

# Needle Valve

## VRMM MicroMetering Series 60,000 psi (4140 bar)

10VRMM, 15PVRMM (NPT), 30VRMM, 60VRMM Series



### Principle of Operation:

MicroMetering valves are designed for applications where more precise control of small flow is required than is possible with a standard regulating stem. Barrel and Thimble micrometer design permits settings to be repeated.

Metering is controlled by a finely tapered stem acting in a precisely mated replaceable seat. Very fine stem position is achieved utilizing a 40 TPI thread. The Barrel and Thimble are calibrated for proper metering at the factory.

**These valves are designed for metering only and cannot be used as a shutoff valve.** Minimum flow is factory set and occurs at “0” position. **DO NOT OPERATE THE VALVE BELOW THE ZERO POSITION OR DAMAGE WILL RESULT.** When shutoff action is required, a pressure matching shutoff valve is recommended.

### MicroMetering Valve Features:

- Barrel and Thimble design permits repeatable settings
- Barrel divisions every 0.025"
- 25 Thimble divisions, each representing 0.001" stem travel. One revolution = 0.025" stem travel.
- Operating Temperatures vary per model but can range from -100° to 800°F (-73° to 427°C)
- UNS S31600 cold worked type 316 stainless steel body. Stem and seat are cold-worked type 316 stainless steel.
- Packing below stem threads is PTFE for the 10VRMM, 15PVRMM and 30VRMM valves and nylon-leather for the 60VRMM. For packing options, see Technical Information Section.
- Speedbite “W” Series compression sleeve connections are used on the 10VRMM Series. Operating temperatures are limited from -100° to 650°F
- 1/4" NPT connections (ANPT Aerospace version) are used on 15PVRMM Series. Operating temperatures are limited from -100°F to 400°F
- Parker AE High Pressure Cone & Thread connections are used on both the 30VRMM and 60VRMM Series
- Electric Flow Control Actuators are available for all VRMM Style Valves. See Actuator Section of Catalog for suffix code options.

Parker Autoclave Engineers valves are complemented by a complete line of fittings, tubing, check valves and line filters. Traceability is ensured by use of heat a purchase order codes etched on valve body that also include model number, MAWP rating, and Material Type references. All valves include connection sleeve/collar and gland nut as appropriate.

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



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# MicroMetering Series: Pressures to 60,000 psi (4137bar)

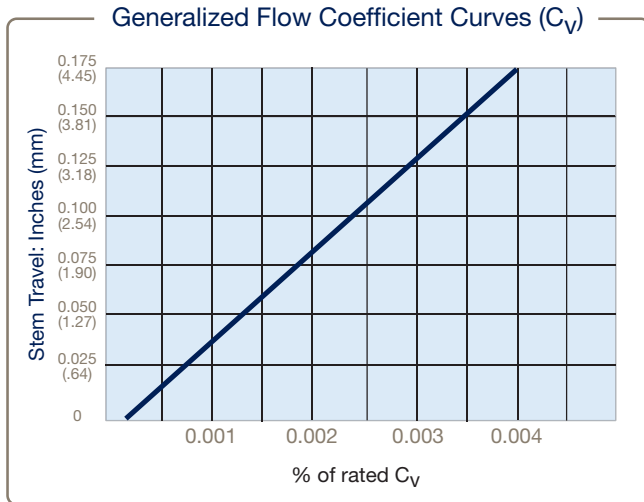


15PVRMM "NPT" version shown above

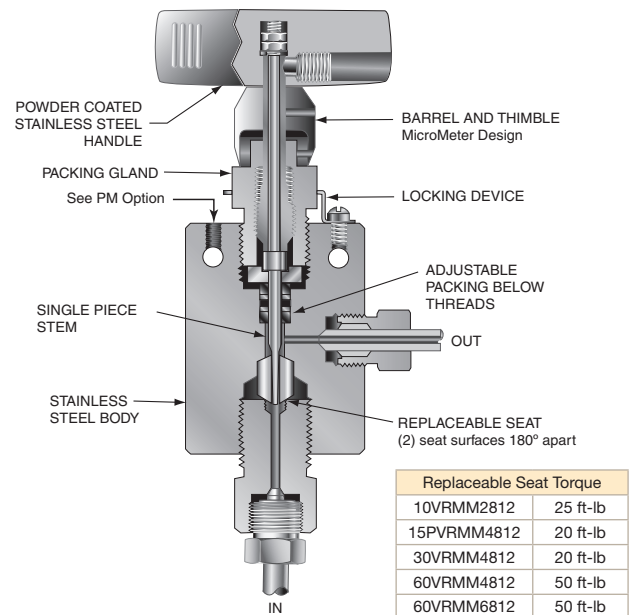
Valve Series	Tube Outside Diameter Size (inches)	Connection Type	Orifice Size Inches (mm)	Rated $C_v^*$	Pressure Rating psi (bar) @Room Temperature**
10VRMM	1/8	W125	0.62 (1.57)	.004	15,000 (1034)
15PVRMM	1/4	NPT	0.62 (1.57)	.004	15,000 (1034)
30VRMM	1/4	F250C	0.62 (1.57)	.004	30,000 (2069)
60VRMM	1/4	F250C	0.62 (1.57)	.004	60,000 (4137)
60VRMM	3/8	F375C	0.62 (1.57)	.004	60,000 (4137)

## Notes

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



MicroMetering (VRMM) Series Flow Curve



To ensure proper fit use Parker Autoclave tubing  
NPT valve option will not have connection collar and gland nut as shown above.

## Valve Packing Options:

Standard Parker Autoclave Engineers 10VRMM, 15PVRMM and 30VRMM Series valves with PTFE packing may be operated to 450°F (232°C). 60VRMM series valves with nylon/leather/nylon packing may be operated from 40°F (4°C) to 230°F (110°C).

**\*TG** Standard valve with PTFE glass packing -100° to 600°F (-73° to 316°).

**GY** Standard valve with graphite braided yarn packing to 32° to 800°F (0° to 427°).

**B** Cryogenic trim materials and PTFE packing required when below 0°F (-18°C) to -100°F (-73°C).

Note: \*60VRMM valves with -TG option supplied with PEEK/PTFE Glass/PEEK packing

Parker Autoclave Engineers does not recommend Low Pressure Speedbite sleeve connections below -100°F (-73°C) or above 650°F (343°C). NPT Pipe Connections can be used from -100° to over 400°F (-72 to 204°C) (dependent on sealant temperature range). See needle valve options for stem and seat coating for erosive service.

## 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. VRMM Series valves are furnished complete with connection components, unless otherwise specified.

### Building a Part Number: Example: 60VRMM4812

Example Part Number:	<b>60VRMM</b>	<b>4</b>	<b>81</b>	<b>2</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

10VRMM	MicroMetering Valve (Compression Sleeve connection)
15PVRMM	MicroMetering Valve (NPT connection)
30VRMM	MicroMetering Valve, High Pressure Cone & Thread
60VRMM	MicroMetering Valve, High Pressure Cone & Thread

#### B - Outside Diameter Tube/Pipe Size

2	1/8" (10VRMM only available)
4	1/4" (15PVRMM & 30VRMM only available)
6	3/8"

#### C - Stem/Seal Type

81	Rotating MicroMetering one piece stem with Replaceable Seat
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#### D - Body Pattern

2	Two-Way Angle
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#### E - Options

For extreme temperatures and other options, see Valve Options.

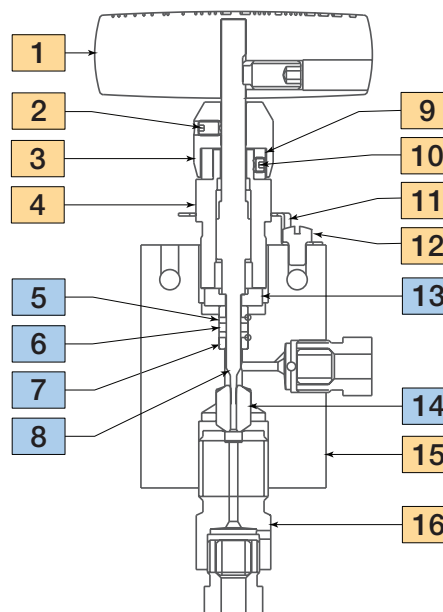
PM	Panel Mount, additional #10-24 screw is supplied
CSS	N-Dura Coated Stem and Seat
B	Cryogenic Trim material change required when below 0°F
TG	PTFE Glass (25%) Packing to 600°F
GY	Graphite Yarn Packing for Temperatures to 800°F

## Material of Construction:

Item #	Description	Material
1	Handle, 3 inches	316 SS
2	Set Screw, #8-35 x .25 LG	Steel
3	Thimble	303 SS
4	Packing Gland	AMPCO 45
5*	Packing	Nylon
6*	Packing	Leather
7	Packing Washer	316 SS
8	Stem	316 SS
9	Barrel	303 SS
10	Set Screw, #8-35 x .125 LG	Steel
11	Locking Device	302 SS
12	Screw, Fillister Head #10	18-8 SS
13	Backup Washer	17-4 PH
14	Replaceable Seat	17-4 PH
15	Valve Body	316 SS
16	Seat Retainer	316 SS

Typical spare parts found in Repair Kits

\* 10VRMM, 15PVRMM, and 30VRMM have a single PTFE packing ring



## Basic Repair Kits for 316 SS Material:

Stem Type		Basic Repair Kit for 316 SS Material			
		10VRMM	15PVRMM	30VRMM	60VRMM
2 Way Angle Vee Stem	VEE	R10VRMM2812	R15PVRMM	R30VRMM4812	R60VRMM (both sizes)
Consult your Parker Autoclave Engineers representative for other kit numbers, body part numbers, and pricing. Visit <a href="http://www.autoclave.com">www.autoclave.com</a> for product Operation manuals.					

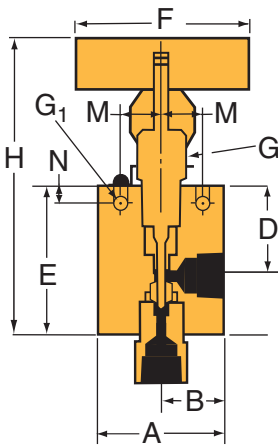
## VRMM Series Dimensions:

2 Way Angle - 10VRMM		
		Catalog Number
Stem Type	VEE	10VRMM2812
Outside Diameter Tube		<b>1/8</b> <b>(3.17)</b>
Orifice Diameter		0.062 (1.57)
Dimensions: inches (mm)		
	A	1.50 (38)
	B	0.88 (22)
	C	0.31 (8)
	D	0.94 (24)
	E	1.56 (40)
	F	3.00 (76)
	G	0.75 (19)
	G1	0.16 (4)
	H*	5.06 (129)
	M	1.00 (25)
N	0.25 (6)	
Block Thickness		0.75 (19)

2 Way Angle - 30 & 60VRMM				
		Catalog Number		
Stem Type	VEE	30VRMM4812	60VRMM4812	60VRMM6812
Outside Diameter Tube		<b>1/4</b> <b>(6.35)</b>	<b>1/4</b> <b>(6.35)</b>	<b>3/8</b> <b>(3.17)</b>
Orifice Diameter		0.062 (1.57)	0.062 (1.57)	0.062 (1.57)
Dimensions: inches (mm)				
	A	2.00 (50.80)	2.00 (50.80)	2.00 (50.80)
	B	1.00 (25.40)	1.00 (25.40)	1.00 (25.40)
	C	0.50 (12.70)	0.50 (12.70)	0.53 (13.46)
	D	1.12 (28.44)	1.31 (33.27)	1.31 (33.27)
	E	2.00 (50.80)	2.63 (66.80)	2.63 (66.80)
	F	3.00 (76.20)	3.00 (76.20)	3.00 (76.20)
	G	1.00 (25)	1.00 (25)	1.00 (25)
	G1	0.22 (5.58)	0.22 (5.58)	0.22 (5.58)
	H*	5.06 (128.52)	6.06 (153.92)	6.06 (153.92)
	M	0.69 (17.25)	0.69 (17.25)	0.69 (17.25)
N	0.50 (12.70)	0.38 (9.65)	0.38 (9.65)	
Block Thickness		1.00 (25.40)	1.00 (25.40)	1.00 (25.40)

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.

## VRMM Series Dimensions:

2 Way Angle - 15PVRMM (NPT)		
		Catalog Number
Stem Type	VEE	15PVRMM4812
Outside Diameter Tube		1/4 (6.35)
Orifice Diameter		0.062 (1.57)
Dimensions: inches (mm)		
	A	2.00 (51)
	B	1.00 (25)
	C	-
	D	1.25 (32)
	E	2.16 (53)
	F	3.00 (76)
	G	1.00 (25)
	G1	0.22 (6)
	H*	5.25 (132)
	M	0.69 (17)
N	0.5 (13)	
Block Thickness		1.00 (25)

### Notes

#### 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 temperature.

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.

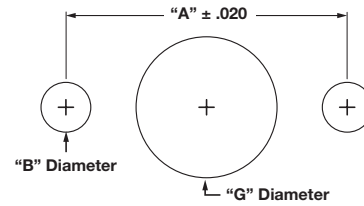
**Sealing performance** may vary based on many factors such as pressure, temperature, media, thread quality, thread material, proper engagement, and proper use of thread sealant.

**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.

## Panel Hole Sizes:

Valve Size	Inches			
	A	B	Screw Size	G
10VRMM	.63 *	.22	#10-24	0.75
15PVRMM	1.38	.22	#10-24	1.0
30VRMM	1.38	.22	#10-24	1.0
60VRMM (both sizes)	1.38	.22	#10-24	1.0

\*10VRMM Valve has only one mounting screw. Dimension shown is from stem center to panel hole center.  
10VRMM Thimble must be removed to mount on panel.



Needle Valve Panel Mount

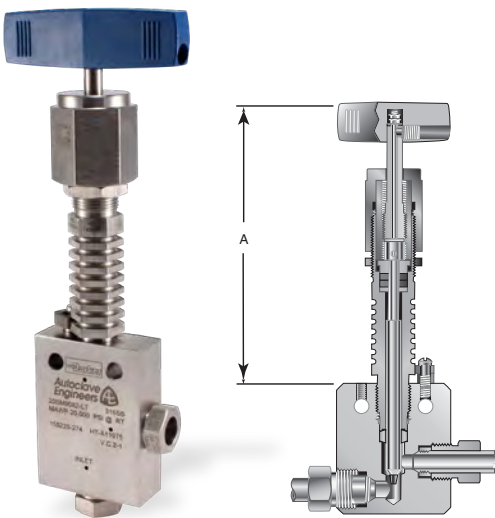
# Valve Options: (For Actuator Options please reference specific Actuator brochure)



## Electric Valve Actuators:

Parker Autoclave Engineers has developed an electric actuator capable of fine, multi-turn, control.

This actuator is designed specifically for our VRMM Series valves to facilitate remote control of these high pressure low flow metering valves. 4-20mA (-C4 suffix) or 0-10VDC (-C10 suffix) control signal options are available.



## High Temperature Extension:

Required for extreme temperatures

**-HT** High Temperature (over 600°F to 800°F maximum)

Valve Series	Outside Diameter Tube Size (inches)	Dimensions "A" inches (mm)
<b>10VRMM</b>	1/8"	5.38 (137)
<b>15PVRMM</b>	1/4"	6.00 (152)
<b>30VRMM</b>	3/8"	6.00 (152)
<b>60VRMM</b>	3/8"	6.00 (152)

HT option code includes Graphite (-GY) packing



## 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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