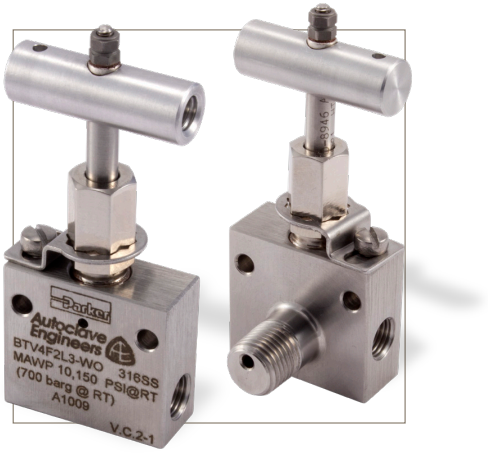
Needle Valve
Bottle Valve Series

Low Pressures to 15,000 psi (1034 bar)



Principle of Operation:

Since 1945 Parker Autoclave Engineers has designed and built premium quality valves, fittings and tubing. Parker Autoclave Engineers has long been established as the world leader in high-pressure fluid handling components for the chemical/petrochemical, research, and oil and gas industries. Bottle valves are used on sample bottles and cylinders for remote sampling in the oil industry.

Mini Series Valve Features:

- BTV Series valve design provides male inlet connections from 1/8" to 1/2" NPT.
- Outlet connections in NPT or tube to 1"
- Rising stem/barstock body design
- Non-rotating stem prevents stem/seat galling
- Metal-to-metal seating achieves bubble-tight shut-off, longer stem/seat life in abrasive flow, greater durability for repeated on/off cycles and excellent corrosion resistance
- PTFE encapsulated packing provides dependable stem and body sealings
- Stem sleeve and packing gland materials have been selected to achieve extended thread cycle life and reduced handle torque
- Vee stem tip provideds
- Available in five body patterns
- Mini valves available with metric tube glands

Parker Autoclave Engineers valves are complemented by a complete line of low pressure fittings, tubing, check valves and line filters. The Bottle Valve Series use Parker Autoclave Engineers' SpeedBite connection. This single-ferrule compression sleeveconnection delivers fast, easy make-up and reliable bubble-tight performance in liquid or gas service.

All Parker Autoclave Engineers products are designed in accordance with ASME B31.3 Chapter IX High Pressure Piping standards.

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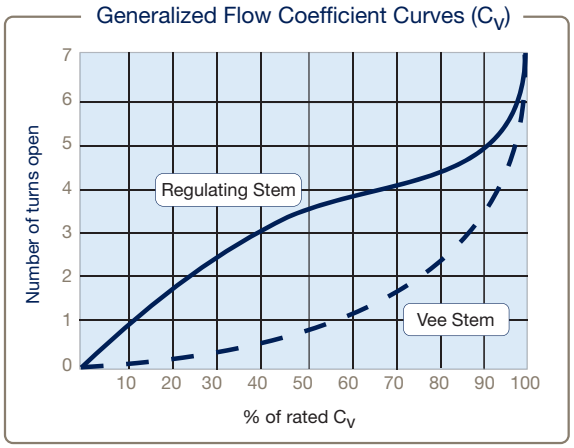
Bottle Valve Series: Pressures to 15,000 psi (1034 bar)

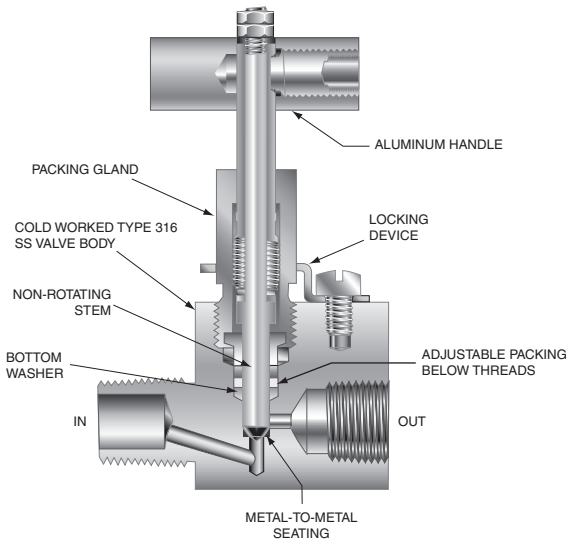
Tube Outside Diameter Size (inches)	Connection Type	Orifice Size Inches (mm)	Rated C_V*	Pressure Rating psi (bar) @Room Temperature**
1/16	W062	0.055 (1.40)	0.05	15,000 (1034)
1/8	W125	0.078 (1.98)	0.11	15,000 (1034)

Notes
* C_V values shown are for 2-way straight valve pattern. For 2-way angle patterns, increase C_V value 50%. (Based on water)

** For complete temperature ratings see pressure/temperature rating guide in Technical Information section.



Bottle Valve Series Flow Curve



To ensure proper fit use Parker Autoclave tubing

Valve Options:

Extreme Temperatures

Standard Parker Autoclave Engineers valves with PTFE packing may be operated to 450°F (232°C). High temperature packing is available for service from 0°F (-17.8°C) to 600°F (316°C) by adding the following suffixes to catalog order number:†

TG Standard valve with PTFE glass packing to 600°F (316°C).

† Parker Autoclave Engineers does not recommend MV/MVE compression sleeve connections below 0°F (-17.8°C) or above 650°F (343°C). For additional valve options, contact your Sales Representative.

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Ordering Guide:

For complete information on available stem types, optional connections and additional valve options, see Needle Valve Options section or contact your Sales Representative. BTV Series valves are furnished complete with connection components, unless otherwise specified.

Building a Part Number: *Example: BTV4S4P1*

Example Part Number:	BTV	4	S	4	P	1	XX
Ordering Parameters/Options:	Valve Series	Inlet Male NPT	Inlet Male NPT Position	Female Outlet Port Size	Female Outlet Connection	Body Pattern	Options
Table Reference: (see below)	A	B	C	D	E	F	G

A - Valve Series	
BTV	Bottle Valve Needle Valve

B - Inlet Male NPT	
2	1/8"
4	1/4"
6	3/8"
8	1/2"

C - Inlet Male NPT Position	
F	Front
S	Side
B	Bottom

D - Female Outlet Port Size	
2	1/8"
4	1/4"
6	3/8"
8	1/2"

E - Female Outlet Connection	
P	NPT
L6	Low Pressure

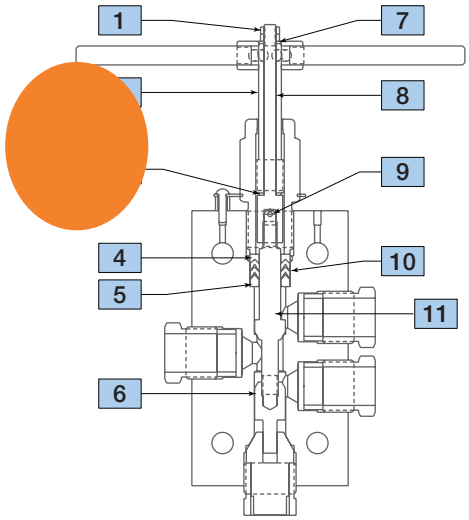
DF - Body Pattern	
1	Straight
2	Angle
3	3 Way, 2 on Pressure (*2)
4	3 Way, 1 on Pressure (*1)

E - Options	
For extreme temperatures and other options, see Valve Options.	
R	Regulating Stem

Note:
(*1) = Inlet is NPT Male
(*2) = Inlets are NPT Male and one Female Connection

Material of Construction:

Item #	Description	Material
1	Hex Nut	300 Series SS
2	Stem Sleeve	K-Monel
3	Thrust Washer	17-4 PH
4	Packing Washer	AMPCO 45
5	Bottom Washer	316 SS
6	Stem Head	MP35N
7	Thrust Washer	17-4 PH
8	Upper Stem (1" 20DV shown)	MP35N
9	Groove Pin	300 Series SS
10	Packing	PTFE
11	Lower Stem	MP35N
	Typical spare parts found in Repair Kits	



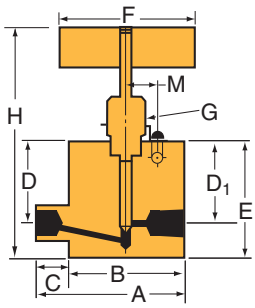
Basic Repair Kits for 316 SS Material:

Stem Type		Basic Repair Kit for 316 SS Material	
		1/16"	1/8”
2 Way Straight 2 Way Angle	VEE REG	-	-
2 Way, Replaceable Seat and Stem	VEE REG	-	-
3 Way, 2 Stem Manifold	VEE REG	-	-

Consult your Parker Autoclave Engineers representative for other kit numbers, body part numbers, and pricing.
Visit www.autoclave.com for product Operation manuals.

Bottle Valve Series Dimensions:

2 Way Straight - Side Inlet

			Catalog Number		
Stem Type	VEE		BTV2S2L1	BTV4S4P1	BTV8S8P1
Outside Diameter Tube			**1/8 (3.18)**	**1/4 (6.35)**	**1/2 (12.70)**
Orifice Diameter			0.094 (2.39)	0.094 (2.39)	0.203 (5.16)
Dimensions: inches (mm)		A	1.81 (45.97)	2.00 (50.80)	3.00 (76.20)
		B	1.31 (33.27)	1.31 (33.27)	1.00 (25.40)
		C	0.50 (12.70)	0.69 (17.53)	0.75 (19.05)
		D	0.82 (20.83)	0.82 (20.83)	0.82 (20.83)
		D1	0.82 (20.83)	0.82 (20.83)	-
		D2	-	-	-
		E	1.28 (32.51)	1.28 (32.51)	1.38 (35.05)
		F	1.50 (38.10)	1.50 (38.10)	1.50 (38.10)
		G	0.56 (14.22)	0.61 (15.49)	0.68 (17.27)
		H	3.43 (87.12)	3.41 (86.61)	3.53 (89.66)
		M	0.56 (14.22)	0.56 (14.22)	0.56 (14.22)
Block Thickness			0.56 (14.27)	0.56 (14.27)	0.56 (14.27)

G - Packing Gland mounting hole drill 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.

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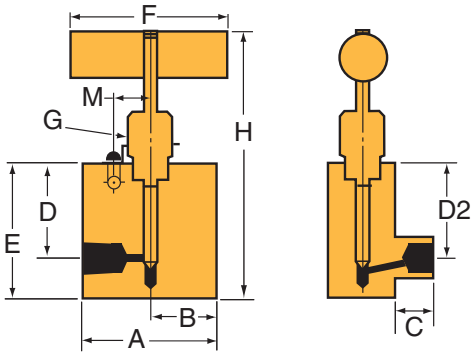
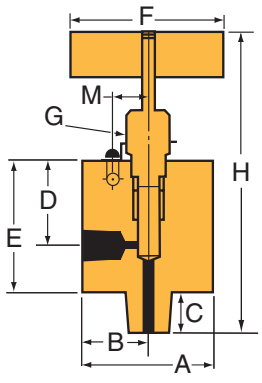
Bottle Valve Series Dimensions:

2 Way Straight - Front Inlet

			Catalog Number	
Stem Type	VEE		BTV4F2L1	BTV4F4L1
Outside Diameter Tube			**1/8 (3.18)**	**1/4 (6.35)**
Orifice Diameter			0.094 (2.39)	0.125 (3.18)
Dimensions: inches (mm)		A	1.50 (38.10)	2.00 (50.80)
		B	0.75 (19.05)	2.12 (53.85)
		C	0.63 (15.88)	0.88 (22.35)
		D	0.81 (20.57)	1.18 (29.97)
		D1	-	1.19 (30.23)
		D2	0.88 (22.35)	-
		E	1.38 (35.05)	2.00 (50.80)
		F	1.50 (38.10)	1.50 (38.10)
		G	0.61 (15.49)	0.68 (17.27)
		H	3.49 (88.65)	4.31 (109.47)
		M	0.56 (14.22)	0.63 (16.00)
Block Thickness			0.63 (16.00)	1.25 (31.75)

2 Way Angle - Bottom Inlet

			Catalog Number			
Stem Type	VEE		BTV2B2P2	BTV4B2L2	BTV4B4P2	BTV8B8P2
Outside Diameter Tube			**1/8 (3.18)**	**1/8 (3.18)**	**1/4 (6.35)**	**1/2 (12.70)**
Orifice Diameter			0.094 (2.39)	0.094 (2.39)	0.203 (5.16)	0.203 (5.16)
Dimensions: inches (mm)		A	1.50 (38.10)	2.00 (50.80)	1.50 (38.10)	2.25 (57.15)
		B	0.50 (12.70)	1.00 (25.40)	1.00 (25.40)	0.88 (22.35)
		C	0.50 (12.70)	1.00 (25.40)	1.00 (25.40)	0.88 (22.35)
		D	-	1.19 (30.23)	1.19 (30.23)	1.19 (30.23)
		D1	-	-	-	-
		D2	-	-	-	-
		E	1.28 (32.51)	1.63 (41.40)	1.63 (41.40)	2.13 (54.10)
		F	1.50 (38.10)	1.50 (38.10)	3.00 (76.20)	1.50 (38.10)
		G	0.56 (14.22)	0.75 (19.05)	0.75 (19.05)	0.68 (17.27)
		H	3.93 (99.82)	4.75 (120.65)	5.30 (134.62)	5.31 (134.87)
		M	0.56 (14.22)	0.62 (15.75)	0.62 (15.75)	0.63 (16.00)
Block Thickness			0.75 (19.05)	0.75 (19.05)	0.75 (19.05)	1.25 (31.75)

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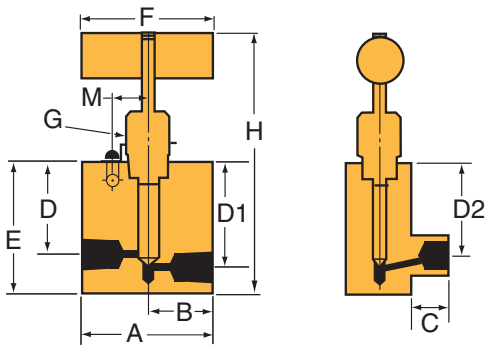
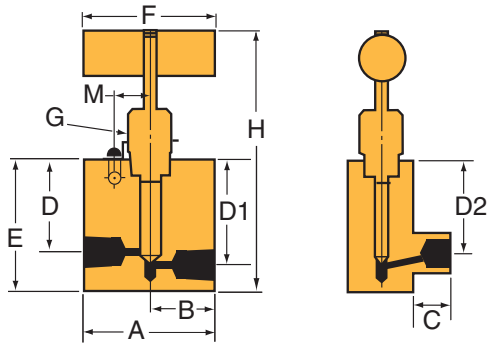
Bottle Valve Series Dimensions:

3 Way, 2 on Pressure - Front Inlet			
			Catalog Number
Stem Type	VEE		BTV4F2L3
Outside Diameter Tube			1/8 (3.18)
Orifice Diameter			0.094 (2.39)
Dimensions: inches (mm)		A	1.50 (38.10)
		B	0.75 (19.05)
		C	0.63 (15.88)
		D	0.81 (20.57)
		D1	1.06 (26.92)
		D2	0.88 (22.35)
		E	1.38 (34.93)
		F	1.50 (38.10)
		G	0.75 (19.05)
		H	3.49 (88.65)
		M	0.50 (12.70)
Block Thickness			0.75 (19.05)

3 Way, 1 on Pressure - Front Inlet				
			Catalog Number	
Stem Type	VEE		BTV4F2L4	BTV4F4L4
Outside Diameter Tube			1/8 (3.18)	1/4 (6.35)
Orifice Diameter			0.094 (2.39)	0.125 (3.18)
Dimensions: inches (mm)		A	1.50 (38.10)	2.00 (50.80)
		B	0.75 (19.05)	1.00 (25.40)
		C	0.63 (15.88)	0.75 (19.05)
		D	0.81 (20.57)	0.82 (20.83)
		D1	0.81 (20.57)	0.82 (20.83)
		D2	0.88 (22.35)	-
		E	1.38 (34.93)	1.38 (34.93)
		F	1.50 (38.10)	1.50 (38.10)
		G	0.75 (19.05)	0.56 (14.27)
		H	3.49 (88.65)	3.53 (89.66)
		M	0.50 (12.70)	0.56 (14.22)
Block Thickness			0.75 (19.05)	0.75 (19.05)

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High Pressure Liquid Pumps

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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.

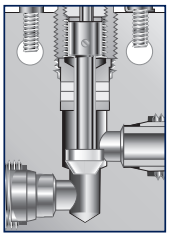
The Electrically Actuated Shut-off/Flow Regulating Actuator (FRC Series) is available for most of our Needle Valves through 9/16" tubing size and up to 60,000 psi maximum pressure. They are available in all body patterns except 3-Way / 2-Stem Manifold, and can withstand wide process temperature ranges.

Please consult the appropriate needle valve brochure for information on valve options, ratings, flow coefficient, body dimensions, and other specifications.

Stem Options:

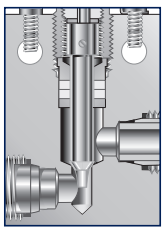
Most Parker Autoclave Engineers' valves are available with either Vee (on-off) or Regulating (Flow Control) Stems in our standard valve body seat or with our optional replaceable seat as shown below:

VEE Stem



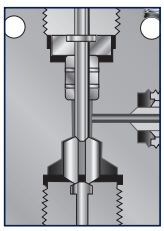
The Vee stem is used for direct on-off, metal-to-metal shut-off with quick-opening flow characteristics.

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
(with Vee Stem)



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.

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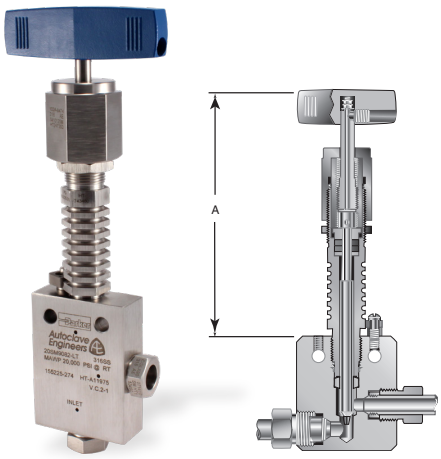
Valve Options: (For Actuator Options please reference specific Actuator brochure)



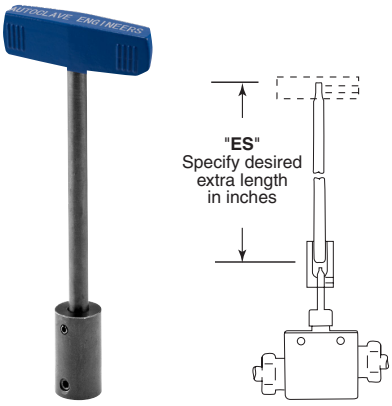
High/Low Temperature Extension:

Not typically needed for 10V/SW Series valves as temperature range does not exceed the barriers below, but option is shown for consideration.

-HT High Temperature (over 800°F (427°C))

-LT Low Temperature (under -100°F (-73°C))

Valve Series	Outside Diameter Tube Size (inches)	Dimensions "A" inches (mm)
10V & SW (this option not typically needed)	1/8"	5.38 (137)
	1/4"	5.50 (140)
	3/8"	5.50 (140)
	9/16"	6.31 (160)
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. ES12-20SM6071. Other lengths to special order.

To order Stem Extender only, provide valve model prefix e.g. ES12-20SM6. 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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! CAUTION !

Do not mix or interchange component parts or tubing with those of other manufacturers. Doing so is unsafe and will void warranty.

Parker Autoclave Engineers Valves, Fittings, and Tools are not designed to interface with common commercial instrument tubing and are designed to only connect with tubing manufactured to Parker Autoclave Engineers AES specifications. Failure to do so is unsafe and will void warranty.

WARNING

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