



## All-Metal Angle Valve with double acting pneumatic actuator

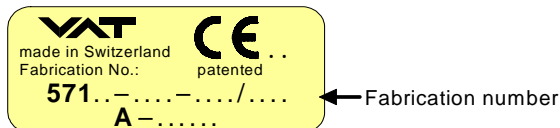


This manual is valid for the valve ordering number(s):

57124- . E14/24/34/44

57132- . E14/24/34/44

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 571, DN 16-40 (I.D. 5/8-1 1/2")**

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**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	≤ 450°C open / ≤ 350°C closed
Pneumatic actuator	≤ 80°C (option: 200°C)
Position indicator	≤ 80°C (option: 200°C)
Solenoid	≤ 80°C
Position indicator: Contact rating	≤ 50 V AC / DC; ≤ 1.2 A ( 80°C version) ≤ 50 V AC / DC; ≤ 1 A (200°C version)
Solenoid	see tag on solenoid

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).

#### Removal of transport protection

For safety reason the valve is kept in open position during transport.

- version without solenoid: remove the locking screw which is attached to air connection «close»
- version with solenoid: connect air supply and do electrical connection according to this manual. Control the solenoid to open the valve and remove then the locking screw which is attached to connection «3» of the solenoid.

## 2.3 Connections

### 2.3.1 Compressed air connection



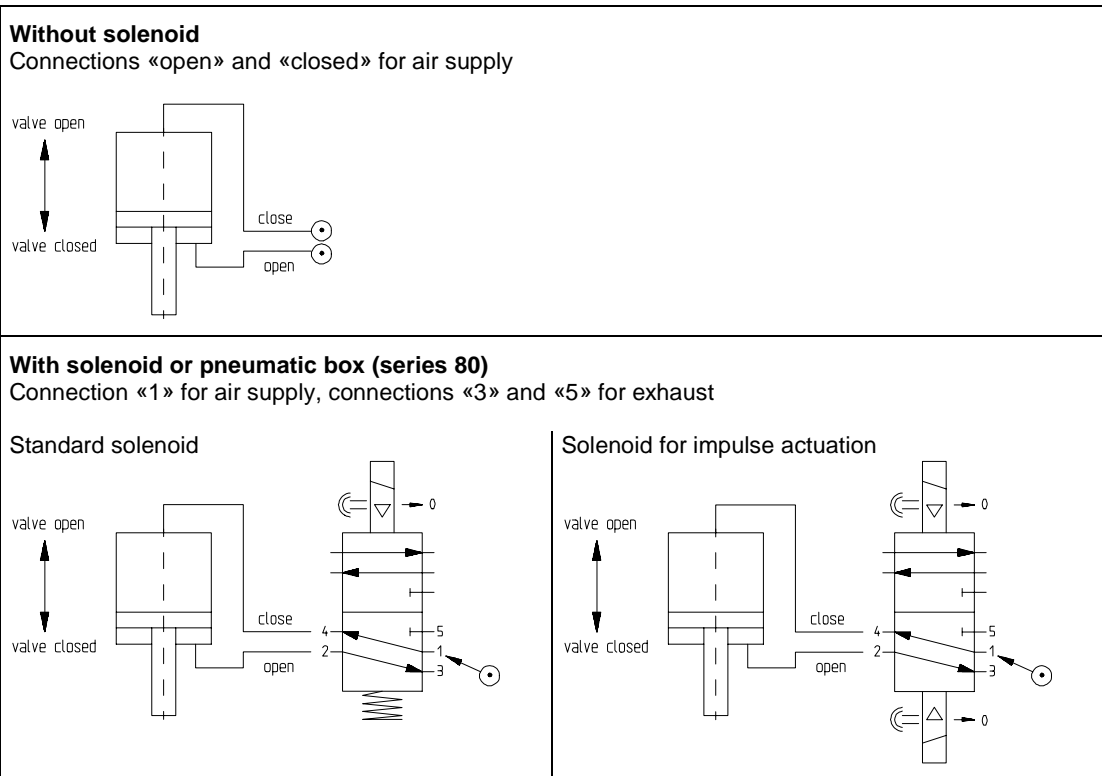
- Connect compressed air only if
- valve is installed into the vacuum system
  - moving parts cannot be touched

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

Connection for compressed air supply: ⊙

Compressed air pressure (min. - max. overpressure): 4 - 5 bar / 55 - 70 psig

Use only clean, dry or slightly lubricated air!



### 2.3.2 Electrical connection



Do not touch electrical parts under voltage!



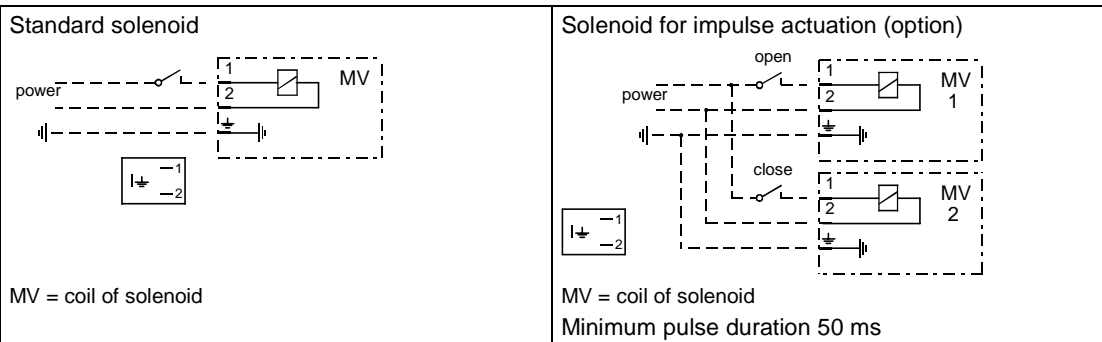
Connect electrical power only if  
 - valve is installed into the vacuum system  
 - moving parts cannot be touched

Verify that mains voltage matches voltage stated on the solenoid!

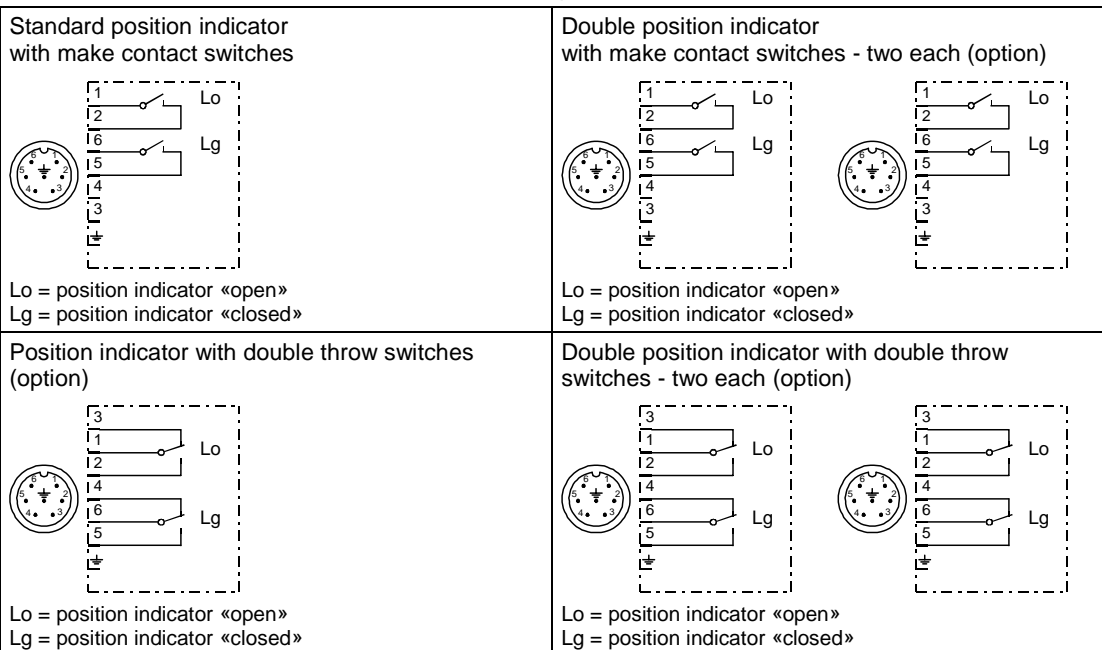
Sockets for position indicator and solenoid are supplied with the valve.

Wiring diagrams:

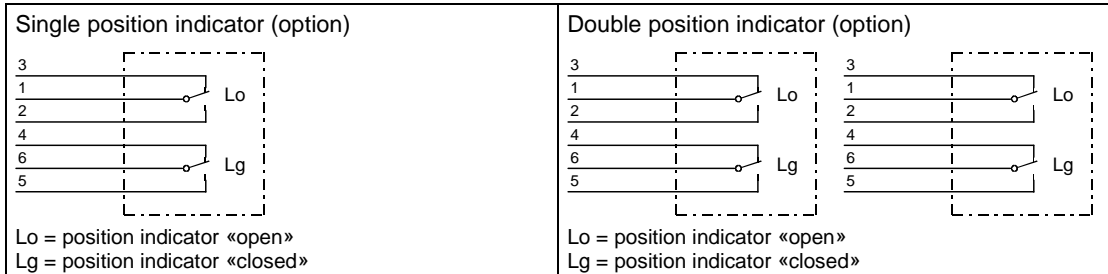
#### Solenoids



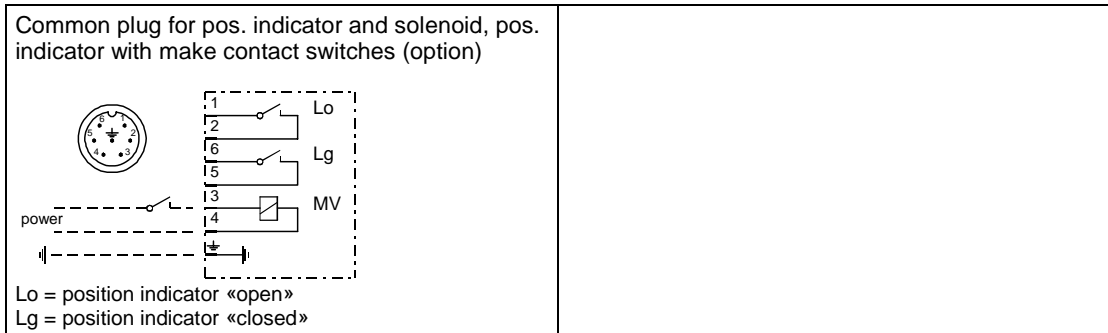
#### Position indicators for max. 80°C — contact rating ≤ 50 V AC / DC; ≤ 1.2 A



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



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





## 3 Operation

### 3.1 Normal operation

Opening of closed valve

- without solenoid:
  - air supply to connection «open»
  - air release through connection «closed»
- with standard solenoid:
  - supply specified control voltage to the coil
- with impulse solenoid:
  - supply an impulse of specified control voltage to the coil for opening (pulse duration min. 50 ms)

Closing of open valve

- without solenoid:
  - air supply to connection «close»
  - air release through connection «open»
- with standard solenoid:
  - release control voltage
- with impulse solenoid:
  - supply an impulse of specified control voltage to the coil for closing (pulse duration min. 50 ms)

### 3.2 Operation under increased temperature

See «1.1 Technical data»

#### 3.2.1 Bake-out

Valve body:	≤ 450°C open / ≤ 350°C closed
Actuator:	≤ 80°C (option: ≤ 200°C)
Position indicator:	≤ 80°C (option: ≤ 200°C)
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. If actuation during bake-out is required, the heating and cooling rate from 200°C to 350°C must not exceed 30°C/h.

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



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

Valve closed: valve position is undefined  
 Valve open: valve position is undefined

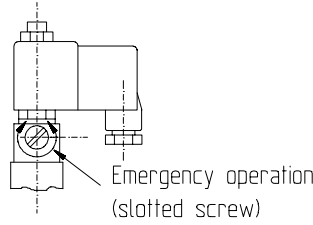
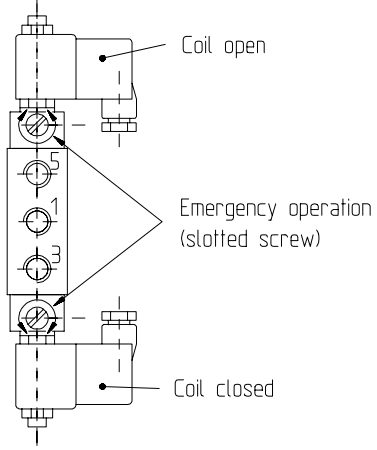
### 3.4 Behavior in case of power failure

Standard solenoid: Valve closes

Solenoid for impulse actuation (option): Valve position does not change, a started movement will be completed.

#### 3.4.1 Emergency operation at power failure

Option: Solenoids with an emergency operation (slotted screw) to operate the valve in case of a power failure (with compressed air available)

<p><b>Standard solenoid</b></p> <p>To <u>close</u> the valve: Turn the slotted screw counter-clockwise to its stop</p> <p>To <u>open</u> the valve: Turn the slotted screw clockwise to its stop</p> <p>For remote operation make sure that the slotted screw is turned counter-clockwise to its stop.</p>	 <p>Emergency operation (slotted screw)</p>
<p><b>Solenoid for impulse actuation</b></p> <p>To <u>close</u> the valve: Turn the slotted screw (coil «closed») clockwise to its stop. If the valve is closed, turn the screw back to its original position.</p> <p>To <u>open</u> the valve: Turn the slotted screw (coil «open») clockwise to its stop. If the valve is open, turn the screw back to its original position.</p> <p>For remote operation make sure that both slotted screws are turned counter-clockwise to their stop (original position).</p>	 <p>Coil open</p> <p>Emergency operation (slotted screw)</p> <p>Coil closed</p>

## 4 Trouble shooting

Failure	Check	Action
Valve mechanism does not move:	Power available?	Check voltage!
	Compressed air available?	Check air pressure!
	Slotted screw of solenoid in proper position?	Check position of slotted screw!

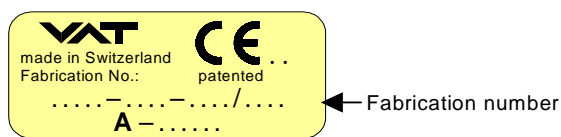
If you need any further information, please contact one of our service centers. You can find the addresses on our website: <http://www.vat.ch>



## 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

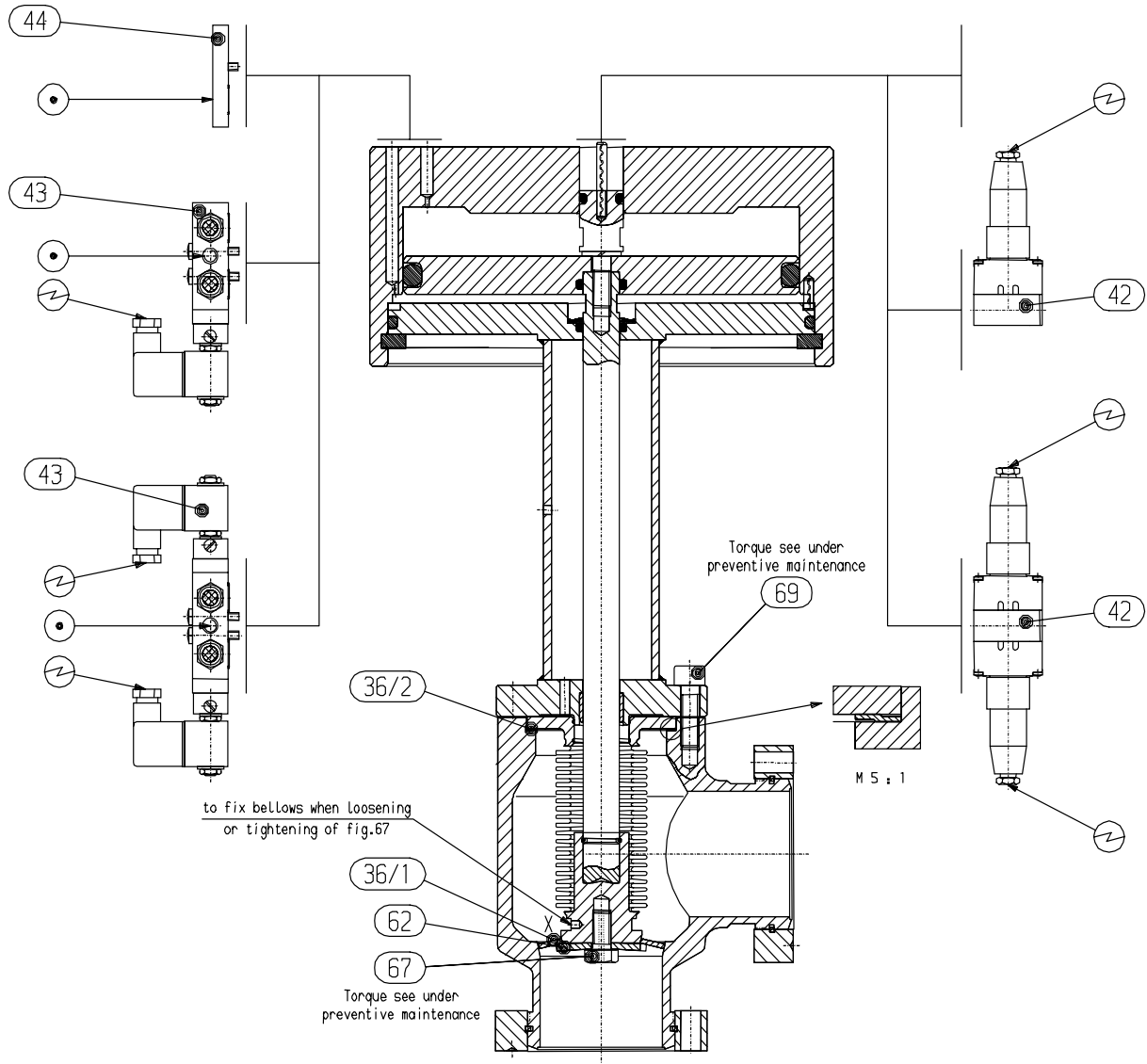
Under clean operating conditions, the valve does not require any maintenance during the specified cycle life.

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

- Open the valve and remove the bonnet screws (69)
- Remove valve insert and bonnet seal (36/2)
- When opening or tightening screw (67) the bellow must be protected against turning (torsion) → see **detail X**
- 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 frontal of the plate
- Place holding ring on top of plate
- Insert screw (67), protect bellow against turning, tighten screw (torque see list)
- Place new bonnet seal (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)

	Nominal I.D. (DN)				
	DN 25	DN 40	DN 63	DN 100	
closing torque of Vatriring screw (fig.67)		7 Nm			
closing torque of bonnet screw (fig.69)		7 Nm			

## 6 Drawing





## 7 Spare parts



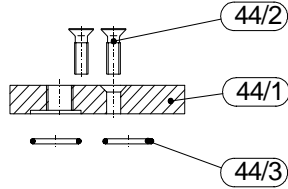
Please specify the **fabrication number of the valve** (see yellow label on valve) when ordering spare parts. This is to ensure that the appropriate spare parts are supplied.

The item numbers refer to the drawing on page 12.

Item	Description	Qty	Part / Ordering number	
			DN 16	DN 40
36/1	VATRING	1	38891-01	42372-01
36/2	Bonnet seal	1	209150	90367-01
62	Holding ring	1	94973-01	93854-01
67	Screw with venting hole	1	217507	N-5002-052
69	Treated hexagon socket head cap screw	6	N-5019-788	N-5019-790
	Vacuum seal kit, consisting of VATRING and bonnet seal	1	D-57124-.... (216767)	D-57132-... (90368-R1)
	Pneumatic seal kit (Elastomer seals inside the pneumatic actuator)	1	218912	93821-R1

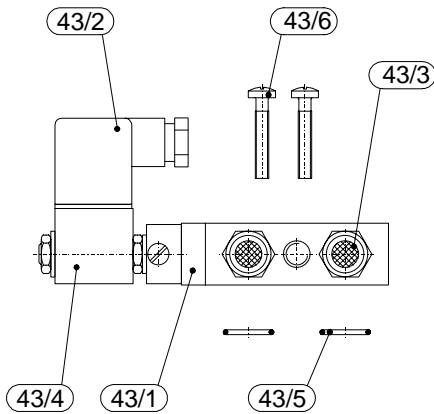
**Air connection kit (solenoid on customer's site)**

Item	Description	Version	Qty.	Part No.
44	Connection kit	standard	1	81427-R1
		actuator for 10 <sup>6</sup> Gy	1	86069-R1
44/1	Plate		1	81428-01
44/2	Screw		2	N-6013-463
44/3	O-ring	standard	2	N-7100-016
		actuator for 10 <sup>6</sup> Gy	2	N-7115-016



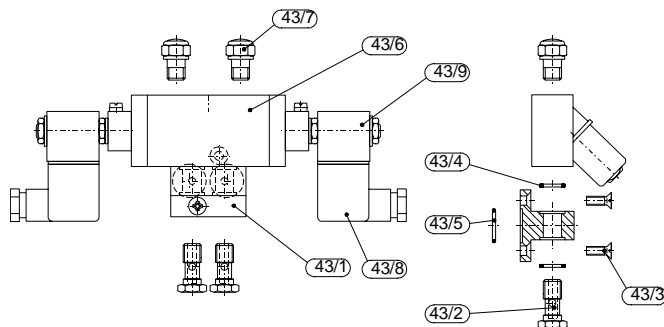
**Solenoid kit (5/2-way standard)**

Item	Description	Qty.	Part No.
43	Solenoid kit	1	80993-R1
43/1	Solenoid	1	N-7501-502
43/2	Socket	1	N-8501-300
43/3	Sound absorber	2	N-7705-001
43/4	Coil**	1	N-7510-2**
43/5	O-ring	2	N-7100-016
43/6	Screw	2	N-6024-562



**Solenoid kit (5/2-way impulse actuation)**

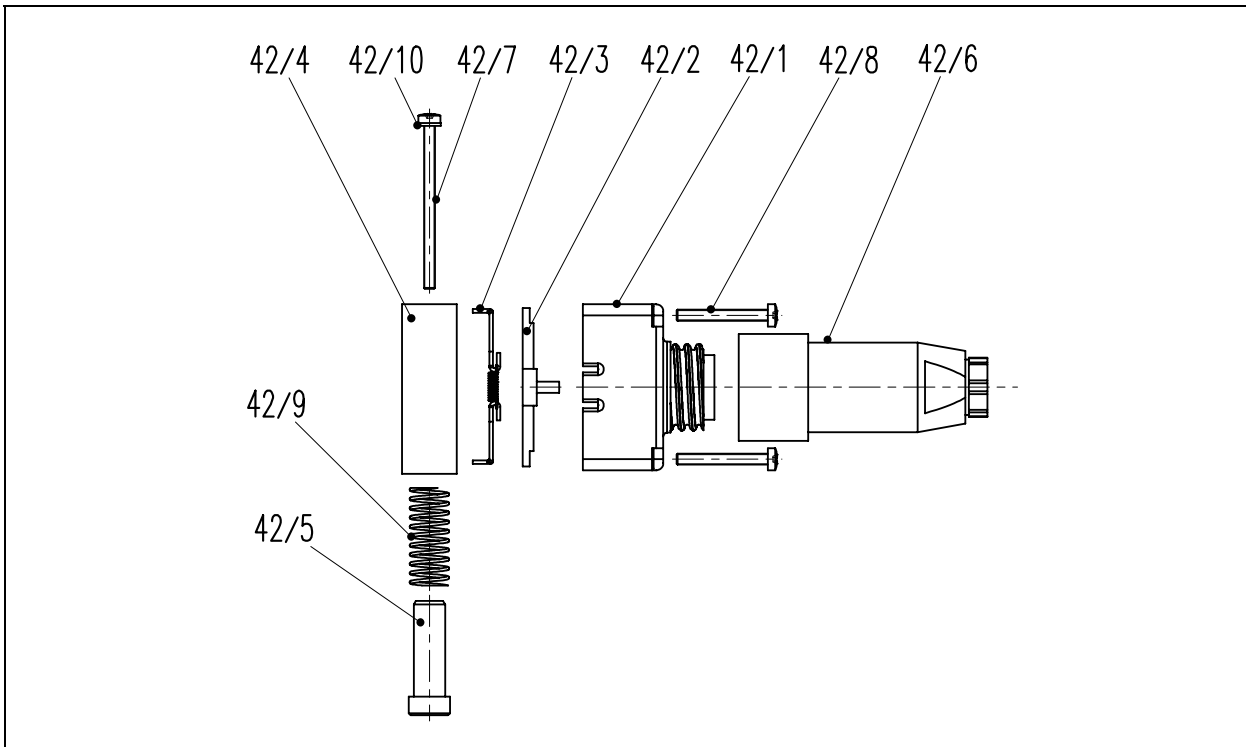
Item	Description	Qty.	Part No.
43	Solenoid kit	1	84569-R1
43/1	Connection plate	1	93708-01
43/2	Hollow screw	2	N-5060-010
43/3	Screw	2	N-6013-462
43/4	Gasket	4	N-7016-010
43/5	O-ring	2	N-7100-016
43/6	Solenoid	1	N-7502-504
43/7	Sound absorber	2	N-7705-001
43/8	Socket	2	N-8501-300
43/9	Coil**	2	N-7510-2**



\*\* Specify voltage!  
 (e.g. N-7510-2-220V 50Hz)

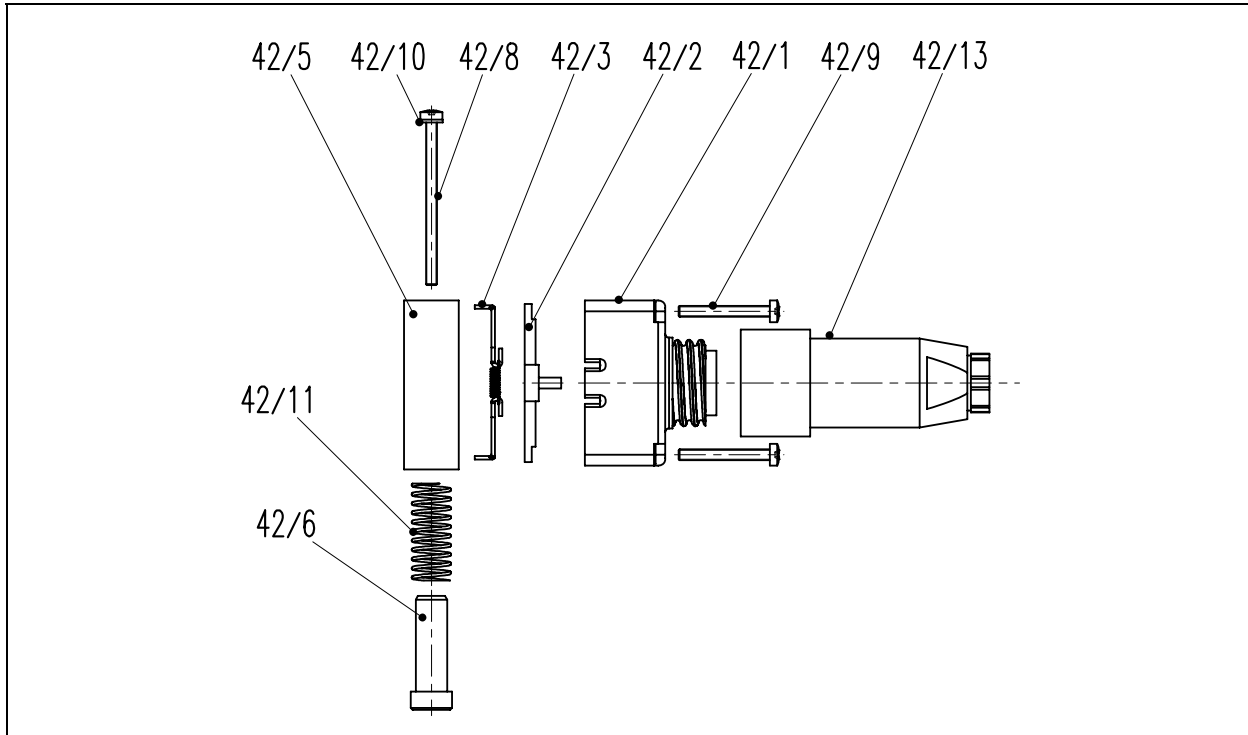
7.1.1 Position indicators 80°C (single + double) in various versions with adapter

Series 57124-.....-.....



Item	Description	Version	Qty.	Part No.
			Single	
42	BS Mini position indicator	double throw switches	1	81361-R1
42/1	Position indicator		1	71852-R1
42/2	Slider		1	69846-01
42/3	Driving piece		1	69428-R1
42/4	Holder position indicator		1	80420-01
42/5	Bolt		1	81349-01
42/6	Socket		1	N-8504-002
42/7	Screw		2	211199
42/8	Screw		4	N-6024-531
42/9	Pressure spring		1	N-6240-303
42/10	Spring ring		2	N-6160-406

Series 57132-.....-.....

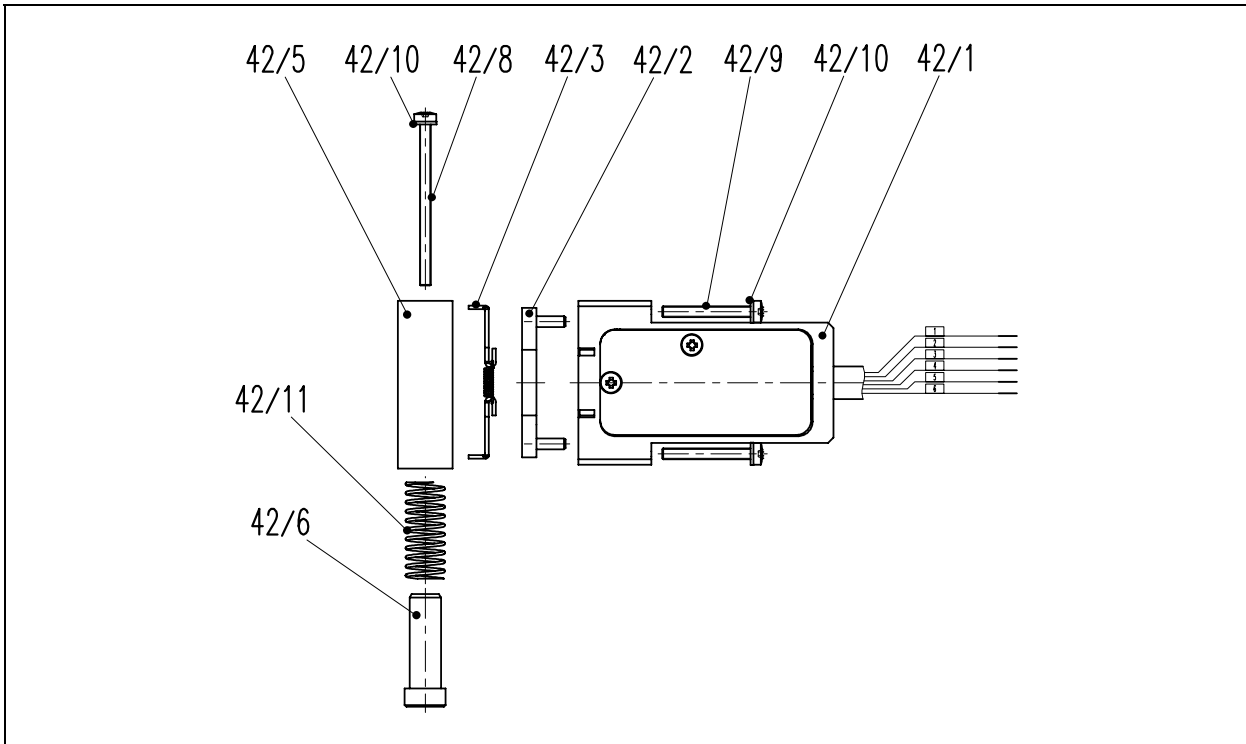


Item	Description	Version	Qty.	Part No.
			single	
42	BS Mini position indicator	double throw switches	1	211209
42/1	Position indicator		1	71852-R1
42/2	Slider		1	69846-01
42/3	Driving piece		1	69428-R1
42/5	Holder position indicator		1	80420-01
42/6	Bolt		1	80423-01
42/8	Screw		2	211199
42/9	Screw		4	N-6024-531
42/10	Spring ring		2	N-6160-406
42/11	Pressure spring		1	N-6240-303
42/13	Socket		1	N-8504-002



**7.1.2 Position indicators 200°C (single + double) in various versions with adapter**

Series 57124-.....-.....

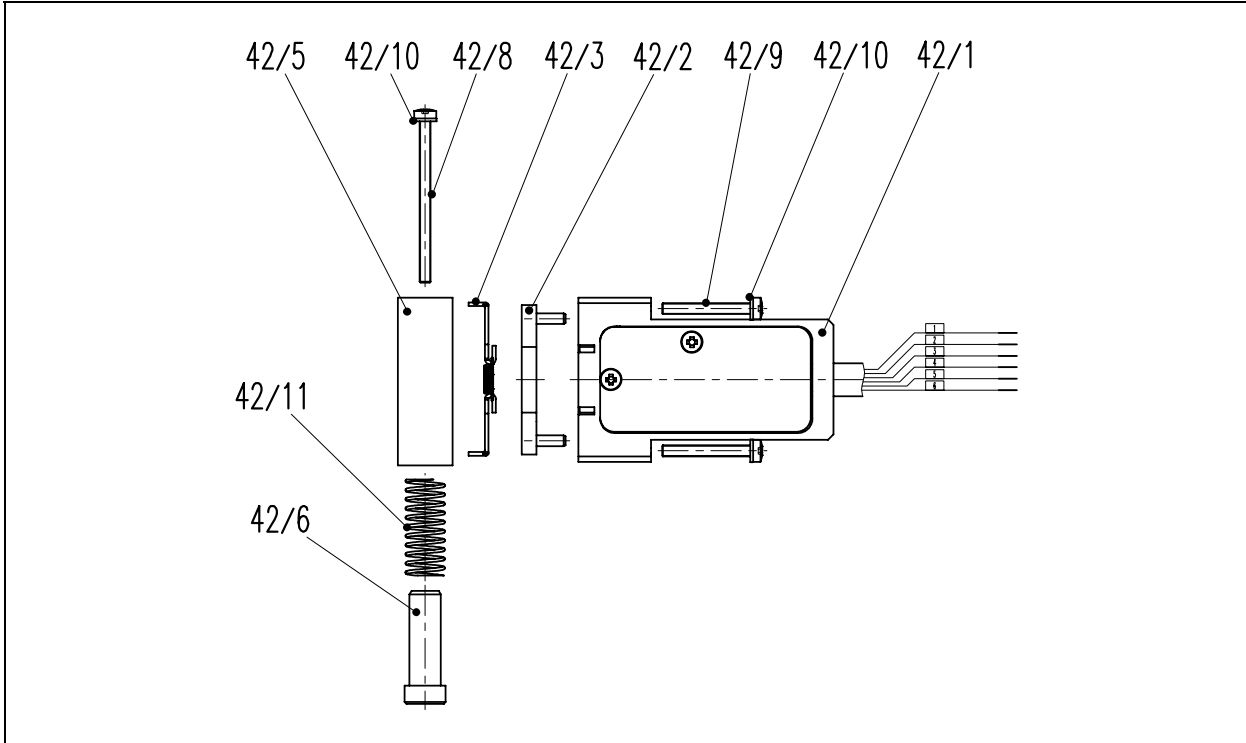


Item	Description	Version	Qty.	Part No.
			single	
42	BS Mini position indicator	double throw switches	1	330370
42/1	Position indicator		1	241824
42/2	Slider		1	241825
42/3	Driving piece		1	69428-R1
42/5	Holder position indicator		1	80420-01
42/6	Bolt		1	81349-01
42/8	Screw		2	211199
42/9	Screw		4	N-6024-531
42/10	Spring ring		6	N-6160-406
42/11	Pressure spring		1	N-6240-303



Installation, Operating & Maintenance Instructions  
**Series 571, DN 16-40 (I.D. 5/8-1 1/2")**

Series 57132-.....-.....



Item	Description	Version	Qty.	Part No.
			single	
42	BS Mini position indicator	double throw switches	1	330319
42/1	Position indicator		1	241824
42/2	Slider		1	241825
42/3	Driving piece		1	69428-R1
42/5	Holder position indicator		1	80420-01
42/6	Bolt		1	80423-01
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.

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