



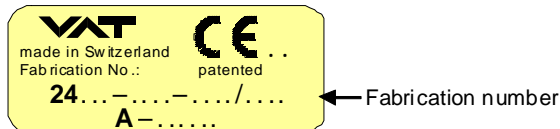
## Vacuum Angle Valve (244)

## Vacuum Angle Valve (245)

with pneumatic actuator,  
single acting with closing spring (NC)

This manual is valid for the valve ordering number:  
244...  
245...

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!



Installation, Operating & Maintenance Instructions

**Series 244, DN 63 - 80 (I.D. 2<sup>1</sup>/<sub>2</sub>" - 3")**

**Series 245, DN 63 - 80 (I.D. 2<sup>1</sup>/<sub>2</sub>" - 3")**

---

**Imprint:**

**Manufacturer** VAT Vakuumventile AG, CH-9469 Haag, Switzerland

Website  
www.vatvalve.com

Phone  
+41 81 771 61 61

Fax  
+41 81 771 48 30

Email  
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 2008

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:**

1	Use of product .....	4
1.1	Technical data .....	4
2	Installation.....	5
2.1	Unpacking .....	5
2.2	Installation into the system.....	5
2.3	Connections .....	5
2.3.1	Compressed air connection .....	5
2.3.2	Electrical connection .....	6
3	Operation .....	9
3.1	Normal operation.....	9
3.2	Operation under increased temperature .....	9
3.3	Behavior in case of compressed air pressure drop.....	9
3.4	Behavior in case of power failure .....	9
4	Trouble shooting.....	9
5	Maintenance & repairs .....	10
5.1	Replacement of vacuum seals .....	10
5.1.1	Dismount "actuator/gate assembly" .....	10
5.1.2	Replacement of plate seal .....	11
5.1.3	Replacement of feedthrough O-ring (15/3) .....	11
5.1.4	Mount "actuator/plate assembly" .....	11
6	Drawing.....	12
7	Spare parts .....	13
8	Warranty .....	14



## 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 standard valve

Leak rate	1 x 10 <sup>-9</sup> mbar l / s	
Pressure range	1 x 10 <sup>-7</sup> mbar to 4 bar (abs)	
Molecular flow conductance	DN 63: 160 l s <sup>-1</sup> DN 80: 200 l s <sup>-1</sup>	
Differential pressure:		
in opening direction	DN 63: ≤ 2 bar DN 80: ≤ 1,2 bar	
in closing direction	DN 63: ≤ 5 bar DN 80: ≤ 4 bar	
Differential pressure at opening	≤ 1 bar in either direction	
Admissible temperature	body	0°C bis 150°C
	actuator	0°C bis 120°C
	position indicator	0°C bis 80°C
	solenoid valve	0°C bis 80°C
Cycles until first service	3 Mio cycles at T <sub>max</sub> 80°C	
Position indicator power rating	Voltage:	50 V AC / DC
	Current:	0,1 A
	Power:	1,0 VA / W
Position indicator cable	standard 500 mm, no plug	
Solenoid	voltage	see label on solenoid

**Technical data for valve with specific options according to «product data sheet».**  
Product data sheet on request.



## 2 Installation

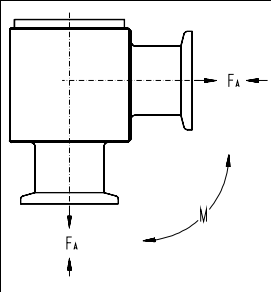
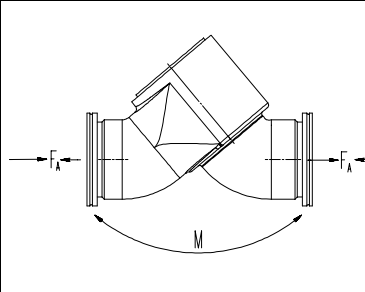
### 2.1 Unpacking

Before unpacking the valve, make sure that the packaging is in impeccable condition and the valve has not suffered damage.

**Note!** The plastic packing material and/or protective covers may only be removed immediately before the valve is mounted into the system. Unprotected sealing surfaces must be treated with care and kept clean.

### 2.2 Installation into the system

DN (nom. I.D.)		Axial tensile or compressive force «F <sub>A</sub> »		Bending moment «M»	
mm	inch	N	lbf	Nm	lbf · ft
63	2 1/2	200	45	18	13
80	3	250	50	22	16

A combination of both forces «F<sub>A</sub>» and «M» is prohibited. Please contact VAT.

### 2.3 Connections

#### 2.3.1 Compressed air connection



Connect compressed air only when

- valve is installed into the system
- moving parts cannot be touched

The valve is closed by a spring at compressed air failure.

Connection: Internal thread R1/8" (various adapter as option)

Compressed air pressure (min. - max. overpressure): 4 - 8 bar / 60 - 115 psi

Use clean, dry or slightly oiled air only!



2.3.2 Electrical connection



Do not touch parts under voltage!



Hot surfaces; do not touch!

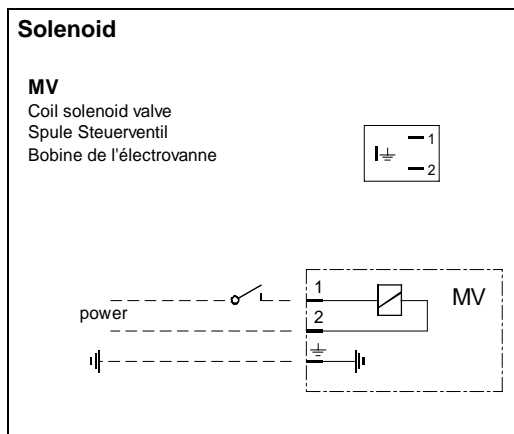


Connect electrical power only when  
- valve is installed into the system  
- moving parts cannot be touched

Make sure that the control voltage is in accordance with the voltage stated on the solenoid!

Plug for solenoid is supplied with the valve.

Connections:





Installation, Operating & Maintenance Instructions

Series 244, DN 63 - 80 (I.D. 2 1/2" - 3")

Series 245, DN 63 - 80 (I.D. 2 1/2" - 3")

**Position indicator «open/closed»**  
**Admissible temperature 80°C (standard)**

<b>Lo</b> Position indicator "open" Lagemelder "offen" Indicateur de position "ouvert"	<b>Lg</b> Position indicator "closed" Lagemelder "geschlossen" Indicateur de position "fermé"
---	--

**Position indicator «open/closed»**  
**Admissible temperature 120°C (option)**

<b>Lo</b> Position indicator "open" Lagemelder "offen" Indicateur de position "ouvert"	<b>Lg</b> Position indicator "closed" Lagemelder "geschlossen" Indicateur de position "fermé"
---	--

**Position indicator with plug (option)**

**Plug 7 pin (standard wiring)**

<b>Lo</b> Position indicator "open" Lagemelder "offen" Indicateur de position "ouvert"	<b>Lg</b> Position indicator "closed" Lagemelder "geschlossen" Indicateur de position "fermé"
---	--

**D-sub plug 9 pin**

<b>Lo</b> Position indicator "open" Lagemelder "offen" Indicateur de position "ouvert"	<b>Lg</b> Position indicator "closed" Lagemelder "geschlossen" Indicateur de position "fermé"
---	--

Betriebsspannung  
max. 50 V DC

**M8 plug 4 pin**

<b>Lo</b> Position indicator "open" Lagemelder "offen" Indicateur de position "ouvert"	<b>Lg</b> Position indicator "closed" Lagemelder "geschlossen" Indicateur de position "fermé"
---	--

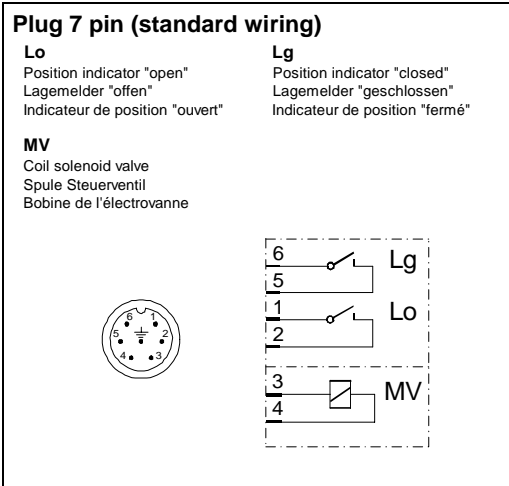


Installation, Operating & Maintenance Instructions

Series 244, DN 63 - 80 (I.D. 2<sup>1</sup>/<sub>2</sub>" - 3")

Series 245, DN 63 - 80 (I.D. 2<sup>1</sup>/<sub>2</sub>" - 3")

Common connector for solenoid and position indicator (option)







## 3 Operation

### 3.1 Normal operation

Valve with pneumatic actuator: - valve is closed with a spring  
- valve is opened pneumatically

### 3.2 Operation under increased temperature

See «1.1 Technical data»

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

Valve closed: valve remains closed and leaktight  
Valve open: valve closes leaktight

### 3.4 Behavior in case of power failure

Valve equipped with a solenoid valve:  
Valve is closed leaktight by a spring.

Valve without a solenoid valve:  
Depends on customer installation.

## 4 Trouble shooting

Failure	Check	Action
Valve does not open / close	Power available?	Connect correct voltage
	Compressed air available?	Connect correct air pressure

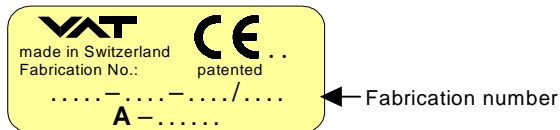
If you need any further information, please contact one of our service centers. You can find the addresses on our website:  
<http://www.vat.ch>



## 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 Replacement of vacuum seals

The item numbers in brackets refer to the drawing on page 12

#### 5.1.1 Dismount "actuator/gate assembly"



- Remove 4 screws (60) uniformly and crosswise  
**Attention:** Loaded spring!
- Withdraw "actuator/gate assembly" carefully from body (pneumatic actuator)
- Remove bonnet seal (O-ring, 62) from groove



#### 5.1.2 Replacement of plate seal

- Dismount "actuator/gate assembly" (see 5.1.1)
- Pick O-ring (61) with a needle and pull it out of groove
- **Attention: Do not damage the sealing surface!**
- Check sealing surface and clean it with alcohol
- Put new O-ring (61) on plate groove and press it crosswise into groove at 4 points
- Press O-ring uniformly into groove
- Mount "actuator/gate assembly" (see 5.1.4)

#### 5.1.3 Replacement of feedthrough O-ring (15/3)

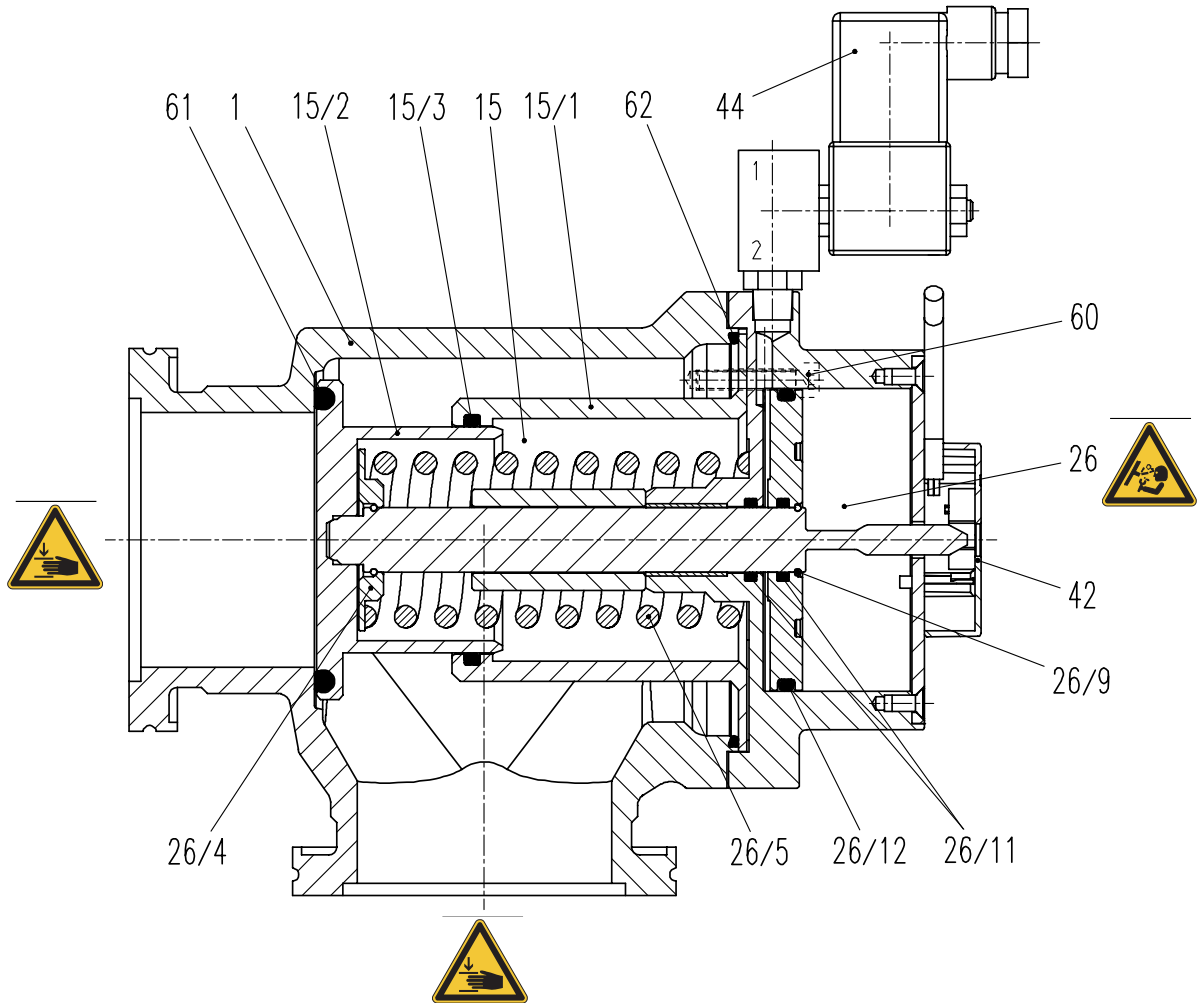
- Dismount "actuator/gate assembly" (see 5.1.1)
- Hold the "actuator/gate assembly" on the plate and turn with a 3mm allen key anticlockwise until the rod is disconnected from the plate.
- Pull the plate (15/2) out of the bushing (15/1).
- Pick the shaft feedthrough o-ring (15/3) with a needle and pull it out of groove
- **Attention: Do not damage the sealing surface!**
- Check sealing surface and clean it with alcohol
- Use a small amount of VAT vacuum grease to lubricate the o-ring (15/3) and the sliding surface of the shaft feedthrough
- Put new O-ring (15/3) into the groove and press it crosswise into the groove at 4 points
- Press O-ring (15/3) uniformly into the groove
- Put 2-3 bits of Loctite 222 on the thread of the rod
- Push the plate (15/2) into the shaft feedthrough and turn on the rod with a 3mm allen key clockwise until the rod is connected with the plate.
- Mount the actuator assembly (see 5.1.4)

#### 5.1.4 Mount "actuator/plate assembly"

- Check and clean sealing surfaces of bonnet flange and valve seat
- Put bonnet seal (O-ring, 62) into body
- Carefully insert "actuator/plate assembly". Do not cant!
- Fasten 4 screws (60) uniformly and crosswise in 2 to 3 steps
- Perform function and leak test



## 6 Drawing





## 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.

Item	Description	Extras
1	body	
15/1	Feedthrough end piece	
15/2	Plate	
15/3	Shaft feedthrough O-ring	
26	Actuator complete	
26/11	O-ring for pneumatic actuator	
26/12	O-ring for pneumatic actuator	
42	Position indicator complete	
44	Solenoid valve	
61	Plate seal (O-ring)	
62	Bonnet seal (O-ring)	
61/62	Seal kit vacuum	
	VAT vacuum grease	12 g
	Loctite 222	10ml / 50ml / 250ml

Solenoid valve	Item	Description	Voltage (±10 %)
	44	Solenoid valve	12 VDC
			24 VDC
			48 VDC
			110 VDC
			24 VAC / 50 Hz
			24 VAC / 60 Hz
			48 VAC / 50 Hz
			100 VAC / 50-60 Hz
			110-115 VAC / 50 Hz
			110-115 VAC / 60 Hz
			200 VAC / 50-60 Hz
			220-230 VAC / 50 Hz
			220-230 VAC / 60 Hz



## 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.