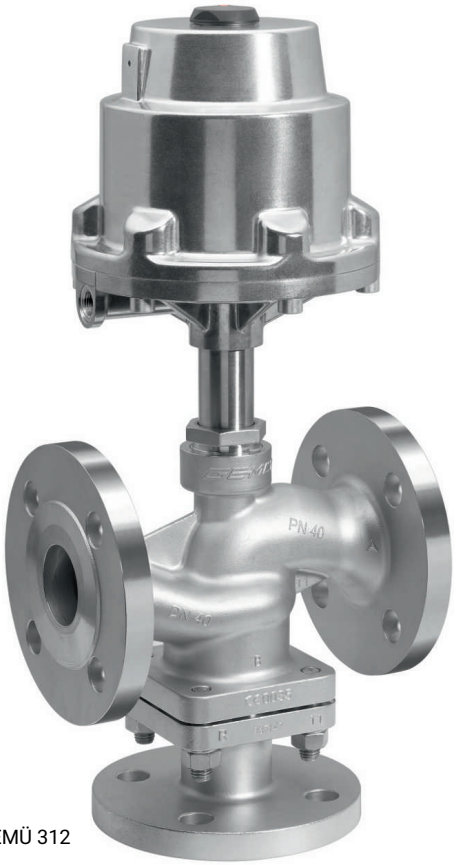
# GEMÜ 312, 314

Pneumatically operated multi-port globe valve

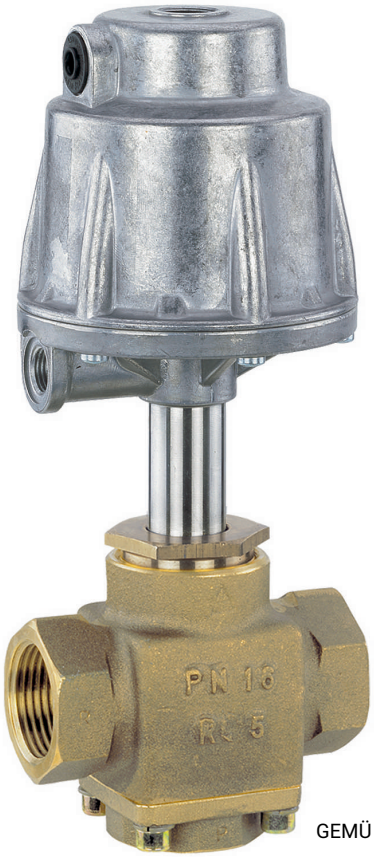
EN

## Assembly instructions

Replacing the wearing parts




GEMÜ 312




GEMÜ 314

further information
webcode: GW-312, 314

## 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 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 Symbols used

The following symbols are used in this document:

| Symbol | Meaning |
|---|---|
| ● | Tasks to be performed |
| ▶ | Response(s) to tasks |
| – | Lists |

## 1.3 Definition of terms

**Working medium**

The medium that flows through the GEMÜ product.

**Control function**

The possible actuation functions of the GEMÜ product.

**Control medium**

The medium whose increasing or decreasing pressure causes the GEMÜ product to be actuated and operated.

## 1.4 Warning notes

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

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 |
|---|---|
|  | The equipment is subject to pressure! |
|  | The actuator cover is under spring pressure! |

## 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 basic safety information that must be observed. 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, compliance with which the operator is responsible for (including compliance by any additional installation personnel).

This documentation is a supplement to the associated installation, operating and maintenance instructions, and contains additional information and safety information for the installation of the product.

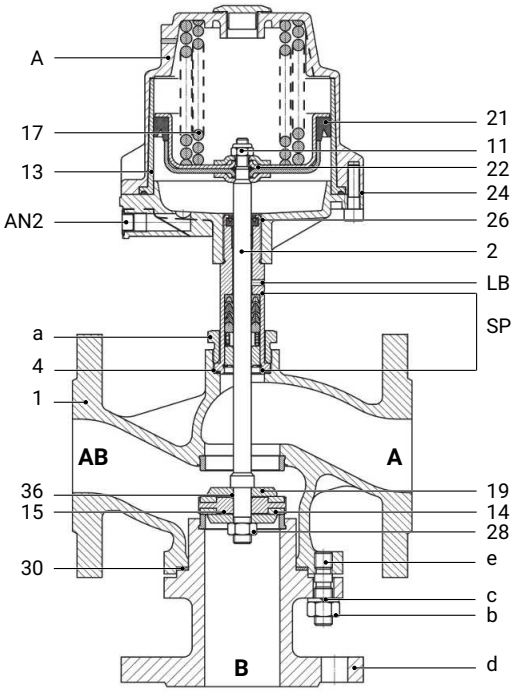
See the associated installation, operating and maintenance instructions for the product description and the description of the most important components and displays.

**Before installation:**

- Read the complete installation, operating and maintenance instructions for the GEMÜ 312/314 before you work with the product.

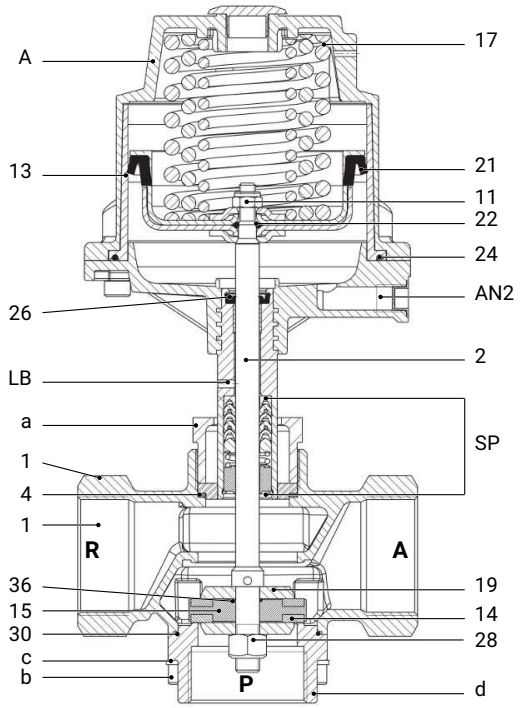
## 3 Construction

### 3.1 GEMÜ 312 construction




| Item | Name |
|---|---|
| 1 | Valve body |
| 2 | Spindle |
| 4 | Gasket |
| 11 | Hexagon nut |
| 13 | Piston sleeve |
| 14 | Seat seal |
| 15 | Valve plug |
| 17 | Compression spring(s) |
| 19 | Retaining washer |
| 21 | Lip ring |
| 22 | O-ring |
| 24 | O-ring |
| 26 | Lip ring |
| 28 | Hexagon nut |
| 30 | Gasket |
| 36 | O-ring |
| A | Actuator |
| a | Union nut |
| b | Hexagon nut |
| c | Washer |
| d | Seat flange |
| e | Stud bolt |
| AN2 | Connector 2 |
| LB | Leak detection hole |
| SP | Gland packing |

## 3.2 GEMÜ 314 construction




| Item | Name |
|---|---|
| 1 | Valve body |
| 2 | Spindle |
| 4 | Gasket |
| 11 | Hexagon nut |
| 13 | Piston sleeve |
| 14 | Seat seal |
| 15 | Valve plug |
| 17 | Compression spring(s) |
| 19 | Retaining washer |
| 21 | Lip ring |
| 22 | O-ring |
| 24 | O-ring |
| 26 | Lip ring |
| 28 | Hexagon nut |
| 30 | O-ring |
| 36 | O-ring |
| A | Actuator |
| a | Union nut |
| b | Cylindrical screw |
| c | Washer |
| d | Seat flange |
| AN2 | Connector 2 |
| LB | Leak detection hole |
| SP | Gland packing |

## 4 Preparing for installation

**⚠ WARNING**

**The equipment is subject to pressure!**

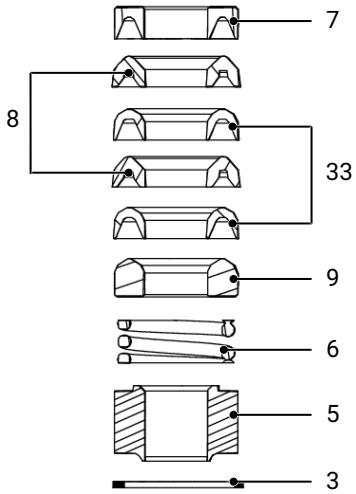
- ► Risk of severe injury or death
- ● Depressurize the plant or plant component.
- ● Completely drain the plant or plant component.

1. Ensure that the product is suitable for the respective application.
2. Check the technical data of the product and the materials.
3. Keep appropriate tools ready.
4. Wear appropriate protective gear in accordance with the plant operator's guidelines.
5. Observe appropriate regulations for connections.
6. Installation work must only be performed 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 allow it to cool down until the temperature is below the media vaporization temperature and cannot cause scalding.
11. If necessary, correctly decontaminate, rinse and ventilate the plant or plant component.

# 5 Installing/removing the gland packing

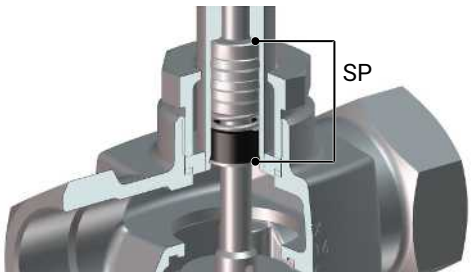
See also the Construction (see Chapter 3, page 5) chapter or, in the installation, operating and maintenance instructions for the GEMÜ 312/314, the "Installing the valve" chapter and the "Sectional drawings" chapter.

## 5.1 Gland packing construction



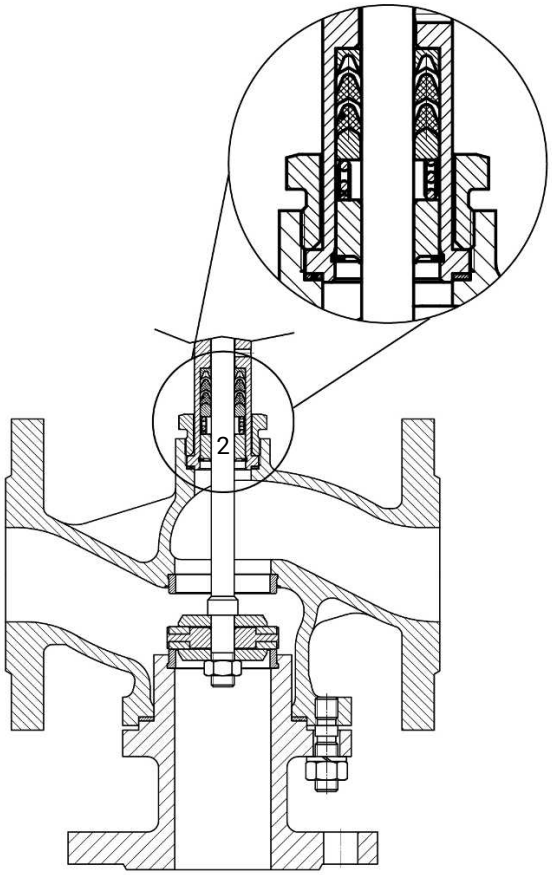

| Item | Name |
|---|---|
| 3 | Circlip B |
| 5 | Guide bush |
| 6 | Compression spring |
| 7 | Support ring |
| 8 | Chevron packing |
| 9 | Pressure ring |
| 33 | Chevron packing |

**Gland packing position**

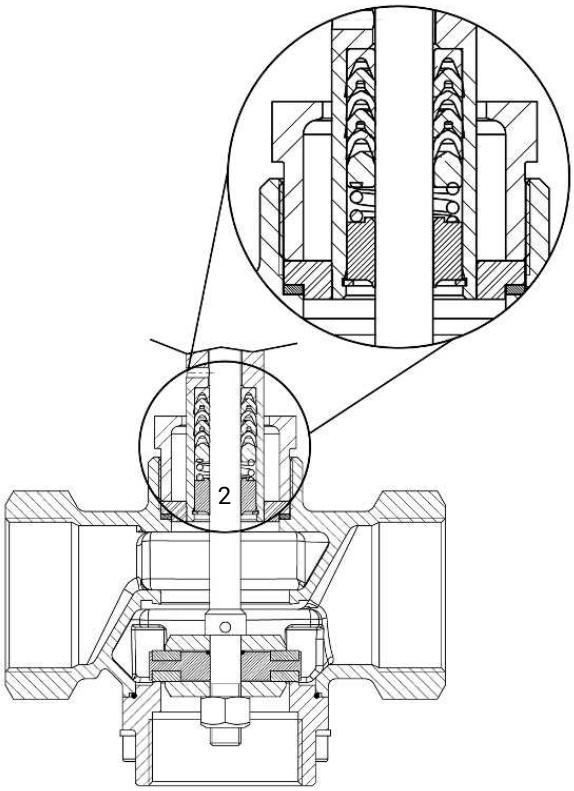



| Item | Name |
|---|---|
| SP | Gland packing |

**GEMÜ 312: Gland packing when installed**




**GEMÜ 314: Gland packing when installed**



## 5.2 Removing the actuator

**NOTICE**

► 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).

**NOTICE**

**Gasket!**

● Replace the gasket **4** and gasket/O-ring **30** each time the actuator is disassembled/assembled.

### 5.2.1 Removing the GEMÜ 312 actuator

1. Move actuator **A** to the open position.
   ⇨ Connection AB-B open.
2. Undo and remove screws **e**, hexagon nuts **b** and washers **c** on seat flange **d**.
3. Pull seat flange **d** downwards.
4. Remove gasket **30**.
5. Move actuator **A** to the closed position.
   ⇨ Connection AB-A open.
6. Undo and remove hexagon nut **28** on valve plug **15** with retaining washer **19**.
7. Move actuator **A** to the open position.
   ⇨ Connection AB-A open.
   ⇨ Valve plug **15** becomes loose.
8. Move actuator **A** to the closed position.
   ⇨ Connection AB-A open.
9. Remove all of the loosened parts.
10. Undo union nut **a**.
11. Remove actuator **A** from valve body **1**.
12. Remove gasket **4**.

### 5.2.2 Removing the GEMÜ 314 actuator

1. Move actuator **A** to the open position.
   ⇨ Connection A-P open.
2. Undo and remove cylindrical screws **b** and washers **c** on seat flange **d**.
3. Pull seat flange **d** downwards.
4. Remove O-ring **30**.
5. Move actuator **A** to the closed position.
   ⇨ Connection A-R open.
6. Undo and remove hexagon nut **28** on valve plug **15** with retaining washer **19**.
7. Move actuator **A** to the open position.
   ⇨ Connection A-P open.
   ⇨ Valve plug **15** becomes loose.
8. Move actuator **A** to the closed position.
   ⇨ Connection A-R open.
9. Remove all of the loosened parts.
10. Undo union nut **a**.
11. Remove actuator **A** from valve body **1**.
12. Remove gasket **4**.

## 5.3 Removing the gland packing

**⚠ WARNING**

**The actuator cover is under spring pressure!**

► Risk of severe injury or death!

● Only open the actuator under a press.

1. Remove actuator **A** (Removing the actuator (see Chapter 5.2, page 8)).
2. Clamp actuator **A** in a press.

**⚠ CAUTION**

**Actuator cover will break if pressure is too high!**

► Only use minimum required pressure.

3. Undo and remove connecting bolts between cover and base of actuator **A**.
4. Slowly release the press.
   Release and open actuator **A**.
5. Remove compression springs **17** and O-ring **24** from piston sleeve **13**.
6. Pull piston sleeve **13** from cover of actuator **A** and lubricate with Dowcorning 111 Molycote.
7. Undo hexagon nut **11** of piston-spindle joint in base of actuator **A**.
8. Remove lip ring **21** from piston cover.
9. Remove O-ring **22** between piston and piston cover.
10. Pull out spindle **2** downwards from base of actuator **A**.
11. Remove lip ring **26** from base of actuator **A**.
12. Use an appropriate tool to remove circlip **3** from base of actuator **A**.
13. Pull out the components from the pipe in the base of actuator **A** in the following order: Guide bush **5**, compression spring **6**, pressure ring **9**, chevron packings **8** and **33** and support ring **7**.

## *5.4 Installing new gland packing*

1. Insert the new gland packing into the pipe in the base of actuator **A** in the following order:
   1. Support ring **7**.
   2. Chevron packings **8** and **33** (before this, lubricate using Dowcorning 111 Molycote).

**NOTICE**

**Loss of sealing tightness in the event of incorrect layout!**

- Arrange the sharp-edged sides of chevron packings **8** and **33** in the direction of the valve body, otherwise no sealing tightness will be achieved (see Gland packing construction (see Chapter 5.1, page 7)).

   3. Pressure ring **9**.
   4. Compression spring **6**.
   5. Guide bush **5**.
2. Lock gland packing in place using circlip **3**.
3. Insert new lip ring **26** in base of actuator **A**.
4. Check spindle **2** for potential damage and, if necessary, replace it.
5. Push spindle **2** through base of actuator **A**.
6. Insert O-ring **22** between piston and piston cover.
7. Insert new lip ring **21** in piston cover.
8. Fix piston-spindle joint in base of actuator **A** with hexagon nut **11**.
9. Press piston sleeve **13** into cover of actuator **A**.
10. Insert O-ring **24** and compression springs **17** into piston sleeve **13**.
11. Put cover and base of actuator **A** together and insert connecting bolts.
12. Clamp actuator **A** in a press, and press cover and base of actuator **A** flush together.

**⚠ CAUTION**

**Actuator cover will break if pressure is too high!**

► Only use minimum required pressure.

13. Tighten connecting bolts between cover and base of actuator **A** diagonally.
14. Slowly release the press.
15. Mount actuator **A** (Mounting the actuator (see Chapter 5.5, page 10)).

### 5.5 Mounting the actuator

**NOTICE**

**Gasket!**

- Replace the gasket **4** and gasket/O-ring **30** each time the actuator is disassembled/assembled.

1. Move actuator **A** to the open position.
   - ⇨ **GEMÜ 312:** Connection AB-B open.
   - ⇨ **GEMÜ 314:** Connection A-P open.
2. Insert new gasket **4** in valve body **1**.
3. Place actuator **A** on valve body **1** approx. 90° anticlockwise to the end position of the control medium connectors and screw it on hand-tight using union nut **a**.
   - ⇨ The actuator can be rotated through 360°.
   - ⇨ The position of the control medium connectors is optional.
4. Tighten union nut **a** with an open-end wrench (for torques, see table). This causes the actuator to turn approx. 90° clockwise until it reaches the desired position.

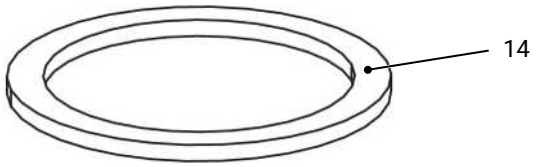
| Nominal size | Torques [Nm] |
|---|---|
| DN 15 | 100 |
| DN 20 | 100 |
| DN 25 | 100 |
| DN 32 | 100 |
| DN 40 | 100 |
| DN 50 | 100 |
| DN 65 | 120 |
| DN 80 | 120 |
| DN 100 | 120 |

5. Move actuator **A** to the closed position.
   - ⇨ **GEMÜ 312:** Connection AB-A open.
   - ⇨ **GEMÜ 314:** Connection A-R open.
6. Insert seat seal **14** into valve plug **15**.
7. Insert retaining washer **19** and use hexagon nut **28** to fix it in place.
8. Move actuator **A** to the open position.
   - ⇨ **GEMÜ 312:** Connection AB-B open.
   - ⇨ **GEMÜ 314:** Connection A-P open.
9. Insert gasket/O-ring **30** into seat flange **d**.
10. Connect valve body **1** and the seat flange using screws, washers and nuts.
11. With the valve fully assembled, check that it is working correctly and that it is leak-tight.

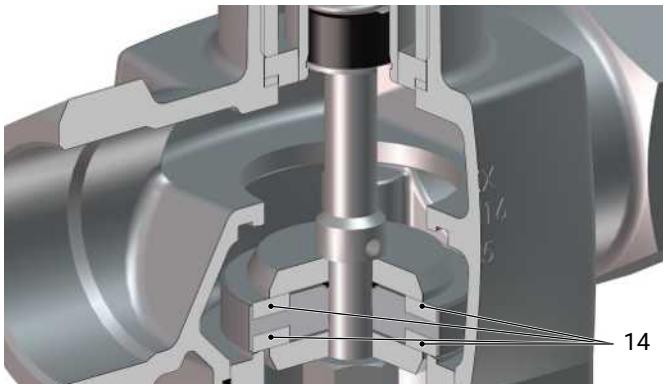
## 6 Installing/removing the seat seal

See also the Construction (see Chapter 3, page 5) chapter or, in the installation, operating and maintenance instructions for the GEMÜ 312/314, the "Installing the valve" chapter and the "Sectional drawings" chapter.

### 6.1 Seat seal construction

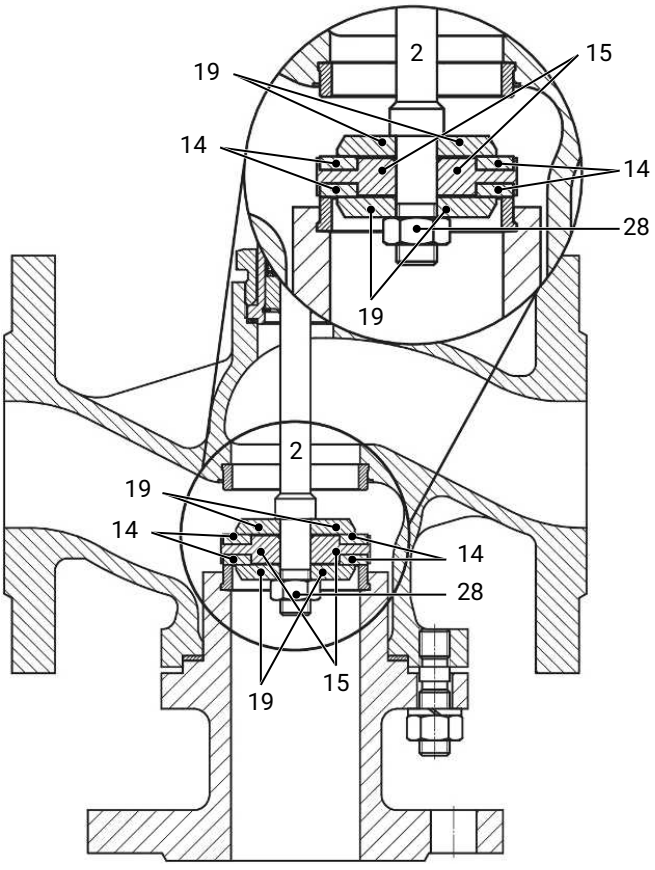



Seat seal position

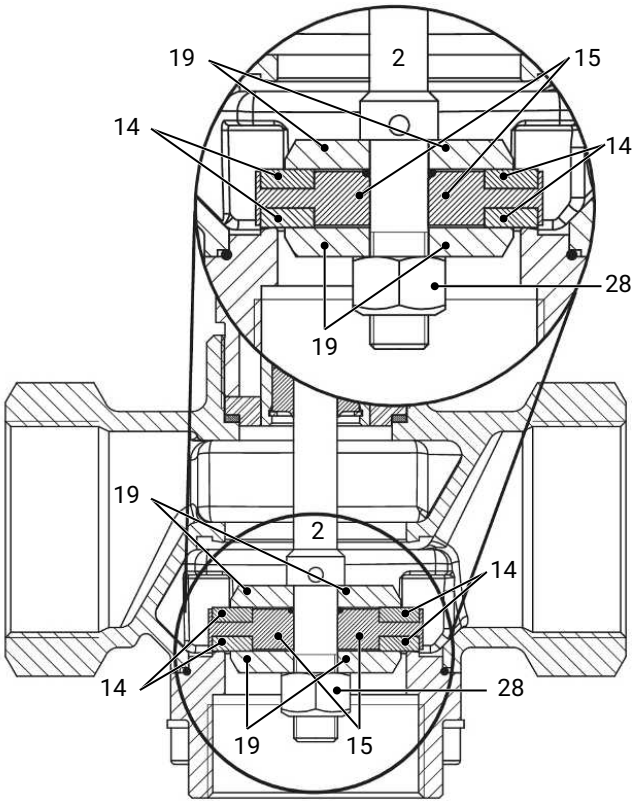



| Item | Name |
|---|---|
| 14 | Seat seal |

GEMÜ 312: Seat seal when installed



GEMÜ 314: Seat seal when installed




## 6.2 Removing the actuator

**NOTICE**

► 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).

**NOTICE**

**Gasket!**

● Replace the gasket **4** and gasket/O-ring **30** each time the actuator is disassembled/assembled.

### 6.2.1 Removing the GEMÜ 312 actuator

1. Move actuator **A** to the open position.
   ⇨ Connection AB-B open.
2. Undo and remove screws **e**, hexagon nuts **b** and washers **c** on seat flange **d**.
3. Pull seat flange **d** downwards.
4. Remove gasket **30**.
5. Move actuator **A** to the closed position.
   ⇨ Connection AB-A open.
6. Undo and remove hexagon nut **28** on valve plug **15** with retaining washer **19**.
7. Move actuator **A** to the open position.
   ⇨ Connection AB-A open.
   ⇨ Valve plug **15** becomes loose.
8. Move actuator **A** to the closed position.
   ⇨ Connection AB-A open.
9. Remove all of the loosened parts.
10. Undo union nut **a**.
11. Remove actuator **A** from valve body **1**.
12. Remove gasket **4**.
13. Disconnect the control medium supply/remove the control medium hoses.

### 6.2.2 Removing the GEMÜ 314 actuator

1. Move actuator **A** to the open position.
   ⇨ Connection A-P open.
2. Undo and remove cylindrical screws **b** and washers **c** on seat flange **d**.
3. Pull seat flange **d** downwards.
4. Remove O-ring **30**.
5. Move actuator **A** to the closed position.
   ⇨ Connection A-R open.
6. Undo and remove hexagon nut **28** on valve plug **15** with retaining washer **19**.
7. Move actuator **A** to the open position.
   ⇨ Connection A-P open.
   ⇨ Valve plug **15** becomes loose.
8. Move actuator **A** to the closed position.
   ⇨ Connection A-R open.
9. Remove all of the loosened parts.
10. Undo union nut **a**.
11. Remove actuator **A** from valve body **1**.
12. Remove gasket **4**.
13. Disconnect the control medium supply/remove the control medium hoses.

### 6.3 Removing the seat seal

1. Remove actuator **A** (Removing the actuator (see Chapter 6.2, page 11)).
2. Undo retaining washer **19** on spindle **2** (hold spindle **2** in place using an appropriate tool that will not damage the spindle surface).
3. Remove seat seal **14**.
4. Clean all parts; do not scratch or damage the parts during cleaning.

### 6.4 Installing a new seat seal

**NOTICE**

**Steel seat seal!**

► The steel seat seal may only be replaced by GEMÜ.

● Send the **complete** valve to GEMÜ together with a completed return delivery note.

1. Insert new seat seals **14** into valve plug **15** from above and below.
2. Apply appropriate thread locking compound to the thread of valve plug **15**.
3. Push upper retaining washer **19** over spindle **2**.
4. Place O-ring **36** on valve plug **15**.
5. Push valve plug **15** with inserted seat seals **14** over spindle **2**.
6. Push lower retaining washer **19** over spindle **2** and upwards as far as valve plug **15**, and bolt it with hexagon nut **28**.
7. Mount actuator **A** (Mounting the actuator (see Chapter 6.5, page 12)).

### 6.5 Mounting the actuator

**NOTICE**

**Gasket!**

● Replace the gasket **4** and gasket/O-ring **30** each time the actuator is disassembled/assembled.

1. Move actuator **A** to the open position.
   ⇨ **GEMÜ 312:** Connection AB-B open.
   ⇨ **GEMÜ 314:** Connection A-P open.
2. Insert new gasket **4** in valve body **1**.
3. Place actuator **A** on valve body **1** approx. 90° anticlockwise to the end position of the control medium connectors and screw it on hand-tight using union nut **a**.
   ⇨ The actuator can be rotated through 360°.
   ⇨ The position of the control medium connectors is optional.
4. Tighten union nut **a** with an open-end wrench (for torques, see table). This causes the actuator to turn approx. 90° clockwise until it reaches the desired position.

| Nominal size | Torques [Nm] |
|---|---|
| DN 15 | 100 |
| DN 20 | 100 |
| DN 25 | 100 |
| DN 32 | 100 |
| DN 40 | 100 |
| DN 50 | 100 |
| DN 65 | 120 |
| DN 80 | 120 |
| DN 100 | 120 |

5. Move actuator **A** to the closed position.
   ⇨ **GEMÜ 312:** Connection AB-A open.
   ⇨ **GEMÜ 314:** Connection A-R open.
6. Insert gasket/O-ring **30** into seat flange **d**.
7. Connect valve body **1** and the seat flange using screws, washers and nuts.
8. With the valve fully assembled, check that it is working correctly and that it is leak-tight.

# 7 Wearing parts kits

## 7.1 GEMÜ 312 wearing parts kits

### 7.1.1 SKV wearing parts kit

| Item | Name | Order designation |
|---|---|---|
| **Actuator** | | 312...SKV... |
| 11 | Hexagon nut | |
| 13 | Piston sleeve | |
| 21 | Lip ring (external seal) | |
| 22 | O-ring | |
| 24 | O-ring | |
| 26 | Lip ring (internal seal) | |
| **Valve** | | |
| 4 | Gasket | |
| 14 | Seat seal | |
| 28 | Hexagon nut | |
| 30 | Gasket | |
| 36 | O-ring | |
| **Gland packing** | | |
| 3 | Circlip B | |
| 5 | Guide bush | |
| 6 | Compression spring | |
| 7 | Support ring | |
| 8 | Chevron packing | |
| 9 | Pressure ring | |
| 33 | Chevron packing | |

### 7.1.2 SKS wearing parts kit

| Item | Name | Order designation |
|---|---|---|
| **Spindle** | | 312...SKS... |
| 2 | Spindle | |
| 11 | Hexagon nut | |
| 14 | Seat seal | |
| 15 | Valve plug | |
| 19 | Retaining washer | |
| 28 | Hexagon nut | |
| 36 | O-ring | |
| **SKV** | | |
| – | SKV wearing parts kit | |

### 7.1.3 SAF wearing parts kit

| Item | Name | Order designation |
|---|---|---|
| 17 | Compression spring* | 312...SAF... |

* The number of compression springs with control function 1 is dependent on the actuator version.

## 7.2 GEMÜ 314 wearing parts kits

### 7.2.1 SKV wearing parts kit

| Item | Name | Order designation |
|---|---|---|
| **Actuator** | | 314...SKV... |
| 11 | Hexagon nut | |
| 13 | Piston sleeve | |
| 21 | Lip ring (external seal) | |
| 22 | O-ring | |
| 44 | O-ring (only with control function 3) | |
| 26 | Lip ring (internal seal) | |
| **Valve** | | |
| 4 | Gasket | |
| 14 | Seat seal | |
| 28 | Hexagon nut | |
| 30 | O-ring | |
| 36 | O-ring | |
| **Gland packing** | | |
| 3 | Circlip B | |
| 5 | Guide bush | |
| 6 | Compression spring | |
| 7 | Support ring | |
| 8 | Chevron packing | |
| 9 | Pressure ring | |
| 33 | Chevron packing | |

### 7.2.2 SKS wearing parts kit

| Item | Name | Order designation |
|---|---|---|
| **Spindle** | | 314...SKS... |
| 2 | Spindle | |
| 14 | Seat seal | |
| 15 | Valve plug | |
| 19 | Retaining washer | |
| 28 | Hexagon nut | |
| 36 | O-ring | |
| **SKV** | | |
| | SKV wearing parts kit | |

### 7.2.3 SAF wearing parts kit

| Item | Name | Order designation |
|---|---|---|
| 17 | Compression spring* | 314...SAF... |

* The number of compression springs with control function 1 is dependent on the actuator version.

## 8 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.

## 9 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.

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www.gemu-group.com



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