

# 2/2-way automatic valve

- **PKI** (with bar-acturn or actubar)
- **EKI**

## Translation of the original operating manual

IMPORTANT: This manual is only valid in conjunction with the manufacturer documentation of the actuator



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# 1. General information

This operating manual is a part of the product. The operating manual must be kept for the entire life of the product and must be passed on to each subsequent owner of the product.

The operating manual must always be available at the place of operation.

## 1.1 Reference documents

This manual, the data mentioned and design data sheets, additional assembly and maintenance instructions as well as further information – also in other language versions, can be obtained from:

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53547 Dattenberg

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### IMPORTANT

This manual is only valid in conjunction with the manufacturer documentation of the rotary actuator.

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## 1.2 Validity of the operating manual

This operating manual is valid for the 2/2-way automatic valve of PKI /EKI type since year of manufacture 2019 with one of the following rotary actuators:

### bar-agturn

- agturn Type GD-032 till 040
- agturn Type GD/GS-052 till 400

### actubar

- actubar Type AD-001
- actubar Type AD/AS-002 till 1200

## Electric rotary actuator of company Valpes

## 1.3 Notes to operating manual

The safety and hazard statements in the document are intended for your protection, the protection of third parties and the protection of the product. The instructions must therefore be observed.

### 1.3.1 Signal words and symbols

#### **DANGER**

... indicates a hazard that, if not avoided, will result in death or serious injury.

#### **WARNING**

... indicates a hazard that, if not avoided, could result in death or serious injury.

#### **CAUTION**

... indicates a hazard which, if not avoided, could result in minor or moderate injury.

#### **NOTE**

... indicates important information (e.g. Material damage) but not hazards.



#### **Electric voltage!**

The text passages marked with this symbol inform you about dangerous situations with danger to life and health of persons due to electrical voltage.



#### **Corrosive substances!**

The text passages marked with this symbol inform you about dangerous situations caused by corrosive substances.



#### **Hot surface!**

The text passages marked with this symbol inform you about dangerous situations with a risk of burns due to hot surfaces.



#### **Cold surface!**

The text passages marked with this symbol inform you about dangerous situations with a risk due to cold surfaces.



#### **Suspended load!**

The text passages marked with this symbol inform you about dangerous situations with a risks due to suspended load.



#### **Hand injuries!**

The text passages marked with this symbol inform you about dangerous situations resulting in hand injuries caused by bruising or punching. The activities described in the relevant text passage must be performed with the utmost care to avoid dangerous situations and resulting injuries such as loss of limbs.



### **Use head protection!**

Notes with this symbol indicate that a head protection must be worn.



### **Use protective clothing!**

Notes with this symbol indicate that a protective clothing must be worn.



### **Use hand protection!**

Notes with this symbol indicate that a hand protection must be worn.

## **1.3.2 Explanation of the structure of the safety instructions**

A safety instruction is initiated with a signal word describing the severity of the danger („Chapter 1.3.1 Signal words and symbols“).

### **⚠ WARNING**

#### **Type or source of danger (possibly with warning signs according to DIN EN ISO 7010)**

Consequences in case of not following the instruction

- Avoidance of danger

## **1.3.3 Descriptions in figures**

The figures in this operating manual are intended to help you understand the facts and procedures.

The descriptions in the figures are exemplary and may differ slightly from the actual appearance of your product.

## **1.4 Responsibility of the operating company**

- The installation, electrical and pneumatic connection as well as the commissioning of the product may only be carried out by qualified personnel in accordance with the instructions described in this operating manual.
- The product may only be operated and maintained by personnel of the legal minimum age and the corresponding personnel qualification.
- This operating manual is an integral part of the product and must be available to the personnel at all times. This operating manual must be read and understood before the first commissioning.
- The operating and technical personnel must be instructed about safety devices of the product as well as safe working methods.
- The product may only be operated in perfect condition. No safety devices may be removed or disconnected.

## 2. Safety

### 2.1 General Safety Instructions

Personnel assigned to work on the automatic valve must read the operating instructions before starting work and, in particular, understand the chapter “Safety” before starting work. This is particularly valid for personnel working only occasionally on the rotary actuator.

### 2.2 Intended use

- The automatic valve is used for the automatic shut-off of liquids and gases in pipelines.
- The automatic valve is designed for use in process engineering plants.
- The operating values, limit values and setting data specified in the operating manual and the corresponding data sheet must be observed.
- Intended use also includes the observance of these operating instructions.

### 2.3 Reasonable foreseeable use

Any use other than that described in „Chapter 2.2 Intended use“ and any use not approved by the manufacturer is considered as unintended.

## DANGER

### Danger of explosion!

The automatic valve in combination with an electric actuator is not intended for use in potentially explosive atmospheres as standard. For this purpose, an electric actuator suitable for ATEX applications must be selected.

- Do not use the automatic valve with standard E drive in potentially explosive atmospheres.

### 2.4 Organizational measures

#### 2.4.1 Subsequent retrofitting or changes

The operator must make a corresponding assessment of the hazards when dealing with subsequently integrated components and retrofitting.

If you want to use a different medium or use the ball valve for a different purpose, contact our customer service. We can help you with any possible necessary configurations.

#### 2.4.2 Replacement of defective parts

Replace parts of the rotary actuator that are not in perfect condition immediately with original spare parts.

Please note that only original spare and wear parts of bar GmbH are to be used.

In the case of usage of the third-party parts, it is not ensured that they are designed and manufactured to suit the requirements.

## 2.5 Protective equipment

If necessary, the protective equipment shall be used. Keep your hair and clothing away from moving parts. If necessary, wear a hairnet and do not wear jewelry such as necklaces and rings!



### **Use head protection!**

Wear suitable head protection during transport.



### **Use protective clothing!**

Wear suitable protective clothing during commissioning, maintenance and troubleshooting.



### **Use hand protection!**

Wear suitable hand protection during transport, commissioning, maintenance and troubleshooting.

## 2.6 Personnel qualification

Only trained or instructed personnel who has known and understood the operating instructions as well as the possible dangers of the rotary actuator is allowed to work with the rotary actuator. The responsibility of the personnel for operation, maintenance and repair must be clearly defined by the operator.

Personnel to be trained, instructed or undergoing training may work on the rotary actuator only under the constant supervision of an experienced person.

The individual activities on the rotary actuator require different personnel qualifications which are listed in the following table. The different qualifications are characterized by the following skills and knowledge:

- Instructed persons must operate the rotary actuator and be able to detect possible damage and dangers on the rotary actuator.
- Instructed persons with technical training must also be aware of the dangers of handling pressurized equipment, hot and cold surfaces, harmful and hazardous materials and the process of installing and removing the valves in a process line, the specific and potential risks of the process and the most important safety regulations.
- Trained electricians must read and understand electrical circuit diagrams, commission, put electric machines into operation, service and maintain them, wire switch and control cabinets, install control software, ensure the functionality of electrical components and identify potential hazards in handling electrical and electronic systems.
- Trained pneumatic specialists must read and understand pneumatic circuit diagrams, put pneumatic systems into operation, service and maintain them, disconnect and connect pneumatic hoses, ensure the proper functioning of pneumatic components, assess the work performed on the pneumatic system and identify potential hazards.

Read this table as follows:

“The electrical installation requires the qualification of a qualified electrician.”

| Activities                                            | Instructed persons | Instructed persons with technical training | Electricians | Pneumatic specialists |
|-------------------------------------------------------|--------------------|--------------------------------------------|--------------|-----------------------|
| Installation                                          |                    | X                                          |              |                       |
| Electrical installation                               |                    |                                            | X            |                       |
| Pneumatic installation                                |                    |                                            |              | X                     |
| Setting and equipping                                 |                    | X                                          |              |                       |
| Commissioning                                         |                    | X                                          |              |                       |
| Troubleshooting                                       | X                  |                                            |              |                       |
| Cleaning                                              | X                  |                                            |              |                       |
| Troubleshooting, repair and maintenance of mechanics  |                    | X                                          |              |                       |
| Troubleshooting, repair and maintenance of electrics  |                    |                                            | X            |                       |
| Troubleshooting, repair and maintenance of pneumatics |                    |                                            |              | X                     |
| Functional checks                                     |                    | X                                          |              |                       |
| Shutdown                                              | X                  |                                            | X            |                       |
| Transport                                             | X                  |                                            |              |                       |
| Disposal                                              | X                  |                                            |              |                       |

Tab. 2-1 Overview of the required personnel qualifications

## 2.7 Dangers when handling the automatic valve

This product of bar GmbH is built according to the state of the art and the recognized safety rules. Nevertheless, there remains a residual risk and may cause dangers to the life and limb of the user or third parties or impairments of the product and other material assets in use, if:

- the product is not used as intended,
- the product is operated or repaired by untrained personnel,
- the product is improperly changed or modified and/or
- the safety instructions are not observed.

Eliminate faults that may affect safety.

### 2.7.1 Dangers during assembly, maintenance and disassembly

#### **DANGER**



#### **Electric voltage!**

There is danger to life when working on electrical components.

- The electrical connections may be performed only by qualified electricians.
- When working on the components, have the voltage released by a qualified electrician and secured against being switched on again.
- Let a qualified electrician check that no current is present.

#### **DANGER**



#### **Corrosive substances!**

Depending on the type of medium, there may be danger to life when in contact with the medium.

- Check the properties of the medium.
- Protect yourself and your environment from harmful or toxic substances.
- Follow the safety instructions in the manufacturer's safety data sheets.
- Make sure that no medium can get into the pipeline, valves during assembly work.
- Make sure that personnel working with the valves and installing or repairing the valves have received appropriate training.

#### **WARNING**



#### **Very cold and hot surfaces!**

The body of the valve can become very cold or very hot during operation.



- Wear protective gloves and protective clothing to protect against frostbite or burns.
- Make sure that personnel working with the valves and installing or repairing the valves have received appropriate training.

## **WARNING**



### **Danger of crushing hands and other body parts!**

There is a risk of injury during assembly/disassembly by movements of the ball. The shut-off body (e.g. ball or disc) of the valve works as a separating element. It makes no difference whether a rotary actuator is mounted or not. The position of the ball may change during transport or handling of the valve.

- Keep hands and fingers away when power is connected.
- Always disconnect the power supply from the rotary actuator before carrying out maintenance and repair work on the valve and when installing and removing the ball valve from the pipeline.
- Pay attention to movements of the ball.
- Keep hands, other body parts, tools and other objects out of the swivel range of the ball. Do not leave any foreign objects inside the pipeline.
- Perform works carefully when assembling, disassembling and sampling.

## **WARNING**

### **Flying parts! Splashing medium!**

There is a risk of injury when the valve is removed under pressure or with present medium. The disassembly or removal of a pressurised valve causes an uncontrolled pressure drop.

- Do not disassemble or remove the valve from the pipeline as long as the valve is pressurized.
- Always isolate the respective valve in the piping system.
- Depressurise the valve and remove the medium before working on the valve and the rotary actuator.

## **WARNING**

### **Ejected parts! (only for pneumatic actuator)**

When adjusting the rotary actuators and when the rotary actuator is opened under pressure, there is a risk of parts being ejected!

- Always disconnect the compressed air supply before maintenance, disassembly and repair!
- Never set the mechanical end positions on the actuator as long as there is pressure on connection 2 or 4.
- Never dismount the threaded pins of the vacotrol interface under pressure (only for actubar).
- Make sure the pinion of the rotary actuator is moving in the correct direction.

## ⚠ WARNING

### Welding Works!

Welding and flying sparks can cause fires.

- Make sure that the prescribed safety precautions are taken before carrying out welding works.
- Inform the relevant employees such as security officer, shift leader, company fire brigade.
- Apply for a written welding permit.
- Provide fire extinguishers.

## ⚠ WARNING

### Uncontrolled start-ups! (only for pneumatic actuator)

There is a risk of injury if pneumatic rotary actuators create a very high torque during actuation or by spring force.

- Secure the rotary actuator against any unintentional start-up or unexpected spinning.
- Work on the pneumatic rotary actuators in a prudent way.
- In case of single-acting rotary actuators (type GS), make sure that the rotary actuator is in the home position (relaxed springs) when disassembling.

## ⚠ CAUTION

### Hand injuries!

When mounting the rotary actuator on the valve spindle, the rotary actuator is pushed to the connection point/flange of the valve.

When disassembling the rotary actuator or removing the rotary actuator from the valve spindle, the parts can slip down.

There is danger of crushing the hands!

- Carefully pull off the rotary actuator.
- Keep fingers and hands away from the connection point.

## NOTE

### Material damage to valve spindle!

Material damage can occur if you use built-on rotary actuators as levers.

- Do not use built-on actuators as levers as they could damage the actuator and the valve.

## 2.7.2 Dangers during functional checks, commissioning and operation

### **DANGER**

#### **Bursting parts! Escaping media!**

There is danger to life if the maximum permissible pressure and temperature ranges of the valve are insufficient for the operating conditions of the system. There is a risk of injury and the risk of material damage by wrongly selected materials.

In addition, there is a risk of damage to the piping system.

- Only use the valves that are designed for the operating conditions.
- Make sure that the selected materials of the parts of the valve coming in contact with the medium are suitable for the media used.

### **DANGER**

#### **Escaping medium!**



There is a risk of death from escaping medium as a result of leaks (scalding, hazardous substances).

- Protect yourself from thermal or chemical burns.
- Leave the danger area in case of leakage and keep third persons out of the danger zone. Use appropriate barriers or name supervisors.

### **WARNING**



#### **Danger of being pulled in, danger of crushing and locking!**

Danger due to moving parts of the machine/valve which can be accessed through assembly, disassembly, removable covers at openings for functional checks, sampling, etc. and through automatically operated valves.

- Keep hands and fingers away when compressed air or power is connected.
- Please note that single-acting rotary actuators can move the valve to the "open" or "closed" position when closing or disconnecting the compressed air supply (only for pneumatic actuator).
- Perform works carefully when commissioning, making functional checks and sampling.

### **WARNING**



#### **Risk of burns!**

Devices and system components can become very hot during operation.

- Wear protective gloves and protective clothing to protect against burns.
- At operating temperatures > 65°C a short contact (approx. 1s) of the skin with the surface of the machine/valve may cause burns (DIN EN ISO 13732-1).

- At operating temperatures = 60 °C a long contact (approx. 3s) of the skin with the surface of the machine/valve may cause burns (DIN EN ISO 13732-1).
- At operating temperatures 55 °C – 60 °C a long contact (approx. 3S to 10s) of the skin with the surface of the machine/valve may cause burns (DIN EN ISO 13732-1).

### **CAUTION**

#### **Self-loosing components!**

Components and fasteners may become loose if not properly installed.

- Observe the information on tightening torques in this operating manual.
- Check the tightening torque of screw connections and tighten with the torque wrench, if necessary.

### **CAUTION**

#### **Noise! (only for pneumatic actuator)**

When venting the pneumatic rotary actuator, noise can be hazardous to health.

- Use silencer at vent port or take other personal protection measures.

## **2.7.3 Dangers when used in explosion-protected areas**

### **DANGER**

#### **Danger of explosion!**

An explosion can occur if the following protective measures are not observed:

- Establish an internal electrically conductive equipotential bonding between the rotary actuator and all metal mounting parts and the pipeline and make sure that sufficient lightning protection is available.
- Protect the surfaces against inadmissibly high temperatures due to solar radiation. Shading covers can possibly be required.
- Protect the actuator against excessive heating due to heat transfer with hot media inside the pipeline. If necessary, mounting kits or shaft extensions are required.
- Please be aware of that the max. surface temperature significantly depends on the operating conditions. Make sure that the actual max. surface temperature is not an ignition source.
- When selecting the pneumatic valves and the end position feedbacks, pay attention to the combination with Ex-approved products.
- Avoid sparking when using the tool.

 **DANGER**

**Danger of explosion!**

(continuation)

- Always observe the max. permissible operating pressure. Exceeding can cause material failure which can lead to sparking.
- Avoid dust accumulation.
- Do not install rotary actuators in pit-like cavities if there is a predictable dust accumulation.
- Do not carry out leak detection with ultrasonic transmitters.

### 3. Product description

The 2/2-way automatic valve of PKI/EKI type is a combination of the following components:

- 2/2-way ball valve of KI type made of stainless steel, three-part, with floating precision ball

and one of the following rotary actuators (according to order):

#### **PKI (pneumatic)**

- agturn Type GD-032 till 040 and Type GD/GS-052 till 400
- actubar Type AD-001 and Type AD/AS-002 till 1200

#### **EKI (electric)**

- electric rotary actuator of company Valpes

The valve is operated pneumatically (double- and single-acting) or electrically and is characterized by a long service life and high operational safety.

#### **Product features:**

- Full passage
- Maintenance-free
- Optionally available with end position feedback, position controllers and solenoid valves (only for pneumatic rotary actuators)
- Anti-blowout spindle
- Usage also with vacuum and high flow velocities
- Alternatively also can be delivered with hand lever or gearbox

#### 3.1 Ball valve

The 2/2-way ball valve of KI type is intended for installation in piping systems. Its function is to shut off or regulate a medium in pipelines.

#### 3.2 Rotary actuator

The rotary actuator is used for the automatic actuation of industrial valves continuously moving between the end positions.

### 3.3 Type plate

The type plate of the automatic valve is attached to the rotary actuator.



Fig. 3-1 Type plates PKI

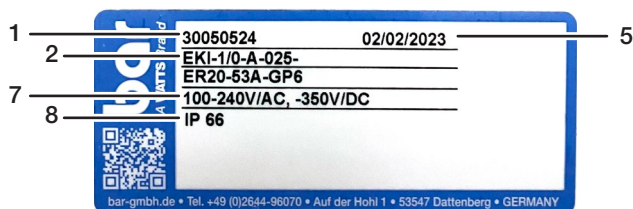


Fig. 3-2 Type plate EKI

### Legend

- 1 bar article number
- 2 Article/order designation (see data sheet)
- 3 Control pressure range for the pneum. rotary actuator
- 4 Maximum permissible medium pressure
- 5 Manufacture date (year of construction)
- 6 ATEX marking
- 7 Electric voltage
- 8 Protection type

## 4. Transport and storage

### 4.1 Scope of delivery

- 2/2-way automatic valve of PKI or EKI type
- Possibly ordered accessories

### 4.2 Incoming goods inspection

The following items must be checked at the time of delivery:

- Does the number of delivered transport containers correspond to the delivery note?
- Is the packaging free of visible damage?
- Are the product and accessories free of visible damages?
- Are there any evidences of not gentle handling during the transport (e.g., burns, scratches, colour)?

To have all the right for claim against the transport company, you have to document the possible external transport damages (e.g. with photographs and a written protocol) before unpacking the product.

bar GmbH is not responsible for transport damages and can take over no liability for that.

## 4.3 Transport, packaging and storage

### **DANGER**



#### **Suspended load!**

When transporting, e.g. with a crane, there is a risk that parts fall down and people are seriously injured.

- Never exceed the permissible load of the hoisting equipment used.
- Use only suitable, approved and undamaged lifting slings for transport.
- If you attach lifting slings to the rotary actuator, they must be designed for the entire actuator.
- Connect the slings so that the products can not be damaged.
- Exercise the utmost care when handling and balancing the load.
- Perform the works with constant eye contact with the load.
- Do not stay under or near the lifted load.
- Keep third persons out of the danger zone. Use appropriate barriers or name supervisors.

## NOTE

Lifting slings are factory-fitted for dimensions with high weights. They are designed exclusively for the weight of the actuator and must not be used for lifting the automatic valve!

The products must be handled, transported and stored with care:

- There is no liability of the manufacturer for transport within the customer's territory or to the individual places of use.
- The products should be transported in their original packaging or on a pallet (or similarly supported) to the installation site and unpacked immediately before installation.
- When storing before installation, keep the products in a closed room and protect them from harmful influences such as dirt or moisture.
- The products must be stored in their original packaging and, if necessary, with the appropriate protective covers.
- In case of a longer storage period, the pneumatic rotary actuator must be operated at least once a year.
- Proper disposal of the packaging is the responsibility of the customer.

## 5. Installation

### WARNING

#### Installation works

There is a risk of injury if this product is not properly installed, disassembled and put into operation.

- Make sure the personnel has received the appropriate training.
- Observe the safety instructions in „Chapter 2. Safety“.

### NOTE

Check the technical parameters, in particular pressure and temperature, and the electrical voltage of the control valve before installing or commissioning the actuator.

The piping system and control system must be installed properly.

Make sure the valve is moving in the correct direction of rotation. Always mount the valves into the pipeline without tensing them.

The valve is not designed to absorb additional pipe connection forces. In the case of large valves, it is recommended to support the pipeline.

### 5.1 Installation conditions

The minimum space requirement can be found in the dimensional drawing (“Chapter 14. Annex/Technical data”).

### 5.2 Before installation

Observe the following points before installation:

- The dew point of the control medium must be min. 10 °C lower than the lowest operating temperature! The max. temperature of the control medium is 45 °C!

For other valve types, in particular large-volume valves with low torque requirement, the operating conditions of the actuator must be agreed with the manufacturer. We will be delighted to advise you.

### 5.3 Installation of ball valve

#### 5.3.1 Preparing for installation

These steps are to be carried out both when mounting a ball valve with welding ends and with threaded connection.

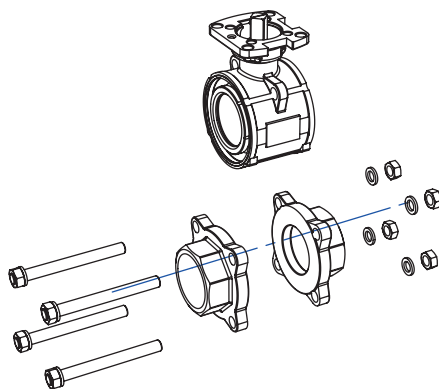


Fig. 5-1 Exploded-view drawing of ball valve

1. Gently clamp the fitting into a vise. Leave the supplied protective covers on the connection ends to prevent damage to the connection ends.

2. First mark the position of the ball valve middle section to a connection end.
3. Loosen the hexagon nuts from the ball valve screws crosswise and pull the ball valve screws out of the housing.
4. Now remove the ball valve middle section. Attention! Make sure that the gaskets or the ball do not fall out of the middle section of the housing. Carefully place the middle section of the housing incl. gaskets, ball and rotary actuator aside and store them carefully.
5. Carry out the steps – depending on the type of ball valve – in Chap. 5.3.2 or in Chap. 5.3.3.

### 5.3.2 Installation of ball valve with welding ends

#### Weld connection ends

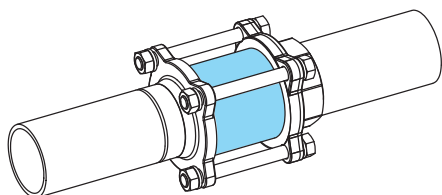


Fig. 5-2 Inserting the pipe section

1. Now that you have removed the middle section of the ball valve, mount a pipe piece between the connection ends which corresponds to the identical length of the middle section of the housing. Then mount the connection ends to the corresponding pipe piece by evenly screwing the 4 hexagon housing screws through the holes of the connection ends with the hexagon nuts crosswise (please observe the prescribed tightening torques).

2. Weld the pipeline with the connection ends in accordance with the applicable requirements and guidelines.

#### Mounting the ball valve middle section

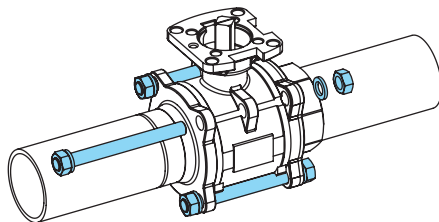


Fig. 5-3 Mounting the ball valve middle section

1. Disassemble the previously inserted pipe section.
2. Now slide the ball valve middle section between the connection ends. Make sure that the ball valve middle section is seated correctly and that the previously made markings between the ball valve middle section and the connection ends match.
3. Ensure that all gaskets are seated correctly and that there are no dirt or other particles on the gaskets or the ball.
4. Slide the 4 hexagonal housing screws through the holes in the connection ends. Tighten the hexagon nuts evenly and crosswise (please observe the prescribed tightening torques, see Tab. 5-1).
5. Check the valve for function and all connections for leaks.

| Rp    | DN | Tightening torque [Nm] |
|-------|----|------------------------|
| 1/2   | 15 | 20                     |
| 3/4   | 20 | 26                     |
| 1     | 25 | 31                     |
| 1 1/4 | 32 | 34                     |
| 1 1/2 | 40 | 37                     |
| 2     | 50 | 40                     |
| 2 1/2 | 62 | 45                     |
| 3     | 80 | 51                     |

Tab. 5-1 Tightening torque

### 5.3.3 Mounting the valve with threaded connection

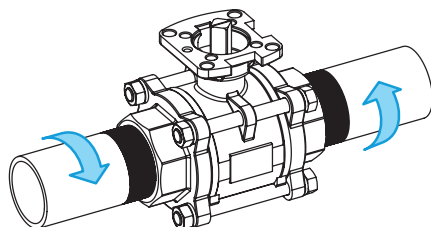


Fig. 5-4 Mounting the valve with threaded connection in the pipeline

1. Before applying additional sealing materials, test whether the pipeline can easily be screwed into the valve body.
2. Apply suitable sealing material to the pipeline ends. By using PTFE-ribbon or hemp sealings observe the screw direction. Do not use sealing material that is not suitable for your intended purpose.
3. Screw the pipelines into the threaded ends of the ball valve. Do not use the complete valve as a lever!
4. Attention! Before you pressurize the pipeline, the sealing material must be hardened. Information on the hardening time is available from the respective manufacturer.
5. Check all connections for leaks.

## 5.4 Mounting the rotary actuator

For information on mounting the actuator, refer to the manufacturer documentation supplied with the actuator (from bar GmbH for PKI and from Valpes for EKI).

## 5.5 Pressure test of the pipe section

The following must be observed when making the pressure test of a pipe section with installed valves:

Carefully rinse newly installed piping systems to flush out any foreign objects.

Valve opened:

- The test pressure must not exceed the value of  $1.5 \times PN$  as marked on the housing.

Valve closed:

- The test pressure must not exceed the value of  $1.1 \times PN$  as marked on the housing.

## 6. Commissioning and operation

For information on commissioning and operation of the actuator, refer to the manufacturer documentation supplied with the actuator.

## 7. Maintenance and repair

The automatic valve is a maintenance-free device.

In terms of operational safety, however, it is recommended to check them for function and to switch at least every three months but no later than after 50,000 switching cycles; and in case of difficult operating conditions even more often.

Do not use harsh detergents or abrasives to clean the housings.

### 7.1 Maintenance of the actuator

For information on maintenance of the actuator, refer to the manufacturer documentation supplied with the actuator.

### 7.2 Maintenance of ball valve

In case of ball valve, the seal and wear parts can be replaced.

#### NOTE

We recommend that you have the repair carried out by the company bar GmbH. We will be pleased to offer you a corresponding servicing, maintenance or repair. Please contact the company bar GmbH for this.

## 8. Troubleshooting

#### WARNING

##### Observe the safety instructions

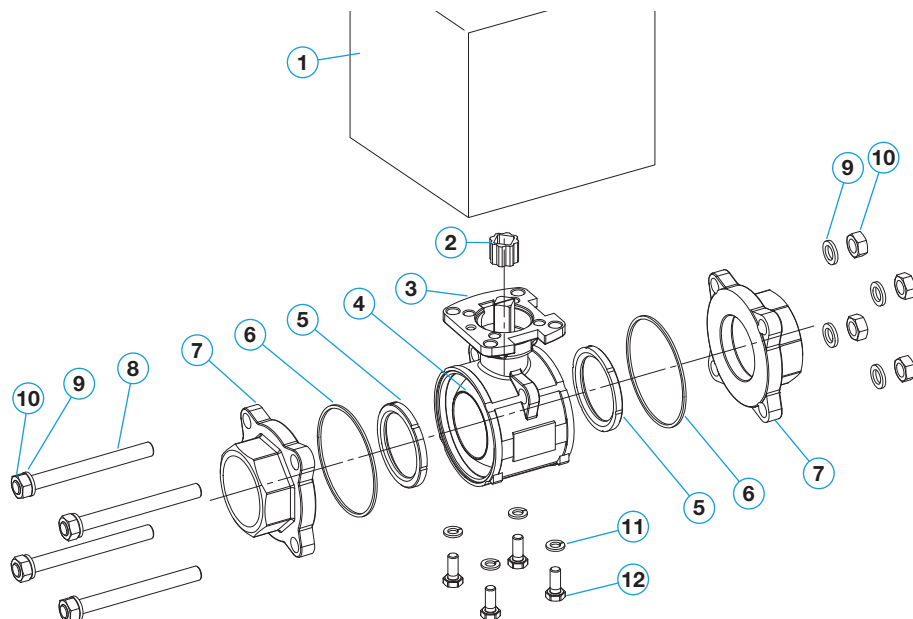
There is danger to life if you do not observe safety instructions.

- When eliminating the faults, always observe the safety instructions from „Chapter 8. Troubleshooting“.

#### NOTE

Spare parts are to be ordered with all information on the type plate and the serial number. It is allowed to mount only original parts of bar GmbH.

## 9. Repair and spare parts



**Abb. 9-1** Exploded-view drawing of all individual components of 2/2-way automatic valve of EKI type  
(Schematic representation. Deviations possible depending on the component)

|   |                           |    |                                     |
|---|---------------------------|----|-------------------------------------|
| 1 | Actuator                  | 7  | Connector                           |
| 2 | Reducing piece            | 8  | Threaded rod/screw                  |
| 3 | Ball valve middle section | 9  | Spring washer                       |
| 4 | Ball                      | 10 | Nut                                 |
| 5 | Bearing shell             | 11 | Spring washer for actuator fixation |
| 6 | Sealing ring              | 12 | Screw for actuator fixation         |

For information on repairing the actuator, refer to the manufacturer documentation supplied with the actuator.

## 10. Disassembly

### **DANGER**



#### **Electric voltage!**

There is danger to life when working on electrical components.

- Work on electrical connections should only be carried out by qualified electricians with the supply voltage switched off and secured against reconnection.

### **WARNING**

#### **Installation works**

There is a risk of injury if this product is not properly installed, disassembled and put into operation.

- Make sure the personnel has received the appropriate training.
- Observe the safety instructions in „Chapter 2. Safety“.

### 10.1 Disassembly of the actuator

For information on disassembling the actuator, refer to the manufacturer documentation supplied with the actuator.

### 10.2 Disassembly of the ball valve from the pipeline

If the unit is to be replaced by a structurally identical one, it is not necessary to unscrew the connectors on the pipe or cut off. The condition is that these are not damaged.

In this case, it is sufficient to disassemble the actuator and the middle section of the ball valve.

## 11. Disposal

- Proper disposal of the products is the responsibility of the customer. Dispose of the products after their use in accordance with the legal requirements regarding safety and environmental protection.
- The materials used in the products are steel, aluminum, brass, copper and various plastics.

Dispose of lubricated parts separately according to local environmental regulations!

If you have any questions, please contact the company bar GmbH.

## 12. EU Declaration of Incorporation Type P...



A WATTS Brand

Z5100001\_00B

Auf der Hohl 1 | 53547 Dattenberg | Germany | T: +49 (0)2644 9607-0 | F: +49 (0)2644 9607-35

### Einbauerklärung für eine unvollständige Maschine / Declaration of Incorporation of a partly completed machinery

im Sinne der Maschinenrichtlinie 2006/42/EG, Anhang II Teil 1B /  
according to Machinery Directive 2006/42/EC, Annex II 1b  
(EU-Abl. L 157/24 vom 09.06.2006)

Name und Anschrift des Herstellers: **bar pneumatische Steuerungssysteme GmbH**  
Name and address of the manufacturer: **Auf der Hohl 1, 53547 Dattenberg / Germany**

Diese Erklärung bezieht sich nur auf das Produkt in dem Zustand, in dem es in den Verkehr gebracht wurde.  
Die Erklärung verliert ihre Gültigkeit, wenn das Produkt ohne Rücksprache mit uns umgebaut oder verändert wird.

*This declaration relates exclusively to the product in the state in which it was placed on the market.  
The declaration loses validity if the product is modified without agreement of company bar.*

Hiermit erklären wir, dass die nachstehend beschriebenen Produkte  
*Herewith we declare that the following products*

Produktbezeichnung: **Automatik-Armatur mit pneumatischem Stellantrieb**  
*Product denomination: Automatic-valve with pneumatic actuator*  
Serien-/Typenbezeichnung / model/type: **PKO..., PKO2..., PKI..., PKN..., PKW..., PMK..., PMK2...,  
PKT..., PZDS..., PZR...**

unvollständige Maschinen im Sinne der Maschinenrichtlinie sind und die folgenden grundlegenden Anforderungen der  
Richtlinie 2006/42/EG erfüllen:  
*are partly completed machinery according to the Machinery Directive and meet the following basic requirements of the  
directive 2006/42/EC:*

Anhang I, Ziffern / Annex I, articles: 1.1.3, 1.1.5, 1.3.2, 1.3.4, 1.3.7, 1.3.9, 1.5.3, 1.5.4, 1.5.5, 1.5.8, 1.7.3, 1.7.4

Die bar-Automatik-Armatur mit pneumatischem Schwenkantrieb ist ausschließlich zum Einbau in eine Rohrleitung bestimmt.  
Die Inbetriebnahme ist solange untersagt, bis sichergestellt wurde, dass die gesamte Maschine, in die das Produkt  
eingebaut ist, den Bestimmungen der EG-Richtlinie 2006/42/EG in vollem Umfang entspricht.

*bar automatic-valves with pneumatic actuators are designed to be installed into a pipework. The product must not put in  
service until the final machinery into which they are to be incorporated has been declared in conformity with the provisions of  
the Directive 2006/42/EC.*

Der Hersteller verpflichtet sich, die Unterlagen zur unvollständigen Maschine der zuständigen nationalen Behörde auf  
Verlangen elektronisch zu übermitteln. Die zur Maschine gehörenden speziellen technischen Unterlagen nach Anhang VII  
Teil B wurden erstellt.

*With regard of the partly completed machinery, the manufacturer commits to submitting the documents to the competent  
national authority via electronic transmission upon request. The relevant technical documentation pertaining to the  
machinery described in Annex VII, part B has been prepared.*

Die Einhaltung der in den technischen Daten und Sicherheitshinweisen beschriebenen Betriebsbedingungen ist  
sicherzustellen. *Please take care about the technical data and the relevant warning and safety notices.*

Bevollmächtigter für die Dokumentation:  
*Authorised person for documentation:* Klaus Scholl,  
Auf der Hohl 1,  
D-53547 Dattenberg

Dattenberg, 21.12.2021  
Ort, Datum  
Place, Date

Repellin, Lionel, Operations Manager  
Name, Vorname und Funktion des Unterzeichners  
Surname, first name and function of signatory

Unterschrift  
Signature



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Deutsche Bank Amsterdam • SWIFT DEUTNL33 • IBAN NL52 0017 0319 8666 53  
HRB 10991 Amtsgericht Montabaur • USt-Nr. DE 149 522 999  
Geschäftsführer: Olivier Givardon, Nigel Wood  
bar-info@wattswater.com

bar-gmbh.de

## 13. EU Declaration of Incorporation Type E...



A WATTS Brand

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### Einbauerklärung für eine unvollständige Maschine / Declaration of Incorporation of a partly completed machinery

im Sinne der Maschinenrichtlinie 2006/42/EG, Anhang II Teil 1B /  
according to Machinery Directive 2006/42/EC, Annex II 1b  
(EU-Abl. L 157/24 vom 09.06.2006)

Name und Anschrift des Herstellers: **bar pneumatische Steuerungssysteme GmbH**  
Name and address of the manufacturer: **Auf der Hohl 1, 53547 Dattenberg / Germany**

Diese Erklärung bezieht sich nur auf das Produkt in dem Zustand, in dem es in den Verkehr gebracht wurde.  
Die Erklärung verliert ihre Gültigkeit, wenn das Produkt ohne Rücksprache mit uns umgebaut oder verändert wird.

*This declaration relates exclusively to the product in the state in which it was placed on the market.  
The declaration loses validity if the product is modified without agreement of company bar.*

Hiermit erklären wir, dass die nachstehend beschriebenen Produkte  
Herewith we declare that the following products

Produktbezeichnung:  
Product denomination:

**Automatik-Armatur mit elektrischem Stellantrieb**  
**Automatic-valve with electric actuator**

Serien-/Typenbezeichnung / model/type:

**EKI..., EKN..., EKO..., EKO2..., EKW..., EMK..., EMK2...,  
EKT..., EZDS..., EZR...**

unvollständige Maschinen im Sinne der Maschinenrichtlinie sind und die folgenden grundlegenden Anforderungen der  
Richtlinie 2006/42/EG erfüllen:

*are partly completed machinery according to the Machinery Directive and meet the following basic requirements of the  
directive 2006/42/EC:*

Anhang I, Ziffern / Annex I, articles: 1.1.3, 1.1.5, 1.3.2, 1.3.4, 1.3.7, 1.3.9, 1.5.3, 1.5.4, 1.5.5, 1.5.8, 1.7.3, 1.7.4

Die bar-Automatik-Armatur mit pneumatischem Schwenkantrieb ist ausschließlich zum Einbau in eine Rohrleitung bestimmt.  
Die Inbetriebnahme ist so lange untersagt, bis sichergestellt wurde, dass die gesamte Maschine, in die das Produkt  
eingebaut ist, den Bestimmungen der EG-Richtlinie 2006/42/EG in vollem Umfang entspricht.

*bar automatic-valves with pneumatic actuators are designed to be installed into a pipework. The product must not put in  
service until the final machinery into which they are to be incorporated has been declared in conformity with the provisions of  
the Directive 2006/42/EC.*

Der Hersteller verpflichtet sich, die Unterlagen zur unvollständigen Maschine der zuständigen nationalen Behörde auf  
Verlangen elektronisch zu übermitteln. Die zur Maschine gehörenden speziellen technischen Unterlagen nach Anhang VII  
Teil B wurden erstellt.

*With regard of the partly completed machinery, the manufacturer commits to submitting the documents to the competent  
national authority via electronic transmission upon request. The relevant technical documentation pertaining to the  
machinery described in Annex VII, part B has been prepared.*

Bevollmächtigter für die Dokumentation/  
Authorised person for documentation:

Klaus Scholl,  
Auf der Hohl 1,  
D-53547 Dattenberg

Die Einhaltung der in den technischen Daten und Sicherheitshinweisen beschriebenen Betriebsbedingungen ist  
sicherzustellen. Please take care about the technical data and the relevant warning and safety notices.

Dattenberg, 21.12.2021

Ort, Datum  
Place, Date

Repellin, Lionel, Operations Manager

Name, Vorname und Funktion des Unterzeichners  
Surname, first name and function of signatory

Unterschrift  
Signature



Management  
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ISO 9001:2015



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Geschäftsführer: Olivier Givardon, Nigel Wood  
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# 14. ATEX Declaration of Conformity Type P...



**A WATTS Brand**

bar 19.0003

Z5100002\_00B

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## ATEX-Konformitätserklärung / ATEX Declaration of Conformity

Name und Anschrift des Herstellers: **bar pneumatische Steuerungssysteme GmbH**  
Name and address of the manufacturer: **Auf der Hohl 1, 53547 Dattenberg / Germany**

Diese Erklärung bezieht sich nur auf das Produkt in dem Zustand, in dem es in den Verkehr gebracht wurde.  
Die Erklärung verliert ihre Gültigkeit, wenn das Produkt ohne Rücksprache mit uns umgebaut oder verändert wird.

*This declaration relates exclusively to the product in the state in which it was placed on the market.  
The declaration loses validity, if the product is modified without agreement of company bar.*

Hiermit erklären wir, dass das nachstehend beschriebene Produkt  
Herewith we declare, that the following product

Produktbezeichnung: **Automatik-Armatur mit pneumatischem Stellantrieb**  
Product denomination: **Automatic-valve with pneumatic actuator**  
Serien-/Typenbezeichnung / model/type: **PKI-...-ATEX...  
PKN-...-ATEX...  
PKW-...-ATEX...  
PKT-...-ATEX...**

nach den Anforderungen folgender Richtlinien hergestellt wurde:  
was manufactured according to the following directives:

2014/34/EU ATEX-Richtlinie / ATEX – directive (EU-Abl. L 96/309 vom 29.03.2014)

Die Einhaltung der in den technischen Daten und Sicherheitshinweisen beschriebenen Betriebsbedingungen ist sicherzustellen. Der anlagenseitige elektrische Potentialausgleich der Anbauteile ist zu prüfen und über die gesamte Einsatzzeit sicherzustellen.

*Please take care about the technical data and the relevant warning and safety notices.  
Check the electrical equipotential bonding of all parts and ensure it during whole operating time.*

Gerätekennzeichnung / Designation:

**Ex** II 2 G Ex h IIC T6..T3 Gb  
II 2 D Ex h IIC T180°C Db

Für die max. Oberflächentemperatur in Abhängigkeit der Medien- und Umgebungstemperatur bitte Anhang I beachten!

Angewandte harmonisierte Normen: *Where appropriate harmonised Standards used:*

DIN EN ISO 80079-36:2016 Explosionsfähige Atmosphären – *Explosive atmospheres*  
Teil 36: Nicht-elektrische Geräte für den Einsatz in explosionsfähigen Atmosphären – Grundlagen und Anforderungen  
Part 36: *Non-electrical equipment for explosive atmospheres – Basic method and requirements*

DIN EN ISO 80079-37:2016 Explosionsfähige Atmosphären – *Explosive atmospheres*  
Teil 37: Nicht-elektrische Geräte für den Einsatz in explosionsfähigen Atmosphären – Schutz durch konstruktive Sicherheit „c“ [...] *Part 37: Non-electrical equipment for explosive atmospheres – Non-electrical type of protection constructional safety "c"*

Dattenberg, 19.03.2020  
Ort, Datum  
Place, Date

Wood, Nigel, Managing Director  
Name, Vorname und Funktion des Unterzeichners  
Surname, first name and function of signatory

*Nigel Wood*  
Unterschrift  
Signature



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Deutsche Bank Amsterdam • SWIFT DEUTNL2N • IBAN NL52 DEUT 0319 8666 53  
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Geschäftsführer: Olivier Giverdon, Nigel Wood  
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bar 19.0003

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### Anhang I / Annex I

Die maximal auftretenden Oberflächentemperaturen sind abhängig von den Betriebsbedingungen. Bitte entnehmen sie die jeweiligen Grenzwerte der entsprechenden Tabelle. Beachten Sie hierbei, dass die maximale Oberflächentemperatur sich nach dem höheren Wert (Medientemperatur innerhalb der Rohrleitung oder Umgebungstemperatur richtet).

*The maximal occurring surface temperatures are depending on the working conditions. The respective temperature limits for ambient and media temperature can be found in the tables below. Please note, that the maximal occurring surface temperature is based on the higher (ambient or media within pipeline) temperature.*

| Umgebungstemperatur / Ambient temperature                                          |        |                                                                                  |
|------------------------------------------------------------------------------------|--------|----------------------------------------------------------------------------------|
| Maximal auftretende Oberflächentemperatur<br>Maximal occurring surface temperature |        | Maximal zulässige Umgebungstemperatur<br>Maximal permissible ambient temperature |
| T6                                                                                 | <85°C  | 65°C                                                                             |
| T5                                                                                 | <100°C | 80°C                                                                             |
| T4                                                                                 | <135°C | 115°C                                                                            |
| T3                                                                                 | <200°C | 160°C                                                                            |

Max. Umgebungstemperatur für / Max. ambient temperature for

Antriebe in Standardausführung / actuators in standard version: 80°C

Antriebe mit FKM-Dichtungen / actuators with FKM sealings: 120°C

Antriebe in Hochtemperatursausführung / high temperature version: 160°C

| Medientemperatur innerhalb der Rohrleitung / media temperature within pipeline     |        |                                                                             |
|------------------------------------------------------------------------------------|--------|-----------------------------------------------------------------------------|
| Maximal auftretende Oberflächentemperatur<br>Maximal occurring surface temperature |        | Maximal zulässige Medientemperatur<br>Maximal permissible media temperature |
| T6                                                                                 | <85°C  | 65°C                                                                        |
| T5                                                                                 | <100°C | 80°C                                                                        |
| T4                                                                                 | <135°C | 115°C                                                                       |
| T3                                                                                 | <200°C | 180°C                                                                       |

**ACHTUNG:** Es muss durch den Anlagenbetreiber sichergestellt werden, dass keine zusätzliche Erwärmung der Komponenten durch äußere Energiequellen (Strahlung etc.) stattfindet, um eine unzulässige Erwärmung der Komponenten zu vermeiden.

**ATTENTION:** The plant operator has to ensure that no additional heating of the components by external energy sources (e.g. radiation or emission etc.) takes place in order to avoid inadmissible heating of the components.



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HRB 10991 Amtsgericht Montabaur • Ust-Nr. DE 149 522 999  
Geschäftsführer: Olivier Giverdon, Nigel Wood  
bar-info@wattswater.com

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# 15. ATEX Declaration of Conformity Type E...



bar 19.0005

Z5100007\_00A

A WATTS Brand

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## ATEX-Konformitätserklärung / ATEX Declaration of Conformity

Name und Anschrift des Herstellers: **bar pneumatische Steuerungssysteme GmbH**  
Name and address of the manufacturer: **Auf der Hohl 1, 53547 Dattenberg / Germany**

Diese Erklärung bezieht sich nur auf das Produkt in dem Zustand, in dem es in den Verkehr gebracht wurde.  
Die Erklärung verliert ihre Gültigkeit, wenn das Produkt ohne Rücksprache mit uns umgebaut oder verändert wird.

*This declaration relates exclusively to the product in the state in which it was placed on the market.  
The declaration loses validity, if the product is modified without agreement of company bar.*

Hiermit erklären wir, dass das nachstehend beschriebene Produkt  
Herewith we declare, that the following product

Produktbezeichnung: **Automatik-Armatur mit elektrischem Stellantrieb**  
Product denomination: **Automatic-valve with electric actuator**  
Serien-/Typenbezeichnung / model/type: **EKI-...-ATEX..., EKN-...-ATEX..., EKW-...-ATEX...**

nach den Anforderungen folgender Richtlinien hergestellt wurde:  
was manufactured according to the following directives:

2014/34/EU ATEX-Richtlinie / ATEX – directive (EU-Abl. L 96/309 vom 29.03.2014)

Die Einhaltung der in den technischen Daten und Sicherheitshinweisen beschriebenen Betriebsbedingungen ist sicherzustellen. Der anlagenseitige elektrische Potentialausgleich der Anbauteile ist zu prüfen und über die gesamte Einsatzzeit sicherzustellen.

*Please take care about the technical data and the relevant warning and safety notices.*

*Check the electrical equipotential bonding of all parts and ensure it during whole operating time.*

Gerätekenzeichnung / Designation:

|  |                 |          |                 |                     |                                    |
|--|-----------------|----------|-----------------|---------------------|------------------------------------|
|  | Standardmodelle | II 2 G D | Ex db IIB T6 Gb | Ex tb IIIC T80°C Db | T <sub>a</sub> = -20 °C bis +70 °C |
|  | 400 V Modelle   | II 2 G D | Ex db IIB T5 Gb | Ex tb IIIC T95°C Db | T <sub>a</sub> = -20 °C bis +54 °C |
|  | BBPR Modelle    | II 2 G D | Ex db IIB T6 Gb | Ex tb IIIC T80°C Db | T <sub>a</sub> = -10 °C bis +40 °C |

Für die max. Oberflächentemperatur in Abhängigkeit der Medientemperatur bitte Anhang I beachten!  
For max media temperature within pipeline see annex I.

Angewandte harmonisierte Normen: *Where appropriate harmonised standards used:*

EN IEC 60079-0:2018 EN 60079-1:2014 EN 60079-31:2014

Die elektrischen Anschlüsse müssen die geltenden Empfehlungen der ATEX einhalten (Bedingungen BE3 der NF C-15100 und EN60079-14).

*The electric connecting has to respect current ATEX recommendations (BE3 conditions of NF C-15100 and EN 60079-14).*

Die mit der Qualitätssicherung der Produktion der elektrischen Antriebe beauftragte Einrichtung ist die  
The notified body in charge of the production of the electric actuators quality surveillance is

LCIE (N°0081) : LCIE 15 ATEX Q 4009

33 av. du Général Leclerc PB 8, 92266 Fontenay-aux-Roses cedex, France.

Dattenberg, 21.12.2021

Ort, Datum  
Place, Date

Repellin, Lionel, Operations Manager

Name, Vorname und Funktion des Unterzeichners  
Surname, first name and function of signatory

Unterschrift  
Signature



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Deutsche Bank Amsterdam • SWIFT DEUTIN33 • IBAN NL52 DEUT 0319 8666 53  
HRB 10991 Amtsgericht Montabaur • Ust-Nr. DE 149 522 999  
Geschäftsführer: Olivier Glverdon, Nigel Wood  
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bar 19.0005

Z5100007\_00A

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## Anhang I / Annex I

Die maximal auftretenden Oberflächentemperaturen sind abhängig von den Betriebsbedingungen. Bitte entnehmen sie die jeweiligen Grenzwerte der entsprechenden Tabelle. Beachten Sie hierbei, dass die maximale Oberflächentemperatur sich nach dem höheren Wert (Medientemperatur innerhalb der Rohrleitung oder Umgebungstemperatur richtet).

*The maximal occurring surface temperatures are depending on the working conditions. The respective temperature limits for ambient and media temperature can be found in the tables below. Please note, that the maximal occurring surface temperature is based on the higher (ambient or media within pipeline) temperature.*

| Medientemperatur innerhalb der Rohrleitung / media temperature within pipeline     |        |                                                                             |
|------------------------------------------------------------------------------------|--------|-----------------------------------------------------------------------------|
| Maximal auftretende Oberflächentemperatur<br>Maximal occurring surface temperature |        | Maximal zulässige Medientemperatur<br>Maximal permissible media temperature |
| T6                                                                                 | <85°C  | 65°C                                                                        |
| T5                                                                                 | <100°C | 80°C                                                                        |
| T4                                                                                 | <135°C | 115°C                                                                       |
| T3                                                                                 | <200°C | 180°C                                                                       |

**ACHTUNG:** Es muss durch den Anlagenbetreiber sichergestellt werden, dass keine zusätzliche Erwärmung der Komponenten durch äußere Energiequellen (Strahlung etc.) stattfindet, um eine unzulässige Erwärmung der Komponenten zu vermeiden.

**ATTENTION:** The plant operator has to ensure that no additional heating of the components by external energy sources (e.g. radiation or emission etc.) takes place in order to avoid inadmissible heating of the components.



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Deutsche Bank Amsterdam • SWIFT DEUTNL2N • IBAN NL52 DEUT 0319 8666 53  
HRB 10991 Amtsgericht Montabaur • Ust-Nr. DE 149 522 999  
Geschäftsführer: Olivier Giverton, Nigel Wood  
bar-info@wattswater.com

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# 16. EU Declaration of Conformity Type E...



Z5100005\_00A

A WATTS Brand

Auf der Hohl 1 | 53547 Dattenberg | Germany | T: +49 (0)2644 9607-0 | F: +49 (0)2644 9607-35

## EU Konformitätserklärung EU Declaration of Conformity

Name und Anschrift des Herstellers: **bar pneumatische Steuerungssysteme GmbH**  
Name and address of the manufacturer: **Auf der Hohl 1, 53547 Dattenberg / Germany**

Diese Erklärung bezieht sich nur auf das Produkt in dem Zustand, in dem es in den Verkehr gebracht wurde.  
Die Erklärung verliert ihre Gültigkeit, wenn das Produkt ohne Rücksprache mit uns umgebaut oder verändert wird.  
*This declaration relates exclusively to the product in the state in which it was placed on the market.*  
*The declaration loses validity if the product is modified without agreement of company bar.*

Hiermit erklären wir, dass die nachstehend beschriebenen Produkte  
*Herewith we declare that the following products*

|                                                     |                                                                                                         |
|-----------------------------------------------------|---------------------------------------------------------------------------------------------------------|
| Produktbezeichnung:<br><i>Product denomination:</i> | <b>Automatik-Armatur mit elektrischem Stellantrieb</b><br><b>Automatic-valve with electric actuator</b> |
| Serien-/Typenbezeichnung / model/type:              | <b>EKI..., EKN..., EKO..., EKO2..., EKW..., EMK..., EMK2...,</b><br><b>EKT..., EZDS..., EZR...</b>      |

nach den Anforderungen folgender Richtlinien hergestellt wurde  
*was manufactured according to the following directives:*

2014/35/EU Niederspannungsrichtlinie / Low voltage directive  
(EU-Abl. L 96/357 vom 29.03.2014)

2011/65/EU Beschränkung bestimmter gefährlicher Stoffe / Restriction of certain hazardous substances (RoHS)  
(EU-Abl. L 174/88 vom 01.07.2011)

2014/53/EU Funkanlagenrichtlinie / Radio Equipment Directive (RED)  
(EU-Abl. L 153/62 vom 22.5.2014)

2014/68/EU Druckgeräterichtlinie / Pressure Equipment Directive (PED)  
(EU-Abl. L 189/164 vom 27.6.2014)

und den wesentlichen Anforderungen der Richtlinie 2014/30/EU Elektromagnetische Verträglichkeit (EMV, EU-Abl. L 96/79 vom 29.03.2014) entspricht.  
*and meets the essential requirements of the directive 2014/30/EU electromagnetic compatibility (EMC).*

Die Einhaltung der in den technischen Daten und Sicherheitshinweisen beschriebenen Betriebsbedingungen ist sicherzustellen.  
*Please take care about the technical data and the relevant warning and safety notices.*

Bevollmächtigter für die Dokumentation/  
*Authorised person for documentation:*

Klaus Scholl,  
Auf der Hohl 1,  
D-53547 Dattenberg

Dattenberg, 21.12.2021  
Ort, Datum  
Place, Date

Repellin, Lionel, Operations Manager  
Name, Vorname und Funktion des Unterzeichners  
Surname, first name and function of signatory

  
Unterschrift  
Signature



Deutsche Bank Neustadt Weinstraße • SWIFT DEUTDE33  
Deutsche Bank Amsterdam • SWIFT DEUTNL2N • IBAN NL52 DEUT 0319 8666 53  
HRB 10991 Amtsgericht Montabaur • Ust-Nr. DE 149 522 999  
Geschäftsführer: Olivier Giverdon, Nigel Wood  
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## 17. Annex / Technical data

### 17.1 Technical data of rotary actuator

The technical data of the rotary actuator can be found in the supplied manufacturer documentation.

### 17.2 Technical data of 2/2-way ball valve of KI type

|                         | Standard design                                                                                                                                                                                                                           | Upon request           |
|-------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------|
| Nominal size            | DN15 - DN100                                                                                                                                                                                                                              |                        |
| Connection type         | Inside thread Rp 1/2" - Rp 4" acc. to ISO 7-1<br>Alternatively: Welding ends acc. to EN 12627:1999                                                                                                                                        |                        |
| Mounting position       | any                                                                                                                                                                                                                                       |                        |
| Nominal pressure rating | DN 15 – 50: PN 63<br>DN 65 – 100: PN 50                                                                                                                                                                                                   |                        |
| Operating pressure      | See Pressure-Temperature diagram (see Chap. 17.3)                                                                                                                                                                                         |                        |
| Temperature range       | -20 °C - 180 °C                                                                                                                                                                                                                           |                        |
| Materials               | Housing: Stainless steel AISI 316 (1.4408)<br>Ball: Stainless steel AISI 316 (1.4401)<br>Switching shaft: Stainless steel AISI 316 (1.4401)<br>Sealing bowl: PTFE<br>Switching shaft seal: DN 15 – DN 50 PTFE+ FKM<br>DN 65 – DN 100 PTFE |                        |
| Flow media              | Neutral gases and liquids                                                                                                                                                                                                                 | Other media on request |
| Flow direction          | any                                                                                                                                                                                                                                       |                        |

**Tab. 14-1 Technical data of 2/2-way ball valve of KI type**

### 17.3 Pressure-Temperature diagram

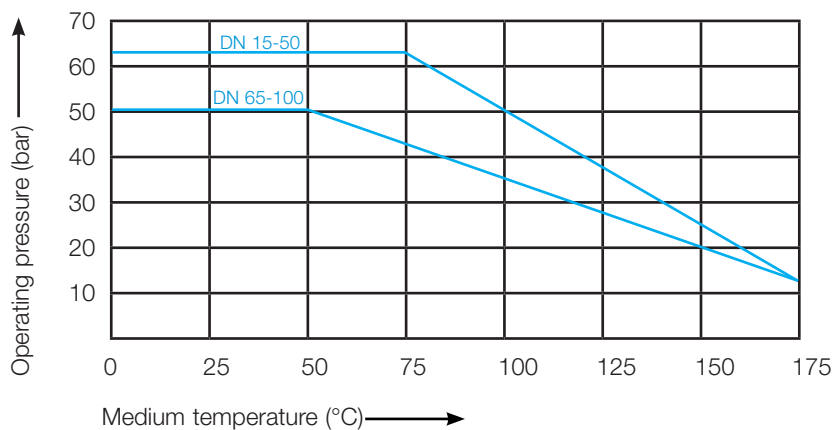


Fig. 14-1 Pressure-Temperature diagram

## 17.4 Dimensional tables and dimensional drawings Type PKI with bar-agturn

### 17.4.1 Dimensional drawing Type PKI with bar-agturn

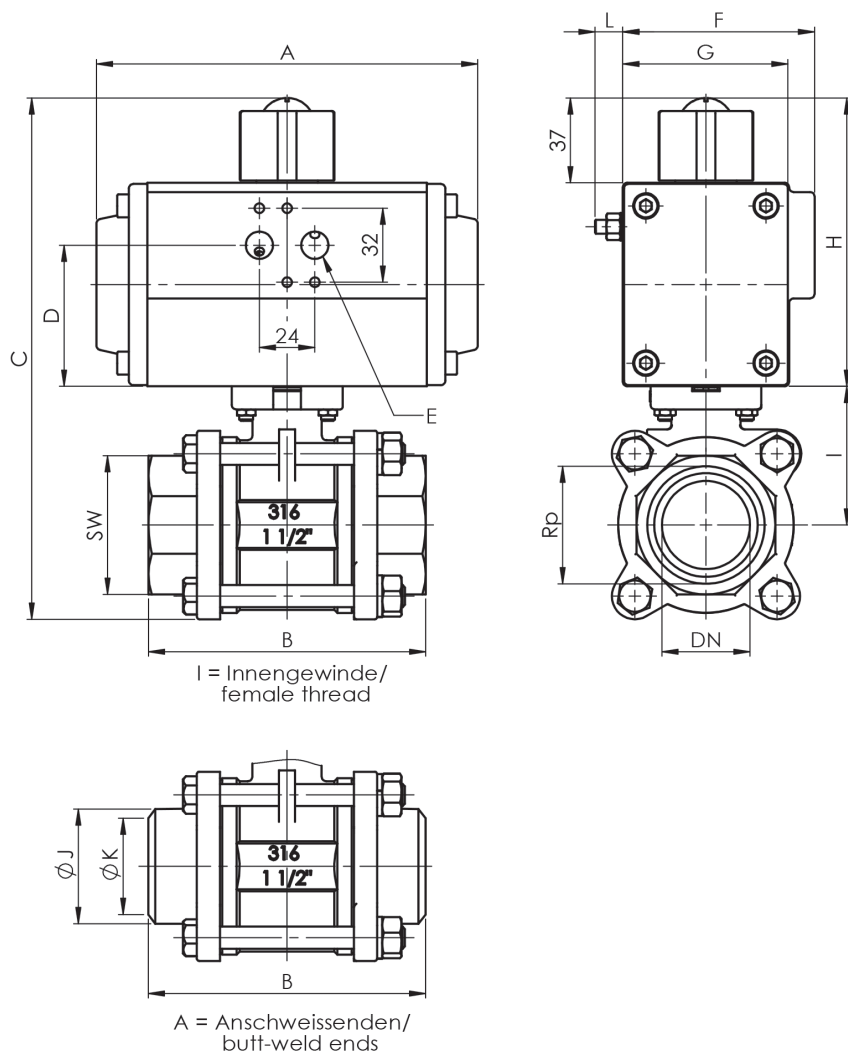


Fig. 13-2 Dimensional drawing Type PKI with bar-agturn type GD-063 (exemplary presentation)

## 17.4.2 Dimensional table Type PKI with bar-agturn

| Thread „Rp“ | DN  | Actuator size | A   | B   | C     | D     | E      |
|-------------|-----|---------------|-----|-----|-------|-------|--------|
| <b>1/2"</b> | 15  | 032           | 114 | 70  | 146,0 | 24,5  | G 1/8" |
|             |     | 040           | 120 |     | 157,0 | 24    | G 1/4" |
|             |     | 052           | 147 |     | 169,0 | 48    | G 1/4" |
| <b>3/4"</b> | 20  | 032           | 114 | 77  | 153,0 | 24,5  | G 1/8" |
|             |     | 040           | 120 |     | 164,0 | 24    | G 1/4" |
|             |     | 052           | 147 |     | 176,0 | 48    | G 1/4" |
|             |     | 063           | 165 |     | 196,0 | 61    | G 1/4" |
| <b>1/0"</b> | 25  | 040           | 120 | 92  | 177,0 | 24    | G 1/4" |
|             |     | 052           | 147 |     | 189,0 | 48    | G 1/4" |
|             |     | 063           | 165 |     | 205,0 | 61    | G 1/4" |
|             |     | 075           | 182 |     | 216,5 | 73,3  | G 1/4" |
| <b>5/4"</b> | 32  | 052           | 147 | 105 | 197,0 | 48    | G 1/4" |
|             |     | 063           | 165 |     | 213,0 | 61    | G 1/4" |
|             |     | 075           | 182 |     | 224,5 | 73,3  | G 1/4" |
|             |     | 083           | 208 |     | 234,0 | 80    | G 1/4" |
| <b>3/2"</b> | 40  | 063           | 165 | 120 | 225,0 | 61    | G 1/4" |
|             |     | 083           | 208 |     | 246,0 | 80    | G 1/4" |
|             |     | 092           | 262 |     | 253,5 | 91    | G 1/4" |
| <b>2/0"</b> | 50  | 063           | 165 | 140 | 244,0 | 61    | G 1/4" |
|             |     | 075           | 182 |     | 255,5 | 73,3  | G 1/4" |
|             |     | 083           | 208 |     | 265,0 | 80    | G 1/4" |
|             |     | 092           | 262 |     | 272,5 | 91    | G 1/4" |
| <b>5/2"</b> | 65  | 083           | 208 | 185 | 316,0 | 80    | G 1/4" |
|             |     | 092           | 262 |     | 323,5 | 91    | G 1/4" |
|             |     | 105           | 270 |     | 340,0 | 99,5  | G 1/4" |
|             |     | 125           | 301 |     | 362,0 | 127   | G 1/4" |
| <b>3/0"</b> | 80  | 092           | 262 | 205 | 338,5 | 91    | G 1/4" |
|             |     | 105           | 270 |     | 355,0 | 99,5  | G 1/4" |
|             |     | 125           | 301 |     | 377,0 | 127   | G 1/4" |
|             |     | 140           | 395 |     | 394,0 | 138   | G 1/4" |
| <b>4/0"</b> | 100 | 105           | 270 | 240 | 398,0 | 99,5  | G 1/4" |
|             |     | 125           | 301 |     | 420,0 | 127   | G 1/4" |
|             |     | 140           | 395 |     | 437,0 | 138   | G 1/4" |
|             |     | 160           | 454 |     | 462,0 | 159,5 | G 1/4" |

Tab. 13-2 Dimensional table Type PKI with bar-agturn, size A to E

| F     | G    | H     | I   | ø J | ø K  | L   | SW   | Weight (kg) |
|-------|------|-------|-----|-----|------|-----|------|-------------|
| /     | 55   | 49    | 36  | 22  | 19   | /   | 27   | 1,29        |
| /     | 60,5 | 60    |     |     |      | 15  |      | 1,46        |
| 74,5  | 60   | 72    |     |     |      | 9   |      | 1,86        |
| /     | 55   | 49    | 40  | 28  | 24   | /   | 33,5 | 1,50        |
| /     | 60,5 | 60    |     |     |      | 15  |      | 1,67        |
| 74,5  | 60   | 72    |     |     |      | 9   |      | 2,07        |
| 83    | 72   | 88    |     |     |      | 12  |      | 2,77        |
| /     | 60,5 | 60    | 47  | 34  | 30   | 15  | 40   | 2,23        |
| 74,5  | 60   | 72    |     |     |      | 9   |      | 2,63        |
| 83    | 72   | 88    |     |     |      | 12  |      | 3,33        |
| 95    | 84   | 99,5  |     |     |      | 11  |      | 3,88        |
| 74,5  | 60   | 72    | 51  | 43  | 38   | 9   | 50   | 3,11        |
| 83    | 72   | 88    |     |     |      | 12  |      | 3,81        |
| 95    | 84   | 99,5  |     |     |      | 11  |      | 4,36        |
| 103   | 92   | 109   |     |     |      | 12  |      | 5,06        |
| 83    | 72   | 88    | 60  | 49  | 41,5 | 12  | 57   | 4,67        |
| 103   | 92   | 109   |     |     |      | 12  |      | 5,92        |
| 109,5 | 102  | 116,5 |     |     |      | 9   |      | 7,91        |
| 83    | 72   | 88    | 69  | 61  | 54   | 12  | 72   | 6,30        |
| 95    | 84   | 99,5  |     |     |      | 11  |      | 6,85        |
| 103   | 92   | 109   |     |     |      | 12  |      | 7,55        |
| 109,5 | 102  | 116,5 |     |     |      | 9   |      | 9,54        |
| 103   | 92   | 109   | 110 | 77  | 69   | 12  | 85   | 11,75       |
| 109,5 | 102  | 116,5 |     |     |      | 9   |      | 13,74       |
| 124,5 | 115  | 133   |     |     |      | 7,5 |      | 14,56       |
| 142   | 135  | 155   |     |     |      | 8,5 |      | 18,50       |
| 109,5 | 102  | 116,5 | 118 | 90  | 84   | 9   | 100  | 17,54       |
| 124,5 | 115  | 133   |     |     |      | 7,5 |      | 18,36       |
| 142   | 135  | 155   |     |     |      | 8,5 |      | 22,30       |
| /     | 152  | 172   |     |     |      | 7   |      | 26,32       |
| 124,5 | 115  | 133   | 133 | 116 | 107  | 7,5 | 130  | 27,66       |
| 142   | 135  | 155   |     |     |      | 8,5 |      | 31,60       |
| /     | 152  | 172   |     |     |      | 7   |      | 35,62       |
| /     | 174  | 197   |     |     |      | 6   |      | 46,12       |

Tab. 13-3 Dimensional table Type PKI with bar-agturn, size F to SW

### 17.4.3 Actuator assignment Type PKI with bar-agturn

#### Actuator assignment for bar-agturn type GD

| Thread<br>„Rp“ | DN  | 4 bar<br>actuators | 6 bar<br>actuators |
|----------------|-----|--------------------|--------------------|
| <b>1/2"</b>    | 15  | GD-040             | GD-032             |
| <b>3/4"</b>    | 20  | GD-040             | GD-032             |
| <b>1/0"</b>    | 25  | GD-052             | GD-040             |
| <b>5/4"</b>    | 32  | GD-063             | GD-052             |
| <b>3/2"</b>    | 40  | GD-063             | GD-063             |
| <b>2/0"</b>    | 50  | GD-075             | GD-063             |
| <b>5/2"</b>    | 65  | GD-092             | GD-083             |
| <b>3/0"</b>    | 80  | GD-105             | GD-092             |
| <b>4/0"</b>    | 100 | GD-125             | GD-105             |

Tab. 13-4 Actuator assignment for bar-agturn type GD

#### Actuator assignment for bar-agturn type GS

| Thread<br>„Rp“ | DN  | 4 bar<br>actuators | 6 bar<br>actuators |
|----------------|-----|--------------------|--------------------|
| <b>1/2"</b>    | 15  | GS-052-08          | GS-052-10          |
| <b>3/4"</b>    | 20  | GS-063-08          | GS-052-12          |
| <b>1/0"</b>    | 25  | GS-075-08          | GS-063-12          |
| <b>5/4"</b>    | 32  | GS-083-07          | GS-063-12          |
| <b>3/2"</b>    | 40  | GS-092-07          | GS-083-10          |
| <b>2/0"</b>    | 50  | GS-092-08          | GS-083-12          |
| <b>5/2"</b>    | 65  | GS-125-08          | GS-105-12          |
| <b>3/0"</b>    | 80  | GS-140-08          | GS-125-12          |
| <b>4/0"</b>    | 100 | GS-160-07          | GS-140-10          |

Tab. 13-5 Actuator assignment for bar-agturn type GS

The detailed dimensions of the rotary actuator can be found in the supplied manufacturer documentation.

## 17.5 Dimensional tables and dimensional drawings Type PKI with actubar

### 17.5.1 Dimensional drawing Type PKI with actubar

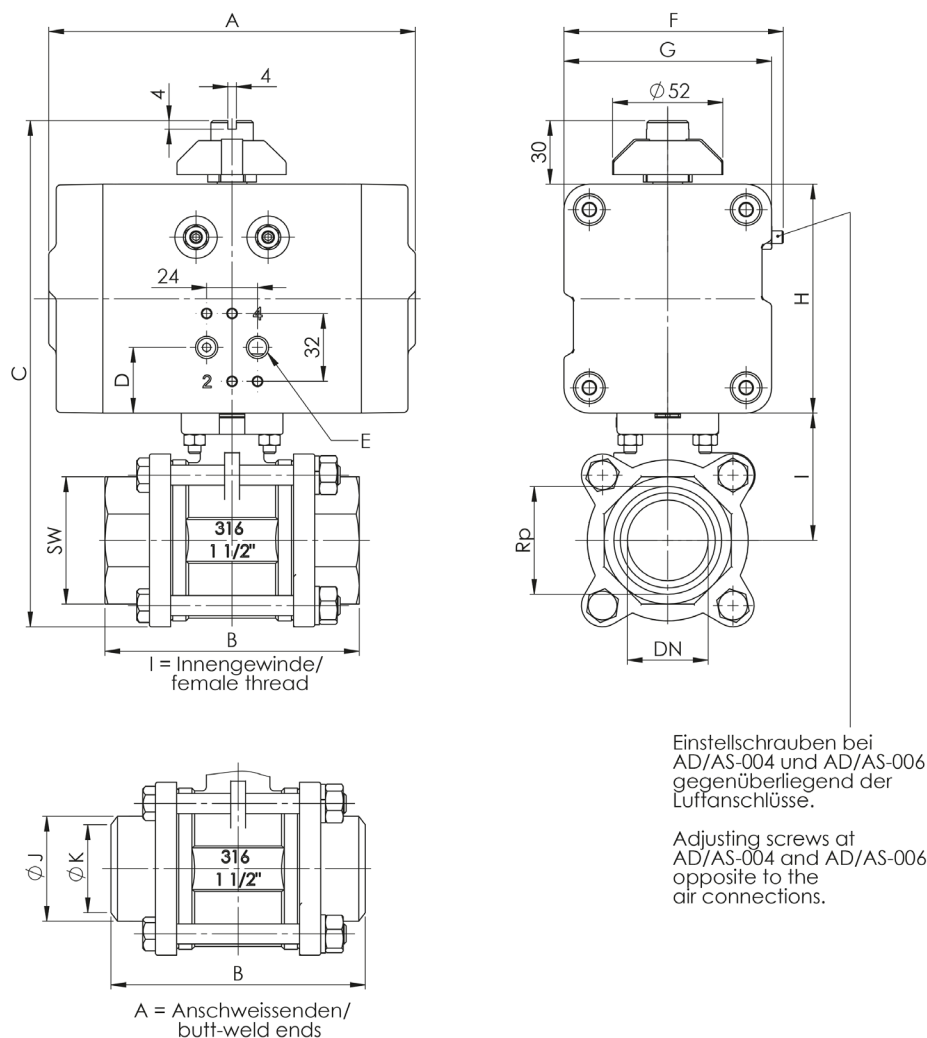


Fig. 13-3 Dimensional drawing Type PKI with actubar type AD/AS-004 till 230 (exemplary presentation)

## 17.5.2 Dimensional table Type PKI with actubar

| Thread „Rp“ | DN  | Actuator size | A   | B   | C   | D    | E      |
|-------------|-----|---------------|-----|-----|-----|------|--------|
| <b>1/2"</b> | 15  | 001           | 80  | 70  | 120 | 22,5 | G 1/8" |
|             |     | 002           | 136 |     | 134 | 27,5 | G 1/8" |
|             |     | 004           | 144 |     | 158 | 24   | G 1/8" |
| <b>3/4"</b> | 20  | 002           | 136 | 77  | 127 | 27,5 | G 1/8" |
|             |     | 004           | 144 |     | 165 | 24   | G 1/8" |
|             |     | 006           | 159 |     | 181 | 32   | G 1/8" |
| <b>1/0"</b> | 25  | 002           | 136 | 92  | 154 | 27,5 | G 1/8" |
|             |     | 004           | 144 |     | 178 | 24   | G 1/8" |
|             |     | 006           | 159 |     | 194 | 32   | G 1/8" |
|             |     | 008           | 173 |     | 218 | 31   | G 1/8" |
| <b>5/4"</b> | 32  | 004           | 144 | 105 | 186 | 24   | G 1/8" |
|             |     | 006           | 159 |     | 202 | 32   | G 1/8" |
|             |     | 008           | 173 |     | 226 | 31   | G 1/8" |
| <b>3/2"</b> | 40  | 006           | 159 | 120 | 214 | 32   | G 1/8" |
|             |     | 008           | 173 |     | 238 | 31   | G 1/8" |
|             |     | 011           | 215 |     | 238 | 31   | G 1/8" |
|             |     | 018           | 213 |     | 262 | 35   | G 1/4" |
| <b>2/0"</b> | 50  | 006           | 159 | 140 | 233 | 32   | G 1/8" |
|             |     | 008           | 173 |     | 247 | 31   | G 1/8" |
|             |     | 011           | 215 |     | 247 | 31   | G 1/8" |
|             |     | 018           | 213 |     | 271 | 35   | G 1/4" |
| <b>5/2"</b> | 65  | 018           | 213 | 185 | 332 | 35   | G 1/4" |
|             |     | 026           | 281 |     | 332 | 35   | G 1/4" |
|             |     | 037           | 266 |     | 361 | 40,5 | G 1/4" |
| <b>3/0"</b> | 80  | 018           | 213 | 205 | 347 | 35   | G 1/4" |
|             |     | 026           | 281 |     | 347 | 35   | G 1/4" |
|             |     | 037           | 266 |     | 376 | 40,5 | G 1/4" |
|             |     | 050           | 347 |     | 376 | 40,5 | G 1/4" |
|             |     | 076           | 329 |     | 415 | 50   | G 1/4" |
| <b>4/0"</b> | 100 | 026           | 281 | 240 | 390 | 35   | G 1/4" |
|             |     | 037           | 266 |     | 419 | 40,5 | G 1/4" |
|             |     | 050           | 347 |     | 419 | 40,5 | G 1/4" |
|             |     | 076           | 329 |     | 458 | 50   | G 1/4" |

Tab. 13-6 Dimensional table Type PKI with actubar, size A to E

| F   | G   | H   | I   | ø J | ø K  | SW   | Weight (kg) |
|-----|-----|-----|-----|-----|------|------|-------------|
| /   | 45  | 45  | 36  | 22  | 19   | 27   | 0,90        |
| /   | 59  | 59  |     |     |      |      | 1,29        |
| 82  | 68  | 68  |     |     |      |      | 1,77        |
| /   | 45  | 45  | 40  | 28  | 24   | 33,5 | 1,50        |
| 82  | 68  | 68  |     |     |      |      | 1,98        |
| 90  | 76  | 84  |     |     |      |      | 2,58        |
| /   | 59  | 59  | 47  | 34  | 30   | 40   | 2,06        |
| 82  | 68  | 68  |     |     |      |      | 2,54        |
| 90  | 76  | 84  |     |     |      |      | 3,14        |
| 109 | 98  | 108 |     |     |      |      | 4,30        |
| 82  | 68  | 68  | 51  | 43  | 38   | 50   | 3,02        |
| 90  | 76  | 84  |     |     |      |      | 3,62        |
| 109 | 98  | 108 |     |     |      |      | 4,78        |
| 90  | 76  | 84  | 60  | 49  | 41,5 | 57   | 4,48        |
| 109 | 98  | 108 |     |     |      |      | 5,64        |
| 109 | 98  | 108 |     |     |      |      | 6,26        |
| 127 | 114 | 132 |     |     |      |      | 7,47        |
| 90  | 76  | 84  | 69  | 61  | 54   | 72   | 6,11        |
| 109 | 98  | 108 |     |     |      |      | 7,27        |
| 109 | 98  | 108 |     |     |      |      | 7,89        |
| 127 | 114 | 132 |     |     |      |      | 9,10        |
| 127 | 114 | 132 | 110 | 77  | 69   | 85   | 13,30       |
| 127 | 114 | 132 |     |     |      |      | 14,77       |
| 155 | 138 | 161 |     |     |      |      | 16,73       |
| 127 | 114 | 132 | 118 | 90  | 84   | 100  | 17,10       |
| 127 | 114 | 132 |     |     |      |      | 18,57       |
| 155 | 138 | 161 |     |     |      |      | 20,53       |
| 155 | 138 | 161 |     |     |      |      | 23,55       |
| 195 | 176 | 200 |     |     |      |      | 28,20       |
| 127 | 114 | 132 | 133 | 116 | 107  | 130  | 27,87       |
| 155 | 138 | 161 |     |     |      |      | 29,83       |
| 155 | 138 | 161 |     |     |      |      | 32,85       |
| 195 | 176 | 200 |     |     |      |      | 37,50       |

Tab. 13-7 Dimensional table Type PKI with actubar, size F to SW

### 17.5.3 Actuator assignment Type PKI with actubar

#### Actuator assignment for actubar type AD

| Thread<br>„Rp“ | DN  | 4 bar<br>actuators | 6 bar<br>actuators |
|----------------|-----|--------------------|--------------------|
| <b>1/2"</b>    | 15  | AD-002             | AD-001             |
| <b>3/4"</b>    | 20  | AD-002             | AD-002             |
| <b>1/0"</b>    | 25  | AD-004             | AD-002             |
| <b>5/4"</b>    | 32  | AD-004             | AD-004             |
| <b>3/2"</b>    | 40  | AD-008             | AD-006             |
| <b>2/0"</b>    | 50  | AD-008             | AD-006             |
| <b>5/2"</b>    | 65  | AD-018             | AD-018             |
| <b>3/0"</b>    | 80  | AD-026             | AD-018             |
| <b>4/0"</b>    | 100 | AD-037             | AD-026             |

Tab. 13-8 Actuator assignment for actubar type AD

#### Actuator assignment for actubar type AS

| Thread<br>„Rp“ | DN  | 4 bar<br>actuators | 6 bar<br>actuators |
|----------------|-----|--------------------|--------------------|
| <b>1/2"</b>    | 15  | AS-004-08          | AS-004-08          |
| <b>3/4"</b>    | 20  | AS-006-06          | AS-004-10          |
| <b>1/0"</b>    | 25  | AS-008-06          | AS-006-10          |
| <b>5/4"</b>    | 32  | AS-008-07          | AS-006-12          |
| <b>3/2"</b>    | 40  | AS-018-06          | AS-008-11          |
| <b>2/0"</b>    | 50  | AS-018-08          | AS-011-12          |
| <b>5/2"</b>    | 65  | AS-037-07          | AS-026-12          |
| <b>3/0"</b>    | 80  | AS-076-05          | AS-037-10          |
| <b>4/0"</b>    | 100 | AS-076-07          | AS-050-11          |

Tab. 13-9 Actuator assignment for actubar type AS

The detailed dimensions of the rotary actuator can be found in the supplied manufacturer documentation.

## 17.6 Dimensional tables and dimensional drawings Type EKI

### 17.6.1 Dimensional drawing Type EKI

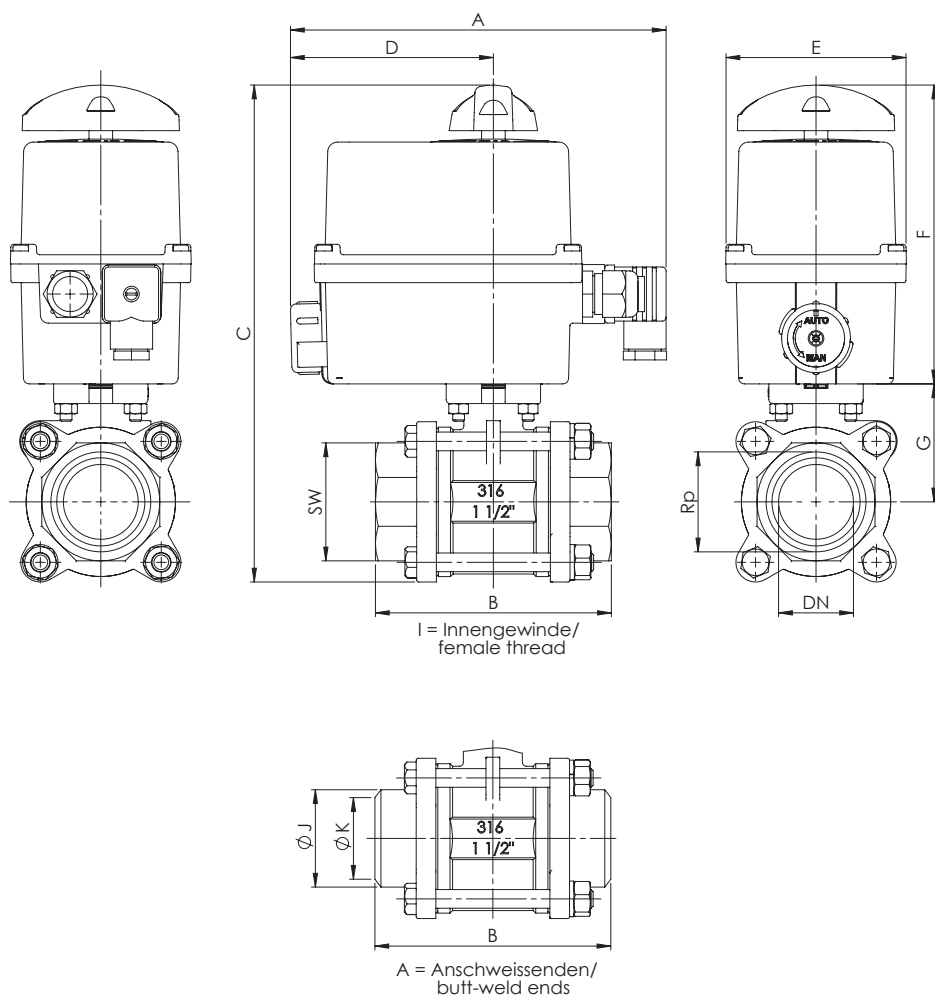


Fig. 14-4 Dimensional drawing Type EKI (exemplary representation with ER Plus rotary actuator)

## 17.6.2 Dimensional table Type EKI

| Thread<br>"Rp" | DN  | Actuator<br>size | A   | B   | C   | D   | E   |
|----------------|-----|------------------|-----|-----|-----|-----|-----|
| <b>1/2"</b>    | 15  | ER10             | 191 | 70  | 212 | 103 | 92  |
| <b>3/4"</b>    | 20  | ER10             | 191 | 77  | 219 | 103 | 92  |
| <b>1/0"</b>    | 25  | ER20             | 191 | 92  | 232 | 103 | 92  |
| <b>5/4"</b>    | 32  | ER20             | 191 | 105 | 240 | 103 | 92  |
| <b>3/2"</b>    | 40  | ER35             | 191 | 120 | 252 | 103 | 92  |
| <b>2/0"</b>    | 50  | ER35             | 191 | 140 | 271 | 103 | 92  |
| <b>5/2"</b>    | 65  | ER100            | 205 | 185 | 346 | 106 | 128 |
| <b>3/0"</b>    | 80  | ER100            | 205 | 205 | 361 | 106 | 128 |
| <b>4/0"</b>    | 100 | ER100            | 205 | 240 | 404 | 106 | 128 |

Tab. 14-10 Dimensional table for 2/2-way automatic valve of EKI type, size A to E

| Thread<br>"Rp" | F   | G   | Ø J | Ø K  | SW   | Weight<br>(kg) |
|----------------|-----|-----|-----|------|------|----------------|
| <b>1/2"</b>    | 152 | 36  | 22  | 19   | 27   | 2,00           |
| <b>3/4"</b>    | 152 | 40  | 28  | 24   | 33,5 | 2,21           |
| <b>1/0"</b>    | 152 | 47  | 34  | 30   | 40   | 2,77           |
| <b>5/4"</b>    | 152 | 51  | 43  | 38   | 50   | 3,25           |
| <b>3/2"</b>    | 152 | 60  | 49  | 41,5 | 57   | 4,11           |
| <b>2/0"</b>    | 152 | 69  | 61  | 54   | 72   | 5,74           |
| <b>5/2"</b>    | 176 | 110 | 77  | 69   | 85   | 10,97          |
| <b>3/0"</b>    | 176 | 118 | 90  | 84   | 100  | 14,77          |
| <b>4/0"</b>    | 176 | 133 | 116 | 107  | 130  | 24,07          |

Tab. 14-11 Dimensional table for 2/2-way automatic valve of EKI type, size F to SW

The detailed dimensions of the rotary actuator can be found in the supplied manufacturer documentation.

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