

# SCREWED BONNET NEEDLE VALVES



# SCREWED BONNET NEEDLE VALVES

## Design Features

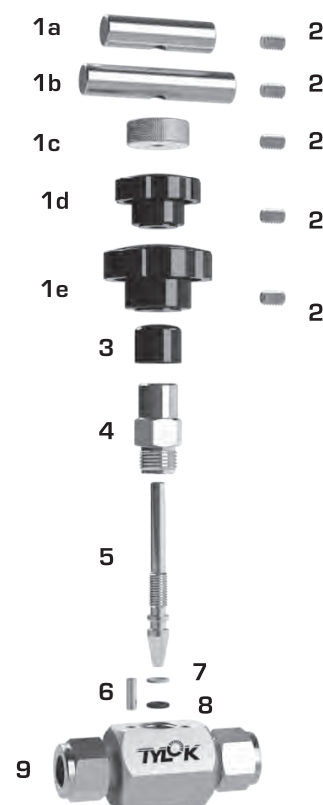
- Hard [Vee] or Acetal Soft Seat/Tip
- Straight or angle flow patterns
- Optional panel mount
- Handle options available
- Non-wetted stem threads
- Valves are 100% Helium leak tested to  $1 \times 10^{-6}$  ml/s ensuring performance and reliability.

| Material                                        | Maximum Pressure Rating, psig |              |       |
|-------------------------------------------------|-------------------------------|--------------|-------|
|                                                 | 316 Stainless                 | Carbon Steel | Brass |
| O-Ring Stem Seal, Hard Seat, 1/2" and Smaller   | 10,000                        | 10,000       | 6,000 |
| O-Ring Stem Seal, Hard Seat, 3/4" to 1-1/2" NPT | 8,000                         | 8,000        |       |
| Delrin Soft Seat / Tip                          | 6,000                         | 6,000        |       |
| Graphite Packing, Hard Seat                     |                               |              |       |
| PTFE Packing, Hard Seat                         |                               |              |       |

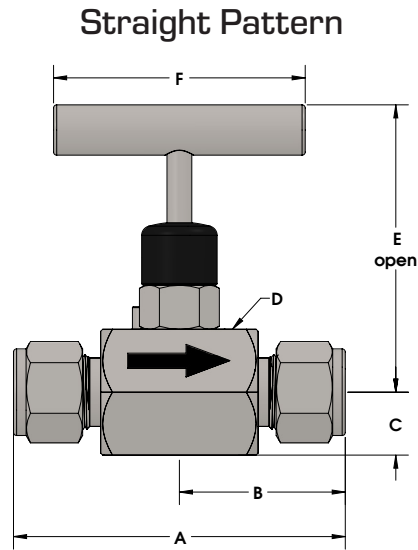
## Materials of Construction

| #  | Component             | 316 SS                  | Brass  | Steel |
|----|-----------------------|-------------------------|--------|-------|
| 1a | Mini "T" Handle       | 316 SS                  | N/A    | Steel |
| 1b | "T" Handle            | 316 SS                  | N/A    | Steel |
| 1c | Round Knurled Handle  | 316 SS                  | Brass  | Steel |
| 1d | 1-3/8" Plastic Handle | Phenolic                |        |       |
| 1e | 1-3/4" Plastic Handle | Phenolic                |        |       |
| 2  | Set Screw             | 316 SS                  | Steel  |       |
| 3  | Dust Cap*             | Vinyl                   |        |       |
| 4  | Valve Bonnet          | 316 SS                  | Brass  | Steel |
| 5  | Valve Stem            | Chrome-plated<br>316 SS | 316 SS |       |
| 6  | Bonnet Lock Pin*      | 316 SS                  | N/A    | Steel |
| 7  | Stem Back-up Ring     | PTFE                    |        |       |
| 8  | Stem O-ring           | Fluorocarbon FKM        |        |       |
| 9  | Valve Body            | 316 SS                  | Brass  | Steel |

\* Not applicable to all configurations



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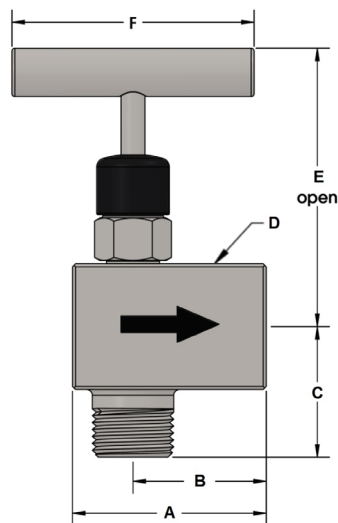


| End Connections           |       | Dimensions     |         |      |      |      |            |      | Hard Seat |      | Soft Seat/Tip |      |
|---------------------------|-------|----------------|---------|------|------|------|------------|------|-----------|------|---------------|------|
| Inlet/<br>Outlet          | Size  | Part<br>Number | Orifice | A    | B    | C    | D          | E    | F*        | Cv   | F*            | Cv   |
| CBC-Lok®<br>Tube Fittings | 1/4   | 4-6DD-4        | 0.172   | 2.46 | 1.23 | 0.33 | 3/4" SQ    | 2.17 | 1-13/16   | 0.37 | 1-3/8         | 0.37 |
|                           | 3/8   | 6-6DD-6        |         | 3.08 | 1.54 | 0.37 |            | 2.13 |           |      |               |      |
|                           | 1/2   | 8-6DD-8        | 0.187   | 3.30 | 1.65 | 0.63 | 1-1/4" HEX | 3.16 | 2-1/2     | 0.44 | 2-1/2         | 0.44 |
| CS-Lok®<br>Tube Fittings  | 1/4   | 4-6SS-4        | 0.172   | 2.46 | 1.23 | 0.33 | 3/4" SQ    | 2.17 | 1-13/16   | 0.37 | 1-3/8         | 0.37 |
|                           | 3/8   | 6-6SS-6        |         | 3.08 | 1.54 | 0.37 |            | 2.13 |           |      |               |      |
|                           | 1/2   | 8-6SS-8        | 0.187   | 3.30 | 1.65 | 0.63 | 1-1/4" HEX | 3.16 | 2-1/2     | 0.44 | 2-1/2         | 0.44 |
| Female<br>NPT             | 1/8   | 2-6FF-2        | 0.172   | 1.81 | 0.91 | 0.38 | 3/4" SQ    | 2.09 | 1-13/16   | 0.42 | 1-3/8         | 0.42 |
|                           | 1/4   | 4-6FF-4        |         |      |      |      |            |      |           |      |               |      |
|                           | 3/8   | 6-6FF-6        | 0.187   | 2.50 | 1.25 | 0.63 | 1-1/4" HEX | 3.16 | 2-1/2     | 0.44 | 2-1/2         | 0.76 |
|                           | 1/2   | 8-6FF-8        |         |      |      |      |            |      |           |      |               |      |
|                           | 3/4   | 12-6FF-12      | 0.438   | 4.25 | 2.13 | 1.25 | 2-1/4" HEX | 4.25 | 4-1/4     | 2.70 | 4-1/4         | 4.00 |
|                           | 1     | 16-6FF-16      |         |      |      |      |            |      |           |      |               |      |
|                           | 1-1/4 | 20-6FF-20      |         |      |      |      |            |      |           |      |               |      |
|                           | 1-1/2 | 24-6FF-24      |         |      |      |      |            |      |           |      |               |      |
| Male<br>NPT               | 1/8   | 2-6MM-2        | 0.172   | 1.81 | 0.91 | 0.38 | 3/4" SQ    | 2.09 | 1-13/16   | 0.42 | 1-3/8         | 0.42 |
|                           | 1/4   | 4-6MM-4        |         |      |      |      |            |      |           |      |               |      |
| Male/Female<br>NPT        | 1/8   | 2-6MF-2        | 0.172   | 1.81 | 0.91 | 0.38 | 3/4" SQ    | 2.09 | 1-13/16   | 0.42 | 1-3/8         | 0.42 |
|                           | 1/4   | 4-6MF-4        |         |      |      |      |            |      |           |      |               |      |
|                           | 1/2   | 8-6MF-8        | 0.44    | 3.50 | 1.25 | 0.63 | 1-1/4" HEX | 3.16 | 2-1/2     | 0.44 | 2-1/2         | 0.76 |
|                           | 3/4   | 12-6MF-12      | 0.438   | 5.25 | 2.13 | 1.25 | 2-1/4" HEX | 5.25 | 4-1/4     | 2.70 | 4-1/4         | 4.00 |
|                           | 1     | 16-6MF-16      |         |      |      |      |            |      |           |      |               |      |
|                           | 1-1/4 | 20-6MF-20      |         |      |      |      |            |      |           |      |               |      |
|                           | 1-1/2 | 24-6MF-24      |         |      |      |      |            |      |           |      |               |      |

\* Brass Default is 1" Round Knurled Nut

# SCREWED BONNET NEEDLE VALVES

Angle Pattern

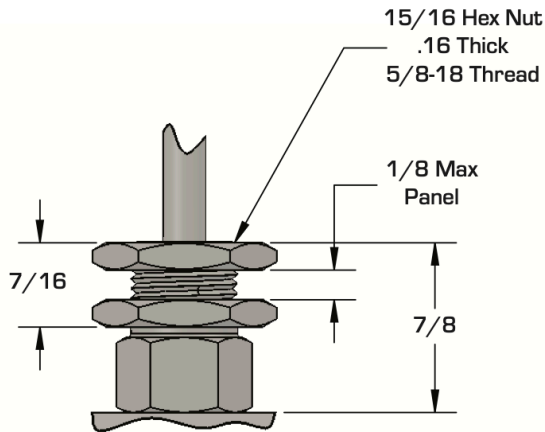


| End Connections    |      |                | Dimensions |      |      |      |       |      | Hard Seat |      |
|--------------------|------|----------------|------------|------|------|------|-------|------|-----------|------|
| Inlet/<br>Outlet   | Size | Part<br>Number | Orifice    | A    | B    | C    | D     | E    | F*        | Cv   |
| Female<br>NPT      | 1/8  | 2-6FF-2-A      | 0.172      | 1.25 | 0.88 | 0.88 | 3/4   | 2.09 | 1-13/16   | 0.42 |
|                    | 1/4  | 4-6FF-4-A      |            | 1.50 | 1.13 | 1.13 | 3/4   |      |           |      |
|                    | 1/2  | 8-6FF-8-A      | 0.187      | 2.00 | 1.38 | 1.38 | 1-1/4 | 3.66 | 2-1/2     | 0.44 |
| Male<br>NPT        | 1/8  | 2-6MM-2-A      | 0.172      | 1.25 | 0.88 | 0.72 | 3/4   | 2.09 | 1-13/16   | 0.42 |
|                    | 1/4  | 4-6MM-4-A      |            | 1.50 | 1.13 | 0.88 | 3/4   |      |           |      |
| Male/Female<br>NPT | 1/8  | 2-6MF-2-A      |            | 1.25 | 0.88 | 0.72 | 3/4   |      | 1-13/16   | 0.42 |
|                    | 1/4  | 4-6MF-4-A      |            | 1.75 | 1.13 | 0.88 | 3/4   |      |           |      |
|                    | 1/2  | 8-6MF-8-A      | 0.187      | 2.00 | 1.38 | 1.38 | 1-1/4 | 3.66 | 2-1/2     | 0.44 |

\* Brass Default is 1" Round Knurled Nut

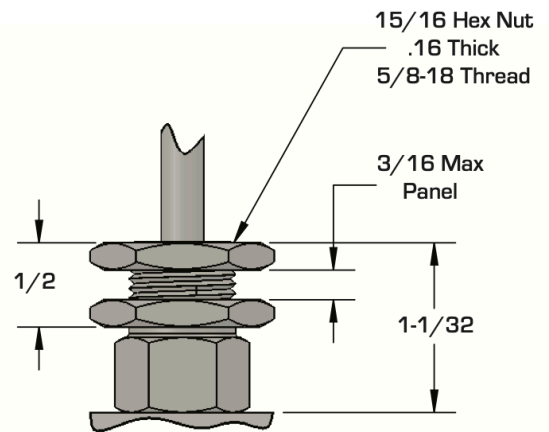
# SCREWED BONNET NEEDLE VALVES

## Panel Mount Details



Dimensions for:

- Square Bar Stock
- 1/4" and Smaller Angle Valves



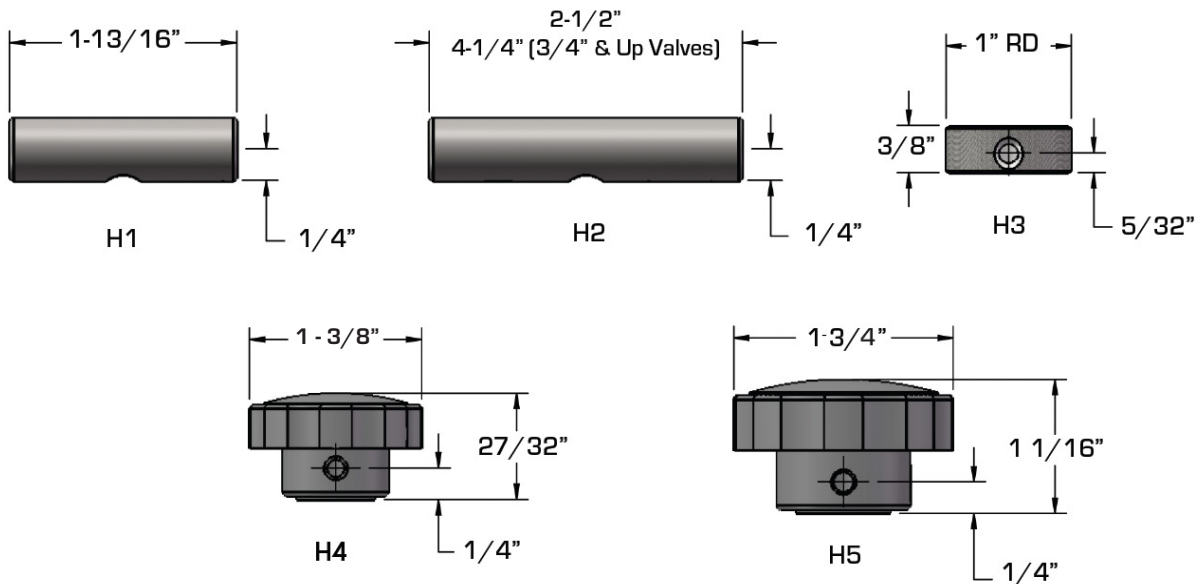
Dimensions for:

- Hex Bar Stock
- 1/2" Angle Valves

## Handle Options

1 - 13/16" (Hard Seat)

1 - 3/8" (Acetal Soft Seat/Tip)

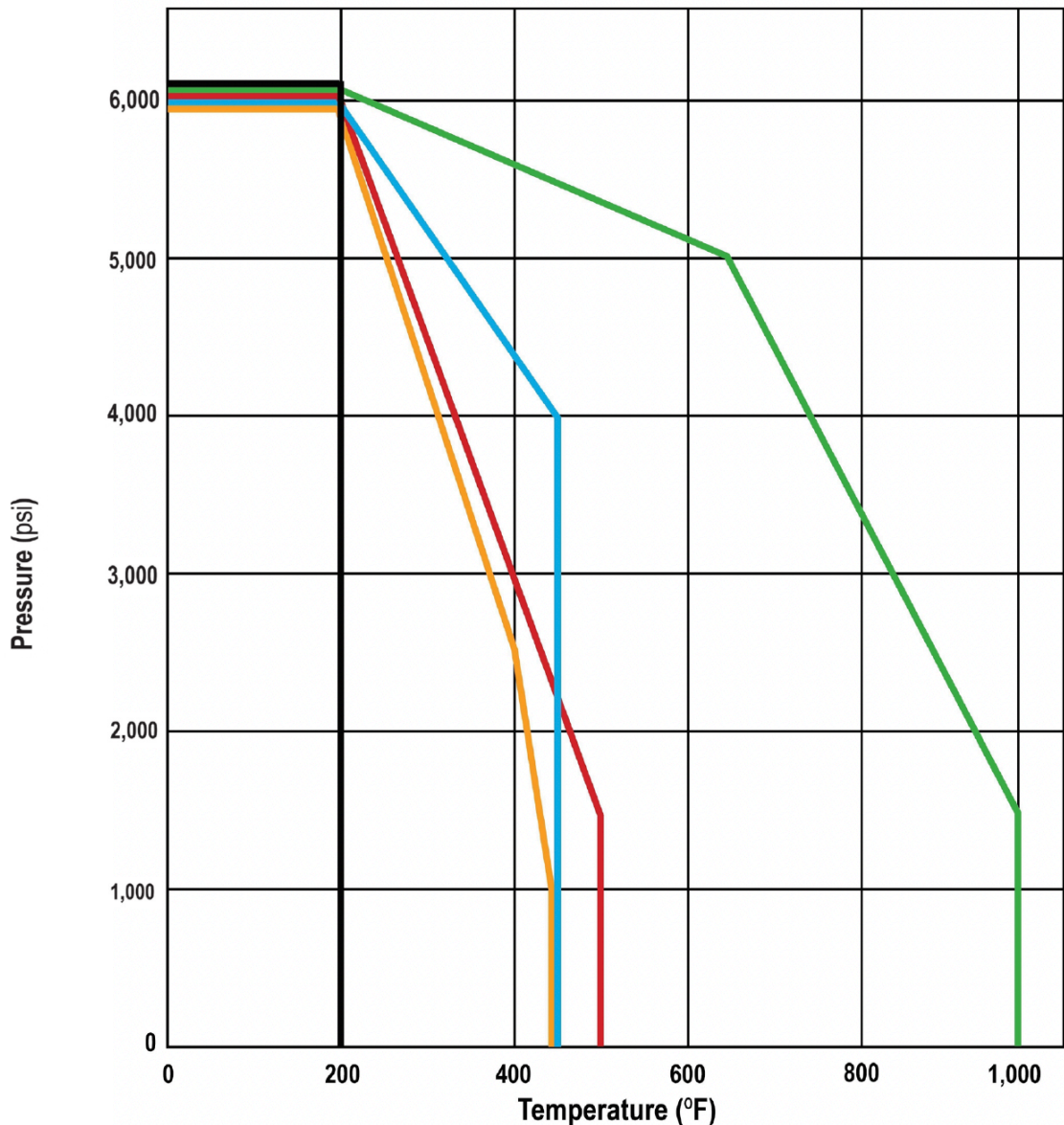


| Standard Handles                             | 316 SS | Brass | Steel |
|----------------------------------------------|--------|-------|-------|
| Square Bar Stock and 1/4" Small Angle Valves | H1     | H3    | H1    |
| Hex Bar Stock and 1/2" Angle Valves          | H2     | N/A   | H2    |

The handle material will always match the valve body, unless otherwise specified.

# SCREWED BONNET NEEDLE VALVES

Screwed Bonnet Needle Valve with Packing Option  
Pressure vs Temperature

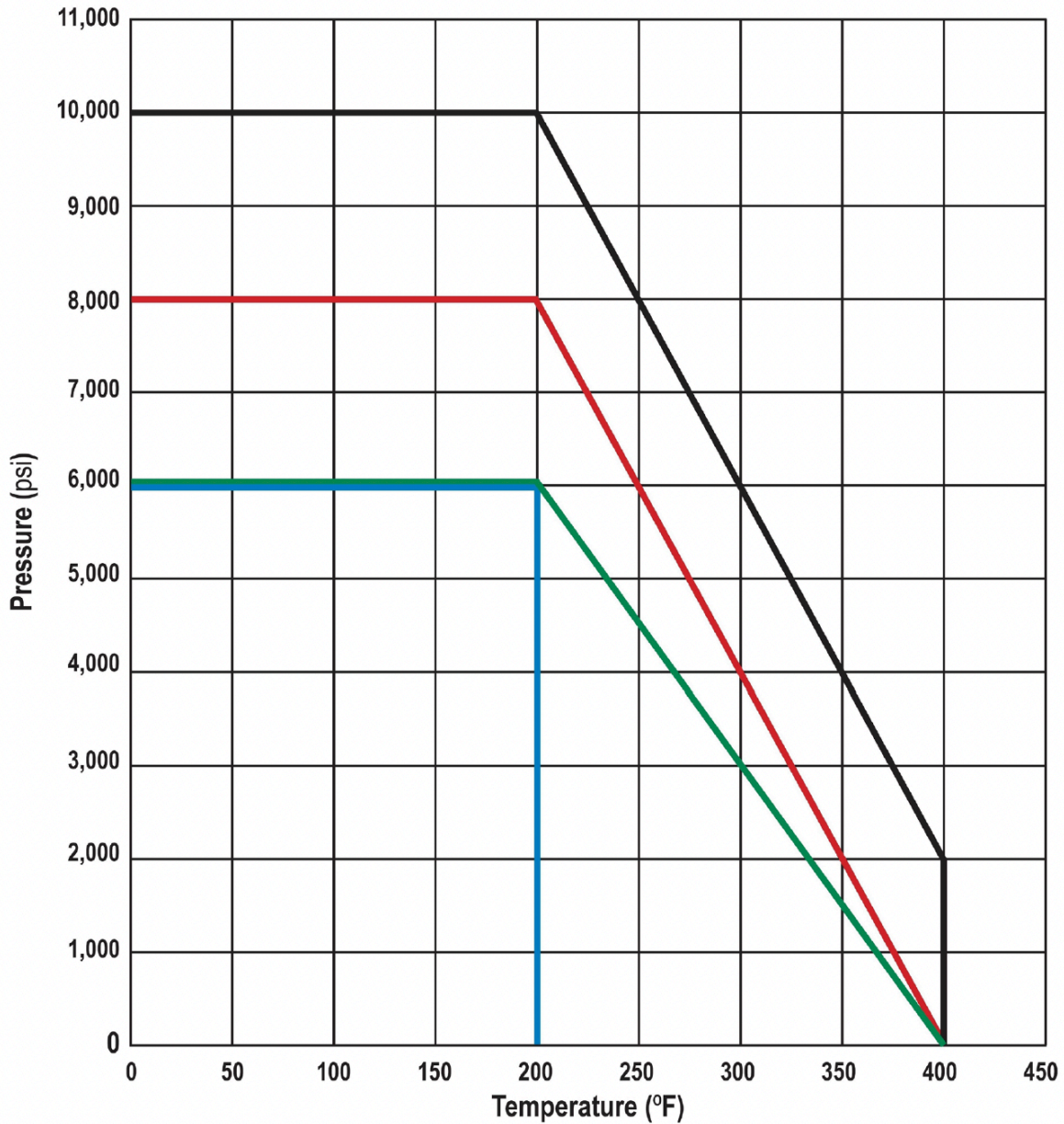


- Brass, Steel, or Stainless Steel Body; PTFE Packing; Acetal Soft Seat / Tip; All Ends
- Brass Body; Graphite or PTFE Packing; Hard Seat; 3/8" and Smaller Female and Male NPT Ends
- Steel Body; Graphite Packing; Hard Seat; All Ends
- Steel or Stainless Steel Body; PTFE Packing; Hard Seat; All Ends
- Stainless Steel Body; Graphite Packing, Hard Seat; All Ends

\* For tubing and pipe working pressures, CBC-Lok® / CS-Lok® Section

# SCREWED BONNET NEEDLE VALVES

Screwed Bonnet Needle Valves with O-Ring Stem Seals  
Pressure vs Temperature



- Brass, Steel, or Stainless Steel Body; PTFE Packing; Acetal Soft Seat / Tip; All Ends
- Brass Body; Hard Seat; 3/8" and Smaller Tube Ends or 1/4" and Smaller Female and Male NPT Ends
- Steel or Stainless Steel Body; Hard Seat; 1/2" and Smaller Ends
- Steel or Stainless Steel Body; Hard Seat; 3/4" to 1-1/2" Female and Male NPT Ends

\* For tubing and pipe working pressures, CBC-Lok® / CS-Lok® Section

# SCREWED BONNET NEEDLE VALVES

Screwed Bonnet Needle Valves are ordered as listed in this catalog by inserting the material code before the part number.

Special configurations available upon request.

Example: A Stainless Steel Needle Valve with 1/2" CBC-Lok® Tube Fitting inlet to 1/2" CBC-Lok® Tube Fitting outlet with 2 nut panel mount option, Graphite Packing and 1-3/4" phenolic handle is designed as follows:

|          |   |            |   |         |  |              |   |             |   |         |   |                  |   |                    |
|----------|---|------------|---|---------|--|--------------|---|-------------|---|---------|---|------------------|---|--------------------|
| SS       | - | 8          | - | 6       |  | DD           | - | 8           | - | P2      | - | G                | - | H5                 |
| ↓        |   | ↓          |   | ↓       |  | ↓            |   | ↓           |   | ↓       |   | ↓                |   | ↓                  |
| Material |   | Inlet Size |   | Style   |  | Inlet/Outlet |   | Outlet Size |   | Options |   | Seal<br>Optional |   | Handle<br>Optional |
| Chart 1  |   | Chart 2    |   | Chart 3 |  | Chart 4      |   | Chart 2     |   | Chart 5 |   | Chart 6          |   | Chart 7            |

| Chart 1- Material |                 |
|-------------------|-----------------|
| SS                | Stainless Steel |
| S                 | Steel*          |
| B                 | Brass**         |

\* Zinc-Nickel plated

\*\* Available for 1/4" ends and smaller

| Chart 2- Valve Series |            |
|-----------------------|------------|
| Designator            | Valve Size |
| 2                     | 1/8"       |
| 4                     | 1/4"       |
| 6                     | 3/8"       |
| 8                     | 1/2"       |
| 12                    | 3/4"       |
| 16                    | 1"         |
| 20                    | 1-1/4"     |
| 24                    | 1-1/2"     |

| Chart 3- Style |              |
|----------------|--------------|
| 6              | Needle Valve |

| Chart 4- Inlet/Outlet Port |                       |                       |
|----------------------------|-----------------------|-----------------------|
| Designator                 | Inlet                 | Outlet                |
| DD                         | CBC-Lok® Tube Fitting | CBC-Lok® Tube Fitting |
| SS                         | CS-Lok® Tube Fitting  | CS-Lok® Tube Fitting  |
| FF                         | Female NPT            | Female NPT            |
| MF                         | Male NPT              | Female NPT            |
| MM                         | Male NPT              | Male NPT              |

| Chart 5- Options |                       |
|------------------|-----------------------|
| A                | Angle Pattern         |
| L                | Acetal Soft Stem/Seat |
| P1               | Panel Mount [1 Nut]   |
| P2               | Panel Mount [2 Nut]   |

| Chart 6- Stem Seal/Packing Options |                              |
|------------------------------------|------------------------------|
| EM1                                | EPDM 80 O-Ring               |
| KZ1                                | FFKM (Kalrez® or Equivalent) |
| G                                  | Graphite Packing             |
| T                                  | PTFE Packing                 |

| Chart 7- Handle Options |                        |
|-------------------------|------------------------|
| H1                      | Mini "T" Handle        |
| H2                      | 2-1/2" "T" Handle      |
| H3                      | Round Knurled Handle   |
| H4                      | 1-3/8" Phenolic Handle |
| H5                      | 1-3/4" Phenolic Handle |
| H9                      | 2-3/8" Phenolic Handle |

Special configuration options are shown as general guidelines, not all options are available with every configuration. Consult factory for details.