

High Vacuum Valves Leader in Quality and Value

81000 Series Aluminum Gate Valve Installation and Repair Manual



Dear Customer,

Thank you for choosing HVA as your vacuum valve supplier. Your valve will give you years of trouble-free operation. Please use this manual for hints on installation and repairs.

Read all instructions in this manual before installing or attempting to service the valve.

For safety, on pneumatic valves, remove air to actuator before disassembly. Do not attempt to disassemble or service the valve unless the air-pneumatic supply has been removed or severe injury could occur.

Always wear powder-free latex gloves when performing maintenance or repairs of the gate valve. Oil from bare fingers may be missed during wipe down of parts causing a leak.

Be careful not to scratch an o-ring groove. Use a plastic pick for o-ring removal. Small scratches parallel to the groove may not be harmful, but scratches across the groove cause leaks.

Apply grease sparingly.

Avoid twisting, stretching or deforming any o-ring.



Pre-Installation

WARNING: NEVER PUT HANDS OR ANY



OTHER OBJECT IN THE GATE VALVE. SERIOUSE INJURIES WILL OCCUR AND THE VALVE WILL BE DAMAGED Determine that the valve and adjacent plumbing in the vacuum system will be adequately supported when installed. To minimize straining of the valve body, make sure the mating flanges are in line, flat, parallel and the correct distance apart.

Remove the flange cover and wipe the flange and gaskets with a lint-free, dry wipe. If installing an o-ring seal flange, apply a light film of vacuum grease (Apiezon-L grease or an equivalent is recommended) to the o-ring and install in the flange groove.

Bench Test (for pneumatic valves only)

Before installing the valve into a system, run a bench test to verify that gate functions are operational. A capacitance manometer is not necessary for test purposes. If possible, test the unit when it is under vacuum

Connect air lines by pressing on the air fitting ring and inserting the air line. Release the air fitting ring to grip and secure the air line. Smaller valves have the solenoid remotely mounted. The fitting closest to the bonnet will open the valve, and the other fitting will close the valve. In all cases, air is exhausted through the solenoid.

Confirm that the valve actuates properly by carefully checking the operation of the valve using the minimum air pressure required to achieve full closure. First, make sure the gate is actuated into the open position. Next, slowly close the valve using the minimum amount of air required until you visually see the gate o-ring make contact. Increase pressure by five (5) PSIG (0.35 bar) increments, as necessary to achieve a seal (see operating tag on valve).

For continued trouble-free operation, it is recommended that an air filter/lubricator be used in the air line system. Refer to the solenoid nameplate for the correct voltage when connecting to the electric service. Visually check the valve opening for any obstruction, but do not put hands or any other object in the valve.

* Air Operated: Connect the compressed air supply to the valve using Teflon® tape or an equivalent on the threads to ensure leak-proof joints. Carefully check the operation of the valve using 20 PSIG (1.38 bar) air pressure (required to achieve full closure). The valve is now set and ready for operation.



Air line installation for 5/32" (4mm) tube



Recommended Protection for Reed

Reed switch with open leads

* **Position Indicators:** Position indicator switches are preset and indicate when the valve is fully opened or fully closed. Wires are marked for **OPEN/CLOSE** indicators. See diagrams below for specs and wiring.

Reed Switch Specifications

| Sensor Type: Two wire magnetic sensing normally open switch | | Switch Sensors |
|--|---|--|
| Max: Electrical Ratings Contact Rating: Current Switching: Carry: Resistance Contact: Capacitance Contact: Voltage Switching: Breakdown: Shock Resistance: Vibration Resistance: Environment: Protection: Lead Wire: Cycle Life: Temperature Range: Storage Temperature: | 3 WATT-MAX. .5 A MAX. .5 A MAX. .15 Ohms-MAX. .2 pT - TYP. 100 V DC MAX. 170 V DC MAX. 170 V DC MAX. 170 V DC MAX. 150 G MAX 30G 50-2000 HTZ 1966 (IEC STANDARD) PVC INSULATED 2 X 24 AWG 5 MILLION MIN. -40° TO 212°F (-40° TO +100°C) -85° TO 257°F (-65° TO +125°C) | USE IN THE PRESENCE OF INDUCTIVE LOADS (MAGNETIC RELATS, ETC.): SWITCH USE WIFEN LONG LEAD WIRES (>39 ff or 10 m) ARE NECESSARY BETWEEN SENSOR AND LOAD: CHOKE COIL: 1-5mh SUNCH SUNCH SUNCH SUNCH MOUNT AS CLOSE AS POSSIBLE |
| Release Time: .1 MS MAX. Standard Reed Switch with Ope | en Leads | Standard Reed Switch with 6-Pin Connector |
| OPEN C contraction c contracti | TAGGED: Open (Blue) | |
| 1 CLOSED C | TAGED: CLOSED (YELLOW) | OPEN |

Installation

It is preferable to install the valve with vacuum on the backside of the gate/sealing side so the valve remains under vacuum at all times and the pumpdown of the valve body is eliminated.

Valve Orientation: For sizes 1.5" [DN40 mm] to 6" [DN160 mm], any orientation; for sizes 8" [DN200 mm] to 20" [DN500 mm] and greater, contact factory. HVA valves are adjusted at the factory for a horizontal actuation. Valves that are mounted with vertical actuation may require a different speed control adjustment to compensate for the weight of the gate-carriage assembly.

Making sure that no foreign particles enter the valve, proceed with installation. When installing a valve, it is imperative that proper length bolts be used.



Bolts longer than the thickness of both mating flanges will damage the body and destroy the seal surface area for the gate o-ring. For best results, always use bolts that are at least 1/4-inch (6.4mm) shorter than the thickness of both mating flanges.

Lightly Grease the flange bolts with high temperature, non-galling type grease such as Loctite[®] Heavy Duty Anti-Seize paste or equivalent.

Carefully tighten the bolts around the flange using proper torque sequence until flanges are metal to metal and bolts are at proper torque. See chart below for proper torque on bolts.

| Valve size | | Torque | |
|------------|----------|---------|-------------|
| inch | mm | ft-Ibs | N∙m |
| 1.5" | 40 | 8 - 10 | 10.9 - 13.6 |
| 2.0" - 20" | 50 - 500 | 15 - 20 | 20.4 - 27.2 |

Operation

For continued trouble-free operation, keep the valve clean and free of contaminates. Valves are designed to run at 80 PSIG (5.5 bar) maximum. Do not operate pneumatic valves above 80 PSIG (5.5 bar). Higher PSIG (bar) will shorten the lifespan of the valve.

Gate and Bonnet Seal Replacement

Tools and Materials Required

- Allen wrench set
- 1/2" box wrench
- O-ring pick, plastic
- Powder-free latex gloves
- Grease for o-rings: Apiezon L or equivalent
- Isopropyl alcohol (IPA)
- Appropriate replacement o-rings



Procedure

- 1. Both the station and the pump corresponding to the gate valve should be vented to atmosphere.
- 2. Actuate valve to GATE OPEN position.
- 3. For safety, remove air to actuator (if pneumatic).
- 4. Remove bolts that hold Bonnet Actuator Carriage Assembly to Body and pull out Assembly.
- 5. Remove Bonnet o-ring. Use a plastic o-ring pick to avoid scratching or marring the o-ring groove.
- 6. Remove Gate o-ring with plastic pick, taking care not to scratch the o-ring groove; discard the o-ring.
- 7. Clean new o-ring groove with IPA and dry out with Nitrogen or CDA (compressed dry air).
- 8. Apply a light coat of Apiezon L grease or equivalent to the new Gate o-ring.
- 9. Install new o-ring, taking care to avoid twisting or deforming. Start by pressing the o-ring at two points that are 180° apart. Continue pressing until the entire o-ring is in the groove, then finish smoothing out the o-ring all the way around the groove.
- 10. Apply a light coat of Apiezon L or equivalent grease to the new bonnet assembly Viton o-ring.
- 11. Install new o-ring on Bonnet assembly, taking care to avoid twisting or deforming.
- 12. Replace Bonnet Actuator Carriage Assembly into body.
- 13. Install bolts and tighten.
- 14. Leak check.





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Product Warranty

Each product sold by HVA, LLC (HVA) is warranted to be free from manufacturing defects that adversely affect its normal functioning during one-year immediately following delivery therof by HVA (or in the case of products and components of any product purchased by HVA from another for any lesser period of time that such manufacturer warrants said product or component to HVA).

Not withstanding the warranty provisions set forth above, all of HVA's obligations with respect to such warranties shall be contingent on licensee's use of the licensed programs in accordance with HVA's instructions as provided by HVA in the documentation or otherwise, and as may be amended, supplemented, or modified by HVA from time to time. HVA shall have no warranty obligations with respect to any product which has been:

A. Operated by purchaser in a manner inconsistent with requirements set forth in the documentation or under the provisions of this agreement or that has been modified or repaired by any party other than HVA;

B. Damaged in any manner and by any cause other than the act of omission of HVA; or

C. Operated or maintained in environmental conditions outside the parameters designated by HVA in the documentation elsewhere.

HVA shall not be liable for any damage, loss or expense, whether consequential, special, incidental, direct or otherwise caused by, arising out of or connected with the manufacture, delivery (including delay in, or failure to, deliver), packaging, storage or use of any product sold or delivered by HVA, whether or not resulting from negligence or from breach of contract except that in the event that any product so sold or delivered by HVA shall fail to conform to the foregoing warranty, the purchaser, as its exclusive remedy, shall upon prompt notice to HVA of any such defect or failure and upon return of the product, part of component in question to HVA at its factory, with transportation charges prepaid, and upon HVA's inspection confirming the existence of any defect inconsistent with said warranty or any such failure, be entitled to have such defect or failure cured at HVA's factory and at no charge therefore, by replacement or repair of such product as HVA may elect.

The warranties stated are the sole and exclusive warranties offered by HVA. There are no other warranties respecting the products provided hereunder, either express or implied, including but not limited to any warranty of design, merchantability, or fitness for a particular purpose, even if HVA has been informed of such purpose. No agent of HVA is authorized to alter or exceed the warranty obligations of HVA as set forth herein.

Warranty Repairs

If a unit requires service, contact HVA to discuss the problem. Prior to returning the unit, a Return Material Authorization (RMA) number must be assigned by HVA. That RMA number must be legibly marked on the outside of the shipping box. Place the unit in a clean plastic bag to protect the unit from packaging materials. Package the unit in its original box or an equivalent one. Cushion the unit securely to prevent damage during shipping.

If a unit is received damaged or dirty due to improper packaging, it will be necessary for HVA to charge the customer for the additional cleaning or repair required. Any product received that does not comply with the above instruction is subject to return at the customer's expense.

Non-Warranty Repairs

If repairs are needed after the warranty period expires, contact HVA to discuss the problem. Refer to the above Warranty Repairs information for return procedures. Repairs are warranted for 90 days.

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