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

# Operating manual

## Solenoid-Valve

# Series EVS

## Normally closed

EN

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# Operating manual

## Contents

# Operating manual

## 1.0 General remarks

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

| | |
|---|---|
| Series MG…(Xn)… | 220.100.011 DE / 220.100.038 EN |
| Series MG…x | 220.100.028 DE / 220.100.040 EN |
| Series MG…m | 220.100.004 DE / 220.100.039 EN |

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 solenoid actuator.

| | | | |
|---|---|---|---|
| **Working pressure:** | 16 | - EVS… | 0 - 16 bar (0 - 1600 kPa) |
| | 25 | - EVS… | 0 - 25 bar (0 - 2500 kPa) |
| | 40 | - EVS… | 0 - 40 bar (0 - 4000 kPa) |
| | 120 | - EVS… | 0 - 120 bar (0 - 12000 kPa) |
| | 135 | - EVS 12… | 0 - 10 bar (0 - 1000 kPa) |
| | 135 | - EVS 15… | 0 - 12 bar (0 - 1200 kPa) |
| | 160 | - EVS 15… | 0 - 24 bar (0 - 2400 kPa) |

| | |
|---|---|
| **Type:** | **16 - EVS…** |
| **Fiting position:** | vertical or horizontal drive |
| **Medium:** | Propan, Butan |
| **Medium temperature:** | -30 °C to + 120 °C (243 K to 393 K) |
| **Ambient temperature:** | -10 °C to + 60 °C (263 K to 333 K) |

| | |
|---|---|
| **Type:** | **16 - EVS…** |
| **Fitting position:** | vertical drive |
| **Medium:** | Demineral water |
| **Medium temperature:** | -20 °C to + 60 °C (253 K to 333 K) |
| **Ambient temperature:** | -20 °C to + 60 °C (253 K to 333 K) |

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| | |
|---|---|
| **Type:** | **25 - EVS…** |
| **Fitting position:** | vertical or horizontal drive |
| **Medium:** | Propan, Butan |
| **Medium temperature:** | -30 °C to + 120 °C (243 K to 393 K) |
| **Ambient temperature:** | -20 °C to + 60 °C (253 K to 333 K) |

| | |
|---|---|
| **Type:** | **25 - EVS….Xde** |
| **Fitting position:** | vertical or horizontal drive |
| **Medium:** | Propan, Butan |
| **Medium temperature:** | -20 °C to + 120 °C (253 K to 393 K) |
| **Ambient temperature:** | -20 °C to + 60 °C (253 K to 333 K) |

| | |
|---|---|
| **Type:** | **40 - EVS…** |
| **Fitting position:** | vertical or horizontal drive |
| **Medium:** | Propan, Butan |
| **Medium temperature:** | -30 °C to + 140 °C (243 K to 413 K) |
| **Ambient temperature:** | -20 °C to + 50 °C (253 K to 323 K) |

| | |
|---|---|
| **Type:** | **120 - EVS…** |
| **Fitting position:** | vertical or horizontal drive |
| **Medium:** | Natural gas |
| **Medium temperature:** | -20 °C to + 60 °C (253 K to 333 K) |
| **Ambient temperature:** | -20 °C to + 60 °C (253 K to 333 K) |

| | |
|---|---|
| **Type:** | **135 - EVS 12…** |
| **Fitting position:** | vertical drive |
| **Medium:** | Fuel oil, Water |
| **Medium temperature:** | 0 °C to + 80 °C (273 K to 353 K) |
| **Ambient temperature:** | -20 °C to + 60 °C (253 K to 333 K) |

| | |
|---|---|
| **Type:** | **135 - EVS 15…** |
| **Fitting position:** | vertical drive |
| **Medium:** | Fuel oil, Water |
| **Medium temperature:** | 0 °C to + 80 °C (273 K to 353 K) |
| **Ambient temperature:** | -20 °C to + 60 °C (253 K to 333 K) |

| | |
|---|---|
| **Type:** | **160 - EVS 15…** |
| **Fitting position:** | vertical drive |
| **Medium:** | Fuel oil EL, Water |
| **Medium temperature:** | 0 °C to + 60 °C (273 K to 333 K) |
| **Ambient temperature:** | -20 °C to + 60 °C (253 K to 333 K) |

**Switching cycles:** see operating instructions solenoid drive

**Threaded connection dimension** at DIN ISO 228-1

| Connection G | 1/4 (2) | 3/8 (3) | 1/2 (5) | 3/4 (7) | 1 (10) | 1 1/4 (12) | 1 1/2 (15) | 2 (20) | Test pressure (*) PT |
|---|---|---|---|---|---|---|---|---|---|
| 120 - EVS… | - | - | O | - | - | - | - | - | PT 180 |
| 135 - EVS… | - | - | - | - | - | O | O | - | PT 203 |
| 160 - EVS… | - | - | - | - | - | - | O | - | PT 240 |

**(*)** Test pressure to perform leakage test "No FUNCTION TEST"
**O** Acceptance test certificate 3.2 possible, **-** not available

**Flange connection measures acc. to** DIN EN 1092-1 / ANSI

| Flange DN | PN / ANSI | 15 5N | 20 7N | 25 10N | 32 12N | 40 15N | 50 20N | 65 25N | 80 30N | 100 | Test pressure (*) PT |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 16 - EVS… | 16/25 | - | - | - | O | O | - | - | - | - | PT 24 |
| 25 - EVS… | 300 lbs | - | - | - | O[1)] | O[1)] | O[1)4)] | - | - | - | PT 37,5 |
| 25 - EVS….Xde | 300 lbs | - | - | - | O[2)] | - | O[3)] | - | - | - | PT 37,5 |
| 40 - EVS… | 40 | - | - | O | - | - | - | - | - | - | PT 60 |

**(*)** Test pressure to perform leakage test "No FUNCTION TEST"
**O** Acceptance test certificate 3.2 possible, **-** not available
[1)] Valve chamber to ANSI 300lbs table 2, row 15 (see fig. 1.1)
[2)] Valve chamber to ANSI 300lbs table 2, row 21 (see fig. 1.2)
[3)] Valve chamber to ANSI 300lbs table 2, row 21 (see fig. 1.3)
[4)] Valve chamber to ANSI 300lbs table 2, row 21 (see fig. 1.4)

**Welding ends** in accordance with DIN EN 558

| Welding ends | PN | 15 5N | 20 7N | 25 10N | 32 12N | 40 15N | 50 20N | 65 25N | 80 30N | 100 | Test pressure (*) PT |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 25 - EVS… | 40 | - | - | - | O[5)] | - | O[5)] | - | - | - | PT 37,5 |

**(*)** Test pressure to perform leakage test "No FUNCTION TEST"
**O** Acceptance test certificate 3.2 possible, **-** not available
[5)] Valve chamber to DIN EN 558, row 92 (see fig. 1.5)

**Voltage:** VDC 12 – 440 (-15% to +10%)
VAC 24 – 500 (-15% to +10%)
**Protection type:** IP54 or IP65
**Frequency:** 40 – 60 Hz
**Power:** 10 – 4000 W
Details to the electrical data can be found on the type sign and the adequate operating instructions of the solenoid drives.

### 1.2 Application

The solenoid valves EVS 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.

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.

### 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.

### 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 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 box or on a pallet with soft base and it smoothly on even floor. **Never put 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 EVS series are direct-acting, normally closed NC, spring-loaded automatic shut off valves with solenoid actuator.

The sectional drawing part 11.1 in Fig. 1 - Fig. 4 shows the valve construction.

### 4.1 Function

By switching on the solenoid drive (800), the solenoid core (207) is drawn against the upper part of housing (106). The pressure spring (503) is pressed and the balance piston (220) releases the valve cross section. The valve is open.

The valve closes by switching off, interruption or failure of power energy to solenoid drive. Due to press of the pressure spring (503) the balance piston closes (220). The valve is closed at 15% of nominal voltage.

### 4.2 Technical data

**Opening times:** 0,3 – 0,7s depends upon nominal width
**Closing times:** < 1s

**Solenoid-drive types MG...**

| Connection G | 1/4 (2) | 3/8 (3) | 1/2 (5) | 3/4 (7) | 1 (10) | 1 1/4 (12) | 1 1/2 (15) | 2 (20) |
|---|---|---|---|---|---|---|---|---|
| 120 - EVS… | - | - | 019A5 | - | - | - | - | - |
| 135 - EVS… | - | - | - | - | - | 019A5 | 019A5 | - |
| 160 - EVS… | - | - | - | - | - | - | 019A5 | - |

| Flange DN<br>Flange ANSI | 15<br>1/2" | 20<br>3/4" | 25<br>1” | 32<br>11/4” | 40<br>11/2” | 50<br>2” | 65<br>21/2” | 80<br>3” | 100<br>4” |
|---|---|---|---|---|---|---|---|---|---|
| 16 - EVS… | - | - | - | 018 | 018 | - | - | - | - |
| 25 - EVS… | - | - | - | 019A5 | 019A5 | 019A5 | - | - | - |
| 25 - EVS….Xde | - | - | - | 019A5 | - | 019A5 | - | - | - |
| 40 - EVS… | - | - | 018 | - | - | - | - | - | - |

Drive types with “A” consist of pickup and holding winding

**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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Torsion | Nm | 20 | 35 | 50 | 85 | 125 | 160 | 200 | 250[1)] | 325[1)] | 400[1)] | - | - | - |
| Bending | Nm | 35 | 70 | 105 | 225 | 340 | 475 | 610 | 1100 | 1600 | 2400 | 5000 | 6000 | 7600 |

[1)] 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Torque | 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 |
|---|---|---|---|---|---|---|---|---|
| Torque | 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
- 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.

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**Installation guidelines for installing valve housings with welding ends**

**NOTICE!**

- Electric solenoid valves EVS… are usually installed in horizontally running pipelines. The flow direction in the pipeline and the direction arrow on the valve housing must be pointing in the same direction.
- The electric solenoid valve can be installed in a vertically arranged pipeline observing the flow direction arrow on the valve housing.

**DANGER!**
**The valve chamber may only be welded in by qualified personnel (see point 2.3 "Qualified personnel") and with an open solenoid valve.**

- The valve disk sealing of the balancing piston must not exceed +180°C.
- Carry out the welding procedure at the connecting ends using the valid welding instructions.
- After welding in the solenoid valve, the pipeline should be thoroughly flushed with the valve open.
- Carrying out trial runs with contaminated media will damage the sealing system of the solenoid valve.
- Check valve for internal and external leaks in accordance with DIN EN 12266-1 and carry out a function test.

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.

**NOTICE!**
Please observe the solenoid drive 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

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 |

**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.

### 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 | Valve does not open | Switch on solenoid drive (800) |
| | | Check operating voltage |
| | Working pressure too high | Compare working pressure with the data on the rating plate |
| | Protective caps were not removed | Remove protective caps |
| geringer Durchfluss | Clogging in the pipework system | Check pipework system |
| | Contaminated strainer | Filter clean/exchange |
| 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)
- For special application such as for oxygen use only the approved lubricants and appropriate sealing materials (BAM- approval)

### 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. Damage to the valve seat (100).
2. Damage to the valve disc sealing (400)
3. Wear of the guide rings (206)

In case of damage to the valve seat, replace the whole valve.
If the sealing element becomes damaged (only applies to flange version Fig.1), the spare parts kit should be used.

## Flange version

**Fig. 1.1 16-EVS 12N - 15N… / 25-EVS 12N - 20N…**
Loosen set screw (941) and unscrew upper part of housing (106). Remove bolt (902) together with split-pin (912) and place solenoid core (207) together with spring bolt (210), valve pin (214), pressure spring (503), hexagon nut (901/2), locking plate (908) and guide rings (206) aside on a clean surface.

Loosen and remove hexagon screw (900) together with lock washer (905). Remove spacer (110) from piston guide (221). Then pull balance piston (220) together with piston guide (221) out of valve chamber (100) and pull apart.

**Fig.1.2 25-EVS 12N….Xde,**
**Fig.1.3 25-EVS 20N....(Xde)**
**Fig.1.4 25-EVS 20N…**
Replace the complete valve.

**Fig.2.1 40-EVS 10N…**
**Fig.2.2 40-EVS 10N… optional with limit switch**
Replace the complete valve.

## Welding ends

**Fig.1.5 25-EVS 12N… / 25-EVS 20N…**
Replace the complete valve.

## Thread version

**Fig.3 120-EVS 5… / 135-EVS 12…**
**Fig.4 135-EVS 15… / 160-EVS 15…**
Replace the complete valve.

**NOTICE!**
Before assembly, replace O-rings (403), lip-rings (404) and scraper rings (405). Lubricate the piston guide with Staburags N32 lubricant. (Does not apply to oxygen!)

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 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. Directive 2014/68/EU applies to the valve (mechanical part).

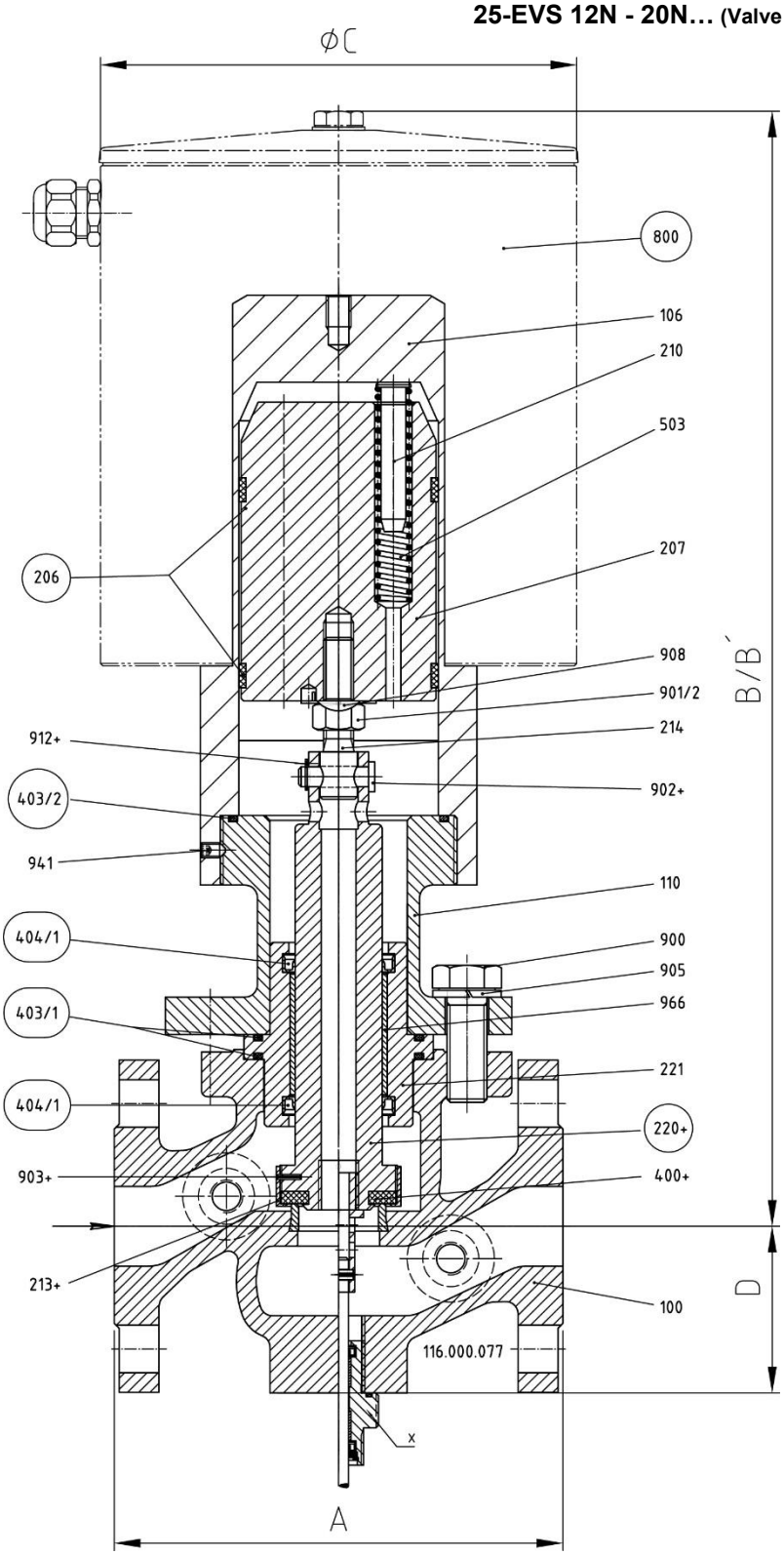
Notes on Directive 2014/68/EU (Pressure Equipment Directive, DGRL):
It has been conformed that the quality assurance in design control, manufacture and final acceptance of the manufacturer, Uni-Geräte E. Mangelmann Elektrotechnische Fabrik GmbH, satisfy the requirements of 2014/68/EU Article 14 Module 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. 1.1 Flange version

**16-EVS 12N - 15N… /**
**25-EVS 12N - 20N… (Valve chamber to ANSI 300lbs table 2, row 15)**

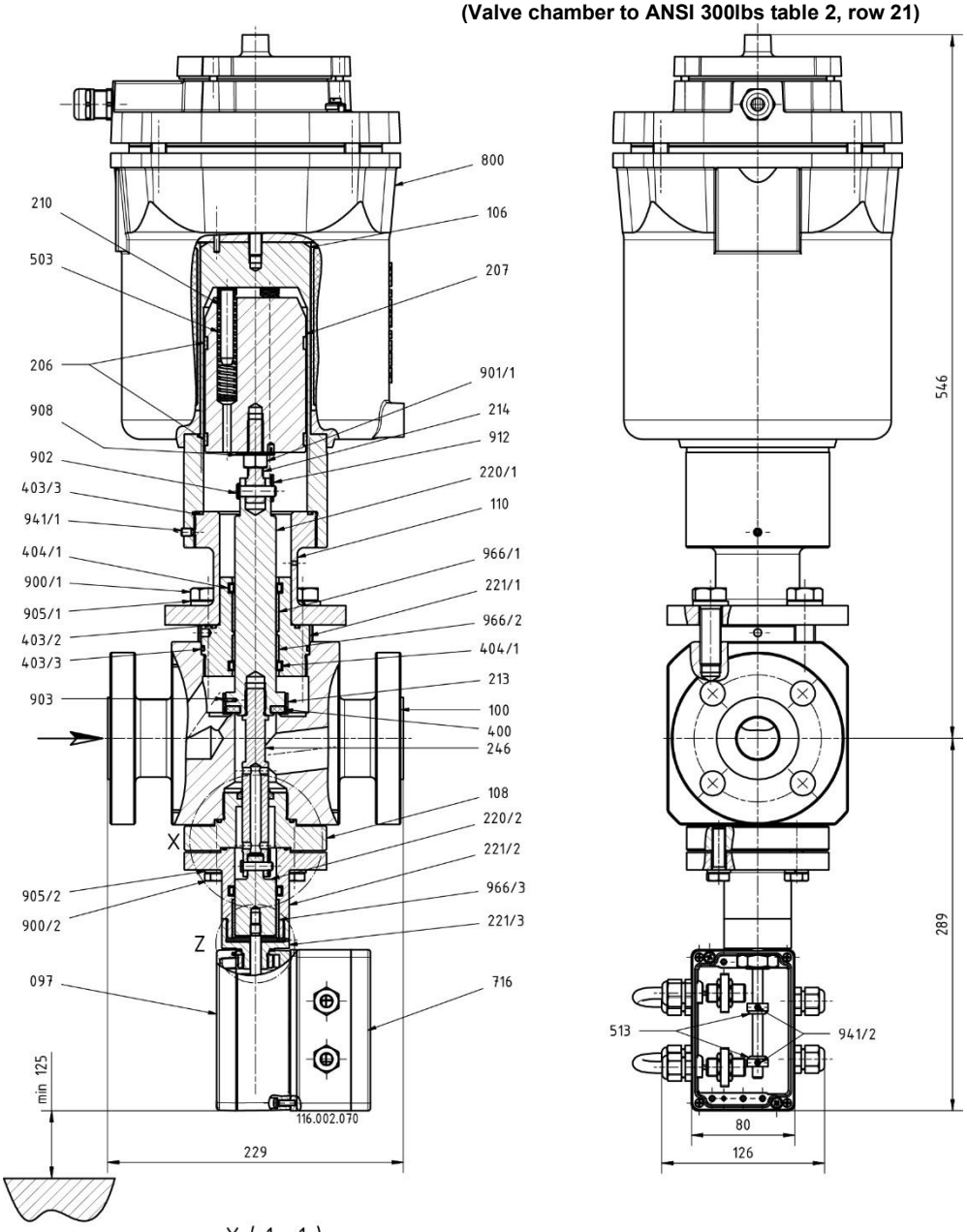


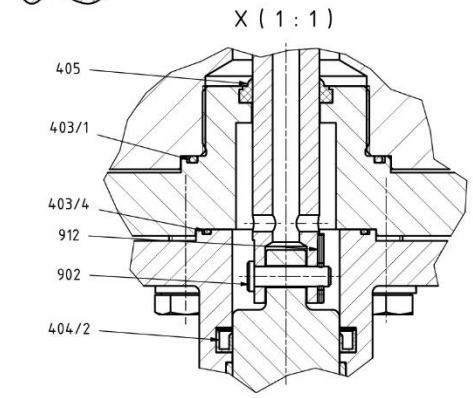

O = Spare part kit

X = Option limit switch mounting

(…+) supplied as a complete unit

**Fig.1.2 Flange version 25-EVS 12N….Xde**
**(Valve chamber to ANSI 300lbs table 2, row 21)**



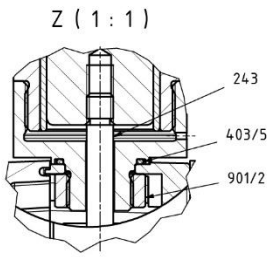
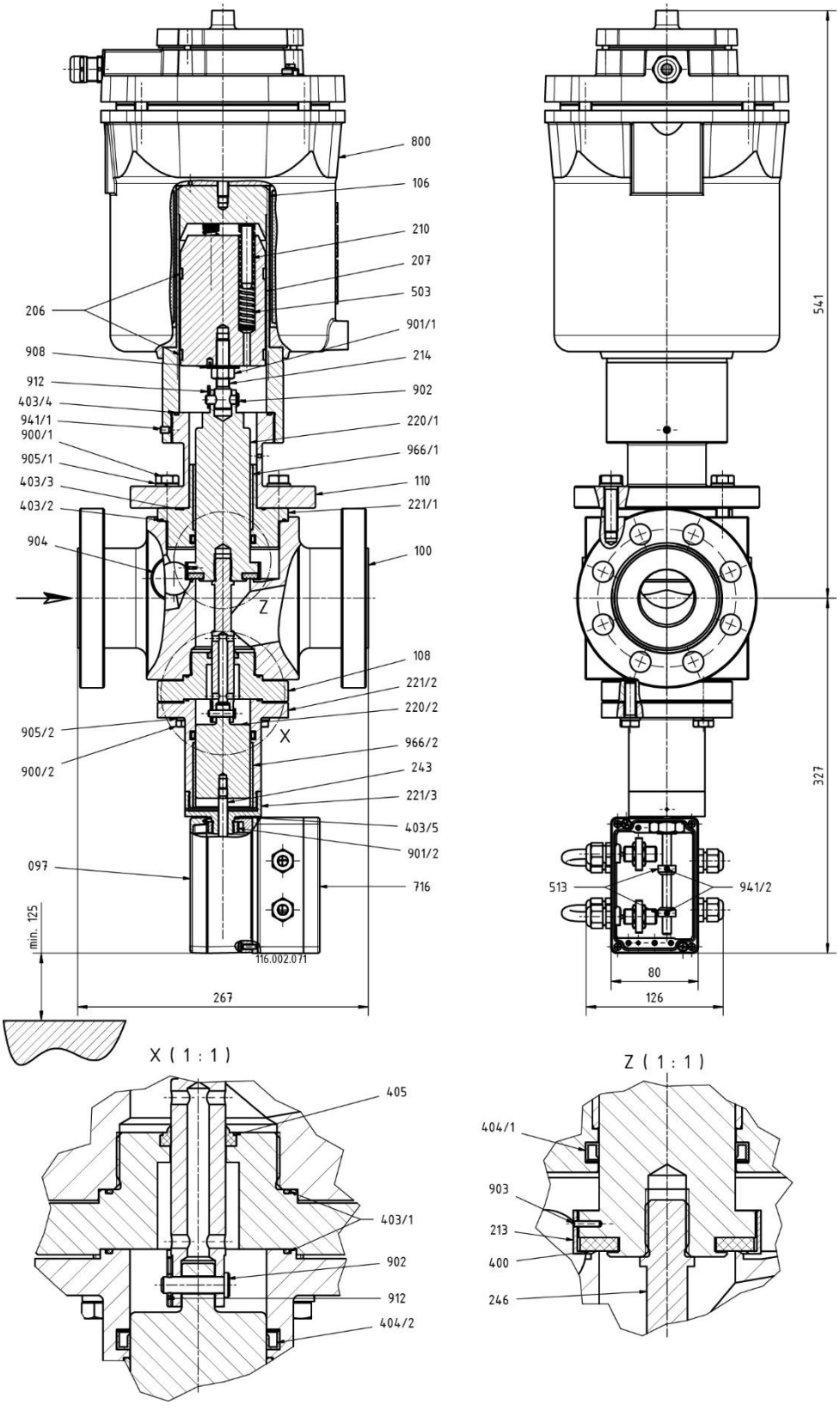
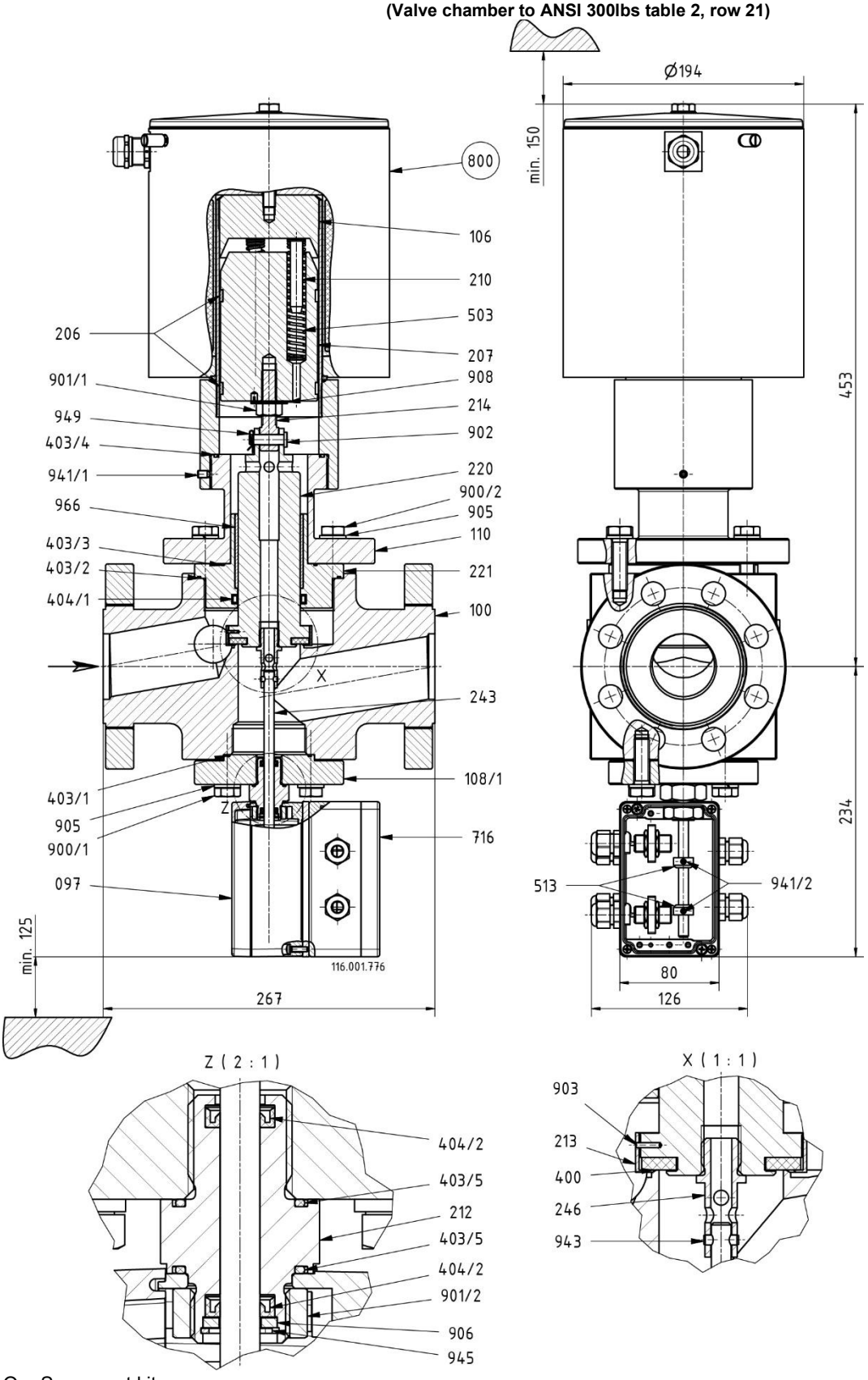



**Fig.1.3 Flange version 25-EVS 20N....(Xde)**
**(Valve chamber to ANSI 300lbs table 2, row 21)**



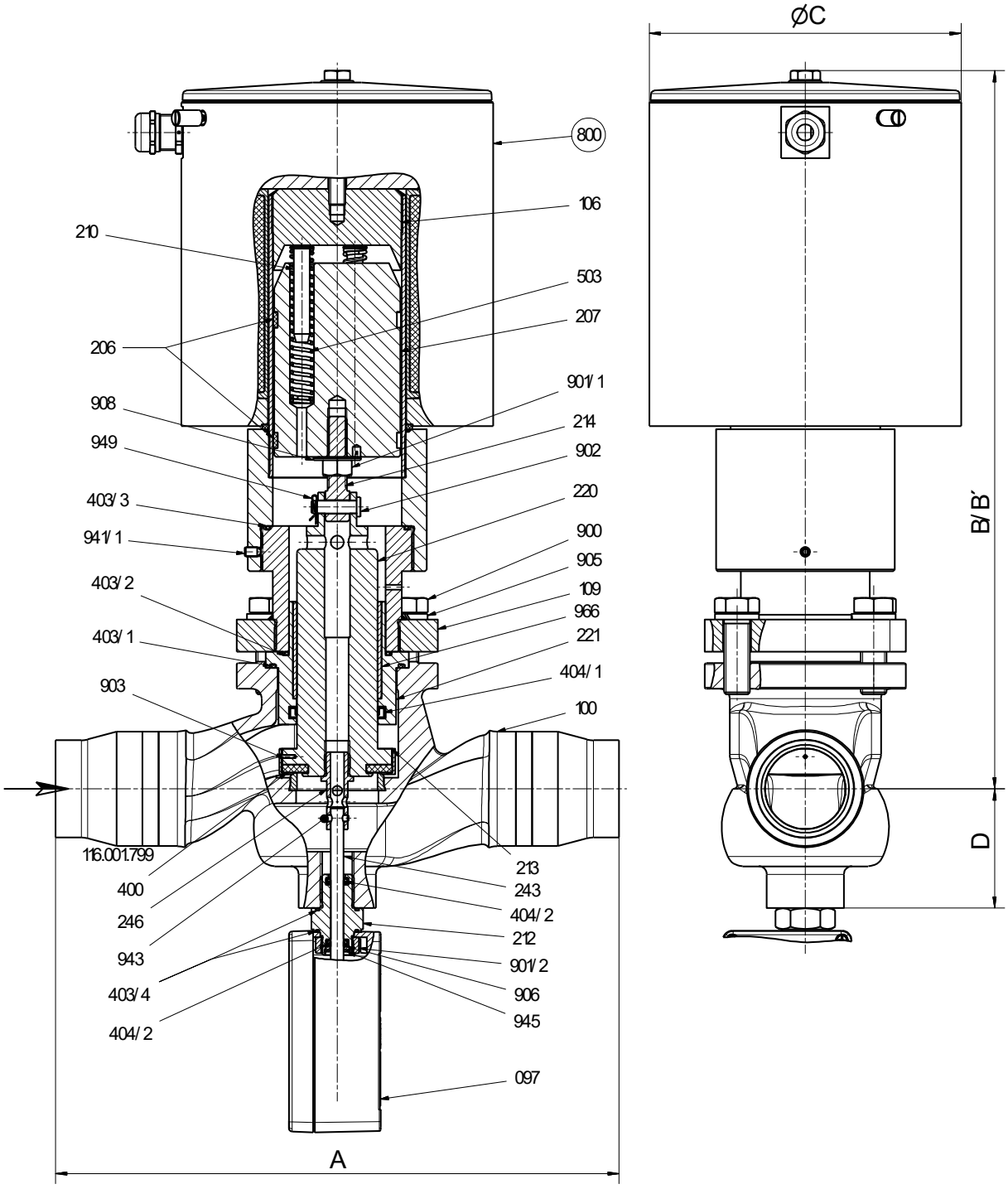
# Operating manual

**Fig.1.4 Flange version 25-EVS 20N…**
**(Valve chamber to ANSI 300lbs table 2, row 21)**




O = Spare part kit

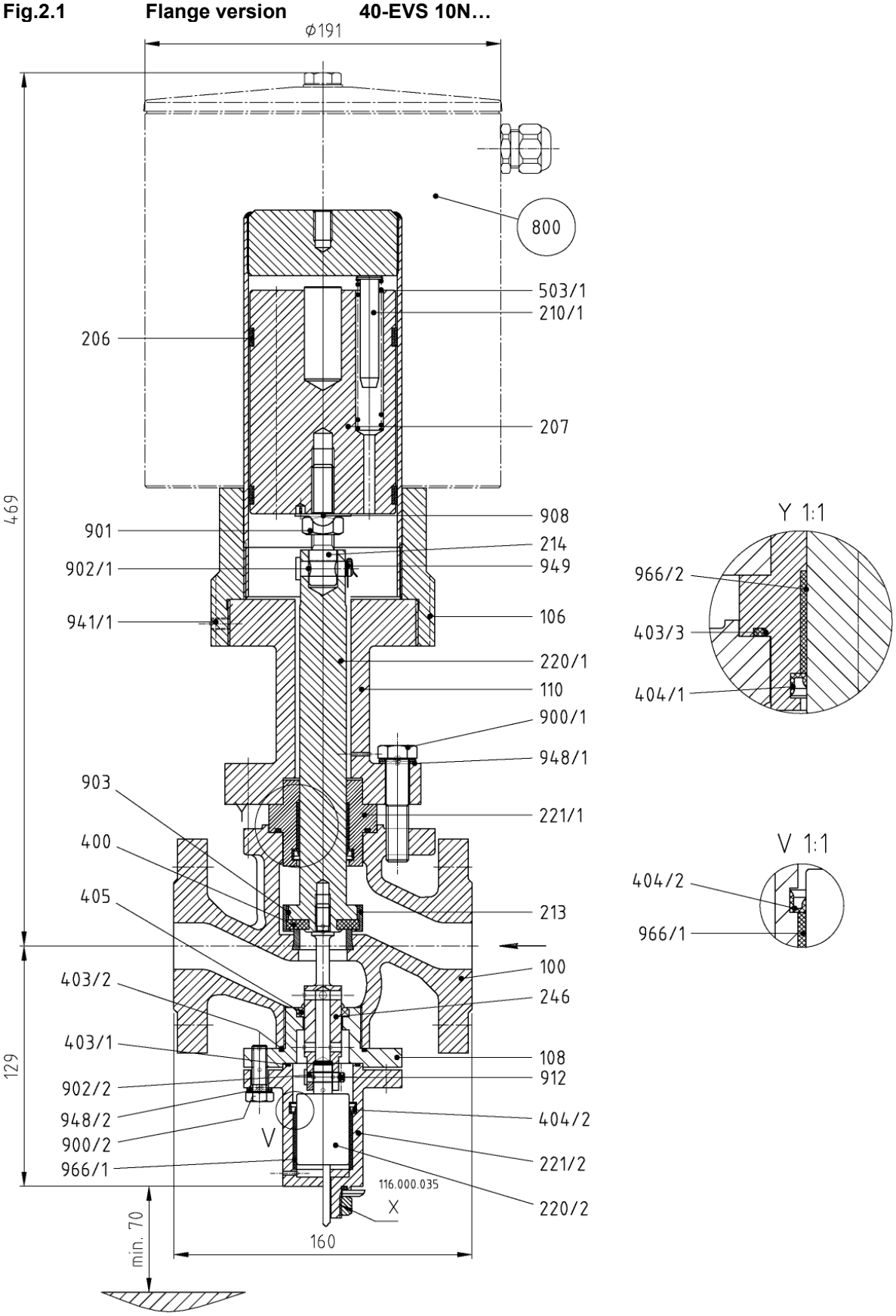
**Fig.1.5** **Welding version** **25-EVS 12N… / 25-EVS 20N…**
**(Valve chamber to DIN EN 558, row 92)**




O = Spare part kit

# Operating manual

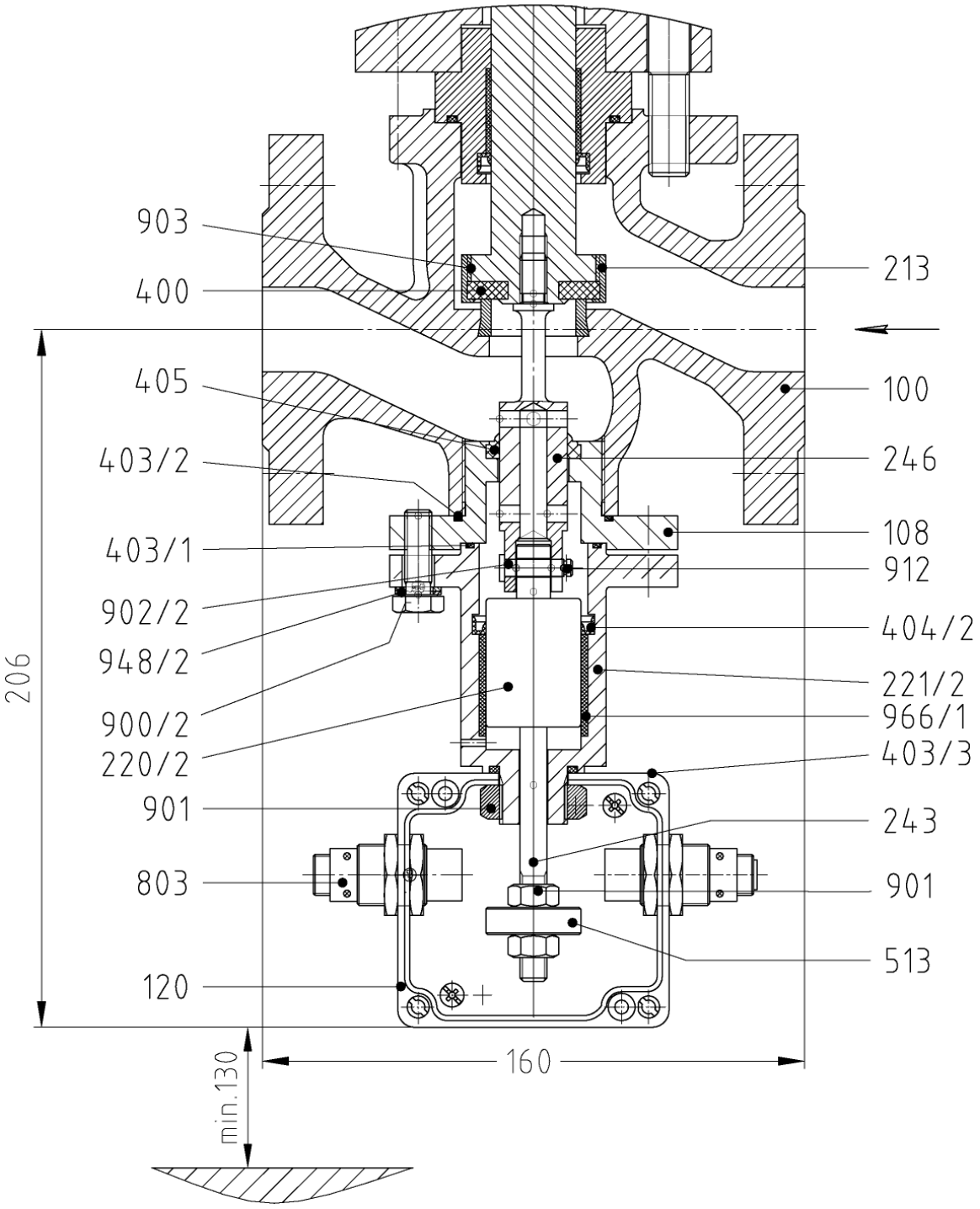
**Fig.2.1 Flange version 40-EVS 10N…**




O = Spare part kit

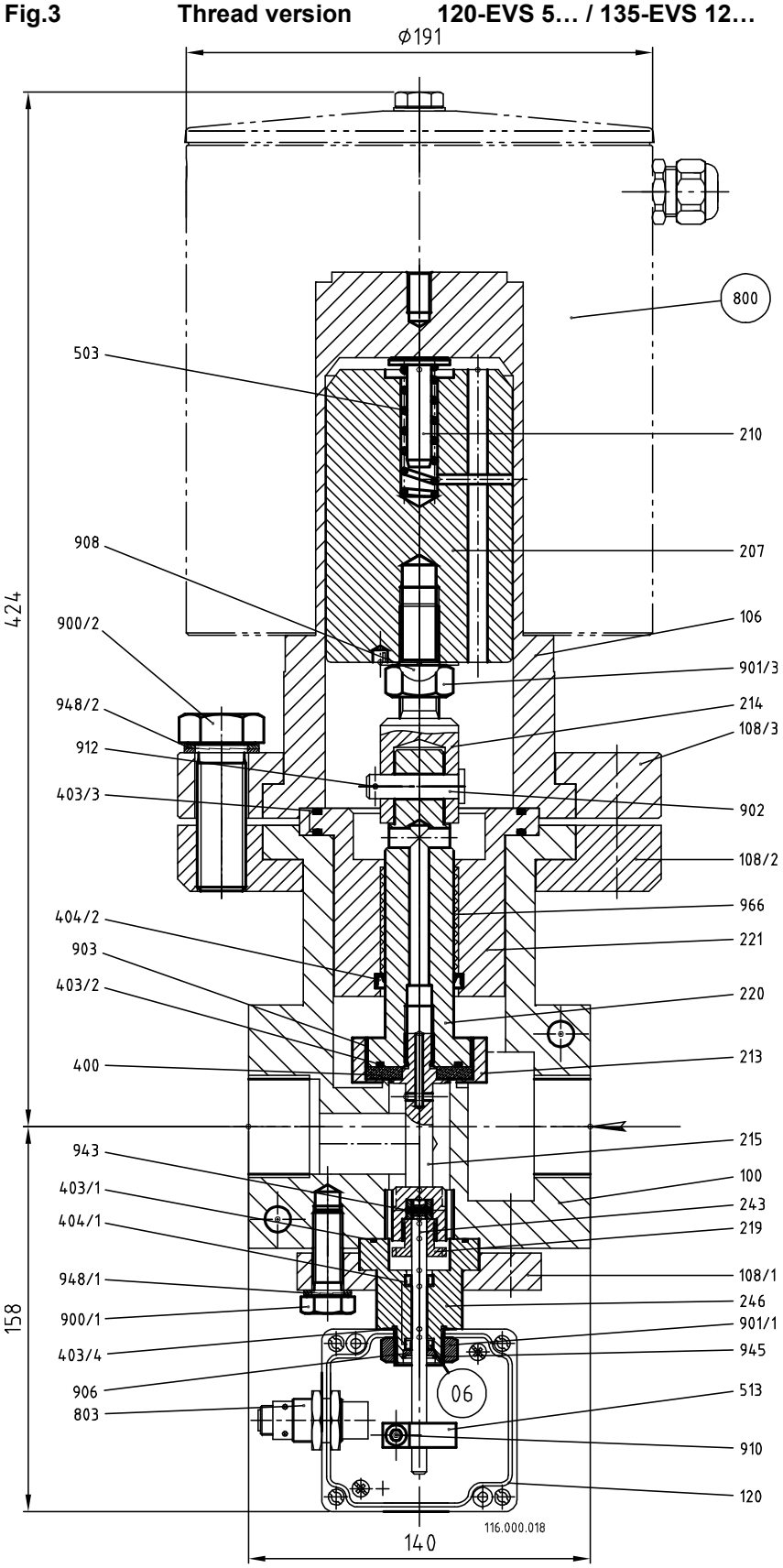
X = Option limit switch mounting

**Fig.2.2 Flange version 40-EVS 10N… optional with limit switch**



# Operating manual

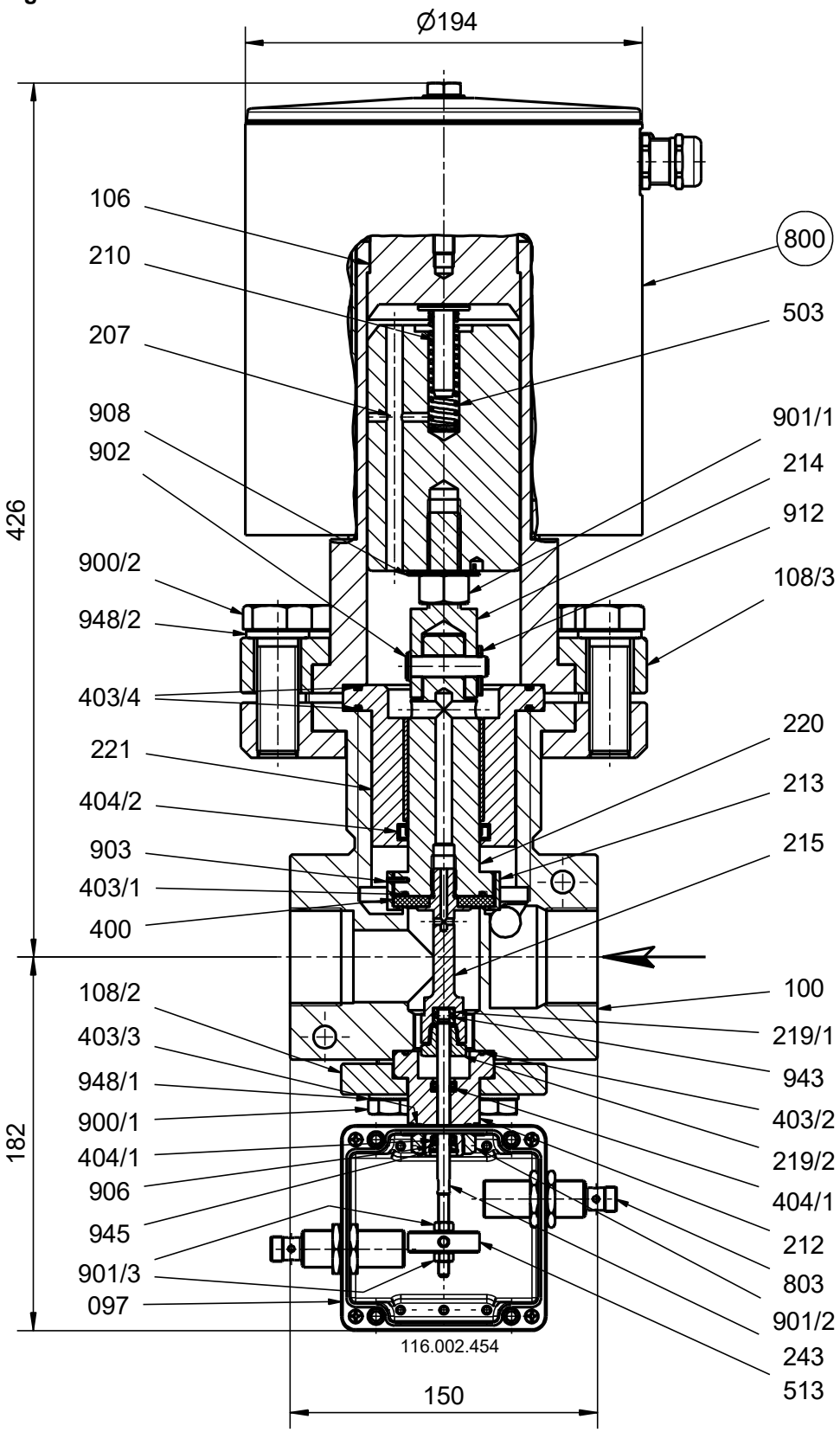
**Fig.3 Thread version 120-EVS 5... / 135-EVS 12...**




O = Spare part kit

# Operating manual

**Fig.4 Thread version 135-EVS 15… / 160-EVS 15…**




O = Spare part kit

### 11.2 List of parts

| Pos./ Item | Stück/ Qty. | Benennung | Description |
|---|---|---|---|
| 097 | 1 | Endschalteranbau | limit switch mounting |
| 100 | 1 | Ventilgehäuse | valve chamber |
| 106 | 1 | Oberteil | upper part of housing |
| 108/x | 1 | Gehäuseflansch | housing flange |
| 109 | 1 | Gehäusezylinder | housing cylinder |
| 110 | 1 | Distanzstück | spacer |
| 120 | 1 | Endschaltergehäuse | limit switch housing |
| 206 | 2 | Führungsring | guide ring |
| 207 | 1 | Magnetkern | solenoid core |
| 210/x | 1/3/x | Federbolzen | spring bolt |
| 212 | 1 | Spindelführung | spindle guide |
| 213 | 1 | Gewindering | ring nut |
| 214 | 1 | Ventilstift | valve pin |
| 215 | 1 | Tellerschraube | plate screw |
| 219/x | 1 | Spindelmutter | spindle nut |
| 220/x | 1 | Ausgleichskolben | balance piston |
| 221/x | 1 | Kolbenführung | piston guide |
| 243 | 1 | Endschalterspindel | limit switch spindle |
| 246 | 1 | Verbindungsstück | connecting piece |
| 400 | 1 | Ventiltellerdichtung | valve disc sealing |
| 403/x | 1/2 | O-Ring | o-ring |
| 404/x | 1/2 | Lippenring | lip-ring |
| 405 | 1 | Abstreifring | scraper ring |
| 503/x | 1/3/x | Druckfeder | pressure spring |
| 513 | 1/2 | Endschalterbetätigung | switch actuator |
| 716 | 1 | Klemmkasten | terminal box |
| 800 | 1 | Magnet-Antrieb | solenoid drive |
| 803 | 1/2 | Endschalter | limit switch |
| 900/x | 4/8/x | Sechskantschraube | hexagon screw |
| 901/x | 1/2 | Sechskantmutter | hexagon nut |
| 902/x | 1/2 | Bolzen | bolt |
| 903 | 1 | Kerbstift | grooved dowel pin |
| 905/x | 4/x | Federring | lock washer |
| 906 | 1 | Scheibe | washer |
| 908 | 1 | Sicherungsblech | locking plate |
| 910 | 1 | Zylinderschraube | cylinder head screw |
| 912 | 1/2 | Splint | split pin |
| 941/x | 1/2 | Gewindestift | setscrew |
| 943 | 1 | Spannstift | spring dowel sleeve |
| 945 | 1 | Sicherungsring | safety ring |
| 948/x | 4/8/x | Nordlockscheibe | nordlock washer |
| 949 | 1 | SL-Sicherung | SL-retainer |
| 966/x | 1 | DU-Buchse | DU-liner |

/x = Quantity varies depending on the valve design

# Operating manual

**Spare parts**

| Version | Fig. | Type | Spare parts |
|---|---|---|---|
| **Flange version** | Fig. 1.1 | 16 - EVS 12N - 15N…<br>25 - EVS 12N - 20N… | Solenoid drive (800),<br>Spare part kit |
| | Fig. 1.2 | 25 - EVS 12N….Xde | - |
| | Fig. 1.3 | 25 - EVS 20N….(Xde) | - |
| | Fig. 1.4 | 25 - EVS 20N… | Solenoid drive (800) |
| | Fig. 2.1 | 40 - EVS 10N… | Solenoid drive (800) |
| | Fig. 2.2 | 40 - EVS 10N… optional with limit switch | Solenoid drive (800) |
| **Welding ends** | Fig. 1.5 | 25 - EVS 12N…<br>25 - EVS 20N… | Solenoid drive (800) |
| **Thread version** | Fig. 3 | 120 - EVS 5…<br>135 - EVS 12… | Solenoid drive (800) |
| | Fig. 4 | 135 - EVS 15...<br>160 - EVS 15… | Solenoid drive (800) |

**Dimension with standard solenoid drive**

| **Flange DN** | **Dim.** | **15** | **20** | **25** | **32** | **40** | **50** | **65** | **80** | **100** | **125** | **150** |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Baulänge** | **A[1)]** | 130 | 150 | 160 | 180 | 200 | 230 | 290 | 310 | 350 | 400 | 480 |
| **Flange ANSI** | **Dim.** | **1/2"** | **3/4"** | **1”** | **11/4”** | **11/2”** | **2”** | **21/2”** | **3”** | **4”** | **-** | **6”** |
| **Baulänge** | **A[2)]** | 108 | 118 | 127 | 140 | 165 | 203 | 216 | 241 | 292 | - | 406 |
| **16-EVS...N…** | **B** | - | - | | 450 | 480 | - | - | - | - | - | - |
| | **B`** | - | - | | 610 | 680 | - | - | - | - | - | - |
| | **ØC** | - | - | | 194 | 194 | - | - | - | - | - | - |
| | **D** | - | - | | 68 | 68 | - | - | - | - | - | - |
| **25- EVS...N…** | **B** | - | - | - | 450 | 450 | 460 | - | - | - | - | - |
| | **B`** | - | - | - | 610 | 610 | 620 | - | - | - | - | - |
| | **ØC** | - | - | - | 194 | 194 | 194 | - | - | - | - | - |
| | **D** | - | - | - | 68 | 68 | 75 | - | - | - | - | - |

**Dimension with standard solenoid drive**

| **Welding ends** | **Dim.** | **15** | **20** | **25** | **32** | **40** | **50** | **65** | **80** | **100** | **125** | **150** |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Baulänge** | **A** | 250 | 250 | 275 | 300 | 300 | 350 | 450 | 500 | 550 | 600 | 700 |
| **25-EVS...N…** | **B** | - | - | - | 445 | - | 445 | - | - | - | - | - |
| | **B`** | - | - | - | 605 | - | 605 | - | - | - | - | - |
| | **ØC** | - | - | - | 194 | - | 194 | - | - | - | - | - |
| | **D** | - | - | - | 67 | - | 74 | - | - | - | - | - |

**A[1)]** = Dimension at DIN (resp. flanges ANSI and dimension DIN or flanges and dimension at DIN)
**A[2)]** = Dimension at ANSI 150lbs (see data sheet on our website armature installation lenght 225.100.026)
**B`** = Dimension for removing the solenoid drive

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