

# Installation, Operating & Maintenance Instructions

---



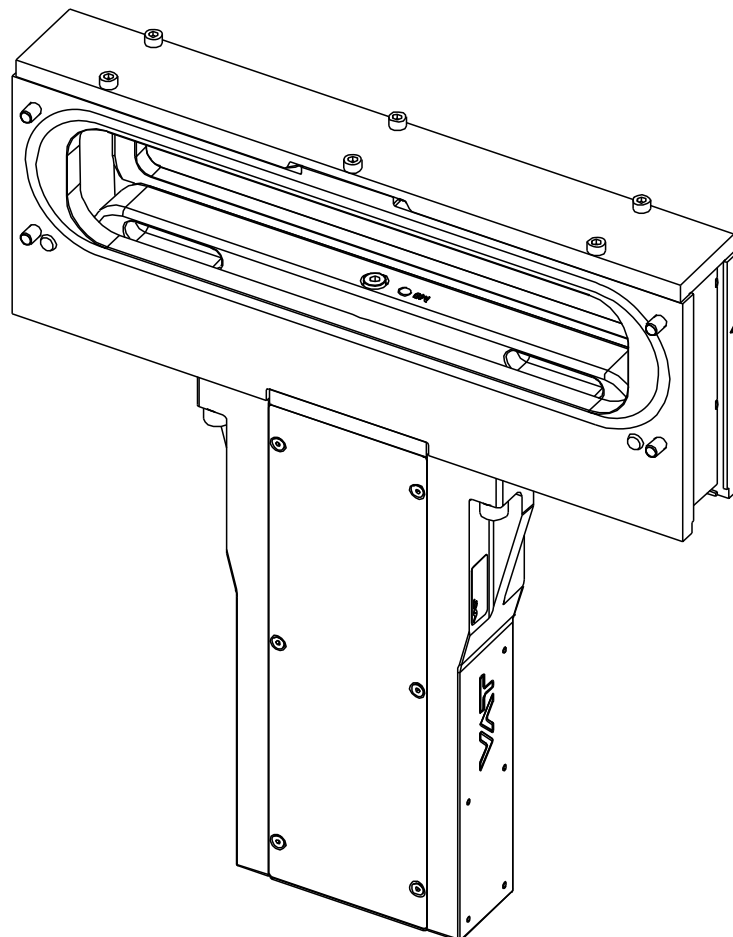
## Transfer valve / insert L-VAT with double acting pneumatic actuator

Series 042 / 052  
50 x 336 mm (2" x 13.2")

This manual is valid for the following product ordering numbers:

**042** .. - .... - .....

**052** .. - .... - .....



Sample picture

## Imprint

Manufacturer VAT Vakuumventile AG, CH-9469 Haag, Switzerland

Website: [www.vatvalve.com](http://www.vatvalve.com)  
Phone: +41 81 771 61 61  
Fax: +41 81 771 48 30  
Email: [CH@vatvalve.com](mailto:CH@vatvalve.com)

Publisher VAT Vakuumventile AG, CH-9469 Haag, Switzerland

Editor VAT Vakuumventile AG, CH-9469 Haag, Switzerland

Print VAT Vakuumventile AG, CH-9469 Haag, Switzerland

Copyright © VAT Vakuumventile AG 2022

No part of these Instructions may be reproduced in any way (photocopies, microfilms or any other reproduction processes) nor may it be manipulated with electronic systems, duplicated or distributed without written permission from VAT. Offenders are liable to pay damages.

The original VAT firmware and updated state of the art versions of the VAT firmware are intended for use with VAT products. The VAT firmware contains a limited, time unlimited user license. The VAT firmware may not be used for purposes other than those intended nor is it permitted to make copies of the VAT firmware. In particular, it is strictly forbidden to give copies of the VAT firmware to other people.

The use of trade names, brand names, trademarks, etc. in these Instructions does not entitle third parties to consider these names to be unprotected and to use them freely. This is in accordance with the meaning of the laws and acts covering brand names and trademarks.

## Contents

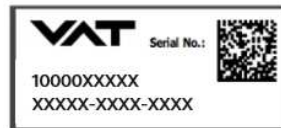
<b>1</b>	<b>Description of product.....</b>	<b>5</b>
1.1	Identification of product.....	5
1.2	Use of product.....	5
1.3	Related documents.....	5
1.4	Important information.....	5
1.5	Technical data.....	5
<b>2</b>	<b>Safety.....</b>	<b>6</b>
2.1	Compulsory reading material.....	6
2.2	Danger levels.....	6
2.3	Personnel qualifications.....	7
2.4	Safety labels.....	7
<b>3</b>	<b>Design and Function.....</b>	<b>8</b>
3.1	Design.....	8
3.2	Function.....	9
3.2.1	Series 042.....	9
3.2.2	Series 052.....	9
<b>4</b>	<b>Installation.....</b>	<b>10</b>
4.1	Unpacking.....	10
4.2	Installation into the system.....	11
4.3	Compressed air connection.....	13
4.4	Electrical connection.....	14
<b>5</b>	<b>Operation.....</b>	<b>15</b>
5.1	Normal operation.....	15
5.2	Operation under increased temperature.....	15
5.3	Behavior in case of compressed air pressure drop.....	15
5.4	Behavior in case of power failure.....	15
5.5	Trouble shooting.....	16
5.6	Test device for position indicator.....	16
<b>6</b>	<b>Maintenance.....</b>	<b>18</b>
6.1	Maintenance intervals.....	18
6.2	Required tools.....	19
6.3	Replacement of gate.....	19
<b>7</b>	<b>Repairs.....</b>	<b>22</b>
<b>8</b>	<b>Dismounting and Storage.....</b>	<b>23</b>
8.1	Dismounting.....	23
8.2	Storage.....	24
<b>9</b>	<b>Packaging and Transport.....</b>	<b>25</b>
9.1	Packaging.....	26
9.2	Transport.....	26

<b>10</b>	<b>Disposal.....</b>	<b>27</b>
<b>11</b>	<b>Spare parts.....</b>	<b>28</b>

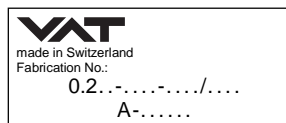
# 1 Description of product

## 1.1 Identification of product

The serial / fabrication number and order number are fixed on the product directly or by means of an identification plate.



← Serial number  
← Order number



← Fabrication number  
← Order number

## 1.2 Use of product

Use product for clean and dry indoor vacuum applications under the conditions indicated in the product data sheet and dimensional drawing. Other applications are only allowed with the written permission of VAT.

## 1.3 Related documents

- Product data sheet
- Dimensional drawing

## 1.4 Important information



This symbol points to a very important statement that requires particular attention.

### Example:



VAT disclaims any liability for damages resulting from inappropriate packaging.

## 1.5 Technical data

See product data sheet and dimensional drawing.

## 2 Safety

### 2.1 Compulsory reading material

Read this chapter prior to performing any work with or on the product. It contains important information that is significant for your own personal safety. This chapter must have been read and understood by all persons who perform any kind of work with or on the product during any stage of its serviceable life.

	NOTICE
	<p><b>Lack of knowledge</b>                  Failing to read this manual may result in property damage.                  Firstly, read manual.</p>



These Installation, Operating & Maintenance Instructions are an integral part of a comprehensive documentation belonging to a complete technical system. They must be stored together with the other documentation and accessible for anybody who is authorized to work with the system at any time.

### 2.2 Danger levels


	⚠ DANGER
	<p><b>High risk</b>                  Indicates a hazardous situation which, if not avoided, will result in death or serious injury.</p>

	⚠ WARNING
	<p><b>Medium risk</b>                  Indicates a hazardous situation which, if not avoided, could result in death or serious injury.</p>

	⚠ CAUTION
	<p><b>Low risk</b>                  Indicates a hazardous situation which, if not avoided, may result in minor or moderate injury.</p>

	NOTICE
	<p><b>Command</b>                  Indicates a hazardous situation which, if not avoided, may result in property damage.</p>

## 2.3 Personnel qualifications

	<b>⚠ WARNING</b>
	<p><b>Unqualified personnel</b>  Inappropriate handling may cause serious injury or property damage.  Only qualified personnel are allowed to carry out the described work.</p>

## 2.4 Safety labels


Label	Part No.	Location on valve
	T-9001-156	On protective foil covering the valve opening

Table 2-1

### 3 Design and Function

#### 3.1 Design

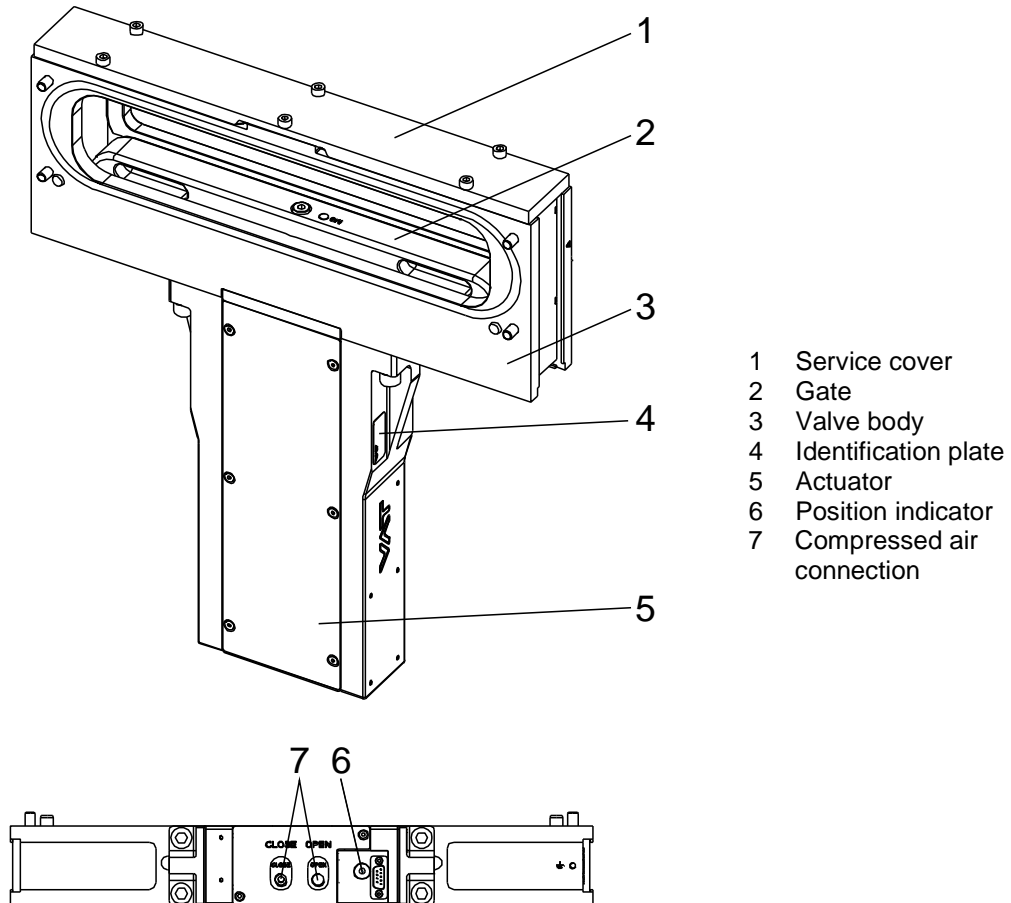


Figure 3-1 Rear side and bottom view



### 3.2 Function

The main actuator performs an L-movement triggered by a pneumatically sequence control. The valve starts in open position (1); see «Figure 3-2» and «Figure 3-3». The single shaft actuator moves the gate upwards until position (2) is reached. The gate is moved towards sealing surface through pneumatic piston. Movement ends in closed position (3).

#### 3.2.1 Series 042

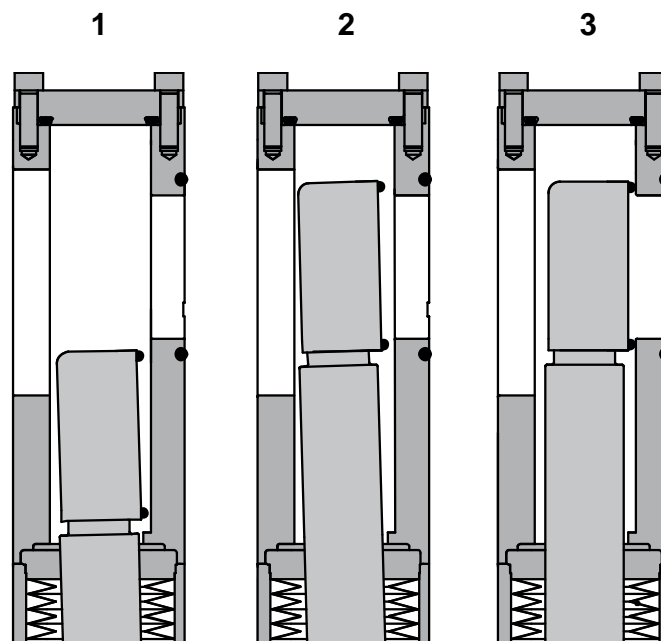


Figure 3-2

#### 3.2.2 Series 052

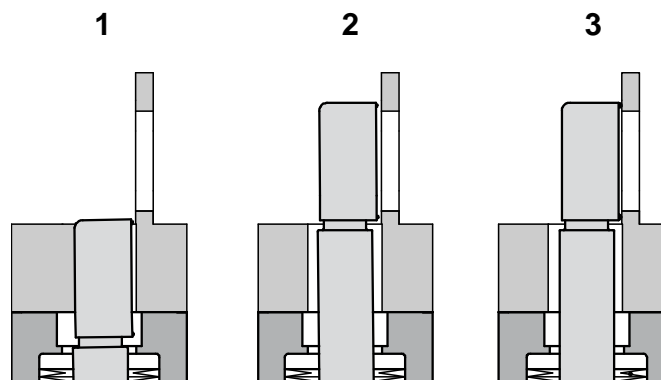



Figure 3-3


## 4 Installation

	<b>⚠ WARNING</b>
	<p><b>Unqualified personnel</b> Inappropriate handling may cause serious injury or property damage. Only qualified personnel are allowed to carry out the described work.</p>

### 4.1 Unpacking






- Make sure that the supplied products are in accordance with your order.
- Inspect the quality of the supplied products visually. If it does not meet your requirements, please contact VAT immediately.
- Store the original packaging material. It may be useful if products must be returned to VAT.

	<b>NOTICE</b>
	<p><b>Suspended load</b> The actuators will be damaged if they touch the ropes or any solid object. Use assisting staff when handling the valve by a crane.</p>



- Remove the protective plastic bag only immediately before the valve is mounted to the system.
- Do not remove blue foil on the valve body openings as long as possible in order to protect the valve interior from dust and particles.

## 4.2 Installation into the system

	<p style="text-align: center;"><b>⚠ WARNING</b></p> <p><b>Hazardous components</b> Parts, loaded springs, air cushions etc. may move or release a movement and cause serious injury. Do not connect or supply electrical power and compressed air before the product is completely mounted in the system.</p>
	<p style="text-align: center;"><b>NOTICE</b></p> <p><b>Insufficient stability</b> Product may get damaged when actuated at this stage. Do not operate before product is installed completely into the vacuum system.</p>
	<p style="text-align: center;"><b>NOTICE</b></p> <p><b>Contamination</b> Product may get contaminated. Always wear cleanroom gloves when handling the product.</p>

1. Remove protective foil from transfer module.
2. Install the valve to the transfer module.
3. Use the hexagon socket screw for connection to transfer module; see «Figure 4-1» on page 12.
4. Tighten the connection screws crosswise with a torque of 14.5 Nm; use torque wrench 14.5 Nm.

5. Install the valve to the process module; use clamp groove (2) at the outside of body; see «Figure 4-1».

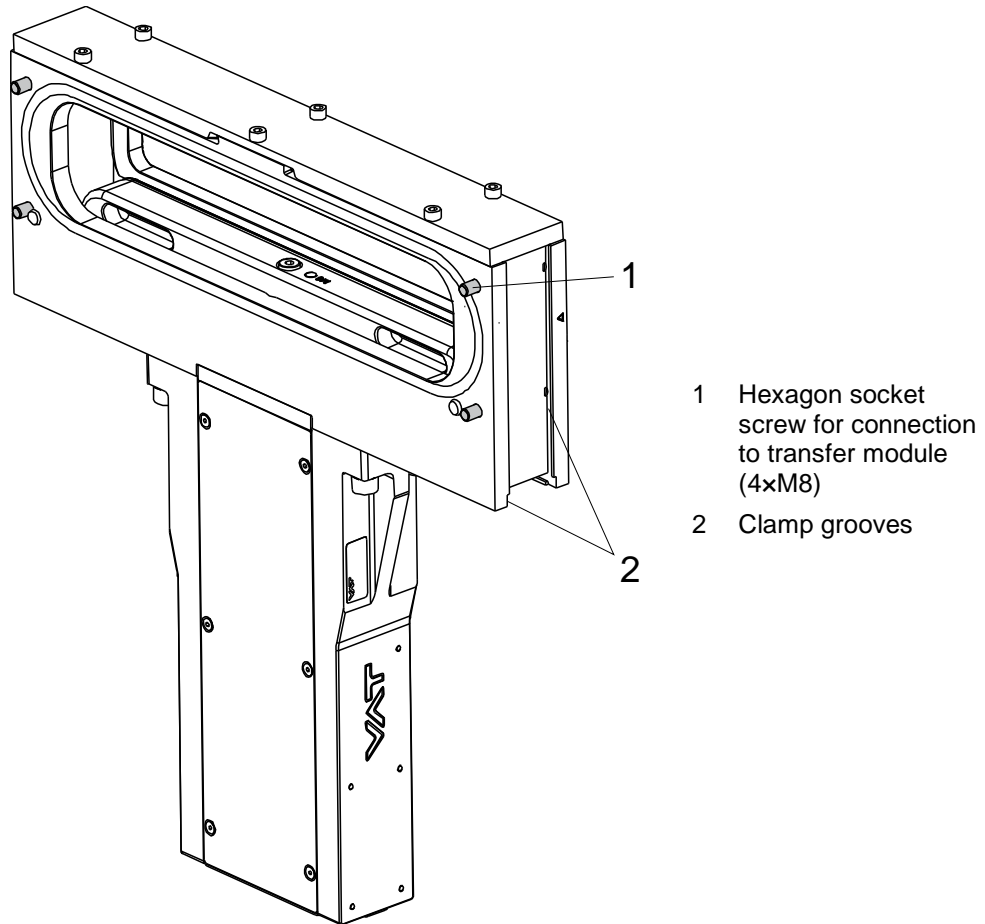



Figure 4-1


6. Tighten the connection clamps crosswise.





Clamp, type and torque according the producer of the plant.

### 4.3 Compressed air connection

	<b>⚠ WARNING</b>
	<p><b>Valve in open position</b></p> <p>Risk of injury when compressed air is connected to the valve.</p> <p>Connect compressed air only when:</p> <ul style="list-style-type: none"> <li>– valve is installed in the vacuum system</li> <li>– moving parts cannot be touched</li> </ul>

	<b>⚠ WARNING</b>
	<p><b>Wrong compressed air pressure</b></p> <p>Risk of injury if valve is connected to air supply.</p> <p>Connect valve only with a compressed air pressure <math>\leq 100</math> psig (7.0 bar).</p>

	<b>NOTICE</b>
	<p><b>Valve not in open position</b></p> <p>No proper operation if the valve is not in open position.</p> <p>At the first installation and every time the compressed-air line was disconnected the first operating command must be "OPEN" to insure a proper operation.</p>

	<b>NOTICE</b>
	<p><b>Wrong compressed air pressure</b></p> <p>No proper operation if the pressure of the compressed air is less than 75 psig (5.0 bar).</p> <p>Only operate the valve with regular compressed air lines.</p>




Use clean, dry or slightly oiled air only.



Admissible air pressure range; see product data sheet.

1. Connect compressed air according to the product data sheet and dimensional drawing.

#### 4.4 Electrical connection

<b>NOTICE</b>	
	<p><b>Wrong voltage</b> Electrical components may get damaged. Supply electrical components with the correct voltage.</p>


1. Connect solenoid valve according to the product data sheet and dimensional drawing.
2. Connect position indicator according to the product data sheet and dimensional drawing.



Serial / fabrication number: 042...**24**.... without solenoid valve

Serial / fabrication number: 042...**44**.... with solenoid valve

## 5 Operation

	<b>⚠ WARNING</b>
	<b>Unqualified personnel</b> Inappropriate handling may cause serious injury or property damage. Only qualified personnel are allowed to carry out the described work.

	<b>⚠ WARNING</b>
	<b>Movable parts</b> Human body parts may get jammed and severely injured. Do not operate before product is installed completely into the vacuum system.

### 5.1 Normal operation

Valve is opened and closed pneumatically (double acting compressed air cylinder with sequence control).

### 5.2 Operation under increased temperature

Maximum allowed temperature, see product data sheet.

### 5.3 Behavior in case of compressed air pressure drop

See product data sheet.

### 5.4 Behavior in case of power failure

See product data sheet.

## 5.5 Trouble shooting

Failure	Check	Action	See
Valve cannot be operated	Solenoid valve correctly connected?	Check wiring	«4.4 Electrical connection»
	Electrical power connected?	Check voltage	«4.4 Electrical connection»
	Compressed air connected?	Check air pressure	«4.3 Compressed air connection»
Leak at gate	Contamination?	Clean valve and gate	«6.3 Replacement of gate»
	Gate damaged?	Replace gate	«6.3 Replacement of gate»
	Seal compression weak?	Check air pressure	«4.3 Compressed air connection»
Leak at valve in open position	–	Contact VAT	www.vatvalve.com
No position indicator signal	Valve position correct?	Check position indicator with test device for position indicator	«5.6 Test device for position indicator»

Table 5-1

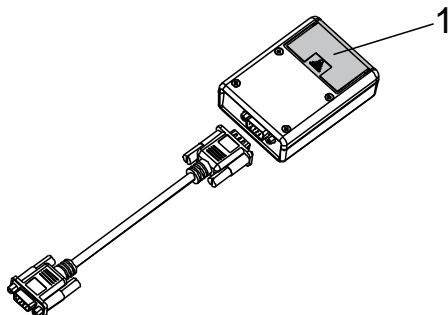
If you need any further information, please contact one of our service centers. You will find the addresses on our website [www.vatvalve.com](http://www.vatvalve.com).

## 5.6 Test device for position indicator

1. Install battery into the test device; see «Table 11-1» on page 28.



Check expiry date of battery.



1 Battery cover

Figure 5-1



2. Disconnect D-sub plug from valve; see «Figure 5-2».

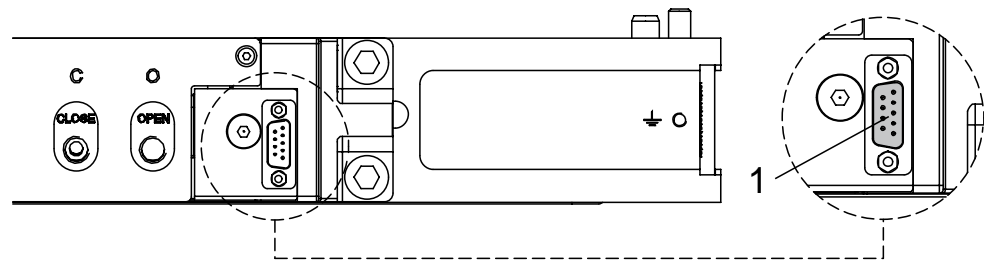


Figure 5-2 Bottom view





1 D-sub connector

3. Connect D-sub plug to test device.
4. Check all three positions accordingly.



If any failure on valve occurs, please contact VAT.

## 6 Maintenance

	<p style="text-align: center;"><b>WARNING</b></p> <p><b>Unqualified personnel</b>                  Inappropriate handling may cause serious injury or property damage.                  Only qualified personnel are allowed to carry out the described work.</p>
	<p style="text-align: center;"><b>WARNING</b></p> <p><b>Hazardous components</b>                  Parts, loaded springs, air cushions etc. may move or release a movement and cause serious injury.                  Before starting maintenance:                  – disconnect compressed air supply                  – disconnect electrical power supply</p>
	<p style="text-align: center;"><b>WARNING</b></p> <p><b>Movable parts</b>                  Human body parts may get jammed and severely injured.                  Keep human body parts away from movable parts.</p>
	<p style="text-align: center;"><b>NOTICE</b></p> <p><b>Contamination</b>                  Product may get contaminated.                  Always wear cleanroom gloves when handling the product.</p>

### 6.1 Maintenance intervals





- Impacts from the process may require more frequent maintenance.
- When the valve has reached the specified cycles; see product data sheet; we recommend to have it serviced by VAT. Please contact your nearest VAT service center to get recommendations and an offer. You will find the addresses on our website [www.vatvalve.com](http://www.vatvalve.com).


## 6.2 Required tools


- Convenience tool; see «Table 11-1» on page 28
- Torque wrench 8 Nm / 14 Nm


## 6.3 Replacement of gate

	<b>⚠ WARNING</b>
	<p><b>Unqualified personnel</b> Inappropriate handling may cause serious injury or property damage. Only qualified personnel are allowed to carry out the described work.</p>


	<b>⚠ WARNING</b>
	<p><b>Movable parts</b> Human body parts may get jammed and severely injured. Keep human body parts away from movable parts.</p>

	<b>NOTICE</b>
	<p><b>Wrong tightening torque</b> Valve body and screws may get damaged. Use tightening torque according to size of the screws.</p>

	<b>NOTICE</b>
	<p><b>Contamination</b> Product may get contaminated. Always wear cleanroom gloves when handling the product.</p>

 Gate replacement can be done through the service cover of the valve.

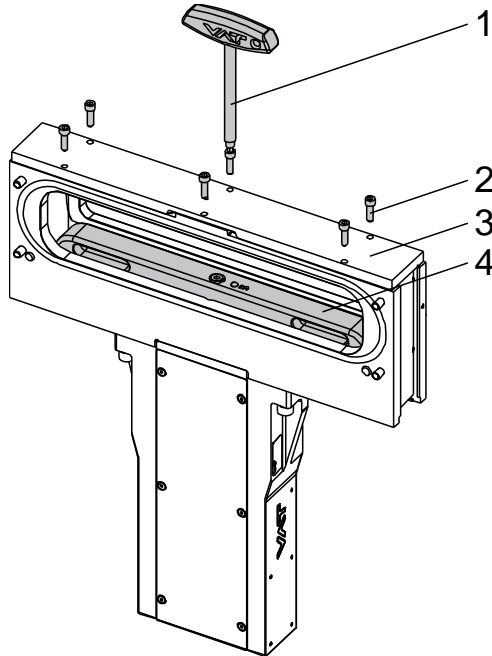
1. Open the valve.

 Make sure that the gate assembly is in OPEN position.

2. Disconnect electrical power supply.

3. Disconnect compressed air supply.

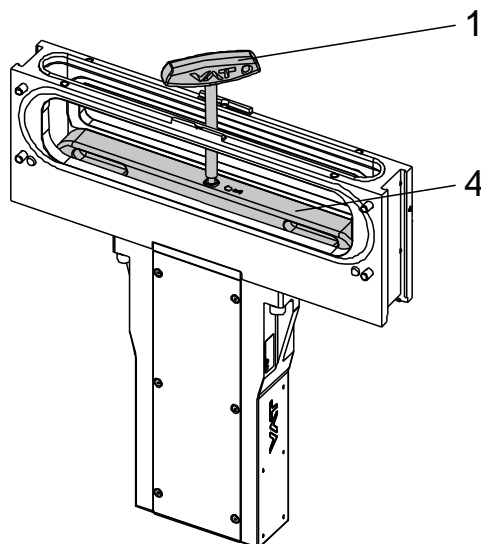
4. Remove all service cover screws (2) on top of the service cover (3), use convenience tool (1); see «Figure 6-1».



- 1 Convenience tool
- 2 Service cover screw
- 3 Service cover
- 4 Gate

Figure 6-1

5. Remove service cover (3) and put it on a clean surface.
6. Loosen the screw for the gate.



- 1 Convenience tool
- 4 Gate

Figure 6-2

7. Grasp the gate, by using the convenience tool (1) into the M8 thread; see «Figure 6-2» on page 20.
8. Remove the gate (4) carefully.

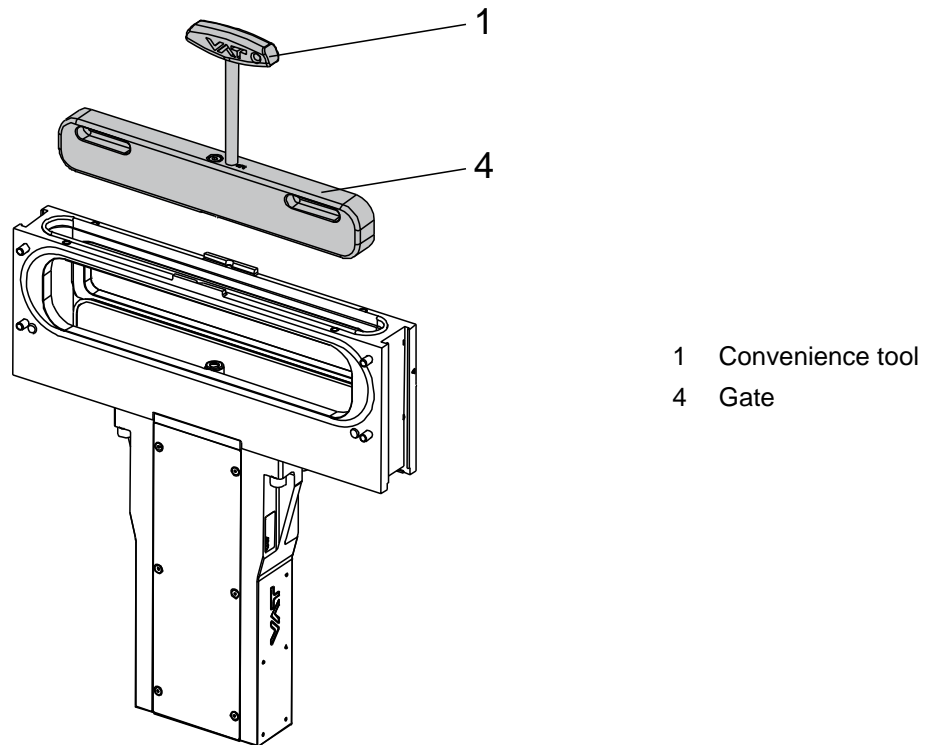


Figure 6-3

9. Grasp a new gate, by using the convenience tool (1) into the M8 thread.
10. Insert a new gate carefully, by using the convenience tool.
11. Tighten the screw for the gate with a torque of 14 Nm; use torque wrench 14 Nm.
12. Mount the service cover (3); see «Figure 6-1» on page 20.
13. Tighten all service cover screws (2) of the service cover (3) crosswise with a torque of 8 Nm; see «Figure 6-1» on page 20. Use torque wrench 8 Nm.
14. Connect compressed air supply.
15. Connect electrical power supply.



Make sure that the gate assembly is in OPEN position.





Valve is ready for use.

## 7 Repairs

Repairs may only be carried out by the VAT service staff. In exceptional cases, the customer is allowed to carry out the repairs, but only with the prior consent of VAT.

Please contact one of our service centers. You will find the addresses on our website [www.vatvalve.com](http://www.vatvalve.com).

## 8 Dismounting and Storage

	<p style="text-align: center;"><b>⚠ WARNING</b></p> <p><b>Unqualified personnel</b> Inappropriate handling may cause serious injury or property damage. Only qualified personnel are allowed to carry out the described work.</p>
	<p style="text-align: center;"><b>⚠ WARNING</b></p> <p><b>Hazardous components</b> Parts, loaded springs, air cushions etc. may move or release a movement and cause serious injury. Before dismantling the product: – disconnect compressed air supply – disconnect electrical power supply</p>
	<p style="text-align: center;"><b>⚠ WARNING</b></p> <p><b>Movable parts</b> Human body parts may get jammed and severely injured. Keep human body parts away from movable parts.</p>
	<p style="text-align: center;"><b>NOTICE</b></p> <p><b>Contamination</b> Product may get contaminated. Always wear cleanroom gloves when handling the product.</p>

### 8.1 Dismounting


1. Open valve.


For dismantling the valve follow the instruction of chapter «4 Installation», however in reverse order.



Observe safety instruction of chapter «4 Installation».

## 8.2 Storage


<b>NOTICE</b>	
	<p><b>Wrong storage</b></p> <p>Inappropriate temperatures and humidity may cause damage to the product.</p> <p>Valve must be stored at:</p> <ul style="list-style-type: none"><li>– relative humidity between 10% and 70%</li><li>– temperature between 10 °C and +50 °C</li><li>– non-condensing environment</li></ul>


<b>NOTICE</b>	
	<p><b>Inappropriate packaging</b></p> <p>Product may get damaged if inappropriate packaging material is used.</p> <p>Always use the original packaging material and handle product with care.</p>


1. Clean / decontaminate valve.
2. Cover all valve openings with a protective foil.
3. Pack valve appropriately, by using the original packaging material.



## 9 Packaging and Transport

	<b>⚠ WARNING</b>
	<b>Unqualified personnel</b> Inappropriate handling may cause serious injury or property damage. Only qualified personnel are allowed to carry out the described work.

	<b>⚠ WARNING</b>
	<b>Harmful substances</b> Risk of injury in case of contact with harmful substances. Remove harmful substances (e. g. toxic, caustic or microbiological ones) from valve before you return the valve to VAT.

	<b>NOTICE</b>
	<b>Inappropriate packaging</b> Product may get damaged if inappropriate packaging material is used. Always use the original packaging material and handle product with care.



- When returning products to VAT, please fill out the VAT form «Declaration of Chemical Contamination» and send it to VAT in advance. The form can be downloaded from our website [www.vatvalve.com](http://www.vatvalve.com).
- If products are radioactively contaminated, the VAT form «Contamination and Radiation Report» must be filled out. Please contact VAT in advance.
- If products are sent to VAT in contaminated condition, VAT will carry out the decontamination procedure at the customer's expense.

## 9.1 Packaging

1. Cover all valve openings with a protective foil.
2. Pack valve appropriately, by using the original packaging material.



VAT disclaims any liability for damages resulting from inappropriate packaging.

## 9.2 Transport



### **NOTICE**



#### **Inappropriate packaging**

Product may get damaged if inappropriate packaging material is used.  
Always use the original packaging material and handle product with care.



VAT disclaims any liability for damages resulting from inappropriate packaging.

## 10 Disposal

	 <b>WARNING</b>	
	<b>Harmful substances</b> Environmental pollution. Discard products and parts according to the local regulations.	

## 11 Spare parts

	NOTICE
<p><b>Non-original spare parts</b>                  Non-original spare parts may cause damage to the product.                  Use original spare parts from VAT only.</p>	



- Please specify the serial / fabrication number of the product when you place an order for spare parts; see chapter «1.1 Identification of product». This is to ensure that the appropriate spare parts are supplied.
- VAT makes a difference between spare parts that may be replaced by the customer and those that need to be replaced by the VAT service staff.
- «Table 11-1» only contains spare parts that may be replaced by the customer. If you need any other spare parts, please contact one of our service centers. You will find the addresses on our website [www.vatvalve.com](http://www.vatvalve.com).

Description	Part No.	Quantity per valve	Maintenance procedure see chapter
Convenience tool	239582	1	«6.3 Replacement of gate»
Gate	on request	1	«6.3 Replacement of gate»
Test device for position indicator	409213	1	«5.6 Test device for position indicator»

Table 11-1

