

All-Metal Angle Valve

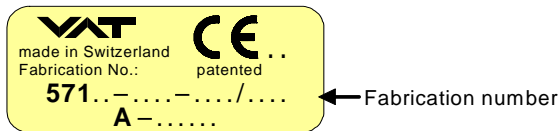
Single acting pneumatic actuator with closing spring (compact)



This manual is valid for the valve ordering number(s):
 57120-XE21-....

X = flanges CF-R 16 (Standard Specification)

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 57.1, DN 10 (I.D. 2/5")

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

Pressure range	extreme UHV to 5 bar (abs)
Differential pressure on the plate	5 bar in either direction
Max. differential pressure at opening	1 bar (>1 bar with reduced cycle life)
Admissible temperature: Valve body	≤ 250°C open and closed
Pneumatic actuator	≤ 150°C
Position indicator	≤ 80°C (option 200 C)
cycles until first service	10000
Position indicator: Contact rating	≤ 50 V AC / DC; ≤ 1.2 A (80°C version) ≤ 50 V AC / DC; ≤ 1 A (200°C version)

Further data according to VAT catalogue «Vacuum Valves 2012»

2 Installation

2.1 Unpacking



Handling of the valve must take place under clean conditions normally observed in good vacuum practice. The valve may only be touched with clean gloves. After the protective covers have been removed, the sealing surfaces of the flanges have to be cleaned carefully with alcohol. The screws of the flanges have to be tightened uniformly in diagonal crosswise order. Determine that the valve and existing plumbing in the vacuum system will be adequately supported.

2.2 Installation into the system

The valve must not support other components and has to be protected from forces of the system (e.g. by bellows sections).

2.3 Connections

2.3.1 Compressed air connection



Connect compressed air only if
 - valve is installed into the vacuum system
 - moving parts cannot be touched

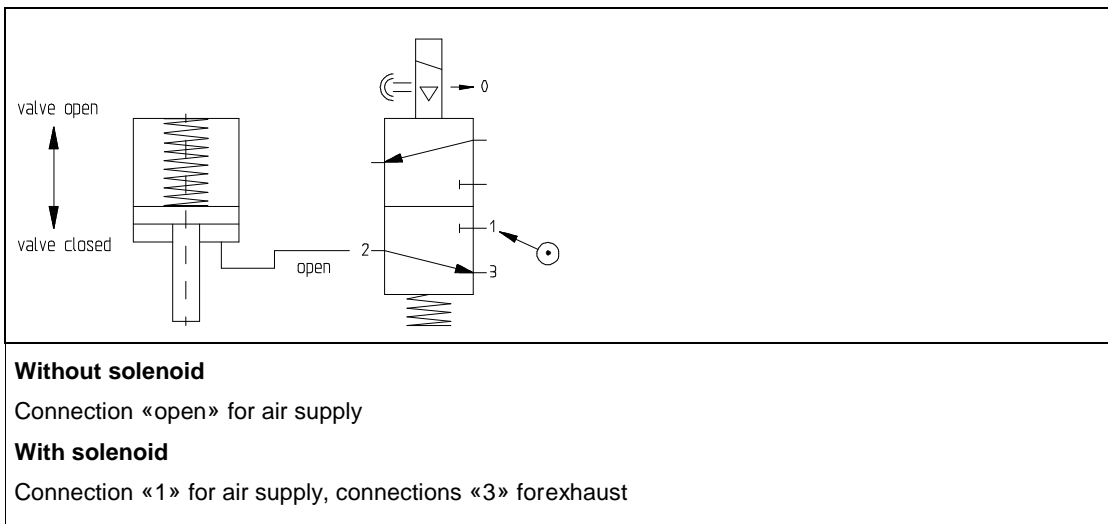
Attention: Please check that the circlip connecting the lid to the cylinder is in proper position.

Connection: internal thread R 1/8" (1/8" NPT for USA)

Connection for compressed air supply: ⊙

Compressed air pressure (min. - max. overpressure): 6 - 9 bar / 85 - 125 psig

Use only clean, dry or slightly lubricated air!



2.3.2 Electrical connection



Do not touch electrical parts under voltage!



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

Socket for position indicator is supplied with the valve.

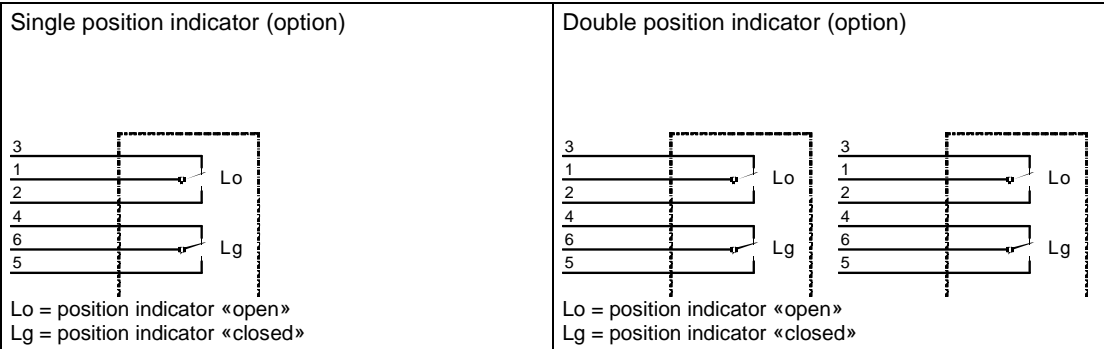
Wiring diagrams:

Position indicators for max. 80°C — contact rating ≤ 50 V AC / DC; ≤ 1.2 A

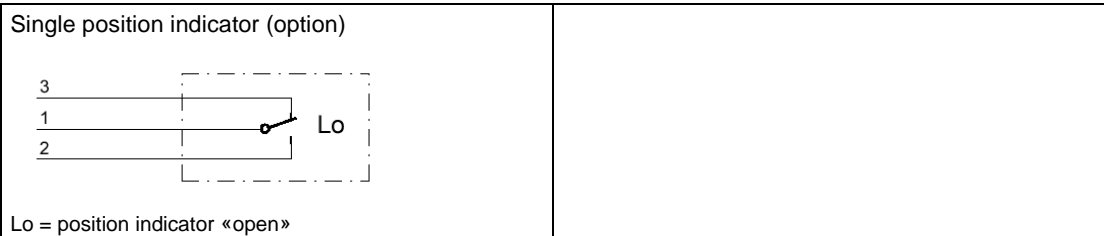
<p>Standard position indicator with make contact switches</p> <p>Lo = position indicator «open» Lg = position indicator «closed»</p>	<p>Double position indicator with make contact switches - two each (option)</p> <p>Lo = position indicator «open» Lg = position indicator «closed»</p>
<p>Position indicator with double throw switches (option)</p> <p>Lo = position indicator «open» Lg = position indicator «closed»</p>	<p>Double position indicator with double throw switches - two each (option)</p> <p>Lo = position indicator «open» Lg = position indicator «closed»</p>



Position indicators for max. 200°C — contact rating ≤ 50 V AC / DC; ≤ 1 A



Position indicator "open" for max. 200°C — contact rating ≤ 50 V AC / DC; ≤ 1 A





3 Operation

3.1 Normal operation

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

Opening of closed valve

- without solenoid:
 - air supply to connection «open» (air release through connection «open»)

Closing of open valve

- without solenoid:
 - air release through connection «open»

3.2 Operation under increased temperature

See «1.1 Technical data»

3.3 Bake out

Valve body:	≤ 250°C open and closed
Actuator:	≤ 150°C
Position indicator:	≤ 80°C (option 200C°)
Solenoid	≤ 80°C
Heating and cooling rate:	60°C/h

Operate the valve only after the bake-out temperature has been stable for two hours.

Temperature differences exceeding 30°C throughout the valve are not allowed. They may affect the performance of the valve.



3.4 Behavior in case of compressed air pressure drop

Valve closed: valve remains closed and leaktight

Valve open: valve closes

4 Trouble shooting

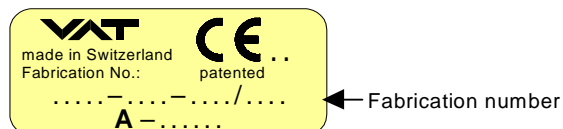
Failure	Check	Action
Valve mechanism does not move:	Compressed air available?	Check air pressure!

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 Preventive Maintenance

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

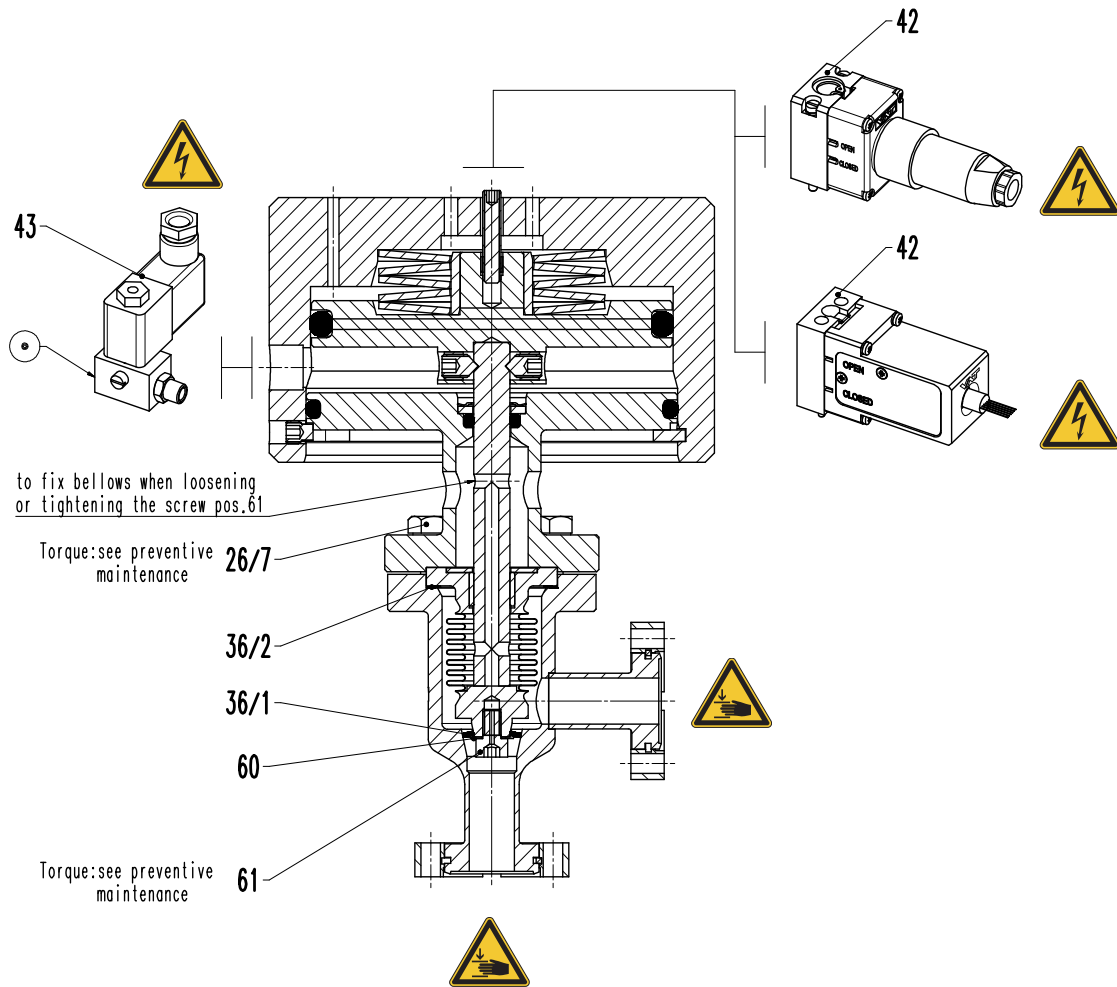
Instruction how to change the VATRING (Don't touch inside valve parts without gloves)

The item numbers refer to the drawing on page 11.

- Open the valve and remove the bonnet screws (Pos.26/7).
- Remove valve insert and bonnet seal (Pos.36/2).
- When opening or tightening screw (Pos.61) the bellows must be protected against turning (torsion) → shown on the next page.
- Remove VATRING.
- Take a lint free tissue dabbed with alcohol and clean all sealing surfaces (plate, bonnet, body seat and VATRING).
- Check sealing surfaces (visually) for scratches.
- Clean VATRING and plate with clean and dry compressed air.
- Place VATRING on sealing surface of the plate.
- Align VATRING parallel with the front of the plate.
- Place holding ring on top of plate.
- Insert screw (Pos.61), protect bellow against turning, tighten screw (torque see list).
- Place new bonnet seal (Pos.36/2) exactly like shown on next page (fitting position)!
- Put valve insert back into valve body and tighten bonnet screws in crosswise order (torque see list).

closing torque of screw with venting hole (pos. 61)	2.5 Nm
closing torque of bonnet screw (pos. 26/7)	7 Nm

6 Drawing





7 Spare parts

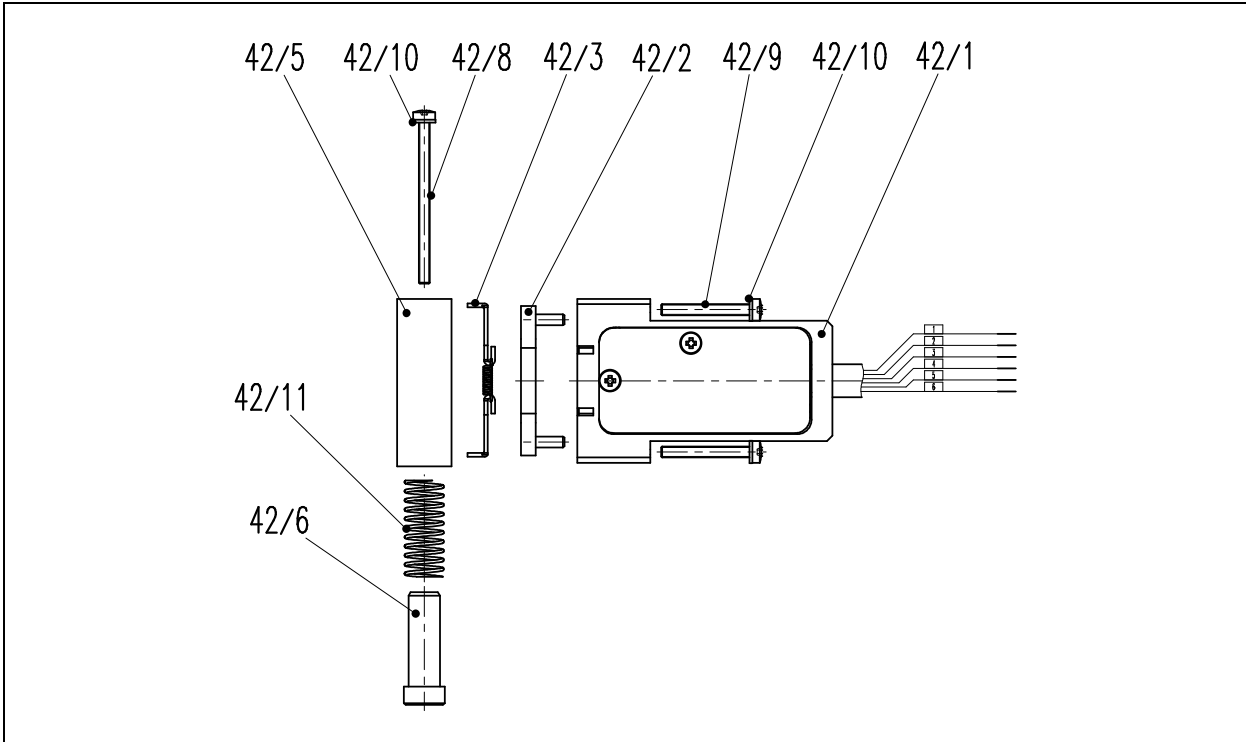


Please specify the **fabrication number of the valve** (see yellow label on valve) when ordering spare parts. This is to ensure that the appropriate spare parts are supplied.

The item numbers refer to the drawing on page 10.

Item	Description	Qty	Part / Ordering number
26/7	Treated hexagon screw	4	202851
36/1	Seal VATRING (standard)	1	45670-01
36/1	Seal VATRING gold-plated	1	509350
36/2	Bonnet seal	1	203120
36	Vacuum seal kit, consisting of VATRING and bonnet seal	1	203119
37	Pneumatic seal kit (Elastomer seals inside the pneumatic actuator)	1	203122
42	BS position indicator (standard 80°C - 7 pole connector)	1	221220
42	BS position indicator (option 200°C with 300 mm cable tail)	1	458150
42	BS position indicator (option 200°C with 5'000 mm cable tail)	1	353275
60	Holding ring	1	45717-01
61	Screw with venting hole	1	217507

Position indicators 200°C (single) with adapter, cable length 300mm



Item	Description	Version	Qty.	Part No.
			single	
42	BS Mini position indicator (300 mm cable tail)	double throw switches	1	458150
42/1	Position indicator (300 mm cable tail)		1	241824
42	BS Mini position indicator (5'000 mm cable tail)	double throw switches	1	353275
42/1	Position indicator (5'000 mm cable tail)		1	353272
42/2	Slider		1	241825
42/3	Driving piece		1	69428-R1
42/5	Holder position indicator		1	80420-01
42/6	Bolt		1	93922-01
42/8	Screw		2	211199
42/9	Screw		4	N-6024-531
42/10	Spring ring		6	N-6160-406
42/11	Pressure spring		1	N-6240-303



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.