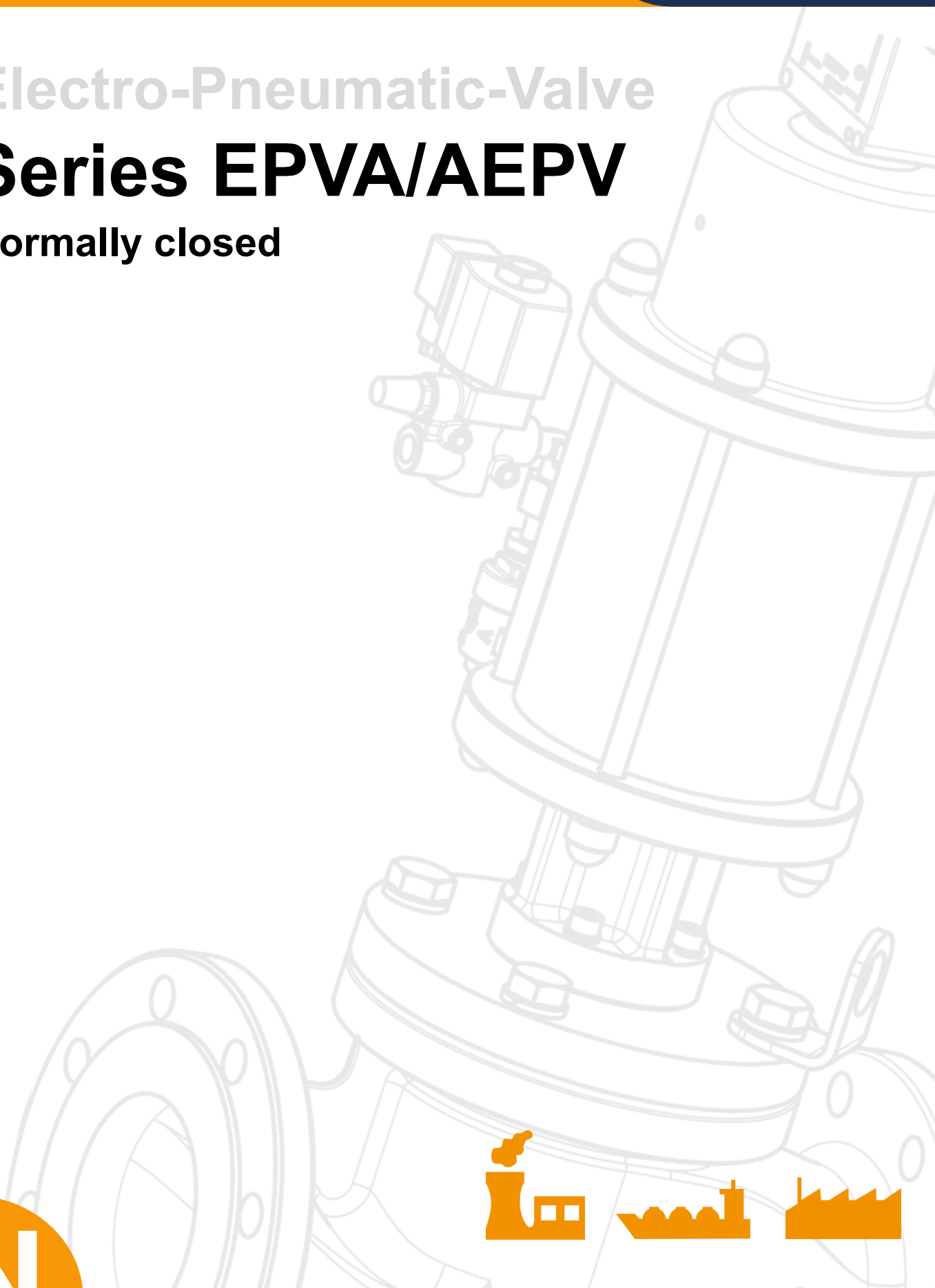




# Operating manual

## Electro-Pneumatic-Valve **Series EPVA/AEPV** Normally closed



**EN**





# Operating manual

## Contents

### 1.0 General remarks

- 1.1 Valve data
- 1.2 Application

### 2.0 Danger notices

- 2.1 Safety terms
- 2.2 Safety notice
- 2.3 Qualified staff
- 2.4 Unauthorized modification and spare part production
- 2.5 Unauthorized operation
- 2.6 Safety information for the use in explosion-prone areas guideline 2014/34/EU
- 2.7 Safety information regarding guideline 2014/68/EU attachment I

### 3.0 Handling

- 3.1 Transport
- 3.2 Storage
- 3.3 Handling before mounting

### 4.0 Product description

- 4.1 Function
- 4.2 Technical data
- 4.3 Marking

### 5.0 Installation

- 5.1 Warning of dangers during Installation, operation and maintenance
- 5.2 Installation

### 6.0 Operation

- 6.1 Commissioning
- 6.2 Shutting down
- 6.3 Maintenance
- 6.4 Putting back into operating

### 7.0 Troubleshooting

- 7.1 Detection of defects
- 7.2 Troubleshooting plan

### 8.0 Dismantling of the valve

- 8.1 Visual inspection
- 8.2 Replacement of wear parts

### 9.0 Warranty

### 10.0 Explanations on codes and directives

### 11.0 Drawing

- 11.1 Sectional drawing
- 11.2 Projection
- 11.3 Control valve
- 11.4 List of parts





# Operating manual

## 1.0 General remarks

This operating manual includes instructions to assemble and operate the valve in the prescribed and safe way. **Additionally and accordance with the solenoid drive of the control valve (805), the relevant manufacturer's operating instructions must be taken into consideration.**

If any difficulties appear that can not be solved by means of the operating manual, further information may be demanded from the manufacturer.

This operating manual is in accordance with the relevant valid EN safety standards and the valid prescriptions and rules of the Federal Republic of Germany. If the solenoids are used abroad of the FRG, the operator and/or the person who is responsible for the plant concept must take care that the valid national rules are met. The manufacturer reserves the right of any technical change and improvement. The use of these operating instructions suppose the qualification of the user according to paragraph 2.3 "qualified staff".

The operating staff must be trained in accordance with the operating instructions. The operating manual must always be available at the location where used.

## 1.1 Valve data

### Manufacturer:

Uni-Geräte E. Mangelmann Elektrotechnische Fabrik GmbH  
Holtumsweg 13, 47652 Weeze, Germany

### Designation

Direct-acting, normally closed NC, spring-loaded automatic shut off valve with pneumatic actuator.

<b>Working pressure:</b>	10-4 - EPVA	0 - 10 bar (0 - 1000 kPa)
	16-4 - AEPV	0 - 16 bar (0 - 1600 kPa)
	20-4 - AEPV	0 - 20 bar (0 - 2000 kPa)
	30-4 - AEPV	0 - 30 bar (0 - 3000 kPa)
	40-4 - AEPV	0 - 40 bar (0 - 4000 kPa)
<b>Medium temperature:</b>	-20 °C to + 60 °C (253 K to 333 K)	
<b>Working pressure</b>	16-4 - EPVA	0 - 16 bar (0 - 1600 kPa)
	40-4 - EPVA	0 - 40 bar (0 - 4000 kPa)
<b>Medium temperature:</b>	-20 °C to + 60 °C (253 K to 333 K) (+100 °C / 373 K optional)	
<b>Ambient temperature:</b>	-20 °C to + 60 °C (253 K to 333 K)	
<b>Fitting position:</b>	vertical or horizontal drive	
<b>Switching cycles:</b>	500 cycles/h	





# Operating manual

Flange connection measures acc. to DIN EN 1092-2 / ANSI

Flange DN	PN	15	20	25	32	40	50	65	80	100	125	150	200	250	300	Test pressure (*) PT
10-4 - EPVA	16	-	-	-	-	-	-	-	-	-	-	X	X	X	X	PT 16
16-4 - EPVA	16	-	-	-	-	X	X	X	X	X	-	-	-	-	-	PT 16
40-4 - EPVA	40	-	-	-	-	X	X	X	X	X	X	-	-	-	-	PT 40
16-4 - AEPV	16	X	X	X	X	X	X	-	-	-	-	-	-	-	-	PT 16
20-4 - AEPV	25	-	-	-	-	X	-	-	-	-	-	-	-	-	-	PT 25
30-4 - AEPV	40	-	-	-	X	-	-	-	-	-	-	-	-	-	-	PT 40
40-4 - AEPV	40	X	X	X	-	-	-	-	-	-	-	-	-	-	-	PT 40

(\*) Test pressure to perform leakage test "No FUNCTION TEST"

X Type examination EU/2016/426, CE-0085AQ0211, O Acceptance test certificate 3.2 possible, - not available

**Control medium:**

Air, nitrogen -20 °C up to + 60 °C

**Control pressure:**

Min. –control pressure, second number on the type plate

Max. –control pressure, e.g. 4 - 10 bar

**Electric connection control valve:**

Notice instructions on type plate of control valve.

## 1.2 Application

The electro-pneumatic-valves EPVA and AEPV are used as automatic shut off valves for protection, limitation, shut-off and release of gas and air supply at main stops or in front of gas burners.

The valves are suitable for gases of the 1<sup>st</sup>, 2<sup>nd</sup> and 3<sup>rd</sup> gas families to DIN EN 437 and for neutral gases and as a variant with material design for aggressive gases such as e.g. biogas, sewage plant gas or dump gas.

If used in other cases, the operator must carefully check if construction/design of valve, accessories and materials are suitable for the new application. The range of application is subject to the responsibility of the plant planner. The service life of the valve is 20 years.

## 2.0 Danger notices

### 2.1 Safety terms

The signal terms DANGER, CAUTION und NOTICE are used in this operating manual in case of notices concerning special dangers, or for unusual information, requiring a special marking.



#### **DANGER!**

means that in case of non-observance there is danger to life and/or considerable damage.



#### **CAUTION!**

means that in case of non-observance there is danger of injury and/or damage.



#### **NOTICE!**

means that attention is drawn to technical correlations/connections.

Observance of other, not especially marked notices concerning transport, assembly, operation and maintenance and other data (in the operating manual, product documentation and at the unit itself) is also essential, in order to avoid disturbances that might affect direct or indirect damage to property or injury to persons.





# Operating manual

## 2.2 Safety notice

Non observance of safety instructions can lead to loss of any claim for damages.

Non observance can lead to the following mentioned dangers:

- Failure of important functions of the valve/plant.
- Endangering of persons by electrical or mechanical influences.
- Protection against accidental contact for moving parts may not be removed as long as the valve is in operation.
- Leakage of dangerous media (e.g. explosive, toxic, hot) must be removed in the way that there is no danger for persons or environment. Laws and regulations must be observed.

## 2.3 Qualified staff

These are persons who are familiar with erection, assembly, starting, operation and maintenance of the product and who have special qualifications acc. to their activities and functions, e.g.:

- Instruction and obligation to carry out and meet all regional and in-house orders and requirements.
- Education or instruction according to the safety engineering standards in use and maintenance of adequate safety and working protection equipment.
- Training in first aid.

## 2.4 Unauthorized modification and spare part production

Modification or changes of the valve are only allowed after agreement of the manufacturer. Original drawings and accessories authorized by the manufacturer are for safety purposes. The use of other parts or unauthorized changes at the valve by third persons may cancel and abolish the manufacturer's liability for resulting consequences.

## 2.5 Unauthorized operation

Operational reliability of the delivered valve is only guaranteed in case of determined use in accordance to paragraph 1 of the operating manual. **The application limits mentioned on the type sign may on no account be exceeded.**

## 2.6 Safety information for the use in explosion-prone areas guideline 2014/34/EU

- The temperature of the medium must not exceed the respective temperature class, and respectively, the respective maximum permitted medium temperature as per operation guideline.
- If the valve is heated (e.g. heating jacket), care must be taken, that the specified temperature class is kept in the time.
- The valve must be connected to the ground.  
In the case most simple this can be realized via pipe screws by means of tooth disc.  
Otherwise the connection to the ground must be implemented by other measures e.g. cable links.
- Control valves, electrical and electrical/mechanical drives as well as sensors must undergo a separate conformity check as per ATEX. In doing so the respective safety and explosion protection information in the operation instructions are to taken into special consideration.
- Any modifications whatsoever to the valve are not allowed. The ATEX approval is void with immediate effect if the valve is modified without prior authorization (even including painting).
- Uni-Geräte GmbH must be consulted before any modifications are made.

Furthermore we point out the guideline 1999/92/EG, which include the minimum regulations for the improvement of the health-related situation and the safety of the employees, who might be jeopardized by an explosive atmosphere.





# Operating manual

## 2.7 Safety information regarding guideline 2014/68/EU attachment I



### **DANGER!**

Uni-valves are not an accessory with a safety function as defined in the PED 2014/68/EU Article 2 (4) and Article 4 (1) (d) by category IV Use or classify!

## 3.0 Handling

### 3.1 Transport

For any transport works, the generally recognised technical rules and standards as well as rules for prevention of accidents must be observed.

During transport, storage and decommissioning, protective caps must be attached to the sides of the valve.

The goods to be transported must be carefully treated. During transport, the valve must be protected against strokes, impacts or vibration. The coat of lacquer may not be damaged. Transport temperature is -20 °C up to +60 °C.

**Never transport the valve at pneumatic drive piping/ tubing or components.** Transport the valve at provided transport angles (256) from KA120 or ring nut (926) from KA160.

Transport the valve in a box or on a pallet with soft base and it smoothly on even floor. **Never put valve on the piping/ tubing or its components.**

The goods must be checked on completeness and transport damage. See also section 9.0

### 3.2 Storage

If the valve is not installed immediately after delivery, it must be stored properly.

- Storage temperature -20 °C up to +60 °C, dry and clean.
- The lacquer protects against corrosion in neutral dry atmosphere. Do not damage colour.
- In humid rooms, a drying agent or a heating resp. is necessary because of condensation of water.

Requirements according to DIN 7716 (products made of caoutchouc and rubber) must be met.

### 3.3 Handling before mounting

- In case of valve with protection caps, they must be removed before being mounted!
- Protect against atmospheric influences such as humidity.
- Appropriate treatment protects against damage.

## 4.0 Product description

The electro-pneumatic-valves in the EPVA and AEPV series are direct-acting, normally closed NC, spring-loaded automatic shut-off valves with pneumatic actuator.

The drive is actuated by a 3/2 way control valve with solenoid drive, type 10-EVD 2 or 10-EVD 2/2401 resp.

The sectional drawing part 11.1 in Fig. 1 – Fig. 5 shows the valve construction.





# Operating manual

## 4.1 Function

When opening the 3/2 way control valve (805) the control medium flows via the connection 3 → 2 under the drive piston (217). The control medium pushes the drive piston (217) against the pressure spring (503) and opens- via the valve spindle (205)- the balance piston (220) or valve disk (200) that is pressure impinged. The valve is open.

The valve closes in case of shut-off, failure or interruption of power energy to control valve (805). The compressed control medium in the pneumatic drive is blown-off via the quick-venting mechanism (601) with sound absorber (600) and the control valve (805).

## 4.2 Technical data

**Opening times:** 0,8 – 2s depends upon nominal width

**Closing times:** < 1s

**Drive types (KA) and air consumption in standard litre (NL) per connection at 4 bar control pressure**

Flange DN	15 (5N)	20 (7N)	25 (10)	32 (12N)	40 (15N)	50 (20N)	65 (25N)	80 (30N)	100	125	150	200	250	300
10-4 - EPVA	-	-	-	-	-	-	-	-	-	-	120 5NL	160 10NL	160 10NL	200 17NL
16-4 - EPVA	-	-	-	-	120 2,5NL	160 4,5NL	160 4,5NL	160 4,5NL	200 9NL	-	-	-	-	-
40-4 - EPVA	-	-	-	-	120 2,5NL	160 4,5NL	160 4,5NL	160 4,5NL	200 9NL	200 9NL	-	-	-	-
16-4 - AEPV	120 2,5NL	120 2,5NL	120 2,5NL	120 2,5NL	120 2,5NL	120 2,5NL	-	-	-	-	-	-	-	-
20-4 - AEPV	-	-	-	-	120 2,5NL	-	-	-	-	-	-	-	-	-
30-4 - AEPV	-	-	-	120 2,5NL	-	-	-	-	-	-	-	-	-	-
40-4 - AEPV	120 2,5NL	120 2,5NL	120 2,5NL	-	-	-	-	-	-	-	-	-	-	-

Air consumption for 10 bar, multiply control pressure table values by 2,2

### Max. valve loading by pipe power

The indicated moments may not work longer than 10s.

DN	8	10	15	20	25	32	40	50	65	80	100	125	≥150
<b>Torsion Nm</b>	20	35	50	85	125	160	200	250 <sup>1)</sup>	325 <sup>1)</sup>	400 <sup>1)</sup>	-	-	-
<b>Bending Nm</b>	35	70	105	225	340	475	610	1100	1600	2400	5000	6000	7600

<sup>1)</sup> Not valid in case of valves with flanges

### Starting torque, pipe screws greased

DN	8	10	15	20	25	32	40	50	65	80	100	125	≥150
<b>Torque Nm</b>	20	30	30	30	30	50	50	50	50	50	80	160	160

### Starting torque, product screws and nuts greased

Screw	M6	M8	M10	M12	M16	M20	M24
<b>Torque Nm</b>	5	11	22	39	70	110	150





# Operating manual

## 4.3 Marking

The type sign on the pneumatic drive has the following information:

- Fabricator
- Valve type, nominal width, pressure and temperature indication, fitting position
- Year of construction / production no.
- Valve class and valve group
- CE-Sign and no. of relevant location
- Fluid group and test pressure PT
- Pneumatic drive type
- Control medium,  $p_{min}$  and  $p_{max}$  for control medium

Refer also to section 10.0

## 5.0 Installation

### 5.1 Warning of dangers during installation, operation and maintenance



#### **DANGER!**

Safe operation of the valve can only be guaranteed if it is installed, commissioned and maintained by qualified personnel (see point 2.3 "Qualified staff") correctly and in observance of the warnings in this operating manual. Apart from that, the operation safety order and the qualified use of tools and protection equipment must be guaranteed. The operating instructions for the valve must be observed during all work on or with the valve. Failure to observe these instructions may result in injury or in damage to the valve or other installations.

When the valve is used as a final sealing element, a safety precaution e.g. blanking disc, blind flange, etc., in accordance with the code of practice of the German Technical and Scientific Association for Gas and Water (DVGW) is recommended during all repair work.

### 5.2 Installation

Apart from the general installation guidelines, the following points should be observed:



#### **NOTICE!**

- Remove protective caps.
- The inside of the valve and the pipeline must be free from foreign particles.
- Observe the installation position in relation to the flow direction, see markings on the valve.
- Centre gaskets between the flanges.
- The connecting flanges must be aligned.
- Ensure that none of the components is strained during installation.
- The valve must not be used as a fixed point; it is supported by the pipework system.
- Protect valves from soiling, particularly during construction work.
- Thermal expansion of the pipework must be equalized using compensators.







# Operating manual

For shut-off / blow-off valves: Install dirt trap upstream of the valve.  
Observe the direction of flow.

The mesh size of the dirt trap must have the following properties:

- be smaller than 1.5 mm
- a test mandrel of 1 mm diameter to pass and not allow.

If two valves are combined to form a group, one dirt trap installed upstream of the first valve is sufficient.  
The Uni-Geräte dirt traps of the SFR Series are approved for use together with the electro-pneumatic-valves in accordance with EU/2016/426.

The valve can be installed with vertical or horizontal pneumatic drive. The solenoid drive of the control valve should preferably be installed with vertical drive. The control air must be connected at connection 3. We recommend an air filter in front of the control valve. Mesh size 40 µm.



## NOTICE!

Please observe the control valve documentation.

## 6.0 Operation



### DANGER!

Before commissioning a new installation or before starting up an installation again after repairs or modifications, ensure:

- The proper completion of all installation and assembly work!
- Commissioning only by „qualified staff“ (see point 2.3).
- Installation or repair of existing guards and protection equipment.

### 6.1 Commissioning

- Before commissioning, check the data on material, pressure, temperature and flow direction with the layout plan of the pipework system.
- Depending on the field of application, the local regulations have to be observed, e.g. the operation safety order.
- Residues in the pipework and the valve (dirt, weld beads, etc.) will inevitably result in leaks.
- Leakage inspection of the installed valve.

### 6.2 Shutting down

- Depending on the field of application, the local regulations have to be observed, e.g. the operation safety order.

### 6.3 Maintenance

Electro-pneumatic-valves have to be checked at regular intervals for proper function and internal leak tightness. The intervals for regular inspections have to be defined by the operator according to the operating conditions. Uni-Geräte recommends an internal visual inspection once a year and an overhaul of the valve after 2 years or after the following number of switching cycles at the latest:

Application temperature	≤ DN 25	≤ DN 80	≤ DN 150	> DN 150
≤ 25 °C	150 000	75 000	25 000	20 000
> 25 °C	50 000	25 000	25 000	5 000

### Repair or maintenance works at the manufacturing company (UNI- Geräte)

- Valves and fittings must be delivered clean and free from substances which are harmful to health or to the environment.

### Uni-Geräte prescribes the following maintenance intervals for valves with SIL requirements:

The safety requirements with regard to the maintenance intervals to be adhered are described in the **SIL manual** of the type series and must be complied with.





# Operating manual

## 6.4 Putting back into operation

When putting a valve back into operation, ensure that all the necessary steps described in section 5.2 (Installation) and section 6.1 (Commissioning) are repeated.

## 7.0 Troubleshooting

### 7.1 Detection of defects



#### **DANGER!**

Be sure to observe the safety instructions during troubleshooting.

If the malfunctions cannot be remedied using the following **“Troubleshooting plan (7.2)”** please contact the manufacturer.

In the event of faults in the function or operating behaviour of the valve, check whether the installation work was carried out and completed as described in this operating manual.  
Depending on the field of application, the operation safety order must be observed.

Check the data on material, pressure, temperature, voltage and flow direction with the layout plan of the pipework system. In addition, check whether the operating conditions correspond to the technical data in the data sheet or on the rating plate.

### 7.2 Troubleshooting plan

Malfunction	Possible causes	Remedy
No flow	Pneumatic drive does not open	Switch on control valve (805) Check control pressure Clean filter control line, if necessary
	Working pressure too high	Compare working pressure with the data on the rating plate
	Protective caps were not removed	Remove protective caps
Low flow rate	contaminated dirty strainer	Clean / exchange sieve
	Clogging in the pipework system	Check pipework system
Valve leaking at seat, no internal tightness	Valve seat gasket (400) or valve seat (100) damaged by external particles	See section 8 or replace valve
No external tightness	Gaskets damaged	See section 8 or replace valve
Valve opens too slowly	Soiled exhaust plug	Clean/exchange exhaust plug
	Control pressure too low	Check control pressure
Valve closes too slowly	Dirt in control line	Clean sound absorber (600) Clean vent line
	Reduced conductor cross sections	Replace folded control lines
Valve does not close	Control valve does not close	Check, if residual voltage is aligned
	Dirt in control line	Clean sound absorber (600) Clean vent line
	Reduced conductor cross sections	Replace folded control lines
Flange fracture (valve/pipework)	Screws not tightened uniformly, mating flanges not aligned	Align pipework. Install new valve



#### **NOTICE!**

Observe section 9.0 before all installation and repair work!

Observe section 6.4 when putting the valve back into operation!





# Operating manual

## 8.0 Dismantling of the valve

In addition to the general installation guidelines and the operation safety order, the following points must also be observed:



### DANGER!

- Depressurised pipework system
- Cooled medium
- Emptied installation
- Vent pipework systems containing corrosive, inflammable, aggressive or toxic media
- Have dismantling work carried out only by qualified staff (see point 2.3)
- For special application such as for oxygen use only the approved lubricants and appropriate sealing materials (BAM- approval)

### 8.1 Visual inspection

(Only by 10-4 - EPVA...N(H)... DN 150 – DN 300; 16/40-4 - EPVA...N(H)... DN 80 – DN 125;  
16/40-4 - AEPV...N(H)... DN 15 – DN 25)  
(No visual inspection possible in case of the 16/40-4 - EPVA...N(H)... DN 40 – DN 65;  
16/20/30-4 - AEPV...N(H)... DN 32 – DN 50)

Shut down the valve as described in section 6.2.

Switch off control valve (805) and disassemble the control line from pneumatic drive. Assemble a shut-off valve in the drive connection. Put control medium within the permissible pressure range on the pneumatic drive. Close shut-off valve. The valve is open. Loosen the hex. screw (900/x) resp. hex. nut (901/4). Disassemble the drive together with the balance piston (220).

During the visual inspection, pay attention to the following points:

1. Damage to the valve seat (100).
2. Damage to the valve sealing elements
3. Residues in sound absorber (600/2)

In case of damages at the valve seat exchange the complete valve.

In case of damages at the sealing elements use

spare part kit for 10-4 - EPVA...N(H)...	DN 150 – DN 300
spare part kit for 16/40-4 - EPVA...N(H)...	DN 80 – DN 125
spare part kit for 16/40-4 - EPVA...N(H)...	DN 40 – DN 65
spare part kit for 16/40-4 - AEPV...N(H)...	DN 15 – DN 25
spare part kit for 16/20/30-4 - AEPV...N(H)...	DN 32 – DN 50

Clean sound absorber (600/2) at the quick venting mechanism (601) and at the control valve (805).



### NOTICE!

Fittings with an approval for ships (inspection certificate 3.2 as per EN10204 (01/2005), for the series: 16-4 - EPVA...N(H)... DN 40 – DN 100, must be completely exchanged.

Assemble the valve in the reverse order to the dismantling.



### CAUTION!

In case of installation on the proper seat of the flat gasket (402) in case of 10-4 - EPVA...N(H)..., regard and do not damage the O-rings (403/6 and 403/7) in case of 16/40-4 - EPVA...N(H)... and the O-rings (403/6) in case of 16/20/30/40-4 - AEPV...N(H)...

Examine the valve acc. to DIN EN 12266-1 for internal and external leaks and finally carry out a function test.





# Operating manual

## 8.2 Replacement of wear parts

Shut down the valve as described in section 6.2.



### DANGER!

Opening of pneumatic drive

The spring dome or the housing flange stands under spring tension. At least two locking screws (236) with 10-4 - EPVA...N(H)... and 16/40-4 - EPVA...N(H)... or hexagon screws (900/2) with 16/20/30/40-4 - AEPV...N(H)... must remain screwed into the spring dome of housing flange.

Remove two opposing studs (236), or respectively, hexagon head screws (900/2 or 900/4) and replace them by threaded rods with nuts.

Drive size	KA 70	KA 120	KA 160	KA 200	KA250
Threaded rod	M6 x 250	M10 x 450	M12 x 450	M16 x 500	M16 x 650

Manually tighten the threaded rods with nuts and loosen and remove the remaining studs (236), or respectively, hexagon head screws (900/2 or 900/4).



### NOTICE!

The spring dome (112) or housing flange (108/3) is, at the start, pressed against the nuts of the threaded rod.

Unscrew the nuts on the threaded rod, so that the pressure spring (503/X) is unloaded.

Remove the threaded rods with the spring dome (112) or the housing flange (108/3). Dismantle spring guide (204), pressure springs (503/1), (503/2) and pneumatic cylinder (111). Unscrew and remove nuts (901 or 901/3) or connecting piece limit switch mounting (246).

With 10-4 - EPVA...N(H)...; 16/40-4 - EPVA...N(H)... and 16/20/30/40-4 - AEPV...N(H)... remove spring plate (216\*\*), driving piston (217) and seal (226).

### Fig. 1 10-4 - EPVA...N(H)... DN 150 – DN 300

Loosen the cylinder head screw (910) and separate and remove the spacer (110) from the housing flange (108).

Take out and remove the spindle guide (212#).

Take away and remove the housing flange (108) from the valve housing (100).

Completely remove the piston guide (221) including balance piston (220+) and valve spindle (205+) from the valve housing (100).

Completely de-install the piston guide (221) from the balance piston (220+).



### NOTICE!

Spare part kit includes a complete balance piston (220+), spindle guide (212#) and spring disk (216\*\*).

The position numbers marked with a (+, #, \*\*) are supplied as complete unit.

### Fig. 2 16/40-4 - EPVA...N(H)... DN 80 – DN 125

Loosen the cylinder head screw (910) and separate and remove the spacer (110) from the housing flange (108).

Take out and remove the spindle guide (212#).

Loosen hex. nuts (901/4) and remove them including lock washer (905/4).

Take off housing flange (108) from the piston guide (221) and remove it.

Take out the piston guide (221) with the balance piston (220+) of the valve housing flange (100).

Completely de-install the piston guide (221) from the balance piston (220+).





# Operating manual

## **Fig. 4 16/40-4 - EPVA...N(H)... DN 40 – DN 65**

Loosen hex. nuts (901/4) and remove them with lock washer (905/4).  
Take out and remove the spindle guide (212#).  
Take out the piston guide (221) with the balance piston (220+) of the valve housing (100).  
Completely de-install the piston guide (221) from the balance piston (220+).



### **NOTICE!**

Spare part kit includes a complete balance piston (220+), spindle guide (212#) and spring disk (216\*\*).  
The position numbers marked with a (+, #, \*\*) are supplied as complete unit.

## **Fig. 3 16/40-4 - AEPV...N(H)... DN 15 – DN 25**

Loosen the hexagon head screw (900/1) and remove it with lock washer (905/2).  
Remove the housing flange (108/2) with spindle guide (212/2) from spacer (110).  
Remove the distance pipe (235).  
Loosen and remove bolt (902/2) including the SL-retainer (949). Remove the valve spindle (205/2).  
Loosen the cylinder head screw (910/1) and remove it with lock washer (905/1).  
Remove the spacer (110) from the valve housing (100).  
Pull off and remove the sealing board (115) with spindle guide (212/1) and guide piece (255) from the valve spindle (205/1+).  
Completely take out the valve disc (200+) from the valve housing (100).

## **Fig. 5 16/20/30-4 - AEPV...N(H)... DN 32 – DN 50**

Loosen the hexagon head screw (900/1) and remove it with the lock washer (905/2).  
Remove the housing flange (108/2) with the spindle guide (212/2) from the spacer (110). Remove the distance pipe (235).  
Loosen and remove bolt (902/2) including the SL-retainer (949). Remove the valve spindle (205/2).  
Loosen the cylinder head screw (910/1) and remove it with lock washer (905/1).  
Remove the spacer (110) from the housing flange (108).  
Loosen the cylinder head screws (910/2) and remove it with lock washer (905/5).  
Remove the housing flange (108/1) from the valve housing (100).  
Pull off and remove the sealing board (115) with spindle guide (212/1) and guide piece (255) from the valve spindle (205/1+).  
Completely take out the valve disc (200+) from the valve housing (100).



### **NOTICE!**

Spare part kit includes a complete valve disc (200+) and spring disk complete (216\*\*).  
The position numbers marked with a (+, \*\*) are supplied as complete unit.

Assemble the valve in the reverse order to the dismantling.

Grease the balance piston (220), the valve spindle (205) in the area of the radial packing ring (404) with lubricant Staburags N32 or equivalent material (DVGW-authorization).

Grease the pneumatic cylinder (111) in the area of the drive piston (217) with lubricant Staburags NBU 30.



### **CAUTION!**

Install sealing elements carefully and properly and do not damage them during assembly.

Examine the valve acc. to DIN EN 12266-1 for internal and external leaks and finally carry out a function test.





# Operating manual

## 9.0 Warranty

Scope and period of the warranty is specified in the edition of the "General Terms of Business of the Uni-Geräte E. Mangelmann Elektrotechnische Fabrik GmbH" valid at the time of delivery or else in the purchase agreement.

We warranty that the valve is free from faults in line with the state of the art and for the confirmed field of application.

No warranty claims will be accepted for damage resulting from improper use or failure to observe these operating and installation instructions, the statutory accident prevention regulations, the EN, DIN and VDE standards and other codes and regulations.

Warranty claims will also not be accepted for damage occurring during operation due to operating conditions deviating from those specified in the data sheet or in other agreements.

Justified complaints will be remedied by reworking by us or specialist companies authorized by us.

Claims going beyond the scope of the warranty will not be accepted. The customer shall have no right to the supply of a replacement valve.

Maintenance work, installation of parts from other manufacturers, any modifications to the design and natural wear are not covered by the warranty.

Transport damage must be reported not to us but **without delay** to your responsible goods handling company, the railway company or the shipping agent as otherwise all claims for damages against these companies will be voided.

## 10.0 Explanation on codes and directives

The Commission of the European Union has laid down common directives resp. regulations for the free trading of goods within the Union specifying minimum requirements for safety and health protection. The CE symbol confirms that products comply with the EU directives resp. regulations, i.e. in conformity with the relevant, in particular harmonised standards. Regulation EU/2016/426 and directive 2014/68/EU are of relevance for the valve (mechanical part).

### Notes on Regulation EU/2016/426 (Gas Appliances Regulation GAR):

The valves have been developed, manufactured and tested in compliance with the applicable harmonised standard and comply with the relevant requirements of the Regulation EU/2016/426. Unless otherwise stated separately, this has been confirmed by a type examination.

### Notes on Directive 2014/68/EU (Pressure Equipment Directive, DGRL):

It has been confirmed that the quality assurance in design control, manufacture and final acceptance of the manufacturer, Uni-Geräte E. Mangelmann Elektrotechnische Fabrik GmbH, satisfy the requirements of 2014/68/EU Article 14 Module H. The valves comply with the fundamental requirements of Directive 2014/68/EU. Valves in according to Article 1 Paragraph 2,f,v or Article 4 paragraph 3 are not allowed to have the CE Mark in according to Article 18.

### Note concerning ex-guideline 2014/34/EU (explosion guideline ATEX):

The product is not subject to guideline 2014/34/EU, since due to the loads occurring during practical operation, there is no effective source of ignition even in case of an error case to be assumed. This also applies to spring loaded components in medium filled rooms. In case of electric drives, sensors or other electric components the application as per 2014/34/EU is to be checked separately.



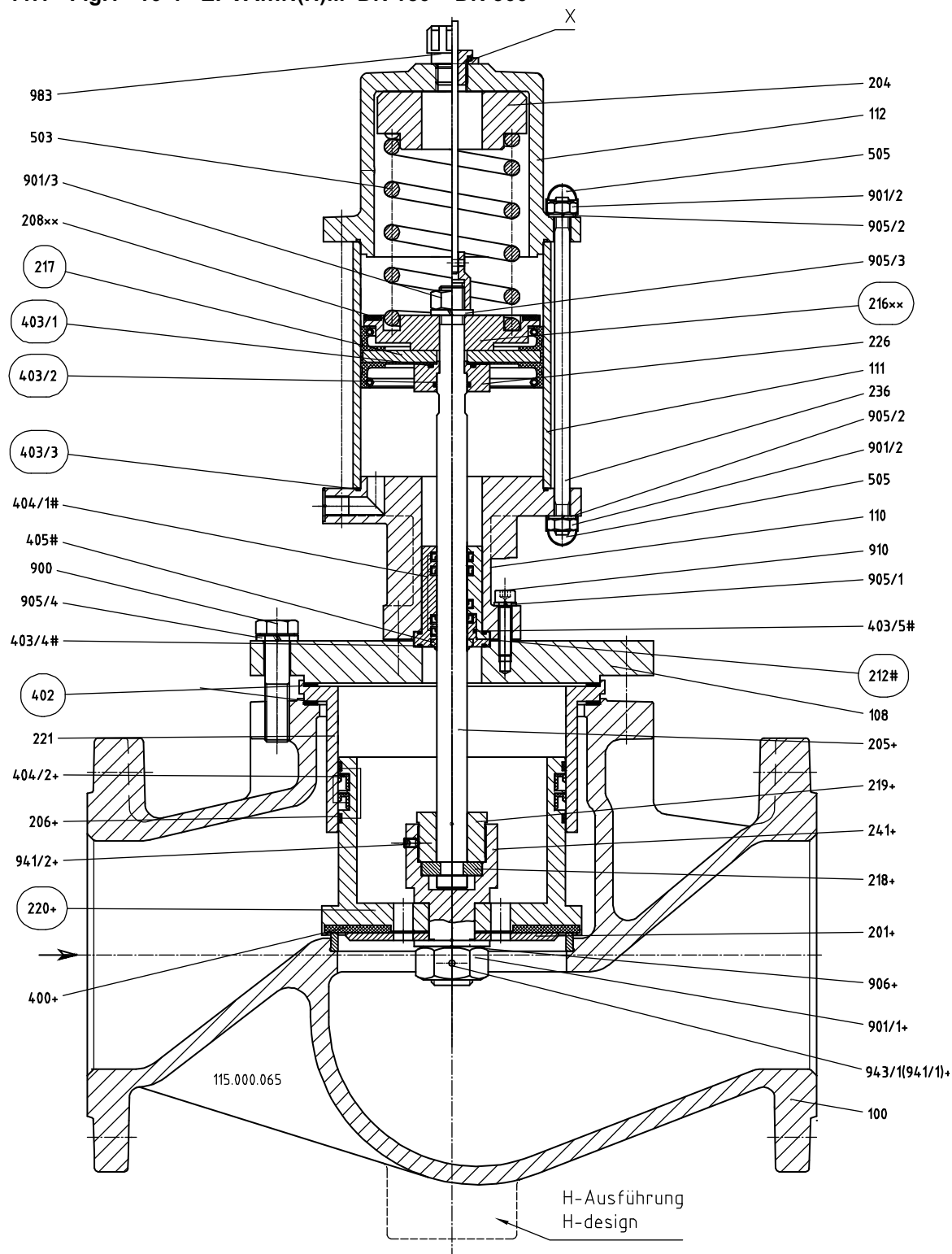




# Operating manual

## 11.0 Drawing

### 11.1 Fig.1 10-4 - EPVA...N(H)... DN 150 – DN 300



O = Spare part kit

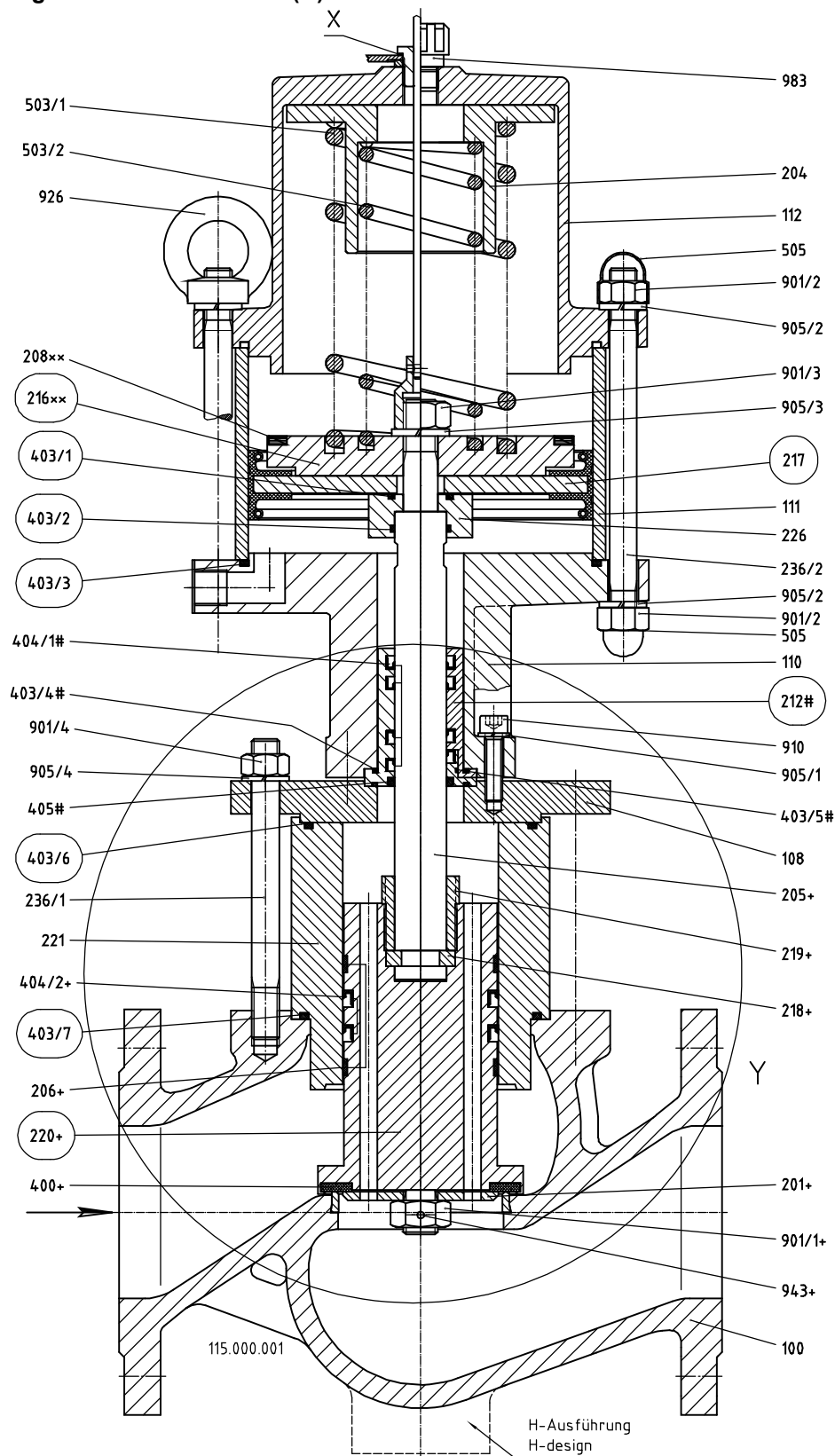
X = Option limit switch mounting





# Operating manual

**Fig.2 16/40-4 - EPVA...N(H)... DN 80 – DN 125**



O = Spare part kit

X = Option limit switch mounting

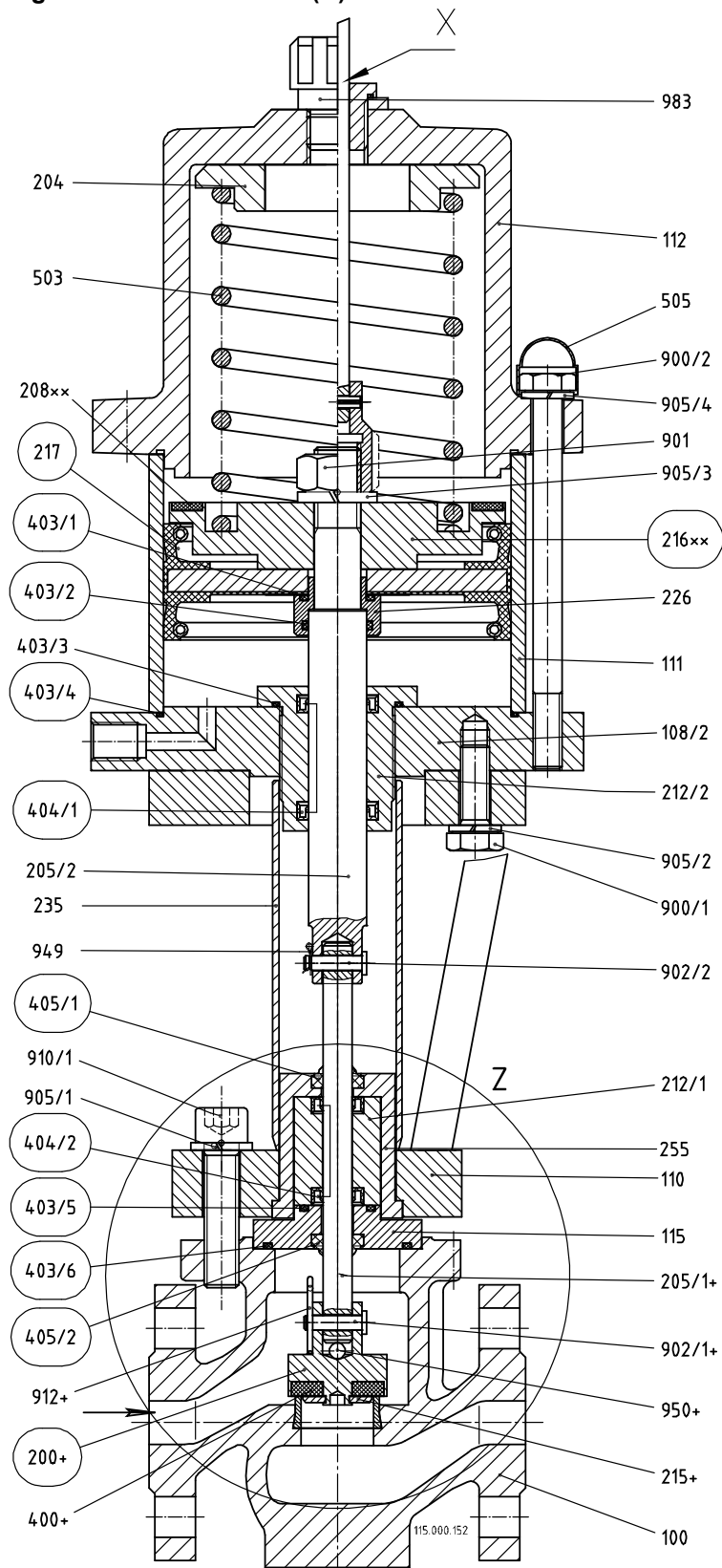






# Operating manual

**Fig.3 16/40-4 - AEPV...N(H)... DN 15 – DN 25**



O = Spare part kit

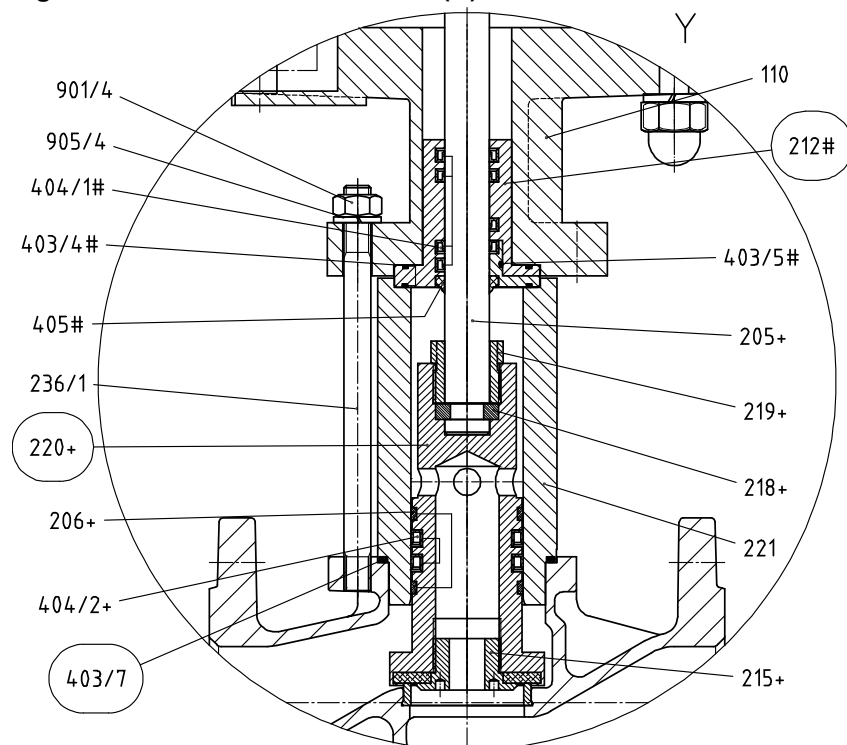
X = Option limit switch mounting





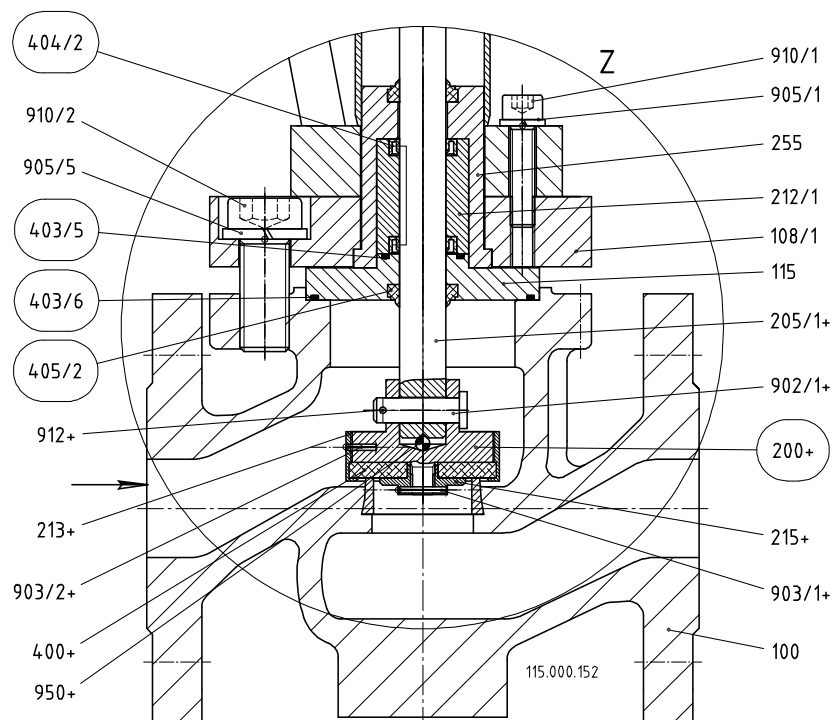
# Operating manual

**Fig.4 Detail Y 16/40-4 - EPVA...N(H)... DN 40 – DN 65**



O = Spare part kit

**Abb.5 Detail Z 16/20/30-4 - AEPV...N(H)... DN 32 – DN 50**



O = Spare part kit





# Operating manual

## 11.2 Projection

Fig.1 10-4 - EPVA...N(H)...

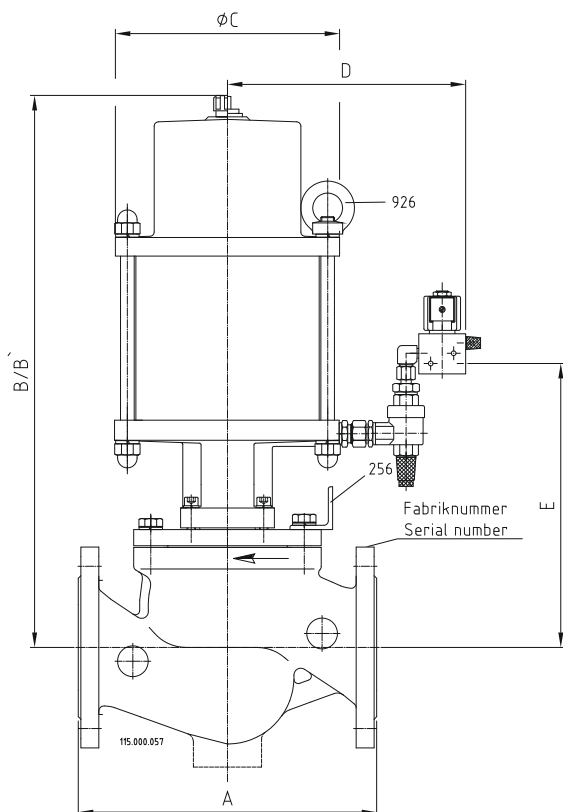


Fig.2 16/40-4 - EPVA...N(H)...

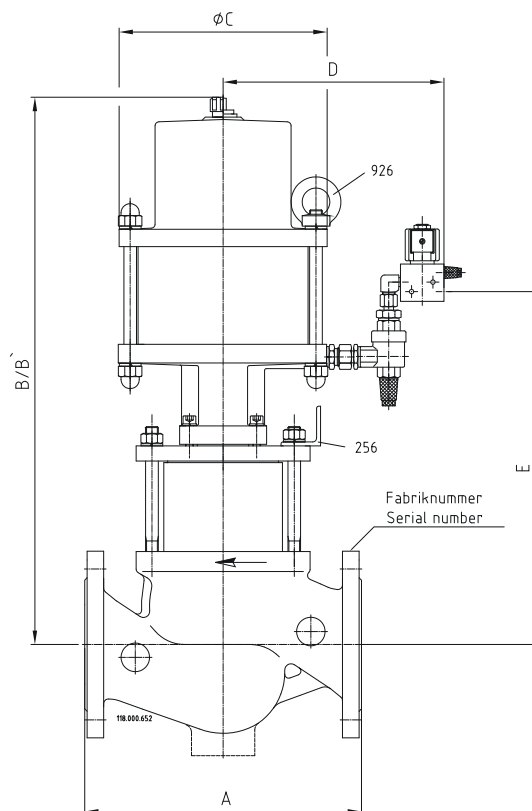


Fig.3 16/40-4 - AEPV...N(H)...

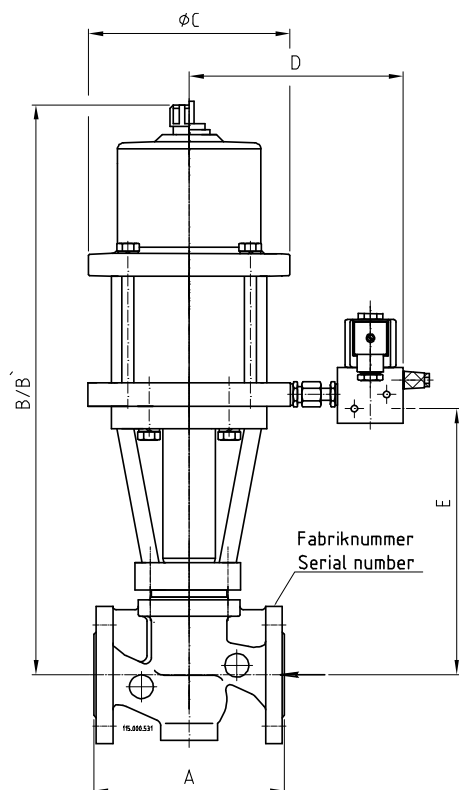
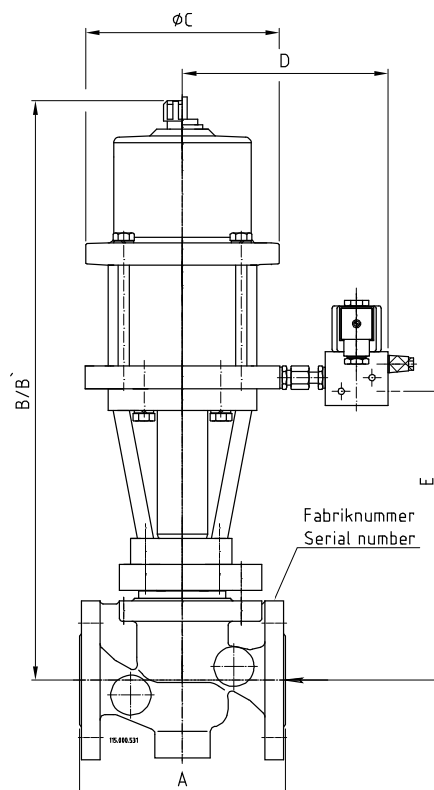


Fig.4 16/20/30-4 - AEPV...N(H)...



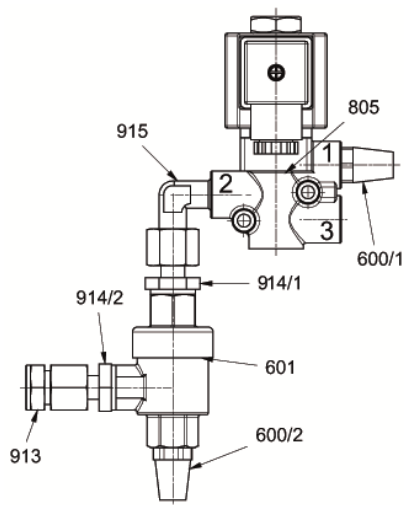
B' = Dimension for disassembling of complete drive





# Operating manual

## 11.3 Control valve



Connection 1 = Ventilation

Connection 2 = Drive

Connection 3 = Control air

## 11.4 List of parts

Pos./ Item	Stück/ Qty.	Benennung	Description
097	1	Endschalteranbau	Limit switch mounting
100	1	Ventilgehäuse	Valve chamber/ housing
108/X	1 (2) (3)	Gehäuseflansch	Housing flange
110	1	Distanzstück	Spacer
111	1	Pneumatikzylinder	Pneumatic cylinder
112	1	Federdom	Spring cap
115	1	Dichtplatte	Sealing board
200	1	Ventilteller	Valve disk
201	1	Tellerscheibe	Disc plate
204	1 (8)	Federführung	Spring guide pin
205/X	1	Ventilspindel	Valve spindle
206/X	1 (2)	Führungsring	Guide ring
208	1	Schlagdämpfung	Sound insulation
212/X	1 (2)	Spindelführung	Spindle guide
213	1	Gewinding	Ring nut
215	1	Tellerschraube	Plate screw
216	1	Federteller	Spring disc
217	1	Antriebskolben	Drive piston
218	1	Zweiteiliger Ring	Two-piece ring
219	1	Spindelmutter	Spindle nut
220	1	Ausgleichskolben	Balance piston
221	1	Kolbenführung	Piston guide
226	1	Dichtstück	Sealing piece
235	1	Distanzrohr	Distance pipe
236/X	4 (8)	Stiftschraube	Stud
241	1	Ventiltelleraufhängung	Valve disc mounting
243	1	Endschalterspindel	Limit switch spindle
246	1	Verbindungsstück Endschalter	Connecting piece limit switch
255	1	Führungsteil	Guide piece
256	1	Transportwinkel	Transport angle
259	2	Scheibe (Fertigungsteil)	Disc (production piece)
261	1	Luftraumverkleinerer	Airspace reduction
400	1	Ventiltellerdichtung	Valve disc sealing
402	2	Flachdichtung	Flat gasket





# Operating manual

Pos./ Item	Stück/ Qty.	Benennung	Description
403/1	1	O-Ring	O-ring
403/2	1	O-Ring	O-ring
403/3	1	O-Ring	O-ring
403/4	1 (2)	O-Ring	O-ring
403/5	1 (2)	O-Ring	O-ring
403/6	1	O-Ring	O-ring
403/7	1	O-Ring	O-ring
404/1	2 (4)	Lippenring	Lip-ring
404/2	2	Lippenring	Lip-ring
404/3	1	Lippenring	Lip-ring
405/X	1	Abstreifring	Scraper ring
409	1	Dachmanschettensatz	Chevron Sealing Sets
503/X	1 (2) (8)	Druckfeder	Pressure spring
505	4/6/7/8	Schutzkappe	Protective cap
513	1	Endschalterbetätigung	Switch actuator
600/1	1	Schalldämpfer	Sound absorber
600/2	1	Schalldämpfer	Sound absorber
601/X	1	Schnellentlüfter	Quick-venting mechanism
805	1	Steuerventil	Control valve
900/X	4 (8)	Sechskantschraube	Hex. head screw
901	3	Sechskantmutter	Hex. nut
901/1	1	Sechskantmutter	Hex. nut
901/2	8	Sechskantmutter	Hex. nut
901/3	1	Sechskantmutter	Hex. nut
901/4	4	Sechskantmutter	Hex. nut
902/X	1 (2)	Bolzen	Bolt
903/X	1	Kerbstift	Grooved dowel pin
904	1	Verschlusschraube	Screwed plug
905/1	4	Federring	Lock washer
905/2	4 (8)	Federring	Lock washer
905/3	1	Federring	Lock washer
905/4	4/8	Federring	Lock washer
905/5	4	Federring	Lock washer
906	1	Scheibe	Washer
910/X	4	Zylinderschraube	Cylinder head screw
912	1	Splint	Split-pin
913	1	Gerade- Einschraubverschraubung	Linear threaded screw connection
914/1	1	Gerader Aufsteckstutzen	Linear put on adapter
914/2	1	Gerader Aufsteckstutzen	Linear put on adapter
915	1	Winkel- Einschraubverschraubung	Angle threaded screw connection
926	1 (2)	Ringmutter	Ring nut
941/X	1	Gewindestift	Set screw
943	1	Spannstift	Spring dowel sleeve
948/X	8 (12)	Nordlockscheibe	Nordlock washer
949	1	SL-Sicherung	SL-retainer
950	1	Kugel	Ball
966/X	1	DU-Buchse	DU-liner
983	1	Entlüftungsstopfen	Exhaust plug





# Operating manual

## Spare parts

Type	DN	Fig.	Spare part
10-4 - EVPA...N(H)...	DN 150 – DN 300	1	Spare part kit
16/40-4 - EPVA...N(H)...	DN 80 – DN 125	2	Spare part kit
16/40-4 - EPVA...N(H)...	DN 40 – DN 65	4	Spare part kit
16/40-4 - AEPV...N(H)...	DN 15 – DN 25	3	Spare part kit
16/20/30/40-4 - AEPV...N(H)...	DN 32 – DN 50	5	Spare part kit

## Dimension

Flange DN	Dim.	15	20	25	32	40	50	65	80	100	125	150	200	250	300
Installation length	A	130	150	160	180	200	230	290	310(*)	350	400	480	600	730	850
10-4 - EPVA	B	-	-	-	-	-	-	-	-	-	-	590	710	765	845
	B'	-	-	-	-	-	-	-	-	-	-	770	940	1040	1180
	ØC	-	-	-	-	-	-	-	-	-	-	170	210	210	265
	D	-	-	-	-	-	-	-	-	-	-	230	250	250	290
	E	-	-	-	-	-	-	-	-	-	-	360	435	480	545
16/40-4 - EPVA	B	-	-	-	-	460	570	590	560	670	715	-	-	-	-
	B'	-	-	-	-	550	670	690	670	800	845	-	-	-	-
	ØC	-	-	-	-	170	210	210	210	265	265	-	-	-	-
	D	-	-	-	-	230	250	250	250	290	290	-	-	-	-
	E	-	-	-	-	310	375	395	365	455	485	-	-	-	-
16-4 - AEPV	B	475	475	475	509	509	517	-	-	-	-	-	-	-	-
	B'	565	565	565	600	600	608	-	-	-	-	-	-	-	-
	ØC	170	170	170	170	170	170	-	-	-	-	-	-	-	-
	D	180	180	180	180	180	180	-	-	-	-	-	-	-	-
	E	220	220	220	254	254	262	-	-	-	-	-	-	-	-
20-4 - AEPV	B	-	-	-	-	509	-	-	-	-	-	-	-	-	-
	B'	-	-	-	-	600	-	-	-	-	-	-	-	-	-
	ØC	-	-	-	-	170	-	-	-	-	-	-	-	-	-
	D	-	-	-	-	180	-	-	-	-	-	-	-	-	-
	E	-	-	-	-	254	-	-	-	-	-	-	-	-	-
30-4 - AEPV	B	-	-	-	509	-	-	-	-	-	-	-	-	-	-
	B'	-	-	-	600	-	-	-	-	-	-	-	-	-	-
	ØC	-	-	-	170	-	-	-	-	-	-	-	-	-	-
	D	-	-	-	180	-	-	-	-	-	-	-	-	-	-
	E	-	-	-	254	-	-	-	-	-	-	-	-	-	-
40-4 - AEPV	B	475	475	475	-	-	-	-	-	-	-	-	-	-	-
	B'	565	565	565	-	-	-	-	-	-	-	-	-	-	-
	ØC	170	170	170	-	-	-	-	-	-	-	-	-	-	-
	D	180	180	180	-	-	-	-	-	-	-	-	-	-	-
	E	220	220	220	-	-	-	-	-	-	-	-	-	-	-

