GEMÜ P600S

M-block diaphragm valve with flexible connection system made from stainless steel

EN **Operating instructions**

further information
webcode: GW-P600S

Contents

1 General information

1.1 Information

- The descriptions and instructions apply to the standard versions. For special versions not described in this document, the basic information contained herein applies in conjunction with the type documentation and the technical drawing.
- Correct installation, operation, servicing and repair work ensure faultless operation of the GEMÜ product.

1.2 Definition of terms

Working medium

The medium that flows through the GEMÜ product.

Diaphragm size

Uniform seat size of GEMÜ diaphragm valves for different nominal sizes.

1.3 Warning notes

Wherever possible, warning notes are organised according to the following scheme:

SIGNAL WORD	
Possible symbol for the specific danger	Type and source of the danger ▶ Possible consequences of non-observance. ● Measures for avoiding danger.

Warning notes are always marked with a signal word and sometimes also with a symbol for the specific danger.

The following signal words and danger levels are used:

⚠ DANGER

Imminent danger!

▶ Non-observance can cause death or severe injury.

⚠ WARNING

Potentially dangerous situation!

▶ Non-observance can cause death or severe injury.

⚠ CAUTION

Potentially dangerous situation!

▶ Non-observance can cause moderate to light injury.

NOTICE

Potentially dangerous situation!

▶ Non-observance can cause damage to property.

The following symbols for the specific dangers can be used within a warning note:

Symbol	Meaning
	Danger of explosion
	Corrosive chemicals!
	Hot plant components!

2 Safety information

The safety information in this document refers only to an individual product. Potentially dangerous conditions can arise in combination with other plant components, which need to be considered on the basis of a risk analysis. The operator is responsible for the production of the risk analysis and for compliance with the resulting precautionary measures and regional safety regulations.

The document contains fundamental safety information that must be observed during commissioning, operation and maintenance. Non-compliance with these instructions may cause:

- Personal hazard due to electrical, mechanical and chemical effects.
- Hazard to nearby equipment.
- Failure of important functions.
- Hazard to the environment due to the leakage of dangerous substances.

The safety information does not take into account:

- Unexpected incidents and events, which may occur during installation, operation and maintenance.
- Local safety regulations which must be adhered to by the operator and by any additional installation personnel.

Prior to commissioning:

1. Transport and store the product correctly.
2. Do not paint the bolts and plastic parts of the product.
3. Carry out installation and commissioning using trained personnel.
4. Provide adequate training for installation and operating personnel.
5. Ensure that the contents of the document have been fully understood by the responsible personnel.
6. Define the areas of responsibility.
7. Observe the safety data sheets.
8. Observe the safety regulations for the media used.

During operation:

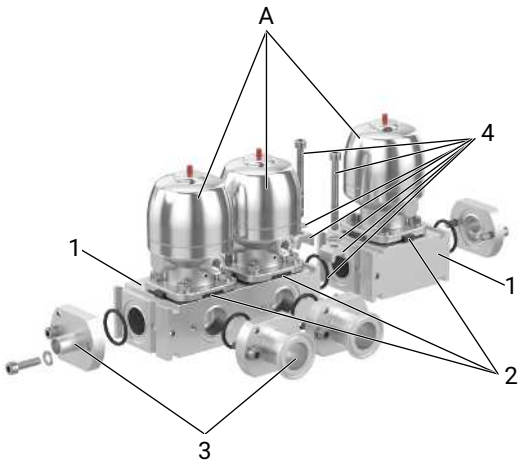
9. Keep this document available at the place of use.
10. Observe the safety information.
11. Operate the product in accordance with this document.
12. Operate the product in accordance with the specifications.
13. Maintain the product correctly.
14. Do not carry out any maintenance work and repairs not described in this document without consulting the manufacturer first.

In cases of uncertainty:

15. Consult the nearest GEMÜ sales office.

3 Product description

3.1 Construction



Item	Name
A	Actuators
1	Bodies
2	Diaphragms
3	Connection adapters
4	Mounting set

3.2 Description

The GEMÜ P600S valve block made from stainless steel comprises one or more diaphragm valve seats. The individual modules can be combined together in any order. They are equipped with the pneumatically operated GEMÜ 9650 actuator.

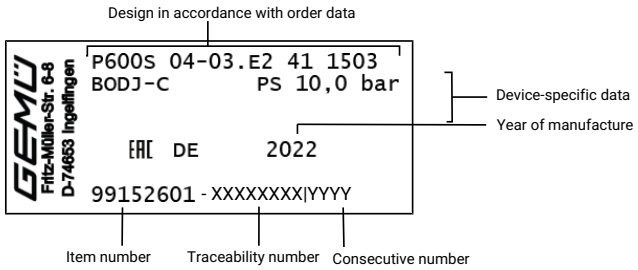
3.3 Function

Multi-port valves or multi-port valve blocks unite a variety of functions in the smallest of spaces thanks to their individual design, such as:

- Mixing
- Dividing
- Controlling
- Draining
- Feeding

They can also fulfil safety functions, double shut-off (double block and bleed), cross connections and control functions. Specific tasks are assigned to these individual functions on a case-by-case basis.

3.4 Product label



The manufacturing month is coded under the traceability number and can be requested from GEMÜ. The product was manufactured in Germany.

4 Correct use

⚠ DANGER

Danger of explosion

► Risk of severe injury or death.

● Only versions that have been approved according to their technical data may be used in potentially explosive environments.

⚠ WARNING

Improper use of the product

► Risk of severe injury or death.

► Manufacturer liability and guarantee will be void.

● Only use the product in accordance with the operating conditions specified in the contract documentation and in this document.

● Use the product in accordance with the technical data.

5 Order data

Order codes

1 Type	Code
Valve assembly	P600

2 Body configuration	Code
Standard blocks	S

3 Number of spigots	Code
2 spigots	02
3 spigots	03
4 spigots	04
Other connections on request	

4 Number of valve seats	Code
1 valve seat	01
2 valve seats	02
3 valve seats	03
Other valve seats on request	

5 Valve body material	Code
1.4435 (316L), block material	41
1.4435 (BN2), block material, Δ Fe < 0.5%	43
1.4539, block material	44

6 Diaphragm size	Code
Maximum diaphragm size in valve block	25

7 Type seat 1	Code
Diaphragm valve, pneumatically operated, stainless steel piston actuator electropolished, optical position indicator	650

8 Actuator control function seat 1	Code
Normally closed (NC)	1
Normally open (NO)	2
Double acting (DA)	3

9 Diaphragm material	Code
EPDM ethylene-propylene without fabric	13
EPDM	17
EPDM	19
PTFE/EPDM one-piece	54
PTFE/EPDM two-piece	5M

10 DN spigot 1	Code
DN 20	20
DN 25	25

11 Connection type, spigot 1	Code
Spigot	
Spigot DIN EN 10357 series B (2014 edition; formerly DIN 11850 series 1)	16
Spigot EN 10357 series A/DIN 11866 series A formerly DIN 11850 series 2	17
Spigot DIN 11850 series 3	18
Spigot JIS-G 3447	35
Spigot JIS-G 3459 schedule 10s	36
Spigot SMS 3008	37
Spigot BS 4825, part 1	55
Spigot ASME BPE/DIN EN 10357 series C (from 2022 edition)/DIN 11866 series C	59
Spigot ISO 1127/DIN EN 10357 series C (2014 edition)/ DIN 11866 series B	60
Spigot ANSI/ASME B36.19M schedule 10s	63
Spigot ANSI/ASME B36.19M schedule 40s	65
Clamp	
Clamp DIN 32676 series B, for pipe EN ISO 1127	82
Clamp DIN 32676 series A	86
Clamp ISO 2852 for pipe ISO 2037, clamp SMS 3017 for pipe SMS 3008	87
Clamp ASME BPE, for pipe ASME BPE	88
Aseptic clamp DIN 11864-NKS, for pipe DIN 11866 series A and EN 10357 series A	E1
Aseptic clamp DIN 11864-BKS, for pipe DIN 11866 series A and EN 10357 series A	E2
Aseptic clamp DIN 11864-NKS, for pipe DIN 11866 series B and EN ISO 1127	E4
Aseptic clamp DIN 11864-BKS, for pipe DIN 11866 series B and EN ISO 1127	E5
Aseptic clamp DIN 11864-NKS, for pipe DIN 11866 series C / ASME BPE	E7
Aseptic clamp DIN 11864-BKS, for pipe DIN 11866 series C / ASME BPE	E8
Clamp DIN 32676 series C	8T
Flange	
Aseptic flange DIN 11864-NF, for pipe DIN 11866 series A and EN 10357 series A	A1
Aseptic flange DIN 11864-BF, for pipe DIN 11866 series A and EN 10357 series A	A2
Aseptic flange DIN 11864-NF, for pipe DIN 11866 series B and EN ISO 1127	A4
Aseptic flange DIN 11864-BF, for pipe DIN 11866 series B and EN ISO 1127	A5
Aseptic flange DIN 11864-NF, for pipe DIN 11866 series C and ASME BPE	A7
Aseptic flange DIN 11864-BF, for pipe DIN 11866 series C and ASME BPE	A8

6 Technical data

The detailed technical data can be found in the product types' datasheets in conjunction with the technical drawing of the valve block.

6.1 Medium

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.

6.2 Temperature

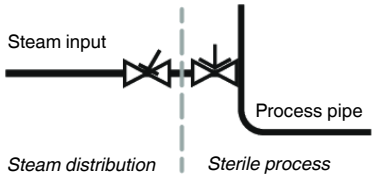
Media temperature: -10 — 100 °C

Ambient temperature: 0 — 60 °C

Sterilization temperature:

EPDM (code 13)	max. 150 °C, max. 60 min per cycle
EPDM (code 17)	max. 150 °C, max. 180 min per cycle
EPDM (code 19)	max. 150 °C, max. 180 min per cycle
PTFE/EPDM (code 54)	max. 150 °C, constant temperature per cycle
PTFE/EPDM (code 5M)	max. 150 °C, constant temperature per cycle

The sterilization temperature is only valid for steam (saturated steam) or superheated water.
If the sterilization temperatures listed above are applied to the EPDM diaphragms for longer periods of time, the service life of the diaphragms will be reduced. In these cases, maintenance cycles must be adapted accordingly.
PTFE diaphragms can also be used as steam barriers; however, this will reduce their service life. This also applies to PTFE diaphragms exposed to high temperature fluctuations. The maintenance cycles must be adapted accordingly. GEMÜ 555 and 505 globe valves are particularly suitable for use in the area of steam generation and distribution. The following valve arrangement for interfaces between steam pipes and process pipes has proven itself over time: A globe valve for shutting off steam pipes and a diaphragm valve as an interface to the process pipes.



6.3 Pressure

Operating pressure: 0 — 10 bar

6.4 Product conformity

Pressure Equipment Directive: 2014/68/EU

Machinery Directive: 2006/42/EC

BSE/TSE: The product conforms to EMA/410/01 revision 3 and is free of animal substances

EAC: TR CU 010/2011

Food:
3A
FDA
USP Class VI
Regulation (EC) No. 1935/2004
Regulation (EC) No. 2023/2006
Regulation (EC) No. 10/2011

6.5 Materials

Materials:

Valve body
1.4435 (316L), block material
1.4435 (BN2), block material
1.4435 (904L), block material

Diaphragm
EPDM
PTFE/EPDM

O-ring
EPDM
FEP/FKM

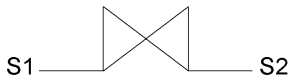
6.6 Mechanical data

Weight:	Actuator size 2T1, 2R1	1.9 kg

The mechanical data can be found in the product types' datasheets in conjunction with the technical drawing of the valve block.

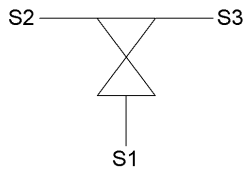
Kv values:

K600S D valve



Kv value				
Pipe standard Connection code		ISO 1127 / EN 10357 series C / DIN 11866 series B	ASME BPE / DIN 11866 series C	EN 10357 series A (formerly DIN 11850 series 2) / DIN 11866 series A
MG	DN	60	59	17
25	20	13.0	7.5	11.0
25	25	13.7	12.3	13.4

K600S T valve

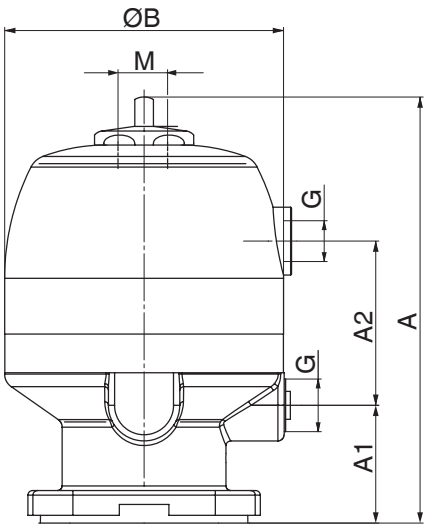


Kv value					
Pipe standard			ISO 1127 / EN 10357 series C / DIN 11866 series B	ASME BPE / DIN 11866 series C	EN 10357 series A (formerly DIN 11850 series 2) / DIN 11866 series A
Connection code			60	59	17
MG	DN	Flow path			
25	20	S1-S2 S2-S1	11.0 10.7	6.8 6.7	9.6 9.7
25	25	S1-S2 S2-S1	11.9 11.1	10.6 10.5	11.7 10.9

MG = diaphragm size, Kv values in m³/h
DN = nominal size

7 Dimensions

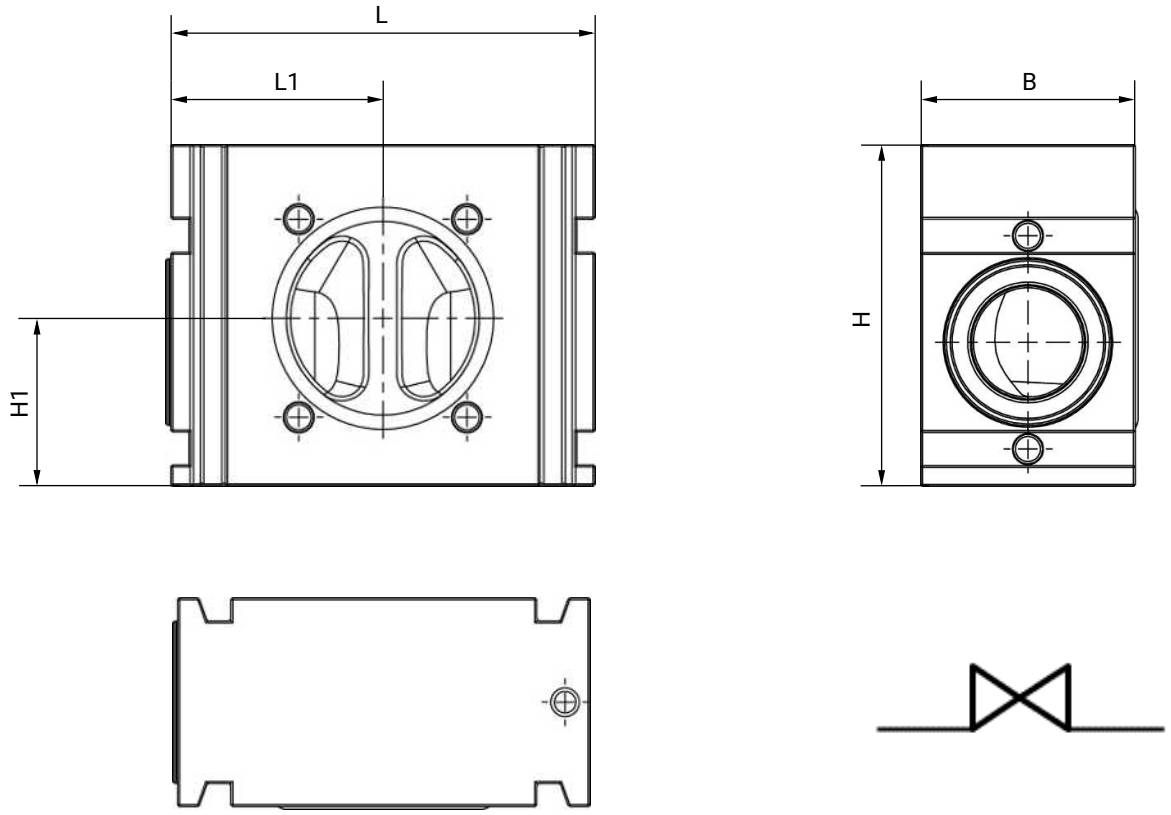
7.1 Actuator dimensions



MG	DN	AG	A	A1	A2	øB	G	M
25	**15 - 25**	2T1, 2R1	137.5	38.0	53.0	90.0	G 1/4	M16x1

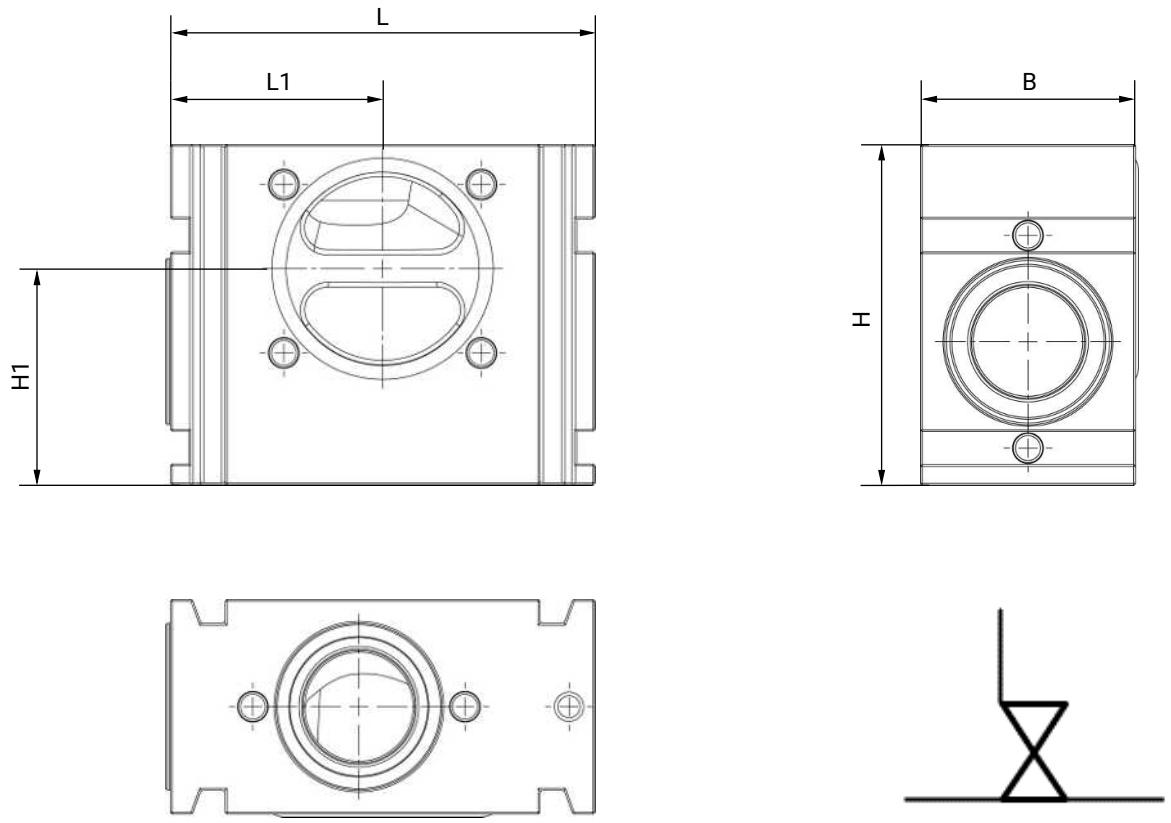
AG = actuator size
Dimensions in mm

7.2 Body dimensions



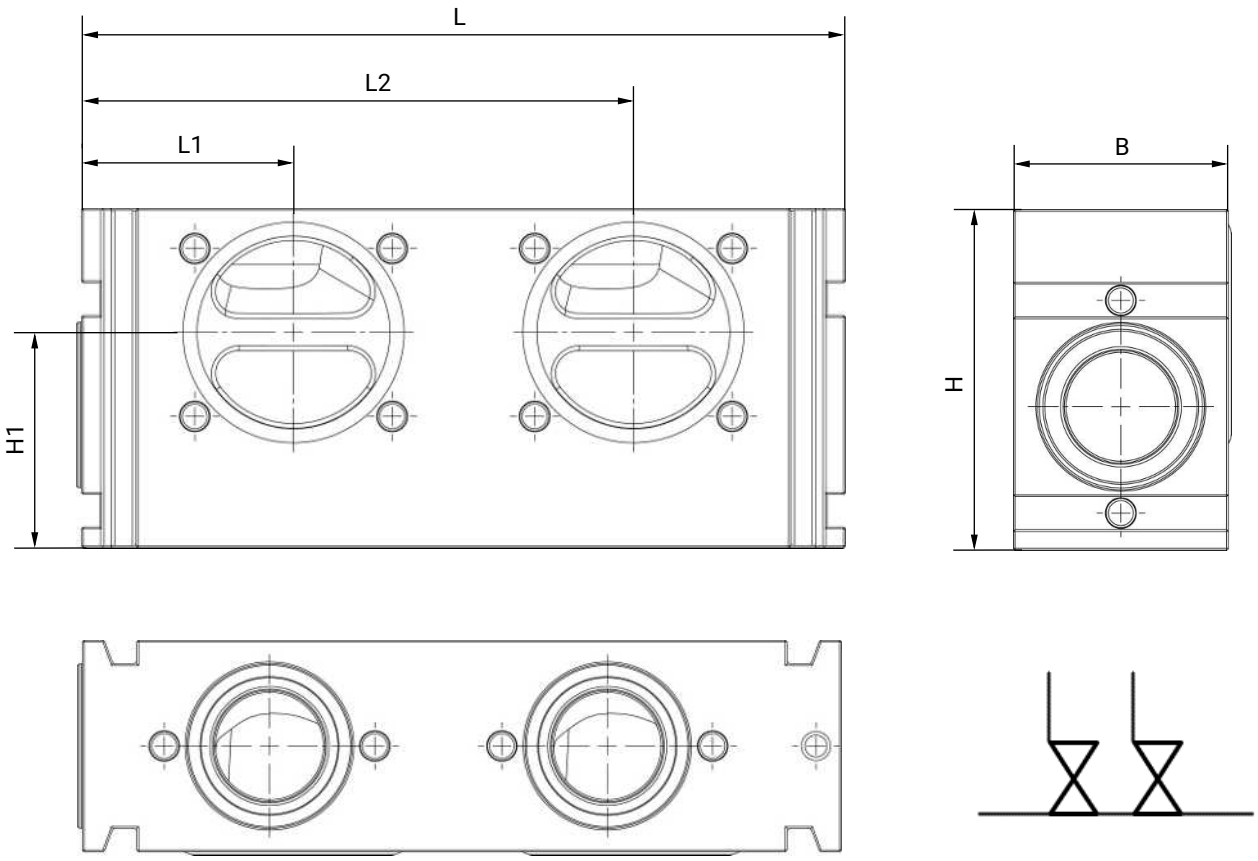
MG	DN	B	H	H1	L	L1
25	**20, 25**	58.4	93.0	45.6	116.0	58.0

Dimensions in mm



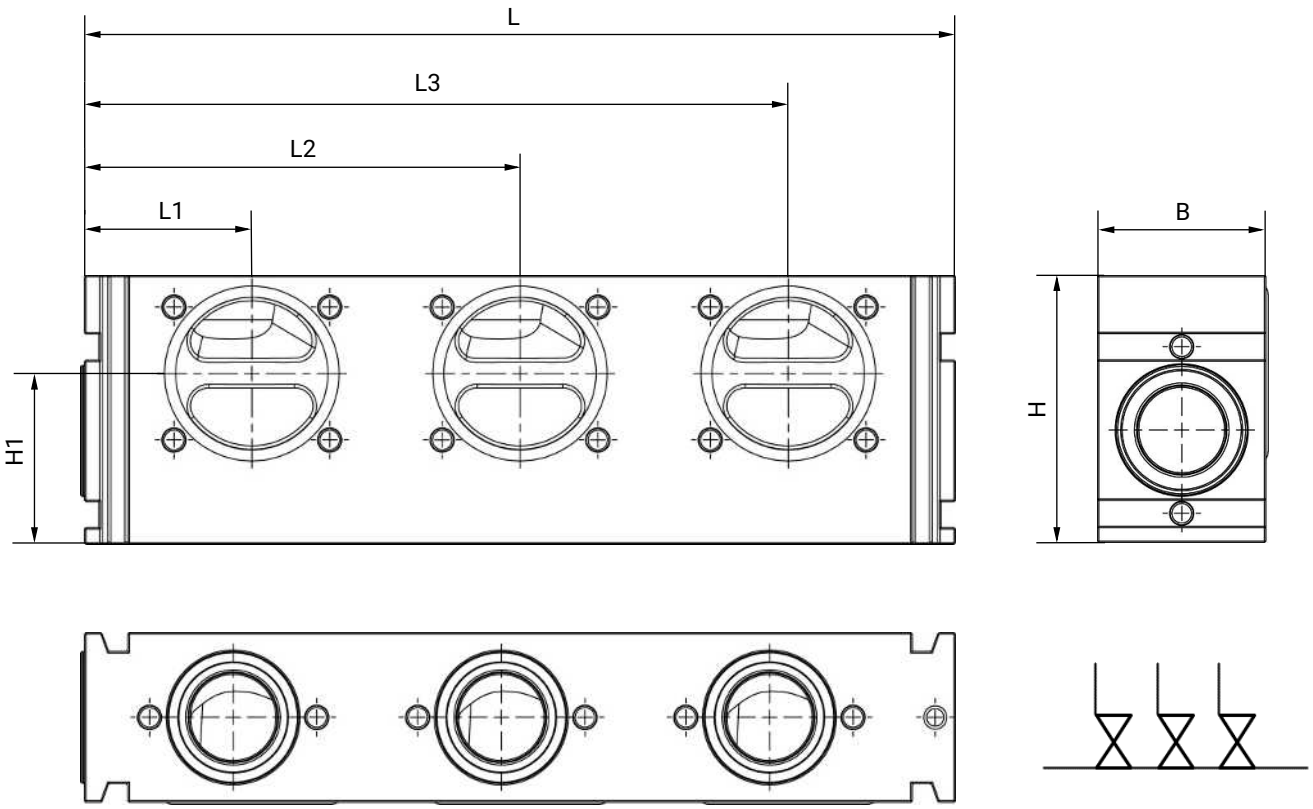
MG	DN	B	H	H1	L	L1
25	**20, 25**	58.4	93.0	59.0	116.0	58.0

Dimensions in mm



MG	DN	B	H	H1	L	L1	L2
25	**20, 25**	58.4	93.0	59.0	209.0	58.0	151.0

Dimensions in mm

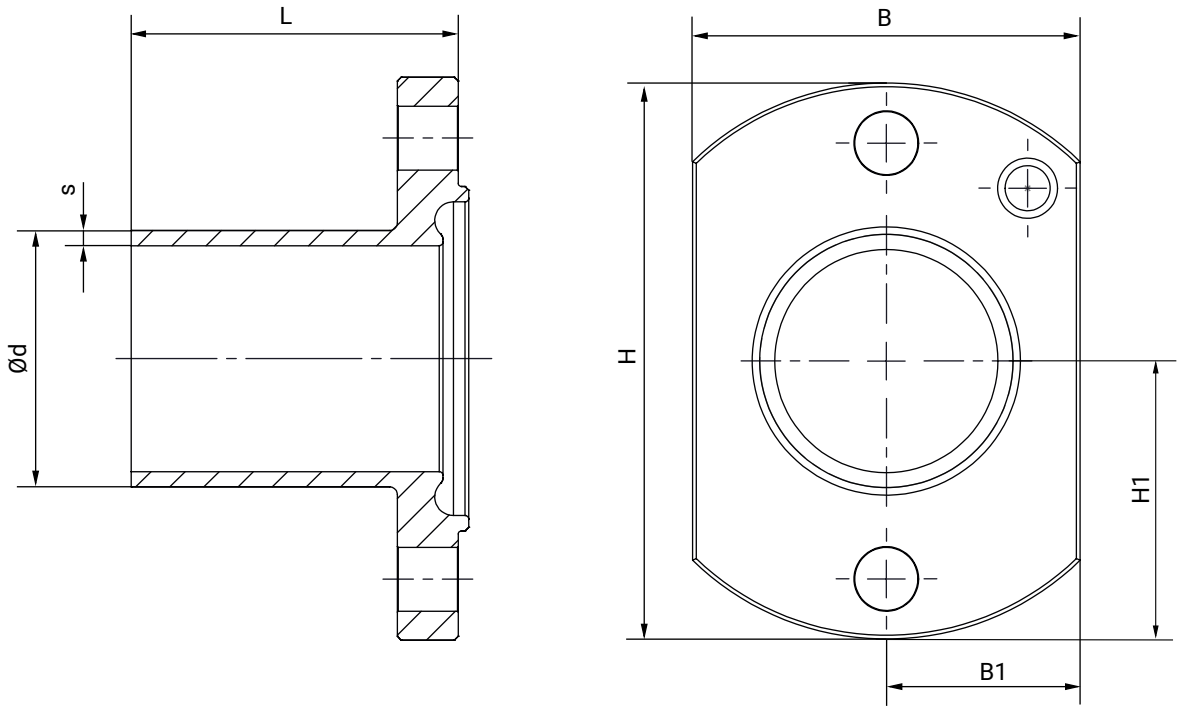


MG	DN	B	H	H1	L	L1	L2	L3
25	**20, 25**	58.4	93.0	59.0	302.0	58.0	151.0	244.0

Dimensions in mm

7.3 Connection dimensions

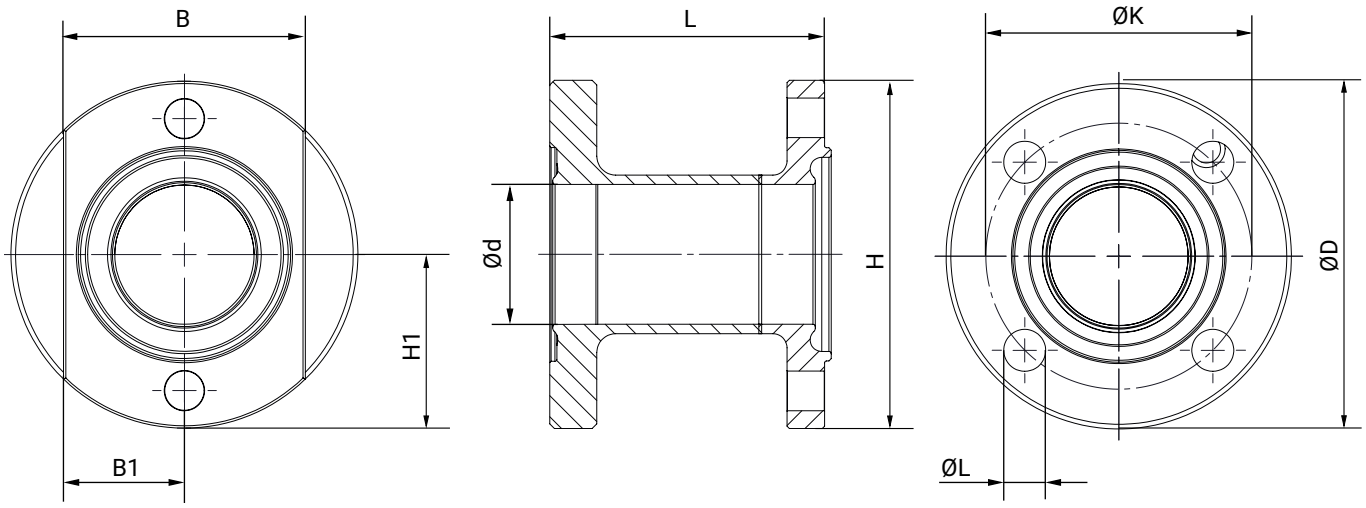
7.3.1 Butt weld spigot adapter (code 16, 17, 18, 60, 35, 36, 37, 55, 59, 63, 65)



MG	DN	Code	Ød	s	B	B1	H	H1	L
25	**20**	**16**	22.0	1.0	58.0	29.0	76.0	33.2	40.0
25	**20**	**17**	23.0	1.5	58.0	29.0	76.0	33.2	40.0
25	**20**	**18**	24.0	2.0	58.0	29.0	76.0	33.2	40.0
25	**20**	**60**	26.9	1.6	58.0	29.0	76.0	35.0	40.0
25	**20**	**35**	-	-	-	-	-	-	-
25	**20**	**36**	27.2	2.1	58.0	29.0	76.0	34.7	40.0
25	**20**	**37**	-	-	-	-	-	-	-
25	**20**	**55**	19.05	1.2	58.0	29.0	76.0	31.5	40.0
25	**20**	**59**	19.05	1.65	58.0	29.0	76.0	31.0	40.0
25	**20**	**63**	26.7	2.11	58.0	29.0	76.0	34.4	40.0
25	**20**	**65**	26.7	2.87	58.0	29.0	76.0	33.6	40.0
25	**25**	**16**	28.0	1.0	58.0	29.0	76.0	36.2	40.0
25	**25**	**17**	29.0	1.5	58.0	29.0	76.0	36.2	40.0
25	**25**	**18**	30.0	2.0	58.0	29.0	76.0	36.2	40.0
25	**25**	**60**	33.7	2.0	58.0	29.0	76.0	38.0	40.0
25	**25**	**35**	25.4	1.2	58.0	29.0	76.0	34.7	40.0
25	**25**	**36**	34.0	2.8	58.0	29.0	76.0	37.4	40.0
25	**25**	**37**	25.0	1.2	58.0	29.0	76.0	34.5	40.0
25	**25**	**55**	-	-	-	-	-	-	-
25	**25**	**59**	25.4	1.65	58.0	29.0	76.0	34.2	40.0
25	**25**	**63**	33.4	2.77	58.0	29.0	76.0	37.1	40.0
25	**25**	**65**	33.4	3.38	58.0	29.0	76.0	36.5	40.0

Dimensions in mm

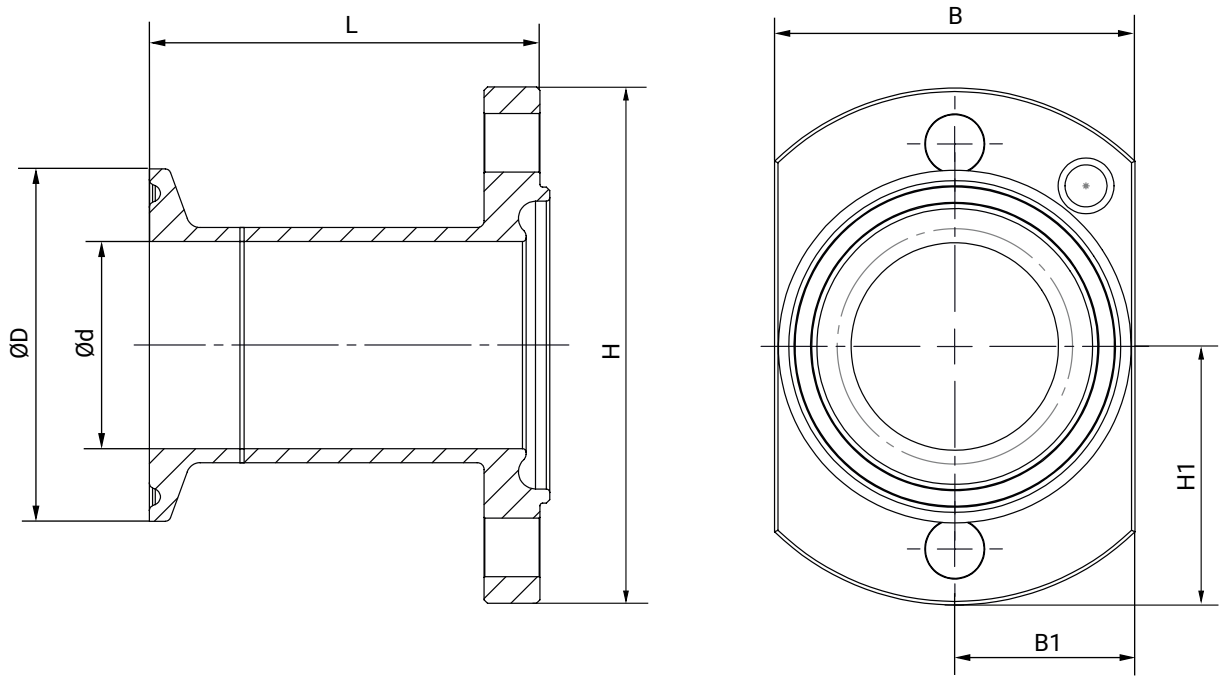
7.3.2 Flange adapter (code A1, A2, A4, A5, A6, A7)



MG	DN	Code	Ød	ØD	B	B1	H	H1	L	ØK	ØL
25	**20**	**A1, A2**	20.0	64.0	58.0	29.0	76.0	33.2	65.0	47.0	9.0
25	**20**	**A4, A5**	23.7	69.0	58.0	29.0	76.0	35.0	65.0	52.0	9.0
25	**20**	**A6, A7**	15.75	59.0	58.0	29.0	76.0	31.0	65.0	42.0	9.0
25	**25**	**A1, A2**	26.0	70.0	58.0	29.0	76.0	36.2	65.0	53.0	9.0
25	**25**	**A4, A5**	29.7	74.0	58.0	29.0	76.0	38.0	65.0	57.0	9.0
25	**25**	**A6, A7**	22.1	66.0	58.0	29.0	76.0	34.2	65.0	49.0	9.0

Dimensions in mm

7.3.3 Clamp adapter (code 82, 86, 87, 88, E1, E2, E4, E5, E7, E8, 8T)



MG	DN	Code	Ød	ØD	B	B1	H	H1	L
25	**20**	**82**	23.7	50.5	58.0	29.0	76.0	35.0	53.0
25	**20**	**86**	20.0	34.0	58.0	29.0	76.0	33.2	53.0
25	**20**	**87**	-	-	-	-	-	-	-
25	**20**	**88**	15.75	25.0	58.0	29.0	76.0	31.0	53.0
25	**20**	**E1, E2**	20.0	50.5	58.0	29.0	76.0	33.2	53.0
25	**20**	**E4, E5**	23.7	50.5	58.0	29.0	76.0	35.0	53.0
25	**20**	**E7, E8**	15.75	34.0	58.0	29.0	76.0	31.0	53.0
25	**20**	**8T**	-	-	-	-	-	-	-
25	**25**	**82**	29.7	50.5	58.0	29.0	76.0	38.0	53.0
25	**25**	**86**	26.0	50.5	58.0	29.0	76.0	36.2	53.0
25	**25**	**87**	22.6	50.5	58.0	29.0	76.0	34.5	53.0
25	**25**	**88**	22.1	50.5	58.0	29.0	76.0	34.2	53.0
25	**25**	**E1, E2**	26.0	50.5	58.0	29.0	76.0	36.2	53.0
25	**25**	**E4, E5**	29.7	50.5	58.0	29.0	76.0	38.0	53.0
25	**25**	**E7, E8**	22.1	50.5	58.0	29.0	76.0	34.2	53.0
25	**25**	**8T**	22.1	50.5	58.0	29.0	76.0	34.2	53.0

Dimensions in mm

8 Manufacturer's information

8.1 Delivery

- Check that all parts are present and check for any damage immediately upon receipt. The scope of delivery is apparent from the dispatch documents and the design from the order number.

8.2 Transport

1. Only transport the product by suitable means. Do not drop. Handle carefully.
2. After the installation dispose of transport packaging material according to relevant local or national disposal regulations / environmental protection laws.

8.3 Storage

1. Store the product free from dust and moisture in its original packaging.
2. Avoid UV rays and direct sunlight.
3. Do not exceed the maximum storage temperature.
4. Do not store solvents, chemicals, acids, fuels or similar fluids in the same room as GEMÜ products and their spare parts.

9 Installation in piping

9.1 Preparing for installation

⚠ WARNING

The equipment is subject to pressure!

► Risk of severe injury or death
- Depressurize the plant.
- Completely drain the plant.

⚠ WARNING

Corrosive chemicals!

► Risk of caustic burns
- Wear appropriate protective gear.
- Completely drain the plant.

⚠ CAUTION

Hot plant components!

► Risk of burns
- Only work on plant that has cooled down.

⚠ CAUTION

Exceeding the maximum permissible pressure.

► Damage to the product
- Provide precautionary measures against exceeding the maximum permitted pressures caused by pressure surges (water hammer).

⚠ CAUTION

Use as step.

► Damage to the product
► Risk of slipping-off
- Choose the installation location so that the product cannot be used as a foothold.
- Do not use the product as a step or a foothold.

NOTICE

Suitability of the product!

► The product must be appropriate for the piping system operating conditions (medium, medium concentration, temperature and pressure) and the prevailing ambient conditions.

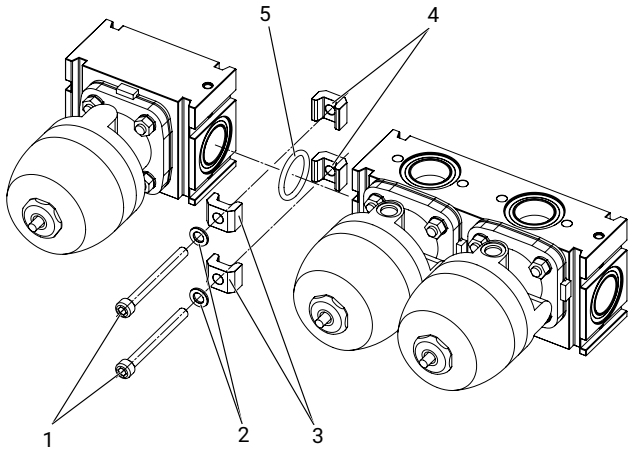
NOTICE

Tools

► The tools required for installation and assembly are not included in the scope of delivery.
- Use appropriate, functional and safe tools.

1. Ensure the suitability of the GEMÜ product for each respective use.
2. Check the technical data of the GEMÜ product and the materials.
3. Keep appropriate tools ready.
4. Ensure appropriate protective gear as specified in the plant operator's guidelines.
5. Observe appropriate regulations for connections.
6. Have installation work carried out by trained personnel.
7. Shut off plant or plant component.
8. Secure plant or plant component against recommissioning.
9. Depressurize the plant or plant component.
10. Completely drain the plant (or plant component) and let it cool down until the temperature is below the media vaporization temperature and scalding can be ruled out.
11. Correctly decontaminate, rinse and ventilate the plant or plant component.
12. Lay piping so that the GEMÜ product is protected against transverse and bending forces, and also vibrations and tension.
13. Only install the product between matching aligned pipes (see chapters below).
14. Observe the flow direction if necessary.
15. The installation position varies depending on version. Observe the technical drawing.
16. The plant operator is responsible for ensuring that the weight of the product and the actuators is suitably supported depending on the installation position.

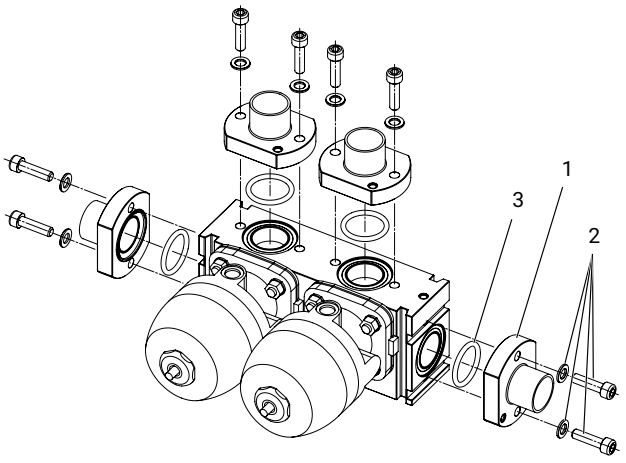
9.2 Installing/removing the modules



The modules are connected via a mounting set. Each mounting set comprises two cylindrical screws (**1**), two washers (**2**), two brackets with a hole (**3**) and two brackets with thread (**4**), as well as an O-ring (**5**).

The modules can only be combined and bolted accordingly in a combination of projection and recess, based on DIN 11864. The gasket (O-ring) is compressed by screwing on the brackets up to the mechanical stop (tightening torque: 16 Nm).

9.3 Installing/removing the connection adapters



The connection adapters (**1**) are screwed onto the valve block via a flange connection (**2**) and a separate gasket (**3**). The component has a special connection geometry, comprising a sealing surface and mounting centre, based on DIN 11864. The gasket is compressed by screwing on the connection up to the mechanical stop (tightening torque: 10 Nm).

Thanks to interchangeable connection adapters, the product is maintenance friendly and can be customized.

When installing the connection adapters, the combination of projection and recess must be taken into account.

9.4 Installation with butt weld spigots

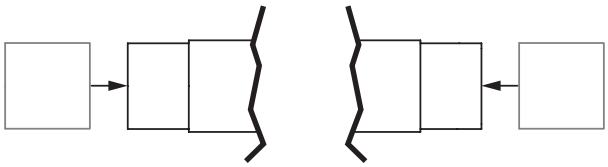


Fig. 1: Butt weld spigots

1. Adhere to good welding practices, Installing/removing the connection adapters (see Chapter 9.3, page 20).
2. Remove connection adapters and O-rings from the valve body before welding in, Valve disassembly (removing the actuator from the body) (see Chapter 14.2.1, page 25).
3. Allow butt weld spigots to cool down.
4. Reassemble the valve body and the actuator with diaphragm, Installing/removing the connection adapters (see Chapter 9.3, page 20).

9.5 Installation with clamp connections

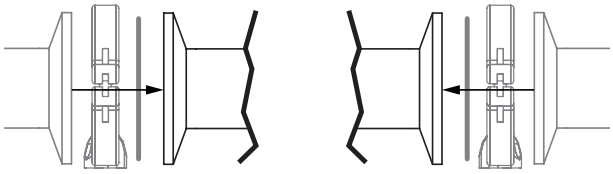


Fig. 2: Clamp connection

NOTICE

Gasket and clamp!

► The gasket and clamps for clamp connections are not included in the scope of delivery.

1. Insert the corresponding gasket between the connection adapter and the pipe connection.
2. Connect the gasket between the connection adapter and the pipe connection using clamps.

9.6 Installation with flanged connection

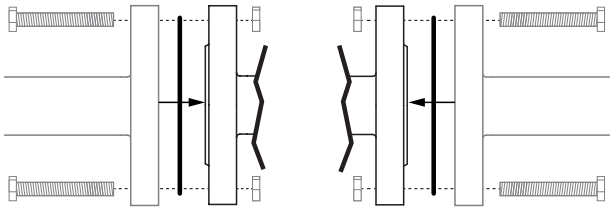


Fig. 3: Flanged connection

NOTICE

Sealing material!

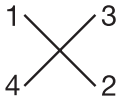
► The sealing material is not included in the scope of delivery.
● Only use appropriate sealing material.

NOTICE

Connector elements!

► The connector elements are not included in the scope of delivery.
● Only use connector elements made of approved materials.
● Observe permissible tightening torque of the bolts.

1. Ensure clean, undamaged sealing surfaces on the connection flanges.
2. Align flanges carefully before installing them.
3. Centre the gaskets.
4. Connect the valve flange and the piping flange using appropriate sealing materials and matching bolting. Sealing material and bolts are not included in the scope of delivery.
5. Use all flange holes.
6. Only use connector elements made of approved materials!
7. Tighten the bolts diagonally.



Observe appropriate regulations for connections!

After the installation:

- Re-attach or reactivate all safety and protective devices.

10 Pneumatic connections

10.1 Control function

The following control functions are available:

Control function 1

Normally closed (NC):

Valve resting position: closed by spring force. Activation of the actuator (connector 2) opens the valve. When the actuator is vented, the valve is closed by spring force.

Control function 2

Normally open (NO):

Valve resting position: opened by spring force. Activation of the actuator (connector 4) closes the valve. When the actuator is vented, the valve is opened by spring force.

Control function 3

Double acting (DA):

Valve resting position: no defined normal position. The valve is opened and closed by activating the respective control medium connectors (connector 2: open/connector 4: close).

Actuator size 2
control function 2 + 3

Control function	Connectors	
	2	4
1 (NC)	+	-
2 (NO)	-	+
3 (DA)	+	+
+ = available / - = not available (see figure for connectors 2 / 4)		

10.2 Connecting the control medium

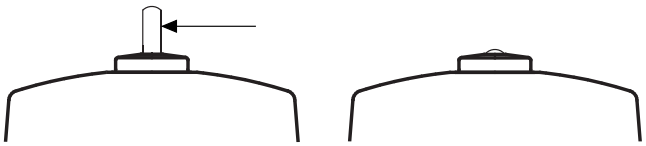
1. Use suitable connectors.
2. Connect the control medium lines tension-free and without any bends or knots.

Thread size of the control medium connectors:
Diaphragm size 25: G1/4

	Control function	Connectors
1	Normally closed (NC)	2: Control medium (open)
2	Normally open (NO)	4: Control medium (close)
3	Double acting (DA)	2: Control medium (open) 4: Control medium (close)
For connectors 2 / 4 see figure on the left		

10.3 Operation

Optical position indicator



Valve open

Valve closed

11 Commissioning

⚠ WARNING

Corrosive chemicals!

► Risk of caustic burns.
● Wear suitable protective gear.
● Completely drain the plant.

⚠ CAUTION

Leakage!

► Emission of dangerous materials.
● Provide precautionary measures against exceeding the maximum permitted pressures caused by pressure surges (water hammer).

⚠ CAUTION

Cleaning agent!

► Damage to the GEMÜ product.
● The plant operator is responsible for selecting the cleaning material and performing the procedure.

1. Check the tightness and the function of the product (close and reopen the product). Due to the setting behavior of elastomers, the bolts may need to be retightened following the installation and commissioning of the valve.
2. Flush the piping system of new plant and following repair work (the product must be fully open).
   ⇨ Harmful foreign matter has been removed.
   ⇨ The product is ready for use.
3. Commission the product.
4. Use suitable connectors.
5. Connect the control medium lines tension-free and without any bends or knots.

12 Operation

The product is pneumatically operated.

● Observe the enclosed actuator instructions.

13 Troubleshooting

Error	Error cause	Troubleshooting
Control medium escaping from vent hole / vent* in the actuator cover for control function NC or connector 2 for control function NO (see chapter "Control functions").	Piston faulty	Replace the actuator
Control medium escaping from leak detection hole*	Spindle seal leaking	Replace the actuator and check control medium for impurities
Working medium escaping from leak detection hole*	Shut-off diaphragm faulty	Check shut-off diaphragm for potential damage, replace diaphragm if necessary
The product does not open or does not open fully	Control pressure too low (for control function NC)	Operate the product with the control pressure specified in the datasheet
	Pilot valve faulty	Check and replace pilot valve
	Actuator defective	Replace the actuator
	Control medium not connected	Connect control medium
	Shut-off diaphragm incorrectly mounted	Remove the actuator, check the diaphragm mounting, replace the shut-off diaphragm if necessary
	Actuator spring faulty (for control function NO)	Replace the actuator
The product is leaking downstream (does not close or does not close fully)	Operating pressure too high	Operate the product with operating pressure specified in datasheet
	Control pressure too low (for control function NO and control function DA)	Operate the product with the control pressure specified in the datasheet
	Foreign matter between shut-off diaphragm and valve body	Remove the actuator, remove foreign matter, check diaphragm and valve body for potential damage, replace damaged parts if necessary
	Valve body leaking or damaged	Check valve body for potential damage, replace valve body if necessary
	Shut-off diaphragm is defective	Check shut-off diaphragm for potential damage, replace diaphragm if necessary
	Actuator spring faulty (for control function NC)	Replace actuator
The product is leaking between actuator and valve body	Shut-off diaphragm incorrectly mounted	Remove the actuator, check the diaphragm mounting, replace the shut-off diaphragm if necessary
	Bolting between valve body and actuator loose	Tighten bolting between valve body and actuator
	Shut-off diaphragm faulty	Check shut-off diaphragm for potential damage, replace diaphragm if necessary
	Actuator/valve body damaged	Replace actuator/valve body
Connection between valve body and piping leaking	Incorrect installation	Check installation of valve body in piping
	Threaded connections / unions loose	Tighten threaded connections / unions
	Sealing material faulty	Replace sealing material
Valve body leaking	Valve body faulty or corroded	Check valve body for potential damage, replace valve body if necessary
	Incorrect assembly	Check the assembly of the O-ring at the interfaces of the valve bodies

* see chapter "Spare parts"

14 Inspection and maintenance

⚠ WARNING

The equipment is subject to pressure!

► Risk of severe injury or death

- Depressurize the plant.
- Completely drain the plant.

⚠ CAUTION

Hot plant components!

► Risk of burns

- Only work on plant that has cooled down.

⚠ CAUTION

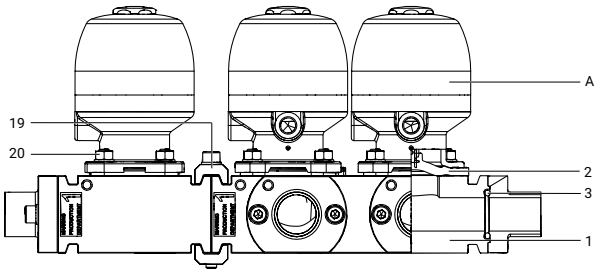
- Servicing and maintenance work must only be performed by trained personnel.
- Do not extend hand lever. GEMÜ shall assume no liability whatsoever for damages caused by improper handling or third-party actions.
- In case of doubt, contact GEMÜ prior to commissioning.

1. Wear appropriate protective gear as specified in the plant operator's guidelines.
2. Shut off plant or plant component.
3. Secure against recommissioning.
4. Depressurize the plant or plant component.

The operator must carry out regular visual examination of the valves dependent on the operating conditions and the potential danger in order to prevent leakage and damage. The valve also has to be disassembled in corresponding intervals and checked for wear, Fitting/removing spare parts (see Chapter 14.2, page 25).

14.1 Spare parts

14.1.1 Diaphragm size 25 / actuator version: T

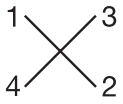


Item	Name	Order designation
A	Actuator	9650
1	Valve body	K600
2	Diaphragm	600...M
3	O-ring	O-ring
19	Mounting set – valve body incl. O-ring	P600S...SCR
20	Actuator mounting set	650 S30M

14.2 Fitting/removing spare parts

14.2.1 Valve disassembly (removing the actuator from the body)

1. Move the actuator **A** to the open position.
2. Loosen the fastening elements between the valve body **1** and the actuator **A** diagonally and remove them.



3. Lift the actuator **A** off the valve body **1**.
4. Move the actuator **A** to the closed position.

NOTICE

Important:

► Clean all parts of contamination (do not damage the parts during cleaning) following removal. Check parts for potential damage; replace if necessary (only use genuine parts from GEMÜ).

14.2.2 Removing the diaphragm

NOTICE

► Before removing the diaphragm, please remove the actuator, Valve disassembly (removing the actuator from the body) (see Chapter 14.2.1, page 25).

1. Unscrew the diaphragm.
2. Clean all parts of remains of product and contaminants. Do not scratch or damage parts during cleaning!
3. Check all parts for potential damage.
4. Replace damaged parts (only use genuine parts from GEMÜ).

14.2.3 Mounting the diaphragm

14.2.3.1 General information

NOTICE

► Mount the correct diaphragm that suits the valve (suitable for medium, medium concentration, temperature and pressure). The shut-off diaphragm is a wearing part. Check the technical condition and function of the valve before commissioning and during the whole duration of use. Carry out checks regularly and determine the check intervals in accordance with the conditions of use and/or the regulatory codes and provisions applicable for this application.

NOTICE

► If the diaphragm is not screwed into the adapter far enough, the closing force is transmitted directly onto the diaphragm pin and not via the compressor. This will cause damage and early failure of the diaphragm and thus leakage of the valve. If the diaphragm is screwed in too far, perfect sealing at the valve seat will not be achieved. The function of the valve is no longer ensured.

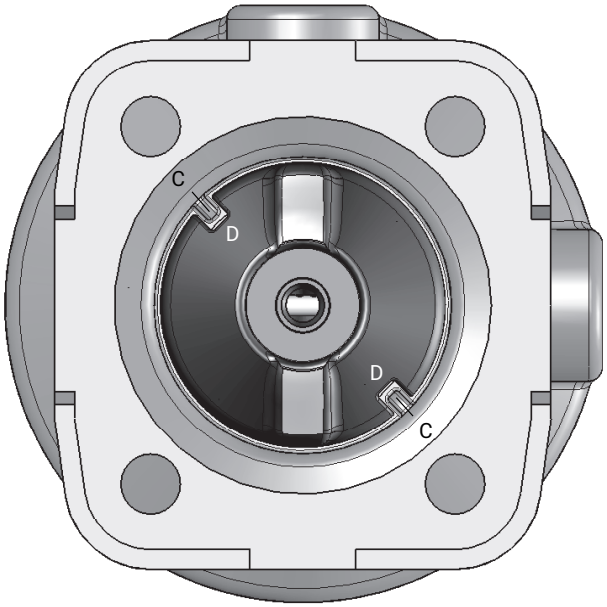
NOTICE

► An incorrectly mounted diaphragm may cause valve leakage/emission of medium. In this case, remove the diaphragm, check the complete valve and diaphragm and reassemble, proceeding as in the instructions above.

Diaphragm size 25:

The compressor is loose.

Compressor and actuator flange seen from below:

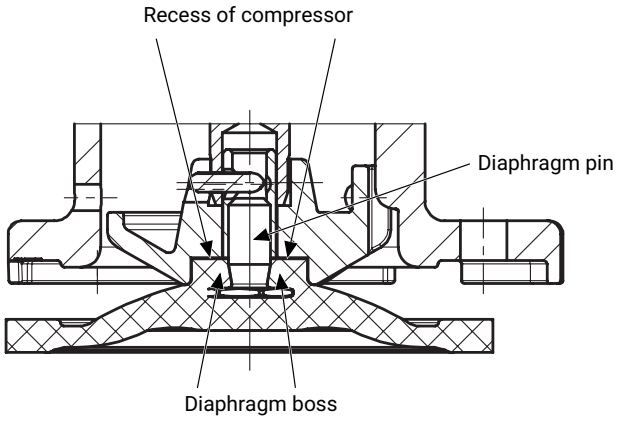


- Place the compressor loosely on the actuator spindle, fit the recesses **D** into the guides **C**. It must be possible to move the compressor freely between the guides.

14.2.3.2 Mounting a concave diaphragm

Diaphragm size 25

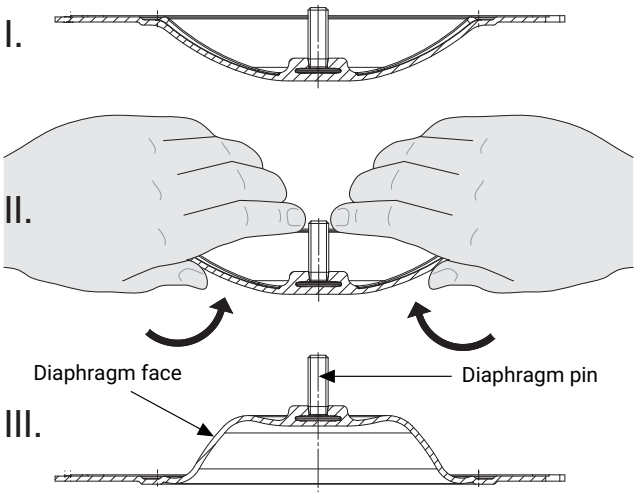
Threaded pin type diaphragm:



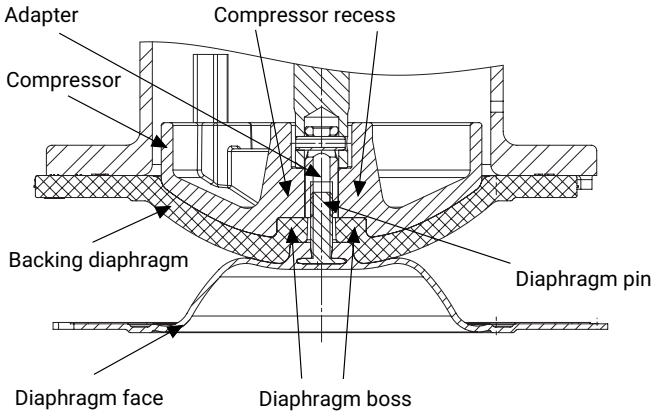
1. Move the actuator **A** to the closed position.
2. Diaphragm size 25:
   Place the compressor loosely on the actuator spindle, fit the recesses **D** into the guides **C**, General information (see Chapter 14.2.3.1, page 25).
3. Check if the compressor fits closely in the guides.
4. Manually screw the new diaphragm into the compressor tightly.
5. Check if the diaphragm boss fits closely in the recess of the compressor.
6. If it is difficult to screw it in, check the thread, replace damaged parts (only use genuine parts from GEMÜ).
7. When clear resistance is felt, turn back the diaphragm anticlockwise until its bolt holes are in correct alignment with the bolt holes of the actuator.

14.2.3.3 Mounting a convex diaphragm

1. Move the actuator **A** to the closed position.
2. Diaphragm size 25: Place the compressor loosely on the actuator spindle, fit the recesses into the guides, General information (see Chapter 14.2.3.1, page 25).
3. Check if the compressor fits closely in the guides.
4. Invert the new diaphragm face manually; use a clean, padded mat with bigger nominal sizes.



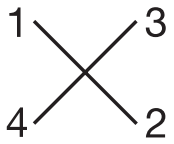
5. Position the new backing diaphragm onto the compressor.
6. Position the diaphragm face onto the backing diaphragm.
7. Manually screw the diaphragm face into the compressor tightly. The diaphragm boss must fit closely in the recess of the compressor.



8. If it is difficult to screw it in, check the thread, replace damaged parts.
9. When clear resistance is felt, turn back the diaphragm anticlockwise until its bolt holes are in correct alignment with the bolt holes of the actuator.
10. Press the diaphragm face tightly onto the backing diaphragm manually so that it returns to its original shape and fits closely on the backing diaphragm.

14.2.4 Mounting the actuator on the valve body

1. Move the actuator **A** to the open position.
2. Place actuator **A** with the mounted diaphragm **2** on the valve body **1**.
3. Fit the stud bolts if necessary.
4. Tighten the washers and nuts by hand.
5. Move the actuator **A** to the closed position.
6. Tighten the nuts diagonally.



7. Ensure that the diaphragm **2** is compressed evenly (approx. 10-15 %, visible by an even bulge to the outside).
8. Check the tightness of the fully assembled valve.

NOTICE

► Service and maintenance:
Diaphragms set in the course of time. After valve disassembly/assembly, check that the bolts and nuts **20** on the body are tight and retighten as necessary (at the very latest after the first sterilization process).

15 Disposal

1. Pay attention to adhered residual material and gas diffusion from penetrated media.
2. Dispose of all parts in accordance with the disposal regulations/environmental protection laws.

16 Returns

Legal regulations for the protection of the environment and personnel require that the completed and signed return delivery note is included with the dispatch documents. Returned goods can be processed only when this note is completed. If no return delivery note is included with the product, GEMÜ cannot process credits or repair work but will dispose of the goods at the operator's expense.

1. Clean the product.
2. Request a return delivery note from GEMÜ.
3. Complete the return delivery note.
4. Send the product with a completed return delivery note to GEMÜ.

17 Specification GEMÜ P600S

send an E-mail

Reference no.

GEMÜ

Specification | GEMÜ P600S
Modular M-block stainless steel diaphragm valve

Operating pressure: bar

Medium temperature: °C

Valve block material:

1.4435 ○

1.4435 BN 2 (ΔFe < 0.5%) ○

1.4539 ○

Other ○

Shut-off diaphragm material:

EPDM Code

PTFE Code

Other

Surface finish of valve block:

1502 (Ra) ≤ 0.8 µm ○

1503 (Ra) ≤ 0.8 µm electropolished ○

1507 (Ra) ≤ 0.6 µm ○

1508 (Ra) ≤ 0.6 µm electropolished ○

1536 (Ra) ≤ 0.4 µm ○

1537 (Ra) ≤ 0.4 µm electropolished ○

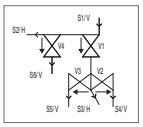
1527 (Ra) ≤ 0.25 µm ○

1516 (Ra) ≤ 0.25 µm electropolished ○

Other ○

Quantity:

Example:



Please draw functional diagram.
Important: Please ensure that the table and functional diagram correspond.

Please specify the design (e.g. M600 06-04.P1) if possible:

Spigot/Valve seat: S1, S2, etc./V1, V2, etc. Flow direction (medium): →

Preferred installation position: **H**orizontal/**V**ertical

Draining direction: →

Valve seat: ⋈

Spigot	Pipe connection				Actuator				Other
Spigot no.	DN	Code	ød(a)[mm]	s [mm]	Actuator type		Control function	Actuator size	Comment/accessories
S1					V1				
S2					V2				
S3					V3				
S4					V4				
S5					V5				
S6					V6				
S7					V7				
S8					V8				
S9					V9				
S10					V10				
S11					V11				
S12					V12				

The technical details of each enquiry must be checked by GEMÜ.

Contact (GEMÜ): _____

Customer: _____

Department: _____

Address: _____

_____

Phone: _____ E-mail: _____

Please do not write here!

K-No.:

P600:

M600:

X:

GEMÜ Gebr. Müller Apparatebau GmbH & Co. KG · Fritz-Müller-Str. 6-8 · 74653 Ingelfingen · Germany · Phone +49(0)7940/123-0
info@gemue.de · www.gemu-group.com

18 EU Declaration of Incorporation according to the EC Machinery Directive 2006/42/EC, Annex II B

EU Declaration of Incorporation

according to the EC Machinery Directive 2006/42/EC, Annex II B

We, the company

GEMÜ Gebr. Müller Apparatebau GmbH & Co. KG
Fritz-Müller-Strasse 6–8
74653 Ingelfingen-Criesbach, Germany

hereby declare under our sole responsibility that the below-mentioned product complies with the relevant essential health and safety requirements in accordance with Annex I of the above-mentioned Directive.

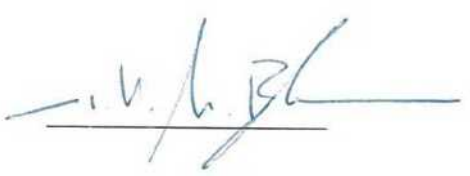
Product:	GEMÜ P600S
Product name:	M-block diaphragm valve with flexible connection system
The following essential health and safety requirements of the EC Machinery Directive 2006/42/EC, Annex I have been applied or adhered to:	1.1.2.; 1.1.3.; 1.1.5.; 1.3.2.; 1.3.4.; 1.3.7.; 1.5.3.; 1.5.4.; 1.5.5.; 1.6.1.; 1.6.3.; 1.6.4.; 1.7.1.1.; 1.7.2.; 1.7.3.; 1.7.4.; 1.7.4.1.; 1.7.4.2.; 1.7.4.3.
The following harmonized standards (or parts thereof) have been applied:	EN ISO 12100:2010

We also declare that the specific technical documents have been created in accordance with part B of Annex VII.

The manufacturer undertakes to transmit relevant technical documents on the partly completed machinery to the national authorities in response to a reasoned request. This communication takes place electronically.

This does not affect the industrial property rights.

The partly completed machinery may be commissioned only if it has been determined, if necessary, that the machinery into which the partly completed machinery is to be installed meets the provisions of the Machinery Directive 2006/42/EC.



M. Barghoorn
Head of Global Technics

Ingelfingen, 23/10/2023

19 Manufacturer's declaration according to the Pressure Equipment Directive 2014/68/EU

Manufacturer's declaration

according to the Pressure Equipment Directive 2014/68/EU

We, the company

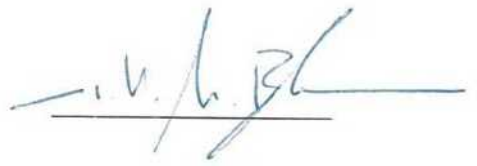
GEMÜ Gebr. Müller Apparatebau GmbH & Co. KG
Fritz-Müller-Strasse 6–8
74653 Ingelfingen-Criesbach, Germany

declare that the below-mentioned product is designed and manufactured in compliance with sound engineering practice according to Article 4, Paragraph 3 of the Pressure Equipment Directive 2014/68/EU.

Product: GEMÜ P600S

Product name: M-block diaphragm valve with flexible connection system

The product has been developed and produced according to GEMÜ's in-house process instructions and standards of quality which comply with the requirements of ISO 9001 and ISO 14001. According to Article 4, Paragraph 3 of the Pressure Equipment Directive 2014/68/EU, this product must not be identified by a CE-marking.



M. Barghoorn
Head of Global Technics

Ingelfingen, 23/10/2023

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www.gemu-group.com

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