

# Needle Valve

## NPT (Pipe Style) Threaded Connection 15,000 psi (1034 bar)

10P and 15P Series



### Principle of Operation:

P Series (Pipe Style) Needle Valves are made available for those customers that prefer using pipe instead of high pressure instrumentation tubing for pressures up to 15,000 psi MAWP. Designed using high tensile strength cold worked 316 Stainless Steel material and “ANPT” (Aerospace version - compatible with all ANSI B1.20.1 NPT connections) thread form. Use only with similar valves, fittings and pipe capable of same or lower pressures.

### Pipe Valve Features:

- P Series valve design provides in-line pipe connections for 1/4" to 1" pipe sizes.
- UNS S31600 cold worked 316 Stainless Steel material as standard. See Technical brochure for additional material options.
- 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. These valves can be used in liquid or gas applications.
- PTFE packing below stem threads provide dependable stem and body sealing. Optional packing materials available.
- Choice of Vee or Flow Regulating stem tips. N-Dura Coating or Stellite® material option for severe service
- Operating temperature range from -423° to 400°F (-252° to 204°C) (Limit of PTFE sealant tape)

Parker Autoclave Engineers valves are complemented by a complete line of fittings, needle and ball valves, relief and check valves.

#### Note:

#### NPT Pipe Thread Connections:

**NPT threads** must be sealed using a high quality PTFE tape (3 wraps minimum) and/or thread sealant paste product suitable for process temperatures. Refer to thread sealant manufacturer’s instructions for application instructions. A good thread lubrication product (metal flake style) capable of process temperatures is also necessary to prevent thread galling.

**Sealing performance** may vary based on many factors such as pressure, temperature, media, thread quality, thread material, proper engagement, and proper use of thread sealant.

**End user** should limit the number of times an NPT fitting is assembled and disassembled as thread deformation during assembly will result in deteriorating seal quality over time.

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



ENGINEERING YOUR SUCCESS.

# P Series Needle Valve: Pressures to 15,000 psi (1034 bar)

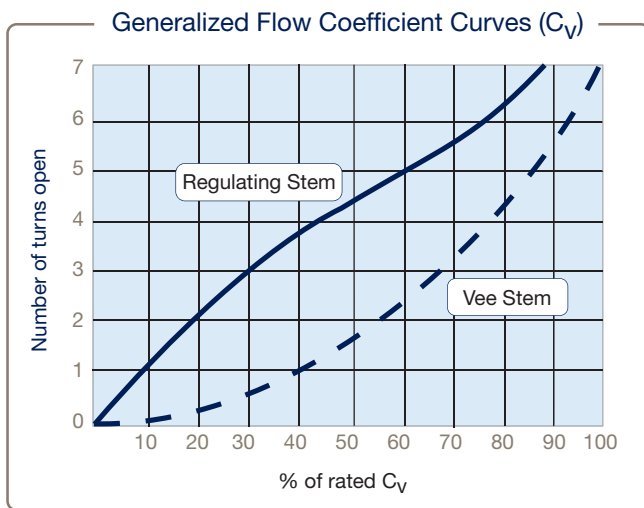


Tube Outside Diameter Size (inches)	Connection Type	Orifice Size Inches (mm)	Rated $C_v^*$	Pressure Rating psi (bar) @Room Temperature**
1/4	NPT	0.203 (5.16)	0.63	15,000 (1034)
3/8	NPT	0.219 (5.56)	0.75	15,000 (1034)
1/2	NPT	0.312 (7.92)	1.30	15,000 (1034)
3/4	NPT	0.438 (11.13)	2.50	10,000 (689)
1	NPT	0.562 (14.27)	4.40	10,000 (689)

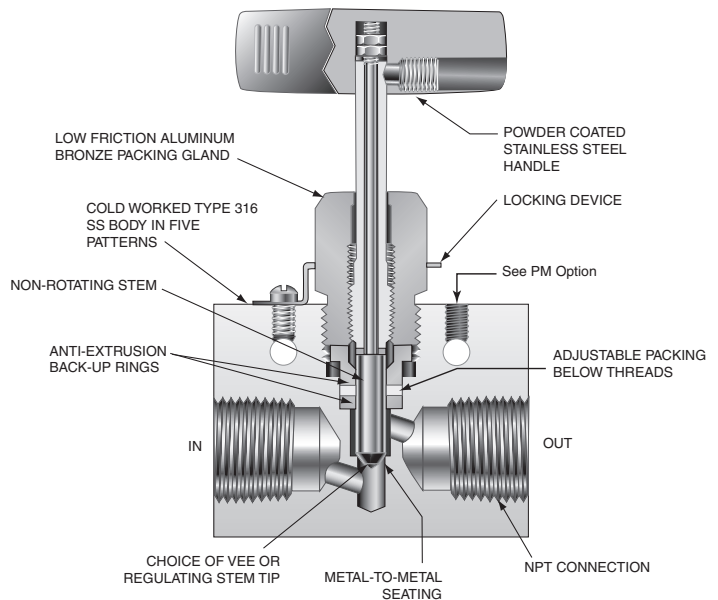
## Notes

\*  $C_v$  values shown are for 2-way straight valve pattern. For 2-way angle patterns, increase CV value 50%. (Based on water). Formula for converting  $C_v$  to volumetric flow can be found in Technical Information section.

\*\* Maximum Allowable Working Pressures decrease as temperatures increase - see pressure/temperature rating guide in Technical Information section.



P Series Flow Curves for Vee and Regulating Style Stems



## Valve Packing Options:

Standard Parker Autoclave Engineers valves with PTFE packing may be operated from 0°F (-18°C) to 450°F (232°C). High and Cryogenic temperature packing and /or extended stuffing box are available for service from -423°F (-252°C) to 800°F (427°C) by adding the following suffixes to catalog order number:

- B** Cryogenic trim materials and PTFE packing required when below 0°F (-18°C) to -100°F (-73°C)
- LT** Extended stuffing box valve with PTFE packing and Cryogenic trim materials to -423°F (-252°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 Braided Yarn packing 32°F (0°C) to 800°F (427°C).

† Parker Autoclave Engineers recommends pipe connections be operated between -423°F (-252°C) and 400°F (204°C) (Temperature limit of PTFE sealant tape). For additional valve options, contact your Sales Representative.

(See "Technical Brochure" for Pressure/Temperature effect on temperatures above ambient.)

## 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.

### Building a Part Number: Example: 15P4071

Example Part Number:	<b>15P</b>	<b>4</b>	<b>07</b>	<b>1</b>	<b>XX</b>
Ordering Parameters/Options:	Valve Series	Outside Diameter Tube Size	Stem/Seat Type	Body Pattern	Options
Table Reference: (see below)	A	B	C	D	E

A - Valve Series	
10P	10,000 psi P Series (Pipe Valve) Needle Valve (use with 3/4" and 1")
15P	15,000 psi P Series (Pipe Valve) Needle Valve

B - Pipe Connection Size	
4	1/4" Female NPT
6	3/8" Female NPT
8	1/2" Female NPT
12	3/4" Female NPT
16	1" Female NPT

C - Stem/Seal Type (see page 8 for optional stem type description)	
07	Non-Rotating Vee Stem (on-off service)
08	Non-Rotating Regulating Stem (tapered tip for regulating and shutoff)

**Notes:** Valve Manuals can be found on our website at [www.Autoclave.com](http://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.

(See "Technical Brochure" for Pressure/Temperature effect on temperatures above ambient.)

D - Body Pattern	
1	Two-Way Straight
2	Two-Way Angle
3	Three-Way, Two on Pressure
4	Three-Way, One on Pressure
5	Three-Way, Two Stem Manifold Valve

E - Options (select as many as necessary)	
For additional valve options see pages 8 & 9	
PM	Panel Mount, additional screw is supplied
B	Low temperature service below 0°F (-18°C) (included in LT code)
LT	Extended packing option with PTFE packing & cryogenic materials
TG	PTFE Glass (25%) Packing (to 600°F)
GY	High Temperature Graphite Yarn Packing to 800°F
*SOG	NACE Material, Hardness Verification/Certificate
***2507	UNS 32750 2507 Super Duplex Wetted Materials
***IN625	UNS N06625 Inconel 625 Wetted Materials

Pneumatic and Electric Actuator Options - see individual brochures for Suffix Codes  
Other materials available on request See Technical Brochure for common options and MAWP ratings

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

\* SOG suffix also changes CW 316 SS Body material to Annealed 316 SS suitable for NACE service, Pressure reduction to 10,000 psi is typical.

\*\*\* Special Materials often have reduced MAWP ratings, see Technical brochure for assistance and for additional material options

## Basic Repair Kits for 316 SS Material:

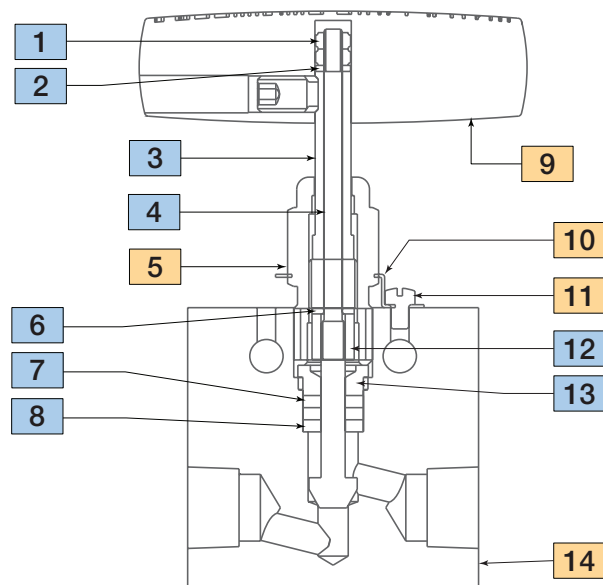
Basic Repair Kit for 316 SS Material						
Stem Type		Pipe Size:				
		1/4"	3/8"	1/2"	3/4"	1"
2 Way Straight 2 Way Angle 3 Way, Two On 3 Way, One On	VEE	R15P407	R15P607	R15P807	R10P1207	R10P1607
	REG	R15P408	R15P608	R15P808	R10P1208	R10P1608
3 Way, 2 Stem Manifold	VEE	R15P4075	R15P6075	R15P8075	R10P12075	R10P16075
	REG	R15P4085	R15P6085	R15P8085	R10P12085	R10P16085

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 and pneumatically actuated valve are different and the repair kit must include the exact actuator suffix codes).  
Valve Manuals can be found on our website at [www.Autoclave.com](http://www.Autoclave.com).  
Running and Seating Torques can be found in the product manual or in our Tools and Installation Catalog Section

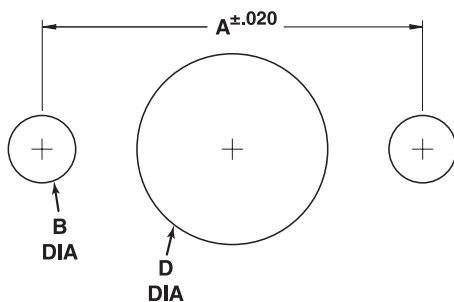
## Material of Construction:

Item #	Description	Material
1	Hex Nut	300 Series SS
2	Thrust Washer	17-4 PH
3	Stem Sleeve	304 SS
4	Vee Stem (1/2" 15P shown)	316 SS
5	Packing Gland	AMPCO 18
6	Thrust Washer	17-4 PH
7	Packing Washer	PTFE
8	Bottom Washer	316 SS
9	Handle Assembly	316 SS
10	Locking Device	302 SS
11	Fill HD Screw, #10-24	18-8 SS
12	Stem Collar, (not used in 1/4" and 3/8" series)	PTFE
13	Packing Washer	AMPCO 18
14	Valve Body, (1/2" 15P shown)	316 SS

Typical spare parts found in Repair Kits



## Panel Hole Size:

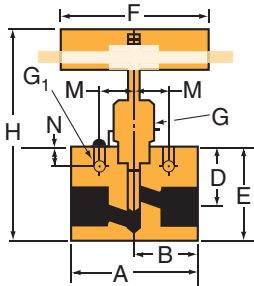


Needle Valve Panel Mount

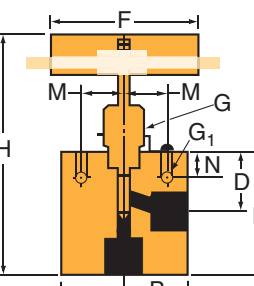
Valve Size	Inches			
	A	B	Screw Size	D
1/4" & 3/8"	1.25	.22	10 - 24	.75
1/2"	1.375	.22	10 - 24	1.00
3/4"	1.75	.22	10 - 24	1.12
1"	2.50	.22	10 - 24	1.62

Use suffix **-PM** for extra mounting hardware

## P Series Needle Valve Dimensions:

2 Way Straight								
Stem Type	VEE REG	15P4071 15P4081	15P6071 15P6081	15P8071 15P8081	10P12071 10P12081	10P16071 10P16081		
Pipe Size		1/4 (6.35)	3/8 (9.53)	1/2 (12.70)	3/4 (19.05)	1 (25.40)		
Orifice Diameter		0.203 (5.16)	0.219 (5.56)	0.312 (7.92)	0.437 (11.10)	0.562 (14.27)		
Dimensions: inches (mm)		A	B	C	D	D1		
		2.00 (50.80)	2.50 (63.50)	3.00 (76.20)	3.50 (88.90)	4.12 (104.65)		
		1.00 (25.40)	1.25 (31.75)	1.50 (38.10)	1.75 (44.45)	2.06 (52.32)		
		-	-	-	-	-		
		1.41 (35.81)	1.41 (35.81)	2.06 (52.32)	2.63 (66.80)	3.31 (84.07)		
		-	-	-	-	-		
		2.00 (50.80)	2.00 (50.80)	2.88 (73.15)	3.75 (95.25)	4.62 (117.35)		
		3.00 (76.20)	3.00 (76.20)	4.00 (101.60)	10.25 (260.35)	10.25 (260.35)		
		0.75 (19.05)	0.75 (19.05)	1.00 (25.40)	1.12 (28.45)	1.62 (41.15)		
		0.22 (5.59)	0.22 (5.59)	0.34 (8.64)	0.44 (11.18)	0.56 (14.22)		
		4.63 (117.60)	4.63 (117.60)	5.93 (150.62)	7.00 (177.80)	9.00 (228.60)		
		0.62 (15.75)	0.62 (15.75)	0.69 (17.53)	0.88 (22.35)	1.25 (31.75)		
		0.38 (9.65)	0.38 (9.65)	0.50 (12.70)	0.63 (16.00)	1.13 (28.70)		
		Block Thickness		0.75 (19.05)	1.00 (25.4)	1.38 (35.05)	1.75 (44.45)	1.75 (44.45)

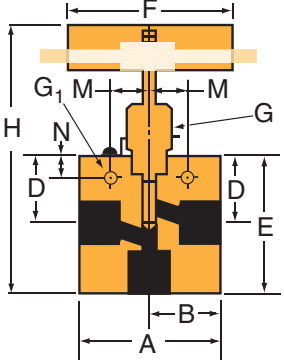
Bar Handle used on 3/4" and 1" Valves

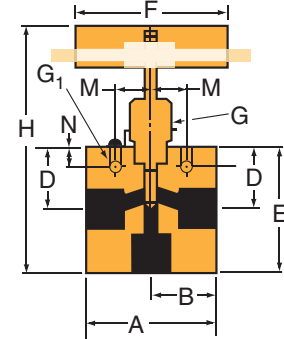
2 Way Angle								
Stem Type	VEE REG	15P4072 15P4082	15P6072 15P6082	15P8072 15P8082	10P12072 10P12082	10P16072 10P16082		
Pipe Size		1/4 (6.35)	3/8 (9.53)	1/2 (12.70)	3/4 (19.05)	1 (25.40)		
Orifice Diameter		0.203 (5.16)	0.219 (5.56)	0.312 (7.92)	0.437 (11.10)	0.562 (14.27)		
Dimensions: inches (mm)		A	B	C	D	D1		
		2.00 (50.80)	2.50 (63.50)	3.00 (76.20)	3.50 (88.90)	4.12 (104.65)		
		1.00 (25.40)	1.25 (31.75)	1.50 (38.10)	1.75 (44.45)	2.06 (52.32)		
		-	-	-	-	-		
		1.41 (35.81)	1.41 (35.81)	2.06 (52.32)	2.63 (66.80)	3.31 (84.07)		
		-	-	-	-	-		
		2.44 (61.98)	2.44 (61.98)	3.38 (85.85)	4.25 (107.95)	5.12 (130.05)		
		3.00 (76.20)	3.00 (76.20)	4.00 (101.60)	10.25 (260.35)	10.25 (260.35)		
		0.75 (19.05)	0.75 (19.05)	1.00 (25.40)	1.12 (28.45)	1.62 (41.15)		
		0.22 (5.59)	0.22 (5.59)	0.34 (8.64)	0.44 (11.18)	0.56 (14.22)		
		4.81 (122.17)	4.81 (122.17)	6.43 (163.32)	7.50 (190.50)	9.00 (228.60)		
		0.62 (15.75)	0.62 (15.75)	0.69 (17.53)	0.88 (22.35)	1.25 (31.75)		
		0.38 (9.65)	0.38 (9.65)	0.50 (12.70)	0.63 (16.00)	1.13 (28.70)		
		Block Thickness		0.75 (19.05)	1.00 (25.4)	1.38 (35.05)	1.75 (44.45)	1.75 (44.45)

Bar Handle used on 3/4" and 1" Valves

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.

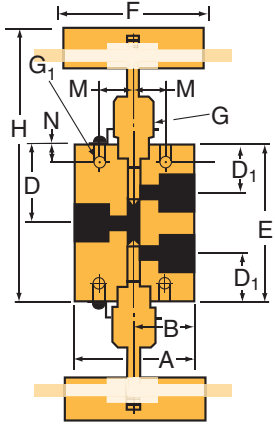
## P Series Needle Valve Dimensions:

3 Way, 2 on Pressure							
Stem Type	VEE REG	15P4073 15P4083	15P6073 15P6083	15P8073 15P8083	10P12073 10P12083	10P16073 10P16083	
Pipe Size		1/4 (6.35)	3/8 (9.53)	1/2 (12.70)	3/4 (19.05)	1 (25.40)	
Orifice Diameter		0.203 (5.16)	0.219 (5.56)	0.312 (7.92)	0.437 (11.10)	0.562 (14.27)	
	Dimensions: inches (mm)	A	2.00 (50.80)	2.50 (63.50)	3.00 (76.20)	3.50 (88.90)	4.12 (104.65)
	B	1.00 (25.40)	1.25 (31.75)	1.50 (38.10)	1.75 (44.45)	2.06 (52.32)	
	C	-	-	-	-	-	
	D	1.41 (35.81)	1.41 (35.81)	2.06 (52.32)	2.65 (67.31)	3.31 (84.07)	
	D1	-	-	-	-	-	
	E	2.62 (66.55)	2.62 (66.55)	3.62 (91.95)	4.62 (117.35)	5.88 (149.35)	
	F	3.00 (76.20)	3.00 (76.20)	4.00 (101.60)	10.25 (260.35)	10.25 (260.35)	
	G	0.75 (19.05)	0.75 (19.05)	1.00 (25.40)	1.12 (28.45)	1.62 (41.15)	
	G1	0.22 (5.59)	0.22 (5.59)	0.34 (8.64)	0.44 (11.18)	0.56 (14.22)	
	H*	5.00 (127.00)	5.00 (127.00)	6.52 (165.61)	7.88 (200.15)	9.75 (247.65)	
	M	0.62 (15.75)	0.62 (15.75)	0.69 (17.53)	0.88 (22.35)	1.25 (31.75)	
	N	0.38 (9.65)	0.38 (9.65)	0.50 (12.70)	0.63 (16.00)	1.13 (28.70)	
	Block Thickness		0.75 (19.05)	1.00 (25.4)	1.38 (35.05)	1.75 (44.45)	1.75 (44.45)

3 Way, 1 on Pressure							
Stem Type	VEE REG	15P4074 15P4084	15P6074 15P6084	15P8074 15P8084	10P12074 10P12084	10P16074 10P16084	
Pipe Size		1/4 (6.35)	3/8 (9.53)	1/2 (12.70)	3/4 (19.05)	1 (25.40)	
Orifice Diameter		0.203 (5.16)	0.219 (5.56)	0.312 (7.92)	0.437 (11.10)	0.562 (14.27)	
	Dimensions: inches (mm)	A	2.00 (50.80)	2.50 (63.50)	3.00 (76.20)	3.50 (88.90)	4.12 (104.65)
	B	1.00 (25.40)	1.25 (31.75)	1.50 (38.10)	1.75 (44.45)	2.06 (52.32)	
	C	-	-	-	-	-	
	D	1.41 (35.81)	1.41 (35.81)	2.06 (52.32)	2.65 (67.31)	3.31 (84.07)	
	D1	-	-	-	-	-	
	E	2.44 (61.98)	2.44 (61.98)	3.38 (85.85)	4.25 (107.95)	5.12 (130.05)	
	F	3.00 (76.20)	3.00 (76.20)	4.00 (101.60)	10.25 (260.35)	10.25 (260.35)	
	G	0.75 (19.05)	0.75 (19.05)	1.00 (25.40)	1.12 (28.45)	1.62 (41.15)	
	G1	0.22 (5.59)	0.22 (5.59)	0.34 (8.64)	0.44 (11.18)	0.56 (14.22)	
	H	4.81 (122.17)	4.81 (122.17)	6.31 (160.27)	7.50 (190.50)	9.09 (230.89)	
	M	0.62 (15.75)	0.62 (15.75)	0.69 (17.53)	0.88 (22.35)	1.25 (31.75)	
	N	0.38 (9.65)	0.38 (9.65)	0.50 (12.70)	0.63 (16.00)	1.13 (28.70)	
	Block Thickness		0.75 (19.05)	1.00 (25.4)	1.38 (35.05)	1.75 (44.45)	1.75 (44.45)

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.

## P Series Needle Valve Dimensions:

3 Way, 2 Stem Manifold							
Stem Type	VEE REG	15P4075 15P4085	15P6075 15P6085	15P8075 15P8085	10P12075 10P12085	10P16075 10P16085	
Pipe Size		1/4 (6.35)	3/8 (9.53)	1/2 (12.70)	3/4 (19.05)	1 (25.40)	
Orifice Diameter		0.203 (5.16)	0.219 (5.56)	0.312 (7.92)	0.437 (11.10)	0.562 (14.27)	
Dimensions: inches (mm)	A	2.00 (50.80)	2.50 (63.50)	3.00 (76.20)	3.50 (88.90)	4.12 (104.65)	
	B	1.00 (25.40)	1.25 (31.75)	1.50 (38.10)	1.75 (44.45)	2.06 (52.32)	
	C	-	-	-	-	-	
	D	1.69 (42.88)	1.69 (42.88)	2.56 (66.07)	3.25 (82.55)	3.75 (96.25)	
	D1	1.19 (30.18)	1.19 (30.18)	1.75 (44.45)	2.25 (57.15)	2.81 (71.42)	
	E	3.38 (85.85)	3.38 (85.85)	5.12 (130.05)	6.50 (165.10)	7.50 (190.50)	
	F	3.00 (76.20)	3.00 (76.20)	4.00 (101.60)	10.25 (260.35)	10.25 (260.35)	
	G	0.75 (19.05)	0.75 (19.05)	1.00 (25.40)	1.12 (28.45)	1.62 (41.15)	
	G1	0.22 (5.59)	0.22 (5.59)	0.34 (8.64)	0.44 (11.18)	0.56 (14.22)	
	H	5.75 (146.05)	5.75 (146.05)	8.05 (204.47)	9.75 (247.65)	11.47 (291.38)	
	M	0.62 (15.75)	0.62 (15.75)	0.69 (17.53)	0.88 (22.35)	1.25 (31.75)	
	N	0.38 (9.65)	0.38 (9.65)	0.50 (12.70)	0.63 (16.00)	1.13 (28.70)	
	Block Thickness		0.75 (19.05)	1.00 (25.4)	1.38 (35.05)	1.75 (44.45)	1.75 (44.45)

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.

# 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:

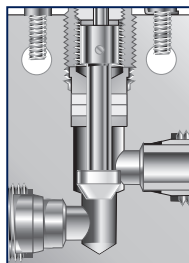
Remotely controlling process flow at high pressure enhances safety and lowers labor costs. Parker Autoclave Engineers developed a flow control valve available in several models including weatherproof and explosionproof options.

The Electrically Actuated Shut-off/Flow Regulating Actuator (FRC Series) is available for most of our Needle Valves through 1/2" pipe connection sizes and up to 15,000 psi maximum pressure. They can withstand wide process temperature ranges.

## Stem Options:

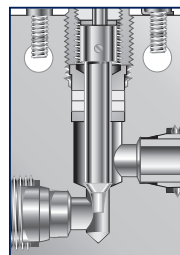
Most Parker Autoclave Engineers' valves are available with either Vee (on-off) or Regulating (Flow Control) Stems in our standard valve body as shown below. For severe service stem (and replaceable seat if ordered) can be offered with N-Dura Diamond-Like coating (-CS suffix or -CSS (coated stem & seat)) or made from Stellite (-SS or -SSRS (Stellite stem, replaceable seat)).

### VEE Stem



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

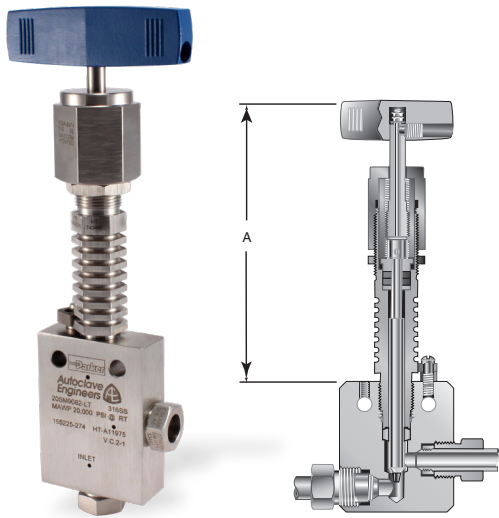
### Regulating Stem



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.



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



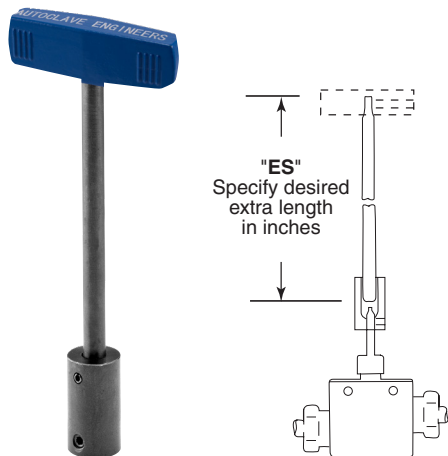
## High/Low Temperature Extension:

Required with extreme temperatures to remove packing from contact with flow stream.

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

Valve Series	Outside Diameter Tube Size (inches)	Dimensions "A" inches (mm)
<b>10P Series 15P Series</b>	1/4"	5.50 (140)
	3/8"	6.00 (152)
	1/2"	6.60 (168)
	3/4"	7.75 (197)
	1"	9.30 (236)

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. ES12-15P6071. Other lengths to special order.

To order Stem Extender only, provide valve model prefix e.g. ES12-15P6. 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

NOTES:

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 <b>PNEUMATICS</b>	Aerospace Conveyor & Material Handling Factory Automation Life Science & Medical	Machine Tools Packaging Machinery Transportation & Automotive	Air Preparation Brass Fittings & Valves Manifolds Pneumatic Accessories Pneumatic Actuators & Grippers Pneumatic Valves & Controls	Quick Disconnects Rotary Actuators Rubber & Thermoplastic Hose & Couplings Structural Extrusions Thermoplastic Tubing & Fittings Vacuum Generators, Cups & Sensors
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# Parker Worldwide

## North America

**USA** – Corporate, Cleveland, OH  
Tel: +1 256 896 3000

**USA** – IPD, Huntsville, AL  
Tel: +1 256 881 2040  
ipdcct@parker.com

**USA** – IPD, (Autoclave), Erie, PA  
Tel: +1 814 860 5700  
ipdaect@parker.com

**CA** – Canada, Grimsby, Ontario  
Tel: +1 905-945-2274  
ipd\_canada@parker.com

## South America

**AR** – Argentina, Buenos Aires  
Tel: +54 3327 44 4129  
falecom@parker.com

**BR** – Brazil, Diadema, SP  
Tel: +55 11 4360 6700  
falecom@parker.com

**CL** – Chile, Santiago  
Tel: +56 (0) 2 2303 9640  
falecom@parker.com

**MX** – Mexico, Toluca  
Tel: +52 722 275 4200  
contacto@parker.com

## Asia Pacific

**AU** – Australia, Dandenong  
Tel: +61 (0)2 9842 5150  
customer.service.au@parker.com

**CN** – China, Shanghai  
Tel: +86 21 2899 5000  
INGtechnical.china@parker.com

**HK** – Hong Kong  
Tel: +852 2428 8008

**IN** – India, Mumbai  
Tel: +91 22 6513 7081-85

**ID** – Indonesia, Tangerang  
Tel: +62 2977 7900  
parker.id@parker.com

**JP** – Japan, Tokyo  
Tel: +(81) 3 6365 4020  
infophj@parker.com

**KR** – South Korea, Seoul  
Tel: +82 2 559 0400  
parkerkr@parker.com

**MY** – Malaysia, Selangor  
Tel: +603 784 90 800  
parkermy@parker.com

**SG** – Singapore,  
Tel: +65 6887 6300  
parkerkg@parker.com

**TH** – Thailand, Bangkok  
Tel: +66 2 186 7000  
phthailand@parker.com

**TW** – Taiwan, Taipei  
Tel: +886 2 2298 8987  
enquiry.taiwan@parker.com

**VN** – Vietnam, Hochi Minh City  
Tel: +848 382 508 56  
parker\_viet@parker.com

## Europe, Middle East, Africa

**AE** – UAE, Dubai  
Tel: +971 4 812 7100  
parker.me@parker.com

**AT** – Austria, Wiener Neustadt  
Tel: +43 (0)2622 23501-0  
parker.austria@parker.com

**AT** – Eastern Europe, Wiener Neustadt  
Tel: +43 (0)2622 23501 900  
parker.easteurope@parker.com

**AZ** – Azerbaijan, Baku  
Tel: +994 50 2233 458  
parker.azerbaijan@parker.com

**BE/LU** – Belgium, Nivelles  
Tel: +32 (0)67 280 900  
parker.belgium@parker.com

**BG** – Bulgaria, Sofia  
Tel: +359 2 980 1344  
parker.bulgaria@parker.com

**BY** – Belarus, Minsk  
Tel: +48 (0)22 573 24 00  
parker.belarus@parker.com

**CH** – Switzerland, Etoy  
Tel: +41 (0) 21 821 87 00  
parker.switzerland@parker.com

**CZ** – Czech Republic, Klecany  
Tel: +420 284 083 111  
parker.czechrepublic@parker.com

**DE** – Germany, Kaarst  
Tel: +49 (0)2131 4016 0  
parker.germany@parker.com

**DK** – Denmark, Ballerup  
Tel: +45 43 56 04 00  
parker.denmark@parker.com

**ES** – Spain, Madrid  
Tel: +34 902 33 00 01  
parker.spain@parker.com

**FI** – Finland, Vantaa  
Tel: +358 (0)20 753 2500  
parker.finland@parker.com

**FR** – France, Contamine s/Arve  
Tel: +33 (0)4 50 25 80 25  
parker.france@parker.com

**GR** – Greece, Athens  
Tel: +30 210 933 6450  
parker.greece@parker.com

**HU** – Hungary, Budapest  
Tel: +36 223 885 470  
parker.hungary@parker.com

**IE** – Ireland, Dublin  
Tel: +353 (0)1 466 6370  
parker.ireland@parker.com

**IT** – Italy, Corsico (MI)  
Tel: +39 02 45 19 21  
parker.italy@parker.com

**KZ** – Kazakhstan, Almaty  
Tel: +7 7273 561 000  
parker.easteurope@parker.com

**NL** – The Netherlands, Oldenzaal  
Tel: +31 (0)541 585 000  
parker.nl@parker.com

**NO** – Norway, Stavanger  
Tel: +47 66 75 34 00  
parker.norway@parker.com

**PL** – Poland, Warsaw  
Tel: +48 (0)22 573 24 00  
parker.poland@parker.com

**PT** – Portugal, Leca da Palmeira  
Tel: +351 22 999 7360  
parker.portugal@parker.com

**RO** – Romania, Bucharest  
Tel: +40 21 252 1382  
parker.romania@parker.com

**RU** – Russia, Moscow  
Tel: +7 495 645-2156  
parker.russia@parker.com

**SE** – Sweden, Spånga  
Tel: +46 (0)8 59 79 50 00  
parker.sweden@parker.com

**SK** – Slovakia, Banská Bystrica  
Tel: +421 484 162 252  
parker.slovakia@parker.com

**SL** – Slovenia, Novo Mesto  
Tel: +386 7 337 6650  
parker.slovenia@parker.com

**TR** – Turkey, Istanbul  
Tel: +90 216 4997081  
parker.turkey@parker.com

**UA** – Ukraine, Kiev  
Tel: +48 (0)22 573 24 00  
parker.ukraine@parker.com

**UK** – United Kingdom, Warwick  
Tel: +44 (0)1926 317 878  
parker.uk@parker.com

**ZA** – South Africa, Kempton Park  
Tel: +27 (0)11 961 0700  
parker.southafrica@parker.com

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Instrumentation Products Division  
Autoclave Engineers Operation  
8325 Hessinger Drive  
Erie, PA 16509-4679  
Tel: 814 860 5700  
Fax: 814 860 5811  
[www.autoclave.com](http://www.autoclave.com)  
[www.parker.com/ipd](http://www.parker.com/ipd)

Instrumentation Products Division  
Division Headquarters  
1005 A Cleaner Way  
Huntsville, AL 35805 USA  
Tel: 256 881 2040  
Fax: 256 881 5072

Parker Hannifin Manufacturing Ltd.  
Instrumentation Products Division,  
Europe  
Riverside Road  
Pottington Business Park  
Barnstaple, UK, EX31 1NP, UK  
Tel: 44 1271 313131  
Fax: 44 1271 373636

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