

# **GEMÜ® 563, 568, 613, 618, 9618**

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**GEMÜ 9618 - Motorized Linear Actuator**  
**GEMÜ 563 / 568 - Motorized Globe Valves**  
**GEMÜ 613 / 618 - Motorized Diaphragm Valves**

## **GB OPERATING INSTRUCTIONS**



**GEMÜ 563 / 568**



**GEMÜ 613 / 618**



**GEMÜ 9618**

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# 1 Safety Guidelines

Please read the following instructions carefully and always comply with them.

## 1.1 General

In order for the motorized linear actuator to function properly, the following conditions must be fulfilled:

- proper transportation and storage
- installation and startup by trained personnel
- operation in accordance with these operating instructions
- proper maintenance

Therefore, you must observe

- the information contained in these operating instructions
- the relevant safety regulations for the installation and operation of electric systems
- that this device must not be used in areas exposed to the danger of explosion.

The regulations, standards and directives mentioned in these operating instructions only apply for Germany. If the GEMÜ 9618 (563 / 568 / 613 / 618) linear actuator is used in other countries, the applicable local regulations must be observed.

## 1.2 Explanation of Symbols and Notices

Important information in these operating instructions is emphasized by the following symbols:



This symbol indicates a potential danger.

**Endangerment of human life or health and/or considerable material damage** can occur if these instructions are not observed.



This symbol indicates **Notices** that provide important information on your GEMÜ 9618 (563 / 568 / 613 / 618) geben.

## 1.3 Safety Notices



### **DANGER!**

Electric shock can cause serious burns and fatal injuries!

- Only qualified and trained electricians are permitted to install, connect and start up the GEMÜ 9618 (563 / 568 / 613 / 618)
- Make sure that the host devices are electrically safe
- Ensure compliance with the electrical data requirements

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## 1.4 Intended Use

The GEMÜ 9618 is a motorized linear actuator for mounting on diaphragm valves (GEMÜ 613 / 618) or globe valves / control valves (GEMÜ 563 / 568). The actuator performs a linear movement of max. 5.5 mm, which is transferred to the diaphragm or the regulating cone of the valve body by means of a spindle.

The actuator is built to protection class IP65.

## 1.5 Tools Required for Installation and Connection

- Screwdriver (3 mm flat head) for connecting power supply and signal cable to the standard version terminal strip
- Screwdriver for mounting the socket connector, if applicable (depending on version)
- 10 mm open-end wrench for cover
- 7 mm open-end wrench
- 3 mm hexagon allen key

## 2 Manufacturer's Information

### 2.1 Delivery

Inspect the product immediately upon delivery for missing parts or damage. The delivery documents indicate the scope of delivery.

Compare the order numbers to determine that the correct version has been delivered and that the order is complete.

The actuator is already checked at the factory for function.

### 2.2 Functions

The motorized linear actuator is driven by means of a synchronous motor.

The power supply voltage must be 24 V AC, 120 V AC or 230 V AC, 50 / 60 Hz, depending on the version (voltage tolerance: +10%).

The change in frequency from 50 to 60 Hz results in reduction of the stroke time by 20%.

The motor drives a spur gear. This is available with two different speeds:  
17 sec. or 45 sec.

A cam is integrated in the spur gear that transfers a stroke of max. 5.5 mm to the valve spindle.

The valve spindle is pressed non-directly via a spring against the cam. This ensures opening even when there is a vacuum.

The shape of the cam is such that in the final stroke area there is a slight increase in the stroke with the same rotary angle.

The valve end travel positions "OPEN" and "CLOSED" are achieved by limit switches. These are actuated by two trigger cams attached to the position indicator.

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The micro-switches (change-over contact) are wired internally as follows:  
The break contact (to which the A.C. voltage is connected) switches to open position when the trigger cam is actuated and the power supply is interrupted.  
The make contact is closed, which allows a limit switch signal to be picked up (e.g.: activation of a signal lamp by means of a separate power supply).

The potentiometer installed at the factory enables infinite adjustment of the actuator. In addition, the actuator can be equipped with an integrated positioner (code E1 / E2), which can be controlled with a signal from 0 - 10 V or 0 / 4 - 20 mA as the set value. Instead of the positioner, a process controller E3 can also be installed. In this case, both the set value and the actual value can be defined externally as a standard signal 0/4-20 mA.

At a defined set value of 0 V and 0/4 mA the actuator runs to the CLOSED position and at 10V and 20 mA to the OPEN position.

The version without a control module is connected to the terminal strip by means of cable glands; the version with a control module (code E1, E2 or E3) makes use of socket connectors.

## 2.3 Versions

The actuator is available in the following versions:

- GEMÜ 9618: actuator without mounted valve body (e.g. as replacement actuator)
- GEMÜ 613: actuator with mounted plastic valve body (diaphragm valve)
- GEMÜ 618: actuator with mounted metal valve body (diaphragm valve)
- GEMÜ 563: actuator with mounted plastic valve body with regulating cone (globe valve)
- GEMÜ 568: actuator with mounted metal valve body with regulating cone (globe valve)

All models are available in the standard version (OPEN - CLOSED), optionally with or without potentiometer or with an integrated control module (code E1, E2 or E3).  
The operating time of the transmission can be either 17 sec. or 45 sec.  
Detailed information on the various versions can be found in the order specifications (see page 19-23).

## 2.4 Operation and Adjustment

The GEMÜ 9618 actuator is manufactured without a valve body and is delivered in "CLOSED" position. Depending on the desired use, either a diaphragm valve or a control valve must be mounted under the actuator (see chapter 3).

The GEMÜ 613 / 618 / 563 / 568 motorized valves are set in the "OPEN" position when delivered. No additional parts are required before installing the unit directly into the system.

**For the use of integrated control modules, parameters can be modified or set according to the specific system:**

Control module E1: Position control via integrated three-point controller by means of external set value 0-10 V (plus code 6025 / 6026 - see page 17-23)

Control module E2: Position control via integrated three-point controller by means of external set value 0/4-20mA (plus code 6025 / 6026 - see page 17-23)

Control module E3: Process control via integrated controller by means of external set value 0/4-20 mA external actual value definition 0/4-20 mA (plus code 6023 / 6024 - see p. 17-23)

**Adjustable parameters:**

- Position of the valve at set value 0 V or 0/4 mA
- Position of the valve at set value 10 V or 20 mA
- Dead zone from  $\pm 0.5 \%$  to  $\pm 5 \%$

**The following factory settings are programmed:**

Set value input at E1	0 V	corresponds to	0 % valve stroke
	10 V	corresponds to	100 % valve stroke
Set value input at E2 / E3	4 mA	corresponds to	0 % valve stroke
	20 mA	corresponds to	100 % valve stroke
Dead zone	Position A	corresponds to	$\pm 3.5 \%$

The settings can be changed by means of the control elements, which are visible when the motor cover is removed.



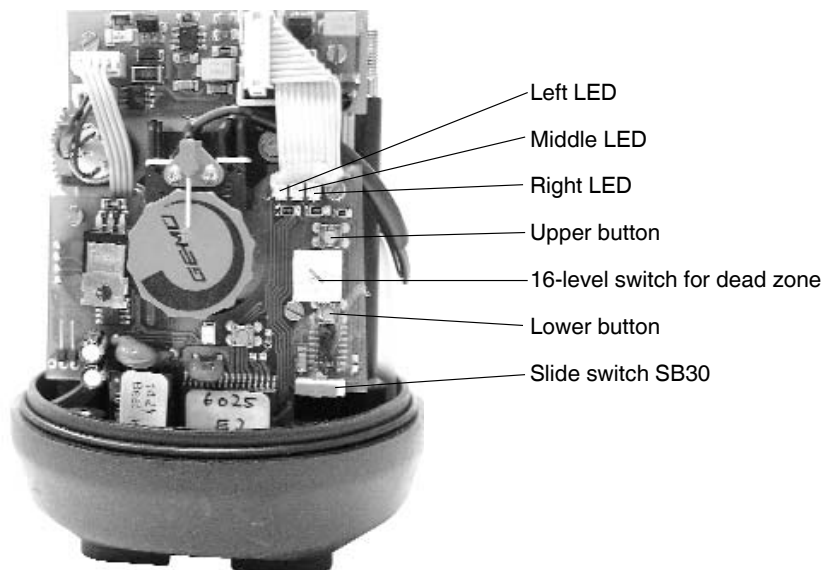
**DANGER!**

Adjustments are conducted with the cover removed and the unit connected to the power supply. Electric shock can cause serious burns and fatal injuries. Therefore, adjustments must be performed only by qualified electricians.

All operating and display elements are located on the side of the unit as depicted in the photo below. All live elements are on the opposite side of the transmission and are protected by a foil against accidental contact.



In the event of an operating error or in order to abort, the mains plug must be pulled in order to restart the unit.



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**The slide switch should remain in the left position.**

If it is pushed to the right, the factory setting (set value 0-10 V / 4-20 mA) could be lost  
→ If recalibrated, a signal with 0/4 mA and 20 mA would have to be fed.

### **2.4.1 RESET set value input to factory setting for E1/ E2 / E3**

- Operating condition  
→ middle LED lit (on)
- Press upper and lower buttons longer than 0.5 sec.  
→ left and right LED lit (on); middle LED flashes
- Press upper and lower buttons longer than 0.5 sec.  
→ left and right LED lit (on); middle LED flickers  
→ factory setting detected
- Press upper and lower buttons longer than 0.5 sec.  
→ middle LED lit (on)  
→ Factory setting is saved.
- Check the new setting by changing the signal

### **2.4.2 Electric closing limit for E1 / E2 → reprogramming position of valve at set value 0 V or 0/4 mA**

- Operating condition  
→ middle LED lit (on)
- Press lower button longer than 0.5 sec.  
→ right LED lit (on); middle LED flashes
- Apply electric signal and change it so that the motor runs to the desired position
- Press lower button longer than 0.5 sec.  
→ right LED lit (on); middle LED flickers  
→ new position of the valve for 0/4 mA is detected
- Press lower button longer than 0.5 sec.  
→ middle LED lit (on)  
→ new position of the valve for 0/4 mA is saved
- Check the new setting by changing the signal

If the new valve position is not okay with a set value of 0 / 4 mA or 0 V, a RESET must be conducted (see 2.4.1) and the entire programming process must be repeated.

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### 2.4.3 Electric opening limit for E1 / E2 → reprogramming position of valve at set value 20 mA

- Operating condition  
→ middle LED lit (on)
- Press upper button longer than 0.5 sec.  
→ right LED lit (on); middle LED flashes
- Apply electric signal and change it so that the motor runs to the desired position
- Press upper button longer than 0.5 sec.  
→ left LED lit (on); middle LED flickers  
→ new position of the valve for 20 mA is detected
- Press upper button longer than 0.5 sec.  
→ middle LED lit (on)  
→ new position of the valve for 20 mA is saved
- Check the new setting by changing the signal

If the new valve position is not okay with a set value of 20 mA or 10 V, a RESET must be conducted (see 2.4.1) and the entire programming process must be repeated.

### 2.4.4 Setting the dead zone

- Operating condition  
→ middle LED lit (on)
- Set 16-level rotary switch to desired position:

Position	Dead zone
0	± 0.5 %
1	± 0.8 %
2	± 1.1 %
3	± 1.4 %
4	± 1.7 %
5	± 2.0 %
6	± 2.3 %
7	± 2.6 %
8	± 2.9 %
9	± 3.2 %
A	± 3.5 %
B	± 3.8 %
C	± 4.1 %
D	± 4.4 %
E	± 4.7 %
F	± 5.0 %

- Press upper or lower button for less than 0.5 sec.  
→ middle LED lit (on)  
→ new dead zone was saved



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## 3 Mechanical Mounting and Installation

### 3.1 Installation of the GEMÜ 613 / 618 / 563 / 568

The GEMÜ 613 / 618 / 563 / 568 valves require no mechanical modification or additional extensions.

The valves can be installed directly into pipes by the chosen connection: butt weld spigots, clamp connections or threaded connection (see page 20-23).



**ATTENTION!**

Only install the valve upright or with its leak detection hole pointing downwards, otherwise escaping liquid will damage the actuator.

### 3.2 Mounting / Installation of the GEMÜ 9618

The GEMÜ 9618 motorized linear actuator can be mounted to a diaphragm valve (corresponding to a GEMÜ 613 or 618).

**Please note the following:**

The GEMÜ 9618 actuator is in the "CLOSED" position when delivered.

The transmission adjusting screws and transmission fastening screws are loosened, since adjustment and fixing take place after mounting of the valve.



**ATTENTION!**

Do not open globe valves (GEMÜ 563 or 568).

The regulating cone may only be replaced by GEMÜ.

### 3.3 Mounting of a Diaphragm Valve

#### 3.3.1 Mounting the diaphragm and valve body

- Disassemble cover (2 x SW 10 screws)
- Mount diaphragm and turn until it stops (do not turn too far!)
- Turn diaphragm back min. 90°, but max. 270°, so that the diaphragm tab lines up with the groove
- Put actuator in "OPEN" position by applying voltage or, if there is an integrated control module apply the 20 mA signal  
→ Diaphragm must be able to move in actuator base
- Mount body and tighten 4 fastening screws in cross pattern until an even compression bulge is visible on all 4 diaphragm sides
- Check for external tightness and tighten screws, if necessary

### 3.3.2 Checking the valve seal

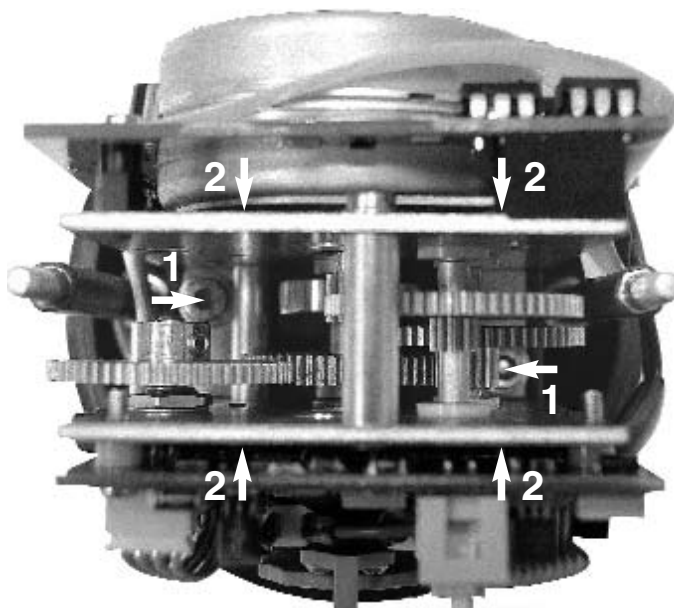
- Install actuator into pipe (or testing device)
- Apply operating pressure to valve ( $P = 6 \text{ bar}$ )
- Check / set seal:
  - by alternately turning both transmission adjusting screws **1** (see photo below)
    - clockwise - tightness is increased
    - anticlockwise - tightness is decreased



Set the seal of the valve only as high as absolutely necessary.  
Setting the seal too high causes unnecessary wear on the actuator  
→ decreasing the life

- after checking the seal, both transmission fastening screws **2** must be tightened in order to fix the transmission (see photo on right)
- Replace cover (2 x SW10 screws)

On an actuator with a control module, the screws must be tightened from the opposite side, due to the additional plates.



## 4 Electrical Connections

### 4.1 Procedure

- The on-site cable ends must be connected to the terminal strip according to the connection diagram for the standard version
- For the integrated control modules, the included connectors must be wired to the on-site cable ends (power supply and signal cable) according to the connection diagram
- Depending on the version, there may be one or two socket connectors on the housing; for the power supply - labelled with the voltage type - and for the signal line

### 4.2 Connection Diagram

#### 4.2.1 Internal Wiring Diagram with Connection to Terminal Strip

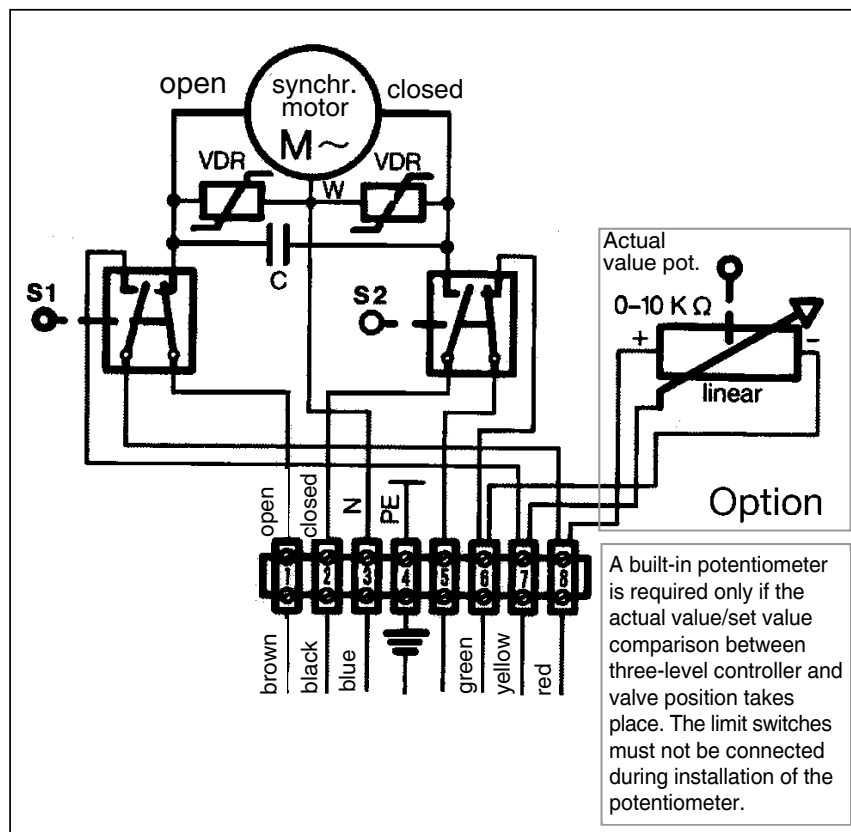


Diagram shows CLOSED position - cam has actuated S2 (limit switch CLOSED) → break contact was opened.

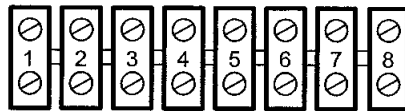


#### ATTENTION!

The potentiometer will be destroyed if both the limit switch and the potentiometer are connected to terminals 5-8.

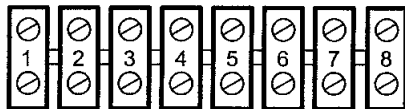
Therefore, connect either the limit switch **or** the potentiometer!  
Never connect both!

#### 4.2.1.1 Standard version - with limit switch feedback (Design: 6023 / 6024)



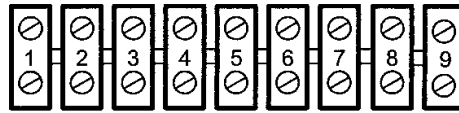
Pin	Description
1	L1, motor voltage for direction of travel OPEN
2	L1, motor voltage for direction of travel CLOSED
3	N, reference voltage
4	$\perp$ , PE protective conductor
5	L1, S2 (23) end position CLOSED
6	Us, S2 (24) end position CLOSED
7	L1, S1 (24) end position OPEN
8	Us, S1 (23) end position OPEN

#### 4.2.1.2 Standard version - with actual value potentiometer (Design: 6025 / 6026)



Pin	Description
1	L1, motor voltage for direction of travel OPEN
2	L1, motor voltage for direction of travel CLOSED
3	N, reference voltage
4	$\perp$ , PE protective conductor
5	n.c.
6	Us -, actual value potentiometer signal voltage
7	Us $\square$ , actual value potentiometer signal output
8	Us +, actual value potentiometer signal voltage

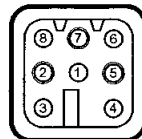
### 4.2.1.3 Version with actual value potentiometer output and limit switch feedback CLOSED; Design: 6442



Pin	Description
1	L1, motor voltage for direction of travel OPEN
2	L1, motor voltage for direction of travel CLOSED
3	N, reference voltage
4	PE, protective conductor $\perp$
5	L1, S2 (23) end position CLOSED
6	Us -, actual value potentiometer signal voltage
7	Us $\neg$ , actual value potentiometer signal output
8	Us +, actual value potentiometer signal voltage
9	Us, S2 (24) end position CLOSED

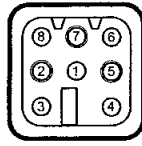
## 4.2.2 Connection with Harting connector

### 4.2.2.1 Version with limit switch feedback (Design: 6023 / 6024) with Harting connector HAN 7 D (Design: 6734)



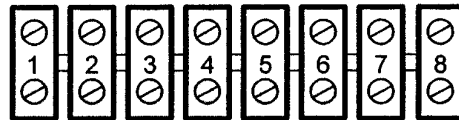
Pin	Description
1	L1, motor voltage for direction of travel OPEN
2	L1, motor voltage for direction of travel CLOSED
3	N, reference voltage
4	Us, S2 (23) end position CLOSED
5	L1, S2 (24) end position CLOSED
6	Us, S1 (23) end position OPEN
7	L1, S1 (24) end position OPEN
8	PE, protective conductor $\perp$

#### 4.2.2.2 Version with actual value potentiometer output (Design: 6025 / 6026) with Harting connector HAN 7 D



Pin	Description
1	L1, motor voltage for direction of travel OPEN
2	L1, motor voltage for direction of travel CLOSED
3	N, reference voltage
4	n.c.
5	Us -, actual value potentiometer signal voltage
6	Us $\perp$ , actual value potentiometer signal output
7	Us +, actual value potentiometer signal voltage
8	PE, protective conductor $\perp$

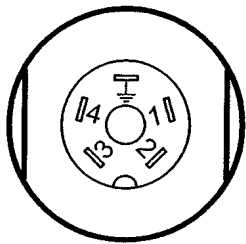
#### 4.2.3 Version with 4-20 mA signal output (two-wire) (Design: 6025 / 6026 + 2422)



Pin	Description
1	L1, motor voltage for direction of travel OPEN
2	L1, motor voltage for direction of travel CLOSED
3	N, reference voltage
4	PE, protective conductor $\perp$
5	n.c.
6	n.c.
7	I-, actual value output 4-20mA
8	I+, actual value output 4-20mA

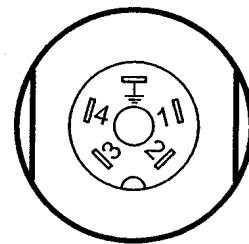
## 4.2.4 Control module E1 with Binder connector 717 (Design: 6025 / 6026)

**X1 Connector power**



Pin	Signal name
1	L1, power supply
2	N, neutral
3	n.c.
4	n.c.
⏚	PE

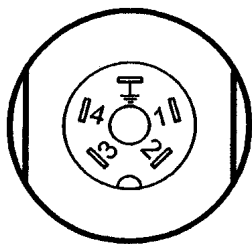
**X2 Connector signal**



Pin	Signal name
1	n.c.
2	n.c.
3	U-, set value input 0-10V
4	U+, set value input 0-10V
⏚	PE

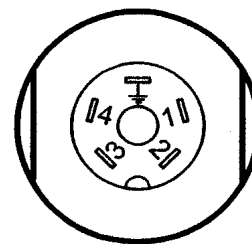
## 4.2.5 Control module E2 with Binder connector 717 (Design: 6025 / 6026)

**X1 Connector power**



Pin	Signal name
1	L1, power supply
2	N, neutral
3	n.c.
4	n.c.
⏚	PE

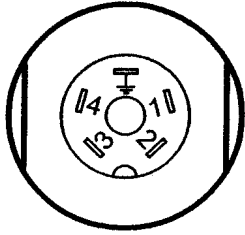
**X2 Connector signal**



Pin	Signal name
1	n.c.
2	n.c.
3	I-, set value input 0/4-20mA
4	I+, set value input 0/4-20mA
⏚	n.c.

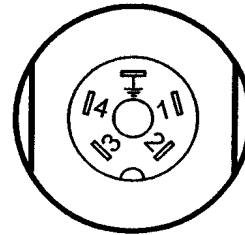
## 4.2.6 Control module E3 with Binder connector 717 (Design: 6023 / 6024)

**X1 Connector power**



Pin	Signal name
1	L1, power supply
2	N, neutral
3	n.c.
4	n.c.
⏚	PE

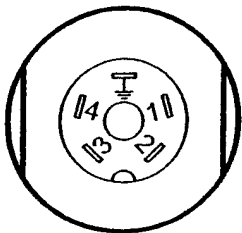
**X2 Connector signal**



Pin	Signal name
1	I-, Actual value input 0/4-20mA
2	I+, Actual value input 0/4-20mA
3	U-, Set value input 0/4-20mA
4	U+, Set value input 0/4-20mA
⏚	n.c.

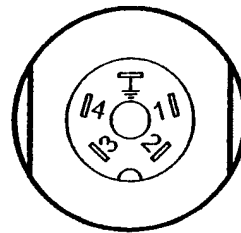
## 4.2.7 Control module EP with Binder connector 717 (Design: 6023 / 6024)

**X1 Connector power**



Pin	Signal name
1	L1, power supply
2	N, neutral
3	n.c.
4	n.c.
⏚	PE

**X2 Connector signal**



Pin	Signal name
1	Us -, Set value potentiometer signal voltage -
2	Us +, Set value potentiometer signal voltage +
3	Us ⏚, Set value potentiometer signal
4	n.c.
⏚	PE



## 5 Technical Data

### 5.1 Technical Data for GEMÜ 9618

Power consumption	
3.5 VA	
Rating	
Continuously rated	
Load resistor	
32 Ω (with reverse diode)	
Operating time	
See design	appr. 17 or 45 s
Electrical connection	
2 x PG 13,5 (Design without integrated control module)	
2 x Circular connector (Binder Series 717) (Design with integrated control module)	

Protection class		
IP 65 acc. to DIN 40050		
Supply voltages / frequency		Code
24 V 50/60 Hz	±10%	C4
120 V 50/60 Hz	±10%	G4
230 V 50/60 Hz	±10%	L4
Design		Code
Standard: approx. 17 sec. operating time, 2 switching contacts		6023
Operating time approx. 45 sec. 2 switching contacts		6024
Operating time approx. 17 sec., with potentiometer 10 kΩ		6025
Operating time approx. 45 sec., with potentiometer 10 kΩ		6026

### 5.2 Technical Data for GEMÜ 613

Working medium
Corrosive, inert, gaseous and liquid media which have no negative impact on the physical and chemical properties of the body and diaphragm materials.

Working medium temperature
Valve body PVC-U 5 to 60° C
Valve body PP 5 to 80° C
Valve body PVDF -20 to 80° C
The permissible operating pressure depends on the working medium temperature.

Ambient temperature
Valve body PVC-U / PP 5 to 60° C
Valve body PVDF -20 to 60° C

Electrical connection
2 x PG 13.5 (Design without integrated control module)
2 x Circular connector (Binder Series 717) (Design with integrated control module)

Rating
Continuously rated

Power consumption
3.5 VA

Protection class
IP 65 acc. to DIN 40050

Operating time
See type of design appr. 17 or 45 s

Nominal size (mm)	Operating pressure (bar)	K <sub>v</sub> value (m <sup>3</sup> /h)	Weight (g)
12	0 - 6	2.8	1000
15	0 - 6	3.5	1050

All pressures are given as gauge pressures when applied upstream only.

O-ring material for valve bodies with union ends	
Diaphragm material	O-ring material
NBR	EPDM
FPM	FPM
EPDM	EPDM
PTFE	FPM
Other combinations upon request	

Pressure / temperature correlation for plastic														
Temperature in °C (plastic body)		-20	-10	±0	5	10	20	25	30	40	50	60	70	80
Valve body material		permissible operating pressure in bar												
PVC-U	Code 1	-	-	-	6.0	6.0	6.0	6.0	4.8	3.6	2.1	0.9	-	-
PP	Code 5	-	-	-	6.0	6.0	6.0	6.0	5.1	4.2	3.3	2.4	1.6	0.9
PVDF	Code 20	6.0	6.0	6.0	6.0	6.0	6.0	6.0	5.4	4.8	4.3	3.8	3.2	2.8

Data for extended temperature ranges on request. Please note that the ambient temperature and medium temperature generate a combined temperature at the valve body which must not exceed the above values.

## 5.3 Technical Data for GEMÜ 618

### Working medium

Corrosive, inert, gaseous and liquid media which have no negative impact on the physical and chemical properties of the body and diaphragm material.

### Temperature of working medium

Direct mount (actuator design 2) + 60° C  
With distance piece (actuator design 1+3) +130° C

### Ambient conditions

Ambient temperature -15 to +55° C

### Power consumption

3.5 VA

### Rating

Continuously rated

### Load resistor

32 Ω (with reverse diode)

### Operating time

See design approx. 17 or 45 s

### Protection class

IP 65 acc. to DIN 40050

### Electrical connection

2 x PG 13.5 (Design without integrated control module)

2 x Circular connector (Binder Series 717) (Design with integrated control module)

Diaphragm size	Nominal size [mm]	Operating pressure [bar]	Kv value* [m³/h]	Weight [g]
8	004	0 - 6	-	1100
	006		-	
	008		2.2	
	010		-	
	015		-	
10	10	0 - 6	3.3	1330
	12		-	
	15		4.0	
	20		-	

All pressures are gauge pressures. Operating pressure values were determined with static operating pressure applied on one side of a closed valve. Sealing at the valve seat and atmospheric sealing is ensured for the given values.

Information on operating pressures applied on both sides and for high purity media on request.

\*Given  $K_v$  values are valid for ISO valve body connection, EPDM diaphragm material.

$K_v$  values determined at  $p_1 = 6$  bar, EPDM diaphragm material.  $K_v$ -values: Tolerance  $\pm 10\%$ .

## 5.4 Technical Data for GEMÜ 563 / 568

### Working medium

Corrosive, inert, gaseous and liquid media which have no negative impact on the physical and chemical properties of the body and seal material.

Leakage rate at 6 bar acc. to DIN 3230,  
T.3: Leakage rate 3 (test with water)

Max. permissible temp. of working medium

**GEMÜ 563:**

See data sheet "Technical Information on Plastic Materials"

**GEMÜ 568:**

80° C

### Ambient conditions

Ambient temperature -15 to +55° C  
For limitations see table Pressure/temperature correlation

Nominal size DN	Operating pressure [bar]	Weight [kg]	
		GEMÜ 563	GEMÜ 568
3, 6, 10, 15	0 - 6	1.6	2.4

All pressures are gauge pressures.

### Rating

Continuously rated

### Input resistance

33 Ω (input protected by reverse diode)

### Operating time

See design approx. 17 or 45 s

### Protection class

IP 65 acc. to EN 60529

### Electrical connection

2 x PG 13.5 (Design without integrated control module)

2 x circular connector (Binder Series 717) (Design with integrated control module)

### Power supply

24, 120, 230V 50/60 Hz  $\pm 10\%$

### Power consumption

3.5 VA

Pressure / temperature correlation for plastic													
Temperature in °C Plastic body	-20	-10	±0	5	10	20	25	30	40	50	60	70	80
Valve body material	Permissible operating pressure in bar												
PVC-U Code 1	-	-	-	6.0	6.0	6.0	6.0	4.8	3.6	2.1	0.9	-	-
PVDF Code 20	6.0	6.0	6.0	6.0	6.0	6.0	6.0	5.4	4.8	4.3	3.8	3.2	2.8

Data for extended temperature ranges on request. Please note that the ambient temperature and medium temperature generate a combined temperature at the valve body which must not exceed the above values.

## 6 Order Data

### 6.1 Order Data for GEMÜ 9618

Diaphragm size	Code
Diaphragm size 8	8
Diaphragm size 10	10

Adapter	Code
Diaphragm size 8 (absolutely necessary)	A
Diaphragm size 10 (optionally defined by K-number 6164)	-

Connection type	Code
For M-blocks	M
For D-valve	D
For T-valve	T

Supply voltage / frequency	Code
24 V 50/60 Hz ±10%	C4
120 V 50/60 Hz ±10%	G4
230 V 50/60 Hz ±10%	L4

Integrated control modules (with connectors)	Code
Without	-
<b>Analogue signal processing</b>	
Control of valve position. Actual value control inside the actuator by potentiometer (K 6025 / K 6026); set value external, 0 - 10 V	E1
Control of valve position. Actual value control inside the actuator by potentiometer (K 6025 / K 6026); set value external, 0/4-20 mA	E2
Control of process variables. Actual value external, 0/4-20 mA, set value external, 0/4-20 mA (K 6023 / K 6024)	E3
Control of valve position. Actual value control inside the actuator by potentiometer (K 6025 / K 6026); set value external, external potentiometer	EP

Design	Code
Standard: approx. 17 sec. operating time, 2 switching contacts	6023
Operating time approx. 45 sec., 2 switching contacts	6024
Operating time approx. 17 sec., with 10 kΩ potentiometer	6025
Operating time approx. 45 sec., with 10 kΩ potentiometer	6026

Order example	9618	8	M	A	C4	E2	6025
Type	9618						
Diaphragm size (code)		8					
Connection type (code)			M				
Adapter (code)				A			
Supply voltage / Frequency (code)					C4		
Integrated control modules (code)						E2	
Design (K-No.)							6025

## 6.2 Order Data for GEMÜ 613

Body configuration	Code
Straight through	D

Connection	Code
Threaded sockets - DIN ISO 228	1
Solvent cement sockets - DIN (only with PVC-U)	2
Union ends with metric sockets - DIN	7
Spigots for butt welding (only with PVDF)	28
Union ends with metric butt weld spigots acc. to DIN 16962 T 13 series 4 (only with PP and PVDF)	78

Valve body material	Code
PVC-U, grey	1
PP	5
PVDF	20

Diaphragm material	Code
NBR	2
FPM	4
EPDM	14
PTFE/EPDM	PTFE laminated 52

Supply voltages / Mains frequency	Code
24 V 50/60 Hz ±10%	C4
120 V 50/60 Hz ±10%	G4
230 V 50/60 Hz ±10%	L4

Integrated control modules with connectors	Code
Without	-
<b>Analogue signal processing</b>	
Control of valve position. Actual value control inside the actuator by means of a potentiometer (K 6025/K 6026); set value external, 0-10 V	E1
Control of valve position. Actual value control inside the actuator by means of a potentiometer (K 6025/K 6026); set value external, 0/4-20 mA	E2
Control of process variables. Actual value external, 0/4-20 mA; set value external, 0/4-20 mA (K 6023/K 6024)	E3
Control of valve position. Actual value control inside the actuator by means of a potentiometer (K 6025/K 6026); set value external, external potentiometer	EP

Design	Code
Standard: approx. 17 sec. operating time, 2 potential-free switching contacts	6023
Operating time approx. 45 sec., 2 potential-free switching contacts	6024
Operating time approx. 17 sec., with potentiometer 10 kΩ	6025
Operating time approx. 45 sec., with potentiometer 10 kΩ	6026

Integrated mounting plate	Code
With integrated mounting plate Material code 20	M
Without mounting plate Material code 20	O
Without mounting plate Material code 1 and 5	-

Order example	613	15	D	7	1	14	C4	E2	6023	M
Type	613									
Nominal size (mm)		15								
Body configuration (code)			D							
Connection (code)				7						
Valve body material (code)					1					
Diaphragm material (code)						14				
Supply voltage / frequency (code)							C4			
Integrated control modules (code)								E2		
Design (additional K code)									6023	
Integrated mounting plate (code)										M

## 6.3 Order Data for GEMÜ 618

Body configuration	Code
Tank valve body	B**
2/2-way	D
Multi-port design	M**
T body	T*
* For dimensions see T Valves brochure	
** Dimensions and versions on request or according to customer requirements	

Valve body material	Code
MS Brass	12
1.4435 (ASTM A 351 CF3M) Investment casting*	34
1.4435 (316 L) Forged body	40
1.4435 (316 L) Block material**	41
* Material equivalency 316L	
** only for body configuration B, M and T	

Connection	Code
<b>Butt weld spigots</b>	
Spigots DIN	0
Spigots DIN 11850, series 1	16
Spigots DIN 11850, series 2	17
Spigots DIN 11850, series 3	18
Spigots DIN 11866, series A	1A
Spigots JIS-G 3459	36
Spigots BS 4825, Part 1	55
Spigots ASME BPE	59
Spigots EN ISO 1127	60
<b>Threaded connections</b>	
Threaded sockets DIN ISO 228	1
Threaded spigots to DIN 11851	6
One side threaded spigot (to DIN 11851) other side cone spigot with union nut (to DIN 11851)	62
Aseptic unions upon request	
<b>Clamp connections</b>	
Clamp ASME BPE for pipe ASME BPE, length ASME BPE	80
Clamp following ASME BPE for pipe EN ISO 1127, length EN 558-1 series 7	82
Clamp ASME BPE for pipe ASME BPE length EN 558-1, series 7	88
Clamp DIN 32676 for pipe DIN 11850 length EN 558-1, series 7	8A
For overview of available valve bodies see datasheet page 8	

Diaphragm material	Code
FPM	4, 4A**
EPDM	max. 130°C* 12
EPDM	max. 150°C* 13, 3A**
EPDM	max. 150°C* 16, 6A**
EPDM	max. 150°C* 17**
PTFE/EPDM	PTFE laminated max. 150°C* 52, 5A**
Materials comply with FDA requirements, except code 4, 4A	
* Steam sterilisation temperature (valid for actuator sizes 1 + 3 - see dimensions)	
** for actuator size 1 (see dimensions)	

Supply voltages / frequency	Code
24 V 50/60 Hz ±10%	C4
120 V 50/60 Hz ±10%	G4
230 V 50/60 Hz ±10%	L4

Integrated control modules with connectors	Code
<b>Without</b>	-
<b>Analogue signal processing</b>	
Control of valve position. Actual value control inside the actuator by means of a potentiometer (K 6025/K 6026); set value external, 0-10 V	E1
Control of valve position. Actual value control inside the actuator by means of a potentiometer (K 6025/K 6026); set value external, 0/4-20 mA	E2
Control of process variables. Actual value external, 0/4-20 mA; set value external, 0/4-20 mA (K 6023/K 6024)	E3
Control of valve position. Actual value control inside the actuator by means of a potentiometer (K 6025/K 6026); set value external, external potentiometer	EP

Design	Code
Standard: approx. 17 sec. operating time, 2 switching contacts	6023
Operating time approx. 45 sec., 2 switching contacts	6024
Operating time approx. 17 sec., with 10 kΩ potentiometer	6025
Operating time approx. 45 sec., with 10 kΩ potentiometer	6026

Valve surface finishes, internal finish	Code
Ra ≤ 6.3 μm      blasted internal/external	1500*
Ra ≤ 6.3 μm      electropolished internal/external	1509*
Ra ≤ 0.8 μm      mechanically polished internal, blasted external	1502
Ra ≤ 0.8 μm      electropolished internal/external	1503
Ra ≤ 0.6 μm      mechanically polished internal, blasted external	1507
Ra ≤ 0.6 μm      electropolished internal/external	1508
Ra ≤ 0.4 μm      mechanically polished internal, blasted external	1536
Ra ≤ 0.4 μm      electropolished internal/external	1537
Ra ≤ 0.25 μm     mechanically polished internal, blasted external	1527
Ra ≤ 0.25 μm     electropolished internal/external	1516

Ra acc. to DIN 4768; at defined reference points

\* only in investment cast design

The available internal surface finishes are dependent on the inside diameter and the body production procedure.

Actuator	K-no.
Without metal distance piece	-
With metal distance piece (see actuator design 3 / dimensions) with diaphragm size 10	6164
With metal distance piece (see actuator design 1 / dimensions) with diaphragm size 8	-

Order example	618	10	D	60	34	13	L4	-	6023	1516	6164
Type	618										
Nominal size (mm)		10									
Body configuration (code)			D								
Connection (code)				60							
Valve body material (code)					34						
Diaphragm material (code)						13					
Supply voltage / frequency (code)							L4				
Integrated control modules (code)								-			
Design (code)									6023		
Surface finish (code)										1516	
Actuator (K-no.)											6164

## 6.4 Order Data for GEMÜ 563 / 568

Body configuration	Code
Body configuration	D

Connection	Code
<b>Threaded connections</b>	
Threaded sockets DIN ISO 228 (GEMÜ 563/568)	1
Threaded spigots DIN 11851 (GEMÜ 568)	6
Union ends with DIN insert (socket) (GEMÜ 563)	7
<b>Clamp connections</b>	
Clamps DIN 32676 for pipe DIN 11850 (GEMÜ 568)	86

Valve body material	Code
PVC-U, grey (GEMÜ 563)	1
PVDF (GEMÜ 563)	20
1.4435 (ASTM A 351 CF3M) investment casting* (GEMÜ 568)	34
* Material equivalency 316 L	

Seat seal	Code
FPM	4
EPDM	14

Voltage/Frequency	Code
24V 50/60 Hz ±10%	C4
120V 50/60 Hz ±10%	G4
230V 50/60 Hz ±10%	L4

Control module (with connector)	Code
<b>Without</b>	-
<b>Analogue signal processing</b>	
Control of valve position. Actual value control inside the actuator by potentiometer (K 6025/K 6026); set value external, 0 - 10V	E1
Control of valve position. Actual value control inside the actuator by potentiometer (K 6025/K 6026); set value external, 0/4-20 mA	E2
Control of process variables. Actual value external, 0/4-20 mA; set value external, 0/4-20 mA (K 6023/K 6024)	E3
Control of valve position. Actual value control inside the actuator by potentiometer (K 6025/K 6026); set value external, external potentiometer	EP

Control characteristic	Code
Kv values / control characteristic / equal-percentage	A*
/ equal-percentage	B*
/ equal-percentage	C*
/ linear	D*
/ linear	E*
* For selection see diagrams page 4.	

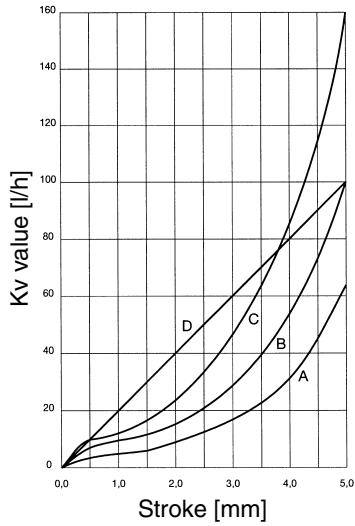
Kv value	see diagrams
Kv values: Tolerance ±10%.	

Design	K number
Standard: approx. 17 sec. operating time, 2 potential-free switching contacts	6023
Operating time approx. 45 sec., 2 potential-free switching contacts	6024
Operating time approx. 17 sec., with potentiometer 10 kΩ	6025
Operating time approx. 45 sec., with potentiometer 10 kΩ	6026

Order example	563	10	D	1	1	14	L4	E2	B	1600	6025
Type	563										
Nominal size		10									
Body configuration (code)			D								
Connection (code)				1							
Valve body material (code)					1						
Seat seal (code)						14					
Voltage/Frequency (code)							L4				
Integrated control modules (code)								E2			
Control characteristic (code)									B		
Kv value (see diagrams)										1600	
Design (K number)											6025

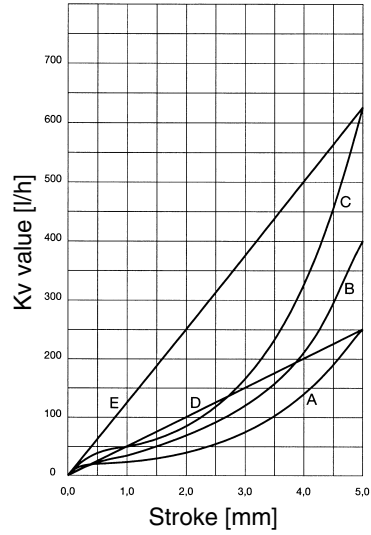
**Characteristics DN 3 (seat)**

Characteristic	Kv value [l/h]
A	63
B	100
C	160
D	100



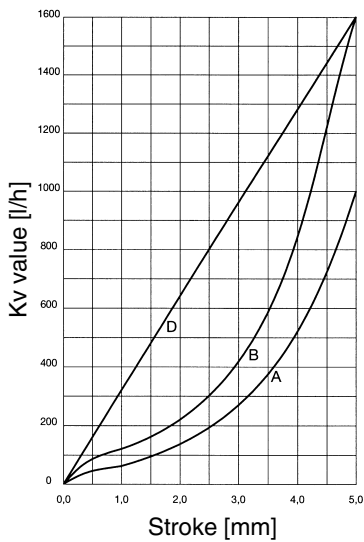
**Characteristics DN 6 (seat)**

Characteristic	Kv value [l/h]
A	250
B	400
C	630
D	250
e	630



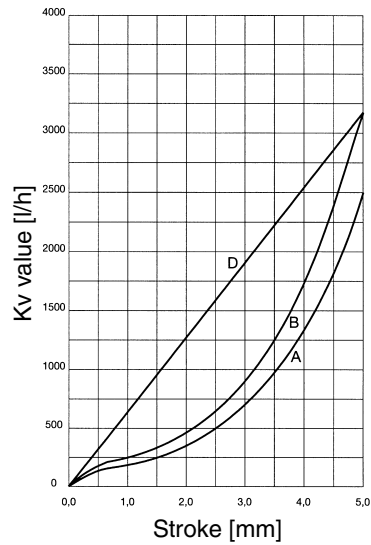
**Characteristics DN 10 (seat)**

Characteristic	Kv value [l/h]
A	1000
B	1600
D	1600



**Characteristics DN 15 (seat)**

Characteristic	Kv value [l/h]
A	2500
B	3300
D	3300



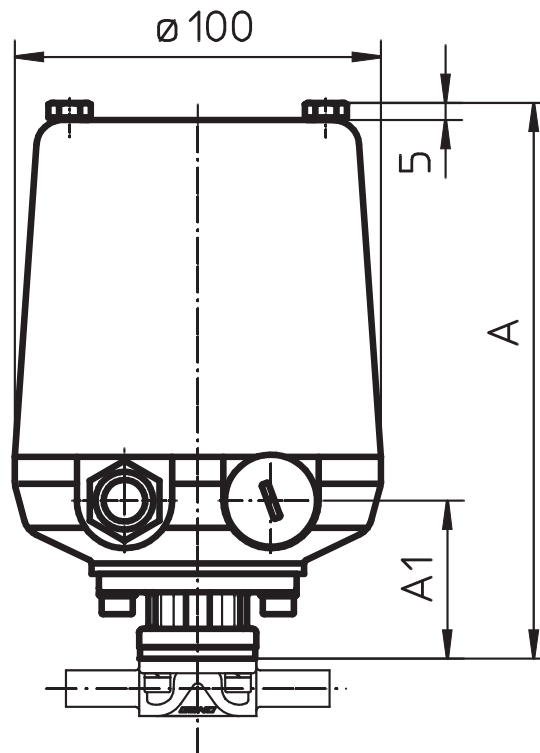


## 7 Dimensions

### 7.1 Dimensions - GEMÜ 9618 / 618

Dimensions - Actuator design 1 [mm]					
MG	DN	Actuator design	Actuator K-no.	A	A 1
8	004 - 015	1	-	152	44

MG = Diaphragm size

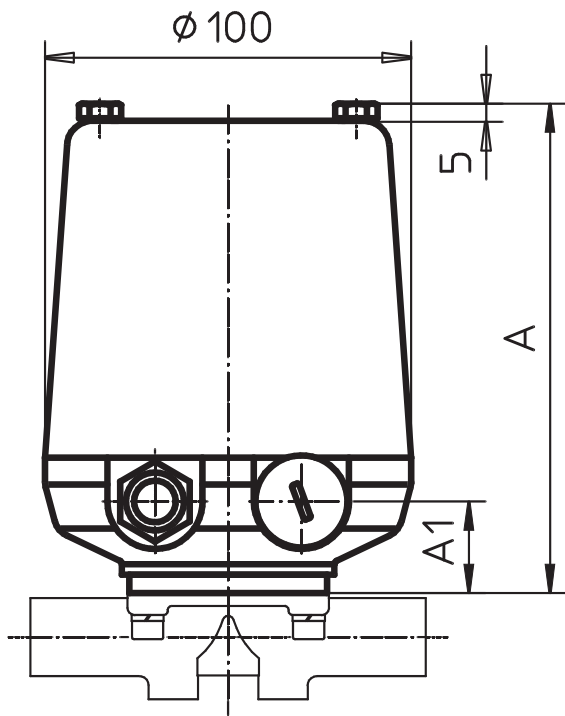


Valve body DN 004 - 015

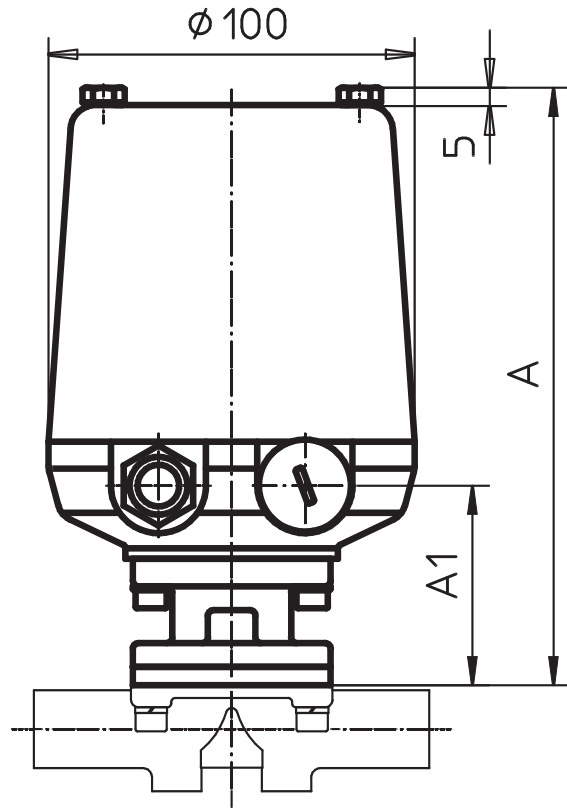
## Dimensions - Actuator designs 2 and 3 [mm]

MG	DN	Actuator design	Actuator K-no.	A	A 1
10	10 - 20	2	-	134	25
	10 - 20	3	6164	164	55

MG = Diaphragm size



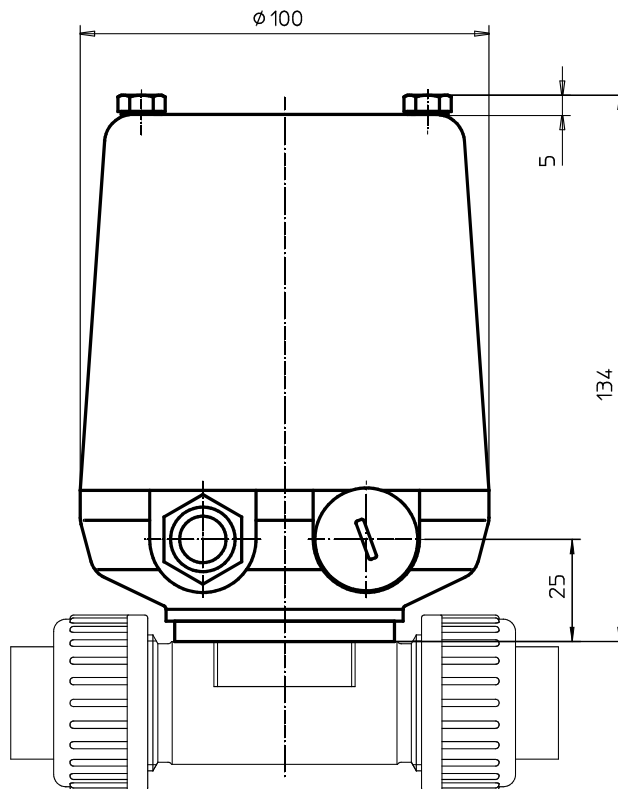
Valve body DN 10 - 20



Valve body DN 10 - 20  
with metal distance piece  
(actuator K-no. 6164)

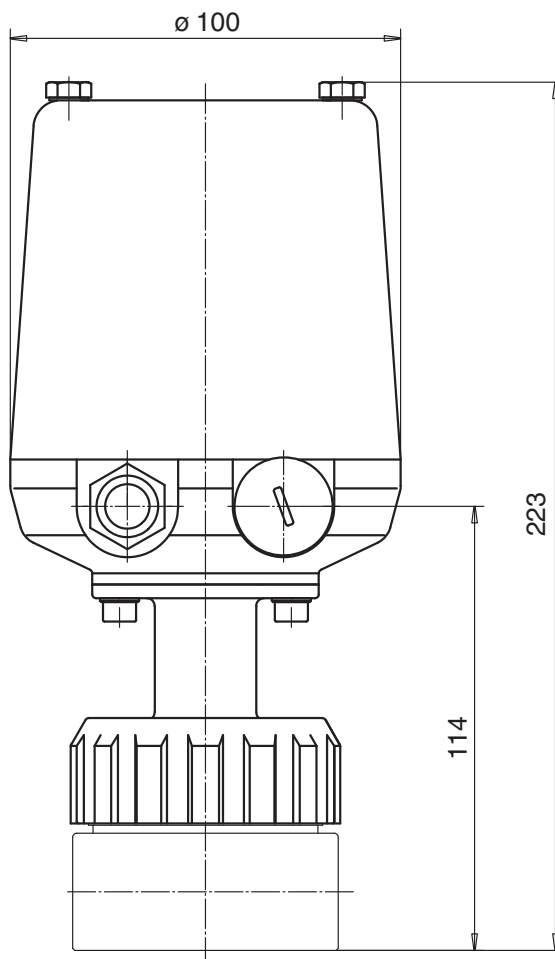
## 7.2 Dimensions - GEMÜ 613

Dimensions in mm



## 7.3 Dimensions - GEMÜ 563 / 568

Dimensions in mm



**Note:**

Connection and adjustment of the machine must be performed only by authorized service personnel. The manufacturer shall assume no liability for damages resulting from improper use or unauthorized actions. In case of doubt, please contact us before initial operation.

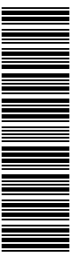
**Note concerning the EC Machinery Directive 2006/42/EC:**

A Declaration of Incorporation in accordance with the EC Machinery Directive 2006/42/EC accompanies this product.

**For incorporation in an installation classed as a machine:**

The commissioning is prohibited until it has been determined that the machine (plant) in which this product is to be incorporated complies with the provisions of the EC Machinery Directive 2006/42/EC.

Handling, assembly and commissioning, in addition to setting and adjustment of the machine must be performed only by authorised specialist staff.



Subject to modifications · 11/2012 · 88237961



**GEMÜ**® VALVES, MEASUREMENT  
AND CONTROL SYSTEMS