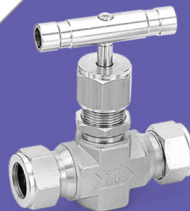


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# Integral Bonnet Needle Valves

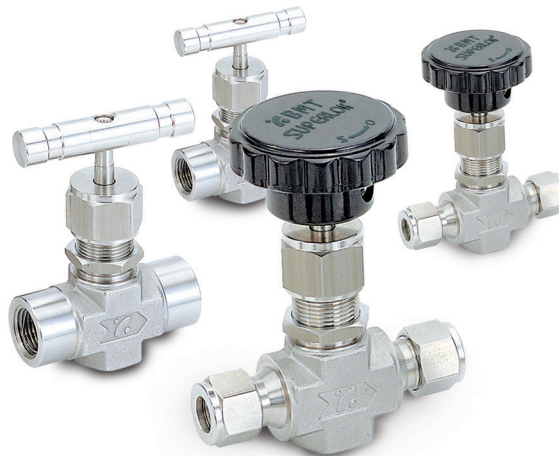


# Integral Bonnet Needle Valves

## SINV Series

### Features

- Compact design
- Low operating torques
- Panel mountable
- Straight and angle flow patterns
- Bar and round knob handle are available
- Three stem type are available



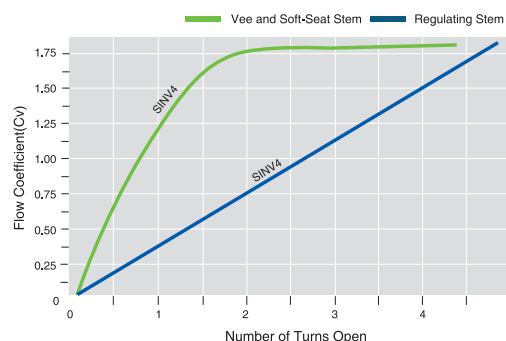
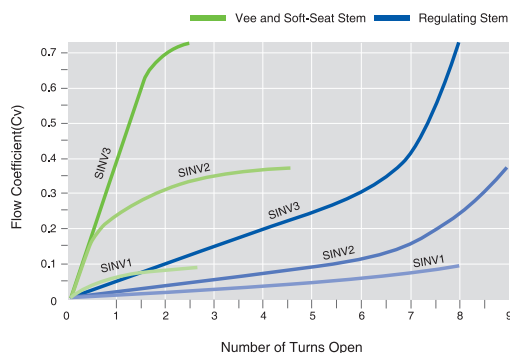
### Specifications

|                        |                                       |                                     |
|------------------------|---------------------------------------|-------------------------------------|
| Temperature Ratings    | 316 Stainless Steel with PTFE packing | : -65°F to 450°F (-53°C to 232°C)   |
|                        | 316 Stainless Steel with PEEK packing | : -65°F to 600°F (-53°C to 315°C)   |
|                        | Brass                                 | : -65°F to 400°F (-53°C to 204°C)   |
|                        | Alloy400 with PTFE packing            | : -65°F to 450°F (-53°C to 232°C)   |
|                        | Alloy400 with PEEK packing            | : -65°F to 500°F (-53°C to 260°C)   |
|                        | PCTFE Stem Tip                        | : -65°F to 200°F (-53°C to 93°C)    |
|                        | PTFE Packing                          | : -65°F to 450°F (-53°C to 232°C)   |
| Orifice Size           | PEEK Packing                          | : -65°F to 600°F (-53°C to 315°C)   |
|                        |                                       | From 0.08 to 0.375 in. (2 to 9.5mm) |
| Flow Coefficients (Cv) |                                       | From 0.09 to 1.80                   |
| End Connection Size    |                                       | From 1/8 to 3/4 in. 3 to 18mm       |

### Pressure - Temperature Ratings

| Material Group        | 2.2                          | N/A        | 3.4        |
|-----------------------|------------------------------|------------|------------|
| Material              | 316 SS                       | Brass      | Alloy 400  |
| Temperature, °F(°C)   | Working Pressure, psig (bar) |            |            |
| -65 (-53) to 100 (37) | 5000 (344)                   | 3000 (206) | 3000 (206) |
| 200 (93)              | 4295 (295)                   | 2350 (161) | 2640 (181) |
| 250 (121)             | 4085 (281)                   | 2200 (151) | 2555 (176) |
| 300 (148)             | 3875 (266)                   | 2050 (141) | 2470 (170) |
| 350 (176)             | 3715 (255)                   | 1470 (101) | 2430 (167) |
| 400 (204)             | 3560 (245)                   | 390 (26)   | 2390 (164) |
| 450 (232)             | 3435 (236)                   | -          | 2380 (163) |
| 500 (260)             | 3310 (228)                   | -          | 2375 (163) |
| 600 (315)             | 3130 (215)                   | -          | -          |

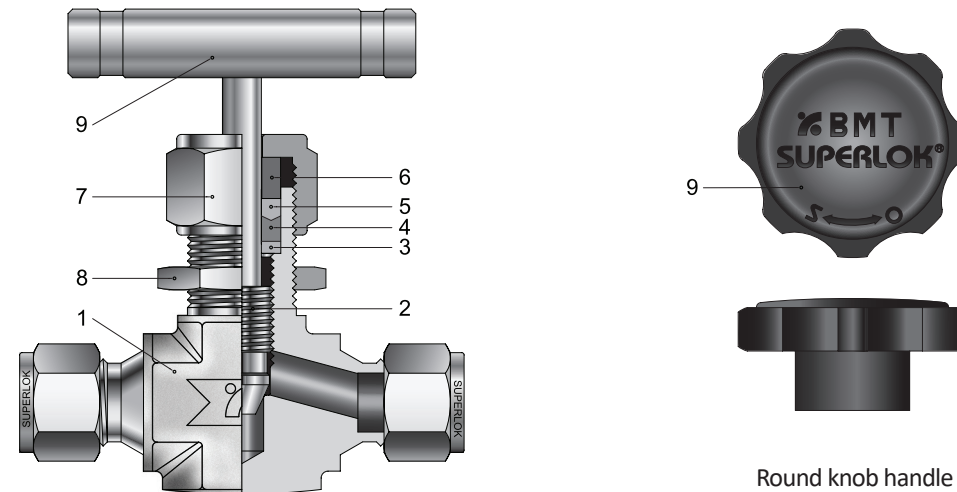
### Flow Data at 100°F (37°C)



## Testing

- Each and every valve is tested with nitrogen at 1000psig (69bar).
- Valve have max allowable leak rate of 0.1cm<sup>3</sup>/min.
- Shell testing is available upon request.

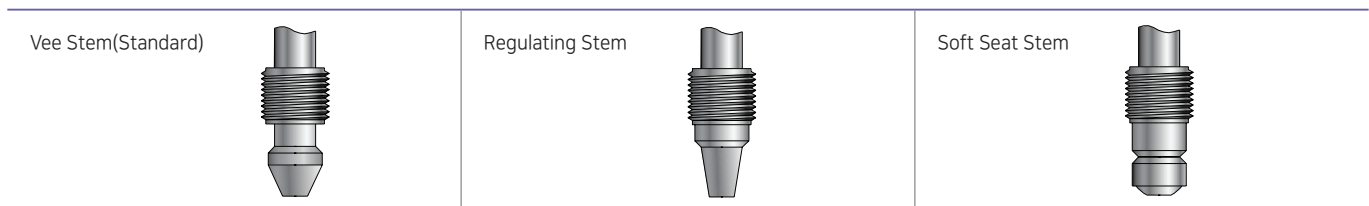
## Materials of Construction



| No. | Component         | Material                   |                           |                   |
|-----|-------------------|----------------------------|---------------------------|-------------------|
|     |                   | Stainless Steel            | Brass                     | Alloy 400         |
| *1  | Body              | ASTM A182 F316             | ASTM B283                 | ASTM B564         |
| *2  | Vee stem          | ASTM A276 Type316          | ASTM A276 Type316         | ASTM B164         |
|     | Regulating stem   | ASTM A276 Type316          | ASTM A276 Type316         | ASTM B164         |
|     | Soft seat stem    | ASTM A276 Type316 + PCTFE  | ASTM A276 Type316 + PCTFE | ASTM B164 + PCTFE |
| *3  | Packing support   | ASTM A276 Type316          | ASTM B16                  | ASTM B164         |
| *4  | Lower packing     | PTFE                       | PTFE                      | PTFE              |
| *5  | Upper packing     | PTFE                       | PTFE                      | PTFE              |
| 6   | Packing gland     | ASTM A276 Type316          | ASTM B16                  | ASTM B164         |
| 7   | Packing nut       | ASTM A276 Type316          | ASTM B16                  | ASTM B164         |
| 8   | Panel nut         | ASTM A276 Type316          | ASTM B16                  | ASTM B164         |
| 9   | Bar handle        | ASTM A276 Type304          |                           |                   |
|     | Round knob handle | Phenolic with brass insert |                           |                   |
|     | Set screw         | Stainless Steel            |                           |                   |

\* Wetted components

## Stem Type



## Packing

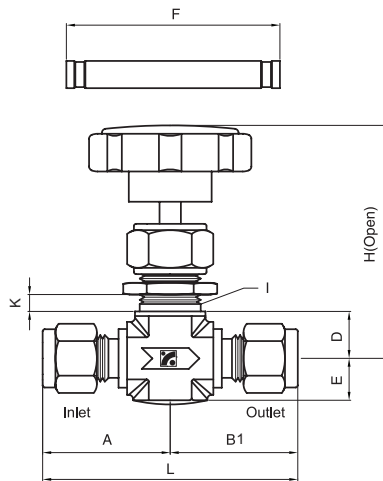
PTFE packing is standard. PEEK packing is optional.

## Handle

- 316 stainless steel and alloy 400 body valve - Stainless steel bar handles are standard.
- Brass body and Soft seat stem valve - Black round knob handles are standard.
- Anodized black aluminum bar handles are optional.

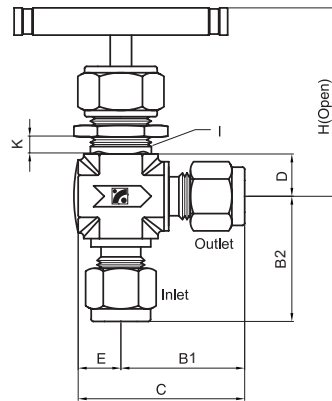
## Table of Dimensions

### SINV Series



Straight Flow Pattern

### SINV A Series



Angle Flow Pattern

I : Panel Hole Drill  
K : Panel Mount Thickness  
Min 3.17, Max 6.35

| Part No. | Orifice       | Cv            | End Connections |                 | Dimensions      |      |      |      |      |      |      |      |      |      |      |
|----------|---------------|---------------|-----------------|-----------------|-----------------|------|------|------|------|------|------|------|------|------|------|
|          |               |               | Inlet           | Outlet          | L               | A    | B1   | B2   | C    | D    | E    | F    | I    | H    |      |
| SINV1    | S2            | 2.0           | 0.09            | 1/8" SUPERLOK   |                 | 49.4 | 24.7 | 24.7 | 24.7 | 32.6 | 11.2 | 7.9  | 32.0 | 11.9 | 55   |
|          | S3M           |               |                 | 3mm SUPERLOK    |                 | 49.4 | 24.7 | 24.7 | 24.7 | 32.6 |      |      |      |      |      |
|          | M2N           |               |                 | 1/8" Male NPT   |                 | 38.1 | 19.1 | 19.1 | 19.1 | 27.0 |      |      |      |      |      |
|          | F2N           |               |                 | 1/8" Female NPT |                 | 47.8 | 23.9 | 23.9 | 23.9 | 31.8 |      |      |      |      |      |
|          | M2N-S2        |               |                 | 1/8" Male NPT   | 1/8" SUPERLOK   | 43.8 | 19.1 | 24.7 | 19.1 | 32.6 |      |      |      |      |      |
| SINV2    | S4            | 4.4           | 0.37            | 1/4" SUPERLOK   |                 | 57.4 | 28.7 | 28.7 | 28.7 | 38.4 | 11.2 | 9.7  | 45.0 | 13.5 | 51.5 |
|          | S6M           |               |                 | 6mm SUPERLOK    |                 | 57.4 | 28.7 | 28.7 | 28.7 | 38.4 |      |      |      |      |      |
|          | S8M           |               |                 | 8mm SUPERLOK    |                 | 59.4 | 29.7 | 29.7 | 29.7 | 39.4 |      |      |      |      |      |
|          | M2N           |               |                 | 1/8" Male NPT   |                 | 41.2 | 20.6 | 20.6 | 20.6 | 30.3 |      |      |      |      |      |
|          | M4N           |               |                 | 1/4" Male NPT   |                 | 49.8 | 24.9 | 24.9 | 24.9 | 34.6 |      |      |      |      |      |
| M4N-S4   | 1/4" Male NPT | 1/4" SUPERLOK | 53.6            | 24.9            | 28.7            | 24.9 | 38.4 |      |      |      |      |      |      |      |      |
| SINV3    | S6            | 6.3           | 0.73            | 3/8" SUPERLOK   |                 | 65.6 | 32.8 | 32.8 | 32.8 | 45.5 | 12.7 | 12.7 | 64.0 | 20.0 | 63.5 |
|          | S8            |               |                 | 1/2" SUPERLOK   |                 | 71.2 | 35.6 | 35.6 | 35.6 | 48.3 | 14.0 |      |      |      |      |
|          | S10M          |               |                 | 10mm SUPERLOK   |                 | 66.0 | 33.0 | 33.0 | 33.0 | 45.7 | 12.7 |      |      |      |      |
|          | S12M          |               |                 | 12mm SUPERLOK   |                 | 71.2 | 35.6 | 35.6 | 35.6 | 48.3 | 14.0 |      |      |      |      |
|          | M6N           |               |                 | 3/8" Male NPT   |                 | 57.4 | 28.7 | 28.7 | 28.7 | 41.4 | 12.7 |      |      |      |      |
|          | F4N           |               |                 | 1/4" Female NPT |                 | 53.8 | 26.9 | 26.9 | 26.9 | 39.6 | 12.7 |      |      |      |      |
|          | M4N-S6        |               |                 | 1/4" Male NPT   | 3/8" SUPERLOK   | 61.5 | 28.7 | 32.8 | 28.7 | 45.5 | 12.7 |      |      |      |      |
|          | M6N-S6        |               |                 | 3/8" Male NPT   | 3/8" SUPERLOK   | 61.5 | 28.7 | 32.8 | 28.7 | 45.5 | 12.7 |      |      |      |      |
|          | M6N-S8        |               |                 | 3/8" Male NPT   | 1/2" SUPERLOK   | 64.3 | 28.7 | 35.6 | 28.7 | 48.3 | 14.0 |      |      |      |      |
|          | M4N-F4N       |               |                 | 1/4" Male NPT   | 1/4" Female NPT | 55.6 | 28.7 | 26.9 | 28.7 | 39.6 | 12.7 |      |      |      |      |
| SINV4    | S8            | 9.5           | 1.80            | 1/2" SUPERLOK   |                 | 96.6 | 48.3 | 48.3 | 48.3 | 67.4 | 19.1 | 19.1 | 76.0 | 26.2 | 99.5 |
|          | S12           |               |                 | 3/4" SUPERLOK   |                 |      |      |      |      |      |      |      |      |      |      |
|          | M8N           |               |                 | 1/2" Male NPT   |                 |      |      |      |      |      |      |      |      |      |      |
|          | F6N           |               |                 | 3/8" Female NPT |                 | 76.2 | 38.1 | 38.1 | 38.1 | 57.2 |      |      |      |      |      |
|          | F8N           |               |                 | 1/2" Female NPT |                 |      |      |      |      |      |      |      |      |      |      |
|          | M8N-F8N       |               |                 | 1/2" Male NPT   | 1/2" Female NPT |      |      |      |      |      |      |      |      |      |      |

- Dimensions and Drawings are for reference only and are subject to change without prior notice.
- Unless otherwise specified, all dimensions are in millimeters.
- Sizes, pressure classes, and end connections not listed are available upon request.
- Dimensions shown with SUPERLOK nuts finger-tight, where applicable.

## Ordering Information

|            |              |       |            |        |           |   |           |   |           |   |           |
|------------|--------------|-------|------------|--------|-----------|---|-----------|---|-----------|---|-----------|
| Example 1: |              | Inlet |            | Outlet |           |   |           |   |           |   |           |
|            | <b>SINV3</b> | -     | <b>M6N</b> | -      | <b>S8</b> | - | <b>RS</b> | - | <b>PE</b> | - | <b>KH</b> |
|            | 1            |       | 2 3        |        | 2 3       |   | 4         |   | 5         |   | 6         |

|             |              |       |            |        |            |   |           |   |          |
|-------------|--------------|-------|------------|--------|------------|---|-----------|---|----------|
| Example 2 : |              | Inlet |            | Outlet |            |   |           |   |          |
|             | <b>SINV4</b> | -     | <b>M8N</b> | -      | <b>F8N</b> | - | <b>KH</b> | - | <b>B</b> |
|             | 1            |       | 2 3        |        | 2 3        |   | 6         |   | 7        |

### 1. Valve Series

#### Straight Flow Pattern

- SINV1** = Orifice 2.0mm
- SINV2** = Orifice 4.4mm
- SINV3** = Orifice 6.3mm
- SINV4** = Orifice 9.5mm

#### Angle Flow Pattern

- SINV1A** = Orifice 2.0mm
- SINV2A** = Orifice 4.4mm
- SINV3A** = Orifice 6.3mm
- SINV4A** = Orifice 9.5mm

### 2. End Connection Type

- S** = SUPERLOK Tube Fitting
- M** = Male Pipe Thread
- F** = Female Pipe Thread

### 3. End Connection Size

#### Pipe Thread Designator

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

#### Tube O.D Designator

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

### 4. Stem

- (Blank)** = Vee Stem (Standard)
- RS** = Regulating Stem
- SS** = Soft Seat Stem

### 5. Packing

- (Blank)** = PTFE Packing (Standard)
- PE** = PEEK Packing

### 6. Handle

- (Blank)** = Stainless Steel Bar Handle (Standard)
- KH** = Black Round Knob Handle
- AH** = Anodized Black Aluminum Bar Handle

### 7. Body Material

- (Blank)** = 316 Stainless Steel
- B** = Brass
- M40** = Alloy 400 (Monel)



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