

Operating and mounting manual control valve flow-adjustment-valve MEA / MEAF

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1.0 General Remarks

This operating manual includes instructions to assemble and operate the flow-adjustment-valves in the prescribed and safe way.

If any difficulties appear that can not be solved by means of the operation instructions, 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 flow-adjustment-valve 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:

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Holtumsweg 13
D-47652 Weeze

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Designation

Control valve as actuator for controlling without zero closure

Working pressure:	10-MEA	0 - 10 bar
	25-MEA	0 - 25bar
	40-MEA	0 - 40bar

Medium temperature: -20°C to + 60°C

Working pressure:	25-MEA..Ü	0 - 25bar
	40-MEA..Ü	0 - 40bar

Medium temperature: -20°C to + 200°C

Working pressure:	40-MEAF	0 - 40bar
	63-MEAF	0 - 63bar

Medium temperature: -20°C to + 400°C

Ambient temperature: -20°C to + 60°C

Fitting position: arbitrary

Optional: Handwheel with locking lever
Through passage drawn in (99)

Threaded connection measures acc. to 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)	2 1/2 (25)	3 (30)	Test pressure (*) PT
10-MEA	X	X	X	X	X	X	X	X	O	O	PN 16
25-MEA	O	O	O	O	O	O	O	O	-	-	PN 40

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

X Type examination EU/2016/426, CE-0085AQ0615, O Acceptance test certificate 3.2 possible, - not available,

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"	Test pressure (*) PT
10-MEA	16	X	X	X	X	X	X	X	X	O	PN 16
25-MEA	25	X	O	O	O	O	O	O	O	O	PN 25
40-MEA	40	O	O	O	O	O	O	O	O	O	PN 40
40-MEAF	40	O	O	O	O	O	O	O	O	-	PN 40
63-MEAF	63	-	-	-	-	-	-	-	O	-	PN 63

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

X Type examination EU/2016/426, CE-0085AQ0615, O Acceptance test certificate 3.2 possible, - not available,

1.2 Application

The flow-adjustment-valves MEA and MEAF are used as actuators for presetting the volume flow in the entire firing technology.

The flow-adjustment-valves are suitable for gases of the 1st, 2nd and 3rd gas families to DIN EN 437 and for neutral gases and air. There also is a version made of materials suitable for aggressive gases, and as an alternative for fluid media.

If used in other cases, the operator must carefully check if construction/design of flow-adjustment-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 flow-adjustment-valves 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 flow-adjustment-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 flow-adjustment-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 flow-adjustment-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 flow-adjustment-valve by third persons may cancel and abolish the manufacturer's liability for resulting consequences.

2.5 Unauthorized operation

Operational reliability of the delivered flow-adjustment-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 guidelines.
- If the valve is heated (e.g. heating jacket), care must be taken, that the specified temperature class is kept in the line.
- The valve must be connected to the ground.
In the case most simple this can be realized via pipe screws by means of tooth discs.
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.

In case of transport, storage and stopping, the flange protection caps must be mounted at both valve flanges.

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 $+60^{\circ}\text{C}$.

Transport the valve in a case or on a pallet with smooth base and put it softly on plain floor.

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

3.2 Storage

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

- Storage temperature -20°C up to $+60^{\circ}\text{C}$, dry and clean.
- The lacquering 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

- Protect against atmospheric influences such as humidity (otherwise use drying agent).
- Appropriate treatment protects against damage.

4.0 Product Description

The flow-adjustment-valves in the MEA and MEAF series are control valves as actuators for adjusting a flow rate without zero closure.

Sectional drawing 11.1 Fig. 1, 2, 3 and 4 shows the valve construction.

4.1 Function

Control valves for fine adjustment of volume flow. The plant supplies the valves open.

4.1.1 MEAF volume flow setting (Fig. 1 and Fig. 2):

The volume flow is set using normal commercial tools.

1. Undo and remove the protective cap (505).
2. Undo the hex nut (901 and 901/1).
3. The volume flow is reduced by turning the cap nut (927) or the hex nut (901/2) clockwise.
 - In the case of the slotted and hexagon socket setting variant, this is done by turning the nut clockwise using a commercially available tool via the specified slot or the specified hexagon socket, see Fig. 3.1 and Fig. 3.2.
4. The volume flow is increased by turning the cap nut (927) or the hex nut (901/2) anticlockwise.
 - In the case of the slotted and hexagon socket setting variant, this is done by turning the nut anticlockwise using a commercially available tool via the specified slot or the specified hexagon socket, see Fig. 3.1 and Fig. 3.2.
5. Lock the hex nut (901 and 901/1).
6. Screw on and tighten the protective cap (505).



NOTE!

Ensure that the O-ring (403/2) is correctly seated.

4.1.2 MEAF volume flow setting using handwheel and locking lever (Fig. 3.3):

1. Undo the tapered handle (951) by hand.
2. The volume flow is reduced by turning the handwheel (952) clockwise.
3. The volume flow is increased by turning the handwheel (952) anticlockwise.
4. Tighten the tapered handle (951) by hand.

4.1.3 MEAF volume flow setting (Fig. 4):

The volume flow is set using normal commercial tools.

1. Undo and remove the protective cap (505).
2. Undo the hex nut (901/2).
3. The volume flow is reduced by turning the cap nut (927) clockwise.
4. The volume flow is increased by turning the cap nut (927) anticlockwise.
5. Lock the hex nut (901/2).
6. Screw on and tighten the protective cap (505).

4.2 Technical data

- Thread connection for DIN ISO 228-1 (G1/4 – G3)
- Flange connection for ISO 7005 (DN15 – DN100)

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	80	35	50	86	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 acc.
- CE-sign and no. of relevant location
- Fluid group and test pressure PT
- Protection type

Refer also to section 10.0.

5.0 Installation

5.1 Warning of dangers during installation, operation and maintenance



DANGER!

Safe operation of the flow-adjustment-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 flow-adjustment-valve must be observed during all work on or with the flow-adjustment-valve . Failure to observe these instructions may result in injury or in damage to the flow-adjustment-valve or other installations.

5.2 Installation

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



NOTICE!

- The fitting position for flow-adjustment-valves is arbitrary.
- The inside of the valve and the pipeline must be free from foreign particles.
- Centre gaskets between the flanges.
- The connecting flanges must be aligned.
- Ensure that none of the components is strained during installation.
- The flow-adjustment-valve must not be used as a fixed point; it is supported by the pipework system.
- Protect flow-adjustment-valve from soiling, particularly during construction work.
- Thermal expansion of the pipework must be equalized using compensators.

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.
- Leakage inspection of the installed flow-adjustment-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

Flow-adjustment-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.

6.4 Putting back into operation

When putting a flow-adjustment-valves 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	Solution
no flow, or respectively low flow	flow-adjustment-valve cannot be adjusted	Greasing of valve spindle See section 8 or exchange flow-adjustment-valves
	Clogging of pipe systems External matter in pipe system	Check pipe system Clean pipe system
No external tightness	Gaskets damaged	See section 8 or replace 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 Replace the flow-adjustment-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)

In case of damages at the valve seat or the sealing elements the complete flow-adjustment-valve MEA or MEAF must be exchanged.

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 authorised 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 flow-adjustment-valve (mechanical part).

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

The flow-adjustment-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 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 flow-adjustment-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 Sectional drawing

Fig.1 MEA thread design

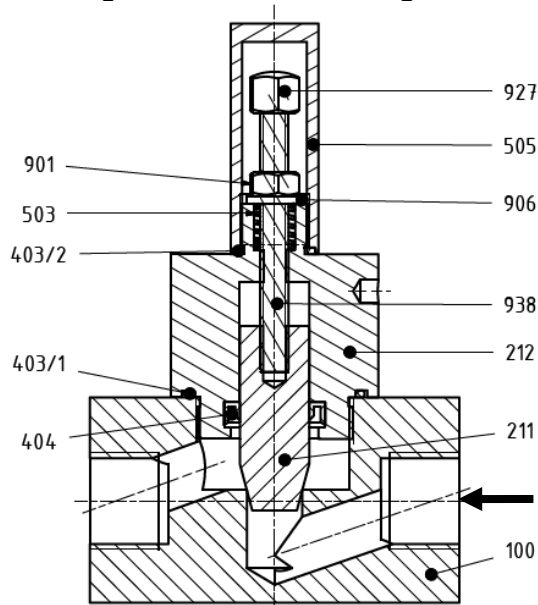


Fig.2 MEA flange design

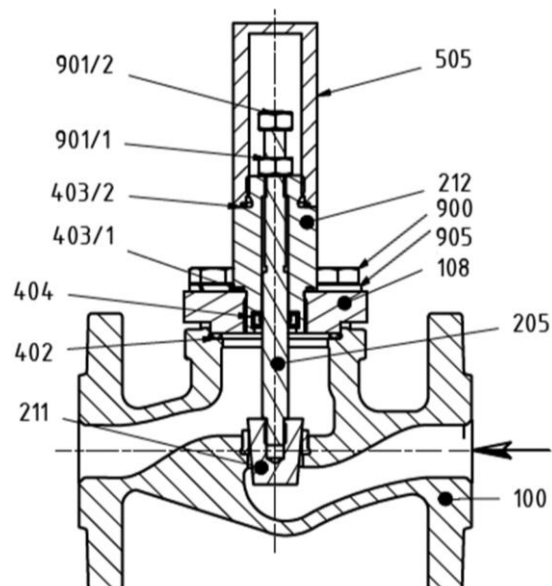


Fig. 3 Other variants for setting the volume flow

Fig.3.1 Setting using the slot

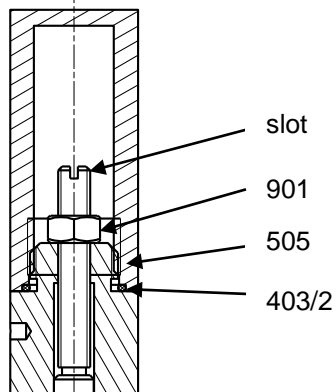


Fig.3.2 Setting using the hexagon socket

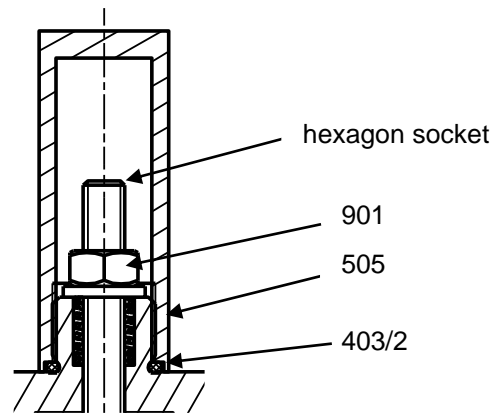


Fig.3.3 Handwheel and locking lever setting

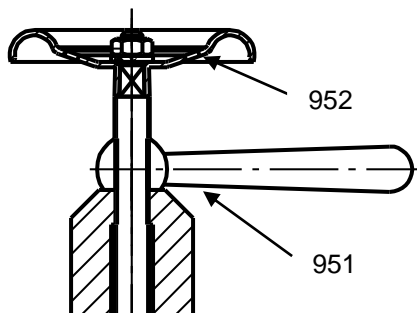
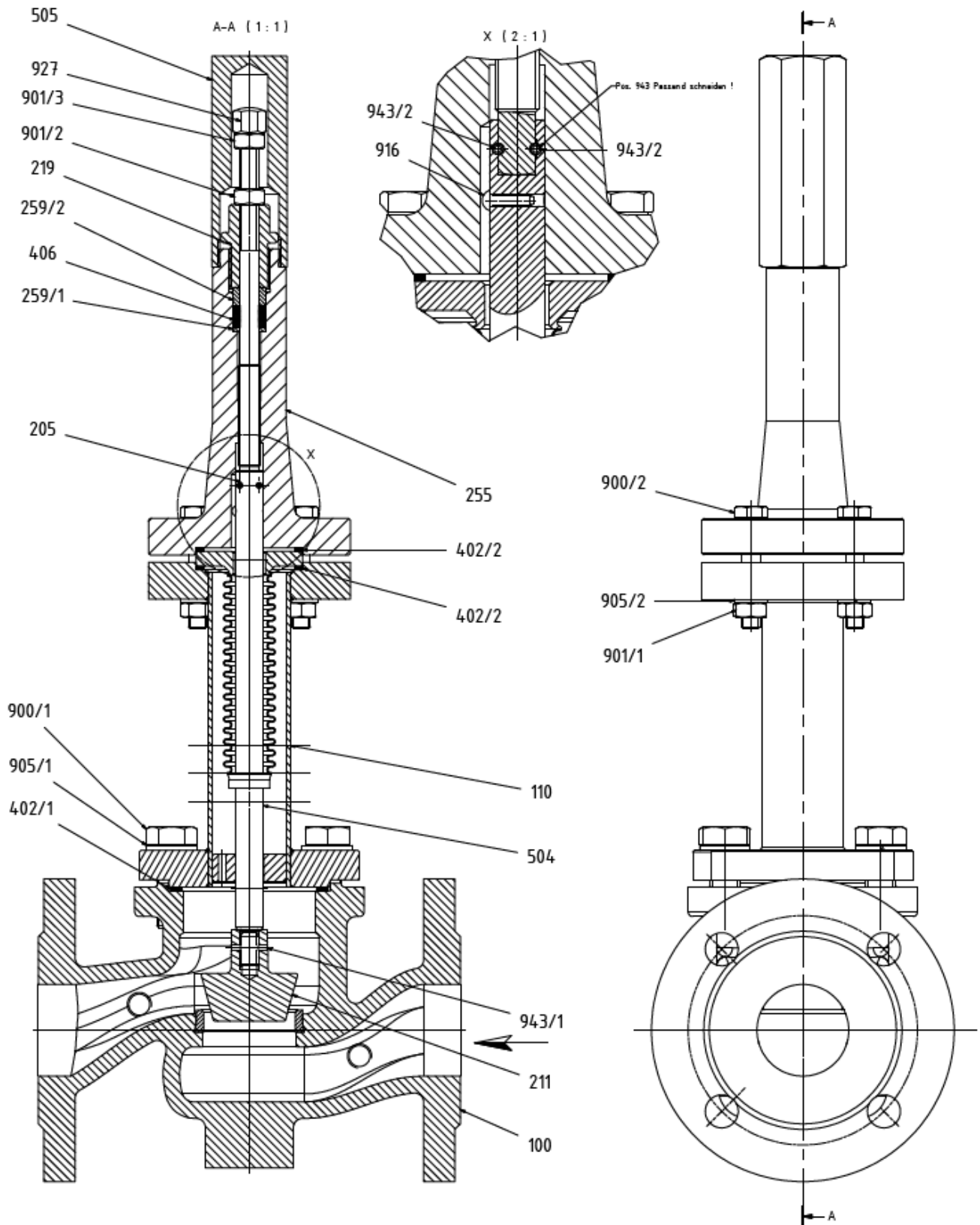
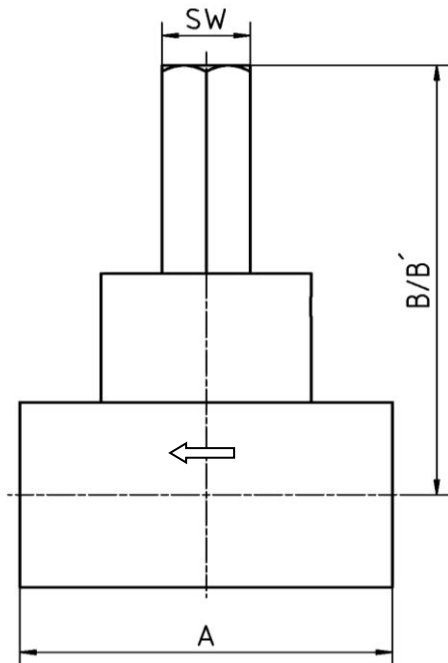


Fig.4 MEAF flange design

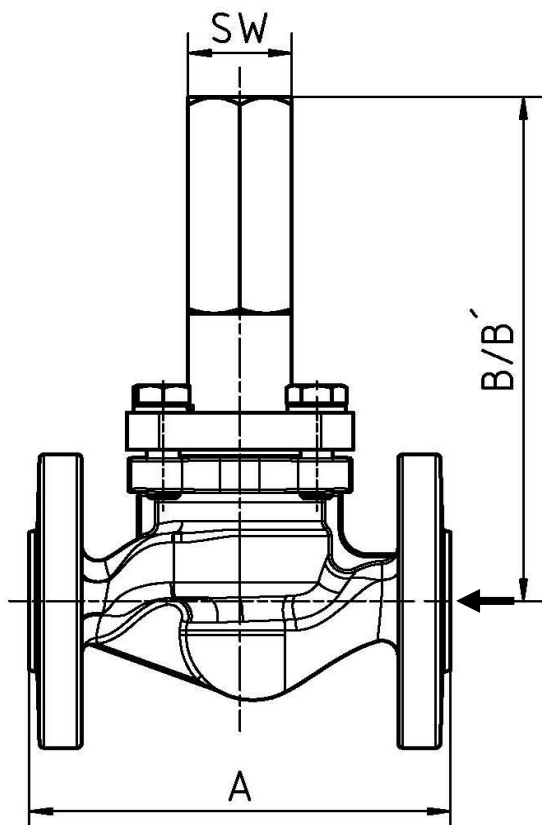


11.2 View drawing

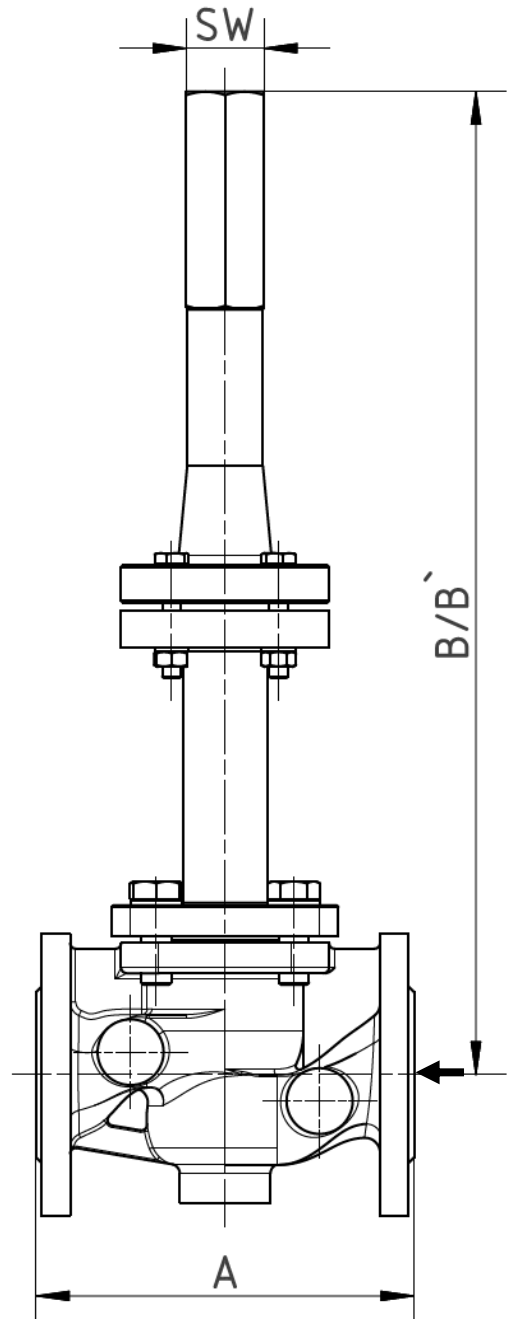
MEA- Thread



MEA- Flange



MEAF



11.3 List of parts

Pos./ Item	Stück/ Qty.	Benennung	Description
100	1	Ventilgehäuse	valve chamber
108	1	Gehäuseflansch	housing flange
110	1	Distanzstück	spacer
205	1	Ventilspindel	valve spindle
211	1	Mengeneinstellkegel	volume adjusting cone
212	1	Spindelführung	spindle guide
219	1	Spindelmutter	spindle nut
255	1	Führungsteil	guide piece
259/1	1	Scheibe (Fertigungsteil)	disc (production piece)
259/2		Scheibe (Fertigungsteil)	disc (production piece)
402	1	Flachdichtung	gasket
402/1	1	Flachdichtung	gasket
402/2	2	Flachdichtung	gasket
403/1	1	O-Ring	o-ring
403/2	1	O-Ring	o-ring
404	1	Lippenring	lip-ring
406	4	Packung	packing
503	1	Druckfeder	pressure spring
504	1	Faltenbalg	expansion bellows
505	1	Schutzkappe	protective cap
900	4	Sechskantschraube	hex. head screw
900/1	4	Sechskantschraube	hex. head screw
900/2	4	Sechskantschraube	hex. head screw
901	1	Sechskantmutter	hex. nut
901/1	1/4	Sechskantmutter	hex. nut
901/2	1	Sechskantmutter	hex. nut
901/3	1	Sechskantmutter	hex. nut
905	4	Federring	lock washer
905/1	4	Federring	lock washer
905/2	4	Federring	lock washer
906	1	Scheibe	washer
916	1	Halbrundkerbnägel	semi-round grooved drive stud
927	1	Hutmutter	cap nut
943/1	1	Spannstift	spring dowel sleeve
943/2	2	Spannstift	spring dowel sleeve
951	1	Kegelgriff	tapered handle
952	1	Handrad	hand wheel

11.4 Dimension threaded version MEA

Connection G	Dimension	1/4	3/8	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3	
Installation length	A	60	80	80	95	105	120	150	170	180	212	
	10-MEA	B	95	95	95	105	153	155	173	185	245	270
		B`	145	145	145	155	223	225	243	255	315	340
	SW	19	19	19	19	32	32	32	32	32	32	
25-MEA	B	95	95	95	105	153	155	173	185	-	-	
	B`	145	145	145	155	223	225	243	255	-	-	
	SW	19	19	19	19	32	32	32	32	-	-	

Dimension flange version MEA

Flange DN	Dimension	15	20	25	32	40	50	65	80	100
Installation length	A ¹⁾	130	150	160	180	200	230	290	310	350
Flange ANSI	Dimension	1/2"	3/4"	1"	1 1/4"	1 1/2"	2"	2 1/2"	3"	4"
Installation length	A ²⁾	108	117	127	140	165	203	216	241	292
10-MEA	B	168	168	172	172	195	200	250	300	332
	B`	238	238	242	242	265	270	340	400	432
	SW	32	32	32	32	32	32	32	41	41
25-MEA	B	168	168	172	172	195	200	250	300	332
40-MEA	B`	238	238	242	242	265	270	340	400	432
	SW	32	32	32	32	32	32	32	41	41

Dimension flange version MEAF

Flange DN	Dimension	15	20	25	32	40	50	65	80
Installation length	A ¹⁾	130	150	160	180	200	230	290	310(*)
Flange ANSI	Dimension	1/2"	3/4"	1"	1 1/4"	1 1/2"	2"	2 1/2"	3"
Installation length	A ²⁾	108	117	127	140	165	203	216	241
40-MEAF	B	523	523	523	530	523	531	547	550
	B`	638	638	638	645	638	646	662	615
	SW	41	41	41	41	41	41	41	41
63-MEAF	B	-	-	-	-	-	-	-	752
	B`	-	-	-	-	-	-	-	892
	SW	-	-	-	-	-	-	-	41

A¹⁾ = Dimension at DIN (resp. flanges ANSI and dimension DIN or flanges and dimension at DIN)

A²⁾ = Dimension at ANSI 150lbs (resp. flanges and dimension at ANSI)

B` = Dimension for removing the protective cap

(*) = Dimension A¹⁾ for PN 63 = 380mm