

GEMÜ® 693, 698, 9698

GEMÜ 9698 - Motorized Linear Actuator
GEMÜ 693 / 698 - Motorized Diaphragm Valves

GB OPERATING INSTRUCTIONS



GEMÜ 693



GEMÜ 698



GEMÜ 9698

Contents

| | | |
|----------|---|-----------|
| 1 | Notes for your safety | 3 |
| 1.1 | General notes | 3 |
| 1.2 | Explanation of symbols and signs | 3 |
| 1.3 | Safety notes | 3 |
| 1.4 | Correct use | 4 |
| 1.5 | Tools required for installation and connection | 4 |
| 2 | Manufacturer's information | 4 |
| 2.1 | Delivery | 4 |
| 2.2 | Functions | 4 |
| 2.3 | Versions | 5 |
| 2.4 | Operation and adjustment | 5 |
| 3 | Mechanical installation and mounting | 7 |
| 3.1 | Installation of the GEMÜ 693 / 698 | 7 |
| 3.2 | Installation / mounting of the GEMÜ 9698 | 7 |
| 3.3 | Mounting of a diaphragm valve | 7 |
| 3.4 | Manual override | 8 |
| 4 | Electrical connections | 9 |
| 4.1 | Procedure | 9 |
| 4.2 | Connection diagram | 9 |
| 4.2.1 | Internal wiring diagram with connection on terminal strip | 9 |
| 4.2.1.1 | Functional module AE - OPEN / CLOSE control with additional end position feedback | 10 |
| 4.2.1.2 | Functional module AP - OPEN / CLOSE control with potentiometer output | 10 |
| 4.2.2 | Connection with Hirschmann connector | 11 |
| 4.2.2.1 | Functional module AE - OPEN / CLOSE control with additional end position feedback and Hirschmann connector N 6 R AM2 (Design: 6027) | 11 |
| 4.2.2.2 | Functional module AP - OPEN / CLOSE control with potentiometer output and Hirschmann connector N 6 R AM2 (Design: 6027) | 11 |
| 4.2.3 | With mounted controller GEMÜ 1283 | 12 |
| 5 | Technical data | 13 |
| 6 | Order data | 13 |
| 6.1 | Order data for GEMÜ 9698 | 13 |
| 6.2 | Order data for GEMÜ 693 | 14 |
| 6.3 | Order data for GEMÜ 698 | 15 |
| 7 | Information | 17 |
| 8 | Dimensions | 17 |
| 8.1 | Dimensions - GEMÜ 9698 | 17 |
| 8.2 | Dimensions - GEMÜ 693 | 18 |
| 8.3 | Dimensions - GEMÜ 698 | 18 |
| | Goods return declaration | 19 |
| 9 | EC Declaration of conformity | 20 |

1 Notes for your safety

Please read the following notes carefully and observe them!

1.1 General notes

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

- proper transport and storage
- installation and commissioning by trained personnel
- operation in accordance to 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 apply only for Germany. If the GEMÜ 9698 (693/698) is used in other countries, the applicable local regulations must be observed.

1.2 Explanation of symbols and signs

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



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 9698 (693/698).

1.3 Safety notes



WARNING:

Electric shock can cause serious burns and fatal injuries!

- Only qualified and trained electricians are permitted to install, connect and start up the GEMÜ 9698 (693/698)
- Make sure that the host devices are electrically safe
- Ensure compliance with the electrical data requirements

1.4 Correct use

The GEMÜ 9698 is a motorized linear actuator for mounting on diaphragm valves. A diaphragm valve with a built-on plastic valve body is supplied as GEMÜ type 693, or with a metal valve body as GEMÜ type 698. The actuator performs a linear movement, which is transferred to the diaphragm 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 (5 mm flat head) for loosening the cover and any potentiometer component
- Screwdriver (PH1 Philips head) for fixing the limit switch
- Screwdriver (3 mm flat head) for connecting power supply and signal cable to the standard model terminal strip and for adjustment screws
- Various open-end wrenches and hexagon sockets for mounting the body
- Hexagon allen key (1.5 mm) for trigger cams

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 model has been delivered and that the order is complete.

The motorized linear 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 24V AC, 120V AC or 230V AC, 50 / 60 Hz, depending on the model (voltage tolerance: +10%).

The change in frequency from 50 to 60 Hz results in reduction of the stroke time from 20 sec. to 16 sec.

The motor transmits force via a toothed belt creating a rotary movement.

The rotary movement is converted into a lifting movement by means of a ball screw.

The valve CLOSED position set at the factory is suitable for up to 10 bar for sizes DN 15 - 25 and up to 6 bar (4 bar for Teflon diaphragm DN 50) for sizes DN 32 - 50.

The valve end travel positions "OPEN" and "CLOSED" are achieved by limit switches.

The micro-switches (change-over contact) are wired internally as follows:

The break contact of the change-over contact to which the A.C. voltage is connected opens 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).

The potentiometer installed at the factory enables continuous detection of the position of the actuator.

Optionally a three-point controller (GEMÜ 1283) can be added, which makes it possible to control the actuator via a signal from 0 / 4 - 20 mA as a set value or via keys.

(As a special version, the GEMÜ 1283 position controller can also be used as a process controller.

In this case, both the set value and the actual value can be defined externally.)

At a set value of 0 / 4 mA the actuator runs to the CLOSED position and at 20 mA to the OPEN position (see GEMÜ 1283 operating instructions).

2.3 Versions

The actuator is available in the following versions:

GEMÜ 9698: actuator without mounted valve body (e.g. as replacement actuator)

GEMÜ 693: actuator with mounted plastic diaphragm valve body (diaphragm valve)

GEMÜ 698: actuator with mounted metal diaphragm valve body (diaphragm valve)

All models are available in the standard version (OPEN - CLOSED), optionally with or without potentiometer or with a mounted GEMÜ 1283 controller.

Detailed information on the various versions can be found in the order specifications (see pages 14-17).

2.4 Operation and adjustment

The GEMÜ 9698 actuator is set in the open position when delivered.

The potentiometer component (if ordered) is disconnected from the transmission and must be attached with the included screw after adjustment (see page 7).

The GEMÜ 693 / 698 motorized valves are set in the "OPEN" position when delivered. No additional parts are required before installing the unit directly into the system. The motorized valves can be installed directly in the system.

When mounting a GEMÜ 1283 controller, parameters can be changed or adjusted according to the specific system; for information on this, please read the GEMÜ 1283 operating instructions!



WARNING:

Adjustments on the GEMÜ 9698 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.

Adjusting the actuator

1. Setting the CLOSED limit switch:

(Prerequisite: valve body and diaphragm are already mounted; (see chapter 3))

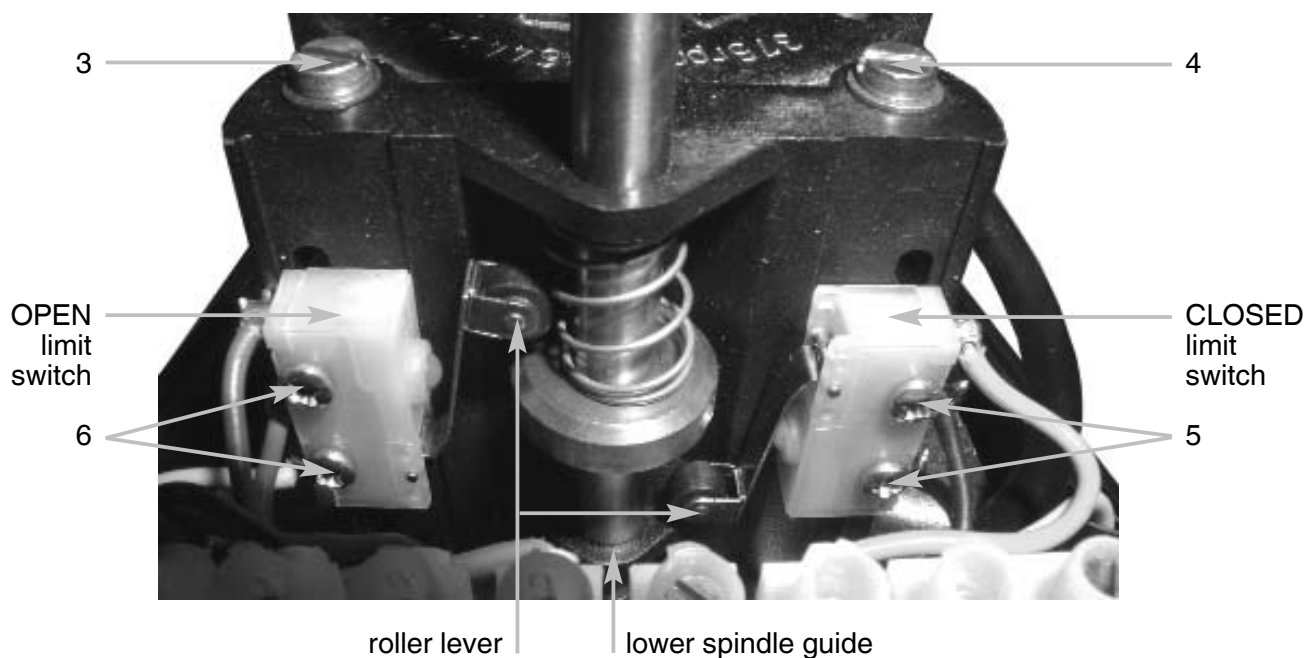
- Loosen cover screws (with 5mm flat-head screwdriver) and remove cover
- Using PH 1 Philips head screwdriver, loosen limit switch fixing screws **5**, but do not remove
- Turn adjustment screw **4** (3mm flat head screwdriver) to position roller lever of the CLOSED limit switch approx. 1 mm above the lower spindle guide
- Connect power supply to terminal 2 (L) and terminal 3 (N) → actuator runs to the CLOSED position
- Hold indicator spindle on the red marking → actuator closes completely, until motor stalls
- Release indicator spindle
- Disconnect power supply
- Loosen trigger cam screw using hexagon allen key (size 1.5)
- Press indicator spindle downward and fasten the trigger cam screw so that the cam actuates the roller lever of the CLOSED limit switch = switch point
- Continue to turn adjustment screw **4** 1 1/2 revolutions clockwise (jam safety).
(By continuing to turn the screw clockwise it is possible to reduce the pre-tension of the diaphragm somewhat, which will increase the life of the diaphragm; however, if it is turned too far, the valve will no longer seal properly)
- Check for leaks
- Fix CLOSED limit switch by means of limit switch fixing screws **5**

2. Setting the OPEN limit switch:

(Prerequisite: Valve body and diaphragm already mounted (see chapter 3), CLOSED limit switch set (see above))

- Using PH 1 Philips head screwdriver, loosen limit switch fixing screws **6**, but do not remove)
- Drive actuator to OPEN direction past CLOSED limit switch and reverse towards CLOSED until the CLOSED limit switch shuts off
- Turn the adjustment screw **3** clockwise to position the OPEN limit switch upward until it stops (3mm flat blade screwdriver)
- Move actuator towards OPEN direction until the stroke length in the table below is reached and switch off immediately → stroke length must correspond exactly.
- Turn the adjustment screw **3** anticlockwise to position the OPEN limit switch downward until the switch point is made (audible click)
- Fix OPEN limit switch with limit switch fixing screws

| | | | |
|----------------------|-------|-------|------|
| DN: | 15/25 | 32/40 | 50 |
| stroke length in mm: | 7.9 | 13.2 | 17.7 |



3. Setting the potentiometer (functional module AP):

(Prerequisite: Valve body and diaphragm are already mounted (see chapter 3), CLOSED limit switch and OPEN limit switch are set (see above))

a) Installation of potentiometer:

- To install the potentiometer support plate, loosen the 4 motor mount screws
- Push support plate in between (Caution: do not lift motor too much → otherwise toothed belt will slip)
- Replace long screws with short screws (on potentiometer)

b) Setting the potentiometer:

- When the 9698 is delivered, the potentiometer is swiveled away from the actuator
- Connect power supply to terminal 2 (L) and terminal 3 (N)
→ actuator runs to the CLOSED position until limit switch shuts off
- Turn toothed gear of potentiometer (DN 50: lowest gear) clockwise until it reaches the stop
- Turn gear back 3 teeth
- Press potentiometer support plate onto the actuator gear and fix with enclosed screw
- To adjust the tooth clearance, loosen the other screw of the potentiometer support plate (on the opposite side of the potentiometer)
- There must be some play in the toothed gear of the potentiometer:
Move plate anticlockwise: increases play in toothed gear
(Move plate clockwise: reduces play of toothed gear)
- Fix the potentiometer support plate screws



3 Mechanical installation and mounting

3.1 Installation of the GEMÜ 693 / 698

The GEMÜ 693 / 698 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 connections (see pages 15-16).

3.2 Installation / mounting of the GEMÜ 9698

The GEMÜ 9698 motorized linear actuator must be connected to a diaphragm valve (then corresponding to a GEMÜ 693 or 698).

Please note the following:

The GEMÜ 9698 actuator is in the open position when delivered.
The limit switches are not set, since this is only possible after the valve has been mounted.
The limit switch fixing screws are loose.

3.3 Mounting of a diaphragm valve

Mounting the valve body and diaphragm:

- Loosen cover screws (with 5mm flat-head screwdriver) and remove cover
- Connect power supply to terminal 2 (L) and 3 (N) → actuator runs to the CLOSED position

- Switch off power supply
- for DN 15 / 25: Place washer and compressor on actuator shaft
- for DN 32 / 40: Spring washers in the following arrangement: Place actuator----(((()))) and compressor on actuator shaft
- for DN 50: Spring washers in the following arrangement:
Place actuator----() () ((and compressor on actuator shaft
- Turn diaphragm until stop - do not turn too far!
- Turn diaphragm back at least 180° but no more than 270° back to angled position, so that the diaphragm tab lines up with small groove in the distance piece
- Connect power supply to terminal 1 (L) and (N) → actuator runs to the OPEN position
- Disconnect power supply as soon as the diaphragm lies loosely approx. 2 - 3 mm in the depression of the lower part of the distance piece (exception: DN 50)
(With DN 50, the ball bearing spindle must not touch the lower spindle guide (see photo on p. 6), since this will otherwise be destroyed, i.e. the diaphragm is outside of the depression in the max. OPEN position and is only pressed in by the screws)
- Mount body and tighten 4 fastening screws in cross pattern until a small compression bulge is visible on all 4 diaphragm sides
- Check for external leakage and tighten screws, if necessary. Retighten after use if needed.

3.4 Manual override

Perform the following steps if you need the manual override:

- Unscrew position indicator transparent cover **1**
- and pull out together with adapter **2**
This unit forms the hand crank **3**
- Remove the plug **4** on the actuator outer surface
- Press adapter **2** tightly into the opening **5**
- Crank into desired valve position (in the direction on label)



If the actuator is equipped with a potentiometer, use of the emergency hand crank may cause the potentiometer to move out of adjustment. After a manual override, therefore, the potentiometer should be set again according to chapter 2.4, before the actuator is operated again.



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
- With a mounted controller, the included connector must be connected to the on-site cable ends (power supply and signal cable) according to the respective connection diagram (see pages 10-13)

4.2 Connection diagram

4.2.1 Internal wiring diagram with connection to terminal strip

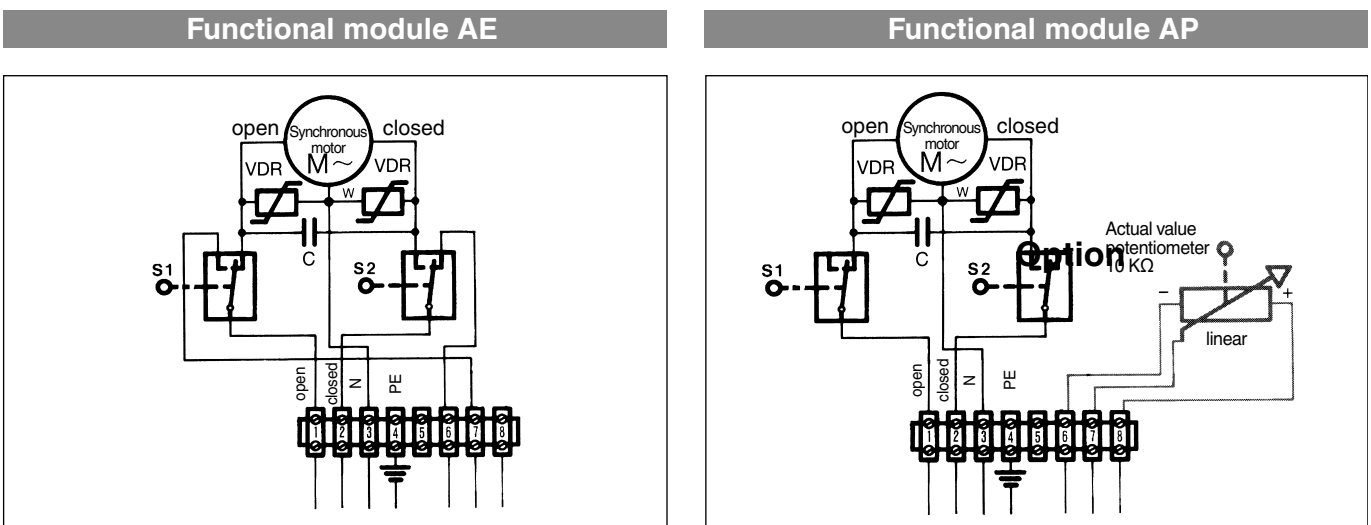


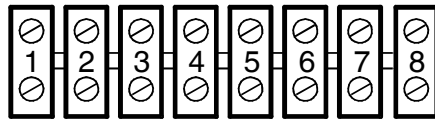
Diagram shows CLOSED position - cam has actuated S2 (limit switch CLOSED) → break contact was opened.



CAUTION:

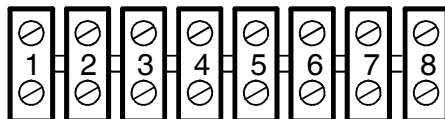
The potentiometer will be destroyed if both the limit switch and the potentiometer are connected to terminals 5-8. Therefore, connect either the limit switch **or** the potentiometer! Never connect both!

4.2.1.1 Functional module AE OPEN / CLOSE control with additional end position feedback



| 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, S2 end position CLOSED [Us = Ub] |
| 7 | Us, S2 end position OPEN [Us = Ub] |
| 8 | n. c. |

4.2.1.2 Functional module AP OPEN / CLOSE control with potentiometer output

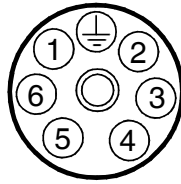


| Pin | Description |
|-----|--|
| 1 | L1, motor voltage for direction of travel OPEN |
| 2 | L1, motor voltage for direction of travel CLOSED |
| 3 | N, reference voltage |
| 4 | \perp , PE, protective conductor |
| 5 | n. c. |
| 6 | Us -, actual value potentiometer signal voltage |
| 7 | Us $\overline{-}$,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

4.2.2 Connection with Hirschmann connector

4.2.2.1 Functional module AE

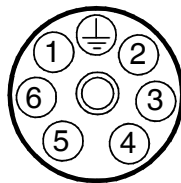
OPEN / CLOSE control with additional end position feedback and Hirschmann connector N 6 R AM2 (Design: 6027)



| 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, S2 end position CLOSED [Us = Ub] |
| 6 | Us, S2 end position OPEN [Us = Ub] |
| 7 | \perp , PE, protective conductor |

4.2.2.2 Functional module AP

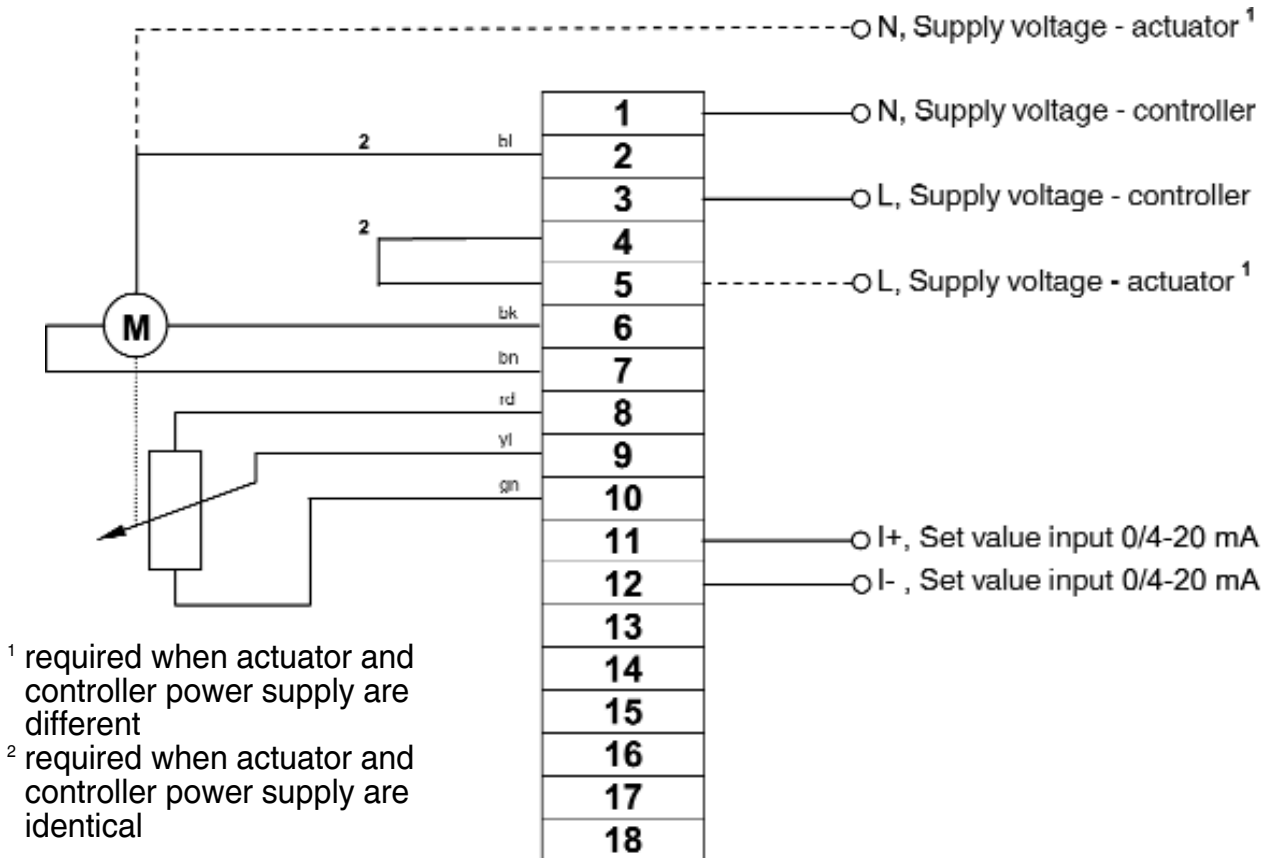
OPEN / CLOSE control with potentiometer output and Hirschmann connector N 6 R AM2 (Design: 6027)



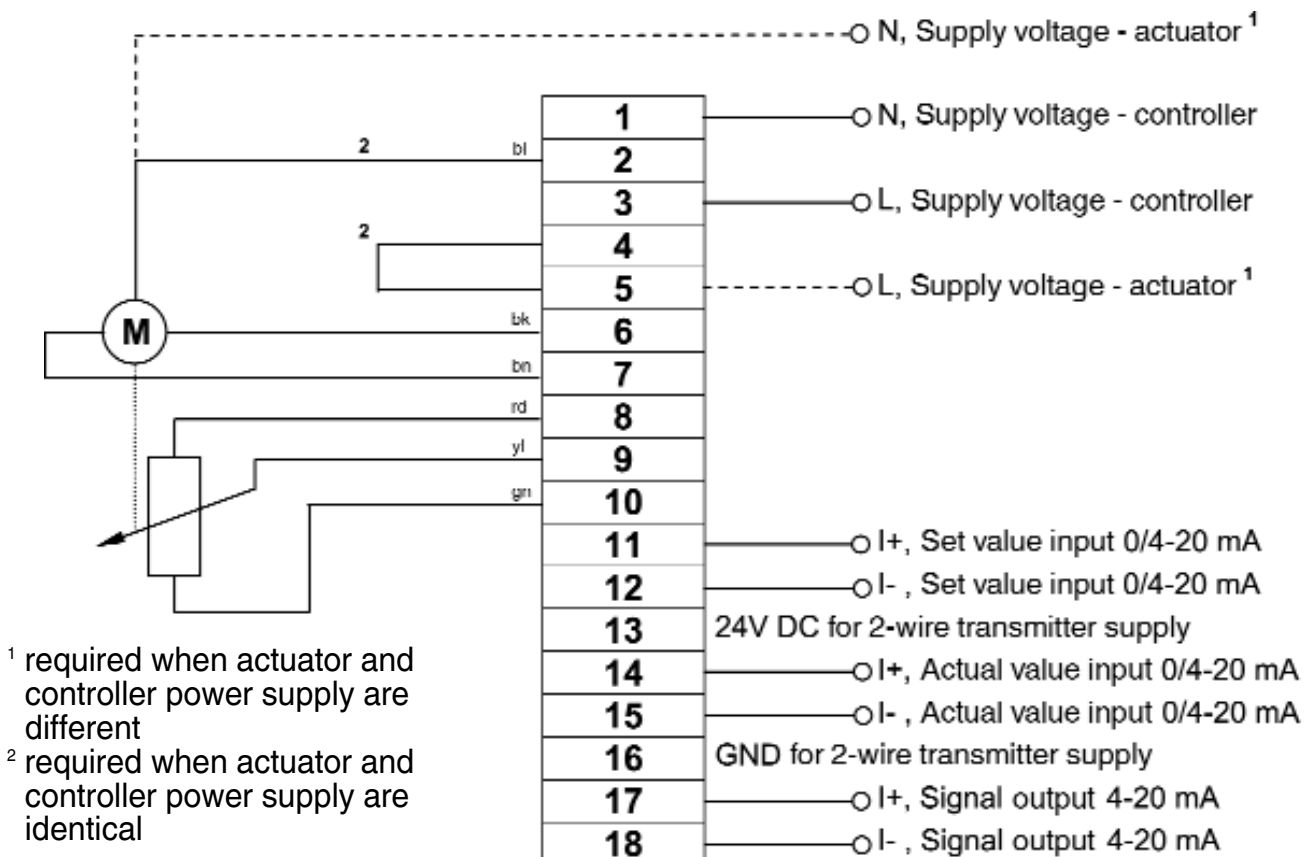
| Pin | Description |
|-----|--|
| 1 | L1, motor voltage for direction of travel OPEN |
| 2 | L1, motor voltage for direction of travel CLOSED |
| 3 | N, reference voltage |
| 4 | Us +, actual value potentiometer signal voltage |
| 5 | Us -, actual value potentiometer signal output |
| 6 | Us \perp ,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

4.2.3 With mounted controller GEMÜ 1283

Connection diagram 1283 000 Z XX 01 00 ...



Connection diagram 1283 000 Z XX 01 01 ...



5 Technical data

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.

Working medium temperature of GEMÜ 693

| | |
|------------------|--------------|
| Valve body PVC-U | 5 to 60° C |
| Valve body ABS | -20 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

Working medium temperatur of GEMÜ 698

Operating temperature max. 150° C
(depending on the medium wetted materials)

Ambient temperature of GEMÜ 693

| | |
|-----------------------|--------------|
| Valve body PVC-U / PP | 5 to 55° C |
| Valve body ABS / PVDF | -10 to 55° C |

Ambient conditions of GEMÜ 698

| | |
|---------------------|----------------|
| Ambient temperature | -10 ... +55° C |
| Storage temperature | -15 ... +55° C |

Permissible temperatures of GEMÜ 693

| | |
|---------------------|---------------|
| Storage temperature | -15 to +55° C |
|---------------------|---------------|

Power consumption

10 VA

Rating

Continuously rated

Operating time

Standard design approx. 20 sec.

Protection class

IP 65 acc. to DIN 40050

Cable gland

2 x PG 13.5

6 Order data

6.1 Order data for GEMÜ 9698

Diaphragm size

| | |
|-------------------|----|
| Diaphragm size 25 | 25 |
| Diaphragm size 40 | 40 |
| Diaphragm size 50 | 50 |

Connection type

| | |
|--------------|---|
| Code | |
| For D valves | Z |

Supply voltages and mains frequency

| | |
|----------------|----|
| Code | |
| 24 V 50/60 Hz | C4 |
| 120 V 50/60 Hz | G4 |
| 230 V 50/60 Hz | L4 |

Functional module

| | |
|--|----|
| Code | |
| OPEN / CLOSE control with additional end position feedback | AE |
| OPEN / CLOSE control with potentiometer output | AP |

Note

Drive 9698 is delivered with an adapter as standard equipment.

Order example

| | | | | | |
|---|------|----|---|----|----|
| | 9698 | 25 | Z | L4 | AE |
| Type | 9698 | | | | |
| Diaphragm size (code) | | 25 | | | |
| Connection type (code) | | | Z | | |
| Supply voltage / mains frequency (code) | | | | L4 | |
| Functional module (code) | | | | | AE |

6.2 Order data for GEMÜ 693

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 | - | - | - | 10.0 | 10.0 | 10.0 | 10.0 | 8.0 | 6.0 | 3.5 | 1.5 | - | - |
| ABS | Code 4 | 10.0 | 10.0 | 10.0 | 10.0 | 10.0 | 10.0 | 10.0 | 8.0 | 6.0 | 4.0 | 2.0 | - | - |
| PP-H | Code 70/71 | - | - | - | 10.0 | 10.0 | 10.0 | 10.0 | 8.5 | 7.0 | 5.5 | 4.0 | 2.7 | 1.5 |
| PVDF | Code 20 | 10.0 | 10.0 | 10.0 | 10.0 | 10.0 | 10.0 | 10.0 | 9.0 | 8.0 | 7.1 | 6.3 | 5.4 | 4.7 |

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.

| | | Operating pressure | | Kv value | Weight (actuator only) |
|----|----|--------------------|-----------|---------------------|---------------------------|
| MG | DN | EPDM / FPM | PTFE | [m ³ /h] | [kg] |
| 25 | 15 | 0 - 10 bar | 0 - 6 bar | 5.6 | 2.35 |
| | 20 | | | 8.2 | |
| | 25 | | | 10.5 | |
| 40 | 32 | 0 - 6 bar | 0 - 6 bar | 18.0 | 2.90 |
| | 40 | | | 25.0 | |
| 50 | 50 | 0 - 6 bar | 0 - 4 bar | 46.0 | 3.30 |

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.

Kv values determined at p1 = 6 bar, EPDM diaphragm material, Kv values: Tolerance ±10%. MG = diaphragm size

| Body configuration | Code |
|--------------------|------|
| 2/2 way | D |

| Connection | Code |
|---|------|
| Spigots DIN for socket welding | 0 |
| Flanges EN 1092 / PN10 / form B (ex DIN 2501 / PN10 / form C) length EN 558-1, series 1 ISO 5752, basic series 1 | 4 |
| Union ends with DIN insert (socket) | 7 |
| Spigots for IR butt welding | 20 |
| Spigots for IR butt welding, BCF | 28 |
| Spigots - inch | 30 |
| Union ends with inch insert (socket) | 33 |
| Flanges ANSI class 125/150 RF, length EN 558-2, series 1 ISO 5752, basic series 1 | 39 |
| Union ends with DIN insert (IR butt welding) | 78 |

For overview of available valve bodies see datasheet page 8

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

| Valve body material | Code |
|-------------------------------------|------|
| PVC-U, grey | 1 |
| ABS | 4 |
| PVDF | 20 |
| Inliner PPH - natural | 70 |
| Inliner PPH - grey acc. to RAL 7032 | 71 |

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

| Voltage / Frequency | Code |
|---------------------|------|
| 24 V 50/60 Hz | C4 |
| 120 V 50/60 Hz | G4 |
| 230 V 50/60 Hz | L4 |

| Functional module | Code |
|---|------|
| OPEN / CLOSE control with additional end position feedback | AE |
| OPEN / CLOSE control with potentiometer output | AP |

| Order example | 693 | 15 | D | 0 | 1 | 14 | L4 | AE |
|----------------------------|-----|----|---|---|---|----|----|----|
| Type | 693 | | | | | | | |
| Nominal size | | 15 | | | | | | |
| Body configuration (code) | | | D | | | | | |
| Connection (code) | | | | 0 | | | | |
| Valve body material (code) | | | | | 1 | | | |
| Diaphragm material (code) | | | | | | 14 | | |
| Voltage / Frequency (code) | | | | | | | L4 | |
| Functional module (code) | | | | | | | | AE |

6.3 Order data for GEMÜ 698

| Diaphragm size | DN | Operating pressure [bar] | | Weight [kg] |
|----------------|----|--------------------------|-------|-------------------|
| | | EPDM/FPM | PTFE | Butt weld spigots |
| 25 | 15 | 0 - 10 | 0 - 6 | 2.7 |
| | 20 | | | 2.8 |
| | 25 | | | 3.1 |
| 40 | 32 | 0 - 6 | 0 - 6 | 7.0 |
| | 40 | | | 7.5 |
| 50 | 50 | 0 - 6 | 0 - 4 | 11.5 |

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.

| Kv values [m ³ /h] | | | | | | | | |
|-------------------------------|----|------------|----------------------------|----------------------------|----------------------------|------------------|------------------|---------------------|
| MG | DN | DIN Code 0 | DIN 11850 series 1 Code 16 | DIN 11850 series 2 Code 17 | DIN 11850 series 3 Code 18 | SMS 3008 Code 37 | ASME BPE Code 59 | EN ISO 1127 Code 60 |
| 25 | 15 | 4.1 | 4.7 | 4.7 | 4.7 | - | - | 7.4 |
| | 20 | 6.3 | 7.0 | 7.0 | 7.0 | - | 4.4 | 13.2 |
| | 25 | 13.9 | 15.0 | 15.0 | 15.0 | 12.6 | 12.2 | 16.2 |
| 40 | 32 | 25.3 | 27.0 | 27.0 | 27.0 | 26.2 | - | 30.0 |
| | 40 | 29.3 | 30.9 | 30.9 | 30.9 | 30.2 | 29.5 | 32.8 |
| 50 | 50 | 46.5 | 48.4 | 48.4 | 48.4 | 51.7 | 50.6 | 55.2 |

Kv values determined acc. to IEC 534 standard, inlet pressure 6 bar, Δp 1 bar, stainless steel valve body and soft elastomer diaphragm. MG = Diaphragm size

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

| Connections | Code |
|---|------|
| Butt weld spigots | |
| 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 3447 | 35 |
| Spigots JIS-G 3459 | 36 |
| Spigots SMS 3008 | 37 |
| Spigots BS 4825, Part 1 | 55 |
| Spigots ASME BPE | 59 |
| Spigots EN ISO 1127 | 60 |
| Threaded connections | |
| Threaded sockets DIN ISO 228 | 1 |
| Threaded spigots DIN 11851 | 6 |
| One side threaded spigot, other side cone spigot and union nut, DIN 11851 | 62 |
| Aseptic unions on request | |

| Connections | Code |
|--|------|
| Flanges | |
| Flanges EN 1092 / PN16 / form B, length EN 558-1, series 1, ISO 5752, basic series 1 | 8 |
| Flanges ANSI class 125/150 RF, length MSS SP-88 | 38 |
| Flanges ANSI class 125/150 RF, length EN 558-2, series 1, ISO 5752, basic series 1 | 39 |
| Clamp connections | |
| Clamps ASME BPE for pipe ASME BPE, short design | 80 |
| Clamps following ASME BPE for pipe EN ISO 1127, length EN 558-1, series 7 | 82 |
| Clamps ASME BPE for pipe ASME BPE, length EN 558-1, series 7 | 88 |
| Clamps DIN 32676 for pipe DIN 11850, length EN 558-1, series 7 | 8A |
| Clamps SMS 3017 for pipe SMS 3008, length EN 558-1, series 7 | 8E |
| For overview of available valve bodies see data sheet page 8 | |

| Valve body material | Code |
|--|------|
| EN-GJL-250, (GG25) | 8 |
| EN-GJS-400-18-LT (GGG 40.3), PFA lined | 17 |
| EN-GJS-400-18-LT (GGG 40.3), PP lined | 18 |
| 1.4435 - BN2 (CF3M), investment casting Fe<0.5% | 32 |
| 1.4435 (ASTM A 351 CF3M, \triangle 316L), investment casting | 34* |
| 1.4408, investment casting | 37 |
| 1.4408, investment casting, PFA lined | 39 |
| 1.4435 (316L), forged body | 40 |
| 1.4435 (BN2), forged body Fe<0.5% | 42 |
| EN-GJS-400-18-LT (GGG 40.3), hard rubber lined | 83 |
| * Material equivalency 316 L | |

| Diaphragm material | Code |
|--|------------------|
| FPM | 4 |
| EPDM | max. 150°C* 13** |
| EPDM | max. 90°C* 14 |
| EPDM | max. 150°C* 16** |
| EPDM | max. 150°C* 17** |
| PTFE/EPDM convex PTFE loose | max. 150°C* 5E** |
| PTFE/FPM convex PTFE loose | max. 150°C* 5F |
| * Steam sterilization temperature / 20 min | |
| ** Material complies with FDA requirements | |

| Supply voltage | Code |
|-----------------|------|
| 24 V \pm 10% | C |
| 120 V \pm 10% | G |
| 230 V \pm 10% | L |

| Mains frequency | Code |
|-----------------|------|
| 50/60 Hz | 4 |

| Functional module | Code |
|--|------|
| OPEN / CLOSE control with additional end position feedback | AE |
| OPEN / CLOSE control with potentiometer output | AP |

| Valve body surface finish, internal contour | Code |
|---|-------|
| Ra \leq 6.3 μ m blasted internal/external | 1500* |
| Ra \leq 6.3 μ m electropolished internal/external | 1509* |
| Ra \leq 0.8 μ m mechanically polished internal, blasted external | 1502 |
| Ra \leq 0.8 μ m electropolished internal/external | 1503 |
| Ra \leq 0.6 μ m mechanically polished internal, blasted external | 1507 |
| Ra \leq 0.6 μ m electropolished internal/external | 1508 |
| Ra \leq 0.4 μ m mechanically polished internal, blasted external | 1536 |
| Ra \leq 0.4 μ m electropolished internal/external | 1537 |
| Ra \leq 0.25 μ m mechanically polished internal, blasted external | 1527 |
| Ra \leq 0.25 μ m electropolished internal/external | 1516 |

Ra acc. to DIN 4768; at defined reference points

* only investment cast design

| Order example | 698 | 25 | D | 60 | 34 | 12 | L | 4 | AE | 1500 |
|----------------------------|-----|----|---|----|----|----|---|---|----|------|
| Type | 698 | | | | | | | | | |
| Nominal size | | 25 | | | | | | | | |
| Body configuration (code) | | | D | | | | | | | |
| Connection (code) | | | | 60 | | | | | | |
| Valve body material (code) | | | | | 34 | | | | | |
| Diaphragm material (code) | | | | | | 12 | | | | |
| Supply voltage (code) | | | | | | | L | | | |
| Mains frequency (code) | | | | | | | | 4 | | |
| Functional module (code) | | | | | | | | | AE | |
| Surface finish (code) | | | | | | | | | | 1500 |

7 Information

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:

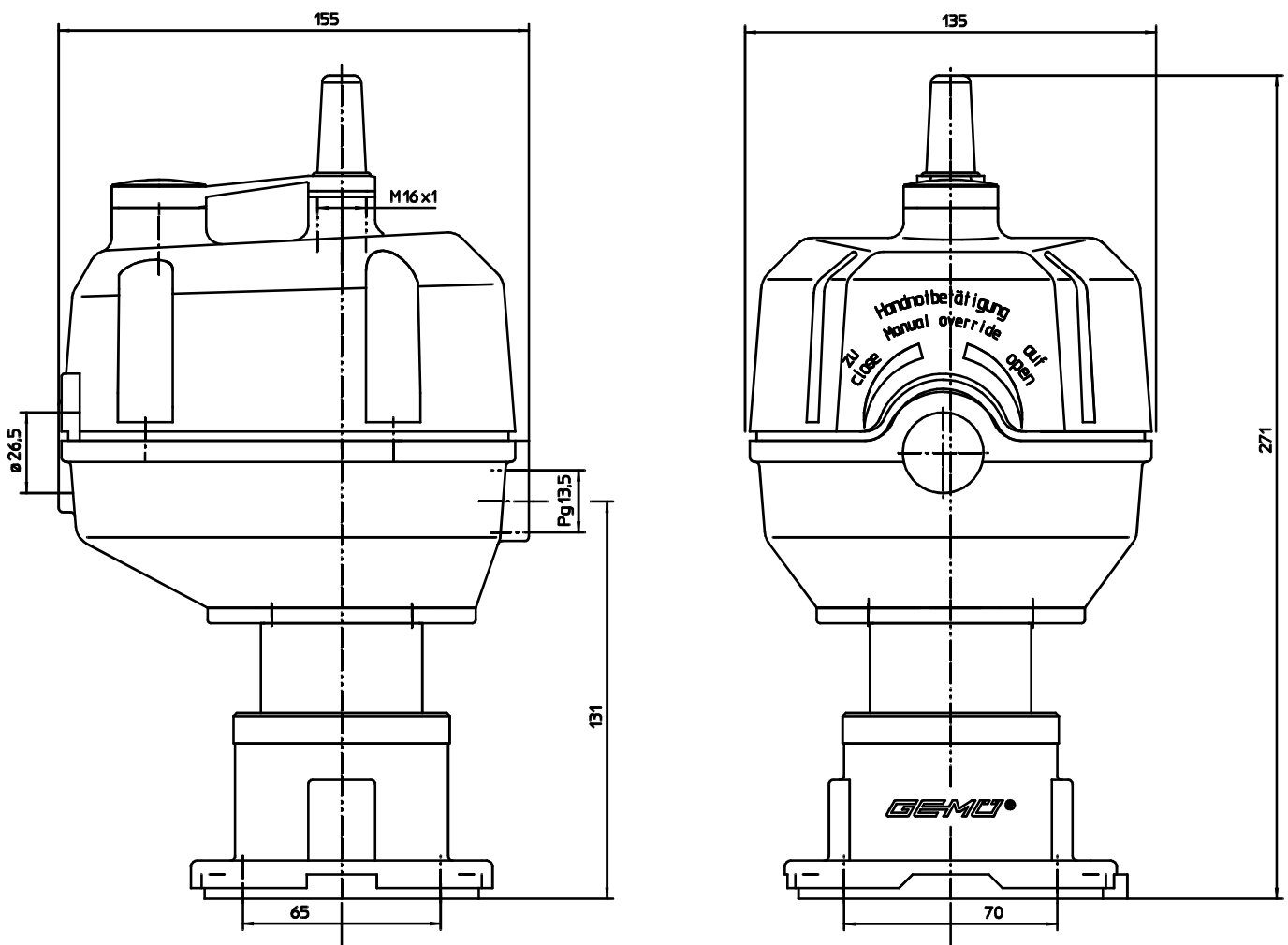
The commissioning is prohibited until it has been determined that the machine (plant) in which this product is to be incorporated complies with the provisions of the EC Machinery Directive 2006/42/EC.

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

Note: Connection and adjustment of the machine must be performed only by authorised 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.

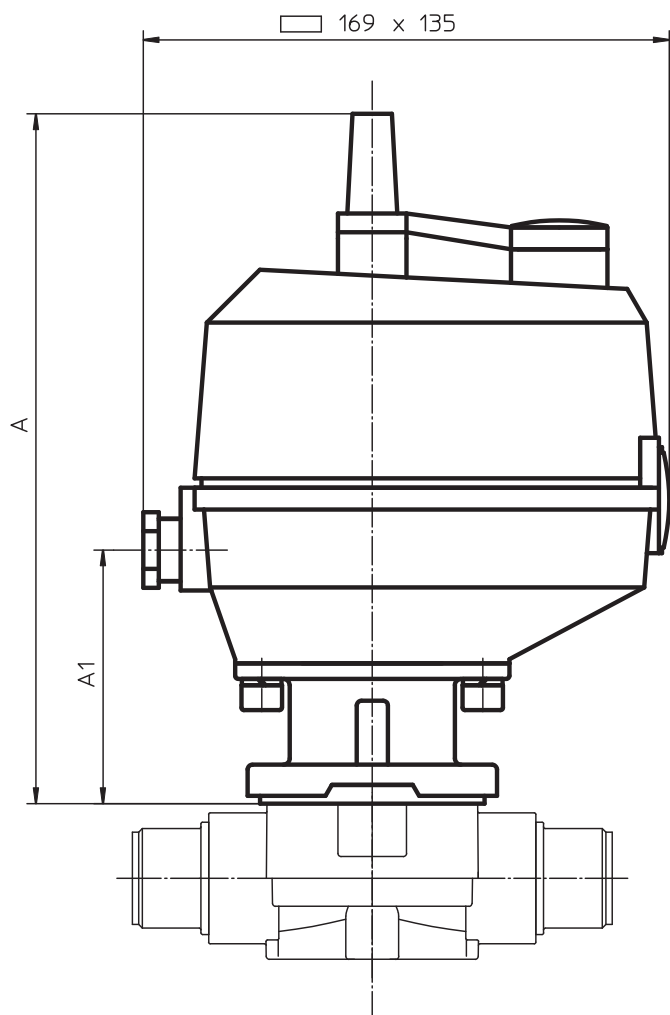
8 Dimensions

8.1 Dimensions - GEMÜ 9698

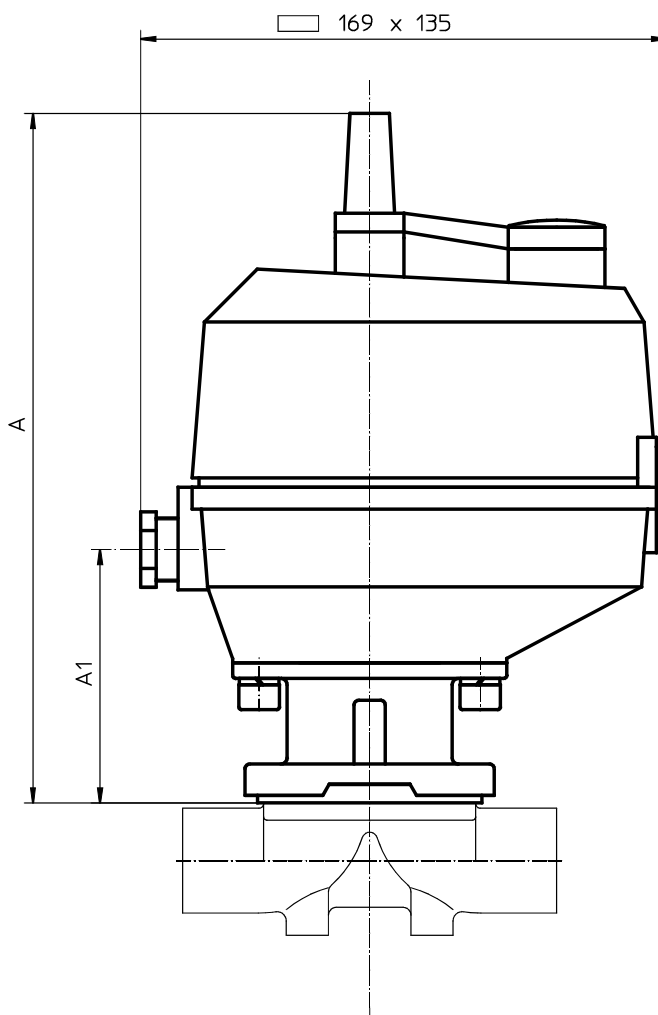


All dimensions in mm

8.2 Dimensions - GEMÜ 693



8.3 Dimensions - GEMÜ 698



**Actuator dimensions
of GEMÜ 693 [mm]**

| MG | DN | A | A1 |
|----|---------|-----|-----|
| 25 | 15 - 25 | 222 | 82 |
| 40 | 32 - 40 | 271 | 131 |
| 50 | 50 | 278 | 138 |

MG = Diaphragm size
The dimensions of the valve bodies see data sheet of GEMÜ 693.

**Actuator dimensions
of GEMÜ 698 [mm]**

| MG | DN | A | A1 |
|----|---------|-----|-----|
| 25 | 15 - 25 | 222 | 82 |
| 40 | 32 - 40 | 271 | 131 |
| 50 | 50 | 278 | 138 |

MG = Diaphragm size
The dimensions of the valve bodies see data sheet of GEMÜ 698.

Goods return declaration (copy specimen)

Legal regulations for the protection of the environment and personnel require that you include the completed and signed goods return declaration with the dispatch documents.

If this declaration is not completed or not included with the dispatch documents, your return will not be processed!

If the valve / device was operated with poisonous, corrosive, flammable, aggressive or water-endangering media, all medium wetted parts must be emptied carefully, decontaminated and rinsed. Select an appropriate transport container, label it with the name of medium which the valve / device had made contact. This serves to avoid personal injury or damage to property from remains of media.

Company details:

Company

Address

.....

Contact person

Telephone number

Fax number

E-Mail

Valve / device information

Type:

Year of manufacture:

Serial number:

Ambient temperature:

Media:

.....

.....

Concentration:

.....

.....

Operating temperature:

Operating pressure:

Viscosity:

Solids content:

Reason for return:

.....

.....

.....

.....

.....

.....

.....

Please tick the relevant warning labels:



radioactive



explosive



corrosive



poisonous



harmful
to health



bio-
hazardous



oxidising



harmless

We herewith declare that the returned parts were cleaned and that according to danger protection regulations there is no danger from remains of media for persons or for the environment.

Location, Date

Stamp / signature



Declaration of Conformity

According to annex VII of the Directive 97/23/EC

Hereby we, **GEMÜ Gebr. Müller GmbH & Co. KG**
Fritz-Müller-Straße 6-8
D-74653 Ingelfingen

declare that the equipment listed below complies with the safety requirements of the Pressure Equipment Directive 97/23/EC.

Description of the equipment - product type

Diaphragm valve
GEMÜ 693, GEMÜ 698

Notified body: TÜV Rheinland
Berlin Brandenburg
Number: 0035
Certificate no.: 01 202 926/Q-02 0036

Conformity assessment procedure:
Module H

Valves DN \leq 25 comply with section 3§3 of the Pressure Equipment Directive 97/23/EC. They are not identified with a CE label as per Pressure Equipment Directive 97/23/EC and no conformity is declared.

Management



GEMÜ® VALVES, MEASUREMENT
AND CONTROL SYSTEMS

