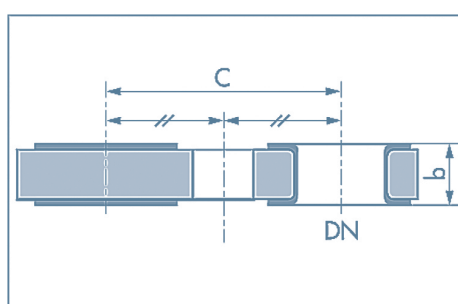
ANTI STATIC PTFE, C4 = A :
DN 20 – DN 400

DN	ØD	C	E	ØA	b	Weight	REFERENCE															
	mm	mm	mm	mm	mm	kg	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
20	61	75	35	16	14	1.9	D	1	-	-	O	B	-	-	-	J						
25	71	85	40	16	14	2.6	D	1	-	-	O	B	-	-	-	K						
32	82	100	50	19	14	3.9	D	1	-	-	O	B	-	-	-	L						
40	92	110	55	19	14	4.4	D	1	-	-	O	B	-	-	-	M						
50	107	125	65	19	14	5.9	D	1	-	-	O	B	-	-	-	N						
65	127	145	70	19	14	7.4	D	1	-	-	O	B	-	-	-	O						
80	142	160	40	19	14	8.5	D	1	-	-	O	B	-	-	-	P						
100	162	180	50	19	18	9.8	D	1	-	-	O	B	-	-	-	Q						
125	192	210	60	19	18	14	D	1	-	-	O	B	-	-	-	R						
150	218	240	65	24	18	19	D	1	-	-	O	B	-	-	-	S						
200	273	295	80	24	21	28	D	1	-	-	O	B	-	-	-	T						
250	328	350	65	24	23	39	D	1	-	-	O	B	-	-	-	U						
300	378	400	80	24	26	48	D	1	-	-	O	B	-	-	-	V						
350	438	460	65	24	28	64	D	1	-	-	O	B	-	-	-	W						
400	488	515	70	28	30	79	D	1	-	-	O	B	-	-	-	X						
450	538	565	60	28	30	94	D	1	-	-	O	B	-	-	-	Y						
500	593	620	70	28	33	123	D	1	-	-	O	B	-	-	-	Z						
600	695	725	80	32	38	191	D	1	-	-	O	E	-	-	-	B						

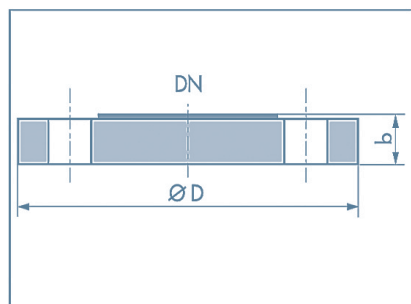
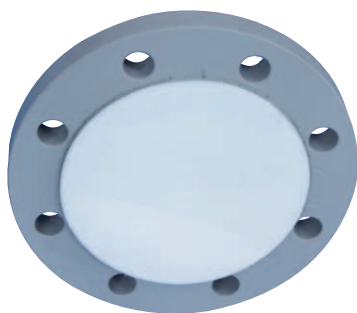
Spectacle blind (front view)



Spectacle blind (sectional view)



BLIND FLANGES



LININGS

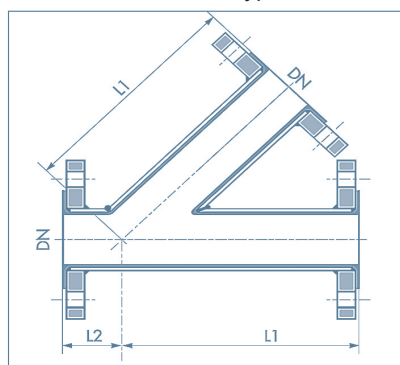
VIRGIN PTFE :
DN 15 – DN 600

ANTI STATIC, C4 = A :
DN 15 – DN 400

DN	ØD	b	Weight	REFERENCE															
	mm	mm	kg	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
15	95	18	0.7	D	1	-	-	B	P	-	-	-	H						
20	105	20	1.0	D	1	-	-	B	P	-	-	-	J						
25	115	20	1.2	D	1	-	-	B	P	-	-	-	K						
32	140	20	1.3	D	1	-	-	B	P	-	-	-	L						
40	150	20	2.1	D	1	-	-	B	P	-	-	-	M						
50	165	22	2.9	D	1	-	-	B	P	-	-	-	N						
65	185	22	3.7	D	1	-	-	B	P	-	-	-	O						
80	200	24	4.9	D	1	-	-	B	P	-	-	-	P						
100	220	24	5.8	D	1	-	-	B	P	-	-	-	Q						
125	250	26	8.6	D	1	-	-	B	P	-	-	-	R						
150	285	26	10	D	1	-	-	B	P	-	-	-	S						
200	340	28	16	D	1	-	-	B	P	-	-	-	T						
250	395	30	24	D	1	-	-	B	P	-	-	-	U						
300	445	30	31	D	1	-	-	B	P	-	-	-	V						
350	505	30	41	D	1	-	-	B	P	-	-	-	W						
400	565	30	50	D	1	-	-	B	P	-	-	-	X						
450	615	30	65	D	1	-	-	B	P	-	-	-	Y						
500	670	31	76	D	1	-	-	B	P	-	-	-	Z						
600	780	36	132	D	1	-	-	B	P	-	-	-	B						

LATERAL TEES

Lateral tees Type P



Standard construction :
• Type P : fix flanges

LININGS

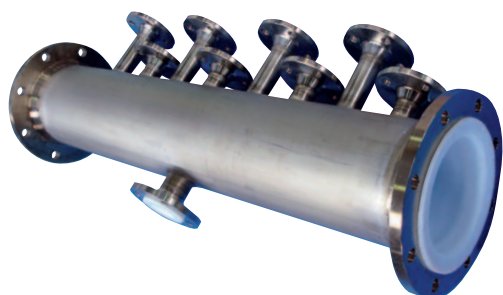
VIRGIN PFA :
DN 25 & DN 40-100

ANTI STATIC PFA, C4 = A :
DN 25 – DN 100

VIRGIN PTFE :
DN 32, DN 65 & DN 125-200

ANTI STATIC PTFE, C4 = A :
DN 125 – DN 200

DN	L1	L2	Poids	RÉFÉRENCE															
	mm	mm	kg	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
25	146	44	6.0	D	1	-	-	T	L	-	-	-	K						
32	180	44	8.0	D	1	-	-	T	L	-	-	-	L						
40	178	51	10	D	1	-	-	T	L	-	-	-	M						
50	203	63	12	D	1	-	-	T	L	-	-	-	N						
65	241	64	17	D	1	-	-	T	L	-	-	-	O						
80	254	76	21	D	1	-	-	T	L	-	-	-	P						
100	305	76	33	D	1	-	-	T	L	-	-	-	Q						
125	343	89	28	D	1	-	-	T	L	-	-	-	R						
150	368	89	49	D	1	-	-	T	L	-	-	-	S						
200	445	114	70	D	1	-	-	T	L	-	-	-	T						



LININGS

VIRGIN PTFE :
DN 25 – DN 300

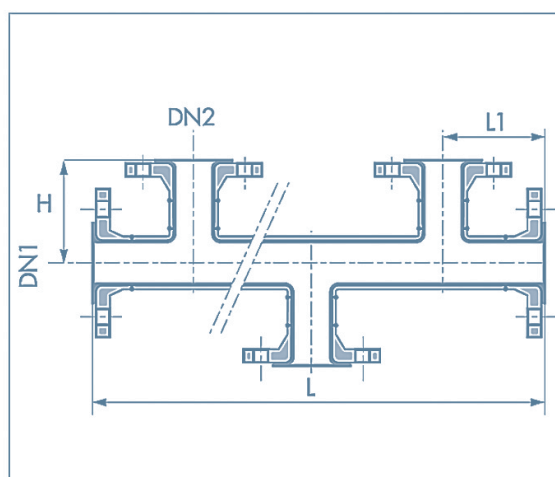
ANTI STATIC PTFE :
DN 25 – DN 300

DN1	DN2	H mm	L1 mm
25	25	110	110
32	25	110	110
	32	130	130
40	25	110	110
	32	130	130
	40	150	150
50	25	110	110
	32	130	130
	40	150	150
	50	120	120
65	25	110	110
	32	130	130
	40	150	150
	50	120	120
	65	140	140
80	25	110	110
	32	130	130
	40	150	150
	50	120	120
	65	140	140
	80	165	165
100	25	110	110
	32	130	130
	40	150	150
	50	120	120
	65	140	140
	80	165	165
	100	205	205
125	25	130	100
	32	130	130
	40	150	150
	50	150	120
	65	140	140
	80	165	165
	100	205	205
	125	245	245

DN1	DN2	H mm	L1 mm
	25	130	110
	32	150	130
	40	150	150
	50	150	120
150	65	150	140
	80	165	165
	100	205	205
	125	245	245
	150	285	285
	32	180	130
	40	200	150
	50	200	120
	65	200	140
200	80	205	165
	100	205	205
	125	245	245
	150	285	285
	200	365	365
	40	220	150
	50	220	120
	65	220	140
	80	220	165
250	100	245	205
	125	245	245
	150	285	285
	200	305	365
	250	305	450
	65	245	140
	80	245	165
	100	245	205
	125	245	245
	150	285	285
	200	305	365
	250	305	450
300	300	305	525

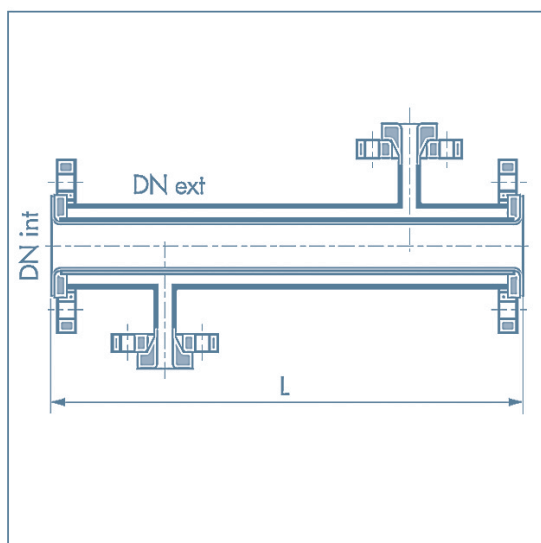
**DRAWING ABOVE IS SHOWN
AS AN EXEMPLE**

Other manifolds configurations on request
number, DN and nozzles inclination
L max : 1.5 meter



Fix flanges manifolds Type W

LINED JACKETED PIPING



Straight lengths

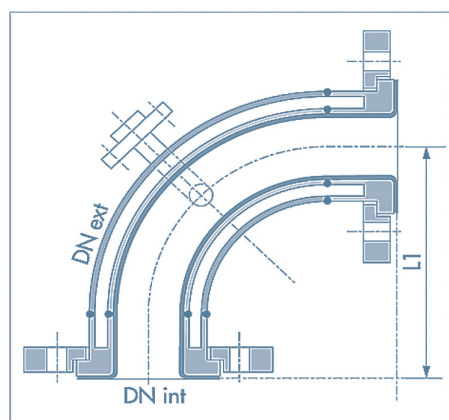
LININGS

VIRGIN PTFE / PFA :
DN 20 – DN 100

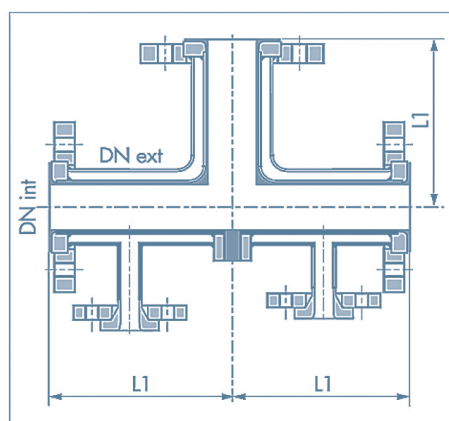
ANTI STATIC PTFE / PFA, C4 = A :
DN 20 – DN 100

SPOOLS

DN	DN	L mini	L maxi
int	ext	mm	mm
20	32	200	6000
25	40	200	6000
32	50	200	6000
40	65	200	6000
50	80	200	6000
65	100	200	6000
80	100	200	6000
100	125	200	6000



90° elbows



Equal tees

90° ELBOWS & EQUAL TEES

DN	DN	L1
in	out	mm
25	40	110
32	50	130
40	65	150
50	80	120
65	100	140
80	100	165
100	125	205

The jacketed pipe connections are made via nozzle DN 20.
Other connection types are possible on request.
Other dimensions and part type on request.

DIP PIPES & ENTRY PIPES

LININGS

VIRGIN PTFE :
DN 15 – DN 500

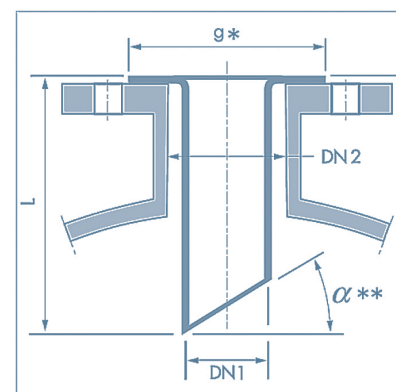
ANTI STATIC PTFE, C4 = A :
DN 15 – DN 400

ENTRY PIPES

DN1	DN2 mini	L maxi mm	REFERENCE															
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
20	25	3000	D	1	-	-	N	x	x	x	x	J						
25	32	3000	D	1	-	-	N	x	x	x	x	K						
32	40	3000	D	1	-	-	N	x	x	x	x	L						
40	50	3000	D	1	-	-	N	x	x	x	x	M						
50	65	3000	D	1	-	-	N	x	x	x	x	N						
65	80	3000	D	1	-	-	N	x	x	x	x	O						
80	100	3000	D	1	-	-	N	x	x	x	x	P						
100	125	3000	D	1	-	-	N	x	x	x	x	Q						
125	150	3000	D	1	-	-	N	x	x	x	x	R						
150	200	3000	D	1	-	-	N	x	x	x	x	S						
200	250	3000	D	1	-	-	N	x	x	x	x	T						
250	300	3000	D	1	-	-	N	x	x	x	x	U						
300	350	3000	D	1	-	-	N	x	x	x	x	V						
350	400	3000	D	1	-	-	N	x	x	x	x	W						
400	450	2000	D	1	-	-	N	x	x	x	x	X						
450	500	2000	D	1	-	-	N	x	x	x	x	Y						
500	600	1500	D	1	-	-	N	x	x	x	x	Z						

xxxx : length in mm

Type A



* Collar G diameter in accordance with DN2
**α : different angles possible on requested

DIP PIPES

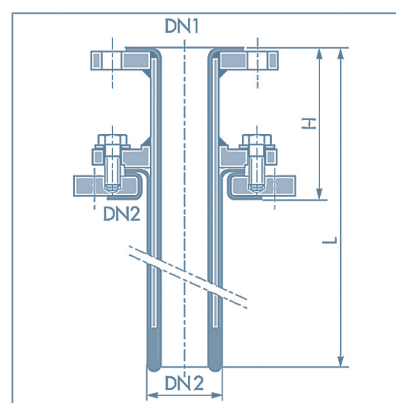
DN1	DN2 mini	H mm	L maxi mm
15	32	140	3000
20	32	140	3000
25	50	160	3000
32	65	170	3000
40	65	170	3000
50	80	180	3000
65	100	180	3000
80	100	190	3000
100	125	200	3000
150	200	200	3000

Other special dip pipes are available on request.

LININGS

VIRGIN PTFE :
DN 15 – DN 150

ANTI STATIC PTFE, C4 = A :
DN 15 – DN 150



Type B

WORLDWIDE INDUSTRIAL WORKSHOP



Main production sites



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 All materials
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Mersen India Chennai
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 > 2,500 m²
 > Assembly and repair shop

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 > 6,690 m²
 > All equipment
 All materials

Mersen USA Oxnard
 > 6,600 m²
 > Specialist in reactive metals equipment

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 All materials
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