

TOMBO™ BRAND

NAFLON™ Hoses

Fluoropolymer Products



TOMBO™ Fluoropolymer Products

NAFLON™ Hoses

NAFLON hoses consist of a NAFLON inner hose made of an excellent heat- and chemical-resistant fluoropolymer. These products can be further modified to meet the requirements of particular applications by reinforcing the outside of the tube with protective stainless steel wire braiding and fitting designated metal or flared connections. The main applications are joints in piping systems for steam, oil (especially nonflammable oil), gases, chemicals and foods.

* As with other plastics, fluoropolymers are known to allow slight amounts of gas penetration and permeation.

*** Names of Fluoropolymer Products in this Catalog.**

PTFE··· (Polytetrafluoroethylene)

PFA ··· (Tetrafluoroethylene Perfluoroalkoxy Ethylene Copolymer)

ETFE ··· (Ethylene-Tetra-Fluoro-Ethylene)

PVDF··· (Polyvinylidene fluoride)

*** TOMBO is registered trademark or trademark of NICHIAS Corporation.**

*** All brand names and product names in this catalog are trademarks of NICHIAS Corporation.**

■ Major Features of Fluoropolymers

- Chemical resistance: Stable when used with almost all chemicals and solvents. Contact us for any inquiries about the chemical you are using.
- Purity: Fluoropolymers contain absolutely no stabilizers or oxidant inhibitors and so are extremely pure plastics.
- Electrical properties: Fluoropolymers have the minimum dielectric constant and dielectric tangential of all insulators.
- Non-stick properties: Fluoropolymers even resist adhesion to adhesives, and feature excellent detachment properties.
- Weather resistance: Excellent weatherability and free of aging deterioration
- Low friction properties: Fluoropolymers have the lowest friction coefficient of all resins, equivalent to rubbing two blocks of ice together.
- Moisture absorption: Although there are very slight differences in the moisture absorption of PTFE and PFA, for practical purposes they do not absorb moisture.

INDEX

Warnings and Cautions	1
NAFLON hose products	2 ~ 3
TOMBO No.9065-F	
NAFLON PTFE pressure resistant hose	4
TOMBO No.9065-SH/9065-SG	
NAFLON PTFE Sanitary use straight hose	5
TOMBO No.9065-SPL	
NAFLON PTFE Smooth-PLiable hose	6
TOMBO No.9066-S	
NAFLON PFA pressure resistant hose	7
TOMBO No.9066-AS	
NAFLON PFA Anti-Static pressure resistant hose	8
TOMBO No.9066-R	
NAFLON PFA RUBBER pressure resistant hose	9
TOMBO No.9067-A-S/9067-A-HW-S	
NAFLON PTFE Super Pliable hose	10 ~ 11
TOMBO No.9067-A-F/9067-A-FV/ 9067-A-HW-F/9067-A-HW-FV	
NAFLON PTFE Super Pliable hose	12 ~ 13
TOMBO No.9067-A-FB/9067-A-FBV/ 9067-A-HW-FB/9067-A-HW-FBV	
NAFLON PTFE Super Pliable hose	14 ~ 15
TOMBO No.9067-A-K	
NAFLON PTFE Super Pliable hose	16
TOMBO No.9067-A-HW-CP/9067-A-HW-CPL	
NAFLON Liquid Chlorine hose	17

TOMBO No.9068-S/9068-E	
NAFLON PFA pliable hose	18
TOMBO No.9068-F/9068-FV	
NAFLON PFA pliable hose	19
TOMBO No.9068-FB/9068-FBV	
NAFLON PFA pliable hose	20
TOMBO No.9068-K	
NAFLON PFA pliable hose	21
Joint type list	22
Joint Dimensions / Joint Material	23

JIS10K flanges/JIS20K flanges dimension chart	
Joint dimensions of NAFLON sanitary flexible hoses	24
Joint dimensions for NAFLON PFA RUBBER pressure resistant hoses	
Sealing face configuration / Connector (Joint) seal method	25
Method of selecting hose size based on flow volume and flow speed	
Method of determining the required hose length	26
Precautions for Use	
Recommended configuration of flexible hose connection	27
Quick reference tables of permissible radial displacements	28
Related Products	29
Meanings of NAFLON hose codes	30
NAFLON Hose Inquiry Form	31

Warnings and Cautions

Prohibitions

1. Never use NICHIAS fluoropolymer products for any applications in which they can come into contact with biomedical tissue, body fluid or other similar substances.
2. Never allow NICHIAS fluoropolymer products to enter the human body (such as by swallowing them inadvertently).

Precautions

The following precautions must be strictly observed to ensure correct functioning and safe use of NICHIAS fluoropolymer products.

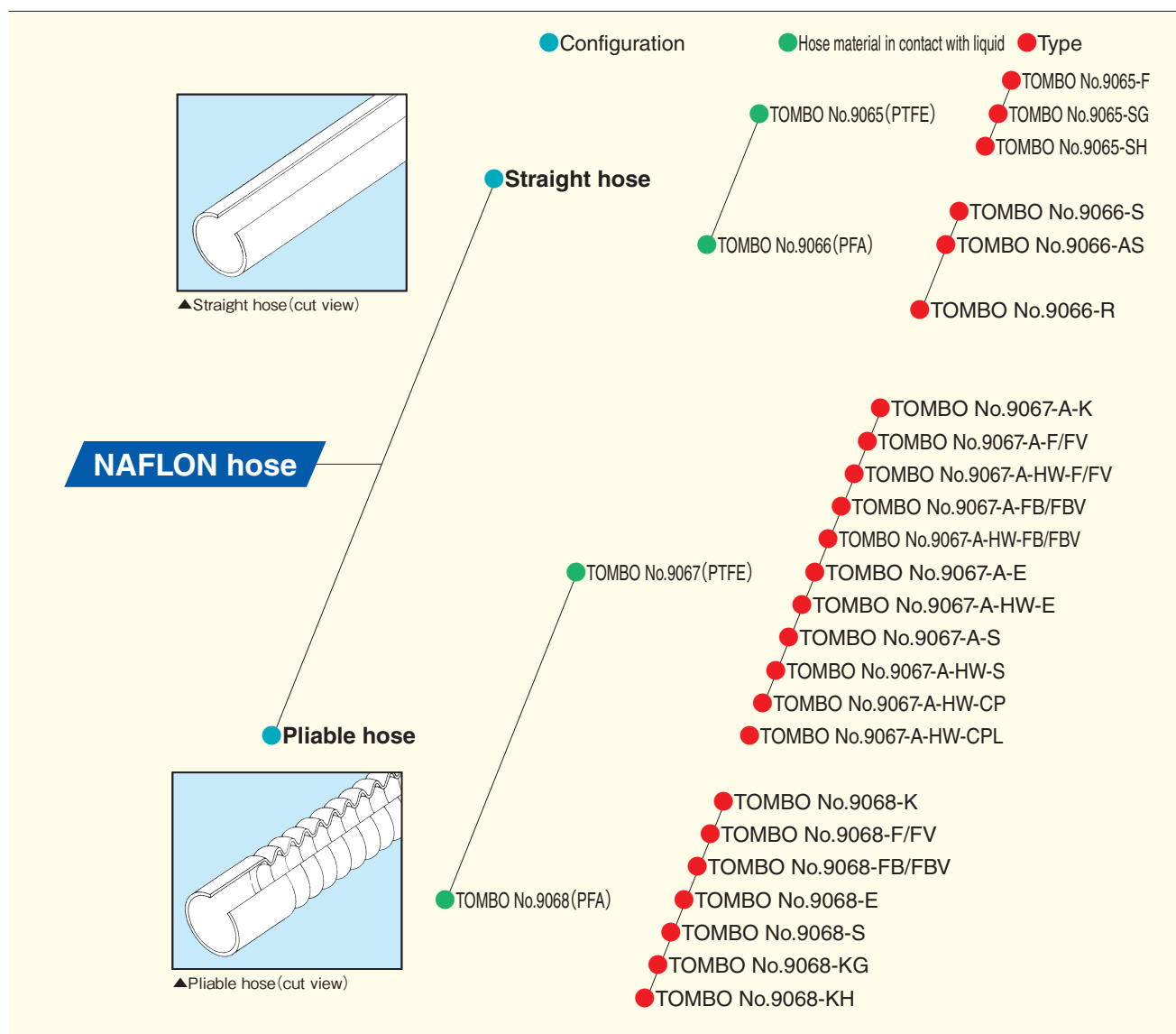
1. Do not use NICHIAS fluoropolymer products for any applications other than those specified in their brochures.
2. Use NICHIAS fluoropolymer products within the temperature ranges specified in their brochures.
3. If their (reference) maximum service temperatures are exceeded while NICHIAS fluoropolymer products are being processed, cracked fluorine-containing gases are generated. Ensure adequate ventilation. Be careful not to inhale cracked gases.
4. Do not weld NICHIAS fluoropolymer products or bring flames near them. Otherwise, they can fail or leakage may result.
5. Before using NICHIAS fluoropolymer products, read their SDS (Safety Data Sheet) carefully.
6. Dispose of NICHIAS fluoropolymer products correctly in compliance with relevant laws of the country.

Considerations before use

Before using NICHIAS fluoropolymer products, please consider their characteristics as described below.

1. The technical (product performance) data provided in the product brochures are measured or representative values from experiments (and are not guaranteed values). Consider this carefully before starting to use the product for a particular application.
2. Applications in which acid, alkaline or highly toxic fluids are used require even more careful consideration regarding precaution “1” above. Please contact us for technical advice.
3. Fluoropolymer, which is used in NICHIAS fluoropolymer products, can fail under repeated, highly concentrated or bending load. Please consider this carefully with respect to the actual working environment before starting to use the product.
4. Fluoropolymer products do not require lubrication but are subject to wear. Therefore, regular replacement is recommended when they are used in locations of continuous wear.
5. Fluoropolymer, which is used in NICHIAS fluoropolymer products, can harden, suffer dimensional change or allow fluids to permeate or pass through it under certain working conditions. Please consider this carefully regarding the actual working environment before starting to use the product.

For questions or advice, please contact our sales or technical department.

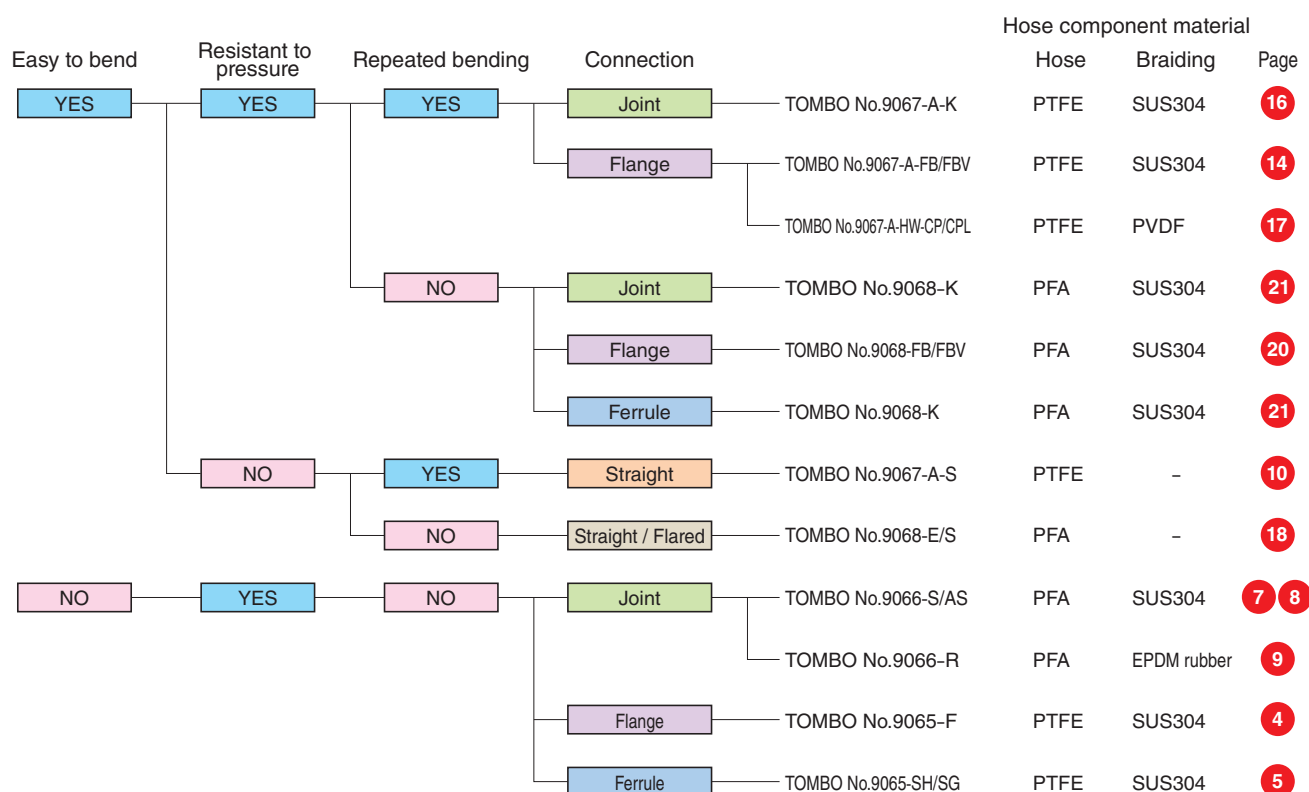


Straight hose

Product	Connection	Joint material in contact with liquid
TOMBO No.9065-F Flange type	10K Flange (SS400, SUS304)	PTFE
TOMBO No.9065-SG Sanitary use hose	Box nut (SUS304)	SUS304
TOMBO No.9065-SH Sanitary use hose	Ferrule type (SUS304)	SUS304
TOMBO No.9066-S Pressure resistant hose	Male fixed Box nut + nipple (SUS304)	SUS304
TOMBO No.9066-AS Anti-Static pressure resistant hose	Male fixed Box nut + nipple (SUS304)	SUS304
TOMBO No.9066-R Rubber pressure resistant hose	See "Joint type" on P9	SUS304 PFA

* For details on normal pressure data, see the individual product pages.

Hose selection guide



Straight hose

Product	Connection	Joint material in contact with liquid
TOMBO No.9067-A-K TOMBO No.9068-K Joint type	Male fixed Box nut + nipple (SUS304)	SUS304
TOMBO No.9067-A-F Flange type	10K Flange (SS400, SUS304)	PTFE
TOMBO No.9067-A-FB Flange type	10K Flange (SS400, SUS304)	PTFE
TOMBO No.9068-KG Sanitary use hose	Box nut (SUS304)	SUS304
TOMBO No.9068-KH Sanitary use hose	Ferrule type (SUS304)	SUS304
TOMBO No.9067-A-HW-CP TOMBO No.9067-A-HW-CPL Liquid chlorine hose	20K Flange (SUS304)	SUS316
TOMBO No.9067-A-E TOMBO No.9067-A-S	—	PTFE

* For details on normal pressure data, see the individual product pages.

NAFLON™ PTFE pressure resistant hose

F Type

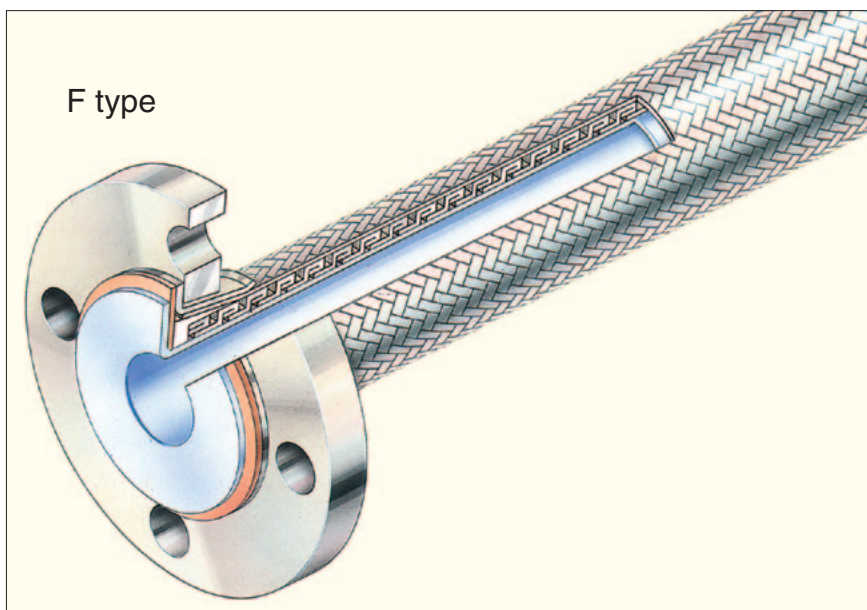
NAFLON PTFE pressure resistant hoses have a PTFE tube inner liner with interlocked spiral tube reinforced by external wire braiding.

Applications

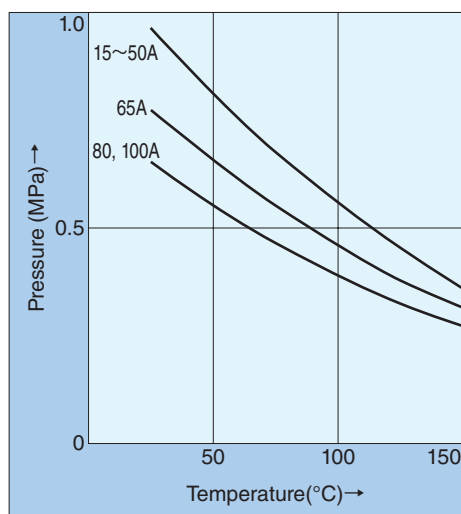
- Ideal when a corrosion-resistant hose is required for transporting liquid chemicals, solvents and viscous fluids.

Notes:

- Flanges at both ends are not fixed (they can be rotated).
- If it is necessary to remove the hose frequently, there may be damage to the flare section. Therefore, we recommend the use of a flange adapter (P27).
- It is not possible to bend the hose to its minimum radius right up to the ends. The hose must have straight sections at both ends, the length of which is shown in the table below.
- Cannot be used in a vacuum environment.



Max service pressure by size (F type)



Measured by NICHIAS

* The above figures are actual measurements and are not nominal values.

Specifications

Nominal size		Minimum bending radius(mm)	Load required for minimum bending radius(kg)
A	B		
15	1/2	250	10
20	3/4	250	10
25	1	300	20
32	1 1/4	450	40
40	1 1/2	450	40
50	2	600	60
65	2 1/2	700	80
80	3	900	100
100	4	1200	100

Measured by NICHIAS

* The above figures are actual measurements and are not nominal values.

Service temperature range

- - 40 ~ 150°C

Dimensions

Nominal size		Hose			Size availability		Hose weight (g/m)
A	B	Inner dia. (mm)	Outer dia. (mm)	Length of straight end section (mm)	Min. (mm)	Max. (m)	
15	1/2	17	25.0	150	150	10	1300
20	3/4	17	25.0	150	150	10	1300
25	1	23	32.5	175	150	7	1870
32	1 1/4	34	46.0	200	200	6	2805
40	1 1/2	34	46.0	200	200	6	2805
50	2	46	58.5	225	200	6	3960
65	2 1/2	58	71.5	250	200	6	5370
80	3	71	84.0	275	200	5	6510
100	4	94	108.5	300	200	5	8650

* For an explanation of NAFLON hose codes, see P30.

* For flange dimensions, see P24.

NAFLON™ PTFE Sanitary use straight hose

SH Type
SG Type

The structure of this straight hose is as follows. The NAFLON PTFE inner tube is encased within an interlocking spiral pipe reinforced with an outer wire braiding protective sheath.

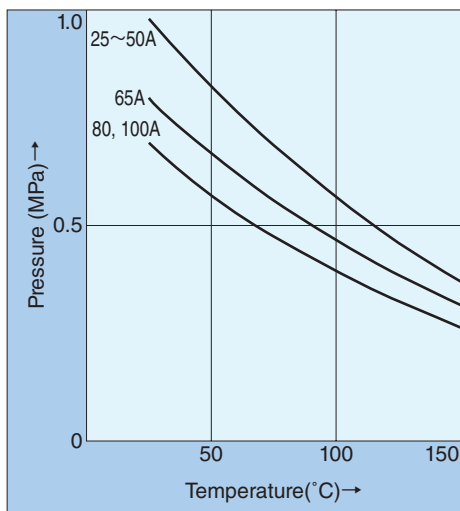
Two types of joint connectors are available: the SH type which employs a stainless steel clamp liner (ferrule) for food industry applications which is in conformity with ISO 2852 and the SG type which employs a stainless steel screw type connector for food industry applications which is in conformity with ISO 2853. Both types are structured to avoid liquid sedimentation inside.

* The connector dimensions are the same as the former IDF 14 standard.

Applications

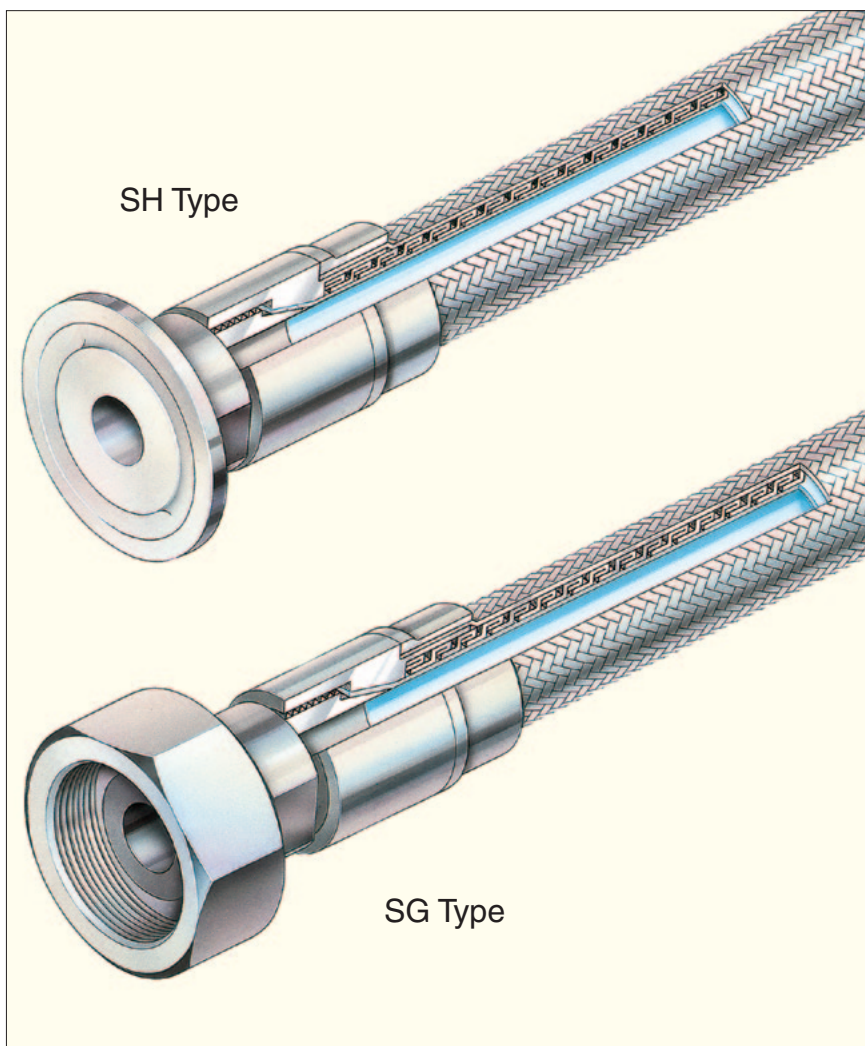
● Suitable for food industry applications.

Max service pressure by size (SH, SG type)



Measured by NICHIAS

* The above figures are actual measurements and are not nominal values.



Service temperature range

● - 40 ~ 150°C

Specifications/Dimensions

Nominal Size		Hose		Minimum bending radius (mm)	Size availability		Hose weight (g/m)
A	B	Inner dia. (mm)	Outer dia. (mm)		Min. (mm)	Max. (m)	
25	1	23	32.5	300	500	7	1870
40	1½	34	46.0	450	500	6	2805
50	2	46	58.5	600	500	6	3960
65	2½	58	71.5	700	800	6	5370
80	3	71	84.0	900	800	5	6510
100	4	94	108.5	1200	800	5	8650

* For an explanation of NAFLON hose codes, see P30.

Measured by NICHIAS

* For the dimensions of metal connectors, see P24.

* For gaskets for sanitary applications, see P29.

* The above figures are actual measurements and are not nominal values.

NAFLONTM PTFE Smooth-PLiable hose

The NAFLON PTFE-SPL (Smooth-PLiable: smooth pliable inner surface) pressure-resistant hose has an outer spiral NAFLON BT tube reinforced by external stainless steel wire braiding.

The hose minimizes the amount of inside liquid sedimentation and has a smaller bending radius than NAFLON straight hoses.

Applications

- Transporting liquid chemicals, solvents and viscous fluids with minimum sedimentation.
- Transporting liquid chemicals from tank lorries and freight wagons.
- For complicated piping layout in a confined space.
- Food industry and pharmaceutical production lines.

Service temperature range

- -40~150°C

Dimensions

Nominal Size		Hose		Size availability		Hose weight (g/m)	Minimum bending radius *1 (mm)	Max. service temperature (°C) *2	
A	B	Inner dia. (mm)	Outer dia. (mm)	Min. (mm)	Max. (m)			Negative pressure	Positive pressure
20	3/4	19.0	24.0	500	12	460	80	100	150
25	1	25.0	31.0	500	12	650	90		
40	1 1/2	37.5	45.5	500	10	1150	120		
50	2	48.1	57.0	500	10	1670	170		

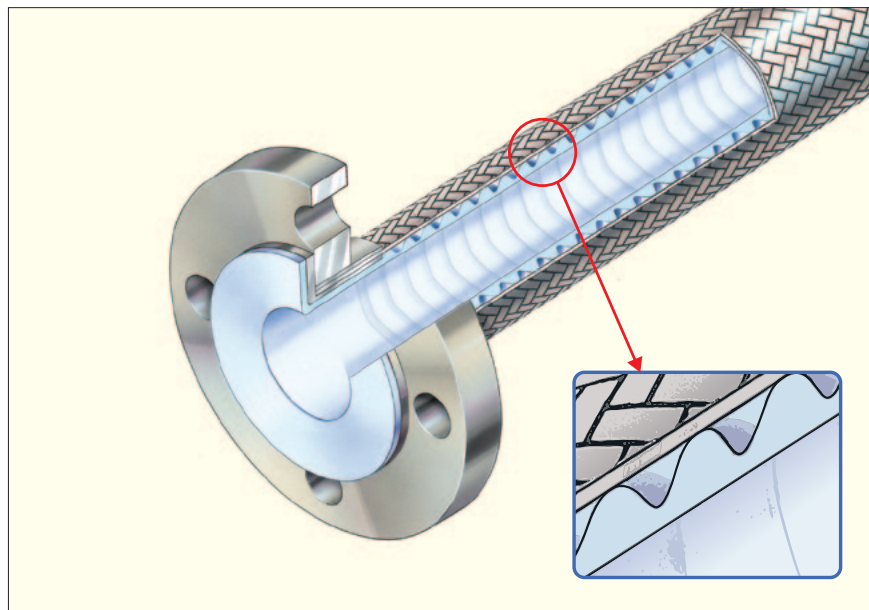
*1: The minimum bending radius is 1.2 times the measured value. *2: The maximum service temperature for resin (PCTFE) joints is 80°C.

* The above figures are actual measurements and are not nominal values.

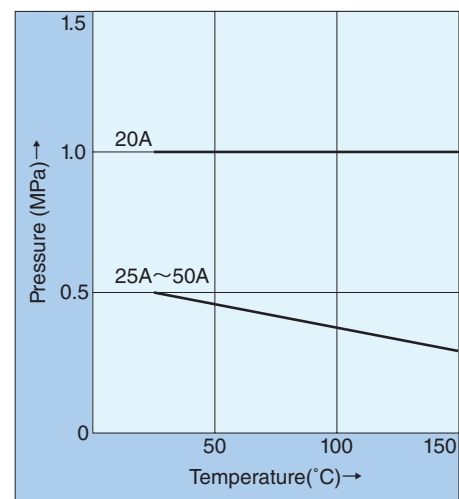
Joint type

Type (Material)	Code
Screw type (SUS304)	SA
Resin type (PCTFE)	JA
Flange type (SUS304)	FB
Sanitary type (SUS304)	SH

* For possibilities of other joint types, please contact us.



Max service pressure by size



Measured by NICHIAS

* The above figures are actual measurements and are not nominal values.

NAFLON™ PFA pressure resistant hose

S Type

NAFLON PFA pressure resistant hoses consist of a straight fluoropolymer PFA tube, offering both excellent resistance to chemicals and mechanical strength at high temperature. The hoses are reinforced by external stainless steel wire braiding, and metal connectors are fitted to the hose ends.

Applications

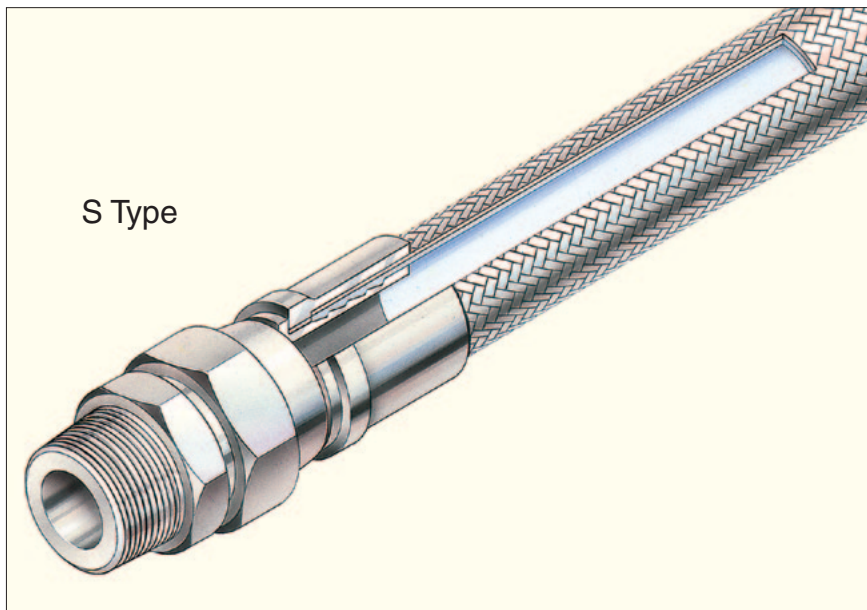
- Suitable for high-pressure lines as well as pharmaceutical and food industry applications.

Notes:

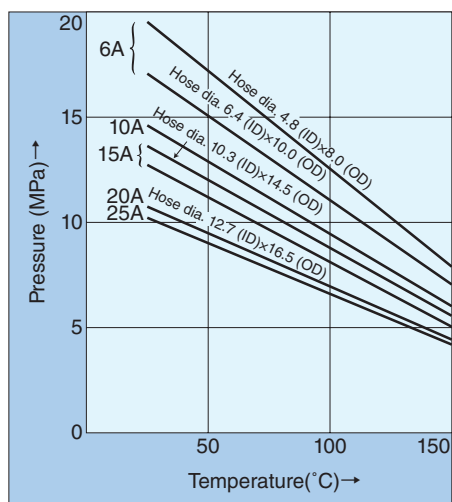
- Cannot be used in a vacuum environment.
- Please consult us for applications where the maximum service pressure is exceeded.

Service temperature range

- -40~150℃



Max service pressure by size (S type)



Measured by NICHIAS

* The above figures are actual measurements and are not nominal values.

Specifications

Nominal size		Minimum bending radius (mm)
A	B	
6	1/4	20
10	3/8	40
15	1/2	70
20	3/4	130
25	1	250

Measured by NICHIAS

* The above figures are actual measurements and are not nominal values.

Dimensions

Nominal Size		Hose		Joint internal diameter Min. (mm)	Size availability		Hose weight (g/m)
A	B	Inner dia. (mm)	Outer dia. (mm)		Min. (mm)	Max. (m)	
6	1/4	4.8 (6.4)	8.0 (10.0)	3	250	50	105
10	3/8	7.8	11.0	5.5	260	50	155
15	1/2	10.3 (12.7)	14.5 (16.5)	8	380	50	220
20	3/4	15.8	19.5	13	390	50	325
25	1	22.2	26.5	19	400	50	540

* For an explanation of NAFLON hose codes, see P30.

* There are six joint types from A to F. For details, see P22.

* Products with the bracketed dimensions are also available.

NAFLON™ PFA Anti-Static pressure resistant hose

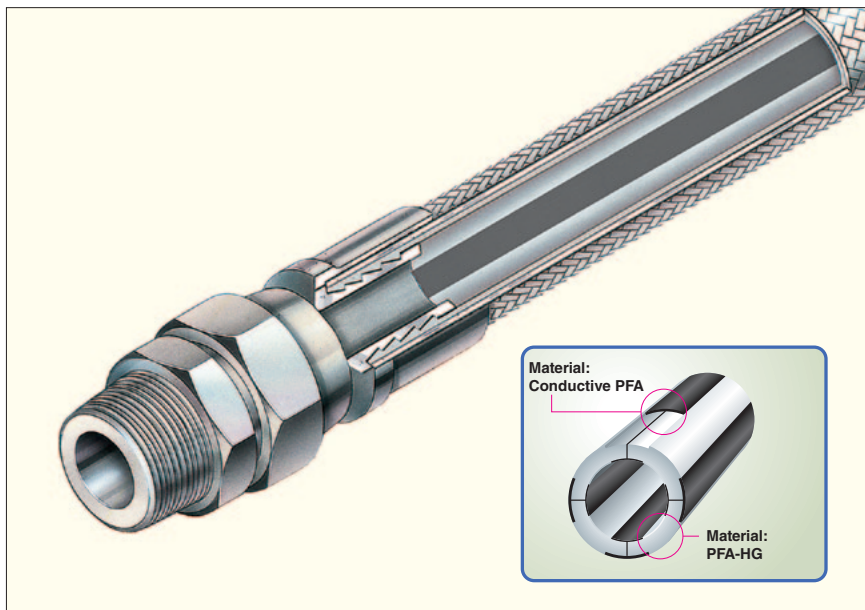
NAFLON PFA Anti-Static pressure resistant hoses consist of a NAFLON PFA-AS tube with inner and outer layers of striped conductive PFA material, which is reinforced by external stainless steel wire braiding. The hose's insulating material is protected against damage from static buildup caused by friction between the hose's inner wall and the fluid carried.

Applications

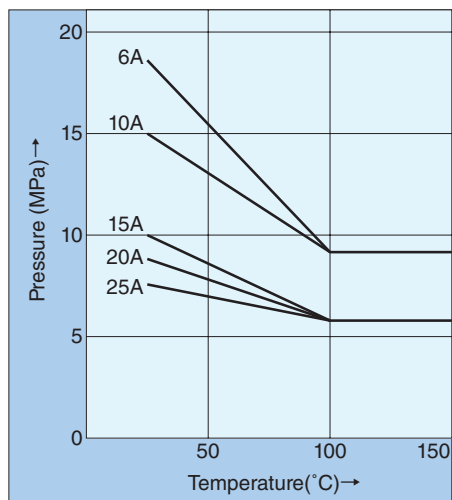
- Suitable for conveying substances that are likely to damage the hose's insulating material, such as organic solvents, fuels, refrigerants, powders and steam.

Notes:

- Cannot be used for negative-pressure applications



Max service pressure by size



Measured by NICHIAS

* The above figures are actual measurements and are not nominal values.

Dimensions

Nominal Size		Hose		Joint internal diameter Min. (mm)	Size availability		Hose weight (g/m)	Minimum bending radius (mm)
A	B	Inner dia. (mm)	Outer dia. (mm)		Min. (mm)	Max. (m)		
6	1/4	4.8	8.0	3.0	250	50	105	10
10	3/8	7.8	11.0	5.5	260	50	155	20
15	1/2	10.3	14.5	8.0	380	50	220	40
20	3/4	15.8	19.5	13.0	390	50	325	100
25	1	22.2	26.5	19.0	400	50	540	350

* Various combinations of the following joints are available: male fixed, male union and female union.

* The above figures are actual measurements and are not nominal values.

NAFLON™ PFA RUBBER pressure resistant hose

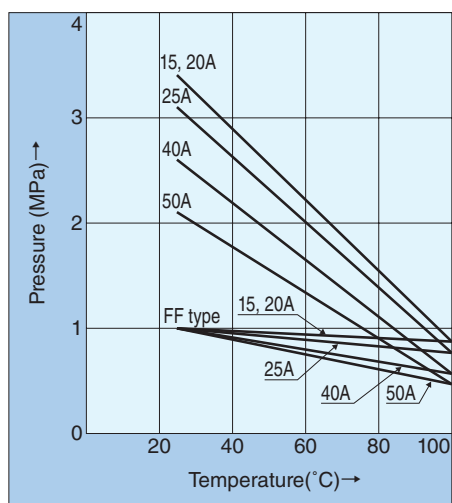
NAFLON PFA RUBBER pressure resistant hoses feature a bonded structure of fluoropolymer PFA tubing and rubber, multi-layered reinforcement and steel wiring, which combine to make the hose highly resistant to high pressure and vacuum. The perfect bonding of fluoropolymer and rubber materials helps prevent buckling. The small bending radius and the multi-layered rubber-incorporated structure make the hose sturdy, difficult to fold and resistant to chafing and other types of damage. The liquid contact surface is made of non-colored fluoropolymer PFA (1 mm thick), which is highly resistant to chemicals and non-adhesive.



Applications

- For transporting liquids to/from tank lorries, freight wagons and vessels and for applications prone to external damage.

Max service pressure by size



Measured by NICHIAS

* The above figures are actual measurements and are not nominal values.

Specifications

Nominal size		Minimum bending radius (mm)	Vacuum resistance (MPa)	Max. service temperature (°C)
A	B			
15	1/2	80	0.27	100
20	3/4	160		
25	1	230		
40	1 1/2	310		
50	2	410		

* The FF (flange) type cannot be used in a vacuum environment.

Measured by NICHIAS

* Can be used at service temperatures of up to 150°C, but not for an extended period.

* For applications with temperatures of 100°C and above, please contact us.

* The above figures are actual measurements and are not nominal values.

Service temperature range

- 40~100°C

Joint type

Joint	A - F	See P22 - P23
Sanitary type	G, H	See P24
Flange type	KF, FF	See P25
Quick coupler type	QC, QCA	See P25

Dimensions

Nominal Size		Hose		Size availability		Hose weight (kg/m)
A	B	Inner dia. (mm)	Outer dia. (mm)	Min. (mm)	Max. (m)	
15	1/2	12.7	25.4	250	15	0.55
20	3/4	19.1	31.8	270	30	0.9
25	1	25.4	38.9	270	30	1.1
40	1 1/2	38.1	54.1	310	30	1.7
50	2	50.8	68.1	320	30	2.1

NAFLON™ PTFE Super Pliable hose

S Type

NAFLON PTFE Super Pliable hoses are molded into a spiral shape to offer higher resistance to flex fatigue than the conventional pliable hoses and have a small bending radius. The S type has straight sections at both ends.

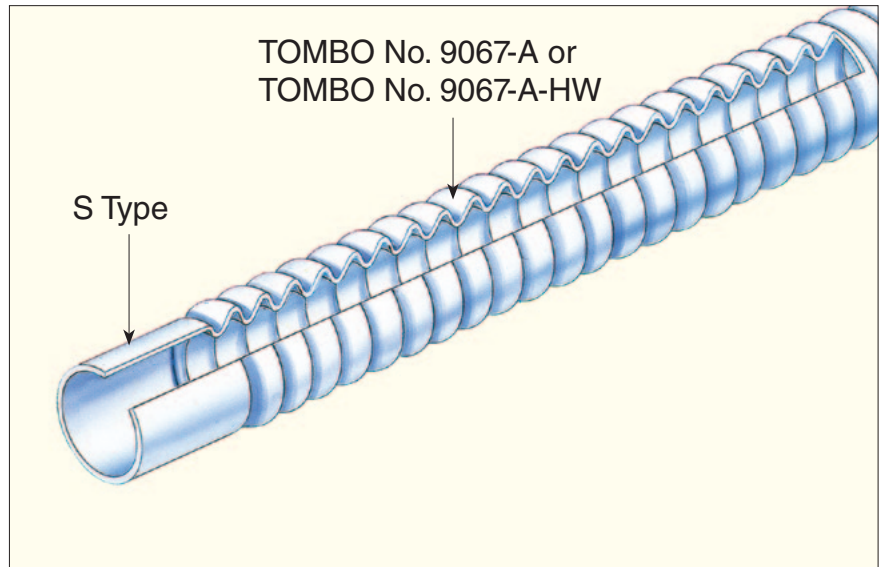
Two types are available: the standard TOMBO No. 9067-A and the pressure-resistant TOMBO No. 9067A-HW.

Applications

- Suitable for piping systems with a complicated layout with many bending sections, for absorbing vibration on sites subject to frequent vibration, and as feed or drain pipes for tank lorries with high vibrational amplitude.

Service temperature range

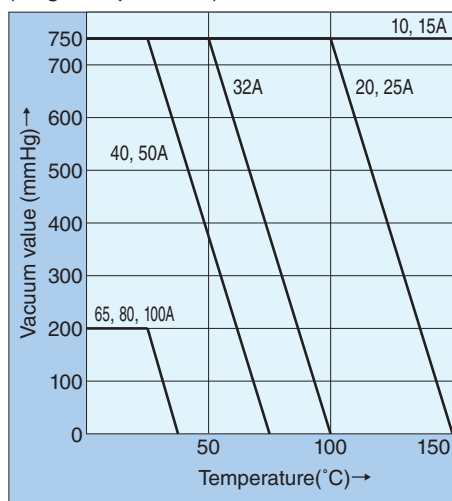
- 40~150℃



Max service pressure by size

●TOMBO No.9067-A-S

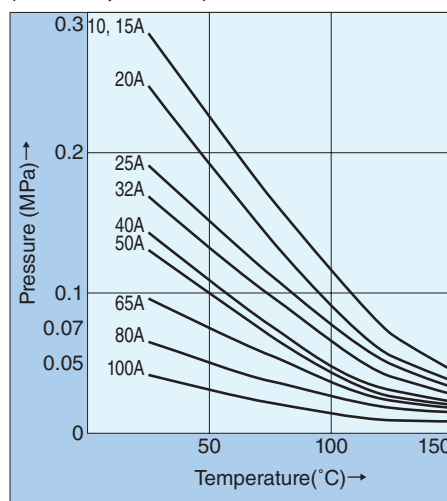
(Negative pressure)



Measured by NICHIAS

* The above figures are actual measurements and are not nominal values.

(Positive pressure)

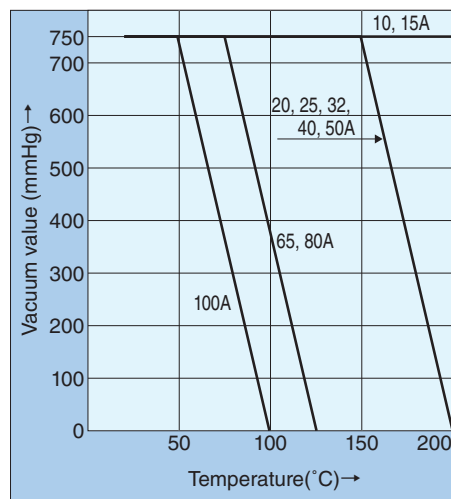


Measured by NICHIAS

* The above figures are actual measurements and are not nominal values.

●TOMBO No.9067-A-HW-S

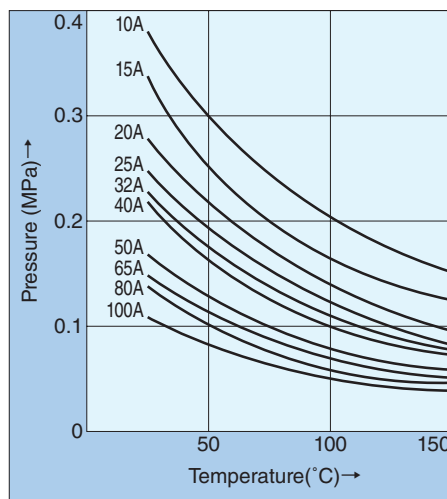
(Negative pressure)



Measured by NICHIAS

* The above figures are actual measurements and are not nominal values.

(Positive pressure)



Measured by NICHIAS

* The above figures are actual measurements and are not nominal values.

Specifications

Nominal size		Bending radius (mm)		
A	B	Existing NICHIAS products	TOMBO No. 9067-A	TOMBO No. 9067-A-HW
10	3/8	30	50	50
15	1/2	50	50	60
20	3/4	100	80	100
25	1	100	100	100
32	1 1/4	150	130	120
40	1 1/2	150	150	130
50	2	200	200	200
65	2 1/2	250	230	230
80	3	300	250	250
100	4	300	280	280

* The above figures are actual measurements and are not nominal values.

Measured by NICHIAS

Dimensions

Upper TOMBO No.9067-A-S
Lower TOMBO No.9067-A -HW-S

Nominal Size		Pliable hose			Sleeve		Size availability		Hose weight (g/m)
A	B	Inner dia. (mm)	Outer dia. (mm)	Thickness (mm)	Inner dia. (mm)	Length (mm)	Min. (mm)	Max. (m)	
10	3/8	8.5	14.5	1.0	10	50	150	28	90
		11.5	20.0	1.25	15	50	150	15	200
15	1/2	12.5	20.0	1.0	14	50	150	26	155
		14.0	22.5	1.25	17	50	150	15	225
20	3/4	19.0	27.5	1.0	20	50	150	17	210
		19.0	27.5	1.5	20	50	150	10	320
25	1	24.0	32.0	1.2	26	50	150	10	325
		25.0	35.5	1.5	26	50	150	10	435
32	1 1/4	29.0	38.0	1.2	33	50	150	10	375
		29.5	42.0	1.5	32	50	150	7.5	580
40	1 1/2	35.0	45.0	1.2	40	50	150	10	460
		34.5	47.5	1.5	38	50	150	6.5	670
50	2	46.0	58.0	1.2	52	50	150	6.5	640
		43.0	58.5	2.0	48	50	150	3.2	1015
65	2 1/2	59.0	73.5	1.5	66	50	150	4.2	1140
		58.5	73.0	2.0	64	50	150	2.2	1405
80	3	74.0	89.5	1.5	80	50	150	3.2	1340
		73.0	91.0	2.0	79	50	150	2.2	1765
100	4	90.0	113.0	1.5	95	50	150	3.5	1870
		91.0	113.0	2.0	92	50	150	2.6	2460

* For an explanation of NAFLON hose codes, see P30.

NAFLON™ PTFE Super Pliable hose

F Type
FV Type

The F Type hose of the NAFLON PTFE Super Pliable hoses has both of its ends flared and fitted with flanges, and is not reinforced with external braiding. Two types are available: the standard TOMBO No. 9067-A and the pressure-resistant TOMBO No. 9067A-HW. The FV Type is designed for vacuum environments: the straight sections at both ends are fitted with a fluoropolymer PTFE sleeve.

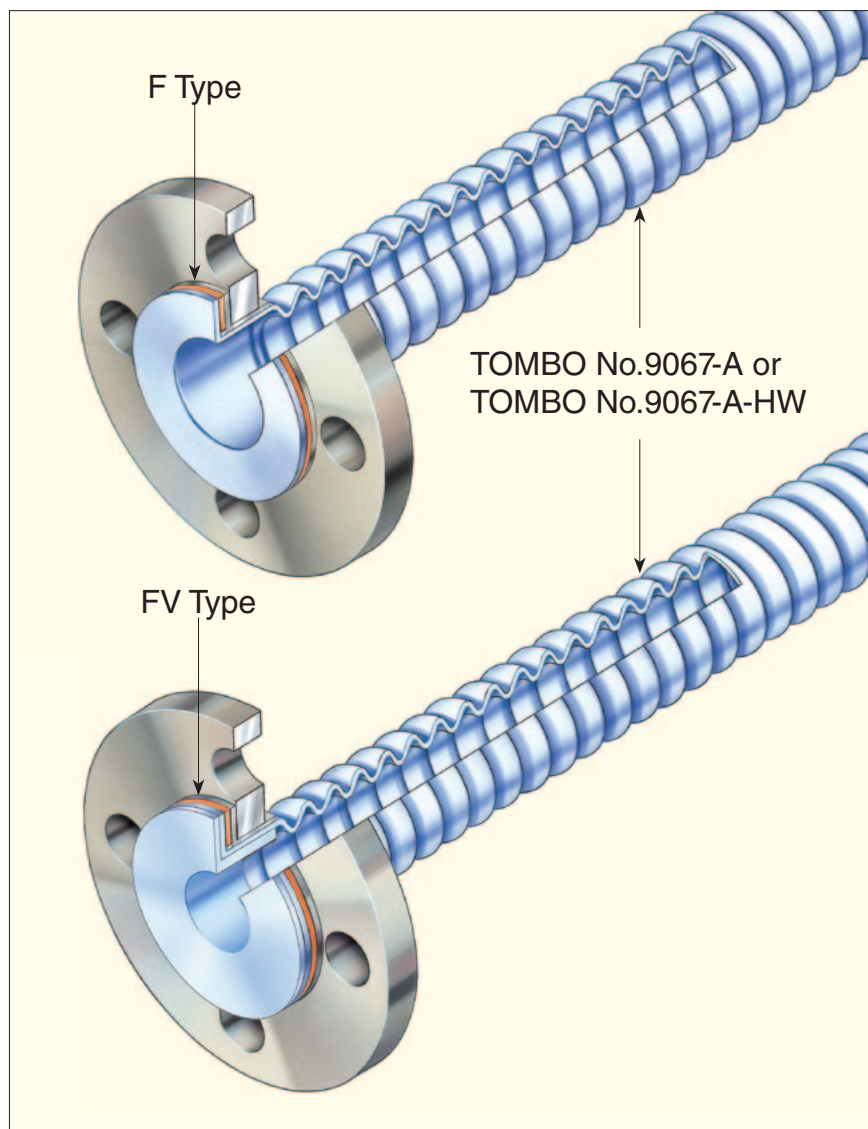
* For details about NAFLON PTFE super-pliable hoses, see P8 and P9.

Applications

● Suitable for pharmaceutical production lines and applications that demand flexibility.

Service temperature range

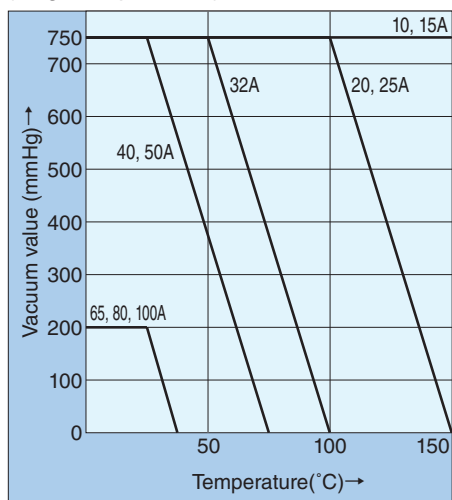
● -40~150°C



Max service pressure by size

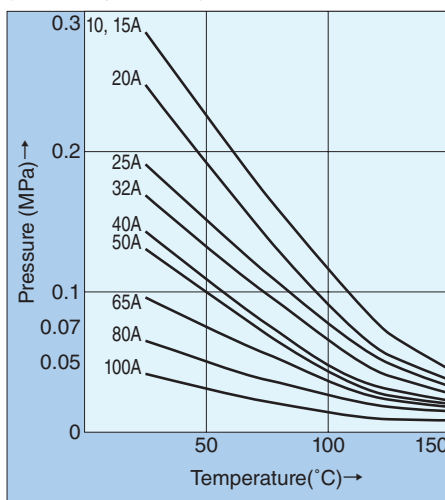
● TOMBO No.9067-A-F,FV(Only the FV Type is suitable for negative-pressure applications.)

(Negative-pressure)



Measured by NICHIAS

(Positive pressure)



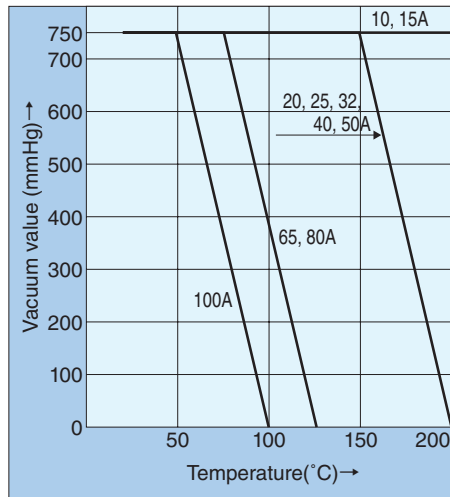
Measured by NICHIAS

* The above figures are actual measurements and are not nominal values.

* The above figures are actual measurements and are not nominal values.

●TOMBO No.9067-A-HW-F, FV(Only the FV Type is suitable for negative-pressure applications.)

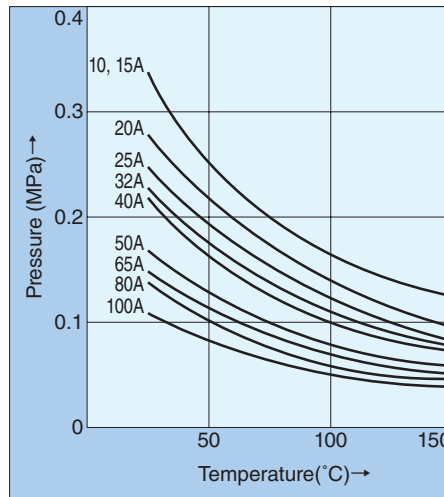
(Negative pressure)



Measured by NICHIAS

* The above figures are actual measurements and are not nominal values.

(Positive pressure)



Measured by NICHIAS

* The above figures are actual measurements and are not nominal values.

Specifications

Nominal size		Bending radius (mm)		
A	B	Existing NICHIAS products	TOMBO No.9067-A-F/FV	TOMBO No.9067-A-HW-F/FV
10	$\frac{3}{8}$	30	50	60
15	$\frac{1}{2}$	50	50	60
20	$\frac{3}{4}$	100	80	100
25	1	100	100	100
32	$1\frac{1}{4}$	150	130	120
40	$1\frac{1}{2}$	150	150	130
50	2	200	200	200
65	$2\frac{1}{2}$	250	230	230
80	3	250	250	250
100	4	300	280	280

* The above figures are actual measurements and are not nominal values.

Measured by NICHIAS

Dimensions

Upper TOMBO No.9067-A-F/FV
Lower TOMBO No.9067-A-HW-F/FV

Nominal Size		Pliable hose			Size availability		Hose weight (g/m)	Metal connector weight (g) F/FV
A	B	Inner dia. (mm)	Outer dia. (mm)	Thickness (mm)	Min. (mm)	Max. (m)		
10	$\frac{3}{8}$	12.5	20.0	1.0	250	10	155	1160/1170
		14.0	22.5	1.25	150	15	225	1060/1085
15	$\frac{1}{2}$	12.5	20.0	1.0	250	10	155	1330/1330
		14.0	22.5	1.25	150	15	225	1170/1195
20	$\frac{3}{4}$	19.0	27.5	1.0	250	10	210	1640/1660
		19.0	27.5	1.5	150	10	320	1475/1505
25	1	24.0	32.0	1.2	250	10	325	2590/2610
		25.0	35.5	1.5	150	10	435	2280/2320
32	$1\frac{1}{4}$	29.0	38.0	1.2	250	10	375	3380/3410
		29.5	42.0	1.5	150	7.5	580	3060/3130
40	$1\frac{1}{2}$	35.0	45.0	1.2	250	10	460	3520/3570
		34.5	47.5	1.5	150	6.5	670	3110/3190
50	2	46.0	58.0	1.2	250	6.5	640	4360/4440
		43.0	58.5	2.0	150	3.2	1015	3820/3930
65	$2\frac{1}{2}$	59.0	73.5	1.5	250	4.2	1140	6120/6270
		58.5	73.0	2.0	150	2.2	1405	5250/5550
80	3	74.0	89.5	1.5	250	3.2	1340	6190/6420
		73.0	91.0	2.0	150	2.2	1765	5270/5630
100	4	90.0	113.0	1.5	250	3.5	1540	7030/7360
		91.0	113.0	2.0	150	2.6	2460	5580/6130

* For an explanation of NAFLON hose codes, see P30. * For flange dimensions, see P24. * There is no difference in hose dimensions between 10A and 15A.

NAFLON™ PTFE Super Pliable hose

FB Type
FBV Type

The FB type consists of a NAFLON PTFE Super Pliable hose reinforced with external wire braiding. Two types are available: the standard TOMBO No. 9067-A and the pressure-resistant TOMBO No. 9067-A-HW. The FBV type is resistant to vacuum, with its straight sections consisting of those from the TOMBO No. 9067A-HW-FB but fitted with fluoropolymer PTFE sleeves.

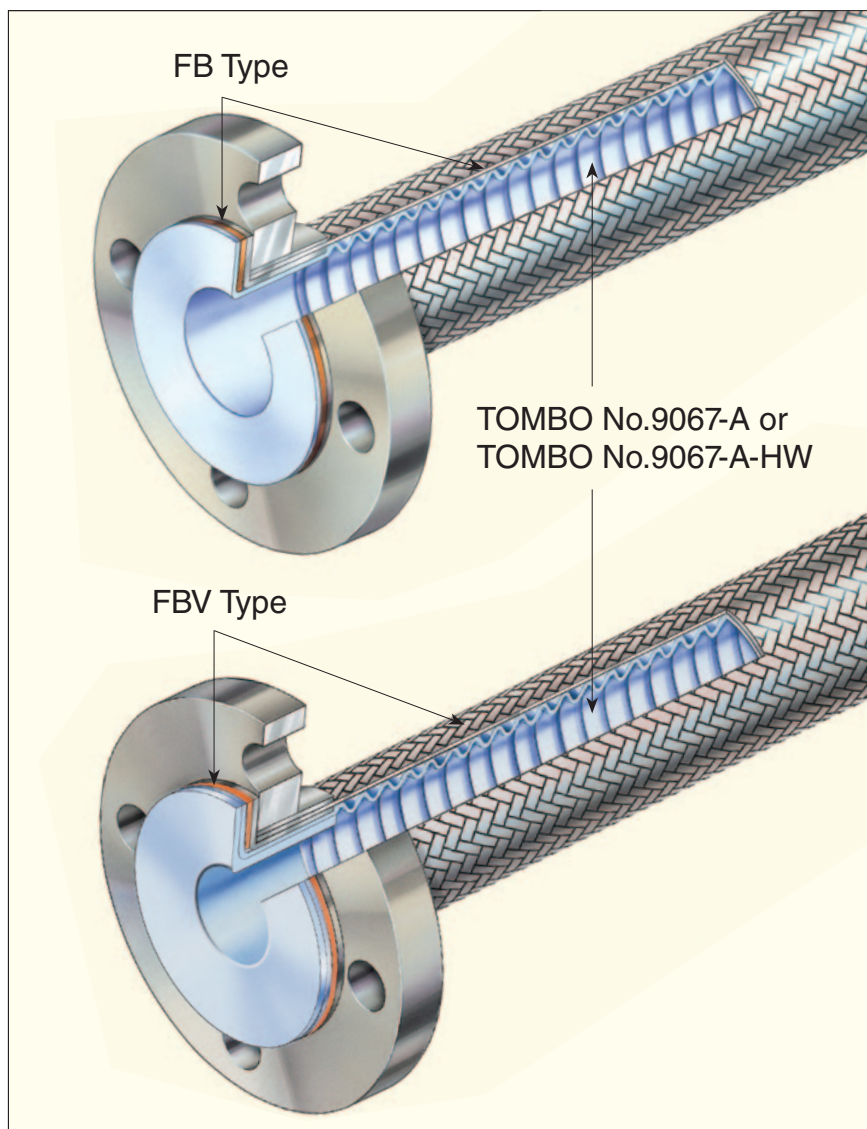
* For NAFLON PTFE super pliable hoses, see P8 - P9.

Applications

● Suitable for transporting high-temperature, high-pressure gas, steam and oil. Suitable as an insertion tube for highly viscous fluids.

Service temperature range

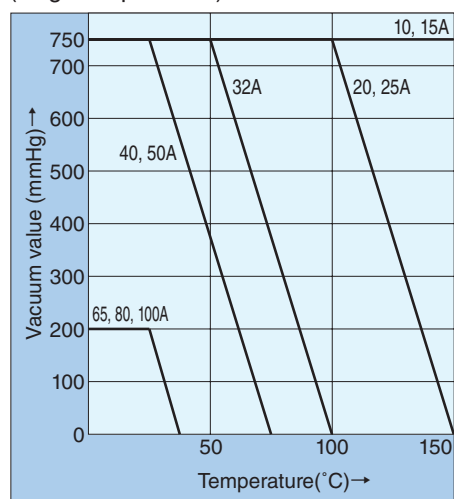
● -40~150°C



Max service pressure by size

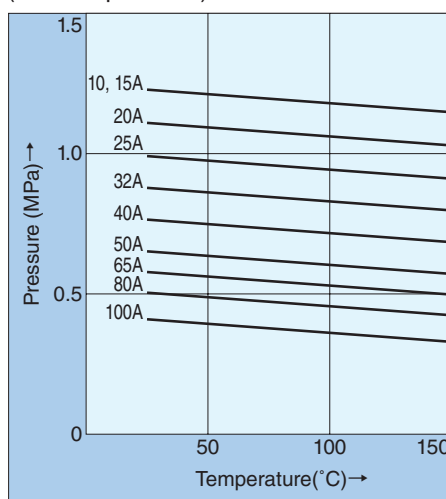
● TOMBO No.9067-A-FB,FBV(Only the FBV Type is suitable for negative-pressure applications.)

(Negative-pressure)



Measured by NICHIAS

(Positive pressure)



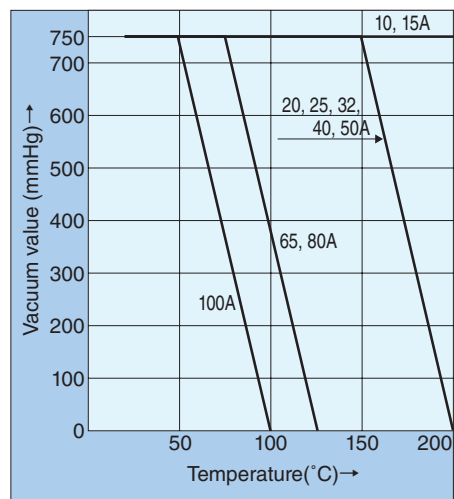
Measured by NICHIAS

* The above figures are actual measurements and are not nominal values.

* The above figures are actual measurements and are not nominal values.

●TOMBO No.9067-A-HW-FB, FBV(Only the FBV Type is suitable for negative-pressure applications.)

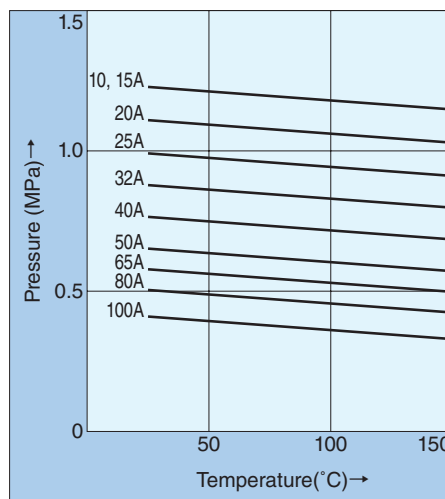
(Negative pressure)



Measured by NICHIAS

* The above figures are actual measurements and are not nominal values.

(Positive pressure)



Measured by NICHIAS

* The above figures are actual measurements and are not nominal values.

Specifications

Nominal size		Bending radius (mm)		
A	B	Existing NICHIAS products	TOMBO No.9067-A-FB/FBV	TOMBO No.9067-A-HW-FB/FBV
10	$\frac{3}{8}$	70	50	50
15	$\frac{1}{2}$	100	50	60
20	$\frac{3}{4}$	150	80	100
25	1	150	100	100
32	$1\frac{1}{4}$	200	130	120
40	$1\frac{1}{2}$	200	150	130
50	2	250	200	200
65	$2\frac{1}{2}$	300	230	230
80	3	300	250	250
100	4	400	280	280

* The above figures are actual measurements and are not nominal values.

Measured by NICHIAS

Dimensions

Upper TOMBO No.9067-A-FB/FBV
Lower TOMBO No.9067-A-HW-FB/FBV

Nominal Size		Pliable hose			Size availability		Hose weight (g/m)	Metal connector weight (g) FB/FBV
A	B	Inner dia. (mm)	Outer dia. (mm)	Thickness (mm)	Min. (mm)	Max. (m)		
10	$\frac{3}{8}$	12.5	22.0	1.0	250	10	330	1250/1260
		11.5	22.0	1.25	250	10	375	1250/1285
15	$\frac{1}{2}$	12.5	22.0	1.0	250	10	330	1400/1420
		14.0	24.5	1.25	250	10	425	1410/1445
20	$\frac{3}{4}$	19.0	29.5	1.0	250	10	440	1720/1740
		19.0	29.5	1.5	250	10	560	1720/1760
25	1	24.0	34.0	1.2	250	10	600	2780/2800
		25.0	37.5	1.5	250	10	845	2780/2830
32	$1\frac{1}{4}$	29.0	40.0	1.2	250	10	815	3530/3560
		29.5	44.0	1.5	250	7.5	1060	3530/3610
40	$1\frac{1}{2}$	35.0	47.0	1.2	250	10	970	3770/3820
		34.5	49.5	1.5	250	6.5	1210	3780/3900
50	2	46.0	60.0	1.2	250	6.5	1290	4610/4690
		43.0	60.5	2.0	250	3.2	1665	4610/4820
65	$2\frac{1}{2}$	59.0	76.0	1.5	250	4.2	2180	6680/6830
		58.5	75.5	2.0	250	2.2	2465	6680/6980
80	3	74.0	92.0	1.5	250	3.2	2600	7810/7040
		73.0	93.5	2.0	250	2.2	3045	6810/7300
100	4	90.0	115.0	1.5	250	3.5	3120	8020/8350
		91.0	115.5	2.0	250	2.6	4040	8020/8750

* For an explanation of NAFLON hose codes, see P30.

* For flange dimensions, see P24.

NAFLON™ PTFE Super Pliable hose

K Type

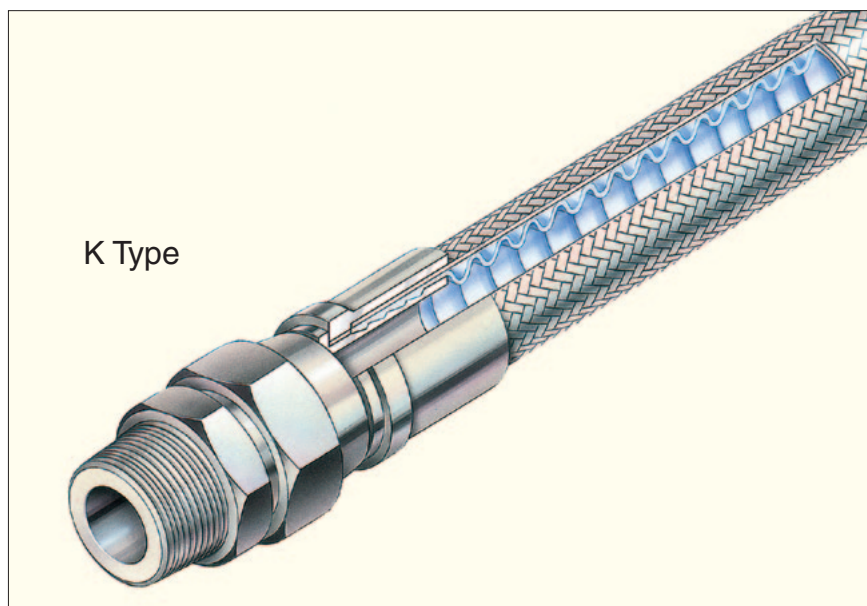
The K type consists of an FB type hose with both ends not flared but fitted with metal connectors. There are eight types depending on the types of metal connectors used: A - F types, and G and H types for sanitary use.

Applications

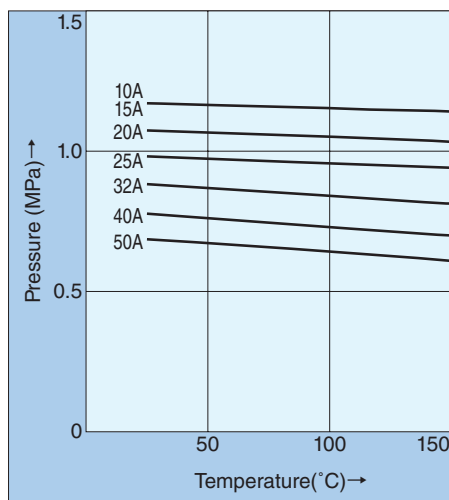
- Suitable for piping systems with a complicated layout with many bending sections, for absorbing vibration on sites subject to frequent vibration, and as feed or drain pipes for tank lorries with high vibrational amplitude.

Service temperature range

- 40~150℃



Max service pressure by size (K type)



Measured by NICHIAS

* The above figures are actual measurements and are not nominal values.

Specifications

Nominal size		Minimum bending radius (mm)
A	B	
10	3/8	30
15	1/2	50
20	3/4	60
25	1	80
32	1 1/4	130
40	1 1/2	150
50	2	200

Measured by NICHIAS

* The above figures are actual measurements and are not nominal values.

Dimensions

Nominal Size		Hose			Size availability	Hose weight (g/m)
A	B	Inner dia. (mm)	Outer dia. (mm)	Thickness (mm)	Max. (m)	
10	3/8	8.5	16	1.0	10	215
15	1/2	12.5	22	1.0	10	330
20	3/4	15	25	1.0	10	395
25	1	19	29.5	1.0	10	440
32	1 1/4	29	40	1.2	10	815
40	1 1/2	35	47	1.2	10	970
50	2	46	60	1.2	6.5	1290

* For an explanation of NAFLON hose codes, see P30.

* There are eight joint types from A to H. For details, see P22 and P24.

* For sanitary gaskets, see P29.

* For possibilities of sizes larger than 50A, please contact us.

NAFLON™ Liquid Chlorine hose

CP Type
CPL Type

NAFLON Liquid Chlorine hoses consist of a NAFLON PTFE Super Pliable hose externally covered in fluoropolymer PVDF braiding and fitted with reinforcement springs.

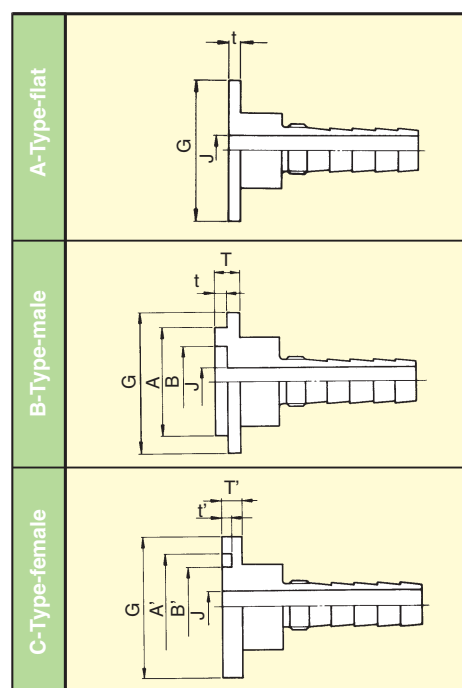
The hose offers long-term stable performance for transporting corrosive fluids such as liquid chlorine without allowing permeation and resulting corrosion of the reinforcement braiding. Even in an environment that would normally cause metal braiding to rust, the external PVDF fiber coating protects the hose inside.

In the case of CPL type, an electroconductive PTFE liner has been inserted into a CP type hose to prevent the buildup of static charge.

Applications

- Suitable for transporting chemicals such as chlorine and bromine that can permeate and corrode reinforcement braiding.

Flange collar types



Dimensions

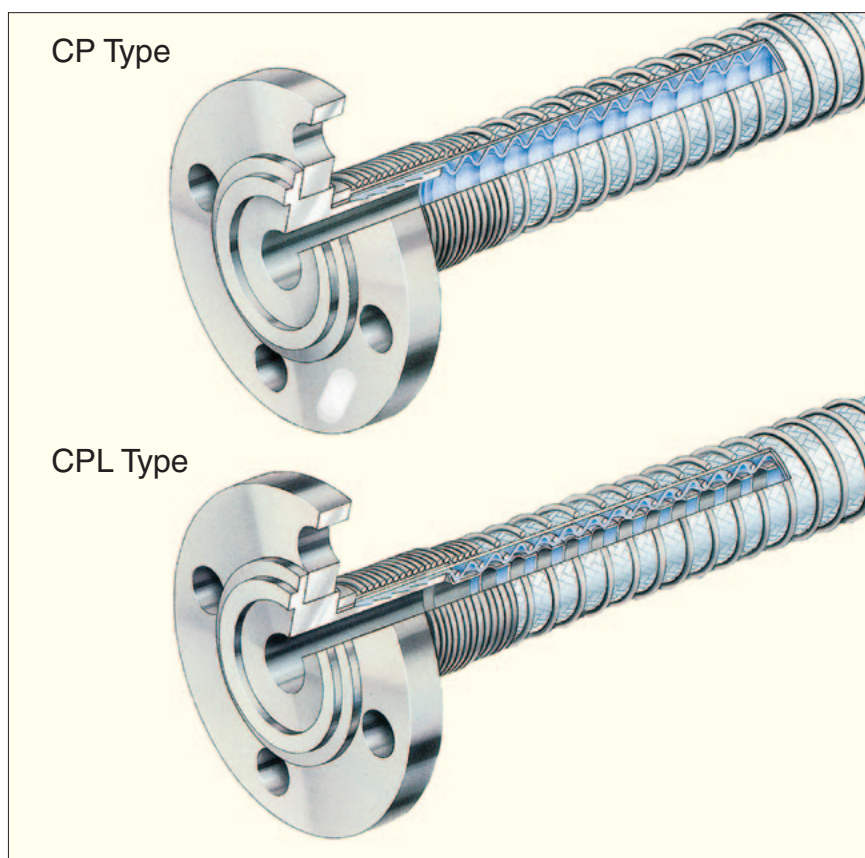
Nominal Size		Pliable hose		Size availability		Hose weight (g/m)		Metal connector weight (g)
A	B	Inner dia. (mm)	Outer dia. (mm)	Min. (mm)	Max. (m)	TOMBO No. 9067-A-HW-CP	TOMBO No. 9067-A-HW-CPL	
20	3/4	19.0	32.5	500	10	795	955	2850
25	1	25.0	40.5	500	10	915	1156	4350
32	1 1/4	29.5	47.0	500	7.5	1120	1405	5770
40	1 1/2	34.5	52.5	500	6.5	1395	1725	6580
50	2	43.0	63.5	500	3.2	1835	2275	8380

*For an explanation of NAFLON hose codes, see P30.

*Please inform us of the flange collar shape.

*Service range is -40 up to +50°C.

*We can also manufacture these products in sizes other than the dimensions shown above. Please consult us about your needs.



Specifications

Nominal size		Recommended pressure for continuous use MPa {kgf/cm²}	Minimum bending radius (mm)
A	B		
20	3/4	1.96 {20}	200
25	1	1.96 {20}	250
32	1 1/4	1.96 {20}	300
40	1 1/2	1.96 {20}	350
50	2	1.47 {15}	400

* The above figures are actual measurements and are not nominal values.

Measured by NICHIAS

Dimensions of metal connectors

Nominal size		Metal connectors									
A	B	G	T	T'	t	t'	A	A'	B	B'	J
20	3/4	58	11	9	5	6	50	51	38	37	17
25	1	70	11	9	5	6	60	61	45	44	23
32	1 1/4	80	11	10	5	6	70	71	55	54	30
40	1 1/2	85	12	11	5	6	75	76	60	59	36
50	2	100	12	11	5	6	90	91	70	69	46

NAFLON™ PFA pliable hose

S Type

E Type

There are two types of NAFLON PFA pliable fluoropolymer hoses: the S Type which has straight ends and the E Type which has flared ends.

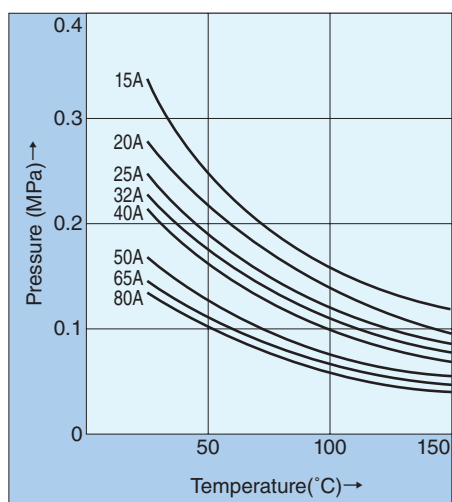
Applications

- Suitable for applications that demand flexibility and visibility of fluids.

Service temperature range

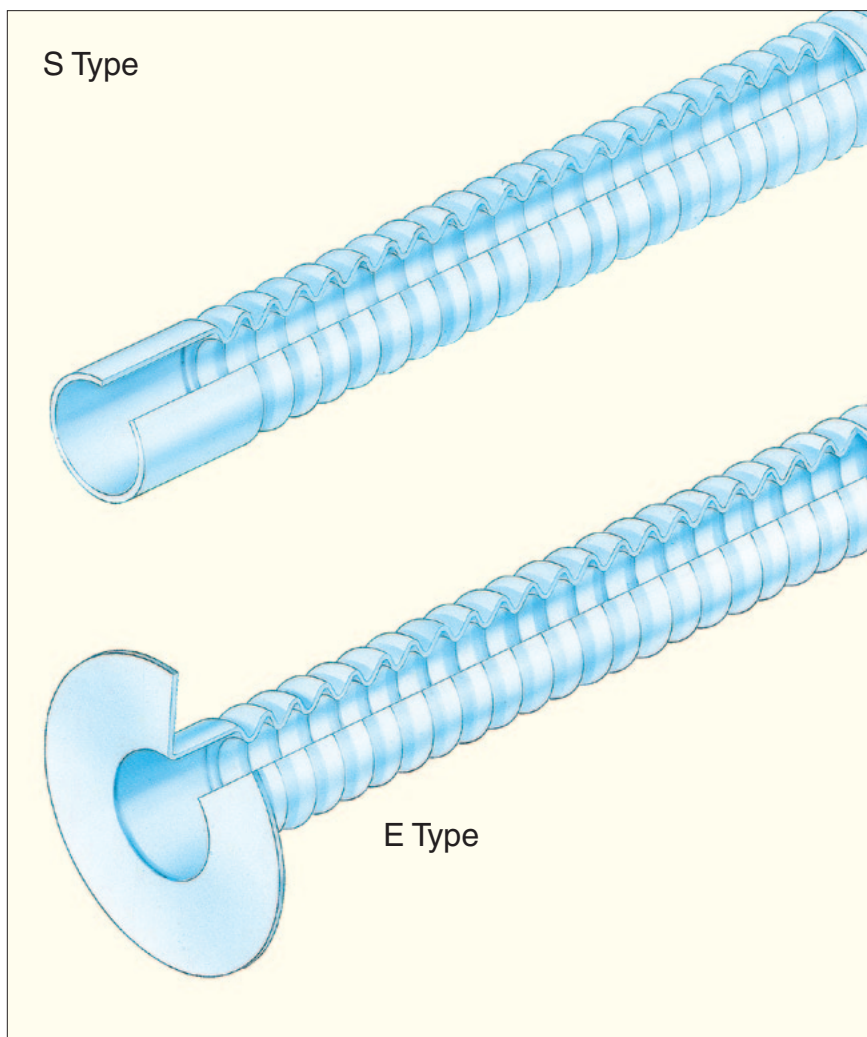
- -40~150°C

Max service pressure by size (S,E type)



Measured by NICHIAS

* The above figures are actual measurements and are not nominal values.



Dimensions

Nominal Size		Hose		Outer dia. of flare (mm)	Sleeve			Size availability		Hose weight (g/m)
A	B	Inner dia. (mm)	Outer dia. (mm)		Inner dia. (mm)	Length (mm)		Min. (mm)	Max. (m)	
						-S	-E			
15	1/2	15	23.5	50	22	50	25	150	6	235
20	3/4	18	27	55	25	50	30	150	6	295
25	1	26	35	60	30	50	30	150	6	370
32	1 1/4	31	43	70	39	50	30	150	6	540
40	1 1/2	37	49	80	46	50	30	150	6	630
50	2	48	62	95	58	50	30	150	6	760
65	2 1/2	64	77	115	74	50	35	150	6	1250
80	3	75	93	125	87	50	35	150	6	1490

* For an explanation of NAFLON hose codes, see P30.

NAFLON™ PFA pliable hose

F Type
FV Type

NAFLON PFA pliable hoses - F Type consist of a fluoropolymer PFA pliable hose both ends of which are flared and flanges have already been fitted. The FV Type is designed for vacuum environments: the straight sections at both ends are fitted with a fluoropolymer PTFE sleeve.

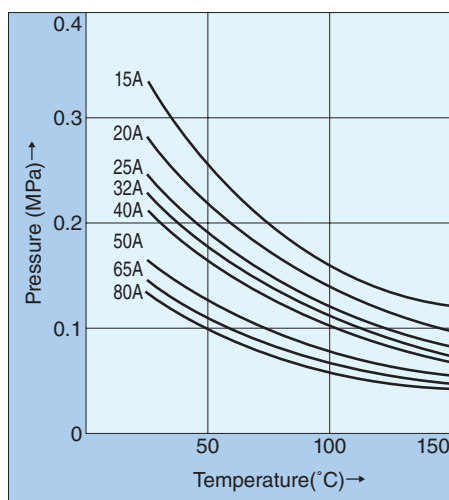
Applications

● Suitable for applications that demand flexible mounting and the visibility of fluids.

Service temperature range

● -40~150°C

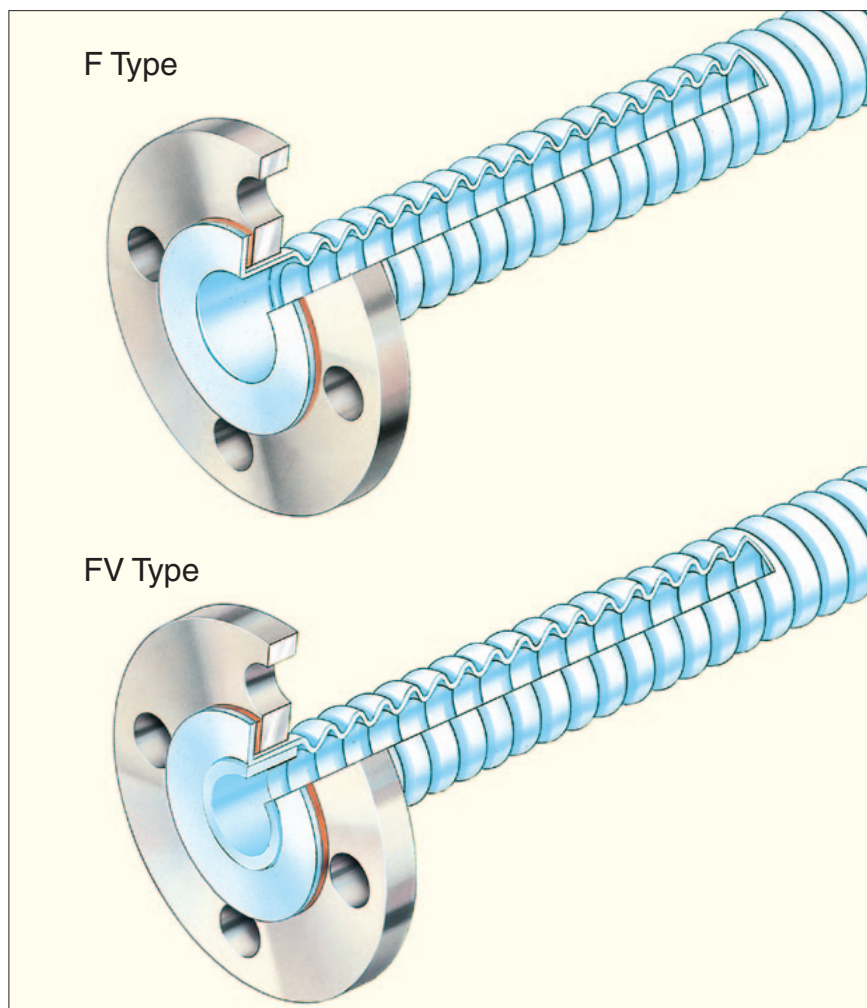
Max service pressure by size (F,FV type)



Measured by NICHIAS

* Please contact us for any inquiries about the hose's resistance to vacuum.

* The above figures are actual measurements and are not nominal values.



Specifications

Nominal size		Minimum bending radius (mm)
A	B	TOMBO No.9068-F, FV
15	1/2	70
20	3/4	100
25	1	120
32	1 1/4	170
40	1 1/2	220
50	2	270
65	2 1/2	320
80	3	370

Measured by NICHIAS

* These figures are actual measurements and are not nominal values.

Dimensions

Nominal Size		Pliable hose		Inner dia. of mouth (mm)	Size availability		Hose weight (g/m)
A	B	Inner dia. (mm)	Outer dia. (mm)		Min. (mm)	Max. (m)	
15	1/2	15	23.5	22	150	6	235
20	3/4	18	27	25	150	6	295
25	1	26	35	30	150	6	370
32	1 1/4	31	43	39	150	6	540
40	1 1/2	37	49	46	150	6	630
50	2	48	62	58	150	6	760
65	2 1/2	64	77	74	200	6	1250
80	3	75	93	87	200	6	1490

* For an explanation of NAFLON hose codes, see P30. * For flange dimensions, see P24.

NAFLON™ PFA pliable hose

FB Type
FBV Type

NAFLON PFA pliable hoses - FB Type consist of a TOMBO No. 9068-F reinforced with external wire braiding. The FBV Type is designed for vacuum environments in both positive and negative pressures.

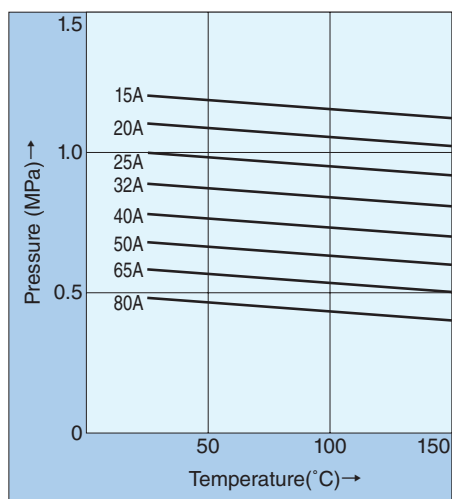
Applications

● Suitable for transporting high-temperature, high-pressure gas, steam and oil. Suitable as an insertion tube for highly viscous fluids.

Service temperature range

● -40~150℃

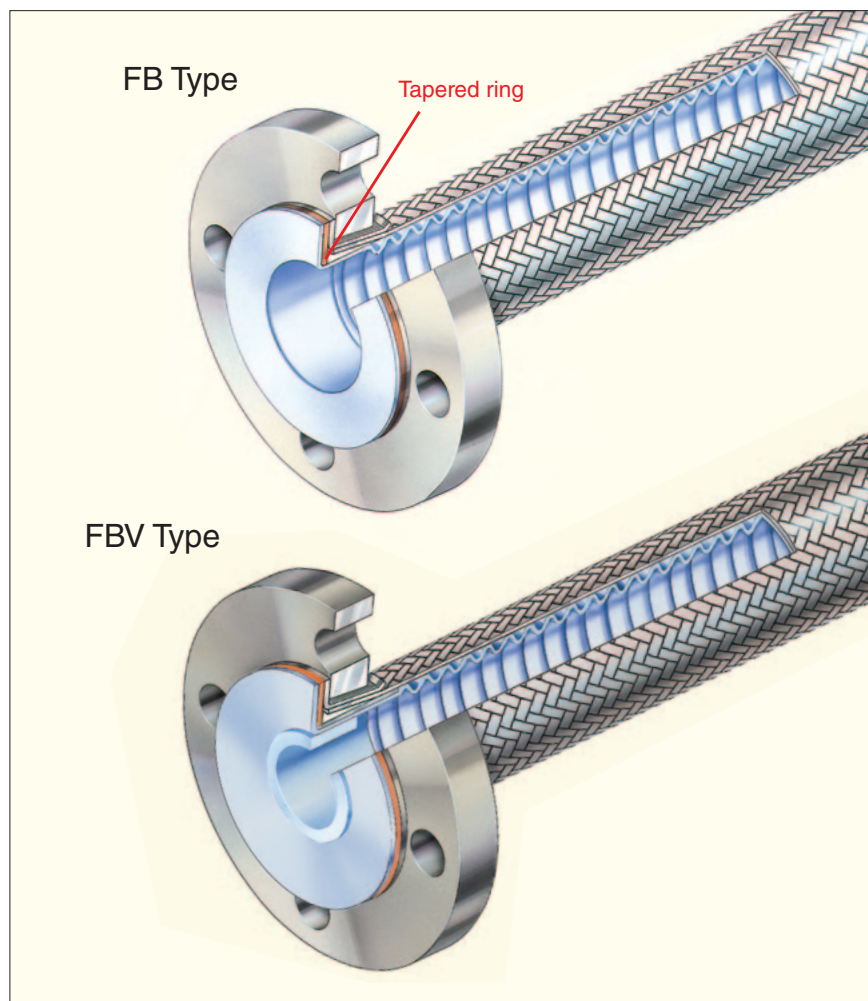
Max service pressure by size (FB,FBV type)



Measured by NICHIAS

* Please contact us for any inquiries about the hose's resistance to vacuum.

* The above figures are actual measurements and are not nominal values.



Specifications

Nominal size		Minimum bending radius (mm)
A	B	TOMBO No.9068-FB, FBV
15	1/2	100
20	3/4	130
25	1	150
32	1 1/4	200
40	1 1/2	250
50	2	300
65	2 1/2	350
80	3	400

Measured by NICHIAS

* These figures are actual measurements and are not nominal values.

Dimensions

Nominal Size		Pliable hose		Inner dia. of mouth (mm)	Size availability		Hose weight (g/m)
A	B	Inner dia. (mm)	Outer dia. (mm)		Min. (mm)	Max. (m)	
15	1/2	15	25	21	150	6	525
20	3/4	18	29	24	150	6	635
25	1	26	37	29	150	6	950
32	1 1/4	31	45	39	200	6	1250
40	1 1/2	37	51	46	200	6	1430
50	2	48	64	58	200	6	1860
65	2 1/2	64	80	72	250	6	2700
80	3	75	95	86	250	6	3190

* For an explanation of NAFLON hose codes, see P30. * For flange dimensions, see P24.

NAFLON™ PFA pliable hose

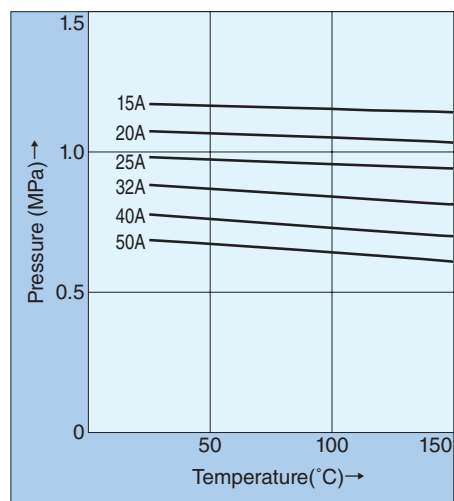
K Type

NAFLON PFA pliable hoses - K Type consist of an FB type hose with both ends not flared but fitted with metal connectors. There are eight types depending on the types of metal connectors used: A - F types, and G and H types for sanitary use.

Applications

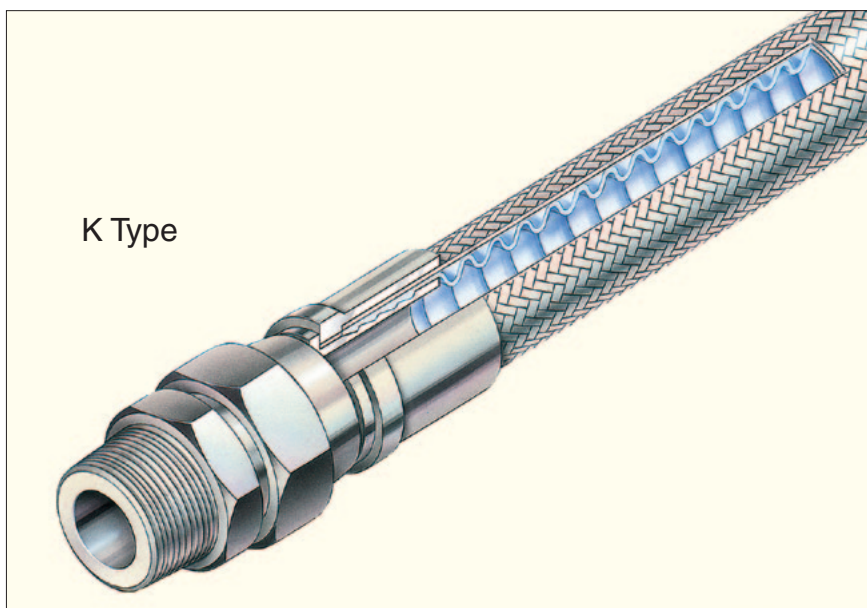
- Suitable for piping systems with a complicated layout with many bending sections, for absorbing vibration on sites subject to frequent vibration, and as feed or drain pipes for tank lorries with high vibrational amplitude.

Max service pressure by size (K type)



Measured by NICHIAS

* The above figures are actual measurements and are not nominal values.



Specifications

Nominal size		Minimum bending radius (mm)
A	B	
15	1/2	100
20	3/4	130
25	1	150
32	1 1/4	200
40	1 1/2	250
50	2	300

Measured by NICHIAS

* The above figures are actual measurements and are not nominal values.

Service temperature range

- 40~150°C

Dimensions

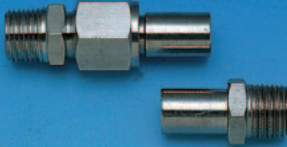
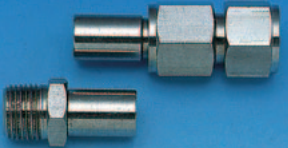
Nominal Size		Hose		Joint internal diameter Min. (mm)	Size availability							Hose weight (g/m)
A	B	Inner dia. (mm)	Outer dia. (mm)		Min. (mm)						Max. (m)	
					A	B	C	D	E	F		
15	½	15	25	12	170	270	310	310	270	300	6	525
20	¾	18	29	17	170	270	310	310	270	300	6	635
25	1	26	37	23	240	300	330	330	290	320	6	950
32	1¼	31	45	30	260	320	370	360	320	360	6	1250
40	1½	37	52	36	380	420	470	460	420	460	6	1430
50	2	48	64	46	410	470	520	510	460	500	6	1860

* For an explanation of NAFLON hose codes, see P30.

* There are eight joint types: A - F types, G type and H type. For details, see P22 and P24.

* For sanitary gaskets, see P29.

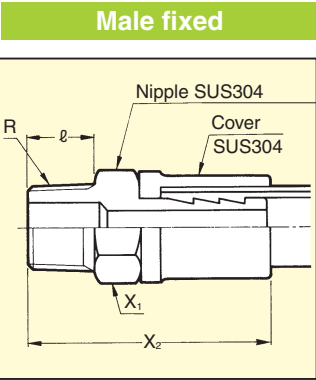
Joint Types

Type	Hose side joint	Partner joint type
A	Male fixed + Male fixed	For taper female screw fittings on both pipe sides; one side (or both sides) must be a union (rotatable) type.
		
B	Male union + Male fixed	For taper female screw fittings on both pipe sides; both sides are fixed type joints (union type also acceptable).
		
C	Male union + Male union	For taper female screw fittings on both pipe sides; both sides are fixed type joints (union type also acceptable).
		
D	Male union + Female union	For taper female screw fitting on one pipe side and taper male screw fitting on the other side; both are fixed type joints (or union type).
		
E	Female union + Male fixed	For taper female screw fitting on one pipe side and taper male screw fitting on the other side; both are fixed type joints (or union type).
		
F	Female union + Female union	For taper female screw fittings on both pipe sides; both sides are fixed type joints (union type also acceptable).
		

*For dimensions of various joints , see P23.



Joint Dimensions



● TOMBO No.9066-S

Nominal size		Piping connection joint					
A	B	R	ℓ	X ₁	X ₂		
6	1/4	1/4	12	14	37		
10	3/8	3/8	13	19	44		
15	1/2	1/2	16	23	48		
20	3/4	3/4	19	29	56		
25	1	1	22	35	65		

● TOMBO No.9066-U

Nominal size		Piping connection joint					
A	B	R	ℓ	X ₁	X ₂		
6	1/4	1/4	12	14	47		
10	3/8	3/8	13	19	55		
15	1/2	1/2	16	23	59		
20	3/4	3/4	19	29	69		
25	1	1	22	35	79		

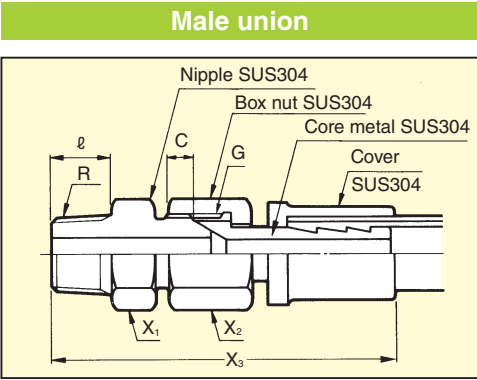
● TOMBO No.9066-R

Nominal size		Piping connection joint					
A	B	R	ℓ	X ₁	X ₂		
15	1/2	1/2	16	23	60		
20	3/4	3/4	19	29	70		
25	1	1	22	35	75		

● TOMBO No.9067-A-K
TOMBO No.9068-K

Nominal size		Piping connection joint					
A	B	R	ℓ	X ₁	X ₂		
10 ^{NOTE1}	3/8	3/8	13	21	45		
15	1/2	1/2	16	26	48		
20	3/4	3/4	19	29	57		
25	1	1	22	35	67		

NOTE1: Size 10A is only available for No. 9067-K.



● TOMBO No.9066-S

Nominal size		Piping connection joint							
A	B	R	ℓ	X ₁	X ₂	X ₃	G	C	
6	1/4	1/4	12	14	17	59	1/4	8	
10	3/8	3/8	13	19	21	70	3/8	9	
15	1/2	1/2	16	23	26	78	1/2	12	
20	3/4	3/4	19	29	32	89	3/4	14	
25	1	1	22	35	41	100	1	15	

● TOMBO No.9066-U

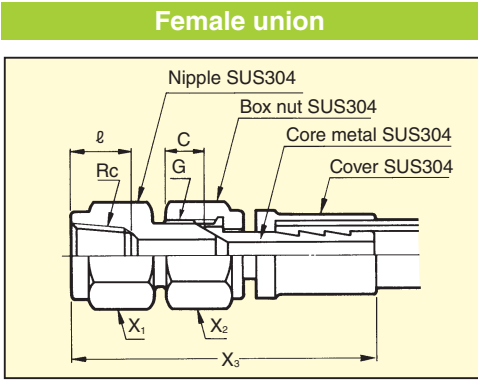
Nominal size		Piping connection joint							
A	B	R	ℓ	X ₁	X ₂	X ₃	G	C	
6	1/4	1/4	12	14	17	59	1/4	8	
10	3/8	3/8	13	19	21	80	3/8	9	
15	1/2	1/2	16	23	26	88	1/2	12	
20	3/4	3/4	19	29	32	101	3/4	14	
25	1	1	22	35	41	113	1	15	

● TOMBO No.9066-R

Nominal size		Piping connection joint							
A	B	R	ℓ	X ₁	X ₂	X ₃	G	C	
15	1/2	1/2	16	23	26	88	1/2	12	
20	3/4	3/4	19	29	32	102	3/4	14	
25	1	1	22	35	41	110	1	15	

● TOMBO No.9067-A-K
TOMBO No.9068-K

Nominal size		Piping connection joint							
A	B	R	ℓ	X ₁	X ₂	X ₃	G	C	
15	1/2	1/2	16	23	26	86	1/2	12	
20	3/4	3/4	19	29	32	93	3/4	14	
25	1	1	22	35	41	105	1	15	



● TOMBO No.9066-S

Nominal size		Piping connection joint							
A	B	R	ℓ	X ₁	X ₂	X ₃	G	C	
6	1/4	1/4	12	17	17	58	1/4	8	
10	3/8	3/8	13	21	21	68	3/8	9	
15	1/2	1/2	16	26	26	75	1/2	12	
20	3/4	3/4	19	32	32	86	3/4	14	
25	1	1	22	41	41	95	1	15	

● TOMBO No.9066-U

Nominal size		Piping connection joint							
A	B	R	ℓ	X ₁	X ₂	X ₃	G	C	
6	1/4	1/4	12	17	17	58	1/4	8	
10	3/8	3/8	13	21	21	78	3/8	9	
15	1/2	1/2	16	26	26	85	1/2	12	
20	3/4	3/4	19	32	32	98	3/4	14	
25	1	1	22	41	41	108	1	15	

● TOMBO No.9066-R

Nominal size		Piping connection joint							
A	B	R	ℓ	X ₁	X ₂	X ₃	G	C	
15	1/2	1/2	16	26	26	85	1/2	12	
20	3/4	3/4	19	32	32	99	3/4	14	
25	1	1	22	41	41	105	1	15	

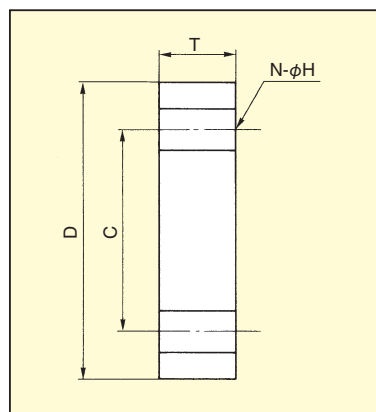
● TOMBO No.9067-A-K
TOMBO No.9068-K

Nominal size		Piping connection joint							
A	B	R	ℓ	X ₁	X ₂	X ₃	G	C	
15	1/2	1/2	16	26	26	83	1/2	12	
20	3/4	3/4	19	32	32	90	3/4	14	
25	1	1	22	41	41	100	1	15	

Joint Material

* The joints use SUS304 material as standard.
* Please contact us for the possibility of other materials.

JIS10K flanges/JIS20K flanges dimension chart



Nominal Dimensions		JIS 10K flange			
A	B	D	C	T	N-φH
15	1/2	95	70	12	4-15
20	3/4	100	75	14	4-15
25	1	125	90	14	4-19
32	1 1/4	135	100	16	4-19
40	1 1/2	140	105	16	4-19
50	2	155	120	16	4-19
65	2 1/2	175	140	18	4-19
80	3	185	150	18	8-19
100	4	210	175	18	8-19

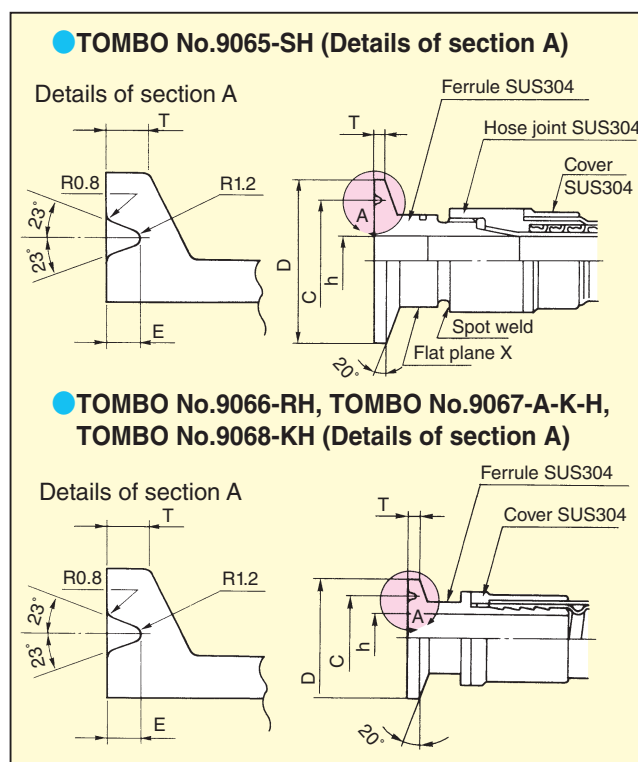
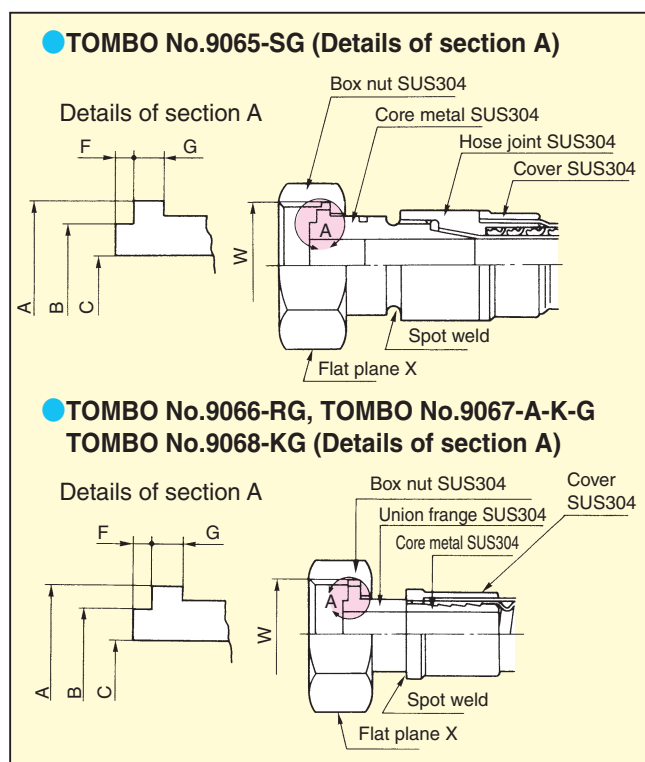
Nominal Dimensions		JIS 20K flange			
A	B	D	C	T	N-H
15	1/2	95	70	14	4-15
20	3/4	100	75	16	4-15
25	1	125	90	16	4-19
32	1 1/4	135	100	18	4-19
40	1 1/2	140	105	18	4-19
50	2	155	120	18	8-19

* Only the TOMBO No. 9067-A-HW-CP and CPL flanges are manufactured to the JIS 20K flange standards.

* The above dimensions are manufactured to the JIS 10K flange standards.

* Requests can be accommodated for ANSI and DIN sizes as well as for PP and PVC materials.

Joint dimensions of NAFLON™ sanitary flexible hoses



Nominal size		Piping connection joint						
A	B	W	A	B	C	F	G	X
25	1	38-8C *	33.8	29.2	23.0	3	4	45
40	1 1/2	51.5-8C *	47.0	42.7	35.7	3	4	56
50	2	65-8C *	60.5	56.2	47.8	3	4	76
65	2 1/2	78.5-8C *	74.0	69.9	59.5	3	4	91
80	3	92-8C *	87.5	82.6	72.3	3	4	106
100	4	119-8C *	114.1	108.7	97.6	3	4	138

* Convolution

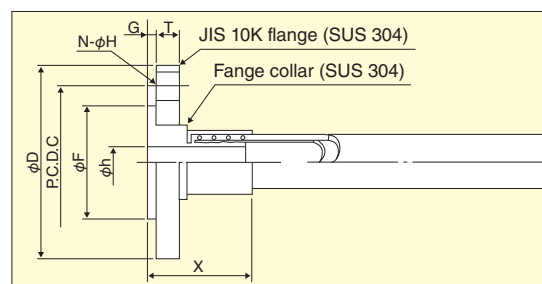
Nominal size		Piping connection joint				
A	B	D	C	h	E	T
25	1	50.5	43.5	23.0	1.6	2.85
40	1 1/2	50.5	43.5	35.7	1.6	2.85
50	2	64.0	56.5	47.8	1.6	2.85
65	2 1/2	77.5	70.5	59.5	1.6	2.85
80	3	91.0	83.5	72.3	1.6	2.85
100	4	119.0	110.0	97.6	1.6	2.85

Joint dimensions for NAFLON™ PFA RUBBER pressure resistant hoses

Flange type

KF

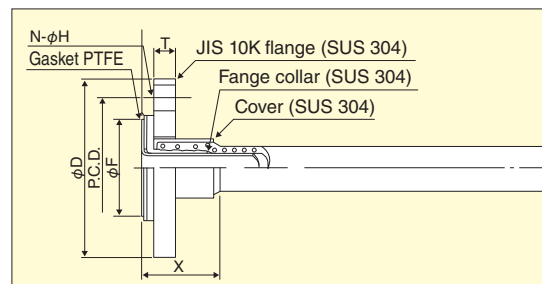
Unit: mm



Nominal size		Flange (JIS 10K)				Flange collar			
A	B	D	C	T	N-φH	F	h	G	X
15	1/2	95	70	12	4-φ15	50	9.6	5	51
20	3/4	100	75	14	4-φ15	55	15.5	5	56
25	1	125	90	14	4-φ19	60	21.2	5	61
40	1 1/2	140	105	16	4-φ19	80	34	6	80
50	2	155	120	16	4-φ19	95	44	6	82

FF

Unit: mm

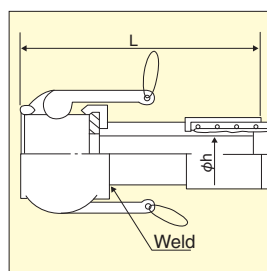
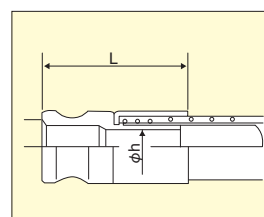


Nominal size		Flange (JIS 10K)				
A	B	D	C	T	N-φH	X
15	1/2	95	70	12	4-φ15	33
20	3/4	100	75	14	4-φ15	33
25	1	125	90	14	4-φ19	33
40	1 1/2	140	105	16	4-φ19	38
50	2	155	120	16	4-φ19	38

Quick coupler type

QC (male type)

QCA (female type)



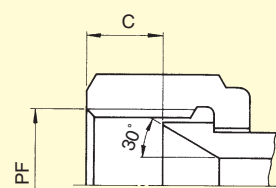
Nominal size		QC		QCA	
A	B	φ	L	φ	L
15	1/2	9.6	62	9.6	76
20	3/4	15.5	69	15.5	91
25	1	21.2	76	21.2	104
40	1 1/2	34	102	34	145
50	2	44	111	44	152

Sealing face configuration / Connector (Joint) seal method

Sealing face configuration (NAFLON PFA pressure resistant hose)

TOMBO No.9066-S

Stainless steel (SUS304)
standard is 30°



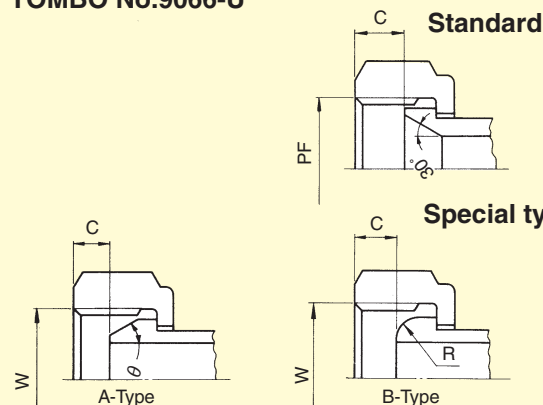
Sealing method for metal connector

A pipe taper screw thread (R-Screw) is employed to connect with the onward pipe nipple screw, and the seal is established using sealing tape, etc.

The seal with a box nut and nipple uses a pipe parallel screw (G-screw) as shown in the diagram on the left with a surface seal.

Sealing face configuration (NAFLON PFA ultra high pressure hose)

TOMBO No.9066-U



Sealing method for metal connector

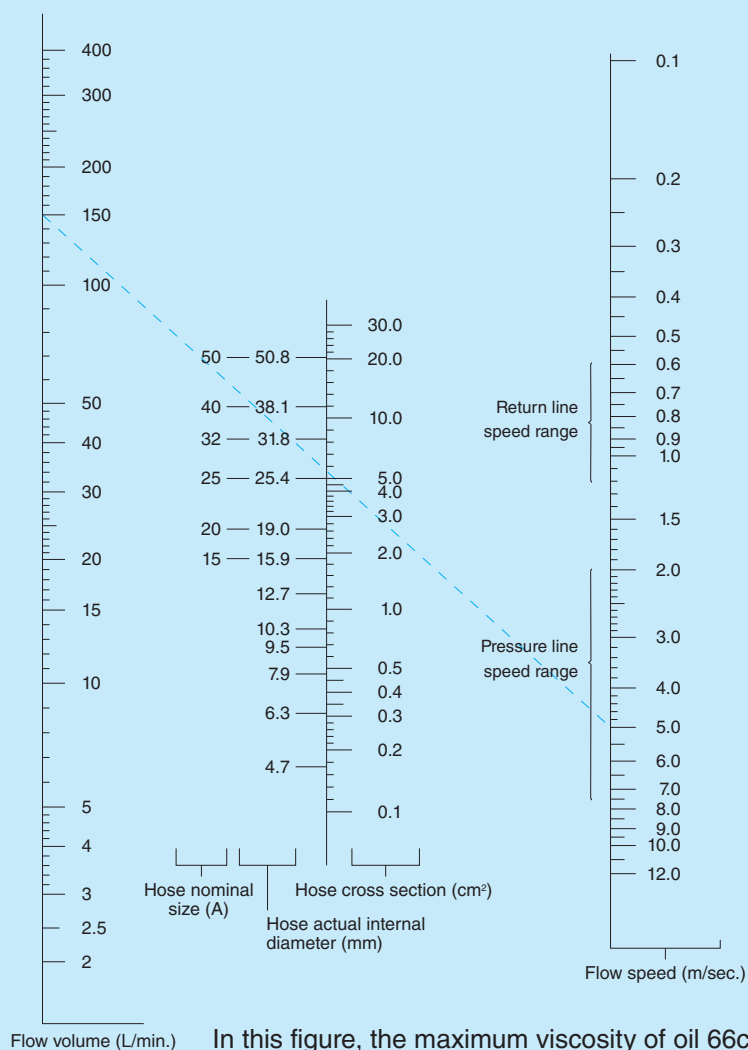
A pipe taper screw thread (R-Screw) is employed to connect with the onward pipe nipple screw, and the seal is established using sealing tape, etc.

The box nut and nipple seal uses a pipe parallel screw (G-screw) as shown in the diagram on the left with a surface seal or gasket. The standard type is 30-degree taper seal, and we can make special types A, B and C to order. In this case, please indicate W, C, θ and R.

Method of selecting hose size based on flow volume and flow speed

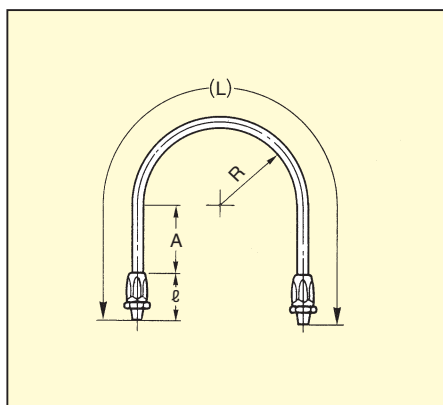
Please use this nomograph as a reference for selecting the correct hose size for each equipment unit.

Example: When the pressure line flow speed is 5m/sec and necessary flow volume is 150 L/min., the hose size required is 25.

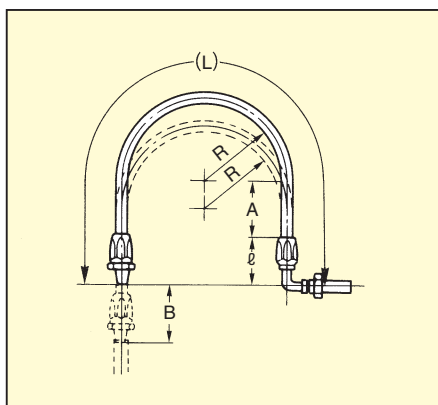


In this figure, the maximum viscosity of oil 66cst (40°C) is applied

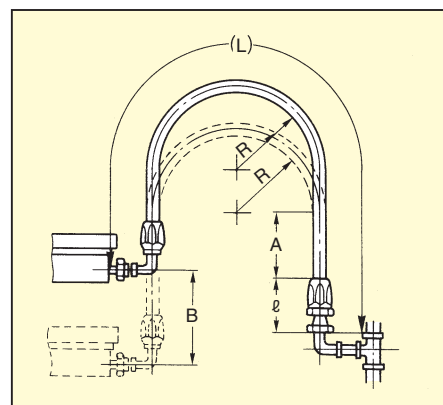
Method of determining the required hose length



- If the hose does not move
Hose length (L) = $2A + \pi R + 2l$



- If one end of the hose moves parallel to the mated connector in one direction
Hose length (L) = $2A + \pi R + B + 2l$



- If one end of the hose moves parallel to the mated connector in both directions by an equal distance
Hose length (L) = $2A + \pi R + \frac{1}{2}B + 2l$

A = Hose size constant
(Based on chart on right)
R = Minimum bending radius of hose
B = Movement distance
l = length of hose joint

Hose size	15A	20A	25A	32A	40A	50A
Amm	60	70	80	100	120	140
2Amm	120	140	160	220	240	280

Precautions for Use

1 Storage

● Rust proofing

When it is required to store the metal parts such as connectors and joints for a long period of time, appropriate measures should be taken to prevent rust using oil or oily paper.

● Storage location

Avoid direct sunlight and select a place with a temperature range of from -10 to $+40^{\circ}\text{C}$. Not affected by toxic gases and with a dry air flow. Ensure no oil or chemicals adhere to the metal parts.

● Storage

Ensure no accidental damage occurs to the hoses and fittings. When laying hoses down, try to lay them straight. If they need to be coiled, ensure the radius is greater than the minimum bend radius.

2 Protection

● In case of acute bending

In the case of an acute bend from the connector and joint section when the bend radius of the hose is less than the minimum bending radius, expect this to result in rapid

damage. Thus, we recommend you change the hose mounting angle using the joints provided or you fit protective strips from the hose connector joint assembly and avoid acute bends.

● In the case of torsion

Do not use the hose while subject to torsion (twisting). If it is unavoidable to use the hose in a state of torsion, please employ swivel joints.

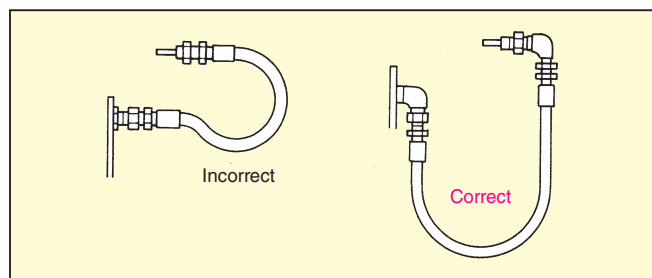
● If there is a likelihood of external damage

If the hose assembly is likely to be damaged, fit external wire braiding or protective springs.

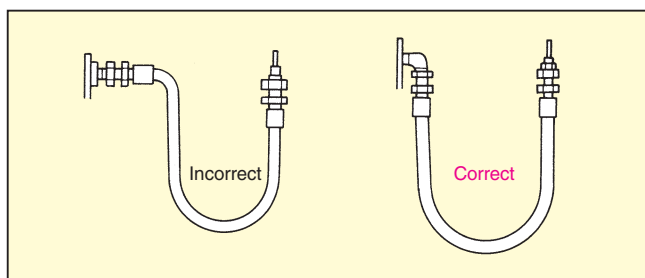
3 Handling hoses

- Do not touch a hose that is under pressure under any circumstances.
- If subjected to external pressure or experiencing pressure loss, a hose will lose a significant portion of its service life. If external pressure or pressure loss is expected, please consult us.
- NAFLON pliable hoses are not designed to withstand expansion or contraction. Do not use them as an expansion hose.

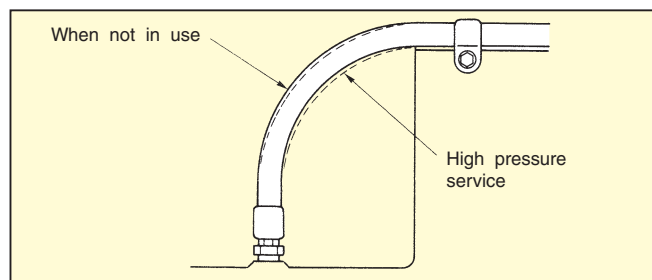
Recommended configuration of flexible hose connection



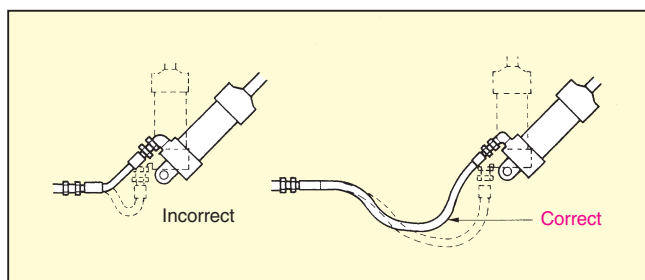
* When used with the minimum bending radius of hose, please avoid using the hose so that an acute elbow bend is formed, as shown in the figure.



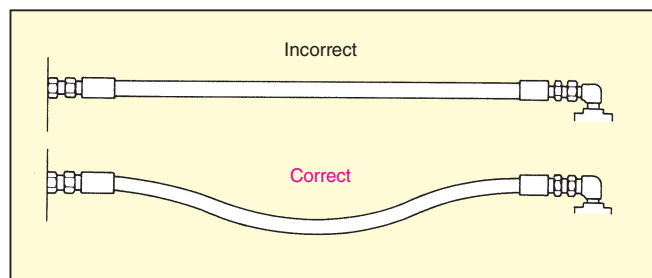
* When using in elbow configuration, please ensure that the hose is not subjected to extreme torsion or bending.



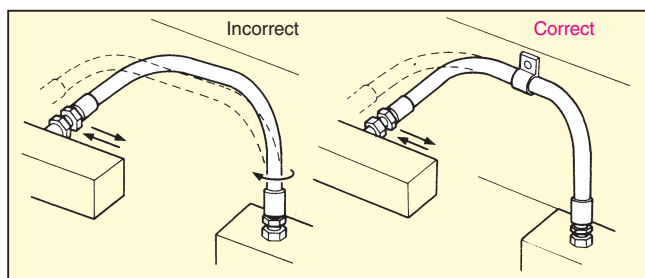
* When the hose is subject to internal pressure and this state is held, the length of the hose tends to vary slightly. However, do not attempt to curb this tendency by securing the bent section of the hose.



* An appropriate amount of leeway is required in hose length. Ensure hose movement is smooth and avoid acute bends.



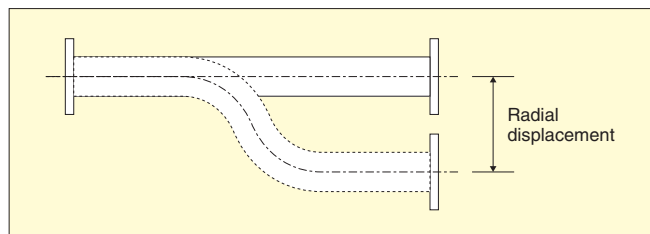
* When used in high-pressure service, the length of the hose can vary from plus 2% to minus 4%. To accommodate this expansion and contraction movement, an adequate amount of slack must be allowed.



* When a hose is bent to connect it up to two points on different planes, fix it to a separate surface to avoid excessive torsion as shown in figure.

Quick reference tables of permissible radial displacements

Flange-type hoses must have a certain amount of slack when installed to compensate for possible flange displacement. Even if this is not possible due to layout-related reasons, these hoses are still capable of withstanding radial flange displacement up to certain limits. Use the following quick reference tables of permissible radial displacements to choose appropriate hoses.



- The figures in the tables are theoretical values for hoses set straight.
- For hoses with metal connectors, the lengths of the rigid, non-bending metal connectors at both ends should be subtracted from the hose length to obtain the corresponding permissible radial displacement.

● TOMBO No.9065-F

Nominal size		Hose length (mm)								
		200	300	400	500	600	700	800	900	1000
		Permissible radial displacement (mm)								
15	1/2	7	21	35	49	63	77	91	105	119
20	3/4	7	21	35	49	63	77	91	105	119
25	1	4	18	32	46	60	74	88	102	116
32	1 1/4	—	8	22	36	50	64	78	99	106
40	1 1/2	—	8	22	36	50	64	78	99	106
50	2	—	—	14	28	42	56	70	91	98
65	2 1/2	—	—	9	23	37	51	65	86	93
80	3	—	—	—	15	29	43	57	78	85
100	4	—	—	—	3	17	31	45	66	73

● TOMBO No.9067-A-F

Nominal size		Hose length (mm)								
		200	300	400	500	600	700	800	900	1000
		Permissible radial displacement (mm)								
10	³ / ₈	12	26	40	54	68	83	97	111	125
15	¹ / ₂	12	26	40	54	68	83	97	111	125
20	³ / ₄	10	24	38	52	66	80	94	108	122
25	1	6	21	35	49	63	77	91	105	119
32	1 ¹ / ₄	4	18	32	46	60	75	89	103	117
40	1 ¹ / ₂	2	16	30	44	58	72	86	100	114
50	2	—	10	24	38	52	66	80	94	108
65	2 ¹ / ₂	—	2	16	30	44	58	72	86	101
80	3	—	—	11	25	39	53	68	82	96
100	4	—	—	4	18	32	46	60	74	88

● TOMBO No.9067-A-HW-F

Nominal size		Hose length (mm)								
		200	300	400	500	600	700	800	900	1000
		Permissible radial displacement (mm)								
10	3/8	14	28	42	56	70	84	98	112	126
15	1/2	14	28	42	56	70	84	98	112	126
20	3/4	11	25	40	54	68	82	96	110	124
25	1	9	23	37	51	65	79	94	108	122
32	1 1/4	7	21	35	49	63	77	91	105	119
40	1 1/2	5	19	33	47	61	75	90	104	118
50	2	—	13	27	42	56	70	84	98	112
65	2 1/2	—	7	21	35	50	64	78	92	106
80	3	—	2	16	30	44	58	72	86	100
100	4	—	—	9	23	37	51	65	79	94

● TOMBO No.9067-A-FB

Nominal size		Hose length (mm)								
		200	300	400	500	600	700	800	900	1000
		Permissible radial displacement (mm)								
10	³ / ₈	12	26	40	54	68	82	96	110	124
15	¹ / ₂	12	26	40	54	68	82	96	110	124
20	³ / ₄	9	23	37	51	65	79	93	107	121
25	1	6	20	34	48	62	76	90	104	118
32	1 ¹ / ₄	4	18	32	46	60	74	88	102	116
40	1 ¹ / ₂	1	15	29	43	58	72	86	100	114
50	2	—	9	23	37	52	66	80	94	108
65	2 ¹ / ₂	—	1	15	30	44	58	72	86	100
80	3	—	—	11	25	39	53	67	81	95
100	4	—	—	4	18	32	46	60	74	88

● TOMBO No.9067-A-HW-FB

Nominal size		Hose length (mm)								
		200	300	400	500	600	700	800	900	1000
		Permissible radial displacement (mm)								
10	3/8	12	26	40	54	68	82	96	110	124
15	1/2	11	25	39	53	67	81	95	109	123
20	3/4	9	23	37	51	65	79	93	107	121
25	1	5	19	33	47	61	75	89	103	117
32	1 1/4	3	17	31	45	59	73	87	101	115
40	1 1/2	1	15	29	43	57	71	85	99	113
50	2	—	9	23	37	51	65	79	94	108
65	2 1/2	—	2	16	30	44	58	72	86	100
80	3	—	—	10	24	38	52	66	80	95
100	4	—	—	3	17	32	46	60	74	88

● TOMBO No.9068-F

Nominal size		Hose length (mm)								
		200	300	400	500	600	700	800	900	1000
		Permissible radial displacement (mm)								
15	1/2	13	27	41	55	69	83	97	111	125
20	3/4	10	24	38	52	66	80	94	108	122
25	1	7	21	35	49	63	77	91	105	119
32	1 1/4	4	18	32	46	60	74	88	102	116
40	1 1/2	—	15	29	43	57	71	85	99	113
50	2	—	11	25	39	53	67	81	95	109
65	2 1/2	—	4	18	32	46	60	74	88	102
80	3	—	—	13	27	41	55	69	83	97

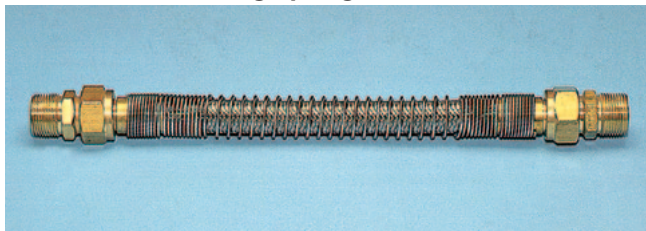
● TOMBO No.9068-FB

Nominal size		Hose length (mm)								
		200	300	400	500	600	700	800	900	1000
		Permissible radial displacement (mm)								
15	1/2	10	24	38	52	66	80	94	108	122
20	3/4	8	22	36	50	64	78	92	106	120
25	1	5	19	33	47	61	75	89	103	117
32	1 1/4	—	13	27	41	55	69	83	97	111
40	1 1/2	—	11	25	39	53	67	81	95	109
50	2	—	4	18	32	46	60	74	88	102
65	2 1/2	—	—	13	27	41	55	69	83	97
80	3	—	—	8	22	36	50	64	78	92

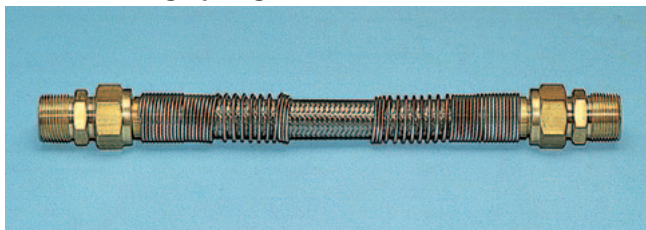
Related Products

Optional parts (Stock always available)

Overall reinforcing spring (SUS304-WPA)



Reinforcing springs for both ends (SUS304-WPA)



Rubber sleeve (EPR)



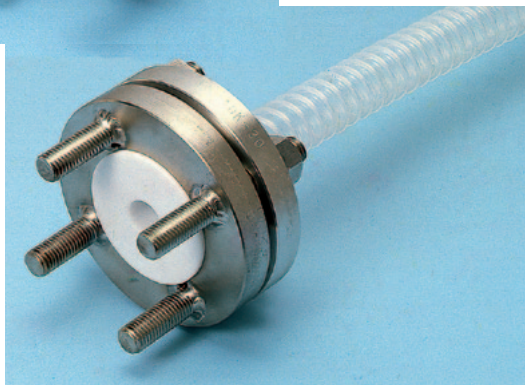
Flange adapter

- By fitting the flange adapter to flange type hoses, the flared section of the hose can be protected from damage.

▼Flange Adapter



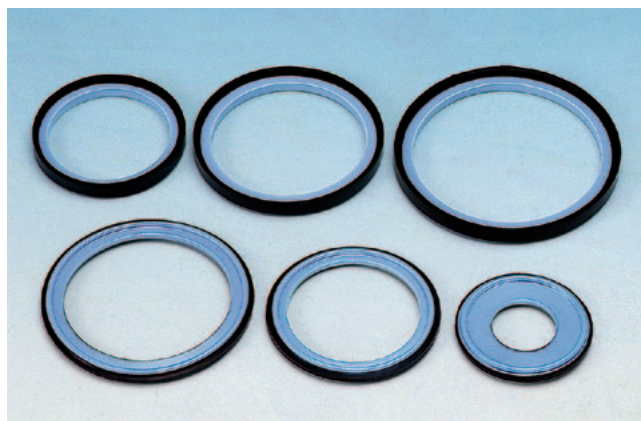
▼Fitted with Flange Adapter



TOMBO No.9014

SANICLEAN™ Gasket

TOMBO No.9014 SANICLEAN Gasket is a sandwich type composite gasket. The surface of a rubber sanitary gasket is covered with PTFE resin film. This SANICLEAN gasket combines the features of two materials, the flexibility of rubber and the chemical, heat and pollution resistance of PTFE resin film, and it is easy to use. Two types are available. Two types A type (screw connectors) and B type (ferrules) are available.



Features

- PTFE covered surface contribute good resistance to sanitation hot water, hot caustic liquids and chlorine liquids.
- PTFE covered surface prevent flavour from liquid adherence, penetration and pollution at flavour change.
- Enable to shorten flavour change time and improve in productivity.
- The method of use is basically the same as conventional all-rubber sanitary gaskets, and very simple. However, it requires additional tightening work.

Note

Flavor change: This is the process of switching from one type of beverage to another on product filling lines when several types of beverages are handled on the same production line.

Sanitation: This is the washing out process. Washing out is carried out using clean water, chlorinated water, hot water and hot caustic liquids, etc.



▲For screw connectors



▲For ferrules

Meanings of NAFLON™ hose codes

Product names and dimensions of NAFLON™ hoses are displayed as shown below:

Product	Dimensions
TOMBO No.9066- (S/U) TOMBO No.9066-R TOMBO No.9067-A-K TOMBO No.9068-K	Example: A × 25A × 1000  ×  ×  Overall length Nominal size (A, B display) Joint type (See P23)
TOMBO No.9067-A-S TOMBO No.9067-A-HW-S TOMBO No.9068-S	Example: 25A × 50 × 800  ×  ×  Overall length Length of straight pipe Nominal size (A, B display)
TOMBO No.9067-A-E TOMBO No.9067-A-HW-E TOMBO No.9068-E	Example: 25A × 2MT  ×  Overall length Nominal size (A, B display)
TOMBO No.9065-F TOMBO No.9067-A- (F/FB/FV/FBV) TOMBO No.9067-A-HW- (F/FB/FV/FBV) TOMBO No.9068- (F/FB/FV/FBV)	Example: SS × 10K × 50A × 500  ×  ×  ×  Overall length Nominal size (A, B display) Pressure stages Flange materials
TOMBO No.9067-A-HW- (CP/CPL)	Example: AB × 20K × 20A × 500  ×  ×  ×  Overall length Nominal size (A, B display) Pressure stages Flange collar combination (See P17)
TOMBO No.9065- (SH/SG)	Example: 304 × 10A × 400  ×  ×  Overall length Nominal size (A, B display) Flange materials

NAFLON™ Hose Inquiry Form

Please use a copy of this original form when making an inquiry.

Date _____

Corporate customer name _____

Contact person _____

Department _____

Phone _____

Fax _____

E-mail _____

Description of your inquiry

Details

Service conditions		Connection	
Fluid	_____	Model _____	
Temperature	_____ °C	Flange	JIS _____ K
	_____ °C		ANSI _____ LB
Pressure	_____ Mpa Kg/cm²	Joint type	_____
	_____ Mpa Kg/cm²	Nominal diameter	_____
		Face-to-face (Overall length)	_____
		Material*	_____
Vacuum	_____	Bending radius	_____ mm

* This item must be entered.

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