

# Operating and mounting manual semi-automatic shut off valve solenoid-valve EVA...(N)H-4.B...

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## 1.0 General Remarks

This operating manual includes instructions to assemble and operate the valve in the prescribed and safe way. **Additionally, the adequate operating instructions of each special solenoid drive must be considered.**

Series MG...	220.100.038
Series MG...X	220.100.040
Series MG...Xme	220.100.039

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  
D-47652 Weeze  
Telefon: +49 (0) 2837/9134-0  
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Homepage: [www.uni-geraete.de](http://www.uni-geraete.de)

#### Designation

Direct-acting, normally closed NC, spring-loaded semi-automatic shut off valve with solenoid actuator, opening manually only, closing on discontinuation of voltage supply.

<b>Working pressure:</b>	05 - EVA	0 - 0,5 bar
<b>Fitting position:</b>	vertical drive	
<b>Medium temperature:</b>	-20°C to + 60°C	
<b>Ambient temperature:</b>	-20°C to + 60°C	
<b>Switching cycles:</b>	see operating instructions solenoid drive	

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

Flange DN ANSI	PN	15 (5N) 1/2"	20 (7N) 3/4"	25 (10N) 1"	32 (12N) 1 1/4"	40 (15N) 1 1/2"	50 (20N) 2"	65 (25N) 2 1/2"	80 (30N) 3"	100 4"	125 -	150 6"	200 8"	Test pressure (*) PT
05- EVA...	16	-	-	-	-	-	X	-	X	X	X	X	X	0,75 bar

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

X Type examination EU/2016/426, CE-0085AQ0563, O Acceptance test certificate 3.2 possible, - not available,

<b>Voltage:</b>	VDC12 – 440 (–15% to +10%) VAC24 – 500 (–15% to +10%)
<b>Protection type:</b>	IP54 or IP65
<b>Frequency</b>	40 – 60 Hz
<b>Power</b>	10 – 4000W

Details to the electrical data can be found on the type sign and the adequate operating instructions of the solenoid valves.

## 1.2 Application

The solenoid valves EVA...(N)H-4.B... are used as semi-automatic shut-off valve 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 operation instructions, 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.

### 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 authorisation (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.

## 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  $-20^{\circ}\text{C}$  up to  $+60^{\circ}\text{C}$ .

**Never transport the valve at screwed cable glands, appliance plugs or add-on units.** The valve can be transported at ring nuts, flange borings or by means of a belt under the solenoid drive.

Transport the valve in a case or on a pallet with smooth base and put it softly on plain floor. **Never put the valve on attachment parts.**

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 solenoid valves in the EVA... (N)H-4.B... series are direct-acting, normally closed NC, spring-loaded semi-automatic shut off valves with solenoid actuator, **opening** manually only, **closing** on discontinuation of voltage supply.

Sectional drawing 11.1 Fig. 1 show the valve construction.

### 4.1 Function

The valve can only be opened manually by means of a (removable) manual lever. The energized solenoid coil holds the solenoid core (207) with the connected valve disk (200) in the manually set open position. The valve is open.



#### **DANGER! (Danger of injuries)**

After opening of the valve the manual lever (if removable) should be removed and put into the provided holder (at the housing flange).

The valve closes on shutting down of energy supply, breakdown or interruption of the energy supply to the solenoid drive. Due to the initial load of the pressure spring (503) the valve disk (200) seals the gas flow off.

### 4.2 Technical data

Opening times: s  
Closing times: < 1s

#### Solenoid –drive types MG...

Flange DN	15	20	25	32	40	50	65	80	100	125	150	200
Flange ANSI	1/2"	3/4"	1"	1 1/4"	1 1/2"	2"	2 1/2"	3"	4"	-	6"	8"
05-EVA...	-	-	-	-	-	005-3	-	008-2	010	012	016	018

#### 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</b> Nm	20	35	50	85	125	160	200	250 <sup>1)</sup>	325 <sup>1)</sup>	400 <sup>1)</sup>	-	-	-
<b>Bending</b> Nm	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</b> Nm	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</b> Nm	5	11	22	39	70	110	150

### 4.3 Marking

The type sign on the solenoid 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 acc.
- CE-sign and no. of relevant location
- Fluid group and test pressure PT
- Solenoid drive type
- Electr. performance
- Voltage
- Frequency
- Protection type

When using solenoid drives for ex-protection zone 1 refer to information in the valid operating instructions.

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.

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 solenoid valves in accordance with EU/2016/426.

The valve can be installed with upright but not suspended solenoid drive.



**NOTICE!**

Please observe the solenoid drive operating instructions.

## 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

Solenoid 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

**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.

### 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.

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



**DANGER!**

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

## 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
Valve closes by itself after opening	Solenoid core falls out of magnetic field of the solenoid coil	Check for voltage supply
no flow	Protective caps were not removed	Remove protective caps
Low flow rate	Contaminated strainer	Filter clean/exchange
	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 does not close	Connected voltage too high	Check whether there is residual voltage, see section 4.1
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!

## 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)

### 8.1 Replacement of Wear Parts

Shut down the valve as described in section 6.2.

Switch off and dismantle the solenoid drive as described in the operating manual of the solenoid drive.



### DANGER!

**After continuous operation, the solenoid drive may be hot! Danger of burns!**

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

1. Damages at valve seat (100).
2. Damages at valve disc sealing (400)



### 3. Wear of guide rings (206)

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

In case of damages at the sealing elements e.g. valve disc sealing (400), etc. use the spare parts kit.

#### Flange version

...-EVA...(N)H-4.B...

Release ES-bolts (936/1) and (936/2) from fork heads (937/1) and (937/2).

Remove manual lever (969/1). Remove setscrew (941/2) at fork head (937/2) and unscrew fork head (937/2) from valve spindle (205).

Loosen hexagon screw (900/1) and remove it together with the lock washers (905/1).

Remove housing flange (108) from valve housing (100).



#### DANGER!

Complete upper part of housing (106) with housing flange (108) is under tension!

Take out the complete inner part from the valve housing (100) and put it onto a clean surface:

Solenoid core (207) with guide rings (206) (depending on nominal width), valve pin (214), hexagon nut (901/1) and locking plate (908) (depending on nominal width a lock washer (905) is instead of locking plate (908) installed).

Pressure spring (503) with spring cap (203) ( depending on nominal width a washer is under the spring cap (203) present).

Valve disk (200) with disc plate (201), valve piece (202), connection piece limit switch (246), valve spindle (205), valve disk sealing (400), O-ring (403/1), bolts (902/1) and (902/2), washer (only in case of DN200) (906), split pin (912) respectively SL-retainer (949), spring dowel sleeve (943) and SL-retainer (949).

Release the bolt connection (902/2) with SL-retainer (949) so that the valve spindle (205) can be removed.

Finally remove bolt (902/1) together with split pins (912) respectively SL-retainer (949) and put the solenoid core (207) onto a clean surface.



#### NOTICE!

Ball (950) (depending on nominal width) falls out.



#### NOTICE!

Replace gasket (402) before mounting.



#### DANGER!

For special application such as for oxygen use only the approved Lubricants and appropriate sealing materials (Bam-approval).

Assemble the valve in the reverse order to the dismantling.



#### CAUTION!

Install wear parts carefully and properly and do not damage them during assembly.

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

## 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 Explanations 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.

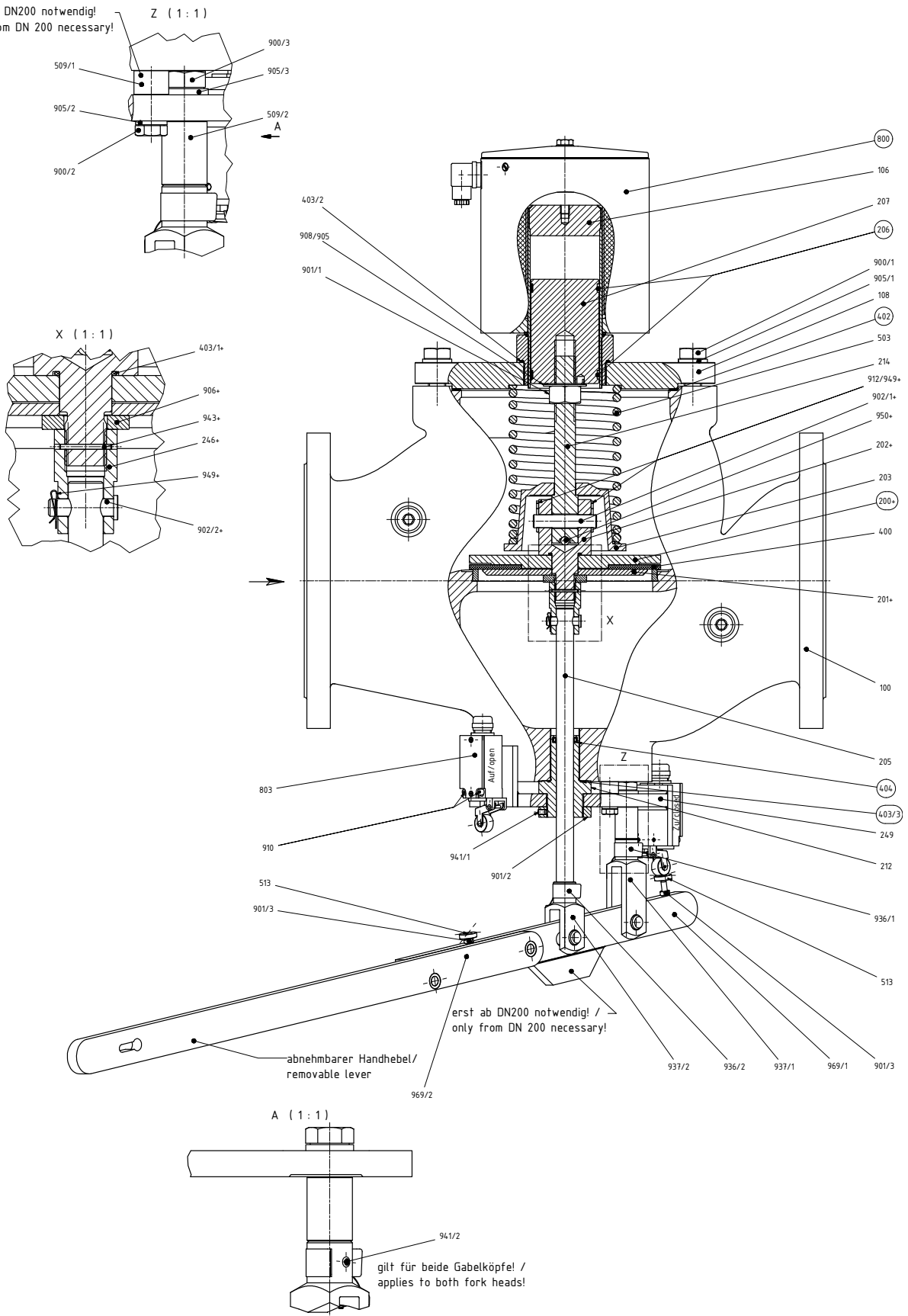
### Note concerning ex-guideline 2014/34/EU (explosion guideline ATEX):

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.

## 11.0 Drawing

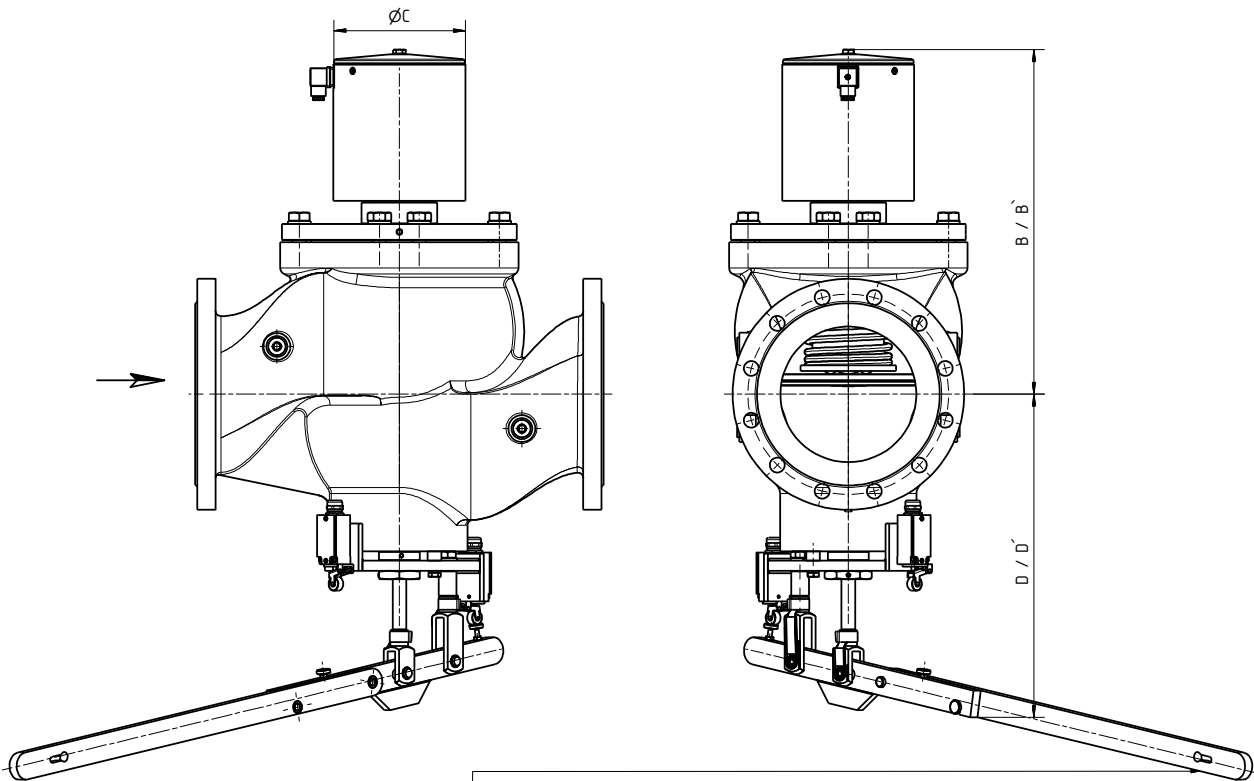
### 11.1 Fig. 1 sectional drawing 05 – EVA...(N)H-4.B... (116.000.889)

erst ab DN200 notwendig!  
only from DN 200 necessary!

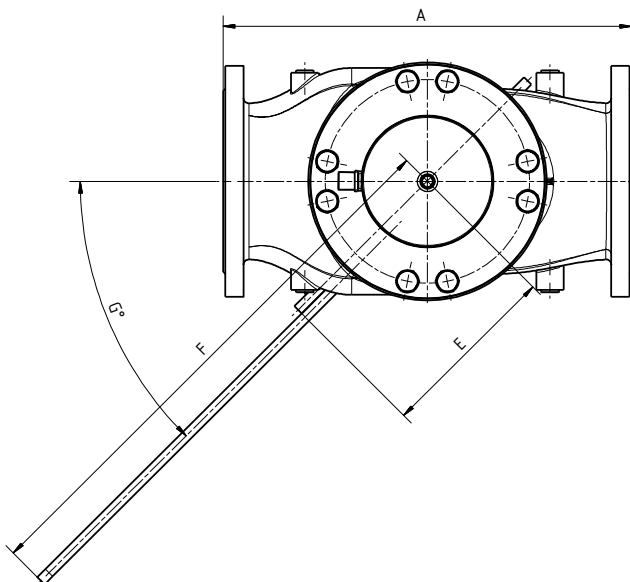


○ = Spare part kit, (...+) are supplied as a complete unit

11.2 View drawing 05 – EVA...(N)H-4.B... (118.003.056)



abnehmbarer Handhebel (Nennweitenabhängig)  
*detachable hand lever (depending on nominal width)*



### 11.3 List of parts

Pos./ Item	Stück/ Qty.	Benennung	Description
100	1	Ventilgehäuse	valve chamber
106	1	Gehäuseoberteil	upper part of housing
108	1	Gehäuseflansch	housing flange
200	1	Ventilteller	valve disk
201	1	Tellerscheibe	disc plate
202	1	Ventilstück	valve piece
203	1	Federkappe	spring cap
205	1	Ventilspindel	valve spindle
206	2	Führungsring	guide ring
207	1	Magnetkern	solenoid core
212	1	Spindelführung	spindle guide
214	1	Ventilstift	valve pin
246	1	Verbindungsstück Endschalter	connection piece limit switch
249	1	Endschalter Konsolenhalter	limit switch console owner
400	1	Ventiltellerdichtung	valve disc sealing
402	1	Flachdichtung	gasket
403/1	1	O-Ring	o-ring
403/2	1	O-Ring	o-ring
403/3	1	O-Ring	o-ring
404	1	Lippenring	lip-ring
503	1	Druckfeder	pressure spring
509/1	1	Distanzring	distance ring
509/2	1	Distanzring	distance ring
* 513	1/2	Endschalterbetätigung	switch actuator
800	1	Magnetantrieb	solenoid drive
* 803	1/2	Endschalter	limit switch
900/1	4/8	Sechskantschraube	hexagon screw
900/2	1	Sechskantschraube	hexagon screw
* 900/3	1	Sechskantschraube	hexagon screw
901/1	1	Sechskantmutter	hexagon nut
901/2	1	Sechskantmutter	hexagon nut
901/3	1/2	Sechskantmutter	hexagon nut
902/1	1	Bolzen	bolt
902/2	1	Bolzen	bolt
905	1	Federring (Nennweitenabhängig)	lock washer (depending on nominal width)
905/1	4/8	Federring	lock washer
905/2	1	Federring	lock washer
905/3	1	Federring	lock washer
906	1	Scheibe	washer
908	1	Sicherungsblech	locking plate
910	2/4	Zylinderschraube	cylinder head screw
912	2	Splint	split pin
936/1	1	ES- Bolzen	ES- bolt
936/2	1	ES- Bolzen	ES- bolt
937/1	1	Gabelkopf	fork head
937/2	1	Gabelkopf	fork head
941/1	1/2	Gewindestift	setscrew
941/2	2	Gewindestift	setscrew
943	1	Spannstift	spring dowel sleeve
949	1/2	SL-Sicherung	SL- retainer
950	1	Kugel	ball
969/1	1	Handhebel	manual lever
969/2	1	Handhebel	manual lever

\* **Option:** Open- or close position with one limit switch resp. open- and close position with two limit switch

**Wearing parts**

Version	Type	Spare parts
Flange version	05- EVA...	Spare part kit, Solenoid drive (800)

**Dimension with standard solenoid drive**

Flange DN	Dimension	15	20	25	32	40	50	65	80	100	125	150	200
Installation length	A <sup>1)</sup>	130	150	160	180	200	230	290	310	350	400	480	600
Flange ANSI	Dimension	1/2"	3/4"	1"	1 1/4"	1 1/2"	2"	2 1/2"	3"	4"	-	6"	8"
05-EVA...	B	-	-	-	-	-	213	-	284	335	362	419	507
	B`	-	-	-	-	-	279	-	364	430	469	560	666
	ØC	-	-	-	-	-	83	-	106	127	127	153	194
	D	-	-	-	-	-	215	-	280	301	353	375	479
	D´	-	-	-	-	-	156	-	224	231	259	265	299
	E	-	-	-	-	-	*	-	183	184	207	208	266
	F	-	-	-	-	-	221	-	357	395	704	891	817
	G°	-	-	-	-	-	55	-	40	30	30	30	45

A<sup>1)</sup> = Dimension at DIN (resp. flanges ANSI and dimension DIN or flanges and dimension at DIN)

B` = Dimension for removing the solenoid drive

D´ = Dimension by operated hand lever

\* = lever not removable

Dimensions B and diameter C change for solenoid drives for explosion-proof zone 1.