Maintenance Instructions

MI-102 Revision -

VQ-11 Series Needle Valve

MAXIMUM ALLOWABLE WORKING PRESSURE AND TEMPERATURE

Valve Size	Specifications	
V4		Actuator Pressure:
	Normally Open	75 Psig (.52 MPa)
	Normally Closed	75 Psig (.52 MPa)
	Double Acting	55 Psig (.38 MPa)
		System Pressure:
	Normally Open	450 Psig @ 70 °F (3.1 MPa @ 21 °C)
	Normally Closed	600 Psig @ 70 °F (4.1 MPa @ 21 °C)
	Double Acting	450 Psig @ 70 °F (3.1 MPa @ 21 °C)
V6		Actuator Pressure:
	Normally Open	75 Psig (.52 MPa)
	Normally Closed	75 Psig (.52 MPa)
	Double Acting	55 Psig (.38 MPa)
		System Pressure:
	Normally Open	450 Psig @ 70 °F (3.1 MPa @ 21 °C)
	Normally Closed	500 Psig @ 70 °F (3.4 MPa @ 21 °C)
	Double Acting	450 Psig @ 70 °F (3.1 MPa @ 21 °C)

Always consult your authorized Parker representative if questions arise. The arrow on the Valve Body indicates the normal direction of flow.

Parker Hannifin Corporation
Instrumentation Valve Division
Jacksonville, Alabama

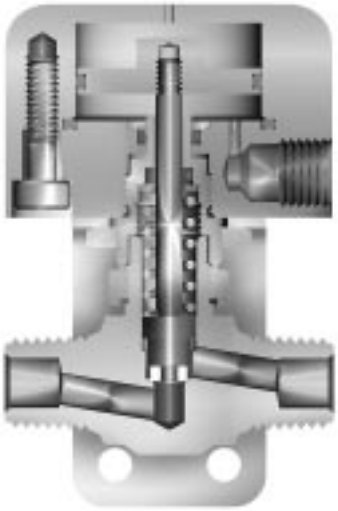

Figure 1: VQ-11AC Series Actuated Valve Cross Sectional View

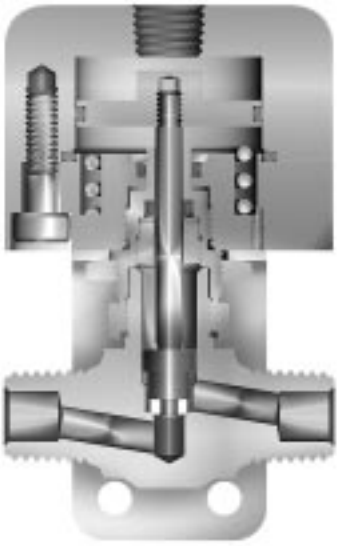

Figure 2: VQ-11AO Series Actuated Valve Cross Sectional View

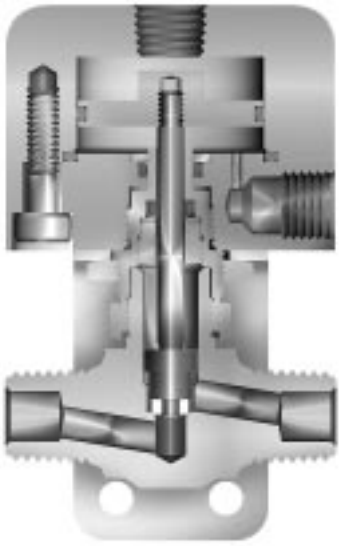

Figure 3: VQ-11AD Series Actuated Valve Cross Sectional View

AIR ACTUATOR CONNECTIONS

1. Air Actuator ports are 1/8-27 NPT internal female pipe threads. When making pipe thread connections to the air actuator, use a high quality pipe joint compound or PTFE tape made for this purpose. PTFE tape should not be overhanging or covering the first external pipe thread.
2. Engage the external pipe connection into the actuator, hand tight.
3. With a proper wrench, continue to tighten the connection to a leak tight joint.
4. It is recommended that no wrenching be applied to the actuator during this make-up but, rather be held firmly be hand. If clamping of the actuator for make-up is unavoidable, be certain the entire actuator length (or height) is supported to avoid crushing.

NOTE: Installation of this 1/8-27 NPT Port may be achieved by loosening the lock-nut located under the actuator with a 1 inch hex wrench. Rotate the actuator by hand in a counter-clockwise direction until the proper port alignment is realized but never more than one full turn; retighten the lock-nut to 25 in-lbs (2.8 N-m).

NORMALLY CLOSED VALVE (11AC)
STEM AND O-RING REPLACEMENT

Disassembly

MAKE CERTAIN THE SYSTEM IN WHICH THE VALVE IS INSTALLED IS DRAINED AND/OR EXHAUSTED OF ALL PRESSURES BEFORE VALVE DISASSEMBLE OR REMOVAL OCCURS.

1. Loosen the Lock Nut with a 1 inch hex wrench and remove the Bracket.
2. Pressurize the Air Actuator with 60 psig to open the valve before disassembling the valve.
3. Remove the Bonnet/Actuator Assembly by unthreading from the Valve Body using the appropriate wrench:
   - V4Q 5/8 inch hex wrench
   - V6Q 7/8 inch hex wrench
4. Relieve the air pressure from the Air Actuator.
5. Remove the three Socket Head Screws on the Actuator using a 5/32 inch Allen wrench.
6. Remove the Actuator Cap from the Actuator Assembly.
7. Disengage the Piston by unthreading with a 1/4 inch hex wrench on the Piston flats while holding the Stem flats with a 1/4 inch hex wrench.
8. Remove the Stem and Spring from the Bonnet.
9. Remove the Washer and O-Ring from the Bonnet.

Reassembly

MAKE CERTAIN THAT ALL PARTS ARE FREE OF DIRT OR OTHER CONTAMINANTS BEFORE REASSEMBLY.

1. Apply a liberal amount of lubricant, as consistent with the valve's service requirements, to the new O-Ring. Always contact your Parker representative if questions arise.
2. Place the new O-Ring and Washer into the Bonnet
3. Carefully insert the Spring and Bonnet making sure not to damage the O-Ring.
4. Apply a drop of Loctite 222 or equivalent to the Stem threads.
5. Thread the Stem into the Piston and torque to 12 in-lb.
6. Ensure the Piston O-Ring and the Body seal O-Ring are properly installed and lubricated.
7. Carefully install the Actuator Cap to ensure the O-Rings are not damaged. Re-install and torque the three screws to 15 in-lb.
8. Pressurize the Air Actuator with 60 psi before torquing the Bonnet/Actuator Assembly to the body.
9. Apply lubricant to the leading edge and threads of the valve body. Thread the body into the Bonnet/Actuator Assembly and torque accordingly:

Valve Size	Brass Bodies	Stainless Steel Bodies
V4Q	100 in-lbs (11.3 N-m)	175 in-lbs (19.7 N-m)
V6Q	100 in-lbs (11.3 N-m)	300 in-lbs (33.9 N-m)

10. Place the Bracket between the Panel Nut and the Actuator Body.
11. Installation alignment of the 1/8-27 NPT port may be achieved by rotating the Actuator Body by hand in a counter-clockwise direction, but never more than one full turn. Torque the Panel Nut to 25 in-lbs.

NORMALLY OPEN VALVE (11AO)
STEM AND O-RING REPLACEMENT

Disassembly

MAKE CERTAIN THE SYSTEM IN WHICH THE VALVE IS INSTALLED IS DRAINED AND/OR EXHAUSTED OF ALL PRESSURES BEFORE VALVE DISASSEMBLY OR REMOVAL OCCURS.

1. Loosen the Lock Nut with a 1 inch hex wrench and remove the Bracket.
2. Remove the Bonnet/Actuator Assembly by unthreading from the Valve Body using the appropriate wrench:
   - V4Q 5/8 inch hex wrench
   - V6Q 7/8 inch hex wrench
3. Remove the three Socket Head Screws on the Actuator using a 5/32 inch Allen wrench.
4. Remove the Actuator Cap from the Actuator Assembly.
5. Disengage the Piston by unthreading with a 1/4 inch hex wrench on the Piston flats while holding the Stem flats with a 1/4 inch hex wrench. EXERCISE CARE TO AVOID INJURY AND DAMAGE FROM THE COMPRESSED SPRING.
6. Remove the Stem and Spring from the Bonnet.
7. Remove the Threaded Insert from the Bonnet with a screwdriver.
8. Remove the Washer and O-Ring from the Bonnet.

Reassembly

MAKE CERTAIN THAT ALL PARTS ARE FREE OF DIRT OR OTHER CONTAMINANTS BEFORE REASSEMBLY.

1. Apply a liberal amount of lubricant, as consistent with the valve's service requirements, to the new O-Ring. Always contact your Parker representative if questions arise.
2. Place the new O-Ring and Washer into the Bonnet.
3. Fully engage the Threaded Insert into the bonnet. Carefully insert the Stem into the Bonnet making sure not to damage the O-Ring.
4. Apply a drop of Loctite 222 or equivalent to the Stem threads.
5. Place the Spring into the Actuator Body.
6. Thread the Stem into the Piston and torque to 12 in-lb.
7. Ensure the Piston O-Ring and the Body seal O-Ring are properly installed and lubricated.
8. Carefully install the Actuator Cap to ensure the O-Rings are not damaged. Re-install and torque the three screws to 15 in-lb.
9. Apply lubricant to the leading edge and threads of the valve body. Thread the body into the Bonnet/Actuator Assembly and torque accordingly:

Valve Size	Brass Bodies	Stainless Steel Bodies
V4Q	100 in-lbs (11.3 N-m)	175 in-lbs (19.7 N-m)
V6Q	100 in-lbs (11.3 N-m)	300 in-lbs (33.9 N-m)

10. Place the Bracket between the Panel Nut and the Actuator Body.
11. Ensure the Actuator Body is properly bottomed on the Bonnet and torque the Lock Nut with 25 in-lbs.

DOUBLE ACTING VALVE (11AD)
STEM AND O-RING REPLACEMENT

Disassembly

MAKE CERTAIN THE SYSTEM IN WHICH THE VALVE IS INSTALLED IS DRAINED AND/OR EXHAUSTED OF ALL PRESSURES BEFORE VALVE DISASSEMBLY OR REMOVAL OCCURS.

1. Loosen the Lock Nut with a 1 inch hex wrench and remove the Bracket.
2. Remove the Bonnet/Actuator Assembly by unthreading from the Valve Body using the appropriate wrench:
   V4Q 5/8 inch hex wrench
   V6Q 7/8 inch hex wrench
3. Remove the three Socket Head Screws on the Actuator using a 5/32 inch Allen wrench.
4. Remove the Actuator Cap from the Actuator Assembly.
5. Disengage the Piston by unthreading with a 1/4 inch hex wrench on the Piston flats while holding the Stem flats with a 1/4 inch hex wrench.
6. Remove the Stem from the Bonnet.
7. Remove the Threaded Insert from the Bonnet with a screwdriver.
8. Remove the Washer and O-Ring from the Bonnet.

Reassembly

MAKE CERTAIN THAT ALL PARTS ARE FREE OF DIRT OR OTHER CONTAMINANTS BEFORE REASSEMBLY.

1. Apply a liberal amount of lubricant, as consistent with the valve's service requirements, to the new O-Ring. Always contact your Parker representative if questions arise.
2. Place the new O-Ring and Washer into the Bonnet.
3 Fully engage the Threaded Insert into the bonnet. Carefully insert the Stem into the Bonnet making sure not to damage the O-Ring.
4. Apply a drop of Loctite 222 or equivalent to the Stem threads.
5. Thread the Stem into the Piston and torque to 12 in-lb.
6. Ensure the Piston O-Ring and the Body seal O-Ring are properly installed and lubricated.
7. Carefully install the Actuator Cap to ensure the O-Rings are not damaged. Re-install and torque the three screws to 15 in-lb.
8. Apply lubricant to the leading edge and threads of the valve body. Thread the body into the Bonnet/Actuator Assembly and torque accordingly:

Valve Size	Brass Bodies	Stainless Steel Bodies
V4Q	100 in-lbs (11.3 N-m)	175 in-lbs (19.7 N-m)
V6Q	100 in-lbs (11.3 N-m)	300 in-lbs (33.9 N-m)

9. Place the Bracket between the Lock Nut and the Actuator Body.
10. Installation alignment of the 1/8-27 NPT Port may be achieved by rotating the Actuator Body by hand in a counter-clockwise direction, but never more than one full turn. Torque the Lock Nut to 25 in-lbs

VALVE CONNECTOR MAKE-UP INSTRUCTIONS

MALE AND FEMALE PIPE PORTS

Wrench flats are provided on the Valve Body. It is recommended a smooth- jawed wrench or vise be used to grip the Valve Body.

1. On the male threaded part of the connection, apply a high quality pipe joint compound or PTFE tape made for this purpose. When PTFE tape is used, it is recommended two full turns of tape be applied. PTFE tape should not be overhanging or covering the first thread
2. Engage the Valve and the other component part together, until hand-tight.
3. With a proper wrench, holding both the Valve and the component part, continue to tighten to achieve a leak-tight joint.

ULTRASEAL CONNECTIONS

1. Insert the proper O-Ring into the UltraSeal fitting's O-Ring groove. Position the UltraSeal gland sealing face against the O-Ring, and then advance the Nut to a finger-tight position.
2. A positive seal is obtained by advancing the Nut no less than 1/4 turn from the finger-tight position. Proper UltraSeal make-up is achieved when a sharp rise in required application torque occurs, which indicates proper seal face contact and O-Ring seal compression into the UltraSeal groove.

VACUSEAL CONNECTIONS

1. A positive seal is obtained by advancing the Nut 1/8 turn from the finger-tight position.
2. A new gasket should be installed upon each fitting re-make to insure system pressure integrity.

TUBE FITTING CONNECTIONS

1. Insert the tube into the Valve port until the tube bottoms out in the Valve Body. Care should be exercised to insure the tube is properly aligned with the Valve Body and port.
2. Normal make-up for US Customary port sizes 1 thru 3 (1/16 thru 3/16 inch) and SI port sizes 2 thru 4 (2 thru 4 mm) is 3/4 turn from finger tight. Normal make-up for US Customary port sizes 4 thru 16 (1/4 thru 1 inch) and SI port sizes 5 thru 25 (5 thru 25 mm) is 1 1/4 turn from finger tight. For larger port sizes consult Parker Ferrule Presetting Tool Instructions.

PLEASE FOLLOW THE ABOVE DIRECTIONS FOR COUNTING THE NUMBER OF TURNS FOR PROPER FITTING MAKE-UP. DO NOT MAKE-UP TUBE FITTINGS BY TORQUE OR "FEEL". VARIABLES SUCH AS TUBING AND FITTING TOLERANCES, TUBE WALL THICKNESS, AND THE LUBRICITY OF NUT LUBRICANTS CAN RESULT IN AN IMPROPERLY ASSEMBLED TUBE FITTING CONNECTION.

A -Two ferrule A-LOK® compression port

Z -Single ferrule CPI™ compression port

F -ANSI/ASME B1.20.1 Internal pipe threads

V -VacuSeal face seal port

Q -UltraSeal face seal port

M -ANSI/ASME B1.20.1 External pipe threads

WARNING

FAILURE OR 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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ALL PARKER VALVES MUST PASS A RIGID OPERATIONAL AND LEAKAGE TEST BEFORE LEAVING THE FACTORY. IT IS RECOMMENDED AFTER ANY REASSEMBLY, THE VALVE SHOULD BE TESTED BY THE USER FOR OPERATION AND LEAKAGE. IF THESE INSTRUCTIONS ARE NOT FULLY COMPLIED WITH, THE REPAIRED PRODUCT MAY FAIL AND CAUSE DAMAGE TO PROPERTY OR INJURY TO PERSONS. PARKER HANNIFIN CANNOT ASSUME RESPONSIBILITY FOR PERFORMANCE OF A CUSTOMER SERVICED VALVE.

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 Instrumentation

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