

# Needle Valves

NB, NBH, ND, NDH, NF, NFH, NG, NGH, NR, NRG, NT, NU, NUH, NY and NYH Series



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# Bar Stock Needle Valves

**NB Series:** Working pressure up to 6000 psig

**NBH Series:** Working pressure up to 10000 psig

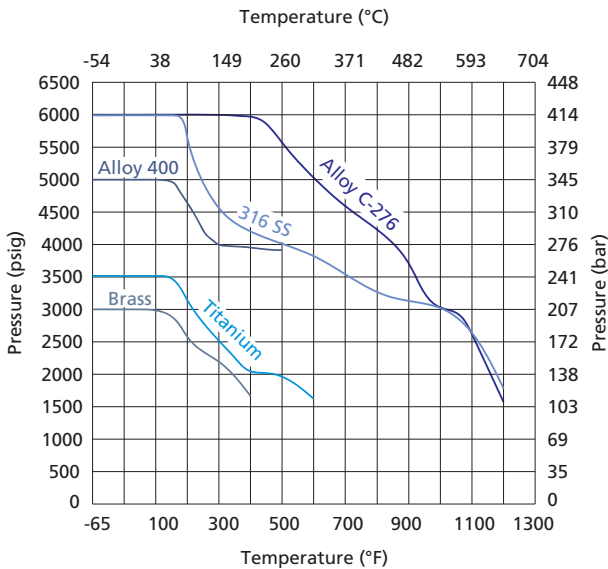


## Features

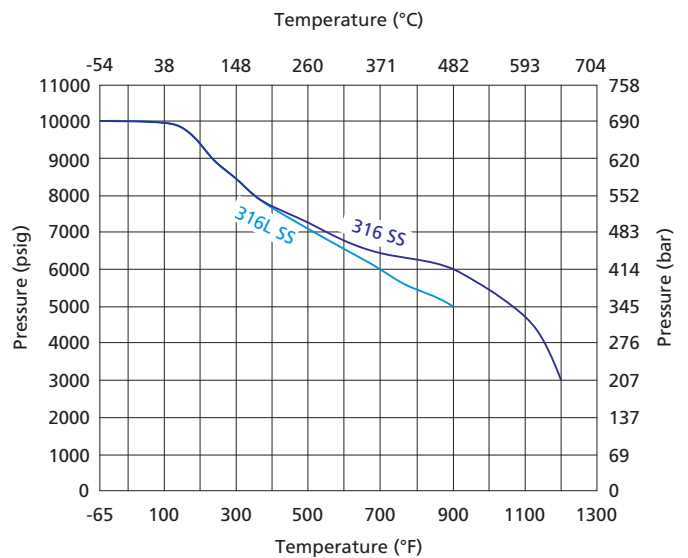
- ⦿ Cold drawn bar as body
- ⦿ Two-stem design: Upper stem threads cold rolled and lower stem hardened for high strength and smooth operation
- ⦿ Upper stem thread lubricant isolated from system media
- ⦿ Linear instead of rotary motion of the rising, non-rotating stem minimizes packing abrasion and reduces the friction between the seat and the tip
- ⦿ Safety back seating seal in fully open position
- ⦿ Panel mounting available
- ⦿ Steady and durable fastening of the handle by double lock-pins
- ⦿ Handles of different colors available
- ⦿ Every valve leak tested with nitrogen/air (NB Series) at the maximum allowable working pressure or with water (NBH Series) at 1.1 times maximum allowable working pressure
- ⦿ Working pressure up to:
  - NB Series—Stainless steel: 6000 psig (414 bar)
  - Alloy C-276: 6000 psig (414 bar)
  - Alloy 400: 5000 psig (345 bar)
  - Titanium: 3500 psig (241 bar)
  - Brass: 3000 psig (207 bar)
  - NBH Series—Stainless steel: 10000 psig (690 bar)
- ⦿ Working temperature:
  - PTFE: -65°F to 450°F (-54°C to 232°C)
  - PEEK: -65°F to 500°F (-54°C to 260°C)
  - Graphite: -65°F to 1200°F (-54°C to 649°C)

## Pressure vs. Temperature

NB Series



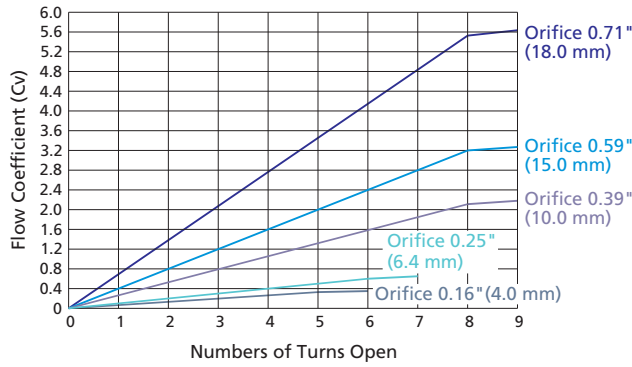
NBH Series



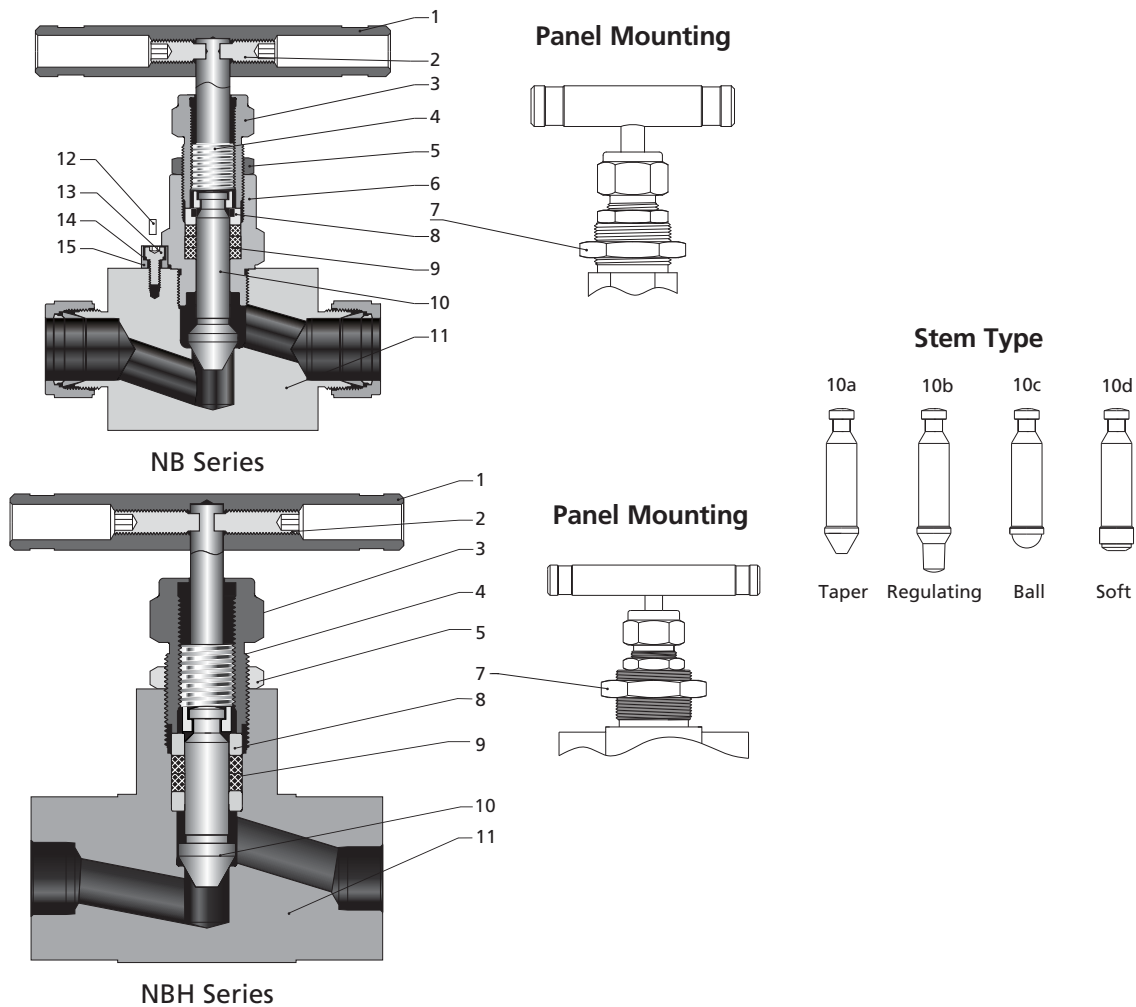
1. Graphs are based on graphite packing.  
 2. Soft tips are for NB Series only. Temperature rating is limited to 200°F (93°C) max. with PCTFE stem tip (soft tip).  
 3. Contact FITOK Group or our authorized distributors for curve graph of other materials.

## Flow Data at 100°F (38°C)

Regulating Stem



## Standard Materials of Construction



Needle Valves  
Metering Valves

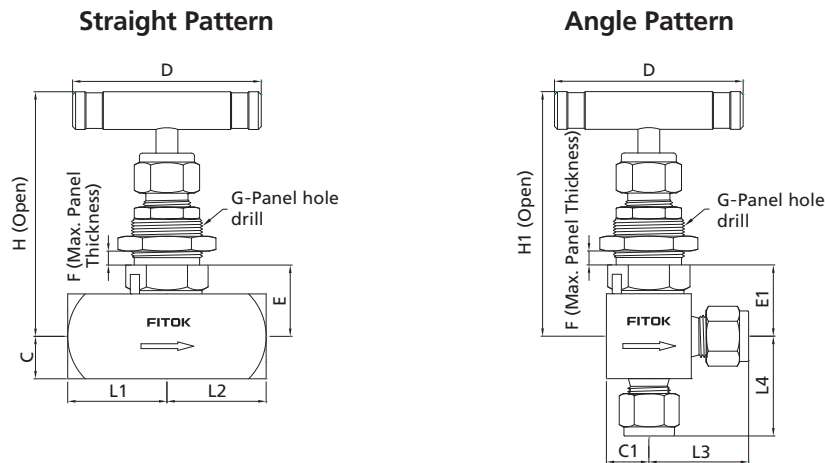
| Item | Component    | Valve Body Material                                |                |                    |                  |                  |
|------|--------------|--|----------------|--------------------|------------------|------------------|
|      |              | 316 SS   | Alloy 400      | Titanium           | Alloy C-276      | Brass            |
|      |              | Material Grade/ASTM Specification                  |                |                    |                  |                  |
| 1    | Handle       | Anodized aluminum or stainless steel or black knob |                |                    |                  |                  |
| 2    | Set Screw    | Stainless steel                                    |                |                    |                  |                  |
| 3    | Packing Bolt | 304 SS/A276  |                |                    | Brass C36000/B16 |                  |
| 4    | Upper Stem   | 316 SS/A276  |                |                    |                  |                  |
| 5    | Lock Nut     | Stainless steel                                    |                |                    |                  | Brass C36000/B16 |
| 6    | Bonnet       | 316 SS/A479  | Alloy 400/B164 | Titanium Gr 4/B348 | Alloy C-276/B574 |                  |

## B-64 Needle Valves

| Item                     | Component     | Valve Body Material               |                |                    |                  |                      |
|--------------------------|---------------|-----------------------------------|----------------|--------------------|------------------|----------------------|
|                          |               | 316 SS                            | Alloy 400      | Titanium           | Alloy C-276      | Brass                |
|                          |               | Material Grade/ASTM Specification |                |                    |                  |                      |
| 7                        | Panel Nut     | Stainless steel                   |                |                    |                  | Brass C36000/B16     |
| 8                        | Gland         | 316 SS/A276                       |                |                    |                  |                      |
| 9                        | Packing       | PTFE or PEEK or graphite          |                |                    |                  |                      |
| 10a<br>10b<br>10c<br>10d | Lower Stem    | Hardened 316 SS/A276              | Alloy 400/B164 | Titanium Gr 4/B348 | Alloy C-276/B574 | Hardened 316 SS/A276 |
| 11                       | Body          | 316 SS/A479                       | Alloy 400/B164 | Titanium Gr 4/B348 | Alloy C-276/B574 | Brass C36000/B16     |
|                          | Seat          | Same as Body                      |                |                    |                  |                      |
| 12                       | Lock Pin      | Stainless steel                   |                |                    |                  |                      |
| 13                       | Screw         | Stainless steel                   |                |                    |                  |                      |
| 14                       | Spring Washer | Stainless steel                   |                |                    |                  |                      |
| 15                       | Bush          | Stainless steel                   |                |                    |                  |                      |
|                          | Lubricant     | Molybdenum disulfide-based        |                |                    |                  |                      |

- Item 12 is applied in valves with orifice of 4.0 and 6.0mm. For valves with orifice of 10.0, 15.0 and 18.0mm, item 13, 14 and 15 are used instead of item 12.
- Contact FITOK Group or our authorized distributors for other materials.

## Dimensions



© NB Series Needle Valves are standard without panel mounting. To order needle valves with panel mounting as illustrated, add -Y to the ordering number. Example: NBSS-FNS2-7-Y

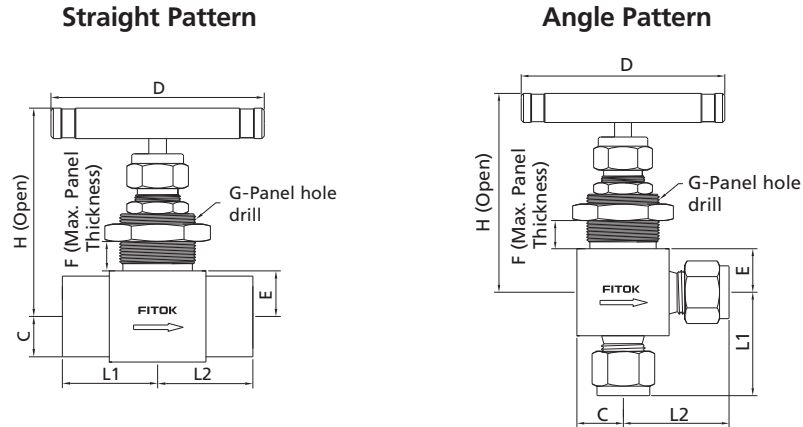
## Dimensions of NB Series

| Basic Ordering Number | Connection Type and Size |                | Orifice in.(mm) | Cv   | Dimensions, in.(mm) |                |                |                |                |                |                |                |                |               |                |                |                |
|-----------------------|--------------------------|----------------|-----------------|------|---------------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|---------------|----------------|----------------|----------------|
|                       | Inlet                    | Outlet         |                 |      | L1                  | L2             | L3             | L4             | C              | C1             | D              | E              | E1             | F             | G              | H              | H1             |
| NB□□-FNS2-7           | 1/8 Female NPT           | 1/8 Female NPT | 0.16<br>(4.0)   | 0.35 | 1.00<br>(25.4)      | 1.00<br>(25.4) | 1.00<br>(25.4) | 0.56<br>(14.3) | 0.50<br>(12.7) | 0.50<br>(12.7) | 2.17<br>(55)   | 0.84<br>(21.4) | 0.84<br>(21.4) | 0.25<br>(6.4) | 0.77<br>(19.6) | 2.86<br>(72.7) | 2.86<br>(72.7) |
| NB□□-FNS4-7           | 1/4 Female NPT           | 1/4 Female NPT |                 |      | 1.06<br>(26.9)      | 1.06<br>(26.9) |                | 0.56<br>(14.3) |                |                |                |                |                |               |                |                |                |
| NB□□-NS4-7            | 1/4 Male NPT             | 1/4 Male NPT   |                 |      | 1.03<br>(26.2)      | 1.03<br>(26.2) | 1.06<br>(26.9) | 1.06<br>(26.9) |                |                |                |                |                |               |                |                |                |
| NB□□-NS6-7            | 3/8 Male NPT             | 3/8 Male NPT   |                 |      | 1.19<br>(30.2)      | 1.19<br>(30.2) | 1.06<br>(26.9) | 1.06<br>(26.9) |                |                |                |                |                |               |                |                |                |
| NB□□-FL4-7            | 1/4" FITOK               | 1/4" FITOK     |                 |      | 1.20<br>(30.5)      | 1.20<br>(30.5) | 1.20<br>(30.5) | 1.20<br>(30.5) |                |                |                |                |                |               |                |                |                |
| NB□□-ML6-7            | 6 mm FITOK               | 6 mm FITOK     |                 |      | 1.20<br>(30.5)      | 1.20<br>(30.5) | 1.20<br>(30.5) | 1.20<br>(30.5) |                |                |                |                |                |               |                |                |                |
| NB□□-ML8-7            | 8 mm FITOK               | 8 mm FITOK     |                 |      | 1.20<br>(30.5)      | 1.20<br>(30.5) | 1.20<br>(30.5) | 1.20<br>(30.5) |                |                |                |                |                |               |                |                |                |
| NB□□-FNS4-8           | 1/4 Female NPT           | 1/4 Female NPT | 0.25<br>(6.4)   | 0.85 | 1.12<br>(28.6)      | 1.12<br>(28.6) | 1.12<br>(28.6) | 0.63<br>(15.9) | 0.56<br>(14.3) | 0.56<br>(14.3) | 2.50<br>(63.5) | 0.89<br>(22.5) | 0.89<br>(22.5) | 0.38<br>(9.7) | 0.96<br>(24.4) | 3.50<br>(88.9) | 3.50<br>(88.9) |
| NB□□-FNS6-8           | 3/8 Female NPT           | 3/8 Female NPT |                 |      | 1.12<br>(28.6)      | 1.12<br>(28.6) | 1.12<br>(28.6) | 1.12<br>(28.6) |                |                |                |                |                |               |                |                |                |
| NB□□-NS6-8            | 3/8 Male NPT             | 3/8 Male NPT   |                 |      | 1.41<br>(35.8)      | 1.41<br>(35.8) | 1.32<br>(33.6) | 1.32<br>(33.6) |                |                |                |                |                |               |                |                |                |
| NB□□-FL6-8            | 3/8" FITOK               | 3/8" FITOK     |                 |      | 1.52<br>(38.6)      | 1.52<br>(38.6) | 1.42<br>(36.1) | 1.42<br>(36.1) |                |                |                |                |                |               |                |                |                |
| NB□□-FL8-8            | 1/2" FITOK               | 1/2" FITOK     |                 |      | 1.52<br>(38.6)      | 1.52<br>(38.6) | 1.42<br>(36.1) | 1.42<br>(36.1) |                |                |                |                |                |               |                |                |                |

## Dimensions of NB Series

| Basic Ordering Number | Connection Type and Size |                       | Orifice in.(mm) | Cv             | Dimensions, in.(mm) |                |                |                |                |                |                |                |                |                |                |                |                |
|-----------------------|--------------------------|-----------------------|-----------------|----------------|---------------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
|                       | Inlet                    | Outlet                |                 |                | L1                  | L2             | L3             | L4             | C              | C1             | D              | E              | E1             | F              | G              | H              | H1             |
| NB□□-ML10-8           | 10 mm FITOK              | 10 mm FITOK           | 0.25<br>(6.4)   | 0.85           | 1.42<br>(36.1)      | 1.42<br>(36.1) | 1.33<br>(33.8) | 1.33<br>(33.8) | 0.56<br>(14.3) | 0.56<br>(14.3) | 2.50<br>(63.5) | 0.89<br>(22.5) | 0.89<br>(22.5) | 0.38<br>(9.7)  | 0.96<br>(24.4) | 3.50<br>(88.9) | 3.50<br>(88.9) |
| NB□□-ML12-8           | 12 mm FITOK              | 12 mm FITOK           |                 |                | 1.52<br>(38.6)      | 1.52<br>(38.6) | 1.42<br>(36.1) | 1.42<br>(36.1) |                |                |                |                |                |                |                |                |                |
| NB□□-ML14-8           | 14 mm FITOK              | 14 mm FITOK           |                 |                | 1.56<br>(39.7)      | 1.56<br>(39.7) |                |                |                |                |                |                |                |                |                |                |                |
| NB□□-TS6-8-G          | 3/8" TS                  | 3/8" TS               |                 |                | 1.13<br>(28.6)      | 1.13<br>(28.6) | 1.13<br>(28.6) | 1.13<br>(28.6) |                |                |                |                |                |                |                |                |                |
| NB□□-TS8-8-G          | 1/2" TS                  | 1/2" TS               |                 |                |                     |                |                |                |                |                |                |                |                |                |                |                |                |
| NB□□-MTS12-8-G        | 12 mm MTS                | 12 mm MTS             |                 |                | 1.50<br>(38.1)      | 1.50<br>(38.1) | 1.50<br>(38.1) | 1.50<br>(38.1) |                |                |                |                |                |                |                |                |                |
| NB□□-MTS14-8-G        | 14 mm MTS                | 14 mm MTS             |                 |                |                     |                |                |                |                |                |                |                |                |                |                |                |                |
| NB□□-MTS16-8-G        | 16 mm MTS                | 16 mm MTS             |                 |                | 2.92<br>(74.1)      | 2.92<br>(74.1) |                |                |                |                |                |                |                |                |                |                |                |
| NB□□-MTB14-8-G        | 14 mm MTB                | 14 mm MTB             |                 |                |                     |                |                |                |                |                |                |                |                |                |                |                |                |
| NB□□-MTB16-8-G        | 16 mm MTB                | 16 mm MTB             |                 |                | 1.50<br>(38.1)      | 1.50<br>(38.1) |                |                |                |                |                |                |                |                |                |                |                |
| NB□□-UMB14-8          | 14 mm UMB                | 14 mm UMB             |                 |                |                     |                |                |                |                |                |                |                |                |                |                |                |                |
| NB□□-UMB16-8          | 16 mm UMB                | 16 mm UMB             |                 |                | 1.50<br>(38.1)      | 1.50<br>(38.1) |                |                |                |                |                |                |                |                |                |                |                |
| NB□□-MS20-8           | M20 x 1.5 Male Metric    | M20 x 1.5 Male Metric |                 |                |                     |                |                |                |                |                |                |                |                |                |                |                |                |
| NB□□-MS22-8           | M22 x 1.5 Male Metric    | M22 x 1.5 Male Metric |                 |                | 0.39<br>(10.0)      | 2.18           | 1.75<br>(44.5) | 1.75<br>(44.5) |                |                |                |                |                |                |                |                |                |
| NB□□-FNS8-9           | 1/2 Female NPT           | 1/2 Female NPT        | 1.75<br>(44.5)  | 1.75<br>(44.5) |                     |                |                |                | 1.50<br>(38.1) |                |                |                |                |                |                |                |                |
| NB□□-FNS12-9          | 3/4 Female NPT           | 3/4 Female NPT        |                 |                |                     |                |                |                |                |                |                |                |                |                |                |                |                |
| NB□□-NS12-9           | 3/4 Male NPT             | 3/4 Male NPT          | 1.97<br>(50.0)  | 1.97<br>(50.0) |                     |                | 1.61<br>(41.0) | 1.61<br>(41.0) |                |                |                |                |                |                |                |                |                |
| NB□□-FL12-9           | 3/4" FITOK               | 3/4" FITOK            |                 |                |                     |                |                |                |                |                |                |                |                |                |                |                |                |
| NB□□-ML14-9           | 14 mm FITOK              | 14 mm FITOK           | 1.75<br>(44.5)  | 1.75<br>(44.5) |                     |                |                |                |                |                |                |                |                |                |                |                |                |
| NB□□-ML16-9           | 16 mm FITOK              | 16 mm FITOK           |                 |                |                     |                |                |                |                |                |                |                |                |                |                |                |                |
| NB□□-ML18-9           | 18 mm FITOK              | 18 mm FITOK           | 2.98<br>(75.7)  | 2.98<br>(75.7) |                     |                |                |                |                |                |                |                |                |                |                |                |                |
| NB□□-MTS14-9-G        | 14 mm MTS                | 14 mm MTS             |                 |                |                     |                |                |                |                |                |                |                |                |                |                |                |                |
| NB□□-MTS16-9-G        | 16 mm MTS                | 16 mm MTS             | 1.56<br>(39.7)  | 1.56<br>(39.7) |                     |                |                |                |                |                |                |                |                |                |                |                |                |
| NB□□-TS12-9-G         | 3/4" TS                  | 3/4" TS               |                 |                |                     |                |                |                |                |                |                |                |                |                |                |                |                |
| NB□□-UMB14-9          | 14 mm UMB                | 14 mm UMB             | 1.75<br>(44.5)  | 1.75<br>(44.5) |                     |                | 1.75<br>(44.5) | 1.75<br>(44.5) |                |                |                |                |                |                |                |                |                |
| NB□□-MS27-9           | M27 x 2 Male Metric      | M27 x 2 Male Metric   |                 |                |                     |                |                |                |                |                |                |                |                |                |                |                |                |
| NB□□-FNS12-6          | 3/4 Female NPT           | 3/4 Female NPT        | 0.59<br>(15.0)  | 3.27           |                     |                | 1.75<br>(44.5) | 1.75<br>(44.5) | 1.75<br>(44.5) | 1.14<br>(29.0) | 1.14<br>(29.0) | 0.88<br>(22.2) | 5.00<br>(127)  | 1.70<br>(43.2) | 1.43<br>(36.4) | 0.38<br>(9.7)  | 1.28<br>(32.5) |
| NB□□-TS16-6-G         | 1" TS                    | 1" TS                 |                 |                | 1.75<br>(44.5)      | 1.75<br>(44.5) |                |                | 1.75<br>(44.5) | 1.75<br>(44.5) |                |                |                |                |                |                |                |
| NB□□-MTS25-6-G        | 25 mm MTS                | 25 mm MTS             |                 |                |                     |                |                |                |                |                |                |                |                |                |                |                |                |
| NB□□-MTS28-6-G        | 28 mm MTS                | 28 mm MTS             |                 |                | 2.35<br>(59.7)      | 2.35<br>(59.7) | 2.35<br>(59.7) | 2.00<br>(51.0) |                |                |                |                |                |                |                |                |                |
| NB□□-PS12-6-G         | 3/4 PS                   | 3/4 PS                |                 |                |                     |                |                |                |                |                |                |                |                |                |                |                |                |
| NB□□-ML22-6           | 22 mm FITOK              | 22 mm FITOK           |                 |                | 0.71<br>(18.0)      | 5.65           | 1.97<br>(50.0) | 1.97<br>(50.0) |                |                |                |                |                |                |                |                |                |
| NB□□-FNS16-0          | 1 Female NPT             | 1 Female NPT          | 1.97<br>(50.0)  | 1.97<br>(50.0) |                     |                |                |                |                |                |                |                |                |                |                |                |                |
| NB□□-MTS25-0-G        | 25 mm MTS                | 25 mm MTS             |                 |                |                     |                |                |                |                |                |                |                |                |                |                |                |                |
| NB□□-TS16-0-G         | 1" TS                    | 1" TS                 | 1.97<br>(50.0)  | 1.97<br>(50.0) |                     |                |                |                |                |                |                |                |                |                |                |                |                |
| NB□□-MTS28-0-G        | 28 mm MTS                | 28 mm MTS             |                 |                |                     |                |                |                |                |                |                |                |                |                |                |                |                |
| NB□□-PS12-0-G         | 3/4 PS                   | 3/4 PS                | 1.97<br>(50.0)  | 1.97<br>(50.0) |                     |                |                |                |                |                |                |                |                |                |                |                |                |
| NB□□-PS16-0-G         | 1 PS                     | 1 PS                  |                 |                |                     |                |                |                |                |                |                |                |                |                |                |                |                |

1. Connection type of "FITOK" means FITOK double ferrule tube fittings. When the connection type of valves is FITOK double ferrule tube fitting, the working pressures of the valves are related to the wall thickness of tubing applied. For specific working pressure of the valves, please refer to the allowable working pressures in FITOK Catalog Tubing.
2. Connection type of "TS" means fractional tube socket weld. "MTS" means metric tube socket weld. "MTB" means metric tube butt weld. "UMB" means rotatable metric tube butt weld. "PS" means pipe socket weld.
3. Sizes and types listed are standard. Other sizes and types are available upon request. For details, please contact FITOK Group or our authorized distributors.
4. Dimensions are shown with FITOK tube fitting nuts finger-tight. All dimensions are for reference only and are subject to change. For dimensions not shown above, please contact FITOK Group or our authorized distributors.



© NBH Series Needle Valves are standard without panel mounting. To order needle valves with panel mounting as illustrated, add -Y to the ordering number. Example: NBHSS-FNS2-7-Y

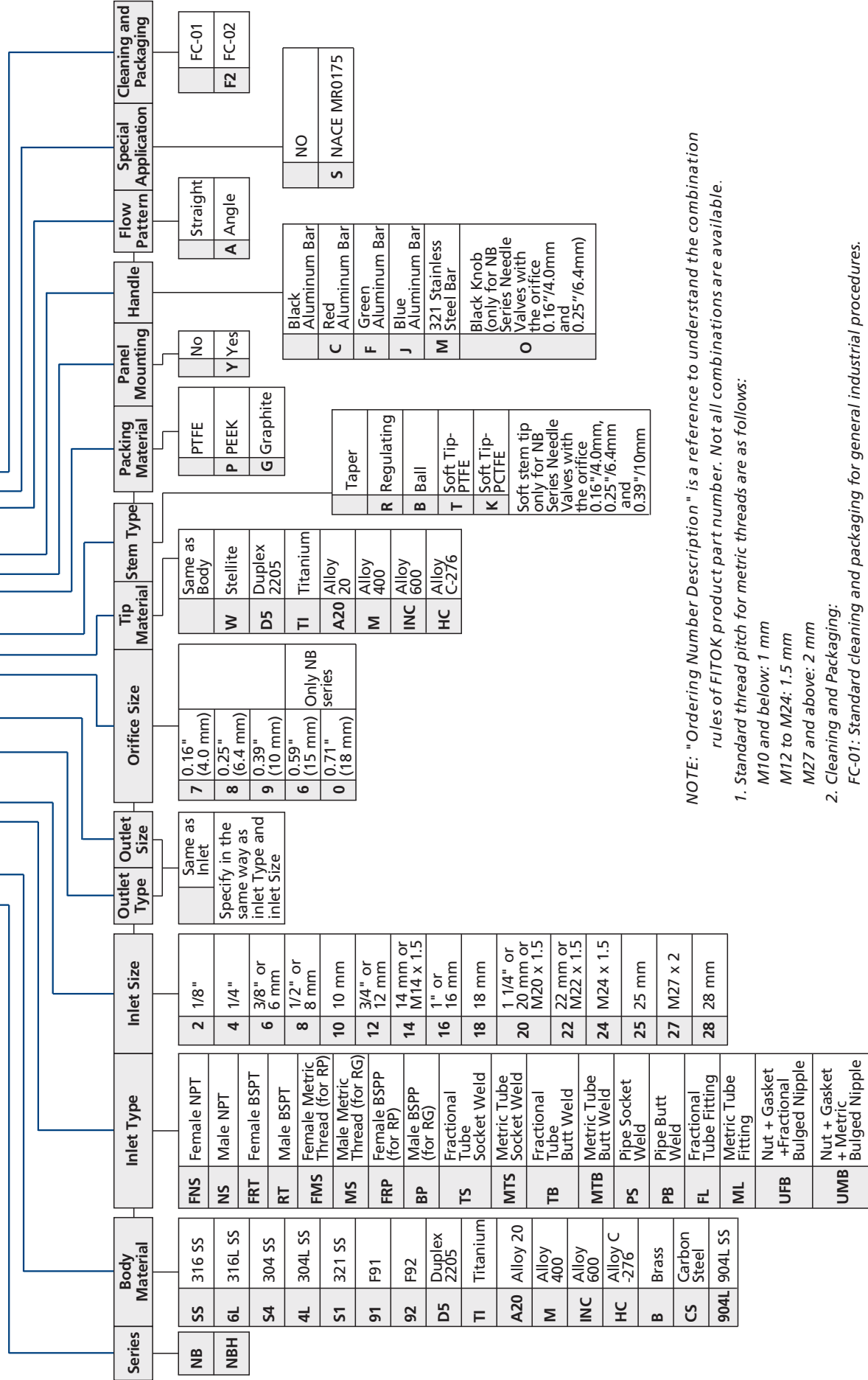
**Dimensions of NBH Series**

| Basic Ordering Number | Connection Type and Size |                | Orifice in.(mm) | Cv   | Dimensions, in.(mm) |                |                  |                |                  |               |                |                |
|-----------------------|--------------------------|----------------|-----------------|------|---------------------|----------------|------------------|----------------|------------------|---------------|----------------|----------------|
|                       | Inlet                    | Outlet         |                 |      | L1                  | L2             | C                | D              | E                | F             | G              | H              |
| NBH□□-FNS2-7          | 1/8 Female NPT           | 1/8 Female NPT | 0.157<br>(4.0)  | 0.35 | 1.13<br>(28.6)      | 1.13<br>(28.6) | 0.50<br>(12.7)   | 2.50<br>(63.5) | 0.50<br>(12.7)   | 0.25<br>(6.4) | 0.96<br>(24.4) | 2.87<br>(73)   |
| NBH□□-FNS4-7          | 1/4 Female NPT           | 1/4 Female NPT |                 |      |                     |                |                  |                |                  |               |                |                |
| NBH□□-FNS4-NS4-7      | 1/4 Female NPT           | 1/4 Male NPT   |                 |      |                     |                |                  |                |                  |               |                |                |
| NBH□□-NS4-7           | 1/4 Male NPT             | 1/4 Male NPT   |                 |      |                     |                |                  |                |                  |               |                |                |
| NBH□□-TS4-7-G         | 1/4" TS                  | 1/4" TS        |                 |      |                     |                |                  |                |                  |               |                |                |
| NBH□□-FNS4-8          | 1/4 Female NPT           | 1/4 Female NPT | 0.236<br>(6.4)  | 0.85 | 1.31<br>(33.4)      | 1.31<br>(33.4) | 0.625<br>(15.88) | 3.50<br>(88.9) | 0.625<br>(15.88) | 0.38<br>(9.7) | 1.09<br>(27.7) | 3.56<br>(90.3) |
| NBH□□-FNS6-8          | 3/8 Female NPT           | 3/8 Female NPT |                 |      |                     |                |                  |                |                  |               |                |                |
| NBH□□-NS6-8           | 3/8 Male NPT             | 3/8 Male NPT   |                 |      |                     |                |                  |                |                  |               |                |                |
| NBH□□-FNS8-9          | 1/2 Female NPT           | 1/2 Female NPT | 0.39<br>(10.0)  | 2.18 | 1.56<br>(39.6)      | 1.56<br>(39.6) | 0.875<br>(22.2)  | 3.50<br>(88.9) | 0.875<br>(22.2)  | 0.38<br>(9.7) | 1.45<br>(36.8) | 4.17<br>(106)  |

1. Connection type of "TS" means fractional tube socket weld.
2. Sizes and types listed are standard. Other sizes and types are available upon request. For details, please contact FITOK Group or our authorized distributors.
3. All dimensions are for reference only and are subject to change. For dimensions not shown above, please contact FITOK Group or our authorized distributors.

# Ordering Number Description

NBSS - FL8 - ML12 - 8WB - GYM - ASF2



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

1. Standard thread pitch for metric threads are as follows:

- M10 and below: 1 mm
- M12 to M24: 1.5 mm
- M27 and above: 2 mm

2. Cleaning and Packaging:

- FC-01: Standard cleaning and packaging for general industrial procedures.
- FC-02: Special cleaning and packaging for wetted system components to ensure compliance with product cleanliness requirement of ASTM G93 Level C.



# Nonrotating-stem Needle Valves

**ND Series: Working pressure up to 3000 psig**

**NDH Series: Working pressure up to 5000 psig**

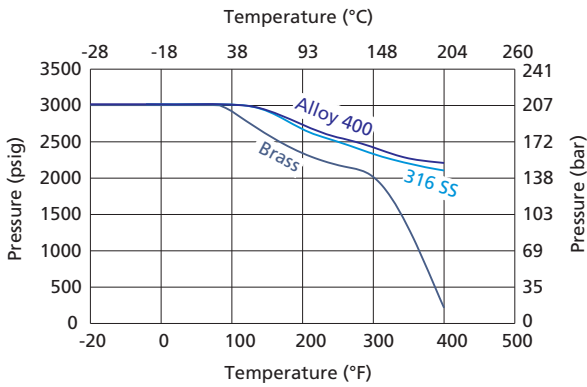
## Features

- ⦿ One-piece forged body
- ⦿ Straight and angle pattern
- ⦿ Compact design
- ⦿ Non-rotating stem
- ⦿ Specially designed handle to stop contamination from entering into the valve
- ⦿ Every valve leak tested with nitrogen/air at the maximum allowable working pressure
- ⦿ Working pressure up to:
  - ND Series—Stainless steel: 3000 psig (207 bar)
  - Brass: 3000 psig (207 bar)
  - NDH Series—Stainless steel: 5000 psig(345 bar)
- ⦿ Working temperature with stem tip:
  - PCTFE stem tip: -20°F to 200°F (-28°C to 93°C)
  - PEEK stem tip: -20°F to 450°F (-28°C to 232°C)
- ⦿ Working temperature with O-ring:
  - Fluorocarbon Rubber (FKM) : -20°F to 400°F (-28°C to 204°C)
  - Nitrile Butadiene Rubber (NBR) : -20°F to 212°F (-28°C to 100°C)
  - Ethylene Propylene Diene Rubber (EPDM): -20°F to 300°F (-28°C to 148°C)

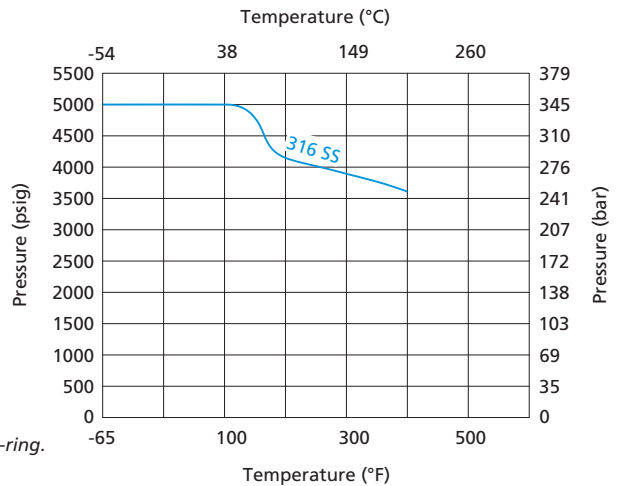


## Pressure vs. Temperature

ND Series

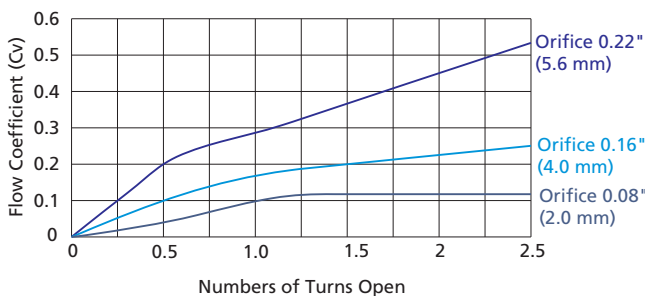


NDH Series

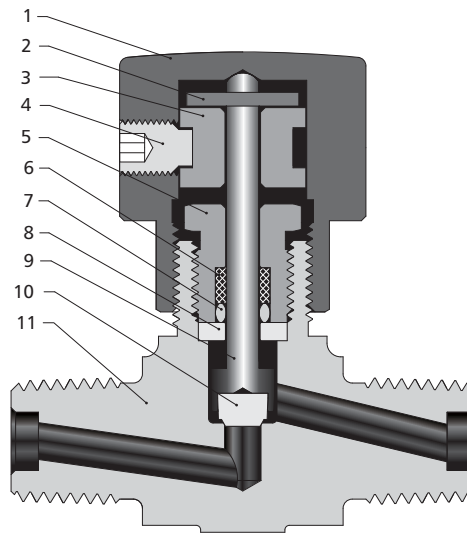


1. The graphs are based on PEEK stem tip and Fluorocarbon rubber (FKM) O-ring.
2. Contact FITOK Group or our authorized distributors for curve graph of other materials.

## Flow Data at 100°F (38°C)



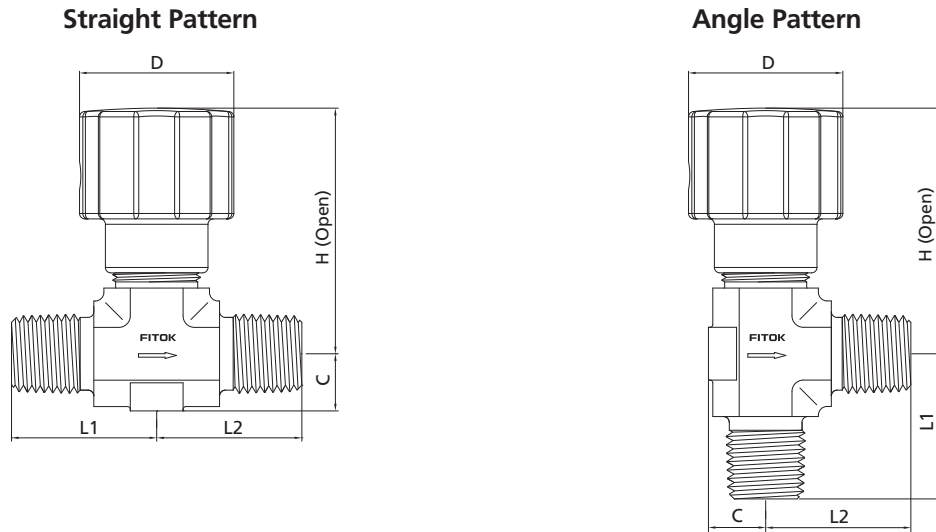
## Standard Materials of Construction



| Item | Component    | Valve Body Material  |             |             |                      |                |
|------|--------------|--|-------------|-------------|----------------------|----------------|
|      |              | 316 SS   | 304 SS      | 321 SS      | Brass                | Alloy 400      |
|      |              | Material Grade/ASTM Specification  |             |             |                      |                |
| 1    | Handle       | Anodized aluminum  |             |             |                      |                |
| 2    | Stop Pin     | Stainless steel  |             |             |                      |                |
| 3    | Spool        | Aluminum   |             |             |                      |                |
| 4    | Set Screw    | Stainless steel  |             |             |                      |                |
| 5    | Packing Bolt | 316 SS/A276  | 304 SS/A276 | 321 SS/A276 | Brass<br>C36000/B16  | Alloy 400/B164 |
| 6    | Backup Ring  | PTFE/D1710   |             |             |                      |                |
| 7    | O-ring       | Fluorocarbon Rubber (FKM), Nitrile Butadiene Rubber (NBR) or<br>Ethylene Propylene Diene Rubber (EPDM) |             |             |                      |                |
| 8    | Washer       | 316 SS/A276  |             |             |                      | Alloy 400/B164 |
| 9    | Stem         | 316 SS/A276  |             |             |                      | Alloy 400/B164 |
| 10   | Stem Tip     | PCTFE or PEEK  |             |             |                      |                |
| 11   | Body         | 316 SS/A182  | 304 SS/A182 | 321 SS/A182 | Brass<br>C37700/B283 | Alloy 400/B564 |
|      | Lubricant    | Molybdenum disulfide-based   |             |             |                      |                |

Note: Contact FITOK Group or our authorized distributors for other materials.

## Dimensions



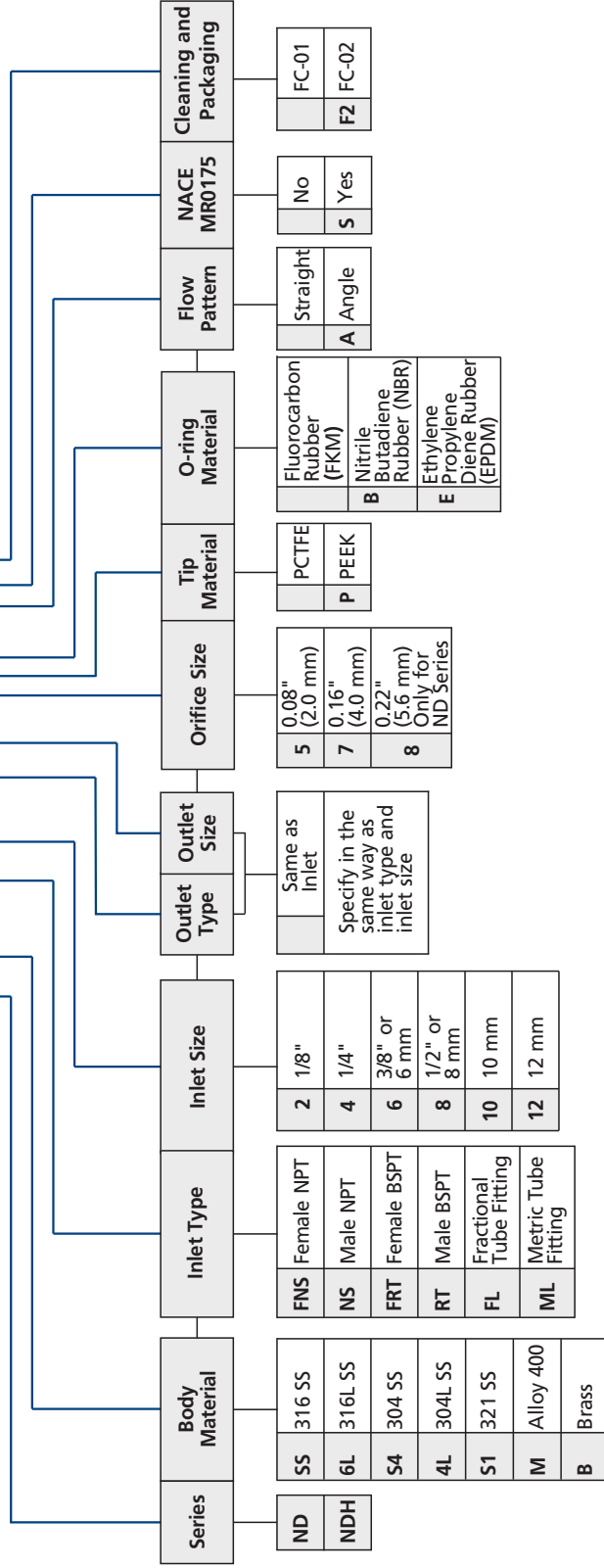
### ND and NHD Series

| Basic Ordering Number | Connection Type and Size |                | Orifice in.(mm) | Cv   | Dimensions, in.(mm) |                |                |                |                |
|-----------------------|--------------------------|----------------|-----------------|------|---------------------|----------------|----------------|----------------|----------------|
|                       | Inlet                    | Outlet         |                 |      | L1                  | L2             | C              | D              | H              |
| ND□□-NS2-5            | 1/8 Male NPT             | 1/8 Male NPT   | 0.08<br>(2.0)   | 0.12 | 0.81<br>(20.6)      | 0.81<br>(20.6) | 0.32<br>(8.1)  | 1.06<br>(26.9) | 1.86<br>(47.2) |
| ND□□-NS2-FL2-5        | 1/8" Male NPT            | 1/8" Male NPT  |                 |      |                     |                |                |                |                |
| ND□□-FL2-5            | 1/8" FITOK               | 1/8" FITOK     |                 |      | 1.10<br>(27.9)      |                |                |                |                |
| ND□□-ML3-5            | 3 mm FITOK               | 3 mm FITOK     |                 |      | 1.10<br>(27.9)      |                |                |                |                |
| ND□□-NS4-7            | 1/4 Male NPT             | 1/4 Male NPT   | 0.16<br>(4.0)   | 0.27 | 0.98<br>(25.0)      | 0.98<br>(25.0) | 0.39<br>(10.0) | 1.06<br>(26.9) | 1.86<br>(47.2) |
| ND□□-NS4-FL4-7        | 1/4" Male NPT            | 1/4" Male NPT  |                 |      |                     |                |                |                |                |
| ND□□-FL4-7            | 1/4" FITOK               | 1/4" FITOK     |                 |      | 1.13<br>(28.7)      |                |                |                |                |
| ND□□-ML6-7            | 6 mm FITOK               | 6 mm FITOK     |                 |      | 1.18<br>(30.0)      |                |                |                |                |
| ND□□-ML8-7            | 8 mm FITOK               | 8 mm FITOK     | 0.22<br>(5.6)   | 0.53 | 1.06<br>(26.9)      | 1.06<br>(26.9) | 0.53<br>(13.5) | 1.12<br>(28.4) | 2.02<br>(51.3) |
| ND□□-FNS4-8           | 1/4 Female NPT           | 1/4 Female NPT |                 |      |                     |                |                |                |                |
| ND□□-NS6-8            | 3/8 Male NPT             | 3/8 Male NPT   |                 |      | 1.12<br>(28.6)      |                |                |                |                |
| ND□□-FL6-8            | 3/8" FITOK               | 3/8" FITOK     |                 |      | 1.29<br>(32.8)      |                |                |                |                |
| ND□□-FL8-8            | 1/2" FITOK               | 1/2" FITOK     |                 |      | 1.40<br>(35.6)      |                |                |                |                |
| ND□□-ML10-8           | 10 mm FITOK              | 10 mm FITOK    |                 |      | 1.30<br>(33.0)      |                |                |                |                |
| ND□□-ML12-8           | 12 mm FITOK              | 12 mm FITOK    | 1.40<br>(35.6)  |      |                     |                |                |                |                |
| NDH□□-NS2-5           | 1/8 Male NPT             | 1/8 Male NPT   | 0.08<br>(2.0)   | 0.12 | 0.81<br>(20.6)      | 0.81<br>(20.6) | 0.32<br>(8.1)  | 1.06<br>(26.9) | 1.86<br>(47.2) |
| NDH□□-FL2-5           | 1/8" FITOK               | 1/8" FITOK     |                 |      |                     |                |                |                |                |
| NDH□□-ML3-5           | 3 mm FITOK               | 3 mm FITOK     |                 |      | 1.10<br>(27.9)      |                |                |                |                |
| NDH□□-NS4-7           | 1/4" Male NPT            | 1/4" Male NPT  | 0.16<br>(4.0)   | 0.27 | 0.98<br>(25.0)      | 0.95<br>(25.0) | 0.39<br>(10.0) | 1.06<br>(26.9) | 1.98<br>(50.2) |
| NDH□□-FL4-7           | 1/4" FITOK               | 1/4" FITOK     |                 |      |                     |                |                |                |                |
| NDH□□-ML6-7           | 6 mm FITOK               | 6 mm FITOK     |                 |      | 1.13<br>(28.7)      |                |                |                |                |

1. Connection type of "FITOK" means FITOK double ferrule tube fittings. When the connection type of valves is FITOK double ferrule tube fitting, the working pressures of the valves are related to the wall thickness of used applied. For specific working pressure of the valves, please refer to the allowable working pressures in FITOK Catalog Tubing.
2. Sizes and types listed are standard. Other sizes and types are available upon request. For details, please contact FITOK Group or our authorized distributors.
3. Dimensions are shown with FITOK tube fitting nuts finger-tight. All dimensions are for reference only and are subject to change. For dimensions not shown above, please contact FITOK Group or our authorized distributors.

# Ordering Number Description

NDSS - FNS4 - ML8 - 7PE - ASF2



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

### Cleaning and Packaging:

FC-01: Standard cleaning and packaging for general industrial procedures.

FC-02: Special cleaning and packaging for wetted system components to ensure compliance with product cleanliness requirement of ASTM G93 Level C.

# Forged Needle Valves

**NF Series: Working pressure up to 6000 psig**

**NFH Series: Working pressure up to 10000 psig**

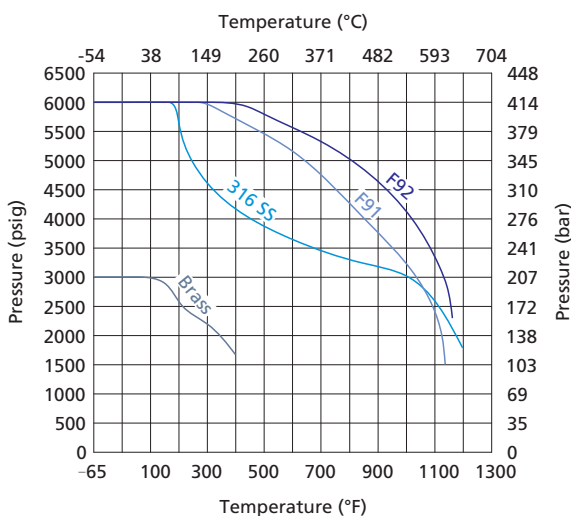
## Features

- ⦿ One-piece forged body
- ⦿ Two-stem design: Upper stem threads cold rolled and lower stem hardened for high strength and smooth operation
- ⦿ Upper stem thread lubricant isolated from system media
- ⦿ Linear instead of rotary motion of the rising, non-rotating stem minimizes packing abrasion and reduces the friction between the seat and the tip
- ⦿ Panel mounting available
- ⦿ Steady and durable fastening of the handle by double lock-pins
- ⦿ Handles of different colors available
- ⦿ Every valve leak tested with nitrogen/air (NF Series) at the maximum allowable working pressure or with water (NFH Series) at 1.1 times the maximum allowable working pressure
- ⦿ Working pressure up to:
  - NF Series—Stainless steel: 6000 psig (414 bar)
  - Alloy C-276: 6000 psig (414 bar)
  - Alloy 400: 5000 psig (345 bar)
  - Titanium: 3500 psig (241 bar)
  - Brass: 3000 psig (207 bar)
- ⦿ NFH Series—Stainless steel: 10000 psig (690 bar)
- ⦿ Working temperature:
  - PTFE: -65°F to 450°F (-54°C to 232°C)
  - PEEK: -65°F to 500°F (-54°C to 260°C)
  - Graphite: -65°F to 1200°F (-54°C to 649°C)

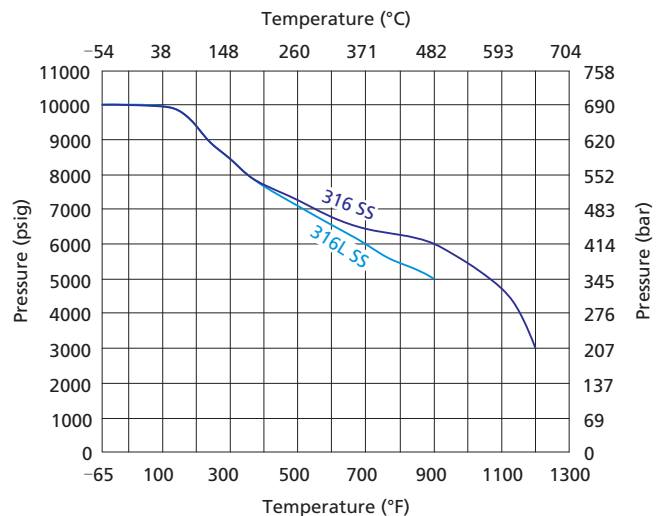


## Pressure vs. Temperature

NF Series



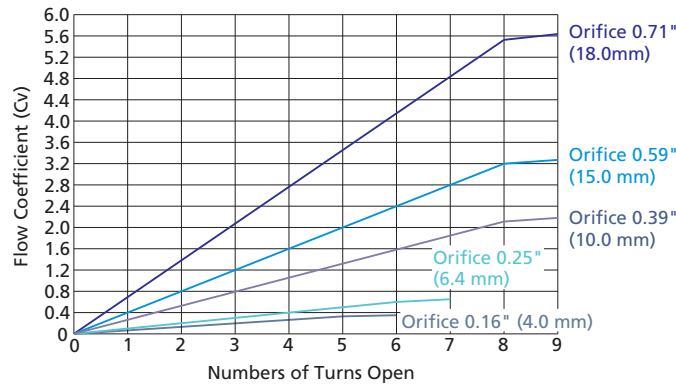
NFH Series



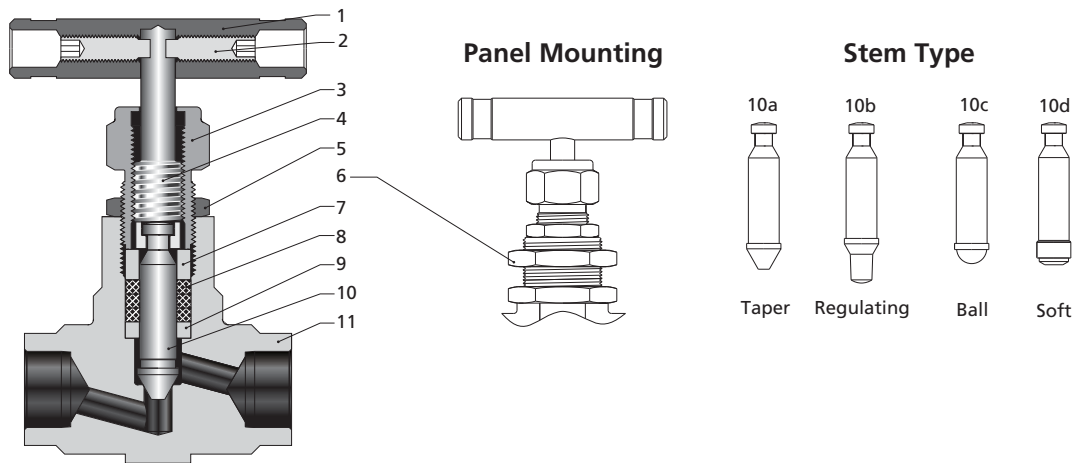
1. Graphs are based on graphite packing.
2. Soft tips are for NF Series only. Temperature rating is limited to 200°F (93°C) max. with PCTFE stem tip (soft tip).
3. Contact FITOK Group or our authorized distributors for curve graph of other materials.

## Flow Data at 100°F (38°C)

Regulating Stem



## Standard Materials of Construction

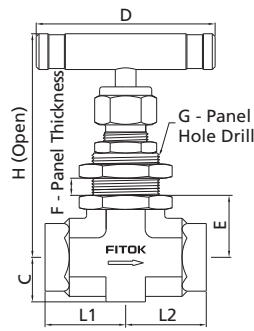


| Item                     | Component      | Valve Body Material                                |           |                   |
|--------------------------|----------------|--|-----------|-------------------|
|                          |                | 316 SS   | F91       | Brass             |
|                          |                | Material Grade/ASTM Specification                  |           |                   |
| 1                        | Handle         | Anodized aluminum or stainless steel or black knob |           |                   |
| 2                        | Set Screw      | Stainless steel                                    |           |                   |
| 3                        | Packing Bolt   | 304 SS/A276  | F91/A182  | Brass C36000/B16  |
| 4                        | Upper Stem     | 316 SS/A276  |           |                   |
| 5                        | Lock Nut       | Stainless steel                                    | 1020/A108 | Brass C36000/B16  |
| 6                        | Panel Nut      | Stainless steel                                    | 1020/A108 | Brass C36000/B16  |
| 7                        | Gland          | 316 SS/A276  |           | Brass C36000/B16  |
| 8                        | Packing        | PTFE or PEEK or graphite                           |           |                   |
| 9                        | Packing Washer | 316 SS/A276  |           | Brass C36000/B16  |
| 10a<br>10b<br>10c<br>10d | Lower Stem     | Hardened<br>316 SS/A276                            |           |                   |
| 11                       | Body           | 316 SS/A182  | F91/A182  | Brass C37700/B283 |
|                          | Seat           | Same as Body                                       |           |                   |
|                          | Lubricant      | Molybdenum disulfide-based                         |           |                   |

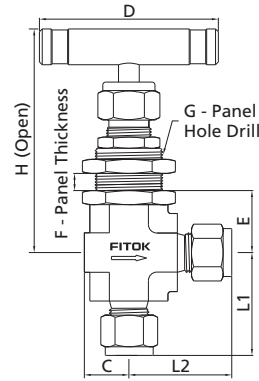
Note: Contact FITOK Group or our authorized distributors for other materials.

## Dimensions

**Straight Pattern**



**Angle Pattern**



© NF Series Needle Valves are standard without panel mounting. To order needle valves with panel mounting as illustrated, add -Y to the ordering number. Example: NF5S-FNS2-7-Y

## Dimensions of NF Series

| Basic Ordering Number | Connection Type and Size |                       | Orifice in.(mm) | Cv             | Dimensions, in.(mm) |                 |                |              |                |                |               |                |
|-----------------------|--------------------------|-----------------------|-----------------|----------------|---------------------|-----------------|----------------|--------------|----------------|----------------|---------------|----------------|
|                       | Inlet                    | Outlet                |                 |                | L1                  | L2              | H              | D            | C              | E              | F             | G              |
| NF□□-FNS2-7           | 1/8 Female NPT           | 1/8 Female NPT        | 0.16<br>(4.0)   | 0.35           | 1.00<br>(25.4)      | 1.00<br>(25.4)  | 2.85<br>(72.5) | 2.17<br>(55) | 0.53<br>(13.5) | 0.71<br>(18.0) | 0.25<br>(6.4) | 0.77<br>(19.6) |
| NF□□-FNS4-7           | 1/4 Female NPT           | 1/4 Female NPT        |                 |                | 1.03<br>(26.2)      | 1.03<br>(26.2)  |                |              |                |                |               |                |
| NF□□-FL4-7            | 1/4" FITOK               | 1/4" FITOK            |                 |                | 1.22<br>(30.9)      | 1.22<br>(30.9)  |                |              |                |                |               |                |
| NF□□-ML6-7            | 6 mm FITOK               | 6 mm FITOK            |                 |                | 1.25<br>(31.75)     | 1.25<br>(31.75) |                |              |                |                |               |                |
| NF□□-ML8-7            | 8 mm FITOK               | 8 mm FITOK            |                 |                |                     |                 |                |              |                |                |               |                |
| NF□□-NS4-7            | 1/4 Male NPT             | 1/4 Male NPT          |                 |                | 1.03<br>(26.2)      | 1.03<br>(26.2)  |                |              |                |                |               |                |
| NF□□-NS6-7            | 3/8 Male NPT             | 3/8 Male NPT          |                 |                | 1.13<br>(28.6)      | 1.13<br>(28.6)  |                |              |                |                |               |                |
| NF□□-FO4-7            | 1/4" Male FO             | 1/4" Male FO          |                 |                |                     |                 |                |              |                |                |               |                |
| NF□□-FR4-7            | 1/4" Male FR             | 1/4" Male FR          |                 |                |                     |                 |                |              |                |                |               |                |
| NF□□-FNS4-8           | 1/4 Female NPT           | 1/4 Female NPT        |                 |                | 0.25<br>(6.4)       | 0.85            |                |              |                |                |               |                |
| NF□□-FNS6-8           | 3/8 Female NPT           | 3/8 Female NPT        | 1.42<br>(36.1)  | 1.42<br>(36.1) |                     |                 |                |              |                |                |               |                |
| NF□□-NS6-8            | 3/8 Male NPT             | 3/8 Male NPT          | 1.44<br>(36.5)  | 1.44<br>(36.5) |                     |                 |                |              |                |                |               |                |
| NF□□-FL6-8            | 3/8" FITOK               | 3/8" FITOK            |                 |                |                     |                 |                |              |                |                |               |                |
| NF□□-ML10-8           | 10 mm FITOK              | 10 mm FITOK           | 1.53<br>(38.9)  | 1.53<br>(38.9) |                     |                 |                |              |                |                |               |                |
| NF□□-ML12-8           | 12 mm FITOK              | 12 mm FITOK           | 1.56<br>(39.7)  | 1.56<br>(39.7) |                     |                 |                |              |                |                |               |                |
| NF□□-ML14-8           | 14 mm FITOK              | 14 mm FITOK           | 1.26<br>(32.0)  | 1.26<br>(32.0) |                     |                 |                |              |                |                |               |                |
| NF□□-FNS8-8           | 1/2 Female NPT           | 1/2 Female NPT        |                 |                |                     |                 |                |              |                |                |               |                |
| NF□□-NS8-8            | 1/2 Male NPT             | 1/2 Male NPT          | 1.50<br>(38.1)  | 1.50<br>(38.1) |                     |                 |                |              |                |                |               |                |
| NF□□-FL8-8            | 1/2" FITOK               | 1/2" FITOK            | 1.53<br>(38.9)  | 1.53<br>(38.9) |                     |                 |                |              |                |                |               |                |
| NF□□-TS6-8-G          | 3/8" TS                  | 3/8" TS               | 1.13<br>(28.6)  | 1.13<br>(28.6) |                     |                 |                |              |                |                |               |                |
| NF□□-TS8-8-G          | 1/2" TS                  | 1/2" TS               |                 |                |                     |                 |                |              |                |                |               |                |
| NF□□-MTS12-8-G        | 12 mm MTS                | 12 mm MTS             | 1.50<br>(38.1)  | 1.50<br>(38.1) |                     |                 |                |              |                |                |               |                |
| NF□□-MTS14-8-G        | 14 mm MTS                | 14 mm MTS             |                 |                |                     |                 |                |              |                |                |               |                |
| NF□□-MTS16-8-G        | 16 mm MTS                | 16 mm MTS             | 2.92<br>(74.1)  | 2.92<br>(74.1) |                     |                 |                |              |                |                |               |                |
| NF□□-MTB14-8-G        | 14 mm MTB                | 14 mm MTB             |                 |                |                     |                 |                |              |                |                |               |                |
| NF□□-MTB16-8-G        | 16 mm MTB                | 16 mm MTB             | 1.13<br>(28.6)  | 1.13<br>(28.6) |                     |                 |                |              |                |                |               |                |
| NF□□-UMB14-8          | 14 mm UMB                | 14 mm UMB             | 1.56<br>(39.7)  | 1.56<br>(39.7) |                     |                 |                |              |                |                |               |                |
| NF□□-UMB16-8          | 16 mm UMB                | 16 mm UMB             | 1.50<br>(38.1)  | 1.50<br>(38.1) |                     |                 |                |              |                |                |               |                |
| NF□□-FO8-8            | 1/2" Male FO             | 1/2" Male FO          |                 |                |                     |                 |                |              |                |                |               |                |
| NF□□-FR8-8            | 1/2" Male FR             | 1/2" Male FR          |                 |                |                     |                 |                |              |                |                |               |                |
| NF□□-MS20-8           | M20 x 1.5 Male Metric    | M20 x 1.5 Male Metric |                 |                |                     |                 |                |              |                |                |               |                |

## Dimensions of NF Series

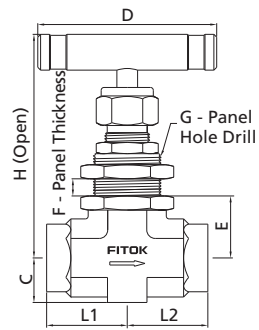
| Basic Ordering Number | Connection Type and Size |                       | Orifice in.(mm) | Cv             | Dimensions, in.(mm) |                |                 |                |                |                |               |                |
|-----------------------|--------------------------|-----------------------|-----------------|----------------|---------------------|----------------|-----------------|----------------|----------------|----------------|---------------|----------------|
|                       | Inlet                    | Outlet                |                 |                | L1                  | L2             | H               | D              | C              | E              | F             | G              |
| NF□□-MS22-8           | M22 x 1.5 Male Metric    | M22 x 1.5 Male Metric | 0.25<br>(6.4)   | 0.85           | 1.50<br>(38.1)      | 1.50<br>(38.1) | 3.38<br>(85.8)  | 2.50<br>(63.5) | 0.62<br>(15.8) | 0.87<br>(22.0) | 0.38<br>(9.7) | 0.96<br>(24.4) |
| NF□□-FNS8-9           | 1/2 Female NPT           | 1/2 Female NPT        | 0.39<br>(10.0)  | 2.18           | 1.56<br>(39.7)      | 1.56<br>(39.7) | 3.86<br>(98.0)  | 3.50<br>(88.9) | 0.89<br>(22.5) | 1.10<br>(28.3) | 0.38<br>(9.7) | 1.08<br>(27.5) |
| NF□□-NS8-9            | 1/2 Male NPT             | 1/2 Male NPT          |                 |                |                     |                |                 |                |                |                |               |                |
| NF□□-NS12-9           | 3/4 Male NPT             | 3/4 Male NPT          |                 |                |                     |                |                 |                |                |                |               |                |
| NF□□-FL12-9           | 3/4" FITOK               | 3/4" FITOK            |                 |                |                     |                |                 |                |                |                |               |                |
| NF□□-ML14-9           | 14 mm FITOK              | 14 mm FITOK           |                 |                |                     |                |                 |                |                |                |               |                |
| NF□□-ML16-9           | 16 mm FITOK              | 16 mm FITOK           |                 |                | 1.97<br>(50.0)      | 1.97<br>(50.0) |                 |                | 0.76<br>(19.4) |                |               |                |
| NF□□-ML18-9           | 18 mm FITOK              | 18 mm FITOK           |                 |                |                     |                |                 |                |                |                |               |                |
| NF□□-ML20-9           | 20 mm FITOK              | 20 mm FITOK           |                 |                |                     |                |                 |                |                |                |               |                |
| NF□□-MTS14-9-G        | 14 mm MTS                | 14 mm MTS             |                 |                |                     |                |                 |                |                |                |               |                |
| NF□□-MTS16-9-G        | 16 mm MTS                | 16 mm MTS             |                 |                |                     |                |                 |                |                |                |               |                |
| NF□□-MTS18-9-G        | 18 mm MTS                | 18 mm MTS             |                 |                | 1.56<br>(39.7)      | 1.56<br>(39.7) |                 |                | 0.76<br>(19.4) |                |               |                |
| NF□□-TS12-9-G         | 3/4" TS                  | 3/4" TS               |                 |                |                     |                |                 |                |                |                |               |                |
| NF□□-PS8-9-G          | 1/2 PS                   | 1/2 PS                |                 |                |                     |                |                 |                |                |                |               |                |
| NF□□-MTB16-9-G        | 16 mm MTB                | 16 mm MTB             |                 |                |                     |                |                 |                |                |                |               |                |
| NF□□-UMB14-9          | 14 mm UMB                | 14 mm UMB             |                 |                | 2.98<br>(75.7)      | 2.98<br>(75.7) |                 |                |                |                |               |                |
| NF□□-UMB16-9          | 16 mm UMB                | 16 mm UMB             | 1.56<br>(39.7)  | 1.56<br>(39.7) | 0.89<br>(22.5)      |                |                 |                |                |                |               |                |
| NF□□-MS27-9           | M27 x 2 Male Metric      | M27 x 2 Male Metric   |                 |                |                     |                |                 |                |                |                |               |                |
| NF□□-FNS12-6          | 3/4 Female NPT           | 3/4 Female NPT        | 0.59<br>(15.0)  | 3.27           | 1.97<br>(50.0)      | 1.97<br>(50.0) | 5.00<br>(127)   | 5.00<br>(127)  | 1.08<br>(27.5) | 1.61<br>(41.0) | 0.38<br>(9.7) | 1.45<br>(36.8) |
| NF□□-TS16-6-G         | 1" TS                    | 1" TS                 |                 |                |                     |                |                 |                |                |                |               |                |
| NF□□-MTS25-6-G        | 25 mm MTS                | 25 mm MTS             |                 |                |                     |                |                 |                |                |                |               |                |
| NF□□-MTS28-6-G        | 28 mm MTS                | 28 mm MTS             |                 |                |                     |                |                 |                |                |                |               |                |
| NF□□-PS12-6-G         | 3/4 PS                   | 3/4 PS                |                 |                |                     |                |                 |                |                |                |               |                |
| NF□□-PB12-6-G         | 3/4 PB                   | 3/4 PB                |                 |                |                     |                |                 |                |                |                |               |                |
| NF□□-FL12-6           | 3/4" FITOK               | 3/4" FITOK            |                 |                | 2.35<br>(59.7)      | 2.35<br>(59.7) |                 |                |                |                |               |                |
| NF□□-FL16-6           | 1" FITOK                 | 1" FITOK              |                 |                |                     |                |                 |                |                |                |               |                |
| NF□□-ML20-6           | 20 mm FITOK              | 20 mm FITOK           |                 |                |                     |                |                 |                |                |                |               |                |
| NF□□-ML22-6           | 22 mm FITOK              | 22 mm FITOK           |                 |                |                     |                |                 |                |                |                |               |                |
| NF□□-ML25-6           | 25 mm FITOK              | 25 mm FITOK           |                 |                |                     |                |                 |                |                |                |               |                |
| NF□□-ML25-6           | 25 mm FITOK              | 25 mm FITOK           |                 |                |                     |                |                 |                |                |                |               |                |
| NF□□-TS16-0-G         | 1" TS                    | 1" TS                 | 0.71<br>(18.0)  | 5.65           | 1.97<br>(50.0)      | 1.97<br>(50.0) | 5.33<br>(135.4) | 5.00<br>(127)  | 1.08<br>(27.5) | 1.61<br>(41.0) | 0.38<br>(9.7) | 1.45<br>(36.8) |
| NF□□-MTS25-0-G        | 25 mm MTS                | 25 mm MTS             |                 |                |                     |                |                 |                |                |                |               |                |
| NF□□-MTS28-0-G        | 28 mm MTS                | 28 mm MTS             |                 |                |                     |                |                 |                |                |                |               |                |
| NF□□-PS12-0-G         | 3/4 PS                   | 3/4 PS                |                 |                |                     |                |                 |                |                |                |               |                |
| NF□□-PB16-0-G         | 1 PB                     | 1 PB                  |                 |                |                     |                |                 |                |                |                |               |                |

1. Connection type of "FITOK" means FITOK double ferrule tube fittings. When the connection type of valves is FITOK double ferrule tube fitting, the working pressures of the valves are related to the wall thickness of tubing applied. For specific working pressure of the valves, please refer to the allowable working pressures in FITOK Catalog Tubing.
2. Connection type of "FO" means O-ring face seal fittings. "FR" means metal gasket face seal fittings. "TS" means fractional tube socket weld. "MTS" means metric tube socket weld. "MTB" means metric tube butt weld. "UMB" means rotatable metric tube butt weld. "PS" means pipe socket weld. "PB" means pipe butt weld.
3. Sizes and types listed are standard. Other sizes and types are available upon request. For details, please contact FITOK Group or our authorized distributors.
4. Dimensions are shown with FITOK tube fitting nuts finger-tight. All dimensions are for reference only and are subject to change. For dimensions not shown above, please contact FITOK Group or our authorized distributors.

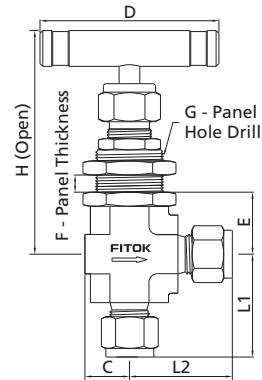


## B-76 Needle Valves

### Straight Pattern



### Angle Pattern



© NFH Series Needle Valves are standard without panel mounting. To order needle valves with panel mounting as illustrated, add -Y to the ordering number. Example: NFHSS-FNS2-7-Y

### Dimensions of NFH Series

| Basic Ordering Number | Connection Type and Size |                | Orifice in.(mm) | Cv   | Dimensions, in.(mm) |                |                |                |                |                |               |                |
|-----------------------|--------------------------|----------------|-----------------|------|---------------------|----------------|----------------|----------------|----------------|----------------|---------------|----------------|
|                       | Inlet                    | Outlet         |                 |      | L1                  | L2             | H              | D              | C              | E              | F             | G              |
| NFH□□-FNS2-7          | 1/8 Female NPT           | 1/8 Female NPT | 0.16<br>(4.0)   | 0.35 | 1.00<br>(25.4)      | 1.00<br>(25.4) | 2.85<br>(72.5) | 2.17<br>(55.0) | 0.62<br>(15.8) | 0.76<br>(19.4) | 0.25<br>(6.4) | 0.77<br>(19.6) |
| NFH□□-FNS4-7          | 1/4 Female NPT           | 1/4 Female NPT |                 |      | 1.06<br>(26.2)      | 1.06<br>(26.2) |                |                |                |                |               |                |
| NFH□□-NS4-7           | 1/4 Male NPT             | 1/4 Male NPT   |                 |      | 1.22<br>(30.9)      | 1.22<br>(30.9) |                |                |                |                |               |                |
| NFH□□-FNS4-NS4-7      | 1/4 Female NPT           | 1/4 Male NPT   |                 |      | 1.06<br>(26.2)      | 1.22<br>(30.9) |                |                |                |                |               |                |
| NFH□□-TS4-7-G         | 1/4" TS                  | 1/4" TS        |                 |      | 1.06<br>(26.2)      | 1.06<br>(26.2) |                |                |                |                |               |                |
| NFH□□-FNS4-8          | 1/4 Female NPT           | 1/4 Female NPT |                 |      | 1.12                | 1.12           |                |                |                |                |               |                |
| NFH□□-FNS6-8          | 3/8 Female NPT           | 3/8 Female NPT | 0.25<br>(6.4)   | 0.85 | (28.6)              | (28.6)         | 3.38<br>(85.8) | 2.50<br>(63.5) | 0.76<br>(19.4) | 0.87<br>(22.0) | 0.38<br>(9.7) | 0.96<br>(24.4) |
| NFH□□-NS6-8           | 3/8 Male NPT             | 3/8 Female NPT |                 |      | 1.50<br>(38.1)      | 1.50<br>(38.1) |                |                |                |                |               |                |
| NFH□□-TS8-9-G         | 1/2" TS                  | 1/2" TS        | 0.39<br>(10.0)  | 2.18 | 1.56<br>(39.7)      | 1.56<br>(39.7) | 3.86<br>(98.0) | 3.50<br>(88.9) | 0.76<br>(19.4) | 1.10<br>(28.3) | 0.38<br>(9.7) | 1.08<br>(27.5) |

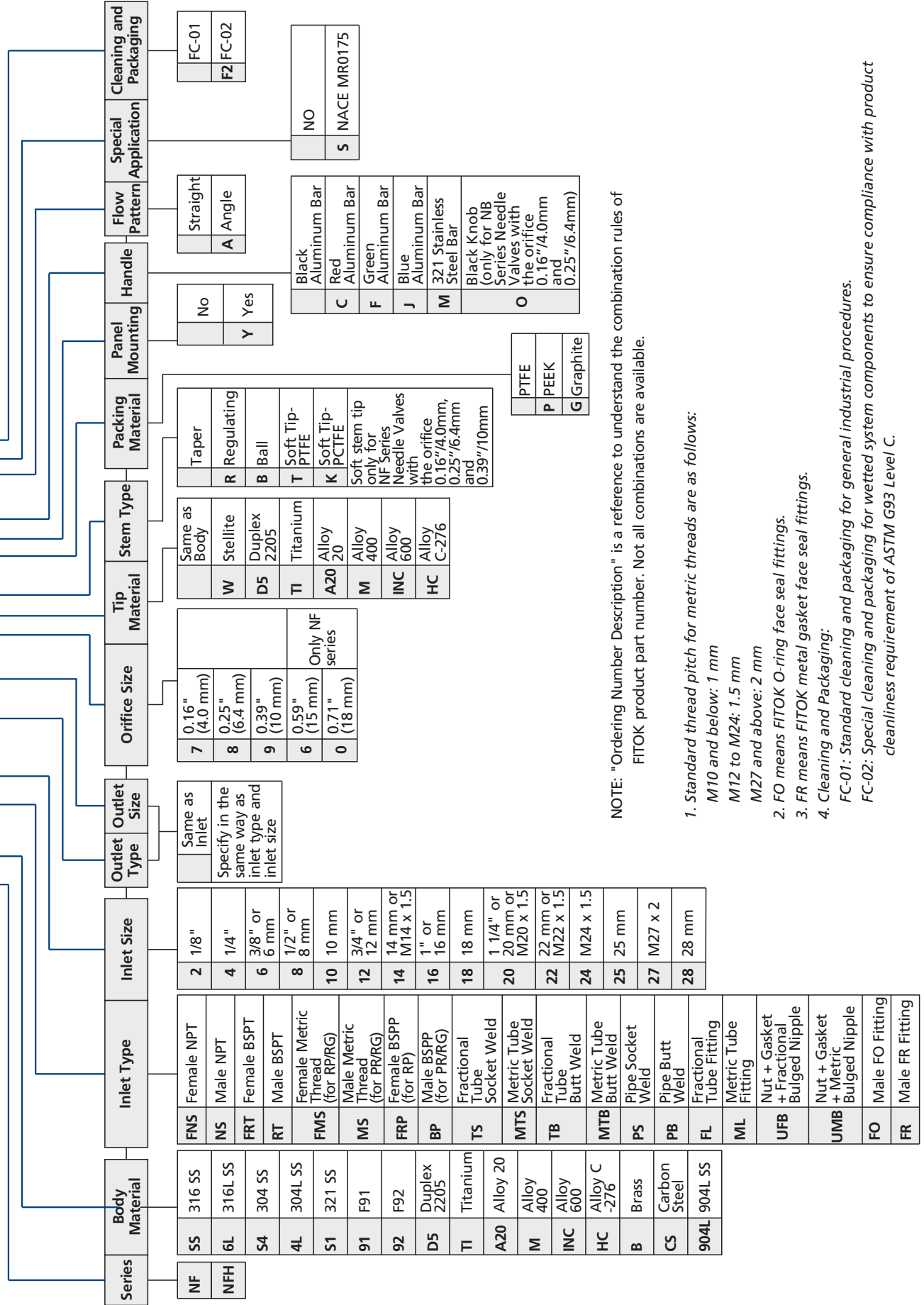
1. Connection type of "TS" means tube socket weld.

2. Sizes and types listed are standard. Other sizes and types are available upon request. For details, please contact FITOK Group or our authorized distributors.

3. All dimensions are for reference only and are subject to change. For dimensions not shown above, please contact FITOK Group or our authorized distributors.

# Ordering Number Description

NFS4 - TS16 - MTS25 - 6WR - GYM - ASF2



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

- Standard thread pitch for metric threads are as follows:  
M10 and below: 1 mm  
M12 to M24: 1.5 mm  
M27 and above: 2 mm
- FR means FITOK O-ring face seal fittings.
- FO means FITOK metal gasket face seal fittings.
- Cleaning and Packaging:  
FC-01: Standard cleaning and packaging for general industrial procedures.  
FC-02: Special cleaning and packaging for wetted system components to ensure compliance with product cleanliness requirement of ASTM G93 Level C.

# General Purpose Needle Valves

**NG Series: Working pressure up to 3000 psig**

**NGH Series: Working pressure up to 5000 psig**

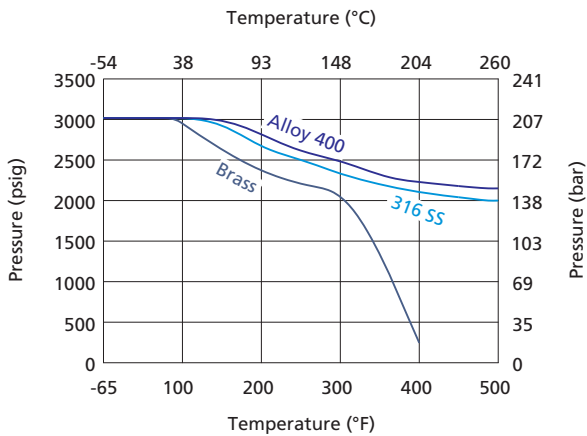
## Features

- ⦿ One-piece forged body
- ⦿ Easy external adjustments by packing nut
- ⦿ Live-loaded packing system
- ⦿ Handles of different colors available
- ⦿ Compact design
- ⦿ Panel mounting available
- ⦿ Every valve leak tested with nitrogen/air at the maximum allowable working pressure
- ⦿ Working pressure up to:
  - NG Series—Stainless steel, Brass, Alloy 400: 3000 psig (207 bar)
  - NGH Series—Stainless steel: 5000 psig (345 bar)
- ⦿ Working temperature:
  - PTFE: -65°F to 450°F (-54°C to 232°C)
  - PEEK: -65°F to 500°F (-54°C to 260°C)

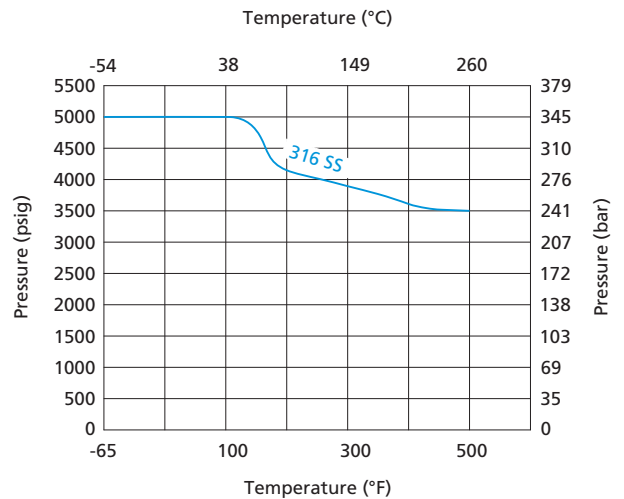


## Pressure vs. Temperature

NG Series



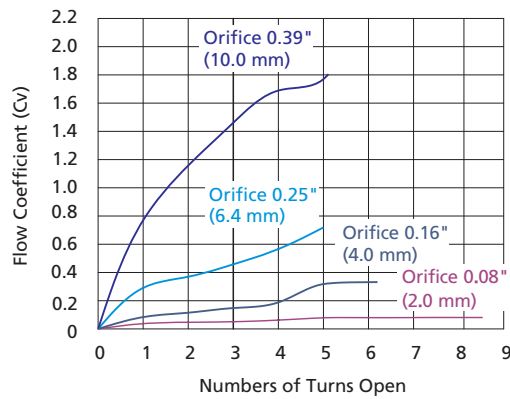
NGH Series



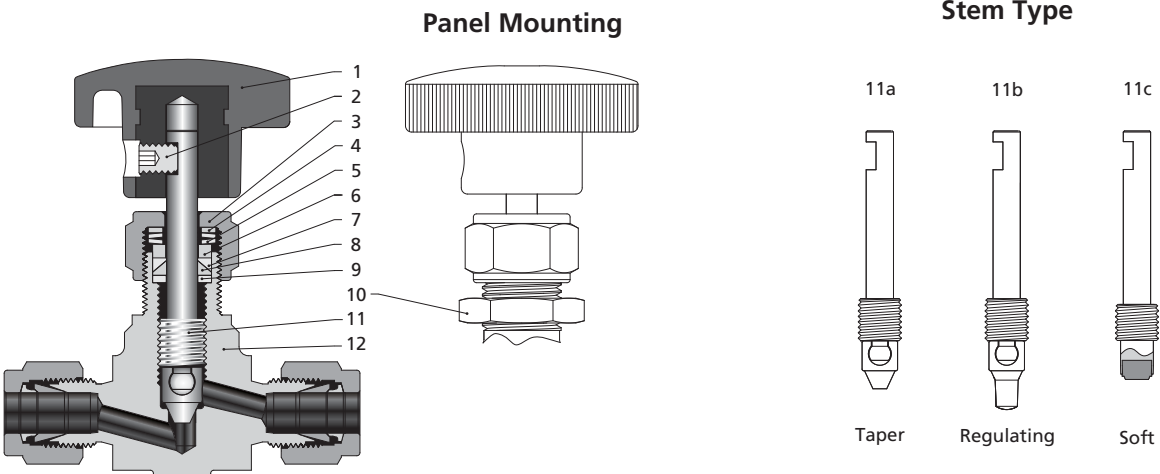
1. Graphs are based on PEEK packing.
2. Temperature rating is limited to 200°F (93°C) max with PCTFE stem tip (soft tip).
3. Contact FITOK Group or our authorized distributors for curve graph of other materials.

## Flow Data at 100°F (38°C)

Regulating Stem



## Standard Materials of Construction

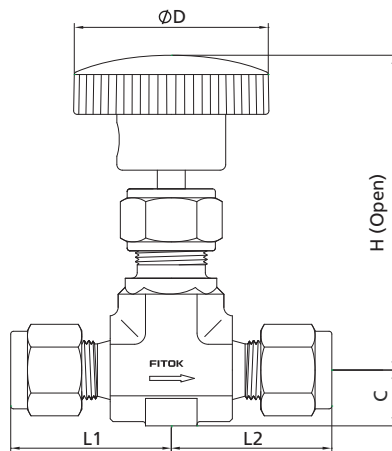


| Item      | Component                | Valve Body Material   |                   |                |
|-----------|--------------------------|---|-------------------|----------------|
|           |                          | 316 SS  | Brass             | Alloy          |
|           |                          | <b>Material Grade/ASTM Specification</b>  |                   |                |
| 1         | Handle                   | Black knob (aluminum or nylon with copper insert), aluminum alloy or stainless steel bar handle |                   |                |
| 2         | Set Screw                | Stainless steel   |                   |                |
| 3         | Packing Bolt             | 304 SS/A276   | Brass C36000/B16  | Alloy 400/B164 |
| 4         | Washer                   | 316 SS/A276   |                   |                |
| 5         | Packing Spring           | S17700/A693   |                   |                |
| 6         | Washer                   | 316 SS/A276   |                   |                |
| 7         | Upper Packing            | PTFE/PEEK   |                   |                |
| 8         | Lower Packing            |   |                   |                |
| 9         | Packing Washer           | 316 SS/A276   |                   |                |
| 10        | Panel Nut                | Stainless steel   |                   |                |
| 11a       | Taper Stem/Stem Tip      | Hardened 316 SS/A276  |                   |                |
| 11b       | Regulating Stem/Stem Tip | Hardened 316 SS/A276  |                   |                |
| 11c       | Soft Stem                | 316 SS/A276   |                   |                |
|           | Stem Tip                 | PCTFE/D1430 or PEEK   |                   |                |
| 12        | Body                     | 316 SS/A182   | Brass C37700/B283 | Alloy 400/B564 |
| Lubricant |                          | Molybdenum disulfide-based  |                   |                |

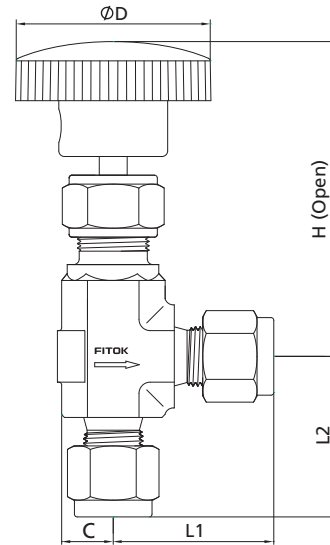
Note: Contact FITOK Group or our authorized distributors for other materials.

## Dimensions

**Straight Pattern**



**Angle Pattern**



### Dimensions of NG Series

| Basic Ordering Number | Connection Type and Size |                       | Orifice in.(mm) | Cv   | Dimensions, in.(mm) |                 |                |                |                |
|-----------------------|--------------------------|-----------------------|-----------------|------|---------------------|-----------------|----------------|----------------|----------------|
|                       | Inlet                    | Outlet                |                 |      | L1                  | L2              | C              | D              | H              |
| NG□□-NS2-5            | 1/8 Male NPT             | 1/8 Male NPT          | 0.08<br>(2.0)   | 0.09 | 0.75<br>(19.05)     | 0.75<br>(19.05) | 0.31<br>(7.9)  | 1.00<br>(25.4) | 2.28<br>(57.9) |
| NG□□-FNS2-5           | 1/8 Female NPT           | 1/8 Female NPT        |                 |      | 0.81<br>(20.6)      | 0.81<br>(20.6)  |                |                |                |
| NG□□-FL2-5            | 1/8" FITOK               | 1/8" FITOK            |                 |      | 0.98<br>(25.0)      | 0.98<br>(25.0)  |                |                |                |
| NG□□-ML3-5            | 3 mm FITOK               | 3 mm FITOK            |                 |      |                     |                 |                |                |                |
| NG□□-FNS2-7           | 1/8 Female NPT           | 1/8 Female NPT        | 0.16<br>(4.0)   | 0.35 | 0.81<br>(20.6)      | 0.81<br>(20.6)  | 0.39<br>(9.9)  | 1.38<br>(35.0) | 2.46<br>(62.5) |
| NG□□-NS4-7            | 1/4 Male NPT             | 1/4 Male NPT          |                 |      | 0.98<br>(25.0)      | 0.98<br>(25.0)  |                |                |                |
| NG□□-FL4-7            | 1/4" FITOK               | 1/4" FITOK            |                 |      | 1.13<br>(28.7)      | 1.13<br>(28.7)  |                |                |                |
| NG□□-ML6-7            | 6 mm FITOK               | 6 mm FITOK            |                 |      | 1.17<br>(29.7)      | 1.17<br>(29.7)  |                |                |                |
| NG□□-ML8-7            | 8 mm FITOK               | 8 mm FITOK            |                 |      | 2.24<br>(57.0)      | 2.24<br>(57.0)  |                |                |                |
| NG□□-UMB6-7           | 6 mm UMB                 | 6 mm UMB              |                 |      |                     |                 |                |                |                |
| NG□□-FNS4-8           | 1/4 Female NPT           | 1/4 Female NPT        | 0.25<br>(6.4)   | 0.70 | 1.06<br>(26.9)      | 1.06<br>(26.9)  | 0.53<br>(13.5) | 1.88<br>(47.8) | 2.97<br>(75.4) |
| NG□□-FNS6-8           | 3/8 Female NPT           | 3/8 Female NPT        |                 |      |                     |                 | 0.62<br>(15.8) |                |                |
| NG□□-NS6-8            | 3/8 Male NPT             | 3/8 Male NPT          |                 |      | 1.12<br>(28.4)      | 1.12<br>(28.4)  | 0.53<br>(13.5) |                |                |
| NG□□-NS8-8            | 1/2 Male NPT             | 1/2 Male NPT          |                 |      | 1.50<br>(38.1)      | 1.50<br>(38.1)  | 0.62<br>(15.8) |                |                |
| NG□□-FL6-8            | 3/8" FITOK               | 3/8" FITOK            |                 |      | 1.29<br>(32.8)      | 1.29<br>(32.8)  |                |                |                |
| NG□□-FL8-8            | 1/2" FITOK               | 1/2" FITOK            |                 |      | 1.40<br>(35.6)      | 1.40<br>(35.6)  |                |                |                |
| NG□□-ML10-8           | 10 mm FITOK              | 10 mm FITOK           |                 |      | 1.30<br>(33.0)      | 1.30<br>(33.0)  | 0.53<br>(13.5) |                |                |
| NG□□-ML12-8           | 12 mm FITOK              | 12 mm FITOK           |                 |      | 1.40<br>(35.6)      | 1.40<br>(35.6)  |                |                |                |
| NG□□-ML14-8           | 14 mm FITOK              | 14 mm FITOK           |                 |      | 1.56<br>(39.7)      | 1.56<br>(39.7)  |                |                |                |
| NG□□-MS20-8           | M20 x 1.5 Male Metric    | M20 x 1.5 Male Metric |                 |      | 1.50<br>(38.1)      | 1.50<br>(38.1)  | 0.62<br>(15.8) |                |                |
| NG□□-UMB10-8          | 10 mm UMB                | 10 mm UMB             |                 |      |                     |                 |                |                |                |
| NG□□-UMB14-8          | 14 mm UMB                | 14 mm UMB             |                 |      | 2.60<br>(66.0)      | 2.60<br>(66.0)  | 0.53<br>(13.5) |                |                |

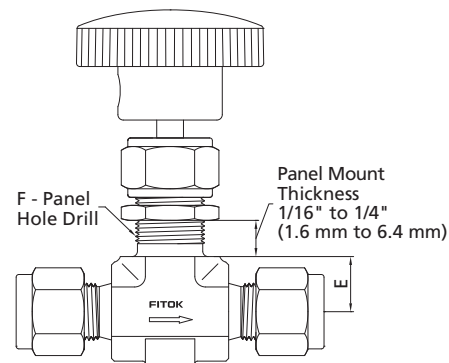
## Dimensions of NG Series

| Basic Ordering Number | Connection Type and Size |                | Orifice in.(mm) | Cv   | Dimensions, in.(mm) |                |                |                |                |
|-----------------------|--------------------------|----------------|-----------------|------|---------------------|----------------|----------------|----------------|----------------|
|                       | Inlet                    | Outlet         |                 |      | L1                  | L2             | C              | D              | H              |
| NG□□-FNS8-9-L         | 1/2 Female NPT           | 1/2 Female NPT | 0.39<br>(10.0)  | 1.80 | 1.56<br>(39.7)      | 1.56<br>(39.7) | 0.76<br>(19.4) | 3.50<br>(88.9) | 3.37<br>(85.7) |
| NG□□-FNS12-9-L        | 3/4 Female NPT           | 3/4 Female NPT |                 |      | 1.63<br>(41.3)      | 1.63<br>(41.3) | 0.89<br>(22.5) |                |                |
| NG□□-NS12-9-L         | 3/4 Male NPT             | 3/4 Male NPT   |                 |      | 1.90<br>(48.3)      | 1.90<br>(48.3) | 0.76<br>(19.4) |                |                |
| NG□□-FL8-9-L          | 1/2" FITOK               | 1/2" FITOK     |                 |      |                     |                |                |                |                |
| NG□□-FL12-9-L         | 3/4" FITOK               | 3/4" FITOK     |                 |      |                     |                |                |                |                |
| NG□□-ML14-9-L         | 14 mm FITOK              | 14 mm FITOK    |                 |      |                     |                |                |                |                |

1. Connection type of "FITOK" means FITOK double ferrule tube fittings. When the connection type of valves is FITOK double ferrule tube fitting, the working pressures of the valves are related to the wall thickness of used tubing. For specific working pressure of the valves, please refer to the allowable working pressures in FITOK Catalog Tubing.
2. Connection type of "UMB" means rotatable metric tube butt weld.
3. Sizes and types listed are standard. Other sizes and types are available upon request. For details, please contact FITOK Group or our authorized distributors.
4. Dimensions are shown with FITOK tube fitting nuts finger-tight. All dimensions are for reference only and are subject to change. For dimensions not shown above, please contact FITOK Group or our authorized distributors.

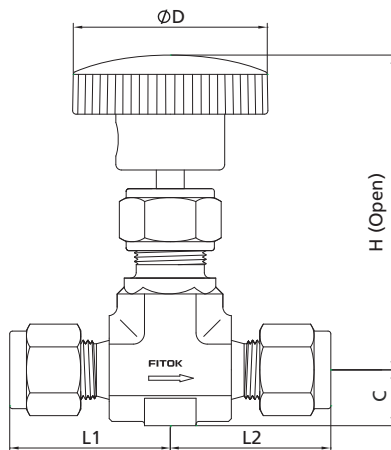
## Panel Mount Dimensions of NG Series

| Orifice in.(mm) | Dimensions, in.(mm) |             |
|-----------------|---------------------|-------------|
|                 | E                   | F           |
| 0.08 (2.0)      | 0.44 (11.2)         | 0.47 (11.9) |
| 0.16 (4.0)      | 0.44 (11.2)         | 0.53 (13.5) |
| 0.25 (6.4)      | 0.50 (12.7)         | 0.78 (19.8) |
| 0.39 (10.0)     | 0.75 (19.1)         | 1.03 (26.2) |

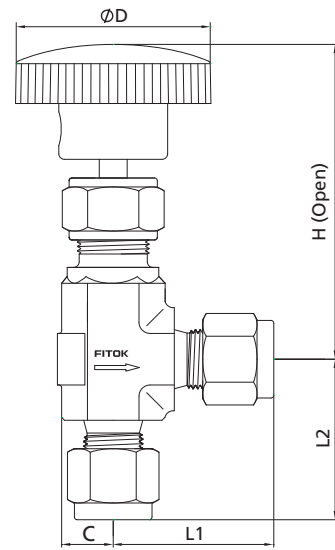


1. NG Series Needle Valves are standard without panel mounting.
2. To order needle valves with panel mounting as illustrated, add -Y to the ordering number. Example: NGSS-NS2-5-Y

**Straight Pattern**



**Angle Pattern**



**Dimensions of NGH Series**

| Basic Ordering Number | Connection Type and Size |                       | Orifice in.(mm) | Cv             | Dimensions, in.(mm) |                |               |                |                |                |                |                |
|-----------------------|--------------------------|-----------------------|-----------------|----------------|---------------------|----------------|---------------|----------------|----------------|----------------|----------------|----------------|
|                       | Inlet                    | Outlet                |                 |                | L1                  | L2             | C             | D              | H              |                |                |                |
| NGH□□-NS2-5           | 1/8 Male NPT             | 1/8 Male NPT          | 0.08<br>(2.0)   | 0.09           | 0.75<br>(19.0)      | 0.75<br>(19.0) | 0.31<br>(7.9) | 1.00<br>(25.4) | 2.28<br>(57.9) |                |                |                |
| NGH□□-FNS2-5          | 1/8 Female NPT           | 1/8 Female NPT        |                 |                | 0.81<br>(20.6)      | 0.81<br>(20.6) |               |                |                |                |                |                |
| NGH□□-FL2-5           | 1/8" FITOK               | 1/8" FITOK            |                 |                | 0.98<br>(25.0)      | 0.98<br>(25.0) |               |                |                |                |                |                |
| NGH□□-ML3-5           | 3 mm FITOK               | 3 mm FITOK            |                 |                |                     |                |               |                |                |                |                |                |
| NGH□□-FNS2-7          | 1/8 Female NPT           | 1/8 Female NPT        | 0.16<br>(4.0)   | 0.35           | 0.81<br>(20.6)      | 0.81<br>(20.6) | 0.39<br>(9.9) | 1.38<br>(35.0) | 2.50<br>(63.5) |                |                |                |
| NGH□□-NS4-7           | 1/4 Male NPT             | 1/4 Male NPT          |                 |                | 0.98<br>(25.0)      | 0.98<br>(25.0) |               |                |                |                |                |                |
| NGH□□-FL4-7           | 1/4" FITOK               | 1/4" FITOK            |                 |                | 1.13<br>(28.7)      | 1.13<br>(28.7) |               |                |                |                |                |                |
| NGH□□-ML6-7           | 6 mm FITOK               | 6 mm FITOK            |                 |                | 1.17<br>(29.7)      | 1.17<br>(29.7) |               |                |                |                |                |                |
| NGH□□-ML8-7           | 8 mm FITOK               | 8 mm FITOK            |                 |                | 2.24<br>(57.0)      | 2.24<br>(57.0) |               |                |                |                |                |                |
| NGH□□-UMB6-7          | 6 mm UMB                 | 6 mm UMB              |                 |                |                     |                |               |                |                |                |                |                |
| NGH□□-FNS4-8          | 1/4 Female NPT           | 1/4 Female NPT        |                 |                | 1.06<br>(26.9)      | 1.06<br>(26.9) |               |                |                | 0.53<br>(13.5) | 1.88<br>(47.8) | 2.97<br>(75.4) |
| NGH□□-FNS6-8          | 3/8" Female NPT          | 3/8" Female NPT       |                 |                |                     |                |               |                |                | 0.62<br>(15.8) |                |                |
| NGH□□-NS6-8           | 3/8 Male NPT             | 3/8 Male NPT          | 1.12<br>(28.4)  | 1.12<br>(28.4) | 0.53<br>(13.5)      |                |               |                |                |                |                |                |
| NGH□□-NS8-8           | 1/2 Male NPT             | 1/2 Male NPT          | 1.50<br>(38.1)  | 1.50<br>(38.1) | 0.62<br>(15.8)      |                |               |                |                |                |                |                |
| NGH□□-FL6-8           | 3/8" FITOK               | 3/8" FITOK            | 1.29<br>(32.8)  | 1.29<br>(32.8) | 0.53<br>(13.5)      |                |               |                |                |                |                |                |
| NGH□□-FL8-8           | 1/2" FITOK               | 1/2" FITOK            | 1.40<br>(35.6)  | 1.40<br>(35.6) |                     |                |               |                |                |                |                |                |
| NGH□□-ML10-8          | 10 mm FITOK              | 10 mm FITOK           | 1.30<br>(33.0)  | 1.30<br>(33.0) |                     |                |               |                |                |                |                |                |
| NGH□□-ML12-8          | 12 mm FITOK              | 12 mm FITOK           | 1.40<br>(35.6)  | 1.40<br>(35.6) |                     |                |               |                |                |                |                |                |
| NGH□□-ML14-8          | 14 mm FITOK              | 14 mm FITOK           | 1.56<br>(39.7)  | 1.56<br>(39.7) | 0.62<br>(15.8)      |                |               |                |                |                |                |                |
| NGH□□-MS20-8          | M20 x 1.5 Male Metric    | M20 x 1.5 Male Metric | 1.50<br>(38.1)  | 1.50<br>(38.1) |                     |                |               |                |                |                |                |                |
| NGH□□-UMB10-8         | 10 mm UMB                | 10 mm UMB             | 2.60<br>(66.0)  | 2.60<br>(66.0) | 0.53<br>(13.5)      |                |               |                |                |                |                |                |
| NGH□□-UMB14-8         | 14 mm UMB                | 14 mm UMB             |                 |                |                     |                |               |                |                |                |                |                |

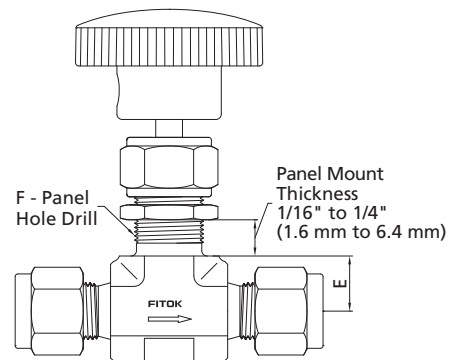
## Dimensions of NGH Series

| Basic Ordering Number | Connection Type and Size |                | Orifice in.(mm) | Cv   | Dimensions, in.(mm) |                |                |                |                |
|-----------------------|--------------------------|----------------|-----------------|------|---------------------|----------------|----------------|----------------|----------------|
|                       | Inlet                    | Outlet         |                 |      | L1                  | L2             | C              | D              | H              |
| NGH□□-FNS8-9-L        | 1/2 Female NPT           | 1/2 Female NPT | 0.39<br>(10.0)  | 1.80 | 1.56<br>(39.7)      | 1.56<br>(39.7) | 0.76<br>(19.4) | 3.50<br>(88.9) | 3.37<br>(85.7) |
| NGH□□-NS12-9-L        | 3/4 Male NPT             | 3/4 Male NPT   |                 |      | 1.63<br>(41.3)      | 1.63<br>(41.3) | 0.89<br>(22.5) |                |                |
| NGH□□-FL8-9-L         | 1/2" FITOK               | 1/2" FITOK     |                 |      |                     |                |                |                |                |
| NGH□□-FL12-9-L        | 3/4" FITOK               | 3/4" FITOK     |                 |      | 1.90<br>(48.3)      | 1.90<br>(48.3) | 0.76<br>(19.4) |                |                |
| NGH□□-ML14-9-L        | 14 mm FITOK              | 14 mm FITOK    |                 |      |                     |                |                |                |                |

1. Connection type of "FITOK" means FITOK double ferrule tube fittings. When the connection type of valves is FITOK double ferrule tube fitting, the working pressures of the valves are related to the wall thickness of tubing applied. For specific working pressure of the valves, please refer to the allowable working pressures in FITOK Catalog Tubing.
2. Connection type of "UMB" means rotatable metric tube butt weld.
3. Sizes and types listed are standard. Other sizes and types are available upon request. For details, please contact FITOK Group or our authorized distributors.
4. Dimensions are shown with FITOK tube fitting nuts finger-tight. All dimensions are for reference only and are subject to change. For dimensions not shown above, please contact FITOK Group or our authorized distributors.

## Panel Mount Dimensions of NGH Series

| Orifice in.(mm) | Dimensions, in.(mm) |             |
|-----------------|---------------------|-------------|
|                 | E                   | F           |
| 0.08 (2.0)      | 0.44 (11.2)         | 0.47 (11.9) |
| 0.16 (4.0)      | 0.44 (11.2)         | 0.53 (13.5) |
| 0.25 (6.4)      | 0.50 (12.7)         | 0.78 (19.8) |
| 0.39 (10.0)     | 0.75 (19.1)         | 1.03 (26.2) |

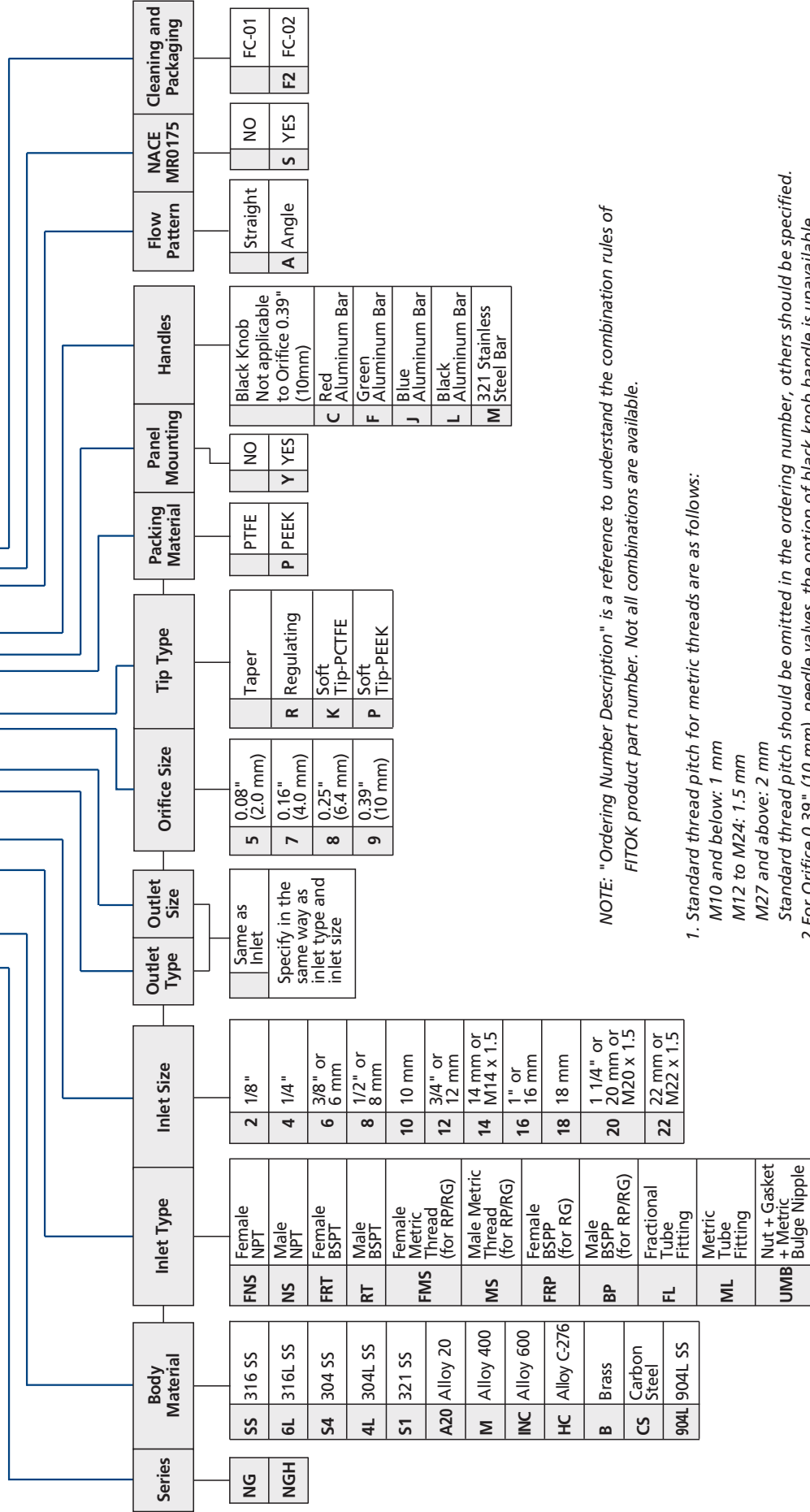


1. NGH Series Needle Valves are standard without panel mounting.
2. To order needle valves with panel mounting as illustrated, add -Y to the ordering number. Example: NGHSS-NS2-5-Y



# Ordering Number Description

NGS4 - FNS8 - FL8 - 9P - PYM - ASF2



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

- Standard thread pitch for metric threads are as follows:  
 M10 and below: 1 mm  
 M12 to M24: 1.5 mm  
 M27 and above: 2 mm  
 Standard thread pitch should be omitted in the ordering number, others should be specified.  
 For Orifice 0.39" (10 mm) needle valves, the option of black knob handle is unavailable.  
 If handle designator is void, a black anodized Aluminum bar handle should be equipped.
- Cleaning and Packaging:  
 FC-01: Standard cleaning and packaging for general industrial procedures.  
 FC-02: Special cleaning and packaging for wetted system components to ensure compliance with product cleanliness requirement of ASTM G93 Level C.

# Rising Plug Valves

## NR Series NRG (with gauge port) Series

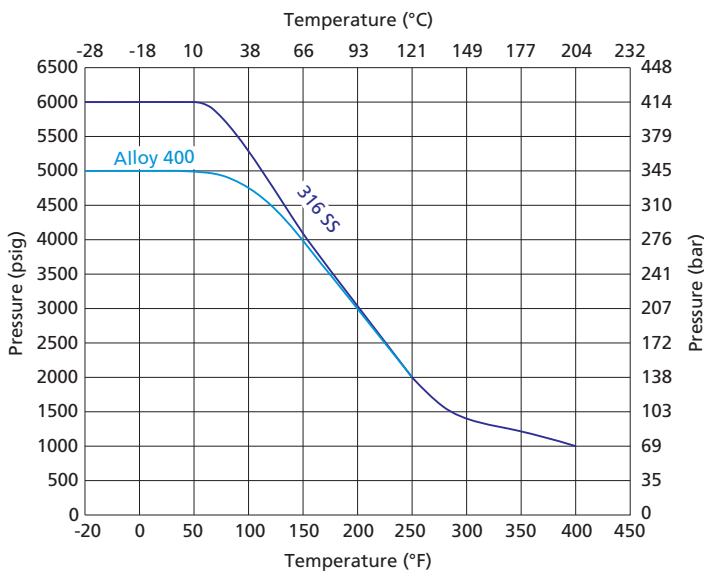
### Features

- ⦿ Cold drawn square bar as body material
- ⦿ Nonrotating stem for longer seat life
- ⦿ Roddable, straight through flow path for maximum flow with minimum pressure drop
- ⦿ Stem thread lubricant isolated from system media
- ⦿ Replaceable seat and stem tip design
- ⦿ Stem thread protected from outside contamination by PTFE ring in the gland
- ⦿ Panel mounting available
- ⦿ Handles of different colors available
- ⦿ Every valve leak tested with nitrogen/air at the maximum allowable working pressure
- ⦿ Working pressure up to:
  - Stainless steel: 6000 psig (414 bar)
  - Alloy 400: 5000 psig (345 bar)
- ⦿ Working temperature with seat:
  - Acetal: -20°F to 250°F (-28°C to 121°C)
  - PEEK: -20°F to 450°F (-28°C to 232°C)
- ⦿ Working temperature with O-ring:
  - Fluorocarbon Rubber (FKM): -20°F to 400°F (-28°C to 204°C)
  - Nitrile Butadiene Rubber (NBR): -20°F to 212°F (-28°C to 100°C)
  - Ethylene Propylene Diene Rubber (EPDM): -20°F to 300°F (-28°C to 148°C)

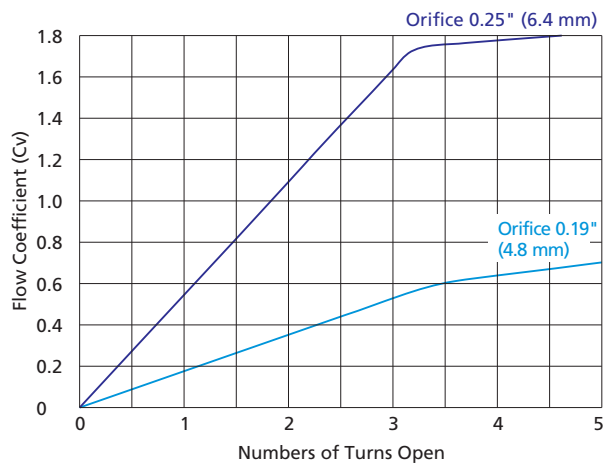


Needle Valves  
Metering Valves

### Pressure vs. Temperature

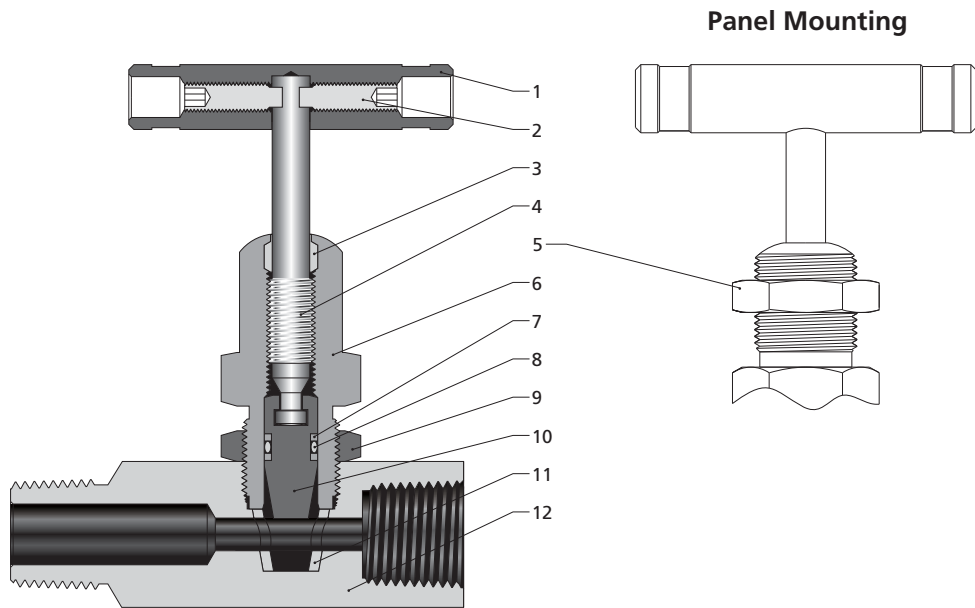


### Flow Data at 100°F (38°C)



1. Graphs are based on PEEK seat and Fluorocarbon(FKM) O-ring.
2. Contact FITOK Group or our authorized distributors for curve graph of other materials.

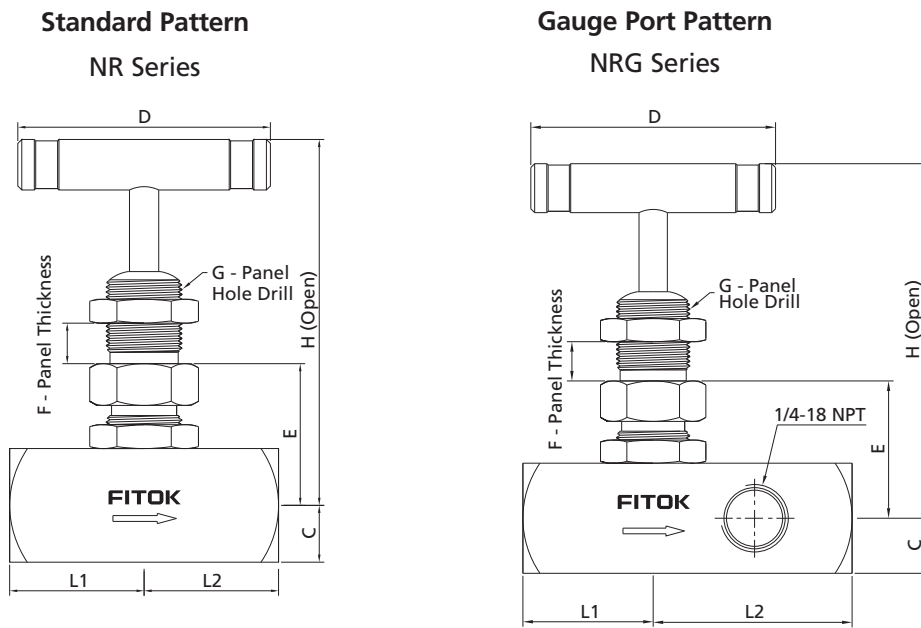
## Standard Materials of Construction



| Item | Component   | Valve Body Material  |             |             |                |
|------|-------------|--|-------------|-------------|----------------|
|      |             | 316 SS   | 304 SS      | 321 SS      | Alloy 400      |
|      |             | Material Grade/ASTM Specification  |             |             |                |
| 1    | Handle      | Anodized aluminum or stainless steel or black knob   |             |             |                |
| 2    | Set Screw   | Stainless steel  |             |             |                |
| 3    | Wiper Ring  | PTFE/D1710   |             |             |                |
| 4    | Upper Stem  | 316 SS/A479  |             |             | Alloy 400/B164 |
| 5    | Panel Nut   | Stainless steel  |             |             |                |
| 6    | Bonnet      | 316 SS/A479  | 304 SS/A479 | 321 SS/A479 | Alloy 400/B164 |
| 7    | Backup Ring | PTFE/D1710   |             |             |                |
| 8    | O-ring      | Fluorocarbon Rubber (FKM), Nitrile Butadiene Rubber (NBR)<br>or Ethylene Propylene Diene Rubber (EPDM) |             |             |                |
| 9    | Lock Nut    | Stainless steel  |             |             |                |
| 10   | Stem Tip    | 316 SS/A276  | 304 SS/A276 | 321 SS/A276 | Alloy 400/B164 |
| 11   | Seat        | Acetal or PEEK   |             |             |                |
| 12   | Body        | 316 SS/A479  | 304 SS/A479 | 321 SS/A479 | Alloy 400/B164 |
|      | Lubricant   | Molybdenum disulfide-based   |             |             |                |

Note: Contact FITOK Group or our authorized distributors for other materials.

## Dimensions



© NR Series Needle Valves are standard without panel mounting. To order needle valves with panel mounting as illustrated, add -Y to the ordering number. Example: NR55-FNS4-7-Y

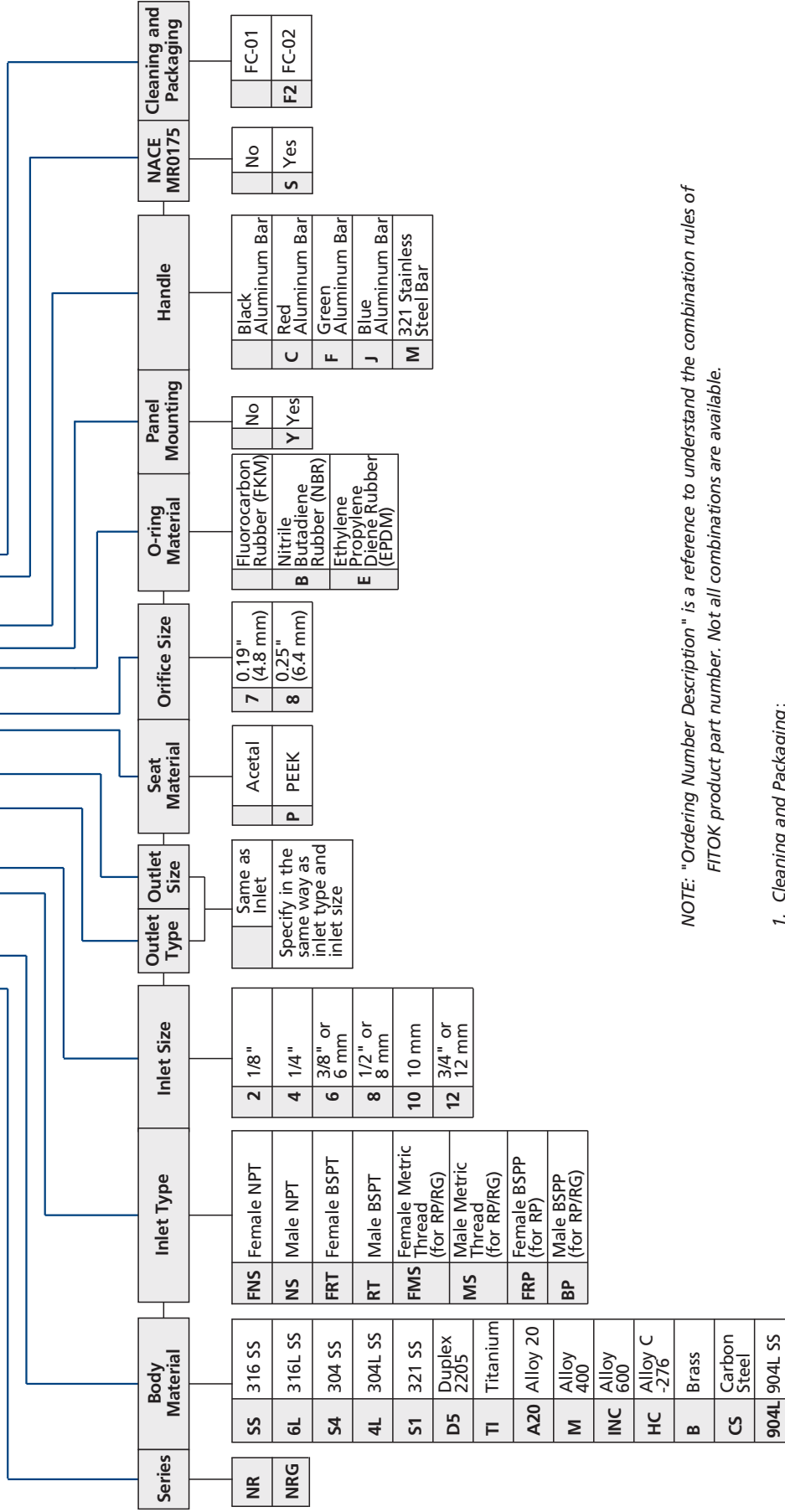
### Dimensions of NR and NRG Series

| Basic Ordering Number | Connection Type and Size |                | Orifice in.(mm) | Cv             | Dimensions, in.(mm) |                |                |                |                |                |                |                |
|-----------------------|--------------------------|----------------|-----------------|----------------|---------------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
|                       | Inlet                    | Outlet         |                 |                | L1                  | L2             | C              | D              | E              | F              | G              | H              |
| NR □□-FNS4-7          | 1/4 Female NPT           | 1/4 Female NPT | 0.19<br>(4.8)   | 0.63           | 1.12<br>(28.4)      | 1.12<br>(28.4) | 0.44<br>(11.1) | 2.17<br>(55.0) | 1.28<br>(32.5) | 0.38<br>(9.7)  | 0.77<br>(19.6) | 3.77<br>(95.8) |
| NR □□-NS4-FNS4-7      | 1/4 Male NPT             | 1/4 Female NPT |                 |                | 1.78<br>(45.2)      |                | 0.50<br>(12.7) |                | 1.34<br>(34.0) |                |                |                |
| NR □□-NS8-FNS4-7      | 1/2 Male NPT             | 1/4 Female NPT |                 |                | 1.89<br>(48.0)      | 1.75<br>(44.4) | 1.34<br>(34.0) | 0.38<br>(9.7)  | 0.77<br>(19.6) | 3.77<br>(95.8) |                |                |
| NRG □□-FNS4-7         | 1/4 Female NPT           | 1/4 Female NPT |                 |                | 1.12<br>(28.4)      |                |                |                |                |                |                |                |
| NRG □□-NS8-FNS4-7     | 1/2 Male NPT             | 1/4 Female NPT |                 |                | 3.12<br>(79.2)      |                |                |                |                |                |                |                |
| NR □□-FNS8-8          | 1/2 Female NPT           | 1/2 Female NPT |                 |                | 0.25<br>(6.4)       | 1.80           | 1.33<br>(33.8) | 1.33<br>(33.8) | 0.56<br>(14.3) | 2.50<br>(63.5) | 1.40<br>(35.5) | 0.38<br>(9.7)  |
| NR □□-NS8-FNS8-8      | 1/2 Male NPT             | 1/2 Female NPT | 2.16<br>(54.9)  |                |                     |                |                |                |                |                |                |                |
| NR □□-NS12-FNS8-8     | 3/4 Male NPT             | 1/2 Female NPT | 3.33<br>(84.6)  | 2.25<br>(57.2) |                     |                | 2.25<br>(57.2) | 0.38<br>(9.7)  | 0.77<br>(19.6) | 3.83<br>(97.3) |                |                |
| NRG □□-FNS8-8         | 1/2 Female NPT           | 1/2 Female NPT |                 |                |                     |                |                |                |                |                |                |                |
| NRG □□-NS12-FNS8-8    | 3/4 Male NPT             | 1/2 Female NPT |                 |                |                     |                |                |                |                |                |                |                |

1. Sizes and types listed are standard. Other sizes and types are available upon request.
2. For dimensions not shown above, please contact FITOK Group or our authorized distributors.

# Ordering Number Description

NRSS - NS8 - FNS8 - P8 - BYM - SF2



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

- Cleaning and Packaging:
  - FC-01: Standard cleaning and packaging for general industrial procedures.
  - FC-02: Special cleaning and packaging for wetted system components to ensure compliance with product cleanliness requirement of ASTM G93 Level C.

# Toggle Valves

## NT Series

### Features

- ⦿ One piece forged body
- ⦿ Straight and angle patterns
- ⦿ Compact design
- ⦿ Quick opening or closing
- ⦿ Nonrotating stem
- ⦿ Panel mounting available
- ⦿ Every valve leak tested with nitrogen/air at the maximum allowable working pressure
- ⦿ Working pressure up to: 300 psig (20.7 bar)

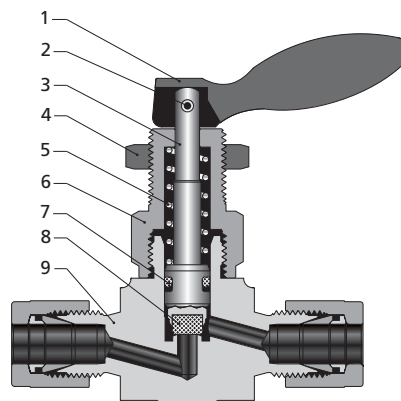


### Technical Data

| Orifice in. (mm) | Working Pressure at 100°F (38°C) psig (bar) |
|------------------|---|
| 0.08 (2.0)       | 300 (20.7)                                  |
| 0.125 (3.2)      |   |
| 0.25 (6.4)       | 200 (13.8)                                  |

| O-ring Material                        | Temperature Rating              |
|--|---------------------------------|
| Fluorocarbon Rubber (FKM)              | -20°F to 400°F (-28°C to 204°C) |
| Nitrile Butadiene Rubber (NBR)         | -20°F to 212°F (-28°C to 100°C) |
| Ethylene Propylene Diene Rubber (EPDM) | -20°F to 300°F (-28°C to 148°C) |

### Standard Materials of Construction

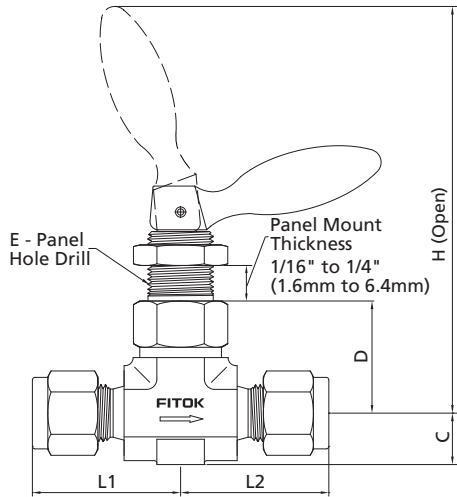


| Item                              | Component | Valve Body Material   |             |             |                   |
|-----------------------------------|-----------|---|-------------|-------------|-------------------|
|                                   |           | 316 SS  | 304 SS      | 321 SS      | Brass             |
| Material Grade/ASTM Specification |           |   |             |             |                   |
| 1                                 | Handle    | Stainless steel   |             |             |                   |
| 2                                 | Pin       | Stainless steel   |             |             |                   |
| 3                                 | Stem      | 316 SS/A276   | 304 SS/A276 | 316 SS/A276 |                   |
| 4                                 | Panel Nut | Stainless steel   |             |             | Brass C36000/B16  |
| 5                                 | Spring    | S17700/A313   |             |             |                   |
| 6                                 | Bonnet    | 304 SS/A276   |             |             | Brass C36000/B16  |
| 7                                 | O-ring    | Fluorocarbon Rubber (FKM), Nitrile Butadiene Rubber (NBR) or Ethylene Propylene Diene Rubber (EPDM) |             |             |                   |
| 8                                 | Stem Tip  | PTFE/D1710  |             |             |                   |
| 9                                 | Body      | 316 SS/A182   | 304 SS/A182 | 321 SS/A182 | Brass C37700/B283 |
|                                   | Lubricant | Molybdenum disulfide-based  |             |             |                   |

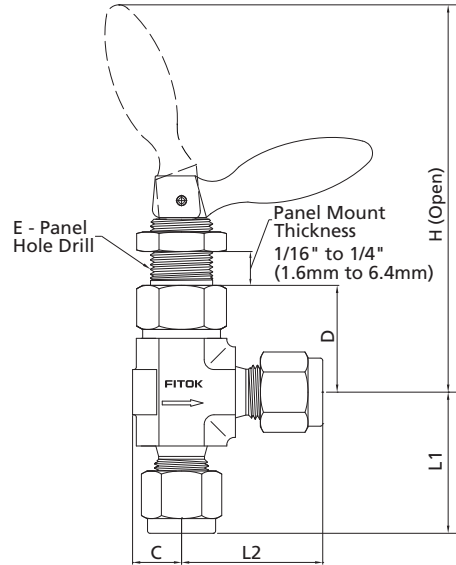
Note: Contact FITOK Group or our authorized distributors for other materials.

## Dimensions

Straight Pattern



Angle Pattern



### Dimensions of NT series

| Basic Ordering Number | Connection Type and Size |                | Orifice in.(mm) | Cv             | Dimensions, in.(mm) |                 |                |                |                |                |
|-----------------------|--------------------------|----------------|-----------------|----------------|---------------------|-----------------|----------------|----------------|----------------|----------------|
|                       | Inlet                    | Outlet         |                 |                | L1                  | L2              | C              | D              | E              | H              |
| NT□□-NS2-5            | 1/8 Male NPT             | 1/8 Male NPT   | 0.08<br>(2.0)   | 0.11           | 0.75<br>(19.05)     | 0.75<br>(19.05) | 0.32<br>(8.2)  | 0.85<br>(21.7) | 0.53<br>(13.5) | 2.83<br>(71.9) |
| NT□□-NS2-FL2-5        | 1/8 Male NPT             | 1/8" FITOK     |                 |                | 0.75<br>(19.05)     | 0.98<br>(25.0)  |                |                |                |                |
| NT□□-FL2-5            | 1/8" FITOK               | 1/8" FITOK     |                 |                | 0.98<br>(25.0)      | 0.98<br>(25.0)  |                |                |                |                |
| NT□□-ML3-5            | 3 mm FITOK               | 3 mm FITOK     |                 |                |                     |                 |                |                |                |                |
| NT□□-FNS2-7           | 1/8 Female NPT           | 1/8 Female NPT | 0.125<br>(3.2)  | 0.20           | 0.81<br>(20.6)      | 0.81<br>(20.6)  | 0.39<br>(10.0) | 0.85<br>(21.7) | 0.53<br>(13.5) | 2.83<br>(71.9) |
| NT□□-NS2-7            | 1/8 Male NPT             | 1/8 Male NPT   |                 |                | 0.86<br>(21.8)      | 0.86<br>(21.8)  |                |                |                |                |
| NT□□-NS4-7            | 1/4 Male NPT             | 1/4 Male NPT   |                 |                | 0.98<br>(25.0)      | 0.98<br>(25.0)  |                |                |                |                |
| NT□□-NS4-FL4-7        | 1/4 Male NPT             | 1/4" FITOK     |                 |                | 0.98<br>(25.0)      | 1.13<br>(28.7)  |                |                |                |                |
| NT□□-FL4-7            | 1/4" FITOK               | 1/4" FITOK     |                 |                | 1.13<br>(28.7)      |                 |                |                |                |                |
| NT□□-ML6-7            | 6 mm FITOK               | 6 mm FITOK     |                 |                |                     |                 |                |                |                |                |
| NT□□-ML8-7            | 8 mm FITOK               | 8 mm FITOK     |                 |                |                     |                 |                |                |                |                |
| NT□□-FNS4-8           | 1/4 Female NPT           | 1/4 Female NPT |                 |                | 0.25<br>(6.4)       | 0.70            |                |                |                |                |
| NT□□-FNS6-8           | 3/8 Female NPT           | 3/8 Female NPT | 1.12<br>(28.4)  | 1.12<br>(28.4) |                     |                 |                |                |                |                |
| NT□□-NS6-8            | 3/8 Male NPT             | 3/8 Male NPT   | 1.29<br>(32.8)  | 1.29<br>(32.8) |                     |                 |                |                |                |                |
| NT□□-FL6-8            | 3/8" FITOK               | 3/8" FITOK     | 1.40<br>(35.6)  | 1.40<br>(35.6) |                     |                 |                |                |                |                |
| NT□□-FL8-8            | 1/2" FITOK               | 1/2" FITOK     | 1.36<br>(34.5)  | 1.36<br>(34.5) |                     |                 |                |                |                |                |
| NT□□-ML10-8           | 10 mm FITOK              | 10 mm FITOK    | 1.46<br>(37.1)  | 1.46<br>(37.1) |                     |                 |                |                |                |                |
| NT□□-ML12-8           | 12 mm FITOK              | 12 mm FITOK    |                 |                |                     |                 |                |                |                |                |

1. Connection type of "FITOK" means FITOK double ferrule tube fittings.
2. Sizes and types listed are standard. Other sizes and types are available upon request. For details, please contact FITOK Group or our authorized distributors.
3. Dimensions are shown with FITOK tube fitting nuts finger-tight. All dimensions are for reference only and are subject to change. For dimensions not shown above, please contact FITOK Group or our authorized distributors.

# Pneumatic Actuators

## Features

- Valve and actuator are fully assembled and every valve leak tested with nitrogen/air at the maximum allowable working pressure
- Opens and closes quickly and reliably
- Rotatable actuator port allows easy installation

## Actuation Modes

- Normally closed—air opens, spring closes
- Normally open—air closes, spring opens
- Double acting—air opens and closes

Normally Closed and Double Acting

Normally Open



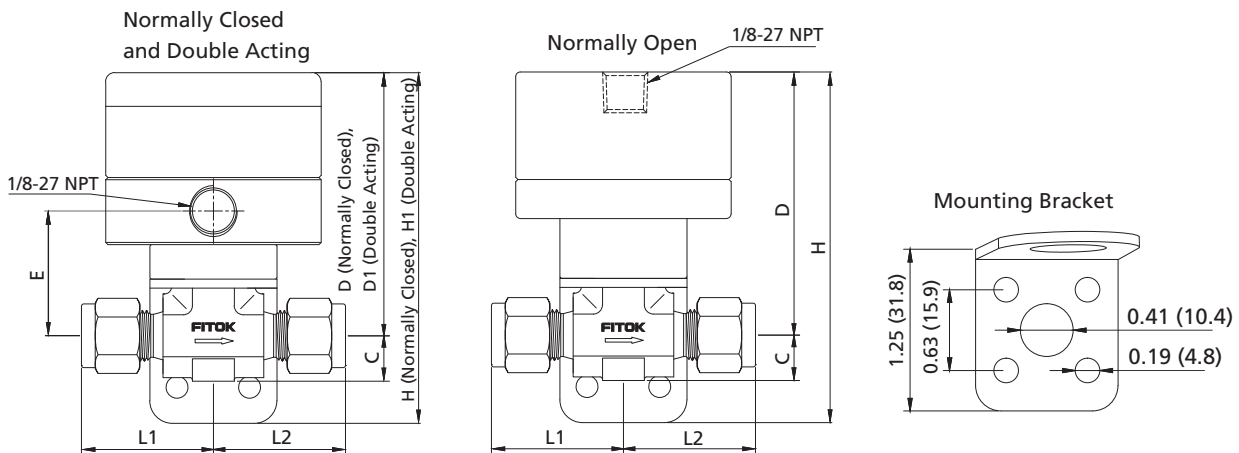
## Technical Data

| Actuator Type   | Working Pressure at 100°F (38°C)<br>psig (bar) | Actuator Pressure Rating<br>psig (bar) |
|-----------------|--|--|
| Normally closed | 300 (20.7)                                     | 87 (6)                                 |
| Normally open   | 450 (31.0)                                     |  |
| Double acting   |  |  |

| Component        | Material  |
|------------------|---|
|                  | Material Grade/ASTM Specification                                       |
| Housing          | Anodized aluminum   |
| Spring           | S17700/A313   |
| Mounting Bracket | 304SS/A240  |
| Stem Tip         | Normally open, normally closed—PTFE/D1710,<br>double acting—PCTFE/D1430 |

Please refer to NT Series "Standard Materials of Construction" for other materials.

## Dimensions

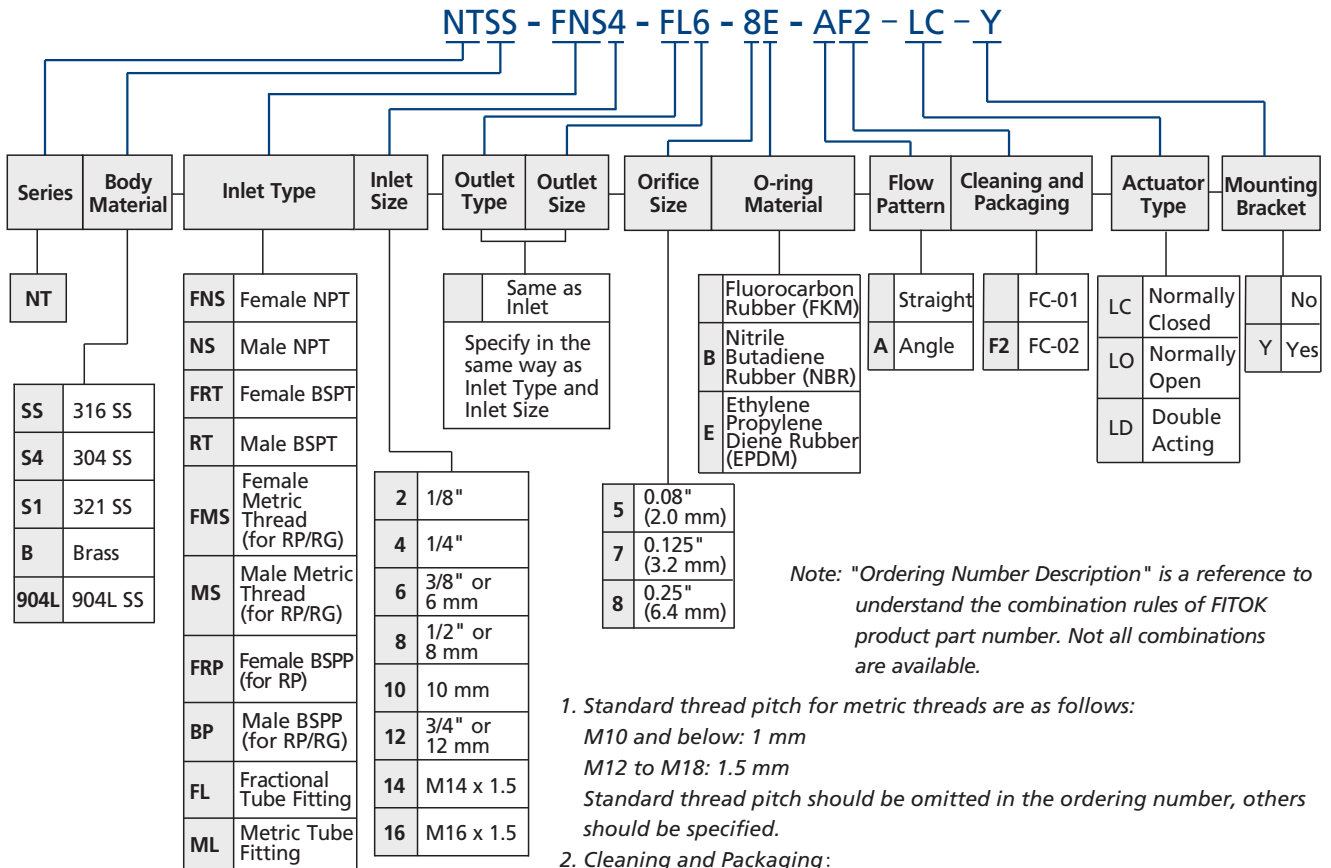




| Basic Ordering Number | Connection Type and Size |                | Orifice in.(mm) | Cv   | Dimensions, in.(mm) |                |                |              |                |                |                |                |
|-----------------------|--------------------------|----------------|-----------------|------|---------------------|----------------|----------------|--------------|----------------|----------------|----------------|----------------|
|                       | Inlet                    | Outlet         |                 |      | L1                  | L2             | C              | D            | D1             | H              | H1             | E              |
| NT□□-NS2-5-LC-Y       | 1/8 Male NPT             | 1/8 Male NPT   | 0.08<br>(2.0)   | 0.11 | 0.86<br>(21.8)      | 0.86<br>(21.8) |                |              |                |                |                |                |
| NT□□-NS2-FL2-5-LC-Y   | 1/8 Male NPT             | 1/8" FITOK     |                 |      | 0.86<br>(21.8)      | 1.03<br>(26.2) |                |              |                |                |                |                |
| NT□□-FL2-5-LC-Y       | 1/8" FITOK               | 1/8" FITOK     |                 |      | 1.03<br>(26.2)      | 1.03<br>(26.2) |                |              |                |                |                |                |
| NT□□-ML3-5-LC-Y       | 3 mm FITOK               | 3 mm FITOK     |                 |      |                     |                |                |              |                |                |                |                |
| NT□□-FNS2-7-LC-Y      | 1/8 Female NPT           | 1/8 Female NPT | 0.125<br>(3.2)  | 0.20 | 0.81<br>(20.6)      | 0.81<br>(20.6) | 0.39<br>(10.0) | 2.28<br>(58) | 2.46<br>(62.5) | 3.04<br>(77.3) | 3.22<br>(81.8) | 1.08<br>(27.5) |
| NT□□-NS2-7-LC-Y       | 1/8 Male NPT             | 1/8 Male NPT   |                 |      | 0.86<br>(21.8)      | 0.86<br>(21.8) |                |              |                |                |                |                |
| NT□□-NS4-7-LC-Y       | 1/4 Male NPT             | 1/4 Male NPT   |                 |      | 0.98<br>(25.0)      | 0.98<br>(25.0) |                |              |                |                |                |                |
| NT□□-NS4-FL4-7-LC-Y   | 1/4 Male NPT             | 1/4" FITOK     |                 |      | 0.98<br>(25.0)      | 1.13<br>(28.7) |                |              |                |                |                |                |
| NT□□-FL4-7-LC-Y       | 1/4" FITOK               | 1/4" FITOK     |                 |      |                     |                |                |              |                |                |                |                |
| NT□□-ML6-7-LC-Y       | 6 mm FITOK               | 6 mm FITOK     |                 |      |                     |                |                |              |                |                |                |                |
| NT□□-ML8-7-LC-Y       | 8 mm FITOK               | 8 mm FITOK     |                 |      |                     |                |                |              |                |                |                |                |

1. Connection type of "FITOK" means FITOK double ferrule tube fittings.
2. Sizes and types listed are standard. Other sizes and types are available upon request. For details, please contact FITOK Group or our authorized distributors.
3. Dimensions are shown with FITOK tube fitting nuts finger-tight. All dimensions are for reference only and are subject to change. For dimensions not shown above, please contact FITOK Group or our authorized distributors.

## Ordering Number Description



1. Standard thread pitch for metric threads are as follows:  
 M10 and below: 1 mm  
 M12 to M18: 1.5 mm  
 Standard thread pitch should be omitted in the ordering number, others should be specified.
2. Cleaning and Packaging:  
 FC-01: Standard cleaning and packaging for general industrial procedures.  
 FC-02: Special cleaning and packaging for wetted system components to ensure compliance with product cleanliness requirement of ASTM G93 Level C.

# Union Bonnet Needle Valves

**NU Series: Working pressure up to 6000 psig**

**NUH Series: Working pressure up to 10000 psig**

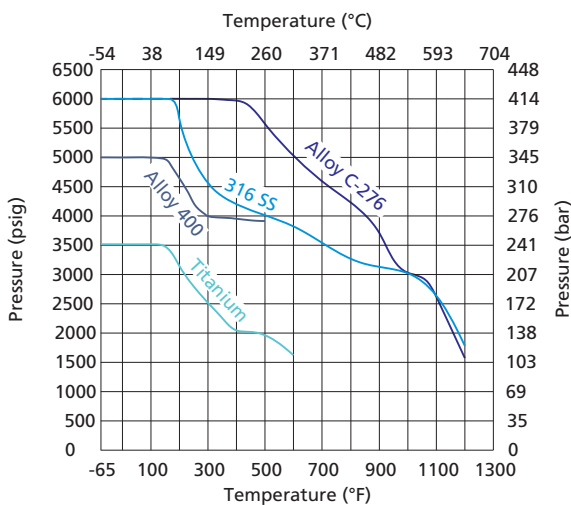
## Features

- ⦿ One-piece forged body
- ⦿ Two-stem design: Upperstem threads cold rolled and lower stem hardened for high strength and smooth operation
- ⦿ Accidental valve disassembly disabled by union bonnet construction
- ⦿ Upper stem thread lubricant isolated from system media
- ⦿ Linear instead of rotary movement of the rising, non-rotating stem minimizes packing abrasion and reduces the friction between the seat and the tip
- ⦿ Safety back seating seal in fully open position
- ⦿ Panel mounting available
- ⦿ Steady and durable fastening of the handle by double lock-pins
- ⦿ Handles of different colors available
- ⦿ Every valve leak tested with nitrogen/air (NU Series) at the maximum allowable working pressure or with water (NUH Series) at 1.1 times the maximum allowable pressure
- ⦿ Working pressure up to:
  - NU Series—Stainless steel: 6000 psig (414 bar)
  - Alloy C-276: 6000 psig (414 bar)
  - Alloy 400: 5000 psig (345 bar)
  - Titanium: 3500 psig (241 bar)
- NUH Series—Stainless steel: 10000 psig (690 bar)
- ⦿ Working temperature:
  - PTFE: -65°F to 450°F (-54°C to 232°C)
  - PEEK: -65°F to 500°F (-54°C to 260°C)
  - Graphite: -65°F to 1200°F (-54°C to 649°C)

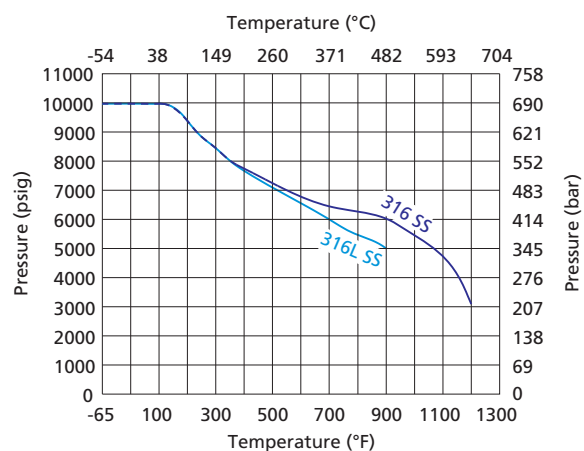


## Pressure vs. Temperature

### NU Series



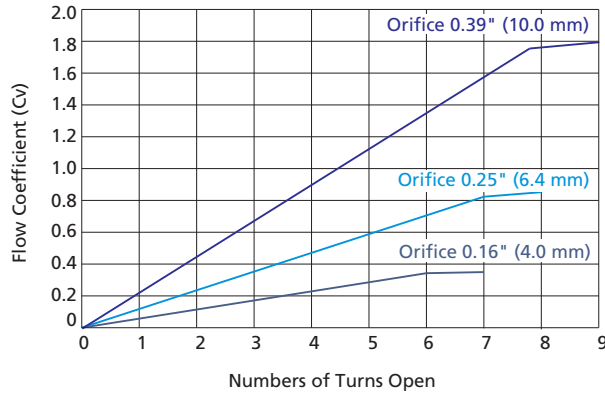
### NUH Series



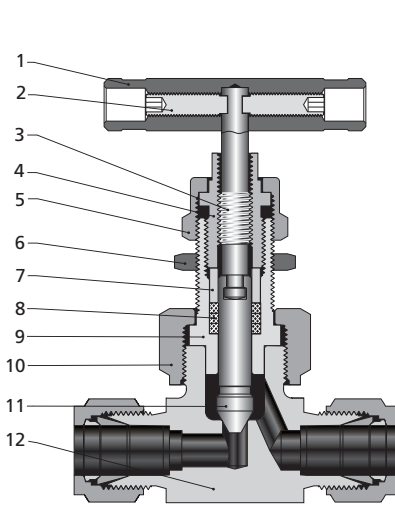
1. Graphs are based on graphite packing.
2. Soft tips are for NU Series only. Temperature rating is limited to 200°F (93°C) max. with PCTFE stem tip (soft tip).
3. Contact FITOK Group or our authorized distributors for curve graph of other materials.

## Flow Data at 100°F (37°C)

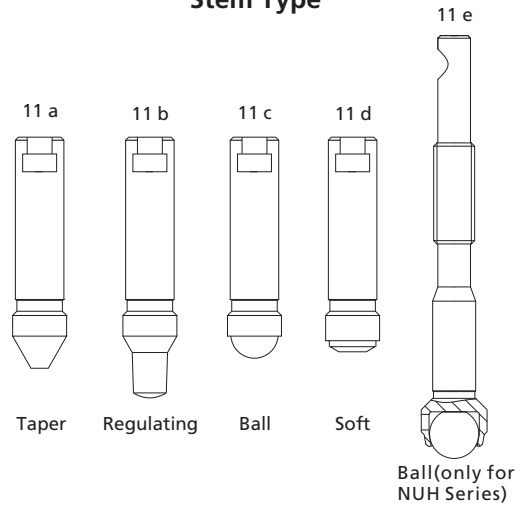
Regulating Stem



## Standard Materials of Construction



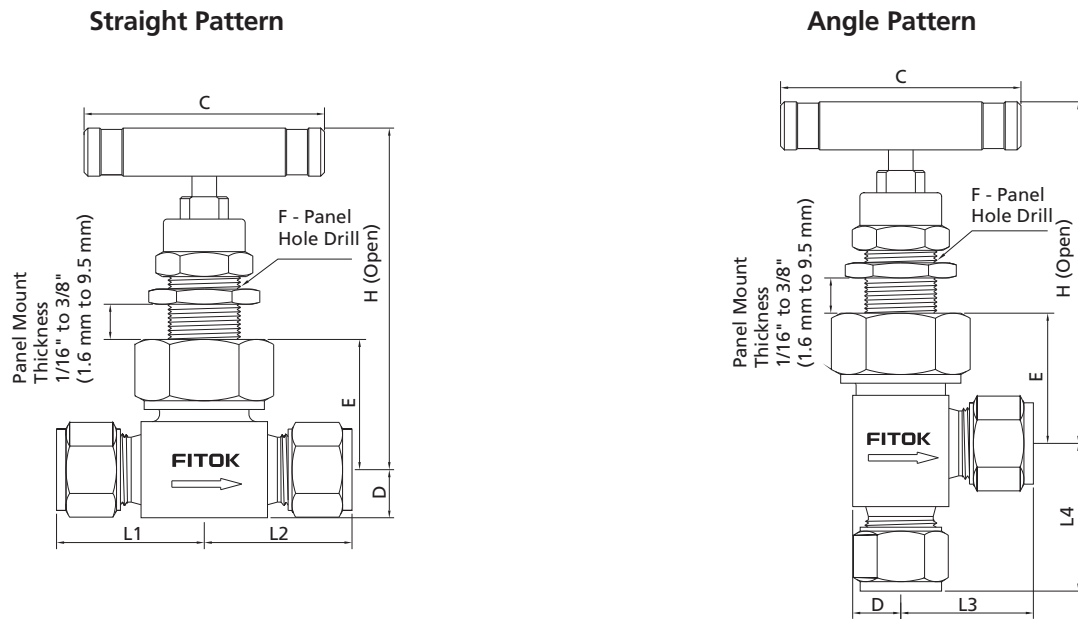
### Stem Type



| Item                            | Component    | Valve Body Material                                 |                               |   |                  |
|---------------------------------|--------------|---|-------------------------------|---|------------------|
|                                 |              | 316 SS  | Alloy 400                     | Titanium                                    | Alloy C-276      |
|                                 |              | Material Grade/ASTM Specification                   |                               |   |                  |
| 1                               | Handle       | Anodized aluminium or stainless steel or black knob |                               |   |                  |
| 2                               | Set Screw    | Stainless steel                                     |                               |   |                  |
| 3                               | Upper Stem   | 316 SS/A276   |                               |   |                  |
| 4                               | Packing Bolt | 304 SS/A276   |                               |   |                  |
| 5                               | Lock Nut     | 316 SS/A276   |                               |   |                  |
| 6                               | Panel Nut    | Stainless steel                                     |                               |   |                  |
| 7                               | Gland        | 316 SS/A276   |                               |   |                  |
| 8                               | Packing      | PTFE or PEEK or graphite                            |                               |   |                  |
| 9                               | Bonnet       | 316 SS/A479   | Alloy 400/B164                | Titanium Gr 4/B348                          | Alloy C-276/B574 |
| 10                              | Union Nut    | 316 SS/A276   |                               |   |                  |
| 11a<br>11b<br>11c<br>11d<br>11e | Lower Stem   | Hardened<br>316 SS/A276                             | Alloy 400/B164                | Titanium Gr 4/B348                          | Alloy C-276/B574 |
| 12                              | Body         | 316 SS/A182   | Alloy 400/B164,<br>B127, B564 | Titanium Gr 4/B348<br>or titanium Gr 4/B381 | Alloy C-276/B564 |
|                                 | Seat         | Same as Body  |                               |   |                  |
|                                 | Lubricant    | Molybdenum disulfide-based                          |                               |   |                  |

Note: Contact FITOK Group or our authorized distributors for other materials.

## Dimensions



### Dimensions of NU Series

| Basic Ordering Number | Connection Type and Size |                 | Orifice in.(mm) | Cv             | Dimensions, in.(mm) |                |                |                |                |               |                |                |                |                |                |                |                |                |                |                |
|-----------------------|--------------------------|-----------------|-----------------|----------------|---------------------|----------------|----------------|----------------|----------------|---------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
|                       | Inlet                    | Outlet          |                 |                | L1                  | L2             | L3             | L4             | C              | D             | E              | F              | H              |                |                |                |                |                |                |                |
| NU□□-FNS2-7           | 1/8 Female NPT           | 1/8 Female NPT  | 0.16<br>(4.0)   | 0.35           | 1.00<br>(25.4)      | 1.00<br>(25.4) | 0.89<br>(22.6) | 1.00<br>(25.4) | 1.75<br>(44.5) | 0.39<br>(9.9) | 1.09<br>(27.7) | 0.59<br>(15.1) | 3.04<br>(77.2) |                |                |                |                |                |                |                |
| NU□□-FNS4-7           | 1/4 Female NPT           | 1/4 Female NPT  |                 |                | 1.03<br>(26.2)      | 1.03<br>(26.2) |                |                |                |               |                |                |                |                |                |                |                |                |                |                |
| NU□□-NS4-FNS4-7       | 1/4 Male NPT             | 1/4 Female NPT  |                 |                | 1.00<br>(25.4)      | 1.03<br>(26.2) |                |                |                |               |                |                |                |                |                |                |                |                |                |                |
| NU□□-NS4-7            | 1/4 Male NPT             | 1/4 Male NPT    |                 |                | 1.00<br>(25.4)      | 1.00<br>(25.4) | 1.00<br>(25.4) |                |                |               |                |                |                | 1.14<br>(28.8) |                |                |                |                |                |                |
| NU□□-NS6-7            | 3/8 Male NPT             | 3/8 Male NPT    |                 |                | 1.03<br>(26.2)      | 1.03<br>(26.2) | 0.89<br>(22.6) |                |                |               |                |                |                |                |                |                |                |                |                |                |
| NU□□-FRP4-7           | 1/4 Female BSPP          | 1/4 Female BSPP |                 |                | 1.00<br>(25.4)      | 1.22<br>(30.9) | 1.14<br>(28.8) |                |                |               |                |                |                | 1.22<br>(30.9) |                |                |                |                |                |                |
| NU□□-NS4-FL4-7        | 1/4 Male NPT             | 1/4" FITOK      |                 |                | 1.03<br>(26.2)      | 1.22<br>(30.9) |                |                |                |               |                |                |                |                |                |                |                |                |                |                |
| NU□□-FNS4-FL4-7       | 1/4 Female NPT           | 1/4" FITOK      |                 |                | 1.22<br>(30.9)      | 1.22<br>(30.9) | 0.88<br>(22.4) |                |                |               |                |                |                | 1.19<br>(30.2) |                |                |                |                |                |                |
| NU□□-FL4-7            | 1/4" FITOK               | 1/4" FITOK      |                 |                | 0.91<br>(23.1)      | 0.91<br>(23.1) |                |                |                |               |                |                |                |                |                |                |                |                |                |                |
| NU□□-ML6-7            | 6 mm FITOK               | 6 mm FITOK      |                 |                | 1.03<br>(26.2)      | 1.03<br>(26.2) | 0.25<br>(6.4)  |                |                |               |                |                |                | 0.8            | 1.00<br>(25.4) | 2.50<br>(63.5) | 0.50<br>(12.7) | 1.34<br>(34.0) | 0.78<br>(19.8) | 3.77<br>(95.7) |
| NU□□-ML8-7            | 8 mm FITOK               | 8 mm FITOK      |                 |                | 1.13<br>(28.6)      | 1.13<br>(28.6) |                |                |                |               |                |                |                |                |                |                |                |                |                |                |
| NU□□-TS4-7-G          | 1/4" TS                  | 1/4" TS         |                 |                | 1.06<br>(26.9)      |                |                |                |                |               |                |                |                |                |                |                |                |                |                |                |
| NU□□-FO4-7            | 1/4" Male FO             | 1/4" Male FO    | 1.41<br>(35.9)  | 1.41<br>(35.9) | 1.28<br>(32.5)      | 1.47<br>(37.3) |                |                |                |               |                |                |                |                |                |                |                |                |                |                |
| NU□□-FR4-7            | 1/4" Male FR             | 1/4" Male FR    | 1.52<br>(38.6)  | 1.52<br>(38.6) | 1.40<br>(35.6)      | 1.58<br>(40.1) |                |                |                |               |                |                |                |                |                |                |                |                |                |                |
| NU□□-FNS4-8           | 1/4 Female NPT           | 1/4 Female NPT  | 1.42<br>(36.1)  | 1.42<br>(36.1) | 1.30<br>(33.0)      | 1.48<br>(37.6) |                |                |                |               |                |                |                |                |                |                |                |                |                |                |
| NU□□-FNS6-8           | 3/8 Female NPT           | 3/8 Female NPT  |                 |                |                     |                |                |                |                |               |                |                |                |                |                |                |                |                |                |                |
| NU□□-NS6-8            | 3/8 Male NPT             | 3/8 Male NPT    |                 |                |                     |                |                |                |                |               |                |                |                |                |                |                |                |                |                |                |
| NU□□-FL6-8            | 3/8" FITOK               | 3/8" FITOK      |                 |                |                     |                |                |                |                |               |                |                |                |                |                |                |                |                |                |                |
| NU□□-FL8-8            | 1/2" FITOK               | 1/2" FITOK      |                 |                |                     |                |                |                |                |               |                |                |                |                |                |                |                |                |                |                |
| NU□□-ML10-8           | 10 mm FITOK              | 10 mm FITOK     |                 |                |                     |                |                |                |                |               |                |                |                |                |                |                |                |                |                |                |

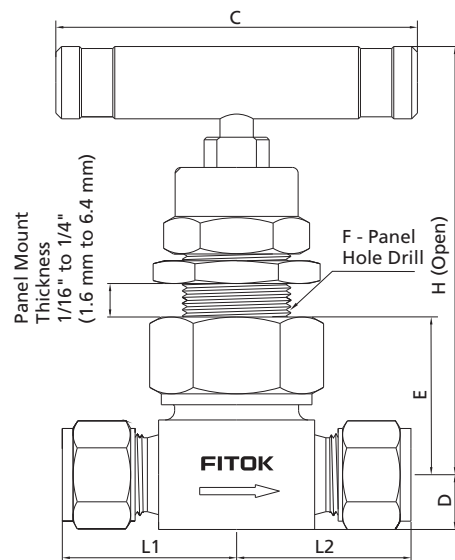
Needle Valves  
Metering Valves

## B-96 Needle Valves

### Dimensions of NU Series

| Basic Ordering Number | Connection Type and Size |                       | Orifice in.(mm) | Cv             | Dimensions, in.(mm) |                |                |                |                |                |                |                |                |                |                |
|-----------------------|--------------------------|-----------------------|-----------------|----------------|---------------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
|                       | Inlet                    | Outlet                |                 |                | L1                  | L2             | L3             | L4             | C              | D              | E              | F              | H              |                |                |
| NU □□-ML12-8          | 12 mm FITOK              | 12 mm FITOK           | 0.25<br>(6.4)   | 0.86           | 1.52<br>(38.6)      | 1.52<br>(38.6) | 1.40<br>(35.6) | 1.58<br>(40.1) | 2.50<br>(63.5) | 0.50<br>(12.7) | 1.34<br>(34.0) | 0.78<br>(19.8) | 3.70<br>(94.0) |                |                |
| NU □□-ML14-8          | 14 mm FITOK              | 14 mm FITOK           |                 |                |                     |                |                |                |                |                |                |                |                |                |                |
| NU □□-ML16-8          | 16 mm FITOK              | 16 mm FITOK           |                 |                |                     |                |                |                |                |                |                |                |                |                |                |
| NU □□-TS6-8-G         | 3/8" TS                  | 3/8" TS               |                 |                |                     |                |                |                |                |                |                |                |                |                |                |
| NU □□-TS8-8-G         | 1/2" TS                  | 1/2" TS               |                 |                |                     |                |                |                |                |                |                |                |                |                |                |
| NU □□-PS4-8-G         | 1/4 PS                   | 1/4 PS                |                 |                |                     |                |                |                |                |                |                |                |                |                |                |
| NU □□-MTS12-8-G       | 12 mm MTS                | 12 mm MTS             |                 |                |                     |                |                |                |                |                |                |                |                |                |                |
| NU □□-MTS14-8-G       | 14 mm MTS                | 14 mm MTS             |                 |                |                     |                |                |                |                |                |                |                |                |                |                |
| NU □□-MTS16-8-G       | 16 mm MTS                | 16 mm MTS             |                 |                |                     |                |                |                |                |                |                |                |                |                |                |
| NU □□-MTB14-8-G       | 14 mm MTB                | 14 mm MTB             |                 |                |                     |                |                |                |                |                |                |                |                |                |                |
| NU □□-MTB16-8-G       | 16 mm MTB                | 16 mm MTB             |                 |                |                     |                |                |                |                |                |                |                |                |                |                |
| NU □□-UMB14-8         | 14 mm UMB                | 14 mm UMB             |                 |                |                     |                |                |                |                |                |                |                |                |                |                |
| NU □□-FO8-8           | 1/2" Male FO             | 1/2" Male FO          |                 |                |                     |                |                |                |                |                |                |                |                |                |                |
| NU □□-FR8-8           | 1/2" Male FR             | 1/2" Male FR          |                 |                |                     |                |                |                |                |                |                |                |                |                |                |
| NU □□-MS20-8          | M20 x 1.5 Male Metric    | M20 x 1.5 Male Metric | 0.39<br>(10.0)  | 1.8            | 2.92<br>(74.1)      | 2.92<br>(74.1) | 2.55<br>(64.7) | 2.92<br>(74.1) | 3.50<br>(88.9) | 0.63<br>(16.0) | 1.82<br>(46.2) | 1.03<br>(26.2) | 4.76<br>(121)  |                |                |
| NU □□-NS8-9           | 1/2 Male NPT             | 1/2 Male NPT          |                 |                | 1.13<br>(28.6)      | 1.13<br>(28.6) | —              | —              |                |                |                |                |                | 0.63<br>(16.0) | 1.82<br>(46.2) |
| NU □□-FNS8-9          | 1/2 Female NPT           | 1/2 Female NPT        |                 |                | 1.56<br>(39.6)      | 1.56<br>(39.6) | —              | —              |                |                |                |                |                | 0.87<br>(22.2) | 2.07<br>(52.6) |
| NU □□-FR8-8           | 1/2" Male FR             | 1/2" Male FR          |                 |                | 1.50<br>(38.1)      | 1.50<br>(38.1) | 1.13<br>(28.6) | 1.50<br>(38.1) |                |                |                |                |                | —              | —              |
| NU □□-MS22-8          | M22 x 1.5 Male Metric    | M22 x 1.5 Male Metric |                 |                | 1.63<br>(41.3)      | 1.63<br>(41.3) | —              | —              |                |                |                |                |                | —              | —              |
| NU □□-NS12-9          | 3/4 Male NPT             | 3/4 Male NPT          |                 |                | 1.97<br>(50.0)      | 1.97<br>(50.0) | 1.68<br>(42.7) | 2.08<br>(52.8) |                |                |                |                |                | —              | —              |
| NU □□-FL8-9           | 1/2" FITOK               | 1/2" FITOK            |                 |                | —                   | —              | —              | —              |                |                |                |                |                | —              | —              |
| NU □□-FL12-9          | 3/4" FITOK               | 3/4" FITOK            |                 |                | —                   | —              | —              | —              |                |                |                |                |                | —              | —              |
| NU □□-ML14-9          | 14 mm FITOK              | 14 mm FITOK           |                 |                | —                   | —              | —              | —              |                |                |                |                |                | —              | —              |
| NU □□-ML16-9          | 16 mm FITOK              | 16 mm FITOK           |                 |                | —                   | —              | —              | —              |                |                |                |                |                | —              | —              |
| NU □□-ML18-9          | 18 mm FITOK              | 18 mm FITOK           |                 |                | —                   | —              | —              | —              |                |                |                |                |                | —              | —              |
| NU □□-ML20-9          | 20 mm FITOK              | 20 mm FITOK           |                 |                | —                   | —              | —              | —              |                |                |                |                |                | —              | —              |
| NU □□-MTS14-9-G       | 14 mm MTS                | 14 mm MTS             |                 |                | 1.56<br>(39.7)      | 1.56<br>(39.7) | 1.31<br>(33.3) | 1.69<br>(42.9) |                |                |                |                |                | —              | —              |
| NU □□-MTS16-9-G       | 16 mm MTS                | 16 mm MTS             |                 |                | —                   | —              | —              | —              |                |                |                |                |                | —              | —              |
| NU □□-TS8-9-G         | 1/2" TS                  | 1/2" TS               | —               | —              | —                   | —              | —              | —              |                |                |                |                |                |                |                |
| NU □□-TS12-9-G        | 3/4" TS                  | 3/4" TS               | 2.98<br>(75.7)  | 2.98<br>(75.7) | —                   | —              | —              | —              |                |                |                |                |                |                |                |
| NU □□-MTB16-9-G       | 16 mm MTB                | 16 mm MTB             | 1.56<br>(39.7)  | 1.56<br>(39.7) | —                   | —              | —              | —              |                |                |                |                |                |                |                |
| NU □□-UMB14-9         | 14 mm UMB                | 14 mm UMB             | —               | —              | —                   | —              | —              | —              |                |                |                |                |                |                |                |
| NU □□-FR8-9           | 1/2" Male FR             | 1/2" Male FR          | —               | —              | —                   | —              | —              | —              |                |                |                |                |                |                |                |
| NU □□-MS27-9          | M27 x 2 Male Metric      | M27 x 2 Male Metric   | —               | —              | —                   | —              | —              | —              |                |                |                |                |                |                |                |

1. Connection type of "FITOK" means FITOK double ferrule tube fittings. When the connection type of valves is FITOK double ferrule tube fitting, the working pressures of the valves are related to the wall thickness of tubing applied. For specific working pressure of the valves, please refer to the allowable working pressures in FITOK Catalog Tubing.
2. Connection type of "TS" means fractional tube socket weld. "MTS" means metric tube socket weld. "MTB" means metric tube butt weld. "UMB" means rotatable metric tube butt weld. "PS" means pipe socket weld.
4. Sizes and types listed are standard. Other sizes and types are available upon request. For details, please contact FITOK Group or our authorized distributors.
5. Dimensions are shown with FITOK tube fitting nuts finger-tight. All dimensions are for reference only and are subject to change. For dimensions not shown above, please contact FITOK Group or our authorized distributors.

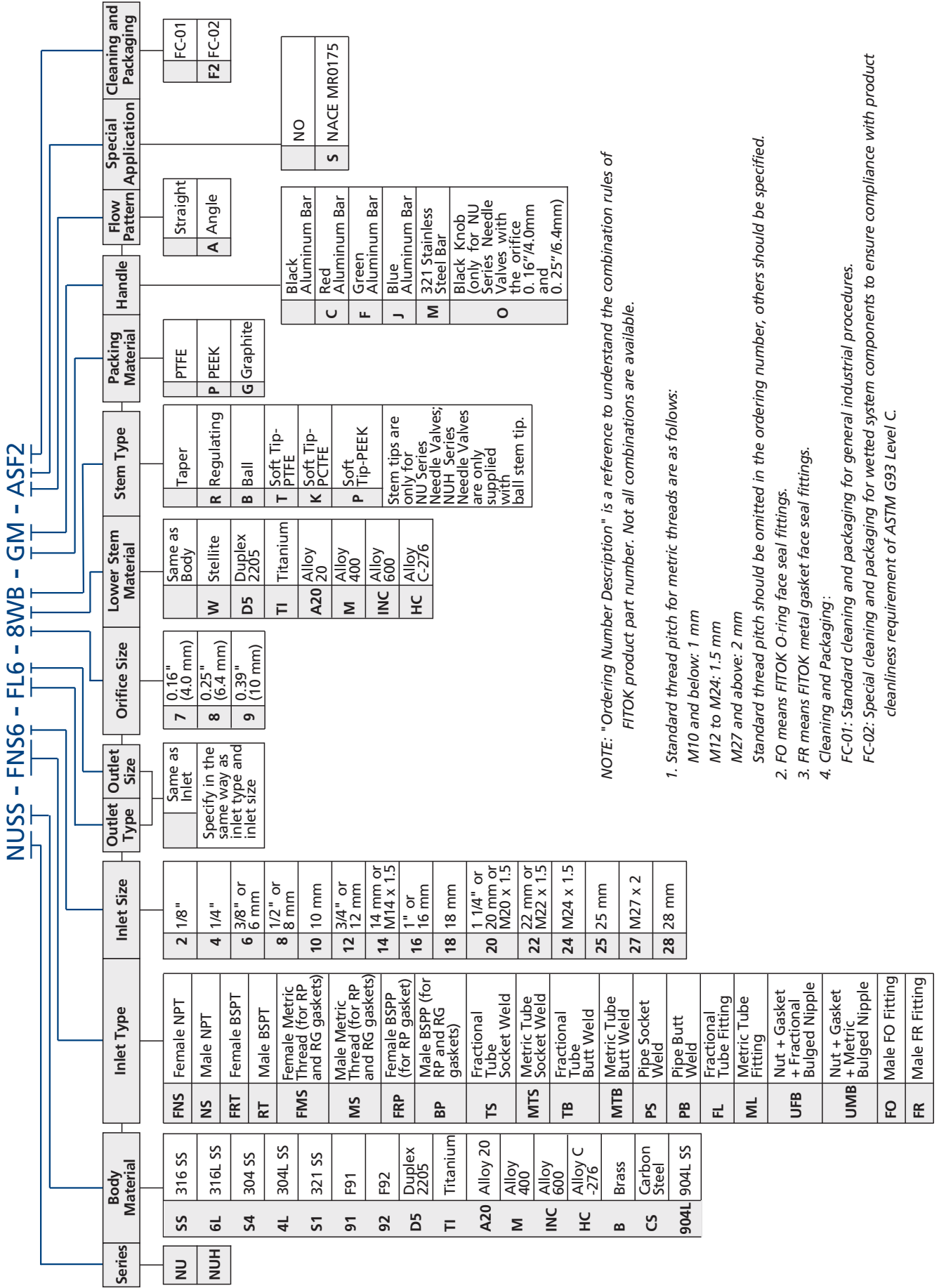


### Dimensions of NUH Series

| Basic Ordering Number | Connection Type and Size |                | Orifice in.(mm) | Cv   | Dimensions, in.(mm) |                |                |                |                |                |                |
|-----------------------|--------------------------|----------------|-----------------|------|---------------------|----------------|----------------|----------------|----------------|----------------|----------------|
|                       | Inlet                    | Outlet         |                 |      | L1                  | L2             | C              | D              | E              | F              | H              |
| NUH□□-FNS2-7          | 1/8 Female NPT           | 1/8 Female NPT | 0.16<br>(4.0)   | 0.35 | 1.13<br>(28.6)      | 1.13<br>(28.6) | 2.50<br>(63.5) | 0.50<br>(12.7) | 1.34<br>(34.1) | 0.78<br>(19.8) | 3.42<br>(86.9) |
| NUH□□-FNS4-7          | 1/4 Female NPT           | 1/4 Female NPT |                 |      |                     |                |                |                |                |                |                |
| NUH□□-NS4-FNS4-7      | 1/4 Male NPT             | 1/4 Female NPT |                 |      |                     |                |                |                |                |                |                |
| NUH□□-NS4-7           | 1/4 Male NPT             | 1/4 Male NPT   |                 |      |                     |                |                |                |                |                |                |
| NUH□□-TS4-7-G         | 1/4" TS                  | 1/4" TS        |                 |      |                     |                |                |                |                |                |                |
| NUH□□-FNS4-8          | 1/4 Female NPT           | 1/4 Female NPT | 0.25<br>(6.4)   | 0.86 | 1.56<br>(39.6)      | 1.56<br>(39.6) | 3.50<br>(88.9) | 0.63<br>(16.0) | 1.77<br>(45.0) | 1.03<br>(26.2) | 4.09<br>(104)  |
| NUH□□-NS8-8           | 1/2 Male NPT             | 1/2 Male NPT   |                 |      |                     |                |                |                |                |                |                |
| NUH□□-TS8-8-G         | 1/2" TS                  | 1/2" TS        |                 |      |                     |                |                |                |                |                |                |
| NUH□□-MTS12-8-G       | 12 mm MTS                | 12 mm MTS      |                 |      |                     |                |                |                |                |                |                |

1. Connection type of "TS" means tube socket weld. "MTS" means metric tube socket weld.
2. Sizes and types listed are standard. Other sizes and types are available upon request. For details, please contact FITOK Group or our authorized distributors.
3. All dimensions are for reference only and are subject to change. For dimensions not shown above, please contact FITOK Group or our authorized distributors.

# Ordering Number Description



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

- Standard thread pitch for metric threads are as follows:  
 M10 and below: 1 mm  
 M12 to M24: 1.5 mm  
 M27 and above: 2 mm  
 Standard thread pitch should be omitted in the ordering number, others should be specified.
- FO means FITOK O-ring face seal fittings.
- FR means FITOK metal gasket face seal fittings.
- Cleaning and Packaging:  
 FC-01: Standard cleaning and packaging for general industrial procedures.  
 FC-02: Special cleaning and packaging for wetted system components to ensure compliance with product cleanliness requirement of ASTM G93 Level C.

# Outside Screw and Yoke (OS&Y) Needle Valves

**NY Series: Working pressure up to 6000 psig**

**NYH Series: Working pressure up to 10000 psig**

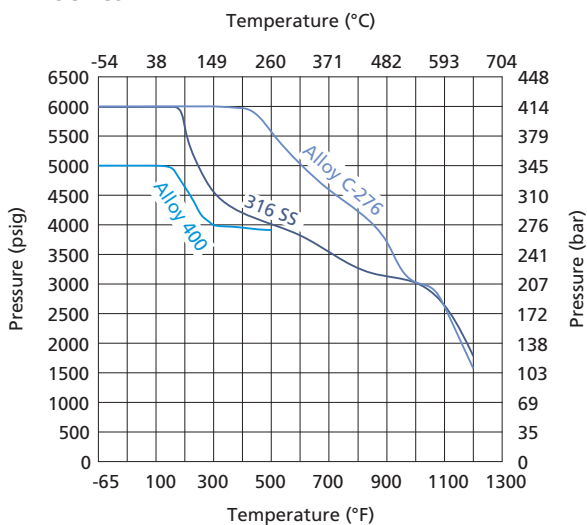
## Features

- ⦿ Cold drawn bar as body
- ⦿ Standard seat diameter 0.16" (4mm). Cv: 0.35 standard
- ⦿ Hardened stem threads prevent galling
- ⦿ Stem threads completely isolated from system media
- ⦿ Linear instead of rotary motion of the rising, non-rotating stem minimizes packing abrasion and reduces the friction between the seat and the tip
- ⦿ Externally adjustable gland, independent of spindle thread
- ⦿ Steady and durable fastening of the handle by double lock-pins
- ⦿ Bottom mounting available
- ⦿ Every valve leak tested with nitrogen/air (NY Series) at maximum allowable working pressure or with water (NYH Series) at 1.1 times maximum allowable working pressure
- ⦿ Working pressure up to:
  - NY Series—Stainless steel: 6000 psig (414 bar)
  - Alloy C-276: 6000 psig (414 bar)
  - Alloy 400: 5000 psig (345 bar)
  - NYH Series—Stainless steel: 10000 psig (690 bar)
- ⦿ Working temperature:
  - PTFE: -65°F to 450°F (-54°C to 232°C)
  - PEEK: -65°F to 500°F (-54°C to 260°C)
  - Graphite: -65°F to 1200°F (-54°C to 649°C)

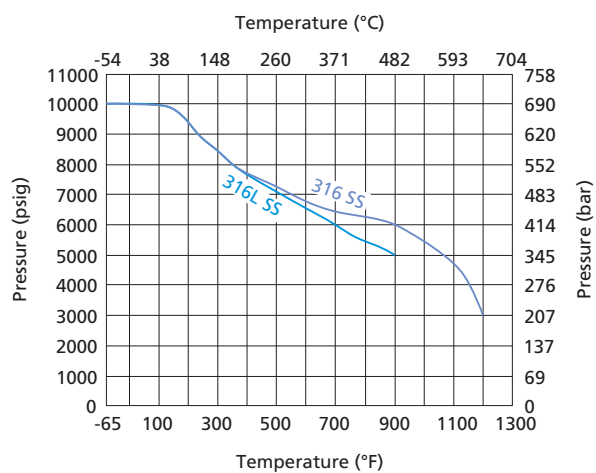


## Pressure vs. Temperature

NY Series



NYH Series

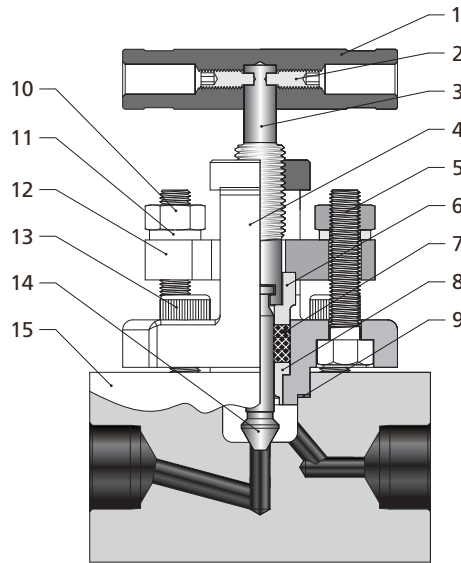


1. Graphs are based on graphite packing.

2. Contact FITOK Group or our authorized distributors for curve graph of other materials.



## Standard Materials of Construction

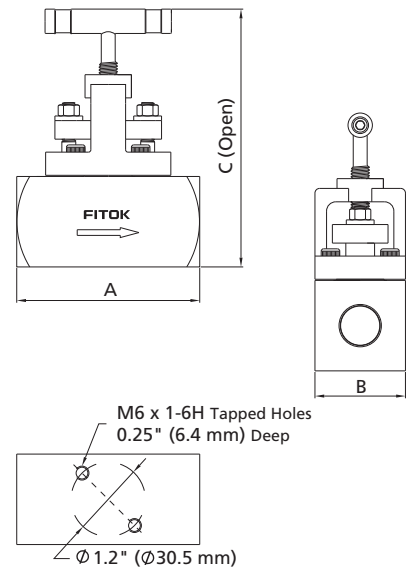


| Item | Component      | Valve Body Material                  |
|------|----------------|--------------------------------------|
|      |                | 316 SS                               |
|      |                | Material Grade/ASTM Specification    |
| 1    | Handle         | Anodized aluminum or stainless steel |
| 2    | Set Screw      | Stainless steel                      |
| 3    | Upper Stem     | 316 SS/A276                          |
| 4    | Yoke           | 316 SS/A182                          |
| 5    | Bolts          | Stainless steel                      |
| 6    | Packing Washer | 316 SS/A276                          |
| 7    | Packing        | PTFE or PEEK or graphite             |
| 8    | Packing Washer | 316 SS/A276                          |
| 9    | Joint Seal     | 316 SS/A276                          |
| 10   | Nuts           | Stainless steel                      |
| 11   | Gaskets        | Stainless steel                      |
| 12   | Gland bridge   | 316 SS/A182                          |
| 13   | Bolts          | Stainless steel                      |
| 14   | Lower Stem     | Hardened 316 SS/A276                 |
| 15   | Body           | 316 SS/A479                          |
|      | Lubricant      | Molybdenum disulfide-based           |

Note: Contact FITOK Group or our authorized distributors for other materials.

## Dimensions of NY Series

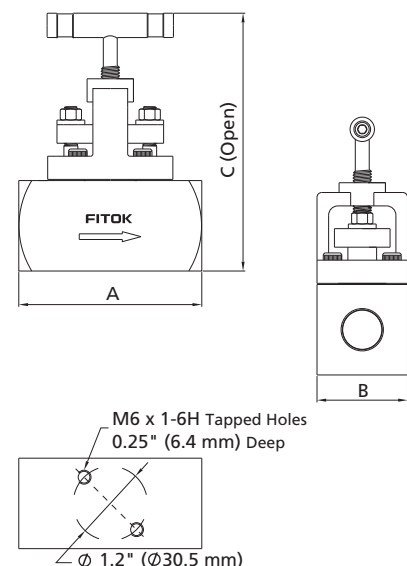
| Basic Ordering Number | Connection Type and Size |                | Orifice in.(mm) | Cv   | Dimensions, in.(mm) |                |                 |
|-----------------------|--------------------------|----------------|-----------------|------|---------------------|----------------|-----------------|
|                       | Inlet                    | Outlet         |                 |      | A                   | B              | C               |
| NY□□-FNS4             | 1/4 Female NPT           | 1/4 Female NPT | 0.16<br>(4.0)   | 0.35 | 2.69<br>(68.2)      | 1.50<br>(38.1) | 4.04<br>(102.7) |
| NY□□-NS4              | 1/4 Male NPT             | 1/4 Male NPT   |                 |      | 2.95<br>(75.0)      |                |                 |
| NY□□-NS4-FNS4         | 1/4 Male NPT             | 1/4 Female NPT |                 |      | 2.72<br>(69.2)      |                |                 |
| NY□□-FNS6             | 3/8 Female NPT           | 3/8 Female NPT |                 |      | 2.93<br>(75.0)      |                |                 |
| NY□□-NS6              | 3/8 Male NPT             | 3/8 Male NPT   |                 |      | 3.00<br>(76.2)      |                |                 |
| NY□□-FNS8             | 1/2 Female NPT           | 1/2 Female NPT |                 |      | 3.27<br>(82.0)      |                |                 |
| NY□□-NS8              | 1/2 Male NPT             | 1/2 Male NPT   |                 |      | 3.00<br>(76.2)      |                |                 |
| NY□□-NS8-FNS8         | 1/2 Male NPT             | 1/2 Female NPT |                 |      | 3.54<br>(89.8)      |                |                 |
| NY□□-PS8-G            | 1/2 PS                   | 1/2 PS         |                 |      | 3.44<br>(87.4)      |                |                 |
| NY□□-PB8-G            | 1/2 PB                   | 1/2 PB         |                 |      | 3.50<br>(88.9)      |                |                 |
| NY□□-FL4              | 1/4" FITOK               | 1/4" FITOK     |                 |      | 3.78<br>(96.0)      |                |                 |
| NY□□-FL6              | 3/8" FITOK               | 3/8" FITOK     |                 |      | 3.44<br>(87.4)      |                |                 |
| NY□□-FL8              | 1/2" FITOK               | 1/2" FITOK     |                 |      | 3.78<br>(96.0)      |                |                 |
| NY□□-ML6              | 6 mm FITOK               | 6 mm FITOK     |                 |      | 3.78<br>(96.0)      |                |                 |
| NY□□-ML8              | 8 mm FITOK               | 8 mm FITOK     |                 |      |                     |                |                 |
| NY□□-ML12             | 12 mm FITOK              | 12 mm FITOK    |                 |      |                     |                |                 |



1. Connection type of "FITOK" means FITOK double ferrule tube fittings. When the connection type of valves is FITOK double ferrule tube fitting, the working pressures of the valves are related to the wall thickness of tubing applied. For specific working pressure of the valves, please refer to the allowable working pressures in FITOK Catalog Tubing.
2. Connection type of "PS" means pipe socket weld. "PB" means pipe butt weld.
3. Sizes and types listed are standard. Other sizes and types are available upon request. For details, please contact FITOK Group or our authorized distributors.
4. Dimensions are shown with FITOK tube fitting nuts finger-tight. All dimensions not shown above, please contact FITOK Group or our authorized distributors.

## Dimensions of NYH Series

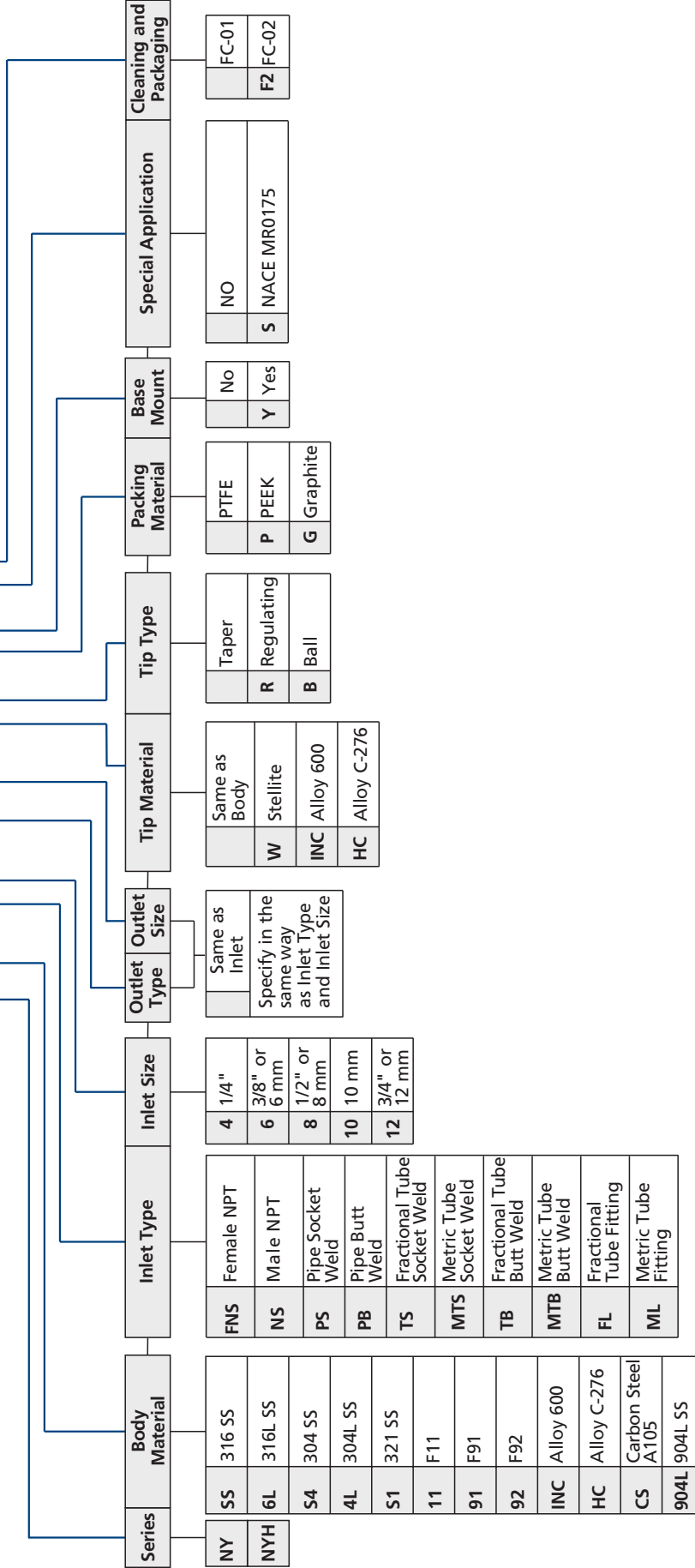
| Basic Ordering Number | Connection Type and Size |                | Orifice in.(mm) | Cv   | Dimensions, in.(mm) |                |                 |
|-----------------------|--------------------------|----------------|-----------------|------|---------------------|----------------|-----------------|
|                       | Inlet                    | Outlet         |                 |      | A                   | B              | C               |
| NYH□□-FNS4            | 1/4 Female NPT           | 1/4 Female NPT | 0.16<br>(4.0)   | 0.35 | 2.69<br>(68.2)      | 1.50<br>(38.1) | 4.04<br>(102.7) |
| NYH□□-NS4             | 1/4 Male NPT             | 1/4 Male NPT   |                 |      | 2.95<br>(75.0)      |                |                 |
| NYH□□-FNS4-NS4        | 1/4 Female NPT           | 1/4 Male NPT   |                 |      | 2.72<br>(69.2)      |                |                 |
| NYH□□-TS4-G           | 1/4" TS                  | 1/4" TS        |                 |      | 2.69<br>(68.2)      |                |                 |
| NYH□□-FNS6            | 3/8 Female NPT           | 3/8 Female NPT |                 |      | 3.00<br>(76.2)      |                |                 |
| NYH□□-NS6             | 3/8 Male NPT             | 3/8 Male NPT   |                 |      |                     |                |                 |
| NYH□□-FNS8            | 1/2 Female NPT           | 1/2 Female NPT |                 |      |                     |                |                 |
| NYH□□-NS8             | 1/2 Male NPT             | 1/2 Male NPT   |                 |      |                     |                |                 |



1. Connection types of "TS" means tube socket weld.
2. Sizes and types listed are standard. Other sizes and types are available upon request. For details, please contact FITOK Group or our authorized distributors.
3. All dimensions are for reference only and are subject to change. For dimensions not shown above, please contact FITOK Group or our authorized distributors.

# Ordering Number Description

NYSS - FL8 - ML12 - WB - GY - SF2



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

Cleaning and Packaging:

FC-01: Standard cleaning and packaging for general industrial procedures.

FC-02: Special cleaning and packaging for wetted system components to ensure compliance with product cleanliness requirement of ASTM G93 Level C.

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