

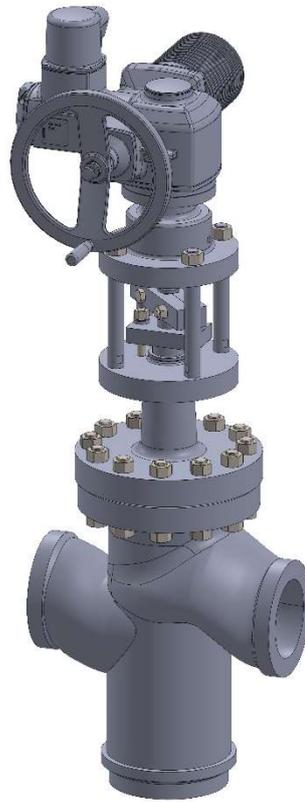
Operation Instruction- Globe Valves



PHOENIX Armaturenwerke GmbH

Instruction for 3-Way Globe Valve  
BA 199-AV-E

Edition 2023-08-00



Edition		00							
Date	Name	08/23							
Edition									
Date	Name								

# Operation Instruction- Globe Valves

## Declaration of conformity acc. to Directive 2014/68/EU

<b>The manufacturer</b>	PHOENIX Armaturenwerke GmbH 34471 Volkmarsen
declares that the valves	<b>Manufacturer and Brand PHOENIX:</b> <b>3-Way Globe Valves with bellows seal and secondary stuffing box seal Type 374</b> <b>3-Way Globe valves with stuffing box seal Type 324</b> <ul style="list-style-type: none"> <li>• with handwheel and actuator</li> <li>• with square for gear assembling</li> </ul>
<ol style="list-style-type: none"> <li>1. are pressure bearing equipment's within the meaning of the Pressure Equipment Directive 2014/68/EU and in conformity with the requirements of this directive,  <b>Note: Globe valves &lt;DN 32 are not concerned by this directive</b></li> <li>2. can only be used and operated under observance of the attached operation manual BA 199-AV-E.</li> </ol>	

Related standards :

<b>DIN EN 16668</b>	<b>Requirements and testing for metallic valves as pressure accessories</b> <b>Direction for pressure bearing body components</b> Body- and Bonnet Material acc. AD 2000 AD-A4 with Inspection Certificate 3.1 to EN 10204
<b>DIN EN 19</b>	<b>Marking of metallic valves</b>

Description of type and technical features :

<b>PHOENIX-type data-sheets &lt;350, 385, 390, 365, 925, 941, 359, 382, 311, 430, 730, 919, 935&gt;</b> <b>STRACK-type data-sheets &lt; S 20, S 21, S24 &gt;</b> <i>NOTE: This manufacturer declaration is valid for all variants of types mentioned in the PHOENIX catalogue</i>
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Applied procedure for the rating of the conformity :

<b>to Annex II of the Pressure Equipment Directive 2014/68/EU Module „H“</b>
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Name of the notified body :

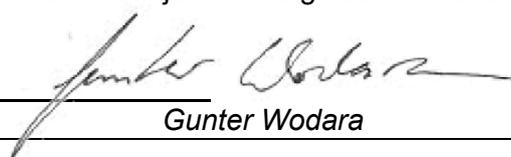
Identification N° of the notified body :

<b>LRQA Deutschland GmbH</b>	<b>0525</b>
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Modifications on globe valves and/or components with consequences for the technical features of the valve, of the <defined use> acc. to section 1 of the operation instruction and which will modify the valve essentially cancel these declarations.

According to the guidelines for the application of the Council's general direction 2014/34/EU of 26.02.2014 for adapting legal regulations valid in the single member countries and dealing with apparatuses and safety systems and their application in areas endangered by explosion, globe valves do not have an integrated potential source of sparks as revealed by the danger of releasing sparks analysis. Due to this, globe valves are not subject to the guideline mentioned above.

Volkmarsen, 30.08.2023



Gunter Wodara

**PHOENIX Armaturenwerke GmbH 34471 Volkmarsen**

BA 199-AV-E-3-Way-Globe Valve-2023-08-008-00

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# Operation Instruction- Globe Valves

## 0 GENERAL

This Operation and maintenance manual shall ensure the correct and technically safe use of 3-way globe valves during operation. The instructions apply to all 3-way globe valves equipped with actuator or handwheel, irrespective of material, size and pressure rating.

The extent of the delivery includes the 3-way globe valve, comprising the housing, the internals, and the structure of the actuator. Any connecting piping, electrical connections or remote operators and their adapters are not included in the delivery.

The basis of the Operation and maintenance manual are the approved construction plan (CP) documents. They apply together with the applicable Valve Data Sheets (VDS) and the accompanying general sectional drawing and general part list.

**In terms of their risk potential, 3-way globe valves are equivalent to pressurised vessels. Therefore, the regulations applicable to the planning, commissioning, installation, operation and maintenance must be observed.**

The following must be observed in particular:

- 3-way globe valves shall only be used according to the approved CP and within the permitted limits.
- No modifications shall be made without the consent of PHOENIX
- Only original spare parts shall be used.
- Accident prevention provisions, regulations and plant-specific requirements must be observed.
- The references in this Operation and maintenance manual must be observed.
- Only trained and instructed personnel shall be employed to work on the valve.



### Note

All dismantling and assembly work of the valve during the warranty period must be performed by PHOENIX personnel or its authorized service provider. In special cases after prior consultation and agreement with PHOENIX, qualified technical personnel can be deployed by the customer. (see 91914-3-w-globe-II Appendix 1)

Maintenance work, such as work on the packing, is excepted.

**The valves have been designed for the requirements defined in the Valve Data Sheets (VDS). The information in the sectional drawing and part list must be observed. The Operation and maintenance manuals of the actuator manufacturers must also be observed.**

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## 1 NORMAL OPERATION AND MAINTENANCE

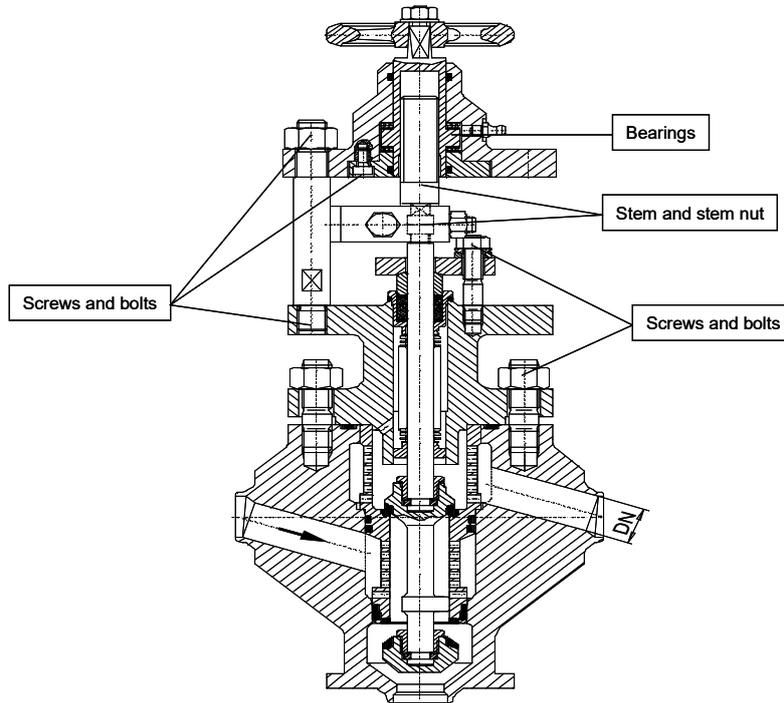
Turning the handwheel clockwise provokes the closing of the globe valves and an anticlockwise operation opens the valve.

	The use of extension rods, levers and similar items to increase the operation moment is not admitted.
	<b>3-way Globe valves are <i>not suitable for an operation in intermediate position.</i></b> 3-way Globe valves shall only be used in their final position, either completely opened in one direction or to the other. When an intermediate/throttling position is required the valve shall be equipped with a rigid regulating disc, i.e. no flexible disc.
	<b>Danger to life</b> Because of their hazard potential valves are comparable with over pressure vessels and as such are governed by the relevant "Accident Prevention Regulations (UVV – user guidelines). Before undertaking maintenance and assembly work, make sure that the valve is not under pressure or temperature and that the system before and after the valve is completely blocked of.
	<b>Note</b> All dismantling and assembly work of the valve during the warranty period must be performed by PHOENIX personnel or its authorized service provider. In special cases after prior consultation and agreement with PHOENIX, qualified technical personnel can be deployed by the customer. (see 91914-3-w-globe-II Appendix 1)

Maintenance work, such as work on the packing, is excepted. Typical maintenance points include checking glands, lubricating stems and function tests.

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## 2 LUBRICATION



Application	Grease	Manufacturer
Bearings	Shell Alvania Grease RL	Shell
Stem nut	Molykote BR 2 Plus	Dow Corning GmbH
Used during assembly	Dag Diapension 156	Acheson Colloids Company
Screws and bolts	Never Seez Nickel Special (NGBT-8)	Bostik

### Lubrication of the stem thread

The frequency of the lubrication will depend on the valve operation cycle, its ambient conditions (pollution, temperature) and the influence of the valve heat on the grease point. The stem thread should first be cleaned if heavily soiled and the gland area protected accordingly.

For hand operated valves, the stem thread should be brush greased below the yoke head and below the handwheel.

 <b>Note!</b>	After the stem lubrication, the valves should be operated a number of times and lubrication repeated if necessary.
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Under normal conditions the stem thread and stem bushing should be lubricated in intervals of two years.

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## 3 MAINTENANCE AFTER “FAULT FINDINGS”

Repairs should be carried out in accordance with the safety rules from the end user, the relevant Accident Prevention Regulations.

 <b>Note</b>	All dismantling and assembly work of the valve during the warranty period must be performed by PHOENIX personnel or its authorized service provider. PHOENIX recommends that all dismantling and assembly work of the valve beyond the warranty period shall be performed by PHOENIX personnel or its authorized service provider. (see 91914-3-w-globe-II Appendix 1)
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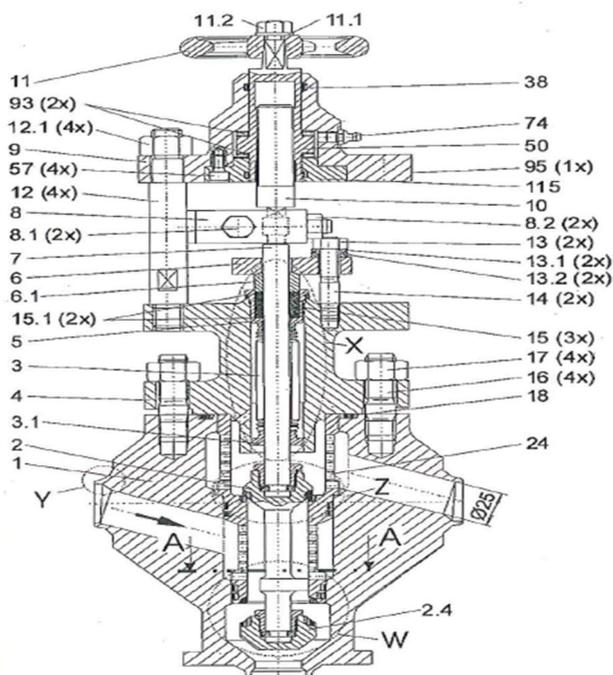
### 3.1 Replacement of packing

 <b>Danger to life</b>	Prior to any maintenance and assembly work, make sure that the valve is not under pressure or temperature and that the system before and after the valve is completely blocked of.
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 <b>Note!</b>	Only use packings as specified by the manufacturer!
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#### 3.1.1 Disassembly

Turn the handwheel clockwise until the upper disc closes with the seat. Remove coupling (8). Lift the upper stem (10) with the handwheel (11), thus creating sufficient space between the upper stem (10) and the lower stem (7) for the replacement of the packing (15). When the packing consists of cords, e.g. PTFE-silk or similar designs, the replacement can be achieved without problems and no explanations are necessary. Therefore, the following statements refer mainly to rings. Especially when pressed, ready-made undivided packing rings are used, a design with a spited stem (coupled option) offers many advantages compared to an option with a one piece stem because the whole operating mechanism must not be disassembled for this procedure.



#### Undivided rings

Undivided rings will be simply drawn over the lower stem (7) and then pressed-down into the packing

# Operation Instruction- Globe Valves

chamber (5).

## Slotted rings

Slotted rings shall not be expanded in tangential direction but must be opened in axial direction, drawn over the stem (7) and then plane upset.

### 3.1.2 Removal of the old packing

Unscrew stuffing box nuts (13) and pull up gland follower (6), gland (6.1) and fix it e.g. with wire or similar. Pick up first cover gasket (15.1) and pull it upwards. Then pull out the old packing set (15) carefully using adequate tools. Clean packing chamber (5) and check stem finish. The stem has to be free of damages. In case that there are scratches or grooves onto the stems surface, it has to be replaced.



**Note!**

Surfaces of stem (7) and packing chamber (5) must not be damaged!

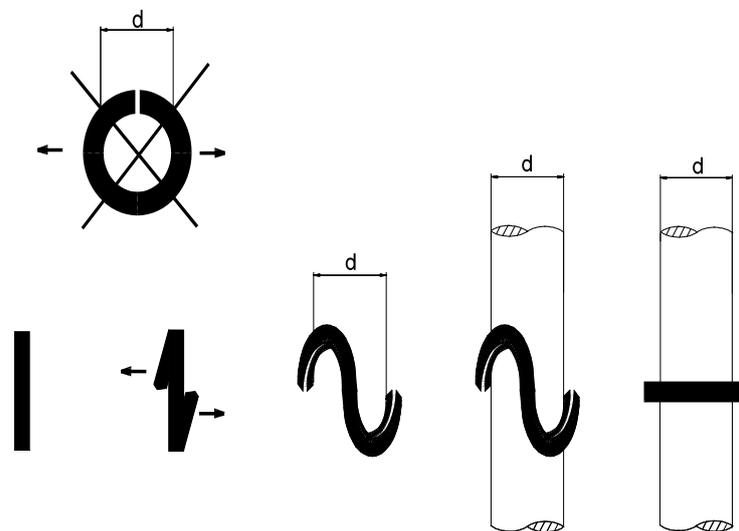
### 3.1.3 Insertion of the new packing



**Note!**

Reinsert the rings in the same sequence as it was originally.

PHOENIX recommends to use ready made, pressed rings having the necessary tolerances of the former ones. Rings are the common forms of packing used in PHOENIX valves. The number of rings to be used in a particular valve will be determined, in the related Part list of the valve.



Introduce the single rings (15) into the packing chamber (5) with their intersection to the front. Press them down with a suitable packing rod e.g. a divided sleeve. The intersections of the slotted rings (15) must be displaced on each about 90° or 120°. The packing chamber (5) must be filled up to a level that the gland follower (6) will center perfectly.

After the replacement fit gland follower (6), gland (6.1) again and tighten slightly with the stuffing box nuts (13). Screw down upper stem (10) and refit it together with the lower stem (7) inside the coupling (8). Fix the two halves of the coupling with the relevant bolts (8.1) and nuts (8.2). For torque values see general sectional drawing. Verify during this procedure that the stem (7) will move smoothly.

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## 3.2 Leaks across the seats

PHOENIX valves have a conical sealing surface. For all valves the disc is harder than the seat. Due to this arrangement the disc remains free from scratches and markings and it is also possible to polish-off minor damages and/ or scratches on the seat area using a high closing force. When there is a more extensive damage, however, the complete seat area shall be remachined.

### Possible causes are:

- Solid particles in the medium that has damaged the seat
- Deformation of the seat faces trough excessive tightening of the valve or through thermal stress
- Erosion or corrosion caused for instance by incorrect selection of valve nominal diameter or valve material.

**Remedy:** use spare parts if required

First, try opening the valve slightly to flush any foreign material from the seating surfaces and then fully close the valve. If this doesn't stop the leakage, it must be concluded that there is an imperfect seal, and the valve has to be opened for examination. Remove the valve's bonnet, clean and check the internal parts. In case of damaged seats a replacement will be necessary.



**Note**

**Always replace bonnet gasket (18) after disassembly of the bonnet.**

### 3.2.1 Replacement of disc

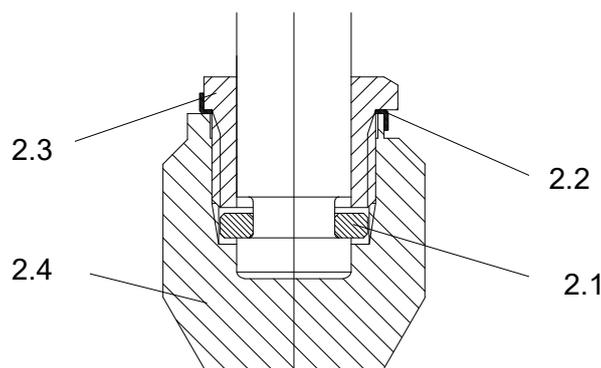
For safety and economic reasons discs should be replaced as a complete unit instead of long repair works. For the disassembling process of the bonnet with trim parts, the valve's upper disc must be fully opened. To remove the bonnet (4) first turn the handwheel anti-clockwise until the lower disc closes with the seat. Unscrew connecting bolts (16,17) to remove bonnet assembly. Due to the closing of the lower outlet the seat will be pressed onto the bonnet and can be removed along with the bonnet. Make sure to remove the bonnet-seat assembly perpendicular to the body to avoid any damages by skew. After that turn the handwheel clockwise to extend the lower disc (2.4) completely.



**Note**

**For the following procedures make sure that the lower stem (7) cannot rotate and is not subject to torsion to avoid damages of the bellows (3).**

Bend up safety washer (2.2). By means of a wrench or a ring spanner unscrew the fixation nut (2.3) from the disc (2). Grip the disc (2) in a vise with aluminium jaws. Remove disc (2.4). Be cautious not to loose the split rings (2.1).



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To replace the upper disc continue with the removal of the seat. Take care not to tilt the seat (24) with the disc guide (2). After removing the seat the upper disc (2) can be replaced following the same procedure as the lower disc.

To remount the new upper disc (2) replace the safety washer (2.2), insert the splitted rings (2.1) into the groove of the lower stem extremity (7). Then slide the stem (7) into the disc (2), tighten the fixation nut (2.3) and bend the washer (2.2) down and up over the flat side of the disc (2)

Remount the seat (24). Take care not to tilt the seat (24) with the disc guide (2). To remount the new lower disc (2.4) replace the safety washer (2.2), insert the splitted rings (2.1). Then slide the stem of the disc guide (2) into the disc (2.4), tighten the fixation nut (2.3) and bend the washer (2.2) down and up over the flat side of the disc (2.4).

Turn the handwheel anti-clockwise to retract the lower disc completely. The lower disc shall close completely to the seat with the result that the seat (24) will be grounded with the bonnet (4).

Replace also the bonnet gasket (18) and fit bonnet-seat assembly. Make sure to fit the bonnet-seat assembly perpendicular to the body to avoid any damages by skew. Following this tighten the nuts (17) crosswise. For torque values see general sectional drawing.

## 3.2.2 Regrinding of the seat

In case of damages of the seat no maintenance work is allowed. If there are any damages on the seat it has to be replaced (see section 4.2).

## 3.3 Leaks on body-bonnet connection

### Possible causes are:

- Settling of the bonnet flange bolts caused by extreme temperature fluctuations or vibration.
- Excessive pressure stresses on the bonnet flange bolting.
- Inadequate maintenance.
- External influences
- Failure of seal as a result of insufficient resistance to temperature or medium.

**Remedy:** Retighten connecting bolts. For torque values see general sectional drawing.



**Danger  
to life**

Because of their hazard potential valves are comparable with over pressure vessels and as such are governed by the relevant "Accident Prevention Regulations (UVV – user guidelines). Before undertaking maintenance and assembly work, make sure that the valve is not under pressure or temperature and that the system before and after the valve is completely blocked of.

If the retightening does not achieve the desired result, the seal will need to be replaced. The sealing faces of the valve body and valve flange must be handled with great care, and any residual seal material completely removed. The seal faces must be right, undamaged and smooth, and the surface structure to equal the original one.

The remachining of seal seat faces (valve body, bonnet etc.) should be carried out only by skilled personnel using the correct tools.

## 3.4 Leaks on gland packing

### Possible causes are:

- Inadequate maintenance.
- Wear of packing material,
- Failure of gland caused by the use of a packing material without insufficient resistance to temperature or medium.

**PHOENIX Armaturenwerke GmbH 34471 Volkmarsen - Germany**

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- Damaged bellows

**Remedy:** Retighten, repack or replace packing, For torque values see general sectional drawing.

## 3.5 Reassembling

When reassembling valves it is important to retighten the bolts (16,17) progressively and crosswise. For torque values see general sectional drawing.

## 3.6 Shell and seat tightness after maintenance

The tests must be carry out in acc. with EN 12266 P11, P12 and F20 and additional specifications.

## 4 REPAIRS

 <b>Danger to life</b>	Because of their hazard potential valves are comparable with over pressure vessels and as such are governed by the relevant "Accident Prevention Regulations (UVV – user guidelines). Before undertaking maintenance and assembly work, make sure that the valve is not under pressure or temperature and that the system before and after the valve is completely blocked of.
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 <b>Note</b>	All dismantling and assembly work of the valve during the warranty period must be performed by PHOENIX personnel or its authorized service provider. PHOENIX recommends that all dismantling and assembly work of the valve beyond the warranty period shall be performed by PHOENIX personnel or its authorized service provider.
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### 4.1 Replacement of complete bonnets for PHOENIX bellows sealed valves

When the bellows is damaged, PHOENIX recommends to tighten down the emergency packing. In most cases this procedure makes it possible that the valve can remain in line until the spare bonnet is supplied. For the disassembling process of the bonnet with trim parts, the valve's upper disc must be fully opened. To remove the bonnet (4) first turn the handwheel anti-clockwise until the lower disc closes with the seat. Unscrew connecting bolts (16,17) to remove bonnet assembly. Due to the closing of the lower outlet the seat will be pressed onto the bonnet and can be removed along with the bonnet. Make sure to remove the bonnet-seat assembly perpendicular to the body to avoid any damages by skew.

To remount the bonnet assembly turn the handwheel anti-clockwise to retract the lower disc completely. The lower disc shall close completely to the seat with the result that the seat (24) will be grounded with the bonnet (4).

Replace also the bonnet gasket (18) and fit bonnet-seat assembly. Make sure to fit the bonnet-seat assembly perpendicular to the body to avoid any damages by skew. Following this tighten the nuts (17) crosswise. For torque values see general sectional drawing.

 <b>Note</b>	<b>Always replace bonnet gasket (18).</b>
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### 4.2 Replacement of the seat

For the disassembling process of the bonnet with trim parts, the valve's upper disc must be fully opened. To remove the bonnet (4) first turn the handwheel anti-clockwise until the lower disc closes with the seat. Unscrew connecting bolts (16,17) to remove bonnet assembly. Due to the closing of the lower outlet the

## Operation Instruction- Globe Valves

seat will be pressed onto the bonnet and can be removed along with the bonnet. Make sure to remove the bonnet-seat assembly perpendicular to the body to avoid any damages by skew. After that turn the handwheel clockwise to extend the lower disc (2.4) completely.



**Note**

**For the following procedures make sure that the lower stem (7) cannot rotate and is not subject to torsion to avoid damages of the bellows (3).**

Bend up safety washer (2.2). By means of a wrench or a ring spanner unscrew the fixation nut (2.3) from the disc (2). Grip the disc (2) in a vise with aluminium jaws. Remove disc (2.4). Be cautious not to loose the split rings (2.1). Replace the seat (24). Take care not to tilt the seat (24) with the disc guide (2). Remount the new lower disc (2.4) replace the safety washer (2.2), insert the splitted rings (2.1). Then slide the stem of the disc guide (2) into the disc (2.4), tighten the fixation nut (2.3) and bend the washer (2.2) down and up over the flat side of the disc (2.4).

Turn the handwheel anti-clockwise to retract the lower disc completely. The lower disc shall close completely to the seat with the result that the seat (24) will be grounded with the bonnet (4).

Replace also the bonnet gasket (18) and fit bonnet-seat assembly. Make sure to fit the bonnet-seat assembly perpendicular to the body to avoid any damages by skew. Following this tighten the nuts (17) crosswise. For torque values see general sectional drawing.

### 4.3 Reassembling

When reassembling valves it is important to retighten the bolts (16,17) progressively and crosswise. For torque values see general sectional drawing.

### 4.4 Shell and seat tightness test and functional test after repairs

The tests must be carry out in acc. with EN 12266 P11, P12 and F20 and additional specifications for every direction.

## 5 SPARE PARTS

When ordering spare parts the customer has to specify the PHOENIX serial number that is stamped on the valve's name plate.

[Info@phoenix-Valvegroup.com](mailto:Info@phoenix-Valvegroup.com) oder <http://www.phoenix-valvegroup.com>

or following address

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GmbH**

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**Tel.: +49-5693-988-0  
Fax.: +49-5693-988-140**