

# Integral Bonnet Bar Stock Needle Valves

## SBNV Series

### Features

- Integral bonnet design
- Bar stock body
- Compact design
- Low operating torques
- Variety of End Connections
- Straight and Angle flow patterns
- Each and every valve is tested at the factory



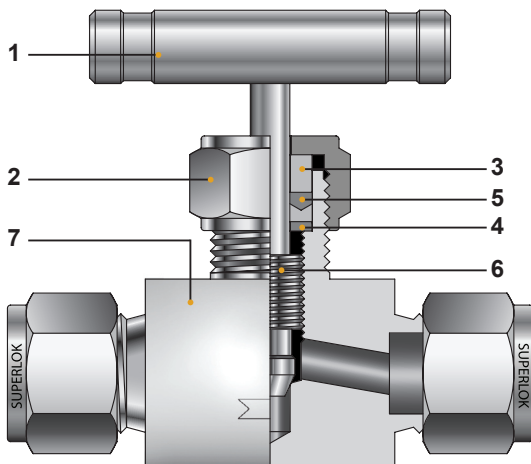
### Specifications

|                           |  |
|---------------------------|--|
| <b>Pressure rating</b>    | 6000psig (413bar)@100°F (38°C)   |
| <b>Temperature rating</b> | -65 to 450°F (-54 to 232°C) with PTFE packing<br>and up to 600°F (315°C) with PEEK packing |
| <b>Body material</b>      | 316 stainless steel and Alloy400   |
| <b>Orifice</b>            | 0.17" and 0.25" (4.3mm and 6.4mm)  |

### Testing

- Each Valve is tested with nitrogen at 1000psig (69bar) to maximum allowable leak rate of 0.1 SCCM.
- Hydrostatic shell test is performed at 1.5 times of the working pressure. (OPTION)

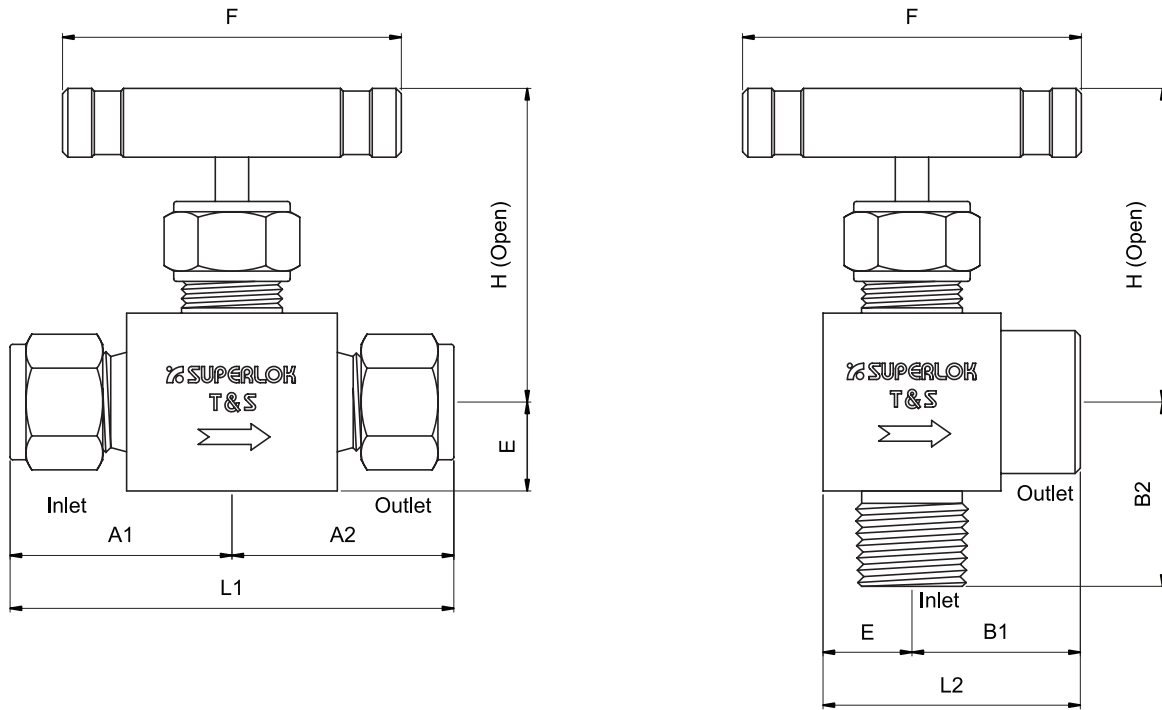
### Materials of Construction



| No. | Component       | Material Grade / ASTM Specification |                             |
|-----|-----------------|-------------------------------------|-----------------------------|
|     |                 | Stainless Steel                     | Alloy 400                   |
| 1   | Bar Handle      | Stainless Steel                     |                             |
|     | Knob Handle     | Phenolic with brass insert          |                             |
|     | Set Screw       | Stainless Steel                     |                             |
| 2   | Packing Nut     | SS316 / A276                        | Alloy R-405/B164            |
| 3   | Packing Gland   |                                     |                             |
| *4  | Packing Support | PTFE (Standard), PEEK (Optional)    |                             |
| *5  | Packing         |                                     |                             |
| *6  | Vee Stem        | SS316 / A276                        | Alloy R-405/B164            |
|     | Soft Seat Stem  | SS316 / A276 with PCTFE             | ALLOY R-405/B164 with PCTFE |
| *7  | Body            | SS316 / A479                        | ALLOY R-405/B164            |

\*Wetted components are marked \*\*

# SBNV Series



## Table of dimensions

| Order Number |          | Orifice | Cv  | End Connections |                 | Dimensions      |      |      |      |      |      |      |      |      |      |
|--------------|----------|---------|-----|-----------------|-----------------|-----------------|------|------|------|------|------|------|------|------|------|
| Series       | Part No. |         |     | Inlet           | Outlet          | L1              | A1   | A2   | L2   | B1   | B2   | E    | F    | H    |      |
| SBNV1        | F        | 4N      | 4.3 | 0.37            | 1/4" FEMALE NPT |                 | 47.6 | 23.8 | 23.8 | 36.5 | 25.4 | 25.4 | 11.1 | 45.0 | 51.0 |
|              | F        | 4R      |     |                 | 1/4" FEMALE ISO |                 |      |      |      |      |      |      |      |      |      |
|              | M        | 4N      |     |                 | 1/4" MALE NPT   |                 | 49.2 | 24.6 | 24.6 | -    | -    | -    | -    |      |      |
|              | MF       | 4N      |     |                 | 1/4" MALE NPT   | 1/4" FEMALE NPT | 48.4 |      | 23.8 | 36.5 | 25.4 | 26.2 | 11.1 |      |      |
|              | MS       | 4N-4    |     |                 | 1/4" MALE NPT   | 1/4" SUPERLOK   | 53.3 |      | 28.7 | 39.8 | 28.7 |      |      |      |      |
|              | S        | 4       |     |                 | 1/4" SUPERLOK   |                 | 62.4 | 31.2 | 31.2 |      |      | -    | -    |      |      |
| SBNV2        | F        | 6N      | 6.4 | 0.73            | 3/8" FEMALE NPT |                 | 64.0 | 32.0 | 32.0 | 48.6 | 31.8 | 31.8 | 16.8 | 64.0 | 63.0 |
|              | F        | 8N      |     |                 | 1/2" FEMALE NPT |                 |      |      |      |      |      |      |      |      |      |
|              | F        | 8R      |     |                 | 1/2" FEMALE ISO |                 |      |      |      |      |      |      |      |      |      |
|              | MF       | 6N      |     |                 | 3/8" MALE NPT   | 3/8" FEMALE NPT | 64.5 | 32.5 | 32.0 | 48.6 | 31.8 | 31.0 | 35.8 |      |      |
|              | MF       | 8N      |     |                 | 1/2" MALE NPT   | 1/2" FEMALE NPT |      |      |      |      |      |      |      |      |      |
|              | MF       | 12N-8N  |     |                 | 3/4" MALE NPT   | 1/2" FEMALE NPT | 63.8 | 31.8 | 41.9 | 48.6 | 31.8 | 35.8 |      |      |      |
|              | MS       | 6N-8    |     |                 | 3/8" MALE NPT   | 1/2" SUPERLOK   | 73.7 |      |      |      |      |      |      |      |      |
|              | S        | 6       |     |                 | 3/8" SUPERLOK   |                 | 78.2 | 39.1 | 39.1 | -    | -    | -    | -    |      |      |
|              | S        | 8       |     |                 | 1/2" SUPERLOK   |                 | 83.8 | 41.9 | 41.9 | -    | -    | -    | -    |      |      |

\*All dimensions in millimeters. All dimensions are for reference only, subject to change.

\*Dimension shown with SUPERLOK nuts measure in the finger-tight, where applicable.

## Technical Data

### Temperature and Pressure Rating

| Body Material | Stem      | Temperature Rating        | Pressure Rating@<br>-65°F~-100°F (-54°C~38°C) |
|---------------|-----------|---------------------------|---|
| SS316         | Vee       | -65°F~450°F (-54°C~232°C) | 6000psig (413 bar)                            |
|               | Soft Seat | -65°F~200°F (-54°C~93°C)  |   |
| Alloy 400     | Vee       | -65°F~450°F (-54°C~232°C) | 5000psig (345bar)                             |
|               | Soft Seat | -65°F~200°F (-54°C~93°C)  |   |

\*The above ratings are for a standard valve with PTFE packing.

\*Extreme temperature fluctuations may require packing adjustment.

### Temperature vs Working Pressure

| Temperature Rating | Pressure psig(bar) @ Temperature Rating |                   |                    |
|--------------------|---|-------------------|--------------------|
|                    | SS316                                   | Alloy 400         |                    |
| -65°F (-54°C) to   | 100°F (38°C)                            | 6000psig (413bar) | 5000psig (435 bar) |
|                    | 200°F (93°C)                            | 5160psig (355bar) | 4400psig (303 bar) |
|                    | 300°F (148°C)                           | 4660psig (321bar) | 4120psig (284 bar) |
|                    | 350°F (176°C)                           | 4470psig (308bar) | 4050psig (279 bar) |
|                    | 400°F (204°C)                           | 4280psig (295bar) | 3980psig (274bar)  |
|                    | 450°F (232°C)                           | 4130psig (284bar) | 3970psig (273 bar) |

### Packing and Body material vs Temperature and Pressure Rating

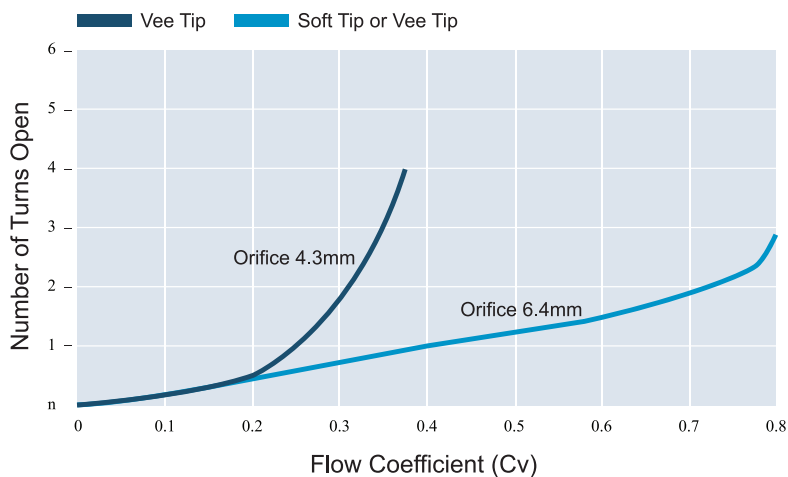
| Packing Material | Body Material | Temperature Rating        | Pressure Rating@ Max. Temperature |
|------------------|---------------|---------------------------|-----------------------------------|
| PTFE (Standard)  | SS316         | -65°F~450°F (-54°C~232°C) | 4130psig (284 bar)                |
|                  | Alloy 400     |                           | 3970psig (273 bar)                |
| PEEK             | SS316         | -65°F~600°F (-54°C~315°C) | 3760psig (259bar)                 |
|                  | Alloy 400     | -65°F~500°F (-54°C~260°C) | 3960psig (272bar)                 |

\* Alloy 400 not applicable over 500 °F(260 °C)

\* PEEK is not recommended for service with aromatic heat transfer or concentrated sulfuric and nitric acids. Other limitations may apply.

## Flow Data at 100°F (37°C)

### Flow Coefficient at Turns Open



## Handle

- 316 Stainless steel bar handles are standard.
- Black phenolic knob is standard for soft seat stem Valves.
- Anodized black aluminum bar handles

## Available Stem Type

- Two stem types
  - Vee stem : All metal, Vee stem tip (Standard)
  - Soft Seat Stem: PCTFE stem tip (Optional)

## Ordering Information

**SBNV2-MS-6N-8-KH-A-PEST-SS**

**1**

**2**

**3**

**4**

**5**

**6**

**7**

**8**

### 1. Valve Series

- SBNV1 : 4.3mm Orifice
- SBNV2 : 6.4mm Orifice

### 2. Port Type (Inlet x Outlet)

- S : SUPERLOK Tube Fitting
- M : Male Pipe Thread
- F : Female Pipe Thread
- MS : Male Pipe Thread x SUPERLOK Tube Fitting
- MF : Male Pipe Thread x Female Pipe Thread

### 3. Port Size

#### ■ Pipe Thread Designation

| Size (inch)  | 1/8 | 1/4 | 3/8 | 1/2 | 3/4 | 1   |
|--------------|-----|-----|-----|-----|-----|-----|
| Screwed BSPT | 2R  | 4R  | 6R  | 8R  | 12R | 16R |
| Screwed NPT  | 2N  | 4N  | 6N  | 8N  | 12N | 16N |

#### ■ Tube O.D Designation

| Tube O.D (inch) | 1/4 | 3/8 | 1/2 | 3/4 | 1   |
|-----------------|-----|-----|-----|-----|-----|
| Designation     | 4   | 6   | 8   | 12  | 16  |
| Tube O.D (mm)   | 6   | 10  | 12  | 20  | 25  |
| Designation     | 6M  | 10M | 12M | 20M | 25M |

### 4. Handle

- Nil : Stainless Steel Bar Handle (Standard)
- KH : Black Phenolic Knob Handle
- AH : Anodized black aluminum bar handle

### 5. Flow Pattern

- Nil : Straight Pattern (Standard)
- A : Angle Pattern

### 6. Packing Material

- Nil : PTFE (Standard)
- PE : PEEK

### 7. Stem Type

- Nil : Vee Stem (Standard)
- ST : Soft Seat Stem

### 8. Body Material

- SS : 316 Stainless Steel
- M : Alloy 400 (Monel)

### ■ Examples

ex1) SBNV1 - S - 4 - SS

- SBNV1 Series / [Inlet]SUPERLOK x [Outlet]SUPERLOK / Port Size: 1/4" x 1/4" / SS316 Bar Handle / Straight Pattern / PTFE packing / Vee Stem / 316 Stainless Steel Body

ex2) SBNV2 - F - 8N - KH - ST - SS

- SBNV2 Series / [Inlet]Female Pipe Thread x [Outlet]Female Pipe Thread / Port Size: 1/2"NPT x 1/2"NPT / Black phenolic knob handle / Straight Pattern / PTFE packing / Soft Seat Stem / 316 Stainless Steel Body

ex3) SBNV2 - MF - 8N - A - PE - SS

- SBNV2 Series / [Inlet]Male Pipe Thread x [Outlet]Female Pipe Thread / Port Size: 1/2"NPT x 1/2"NPT / SS316 Bar Handle / Angle Pattern / PEEK packing / Vee Stem / 316 Stainless Steel Body