



EN Operating instructions

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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 combination with any additional special documentation.
- Correct installation, operation, maintenance and repair work ensure faultless operation of the product.
- Should there be any doubts or misunderstandings, the German version is the authoritative document.
- Contact us at the address on the last page for staff training information.

1.2 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. 			
	 Potentially dangerous situation! Non-observance can cause death or severe injury. 			

A 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!
<u>Sss</u>	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 materials.

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



ltem	Name	Materials
1	Optical position indic- ator	
2	Actuator	
3	Distance piece with leak detection hole	1.4305 / 1.4408
4	Valve body	ASTM A 351 CF3M, in- vestment casting

3.2 Description

The GEMÜ 566 2/2-way straight seat control valve has a body with an integrated control mechanism. Manual, pneumatic and motorized actuator types are available. The GEMÜ 566 valve was specially developed for controlling small quantities and allows flow rates from 63 l/h to 2500 l/h.

4 Correct use

▲ DANGER

Danger of explosion

- Risk of death or severe injury.
- Do **not** use the product in potentially explosive zones.

🗥 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.

The product is designed for installation in piping systems and for controlling a working medium.

The product is not intended for use in potentially explosive areas.

• Use the product in accordance with the technical data.

5 Order data

The order data provide an overview of standard configurations.

Please check the availability before ordering. Other configurations available on request.

Order codes

1 Туре	Code
Control valve	566
2 DN	Code
DN 8	8
DN 10	10
DN 15	15
DN 20	20
3 Body configuration	Code
2/2-way body	D
4 Connection type	Code
Threaded socket DIN ISO 228	1
Clamp ASME BPE,	88
face-to-face dimension FTF EN 558 series 7	
5 Valve body material	Code
ASTM A 351 CF3M, investment casting	C1

6 Seal material	Code
FPM	4
EPDM	33
7 Control function	Code
Normally Closed (NC)	1
8 Actuator version	Code
Actuator size 1T1	1T1
9 Control characteristic	Code
Modified equal-percentage	G
Linear	L
10 Kv value	Code
63 l/h	63
100 l/h	100
160 l/h	160
1000 l/h	1000
1600 l/h	1600
2500 l/h	2500

Order example

Order option	Code	Description
1 Туре	566	Control valve
2 DN	8	DN 8
3 Body configuration	D	2/2-way body
4 Connection type	1	Threaded socket DIN ISO 228
5 Valve body material	C1	ASTM A 351 CF3M, investment casting
6 Seal material	4	FPM
7 Control function	1	Normally Closed (NC)
8 Actuator version	1T1	Actuator size 1T1
9 Control characteristic	G	Modified equal-percentage
10 Kv value	63	63 l/h

6 Technical data

6.1 Temperature

Media temperature:	Standard: CIP max. 30 min. (isolating diaphragm material code 33)	0 °C to 90 °C 85 °C
Control medium temper- ature:	0 to 70 °C	
Ambient temperature:	-15 to 60 °C	
Storage temperature:	0 to 40 °C	
6.2 Pressure		
Operating pressure:	0 to 6 bar All pressures are gauge pressures. Valve bodies are ap	proved up to PN 10.
Control pressure:	4.5 to 7.0 bar	
Filling volume:	0.03 dm³	

Seat seal	Seat seal Standard	Test procedure	Leakage rate	Test medium
Metal	Metal DIN EN 60534-4	1	IV	Air

Kv values:

Leakage rate:



Equal-percentage (connection code 1) / linear (connection code 1)

Control charac- teristic	Seat Ø [mm]	Kv value	DN 8	DN 10	DN 15
G	3	63	Х	-	-
G, L	3	100	Х	-	-
G	3	160	Х	-	-
G, L	6	250	Х	-	-
G	6	400	Х	-	-
G, L	6	630	Х	-	-
G	11	1000	-	Х	-
G, L	11	1600	-	Х	-
G, L	15	2500	-	-	Х

Kv values:

Equal-percentage (connection code 88) / linear (connection code 88)

Control character- istic	Seat Ø [mm]	Kv value	DN 15	DN 20
G	3	63	Х	-
G, L	3	100	Х	-
G	3	160	Х	-
G, L	6	250	Х	-
G	6	400	Х	-
G, L	6	630	Х	-
G	11	1000	Х	-
G, L	11	1600	Х	-
G, L	15	2500	-	Х

6.3 Product compliance

Food:	FDA* * only for seal material code 33
Machinery Directive:	2006/42/EU
EAC:	TR CU 010/2011 TR CU 004/2011

6.4 Mechanical data

Stroke:	5 mm	
Weight:	DN 8	4.0
	DN 10	4.0
	DN 15	3.5
	DN 15, code 88	4,2
	DN 20, code 88	4.2
	Weights in kg	

7 Dimensions

7.1 Installation and actuator dimensions





GEMÜ 1434





CT1	ØВ		□ B2		G	М
82	61		67		1/4	16x1
						-11
			HAR			UU
GEMÜ 4	232		228			32
GEMÜ 1	GEMÜ 1434		255			42
GEMÜ 1	436		283			90

Dimensions in mm

7.2 Body dimensions

7.2.1 Threaded socket



DN	Connection type code 1 ¹⁾				
	Material code C1 ²⁾				
	R		Н	H2	
8	G 1/4	16.0	33.0	15.0	72.0
10	G 3/8	16.0	33.0	15.0	72.0
15	G 1/2	16.0	33.0	15.0	72.0

Dimensions in mm

1) Connection type Code 1: Threaded socket DIN ISO 228

2) Valve body material Code C1: ASTM A 351 CF3M, investment casting

7.2.2 Clamp



DN	Connection type code 88 ¹⁾				
	Material code C1 ²⁾				
		н	H2	ød1	ød3
15	108.0	33.0	15.2	9.40	25.0
20	117.0	33.0	15.2	15.75	25.0

Dimensions in mm

1) Connection type

Code 88: Clamp ASME BPE, face-to-face dimension FTF EN 558 series 7

2) Valve body material

Code C1: ASTM A 351 CF3M, investment casting

7.3 Valve body mounting



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 product's performance is tested at the factory. The scope of delivery is apparent from the dispatch documents and the design from the order number.

8.2 Packaging

The product is packaged in a cardboard box which can be recycled as paper.

8.3 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.

8.4 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 (see chapter "Technical data").
- 4. Do not store solvents, chemicals, acids, fuels or similar fluids in the same room as GEMÜ products and their spare parts.

8.5 Tools required

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

9 Installation in piping

9.1 Preparing for installation

A 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 suitable protective gear.
- Completely drain the plant.

Hot plant components!

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

A 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).

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 product is suitable for the relevant application.
- 2. Check the technical data of the product and the materials.
- 3. Keep appropriate tools ready.
- 4. Wear 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 cannot cause scalding.
- 11. Correctly decontaminate, rinse and ventilate the plant or plant component.
- 12. Lay piping so that the product is protected against transverse and bending forces, and also from vibrations and tension.
- 13. Only install the product between matching aligned pipes (see chapters below).
- 14. Please note the flow direction.
- 15. Please note the installation position (see chapter "Installation position").

9.2 Installation position

GEMÜ recommend installing the actuator vertically upright or vertically down to optimise the service life.

9.3 Installation with threaded sockets



Fig. 1: Threaded socket

NOTICE

Sealing material

- The sealing material is not included in the scope of delivery.
- Only use appropriate sealing material.
- 1. Keep thread sealant ready.
- 2. Carry out preparations for installation (see chapter "Preparing for installation").
- 3. Screw the threaded connections into the pipe in accordance with valid standards.
- Screw the body of the product onto the piping using appropriate thread sealant.
- 5. Re-attach or reactivate all safety and protective devices.

9.4 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. Keep ready gasket and clamp.
- 2. Carry out preparation for installation (see chapter "Preparing for installation").
- 3. Insert the corresponding gasket between the body of the product and the pipe connection.
- 4. Connect the gasket between the body of the product and the pipe connection using clamps.
- 5. Re-attach or reactivate all safety and protective devices.

10 Inspection and maintenance

The equipment is subject to pressure!

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

Use of incorrect spare parts!

- ► Damage to the GEMÜ product.
- Manufacturer liability and guarantee will be void.
 - Use only genuine parts from GEMÜ.

Hot plant components!

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

NOTICE

Exceptional maintenance work!

- ► Damage to the GEMÜ product.
- Any maintenance work and repairs not described in these operating instructions must not be performed without consulting the manufacturer first.

The operator must carry out regular visual examination of the GEMÜ products depending on the operating conditions and the potential danger in order to prevent leakage and damage. The product also must be disassembled and checked for wear in the corresponding intervals.

- 1. Have servicing and maintenance work performed by trained personnel.
- 2. Wear appropriate protective gear as specified in plant operator's guidelines.
- 3. Shut off plant or plant component.
- 4. Secure plant or plant component against recommissioning.
- 5. Depressurize the plant or plant component.
- 6. Actuate GEMÜ products which are always in the same position four times a year.

10.1 Spare parts



ltem	Name	Order description
A	Actuator	9566
2	Isolating dia- phragm	566 000 PAM 4/33

10.2 Removing the actuator

- 1. Move the actuator **A** to the open position.
- 2. Loosen the fastening elements between actuator **A** and body **1** diagonally and remove them.
- 3. Remove the washers 27.
- 4. Remove actuator A from control mechanism 4.

NOTICE

Important:

- After disassembly, clean all parts of contamination. Take care not to damage the parts in the process. Afterwards, check parts for potential damage. If parts are damaged, replace them.
- 5. Move the actuator **A** to the closed position.

10.3 Mounting the actuator

- 1. Move the actuator **A** to the open position.
- 2. Place actuator A onto control mechanism 4.
- 3. Lay the washers 27 over the stud bolts 25.
- 4. Screw in the fastening elements until hand tight and tighten diagonally with a suitable open-end wrench (for torques see table).

10.4 Replacing the regulating cone



10.4.1 Disassembly without assembly tool

- 1. Remove the actuator (see chapter 12.1 "Removing the actuator).
- 2. Undo the hexagon socket screws 6.
- 3. Remove the washers 7.
- 4. Remove the valve body 1 from the control mechanism 4 .
 - ⇒ Do not damage the sealing surfaces!
- 5. Remove the circlip 28.
 - ⇒ Compression spring 23 is under tension.
- 6. Remove the washer **22**.
- 7. Remove the compression spring **23**.
- 8. Remove the valve spindle **21** and regulating cone **3** with the mounted isolating diaphragm **2** by withdrawing them downwards.



10.4.2 Disassembly with assembly tool

- 1. Have the assembly tool to hand.
 - ⇒ The assembly tool must be ordered separately (order key: 566000MWZ).



- 2. Remove the actuator (see chapter 12.1 "Removing the actuator).
- 3. Undo the hexagon socket screws $\mathbf{6}$.
- 4. Remove the washers 7.
- 5. Remove the valve body 1 from the control mechanism 4.
 ⇒ Do not damage the sealing surfaces!
- 6. Tension compression spring 23 using the assembly tool.
 - ⇒ Do not damage the sealing surfaces!



- 7. Remove the circlip 28.
 - ⇒ Compression spring **23** is under tension.
- 8. Remove the valve spindle **21** and regulating cone **3** with the mounted isolating diaphragm **2** by withdrawing them downwards.



10.4.3 Assembly without assembly tool

- 1. Fit the valve spindle **21** and regulating cone **3** with the mounted isolating diaphragm **2** by sliding them into the control mechanism **4**.
 - ⇒ Do not damage the sealing surface!
- 2. Mount the compression spring 23.
- 3. Mount the washer 22.
- 4. Mount the circlip **28**.
 - ⇒ Compression spring **23** is under tension.
- 5. Place the control mechanism **4** onto the valve body **1**.
- 6. Mount the washers **7** and hexagon socket screws **6**, and tighten the screws by hand.
- 7. Fully tighten the hexagon socket screws **6** diagonally.



10.4.4 Assembly with assembly tool

- 1. Have the assembly tool to hand.
 - ⇒ The assembly tool must be ordered separately (order key: 566000MWZ).



- 2. Tension compression spring 23 using the assembly tool.
 - ⇒ Do not damage the sealing surfaces!



- 3. Fit the valve spindle **21** and regulating cone **3** with the mounted isolating diaphragm **2** by sliding them into the control mechanism **4**.
 - ⇒ Do not damage the sealing surface!
- 4. Mount the circlip 28.
 - \Rightarrow Compression spring **23** is under tension.
- 5. Place the control mechanism 4 onto the valve body 1.
- 6. Mount the washers **7** and hexagon socket screws **6**, and tighten the screws by hand.
- 7. Fully tighten the hexagon socket screws **6** diagonally.



10.5 Replacing the isolating diaphragm

10.5.1 Disassembly without assembly tool

1. Remove the regulating cone (see chapter "Removing the regulating cone").



2. Position a WAF 17 open-end wrench on the regulating cone **3**.



- 3. Simultaneously, position a WAF 18 open-end wrench on the nut **29**.
- 4. By counterholding both open-end wrenches, carefully release the regulating cone **3** and the nut **29** from the isolating diaphragm **2**.



5. Leave valve spindle **21**, spring washers **30** and nut **29** in their original position.

NOTICE

Important:

After disassembly, clean all parts of contamination. Take care not to damage the parts in the process. Afterwards, check parts for potential damage. If parts are damaged, replace them.

10.5.2 Disassembly with assembly tool

1. Remove the regulating cone (see chapter "Removing the regulating cone").



- 2. Insert valve spindle **21** and regulating cone **3** with the mounted isolating diaphragm **2** into the recess on the assembly tool (insert nut **29** into the recess).
- 3. Position a WAF 17 open-end wrench on regulating cone **3** and turn it anticlockwise.



4. Remove regulating cone **3** and isolating diaphragm **2**.



5. Leave valve spindle **21**, spring washers **30** and nut **29** in their original position.

NOTICE

Important:

After disassembly, clean all parts of contamination. Take care not to damage the parts in the process. Afterwards, check parts for potential damage. If parts are damaged, replace them.

10.5.3 Assembly without assembly tool



- 1. Connect the isolating diaphragm **2** to the regulating cone **3** and nut **29**.
- 2. Position a WAF 17 open-end wrench on the regulating cone **3**.
- 3. Simultaneously, position a WAF 18 open-end wrench on the nut **29**.
- 4. By counterholding both open-end wrenches, carefully screw the regulating cone **3** and the nut **29** to the isolating diaphragm **2**.
- 5. Mount the regulating cone (see chapter "Mounting the regulating cone").

10.5.4 Assembly with assembly tool



- 1. Connect the isolating diaphragm **2** to the regulating cone **3** and nut **29**.
- 2. Insert nut 29 into the recess on the assembly tool.
- 3. Position a WAF 17 open-end wrench on regulating cone **3** and turn it clockwise. Then screw together nut **29** and isolating diaphragm **2**.
- 4. Mount the regulating cone (see chapter "Mounting the regulating cone").

10.6 Cleaning the product

- · Clean the product with a damp cloth.
- Do **not** clean the product with a high pressure cleaning device.

11 Troubleshooting

11.1 Troubleshooting

Error	Possible cause	Troubleshooting
The product leaks downstream (doesn't close or doesn't close fully)	Operating pressure too high	Operate the product with operating pres- sure specified in datasheet
	Foreign matter between shut off dia- phragm and valve body weir	Remove the actuator, remove foreign matter, check diaphragm and valve body weir for potential damage, replace actu- ator if necessary
	Valve body leaks or is damaged	Check valve body for potential damage, replace valve body if necessary
	Shut off diaphragm faulty	Check shut off diaphragm for potential damage, replace diaphragm if necessary
The product doesn't close or doesn't close fully	The actuator design is not suitable for the operating conditions	Use an actuator that is designed for the operating conditions
	Foreign matter in the product	Remove and clean the product
The product doesn't open or doesn't	Actuator defective	Replace the actuator
open fully	Shut off diaphragm incorrectly mounted	Remove actuator, check diaphragm mounting, replace if necessary
	Foreign matter in the product	Remove and clean the product
	The actuator design is not suitable for the operating conditions	Use an actuator that is designed for the operating conditions
The product leaks between actuator and valve body	Shut off diaphragm incorrectly mounted	Remove actuator, check diaphragm mounting, replace if necessary
	Bolting between valve body and actuator loose	Retighten bolting between valve body and actuator
	Shut off diaphragm faulty	Check shut off diaphragm for damage, replace diaphragm if necessary
	Actuator/valve body damaged	Replace actuator/valve body
The product leaks between actuator	Mounting parts loose	Retighten mounting parts
flange and valve body	Valve body / actuator damaged	Replace valve body/actuator
Body of the GEMÜ product is leaking	Body of the GEMÜ product is faulty or corroded	Check the body of the GEMÜ product for potential damage, replace body if neces- sary
	Incorrect installation	Check installation of valve body in piping
Valve body connection to piping leaks	Incorrect installation	Check installation of valve body in piping

12 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.

13 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.

14 Declaration of conformity according to 2014/68/EU (Pressure Equipment Directive)

EU Declaration of Conformity

in accordance with 2014/68/EU (Pressure Equipment Directive)

We,

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

declare that the product listed below complies with the safety requirements of the Pressure Equipment Directive 2014/68/EU.

Description of the pressure equipment:	GEMU 566
Notified body:	TÜV Rheinland Industrie Service GmbH
Number:	0035
Certificate no.:	01 202 926/Q-02 0036
Conformity assessment procedure:	Module H
Technical standard used:	EN 1983, AD 2000

Note for products with a nominal size ≤ DN 25:

The products are developed and produced according to GEMÜ process instructions and quality standards 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 these products must not be identified by a CE-label.

2020-06-22

Joachim Brien Head of Technical Department







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Subject to alteration

