bürkert
FLUID CONTROL SYSTEMS

# Type 6211

2/2-way solenoid valve, servo-assisted


## Operating Instructions

MAN 1000604660 EN Version: A Status: RL (released | freigegeben) printed: 14.02.2024

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Operating Instructions 2402/01_EUen_ 00805814 / Original DE

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# 1 ABOUT THIS DOCUMENT

The document is an important part of the product and guides the user to safe installation and operation. The information and instructions in this document are binding for the use of the product.

- Before using the product for the first time, read and observe the whole safety chapter.
- Before starting any work on the product, read and observe the respective sections of the document.
- Keep the document available for reference and give it to the next user.
- Contact the Bürkert sales office for any questions.

Further information concerning the product at country.burkert.com.

## 1.1 Document validity

The document is valid for following device version:

The device version is indicated on the type label.

## 1.2 Manufacturer

**Bürkert Fluid Control Systems**

Christian-Bürkert-Str. 13–17

D-74653 Ingelfingen

The contact addresses are available at country.burkert.com in the menu "Contact".

## 1.3 Symbols

**DANGER!**

Warns of a danger that leads to death or serious injuries.

**WARNING!**

Warns of a danger that can lead to death or serious injuries.

**CAUTION!**

Warns of a danger that can lead to minor injuries.

**NOTICE!**

Warns of property damage that can damage the product or the installation.

Indicates important additional information, tips and recommendations.

Refers to information in this document or in other documents.

➔ Indicates a step to be carried out.

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Indicates a result.

Menu Indicates a software user-interface text.

## 1.4 Terms and abbreviations

The terms and abbreviations are used in this document to refer to following definitions.

| | |
|---|---|
| Device | 2/2-way solenoid valve, servo-assisted, Type 6211 |
| bar | Unit for relative pressure |

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# 2 SAFETY

## 2.1 Intended use

**The device is designed to control the flow rate of media. The permitted media are listed in Technical data [▶ 12].**

Prerequisites for safe and trouble-free operation are correct proper transportation, storage, installation, start-up, operation and maintenance.

The instructions are part of the device. The device is intended exclusively for use within the scope of these instructions. Uses of the device that are not described in these instructions, the contractual documents or the type label can lead to severe personal injury or death, damage to the device or property and dangers for the surrounding area or the environment.

- ➔ Do not mechanically load the device.
- ➔ Only trained and qualified personnel may install, operate and maintain the device. See qualification of persons in Safety instructions [▶ 6]
- ➔ Use the device only in conjunction with third-party devices and components recommended and authorized by Bürkert.
- ➔ Use the device only when it is in perfect condition.

## 2.2 Safety instructions

### Qualification of personnel working with the device

Improper use of the device can lead to serious personal injury or death. To avoid accidents when working with the device, the following minimum requirements must be met:

- ➔ Carry out work on the device within the scope of these instructions in a safety-compliant manner.
- ➔ Detect and avoid dangers when working on the device.
- ➔ Understand the instructions and implement the information contained therein accordingly.

### Responsibility of the operator

The operator is responsible for observing the location-specific safety regulations, also in relation to personnel.

- ➔ Observe the general rules of technology.
- ➔ Install the device according to the regulations applicable in the respective country.
- ➔ The operator must make hazards arising from the location of the device avoidable by providing appropriate operating instructions.

### Only use authorised devices in a potentially explosive atmosphere

There are variants for this device type that may be used in Ex areas. These variants are identified by a separate Ex type label. The scope of delivery for these variants includes additional instructions identified with the ATEX logo.

- ➔ Only use devices that are approved for use in a potentially explosive atmosphere.
- ➔ For use in an Ex area, observe the information on the separate Ex type label.
- ➔ For use in an Ex area, observe the additional instructions identified with the ATEX logo.

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### Changes and other modifications, spare parts and accessories

Changes to the device, incorrect installation or use of non-approved devices or components create hazards that can lead to accidents and injuries.

- ➔ Do not make any changes to the device.
- ➔ Do not mechanically load the device.
- ➔ Observe the operating instructions of the device or component used.
- ➔ Only use the devices in conjunction with approved devices or components.

Spare parts and accessories that do not meet Bürkert's requirements may impair the operational safety of the device and cause accidents.

- ➔ To ensure operational safety, only use original parts from Bürkert.

### Operation only after proper transport, storage, installation, start-up or maintenance.

Improper transport, storage, installation, start-up or maintenance endanger the operational safety of the device and can cause accidents. This can lead to serious personal injury or death.

- ➔ Only carry out works which are described in these instructions.
- ➔ Only carry out works using suitable tools.
- ➔ Have all other works carried out by Bürkert only.

### Technical limit values and media

Non-compliance with technical limit values or unsuitable media can damage the device and lead to leaks. This can cause accidents and seriously injure or kill people.

- ➔ Comply with limit values. See Technical data [▸ 12] and information on the type label.
- ➔ Only feed media into the media ports that are listed in the chapter Technical data [▸ 12].
- ➔ Observe the safety data sheet for the media used.

### Medium under pressure

Medium under pressure can seriously injure people. In the event of overpressure or pressure surges, the device or lines can burst. Pneumatic lines that are defective or not securely fastened can come loose and swing around.

- ➔ Before working on the device or system, switch off the pressure. Vent or empty the lines.
- ➔ Adhere to the permitted pressure ranges of the medium.
- ➔ Comply with the permitted temperature ranges of the medium.

### Electric shock due to electrical components

Touching live parts can result in severe electric shock. This can lead to serious personal injury or death.

- ➔ Before working on the device or system, switch off the power supply. Secure it against reactivation.
- ➔ Observe any applicable accident prevention and safety regulations for electrical devices.

### Hot surfaces and fire hazard

The surface of the device can become hot with fast-switching actuators or with hot media.

- ➔ Wear suitable protective gloves.
- ➔ Keep highly flammable substances and media away from the device.

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### Working on the device

Working on the device that has not been powered down, unauthorised switching on or uncontrolled start-up of the system can cause accidents. This can lead to serious personal injury or death.

- ➔ Only work on the device when it is not in use.
- ➔ Ensure that the device or system cannot be switched on unintentionally.
- ➔ Only start the process in a controlled manner following disruptions. Observe sequence:
  1. Apply supply voltage or pneumatic supply.
  2. Charge the device with medium.

### Risk of injury from malfunctioning valves with alternating current (AC)

If the core sticks, the solenoid will overheat and cause the valve to malfunction.

- ➔ Monitor valve function.

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# 3 PRODUCT DESCRIPTION

The Type 6211 is a servo-assisted and compact 2/2-way piston valve.

- Servo-assisted diaphragm valve up to DN20
- Body available in brass, stainless steel and plastic
- Explosion-proof variants
- Damped design for low noise

**DANGER!**

**Risk of injury from high pressure and discharge of medium.**

➔ Before working on the device or system, switch off the pressure. Vent or drain lines.

**NOTICE!**

**Reduced service life**

High switching frequency and high pressure will reduce overall service life.

**Important information to ensure functional reliability during continuous operation.**

During a long downtime, a minimum activity of at least 1–2 switching operations per day is recommended.

## 3.1 Product structure

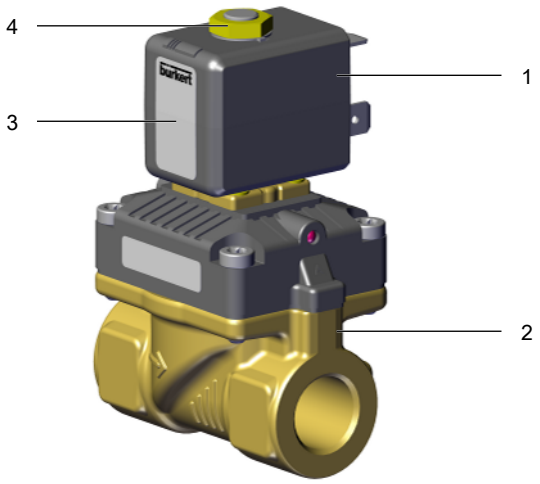


*Fig. 1: Type 6211*

| | | | |
|---|---|---|---|
| 1 | Coil | 2 | Valve body |
| 3 | Type label | 4 | Nut for coil attachment |

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## 3.2 Product identification

### 3.2.1 Type label

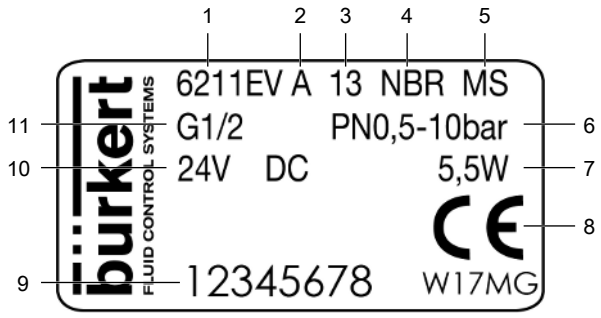



*Fig. 2: Type 6211EV type label*

| | | | |
|---|---|---|---|
| 1 | Type | 2 | Circuit function |
| 3 | Orifice | 4 | Sealing material |
| 5 | Body material | 6 | Operating pressure |
| 7 | Nominal power | 8 | CE marking |
| 9 | Article number | 10 | Operating voltage |
| 11 | Port connection | | |

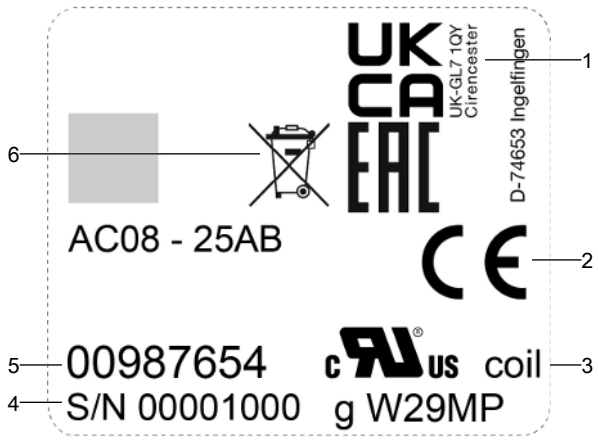
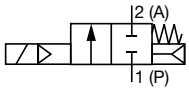



*Fig. 3: Type 6211EV laser marking*

| | | | |
|---|---|---|---|
| 1 | UKCA marking | 2 | CE marking |
| 3 | Certification marking for USA and/or Canada | 4 | Serial number |
| 5 | Article number | 6 | Indication for disposal |

## 3.3 Functionality

### 3.3.1 Circuit function

| Icon | Description |
|---|---|
|  | Circuit function A (CF A), NC<br>2/2-way solenoid valve, servo-assisted<br>Normally closed |

*Tab. 1: Circuit function*

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# 4 TECHNICAL DATA

## 4.1 Standards and directives

The device complies with the valid EU harmonisation legislation. In addition, the device also complies with the requirements of the laws of the United Kingdom.

The harmonised standards that have been applied for the conformity assessment procedure are listed in the current version of the EU Declaration of Conformity/UK Declaration of Conformity.

## 4.2 Approvals

Approvals and conformities are only valid if the labelling is on the device.

| Labelling on device | Certification |
|---|---|
| | |
|  | The device is ATEX approved.<br>Labelling for approval for use in potentially explosive areas is on the device. |
|  | Valid for coils: UL-recognized<br>The coils are recognised by UL in the USA and Canada according to:<br>■ UL 429 (electrically operated valves)<br>■ CAN/CSA-C22.2 No. 139 |

*Tab. 2: Approvals*

## 4.3 Operating conditions

| | |
|---|---|
| Medium | neutral, gaseous and liquid media which do not attack the body and seal materials. See resistance chart at country.burkert.com |
| Medium temperature | NBR: 0 °C...+70 °C (with PPE/PA body 0 °C...50 °C)<br>EPDM: –10 °C...+70 °C (with PPE/PA body –10 °C...+50 °C)<br>FKM: 0 °C...+70 °C (with PPE/PA body 0 °C...+50 °C) |
| Ambient temperature | 0 °C...+55 °C<br>0 °C...+50 °C with PPE/PA body |
| Storage temperature | –40…+80 °C |
| Operating mode | Continuous operation (unless otherwise stated on the type label) |
| Installation position | Any, preferably actuator face up |
| Degree of protection (EN 60529 / IEC 60529) | IP65* |
| | **With correctly connected cable plug*. |
| Materials | see data sheet |
| Viscosity | maximum 21 $mm^2/s$ |

# 5 INSTALLATION

**Risk of injury or material damage when working on the device or system.**

➔ Read and observe the chapter Safety [▶ 6] before working on the device or system.

## 5.1 Preparatory work

**DANGER!**

**Risk of injury from high pressure and discharge of medium.**

➔ Before working on the device or system, switch off the pressure. Vent or drain lines.

➔ Clear pipes of any dirt.

➔ Fit a dirt trap on a dirty medium before the valve inlet (mesh size 0.2...0.4 mm).

➔ Devices that are suitable for use with food according to the manufacturer should be flushed for 5 minutes prior to start-up.

➔ Seal pipe connections using an elastomer seal or PTFE tape. Ensure that seal material does not get into the device.

## 5.2 Installation in pipe

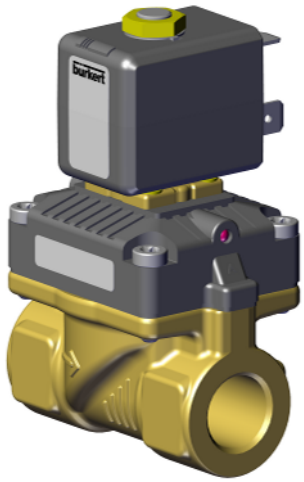

*Fig. 4: Assembly*

➔ Observe flow direction: from 1(P) to 2(A)

➔ Ensure that the seal surfaces on the body connections are free of any damage.

➔ Hold the device on the valve body using an open-end wrench and screw into the pipe.

**NOTICE!**

➔ Ensure that the O-rings on the valve body and the seal surfaces of the connection housing are not damaged during installation.

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**NOTICE!**

**Breaking hazard**

The coils may be damaged by mechanical stress.

➔ Do not use the coil as a lever arm.

## 5.3 Coil installation

**WARNING!**

**Risk of injury due to medium leak**

Medium may leak if a firmly fastened nut is loosened.

➔ Do not continue to rotate firmly fastened nuts.

**NOTICE!**

**Overheating of coil, fire hazard**

Connecting the coil without a pre-installed valve will cause overheating and destroy the coil.

➔ Only connect the coil after the valve has been installed.

**Electric shock due to electrical components**

Touching live parts can result in severe electric shock. This can lead to serious personal injury or death.

➔ Before working on the device or system, switch off the power supply. Secure it against reactivation.

➔ Observe any applicable accident prevention and safety regulations for electrical devices.

**CAUTION!**

**If there is no protective conductor function, there is a risk of injury from electric shock.**

➔ Always connect the protective conductor.

➔ Check electrical continuity between coil and body.

**NOTICE!**

During installation, make sure that the coil fits properly on the housing lid. The protective conductor connection of the coil is then connected to the valve body.

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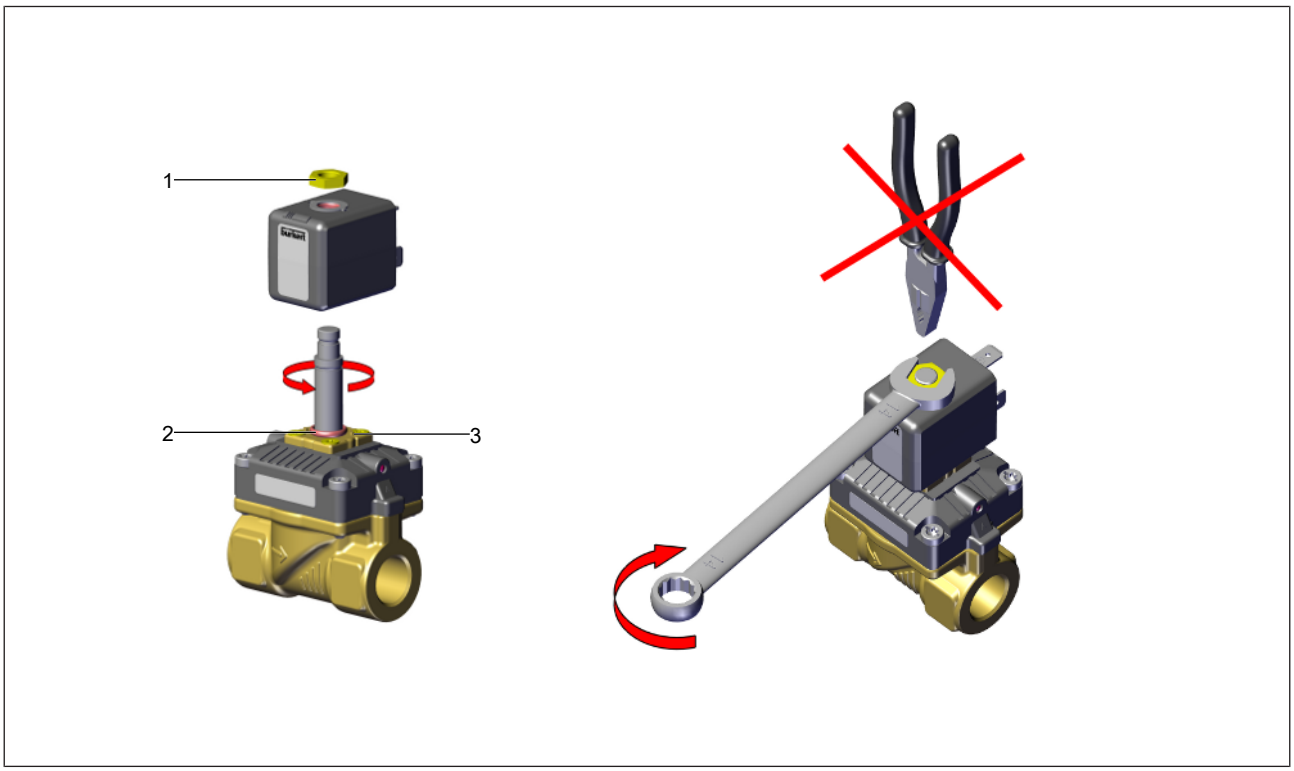


*Fig. 5: Installing coil*

| | | | |
|---|---|---|---|
| 1 | Nut | 2 | O-ring |
| 3 | Anti-twist device | | |

- ➔ Check the correct positioning of the O-ring on the valve body.
- ➔ Slide the coil onto the core guide tube.
- ➔ Fasten the nut with an open-end wrench. When screwing in, observe the tightening torque indicated in the following table.
- ➔ Check protective conductor function.

| Variant | Tightening torque [Nm] |
|---|---|
| all variants | 2.8 |

*Tab. 3: Tightening torque during coil installation*

## 5.4 Cable plug installation

**WARNING!**

**Risk of injury from electric shock.**

- ➔ Switch off the power supply before working on the device or system. Secure it against reactivation.
- ➔ Observe the applicable accident prevention and safety regulations for electrical devices.

**CAUTION!**

**If there is no protective conductor function, there is a risk of injury from electric shock.**

- ➔ Always connect the protective conductor.
- ➔ Check electrical continuity between coil and body.

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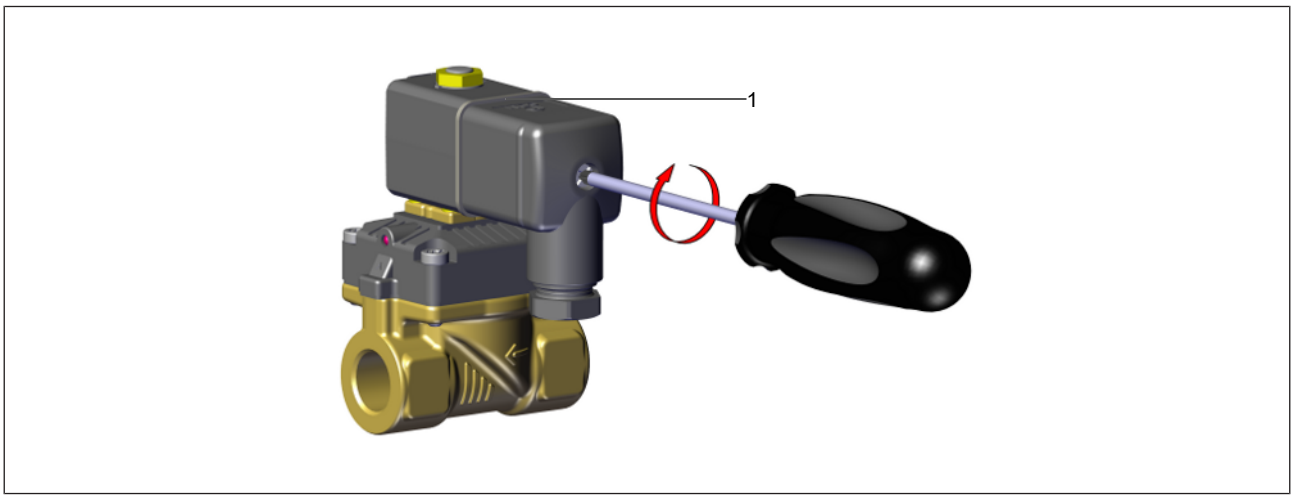


*Fig. 6: Install the cable plug*

| | |
|---|---|
| 1 | Seal |

**Electric shock due to electrical components**

Touching live parts can result in severe electric shock. This can lead to serious personal injury or death.

- ➔ Before working on the device or system, switch off the power supply. Secure it against reactivation.
- ➔ Observe any applicable accident prevention and safety regulations for electrical devices.

**WARNING!**

**Risk of injury due to electric shock.**

- ➔ Only use cable plug in matching coil variant. Cable plug B must not be used for a protection class III device.
- ➔ Only connect protection class III devices (without protective conductor) to SELV or PELV power sources.

- ➔ Attach the cable plug (for permitted types, see data sheet) to the contacts on the coil.
- ➔ Check that the seal is properly fitted.
- ➔ Tightly screw cable plug, while observing a tightening torque of 0.3 Ncm.
- ➔ Connect the protective conductor.
- ➔ Check electrical continuity between coil and body.

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# 6 ELECTRICAL CONNECTION

**WARNING!**

**Risk of injury from electric shock.**

➔ Switch off the power supply before working on the device or system. Secure it against reactivation.

➔ Observe the applicable accident prevention and safety regulations for electrical devices.

## 6.1 Type 2507 cable plug, plug shape B (industry standard) according to DIN EN 175301-803

Other cable plug variants can be found on the data sheet for Type 2507 at country.burkert.com.

*Fig. 7: Type 2507 cable plug, plug shape B (industry standard) according to DIN EN 175301-803*

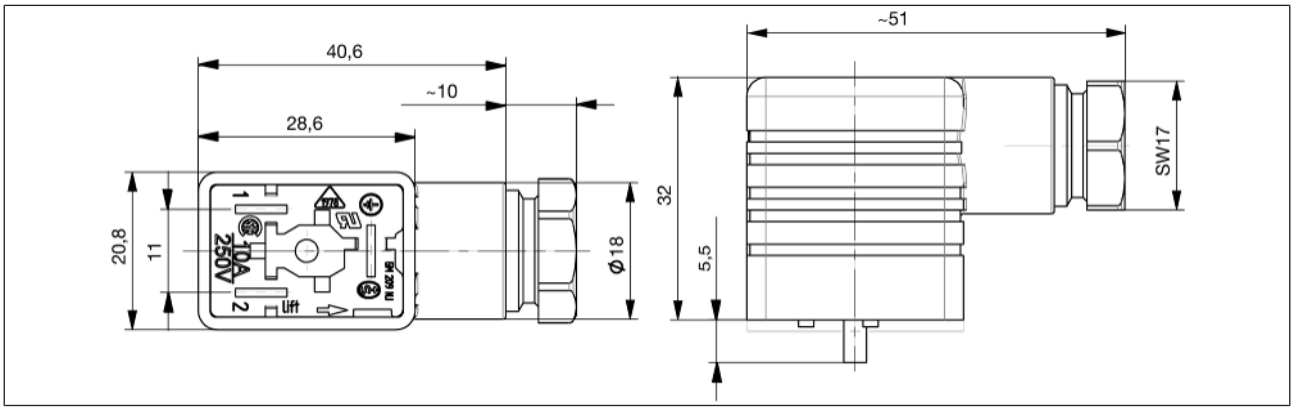


*Fig. 8: Type 2507 cable plug dimensions*

Further information, such as wiring and electrical values, can be found on the data sheet for Type 2507 at country.burkert.com.

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## 6.2 Type 2516 cable plug, plug shape C according to DIN EN 175301-803

Other cable plug variants can be found on the data sheet for Type 2516 at country.burkert.com.

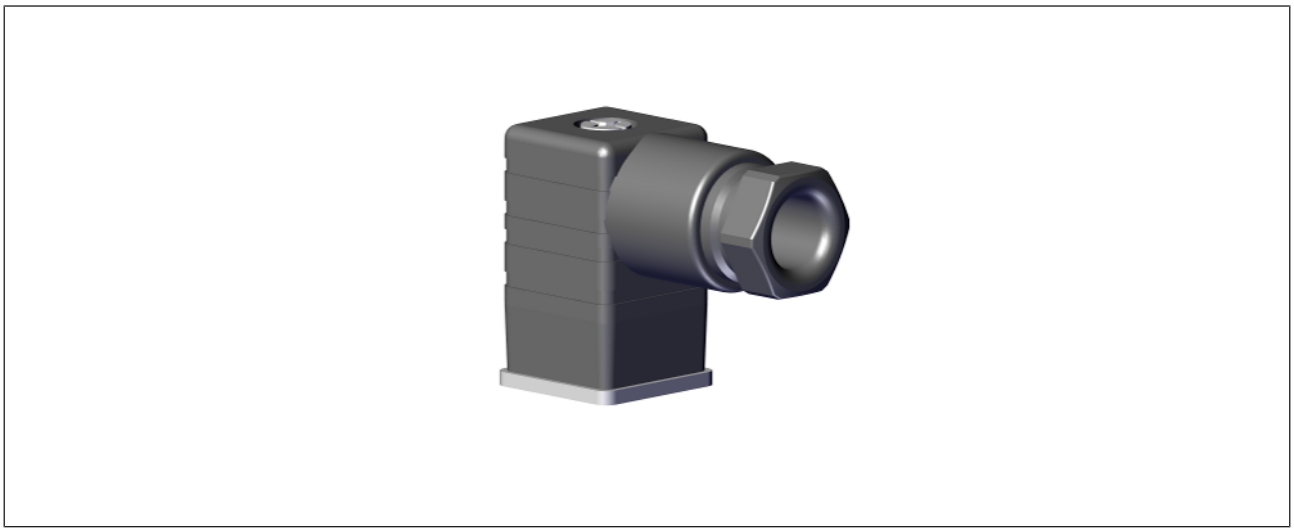

*Fig. 9: Type 2516 cable plug, plug shape C according to DIN EN 175301-803*

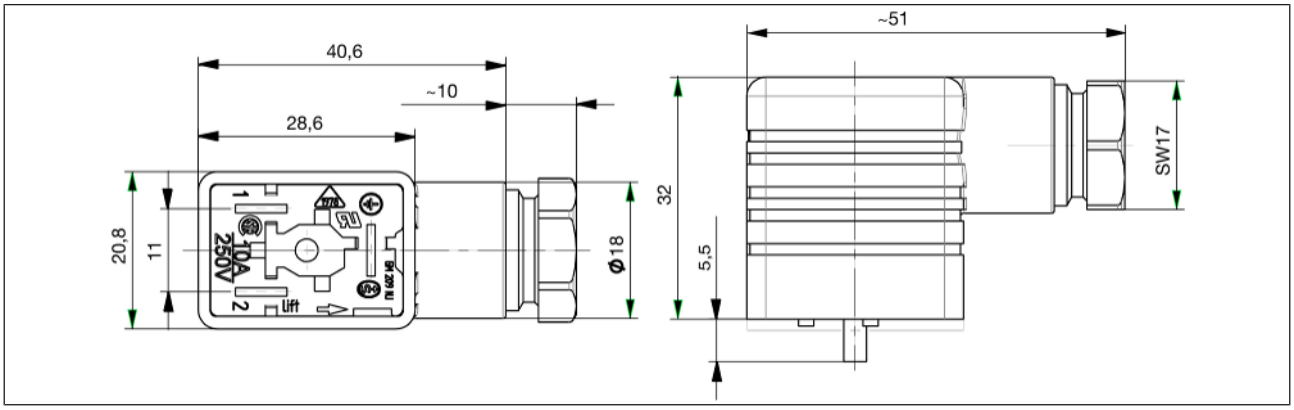


*Fig. 10: Type 2516 cable plug, dimensions*

Further information, such as wiring and electrical values, can be found on the data sheet for Type 2516 at country.burkert.com.

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# 7 FAULTS

**DANGER!**

**Risk of injury from high pressure and discharge of medium.**

➔ Before working on the device or system, switch off the pressure. Vent or drain lines.

**WARNING!**

**Risk of injury from electric shock.**

➔ Switch off the power supply before working on the device or system. Secure it against reactivation.

➔ Observe the applicable accident prevention and safety regulations for electrical devices.

**If faults occur, check whether**

- the device has been installed according to regulations
- the connection has been properly made
- the device has been damaged
- all screws have been tightened
- voltage and pressure have been applied
- the pipes are clean

**If the magnet is not attracting**

Possible cause:

- Short circuit or coil interrupted
- Core or core area contaminated
- Medium pressure outside the permitted pressure range

**Valve does not close**

Possible cause:

- Interior of the valve contaminated
- Small control bore in diaphragm blocked

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# 8 SPARE PARTS AND ACCESSORIES

**CAUTION!**

**Risk of injury, property damage due to incorrect parts.**

Incorrect options and unsuitable spare parts can cause injuries to people and damage to the appliance and its surroundings.

➔ Only use original options and original spare parts from Bürkert.

For any questions, contact **Bürkert**.

## 8.1 Spare part sets

**Important information for ordering spare part sets.**

When ordering spare part sets, always give the spare part set number and the identification number of the device.

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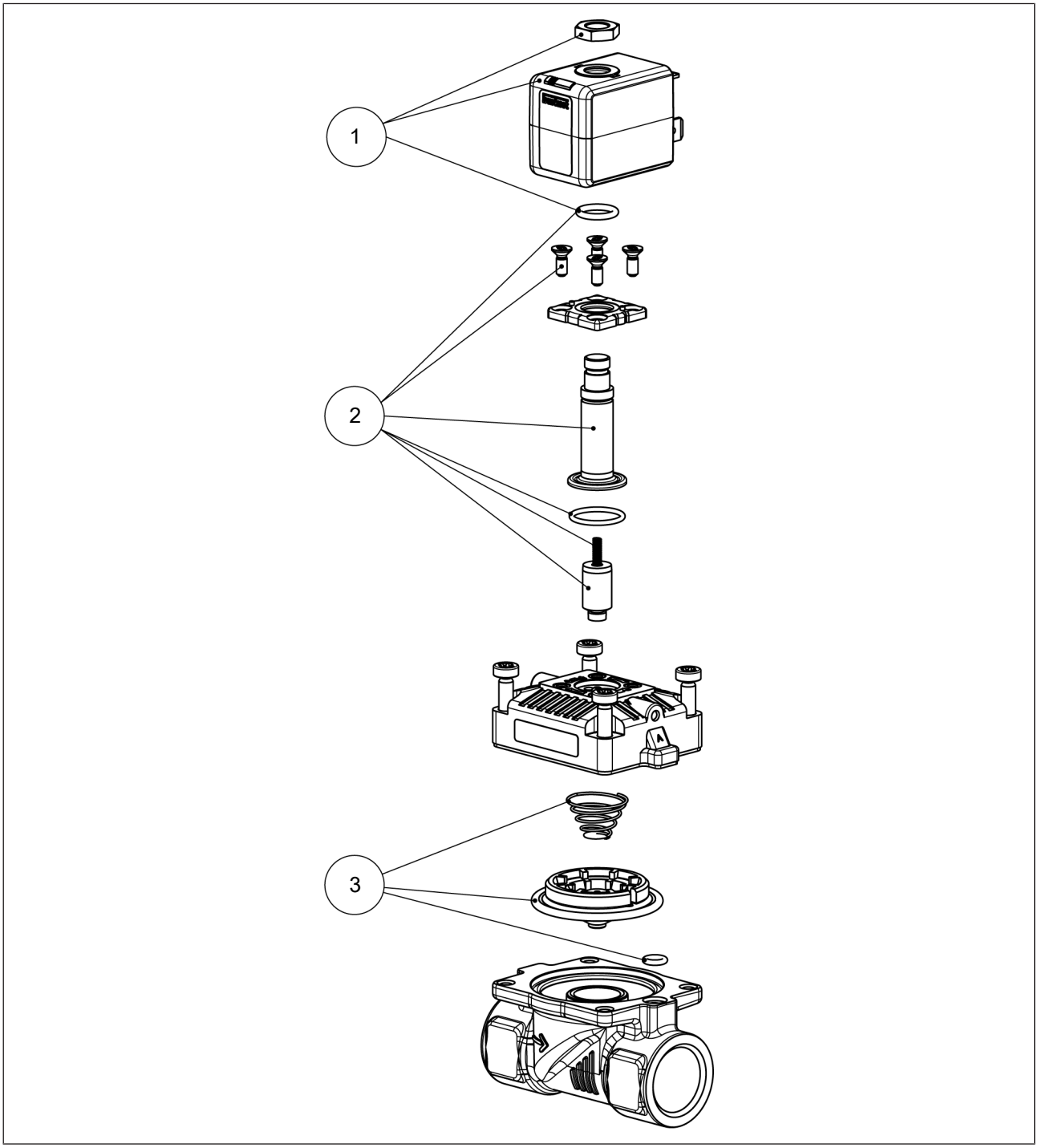


*Fig. 11: Spare part sets*

| | | | |
|---|---|---|---|
| 1 | SET1: Coil set | 2 | SET7: Stopper set |
| 3 | SET3: Wearing part set | | |

# 9 DISASSEMBLY

## 9.1 Preparatory work

**Electric shock due to electrical components**

Touching live parts can result in severe electric shock. This can lead to serious personal injury or death.

➔ Before working on the device or system, switch off the power supply. Secure it against reactivation.

➔ Observe any applicable accident prevention and safety regulations for electrical devices.

**Medium under pressure**

Medium under pressure can seriously injure people. In the event of overpressure or pressure surges, the device or lines can burst. Pneumatic lines that are defective or not securely fastened can come loose and swing around.

➔ Before working on the device or system, switch off the pressure. Vent or empty the lines.

➔ Adhere to the permitted pressure ranges of the medium.

➔ Comply with the permitted temperature ranges of the medium.

**Qualification of personnel working with the device**

Improper use of the device can lead to serious personal injury or death. To avoid accidents when working with the device, the following minimum requirements must be met:

➔ Carry out work on the device within the scope of these instructions in a safety-compliant manner.

➔ Detect and avoid dangers when working on the device.

➔ Understand the instructions and implement the information contained therein accordingly.

➔ Remove the cable plug.

## 9.2 Devices with threaded connection

➔ Hold the device on the housing using an open-end wrench and screw out from the pipe.

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# 10 LOGISTICS

## 10.1 Transport and storage

- ➔ Protect the device against moisture and dirt in the original packaging during transportation and storage.
- ➔ Avoid UV radiation and direct sunlight.
- ➔ Protect connections from damage with protective caps.
- ➔ Observe permitted storage temperature.

## 10.2 Disposal

**Environmentally friendly disposal**

- ➔ Follow national regulations regarding disposal and the environment.
- ➔ Collect electrical and electronic devices separately and dispose of them as special waste.

Further information at country.burkert.com

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