Principle of Operation:
The Low Pressure (15,000 psi maximum), otherwise known as “SpeedBite” Needle Valves are designed for applications between traditional compression fittings and the Parker Autoclave Engineers’ Medium Pressure Cone and Thread products that are designed for high flow and high pressure. SpeedBite Valves are engineered for use with annealed ASTM A269 316 (and similar) Stainless Steel tubing designed by Parker Autoclave Engineers to a controlled hardness. SpeedBite valves employ a bite-type compression style single ferrule that is manually “set”. 1-1/4 rotation from tube grip forces the ferrule into tapered seat and causes the leading edge of ferrule to bite into the tubing, creating a shoulder for positive mechanical support of the tubing. When correctly installed, connection strength far exceeds the burst pressure of the tubing utilized.

Low Pressure Valve Features:
Temperature Rated -100ºF (-73ºC) to 650ºF (343ºC)
- Designed for use with Low Pressure “SpeedBite” single ferrule compression fittings and tubing
- 10V2 Series valve design provides for a 1/8” tube size connection
- SW Series valves are constructed for tube sizes from 1/4” to 1/2” OD
- UNS S31600/S31603 cold worked 316/316L SS body construction as standard. (Optional materials available)
- Non-rotating stem prevents stem/seat galling
- Metal-to-metal seating achieves bubble-tight shut-off, longer stem/seat life, greater durability for repeated on/off cycles and excellent corrosion resistance. These valves can be used with liquid and gas.
- PTFE packing below stem threads provides dependable stem and body sealing. Optional packing materials available.
- Choice of Vee (Shutoff) or Regulating (Flow Control) stem tips
- Optional N-Dura Stem and/or Replaceable Seat Coating or Stellite material option for severe service available
- Available in five body patterns

Traceability is ensured by use of heat and purchase order codes etched on valve body that also includes model number, MAWP rating, and material type references. All valves include compression sleeve and gland nut unless requested otherwise. Parker Autoclave Engineers’ valves are complemented by a complete line of low pressure fittings, tubing, check valves, relief valves, and line filters.

All Parker Autoclave Engineers products are designed in accordance with ASME B31.3 Chapter IX High Pressure Piping standards.
10V2 and SW Series: Pressures to 15,000 psi (1034 bar)

<table>
<thead>
<tr>
<th>Tube Outside Diameter Size (inches)</th>
<th>Connection Type</th>
<th>Orifice Size Inches (mm)</th>
<th>Rated Cv*</th>
<th>Pressure Rating psi (bar) @Room Temperature**</th>
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</thead>
<tbody>
<tr>
<td>1/8 (10V2 Series)</td>
<td>W125</td>
<td>0.094 (2.39)</td>
<td>0.12</td>
<td>15,000 (1034)</td>
</tr>
<tr>
<td>1/4</td>
<td>SW250</td>
<td>0.188 (4.77)</td>
<td>0.65</td>
<td>15,000 (1034)</td>
</tr>
<tr>
<td>3/8</td>
<td>SW375</td>
<td>0.250 (6.35)</td>
<td>0.95</td>
<td>15,000 (1034)</td>
</tr>
<tr>
<td>1/2</td>
<td>SW500</td>
<td>0.375 (9.52)</td>
<td>1.90</td>
<td>10,000 (690)</td>
</tr>
</tbody>
</table>

Notes
* Cv values shown are for 2-way straight valve pattern. For 2-way angle patterns, increase Cv value 50%.
** Maximum Allowable Working Pressures decrease as temperatures increase see pressure/temperature rating guide in Technical Information section.
Formula for converting Cv to volumetric flow can be found in Technical Information section.

Valve Packing Options:

Standard Parker Autoclave valves with PTFE packing may be operated from 0° (-18°C) to 450°F (232°C). Extreme temperature packing for service from -100°F (-73°C) to 650°F (343°C) by adding the following suffixes to catalog order number.†

- **B** Cryogenic trim materials and PTFE required when below 0°F (-18°C) -100°F (-73°C).
- **TG** Standard valve with PTFE glass packing -100°F (-73°C) to 600°F (316°C). (See also -B option above when below 0°F (-18°C)
- **GY** Standard valve with Graphite Yarn packing to 650°F (343°C).

† Parker Autoclave Engineers does not recommend compression sleeve connections below -100°F (-73°C) or above 650°F (343°C). For additional valve options, contact your Sales Representative. (See “Technical Brochure” for Pressure/Temperature effect on temperatures above ambient.)
Ordering Guide:

Common valve option details can be found on pages 6 & 7. The part number and option ordering matrix is given below. 10V/SW Series “SpeedBite” valves are furnished complete with connection components, unless otherwise specified.

Building a Part Number:  Example: SW4071

<table>
<thead>
<tr>
<th>Ordering Parameters/Options:</th>
<th>SW</th>
<th>4</th>
<th>07</th>
<th>1</th>
<th>-</th>
<th>XX</th>
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<td>2</td>
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<tr>
<td>4</td>
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<td>6</td>
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<tr>
<td>8</td>
<td>1/2&quot; (10,000 psi maximum)</td>
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<tr>
<td>C - Stem/Seal Type (see page 6 for optional Stem Types)</td>
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<td>07</td>
<td>Non-Rotating Vee Stem (on-off service)</td>
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<tr>
<td>08</td>
<td>Non-Rotating Regulating Stem (tapered tip for regulating and shutoff)</td>
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<td>87</td>
<td>Vee Stem with Replaceable Seat</td>
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<tr>
<td>88</td>
<td>Regulating Stem with Replaceable Seat</td>
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</table>

Notes:

Valve Manuals can be found on our website at www.Autoclave.com. Connection, Running and Seating Torques can be found in the product manual or in our Tools and Installation Catalog Section.

Valves that have not been cycled for a substantial period of time may require higher initial actuation torque.

SpeedBite connections are set by making 1-1/4 turns from WRENCH tight (point beyond finger tight where torque to tighten suddenly increases and sleeve begins to grip tubing.) Installation instructions can be found in Tools & Installation brochure.

*Replaceable seat option is sold with two (2) seat surfaces 180° apart.

E - Options (choose as many as necessary)

For additional valve options see pages 6-7 or contact factory.

PM Panel Mount, additional #10-24 screw is supplied
B All 316 SS materials required when below 0°F (-18°C)
TG PTFE Glass (25%) Packing (to 600°F)
GY Graphite Packing (to 650°F)
HC Hastelloy C-276***
MO Monel***

Note: Contact factory for 1/16" tube size or see MVE Series. Pneumatic and electric actuators are available for these valves, see associated brochures for details.

316 SS valve bodies are cold worked and not suitable for use in NACE (ISO 15156) applications. If required, contact factory for options.

*** Special Materials often have reduced MAWP ratings, see Technical brochure for assistance and for additional material options.
(See “Technical Brochure” for Pressure/Temperature effect on temperatures above ambient.)

Basic Repair Kits for 316 SS Material:

<table>
<thead>
<tr>
<th>Stem Type</th>
<th>Outside Diameter Tube:</th>
<th>1/8&quot; (10V2 Series)</th>
<th>1/4&quot;</th>
<th>3/8&quot;</th>
<th>1/2&quot;</th>
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</thead>
<tbody>
<tr>
<td>2 Way Straight / 2 Way Angle / 3 Way</td>
<td></td>
<td>VEE R10V207</td>
<td>RSW407</td>
<td>RSW607</td>
<td>RSW807</td>
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<td></td>
<td></td>
<td>REG R10V208</td>
<td>RSW408</td>
<td>RSW608</td>
<td>RSW808</td>
</tr>
<tr>
<td>2 Way, Replaceable Seat and Stem</td>
<td></td>
<td>VEE R10V2872</td>
<td>RSW4872</td>
<td>RSW6872</td>
<td>RSW8872</td>
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<tr>
<td></td>
<td></td>
<td>REG R10V2882</td>
<td>RSW4882</td>
<td>RSW6882</td>
<td>RSW8882</td>
</tr>
<tr>
<td>3 Way, 2 Stem Manifold</td>
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<td>VEE R10V2075</td>
<td>RSW4075</td>
<td>RSW6075</td>
<td>RSW8075</td>
</tr>
<tr>
<td></td>
<td></td>
<td>REG R10V2085</td>
<td>RSW4085</td>
<td>RSW6085</td>
<td>RSW8085</td>
</tr>
</tbody>
</table>

When ordering for valves bought with additional suffix options, please include those exact suffix codes when ordering repair kit. (Example: the stem for a manual valve is manufactured differently for a pneumatically actuated valve and the repair kit must include the exact actuator suffix codes).

Valve Manuals can be found on our website at www.Autoclave.com. Connection, Running and Seating Torques can be found in the product manual or in our Tools and Installation Catalog Section.

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*Replaceable seat option is sold with two (2) seat surfaces 180° apart.
### 10V2 and SW Series Dimensions:

#### 2 Way Straight Dimensions:

<table>
<thead>
<tr>
<th>Catalog Number</th>
<th>Outside Diameter Tube</th>
<th>Orifice Diameter</th>
<th>Dimensions: inches (mm)</th>
<th>Block Thickness</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/8 (3.18)</td>
<td>SW0401</td>
<td>0.094 (2.39)</td>
<td>[A</td>
<td>B</td>
</tr>
<tr>
<td>1/4 (6.35)</td>
<td>SW6041</td>
<td>0.187 (4.75)</td>
<td>A</td>
<td>0.75 (19.05)</td>
</tr>
<tr>
<td>3/8 (8.35)</td>
<td>SW6061</td>
<td>0.250 (6.35)</td>
<td>B</td>
<td>1.00 (25.40)</td>
</tr>
<tr>
<td>1/2 (12.70)</td>
<td>SW6081</td>
<td>0.375 (9.53)</td>
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<td>1.25 (31.75)</td>
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</tbody>
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#### 2 Way Angle Dimensions:

<table>
<thead>
<tr>
<th>Catalog Number</th>
<th>Outside Diameter Tube</th>
<th>Orifice Diameter</th>
<th>Dimensions: inches (mm)</th>
<th>Block Thickness</th>
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</thead>
<tbody>
<tr>
<td>1/8 (3.18)</td>
<td>SW0401</td>
<td>0.094 (2.39)</td>
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<td>B</td>
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<tr>
<td>1/4 (6.35)</td>
<td>SW6041</td>
<td>0.187 (4.75)</td>
<td>A</td>
<td>0.75 (19.05)</td>
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<tr>
<td>3/8 (8.35)</td>
<td>SW6061</td>
<td>0.250 (6.35)</td>
<td>B</td>
<td>1.00 (25.40)</td>
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<tr>
<td>1/2 (12.70)</td>
<td>SW6081</td>
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#### 3 Way, 2 on Pressure Dimensions:

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<tr>
<th>Catalog Number</th>
<th>Outside Diameter Tube</th>
<th>Orifice Diameter</th>
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</thead>
<tbody>
<tr>
<td>1/8 (3.18)</td>
<td>SW0401</td>
<td>0.094 (2.39)</td>
<td>[A</td>
<td>B</td>
</tr>
<tr>
<td>1/4 (6.35)</td>
<td>SW6041</td>
<td>0.187 (4.75)</td>
<td>A</td>
<td>0.75 (19.05)</td>
</tr>
<tr>
<td>3/8 (8.35)</td>
<td>SW6061</td>
<td>0.250 (6.35)</td>
<td>B</td>
<td>1.00 (25.40)</td>
</tr>
<tr>
<td>1/2 (12.70)</td>
<td>SW6081</td>
<td>0.375 (9.53)</td>
<td>C</td>
<td>1.25 (31.75)</td>
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</tbody>
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#### 3 Way, 1 on Pressure Dimensions:

<table>
<thead>
<tr>
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<th>Dimensions: inches (mm)</th>
<th>Block Thickness</th>
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</thead>
<tbody>
<tr>
<td>1/8 (3.18)</td>
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<td>0.094 (2.39)</td>
<td>[A</td>
<td>B</td>
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<tr>
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<td>SW6041</td>
<td>0.187 (4.75)</td>
<td>A</td>
<td>0.75 (19.05)</td>
</tr>
<tr>
<td>3/8 (8.35)</td>
<td>SW6061</td>
<td>0.250 (6.35)</td>
<td>B</td>
<td>1.00 (25.40)</td>
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<tr>
<td>1/2 (12.70)</td>
<td>SW6081</td>
<td>0.375 (9.53)</td>
<td>C</td>
<td>1.25 (31.75)</td>
</tr>
</tbody>
</table>

---

G - Packing Gland mounting hole drill size  
G1 - Bracket mounting hole size  
H* - Dimension is with stem in closed position

All dimensions for reference only and subject to change  
* For prompt service, Parker Autoclave stocks select products. Consult factory.
10V2 and SW Series Dimensions:

### 2 Way Angle / Replaceable Seat

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<thead>
<tr>
<th>Catalog Number</th>
<th>VEE REG</th>
<th>10V2872</th>
<th>10V2882</th>
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<th>SW4882</th>
<th>SW6872</th>
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<tr>
<td>Orifice Diameter</td>
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<td>0.250</td>
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</tr>
<tr>
<td>B</td>
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Block Thickness: 0.62 (15.75) 0.75 (19.05) 0.75 (19.05) 1.00 (25.40)

### 3 Way, 2 Stem Manifold

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Block Thickness: 0.62 (15.75) 0.75 (19.05) 0.75 (19.05) 1.00 (25.40)

### Material of Construction:

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<th>Item #</th>
<th>Description</th>
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<td>1</td>
<td>Hex Nut</td>
<td>300 Series SS</td>
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<tr>
<td>2</td>
<td>Thrust Washer</td>
<td>17-4 PH</td>
</tr>
<tr>
<td>3</td>
<td>Stem Sleeve</td>
<td>304 SS</td>
</tr>
<tr>
<td>4</td>
<td>Vee Stem (3/8&quot; SW shown)</td>
<td>316 SS</td>
</tr>
<tr>
<td>5</td>
<td>Packing Gland</td>
<td>AMPCO 18</td>
</tr>
<tr>
<td>6</td>
<td>Thrust Washer</td>
<td>17-4 PH</td>
</tr>
<tr>
<td>7</td>
<td>Packing Washer</td>
<td>AMPCO 45</td>
</tr>
<tr>
<td>8</td>
<td>Bottom Washer</td>
<td>316 SS</td>
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<tr>
<td>9</td>
<td>Handle Assembly</td>
<td>316 SS</td>
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<tr>
<td>10</td>
<td>Fill HD Screw, #10-24</td>
<td>18-8 SS</td>
</tr>
<tr>
<td>11</td>
<td>Locking Device</td>
<td>302 SS</td>
</tr>
<tr>
<td>12</td>
<td>Packing</td>
<td>PTFE</td>
</tr>
<tr>
<td>13</td>
<td>Valve Body, (3/8&quot; SW shown)</td>
<td>CW 316/316L SS</td>
</tr>
<tr>
<td>•</td>
<td>Replaceable Seat</td>
<td>17-4 PH</td>
</tr>
</tbody>
</table>

- Typical spare parts found in Repair Kits • indicates part not shown

### Panel Hole Sizes:

<table>
<thead>
<tr>
<th>Valve Size</th>
<th>A</th>
<th>B</th>
<th>Screw Size</th>
<th>G</th>
</tr>
</thead>
<tbody>
<tr>
<td>10 V2</td>
<td>1.12</td>
<td>.22</td>
<td>#10-24</td>
<td>.62</td>
</tr>
<tr>
<td>4 and 6</td>
<td>1.25</td>
<td>.22</td>
<td>#10-24</td>
<td>.75</td>
</tr>
<tr>
<td>8</td>
<td>1.375</td>
<td>.22</td>
<td>#10-24</td>
<td>1.00</td>
</tr>
</tbody>
</table>

Use suffix -PM for extra mounting hardware
Valve Options:  (For Actuator Options please reference specific Actuator brochure)

**Pneumatic Valve Actuators:**

The need to control process and vent valves from a remote location makes air operated valves a vital component to many processing operations. All Parker Autoclave Engineers’ valves are available with piston type actuators. Five sizes of air actuators (light, mini-light, medium, heavy duty or extra heavy, single and double stage) are offered to meet the service requirements of Parker Autoclave Engineers’ Low, Medium and High Pressure needle valves. Both air-to-open (normally closed) and air-to-close (normally open) designs are included in the product line. Optional air to open AND close actuators available upon request. Please see our Pneumatic Valve Actuator Brochure to help size the proper actuator for your application.

**Electric Valve Actuators:**

Remotely controlling process flow at high pressure enhances safety and lowers labor costs. Parker Autoclave Engineers developed a flow control valve available in several models including weatherproof and explosionproof options.

The Electrically Actuated Shut-off/Flow Regulating Actuator (FRC Series) is available for all sizes of 10V2 and SW Series “SpeedBite” valves up to full working pressure. Explosion proof version is rated for hydrogen service and can withstand wide process temperature ranges.

**Stem Options:**

Most Parker Autoclave Engineers’ valves are available with either Vee (on-off) or Regulating (Flow Control) Stems in our standard valve body seat or with our optional replaceable seat as shown below:

- **VEE Stem**

  The Vee stem is used for direct on-off, metal-to-metal shut-off with quick-opening flow characteristics.

- **Regulating Stem**

  In some applications, more precise flow control is required than is possible with a Vee stem. For these cases, Autoclave offers a non-rotating, two-piece regulating stem which can be used for both control and shut-off. While it is not as precise as the control associated with the MicroMetering stem, especially with smaller flows, it does offer substantially better control than the Vee stem.

- **Replaceable Seat**

  Replaceable seat option is only available with Right-Angle Style body. Replaceable seat is supplied as standard with an additional seat - rotate to use second side. Can be used with either stem type. Options include Stellite material or N-Dura coating to increase service life.
Valve Options: (For Actuator Options please reference specific Actuator brochure)

High/Low Temperature Extension:
Not typically needed for 10V2/SW Series valves as temperature range does not exceed the barriers below, but option is shown for consideration.

- **HT**  High Temperature
- **LT**  Low Temperature

<table>
<thead>
<tr>
<th>Valve Series</th>
<th>Outside Diameter</th>
<th>Dimensions “A”</th>
</tr>
</thead>
<tbody>
<tr>
<td>10V2 &amp; SW</td>
<td>Tube Size (inches)</td>
<td>inches (mm)</td>
</tr>
<tr>
<td>(this option not typically needed)</td>
<td>1/8”</td>
<td>5.38 (137)</td>
</tr>
<tr>
<td></td>
<td>1/4”</td>
<td>5.50 (140)</td>
</tr>
<tr>
<td></td>
<td>3/8”</td>
<td>5.50 (140)</td>
</tr>
<tr>
<td></td>
<td>1/2”</td>
<td>6.31 (160)</td>
</tr>
</tbody>
</table>

HT option code includes Graphite (-GY) packing
LT option code includes 316 SS Trim material and PTFE packing

ES Stem Extender:
Stem extenders are offered for High and Low temperature operation or to extend through panel or barricade.

To order valve with Stem Extender, add “ES-” and length (6”, 12”, 18”, 24”) to beginning of valve part number e.g. ES12-SW6071. Other lengths to special order.

To order Stem Extender only, provide valve model prefix e.g. ES12-SW6. Handle not included – use same provided with original valve.

Needle Valve Clam Shell Handle Lockout:
(order separately using part numbers shown below, padlock not included)
Clam Shell Handle locks are provided to lockout valves in open or closed position preventing unauthorized personnel from actuating valve during shutdown or emergency situations. This clamshell design is available in four (4) sizes dependent on handle length:

- P/N AE004855 – 1” to 2.5” handle length
- P/N 90088 – 2.5” to 5.0” handle length
- P/N 90194 – 6.5” to 10” handle length
- P/N AE004350 – 8” to 13” handle length
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