

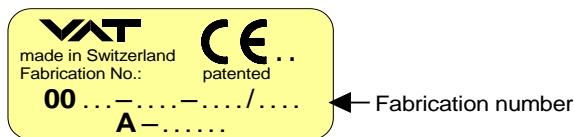
Transfer Valve / Insert **MONOVAT S022/032** with double acting pneumatic actuator



This manual is valid for the valve ordering number(s):

VAT Series 022 / 032
 SIZES 01..10, 12 and 13
 Valve Types A, B
 Insert Type C

The fabrication number is indicated on each product as per the label below (or similar):



Explanation of symbols:



Read declaration carefully before you start any other action!



Keep body parts and objects away from the valve opening!



Attention!



Hot surfaces; do not touch!



Product is in conformity with EC guidelines, if applicable!



Loaded springs and/or air cushions are potential hazards!



Disconnect electrical power and compressed air lines. Do not touch parts under voltage!



Wear gloves!



Read these «**Installation, Operating & Maintenance Instructions**» and the enclosed «**General Safety Instructions**» carefully before you start any other action!



Imprint:

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1 Use of product

Use product for clean and dry indoor vacuum applications under the conditions indicated in chapter «Technical data» only! Other applications are only allowed with the written permission of VAT.

1.1 Technical data

please refer to according product data sheet VAT P/N 277756

2 Installation

2.1 Unpacking

Leave the product sealed in the plastic bag as long as possible in order to protect them from dust and particles. The valve/insert and seals must not be cleaned before installation. The insert is assembled at VAT in a clean environment and sealed in a plastic bag.

2.2 Installation into the system

The dimensions and tolerances specified on the dimensional drawing must be met under all operating conditions. Attach the valve/insert to a clean system only.

The screws on the valve flanges have to be tightened uniformly in crosswise order (torque = 15Nm).

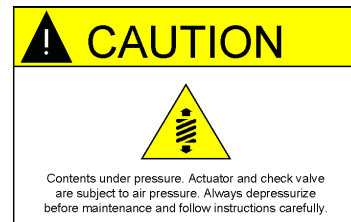
Put the insert into the chamber, wait until the insert and the chamber have nearly reached the same temperature, then tighten the screws on the seat uniformly: torque = 15 Nm.



Connect compressed air and electrical power only if:
– insert is installed into the vacuum system
– moving parts cannot be touched



Do not touch electrical parts under voltage.



2.3 Connections

2.3.1 Compressed air connection

Compressed air pressure: ≤ 7.0bar / 100psi (max. overpressure for the pneumatic components)
Use only clean, dry or slightly oiled air.

Recommended minimal actuation pressures: Minimal actuation pressures translate into less force transmitted to the actual dynamic seal. The listed (see product data sheet VAT P/N 277756) pressures resulted during tests with the according sealing materials under room temperature 20°C without consideration of any compression set during any life time cycling of the insert. Values based on an initial leak rate specified for the individual sealing material.

In order to maximize the life time of the gate, actuation pressure should be set as low as possible, but not so low to produce an unacceptable leak rate in the closed position.

Connection For ordering codes 0 . 2 **24**: Internal threads 1/8" (ISO/NPT)
For ordering codes 0 . 2 **44**: quick connect fittings, OD 6mm
Actuator ports Actuator ports marked "open" and "close"

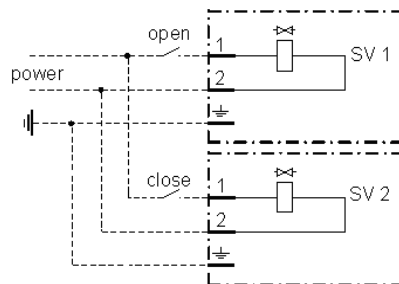
2.3.2 Electrical connections

A) Position indicator

Position indicator version	Standard *)	Standard "Advanced" 2x Open / 2x Close	High temperature 1x Open / 2x Close	High temperature 2x Open / 2x Close																																																						
Type of connector	D-SUB 9 PIN, male	D-SUB 9 PIN, male	D-SUB 9 PIN, male	D-SUB 15 PIN, male																																																						
Sensor type	Micro Switch	Micro Switch + GMR	Micro Switch	Micro Switch																																																						
Temperature rating	<80°C	<80°C	<150°C	<150°C																																																						
Option		Cycle counter																																																								
Electrical Diagram	<p>"LM": position indicator</p> <p>"Lo": position open "Lg": position close</p>	<p>Micro Switch</p> <p>Magnetic Sensor</p> <p>+24VDC</p> <p>GND</p> <p>LM open</p> <p>LM closed</p> <p>PNP</p>	<p>Lo</p> <p>Lg1</p> <p>Lg2</p>	<p>Lo1</p> <p>Lo2</p> <p>Lg1</p> <p>Lg2</p>																																																						
Logical Diagram (for micro switch)	<table border="1"> <thead> <tr> <th>Position Switch</th> <th>Valve Open Position</th> <th>Valve Closed Position</th> </tr> </thead> <tbody> <tr> <td>Lo</td> <td>PIN 1-7</td> <td>--</td> </tr> <tr> <td>Lg</td> <td>--</td> <td>PIN 2-8</td> </tr> </tbody> </table>	Position Switch	Valve Open Position	Valve Closed Position	Lo	PIN 1-7	--	Lg	--	PIN 2-8	<table border="1"> <thead> <tr> <th>Position Switch</th> <th>Valve Open Position</th> <th>Valve Closed Position</th> </tr> </thead> <tbody> <tr> <td>Lo</td> <td>PIN 1-7</td> <td>--</td> </tr> <tr> <td>Lg</td> <td>--</td> <td>PIN 2-8</td> </tr> </tbody> </table>	Position Switch	Valve Open Position	Valve Closed Position	Lo	PIN 1-7	--	Lg	--	PIN 2-8	<table border="1"> <thead> <tr> <th>Position Switch</th> <th>Valve Open Position</th> <th>Valve Intermediate Position</th> <th>Valve Closed Position</th> </tr> </thead> <tbody> <tr> <td>Lo</td> <td>PIN 1-7</td> <td>PIN 1-3</td> <td>(PIN 1-3)</td> </tr> <tr> <td>Lg 1</td> <td>(PIN 2-4)</td> <td>PIN 2-4</td> <td>PIN 2-8</td> </tr> <tr> <td>Lg 2</td> <td>(PIN 5-6)</td> <td>PIN 5-6</td> <td>PIN 5-9</td> </tr> </tbody> </table>	Position Switch	Valve Open Position	Valve Intermediate Position	Valve Closed Position	Lo	PIN 1-7	PIN 1-3	(PIN 1-3)	Lg 1	(PIN 2-4)	PIN 2-4	PIN 2-8	Lg 2	(PIN 5-6)	PIN 5-6	PIN 5-9	<table border="1"> <thead> <tr> <th>Position Switch</th> <th>Valve Open Position</th> <th>Valve Intermediate Position</th> <th>Valve Closed Position</th> </tr> </thead> <tbody> <tr> <td>Lo 1</td> <td>PIN 1-7</td> <td>PIN 1-3</td> <td>(PIN 1-3)</td> </tr> <tr> <td>Lo 2</td> <td>(PIN 14-10)</td> <td>PIN 14-10</td> <td>PIN 14-12</td> </tr> <tr> <td>Lg 1</td> <td>(PIN 2-4)</td> <td>PIN 2-4</td> <td>PIN 2-8</td> </tr> <tr> <td>Lg 2</td> <td>(PIN 15-13)</td> <td>PIN 15-13</td> <td>PIN 15-11</td> </tr> </tbody> </table>	Position Switch	Valve Open Position	Valve Intermediate Position	Valve Closed Position	Lo 1	PIN 1-7	PIN 1-3	(PIN 1-3)	Lo 2	(PIN 14-10)	PIN 14-10	PIN 14-12	Lg 1	(PIN 2-4)	PIN 2-4	PIN 2-8	Lg 2	(PIN 15-13)	PIN 15-13	PIN 15-11
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Contact rating	<100mA, >5mA <50VDC	<100mA, >10mA 24VDC	<100mA, >5mA <50VDC	<100mA, >5mA <50VDC																																																						

B) Solenoid valve (for ordering codes:: 0 . 2 44)

VAT is always recommending 5/2 ways solenoid valve for impulse actuation.
 Electrical connection: DIN43650B



SV = coil of solenoid

3 Operation

Products without differential pressure tabs are specifically designed for operation under equal pressure on either side. Application of differential pressure through such products may cause damage to the product and serious injury of people.

3.1 Normal operation

A. Operation in clean vacuum environment (e.g. load lock applications):

If the valve/insert is used in clean vacuum environment standard configuration with FKM seals (VITON or similar) are recommended. Always check the operational pressure if a gate change is performed and in particular if seal material is changed. Recommended operational pressures are listed in the product data sheet.

B. Operation in harsh process environments (e.g. transfer/process modules):

Optimum cost of ownership with lowest particle shed rates requires that the MONOVAT vulcanized seal material avoid excessive stress when the mechanism is locked. Therefore, operational pressure should be set as low as possible, but not so low to produce an unacceptable leak rate in the closed position. This is true for any operational conditions and in particular in harsh process environments with increased temperatures where process gases attack the elastomeric compounds. Please refer to the product data sheet where the compound specific locking pressures are listed. The product can optional be delivered with a pressure regulator.

3.2 Operation under increased temperature

See «1.1 Technical data»

The temperature range is specified in the product data sheet VAT P/N 277756.

3.3 Behavior in case of compressed air pressure drop

Valve closed: position undefined; valve remains for 6h closed if non return valve is installed (option).

Valve open: position undefined; valve remains for 6h open if non return valve is installed (option).

NOTE:



Proper check valve function (optional feature) depends on fast air pressure decrease in the pneumatic supply line to the according actuator port. Slow pressure drop in this line will not trigger the check valve and the door position is undefined at compressed air failure.

In order to disengage an engaged check valve (e.g. in case of pneumatic power failure) disconnect the check valve from the valve.

3.4 Behavior in case of power failure

Ordering codes 0 . 2 **24**: (transfer valve supplied without solenoid)

Valve position depends on applied solenoid valves (SV). VAT recommends operating all transfer valves with impulse actuated SV.

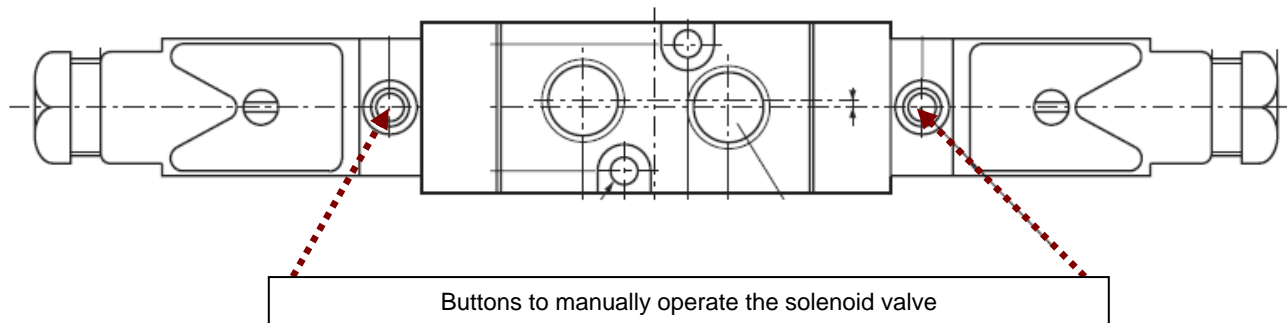
Ordering codes 0 . 2 **44**: (transfer valve supplied with impulse solenoid)

Valve closed: valve remains closed.

Valve open: valve remains open.

A started movement will be completed.

In case of power failure, valve can be actuated if compressed air is available.



4 Trouble shooting

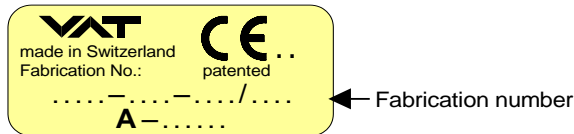
Failure	Check	Action
Valve does not close / open	Power available? Compressed air available? Solenoid defective?	Check voltage Check air pressure Check solenoid (manual emergency operation).
Leak at gate	Dirty? Gate seal damaged? Seal compression weak?	Clean valve seat and gate. Replace gate if damaged. Check air pressure and actuator adjustment
Leak at body	Flanges leak tight? Leak at bellows?	Clean or replace flange O-ring. Replace bellows.

If you need any further information, please contact one of our service centers. You can find the addresses on our website: <http://www.vat.ch>

5 Maintenance & repairs

Under clean operating conditions, the valve does not require any maintenance during the specified cycle life. Contamination from the process may influence the function and requires more frequent maintenance.

Before carrying out any maintenance or repairs, please contact VAT. It has to be individually decided whether the maintenance/repair can be performed by the customer or has to be carried out by VAT. The fabrication number on the valve



has always to be specified.

All supplies (e. g. compressed air, electrical power) must be disconnected for removal/installation of the valve from/into the system and for maintenance work.



Even with disconnected supply, loaded springs and/or air cushions in cylinders can be potential hazards.

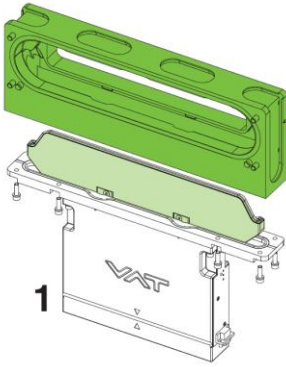
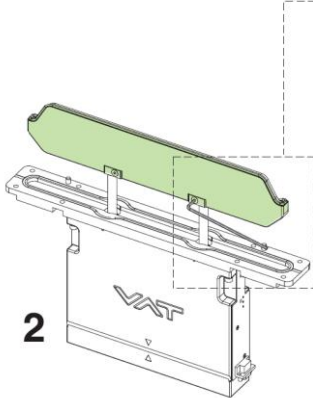
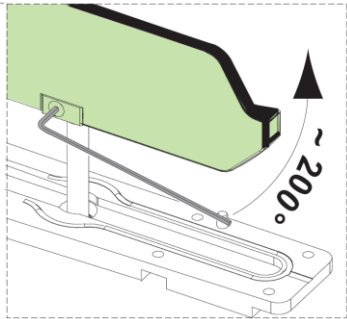
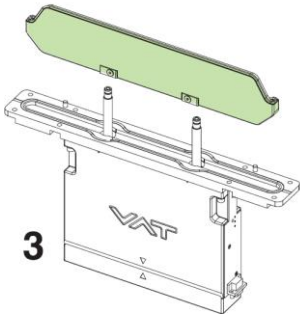


Keep fingers and objects away from the valve opening!

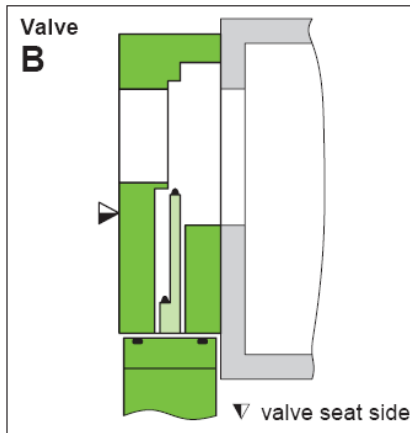
Products returned to VAT must be free of harmful substances such as e.g. toxic, caustic or microbiological ones. If products are radioactively contaminated, fill in the VAT form «Contamination and Radiation Report» and send it with the product. The form is available at VAT. The maximum values indicated in the form must not be exceeded.

5.1 Gate exchange

- Vent chambers and move gate into fully open position.
- Disconnect valve from compressed air and electrical supply.

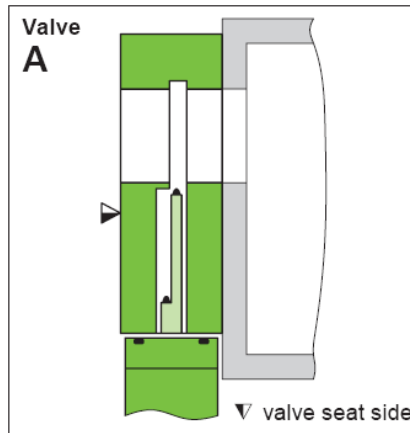
Step	Picture	Action
1		<p>A- & B-type valve: Dismount actuator/gate.</p> <p>C-Type insert: go to step 2</p>
2		 <p>Loosen gate fixation screws: Apply an Allen wrench and turn it about 200°</p>
3		<p>Remove the gate carefully by hand Clean or replace gate</p> <p>GATE INSTALLATION:</p> <ul style="list-style-type: none"> - Place the gate carefully onto the shafts - Fix the gate by turning the Allen wrench (about 200°); apply a torque of 2.6Nm - Insert the actuator/gate assembly into the valve housing (A- & B-type).

6 Drawing



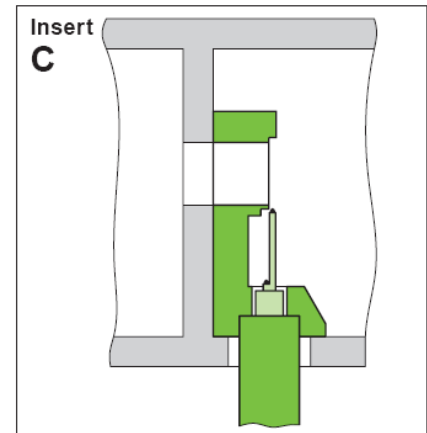
Opening on rear side larger than on seat side

With bonnet flange
Gate service through bonnet flange



Same size of opening on seat side and rear side

With bonnet flange
Gate service through bonnet flange



MONOVAT seat mounted inside of chamber

Insert installation from the top
Gate service through chamber

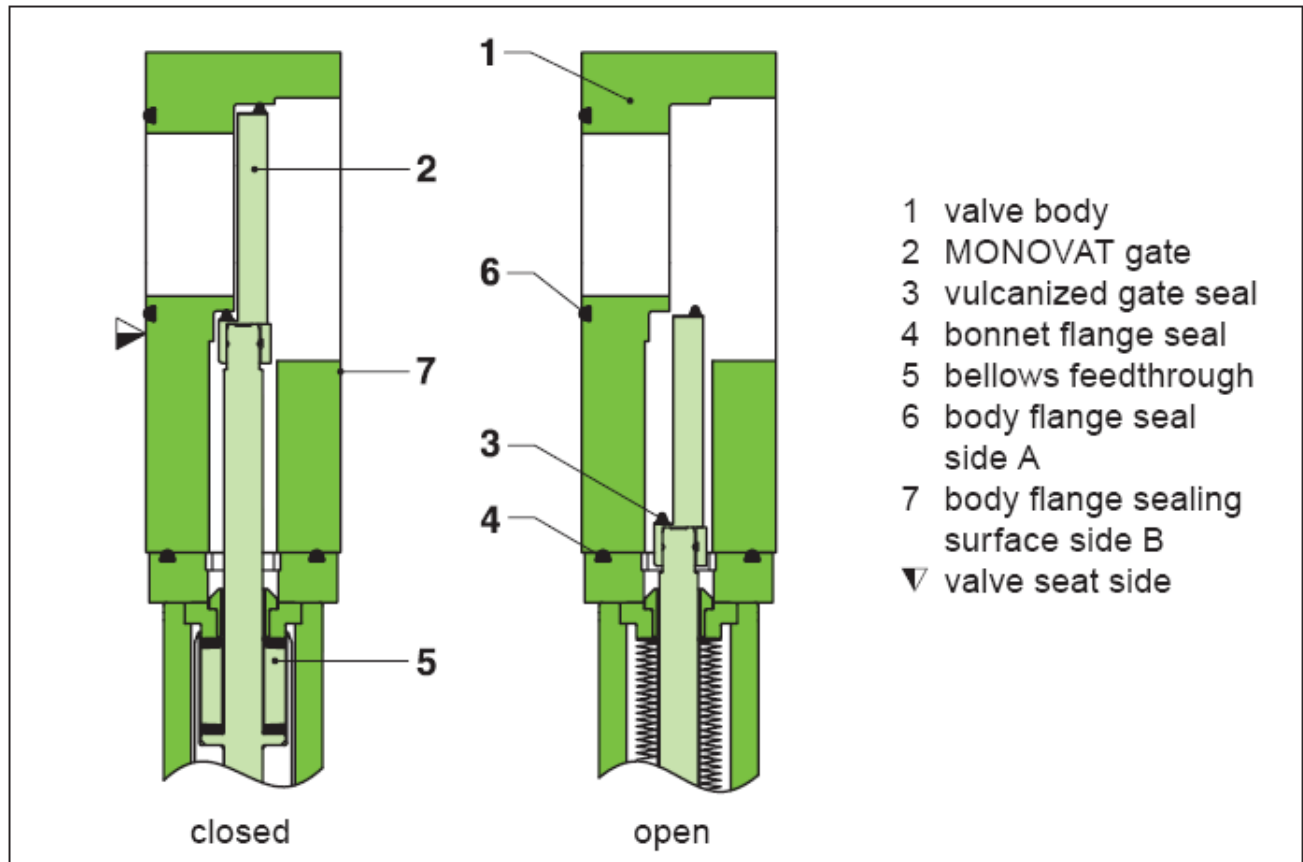
7 Spare parts



Please specify the **fabrication number of the valve** (see yellow label on valve) when ordering spare parts. This is to ensure that the appropriate spare parts are supplied.

Size	Spare Gate (Al)	Spare Gate (SS)	Body/Seat Flange Seal (seat side)	Bonnet Seal Valve Type (B, A) Insert Type (C)	Seal Kit, incl. Gate (Al) & Bonnet Seal	Seal Kit, incl. Gate (SS) & Bonnet Seal
32 x 322	393165	393172	N-5100-263	N-5100-266 (B, A) N-5100-264 (C)	393189 (B, A)	393190 (B, A)
46 x 236	393163	393170	N-5100-263	N-5100-266 (B, A) N-5100-269 (C)	393185 (B, A)	393188 (B, A)
50 x 336	370244	393167	N-5100-273	N-5100-275 (B, A) N-5100-269 (C)	393148 (B, A)	393184 (B, A)
56 x 496	393177	393178	N-5100-280	N-5100-281 (B, A) N-5100-269 (C)	393191 (B, A)	393192 (B, A)

Al – Aluminum; SS – Stainless Steel





8 Warranty

Each product sold by VAT Vakuumventile AG (VAT) is warranted to be free from the manufacturing defects that adversely affect the normal functioning thereof during the warranty period stated in VAT's «Terms of Sale» immediately following delivery thereof by VAT, provided that the same is properly operated under conditions of normal use and that regular, periodic maintenance and service is performed or replacements made, in accordance with the instructions provided by VAT. The foregoing warranty shall not apply to any product or component that has been repaired or altered by anyone other than an authorized VAT representative or that has been subject to improper installation or abuse, misuse, negligence or accident. VAT 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 any delay in or failure to deliver), packaging, storage or use of any product sold or delivered by VAT shall fail to conform to the foregoing warranty or to the description thereof contained herein, the purchaser thereof, as its exclusive remedy, shall upon prompt notice to VAT of any such defect or failure and upon the return of the product, part or component in question to VAT at its factory, with transportation charges prepaid, and upon VAT'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 VAT's factory and at no charge therefor, by replacement or repair of said product, as VAT may elect. VAT MAKES NO WARRANTY OR REPRESENTATION OF ANY KIND, EXPRESS OR IMPLIED, (INCLUDING NO WARRANTY OR MERCHANTABILITY), EXCEPT FOR THE FOREGOING WARRANTY AND THE WARRANTY THAT EACH PRODUCT SHALL CONFORM TO THE DESCRIPTION THEREOF CONTAINED HEREIN, and no warranty shall be implied by law.

Furthermore, the «Terms of sale» at the back of the price list are applicable.