

# LINED PIPE & FITTING EXPANSION JOINT FLEXIBLE HOSE

PIPE, ELBOW, TEE, REDUCER, BLIND FLANGE  
SIGHT GLASS, REDUCING FLANGE, SPACER, GASKET  
PTFE BELLOWS (PTFE EXPANSION JOINT)  
PTFE/PFA FLEXIBLE HOSE



**FOOSUNG**

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INTRODUCTION & FEATURES

01  
INTRODUCTION

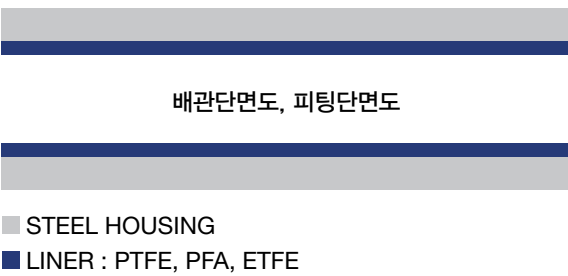
불소수지를 이용한 후성정공의 LINING 배관은 당사만의 축적된 라이닝 기술로 최고의 품질의 제품이 생산되고 있습니다. 불소수지의 내화학성, 비점착성의 특징을 사용하여 반도체 및 정밀화학산업, 정유화학, 일반화학, 제약 등 다양한 분야에서 사용되고 있습니다. 라이닝 방식은 ISOSTASTIC MOLDING, INJECTION MOLDING, EXTRUSION MOLDING 방식이 있습니다.

The Lined Pipe & Fittings of Foosung Precision using fluoro-polymer is a product of the highest quality produced with our own accumulated lining technology. Our products are used in various fields such as semiconductors, fine chemical industries, petrochemicals, general chemicals, and pharmaceuticals, utilizing their chemical resistance and non-adhesive properties. The lining methods are Isostatic molding, injection molding and extrusion molding.

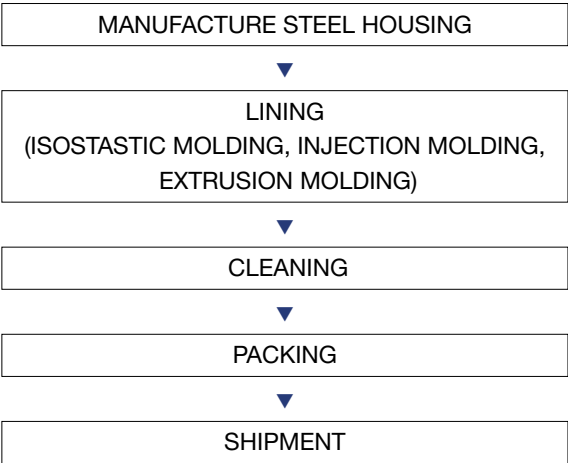
フッ素樹脂が使われたFOOSUNG精工のライニングタンクは蓄積された弊社独自のライニング技術で最高品質の製品が生産されています。  
フッ素樹脂の耐化学性、非粘着性等の特性を利用し、半導体及び精密化学産業、石油化学、一般化学、製薬等の様々な分野で使われています。  
ライニング方式には、ISOSTASTIC MOLDING、INJECTION MOLDING、EXTRUSION MOLDING方式があります。

厚成精工の氟树脂衬氟罐体应用多年的技术经验，充分保证了产品的高质量。  
利用氟树脂的耐化学性、非粘着性特点，已应用于半导体及精细化工、炼油化工、普通化工、制药等多个领域。  
衬里方式等静压成型法、注塑成型法、挤出成型法。

02  
SECTION VEIW



03  
MANUFACTURING PROCESS

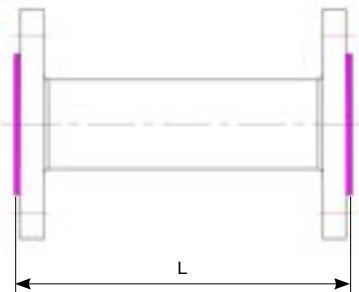


04  
INSPECTION

- ✓ VISUAL CHECK
- ✓ DIMENSION CHECK
- ✓ PIN HOLE TEST
- ✓ LEAKAGE TEST
- ✓ HYDRO TEST (IF REQUIRED)
- ✓ PAINTING or OUTSIDE TREATMENT CHECK
- ✓ NDE TEST(IF REQUIRED)
- ✓ PWHT(IF REQUIRED)
- ✓ IMPACT TEST(IF REQUIRED)

PIPE

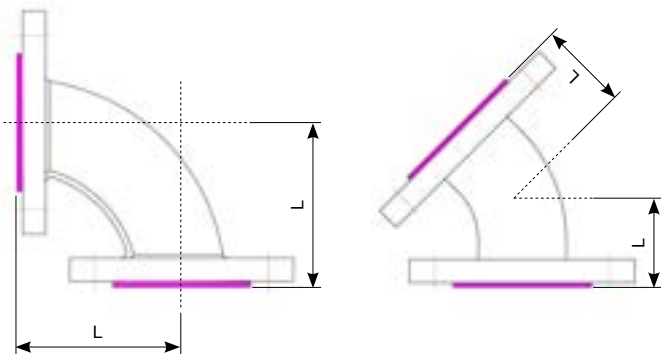
|                                                    |                                             |
|----------------------------------------------------|---------------------------------------------|
| HOUSING MATERIAL                                   | CARBON STEEL<br>STAINLESS STEEL             |
| LINING MATERIAL                                    | PTFE<br>PFA<br>ETFE<br>PTFE(ANTISTASTIC)    |
| LINING APPLICATION CODE                            | ASTM F-1545                                 |
| STANDARD FLANGE<br>CONNECTION TYPE                 | Fixed - Rotating Flanges                    |
| ** Other types of flange connection are available. |                                             |
| VENT HOLE(1/4")                                    | Min~500mm : 1 POINT<br>OVER 500mm : 2 POINT |
| (If necessary, follow the project requirements.)   |                                             |
| PIPE SCHEDULE                                      | According to Project Specification          |
| ** Other specification is available.               |                                             |



| SIZE   |      | 제작길이(LENGTH, mm) |      | TOLERANCE<br>(mm) | ID<br>(mm) | LINING MATERIAL |     |     |     |      |     |
|--------|------|------------------|------|-------------------|------------|-----------------|-----|-----|-----|------|-----|
| ANSI   | JIS  | MIN              | MAX  |                   |            | PTFE            |     | PFA |     | ETFE |     |
| 1/2"   | 15A  | 80               | 3000 | ±3                | 16         | O               | 3.2 | O   | 3.0 |      |     |
| 3/4"   | 20A  | 80               | 3000 | ±3                | 16         | O               | 3.2 | O   | 3.0 |      |     |
| 1"     | 25A  | 80               | 3000 | ±3                | 22         | O               | 3.2 | O   | 3.0 | O    | 2.0 |
| 1-1/2" | 40A  | 85               | 3000 | ±3                | 36         | O               | 3.2 | O   | 3.0 | O    | 2.0 |
| 2"     | 50A  | 100              | 3000 | ±3                | 47         | O               | 3.2 | O   | 3.0 | O    | 2.0 |
| 2-1/2" | 65A  | 120              | 3000 | ±3                | 60         | O               | 3.2 | O   | 3.0 | O    | 2.0 |
| 3"     | 80A  | 120              | 3000 | ±3                | 73         | O               | 3.2 | O   | 3.0 | O    | 2.0 |
| 4"     | 100A | 120              | 3000 | ±3                | 94         | O               | 4.5 |     |     | O    | 2.0 |
| 5"     | 125A | 130              | 3000 | ±3                | 118        | O               | 5.0 |     |     | O    | 2.0 |
| 6"     | 150A | 135              | 3000 | ±3                | 143        | O               | 5.0 |     |     | O    | 2.0 |
| 8"     | 200A | 140              | 3000 | ±3                | 192        | O               | 5.0 |     |     | O    | 2.0 |
| 10"    | 250A | 155              | 3000 | ±3                | 240        | O               | 5.0 |     |     | O    | 2.0 |
| 12"    | 300A | 165              | 2000 | ±3                | 287        | O               | 5.0 |     |     | O    | 2.0 |
| 14"    | 350A | 170              | 2000 | ±5                | 323        | O               | 5.0 |     |     | O    | 2.0 |
| 16"    | 400A | 180              | 2000 | ±5                | 371        | O               | 5.0 |     |     | O    | 2.0 |
| 18"    | 450A | 200              | 2000 | ±5                | 418        | O               | 5.0 |     |     | O    | 2.0 |
| 20"    | 500A | 210              | 2000 | ±5                | 467        | O               | 5.0 |     |     | O    | 2.0 |
| 24"    | 600A | 220              | 1500 | ±5                | 565        | O               | 5.0 |     | O   | 2.0  |     |

ELBOW (90°, 45°)

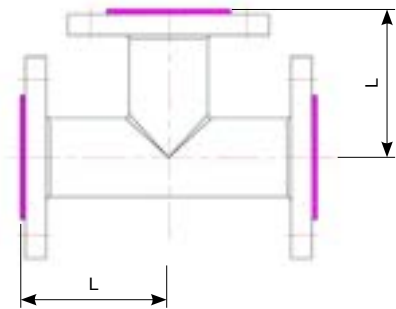
|                                                    |                                                    |
|----------------------------------------------------|----------------------------------------------------|
| HOUSING MATERIAL                                   | CARBON STEEL<br>STAINLESS STEEL                    |
| LINING MATERIAL                                    | PTFE<br>PFA<br>ETFE<br>PTFE(ANTISTASTIC)           |
| LINING APPLICATION CODE                            | F-1545                                             |
| STANDARD FLANGE<br>CONNECTION TYPE                 | Fixed Flange                                       |
| ** Other types of flange connection are available. |                                                    |
| VENT HOLE                                          | 1 POINT                                            |
| PIPE SCHEDULE                                      | CARBON STEEL : SCH-STD<br>STAINLESS STEEL : SCH 10 |
| ** Other specification is available.               |                                                    |



| SIZE   |      | 면간거리(Center to Face, mm) |     |           | ID<br>(mm) | LINING MATERIAL |     |     |      |   |     |
|--------|------|--------------------------|-----|-----------|------------|-----------------|-----|-----|------|---|-----|
| ANSI   | JIS  | 90°                      | 45° | TOLERANCE |            | PTFE            |     | PFA | ETFE |   |     |
| 1/2"   | 15A  | 70                       | 45  | ±2        | 16         | O               | 3.2 | O   | 3.0  |   |     |
| 3/4"   | 20A  | 80                       | 45  | ±2        | 16         | O               | 3.2 | O   | 3.0  |   |     |
| 1"     | 25A  | 89                       | 60  | ±2        | 22         | O               | 3.2 | O   | 3.0  | O | 2.0 |
| 1-1/2" | 40A  | 102                      | 60  | ±2        | 36         | O               | 3.2 | O   | 3.5  | O | 2.0 |
| 2"     | 50A  | 114                      | 64  | ±3        | 47         | O               | 3.2 | O   | 3.5  | O | 2.0 |
| 2-1/2" | 65A  | 127                      | 76  | ±5        | 60         | O               | 3.2 | O   | 4.0  | O | 2.0 |
| 3"     | 80A  | 140                      | 76  | ±5        | 73         | O               | 3.2 | O   | 4.0  | O | 2.0 |
| 4"     | 100A | 165                      | 102 | ±5        | 94         | O               | 4.5 | O   | 4.5  | O | 2.0 |
| 5"     | 125A | 194                      | 114 | ±5        | 118        | O               | 4.5 |     |      | O | 2.0 |
| 6"     | 150A | 203                      | 127 | ±5        | 143        | O               | 4.5 |     |      | O | 2.0 |
| 8"     | 200A | 228                      | 140 | ±5        | 192        | O               | 4.5 |     |      | O | 2.0 |
| 10"    | 250A | 280                      | 165 | ±5        | 240        | O               | 4.5 |     |      | O | 2.0 |
| 12"    | 300A | 312                      | 204 | ±5        | 287        |                 |     |     |      | O | 2.0 |
| 14"    | 350A | 361                      | 227 | ±5        | 323        |                 |     |     |      | O | 2.0 |
| 16"    | 400A | 412                      | 260 | ±5        | 371        |                 |     |     |      | O | 2.0 |
| 18"    | 450A | 460                      | 291 | ±5        | 418        |                 |     |     |      | O | 2.0 |
| 20"    | 500A | 511                      | 322 | ±7        | 467        |                 |     |     |      | O | 2.0 |
| 24"    | 600A | 612                      | 386 | ±7        |            |                 |     |     |      | O | 2.0 |

EQUAL-TEE

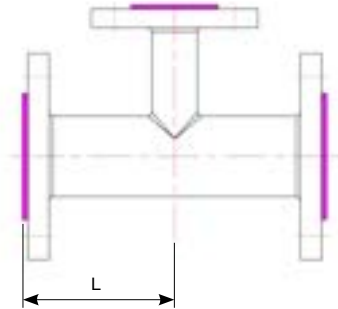
|                                                    |                                                    |
|----------------------------------------------------|----------------------------------------------------|
| HOUSING MATERIAL                                   | CARBON STEEL<br>STAINLESS STEEL                    |
| LINING MATERIAL                                    | PTFE<br>PFA<br>ETFE<br>PTFE(ANTISTASTIC)           |
| LINING APPLICATION CODE                            | F-1545                                             |
| STANDARD FLANGE<br>CONNECTION TYPE                 | Fixed Flange                                       |
| ** Other types of flange connection are available. |                                                    |
| VENT HOLE                                          | 1 POINT                                            |
| PIPE SCHEDULE                                      | CARBON STEEL : SCH-STD<br>STAINLESS STEEL : SCH 10 |
| ** Other specification is available.               |                                                    |



| SIZE   |      | 면간거리(Center to Face, mm) |           | LINING MATERIAL |     |      |     |   |     |
|--------|------|--------------------------|-----------|-----------------|-----|------|-----|---|-----|
| ANSI   | JIS  | LENGTH                   | TOLERANCE | PTFE            | PFA | ETFE |     |   |     |
| 1/2"   | 15A  | 70                       | ±5        | O               | 3.2 | O    | 3.0 |   |     |
| 3/4"   | 20A  | 80                       | ±5        | O               | 3.2 | O    | 3.0 |   |     |
| 1"     | 25A  | 89                       | ±5        | O               | 3.2 | O    | 3.0 | O | 2.0 |
| 1-1/2" | 40A  | 102                      | ±5        | O               | 3.2 | O    | 3.0 | O | 2.0 |
| 2"     | 50A  | 114                      | ±6        | O               | 3.2 | O    | 3.0 | O | 2.0 |
| 2-1/2" | 65A  | 127                      | ±6        | O               | 3.2 | O    | 4.0 | O | 2.0 |
| 3"     | 80A  | 140                      | ±6        | O               | 3.2 | O    | 4.0 | O | 2.0 |
| 4"     | 100A | 165                      | ±6        | O               | 4.5 | O    | 4.5 | O | 2.0 |
| 5"     | 125A | 194                      | ±7        | O               | 4.5 |      |     | O | 2.0 |
| 6"     | 150A | 203                      | ±7        | O               | 4.5 |      |     | O | 2.0 |
| 8"     | 200A | 228                      | ±7        | O               | 4.5 |      |     | O | 2.0 |
| 10"    | 250A | 280                      | ±7        | O               | 4.5 |      |     | O | 2.0 |
| 12"    | 300A | 305                      | ±7        | O               | 4.5 |      |     | O | 2.0 |
| 14"    | 350A | 356*                     | ±7        | O               | 5.0 |      |     | O | 2.0 |
| 16"    | 400A | 412*                     | ±7        |                 |     |      |     | O | 2.0 |
| 18"    | 450A | 460*                     | ±7        |                 |     |      |     | O | 2.0 |
| 20"    | 500A | 511*                     | ±7        |                 |     |      |     | O | 2.0 |
| 24"    | 600A | 612*                     | ±7        |                 |     |      |     | O | 2.0 |

REDUCING-TEE

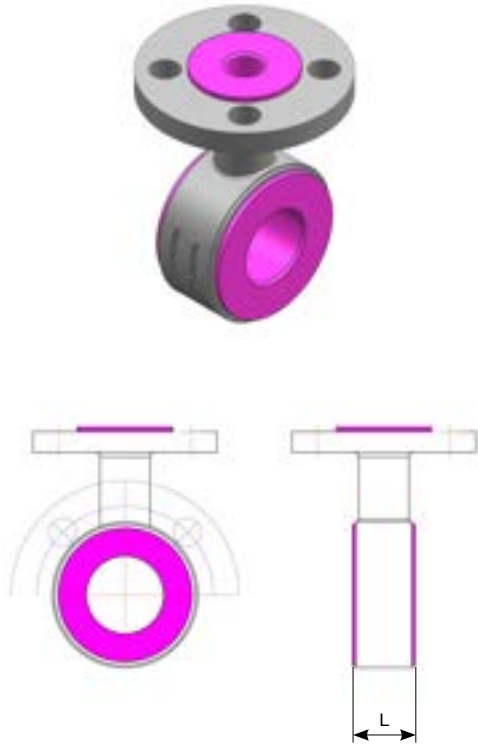
|                                                    |                                                    |
|----------------------------------------------------|----------------------------------------------------|
| HOUSING MATERIAL                                   | CARBON STEEL<br>STAINLESS STEEL                    |
| LINING MATERIAL                                    | PTFE<br>PFA<br>ETFE<br>PTFE(ANTISTASTIC)           |
| LINING APPLICATION CODE                            | F-1545                                             |
| STANDARD FLANGE<br>CONNECTION TYPE                 | Fixed Flange                                       |
| ** Other types of flange connection are available. |                                                    |
| VENT HOLE                                          | 1 POINT                                            |
| PIPE SCHEDULE                                      | CARBON STEEL : SCH-STD<br>STAINLESS STEEL : SCH 10 |
| ** Other specification is available.               |                                                    |



| SIZE         |              | 면간거리(Center to Face, mm) |           | LINING MATERIAL |     |      |     |   |     |
|--------------|--------------|--------------------------|-----------|-----------------|-----|------|-----|---|-----|
| MAIN SIZE    | BRANCH SIZE  | LENGTH                   | TOLERANCE | PTFE            | PFA | ETFE |     |   |     |
| 3/4" (20A)   | 1/2" (15A)   | 80                       | ±5        | O               | 3.2 |      |     |   |     |
| 1" (25A)     | 1/2" (15A)   | 89                       | ±5        |                 |     | O    | 3.0 |   |     |
|              | 3/4" (20A)   | 89                       | ±5        | O               | 3.2 | O    | 3.0 | O | 2.0 |
| 1-1/2" (40A) | 3/4" (20A)   | 102                      | ±5        | O               | 3.2 | O    | 3.0 | O | 2.0 |
|              | 1" (25A)     | 102                      | ±5        | O               | 3.2 | O    | 3.0 | O | 2.0 |
| 2" (50A)     | 3/4" (20A)   | 114                      | ±5        | O               | 3.2 | O    | 3.0 | O | 2.0 |
|              | 1" (25A)     | 114                      | ±5        | O               | 3.2 | O    | 3.0 | O | 2.0 |
|              | 1-1/2" (40A) | 114                      | ±5        | O               | 3.2 | O    | 3.0 | O | 2.0 |
| 2-1/2" (65A) | 3/4" (20A)   | 127                      | ±6        | O               | 3.2 | O    | 3.0 | O | 2.0 |
|              | 1" (25A)     | 127                      | ±6        | O               | 3.2 | O    | 3.0 | O | 2.0 |
|              | 1-1/2" (40A) | 127                      | ±6        | O               | 3.2 | O    | 3.0 | O | 2.0 |
|              | 2" (50A)     | 127                      | ±6        | O               | 3.2 |      |     | O | 2.0 |
| 3" (80A)     | 3/4" (20A)   | 140                      | ±6        | O               | 3.2 | O    | 3.0 | O | 2.0 |
|              | 1" (25A)     | 140                      | ±6        | O               | 3.2 | O    | 3.0 | O | 2.0 |
|              | 1-1/2" (40A) | 140                      | ±6        | O               | 3.2 | O    | 3.0 | O | 2.0 |
|              | 2" (50A)     | 140                      | ±6        | O               | 3.2 | O    | 3.0 | O | 2.0 |
| 4" (100A)    | 3/4" (20A)   | 165                      | ±6        | O               | 4.0 | O    | 4.0 | O | 2.0 |
|              | 1" (25A)     | 165                      | ±6        | O               | 4.0 | O    | 4.0 | O | 2.0 |
|              | 1-1/2" (40A) | 165                      | ±6        | O               | 4.0 |      |     | O | 2.0 |
|              | 2" (50A)     | 165                      | ±6        | O               | 4.0 | O    | 4.0 | O | 2.0 |
|              | 3" (80A)     | 165                      | ±6        | O               | 4.0 | O    | 4.0 | O | 2.0 |
| 5" (125A)    | 2" (50A)     | 194                      | ±7        | O               | 4.0 |      |     | O | 2.0 |
|              | 3" (80A)     | 194                      | ±7        | O               | 4.0 |      |     | O | 2.0 |
|              | 4" (100A)    | 194                      | ±7        | O               | 4.0 |      |     | O | 2.0 |
| 6" (150A)    | 2-1/2" (65A) | 203                      | ±7        | O               | 4.0 |      |     | O | 2.0 |
|              | 3" (80A)     | 203                      | ±7        | O               | 4.0 |      |     | O | 2.0 |
|              | 4" (100A)    | 203                      | ±7        | O               | 4.0 |      |     | O | 2.0 |
|              | 5" (125A)    | 203                      | ±7        | O               | 4.0 |      |     | O | 2.0 |
| 8" (200A)    | 3" (80A)     | 228                      | ±7        | O               | 4.0 |      |     | O | 2.0 |
|              | 4" (100A)    | 228                      | ±7        | O               | 4.0 |      |     | O | 2.0 |
|              | 6" (150A)    | 228                      | ±7        | O               | 4.0 |      |     | O | 2.0 |
|              | 4" (100A)    | 280                      | ±7        | O               | 4.0 |      |     | O | 2.0 |
| 10" (250A)   | 6" (150A)    | 280                      | ±7        | O               | 4.0 |      |     | O | 2.0 |
|              | 8" (200A)    | 280                      | ±7        | O               | 4.0 |      |     | O | 2.0 |
| 12" (300A)   | 6" (150A)    | 305                      | ±7        | O               | 4.0 |      |     | O | 2.0 |
|              | 8" (200A)    | 305                      | ±7        | O               | 4.0 |      |     | O | 2.0 |
|              | 10" (250A)   | 305                      | ±7        | O               | 4.0 |      |     | O | 2.0 |

INSTRUMENT-TEE

|                                                    |                                                    |
|----------------------------------------------------|----------------------------------------------------|
| HOUSING MATERIAL                                   | CARBON STEEL<br>STAINLESS STEEL                    |
| LINING MATERIAL                                    | PTFE<br>PFA<br>ETFE<br>PTFE(ANTISTASTIC)           |
| LINING APPLICATION CODE                            | F-1545                                             |
| STANDARD FLANGE<br>CONNECTION TYPE                 | Fixed Flange                                       |
| ** Other types of flange connection are available. |                                                    |
| VENT HOLE                                          | 1 POINT                                            |
| PIPE SCHEDULE                                      | CARBON STEEL : SCH-STD<br>STAINLESS STEEL : SCH 10 |
| ** Other specification is available.               |                                                    |

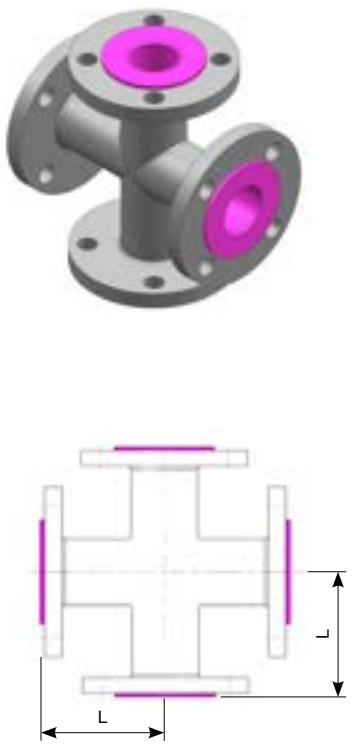


| SIZE         |                                        | ID<br>(mm) | LINING MATERIAL      |                      |                      |    |
|--------------|----------------------------------------|------------|----------------------|----------------------|----------------------|----|
|              |                                        |            | PTFE                 | PFA (FLG WELD TYPE)  | PFA (ALL CASTING)    |    |
| MAIN SIZE    | BRANCH SIZE                            |            | Face to face<br>(mm) | Face to face<br>(mm) | Face to face<br>(mm) |    |
| 1" ~ 6"      | 1/2" (15A)                             | 20         | O                    | 60                   | O                    | 60 |
|              | 3/4" (20A)                             | 20         | O                    | 60                   | O                    | 60 |
|              | 1" (25A)                               | 20         | O                    | 60                   | O                    | 60 |
|              | 1-1/2" (40A)                           | 29.4       | O                    | 70                   | Δ                    | 70 |
|              | 2" (50A)                               | 40         | O                    | 90                   | Δ                    | 80 |
| 8" ~ 12"     | 1/2" (15A)                             | 20         | O                    | 60                   |                      |    |
|              | 3/4" (20A)                             | 20         | O                    | 60                   |                      |    |
|              | 1" (25A)                               | 20         | O                    | 60                   |                      |    |
|              | 1-1/2" (40A)                           | 29.4       | O                    | 70                   |                      |    |
|              | 2" (50A)                               | 40         | O                    | 90                   |                      |    |
| 14" AND OVER | Special type. Contact sale department. |            |                      |                      |                      |    |

\*\* Branch diameter should be smaller than main size.  
\*\* FLARE THICKNESS 1"~4" : 5T, 5"AND OVER : 6T

CROSS-TEE

|                                                    |                                                    |
|----------------------------------------------------|----------------------------------------------------|
| HOUSING MATERIAL                                   | CARBON STEEL<br>STAINLESS STEEL                    |
| LINING MATERIAL                                    | PTFE<br>PFA<br>ETFE<br>PTFE(ANTISTASTIC)           |
| LINING APPLICATION CODE                            | F-1545                                             |
| STANDARD FLANGE<br>CONNECTION TYPE                 | Fixed Flange                                       |
| ** Other types of flange connection are available. |                                                    |
| VENT HOLE                                          | 1 POINT                                            |
| PIPE SCHEDULE                                      | CARBON STEEL : SCH-STD<br>STAINLESS STEEL : SCH 10 |
| ** Other specification is available.               |                                                    |

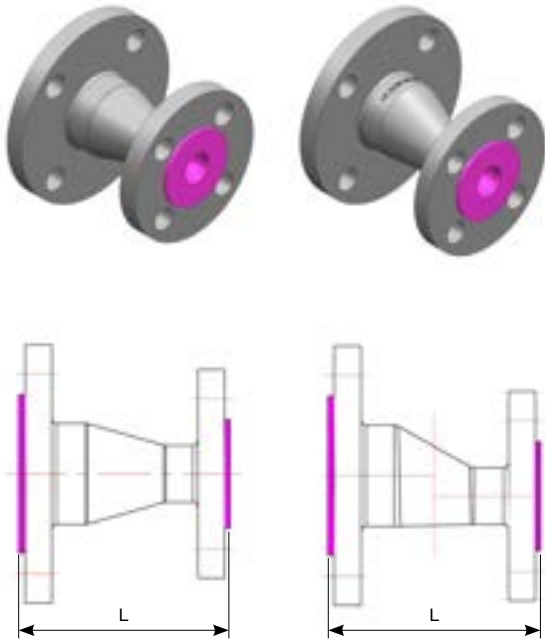


| SIZE   |      | 면간거리(Center to Face, mm) |           | ID<br>(mm) | LINING MATERIAL |     |      |       |
|--------|------|--------------------------|-----------|------------|-----------------|-----|------|-------|
| ANSI   | JIS  | LENGTH                   | TOLERANCE |            | PTFE            | PFA | ETFE |       |
| 1/2"   | 15A  | 70                       | ±2        | 11         | O               | 3.2 |      |       |
| 3/4"   | 20A  | 80                       | ±2        | 16         | O               | 3.2 |      |       |
| 1"     | 25A  | 89                       | ±2        | 22         | O               | 3.2 |      | O 2.0 |
| 1-1/2" | 40A  | 102                      | ±2        | 36         | O               | 3.2 |      | O 2.0 |
| 2"     | 50A  | 114                      | ±3        | 47         | O               | 3.2 |      | O 2.0 |
| 2-1/2" | 65A  | 127                      | ±3        | 60         | O               | 3.2 |      | O 2.0 |
| 3"     | 80A  | 140                      | ±3        | 73         | O               | 3.2 |      | O 2.0 |
| 4"     | 100A | 165                      | ±3        | 94         | O               | 4.5 |      | O 2.0 |
| 5"     | 125A | 194                      | ±3        | 118        |                 |     |      | O 2.0 |
| 6"     | 150A | 203                      | ±3        | 143        | O               | 4.5 |      | O 2.0 |
| 8"     | 200A | 228                      | ±3        | 192        | O               | 4.5 |      | O 2.0 |

REDUCER

|                                                    |                                                    |
|----------------------------------------------------|----------------------------------------------------|
| HOUSING MATERIAL                                   | CARBON STEEL<br>STAINLESS STEEL                    |
| LINING MATERIAL                                    | PTFE<br>PFA<br>ETFE<br>PTFE(ANTISTASTIC)           |
| LINING APPLICATION CODE                            | F-1545                                             |
| STANDARD FLANGE<br>CONNECTION TYPE                 | Fixed Flange                                       |
| ** Other types of flange connection are available. |                                                    |
| VENT HOLE                                          | 1 POINT                                            |
| PIPE SCHEDULE                                      | CARBON STEEL : SCH-STD<br>STAINLESS STEEL : SCH 10 |

\*\* Other specification is available.



| SIZE         |              | 면간거리(Center to Face, mm) |           | LINING MATERIAL |     |      |     |   |     |
|--------------|--------------|--------------------------|-----------|-----------------|-----|------|-----|---|-----|
| MAIN SIZE    | BRANCH SIZE  | LENGTH                   | TOLERENCE | PTFE            | PFA | ETFE |     |   |     |
| 3/4" (20A)   | 1/2" (15A)   | 100                      | ±2        | O               | 3.2 | Δ    | 3.0 | - | -   |
| 1" (25A)     | 1/2" (15A)   | 100                      | ±2        | O               | 3.2 | -    | -   | O | 2.0 |
|              | 3/4" (20A)   | 100                      | ±2        | O               | 3.2 | O    | 3.0 | O | 2.0 |
| 1-1/2" (40A) | 1/2" (15A)   | 100                      | ±2        | O               | 3.2 | O    | 3.0 | O | 2.0 |
|              | 3/4" (20A)   | 100                      | ±2        | O               | 3.2 | O    | 3.0 | O | 2.0 |
|              | 1" (25A)     | 100                      | ±2        | O               | 3.2 | O    | 3.0 | O | 2.0 |
| 2" (50A)     | 1/2" (15A)   | 127                      | ±3        | -               | -   | O    | 3.0 | - | -   |
|              | 3/4" (20A)   | 127                      | ±3        | O               | 3.2 | O    | 3.0 | O | 2.0 |
|              | 1" (25A)     | 127                      | ±3        | O               | 3.2 | O    | 3.0 | O | 2.0 |
|              | 1-1/2" (40A) | 127                      | ±3        | O               | 3.2 | O    | 3.0 | O | 2.0 |
| 2-1/2" (65A) | 3/4" (20A)   | 127                      | ±3        | O               | 3.2 | -    | -   | O | 2.5 |
|              | 1" (25A)     | 127                      | ±3        | O               | 3.2 | O    | 3.0 | O | 2.5 |
|              | 1-1/2" (40A) | 127                      | ±3        | O               | 3.2 | O    | 3.0 | O | 2.5 |
|              | 2" (50A)     | 127                      | ±3        | O               | 3.2 | O    | 3.0 | O | 2.5 |
| 3" (80A)     | 1" (25A)     | 152                      | ±3        | O               | 3.2 | O    | 3.0 | O | 2.5 |
|              | 1-1/2" (40A) | 152                      | ±3        | O               | 3.2 | O    | 3.0 | O | 2.5 |
|              | 2" (50A)     | 152                      | ±3        | O               | 3.2 | O    | 3.0 | O | 2.5 |
|              | 2-1/2" (65A) | 152                      | ±3        | -               | -   | O    | 3.0 | - | -   |
| 4" (100A)    | 1" (25A)     | 152                      | ±5        | O               | 4.0 | O    | 4.0 | O | 2.5 |
|              | 1-1/2" (40A) | 152                      | ±5        | O               | 4.0 | -    | -   | O | 2.5 |
|              | 2" (50A)     | 152                      | ±5        | O               | 4.0 | O    | 4.0 | O | 2.5 |
|              | 3" (80A)     | 152                      | ±5        | O               | 4.0 | O    | 4.0 | O | 2.5 |
| 5" (125A)    | 2" (50A)     | 194                      | ±5        | O               | 5.0 | -    | -   | O | 2.5 |
|              | 3" (80A)     | 194                      | ±5        | O               | 5.0 | -    | -   | O | 2.5 |
| 6" (150A)    | 4" (100A)    | 194                      | ±5        | O               | 5.0 | -    | -   | O | 2.5 |
|              | 3" (80A)     | 200                      | ±5        | O               | 5.0 | O    | 4.0 | O | 2.5 |
|              | 4" (100A)    | 200                      | ±5        | O               | 5.0 | O    | 4.0 | O | 2.5 |
| 8" (200A)    | 5" (125A)    | 200                      | ±5        | O               | 5.0 |      |     | O | 2.5 |
|              | 3" (80A)     | 200                      | ±5        | O               | 5.0 |      |     | O | 2.5 |
|              | 4" (100A)    | 200                      | ±5        | O               | 5.0 |      |     | O | 2.5 |
| 10" (250A)   | 6" (150A)    | 200                      | ±5        | O               | 5.0 |      |     | O | 2.5 |
|              | 4" (100A)    | 250                      | ±5        | O               | 5.5 |      |     | O | 2.5 |
|              | 6" (150A)    | 250                      | ±5        | O               | 5.5 |      |     | O | 2.5 |
| 12" (300A)   | 8" (200A)    | 250                      | ±5        | O               | 5.5 |      |     | O | 2.5 |
|              | 6" (150A)    | 300                      | ±5        | O               | 5.5 |      |     | O | 2.5 |
|              | 8" (200A)    | 300                      | ±5        | O               | 5.5 |      |     | O | 2.5 |
|              | 10" (250A)   | 300                      | ±5        | O               | 5.5 |      |     | O | 2.5 |

FLANGE

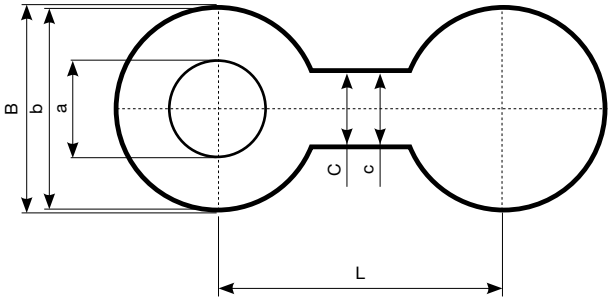
- BLIND FLANGE

|                    |                                 |
|--------------------|---------------------------------|
| HOUSING MATERIAL   | CARBON STEEL<br>STAINLESS STEEL |
| LINING MATERIAL    | PTFE                            |
| LINING THICKNESS   | 3mm                             |
| APPLICATE STANDARD | ANSI<br>JIS<br>KS<br>DIN        |



- SPECTACLE FLANGE

|                  |                                 |
|------------------|---------------------------------|
| HOUSING MATERIAL | CARBON STEEL<br>STAINLESS STEEL |
| LINING MATERIAL  | PTFE                            |
| LINING THICKNESS | 3mm                             |



| SIZE   |      |      | DIMENSION |     |     |     | LINING MATERIAL |           |
|--------|------|------|-----------|-----|-----|-----|-----------------|-----------|
| ANSI   | JIS  | T    | L         | A   | B   | C   | PTFE            | THICKNESS |
| 1"     | 25A  | 9    | 80        | 21  | 64  | 38  | O               | 3.0       |
| 1-1/2" | 40A  | 12.4 | 100       | 42  | 83  | 38  | O               | 3.0       |
| 2"     | 50A  | 12.4 | 120       | 55  | 102 | 55  | O               | 3.0       |
| 2-1/2" | 65A  | 12.4 | 140       | 67  | 107 | 67  | O               | 3.0       |
| 3"     | 80A  | 12.4 | 150       | 83  | 133 | 83  | O               | 3.0       |
| 4"     | 100A | 15.7 | 190       | 108 | 172 | 108 | O               | 3.0       |
| 5"     | 125A | 15.7 | 215       | 135 | 194 | 135 | O               | 3.0       |
| 6"     | 150A | 18.7 | 240       | 162 | 219 | 162 | O               | 3.0       |
| 8"     | 200A | 18.7 | 300       | 213 | 276 | 213 | O               | 3.0       |
| 10"    | 250A | 21.7 | 360       | 267 | 337 | 267 | O               | 3.0       |
| 12"    | 300A | 25.1 | 430       | 318 | 406 | 318 | O               | 3.0       |
| 14"    | 350A | *    | *         | *   | *   | *   | O               | 3.0       |
| 16"    | 400A | *    | *         | *   | *   | *   | O               | 3.0       |
| 18"    | 450A | *    | *         | *   | *   | *   | O               | 3.0       |
| 20"    | 500A | *    | *         | *   | *   | *   | O               | 3.0       |
| 24"    | 600A | *    | *         | *   | *   | *   | O               | 3.0       |

OTHER

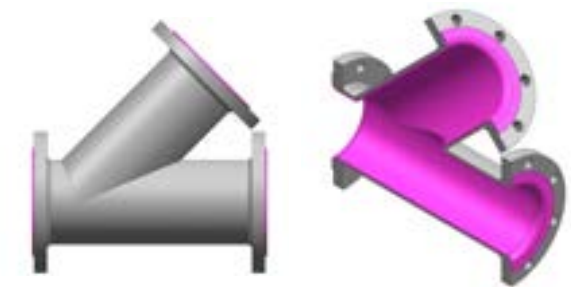
- REDUCING FLANGE

|                                                               |                                 |
|---------------------------------------------------------------|---------------------------------|
| HOUSING MATERIAL                                              | CARBON STEEL<br>STAINLESS STEEL |
| LINING MATERIAL                                               | PTFE                            |
| LINING THICKNESS                                              | 3mm                             |
| APPLICATE STANDARD                                            | ANSI<br>JIS<br>KS<br>DIN        |
| FLANGE THICKNESS (WITH LINING, From 3/4" ~ 8")                | A TYPE : 38T<br>B TYPE : 50T    |
| ** For size of 10" & Over, follow with customer's requirment. |                                 |



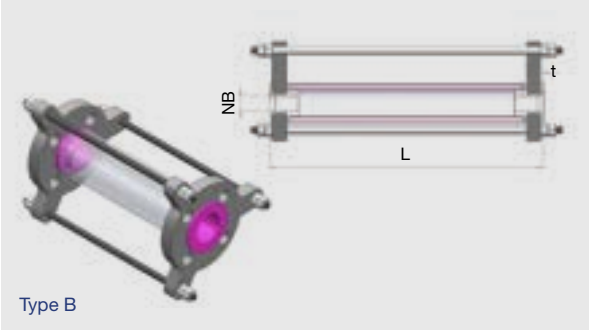
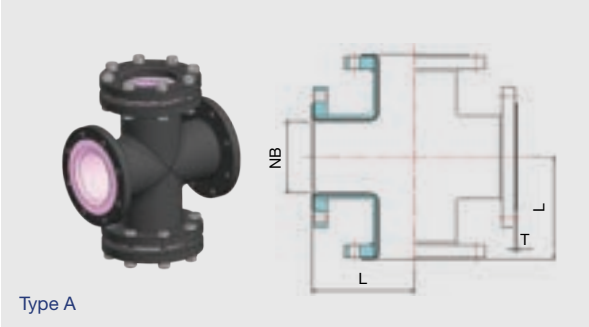
- LATERAL TEE

|                  |                                 |
|------------------|---------------------------------|
| HOUSING MATERIAL | CARBON STEEL<br>STAINLESS STEEL |
| LINING MATERIAL  | ETFE<br>PFA                     |
| LINING THICKNESS | Minimum 2mm                     |



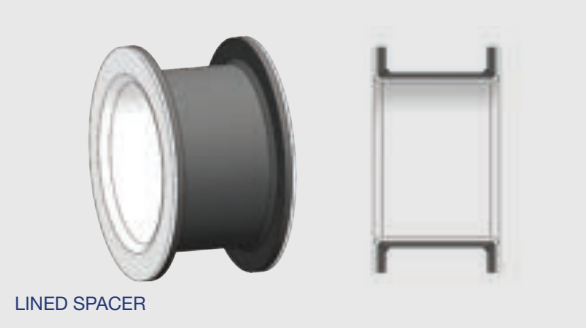
- SIGHT GLASS

|                     |                                                    |
|---------------------|----------------------------------------------------|
| HOUSING MATERIAL    | CARBON STEEL<br>STAINLESS STEEL                    |
| LINING MATERIAL     | PTFE                                               |
| LINING THICKNESS    | 3mm                                                |
| APPLICATE STANDARD  | ANSI<br>JIS<br>KS<br>DIN                           |
| FACE TO FACE LENGTH | TYPE A - SAME WITH EQU-TEE<br>TYPE B - 150L ~ 300L |



- SPACER

|                      |                                 |
|----------------------|---------------------------------|
| HOUSING MATERIAL     | CARBON STEEL<br>STAINLESS STEEL |
| LINING MATERIAL      | PTFE                            |
| LINING THICKNESS     | 3mm                             |
| MANUFACTURING LENGTH | 51mm ~ 100mm                    |



|                      |        |
|----------------------|--------|
| MATERIAL             | PTFE   |
| MANUFACTURING LENGTH | ~ 50mm |



- GASKET

|                      |                       |
|----------------------|-----------------------|
| MATERIAL             | PTFE                  |
| MANUFACTURING LENGTH | 1/2"(15A) ~ 24"(600A) |



# PFA PALL RING & RASCHIG RING

## - PFA TUBE / PFA PIPE



DIMENSION TABLE

| ITEM     | SIZE   | OD(mm) | ID(mm) | Thickness(mm) | Tolerance(±mm) | APPLICATION LENGTH (M) |
|----------|--------|--------|--------|---------------|----------------|------------------------|
| PFA TUBE | 1/4"   | 6.35   | 3.97   | 1.19          | 0.102          | 50 / 100 / 150 / 200   |
|          | 3/8"   | 9.53   | 6.39   | 1.57          | 0.127          | 50 / 100 / 150 / 200   |
|          | 1/2"   | 12.7   | 9.56   | 1.57          | 0.127          | 50 / 100 / 150 / 200   |
|          | 3/4"   | 19.05  | 15.91  | 1.57          | 0.127          | 50 / 100 / 150 / 200   |
|          | 1"     | 25.4   | 22.26  | 1.57          | 0.127          | 50 / 100 / 150 / 200   |
|          | 1-1/4" | 31.8   | 28     | 1.9           | 0.203          | 50 / 100 / 150 / 200   |
|          | 1-1/2" | 38.1   | 33.74  | 2.18          | 0.203          | 50 / 100 / 150 / 200   |
|          | 1-1/2" | 40     | 35.64  | 2.18          | 0.203          | 50 / 100 / 150 / 200   |
|          | 2"     | 50.8   | 46     | 2.4           | 0.254          | 50 / 100               |
| PFA PIPE | 15A    | 21.34  | 15.8   | 2.76          | 0.254          | 3                      |
|          | 20A    | 26.67  | 20.93  | 2.87          | 0.254          | 3                      |
|          | 25A    | 33.4   | 26.64  | 3.37          | 0.381          | 3                      |
|          | 40A    | 48.26  | 40.86  | 3.7           | 0.381          | 3                      |
|          | 50A    | 60.33  | 52.51  | 3.91          | 0.381          | 3                      |

## - PFA PALL RING

DIMENSION TABLE

| SIZE   | DIMENSION (L × H × t) | FILLING QUANTITY (/m³) | FREE SPACE (%) | MATERIAL | MINIMUM QUANTITY |
|--------|-----------------------|------------------------|----------------|----------|------------------|
| 5/8"   | Φ16×15.4L×1.25T       | 323,124                | 90%            | PFA      | 10,000           |
| 1"     | Φ26×25L×1.25T         | 75,377                 | 92%            | PFA      | 10,000           |
| 1-1/2" | Φ40×40L×1.4T          | 19,904                 | 95%            | PFA      | 7,000            |
| 2"     | Φ50×50L×1.25T         | 10,191                 | 95%            | PFA      | 7,000            |
| 3"     | Φ77×77L×1.8T          | 2,790                  | 92%            | PFA      | 5,000            |



## - PTFE RASCHIG RING

DIMENSION TABLE

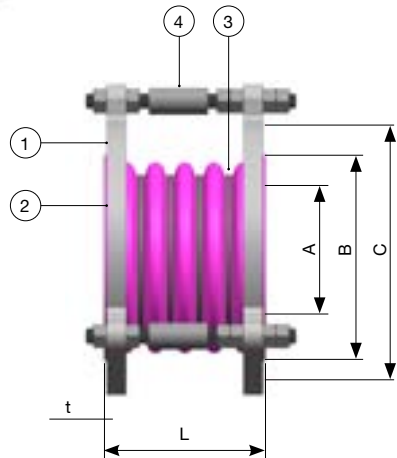
| SIZE | DIMENSION (L × H × t) | FILLING QUANTITY (/m³) | MATERIAL |
|------|-----------------------|------------------------|----------|
| 1"   | Φ26×25L×3.5T          | 81,528                 | PTFE     |
| 2"   | Φ50×50L×4T            | 10,191                 | PTFE     |



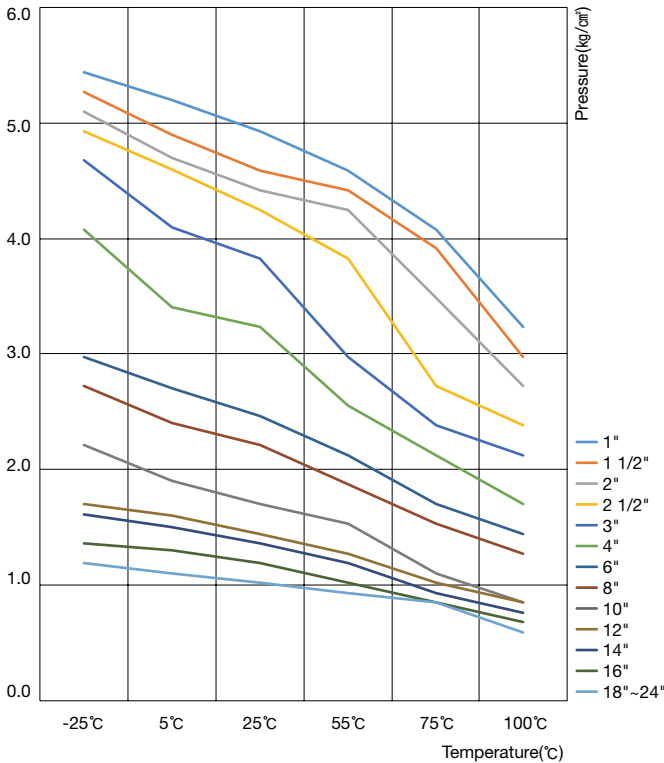
# EXPANSION JOINT FLEXIBLE HOSE

PTFE BELLOWS (PTFE EXPANSION JOINT)  
PTFE/PFA FLEXIBLE HOSE

## BELLOWS (FS TYPE)



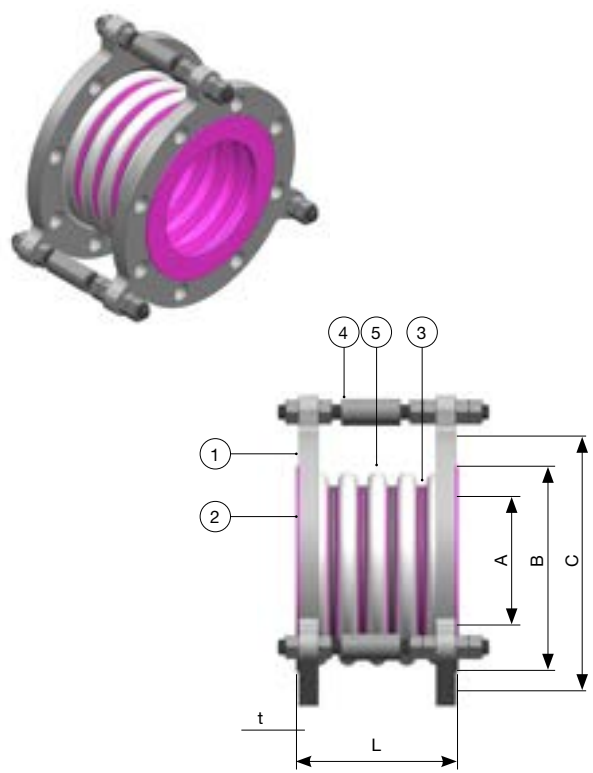
PERFORMANCE CURVE  
(PRESSURE-TEMPERATURE)



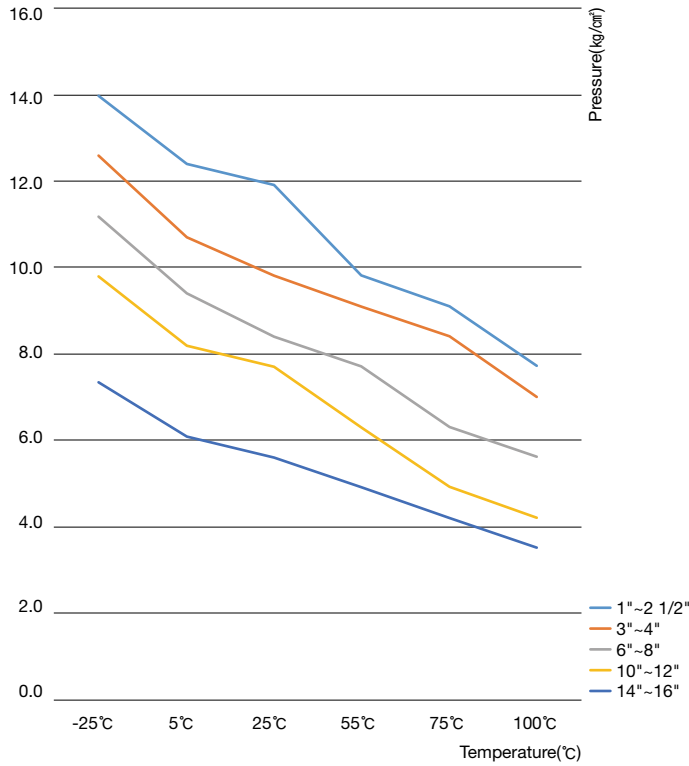
| NO | PART       | MATERIAL                       |
|----|------------|--------------------------------|
| 1  | FLANGE     | CARBON STEEL / STAINLESS STEEL |
| 2  | BELLOWS    | PTFE (3 CON or 5 CON)          |
| 3  | GUIDE BOLT | STAINLESS STEEL (SS304)        |
| 4  | LOW RING   | STAINLESS STEEL (SS304)        |

| SIZE   |      | Corrugation    | Length (mm) |       | ID (mm) | Liner Thickness | Axial Elasticity (mm) |       | Displace-axis (mm) |       | Angular (mm) |       | TOLERANCE (mm) |
|--------|------|----------------|-------------|-------|---------|-----------------|-----------------------|-------|--------------------|-------|--------------|-------|----------------|
| ANSI   | JIS  |                | 3 Con       | 5 Con |         |                 | 3 Con                 | 5 Con | 3 Con              | 5 Con | 3 Con        | 5 Con |                |
| 1"     | 25A  | 3 Con or 5 Con | -           | 80    | 24      | 3mm             | ±5                    | ±7    | ±3                 | ±5    | 10°          | 15°   | ±3             |
| 1-1/2" | 40A  |                | 67          | 100   | 37      | 3mm             |                       |       |                    |       |              |       | ±3             |
| 2"     | 50A  |                | 70          | 100   | 45      | 3mm             |                       |       |                    |       |              |       | ±3             |
| 2-1/2" | 65A  |                | 88          | 120   | 60      | 3mm             |                       |       |                    |       |              |       | ±3             |
| 3"     | 80A  |                | 90          | 130   | 70      | 3mm             | ±10                   | ±12   | ±5                 | ±7    | 6°           | 10°   | ±3             |
| 4"     | 100A |                | 98          | 146   | 98      | 3.5mm           |                       |       |                    |       |              |       | ±3             |
| 5"     | 125A |                | 98          | 146   | 120     | 3.5mm           |                       |       |                    |       |              |       | ±3             |
| 6"     | 150A |                | 98          | 165   | 145     | 3.5mm           |                       |       |                    |       |              |       | ±3             |
| 8"     | 200A |                | 135         | 220   | 196     | 4mm             |                       |       |                    |       |              |       | ±3             |
| 10"    | 250A |                | 180         | 225   | 242     | 5mm             |                       |       |                    |       |              |       | ±3             |
| 12"    | 300A |                | 140         | 230   | 289     | 5mm             |                       |       |                    |       |              |       | ±3             |
| 14"    | 350A |                | 140         | 230   | 333     | 5mm             |                       |       |                    |       |              |       | ±5             |
| 16"    | 400A |                | 145         | 230   | 372     | 5mm             |                       |       |                    |       |              |       | ±5             |
| 18"    | 450A | (5 con)        | 230 (5 con) |       | 418     | 5mm             | ±12                   | ±15   | ±3                 | ±5    | 6°           | 6°    | ±5             |
| 20"    | 500A | (2 con)        | 165 (2 con) |       | 485     | 5mm             |                       |       |                    |       |              |       | ±5             |
| 24"    | 600A |                | 175 (2 con) |       | 585     | 5mm             |                       |       |                    |       |              |       | ±5             |

BELLOWS (FP TYPE)



PERFORMANCE CURVE  
(PRESSURE-TEMPERATURE)

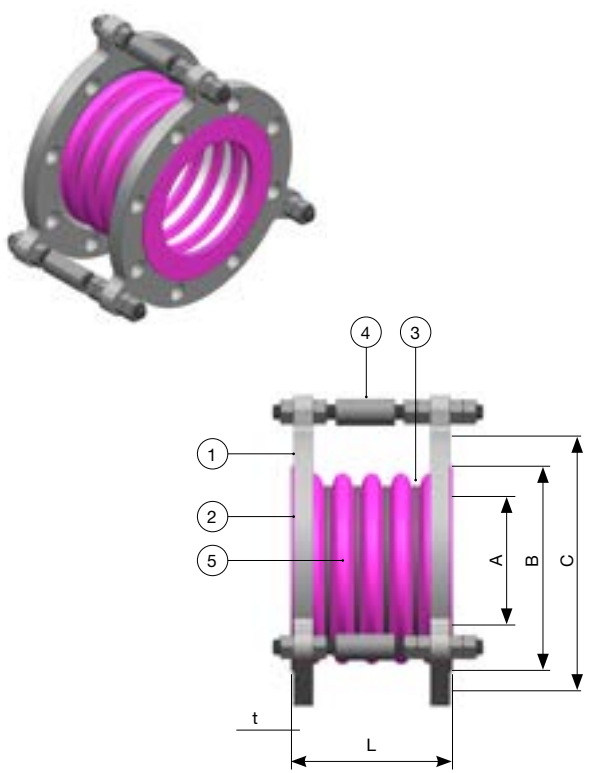


| NO | PART       | MATERIAL                       |
|----|------------|--------------------------------|
| 1  | FLANGE     | CARBON STEEL / STAINLESS STEEL |
| 2  | BELLOWS    | PTFE (3 CON or 5 CON)          |
| 3  | GUIDE BOLT | STAINLESS STEEL (SS304)        |
| 4  | LOW RING   | STAINLESS STEEL (SS304)        |
| 5  | CAP RING   | STAINLESS STEEL (SS304)        |

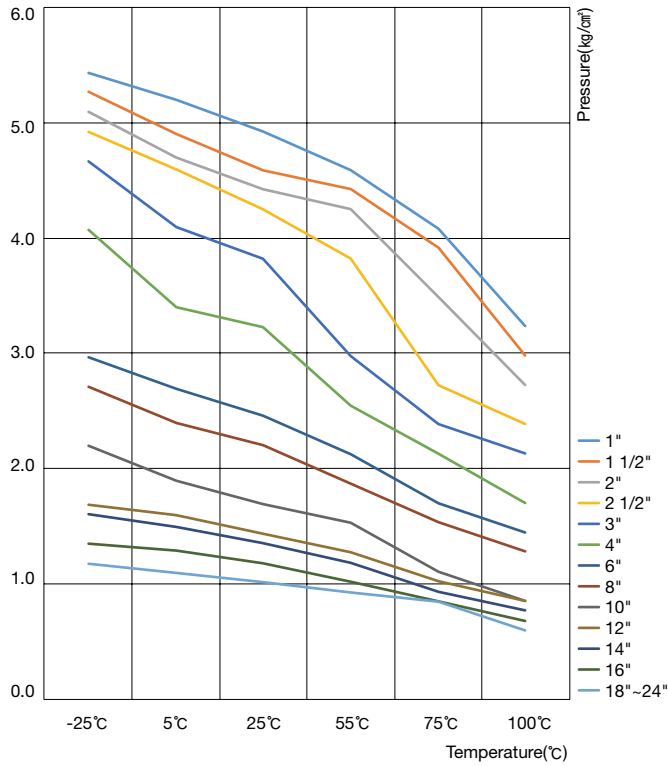
\*\* FLANGE : ANSI150# / JIS10K

| SIZE   |      | Corrugation    | Length (mm) |       | ID (mm) | Liner Thickness | Axial Elasticity (mm) |       | Displace-axis (mm) |       | Angular (mm) |       | TOLERANCE (mm) |
|--------|------|----------------|-------------|-------|---------|-----------------|-----------------------|-------|--------------------|-------|--------------|-------|----------------|
| ANSI   | JIS  |                | 3 Con       | 5 Con |         |                 | 3 Con                 | 5 Con | 3 Con              | 5 Con | 3 Con        | 5 Con |                |
| 1"     | 25A  | 3 Con or 5 Con | -           | 80    | 24      | 3mm             |                       |       |                    |       |              |       | ±3             |
| 1-1/2" | 40A  |                | 67          | 100   | 37      | 3mm             |                       |       |                    |       |              |       | ±3             |
| 2"     | 50A  |                | 70          | 100   | 45      | 3mm             | ±5                    | ±7    | ±3                 | ±5    | 8°           | 12°   | ±3             |
| 2-1/2" | 65A  |                | 88          | 120   | 60      | 3mm             |                       |       |                    |       |              |       | ±3             |
| 3"     | 80A  |                | 90          | 130   | 70      | 3mm             |                       |       |                    |       |              |       | ±3             |
| 4"     | 100A |                | 98          | 146   | 98      | 3.5mm           |                       |       |                    |       |              |       | ±3             |
| 5"     | 125A |                | 98          | 146   | 120     | 3.5mm           |                       |       |                    |       |              |       | ±3             |
| 6"     | 150A |                | 98          | 165   | 145     | 3.5mm           | ±7                    | ±10   | ±5                 | ±7    | 6°           | 10°   | ±3             |
| 8"     | 200A |                | 135         | 220   | 196     | 4mm             |                       |       |                    |       |              |       | ±3             |
| 10"    | 250A |                | 180         | 225   | 242     | 5mm             |                       |       |                    |       |              |       | ±3             |
| 12"    | 300A |                | 140         | 230   | 289     | 5mm             |                       |       |                    |       |              |       | ±3             |
| 14"    | 350A |                | 140         | 230   | 333     | 5mm             |                       |       |                    |       |              |       | ±5             |
| 16"    | 400A |                | 145         | 230   | 372     | 5mm             |                       |       |                    |       |              |       | ±5             |
| 18"    | 450A | (5 con)        | 230 (5 con) |       | 418     | 5mm             | ±10                   | ±12   | ±3                 | ±5    | 6°           | 6°    | ±5             |
| 20"    | 500A | (2 con)        | 165 (2 con) |       | 485     | 5mm             |                       |       |                    |       |              |       | ±5             |
| 24"    | 600A |                | 175 (2 con) |       | 585     | 5mm             |                       |       |                    |       |              |       | ±5             |

BELLOWS (FV TYPE)



PERFORMANCE CURVE  
(PRESSURE-TEMPERATURE)

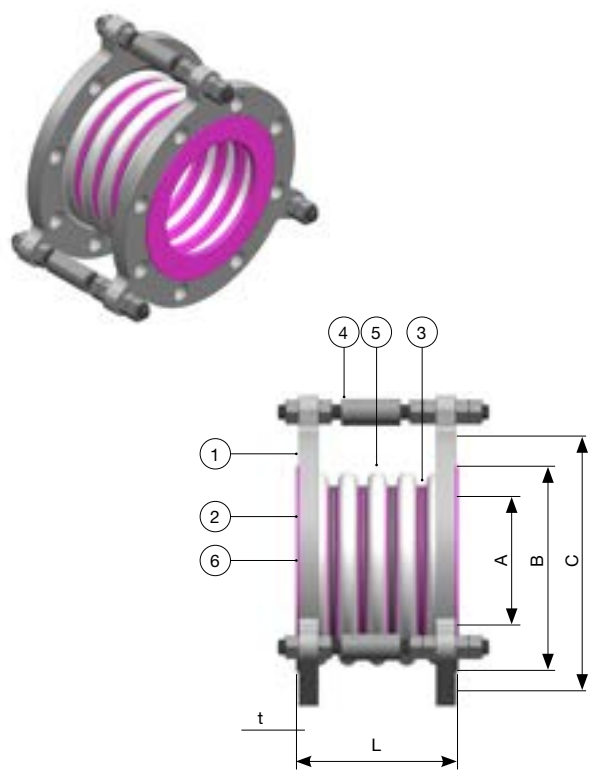


| NO | PART        | MATERIAL                                    |
|----|-------------|---------------------------------------------|
| 1  | FLANGE      | CARBON STEEL / STAINLESS STEEL              |
| 2  | BELLOWS     | PTFE (3 CON or 5 CON)                       |
| 3  | GUIDE BOLT  | STAINLESS STEEL (SS304)                     |
| 4  | LOW RING    | STAINLESS STEEL (SS304)                     |
| 5  | VACUUM RING | PTFE (8" & Under) / SUS304+PFA (10" & over) |

\*\* FLANGE : ANSI150# / JIS10K

| SIZE   |      | Corrugation    | Length (mm) |       | ID (mm) | Liner Thickness | Axial Elasticity (mm) |       | Displace-axis (mm) |       | Angular (mm) |       | TOLERANCE (mm) |
|--------|------|----------------|-------------|-------|---------|-----------------|-----------------------|-------|--------------------|-------|--------------|-------|----------------|
| ANSI   | JIS  |                | 3 Con       | 5 Con |         |                 | 3 Con                 | 5 Con | 3 Con              | 5 Con | 3 Con        | 5 Con |                |
| 1"     | 25A  | 3 Con or 5 Con | -           | 80    | 24      | 3mm             |                       |       |                    |       |              |       | ±3             |
| 1-1/2" | 40A  |                | 67          | 100   | 37      | 3mm             |                       |       |                    |       |              |       | ±3             |
| 2"     | 50A  |                | 70          | 100   | 45      | 3mm             | ±5                    | ±7    | ±3                 | ±5    | 10°          | 15°   | ±3             |
| 2-1/2" | 65A  |                | 88          | 120   | 60      | 3mm             |                       |       |                    |       |              |       | ±3             |
| 3"     | 80A  |                | 90          | 130   | 70      | 3mm             |                       |       |                    |       |              |       | ±3             |
| 4"     | 100A |                | 98          | 146   | 98      | 3.5mm           |                       |       |                    |       |              |       | ±3             |
| 5"     | 125A |                | 98          | 146   | 120     | 3.5mm           |                       |       |                    |       |              |       | ±3             |
| 6"     | 150A |                | 98          | 165   | 145     | 3.5mm           | ±10                   | ±12   | ±5                 | ±7    | 6°           | 10°   | ±3             |
| 8"     | 200A |                | 135         | 220   | 196     | 4mm             |                       |       |                    |       |              |       | ±3             |
| 10"    | 250A |                | 180         | 225   | 242     | 5mm             |                       |       |                    |       |              |       | ±3             |
| 12"    | 300A |                | 140         | 230   | 289     | 5mm             |                       |       |                    |       |              |       | ±3             |
| 14"    | 350A |                | 140         | 230   | 333     | 5mm             |                       |       |                    |       |              |       | ±5             |
| 16"    | 400A |                | 145         | 230   | 372     | 5mm             |                       |       |                    |       |              |       | ±5             |
| 18"    | 450A | (5 con)        | 230 (5 con) |       | 418     | 5mm             | ±12                   | ±15   | ±3                 | ±5    | 6°           | 6°    | ±5             |
| 20"    | 500A | (2 con)        | 165 (2 con) |       | 485     | 5mm             |                       |       |                    |       |              |       | ±5             |
| 24"    | 600A |                | 175 (2 con) |       | 585     | 5mm             |                       |       |                    |       |              |       | ±5             |

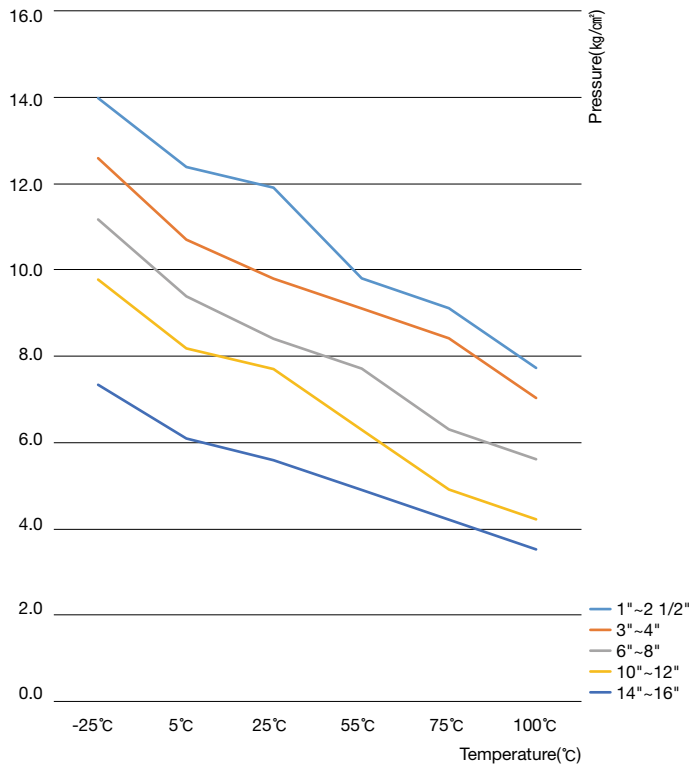
BELLOWS (FVP TYPE)



| NO | PART        | MATERIAL                                    |
|----|-------------|---------------------------------------------|
| 1  | FLANGE      | CARBON STEEL / STAINLESS STEEL(SS304)       |
| 2  | BELLOWS     | PTFE (3 CON or 5 CON)                       |
| 3  | GUIDE BOLT  | STAINLESS STEEL (SS304)                     |
| 4  | LOW RING    | STAINLESS STEEL (SS304)                     |
| 5  | CAP RING    | STAINLESS STEEL (SS304)                     |
| 6  | VACUUM RING | PTFE (8" & Under) / SUS304+PFA (10" & over) |

\*\* FLANGE : ANSI150# / JIS10K

PERFORMANCE CURVE  
(PRESSURE-TEMPERATURE)



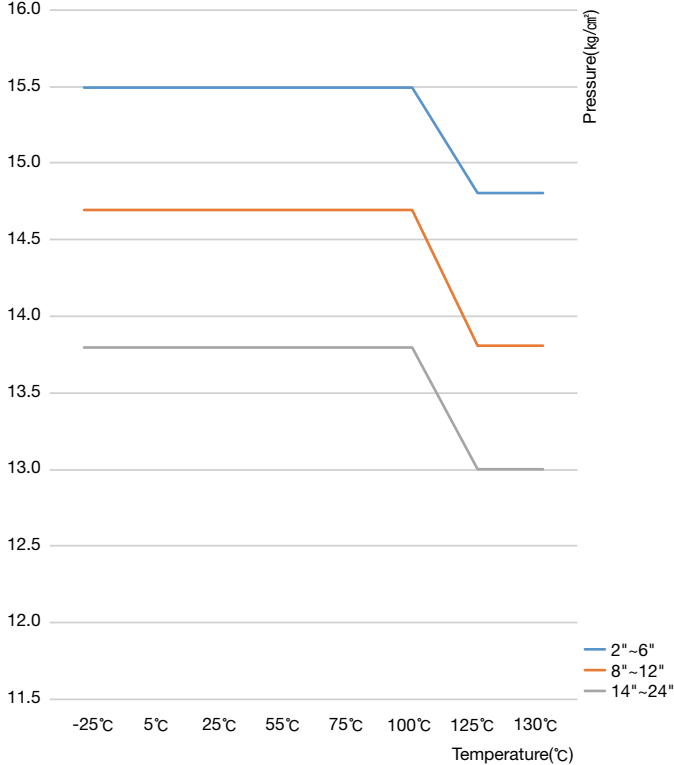
BELLOWS (FM TYPE)



| PART       | MATERIAL                              |
|------------|---------------------------------------|
| FLANGE     | CARBON STEEL / STAINLESS STEEL(SS304) |
| BELLOWS    | STAINLESS STEEL(304) + PTFE LINED     |
| GUIDE BOLT | STAINLESS STEEL (SS304)               |

\*\* FLANGE : ANSI150# / JIS10K  
\*\* 진공 사양은 별도 문의 요망.  
For Vacuum condition, please contact to sales department.

PERFORMANCE CURVE  
(PRESSURE-TEMPERATURE)

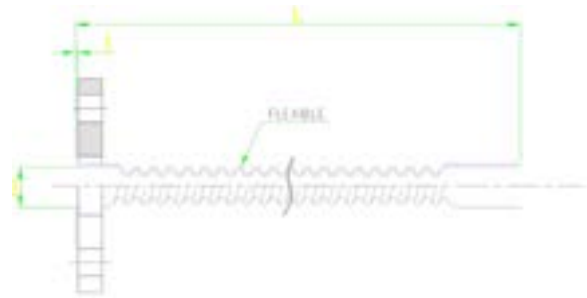


| SIZE   |      | Corrugation    | Length (mm) |       | ID (mm) | Liner Thickness | Axial Elasticity (mm) |       | Displace-axis (mm) |       | Angular (mm) |       | TOLERANCE (mm) |
|--------|------|----------------|-------------|-------|---------|-----------------|-----------------------|-------|--------------------|-------|--------------|-------|----------------|
| ANSI   | JIS  |                | 3 Con       | 5 Con |         |                 | 3 Con                 | 5 Con | 3 Con              | 5 Con | 3 Con        | 5 Con |                |
| 1"     | 25A  | 3 Con or 5 Con | -           | 80    | 24      | 3mm             |                       |       |                    |       |              |       | ±3             |
| 1-1/2" | 40A  |                | 67          | 100   | 37      | 3mm             |                       |       |                    |       |              |       | ±3             |
| 2"     | 50A  |                | 70          | 100   | 45      | 3mm             | ±5                    | ±7    | ±3                 | ±5    | 8°           | 12°   | ±3             |
| 2-1/2" | 65A  |                | 88          | 120   | 60      | 3mm             |                       |       |                    |       |              |       | ±3             |
| 3"     | 80A  |                | 90          | 130   | 70      | 3mm             |                       |       |                    |       |              |       | ±3             |
| 4"     | 100A |                | 98          | 146   | 98      | 3.5mm           |                       |       |                    |       |              |       | ±3             |
| 5"     | 125A |                | 98          | 146   | 120     | 3.5mm           |                       |       |                    |       |              |       | ±3             |
| 6"     | 150A |                | 98          | 165   | 145     | 3.5mm           | ±7                    | ±10   | ±5                 | ±7    | 6°           | 10°   | ±3             |
| 8"     | 200A |                | 135         | 220   | 196     | 4mm             |                       |       |                    |       |              |       | ±3             |
| 10"    | 250A |                | 180         | 225   | 242     | 5mm             |                       |       |                    |       |              |       | ±3             |
| 12"    | 300A |                | 140         | 230   | 289     | 5mm             |                       |       |                    |       |              |       | ±3             |
| 14"    | 350A |                | 140         | 230   | 333     | 5mm             |                       |       |                    |       |              |       | ±5             |
| 16"    | 400A |                | 145         | 230   | 372     | 5mm             |                       |       |                    |       |              |       | ±5             |
| 18"    | 450A | (5 con)        | 230 (5 con) |       | 418     | 5mm             | ±10                   | ±12   | ±3                 | ±5    | 6°           | 6°    | ±5             |
| 20"    | 500A | (2 con)        | 165 (2 con) |       | 485     | 5mm             |                       |       |                    |       |              |       | ±5             |
| 24"    | 600A |                | 175 (2 con) |       | 585     | 5mm             |                       |       |                    |       |              |       | ±5             |

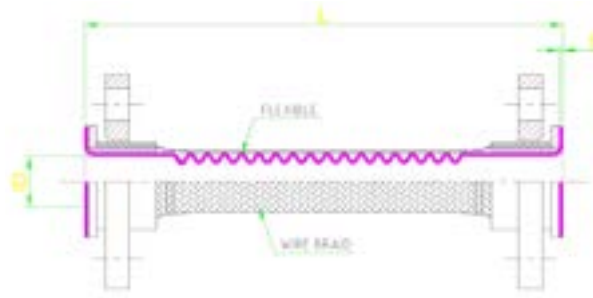
| SIZE   |      | Length (mm) | ID (mm) | Liner Thickness | Axial Elasticity (mm) | Displace-axis (mm) | TOLERANCE (mm) |
|--------|------|-------------|---------|-----------------|-----------------------|--------------------|----------------|
| ANSI   | JIS  |             |         |                 |                       |                    |                |
| 2"     | 50A  | 110         | 45      | 2.5mm           | 7                     | 2                  | ±3             |
| 2-1/2" | 65A  | 110         | 60      | 2.5mm           | 7                     | 2                  | ±3             |
| 3"     | 80A  | 125         | 70      | 2.5mm           | 10                    | 3                  | ±3             |
| 4"     | 100A | 125         | 98      | 3mm             | 10                    | 3                  | ±3             |
| 5"     | 125A | 150         | 120     | 3mm             | 10                    | 3                  | ±3             |
| 6"     | 150A | 150         | 145     | 3mm             | 15                    | 5                  | ±3             |
| 8"     | 200A | 165         | 196     | 3mm             | 15                    | 5                  | ±3             |
| 10"    | 250A | 165         | 242     | 3.4mm           | 15                    | 5                  | ±3             |
| 12"    | 300A | 165         | 289     | 3.4mm           | 15                    | 5                  | ±3             |
| 14"    | 350A | 200         | 333     | 3.4mm           | 15                    | 5                  | ±5             |
| 16"    | 400A | 200         | 372     | 3.4mm           | 15                    | 5                  | ±5             |
| 18"    | 450A | 200         | 418     | 3.4mm           | 15                    | 5                  | ±5             |
| 20"    | 500A | 255         | 485     | 3.4mm           | 15                    | 5                  | ±5             |
| 24"    | 600A | 255         | 585     | 3.4mm           | 15                    | 5                  | ±5             |

FLEXIBLE HOSE

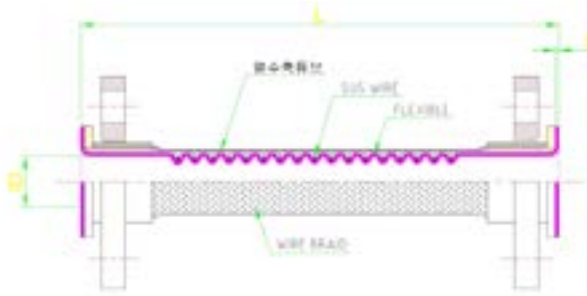
Pliable Hose  
(PTFE / PFA TUBE)



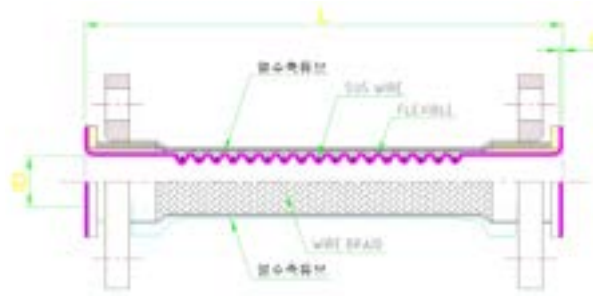
HB-2000  
(PTFE/PFA TUBE + SUS BRAID)



HB-2000-SS  
(PTFE/PFA TUBE + SUS WIRE + SUS BRAID)



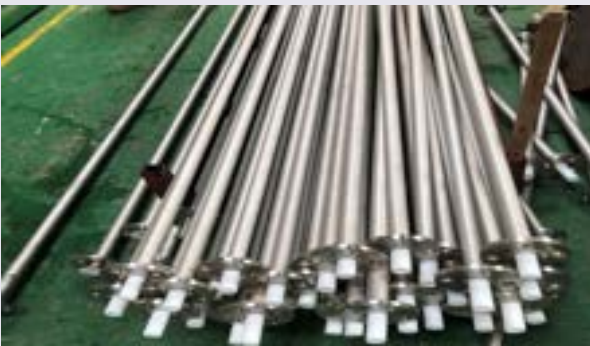
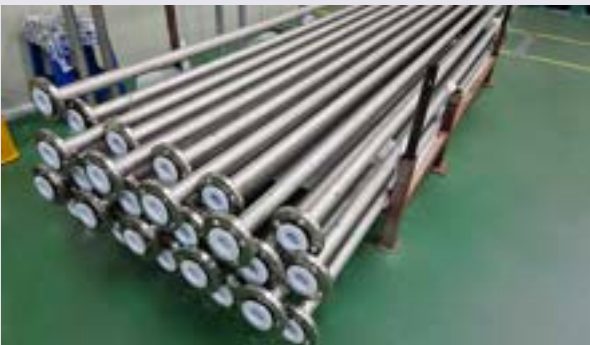
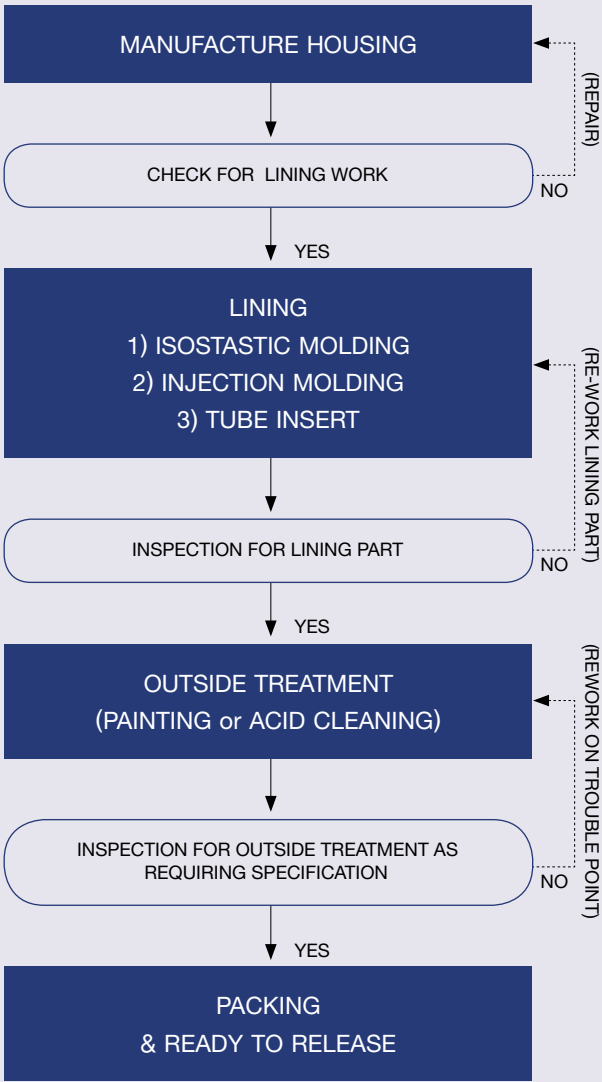
HB-2000-ERC  
(PTFE TUBE + PE HEAT SHRINKABLE TUBE + SUS BRAID + PE HEAT SHRINKABLE TUBE)



| SIZE   |      | Max Length<br>(mm) | Tolerance<br>(mm) | Thickness |      |           | REMARK |
|--------|------|--------------------|-------------------|-----------|------|-----------|--------|
| ANSI   | JIS  |                    |                   | PFA       | PTFE | Tolerance |        |
| 3/4"   | 20A  | 3000               | ±3.0              | 1.5       | 2.5  | ±5%       |        |
| 1"     | 25A  | 3000               |                   | 1.5       | 2.5  |           |        |
| 1-1/2" | 40A  | 3000               |                   | 1.5       | 2.5  |           |        |
| 2"     | 50A  | 3000               |                   | 1.5       | 2.5  |           |        |
| 2-1/2" | 65A  | 3000               |                   | 2.0       | 3.0  |           |        |
| 3"     | 80A  | 3000               |                   | 2.0       | 3.0  |           |        |
| 4"     | 100A | 2000               |                   |           | 3.0  |           |        |
| 6"     | 150A | 2000               |                   |           | 3.0  |           |        |
| 8"     | 200A | 2000               |                   |           | 3.5  |           |        |

| SIZE   |      | FLEXIBLE TUBE |     |      | FLEXIBLE HOSE<br>(NORMAL TYPE) |     |      | FLEXIBLE HOSE<br>(PRESSURE TYPE) |     |      | FLEXIBLE HOSE<br>(TANK LORRY TYPE) |     |      | REMARK |
|--------|------|---------------|-----|------|--------------------------------|-----|------|----------------------------------|-----|------|------------------------------------|-----|------|--------|
|        |      | PLIABLE HOSE  |     |      | HB-2000                        |     |      | HB-2000-SS                       |     |      | HB-2000-ERC                        |     |      |        |
| ANSI   | JIS  | 25℃           | 50℃ | 100℃ | 25℃                            | 50℃ | 100℃ | 25℃                              | 50℃ | 100℃ | 25℃                                | 50℃ | 100℃ |        |
| 3/4"   | 20A  | 7             | 6   | 4    | 7                              | 6   | 4    | 16                               | 16  | 15   | 8                                  | 8   | 5    |        |
| 1"     | 25A  | 6             | 5   | 3    | 6                              | 5   | 3    | 16                               | 15  | 14   | 8                                  | 8   | 5    |        |
| 1-1/2" | 40A  | 6             | 5   | 3    | 6                              | 5   | 3    | 14                               | 14  | 11   | 7                                  | 6   | 4    |        |
| 2"     | 50A  | 5             | 4   | 2    | 5                              | 4   | 2    | 13                               | 12  | 10   | 7                                  | 6   | 4    |        |
| 2-1/2" | 65A  |               |     |      | 5                              | 4   | 2    | 10                               | 10  | 9    |                                    |     |      |        |
| 3"     | 80A  |               |     |      | 4                              | 3   | 2    | 8                                | 8   | 7    |                                    |     |      |        |
| 4"     | 100A |               |     |      | 4                              | 3   | 2    | 7                                | 7   | 6    |                                    |     |      |        |
| 6"     | 150A |               |     |      | 3                              | 2   | 1    | 6                                | 5   | 4    |                                    |     |      |        |
| 8"     | 200A |               |     |      | 3                              | 2   | 1    | 4                                | 3   | 2    |                                    |     |      |        |

PROCESS OF FLUOROPOLYMER LINING FOR PIPE & FITTING



LINED TANK / EP TANK  
LINED PIPE & FITTING  
LINED VALVE  
AUTOMOBILE & PRECISION PART



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