



All-Metal Gate Valve with extended and compact pneumatic actuator

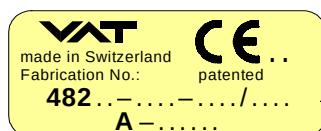


compact

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

extended:	compact:
48236- . E14/24/34/44	48236- . E71/72/73/74/77
48240- . E14/24/34/44	48240- . E71/72/73/74/77
48244- . E14/24/34/44	48244- . E71/72/73/74/77

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 48.2, DN 63-160 (I.D. 2 ½ - 6")

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Installation, Operating & Maintenance Instructions
Series 48.2, DN 63-160 (I.D. 2 ½ - 6")

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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 2 bar (abs)
Differential pressure on the gate	2 bar in either direction
Max. differential pressure at opening:	
DN 63 – 160	500 mbar, 1 bar with reduced cycle life
Admissible temperature:	
Valve extended	≤ 300°C open and closed
Valve compact	≤ 200°C open and closed
Pneumatic actuator	≤ 200°C (option: 300°C, radiation resistant E6Gy 140°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



Be carefull during opening the boxes and nylon bag, do not contaminate the valve.

Also pay attention that valve and flanges are not damaged when the valve is lifting out of the box and handled afterwards.

2.2 Installation into the system

Remove protection flanges only prior assembly into the vacuum 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

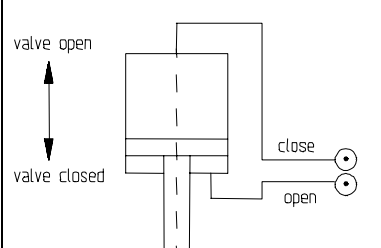
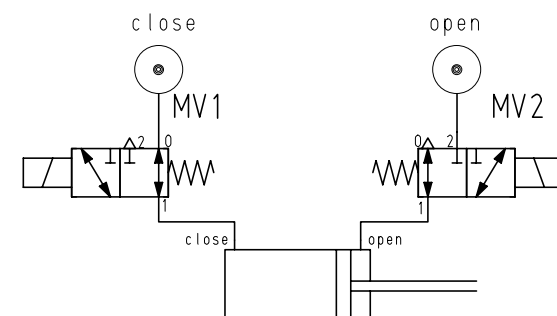
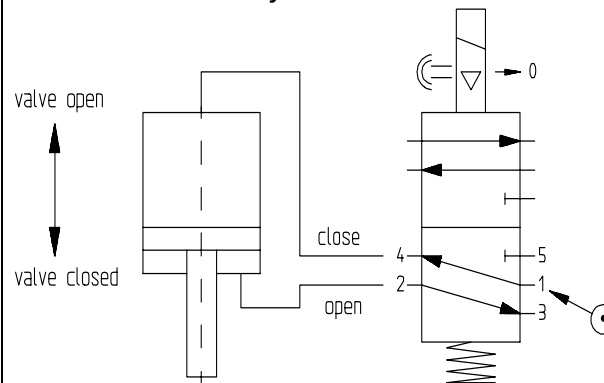
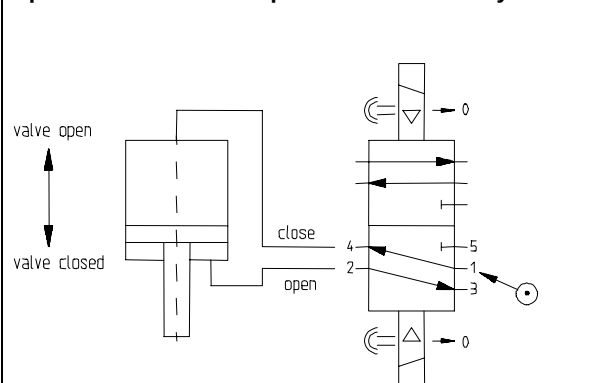
Connection: internal thread R 1/8" (1/8" NPT for USA)

Connection for compressed air supply: ☉

Compressed air pressure (min. - max. overpressure): 4 - 8 bar / 55 - 110 psig

Use only clean, dry or slightly oiled air!

Valves equipped with a fast closing device, may reduce the specified cycle lifetime

Without solenoid Connections «open» and «closed» for air supply 	Option: Radiation resistant solenoid (2x3/2way) E6Gy Connections «open» and «closed» for air supply 
With solenoid or pneumatic box (series 80) Connection «1» for air supply, connections «3» and «5» for exhaust	
Standard solenoid E4Gy 	Option: Solenoid for impulse actuation E4Gy 

2.3.2 Electrical connection



Do not touch electrical parts under voltage!

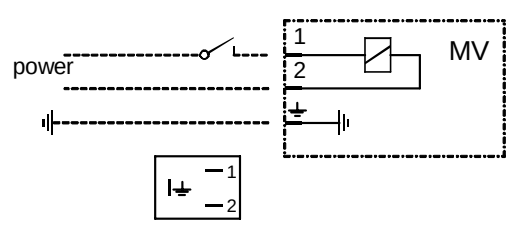
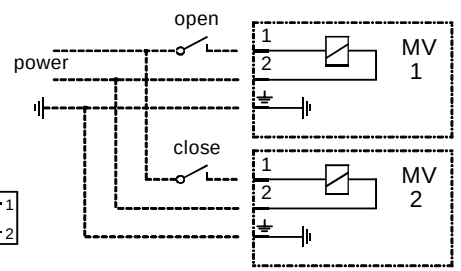


Connect electrical power only if
 - valve is installed into the vacuum system
 - moving parts cannot be touched

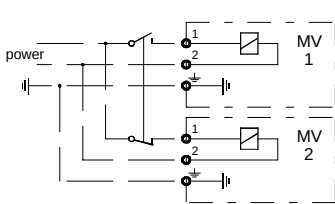
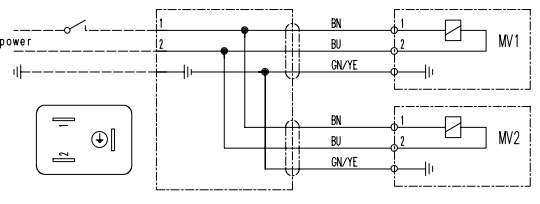
Verify that mains voltage matches voltage stated on the solenoid!

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

2.3.3 Wiring diagrams solenoids

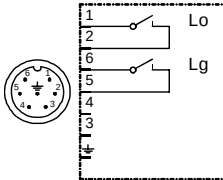
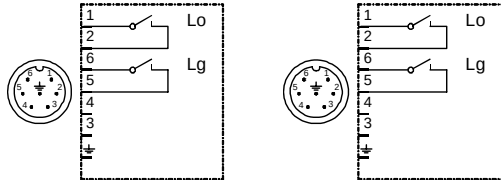
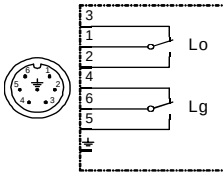
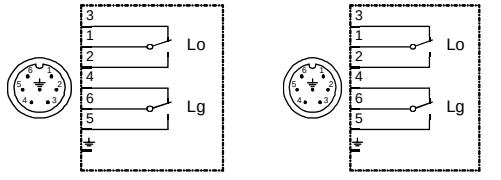
Standard solenoid E4Gy	Option: Solenoid for impulse actuation E4Gy
 MV = coil of solenoid	 MV = coil of solenoid Minimum pulse duration 50 ms

2.3.4 Wiring diagram radiation resistant solenoid

Solenoid (2x3/2 way)	Solenoid (2x3/2 way) 3 pole plug (with wire and plug connection)
Radiation resistant E6Gy	Radiation resistant E6Gy
 MV = coil of solenoids	 MV = coil of solenoids

2.3.5 Wiring diagrams position indicator

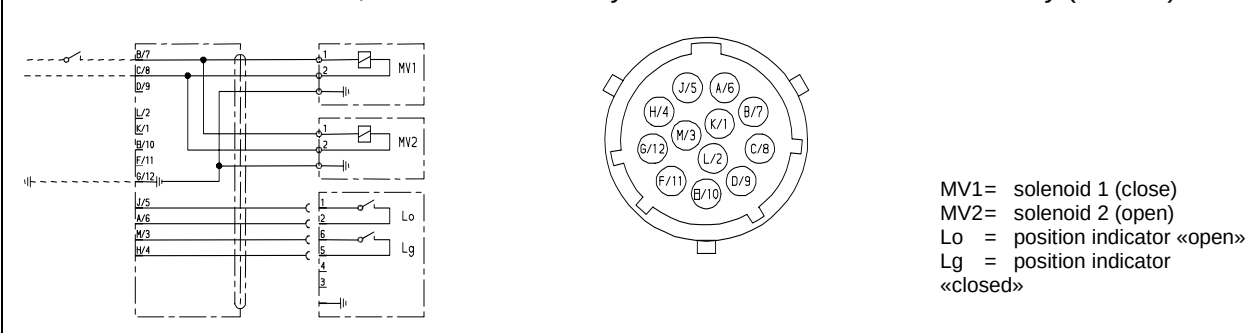
Position indicators for max. 80°C — contact rating ≤ 50 V AC / DC; ≤ 1.2 A

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

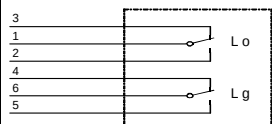
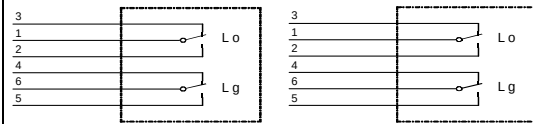
2.3.6 Wiring diagrams solenoid and position indicator – common plug 12 pole

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

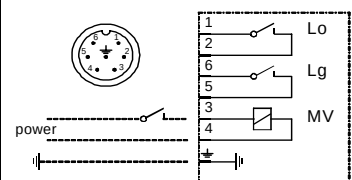
12 pole common plug for pos.indicator and solenoids, pos.indicator rad.resistant 10^6 Gy (10^8 rad) with make contact switches, solenoid 2x 3/2 way 220V / 50 Hz rad.resistant 10^6 Gy (10^8 rad)



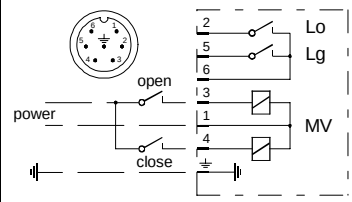
Position indicators for max. 200°C — contact rating ≤ 50 V AC / DC; ≤ 1 A

Single position indicator (option)  Lo = position indicator «open» Lg = position indicator «closed»	Double position indicator (option)  Lo = position indicator «open» Lg = position indicator «closed»
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Position indicator for max. 80°C — contact rating ≤ 50 V AC / DC; ≤ 1.2 A

Common plug for pos. indicator and solenoid, pos. indicator with make contact switches (option)  Lo = position indicator «open» Lg = position indicator «closed»	
--	--

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

Common plug for pos. indicator and solenoid impulse, pos. indicator with make contact switches (option)  Lo = position indicator «open» Lg = position indicator «closed»	
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3 Operation

3.1 Normal operation

Opening of closed valve

- without solenoid:
 - before valve is opened — supply air pressure in closing direction
 - 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)
- with radiation resistant solenoid:
 - supply specified control voltage to the solenoid coil „open“ and coil „close“.

Closing of open valve

- without solenoid:
 - before valve is closed — supply air pressure in opening direction
 - 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)
- with radiation resistant solenoid:
 - release control voltage from the solenoid coil „close“ and coil „open“.



3.2 Bakeout

	extended	compact
Valve:	≤ 300°C in open and closed position	≤ 200°C in open and closed position
Actuator:	≤ 200°C max. 200h	≤ 200°C max. 200h
Position indicator:	≤ 80°C (option: ≤ 200°C)	≤ 80°C (option: 200°C)
Solenoid	≤ 80°C	≤ 80°C
Heating and cooling rate:	50°C/h	50°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 100°C to 200°C must not exceed 10°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 remains closed and leaktight
Valve open: valve position is undefined

3.4 Behavior in case of power failure

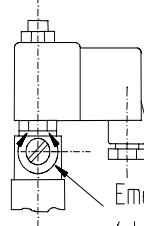
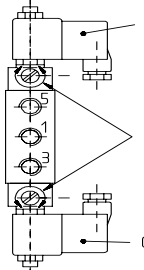
Standard solenoid: Valve closes

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

Radiation resistant solenoid: Valve closes

3.5 Emergency operation at power failure (E4Gy)

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

Standard solenoid To <u>close</u> the valve: Turn the slotted screw counter-clockwise to its stop To <u>open</u> the valve: Turn the slotted screw clockwise to its stop For remote operation make sure that the slotted screw is turned counter-clockwise to its stop.	 Emergency operation (slotted screw)
Solenoid for impulse actuation 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. 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. For remote operation make sure that both slotted screws are turned counter-clockwise to their stop (original position).	 Coil open Emergency operation (slotted screw) Coil closed
Radiation resistant solenoid In case of a power failure, the solenoid can be removed and compressed air can be connected directly to the connection plate.	

4 Trouble shooting

Failure	Check	Action
Valve mechanism does not move	Power available?	Check voltage!
	Compressed air available?	Check air pressure!
	Slotted screw in proper position?	Check slotted screw!
Whistling sound during opening/closing:	When operating at atmosphere: (not recommended)	No reason for concern
	When operating at vacuum:	No reason for concern unless the sound gets extensive

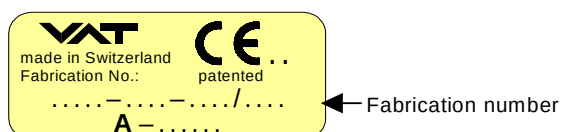
If you need any further information, please contact one of our service centers. You can find the addresses on our website: <http://www.vat.ch>



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.



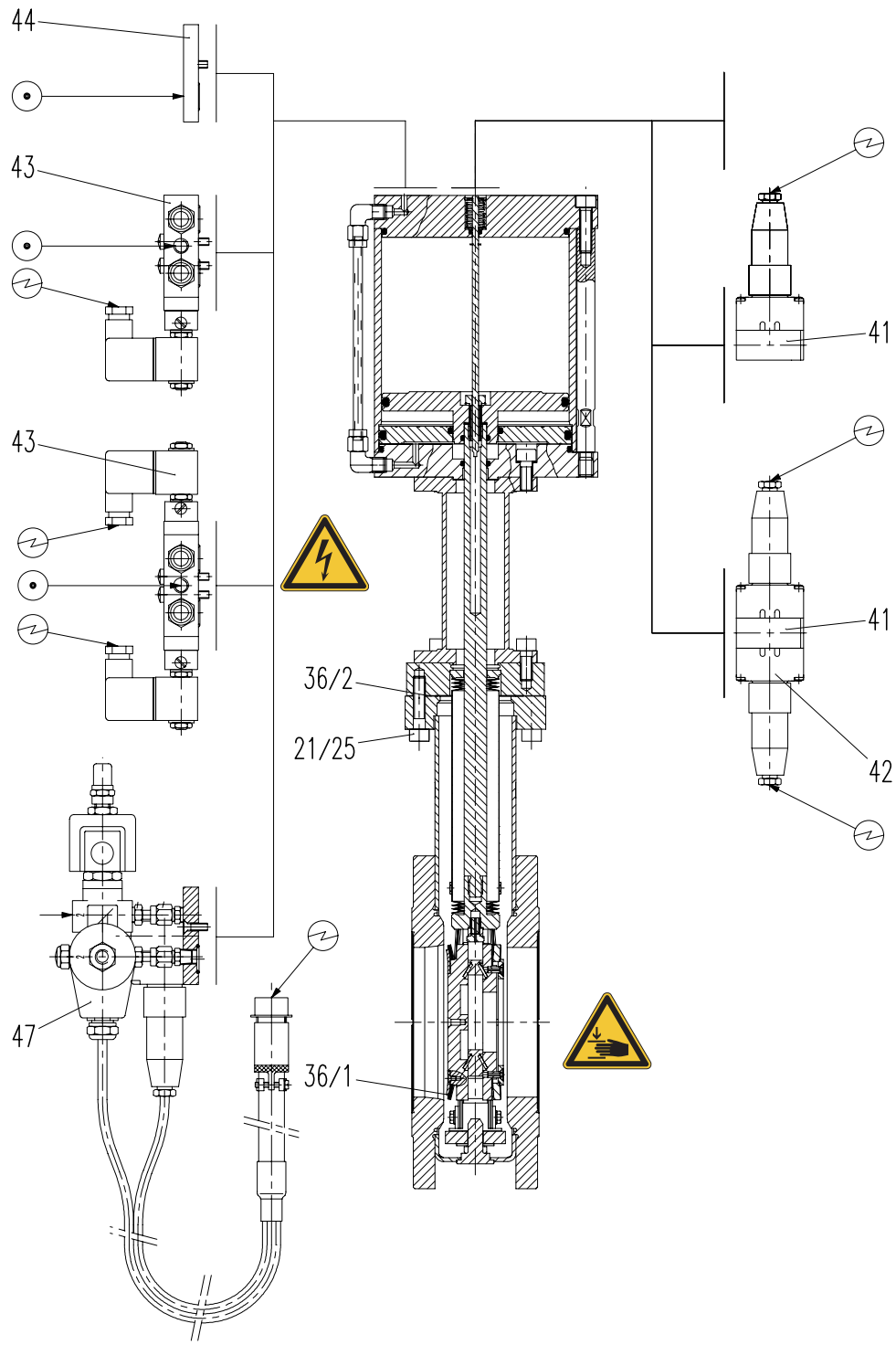
Even with disconnected supply, loaded springs and/or air cushions in cylinders can be potential hazards.



Keep fingers and objects away from the valve opening!

Products returned to VAT must be free of harmful substances such as e.g. toxical, 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.

6 Drawing



7 Spare parts

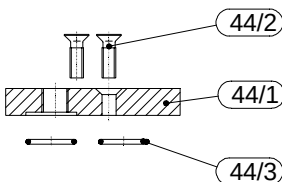


Please specify the **fabrication number of the valve** (see yellow label on valve) when ordering spare parts. This is to ensure that the appropriate spare parts are supplied.

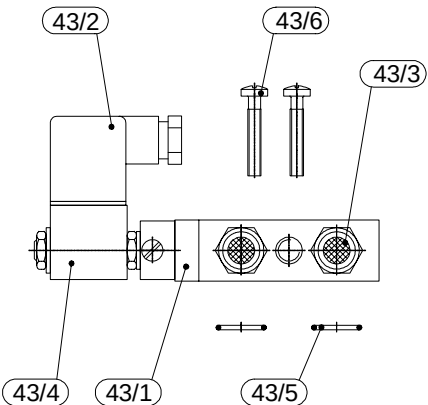
The item numbers refer to the drawing on page 13.

Item	Description	Qty	Parts/Ordering numbers		
			DN 63	DN 100	DN 160
21/25	Treated hexagon socket head cap screw required torque of bonnet screw	10	224837		
		14		224837	224837
			24 Nm	24 Nm	24 Nm
36/1	VATRING	1	39615-01	39986-01	35774-01
36/2	VATSEAL	1	247767	247768	247769
	Vacuum seal kit, consisting of VATRING (36/1) and VATSEAL (36/2)		D-48236-.... (80989-R1)	D-48240-.... (81458-R1)	D-48244-.... (83884-R1)
	Pneumatic seal kit, consisting of all elastomer seals inside the pneumatic actuator: Standard 200°C actuator for 10 ⁶ Gy (option)		80988-R1 87369-R1	81459-R1 85226-R1	83885-R1 86997-R1

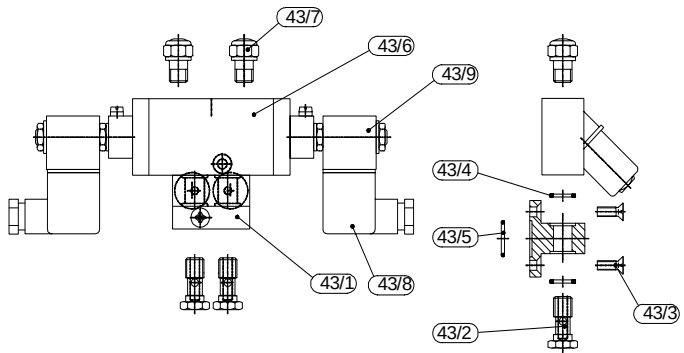
Air connection kit (solenoid on customer's site)

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

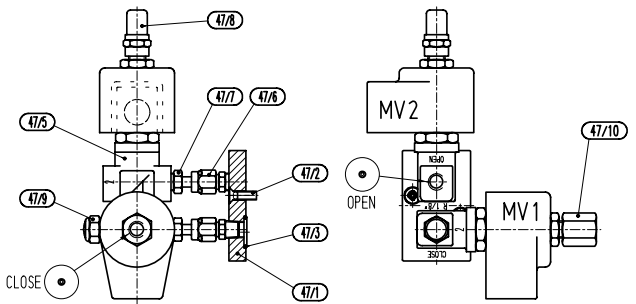
Solenoid kit E4Gy (5/2-way standard)

	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 E4Gy (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**

Solenoid kit E 6Gy (3/2-way standard)

	Item	Description	Qty.	Part No.
	47	Solenoid kit	1	90242-R1
	47/1	Connection plate	1	81428-01
	47/2	Screw	2	N-6013-463
	47/3	O-ring	2	N-7115-016
	47/5	3/2 way solenoid	2	218445
	47/6	Screw connection	2	N-7610-031
	47/7	Adjust nipple	2	N-7628-031
	47/8	sound absorber	1	N-7705-201
	47/9	sound absorber	1	N-7705-001
	47/10	bushing	1	N-7501-005

**** Specify voltage!**

(e.g. N-7510-2-220V 50Hz)



Solenoid kit (5/2-way standard)

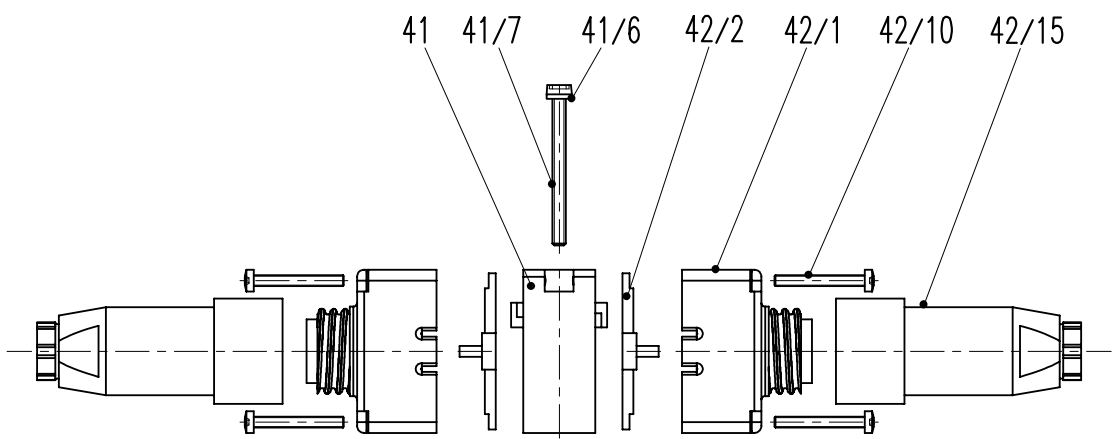
	Item	Description	Qty.	Part No.
	43	Solenoid kit	1	207093 87998-R1
	43/1	Solenoid	1	N-7501-502
	43/3	Sound absorber	2	N-7705-001
	43/4	Coil**	1	N-7510-2**
	43/5	O-ring	2	N-7100-016
	43/6	Screw	2	N-6024-562
	43/7	Cover	1	202743

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

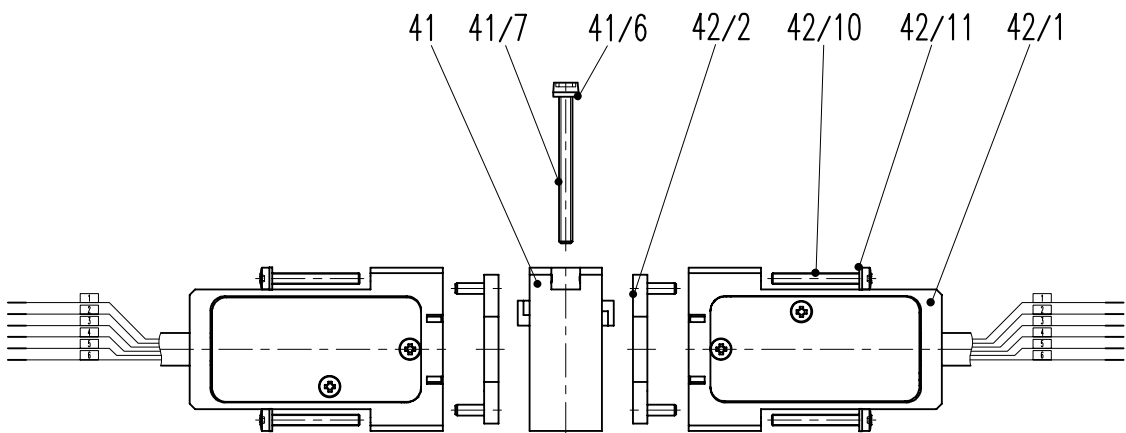
Position indicators 80°C (single + double) in various versions with adapter

Item	Description	Version	Qty.	Part No.	
				E4Gy	E6Gy
41	Adapter complete		1	72228-R1	72228-R1
41/7	Screw		2	N-6016-503	N-6016-503
42	BS Mini position indicator	make contact switch with common plug for pos. indicator and solenoid	1	87997-R1	256480
42/1	Position indicator	make contact switch with common plug for pos. indicator and solenoid	1	82560-R1	256481
42/2	Slider		1	69846-01	69846-01
42/10	Screw		4	N-6024-531	N-6024-531
42/15	Socket		1	N-8504-002	N-8504-002

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

					
Item	Description	Version	Qty.		Part No.
			single	double	
41	Adapter complete		1	1	72228-R1 83923-R1
41/6	Spring ring		2	2	N-6162-404
41/7	Screw		2	2	N-6016-503
42	BS Mini position indicator	make contact switches	1	2	76664-R1
		double throw switches	1	2	85399-R1
		make contact radiation resistant	1	2	80074-R1
		double throw radiation resistant	1	2	83953-R1
		make contact switch with common plug for pos. indicator and solenoid	1	-	87997-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
		make contact switch with common plug for pos. indicator and solenoid	1	-	82560-R1
42/2	Slider		1	2	69846-01
42/10	Screw		4	8	N-6024-531
42/15	Socket		1	2	N-8504-002
	Cable socket, snaked		1	2	N-8504-005

Position indicators 200°C (single + double) with adapter

					
Item	Description	Version	Qty.		Part No.
			single	double	
41	Adapter complete		1	1	72228-R1 83923-R1
41/6	Spring ring		2	2	N-6162-404
41/7	Screw		2	2	N-6016-503
42	BS Mini position indicator	double throw switches	1	2	241823
42/1	Position indicator		1	2	241824
42/2	Slider		1	2	241824
42/10	Screw		4	8	N-6024-531
42/11	Spring ring		4	8	N-6160-406



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.