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

Operating manual

Flow-Control-Butterfly-Valve

Series MRK Ma

Control valve

EN

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Operating manual

Contents

Operating manual

1.0 General remarks

This operating manual includes instructions to assemble and operate the control 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 control valve is 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 Control valve data

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

Designation
Control valve as actuator for controlling without zero obturation with solenoid-actuator.

Working pressure:	0 – 150 mbar (0 - 15 kPa)
Medium temperature:	MRK Ma…-4 -20 °C to + 60 °C (253 K to 333 K) MRK Ma…Ü200 -20 °C to + 200 °C (253 K to 473 K) MRK Ma…Ü550 -20 °C to + 550 °C (253 K to 823 K)
Ambient temperature:	-20 °C to + 60 °C (253 K to 333 K)
Actuation type:	Ma with solenoid-actuator
Fitting position:	Horizontal pipe vertical solenoid drive ± 5°; with additional order information "W" vertical pipe vertical solenoid drive ± 5°.
Ausführung:	Butterfly plate through passage Butterfly plate limit stop (-2) (in case of construction with limit stop a „-2“ is added to the model designation e.g. MRK Ma…-4-**2**)
Optional:	Special control butterfly plate (55) Through passage drawn in
Switching cycles:	see operating instructions solenoid drive

Installation between to flanges acc. to DIN EN 1092-2 / ANSI

Type	15 (5N)	20 (7N)	25 (10N)	32 (12N)	40 (15N)	50 (20N)	65 (25N)	80 (30N)
MRK Ma…-4	X	X	X	X	X	X	X	X
MRK Ma...Ü200	O	O	O	O	O	O	O	O
MRK Ma…Ü550	O	O	O	O	O	O	O	O

X Type examination EU2016/426, CE-0085AR0408

Type	100	125	150	200	250	300	350	400
MRK Ma…-4	X	X	X	X	X	X	X	X
MRK Ma...Ü200	O	O	O	O	O	O	O	O
MRK Ma…Ü550	O	O	O	O	O	O	O	O

X Type examination EU2016/426, CE-0085AR0408
(*) DN 200 – DN 400 on request

Voltage: VDC 12 – 440 (-15% to +10%)
VAC 24 – 500 (-15% to +10%)
Protection type: IP54 oder 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 flow-control-butterfly-valves MRK Ma are used as actuators for control tasks in the entire firing technology.

The control valves are suitable for gases of the 1st, 2nd and 3rd gas families to DIN EN 437 and for neutral gases and air. As variation with material design for hot air, exhaust gas and aggressive gases.

MRK Ma…-4	Gases of the 1.,2.,3. gas families and air
MRK Ma…Ü200	Hot air / neutral gases
MRK Ma…Ü550	Hot air / exhaust gases

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

2.5 Unauthorized operation

Operational reliability of the delivered control 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-control 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.

The goods to be transported must be carefully treated. During transport, the control 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 flow-control-butterfly-valve at screwed cable glands, appliance plugs or add-on units. Transport the flow-control-butterfly-valve with a belt below the solenoid drive (see illustration).

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

- Storage of the flow-control-butterfly-valve with an opening of approximately 15°.
- 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

- Protect against atmospheric influences such as humidity.
- Appropriate treatment protects against damage.

4.0 Product description

The flow-control-butterfly-valves in the MRK series are control valves as actuators for controlling without zero obturation with solenoid-actuator.

The sectional drawing in section 11.1 shows the butterfly plate - version
11.2 Fig. 1 - Fig. 7 shows the construction.

4.1 Function

- NC normally closed MRK Ma…
- NO normally opened MRK Ma...**R**
  (in case of version normally opened a „**R**“ is added to the model designation e.g. MRK Ma…**R**)

Function NC normally closed MRK Ma...
By switching on the solenoid drive (800) the solenoid core (207) is drawn and operates the butterfly plate (232) via the toothed rack (247) and the toothed spindle (248) releasing the set cross section. The flow-control-butterfly-valve is open or moves the butterfly plate (232) into the main flow setting.

In case of switching off, breakdown or interruption of the energy supply to the solenoid drive, the solenoid core (207) withdraws due to the pre-stress of the pressure spring (503) and closes the flow-control-butterfly-valve or moves the butterfly plate (232) into the base flow setting.

Function NO normally opened MRK Ma…R
By switching on of the solenoid drive (800) the solenoid core (207) is drawn and operates the butterfly plate (232) via the toothed rack (247) and the toothed spindle (248) closing the set cross section. The flow-control-butterfly-valve is closed or moves the butterfly plate (232) into the base flow setting.

In case of switching off, breakdown or interruption of the energy supply to the solenoid drive, the solenoid core (207) withdraws due to the pre-stress of the pressure spring (503) and opens the flow-control-butterfly-valve or moves the butterfly plate (232) into the main flow setting.

NOTICE!
To set the base- (G) and main flow (H), see Fig. 3 and Fig. 4
No base flow or main flow is set at the factory.

4.2 Technical data

Control: without zero obturation

Solenoid-drive types MG...

Type	DN							
	15 (5N)	20 (7N)	25 (10N)	32 (12N)	40 (15N)	50 (20N)	65 (25N)	80 (30N)
MRK Ma…-4	012	012	012	012	012	012	012	012
MRK Ma...Ü200	012	012	012	012	012	012	012	012
MRK Ma…Ü550	014	014	014	014	014	014	014	014

Type	DN							
	100	125	150	200	250	300	350	400
MRK Ma…-4	012	012	014	016	019	019	019	020
MRK Ma...Ü200	012	012	014	016	019	019	019	020
MRK Ma…Ü550	014	014	016	019	019	019	019	020A1

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

Max. control 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 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 control 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 control 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 control valve or other installations.

5.2 Installation

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

NOTICE!

- The inside of the control 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 control 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.

The flow-control-butterfly-valve can be installed with vertical but not suspended solenoid drive. with additional order information "W" in the type designation the flow-control-butterfly-valve can be installed in a vertical pipe with vertical solenoid drive.

NOTICE!
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 control valve (dirt, weld beads, etc.) will inevitably result in leaks.
- Leakage inspection of the installed control 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-control-butterfly-valves have to be checked at regular intervals for proper function. The intervals for regular inspections have to be defined by the operator according to the operating conditions. Uni-Geräte recommends an external visual inspection once a year and an overhaul of the flow-control-butterfly-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.

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	Clogging in the pipework system	Check pipework system
No external tightness	Gaskets damaged	See section 8 or replace flow-control-butterfly-valve
MRK Ma… (version normally closed NC)		
Low flow rate	Flow-control-butterfly-valve does not open / close completely	Check setting of base flow resp. main flow
Flow-control-butterfly-valve does not open	Working pressure too high	Compare working pressure with the data on the rating plate
	Foreign matter in pipe	Clean pipe
	Solenoid drive without function	Switch on solenoid drive
	Existing voltage too low	Check voltage
Flow-control-butterfly-valve does not close	Foreign matter in pipe	Clean pipe
	Solenoid drive without function	Switch off solenoid drive
	Existing voltage too high	Check voltage
MRK Ma…R (version normally opened NO)		
Low flow rate	Flow-control-butterfly-valve does not open / close completely	Check setting of base flow resp. main flow
Flow-control-butterfly-valve does not open	Foreign matter in pipe	Clean pipe
	Solenoid drive without function	Switch off solenoid drive
	Existing voltage too high	Check voltage
Flow-control-butterfly-valve does not close	Working pressure too high	Compare working pressure with the data on the rating plate
	Foreign matter in pipe	Clean pipe
	Solenoid drive without function	Switch on solenoid drive
	Existing voltage too low	Check voltage

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 control 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!

Replace the flow-control-butterfly-valves

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 control valve (mechanical part).

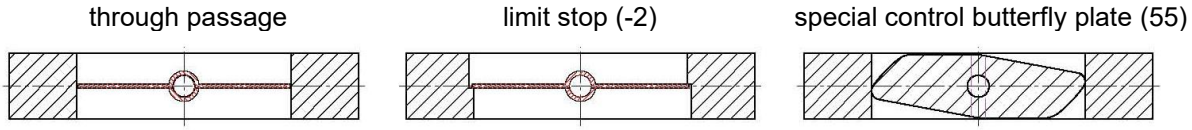
Notes on Regulation EU/2016/426 (Gas Appliances Regulation GAR):
The control valves have been developed, manufactured and tested in compliance with the applicable harmonised standard and comply with the relevant requirements of the Regulation EU/2016/426. Unless otherwise stated separately, this has 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 control valves comply with the fundamental requirements of Directive 2014/68/EU. Control 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.

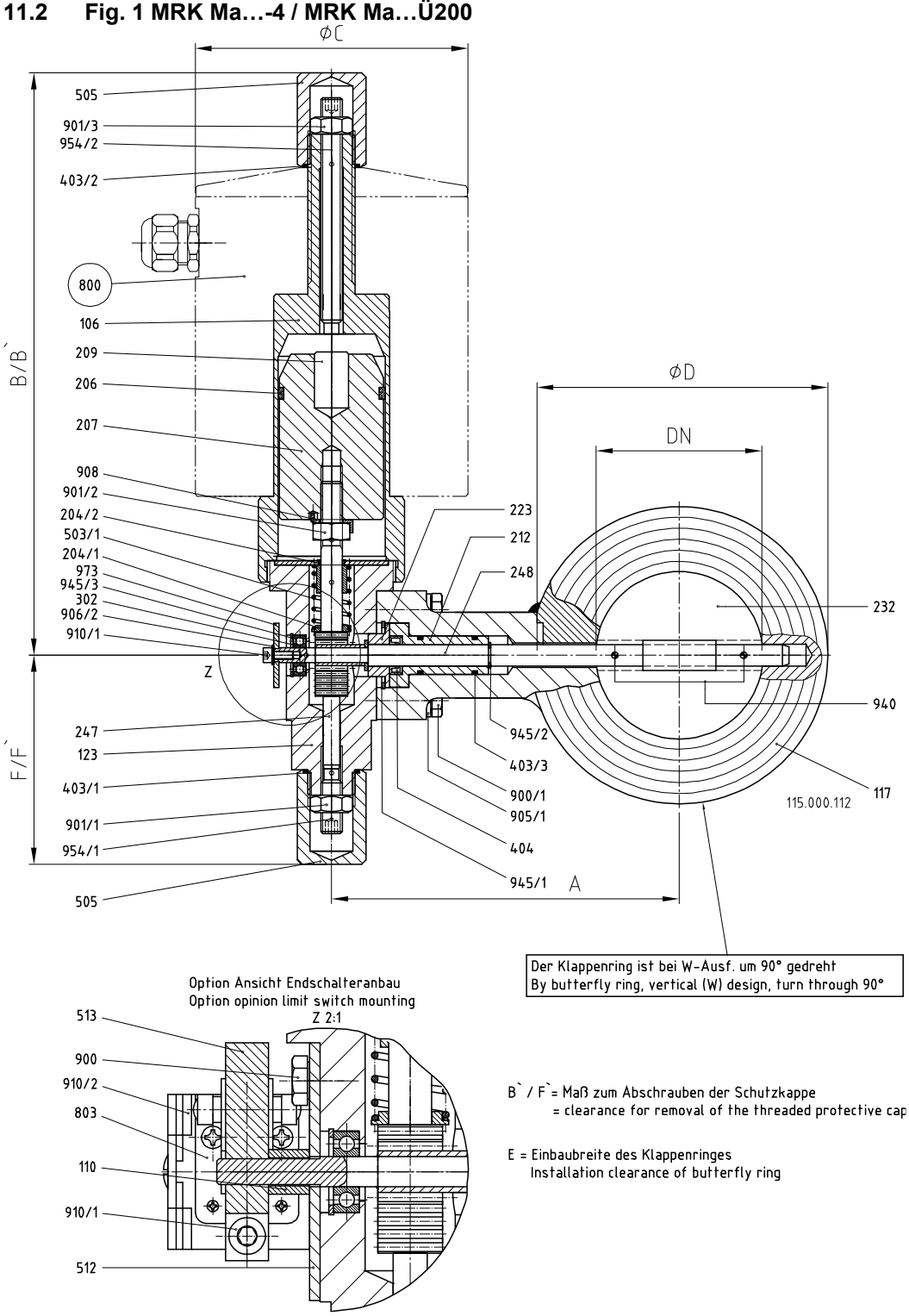
Note concerning ex-guideline 2014/34/EU (explosion guideline ATEX):
The product is not subject to guideline 2014/34/EU, since due to the loads occurring during practical operation, there is no effective source of ignition even in case of an error case to be assumed. This also applies to spring loaded 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 Version butterfly plate



11.2 Fig. 1 MRK Ma…-4 / MRK Ma…Ü200



B` / F` = Maß zum Abschrauben der Schutzkappe
= clearance for removal of the threaded protective cap

E = Einbaubreite des Klappenringes
Installation clearance of butterfly ring

Operating manual

Fig.2 MRK Ma…Ü550

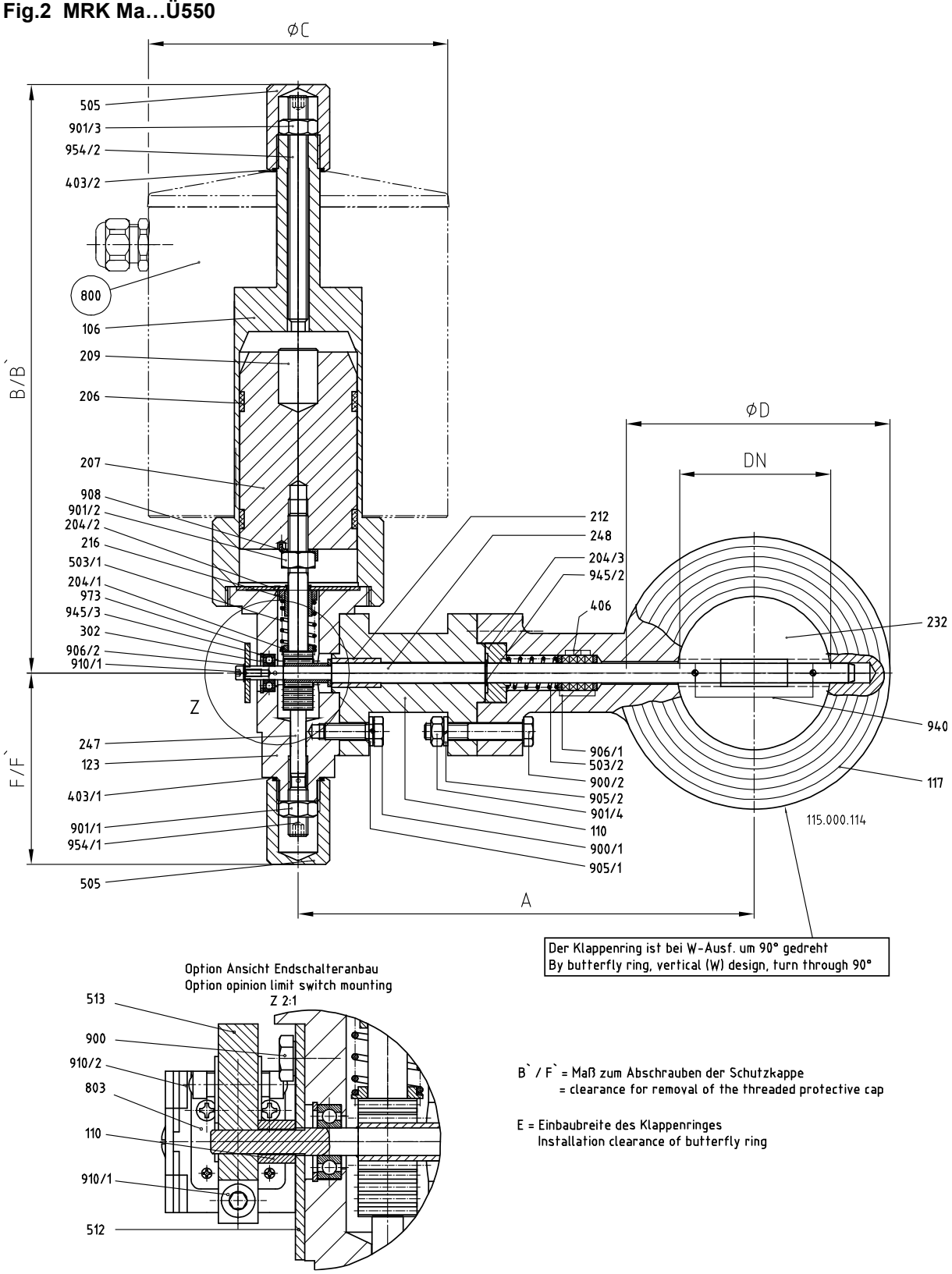
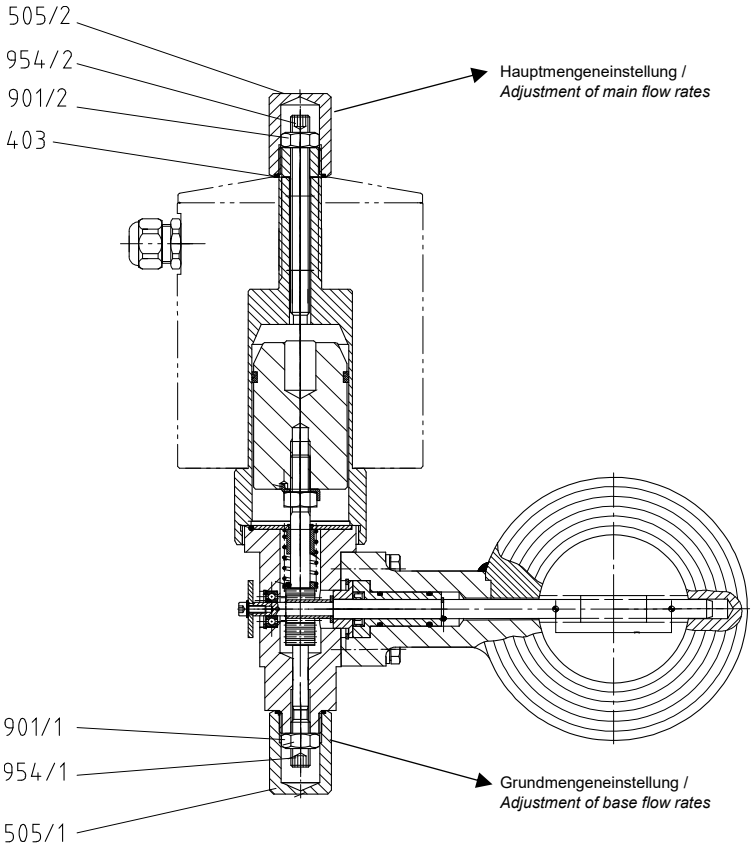


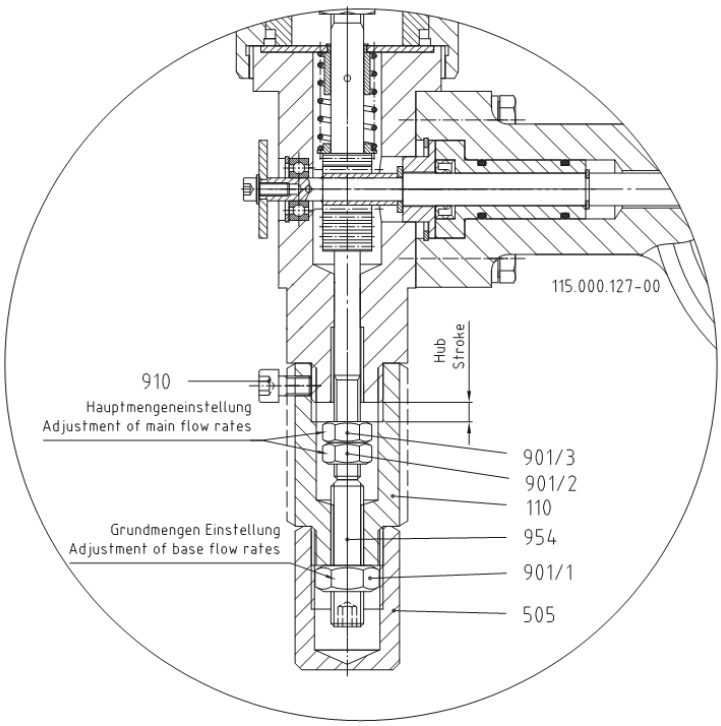
Fig.3 Main- and base flow setting for solenoid-actuators in standard-version



1. Unscrew protective cap (505/1) resp. (505/2).
2. Loosen hex. nut (901/1) resp. (901/2).
3. The desired flow setting can be set by turning the adjusting pin (954/1) (base flow) resp. (954/2) (main flow) clockwise.
4. After setting secure the adjustment pin (954/1) resp. (954/2) against moving using the hex. nut (901/1) resp. (901/2).
5. Screw on protective cap (505/1) resp. (505/2).

NOTICE:
Ensure that the O-ring (403) is seated correctly.

Fig.4 Main- and base flow setting for solenoid-actuators in MG…x-version



1. Unscrew protective cap (505) resp. loosen cylinder head screw (910) and unscrew spacer (110).
2. Loosen hex. nut (901/1) resp. (901/3).
3. The desired flow setting can be set by turning the adjusting pin (954) (base flow) resp. hex. nut (901/3) (main flow) clockwise.
4. After setting secure the adjustment pin (954) resp. hex. nut (901/3) against moving using the hex. nut (901/1) resp. (901/2).
5. Screw on protective cap (505) resp. screw on spacer (110) and secure via cylinder head screw (910).

Fig.5 Limit switch installation with one or two limit switches - <u>with one limit switch actuation</u>

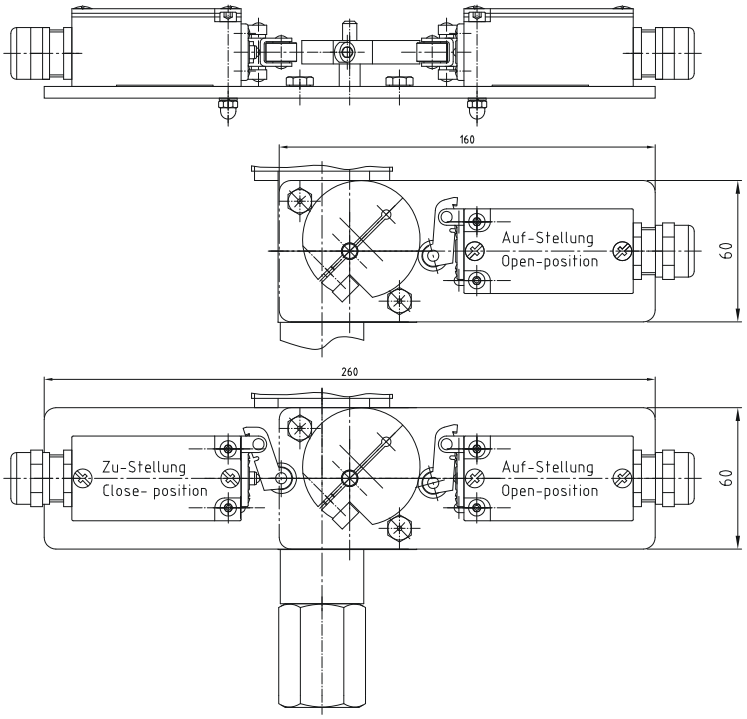


Fig.6 Limit switch installation with two limit switches - <u>with two limit switch actuations</u>

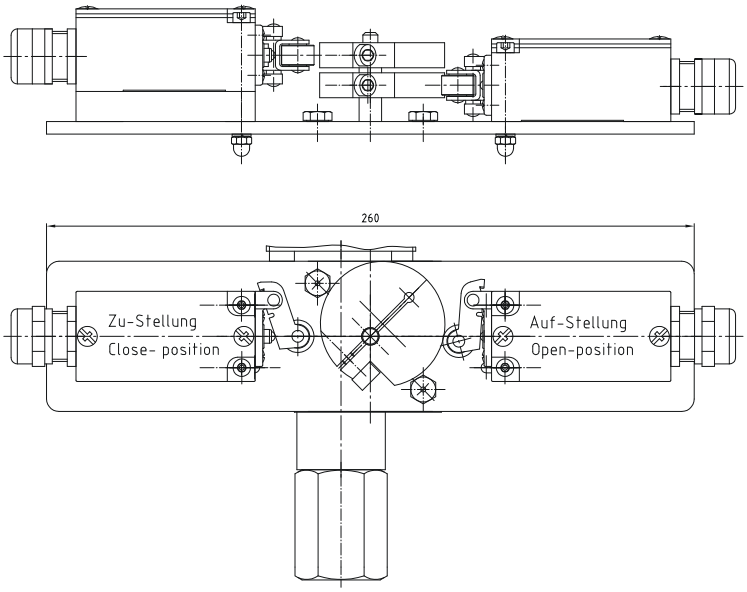


Fig.7 MRK Ma… Version with through passage drawn in

11.3 List of parts

Pos./ Item	Stück/ Qty.	Benennung	Description
106	1	Gehäuseoberteil	Upper part of housing
110	1	Distanzstück	Spacer
117	1	Klappenring	Butterfly ring
123	1	Klappengehäuse	Butterfly housing
204/1	1	Federführung	Spring guide
204/2	1	Federführung	Spring guide
204/3	1	Federführung	Spring guide
206	2	Führungsring	Guide ring
207	1	Magnetkern	Solenoid core
209	1	Abwurfbolzen	Discharge bolt
212	1	Spindelführung	Spindle guide
216	1	Federteller	Spring disc
223	1	Buchse	Bush
232	1	Klappenteller	Butterfly plate
247	1	Zahnstange	Toothed rack
248	1	Zahnspindel	Toothed spindle
302	1	Rillenkugellager	Deep groove ball bearing
403/1	1	O-Ring	O-ring
403/2	1	O-Ring	O-ring
403/3	2	O-Ring	O-ring
404	1	Lippenring	Lip-ring
406	4	Packung	Packing
503/1	1	Druckfeder	Pressure spring
503/2	1	Druckfeder	Pressure spring
505	2	Schutzkappe	Protective cap
800	1	Magnetantrieb	Solenoid drive
900/1	4	Sechskantschraube	Hex. head screw
900/2	4	Sechskantschraube	Hex.head screw
901/1	1	Sechskantmutter	Hex. nut
901/2	1	Sechskantmutter	Hex. nut
901/3	1	Sechskantmutter	Hex. nut
901/4	4	Sechskantmutter	Hex. nut
905/1	4	Federring	Lock washer
905/2	4	Federring	Lock washer
906/1	1	Scheibe	Washer
906/2	1	Scheibe	Washer
908	1	Sicherungsblech	Locking plate
910/1	1	Zylinderschraube	Cylinder head screw
940	2/4	Halbrundniete	Semi-round rivetting
945/1	1	Sicherungsring	Safety ring
945/2	1	Sicherungsring	Safety ring
945/3	1	Sicherungsring	Safety ring
954/1	1	Einstellstift	Adjusting pin
954/2	1	Einstellstift	Adjusting pin
973	1	Skala	Scale

Only by limit switch mounting

Pos./ Item	Stück/ Qty.	Benennung	Description
110	1	Distanzstück	Spacer
512	1	Endschalterkonsole	Limit switch console
513	1/2	Endschalterbetätigung	Switch actuator
803	1/2	Endschalter	Limit switch
900	2	Sechskantschraube	Hex. head screw
910/1	1/2	Zylinderschraube	Cylinder head screw
910/2	2/4	Zylinderschraube	Cylinder head screw

Operating manual

Spare parts

Version	Fig.	Type	Spare part
MRK Ma…-4	Fig. 1	MRK Ma 5N - 400	Solenoid drive (800)
MRK Ma…Ü200	Fig. 1	MRK Ma 5N - 400	Solenoid drive (800)
MRK Ma…Ü550	Fig. 2	MRK Ma 5N - 400	Solenoid drive (800)

Dimension with standard solenoid-drive

Type	Dim.	DN						
		15 / 20 (5N/7N)	25 / 32 (10N/12N)	40 (15N)	50 (20N)	65 (25N)	80 (30N)	100
MRK Ma...-4	**A**	133	139	142	147	154	162	172
MRK Ma…Ü200	**B**	255	255	272	272	272	272	272
	B`	305	305	305	305	305	305	305
	ØC	127	127	127	127	127	127	127
	ØD	50	70	92	96	125	140	162
	E	25	25	25	25	25	30	30
	F	92	92	97	97	97	97	97
	F`	140	140	140	140	140	140	140
MRK Ma…Ü550	**A**	133	139	142	147	155	162	172
	B	285	285	285	285	285	285	285
	B`	335	335	335	335	335	335	335
	ØC	127	127	127	127	127	127	127
	ØD	50	70	90	105	125	140	160
	E	25	25	25	25	25	30	30
	F	92	92	92	92	92	92	92
	F`	140	140	140	140	140	140	140

Type	Dim	DN						
		125	150	200	250	300	350	400
MRK Ma...-4	**A**	185	197	236	261	286	336	356
MRK Ma…Ü200	**B**	272	318	335	365	365	370	430
	B`	305	355	385	415	415	420	480
	ØC	127	153	153	191	191	191	230
	ØD	191	215	270	310	370	428	465
	E	35	35	40	40	45	45	50
	F	97	97	110	110	110	110	110
	F`	140	140	160	160	160	160	160
MRK Ma…Ü550	**A**	255	267	355	380	405	455	520
	B	285	297	360	373	373	373	430
	B`	335	347	410	425	425	425	480
	ØC	153	153	191	191	191	191	230
	ØD	190	215	270	320	370	428	465
	E	35	35	40	40	45	45	50
	F	92	92	110	110	110	110	110
	F`	140	140	160	160	160	160	160

In the version with through passage drawn in, the nominal diameter is reduced while maintaining the same size.

Example: MRK Ma…25N/20N
Size: DN 65
Drawn in: DN 50