

## ARGUS Ball Valve EK, FK and HK

High Performance Ball Valves

BA1000 EN

*Translation of the Original Operating Manual*

**Installation  
Operation  
Maintenance**



***This operating manual must be read and observed before using an ARGUS Ball Valve.***

***Also read and observe the superior operating manual BA2000 before using an ARGUS Ball Valve automated by Flowserve Flow Control GmbH.***





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## **Document Version**

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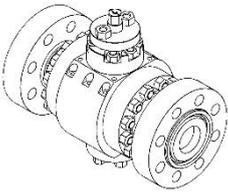
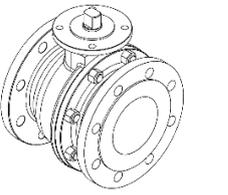
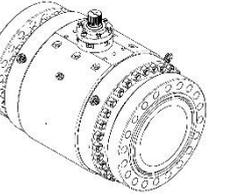
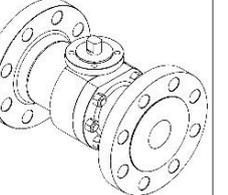
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Overview of ARGUS Ball Valve Standard Types

Brand		Argus				
						
<b>Series</b>		HK 35	EK 71	FK 75M / FK 75	FK 76M / FK 76	FK 79
<b>Design</b>		Trunnion-mounted ball	Floating ball	Floating ball	Trunnion-mounted ball	Floating ball
<b>Size Range</b>		DN 40 – 500, 1½" – 20"  Full bore or reduced bore	DN 15 – 50, ½" – 2"  Full bore	DN 80 – 200, 3" – 8"  Full bore or reduced bore	DN 80 – 900, 3" – 36"  Full bore or reduced bore	DN 15 – 100, ½" – 4"  Full bore or reduced bore
<b>Pressure Classes</b>	PN	10 – 250	16 – 100	16 – 40	16 – 160	16 – 250
	ANSI/ASME class	600 – 2500	150 – 600	150 – 300	150 – 900	150 – 2500
<b>Connections</b>		Flange connection	Flange connection	Flange connection	Flange connection	Flange connection
<b>Body Material</b>		– Fine grain steel (forged or cast) – Stainless steel – Special steel, e.g., Duplex SS Monel Inconel Hastelloy Alloy 20	– Fine grain steel (forged)	– Fine grain steel (forged or cast) – Stainless steel – Special steel, e.g., Duplex SS Monel Inconel Hastelloy Alloy 20	– Fine grain steel (forged or cast) – Stainless steel – Special steel, e.g., Duplex SS Monel Inconel Hastelloy Alloy 20	– Fine grain steel (forged or cast) – Stainless steel – Special steel, e.g., Duplex SS Monel Inconel Hastelloy Alloy 20
<b>Ball Seat Material</b>		– POM – DEVLON – PEEK (LYTON) – ARGULOY (metallic) – CARBIDE (metallic)	– PTFE – POM	– PTFE – POM – DEVLON – PEEK (LYTON) – ARGULOY (metallic) – CARBIDE (metallic)	– PTFE – POM – DEVLON – PEEK (LYTON) – ARGULOY (metallic) – CARBIDE (metallic)	– PTFE – POM – PEEK (LYTON) – ARGULOY (metallic) – CARBIDE (metallic)
<b>Special Design &amp; Accessories</b>		Refer to Flowserve catalogues and data sheets or contact Flowserve Flow Control GmbH.				



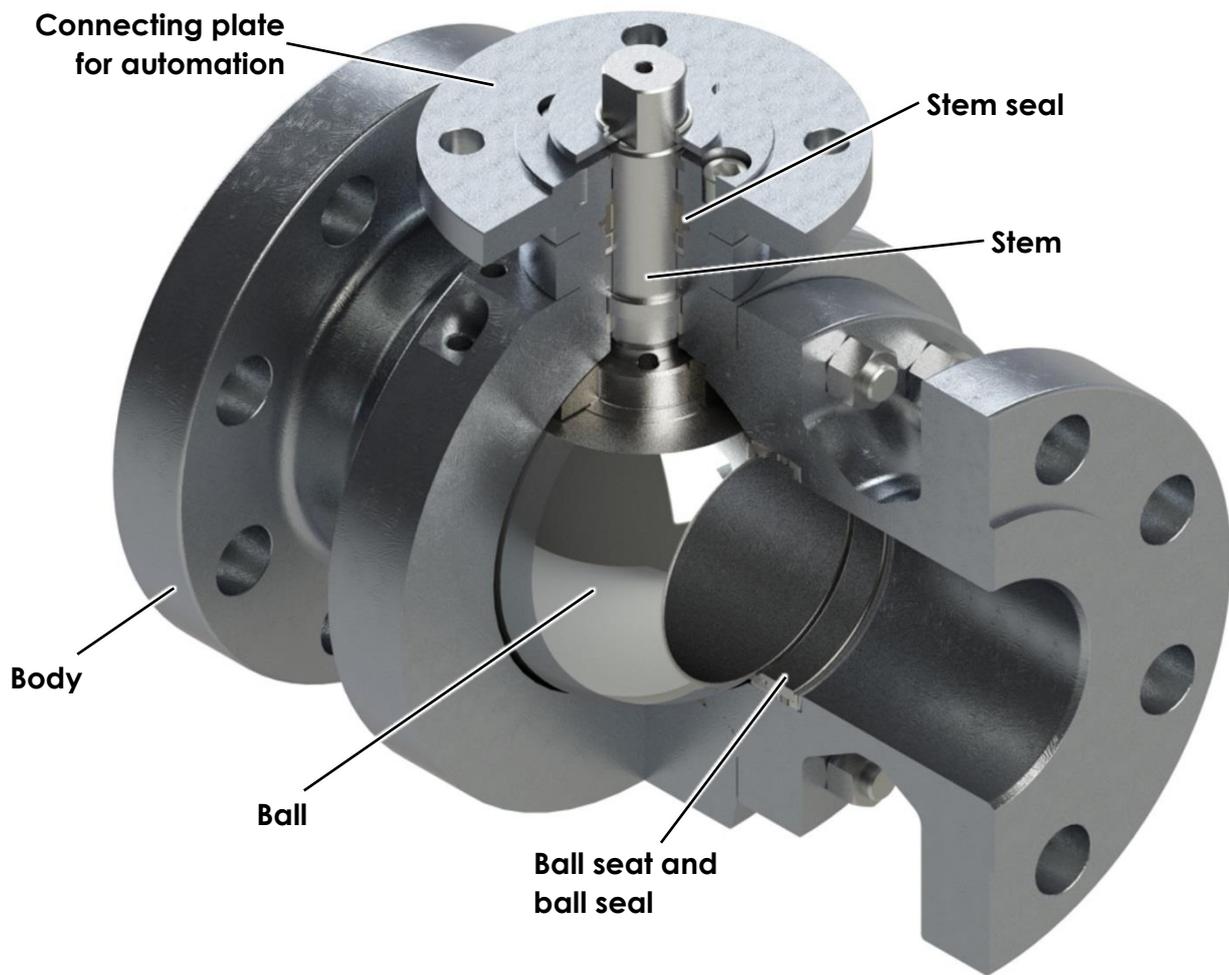


Figure 1: Components of the ARGUS Ball Valve

## 1 General Information

### 1.1 Scope of this Operating Manual

This operating manual is intended to familiarize the reader with the ARGUS Ball Valve and its intended use. Operating the ARGUS Ball Valve in compliance with this operating manual is important to help ensure reliability in service and avoid risks.

This operating manual provides information for qualified personnel on the intended use of the ARGUS Ball Valve as well for its special design variants.

	<p><b>Read this operating manual prior to handling the ARGUS Ball Valve in any region worldwide and pay particular attention to the marked safety-relevant warnings, information and instructions.</b></p> <p><b>Do not put the ARGUS Ball Valve into service until all of the safe operating conditions referred to in this operating manual have been met.</b> <b>Failure to comply with the information provided in the operating manual shall be considered to be misuse. Personal injury, product damage, delays in operation, or product failure caused by misuse are not covered by the Flowserve warranty.</b></p> <p><b>Observe all relevant local regulations for occupational safety and health – even when they are not stated explicitly in this operating manual.</b></p> <p><b>Always coordinate repair works with the personnel of the operating company, and follow all industrial plant safety requirements and applicable occupational health and safety legislation.</b></p> <p><b>Immediately inform Flowserve Flow Control GmbH if documents are missing or damaged, illegible or incomplete in order to receive a replacement – if desired in electronic form.</b></p> <p><b>Keep this operating manual close to the product's operating location or directly with the product.</b></p>
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### 1.2 Disclaimer

Information in this operating manual is believed to be complete and reliable. In spite of all efforts made by Flowserve Flow Control GmbH to provide comprehensive information and instructions, good engineering and safety practices should always be followed. In cases of doubt consult a qualified engineer.

Flowserve Flow Control GmbH manufactures products in conformance to relevant International Quality Management System Standards as certified and audited by external quality assurance organizations. Genuine parts and accessories have been designed, tested, and incorporated into the products to help ensure consistently high product quality and performance in use. As Flowserve Flow Control GmbH cannot test parts and accessories sourced from other vendors the (incorrect) installation of such parts and accessories may adversely affect the performance and safety features of the product. The failure to properly select, install, or use authorized Flowserve spare parts and accessories

shall be considered to be product misuse. Damage or failure caused by product misuse is not covered by Flowserve's warranty. In addition, any modification of Flowserve products or removal of original components may impair the safety of these products in use.

### 1.3 Safety Messages

This safety section contains detailed explanations about the different kinds of safety messages used in this operating manual.

ANSI Z535.6 specifies four different types of safety messages:

- Supplemental directives
- Grouped safety messages
- Section safety messages
- Embedded safety messages

Supplemental directives instruct readers to read an entire manual or direct them to specific safety information contained in the operating manual or from other sources. Supplemental directives usually appear at the beginning of a safety messages section of a chapter.

Grouped safety messages provide a general description of the risks involved in using the ARGUS Ball Valve and how to minimize these risks. Grouped safety messages are included in Section 2.1 Grouped Safety Messages.

Section and embedded safety messages caution against residual risks that may occur during intended and non-intended (reasonably foreseeable misuse) use of the ARGUS Ball Valve. Furthermore, section and embedded safety messages provide information on avoiding hazards that may be caused by different working situations and hazardous areas within the product life cycle.

Section safety messages are included in the safety messages section of a chapter.

Embedded safety messages precede an action step that may pose an especially severe hazard.

### 1.3.1 Safety Symbols and Their Description

This operating manual contains specific safety instructions with signal word panels which, if not observed, would cause a hazard. The specific signal word panels are:

Table 1: Explanation of the signal word panels

Signal word panel	Description
	<b>DANGER</b> This signal word panel indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury. Observe all safety messages having this signal word panel to avoid the hazard.
	<b>WARNING</b> This signal word panel indicates a potentially hazardous situation which, if not avoided, will result in death or serious injury. Observe all safety messages having this signal word panel to avoid the hazard.
	<b>CAUTION</b> This signal word panel indicates a potentially hazardous situation which, if not avoided, will result in minor or moderate injury. Observe all safety messages having this signal word panel to avoid the hazard.
	<b>NOTICE</b> This signal word panel is used to alert about an activity which may result in property damage. Observe all safety messages having this signal word panel to avoid the hazard.

Table 2: Additional symbols

Symbol/Warning Sign	Description
	<b>GENERAL HAZARD</b> Indicates a general hazardous situation which, if not avoided, could lead to personal injury and/or result in property damage.
	<b>HEAVY OBJECT HAZARD</b> Indicates a heavy object hazard which, if not avoided, could lead to personal injury and/or property damage.
	<b>EXPLOSIVE MATERIAL HAZARD</b> Indicates an explosive material hazard which, if not avoided, could lead to personal injury and/or property damage.
	<b>MOVING PARTS HAZARD</b> Indicates a moving parts hazard which, if not avoided, could lead to personal injury and/or property damage.

Symbol/Warning Sign	Description
	<b>SUSPENDED LOAD HAZARD</b> Indicates a suspended load hazard which, if not avoided, could lead to personal injury and/or property damage.
	<b>TOXIC HAZARD</b> Indicates a toxic hazard which, if not avoided, could lead to personal injury and/or property damage.
	<b>HOT SURFACE HAZARD</b> Indicates a hot surface hazard which, if not avoided, could lead to personal injury and/or property damage.
	<b>FLAMMABLE MATERIAL HAZARD</b> Indicates a flammable material hazard which, if not avoided, could lead to personal injury and/or property damage.
	<b>PRESSURE HAZARD</b> Indicates a pressure hazard which, if not avoided, could lead to personal injury and/or property damage.
	<b>ELECTRICAL HAZARD</b> Indicates an electrical hazard which, if not avoided, could lead to personal injury and/or property damage.
	<b>EXPLOSIVE ATMOSPHERE HAZARD</b> This ATEX explosive atmosphere marking indicates an explosive atmosphere hazard which, if not avoided, could lead to personal injury and/or property damage.
	<b>ENVIRONMENTAL HAZARD</b> Indicates environmental hazards due to hazardous substances.
	<b>HEALTH HAZARD</b> Indicates health hazards due to irritant hazardous substances.
	<b>PHYSICAL HAZARD</b> Indicates physical hazards due to fire-promoting hazardous substances.
	<b>PHYSICAL HAZARD</b> Indicates physical hazards due to explosive hazardous substances.
	Indicates a potential personal injury and/or property damage. Observe all supplemental directives which include this symbol.
	Indicates particularly important information. Comply with all general notices bearing this symbol.

Symbol/Warning Sign	Description
1. 2. 3.	Introduces an action step.
	Introduces a condition related to a following action step.
	Introduces a secondary action step or an action step within safety messages or instructions.
	Introduces a result of preceding action steps.
	Introduces an entry in a list.

### 1.3.2 Typographical Conventions and Content Structure in General Instructions

General instructions observe the following typographical conventions and content structure:

General instructions

**Example:**

This operating manual contains further information on using the ARGUS Ball Valve.

### 1.3.3 Typographical Conventions and Content Structure in Safety Messages

**Supplemental Directives**

Supplemental directives observe the following typographical conventions and content structure:

	<i>Action step</i>
--	--------------------

**Example:**

	<p><i>Keep this operating manual close to the product's operating location or directly with the product.</i></p>
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**Grouped Safety Messages**

Grouped safety messages observe the following typographical conventions and content structure:

<p>Signal word panel</p> <p><b>Type and source of the hazard!</b></p> <p>Consequences of failing to avoid hazard.</p> <p>▶ Action step to avoid the hazard.</p>
---

**Example:**

<p><b>NOTICE</b></p>	<p><b>Risk of property damage due to high temperatures!</b></p> <p>High temperatures due to welding may lead to a damaged ball sealing.</p> <p>▶ Monitor the temperature of the valve body in the seat area by using the temperature-sensing strips during welding.</p>
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**Section Safety Messages**

Section safety messages observe the following typographical conventions and content structure:

<p>Warning sign</p>	<p>Signal word panel</p> <p><b>Type and source of the hazard!</b></p> <p>Consequences of failing to avoid hazard.</p> <p>▶ Action step to avoid the hazard.</p>
---------------------	---

Signal word panel

**Type and source of the hazard!**

Consequences of failing to avoid hazard.

- ▶ Action step to avoid the hazard.

**Example:**

	<p><b>⚠ DANGER</b></p> <p><b>Risk of injury due to falling of suspended loads!</b></p> <p>Falling of suspended loads may cause severe injury or death.</p> <ul style="list-style-type: none"><li>▶ Never stand under suspended loads.</li></ul>
---	---

<p><b>NOTICE</b></p> <p><b>Risk of injury due to falling of suspended loads!</b></p> <p>Falling of suspended loads may cause severe injury or death.</p> <ul style="list-style-type: none"><li>▶ Never stand under suspended loads.</li></ul>
---

## Embedded Safety Messages

Embedded safety messages observe the following typographical conventions and content structure:

Signal word panel

**Type and source of the hazard!**

Consequences of failing to avoid hazard.

- ▶ Action step to avoid the hazard.

### Example:

**▲ DANGER**

**Risk of injury due to trapped pressure!**

Pressure trapped in the inside of the ARGUS Ball Valve may cause severe injury.

- ▶ Before removing and/or loosening the drain plug, operate the ARGUS Ball Valve several times so that the trapped pressure can escape.

## 1.4 Units

In this operating manual, the metric unit system (SI) is used.

## 1.5 Typographical Conventions for Special Designations

The following typographical conventions are observed for special designations:

- Foreign-language designations consisting of two or more words are *italicized*.
- Designations of objects (e.g., buttons, text boxes, switches, levers, knobs) of a product (machine or software) are written in SMALL CAPS for better legibility.

## 1.6 ARGUS Ball Valve as Pressure Equipment

The design of ARGUS Ball Valves takes all relevant laws, directives, standards, and specifications into account, such as the European Directive for Pressure Equipment 2014/68/EU, EN 12516, AD 2000 Regulations, API 6D and ASME/ANSI B16.34 and others, depending on the specified application.

The careful selection, design and calculation of materials as well as quality assurance performed during materials procurement, in production and on finished products ensure the elimination of pressure-related hazards when the ARGUS Ball Valves are used as intended.

As a manufacturer, Flowserve Flow Control GmbH applies the conformity assessment procedure according to module H (Article 14 of European Pressure Equipment Directive 2014/68/EU), i.e., "Comprehensive Quality Assurance" as described in Appendix III, Paragraph 11.

ARGUS Ball Valves are marked according to the provisions of the European Pressure Equipment Directive with the CE mark as well as the identification number of the notified conformity assessment body.

For the ARGUS Ball Valves, which are covered by the provisions of the European Pressure Equipment Directive 2014/68/EU, the EU declaration of conformity is part of this operating manual.

### 1.7 ARGUS Ball Valve as “Partly Completed Machinery”

The automated ARGUS Ball Valve, i.e., an assembly consisting of an ARGUS Ball Valve and a mounted pneumatic, hydraulic, or electric actuator with the corresponding control components for an automated operating of the complete automated unit, can be considered to be “machinery” in the sense of the European Machinery Directive 2006/46/EC. An ARGUS Ball Valve prepared for assembly with an actuator is thus regarded as “partly completed machinery” in the sense of the European Machinery Directive 2006/46/EC.

The European Machinery Directive 2006/46/EC requires that any hazards for persons and for the environment must be excluded when using the machinery.

Flowserve Flow Control GmbH certifies by the “Declaration of Incorporation” delivered with each ARGUS Ball Valve prepared for automation that the ARGUS Ball Valve poses no risks during assembly, installation into the industrial plant and during operation of the automated unit.

This operating manual for the ARGUS Ball Valve is part of the complete documentation of the automated unit (ARGUS Ball Valve and actuator).

### 1.8 Operating Parameters/Limits of the ARGUS Ball Valve

ARGUS Ball Valves are designed for special applications. Series (Type), material selection, nominal size, special features, attachments, accessories, and valve qualification are adapted to the specified operating conditions. This results in operating parameters/limits concerning fluids (media), pressure, temperature, and environmental conditions for each ARGUS Ball Valve.

The metallic nameplate attached to the ARGUS Ball Valve provides information on these operating parameters/limits:

↳ See Section 1.9 Nameplate: Identification of the ARGUS Ball Valve.



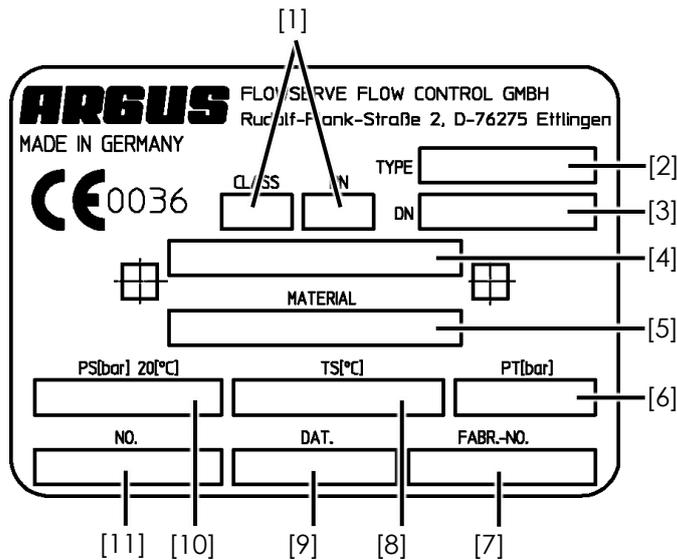
The nameplate permanently attached to the ARGUS Ball Valve body indicates the operating parameters/limits of the equipment. The maximum permissible operating pressure and the maximum permissible operating temperature must never be exceeded.

### 1.9 Nameplate: Identification of the ARGUS Ball Valve

The nameplate permanently affixed to the ball valve body provides the most important information regarding the design and use of the ARGUS Ball Valve.



If the nameplate is missing or illegible, do not put the ARGUS Ball Valve into operation. Instead, contact the *Quick Response Center (QRC)* at Flowserve Flow Control GmbH for support.



- [1] **Nominal Pressure (Class/PN)**
- [2] **ARGUS Ball Valve Type**
- [3] **Nominal Size**
- [4] **Order Number & Order Item (from Flowserve Flow Control GmbH)**
- [5] **Material Combination**
- [6] **Test Pressure**
- [7] **Fabrication Number (Serial Number)**
- [8] **Permissible Maximum & Minimum Temperature – TS\***
- [9] **Date of Manufacture (Month.Year)**
- [10] **Maximum Permissible Operating Pressure at Room Temperature – PS\***
- [11] **Article Number (Ball Valve Number)**



\*Observe temperature-dependent limit values for the pressure load for non-metallic sealing material. Refer to ↗ Annex C: Pressure-Temperature Diagrams for Ball Seats.



CE marking according to European Pressure Equipment Directive 2014/68/EU (PED): According to the provisions of European Pressure Equipment Directive 2014/68/EU, ARGUS Ball Valves and equipment classified in Category II and above are marked with the CE symbol and the identification number of the notified body ("0036"). ARGUS Ball Valves in Category I are marked with "CE" only. ARGUS Ball Valves which, due to their design, are not covered by the Directive do not bear the CE marking.  
The attached EU conformity declaration according to 2014/68/EU certifies that the provisions from the Directive have been fulfilled for the affected ARGUS Ball Valves and equipment.

## 2 Safety Information

### 2.1 Grouped Safety Messages

The following sections contain grouped safety messages on qualifications of personnel and on important life cycle stages of the ARGUS Ball Valve.

#### 2.1.1 Personnel Qualification

##### **⚠ WARNING**

##### **Risk of injury due to insufficiently qualified personnel!**

Insufficiently qualified personnel may lead to severe injury.

- ▶ Only deploy qualified personnel with appropriate personal protective equipment (PPE) and suitable work tools.
  - ↳ See Chapter 2 Safety Information.
- ▶ Ensure that unauthorized persons do not have any access to the ARGUS Ball Valve.

##### **NOTICE**

##### **Risk of property damage due to insufficiently qualified personnel!**

Deploying insufficiently qualified personnel may lead to damage of the ARGUS Ball Valve.

- ▶ Only deploy qualified personnel with appropriate personal protective equipment (PPE) and suitable work tools.
  - ↳ See Chapter 2 Safety Information.
- ▶ Ensure that unauthorized persons do not have any access to the ARGUS Ball Valve.

## 2.1.2 ARGUS Ball Valve Life Cycle Stages

### Installation

#### **⚠ WARNING**

##### **Risk of injury due to improper installation works!**

Improper installation works may cause severe injury or death.

- ▶ Only deploy qualified personnel with appropriate personal protective equipment (PPE) and suitable work tools.  
↳ See Sections 2.2 to 2.5.
- ▶ Ensure that unauthorized persons do not have any access to the ARGUS Ball Valve.
- ▶ Use appropriate safety measures in the workplace to ensure that parts cannot fall off.
- ▶ Ensure that the ARGUS Ball Valve is designed for the special operating conditions.
- ▶ Ensure that the connections, in particular the welding parameters, comply with the design specifications of the ARGUS Ball Valve.
- ▶ Monitor the temperature of the valve body in the seat area by using the temperature-sensing strips during welding.
- ▶ Provide safety instructions relating the piping (including the ARGUS Ball Valve).
- ▶ When installing the ARGUS Ball Valve via flange connection, determine the required tightening torques of the bolts.
- ▶ After completing the installation and before actuating the ARGUS Ball Valve, make sure to flush out the piping system.

If the ARGUS Ball Valve is intended to serve as permanent shut-off from the atmosphere, provide a blind flange or equivalent end.

**NOTICE****Risk of property damage due to improper installation works!**

Improper installation works may cause property damage.

- ▶ Only deploy qualified personnel with appropriate personal protective equipment (PPE) and suitable work tools.  
↳ See Sections 2.2 to 2.5.
- ▶ Ensure that unauthorized persons do not have any access to the ARGUS Ball Valve.
- ▶ Use appropriate safety measures in the workplace to ensure that parts cannot fall off.
- ▶ Ensure that the ARGUS Ball Valve is designed for the special operating conditions.
- ▶ Ensure that the connections, in particular the welding parameters, comply with the design specifications of the ARGUS Ball Valve.
- ▶ Monitor the temperature of the valve body in the seat area by using the temperature-sensing strips during welding.
- ▶ Provide safety instructions relating the piping (including the ARGUS Ball Valve).
- ▶ When installing the ARGUS Ball Valve via flange connection, determine the required tightening torques of the bolts.
- ▶ After completing the installation and before actuating the ARGUS Ball Valve, make sure to flush out the piping system.
- ▶ If the ARGUS Ball Valve is intended to serve as permanent shut-off from the atmosphere, provide a blind flange or equivalent end.

**NOTICE****Risk of property damage due to high temperatures during welding!**

High temperatures due to welding may damage the ball sealing.

- ▶ Monitor the temperature of the valve body in the seat area by using the temperature-sensing strips during welding.

**NOTICE****Risk of environmental pollution due to fluid residues!**

Fluid residues may harm the environment.

- ▶ Handle fluid residues with care.
- ▶ Temporarily place the ARGUS Ball Valve in the half-open position to let fluid residues escape.
- ▶ Use a vessel to collect any fluid residues and properly dispose of them.

## Commissioning/Decommissioning and Disassembly

### **⚠ WARNING**

#### **Risk of injury due to improper commissioning/decommissioning and disassembly!**

Improper commissioning/decommissioning and disassembly may cause severe injury or death.

- ▶ Only deploy qualified personnel with appropriate personal protective equipment (PPE) and suitable work tools.  
↳ See Sections 2.2 to 2.5.
- ▶ Ensure that unauthorized persons do not have any access to the ARGUS Ball Valve.
- ▶ Use appropriate safety measures in the workplace to ensure that parts cannot fall off.

### **NOTICE**

#### **Risk of property damage due to improper commissioning/decommissioning and disassembly!**

Improper commissioning/decommissioning and disassembly may cause property damage.

- ▶ Only deploy qualified personnel with appropriate personal protective equipment (PPE) and suitable work tools.  
↳ See Sections 2.2 to 2.5.
- ▶ Ensure that unauthorized persons do not have any access to the ARGUS Ball Valve.
- ▶ Use appropriate safety measures in the workplace to ensure that parts cannot fall off.

### **NOTICE**

#### **Risk of property damage due to flushing!**

Pressure from flushing may damage the sealing elements.

- ▶ Operate the ARGUS Ball Valve in the fully open or fully closed (90°) position.
- ▶ After flushing, check the tightness of the flange connections.
- ▶ If necessary, retighten the screws of the flange connection.

### **NOTICE**

#### **Risk of environmental pollution due to fluid residues!**

Fluid residues may harm the environment.

- ▶ Operate the ARGUS Ball Valve several times so that fluid residues and trapped pressure can escape.
- ▶ Use a vessel to collect any fluid residues and properly dispose of them.

## Maintenance/Troubleshooting

### **⚠ WARNING**

#### **Risk of injury due to improper maintenance/repair works!**

Improper maintenance/repair works may cause severe injury or death.

- ▶ Only deploy qualified personnel with appropriate personal protective equipment (PPE) and suitable work tools.  
↳ See Sections 2.2 to 2.5.
- ▶ Ensure that unauthorized persons do not have any access to the ARGUS Ball Valve.
- ▶ Observe the maximum permissible tightening torque of the stuffing box:  
↳ See Annex D: Max. Permissible Screw Tightening Torques for Stuffing Box.
- ▶ Only use original spare parts provided by Flowserve Flow Control GmbH.
- ▶ Provide all necessary and appropriate tools and equipment for the maintenance/repair works.
- ▶ Use appropriate safety measures in the workplace to ensure that parts cannot fall off.
- ▶ Do not attempt to carry out repair/maintenance works on the ARGUS Ball Valve while in operation or under pressure.
- ▶ Contact the *Quick Response Center (QRC)* at Flowserve Flow Control GmbH for support if any repairs have to be carried out.

### **NOTICE**

#### **Risk of property damage due to improper maintenance/repair works!**

Improper maintenance/repair works may cause property damage.

- ▶ Only deploy qualified personnel with appropriate personal protective equipment (PPE) and suitable work tools.  
↳ See Sections 2.2 to 2.5.
- ▶ Ensure that unauthorized persons do not have any access to the ARGUS Ball Valve.
- ▶ Observe the maximum permissible tightening torque of the stuffing box:  
↳ See Annex D: Max. Permissible Screw Tightening Torques for Stuffing Box.
- ▶ Only use original spare parts provided by Flowserve Flow Control GmbH.
- ▶ Provide all necessary and appropriate tools and equipment for the maintenance/repair works.
- ▶ Use appropriate safety measures in the workplace to ensure that parts cannot fall off.
- ▶ Do not attempt to carry out repair/maintenance works on the ARGUS Ball Valve while in operation or under pressure.
- ▶ Contact the *Quick Response Center (QRC)* at Flowserve Flow Control GmbH for support if any repairs have to be carried out.

### NOTICE

#### Risk of environmental pollution due to fluid residues!

Fluid residues may harm the environment.

- ▶ Operate the ARGUS Ball Valve several times so that fluid residues and trapped pressure can escape.
- ▶ Use a vessel to collect any fluid residues and properly dispose of them.

## Storage

### ⚠ WARNING

#### Risk of injury due to improper storage!

Improper storage may cause severe injury or death.

- ▶ Only deploy qualified personnel with appropriate personal protective equipment (PPE) and suitable work tools.  
↳ See Sections 2.2 to 2.5.
- ▶ Ensure that unauthorized persons do not have any access to the ARGUS Ball Valve.

### NOTICE

#### Risk of property damage due to improper storage!

Improper storage may cause property damage.

- ▶ Only deploy qualified personnel with appropriate personal protective equipment (PPE) and suitable work tools.  
↳ See Sections 2.2 to 2.5.
- ▶ Ensure that unauthorized persons do not have any access to the ARGUS Ball Valve.
- ▶ Ensure that the ARGUS Ball Valve is in a fully open position.

## Packaging

### ⚠ WARNING

#### Risk of injury due to improper packaging!

Improper packaging may cause severe injury.

- ▶ Only deploy qualified personnel with appropriate personal protective equipment (PPE) and suitable work tools.  
↳ See Sections 2.2 to 2.5.
- ▶ Ensure that unauthorized persons do not have any access to the ARGUS Ball Valve.

### NOTICE

#### **Risk of property damage due to improper packaging!**

Improper packaging may cause property damage.

- ▶ Only deploy qualified personnel with appropriate personal protective equipment (PPE) and suitable work tools.  
↳ See Sections 2.2 to 2.5.
- ▶ Ensure that unauthorized persons do not have any access to the ARGUS Ball Valve.
- ▶ Ensure that the ARGUS Ball Valve is in open position.

## Transportation

### ⚠ WARNING

#### **Risk of injury due to improperly performed transportation!**

Improperly performed transportation may cause severe injury or death.

- ▶ Only deploy qualified personnel with appropriate personal protective equipment (PPE) and suitable work tools.  
↳ See Sections 2.2 to 2.5.
- ▶ Ensure that unauthorized persons do not have any access to the ARGUS Ball Valve.
- ▶ Correctly attach the ARGUS Ball Valve and/or actuator.  
↳ See Chapter 12 Transportation and the superior operating manual BA2000.
- ▶ Use protective packaging materials to protect the ARGUS Ball Valve from damage during transport.
- ▶ Observe all load-handling regulations.

### NOTICE

#### **Risk of property damage due to improperly performed transportation!**

Improperly performed transportation may cause property damage.

- ▶ Only deploy qualified personnel with appropriate personal protective equipment (PPE) and suitable work tools.  
↳ See Sections 2.2 to 2.5.
- ▶ Ensure that unauthorized persons do not have any access to the ARGUS Ball Valve.
- ▶ Correctly attach the ARGUS Ball Valve and/or actuator.  
↳ See Chapter 12 Transportation and the superior operating manual BA2000.
- ▶ Use protective packaging materials to protect the ARGUS Ball Valve from damage during transport.
- ▶ Observe all load-handling regulations.

## 2.2 Responsibility of the Operating Company

ARGUS Ball Valves are often installed as safety-relevant components in industrial plants and piping systems. The operating company is responsible for the intended use/operation of the ARGUS Ball Valve and all necessary work within the ball valve life cycle and enforces all required preventive safety measures to protect all personnel and the environment.

The operating company is responsible for implementing the following preventive safety measures:

- All applicable laws, technical safety requirements/standards, regulations for the prevention of accidents and the protection of the environment as well as operating provisions are to be observed and enforced.
- Proper use of the ARGUS Ball Valve must be ensured.
- The operating conditions and limits of the ARGUS Ball Valve must be continuously observed and any hazards resulting from the operation of the ARGUS Ball Valve remedied.
- Only qualified personnel for the necessary work activities within the product life cycle of the ARGUS Ball Valve are to be deployed.
- Comprehensive personal protective equipment (PPE) and suitable work tools must be provided to personnel.
- A risk assessment of the site where the ARGUS Ball Valves will be in operation is to be conducted.
- Site-specific work instructions for the operation of the ARGUS Ball Valve are to be created.
- Continuous monitoring to ensure personnel have read and understand all applicable instructions and this operating manual must be implemented.
- Regular training should be given to keep the level of knowledge of personnel up to date.

## 2.3 Qualified Personnel

Qualified personnel are authorized by the person responsible for safe operation of the industrial plant or piping system to execute the necessary activities in accordance with their experience as well as their knowledge of all applicable laws, technical safety requirements/standards, regulations for the prevention of accidents and the protection of the environment as well as operating provisions and operating conditions. Qualified personnel are able to detect and avoid possible risks.

The operating company ensures that only qualified personnel for the necessary work activities within the product life cycle of the ARGUS Ball Valve is engaged.

## 2.4 Personal Protective Equipment

It is the responsibility of the operating company to provide high-quality personal protective equipment (PPE) to all personnel. In addition, this personal protective equipment must be appropriate for the work activities at the respective point of the life cycle of the ARGUS Ball Valve. The following personal protective equipment has to be provided by the operating company:

Table 3: Personal protective equipment

Personal Protective Equipment	
	Protective helmet
	Protective goggles
	Protective clothing
	Protective gloves
	Protective shoes
 	Protective respiratory mask

## 2.5 Personnel Qualification

Any personnel of the operating company that works with the ARGUS Ball Valve must have appropriate knowledge and skills and fulfill the following conditions:

- Sufficient qualification and personal suitability for the respective activity.
- Successfully completed user training for supervised or unsupervised work with the ARGUS Ball Valve.
- Knowledge of the personal protective equipment (PPE) and the way this equipment functions.
- Knowledge of this operating manual, particularly of safety messages and sections relevant to the activities to be performed.

- Knowledge of fundamental regulations regarding health and safety and accident prevention.

## 2.6 Target Groups

This operating manual addresses the following target groups:

### 2.6.1 Management of the Operating Company

The operating company's management carries out the compliance and organizational management activities and can be held responsible for their decisions.

### 2.6.2 Specialist Staff

Thanks to their completed specialist training, experience and knowledge of the relevant specifications and appropriate working equipment, specialist staff are able to perform the task assigned to them and recognize and eliminate any possible work-related dangers by themselves.

### 2.6.3 Trained Persons

Trained persons have received training provided by the operating company about the tasks they are to perform and work-related dangers.

### 2.6.4 Working Activities of the Target Groups

The table below contains work activities assigned to the target groups.

	<p><b><i>In order to prevent personal injury and/or property damage, ensure that only suitably qualified target groups are allowed to perform the work activities specified in Table 4: Target groups with assigned work activities.</i></b></p>
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Table 4: Target groups with assigned work activities

Target Groups	Work Activities
Management and executives of the operating company	<ul style="list-style-type: none"> <li>■ Compliance and organizational management (this includes initially reading and observing this operating manual before personnel do)</li> <li>■ Creation of training materials and conducting of training courses</li> </ul>
Specialist staff	<ul style="list-style-type: none"> <li>■ Installation</li> <li>■ Commissioning/decommissioning</li> <li>■ Maintenance</li> <li>■ Repairs (fault rectification)</li> <li>■ Returns and disposal</li> <li>■ Other kind of related work activities</li> </ul>
Trained persons	<ul style="list-style-type: none"> <li>■ Unpacking</li> </ul>

<b>Target Groups</b>	<b>Work Activities</b>
	<ul style="list-style-type: none"><li data-bbox="774 309 954 340">■ Packaging</li><li data-bbox="774 353 997 385">■ Transportation</li><li data-bbox="774 398 912 430">■ Storage</li><li data-bbox="774 443 1273 474">■ Other kind of related work activities</li></ul>

## 2.7 Notes on Product Warranty

Any non-intended use of the ARGUS Ball Valve may compromise its function. This leads to invalidation of any product warranty claims!



Note that the operating company shall be liable in the following cases:

- The ARGUS Ball Valve is operated in a manner which is not consistent with this operating manual, particularly safety instructions, handling instructions and Section 2.8 Intended Use.
- Personnel operate the ARGUS Ball Valve who are not sufficiently qualified to carry out their respective activities.
- No original spare parts or accessories of Flowserve Flow Control GmbH are used.
- Unauthorized changes are made to the ARGUS Ball Valve.

## 2.8 Intended Use

The ARGUS Ball Valve is used as a shut-off device within its operating parameters/limits appropriate for the application, e.g., in piping or on containers in the areas of processing, transport and treatment of liquids, gases and solid-containing fluids. It is either operated manually or its function is automated using an actuator and the corresponding control system.

	<p><b><i>In order to prevent personal injury and/or property damage, ensure that the operating parameters on the nameplate and the design of the ARGUS Ball Valve match the specified application.</i></b></p> <p><b><i>☞ See Section 1.9 Nameplate: Identification of the ARGUS Ball Valve. Observe all labels on the ARGUS Ball Valve and keep them in a legible condition.</i></b></p> <p><b><i>If necessary, immediately replace any damaged and/or illegible labels.</i></b></p>
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ARGUS Ball Valves are generally suitable for operation in potentially explosive atmospheres. When used as intended, the ARGUS Ball Valves do not have their own potential sources of ignition and are therefore not "equipment" as defined by Article 1 of Directive 2014/34/EU ("ATEX Directive").

	<div style="background-color: red; color: white; padding: 5px; display: inline-block; margin-bottom: 10px;">  <b>DANGER</b> </div> <p><b>Risk of injury due to “Ex Area”!</b></p> <p>The explosion of an explosive atmosphere (“Ex Area”) may cause severe injury or death.</p> <ul style="list-style-type: none"> <li>▶ Observe the intended use of the ARGUS Ball Valve.</li> <li>▶ Observe the specific limit values applicable to the hazardous area.</li> <li>▶ Observe the permissible fluid temperature and valve surface temperature.</li> <li>▶ Only assign sufficiently qualified personnel to do work in potentially explosive atmospheres.</li> <li>▶ Only use appropriate safe accessory components.</li> </ul>
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## 2.9 Non-intended Use

A non-intended use (only reasonably foreseeable misuse) is present in the following cases:

- The ARGUS Ball Valve is operated as a control valve.
- The ARGUS Ball Valve is operated outside its operating parameters/limits stated on the ARGUS Ball Valve nameplate.
- The ARGUS Ball Valve is installed, commissioned, maintained, repaired or worked on in any way that is not in compliance with this operating manual.
- The ARGUS Ball Valve is operated without regard to the labels, such as arrows designating the installation orientation, warning signs, etc.
- The ARGUS Ball Valve is modified or used with spare parts not supplied by Flowserve Flow Control GmbH.
- The ARGUS Ball Valve is operated without having successfully passed all inspection acceptance criteria.
- The ARGUS Ball Valve is operated in a partially assembled condition.



If there is any doubt as to the suitability of the ARGUS Ball Valve for the application intended, contact the *Quick Response Center (QRC)* at Flowserve Flow Control GmbH for advice, quoting the serial number or article number of the ARGUS Ball Valve as stated on the nameplate.



If the application conditions change (e. g., fluid, temperature or pressures) contact the *Quick Response Center (QRC)* at Flowserve Flow Control GmbH for support before putting the ARGUS Ball Valve in operation again.

## 2.10 General Sources of Danger/Residual Risks

This section points out general sources of danger/residual risks that exist during intended and non-intended use (only reasonably foreseeable misuse).

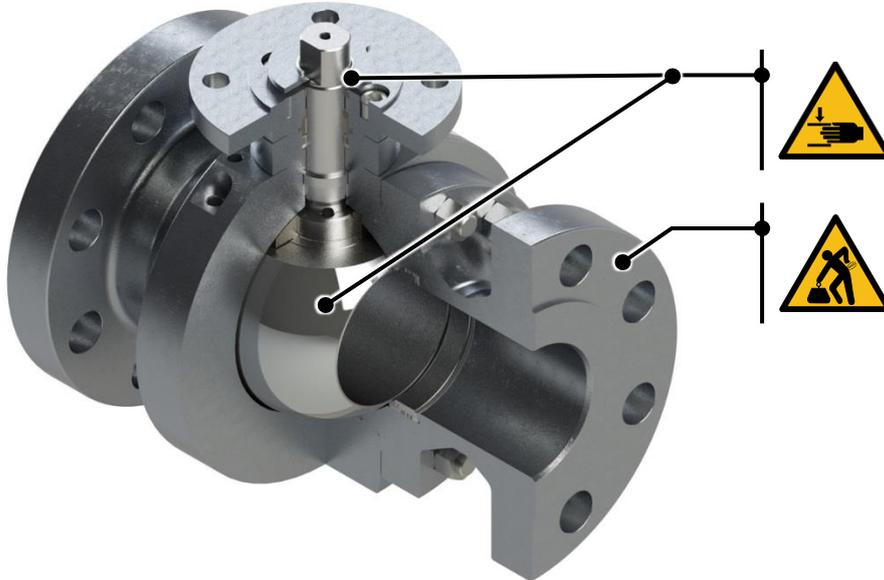


Figure 2: General sources of danger/residual risks on the ARGUS Ball Valve

	<p><b>⚠ WARNING</b></p> <p><b>Risk of injury due to ball valve parts in motion!</b></p> <p>A ball valve wrench and ball which are in motion may cause crushing and/or amputate limbs.</p> <ul style="list-style-type: none"> <li>▶ Do not reach between the ball valve wrench and the ball valve guide washer.</li> <li>▶ Do not reach into the bore of the ARGUS Ball Valve.</li> <li>▶ Wear appropriate safety gloves.</li> </ul>
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	<p><b>⚠ WARNING</b></p> <p><b>Risk of injury due to a heavy ARGUS Ball Valve (≥ 15 kg)!</b></p> <p>A heavy ARGUS Ball Valve (≥ 15 kg) can cause back injuries when lifted without suitable lifting gear and slings.</p> <ul style="list-style-type: none"> <li>▶ Lift the ARGUS Ball Valve only in accordance with the operator's work instructions, industry standards and current legislation.</li> <li>▶ Before lifting the ARGUS Ball Valve, first find out the approximate ball valve weight.</li> <li>▶ Only lift the ARGUS Ball Valve with ≥ 15 kg with suitable lifting gear and slings.</li> <li>▶ Always wear an appropriate personal protective equipment (PPE).</li> </ul>
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Furthermore, in case of a non-intended use (only reasonably foreseeable misuse) the following may occur:

- Failure of the ARGUS Ball Valve's primary functions.
- Damage to the industrial plant or piping system.
- Failure of required maintenance and repair methods.
- General risk of injury to personnel.
- Environment pollution caused by substances leaking from the ARGUS Ball Valve.

## 3 Product Description

### 3.1 General Product Description

The ARGUS Ball Valve has many innovative design features that represent the highest standards in valve technology.

The ARGUS Ball Valve EK, FK and HK series are used as bubble-tight shut-off devices or shut-off valves in piping systems and containers used for processing, handling and transporting liquid or gaseous substances and solid materials.

ARGUS Ball Valves are composed of a body with a recess for a cylindrical perforated ball for rough flow control. The ball is either trunnion-mounted or floating. Depending on the size, the ARGUS Ball Valves can be opened and closed manually with a ball valve wrench, a handwheel (with or without gearbox) or automatically by a hydraulic, pneumatic or electric actuator.

The ARGUS Ball Valve is open when the hole of the ARGUS Ball Valve is in line with the flow and closed when it is turned by 90 degrees. The wrench lies flat in alignment with the flow when open, and is perpendicular to it when closed, allowing easy visual confirmation of the valve's status.

ARGUS Ball Valves are durable, perform reliably after many cycles, and close securely even after long periods of non-use.

ARGUS Ball Valves are used for various applications in the following industries:

- Energy industry (e.g. oil, gas, nuclear and coal industry)
- Chemical and petrochemical industry
- Defense industry
- Pharmaceutical industry
- Research industry (e.g. research centers)

### 3.2 Design Features

The ARGUS Ball Valves EK, FK and HK series can feature the following major construction/design characteristics:

- Unibody design with screw-in connection (ARGUS Ball Valves EK series only)
- Two-piece/three-piece split body design with flanged connection (ARGUS Ball Valve FK and HK series only)
- Soft or metal ball seal (soft or metal ball seated/sealing)
- Trunnion-mounted ball
- Floating ball
- Anti-blow-out and anti-static stem
- Spring supported ball sealing (up to DN 300) with cavity pressure relief
- Seat area supported by coil springs (from DN 350) with cavity pressure relief
- Long life double stem sealing system

- Body design in compliance with EU Pressure Equipment Directive (PED), AD 2000, EN 12516 and EN 1092-1
- Body design in compliance with API 6D, API 608, ASME B16.34, B16.5, B16.47, B16.10
- Sealing design compliance in accordance with EN ISO 15848 fugitive emissions requirements and TA-Luft (VDI 2440)
- Fire safe compliance in accordance with EN ISO 10497 and API 607
- Connecting plate design in accordance with EN ISO 5211 for easy assembly with actuators
- Sizes available from DN 15 (1/2") to DN 900 (36") with full or reduced bore
- Supported pressure classes from PN 10 to PN 250 (ASME Classes 150 to 2500)
- Standard temperature range from -50 °C to +400 °C (ARGUS Ball Valves with special features excluded)



Note that the actual design features of the ARGUS Ball Valve are specified in the delivery documents.

### 3.3 Scope of Delivery

The scope of delivery normally includes the following components:

- ARGUS Ball Valve (usually operated in open position)
- Wrench, wrench head with tube or handwheel (only for ball valves that are intended for manual operation)
- Protective caps
- Operating manual including the EU Declaration of Conformity and Incorporation
- Order related documents (e.g., material certifications)
- Documents required by law



After goods receipt, check whether the delivery corresponds to the information on the delivery note. Report any deviations immediately to the forwarding agent and Flowserve Flow Control GmbH.

## 4 Consignment Receipt

### 4.1 Safety Messages

	<p><b><i>In order to prevent personal injury and/or property damage, ensure that verification and unpacking work is only carried out by qualified personnel with appropriate personal protective equipment (PPE) and suitable work tools.</i></b>  <i>☞ See Chapter 2 Safety Information.</i></p>
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### 4.2 Checking the Consignment Receipt for Completeness

1. Immediately upon receipt of the ARGUS Ball Valve check it against the delivery document (delivery note) for completeness.
    - ⓘ A delivery document (delivery note) is enclosed with each delivery. The details on the nameplate of the ARGUS Ball Valve allow clear identification and must correspond with the details on the delivery document (delivery note).
  2. Check the ARGUS Ball Valve for transportation damage.
  3. Immediately report any missing parts and/or damage to the transport agent and to Flowserve Flow Control GmbH.
    - ⓘ Flowserve Flow Control GmbH must receive any claims in writing within one month of receipt of the ARGUS Ball Valve. Note that Flowserve Flow Control GmbH cannot accept later claims.
- ✓ The procedure for consignment receipt is now complete.

### 4.3 Unpacking the ARGUS Ball Valve

1. Open the packaging.
  2. Loosen and remove all load securing material.
  3. Safely lift the ARGUS Ball Valve out of the packaging.  
☞ See Chapter 12 Transportation.
  4. Dismantle or break down the packaging.
  5. Properly dispose any unneeded packaging and load securing material.  
☞ See Chapter 13 Disposal and Recycling.
  6. Safely transport the ARGUS Ball Valve to its place of operation.  
☞ See Chapter 12 Transportation.
- ✓ Unpacking the ARGUS Ball Valve is now complete.

## 5 Installation

### 5.1 Safety Messages

	<p><b><i>In order to prevent personal injury and/or property damage, ensure that installation work is only carried out by qualified personnel with appropriate personal protective equipment (PPE) and suitable work tools.</i></b></p> <p><b><i>🔗 See Chapter 2 Safety Information.</i></b></p>
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	<p style="background-color: red; color: white; padding: 5px;"><b>⚠ DANGER</b></p> <p><b>Risk of injury due to welding procedures on pressurized piping!</b></p> <p>Welding procedures on pressurized piping may cause severe injury or death.</p> <ul style="list-style-type: none"> <li>▶ Observe local welding regulations, provisions, instructions, and specifications as well as specific safety requirements when welding.</li> <li>▶ Ensure that welding is only carried out by qualified personnel with appropriate protective equipment.</li> <li>▶ Ensure that no welding is carried out on pressurized piping.</li> </ul>
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	<p style="background-color: orange; color: black; padding: 5px;"><b>⚠ WARNING</b></p> <p><b>Risk of injury due to incorrect ball valve installation!</b></p> <p>In case of incorrect ball valve installation (installation direction for unidirectional ball valves does not correspond to the specified flow direction or pressure direction), leakage of the ball valve can lead to serious injury or death.</p> <ul style="list-style-type: none"> <li>▶ Install the ARGUS Ball Valve according to the specified flow or pressure direction.</li> <li>▶ Note the following preparations for the flange and welding installation.</li> </ul>
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**NOTICE****Risk of property damage due to high temperature!**

In the case of short welding ends, high temperature from welding works may cause damage to the soft seal.

- ▶ Observe the procedures in the following embedded safety messages.

**NOTICE****Risk of property damage due to incorrect ball valve installation**

In case of incorrect ball valve installation (installation direction for unidirectional ball valves does not correspond to the specified flow or pressure direction), the ball valve may leak.

- ▶ Install the ARGUS Ball Valve according to the specified flow or pressure direction.
- ▶ Note the following preparations for the flange and welding installation.

## 5.2 Preparing the Flange and Welded Installation

Observe the following safety measures before installing the ARGUS Ball Valve:

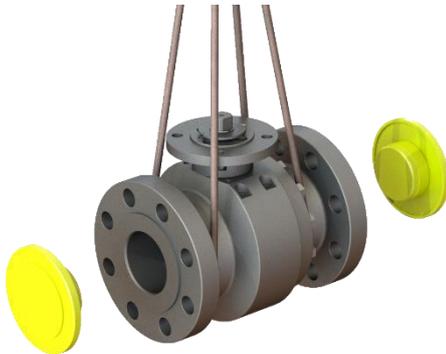
- Ensure that the installation direction for an unidirectional ARGUS Ball Valve corresponds to the specified flow direction or pressure direction.  
In the case of an ARGUS Ball Valve with a wrench, the valve key should point in the flow direction.
- Ensure that the piping is strong enough to safely bear the ARGUS Ball Valve and its accessories.  
Note: The total weight of the ARGUS Ball Valve including actuator and control modules is specified in the position parts list and assembly drawing.  
These documents are available on request, indicating the order and item number.
- Before installing the ARGUS Ball Valve, ensure that the piping is clean and free of any fluids or other substances.
- Make sure there is sufficient clearance above and to the side of the ARGUS Ball Valve and attachments to ensure maintenance and/or repair work without risk.
- If the ARGUS Ball Valve is intended for regular manual operation, provide a standing area for the operator so he or she can safely apply the necessary forces.

### 5.3 Installing the ARGUS Ball Valve via a Flange Connection

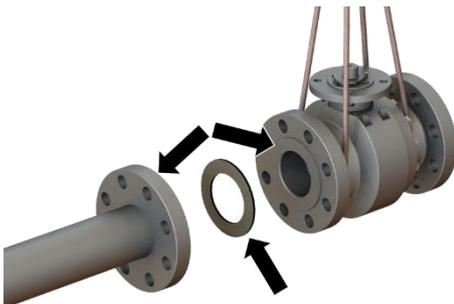
1. Transport the ARGUS Ball Valve to the installation site using lifting devices suitable and slings for the weight and the size of the ARGUS Ball Valve.  
↪ See Chapter 12 Transportation.



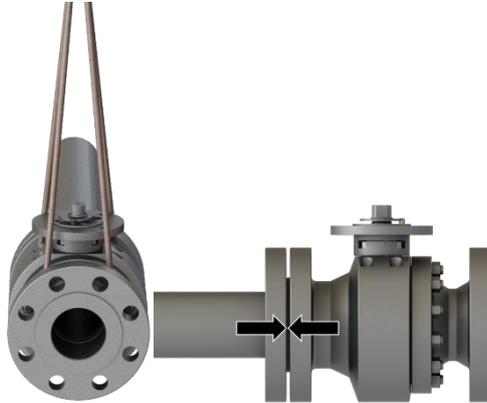
2. Remove the protective caps.



3. Clean the piping ends, flange connections and sealing surfaces.

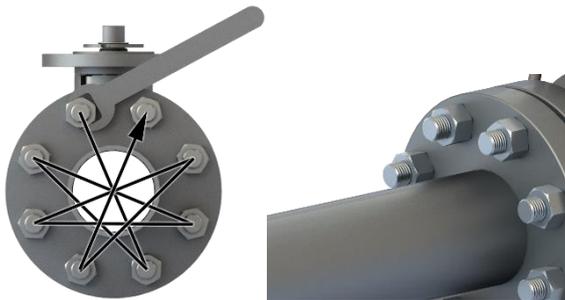


4. Assembling the ARGUS Ball Valve on the first flange:
  - ▶ Connect the ARGUS Ball Valve on the first flange using some bolts and position the seal.
  - ▶ Ensure the correct position of the ARGUS Ball Valve and seal.



5. Tighten the bolts crosswise.

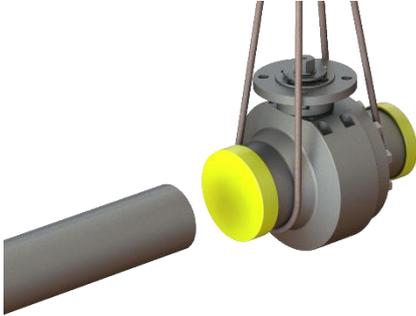
**i** Use the correct tightening torques specified by the industrial plant operator.



6. Assemble the ARGUS Ball Valve to the second flange:  
Follow the same procedure as for the first flange.
7. Check the seal after the flange connection has been completed.
- ✓ Installation of the ARGUS Ball Valve is now complete.

## 5.4 Installing the ARGUS Ball Valve via a Welded Connection

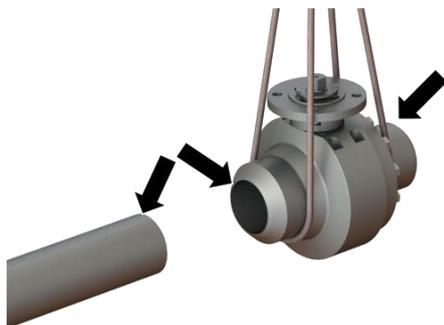
1. Transport the ARGUS Ball Valve to the assembly location using lifting devices and slings suitable for the weight and the size of the ARGUS Ball Valve.  
↳ See Chapter 12 Transportation.



2. Remove the protective caps.



3. Clean the piping connection and the welding ends of the ARGUS Ball Valve.
4. Remove paint and rust in the area of the welded joints so there is a clean metal surface.

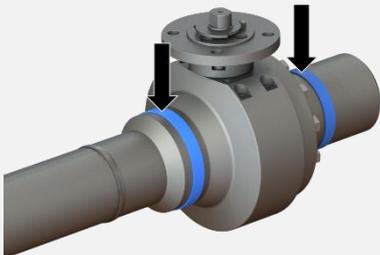


**NOTICE**

**Risk of property damage due to excessive heat development!**

In the case of short welding ends, excessive heat development from welding works may cause damage to the soft seal.

- ▶ If possible, put a wet towel over the ARGUS Ball Valve.
- ▶ Monitor the temperature of the valve body in the seat area by using the temperature-sensing strips (shown here in blue) during welding.  
The maximum permitted temperature is: 100 °C

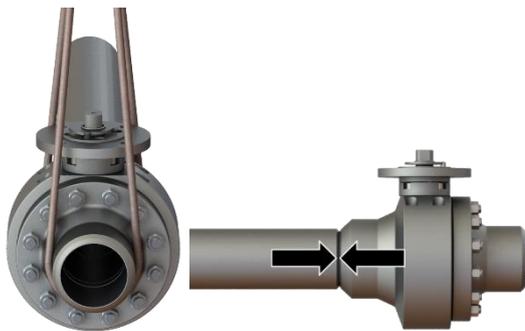


(position of the temperature-sensing strips)

- ▶ Continuously monitor the temperature strip during welding.
- ▶ In case of a reaction (color change), interrupt the welding.
- ▶ Let the valve body cool down.

**5.** Weld the ARGUS Ball Valve to the first welding end.

- ⓘ Ensure correct placement and correct alignment of the ARGUS Ball Valve with the piping connection.

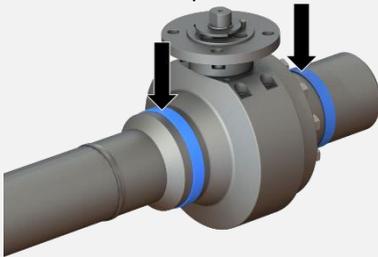


**NOTICE**

**Risk of property damage due to excessive heat development!**

In case of short welding ends, excessive heat development may cause damage to soft seal.

- ▶ If possible, put a wet towel over the ARGUS Ball Valve.
- ▶ Monitor the temperature of the valve body in the seat area by using the temperature-sensing strips during welding.  
The maximum permitted temperature is: 100 °C



(position of the temperature-sensing strips)

- ▶ Continuously monitor the measuring strip during welding.
- ▶ In case of a reaction (color change), interrupt the welding.
- ▶ Let the valve body cool down.

6. Weld the ARGUS Ball Valve to the second welding end.

- ⓘ Ensure correct placement and correct alignment of the ARGUS Ball Valve with the piping connection.



- ✓ Installation of the ARGUS Ball Valve is now complete.

### 5.5 Installing/Aligning the Actuator

Actuators are usually installed above the ARGUS Ball Valve if the stem of the ball valve is in a vertical position. Other types of installation are possible depending on assessment of the specific application conditions.



In case of heavy and/or asymmetrical actuators or with units which are not installed vertically, critical bending or torsional forces can occur, especially on extended stems, for example, those equipped with a stuffing box. Have on-site support provided for installing the actuator.

In case of critical vibrations or impacts during operation, it is also useful to additionally support the actuator or provide shock absorption.

## 6 Commissioning

### 6.1 Safety Messages

	<p><b><i>In order to prevent personal injury and/or property damage, ensure that commissioning, flushing and pressure testing works are only carried out by qualified personnel with appropriate personal protective equipment (PPE) and suitable work tools.</i></b></p> <p><b><i>⚡ See Chapter 2 Safety Information.</i></b></p>
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	<p style="background-color: red; color: white; padding: 5px;"><b>⚠ DANGER</b></p> <p><b>Risk of injury due to exceeded operating parameters/limits!</b></p> <p>Exceeded operating parameters/limits may cause severe injury or death.</p> <ul style="list-style-type: none"> <li>▶ Never exceed the operating parameters/limits of the ball valve stated on the nameplate.</li> </ul>
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	<p style="background-color: red; color: white; padding: 5px;"><b>⚠ DANGER</b></p> <p><b>Risk of injury due to automated operation!</b></p> <p>In automated operation moving parts may cause severe injury or death.</p> <ul style="list-style-type: none"> <li>▶ Keep hands, hair and clothing away from all moving parts.</li> <li>▶ Observe the operating manual of the actuator.</li> </ul>
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<p style="font-size: 24px; margin: 0;"><b>NOTICE</b></p>	<p><b>Risk of property damage due to flushing and/or pressure testing of the piping!</b></p> <p>Flushing pressure and/or a (hydrostatic) pressure testing may cause damages to sealing elements (e.g., at the stem and the stuffing box).</p> <ul style="list-style-type: none"> <li>▶ Never exceed the operating parameters/limits stated on the ball valve nameplate.</li> <li>▶ Operate the ARGUS Ball Valve into fully open position.</li> <li>▶ After flushing and/or the pressure testing, check the flange connections again.</li> <li>▶ If necessary, retighten bolts on the flange connection according to the torque specifications of the plant operator.</li> </ul>
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## 6.2 Requirements for Commissioning

Before commissioning and putting into service, ensure the following requirements:

- Flush the piping
- Test the pressure of the piping

## 6.3 Flushing and Pressure Testing of the Piping

### **⚠ DANGER**

#### **Risk of injury due to exceeded operating parameters/limits!**

Exceeded operating parameters/limits may cause severe injury or death.

- ▶ Never exceed the operating parameters/limits of the ball valve stated on the nameplate.

1. Flush the pipeline to remove any fluid residue, dirt or other foreign particles
  2. Test the pressure of the piping to confirm the tightness and strength of the industrial plant section.
- ✓ Flushing and pressure testing of the piping are now complete.

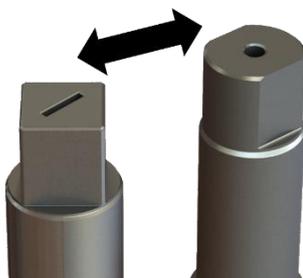
## 6.4 Operating the ARGUS Ball Valve

The ARGUS Ball Valve can be operated manually or automatically by an actuator.

There are three operation positions:

- Open (the ARGUS Ball Valve opens by rotating to the left or counterclockwise)
- Closed (the ARGUS Ball Valve closes by rotating to the right or clockwise)
- Half-open (not intended for normal operation)

The ARGUS Ball Valve is open when the flat flanks of a shaft sealing head or the groove of a square shaft sealing head are parallel to the flow direction.



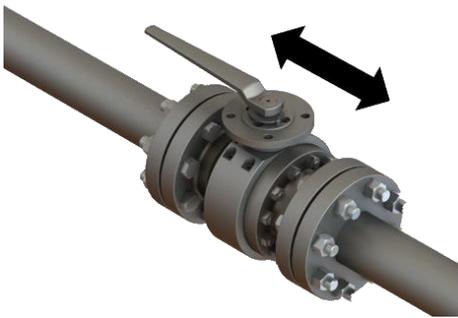
For safety reasons the position of the ARGUS Ball Valve is recognizable by the ball valve wrench.

#### 6.4.1 Manually Operating the ARGUS Ball Valve to Open Position

1. Move the ball valve wrench parallel to the valve body/piping.



- ✓ The ARGUS Ball Valve is open.



#### 6.4.2 Manually Operating the ARGUS Ball Valve to Closed Position

1. Move the ball valve wrench crosswise (90°) to the valve body/piping.



- ✓ The ARGUS Ball Valve is closed.



## 7 Maintenance

### 7.1 Safety Messages

	<p><i>In order to prevent personal injury and/or property damage, ensure that maintenance work is only carried out by qualified personnel with appropriate personal protective equipment (PPE) and suitable work tools.</i></p> <p><i>🔗 See Chapter 2 Safety Information.</i></p>
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	<p><b>⚠ DANGER</b></p> <p><b>Risk of injury due to an automated ARGUS Ball Valve!</b></p> <p>Moving parts of an automated ARGUS Ball Valve may cause severe injury or death.</p> <ul style="list-style-type: none"> <li>▶ Keep hands, hair or clothing away from moving parts.</li> <li>▶ Observe the operating manuals and their safety messages of the automated components.</li> </ul>
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	<p><b>⚠ DANGER</b></p> <p><b>Risk of injury from fluid residues and trapped pressure!</b></p> <p>Fluid residue and trapped pressure can cause serious injury or death.</p> <ul style="list-style-type: none"> <li>▶ Operate the ARGUS Ball Valve several times so that fluid residues and trapped pressure can escape.</li> <li>▶ Use a vessel to collect any fluid residues and properly dispose of them.</li> </ul>
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## 7.2 Required Spare Parts for Maintenance

Under particularly stressful operating conditions, wear and tear to the sealing elements of the ARGUS Ball Valve may occur after a certain period of time. In addition, very critical or severe service may require that components of the ARGUS Ball Valve be periodically renewed.



For maintenance works appropriate spare parts are required. Flowserve Flow Control GmbH provides repair sets or replacement kits for each ARGUS Ball Valve.

Clearly identify the ARGUS Ball Valve so Flowserve Flow Control GmbH can provide the corresponding repair sets or replacement kits.

This technical identification can be made either via the customer order documents (e.g. delivery bill or invoice) or via the information on the type plate.

### 7.3 Maintenance Schedule



The following inspections can be carried out in the installed state. As a rule, normal industrial plant operation does not have to be interrupted.

In case of any leakage, damage and/or incorrect condition:

↳ See Chapter 8 Troubleshooting Guide.

Table 5: Recommended maintenance inspections

No.	Inspection	Schedule/Cycles
1	Inspect the flange and welded connection for leakages.	Every 6 months
2	Inspect the ARGUS Ball Valve's seals for leaks and retighten the stuffing box nuts if present (↳ see Section 8.4 Tightening the Stuffing Box Nuts or Replacing the Stuffing Box Packing).	
3	Inspect the test connection (leakage detector at the stem seal) or the drain/safety plug (↳ see Sections 8.6 and 8.7) – if present – for leaks to the outside.	
4	Inspect the ARGUS Ball Valve for external damage.	
5	Clean the ARGUS Ball Valve and repaint if necessary.	
6	If possible during industrial plant operation, open and close the ARGUS Ball Valve and ensure that the ball valve stem runs smoothly.   Jerky running of the ball valve stem can indicate increased torque. With stem seals made of graphite jerky, running of the ball valve stem is possible without any defect.	
7	Check the actuator for fixed installation and proper function.	
8	Check all accessories for tight fit and proper function.	

## 8 Troubleshooting Guide

### 8.1 Safety Messages

	<p><b>In order to prevent personal injury and/or property damage, ensure that repair work is only carried out by qualified personnel with appropriate personal protective equipment (PPE) and suitable work tools.</b></p> <p>🔗 See Chapter 2 Safety Information.</p>
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	<p style="background-color: red; color: white; padding: 5px;"><b>⚠ DANGER</b></p> <p><b>Risk of injury due to repair work on the ARGUS Ball Valve during operation!</b></p> <p>Repair work on the ARGUS Ball Valve during operation and/or while under pressure may cause severe injury or death.</p> <ul style="list-style-type: none"> <li>▶ Do not attempt to repair the ARGUS Ball Valve while in operation and/or under pressure.</li> <li>▶ Follow the procedures specified in the embedded safety messages below closely.</li> <li>▶ Contact the <i>Quick Response Center (QRC)</i> at Flowserve Flow Control GmbH for support if any repairs have to be carried out.</li> </ul>
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	<p style="background-color: orange; color: black; padding: 5px;"><b>⚠ WARNING</b></p> <p><b>Risk of injury due to repair welding or joint welding on the ARGUS Ball Valve!</b></p> <p>Due to possible non-metallic inclusions in the metal body of the ARGUS Ball Valve, repair or joint welding is very dangerous and can lead to serious injury or death.</p> <ul style="list-style-type: none"> <li>▶ Do not perform any repairs or joint welding.</li> <li>▶ Contact the <i>Quick Response Center (QRC)</i> at Flowserve Flow Control GmbH for support if any repair or joint welding has to be carried out.</li> </ul>
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## 8.2 Required Spare Parts for Repair Works



For repair works appropriate spare parts are required. Flowserve Flow Control GmbH provides repair sets or replacement kits for each ARGUS Ball Valve. Clearly identify the ARGUS Ball Valve so Flowserve Flow Control GmbH can provide the corresponding repair sets or replacement kits. This technical identification can be made either via the customer order documents (e.g. delivery bill or invoice) or via the information on the type plate.

## 8.3 Troubleshooting Table



Due to the large number of ARGUS Ball Valve variants, installed actuators and their use, it is not possible to refer to all types of problems, causes and remedies in the following troubleshooting table. If problems occur, it is best to contact the *Quick Response Center (QRC)* at Flowserve Flow Control GmbH for the specific support services you require.

Table 6: Troubleshooting table

No.	Problem Description	Probable Causes	Corrective Action
1	External leakage	Stem seal or the stuffing box packing are worn out	Replace stem seal or stuffing box packing ↳ for this purpose contact the <i>Quick Response Center (QRC)</i> at Flowserve Flow Control GmbH
		Nuts at the stuffing box are loose (stem seal has settled)	Retighten stuffing box nuts ↳ see Section 8.4 Tightening the Stuffing Box Nuts or Replacing the Stuffing Box Packing.
		Body seal is worn out	Replace body seal ↳ for this purpose contact the <i>Quick Response Center (QRC)</i> at Flowserve Flow Control GmbH
		ARGUS Ball Valve incorrectly installed in the pipeline	Check the installation of the ball valve ↳ see Chapter 5 Installation
		The pipelines are not laid with low tension	Lay the pipelines tension-free
2	Leakage into the pipeline	Ball seal is worn out	Replace the ball seal → for this purpose contact the

No.	Problem Description	Probable Causes	Corrective Action
			Quick Response Center (QRC) at Flowserve Flow Control GmbH
3	ARGUS Ball Valve is stiff	The inside of the ball valve is dirty	Clean the ball/ball valve → for this purpose contact the Quick Response Center (QRC) at Flowserve Flow Control GmbH

### 8.4 Tightening the Stuffing Box Nuts or Replacing the Stuffing Box Packing

For use at high temperatures (> 250 °C) ARGUS Ball Valves can be equipped with an extended stem and a stuffing box attachment. To eliminate a stem leakage of the ARGUS Ball Valve, the stuffing box nuts have to be retightened or the stuffing box packing have to be replaced.

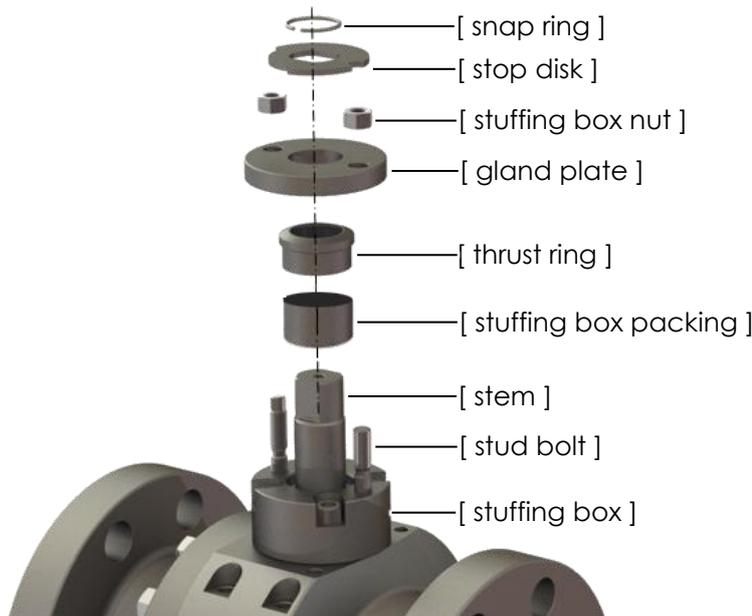
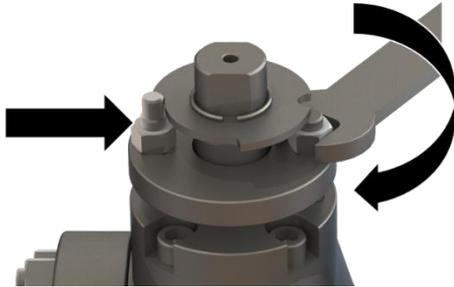


Figure 3: Components of the stuffing box attachment

### **Retightening the Stuffing Box Nuts**

1. Tighten the stuffing box nuts evenly crosswise.



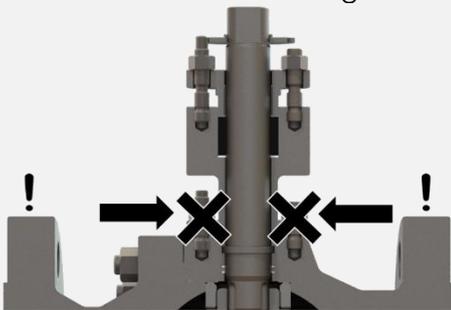
- ⓘ Observe the recommended maximum torques for tightening the stuffing box nuts in Annex D: Max. Permissible Screw Tightening Torques for Stuffing Box.

#### **⚠ WARNING**

##### **Risk of injury due to loose fastening nuts on the ball valve body!**

Loose fastening nuts on the ball valve body can lead to serious injury or death.

- ▶ Do not loosen the fastening nuts.



- ✓ Tightening of the stuffing box nuts is completed.

- ⓘ If you cannot eliminate a stem leakage of the ARGUS Ball Valve by tightening the stuffing box nuts, replace the stuffing box packing (see following section).

### **Replacing the Stuffing Box Packing**

- ⓘ Flowserve Flow Control GmbH will provide replacement stuffing box packings and special tools (e.g. packing puller and setting bushing) if you specify the order number and position number of the ARGUS Ball Valve. You will find these numbers on the ball valve name plate.  
Only use original spare parts from Flowserve Flow Control GmbH.

**⚠ DANGER**

**Risk of injury from fluid residues, trapped pressure and high surface temperatures!**

Fluid residue, trapped pressure and/or high surface temperatures can cause serious injury or death.

- ▶ Before replacing the stuffing box packing, operate the ARGUS Ball Valve several times so that fluid residues and trapped pressure can escape.
- ▶ Do not touch surfaces with high surface temperatures and let them cool down.
- ▶ Collect fluid residues with a collecting container and dispose of them properly and properly.



The ARGUS Ball Valve

- is out of service.
- is not under pressure (operate the ARGUS Ball Valve several times so that fluid residues and trapped pressure can escape).

1. Remove the snap ring and stop disk (if present).

**⚠ DANGER**

**Danger of injury due to a pressurized stuffing box packing!**

Components of the stuffing box can be ejected due to a pressurized stuffing box attachment.

- ▶ If the stuffing box packing is under pressure, do not unscrew nuts from the stud bolts.
- ▶ Allow the stuffing box packing to outgas for 24 hours with the gland plate loosened.

2. Loosen the nuts on the gland plate.

3. Allow the stuffing box packing to outgas for 24 hours with the gland plate loosened.

4. Unscrew the loosened nuts from the stud bolts.

5. Pull the gland plate and the thrust ring off the stem.

6. Slowly and carefully remove the old stuffing box packing with suitable tools (e.g. packing puller).

**i** Take care not to damage the stem and/or the inside of the stuffing box when removing the stuffing box packing, as in this case the ARGUS Ball Valve may leak.

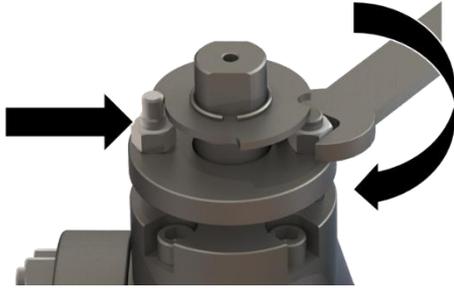
7. Insert a new stuffing box packing into the stuffing box.

**i** Use a suitable setting bushing for this purpose.

8. Push the thrust ring into the stuffing box.

9. Place the gland plate on the stuffing box.

10. Tighten the stuffing box nuts evenly crosswise.



**i** Observe the recommended maximum torques for tightening the stuffing box nuts in Annex D: Max. Permissible Screw Tightening Torques for Stuffing Box.

11. Attach the stop disk and snap ring.

✓ The replacement of the stuffing box packing is completed.

## 8.5 Replacing the Live Loading Stuffing Box Packing

In the course of time, stuffing box packings show signs of settling which make it necessary to retighten the stuffing box nuts. In order to maintain the minimum pressure permanently and to avoid a stem leakage, ARGUS Ball Valves can be equipped with a live loading stuffing box packing (also called self-tightening stuffing box packing). The advantage of the live loading stuffing box packing is that the stuffing box packing is constantly retightened and therefore retightening of the stuffing box nuts is not necessary. A live loading stuffing box packing therefore extends the maintenance interval.

If a stem leakage occurs at the ARGUS Ball Valve despite live loading stuffing box packing, you have to retighten the stuffing box nuts or replace the stuffing box packing.

↪ See Section 8.4.

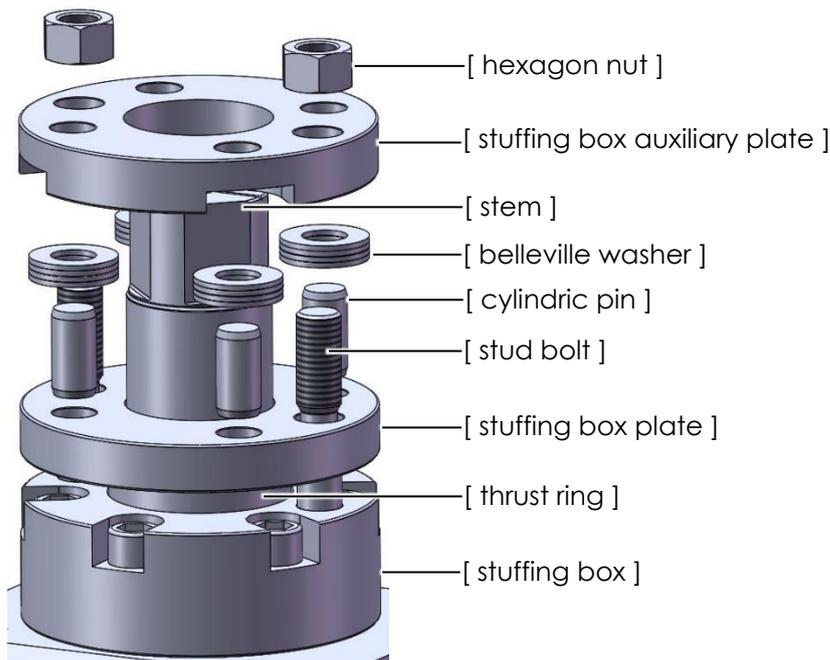


Figure 4: Components of the stuffing box attachment with live loading stuffing box packing (disassembled)

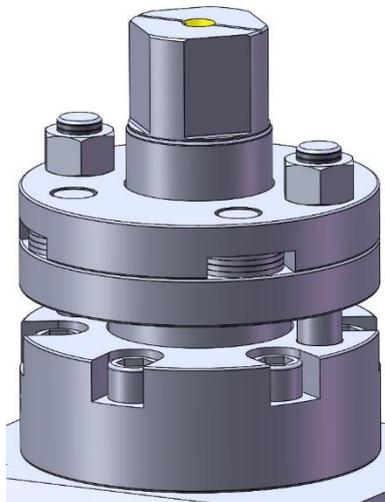


Figure 5: Components of the stuffing box attachment with live loading stuffing box packing (assembled)

## 8.6 Draining the ARGUS Ball Valve with the Drain Plug (if present)

The drain plug on the bottom of the ARGUS Ball Valve housing, as an optional feature, serves to drain off any fluid residues from the ball valve interior.



Note that the operation and use of the drain plug may vary depending on the type and manufacturer. Therefore the following instructions are intended to illustrate the use only as an example. Information on the exact operation and use of the drain plug can be found in the manufacturer's documentation.

### Draining Fluid Residues

**⚠ DANGER**

**Risk of injury from fluid residues and trapped pressure!**

Fluid residues and trapped pressure in the ARGUS Ball Valve can cause serious injury or death.

- ▶ Before removing and/or loosening the drain plug, operate the ARGUS Ball Valve several times so that fluid residues and trapped pressure can escape.
- ▶ Use a vessel to collect any fluid residues and dispose of them properly.

1. Place a catch basin under the plug orifice before draining.
2. Remove the drain plug to drain fluid residues.



3. After draining properly, dispose of the fluid residues that have been collected.



4. Screw the drain plug to the upper part of the ball valve body.
- ✓ Draining is now complete.

### 8.7 Draining the ARGUS Ball Valve with the Safety Plug (if present)

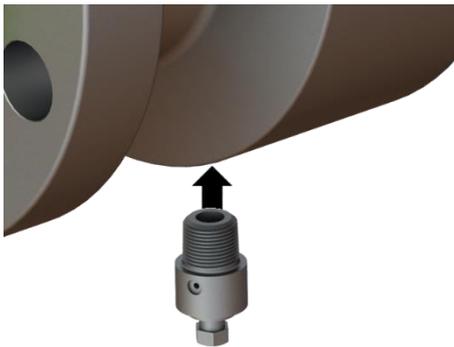
The safety plug, also called the "captive drain plug" is designed to prevent unintended loss of the drain plug when draining fluid residues. The safety plug can also be closed again immediately when loosening – even if there is overpressure in the ARGUS Ball Valve.



Note that the operation and use of the safety plug may vary depending on the type and manufacturer. Consequently, the following instructions are intended to illustrate the use only as an example. Information on the exact operation and use of the safety plug can be found in the manufacturer's documentation.

### **Installing the Safety Plug**

1. Screw the complete safety plug tightly into the tapped hole using a thread lock (e.g. Loctite).



- ✓ Installation of the safety plug is now complete.

### **Opening the Safety Drain Plug**

#### **⚠ DANGER**

#### **Risk of injury from fluid residues and trapped pressure!**

Fluid residues and trapped pressure in the ARGUS Ball Valve can cause serious injury or death.

- ▶ Do not place yourself in front of the outlet orifice.
- ▶ Keep a vessel nearby and collect any fluid residues.

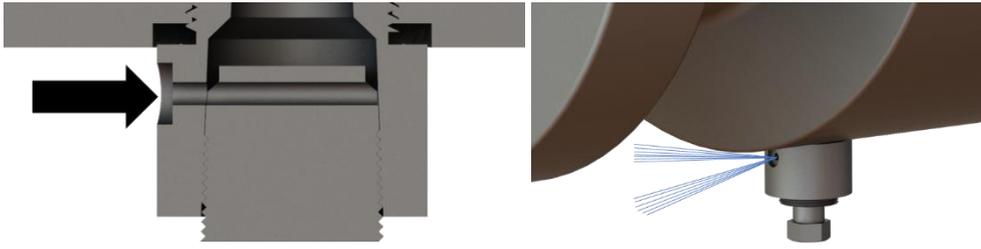
1. Turn the safety plug head in the counterclockwise direction.



Note that the safety plug head may only be opened, not forcibly screwed out.

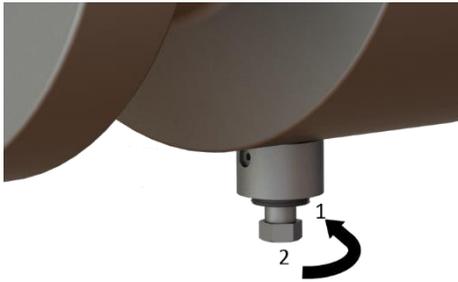


- ✓ The safety drain plug is open and the fluid residues can escape.



### **Closing the Safety Drain Plug**

1. Turn the safety plug head in the clockwise direction.



- ✓ The safety drain plug is now closed.

## 8.8 Returning the ARGUS Ball Valve for Repair

If the ARGUS Ball Valve cannot be repaired using the troubleshooting table above, return the ARGUS Ball Valve to Flowserve Flow Control GmbH for professional repair.



Note that the ARGUS Ball Valve must be emptied, cleaned, and a preserving medium applied before being returned to Flowserve Flow Control GmbH. Flowserve Flow Control GmbH will only open and repair the ARGUS Ball Valve if the decontamination declaration form and safety data sheet are enclosed. Flowserve Flow Control GmbH will provide you with a decontamination declaration form and safety data sheet before return.



The ARGUS Ball Valve to be returned must be

- Emptied
- Cleaned
- Preserved
- Free from fluid residues and trapped pressure

1. Properly pack the ARGUS Ball Valve for return.  
↳ See Chapter 11 Packaging.

2. Send the completed and signed decontamination declaration form and the safety data sheet in advance to Flowserve Flow Control GmbH or attach the documents to the outside and clearly visible on the return of goods.



The decontamination declaration form and safety data sheet must clearly confirm that the ARGUS Ball Valve does not pose any risk to persons or to the environment. Flowserve Flow Control GmbH will accept a return only if the completed and bindingly signed decontamination declaration form and safety data sheet accompany the return.

3. Send the return to Flowserve Flow Control GmbH.



The return of the ARGUS Ball Valve is completed.

## 9 Decommissioning and Disassembly

### 9.1 Safety Messages

	<p><b><i>In order to prevent personal injury and/or property damage, ensure that decommissioning work is only carried out by qualified personnel with appropriate personal protective equipment (PPE) and suitable work tools.</i></b></p> <p><b><i>☞ See Chapter 2 Safety Information.</i></b></p>
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	<p style="text-align: center;"><b>⚠ DANGER</b></p> <p><b>Risk of injury due to falling loads!</b></p> <p>Incorrect attachment of loads may cause severe injury or death.</p> <ul style="list-style-type: none"> <li>▶ Correctly attach the ARGUS Ball Valve and/or actuator. ☞ See Chapter 12 Transportation and the superior operating manual BA2000.</li> <li>▶ Never stand under heavy load.</li> </ul>
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	<p style="text-align: center;"><b>⚠ DANGER</b></p> <p><b>Risk of injury due to fluid residues and trapped pressure!</b></p> <p>Fluid residue and trapped pressure can cause serious injury or death.</p> <ul style="list-style-type: none"> <li>▶ Never disassemble a pressurized ARGUS Ball Valve from the pipeline.</li> <li>▶ Operate the ARGUS Ball Valve several times so that fluid residues and trapped pressure can escape.</li> <li>▶ Use a vessel to collect any fluid residues and dispose of them properly.</li> <li>▶ Follow the procedures specified in the embedded safety messages below closely.</li> </ul>
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## 9.2 Decommissioning and Disassembly of the ARGUS Ball Valve

### 9.2.1 Requirements for Decommissioning and Disassembly

Before decommissioning and disassembly, observe the following requirements:

- The specifications of the operating company for the decommissioning and disassembly are observed.
- The piping and the ARGUS Ball Valve are depressurized, free of fluid residues and have cooled down, so there is no risk of injury.

### 9.2.2 Decommissioning and Disassembly of the ARGUS Ball Valve

1. Decommission the affected piping system.
  2. Operate the ARGUS Ball Valve several times so that fluid residues and trapped pressure can escape.
  3. Flush the pipeline to remove any fluid residue, dirt or other foreign particles.
  4. Ensure that there are no fluid residues, dirt or other foreign particles in the pipeline.
  5. Disconnect the power supply to the actuator and to its control components.
  6. Disconnect the actuator and the control components from the ARGUS Ball Valve.
  7. Disassemble the ARGUS Ball Valve from the pipeline.
-  When disassembling the ARGUS Ball Valve, pay attention to the information given in chapter 12 Transportation.
- ✓ The decommissioning and disassembly are now complete.

## 10 Storage

### 10.1 Safety Messages

	<p><b><i>In order to prevent personal injury and/or property damage, ensure that storage work is only carried out by qualified personnel with appropriate personal protective equipment (PPE) and suitable work tools.</i></b></p> <p>☞ See Chapter 2 Safety Information.</p>
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	<p><b>⚠ DANGER</b></p> <p><b>Risk of injury due to falling loads!</b></p> <p>Incorrect attachment of loads may cause severe injury or death.</p> <ul style="list-style-type: none"> <li>▶ Correctly attach the ARGUS Ball Valve and/or actuator. ☞ See Chapter 12 Transportation and the superior operating manual BA2000.</li> <li>▶ Never stand under heavy load.</li> </ul>
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<p><b>NOTICE</b></p>	
<p><b>Risk of property damage due to incorrect storage!</b></p> <p>An incorrect storage of the ARGUS Ball Valve may cause property damage.</p> <ul style="list-style-type: none"> <li>▶ Follow the procedures in the section below closely.</li> </ul>	

## 10.2 Storing the ARGUS Ball Valve



Ensure that the following conditions apply:  
The ARGUS Ball Valve

- Is disconnected from the piping
- Is free from any fluid residues and trapped pressure (observe national regulations on disposal of hazardous waste)
- Is in the open position (as supplied)
- Is free from any dirt
- Is dry
- Has protective factory fitted caps (including Volatile Corrosion Inhibitor paper) attached

1. For an ARGUS Ball Valve with a nominal pipe size greater or equal to ( $\geq 15$  kg), position the lifting straps of an appropriate hoist or swing crane around the ARGUS Ball Valve body or attach them to lifting eyelets, if they are present.  
↳ See Chapter 12 Transportation.

2. Transport the ARGUS Ball Valve to its storage location.

3. Extend the useful life of the ARGUS Ball Valve by ensuring the following storage conditions at the storage location are fulfilled:



Storage location conditions of the ARGUS Ball Valve:

Indoor (long-term storage):

- dry, free of dust and adequately ventilated
- storage temperature between +5 °C and +40 °C
- relative humidity of < 50 %

Outdoor/construction site area (short-term storage;  $\leq 7$  days):

- storage temperature between -10 °C and +50 °C



The preparations for the storage of the ARGUS Ball Valve have been completed.



The operability of the ARGUS Ball Valve must be checked by an inspection of the ARGUS Ball Valve after (longer) storage and before commissioning.

Carry out the maintenance work (section 7.3) listed in chapter 7 Maintenance on the ARGUS Ball Valve.

## 11 Packaging

### 11.1 Safety Messages



*In order to prevent personal injury and/or property damage, ensure that packaging work is only carried out by qualified personnel with appropriate personal protective equipment (PPE) and suitable work tools.*  
⚡ See Chapter 2 Safety Information.

### **NOTICE**

**Risk of property damage due to improper packaging!**

Improper packaging of the ARGUS Ball Valve may cause damage during transportation.

- ▶ Follow the procedures in the section below closely.

## 11.2 Packaging the ARGUS Ball Valve



Ensure that the following conditions apply:  
The ARGUS Ball Valve

- Is disconnected from the piping
- Is free from any fluid residues and trapped pressure (observe national regulations on disposal of hazardous waste)
- Is in the open position (as supplied)
- Is free from any dirt
- Is dry

1. Attach protective factory fitted caps to the ARGUS Ball Valve (including Volatile Corrosion Inhibitor paper).



Protective factory fitted caps prevent the penetration of dirt and foreign particles into the interior of the ARGUS Ball Valve. The caps also protect the flange sealing surface, the welding end, and the connecting thread from corrosion and other damage.

2. Choose suitable packaging to guarantee that the ARGUS Ball Valve reaches its destination without any damage (e.g., "seaworthy" packaging).



When choosing suitable packaging, please observe customer specifications, applicable laws, load securing regulations, the properties of the transported goods (dimensions and weight), the protection requirements and the type of transport (road, rail, air and/or sea freight).

3. If necessary, protect/secure the ARGUS Ball Valve against tipping over and slipping.

4. If necessary – particularly in the case of sea freight – display appropriate and clearly visible transportation symbols on the packaging in accordance with ISO 780 and DIN 55402.



Transport symbols on the boxes are either laminated or sprayed on with weatherproof paint.

Possible transportation symbols are:

	This side up		Fragile goods
	Keep dry		Protect from direct sunlight
	Center of gravity		Do not use hooks
	Attach chain here		

- ✓ The packaging of the ARGUS Ball Valve is now complete.

## 12 Transportation

### 12.1 Safety Messages

	<p><b>In order to prevent personal injury and/or property damage, ensure that transportation work is only carried out by qualified personnel with appropriate personal protective equipment (PPE) and suitable work tools.</b></p> <p>☞ See Chapter 2 Safety Information.</p> <p><b>In order to prevent personal injury and/or property damage, observe the transport instructions in chapter 4 of the superior operating manual BA2000.</b></p>
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	<p style="background-color: red; color: white; padding: 5px;"><b>⚠ DANGER</b></p> <p><b>Risk of injury due to falling loads!</b></p> <p>Incorrect attachment of loads may cause severe injury or death.</p> <ul style="list-style-type: none"> <li>▶ Correctly attach the ARGUS Ball Valve and/or actuator. ☞ See following Section 12.2 and the superior operating manual BA2000.</li> <li>▶ Never stand under heavy load.</li> </ul>
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	<p style="background-color: orange; color: black; padding: 5px;"><b>⚠ WARNING</b></p> <p><b>Risk of injury due to improper transportation!</b></p> <p>Improper transportation may lead to severe injury.</p> <ul style="list-style-type: none"> <li>▶ Correctly attach the ARGUS Ball Valve and/or actuator. ☞ See following Section 12.2 and the superior operating manual BA2000.</li> <li>▶ Observe all load-handling regulations.</li> </ul>
--	--

## **NOTICE**

### **Risk of property damage due to improper transportation!**

Improper transportation of the ARGUS Ball Valve may cause damage.

- ▶ Use protective packaging materials to protect the ARGUS Ball Valve from damage during transport (e.g., packaging cover).
- ▶ Follow the procedures specified in the section below closely.

## 12.2 Transporting the ARGUS Ball Valve



Ensure that the following conditions apply:  
The ARGUS Ball Valve



Is disconnected from the piping

- Is free from any fluid residues and trapped pressure  
(observe national regulations on disposal of hazardous waste)
- Is in the open position (as supplied)
- Is free from any dirt
- Is dry

1. Attach protective factory fitted caps to the ARGUS Ball Valve (including Volatile Corrosion Inhibitor paper).



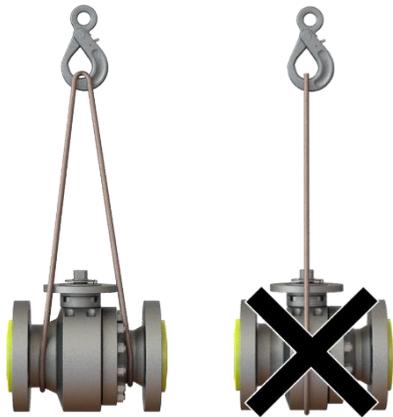
Protective factory fitted caps prevent the penetration of dirt and foreign particles into the interior of the ARGUS Ball Valve. The cap also protects the flange sealing surface, the welding end, and the connecting thread from corrosion and other damage.

2. Use protective packaging materials to protect the ARGUS Ball Valve from damage during transport (e.g., packaging cover).

3. In case of a heavy ARGUS Ball Valve ( $\geq 15$  kg) position appropriate lifting straps around the ball valve body or attach them to lifting eyelets, if they are present.



Note that when lifting straps around the ARGUS Ball Valve are used the center of gravity can be higher than the attachment point.



4. Put the lifting straps into the load hook of an appropriate hoist or swing crane.

5. Lift the ARGUS Ball Valve to the desired location and set it down safely.

6. Remove the lifting straps from the ARGUS Ball Valve.



Preparation of the ARGUS Ball Valve for transport and its transport are now complete.

## 13 Disposal and Recycling

### 13.1 Safety Messages

	<p><i>In order to prevent personal injury and/or property damage, ensure that disposal and recycling work is only carried out by qualified personnel with appropriate personal protective equipment (PPE) and suitable work tools.</i></p> <p><i>🔗 See Chapter 2 Safety Information.</i></p>
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	<p><b>⚠ DANGER</b></p> <p><b>Risk of injury from fluid residues and trapped pressure!</b></p> <p>Fluid residue and trapped pressure can cause serious injury or death.</p> <ul style="list-style-type: none"> <li>▶ Operate the ARGUS Ball Valve several times so that fluid residues and trapped pressure can escape.</li> <li>▶ Use a vessel to collect any fluid residues and dispose of them properly.</li> </ul>
--	---

	<p><b>NOTICE</b></p> <p><b>Risk of environmental pollution due to fluid residues!</b></p> <p>Fluid residues may harm the environment.</p> <ul style="list-style-type: none"> <li>▶ Operate the ARGUS Ball Valve several times so that fluid residues and trapped pressure can escape.</li> <li>▶ Use a vessel to collect any fluid residues and dispose of them properly.</li> </ul>
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## 13.2 Disposing and Recycling the ARGUS Ball Valve

At the end of the ARGUS Ball Valve useful life, all materials and parts must be recycled or disposed of in accordance with local/regional environmental laws and regulations. If the ARGUS Ball Valve contains hazardous substances or toxic fluid residues which are harmful to the environment or to health, removal and disposal of the ARGUS Ball Valve must adhere to local/regional regulations and laws on waste disposal.



The ARGUS Ball Valve is

- Decommissioned
- Disconnected from the piping, the actuator and the control components
- Depressurized
- Decontaminated (free from hazardous substances or toxic fluid residues)

1. Consign the ARGUS Ball Valve to an authorized waste disposal and/or recycling company.



The authorized waste disposal or recycling company will transfer the ARGUS Ball Valve into the disposal or recycling circuit.



Disposal or recycling is now complete.

## Annex A: Declaration of Conformity



**ARGUS**

### EU Declaration of Conformity acc. Directive 2014/68/EU

(Translation of AZ1787\_DE)

Product:

**Ball Valve Types under brand name ARGUS:**

Type	DN
<b>EK 71</b>	<b>32 - 50</b>
<b>EK 80</b>	<b>32 - 100</b>
<b>FK 75, FK 75M, FK 76, FK 76M, FK 78</b>	<b>65 - 900</b>
<b>FK 79, FK 79FC</b>	<b>32 - 100</b>
<b>HK 35</b>	<b>50 - 600</b>
<b>KK 8, KK 51</b>	<b>32 - 80</b>
<b>MK 8, MK 10</b>	<b>32 - 50</b>
<b>MW 2</b>	<b>32 - 40</b>
<b>MW 22</b>	<b>50 - 100</b>
<b>MW 76, MW 76 combination, MW 76M</b>	<b>32 - 300</b>

Note:

In compliance with article 4 paragraph 3 of Directive 2014/68/EU, ball valves of nominal size up to DN 25 are "designed and manufactured in accordance with the sound engineering practice ... in order to ensure safe use". Such valves do not bear the CE marking.

Manufacturer:

**Flowserve Flow Control GmbH**  
**Rudolf-Plank-Str. 2**  
**D-76275 Ettlingen**

Directive:

**2014/68/EU of the European Parliament and the Council of 15 May 2014 „Pressure Equipment Directive (PED)“**

Flowserve Flow Control GmbH, the manufacturer, hereby declares under sole responsibility that the above listed products are in compliance with the provisions of Directive 2014/68/EU. The equipment is subjected to a conformity assessment procedure according Module H. A Full Quality Assurance System as stipulated in annex III section 11 "Module H" is applied.

The quality assurance system is monitored by the notified body:

**TÜV Süd Industrie Service GmbH**  
**Westendstraße 199, D-80686 München**

Identification code: **0036**

Certificate No.: **DGR-0036-QS-1067-..** (in the valid version)

Technical standards applied:

**AD2000 Regelwerk, Reihe A4; EN 12516-2**

Ettlingen, 01 Juli 2020

AZ1787 EN P. 1/1  
Rev.: P

  
Peter Benien  
Managing Director

  
Dirk Malischewsky  
Head of Research & Development

## Annex B: Declaration of Incorporation



### DECLARATION OF INCORPORATION ACC. DIRECTIVE 2006/42/EC

(TRANSLATION FROM GERMAN ORIGINAL)

#### Product

Argus Ball Valve Types

Type	DN	Type	DN
EK 71	15 – 50	MK 8, MK 10	25 – 50
EK 80	15 – 100	KK 8, KK 51	32 – 80
FK 75, FK 75M, FK 76, FK 76M, FK 78	65 – 1200	MW 8	05 – 25
FK 79, FK 79FC	15 – 100	MW 2	32 – 40
HK 35	40 – 900	MW 22	50 – 100
BK 8, BK 9, BK 10	04 – 25	MW 76, MW 76 (Combination), MW 76M	32 – 300

#### Manufacturer and Authorized Person for the Compilation of the Technical Documentation

Flowserve Flow Control GmbH  
Rudolf-Plank-Str. 2  
76275 Ettlingen  
Deutschland / Germany

#### Directive

2006/42/EC of the European Parliament and the Council of 17. May 2006, „European Machinery Directive“

Flowserve Flow Control GmbH as the manufacturer hereby declares that the above listed ball valve types and their variants, that are intended for automated operation in combination with pneumatic, electric or hydraulic actuation systems fulfill the basic requirements of the Directive 2006/42/EC for “partly completed machinery”: Annex I, paragraphs 1.1.2, 1.1.3, 1.1.5, 1.2.1, 1.3.2, 1.3.3, 1.3.4., 1.3.7, 1.3.8, 1.5.2, 1.5.4, 1.5.6, 1.5.7, 1.5.13, 1.6.1, 1.7.1, 1.7.2, 1.7.3 & 1.7.4.

The conformity assessment was carried out in accordance with the harmonized standard EN ISO 12100:2010. Commissioning is prohibited until it has been ensured that the entire machine or system in which the Flowserve ball valves are installed comply with the provisions of Directive 2006/42/EC.

The relevant technical documentation for partly completed machinery in accordance with Annex VII, part B, has been created and can be provided to national authorities in case of justified requirement.

The operating manual must be observed.

Applied standard:

- EN ISO 12100:2010



Peter Benien  
Managing Director

Ettlingen, 11.11.2020



Dirk Malschewsky  
Head of Research & Development

Flowserve Flow Control GmbH  
argus@flowserve.com  
www.flowserve.com

**Experience In Motion**

AZ2215 EN S.1/1  
Rev.: B

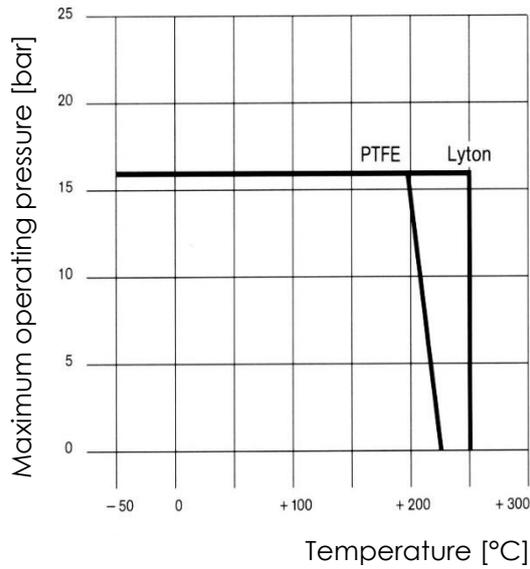
## Annex C: Pressure-Temperature Diagrams for Ball Seats



Observe the operating parameters/limits shown in the diagrams.

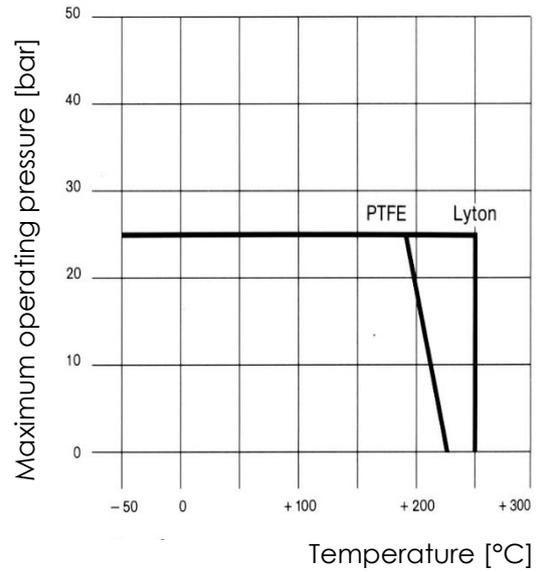
### PN 10/16

EK 71, FK 79, FK 75/M, FK 76/M, HK 35



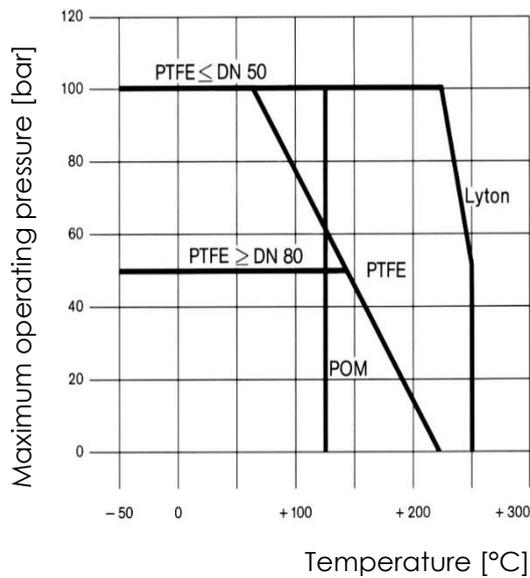
### PN 25, Cl. 150

EK 71, FK 79, FK 75/M, FK 76/M, HK 35



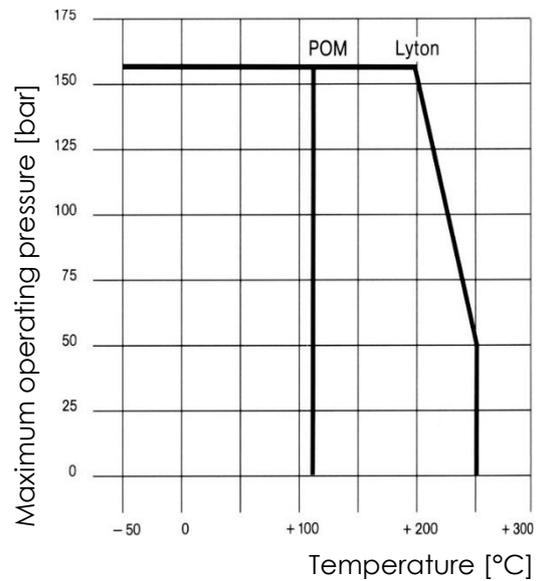
### PN 40/63/100, Cl. 300/600

EK 71, FK 79, FK 75/M, FK 76/M, HK 35



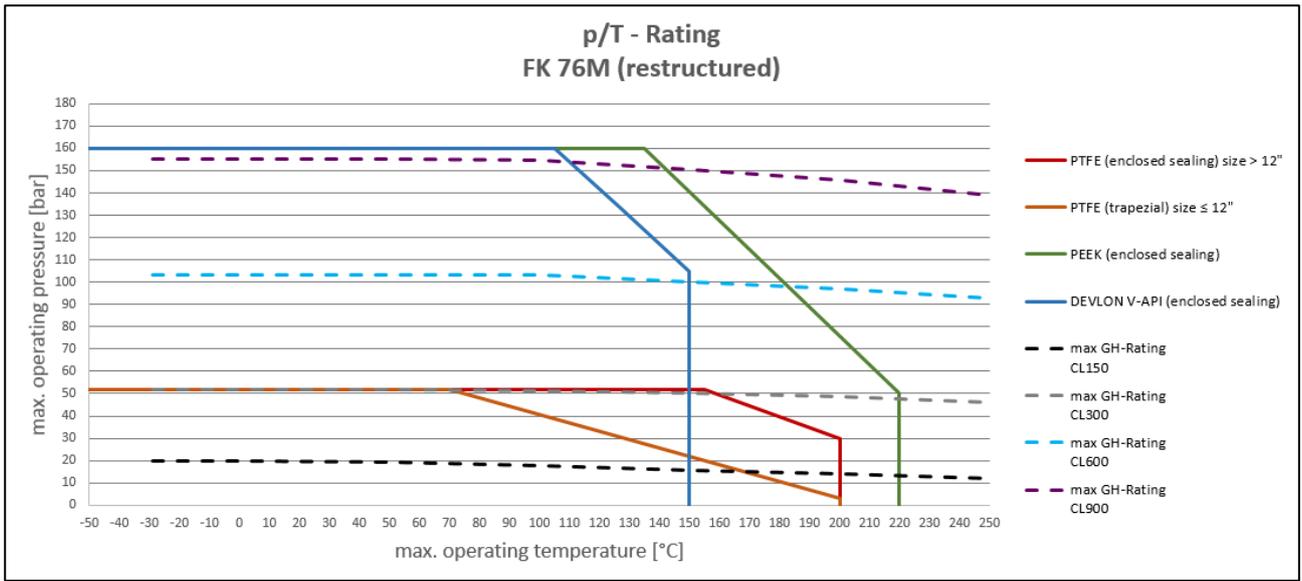
### PN 160, Cl. 900

EK 71, FK 79, FK 76/M, HK 35



1 bar = 10<sup>5</sup> N/m<sup>2</sup>

Annex C: Pressure-Temperature Diagrams for Ball Seats



Annex D: Max. Permissible Screw Tightening Torques for Stuffing Box

**Annex D: Max. Permissible Screw Tightening Torques for Stuffing Box**

Argus Type/ Valve Series	Nominal Diameter		Class	Stem	Screws		
	DN	NPS			Quantity	Size	Torque Nm
FK 79	15 – 25	0.5" – 1"	150	2FL SW12	2	M10	13
			300		2		13
			600		2		17
	40 – 50	1.5" – 2"	150	2FL SW17	2	M10	13
	40 – 50	1.5" – 2"	300		2		16
		600		2		21	
FK 75M / FK 76M	80 – 100	3" – 4"	150	2FL SW19	2	M12	22
			300		2		22
			600		2		29
			900	2	M16	106	
	150 – 200	6" – 8"	150	2FL SW36	2	M16	54
			300		2		54
			600		2		71
	250 – 300	10" – 12"	900	4KT SW55	2	M20	182
			150	4KT SW55	2	M20	93
			300	4KT SW55	2		93
			600	4KT SW55	2		121
	350 – 400	14" – 16"	900	W 80	2		239
			150	4KT SW55	2	M20	122
			300	4KT SW55	2		122
			600	W 80	2		159
900			W100	2	M24	517	
HK 35	50	2"	900	2FL SW19	2	M12	43
			1500		2		72
			2500	4KT SW27	2	M12	120
	80	3"	900	4KT SW27	2	M16	87
			1500		2		145
			2500	W 60	2	M27	120
	100	4"	900	4K SW36	2	M16	106
			1500		2		177
			2500	4K SW55	2	M27	150
	150 – 200	6" – 8"	900	4K SW55	2	M20	90
			1500		2		90
			2500	W75	2	M27	220
	250	10"	900	W80	2	M20	117
			1500		2		117
			2500	W100	2	M30	390
	300	12"	900	W80	2	M20	117
			1500	W90	2	M30	290
2500			W120	2	M36	550	
			W120	4	M30	230	

Maximum tightening torques for stuffing boxes\*\*

\*\* For ARGUS Ball Valves not listed, please contact Flowserve Flow Control GmbH.



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To find your local Flowserve representative use the Sales Support Locator System found at [www.flowserve.com](http://www.flowserve.com).

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