Parker
Instrumentation

Needle Valves (VQ Series)

Catalog 4110-VQ
Revised, July 2001

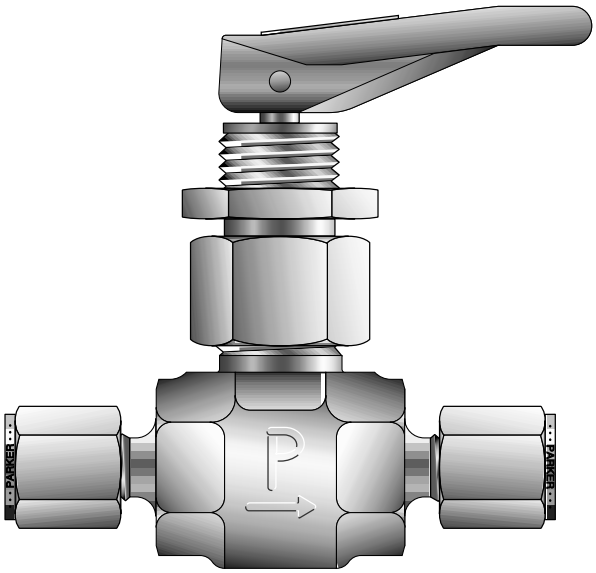


Introduction

Parker VQ Series Needle Valves are the right combination of performance and value for manual or pneumatic on-off control in moderate pressure and temperature applications. The manual version employs a toggle handle for quick action at pressures up to 300 psig (21 bar). Compact double acting, normally closed, and normally open pneumatically actuated versions of this valve are ideal for automatic control at pressures up to 600 psig (41 bar).

Manual Toggle Valve Features

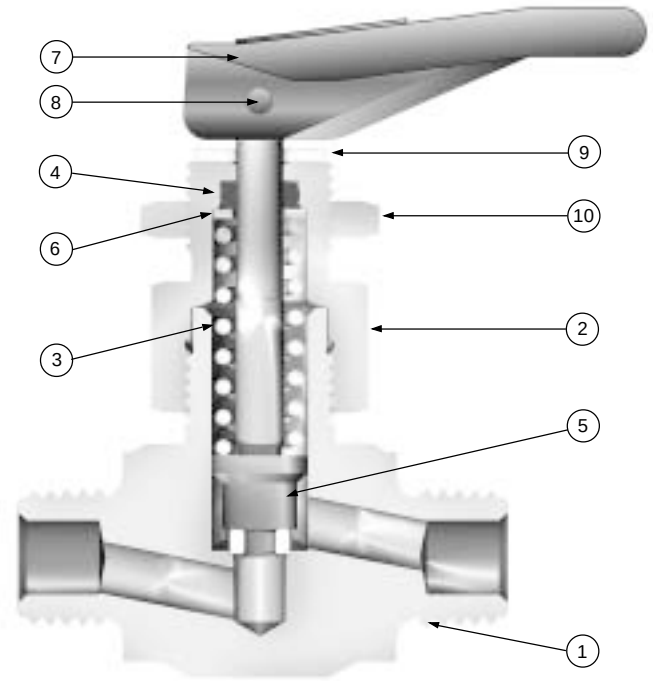
- Quick acting
- Inline and angle patterns
- Available with CPI™, A-LOK®, male and female NPT end connections
- Panel mountable
- Color-coded handles
- 316 stainless steel and brass body construction
- Stem seal materials -
  - Fluorocarbon Rubber
  - Buna-N Rubber
  - Ethylene Propylene Rubber
  - Highly Fluorinated Fluorocarbon Rubber
- Optional handle positioners and anti-lock handles
- 100% factory tested



Model Shown: 4A-V4LQ-BP

Manual Toggle Valve Specifications

- Pressure Rating at all temperatures:
  - 300 psig (21 bar) CWP
- Temperature Ratings -
  - PTFE Stem Tip: -20 °F to 200 °F (-29 °C to 93 °C)
  - PCTFE Stem Tip: -65 °F to 200 °F (-54 °C to 93 °C)



Model Shown: 4M-V4LQ-SSP

Materials of Construction Manual Toggle Valve

Item #	Description	Stainless Steel	Brass
1	Body	ASTM A 182 Type F316	ASTM B 283 Alloy C37700
2	Cap	ASTM A 479 Type 316	ASTM B 453 Alloy C34000
3	Spring	Stainless Steel	Stainless Steel
4	Stem Seal*	Fluorocarbon Rubber	Fluorocarbon Rubber
5	Stem	ASTM A 276 Type 316	ASTM A 276 Type 316
6	Stem Washer	Stainless Steel	Stainless Steel
7	Handle	Nylon 6/6	Nylon 6/6
8	Handle Pin	Stainless Steel	Stainless Steel
9	Handle Washer	Acetal	Acetal
10	Panel Nut	316 Stainless Steel	316 Stainless Steel

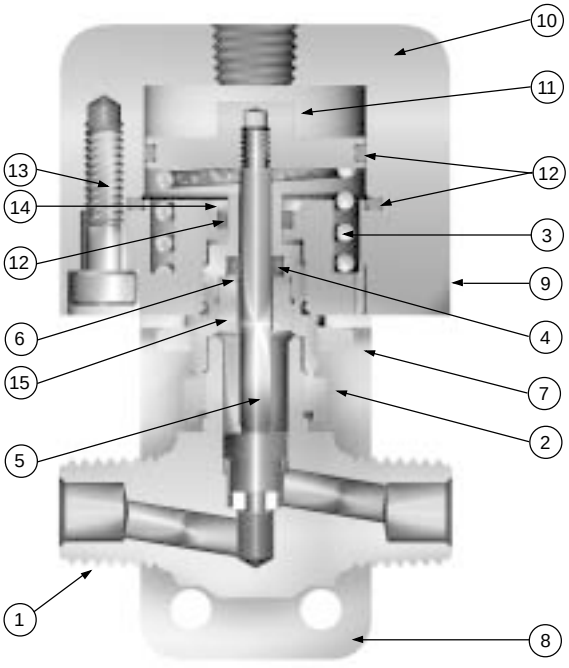
* Optional stem seal materials available - See How to Order
Lubrication: Silicone paste

Actuated Valve Features

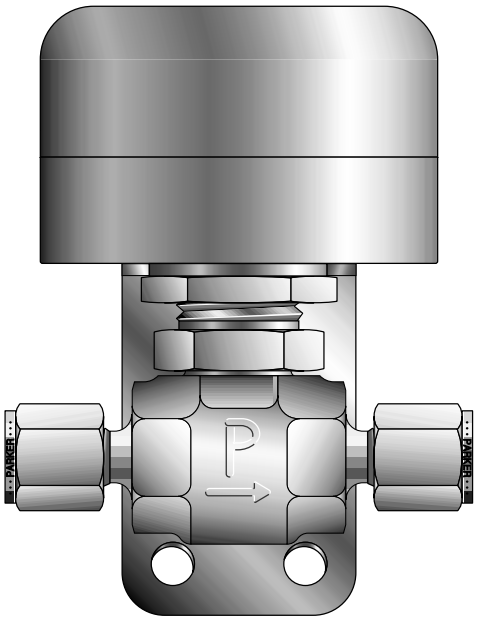
- Available in normally open, normally closed, and double acting models
- Inline and angle patterns
- Available with CPI™, A-LOK®, male and female NPT end connections
- Mounting bracket standard
- 316 stainless steel and brass body construction
- Stem seal materials -
  - Fluorocarbon Rubber
  - Buna-N Rubber
  - Ethylene Propylene Rubber
  - Highly Fluorinated Fluorocarbon Rubber
- 100% factory tested

Actuated Valve Specifications

- Pressure Rating at all temperatures:
  - Size V4 Normally Closed:
    - 600 psig (41 bar) CWP
  - Size V6 Normally Closed:
    - 500 psig (35 bar) CWP
  - Normally Open:
    - 450 psig (31 bar) CWP
  - Double Acting:
    - 450 psig (31 bar) CWP
- Temperature Ratings -
  - PTFE Stem Tip: -20 °F to 200 °F (-29 °C to 93 °C)
  - PCTFE Stem Tip: -65 °F to 200 °F (-54 °C to 93 °C)



Model Shown: 4M-V4LQ-11AO-SS

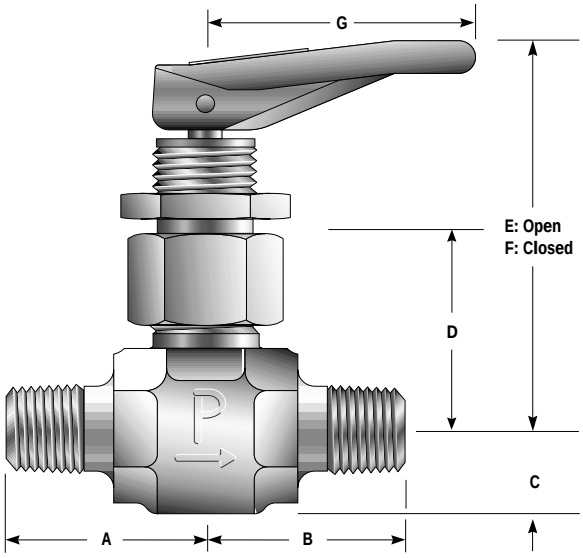


Model Shown: M6A-V4LQ-BN-11AC-SS

Materials of Construction Actuated Valve

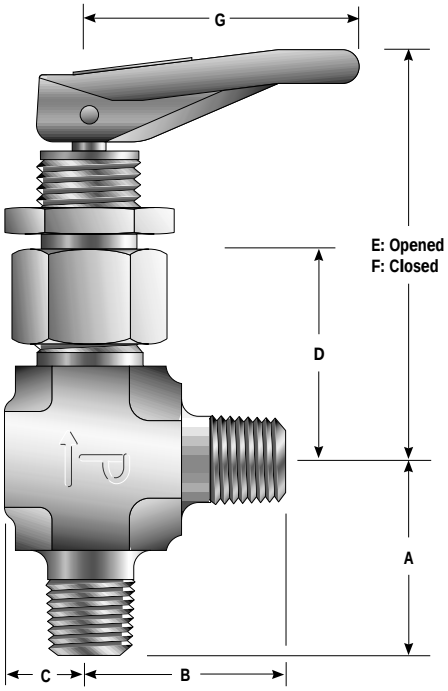
Item #	Description	Stainless Steel	Brass
1	Body	ASTM A 182 Type F316	ASTM B 283 Alloy C37700
2	Cap	ASTM A 479 Type 316	ASTM B 453 Alloy C34000
3	Spring*	Stainless Steel	Stainless Steel
4	Stem Seal**	Fluorocarbon Rubber	Fluorocarbon Rubber
5	Stem	ASTM A 276 Type 316	ASTM A 276 Type 316
6	Stem Washer	Stainless Steel	Stainless Steel
7	Lock Nut	316 Stainless Steel	316 Stainless Steel
8	Mounting Bracket	Aluminum	Aluminum
9	Actuator Base	Aluminum	Aluminum
10	Actuator Cap	Aluminum	Aluminum
11	Piston	Aluminum	Aluminum
12	Actuator Seals	Fluorocarbon Rubber	Fluorocarbon Rubber
13	Screws	Stainless Steel	Stainless Steel
14	Actuator Bushing	Aluminum	Aluminum
15	Stem Bushing***	ASTM A 479 Type 316	ASTM A 479 Type 316

* Spring not used on Double Acting (11AD) models
** Optional stem seal materials available - See How to Order
*** Stem Bushing not used on Normally Closed (11AC) models
Lubrication: Silicone paste



Model Shown: 4M-V4LQ-SSP

Panel Hole Diameter:
V4: 0.52 (13.2)
V6: 0.65 (16.5)
Max. Panel Thickness:
V4: 0.25 (6.4)
V6: 0.35 (8.9)



Model Shown: 4M-V4AQ-EPR-SSP

( ) Denotes dimensions in millimeters

V4 Dimensions / Flow Data

Basic Part Number	End Connections		Flow Data				Dimensions													
	Inlet (Port 1)	Outlet (Port 2)	Orifice				A†		B†		C		D		E		F		G	
			Inch	mm	C_v	X_T*	Inch	mm	Inch	mm	Inch	mm	Inch	mm	Inch	mm	Inch	mm	Inch	mm
2A-V4LQ 2A-V4AQ	1/8" Compression A-LOK®		0.078	2.0	0.14 0.15	0.52 0.50	1.10	27.9	1.10	27.9	0.41	10.4	0.93	23.6	2.88	73.2	1.84	46.7	1.25	31.8
2F-V4LQ 2F-V4AQ	1/8" Female NPT		0.176	4.5	0.36 0.49	0.71 0.64	0.81	20.6	0.81	20.6	0.41	10.4	0.93	23.6	2.88	73.2	1.84	46.7	1.25	31.8
2M-V4LQ 2M-V4AQ	1/8" Male NPT		0.125	3.2	0.30 0.35	0.50 0.55	0.81	20.6	0.81	20.6	0.41	10.4	0.93	23.6	2.88	73.2	1.84	46.7	1.25	31.8
2Z-V4LQ 2Z-V4AQ	1/8" Compression CPI™		0.078	2.0	0.14 0.15	0.52 0.50	1.10	27.9	1.10	27.9	0.41	10.4	0.93	23.6	2.88	73.2	1.84	46.7	1.25	31.8
4A-V4LQ 4A-V4AQ	1/4" Compression A-LOK®		0.176	4.5	0.36 0.49	0.71 0.64	1.15	29.2	1.15	29.2	0.41	10.4	0.93	23.6	2.88	73.2	1.84	46.7	1.25	31.8
4M-V4LQ 4M-V4AQ	1/4" Male NPT		0.176	4.5	0.36 0.49	0.71 0.64	0.94	23.9	0.94	23.9	0.41	10.4	0.93	23.6	2.88	73.2	1.84	46.7	1.25	31.8
4Z-V4LQ 4Z-V4AQ	1/4" Compression CPI™		0.176	4.5	0.36 0.49	0.71 0.64	1.15	29.2	1.15	29.2	0.41	10.4	0.93	23.6	2.88	73.2	1.84	46.7	1.25	31.8
6A-V4LQ 6A-V4AQ	3/8" Compression A-LOK®		0.176	4.5	0.36 0.49	0.71 0.64	1.17	29.7	1.17	29.7	0.41	10.4	0.93	23.6	2.88	73.2	1.84	46.7	1.25	31.8
6Z-V4LQ 6Z-V4AQ	3/8" Compression CPI™		0.176	4.5	0.36 0.49	0.71 0.64	1.17	29.7	1.17	29.7	0.41	10.4	0.93	23.6	2.88	73.2	1.84	46.7	1.25	31.8
M6A-V4LQ M6A-V4AQ	6mm Compression A-LOK®		0.176	4.5	0.36 0.49	0.71 0.64	1.13	28.7	1.13	28.7	0.41	10.4	0.93	23.6	2.88	73.2	1.84	46.7	1.25	31.8
M6Z-V4LQ M6Z-V4AQ	6mm Compression CPI™		0.176	4.5	0.36 0.49	0.71 0.64	1.13	28.7	1.13	28.7	0.41	10.4	0.93	23.6	2.88	73.2	1.84	46.7	1.25	31.8
M8A-V4LQ M8A-V4AQ	8mm Compression A-LOK®		0.176	4.5	0.36 0.49	0.71 0.64	1.13	28.7	1.13	28.7	0.41	10.4	0.93	23.6	2.88	73.2	1.84	46.7	1.25	31.8
M8Z-V4LQ M8Z-V4AQ	8mm Compression CPI™		0.176	4.5	0.36 0.49	0.71 0.64	1.13	28.7	1.13	28.7	0.41	10.4	0.93	23.6	2.88	73.2	1.84	46.7	1.25	31.8

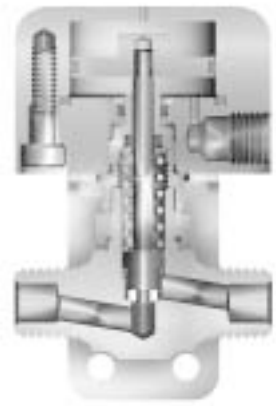
* Tested in accordance with ISA S75.02. Gas flow will be choked when $P_1 - P_2 / P_1 = x_T$.
† For CPI™ and A-LOK®, dimensions are measured with nuts in the finger tight position

V6 Dimensions / Flow Data

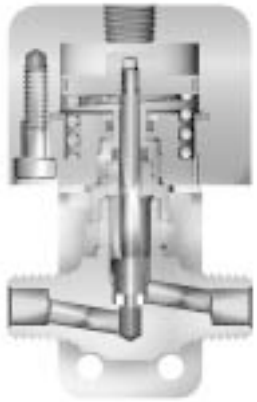
Basic Part Number	End Connections		Flow Data				Dimensions													
	Inlet (Port 1)	Outlet (Port 2)	Orifice		C_v	X_T*	A†		B†		C		D		E		F		G	
			Inch	mm			Inch	mm	Inch	mm	Inch	mm	Inch	mm	Inch	mm	Inch	mm	Inch	mm
4F-V6LQ 4F-V6AQ	1/4" Female NPT		0.250	6.4	0.83 0.92	0.70 0.68	1.00	25.4	1.00	25.4	0.53	13.5	1.07	27.2	3.45	87.6	2.13	54.1	1.60	40.6
6A-V6LQ 6A-V6AQ	3/8" Compression A-LOK®		0.250	6.4	0.83 0.92	0.70 0.68	1.29	32.8	1.29	32.8	0.53	13.5	1.07	27.2	3.45	87.6	2.13	54.1	1.60	40.6
6Z-V6LQ 6Z-V6AQ	3/8" Compression CPI™		0.250	6.4	0.83 0.92	0.70 0.68	1.29	32.8	1.29	32.8	0.53	13.5	1.07	27.2	3.45	87.6	2.13	54.1	1.60	40.6
8A-V6LQ 8A-V6AQ	1/2" Compression A-LOK®		0.250	6.4	0.83 0.92	0.70 0.68	1.37	34.8	1.37	34.8	0.53	13.5	1.07	27.2	3.45	87.6	2.13	54.1	1.60	40.6
8Z-V6LQ 8Z-V6AQ	1/2" Compression CPI™		0.250	6.4	0.83 0.92	0.70 0.68	1.37	34.8	1.37	34.8	0.53	13.5	1.07	27.2	3.45	87.6	2.13	54.1	1.60	40.6
M10A-V6LQ M10A-V6AQ	10mm Compression A-LOK®		0.250	6.4	0.83 0.92	0.70 0.68	1.30	33.0	1.30	33.0	0.53	13.5	1.07	27.2	3.45	87.6	2.13	54.1	1.60	40.6
M10Z-V6LQ M10Z-V6AQ	10mm Compression CPI™		0.250	6.4	0.83 0.92	0.70 0.68	1.30	33.0	1.30	33.0	0.53	13.5	1.07	27.2	3.45	87.6	2.13	54.1	1.60	40.6

* Tested in accordance with ISA S75.02. Gas flow will be choked when $P_1 - P_2 / P_1 = X_T$.
† For CPI™ and A-LOK®, dimensions are measured with nuts in the finger tight position

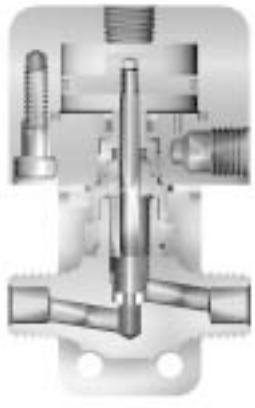
Pneumatically Actuated Valves



Normally Closed (11AC)

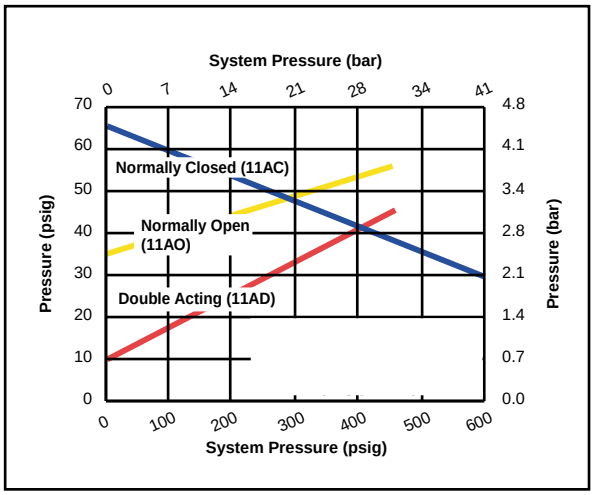


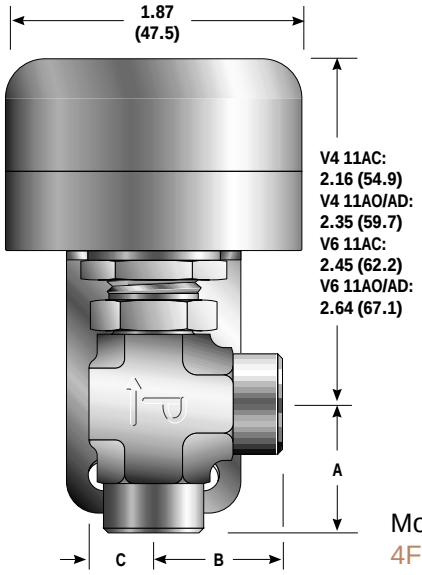
Normally Open (11AO)



Double Acting (11AD)

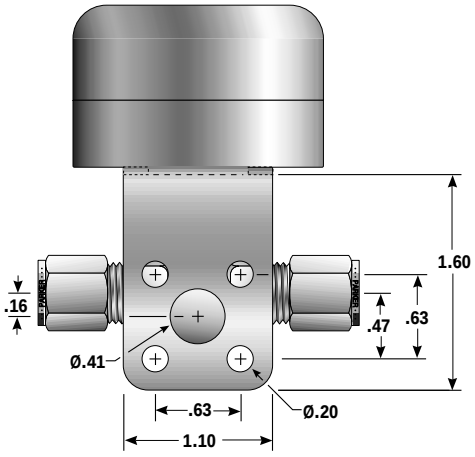
Minimum Actuating Pressures



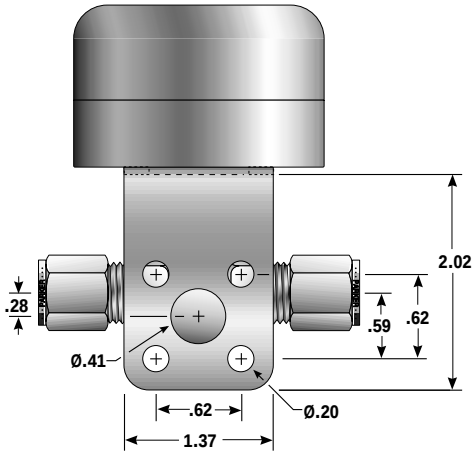


Model Shown:
4F-V6AQ-11AO-B

V4 Valve Mounting Bracket



V6 Valve Mounting Bracket



How to Order Manual Toggle Valves

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	*	-	V4LQ	K	-	BN	-	SSP
	①	②		③	④		⑤		⑥
	Inlet Port	Outlet Port		Valve Series	Stem Tip		Stem Seal		Body Material

Describes a V4 Series inline pattern toggle valve equipped with 1/4" CPI™ compression inlet and outlet ports, PCTFE stem tip, Buna-N rubber stem seal, and stainless steel construction with panel mounting nut.

① Inlet Port	② Outlet Port	③ Valve Series	④ Stem Tip	⑤ Stem Seal	⑥ Body Material
2A, 2F, 2M, 2Z, 4A, 4M, 4Z, 6A, 6Z, M6A, M6Z, M8A, M8Z		**V4LQ** **V4AQ**	**Blank -** PTFE	**Blank -** Fluorocarbon Rubber **BN**- Buna-N Rubber **EPR-** Ethylene Propylene Rubber **KZ-** Highly Fluorinated Fluorocarbon Rubber	**SSP -** Stainless Steel with Panel Nut **BP -** Brass with Panel Nut
4F, 6A, 6Z, 8A, 8Z, M10A, M10Z		**V6LQ** **V6AQ**	**K -** PCTFE		

How to Order Actuated Valves

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

Example:	4M	4A	-	V4AQ	___	-	___	11AC	-	B
	①	②		③	④		⑤	⑥		⑦
	Inlet Port	Outlet Port		Valve Series	Stem Tip		Stem Seal	Actuator Type		Body Material

Describes a V4 Series pneumatically actuated (normally closed) angle pattern valve equipped with a 1/4" MNPT inlet port, a 1/4" A-LOK® compression outlet port, PTFE stem tip, Fluorocarbon rubber stem seal, brass construction with mounting bracket.

How to Order Actuated Valves - Continued

① Inlet Port	② Outlet Port	③ Valve Series	④ Stem Tip	⑤ Stem Seal	⑥ Actuator Type	⑦ Body Material
2A, 2F, 2M, 2Z, 4A, 4M, 4Z, 6A, 6Z, M6A, M6Z, M8A, M8Z		**V4LQ** **V4AQ**	**Blank -** PTFE	**Blank -** Fluorocarbon Rubber **BN-** Buna-N Rubber **EPR-** Ethylene Propylene Rubber **KZ-** Highly Fluorinated Fluorocarbon Rubber	**11AC** - Normally Closed **11AO** - Normally Open **11AD** - Double Acting	**SS -** Stainless Steel **B -** Brass
4F, 6A, 6Z, 8A, 8Z, M10A, M10Z		**V6LQ** **V6AQ**	**K -** PCTFE			

How to Order Options

Colored Nylon Handles – Add the designator corresponding to the correct handle color as a suffix to the part number. Black is standard, **W** - white, **B** - blue, **G** - green, **R** - red, **Y** - yellow. Example: M10A-V6LQ-SSP**-G**

Anti-locking Handles - Prevents the handle from locking in the open position. Add **-ALH** as a suffix to the part number. Example: 4M4F-V4LQ-BN-SSP**-ALH**

Handle Positioner - Aids in keeping the handle from rotating away from a desired position. To order, add the suffix **-Q4** or **Q6** to the end of the part number. Example: 4M4F-V6LQ-EPR-SSP**-Q6**

Position Indicator Switch - Electric indicator activates when an 11AC valve is in the open position. To order, add the letter **S** to the actuator. Example: 4Z-V4AQ-11AC**S**-SS

Position Indicator - Mechanical indicator rises when an 11AC valve moves to the open position. To order, add the letter **I** to the actuator. Example: 8A-V6LQ-KZ-11AC**I**-B

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-V4AQ-EPR-SSP**-C3**

How to Order Maintenance Kits

Colored Nylon Handles with Handle Pin - Valve Series-Handle-Color. Example: **V4Q-HANDLE-BLUE**

Handle Positioners - Enables the user to position the handle in a desired location and prevents it from rotating. V4: **V4Q-HANDLE-POSITIONER**; V6:**V6Q-HANDLE-POSITIONER**

Rubber Seal and Stem Kits - Consists of One Stem; One Rubber O-ring Stem Seal; One Packing Washer; One Handle Pin; Maintenance Instructions. Kit-Valve Series and Stem Tip-Seal Material. Examples: **KIT-V4Q-BN; KIT-V6QK-V**

⚠ WARNING

FAILURE, IMPROPER SELECTION OR IMPROPER USE OF THE PRODUCTS AND/OR SYSTEMS DESCRIBED HEREIN OR RELATED ITEMS CAN CAUSE DEATH, PERSONAL INJURY AND PROPERTY DAMAGE.

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Parker Instrumentation

Catalog 4110-VQ, 30M, 07/01



Subject to Change