

HUB-LOK

# Needle Valves



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## Screwed Bonnet Needle Valves

NB Series



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## Nonrotating-stem Needle Valves

ND Series and NDH Series



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NF Series and NFH Series



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NG Series and NGH Series



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NR Series and NRG Series



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NU Series and NUH Series



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NY Series



B-112

## Notes:

⊙ Packing adjustment may be required during the service life of the valve ⊙ For better quality maintenance, instrumentation needle valves should be kept in half open position in warehouse

# Screwed Bonnet Needle Valves

NB Series: Working pressure up to 6000 psig

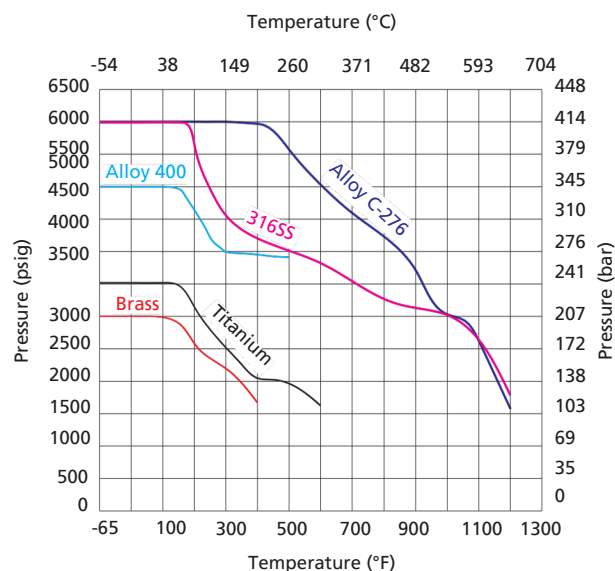


## Features

- ⦿ Cold drawn bar as body
- ⦿ Two-piece 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 or compressed air at the maximum allowable working pressure
- ⦿ Working pressure up to:
  - 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)
- ⦿ 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

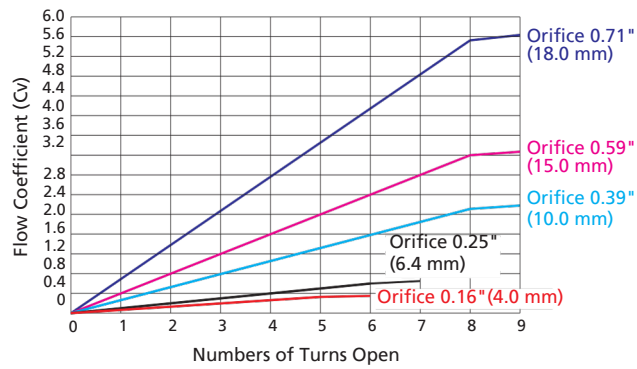
NB Series



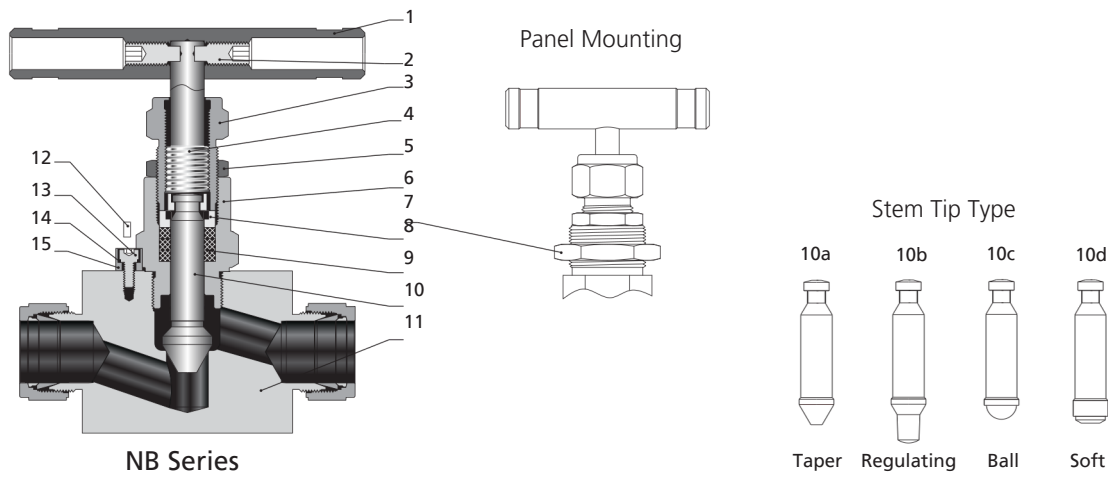
1. Graphs are based on graphite packing.
2. Temperature rating is limited to 200°F (93°C) max. with PCTFE stem tip (soft tip).
3. Contact us for curve graph for other materials.

## Flow Data at 100°F (38°C)

RegulatingStemTip



## Standard Materials of Construction



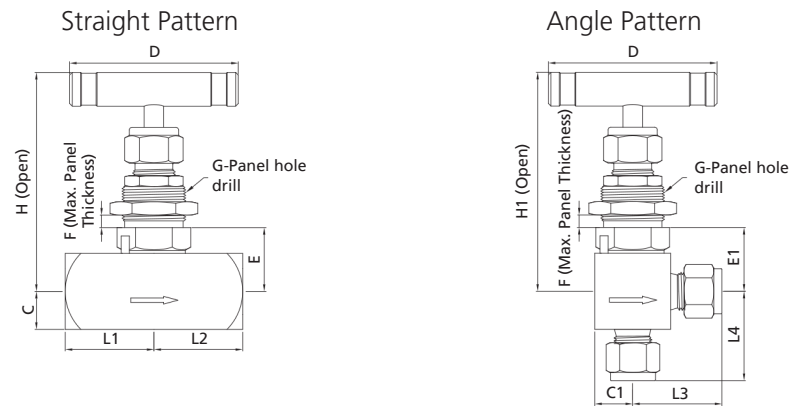
| Item | Component    | Valve Body Material                                |                |                    |                  |                  |
|------|--------------|----------------------------------------------------|----------------|--------------------|------------------|------------------|
|      |              | 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    | Zinc-plated carbon steel                           |                |                    |                  |                  |
| 3    | Packing Bolt | 304 SS/A479                                        |                |                    |                  | Brass C36000/B16 |
| 4    | Upper Stem   | 316 SS/A479                                        |                |                    |                  |                  |
| 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-78 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                   |                |                                     |                  |                         |
| 8                 | Gland         | 316 SS/A479                       |                |                                     |                  |                         |
| 9                 | Packing       | PTFE or PEEK or graphite          |                |                                     |                  |                         |
| 10a<br>10b<br>10c | Lower Stem    | Hardened<br>316 SS/A479           | Alloy 400/B164 | Titanium Gr 4/B348                  | Alloy C-276/B574 | Hardened<br>316 SS/A479 |
| 10d               | Stem Tip      | 316 SS/A479                       | Alloy 400/B164 | Titanium Gr 4/B348<br>PTFE or PCTFE | Alloy C-276/B574 | 316 SS/A479             |
| 11                | Body<br>Seat  | 316 SS/A479                       | Alloy 400/B164 | Titanium Gr 4/B348                  | Alloy C-276/B574 | Brass C36000/B16        |
| 12                | Lock Pin      | Same as body                      |                |                                     |                  |                         |
| 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 us 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 | Connection Pressure at 100°F (38°C) psig (bar) | Orifice in.(mm) | Cv   | Dimensions, in.(mm) |             |             |             |             |             |             |             |             |             |             |             |             |             |
|-----------------------|--------------------------|------------------------------------------------|-----------------|------|---------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
|                       | Inlet/Outlet             |                                                |                 |      | 316 SS              | L1          | L2          | L3          | L4          | C           | C1          | D           | E           | E1          | F           | G           | H           | H1          |
| NB□ -FNS2-7           | 1/8 Female NPT           | 6000 (414)                                     | 0.16 (4.0)      | 0.35 | 1.00 (25.4)         | 1.00 (25.4) | 1.00 (25.4) | 0.56 (14.3) | 0.50 (12.7) | 0.50 (12.7) | 2.17 (55)   | 0.84 (21.4) | 0.82 (20.9) | 0.25 (6.4)  | 0.77 (19.6) | 2.86 (72.7) | 2.86 (72.7) |             |
| NB□ -FNS4-7           | 1/4 Female NPT           |                                                |                 |      | 1.06 (26.9)         | 1.06 (26.9) |             |             |             |             |             |             |             |             |             |             |             |             |
| NB□ -NS4-7            | 1/4 Male NPT             |                                                |                 |      | 1.03 (26.2)         | 1.03 (26.2) | 1.06 (26.9) | 1.06 (26.9) |             |             |             |             |             |             |             |             |             |             |
| NB□ -NS6-7            | 3/8 Male NPT             |                                                |                 |      | 1.19 (30.2)         | 1.19 (30.2) |             |             |             |             |             |             |             |             |             |             |             |             |
| NB□ -FL4-7            | 1/4"                     |                                                |                 |      | 1.20 (30.5)         | 1.20 (30.5) | 1.20 (30.5) | 1.20 (30.5) |             |             |             |             |             |             |             |             |             |             |
| NB□ -ML6-7            | 6 mm                     |                                                |                 |      |                     |             |             |             |             |             |             |             |             |             |             |             |             |             |
| NB□ -ML8-7            | 8 mm                     |                                                |                 |      |                     |             |             |             |             |             |             |             |             |             |             |             |             |             |
| NB□ -FNS4-8           | 1/4 Female NPT           |                                                | 0.25 (6.4)      | 0.85 |                     | 1.12 (28.6) | 1.12 (28.6) | 1.12 (28.6) | 0.63 (15.9) | 0.56 (14.3) | 0.56 (14.3) | 2.50 (63.5) | 0.89 (22.5) | 0.89 (22.5) | 0.38 (9.7)  | 0.96 (24.4) | 3.50 (88.9) | 3.50 (88.9) |
| NB□ -FNS6-8           | 3/8 Female NPT           |                                                |                 |      |                     |             |             |             |             |             |             |             |             |             |             |             |             |             |
| NB□ -NS6-8            | 3/8 Male NPT             |                                                |                 |      |                     |             |             | 1.12 (28.6) |             |             |             |             |             |             |             |             |             |             |
| NB□ -FL6-8            | 3/8"                     |                                                |                 |      |                     | 1.41 (35.8) | 1.41 (35.8) | 1.32 (33.6) | 1.32 (33.6) |             |             |             |             |             |             |             |             |             |
| NB□ -FL8-8            | 1/2"                     |                                                |                 |      |                     | 1.52 (38.6) | 1.52 (38.6) | 1.42 (36.1) | 1.42 (36.1) |             |             |             |             |             |             |             |             |             |
|                       |                          |                                                |                 |      |                     |             |             |             |             |             |             |             |             |             |             |             |             |             |

## Dimensions of NB Series

| Basic Ordering Number | Connection Type and Size           | Connection Pressure at 100°F (38°C) psig (bar) | Orifice in. (mm) | Cv   | Dimensions, in. (mm) |             |             |             |             |             |             |             |              |            |             |              |              |
|-----------------------|------------------------------------|------------------------------------------------|------------------|------|----------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|--------------|------------|-------------|--------------|--------------|
|                       | Inlet/Outlet                       | 316 SS                                         |                  |      | L1                   | L2          | L3          | L4          | C           | C1          | D           | E           | E1           | F          | G           | H            | H1           |
| NB□ -ML10-8           | 10 mm                              | 6000 (414)                                     | 0.25 (6.4)       | 0.85 | 1.42 (36.1)          | 1.42 (36.1) | 1.33 (33.8) | 1.33 (33.8) |             |             |             |             |              |            |             |              |              |
| NB□ -ML12-8           | 12 mm                              |                                                |                  |      | 1.52 (38.6)          | 1.52 (38.6) | 1.42 (36.1) | 1.42 (36.1) |             |             |             |             |              |            |             |              |              |
| NB□ -ML14-8           | 14 mm                              |                                                |                  |      | 1.56 (39.7)          | 1.56 (39.7) |             |             |             |             |             |             |              |            |             |              |              |
| NB□ -TS6-8-G          | 3/8" Tube Socket Weld              |                                                |                  |      |                      |             |             |             |             |             |             |             |              |            |             |              |              |
| NB□ -TS8-8-G          | 1/2" Tube Socket Weld              |                                                |                  |      |                      |             |             |             |             |             |             |             |              |            |             |              |              |
| NB□ -MTS12-8-G        | 12 mm Tube Socket Weld             |                                                |                  |      | 1.13 (28.6)          | 1.13 (28.6) | 1.13 (28.6) | 1.13 (28.6) |             |             |             |             |              |            |             |              |              |
| NB□ -MTS14-8-G        | 14 mm Tube Socket Weld             |                                                |                  |      |                      |             |             |             | 0.56 (14.3) | 0.56 (14.3) | 2.50 (63.5) | 0.89 (22.5) | 0.89 (22.5)  | 0.38 (9.7) | 0.96 (24.4) | 3.50 (88.9)  | 3.50 (88.9)  |
| NB□ -MTS16-8-G        | 16 mm Tube Socket Weld             |                                                |                  |      |                      |             |             |             |             |             |             |             |              |            |             |              |              |
| NB□ -MTB14-8-G        | 14x2.5 mm Tube Butt Weld           |                                                |                  |      | 1.50 (38.1)          | 1.50 (38.1) | 1.50 (38.1) | 1.50 (38.1) |             |             |             |             |              |            |             |              |              |
| NB□ -MTB16-8-G        | 16x2.8 mm Tube Butt Weld           |                                                |                  |      |                      |             |             |             |             |             |             |             |              |            |             |              |              |
| NB□ -UMB14-8          | 14x2.5 mm Rotatable Tube Butt Weld |                                                |                  |      | 2.92 (74.1)          | 2.92 (74.1) |             |             |             |             |             |             |              |            |             |              |              |
| NB□ -UMB16-8          | 16x2.8 mm Rotatable Tube Butt Weld |                                                |                  |      |                      |             |             |             |             |             |             |             |              |            |             |              |              |
| NB□ -MS20-8           | M20 x 1.5 Male Metric              |                                                |                  |      | 1.50 (38.1)          | 1.50 (38.1) |             |             |             |             |             |             |              |            |             |              |              |
| NB□ -MS22-8           | M22 x 1.5 Male Metric              |                                                |                  |      |                      |             |             |             |             |             |             |             |              |            |             |              |              |
| NB□ -FNS8-9           | 1/2 Female NPT                     | 5800 (400)                                     | 0.39 (10.0)      | 2.18 | 1.75 (44.5)          | 1.75 (44.5) | 1.63 (41.3) | 1.50 (38.1) |             |             |             |             |              |            |             |              |              |
| NB□ -FNS12-9          | 3/4 Female NPT                     |                                                |                  |      |                      |             | 1.50 (38.1) |             |             |             |             |             |              |            |             |              |              |
| NB□ -NS12-9           | 3/4 Male NPT 3/4"                  |                                                |                  |      |                      |             |             |             |             |             |             |             |              |            |             |              |              |
| NB□ -FL12-9           | 14 mm                              |                                                |                  |      |                      |             |             |             |             |             |             |             |              |            |             |              |              |
| NB□ -ML14-9           | 16 mm                              |                                                |                  |      | 1.97 (50.0)          | 1.97 (50.0) | 1.61 (41.0) | 1.61 (41.0) | 0.88 (22.2) | 0.77 (19.5) | 3.50 (88.9) | 1.38 (34.9) | 1.25 (31.75) | 0.38 (9.7) | 1.08 (27.5) | 4.11 (104.5) | 4.11 (104.5) |
| NB□ -ML16-9           | 18 mm                              |                                                |                  |      |                      |             |             |             |             |             |             |             |              |            |             |              |              |
| NB□ -ML18-9           | 14 mm Tube Socket Weld             |                                                |                  |      |                      |             |             |             |             |             |             |             |              |            |             |              |              |
| NB□ -MTS14-9-G        | 16 mm Tube Socket Weld             |                                                |                  |      |                      |             |             |             |             |             |             |             |              |            |             |              |              |
| NB□ -MTS16-9-G        | 3/4" Tube Socket Weld              |                                                |                  |      | 1.75 (44.5)          | 1.75 (44.5) |             |             |             |             |             |             |              |            |             |              |              |
| NB□ -TS12-9-G         | 14x2.5 mm                          |                                                |                  |      |                      |             |             |             |             |             |             |             |              |            |             |              |              |
| NB□ -UMB14-9          | Rotatable Tube Butt Weld           |                                                |                  |      | 2.98 (75.7)          | 2.98 (75.7) |             |             |             |             |             |             |              |            |             |              |              |
| NB□ -MS27-9           | M27 x 2 Male Metric                |                                                |                  |      | 1.56 (39.7)          | 1.56 (39.7) |             |             |             |             |             |             |              |            |             |              |              |
| NB□ -FNS12-6          | 3/4 Female NPT                     | 5000 (345)                                     | 0.59 (15.0)      | 3.27 |                      |             | 1.75 (44.5) | 1.14 (29.0) |             |             |             |             |              |            |             |              |              |
| NB□ -TS16-6-G         | 1" Tube Socket Weld                |                                                |                  |      | 1.75 (44.5)          | 1.75 (44.5) | 1.75 (44.5) | 1.75 (44.5) | 1.14 (29.0) | 0.88 (22.2) | 5.00 (127)  | 1.70 (43.2) | 1.43 (36.4)  | 0.38 (9.7) | 1.28 (32.5) | 5.00 (127)   | 4.72 (120)   |
| NB□ -MTS25-6-G        | 25 mm Tube Socket Weld             |                                                |                  |      |                      |             |             |             |             |             |             |             |              |            |             |              |              |
| NB□ -MTS28-6-G        | 28 mm Tube Socket Weld             |                                                |                  |      |                      |             |             |             |             |             |             |             |              |            |             |              |              |
| NB□ -PS12-6-G         | 3/4 Pipe Socket Weld               |                                                |                  |      |                      |             |             |             |             |             |             |             |              |            |             |              |              |
| NB□ -FNS16-0          | 1 Female NPT                       |                                                |                  |      |                      |             |             |             |             |             |             |             |              |            |             |              |              |
| NB□ -MTS25-0-G        | 25 mm Tube Socket Weld             |                                                |                  |      |                      |             |             |             |             |             |             |             |              |            |             |              |              |
| NB□ -TS16-0-G         | 1" Tube Socket Weld                |                                                |                  |      | 1.97 (50.0)          | 1.97 (50.0) |             |             | 1.24 (31.5) |             | 5.00 (127)  |             |              |            |             | 5.25 (133.3) |              |
| NB□ -MTS28-0-G        | 28 mm Tube Socket Weld             |                                                |                  |      |                      |             |             |             |             |             |             |             |              |            |             |              |              |
| NB□ -PS12-0-G         | 3/4 Pipe Socket Weld               |                                                |                  |      |                      |             |             |             |             |             |             |             |              |            |             |              |              |
| NB□ -PS16-0-G         | 1 Pipe Socket Weld                 |                                                |                  |      |                      |             |             |             |             |             |             |             |              |            |             |              |              |

1. Connection type of " " means double ferrule tube fittings. When the connection type of valves is 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 Catalog Tubing.
2. Sizes and types listed are standard. Other sizes and types are available upon request. For details, please contact us.
3. Dimensions are shown with OJFLU ID tub efittn gnu tsfinger-tigh t.All dimensions are for reference only and are subject to change. For dimensions not shown above, please contact us.

## Ordering Number Description

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

| Series | Body Material   | Inlet Type                              | Inlet Size                       | Outlet Type | Outlet Size                                            | Orifice Size     | Stem Tip Material | Stem Tip Type | Packing Material | Panel Mounting | Handle | Flow Pattern | Special Application | Cleaning and Packaging |
|--------|-----------------|-----------------------------------------|----------------------------------|-------------|--------------------------------------------------------|------------------|-------------------|---------------|------------------|----------------|--------|--------------|---------------------|------------------------|
| NB     | SS 316 SS       | FNS Female NPT Male                     | 2 1/8"                           |             | Same as Inlet                                          | 7 0.16" (4.0 mm) |                   | Same as Body  | PTFE             |                |        |              |                     | FC-01                  |
|        | 6L 316L SS      | NS NPT                                  | 4 1/4"                           |             | Specified in the same way as Inlet Type and Inlet Size | 8 0.25" (6.4 mm) | W                 | Stellite      | P PEEK           | Y Yes          |        | A Angle      |                     | F2 FC-02               |
|        | S4 304 SS       | FRT Female BSPT                         | 6 3/8" or 6 mm                   |             |                                                        | 9 0.39" (10 mm)  | D5 Duplex 2205    |               | G Graphite       |                |        |              |                     |                        |
|        | 4L 304L SS      | RT Male BSPT                            | 8 1/2" or 8 mm                   |             |                                                        | 6 0.59" (15 mm)  | TI Titanium       |               |                  |                |        |              |                     |                        |
|        | S1 321 SS       | FMS Female Metric Thread (for RG-M)     | 10 10 mm                         |             |                                                        | 0 0.71" (18 mm)  | A20 Alloy 20      |               |                  |                |        |              |                     |                        |
|        | 91 F91          | MS Male Metric Thread (for RG-M)        | 12 3/4" or 12 mm                 |             |                                                        |                  | M Alloy 400       |               |                  |                |        |              |                     |                        |
|        | 92 F92          | FRP Female BSPP (for RP)                | 14 14 mm or 14x2.5 mm or M14x1.5 |             |                                                        |                  | INC Alloy 600     |               |                  |                |        |              |                     |                        |
|        | D5 Duplex 2205  | BP Male BSPP (for RG)                   | 16 or 16 mm or 16x2.8 mm         |             |                                                        |                  | HC Alloy C-276    |               |                  |                |        |              |                     |                        |
|        | TI Titanium     | TS Fractional Tube                      | 18 18 mm                         |             |                                                        |                  |                   |               |                  |                |        |              |                     |                        |
|        | A20 Alloy 20    | MTS Socket Weld Metric Tube             | 20 20 mm or M20 x 1.5            |             |                                                        |                  |                   |               |                  |                |        |              |                     |                        |
|        | M Alloy 400     | TB Socket Weld Fractional Tube          | 22 22 mm or M22 x 1.5            |             |                                                        |                  |                   |               |                  |                |        |              |                     |                        |
|        | INC Alloy 600   | MTB Butt Weld Metric Tube               | 24 M24 x 1.5                     |             |                                                        |                  |                   |               |                  |                |        |              |                     |                        |
|        | HC Alloy C-276  | PS Butt Weld                            | 25 25 mm                         |             |                                                        |                  |                   |               |                  |                |        |              |                     |                        |
|        | B Brass         | PB Pipe Socket Weld                     | 27 M27 x 2                       |             |                                                        |                  |                   |               |                  |                |        |              |                     |                        |
|        | CS Carbon Steel | FL Fractional Tube Fitting              | 28 28 mm                         |             |                                                        |                  |                   |               |                  |                |        |              |                     |                        |
|        | 904L 904L SS    | ML Metric Tube Fitting                  |                                  |             |                                                        |                  |                   |               |                  |                |        |              |                     |                        |
|        |                 | UFB Rotatable Fractional Tube Butt Weld |                                  |             |                                                        |                  |                   |               |                  |                |        |              |                     |                        |
|        |                 | UMB Rotatable Metric Tube Butt Weld     |                                  |             |                                                        |                  |                   |               |                  |                |        |              |                     |                        |

Note: "Ordering Number Description" is a reference to understand the combination rules of 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

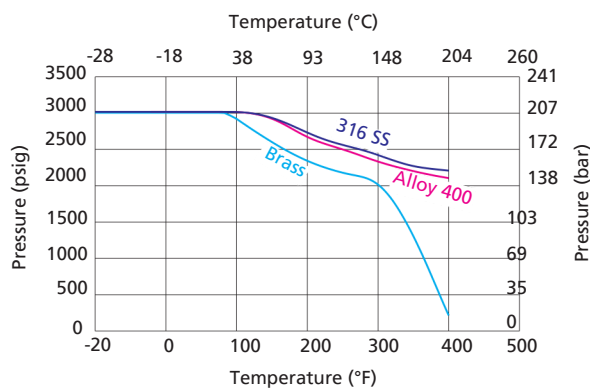
## Features

- ⊙ 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 or compressed 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 400°F (-28°C to 204°C)
- ⊙ Working temperature with O-ring:
  - Fluorocarbon Rubber (FKM): -20°F to 400°F (-28°C to 204°C)
  - Ethylene Propylene Diene Rubber (EPDM): -20°F to 300°F (-28°C to 148°C)

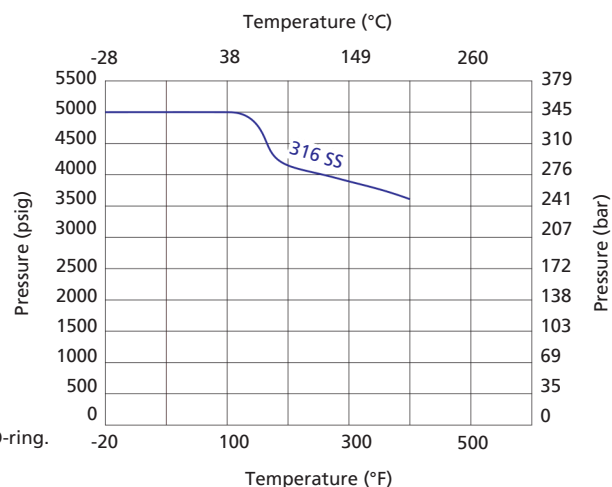


## Pressure vs. Temperature

### ND Series

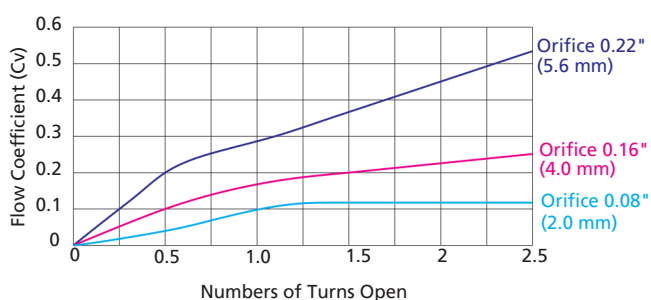


### NDH Series



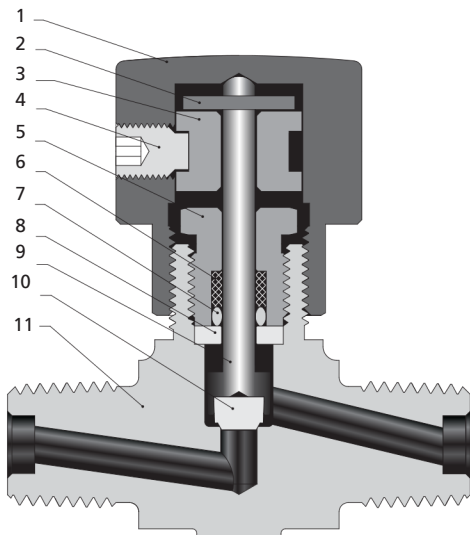
1. The graphs are based on PEEK stem tip and Fluorocarbon rubber (FKM) O-ring.
2. Contact us for curve graph of other materials.

## Flow Data at 100°F (38°C)



Standard Materials of Construction

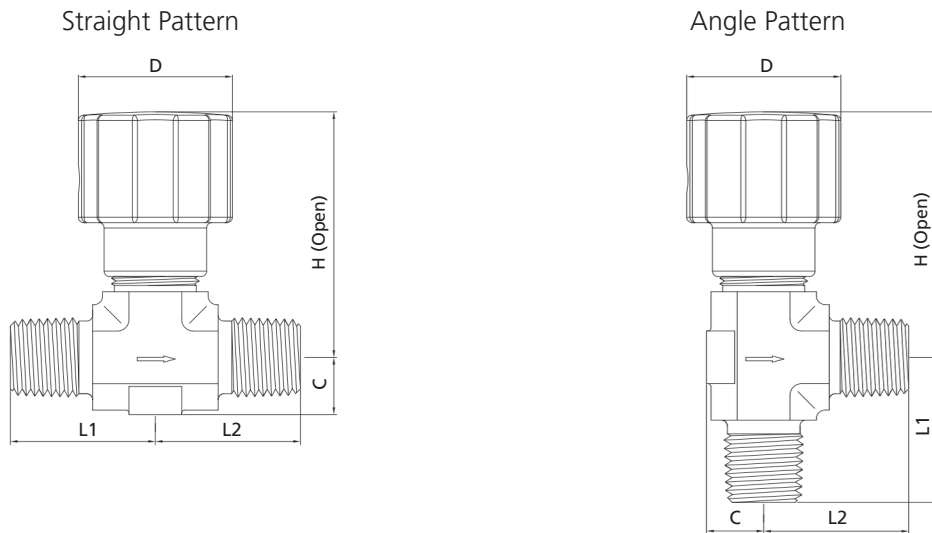
Needle Valves



| Item | Component   | Valve Body Material                                                                                    |             |             |                      |                            |
|------|-------------|--------------------------------------------------------------------------------------------------------|-------------|-------------|----------------------|----------------------------|
|      |             | 316 SS                                                                                                 | 304 SS      | 321 SS      | Brass                | Alloy 400                  |
|      |             | Material Grade/ASTM Specification                                                                      |             |             |                      |                            |
| 1    | Handle Stop | Anodized aluminum                                                                                      |             |             |                      |                            |
| 2    | Pin         | Stainless steel                                                                                        |             |             |                      |                            |
| 3    | Spool Set   | Aluminum                                                                                               |             |             |                      |                            |
| 4    | Screw       | Stainless steel                                                                                        |             |             |                      |                            |
| 5    | Packing     | 304 SS/A479                                                                                            |             |             | Brass<br>C36000/B16  | Alloy 400/B164             |
| 6    | Bolt        | PTFE/D1710                                                                                             |             |             |                      |                            |
| 7    | Backup Ring | Fluorocarbon Rubber (FKM), Nitrile Butadiene Rubber (NBR) or<br>Ethylene Propylene Diene Rubber (EPDM) |             |             |                      |                            |
| 8    | Washer      | 316                                                                                                    |             |             |                      | Alloy                      |
| 9    | Stem        | SS/A479                                                                                                |             |             |                      | 400/B164                   |
| 10   | Stem Tip    | 316 PCTFE or PEEK                                                                                      |             |             |                      | Alloy                      |
| 11   | Body        | 316 SS/A182                                                                                            | 304 SS/A182 | 321 SS/A182 | Brass<br>C37700/B283 | 400/B164<br>Alloy 400/B564 |
|      | Lubricant   | Molybdenum disulfide-based                                                                             |             |             |                      |                            |

Note: Contact us for other materials.

## Dimensions

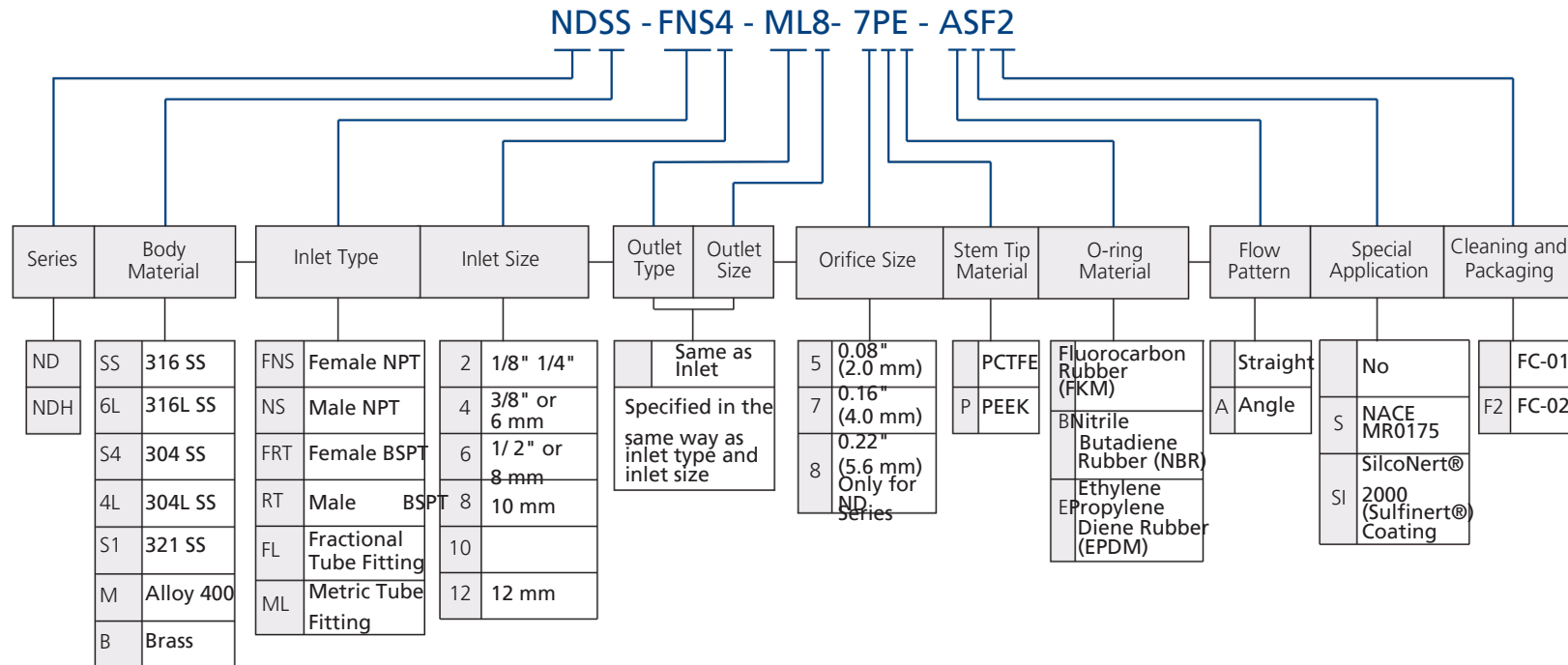


ND and NDH Series

| 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"           |                 |                | 1.10<br>(27.9)      | 1.10<br>(27.9) |                |                |                |
| ND                    | -FL2-5     | 1/8"                     | 1/8"           |                 |                |                     |                |                |                |                |
| ND                    | -ML3-5     | 3 mm                     | 3 mm           |                 |                |                     |                |                |                |                |
| 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) | 1.13<br>(28.7) | 1.86<br>(47.2) |
| ND                    | -NS4-FL4-7 | 1/4 Male NPT             | 1/4"           |                 |                | 1.13<br>(28.7)      | 1.13<br>(28.7) |                |                |                |
| ND                    | -FL4-7     | 1/4"                     | 1/4"           |                 |                |                     |                |                |                |                |
| ND                    | -ML6-7     | 6 mm                     | 6 mm           |                 |                |                     |                |                |                |                |
| ND                    | -ML8-7     | 8 mm                     | 8 mm           |                 |                |                     |                |                |                |                |
| ND                    | -FNS4-8    | 1/4 Female NPT           | 1/4 Female NPT | 0.22<br>(5.6)   | 0.53           | 1.06<br>(26.9)      | 1.06<br>(26.9) | 0.49<br>(12.5) | 1.22<br>(31.0) | 2.02<br>(51.3) |
| ND                    | -NS6-8     | 3/8 Male NPT             | 3/8 Male NPT   |                 |                | 1.12<br>(28.6)      | 1.12<br>(28.6) |                |                |                |
| ND                    | -FL6-8     | 3/8"                     | 3/8"           |                 |                | 1.29<br>(32.8)      | 1.29<br>(32.8) |                |                |                |
| ND                    | -FL8-8     | 1/2"                     | 1/2"           |                 |                | 1.40<br>(35.6)      | 1.40<br>(35.6) |                |                |                |
| ND                    | -ML10-8    | 10 mm                    | 10 mm          |                 |                | 1.30<br>(33.0)      | 1.30<br>(33.0) |                |                |                |
| ND                    | -ML12-8    | 12 mm                    | 12 mm          |                 |                | 1.40<br>(35.6)      | 1.40<br>(35.6) |                |                |                |
| NDH                   | -NS2-5     | 1/8 Male NPT             | 1/8 Male NPT   |                 |                | 0.08<br>(2.0)       | 0.12           |                |                |                |
| NDH                   | -FL2-5     | 1/8"                     | 1/8"           | 1.10<br>(27.9)  | 1.10<br>(27.9) |                     |                |                |                |                |
| NDH                   | -ML3-5     | 3 mm                     | 3 mm           |                 |                |                     |                |                |                |                |
| 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) | 1.13<br>(28.7) | 1.98<br>(50.2) |
| NDH                   | -FL4-7     | 1/4"                     | 1/4"           |                 |                | 1.13<br>(28.7)      | 1.13<br>(28.7) |                |                |                |
| NDH                   | -ML6-7     | 6 mm                     | 6 mm           |                 |                |                     |                |                |                |                |

1. Connection type of "" means double ferrule tube fittings. When the connection type of valves is 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 Catalog Tubing.
2. Sizes and types listed are standard. Other sizes and types are available upon request. For details, please contact us.
3. Dimensions are shown with tubefittingnutfinger-tight. All dimensions are for reference only and are subject to change. For dimensions not shown above, please contact us.

## Ordering Number Description



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

1. 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.

2. Special Application:

Plural special application designators available in one ordering number, example: NDSS-NS4-7-SSI.

SilcoNert® 2000 (Sulfinert®) coating: Wetted metal components SilcoNert® 2000 (Sulfinert®) coated.

# Forged Body Needle Valves

NF Series:

Working pressure up to 6000psig

NFH Series: Working pressure up to 10000 psig

## Features

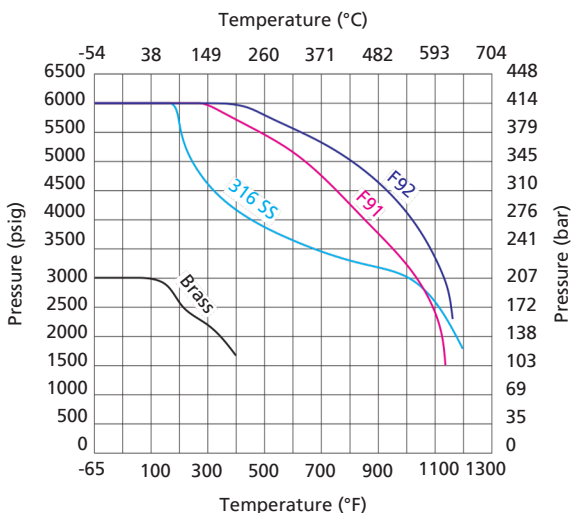
- ⊙ One-piece forged body
- ⊙ Two-piece stem design: Upper stem threads cold rolled and lower stem hardened for high strength and smooth operation
- ⊙ Upper stem thread lubricant isolated from system media
- ⊙ Linear instead of rotary motion of the rising, non-rotating stem minimizes packing abrasion and reduces the friction between the seat and the tip
- ⊙ Panelmounting available
- ⊙ Steady and durable fastening of the handle by double lock-pins
- ⊙ Handles of different colors available
- ⊙ Every valve leak tested with Nitrogen or compressed 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)



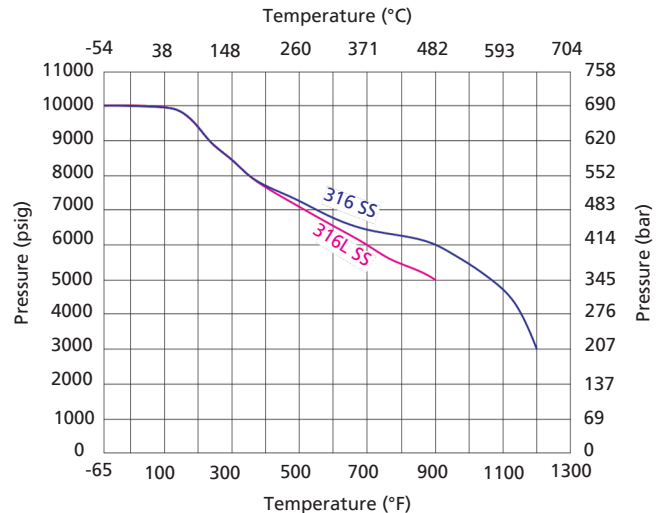
Needle Valves

## Pressure vs. Temperature

### NF Series



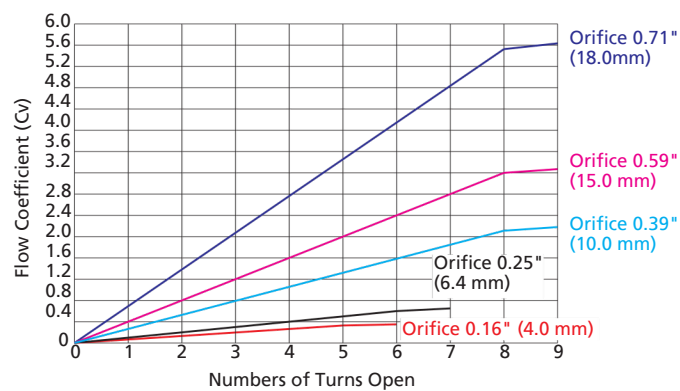
### NFH Series



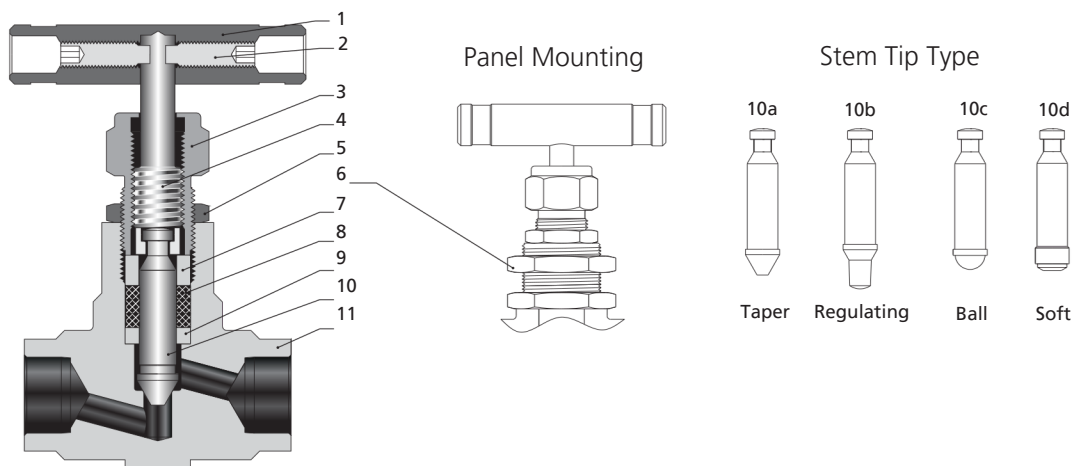
1. Graphs are based on graphite packing.
2. Soft tips are for NF Series only. Temperature rating is limited to 200°F (93°C) max. with PCTFE stem tip (soft tip).
3. Contact us for curve graph of other materials.

## Flow Data at 100°F (38°C)

Regulating Stem Tip



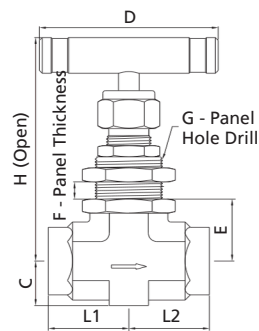
## Standard Materials of Construction



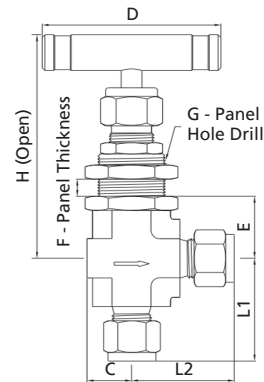
| Item              | Component      | Valve Body Material                                |                          |                   |
|-------------------|----------------|----------------------------------------------------|--------------------------|-------------------|
|                   |                | 316 SS                                             | F91                      | Brass             |
|                   |                | Material Grade/ASTM Specification                  |                          |                   |
| 1                 | Handle         | Anodized aluminum or stainless steel or black knob |                          |                   |
| 2                 | Set Screw      | Zinc-plated carbon steel                           |                          |                   |
| 3                 | Packing Bolt   | 304 SS/A479                                        | F91/A182                 | Brass C36000/B16  |
| 4                 | Upper Stem     | 316 SS/A479                                        |                          |                   |
| 5                 | Lock Nut       | Stainless                                          | 1020/A108                | Brass C36000/B16  |
| 6                 | Panel Nut      | steel                                              | 1020/A108                | Brass C36000/B16  |
| 7                 | Gland          | Stainless                                          | 316 SS/A479              | Brass C36000/B16  |
| 8                 | Packing        | steel                                              | PTFE or PEEK or graphite |                   |
| 9                 | Packing Washer | 316 SS/A479                                        |                          |                   |
| 10a<br>10b<br>10c | Lower Stem     | Hardened<br>316 SS/A479                            |                          |                   |
| 10d               | Stem           | 316 SS/A479                                        |                          |                   |
|                   | Stem Tip       | PTFE or PCTFE                                      |                          |                   |
| 11                | Body           | 316 SS/A182                                        | F91/A182                 | Brass C37700/B283 |
|                   | Seat           | Same as body                                       |                          |                   |
|                   | Lubricant      | Molybdenum disulfide-based                         |                          |                   |

## 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: NFSS-FNS2-7-Y

### Dimensions of NF Series

| 316 SS                |                                    |                                                |                 |      |                     |              |             |           |             |             |            |             |
|-----------------------|------------------------------------|------------------------------------------------|-----------------|------|---------------------|--------------|-------------|-----------|-------------|-------------|------------|-------------|
| Basic Ordering Number | Connection Type and Size           | Connection Pressure at 100°F (38°C) psig (bar) | Orifice in.(mm) | Cv   | Dimensions, in.(mm) |              |             |           |             |             |            |             |
|                       | Inlet/Outlet                       |                                                |                 |      | L1                  | L2           | H           | D         | C           | E           | F          | G           |
| NF□□ -FNS2-7          | 1/8 Female NPT 1/4                 | 6000 (414)                                     | 0.16 (4.0)      | 0.35 | 1.00 (25.4)         | 1.00 (25.4)  | 2.85 (72.5) | 2.17 (55) | 0.49 (12.5) | 0.71 (18.0) | 0.25 (6.4) | 0.77 (19.6) |
| NF□□ -FNS4-7          | Female NPT                         |                                                |                 |      | 1.03 (26.2)         | 1.03 (26.2)  |             |           |             |             |            |             |
| NF□□ -FL4-7           | 1/4" 6 mm                          |                                                |                 |      | 1.22 (30.9)         | 1.22 (30.9)  |             |           |             |             |            |             |
| NF□□ -ML6-7           | 8 mm 1/4 Male NPT                  |                                                |                 |      | 1.25 (31.75)        | 1.25 (31.75) |             |           |             |             |            |             |
| NF□ □-ML8-7           | 3/8 Male NPT 1/4"                  |                                                |                 |      | 1.03 (26.2)         | 1.03 (26.2)  |             |           |             |             |            |             |
| NF□ □-NS4-7           | Male FO 1/4" Male FR               |                                                |                 |      | 1.13 (28.6)         | 1.13 (28.6)  |             |           |             |             |            |             |
| NF□ □-NS6-7           | 1/4 Female NPT                     |                                                |                 |      |                     |              |             |           |             |             |            |             |
| NF□ □-FO4-7           | 3/8 Female NPT 3/8                 |                                                |                 |      |                     |              |             |           |             |             |            |             |
| NF□□ -FR4-7           | Male NPT 3/8" 10                   |                                                |                 |      |                     |              |             |           |             |             |            |             |
| NF□□ -FNS4-8          | mm 12 mm                           |                                                |                 |      | 6000 (414)          | 0.25 (6.4)   |             |           |             |             |            |             |
| NF□□ -FNS6-8          | 14 mm 1/2 Female                   | 1.42 (36.1)                                    | 1.42 (36.1)     |      |                     |              |             |           |             |             |            |             |
| NF□□ -NS6-8           | NPT 1/2 Male NPT                   | 1.44 (36.5)                                    | 1.44 (36.5)     |      |                     |              |             |           |             |             |            |             |
| NF□□ -FL6-8           | 1/2"                               | 1.53 (38.9)                                    | 1.53 (38.9)     |      |                     |              |             |           |             |             |            |             |
| NF□□ -ML10-8          | 3/8" Tube Socket                   | 1.56 (39.7)                                    | 1.56 (39.7)     |      |                     |              |             |           |             |             |            |             |
| NF□□ -ML12-8          | Weld                               | 1.26 (32.0)                                    | 1.26 (32.0)     |      |                     |              |             |           |             |             |            |             |
| NF□□ -ML14-8          | 1/2" Tube Socket                   | 1.50 (38.1)                                    | 1.50 (38.1)     |      |                     |              |             |           |             |             |            |             |
| NF□□ -FNS8-8          | Weld                               | 1.53 (38.9)                                    | 1.53 (38.9)     |      |                     |              |             |           |             |             |            |             |
| NF□□ -NS8-8           |                                    | 1.13 (28.6)                                    | 1.13 (28.6)     |      |                     |              |             |           |             |             |            |             |
| NF□□ -FL8-8           |                                    | 2.92 (74.1)                                    | 2.92 (74.1)     |      |                     |              |             |           |             |             |            |             |
| NF□□ -TS6-8-G         |                                    | 1.13 (28.6)                                    | 1.13 (28.6)     |      |                     |              |             |           |             |             |            |             |
| NF□□ -TS8-8-G         |                                    | 1.56 (39.7)                                    | 1.56 (39.7)     |      |                     |              |             |           |             |             |            |             |
| NF□□                  |                                    | 1.50 (38.1)                                    | 1.50 (38.1)     |      |                     |              |             |           |             |             |            |             |
| NF□ □-MTS12-8-G       | 12 mm Tube Socket Weld             | 1.13 (28.6)                                    | 1.13 (28.6)     |      |                     |              |             |           |             |             |            |             |
| NF□ □-MTS14-8-G       | 14 mm Tube Socket Weld             | 1.50 (38.1)                                    | 1.50 (38.1)     |      |                     |              |             |           |             |             |            |             |
| NF□ □-MTS16-8-G       | 16 mm Tube Socket Weld             | 1.13 (28.6)                                    | 1.13 (28.6)     |      |                     |              |             |           |             |             |            |             |
| NF□□ -MTB14-8-G       | 14×2.5 mm Tube Butt Weld           | 1.56 (39.7)                                    | 1.56 (39.7)     |      |                     |              |             |           |             |             |            |             |
| NF□□ -MTB16-8-G       | 16×2.8 mm Tube Butt Weld           | 1.13 (28.6)                                    | 1.13 (28.6)     |      |                     |              |             |           |             |             |            |             |
| NF□□ -UMB14-8         | 14×2.5 mm Rotatable Tube Butt Weld | 1.56 (39.7)                                    | 1.56 (39.7)     |      |                     |              |             |           |             |             |            |             |
| NF□□ -UMB16-8         | 16×2.8 mm Rotatable                | 1.13 (28.6)                                    | 1.13 (28.6)     |      |                     |              |             |           |             |             |            |             |
| NF□□ -FO8-8           | 1/2" Male FO                       | 1.56 (39.7)                                    | 1.56 (39.7)     |      |                     |              |             |           |             |             |            |             |
| NF□□ -FR8-8           | 1/2" Male FR                       | 1.13 (28.6)                                    | 1.13 (28.6)     |      |                     |              |             |           |             |             |            |             |
| □□ -MS20-8            | M20 x 1.5 Male Metric              | 1.56 (39.7)                                    | 1.56 (39.7)     |      |                     |              |             |           |             |             |            |             |

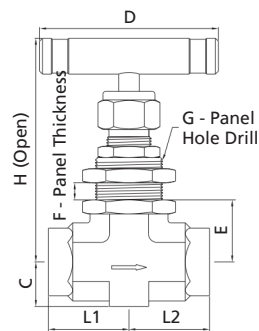
## B-88 Needle Valves

### Dimensions of NF Series

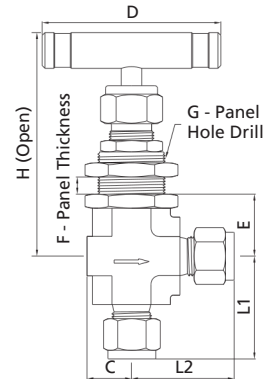
| Basic Ordering Number | Connection Type and Size           | Connection Pressure at 100°F (38°C) psig (bar) | Orifice in.(mm) | Cv          | Dimensions, in.(mm) |             |             |             |             |             |            |             |
|-----------------------|------------------------------------|------------------------------------------------|-----------------|-------------|---------------------|-------------|-------------|-------------|-------------|-------------|------------|-------------|
|                       | Inlet/Outlet                       | 316 SS                                         |                 |             | L1                  | L2          | H           | D           | C           | E           | F          | G           |
| NF□□-MS22-8           | M22 x 1.5 Male Metric              | 6000 (414)                                     | 0.25 (6.4)      | 0.85        | 1.50 (38.1)         | 1.50 (38.1) | 3.38 (85.8) | 2.50 (63.5) | 0.62 (15.8) | 0.87 (22.0) | 0.38 (9.7) | 0.96 (24.4) |
| NF□□-FNS8-9           | 1/2 Female NPT                     |                                                | 1.56 (39.7)     | 1.56 (39.7) | 0.80 (20.4)         | 0.76 (19.4) | 1.10 (28.3) | 0.38 (9.7)  | 1.08 (27.5) |             |            |             |
| NF□□-NS12-9           | 3/4 Male NPT                       |                                                |                 |             |                     |             |             |             |             |             |            |             |
| NF□□-FL12-9           | 3/4" OJFLUID                       |                                                | 5800 (400)      |             |                     |             |             |             |             |             |            |             |
| NF□□-ML14-9           | 14 mm OJFLUID                      |                                                | 6000 (414)      |             |                     |             |             |             |             |             |            |             |
| NF□□-ML16-9           | 16 mm OJFLUID                      |                                                | 5800 (400)      |             |                     |             |             |             |             |             |            |             |
| NF□□-ML18-9           | 18 mm OJFLUID                      |                                                | 5370 (370)      |             |                     |             |             |             |             |             |            |             |
| NF□□-ML20-9           | 20 mm OJFLUID                      | 5510 (380)                                     |                 |             |                     |             |             |             |             |             |            |             |
| NF□□-MTS14-9-G        | 14 mm Tube Socket Weld             | 6000 (414)                                     | 0.39 (10.0)     | 2.18        | 1.56 (39.7)         | 1.56 (39.7) | 3.86 (98.0) | 3.50 (88.9) | 0.80 (20.4) | 1.10 (28.3) | 0.38 (9.7) | 1.08 (27.5) |
| NF□□-MTS16-9-G        | 16 mm Tube Socket Weld             |                                                |                 |             |                     |             |             |             |             |             |            |             |
| NF□□-MTS18-9-G        | 18 mm Tube Socket Weld             |                                                | 1.56 (39.7)     | 1.56 (39.7) | 0.76 (19.4)         |             |             |             |             |             |            |             |
| NF□□-TS12-9-G         | 3/4" Tube Socket Weld              |                                                |                 |             |                     |             |             |             |             |             |            |             |
| NF□□-PS8-9-G          | 1/2 Pipe Socket Weld               |                                                | 0.80 (20.4)     |             |                     |             |             |             |             |             |            |             |
| NF□□-MTB16-9-G        | 16x2.25 mm Tube Butt Weld          |                                                |                 |             |                     |             |             |             |             |             |            |             |
| NF□□-UMB14-9          | 14x2.5 mm Rotatable Tube Butt Weld |                                                | 2.98 (75.7)     | 2.98 (75.7) | 0.76 (19.4)         |             |             |             |             |             |            |             |
| NF□□-UMB16-9          | 16x2.8 mm Rotatable Tube Butt Weld |                                                |                 |             |                     |             |             |             |             |             |            |             |
| NF□□-MS27-9           | M27 x 2 Male Metric                |                                                | 1.56 (39.7)     | 1.56 (39.7) |                     |             |             |             |             |             |            |             |
| NF□□-FNS12-6          | 3/4 Female NPT                     |                                                |                 |             |                     |             |             |             |             |             |            |             |
| NF□□-TS16-6-G         | 1" Tube Socket Weld                | 5500 (379)                                     | 0.59 (15.0)     | 3.27        | 1.97 (50.0)         | 1.97 (50.0) | 5.00 (127)  | 5.00 (127)  | 1.08 (27.5) | 1.61 (41.0) | 0.38 (9.7) | 1.45 (36.8) |
| NF□□-MTS25-6-G        | 25 mm Tube Socket Weld             |                                                |                 |             |                     |             |             |             |             |             |            |             |
| NF□□-MTS28-6-G        | 28 mm Tube Socket Weld             |                                                |                 |             |                     |             |             |             |             |             |            |             |
| NF□□-PS12-6-G         | 3/4 Pipe Socket Weld               |                                                |                 |             |                     |             |             |             |             |             |            |             |
| NF□□-PB12-6-G         | 3/4xSCH80 Pipe Butt Weld           | 6000 (414)                                     |                 |             |                     |             |             |             |             |             |            |             |
| NF□□-FL12-6           | 3/4" OJFLUID                       | 5800 (400)                                     |                 |             |                     |             |             |             |             |             |            |             |
| NF□□-ML20-6           | 20 mm OJFLUID                      | 5510 (380)                                     |                 |             |                     |             |             |             |             |             |            |             |
| NF□□-TS16-0-G         | 1" Tube Socket Weld                | 6000 (414)                                     |                 |             |                     |             |             |             |             |             |            |             |
| NF□□-MTS25-0-G        | 25 mm Tube Socket Weld             | 5500 (379)                                     |                 |             |                     |             |             |             |             |             |            |             |
| NF□□-MTS28-0-G        | 28 mm Tube Socket Weld             | 6000 (414)                                     |                 |             |                     |             |             |             |             |             |            |             |
| NF□□-PS12-0-G         | 3/4 Pipe Socket Weld               | 5720 (394)                                     |                 |             |                     |             |             |             |             |             |            |             |
| NF□□-PB16-0-G         | 1xSCH80 Pipe Butt Weld             |                                                |                 |             |                     |             |             |             |             |             |            |             |

1. Connection type of " " means double ferrule tube fittings. When the connection type of valves is our 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 Catalog Tubing.
  2. Connection type of "FO" means O-ring face seal fittings. "FR" means metal gasket face seal fittings.
  3. Sizes and types listed are standard. Other sizes and types are available upon request. For details, please contact us.
  4. Dimensions are shown with tube fitting nuts finger-tight. All dimensions are for reference only and are subject to change.
- For dimensions not shown above, please contact us.

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        | Connection Pressure at 100°F (38°C) psig (bar) | Orifice in.(mm) | Cv   | Dimensions, in.(mm) |             |              |             |             |             |            |             |
|-----------------------|---------------------------------|------------------------------------------------|-----------------|------|---------------------|-------------|--------------|-------------|-------------|-------------|------------|-------------|
|                       | Inlet/Outlet                    | 316 SS                                         |                 |      | L1                  | L2          | H            | D           | C           | E           | F          | G           |
| NFH□ -FL4-7           | 1/4"                            | 10000 (690)                                    | 0.16 (4.0)      | 0.35 | 1.41 (35.8)         | 1.41 (35.8) | 2.85 (72.5)  | 2.17 (55)   | 0.62 (15.8) | 0.76 (19.4) | 0.25 (6.4) | 0.77 (19.6) |
| NFH□ -FNS2-7          | 1/8 Female NPT                  |                                                |                 |      | 1.00 (25.4)         | 1.00 (25.4) |              |             |             |             |            |             |
| NFH□ -FNS4-7          | 1/4 Female NPT                  |                                                |                 |      | 1.06 (26.2)         | 1.06 (26.2) |              |             |             |             |            |             |
| NFH□ -NS4-7           | 1/4 Male NPT                    |                                                |                 |      | 1.22 (30.9)         | 1.22 (30.9) |              |             |             |             |            |             |
| NFH□ -FNS4-NS4-7      | 1/4 Female NPT/<br>1/4 Male NPT |                                                |                 |      | 1.06 (26.2)         | 1.22 (30.9) |              |             |             |             |            |             |
| NFH□ -TS4-7-G         | 1/4" Tube Socket Weld           |                                                |                 |      | 1.06 (26.2)         | 1.06 (26.2) |              |             |             |             |            |             |
| NFH□ -FNS4-8          | 1/4 Female NPT                  | 9000 (620)                                     | 0.25 (6.4)      | 0.85 | 1.12 (28.6)         | 1.12 (28.6) | 3.38 (85.8)  | 2.50 (63.5) | 0.76 (19.4) | 0.87 (22.0) | 0.38 (9.7) | 0.96 (24.4) |
| NFH□ -FNS6-8          | 3/8 Female NPT                  |                                                |                 |      | 1.50 (38.1)         | 1.50 (38.1) |              |             |             |             |            |             |
| NFH□ -NS6-8           | 3/8 Male NPT                    | 10000 (690)                                    | 0.39 (10.0)     | 2.18 | 1.56 (39.7)         | 1.56 (39.7) | 3.86 (98.0)  | 3.50 (88.9) | 0.76 (19.4) | 1.10 (28.3) | 0.38 (9.7) | 1.08 (27.5) |
| NFH□ -TS8-9-G         | 1/2" Tube Socket Weld           |                                                |                 |      |                     |             |              |             | 0.80 (20.4) |             |            |             |
| NFH□ -MTS16-9-G       | 16 mm Tube Socket Weld          |                                                |                 |      |                     |             |              |             |             |             |            |             |
| NFH□ -MTB25-9-G       | 25×5.5 mm Tube Butt Weld        |                                                |                 |      |                     |             | 4.16 (105.7) | 0.88 (22.2) |             |             |            |             |
| NFH□ -FNS8-9          | 1/2 Female NPT                  |                                                |                 |      |                     |             |              |             |             |             |            |             |

1. Connection type of " " means double ferrule tube fittings. When the connection type of valves is 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 Tubing catalog.

2. Sizes and types listed are standard. Other sizes and types are available upon request. For details, please contact us. 3. Dimensions are shown with tube fitting nuts finger-tight. All dimensions are for reference only and are subject to change. For dimensions not shown above, please contact us.

[illegible]

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

| Series |      |              | Body Material |                                     | Inlet Type |                                                    | Inlet Size                                             | Outlet Type                                            | Outlet Size | Orifice Size   | Stem Tip Material | Stem Tip Type | Packing Material | Panel Mounting | Handle                                                                                                  | Flow Pattern | Special Application | Cleaning and Packaging |                     |       |                                      |
|--------|------|--------------|---------------|-------------------------------------|------------|----------------------------------------------------|--------------------------------------------------------|--------------------------------------------------------|-------------|----------------|-------------------|---------------|------------------|----------------|---------------------------------------------------------------------------------------------------------|--------------|---------------------|------------------------|---------------------|-------|--------------------------------------|
| NF     | SS   | 316 SS       | FNS           | Female NPT                          | 2          | 1/8"                                               |                                                        | Same as Inlet                                          | 7           | 0.16" (4.0 mm) |                   | Same as Body  | Taper            |                | No                                                                                                      |              | Straight            |                        | FC-01               |       |                                      |
| NFH    | 6L   | 316L SS      | NS            | Male NPT                            | 4          | 1/4"                                               | Specified in the same way as inlet type and inlet size | Specified in the same way as inlet type and inlet size | 8           | 0.25" (6.4 mm) | Only NF series    | W             | Stellite         | R              | Regulating                                                                                              | Y Yes        | A                   | Angle                  | F2                  | FC-02 |                                      |
|        | S4   | 304 SS       | FRT           | Female BSPT                         | 6          | 3/8" or 6 mm                                       |                                                        |                                                        | 9           | 0.39" (10 mm)  |                   | D5            | Duplex 2205      | B              | Ball                                                                                                    |              |                     |                        |                     |       |                                      |
|        | 4L   | 304L SS      | RT            | Male BSPT                           | 8          | 1/2" or 8 mm                                       |                                                        |                                                        | 6           | 0.59" (15 mm)  |                   | TI            | Titanium         | T              | Soft Tip-PTFE                                                                                           |              |                     |                        |                     |       |                                      |
|        | S1   | 321 SS       | FMS           | Female Metric Thread (for RG-M)     | 10         | 10 mm                                              |                                                        |                                                        | 0           | 0.71" (18 mm)  | A20               | Alloy 20      | K                | Soft Tip-PCTFE | Soft stem tip only for NF Series Needle Valves with the orifice 0.16"/4.0mm, 0.25"/6.4mm and 0.39"/10mm |              |                     | I                      | Red Aluminum Bar    |       | No                                   |
|        | 91   | F91          | MS            | Male Metric Thread (for RG-M)       | 12         | 3/4" or 3/4"xSCH80 or 12 mm                        |                                                        |                                                        |             |                | M                 | Alloy 400     |                  |                |                                                                                                         |              |                     | GR                     | Green Aluminum Bar  | S     | NACE MR0175                          |
|        | 92   | F92          | FRP           | Female BSPP (for RP)                | 14         | 14 mm or 14x2.5 mm or M14x1.5                      |                                                        |                                                        |             |                | INC               | Alloy 600     |                  |                |                                                                                                         |              |                     | J                      | Blue Aluminum Bar   | SI    | SilcoNert® 2000 (Sulfinert®) Coating |
|        | D5   | Duplex 2205  | BP            | Male BSPP (for RG)                  | 16         | 1" or 1"xSCH80 or 16 mm or 16x2.25 mm or 16x2.8 mm |                                                        |                                                        |             |                | HC                | Alloy C-276   |                  |                |                                                                                                         |              |                     | M                      | Stainless Steel Bar |       |                                      |
|        | TI   | Titanium     | TS            | Fractional Tube Socket Weld         | 18         | 18 mm                                              |                                                        |                                                        |             |                |                   |               |                  |                |                                                                                                         |              |                     |                        |                     |       |                                      |
|        | A20  | Alloy 20     | MTS           | Metric Tube Socket Weld             | 20         | 20 mm or M20 x 1.5                                 |                                                        |                                                        |             |                |                   |               |                  |                |                                                                                                         |              |                     |                        |                     |       |                                      |
|        | M    | Alloy 400    | TB            | Fractional Tube Butt Weld           | 22         | 22 mm or M22 x 1.5                                 |                                                        |                                                        |             |                |                   |               |                  |                |                                                                                                         |              |                     |                        |                     |       |                                      |
|        | INC  | Alloy 600    | MTB           | Metric Tube Butt Weld               | 24         | M24 x 1.5                                          |                                                        |                                                        |             |                |                   |               |                  |                |                                                                                                         |              |                     |                        |                     |       |                                      |
|        | HC   | Alloy C-276  | PS            | Pipe Socket Weld                    | 25         | 25 mm or 25x5.5 mm                                 |                                                        |                                                        |             |                |                   |               |                  |                |                                                                                                         |              |                     |                        |                     |       |                                      |
|        | B    | Brass        | PB            | Pipe Butt Weld                      | 27         | M27 x 2                                            |                                                        |                                                        |             |                |                   |               |                  |                |                                                                                                         |              |                     |                        |                     |       |                                      |
|        | CS   | Carbon Steel | FL            | Fractional Tube Fitting             | 28         | 28 mm                                              |                                                        |                                                        |             |                |                   |               |                  |                |                                                                                                         |              |                     |                        |                     |       |                                      |
|        | 904L | 904L SS      | ML            | Metric Tube Fitting                 |            |                                                    |                                                        |                                                        |             |                |                   |               |                  |                |                                                                                                         |              |                     |                        |                     |       |                                      |
|        |      |              | UFB           | Rotatable Fractional Tube Butt Weld |            |                                                    |                                                        |                                                        |             |                |                   |               |                  |                |                                                                                                         |              |                     |                        |                     |       |                                      |
|        |      |              | UMB           | Rotatable Metric Tube Butt Weld     |            |                                                    |                                                        |                                                        |             |                |                   |               |                  |                |                                                                                                         |              |                     |                        |                     |       |                                      |
|        |      |              | O             | Male O Fitting                      |            |                                                    |                                                        |                                                        |             |                |                   |               |                  |                |                                                                                                         |              |                     |                        |                     |       |                                      |
|        |      |              | R             | Male R Fitting                      |            |                                                    |                                                        |                                                        |             |                |                   |               |                  |                |                                                                                                         |              |                     |                        |                     |       |                                      |

Note: "Ordering Number Description" is a reference to understand the combination rules of OJFLUID 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
- O means O-ring face seal fittings.
- R means 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.
- Special Application:  
Plural special application designators available in one ordering number, example: NFSS-NS4-7-SSI.  
SilcoNert® 2000 (Sulfinert®) coating: Wetted metal components SilcoNert® 2000 (Sulfinert®) coated.

## B-90 Needle Valves

# Integral Bonnet Needle Valves

NG Series: Working pressure up to 3000 psig

NGH Series: Working pressure up to 5000 psig

## Features

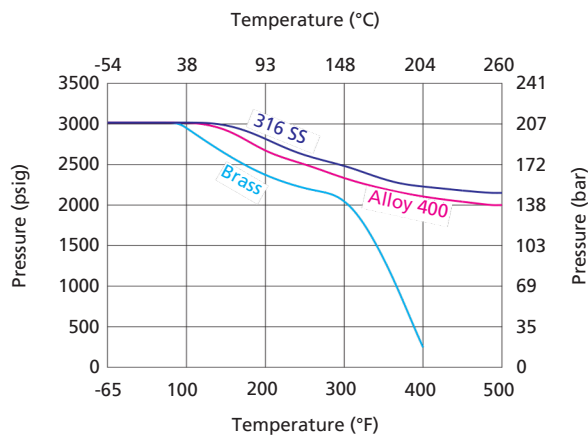
- ⦿ One-piece forged body
- ⦿ Easy external adjustments by packing nut
- ⦿ Live-loaded packing system
- ⦿ Handles of different colors available
- ⦿ Compact design
- ⦿ Panel mounting available
- ⦿ Every valve leak tested with Nitrogen or compressed air at the maximum allowable working pressure
- ⦿ Working 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)



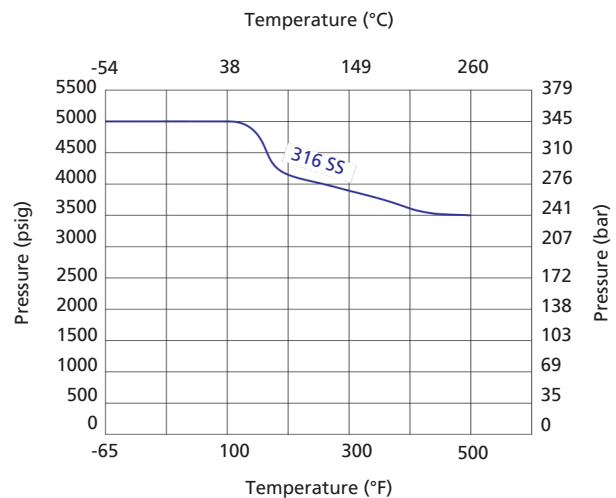
Needle Valves

## Pressure vs. Temperature

### NG Series



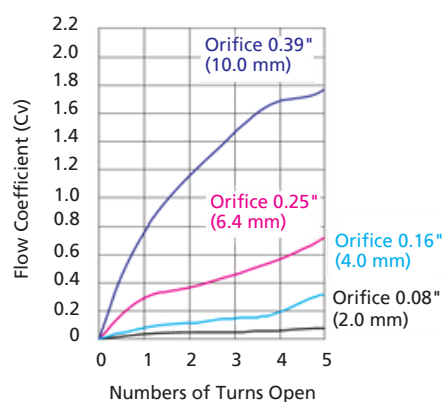
### NGH Series



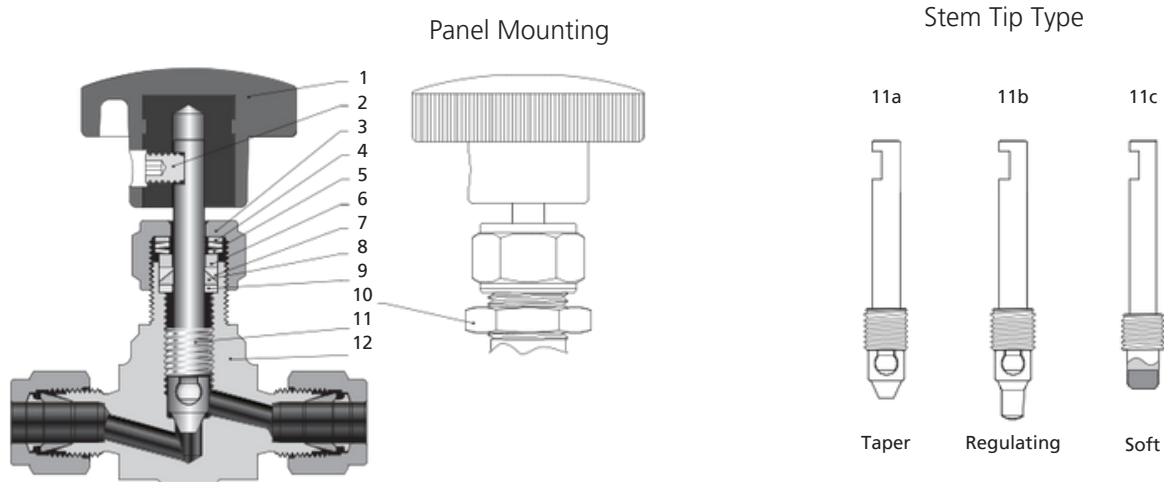
1. Graphs are based on PEEK packing.
2. Temperature rating is limited to 200°F (93°C) max with PCTFE stem tip (soft tip).
3. Contact us for curve graph of other materials.

## Flow Data at 100°F (38°C)

Regulating Stem Tip

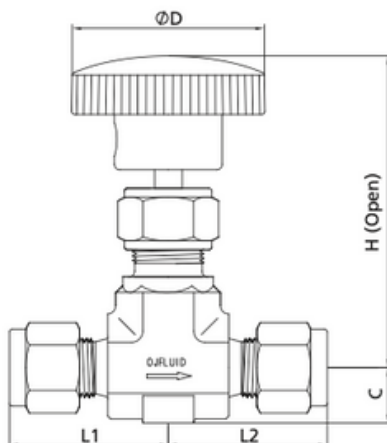


## Standard Materials of Construction

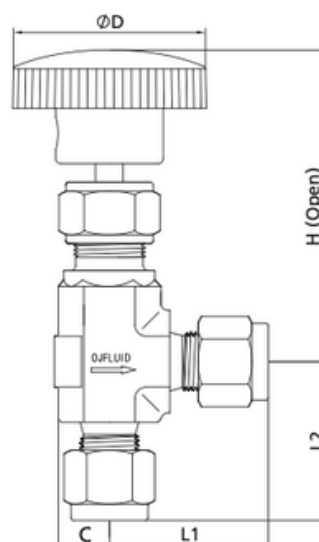


| Item | Component      | Valve Body Material                                                                             |                   |                 |
|------|----------------|-------------------------------------------------------------------------------------------------|-------------------|-----------------|
|      |                | 316 SS                                                                                          | Brass             | Alloy 400       |
|      |                | Material Grade/ASTM Specification                                                               |                   |                 |
| 1    | Handle         | Black knob (aluminum or nylon with copper insert), aluminum alloy or stainless steel bar handle |                   |                 |
| 2    | Set Screw      | Zinc-plated carbon steel                                                                        |                   |                 |
| 3    | Packing Bolt   | 304 SS/A479                                                                                     | Brass C36000/B16  | 304 SS/A479     |
| 4    | Washer         | 316 SS/A479                                                                                     |                   |                 |
| 5    | Packing Spring | S17700/A693                                                                                     |                   |                 |
| 6    | Washer         | 316 SS/A479                                                                                     |                   |                 |
| 7    | Upper Packing  | PTFE/PEEK                                                                                       |                   |                 |
| 8    | Lower Packing  |                                                                                                 |                   |                 |
| 9    | Packing Washer | 316 SS/A479                                                                                     |                   | Alloy 400/B164  |
| 10   | Panel Nut      | Stainless steel                                                                                 | Brass C36000/B16  | Stainless steel |
| 11a  | Stem           | 316 SS/A479                                                                                     |                   | Alloy 400/B164  |
| 11b  | Stem Tip       | Hardened 316 SS/A479                                                                            |                   | Alloy 400/B164  |
| 11c  | Stem           | 316 SS/A479                                                                                     |                   | Alloy 400/B164  |
|      | Stem Tip       | PCTFE or PEEK                                                                                   |                   |                 |
| 12   | Body           | 316 SS/A182                                                                                     | Brass C37700/B283 | Alloy 400/B564  |
|      | Lubricant      | Molybdenum disulfide-based                                                                      |                   |                 |

## 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) | 0.32<br>(8.2)  | 1.00<br>(25.4) | 2.30<br>(58.4) |
| 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" OJFLUID                       | 1/8" OJFLUID                       |                 |      | 0.98<br>(25.0)      | 0.98<br>(25.0)  |                |                |                |
| NG□□-ML3-5            | 3 mm OJFLUID                       | 3 mm OJFLUID                       |                 |      |                     |                 |                |                |                |
| 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>(10.0) | 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" OJFLUID                       | 1/4" OJFLUID                       |                 |      | 1.13<br>(28.7)      | 1.13<br>(28.7)  |                |                |                |
| NG□□-ML6-7            | 6 mm OJFLUID                       | 6 mm OJFLUID                       |                 |      | 1.17<br>(29.7)      | 1.17<br>(29.7)  |                |                |                |
| NG□□-ML8-7            | 8 mm OJFLUID                       | 8 mm OJFLUID                       |                 |      | 2.24<br>(57.0)      | 2.24<br>(57.0)  |                |                |                |
| NG□□-UMB6-7           | 6×1.8 mm Rotatable Tube Butt Weld  | 6×1.8 mm Rotatable Tube Butt Weld  | 0.25<br>(6.4)   | 0.70 |                     |                 | 0.49<br>(12.5) | 1.88<br>(47.8) | 2.85<br>(72.4) |
| NG□□-FNS4-8           | 1/4 Female NPT                     | 1/4 Female NPT                     |                 |      | 1.06<br>(26.9)      | 1.06<br>(26.9)  |                |                |                |
| NG□□-FNS6-8           | 3/8 Female NPT                     | 3/8 Female NPT                     |                 |      | 1.12<br>(28.4)      | 1.12<br>(28.4)  |                |                |                |
| NG□□-NS6-8            | 3/8 Male NPT                       | 3/8 Male NPT                       |                 |      | 1.50<br>(38.1)      | 1.50<br>(38.1)  |                |                |                |
| NG□□-NS8-8            | 1/2 Male NPT                       | 1/2 Male NPT                       |                 |      | 1.29<br>(32.8)      | 1.29<br>(32.8)  |                |                |                |
| NG□□-FL6-8            | 3/8" OJFLUID                       | 3/8" OJFLUID                       |                 |      | 1.40<br>(35.6)      | 1.40<br>(35.6)  |                |                |                |
| NG□□-FL8-8            | 1/2" OJFLUID                       | 1/2" OJFLUID                       |                 |      | 1.30<br>(33.0)      | 1.30<br>(33.0)  |                |                |                |
| NG□□-ML10-8           | 10 mm OJFLUID                      | 10 mm OJFLUID                      |                 |      | 1.40<br>(35.6)      | 1.40<br>(35.6)  |                |                |                |
| NG□□-ML12-8           | 12 mm OJFLUID                      | 12 mm OJFLUID                      |                 |      | 1.56<br>(39.7)      | 1.56<br>(39.7)  |                |                |                |
| NG□□-ML14-8           | 14 mm OJFLUID                      | 14 mm OJFLUID                      |                 |      | 1.50<br>(38.1)      | 1.50<br>(38.1)  |                |                |                |
| NG□□-ML20-8           | M20 x 1.5 Male Metric              | M20 x 1.5 Male Metric              |                 |      | 2.60<br>(66.0)      | 2.60<br>(66.0)  |                |                |                |
| NG□□-UMB10-8          | 10×2.2 mm Rotatable Tube Butt Weld | 10×2.2 mm Rotatable Tube Butt Weld |                 |      |                     |                 |                |                |                |
| NG□□-UMB14-8          | 14×2.5 mm Rotatable Tube Butt Weld | 14×2.5 mm Rotatable Tube Butt Weld |                 |      |                     |                 |                |                |                |

## B-94 Needle Valves

### 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 | 1.50<br>(38.1)      | 1.50<br>(38.1) | 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 |                 |      | 1.56<br>(39.7)      | 1.56<br>(39.7) | 0.80<br>(20.4) |                |                |
| NG□□ -NS12-9-L        | 3/4 Male NPT             | 3/4 Male NPT   |                 |      | 1.56<br>(39.7)      | 1.56<br>(39.7) | 0.76<br>(19.4) |                |                |
| NG□□ -FL8-9-L         | 1/2"                     | 1/2"           |                 |      | 1.90<br>(48.3)      | 1.90<br>(48.3) | 0.76<br>(19.4) |                |                |
| NG□□ -FL12-9-L        | 3/4"                     | 3/4"           |                 |      |                     |                |                |                |                |
| NG□□ -ML14-9-L        | 14 mm                    | 14 mm          |                 |      |                     |                |                |                |                |

1. Connection type of "" means double ferrule tube fittings. When the connection type of valves double ferrule tube fitting, the working pressures of the valves are related to the wall thickness of used tubing.

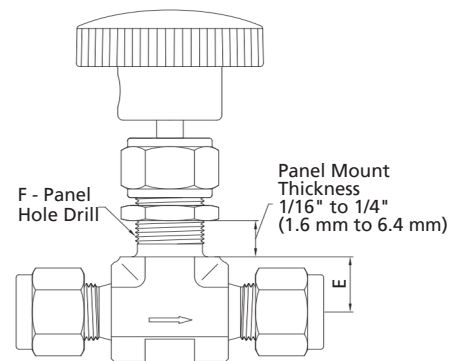
For specific working pressure of the valves, please refer to the allowable working pressures in Catalog Tubing.

2. Sizes and types listed are standard. Other sizes and types are available upon request. For details, please contact us.
3. Dimensions are shown with tube fitting nuts finger-tight. All dimensions are for reference only and are subject to change. For dimensions not shown above, please contact us.

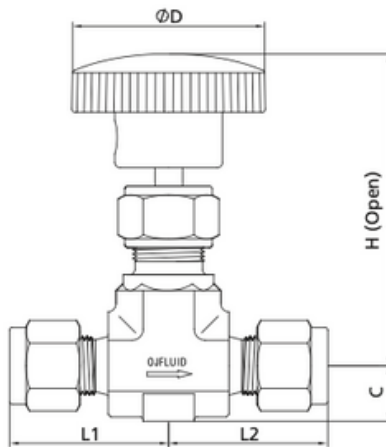
### Panel Mount Dimensions of NG Series

| Orifice in.(mm) | Dimensions, in.(mm) |             |
|-----------------|---------------------|-------------|
|                 | E                   |             |
| 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) |

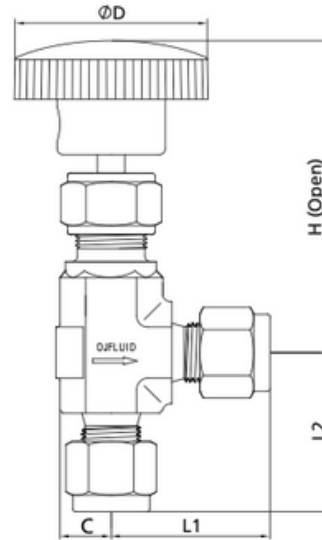
1. NG Series Needle Valves are standard without panel mounting.
2. To order needle valves with panel mounting as illustrated, add -Y to the ordering number. Example: NGSS-NS2-5-Y



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) | 0.32<br>(8.2)  | 1.00<br>(25.4) | 2.30<br>(58.4) |                |
| 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" OJFLUID                       | 1/8" OJFLUID                       |                 |      | 0.98<br>(25.0)      | 0.98<br>(25.0) |                |                |                |                |
| NGH                   | -ML3-5   | 3 mm OJFLUID                       | 3 mm OJFLUID                       |                 |      |                     |                |                |                |                |                |
| 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>(10.0) | 1.38<br>(35.0) | 2.46<br>(62.5) |                |
| 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" OJFLUID                       | 1/4" OJFLUID                       |                 |      | 1.13<br>(28.7)      | 1.13<br>(28.7) |                |                |                |                |
| NGH                   | -ML6-7   | 6 mm OJFLUID                       | 6 mm OJFLUID                       |                 |      | 1.17<br>(29.7)      | 1.17<br>(29.7) |                |                |                |                |
| NGH                   | -ML8-7   | 8 mm OJFLUID                       | 8 mm OJFLUID                       |                 |      | 2.24<br>(57.0)      | 2.24<br>(57.0) |                |                |                |                |
| NGH                   | -UMB6-7  | 6×1.8 mm Rotatable Tube Butt Weld  | 6×1.8 mm Rotatable Tube Butt Weld  |                 |      |                     |                |                |                |                |                |
| NGH                   | -FNS4-8  | 1/4 Female NPT 3                   | 1/4 Female NPT                     | 0.25<br>(6.4)   | 0.70 | 1.06<br>(26.9)      | 1.06<br>(26.9) | 0.49<br>(12.5) | 1.88<br>(47.8) | 2.85<br>(72.4) |                |
| NGH                   | -FNS6-8  | /8" Female NPT 3                   | 3/8 Female NPT                     |                 |      |                     |                | 0.62<br>(15.8) |                | 2.90<br>(73.7) |                |
| NGH                   | -NS6-8   | /8 Male NPT                        | 3/8 Male NPT                       |                 |      | 1.12<br>(28.4)      | 1.12<br>(28.4) | 0.49<br>(12.5) |                | 2.85<br>(72.4) |                |
| 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) |                | 2.90<br>(73.7) |                |
| NGH                   | -FL6-8   | 3/8" OJFLUID                       | 3/8" OJFLUID                       |                 |      | 1.29<br>(32.8)      | 1.29<br>(32.8) |                | 0.49<br>(12.5) | 1.88<br>(47.8) | 2.85<br>(72.4) |
| NGH                   | -FL8-8   | 1/2" OJFLUID                       | 1/2" OJFLUID                       |                 |      | 1.40<br>(35.6)      | 1.40<br>(35.6) |                |                |                |                |
| NGH                   | -ML10-8  | 10 mm OJFLUID                      | 10 mm OJFLUID                      |                 |      | 1.30<br>(33.0)      | 1.30<br>(33.0) |                |                |                |                |
| NGH                   | -ML12-8  | 12 mm OJFLUID                      | 12 mm OJFLUID                      |                 |      | 1.40<br>(35.6)      | 1.40<br>(35.6) |                |                |                |                |
| NGH                   | -ML14-8  | 14 mm OJFLUID                      | 14 mm OJFLUID                      |                 |      | 1.56<br>(39.7)      | 1.56<br>(39.7) | 0.62<br>(15.8) |                | 2.90<br>(73.7) |                |
| 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 | 10×2.2 mm Rotatable Tube Butt Weld | 10×2.2 mm Rotatable Tube Butt Weld |                 |      | 2.60<br>(66.0)      | 2.60<br>(66.0) | 0.49<br>(12.5) |                |                | 2.85<br>(72.4) |
| NGH                   | -UMB14-8 | 14×2.5 mm Rotatable Tube Butt Weld | 14×2.5 mm Rotatable Tube Butt Weld |                 |      |                     |                |                |                |                |                |

## B-96 Needle Valves

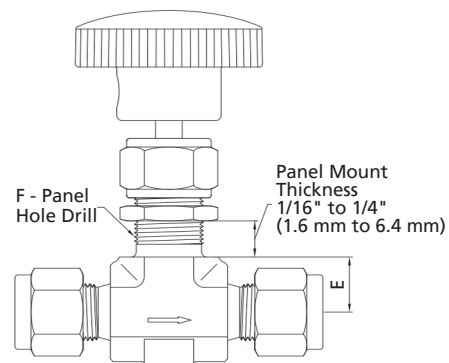
### Dimensions of NGH Series

| 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 | 1.50<br>(38.1)      | 1.50<br>(38.1) | 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   |                 |      | 1.56<br>(39.7)      | 1.56<br>(39.7) | 0.76<br>(19.4) |                |                |
| NGH□ □FL8-9-L         | 1/2"                     | 1/2"           |                 |      |                     |                |                |                |                |
| NGH□ □FL12-9-L        | 3/4"                     | 3/4"           |                 |      | 1.90<br>(48.3)      | 1.90<br>(48.3) | 0.76<br>(19.4) |                |                |
| NGH□ □ML14-9-         | 14 mm                    | 14 mm          |                 |      |                     |                |                |                |                |

1. Connection type of " " means double ferrule tube fittings. When the connection type of valves is 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 Catalog Tubing.
2. Sizes and types listed are standard. Other sizes and types are available upon request. For details, please contact us.
3. Dimensions are shown with tube fitting nuts finger-tight. All dimensions are for reference only and are subject to change. For dimensions not shown above, please contact us.

### 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**

| Series | Body Material |              | Inlet Type                          | Inlet Size                       | Outlet Type                                            | Outlet Size | Orifice Size     | Stem Tip Type    | Packing Material | Panel Mounting | Handles                                           | Flow Pattern | Special Application | Cleaning and Packaging |
|--------|---------------|--------------|-------------------------------------|----------------------------------|--------------------------------------------------------|-------------|------------------|------------------|------------------|----------------|---------------------------------------------------|--------------|---------------------|------------------------|
| NG     | SS            | 316 SS       | FNS Female NPT                      | 2 1/8"                           | Same as Inlet                                          |             | 5 0.08" (2.0 mm) | Taper            | PTFE             | No             | Black Knob Not applicable to Orifice 0.39" (10mm) | Straight     | No                  | FC-01                  |
| NGH    | 6L            | 316L SS      | NS Male NPT                         | 4 1/4"                           | Specified in the same way as inlet type and inlet size |             | 7 0.16" (4.0 mm) | R Regulating     | P PEEK           | Y YES          |                                                   | A Angle      | S NACE MR0175       | F2 FC-02               |
|        | S4            | 304 SS       | FRT Female BSPT                     | 6 3/8" or 6 mm or 6x1.8 mm       |                                                        |             | 8 0.25" (6.4 mm) | K Soft Tip-PCTFE |                  |                | I Red Aluminum Bar                                |              |                     |                        |
|        | 4L            | 304L SS      | RT Male BSPT                        | 8 1/2" or 8 mm                   |                                                        |             | 9 0.39" (10 mm)  | P Soft Tip-PEEK  |                  |                | GR Green Aluminum Bar                             |              |                     |                        |
|        | S1            | 321 SS       | FMS Female Metric Thread (for RG-M) | 10 10 mm or 10x2.2 mm            |                                                        |             |                  |                  |                  |                | J Blue Aluminum Bar                               |              |                     |                        |
|        | A20           | Alloy 20     |                                     | 12 3/4" or 12 mm                 |                                                        |             |                  |                  |                  |                | L Black Aluminum Bar                              |              |                     |                        |
|        | M             | Alloy 400    | MS Male Metric Thread (for RG-M)    | 14 14 mm or 14x2.5 mm or M14x1.5 |                                                        |             |                  |                  |                  |                | M Stainless Steel Bar                             |              |                     |                        |
|        | INC           | Alloy 600    | FRP Female BSPP (for RP)            | 16 1" or 16 mm                   |                                                        |             |                  |                  |                  |                |                                                   |              |                     |                        |
|        | HC            | Alloy C-276  | BP Male BSPP (for RG)               | 18 18 mm                         |                                                        |             |                  |                  |                  |                |                                                   |              |                     |                        |
|        | B             | Brass        | FL Fractional Tube Fitting          | 20 20 mm or M20 x 1.5            |                                                        |             |                  |                  |                  |                |                                                   |              |                     |                        |
|        | CS            | Carbon Steel | ML Metric Tube Fitting              | 22 22 mm or M22 x 1.5            |                                                        |             |                  |                  |                  |                |                                                   |              |                     |                        |
|        | 904L          | 904L SS      | UMB Rotatable Metric Tube Butt Weld |                                  |                                                        |             |                  |                  |                  |                |                                                   |              |                     |                        |

Note: "Ordering Number Description" is a reference to understand the combination rules of OJFLUID 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

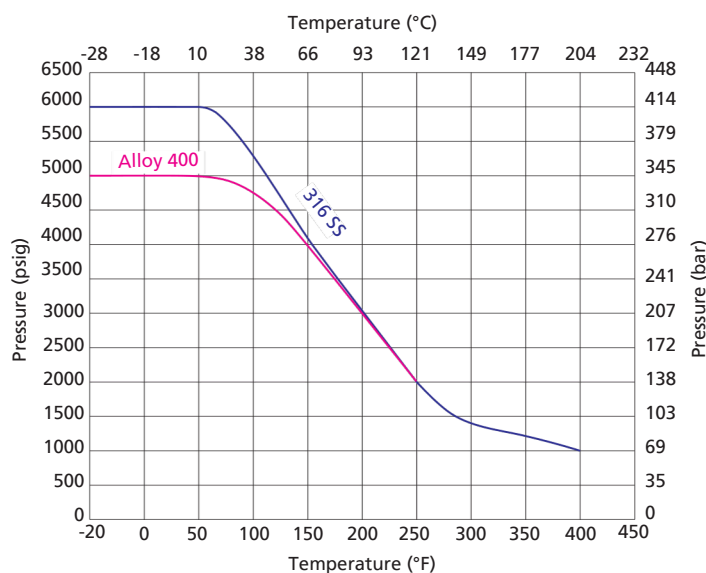
## NRG (with gauge port) Series

### Features

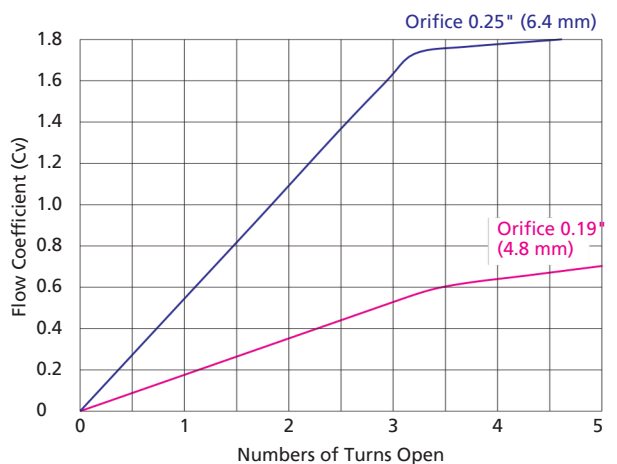
- ⦿ Cold drawn square bar as body material
- ⦿ Nonrotating stem for longer seat life
- ⦿ Roddable, straight through flow path for maximum flow with minimum pressure drop
- ⦿ Stem thread lubricant isolated from system media
- ⦿ Replaceable seat and stem tip design
- ⦿ Stem thread protected from outside contamination by PTFE ring in the gland
- ⦿ Panel mounting available
- ⦿ Handles of different colors available
- ⦿ Every valve leak tested with Nitrogen or compressed 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)



### Pressure vs. Temperature

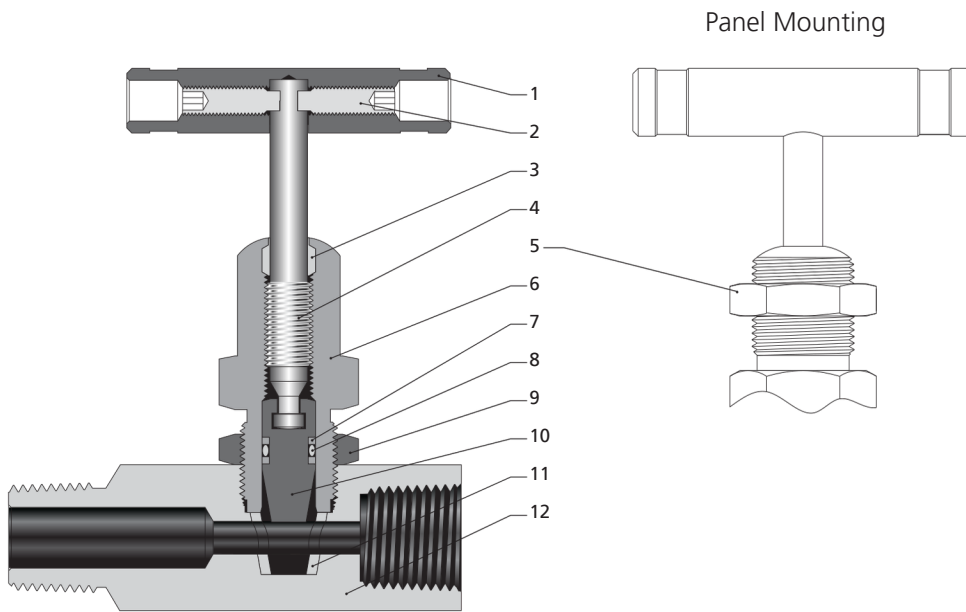


### Flow Data at 100°F (38°C)

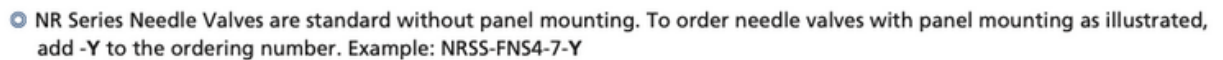


1. Graphs are based on PEEK seat and Fluorocarbon(FKM) O-ring.
2. Contact us for curve graph of other materials.

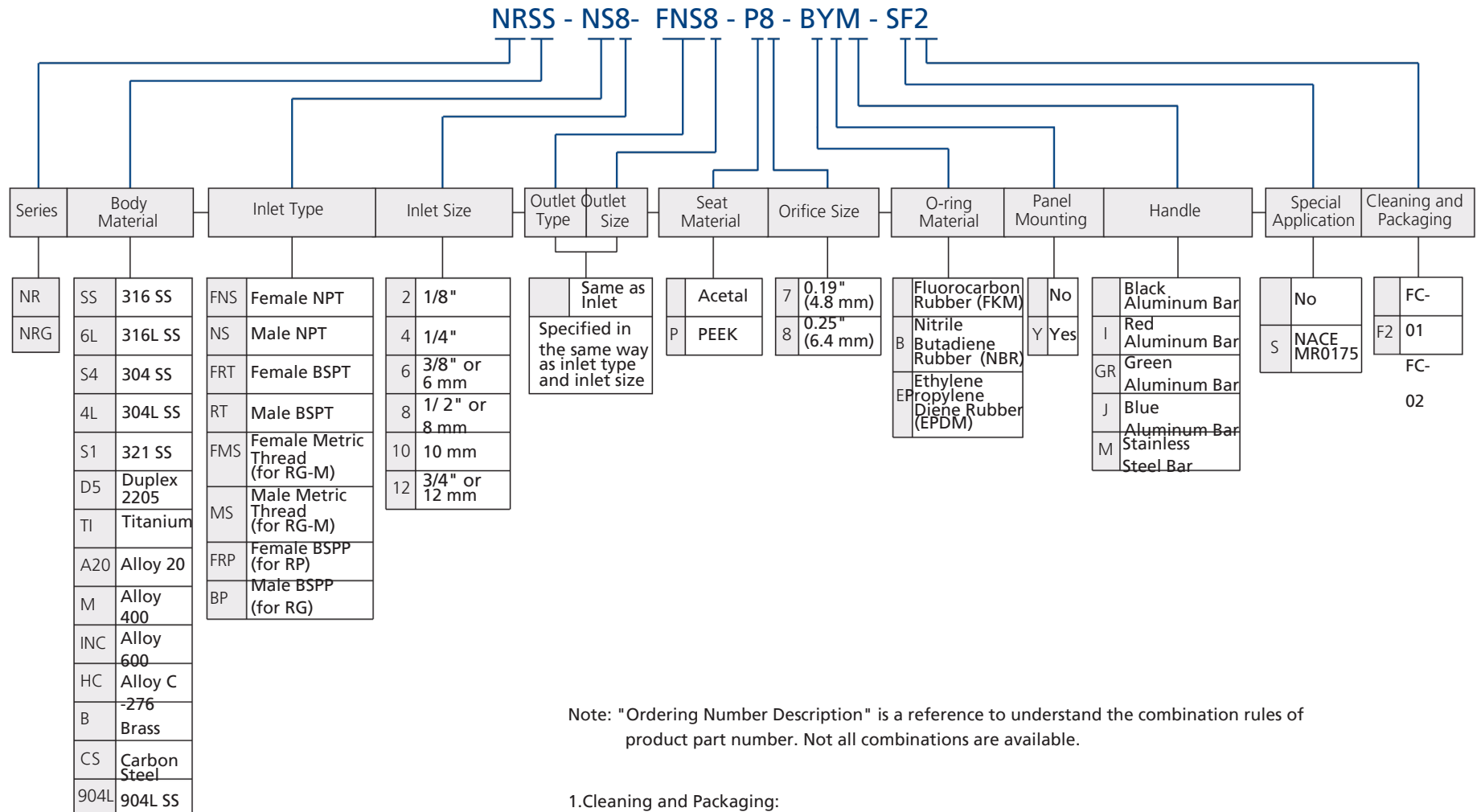
## Standard Materials of Construction



| 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   | Zinc-plated carbon 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/A479                                                                                            | 304 SS/A479 | 321 SS/A479 | 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                                                                             |             |             |                |



## Ordering Number Description



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

### 1. 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 or compressed air at the maximum allowable working pressure
- ⊙ Working pressure up to: 300 psig (20.7 bar)

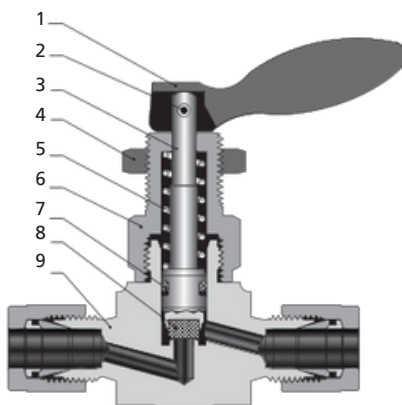


### Technical Data

| Orifice in. (mm) | Working Pressure at 100oF (38oC) psig (bar) |
|------------------|---------------------------------------------|
| 0.08 (2.0)       |                                             |
| 0.125 (3.2)      | 300 (20.7)                                  |
| 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) |

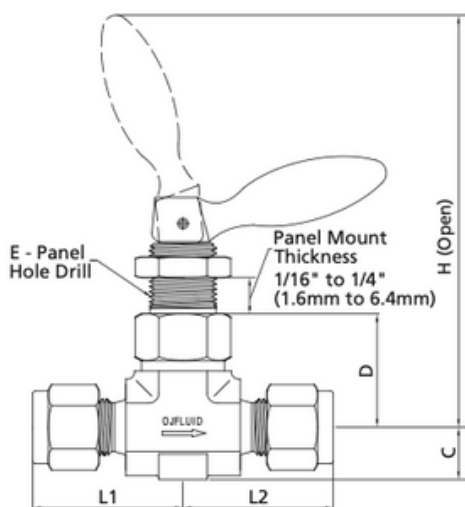
### Standard Materials of Construction



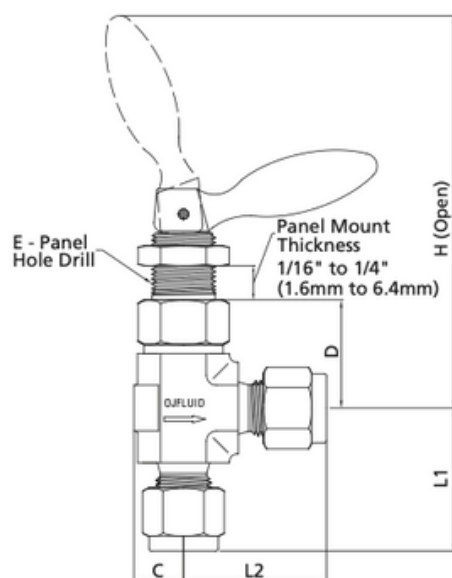
| Item | Component | Valve Body Material                                                                                 |             |             |                   |
|------|-----------|-----------------------------------------------------------------------------------------------------|-------------|-------------|-------------------|
|      |           | 316 SS                                                                                              | 304 SS      | 321 SS      | Brass             |
|      |           | Material Grade/ASTM Specification                                                                   |             |             |                   |
| 1    | Handle    | Stainless steel                                                                                     |             |             |                   |
| 2    | Pin       | Stainless steel                                                                                     |             |             |                   |
| 3    | Stem      | 316 SS/A479                                                                                         | 304 SS/A479 |             | 316 SS/A479       |
| 4    | Panel Nut | Stainless steel                                                                                     |             |             | Brass C36000/B16  |
| 5    | Spring    | S17700/A313                                                                                         |             |             |                   |
| 6    | Bonnet    | 304 SS/A479                                                                                         |             |             | 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                                                                          |             |             |                   |

## 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" OJFLUID   |                 |      | 0.75<br>(19.05)     | 0.98<br>(25.0)  |                |                |                |                |
| NT                    | -FL2-5     | 1/8" OJFLUID             | 1/8" OJFLUID   |                 |      | 0.98<br>(25.0)      | 0.98<br>(25.0)  |                |                |                |                |
| NT                    | -ML3-5     | 3 mm OJFLUID             | 3 mm OJFLUID   |                 |      |                     |                 |                |                |                |                |
| 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" OJFLUID   |                 |      | 0.98<br>(25.0)      | 1.13<br>(28.7)  |                |                |                |                |
| NT                    | -FL4-7     | 1/4" OJFLUID             | 1/4" OJFLUID   |                 |      | 1.13<br>(28.7)      |                 |                |                |                |                |
| NT                    | -ML6-7     | 6 mm OJFLUID             | 6 mm OJFLUID   |                 |      |                     |                 |                |                |                |                |
| NT                    | -ML8-7     | 8 mm OJFLUID             | 8 mm OJFLUID   |                 |      |                     |                 |                |                |                |                |
| NT                    | -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) | 1.06<br>(26.9) | 0.66<br>(16.8) | 3.59<br>(91.2) |
| 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" OJFLUID             | 3/8" OJFLUID   |                 |      | 1.40<br>(35.6)      | 1.40<br>(35.6)  |                |                |                |                |
| NT                    | -FL8-8     | 1/2" OJFLUID             | 1/2" OJFLUID   |                 |      | 1.36<br>(34.5)      | 1.36<br>(34.5)  |                |                |                |                |
| NT                    | -ML10-8    | 10 mm OJFLUID            | 10 mm OJFLUID  |                 |      | 1.46<br>(37.1)      | 1.46<br>(37.1)  |                |                |                |                |
| NT                    | -ML12-8    | 12 mm OJFLUID            | 12 mm OJFLUID  |                 |      |                     |                 |                |                |                |                |

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

# Pneumatic Actuators

## Features

- Valve and actuator are fully assembled and every valve leak tested with Nitrogen or compressed 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



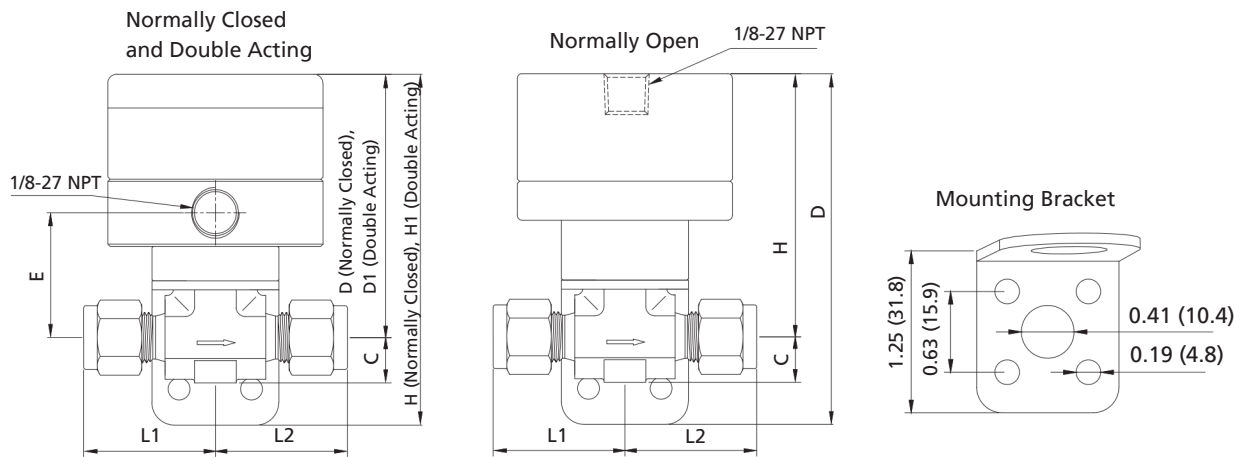
## Technical Data

| 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.

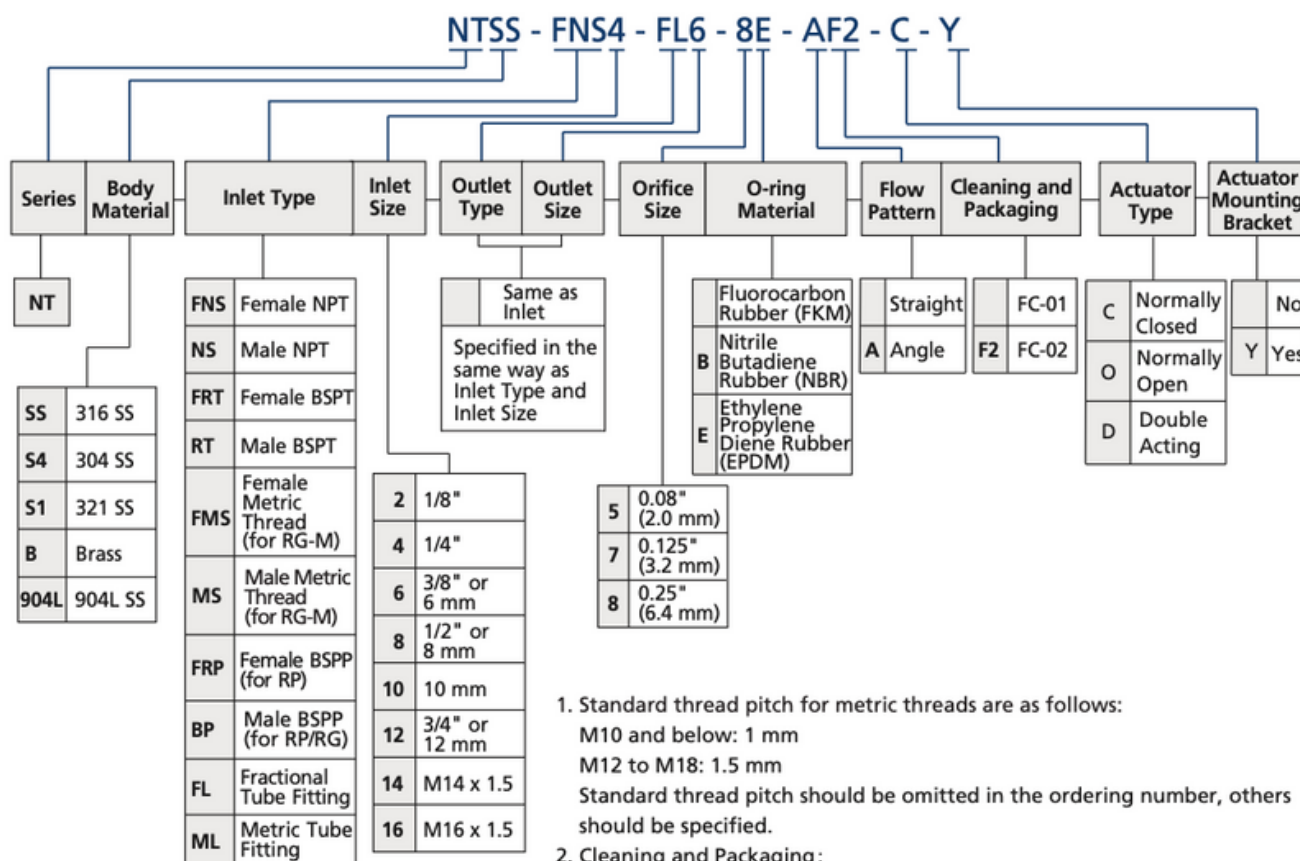
## Dimensions



| 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-C-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) | 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-FL2-5-C-Y    | 1/8 Male NPT             | 1/8" OJFLUID   |                 |      | 0.86<br>(21.8)      | 1.03<br>(26.2) |                |              |                |                |                |                |
| NT□□-FL2-5-C-Y        | 1/8" OJFLUID             | 1/8" OJFLUID   |                 |      | 1.03<br>(26.2)      | 1.03<br>(26.2) |                |              |                |                |                |                |
| NT□□-ML3-5-C-Y        | 3 mm OJFLUID             | 3 mm OJFLUID   |                 |      |                     |                |                |              |                |                |                |                |
| NT□□-FNS2-7-C-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) |                |              |                |                |                |                |
| NT□□-NS2-7-C-Y        | 1/8 Male NPT             | 1/8 Male NPT   |                 |      | 0.86<br>(21.8)      | 0.86<br>(21.8) |                |              |                |                |                |                |
| NT□□-NS4-7-C-Y        | 1/4 Male NPT             | 1/4 Male NPT   |                 |      | 0.98<br>(25.0)      | 0.98<br>(25.0) |                |              |                |                |                |                |
| NT□□-NS4-FL4-7-C-Y    | 1/4 Male NPT             | 1/4" OJFLUID   |                 |      | 0.98<br>(25.0)      | 1.13<br>(28.7) |                |              |                |                |                |                |
| NT□□-FL4-7-C-Y        | 1/4" OJFLUID             | 1/4" OJFLUID   |                 |      |                     |                |                |              |                |                |                |                |
| NT□□-ML6-7-C-Y        | 6 mm OJFLUID             | 6 mm OJFLUID   |                 |      | 1.13<br>(28.7)      |                |                |              |                |                |                |                |
| NT□□-ML8-7-C-Y        | 8 mm OJFLUID             | 8 mm OJFLUID   |                 |      |                     |                |                |              |                |                |                |                |

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

## 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

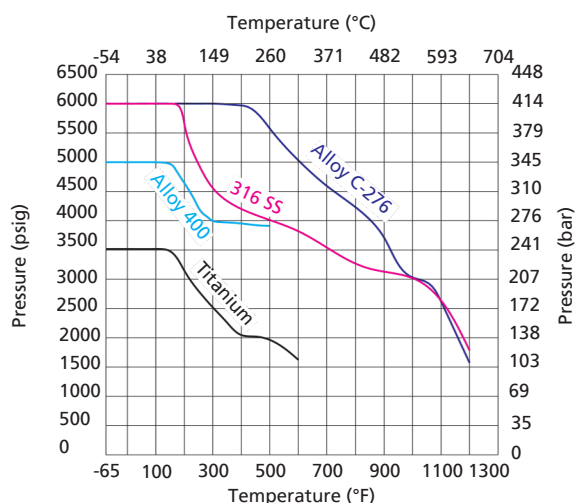
## Features

- ⊙ One-piece forged body
- ⊙ Two-piece stem design: Upper stem 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 and the tip minimizes packing abrasion and reduces the friction between these seat
- ⊙ Safety backseating 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 or compressed 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)

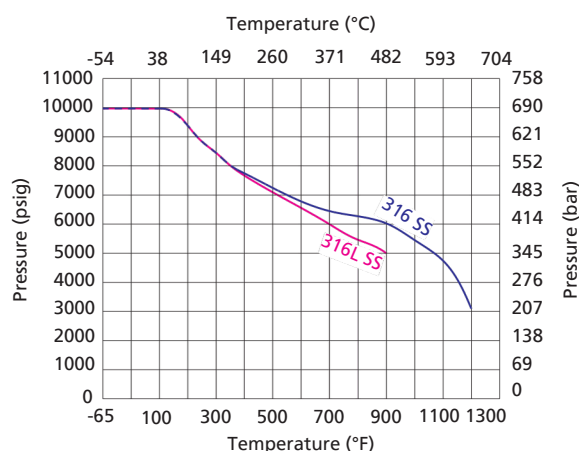


## Pressure vs. Temperature

NU Series



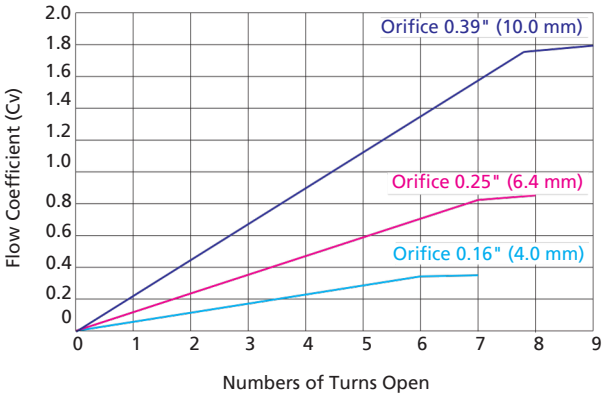
NUH Series



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 us for curve graph of other materials.

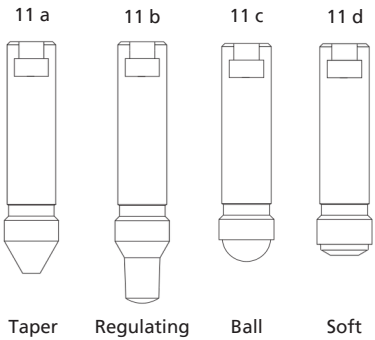
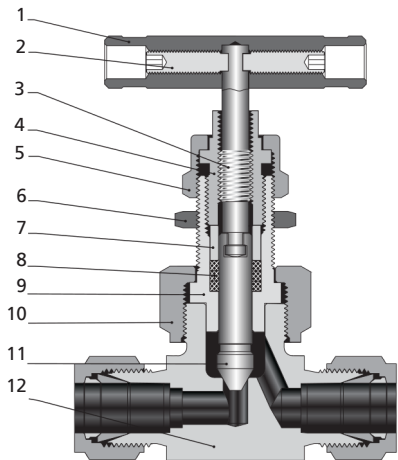
Flow Data at 100°F (37°C)

Regulating Stem



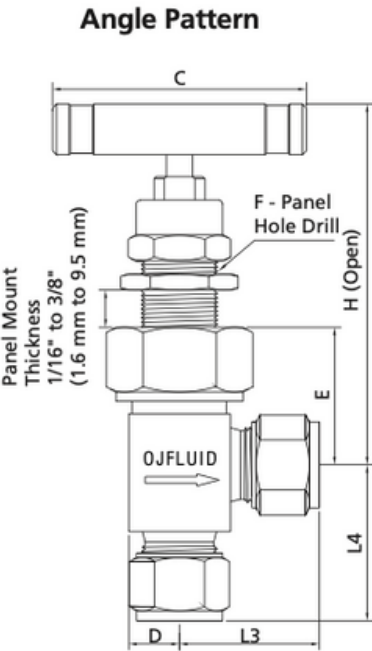
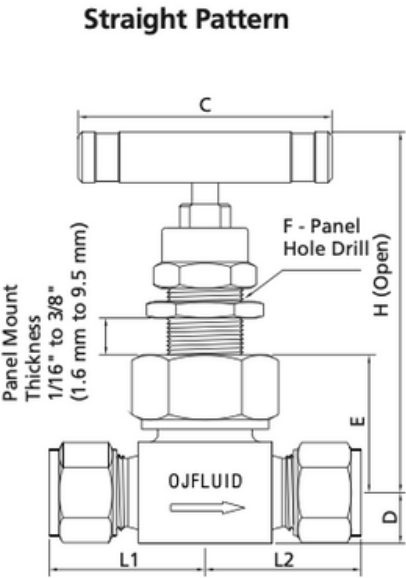
Standard Materials of Construction

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 3       | Set Screw    | Zinc-plated carbon steel                            |                               |                                             |                  |
| 4         | Upper Stem   | 316 SS/A479                                         |                               |                                             |                  |
| 5         | Packing Bolt | 304 SS/A479                                         |                               |                                             |                  |
| 6         | Lock Nut     | 316 SS/A479                                         |                               |                                             |                  |
| 7         | Panel Nut    | Stainless steel                                     |                               |                                             |                  |
| 8         | Gland        | 316 SS/A479                                         |                               |                                             |                  |
| 9         | Packing      | PTFE or PEEK or graphite                            |                               |                                             |                  |
| 10        | Bonnet       | 316 SS/A479                                         | Alloy 400/B164                | Titanium Gr 4/B348                          | Alloy C-276/B574 |
| 11a<br>11 | Union Nut    | 316 SS/A479                                         |                               |                                             |                  |
| b<br>11c  | Lower Stem   | Hardened<br>316 SS/A479<br>316 SS/A479              | Alloy 400/B164                | Titanium Gr 4/B348                          | Alloy C-276/B574 |
| 11d       | Stem         | 316 SS/A479                                         | Alloy 400/B164                | Titanium Gr 4/B348                          | Alloy C-276/B574 |
|           | Stem Tip     | PTFE or PCTFE or PEEK                               |                               |                                             |                  |
| 11e       | Stem         | 316 SS/A479                                         | Not Applicable                |                                             | Alloy C-276/B574 |
|           | Stem Tip     | Stellite                                            |                               |                                             |                  |
| 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                          |                               |                                             |                  |

Dimensions



Dimensions of NU Series

| Basic Ordering Number | Connection Type and Size     | Connection Pressure at 100°F (38°C) psig (bar) | Orifice in.(mm) | Cv   | Dimensions, in.(mm) |             |             |             |             |             |             |             |             |             |  |  |  |  |  |
|-----------------------|------------------------------|------------------------------------------------|-----------------|------|---------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|--|--|--|--|--|
|                       | Inlet/Outlet                 |                                                |                 |      | 316 SS              | L1          | L2          | L3          | L4          | C           | D           | E           | F           | H           |  |  |  |  |  |
| NU□□-FNS2-7           | 1/8 Female NPT               | 6000 (414)                                     | 0.16 (4.0)      | 0.35 | 1.00 (25.4)         | 1.00 (25.4) | 0.89 (22.6) | 1.00 (25.4) | 1.75 (44.5) | 0.39 (9.9)  | 1.09 (27.7) | 0.59 (15.0) | 3.06 (77.7) |             |  |  |  |  |  |
| NU□□-FNS4-7           | 1/4 Female NPT               |                                                |                 |      | 1.03 (26.2)         | 1.03 (26.2) |             |             |             |             |             |             |             |             |  |  |  |  |  |
| NU□□-NS4-FNS4-7       | 1/4 Male NPT/ 1/4 Female NPT |                                                |                 |      | 1.00 (25.4)         | 1.03 (26.2) |             |             |             |             |             |             |             |             |  |  |  |  |  |
| NU□□-NS4-7            | 1/4 Male NPT                 |                                                |                 |      | 1.00 (25.4)         | 1.00 (25.4) | 1.00 (25.4) |             |             |             |             |             |             |             |  |  |  |  |  |
| NU□□-NS6-7            | 3/8 Male NPT                 |                                                |                 |      | 1.03 (26.2)         | 1.03 (26.2) | 0.89 (22.6) |             |             |             |             |             |             |             |  |  |  |  |  |
| NU□□-FRP4-7           | 1/4 Female BSPP              |                                                |                 |      | 1.00 (25.4)         | 1.22 (30.9) | 1.14 (29.0) |             |             |             |             |             |             |             |  |  |  |  |  |
| NU□□-NS4-FL4-7        | 1/4 Male NPT/ 1/4" OJFLUID   |                                                |                 |      | 1.03 (26.2)         | 1.22 (30.9) |             |             |             |             |             |             |             |             |  |  |  |  |  |
| NU□□-FNS4-FL4-7       | 1/4 Female NPT/ 1/4" OJFLUID |                                                |                 |      | 1.22 (30.9)         | 1.22 (30.9) |             |             |             |             |             |             |             |             |  |  |  |  |  |
| NU□□-FL4-7            | 1/4" OJFLUID                 |                                                |                 |      | 1.22 (30.9)         | 1.22 (30.9) | 1.15 (29.2) | 1.22 (30.9) |             |             |             |             |             |             |  |  |  |  |  |
| NU□□-ML6-7            | 6 mm OJFLUID                 |                                                |                 |      | 1.00 (25.4)         | 1.00 (25.4) | 0.85 (21.6) | 1.00 (25.4) |             |             |             |             |             |             |  |  |  |  |  |
| NU□□-ML8-7            | 8 mm OJFLUID                 |                                                |                 |      | 1.03 (26.2)         | 1.03 (26.2) | 1.10 (28.0) | 1.10 (28.0) |             |             |             |             |             |             |  |  |  |  |  |
| NU□□-TS4-7-G          | 1/4" Tube Socket Weld        |                                                |                 |      | 1.13 (28.6)         | 1.13 (28.6) | 1.00 (25.4) | 1.13 (28.6) | 2.50 (63.5) | 0.50 (12.7) | 1.34 (34.0) | 0.78 (19.8) | 3.78 (96.0) |             |  |  |  |  |  |
| NU□□-FO4-7            | 1/4" Male FO                 |                                                |                 |      | 1.06 (26.9)         | 1.06 (26.9) | 1.28 (32.5) |             |             |             |             |             |             | 1.47 (37.3) |  |  |  |  |  |
| NU□□-FR4-7            | 1/4" Male FR                 |                                                |                 |      | 1.41 (35.9)         | 1.41 (35.9) |             |             |             |             |             |             |             |             |  |  |  |  |  |
| NU□□-FNS4-8           | 1/4 Female NPT               |                                                |                 |      | 1.52 (38.6)         | 1.52 (38.6) |             |             |             |             |             |             |             |             |  |  |  |  |  |
| NU□□-FNS6-8           | 3/8 Female NPT               |                                                |                 |      | 1.42 (36.1)         | 1.42 (36.1) | 1.30 (33.0) | 1.48 (37.6) |             |             |             |             |             |             |  |  |  |  |  |
| NU□□-NS6-8            | 3/8 Male NPT                 |                                                | 0.25 (6.4)      | 0.86 | 1.41 (35.9)         | 1.41 (35.9) | 1.28 (32.5) | 1.47 (37.3) |             |             |             |             |             |             |  |  |  |  |  |
| NU□□-FL6-8            | 3/8" OJFLUID                 |                                                |                 |      | 1.52 (38.6)         | 1.52 (38.6) | 1.40 (35.6) | 1.58 (40.1) |             |             |             |             |             |             |  |  |  |  |  |
| NU□□-FL8-8            | 1/2" OJFLUID                 |                                                |                 |      | 1.42 (36.1)         | 1.42 (36.1) | 1.30 (33.0) | 1.48 (37.6) |             |             |             |             |             |             |  |  |  |  |  |
| NU□□-ML10-8           | 10 mm OJFLUID                |                                                |                 |      | 1.42 (36.1)         | 1.42 (36.1) | 1.30 (33.0) | 1.48 (37.6) |             |             |             |             |             |             |  |  |  |  |  |

## Dimensions of NU Series

| Basic Ordering Number | Connection Type and Size           | Connection Pressure at 100°F (38°C) psig (bar) | Orifice in.(mm) | Cv          | Dimensions, in.(mm) |             |             |             |             |             |             |             |             |             |             |             |             |             |             |
|-----------------------|------------------------------------|------------------------------------------------|-----------------|-------------|---------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
|                       | Inlet/Outlet                       | 316 SS                                         |                 |             | L1                  | L2          | L3          | L4          | C           | D           | E           | F           | H           |             |             |             |             |             |             |
| NU□□-ML12-8           | 12 mm OJFLUID                      | 6000 (414)                                     | 0.25 (6.4)      | 0.86        | 1.52 (38.6)         | 1.52 (38.6) | 1.40 (35.6) | 1.58 (40.1) | 2.50 (63.5) | 0.50 (12.7) | 1.34 (34.0) | 0.78 (19.8) | 3.78 (96.0) |             |             |             |             |             |             |
| NU□□-ML14-8           | 14 mm OJFLUID                      |                                                |                 |             |                     |             |             |             |             |             |             |             |             |             |             |             |             |             |             |
| NU□□-ML16-8           | 16 mm OJFLUID                      |                                                |                 |             |                     |             |             |             |             |             |             |             |             | 5800 (400)  |             |             |             |             |             |
| NU□□-TS6-8-G          | 3/8" Tube Socket Weld              | 6000 (414)                                     |                 |             | 1.13 (28.6)         | 1.13 (28.6) | 1.00 (25.4) | 1.13 (28.6) |             |             |             |             |             | 2.92 (74.1) |             |             |             |             |             |
| NU□□-TS8-8-G          | 1/2" Tube Socket Weld              |                                                |                 |             |                     |             |             |             |             |             |             |             |             |             |             |             |             |             |             |
| NU□□-PS4-8-G          | 1/4 Pipe Socket Weld               |                                                |                 |             |                     |             |             |             |             |             |             |             |             |             |             |             |             |             |             |
| NU□□-MTS12-8-G        | 12 mm Tube Socket Weld             |                                                |                 |             | 1.13 (28.6)         | 1.13 (28.6) | —           | —           |             |             |             |             |             |             | 0.63 (16.0) | 1.46 (37.1) | 3.90 (99.0) |             |             |
| NU□□-MTS14-8-G        | 14 mm Tube Socket Weld             |                                                |                 |             |                     |             |             |             |             |             |             |             |             |             |             |             |             |             |             |
| NU□□-MTS16-8-G        | 16 mm Tube Socket Weld             |                                                |                 |             |                     |             |             |             |             |             |             |             |             |             |             |             |             |             |             |
| NU□□-MTB14-8-G        | 14x2.5 mm Tube Butt Weld           |                                                |                 |             | 1.50 (38.1)         | 1.50 (38.1) | 1.13 (28.6) | 1.50 (38.1) |             |             |             |             |             |             | 0.50 (12.7) | 1.34 (34.0) | 3.78 (96.0) |             |             |
| NU□□-MTB16-8-G        | 16x2.8 mm Tube Butt Weld           |                                                |                 |             |                     |             |             |             |             |             |             |             |             |             |             |             |             |             |             |
| NU□□-UMB14-8          | 14x2.5 mm Rotatable Tube Butt Weld |                                                |                 |             |                     |             |             |             |             |             |             |             |             |             |             |             |             |             |             |
| NU□□-FO8-8            | 1/2" Male O                        |                                                |                 |             | 5800 (400)          | 1.56 (39.6) | 1.56 (39.6) | 1.56 (39.6) |             |             |             |             |             |             | 1.56 (39.6) | 0.63 (16.0) | 1.82 (46.2) | 5.00 (127)  |             |
| NU□□-FR8-8            | 1/2" Male R                        |                                                |                 |             |                     |             |             |             |             |             |             |             |             |             |             |             |             |             |             |
| NU□□-MS20-8           | M20 x 1.5 Male Metric              |                                                |                 |             |                     |             |             |             |             |             |             |             |             |             |             |             |             |             |             |
| NU□□-MS22-8           | M22 x 1.5 Male Metric              |                                                |                 |             |                     | 5800 (400)  | 1.97 (50.0) | 1.97 (50.0) |             |             |             |             |             |             | 1.68 (42.7) | 2.08 (52.8) | 3.50 (88.9) | 0.63 (16.0) | 1.82 (46.2) |
| NU□□-NS8-9            | 1/2 Male NPT                       |                                                |                 |             |                     |             |             |             |             |             |             |             |             |             |             |             |             |             |             |
| NU□□-FNS8-9           | 1/2 Female NPT                     |                                                |                 |             |                     |             |             |             |             |             |             |             |             |             |             |             |             |             |             |
| NU□□-FNS12-9          | 3/4 Female NPT                     |                                                |                 |             |                     |             |             |             |             |             |             |             |             |             |             |             |             |             |             |
| NU□□-NS12-9           | 3/4 Male NPT                       |                                                |                 |             |                     |             |             |             |             |             |             |             |             |             |             |             |             |             |             |
| NU□□-FL8-9            | 1/2" OJFLUID                       | 6000 (414)                                     |                 |             |                     | 1.56 (39.7) | 1.56 (39.7) | 1.31 (33.3) |             |             |             |             |             | 1.69 (42.9) | 2.98 (75.7) |             |             |             |             |
| NU□□-FL12-9           | 3/4" OJFLUID                       |                                                |                 |             |                     |             |             |             |             |             |             |             |             |             |             |             |             |             |             |
| NU□□-ML14-9           | 14 mm OJFLUID                      |                                                |                 |             |                     |             |             |             |             |             |             |             |             |             |             |             |             |             |             |
| NU□□-ML16-9           | 16 mm OJFLUID                      |                                                | 1.56 (39.7)     | 1.56 (39.7) |                     | —           | —           | —           | —           |             |             |             |             |             |             |             |             |             |             |
| NU□□-ML18-9           | 18 mm OJFLUID                      |                                                |                 |             |                     |             |             |             |             |             |             |             |             |             |             |             |             |             |             |
| NU□□-ML20-9           | 20 mm OJFLUID                      |                                                |                 |             |                     |             |             |             |             |             |             |             |             |             |             |             |             |             |             |
| NU□□-MTS14-9-G        | 14 mm Tube Socket Weld             |                                                | 6000 (414)      | 2.98 (75.7) | 2.98 (75.7)         | —           | —           | 1.56 (39.7) |             |             |             |             |             |             |             |             |             |             |             |
| NU□□-MTS16-9-G        | 16 mm Tube Socket Weld             |                                                |                 |             |                     |             |             |             |             |             |             |             |             |             |             |             |             |             |             |
| NU□□-TS8-9-G          | 1/2" Tube Socket Weld              |                                                |                 |             |                     |             |             |             |             |             |             |             |             |             |             |             |             |             |             |
| NU□□-TS12-9-G         | 3/4" Tube Socket Weld              |                                                |                 | 1.56 (39.7) | 1.56 (39.7)         | —           | —           |             | —           | —           |             |             |             |             |             |             |             |             |             |
| NU□□-MTB16-9-G        | 16x2.25 mm Tube Butt Weld          |                                                |                 |             |                     |             |             |             |             |             |             |             |             |             |             |             |             |             |             |
| NU□□-UMB14-9          | 14x2.5 mm Rotatable Tube Butt Weld |                                                |                 |             |                     |             |             |             |             |             |             |             |             |             |             |             |             |             |             |
| NU□□-FR8-9            | 1/2" Male FR                       |                                                |                 |             |                     |             |             |             |             |             |             |             |             |             |             |             |             |             |             |
| NU□□-MS27-9           | M27 x 2 Male Metric                |                                                |                 |             |                     |             |             |             |             |             |             |             |             |             |             |             |             |             |             |

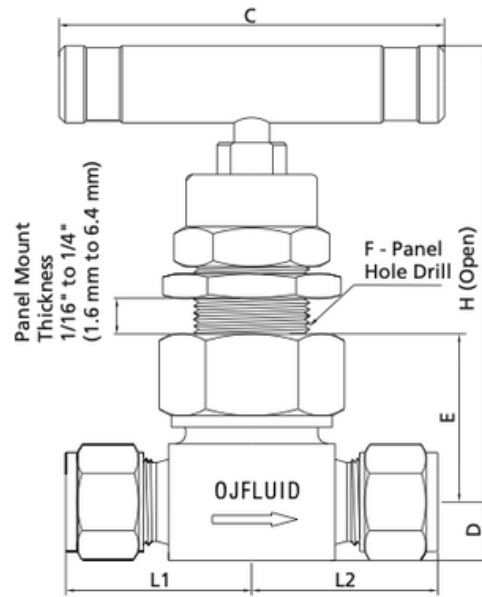
1. Connection type of "OJFLUID" means OJFLUID double ferrule tube fittings. When the connection type of valves is OJFLUID double ferrule tube fitting, the working pressures of the valves are related to the wall thickness of tubing applied. For specific working pressure of the valves, please refer to the allowable working pressures in OJFLUID Catalog Tubing.

2. Connection type of O means O-ring face seal fittings. "R" means metal gasket face seal fittings.

3. Sizes and types listed are standard. Other sizes and types are available upon request. For details, please contact us.

4. Dimensions are shown with OJFLUID tube fitting nuts finger-tight. All dimensions are for reference only and are subject to change. For dimensions not shown above, please contact us.

## B-110 Needle Valves



### Dimensions of NUH Series

| Basic Ordering Number | Connection Type and Size        | Connection Pressure at 100°F (38°C) psig (bar) | Orifice in.(mm) | Cv   | Dimensions, in.(mm) |             |             |             |             |              |
|-----------------------|---------------------------------|------------------------------------------------|-----------------|------|---------------------|-------------|-------------|-------------|-------------|--------------|
|                       | Inlet/Outlet                    | 316 SS                                         |                 |      | L1                  | L2          | C           | D           | E           | F            |
| NUH□□-FL4-7           | 1/4" OJFLUID                    | 10000 (690)                                    | 0.16 (4.0)      | 0.35 | 1.41 (35.8)         | 1.41 (35.8) |             |             |             |              |
| NUH□□-FNS2-7          | 1/8 Female NPT                  |                                                |                 |      |                     |             |             |             |             |              |
| NUH□□-FNS4-7          | 1/4 Female NPT                  |                                                |                 |      | 1.13 (28.6)         | 1.13 (28.6) | 2.50 (63.5) | 0.50 (12.7) | 1.35 (34.3) | 0.78 (19.8)  |
| NUH□□-NS4-FNS4-7      | 1/4 Male NPT/<br>1/4 Female NPT |                                                |                 |      |                     |             |             |             |             | 3.74 (95.0)  |
| NUH□□-NS4-7           | 1/4 Male NPT                    |                                                |                 |      |                     |             |             |             |             |              |
| NUH□□-TS4-7-G         | 1/4" Tube Socket Weld           |                                                | 0.25 (6.4)      | 0.86 |                     |             |             |             |             |              |
| NUH□□-FNS4-8          | 1/4 Female NPT                  |                                                |                 |      |                     |             |             |             |             |              |
| NUH□□-NS8-8           | 1/2 Male NPT                    |                                                |                 |      | 1.56 (39.7)         | 1.56 (39.7) | 3.50 (88.9) | 0.63 (16.0) | 1.77 (45.0) | 1.03 (26.2)  |
| NUH□□-TS8-8-G         | 1/2" Tube Socket Weld           |                                                |                 |      |                     |             |             |             |             | 4.90 (124.5) |
| NUH□□-MTS12-8-G       | 12 mm Tube Socket Weld          |                                                | 0.39 (10.0)     | 1.8  |                     |             |             |             |             |              |
| NUH□□-MTS16-9-G       | 16 mm Tube Socket Weld          |                                                |                 |      | 1.75 (44.5)         | 1.75 (44.5) | 3.50 (88.9) | 0.91 (23.0) | 2.29 (58.2) | 1.14 (28.9)  |
| NUH□□-MTB22-9-G       | 22x5 mm Tube Butt Weld          |                                                |                 |      |                     |             |             |             |             | 5.28 (134.1) |
| NUH□□-FNS8-9          | 1/2 Female NPT                  |                                                |                 |      | 1.56 (39.7)         | 1.56 (39.7) |             |             |             |              |

1. Connection type of "OJFLUID" means OJFLUID double ferrule tube fittings. When the connection type of valves is our 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 OJFLUID Tubing catalog.
2. Sizes and types listed are standard. Other sizes and types are available upon request. For details, please contact us.
3. Dimensions are shown with OJFLUID tube fitting nuts finger-tight. All dimensions are for reference only and are subject to change. For dimensions not shown above, please contact us.

## Ordering Number Description

NUSS - FNS6 - FL6 - 8WB - GM - ASF2

| Series | Body Material |              | Inlet Type |                                     | Inlet Size | Outlet Type                            | Outlet Size                                            | Orifice Size | Stem Tip Material | Stem Tip Type                                       | Packing Material | Handle                                                                                     | Flow Pattern | Special Application                     | Cleaning and Packaging |
|--------|---------------|--------------|------------|-------------------------------------|------------|----------------------------------------|--------------------------------------------------------|--------------|-------------------|-----------------------------------------------------|------------------|--------------------------------------------------------------------------------------------|--------------|-----------------------------------------|------------------------|
| NU     | SS            | 316 SS       | FNS        | Female NPT                          | 2          | 1/8"                                   | Same as Inlet                                          | 7            | 0.16" (4.0 mm)    | Same as Body                                        | Taper            | PTFE                                                                                       | Straight     |                                         | FC-01                  |
| NUH    | 6L            | 316L SS      | NS         | Male NPT                            | 4          | 1/4"                                   |                                                        | 8            | 0.25" (6.4 mm)    |                                                     |                  |                                                                                            |              |                                         |                        |
|        | S4            | 304 SS       | FRT        | Female BSPT                         | 6          | 3/8" or 6 mm                           | Specified in the same way as inlet type and inlet size | 9            | 0.39" (10 mm)     | D5 Duplex 2205                                      | B Ball           | G Graphite                                                                                 | A Angle      |                                         | F2 FC-02               |
|        | 4L            | 304L SS      | RT         | Male BSPT                           | 8          | 1/2" or 8 mm                           |                                                        |              |                   |                                                     |                  |                                                                                            |              |                                         |                        |
|        | S1            | 321 SS       | FMS        | Female Metric Thread (for RG-M)     | 10         | 10 mm                                  |                                                        |              | TI Titanium       | T Soft Tip-PTFE (only for NU Series Needle Valves)  |                  |                                                                                            |              | No                                      |                        |
|        | 91            | F91          | MS         | Male Metric Thread (for RG-M)       | 12         | 3/4" or 12 mm                          |                                                        |              | A20 Alloy 20      |                                                     |                  |                                                                                            |              |                                         |                        |
|        | 92            | F92          | FRP        | Female BSPP (for RP)                | 14         | 14 mm or 14x2.5 mm or M14x1.5          |                                                        |              | M Alloy 400       | K Soft Tip-PCTFE (only for NU Series Needle Valves) |                  |                                                                                            |              | S NACE MR0175                           |                        |
|        | D5            | Duplex 2205  | BP         | Male BSPP (for RP and RG)           | 16         | 1" or 16 mm or 16x2.25 mm or 16x2.8 mm |                                                        |              | INC Alloy 600     |                                                     |                  |                                                                                            |              |                                         |                        |
|        | TI            | Titanium     | TS         | Fractional Tube Socket Weld         | 18         | 18 mm                                  |                                                        |              | HC Alloy C-276    | P Soft Tip-PEEK (only for NU Series Needle Valves)  |                  |                                                                                            |              | SI SilcoNert® 2000 (Sulfinert®) Coating |                        |
|        | A20           | Alloy 20     | MTS        | Metric Tube Socket Weld             | 20         | 20 mm or M20 x 1.5                     |                                                        |              |                   |                                                     |                  |                                                                                            |              |                                         |                        |
|        | M             | Alloy 400    | TB         | Fractional Tube Butt Weld           | 22         | 22 mm or 22x5 mm or M22x1.5            |                                                        |              |                   |                                                     |                  | Black Knob (only for NU Series Needle Valves with the orifice 0.16"/4.0mm and 0.25"/6.4mm) |              |                                         |                        |
|        | INC           | Alloy 600    | MTB        | Metric Tube Butt Weld               | 24         | M24 x 1.5                              |                                                        |              |                   |                                                     |                  |                                                                                            |              |                                         |                        |
|        | HC            | Alloy C-276  | PS         | Pipe Socket Weld                    | 25         | 25 mm                                  |                                                        |              |                   |                                                     |                  |                                                                                            |              |                                         |                        |
|        | B             | Brass        | PB         | Pipe Butt Weld                      | 27         | M27 x 2                                |                                                        |              |                   |                                                     |                  |                                                                                            |              |                                         |                        |
|        | CS            | Carbon Steel | FL         | Fractional Tube Fitting             |            |                                        |                                                        |              |                   |                                                     |                  |                                                                                            |              |                                         |                        |
|        | 904L          | 904L SS      | ML         | Metric Tube Fitting                 |            |                                        |                                                        |              |                   |                                                     |                  |                                                                                            |              |                                         |                        |
|        |               |              | UFB        | Rotatable Fractional Tube Butt Weld |            |                                        |                                                        |              |                   |                                                     |                  |                                                                                            |              |                                         |                        |
|        |               |              | UMB        | Rotatable Metric Tube Butt Weld     |            |                                        |                                                        |              |                   |                                                     |                  |                                                                                            |              |                                         |                        |
|        |               |              | O          | Male O Fitting                      |            |                                        |                                                        |              |                   |                                                     |                  |                                                                                            |              |                                         |                        |
|        |               |              | R          | Male R Fitting                      |            |                                        |                                                        |              |                   |                                                     |                  |                                                                                            |              |                                         |                        |

Note: "Ordering Number Description" is a reference to understand the combination rules of OJFLUID 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.
- O means O-ring face seal fittings.
- R means 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.
- Special Application:  
Plural special application designators available in one ordering number, example: NUSS-NS4-7-SSI.  
SilcoNert® 2000 (Sulfinert®) coating: Wetted metal components SilcoNert® 2000 (Sulfinert®) coated.

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

NY Series: Working pressure up to 6000 psig

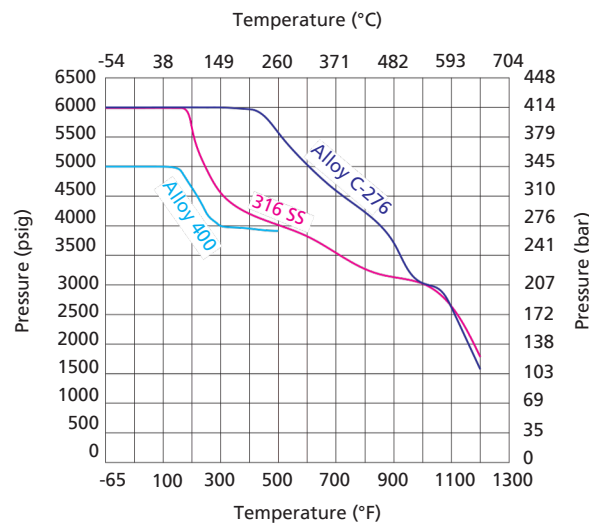
## Features

- ⊙ 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 theseatandthetip abrasion and reduces the friction between minimizes packing a
- ⊙ 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 or compressed air at maximum allowable working pressure
- ⊙ Working pressure up to:
  - Stainless steel: 6000 psig (414 bar)
  - Alloy C-276: 6000 psig (414 bar)
  - Alloy 400: 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)
  - Graphite: -65°F to 1200°F (-54°C to 649°C)



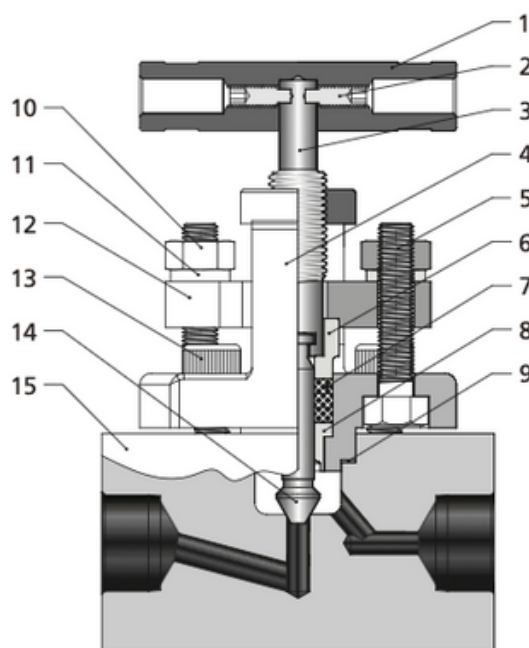
## Pressure vs. Temperature

NY Series



1. Graphs are based on graphite packing.
2. Contact us for curve graph of other materials.

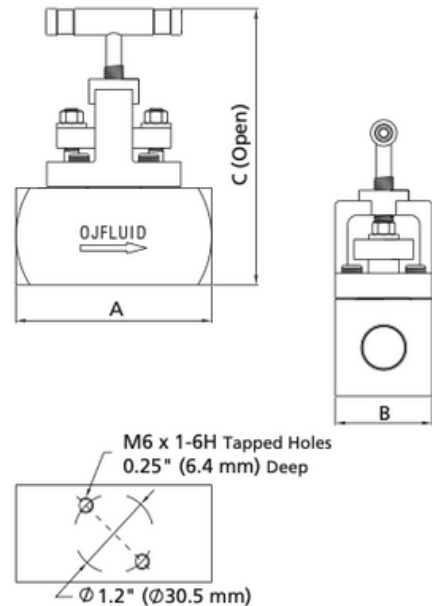
## Standard Materials of Construction



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

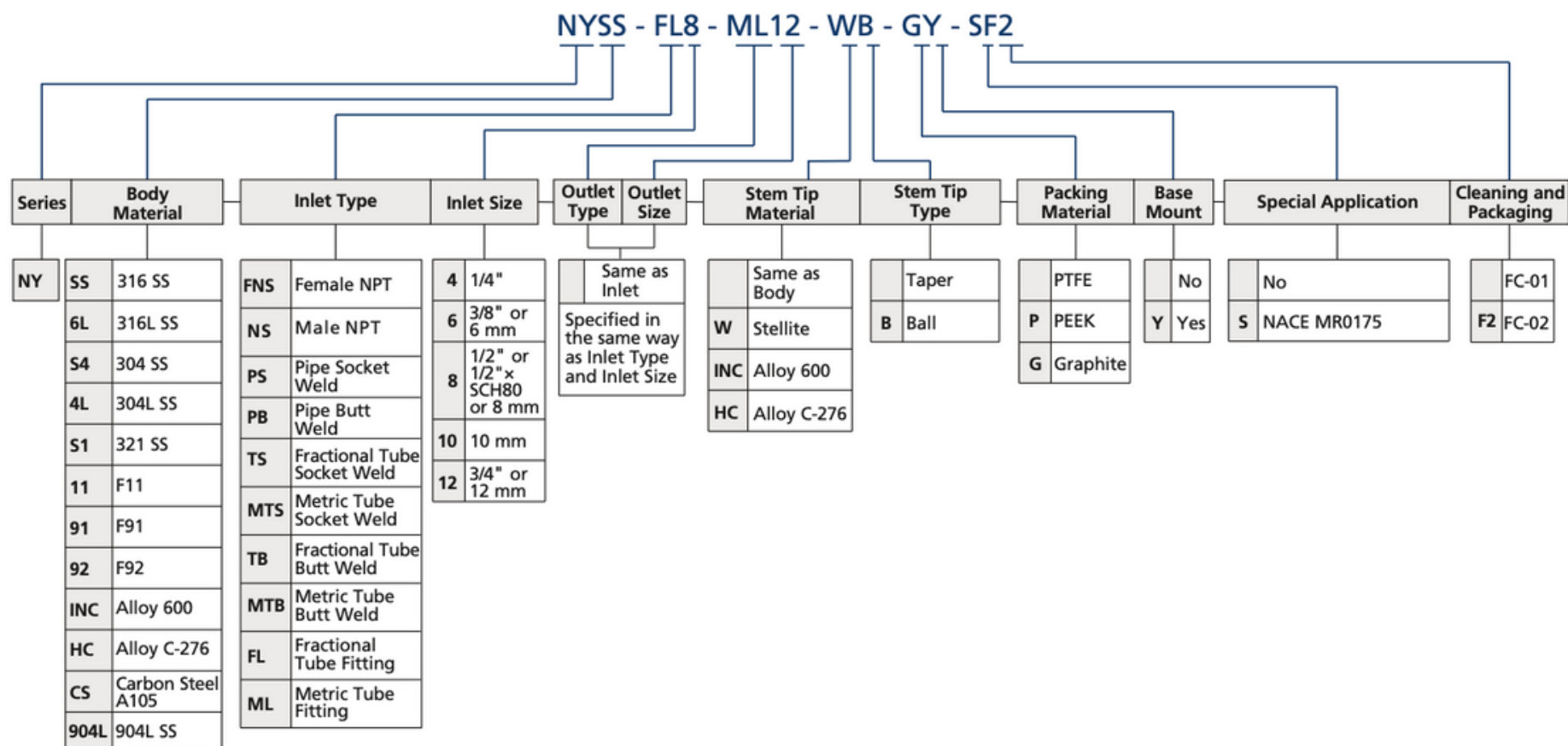
## Dimensions of NY Series

| 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           |                 |      | 3.00<br>(76.2)      |                |                 |
| NY□□-PS8-G            | 1/2 Pipe Socket Weld     | 1/2 Pipe Socket Weld     |                 |      | 3.54<br>(89.8)      |                |                 |
| NY□□-PB8-G            | 1/2×SCH80 Pipe Butt Weld | 1/2×SCH80 Pipe Butt Weld |                 |      | 3.44<br>(87.4)      |                |                 |
| NY□□-FL4              | 1/4" OJFLUID             | 1/4" OJFLUID             |                 |      | 3.50<br>(88.9)      |                |                 |
| NY□□-FL6              | 3/8" OJFLUID             | 3/8" OJFLUID             |                 |      | 3.78<br>(96.0)      |                |                 |
| NY□□-FL8              | 1/2" OJFLUID             | 1/2" OJFLUID             |                 |      | 3.44<br>(87.4)      |                |                 |
| NY□□-ML6              | 6 mm OJFLUID             | 6 mm OJFLUID             |                 |      | 3.78<br>(96.0)      |                |                 |
| NY□□-ML8              | 8 mm OJFLUID             | 8 mm OJFLUID             |                 |      | 3.78<br>(96.0)      |                |                 |
| NY□□-ML12             | 12 mm OJFLUID            | 12 mm OJFLUID            |                 |      | 3.78<br>(96.0)      |                |                 |



1. Connection type of "OJFLUID" means our double ferrule tube fittings. When the connection type of valves is OJFLUID 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 OJFLUID Catalog Tubing.
2. Sizes and types listed are standard. Other sizes and types are available upon request. For details, please contact us.
3. Dimensions are shown with OJFLUID tube fitting nuts finger-tight. All dimensions not shown above, please contact us.

| Ordering Number | Description |
|-----------------|-------------|
|-----------------|-------------|



Note: "Ordering Number Description" is a reference to understand the combination rules of OJFLUID 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.