

GEMÜ® CleanStar® C67

Ultra pure PFA diaphragm valves HPW
2/2-way valves 2" (DN 50)

GB INSTALLATION, OPERATING AND
MAINTENANCE INSTRUCTIONS
Field test sample



Contents may deviate from standard documentation and be incomplete.
Please note the enclosed terms of use.

Contents



1	General information	2
2	General safety information	2
2.1	Information for service and operating personnel	2
2.2	Warning notes	3
2.3	Symbols used	3
3	Definition of terms	4
4	Intended area of use	4
5	Scope of delivery	4
6	Technical data	5
7	Order data 2/2-way body	6
8	Manufacturer's information	7
8.1	Transport	7
8.2	Delivery and performance	7
8.3	Storage	7
8.4	Tools required	7
8.5	Opening the packaging	7
9	Functional description	8
10	Construction	8
11	Installation and operation	8
11.1	Installing the diaphragm valve	8
11.2	Operation	10
12	Commissioning	10
13	Inspection and maintenance	10
14	Disassembly	11
15	Disposal	11
16	Returns	11
17	Information	11
18	Troubleshooting / Fault clearance	12
19	EU Declaration of Conformity	13

1 General information

Prerequisites to ensure that the GEMÜ valve functions correctly:

- x Correct transport and storage
- x Installation and commissioning by trained personnel
- x Operation according to these installation, operating and maintenance instructions
- x Recommended maintenance

Correct installation, operation, maintenance and repair work ensure faultless diaphragm valve operation.

	The descriptions and instructions apply to the standard versions. For special versions not described in these installation, operating and maintenance instructions the basic information contained herein applies in combination with any additional special documentation.
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2 General safety information

The safety information does not take into account:

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

2.1 Information for service and operating personnel

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

- x Personal hazard due to electrical, mechanical and chemical effects.
- x Hazard to nearby equipment.
- x Failure of important functions.
- x Hazard to the environment due to the leakage of dangerous materials.
- x Endangerment of process purity and / or process reliability.

Prior to commissioning:

- Read the installation, operating and maintenance instructions.
- Provide adequate training for installation and operating personnel.
- Ensure that the contents of the installation, operating and maintenance instructions have been fully understood by the responsible personnel.
- Define the areas of responsibility.

During operation:

- Keep the installation, operating and maintenance instructions available at the place of use.
- Observe the safety information.
- Use only in accordance with the specifications.
- Any maintenance work and repairs not described in the installation, operating and maintenance instructions must not be performed without consulting the manufacturer first.

DANGER

Strictly observe the safety datasheets or the safety regulations that are valid for the media used.

In cases of uncertainty:

- x Consult the nearest GEMÜ sales office.

2.2 Warning notes

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

SIGNAL WORD

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 will lead to 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.

CAUTION (WITHOUT SYMBOL)

Potentially dangerous situation!

- Non-observance can cause damage to property.

2.3 Symbols used



Danger - hot surfaces!



Danger - corrosive materials!



Hand: indicates general information and recommendations.



Bullet point: indicates the tasks to be performed.



Arrow: indicates the response(s) to tasks.



Enumeration sign

3 Definition of terms

Working medium

The medium that flows through the diaphragm valve.

4 Intended area of use

- x The GEMÜ diaphragm valve CleanStar® C67 is designed for installation in piping systems. It controls a flowing medium by manual operation.
- x **The valve may only be used providing the product technical criteria are complied with (see chapter 6 "Technical data").**
- x Do not paint the bolts and plastic parts of the diaphragm valve!

5 Scope of delivery

The following is included in the scope of delivery:

- x Diaphragm valve
- x In case of flare connections: Union nuts
- x Installation, operating and maintenance instructions for field test sample

The GEMÜ diaphragm valve is supplied as a separately packed component.

⚠ WARNING

Use the diaphragm valve only for the intended purpose!

- Otherwise the manufacturer liability and guarantee will be void.
- Use the diaphragm valve only in accordance with the operating conditions specified in the contract documentation and in the installation, operating and maintenance instructions.

6 Technical data

Working medium

Corrosive, inert and liquid media - particularly high purity media - which have no negative impact on the physical and chemical properties of the body and diaphragm material.
All operating conditions refer to water as the medium.
A change of operating conditions or other media may result in deviations. In case of doubt it is advisable to test the behaviour of the material under the defined operating conditions by means of a test installation.

Operating pressure

max. 5 bar over complete temperature range (water)

Vacuum 400 mbar/abs*

* The service life of the valve may be affected if exposed to a greater vacuum or with valves installed on the pump suction side.

Operating temperature

0 to 60 °C see temperature/pressure diagram

Ambient temperature

10 to 60 °C

Storage temperature

10 to 60 °C

Kv values

Kv value 75 m³/h

Materials

Media wetted parts	
Body	PFA
Seals	PTFE
Housing parts	
Base	PVDF
Cover	PVDF
Seals	NBR, EPDM
Threaded pin	1.4305

Installation position

Optional

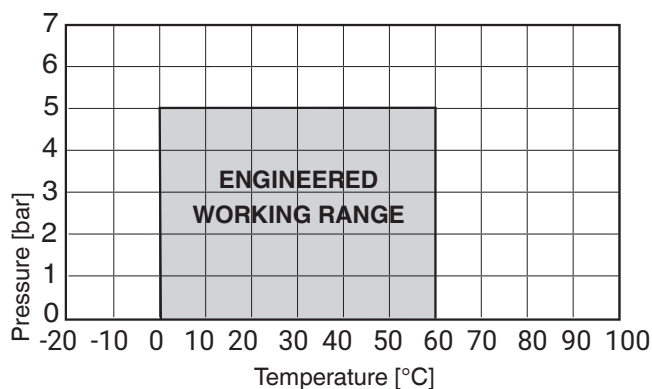
Flow direction

Optional

Weight

Weight 2500 g

Temperature/pressure diagram



Information on the use of the diagram

The temperature/pressure diagram is only an aid. The data refers to water as a working medium. A change of operating conditions or other media may result in deviations. In case of doubt, GEMÜ recommends to test the behaviour of the material under the definitive operating conditions by means of a test installation.

Temperatures below 0 °C can have a negative influence on the actuation speed.

7 Order data 2/2-way body

Nominal size		Code
2" pipe	DN 50	32

Valve body material	Code
PFA, perfluoroalkoxy	30

Body configuration	Code
2/2-way body	D

Seal material	Code
PTFE/EPDM two-piece	5M

Valve body connection	Code
Imperial butt weld spigot	30

Control function	Code
Manually operated	0

Actuator version	Code
Actuator size 4	4

Order example	C67	32	D	30	30	5M	0	4	HPW
Type	C67								
Nominal size (code)		32							
Body configuration (code)			D						
Valve body connection (code)				30					
Valve body material (code)					30				
Seal material (code)						5M			
Control function (code)							0		
Actuator version (code)								4	
High Purity, white									HPW

8 Manufacturer's information

8.1 Transport

- Only transport the diaphragm valve by suitable means. Do not drop. Handle carefully.
- Dispose of packaging material according to relevant local or national disposal regulations/environmental protection laws.

Difference between versions:

HPS: sealed in 1 PE plastic bag

HPW: sealed in 2 PE plastic bags

8.2 Delivery and performance

- 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.
- The performance of the diaphragm valve is checked at the factory.

8.3 Storage

- Store the diaphragm valve free from dust and moisture in its original packaging.
- Avoid UV rays and direct sunlight.
- Maximum storage temperature: +40 °C.
- Solvents, chemicals, acids, fuels or similar fluids must not be stored in the same room as valves.

8.4 Tools required

CAUTION	
	Only use tools suitable for cleanrooms! ➤ Contamination risk!

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

8.5 Opening the packaging

The diaphragm valve is sealed in a single plastic bag (HPS version) or two plastic bags (HPW version) and packed in a box.

CAUTION
Do not open box in the cleanroom! ➤ Contamination risk!

CAUTION
Carefully open box outside the cleanroom. Do not use a knife or pointed object. Avoid tearing open the outer plastic bag! ➤ Contamination risk! ➤ Reduces product purity!

Labeled GEMÜ box contains the sealed diaphragm valve.

CAUTION
HPW version: Avoid tearing open the outer plastic bag! Only open internal Nylon-PE plastic bag in the cleanroom immediately prior to installation! ➤ Contamination risk! ➤ Reduces product purity!

9 Functional description

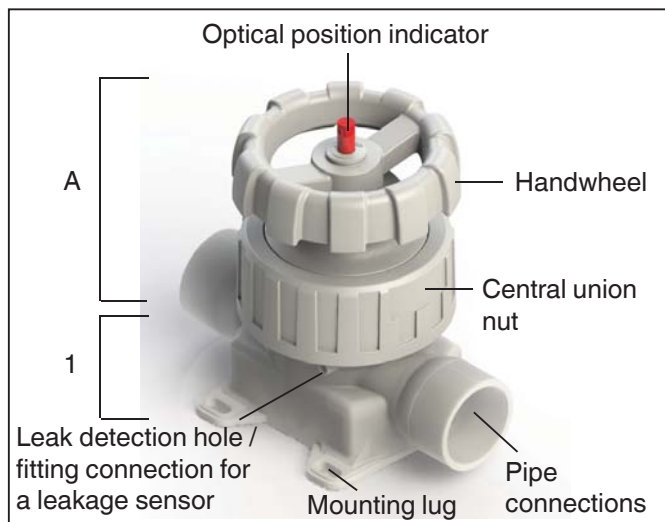
GEMÜ CleanStar® C67 is a plastic diaphragm valve. The external actuator parts are made of PVDF. The diaphragm is made of PTFE/EPDM. An optical position indicator, integral mounting lugs and a leak detection port are standard.

Differences between versions:

HPW:

- x High level of purity
- x Suitable for high-purity applications / cleanroom
- x 2/2-way body available
- x Valve body made of PFA

10 Construction



Construction

1 Valve body

A Actuator

CAUTION

Do not disassemble valve body and actuator!

- Danger of leakage or defect!
- Manufacturer liability and guarantee will be void.

11 Installation and operation

Prior to installation:

- Ensure that valve body and diaphragm material are appropriate and compatible to handle the working medium.
- **Check the suitability prior to the installation.**
See chapter 6 "Technical data".

11.1 Installing the diaphragm valve

⚠ WARNING

The equipment is subject to pressure!

- Risk of severe injury or death!
- Only work on depressurized plant.

⚠ WARNING



Corrosive chemicals!

- Risk of caustic burns!
- Wear appropriate protective gear when installing.
- Flush and rinse contaminated installations as necessary.

⚠ CAUTION



Hot plant components!

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

⚠ CAUTION

Never use the valve as a step or an aid for climbing!

- This entails the risk of slipping-off or damaging the valve.

CAUTION

Do not exceed the maximum permissible pressure!

- Take precautionary measures to avoid possible pressure surges (water hammer).

- Installation work must only be performed by trained personnel.

- Use appropriate protective gear as specified in plant operator's guidelines.

Installation location:

⚠ CAUTION

- Do not apply external force to the valve.
- Choose the installation location so that the valve cannot be used as a foothold.
- Lay the pipeline so that the valve body is protected against transverse and bending forces, and also vibrations and tension.
- Only install the valve between matching aligned pipes.

- x Direction of the working medium: optional.
- x Mounting position of the diaphragm valve: optional.

Installation:

1. Ensure the suitability of the valve for each respective use. The valve must be appropriate for the piping system operating conditions (medium, medium concentration, temperature and pressure) and the prevailing ambient conditions. Check the technical data of the valve and the materials.
2. Shut off plant or plant component.
3. Secure against recommissioning.
4. Depressurize the plant or plant component.
5. Completely drain the plant or plant component and allow it to cool down until the temperature is below the media vaporization temperature and cannot cause scalding.
6. Correctly decontaminate, rinse and ventilate the plant or plant component.
7. Mounting via flexible slots in valve base.

CAUTION

Fixing with suitable media resistant plastic bolts (not included in the scope of delivery)!

- Corrosion and contamination when using metal bolts!

Installation - Butt weld spigots:

⚠ DANGER

Vapor fumes from PFA welding can cause health related issues!

- Risk of damage to respiratory tracts, caustic burns/poisoning.
- Weld PFA components in a well-ventilated area.
- Only use approved welding equipment.
- Wear protective gear.
- Breathing masks are recommended.
- Welding may only be carried out by qualified trained personnel.



Important:

Poor or careless welding procedures and processes will void warranty and cause damage to the product. The results of poor welding procedures are valve leakage and deformation.

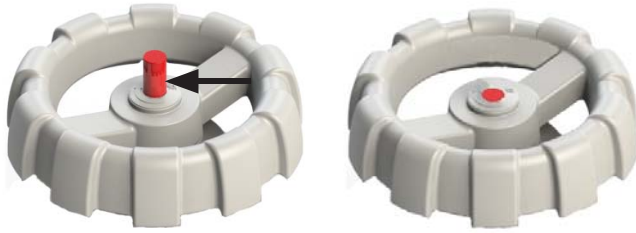
Adhere to good welding practices!

After the installation:

- Re-attach or reactivate all safety and protective devices.
- Check the function and tightness of installed valves at regular intervals.

11.2 Operation

Optical position indicator



Valve open

Valve closed

⚠ CAUTION



Handwheel can become hot during operation!

- Risk of burns!
- Ensure protective gloves are worn when operating handwheel.

12 Commissioning

⚠ WARNING



Corrosive chemicals!

- Risk of caustic burns!
- Check the tightness of the media connections prior to commissioning!
- Use only the appropriate protective gear when performing the tightness check.

⚠ CAUTION

Protect against leakage!

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

Prior to cleaning or commissioning the plant:

- Check the tightness and the function of the diaphragm valve (close and reopen the diaphragm valve).
- If the plant is new and after repairs rinse the piping system with a fully opened diaphragm valve (to remove any harmful foreign matter).

Cleaning:

- x The plant operator is responsible for selecting the cleaning material and performing the procedure.

13 Inspection and maintenance

⚠ WARNING

The equipment is subject to pressure!

- Risk of severe injury or death!
- Only work on depressurized 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.
- 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. Use appropriate protective gear as specified in 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 plant operator is responsible for ensuring compliance with regulations for special applications.



When ordering the valve, please state the complete order number.

14 Disassembly

Removal from the pipeline of the plant is performed observing the same precautionary measures as for installation.

- Remove the diaphragm valve (see chapter 11.1 "Installing the diaphragm valve").

CAUTION

Do not disassemble valve body and actuator!

- Danger of leakage or defect!
- Manufacturer liability and guarantee will be void.

15 Disposal



- Flush the diaphragm valve before disposal.
- All valve parts must be disposed of according to relevant local or national disposal regulations / environmental protection laws.
- Pay attention to adhered residual material and gas diffusion from penetrated media.

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 Information



Note on staff training:

Please contact us at the address on the last page for staff training information.

Should there be any doubts or misunderstandings in the preceding text, the German version of this document is the authoritative document!

18 Troubleshooting / Fault clearance

Error	Possible cause	Troubleshooting
Working medium escapes from leak detection hole* and / or threaded handwheel spindle (depending on installation position)	Shut off diaphragm faulty	Replace valve
Valve doesn't open or doesn't open fully	Actuator faulty	Replace valve
Valve leaks downstream (doesn't close or doesn't close fully)	Operating pressure too high	Operate valve with operating pressure specified in datasheet
	Foreign matter between shut off diaphragm and valve body weir	Replace valve
	Valve body weir damaged	Replace valve
	Shut off diaphragm faulty	Replace valve
Valve body connection to piping leaks	Incorrect installation	Check installation of valve body in piping
Handwheel cannot be turned	Actuator faulty	Replace valve

* see chapter 10 "Construction"

Declaration of conformity

in accordance with directive 2014/68/EU

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

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

Description of the equipment - product type

Diaphragm valve
GEMÜ C67

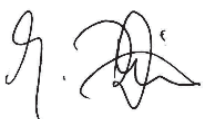
Notified body: TÜV Rheinland
Berlin Brandenburg
Number: 0035
Certificate no.: 01 202 926/Q-02 0036
Technical standards used: AD 2000

Conformity assessment procedure:
Module H

Note for equipment with a nominal size \leq 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.



Joachim Brien
Head of Technical Department

Ingelfingen-Criesbach, July 2016

GEMÜ®



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