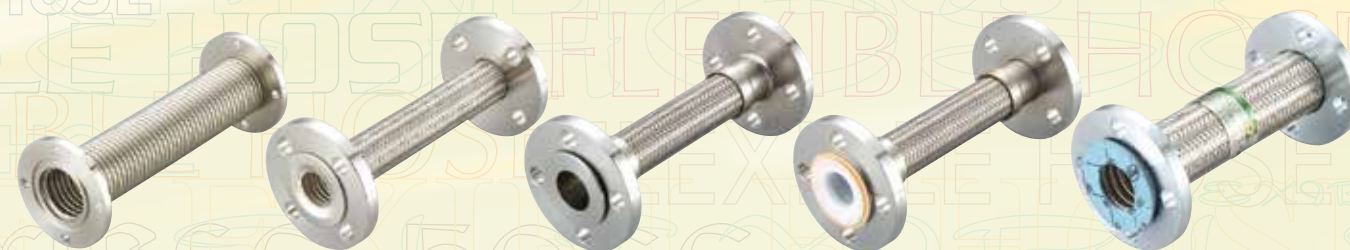




**DAIDOH 大同特殊工業株式会社**  
DAIDOH TOKUSHU KOGYO CO., LTD.

# FLEXIBLE HOSE



Design & Business Dept.

1-7, 3-Chome, Shimaya, Konohana-ku, 554-0024, Osaka  
Tel.06-6464-2358 Fax.06-6464-2367

Tokyo Office

3-14, 6-Chome, Minamiooi, Shinagawa-ku, 140-0013, Tokyo  
Tel.03-5767-5789 Fax.03-5762-0579

Head Office

1-6, 3-Chome, Shimaya, Konohana-ku, 554-0024, Osaka  
Tel.06-6468-0255 Fax.06-6465-0255

Daito Factory

3-14, Shindensakai-machi, Daito City, 574-0051, Osaka Pref.  
Tel.072-874-5338 Fax.072-874-5330

Yao Factory

2-41, 3-Chome, Kitakamei-cho, Yao City, 581-0066, Osaka Pref.  
Tel.072-994-7595 Fax.0729-93-9628

The performance described in this catalog is not the specification value. Please conduct a pre-test at your company before using this product to check that the product matches with the purpose of use. Please note that descriptions are subject to change without notice for improving performances and changing specifications.

2015.3

**DAIDOH**

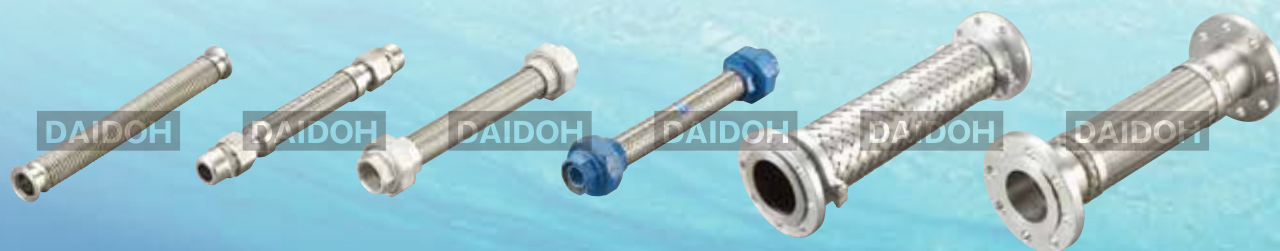
**大同特殊工業株式会社**

**DAIDOH TOKUSHU KOGYO CO., LTD.**



# INDEX

<b>p01</b>	DF-1000 UNION Collar Type DF-1100 UNION R-Type	<b>p9</b>	DF-4000 Metal Touch Male(welding type) DF-4100 Metal Touch Female(welding type)	<b>p20</b>	DF-7600 Fixed Flange Square Band type (Ribbon braid type) DF-7700 Loose Flange Square Band type (Ribbon braid type)	<b>p29</b>	DF-01 T-Tube DF-02 H-Tube
<b>p02</b>	DF-1200 Insulation UNION DF-1300 Non-welding UNION	<b>p10</b>	DF-4600 Metal Touch Male(welding type, opposite sheet) DF-4700 Metal Touch Female(welding type, opposite sheet)	<b>p21</b>	DF-8000 Fixed Flange Hoop Band type DF-8100 Loose Flange Hoop Band type	<b>p30</b>	DF-03 H-Tube with Braid DF-04 PURE FLEX Resin Hose
<b>p03</b>	DF-1400 K-Core UNION (for Water) DF-1500 HL Core UNION (for Hot Water)	<b>p11</b>	DF-4400 Metal Touch Male for Rubber Hose Fitting DF-4500 Metal Touch Female for Rubber Hose Fitting	<b>p22</b>	DF-9000 Loose Flange Non-welding type DFM-6100 Flange for Underground Use R-type	<b>p31-p34</b>	Dimension of Tube
<b>p04</b>	DF-1600 High Pressure UNION O-ring type (Screw-type) DF-1700 High Pressure UNION Sheet Packing type (Screw-type) DF-1800 High Pressure UNION Conical type (Screw-type) DF-W1600 High Pressure UNION O-ring type (Butt Welding type) DF-W1700 High Pressure UNION Sheet Packing type (Butt Welding type) DF-W1800 High Pressure UNION Conical type (Butt Welding type) DFM-1100 Underground UNION R-type	<b>p12</b>	DF-4200 Metal Touch Male (Non-welding type) DF-4300 Metal Touch Female (Non-welding type)	<b>p23</b>	DF-50000 Semi Jacket / Full Jacket	<b>p35</b>	Types of Braid Reinforcement of hose
<b>p05</b>	DF-2000 Hexagonal NIPPLE(fixed) DF-2100 Hexagonal SOCKET(fixed)	<b>p13</b>	DF-30000 Lorry Fitting Female DF-31000 Lorry Fitting Male	<b>p24</b>	Cargo hose model certified by the Nippon Kaiji Kyokai	<b>p36-p38</b>	Formula for calculating the length of flexible section of a flexible metal hose
<b>p06</b>	DF-2200 Round NIPPLE(fixed) DF-2300 Round SOCKET(fixed) Extra: Flexible tube for filling Bite-type joint	<b>p14</b>	DF-32000 Lorry Fitting Female (Ribbon braid type) DF-33000 Lorry Fitting Male (Ribbon braid type)	<b>p25</b>	DTF-2800K PTFE Inserted Collar type DTF-2800R PTFE Inserted R-type DTF-2900 PTFE Inserted Interlock Tube	<b>p39-p40</b>	Manual of Flexible Metal Hose
<b>p07</b>	DF-2500 Lever coupling type DF-2600 Quick coupling method	<b>p15</b>	DF-3300 Sanitary Fitting Ferrule type	<b>p26</b>	DFT-2600 PTFE Corrugation Hose Inserted (H-type) DFT-2700 PTFE Corrugation Hose Inserted (B-type)		
<b>p08</b>	DF-3000 Copper pipe sockets DF-3100 Pipe end	<b>p16</b>	DF-3400 Sanitary Fitting Male Thread type DF-3500 Sanitary Fitting Hex Nut type DF-3600 Sanitary Fitting Grooved Round Nut type	<b>p27</b>	DFV-40000 Vacuum NW Flange DFV-41000 Vacuum Pipe-End		
		<b>p17</b>	DF-5000 Fixed Flange DF-5100 Loose Flange with Collar	<b>p28</b>	DFV-42000 Vacuum Fixed Flange JIS B 2290 Flange VF x VG type DFV-43000 Vacuum One end Loose One end Fixed Flange JIS B 2290 Flange VF x VG type		
		<b>p18</b>	DF-6000 Fixed Flange R-type DF-6100 Loose Flange R-type				
		<b>p19</b>	DF-6600 Fixed Flange R-type (Ribbon braid type) DF-6700 Loose Flange R-type (Ribbon braid type)				



DAIDOH

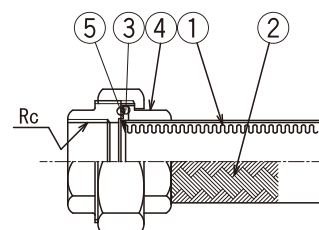


DF-1000

# UNION Collar Type

- Structure** ■ Loose fitting by inserting a tube into a union joint
- Use** ■ Eccentricity of pipes and other parts, ground subsidence, etc.
- Feature** ■ Easy pipe layout work and reasonable price.  
■ Tube and braid with excellent resistance to corrosion, pressure, heat, bending, and operation can be selected.

- Available NB 8A~65A
- Applicable Tubes
- Spiral Tube
  - Super One-Pitch Tube
  - Fine Soft Tube
  - One-Pitch Tube
  - Fine Annular Tube
- Braid of SUS316 and SUS316L are also available. Please contact us for details.
- The operation temperature of the standard gasket is -40°C to 100°C. Please contact us for details if the operation temperature exceeds this range.



Item	Name	Material
1	Tube	SUS304·SUS316L
2	Braid	SUS304·SUS316·SUS316L
3	Union collar	SUS304·SUS316L
4	Union	FCMB·SUS304·BC6·SUS316L
5	Gasket (Packing)	Non-asbestos (standard) ·PTFE, others

## Caution

- ※Please use a gasket designed for steam when fluid is steam.
- ※Please always use a wrench on a union screw to tighten a union nut to prevent twisting of a tube.
- ※Please contact us for details, for pipe layout that generates mechanical operation displacement or vibration.

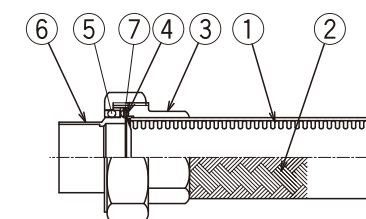
DF-1200

# Insulation UNION

- Structure** ■ Loose fitting by inserting a tube into an insulation union joint.
- Use** ■ Eccentricity of pipes and other parts, ground subsidence, etc.
- Feature** ■ The insulation union eliminates the risk of electrolytic corrosion.  
■ Connected by brazing due to copper tube connection.  
■ Screw connection type with the opposite pipe is also available.  
■ This product is suitable for absorbing deflection of copper pipes.

- Applicable range** ■ Temperature...-10°C~80°C max.  
■ Pressure...1.0MPaG max.

- Available NB 8A~65A
- Applicable Tubes
- Spiral Tube
  - Super One-Pitch Tube
  - Fine Soft Tube
  - One-Pitch Tube
  - Fine Annular Tube
- Braid of SUS316 and SUS316L are also available. Please contact us for details.



Item	Name	Material
1	Tube	SUS304·SUS316L
2	Braid	SUS304·SUS316·SUS316L
3	Union	FCMB·SUS304
4	Union collar	SUS304·SUS316L
5	Insulator	Bakelite resin
6	Copper Pipe Socket	C3601BD
7	Gasket (Packing)	EPDM

## Caution

- ※Please always use a wrench on a union screw to tighten a union nut to prevent twisting of a tube.
- ※Please contact us for details, for pipe layout that generates mechanical operation displacement or vibration.

Dimension of applicable copper pipe

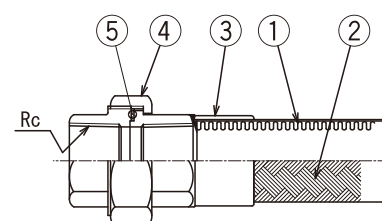
NB	O.D.
15A	φ15.88
20A	φ22.23
25A	φ28.58
32A	φ34.93
40A	φ41.28
50A	φ53.98

DF-1100

# UNION R-Type

- Structure** ■ Butt welding a union joint and a tube
- Use** ■ Eccentricity of pipes and other parts, ground subsidence, etc.
- Feature** ■ Tube and braid with excellent resistance to corrosion, pressure, heat, bending, and operation can be selected.

- Available NB 6A~150A
- Applicable Tubes
- Spiral Tube
  - Super One-Pitch Tube
  - Fine Annular Tube
  - Soft Tube
  - One-Pitch Tube
  - Annular Tube
  - 2PLY Annular Tube
  - Fine Soft Tube
- Braid and tube rings of SUS316 and SUS316L are also available. Please contact us for details.
- The operation temperature of the standard gasket is -40°C to 100°C. Please contact us for details if the operation temperature exceeds this range.
- The underground installation type is P. 04 model number **DFM-1100**.
- For Union fitting
- FCMB: 6A~150A
  - SUS304: 6A~100A
  - SUS316L: 6A~65A
  - BC6: 6A~50A



Item	Name	Material
1	Tube	SUS304·SUS316L
2	Braid	SUS304·SUS316·SUS316L
3	Tube Ring	SUS304·SUS316·SUS316L
4	Union	FCMB·SUS304·SUS316L·BC6
5	Gasket (Packing)	Non-asbestos (standard) ·PTFE, others

## Caution

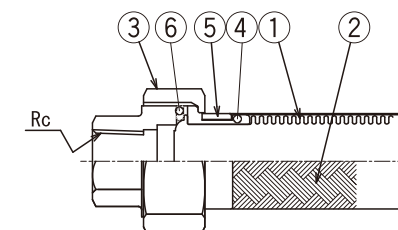
- ※Please use a gasket designed for steam when fluid is steam.
- ※Please always use a wrench on a union screw to tighten a union nut to prevent twisting of a tube.
- ※Please contact us for details, for pipe layout that generates mechanical operation displacement or vibration.

DF-1300

# Non-welding UNION

- Structure** ■ The seal section is integrated with the tube, and the SUS braid and union joint are attached without welding.
- Use** ■ Eccentricity of pipes and other parts, absorption of vibration, ground subsidence, etc.
- Feature** ■ The non-welding assembly of the joint is suitable for absorbing vibration.

- Available NB 10A~50A
- The operation temperature of the standard gasket is -40°C to 100°C. Please contact us for details if the operation temperature exceeds this range.



Dimension of tube

NB	I.D	O.D	Thickness
10A	φ17.0	φ24.0	0.2
15A	φ19.2	φ27.5	0.2
20A	φ24.1	φ33.0	0.2
25A	φ29.5	φ40.5	0.2
32A	φ38.6	φ50.0	0.25
40A	φ44.8	φ57.0	0.3
50A	φ56.4	φ70.0	0.3

## Caution

- ※Please use a gasket designed for steam when fluid is steam.
- ※Please always use a wrench on a union screw to tighten a union nut to prevent twisting of a tube.
- ※Please contact us for details, for pipe layout that generates mechanical operation displacement or vibration.

Item	Name	Material
1	Tube	SUS304·SUS316L
2	Braid	SUS304
3	Union	FCMB·SUS304·BC6
4	Sleeve	SS400·SUS304
5	Clinch Ring	SS400·SUS304
6	Gasket (Packing)	Non-asbestos (standard) ·PTFE, others

DF-1400

# K- Core UNION (for Water) with function to protect core crush

- Structure
- Use
- Feature
- Structured so that water and the main body of the union does not touch due to the resin screw and the core with a screw
  - Clean water (tap water, greywater)
  - Clean design that prevents contaminated water from accumulating at the core and the tube ends due to the movable shape
  - The ring-shaped protrusion at the core absorbs the variation in the inner diameter of the tube and prevents water from entering from the lining wall.

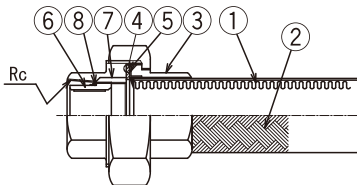
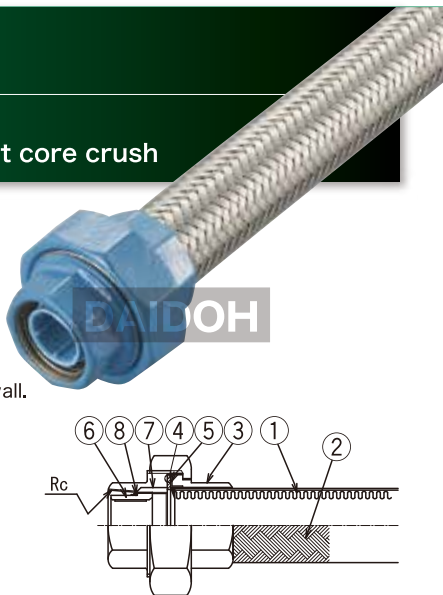
Applicable range

- Temperature...40°C max.
- Pressure...1.0MPaG max.

- Available NB 15A~80A
- Applicable Tubes
  - Spiral Tube
  - One-Pitch Tube
  - Fine Annular Tube
- Braid of SUS316 and SUS316L are also available. Please contact us for details.
- Underground installation type can also be produced. Please contact us for details.

Caution

※Please always use a wrench on a union screw to tighten a union nut to prevent twisting of a tube.



Item	Name	Material
1	Tube	SUS316L
2	Braid	SUS304·SUS316·SUS316L
3	Union	FCMB
4	Gasket (Packing)	SBR
5	Union collar	SUS316L
6	Core	Polyethylene
7	Inner screw	PVC
8	Rubber ring	Synthetic rubber

DF-1500

# HL Core UNION (for Hot Water)

- Structure
- Use
- Feature
- Structured so that hot water and main body of the union does not touch due to the resin screw and the core with a screw.
  - Used for hot water and warm water pipes
  - An anti-corrosion joint which is effective for preventing rusty water is used to attach a hot water pipe joints with excellent heat resistance to a tube.

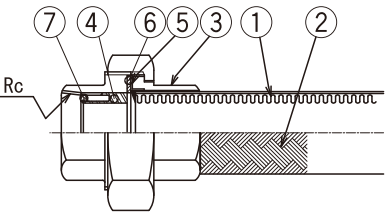
Applicable range

- Temperature...85°C max.
- Pressure...1.0MPaG max.

- Available NB 15A~80A
- Applicable Tubes
  - Spiral Tube
  - One-Pitch Tube
  - Fine Annular Tube
- Braid of SUS316 and SUS316L are also available. Please contact us for details.
- Underground installation type can also be produced. Please contact us for details.

Caution

※Please always use a wrench on a union screw to tighten a union nut to prevent twisting of a tube.



Item	Name	Material
1	Tube	SUS316L
2	Braid	SUS304·SUS316·SUS316L
3	Union	FCMB
4	Core	Heatproof hard PVC
5	Union collar	SUS316L
6	Gasket (Packing)	EPDM
7	Seal agent	Silicone resin

DF-1600 DF-1700 DF-1800  
DF-W1600 DF-W1700 DF-W1800

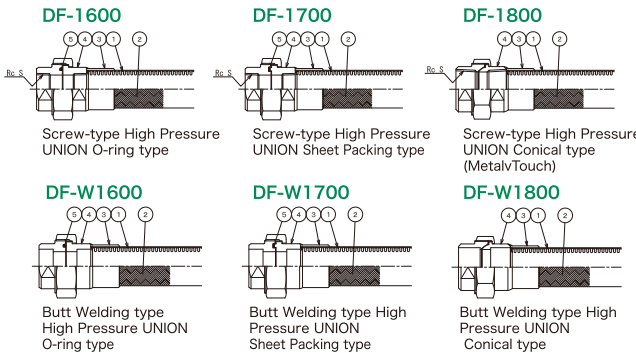
# High Pressure UNION

- Structure
- Use
- Feature
- Butt welding high pressure union joint and tube.
  - Eccentricity of high-pressure pipes, ground subsidence, etc.
  - Tube and braid with excellent resistance to corrosion, pressure, heat, bending, and operation can be selected.
  - Available types of seal include O-ring, joint seal, and metal seal depending on designated union joint fittings.

- Available NB 8A~65A
- Applicable Tubes
  - Spiral Tube
  - Super One-Pitch Tube
  - Fine Annular Tube
  - Soft Tube
- Braid and tube rings of SUS316 and SUS316L are also available. Please contact us for details.
- The standard operating temperature of an O-ring type is -30°C to 85°C or less. Please contact us for details if the operating temperature exceeds this range.
- The standard operating temperature of Sheet Packing type is -40°C to 100°C or less. Please contact us for details if the operating temperature exceeds this range.
- Since the conical type uses a metal seal method, the operating temperature covers from low temperature to high temperature range. Please contact us for details.

Caution

※Please use a gasket designed for steam when fluid is steam.  
※Please always use a wrench on a union screw to tighten a union nut to prevent twisting of a tube.  
※Please contact us for details, for pipe layout that generates mechanical operation displacement or vibration.



Item	Name	Material
1	Tube	SUS304·SUS316L
2	Braid	SUS304·SUS316·SUS316L
3	Tube ring	SUS304·SUS316·SUS316L
4	High Pressure UNION	S25C·SUS304·SUS316L
5	O-ring	NBR (standard), others
	Gasket (Packing)	Non-asbestos (standard), others

DFM-1100

# Underground UNION R-type

- Structure
- Use
- Feature
- Designed for underground installation by wrapping anti-corrosion tapes on the outer surface of the tube
  - Anti-corrosion paint is applied on all parts, except for the stainless steel parts.
  - For absorbing deflection in pipes installed under the ground caused by ground subsidence.
  - The anti-corrosion tape and paint on the exterior provide anti-corrosiveness against impurities in the ground.

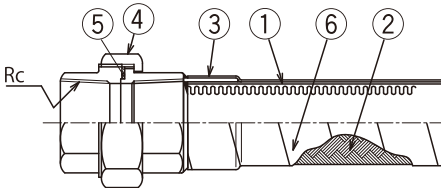
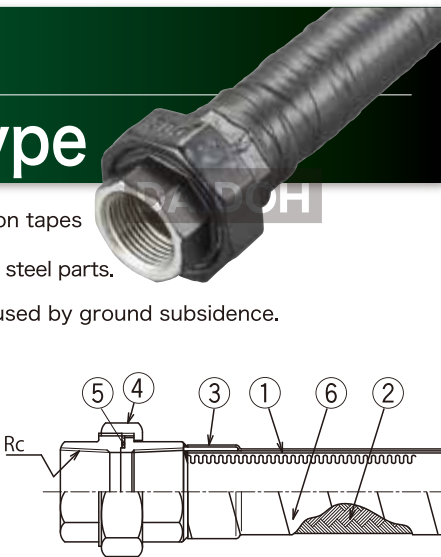
Applicable range

- Temperature...80°C max.

- Available NB 6A~150A
- Applicable Tubes
  - Spiral Tube
  - Annular Tube
  - Soft Tube
- One-Pitch Tube
- Fine Annular Tube
- Fine Soft Tube
- Super One-Pitch Tube
- 2PLY Annular Tube
- Metal touch types and other types can also be produced.
- Braid and tube rings of SUS316 and SUS316L are also available. Please contact us for details.
- For Union fitting
  - FCMB: 6A~150A
  - SUS304: 6A~100A
  - SUS316L: 6A~65A
  - BC6: 6A~50A

Caution

※Please always use a wrench on a union screw to tighten a union nut to prevent twisting of a tube.



Item	Name	Material
1	Tube	SUS304·SUS316L
2	Braid	SUS304·SUS316·SUS316L
3	Tube ring	SUS304·SUS316·SUS316L
4	Union	FCMB·SUS304·SUS316L
5	Packing	Non-asbestos (standard), others
6	Anti-corrosion tape	PVC, others



DF-2000

# Hexagonal NIPPLE (fixed)

**Structure** ■ Butt welding a nipple and a tube.

**Use** ■ Eccentricity of pipes and other parts, ground subsidence, etc.

**Feature**

- Tube and braid with excellent resistance to corrosion, pressure, heat, bending, and operation can be selected.
- Besides tapered screws for pipes, NPT screws, and other screws with different specifications can also be produced.

■ Available NB 6A~100A

■ Applicable Tubes

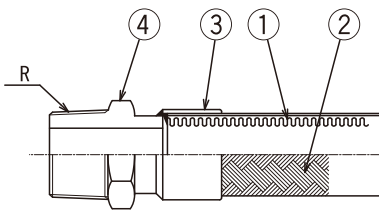
- Spiral Tube
- Super One-Pitch Tube
- Fine Annular Tube
- Soft Tube
- One-Pitch Tube
- Annular Tube
- 2PLY Annular Tube
- Fine Soft Tube

■ Underground installation type can also be produced.

Please contact us for details.

■ Braid and tube rings of SUS316 and SUS316L are also available.

Please contact us for details.



Item	Name	Material
1	Tube	SUS304・SUS316L
2	Braid	SUS304・SUS316・SUS316L
3	Tube-ring	SUS304・SUS316・SUS316L
4	Hex. Nipple	SS400・SUS304・SUS316・SUS316L, others

**Caution**

※Please contact us for details, for pipe layout that generates mechanical operation displacement or vibration.

DF-2100

# Hexagonal SOCKET (fixed)

**Structure** ■ Butt welding a socket and a tube.

**Use** ■ Eccentricity of pipes and other parts, ground subsidence, etc.

**Feature**

- Tube and braid with excellent resistance to corrosion, pressure, heat, bending, and operation can be selected.
- Besides tapered screws for pipes, NPT screws, and other screws with different specifications can also be produced.

■ Available NB 6A~65A

■ Applicable Tubes

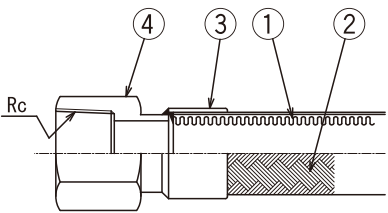
- Spiral Tube
- Super One-Pitch Tube
- Fine Annular Tube
- Soft Tube
- One-Pitch Tube
- Annular Tube
- 2PLY Annular Tube
- Fine Soft Tube

■ Underground installation type can also be produced.

Please contact us for details.

■ Braid and tube rings of SUS316 and SUS316L are also available.

Please contact us for details.



Item	Name	Material
1	Tube	SUS304・SUS316L
2	Braid	SUS304・SUS316・SUS316L
3	Tube-ring	SUS304・SUS316・SUS316L
4	Hex. Socket	SS400・SUS304・SUS316・SUS316L, others

**Caution**

※Please contact us for details, for pipe layout that generates mechanical operation displacement or vibration.

DF-2200

# Round NIPPLE (fixed)

**Structure** ■ Butt welding a nipple and a tube.

**Use** ■ Eccentricity of pipes and other parts, ground subsidence, etc.

**Feature**

- Tube and braid with excellent resistance to corrosion, pressure, heat, bending, and operation can be selected.
- Besides tapered screws for pipes, NPT screws, and other screws with different specifications can also be produced.

■ Available NB 6A~150A

■ Applicable Tubes

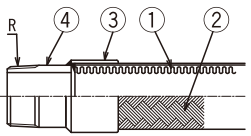
- Spiral Tube
- Annular Tube
- Soft Tube
- One-Pitch Tube
- Fine Annular Tube
- Fine Soft Tube
- Super One-Pitch Tube
- 2PLY Annular Tube

■ Underground installation type can also be produced.

Please contact us for details.

■ Braid and tube rings of SUS316 and SUS316L are also available.

Please contact us for details.



**Caution**

※Please contact us for details, for pipe layout that generates mechanical operation displacement or vibration.

Item	Name	Material
1	Tube	SUS304・SUS316L
2	Braid	SUS304・SUS316・SUS316L
3	Tube-ring	SUS304・SUS316・SUS316L
4	Round Nipple	SGP・STPG370・SUS304・SUS316, others

DF-2300

# Round SOCKET (fixed)

**Structure** ■ Butt welding a socket and a tube.

**Use** ■ Eccentricity of pipes and other parts, ground subsidence, etc.

**Feature**

- Tube and braid with excellent resistance to corrosion, pressure, heat, bending, and operation can be selected.
- Besides tapered screws for pipes, NPT screws, and other screws with different specifications can also be produced.

■ Available NB 6A~100A

■ Applicable Tubes

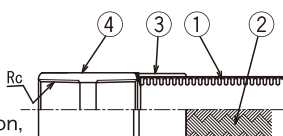
- Spiral Tube
- Annular Tube
- Soft Tube
- One-Pitch Tube
- Fine Annular Tube
- Fine Soft Tube
- Super One-Pitch Tube
- 2PLY Annular Tube

■ Underground installation type can also be produced.

Please contact us for details.

■ Braid and tube rings of SUS316 and SUS316L are also available.

Please contact us for details.



**Caution**

※Please contact us for details, for pipe layout that generates mechanical operation displacement or vibration.

Item	Name	Material
1	Tube	SUS304・SUS316L
2	Braid	SUS304・SUS316・SUS316L
3	Tube-ring	SUS304・SUS316・SUS316L
4	Round Socket	STPG370・SUS304・SUS316, others

## Extra: Flexible tube for filling

**Structure** ■ Butt Welding a fitting and a tube.

**Use** ■ For filling gas

**Feature**

- Right-handed and left-handed screws are also available.
- Trapezoidal screws, unified screws, and Whitworth screws are also available.



## Extra: Bite-type joint

**Structure** ■ Butt Welding a fitting and a tube.

**Use** ■ Absorbs deflections of pipes in general and pipes for gas, water, and oil

**Feature**

- Used for all kinds of pipes.
- Various types of bite-type joints, such as Swagelok can be attached.





DF-2500

Lever coupling type

Structure

- <lever coupling> screwed into a nipple type flexible metal hose.
- Can also be attached to a socket type flexible metal hose.
- Connection by direct welding onto a tube section of a flexible metal hose can also be produced.

Use

- Eccentricity of pipes and other parts, ground subsidence, etc.

Feature

- Easy removal and attachment of the hose.
- The adapter can be removed just by pushing up the lever on the coupler.
- Male screws, female screws, and flange types can also be produced for the adapter.
- Available types of joint metal fittings for selection include hexagonal nipples, hexagonal sockets, round nipples, and round sockets.
- Tube and braid with excellent resistance to corrosion, pressure, heat, bending, and operation can be selected.

- Standard gasket (NBR) is attached on a lever coupler.
- If you want to use other material please contact us for details.

- Available NB 15A~200A

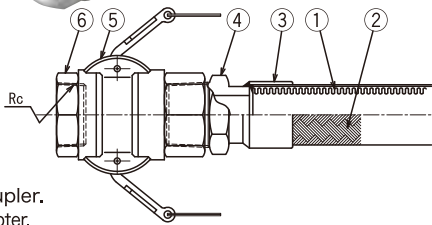
- Applicable Tubes

- Spiral Tube •One-Pitch Tube •Super One-Pitch Tube
- Annular Tube •Fine Annular Tube •2PLY Annular Tube
- Soft Tube •Fine Soft Tube

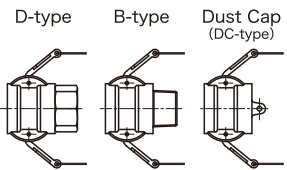
- Braid and tube rings of SUS316 and SUS316L are also available. Please contact us for details.

Caution

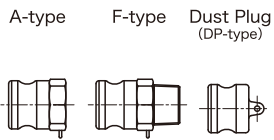
- ※Please contact us for details, for pipe layout that generates mechanical operation displacement or vibration.



Lever Couplers



Adaptor



Applicable temp. for Gaskets

Material	Temp (°C)
NBR (Standard)	-30~ 80
Fluorine Rubber	-20~200
EPDM	-30~120
White Neoprene	-30~ 70
Silicone	-50~150
Super PFA	-20~220
FEP Lap Seal	-60~180
PTFE Over Fluorine Rubber	-30~200
PTFE (accordion)	-20~250

The temperature varies depending on types of fluid and pressure.

Item	Name	Material
1	Tube	SUS304·SUS316L
2	Braid	SUS304·SUS316·SUS316L
3	Tube Ring	SUS304·SUS316·SUS316L
4	Nipple	SS400·SUS304·SUS316L
5	Lever Coupler	Aluminum, Bronze, Stainless, P.P
6	Adaptor	Aluminum, Bronze, Stainless, P.P

DF-2600

Quick coupling method

Structure

- <Quick coupling> screwed into a nipple type flexible metal hose.
- Can also be attached to a socket type flexible metal hose.

Use

- Eccentricity of pipes and other parts, ground subsidence, etc.

Feature

- Easy removal and attachment of the hose.
- High-pressure type can also be produced.
- The two-channel open/close type coupling has built-in automatic opening/closing vales in both the socket and the plug, and prevents the fluid from leaking out from the pipe during separation.
- An open-type without built-in valve is also available.
- Available types of joint metal fittings for selection include hexagonal nipples, hexagonal sockets, round nipples, and round sockets.
- Tube and braid with excellent resistance to corrosion, pressure, heat, bending, and operation can be selected.

- Available NB 8A~65A

- Applicable Tubes

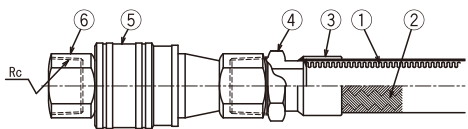
- Spiral Tube •One-Pitch Tube •Super One-Pitch Tube
- Annular Tube •Fine Annular Tube •2PLY Annular Tube
- Soft Tube •Fine Soft Tube

- Braid and tube rings of SUS316 and SUS316L are also available. Please contact us for details.

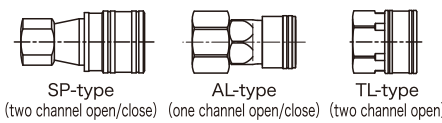
- O-rings made of special materials for different operating conditions can also be produced. Please contact us for details.

Caution

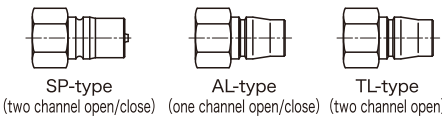
- ※Please contact us for details, for pipe layout that generates mechanical operation displacement or vibration.



Socket



Plug



Special material for O-ring is available depending on usage. Please contact us for details.

Applicable temp. for O-ring

Material	Temp (°C)
NBR	-20~ 80
Fluorine Rubber	-20~180
EPDM	-40~150

The temperature varies depending on types of fluid and pressure.

Item	Name	Material
1	Tube	SUS304·SUS316L
2	Braid	SUS304·SUS316·SUS316L
3	Tube Ring	SUS304·SUS316·SUS316L
4	Nipple	SS400·SUS304·SUS316L
5	Socket	Carbon steel(plated), brass, stainless
6	Plug	Carbon steel(plated), brass, stainless

DF-3000

Copper pipe sockets

Structure

- Butt welding a copper pipe socket and a tube.

Use

- For absorbing vibration of freezers and other devices

Feature

- Freezing prevention and high-pressure designs to be used as pipes of freezers can also be produced.

- Available NB 8A~80A

- Applicable Tubes

- Spiral Tube •One-Pitch Tube •Super One-Pitch Tube
- Annular Tube •Fine Annular Tube •2PLY Annular Tube
- Soft Tube •Fine Soft Tube

- Braid and tube rings of SUS316 and SUS316L are also available. Please contact us for details.

NB	8A		10A	15A	20A	
O.D of connecting pipe mm	6.35	9.53	12.70	15.88	19.05	22.23
I.D of JIS socket	6.43	9.62	12.81	16.00	19.19	22.36

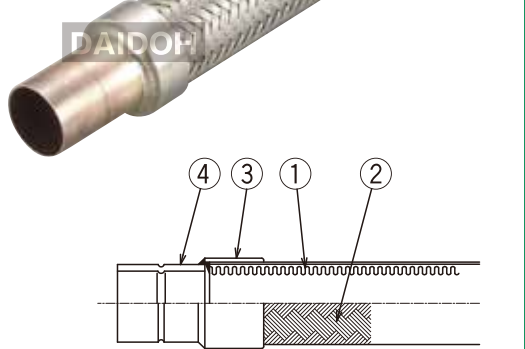
NB	25A		32A	32A	40A	
O.D of connecting pipe mm	25.40	28.58	31.75	34.93	38.10	41.28
I.D of JIS socket	25.48	28.75	31.83	35.11	38.20	41.50

NB	50A			65A		80A
O.D of connecting pipe mm	44.45	50.80	53.98	63.50	66.68	79.38
I.D of JIS socket	44.55	50.90	54.22	63.60	66.96	79.66

Item	Name	Material
1	Tube	SUS304·SUS316L
2	Braid	SUS304·SUS316·SUS316L
3	Tube Ring	SUS304·SUS316·SUS316L
4	Copper Socket	C1220

Caution

- ※Copper pipe sockets are attached by silver soldering. Thus, please make sure that heat would not be transferred by wrapping a wet towel around the welding section of the flexible hose during installation.



DF-3100

Pipe end

Structure

- Butt welding a pipe and a tube.

Use

- Eccentricity of pipes and other parts, ground subsidence, etc.

Feature

- Can select various kinds of steel pipes and copper pipes.
- High-pressure type can also be produced.
- Tube and braid with excellent resistance to corrosion, pressure, heat, bending, and operation can be selected.

- Available NB 6A~350A

- Applicable Tubes

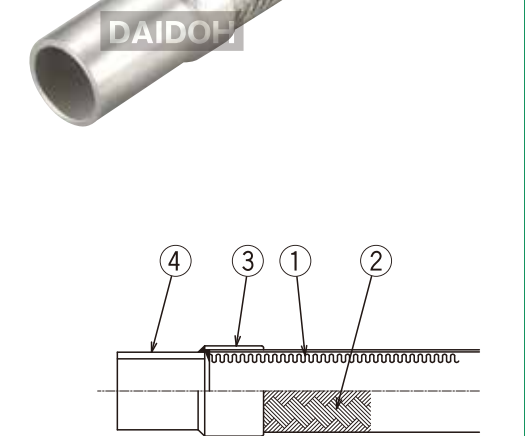
- Spiral Tube •One-Pitch Tube •Super One-Pitch Tube
- Annular Tube •Fine Annular Tube •2PLY Annular Tube
- Soft Tube •Fine Soft Tube

- Braid and tube rings of SUS316 and SUS316L are also available. Please contact us for details.

- Please specify the necessity of a groove when placing an order.

Caution

- ※Please contact us for details, for pipe layout that generates mechanical operation displacement or vibration.



Item	Name	Material
1	Tube	SUS304·SUS316L
2	Braid	SUS304·SUS316·SUS316L
3	Tube Ring	SUS304·SUS316·SUS316L
4	Pipe end	SGP·STPG370·SUS304·SUS316, others



DF-4000

# Metal Touch Male(welding type)

**Structure** ■ Butt welding a cap nut fitting and a tube.

**Use** ■ Eccentricity of pipes and other parts, ground subsidence, etc.

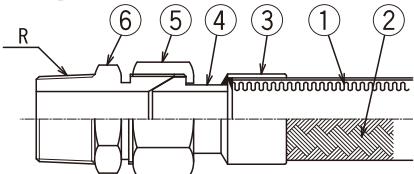
**Feature**

- The bag-shaped nut type enables easy attachment to a pipe.
- The metal touch does not require a gasket.
- Aside from tapered thread for pipe, NPT thread and other various kinds of threads are available.
- Tube and braid with excellent resistance to corrosion, pressure, heat, bending, and operation can be selected.

- Available NB 6A~80A
- Applicable Tubes
  - Spiral Tube
  - One-Pitch Tube
  - Super One-Pitch Tube
  - Annular Tube
  - Fine Annular Tube
  - 2PLY Annular Tube
  - Soft Tube
  - Fine Soft Tube
- Underground installation type can also be produced. Please contact us for details.
- Braid and tube rings of SUS316 and SUS316L are also available. Please contact us for details.

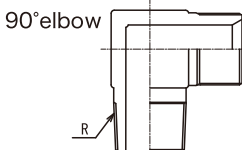
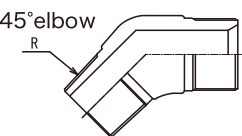
**Caution**

- ※Dust and cutting chips adhered on the sheet surface cause leakage. Please make sure that the sheet surface has no dust or chips before attaching.
- ※To prevent twisting of a tube, please always use a wrench on the adaptor when tightening a cap nut.
- ※Please contact us for details, for pipe layout that generates mechanical operation displacement or vibration.



**Tip adaptors**

The 45° elbow type and 90° elbow type can also be attached to the male adaptor at the tip.



Item	Name	Material
1	Tube	SUS304·SUS316L
2	Braid	SUS304·SUS316·SUS316L
3	Tube Ring	SUS304·SUS316·SUS316L
4	Sleeve	SS400·SUS304·SUS316L, others
5	Cap nut	SS400·SUS304·SUS316L·C3604, others
6	Male adaptor	SS400·SUS304·SUS316L·C3604, others

DF-4600

# Metal Touch Male(welding type, opposite sheet)

**Structure** ■ Butt welding a cap nut fitting and a tube.  
■ This type has a sheet on the opposite side of DF-4000.

**Use** ■ Eccentricity of pipes and other parts, ground subsidence, etc.

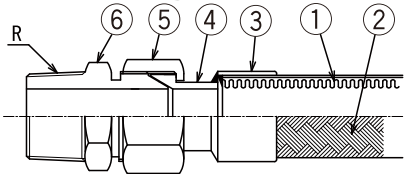
**Feature**

- The bag-shaped nut type enables easy attachment to a pipe.
- The metal touch does not require a gasket.
- Aside from tapered thread for pipe, NPT thread and other various kinds of threads are available.
- Tube and braid with excellent resistance to corrosion, pressure, heat, bending, and operation can be selected.

- Available NB 6A~80A
- Applicable Tubes
  - Spiral Tube
  - One-Pitch Tube
  - Super One-Pitch Tube
  - Annular Tube
  - Fine Annular Tube
  - 2PLY Annular Tube
  - Soft Tube
  - Fine Soft Tube
- Underground installation type can also be produced. Please contact us for details.
- Braid and tube rings of SUS316 and SUS316L are also available. Please contact us for details.

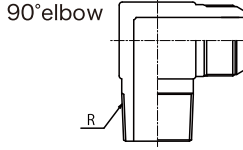
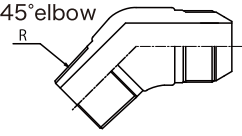
**Caution**

- ※Dust and cutting chips adhered on the sheet surface cause leakage. Please make sure that the sheet surface has no dust or chips before attaching.
- ※To prevent twisting of a tube, please always use a wrench on the adaptor when tightening a cap nut.
- ※Please contact us for details, for pipe layout that generates mechanical operation displacement or vibration.



**Tip adaptors**

The 45° elbow type and 90° elbow type can also be attached to the male adaptor at the tip.



Item	Name	Material
1	Tube	SUS304·SUS316L
2	Braid	SUS304·SUS316·SUS316L
3	Tube Ring	SUS304·SUS316·SUS316L
4	Sleeve	SS400·SUS304·SUS316L, others
5	Cap nut	SS400·SUS304·SUS316L·C3604, others
6	Male adaptor	SS400·SUS304·SUS316L·C3604, others

DF-4100

# Metal Touch Female(welding type)

**Structure** ■ Butt welding a cap nut fitting and a tube.

**Use** ■ Eccentricity of pipes and other parts, ground subsidence, etc.

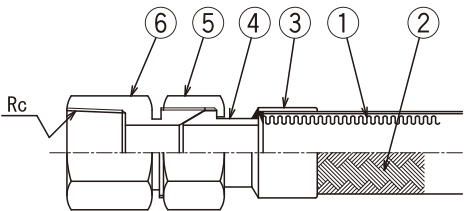
**Feature**

- The bag-shaped nut type enables easy attachment to a pipe.
- The metal touch does not require a gasket.
- Aside from tapered thread for pipe, NPT thread and other various kinds of threads are available.
- Tube and braid with excellent resistance to corrosion, pressure, heat, bending, and operation can be selected.

- Available NB 6A~65A
- Applicable Tubes
  - Spiral Tube
  - One-Pitch Tube
  - Super One-Pitch Tube
  - Annular Tube
  - Fine Annular Tube
  - 2PLY Annular Tube
  - Soft Tube
  - Fine Soft Tube
- Underground installation type can also be produced. Please contact us for details.
- Braid and tube rings of SUS316 and SUS316L are also available. Please contact us for details.

**Caution**

- ※Dust and cutting chips adhered on the sheet surface cause leakage. Please make sure that the sheet surface has no dust or chips before attaching.
- ※To prevent twisting of a tube, please always use a wrench on the adaptor when tightening a cap nut.
- ※Please contact us for details, for pipe layout that generates mechanical operation displacement or vibration.



Item	Name	Material
1	Tube	SUS304·SUS316L
2	Braid	SUS304·SUS316·SUS316L
3	Tube Ring	SUS304·SUS316·SUS316L
4	Sleeve	SS400·SUS304·SUS316L, others
5	Cap Nut	SS400·SUS304·SUS316L·C3604, others
6	Female Adaptor	SS400·SUS304·SUS316L·C3604, others

DF-4700

# Metal Touch Female(welding type, opposite sheet)

**Structure** ■ Butt welding a cap nut fitting and a tube.  
■ This type has a sheet on the opposite side of DF-4100.

**Use** ■ Eccentricity of pipes and other parts, ground subsidence, etc.

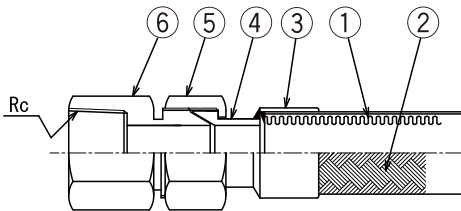
**Feature**

- The bag-shaped nut type enables easy attachment to a pipe.
- The metal touch does not require a gasket.
- Aside from tapered thread for pipe, NPT thread and other various kinds of threads are available.
- Tube and braid with excellent resistance to corrosion, pressure, heat, bending, and operation can be selected.

- Available NB 6A~65A
- Applicable Tubes
  - Spiral Tube
  - One-Pitch Tube
  - Super One-Pitch Tube
  - Annular Tube
  - Fine Annular Tube
  - 2PLY Annular Tube
  - Soft Tube
  - Fine Soft Tube
- Underground installation type can also be produced. Please contact us for details.
- Braid and tube rings of SUS316 and SUS316L are also available. Please contact us for details.

**Caution**

- ※Dust and cutting chips adhered on the sheet surface cause leakage. Please make sure that the sheet surface has no dust or chips before attaching.
- ※To prevent twisting of a tube, please always use a wrench on the adaptor when tightening a cap nut.
- ※Please contact us for details, for pipe layout that generates mechanical operation displacement or vibration.



Item	Name	Material
1	Tube	SUS304·SUS316L
2	Braid	SUS304·SUS316·SUS316L
3	Tube Ring	SUS304·SUS316·SUS316L
4	Sleeve	SS400·SUS304·SUS316L, others
5	Cap Nut	SS400·SUS304·SUS316L·C3604, others
6	Female Adaptor	SS400·SUS304·SUS316L·C3604, others



DF-4400

# Metal Touch Male for Rubber Hose Fitting

**Structure** ■ Butt welding a cap nut fitting for high pressure rubber hose and a tube.

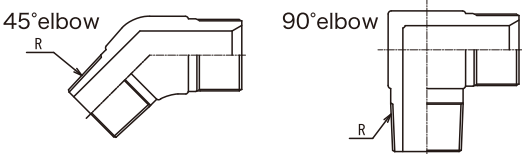
**Use** ■ Eccentricity of pipes and other parts, ground subsidence, etc.

**Feature**

- The bag-shaped nut type enables easy attachment to a pipe.
- The metal touch does not require a gasket.
- Aside from tapered thread for pipe, NPT thread and other various kinds of threads are available.
- Various types of adapters, including hose adapters sold at stores can be attached.
- Tube and braid with excellent resistance to corrosion, pressure, heat, bending, and operation can be selected.

**Tip adaptor**

The 45° elbow type and 90° elbow type can also be attached to the male adapter at the tip.



Item	Name	Material
1	Tube	SUS304・SUS316L
2	Braid	SUS304
3	Tube Ring	SUS304
4	Cap nut*	SS400・SUS304
5	Male Adaptor*	SS400・SUS304

\* A type which has a sheet on the opposite side is also available.

DF-4200

# Metal Touch Male ( Non-welding type)

**Structure** ■ Non-welding assembly of metal fittings and the tube.

**Use** ■ Eccentricity of pipes and other parts, ground subsidence, etc.

**Feature**

- The bag-shaped nut type enables easy attachment to a pipe.
- Lightweight and good flexibility.
- The metal touch does not require a gasket.
- Aside from tapered thread for pipe, NPT thread and other various kinds of threads are available.

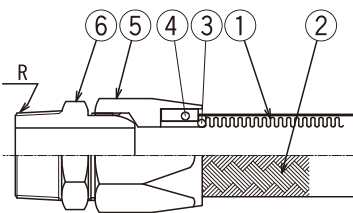
- Available NB 8A~25A
- Applicable Tubes
  - ・Spiral Tube

**Caution**

- ※To prevent twisting of a tube, please always use a wrench on the adapter when tightening a cap nut.
- Sudden and quick tightening is more effective than slow and gradual tightening.
- ※Please be careful to keep adaptor seal free from any flaw or foreign particle.
- ※We recommend to apply seal agent on market to perform metal sealing firmly.
- ※Please contact us for details, for pipe layout that generates mechanical operation displacement or vibration.

Recommendable tightening torque for cap nut

N.B.	Torque value
8A	68N・m (700Kgf・cm)
10A	68N・m (700Kgf・cm)
15A	78N・m (800Kgf・cm)
20A	98N・m(1000Kgf・cm)
25A	127N・m(1300Kgf・cm)



Item	Name	Material
1	Tube	SUS304・SUS316L
2	Braid	SUS304
3	Base Ring	SS400・SUS304
4	Clinch Ring	SS400・SUS304
5	Cap nut	SS400・SUS304
6	Male Adaptor	SS400・SUS304・SUS316L・C3604

DF-4500

# Metal Touch Female for Rubber Hose Fitting

**Structure** ■ Butt welding a cap nut fitting for high pressure rubber hose and a tube.

**Use** ■ Eccentricity of pipes and other parts, ground subsidence, etc.

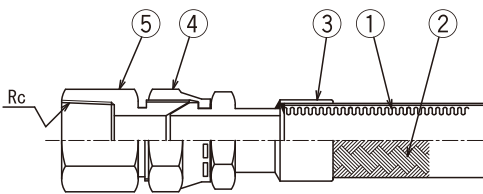
**Feature**

- The bag-shaped nut type enables easy attachment to a pipe.
- The metal touch does not require a gasket.
- Aside from tapered thread for pipe, NPT thread and other various kinds of threads are available.
- Various types of adapters, including hose adapters sold at stores can be attached.
- Tube and braid with excellent resistance to corrosion, pressure, heat, bending, and operation can be selected.

- Available NB 6A~50A
- Applicable Tubes
  - ・Spiral Tube
  - ・Super One-Pitch Tube
  - ・Fine Annular Tube
  - ・Soft Tube
  - ・One-Pitch Tube
  - ・Annular Tube
  - ・2PLY Annular Tube
  - ・Fine Soft Tube

**Caution**

- ※Dust and cutting chips adhered on the sheet surface cause leakage.
- Please make sure that the sheet surface has no dust or chips before attaching.
- ※To prevent twisting of a tube, please always use a wrench on the adapter when tightening a cap nut.
- ※Please contact us for details, for pipe layout that generates mechanical operation displacement or vibration.



Item	Name	Material
1	Tube	SUS304・SUS316L
2	Braid	SUS304
3	Tube Ring	SUS304
4	Cap nut*	SS400・SUS304
5	Female Adaptor*	SS400・SUS304

\* A type which has a sheet on the opposite side is also available.

DF-4300

# Metal Touch Female ( Non-welding type)

**Structure** ■ Non-welding assembly of metal fittings and the tube.

**Use** ■ Eccentricity of pipes and other parts, ground subsidence, etc.

**Feature**

- The bag-shaped nut type enables easy attachment to a pipe.
- Light weight and good flexibility.
- The metal touch does not require a gasket.
- Aside from tapered thread for pipe, NPT thread and other various kinds of threads are available.

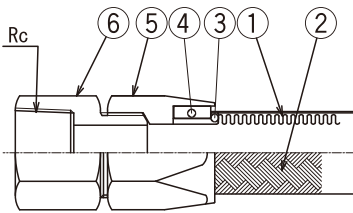
- Available NB 8A~25A
- Applicable Tubes
  - ・Spiral Tube

**Caution**

- ※To prevent twisting of a tube, please always use a wrench on the adapter when tightening a cap nut.
- Sudden and quick tightening is more effective than slow and gradual tightening.
- ※Please be careful to keep adaptor seal free from any flaw or foreign particle.
- ※We recommend to apply seal agent on market to perform metal sealing firmly.
- ※Please contact us for details, for pipe layout that generates mechanical operation displacement or vibration.

Recommendable tightening torque for cap nut

N.B.	Torque value
8A	68N・m (700Kgf・cm)
10A	68N・m (700Kgf・cm)
15A	78N・m (800Kgf・cm)
20A	98N・m(1000Kgf・cm)
25A	127N・m(1300Kgf・cm)



Item	Name	Material
1	Tube	SUS304・SUS316L
2	Braid	SUS304
3	Base Ring	SS400・SUS304
4	Clinch Ring	SS400・SUS304
5	Cap nut	SS400・SUS304
6	Female Adaptor	SS400・SUS304・SUS316L・C3604

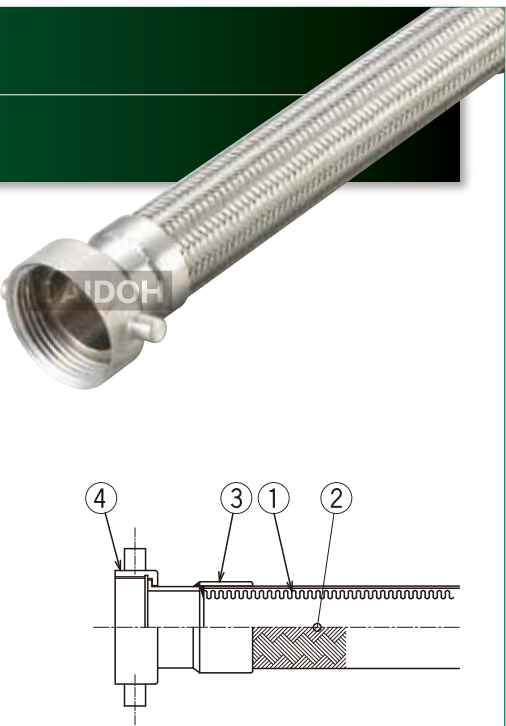


DF-30000

# Lorry Fitting Female

- Structure
  - Butt welding a lorry fitting and a tube.
  - The exterior is a wire braid type.
- Use
  - For purposes, including connecting with a tank lorry.
- Feature
  - The protrusion at the joint allows easy removal and attachment.

- Available NB 25A~80A
- Applicable Tubes
  - Spiral Tube
  - Super One-Pitch Tube
  - Fine Annular Tube
  - Soft Tube
  - One-Pitch Tube
  - Annular Tube
  - 2PLY Annular Tube
  - Fine Soft Tube
- Suitable screw specifications (Kawanishi screw, Tokyu screw, M screw, PF screw, etc.)
- Reinforced spring is effective for preventing excessive bending. Please contact us for details.
- Braid and tube rings of SUS316 and SUS316L are also available. Please contact us for details.



Item	Name	Material
1	Tube	SUS304・SUS316L
2	Braid	SUS304・SUS316・SUS316L
3	Tube Ring	SUS304・SUS316・SUS316L
4	Lorry female	SUS304, others

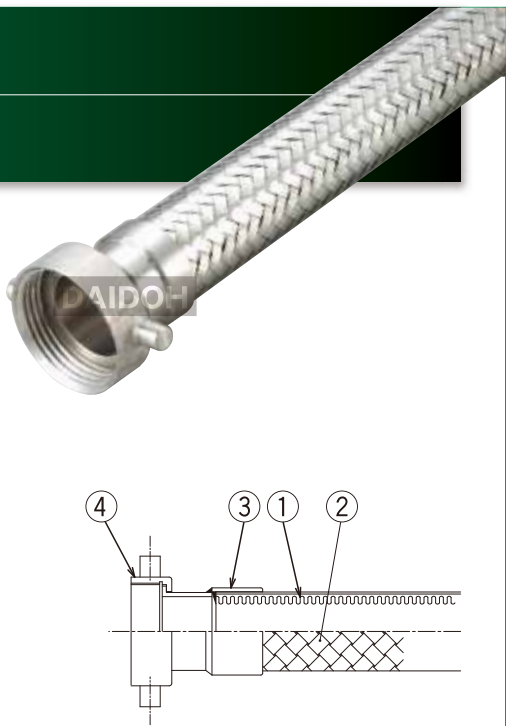
We also repair parts.  
Please contact us for details.

DF-32000 「Ribbon braid type」

# Lorry Fitting Female

- Structure
  - Butt welding a lorry fitting and a tube.
  - The exterior is a ribbon braid type.
- Use
  - For purposes, including connecting with a tank lorry.
- Feature
  - The protrusion at the joint allows easy removal and attachment.

- Available NB 25A~80A
- Applicable Tubes
  - Spiral Tube
  - Super One-Pitch Tube
  - Fine Annular Tube
  - Soft Tube
  - One-Pitch Tube
  - Annular Tube
  - 2PLY Annular Tube
  - Fine Soft Tube
- Suitable screw specifications (Kawanishi screw, Tokyu screw, M screw, PF screw, etc.)
- Reinforced spring is effective for preventing excessive bending. Please contact us for details.
- The widths of available ribbon braid:  
5mm / 6mm / 8mm / 10mm / 12mm / 13mm
- Braid and tube rings of SUS316 and SUS316L are also available. Please contact us for details.



Item	Name	Material
1	Tube	SUS304・SUS316L
2	Braid	SUS304・SUS316・SUS316L
3	Tube Ring	SUS304・SUS316・SUS316L
4	Lorry female	SUS304, others

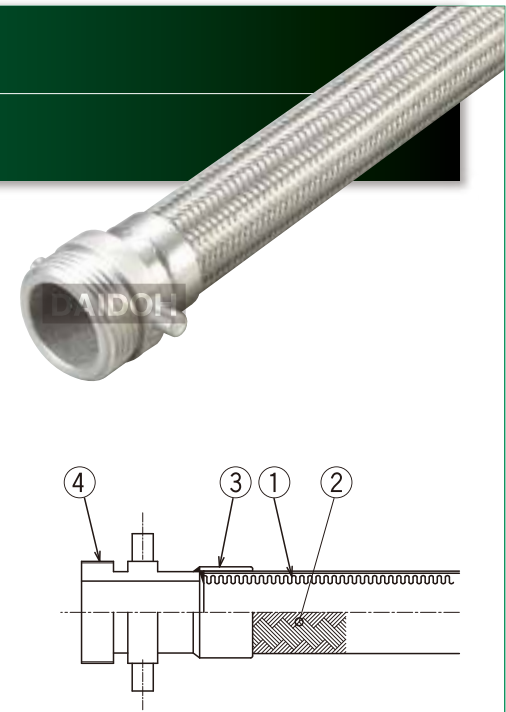
We also repair parts.  
Please contact us for details.

DF-31000

# Lorry Fitting Male

- Structure
  - Butt welding a lorry fitting and a tube.
  - The exterior is a wire braid type.
- Use
  - For purposes, including connecting with a tank lorry.
- Feature
  - The protrusion at the joint allows easy removal and attachment.

- Available NB 25A~80A
- Applicable Tubes
  - Spiral Tube
  - Super One-Pitch Tube
  - Fine Annular Tube
  - Soft Tube
  - One-Pitch Tube
  - Annular Tube
  - 2PLY Annular Tube
  - Fine Soft Tube
- Suitable screw specifications (Kawanishi screw, Tokyu screw, M screw, PF screw, etc.)
- Reinforced spring is effective for preventing excessive bending. Please contact us for details.
- Braid and tube rings of SUS316 and SUS316L are also available. Please contact us for details.



Item	Name	Material
1	Tube	SUS304・SUS316L
2	Braid	SUS304・SUS316・SUS316L
3	Tube Ring	SUS304・SUS316・SUS316L
4	Lorry male	SUS304, others

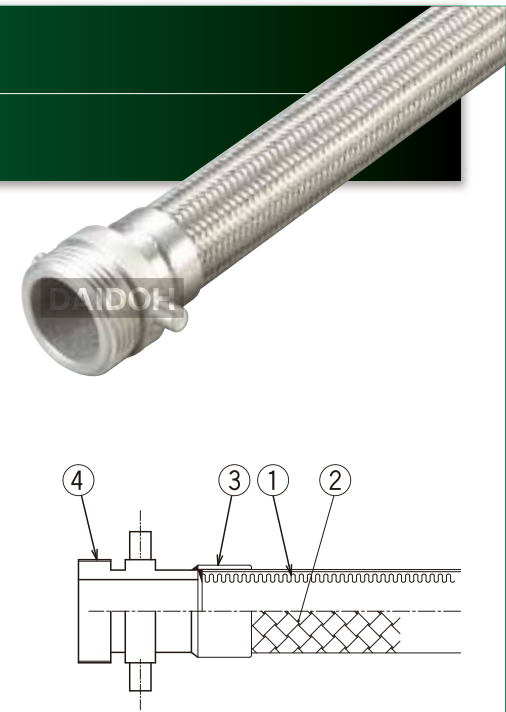
We also repair parts.  
Please contact us for details.

DF-33000 「Ribbon braid type」

# Lorry Fitting Male

- Structure
  - Butt welding a lorry fitting and a tube.
  - The exterior is a ribbon braid type.
- Use
  - For purposes, including connecting with a tank lorry.
- Feature
  - The protrusion at the joint allows easy removal and attachment.

- Available NB 25A~80A
- Applicable Tubes
  - Spiral Tube
  - Super One-Pitch Tube
  - Fine Annular Tube
  - Soft Tube
  - One-Pitch Tube
  - Annular Tube
  - 2PLY Annular Tube
  - Fine Soft Tube
- Suitable screw specifications (Kawanishi screw, Tokyu screw, M screw, PF screw, etc.)
- Reinforced spring is effective for preventing excessive bending. Please contact us for details.
- The widths of available ribbon braid:  
5mm / 6mm / 8mm / 10mm / 12mm / 13mm
- Braid and tube rings of SUS316 and SUS316L are also available. Please contact us for details.



Item	Name	Material
1	Tube	SUS304・SUS316L
2	Braid	SUS304・SUS316・SUS316L
3	Tube Ring	SUS304・SUS316・SUS316L
4	Lorry male	SUS304, others

We also repair parts.  
Please contact us for details.



DF-3300

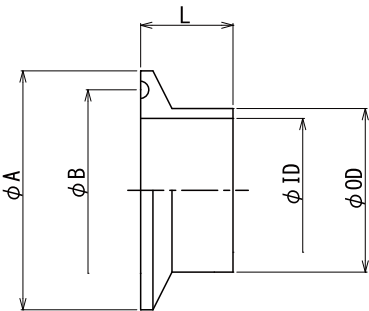
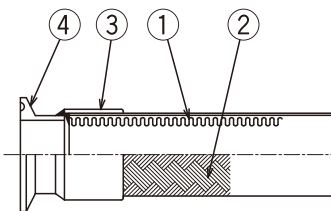
# Sanitary Fitting Ferrule type

**Structure** ■ Butt welding a sanitary fitting and a tube.

**Use** ■ ISO (IDF) standard, gas pipe size, and other categories can be selected.  
■ Pipes for food, medicine.

**Feature** ■ Small and light, easy for removal, maintenance, & inspection.

- Available NB 8A~200A 1.0S~6.5S
- Applicable Tubes
  - Spiral Tube
  - One-Pitch Tube
  - Super One-Pitch Tube
  - Annular Tube
  - Fine Annular Tube
  - Soft Tube
  - Fine Soft Tube
- Besides the flexible metal hose, flexible hose made of resin (PTFE, PFA, silicone, etc.) are also being produced.
- Braid and tube rings of SUS316 and SUS316L are also available. Please contact us for details.



Item	Name	Material
1	Tube	SUS304·SUS316L
2	Braid	SUS304·SUS316·SUS316L
3	Tube Ring	SUS304·SUS316·SUS316L
4	Ferrule	SUS304·SUS316L

Table1. Welding type Ferrule:ISO (IDF) Standard

(Unit:mm)

N.B.	OD	ID	A	B	L	Standard Tube ID
1.0 S	25.4	23.0	50.5	43.5	21.5	20A
1.25 S	31.8	29.4	50.5	43.5	21.5	25A
1.5 S	38.1	35.7	50.5	43.5	21.5	32A
2.0 S	50.8	47.8	64.0	56.5	21.5	40A
2.5 S	63.5	59.5	77.5	70.5	21.5	50A
3.0 S	76.3	72.3	91.0	83.5	21.5	65A
3.5 S	89.1	85.1	106.0	97.0	21.5	80A
4.0 S	101.6	97.6	119.0	110.0	28.0	100A
4.5 S	114.3	108.3	130.0	122.0	28.0	100A
5.5 S	139.8	133.8	155.0	146.0	28.0	125A
6.5 S	165.2	159.2	183.0	174.0	28.0	150A

※The length varies depending on the manufacturers of ferrule fittings.  
※Tubes can be selected based on flow rates or limits of outer diameter. Please contact us for details.

DF-3400

# Sanitary Fitting Male Thread type

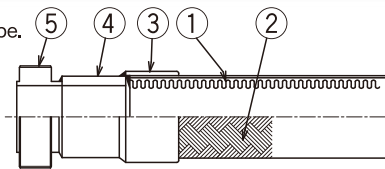
**Structure** ■ Butt welding a sanitary screw fitting and a tube.

**Use** ■ Pipes for food, medicine.

**Feature** ■ Small and light, easy for removal, maintenance, & inspection.

- Available NB 1.0S~4.0S  
(The standard tube diameter is the same as Table 1.  
Welding-type ferrule: ISO (IDF) standard on p. 15.)

- Applicable Tubes
  - Spiral Tube
  - One-Pitch Tube
  - Super One-Pitch Tube
  - Annular Tube
  - Fine Annular Tube
  - Soft Tube
  - Fine Soft Tube
- Besides the flexible metal hose, flexible hose made of resin (PTFE, PFA, silicone, etc.) are also being produced.
- Braid and tube rings of SUS316 and SUS316L are also available. Please contact us for details.



Item	Name	Material
1	Tube	SUS304·SUS316L
2	Braid	SUS304·SUS316·SUS316L
3	Tube Ring	SUS304·SUS316·SUS316L
4	Pipe end	SUS304·SUS316L
5	Male thread	SUS304·SUS316L

DF-3500

# Sanitary Fitting Hex Nut type

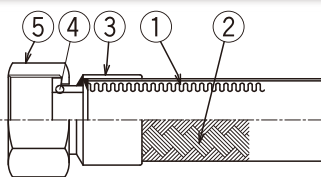
**Structure** ■ Butt welding a sanitary hex nut fitting and a tube.

**Use** ■ Pipes for food, medicine.

**Feature** ■ Small and light, easy for removal, maintenance, & inspection.

- Available NB 1.0S~4.0S  
(The standard tube diameter is the same as Table 1.  
Welding-type ferrule: ISO (IDF) standard on p. 15.)

- Applicable Tubes
  - Spiral Tube
  - One-Pitch Tube
  - Super One-Pitch Tube
  - Annular Tube
  - Fine Annular Tube
  - Soft Tube
  - Fine Soft Tube
- Besides the flexible metal hose, flexible hose made of resin (PTFE, PFA, silicone, etc.) are also being produced.
- Braid and tube rings of SUS316 and SUS316L are also available. Please contact us for details.



Item	Name	Material
1	Tube	SUS304·SUS316L
2	Braid	SUS304·SUS316·SUS316L
3	Tube Ring	SUS304·SUS316·SUS316L
4	Liner	SUS304·SUS316L
5	Hex Nut	SUS304

DF-3600

# Sanitary Fitting Grooved Round Nut type

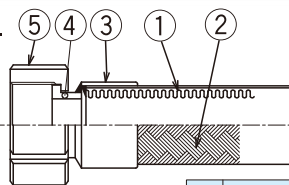
**Structure** ■ Butt welding a sanitary grooved round nut and a tube.

**Use** ■ Pipes for food, medicine.

**Feature** ■ Small and light, easy for removal, maintenance, & inspection.

- Available NB 1.0S~4.0S  
(The standard tube diameter is the same as Table 1.  
Welding-type ferrule: ISO (IDF) standard on p. 15.)

- Applicable Tubes
  - Spiral Tube
  - One-Pitch Tube
  - Super One-Pitch Tube
  - Annular Tube
  - Fine Annular Tube
  - Soft Tube
  - Fine Soft Tube
- Besides the flexible metal hose, flexible hose made of resin (PTFE, PFA, silicone, etc.) are also being produced.
- Braid and tube rings of SUS316 and SUS316L are also available. Please contact us for details.



Item	Name	Material
1	Tube	SUS304·SUS316L
2	Braid	SUS304·SUS316·SUS316L
3	Tube Ring	SUS304·SUS316·SUS316L
4	Liner	SUS304·SUS316L
5	Grooved Round Nut	SUS304



DF-5000

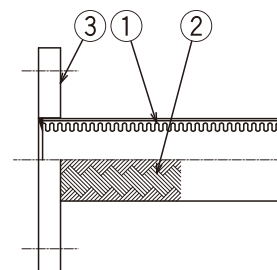
# Fixed Flange

**Structure** ■ Welding joint by inserting a tube into a flange.  
■ Fixed flange type.

**Use** ■ Eccentricity of pipes and other parts, ground subsidence, etc.

**Feature** ■ All fluid contact portion stainless steel.  
■ Can also be produced for short face to face.  
■ Long effective length of a tube can be provided.  
■ Multi-purpose and reasonable price.

- Available NB 15A~300A
- Applicable Tubes
  - Spiral Tube
  - One-Pitch Tube
  - Super One-Pitch Tube
  - Fine Annular Tube
  - Fine Soft Tube
- Braid of SUS316 and SUS316L are also available.  
Please contact us for details.



**Caution**

※Anti-corrosion gasket for stainless steel is recommended for connecting with a pipe.  
※Please contact us for details, for pipe layout that generates mechanical operation displacement or vibration.

Item	Name	Material
1	Tube	SUS304・SUS316L
2	Braid	SUS304・SUS316・SUS316L
3	Fixed flange	SUS304・SUS316・SUS316L・SUS304L

Flange Standards : JIS10K・JIS5K・JIS20K・JPI・ANSI & others

DF-6000

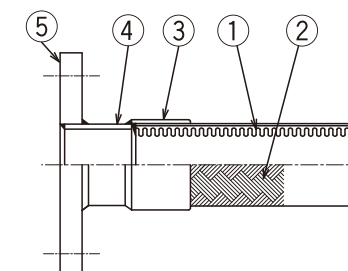
# Fixed Flange R-type

**Structure** ■ Butt welding a pipe end and a tube.  
■ Fixed flange type.

**Use** ■ Eccentricity of pipes and other parts, ground subsidence, etc.

**Feature** ■ Tube and braid with excellent resistance to corrosion, pressure, heat, bending, and operation can be selected.  
■ Flanges with special designs can also be attached.  
■ Compatible with processing of various gasket surfaces.

- Available NB 10A~350A
- Applicable Tubes
  - Spiral Tube
  - One-Pitch Tube
  - Super One-Pitch Tube
  - Annular Tube
  - Fine Annular Tube
  - 2PLY Annular Tube
  - Soft Tube
  - Fine Soft Tube
- Underground installation type can also be produced.
- Braid and tube rings of SUS316 and SUS316L are also available.  
Please contact us for details.



**Caution**

※Anti-corrosion gasket for stainless steel is recommended for connecting with pipes when the flange of a connecting part is made of stainless steel.  
※Please contact us for details, for pipe layout that generates mechanical operation displacement or vibration.

Item	Name	Material
1	Tube	SUS304・SUS316L
2	Braid	SUS304・SUS316・SUS316L
3	Tube Ring	SUS304・SUS316・SUS316L
4	Pipe end	SGP・SUS304・SUS316・SUS316L, others
5	Fixed flange	SS400・SUS304・SUS316・SUS316L, others

Flange Standards : JIS10K・JIS5K・JIS20K・JPI・ANSI・Special flange & others

DF-5100

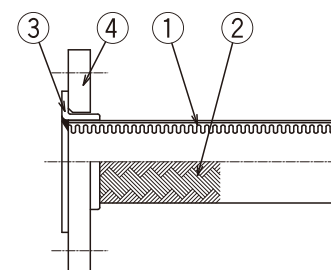
# Loose Flange with Collar

**Structure** ■ Welding joint by inserting a tube into a flange collar.  
■ Loose flange type.

**Use** ■ Eccentricity of pipes and other parts, ground subsidence, etc.

**Feature** ■ All fluid contact portion stainless steel.  
■ Can also be produced for short face to face.  
■ Long effective length of a tube can be provided.  
■ Multi-purpose and reasonable price.

- Available NB 15A~300A
- Applicable Tubes
  - Spiral Tube
  - One-Pitch Tube
  - Super One-Pitch Tube
  - Fine Annular Tube
  - Fine Soft Tube
- Braid of SUS316 and SUS316L are also available.  
Please contact us for details.



**Caution**

※Anti-corrosion gasket for stainless steel is recommended for connecting with a pipe.  
※Please contact us for details, for pipe layout that generates mechanical operation displacement or vibration.

Item	Name	Material
1	Tube	SUS304・SUS316L
2	Braid	SUS304・SUS316・SUS316L
3	Flange collar	SUS304・SUS316L
4	Loose flange	SS400・SUS304・SUS316・SUS316L, others

Flange Standards : JIS10K・JIS5K・JIS20K・JPI・ANSI & others

DF-6100

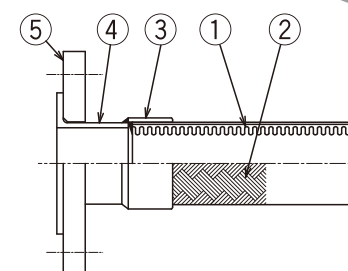
# Loose Flange R-type

**Structure** ■ Butt welding a lap joint and a tube.  
■ Loose flange type.

**Use** ■ Eccentricity of pipes and other parts, ground subsidence, etc.

**Feature** ■ Tube and braid with excellent resistance to corrosion, pressure, heat, bending, and operation can be selected.  
■ Flanges with special designs can also be attached.  
■ Compatible with processing of various gasket surfaces.

- Available NB 10A~350A
- Applicable Tubes
  - Spiral Tube
  - One-Pitch Tube
  - Super One-Pitch Tube
  - Annular Tube
  - Fine Annular Tube
  - 2PLY Annular Tube
  - Soft Tube
  - Fine Soft Tube
- For underground use please refer to P.22 **model DFM-6100**.
- Braid and tube rings of SUS316 and SUS316L are also available.  
Please contact us for details.



**Caution**

※Anti-corrosion gasket for stainless steel is recommended for connecting with pipes when the flange of a connecting part is made of stainless steel.  
※Please contact us for details, for pipe layout that generates mechanical operation displacement or vibration.

Item	Name	Material
1	Tube	SUS304・SUS316L
2	Braid	SUS304・SUS316・SUS316L
3	Tube Ring	SUS304・SUS316・SUS316L
4	Lap Joint	SGP・SUS304・SUS316・SUS316L, others
5	Loose flange	SS400・SUS304・SUS316・SUS316L, others

Flange Standards : JIS10K・JIS5K・JIS20K・JPI・ANSI・Special flange & others

DF-6600 **[Ribbon braid type]**

Fixed Flange R-type

Structure

- The exterior is a ribbon braid type.
- Butt welding for tube and pipe end.
- Fixed flange type.

Use

- Eccentricity of pipes and other parts, ground subsidence, etc.

Feature

- Large diameter can also be produced.  
(550A or larger can also be produced. Please contact us for details.)
- Not compatible with uses involving frequently repeated movements.
- Flanges with special designs can also be attached.
- Compatible with processing of various gasket surfaces.

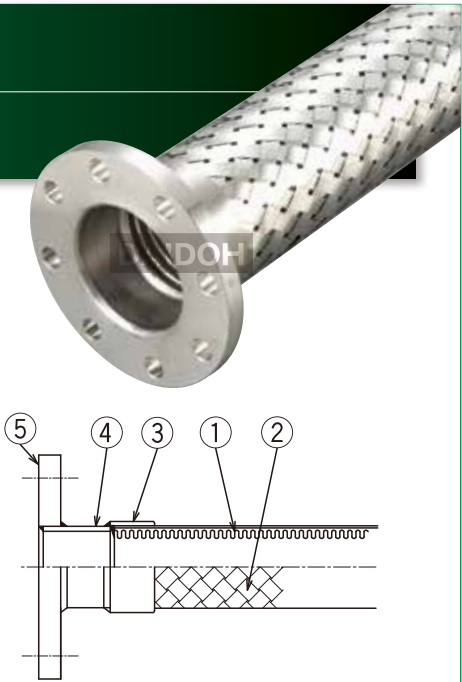
- Available NB 20A~500A (Diameters from 20A to 200A are available for long lengths.)
- Applicable Tubes
  - Spiral Tube
  - Annular Tube
  - 2PLY Annular Tube
  - One-Pitch Tube
  - Fine Annular Tube
- Underground installation type can also be produced.
- Braid and tube rings of SUS316 and SUS316L are also available.  
Please contact us for details.

Caution

- ※Anti-corrosion gasket for stainless steel is recommended for connecting with pipes when the flange of a connecting part is made of stainless steel.
- ※Please contact us for details, for pipe layout that generates mechanical operation displacement or vibration.

Item	Name	Material
1	Tube	SUS304・SUS316L
2	Braid	SUS304・SUS316・SUS316L
3	Tube Ring	SUS304・SUS316・SUS316L
4	Pipe end	SGP・SUS304・SUS316・SUS316L, others
5	Fixed flange	SS400・SUS304・SUS316・SUS316L, others

Flange Standards : JIS10K・JIS5K・JIS20K・JPI・ANSI・Special flange & others



DF-7600 **[Ribbon braid type]**

Fixed Flange Square Band type

Structure

- The exterior is a ribbon braid type.
- The braid is tightly secured with a band.
- Fixed flange type.

Use

- Eccentricity of pipes and other parts, ground subsidence, etc.

Feature

- Large diameter can also be produced.  
(550A or larger can also be produced. Please contact us for details.)
- Not compatible with uses involving frequently repeated movements.  
(Compatible by changing the braid to a soft ribbon.)
- Flanges with special designs can also be attached.
- Compatible with processing of various gasket surfaces.

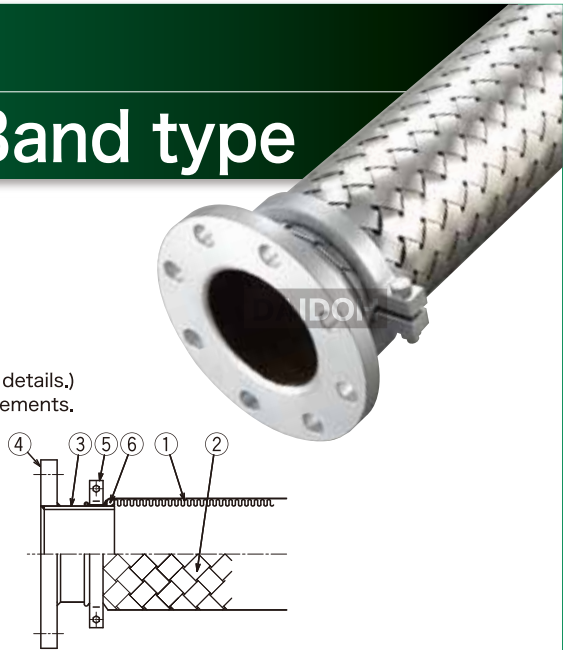
- Available NB 40A~500A  
(Diameters from 40A to 200A are available for long lengths.)
- Applicable Tubes
  - One-Pitch Tube
  - Fine Annular Tube
  - Annular Tube
  - 2PLY Annular Tube
- Underground installation type can also be produced.
- Braid of SUS316 and SUS316L are also available.  
Please contact us for details.
- Soft ribbon braid is also available for 150A & larger.

Caution

- ※Anti-corrosion gasket for stainless steel is recommended for connecting with pipes when the flange of a connecting part is made of stainless steel.
- ※Please contact us for details, for pipe layout that generates mechanical operation displacement or vibration.

Item	Name	Material
1	Tube	SUS304・SUS316L
2	Braid	SUS304・SUS316・SUS316L
3	Pipe end	SGP・SUS304・SUS316・SUS316L, others
4	Fixed flange	SS400・SUS304・SUS316・SUS316L, others
5	Stop band	SS400・SUS304
6	Neck ring	SS400・SUS304

Flange Standards : JIS10K・JIS5K・JIS20K・JPI・ANSI・Special flange & others



DF-6700 **[Ribbon braid type]**

Loose Flange R-type

Structure

- The exterior is a ribbon braid type.
- Butt welding for tube and pipe end.
- Loose flange type.

Use

- Eccentricity of pipes and other parts, ground subsidence, etc.

Feature

- Large diameter can also be produced.  
(550A or larger can also be produced. Please contact us for details.)
- Not compatible with uses involving frequently repeated movements.
- Flanges with special designs can also be attached.
- Compatible with processing of various gasket surfaces.

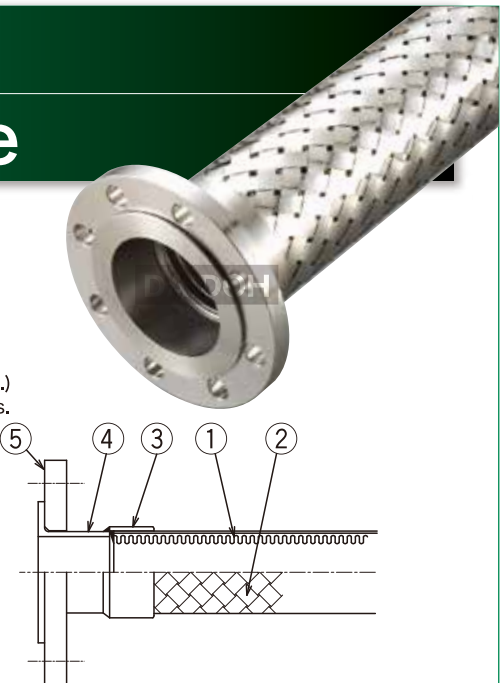
- Available NB 20A~500A (Diameters from 20A to 200A are available for long lengths.)
- Applicable Tubes
  - Spiral Tube
  - Annular Tube
  - 2PLY Annular Tube
  - One-Pitch Tube
  - Fine Annular Tube
- Underground installation type can also be produced.
- Braid and tube rings of SUS316 and SUS316L are also available.  
Please contact us for details.

Caution

- ※Anti-corrosion gasket for stainless steel is recommended for connecting with pipes when the flange of a connecting part is made of stainless steel.
- ※Please contact us for details, for pipe layout that generates mechanical operation displacement or vibration.

Item	Name	Material
1	Tube	SUS304・SUS316L
2	Braid	SUS304・SUS316・SUS316L
3	Tube Ring	SUS304・SUS316・SUS316L
4	Lap Joint	SGP・SUS304・SUS316・SUS316L, others
5	Loose flange	SS400・SUS304・SUS316・SUS316L, others

Flange Standards : JIS10K・JIS5K・JIS20K・JPI・ANSI・Special flange & others



DF-7700 **[Ribbon braid type]**

Loose Flange Square Band type

Structure

- The exterior is a ribbon braid type.
- The braid is tightly secured with a band.
- Loose flange type.

Use

- Eccentricity of pipes and other parts, ground subsidence, etc.

Feature

- Large diameter can also be produced.  
(550A or larger can also be produced. Please contact us for details.)
- Not compatible with uses involving frequently repeated movements.  
(Compatible by changing the braid to a soft ribbon.)
- Flanges with special designs can also be attached.
- Compatible with processing of various gasket surfaces.

- Available NB 40A~500A  
(Diameters from 40A to 200A are available for long lengths.)
- Applicable Tubes
  - One-Pitch Tube
  - Fine Annular Tube
  - Annular Tube
  - 2PLY Annular Tube
- Underground installation type can also be produced.
- Braid of SUS316 and SUS316L are also available.  
Please contact us for details.
- Soft ribbon braid is also available for 150A & larger.

Caution

- ※Anti-corrosion gasket for stainless steel is recommended for connecting with pipes when the flange of a connecting part is made of stainless steel.
- ※Please contact us for details, for pipe layout that generates mechanical operation displacement or vibration.

Item	Name	Material
1	Tube	SUS304・SUS316L
2	Braid	SUS304・SUS316・SUS316L
3	Lap Joint	SGP・SUS304・SUS316・SUS316L, others
4	Loose flange	SS400・SUS304・SUS316・SUS316L, others
5	Stop band	SS400・SUS304
6	Neck ring	SS400・SUS304

Flange Standards : JIS10K・JIS5K・JIS20K・JPI・ANSI・Special flange & others





DF-8000

## Fixed Flange Hoop Band type

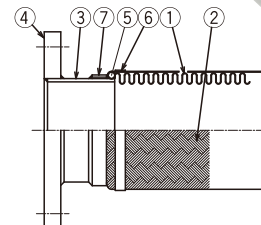
**Structure** ■ Fixed flange type.

**Use** ■ Eccentricity of pipes and other parts, ground subsidence, etc.

### Feature

- Large diameter can also be produced. (550A or larger can also be produced. Please contact us for details.)
- Tube and braid with excellent resistance to corrosion, pressure, heat, bending, and operation can be selected.
- Flanges with special designs can also be attached.
- Compatible with processing of various gasket surfaces.

- Available NB 40A~500A
- Applicable Tubes
  - One-Pitch Tube
  - Annular Tube
  - 2PLY Annular Tube
  - Fine Soft Tube
  - Super One-Pitch Tube
  - Fine Annular Tube
  - Soft Tube
- Braid of SUS316 and SUS316L are also available. Please contact us for details.
- Braid is soft ribbon type for 400A & larger.



Item	Name	Material
1	Tube	SUS304·SUS316L
2	Braid	SUS304·SUS316·SUS316L
3	Pipe end	SGP·SUS304·SUS316·SUS316L, others
4	Fixed flange	SS400·SUS304·SUS316·SUS316L, others
5	Neck ring	SS400·SUS304
6	Hoop Band	SUS304
7	Stop band	SUS304

Flange Standards : JIS10K·JIS5K·JIS20K·JPI·ANSI·Special flange & others

### Caution

- ※Anti-corrosion gasket for stainless steel is recommended for connecting with pipes when the flange of a connecting part is made of stainless steel.
- ※Please contact us for details, for pipe layout that generates mechanical operation displacement or vibration.

DF-9000

## Loose Flange Non-welding type

### Structure

- All fluid contact portion stainless steel.
- The split ring section and the end of the braid are welded, and there is no risk that the braid will fall off.
- Loose flange type
- Equipped with particular Gasket as standard.

### Use

- Widely applicable for absorbing vibration and deflection.

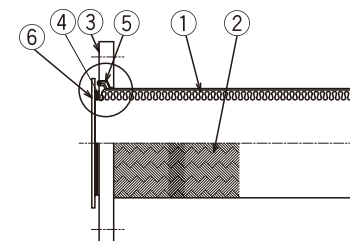
### Feature

- Great anti-corrosion property due to the non-welding in the joint assembly.
- The vibration absorption tube provides excellent flexibility.
- Can be produced for short face to face distance.
- Long effective length of the tube can be provided.

- Available NB 20A~300A
- Applicable Tubes
  - Annular Tube
  - 2PLY Annular Tube
- Up to 200A only for 2-PLY annular tube.
- The operation temperature of the standard gasket is -40°C to 100°C. Please contact us for details if the operation temperature exceeds this range.

### Caution

- ※Please evenly tighten when connecting with a pipe to prevent uneven tightening.
- ※Please use the Gasket supplied as standard equipment for connecting with a pipe.(Please contact us if you use another gasket.)



Item	Name	Material
1	Tube	SUS304·SUS316L
2	Braid	SUS304
3	Loose flange	SS400·SUS304
4	Split ring	FCMB·SUS304
5	Press ring	SUS304
6	Gasket (Packing)	Non-asbestos (standard) , others

Flange Standards : JIS10K·JIS5K·JIS20K·JPI·ANSI·Special flange & others

DF-8100

## Loose Flange Hoop Band type

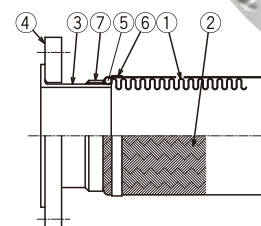
**Structure** ■ Loose flange type

**Use** ■ Eccentricity of pipes and other parts, ground subsidence, etc.

### Feature

- Large diameter can also be produced. (550A or larger can also be produced. Please contact us for details.)
- Tube and braid with excellent resistance to corrosion, pressure, heat, bending, and operation can be selected.
- Flanges with special designs can also be attached.
- Compatible with processing of various gasket surfaces.

- Available NB 40A~500A
- Applicable Tubes
  - One-Pitch Tube
  - Annular Tube
  - 2PLY Annular Tube
  - Fine Soft Tube
  - Super One-Pitch Tube
  - Fine Annular Tube
  - Soft Tube
- Braid of SUS316 and SUS316L are also available. Please contact us for details.
- Braid is soft ribbon type for 400A & larger.



Item	Name	Material
1	Tube	SUS304·SUS316L
2	Braid	SUS304·SUS316·SUS316L
3	Lap Joint	SGP·SUS304·SUS316·SUS316L, others
4	Loose flange	SS400·SUS304·SUS316·SUS316L, others
5	Neck ring	SS400·SUS304
6	Hoop Band	SUS304
7	Stop band	SUS304

Flange Standards : JIS10K·JIS5K·JIS20K·JPI·ANSI·Special flange & others

### Caution

- ※Anti-corrosion gasket for stainless steel is recommended for connecting with pipes when the flange of a connecting part is made of stainless steel.
- ※Please contact us for details, for pipe layout that generates mechanical operation displacement or vibration.

DFM-6100

## Flange for Underground Use R-type

### Structure

- Designed for underground installation by wrapping anti-corrosion tape on the outer surface of a tube
- Anti-corrosion paint is applied on all parts except for parts made of stainless steel.

### Use

- For absorbing deflection in underground pipes caused by ground subsidence and other conditions

### Feature

- Anti-corrosion tape and anti-corrosion paint on the exterior provide anti-corrosion property against impurities in the ground.
- Tube and braid with excellent resistance to corrosion, pressure, heat, bending, and operation can be selected.

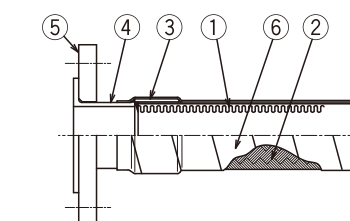
### Applicable range

- Temperature...80°C max.

- Available NB 10A~500A (DF-6700, DF-7100, DF-7700, and DF-8100 types are used for 400A or larger.)
- Applicable Tubes
  - Spiral Tube
  - Super One-Pitch Tube
  - Fine Annular Tube
  - Soft Tube
  - One-Pitch Tube
  - Annular Tube
  - 2PLY Annular Tube
  - Fine Soft Tube
- Braid and tube rings of SUS316 and SUS316L are also available. Please contact us for details.

### Caution

- ※Anti-corrosion gasket for stainless steel is recommended for connecting with a pipe.



Item	Name	Material
1	Tube	SUS304·SUS316L
2	Braid	SUS304·SUS316·SUS316L
3	Tube ring	SUS304·SUS316·SUS316L
4	Lap Joint	SUS304·SUS316·SUS316L, others
5	Loose flange	SS400·SUS304·SUS316·SUS316L, others
6	Anti-corrosion tape	PVC, others

Flange Standards : JIS10K·JIS5K·JIS20K·JPI·ANSI·Special flange & others

DF-50000

# Semi Jacket / Full Jacket

**Structure** ■ The tube and the pipe end have double-layer structure.

**Use** ■ Solidification of fluids is prevented by running heat carrier through the layer between the inner and the outer layers.  
■ Eccentricity of high-pressure pipes, ground subsidence, etc.

**Feature** ■ Solidification of internal fluids is prevented by running steam through the layer between the inner and the outer layers.  
■ The full jacket type is the type which has a double-layer structure throughout the length.  
■ Sockets and flanges can be selected for the inlet and outlet of heat carrier through the layer between the inner and the outer layers.  
■ Tube and braid with excellent resistance to corrosion, pressure, heat, bending, and operation can be selected.

■ **Material**  
Tube: SUS304・SUS304L・SUS316・SUS316L・SUS310S・SUS321 etc.  
Other parts: SS400・SUS304・SUS316・SUS316L etc.

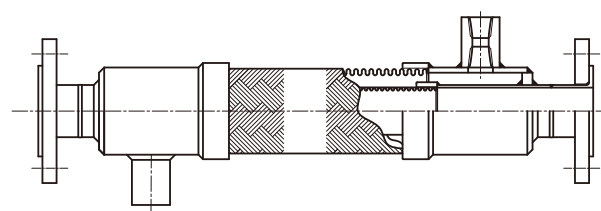
■ **Available NB**  
10A~500A (Please contact us for other NB)

■ **Setting form**  
Flange type (Semi Jacket, Full Jacket)  
Screw type (Semi Jacket)

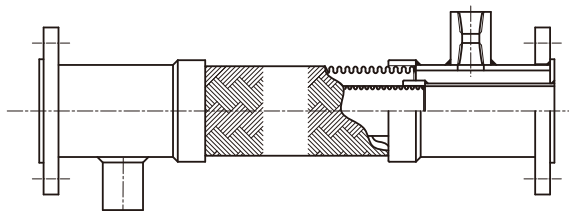
■ **Applicable Tubes**  
・Spiral Tube                      ・One-Pitch Tube                      ・Super One-Pitch Tube  
・Annular Tube                      ・Fine Annular Tube                      ・2PLY Annular Tube  
・Soft Tube                      ・Fine Soft Tube

■ Braid and tube rings of SUS316 and SUS316L are also available. Please contact us for details.

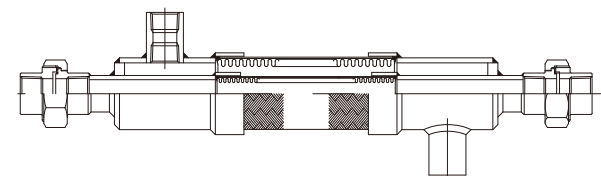
## Semi Jacket



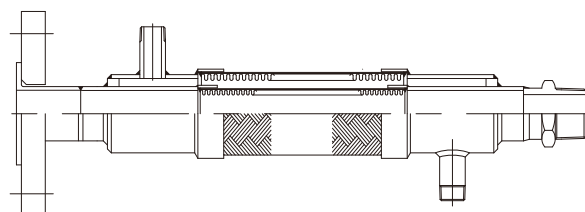
## Full Jacket



## Both ends Screw type



## One end Screw other end Flange type



※Categories to be specified: Please specify nominal diameter, total length, operating conditions (fluid, temperature, pressure, movement, etc.), flange specifications, screw specifications, direction of the inlet and outlet of the heat carrier (the same direction or the opposite direction), and materials of individual parts.

# Cargo hose model certified by the Nippon Kaiji Kyokai



Authorization No.08SN1NH



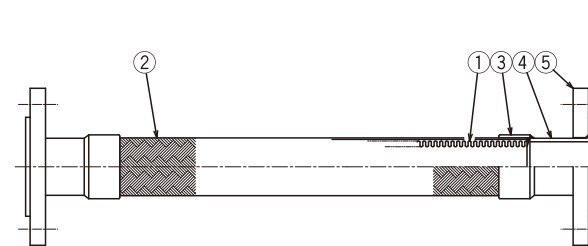
## Feature

- Cargo hose to be loaded on vessels
- The available diameter is from 65A to 250A.  
(Up to 20 meters is length can be produced.)
- Design pressure: 1.0MPa  
(Passed the pressure resistance test at 5.0 MPa in a prototype testing)
- Design temperature: -163~+80°C  
(Passed the pressure resistance test at 1.5MPa under low temperature of below -163°C in a prototype testing.)
- Usable for LNG, LPG vessels.
- Products for individual certification of different vessel grades can also be produced.

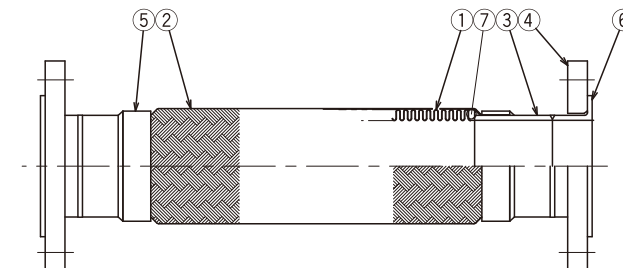
ABS American Bureau of Shipping  
BV Bureau Veritas  
GL Germanischer Lloyd  
KR Korean Register of Shipping  
LR Lloyd's Register of Shipping  
DNV Det Norske Veritas  
CCS China Classification Society



■ Braid and tube rings of SUS316 and SUS316L are also available. Please contact us for details.



Item	Name	Material
1	Tube	SUS304・SUS316L
2	Braid	SUS304・SUS316・SUS316L
3	Tube Ring	SUS304・SUS316・SUS316L
4	Lap Joint	SUS304・SUS316・SUS316L, others
5	Loose flange	SUS304・SUS316・SUS316L, others



Item	Name	Material
1	Tube	SUS304・SUS316L
2	Braid	SUS304・SUS316・SUS316L
3	Pipe end	SUS304・SUS316・SUS316L, others
4	Loose flange	SUS304・SUS316・SUS316L, others
5	Fastening band	SUS304
6	Flange guard	SUS304・SUS316・SUS316L, others
7	Ring	SUS304



DTF-2800K

# PTFE Inserted Collar type

**Structure** ■ PTFE straight hose is inserted into a stainless steel flexible tube.  
■ PTFE on fluid contact portion provides excellent anti-corrosion property.

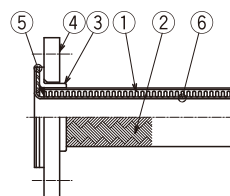
**Use** ■ Pipes for medical fluid, food, and chemicals.

**Feature** ■ The use of a straight tube creates smooth inner surface with no unevenness which prevents fluid from accumulating.  
■ PTFE on fluid contact portion provides excellent anti-corrosion property.

■ Available NB 15A~65A

## Caution

※Please avoid scratching the gasket surface (the PTFE section) when installing pipes.  
※The JPI standard and ANSI standard for 15A cannot be produced.



Item	Name	Material
1	Tube	SUS304·SUS316L
2	Braid	SUS304·SUS316·SUS316L
3	Flange collar	SUS304·SUS316L
4	Loose flange	SS400·SUS304·SUS316·SUS316L, others
5	Back up gasket	Non asbestos
6	Inner Tube	PTFE (PFA available)



DTF-2800R

# PTFE Inserted R-type

**Structure** ■ PTFE straight hose is inserted into a stainless steel flexible tube.  
■ PTFE on fluid contact portion provides excellent anti-corrosion property.

**Use** ■ Pipes for medical fluid, food, and chemicals.

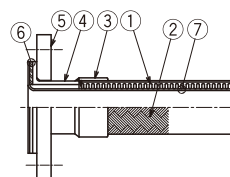
**Feature** ■ The use of a straight tube creates smooth inner surface with no unevenness which prevents fluid from accumulating.  
■ PTFE on fluid contact portion provides excellent anti-corrosion property.

■ Available NB 10A~300A

■ Underground installation type can also be produced. Please inquire us.

## Caution

※Please avoid scratching the gasket surface (the PTFE section) when installing pipes.



Item	Name	Material
1	Tube	SUS304·SUS316L
2	Braid	SUS304·SUS316·SUS316L
3	Tube ring	SUS304·SUS316·SUS316L
4	Lap Joint	SGP·SUS304·SUS316·SUS316L, others
5	Loose flange	SS400·SUS304·SUS316·SUS316L, others
6	Back up gasket	Non asbestos
7	Inner Tube	PTFE (PFA available)

DTF-2900

# PTFE Inserted Interlock Tube

**Structure** ■ PTFE straight hose is inserted into a stainless steel interlock tube.  
■ PTFE on fluid contact portion provides excellent anti-corrosion property.

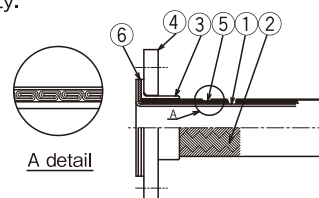
**Use** ■ Pipes for medical fluid, food, and chemicals.

**Feature** ■ The use of a straight tube creates smooth inner surface with no unevenness which prevents fluid from accumulating.  
■ PTFE on fluid contact portion provides excellent anti-corrosion property.

■ Available NB 15A~100A

## Caution

※Please avoid scratching the gasket surface (the PTFE section) when installing pipes.  
※The JPI standard and ANSI standard for 15A cannot be produced.



Item	Name	Material
1	Inner Tube	PTFE (PFA available)
2	Braid	SUS304
3	Flange collar	SUS304
4	Loose flange	SUS304
5	Interlock Tube	SS400·SUS304
6	Back up gasket	Non-asbestos

DTF-2600

# PTFE Corrugation Hose Inserted (H-type)

**Structure** ■ PTFE corrugation hose is inserted into a stainless steel flexible tube.  
■ PTFE on fluid contact portion provides excellent anti-corrosion property.

**Use** ■ Pipes for medical fluid, food, and chemicals.

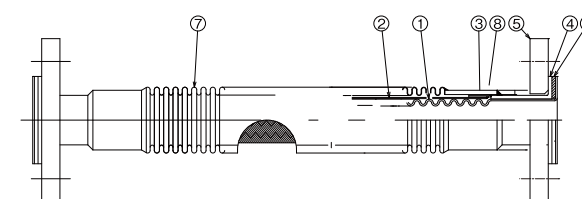
## Feature

- The use of a corrugated hose provides excellent flexibility and easy installation. This product is suitable for bending and movement.
- The corrugated hose on the inside is reinforced with stainless steel wire braid and has excellent pressure resistance.
- Leakage to the outside can be prevented because the outside is covered with a stainless steel flexible hose even when the corrugated hose is damaged.
- The damage on the corrugated hose inside can be checked beforehand by attaching a leakage detection nozzle to the stainless steel flexible hose on the exterior.

■ Available NB 10A~250A

■ Underground installation type can also be produced. Please inquire us.

■ The attachment of the leakage detection nozzle is an optional.



## Caution

※Please avoid scratching the gasket surface (the PTFE section) when installing pipes.

Item	Name	Material
1	Tube	PTFE
2	Braid	SUS304·SUS316·SUS316L
3	Tube ring	SUS304·SUS316·SUS316L
4	Stub end	SUS304·SUS316·SUS316L
5	Loose flange	SS400·SUS304·SUS316·SUS316L
6	Back up ring	Non asbestos
7	Jacket tube	SUS304·SUS316L
8	Pipe end	SUS304·SUS316·SUS316L

DTF-2700

# PTFE Corrugation Hose Inserted (B-type)

**Structure** ■ PTFE corrugation hose is inserted into a stainless steel flexible tube.  
■ PTFE on fluid contact portion provides excellent anti-corrosion property.

**Use** ■ Pipes for medical fluid, food, and chemicals.

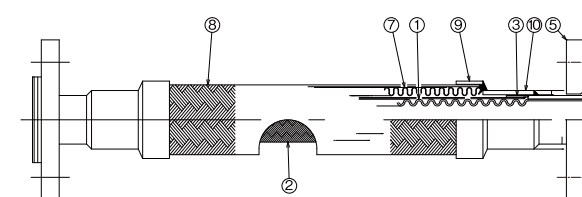
## Feature

- The use of a corrugated hose provides excellent flexibility and easy installation. This product is suitable for bending and movement.
- The corrugated hose on the inside is reinforced with stainless steel wire braid and has excellent pressure resistance.
- Leakage to the outside can be prevented because the outside is covered with a stainless steel flexible hose even when the corrugated hose is damaged.
- The damage on the corrugated hose inside can be checked beforehand by attaching a leakage detection nozzle to the stainless steel flexible hose on the exterior.

■ Available NB 10A~250A

■ Underground installation type can also be produced. Please inquire us.

■ The attachment of the leakage detection nozzle is an optional.



## Caution

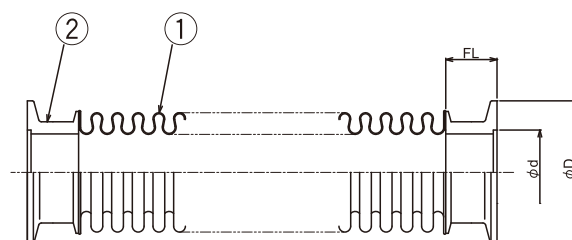
※Please avoid scratching the gasket surface (the PTFE section) when installing pipes.

Item	Name	Material
1	Tube	PTFE
2	Braid	SUS304·SUS316·SUS316L
3	Tube ring	SUS304·SUS316·SUS316L
4	Stub end	SUS304·SUS316·SUS316L
5	Loose flange	SS400·SUS304·SUS316·SUS316L
6	Back up ring	Non asbestos
7	Jacket tube	SUS304·SUS316L
8	Braid	SUS304·SUS316·SUS316L
9	Tube ring	SUS304·SUS316·SUS316L
10	Pipe end	SUS304·SUS316·SUS316L

DFV-40000

## Vacuum NW Flange

**Feature** ■ The attachment using a clamp allows easy removal and attachment.



Item	Name	Material
1	Tube	SUS304·SUS316L
2	NW Flange	SUS304·SUS316L

Desired total length can be produced.

NB	d	D	FL
NW10	12.2	30	20
NW16	17.2	30	20
NW25	26.2	40	20
NW40	41.2	55	20
NW50	52.2	75	20
NW63	70.2	87	25
NW80	83.0	114	25
NW100	102.0	134	25

(Unit:mm)

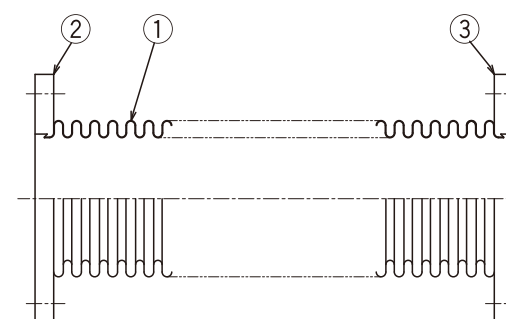


DFV-42000 JIS B 2290 Flange VF x VG type

## Vacuum Fixed Flange

**Structure** ■ Both ends fixed flanges as standard specification.  
■ VF flange or VG flange can also be produced for both ends.

**Feature** ■ The use of an O-ring structure provides high air-tightness.



Item	Name	Material
1	Tube	SUS304·SUS316L
2	VF Flange	SUS304·SUS316L, others
3	VG Flange	SUS304·SUS316L, others

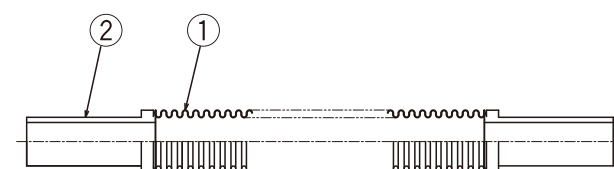
● Available NB:10A~1000A (15A·32A not specified in JIS B2290)  
● Desired total length can be produced.



DFV-41000

## Vacuum Pipe-End

**Feature** ■ The pipe-end type allows easy pipe layout using bite-type joints, such as Swagelok and other joints.



Item	Name	Material
1	Tube	SUS304·SUS316L
2	Pipe	SUS304·SUS316L

Desired total length can be produced.

NB	Pipe OD
6A	φ6.35
10A	φ9.52
15A	φ12.7
25A	φ25.4
40A	φ42.7
50A	φ60.5

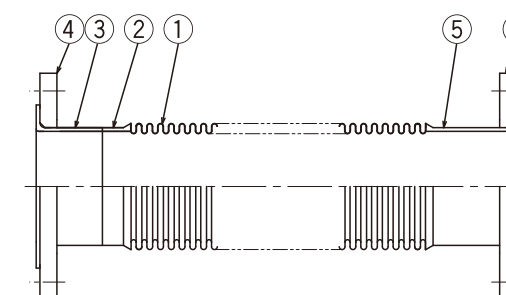


DFV-43000 JIS B 2290 Flange VF x VG type

## Vacuum One end Loose One end Fixed Flange

**Structure** ■ The standard specification is the loose flange for the VF side and fixed flange for the VG side.  
■ Loose type for both sides can also be produced.  
VF flange or VG flange for both sides can also be produced.

**Feature** ■ The use of an O-ring structure provides high air-tightness.



### Caution

※ Anti-corrosion gasket for stainless steel is recommended for connecting with pipes when the flange of a connecting part is made of stainless steel.

※ Please contact us for details, for pipe layout that generates mechanical operation displacement or vibration.

Item	Name	Material
1	Tube	SUS304·SUS316L
2	Pipe end	SS400·SUS304·SUS316·SUS316L
3	Lap joint	SGP·SUS304·SUS316·SUS316L
4	Loose flange (VF)	SS400·SUS304·SUS316·SUS316L
5	Pipe end	SGP·SUS304·SUS316·SUS316L
6	Fixed flange (VG)	SS400·SUS304·SUS316·SUS316L

● Available NB:10A~1000A (15A·32A not specified in JIS B2290)  
● Desired total length can be produced.





DF-01

## T-Tube

**Structure** ■ A cap nut is attached to a single-mound tube.

**Use** ■ For water distribution and hot water distribution pipes of facility units, etc.

**Feature** ■ The flexible bending allows easy installation even in narrow areas.

- Available NB 1/2B · 3/4B · 1B
- The cap nut can also be made with the material of BC6 and SUS304.
- Please specify the material of the gasket when placing an order.
- The operation temperature of standard gasket is -20°C to 60°C for EPDM, and -40°C to 100°C for non-asbestos.

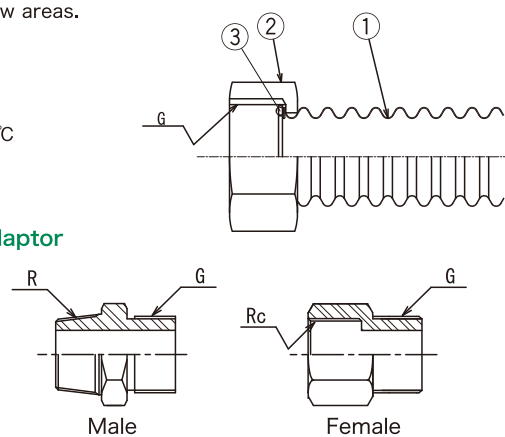
### Tube Dimension

N.B.	Tube			Joint Thread
	I.D.	O.D.	Thick	
1/2B	φ13.0	φ16.0	0.3mm	G 1/2
3/4B	φ16.5	φ20.0	0.3mm	G 3/4
1B	φ20.5	φ25.0	0.3mm	G 1

### Caution

- ※Repeatedly bending the tube may cause problems, such as leakage.
- ※Please do not bend the tube at the base of the cap nut.
- ※Please do not exceed the smallest bending radius (three times the inner diameter of the tube) when bending the tube.

### Tip Adaptor



Item	Name	Material
1	Tube	SUS304·SUS316L
2	Cap Nut	C3604BD (Chrome Plated) ·SUS304
3	Gasket (Packing)	EPDM (standard) ·Non-asbestos, others

DF-03

## H-Tube with Braid

**Structure** ■ The outer surface of the tube is covered with braid made of SUS to protect the outer surface and prevent the tube from stretching.

**Use** ■ For water supply, hot water supply, fan coil units etc.

**Feature** ■ The flexible bending allows easy installation even in narrow areas.

- Available NB 1/2B · 3/4B · 1B
- The cap nut can also be made with the material of BC6 and SUS304.
- Please specify the material of the gasket when placing an order.
- The operation temperature of standard gasket is -20°C to 60°C for EPDM, and -40°C to 100°C for non-asbestos.

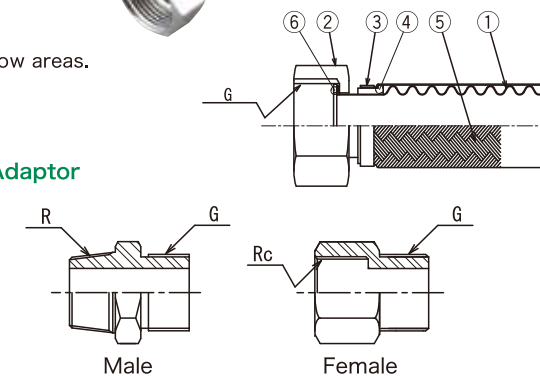
### Tube Dimension

N.B.	Tube			Joint Thread
	I.D.	O.D.	Thick	
1/2B	φ14.0	φ19.5	0.3mm	G 1/2
3/4B	φ19.0	φ25.0	0.3mm	G 3/4
1B	φ25.0	φ32.0	0.3mm	G 1

### Caution

- ※Repeatedly bending the tube may cause problems, such as leakage.
- ※Please do not bend the tube at the base of the cap nut.
- ※Please do not exceed the smallest bending radius (three times the inner diameter of the tube) when bending the tube.

### Tip Adaptor



Item	Name	Material
1	Tube	SUS316L
2	Cap Nut	BC6·SUS304
3	Clinch Ring	SUS304
4	Sleeve	C3604BD
5	Braid	SUS304
6	Gasket (Packing)	EPDM (standard) ·Non-asbestos, others

DF-02

## H-Tube

**Structure** ■ A cap nut is attached on a single-mound tube, and a straight section is provided.

**Use** ■ For water supply, hot water supply, low-pressure fan coil of facility units, etc.

**Feature** ■ The tube is made of the material SUS316L, which provides excellent anti-corrosion properties.  
■ The flexible bending allows easy installation even in narrow areas.

- Available NB 1/2B · 3/4B · 1B
- The cap nut can also be made with the material of BC6 and SUS304.
- Please specify the material of the gasket when placing an order.
- The operation temperature of standard gasket is -20°C to 60°C for EPDM, and -40°C to 100°C for non-asbestos.

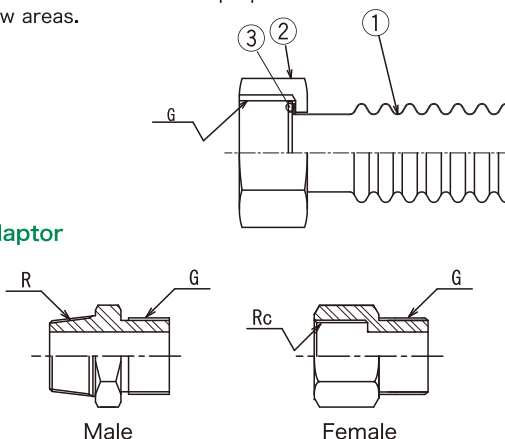
### Tube Dimension

N.B.	Tube			Joint Thread
	I.D.	O.D.	Thick	
1/2B	φ14.0	φ19.5	0.3mm	G 1/2
3/4B	φ19.0	φ25.0	0.3mm	G 3/4
1B	φ25.0	φ32.0	0.3mm	G 1

### Caution

- ※Repeatedly bending the tube may cause problems, such as leakage.
- ※Please do not bend the tube at the base of the cap nut.
- ※Please do not exceed the smallest bending radius (three times the inner diameter of the tube) when bending the tube.

### Tip Adaptor



Item	Name	Material
1	Tube	SUS316L
2	Cap Nut	C3604BD (Chrome Plated) ·SUS304
3	Gasket (Packing)	EPDM (standard) ·Non-asbestos, others

DF-04

## PURE FLEX Resin Hose

### Structure

- Bridged elastomer material is used for fluid contact portions.
  - Passed for pressure resistance test JIS S3200-1
  - Passed for exudation efficiency test JIS S3200-7
- PP core material is lapped spirally on outer surface of bridged elastomer hose to improve flexibility.
- Steel wire braid over the hose keeps pressure resistance.
  - Passed for pressure resistance test JIS S3200-6

**Use** ■ For water supply, hot water supply, unit bath, restroom, etc.

### Feature

- Excellent for easy piping work (softness of pipe).
- ▶ If the hose is bent, it will not be crushed, and fluid channel can always be maintained.
- Usable for water or hotwater supply.
- Bridged elastomer is adopted.
  - ▶ Free from rust or mould.
- No offensive smell particular to resin.

### Applicable range

- Temperature ... 0°C~80°C max. (Maximum workable temperature, not usual working temperature.)
- Pressure ... 1.0MPaG max.

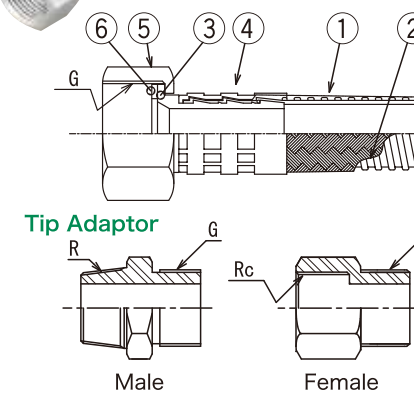
- Available NB 13A (15A) · 20A
- Please specify the material of the gasket when placing an order.
- The operation temperature of standard gasket is 80°C or bellow for non-asbestos.

### Caution

- ※Too much keen bending (smaller angle than 60R), repeated bending, elongation, and torsion will cause leakage.
- ※Please install the tube carefully to keep the outer braid free from contact to any object. (Once you find any break at the outer braid, please make replacement.)
- ※Please give suitable protection to the tube where freezing is expected.
- ※Please pay caution to chloride detergent and corrosive atmosphere.

### Tube Dimension

N.B.	Tube I.D.
13A (15A)	φ11
20A	φ13.7



Item	Name	Material
1	Tube	Synthetic resin
2	Braid	SUS304
3	Sleeve	C3604BD·SUS304
4	Press Cover	SUS304
5	Cap Nut	BC6·SUS304, others
6	Gasket (Packing)	Non-asbestos (standard)

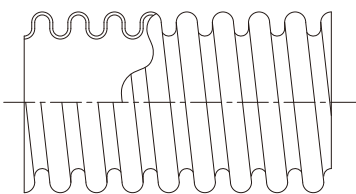
# Dimension and Performance of Tube

## Spiral tube

**Structure** ■ Spiral-shaped multi-purpose tube

**Standard material** ■ SUS304・SUS316L

**Model** ■ SC: Closed pitch  
■ SS: Standard pitch



※The smallest bending radius is for the case when a single-layer braid (standard specification) is mounted.

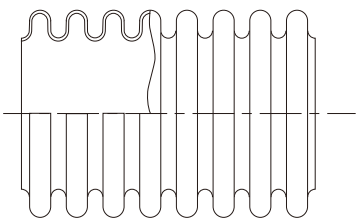
N B (A)	Model	I.D. (mm)	O.D. (mm)	Thickness (mm)	min. bending radius(mm)	
					fixed	repeated
8	SC	7.2	11.4	0.2	15	110
	SS	7.6	11.0	0.2	20	120
10	SC	9.9	15.6	0.25	20	115
	SS	10.0	15.0	0.25	25	150
15	SC	12.7	18.5	0.25	25	130
	SS	13.2	18.5	0.25	30	155
20	SC	19.0	25.8	0.3	30	180
	SS	19.2	25.5	0.3	35	215
25	SC	25.0	33.0	0.3	35	185
	SS	25.0	32.6	0.3	40	220
32	SC	32.0	41.4	0.3	55	200
	SS	32.3	40.5	0.3	60	240
40	SC	38.2	48.5	0.35	65	255
	SS	38.5	47.0	0.35	70	335
50	SC	51.0	62.1	0.35	70	355
	SS	51.5	61.5	0.35	75	450
65	SC	62.9	77.9	0.4	100	360
	SS	63.5	76.5	0.4	105	460

## Super one-pitch tube

**Structure** ■ Single-mound multi-purpose tube with excellent flexibility

**Standard material** ■ SUS304・SUS316L

**Model** ■ TOPC: Closed pitch  
■ TOP: Standard pitch



※The smallest bending radius is for the case when a single-layer braid (standard specification) is mounted.

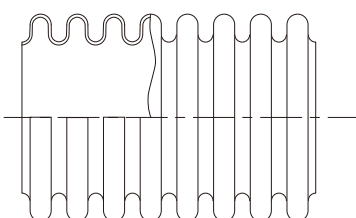
N B (A)	Model	I.D. (mm)	O.D. (mm)	Thickness (mm)	min. bending radius(mm)	
					fixed	repeated
8	TOPC	7.4	11.1	0.15	20	75
	TOP	7.5	11.0	0.15	20	85
10	TOPC	10.3	15.1	0.2	25	100
	TOP	10.5	15.0	0.2	25	110
15	TOPC	13.1	18.4	0.2	30	105
	TOP	13.3	18.3	0.2	30	115
20	TOPC	19.5	25.7	0.2	35	130
	TOP	19.7	25.6	0.2	35	150
25	TOPC	25.3	33.0	0.25	40	145
	TOP	25.5	32.9	0.25	40	170
32	TOPC	32.4	40.9	0.25	55	170
	TOP	32.6	40.8	0.25	60	205
40	TOPC	38.8	48.0	0.3	65	210
	TOP	39.0	47.9	0.3	70	260
50	TOPC	51.3	61.6	0.3	70	235
	TOP	51.5	61.5	0.3	75	295

## One-pitch tube

**Structure** ■ Single-mound shaped multi-purpose tube

**Standard material** ■ SUS304・SUS316L

**Model** ■ YOPC: Closed pitch  
■ YOP: Standard pitch



※The smallest bending radius is for the case when a single-layer braid (standard specification) is mounted.

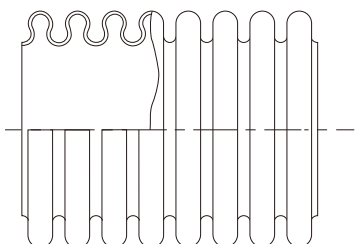
N B (A)	Model	I.D. (mm)	O.D. (mm)	Thickness (mm)	min. bending radius(mm)	
					fixed	repeated
8	YOPC	7.1	11.0	0.2	20	90
	YOP	7.2	10.9	0.2	25	100
10	YOPC	10.3	15.2	0.25	30	100
	YOP	10.5	15.0	0.25	35	120
15	YOPC	13.0	18.6	0.25	45	120
	YOP	13.2	18.5	0.25	50	140
20	YOPC	19.0	25.6	0.3	60	170
	YOP	19.2	25.5	0.3	65	200
25	YOPC	25.2	32.7	0.3	75	210
	YOP	25.3	32.5	0.3	80	240
32	YOPC	33.2	40.8	0.3	95	260
	YOP	33.5	40.6	0.3	100	300
40	YOPC	38.8	47.8	0.35	115	300
	YOP	39.1	47.5	0.35	120	360
50	YOPC	52.3	61.8	0.35	135	370
	YOP	52.6	61.5	0.35	140	450
65	YOPC	65.7	77.3	0.4	215	460
	YOP	66.0	77.0	0.4	220	550

## Annular tube

**Structure** ■ Flexible multi-purpose tube with excellent durability

**Standard material** ■ SUS304・SUS316L

**Model** ■ DAC: Closed pitch  
■ DA: Standard pitch



※The smallest bending radius is for the case when a single-layer braid (standard specification) is mounted.

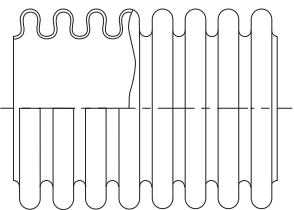
N B (A)	Model	I.D. (mm)	O.D. (mm)	Thickness (mm)	min. bending radius(mm)	
					fixed	repeated
20	DAC	20.6	30.5	0.3	35	145
	DA	20.7	30.4	0.3	45	160
25	DAC	26.5	37.0	0.3	45	185
	DA	27.0	36.5	0.3	55	230
32	DAC	32.0	45.0	0.35	60	195
	DA	32.5	44.5	0.35	70	240
40	DAC	40.5	55.0	0.4	60	240
	DA	41.0	54.5	0.4	70	290
45	DAC	45.0	62.0	0.4	60	250
	DA	46.0	61.5	0.4	70	300
50	DAC	53.0	71.0	0.4	80	260
	DA	53.5	70.5	0.4	90	310
65	DAC	66.5	86.5	0.4	130	290
	DA	67.0	86.0	0.4	140	340
75	DAC	73.0	90.5	0.4	200	350
	DA	74.0	90.5	0.4	210	430
80	DAC	78.0	101.0	0.4	210	310
	DA	78.5	100.5	0.4	220	350
90	DAC	98.0	119.0	0.4	230	410
	DA	98.5	118.0	0.4	240	490
100	DAC	103.0	127.0	0.4	250	400
	DA	103.5	126.5	0.4	270	470
125	DAC	128.0	154.0	0.5	320	500
	DA	128.5	153.5	0.5	350	580
150	DAC	151.5	181.0	0.5	370	540
	DA	152.0	180.5	0.5	400	630
200	DAC	202.5	233.5	0.5	570	680
	DA	203.0	233.0	0.5	600	820
250	DAC	250.5	285.5	0.6	650	850
	DA	251.0	285.0	0.6	700	1000
300	DAC	300.0	336.5	0.6	850	1250
	DA	300.8	336.0	0.6	900	1350



# Dimension and Performance of Tube

## Fine annular tube

- Structure** ■ Flexible multi-purpose tube with excellent durability
- Standard material** ■ SUS304・SUS316L
- Model** ■ DSAC: Closed pitch  
■ DSA: Standard pitch

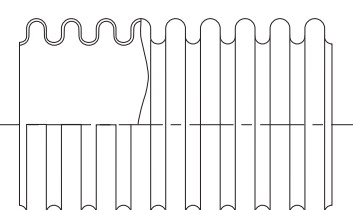


※The smallest bending radius is for the case when a single-layer braid (standard specification) is mounted.

N B (A)	Model	I.D. (mm)	O.D. (mm)	Thickness (mm)	min. bending radius(mm)	
					fixed	repeated
20	DSAC	17.8	26.1	0.3	30	155
	DSA	18.2	25.9	0.3	35	190
25	DSAC	23.5	32.4	0.3	35	180
	DSA	23.8	32.2	0.3	40	215
32	DSAC	30.3	41.3	0.3	55	170
	DSA	30.6	41.2	0.3	60	200
40	DSAC	36.0	48.1	0.4	65	230
	DSA	36.4	47.8	0.4	70	270
50	DSAC	47.0	62.0	0.4	70	250
	DSA	47.2	61.6	0.4	75	290
65	DSAC	58.7	77.8	0.4	100	260
	DSA	59.2	77.4	0.4	105	310
80	DSAC	71.8	91.3	0.4	190	300
	DSA	72.3	90.7	0.4	200	355
100	DSAC	96.8	119.0	0.4	230	375
	DSA	97.2	118.6	0.4	250	425
125	DSAC	119.5	142.5	0.5	300	500
	DSA	119.5	142.0	0.5	320	570
150	DSAC	146.2	172.5	0.5	340	570
	DSA	146.0	170.0	0.5	370	660
200	DSAC	188.0	215.5	0.5	490	700
	DSA	189.2	214.5	0.5	520	850

## Soft tube

- Structure** ■ Very flexible low reactive force type tube
- Standard material** ■ SUS304・SUS316L
- Model** ■ YCC: Closed pitch  
■ YCS: Standard pitch

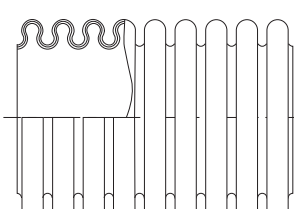


※The smallest bending radius is for the case when a single-layer braid (standard specification) is mounted.

N B (A)	Model	I.D. (mm)	O.D. (mm)	Thickness (mm)	min. bending radius(mm)	
					fixed	repeated
8	YCC	7.5	11.2	0.15	25	85
	YCS	7.8	11.0	0.15	25	90
10	YCC	9.7	13.7	0.15	25	100
	YCS	10.0	13.5	0.15	25	110
15	YCC	12.2	16.7	0.15	35	105
	YCS	12.5	16.5	0.15	40	115
20	YCC	21.2	28.7	0.2	45	125
	YCS	21.5	28.5	0.2	50	135
25	YCC	26.2	36.7	0.2	50	130
	YCS	26.5	36.5	0.2	55	140
32	YCC	32.9	44.2	0.2	70	135
	YCS	33.0	44.0	0.2	75	150
40	YCC	41.2	54.2	0.25	60	175
	YCS	41.5	54.0	0.25	70	190
50	YCC	50.2	65.2	0.25	110	190
	YCS	50.5	65.0	0.25	120	210
65	YCC	65.7	86.2	0.3	130	250
	YCS	66.0	86.0	0.3	140	275
80	YCC	77.7	100.6	0.3	180	310
	YCS	78.0	100.5	0.3	200	335
100	YCC	102.5	126.3	0.3	220	420
	YCS	103.0	126.0	0.3	240	455
125	YCC	128.5	148.3	0.4	260	570
	YCS	129.0	148.0	0.4	300	630
150	YCC	152.5	181.3	0.4	370	590
	YCS	153.0	181.0	0.4	400	650

## 2PLY annular tube

- Structure** ■ Flexible, pressure resistant tube with improved safety with a double-layer structure
- Standard material** ■ SUS316L
- Model** ■ XAWC: Closed pitch  
■ XAW: Standard pitch

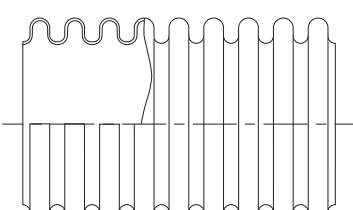


※The smallest bending radius is for the case when a single-layer braid (standard specification) is mounted.

N B (A)	Model	I.D. (mm)	O.D. (mm)	Thickness (mm)		min. bending radius(mm)	
				inner	outer	fixed	repeated
32	XAWC	32.0	47.0	0.3	0.35	70	170
	XAW	32.5	46.5	0.3	0.35	80	205
40	XAWC	40.5	55.0	0.4	0.4	70	250
	XAW	41.0	54.5	0.4	0.4	80	300
50	XAWC	53.0	71.0	0.4	0.4	90	250
	XAW	53.5	70.5	0.4	0.4	100	295
65	XAWC	66.5	86.5	0.4	0.4	140	265
	XAW	66.8	86.3	0.4	0.4	150	320
80	XAWC	78.0	101.0	0.4	0.5	210	275
	XAW	78.5	100.5	0.4	0.5	220	315
100	XAWC	103.0	127.0	0.4	0.5	260	340
	XAW	103.5	126.6	0.4	0.5	280	405
125	XAWC	128.0	154.0	0.5	0.6	330	460
	XAW	128.5	153.5	0.5	0.6	360	550
150	XAWC	151.5	181.0	0.5	0.6	380	470
	XAW	152.0	180.5	0.5	0.6	410	560
200	XAWC	202.5	233.5	0.5	0.5	580	580
	XAW	203.0	233.0	0.5	0.5	610	710

## Fine soft tube

- Structure** ■ Very flexible low reactive force type tube
- Standard material** ■ SUS304・SUS316L
- Model** ■ TCC: Closed pitch  
■ TCS: Standard pitch



※The smallest bending radius is for the case when a single-layer braid (standard specification) is mounted.

N B (A)	Model	I.D. (mm)	O.D. (mm)	Thickness (mm)	min. bending radius(mm)	
					fixed	repeated
8	TCC	7.4	11.1	0.15	20	75
	TCS	7.5	11.0	0.15	20	85
10	TCC	10.4	15.3	0.15	25	80
	TCS	10.5	15.2	0.15	25	90
15	TCC	13.2	18.3	0.15	30	90
	TCS	13.3	18.2	0.15	30	100
20	TCC	19.3	24.3	0.15	35	125
	TCS	19.5	24.2	0.15	35	145
25	TCC	24.3	31.8	0.2	40	130
	TCS	24.5	31.7	0.2	40	150
32	TCC	31.6	39.1	0.2	55	140
	TCS	31.8	39.0	0.2	60	165
40	TCC	38.3	47.3	0.25	65	190
	TCS	38.5	47.2	0.25	70	225
50	TCC	51.3	61.3	0.25	70	215
	TCS	51.5	61.2	0.25	75	260
65	TCC	60.2	77.4	0.3	105	230
	TCS	61.0	77.2	0.3	110	280
80	TCC	75.7	90.4	0.3	140	315
	TCS	76.0	90.2	0.3	150	365
100	TCC	100.2	118.4	0.3	190	370
	TCS	100.5	118.2	0.3	200	425

Types of Braid


Wire braid

■ Process of braiding :  
Structured by putting a few to about a dozen wires in parallel to each other and braiding them

■ Feature :  
Ordinary wire braid. Good at flexibility and pressure resistance. Can be produced in long length.

■ Available range :  $\phi 3 \sim 350A$

■ Material : SUS304・SUS316・SUS316L



Ribbon braid (Plate braid)


■ Process of braiding :  
A plate is cut in ribbon forms and braided in a bamboo-basket shape

■ Feature :  
Easy to crack due to fatigue. So, not recommendable to apply for high frequency repeat movement.

■ Available range : 20A~500A

■ Material : SUS304・SUS316・SUS316L

■ Plate width :  
5mm・6mm・8mm  
10mm・12mm・13mm  
15mm・18mm・20mm  
21mm・25mm・30mm




Soft ribbon braid

■ Process of braiding :  
Several wires are braided to create ribbon-shaped material by a machine, and the produced ribbons are braided.

■ Feature :  
Good at pressure resistance without spoiling flexibility.

■ Available range : 150A~800A

■ Material : SUS304・SUS316・SUS316L



Reinforcement of Hose

Glass braid

■ Use ■ Heat insulation, etc.



■ Glass fiber machine braid

■ Glass cloth half lapping

※Kynol and Kevlar can also be produced.

Reinforcing spring (carbon steel・stainless steel)

■ Use ■ Protection of abrasion, prevention of sharp bending of hose, etc.



Outer inter-lock tube (carbon steel・stainless steel)

■ Use ■ Protection of abrasion, prevention of sharp bending of hose, etc.

Heat contraction tube made of rubber (EPDM・Silicone)

■ Use ■ To avoid water-forming, dust, sea air damage, etc.



Heat contraction tube made of fluoropolymer (PFA・FEP)

■ Use ■ To avoid corrosion by environment, sea air damage.



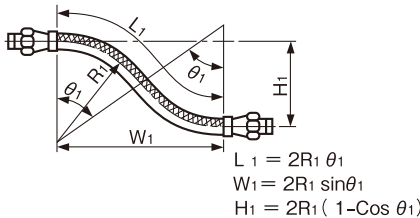
Formula for calculating the length of flexible section of a flexible metal hose

When the deflection is generated in the direction perpendicular to the axis

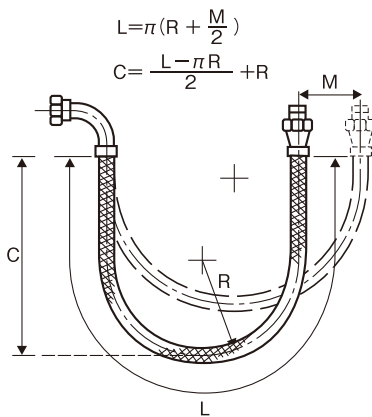
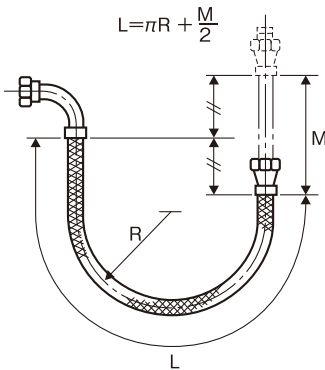
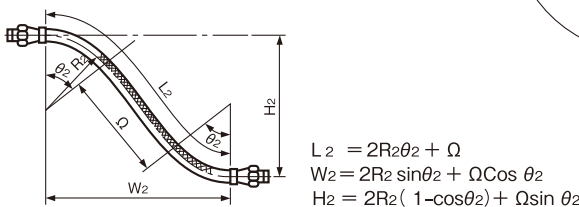
For vertical movement in U-shaped pipe line

For horizontal movement in U-shaped pipe line

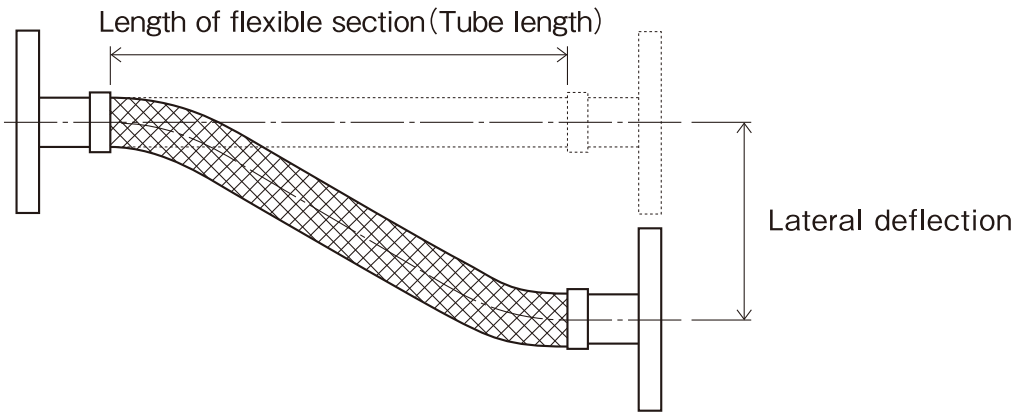
1. When the entire tube is bent in a uniform arc:



2. When both ends are arched and the middle is straight:



When repeated movement (lateral deflection) is generated, and face to face distance for installation is fixed.



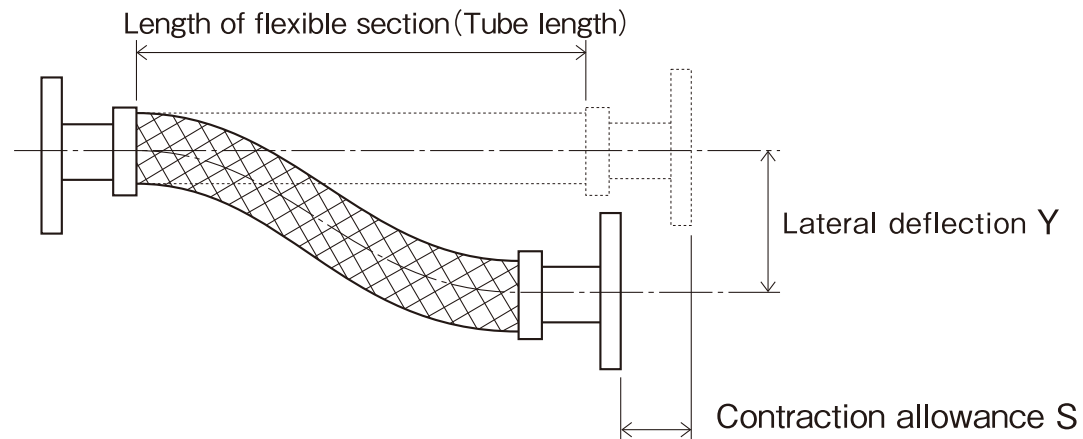
Aim of lateral deflection for a flexible section (tube length)

Unit:mm

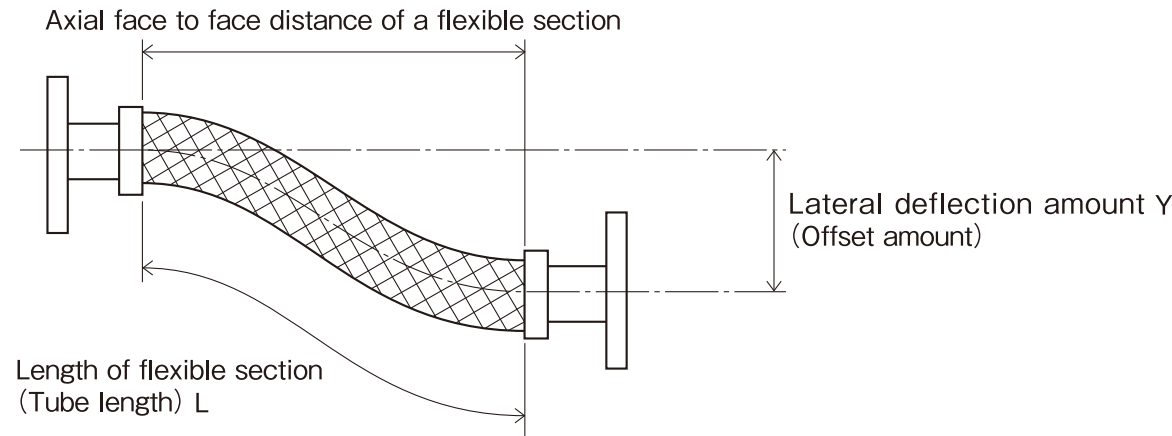
N B	min. bending radius	Length of flexible section (Tube length)															
		200	300	400	500	600	700	800	900	1000	1200	1400	1600	1800	2000		
8A	120	27	41	55	70	84	98	112	126	140	169	197	226	254	282		
10A	150	27	41	55	69	84	98	112	126	140	169	197	225	254	282		
15A	155	27	41	55	69	84	98	112	126	140	169	197	225	254	282		
20A	215	26	41	55	69	83	97	111	126	140	168	197	225	253	282		
25A	220	26	40	55	69	83	97	111	126	140	168	197	225	253	282		
32A	240	26	40	55	69	83	97	111	125	140	168	196	225	253	281		
40A	335	25	40	54	68	82	96	111	125	139	167	196	224	252	281		
50A	450	22	38	53	67	81	96	110	124	138	167	195	223	252	280		
65A	460	21	38	53	67	81	95	110	124	138	166	195	223	251	280		
80A	355	28	39	54	68	82	96	110	125	139	167	196	224	252	281		
100A	425	23	39	53	67	82	96	110	124	138	167	195	223	252	280		
125A	570	17	37	52	66	80	95	109	123	137	166	194	222	251	279		
150A	660	15	34	51	65	80	94	108	122	137	165	193	222	250	279		
200A	850	11	26	47	63	78	92	107	121	135	164	192	220	249	277		
250A	1000	10	22	40	61	76	91	105	120	134	162	191	219	248	276		
300A	1350	7	16	29	46	66	87	102	116	131	159	188	217	245	273		



When repeated movement (lateral deflection) is generated, and face to face distance for installation is not fixed:



The amount of offset against the length of a flexible section of an offset pipe (pipe without repeated movement)



Aim of lateral deflection for a flexible section (tube length)

Unit:mm

N B	min. bending radius	Lateral deflection Y (Contraction allowance) S	Length of flexible section (Tube length)															
			200	300	400	500	600	700	800	900	1000	1200	1400	1600	1800	2000		
8A	120	Y	78	143	190	238	286	334	381	429	477	572	668	763	859	954		
		(S)	(22)	(51)	(69)	(86)	(103)	(121)	(138)	(155)	(173)	(207)	(242)	(276)	(311)	(346)		
10A	150	Y	64	137	190	238	286	334	381	429	477	572	668	763	859	954		
		(S)	(14)	(47)	(69)	(86)	(103)	(121)	(138)	(155)	(173)	(207)	(242)	(276)	(311)	(346)		
15A	155	Y	62	134	190	238	286	334	381	429	477	572	668	763	859	954		
		(S)	(13)	(44)	(69)	(86)	(103)	(121)	(138)	(155)	(173)	(207)	(242)	(276)	(311)	(346)		
20A	215	Y	45	100	173	238	286	334	381	429	477	572	668	763	859	954		
		(S)	(7)	(23)	(55)	(86)	(103)	(121)	(138)	(155)	(173)	(207)	(242)	(276)	(311)	(346)		
25A	220	Y	44	98	169	238	286	334	381	429	477	572	668	763	859	954		
		(S)	(6)	(22)	(52)	(86)	(103)	(121)	(138)	(155)	(173)	(207)	(242)	(276)	(311)	(346)		
32A	240	Y	41	90	157	237	286	334	381	429	477	572	668	763	859	954		
		(S)	(5)	(19)	(44)	(85)	(103)	(121)	(138)	(155)	(173)	(207)	(242)	(276)	(311)	(346)		
40A	335	Y	29	66	115	178	251	333	381	429	477	572	668	763	859	954		
		(S)	(2)	(9)	(23)	(45)	(77)	(120)	(138)	(155)	(173)	(207)	(242)	(276)	(311)	(346)		
50A	450	Y	22	49	87	135	192	258	332	413	477	572	668	763	859	954		
		(S)	(1)	(5)	(13)	(25)	(43)	(68)	(101)	(142)	(173)	(207)	(242)	(276)	(311)	(346)		
65A	460	Y	21	48	85	132	188	253	326	406	477	572	668	763	859	954		
		(S)	(1)	(5)	(12)	(24)	(41)	(65)	(97)	(136)	(173)	(207)	(242)	(276)	(311)	(346)		
80A	355	Y	27	62	109	168	238	318	381	429	477	572	668	763	859	954		
		(S)	(2)	(8)	(20)	(40)	(68)	(108)	(138)	(155)	(173)	(207)	(242)	(276)	(311)	(346)		
100A	425	Y	23	52	92	142	203	272	349	429	477	572	668	763	859	954		
		(S)	(1)	(6)	(14)	(28)	(48)	(76)	(112)	(155)	(173)	(207)	(242)	(276)	(311)	(346)		
125A	570	Y	17	39	69	107	154	208	269	337	411	572	668	763	859	954		
		(S)	(1)	(3)	(8)	(15)	(27)	(43)	(64)	(90)	(123)	(207)	(242)	(276)	(311)	(346)		
150A	660	Y	15	33	60	93	134	181	235	295	361	508	668	763	859	954		
		(S)	(0)	(2)	(6)	(11)	(20)	(32)	(48)	(68)	(92)	(158)	(242)	(276)	(311)	(346)		
200A	850	Y	11	26	46	73	104	142	184	232	285	406	544	698	859	954		
		(S)	(0)	(1)	(3)	(7)	(12)	(19)	(29)	(41)	(56)	(97)	(152)	(225)	(311)	(346)		
250A	1000	Y	9	22	39	62	89	121	157	199	244	349	470	606	756	919		
		(S)	(0)	(1)	(2)	(5)	(8)	(14)	(21)	(30)	(41)	(70)	(111)	(165)	(233)	(317)		
300A	1350	Y	7	16	29	46	66	90	117	148	183	262	354	460	578	707		
		(S)	(0)	(0)	(1)	(2)	(4)	(7)	(11)	(16)	(22)	(39)	(61)	(92)	(130)	(177)		

Unit:mm

N B	min. bending radius (fixed)	Offset amount Y (Length of flexible section L)	Axial face to face distance of a flexible section															
			200	300	400	500	600	700	800	900	1000	1200	1400	1600	1800	2000		
8A	20	Y	200	300	400	500	600	700	800	900	1000	1200	1400	1600	1800	2000		
		(L)	(314)	(471)	(628)	(785)	(942)	(1100)	(1257)	(1414)	(1571)	(1885)	(2199)	(2513)	(2827)	(3142)		
10A	25	Y	200	300	400	500	600	700	800	900	1000	1200	1400	1600	1800	2000		
		(L)	(314)	(471)	(628)	(785)	(942)	(1100)	(1257)	(1414)	(1571)	(1885)	(2199)	(2513)	(2827)	(3142)		
15A	30	Y	200	300	400	500	600	700	800	900	1000	1200	1400	1600	1800	2000		
		(L)	(314)	(471)	(628)	(785)	(942)	(1100)	(1257)	(1414)	(1571)	(1885)	(2199)	(2513)	(2827)	(3142)		
20A	35	Y	200	300	400	500	600	700	800	900	1000	1200	1400	1600	1800	2000		
		(L)	(314)	(471)	(628)	(785)	(942)	(1100)	(1257)	(1414)	(1571)	(1885)	(2199)	(2513)	(2827)	(3142)		
25A	40	Y	200	300	400	500	600	700	800	900	1000	1200	1400	1600	1800	2000		
		(L)	(314)	(471)	(628)	(785)	(942)	(1100)	(1257)	(1414)	(1571)	(1885)	(2199)	(2513)	(2827)	(3142)		
32A	60	Y	200	300	400	500	600	700	800	900	1000	1200	1400	1600	1800	2000		
		(L)	(314)	(471)	(628)	(785)	(942)	(1100)	(1257)	(1414)	(1571)	(1885)	(2199)	(2513)	(2827)	(3142)		
40A	70	Y	200	300	400	500	600	700	800	900	1000	1200	1400	1600	1800	2000		
		(L)	(314)	(471)	(628)	(785)	(942)	(1100)	(1257)	(1414)	(1571)	(1885)	(2199)	(2513)	(2827)	(3142)		
50A	75	Y	200	300	400	500	600	700	800	900	1000	1200	1400	1600	1800	2000		
		(L)	(314)	(471)	(628)	(785)	(942)	(1100)	(1257)	(1414)	(1571)	(1885)	(2199)	(2513)	(2827)	(3142)		
65A	105	Y	145	300	400	500	600	700	800	900	1000	1200	1400	1600	1800	2000		
		(L)	(265)	(471)	(628)	(785)	(942)	(1100)	(1257)	(1414)	(1571)	(1885)	(2199)	(2513)	(2827)	(3142)		
80A	200	Y	53	315	400	500	600	700	800	900	1000	1200	1400	1600	1800	2000		
		(L)	(209)	(339)	(628)	(785)	(942)	(1100)	(1257)	(1414)	(1571)	(1885)	(2199)	(2513)	(2827)	(3142)		
100A	250	Y	41	100	200	500	600	700	800	900	1000	1200	1400	1600	1800	2000		
		(L)	(206)	(332)	(464)	(785)	(942)	(1100)	(1257)	(1414)	(1571)	(1885)	(2199)	(2513)	(2827)	(3142)		
125A	320	Y	32	74	140	240	417	700	800	900	1000	1200	1400	1600	1800	2000		
		(L)	(203)	(312)	(432)	(574)	(778)	(1100)	(1257)	(1414)	(1571)	(1885)	(2199)	(2513)	(2827)	(3142)		
150A	370	Y	27	63	117	194	306	500	800	900	1000	1200	1400	1600	1800	2000		
		(L)	(203)	(309)	(423)	(549)	(700)	(918)	(1257)	(1414)	(1571)	(1885)	(2199)	(2513)	(2827)	(3142)		
200A	520	Y	19	44	80	128	190	270	375	518	754	1200	1400	1600	1800	2000		
		(L)	(201)	(304)	(411)	(522)	(640)	(768)	(913)	(1088)	(1344)	(1885)	(2199)	(2513)	(2827)	(3142)		
250A	700	Y	14	32	58	92	135	187	251	327	420	678	1400	1600	1800	2000		
		(L)	(201)	(302)	(406)	(511)	(620)	(733)	(852)	(978)	(1114)	(1442)	(2199)	(2513)	(2827)	(3142)		
300A	900	Y	11	25	45	70	102	141	187	241	303	458	668	975	1800	2000		
		(L)	(200)	(301)	(403)	(507)	(612)	(719)	(829)	(942)	(1060)	(1314)	(1604)	(1971)	(2827)	(3142)		

# Manual of Flexible Metal Hose

**1** This document is described general attention matters about conveyance , installation and maintenance of "FLEXIBLE METAL HOSE" .

■Picture marks and the meanings

	Warning <b>The meaning of this mark is the contents supposing man dying or becoming serious injury.</b>
	Attention <b>The meaning of this mark is the contents supposing material damage, or man is injured. But it may be connected with a serious result depending on a situation.</b>
	<b>The meaning of this mark is "Prohibition".</b>
	<b>The meaning of this mark is "Compulsion".</b>

**2** The main portion of FLEXIBLE METAL HOSE consist of thin stainless steel tube and stainless steel braid. If tube and braid are damaged or corroded , the capacity to resist pressure of FLEXIBLE METAL HOSE will be declined. Therefore, it is necessary to pay sufficient attention for prevention of the following matters with a possibility of reducing the quality of the FLEXIBLE METAL HOSE.

- 1) Shock , drop
- 2) Over displacement
- 3) Welding and cutting work near the FLEXIBLE METAL HOSE
- 4) Invasion of salt , sand and iron powder

**3 Conveyance** Keep the following matters at conveyance.

- 1) Convey horizontally as much as possible.
- 2) Avoid the drag , drop and crash.
- 3) When hanging up the hose , use the cloth belts so that the wire does not to contact the hose directly.

**4 Storage** Storage of the hose should be in the following state.

- 1) On the shelf or flat board at airy place.
- 2) If a hose is taken out from the packing unavoidably, wrap up the whole hose in polyethylene sheet.
- 3) Do not operate welding, gouging and gas cutting near the hose.
- 4) The place which does not touch the copper products or copper alloy products.

**5 Installation** At installation, take care for the following matters.

- 1) Check the installation place by the machinery number or size, which are indicated in name plate or tag plate.
- 2) Compare the fitting form and dimensions with drawing.
- 3) Don't install the hose with displacement beyond the design value and don't twist.

**6 After installation**

Carry out the followings to prevent the installed hose from damage and deterioration.

- 1) Cover the hose with waterproof clothes and prevent to stick the iron powder, sand, dust and water.
- 2) Attach the plate indicated to prohibit following matters.
  - A. Welding or weld cutting near and upper the hose.
  - B. Put the heavy things on the hose.
  - C. Work to give a shock.
- 3) At welding or weld cutting upper the hose , be sure to cover the hose with nonflammable clothes.

**7** Inspection of pressure proof test of piping line.

Check the following matters during and immediately after system pressure test.

- 1) Abnormal transformation (ex. creases of braid)
- 2) Leakage of fluid
- 3) Other abnormal condition

**8** Inspection of the hose at test operation of piping line.

Judge the following items at test operation.

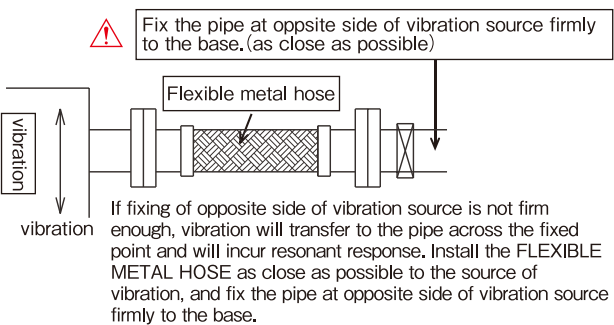
- 1) Vibration
- 2) Displacement
- 3) Rust
- 4) Abnormal transformation

**9** Regular inspection throughout its life.

Frequency of inspection should be determined depending on external enviroment and kind of inner fluid. And, clean and replace old hose to new one, if needed, to prevent damage and accident. Check the followings for regular inspection.

- 1) Rust or corrosive condition on outer surface.
- 2) Corrosive condition of inner surface of tube.  
※Remove the hose from piping system and check.
- 3) External injury and abnormal transformation
- 4) Traces of leakage

**10** FLEXIBLE METAL HOSE for vibration absorber



**11** FLEXIBLE METAL HOSE for water tank

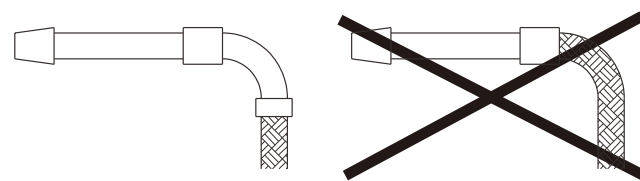
At open and shut of valve , we reccommend to install check-valve to prevent breakage due to water-hammer or vibration.

**12** FLEXIBLE METAL HOSE for main valve piping

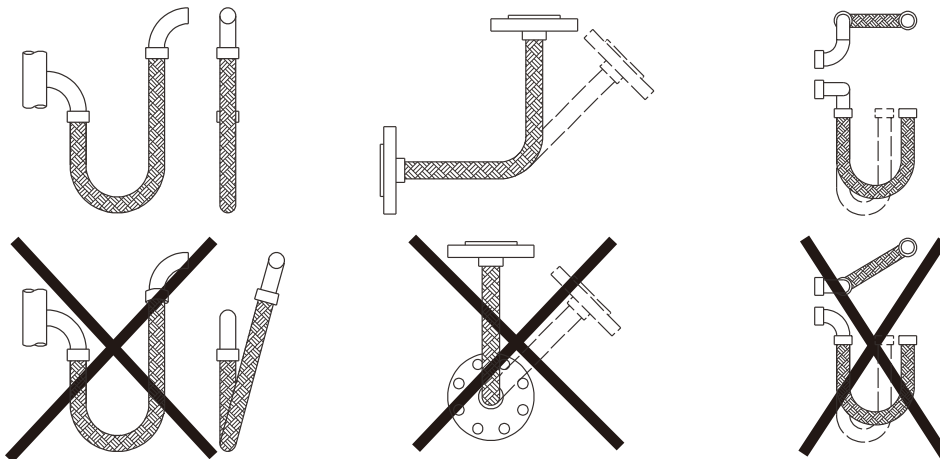
If FLEXIBLE METAL HOSE installed at upper stream side of main valve , it is possible to break according to alteration of water supply pressure. Install the hose at lower stream side of main valve.

# Explanatory Sketch

Install the hose as straight as possible.



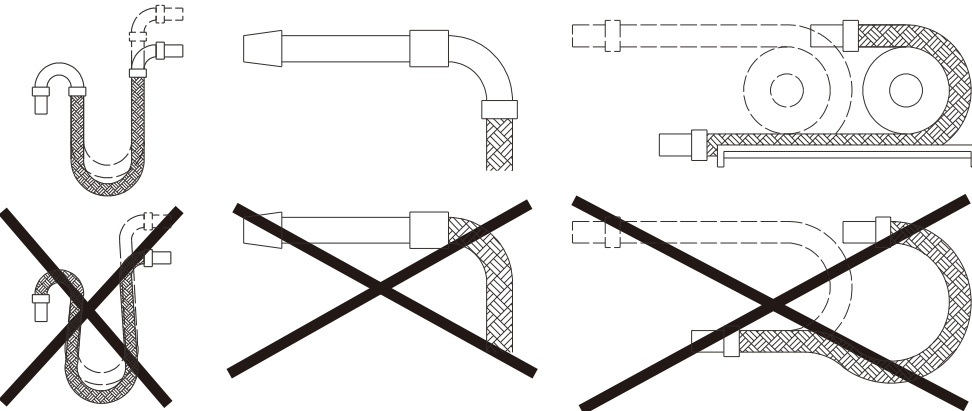
Don't twist the hose.  
(Hose can be bent on only one plane.)



Don't bend the hose by small radius.



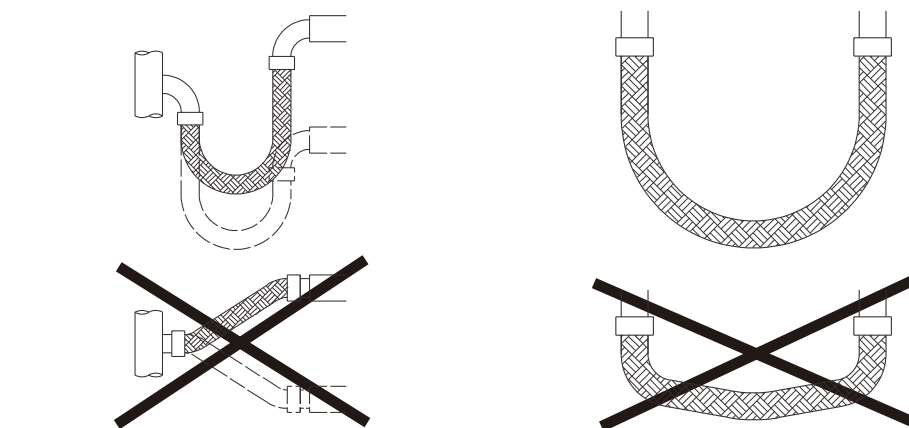
Stress of hose concentrates into root of fittings.  
(Using guides is effective for durability of hose.)



Don't stretch the hose.  
(If hose is stretched , pressure proof capacity of hose declines.)



Consider decision of the hose length and method of installation.



Remove the corrosive matters from hose.



Stainless steel is superior to corrosive proof but take care not to attach the chloride because it is possible to corrode stainless steel by chloride existence.