

TEFPASS[®] ***PTFE Lined pipe & fittings & Bellows***

We are the company which can offer you complete solution in Fluoropolymer



Safety
Innovation
Quality
Service



Introduction

上品綜合工業股份有限公司成立於 1981 年，致力於氟素樹脂 (Fluoropolymer) 材料、設備產品生產及加工應用領域，提供一站式的服務品質。公司持續投入研究開發核心技術，不斷提升技術和品質，累積深厚的品牌經營資源和技術研發成果。我們提供高品質且附加價值高的終端產品，滿足半導體、特化、生物科技、製藥、光電和機械等產業的需求。

上品綜合工業股份有限公司已完成一系列針對不同特用化學品的生產、純化、過濾、混酸、稀釋、調配、罐裝、運輸和使用端自動供應流程，提供最全面的 Fluoropolymer 各種加工和應用，包括氟素樹脂內襯板材、管件、桶槽、蛇管、熱交換器等產品。並不斷追求更新一代氟加工能力的建構，精益求精。

上品作為全球最大的氟素加工企業之一，設備和技術均能本土化，不必仰賴進口，上品清楚客戶對產品的需求和期望，快速整合發展和完整服務，與合作夥伴攜手在世界舞台上發光發熱。上品以企業的永續經營為理念，在內部持續提升技術、品質和新產品開發能力，並與客戶達成互助互利的良好關係。

Allied supreme Corp., was established in 1981, dedicated to the production and processing of Fluoropolymer materials and equipment products, and providing one-stop service quality in the application field. The company continues to invest in research and development of core technology, constantly improving technology and quality, accumulating profound brand management resources and technology research and development results. We provide high-quality and high-value-added end products to meet the needs of industries such as semiconductor, specialty, biotechnology, pharmaceuticals, optoelectronics, and machinery.

Allied supreme Corp., has completed a series of automatic supply processes for the production, purification, filtration, acid mixing, dilution, blending, tanking, transportation, and usage of different specialty chemicals, providing the most comprehensive Fluoropolymer processing and application, including products such as fluoropolymer lining plate, fittings, drums, tanks, hoses, heat exchangers, and more. And constantly pursues the construction of next-generation Fluoropolymer processing capabilities, striving for excellence.

As one of the world's largest Fluoropolymer processing enterprises, Allied supreme Corp., can localize equipment and technology without relying on imports. Allied supreme Corp., understands customers' needs and expectations for products, quickly integrates development and provides complete services, and collaborates with partners to shine on the world stage. Allied supreme Corp., takes sustainable business as its concept, continuously improves technology, quality, and new product development capabilities internally, and achieves a mutually beneficial relationship with customers.

Product catalogue

General terminology and specifications	03
Specification for lined pipe and fittings	04-08
Pipe Dimensions	09
JIS Class 10K Flange Dimensions	09
ANSI Class 150lbs Flange Dimensions	09
DIN PN16 Flange Dimensions	09
PTFE Lined Pipe	10
PTFE Lined 90° Elbow	11
PTFE Lined 45° Elbow	12
PTFE Lined Equal Tee	13
PTFE Lined Reducing Tee	14
PTFE Lined Concentric Reducer	16
PTFE Lined Eccentric Reducer	18
PTFE Lined Cross	20
PTFE Lined Sight Glass	21

PTFE Lined Reducing Flange	22
PTFE Lined Instrument Tee	24
High Pressure Bellows	25
Vacuum Resistant Bellows	26
Reinforced Bellows	27
Reinforced & Vacuum Resistant Bellows	28
PTFE Gasket & Solid Spacer	29
Armored Spacer	29
Distance Spacer	30
Blind Flange	30



General terminology and specifications

PTFE	Synthetic Fluoropolymer of Tetrafluoroethylene.
A105	ASTM Specification for Forged Carbon Steel Flange.
A53B/A106	ASTM Specification for Carbon Steel Pipe.
A234	ASTM Specification for Carbon Steel Fitting.
A216	ASTM Specification for Cast Carbon Steel Fitting.(Grade WCB)
SS400	JIS Specification for Carbon Steel Fitting.
A182	ASTM Specification for Forged Stainless Steel Flange.
A312	ASTM Specification for Stainless Steel Pipe.
A403	ASTM Specification for Stainless Steel Fitting.
A351	ASTM Specification for Cast Stainless Steel Fitting.
SUS	JIS Specification for Stainless Steel Fitting.
F1545	Standard Specification for Plastic-Lined Ferrous Metal Pipe, Fittings, and Flanges.
B31.3	Process Piping Guide.

內襯直管與管件規範 Specification for lined pipe and fittings

範圍

1. 本規範適用於傳送腐蝕性流體之 PTFE 內襯直管及管件。內容包括施工材料、尺寸以及標準的測試程序。
2. 本內容包含 ANSI 150 LBS 及 JIS 10K 規範的 PTFE 內襯直管、法蘭及管件。

Scope

1. This specification covers Polytetrafluoroethylene (PTFE) line pipe & fitting applied for conveying corrosive fluids. The contents include the requirement for construction of materials, dimensions together with standard test procedure.
2. This specification covers ANSI 150 LBS & JIS 10K, PTFE lined pipe, flange and fittings.

材料的結構 Construction of materials

特性 Properties

項目		UNIT	ASTM	PTFE	
溫度限制 Temperature Limitation	環境下溫度耐溫 Environmental Temperature Resistance	°C	-	260	
	融點 Melt Point	°C	-	327	
耐化學性 Chemical Inertness	能抵抗大部分的化學品，關於詳細之資料，請詢問本公司的銷售工程師。 Resist to most of all chemicals. Please consult our sales engineer for information.				
摩擦係數 Coefficient of Friction	靜摩擦係數 Static coefficient of friction	-	-	0.10	
	動摩擦係數 Kinetic coefficient of friction	-	-	0.05	
比重 Specific Gravity		-	D792	2.14~2.2	
抗拉強度 Tensile Strength		kg / cm ²	D638	>210	
抗黏性 Non-stick	表面張力 Surface tension		dyne/cm	-	18.5
	接觸角度 Contact Angle	水 Water	°	-	104~111
		十六烷 Hexadecane	°	-	37~45
延伸率 Elongation		%	D638	>250	
吸水性 Water Absorption		%	D570	<0.01%	

PTFE 內襯

1. 此內襯根據 ASTM D4894 之規範由聚四氟乙烯樹脂及少於總重量 1% 之添加物所製成。
2. 比重：此樹脂內襯根據 ASTM D792 之規範，比重介於 2.14 到 2.2 之間。

PTFE Lining

1. The lining is made from Polytetrafluoroethylene resins conforming to the requirement of specification ASTM D4894 and including less than 1 % weight of additives.
2. Specific Gravity : The lining is made from PTFE resin meeting specification ASTM D792 which have a specific gravity in between 2.14 to 2.2.

內襯直管與管件規範 Specification for lined pipe and fittings

材料的結構 Construction of materials

鐵件

1. 碳鋼直管

- 直管由有縫或無縫鋼管製成，口徑 1/2"~8" 依 SCH40；10" 以上依 SCH20
- 材料規範依 ASTM A53B 或 A106

2. 碳鋼管件

- 管件由工件 / 鋼管製成，口徑 1/2"~10"，依 SCH40；12" 以上依 STD
- 材料規範依 ASTM A234 或 A216

3. 不鏽鋼直管

- 直管由有縫或無縫鋼管製成，口徑 1/2"~8"，依 SCH40；10" 以上依 SCH20
- 材料規範依 ASTM A312

4. 不鏽鋼管件

- 管件由工件 / 鋼管製成，口徑 1/2"~10"，依 SCH40；12" 以上依 STD
- 材料規範依 ASTM A403 或 A351

5. 法蘭

- 材料規範：
 - 碳鋼：ASTM A105
 - 不鏽鋼：ASTM A182 / A240

6. 漸縮法蘭 / 儀表三通 / Armored spacer

- 材料規範：
 - 碳鋼：ASTM A36 / A516 G.70
 - 不鏽鋼：ASTM A479 / A240

7. 焊接

鐵件製作遵照 F1545 & B31.3 的標準製作，焊接方式遵照 ASME 鍋爐及壓力容器規範的第九冊。

8. 表面處理

所有的碳鋼鐵件外部採用噴砂及油漆，不鏽鋼依附銷售工程師和客戶的約定處理

Housing

1. Carbon Steel Straight Pipe

- Straight pipes are made of welded or seamless steel housing for nominal sizes 1/2"-8", fabricated according to SCH 40; 10" and above are according to SCH 20.
- Material specifications are in compliance with ASTM A53B or A106.

2. Carbon Steel Fitting

- Fittings are made of welded or casting iron steel housing for nominal sizes 1/2"-10", fabricated according to SCH 40; 12" and above sizes are according to STD.
- Material specifications are in compliance with ASTM A234 or A216.

3. Stainless Steel Straight Pipe

- Straight pipes are made of welded or seamless steel housing for nominal sizes 1/2"-8", fabricated according to SCH 40; 10" and above are according to SCH 20.
- Material specifications are in compliance with ASTM A312.

4. Stainless Steel Fitting

- The fittings are made from workpieces/steel pipes for nominal sizes 1/2"~10", fabricated according to SCH 40; 10" and above are according to SCH 20.
- Material specifications are in compliance with ASTM A403 or A351.

5. Flange

- Material specifications：
 - Carbon steel：ASTM A105
 - Stainless steel：ASTM A182 / A240

6. Reducing Flange / Instrument Tee / Armored spacer

- Material specifications：
 - Carbon steel：ASTM A36 / A516 G.70
 - Stainless steel：ASTM A479 / A240

7. Welding

Manufacturing in accordance with ASTM F1545 and ASME B31.3, welding methods following Section IX of the ASME Boiler and Pressure Vessel Code.

8. Finish

The external surface of carbon steel housing needs to process sandblasting and painting works; the treatment of stainless steel shall be according to agreement between customer and sales engineer.

內襯直管與管件規範 Specification for lined pipe and fittings

設計要求 Design requirements

尺寸

1. 內襯管件之內襯標準厚度

詳見分頁資料。

2. 公差

直管、法蘭及管件之公差規定如下

- 直管：
 - 長度公差： $\pm 1/8"$ ($\pm 3.2\text{mm}$)
 - 兩端法蘭螺孔偏心公差： $\pm 1/16"$ ($\pm 1.6\text{mm}$)
- 法蘭：根據 ANSI B16.5
- 管件：根據 ANSI B16.5，其他因製作工法因素之管件不再此限

3. 排氣孔

每一直管及管件都有排氣孔以釋放內襯與鐵件之間的氣體。直管至少有兩個直徑 0.12"(3mm) 之排氣孔，直管 500mm 長以上為 2 個排氣孔，位於兩端法蘭面 2"(50mm) 距離的位置，500mm 長以下則為 1 個排氣孔；其他每一個管件則為 1 個排氣孔；漸縮法蘭則沒有排氣孔。

Dimension

1. Wall Thickness of Fittings

Please refer to following specifications of the items in this catalogue.

2. Tolerances

Tolerances of pipe, flange and fitting are specified as follows

- Pipe :
 - In Length : $\pm 1/8"$ ($\pm 3.2\text{mm}$)
 - Flange bolt hole alignment : $\pm 1/16"$ ($\pm 1.6\text{mm}$)
- Flange : Apply to ANSI B16.5
- Fitting : According to ANSI B16.5. However, some fittings with special manufacturing process might not fit the guidelines.

3. Vent Hole

Each pipe & fitting is provided with a venting system that will release any gas between the liner and the housing. Each pipe will have at least 2 vent holes in diameter 0.12"(3mm), located 2"(50mm) from the ends. Each fitting shall have one vent hole at least. As for reducing flange has no vent hole.

PTFE 內襯直管之內襯厚度 PTFE liner thickness of piping

Unit:mm

尺寸 Size	2"	3"	4"	6"	8"	10"	12"	14"	16"	18"	20"
標準管 Standard wall	3.0	3.0	3.0	4.0	5.0	6.0	6.0	6.0	6.5	9.0	-
厚管 Heavy wall	4.0	5.0	5.0	6.0	7.0	10.0	12.0	-	12.0	-	14.0

M-PTFE 內襯直管之內襯厚度 M-PTFE liner thickness of piping

Unit:mm

尺寸 Size	2"	3"	4"	6"	8"	10"	12"	14"	16"	18"	20"
標準管 Standard wall	-	-	-	4.0	5.0	6.0	6.0	6.0	6.5	9.0	-
厚管 Heavy wall	4.0	4.5	5.0	5.5	7.0	9.0	10.0	-	11.0	-	12.0

PTFE 內襯管件 Fitting 內襯厚度 PTFE wall thickness of fittings

Unit:mm

尺寸 Size	2"	2.5"	3"	4"	5"	6"	8"	10"	12"	14"	16"	18"	20"
標準管 Standard wall	3.1	3.1	3.1	3.1	4.0	4.0	5.5	6.0	6.0	-	-	-	-
厚管 Heavy wall	4.0	4.0	5.0	5.0	7.0	7.0	7.5	9.0	11.0	11.0	11.0	13.0	13.0

內襯直管與管件規範 Specification for lined pipe and fittings

安裝說明 Installation instructions

管線組合安裝說明

1. 尚未準備與配管連接前，不可隨意移開法蘭保護板以免因溫差或異物造成法蘭面損壞或扭曲。如果因檢驗而必需開啟法蘭面，也應在檢驗完成後立即保護蓋上。
2. PTFE 內襯管件之連接並不需要使用墊片，但與異種材質之法蘭面連接時，如金屬、玻璃、陶瓷及 FRP 塑鋼等，則須使用墊片以保護法蘭面。
3. 螺絲應以適當的力矩鎖緊，力矩值請參考下表。
4. 螺牙需乾淨且潤滑，同時需使用墊圈以確保正確之轉矩。此外，螺絲必須依序均勻地鎖緊。順序如下圖。
5. 如果法蘭面發生洩漏但洩漏一方之螺絲已被適當地鎖緊，則勿再逼緊螺絲，以免造成法蘭面永久的傷害。正確的方法是，將對角線的螺絲同時放鬆半圈，然後再將洩漏一方之螺絲施以相同之力矩鎖緊。如果洩漏的情況持續，應將所有螺絲鬆開，檢查整個法蘭面是否因刮痕或凹陷而造成洩漏。所有的刮痕或凹陷若未超過整個內襯厚度的 20%，則可以利用細砂紙或細砂布將法蘭面磨平再重新安裝。
6. 如果系統在高溫使用下發生洩漏，則應降溫到常溫狀態後，再施以檢查或維修。
7. PTFE 內襯管請勿在靠近鐵件的地方做焊接或乙炔裁切以免造成 PTFE 內襯管之永久性的損壞，除非事前已做好適當之預防措施避免過熱的情況發生。
8. 安全排氣孔不可被油漆或水泥等物質阻塞，這些排氣孔是用來釋放可能在高溫中產生並殘留於內襯與鐵件之間之氣體。如果這些氣體沒有被釋放出來，則可能造成 PTFE 內襯管坍塌的情況。

鎖緊扭矩

Table of Tightening the Bolts

Unit : kgf-m

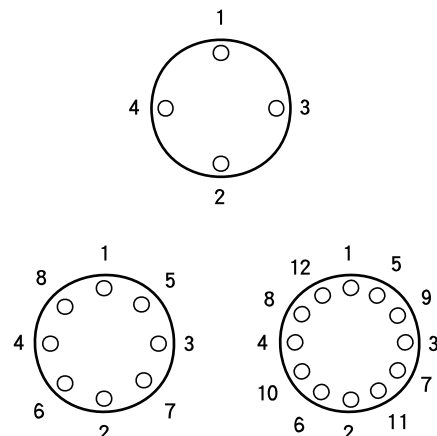
ANSI 150 LBS			JIS 10K		
NPS	MIN.	MAX.	NPS(mm)	MIN.	MAX.
1/2"	0.8	1.1	15	0.8	1.0
3/4"	1.1	1.4	20	1.0	1.4
1"	1.4	1.9	25	1.8	2.4
1-1/2"	2.4	3.1	40	3.0	3.9
2"	4.2	5.5	50	4.2	5.5
2-1/2"	5.1	6.7	65	5.2	6.8
3"	6.4	8.5	80	3.3	4.3
4"	4.7	6.1	100	4.7	6.2
5"	7.0	9.2	125	7.3	9.6
6"	8.4	11.0	150	8.8	11.5
8"	11.4	15.0	200	8.0	10.5
10"	11.1	14.5	250	11.0	14.4
12"	14.5	19.0	300	10.7	14.1
14"	21.2	27.8	350	13.8	18.1
16"	19.2	25.2	400	18.1	23.8
18"	22.1	29.0	450	14.8	19.5
20"	19.6	25.7	500	16.4	21.6
24"	26.5	34.7	600	20.8	27.4

Instructions for assembling pipes and fittings

1. Flange covers should not be removed until flanges are ready to be bolted into position or sealing faces may become damages or distorted. If covers are removed for inspection, they should be replaced immediately.
2. Gaskets are not required with PTFE lined piping components except where they are connected to a flange face of another material such as metal, glass, ceramic, reinforced plastic, etc.
3. Bolts should be tightened using proper bolt torque, the torque values in the tables as below.
4. Threads must be clean and well lubricated. And washers should be used to ensure correct torque. Bolt should be tightened alternately and evenly, following the sequence shown in the charts.
5. If a flange leak occurs and the bolts of the leaking side have been properly tightened, they should not be tightened further or permanent damage to the sealing face may result. Instead, the bolts on the opposite side should be loosened a half turn at a time and then the bolts on the leaking side should be tightened by the same amount. If the leak persists, the bolts should be removed and the sealing faces should be examined for scratches or dents across and entire face that could produce a leak path. Any scratches or dents that do not exceed 20% of the liner thickness can be eliminated by hand polishing with a fine abrasive cloth or paper.
6. If leakage occurs after the system has been cycled in an elevated temperature, it should be cool down to ambient temperature, to have a further inspection and maintenance.
7. No welding, brazing, soldering or flame cutting which can permanently damage the PTFE liner should be done close to the metal housings unless adequate precautions are taken to prevent exposure to excessive heat.
8. Safety vent holes should not be plugged with paint, cement, etc. The vent holes are essential to release gases that may be generated at elevated temperatures and trapped between the liner and the housing. If not vented these gases may collapse the liner.

鎖緊順序

Tightening Sequence for the Bolts



內襯直管與管件規範 Specification for lined pipe and fittings

檢驗要求 Inspection requirements

1. 水壓測試

測試壓力 15 kg/cm²，持壓 5 分鐘，
或依需求條件測試。

2. 針孔測試

需通過 20,000 伏特電壓檢測。

3. 外部油漆

碳鋼管件標準為底漆一道，面漆依需求另訂之，
不鏽鋼管件依訂單需求訂定。

1. Hydrostatic Pressure Test

Test pressure: 15 kg/cm², hold for 5 minutes.
Or test according to specific requirements.

2. Electrostatic Test

Conduct the test with holiday tester at an output of
20,000V.

3. Painting Inspection

The criteria of carbon steel fittings are one primer
coated, finish painting will depend on the actual
requirements. Stainless steel is according to the
order's specification.

包裝方式 Packing method

包裝

每一端之法蘭內襯面以塑膠護蓋保護

- 出貨國外以木箱為原則

Packing

The faces of each end are protected by plastic lids.

- The consignment for overseas transportation will be
packed by wooden cases.

Pipe

Dimensions

unit : mm

Diameter		OD	Nominal wall thickness		
Inch	mm		SCH20	SCH40	STD
1/2"	15	21.3	-	2.77	-
3/4"	20	26.7	-	2.87	-
1"	25	33.4	-	3.38	-
1-1/2"	40	48.3	-	3.68	-
2"	50	60.3	-	3.91	-
2-1/2"	65	73.0	-	5.16	-
3"	80	88.9	-	5.49	-
4"	100	114.3	-	6.02	-
6"	150	168.3	-	7.11	-
8"	200	219.1	6.35	8.18	-
10"	250	273.1	6.35	9.27	-
12"	300	323.9	6.35	10.31	9.53
14"	350	355.6	7.92	11.13	9.53
16"	400	406.4	7.92	12.70	9.53
18"	450	457.2	7.92	14.27	9.53
20"	500	508.8	9.53	15.09	9.53

JIS Class 10K Flange

Dimensions

unit : mm

Nominal size	Flange Diameter	T	Diameter Bolt Circle	Number Bolt Holes	Diameter Bolt Holes
15A	95	12	70	4	15
20A	100	14	75	4	15
25A	125	14	90	4	19
40A	140	16	105	4	19
50A	155	16	120	4	19
65A	175	18	140	4	19
80A	185	18	150	8	19
100A	210	18	175	8	19
125A	250	20	210	8	23
150A	280	22	240	8	23
200A	330	22	290	12	23
250A	400	24	355	12	25
300A	445	24	400	16	25
350A	490	26	445	16	25
400A	560	28	510	16	27
450A	620	30	565	20	27
500A	675	30	620	20	27

ANSI Class 150lbs Flange

Dimensions

unit : mm

Nominal size	Flange Diameter	T	Diameter Bolt Circle	Number Bolt Holes	Diameter Bolt Holes
1/2"	88.9	11.2	60.3	4	16
3/4"	98.4	12.7	69.9	4	16
1"	108	14.3	79.4	4	16
1-1/2"	127.0	17.5	98.4	4	16
2"	152.4	19.1	120.7	4	19
2-1/2"	177.8	22.3	139.7	4	19
3"	190.5	23.9	152.4	4	19
4"	228.6	23.9	190.5	8	19
6"	279.4	25.4	241.3	8	22
8"	342.9	28.6	298.5	8	22
10"	406.4	30.2	362.0	12	25
12"	482.6	31.8	431.8	12	25
14"	533.4	35.0	476.3	12	29
16"	596.9	36.6	539.8	16	29
18"	635.0	39.7	577.9	16	32
20"	698.5	42.9	635.0	20	32

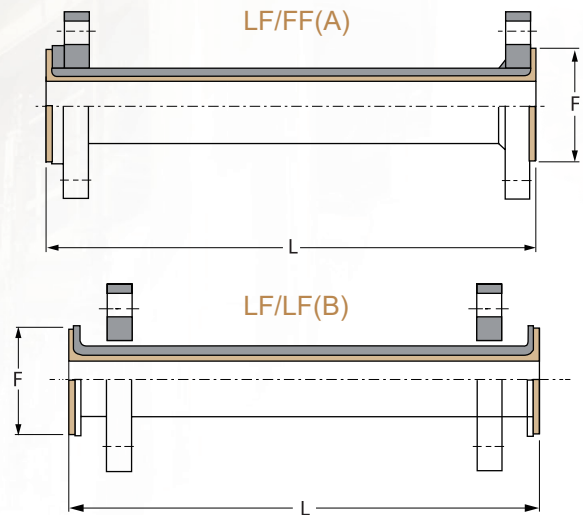
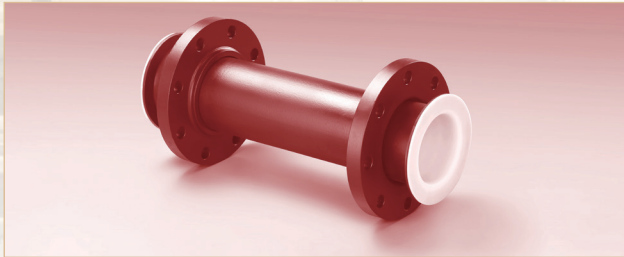
DIN PN16 Flange

Dimensions

unit : mm

Nominal size	Flange Diameter	T	Diameter Bolt Circle	Number Bolt Holes	Diameter Bolt Holes
DN15	95	14	65	4	14
DN20	105	16	75	4	14
DN25	115	16	85	4	14
DN40	150	16	110	4	18
DN50	165	18	125	4	18
DN65	185	18	145	4	18
DN80	200	20	160	8	18
DN100	220	20	180	8	18
DN125	250	22	210	8	18
DN150	285	22	240	8	23
DN200	340	24	295	12	23
DN250	405	26	355	12	27
DN300	460	28	410	12	27
DN350	520	30	470	16	27
DN400	580	32	525	16	30
DN450	640	34	585	20	30
DN500	715	34	650	20	33

PTFE Lined Pipe



Flange : ANSI 150LBS

unit : mm

Nominal size		F	L(Min.)	L(Max.)	G.W.(kg)	
Inch	mm				Standard wall	Selected wall
2"	50	87	100	5900	-	6.77 x M+4.6
3"	80	117	130	5900	-	13.23 x M+8.7
4"	100	151	130	5900	-	18.96 x M+12.4
6"	150	203	140	5900	42.60 x M+15.8	44.40 x M+15.8
8"	200	256	140	5900	48.72 x M+26.8	50.22 x M+26.8
10"	250	311	150	5900	50.60 x M+37.5	52.60 x M+37.5
12"	300	365	150	5800	60.30 x M+62.0	65.10 x M+62.0
14"	350	415	220	1800	81.50 x M+76.0	-
16"	400	475	220	1800	97.50 x M+96.2	99.50 x M+96.2
18"	450	514	320	1800	117.90 x M+102.0	-
20"	500	565	230	1800	-	158.0 x M+141.0

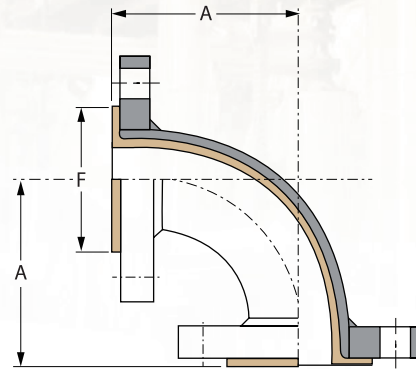
Materials Specification

	Flange			Steel frame			Lining
	Material	Norm	Size	Material	Norm	Size	Norm
Carbon Steel	ASTM A105	ANSI B16.5	Class 150LBS	ASTM A106($\leq 4"$) ASTM A53 grade B($\geq 5"$)	ANSI B36.10	1"~8"(SCH40) 10"~(SCH20)	ASTM D4894
Stainless Steel	ASTM A182	ANSI B16.5	Class 150LBS	ASTM A312	ANSI B36.19	1"~8"(SCH40) 10"~(SCH20)	

- Flange : JIS , DIN or others is also available on request.
- Material : the same grade as chart.

- F/F ; L/F ; L/L are also available on request.
- JIS 10K flange flare can't apply to the chart above due to the B.C.D. limitation of the flange.
- Please inquire our sales representatives if you have other requirements of sizes or materials.

PTFE Lined 90° Elbow



Flange : ANSI 150LBS

unit : mm

Nominal size		F	A	G.W.(kg)	
Inch	mm			Standard wall	Selected wall
2"	50	87	114	7.0	7.2
2-1/2"	65	100	127	9.8	10.3
3"	80	117	140	11.8	12.4
4"	100	151	165	16.2	17.1
5"	125	173	190	22.5	23.5
6"	150	203	203	26.0	27.3
8"	200	256	228	44.0	46.0
10"	250	311	280	67.0	69.0
12"	300	365	305	100.0	104.0
14"	350	415	356	-	147.0
16"	400	475	407	-	199.0
20"	500	565	457	315.0	-

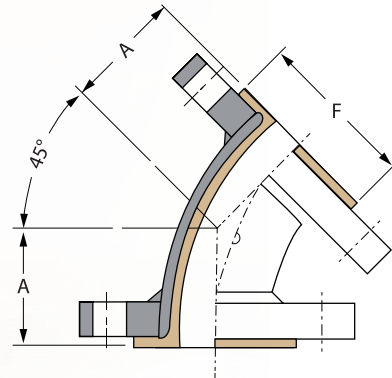
Materials Specification

	Flange			Steel frame			Lining
	Material	Norm	Size	Material	Norm	Size	Norm
Carbon Steel	ASTM A105	ANSI B16.5	Class 150LBS	ASTM A234 ASTM A216	ANSI B16.28	2"~10"(SCH40) 12"~(STD)	ASTM D4894
Stainless Steel	ASTM A182	ANSI B16.5	Class 150LBS	ASTM A403 ASTM A351	ANSI B36.19	2"~10"(SCH40) 12"~(STD)	

- Flange : JIS , DIN or others is also available on request.
- Material : the same grade as chart.

- L/F ; L/L are also available on request.
- JIS 10K flange flare can't apply to the chart above due to the B.C.D. limitation of the flange.
- Please inquire our sales representatives if you have other requirements of sizes or materials.

PTFE Lined 45° Elbow



Flange : ANSI 150LBS

Nominal size		F	A	G.W.(kg)	
Inch	mm			Standard wall	Standard wall
2"	50	87	83	4.8	5.1
2-1/2"	65	100	93	8.4	8.8
3"	80	117	101	10.5	11.0
4"	100	151	113	14.6	15.2
6"	150	203	127	25.1	26.0
8"	200	256	140	40.5	42.0
10"	250	311	165	56.0	57.5
12"	300	365	191	88.0	91.0
14"	350	415	191	-	115.5
16"	400	475	203	-	183.8

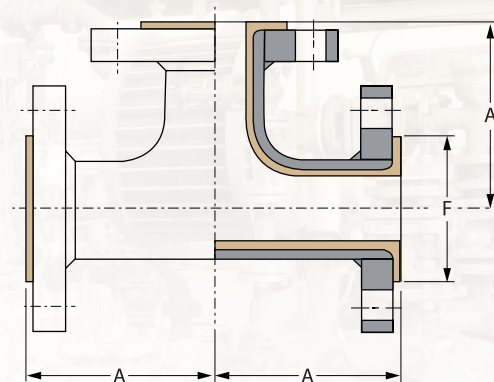
Materials Specification

	Flange			Steel frame			Lining
	Material	Norm	Size	Material	Norm	Size	Norm
Carbon Steel	ASTM A105	ANSI B16.5	Class 150LBS	ASTM A234 ASTM A216	ANSI B16.28	2"~10"(SCH40) 12"~(STD)	ASTM D4894
Stainless Steel	ASTM A182	ANSI B16.5	Class 150LBS	ASTM A403 ASTM A351	ANSI B36.19	2"~10"(SCH40) 12"~(STD)	

- Flange : JIS , DIN or others is also available on request.
- Material : the same grade as chart.

- L/F ; L/L are also available on request.
- JIS 10K flange flare can't apply to the chart above due to the B.C.D. limitation of the flange.
- Please inquire our sales representatives if you have other requirements of sizes or materials.
- Above spec is based on fix flanges. Please inquire our sales representatives if you have other required customized length.

PTFE Lined Equal Tee



Flange : ANSI 150LBS

unit : mm

Nominal size		F	A	G.W.(kg)	
Inch	mm			Standard wall	Selected wall
2"	50	87	114	9.8	10.2
2-1/2"	65	100	127	14.2	14.7
3"	80	117	140	16.6	17.2
4"	100	151	165	25.8	26.6
6"	150	203	203	41.2	42.9
8"	200	256	228	58.0	62.4
10"	250	311	280	104.0	108.6
12"	300	365	305	146.2	153.6
14"	350	415	356	-	219.0

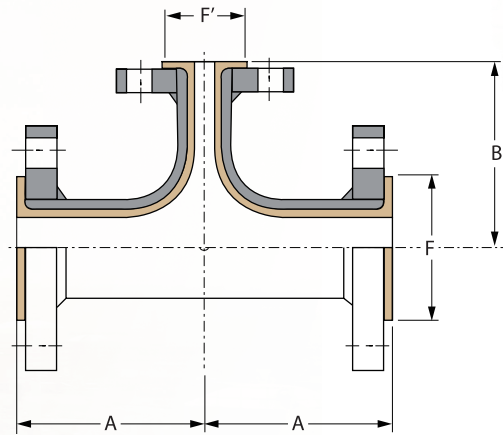
Materials Specification

	Flange			Steel frame			Lining
	Material	Norm	Size	Material	Norm	Size	Norm
Carbon Steel	ASTM A105	ANSI B16.5	Class 150LBS	ASTM A234 ASTM A216	ANSI B16.28	2"~10"(SCH40) 12"~(STD)	ASTM D4894
Stainless Steel	ASTM A182	ANSI B16.5	Class 150LBS	ASTM A403 ASTM A351	ANSI B36.19	2"~10"(SCH40) 12"~(STD)	

- Flange : JIS , DIN or others is also available on request.
- Material : the same grade as chart.

- L/F ; L/L are also available on request.
- JIS 10K flange flare can't apply to the chart above due to the B.C.D. limitation of the flange.
- Please inquire our sales representatives if you have other requirements of sizes or materials.

PTFE Lined Reducing Tee



Flange : ANSI 150LBS

S/W : Standard Wall H/W : Heavy Wall unit : mm

Nominal size		F	F'	A	B	G.W.(kg)	
Inch	mm					S/W	H/W
2-1/2" x 2"	65 x 50	100	87	127	127	13	13
3" x 2"	80 x 50	117	87	140	140	15	16
3" x 2-1/2"	80 x 65	117	100	140	140	17	17
4" x 2"	100 x 50	151	87	165	165	21	22
4" x 2-1/2"	100 x 65	151	100	165	165	22	23
4" x 3"	100 x 80	151	117	165	165	23	24
6" x 2"	150 x 50	203	87	203	203	32	33
6" x 2-1/2"	150 x 65	203	100	203	203	33	35
6" x 3"	150 x 80	203	117	203	203	35	37
6" x 4"	150 x 100	203	151	203	203	37	39
8" x 3"	200 x 80	256	117	228	228	55	57
8" x 4"	200 x 100	256	151	228	228	56	59
8" x 6"	200 x 150	256	203	228	228	63	66
10" x 4"	250 x 100	311	151	280	280	79	83
10" x 6"	250 x 150	311	203	280	280	87	90
10" x 8"	250 x 200	311	256	280	280	89	93

Flange : ANSI 150LBS

S/W : Standard Wall H/W : Heavy Wall unit : mm

Nominal size		F	F'	A	B	G.W.(kg)	
Inch	mm					S/W	H/W
12" x 6"	300 x 150	365	203	305	305	131	136
12" x 8"	300 x 200	365	256	305	305	134	140
12" x 10"	300 x 250	365	311	305	305	141	148
14" x 6"	350 x 150	415	203	356	276	-	170
14" x 8"	350 x 200	415	256	356	276	-	179
14" x 10"	350 x 250	415	311	356	276	-	198
14" x 12"	350 x 300	415	365	356	356	-	205
16" x 6"	400 x 150	475	203	381	310	-	223
16" x 8"	400 x 200	475	256	381	310	-	232
16" x 10"	400 x 250	475	311	381	310	-	243
16" x 12"	400 x 300	475	365	381	381	-	256

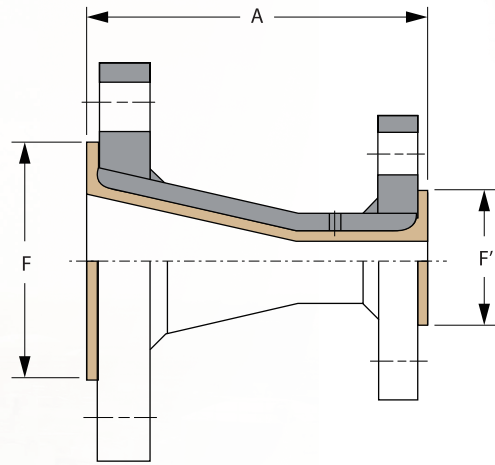
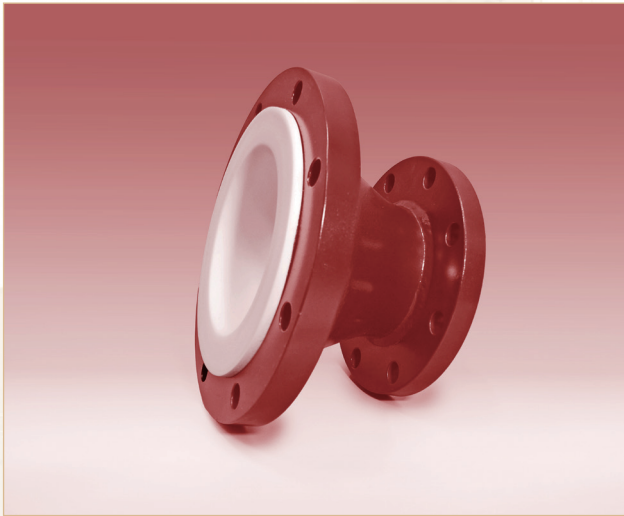
Materials Specification

	Flange			Steel frame			Lining
	Material	Norm	Size	Material	Norm	Size	Norm
Carbon Steel	ASTM A105	ANSI B16.5	Class 150LBS	ASTM A234 ASTM A216	ANSI B16.28	2"~10"(SCH40) 12"~(STD)	ASTM D4894
Stainless Steel	ASTM A182	ANSI B16.5	Class 150LBS	ASTM A403 ASTM A351	ANSI B36.19	2"~10"(SCH40) 12"~(STD)	

- Flange : JIS , DIN or others is also available on request.
- Material : the same grade as chart.

- L/F ; L/L are also available on request.
- JIS 10K flange flare can't apply to the chart above due to the B.C.D. limitation of the flange.
- Please inquire our sales representatives if you have other requirements of sizes or materials.

PTFE Lined Concentric Reducer



Flange : ANSI 150LBS

S/W : Standard Wall H/W : Heavy Wall unit : mm

Nominal size		F	F'	A	G.W.(kg)	
Inch	mm				S/W	H/W
2" x 1-1/2"	50 x 40	87	68	127	4.5	4.6
2-1/2" x 2"	65 x 50	100	87	127	7.0	7.3
3" x 2"	80 x 50	117	87	152	7.6	7.9
3" x 2-1/2"	80 x 65	117	100	152	9.0	9.4
4" x 2"	100 x 50	151	87	152	10.0	10.4
4" x 2-1/2"	100 x 65	151	100	152	10.5	10.9
4" x 3"	100 x 80	151	117	152	11.8	12.2
6" x 2"	150 x 50	203	87	200	14.8	15.4
6" x 2-1/2"	150 x 65	203	100	200	15.2	15.8
6" x 3"	150 x 80	203	117	200	16.8	17.5
6" x 4"	150 x 100	203	151	200	18.6	19.3
8" x 3"	200 x 80	256	117	200	24.4	25.4
8" x 4"	200 x 100	256	151	200	25.5	26.7
8" x 6"	200 x 150	256	203	200	30.0	31.3
10" x 4"	250 x 100	311	151	250	37.8	39.4
10" x 6"	250 x 150	311	203	250	38.5	40.4
10" x 8"	250 x 200	311	256	250	39.4	41.3

Flange : ANSI 150LBS

S/W : Standard Wall H/W : Heavy Wall unit : mm

Nominal size		F	F'	A	G.W.(kg)	
Inch	mm				S/W	H/W
12" x 6"	300 x 150	365	203	300	54.0	57.1
12" x 8"	300 x 200	365	256	300	62.2	65.5
12" x 10"	300 x 250	365	311	300	71.8	75.3
14" x 8"	350 x 200	415	256	406	-	106.1
14" x 10"	350 x 250	415	311	406	-	113.2
14" x 12"	350 x 300	415	365	406	-	125.9
16" x 8"	400 x 200	475	256	457	-	136
16" x 10"	400 x 250	475	311	457	-	139.4
16" x 12"	400 x 300	475	365	457	-	153.5
16" x 14"	400 x 350	475	415	457	-	165.4
18" x 12"	450 x 300	514	365	457	140.3	-
18" x 14"	450 x 350	514	415	457	149.7	-
18" x 16"	450 x 400	514	475	457	158.7	-
20" x 12"	500 x 300	565	365	600	177.7	-
20" x 14"	500 x 350	565	415	600	186.7	-

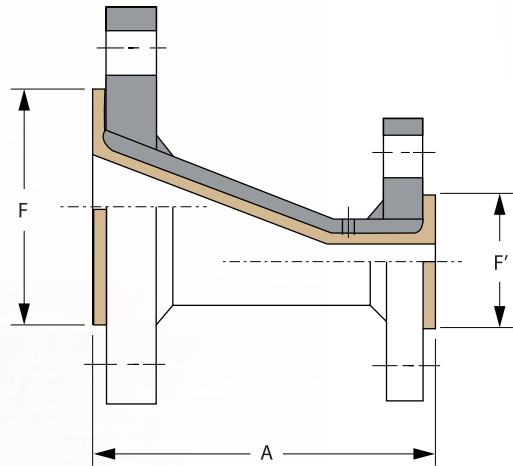
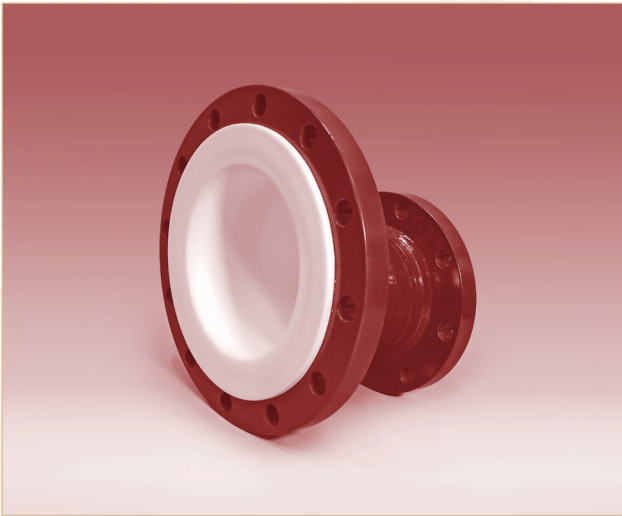
Materials Specification

	Flange			Steel frame			Lining
	Material	Norm	Size	Material	Norm	Size	Norm
Carbon Steel	ASTM A105	ANSI B16.5	Class 150LBS	ASTM A234	ANSI B16.28	2-1/2"~10"(SCH40) 12"~(STD)	ASTM D4894
Stainless Steel	ASTM A182	ANSI B16.5	Class 150LBS	ASTM A403	ANSI B36.19	2-1/2"~10"(SCH40) 12"~(STD)	

- Flange : JIS , DIN or others is also available on request.
- Material : the same grade as chart.

- L/F ; L/L are also available on request.
- JIS 10K flange flare can't apply to the chart above due to the B.C.D. limitation of the flange.
- Please inquire our sales representatives if you have other requirements of sizes or materials.

PTFE Lined Eccentric Reducer



Flange : ANSI 150LBS

S/W : Standard Wall H/W : Heavy Wall unit : mm

Nominal size		F	F'	A	G.W.(kg)	
Inch	mm				S/W	H/W
2-1/2" x 2"	65 x 50	100	87	127	6.5	6.8
3" x 2"	80 x 50	117	87	152	7.8	8.1
3" x 2-1/2"	80 x 65	117	100	152	9.0	9.3
4" x 2"	100 x 50	151	87	152	10.0	10.4
4" x 2-1/2"	100 x 65	151	100	152	11.5	11.9
4" x 3"	100 x 80	151	117	152	12.8	13.2
6" x 2"	150 x 50	203	87	200	15.6	16.2
6" x 2-1/2"	150 x 65	203	100	200	16.2	16.8
6" x 3"	150 x 80	203	117	200	17.0	17.7
6" x 4"	150 x 100	203	151	200	18.7	19.4
8" x 3"	200 x 80	256	117	200	24.4	25.4
8" x 4"	200 x 100	256	151	200	25.5	26.7
8" x 6"	200 x 150	256	203	200	30.0	31.3
10" x 4"	250 x 100	311	151	250	42.5	44.1
10" x 6"	250 x 150	311	203	250	44.6	46.2
10" x 8"	250 x 200	311	256	250	50.0	51.9

Flange : ANSI 150LBS

S/W : Standard Wall H/W : Heavy Wall unit : mm

Nominal size		F	F'	A	G.W.(kg)	
Inch	mm				S/W	H/W
12" x 6"	300 x 150	365	203	300	55.0	57.1
12" x 8"	300 x 200	365	256	300	63.2	66.5
12" x 10"	300 x 250	365	311	300	73.0	76.5
14" x 6"	350 x 150	415	203	406	-	104.5
14" x 8"	350 x 200	415	256	406	-	108.9
14" x 10"	350 x 250	415	311	406	-	116.9
14" x 12"	350 x 300	415	365	406	-	128.9
16" x 8"	400 x 200	475	256	457	-	139.0
16" x 10"	400 x 250	475	311	457	-	144.3
16" x 12"	400 x 300	475	365	457	-	157.5

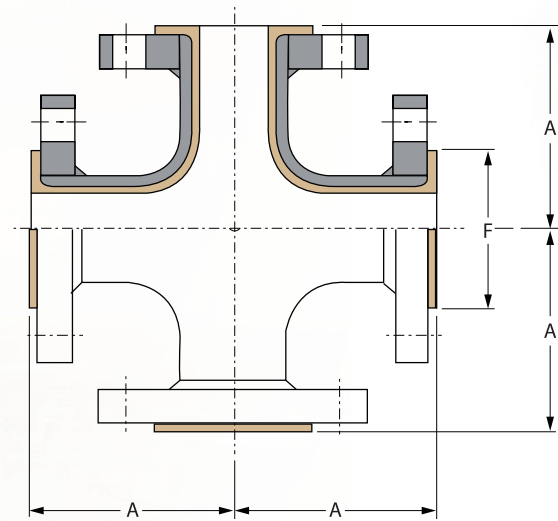
Materials Specification

	Flange			Steel frame			Lining
	Material	Norm	Size	Material	Norm	Size	Norm
Carbon Steel	ASTM A105	ANSI B16.5	Class 150LBS	ASTM A234	ANSI B16.28	2-1/2"~10"(SCH40) 12"~(STD)	ASTM D4894
Stainless Steel	ASTM A182	ANSI B16.5	Class 150LBS	ASTM A403	ANSI B36.19	2-1/2"~10"(SCH40) 12"~(STD)	

- Flange : JIS , DIN or others is also available on request.
- Material : the same grade as chart.

- L/F ; L/L are also available on request.
- JIS 10K flange flare can't apply to the chart above due to the B.C.D. limitation of the flange.
- Please inquire our sales representatives if you have other requirements of sizes or materials.

PTFE Lined Cross



Flange : ANSI 150LBS

unit : mm

Nominal size		F	A	G.W.(kg)
Inch	mm			Heavy wall
2"	50	87	114	11.8
2-1/2"	65	100	127	14.2
3"	80	117	140	22.8
4"	100	151	165	31.8
6"	150	203	203	53.0
8"	200	256	228	66.0

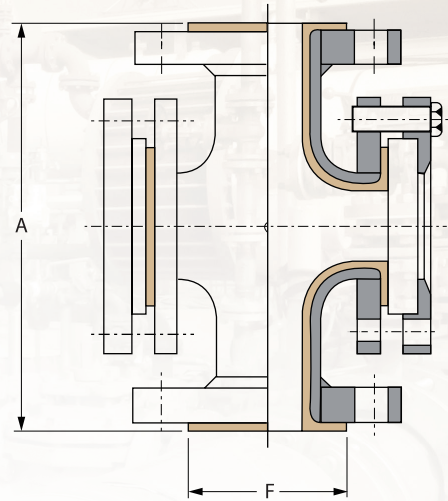
Materials Specification

	Flange			Steel frame			Lining
	Material	Norm	Size	Material	Norm	Size	Norm
Carbon Steel	ASTM A105	ANSI B16.5	Class 150LBS	ASTM A234	ANSI B16.28	2"~8"(SCH40)	ASTM D4894
Stainless Steel	ASTM A182	ANSI B16.5	Class 150LBS	ASTM A403	ANSI B36.19	2"~8"(SCH40)	

- Flange : JIS , DIN or others is also available on request.
- Material : the same grade as chart.

- L/F ; L/L are also available on request.
- JIS 10K flange flare can't apply to the chart above due to the B.C.D. limitation of the flange.
- Please inquire our sales representatives if you have other requirements of sizes or materials.

PTFE Lined Sight Glass



Flange : ANSI 150LBS

unit : mm

Nominal size		F	A	G.W.(kg)
Inch	mm			Heavy wall
2"	50	87	228	12.9
3"	80	117	280	22.7
4"	100	151	330	25.6
6"	150	203	406	51.6
8"	200	256	456	64.5

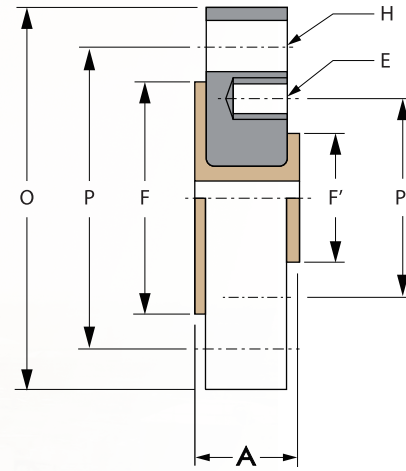
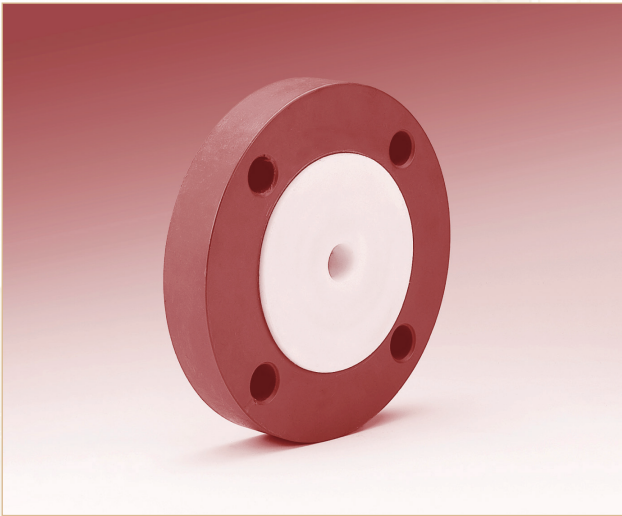
Materials Specification

	Flange			Steel frame			Lining
	Material	Norm	Size	Material	Norm	Size	Norm
Carbon Steel	ASTM A105	ANSI B16.5	Class 150LBS	ASTM A234	ANSI B16.28	2"~8"(SCH40)	ASTM D4894
Stainless Steel	ASTM A182	ANSI B16.5	Class 150LBS	ASTM A403	ANSI B36.19	2"~8"(SCH40)	

- Flange : JIS , DIN or others is also available on request.
- Material : the same grade as chart.

- L/F ; L/L are also available on request.
- JIS 10K flange flare can't apply to the chart above due to the B.C.D. limitation of the flange.
- Please inquire our sales representatives if you have other requirements of sizes or materials.

PTFE Lined Reducing Flange



Flange : ANSI 150LBS

unit : mm

Nominal size Inch	A H/W	F	F'	H holes x Ø	P	P'	O (OD)	E holes x Ø	G.W.(kg)	
									S/W	H/W
2-1/2" x 2"	40	100	87	4-TAP x 5/8"	139.7	120.6	178	4-TAP x 5/8"	5.6	5.9
3" x 2"	41	117	87	4-TAP x 5/8"	152.4	120.6	191	4-TAP x 5/8"	6.8	7.1
3" x 2-1/2"	41	117	100	4-TAP x 5/8"	152.4	139.7	191	4-TAP x 5/8"	6.5	6.9
4" x 2"	41	151	87	8 x 19 Ø	190.5	120.6	229	4-TAP x 5/8"	10.5	11.0
4" x 2-1/2"	41	151	100	8-TAP x 5/8"	190.5	139.7	229	4-TAP x 5/8"	10.0	10.6
4" x 3"	42	151	117	8-TAP x 5/8"	190.5	152.4	229	4-TAP x 5/8"	9.8	10.3
6" x 2"	41	203	87	8 x 23 Ø	241.3	120.6	279	4-TAP x 5/8"	13.5	14.3
6" x 2-1/2"	41	203	100	8 x 23 Ø	241.3	139.7	279	4-TAP x 5/8"	13.4	14.3
6" x 3"	42	203	117	8 x 23 Ø	241.3	152.4	279	4-TAP x 5/8"	13.2	14.1
6" x 4"	42	203	151	8-TAP x 3/4"	241.3	190.5	279	8-TAP x 5/8"	12.6	13.6
8" x 3"	42.5	256	117	8 x 23 Ø	298.4	152.4	343	4-TAP x 5/8"	21.0	22.0
8" x 4"	42.5	256	151	8 x 23 Ø	298.4	190.5	343	8-TAP x 5/8"	20.0	21.2
8" x 6"	44.5	256	203	8-TAP x 3/4"	298.4	241.3	343	8-TAP x 3/4"	18.8	20.0
10" x 2"	41	311	87	12 x 25 Ø	361.9	120.6	406	4-TAP x 5/8"	34.2	35.5
10" x 3"	42	311	117	12 x 25 Ø	361.9	152.4	406	4-TAP x 5/8"	33.5	34.8
10" x 4"	44	311	151	12 x 25 Ø	361.9	190.5	406	8-TAP x 5/8"	32.5	33.8

Flange : ANSI 150LBS

unit : mm

Nominal size Inch	A H/W	F	F'	H	P	P'	O (OD)	E	G.W.(kg)	
				holes x Ø				holes x Ø	S/W	H/W
10" x 6"	46	311	203	12 x 25 Ø	361.9	241.3	406	8-TAP x 3/4"	30.0	31.3
10" x 8"	46	311	256	12-TAP x 7/8"	361.9	298.4	406	8-TAP x 3/4"	26.0	27.5
12" x 3"	42	365	117	12 x 25 Ø	431.8	152.4	483	4-TAP x 5/8"	47.6	49.1
12" x 4"	45	365	256	12 x 25 Ø	431.8	190.5	483	8-TAP x 5/8"	47.4	48.9
12" x 6"	47	365	203	12 x 25 Ø	431.8	241.3	483	8-TAP x 3/4"	44.8	46.3
12" x 8"	47.5	365	256	12 x 25 Ø	431.8	298.4	483	8-TAP x 3/4"	40.8	42.3
12" x 10"	49	365	311	12-TAP x 7/8"	431.8	361.9	483	12-TAP x 7/8"	36.2	37.7
14" x 6"	48	415	203	12 x 29 Ø	476.2	241.3	533	8-TAP x 3/4"	-	68.5
14" x 8"	48.5	415	256	12 x 29 Ø	476.2	298.4	533	8-TAP x 3/4"	-	66.1
14" x 10"	50	415	311	12 x 29 Ø	476.2	361.9	533	12-TAP x 7/8"	-	61.1
14" x 12"	52	415	365	12-TAP x 1"	476.2	431.8	533	12-TAP x 7/8"	-	55.0
16" x 6"	48	475	203	16 x 29 Ø	539.5	241.3	597	8-TAP x 3/4"	-	91.1
16" x 8"	48.5	475	256	16 x 29 Ø	539.5	298.4	597	8-TAP x 3/4"	-	88.3
16" x 10"	50	475	311	16 x 29 Ø	539.5	361.9	597	12-TAP x 7/8"	-	83.6
16" x 12"	52	475	365	16 x 29 Ø	539.5	431.8	597	12-TAP x 7/8"	-	77.7
16" x 14"	52	475	415	16-TAP x 1"	539.5	476.2	597	12-TAP x 1"	-	71.1

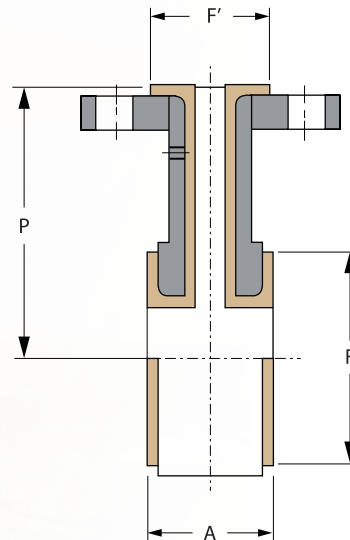
Materials Specification

	Flange			Lining
	Material	Norm	Size	Norm
Carbon Steel	ASTM A105	ANSI B16.5	Class 150LBS	ASTM D4894
		JIS B2220	JIS 10K	
Stainless Steel	ASTM A182	ANSI B16.5	Class 150LBS	
		JIS B2220	JIS 10K	

- Flange : JIS , DIN or others is also available on request.
- Material : the same grade as chart.

- L/F ; L/L are also available on request.
- JIS 10K flange flare can't apply to the chart above due to the B.C.D. limitation of the flange.
- Please inquire our sales representatives if you have other requirements of sizes or materials.

PTFE Lined Instrument Tee



Flange : ANSI 150LBS

unit : mm

Nominal size		F	F'	A	P	G.W.(kg)
Inch	mm					
2" x 2"	50 x 50	87	87	77	114	6.3
3" x 2"	-	117	87	77	140	8.2
6" x 2"	150 x 50	203	87	79	200	15.2
8" x 2"	-	256	87	82	228	19.9
10" x 2"	250 x 50	311	87	83	250	27.4
12" x 2"	300 x 50	365	87	83	305	38.7
14" x 2"	350 x 50	415	87	93	318	40.5
16" x 2"	400 x 50	475	87	93	350	53.7

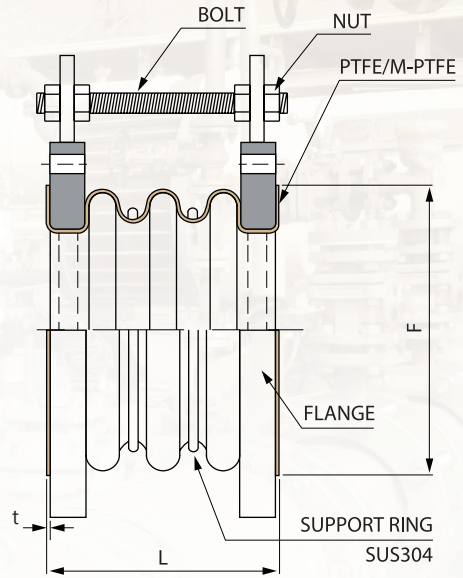
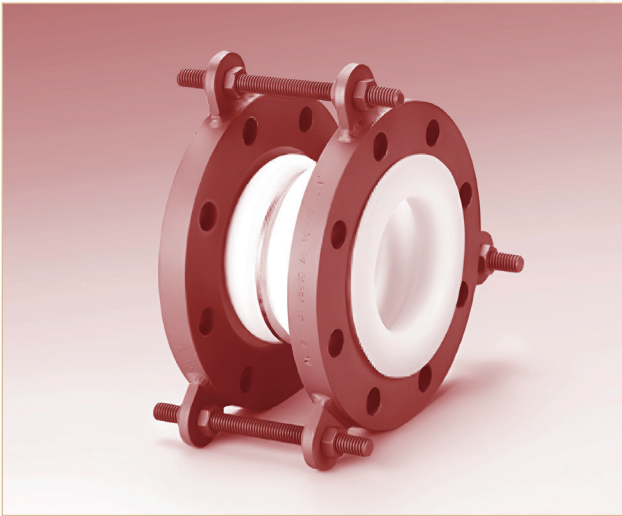
Materials Specification

	Flange			Lining
	Material	Norm	Size	Norm
Carbon Steel	ASTM A105	ANSI B16.5	Class 150LBS	ASTM D4894
		JIS B2220	JIS 10K	
Stainless Steel	ASTM A182	ANSI B16.5	Class 150LBS	
		JIS B2220	JIS 10K	

- Flange : JIS , DIN or others is also available on request.
- Material : The same grade as chart.

- JIS 10K flange flare can't apply to the chart above due to the B.C.D. limitation of the flange.
- Please inquire our sales representatives if you have other requirements of sizes or materials.

High Pressure Bellows



Flange : ANSI 150LBS

unit : mm

Nominal size		L									t	F	pressure resistance Kg / cm ² G		
		2 con.			3 con.			5 con.					25°C		
Inch	mm	Overall length	Compression length	Extension length	Overall length	Compression length	Extension length	Overall length	Compression length	Extension length			2 con.	3 con.	5 con.
1"	25	61	55	70	80	70	90	110	100	120	3.1	48	7	7	7
1.5"	40	61	55	70	90	80	100	120	105	130	3.1	68	7	7	7
2"	50	73	65	80	100	90	110	140	125	155	3.1	87	7	7	7
2.5"	65	90	80	100	110	100	120	150	135	165	3.1	100	7	7	7
3"	80	100	90	110	125	110	135	170	150	185	3.1	117	7	7	7
4"	100	105	95	115	130	115	145	175	155	190	3.1	151	7	7	7
5"	125	110	100	120	135	120	150	180	160	200	4	175	7	7	7
6"	150	125	110	140	150	135	165	200	180	220	4	203	7	7	7
8"	200	125	110	140	155	140	170	205	185	225	5	256	5	5	5
10"	250	130	115	145	160	145	175	210	190	230	6	311	5	5	5
12"	300	135	120	150	165	150	180	225	200	245	6	365	5	5	5
14"	350	140	125	155	170	155	185	235	210	255	6	415	5	5	5
16"	400	150	135	165	190	170	210	260	230	285	6	475	5	5	5
18"	450	150	135	165	190	170	210	270	240	295	7	515	5	5	5
20"	500	160	140	175	200	180	220	280	250	305	7	565	5	5	5

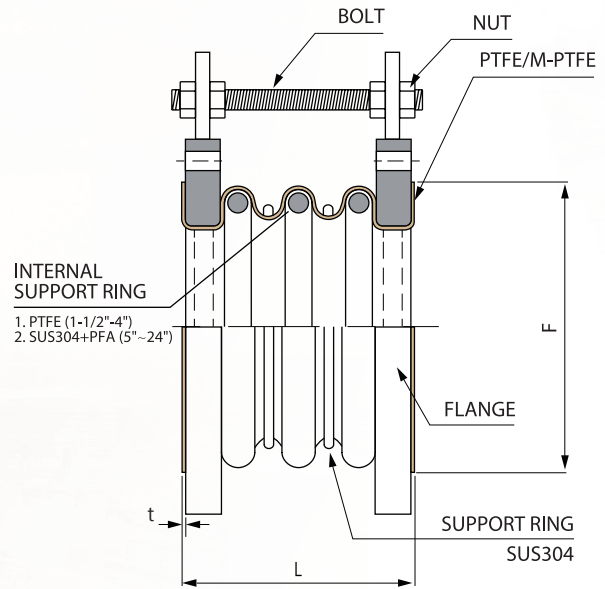
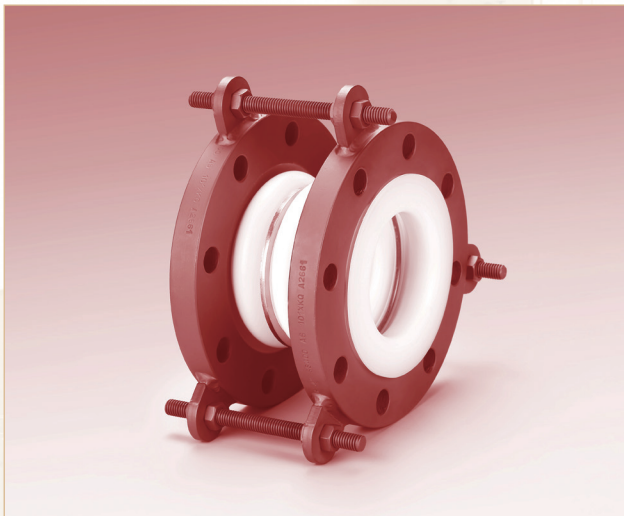
Materials Specification

	Flange			Bolt/Nut	Support Ring
	Material	Norm	Size		
Carbon Steel	ASTM A105	ANSI B16.5	Class 150LBS	Galvanized	SS 304
		JIS B2220	JIS 10K		
Stainless Steel	ASTM A182	ANSI B16.5	Class 150LBS	SS304	
		JIS B2220	JIS 10K		

- Flange : JIS , DIN or others is also available on request.
- Material : The same grade as chart.

- JIS 10K flange flare can't apply to the chart above due to the B.C.D. limitation of the flange.
- Please inquire our sales representatives if you have other requirements of sizes or materials.

Vacuum Resistant Bellows



Flange : ANSI 150LBS

unit : mm

Nominal size		L			t	F
Inch	mm	2 con.	3 con.	5 con.		
2"	50	73	100	-	3.1	87
2.5"	65	90	110	-	3.1	100
3"	80	100	125	170	3.1	117
4"	100	105	130	175	3.1	151
5"	125	110	135	180	4	175
6"	150	125	150	200	4	203
8"	200	125	155	205	5	256
10"	250	130	160	210	6	311
12"	300	135	165	225	6	365
14"	350	140	170	235	6	415
16"	400	150	190	260	6	475
18"	450	150	190	270	7	515
20"	500	165	200	280	7	565
24"	600	170	210	290	7	650

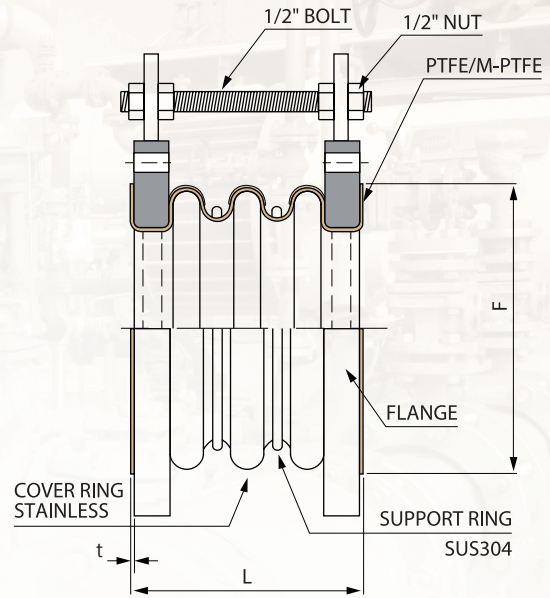
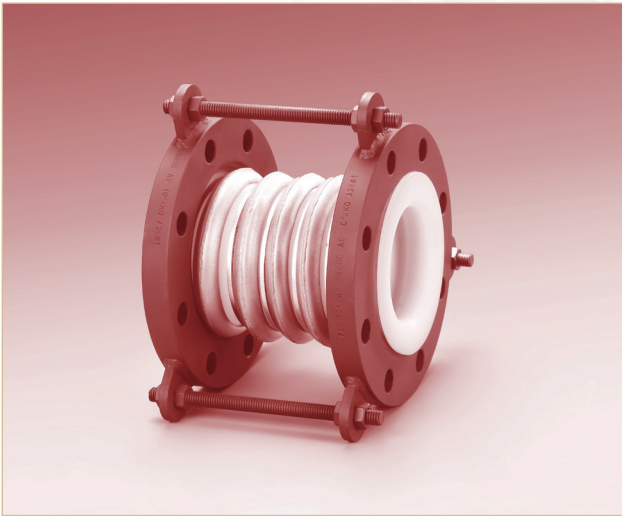
Materials Specification

	Flange			Bolt/Nut	Internal Ring	Support Ring
	Material	Norm	Size			
Carbon Steel	ASTM A105	ANSI B16.5	Class 150LBS	Galvanized	PTFE	SS 304
		JIS B2220	JIS 10K			
Stainless Steel	ASTM A182	ANSI B16.5	Class 150LBS	SS304	SS304+PFA	
		JIS B2220	JIS 10K			

- Flange : JIS , DIN or others is also available on request.
- Material : The same grade as chart.

- JIS 10K flange flare can't apply to the chart above due to the B.C.D. limitation of the flange.
- Please inquire our sales representatives if you have other requirements of sizes or materials.

Reinforced Bellows



Flange : ANSI 150LBS

unit : mm

Nominal size		L			t	F	pressure resistance Kg/cm ² G		
Inch	mm	2 con.	3 con.	5 con.			25°C		
							2 con.	3 con.	5 con.
2"	50	90	130	210	3.1	87	10	10	10
3"	80	105	145	230	3.1	117	10	10	10
4"	100	105	150	240	3.1	151	10	10	10
6"	150	110	160	250	4	203	10	10	10
8"	200	120	165	260	5	256	10	10	10
10"	250	125	175	270	6	311	10	10	10
12"	300	140	195	300	6	365	10	10	10
14"	350	145	200	315	6	415	10	10	10
16"	400	150	210	325	6	475	10	10	10
18"	450	160	215	335	7	515	10	10	10
20"	500	165	225	350	7	565	10	10	10

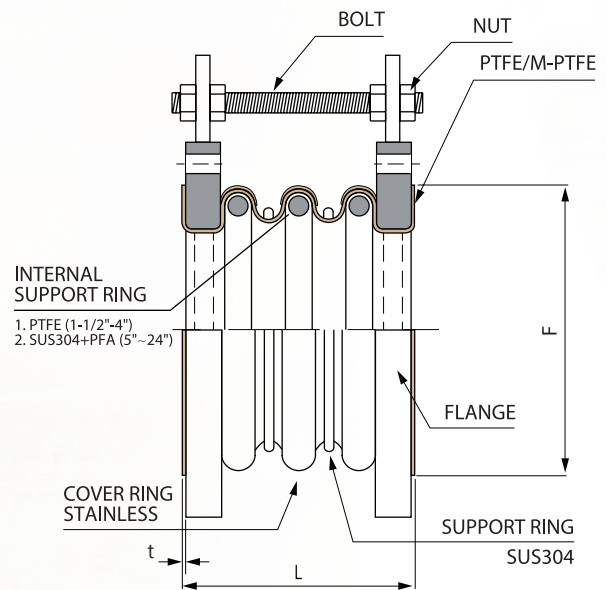
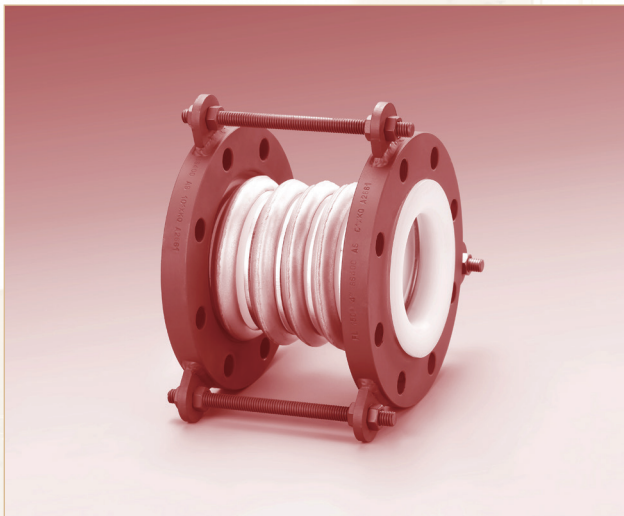
Materials Specification

	Flange			Bolt/Nut	Cover Ring	Support Ring
	Material	Norm	Size			
Carbon Steel	ASTM A105	ANSI B16.5	Class 150LBS	Galvanized	SS 304	SS 304
		JIS B2220	JIS 10K			
Stainless Steel	ASTM A182	ANSI B16.5	Class 150LBS	SS304	SS 304	SS 304
		JIS B2220	JIS 10K			

- Flange : JIS , DIN or others is also available on request.
- Material : The same grade as chart.

- JIS 10K flange flare can't apply to the chart above due to the B.C.D. limitation of the flange.
- Please inquire our sales representatives if you have other requirements of sizes or materials.

Reinforced & Vacuum Resistant Bellows



Flange : ANSI 150LBS

unit : mm

Nominal size		L			t	F
Inch	mm	2 con.	3 con.	5 con.		
2"	50	73	100	-	3.1	87
2.5"	65	90	110	-	3.1	100
3"	80	100	125	170	3.1	117
4"	100	105	130	175	3.1	151
5"	125	110	135	180	4	175
6"	150	125	150	200	4	203
8"	200	125	155	205	5	256
10"	250	130	160	210	6	311
12"	300	135	165	225	6	365
14"	350	140	170	235	6	415
16"	400	150	190	260	6	475
18"	450	150	190	270	7	515
20"	500	160	200	280	7	565
24"	600	170	210	290	7	650

Materials Specification

	Flange			Bolt/Nut	Cover Ring	Internal Ring	Support Ring
	Material	Norm	Size				
Carbon Steel	ASTM A105	ANSI B16.5	Class 150LBS	Galvanized	SS 304	PTFE	SS 304
		JIS B2220	JIS 10K				
Stainless Steel	ASTM A182	ANSI B16.5	Class 150LBS	SS304		SS304+PFA	
		JIS B2220	JIS 10K				

- Flange : JIS , DIN or others is also available on request.
- Material : The same grade as chart.

- JIS 10K flange flare can't apply to the chart above due to the B.C.D. limitation of the flange.
- Please inquire our sales representatives if you have other requirements of sizes or materials.

PTFE Gasket & Solid Spacer

PTFE Gasket

ANSI 150LBS

unit : mm

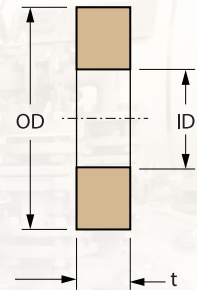
Nominal size	OD	ID	t
Inch			
1/2"	47	16	3
3/4"	56	21	3
1"	66	27	3
1-1/2"	85	41	3
2"	104	53	3
2-1/2"	123	64	3
3"	134	79	3
4"	173	102	3
5"	193	128	3
6"	220	154	3
8"	277	205	3
10"	338	258	3
12"	408	311	3
14"	449	340	3
16"	512	390	3
18"	547	411	3
20"	604	442	3

PTFE Solid Spacer

ANSI 150LBS

unit : mm

Nominal size	OD	ID	t
Inch			
1/2"	46.0	15.0	3~50
3/4"	55.0	20.5	3~50
1"	65.0	22.0	3~50
1-1/2"	85.0	37.0	3~50
2"	105.0	45.0	3~50
2-1/2"	120.0	56.5	3~50
3"	135.0	70.0	3~50
4"	170.0	100.0	3~50
6"	220.0	150.0	3~50
8"	280.0	200.0	3~50
10"	330.0	260.0	3~50
12"	400.0	310.0	3~50
14"	430.0	350.0	3~50
16"	512.0	400.0	3~50
18"	548.0	450.0	3~50
20"	605.0	500.0	3~50
Tolerance	+0 / -3	±3	-



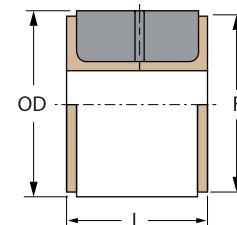
- Material : Pure PTFE in compliance with ASTM D4894.
- Other nominal sizes are available on request.
- Please inquire our sales representatives if you have requirements of JIS, DIN or other specifications.

Armored Spacer

ANSI 150LBS

unit : mm

Nominal size	OD	F	L(Max.)
Inch			
2"	97.9	87	30~75
3"	132.0	117	30~75
4"	169.0	151	30~75
6"	215.0	203	50~100
8"	273.9	256	50~100
10"	334.5	311	50~100
12"	404.9	365	50~100
14"	433.8	415	50~100



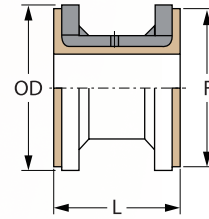
- Steel Frame : ASTM A53 grade B, in compliance with ANSI B36.10.
- Lining : Compliance with ASTM D4894.
- Other nominal sizes are available on request.
- Please inquire our sales representatives if you have other requirements of sizes or materials.

Distance Spacer

ANSI 150LBS

unit : mm

Nominal size Inch	OD	F	L(Max.)
2"	98	87	120~300
3"	128	117	120~300
4"	169	151	120~300
6"	216	203	130~300
8"	274	256	130~300
10"	332	311	150~300
12"	402	365	150~300
14"	434	415	150~300



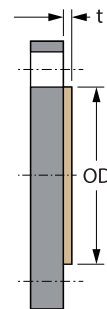
- Steel Frame : ASTM A53 grade B, in compliance with ANSI B36.10.
- Lining : Compliance with ASTM D4894.
- Other nominal sizes are available on request.
- Please inquire our sales representatives if you have requirements of JIS, DIN or other specifications.

Blind Flange

ANSI 150LBS

unit : mm

Nominal size Inch	OD	t	GW(kg)
1/2"	42	3	0.7
3/4"	52	3	0.9
1"	61	3	1.0
1-1/2"	80	3	1.9
2"	100	3	2.5
2-1/2"	119	3	3.4
3"	131	3	4.3
4"	170	3	8.0
6"	217	3	12.5
8"	275	3	21.5
10"	335	3	33.0
12"	405	3	52.0
14"	446	3	66.5
16"	509	3	85.0
18"	544	3	102.8
20"	601	3	133.4



- Flange : ASTM A105, in compliance with ANSI B16.5/ Class 150lbs; JIS 10K or DN is also available on request.
- Material : Compliance with ASTM D4894.
- Other nominal sizes are available on request.
- Please inquire our sales representatives if you have other requirements of sizes or materials.

Worldwide



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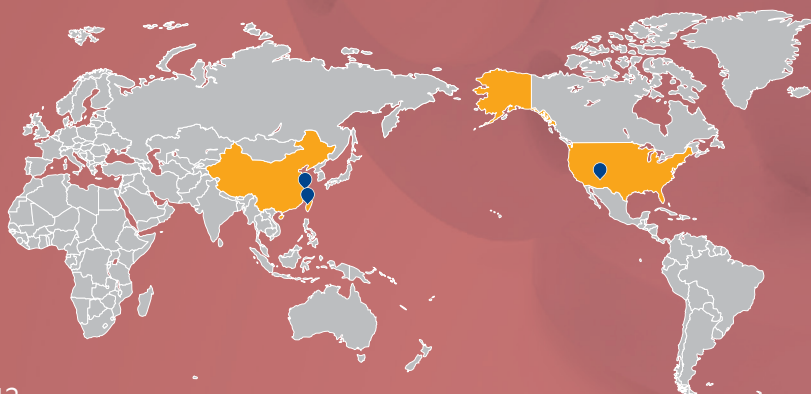
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