

Metering Valves (HR Series)

*Catalog 4170-HR
Revised, August 2002*



HR Series Metering Valves

Introduction

Parker HR Series Metering Valves provide the highest degree of precision metering for moderate pressure applications. A choice of seven precision ground, tapered flat, non-rotating and non-rising valve stems enable repeatable metering at flow capacities as low as 0.0004 C_v . With 15 stem turns, this valve offers the ultimate in precision flow control. This series also features shut-off capability not found in most metering valves.

Features

- Bubble tight shut-off
- Special fine pitch thread with 15 turn resolution is isolated from contact with process fluids
- Non-rotating/non-rising valve stem design provides smooth, non-reversing flow characteristics
- Seven optional valve stem tapers
- Special orifice liner assures long life
- Panel or in-line mounting
- Angle or in-line patterns
- Brass or 316 SS forged body construction
- 100% function tested for actuation and shut-off

Specifications

Pressure Rating at all temperatures:

250 psig (17 bar) CWP

Flow Data:

H0

Orifice: 0.000002 in²

In-line pattern: $C_v = 0.0004$; $X_T = 0.85$

Angle pattern: $C_v = 0.0004$; $X_T = 0.66$

H1

Orifice: 0.000083 in²

In-line pattern: $C_v = 0.0070$; $X_T = 0.85$

Angle pattern: $C_v = 0.0070$; $X_T = 0.66$

H2

Orifice: 0.000168 in²

In-line pattern: $C_v = 0.0140$; $X_T = 0.85$

Angle pattern: $C_v = 0.0140$; $X_T = 0.66$

H3

Orifice: 0.000241 in²

In-line pattern: $C_v = 0.0200$; $X_T = 0.85$

Angle pattern: $C_v = 0.0210$; $X_T = 0.66$

H4

Orifice: 0.000674 in²

In-line pattern: $C_v = 0.0300$; $X_T = 0.85$

Angle pattern: $C_v = 0.0320$; $X_T = 0.66$

H5

Orifice: 0.002325 in²

In-line pattern: $C_v = 0.0470$; $X_T = 0.85$

Angle pattern: $C_v = 0.0490$; $X_T = 0.66$

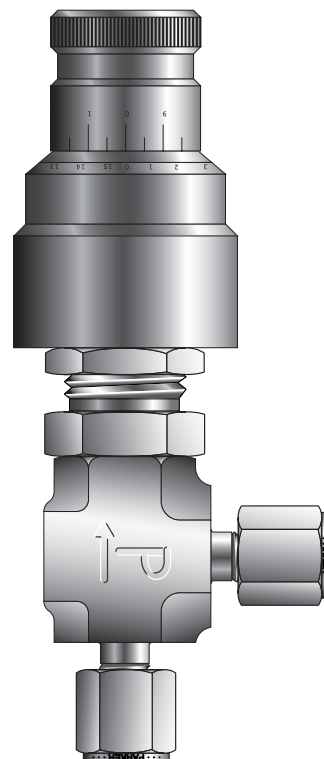
H6

Orifice: 0.006227 in²

In-line pattern: $C_v = 0.1180$; $X_T = 0.85$

Angle pattern: $C_v = 0.1550$; $X_T = 0.66$

Turns to open: 15 +/- 1



Model Shown: 2A-H0A-NE-SS-TC

Valve / Seal Temperature Ratings

Buna-N Rubber:

-50 °F to 300 °F (-47 °C to 149 °C)

Ethylene Propylene Rubber:

-50 °F to 300 °F (-47 °C to 149 °C)

Neoprene Rubber:

-50 °F to 300 °F (-47 °C to 149 °C)

Fluorocarbon Rubber*:

-25 °F to 400 °F (-32 °C to 204 °C)

Highly Fluorinated Fluorocarbon Rubber:

-25 °F to 200 °F (-32 °C to 93 °C)

***Note:** The Turns Counter Handle (TC) requires the HT option for use at temperatures above 300 °F (149 °C).

Flow tested in accordance with ISA S75.02. Gas flow will be choked when $P_1 - P_2 / P_1 = X_T$.

Dimensions

Basic Part Number	End Connections		Dimensions							
	(Inlet)	(Outlet)	A†		B†		C		D	
	Port 1	Port 2	Inch	mm	Inch	mm	Inch	mm	Inch	mm
1A-H#A	1/16" Compression A-LOK®		0.92	23.4	0.92	23.4	0.41	10.4	0.73	18.5
1Z-H#A	1/16" Compression CPI™		0.92	23.4	0.92	23.4	0.41	10.4	0.73	18.5
2A-H#L	1/8" Compression A-LOK®		1.03	26.2	1.03	26.2	0.41	10.4	0.85	21.6
2A-H#A			1.03	26.2	1.03	26.2	0.41	10.4	0.73	18.5
2F-H#L	1/8" Female NPT		0.93	23.6	0.93	23.6	0.41	10.4	0.85	21.6
2F-H#A			0.93	23.6	0.93	23.6	0.41	10.4	0.73	18.5
2Z-H#L	1/8" Compression CPI™		1.03	26.2	1.03	26.2	0.41	10.4	0.85	21.6
2Z-H#A			1.03	26.2	1.03	26.2	0.41	10.4	0.73	18.5
4A-H#L	1/4" Compression A-LOK®		1.11	28.2	1.11	28.2	0.41	10.4	0.85	21.6
4A-H#A			1.11	28.2	1.11	28.2	0.41	10.4	0.73	18.5
4F-H#L	1/4" Female NPT		0.97	24.6	0.97	24.6	0.41	10.4	0.85	21.6
4F-H#A			0.97	24.6	0.97	24.6	0.41	10.4	0.73	18.5
4M-H#L	1/4" Male NPT		0.93	23.6	0.93	23.6	0.41	10.4	0.85	21.6
4M-H#A			0.93	23.6	0.93	23.6	0.41	10.4	0.73	18.5
4Z-H#L	1/4" Compression CPI™		1.11	28.2	1.11	28.2	0.41	10.4	0.85	21.6
4Z-H#A			1.11	28.2	1.11	28.2	0.41	10.4	0.73	18.5
M3A-H#L	3mm Compression A-LOK®		1.00	25.4	1.00	25.4	0.41	10.4	0.85	21.6
M3A-H#A			1.00	25.4	1.00	25.4	0.41	10.4	0.73	18.5
M3Z-H#L	3mm Compression CPI™		1.00	25.4	1.00	25.4	0.41	10.4	0.85	21.6
M3Z-H#A			1.00	25.4	1.00	25.4	0.41	10.4	0.73	18.5
M6A-H#L	6mm Compression A-LOK®		1.15	29.2	1.15	29.2	0.41	10.4	0.85	21.6
M6A-H#A			1.15	29.2	1.15	29.2	0.41	10.4	0.73	18.5
M6Z-H#L	6mm Compression CPI™		1.15	29.2	1.15	29.2	0.41	10.4	0.85	21.6
M6Z-H#A			1.15	29.2	1.15	29.2	0.41	10.4	0.73	18.5

† For CPI™ and A-LOK®, dimensions are measured with nuts in the finger tight position.

K Handle Dimensions

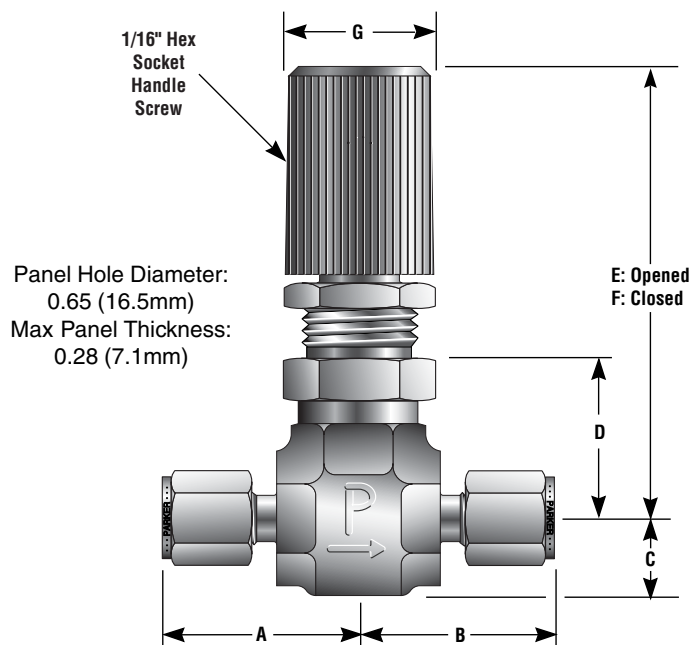
Pattern	Dimensions					
	E		F		G	
	Inch	mm	Inch	mm	Inch	mm
In-line	2.35	59.7	2.35	59.7	0.78	19.8
Angle	2.23	56.6	2.23	56.6	0.78	19.8

TC Handle Dimensions

Pattern	Dimensions					
	E		F		G	
	Inch	mm	Inch	mm	Inch	mm
In-line	2.88	73.2	2.88	73.2	1.12	28.4
Angle	2.76	70.1	2.76	70.1	1.12	28.4

NS Handle Dimensions

Pattern	Dimensions					
	E		F		G	
	Inch	mm	Inch	mm	Inch	mm
In-line	2.33	59.2	2.33	59.2	0.25	6.4
Angle	2.21	56.1	2.21	56.1	0.25	6.4



Model Shown: M6A-H6L-KZ-SS-K

HR Series Metering Valves

How to Order

The correct part number is easily derived from the following number sequence. The six product characteristics required are coded as shown below. *Note: If the inlet and outlet ports are the same, eliminate the outlet port designator.

Example: 4Z - * - H3L - V - SS - TC

① Inlet Port ② Outlet Port ③ Valve/Stem Series ④ Seal Material ⑤ Body Material ⑥ Handle Type

① Inlet Port	② Outlet Port	③ Valve/Stem Series	④ Seal Material	⑤ Body Material	⑥ Handle Type
1A, 1Z		H#A	BN - Buna-N Rubber EPR - Ethylene Propylene Rubber NE - Neoprene Rubber V - Fluorocarbon Rubber KZ - Highly Fluorinated Fluorocarbon Rubber	SS- Stainless Steel B - Brass	K - Knurled TC - Turns Counter NS - No Handle (Slotted Stem)
2A, 2F, 2Z, 4A, 4F, 4M, 4Z, M3A, M3Z, M6A, M6Z		H#A H#L			

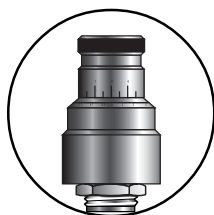
Handle Options

Knurled (K)



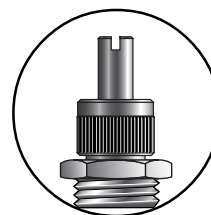
Knurled ABS molded handle provides ease of actuation

Turns Counter (TC)



Graduated black-anodized aluminum alloy handle provides a readable count of turns open

Slotted Stem (NS)



Screwdriver slot on top of stem may be used for inaccessible locations or tamper resistance

How to Order Options

Oxygen Cleaning – Add the suffix **-C3** to the end of the part number to receive valves cleaned and assembled for oxygen service in accordance with Parker Specification ES8003. **Example:** 4A-H1A-EPR-SS-K-C3

High Temperature – Add the suffix **-HT** to the end of the part number to receive valves with Turns Counter (TC) handles suitable for service above 300 °F (149 °C). **Example:** M3A-H4L-KZ-SS-TC-HT

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.

This document and other information from Parker Hannifin Corporation, its subsidiaries and authorized distributors provide product and/or system options for further investigation by users having technical expertise. It is important that you analyze all aspects of your application and review the information concerning the product or system in the current product catalog. Due to the variety of operating conditions and applications for these products or systems, the user, through its own analysis and testing, is solely responsible for making the final selection of the products and systems and assuring that all performance, safety and warning requirements of the application are met.

The products described herein, including without limitation, product features, specifications, designs, availability and pricing, are subject to change by Parker Hannifin Corporation and its subsidiaries at any time without notice.

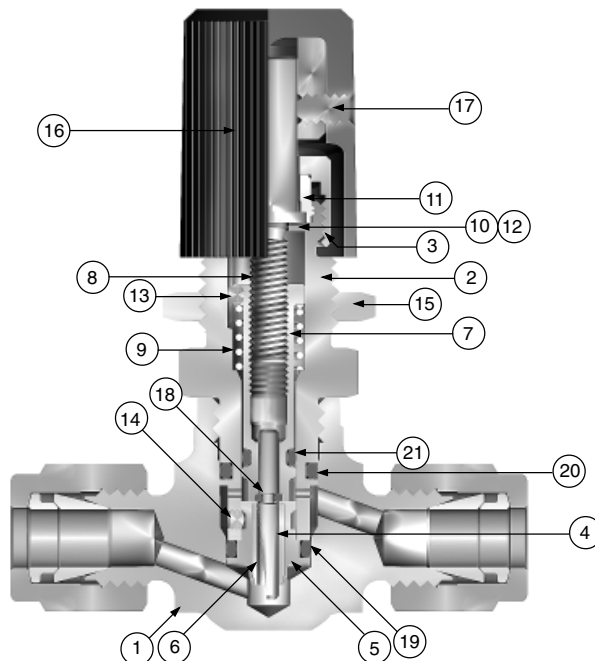
Offer of Sale

The items described in this document are hereby offered for sale by Parker Hannifin Corporation, its subsidiaries or its authorized distributors. This offer and its acceptance are governed by the provisions stated in the "Offer of Sale" located in Catalog 4110-U Needle Valves (U Series).

Materials of Construction

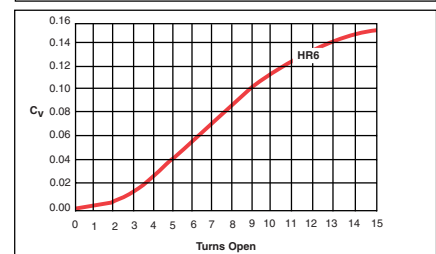
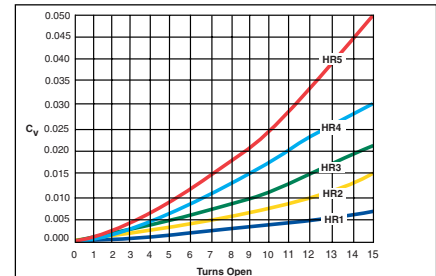
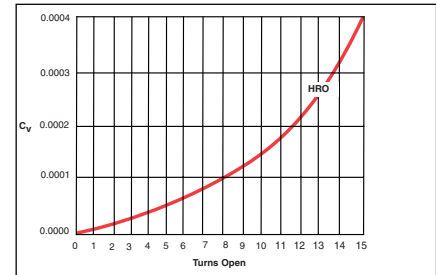
Item #	Description	Stainless Steel	Brass
1	Body	ASTM A 182 Type F316	ASTM B 283 Alloy C37700 (Nickel Plated)
2	Bonnet	ASTM A 479 Type 316	ASTM B 16 Alloy C36000 (Nickel Plated)
3	Bonnet Nut	ASTM B 16 Alloy C36000	ASTM B 16 Alloy C36000
4	Lower Stem	316 Stainless Steel	316 Stainless Steel
5	Orifice	ASTM A 479 Type 316	ASTM B 453 Alloy C34000
6	Orifice Liner	Mica Filled PTFE	Mica Filled PTFE
7	Stem Guide	ASTM A 182 Type F316	ASTM B 16 Alloy C36000
8	Upper Stem	ASTM B 150 Alloy C64200	ASTM B 150 Alloy C64200
9	Spring	302 Stainless Steel	302 Stainless Steel
10	Wave Washer	Steel	Steel
11	Friction Collar*	Acetal	Acetal
12	Stem Washer	Nylon	Nylon
13	Stem Guide Pin	Alloy Steel	Alloy Steel
14	Orifice Screw	Stainless Steel	Stainless Steel
15	Panel Nut	ASTM B 16 (Nickel Plated)	ASTM B 16 (Nickel Plated)
16	Handle**	ABS Plastic	ABS Plastic
17	Handle Set Screw	Alloy Steel	Alloy Steel
18	Lower Stem O-Ring***	Fluorocarbon Rubber	Fluorocarbon Rubber
19	Orifice O-Ring***	Fluorocarbon Rubber	Fluorocarbon Rubber
20	Bonnet O-Ring***	Fluorocarbon Rubber	Fluorocarbon Rubber
21	Stem Guide O-Ring***	Fluorocarbon Rubber	Fluorocarbon Rubber

* Friction Collar is Polyimide with HT option
 ** Acrylonitrile-Butadiene-Styrene. Optional handles are available
 *** Optional materials are available - See How to Order
 Lubrication: Perfluorinated polyether

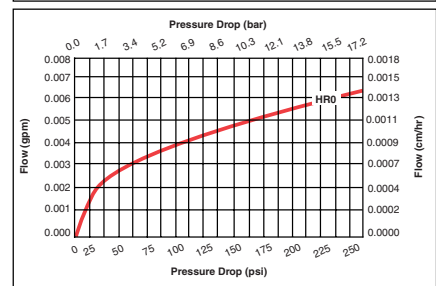
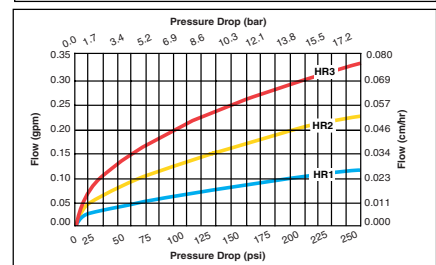
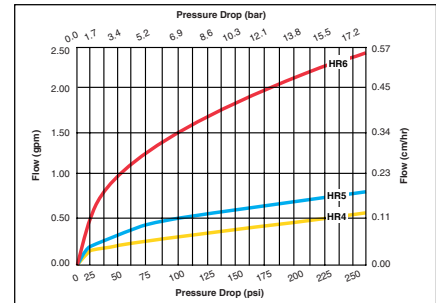


Model Shown: 4A-H4L-NE-SS-K

C_v vs. Turns Open



Water Flow Data





Catalog 4170-HR, 10M, 01/04

Parker Hannifin Corporation
Instrumentation Products Division
2651 Alabama Highway 21 North
Jacksonville, AL 36265-9681
USA
Phone: (256) 435-2130
Fax: (256) 435-7718
www.parker.com/ipdus

Parker Hannifin plc
Instrumentation Products Division
Riverside Road
Pottington Business Park
Barnstaple, Devon EX31 1NP
England
Phone: +44 (0) 1271 313131
Fax: +44 (0) 1271 373636
Email: ipd@parker.com
www.parker.com/ipd

Metering Valves (N Series)

*Catalog 4170-N
Revised, July 2002*



NS Series Metering Valves

Introduction

The Parker NS Series of metering valves are designed to provide accurate and stable control of flow rates in analytical, instrumentation, and research applications. A variety of connection sizes, body patterns and materials of construction provide considerable application versatility. For higher flow rates, refer to the NM and NL Series of metering valves.

Features

- Precisely tapered valve stem accurately controls flow
- Brass or 316 SS forged body construction
- Panel or in-line mounting
- Positive handle stop prevents overtightening
- Angle or in-line patterns
- Valve stem threads not in contact with process fluid
- 100% function tested
- Optional stem seals and handles

Specifications

- Pressure Rating at all temperatures:
2000 psig (138 bar) CWP
- Flow Data:
Orifice: 0.03" (0.76mm)
In-line pattern: $C_v = 0.039$; $X_T = 0.64$
Angle pattern: $C_v = 0.042$; $X_T = 0.53$
- Stem Taper: 1°
- Turns to open: 13 +/- 1

NS Materials of Construction

Item #	Description	Stainless Steel	Brass
1	Body	ASTM A 182 Type F316	ASTM B 283 Alloy C37700 (Nickel Plated)
2	Bonnet	ASTM A 479 Type 316	ASTM B 16 Alloy C36000 (Nickel Plated)
3	Stem	ASTM A 276 Type 316	ASTM A 276 Type 316
4	Handle*	ASTM A 582 Type 303	ASTM A 582 Type 303
5	Panel Nut	ASTM B 16 (Nickel Plated)	ASTM B 16 (Nickel Plated)
6	Sealing Ring*	Fluorocarbon Rubber	Fluorocarbon Rubber
7	Stem Seals*	Fluorocarbon Rubber	Fluorocarbon Rubber
8	Handle Set Screw**	Stainless Steel	Stainless Steel
9	Handle Lock Screw**	Stainless Steel	Stainless Steel

* Optional Handles, Sealing Ring and Stem Seal materials are available - See [How to Order](#)

** K, KS, and F Handles use 18-8 stainless steel screws; V Handles use alloy steel screws; Lock Screws are not used on F and V Handles
Lubrication: Perfluorinated polyether

Valve / Seal Temperature Ratings

Buna-N Rubber:

-50 °F to 300 °F (-46 °C to 149 °C)

Ethylene Propylene Rubber:

-50 °F to 300 °F (-46 °C to 149 °C)

Neoprene Rubber:

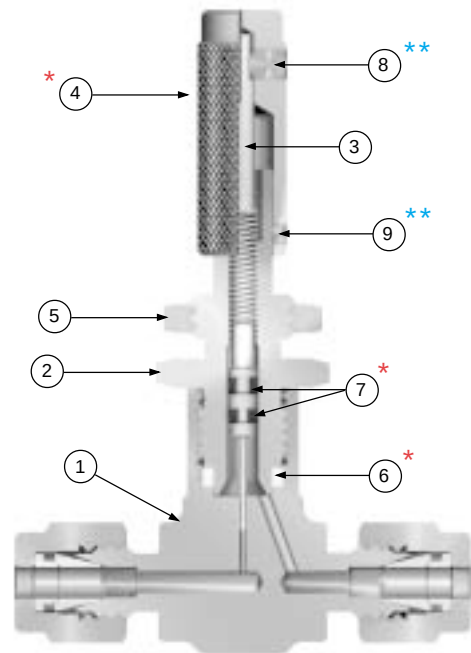
-50 °F to 300 °F (-46 °C to 149 °C)

Fluorocarbon Rubber:

-25 °F to 400 °F (-32 °C to 204 °C)

Highly Fluorinated Fluorocarbon Rubber:

-25 °F to 200 °F (-32 °C to 93 °C)



Model Shown: 2A-NSL-NE-SS-K

Note: These products are not intended for use as shut-off valves. For metering valves with shut-off capabilities, please refer to Catalog 4170-HR.

Flow tested in accordance with ISA S75.02. Gas flow will be choked when $P_1 - P_2 / P_1 = X_T$.

NS Dimensions

Basic Part Number	End Connections		Dimensions							
	(Inlet) Port 1	(Outlet) Port 2	A†		B†		C		D	
			Inch	mm	Inch	mm	Inch	mm	Inch	mm
1A-NSL 1A-NSA	1/16" Compression A-LOK®		0.78	19.8	0.78	19.8	0.31	7.9	0.94	23.9
			0.82	20.8	0.82	20.8	0.31	7.9	0.94	23.9
1Z-NSL 1Z-NSA	1/16" Compression CPI™		0.78	19.8	0.78	19.8	0.31	7.9	0.94	23.9
			0.82	20.8	0.82	20.8	0.31	7.9	0.94	23.9
2A-NSL 2A-NSA	1/8" Compression A-LOK®		0.95	24.1	0.95	24.1	0.31	7.9	0.94	23.9
			1.01	25.7	1.01	25.7	0.31	7.9	0.94	23.9
2M-NSL 2M-NSA	1/8" Male NPT		0.88	22.4	0.88	22.4	0.31	7.9	0.94	23.9
			0.88	22.4	0.88	22.4	0.31	7.9	0.94	23.9
2Z-NSL 2Z-NSA	1/8" Compression CPI™		0.95	24.1	0.95	24.1	0.31	7.9	0.94	23.9
			1.01	25.7	1.01	25.7	0.31	7.9	0.94	23.9
4A-NSL 4A-NSA	1/4" Compression A-LOK®		1.02	25.9	1.02	25.9	0.31	7.9	0.94	23.9
			1.02	25.9	1.02	25.9	0.31	7.9	0.94	23.9
4V-NSL	1/4" VacuSeal		1.03	26.2	1.03	26.2	0.53	13.5	0.94	23.9
4Z-NSL 4Z-NSA	1/4" Compression CPI™		1.02	25.9	1.02	25.9	0.31	7.9	0.94	23.9
			1.02	25.9	1.02	25.9	0.31	7.9	0.94	23.9
M3A-NSL M3A-NSA	3mm Compression A-LOK®		0.94	23.9	0.94	23.9	0.31	7.9	0.94	23.9
			1.00	25.4	1.00	25.4	0.31	7.9	0.94	23.9
M3Z-NSL M3Z-NSA	3mm Compression CPI™		0.94	23.9	0.94	23.9	0.31	7.9	0.94	23.9
			1.00	25.4	1.00	25.4	0.31	7.9	0.94	23.9
M6A-NSL M6A-NSA	6mm Compression A-LOK®		1.02	25.9	1.02	25.9	0.31	7.9	0.94	23.9
			1.02	25.9	1.02	25.9	0.31	7.9	0.94	23.9
M6Z-NSL M6Z-NSA	6mm Compression CPI™		1.02	25.9	1.02	25.9	0.31	7.9	0.94	23.9
			1.02	25.9	1.02	25.9	0.31	7.9	0.94	23.9

Note:

For K & KS Handles:

E = 2.50 (63.5mm), F = 2.27 (57.7mm),
G = 0.37 (9.4mm), H = 0.46 (11.7mm),
I = 0.16 (4.1mm)

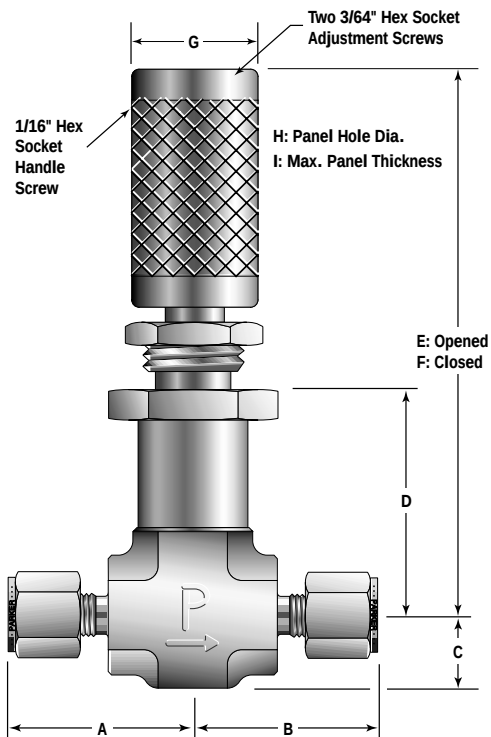
For V Handles:

E = 2.97 (75.4mm), F = 2.74 (69.6mm),
G = 0.84 (21.3mm), H = 0.46 (11.7mm),
I = 0.16 (4.1mm)

For F Handles:

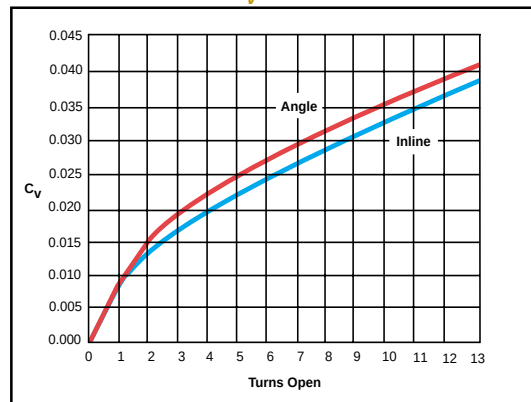
E = 2.97 (75.4mm), F = 2.74 (69.6mm),
G = 0.84 (21.3mm), H = 0.46 (11.7mm),
I = 0.16 (4.1mm)

† For CPI™ and A-LOK®, dimensions are measured with nuts in the finger tight position.

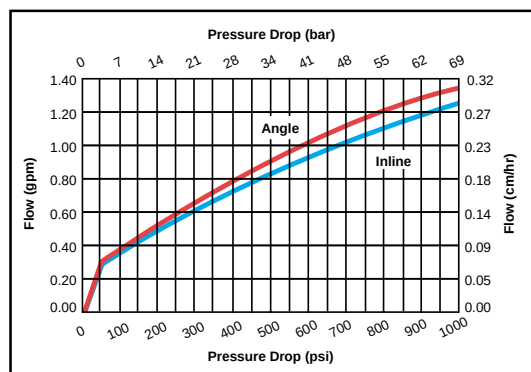


Model Shown: 2A-NSL-BN-SS-F

NS Series - C_v vs. Turns Open



NS Series - Water Flow Data



NM & NL Series Metering Valves

Introduction

The Parker NM and NL Series of metering valves provide higher flow rates than the NS Series of metering valves and retain most of the features found in the NS Series.

Features

- Precisely tapered valve stem accurately controls flow
- Brass or 316 SS forged body construction
- Panel or in-line mounting
- Angle or in-line patterns
- Valve stem threads not in contact with process fluid
- 100% function tested
- Optional stem seals and handles

Specifications

- Pressure Rating at all temperatures:
1000 psig (69 bar) CWP

NM Specifications

- Flow Data:
Orifice: 0.06" (1.5mm)
In-line pattern: $C_v = 0.055$; $X_T = 0.41$
Angle pattern: $C_v = 0.057$; $X_T = 0.38$
- Stem Taper: 3°
- Turns to open: 9 +/- 1

NL Specifications

- Flow Data:
Orifice: 0.13" (3.3mm)
In-line pattern: $C_v = 0.207$; $X_T = 0.71$
Angle pattern: $C_v = 0.299$; $X_T = 0.60$
- Stem Taper: 5°
- Turns to open: 10 +/- 1

NM & NL Materials of Construction

Item #	Description	Stainless Steel	Brass
1	Body	ASTM A 182 Type F316	ASTM B 283 Alloy C37700 (Nickel Plated)
2	Bonnet	ASTM A 479 Type 316	ASTM B 16 Alloy C36000 (Nickel Plated)
3	Stem	ASTM A 276 Type 316	ASTM A 276 Type 316
4	Handle*	Stainless Steel	Stainless Steel
5	Panel Nut	ASTM B 16 (Nickel Plated)	ASTM B 16 (Nickel Plated)
6	Sealing Ring	PTFE	PTFE
7	Stem Seal*	Fluorocarbon Rubber	Fluorocarbon Rubber
8	Handle Set Screw**	Stainless Steel	Stainless Steel
9	Handle Lock Screw**	Stainless Steel	Stainless Steel

* Optional Handles and Stem Seal materials are available - See How to Order

** K, and KS Handles use 18-8 stainless steel screws;

V Handles use alloy steel screws; Lock Screws are not used on V Handles

Lubrication: Perfluorinated polyether

Valve / Seal Temperature Ratings

Buna-N Rubber:

-50 °F to 300 °F (-46 °C to 149 °C)

Ethylene Propylene Rubber:

-50 °F to 300 °F (-46 °C to 149 °C)

Neoprene Rubber:

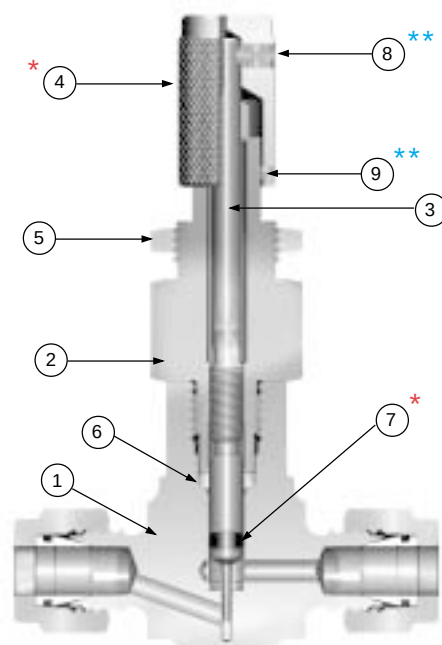
-50 °F to 300 °F (-46 °C to 149 °C)

Fluorocarbon Rubber:

-25 °F to 400 °F (-32 °C to 204 °C)

Highly Fluorinated Fluorocarbon Rubber:

-25 °F to 200 °F (-32 °C to 93 °C)



Model Shown: 4A-NML-KZ-SS-K

Note: These products are not intended for use as shut-off valves. For metering valves with shut-off capabilities, please refer to Catalog 4170-HR.

Flow tested in accordance with ISA S75.02. Gas flow will be choked when $P_1 - P_2 / P_1 = x_T$.

NM Dimensions

Basic Part Number	End Connections		Dimensions							
	(Inlet) Port 1	(Outlet) Port 2	A†		B†		C		D	
			Inch	mm	Inch	mm	Inch	mm	Inch	mm
2A-NML 2A-NMA	1/8" Compression A-LOK®		1.03	26.2	1.03	26.2	0.41	10.4	1.56	39.6
			1.03	26.2	1.03	26.2	0.41	10.4	1.07	27.2
2F-NML 2F-NMA	1/8" Female NPT		0.93	23.6	0.93	23.6	0.41	10.4	1.56	39.6
			0.93	23.6	0.93	23.6	0.41	10.4	1.07	27.2
2Z-NML 2Z-NMA	1/8" Compression CPI™		1.03	26.2	1.03	26.2	0.41	10.4	1.56	39.6
			1.03	26.2	1.03	26.2	0.41	10.4	1.07	27.2
4A-NML 4A-NMA	1/4" Compression A-LOK®		1.11	28.2	1.11	28.2	0.41	10.4	1.56	39.6
			1.11	28.2	1.11	28.2	0.41	10.4	1.07	27.2
4M-NML 4M-NMA	1/4" Male NPT		0.93	23.6	0.93	23.6	0.41	10.4	1.56	39.6
			0.93	23.6	0.93	23.6	0.41	10.4	1.07	27.2
4V-NML	1/4" VacuSeal		1.03	26.2	1.03	26.2	0.53	13.5	1.56	39.6
4Z-NML 4Z-NMA	1/4" Compression CPI™		1.11	28.2	1.11	28.2	0.41	10.4	1.56	39.6
			1.11	28.2	1.11	28.2	0.41	10.4	1.07	27.2
M3A-NML M3A-NMA	3mm Compression A-LOK®		1.00	25.4	1.00	25.4	0.41	10.4	1.56	39.6
			1.00	25.4	1.00	25.4	0.41	10.4	1.07	27.2
M3Z-NML M3Z-NMA	3mm Compression CPI™		1.00	25.4	1.00	25.4	0.41	10.4	1.56	39.6
			1.00	25.4	1.00	25.4	0.41	10.4	1.07	27.2
M6A-NML M6A-NMA	6mm Compression A-LOK®		1.09	27.7	1.09	27.7	0.41	10.4	1.56	39.6
			1.09	27.7	1.09	27.7	0.41	10.4	1.07	27.2
M6Z-NML M6Z-NMA	6mm Compression CPI™		1.09	27.7	1.09	27.7	0.41	10.4	1.56	39.6
			1.09	27.7	1.09	27.7	0.41	10.4	1.07	27.2

† For CPI™ and A-LOK®, dimensions are measured with nuts in the finger tight position.

Note:

For K & KS Handles on in-line pattern valves:

E = 3.22 (81.8mm), F = 2.99 (75.9mm),
G = 0.50 (12.7mm), H = 0.58 (14.7mm),
I = 0.19 (4.8mm)

For K & KS Handles on angle pattern valves:

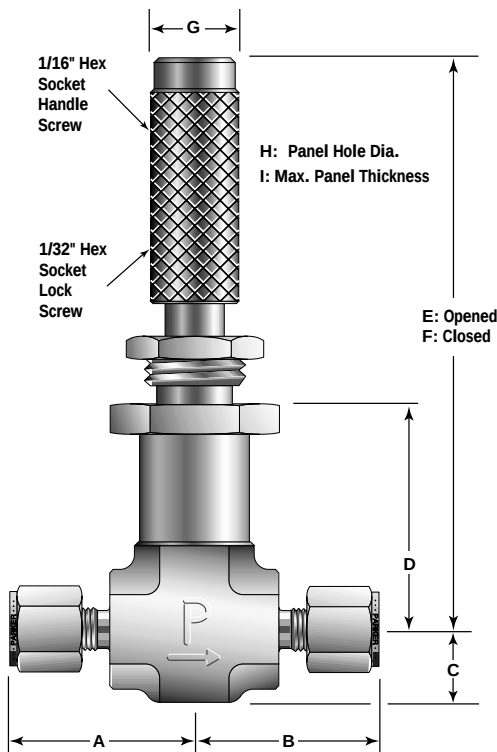
E = 2.82 (71.6mm), F = 2.59 (65.8mm),
G = 0.50 (12.7mm), H = 0.58 (14.7mm),
I = 0.27 (6.9mm)

For V Handles on in-line pattern valves:

E = 3.63 (92.2mm), F = 3.40 (86.4mm),
G = 0.84 (21.3mm), H = 0.58 (14.7mm),
I = 0.19 (4.8mm)

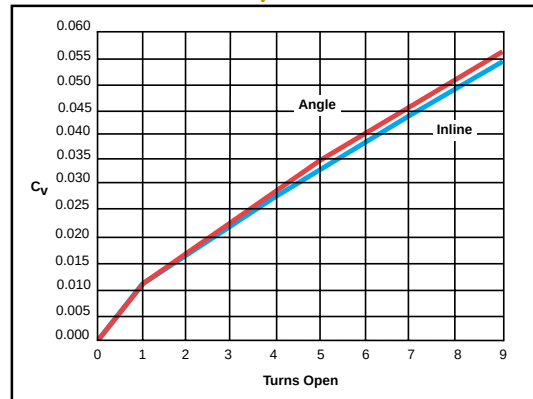
For V Handles on angle pattern valves:

E = 3.23 (82.0mm), F = 3.00 (76.2mm),
G = 0.84 (21.3mm), H = 0.58 (14.7mm),
I = 0.27 (6.9mm)

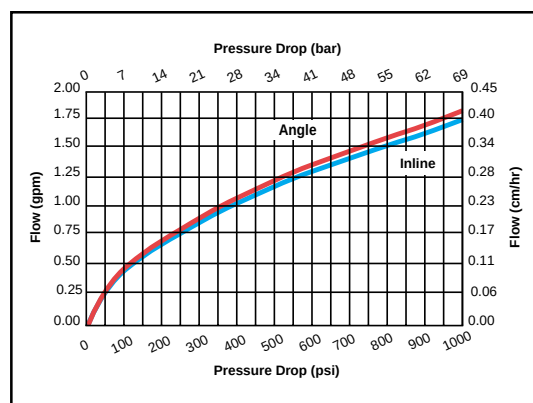


Model Shown: M3A-NML-V-SS-K

NM Series - C_v vs. Turns Open



NM Series - Water Flow Data



NL Series Metering Valves

NL Dimensions

Basic Part Number	End Connections		Dimensions							
	(Inlet) Port 1	(Outlet) Port 2	A†		B†		C		D	
			Inch	mm	Inch	mm	Inch	mm	Inch	mm
2F-NLL 2F-NLA	1/8" Female NPT		0.93 0.93	23.6 23.6	0.93 0.93	23.6 23.6	0.41 0.41	10.4 10.4	1.56 1.07	39.6 27.2
4A-NLL 4A-NLA	1/4" Compression A-LOK®		1.16 1.16	29.5 29.5	1.16 1.16	29.5 29.5	0.41 0.41	10.4 10.4	1.56 1.07	39.6 27.2
4M-NLL 4M-NLA	1/4" Male NPT		0.93 0.93	23.6 23.6	0.93 0.93	23.6 23.6	0.41 0.41	10.4 10.4	1.56 1.07	39.6 27.2
4V-NLL	1/4" VacuSeal		1.03	26.2	1.03	26.2	0.53	13.5	1.56	39.6
4Z-NLL 4Z-NLA	1/4" Compression CPI™		1.16 1.16	29.5 29.5	1.16 1.16	29.5 29.5	0.41 0.41	10.4 10.4	1.56 1.07	39.6 27.2
6A-NLL	3/8" Compression A-LOK®		1.24	31.5	1.24	31.5	0.41	10.4	1.56	39.6
6Z-NLL	3/8" Compression CPI™		1.24	31.5	1.24	31.5	0.41	10.4	1.56	39.6
M6A-NLL M6A-NLA	6mm Compression A-LOK®		1.12 1.15	28.4 29.2	1.12 1.15	28.4 29.2	0.41 0.41	10.4 10.4	1.56 1.07	39.6 27.2
M6Z-NLL M6Z-NLA	6mm Compression CPI™		1.12 1.15	28.4 29.2	1.12 1.15	28.4 29.2	0.41 0.41	10.4 10.4	1.56 1.07	39.6 27.2

† For CPI™ and A-LOK®, dimensions are measured with nuts in the finger tight position.

Note:

For K & KS Handles on in-line pattern valves:

E = 2.92 (74.2mm), F = 2.67 (67.8mm),
G = 0.50 (12.7mm), H = 0.58 (14.7mm),
I = 0.19 (4.8mm)

For K & KS Handles on angle pattern valves:

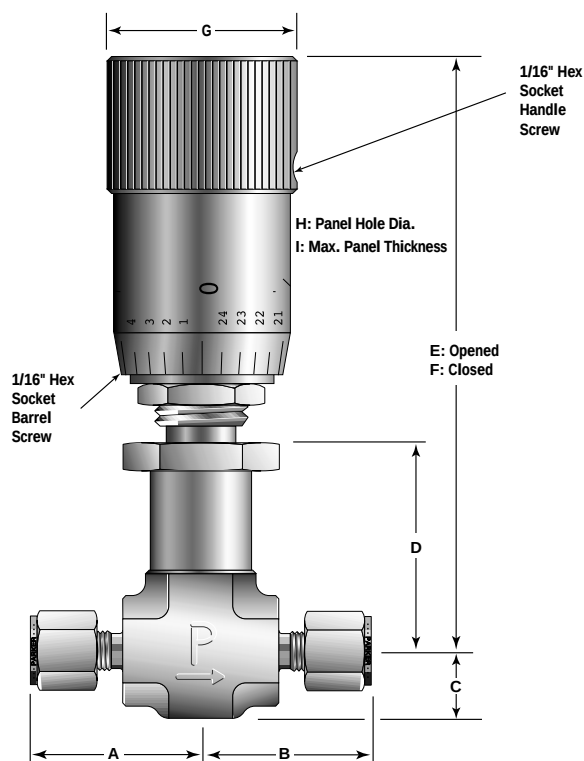
E = 2.83 (71.9mm), F = 2.58 (65.8mm),
G = 0.50 (12.7mm), H = 0.58 (14.7mm),
I = 0.27 (6.9mm)

For V Handles on in-line pattern valves:

E = 3.33 (84.6mm), F = 3.08 (78.2mm),
G = 0.84 (21.3mm), H = 0.58 (14.7mm),
I = 0.19 (4.8mm)

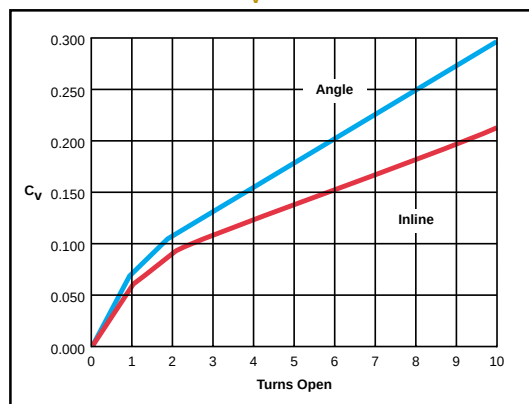
For V Handles on angle pattern valves:

E = 3.24 (82.3mm), F = 2.99 (75.9mm),
G = 0.84 (21.3mm), H = 0.58 (14.7mm),
I = 0.27 (6.9mm)

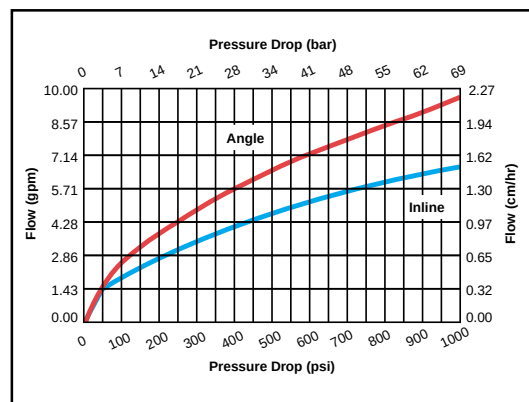


Model Shown: 6A-NLL-EPR-B-V

NL Series - C_v vs. Turns Open



NL Series - Water Flow Data



How to Order

The correct part number is easily derived from the following number sequence. The six product characteristics required are coded as shown below. *Note: If the inlet and outlet ports are the same, eliminate the outlet port designator.

Example: 4Z - NLL - V - SS - V

① ② ③ ④ ⑤ ⑥

Inlet Outlet Valve Seal Body Handle
Port Port Series Material Material Type

① Inlet Port	② Outlet Port	③ Valve Series	④ Seal Material	⑤ Body Material	⑥ Handle Type
1A, 1Z, 2A, 2M, 2Z, 4A, 4V, 4Z, M3A, M3Z, M6A, M6Z		NSA NSL	BN - Buna-N Rubber EPR - Ethylene Propylene Rubber NE - Neoprene Rubber V - Fluorocarbon Rubber KZ - Highly Fluorinated Fluorocarbon Rubber	SS- Stainless Steel B - Brass	K - Knurled KS - Knurled with Slot V - Vernier F - Precision Adjustment*
2A, 2F, 2Z, 4A, 4M, 4V, 4Z, M3A, M3Z, M6A, M6Z		NMA NML			
2F, 4A, 4M, 4V, 4Z, 6A, 6Z, M6A, M6Z		NLA NLL			

* F Handle available only on NS Series.

Optional Handles

Knurled (K) and
Knurled with Slot (KS)



- Knurled K Handle for ease of actuation
- Knurled with Slot (KS) adds a screw-driver slot across the top for locations where handle access is difficult

Vernier (V)



- Precision graduated aluminum alloy permits repeatable flow settings
- Resolution to 1/25th turn

Precision Adjustment (F)



- Adjustable torque handle for precise positioning
- Knurled metal with two top mounted adjustment screws
- NS Series only

How to Order Options

Oxygen Cleaning – Add the suffix **-C3** to the end of the part number to receive valves cleaned and assembled for oxygen service in accordance with Parker Specification ES8003. **Example:** 4A-NMA-EPR-SS-V-C3

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.

This document and other information from Parker Hannifin Corporation, its subsidiaries and authorized distributors provide product and/or system options for further investigation by users having technical expertise. It is important that you analyze all aspects of your application and review the information concerning the product or system in the current product catalog. Due to the variety of operating conditions and applications for these products or systems, the user, through its own analysis and testing, is solely responsible for making the final selection of the products and systems and assuring that all performance, safety and warning requirements of the application are met.

The products described herein, including without limitation, product features, specifications, designs, availability and pricing, are subject to change by Parker Hannifin Corporation and its subsidiaries at any time without notice.

Offer of Sale

The items described in this document are hereby offered for sale by Parker Hannifin Corporation, its subsidiaries or its authorized distributors. This offer and its acceptance are governed by the provisions stated in the "Offer of Sale" located in Catalog 4110-U Needle Valves (U Series).



Catalog 4170-N, 20M, 07/02

Parker Hannifin Corporation
Instrumentation Valve Division
2651 Alabama Highway 21 North
Jacksonville, AL 36265-9681
USA
Phone: (256) 435-2130
Fax: (256) 435-7718
www.parker.com/IVD



Parker Hannifin plc
Instrumentation Products Division
Riverside Road
Pottington Business Park
Barnstaple, Devon EX31 1NP
England
Phone: +44 (0) 1271 313131
Fax: +44 (0) 1271 373636
Email: ipd@parker.com
www.parker.com/IPD

