



# Metering Valves

Catalog 4170-MV

June 2011

- aerospace
- climate control
- electromechanical
- filtration
- fluid & gas handling**
- hydraulics
- pneumatics
- process control**
- sealing & shielding



---

 **WARNING – USER RESPONSIBILITY**

**FAILURE OR IMPROPER SELECTION OR IMPROPER USE OF THE PRODUCTS 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 or system options for further investigation by users having technical expertise.

The user, through its own analysis and testing, is solely responsible for making the final selection of the system and components and assuring that all performance, endurance, maintenance, safety and warning requirements of the application are met. The user must analyze all aspects of the application, follow applicable industry standards, and follow the information concerning the product in the current product catalog and in any other materials provided from Parker or its subsidiaries or authorized distributors.

To the extent that Parker or its subsidiaries or authorized distributors provide component or system options based upon data or specifications provided by the user, the user is responsible for determining that such data and specifications are suitable and sufficient for all applications and reasonably foreseeable uses of the components or systems.

**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 detailed "Offer of Sale" elsewhere in this document or available at [www.parker.com/ipdus](http://www.parker.com/ipdus).

Description.....	Pages
<b>N Series Metering Valves</b> .....	2-7
NS Series Metering Valves .....	2-3
NM Series Metering Valves.....	4-5
NL Series Metering Valves.....	4-6
N Series Ordering Information.....	7
<b>HR Series Metering Valves</b> .....	8-12
<b>Available End Connections</b> .....	13
<b>Offer of Sale</b> .....	15-16

N

HR

End  
Conn

## NS Series Introduction

N

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

- ▶ Precision 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

### Valve / Seal Temperature Ratings

#### Nitrile Rubber:

..... -10°F to 250°F (-23°C to 121°C)

#### Ethylene Propylene Rubber:

..... -40°F to 250°F (-40°C to 121°C)

#### Neoprene Rubber:

..... -40°F to 250°F (-40°C to 121°C)

#### Fluorocarbon Rubber:

..... -10°F to 400°F (-23°C to 204°C)

#### Highly Fluorinated Fluorocarbon Rubber:

..... -25°F to 200°F (-32°C to 93°C)

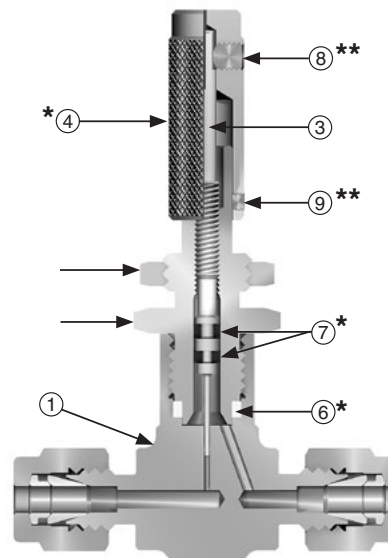
**Note:** These products are not intended for use as shut-off valves. For metering valves with shut-off capabilities, please refer to [page 8](#) of this catalog.

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.



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

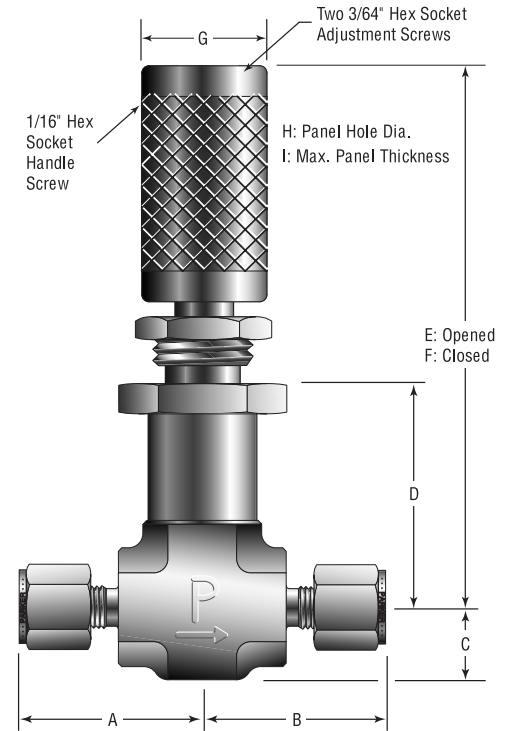
Flow tested in accordance with ISA S75.02. Gas flow will be choked when  $P_1 - P_2 / P_1 = X_T$ .

## NS Series 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	1/16" Compression A-LOK®		0.78	19.8	0.78	19.8	0.31	7.9	0.94	23.9
1A-NSA			0.82	20.8	0.82	20.8	0.31	7.9	0.94	23.9
1Z-NSL	1/16" Compression CPI™		0.78	19.8	0.78	19.8	0.31	7.9	0.94	23.9
1Z-NSA			0.82	20.8	0.82	20.8	0.31	7.9	0.94	23.9
2A-NSL	1/8" Compression A-LOK®		0.95	24.1	0.95	24.1	0.31	7.9	0.94	23.9
2A-NSA			1.01	25.7	1.01	25.7	0.31	7.9	0.94	23.9
2M-NSL	1/8" Male NPT		0.88	22.4	0.88	22.4	0.31	7.9	0.94	23.9
2M-NSA			0.88	22.4	0.88	22.4	0.31	7.9	0.94	23.9
2Z-NSL	1/8" Compression CPI™		0.95	24.1	0.95	24.1	0.31	7.9	0.94	23.9
2Z-NSA			1.01	25.7	1.01	25.7	0.31	7.9	0.94	23.9
4A-NSL	1/4" Compression A-LOK®		1.02	25.9	1.02	25.9	0.31	7.9	0.94	23.9
4A-NSA			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	1/4" Compression CPI™		1.02	25.9	1.02	25.9	0.31	7.9	0.94	23.9
4Z-NSA			1.02	25.9	1.02	25.9	0.31	7.9	0.94	23.9
M3A-NSL	3mm Compression A-LOK®		0.94	23.9	0.94	23.9	0.31	7.9	0.94	23.9
M3A-NSA			1.00	25.4	1.00	25.4	0.31	7.9	0.94	23.9
M3Z-NSL	3mm Compression CPI™		0.94	23.9	0.94	23.9	0.31	7.9	0.94	23.9
M3Z-NSA			1.00	25.4	1.00	25.4	0.31	7.9	0.94	23.9
M6A-NSL	6mm Compression A-LOK®		1.02	25.9	1.02	25.9	0.31	7.9	0.94	23.9
M6A-NSA			1.02	25.9	1.02	25.9	0.31	7.9	0.94	23.9
M6Z-NSL	6mm Compression CPI™		1.02	25.9	1.02	25.9	0.31	7.9	0.94	23.9
M6Z-NSA			1.02	25.9	1.02	25.9	0.31	7.9	0.94	23.9

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

Dimensions in inches/millimeters are for reference only, subject to change.



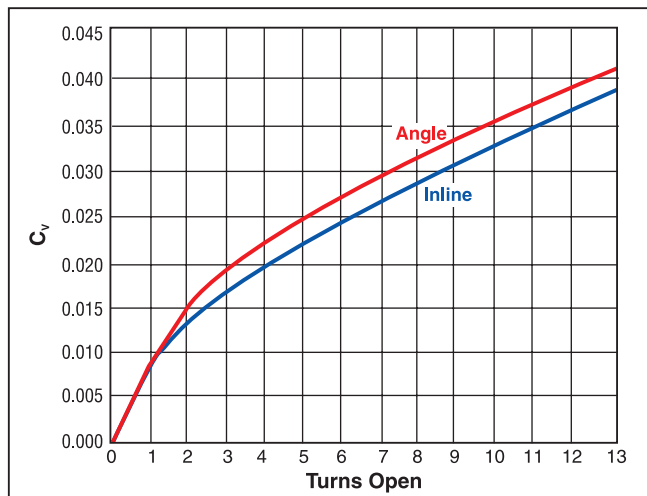
Model Shown: 2A-NSL-BN-SS-F

## Handle Dimensions

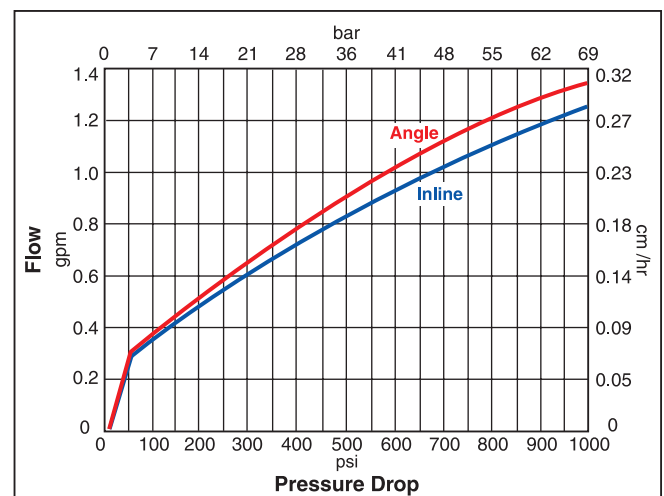
	K & KS		V		F	
	inch	mm	inch	mm	inch	mm
E	2.50	63.5	2.97	75.4	2.97	75.4
F	2.27	57.7	2.74	69.6	2.74	69.6
G	0.37	9.4	0.84	21.3	0.37	9.4
H	0.46	11.7	0.46	11.7	0.46	11.7
I	0.16	4.1	0.16	4.1	0.16	4.1

Dimensions in inches/millimeters are for reference only, subject to change.

## NS Series – C<sub>v</sub> vs. Turns Open



## NS Series – Water Flow Data



## Introduction

N

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

## Valve / Seal Temperature Ratings

**Nitrile Rubber:** ..... -10°F to 250°F (-23°C to 121°C)

### Ethylene Propylene Rubber:

..... -40°F to 250°F (-40°C to 121°C)

**Neoprene Rubber:** ..... -40°F to 250°F (-40°C to 121°C)

### Fluorocarbon Rubber:

..... -10°F to 400°F (-23°C to 204°C)

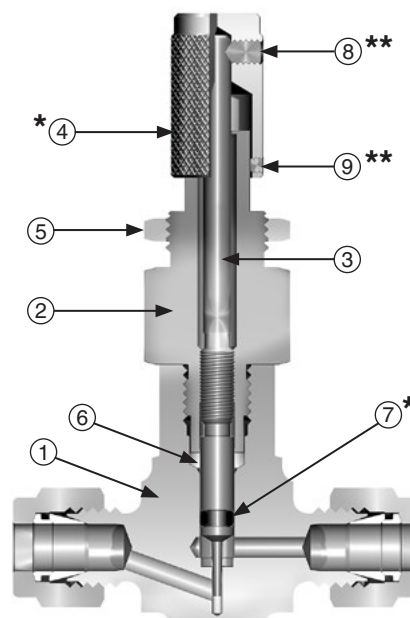
### Highly Fluorinated Fluorocarbon Rubber:

..... -25°F to 200°F (-32°C to 93°C)

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 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 and KS 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.



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

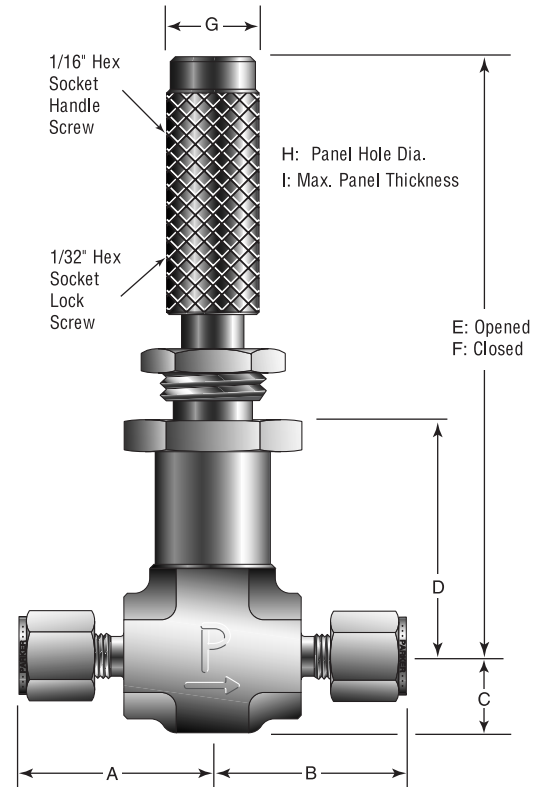
**Note:** These products are not intended for use as shut-off valves. For metering valves with shut-off capabilities, please refer to [page 8](#) of this catalog.

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	1/8" Compression A-LOK®		1.03	26.2	1.03	26.2	0.41	10.4	1.56	39.6
2A-NMA			1.03	26.2	1.03	26.2	0.41	10.4	1.07	27.2
2F-NML	1/8" Female NPT		0.93	23.6	0.93	23.6	0.41	10.4	1.56	39.6
2F-NMA			0.93	23.6	0.93	23.6	0.41	10.4	1.07	27.2
2Z-NML	1/8" Compression CPI™		1.03	26.2	1.03	26.2	0.41	10.4	1.56	39.6
2Z-NMA			1.03	26.2	1.03	26.2	0.41	10.4	1.07	27.2
4A-NML	1/4" Compression A-LOK®		1.11	28.2	1.11	28.2	0.41	10.4	1.56	39.6
4A-NMA			1.11	28.2	1.11	28.2	0.41	10.4	1.07	27.2
4M-NML	1/4" Male NPT		0.93	23.6	0.93	23.6	0.41	10.4	1.56	39.6
4M-NMA			0.93	23.6	0.93	23.6	0.41	10.4	1.07	37.2
4V-NML	1/4" VacuSeal		1.03	26.2	1.03	26.2	0.53	13.5	1.56	39.6
4Z-NML	1/4" Compression CPI™		1.11	28.2	1.11	28.2	0.41	10.4	1.56	39.6
4Z-NMA			1.11	28.2	1.11	28.2	0.41	10.4	1.07	27.2
M3A-NML	3mm Compression A-LOK®		1.00	25.4	1.00	25.4	0.41	10.4	1.56	39.6
M3A-NMA			1.00	25.4	1.00	25.4	0.41	10.4	1.07	27.2
M3Z-NML	3mm Compression CPI™		1.00	25.4	1.00	25.4	0.41	10.4	1.56	39.6
M3Z-NMA			1.00	25.4	1.00	25.4	0.41	10.4	1.07	27.2
M6A-NML	6mm Compression A-LOK®		1.09	27.7	1.09	27.7	0.41	10.4	1.56	39.6
M6A-NMA			1.09	27.7	1.09	27.7	0.41	10.4	1.07	27.2
M6Z-NML	6mm Compression CPI™		1.09	27.7	1.09	27.7	0.41	10.4	1.56	39.6
M6Z-NMA			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. Dimensions in inches/millimeters are for reference only, subject to change.



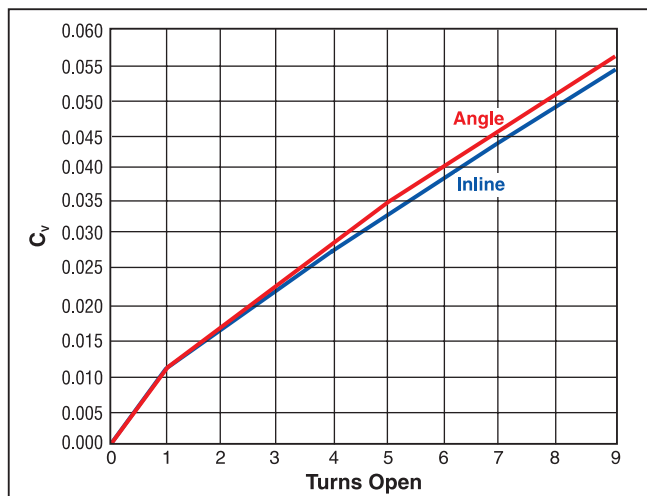
Model Shown: 2A-NML-V-SS-K

## Handle Dimensions

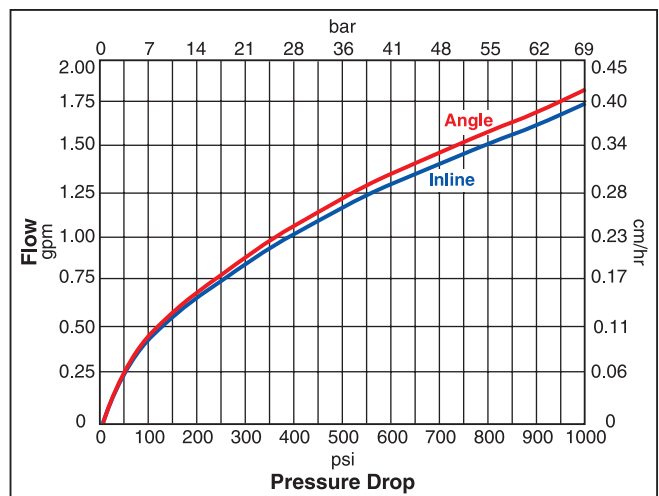
	On In-Line Pattern Valves				On Angle Pattern Valves			
	K & KS		V		K & KS		V	
	inch	mm	inch	mm	inch	mm	inch	mm
E	3.22	81.8	3.63	92.2	2.82	71.6	3.23	82.0
F	2.99	75.9	3.40	86.4	2.59	65.8	3.00	76.2
G	0.50	12.7	0.84	21.3	0.50	12.7	0.84	21.3
H	0.58	14.7	0.58	14.7	0.58	14.7	0.58	14.7
I	0.19	4.8	0.19	4.8	0.27	6.9	0.27	6.9

Dimensions in inches/millimeters are for reference only, subject to change.

## NM Series – C<sub>v</sub> vs. Turns Open



## NM Series – Water Flow Data

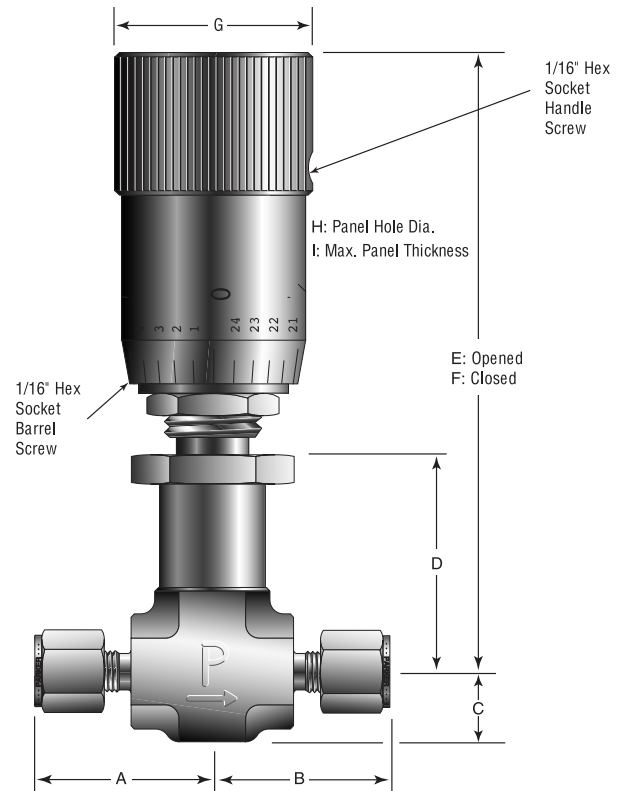


## NL Dimensions

Dimensions in inches/millimeters are for reference only, subject to change.

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	1/8" Female NPT		0.93	23.6	0.93	23.6	0.41	10.4	1.56	39.6
2F-NLA			0.93	23.6	0.93	23.6	0.41	10.4	1.07	27.2
4A-NLL	1/4" Compression A-LOK®		1.16	29.5	1.16	29.5	0.41	10.4	1.56	39.6
4A-NLA			1.16	29.5	1.16	29.5	0.41	10.4	1.07	27.2
4M-NLL	1/4" Male NPT		0.93	23.6	0.93	23.6	0.41	10.4	1.56	39.6
4M-NLA			0.93	23.6	0.93	23.6	0.41	10.4	1.07	37.2
4V-NLL	1/4" VacuSeal		1.03	26.2	1.03	26.2	0.53	13.5	1.56	39.6
4Z-NLL	1/4" Compression CPI™		1.16	29.5	1.16	29.5	0.41	10.4	1.56	39.6
4Z-NLA			1.16	29.5	1.16	29.5	0.41	10.4	1.07	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	1.07	27.2
M6A-NLL	6mm Compression A-LOK®		1.12	28.4	1.12	28.4	0.41	10.4	1.56	39.6
M6A-NLA			1.15	29.2	1.15	29.2	0.41	10.4	1.07	27.2
M6Z-NLL	6mm Compression CPI™		1.12	28.4	1.12	28.4	0.41	10.4	1.56	39.6
M6Z-NLA			1.15	29.2	1.15	29.2	0.41	10.4	1.07	27.2

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



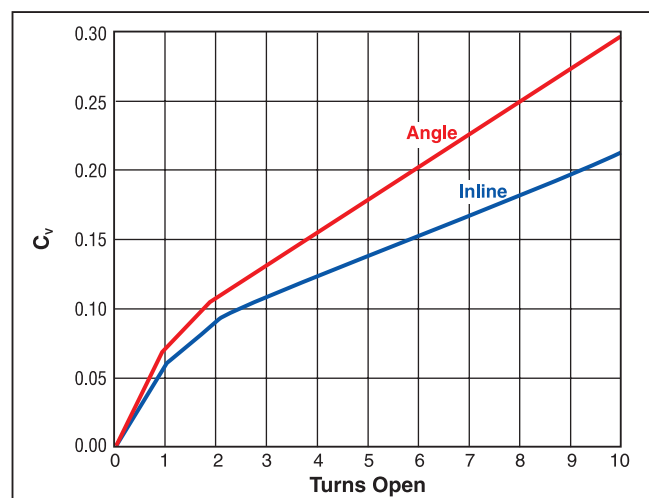
Model Shown: 4A-NLL-V-SS-V

## Handle Dimensions

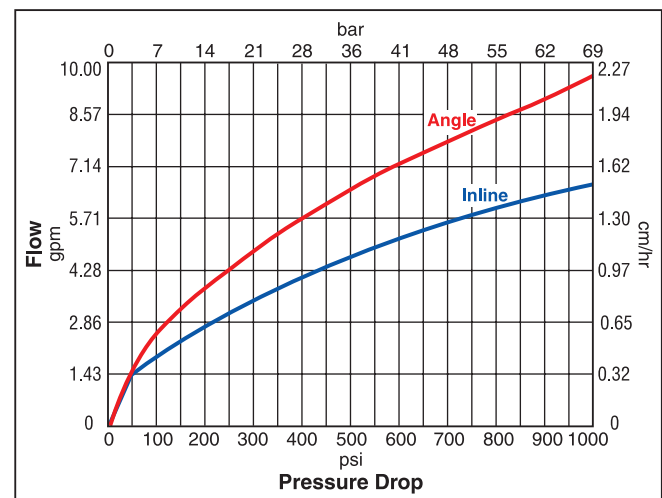
	On In-Line Pattern Valves				On Angle Pattern Valves			
	K & KS		V		K & KS		V	
	inch	mm	inch	mm	inch	mm	inch	mm
E	2.92	74.2	3.33	84.6	2.83	71.9	3.24	82.3
F	2.67	67.8	3.08	78.2	2.58	65.8	2.99	75.9
G	0.50	12.7	0.84	21.3	0.50	12.7	0.84	21.3
H	0.58	14.7	0.58	14.7	0.58	14.7	0.58	14.7
I	0.19	4.8	0.19	4.8	0.27	6.9	0.27	6.9

Dimensions in inches/millimeters are for reference only, subject to change.

## NL Series – C<sub>v</sub> vs. Turns Open



## NL Series – Water Flow Data





## How to Order

Dimensions in inches/millimeters are for reference only, subject to change.

The correct part number is easily derived from the following example and ordering chart. The six product characteristics required are coded as shown in the chart.

The example below describes a stainless steel in-line NLL series valve with 1/4" CPI compression ends, fluorocarbon seals and vernier handles.

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

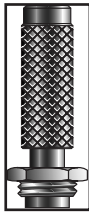
4Z		-		NLL		-		V		-		SS		-		V	
Inlet Port*		Outlet Port*		Valve Series		Seal Material		Body Material		Handle Type							
Inlet Port	Outlet Port	Valve Series	Seal Material	Body Material	Handle Type												
1A, 1Z, 2A, 2M, 2Z, 4A, 4V, 4Z, M3A, M3Z, M6A, M6Z		NSA NSL	BN Nitrile EPR Ethylene Propylene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

\* If the inlet and outlet ports are the same, eliminate the outlet port designator.

\*\* 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.

## 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

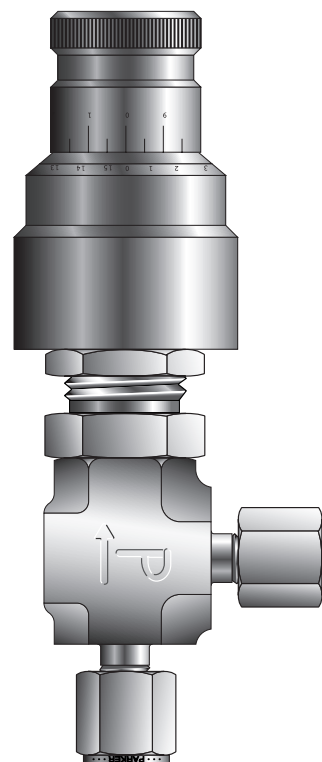
### Pressure Rating at all temperatures:

..... 250 psig (17 bar) CWP

### Flow Data\*:

<b>H0</b> .....	Orifice: 0.000002 in <sup>2</sup>
.....	In-line pattern: $C_V = 0.00034$ ; $X_T = 0.85$
.....	Angle pattern: $C_V = 0.00034$ ; $X_T = 0.66$
<b>H1</b> .....	Orifice: 0.000083 in <sup>2</sup>
.....	In-line pattern: $C_V = 0.0008$ ; $X_T = 0.85$
.....	Angle pattern: $C_V = 0.0008$ ; $X_T = 0.66$
<b>H2</b> .....	Orifice: 0.000168 in <sup>2</sup>
.....	In-line pattern: $C_V = 0.0014$ ; $X_T = 0.85$
.....	Angle pattern: $C_V = 0.0014$ ; $X_T = 0.66$
<b>H3</b> .....	Orifice: 0.000241 in <sup>2</sup>
.....	In-line pattern: $C_V = 0.0031$ ; $X_T = 0.85$
.....	Angle pattern: $C_V = 0.0031$ ; $X_T = 0.66$
<b>H4</b> .....	Orifice: 0.000674 in <sup>2</sup>
.....	In-line pattern: $C_V = 0.0077$ ; $X_T = 0.85$
.....	Angle pattern: $C_V = 0.0077$ ; $X_T = 0.66$
<b>H5</b> .....	Orifice: 0.002325 in <sup>2</sup>
.....	In-line pattern: $C_V = 0.0300$ ; $X_T = 0.85$
.....	Angle pattern: $C_V = 0.0300$ ; $X_T = 0.66$
<b>H6</b> .....	Orifice: 0.006227 in <sup>2</sup>
.....	In-line pattern: $C_V = 0.0900$ ; $X_T = 0.85$
.....	Angle pattern: $C_V = 0.0900$ ; $X_T = 0.66$

**Turns to open: 15 +/- 1**



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

## Valve / Seal Temperature Ratings

**Nitrile Rubber:**.....-10°F to 250°F (-23°C to 121°C)

**Ethylene Propylene Rubber:**

.....-40°F to 250°F (-40°C to 121°C)

**Neoprene Rubber:**.....-40°F to 250°F (-40°C to 121°C)

**Fluorocarbon Rubber:**

.....-10°F to 400°F (-23°C to 204°C)

**Highly Fluorinated Fluorocarbon Rubber:**

.....-25°F to 200°F (-32°C to 93°C)

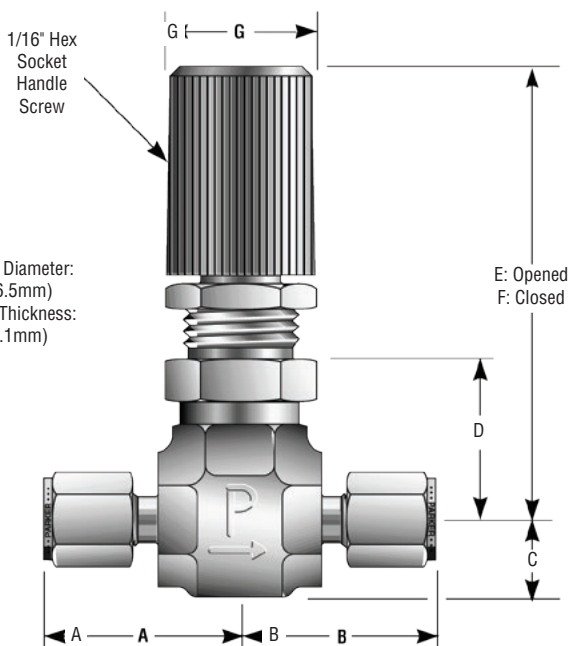
\*Flow tested in accordance with ISA S75.02. Gas flow will be choked when  $P_1 - P_2 / P_1 = x_T$ .

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

## HR Series Dimensions

Dimensions in inches/millimeters are for reference only, subject to change.

**Model Shown:  
4A-H6L-KZ-SS-K**



Panel Hole Diameter:  
0.65 (16.5mm)  
Max Panel Thickness:  
0.28 (7.1mm)

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-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.

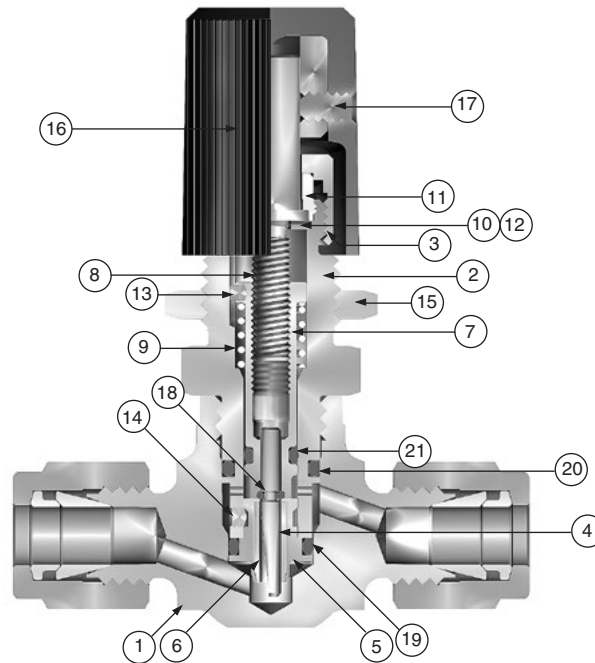
## Handle Dimensions

	On In-Line Pattern Valves						On Angle Pattern Valves					
	K		TC		NS		K		TC		NS	
	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm
E	2.35	59.7	2.88	73.2	2.33	59.2	2.23	56.6	2.76	70.1	2.21	56.1
F	2.35	59.7	2.88	73.2	2.33	59.2	2.23	56.6	2.76	70.1	2.21	56.1
G	0.78	19.8	1.12	28.4	0.25	6.4	0.78	19.8	1.12	28.4	0.25	6.4

Dimensions in inches/millimeters are for reference only, subject to change.

## Materials of Construction

HR



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

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

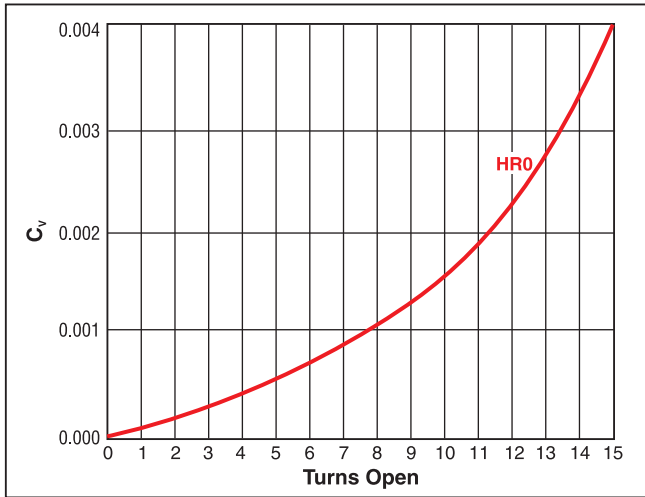
\* Friction Collar is Polymide with HT option.

\*\* Acrylonitrile-Butadiene-Styrene. Optional handles are available.

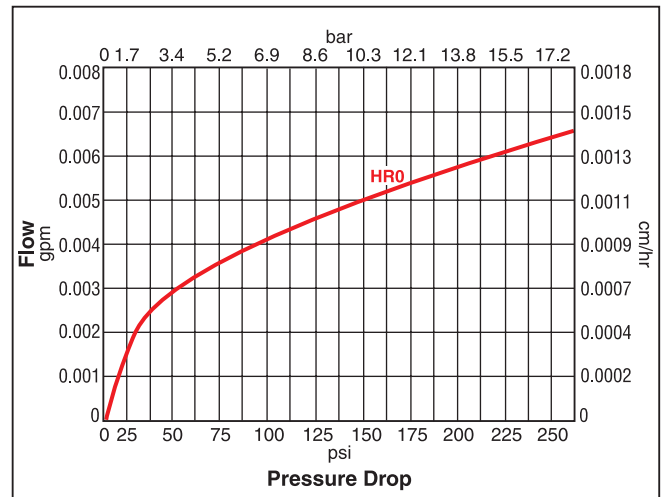
\*\*\*Optional materials are available – See [How to Order](#).

Lubrication: Perfluorinated polyether.

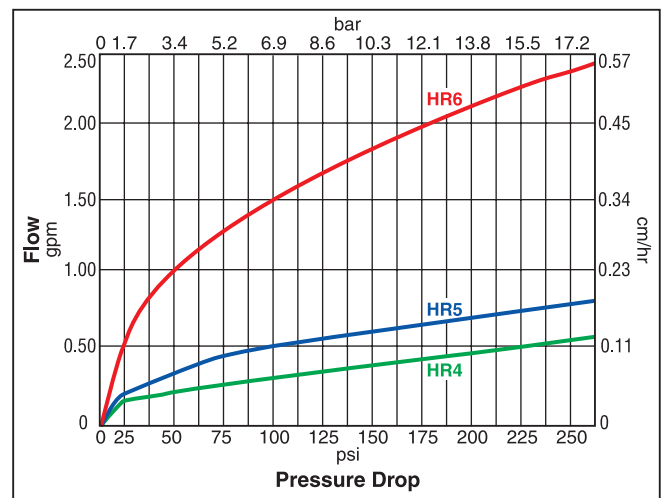
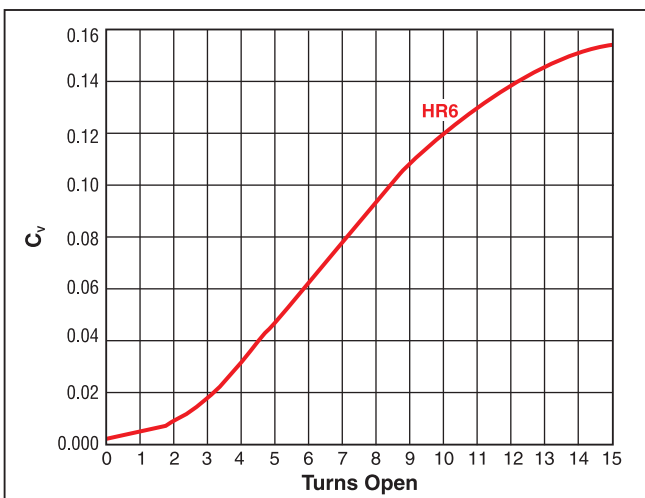
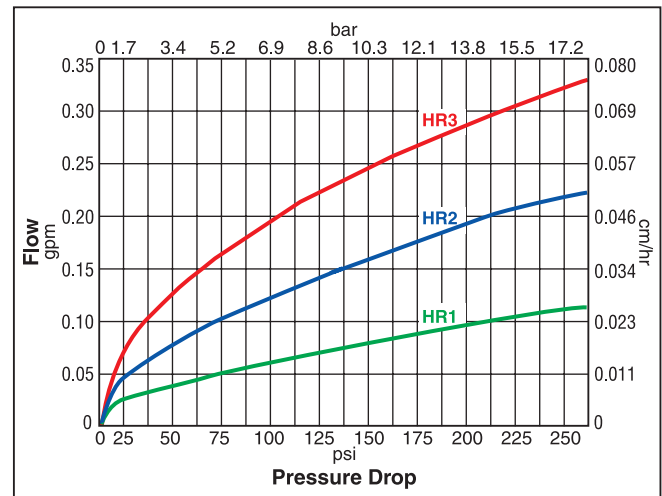
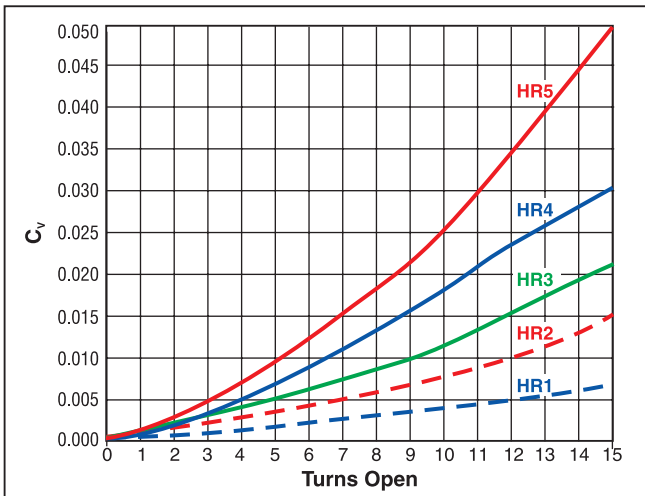
## $C_v$ vs. Turns Open



## Water Flow Data



HR



## How to Order

Dimensions in inches/millimeters are for reference only, subject to change.

The correct part number is easily derived from the following example and ordering chart. The six product characteristics required are coded as shown in the chart.

The example below describes a stainless steel H3L in-line series valve with 1/4" CPI compression ends, fluorocarbon seals and vernier handle. "3" indicates a  $C_v$  of 0.200 per page 8.

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

4Z		H3L		V	SS	TC			
Port 1	Port 2	Valve/Stem Series		Seal Material	Body Material	Handle Type			
Inlet Port	Outlet Port	Valve/Stem Series**		Seal Material		Handle Type			
1A, 1Z		H#A		BN	Nitrile Rubber	B	Brass	K	Knurled
				EPR	Ethylene Propylene Rubber	SS	Stainless Steel	TC	Turns Counter
2A, 2F, 2Z, 4A, 4F, 4M, 4Z, M3A, M3Z, M6A, M6Z		H#A H#L		NE	Neoprene Rubber			NS	No Handle (Slotted Stem)
				V	Fluorocarbon Rubber				
				KZ	Highly Fluorinated Fluorocarbon Rubber				

\* If the inlet and outlet ports are the same, eliminate the outlet port designator.

\*\* See flow data specifications on [page 8](#) to fully identify the valve/stem series properly.

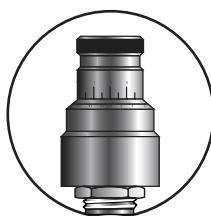
## Handle Options

### Knurled (K)



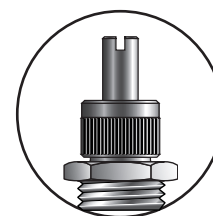
Knurled ABS molded handle provides ease of actuation

### 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

## Available End Connections

### Standard End Connections

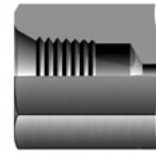
**A** - Two ferrule A-LOK®  
compression port



**Z** - Single ferrule CPI™  
compression port



**F** - ANSI/ASME B1.20.1  
internal pipe threads



**M** - NSI/ASME B1.20.1  
external pipe threads



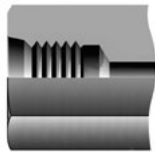
End  
Conn

### Non-Standard End Connections

**F5** - SAE J1926/2, Part 2:  
Heavy-duty (S Series) stud ends



**G5** - SAE J1926/1, Part 1:  
Threaded port with O-ring seal in  
truncated housing



**L** - SAE J1453, Fitting – O-ring  
face seal – External thread with  
O-ring groove designed to seal with an  
elastomer against a sleeve



**KF** - British Standard BS 21  
(ISO 7-1), Internal pipe threads



**KM** - British Standard BS 21  
(ISO 7-1), External pipe threads



**Q** - UltraSeal face seal port



**V** - VacuSeal face seal port

