

# Needle Valves

## Extreme Temperature

# HT, LT and PV Series

Pressures to 60,000 psi (4137 bar)

Autoclave Engineers has two different styles of valves for extreme temperature. Standard valves can be supplied with packing for operation from -100°F (-73°C) to 800°F (427°C), or with the addition of an extended packing housing for operation from -423°F (-252°C) to 1200°F (649°C). The extended packing housing provides the means of removing the packing from the extreme temperature medium. Machined grooves on the housing act as a heatsink to remove heat or cold.

The second, which is economically priced, is a modified standard designed for the power industry. It operates to 1200°F (649°C) with graphite packing and no extended packing housing.

### Extreme Temperature Valve Features:

- The extreme temperature option can be ordered on low, medium, high, micro-metering and other valve series.
- Reliable long life operation with extended stuffing box at very high and low temperatures.
- Design available for operation to 1200°F (649°C) without extended packing housing.
- Available with a variety of tubing connections and orifice sizes.
- Non-rotating stem.
- Wide range of material options
- Adjustable packing below threads.
- Metal to metal seating.
- Anti-extrusion back-up rings.

Autoclave valves are complemented by a complete line of fittings, tubing, and accessories.



### Applications:

- Hot well condenser
- Super-heated steam hookup/ measurement
- Supercritical fluid processing
- Boiler ignition system

**Autoclave  
Engineers** 

Fluid Components  
Division of Snap-tite, Inc.  
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Needle Valves - HT, LT and PV Series  
Extreme Temperature

# Needle Valve - HT, LT Series

## Standard Valve with Stuffing Box option - Pressures to 60,000 psi (4137 bar)

### High Temperature Valves to 1200°F (649°C)

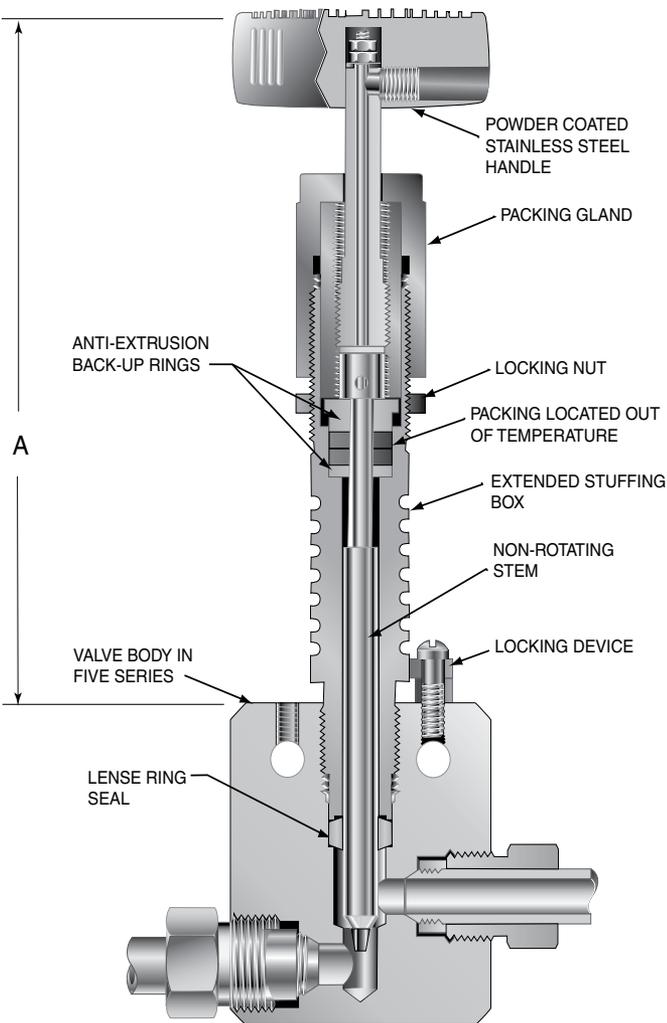
#### High Temperature Packing Option

Standard Autoclave valves can be operated up to 800°F (427°C) at the packing with appropriate packing materials. See table in Technical Section for temperature ratings and ordering information.

#### High Temperature Extended Stuffing Box Option "HT"

For operation above 800°F (427°C) at the packing, optional extended stuffing box removes packing and stem threads from the hot zone. The "HT" option is standard graphite-yarn packing; add "HT" to valve order number. For other packing materials, add both "HT" and the suffix for the desired packing material (See table in Technical Section).

High or Low Temperature Air Operated Valves with extended stuffing box can be ordered by adding suffix "HT" to Air Operated Valve order number.



### Cryogenic Valves to -423°F (256°C)

#### Low Temperature Trim Materials Option "B"

While all WETTED parts in most AE valves are type 316SS, some TRIM parts are constructed of mechanically preferable materials. For low temperature to -100°F (-73°C), type 316SS trim parts and Teflon packing can be furnished (except Series 100V and 150V). To order, add suffix "B" to valve order number.

#### Cryogenic Extended Stuffing Box Option "LT"

For operation below -100°F (-73°C) or for rigorous cycling, an extended stuffing box removes packing from the extreme low temperature zone. The "LT" option also includes many type 316 SS trim parts and Teflon packing. Add "LT" suffix to valve order number.

Valve Series	O.D. Tube Size inches	Dimension "A" inches (mm)
10V	1/8	5.38 (136.65)
	1/4	5.94 (150.87)
	3/8	5.94 (150.87)
	1/2	5.94 (150.87)
SW	1/4	5.50 (139.70)
	3/8	5.50 (139.70)
	1/2	6.31 (160.27)
10SM & 20SM	1/4	5.50 (139.70)
	3/8	5.50 (139.70)
	9/16	6.31 (160.27)
	3/4	6.31 (160.27)
30SC	1	9.52 (241.80)
	1	9.52 (241.80)
30VM	1/4	5.94 (150.87)
	3/8	5.94 (150.87)
	9/16	5.94 (150.87)
40VM	9/16	6.19 (157.22)
60VM	1/4	5.87 (149.10)
	3/8	5.94 (150.87)
	9/16	6.19 (157.22)
10VRMM	1/8	5.38 (136.65)
30VRMM	1/4	5.94 (150.87)
60VRMM	1/4	6.06 (153.92)
	3/8	6.06 (153.92)

**Note:** Caution should be exercised in proper selection of medium pressure tubing based on actual operating conditions. Two series available: 10,000 psi (690 bar) and 20,000 psi (1379 bar).

**Handle Extenders** are available to facilitate extreme temperature operation of valves and for remote actuation through an insulating wall or barricade. See appropriate valve ordering section.

\* See Valve Actuators section.

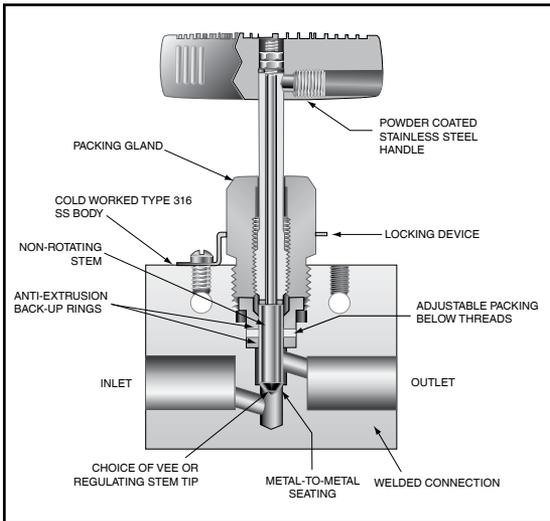
All dimensions for reference only and subject to change.

# Needle Valve - PV Series

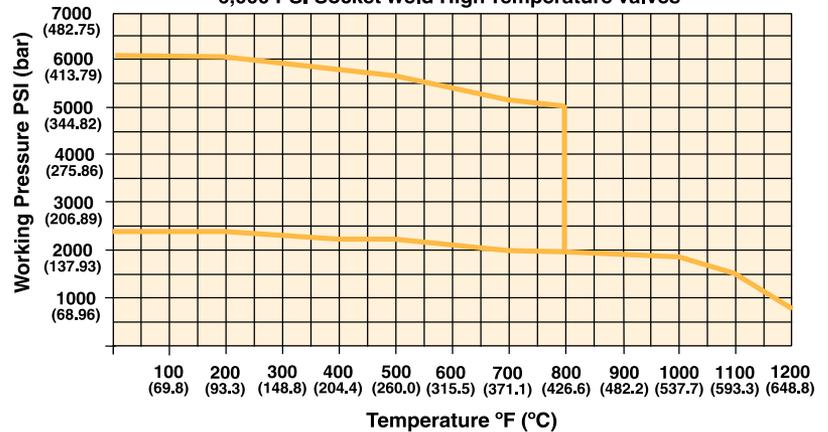
Pressures to 6,000 psi (414 bar)

Tube Outside Diameter	Connection Type	Orifice Size	Pressure Rating psi (bar) @ Room Temperature**
1/4	TW/PW	3/16"	6,000 (414)
3/8	TW/PW	1/4"	6,000 (414)
1/2	TW/PW	1/4"	6,000 (414)
3/4	TW/PW	1/2"	6,000 (414)
10mm	TW	6.50mm	6,000 (414)
12mm	TW	6.50mm	6,000 (414)
14mm	TW	6.50mm or 9.0mm	6,000 (414)
16mm	TW	9.00mm or 11.0mm	6,000 (414)

TW - Tube Weld  
PW - Pipe Weld  
Note: \*\* For temperature ratings see pressure/temperature rating guide chart below..



Pressure/Temperature Rating Curve  
6,000 PSI Socket Weld High Temperature Valves

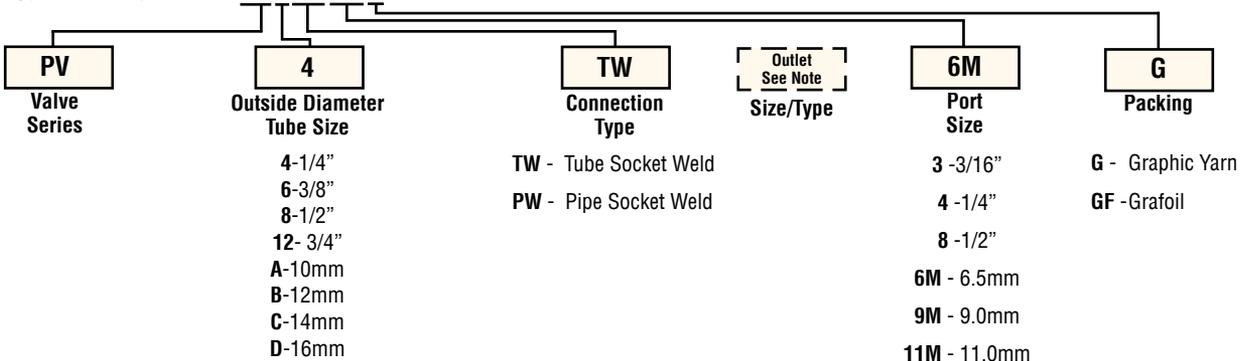


See Technical Information section for curve details.

## Ordering Procedure

For complete information on available stem types, optional connections and additional valve options, see Needle Valve Options section or contact your Sales Representative.

Typical catalog number: **PV4TW6MG**



Note: Use if outlet connection is different - Example: PV4T~~W~~ATW6M-G

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## Valve Options

For optional connection sizes, connection types, material or other options not listed contact your sales representative. Consult factory for availability of dissimilar end connections.

## Valve Maintenance

Repair Kits: add "R" to the front of valve catalog number for proper repair kit.  
(Example: **RPV4TWG**)

Valve Bodies: Valve bodies are available. Order using the eight (8) digit part number found on the valve drawing or contact your Sales Representative for information.

Consult your Autoclave representative for pricing on repair kits and valve bodies. Refer to the Tools, Installation, Operation and Maintenance section for proper maintenance procedures.

Catalog Number	Stem Type	Outside Diameter Tube	Orifice Diameter	Dimensions - inches (mm)												Block Thickness	Valve Pattern
				A	B	C	D	D <sub>1</sub>	E	F	G	G <sub>1</sub>	H*	M	N		

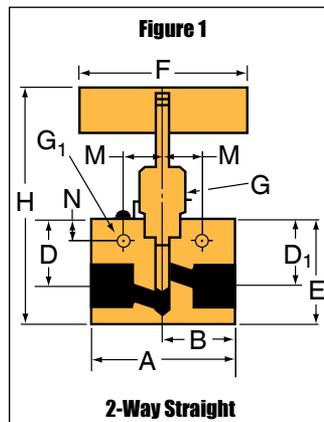
### 2-Way Straight

PV4TW3G	VEE	1/4	0.187	2.00	1.00		1.41	1.41	2.00	3.00	0.75	0.22	4.43	0.62	0.38	0.75	See Figure 1	
		(6.35)	(4.75)	(50.80)	(25.40)		(35.81)	(35.81)	(50.80)	(76.20)	(19.05)	(5.59)	(112.52)	(15.75)	(9.65)	(19.05)		
PVT6TW4G	VEE	3/8	0.250	2.00	1.00		1.41	1.41	2.00	3.00	0.75	0.22	4.43	0.62	0.38	0.75		
		(9.53)	(6.35)	(50.80)	(25.40)		(35.81)	(35.81)	(50.80)	(76.20)	(19.05)	(5.59)	(112.52)	(15.75)	(9.65)	(19.05)		
Metric (in)																		
PVC7W6MG	VEE	14.00	6.5	50.80	25.40		35.81	35.81	50.80	76.20	19.05	5.59	111.00	15.75	9.65	19.05		
		(0.55)	(0.26)	(2.00)	(1.00)		(1.41)	(1.41)	(2.00)	(3.00)	(0.75)	(0.22)	(4.37)	(0.62)	(0.38)	(0.75)		
PVC7W9MG	VEE	14.00	9.0	63.50	31.75		52.32	52.32	73.15	101.60	22.23	5.59	148.34	17.53	12.70	25.40		
		(0.55)	(0.35)	(2.50)	(1.25)		(2.06)	(2.06)	(2.88)	(4.00)	(0.88)	(0.22)	(5.84)	(0.69)	(0.50)	(1.00)		

G - Packing gland mounting hole drill size  
G<sub>1</sub> - Bracket mounting hole size  
Panel mounting drill size: 0.22" all valves.

\* H Dimension is with stem in closed position.  
All dimensions for reference only and subject to change.

For prompt service, Autoclave stocks select products. Consult factory.



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Industrial Estate  
Whitemill-Wexford  
Republic of Ireland  
PH: 353 53 914 1566 FAX: 353 53 914 1582  
e-mail: ste\_sales@snap-tite.com  
www.snap-tite.com



Fluid Components  
Division of Snap-tite, Inc.  
8325 Hessinger Drive  
Erie, Pennsylvania 16509-4679 USA  
PH: 814-860-5700 FAX: 814-860-5811  
e-mail: ae\_sales@snap-tite.com  
www.autoclave.com

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