Parker
Instrumentation

Metering Valves (HR Series)

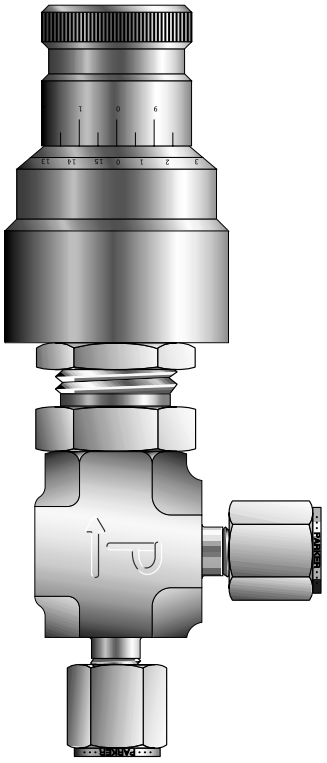
Catalog 4170-HR
Revised, August 2002

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



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

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

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 $P_1 - P_2 / P_1 = x_T$.

Parker Instrumentation
Parker Hannifin Corporation
Instrumentation Valve Division
Jacksonville, Alabama

Dimensions

Basic Part Number	End Connections (Inlet) Port 1	End Connections (Outlet) Port 2	Dimensions A† Inch	A† mm	B† Inch	B† mm	C Inch	C mm	D Inch	D 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

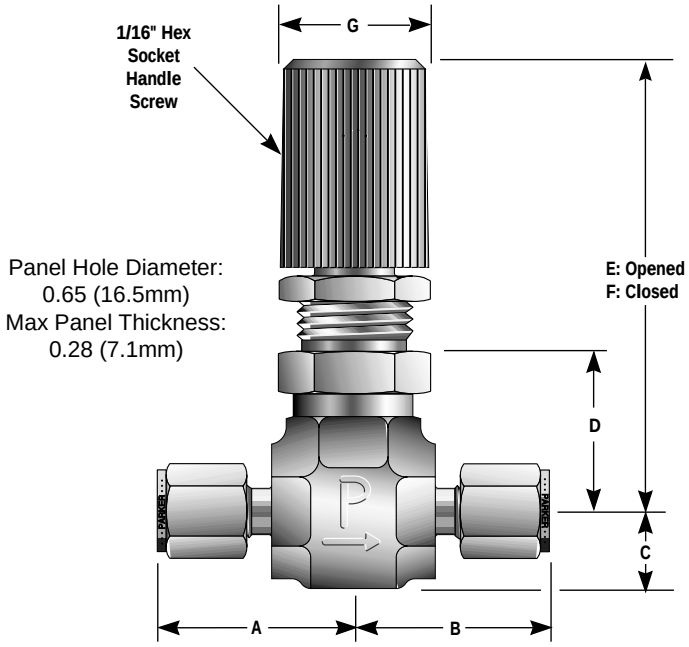
Pattern	Dimensions E Inch	E mm	F Inch	F mm	G Inch	G mm
In-line	2.35	59.7	2.35	59.7	0.78	19.8
Angle	2.23	56.6	2.23	56.6	0.78	19.8

TC Handle Dimensions

Pattern	Dimensions E Inch	E mm	F Inch	F mm	G Inch	G 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 Inch	E mm	F Inch	F mm	G Inch	G 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

How to Order

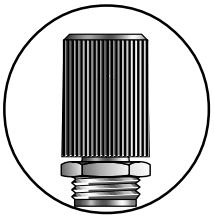
The correct part number is easily derived from the following number sequence. The six product characteristics required are coded as shown below. *Note: If the inlet and outlet ports are the same, eliminate the outlet port designator.

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
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**			

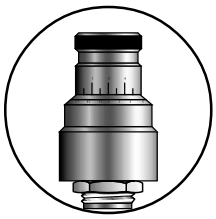
Handle Options

Knurled (K)



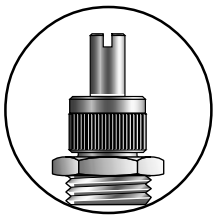
Knurled ABS molded handle provides ease of actuation

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

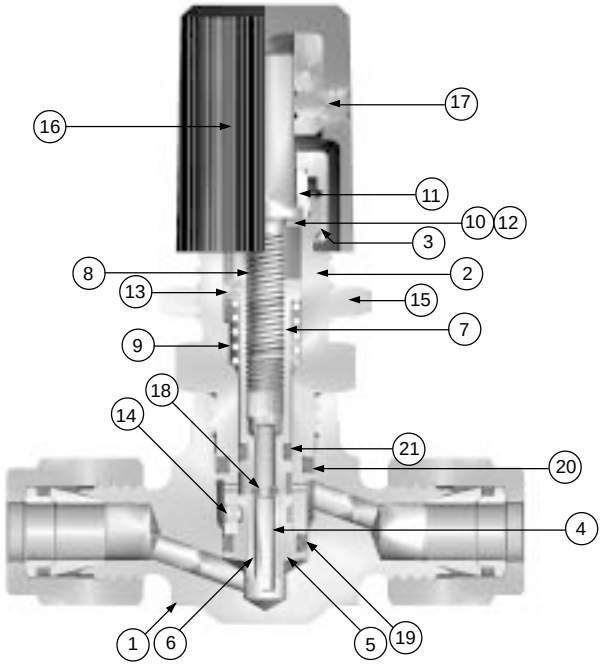
Oxygen Cleaning – Add the suffix **-C3** to the end of the part number to receive valves cleaned and assembled for oxygen service in accordance with Parker Specification ES8003. Example: 4A-H1A-EPR-SS-K**-C3**

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**

Materials of Construction

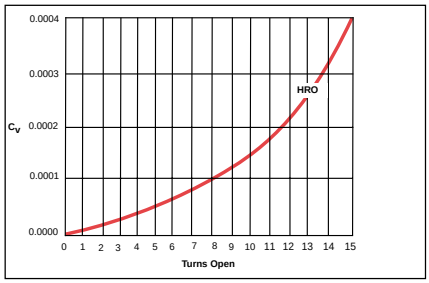
Item #	Description	Stainless Steel	Brass
1	Body	ASTM A 182 Type F316	ASTM B 283 Alloy C37700 (Nickel Plated)
2	Bonnet	ASTM A 479 Type 316	ASTM B 16 Alloy C36000 (Nickel Plated)
3	Bonnet Nut	ASTM B 16 Alloy C36000	ASTM B 16 Alloy C36000
4	Lower Stem	316 Stainless Steel	316 Stainless Steel
5	Orifice	ASTM 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

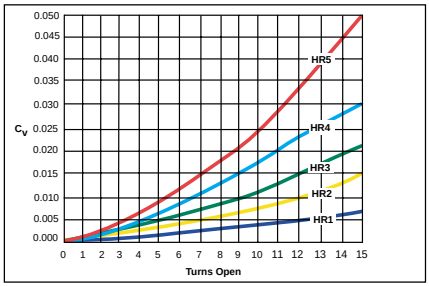
* Friction Collar is Polymide with HT option
** Acrylonitrile-Butadiene-Styrene. Optional handles are available
*** Optional materials are available - See How to Order
Lubrication: Perfluorinated polyether

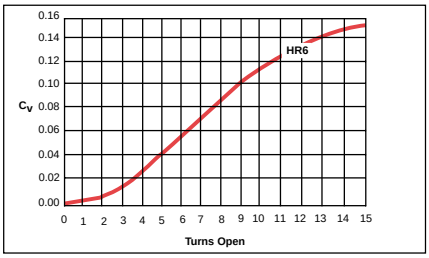


Model Shown: 4A-H4L-NE-SS-K

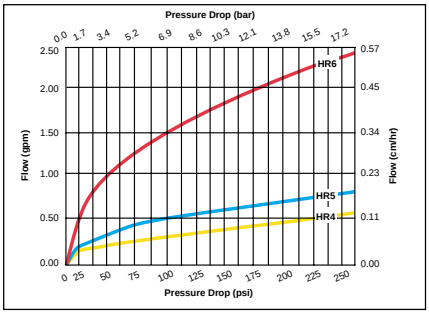
C_v vs. Turns Open

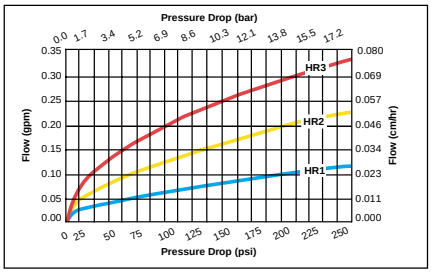


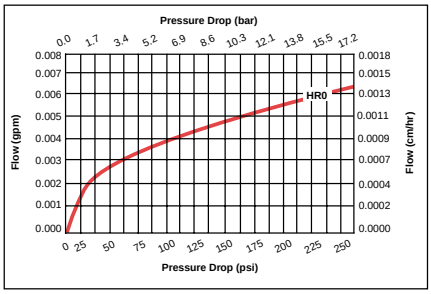




Water Flow Data







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