

All-Metal Angle Valve manual actuator

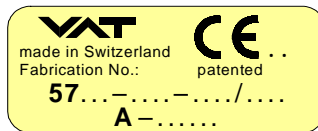
This manual is valid for the valve ordering number(s):

57036-.E02/05/07/08

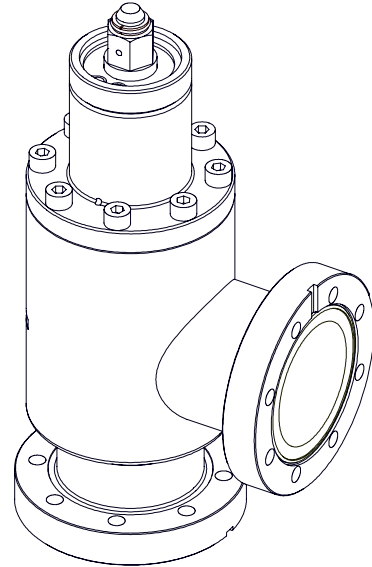
57040-.E02/05/07/08

57044-.E02/05/07/08

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 57.0, DN 63 - 160 (2 1/2" - 6")

Imprint:

Manufacturer VAT Vakuumventile AG, CH-9469 Haag, Switzerland

Website	Phone	Fax	Email
www.vatvalve.com	+41 81 771 61 61	+41 81 771 48 30	CH@vatvalve.com

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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

Leak rate: body, seat		$< 1 \cdot 10^{-10}$ mbarls ⁻¹
Pressure range (T=200°C)		extreme UHV to 5 bar (abs)
	(T=450°C)	extreme UHV to 5 bar (abs)
	DN63	extreme UHV to 3.5 bar (abs)
	DN100 / DN160 .	
Differential pressure on the gate		5 bar in either direction
Max. differential pressure at opening		5 bar in either direction (any differential pressure at opening might reduce the lifetime of the valve)
Admissible temperature:	Valve open	≤ 450°C
	Valve closed	≤ 350°C
	actuator	≤ 300°C
	Position indicator	≤ 80°C (option: 200°C)
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 2008».

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 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

The suitable sockets are 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 and 300°C — contact rating ≤ 50 V AC / DC; ≤ 1 A

<p>Single position indicator (option)</p> <p>Lo = position indicator «open» Lg = position indicator «closed»</p>	<p>Double position indicator (option)</p> <p>Lo = position indicator «open» Lg = position indicator «closed»</p>
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3 Operation

3.1 Normal operation

Opening of closed valve

- turn hexagon head counter clockwise to it's stop. The valve is completely open when the stop is reached.

Closing of open valve

- Valves with hexagon head may be operated by a torque wrench (nominal torque see table below) or by using a hand wheel with sliding clutch Valves with cylindrical head have to be operated by a hand wheel with sliding clutch and free wheel option (see spare parts list).

	Nominal I.D. (DN)		
	DN 63	DN100	DN160
Hexagon head wrench size	22mm	27mm	36mm
Cylindrical head diameter	20mm	30mm	-
Required torque for closing	45Nm	90Nm	125Nm
Maximum allowed closing-torque	51Nm	100Nm	154Nm

Valves with hexagon head may be operated by ring or fork wrench or by using a hand wheel (see spare parts list).
Valves with cylindrical head have to be operated by a hand wheel with free wheel option (see spare parts list).

3.2 Operation under increased temperature

See «1.1 Technical data»

3.3 Bake out

Valve open	≤ 450°C
Valve closed	≤ 350°C
actuator	≤ 300°C
Position indicator:	≤ 80°C (option: 200°C)
Heating and cooling rate:	≤ 60°C/h

Temperature differences exceeding 60°C throughout the valve are not allowed. It may affect the performance of the valve.
The required torque to seal the valve may slightly rise due to bakeouts.



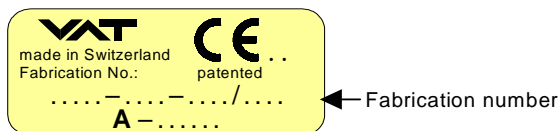
4 Trouble shooting

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

If there is a small leak please try to clean the sealing surface and the seal ring with a lint free towel and some alcohol.

If this doesn't help you can increase the sealing force by increasing the closing torque. The maximum torque is specified in the table under normal operation. It's not allowed to exceed the maximum specified torque.

5.2 Maintenance

Regreasing of actuator shaft:

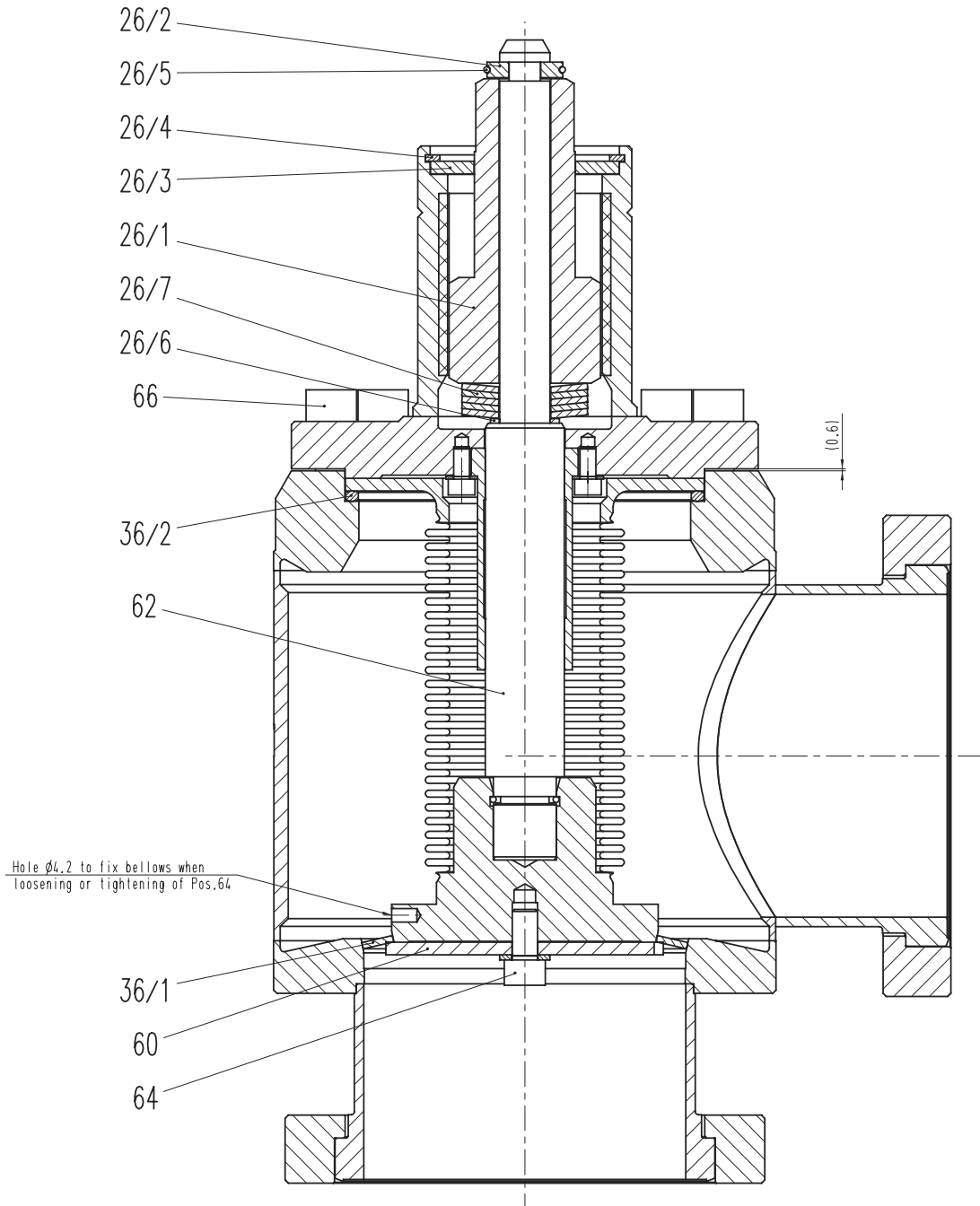
- Remove the circlip (26/4) and washer (26/3)
- Remove the locking ring (26/5) and half shells of bearing (26/2)
- Remove the actuator shaft (26/1) from the spindle (62)
- Remove the Belleville springs (26/7) and washer (26/6)
- Clean actuator shaft (26/1, only thread) and internal thread of actuator, e.g. by using a smooth metal brush
- Regrease these parts with a thin film of Fomblin RT15
- Reassemble actuator parts in reverse order

Instruction how to change the VATRING (Don't touch inside valve parts without gloves) – see also figur 1

- Open the valve and loosen bonnet screws (66)
- Remove valve insert and bonnet seal (36/2)
- When loosening and tightening the screw (64) protect the bellows against torsion with hole \varnothing 4.2
- Remove VATRING
- Take a lint free tissue dabbed with alcohol and clean all sealing surfaces (plate, bonnet, body - seat and bonnet, VATRING)
- Check sealing surfaces (visually) for scratches
- Clean VATRING and plate with cleaned and dry compressed air
- Place VATRING on sealing surface of the plate
- Place holding ring on top of plate
- Align VATRING parallel with the plate
- Insert screw (64), protect bellows against turning, tighten screw (torque according to below list)
- Place new bonnet seal (36/2)
- Put valve insert back into valve body and tighten screws in diagonal crosswise order (torque according to below list)

	Nominal ID (DN)		
	DN 63	DN100	DN160
closing torque of VATRING screw (Pos.64)	15 Nm	15 Nm	15 Nm
closing torque of bonnet screw (Pos.66)	15 Nm	35 Nm	35 Nm

6 Drawing





7 Spare parts

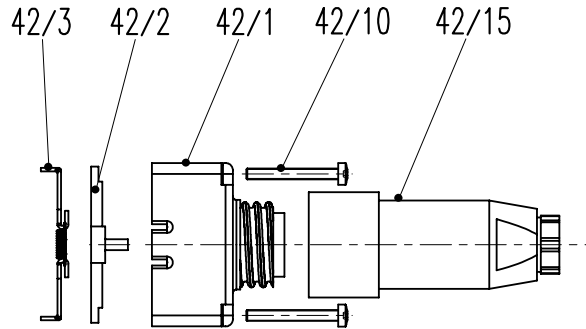


Please specify the **fabrication number of the valve** (see yellow label on valve) when ordering spare parts. This is to ensure that the appropriate spare parts are supplied.

The item numbers refer to the drawing on page 9.

Item	Description	Qty	Part / Ordering number		
			DN 63	DN100	DN160
36/1	VATRING	1	39615-01	39986-01	35774-01
36/2	Bonnet seal	1	51914-03	51914-08	213816
60	Holding ring	1	96868-01	99914-01	213794
64	Screw with venting hole	1	214314	214314	214314
66	Treated hexagon socket head cap screw	6 12 16	N-5019-816	N-5019-839	N-5019-839
99	Hand wheel for hexagon head	1	73753-R1	82438-R1	-
99	Hand wheel for cylindrical head	1	75287-R1	73741-R1	-
	Vacuum seal kit, consisting of VATRING and bonnet seal	1	83173-R1	83921-R1	215875

Position indicators 80°C (single + double) in various versions



Item	Description	Version	Qty.		Part No.
			single	double	
42	BS Mini position indicator	make contact switches	1	2	69250-R1
		double throw switches	1	2	75430-R1
		make contact radiation resistant	1	2	90471-R1
		double throw radiation resistant	1	2	91701-R1
42/1	Position indicator	make contact switches	1	2	71852-R1
		double throw switches	1	2	70606-R1
		make contact radiation resistant	1	2	80075-R1
		double throw radiation resistant	1	2	83954-R1
42/2	Slider		1	2	69846-01
42/3	Driving piece		1	2	69428-R1
42/10	Screw		4	8	N-6016-078
42/15	Socket		1	2	N-8504-002



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.