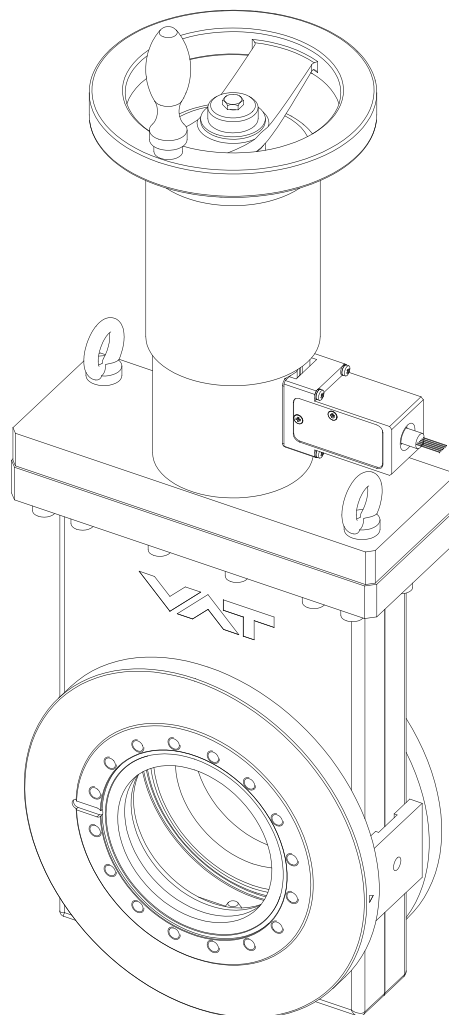


All-metal gate valve with manual actuator

Series 48
DN 16 – 320 mm (I.D. 5/8" – 12")

This manual is valid for the following product ordering numbers:

48124- . E0. -
48132- . E0. -
48236- . E0. -
48240- . E0. -
48244- . E0. -
48146- . E0. -
48148- . E0. -
48150- . E0. -



Sample picture

Imprint

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Publisher VAT Vakuumentile AG, CH-9469 Haag, Switzerland

Editor VAT Vakuumentile AG, CH-9469 Haag, Switzerland

Print VAT Vakuumentile AG, CH-9469 Haag, Switzerland

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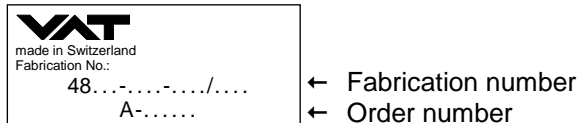
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1 Description of product

1.1 Identification of product

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



1.2 Use of product

Use product for clean and dry vacuum applications only. 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>Lack of knowledge 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>High risk Indicates a hazardous situation which, if not avoided, will result in death or serious injury.</p>

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

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

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

2.3 Personnel qualifications

	WARNING
	<p>Unqualified personnel 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

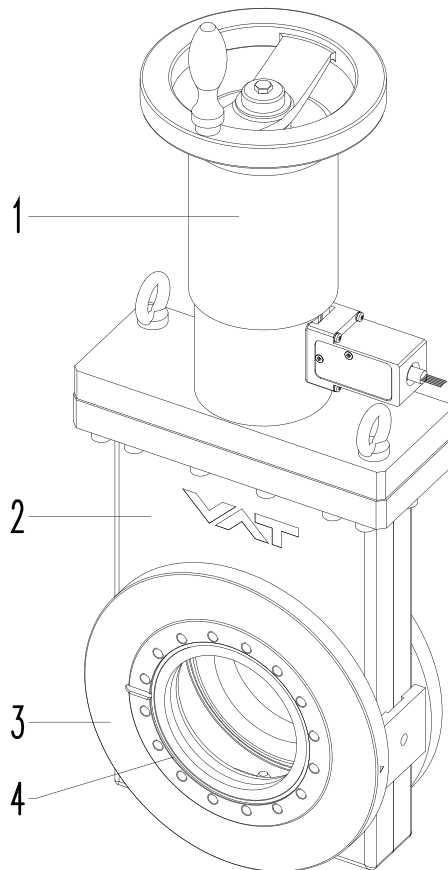
Label	Part No.	Label size (mm)	Location on valve
	DN 16–100: T-9001-155 DN 160–320: T-9001-156	20 x 20 80 x 80	On protective covers of flanges

Table 2-1

3 Design and Function

3.1 Design

With manual actuator:
Type 48 ... - . E0 . -



1. Actuator
2. Valve body
3. Connecting flange
4. Sealing surface

Figure 3-1

3.2 Function

Valve is closed and opened manually by a spindle drive.

Closing: The valve mechanism moves towards the valve opening until it touches the mechanical stop (4). Due to continued pressure, valve gate (1) and counter-plate (2) spread apart and effect leaktight closing.

Opening: Valve gate (1) and counter-plate (2) are retracted and valve mechanism moves back into the valve body.

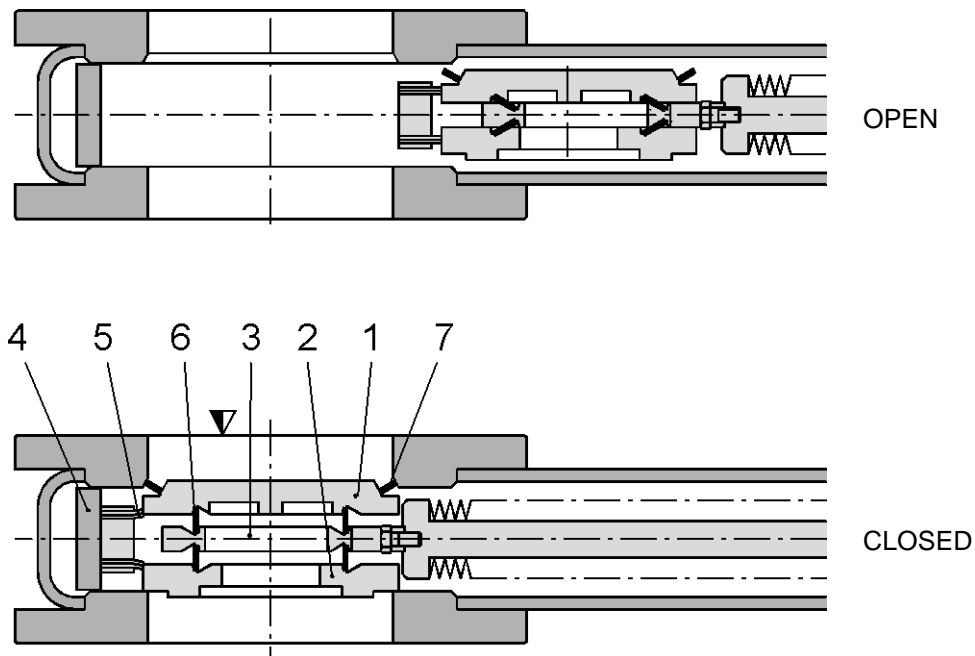




Figure 3-2

- | | |
|-----------------|-------------------|
| 1 Valve gate | 5 Leaf spring |
| 2 Counter-plate | 6 Support |
| 3 Guide plate | 7 VATRING |
| 4 Spring stop | ▽ Valve seat side |

4 Installation

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

	⚠ WARNING
	<p>Heavy weight Physical overstraining. Use a crane to lift the product.</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.



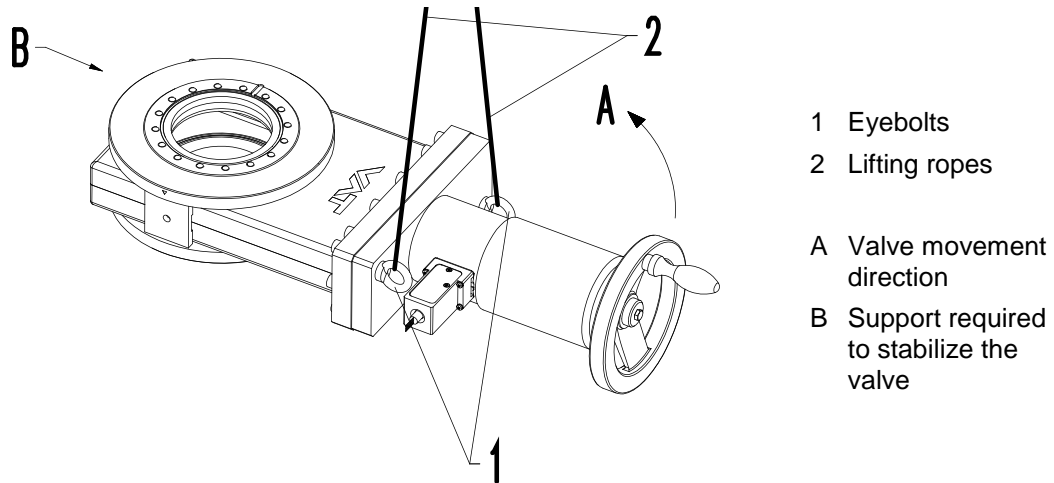
Open the plastic bag protecting the valve only at the points where you need access to the eyebolts (1) for fastening the crane hooks; see «Figure 4-1» on page 10. Keep valve in the plastic bag until it is being installed into the system.

	NOTICE
	<p>Wrong lifting Valve may crash and get damaged. Use only the eyebolts shown in the dimensional drawing and in «Figure 4-1» on page 10 to lift the valve. Using any other components (e. g. position indicators, solenoids) to lift the valve is strictly forbidden.</p>

	NOTICE
	<p>Sensitive product Valve parts may get damaged.</p> <ul style="list-style-type: none"> – When lifting the valve, pay attention that the valve does not touch any solid objects. – Lift valve carefully and put it down on a clean surface or mount it to a clean system.

Use a crane for lifting valves DN100 and larger out of the transport box; see «Figure 4-1».

Weight of valves; see chapter product data sheet.



- 1 Eyebolts
- 2 Lifting ropes

- A Valve movement direction
- B Support required to stabilize the valve

Figure 4-1

4.2 Installation into the system

	NOTICE
	<p>Contamination</p> <p>Product may get contaminated. Always wear cleanroom gloves when handling the product.</p>
	NOTICE
	<p>Force effect from other components of the system</p> <p>Valve body may get deformed and/or malfunctions may occur.</p> <ul style="list-style-type: none"> – Do not use valve to support other components. – Make sure that forces from other components do not impair the valve; use bellows sections, for instance.

4.2.1 Preparation for installation

	⚠ WARNING
	<p>Danger of injury in case of insufficient skills</p> <p>Inappropriate handling may cause serious injury or property damage. Make sure that the valve does not topple or fall down while removing the protective covers from the flanges.</p>

	NOTICE
	<p>Sensitive product</p> <p>Valve parts may get damaged. When removing the protective covers from the flanges, be careful to avoid damage to the valve.</p>

1. Remove plastic bag.
2. Remove screws (2) and protective covers (3); see «Figure 4-2».
3. Remove O-rings (4).

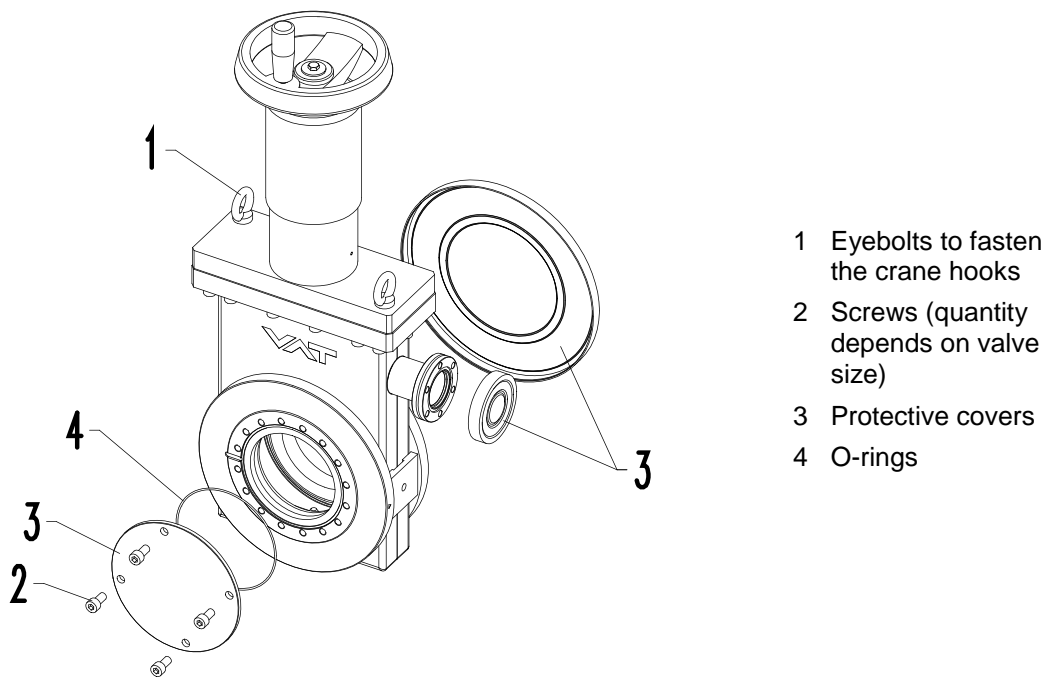


Figure 4-2



Store screws, protective covers and O-rings. They may be useful when valve needs to be repacked.

4. Clean sealing surfaces; see «Figure 3-1» on page 7, with a cleanroom wiper soaked with pure alcohol (Isopropanol).
5. Clean surface with clean, oil free compressed air.

4.2.2 Mounting to the system



The valve seat side is marked with the symbol «∇» on flange «A»; see «Figure 4-3».

1. Mount valve to your system by using appropriate flange screws (different quantity of screws required – depending on valve size).
2. Initially, mount four screws evenly in crosswise order until the seal touches the sealing surface.
3. Afterwards, mount all screws evenly in crosswise order.
4. Tighten all screws with the torques appropriate for the property classes of the screws.

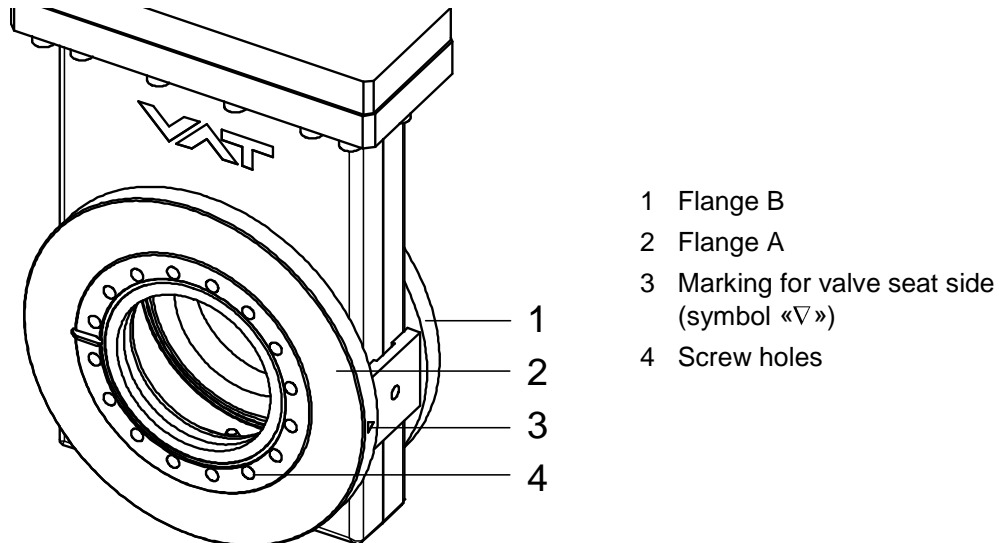


Figure 4-3

4.3 Electrical connection



NOTICE



Wrong voltage

Electrical components may get damaged.

Supply electrical components with the correct voltage.

1. Connect position indicator (option) according to the product data sheet and dimensional drawing.

5 Operation

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

5.1 Normal operation


Valve is closed and opened manually by a spindle drive.



For technical details, see product data sheet.

5.2 Operation under increased temperature

Maximum allowed temperature, see product data sheet.

	NOTICE	
	<p>Inconstant temperatures Performance of the valve may deteriorate.</p> <ul style="list-style-type: none"> – Actuate valve only after the bake-out temperature has been stable for two hours. – If valve must be actuated during bake-out, make sure that the heating or cooling rate does not exceed 10 °C per hour in the temperature range from 100 °C to 300 °C. – Make sure that the temperature differences over the whole body do not exceed 30 °C. 	

5.3 Bake-out



Inside under vacuum pressure $\leq 10^{-5}$ mbar to prevent oxidation.

Valve:		≤ 300 °C in open and closed position
Actuator:	standard:	≤ 140 °C
	option: 200°C	≤ 200 °C
	option: 10^6 Gy (10^8 rad)	≤ 200 °C

Position indicator:	standard:	$\leq 80\text{ }^{\circ}\text{C}$
	option: 200 °C	$\leq 200\text{ }^{\circ}\text{C}$
	option: 10^6 Gy (10^8 rad)	$\leq 80\text{ }^{\circ}\text{C}$
Heating and cooling rate:		
DN 16		$\leq 80\text{ }^{\circ}\text{C / h}$
DN 40 – 160		$\leq 50\text{ }^{\circ}\text{C / h}$
DN 200 – 320		$\leq 25\text{ }^{\circ}\text{C / h}$

Table 5-1

5.4 Trouble shooting

Failure	Check	Action	See
No or wrong position indicator signal	Position indicator connected correctly?	Check electrical power supply and wiring	Product data sheet
Leak at gate	Condition of gate seal	Please contact VAT	www.vatvalve.com
	Condition of valve gate	Please contact VAT	www.vatvalve.com
Leak at body	Condition of bonnet seal and sealing surface	Please contact VAT	www.vatvalve.com
	Condition of bellows	Please contact VAT	www.vatvalve.com
Whistling sound during opening or closing	–	No action required when valve is actuated at atmosphere	–
	–	No action required when valve is actuated in vacuum as long as the sound is not excessive	–

Table 5-2

If you need any further information, please contact one of our service centers. You will find the addresses on our website www.vatvalve.com.

6 Maintenance

6.1 Maintenance intervals

Under clean operating conditions the valve does not require any maintenance during the specified life cycle.






- Impacts from the process may require more frequent maintenance.
- When the valve has reached the specified life cycle; 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.

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.

8 Dismounting and Storage

	<p style="text-align: center;">⚠ WARNING</p> <p>Unqualified personnel 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;">⚠ WARNING</p> <p>Heavy weight Physical overstraining. Use a crane to lift the product.</p>
	<p style="text-align: center;">NOTICE</p> <p>Contamination Product may get contaminated. Always wear cleanroom gloves when handling the product.</p>


8.1 Dismounting


1. Close valve.
2. Dismount valve according chapter «4 Installation», however in reverse order.



Observe safety instruction of chapter «4 Installation».





8.2 Storage

NOTICE	
	<p>Wrong storage</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">– relative humidity between 10% and 70%– temperature between +10 °C and +50 °C– non-condensing environment

NOTICE	
	<p>Inappropriate packaging</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>

3. Clean / decontaminate valve.
4. Mount protective covers on flanges; see chapter «4.2.1 Preparation for installation».
5. Pack valve appropriately, by using the original packaging material.

9 Packaging and Transport

	<p>⚠ WARNING</p> <p>Unqualified personnel Inappropriate handling may cause serious injury or property damage. Only qualified personnel are allowed to carry out the described work.</p>
	<p>⚠ WARNING</p> <p>Harmful substances 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.</p>
	<p>⚠ WARNING</p> <p>Heavy weight Physical overstraining. Use a crane to lift the product.</p>
	<p>NOTICE</p> <p>Inappropriate packaging Product may get damaged if inappropriate packaging material is used. Always use the original packaging material and handle product with care.</p>



- 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.
- 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. Mount protective covers on flanges; see chapter «4.2.1 Preparation for installation».
2. Pack valve appropriately, by using the original packaging material.



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9.2 Transport

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



VAT disclaims any liability for damages resulting from inappropriate packaging.

10 Disposal

	⚠ WARNING
	Harmful substances Environmental pollution. Discard products and parts according to the local regulations.

11 Spare parts



NOTICE

Non-original spare parts

Non-original spare parts may cause damage to the product.
Use original spare parts from VAT only.



- Parts may only be replaced by the VAT service staff.
- Please contact one of our service centers and specify the fabrication number of the product; see chapter «1.1 Identification of product». You will find the addresses on our website www.vatvalve.com.