High Pressure Needle Valve

10N Series, 10,000 psi (690 bar)
15N Series, 15,000 psi (1034 bar)
20N Series, 20,000 psi (1379 bar)
30N Series, 30,000 psi (2068 bar)
60N Series, 60,000 psi (4137 bar)
Contents

10N Series
10,000 psi (690 bar)

15N Series
15,000 psi (1034 bar)

20N Series
20,000 psi (1379 bar)

30N Series
30,000 psi (2068 bar)

60N Series
60,000 psi (4137 bar)

Part Number Description

10N Series
10,000 psi (690 bar)

Features

- Non-rotating stem and bar stock body design.
- Easy to assemble and replace packing.
- Metal-to-metal seating achieves ideal shutoff, longer stem/seat service lifetime for abrasive flow, excellent corrosion resistance and greater durability for repeated on/off cycles.
- PTFE is the standard packing material, RPTFE glass, Graphite and Extend stuffing box valve with Graphite also available.
- The material of packing gland and upper stem have been selected to achieve reduced handle torque and extended thread cycle life.
- The material of valve body is 316 SS, the material of lower stem is 17-4PH SS.
- Options for Vee or Regulating stem tips.
- The location of packing is under the thread of valve stem.
- The locking device of packing gland is reliable.
- Five flow patterns are available.

Technical Data

<table>
<thead>
<tr>
<th>Connector size</th>
<th>Connection Type</th>
<th>Orifice in. (mm)</th>
<th>Cv</th>
<th>Pressure @ Room Temperature psig (bar)</th>
<th>Operating Temperature</th>
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</thead>
<tbody>
<tr>
<td>9/16&quot; Tube</td>
<td>2FH9</td>
<td>0.359 (9.12)</td>
<td>1.75</td>
<td>10,000 (690)</td>
<td>-423°F<del>1200°F (-252°C</del>649°C)</td>
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<tr>
<td>3/4&quot; Tube</td>
<td>2FH12</td>
<td>0.516 (13.10)</td>
<td>2.80</td>
<td>10,000 (690)</td>
<td>-325°F<del>400°F (-198°C</del>204°C)</td>
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<tr>
<td>1&quot; Tube</td>
<td>2FH16</td>
<td>0.688 (17.48)</td>
<td>5.20</td>
<td>10,000 (690)</td>
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</tr>
<tr>
<td>3/4&quot; NPT</td>
<td>FNS12</td>
<td>0.438 (11.13)</td>
<td>2.50</td>
<td>10,000 (690)</td>
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</tr>
<tr>
<td>3/4&quot; BSPT</td>
<td>FRT12</td>
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</tr>
<tr>
<td>1 NPT</td>
<td>FNS16</td>
<td>0.562 (14.27)</td>
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<tr>
<td>1 BSPT</td>
<td>FRT16</td>
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</table>

Notes:

- The value of Cv shown are for 2-way straight valve pattern.
- The value of Cv for 2-way angle pattern will be increase about 50% (Base on water).
- Extreme Temperatures
  - PTFE is the standard packing material for FITOK Needle Valve; RPTFE glass; Graphite (used by Tube connectors only) and Extend stuffing box valve with Graphite (used by Tube connectors only) also available.
  - Normal Needle Valve with PTFE packing can be operated from -10°F (-23°C) to 450°F (232°C).
  - Normal Needle Valve with RPTFE glass packing can be operated from -10°F (-23°C) to 600°F (316°C).
  - Normal Needle Valve with Graphite packing can be operated from 5°F (-15°C) to 800°F (427°C).
  - Extend stuffing box Valve with of Graphite packing can be operated from 70°F (-17°C) to 1200°F (649°C).
Flow Data at 100°F (38°C)

![Graph showing flow data at 100°F (38°C)]

**Standard Materials of Construction**

<table>
<thead>
<tr>
<th>Item</th>
<th>Component</th>
<th>Material Grade/ASTM Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Handle Head</td>
<td>Stainless steel</td>
</tr>
<tr>
<td>2</td>
<td>Handle</td>
<td>Stainless steel</td>
</tr>
<tr>
<td>3</td>
<td>Upper Stem</td>
<td>316 SS/A479</td>
</tr>
<tr>
<td>4</td>
<td>Packing Gland</td>
<td>C63000/B150</td>
</tr>
<tr>
<td>5</td>
<td>Locking Screws</td>
<td>Stainless steel</td>
</tr>
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<td>6</td>
<td>Locking Plate</td>
<td>304 SS/A240</td>
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<tr>
<td>7</td>
<td>Packing Ring</td>
<td>C63000/B150</td>
</tr>
<tr>
<td>8</td>
<td>Packing</td>
<td>PTFE/RPTE/GRAPHITE/Extend stuffing box valve with or of Graphite</td>
</tr>
<tr>
<td>9</td>
<td>Packing Washer</td>
<td>17-4PH/X564</td>
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<tr>
<td>10</td>
<td>Lower Stem</td>
<td>17-4PH/X564</td>
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<tr>
<td>11</td>
<td>Body</td>
<td>316 SS/A479</td>
</tr>
<tr>
<td></td>
<td>Lubricant</td>
<td>Molybdenum disulfide</td>
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**Pressure & Temperature**

![Graph showing pressure and temperature] When exceeding 800°F (427°C), use the pink curve as its cold-worked rating for future operating of the components.

**Dimensions (Tube Connectors)**

<table>
<thead>
<tr>
<th>Dimensions (Straight)</th>
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<tbody>
<tr>
<td><strong>Ordering Number</strong></td>
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<td>10NSS-FH9-1</td>
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<tr>
<td>10NSS-FH12-2</td>
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<tr>
<td>10NSS-FH16-1</td>
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<tr>
<td><strong>Orifice in. (mm)</strong></td>
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<tr>
<td></td>
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<tr>
<td><strong>D1</strong></td>
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<tr>
<td><strong>E</strong></td>
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<tr>
<td><strong>F</strong></td>
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<tr>
<td><strong>G</strong></td>
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<tr>
<td><strong>G1</strong></td>
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<tr>
<td><strong>H</strong></td>
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<td><strong>M</strong></td>
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<td><strong>N</strong></td>
</tr>
<tr>
<td><strong>Thickness</strong></td>
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<td>in. (mm)</td>
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**Dimensions (Angle)**

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<td><strong>D1</strong></td>
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<td><strong>E</strong></td>
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<td><strong>G</strong></td>
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<tr>
<td><strong>G1</strong></td>
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<td><strong>H</strong></td>
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<td><strong>M</strong></td>
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<td><strong>N</strong></td>
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<tr>
<td><strong>Thickness</strong></td>
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<td>in. (mm)</td>
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**Dimensions (Angle/replaceable seat)**

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<td><strong>Orifice in. (mm)</strong></td>
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<tr>
<td><strong>Thickness</strong></td>
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<td>in. (mm)</td>
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### Dimensions (Tube Connectors)

#### 3-way/2 on pressure

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<th>Ordering Number</th>
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<th>B</th>
<th>C</th>
<th>D</th>
<th>D1</th>
<th>E</th>
<th>F</th>
<th>G</th>
<th>G1</th>
<th>H</th>
<th>M</th>
<th>N</th>
<th>Thickness in. (mm)</th>
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<tbody>
<tr>
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<td>2FH9</td>
<td>0.359 (9.12)</td>
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<td>1.00</td>
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<tr>
<td>10NSS-FHS12-4</td>
<td>2FH12</td>
<td>0.516 (13.11)</td>
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<td>1.50</td>
<td>0.62</td>
<td>2.00</td>
<td>2.25</td>
<td>2.63</td>
<td>4.63</td>
<td>10.25</td>
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<tr>
<td>10NSS-FHS16-4</td>
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<td>0.688 (17.48)</td>
<td>4.12</td>
<td>2.06</td>
<td>0.63</td>
<td>3.75</td>
<td>2.81</td>
<td>3.70</td>
<td>5.88</td>
<td>10.25</td>
<td>1.62</td>
<td>0.96</td>
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<td>1.53</td>
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#### 3-way/1 on pressure

<table>
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<th>C</th>
<th>D</th>
<th>D1</th>
<th>E</th>
<th>F</th>
<th>G</th>
<th>G1</th>
<th>H</th>
<th>M</th>
<th>N</th>
<th>Thickness in. (mm)</th>
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</thead>
<tbody>
<tr>
<td>10NSS-FNS16-2</td>
<td>FRT16</td>
<td>0.562 (14.27)</td>
<td>4.12</td>
<td>2.06</td>
<td>0.63</td>
<td>3.75</td>
<td>2.81</td>
<td>3.70</td>
<td>5.88</td>
<td>10.25</td>
<td>1.62</td>
<td>0.96</td>
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#### 3-way/2 stem manifold

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<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>D1</th>
<th>E</th>
<th>F</th>
<th>G</th>
<th>G1</th>
<th>H</th>
<th>M</th>
<th>N</th>
<th>Thickness in. (mm)</th>
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</thead>
<tbody>
<tr>
<td>10NSS-FH16-6</td>
<td>FRT16</td>
<td>0.688 (17.48)</td>
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<td>2.81</td>
<td>3.70</td>
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<td>10.25</td>
<td>1.62</td>
<td>0.96</td>
<td>1.75</td>
<td>1.53</td>
<td>1.75</td>
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### Dimensions (Pipe Connectors)

#### Straight

<table>
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<th>Connection Type</th>
<th>Orifice in. (mm)</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D1</th>
<th>E</th>
<th>F</th>
<th>G</th>
<th>G1</th>
<th>H</th>
<th>M</th>
<th>N</th>
<th>Thickness in. (mm)</th>
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</thead>
<tbody>
<tr>
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<td>FNS12</td>
<td>0.437 (11.10)</td>
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<td>1.19</td>
<td>0.44</td>
<td>0.88</td>
<td>0.63</td>
<td>1.75</td>
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<tr>
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<td>4.25</td>
<td>10.25</td>
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<td>1.75</td>
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<tr>
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#### Angle

<table>
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<th>Connection Type</th>
<th>Orifice in. (mm)</th>
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<th>C</th>
<th>D1</th>
<th>E</th>
<th>F</th>
<th>G</th>
<th>G1</th>
<th>H</th>
<th>M</th>
<th>N</th>
<th>Thickness in. (mm)</th>
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<tbody>
<tr>
<td>10NSS-FNS12-2</td>
<td>FNS12</td>
<td>0.437 (11.10)</td>
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<td>3.75</td>
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<td>1.19</td>
<td>0.44</td>
<td>0.88</td>
<td>0.63</td>
<td>1.75</td>
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<td></td>
</tr>
<tr>
<td>10NSS-FRT12-2</td>
<td>FRT12</td>
<td>0.688 (17.48)</td>
<td>4.25</td>
<td>1.75</td>
<td>4.25</td>
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#### 3-way/2 on pressure

<table>
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<th>Connection Type</th>
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<th>B</th>
<th>C</th>
<th>D1</th>
<th>E</th>
<th>F</th>
<th>G</th>
<th>G1</th>
<th>H</th>
<th>M</th>
<th>N</th>
<th>Thickness in. (mm)</th>
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**Dimensions (Pipe Connectors)**

3-way/1 on pressure

3-way/2 stem manifold

**Dimensions (3-way/1 on pressure)**

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<thead>
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<th>Connection Type</th>
<th>Orifice In. (mm)</th>
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<th>B</th>
<th>C</th>
<th>D</th>
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<th>E</th>
<th>F</th>
<th>G</th>
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<th>Thickness</th>
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</tr>
<tr>
<td>10NSS-FRT12-5</td>
<td>FRT12</td>
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<td>1.75</td>
<td>2.65</td>
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<td>10.25</td>
<td>1.19</td>
<td>0.44</td>
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<td>0.88</td>
<td>0.63</td>
<td>1.75</td>
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<tr>
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<td>FNS16</td>
<td>0.562</td>
<td>4.12</td>
<td>2.06</td>
<td>3.31</td>
<td>5.12</td>
<td>10.25</td>
<td>1.62</td>
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<td>9.09</td>
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<td>0.56</td>
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<td>1.25</td>
<td>1.13</td>
<td>1.75</td>
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</table>

**Dimensions (3-way/2 stem manifold)**

<table>
<thead>
<tr>
<th>Ordering Number</th>
<th>Connection Type</th>
<th>Orifice In. (mm)</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>D1</th>
<th>E</th>
<th>F</th>
<th>G</th>
<th>G1</th>
<th>H</th>
<th>M</th>
<th>N</th>
<th>Thickness</th>
</tr>
</thead>
<tbody>
<tr>
<td>10NSS-FNS12-6</td>
<td>FNS12</td>
<td>0.437</td>
<td>3.50</td>
<td>1.75</td>
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<td>4.25</td>
<td>10.25</td>
<td>1.19</td>
<td>0.44</td>
<td>7.50</td>
<td>0.88</td>
<td>0.63</td>
<td>1.75</td>
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<tr>
<td>10NSS-FRT12-6</td>
<td>FRT12</td>
<td>0.437</td>
<td>3.50</td>
<td>1.75</td>
<td>2.65</td>
<td>4.25</td>
<td>10.25</td>
<td>1.19</td>
<td>0.44</td>
<td>7.50</td>
<td>0.88</td>
<td>0.63</td>
<td>1.75</td>
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</tr>
<tr>
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<td>FNS16</td>
<td>0.562</td>
<td>4.12</td>
<td>2.06</td>
<td>3.31</td>
<td>5.12</td>
<td>10.25</td>
<td>1.62</td>
<td>0.56</td>
<td>9.09</td>
<td>1.25</td>
<td>1.13</td>
<td>1.75</td>
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</tr>
<tr>
<td>10NSS-FRT16-6</td>
<td>FRT16</td>
<td>0.562</td>
<td>4.12</td>
<td>2.06</td>
<td>3.31</td>
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<td>10.25</td>
<td>1.62</td>
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<td>9.09</td>
<td>1.25</td>
<td>1.13</td>
<td>1.75</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Notes:**
1. G is the drill dimension of packing gland mounting hole.
2. G1 is the dimension of bracket mounting hole.
3. Panel mounting drill size: 0.25" all valves.
4. H is the dimension of stem in closed position.
5. All dimensions are for reference only and are subject to change. For dimensions not shown above, please contact the authorized representative or FITOK Group.

---

**15N Series**

15,000 psi (1034 bar)

**Features**
- Non-rotating stem and bar stock body design.
- Easy to assemble and replace packing.
- Metal-to-metal seating achieves ideal shutoff, longer stem/seat service lifetime for abrasive flow.
- Excellent corrosion resistance and greater durability for repeated on/off cycles.
- PTFE is the standard packing material, RPTFE glass and Graphite also available.
- The material of packing gland and upper stem have been selected to achieve reduced handle torque and extended thread cycle life.
- The material of valve body is 316 SS, the material of lower stem is 17-4PH SS.
- Options for Vee or Regulating stem tips.
- The location of packing is under the thread of valve stem.
- The locking device of packing gland is reliable.
- Five flow patterns are available.

**Technical Data**

<table>
<thead>
<tr>
<th>Connector size</th>
<th>Connection Type</th>
<th>Orifice In. (mm)</th>
<th>Cv</th>
<th>Pressure @ Room Temperature psig (bar)</th>
<th>Operating Temperature</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/8&quot; Tube</td>
<td>FH2</td>
<td>0.094</td>
<td>0.12</td>
<td>15, 000 (1034)</td>
<td>-325°F<del>800°F (-198°C</del>427°C)</td>
</tr>
<tr>
<td>1/4&quot; Tube</td>
<td>FH4</td>
<td>0.188</td>
<td>0.65</td>
<td>15, 000 (1034)</td>
<td>-325°F<del>800°F (-198°C</del>427°C)</td>
</tr>
<tr>
<td>3/8&quot; Tube</td>
<td>FH6</td>
<td>0.250</td>
<td>0.95</td>
<td>15, 000 (1034)</td>
<td>-325°F<del>800°F (-198°C</del>427°C)</td>
</tr>
<tr>
<td>1/2&quot; Tube</td>
<td>FH8</td>
<td>0.375</td>
<td>1.30</td>
<td>15, 000 (1034)</td>
<td>-325°F<del>800°F (-198°C</del>427°C)</td>
</tr>
<tr>
<td>1/8 NPT</td>
<td>FNS2</td>
<td>0.078</td>
<td>0.11</td>
<td>15, 000 (1034)</td>
<td>-325°F<del>400°F (-198°C</del>204°C)</td>
</tr>
<tr>
<td>1/8 BSPT</td>
<td>FRT2</td>
<td>0.203</td>
<td>0.63</td>
<td>15, 000 (1034)</td>
<td>-325°F<del>400°F (-198°C</del>204°C)</td>
</tr>
<tr>
<td>3/8 BSPT</td>
<td>FRT6</td>
<td>0.219</td>
<td>0.75</td>
<td>15, 000 (1034)</td>
<td>-325°F<del>400°F (-198°C</del>204°C)</td>
</tr>
<tr>
<td>1/2 NPT</td>
<td>FNS8</td>
<td>0.312</td>
<td>1.30</td>
<td>15, 000 (1034)</td>
<td>-325°F<del>400°F (-198°C</del>204°C)</td>
</tr>
<tr>
<td>1/2 BSPT</td>
<td>FRT8</td>
<td>0.312</td>
<td>1.30</td>
<td>15, 000 (1034)</td>
<td>-325°F<del>400°F (-198°C</del>204°C)</td>
</tr>
</tbody>
</table>

**Notes:**
- The value of Cv shown are for 2-way straight valve pattern.
- The valve of Cv for 2-way angle pattern will increase about 50% (Base on water).
- Extreme Temperatures
- PTFE is the standard packing material for FITOK Needle Valve; RPTFE glass and Graphite (used by Tube connectors only) also available.
- Normal Needle Valve with PTFE packing can be operated from -100°F (-73°C) to 450°F (232°C).
- Normal Needle Valve with RPTFE glass packing can be operated from -100°F (-73°C) to 600°F (316°C).
### Standard Materials of Construction

<table>
<thead>
<tr>
<th>Item</th>
<th>Component</th>
<th>Material Grade/ASTM Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Handle</td>
<td>Stainless steel</td>
</tr>
<tr>
<td>2</td>
<td>Handle Screw</td>
<td>Stainless steel</td>
</tr>
<tr>
<td>3</td>
<td>Upper Stem</td>
<td>316 SS/A479</td>
</tr>
<tr>
<td>4</td>
<td>Packing Gland</td>
<td>C63000/B150</td>
</tr>
<tr>
<td>5</td>
<td>Locking Screw</td>
<td>Stainless steel</td>
</tr>
<tr>
<td>6</td>
<td>Locking Plate</td>
<td>304 SS/A240</td>
</tr>
<tr>
<td>7</td>
<td>Packing Ring</td>
<td>C63000/B150</td>
</tr>
<tr>
<td>8</td>
<td>Packing</td>
<td>PTFE/PTFE/TEFLON/TEA/Extend stuffing box valve with of Graphite</td>
</tr>
<tr>
<td>9</td>
<td>Packing washer</td>
<td>17-4PH/A664</td>
</tr>
<tr>
<td>10</td>
<td>Lower Stem</td>
<td>17-4PH/A664</td>
</tr>
<tr>
<td>11</td>
<td>Body</td>
<td>316 SS/A479</td>
</tr>
<tr>
<td></td>
<td>Lubricant</td>
<td>Molybdenum disulfide</td>
</tr>
</tbody>
</table>

### Flow Data at 100°F (38°C)

- Number of turns open
- Flow Coefficient Co %

### Pressure & Temperature

- Temperature (°C)
- Temperature (°F)
- Pressure (psi)
- Pressure (kPa)

### Dimensions (Tube Connectors)

#### Dimensions (Straight)

<table>
<thead>
<tr>
<th>Ordering Number</th>
<th>Connection Type</th>
<th>Orifice in. (mm)</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>D1</th>
<th>E</th>
<th>F</th>
<th>G</th>
<th>G1</th>
<th>H</th>
<th>M</th>
<th>N</th>
<th>Thickness</th>
</tr>
</thead>
<tbody>
<tr>
<td>15NSS-FH2-1</td>
<td>FH2</td>
<td>0.094 (2.39)</td>
<td>1.50</td>
<td>0.75</td>
<td>0.31</td>
<td>0.81</td>
<td>1.06</td>
<td>0.81</td>
<td>1.38</td>
<td>1.75</td>
<td>0.62</td>
<td>0.17</td>
<td>3.75</td>
<td>0.56</td>
<td>0.31</td>
</tr>
<tr>
<td>15NSS-FH2-1</td>
<td>FH4</td>
<td>0.188 (4.77)</td>
<td>2.00</td>
<td>1.00</td>
<td>0.44</td>
<td>1.19</td>
<td>2.00</td>
<td>1.00</td>
<td>2.00</td>
<td>1.00</td>
<td>0.75</td>
<td>0.22</td>
<td>4.50</td>
<td>0.62</td>
<td>0.38</td>
</tr>
<tr>
<td>15NSS-FH1-1</td>
<td>FH6</td>
<td>0.250 (6.35)</td>
<td>2.50</td>
<td>1.25</td>
<td>0.52</td>
<td>1.38</td>
<td>1.75</td>
<td>1.52</td>
<td>2.88</td>
<td>4.00</td>
<td>1.00</td>
<td>0.34</td>
<td>5.95</td>
<td>0.69</td>
<td>0.50</td>
</tr>
<tr>
<td>15NSS-FH1-1</td>
<td>FH8</td>
<td>0.375 (9.53)</td>
<td>3.50</td>
<td>1.62</td>
<td>0.52</td>
<td>1.19</td>
<td>1.38</td>
<td>1.75</td>
<td>2.88</td>
<td>4.00</td>
<td>1.00</td>
<td>0.34</td>
<td>5.95</td>
<td>0.69</td>
<td>0.50</td>
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</table>

#### Dimensions (Angle)

<table>
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<tr>
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<th>Connection Type</th>
<th>Orifice in. (mm)</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>D1</th>
<th>E</th>
<th>F</th>
<th>G</th>
<th>G1</th>
<th>H</th>
<th>M</th>
<th>N</th>
<th>Thickness</th>
</tr>
</thead>
<tbody>
<tr>
<td>15NSS-FH2-2</td>
<td>FH2</td>
<td>0.094 (2.39)</td>
<td>1.50</td>
<td>0.75</td>
<td>0.31</td>
<td>0.81</td>
<td>1.06</td>
<td>0.81</td>
<td>1.38</td>
<td>1.75</td>
<td>0.62</td>
<td>0.17</td>
<td>3.75</td>
<td>0.56</td>
<td>0.31</td>
</tr>
<tr>
<td>15NSS-FH2-2</td>
<td>FH4</td>
<td>0.188 (4.77)</td>
<td>2.00</td>
<td>1.00</td>
<td>0.44</td>
<td>1.19</td>
<td>2.00</td>
<td>1.00</td>
<td>2.00</td>
<td>1.00</td>
<td>0.75</td>
<td>0.22</td>
<td>4.50</td>
<td>0.62</td>
<td>0.38</td>
</tr>
<tr>
<td>15NSS-FH1-2</td>
<td>FH6</td>
<td>0.250 (6.35)</td>
<td>2.50</td>
<td>1.25</td>
<td>0.52</td>
<td>1.38</td>
<td>1.75</td>
<td>1.52</td>
<td>2.88</td>
<td>4.00</td>
<td>1.00</td>
<td>0.34</td>
<td>5.95</td>
<td>0.69</td>
<td>0.50</td>
</tr>
<tr>
<td>15NSS-FH1-2</td>
<td>FH8</td>
<td>0.375 (9.53)</td>
<td>3.50</td>
<td>1.62</td>
<td>0.52</td>
<td>1.19</td>
<td>1.38</td>
<td>1.75</td>
<td>2.88</td>
<td>4.00</td>
<td>1.00</td>
<td>0.34</td>
<td>5.95</td>
<td>0.69</td>
<td>0.50</td>
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#### Dimensions (Angle/replaceable seat)

<table>
<thead>
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<th>Ordering Number</th>
<th>Connection Type</th>
<th>Orifice in. (mm)</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>D1</th>
<th>E</th>
<th>F</th>
<th>G</th>
<th>G1</th>
<th>H</th>
<th>M</th>
<th>N</th>
<th>Thickness</th>
</tr>
</thead>
<tbody>
<tr>
<td>15NSS-FH2-3</td>
<td>FH2</td>
<td>0.094 (2.39)</td>
<td>1.50</td>
<td>0.75</td>
<td>0.31</td>
<td>0.81</td>
<td>1.06</td>
<td>0.81</td>
<td>1.38</td>
<td>1.75</td>
<td>0.62</td>
<td>0.17</td>
<td>3.75</td>
<td>0.56</td>
<td>0.31</td>
</tr>
<tr>
<td>15NSS-FH2-3</td>
<td>FH4</td>
<td>0.188 (4.77)</td>
<td>2.00</td>
<td>1.00</td>
<td>0.44</td>
<td>1.19</td>
<td>2.00</td>
<td>1.00</td>
<td>2.00</td>
<td>1.00</td>
<td>0.75</td>
<td>0.22</td>
<td>4.50</td>
<td>0.62</td>
<td>0.38</td>
</tr>
<tr>
<td>15NSS-FH1-3</td>
<td>FH6</td>
<td>0.250 (6.35)</td>
<td>2.50</td>
<td>1.25</td>
<td>0.52</td>
<td>1.38</td>
<td>1.75</td>
<td>1.52</td>
<td>2.88</td>
<td>4.00</td>
<td>1.00</td>
<td>0.34</td>
<td>5.95</td>
<td>0.69</td>
<td>0.50</td>
</tr>
<tr>
<td>15NSS-FH1-3</td>
<td>FH8</td>
<td>0.375 (9.53)</td>
<td>3.50</td>
<td>1.62</td>
<td>0.52</td>
<td>1.19</td>
<td>1.38</td>
<td>1.75</td>
<td>2.88</td>
<td>4.00</td>
<td>1.00</td>
<td>0.34</td>
<td>5.95</td>
<td>0.69</td>
<td>0.50</td>
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</table>
## Dimensions (Pipe Connectors)

### 3-way/1 on pressure

<table>
<thead>
<tr>
<th>Ordering Number</th>
<th>Connection Type</th>
<th>Orifice in. (mm)</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
<th>G</th>
<th>G1</th>
<th>H</th>
<th>M</th>
<th>N</th>
<th>Thickness</th>
</tr>
</thead>
<tbody>
<tr>
<td>15NSS-FNS2-4</td>
<td>FN22</td>
<td>(1.98)</td>
<td>1.50</td>
<td>0.75</td>
<td>0.82</td>
<td>1.57</td>
<td>1.75</td>
<td>0.56</td>
<td>0.16</td>
<td>2.86</td>
<td>0.45</td>
<td>0.20</td>
<td>0.63</td>
<td>(15.9)</td>
</tr>
<tr>
<td>15NSS-FRT2-4</td>
<td>FR12</td>
<td>(5.2)</td>
<td>0.203</td>
<td>2.00</td>
<td>1.50</td>
<td>1.41</td>
<td>2.62</td>
<td>3.00</td>
<td>0.75</td>
<td>5.00</td>
<td>0.62</td>
<td>0.38</td>
<td>0.75</td>
<td>(19.1)</td>
</tr>
<tr>
<td>15NSS-FNS4-4</td>
<td>FN04</td>
<td>(5.56)</td>
<td>2.50</td>
<td>1.25</td>
<td>1.41</td>
<td>2.62</td>
<td>3.00</td>
<td>0.75</td>
<td>5.00</td>
<td>0.62</td>
<td>0.38</td>
<td>1.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>15NSS-FRT6-4</td>
<td>FR16</td>
<td>(3.82)</td>
<td>3.00</td>
<td>1.50</td>
<td>2.06</td>
<td>3.62</td>
<td>4.00</td>
<td>1.00</td>
<td>3.40</td>
<td>6.52</td>
<td>0.69</td>
<td>0.50</td>
<td>1.38</td>
<td>(25.1)</td>
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</table>

### 3-way/2 stem manifold

<table>
<thead>
<tr>
<th>Ordering Number</th>
<th>Connection Type</th>
<th>Orifice in. (mm)</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
<th>G</th>
<th>G1</th>
<th>H</th>
<th>M</th>
<th>N</th>
<th>Thickness</th>
</tr>
</thead>
<tbody>
<tr>
<td>15NSS-FNS2-6</td>
<td>FN22</td>
<td>(1.98)</td>
<td>1.50</td>
<td>0.75</td>
<td>0.82</td>
<td>1.57</td>
<td>1.75</td>
<td>0.56</td>
<td>0.16</td>
<td>2.86</td>
<td>0.45</td>
<td>0.20</td>
<td>0.63</td>
<td>(15.9)</td>
</tr>
<tr>
<td>15NSS-FRT2-6</td>
<td>FR12</td>
<td>(5.2)</td>
<td>0.203</td>
<td>2.00</td>
<td>1.50</td>
<td>1.41</td>
<td>2.62</td>
<td>3.00</td>
<td>0.75</td>
<td>5.00</td>
<td>0.62</td>
<td>0.38</td>
<td>0.75</td>
<td>(19.1)</td>
</tr>
<tr>
<td>15NSS-FNS4-6</td>
<td>FN04</td>
<td>(5.56)</td>
<td>2.50</td>
<td>1.25</td>
<td>1.41</td>
<td>2.62</td>
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<td>5.00</td>
<td>0.62</td>
<td>0.38</td>
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</tr>
<tr>
<td>15NSS-FRT6-6</td>
<td>FR16</td>
<td>(3.82)</td>
<td>3.00</td>
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<td>2.06</td>
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<td>1.00</td>
<td>3.40</td>
<td>6.52</td>
<td>0.69</td>
<td>0.50</td>
<td>1.38</td>
<td>(25.1)</td>
</tr>
</tbody>
</table>

### Notes:
1. G is the drill dimension of packing gland mounting hole.
2. G1 is the dimension of bracket mounting hole.
3. Panel mounting drill size: 0.25" all valves.
4. H is the dimension of stem in closed position.
5. All dimensions are for reference only and are subject to change. For dimensions not shown above, please contact the authorized representative or FITOK Group.
20N Series
20,000 psi (1379 bar)

Features
- Tubing sizes available for 1/4", 3/8", 9/16", 3/4", 1".
- Non-rotating stem and bar stock body design.
- Easy to assemble and replace packing.
- Metal-to-metal seating achieves ideal shutoff, longer stem/seat service lifetime for abrasive flow, excellent corrosion resistance and greater durability for repeated on/off cycles.
- PTFE is the standard packing material, RPTFE glass, Graphite and Extend stuffing box valve with Graphite also available.
- Extend stuffing box valve with of Graphite can be operated to 1200°F (649°C).
- The material of packing gland and upper stem have been selected to achieve reduced handle torque and extended thread cycle life.
- The material of valve body is 316 SS, the material of lower stem is 17-4PH SS.
- Options for Vee or Regulating stem tips.
- The location of packing is under the thread of valve stem.
- The locking device of packing gland is reliable.
- Five flow patterns are available.

Technical Data

<table>
<thead>
<tr>
<th>Tube OD in.</th>
<th>Connection Type</th>
<th>Orifice in. (mm)</th>
<th>Cv</th>
<th>Pressure @ room Temperature psig (bar)</th>
<th>Operating Temperature</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/4</td>
<td>2FH4</td>
<td>0.125 (3.18)</td>
<td>0.31</td>
<td>20,000 (1379)</td>
<td>-325°F<del>1200°F (-198°C</del>649°C)</td>
</tr>
<tr>
<td>3/8</td>
<td>2FH6</td>
<td>0.219 (5.56)</td>
<td>0.75</td>
<td>20,000 (1379)</td>
<td>-325°F<del>1200°F (-198°C</del>649°C)</td>
</tr>
<tr>
<td>9/16</td>
<td>2FH9</td>
<td>0.312 (7.92)</td>
<td>1.30</td>
<td>20,000 (1379)</td>
<td>-325°F<del>1200°F (-198°C</del>649°C)</td>
</tr>
<tr>
<td>3/4</td>
<td>2FH12</td>
<td>0.438 (11.13)</td>
<td>2.50</td>
<td>20,000 (1379)</td>
<td>-325°F<del>1200°F (-198°C</del>649°C)</td>
</tr>
<tr>
<td>1</td>
<td>2FH16</td>
<td>0.562 (14.27)</td>
<td>4.40</td>
<td>20,000 (1379)</td>
<td>-325°F<del>1200°F (-198°C</del>649°C)</td>
</tr>
</tbody>
</table>

Notes:
- The value of Cv shown are for 2-way straight valve pattern.
- The value of Cv for 2-way angle pattern will be increase about 50% (Base on water).
- Extreme Temperatures:
  - PTFE is the standard packing material for FITOK Needle Valve; RPTFE glass, Graphite and Extend stuffing box valve with graphite also available.
  - Normal Needle Valve with PTFE packing can be operated from -100°F (-73°C) to 450°F (232°C).
  - Normal Needle Valve with RPTFE glass packing can be operated from -100°F (-73°C) to 600°F (316°C).
  - Normal Needle Valve with Graphite packing can be operated from -1°F (-17.8°C) to 800°F (427°C).
  - Extending stuffing box Valve with of Graphite packing can be operated from 100°F (-17.8°C) to 1200°F (649°C).

Standard Materials of Construction

<table>
<thead>
<tr>
<th>Item</th>
<th>Component</th>
<th>Material Grade/ASTM Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Handle</td>
<td>Stainless steel</td>
</tr>
<tr>
<td>2</td>
<td>Handle Screw</td>
<td>Stainless steel</td>
</tr>
<tr>
<td>3</td>
<td>Upper Stem</td>
<td>316 SS/A479</td>
</tr>
<tr>
<td>4</td>
<td>Packing Gland</td>
<td>C63000/B150</td>
</tr>
<tr>
<td>5</td>
<td>Locking Screw</td>
<td>Stainless steel</td>
</tr>
<tr>
<td>6</td>
<td>Locking Plate</td>
<td>304 SS/A240</td>
</tr>
<tr>
<td>7</td>
<td>Packing Ring</td>
<td>C63000/B150</td>
</tr>
<tr>
<td>8</td>
<td>Packing</td>
<td>PTFE/RPTFE/GRAPHITE/Extend stuffing box valve with of Graphite</td>
</tr>
<tr>
<td>9</td>
<td>Packing washer</td>
<td>17-4PH/A564</td>
</tr>
<tr>
<td>10</td>
<td>Lower Stem</td>
<td>17-4PH/A564</td>
</tr>
<tr>
<td>11</td>
<td>Body</td>
<td>316 SS/A479</td>
</tr>
<tr>
<td></td>
<td>Lubricant</td>
<td>Molybdenum disulfide</td>
</tr>
</tbody>
</table>
### Notes:
1. G is the dimension of packing gland mounting hole.
2. H is the dimension of stem in closed position.
3. Panel mounting drill size: 0.25 in. for all valves.
4. H is the dimension of stem in closed position.
5. All dimensions are for reference only and are subject to change. For dimensions not shown above, please contact the authorized representative or FITOK Group.

### Features
- **Tubing sizes available for 1/4", 3/8", 9/16".
- **Non-rotating stem and bar stock body design.**
- Easy to assemble and replace packing.
- **Metal-to-metal seating achieves ideal shutoff, longer stemseat service lifetime for abrasive flow, excellent corrosion resistance and greater durability for repeated on/off cycles.**
- **PTFE is the standard packing material, RPTFE glass, Graphite and Extend stuffing box valve with of Graphite also available.**
- **Extend stuffing box valve with of Graphite can be operated to 1200°F (649°C).**
- The material of packing gland and upper stem have been selected to achieve reduced handle torque and extended thread cycle life.
- **The material of valve body is 316 SS, the material of lower stem is 17-4PH SS.**
- **Options for Vee or Regulating stem tips.**
- The location of packing is under the thread of valve stem.
- The locking device of packing gland is reliable.
- Five flow patterns are available.

### Technical Data

#### Tube OD in.
- 1/4: 6FH4
- 3/8: 6FH6
- 9/16: 6FH9

#### Connection Type
- 0.094 (2.39)
- 0.12 (3.18)
- 0.12 (3.18)

#### Orifice in. (mm)
- 1/4: 0.125 (3.18)
- 3/8: 0.125 (3.18)
- 9/16: 0.125 (3.18)

#### Cv
- 0.12 (3.18)
- 0.12 (3.18)
- 0.12 (3.18)

#### Pressure @ Room Temperature psi (bar)
- 0.12 (3.18)
- 0.12 (3.18)
- 0.12 (3.18)

#### Operating Temperature
- -325°F to -1200°F (-196°C to 649°C)
- -325°F to -1200°F (-196°C to 649°C)
- -325°F to -1200°F (-196°C to 649°C)

### Dimensions (3-way/1 on pressure)

<table>
<thead>
<tr>
<th>Ordering Number</th>
<th>Connection Type</th>
<th>Orifice in. (mm)</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>D1</th>
<th>E</th>
<th>F</th>
<th>G</th>
<th>G1</th>
<th>H</th>
<th>M</th>
<th>N</th>
<th>Thickness</th>
</tr>
</thead>
<tbody>
<tr>
<td>2035S-FH4-5</td>
<td>2FH4</td>
<td>0.125 (3.18)</td>
<td>2.00</td>
<td>1.00</td>
<td>0.38</td>
<td>0.19</td>
<td>2.44</td>
<td>3.00</td>
<td>0.75</td>
<td>0.22</td>
<td>4.81</td>
<td>0.62</td>
<td>0.38</td>
<td>0.75</td>
<td></td>
</tr>
<tr>
<td>2035S-FH6-5</td>
<td>2FH6</td>
<td>0.219 (5.58)</td>
<td>2.00</td>
<td>1.00</td>
<td>0.47</td>
<td>0.19</td>
<td>2.44</td>
<td>3.00</td>
<td>0.75</td>
<td>0.22</td>
<td>4.81</td>
<td>0.62</td>
<td>0.38</td>
<td>0.75</td>
<td></td>
</tr>
<tr>
<td>2035S-FH9-5</td>
<td>2FH9</td>
<td>0.312 (7.92)</td>
<td>2.50</td>
<td>1.25</td>
<td>0.55</td>
<td>1.75</td>
<td>3.38</td>
<td>4.00</td>
<td>1.00</td>
<td>0.94</td>
<td>3.61</td>
<td>0.69</td>
<td>0.50</td>
<td>1.00</td>
<td></td>
</tr>
<tr>
<td>2035S-PH12-5</td>
<td>2FH12</td>
<td>0.438 (11.13)</td>
<td>3.00</td>
<td>1.50</td>
<td>0.62</td>
<td>2.25</td>
<td>4.25</td>
<td>5.25</td>
<td>1.19</td>
<td>0.94</td>
<td>7.5</td>
<td>0.80</td>
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<td>1.38</td>
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<tr>
<td>2035S-PH16-5</td>
<td>2FH16</td>
<td>0.562 (14.27)</td>
<td>4.12</td>
<td>2.00</td>
<td>0.63</td>
<td>2.81</td>
<td>5.12</td>
<td>6.25</td>
<td>1.83</td>
<td>0.96</td>
<td>9.09</td>
<td>1.25</td>
<td>1.13</td>
<td>1.75</td>
<td></td>
</tr>
</tbody>
</table>

#### Dimensions (3-way/2 stem manifold)

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<th>Connection Type</th>
<th>Orifice in. (mm)</th>
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<th>B</th>
<th>C</th>
<th>D</th>
<th>D1</th>
<th>E</th>
<th>F</th>
<th>G</th>
<th>G1</th>
<th>H</th>
<th>M</th>
<th>N</th>
<th>Thickness</th>
</tr>
</thead>
<tbody>
<tr>
<td>2035S-FH4-6</td>
<td>2FH4</td>
<td>0.125 (3.18)</td>
<td>2.00</td>
<td>1.00</td>
<td>0.38</td>
<td>0.19</td>
<td>2.44</td>
<td>3.00</td>
<td>0.75</td>
<td>0.22</td>
<td>4.81</td>
<td>0.62</td>
<td>0.38</td>
<td>0.75</td>
<td></td>
</tr>
<tr>
<td>2035S-FH6-6</td>
<td>2FH6</td>
<td>0.219 (5.58)</td>
<td>2.00</td>
<td>1.00</td>
<td>0.47</td>
<td>0.19</td>
<td>2.44</td>
<td>3.00</td>
<td>0.75</td>
<td>0.22</td>
<td>4.81</td>
<td>0.62</td>
<td>0.38</td>
<td>0.75</td>
<td></td>
</tr>
<tr>
<td>2035S-FH9-6</td>
<td>2FH9</td>
<td>0.312 (7.92)</td>
<td>2.50</td>
<td>1.25</td>
<td>0.55</td>
<td>1.75</td>
<td>3.38</td>
<td>4.00</td>
<td>1.00</td>
<td>0.94</td>
<td>3.61</td>
<td>0.69</td>
<td>0.50</td>
<td>1.00</td>
<td></td>
</tr>
<tr>
<td>2035S-PH12-6</td>
<td>2FH12</td>
<td>0.438 (11.13)</td>
<td>3.00</td>
<td>1.50</td>
<td>0.62</td>
<td>2.25</td>
<td>4.25</td>
<td>5.25</td>
<td>1.19</td>
<td>0.94</td>
<td>7.5</td>
<td>0.80</td>
<td>0.63</td>
<td>1.38</td>
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<tr>
<td>2035S-PH16-6</td>
<td>2FH16</td>
<td>0.562 (14.27)</td>
<td>4.12</td>
<td>2.00</td>
<td>0.63</td>
<td>2.81</td>
<td>5.12</td>
<td>6.25</td>
<td>1.83</td>
<td>0.96</td>
<td>9.09</td>
<td>1.25</td>
<td>1.13</td>
<td>1.75</td>
<td></td>
</tr>
</tbody>
</table>

### Notes:
- ◎ The value of Cv shown are for 2-way straight valve pattern.
- ◎ The value of Cv shown are for 2-way straight valve pattern with PTFE packing.
- ◎ Extreme Temperatures
- ◎ PTFE is the standard packing material, RPTFE glass, Graphite and Extend stuffing box valve with of Graphite also available.
- ◎ PTFE is the standard packing material, RPTFE glass, Graphite and Extend stuffing box valve with of Graphite also available.
- ◎ 30,000 psi (2068 bar)

### 30N Series
- **30,000 psi (2068 bar)**

#### High Pressure Needle Valve
Flow Data at 100°F (38°C)

When exceeding 800°F (427°C), use the pink curve as its cold-worked rating for future operating of the components.

Standard Materials of Construction

<table>
<thead>
<tr>
<th>Item</th>
<th>Component</th>
<th>Material Grade/ASTM Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Handle</td>
<td>Stainless steel</td>
</tr>
<tr>
<td>2</td>
<td>Handle Screw</td>
<td>Stainless steel</td>
</tr>
<tr>
<td>3</td>
<td>Upper Stem</td>
<td>C63000/B150</td>
</tr>
<tr>
<td>4</td>
<td>Packing Gland</td>
<td>C63000/B150</td>
</tr>
<tr>
<td>5</td>
<td>Locking Screwv</td>
<td>Stainless steel</td>
</tr>
<tr>
<td>6</td>
<td>Locking Plate</td>
<td>304 SS/A240</td>
</tr>
<tr>
<td>7</td>
<td>Lower Stem</td>
<td>17-4PH/AS64</td>
</tr>
<tr>
<td>8</td>
<td>Packing Ring</td>
<td>C63000/B150</td>
</tr>
<tr>
<td>9</td>
<td>Packing</td>
<td>PTFE/RPTFE/GRAPHITE/Extend stuffing box valve with Graphite</td>
</tr>
<tr>
<td>10</td>
<td>Packing Washer</td>
<td>17-4PH/AS64</td>
</tr>
<tr>
<td>11</td>
<td>Body</td>
<td>316 SS/A479</td>
</tr>
</tbody>
</table>

Lubricant
Molybdenum disulfide

Pressure & Temperature

Dimensions (Straight)

<table>
<thead>
<tr>
<th>Ordering Number</th>
<th>Connection Type</th>
<th>Orifice In. (mm)</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>D1</th>
<th>E</th>
<th>F</th>
<th>G</th>
<th>G1</th>
<th>H</th>
<th>M</th>
<th>N</th>
<th>Thickness</th>
</tr>
</thead>
<tbody>
<tr>
<td>30N5S-FH4-1</td>
<td>6FH4</td>
<td>0.094 (2.39)</td>
<td>2.00</td>
<td>1.00</td>
<td>0.50</td>
<td>1.00</td>
<td>1.50</td>
<td>2.00</td>
<td>3.00</td>
<td>1.00</td>
<td>0.50</td>
<td>50.8</td>
<td>117.4 (25.4)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>30N5S-FH5-1</td>
<td>6FH6</td>
<td>0.125 (3.18)</td>
<td>2.00</td>
<td>1.00</td>
<td>0.50</td>
<td>1.00</td>
<td>1.50</td>
<td>2.00</td>
<td>3.00</td>
<td>1.00</td>
<td>0.50</td>
<td>50.8</td>
<td>117.4 (25.4)</td>
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</tr>
<tr>
<td>30N5S-FH6-1</td>
<td>6FH9</td>
<td>0.125 (3.18)</td>
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<td>1.00</td>
<td>0.50</td>
<td>1.00</td>
<td>1.50</td>
<td>2.00</td>
<td>3.00</td>
<td>1.00</td>
<td>0.50</td>
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<td>117.4 (25.4)</td>
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</tbody>
</table>

Dimensions (Angle)

<table>
<thead>
<tr>
<th>Ordering Number</th>
<th>Connection Type</th>
<th>Orifice In. (mm)</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>D1</th>
<th>E</th>
<th>F</th>
<th>G</th>
<th>G1</th>
<th>H</th>
<th>M</th>
<th>N</th>
<th>Thickness</th>
</tr>
</thead>
<tbody>
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<td>1.50</td>
<td>2.00</td>
<td>3.00</td>
<td>1.00</td>
<td>0.50</td>
<td>50.8</td>
<td>117.4 (25.4)</td>
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</tr>
<tr>
<td>30N5S-FH5-2</td>
<td>6FH6</td>
<td>0.125 (3.18)</td>
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<td>1.00</td>
<td>1.50</td>
<td>2.00</td>
<td>3.00</td>
<td>1.00</td>
<td>0.50</td>
<td>50.8</td>
<td>117.4 (25.4)</td>
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<td></td>
</tr>
<tr>
<td>30N5S-FH6-2</td>
<td>6FH9</td>
<td>0.125 (3.18)</td>
<td>2.00</td>
<td>1.00</td>
<td>0.50</td>
<td>1.00</td>
<td>1.50</td>
<td>2.00</td>
<td>3.00</td>
<td>1.00</td>
<td>0.50</td>
<td>50.8</td>
<td>117.4 (25.4)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Dimensions (Angle/replaceable seat)

<table>
<thead>
<tr>
<th>Ordering Number</th>
<th>Connection Type</th>
<th>Orifice In. (mm)</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>D1</th>
<th>E</th>
<th>F</th>
<th>G</th>
<th>G1</th>
<th>H</th>
<th>M</th>
<th>N</th>
<th>Thickness</th>
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<td>1.50</td>
<td>2.00</td>
<td>3.00</td>
<td>1.00</td>
<td>0.50</td>
<td>50.8</td>
<td>117.4 (25.4)</td>
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<td></td>
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<tr>
<td>30N5S-FH5-3</td>
<td>6FH6</td>
<td>0.125 (3.18)</td>
<td>2.00</td>
<td>1.00</td>
<td>0.50</td>
<td>1.00</td>
<td>1.50</td>
<td>2.00</td>
<td>3.00</td>
<td>1.00</td>
<td>0.50</td>
<td>50.8</td>
<td>117.4 (25.4)</td>
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</tr>
<tr>
<td>30N5S-FH6-3</td>
<td>6FH9</td>
<td>0.125 (3.18)</td>
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<td>0.50</td>
<td>1.00</td>
<td>1.50</td>
<td>2.00</td>
<td>3.00</td>
<td>1.00</td>
<td>0.50</td>
<td>50.8</td>
<td>117.4 (25.4)</td>
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<td></td>
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</table>

High Pressure Needle Valve

20

21
### Technical Data

<table>
<thead>
<tr>
<th>Tube OD in.</th>
<th>Connection Type</th>
<th>Orifice in. (mm)</th>
<th>Cv</th>
<th>Pressure @ Room Temperature psig (bar)</th>
<th>Operating Temperature</th>
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<tbody>
<tr>
<td>1/4</td>
<td>6FH4</td>
<td>0.063 (1.59)</td>
<td>0.08</td>
<td>60,000 (4137)</td>
<td>-325°F<del>1200°F (-196°C</del>649°C)</td>
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<td>3/8</td>
<td>6FH6</td>
<td>0.063 (1.59)</td>
<td>0.09</td>
<td>60,000 (4137)</td>
<td>9/16 6FH9</td>
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**Notes:**
1. The value of Cv shown are for 2-way straight valve pattern.
2. The value of Cv for 2-way angle pattern will be increase about 50% (Base on water).
3. Extreme Temperatures
4. Nylon is the standard packing material for FITOK Needle Valve; RPTFE glass, Graphite and Extend stuffing box valve with graphite also available.
5. Normal needle valve with Nylon packing can be operated from 40°F (4.4°C) to 220°F (104°C).
6. Normal Needle Valve with RPTFE glass packing can be operated from -10°F (-23°C) to 400°F (204°C).
7. Normal Needle Valve with Graphite packing can be operated from 0°F (-17.8°C) to 800°F (427°C).
8. Extending stuffing box Valve with of graphite packing can be operated from 100°F (-21°C) to 1200°F (649°C).
Standard Materials of Construction

### Flow Data at 100°F (38°C)

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<th>Pressure (psig)</th>
<th>0</th>
<th>2000</th>
<th>4000</th>
<th>6000</th>
<th>8000</th>
<th>10000</th>
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<tr>
<td>Temperature (°C)</td>
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### Material Grade/ASTM Specification

<table>
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<tr>
<th>Number</th>
<th>Ordering</th>
<th>Connection Type</th>
<th>Orifice in. (mm)</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>D1</th>
<th>E</th>
<th>F</th>
<th>G</th>
<th>G1</th>
<th>H</th>
<th>M</th>
<th>N</th>
<th>Thickness</th>
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<td>0.25</td>
<td>0.99</td>
<td>1.69</td>
<td>1.31</td>
<td>2.13</td>
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<td>0.22</td>
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<td>(50.8)</td>
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<td>2.00</td>
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### Dimensions (Straight)

| Item | Component | Material Grade/ASTM Specification
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<tbody>
<tr>
<td>1</td>
<td>Handle</td>
<td>Stainless steel</td>
</tr>
<tr>
<td>2</td>
<td>Handle Screw</td>
<td>Stainless steel</td>
</tr>
<tr>
<td>3</td>
<td>Upper Stem</td>
<td>316 SS/A479</td>
</tr>
<tr>
<td>4</td>
<td>Packing Gland</td>
<td>CS3000/B150</td>
</tr>
<tr>
<td>5</td>
<td>Locking Screw</td>
<td>Stainless steel</td>
</tr>
<tr>
<td>6</td>
<td>Locking Plate</td>
<td>304 SS/A240</td>
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<td>7</td>
<td>Packing Ring</td>
<td>CS3000/B150</td>
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<tr>
<td>8</td>
<td>Packing</td>
<td>NylonRPTFE/GRAFPE/Extend stuffing box valve with of Graphite</td>
</tr>
<tr>
<td>9</td>
<td>Packing washer</td>
<td>17-4PH/A564</td>
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<tr>
<td>10</td>
<td>Lower Stem</td>
<td>17-4PH/A564</td>
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<td>12</td>
<td>Lubricant</td>
<td>Molybdenum disulfide</td>
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</table>
### Dimensions

#### 3-way/2 on pressure

![Diagram](3-way/2_on_pressure.png)

#### 3-way/1 on pressure

![Diagram](3-way/1_on_pressure.png)

#### 3-way/2 stem manifold

![Diagram](3-way/2_stem_manifold.png)

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### Part Number Description

#### Connector Sizes

- **Series**: 15NSS - FH4 - RG2
- **Body Material**: SS, 316 SS, NXT
- **Material**: Body
- **Connector Sizes**: 1 BSPT, 3/4 BSPT, 1/2 BSPT, 1 NPT, 3/4 NPT, 3/8 NPT, 1/8 NPT, 1" (Female), 3/4" (Female), 9/16" (Female), 1/2" (Female), 3/8" (Female), 1/8" (Female)
- **Needle Valve**: 27

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### Notes:

1. Please contact the authorized representative or FITOK Group.
2. All dimensions are for reference only and are subject to change. For dimensions not shown above, please contact the authorized representative or FITOK Group.