

# Hoses

MH, MM Series

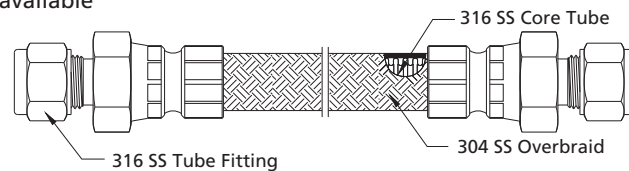


# Metal Flexible Hoses

## MH, MM Series

### Features

- ⦿ Core tube and fitting material: 316 stainless steel
- ⦿ Overbraid material: 304 stainless steel (316 SS available)
- ⦿ Vacuum and positive pressure applications
- ⦿ Working pressure up to: 3100 psig (213 bar)
- ⦿ Hose size: 1/4" to 2"
- ⦿ Working temperature: -325°F to 800°F (-200°C to 426°C)
- ⦿ End connections:
  - 1/4 to 2 thread
  - 1/4" to 2" and 6 mm to 50 mm tube fitting
- ⦿ Welded fitting-to-hose construction to ensure reliable seal
- ⦿ Standard and custom length available



### Hose Technical Data (MH Series)

| Nominal Hose Size | Inside Diameter | Min. Bend Radius |            | Temperature Range            | Working Pressure at 70°F (20°C) | Burst Pressure at 70°F (20°C) | Hose Series |
|-------------------|-----------------|------------------|------------|------------------------------|---------------------------------|-------------------------------|-------------|
|                   |                 | Static           | Dynamic    |                              |                                 |                               |             |
| in. (mm)          | in. (mm)        | in. (mm)         | in. (mm)   | °F (°C)                      | psig (bar)                      | psig (bar)                    |             |
| 1/4 (6.4)         | 0.28 (7.1)      | 2.25 (57.2)      | 10.0 (254) | -325 to 800<br>(-200 to 426) | 3100 (213)                      | 12400 (854)                   | MH4         |
| 3/8 (9.7)         | 0.42 (10.6)     | 3.00 (76.2)      | 12.0 (305) |                              | 2000 (137)                      | 8000 (551)                    | MH6         |
| 1/2 (12.7)        | 0.53 (13.5)     | 4.50 (114)       | 16.0 (406) |                              | 1800 (124)                      | 7200 (496)                    | MH8         |
| 3/4 (19.0)        | 0.80 (20.3)     | 6.00 (152)       | 17.0 (432) |                              | 1500 (103)                      | 6000 (413)                    | MH12        |
| 1 (25.4)          | 1.03 (26.0)     | 6.75 (171)       | 20.0 (508) |                              | 1200 (82.6)                     | 4800 (330)                    | MH16        |
| 1 1/4 (31.8)      | 1.30 (33.0)     | 8.86 (225)       | 23.0 (584) |                              | 950 (65.4)                      | 3800 (261)                    | MH20        |
| 1 1/2 (38.1)      | 1.53 (38.9)     | 11.0 (280)       | 26.0 (660) |                              | 900 (62.0)                      | 3600 (248)                    | MH24        |
| 2 (50.8)          | 2.05 (52.1)     | 13.8 (350)       | 32.0 (813) |                              | 500 (34.4)                      | 2000 (137)                    | MH32        |

### Hose Technical Data (MM Series)

| Nominal Hose Size | Inside Diameter | Min. Bend Radius        |             |                         |            | Temperature Range            | Working Pressure at 70°F (20°C) | Burst Pressure at 70°F (20°C) | Hose Series |
|-------------------|-----------------|-------------------------|-------------|-------------------------|------------|------------------------------|---------------------------------|-------------------------------|-------------|
|                   |                 | Helical Convoluted Core |             | Annular Convoluted Core |            |                              |                                 |                               |             |
|                   |                 | Static                  | Dynamic     | Static                  | Dynamic    |                              |                                 |                               |             |
| in. (mm)          | in. (mm)        | in. (mm)                | in. (mm)    | in. (mm)                | in. (mm)   | °F (°C)                      | psig (bar)                      | psig (bar)                    |             |
| 1/4 (6.4)         | 0.25 (6.4)      | 1.38 (35)               | 8.66 (220)  | 0.79 (20)               | 4.33 (110) | -325 to 800<br>(-200 to 426) | 1600 (110)                      | 6400 (440)                    | MM4         |
| 3/8 (9.7)         | 0.38 (9.5)      | 2.36 (60)               | 10.40 (264) | 0.98 (25)               | 5.91 (150) |                              | 1470 (101)                      | 6000 (413)                    | MM6         |
| 1/2 (12.7)        | 0.50 (12.7)     | 2.95 (75)               | 11.89 (302) | 1.18 (30)               | 4.88 (124) |                              | 1110 (76.4)                     | 4500 (310)                    | MM8         |
| 3/4 (19.0)        | 0.75 (19.0)     | 3.54 (90)               | 13.58 (345) | 1.50 (38)               | 6.65 (169) |                              | 860 (59.2)                      | 3500 (241)                    | MM12        |
| 1 (25.4)          | 1.00 (25.4)     | 4.13 (105)              | 15.00 (381) | 1.77 (45)               | 7.68 (195) |                              | 680 (46.8)                      | 2680 (184)                    | MM16        |
| 1 1/4 (31.8)      | 1.25 (31.8)     | 4.72 (120)              | 16.22 (412) | /                       |            |                              | 680 (46.8)                      | 2600 (179)                    | MM20        |
| 1 1/2 (38.1)      | 1.50 (38.1)     | 5.51 (140)              | 16.89 (429) |                         |            |                              | 520 (35.8)                      | 2200 (151)                    | MM24        |
| 2 (50.8)          | 2.00 (50.8)     | 6.30 (160)              | 18.43 (468) |                         |            |                              | 450 (31.0)                      | 1800 (124)                    | MM32        |

## Testing

Every FITOK metal flexible hose assembly is factory tested with helium to a maximum leak rate of  $1 \times 10^{-5}$  std cm<sup>3</sup>/s.

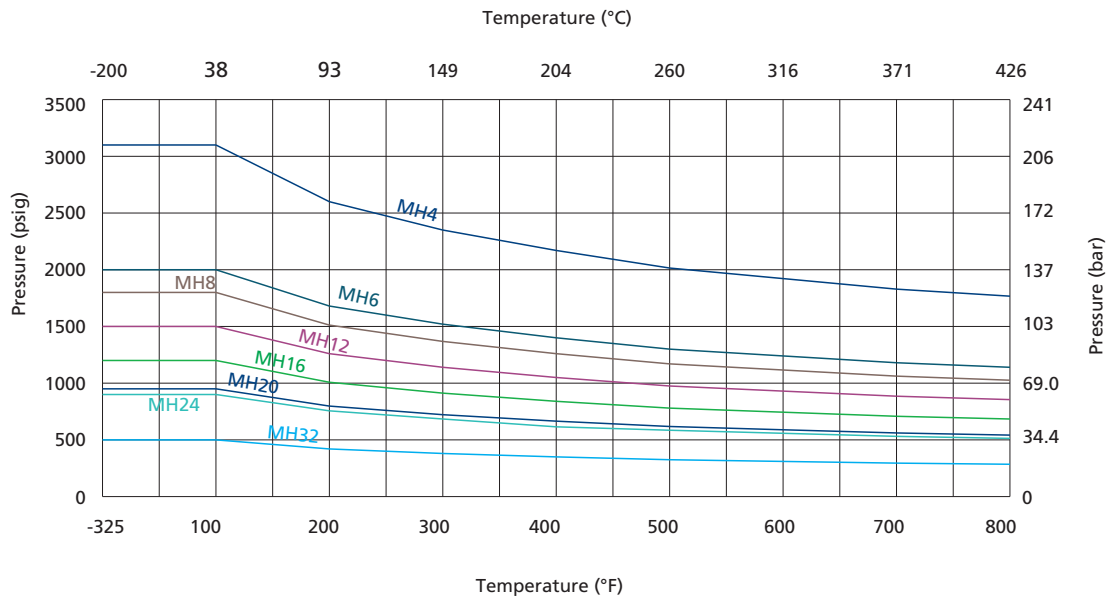
## Cleaning and Packaging

FITOK metal flexible hose components are cleaned in accordance with FITOK *Standard Cleaning and Packaging Process (FC-01)* for general industrial procedures.

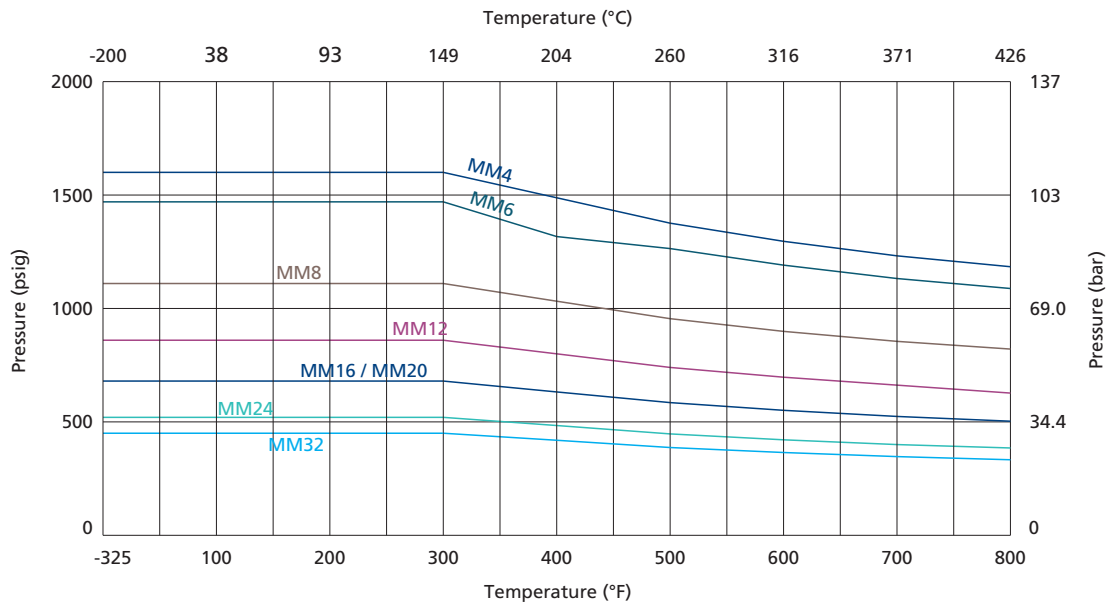
Shorter hoses are packed in cartons with suitable protective material, longer hoses are coiled, bagged and boxed or crated.

## Pressure vs. Temperature

### MH series



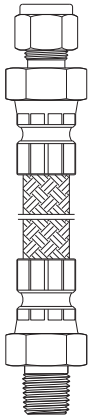
### MM series



When pulsating, surge, or shock pressures exist, the peak pressure in the system should not exceed 50% of the rated working pressure of the hose.

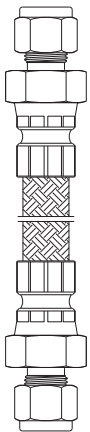
## Standard Assemblies

### Tube Fitting to Male NPT End



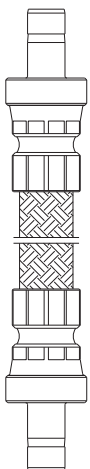
| Nominal Hose Size | Tube Fitting Size | NPT Size | Hose Series | Overall Length | Ordering Number       | Minimum Inside Diameter | Maximum Outside Dimension |
|-------------------|-------------------|----------|-------------|----------------|-----------------------|-------------------------|---------------------------|
|                   |                   |          |             | in. (mm)       |                       | in. (mm)                | in. (mm)                  |
| 1/4               | 1/4               | 1/4      | MH4         | 12 (305)       | SS-MH4-FL4-NS4-F12    | 0.19 (4.8)              | 0.94 (23.8)               |
|                   |                   |          | MM4         | 36 (914)       | SS-MM4-FL4-NS4-F36    | 0.19 (4.8)              | 0.87 (22.0)               |
| 3/8               | 3/8               | 3/8      | MH6         | 18 (457)       | SS-MH6-FL6-NS6-F18    | 0.28 (7.1)              | 1.09 (27.7)               |
|                   |                   |          | MM6         | 36 (914)       | SS-MM6-FL6-NS6-F36    | 0.28 (7.1)              | 1.01 (25.7)               |
| 1/2               | 1/2               | 1/2      | MH8         | 18 (457)       | SS-MH8-FL8-NS8-F18    | 0.41 (10.4)             | 1.23 (31.3)               |
|                   |                   |          | MM8         | 48 (1220)      | SS-MM8-FL8-NS8-F48    | 0.41 (10.4)             | 1.23 (31.3)               |
| 3/4               | 3/4               | 3/4      | MH12        | 18 (457)       | SS-MH12-FL12-NS12-F18 | 0.66 (16.0)             | 1.74 (44.2)               |
|                   |                   |          | MM12        | 48 (1220)      | SS-MM12-FL12-NS12-F48 | 0.66 (16.0)             | 1.59 (40.5)               |
| 1                 | 1                 | 1        | MH16        | 24 (610)       | SS-MH16-FL16-NS16-F24 | 0.88 (22.4)             | 1.82 (46.3)               |

### Tube Fitting End



| Nominal Hose Size | Tube Fitting Size | Hose Series | Overall Length | Ordering Number  | Minimum Inside Diameter | Maximum Outside Dimension |
|-------------------|-------------------|-------------|----------------|------------------|-------------------------|---------------------------|
|                   |                   |             | in. (mm)       |                  | in. (mm)                | in. (mm)                  |
| 1/4               | 1/4               | MH4         | 12 (305)       | SS-MH4-FL4-F12   | 0.19 (4.8)              | 0.94 (23.8)               |
|                   |                   | MM4         | 36 (914)       | SS-MM4-FL4-F36   | 0.19 (4.8)              | 0.87 (22.0)               |
| 3/8               | 3/8               | MH6         | 18 (457)       | SS-MH6-FL6-F18   | 0.28 (7.1)              | 1.09 (27.7)               |
|                   |                   | MM6         | 36 (914)       | SS-MM6-FL6-F36   | 0.28 (7.1)              | 1.01 (25.7)               |
| 1/2               | 1/2               | MH8         | 18 (457)       | SS-MH8-FL8-F18   | 0.41 (10.4)             | 1.23 (31.3)               |
|                   |                   | MM8         | 48 (1220)      | SS-MM8-FL8-F48   | 0.41 (10.4)             | 1.23 (31.3)               |
| 3/4               | 3/4               | MH12        | 18 (457)       | SS-MH12-FL12-F18 | 0.66 (16.0)             | 1.74 (44.2)               |
|                   |                   | MM12        | 48 (1220)      | SS-MM12-FL12-F48 | 0.66 (16.0)             | 1.59 (40.5)               |
| 1                 | 1                 | MH16        | 24 (610)       | SS-MH16-FL16-F24 | 0.88 (22.4)             | 1.82 (46.3)               |

### Tube Adapter End

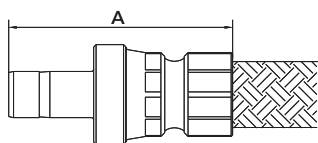


| Nominal Hose Size | Tube Adapter Size | Hose Series | Overall Length | Ordering Number | Minimum Inside Diameter | Maximum Outside Dimension |
|-------------------|-------------------|-------------|----------------|-----------------|-------------------------|---------------------------|
|                   |                   |             | in. (mm)       |                 | in. (mm)                | in. (mm)                  |
| 1/4               | 1/4               | MH4         | 12 (305)       | SS-MH4-FT4-F12  | 0.16 (4.1)              | 0.81 (20.6)               |
|                   |                   | MM4         | 36 (914)       | SS-MM4-FT4-F36  | 0.16 (4.1)              | 0.76 (19.2)               |
| 3/8               | 3/8               | MH6         | 12 (305)       | SS-MH6-FT6-F12  | 0.27 (6.9)              | 1.01 (25.6)               |
|                   |                   | MM6         | 36 (914)       | SS-MM6-FT6-F36  | 0.27 (6.9)              | 0.91 (23.1)               |

1. All dimensions are for reference only and are subject to change. For dimensions not shown above, please contact FITOK Group or our authorized distributors.
2. Types listed are standard. Other types are available upon request.

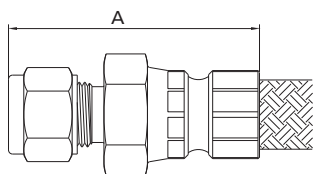
## End Connections

### Tube Adapters

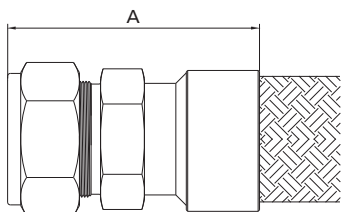


| Tube Adapter Size | Nominal Hose Size | End Connection Designator | Dimensions  |                         |                           |
|-------------------|-------------------|---------------------------|-------------|-------------------------|---------------------------|
|                   |                   |                           | A           | Minimum Inside Diameter | Maximum Outside Dimension |
| in.               | in.               |                           | in. (mm)    |                         |                           |
| 1/4               | 1/4               | FT4                       | 1.76 (44.7) | 0.16 (4.1)              | 0.81 (20.6)               |
| 3/8               | 3/8               | FT6                       | 1.82 (46.2) | 0.27 (6.9)              | 1.01 (25.6)               |
| 1/2               | 1/2               | FT8                       | 2.22 (56.4) | 0.37 (9.4)              | 1.23 (31.3)               |
| 3/4               | 3/4               | FT12                      | 2.35 (59.7) | 0.58 (14.7)             | 1.53 (38.8)               |
| 1                 | 1                 | FT16                      | 2.69 (68.3) | 0.80 (20.3)             | 1.82 (46.3)               |
| mm                | in.               | —                         | mm (in. )   |                         |                           |
| 6                 | 1/4               | MT6                       | 44.4 (1.75) | 4.1 (0.16)              | 20.6 (0.81)               |
| 10                | 3/8               | MT10                      | 47.0 (1.85) | 7.1 (0.28)              | 25.6 (1.01)               |
| 12                | 1/2               | MT12                      | 57.2 (2.25) | 8.9 (0.35)              | 31.3 (1.23)               |

### Tube Fittings



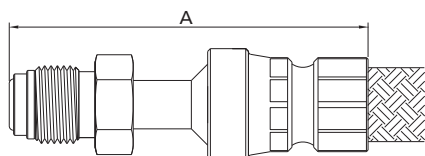
Automatic Weld Style-1 in. and Under



Manual Weld Style-Over 1 in.

| Tube Fitting Size | Nominal Hose Size | End Connection Designator | Dimensions  |                         |                           |
|-------------------|-------------------|---------------------------|-------------|-------------------------|---------------------------|
|                   |                   |                           | A           | Minimum Inside Diameter | Maximum Outside Dimension |
| in.               | in.               |                           | in. (mm)    |                         |                           |
| 1/4               | 1/4               | FL4                       | 1.94 (49.3) | 0.19 (4.8)              | 0.94 (23.8)               |
| 3/8               | 1/4               | FL6                       | 2.00 (50.8) | 0.28 (7.1)              | 0.94 (23.8)               |
| 3/8               | 3/8               | FL6                       | 2.02 (51.3) | 0.28 (7.1)              | 1.09 (27.7)               |
| 1/2               | 1/2               | FL8                       | 2.24 (56.9) | 0.41 (10.4)             | 1.23 (31.3)               |
| 5/8               | 1/2               | FL10                      | 2.27 (57.7) | 0.50 (12.7)             | 1.23 (31.3)               |
| 3/4               | 3/4               | FL12                      | 2.35 (59.7) | 0.63 (16.0)             | 1.74 (44.2)               |
| 1                 | 1                 | FL16                      | 2.64 (67.1) | 0.88 (22.4)             | 1.82 (46.3)               |
| 1 1/4             | 1 1/4             | FL20                      | 4.04 (103)  | 1.09 (27.7)             | 2.23 (58.9)               |
| 1 1/2             | 1 1/2             | FL24                      | 4.75 (121)  | 1.34 (34.0)             | 2.61 (66.3)               |
| 2                 | 2                 | FL32                      | 5.72 (145)  | 1.88 (47.8)             | 3.48 (88.4)               |
| mm                | in.               | —                         | mm (in. )   |                         |                           |
| 6                 | 1/4               | ML6                       | 62.2 (2.45) | 4.8 (0.19)              | 20.6 (0.81)               |
| 8                 | 1/4               | ML8                       | 63.2 (2.49) | 6.4 (0.25)              | 20.6 (0.81)               |
| 10                | 3/8               | ML10                      | 51.6 (2.03) | 7.9 (0.31)              | 31.3 (1.23)               |
| 12                | 1/2               | ML12                      | 56.9 (2.24) | 9.7 (0.38)              | 38.8 (1.53)               |

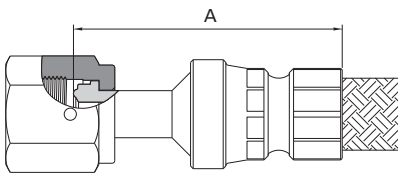
### Male FR Metal Gasket Face Seal Fittings Swivel



| FR Size | Nominal Hose Size | End Connection Designator | Dimensions  |                         |                           |
|---------|-------------------|---------------------------|-------------|-------------------------|---------------------------|
|         |                   |                           | A           | Minimum Inside Diameter | Maximum Outside Dimension |
| in.     | in.               |                           | in. (mm)    |                         |                           |
| 1/4     | 1/4               | SFR4                      | 2.60 (66.0) | 0.18 (4.6)              | 0.81 (20.6)               |
| 1/2     | 1/2               | SFR8                      | 2.83 (71.9) | 0.40 (10.2)             | 1.23 (31.3)               |
| 3/4     | 3/4               | SFR12                     | 4.19 (106)  | 0.65 (16.5)             | 1.52 (38.7)               |
| 1       | 1                 | SFR16                     | 4.80 (122)  | 0.87 (22.1)             | 1.53 (38.8)               |

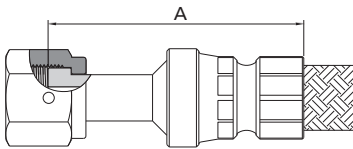
## End Connections

**Female FR Metal Gasket Face Seal Fittings Swivel**



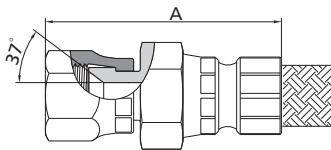
| FR Size | Nominal Hose Size | End Connection Designator | Dimensions  |                         |                           |
|---------|-------------------|---------------------------|-------------|-------------------------|---------------------------|
|         |                   |                           | A           | Minimum Inside Diameter | Maximum Outside Dimension |
| in.     | in.               |                           | in. (mm)    |                         |                           |
| 1/4     | 1/4               | SFFR4                     | 2.00 (50.8) | 0.18 (4.6)              | 0.87 (22.1)               |
| 1/2     | 1/2               | SFFR8                     | 2.16 (54.9) | 0.40 (10.2)             | 1.23 (31.3)               |
| 3/4     | 3/4               | SFFR12                    | 4.19 (106)  | 0.65 (16.5)             | 1.74 (44.2)               |
| 1       | 1                 | SFFR16                    | 4.80 (122)  | 0.87 (22.1)             | 2.03 (51.6)               |

**Female FO O-Ring Face Seal Fittings Swivel**



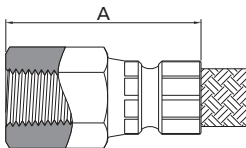
| FO Size | Nominal Hose Size | End Connection Designator | Dimensions  |                         |                           |
|---------|-------------------|---------------------------|-------------|-------------------------|---------------------------|
|         |                   |                           | A           | Minimum Inside Diameter | Maximum Outside Dimension |
| in.     | in.               |                           | in. (mm)    |                         |                           |
| 1/4     | 1/4               | SFFO4                     | 2.11 (53.6) | 0.18 (4.6)              | 0.81 (20.6)               |
| 1/2     | 1/2               | SFFO8                     | 2.14 (54.4) | 0.40 (10.2)             | 1.23 (31.3)               |

**SAE 37° (JIC) Female Swivel**



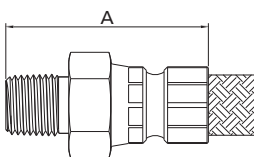
| Swivel Size | Nominal Hose Size | End Connection Designator | Dimensions  |                         |                           |
|-------------|-------------------|---------------------------|-------------|-------------------------|---------------------------|
|             |                   |                           | A           | Minimum Inside Diameter | Maximum Outside Dimension |
| in.         | in.               |                           | in. (mm)    |                         |                           |
| 1/4         | 1/4               | SAN4                      | 1.87 (47.5) | 0.17 (4.3)              | 0.81 (20.6)               |
| 3/8         | 3/8               | SAN6                      | 1.98 (50.3) | 0.28 (7.1)              | 1.01 (25.6)               |
| 1/2         | 1/2               | SAN8                      | 2.25 (57.2) | 0.42 (10.7)             | 1.23 (31.3)               |

**Female Pipe Threads, NPT**

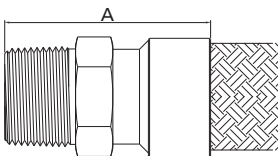


| NPT Size | Nominal Hose Size | End Connection Designator | Dimensions  |                         |                           |
|----------|-------------------|---------------------------|-------------|-------------------------|---------------------------|
|          |                   |                           | A           | Minimum Inside Diameter | Maximum Outside Dimension |
| in.      | in.               |                           | in. (mm)    |                         |                           |
| 1/4      | 1/4               | FNS4                      | 1.81 (46.0) | 0.28 (7.1)              | 0.94 (23.9)               |
| 3/8      | 3/8               | FNS6                      | 1.87 (47.5) | 0.38 (9.7)              | 1.09 (27.7)               |
| 1/2      | 1/2               | FNS8                      | 2.18 (55.4) | 0.47 (11.9)             | 1.23 (31.3)               |
| 3/4      | 3/4               | FNS12                     | 2.21 (56.1) | 0.72 (18.3)             | 1.74 (44.2)               |

**Male Pipe Threads, NPT**



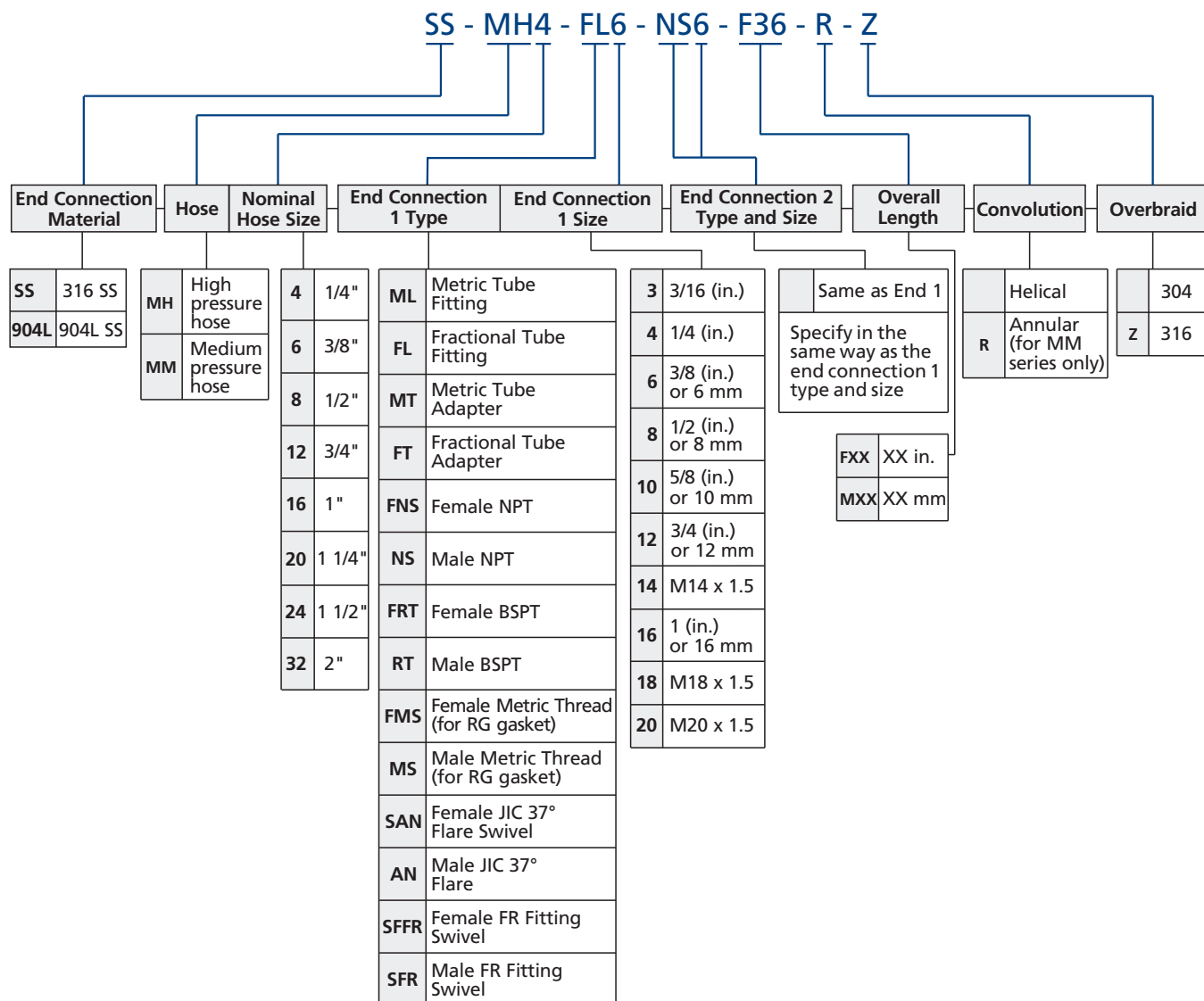
Automatic Weld Style-1 in. and Under



Manual Weld Style-Over 1 in.

| NPT Size | Nominal Hose Size | End Connection Designator | Dimensions  |                         |                           |
|----------|-------------------|---------------------------|-------------|-------------------------|---------------------------|
|          |                   |                           | A           | Minimum Inside Diameter | Maximum Outside Dimension |
| in.      | in.               |                           | in. (mm)    |                         |                           |
| 1/4      | 1/4               | NS4                       | 1.80 (45.7) | 0.28 (7.1)              | 0.94 (23.9)               |
| 1/4      | 3/8               | NS4                       | 1.81 (46.0) | 0.28 (7.1)              | 1.09 (27.7)               |
| 3/8      | 3/8               | NS6                       | 1.81 (46.0) | 0.38 (9.7)              | 1.09 (27.7)               |
| 1/2      | 1/4               | NS8                       | 1.99 (50.6) | 0.47 (11.9)             | 1.02 (25.8)               |
| 1/2      | 1/2               | NS8                       | 2.15 (54.6) | 0.47 (11.9)             | 1.23 (31.3)               |
| 3/4      | 3/4               | NS12                      | 2.22 (56.4) | 0.63 (16.0)             | 1.74 (44.2)               |
| 1        | 1                 | NS16                      | 2.54 (64.5) | 0.88 (22.4)             | 1.82 (46.3)               |
| 1 1/4    | 1 1/4             | NS20                      | 3.06 (77.7) | 1.09 (27.7)             | 2.03 (51.6)               |
| 1 1/2    | 1 1/2             | NS24                      | 3.72 (94.5) | 1.34 (34.0)             | 2.47 (62.6)               |
| 2        | 2                 | NS32                      | 4.19 (106)  | 1.81 (46.0)             | 3.19 (81.0)               |

## Ordering Number Description



**Example: SS-MH4-FT6-M710**

**SS:** End connection material is 316 stainless steel.

**MH4:** MH series, hose size is 1/4".

**FT6:** End connection 1 is 3/8" tube adapter.

End connection 2 is 3/8" tube adapter.

**M710:** Overall length is 710 mm.

Note: "Ordering Number Description" is a reference to understand the combination rules of FITOK product part number. Not all combinations are available.

End 1 and end 2 follow the orders and regulations below:

1. Metric Double Ferrules - Fractional Double Ferrules - Metric Tube Adapters - Fractional Tube Adapters - NPT Threads - BSPT Threads - BSPP Threads -SAE/MS Parallel Threads - 37° Flare - Others
2. Put the sizes from the biggest down to the smallest if they are of the same type.
3. Put the female before male if they are of the same type and size.



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