

# Meijiflex Composit Hose®



#### About us

Our company **MEIJIFLEX CO., LTD.** was established in 1972 as a only **COMPOSITE HOSE** maker in Japan. Our products have excellent reputation in wide range of applications such as in the chemical, petroleum, steel, and food industries, and also cargo hose for marine. We keep doing our best to live up to the trust and expectation from customer deposited on us as a composite hose maker.

#### **New application**

Recently, our products have found successful applications such as hoses used in emergency water tanks, for vapor recovery, and soil fertilization through hydrogen peroxide.

#### Structure

Our hoses are called **COMPOSITE HOSE**, with multi-layers plastic films, tubes, clothes, and spiral wires. This structure have excellent performance by follow features.

- Safety ·····Perfect conductivity, The fittings we designed have original screw grooves and they highly keeps pressure-resistant.
- $\begin{tabular}{ll} \textbf{Wide chemical resistance} \cdots\cdots\cdots\\ \textbf{Oils, solvents, aromatic fuels, acids } & (HCI, H_2SO_4, HNO_3\cdots),\\ & alkalis & (NaOH, KOH\cdots) \\ \end{tabular}$
- Light and flexible ..... Easy to handle at narrow space.
- **Durability for repeated bending** ···Composite structure of multi-reinforced fabrics and films is toughness with repeated bending.

#### Originality

Only our composite hoses have smooth inner face by using **TRIANGLE WIRE** for the first time in the world.

Smooth face reduces pressure loss greatly and Improved loading time. Moreover, we are developing hoses with complete flat inner face now.

#### ISO 9001, 14001

We have produced the composite hoses based on the ISO system and we have kept the high quality and

control quality management system.

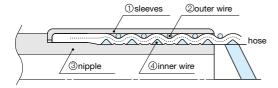


# **SAFETY POINT**

#### **Swaged structure**

Our **ORIGINAL FITTINGS** have excellent durability for various kind of chemical fluids. The spigot what be set into hose is **SCREW TYPE** and almost types are swaged with rubber seal without adhesive between spigot and hose inner face.

#### **Cross section of assembly**



#### **Conductivity**

Our composite hoses have always HIGH ELECTRIC CONDUCTIVITY.

The fittings are connecting to hose with outer and inner wires. This structure is perfect to keep electric conductivity.

#### Leak sign

When the fluid leaked from a hose, it can find before the burst and avoid the big damage. Because of multilayers structure, the reinforced fabric is keeping formation and then prevent the burst.

### **WIDE CHEMICAL RESISTANCE**

The composite hose's structure covers wide range chemical fluids, because of the main resin of **POLYPROPYLENE** is possible to resist various chemicals, and besides by combination of **FLUORO RESIN** (**ETFE**) film, the chemical resistance is more wide.

### **EASY TO HANDLE**

#### **Light weight**

Weight is 20~40 % lighter than generic rubber hoses. It's able to bend easily.

#### **Small bending radius**

Bending radius is only **around 30%** in compared to rubber hoses. Its usable in narrow space.

#### **Contents**

| Chemical hose   |
|---|
| Oil and solvent hose 4  Hose type: 0901F, 0913F-W, 0982, 0985F  Fluids: gasoline, generic oil (lubricant, heavy oil etc.), solvents   |
| Fluoroplastic hose 6  Hose type: 0970F, 0976F, 0978F  Fluids: fuming sulfuric acid, nitric acid, and high aggressive chemicals.   |
| Cryogenic hose  |
| Fire safe hose  |
| Tank lorry hose  Hose type: 0955F-A, 0955F-R, 0951F, 0969LF, 0970F, 0976F  Fluids: acids, alkalis, solvents, organic and inorganic chemicals, gasoline, generic oil (lubricant, heavy oil etc.) |
| Cargo hose 10  Hose type: 0969F, 0976F, 0982, 0998, 0969W-S  Fluids: acids, alkalis, solvents, organic and inorganic chemicals, gasoline, generic oil (lubricant, heavy oil etc.)               |
| Fitting (couplings and flanges)   |
| <technical data=""></technical>   |
| Flange standards ······16   |
| Thread standards18  |
| Chemical resistance20   |
| Caution for handling26  |
| Inspection manual27   |
| Inquiry / Order for28   |

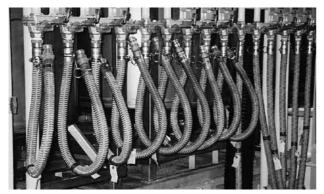
# flex Hose



Outer wire is stainless steel

●Light weight, flexible chemical hoses●

The chemical hose series uses polypropylene (P.P.) as the main constituent material and therefore offers high flexibility and multiple possibilities of use.



0913F (1 1/2") hose in a chemical plant



Easily by high flexibility.

# **Hose selection**

Hose number

# 0913F series

#### 0915F series

# 0951F series

\*0951F, 0951F-S, 0951F-H, 0951F-HS

# 0969LF series

\*0969LF, 0969LF-S 0969LF-H, 0969LF-HS

### 0969F series

\*0969F, 0969F-S, 0969F-H, 0969F-HS

### 0998 series

\*0998, 0998-S, 0998-H, 0998-HS

### Fluorine film insert Main applications

Almost every type of chemicals can be used, including abrasive and volatile substances.

Flat type

- \*The hose, including its external surface, does not suffer the effect of liquids even when dipped directly in the tank. Note, however, that terminal fittings must fulfill special specifications.
- \*Hoses of this series may undergo wear when used outdoors under direct sunlight or when dragged. Please avoid such kind of usage.

Appropriate for abrasive chemicals containing inorganic chemicals such as sulfuric or hydrochloric acid.

\* Hoses of this series have lower electric conductivity. Please avoid the use of chemicals that need measures against electrostatic discharge

Almost every type of chemicals can be used, including abrasive and volatile substances.

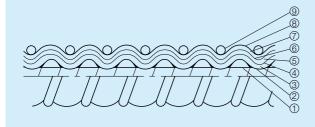
Almost every type of chemicals can be used, including abrasive and volatile substances.

\* Hoses of this series have diameters of 4 inches or more.

Appropriate for abrasive chemicals such as strong sulfuric acid, hydrochloric acid, phosphoric acid, and others.

electrostatic discharge. \*Hoses of this series have diameters of 4 inches or more.

# Construction



| Item | Part<br>name  | 0913F            | 0913F-S         | 0915F            | 0951F            | 0969LF<br>1/2"~4" | 0969F<br>4"∼10"  | 0998             |
|------|---------------|------------------|-----------------|------------------|------------------|-------------------|------------------|------------------|
| 1    | Inner wire    | Stainless steel  | Stainless steel | Stainless steel  | Fluorine coating | Stainless steel   | Stainless steel  | Fluorine coating |
| 2    | Inner fabric  | P.P              | P.P             | Special P.P film | P.P              | P.P               | P.P              | P.P              |
| 3    | Film          | P.P              | P.P             | P.P              | P.P              | P.P               | P.P              | P.P              |
| 4    | Tube          | P.A/P.P          | P.A/P.P         | P.A/P.P          | P.A/P.P          | P.A/P.P           | P.A/P.P          | P.A/P.P          |
| 5    | Middle fabric | _                | -               | _                | -                | -                 | P.P              | P.P              |
| 6    | Film          | P.P              | P.P             | P.P              | P.P              | P.P               | P.P              | P.P              |
| 7    | Middle fabric | _                | -               | P.P              | P.P              | P.P               | P.P              | P.P              |
| 8    | Outer cover   | P.P              | P.P             | P.P              | PVC coat fabric  | PVC coat fabric   | PVC coat fabric  | PVC coat fabric  |
| 9    | Outer wire    | galvanized steel | Stainless steel | galvanized steel | galvanized steel | galvanized steel  | galvanized steel | galvanized steel |
| 10   | (Option)      | _                | -               | _                | Stainless steel  | Stainless steel   | Stainless steel  | Stainless steel  |

# **Chemical Hose**

# specification

- 1. For compatibility with different types of fluid, see appendix in P.20 P.25.
- 2. Chemicals that are not listed in the table or listed as incompatible may be used depending on conditions. For more information, contact us.
- 3. These hoses may not be used with the following chemicals:
  - < Liquid bromine / chlorine gas / chlorosulfonic acid / fuming sulfuric acid / fuming nitric acid >
- 4. Typical temperature range: -20°C to +80°C

For use with temperatures above +80°C, contact us in advance.

| Hose number   | Nominal inner diameter mm (in)      | Outer<br>diameter<br>mm | Minimum<br>bending radius<br>mm | Maximum<br>pressure<br>MPa (kgf/cm2) | Weight<br>kg/m | Maximum product length m | Color and material of outer cover | Color of name tape |
|---|-------------------------------------|-------------------------|---------------------------------|--------------------------------------|----------------|--------------------------|-----------------------------------|--------------------|
|   | 13( <sup>1</sup> /2")               | 22                      | 50                              |                                      | 0.4            | 12                       |                                   |                    |
|   | 19( <sup>3</sup> / <sub>4</sub> ")  | 29                      | 75                              |                                      | 0.5            |                          |                                   |                    |
|   | 25( 1")                             | 35                      | 100                             |                                      | 0.6            |                          |                                   |                    |
| 0913F   | 32(1 <sup>1</sup> / <sub>4</sub> ") | 42                      | 110                             | 1.0(10.5)                            | 0.8            |                          | Gray fabric                       | N/A                |
| 0915F   | 38(1 <sup>1</sup> /2")              | 50                      | 125                             | 1.0 (10.0)                           | 1.2            | 20                       | Gray labric                       | 14/73              |
|   | 50(2")                              | 63                      | 130                             |                                      | 1.6            |                          |                                   |                    |
| (NOTE)  | 65 (2 <sup>1</sup> /2")             | 76                      | 150                             |                                      | 2.0            |                          |                                   |                    |
| 1/2" size is available only for 0915 and 0915S with round inner wire. | 75( 3")                             | 88                      | 180                             |                                      | 2.3            |                          |                                   |                    |
|   | 19(3/4")                            | 29                      | 100                             |                                      | 0.8            |                          |                                   |                    |
|   | 25( 1")                             | 39                      | 110                             |                                      | 0.9            |                          |                                   |                    |
|   | 32(11/4")                           | 46                      | 125                             |                                      | 1.2            |                          | Green PVC                         |                    |
| 0951F   | 38(11/2")                           | 52                      | 150                             | 1.4(14.0)                            | 1.5            | 20                       | coat fabric                       | Blue               |
|   | 50(2")                              | 66                      | 180                             |                                      | 1.8            |                          |                                   |                    |
|   | 65 (2 <sup>1</sup> /2")             | 80                      | 200                             |                                      | 2.6            |                          |                                   |                    |
|   | 75(3")                              | 93                      | 220                             |                                      | 3.2            |                          |                                   |                    |
|   | 13(1/2")                            | 22                      | 50                              |                                      | 0.4            | 12                       |                                   |                    |
|   | 19(3/4")                            | 30                      | 75                              |                                      | 0.6            |                          |                                   |                    |
|   | 25(1")                              | 37                      | 100                             |                                      | 0.7            |                          |                                   |                    |
|   | 32(11/4")                           | 44                      | 110                             |                                      | 0.9            |                          | Green PVC                         |                    |
| 0969LF  | 38(11/2")                           | 50                      | 150                             | 1.4(14.0)                            | 1.2            | 20                       | coat fabric                       | Red                |
|   | 50(2")                              | 64                      | 170                             |                                      | 1.9            |                          |                                   |                    |
|   | 65 (21/2")                          | 78                      | 200                             |                                      | 2.1            |                          |                                   |                    |
| (NOTE)  | 75(3")                              | 91                      | 250                             |                                      | 3.1            |                          |                                   |                    |
| Only 1/2" size has round inner wire.                                  | 100( 4")                            | 116                     | 300                             | 0.5(5.0)                             | 5.0            |                          |                                   |                    |
|   | 100( 4")                            | 123                     | 500                             |                                      | 7.2            | 20                       |                                   |                    |
| 00605   | 114(41/2")                          | 135                     | 550                             | 1.4(14.0)                            | 8.2            |                          |                                   |                    |
| 0969F   | 125( 5")                            | 148                     | 600                             |                                      | 8.8            | 15                       | Green PVC                         | Orange             |
| 0998  | 150( 6")                            | 175                     | 650                             |                                      | 10.8           |                          | coat fabric                       | o ango             |
| (NOTE)  | 200( 8")                            | 232                     | 1000                            |                                      | 17.5           | 10                       |                                   |                    |
| Only 10" size has round inner wire.                                   | 250 ( 10")                          | 287                     | 1200                            | 1.0(10.5)                            | 21.0           |                          |                                   |                    |

- \*Contact us for chemical tanker hoses because they have special specifications.
- \*The hoses are manufactured so that the safety factor is 5 times the maximum pressure for 1.0 MPa and 4 times for 1.4 MPa.
- $*\,0998$  hose is only available in nominal diameter size 4" 6".



<sup>1.</sup> These hoses need to be flushed before changing the fluid. Use cold water with compatible detergent or warm water at the temperature of 80°C or less for flushing.

<sup>2.</sup> If high purity is required for the fluid, flush the hose with the fluid after temporary flushing described above.

<sup>3.</sup> Before using the hose, read the catalog and check the specifications, purposes and applications of the hose.

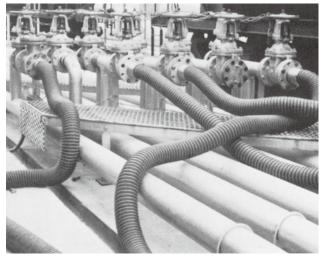
# oil & Solvent Hose X HOSE



●Light weight, flexible, electrically conductive hoses●

Hoses of this oil/solvent series contain polypropylene (P.P.) as their main constituent component, are unbeatable in terms of durability, and embed thoroughgoing measures against electrostatic discharge.





# **Hose selection**

| Hose code letters |                         |                                  |  |  |  |  |  |  |
|-------------------|-------------------------|----------------------------------|--|--|--|--|--|--|
| F                 | H                       | S                                |  |  |  |  |  |  |
| Flat type         | Fluorine<br>film insert | Outer wire is<br>stainless steel |  |  |  |  |  |  |

#### Hose number

### 0901F series

\*0901F, 0901F-S

0913F-W series

\*0913F-W (0915F-W

0982 series

\*0982, 0982-S

0985F series

\*0985F, 0985F-S

etable oil and BTX, ketone, thinner and ink, paint, alcohol, and others

Main applications

A wide range of applications that include gasoline, heavy oil, lubricant, animal and veg-

The applications are the same as those of the 0901F series.

- \*The hose, including its external surface, does not suffer the effect of liquids even when dipped directly in the tank. Note, however, that terminal fittings must fulfill special specifications.
- \*These hoses may suffer wear when used outdoors under direct sunlight or when dragged. Please avoid such kind of usage.

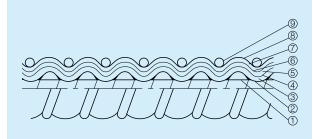
The applications are the same as those of the 0901F series.

\*Hoses of this series have diameters of 4 inches or more.

Based on the 0982 series with internal wires replaced by triangular aluminum for weight saving and to improve discharge efficiency.

\*Hoses of this series have diameters of 4 inches or more.

# Construction



| Item | Part name     | 0901F            | 0913F-W          | 0982             | 0985F            |
|------|---------------|------------------|------------------|------------------|------------------|
| 1    | Inner wire    | galvanized steel | galvanized steel | galvanized steel | Aluminum         |
| 2    | Inner fabric  | P.P              | P.P              | P.P              | P.P              |
| 3    | Film          | P.P              | P.P              | P.P              | P.P              |
| 4    | Tube          | PA/P.P           | PA/P.P           | PA/P.P           | PA/P.P           |
| 5    | Middle fabric | -                | _                | P.P              | P.P              |
| 6    | Film          | P.P              | P.P              | P.P              | P.P              |
| 7    | Middle fabric | P.P              | P.P              | P.P              | P.P              |
| 8    | Outer cover   | PVC coat fabric  | P.P              | PVC coat fabric  | PVC coat fabric  |
| 9    | Outer wire    | galvanized steel | galvanized steel | galvanized steel | galvanized steel |
| 10   | (Option)      | Stainless steel  | _                | Stainless steel  | Stainless steel  |

# Oil & Solvent Hose

# specification

- 1. For compatibility with different types of fluid, see appendix in P.20 P.25.
- 2. Chemicals that are not listed in the table or listed as incompatible may be used depending on conditions. For more information, contact us.
- 3. Typical temperature range : -20°C to +80°C

For use with temperatures above +80°C, contact us in advance.

| Hose number                                 | Nominal inner<br>diameter<br>mm (in)   | Outer<br>diameter<br>mm                      | Minimum<br>bending radius<br>mm       | Maximum<br>pressure<br>MPa (kgf/cm2) | Weight<br>kg/m                            | Maximum product length m | Color and material of outer cover | Color of name tape |
|---|--|--|---------------------------------------|--------------------------------------|---|--------------------------|-----------------------------------|--------------------|
|   | 13(½")<br>19(¾4")<br>25( 1")   | 22<br>30<br>37                               | 50<br>75<br>100                       |                                      | 0.4<br>0.6<br>0.7                         | 12                       | Blue PVC                          |                    |
| 0901F                                       | $32(1^{1}/4^{"})$ $38(1^{1}/2^{"})$  | 44<br>50                                     | 110<br>150                            | 1.4 (14.0)                           | 0.7<br>0.9<br>1.2                         | 20                       |                                   | Red                |
|   | 50( 2")<br>65(2 <sup>1</sup> /2")  | 64<br>78                                     | 170<br>200                            |                                      | 1.9                                       |                          | coat labile                       |                    |
| (NOTE) Only 1/2" size has round inner wire. | 75( 3")<br>100( 4")  | 91<br>116                                    | 250<br>300                            | 0.5(5.0)                             | 3.1<br>5.0                                |                          |                                   |                    |
| 0913F-W                                     | $19(3/4")$ $25(1")$ $32(1^{1}/4")$ $38(1^{1}/2")$ $50(2")$ $65(2^{1}/2")$ $75(3")$ | 29<br>35<br>42<br>50<br>63<br>76<br>88       | 75<br>100<br>110<br>125<br>130<br>150 | 1.0 (10.5)                           | 0.5<br>0.6<br>0.8<br>1.2<br>1.6<br>2.0    | 20                       | Gray fabric                       | N/A                |
| 0982 (NOTE) Has round inner wire.           | 100( 4")<br>114(4 <sup>1</sup> /2")<br>125( 5")<br>150( 6")                        | 127 *123<br>140 *135<br>151 *148<br>179 *175 | 500<br>550<br>600<br>650              | 1.4(14.0)                            | 7.8 *4.<br>8.5 *5.<br>8.8 *6.<br>11.8 *8. | 3<br>1 15                | Blue PVC coat fabric              | Orange             |
| 0985F                                       | 200( 8")<br>250( 10")  | 236 —<br>287 —                               | 1000<br>1200                          | 1.0 (10.5)                           |   | - 10<br>-                |                                   |                    |

- \*Outer diameter values are only for reference.
- \* Values presented with an asterisk (\*) are for 0985F hose.
- \*Contact us for chemical tanker hoses because they have special specifications.
- \*The hoses are manufactured so that the safety factor is 5 times the maximum pressure for 1.0 MPa and 4 times for 1.4 MPa.



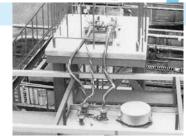
<sup>1.</sup> These hoses need to be flushed before changing the fluid. Use cold water with compatible detergent or warm water at the temperature of 80°C or less for flushing.

<sup>2.</sup> If high purity is required for the fluid, flush the hose with the fluid after temporary flushing described above.

<sup>3.</sup> Before using the hose, read the catalog and check the specifications, purposes and applications of the hose.

# Fluoroplastics HoseX HOSE





■Light weight, flexible, special chemical hoses

These hoses are resistant to substances that cannot be handled by chemical hoses such as fuming sulfuric acid and concentrated nitric acid thanks to the use of fluorocarbon resin in the parts in contact with liquid. Their specifications in terms of resistance to a wide range of chemicals and durability are top-class, complementing the features of chemical hoses.

# **Hose selection**

Hose number

0970F series

\*0970F, 0970F-S

0976F series

\* 0976F 0976F-S

0978F series

\* 0978F 0978F-S

Main applications

These hoses are considered to be the best of the chemical hoses series in terms of resistance to a wide range of chemicals including those showing abrasive properties. These hoses enhanced the range of applications involving corrosive liquids that contain hydrochloric and hypochlorous acid by using fluoroplastic insulation for internal wires in contact with liquid.

\* Hoses of this series have lower electric conductivity. Please avoid the use of chemicals that need measures against electrostatic discharge.k

These hoses are considered to be the best of the chemical hoses series in terms of resistance to a wide range of chemicals including those showing abrasive and volatile properties.

\* Hoses of the 0976F-WS series may undergo wear when used outdoors under direct sunlight or when dragged. Please avoid such kind of usage.

These are special hoses designed for use at temperatures higher than 80°C. The use of fluorocarbon resin on parts in contact with liquid permits excellent resistance to liquid chemicals.

# specification

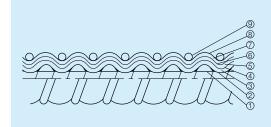
- 1. For compatibility with different types of fluid, see appendix in P.20 P.25.
- 2. Chemicals that are not listed in the table or listed as incompatible may be used depending on conditions. For more information, contact us.
- 3. These hoses may not be used with the following chemicals:
- Sromine, chlorine / chlorosulfonic acid / metallic phosphorus / toxic gases such as cyanide fume
- 4. Typical temperature range: -20°C to +80°C

For use with temperatures above +80°C, contact us in advance.

| Hose number                          | Nominal inner diameter mm (in)      | Outer<br>diameter<br>mm | Minimum<br>bending radius<br>mm | Maximum<br>pressure<br>MPa (kgf/cm2) | Weight<br>kg/m | Maximum product length m | Color and<br>material of<br>outer cover | Color of name tape |
|--------------------------------------|-------------------------------------|-------------------------|---------------------------------|--------------------------------------|----------------|--------------------------|---|--------------------|
|                                      | 13( <sup>1</sup> /2")               | 22                      | 50                              |                                      | 0.4            | 12                       |   |                    |
|                                      | 19(3/4")                            | 30                      | 100                             |                                      | 0.6            |                          |   |                    |
|                                      | 25( 1")                             | 37                      | 100                             |                                      | 0.7            |                          | Green PVC                               |                    |
| _                                    | 32(11/4")                           | 44                      | 150                             |                                      | 0.9            |                          | coat fabric                             | Yellow             |
| 0970F                                | 38(1 <sup>1</sup> /2")              | 50                      | 170                             |                                      | 1.2            | 20                       | (0970F)                                 | (0970F)            |
| 0976F                                | 50(2")                              | 64                      | 200                             | 1.4(14.0)                            | 1.9            |                          | Green PVC coat fabric                   | Orange             |
|                                      | 65(2 <sup>1</sup> / <sub>2</sub> ") | 78                      | 250                             | 1.4(14.0)                            | 2.3            |                          | (0976F)                                 | (0976F)            |
| 0978F                                | 75(3")                              | 91                      | 280                             |                                      | 3.2            |                          | Orange PVC                              | Green              |
|                                      | 100( 4")                            | 123                     | 500                             |                                      | 7.8            |                          | coat fabric                             | (0978F)            |
|                                      | 114(4 <sup>1</sup> /2")             | 135                     | 550                             |                                      | 8.5            |                          | (0978F)                                 |                    |
| (NOTE)                               | 125( 5")                            | 148                     | 600                             |                                      | 8.8            | 15                       |   |                    |
| Only 1/2" size has round inner wire. | 150(6")                             | 175                     | 650                             |                                      | 10.8           |                          |   |                    |

<sup>\*</sup>Outer diameter values are only for reference. \*Contact us for chemical tanker hoses because they have special specifications. \*The hoses are manufactured so that the safety factor is 5 times the maximum pressure for 1.0 MPa and 4 times for 1.4 MPa. \*0970F and 0970F-S hoses are only available in nominal diameter size 3/4" - 3". \*Special model 0978F has enhanced heat resistivity up to 120°C.

# **Construction**



| Item | Partname      | 0970F<br>³∕4"∼3"       | 0976F<br>¹∕2"∼6" | 0978F<br>³∕4"∼6"     |
|------|---------------|------------------------|------------------|----------------------|
| 1    | Inner wire    | Fluorine resin coating | Stainless steel  | Stainless steel      |
| 2    | Inner sheet   | Fluorine resin         | Fluorine resin   | Fluorine resin       |
| 3    | Film          | Fluorine resin         | Fluorine resin   | Fluorine resin       |
| 4    | Tube          | PA/P.P                 | PA/P.P           | PA/P.P               |
| 5    | Middle fabric | -                      | P.P              | -                    |
| 6    | Film          | P.P                    | P.P              | heat resistant resin |
| 7    | Middle fabric | P.P                    | P.P              | heat resistant resin |
| 8    | Outer cover   | PVC coat fabric        | PVC coat fabric  | PVC coat fabric      |
| 9    | Outer wire    | galvanized steel       | galvanized steel | galvanized steel     |
|      | (Option)      | Stainless steel        | Stainless steel  | Stainless steel      |

# Cryogenic Hose EX HOSE





●Cryogenic, flexible, liquefied gas hoses●

These hoses preserve high flexibility and also high pressure even at extremely low temperatures that occur when handling liquefied nitrogen (LN2), liquefied natural gas (LNG), liquefied petroleum gas (LPG), and liquefied ammonia. In addition, they are recognized for not permitting the formation of frost or freezing due to their heat-retaining properties. Finally, to illustrate other new and potential applications of these hoses, it is worth noting that they have served the National Space Development Agency in the launch of a rocket from the Tanegashima Space Center.

# **Hose selection**

※For use with temperatures above +80°C, contact us in advance.

| Hose number                  | Operating temperature range | Typical fluids handled          | Other compatible fluids  |
|------------------------------|-----------------------------|---------------------------------|--|
| 0933 series<br>*0933, 0933-s | -200°C to +80°C             | LNG (-162℃)<br>Ethylene (-103℃) | Propylene, Propane, Butane, Butadiene, Butylene, Ethane, VCM, Liquefied nitrogen, Liquefied carbon dioxide   |
| 0940 series<br>*0940, 0940-s | -110°C to +80°C             | LPG<br>VCM                      | Propylene, Propane, Butane, Butadiene, Butylene,<br>Ethane, Ethylene, Liquefied carbon dioxide, Freon,<br>Liquefied methyl, Methyl bromide, Acetaldehyde |

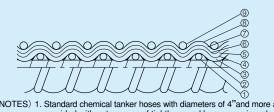
# specification

| Hose number | Nominal inner diameter mm (in) | Outer<br>diameter<br><sub>mm</sub> | Minimum<br>bending radius<br>mm |           | pressure<br>gf/cm2)<br>—200°C | Weight<br>kg/m | Maximum product length m | Color and material of outer cover | Color of name tape |
|-------------|--------------------------------|------------------------------------|---------------------------------|-----------|-------------------------------|----------------|--------------------------|-----------------------------------|--------------------|
|             | 19( <sup>3</sup> /4")          | 29                                 | 64                              |           |                               | 0.4            |                          |                                   |                    |
|             | 25(1")                         | 37                                 | 70                              |           |                               | 0.5            |                          |                                   |                    |
|             | 32(1 <sup>1</sup> /4")         | 43                                 | 89                              |           |                               | 0.7            |                          |                                   |                    |
|             | 38 (1 <sup>1</sup> /2")        | 51                                 | 100                             |           |                               | 1.2            | 20                       |                                   |                    |
| 0000        | 50(2")                         | 63                                 | 140                             | 2.2(22.0) |                               | 2.0            |                          |                                   |                    |
| 0933        | 65 (2 <sup>1</sup> /2")        | 77                                 | 170                             |           | 1.0(10.5)                     | 2.4            |                          | White                             | N/A                |
| 0940        | 75(3")                         | 92                                 | 200                             |           |                               | 4.4            |                          | fabric                            | IN/A               |
|             | 100( 4")                       | 124                                | 400                             |           |                               | 9.0            |                          |                                   |                    |
|             | 125 ( 5")                      | 152                                | 600                             |           |                               | 10.4           | 15                       |                                   |                    |
|             | 150(6")                        | 180                                | 650                             |           |                               | 12.0           |                          |                                   |                    |
|             | 200( 8")                       | 236                                | 1000                            | 1.0(10.5) | _                             | 18.7           | 10                       |                                   |                    |
|             | 250 ( 10")                     | 287                                | 1200                            |           | -                             | 22.5           |                          |                                   |                    |

<sup>\*</sup> Outer diameter values are only for reference.

 $({\hbox{NOTE}}) \ \ {\hbox{For use with higher pressure than specified above, contact use}.$ 

# **Construction**



| (NOTES) 1. | Standard chemical tanker hoses with diameters of 4"and more are  |
|------------|--|
|            | provided with outer cover of tightly wound hemp rope in order to |
|            | increase abrasion resistance and moisture retention.             |

| Item | Part name     | 0940             | 0933             |
|------|---------------|------------------|------------------|
| 1    | Inner wire    | Stainless steel  | Stainless steel  |
| 2    | Inner fabric  | Nylon            | Polyester        |
| 3    | Film          | Nylon            | Polyester        |
| 4    | Tube          | PA/PP            | PA/PP            |
| 5    | Middle fabric | Nylon            | Polyester        |
| 6    | Film          | Nylon            | Polyester        |
| 7    | Middle fabric | Nylon            | Polyester        |
| 8    | Outer cover   | Nylon            | Polyester        |
| 9    | Outer wire    | galvanized steel | galvanized steel |
| 10   | Option        | Stainless steel  | Stainless steel  |

<sup>\*</sup>Contact us for chemical tanker hoses because they have special specifications.

<sup>\*</sup>These hoses are manufactured so that safety factor is 5 times the maximum pressure.

# Fire safe Hose EX HOSE





# Hoses that stand high radiation heat of blast and electric furnaces **Features**

- Excellent flame resistance
  - These hoses employ aluminum, glass fiber, and polyester fiber in multiple layers in the external covering, and also heat-resistant materials such as fluorocarbon resin film, resulting in superb heat resistance.
  - ( Note) These flameproof properties exceed those of the basic cloth used in special fire-proof uniforms worn by fire fighters.
- Easy handling

- High level of safety
  - Thanks to the structure of a few dozen layers, these hoses are not prone to rupture and withstand repeated bending without being damaged.
  - End fittings are fitted by a special method so that they do not come apart easily.
- Smaller bending radius compared to metal or rubber hoses, enabling easy handling.

# **Hose selection**

| Hose number | Main applications   |
|-------------|---|
| 0944        | Appropriate for vapor collecting pipe systems of loading arms used for cargo such as petroleum derivatives and chemicals.   |
| 0944-1      | Appropriate for air ducts installed in places with high levels of radiant heat such as around blast furnaces of steel plants.   |
| 0944-2      | Appropriate for delivering cooling water and lubricating oil (to be discussed separately) installed in places with high levels of radiant heat such as around blast furnaces of steel plants.   |
| 0944-3      | Top-level specifications within the series of flame-resistant hoses. These hoses can be used in an extremely wide range of applications.  |
| 0944-4      | Appropriate for cooling water piping systems that require insulation such as around blast furnaces of steel plants.  (Remark) For usage in places subject to high levels of radiant heat, specify hose number 0944-6.   |
| 0946        | Chemical flame-resistant hoses  *These hoses result from improvements on the 0944-2 and are used with a wide range of chemicals due to the stainless steel employed in the internal wires of contact areas.  *The hose number for external wires made of stainless steel is 0946-S. |

# specification

Typical temperature range: -20°C to +80°C. Maximum ambient temperature range: +300°C Maximum allowed temperature may differ depending on operation conditions. Contact us in advance.

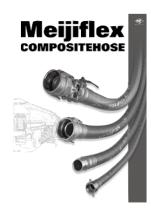
| Hose number | Nominal inner<br>diameter<br>mm (in) | Outer<br>diameter<br>mm | Minimum<br>bending radius<br>mm | Maximum<br>pressure<br>MPa (kgf/cm2) | Weight<br>kg/m | Maximum product length m | Color and material of outer cover | Color of name tape |
|-------------|--------------------------------------|-------------------------|---------------------------------|--------------------------------------|----------------|--------------------------|-----------------------------------|--------------------|
| 0044        | 19 ( <sup>3</sup> / <sub>4</sub> ")  | 30                      | 80                              |                                      | 0.7            |                          |                                   |                    |
| 0944        | 25(1")                               | 38                      | 100                             |                                      | 0.9(0.7)       |                          |                                   |                    |
| 00444       | 32(1 <sup>1</sup> / <sub>4</sub> ")  | 46                      | 120                             |                                      | 1.1 (0.9)      |                          |                                   |                    |
| 0944-1      | 38(1 <sup>1</sup> /2")               | 52                      | 130                             |                                      | 1.3(1.2)       |                          |                                   |                    |
| 0944-2      | 50(2")                               | 66                      | 140                             |                                      | 2.0(1.7)       | 20                       | Silver,                           |                    |
| 0944-2      | 65(2 <sup>1</sup> /2")               | 80                      | 180                             | 1.0(10.5)                            | 3.0(2.5)       |                          | Silicon                           | N/A                |
| 0944-3      | 75(3")                               | 93                      | 250                             | 1.0(10.3)                            | 4.1 (3.3)      |                          | glass                             | IN/A               |
| 0944-3      | 100( 4")                             | 119                     | 280                             |                                      | 5.4(4.2)       |                          | fabric                            |                    |
| 0944-4      | 100( 4")                             | 127                     | 500                             |                                      | 9.4(7.8)       |                          |                                   |                    |
| 0944-4      | 114(4 <sup>1</sup> /2")              | 140                     | 550                             |                                      | 10.2(8.5)      |                          |                                   |                    |
| 0946        | 125(5")                              | 151                     | 600                             |                                      | 10.6(8.8)      | 15                       |                                   |                    |
| USTU        | 150(6")                              | 179                     | 650                             |                                      | 14.2(11.8)     |                          |                                   |                    |

(NOTES) 1. Outer diameter values are only for reference.

- 2. Weight values (kg/m) in parentheses represent the weight of 0944 hose.
- 3. 0944 is available in size 1" and larger.

# Tank Lorry Hose \*Japanese Patent Number 3556278 OSE





# Light weight, easy-to-handle, durable hoses

### **Features**

- High level of safety
- Protection against static discharge
  - No risk of breaking of grounding cable. Both terminals of internal and external wires constituting the hose are connected to fittings to ensure permanent electric conductivity. In addition, a completely sealed construction enables increased safety.
  - \*Recommended by the National Institute of Industrial Safety of Ministry of Health, Labor and Welfare.
  - These hoses do not easily break or crook even if they are repeatedly bent, and unlike rubber hoses, they do not suddenly rupture even when

they reach service life.

- Easy handling
  - Bending radius is about one third of rubber hoses, enabling easy in a tight space.
  - Handling in cold climates in winter is easy because the hoses are nearly unaffected by temperature.
- Highly durable
  - These hoses are about 2 to 3 times more durable than rubber hoses.
  - Unlike rubber or vinyl hoses, these hoses do not easily break near the end fittings after repeated connecting and disconnecting.

# **Hose selection**

Hose number Main applications

0955F-A

0955F-R

0951F series

0969LF series

0970F series

0976F series

Light-weight hoses with a smooth inner surface to be used for both white and black oil.

These hoses have a smooth inner surface and are also appropriate for black oil such as heavy oil, lubricants, and vegetable oil. These hoses are effective for high-temperature liquids.

These hoses are effective for metal-abrasive chemicals such as hydrochloric and hypochlorous acids.

A standard chemical hose targeted on solvents and most other types of chemicals.

These hoses represent the best of the 0951F series in terms of resistance to abrasive chemicals such as hydrochloric and hypochlorous acid.

The specifications of these hoses are top class, and they can be used for fuming sulfuric acid, concentrated nitric acid, and other substances that cannot be used with conventional chemical hoses.

# specification

- 1. For compatibility with different types of chemicals, see appendix in P.20 P.25.
- Typical temperature range: -20 °C to +80 °C.
   For use with temperatures above 80°C, contact us in advance.

| Hose number                     | Nominal inner diameter mm (in) | Outer<br>diameter<br>mm | Minimum<br>bending radius<br>mm | Maximum<br>pressure<br>MPa (kgf/cm2) | Weight<br>kg/m | Standard<br>length<br>m | Color and material of outer cover    | Color of name tape |
|---------------------------------|--------------------------------|-------------------------|---------------------------------|--------------------------------------|----------------|-------------------------|--------------------------------------|--------------------|
|                                 | 65(2 <sup>1</sup> /2")         | 80                      | 200                             |                                      | 1.7            | 3~4                     | Orange PVC                           |                    |
| 0955F-A                         | 75(3")                         | 92                      | 220                             | 1.0(10.5)                            | 2.0            |                         | coat fabric<br>Optional:             | Pod                |
| (For both white and             | 90 (31/2")                     | 104                     | 260                             |                                      | 2.3            |                         | blue, red.                           | Red                |
| black oils)                     | 100( 4")                       | 116                     | 300                             |                                      | 2.6            |                         | green                                |                    |
| 0955F-R                         | 65(2 <sup>1</sup> /2")         | 80                      | 180                             | 1.0(10.5)                            | 2.3            | 3~4                     | Red PVC<br>coat fabric<br>(optional) | Yellow             |
| (For both white and black oils) | 75( 3")                        | 91                      | 210                             | 1.0(10.5)                            | 2.9            |                         |                                      | reliow             |
|                                 | 50(2")                         | 66                      | 180                             |                                      | 1.8            | 3~10                    | 0 51/0                               |                    |
| 0951F                           | 65(2 <sup>1</sup> /2")         | 80                      | 200                             | 1.4(14.0)                            | 2.6            |                         | Green PVC coat fabric                | Blue               |
| (For chemicals)                 | 75( 3")                        | 93                      | 220                             |                                      | 3.2            |                         | coat labile                          |                    |
| 0969LF<br>(For chemicals)       | 50(2")                         | 64                      | 170                             |                                      | 1.9            | 3~10                    |                                      |                    |
|                                 | 65(2 <sup>1</sup> /2")         | 78                      | 200                             | 1.4(14.0)                            | 2.1            |                         | Green PVC coat fabric                | Red                |
|                                 | 75(3")                         | 91                      | 250                             |                                      | 3.1            |                         | COAL TABLIC                          |                    |

(NOTES) 1. See P.6 and separate catalog for 0970F and 0976F hoses.

<sup>2.</sup> Outer diameter values are only for reference.

# flex Hose





# World's first ever Composite Hose® with smooth internal surface **Features**

- Transportation efficiency has been dramatically improved.
- In the newly-developed F series, the internal liquid flow is smoother thanks to a smoothed inner surface.
- This epoch-making hose reduces cargo loading time by approximately 15%. (It has been shown that the reduction in time may reach 20% in some cases.)
- Less amount of residual fluid after cargo loading makes internal flushing easier.
- In terms of safety, the hose has been qualified for the IMO chemical code by Nippon Kaiji Kyokai (NK) like the previous type.

# lose selection

Hose number

#### 0969F series

0969F, 0969F-S, 0969F-HS

### 0969 series

0969, 0969-S, 0969-HS

### 0982 series

0982, 0982-S

#### 0998 series

0998, 0998-S, 0998-H, 0998-HS

# 0976F series

0976F, 0976F-S

### Special specifications product 0969-W, 0969-Ws

#### Main applications

This is a multi-purpose hose for general use with abrasive and volatile chemicals. This type of hose achieves lower pressure loss and permits easier cleaning due to a newly-developed smooth inner surface.

This is a standard hose for use with volatile chemicals.

The range of applications of this hose is wide and includes solvents such as B.T.X ketone and alcohols.

This hose is effective for abrasive chemicals such as strong sulfuric acid. However, do not use volatile chemicals because of their lower electric conductivity.

\*Sizes of up to 3" are classified as belonging to hose code 0951 series.

This is a multi-purpose hose with the highest specifications within the chemical hose series and can also be used with fuming sulfuric acid and concentrated nitric acid.

This hose has chemical resistance on both inner and outer surfaces and is intended for operations inside liquid tanks (can be submerged in liquids).

# specification

Typical temperature range: -20°C to +65°C

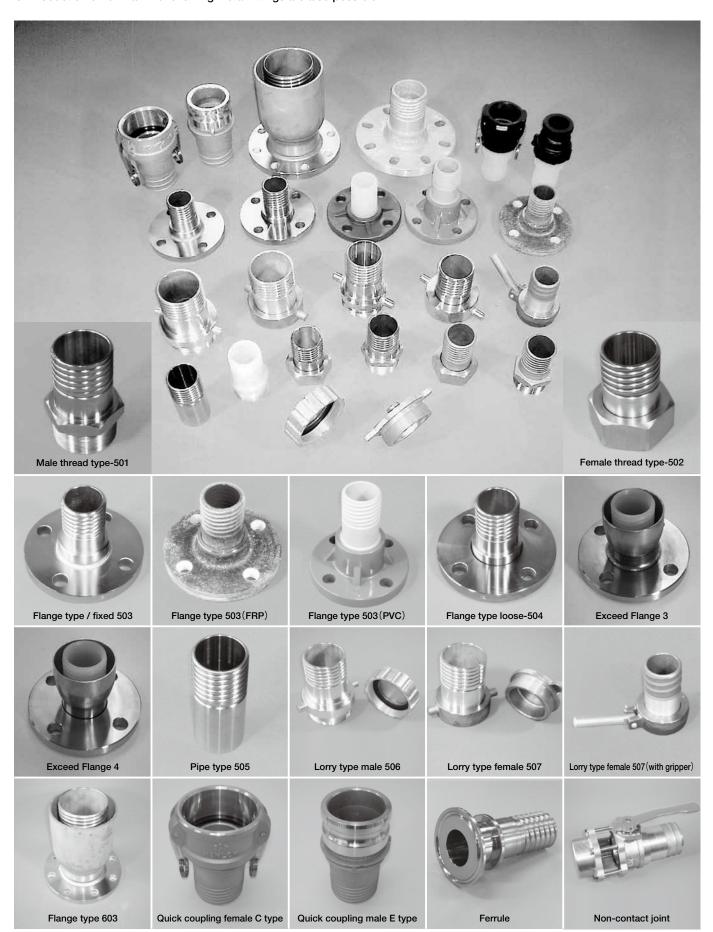
| Hose number             | Nominal inner<br>diameter<br>mm (in) | Outer<br>diameter<br>mm | Minimum<br>bending radius<br>mm | Maximum<br>pressure<br>MPa (kgf/cm2) | Hose weight kg/m | Weight of fittings<br>at both ends<br>JIS 10K kg | Maximum product length m | Color and material of outer cover | Color of name tape |
|-------------------------|--------------------------------------|-------------------------|---------------------------------|--------------------------------------|------------------|--|--------------------------|-----------------------------------|--------------------|
| (Smooth type)           | 100 ( 4)                             | 123                     | 500                             |                                      | 7.2              | 16.0   | 20                       | Croon                             |                    |
| 0969F-S<br>0969F-H      | 114 (4 <sup>1</sup> / <sub>2</sub> ) | 135                     | 550                             | 1.0(10.5)                            | 8.2              | 17.0   |                          | Green, PVC coat fabric            | Orongo             |
|                         | 125 ( 5)                             | 148                     | 600                             |                                      | 8.8              | 22.0   | 15                       |                                   | Orange             |
|                         | 150 ( 6)                             | 175                     | 650                             |                                      | 10.8             | 32.0   |                          |                                   |                    |
| (Smooth and light type) | 100 ( 4)                             | 123                     | 500                             |                                      | 5.3              | 16.0   | 20                       | Croon                             |                    |
| 0969KF<br>0969KF-S      | 114 (4 <sup>1</sup> / <sub>2</sub> ) | 135                     | 550                             | 1.0(10.5)                            | 6.1              | 17.0   |                          | Green, PVC coat                   | Orange             |
|                         | 125 ( 5)                             | 148                     | 600                             |                                      | 6.3              | 22.0   | 15                       |                                   |                    |
| 0969KF-HS               | 150 (6)                              | 176                     | 650                             |                                      | 8.5              | 32.0   |                          | fabric                            |                    |

(NOTES) 1. All sizes of hoses are manufactured so that safety factor is 5 times (rupture pressure of 5.25 MPa or greater) pursuant to IMO BCH and IBC Codes.

- 2. Outer diameter values are only for reference.
- 3. Weight of fittings at both ends are only for reference. 4. Standard end fitting for 4 1/2" hoses is a 4" flange.



- Meijiflex hoses are coupled with Meijiflex original fittings. Please note that Meijiflex will not bear responsibility for accidents involving fittings supplied and installed (re-fastened) by the user's request.
- Production other than the following metal fittings are also possible.



# Joint & Coupling EX HOSE



(Unit: mm)

Material

S

SUS

BS

#### **Joint materials**

Eight standard materials are available: S (Mild steel), SUS (SUS 304), AL (aluminum), BC (Gunmetal), BS (Brass), P.P (Polypropylene), PVC (Vinyl chloride), FRP (Fiber reinforced plastic).

When ordering, use corresponding code to specify material.

Note that PP and PVC must be used under room temperature condition and fluid pressure of 0.5 MPa or lower (See P.14 for quick couplings).

# Types of joints

Male thread type, female thread type, flange type, pipe type, lorry type (male and female), ferrule type, and quick coupling type are available, and their standard dimensions are according to the dimension table. Other special fittings can be prepared in a short lead time.

Fitting

number

502-13

502-19

502-25

502-32

502-38

502-50

Designation

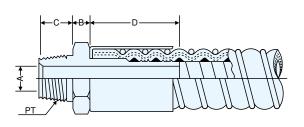
3/4"

11/4"

11/2"

For special fittings, provide a drawing or a sample.

#### 1 Male thread type - 501



\*Thread is according to JIS PT.

If threads of other standards or other forms are needed, please specify when ordering.

| Fitting | Designation |          |     | В  | С  | D  | Material |          |
|---------|-------------|----------|-----|----|----|----|----------|----------|
| number  | Designation | S.SUS.BS | P.P | AL | Б  | C  | D        | Material |
| 501-13  | 1/2"        | 9        | _   | _  | 10 | 18 | 50       |          |
| 501-19  | 3/4"        | 16       | 12  | 14 | 12 | 20 | 55       | S        |
| 501-25  | 1"          | 20       | 18  | 20 | 12 | 21 | 56       | SUS      |
| 501-32  | 11/4"       | 27       | 23  | 27 | 14 | 25 | 57       | BS       |
| 501-38  | 11/2"       | 32       | 29  | 31 | 15 | 26 | 62       | AL       |
| 501-50  | 2"          | 44       | 41  | 44 | 16 | 30 | 65       | P.P      |
| 501-65  | 21/2"       | 57       | 53  | 57 | 18 | 34 | 75       | 1 .1     |
| 501-75  | 3"          | 69       | 65  | 69 | 20 | 40 | 85       |          |

21

24

28

31

35

9

16

20

26

33

45

64

69

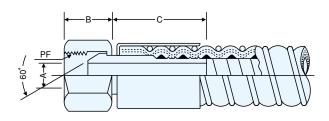
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71

76

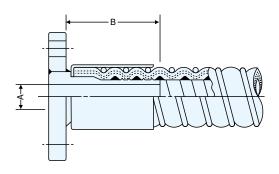
79

#### 2 Female thread type - 502



| *Thread is according to JIS PF. It has an external seat.                              |     |
|---|-----|
| If threads of other standards or other forms are needed, please specify when ordering | ng. |

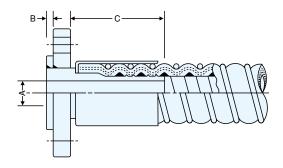
#### 3 Flange type fixed - 503



| Fitting number | Designation | S.SUS.BS | A<br>JS.BS P.P AL |    | В   | Flange         | Material      |
|----------------|-------------|----------|-------------------|----|-----|----------------|---------------|
|                |             |          |                   | AL |     | Stariuaru      |               |
| 503-19         | 3/4"        | 16       | 12                |    | 75  | JIS            | S             |
| 503-25         | 1"          | 20       | 18                |    | 76  | 5K             | SUS           |
| 503-32         | 11/4"       | 27       | 23                |    | 77  | 10K            | AL            |
| 503-38         | 11/2"       | 32       | 29                |    | 82  |                | P.P           |
| 503-50         | 2"          | 44       | 41                |    | 85  | 20K            | PVC<br>FRP    |
| 503-65         | 21/2"       | 57       | 53                |    | 96  | ANSI<br>150PSI | Teflon lining |
| 503-75         | 3"          | 69       | 63                | 69 | 106 |                | Polyethylene  |
| 503-100        | 4"          | 94       | 84                | 94 | 121 | 300PSI         | lining        |

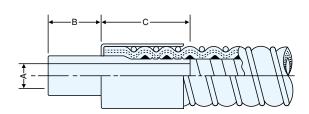
# **Joint & Coupling**

#### 4 Flange type loose - 504



| Fitting number | Designation | Α  | В | С   | Flange<br>standard | Material |
|----------------|-------------|----|---|-----|--------------------|----------|
| 504-19         | 3/4"        | 16 | 4 | 71  | JIS                |          |
| 504-25         | 1"          | 20 | 4 | 72  |                    |          |
| 504-32         | 11/4"       | 27 | 4 | 73  | 5K<br>10K          |          |
| 504-38         | 11/2"       | 32 | 4 | 78  |                    | S        |
| 504-50         | 2"          | 44 | 4 | 81  | 20K                | SUS      |
| 504-65         | 21/2"       | 57 | 5 | 91  | ANSI               |          |
| 504-75         | 3"          | 69 | 5 | 101 | 150PSI<br>300PSI   |          |
| 504-100        | 4"          | 94 | 5 | 116 | 300151             |          |

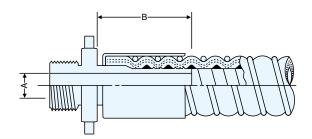
#### **⑤**Pipe type - 505



| * Custom | ontion with | varied B | dimension i | s available | unon request |
|----------|-------------|----------|-------------|-------------|--------------|

| Fitting | Danimantina | A        | В   | С  | Material |     |          |
|---------|-------------|----------|-----|----|----------|-----|----------|
| number  | Designation | S,SUS,BS | P.P | AL | В        | C   | Material |
| 505-19  | 3/4"        | 16       | 12  | 14 | 50       | 55  |          |
| 505-25  | 1"          | 20       | 18  | 20 | 50       | 56  | S        |
| 505-32  | 11/4"       | 27       | 23  | 27 | 50       | 57  | SUS      |
| 505-38  | 11/2"       | 32       | 29  | 31 | 50       | 62  | BS       |
| 505-50  | 2"          | 44       | 41  | 44 | 50       | 65  | AL       |
| 505-65  | 21/2"       | 57       | 53  | 57 | 50       | 75  | P.P      |
| 505-75  | 3"          | 69       | 65  | 69 | 50       | 85  | PVC      |
| 505-100 | 4"          | 94       | 84  | 94 | 50       | 100 |          |

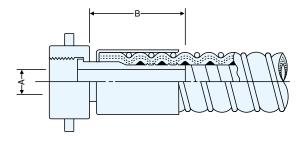
#### **6** Lorry type male - 506



| Fitting<br>number | Designation | Α  | В  | Thread standard                      | Material |
|-------------------|-------------|----|----|--------------------------------------|----------|
| 506-50            | 2"          | 44 | 75 | M thread                             | ВС       |
| 506—65            | 21/2"       | 57 | 85 | Tokyu, Kyokuto,<br>Kawanishi, Kongo, | SUS      |
| 506-75            | 3"          | 69 | 95 | JIS, Fire hose, Morita               | AL       |

%See P.19 for thread dimension.

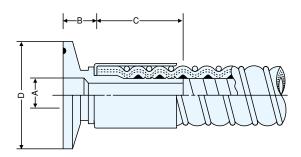
#### 7 Lorry type female - 507



| Fitting<br>number | Designation | Α  | В  | Thread standard                      | Material |
|-------------------|-------------|----|----|--------------------------------------|----------|
| 507-50            | 2"          | 44 | 75 | M thread                             | ВС       |
| 507—65            | 21/2"       | 57 | 85 | Tokyu, Kyokuto,<br>Kawanishi, Kongo, | SUS      |
| 507-75            | 3"          | 69 | 95 | JIS, Fire hose, Morita               | AL       |

\*See P.19 for thread dimension.

#### 8 Ferrule type



| Fitting number | Designation | Α    | В  | С  | D    | Standard | Material |
|----------------|-------------|------|----|----|------|----------|----------|
| Ferrule - 25   | 1"          | 23   | 24 | 56 | 50.5 |          | SUS      |
| Ferrule - 38   | 1.11/2"     | 35.7 | 24 | 62 | 50.5 | IDF      |          |
| Ferrule - 50   | 2"          | 47.8 | 25 | 65 | 64   |          |          |



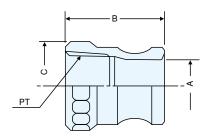
Material

- Special dust cap and dust plug are available for quick couplings. If needed, please specify "with cap" or "with plug" when ordering.
   Availability of materials for each form is indicated by following symbols.

  - O-Available X-Not available
- △-There are no hoses that can directly fit into this fitting. Use 501 (male thread) and then connect Type A or D. 
  ■Standard packing for quick couplings is made of NBR. For different material, specify when ordering.
- Refer to the catalog of quick coupling or contact us to select appropriate packing for fluids to be used.

#### 

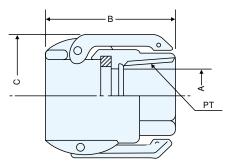
Adapter (male) Brand: OZ/OPW



| Fitting | Designation | ۸   | В  | в с |    | iviai | enai |     |
|---------|-------------|-----|----|-----|----|-------|------|-----|
| number  | Designation | Α   | Ь  | C   | AL | ВС    | SUS  | P.P |
| A- 19   | 3/4"        | 21  | 38 | 32  | 0  | 0     | 0    | 0   |
| A- 25   | 1"          | 24  | 47 | 41  | 0  | 0     | 0    | 0   |
| A- 32   | 11/4"       | 29  | 56 | 48  | 0  | 0     | 0    | ×   |
| A- 38   | 11/2"       | 35  | 59 | 56  | 0  | 0     | 0    | 0   |
| A- 50   | 2"          | 45  | 63 | 67  | 0  | 0     | 0    | 0   |
| A- 65   | 21/2"       | 56  | 87 | 83  | 0  | 0     | 0    | X   |
| A- 75   | 3"          | 71  | 73 | 96  | 0  | 0     | 0    | 0   |
| A-100   | 4"          | 99  | 78 | 127 | 0  | 0     | 0    | ×   |
| A-150   | 6"          | 148 | 86 | 192 | 0  | 0     | 0    | ×   |
|         |             |     |    |     |    |       |      |     |

\* External thread type F is also available.

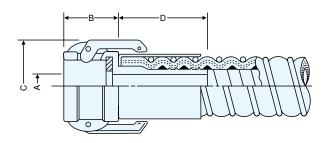
D Coupler (female) Brand: OZ/OPW



| * External thread type | e B is also available. |
|------------------------|------------------------|
|------------------------|------------------------|

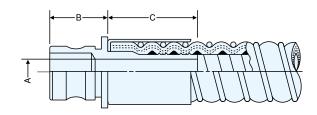
| 3      | Designation | Α   | В   | С   |    |    |     |     |
|--------|-------------|-----|-----|-----|----|----|-----|-----|
| number | Designation | ^   | В   | C   | AL | ВС | SUS | P.P |
| D— 19  | 3/4"        | 19  | 53  | 52  | 0  | 0  | 0   | 0   |
| D- 25  | 1"          | 26  | 61  | 61  | 0  | 0  | 0   | 0   |
| D- 32  | 11/4"       | 33  | 68  | 81  | 0  | 0  | 0   | X   |
| D- 38  | 11/2"       | 38  | 71  | 89  | 0  | 0  | 0   | 0   |
| D- 50  | 2"          | 50  | 76  | 99  | 0  | 0  | 0   | 0   |
| D- 65  | 21/2"       | 61  | 84  | 111 | 0  | 0  | 0   | X   |
| D- 75  | 3"          | 75  | 90  | 137 | 0  | 0  | 0   | 0   |
| D-100  | 4"          | 94  | 96  | 166 | 0  | 0  | 0   | ×   |
| D-150  | 6"          | 142 | 115 | 258 | 0  | 0  | 0   | ×   |
|        |             |     |     |     |    |    |     |     |

#### © Quick coupling (female) Brand: OZ/OPW



| Fitting | Designation | Α  | В  | C D |     |    | Material    |             |             |  |  |
|---------|-------------|----|----|-----|-----|----|-------------|-------------|-------------|--|--|
| number  | Designation |    |    |     |     | AL | ВС          | SUS         | P.P         |  |  |
| C- 19   | 3/4"        | 14 | 32 | 52  | 70  | 0  | $\triangle$ | 0           | $\triangle$ |  |  |
| C- 25   | 1"          | 20 | 39 | 61  | 76  | 0  | $\triangle$ | 0           | $\triangle$ |  |  |
| C- 32   | 11/4"       | 24 | 48 | 76  | 78  | 0  | $\triangle$ | 0           | X           |  |  |
| C- 38   | 11/2"       | 31 | 49 | 84  | 83  | 0  | $\triangle$ | 0           | $\triangle$ |  |  |
| C- 50   | 2"          | 43 | 54 | 97  | 84  | 0  | $\triangle$ | 0           | $\triangle$ |  |  |
| C- 65   | 21/2"       | 55 | 58 | 108 | 96  | 0  | $\triangle$ | $\triangle$ | X           |  |  |
| C- 75   | 3"          | 67 | 60 | 134 | 102 | 0  | $\triangle$ | $\triangle$ | $\triangle$ |  |  |
| C-100   | 4"          | 90 | 62 | 164 | 126 | 0  | $\triangle$ | $\triangle$ | ×           |  |  |

#### © Quick coupling (male) Brand: OZ/OPW



| Fitting | Designation | ۸  | В  | С   |    | Mat         | erial       |             |
|---------|-------------|----|----|-----|----|-------------|-------------|-------------|
| number  | Designation | Α  | В  | C   | AL | ВС          | SUS         | P.P         |
| E- 19   | 3/4"        | 14 | 38 | 70  | 0  | $\triangle$ | 0           | $\triangle$ |
| E- 25   | 1"          | 20 | 44 | 76  | 0  | $\triangle$ | 0           | $\triangle$ |
| E- 32   | 11/4"       | 24 | 51 | 78  | 0  | $\triangle$ | 0           | ×           |
| E- 38   | 11/2"       | 30 | 54 | 84  | 0  | $\triangle$ | 0           | $\triangle$ |
| E- 50   | 2"          | 43 | 58 | 78  | 0  | $\triangle$ | 0           | $\triangle$ |
| E- 65   | 21/2"       | 54 | 64 | 97  | 0  | $\triangle$ | $\triangle$ | ×           |
| E- 75   | 3"          | 67 | 66 | 100 | 0  | $\triangle$ | $\triangle$ | $\triangle$ |
| E-100   | 4"          | 90 | 69 | 124 | 0  | $\triangle$ | $\triangle$ | ×           |

#### Maximum operation pressure of quick couplings

|                  |         |      |      |      |      | (Unit: MPa) |
|------------------|---------|------|------|------|------|-------------|
|                  | 1/2~3/4 | 1~2  | 21/2 | 3    | 4    | 5~6         |
| Aluminum, Bronze | 1.76    | 1.76 | 1.08 | 0.88 | 0.69 | 0.49        |
| SUS              | 1.76    | 1.76 | 1.57 | 1.37 | 1.08 | 0.69        |
| PP               | -       | 0.69 | -    | 0.39 | -    | _           |

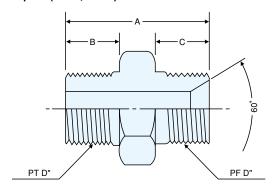
\*PP may be used under room temperature conditions only.

Fitting

# **Joint & Coupling**

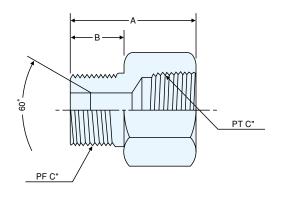
#### **10** Adapter

### G Adapter (male, male)



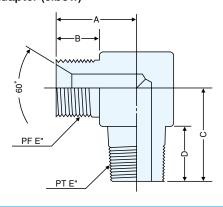
| Fitting<br>number | Designation | Α  | В  | С  | D    | Material |
|-------------------|-------------|----|----|----|------|----------|
| G-19              | 3/4"        | 52 | 20 | 20 | 3/4  |          |
| G-25              | 1"          | 55 | 21 | 21 | 1    | S        |
| G-32              | 11/4"       | 63 | 25 | 24 | 11/4 | SUS      |
| G-38              | 11/2"       | 63 | 25 | 24 | 11/2 | BS       |
| G-50              | 2"          | 75 | 30 | 28 | 2    |          |

#### (H) Adapter (male, female)



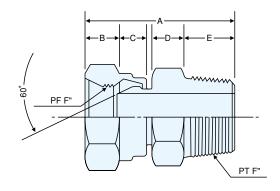
| Fitting<br>number | Designation | Α  | В  | С    | Material |
|-------------------|-------------|----|----|------|----------|
| H-19              | 3/4"        | 45 | 20 | 3/4  |          |
| H-25              | 1"          | 49 | 22 | 1    | S        |
| H-32              | 11/4"       | 54 | 24 | 11/4 | SUS      |
| H-38              | 11/2"       | 54 | 24 | 11/2 | BS       |
| H-50              | 2"          | 64 | 28 | 2    |          |

#### ① Adapter (elbow)



| Fitting number | Designation | Α    | В  | С    | D  | Е    | Material |
|----------------|-------------|------|----|------|----|------|----------|
| I—19           | 3/4"        | 35   | 20 | 43   | 28 | 3/4  |          |
| I—25           | 1"          | 41   | 22 | 50   | 34 | 1    | S        |
| I—32           | 11/4"       | 49.5 | 25 | 59.5 | 37 | 11/4 | SUS      |
| I—38           | 11/2"       | 52   | 25 | 63   | 39 | 11/2 | BS       |
| I—50           | 2"          | 64   | 32 | 74.5 | 41 | 2    |          |

#### ① Adapter (male female union)



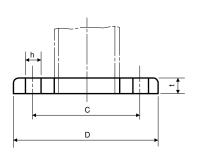
| Fitting<br>number | Designation | Α  | В  | С    | D  | Е  | F    | Material |
|-------------------|-------------|----|----|------|----|----|------|----------|
| J—19              | 3/4"        | 56 | 12 | 10.5 | 12 | 20 | 3/4  |          |
| J-25              | 1"          | 60 | 12 | 12.5 | 12 | 22 | 1    | S        |
| J-32              | 11/4"       | 69 | 14 | 14   | 14 | 25 | 11/4 | SUS      |
| J-38              | 11/2"       | 69 | 14 | 14.5 | 14 | 25 | 11/2 | BS       |
| J-50              | 2"          | 82 | 17 | 17.5 | 17 | 30 | 2    |          |

# Flange standards

#### ● Standard dimension table for JIS 5 kg/cm² pipe flange

| (Offic. IIII |  |
|--------------|--|
|              |  |
|              |  |
| Nominal      |  |
| holt size    |  |

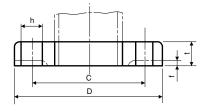
| ١. |     |                | Outer                  |                                     | F         | lange dim             | ensions |               | Bol                   | lt holes |                    |                      |
|----|-----|----------------|------------------------|-------------------------------------|-----------|-----------------------|---------|---------------|-----------------------|----------|--------------------|----------------------|
|    |     | iinal<br>ieter | diameter of connecting | Flange outer<br>diameter<br>D (AXB) | Steel and | malleable   Cast iron |         | Diameter<br>g | Pitch circle diameter | Number   | Bolt hole diameter | Nominal<br>bolt size |
|    | Α   | В              | steel pipe             |                                     | cast iron | Ouot II OII           |         |               | С                     |          | h                  |                      |
| •  | 15  | 1/2            | 21.7                   | 80 (80×50)                          | 9         | 12                    | 1       | (48)          | 60                    | 4 (2)    | 12                 | M10                  |
| 2  | 20  | 3/4            | 27.2                   | 85                                  | 10        | 14                    | 1       | (52)          | 65                    | 4        | 12                 | M10                  |
| 2  | 25  | 1              | 34.0                   | 95                                  | 10        | 14                    | 1       | (62)          | 75                    | 4        | 12                 | M10                  |
| 3  | 32  | $1\frac{1}{4}$ | 42.7                   | 115                                 | 12        | 16                    | 2       | (72)          | 90                    | 4        | 15                 | M12                  |
|    |     |                |                        |                                     |           |                       |         |               |                       |          |                    |                      |
| 4  | 40  | $1\frac{1}{2}$ | 48.6                   | 120                                 | 12        | 16                    | 2       | (78)          | 95                    | 4        | 15                 | M12                  |
| į  | 50  | 2              | 60.5                   | 130                                 | 14        | 16                    | 2       | (88)          | 105                   | 4        | 15                 | M12                  |
| 6  | 65  | 21/2           | 76.3                   | 155                                 | 14        | 18                    | 2       | (122)         | 130                   | 4        | 15                 | M12                  |
| 8  | 30  | 3              | 89.1                   | 180                                 | 14        | 18                    | 2       | (125)         | 145                   | 4        | 19                 | M16                  |
| (9 | 90) | $3^{1}/_{2}$   | 101.6                  | 190                                 | 14        | 18                    | 2       | (135)         | 155                   | 4        | 19                 | M16                  |
|    |     |                |                        |                                     |           |                       |         |               |                       |          |                    |                      |
| 1  | 00  | 4              | 114.3                  | 200                                 | 16        | 20                    | 2       | (145)         | 165                   | 8        | 19                 | M16                  |
| 1  | 25  | 5              | 139.8                  | 235                                 | 16        | 20                    | 2       | (180)         | 200                   | 8        | 19                 | M16                  |
| 1  | 50  | 6              | 165.2                  | 265                                 | 18        | 22                    | 2       | (210)         | 230                   | 8        | 19                 | M16                  |
| 2  | 00  | 8              | 216.3                  | 320                                 | 20        | 24                    | 2       | (255)         | 280                   | 8        | 23                 | M20                  |
|    |     |                |                        |                                     |           |                       |         |               |                       |          |                    |                      |
| 2  | 50  | 10             | 267.4                  | 385                                 | 22        | 26                    | 2       | (320)         | 345                   | 12       | 23                 | M20                  |

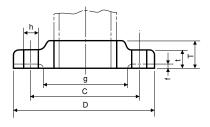


#### ● Standard dimension table for JIS 10 kg/cm² pipe flange

| Init: |  |
|-------|--|
|       |  |

|      |              | Outer                             |                               |                     | lange dim      | ensions |               | Во                            | It holes |                            |                   |
|------|--------------|-----------------------------------|-------------------------------|---------------------|----------------|---------|---------------|-------------------------------|----------|----------------------------|-------------------|
|      | neter        | diameter of connecting steel pipe | Flange outer<br>diameter<br>D | Steel and malleable | t<br>Cast iron | f       | Diameter<br>g | Pitch circle<br>diameter<br>C | Number   | Bolt hole<br>diameter<br>h | Nominal bolt size |
| Α    | В            |                                   |                               | cast iron           |                |         |               |                               |          |                            |                   |
| 15   | 1/2          | 21.7                              | 95                            | 12                  | 16             | 1       | (52)          | 70                            | 4        | 15                         | M12               |
| 20   | 3/4          | 27.2                              | 100                           | 14                  | 18             | 1       | (58)          | 75                            | 4        | 15                         | M12               |
| 25   | 1            | 34.0                              | 125                           | 14                  | 18             | 1       | (70)          | 90                            | 4        | 19                         | M16               |
| 32   | $1^{1}/4$    | 42.7                              | 135                           | 16                  | 20             | 2       | (80)          | 100                           | 4        | 19                         | M16               |
|      |              |                                   |                               |                     |                |         |               |                               |          |                            |                   |
| 40   | 11/2         | 48.6                              | 140                           | 16                  | 20             | 2       | (85)          | 105                           | 4        | 19                         | M16               |
| 50   | 2            | 60.5                              | 155                           | 16                  | 20             | 2       | (100)         | 120                           | 4        | 19                         | M16               |
| 65   | $2^{1}/2$    | 76.3                              | 175                           | 18                  | 22             | 2       | (120)         | 140                           | 4        | 19                         | M16               |
| 80   | 3            | 89.1                              | 185                           | 18                  | 22             | 2       | (130)         | 150                           | 8        | 19                         | M16               |
| (90) | $3^{1}/_{2}$ | 101.6                             | 195                           | 18                  | 22             | 2       | (140)         | 160                           | 8        | 19                         | M16               |
|      |              |                                   |                               |                     |                |         |               |                               |          |                            |                   |
| 100  | 4            | 114.3                             | 210                           | 18                  | 24             | 2       | (155)         | 175                           | 8        | 19                         | M16               |
| 125  | 5            | 139.8                             | 250                           | 20                  | 24             | 2       | (185)         | 210                           | 8        | 23                         | M20               |
| 150  | 6            | 165.2                             | 280                           | 22                  | 26             | 2       | (215)         | 240                           | 8        | 23                         | M20               |
| 200  | 8            | 216.3                             | 330                           | 22                  | 26             | 2       | (265)         | 290                           | 12       | 23                         | M20               |
|      |              |                                   |                               |                     |                |         |               |                               |          |                            |                   |
| 250  | 10           | 267.4                             | 400                           | 24                  | 30             | 2       | (325)         | 355                           | 12       | 25                         | M22               |
| 300  | 12           | 318.5                             | 445                           | 24                  | 32             | 3       | (370)         | 400                           | 16       | 25                         | M22               |
|      |              |                                   |                               |                     |                |         |               |                               |          |                            |                   |

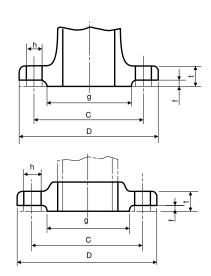




#### ● Standard dimension table for JIS 20 kg/cm² pipe flange

(Unit: mm)

|     |     | in al          | Outer                                   |                        | Flange di | mensions |               |                               | Bolt holes |                            |                      |
|-----|-----|----------------|---|------------------------|-----------|----------|---------------|-------------------------------|------------|----------------------------|----------------------|
| d   | iam | ninal<br>neter | diameter of<br>connecting<br>steel pipe | Outer<br>diameter<br>D | t         |          | Diameter<br>g | Pitch circle<br>diameter<br>C | Number     | Bolt hole<br>diameter<br>h | Nominal<br>bolt size |
|     | 4   | В              |   |                        |           |          | (=-)          |                               |            |                            |                      |
|     | 5   | 1/2            | 21.7                                    | 95                     | 14        | 1        | (52)          | 70                            | 4          | 15                         | M12                  |
| 2   | 0.  | 3/4            | 27.2                                    | 100                    | 16        | 1        | (58)          | 75                            | 4          | 15                         | M12                  |
| 2   | 25  | 1              | 34.0                                    | 125                    | 16        | 1        | (70)          | 90                            | 4          | 19                         | M16                  |
| 3   | 2   | $1^{1}/4$      | 42.7                                    | 135                    | 18        | 2        | (80)          | 100                           | 4          | 19                         | M16                  |
|     |     |                |   |                        |           |          |               |                               |            |                            |                      |
| 4   | 0   | 11/2           | 48.6                                    | 140                    | 18        | 2        | (85)          | 105                           | 4          | 19                         | M16                  |
| 5   | 0   | 2              | 60.5                                    | 155                    | 18        | 2        | (100)         | 120                           | 8          | 19                         | M16                  |
| 6   | 5   | $2^{1}/_{2}$   | 76.3                                    | 175                    | 20        | 2        | (120)         | 140                           | 8          | 19                         | M16                  |
| 8   | 0   | 3              | 89.1                                    | 200                    | 22        | 2        | (135)         | 160                           | 8          | 23                         | M20                  |
| (9) | 0)  | 31/2           | 101.6                                   | 210                    | 24        | 2        | (145)         | 170                           | 8          | 23                         | M20                  |
|     |     |                |   |                        |           |          |               |                               |            |                            |                      |
| 10  | 00  | 4              | 114.3                                   | 225                    | 24        | 2        | (160)         | 185                           | 8          | 23                         | M20                  |
| 12  | 25  | 5              | 139.8                                   | 270                    | 26        | 2        | (195)         | 225                           | 8          | 25                         | M22                  |
| 15  | 50  | 6              | 165.2                                   | 305                    | 28        | 2        | (230)         | 260                           | 12         | 25                         | M22                  |
| 20  | 00  | 8              | 216.3                                   | 350                    | 30        | 2        | (275)         | 305                           | 12         | 25                         | M22                  |
| 25  | 50  | 10             | 267.4                                   | 430                    | 34        | 2        | (345)         | 380                           | 12         | 27                         | M24                  |
|     |     |                |   |                        |           |          |               |                               |            |                            |                      |
| 30  | 00  | 12             | 318.5                                   | 480                    | 35        | 3        | (395)         | 430                           | 16         | 27                         | M24                  |

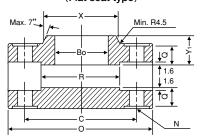


#### • Standard dimension table for forged steel flanges of Class 150 LB of JPI/ANSI

| п | Init: | mm |
|---|-------|----|

| Nominal diameter diam | DOIL SIZE  | Stud<br>bolt | Hex<br>bolt |
|--|------------|--------------|-------------|
| 15 ½ 89 22.2 30.2 34.9 11.5 16 47.6 60.3 4 16  | LINIC 1/0  |              |             |
|  | LINIO 4 /O |              |             |
|  | UNC 1/2    | 60           | 45          |
| 20 3/4 98 27.7 38.1 42.9 13.0 16 52.4 69.9 4 16  | UNC 1/2    | 60           | 50          |
| 25 1 108 34.5 49.2 50.8 14.5 17 55.6 79.4 4 16   | UNC 1/2    | 65           | 50          |
|  |            |              |             |
| 32 11/4 117 43.2 58.7 63.5 16.0 21 57.1 88.9 4 16  | UNC 1/2    | 65           | 56          |
| 40 11/2 127 49.1 65.1 73.2 17.5 22 61.9 98.6 4 16  | UNC 1/2    | 70           | 56          |
| 50 2 152 61.1 77.6 92.1 19.5 25 63.5 120.6 4 19  | UNC 5/8    | 80           | 63          |
|  |            |              |             |
| 65 2 <sup>1</sup> / <sub>2</sub> 178 77.1 90.5 104.8 22.5 29 69.8 139.7 4 19   | UNC 5/8    | 85           | 71          |
| 80 3 191 90.0 107.9 127.0 24.0 30 69.8 152.4 4 19  | UNC 5/8    | 90           | 80          |
| (90) 3 <sup>1</sup> / <sub>2</sub> 216 102.6 122.2 139.7 24.0 32 71.4 177.8 8 19   | UNC 5/8    | 90           | 80          |
|  |            |              |             |
| 100 4 229 115.4 134.9 157.2 24.0 33 76.2 190.5 8 19  | UNC 5/8    | 90           | 80          |
| 125 5 254 141.2 163.5 185.7 24.0 36 88.9 215.9 8 22  | UNC 3/4    | 95           | 80          |
| 150 6 279 166.6 192.1 215.9 25.5 40 88.9 241.3 8 22  | UNC 3/4    | 100          | 80          |
|  |            |              |             |
| 200 8 343 218.0 246.1 269.9 29.0 44 101.6 298.4 8 22   | UNC 3/4    | 110          | 90          |
| 250 10 406 269.5 304.8 323.8 30.5 49 101.6 361.9 12 26   | UNC 7/8    | 120          | 100         |
| 300 12 483 321.0 365.1 381.0 32.0 56 114.3 431.8 12 26   | UNC 7/8    | 120          | 100         |

#### Insert welding type flange (Flat seat type)



● Blind flange (Flat seat type)

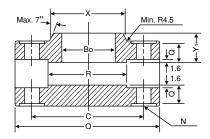
 $*\,\mbox{This table}$  is based on ANSI B 16.5-1977 (metric unit).

#### ● Standard dimension table for forged steel flanges of Class 300 LB of JPI/ANSI

(Unit: mm)

|             |                |                            | Flange inner                     |          |                       |                               | Total I                                      | Total length Bold holes |                             |    |                       |                      | Bolt le      | ength       |
|-------------|----------------|----------------------------|----------------------------------|----------|-----------------------|-------------------------------|--|-------------------------|-----------------------------|----|-----------------------|----------------------|--------------|-------------|
| Non<br>diam | ninal<br>neter | Flange<br>outer<br>diamete | diameter Insert type Socket type | diameter | Flat seat<br>diameter | Flange<br>thickness<br>(Min.) | Insert type<br>Socket type<br>Thread-in type | But-<br>welding<br>type | Pitch<br>circle<br>diameter |    | Bolt hole<br>diameter | Nominal<br>bolt size | Stud<br>bolt | Hex<br>bolt |
| Α           | В              | 0                          | Во                               | X        | R                     | Q                             | Y <sub>1</sub>                               | Y                       | С                           | N  |                       |                      |              |             |
| 15          | 1/2            | 95                         | 22.2                             | 38.1     | 35.1                  | 14.5                          | 22   | 52.4                    | 66.5                        | 4  | 16                    | UNC 1/2              | 65           | 50          |
| 20          | 3/4            | 117                        | 27.7                             | 47.6     | 42.9                  | 16.0                          | 25   | 57.1                    | 82.6                        | 4  | 19                    | UNC 5/8              | 75           | 63          |
| 25          | 1              | 124                        | 34.5                             | 53.8     | 50.8                  | 17.5                          | 27   | 61.9                    | 88.9                        | 4  | 19                    | UNC 5/8              | 75           | 63          |
|             |                |                            |                                  |          |                       |                               |  |                         |                             |    |                       |                      |              |             |
| 32          | $1^{1}/4$      | 133                        | 43.2                             | 63.5     | 63.5                  | 19.5                          | 27   | 65.1                    | 98.6                        | 4  | 19                    | UNC 5/8              | 80           | 63          |
| 40          | $1^{1}/2$      | 155                        | 49.1                             | 69.9     | 73.2                  | 21.0                          | 30   | 68.3                    | 114.3                       | 4  | 22                    | UNC 3/4              | 90           | 71          |
| 50          | 2              | 165                        | 61.1                             | 84.1     | 91.9                  | 22.5                          | 33   | 69.8                    | 127.0                       | 8  | 19                    | UNC 3/4              | 90           | 71          |
|             |                |                            |                                  |          |                       |                               |  |                         |                             |    |                       |                      |              |             |
| 65          | $2^{1}/2$      | 190                        | 77.1                             | 100.0    | 104.6                 | 25.5                          | 38   | 76.2                    | 149.4                       | 8  | 22                    | UNC 3/4              | 100          | 80          |
| 80          | 3              | 210                        | 90.0                             | 117.5    | 127.0                 | 29.0                          | 43   | 79.4                    | 168.1                       | 8  | 22                    | UNC 3/4              | 110          | 90          |
| (90)        | $3^{1}/2$      | 229                        | 102.6                            | 133.3    | 139.7                 | 30.5                          | 44   | 81.0                    | 184.2                       | 8  | 22                    | UNC 3/4              | 110          | 90          |
|             |                |                            |                                  |          |                       |                               |  |                         |                             |    |                       |                      |              |             |
| 100         | 4              | 254                        | 115.4                            | 146.0    | 157.2                 | 32.0                          | 48   | 85.7                    | 200.2                       | 8  | 22                    | UNC 3/4              | 110          | 100         |
| 125         | 5              | 279                        | 141.2                            | 177.8    | 185.7                 | 35.0                          | 51   | 98.4                    | 235.0                       | 8  | 22                    | UNC 3/4              | 120          | 100         |
| 150         | 6              | 318                        | 166.6                            | 206.4    | 215.9                 | 37.0                          | 52   | 98.4                    | 269.7                       | 12 | 22                    | UNC 3/4              | 120          | 112         |
|             |                |                            | 0.00                             |          |                       |                               |  |                         |                             |    |                       |                      |              | 405         |
| 200         | 8              | 381                        | 218.0                            | 260.3    | 269.7                 | 41.5                          | 62   | 111.1                   | 330.2                       | 12 | 26                    | UNC 7/8              | 140          | 125         |
| 250         | 10             | 444                        | 269.5                            | 320.7    | 323.8                 | 48.0                          | 67   | 117.5                   | 387.4                       | 16 | 29                    | UNC 1/8              | 160          | 140         |
| 300         | 12             | 520                        | 321.0                            | 374.6    | 381.0                 | 51.0                          | 73   | 130.2                   | 450.8                       | 16 | 32                    | UNC 11/8             | 170          | 140         |

# ● Insert welding type flange (Flat seat type)



● Blind flange(Flat seat type)

<sup>\*</sup>This table is based on ANSI B 16.5-1977 (metric unit).

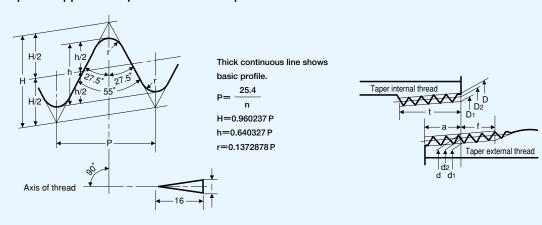
# **Thread standards**

#### • PT thread standard dimension table (JIS standard)

(Unit:mm)

|                                  | Thread             |                            |                  |                      | Gauge diameter                |                   |                               | Position                | of gauge             | diameter             |                            | Effective thread length (minimum) |   |                             | imum)  |                         |                   |
|----------------------------------|--------------------|----------------------------|------------------|----------------------|-------------------------------|-------------------|-------------------------------|-------------------------|----------------------|----------------------|----------------------------|-----------------------------------|---|-----------------------------|--|-------------------------|-------------------|
|                                  |                    |                            |                  |                      | E                             | xternal thre      | ad                            | Externa                 | l thread             | Internal thread      |                            | External thread                   | In  | ternal threa                | ad   | Size of                 | carbon            |
|                                  |                    |                            |                  |                      | Major                         | Pitch             | Minor                         | From p                  | ipe end              | At pipe end          | Tolerance on               | From the                          | When in   |                             | When no imper-                                 |                         | pipe              |
| Thread                           | Number of          |                            |                  | Radius               | diameter                      | diameter          | diameter                      |                         |                      |                      | D, D2 and<br>D1 of paralle | position of                       | thread por<br>Taper inter-                            | Parallel inter-             | fect thread exists Taper thread /              |                         | iping<br>erence)  |
| nominal size                     | threads            | Pitch<br>P                 | Height of thread | r                    | d                             | d2                | d1                            | Cours                   | Axial                | Axial                | linternal                  | gauge<br>diameter                 | nal thread  | nal thread                  | Parallel internal thread                       |                         |                   |
|                                  | (Per 25.4 mm)<br>n | (for reference)            | h                | or<br>r'             | Ir                            | ternal threa      | ad                            | Gauge<br>length         | tolerance            | tolerance            | thread                     | to larger                         | From the posi-  | From end                    | From the                                       |                         |                   |
|                                  | Ü                  |                            |                  | '                    | Major<br>diameter             | Pitch<br>diameter | Minor<br>diameter             |                         | ±b                   | ±c                   | ±                          | diameter<br>end                   | tion of gauge<br>diameter to larg-<br>er diameter end | of pipe or coupler $\ell$ ' | gauge diame-<br>ter, pipe or<br>pipe joint end | Outer<br>diameter       | Thickness         |
|                                  |                    |                            |                  |                      | D                             | D2                | D1                            |                         |                      |                      |                            | f                                 | l   |                             | t  |                         |                   |
| PT 1/8                           | 28                 | 0.9071                     | 0.581            | 0.12                 | 9.728                         | 9.147             | 8.566                         | 3.97                    | 0.91                 | 1.13                 | 0.071                      | 2.5                               | 6.2   | 7.4                         | 4.4  | 10.5                    | 2.0               |
| PT 1/4                           | 19                 | 1.3368                     | 0.856            | 0.18                 | 13.157                        | 12.301            | 11.445                        | 6.01                    | 1.34                 | 1.67                 | 0.104                      | 3.7                               | 9.4   | 11.0                        | 6.7  | 13.8                    | 2.3               |
| PT 3/8                           | 19                 | 1.3368                     | 0.856            | 0.18                 | 16.662                        | 15.806            | 14.950                        | 6.35                    | 1.34                 | 1.67                 | 0.104                      | 3.7                               | 9.7   | 11.4                        | 7.0  | 17.3                    | 2.3               |
| PT 1/2                           | 14                 | 1.8143                     | 1.162            | 0.25                 | 20.995                        | 19.793            | 18.631                        | 8.16                    | 1.81                 | 2.27                 | 0.142                      | 5.0                               | 12.7  | 15.0                        | 9.1  | 21.7                    | 2.8               |
| PT 3/4                           | 14                 | 1.8143                     | 1.162            | 0.25                 | 26.441                        | 25.729            | 24.117                        | 9.53                    | 1.81                 | 2.27                 | 0.142                      | 5.0                               | 14.1  | 16.3                        | 10.2   | 27.2                    | 2.8               |
| PT 1                             | 11                 | 2.3091                     | 1.479            | 0.32                 | 33.249                        | 31.770            | 30.291                        | 10.39                   | 2.31                 | 2.89                 | 0.142                      | 6.4                               | 16.2  | 19.1                        | 11.5   | 34.0                    | 3.2               |
|                                  |                    |                            |                  |                      |                               | • •               |                               |                         |                      |                      |                            | ***                               |   |                             |  |                         | J.=               |
| PT 11/4                          | 11                 | 2.3091                     | 1.479            | 0.32                 | 41.910                        | 40.431            | 38.952                        | 12.70                   | 2.31                 | 2.89                 | 0.181                      | 6.4                               | 18.5  | 21.4                        | 13.4   | 42.7                    | 3.5               |
| PT 1 <sup>1</sup> / <sub>2</sub> | 11                 | 2.3091                     | 1.479            | 0.32                 | 47.803                        | 46.324            | 44.845                        | 12.70                   | 2.31                 | 2.89                 | 0.181                      | 6.4                               | 18.5  | 21.4                        | 13.4   | 48.6                    | 3.5               |
| PT 2                             | 11                 | 2.3091                     | 1.479            | 0.32                 | 59.614                        | 58.135            | 56.656                        | 15.88                   | 2.31                 | 2.89                 | 0.181                      | 7.5                               | 22.8  | 25.7                        | 16.9   | 60.5                    | 3.8               |
|                                  |                    |                            |                  |                      |                               |                   |                               |                         |                      |                      |                            |                                   |   |                             |  |                         |                   |
| PT 2 <sup>1</sup> / <sub>2</sub> | 11                 | 2.3091                     | 1.479            | 0.32                 | 75.184                        | 73.705            | 72.226                        | 17.46                   | 3.46                 | 3.46                 | 0.216                      | 9.2                               | 26.7  | 30.1                        | 18.6   | 76.3                    | 4.2               |
| PT 3                             | 11                 | 2.3091                     | 1.479            | 0.32                 | 87.884                        | 86.405            | 84.926                        | 20.64                   | 3.46                 | 3.46                 | 0.216                      | 9.2                               | 29.8  | 33.3                        | 21.1   | 89.1                    | 4.2               |
| PT 3 <sup>1</sup> / <sub>2</sub> | 11                 | 2.3091                     | 1.479            | 0.32                 | 100.330                       | 98.851            | 97.372                        | 22.23                   | 3.46                 | 3.46                 | 0.216                      | 9.2                               | 31.4  | 34.9                        | 22.4   | 101.6                   | 4.2               |
| PT 4                             | 11                 | 2.3091                     | 1.479            | 0.32                 | 113.030                       | 111.551           | 110.072                       | 25.40                   | 3.46                 | 3.46                 | 0.216                      | 10.4                              | 35.8  | 39.3                        | 25.9   | 114.3                   | 4.5               |
| PT 5                             | 11                 | 2.3091                     | 1.479            | 0.32                 | 138.430                       | 136.951           | 135.472                       | 28.58                   | 3.46                 | 3.46                 | 0.216                      | 11.5                              | 40.1  | 43.5                        | 29.3   | 139.8                   | 4.5               |
| PT 6                             | 11                 | 2.3091                     | 1.479            | 0.32                 | 163.830                       | 162.351           | 160.872                       | 28.58                   | 3.46                 | 3.46                 | 0.216                      | 11.5                              | 40.1  | 43.5                        | 29.3   | 165.2                   | 5.0               |
|                                  |                    |                            |                  |                      |                               |                   |                               |                         |                      |                      |                            |                                   |   |                             |  |                         |                   |
| PT 7                             | 11                 | 2.3091                     | 1.479            | 0.32                 | 189.230                       | 187.751           | 186.272                       | 34.93                   | 5.08                 | 5.08                 | 0.318                      | 14.0                              | 48.9  | 54.0                        | 35.1   | 190.7                   | 5.3               |
| PT 8                             | 11                 | 2.3091                     | 1.479            | 0.32                 | 214.630                       | 213.151           | 211.672                       | 38.10                   | 5.08                 | 5.08                 | 0.318                      | 14.0                              | 52.1  | 57.2                        | 37.6   | 216.3                   | 5.8               |
| PT 9                             | 11                 | 2.3091                     | 1.479            | 0.32                 | 240.030                       | 238.551           | 237.072                       | 38.10                   | 5.08                 | 5.08                 | 0.318                      | 14.0                              | 52.1  | 57.2                        | 37.6   | 241.8                   | 6.2               |
| PT 10                            | 11                 | 2 3091                     | 1 470            | 0.32                 | 265 430                       | 263 951           | 262 472                       | <i>A</i> 1 28           | 5.08                 | 5.08                 | 0.318                      | 14.0                              | 55.3  | 60.4                        | 40.2   | 267.4                   | 6.6               |
| PT 12                            | 11                 | 2.3091                     | 1.479            | 0.32                 |                               |                   |                               | 41.28                   | 6.35                 | 6.35                 |                            | 17.5                              | 58.8  | 65.1                        | 41.9   | 318.5                   | 6.9               |
| PT 8<br>PT 9                     | 11<br>11           | 2.3091<br>2.3091<br>2.3091 | 1.479<br>1.479   | 0.32<br>0.32<br>0.32 | 214.630<br>240.030<br>265.430 | 213.151           | 211.672<br>237.072<br>262.472 | 38.10<br>38.10<br>41.28 | 5.08<br>5.08<br>5.08 | 5.08<br>5.08<br>5.08 | 0.318                      | 14.0<br>14.0                      | 52.1<br>52.1<br>55.3                                  | 57.2<br>57.2<br>60.4        | 37.6<br>37.6<br>40.2                           | 216.3<br>241.8<br>267.4 | 5.8<br>6.2<br>6.6 |

#### • Basic profile applied to taper external and taper internal threads

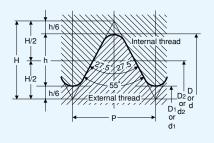


#### • PF thread standard dimension table (JIS standard)

(Unit:mm)

|                                     |  |   |             |  | External thread     |                      |                      |  |  |  |  |
|-------------------------------------|--|---|-------------|--|---------------------|----------------------|----------------------|--|--|--|--|
| Thread                              | Number of threads  | Pitch   | Height of   | Radius   | Major diameter<br>d | Pitch diameter<br>d2 | Minor diameter<br>d1 |  |  |  |  |
| ominal size                         | (Per 25.4 mm)  | P<br>(for reference)  | thread<br>h | r  |                     | Internal thread      |                      |  |  |  |  |
|                                     |  | (13. 13.3.3.3.3.3)  |             |  | Major diameter<br>D | Pitch diameter<br>D2 | Minor diameter<br>D1 |  |  |  |  |
| PF 1/8                              | 28   | 0.9071  | 0.581       | 0.12   | 9.728               | 9.147                | 8.566                |  |  |  |  |
| PF 1/4                              | 19   | 1.3368  | 0.856       | 0.18   | 13.157              | 12.301               | 11.445               |  |  |  |  |
| PF <sup>3</sup> / <sub>8</sub>      | 19   | 1.3368  | 0.856       | 0.18   | 16.662              | 15.806               | 14.950               |  |  |  |  |
| PF 1/2                              | 14   | 1.8143  | 1.162       | 0.25   | 20.995              | 19.793               | 18.631               |  |  |  |  |
| (PF 5/8)                            | 14   | 1.8143  | 1.162       | 0.25   | 22.911              | 21.749               | 20.587               |  |  |  |  |
| PF 3/4                              | 14   | 1.8143  | 1.162       | 0.25   | 26.441              | 25.729               | 24.117               |  |  |  |  |
| (PF 7/8)                            | 14   | 1.8143  | 1.162       | 0.25   | 30.201              | 29.039               | 27.877               |  |  |  |  |
| PF 1                                | 11   | 2.3091  | 1.479       | 0.32   | 33.249              | 31.770               | 30.291               |  |  |  |  |
| (PF 11/8)                           | 11   | 2.3091  | 1.479       | 0.32   | 37.897              | 36.418               | 34.939               |  |  |  |  |
| PF 1 <sup>1</sup> / <sub>4</sub>    | 11   | 2.3091  | 1.479       | 0.32   | 41.910              | 40.431               | 38.952               |  |  |  |  |
| PF 11/2                             | 11   | 2.3091  | 1.479       | 0.32   | 47.803              | 46.324               | 44.845               |  |  |  |  |
| (PF 1 <sup>3</sup> / <sub>4</sub> ) | 11   | 2.3091  | 1.479       | 0.32   | 53.746              | 52.267               | 50.788               |  |  |  |  |
| PF 2                                | 11   | 2.3091  | 1.479       | 0.32   | 59.614              | 58.135               | 56.656               |  |  |  |  |
| (PF 21/4)                           | 11   | 2.3091  | 1.479       | 0.32   | 65.710              | 64.231               | 62.752               |  |  |  |  |
| PF 21/2                             | 11   | 2.3091  | 1.479       | 0.32   | 75.184              | 73.705               | 72.226               |  |  |  |  |
| (PF 2 <sup>3</sup> / <sub>4</sub> ) | 11   | 2.3091  | 1.479       | 0.32   | 81.534              | 80.055               | 78.576               |  |  |  |  |
| PF 3                                | 11   | 2.3091  | 1.479       | 0.32   | 87.884              | 86.405               | 84.926               |  |  |  |  |
| PF 3 <sup>1</sup> / <sub>2</sub>    | 11   | 2.3091  | 1.479       | 0.32   | 100.330             | 98.851               | 97.372               |  |  |  |  |
| PF 4                                | 11   | 2.3091  | 1.479       | 0.32   | 113.030             | 111.551              | 110.072              |  |  |  |  |
| (PF 41/2)                           | 11   | 2.3091  | 1.479       | 0.32   | 125.730             | 124.251              | 122.772              |  |  |  |  |
| PF 5                                | 11   | 2.3091  | 1.479       | 0.32   | 138.430             | 136.951              | 135.472              |  |  |  |  |
| (PF 5 <sup>1</sup> / <sub>2</sub> ) | 11   | 2.3091  | 1.479       | 0.32   | 151.130             | 149.651              | 148.172              |  |  |  |  |
| PF 6                                | 11   | 2.3091  | 1.479       | 0.32   | 163.830             | 162.351              | 160.872              |  |  |  |  |
|                                     | PF 1/4 PF 3/6 PF 1/2 PF 5/6) PF 3/4 PF 7/6) PF 1 1/8 PF 11/2 PF 11/2 PF 13/4) PF 21/2 PF 23/4) PF 3 PF 31/2 PF 4 PF 41/2) PF 51/2) | PF 1/8 28 PF 1/4 19 PF 3/8 19 PF 1/2 14 PF 5/8) 14 PF 5/8) 14 PF 1/8 11 PF 11/8 11 PF 11/8 11 PF 13/4) 11 PF 2 11 PF 21/4 11 PF 21/4 11 PF 3 11 PF 3/4 11 PF 3 11 PF 3/2 11 PF 3/2 11 PF 3/2 11 PF 5 11 PF 5 11 PF 5 11 | PF 1/8      | PF 1/8 28 0.9071 0.581 PF 1/4 19 1.3368 0.856 PF 1/4 19 1.3368 0.856 PF 1/2 14 1.8143 1.162 PF 5/8) 14 1.8143 1.162 PF 3/4 14 1.8143 1.162 PF 1/8) 14 1.8143 1.162 PF 1/9 11 2.3091 1.479 PF 11/9 11 2.3091 1.479 PF 11/9 11 2.3091 1.479 PF 1/9 11 2.3091 1.479 PF 2 11 2.3091 1.479 PF 3 11 2.3091 1.479 PF 5 11 2.3091 1.479 | PF 1/8              | PF 1/8               | PF 1/4               |  |  |  |  |

 Basic profile applied to parallel internal threads



Thick continuous line shows basic profile.

 $P = \frac{25.4}{}$ 

H=0.960237 P

h=0.640327 P

r=0.1372878 P

 $d_2 = d - h$  $D_2=d2$ 

 $d_1 = d - 2h$  $D_1 = d1$ 

#### • Tank lorry thread standard dimension table

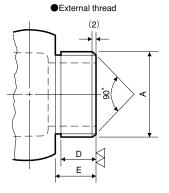
 $(\mathsf{Unit}\texttt{:}\mathsf{mm})$ 

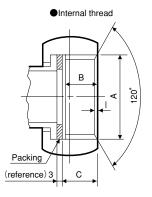
| Thread       | Hose nor | minal size | A A/inch          | В  | С  | D  | E  |
|--------------|----------|------------|-------------------|----|----|----|----|
| nominal size | Α        | В          | AAMION            | В  | Ŭ  | 5  | _  |
| PF 3/4       | 20       | 3/4"       | 26.441 14threads/ | 13 | 15 | 16 | 18 |
| PF 1         | 25       | 1"         | 33.249 11threads/ | 15 | 17 | 18 | 20 |
| PF 11/4      | 32       | 11/4"      | 41.910 11threads/ | 15 | 17 | 18 | 20 |
| PF 111/2     | 40       | 11/2"      | 47.803 11threads/ | 15 | 17 | 18 | 20 |
| 64           | 50       | 2          | M64P3             | 17 | 19 | 22 | 25 |
| 75           | 65       | 21/2"      | M75P3             | 17 | 19 | 22 | 25 |
| 90           | 75       | 3"         | M90P3             | 17 | 19 | 22 | 25 |
| 110          | 100      | 4"         | M110P3            | 22 | 25 | 27 | 30 |
| 115          | 100      | 4"         | M115P3            | 22 | 25 | 27 | 30 |

- \*1) For the purpose of distinguishing from threads of old standard, these are marked with letter "M"
- either punched or embossed. New threads are JIS BO207 metric fine threads.

  2) Number of threads in dimension B and D is based on the length NOT including the chamfer dimension.
- Old standard Thread dimension table (for reference)

| Designation | Number of threads pre inch | Outer diameter of external thread | Applicable maker |
|-------------|----------------------------|-----------------------------------|------------------|
| 2"          | 8                          | 60                                | Tokyu            |
|             | 11                         | 59.6                              | JIS              |
| 21/2"       | 8                          | 75                                | Tokyu            |
|             | 8                          | 72.3                              | Shell            |
|             | 11                         | 75.18                             | JIS              |
| 3"          | 8                          | 87.567                            | Tokyu, Shell     |
|             | 11                         | 87.88                             | JIS              |





# **Chemical Resistance Suitability Table**

- Principal chemical names are listed in this suitability table. Contact us for the availability of the chemicals not listed in the table.
- Descriptions of this suitability table are intended for wetted materials.
- Do not use hose number B (0951F, 0970F and 0998) for volatile chemicals for which electrostatic steps must be taken seriously, even if they satisfy material requirements.
- Items in the list marked with an asterisk (\*) are recommended for use with hoses inserted with a fluorine film, bearing the code "H" at the end of the hose number (example: 0951F-H).

This suitability table was prepared based on past performances, the experiments we conducted and by comprehensively examining documents supplied by the manufacturers of materials.

Use the table as reference material for selecting hoses, since the results vary particularly for chemicals, depending on the conditions, such as concentration, temperature, pressure and movement.

- General working temperature range : -20°C to +80°C
  - Note 1: Be aware that the tolerance varies, depending on individual chemicals, as well as the working conditions.
  - Note 2: Contact us in advance if the working temperature is +80°C or higher, since heat resistant specifications apply also for the fitting mounting amethods for working temperatures +80°C and higher.
- Contact us in advance if there are any questions regarding this suitability table

| hc | se nu | imber (example: 0951F-H).                |    |     |       |      |   |      |               |   |    |                                    |   |     |       |                    |   |       |              |
|----|-------|--|----|-----|-------|------|---|------|---------------|---|----|------------------------------------|---|-----|-------|--------------------|---|-------|--------------|
| N  |       | Chamical name                            |    | Hos | e nun | nber |   | Term | inal fittings | N |    | Chaminal name                      |   | Hos | e nun | nber               |   | Termi | nal fittings |
| IN | 0.    | Chemical name                            | Α  | В   | С     | D    | Е | Iron | SUS Resin     | 1 | 0. | Chemical name                      | Α | В   | С     | D                  | Е | Iron  | SUS Resin    |
| Α  | 1     | Acetaldehyde                             | •  | ×   | ×     | ×    | • | ×    | •             | В | 39 | Benzaldehyde solution              | • | ×   | ×     | ×                  | • | ×     | •            |
|    | 2     | Acetaldehyde water solution, 40%         | •  | ×   | ×     | •    | • | ×    | •             |   | 40 | Benzene                            | • | ×   | •     | ×                  | • | •     | •            |
|    | 3     | Acetate water solution                   | •  | •   | ×     | •    | • | ×    | •             |   | 41 | Benzene sulphonyl chloride         | • | ×   | ×     | ×                  | • | ×     | •            |
|    | 4     | Acetic acid (anhydride)                  | •  | ×   | ×     | ×    | • | ×    | •             |   | 42 | Benzoic acid                       | • | •   | ×     | •                  | • | ×     | •            |
|    | 5     | Acetic acid, 40%                         | •  | •   | ×     | •    | • | ×    | •             |   | 43 | Benzoyl chloride                   | • | •   | ×     | •                  | • | •     | •            |
|    | 6     | Acetone                                  | *• | ×   | *•    | ×    | • | •    | •             |   | 44 | Benzyl acetate                     | • | •   | •     | •                  | • | •     | •            |
|    | 7     | Acetone cyanohydrin                      | •  | ×   | ×     | ×    | • | •    | •             |   | 45 | Benzyl alcohol                     | • | ×   | •     | ×                  | • | •     | •            |
|    | 8     | Acetonitrile                             | •  | ×   | •     | ×    | • | •    | •             |   | 46 | Benzyl chloride                    | • | ×   | ×     | ×                  | • | ×     | •            |
|    | 9     | Acetophenone                             | •  | ×   | •     | ×    | • | •    | •             |   | 47 | Bismuth chloride solution          | • | •   | ×     | •                  | • | ×     | •            |
|    | 10    | Acrylamide solution, 50% or less         | •  | •   | ×     | •    | • | •    | •             |   | 48 | Borax                              | • | •   | ×     | •                  | • | ×     | •            |
|    | 11    | Acrylic acid                             | •  | ×   | ×     | ×    | • | ×    | •             |   | 49 | Boric acid                         | • | •   | ×     | •                  | • | ×     | •            |
|    | 12    | Acrylic emulsion                         | •  | •   | ×     | •    | • | ×    | •             |   | 50 | Bromic acid                        | × | •   | ×     | •                  | × | ×     | ×            |
|    | 13    | Acrylonitrile                            | •  | ×   | •     | ×    | • | •    | •             |   | 51 | Butadiene                          | • | ×   | •     | ×                  | • | •     | •            |
|    | 14    | Adipic acid                              | •  | •   | ×     | •    | • | ×    | •             |   | 52 | Butadiene-50% alcohol solution     | • | ×   | •     | ×                  | • | •     | •            |
|    | 15    | Aircraft turbine fuel                    | •  | ×   | •     | ×    | • | •    | •             |   | 53 | Butane                             | • | ×   | •     | ×                  | • | •     | •            |
|    | 16    | Alkyl benzene sulphonic acid             | •  | •   | ×     | •    | • | X    | •             |   | 54 | Butanediol                         | • | ×   | •     | ×                  | • | •     | •            |
|    | 17    | Allyl alcohol                            | •  | ×   | •     | ×    | • | •    | •             |   | 55 | Butyl acetate                      | • | ×   | •     | ×                  | • | •     | •            |
|    | 18    | Allyl chloride                           | •  | ×   | •     | ×    | • | •    | •             |   | 56 | N-Butyl acetate                    | • | ×   | •     | ×                  | • | •     | •            |
|    | 19    | Aluminum chloride water solution         | •  | •   | ×     | •    | • | ×    | •             |   | 57 | N-Butyl acrylate                   | • | ×   | •     | ×                  | • | •     | •            |
|    | 20    | Aluminum fluoride water solution         | •  | •   | ×     | •    | • | ×    | •             |   | 58 | Butyl alcohol                      | • | ×   | •     | ×                  | • | •     | •            |
|    | 21    | Aluminum sulfate                         | *• | *•  | ×     | •    | • | •    | •             |   | 59 | Butyl benzyl phthalate             | • | •   | •     | •                  | • | •     | •            |
|    | 22    | Alunite water solution                   | •  | •   | ×     | •    | • | ×    | •             |   | 60 | N-Butyl ether                      | • | ×   | •     | •                  | • | •     | •            |
|    | 23    | 2-(2-Aminoethoxy) ethanol                | •  | ×   | ×     | ×    | • | •    | •             |   | 61 | Butyl methacrylate                 | • | ×   | •     | ×                  | • | •     | •            |
|    | 24    | Aminoethyl ethanol amine                 | •  | •   | •     | •    | • | •    | •             |   | 62 | Butyl phthalate                    | • | •   | •     | •                  | • | •     | •            |
|    | 25    | N-Aminoethyl piperazine                  | •  | •   | •     | •    | • | •    | •             |   | 63 | Butyl phthalate                    | • | •   | •     | •                  | • | •     | •            |
|    | 26    | Ammonia anhydride solution               | •  | •   | •     | •    | • | •    | •             |   | 64 | Butyl/decyl/cet osyl               | • | ×   | •     | ×                  | • | •     | •            |
|    | 27    | Ammonia aqueous                          | •  | •   | •     | •    | • | •    | •             |   |    | methacrylate mixture               |   |     |       |                    |   |       |              |
|    | 28    | Ammonia salt solution                    | •  | •   | ×     | •    | • | ×    | •             |   | 65 | N-Butylaldehyde                    | • | ×   | •     | ×                  | • | •     | •            |
|    | 29    | Ammonium sulphide solution (45% or less) | •  | •   | ×     | •    | • | ×    | •             |   | 66 | Butylamine (all isomers)           | • | ×   | ×     | ×                  | • | •     | •            |
|    | 30    | n-Amyl acetate                           | •  | ×   | •     | ×    | • | •    | •             |   | 67 | Butylene glycol                    | • | ×   | •     | ×                  | • | •     | •            |
|    | 31    | Amyl acetate, commercial                 | •  | ×   | •     | ×    | • | •    | •             |   | 68 | Butylene liquid                    | • | ×   | •     | ×                  | • | •     | •            |
|    | 32    | Aniline                                  | •  | ×   | •     | ×    | • | •    | •             |   | 69 | Butyric acid                       | • | •   | •     | •                  | • | •     | •            |
|    | 33    | Anisole                                  | •  | •   | ×     | •    | • | X    | •             | С | 70 | Calcium chloride                   | • | •   | ×     | •                  | • | •     | •            |
|    | 34    | Antimony chloride water solution         | •  | •   | ×     | •    | • | ×    | •             |   | 71 | Calcium hydroxide                  | • | •   | ×     | •                  | • | ×     | •            |
|    | 35    | Antimony trichloride anhydride solution  | ×  | •   | ×     | •    | • | ×    | •             |   | 72 | Calcium hypochlorite solution      |   |     |       | rith the lies only |   | ×     | ×            |
|    | 36    | Arsenic water solution                   | •  | •   | ×     | •    | • | ×    | •             |   | 73 | Calcium naphthenate in mineral oil | • | •   | •     | •                  | • | •     | •            |
|    | 37    | Aviation fuel (JP4 and up)               | •  | ×   | •     | ×    | • | •    | •             |   | 74 | Calcium nitrate                    | • | •   | ×     | •                  | • | ×     | •            |
| В  | 38    | Barium saline solution                   | •  | •   | ×     | •    | • | ×    | •             |   | 75 | Camphor oil                        | • | •   | •     | •                  | • | •     | •            |

 Headings "A" to "E" in the "Hose number" column and "Resin" in the "Terminal fittings" column represent the following hose numbers and resin categories.

| No.   | Chemical name  Hose number  Terminal fit  A B C D E Iron SUS   |     |        |       |        |      |         | <u> </u> |       |
|-------|--|-----|--------|-------|--------|------|---------|----------|-------|
| Resin | P.P/PVC/FRP Note - As a gused for hydronic state of the s |     |        |       |        |      |         |          | -7 15 |
| Е     | 0976F / 0976F-S  |     | l rulo | fibor | roinfo | rood | olootic | (EDI     |       |
| D     | 0970F/0970F-S  |     |        |       |        |      |         |          |       |
| С     | 0913F-W/0901F/0982   |     |        |       |        |      |         |          |       |
| В     | 0951F/0998   |     |        |       |        |      |         |          |       |
| Α     | 0913F/0913F-S/0969F/0969   | 9LF |        |       |        |      |         |          |       |

|   | 1.  |  |                  |                       | ava                  |                        |                | .1   |         |        |
|---|-----|--|------------------|-----------------------|----------------------|------------------------|----------------|------|---------|--------|
|   |     | en a chemical is marked as una<br>vailable for use, depending on the |                  |                       |                      |                        |                |      |         | -      |
| N | o.  | Chemical name  |                  | Hos                   | e nun                | nber                   |                | Term | inal fi | ttings |
|   |     |  | Α                | В                     | С                    | D                      | Ε              | Iron | sus     | Resin  |
| С | 76  | Camphor oil alcohol solution   | •                | •                     | •                    | •                      | •              | •    | •       |        |
|   | 77  | Camphor oil C16M16O water solution                                   | •                | •                     | ×                    | •                      | •              | ×    | •       |        |
|   | 78  | Carbon disulphide  | •                | ×                     | ×                    | ×                      | •              | ×    | •       |        |
|   | 79  | Carbon tetrachloride   | •                | •                     | •                    | •                      | •              | •    | •       |        |
|   | 80  | Carbondioxide (liquefied)  | •                | •                     | •                    | •                      | •              | •    | •       |        |
|   | 81  | Carbonic acid  | •                | •                     | ×                    | •                      | •              | ×    | •       |        |
|   | 82  | Carbonyl chloride  | ×                | •                     | ×                    | •                      | ×              | ×    | ×       | •      |
|   | 83  | Cashew nut shell oil (untreated)                                     | •                | •                     | •                    | •                      | •              | •    | •       |        |
|   | 84  | Castor oil   | •                | •                     | •                    | •                      | •              | •    | •       |        |
|   | 85  | Cetyl alcohol  | •                | •                     | •                    | •                      | •              | •    | •       |        |
|   | 86  | Chloral hydrate  | ×                | ×                     | ×                    | •                      | ×              | ×    | •       |        |
|   | 87  | Chloral hydrate solution   | ×                | •                     | ×                    | •                      | ×              | ×    | ×       | •      |
|   | 88  | Chloric acid   | Availat<br>0951F | ole for us<br>0998 ar | e with th<br>d 0970F | e hose no<br>series or | umbers<br>nly. | ×    | ×       | •      |
|   | 89  | Chloroacetic acid  | •                | •                     | ×                    | •                      | •              | ×    | •       |        |
|   | 90  | Chlorobenzene  | •                | ×                     | •                    | ×                      | •              | •    | •       |        |
|   | 91  | Chloroethanol  | •                | ×                     | •                    | ×                      | •              | •    | •       |        |
|   | 92  | Chloroform   | •                | •                     | •                    | •                      | •              | •    | •       |        |
|   | 93  | Chlorohydrins (crude)  | •                | ×                     | •                    | ×                      | •              | •    | •       |        |
|   | 94  | Chloromethane  | •                | ×                     | •                    | ×                      | •              | •    | •       |        |
|   | 95  | o-Chloronitrobenzenes  | •                | ×                     | •                    | ×                      | •              | •    | •       |        |
|   | 96  | 2- or 3-Chloropropionic acid   | •                | •                     | ×                    | •                      | •              | ×    | •       |        |
|   | 97  | Chlorosulphonic acid   | ×                | ×                     | ×                    | ×                      | ×              | ×    | ×       |        |
|   | 98  | (o-, m-, p-) Chlorotoluene   | •                | ×                     | •                    | ×                      | •              | •    | •       |        |
|   | 99  | Chlorous acid solution   | ×                | •                     | ×                    | •                      | ×              | ×    | ×       | •      |
|   | 100 | Chrom alum water solution  | •                | •                     | ×                    | •                      | •              | ×    | •       |        |
|   | 101 | Chromic acid, 80%  | ×                | ×                     | ×                    | •                      | •              | ×    | •       |        |
|   | 102 | Citric acid  | •                | •                     | ×                    | •                      | •              | ×    | •       |        |
|   | 103 | Coal tar   | •                | •                     | •                    | •                      | •              | •    | •       |        |
|   | 104 | Coal tar naphtha   | •                | ×                     | •                    | ×                      | •              | •    | •       |        |
|   | 105 | Creosote (coal tar or wood)  | •                | •                     | •                    | •                      | •              | •    | •       |        |
|   | 106 | Cresols mixed isomers  | •                | ×                     | •                    | ×                      | •              | •    | •       |        |
|   | 107 | Crotonaldehyde   | •                | ×                     | •                    | ×                      | •              | •    | •       |        |
|   | 108 | Cumene   | •                | ×                     | •                    | ×                      | •              | •    | •       |        |
|   | 109 | Cyclohexane  | •                | ×                     | •                    | ×                      | •              | •    | •       |        |
|   | 110 | Cyclohexanol   | •                | ×                     | •                    | ×                      | •              | •    | •       |        |
|   | 111 | Cyclohexanone  | •                | ×                     | •                    | ×                      | •              | •    | •       |        |
|   | 112 | Cyclohexylamine  | •                | •                     | ×                    | •                      | •              | •    | •       |        |
|   | 113 | p-Cymene   | •                | •                     | •                    | •                      | •              | •    | •       |        |
|   |     |  |                  |                       |                      |                        |                |      |         |        |

●: Available X: Unavailable

| N  |     | Chemical name   |   | Hos | e nun | nber |   | Term | ninal fit | ttings |
|----|-----|---|---|-----|-------|------|---|------|-----------|--------|
| IN | 0.  | Chemical hame   | Α | В   | С     | D    | Е | Iron | sus       | Resin  |
| D  | 114 | Decalin   | • | ×   | •     | ×    | • | •    | •         |        |
|    | 115 | Decyl alcohol   | • | ×   | •     | •    | • | •    | •         |        |
|    | 116 | Detergent liquid  | • | •   | ×     | •    | • | ×    | •         |        |
|    | 117 | Developer (photographic)  | • | •   | ×     | •    | • | ×    | •         |        |
|    | 118 | Dextrin water solution  | • | •   | •     | •    | • | •    | •         |        |
|    | 119 | Di (2-Ethylhexyl) Phosphoric acid   | • | •   | ×     | •    | • | ×    | •         |        |
|    | 120 | Dibutyl ether   | • | ×   | •     | ×    | • | •    | •         |        |
|    | 121 | Dibutyl phthalate   | • | •   | •     | •    | • | •    | •         |        |
|    | 122 | Dibutylamine  | • | ×   | •     | ×    | • | •    | •         |        |
|    | 123 | o-Dichlorobenzene   | • | ×   | •     | ×    | • | •    | •         |        |
|    | 124 | 1-1-Dichloroethane  | • | X   | •     | ×    | • | •    | •         |        |
|    | 125 | Dichloroethane (methylene chloride)   | • | •   | •     | •    | • | •    | •         |        |
|    | 126 | Dichloroethyl ether   | • | •   | •     | •    | • | •    | •         |        |
|    | 127 | Dichloroethylene  | • | ×   | •     | ×    | • | •    | •         |        |
|    | 128 | 2-2-Dichloroisopropyl ether   | • | •   | •     | •    | • | •    | •         |        |
|    | 129 | 2-4-Dichlorophenol  | • | •   | ×     | •    | • | ×    | •         |        |
|    | 130 | 1.3-Dichloropropane   | • | ×   | •     | ×    | • | •    | •         |        |
|    | 131 | 1,3-Dichloropropene   | • | •   | •     | •    | • | •    | •         |        |
|    | 132 | Diesel oil  | • | •   | •     | •    | • | •    | •         |        |
|    | 133 | Diethanolamine  | • | •   | ×     | •    | • | •    | •         |        |
|    | 134 | Diethyl benzene   | • | ×   | •     | ×    | • | •    | •         |        |
|    | 135 | Diethyl ethanolamine  | • | •   | ×     | •    | • | •    | •         |        |
|    | 136 | Diethyl ether   | • | ×   | •     | ×    | • | •    | •         |        |
|    | 137 | Diethyl phthalate   | • | •   | •     | •    | • | •    | •         |        |
|    | 138 | Diethyl sulphate  | • | •   | •     | •    | • | •    | •         |        |
|    | 139 | Diethylamine  | • | ×   | ×     | ×    | • | •    | •         |        |
|    | 140 | Diethylamino ethanol  | • | •   | ×     | •    | • | •    | •         |        |
|    | 141 | Diethylene glycol methyl ether  | • | ×   | •     | ×    | • | •    | •         |        |
|    | 142 | Diethylenetriamine  | • | ×   | •     | ×    | • | •    | •         |        |
|    | 143 | Diisobutyl phthalate  | • | •   | •     | •    | • | •    | •         |        |
|    | 144 | Diisobutylamine   | • | •   | •     | •    | • | •    | •         |        |
|    | 145 | Diisobutylene   | • | •   | •     | •    | • | •    | •         |        |
|    | 146 | Diisopropanolamine  | • | •   | ×     | •    | • | •    | •         |        |
|    | 147 | Diisopropyl benzene (all isomers)   | • | •   | •     | •    | • | •    | •         |        |
|    | 148 | Diisopropylamine  | • | •   | ×     | •    | • | •    | •         |        |
|    | 149 | Diluted mixture of nitric acid and hydrochloric acide Note: Details to be worked out separately | • | ×   | •     | •    | × | ×    | •         |        |
|    | 150 | Diluted sulfonic acid solution  | • | •   | ×     | •    | • | ×    | •         |        |

# **Chemical Resistance Suitability Table**

This suitability table was prepared based on past performances, the experiments we conducted and by comprehensively examining documents supplied by the manufacturers of materials.

Use the table as reference material for selecting hoses, since the results vary particularly for chemicals, depending on the conditions, such as concentration, temperature, pressure and movement.

●: Available X: Unavailable

\*Even when a chemical is marked as unavailable for use, the chemical may still be available for use, depending on the conditions. Contact us for details.

| still | be av      | vailable for use, depending on the           | e cor | iditio | ns. ( | onta | act u | s tor | deta    | uis.   |
|-------|------------|--|-------|--------|-------|------|-------|-------|---------|--------|
| No    | ο.         | Chemical name                                |       | Hos    | e nun | nber |       | Term  | inal fi | ttings |
|       |            |  | Α     | В      | С     | D    | Ε     | Iron  | sus     | Resin  |
| D     | 151        | N.N-Dimethylcyclohexylamine                  | •     | ×      | ×     | ×    | •     | •     | •       |        |
|       | 152        | Dimethyl ethanolamine                        | •     | ×      | ×     | ×    | •     | •     | •       |        |
|       | 153        | Dimethyl formamide                           | •     | ×      | •     | ×    | •     | •     | •       |        |
|       | 154        | Dimethyl phthalate                           | •     | •      | •     | •    | •     | •     | •       |        |
|       | 155        | Dimethylamine aqueous, 40% or less           | •     | •      | ×     | •    | •     | •     | •       |        |
|       | 156        | Dinitrotoluene (molten)                      | *•    | ×      | ×     | ×    | •     | •     | •       |        |
|       | 157        | Di-n-propylamine                             | •     | ×      | ×     | ×    | •     | •     | •       |        |
|       | 158        | 1.4-Dioxane                                  | •     | ×      | •     | ×    | •     | •     | •       |        |
|       | 159        | Dipenten                                     | •     | •      | •     | •    | •     | •     | •       |        |
|       | 160        | Diphenyl ether                               | •     | ×      | •     | ×    | •     | •     | •       |        |
|       | 161        | Diphenyl oxide                               | •     | ×      | •     | ×    | •     | •     | •       |        |
|       | 162        | Diphenylmethane diisocyanate                 | •     | •      | ×     | •    | •     | ×     | •       |        |
|       | 163        | Dodecene (all isomers)                       | •     | •      | •     | •    | •     | •     | •       |        |
|       | 164        | Dodecyl alcohol                              | •     | •      | •     | •    | •     | •     | •       |        |
|       | 165        | Dodecyl benzene                              | •     | •      | •     | •    | •     | •     | •       |        |
|       | 166        | Dodecyl diphenyl oxide disulphonate solution | •     | •      | •     | •    | •     | •     | •       |        |
|       | 167        | Dodecyl methacrylate                         | •     | ×      | •     | ×    | •     | •     | •       |        |
|       | 168        | Dodecyl phenol                               | •     | ×      | •     | ×    | •     | •     | •       |        |
| Е     | 169        | Emulsifier                                   | •     | •      | •     | •    | •     | •     | •       |        |
|       | 170        | Epichlorohydrin                              | •     | ×      | •     | ×    | •     | •     | •       |        |
|       | 171        | Ethanolamine                                 | •     | ×      | ×     | ×    | •     | •     | •       |        |
|       | 172        | Ether maleic anhydride solution              | •     | •      | ×     | •    | •     | ×     | •       |        |
|       | 173        | 2-Ethoxyethyl acetate                        | •     | ×      | •     | ×    | •     | •     | •       |        |
|       | 174        | Ethyl acetate                                | •     | ×      | •     | ×    | •     | •     | •       |        |
|       | 175        | Ethyl acrylate                               | •     | •      | •     | •    | •     | •     | •       |        |
|       | 176        | Ethyl alcohol                                | •     | ×      | •     | ×    | •     | •     | •       |        |
|       | 177        | Ethyl benzene                                | •     | ×      | •     | ×    | •     | •     | •       |        |
|       | 178        | Ethyl chloride                               | ×     | ×      | ×     | •    | •     | •     | •       |        |
|       | 179        | Ethyl dichloride                             | •     | ×      | •     | ×    | •     | •     | •       |        |
|       | 180        | Ethyl ether                                  | •     | ×      | •     | ×    | •     | •     | •       |        |
|       | 181        | 2-Ethyl hexylamine                           | •     | ×      | ×     | ×    | •     | •     | •       |        |
|       | 182        | Ethyl methacrylate                           | •     | ×      | •     | ×    | •     | •     | •       |        |
|       | 183        | Ethyl toluene                                | •     | ×      | •     | ×    | •     | •     | •       |        |
|       | 184        | Ethylamine                                   | •     | ×      | ×     | ×    | •     | •     | •       |        |
|       |            | Eu   |       |        | ×     |      |       |       |         |        |
|       | 185        | Ethylamine solution (72% or less)            | •     |        | ^     | •    |       | •     |         |        |
|       | 185<br>186 | n-Ethylbutylamine                            | •     | ×      | ×     | ×    | •     | •     | •       |        |

|   |     |  |    | Ное | e nun | nhor-     |   | Terminal fittings |     |   |  |  |
|---|-----|--|----|-----|-------|-----------|---|-------------------|-----|---|--|--|
| N | lo. | Chemical name  | Α  | ноs | e nun | nber<br>D | E | Iron              | SUS |   |  |  |
| Е | 188 | Ethylene chlorohydrin  | •  | ×   | •     | ×         | • | •                 | •   |   |  |  |
|   | 189 | Ethylene cyanohydrin   | •  | ×   | •     | ×         | • | •                 | •   |   |  |  |
|   | 190 | Ethylene diamine   | •  | ×   | ×     | ×         | • | •                 | •   |   |  |  |
|   | 191 | Ethylene dibromoide  | •  | •   | •     | •         | • | •                 | •   |   |  |  |
|   | 192 | Ethylene dichloride  | •  | ×   | •     | ×         | • | •                 | •   |   |  |  |
|   | 193 | Ethylene glycol  | •  | ×   | •     | ×         | • | •                 | •   |   |  |  |
|   | 194 | Ethylene oxide   | •  | ×   | ×     | ×         | • | ×                 | •   |   |  |  |
|   | 195 | Ethylene Oxide/propylene oxide<br>mixtures containing < 30% ethylene oxide | *• | ×   | ×     | •         | × | ×                 | •   |   |  |  |
|   | 196 | Ethylene oxilate (25%)   | ×  | ×   | ×     | ×         | • | ×                 | •   |   |  |  |
|   | 197 | 2-Ethylhexyl acrylate  | •  | •   | •     | •         | • | •                 | •   |   |  |  |
|   | 198 | Ethylidene norbonene   | •  | •   | •     | •         | • | •                 | •   |   |  |  |
| F | 199 | Fatty acid   | •  | •   | •     | •         | • | •                 | •   |   |  |  |
|   | 200 | Fatty alcohols (C <sub>12</sub> -C <sub>20</sub> )                         | •  | •   | •     | •         | • | •                 | •   |   |  |  |
|   | 201 | Ferric and ferrous chloride solution                                       | ×  | •   | ×     | •         | × | ×                 | ×   | • |  |  |
|   | 202 | Formaldehyde solution 45% or less  | •  | •   | •     | •         | • | •                 | •   |   |  |  |
|   | 203 | Formic acid  | •  | ×   | ×     | ×         | • | ×                 | •   |   |  |  |
|   | 204 | Freon 12   | •  | •   | •     | •         | • | •                 | •   |   |  |  |
|   | 205 | Fructose solution  | •  | •   | ×     | •         | • | ×                 | •   |   |  |  |
|   | 206 | Fruit juice  | •  | •   | ×     | •         | • | ×                 | •   |   |  |  |
|   | 207 | Fuel oil   | •  | ×   | •     | ×         | • | •                 | •   |   |  |  |
|   | 208 | Fumaric adduct of rosin, water dispersion                                  | •  | •   | •     | •         | • | •                 | •   |   |  |  |
|   | 209 | Fuming sulfuric acid   | ×  | ×   | ×     | •         | • | •                 | •   |   |  |  |
|   | 210 | Furfural   | •  | ×   | •     | ×         | • | •                 | •   |   |  |  |
|   | 211 | Furylmethyl alcohol  | •  | •   | •     | •         | • | •                 | •   |   |  |  |
|   | 212 | Furfuryl alcohol   | •  | ×   | •     | ×         | • | •                 | •   |   |  |  |
| G | 213 | Gasoline   | •  | ×   | •     | ×         | • | •                 | •   |   |  |  |
|   | 214 | Gelatin  | •  | •   | •     | •         | • | •                 | •   |   |  |  |
|   | 215 | Glucose  | •  | •   | •     | •         | • | •                 | •   |   |  |  |
|   | 216 | Glutaraldehyde solution, 50% or less                                       | •  | •   | •     | •         | • | •                 | •   |   |  |  |
|   | 217 | Glycerine  | •  | •   | •     | •         | • | •                 | •   |   |  |  |
|   | 218 | Glycol   | •  | •   | •     | •         | • | •                 | •   |   |  |  |
| Н | 219 | halogen methyl sulfuric acid   | •  | •   | ×     | •         | • | ×                 | •   |   |  |  |
|   | 220 | Heavy oil  | •  | •   | •     | •         | • | •                 | •   |   |  |  |
|   | 221 | Heptanol (all isomers)   | •  | •   | •     | •         | • | •                 | •   |   |  |  |
|   | 222 | Hexamethylenediamine solutions   | •  | ×   | •     | ×         | • | •                 | •   |   |  |  |
|   | 223 | 1-Hexene   | •  | ×   | •     | ×         | • | •                 | •   |   |  |  |
|   | 224 | Hydrazine hydrate  | •  | ×   | ×     | ×         | • | ×                 | •   |   |  |  |
|   |     |  |    |     |       |           |   |                   |     |   |  |  |

● Headings "A" to "E" in the "Hose number" column and "Resin" in the "Terminal fittings" column represent the following hose numbers and resin categories.

| Α     | 0913F/0913F-S/0969F/0969LF   |
|-------|--|
| В     | 0951F/0998   |
| С     | 0913F-W/0901F/0982   |
| D     | 0970F/0970F-S  |
| Е     | 0976F/0976F-S  |
| Resin | P.P/PVC/FRP Note: As a general rule, fiber reinforced plastic (FRP) is used for hydrochloric acid and Diluted sulfuric acid. |

|   |     |  | Hose number |         |                    | Terminal fittings |   |      |     |       |
|---|-----|--|-------------|---------|--------------------|-------------------|---|------|-----|-------|
| N | о.  | Chemical name                              | Α           | В       | С                  | D                 | Е | Iron | sus | Resin |
| Н | 225 | Hydrobromic silver oxide, 50%              | ×           | •       | ×                  | •                 | × | ×    | ×   | •     |
|   | 226 | Hydrochloric acid                          |             |         | use wi             |                   |   | ×    | ×   | •     |
|   | 227 | Hydrochloric acid, 35%                     |             | F serie | 51F, 09<br>s only. | 98 and            | 1 | ×    | ×   | •     |
|   | 228 | Hydrogen chloride                          | •           | •       | ×                  | •                 | • | ×    | •   |       |
|   | 229 | Hydrogen peroxide solution 60%-70%         | *•          | ×       | ×                  | ×                 | • | ×    | •   |       |
|   | 230 | Hydrogen peroxide solution 8%-60%          | *•          | ×       | ×                  | ×                 | • | ×    | •   |       |
|   | 231 | Hydrogen sulfide                           | •           | ×       | ×                  | ×                 | • | ×    | •   |       |
|   | 232 | Hydrogen sulfide solution                  | •           | •       | ×                  | •                 | • | ×    | •   |       |
|   | 233 | Hydroquinone solution                      | •           | •       | ×                  | •                 | • | •    | •   |       |
|   | 234 | Hydroxylamine sulfate 12%                  | •           | •       | ×                  | •                 | • | ×    | •   |       |
|   | 235 | 2-Hydroxyethyl acrylate                    | •           | •       | ×                  | •                 | • | ×    | •   |       |
| 1 | 236 | Ink  | •           | ×       | •                  | ×                 | • | •    | •   |       |
|   | 237 | Isoamyl acetate                            | •           | ×       | •                  | ×                 | • | •    | •   |       |
|   | 238 | Isobutyl acetate                           | •           | ×       | •                  | ×                 | • | •    | •   |       |
|   | 239 | Isobutyl acrylate                          | •           | ×       | •                  | ×                 | • | •    | •   |       |
|   | 240 | Isobutylaldehyde                           | •           | •       | •                  | •                 | • | •    | •   |       |
|   | 241 | Isooctane                                  | •           | ×       | •                  | ×                 | • | •    | •   |       |
|   | 242 | Isophorone                                 | •           | ×       | •                  | ×                 | • | •    | •   |       |
|   | 243 | Isophorone diamine                         | •           | •       | ×                  | •                 | • | •    | •   |       |
|   | 244 | Isoprene                                   | •           | ×       | •                  | ×                 | • | •    | •   |       |
|   | 245 | Isopropanolamine                           | •           | •       | ×                  | •                 | • | •    | •   |       |
|   | 246 | Isopropyl alcohol                          | •           | ×       | •                  | ×                 | • | •    | •   |       |
|   | 247 | Isopropyl benzene                          | •           | ×       | •                  | ×                 | • | •    | •   |       |
|   | 248 | Isopropyl ether                            | •           | ×       | •                  | ×                 | • | •    | •   |       |
|   | 249 | Isopropylamine                             | •           | ×       | ×                  | ×                 | • | •    | •   |       |
| K | 250 | Ketone                                     | *•          | ×       | *•                 | ×                 | • | •    | •   |       |
| L | 251 | Lactic acid                                | •           | •       | ×                  | •                 | • | ×    | •   |       |
|   | 252 | Linseed oil                                | •           | •       | •                  | •                 | • | •    | •   |       |
|   | 253 | Liquefied petroleum gas                    | •           | ×       | •                  | ×                 | • | •    | •   |       |
|   | 254 | Lubrication oil                            | •           | •       | •                  | •                 | • | •    | •   |       |
| М | 255 | Magnesium chloride solution                | •           | •       | ×                  | •                 | • | ×    | •   |       |
|   | 256 | Maleic acid water solution                 | •           | •       | ×                  | •                 | • | ×    | •   |       |
|   | 257 | Maleic anhydride                           | X           | ×       | ×                  | •                 | • | ×    | •   |       |
|   | 258 | Mercaptobenzothiazol, sodium salt solution | •           | •       | •                  | •                 | • | •    | •   |       |
|   | 259 | Mercury chloride solution                  | ×           | •       | ×                  | •                 | × | ×    | ×   | •     |
|   | 260 | Mesityl oxide                              | •           | •       | •                  | •                 | • | •    | •   |       |
|   | 261 | Methacrylic acid                           | •           | •       | ×                  | •                 | • | •    | •   |       |
|   | 262 | Methacrylonitrile                          | •           | •       | •                  | •                 | • | •    | •   |       |

| N |     | Chemical name   |    | Hos | e nun | nber |   | Term | inal fi | ttings |
|---|-----|---|----|-----|-------|------|---|------|---------|--------|
| N | lo. | Chemical name   | Α  | В   | С     | D    | Е | Iron | sus     | Resin  |
| М | 263 | Methanol  | •  | ×   | •     | ×    | • | •    | •       |        |
|   | 264 | Methyl acetate  | •  | ×   | •     | ×    | • | •    | •       |        |
|   | 265 | Methyl acrylate   | •  | ×   | •     | ×    | • | •    | •       |        |
|   | 266 | Methyl acrylate   | •  | ×   | ×     | ×    | • | •    | •       |        |
|   | 267 | Methyl amyl acetate   | •  | ×   | •     | ×    | • | •    | •       |        |
|   | 268 | Methyl amyl alcohol   | •  | ×   | •     | ×    | • | •    | •       |        |
|   | 269 | Methyl amyl ketone  | •  | ×   | •     | ×    | • | •    | •       |        |
|   | 270 | 2-Methyl ethyl aniline  | •  | •   | •     | •    | • | •    | •       |        |
|   | 271 | Methyl ethyl ketone (MEK)   | *• | ×   | *•    | ×    | • | •    | •       |        |
|   | 272 | Methyl formate  | •  | ×   | •     | ×    | • | •    | •       |        |
|   | 273 | Methyl halogen sulfuric acid  | X  | ×   | ×     | •    | × | ×    | •       |        |
|   | 274 | 4-Methyl pyridine   | •  | •   | •     | •    | • | •    | •       |        |
|   | 275 | Methyl salicylate   | •  | ×   | •     | ×    | • | •    | •       |        |
|   | 276 | 2-Methyl-1-pentene  | •  | ×   | •     | ×    | • | •    | •       |        |
|   | 277 | 2-Methyl-2-hydroxy-3-butyne   | •  | •   | •     | •    | • | •    | •       |        |
|   | 278 | N-Methyl-2-pyrrolidone  | •  | •   | •     | •    | • | •    | •       |        |
|   | 279 | 2-Methyl-5-ethylpyridine  | •  | •   | •     | •    | • | •    | •       |        |
|   | 280 | Methylamine solutions 40% or less                                   | •  | •   | ×     | •    | • | •    | •       |        |
|   | 281 | Methylmethacrylate  | •  | ×   | •     | ×    | • | •    | •       |        |
|   | 282 | $\alpha$ -Methylstyrene   | •  | ×   | •     | ×    | • | •    | •       |        |
|   | 283 | Monochlor benzene   | X  | ×   | ×     | ×    | • | ×    | •       |        |
|   | 284 | Morpholine  | •  | •   | ×     | •    | • | •    | •       | •      |
|   | 285 | Motor oil   | •  | •   | •     | •    | • | •    | •       |        |
| N | 286 | Naphthalene molten  | •  | •   | •     | •    | • | •    | •       |        |
|   | 287 | Neodecanoic acid  | •  | •   | ×     | •    | • | •    | •       |        |
|   | 288 | Nickel saline solution  | •  | •   | ×     | •    | • | ×    | •       |        |
|   | 289 | Nitrating acid (mixture of sulphuric and nitric acids)              | *• | *•  | ×     | •    | • | ×    | •       |        |
|   | 290 | Nitric acid (20 to 90% or more)                                     | X  | ×   | ×     | •    | • | ×    | •       |        |
|   | 291 | Nitric acid (20% or less)   | *• | ×   | ×     | •    | • | ×    | •       |        |
|   | 292 | Nitric acid (90% or more) Note: Details to be worked out separately | ×  | X   | ×     | •    | • | ×    | •       |        |
|   | 293 | Nitrobenzene  | •  | ×   | •     | ×    | • | •    | •       |        |
|   | 294 | o-Nitrophenol (molten)  | •  | ×   | ×     | ×    | • | •    | •       |        |
|   | 295 | 1- or 2-Nitropropane  | •  | ×   | •     | ×    | • | •    | •       |        |
|   | 296 | Nitropropane/nitroethane (60/40 mixture)                            | •  | ×   | •     | ×    | • | •    | •       |        |
|   | 297 | Nitrotoluene  | •  | ×   | •     | ×    | • | •    | •       |        |
|   | 298 | Nonene  | •  | •   | •     | •    | • | •    | •       |        |
|   | 299 | Nonyl alcohol   |    | X   |       | X    | • | •    |         |        |

# **Chemical Resistance Suitability Table**

This suitability table was prepared based on past performances, the experiments we conducted and by comprehensively examining documents supplied by the manufacturers of materials.

Use the table as reference material for selecting hoses, since the results vary particularly for chemicals, depending on the conditions, such as concentration, temperature, pressure and movement.

●: Available X: Unavailable

\*Even when a chemical is marked as unavailable for use, the chemical may still be available for use, depending on the conditions. Contact us for details.

| still be available for use, depending on the |            |   |        |          |            |           |          |          |            |                 |  |
|--|------------|---|--------|----------|------------|-----------|----------|----------|------------|-----------------|--|
| N  | о.         | Chemical name                                     | A      | Hos      | e nun<br>C | nber<br>D | Е        | Term     | sus        | ttings<br>Resir |  |
| N  | 300        | Nonyl phenol                                      | ^      | •        |            | •         | _        |          | <b>303</b> | Hesii           |  |
| 0  | 301        | Octanol (all isomers)                             | •      | •        | •          | •         | •        |          | •          |                 |  |
| Ū  | 302        | Octene (all isomers)                              | •      | •        | •          | •         | •        | •        | •          |                 |  |
|  | 303        | Octyl cresol                                      | •      | ×        | ×          | ×         | •        | ×        | •          |                 |  |
|  | 304        | Oil and grease                                    | •      | ^        | ^          | ^         | •        | •        | •          |                 |  |
|  | 305        | Oil for transformer                               | •      | •        | •          | •         | •        | •        | •          |                 |  |
|  | 306        | Olefins, straight chain mixtures                  | •      | •        | •          | •         | •        | •        | •          |                 |  |
|  | 307        | Oleic acid  | •      | •        | •          | •         | •        | •        | •          |                 |  |
|  | 308        | Oxalic acid 50% water solution                    | •      | •        | ×          | •         | •        | ×        | •          |                 |  |
|  | 309        | Ozone   | ×      | ×        | ×          | •         | •        | ×        | •          |                 |  |
| Р  | 310        | Paraffin  | ^      | ^        | ^          | •         | •        | ^        |            |                 |  |
| •  | 311        | Paraldehyde                                       | •      | ×        |            | ×         | •        |          |            |                 |  |
|  | 312        | Pentachloroethane                                 | •      | ^        | •          | ^         | •        |          |            |                 |  |
|  | 313        | 1, 3-Pentadiene                                   | •      | ×        |            | ×         | •        |          |            |                 |  |
|  | 314        | n-Pentane   | •      | ×        | •          | ×         | •        |          | •          |                 |  |
|  | 315        | Pentene (all isomers)                             |        | ×        |            | ×         | •        |          |            |                 |  |
|  | 316        | Perchloric acid                                   | ×      | ^        | ×          | ^         | ×        | ×        | ×          |                 |  |
|  | 317        | Perchloroethylene                                 | ^      |          | ^          | •         | ^        | ^        | ^          |                 |  |
|  | 318        | Petroleum   | •      | ×        | •          | ×         | •        |          |            |                 |  |
|  | 319        | Petroleum ether                                   | ×      | ×        | ×          | ×         | •        |          |            |                 |  |
|  | 320        | Phenol  | ^      | ×        | ^          | ×         | •        |          |            |                 |  |
|  | 321        | 1-Phenyl-1-xylyl ethane                           | •      | ×        |            | ×         | •        |          |            |                 |  |
|  | 322        | Phenylhydrazine                                   |        | ×        | ×          | ×         |          | ×        |            |                 |  |
|  | 323        | Phosgene  | ×      | ×        | ×          | ^         | •        | ×        |            |                 |  |
|  | 324        | Phosphoric acid                                   | ^      | ^        | ×          | •         | •        | ×        |            |                 |  |
|  | 325        | ·   | ×      |          | ×          |           | ×        | ×        | ×          |                 |  |
|  | 325        | Phosphorus oxychloride Phosphorus yellow or white | ^<br>× | ×        | ×          | ×         | ^<br>×   | ×        | ×          |                 |  |
|  | 327        | Phthalic acid                                     | ^      | ×        | ^          | ^<br>×    | ^        | ^        | ^          |                 |  |
|  | 328        | Phthalic anhydride                                |        | ×        | ×          | ×         | •        | ×        |            |                 |  |
|  | 329        | Picric acid                                       |        | ^        | ^          | ^         | •        | ×        |            |                 |  |
|  |            | Polyethylene polyamines                           |        |          | ~          |           | •        | ×        |            |                 |  |
|  | 330<br>331 | Potassium hydroxide solution                      |        |          | ×          |           |          | ×        | •          |                 |  |
|  |            | Potassium salt solution                           | ×      |          |            | •         | <b>Y</b> |          | ~          | _               |  |
|  | 332        |   | ^      | <b>y</b> | ×          | ~         | ×        | ×        | ×          | _               |  |
|  | 333        | n-Propanolamine Propionic acid                    |        | ×        | <b>y</b>   | ×         | •        | <b>Y</b> | •          |                 |  |
|  | 334        | Propionic acid Propionic anhydride                |        |          | ×          |           |          | ×        |            |                 |  |
|  |            |   |        | <b>y</b> | ×          | <b>y</b>  |          | ×        |            |                 |  |
|  | 336<br>337 | Propionitrile Propyl alcohol                      |        | ×        |            | ×         | -        | _        | _          |                 |  |

|   |   |     |   | Hose number |  |          |          |      | Terminal fittings |     |   |  |  |
|---|---|-----|---|-------------|--|----------|----------|------|-------------------|-----|---|--|--|
|   | N | о.  | Chemical name                                       | A           | В  | С        | D        | Е    | Iron              | SUS |   |  |  |
| ı | Р | 338 | Propyl alcohol                                      | •           | ×  | •        | ×        | •    | •                 | •   |   |  |  |
|   |   | 339 | n-Propylamine                                       | •           | ×  | •        | ×        | •    | •                 | •   |   |  |  |
|   |   | 340 | Propylene dimer                                     | •           | ×  | •        | ×        | •    | •                 | •   |   |  |  |
|   |   | 341 | Propylene oxide                                     | •           | ×  | ×        | ×        | •    | ×                 | •   |   |  |  |
|   |   | 342 | Pyridine  | •           | ×  | •        | ×        | •    | •                 | •   |   |  |  |
| F | R | 343 | Rosin   | •           | •  | •        | •        | •    | •                 | •   |   |  |  |
| ( | S | 344 | Saturated saline                                    | ×           | •  | ×        | •        | ×    | ×                 | ×   | • |  |  |
|   |   | 345 | Sea water   | ×           | •  | ×        | •        | ×    | ×                 | ×   | • |  |  |
|   |   | 346 | Sec-Amyl acetate                                    | •           | ×  | •        | ×        | •    | •                 | •   |   |  |  |
|   |   | 347 | Silicon oil   | •           | •  | •        | •        | •    | •                 | •   |   |  |  |
|   |   | 348 | Sodium dichromate (70% or more)                     | •           | •  | ×        | •        | •    | ×                 | •   |   |  |  |
|   |   | 349 | Sodium chlorate solution 50% or less                | •           | •  | ×        | •        | •    | ×                 | •   |   |  |  |
|   |   | 350 | Sodium hydrosulphide solution 45% or less           | •           | •  | •        | •        | •    | •                 | •   |   |  |  |
|   |   | 351 | Sodium hydrosulphide/<br>ammonium sulphide solution | •           | •  | ×        | •        | •    | ×                 | •   |   |  |  |
|   |   | 352 | Sodium hydroxide, 50%                               | •           | •  | ×        | •        | •    | •                 | •   |   |  |  |
|   |   | 353 | Sodium hypochlorite                                 | Διναί       | lahle fo   | r lico w | rith the | hosa | ×                 | ×   | • |  |  |
|   |   | 354 | Sodium hypochlorite solution 15% or less            |             | ailable for use with the hose<br>mber 0970F series only. |          |          |      | ×                 | ×   | • |  |  |
|   |   | 355 | Solid paraffin                                      | •           | •  | •        | •        | •    | •                 | •   |   |  |  |
|   |   | 356 | Stearic acid  | •           | •  | •        | •        | •    | •                 | •   |   |  |  |
|   |   | 357 | Styrene monomer                                     | •           | ×  | •        | ×        | •    | •                 | •   |   |  |  |
|   |   | 358 | Sulfonic acid                                       | •           | •  | ×        | •        | •    | ×                 | •   |   |  |  |
|   |   | 359 | Sulfur chloride                                     | ×           | •  | ×        | •        | ×    | ×                 | ×   | • |  |  |
|   |   | 360 | Sulfur dioxide                                      | •           | •  | ×        | •        | •    | ×                 | •   |   |  |  |
|   |   | 361 | Sulfuric acid 70% or less                           | ×           | •  | ×        | •        | ×    | ×                 | ×   | • |  |  |
|   |   | 362 | Sulfuric acid 98%                                   | *•          | *•   | ×        | •        | •    | •                 | •   | • |  |  |
| - | Т | 363 | Tall oil (crude and distilled)                      | •           | •  | •        | •        | •    | •                 | •   |   |  |  |
|   |   | 364 | Tall oil fatty acid (resin acids less than 20%)     | •           | •  | •        | •        | •    | •                 | •   |   |  |  |
|   |   | 365 | Tannic acid   | •           | •  | ×        | •        | •    | ×                 | •   |   |  |  |
|   |   | 366 | Tartaric acid                                       | •           | •  | ×        | •        | •    | ×                 | •   |   |  |  |
|   |   | 367 | Tetrachloroethane                                   | •           | •  | •        | •        | •    | •                 | •   |   |  |  |
|   |   | 368 | Tetraethyl lead                                     | •           | ×  | ×        | ×        | •    | ×                 | •   |   |  |  |
|   |   | 369 | Tetraethylene pentamine                             | •           | ×  | •        | ×        | •    | •                 | •   |   |  |  |
|   |   | 370 | Tetrahydrofuran                                     | •           | ×  | •        | ×        | •    | •                 | •   |   |  |  |
|   |   | 371 | Tetrahydronaphthalene                               | •           | ×  | •        | ×        | •    | •                 | •   |   |  |  |
|   |   | 372 | Tetralin  | •           | ×  | •        | ×        | •    | •                 | •   |   |  |  |
|   |   | 373 | Thinner   | •           | ×  | •        | ×        | •    | •                 | •   |   |  |  |
|   |   | 374 | Thionyl chloride                                    | ×           | •  | ×        | •        | ×    | ×                 | ×   | • |  |  |
|   |   |     |   |             |  |          |          |      |                   |     |   |  |  |

Note: Contact us in advance if you intend to use nitric acids, since a special type of shielding material is required.

● Headings "A" to "E" in the "Hose number" column and "Resin" in the "Terminal fittings" column represent the following hose numbers and resin categories.

| Α     | 0913F/0913F-S/0969F/0969LF   |
|-------|--|
| В     | 0951F/0998   |
| С     | 0913F-W/0901F/0982   |
| D     | 0970F/0970F-S  |
| E     | 0976F/0976F-S  |
| Resin | P.P/PVC/FRP Note: As a general rule, fiber reinforced plastic (FRP) is used for hydrochloric acid and Diluted sulfuric acid. |

|     |     |  |    | Hos | e nun | nber |   | Term | inal fit | ttings |
|-----|-----|--|----|-----|-------|------|---|------|----------|--------|
| No. |     | Chemical name  | Α  | В   | С     | D    | Е | Iron | sus      | Resin  |
| Т   | 375 | Thiophene  | •  | •   | ×     | •    | • | ×    | •        |        |
|     | 376 | Toluene  | *• | ×   | *•    | ×    | • | •    | •        |        |
|     | 377 | Toluene diisocyanate                                       | •  | ×   | •     | ×    | • | •    | •        |        |
|     | 378 | o-Toluidine  | •  | ×   | •     | ×    | • | •    | •        |        |
|     | 379 | Tributyl phosphate   | •  | •   | •     | •    | • | •    | •        |        |
|     | 380 | Trichloroacetic acid, 10%                                  | •  | •   | ×     | •    | • | ×    | •        |        |
|     | 381 | 1.2.4-Trichlorobenzene                                     | •  | ×   | •     | ×    | • | •    | •        |        |
|     | 382 | 1.1.1-Trichloroethane                                      | •  | •   | •     | •    | • | •    | •        |        |
|     | 383 | 1.1.2-Trichloroethane                                      | •  | •   | •     | •    | • | •    | •        |        |
|     | 384 | Trichloroethylene  | •  | •   | •     | •    | • | •    | •        |        |
|     | 385 | 1.2.3-Trichloropropane                                     | •  | •   | •     | •    | • | •    | •        |        |
|     | 386 | Tricresyl phosphate (containing less than 1% ortho isomer) | •  | •   | •     | •    | • | •    | •        |        |
|     | 387 | Triethanolamine  | •  | ×   | •     | ×    | • | •    | •        |        |
|     | 388 | Triethyl benzene   | •  | ×   | •     | ×    | • | •    | •        |        |
|     | 389 | Triethyl phosphate   | •  | •   | ×     | •    | • | ×    | •        |        |
|     | 390 | Triethylamine  | •  | ×   | •     | ×    | • | •    | •        |        |
|     | 391 | Triethylene tetramine                                      | •  | ×   | •     | ×    | • | •    | •        |        |
|     | 392 | 1.2.4-Trimethyl benzene                                    | •  | ×   | •     | ×    | • | •    | •        |        |
|     | 393 | Trimethyl phosphate  | •  | •   | •     | •    | • | •    | •        |        |
|     | 394 | Trimethylacetic acid                                       | •  | •   | ×     | •    | • | •    | •        |        |
|     | 395 | Trimethylhexamethylene diamine                             | •  | •   | ×     | •    | • | •    | •        |        |
|     | 396 | Trimethylhexamethylene diisocyanate                        | •  | •   | •     | •    | • | •    | •        |        |
|     | 397 | Trioctyl phosphite   | •  | •   | •     | •    | • | •    | •        |        |
|     | 398 | Trixylyl phosphate   | •  | •   | •     | •    | • | •    | •        |        |
|     | 399 | Turpentine   | •  | •   | •     | •    | • | •    | •        |        |
|     | 400 | Turpentine oil   | •  | •   | •     | •    | • | •    | •        |        |
| U   | 401 | Undecane   | •  | ×   | •     | ×    | • | •    | •        |        |
|     | 402 | Undecylic alcohol  | •  | •   | •     | •    | • | •    | •        |        |
|     | 403 | Urea, ammonium solution containing aqua ammonia            | •  | •   | •     | •    | • | •    | •        |        |
| ٧   | 404 | n-Valeraldehyde  | •  | •   | •     | •    | • | •    | •        |        |
|     | 405 | Vaseline   | •  | •   | •     | •    | • | •    | •        |        |
|     | 406 | Vinegar  | •  | •   | ×     | •    | • | ×    | •        |        |
|     | 407 | Vinyl acetate  | •  | ×   | •     | ×    | • | •    | •        |        |
|     | 408 | Vinyl chloride monomer                                     | •  | •   | ×     | •    | • | •    | •        |        |

| No. |     | Chemical name                       | Hose number |   |   |   |   | Terminal fittings |     |       |
|-----|-----|-------------------------------------|-------------|---|---|---|---|-------------------|-----|-------|
|     |     |                                     | Α           | В | С | D | Е | Iron              | sus | Resin |
| ٧   | 409 | Vinyl ethyl ether                   | •           | × | • | × | • | •                 | •   |       |
|     | 410 | Vinyl neodecanoate                  |             | • | • | • | • | •                 | •   |       |
|     | 411 | Vinyl toluene                       | •           | × | × | × | • | •                 | •   |       |
|     | 412 | Vinylidene chloride                 | ×           | × | × | × | • | ×                 | •   |       |
| W   | 413 | Water                               | •           | • | × | • | • | •                 | •   | •     |
|     | 414 | White paraffin                      | •           | • | • | • | • | •                 | •   |       |
|     | 415 | White spirit, low (15-20%) aromatic | •           | × | • | × | • | •                 | •   |       |
| Х   | 416 | Xylenes                             | •           | × | • | × | • | •                 | •   |       |
|     | 417 | Xylenols                            | •           | × | • | × | • | •                 | •   |       |
| Υ   | 418 | Yeast water solution                | •           | • | × | • | • | ×                 | •   |       |

# **Caution for handling**

For long operation life and safe use of the hoses, please keep in mind the following precautions. Note that we shall not be liable for any damage caused by failing to follow these precautions.

Slack must be provided when using the hose.

The hose stretches when pressurized and shrinks under negative pressure. Do not connect both ends of hose while the hose is tightly pulled.



Particular care must be taken when connecting the hose.

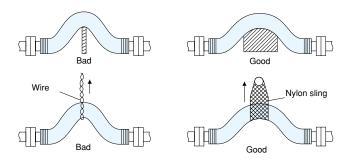
Do not use the hose when it is twisted.



Do not bend the hose sharply near its end fittings.



When supporting the hose from below, provide as much supporting surface as possible so that it will not be damaged. Do not hang or rest the hose on a sharp corner.



Prevent strong friction on the outer surface of the hose.

The outer surface of the hose is abrasion-resistant. However, in order to achieve long operational life, avoid as much as possible dragging it over, throwing it on, or roll over a concrete or ballast surface.

When selecting a hose, please consider the fact that hoses with fabric outer cover, such as 0913F, 0933, 0940 etc., are less abrasion-resistant than other types.

If contact with other object is unavoidable or if the hose must be hung with a rope, use some kind of pad (for example a piece of rubber from old tire) for protection.

\* Stainless steel outer braid can also be provided.

When storing the hose, avoid direct sunlight as much as possible and do not exceed minimum bending radius indicated in the catalog.

\* If possible, lay the hose straight.

Do not allow a person to step on the hose and prevent a heavy or sharp object from being placed or dropped on it.

\* Do not cut or pierce the hose with a knife or a similar tool.

When moving, attaching and detaching a piping system, support not only the hose itself but also the connection fittings.

Do not exceed the maximum fluid temperature specified in the catalog when using the hose.

If flushing is needed, avoid using hot water exceeding 80°C. If use of steam is unavoidable, use insulation material between the hose and the steam pipe to prevent direct contact with the hose and keep the end of the hose open.

\* In general, use the hose within the temperature range of -20  $^{\circ}\!\text{C}$  to +80  $^{\circ}\!\text{C}$  .

Carry out periodical inspection of the hose.

For details, please see Periodical Inspection of Hose on the next page.

Avoid a situation in which limit values of temperature, pressure and minimum bending radius specified in the catalog are reached at the same time.

Example: 0982 4" Hose

Temperature 80  $^{\circ}\text{C}$  , Pressure 1.4 MPa, Minimum bending radius 500 mm

# **Inspection manual**

For long operation life and safety of **Meijiflex Hose**, carry out daily and periodic inspections as instructed below. Note that we shall not be liable for any damage caused by failing to follow these precautions.

# Important notes

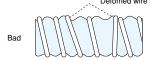
Visual inspection, pressure test, and conductivity inspection must be performed.

If the outer wire is broken (for example by a contact with an object), immediately stop using the hose.

#### 1. Visual inspection of the hose

1-1 Check if the outer wire of the hose is not deformed or crushed as in the figure below.

Normal Normal



- 1-2 Before and after using the hose, visually check if any fault exits inside the hose (e.g., crack of covering wire, scratch on inner fabric or film).
- 1—3 Check that the film is not exposed from under the outer cover through a crack or by wear.
  PVC coating on the fabric substrate of outer cover (excluding 0913 hoses) may come apart by friction, but this is not a problem and the hose can still be used.
- 1-4 If the film under the outer fabric is visible, replace the hose as soon as possible.
- 1-5 If the wire diameter of the outer wire has become less than half of its original diameter due to wear or rust, replace the hose immediately.
- 1-6 If the outer cover is considerably discolored, replace the hose as soon as possible.

#### 2. Visual inspection of end fittings

- 2-1 Check that there is no damage or deformation to the fastening portions of the fittings.
- 2-2 Check that there is no damage to the neck of the hose.
- 2-3 Check that the threaded portion is not deformed.
- 2-4 Check that there is no fault in the welds.

#### 3. Pressure test (water leak test)

As a general rule, apply 1.5 times the operation pressure for at least 15 minutes. During this period, check that there is no leakage or other fault on the whole length of the hose and at the junction with fittings. Unlike rubber hoses, these hoses show very little change of outer diameter when pressure is applied. However, when a test pressure of 1 MPa is applied, they stretch in length by approximately 10 percent. This is a normal behavior due to their unique construction and is not a defect.

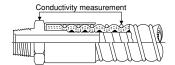
(NOTE) The same behavior is observed when using the hose, stretching under pressure and shrinking under negative pressure.

3—2 When pressure is applied, small bubbles may be observed on the outer surface of the hose. These bubbles are formed when water or air trapped inside the outer cover or the inner layers is forced to come out, and their amount gradually reduces over time. This does not indicate a problem with air tightness of the hose.

(NOTE) The same behavior may be observed when using the hose. If it occurs, bubbles can be reduced or removed by wiping them off with a dry cloth.

#### 4. Conductivity test

4—1 When flammable solvent is used, check the conductivity between the outer wire and end fitting as shown in the illustration (between arrows).



# Inspection method

# **Judgment**

If no fault is detected in appearance, pressure and continuity inspections, you can continue to use the hose. If you have a question regarding how to make judgment of fault from appearance, please contact us.

# **Inquiry / Order for**

Date:

For inquiry or order, please fill in this form with as much detail as possible so that the right choice can be made.

If you are making an inquiry for your currently used hose, please provide the lot number stamped on the fitting. It helps us identify the specifications and production history and make quick response possible.

| Company name | Department |
|--------------|------------|
| Name         | TEL        |
| Address      | FAX        |
| Address      | E-mail     |

# Type of request

( Quotation / Order / Others )

Please encircle one.

### Operating conditions

\*If you are placing an order, please note that we shall not be liable for any damage caused by operation conditions that are different from indicated herein.

| Fluid                  | Name of fluid                                    | / Concentration / Composition etc.   |  |                               |     |  |  |  |
|------------------------|--|--|--|-------------------------------|-----|--|--|--|
| Temperature            | Normal operating temperature                     |  |  | Maximum operating temperature | °C  |  |  |  |
| Pressure               | Normal operating pressure                        |  |  | Maximum operating pressure    | MPa |  |  |  |
| Size / Length          | Size (diamete                                    | r)   |  | Length                        | М   |  |  |  |
| Application            | Location of use / Method of use, etc.            |  |  |                               |     |  |  |  |
| Installation condition | Minimum bending radius / Repeated movement, etc. |  |  |                               |     |  |  |  |
| Surrounding            | Indoor   | Ambient temperature / Whether the outer surface of the hose is wetted by liquid or not, etc. |  |                               |     |  |  |  |
| environment            | Outdoor  | <u></u>  |  |                               |     |  |  |  |
| End fitting            |  |  |  |                               |     |  |  |  |
| Currently used hose    |  |  |  | Existing issues, etc.         |     |  |  |  |
| Other requirements     | Special operating conditions, Illustration, etc. |  |  |                               |     |  |  |  |

### How to specify fitting

See P.12 to 15 for fitting types.

### Fitting number - Size - Material

(1) One end: 501-50-S

(2" male type, material: steel)
Other end: 504-50-10K-S

(2" flange type loose, JIS 10kg/cm2 standard, Material: steel) Sleeve S (Material: steel, zinc plated)

NOTE: How to specify details of #504 fitting

(2) One end: 503-50-20K-SUS

(2" flange type fixed, JIS 20 kg/cm2 standard, Material: SUS 304)
Other end: 504-50-20K-Flange S, Liquid contact portion SUS

(2" flange type loose, JIS 20 kg/cm2 standard, Material: Flange portion = Steel, Liquid contact portion = SUS 304)

Sleeve SUS (Material: SUS 304)

Because it is a loose flange, flange portion and nipple (liquid contact) portion can have different materials. Please pay attention when specifying materials. 504-50-10K-SUS

(2" flange type loose, JIS 10kg / - standard, Material: Flange & Liquid contact portions both SUS 304)

504-50-10K, Flange S, Liquid contact portion SUS

(2" flange type loose, JIS 10kg / - standard, Material: Flange portion = Steel, Liquid contact portion = SUS 304)

How to specify when using adapter

### Fitting number - Size - Material - Fitting number - Size - Material

(Llegg fitting)

(Adapter fitting

(1) One end 502-50-S+G-50-S

(2) Other end 502-50-S+1-50-S

(2" female thread type, Material: Steel + Adapter male female, Material: Steel)

(2" female thread type, Material: Steel + Adapter elbow, Material: Steel)

# **Other product lines**

In addition to Meijiflex Hoses, we can provide the following products.

#### Piping components

Metal components Flexible metal tubes Expansion joints

Rubber components Bandless rubber hose

AL · BR SUS · PP components Quick couplers

(NOTE) Couplers other than quick couplers are also offered.

#### Seaport components

#### Rubber fenders (V, D, Round, Square types)

(NOTE) In addition to fenders for seaports, fenders for ships and garages are also offered.



# **Company History**

July, 1972 Established a joint-venture in Iwatsuki, Saitama Prefecture with Meiji Rubber and Chemical Co., Ltd. and another company with a capital of 10

million yen

December,1973 Became 100% shareholder of Meiji Rubber and

Chemical Co., Ltd.

March, 1974 Moved the plant to Kaiseimachi, Ashigarakami-

gun, Kanagawa Prefecture

May, 1974 Moved the headquarters to Shinjuku-ku, Tokyo

September, 1975 Signed a technological support agreement with

British COMPOFLEX and started production and

sales of their products

November, 1975 Signed a joint-venture with Meiji Rubber and

Chemical Co., Ltd. and T. IIH, which is the holding company of and COMPOFLEX.Capital: 12.5 million yen, investment ratio: 51% Meiji Fubber and

Chemical Co., Ltd and 49% T. IIH

December, 1975 Expanded capital to 50 million yen

August, 1976 Expanded capital to 100 million yen

September, 1987 Moved the plant to Yamakitamachi, Ashigarakami-

gun, Kanagawa Prefecture

October, 1989 Cancelled the joint-venture, and Meiji Rubber

and Chemical Co., Ltd. became 100% share-

holder

March, 1991 Established the Osaka Office

April, 1996 Opened the Nagoya Branch Office

February, 1999 Constructed a new plant in Yamakitamachi

Yaga, Ashigarakami-gun, Kanagawa Prefecture

Lot area: 3.075 m², total constructed floor area:

2,919 m<sup>2</sup>

December, 1999 Moved the Osaka Office to Amagasaki, Hyogo

Prefecture, and renamed it to Kansai Office

January, 2001 Obtained the ISO9001 Certificate (Japanese

Standards Association)

February, 2002 Moved the headquarters to Sanko Building,

Nishishinjuku, Shinjuku-ku, Tokyo

April, 2002 Moved the Nagoya Branch Office to Toyoake,

Aichi Prefecture, and renamed it to Nagoya

Office

November, 2004 Obtained the ISO14001 Certificate (Japanese

Standards Association)

April, 2006 Moved the Nagoya Office to Atsuta-ku, Nagoya

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Distributor /

#### http://www.meijiflex.co.jp

- Specifications and appearances provided in this catalog may change without prior notice for the purpose of product improvement.
- When selecting and using your hose, read Precautions for Use and Instruction Guide attached to the product as well as this catalog and make sure you understand all precautions and operating conditions including pressure, temperature, and chemical compatibility.
- Read Periodical Inspection of Hoses and follow its instructions.
   Note that we shall not be liable for any damage caused as a result of exceeding allowed operating conditions of the hose and hose clamp, and failing to follow the precaution instructions.