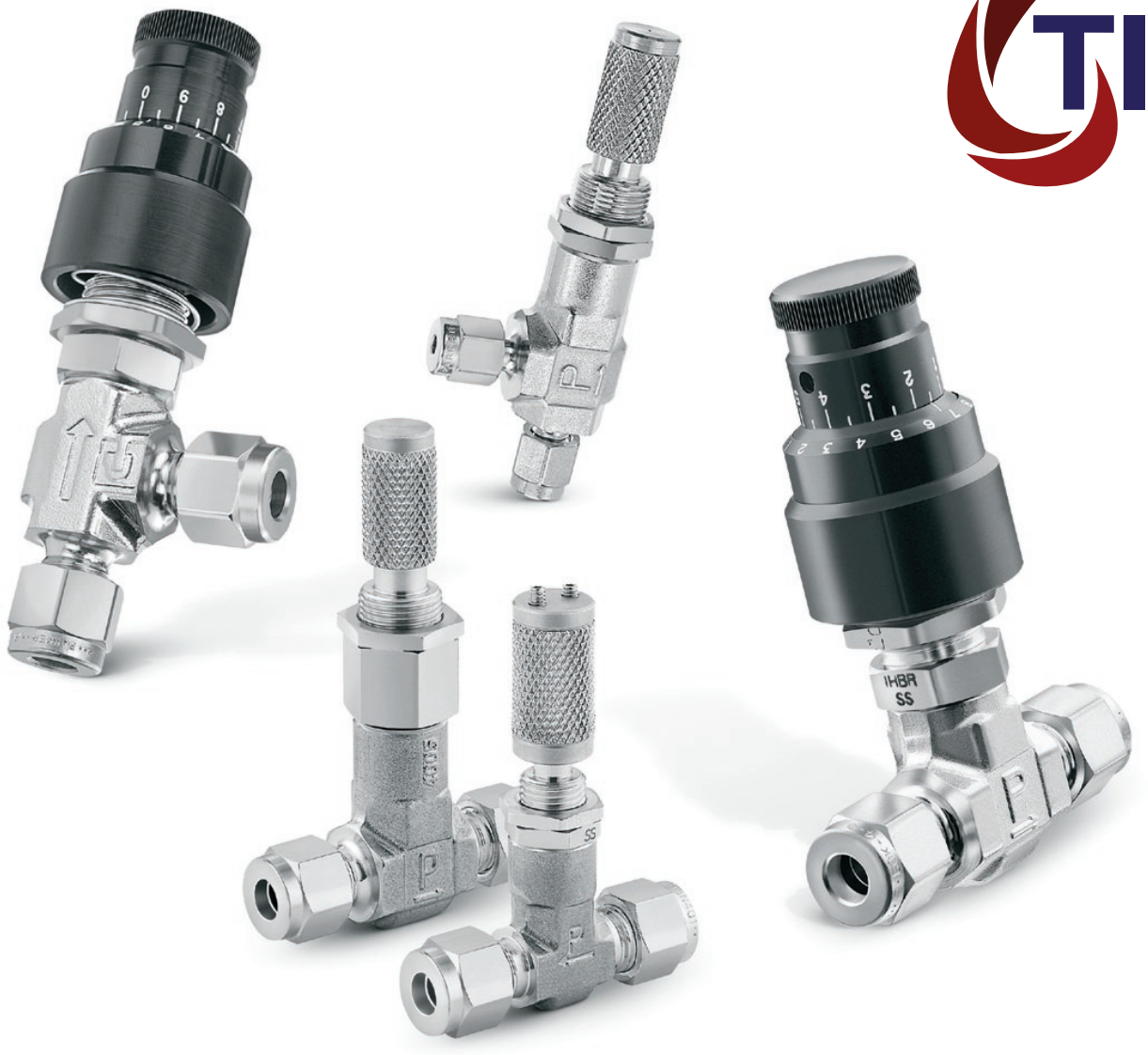


Metering Valves

TIE

www.tie.com.gt

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

Parker

ENGINEERING YOUR SUCCESS.

N

NS Series 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

- 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)

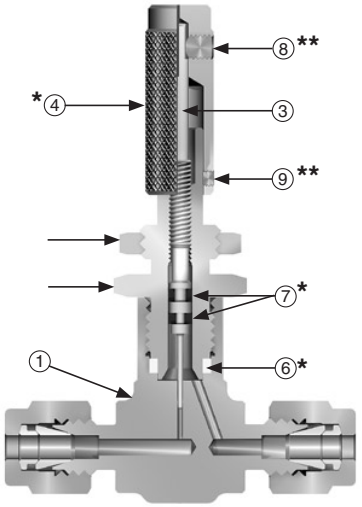
Fluorocarbon Rubber:
..... -10°F to 400°F (-23°C to 204°C)

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 $P_1 - P_2 / P_1 = X_T$.

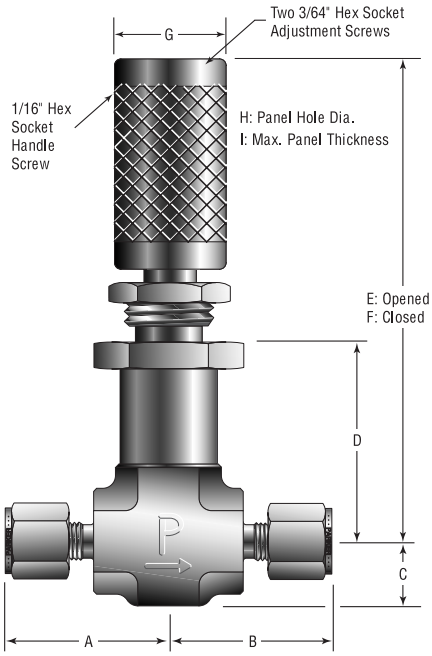
Parker Hannifin Corporation
Instrumentation Products Division
Jacksonville, AL USA
http://www.parker.com/ipdus

NS Series 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-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.



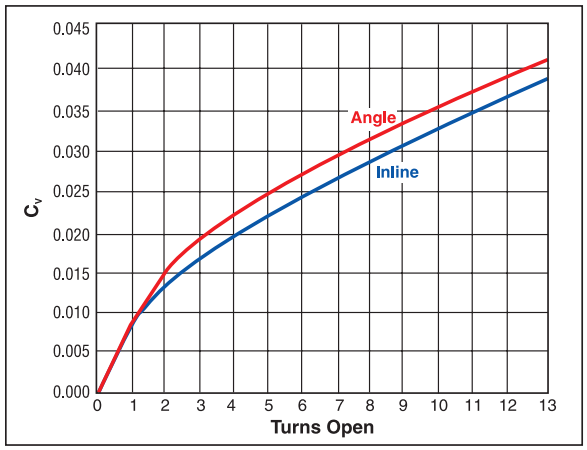
Model Shown: 2A-NSL-BN-SS-F

Handle Dimensions

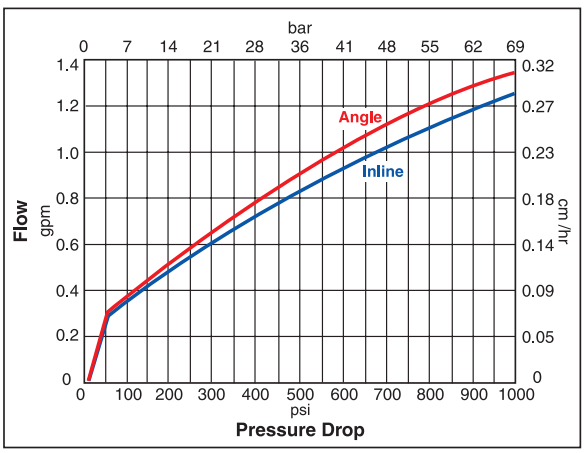
	K & KS inch	K & KS mm	V inch	V mm	F inch	F mm
E	2.50	63.5	2.97	75.4	2.97	75.4
F	2.27	57.7	2.74	69.6	2.74	69.6
G	0.37	9.4	0.84	21.3	0.37	9.4
H	0.46	11.7	0.46	11.7	0.46	11.7
I	0.16	4.1	0.16	4.1	0.16	4.1

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

NS Series – C_v vs. Turns Open



NS Series – Water Flow Data



Parker Hannifin Corporation
Instrumentation Products Division
Jacksonville, AL USA
http://www.parker.com/ipdus

NM and 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

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)

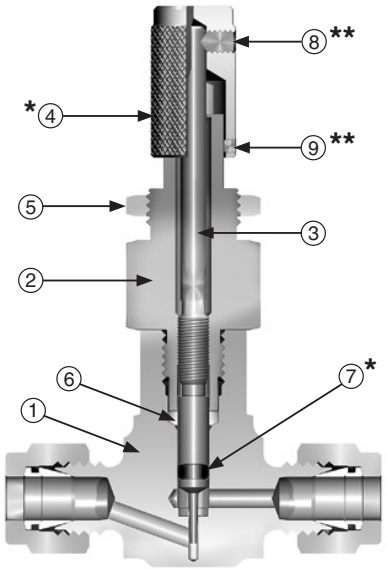
Neoprene Rubber:.....-40°F to 250°F (-40°C to 121°C)

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 $P_1 - P_2 / P_1 = X_T$.

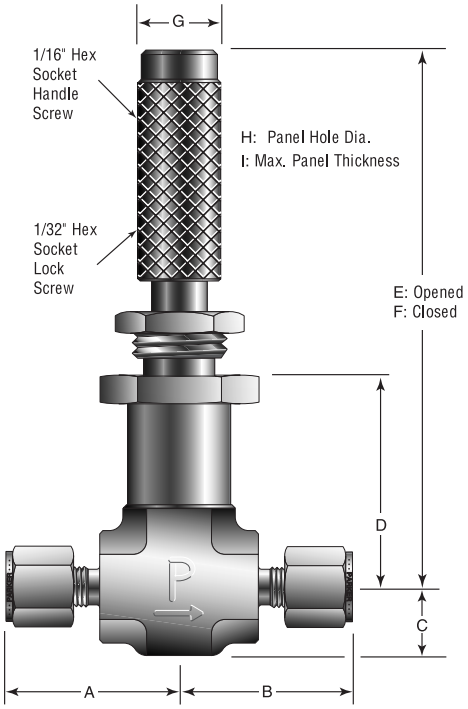
Parker Hannifin Corporation
Instrumentation Products Division
Jacksonville, AL USA
http://www.parker.com/ipdus

NM 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
2A-NML	1/8" Compression		1.03	26.2	1.03	26.2	0.41	10.4	1.56	39.6
2A-NMA	A-LOK®		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		1.03	26.2	1.03	26.2	0.41	10.4	1.56	39.6
2Z-NMA	CPI™		1.03	26.2	1.03	26.2	0.41	10.4	1.07	27.2
4A-NML	1/4" Compression		1.11	28.2	1.11	28.2	0.41	10.4	1.56	39.6
4A-NMA	A-LOK®		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		1.11	28.2	1.11	28.2	0.41	10.4	1.56	39.6
4Z-NMA	CPI™		1.11	28.2	1.11	28.2	0.41	10.4	1.07	27.2
M3A-NML	3mm Compression		1.00	25.4	1.00	25.4	0.41	10.4	1.56	39.6
M3A-NMA	A-LOK®		1.00	25.4	1.00	25.4	0.41	10.4	1.07	27.2
M3Z-NML	3mm Compression		1.00	25.4	1.00	25.4	0.41	10.4	1.56	39.6
M3Z-NMA	CPI™		1.00	25.4	1.00	25.4	0.41	10.4	1.07	27.2
M6A-NML	6mm Compression		1.09	27.7	1.09	27.7	0.41	10.4	1.56	39.6
M6A-NMA	A-LOK®		1.09	27.7	1.09	27.7	0.41	10.4	1.07	27.2
M6Z-NML	6mm Compression		1.09	27.7	1.09	27.7	0.41	10.4	1.56	39.6
M6Z-NMA	CPI™		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.



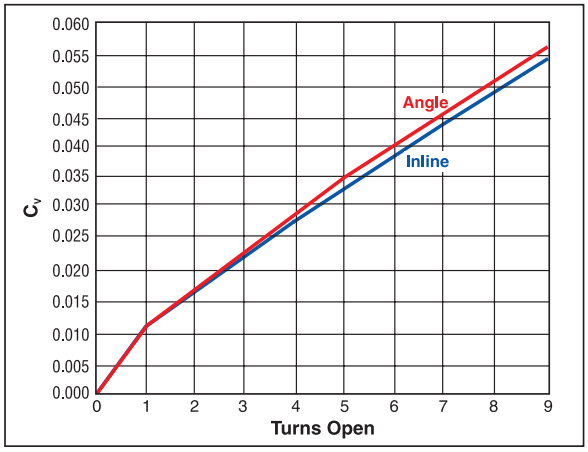
Model Shown: 2A-NML-V-SS-K

Handle Dimensions

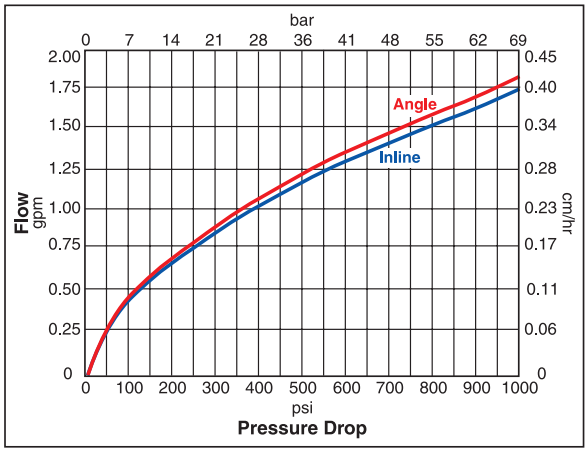
	On In-Line Pattern Valves K & KS inch	K & KS mm	V inch	V mm	On Angle Pattern Valves K & KS inch	K & KS mm	V inch	V mm
E	3.22	81.8	3.63	92.2	2.82	71.6	3.23	82.0
F	2.99	75.9	3.40	86.4	2.59	65.8	3.00	76.2
G	0.50	12.7	0.84	21.3	0.50	12.7	0.84	21.3
H	0.58	14.7	0.58	14.7	0.58	14.7	0.58	14.7
I	0.19	4.8	0.19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

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

NM Series – C_v vs. Turns Open



NM Series – Water Flow Data



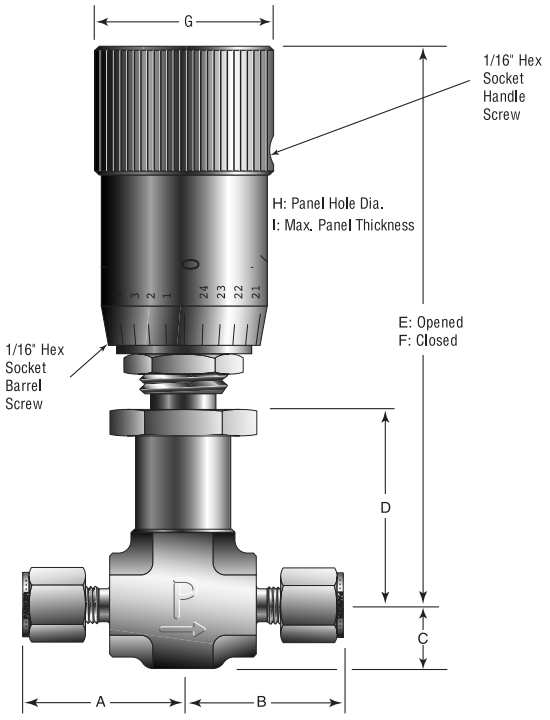
Parker Hannifin Corporation
Instrumentation Products Division
Jacksonville, AL USA
http://www.parker.com/ipdus

NL Dimensions

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

Basic Part Number	End Connections (Inlet) Port 1	End Connections (Outlet) Port 2	A* inch	A* mm	B* inch	B* mm	C inch	C mm	D inch	D 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.



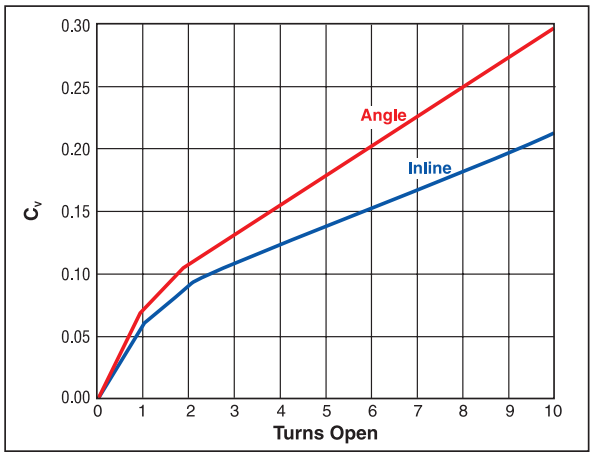
Model Shown: 4A-NLL-V-SS-V

Handle Dimensions

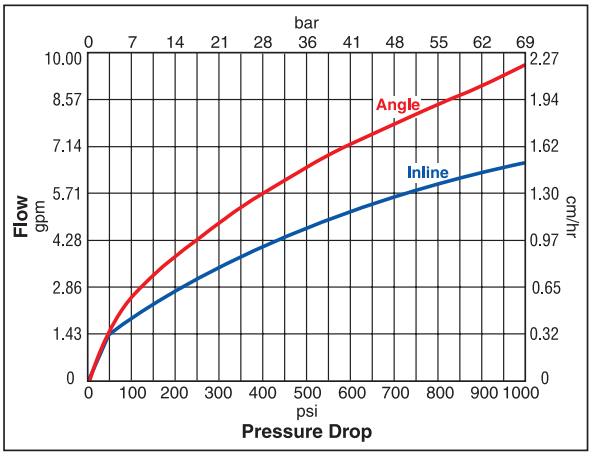
	On In-Line Pattern Valves K & KS inch	On In-Line Pattern Valves K & KS mm	On In-Line Pattern Valves V inch	On In-Line Pattern Valves V mm	On Angle Pattern Valves K & KS inch	On Angle Pattern Valves K & KS mm	On Angle Pattern Valves V inch	On Angle Pattern Valves V mm
E	2.92	74.2	3.33	84.6	2.83	71.9	3.24	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_v vs. Turns Open



NL Series – Water Flow Data



Parker Hannifin Corporation
Instrumentation Products Division
Jacksonville, AL USA
http://www.parker.com/ipdus

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 **NE** Neoprene Rubber **V** Fluorocarbon Rubber **KZ** Highly Fluorinated Fluorocarbon 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			
2F, 4A, 4M, 4V, 4Z, 6A, 6Z, M6A, M6Z		NLA NLL			

* 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**.

Parker Hannifin Corporation
Instrumentation Products Division
Jacksonville, AL USA
http://www.parker.com/ipdus

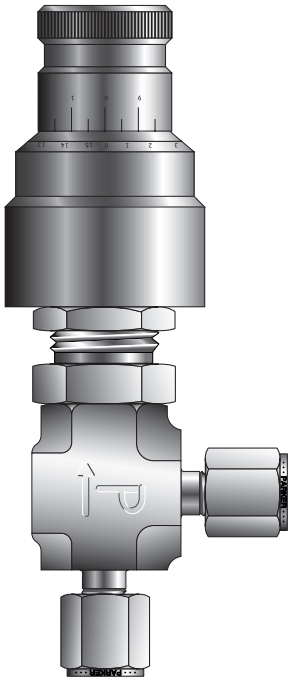
HR

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

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)

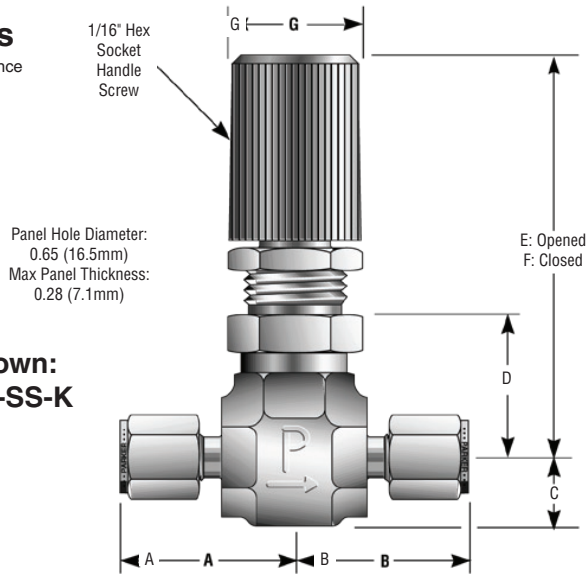
*Flow tested in accordance with ISA S75.02. Gas flow will be choked when $P_1 - P_2 / P_1 = x_T$.

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

Parker Hannifin Corporation
Instrumentation Products Division
Jacksonville, AL USA
http://www.parker.com/ipdus

HR Series Dimensions

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



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

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

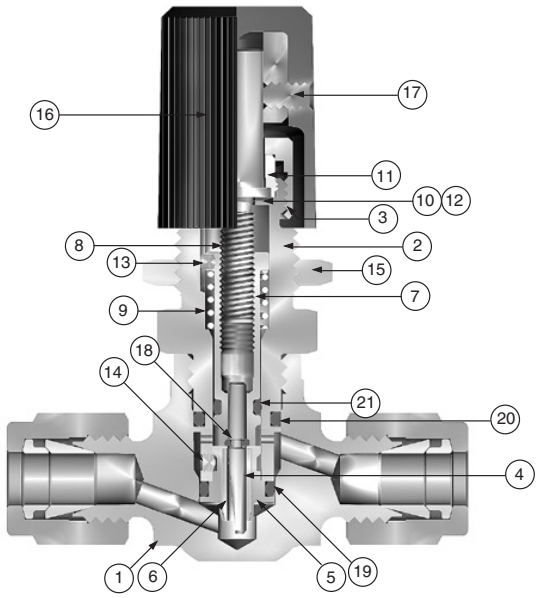
Handle Dimensions

	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.

Parker Hannifin Corporation
Instrumentation Products Division
Jacksonville, AL USA
http://www.parker.com/ipdus

Materials of Construction



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.

Parker Hannifin Corporation
Instrumentation Products Division
Jacksonville, AL USA
http://www.parker.com/ipdus

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

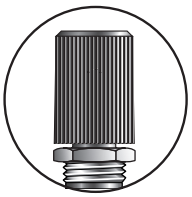
Inlet Port	Outlet Port	Valve/Stem Series**	Seal Material		Body Material		Handle Type	
1A, 1Z		H#A	BN	Nitrile Rubber	B	Brass	K	Knurled
			EPR	Ethylene Propylene Rubber	SS	Stainless Steel	TC	Turns Counter
2A, 2F, 2Z, 4A, 4F, 4M, 4Z, M3A, M3Z, M6A, M6Z		H#A H#L	NE	Neoprene Rubber			NS	No Handle (Slotted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

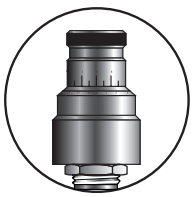
Handle Options

Knurled (K)



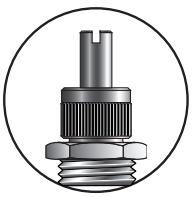
Knurled ABS molded handle provides ease of actuation

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**

Parker Hannifin Corporation
Instrumentation Products Division
Jacksonville, AL USA
http://www.parker.com/ipdus

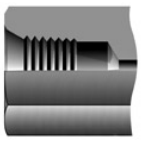
Available End Connections

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

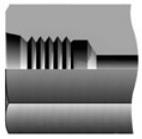


M - NSI/ASME B1.20.1 external pipe threads

Non-Standard End Connections

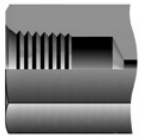
F5 - SAE J1926/2, Part 2: Heavy-duty (S Series) stud ends

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

Parker Hannifin Corporation
Instrumentation Products Division
Jacksonville, AL USA
http://www.parker.com/ipdus

Parker's Motion & Control Technologies

At Parker, we're guided by a relentless drive to help our customers become more productive and achieve higher levels of profitability by engineering the best systems for their requirements. It means looking at customer applications from many angles to find new ways to create value. Whatever the motion and control technology need, Parker has the experience, breadth of product and global reach to consistently deliver. No company knows more about motion and control technology than Parker. For further info call 1-800-C-Parker.

AEROSPACE

Key Markets

- Aircraft engines
- Business & general aviation
- Commercial transports
- Land-based weapons systems
- Military aircraft
- Missiles & launch vehicles
- Regional transports
- Unmanned aerial vehicles

Key Products

- Flight control systems & components
- Fluid conveyance systems
- Fluid metering delivery & atomization devices
- Fuel systems & components
- Hydraulic systems & components
- Inert nitrogen generating systems
- Pneumatic systems & components
- Wheels & brakes

CLIMATE CONTROL

Key Markets

- Agriculture
- Air conditioning
- Food, beverage & dairy
- Life sciences & medical
- Precision cooling
- Processing
- Transportation

Key Products

- CO^2 controls
- Electronic controllers
- Filter driers
- Hand shut-off valves
- Hose & fittings
- Pressure regulating valves
- Refrigerant distributors
- Safety relief valves
- Solenoid valves
- Thermostatic expansion valves

ELECTROMECHANICAL

Key Markets

- Aerospace
- Factory automation
- Life science & medical
- Machine tools
- Packaging machinery
- Paper machinery
- Plastics machinery & converting
- Primary metals
- Semiconductor & electronics
- Textile
- Wire & cable

Key Products

- AC/DC drives & systems
- Electric actuators, gantry robots & slides
- Electrohydrostatic actuation systems
- Electromechanical actuation systems
- Human machine interface
- Linear motors
- Stepper motors, servo motors, drives & controls
- Structural extrusions

FILTRATION

Key Markets

- Food & beverage
- Industrial machinery
- Life sciences
- Marine
- Mobile equipment
- Oil & gas
- Power generation
- Process
- Transportation

Key Products

- Analytical gas generators
- Compressed air & gas filters
- Condition monitoring
- Engine air, fuel & oil filtration & systems
- Hydraulic, lubrication & coolant filters
- Process, chemical, water & microfiltration filters
- Nitrogen, hydrogen & zero air generators

FLUID & GAS HANDLING

Key Markets

- Aerospace
- Agriculture
- Bulk chemical handling
- Construction machinery
- Food & beverage
- Fuel & gas delivery
- Industrial machinery
- Mobile
- Oil & gas
- Transportation
- Welding

Key Products

- Brass fittings & valves
- Diagnostic equipment
- Fluid conveyance systems
- Industrial hose
- PTFE & PFA hose, tubing & plastic fittings
- Rubber & thermoplastic hose & couplings
- Tube fittings & adapters
- Quick disconnects

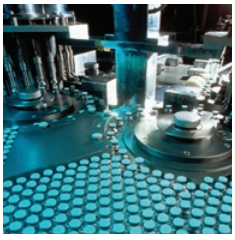
HYDRAULICS

Key Markets

- Aerospace
- Aerial lift
- Agriculture
- Construction machinery
- Forestry
- Industrial machinery
- Mining
- Oil & gas
- Power generation & energy
- Truck hydraulics

Key Products

- Diagnostic equipment
- Hydraulic cylinders & accumulators
- Hydraulic motors & pumps
- Hydraulic systems
- Hydraulic valves & controls
- Power take-offs
- Rubber & thermoplastic hose & couplings
- Tube fittings & adapters
- Quick disconnects



PNEUMATICS

Key Markets

- Aerospace
- Conveyor & material handling
- Factory automation
- Life science & medical
- Machine tools
- Packaging machinery
- Transportation & automotive

Key Products

- Air preparation
- Brass fittings & valves
- Manifolds
- Pneumatic accessories
- Pneumatic actuators & grippers
- Pneumatic valves & controls
- Quick disconnects
- Rotary actuators
- Rubber & thermoplastic hose & couplings
- Structural extrusions
- Thermoplastic tubing & fittings
- Vacuum generators, cups & sensors

PROCESS CONTROL

Key Markets

- **Chemical & refining**
- **Food, beverage & dairy**
- **Medical & dental**
- **Microelectronics**
- **Oil & gas**
- **Power generation**

Key Products

- **Analytical sample conditioning products & systems**
- **Fluoropolymer chemical delivery fittings, valves & pumps**
- **High purity gas delivery fittings, valves & regulators**
- **Instrumentation fittings, valves & regulators**
- **Medium pressure fittings & valves**
- **Process control manifolds**

SEALING & SHIELDING

Key Markets

- Aerospace
- Chemical processing
- Consumer
- Energy, oil & gas
- Fluid power
- General industrial
- Information technology
- Life sciences
- Military
- Semiconductor
- Telecommunications
- Transportation

Key Products

- Dynamic seals
- Elastomeric o-rings
- EMI shielding
- Extruded & precision-cut, fabricated elastomeric seals
- Homogeneous & inserted elastomeric shapes
- High temperature metal seals
- Metal & plastic retained composite seals
- Thermal management

Parker

TIE

ENGINEERING YOUR SUCCESS.