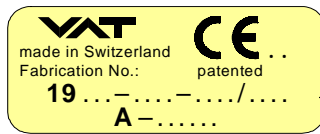


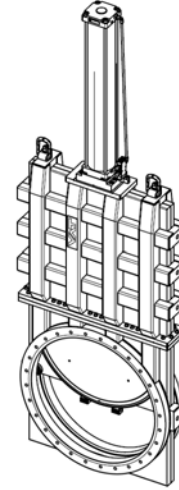
Vacuum Gate Valve With double acting pneumatic actuator

This manual is valid for the valve ordering number(s):
 19059- _E24 / _E44

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



← Fabrication number



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!



Installation, Operating & Maintenance Instructions Series 19.0, DN 900mm (36")

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Editor VAT Vakuumventile AG, CH-9469 Haag, Switzerland

Print VAT Vakuumventile AG, CH-9469 Haag, Switzerland

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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

Technical data

Pressure range	1 x 10 ⁻⁷ mbar to 1 bar (abs)	
Differential pressure on the gate	1 bar in either direction	
Max. differential pressure at opening	10 mbar	
Admissible temperature: Valve	< 150°C	
Pneumatic actuator	< 50°C	
Position indicator	< 80°C	
Solenoid	< 50°C	
Maximum temperature difference between flange side "A" and side "B"	40°C	
Heating and cooling rate	< 5°C h ⁻¹	
Position indicator:	Voltage	[V] 10 ... 30 DC
	Current	[mA] 5 ... 100
	Voltage drop	[V] < 3.5
	Leakage current	[mA] < 0.8
	Magnetic sensitivity	[mT] 2.5
	Switching frequency	[Hz] 4000
	Switching status	LED Yellow
	Connection	PUR cable / 2m / 2x AWG26



Solenoid:

see tag on solenoid



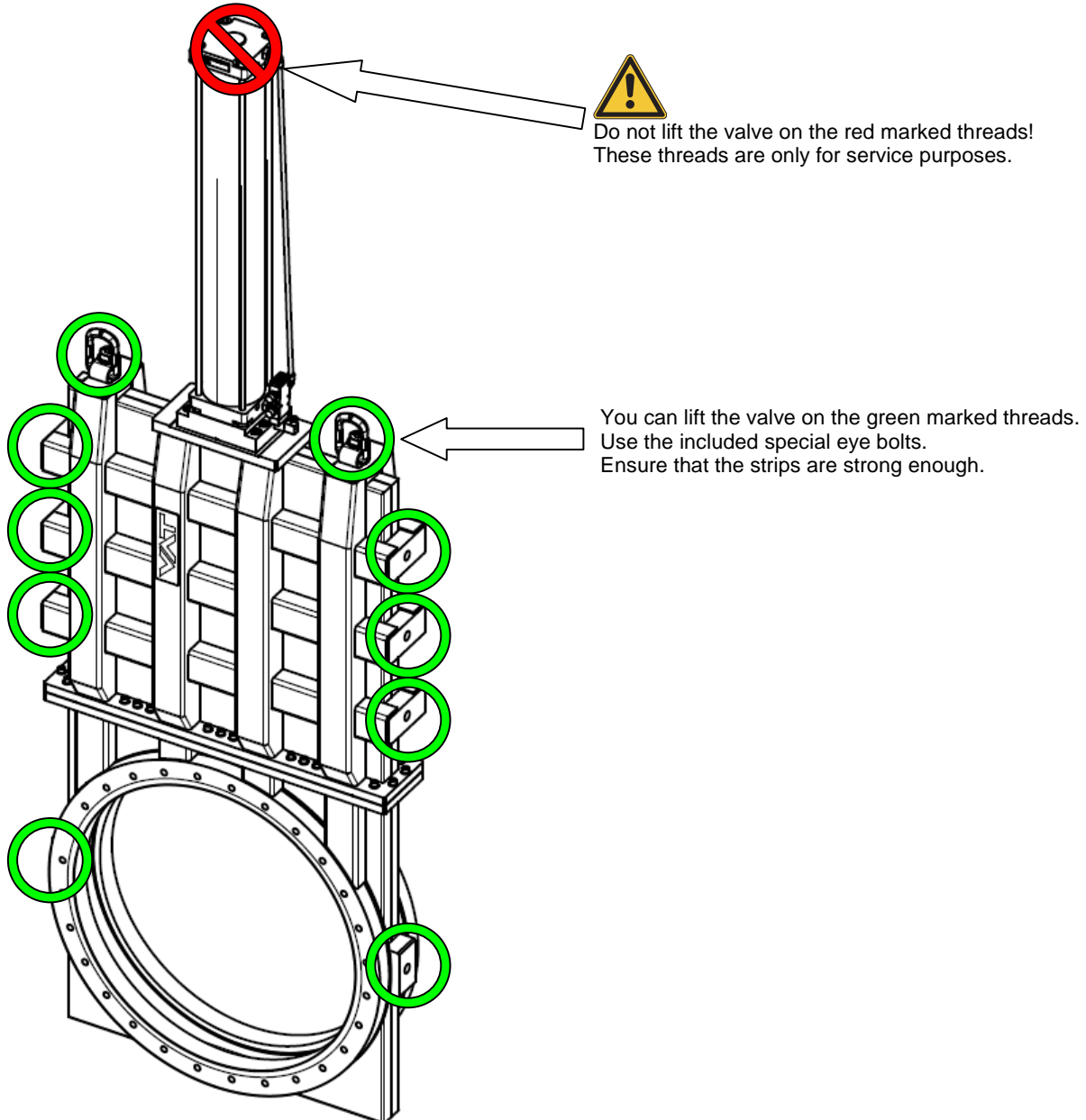
Mounting position:

Any
(actuator downwards or valve horizontal on request)

2 Installation

2.1 Unpacking

The valve is packed into a wooden box. The valve has a few threaded holes for M16 Eyebolds. Use these threads to lift the valve out of the packing.



2.2 Installation into the system

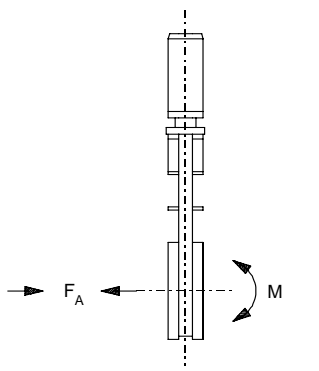
Clean the sealing surface and the O-ring seal of the mating flange. Move the valve in the correct mounting position with the crane. Attention: Do not hit the sealing surfaces during manipulation! Set 2 screws in one line and then another 2 screws 90° turned to the first line. Fasten the 4 screws crosswise until the O-ring seal has contact with the valve sealing surface. Afterwards set all the remaining screws and tighten the screws in clockwise order. The valve is designed to be installed in horizontal pipings. (see picture) Actuator downwards and pipe vertical on request.



2.3 Admissible forces

Forces from evacuating the system, from the weight of other components, and from baking can lead to deformation of the valve body and to malfunction of the valve. The stress has to be relieved by suitable means, e.g. bellows sections. The following forces are admissible:

DN (nom. I.D.)		Axial tensile or compressive force «FA»		Bending moment «M»	
mm	inch	N	lbf	Nm	lbf • ft
900	36	9800	2200	1274	940
If a combination of both forces («FA» and «M») occurs, the values mentioned above are invalid. Please contact VAT for more information.					



The diagram shows a vertical valve assembly with a dashed centerline. A horizontal arrow labeled F_A points to the left, representing axial force. A curved arrow labeled M indicates a bending moment around the vertical axis.

2.4 Connections

2.4.1 Compressed air connection



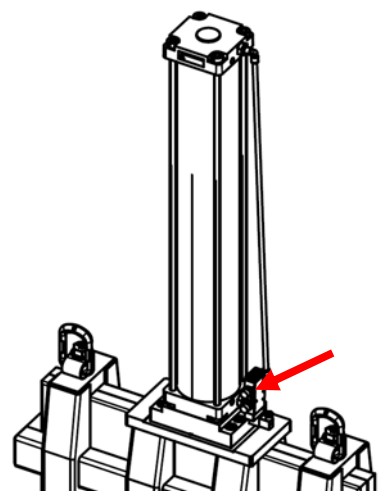
Compressed air may only be connected if

- valve has been installed into the vacuum system
- moving parts cannot be touched

Connect compressed air at the place marked \odot (internal thread G 3/8" / plug in connection \varnothing 12mm)

DN900: Compressed air pressure (min. - max. overpressure): 5 - 7 bar / 70 - 100 psig

Use only clean, dry or slightly oiled air!



2.4.2 Electrical Power connection



Do not touch any electrically charged parts!

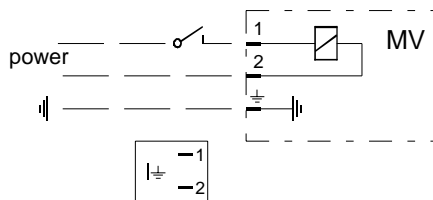


Electrical power may only be connected if
 - valve has been installed into the vacuum system
 - moving parts cannot be touched

Verify that mains voltage matches voltage stated on the solenoid!

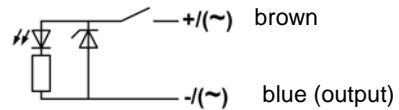
Wire solenoid and position indicator according to the following diagrams:

Solenoid (standard)

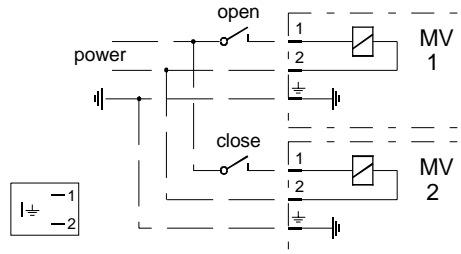


MV = coil of solenoid

Position indicator / magnetic sensors



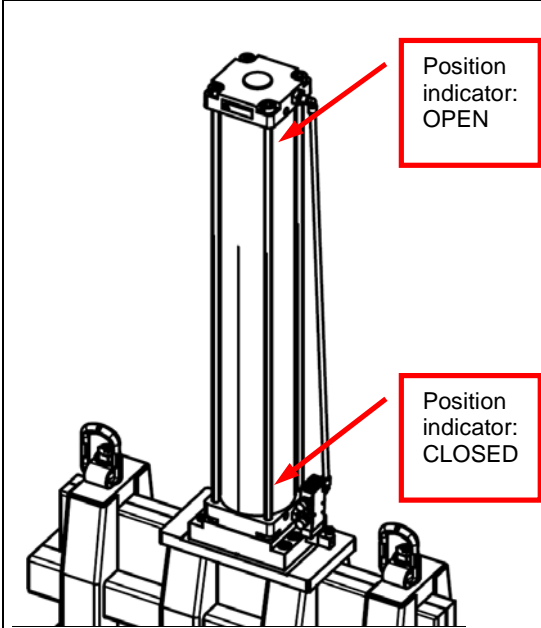
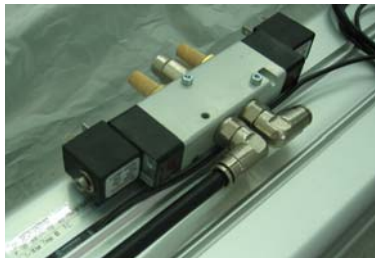
Option: Solenoid for impuls actuation



Minimum pulse duration 50ms

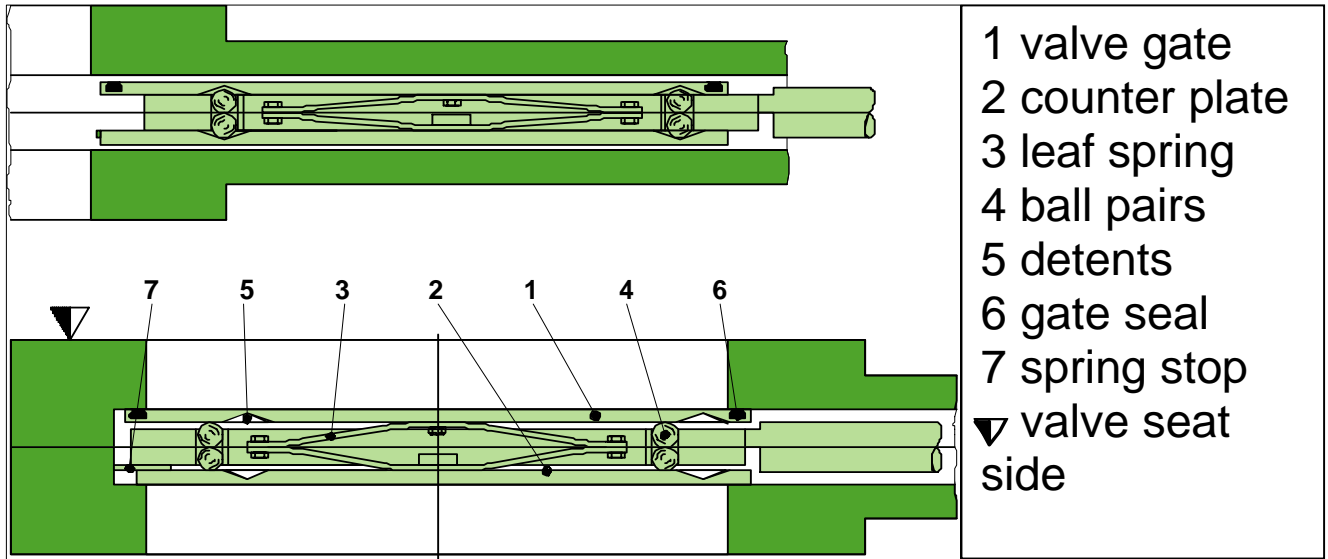
MV1 = Coil of solenoid „open“

MV2 = Coil of solenoid „closed“



3 Function of valve

3.1 Mechanism with VATLOCK



Gate valves with VATLOCK system are mechanically locked in the closed position.

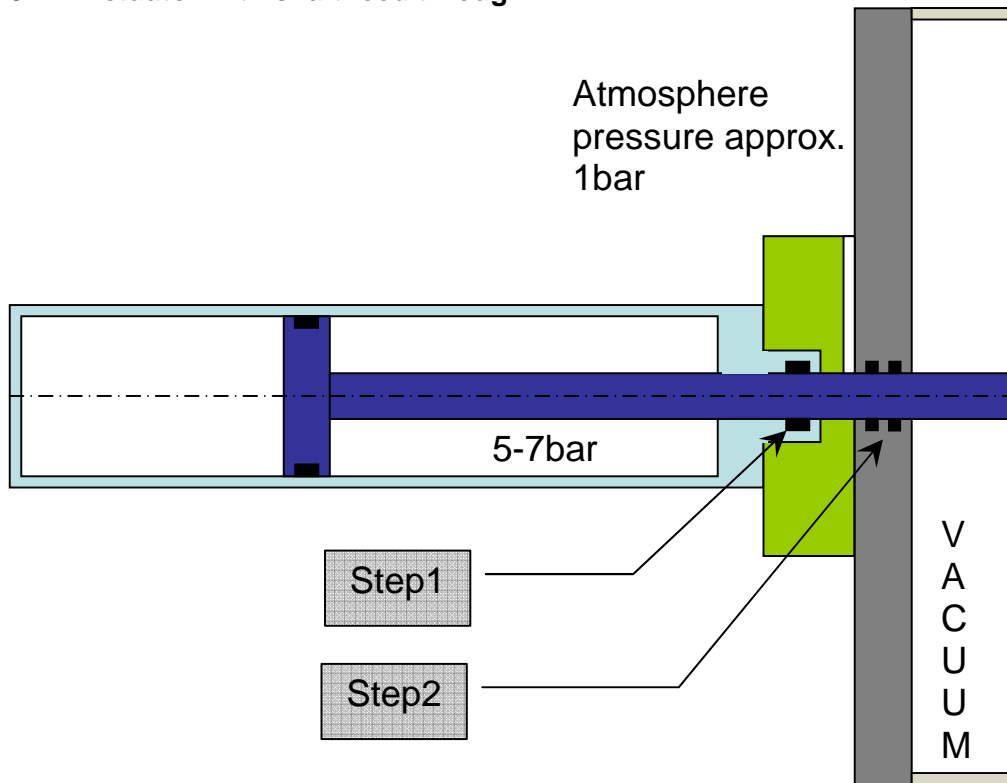
In the open position the mechanism is not locked. Leaf springs(3) hold the gate(1) and counter plate(2) against the carriage with the ball retains. The ball pairs are in the detents(5).

For closing, the mechanism is moved forward into the closing position.

The locking starts after the leaf spring stop(7) touches the body. The ball retainers move the ball pairs(4) out of the detents. Gate and counter plate are spread apart. The gate seal(6) is pressed against the sealing surface without scuffing. The arrangement of ball pairs ensures an increase of the sealing force with vacuum on either side of the gate.

During opening the movement proceed in the reverse order.

3.2 Actuator with shaft feed through



The valve is actuated by a pneumatic cylinder. The shaft of the cylinder moves out of the pneumatic area into the vacuum area in two steps. The first step is a seal between the pneumatic area towards the atmosphere pressure. The second step is between the atmosphere pressure and the vacuum inside of the gate valve. The advantage of the two step sealing is, that the pressure drop between atmosphere and vacuum is not so high as it would be if there would be only one step between overpressure and vacuum. Also we avoid the risk of blowing pressure air inside of the vacuum system in case that the vacuum seal would be damaged due to process influences. Between the atmosphere and the vacuum there are two dynamic seals in order to improve the reliability and to ensure that there is always enough VAT high vacuum grease on the shaft. (fat depot)

4 Operation

4.1 Normal operation

Valve is opened and closed by means of compressed air.

4.2 Operation under increased temperature

See «1.1 Technical data»

4.3 Behavior in case of compressed air pressure drop

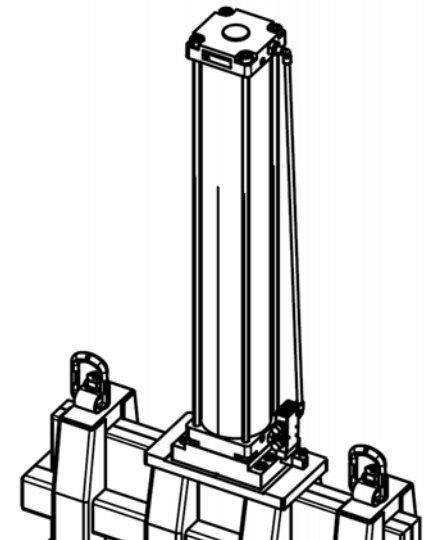
Valve closed: valve remains closed (except mounting position actuator downwards)
 Valve open: valve position is undefined

4.4 Behavior in case of power failure

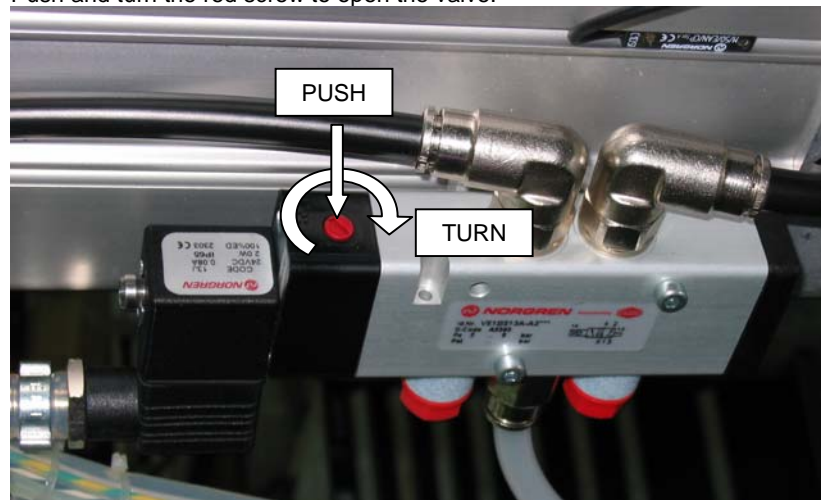
Standard solenoid: valve closes
 Solenoid for impulse actuation (option): valve position does not change, but a started movement will be completed.

4.5 Emergency operation at power failure

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



Push and turn the red screw to open the valve.



Attention!

Remote operation is only possible if the emergency operation (slotted screw) is turned counter-clockwise to its stop.

5 Trouble shooting

Valve does not close/open:	Power available? Compressed air available? Solenoid defective? Check voltage! Check air pressure! Remote operation screw of the solenoid?
Leak at gate:	Clean valve seat and gate! Replace gate seal if damaged! Correct air pressure?
Leak at body:	Flanges leaktight? Replace bonnet seal! Replace feed through seals

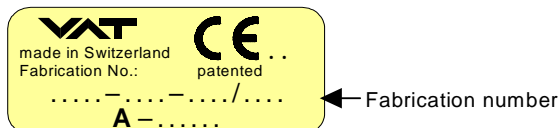


If you need any further information, please contact one of our service centers. You can find the addresses on our website: <http://www.vat.ch>

6 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.




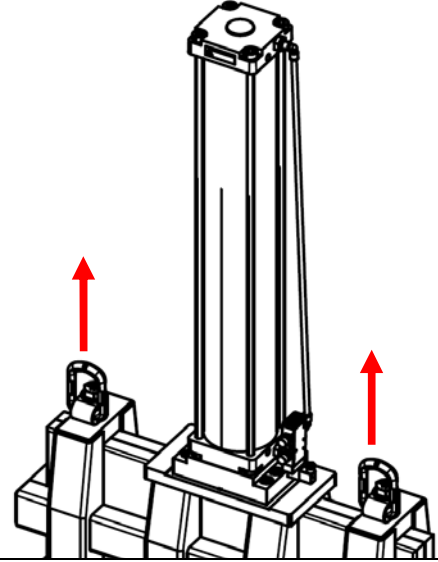
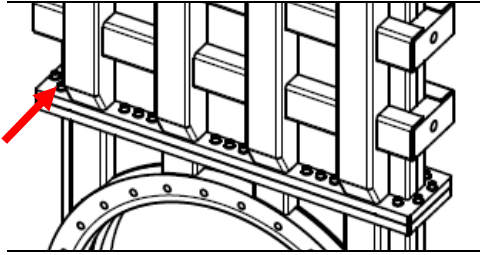
Even with disconnected supply, loaded springs and/or air cushions in cylinders can be potential hazards.


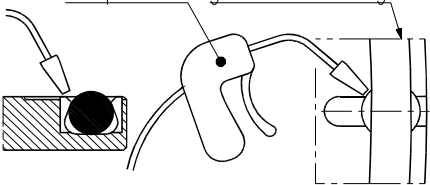



Keep fingers and objects away from the valve opening!

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.

6.1 Replacement of actuator/mechanism assembly for cleaning:

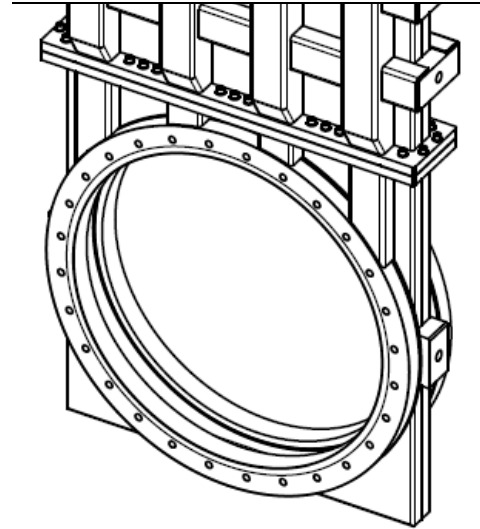
<p>Vent chambers and move the valve in the open position. Ensure that the valve remains open during disassembling. If the valve is mounted with actuator upwards you have to ensure that there is enough air pressure in the cylinder to prevent the mechanism from going down due to gravity. For safety reasons you should disconnect the power supply and actuate the valve with the emergency operating screw on the solenoid.</p>	
<p>Connect the crane to the body upper part. Ensure that all lifting devices are strong enough.</p>	
<p>Remove the screws between the body upper and body lower part in crosswise order.</p>	

<p>Lift the body upper part and the mechanism. Take care that you do not damage the sealing surface of the body lower part.</p>	
<p>In order to exchange the gate o-ring you have to move the mechanism in the "closed" position.</p> <p>Dismount the old O-ring from the gate with compressed air which has to be blown in the venting grooves on the gate.</p> <p style="margin-left: 40px;">air pressure gate seal (o-ring)</p>  <p>Note! Do not damage the ground of the O-ring groove in the gate with tools!!!! Clean the O-ring groove with alcohol Place the new O-ring on the O-ring groove and start to put the O-ring in the groove on one point for 30mm. Move 90° for the next point and so on. Try to halve the distances between the mounted O-ring sections and the loose O-ring sections. Go on with this procedure until only arcs of 50mm are loose and this sections has to be pressed in the groove with a heavy stainless steel shaft (diameter 80 – 90mm and 400mm long) If the O-ring is very hard to mount lubricate the O-ring with alcohol.</p>	



Installation, Operating & Maintenance Instructions
Series 19.0, DN 900mm (36")

Before reassembly please ensure the sealing surfaces of the body lower part are clean.
You can clean them easily with alcohol.





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.

If you need any spare parts please contact VAT.

8 Warranty

Each product sold by VAT Vakuumentile 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.

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