

# Needle Valve Diverter

20DV Series

Pressure to 20,000 psi (1379 bar)



## Principle of Operation:

Parker Autoclave Engineers diverter valves provide the ability to direct incoming flow to one of two outlets. Flow is changed by rotating the handle in or out causing a double-ended stem to block the flow path to the outlet not needed. Diverter valves eliminate the need for multiple valves and the possibility of error in flow direction changes.

## AE Diverter Valve Features:

- Diverts incoming flow to either of two outlet lines.
- Tubing sizes from 9/16" 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 sealing.
- Stem sleeve and packing gland materials have been selected to achieve extended thread cycle life and reduced handle torque.
- Stem turned all the way in directs flow to bottom outlet. Stem turned all the way out directs flow to top outlet (as pictured).

Parker Autoclave Engineers valves are complemented by a complete line of fittings, tubing, and accessories. The 20DV series uses Parker Autoclave Engineers' medium pressure connection. This coned and threaded connection provides a reliable bubble-tight seal for dependable performance to 20,000 psi (1379).

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



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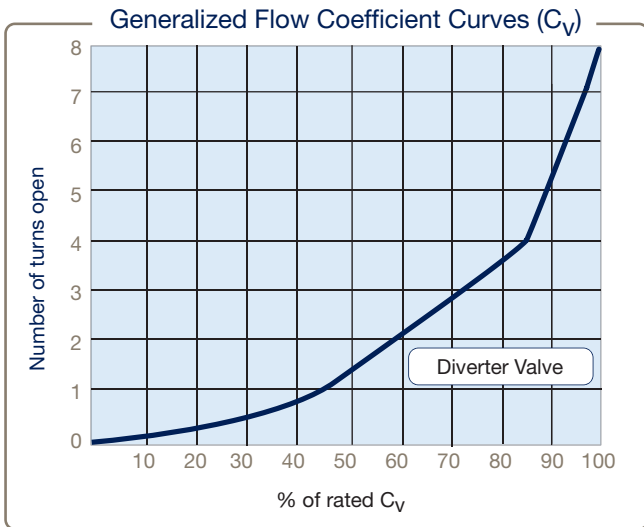
# 20DV Series: Pressures to 20,000 psi (1379 bar)



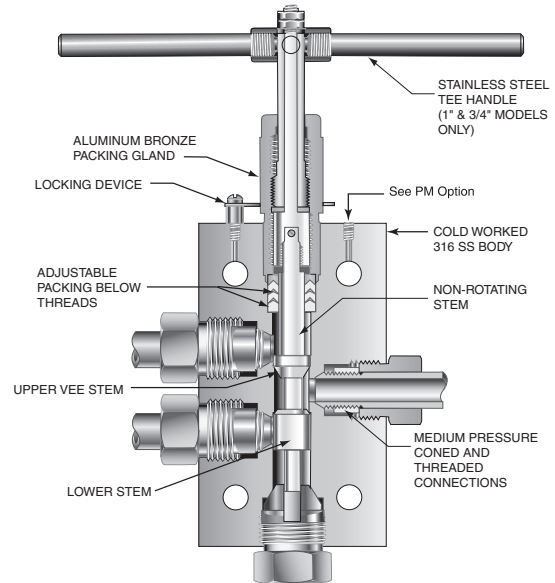
Tube Outside Diameter Size (inches)	Connection Type	Orifice Size Inches (mm)	Rated $C_v^*$	Pressure Rating psi (bar) @Room Temperature**
9/16	SF562CX2	0.359 (9.12)	1.5	20,000 (1379)
3/4	SF750CX2	0.516 (13.10)	2.9	20,000 (1379)
1	SF1000CX2	0.562 (14.27)	4.5	20,000 (1379)

**Notes**

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



20DV (Diverter) Series Flow Curve for Vee Stem Valves



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 and/or extended stuffing box is available for service from -423°F (-252°C) to 1200°F (649°C) by adding the following suffixes to catalog order number:

- HT** Extended stuffing box valve with graphite braided yarn packing to 1200°F (649°C).
- B** Standard valve with cryogenic trim materials and PTFE packing to -100°F (-73°C). Use when temperature is below 0°F (-18°C).
- LT** Extended stuffing box valve with PTFE packing and cryogenic trim materials to -423°F (-252°C).

## 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. The 20DV Series valves are furnished complete with connection components, unless otherwise specified.

Building a Part Number: <i>Example: 20DV16077</i>					
Example Part Number:	20DV	16	07	7	XX
Ordering Parameters/Options:	Valve Series	Outside Diameter Tube Size	Stem Type	Body Pattern	Options
Table Reference: (see below)	A	B	C	D	E

A - Valve Series	
20DV	20DV Series Diverter Needle Valve

D - Body Pattern	
7	Diverter

B - Outside Diameter Tube Size	
9	9/16"
12	3/4"
16	1"

E - Options	
For extreme temperatures and other options, see Valve Options.	
PM	Panel Mount, additional #10-24 screw is supplied
K	Anti-Vibe

C - Stem Type	
07	Non-Rotating Vee Stem (on-off service)

## Basic Repair Kits for 316 SS Material:

Basic Repair Kit for 316 SS Material				
Stem Type		Outside Diameter Tube:		
		9/16"	3/4"	1"
20DV Vee Stem	VEE	R20DV9077	R20DV12077	R20DV16077

Consult your Parker Autoclave Engineers representative for other kit numbers, body part numbers, and pricing.  
Visit [www.autoclave.com](http://www.autoclave.com) for product Operation manuals.

## 20DV Series Dimensions:

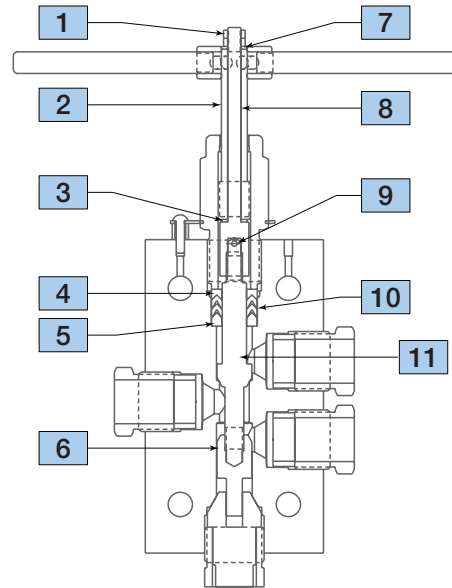
20DV Series				
		Catalog Number		
Stem Type	VEE	20DV9077	20DV12077	20DV16077
Outside Diameter Tube		<b>9/16</b> <b>(14.29)</b>	<b>3/4</b> <b>(19.05)</b>	<b>1</b> <b>(25.40)</b>
Orifice Diameter		0.359 (9.12)	0.516 (13.11)	0.562 (14.27)
Dimensions: inches (mm)		<b>A</b>	<b>B</b>	<b>C</b>
		2.50 (63.50)	3.00 (76.20)	4.12 (104.65)
		1.25 (31.75)	1.50 (38.10)	2.06 (53.32)
		0.53 (13.46)	0.62 (15.75)	0.72 (18.29)
		2.41 (61.21)	3.00 (76.20)	3.75 (95.25)
		1.75 / 1.63 (44.45) / (41.40)	2.13 / 1.81 (54.10) / 45.97	2.81/2.62 (71.37) / 66.55
		4.69 (119.31)	5.69 (144.53)	7.25 (184.15)
		4.00 (101.60)	10.25 (260.35)	10.25 (260.35)
		1.00 (25.40)	1.12 (28.45)	1.62 (41.15)
		0.34 (8.64)	0.44 (11.18)	0.56 (14.22)
		8.88 (225.55)	10.12 (257.05)	12.79 (324.87)
		<b>M</b>	<b>N</b>	
		0.69 (17.53)	0.88 (22.35)	1.25 (31.75)
		0.50 (12.70)	0.62 (15.75)	1.12 (28.45)
Block Thickness		1.00 (25.40)	1.38 (35.05)	1.75 (44.45)

G - Packing Gland mounting hole drill size • G1 - Bracket mounting hole size • H\* - Dimension is with stem in closed position  
 Panel mounting drill size: 0.22" all valves • All dimensions for reference only and subject to change • For prompt service, Parker Autoclave stocks select products. Consult factory.

## 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





# 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.

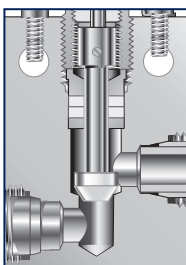
The Electrically Actuated Shut-off/Flow Regulating Actuator (FRC Series) is available for most of our Needle Valves through 9/16" tubing size and up to 60,000 psi maximum pressure. They are available in all body patterns except 3-Way / 2-Stem Manifold, and can withstand wide process temperature ranges.

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

## Stem Options:

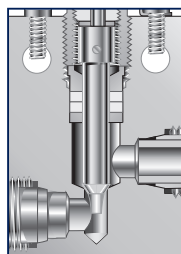
Most Parker Autoclave Engineers' valves are available with either Vee (on-off) or Regulating (Flow Control) Stems in our standard valve body seat or with our optional replaceable seat as shown below:

### VEE Stem



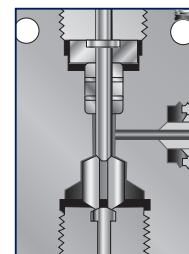
The Vee stem is used for direct on-off, metal-to-metal shut-off with quick-opening flow characteristics.

### Regulating Stem



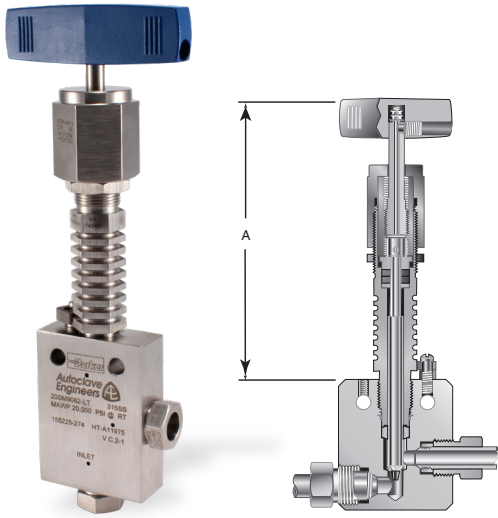
In some applications, more precise flow control is required than is possible with a Vee stem. For these cases, Autoclave offers a non-rotating, two-piece regulating stem which can be used for both control and shut-off. While it is not as precise as the control associated with the MicroMetering stem,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

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



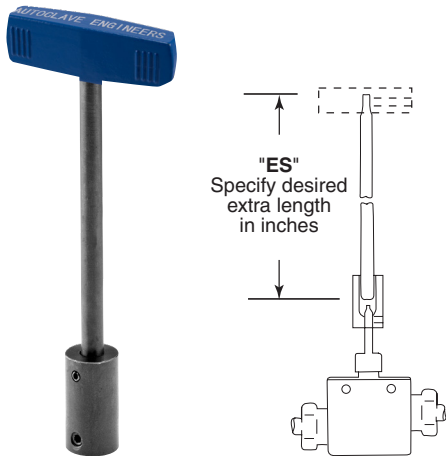
## High/Low Temperature Extension:

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)
<b>10V &amp; SW</b> (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

**FAILURE, IMPROPER SELECTION OR IMPROPER USE OF THE PRODUCTS AND/OR SYSTEMS DESCRIBED HEREIN OR RELATED ITEMS CAN CAUSE DEATH, PERSONAL INJURY AND PROPERTY DAMAGE.**

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