Type 3320, 3321, AE3320, AE3321

Electromotive 2/2-way valve

Quickstart

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1 QUICKSTART GUIDE

The Quickstart guide contains the most important information and notes regarding the use of the device. A detailed description can be found in the operating instructions for Type 3320 and 3321.

Keep the Quickstart guide in an easily accessible location for each user. The Quickstart guide must be available to each new owner of the device.

Important safety information.
Read the Quickstart guide carefully and thoroughly. Study in particular the chapters entitled Basic safety instructions and Intended use.

▶ The Quickstart guide must be read and understood.

The operating instructions can be found on the Internet at:
www.burkert.com

1.1 Definitions of terms

• The term "device" used in these instructions applies to all valve types described in these instructions:
  Type 3320, electromotive 2/2-way angle seat valve
  Type 3321, electromotive 2/2-way straight seat valve

• In these instructions, the abbreviation "Ex" stands for "explosion-proof".

1.2 Symbols

DANGER

Warns of an immediate danger.
▶ Failure to observe the warning will result in fatal or serious injuries.

WARNING

Warns of a potentially dangerous situation.
▶ Failure to observe the warning may result in serious injuries or death.

CAUTION

Warns of a possible danger.
▶ Failure to observe the warning may result in moderate or minor injuries.

NOTE!

Warns of damage to property.

Important tips and recommendations.

Refers to information in these operating instructions or in other documentation.

▶ Designates an instruction to avoid a danger.
→ Designates a work step to be performed.
✓ Indicates a result.
2 INTENDED USE

Non-authorized use of the electromotive 2/2-way valve, Types 3320 and 3321, may be a hazard to people, nearby equipment and the environment.

The electromotive 2/2-way valve, Types 3320 and 3321, is designed to control the flow of liquid and gaseous media.

- Standard devices must not be used in the potentially hazardous area. They do not have a separate Ex type label which indicates approval for the explosion-proof area.
- The surfaces of the device must not be cleaned with alkaline cleaning agents.
- If the valve position is relevant as regards safety in the event of a power failure: Use only those devices which have the SAFEPOS energy-pack (optional energy pack).
- Use according to the authorized data, operating conditions, and conditions of use specified in the contract documents and operating instructions.
- Protect the device against harmful environmental influences (e.g. radiation, air humidity, vapors, etc.)! If in doubt, consult the relevant sales company.

Use the device

- only in conjunction with third-party devices and components recommended and authorized by Bürkert.
- only when in perfect condition and always ensure proper storage, transportation, installation and operation.
- only as intended.

3 BASIC SAFETY INSTRUCTIONS

These safety instructions do not make allowance for any

- contingencies and events which may arise during the assembly, operation, and maintenance.
- local safety regulations – the operator is responsible for observing these regulations, also in relation to the installation personnel.

⚠️ Risk of injury from high pressure.

- Before working on the system or device, switch off the pressure and vent or drain lines.

If switched on for a prolonged time, risk of burns or fire due to hot device surface.

- Keep the device away from highly flammable substances and media and do not touch with bare hands.

Risk of crushing due to mechanically moving parts.

- Perform installation work on the pendulum disc, diaphragm and valve body only when they have been isolated from the power supply.
- Devices with SAFEPOS energy-pack: Completely drain SAFEPOS energy-pack. Wait until LED illuminated ring goes out; the LED status must not be in LED off mode.
- Keep clear of the openings in the valve body.

Danger due to an uncontrolled process in the event of a power failure.

If devices do not have the optional SAFEPOS energy-pack, the valve remains in an undefined position in the event of a power failure.
- If the valve position is relevant as regards safety in the event of a power failure: Use only those devices which have the SAFEPOS energy-pack (optional energy pack).
- Using DIP switches, select a valve position which is safe for the process.

Danger due to loud noises.
- Depending on the operating conditions, the device may generate loud noises. More detailed information on the likelihood of loud noises is available from the relevant sales office.
- Wear hearing protection when in the vicinity of the device.

Leaking medium when the packing gland is worn.
- Regularly check relief bore for leaking medium.
- If medium is leaking out of the relief bore, change the packing gland.
- If the media is hazardous, protect the area surrounding the discharge point against dangers.

General hazardous situations.
To prevent injuries:
- In a hazardous area, the device may be used only in accordance with the specification on the separate Ex type label.
- To use the device in an explosion-risk area, observe the additional information with safety instructions for the explosion-risk area enclosed with the device or the separate explosion-risk operating instructions.
- Devices without a separate Ex type label may not be used in a potentially hazardous area.
- Only feed in the media types specified in chapter “6 Technical data” to the media connections.

- Do not make any internal or external changes on the device and do not subject it to mechanical stress.
- Do not transport, install or remove heavy devices without the aid of a second person and using suitable auxiliary equipment.
- Secure the system from unintentional actuation.
- Only trained technicians may perform installation and maintenance work.
- Note the plant-specific safety regulations.
- After an interruption, ensure that the process is restarted in a controlled manner. Observe sequence.
  1. Apply supply voltage.
  2. Charge the device with medium.
- Observe the general rules of technology.
- The valves must be installed in accordance with the regulations applicable in the country.

NOTE!

Electrostatic sensitive components / modules.
The device contains electronic components which react sensitively to electrostatic discharge (ESD). Contact with electrostatically charged persons or objects are hazardous to these components. In the worst case scenario, they will be destroyed immediately or will fail after start-up.
- Observe the requirements in accordance with EN 61340-5-1 to minimize or avoid the possibility of damage caused by sudden electrostatic discharge.
- Do not touch electronic components while the supply voltage is switched on.
4 GENERAL INFORMATION

4.1 Contact address

Germany
Bürkert Fluid Control Systems
Sales Center
Christian-Bürkert-Str. 13-17
D-74653 Ingelfingen
Tel. + 49 (0) 7940 - 10-91 111
Fax + 49 (0) 7940 - 10-91 448
Email: info@buerkert.com

International
Contact addresses can be found on the final pages of the printed operating instructions.
And also on the Internet at:

www.burkert.com

4.2 Warranty

The warranty is only valid if the device is used as intended in accordance with the specified application conditions.

4.3 Information on the Internet

Operating instructions and data sheets for Types 3320 and 3321 can be found on the Internet at:

www.buerkert.com

5 STRUCTURE AND FUNCTION

The electromotive valve consists of an electromotively driven linear actuator, a pendulum disc and a 2/2-way straight seat valve body or a 2/2-way angle seat valve body.

Valve seat:
As the valve seat is always closed against the medium flow, pay attention to the flow direction.

![Valve seat](image)

**Fig. 1:** Incoming flow under the seat, direction of flow

**Fluid connections:**
- The socket connection or welded connection is the standard model for all valve bodies.
- For the straight seat valve Type 3321 there is also the valve body with a flanged connection.
5.1 Diagram – structure of the electromotive valve

5.2 Display of the device status

To indicate the device status and the valve position, different LED modes can be set (description see main instructions). LED mode set at the factory: “Valve mode w/ warnings”.

5.2.1 Displays in valve mode w/ warnings

When device status “Normal”: Permanently lit in the color of the valve position.

If device status deviates from “Normal”: The colors for valve position and device status flash alternately.

<table>
<thead>
<tr>
<th>Valve position</th>
<th>Color for valve position</th>
<th>Color for device status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Open</td>
<td>yellow</td>
<td>red</td>
</tr>
<tr>
<td>In between</td>
<td>white</td>
<td>orange</td>
</tr>
<tr>
<td>Closed</td>
<td>green</td>
<td>yellow</td>
</tr>
<tr>
<td></td>
<td></td>
<td>blue</td>
</tr>
</tbody>
</table>

Tab. 1: Display of device status in valve mode w/ warnings

If several device statuses exist simultaneously, the device status with the highest priority is displayed.

The priority is determined by the severity of the deviation from standard operation (red = failure = highest priority).
6 TECHNICAL DATA

The following product-specific information is indicated on the type label:

- Voltage [V] (tolerance ±10 %) and current type
- Seal material and material of the valve body
- Fieldbus standard
- Orifice of the valve seat
- Flow capacity
- Actuator size
- Line connection
- Maximum permitted medium pressure
- Direction of flow

6.1 Conformity

The electromotive valves, Types 3320 and 3321, are compliant with EU directives as stated in the EU Declaration of Conformity (if applicable).

6.2 Standards

The applied standards, which are used to demonstrate conformity with the EU Directives, are listed in the EU-type examination certificate and/or the EU Declaration of Conformity (if applicable).

6.3 Approvals

The product is cULus-approved. For notes on operation in the UL area, see the chapters below.

6.4 Type label

Example:

Material valve body, line connection
Da (ø outer)
Di (ø inner), flow capacity
Maximum permitted medium pressure, seal material,
orifice of the valve seat
voltage, direct current, max. power consumption
Type, function, fieldbus standard

Fig. 3: Description of the type label (example)
6.4.1 Additional type label for UL approval (example)

![Type AE3320](image)

- Type AE3320
- Power Supply
- SELV / PELV only!

![Process Control Equipment](image)

![UL LISTED](image)

![Type](image)

- Fig. 4: Additional type label for UL approval (example)

6.5 Operating conditions

**Warning!**

- Malfunction if the temperature exceeds or drops below the permitted temperature range.
  - Never expose the device outdoors to direct sunlight.
  - The temperature must not exceed or drop below the permitted ambient temperature range.

<table>
<thead>
<tr>
<th>Operating conditions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Media:</td>
</tr>
<tr>
<td>Neutral gases and vapor.</td>
</tr>
<tr>
<td>Liquid media: Water, alcohol, oil, propellant, hydraulic fluid, saline solution, alkali, organic solvent.</td>
</tr>
<tr>
<td>Degree of protection:</td>
</tr>
<tr>
<td>(verified by Bürkert / not evaluated by UL)</td>
</tr>
<tr>
<td>IP65 as per IEC 529, EN 60529 (IP67 on request).</td>
</tr>
<tr>
<td>NEMA 250 4x (not guaranteed for installation location: actuator facing downward).</td>
</tr>
<tr>
<td>Direction of flow:</td>
</tr>
<tr>
<td>If a direction of inflow is required, this is specified on the type label by an arrow and the numbers 1 and 2. The numbers 1 and the 2 stand for identification also on the valve body. Direction of inflow see chapter “5 Structure and Function”</td>
</tr>
<tr>
<td>Operating altitude:</td>
</tr>
<tr>
<td>Up to 2000m above sea level</td>
</tr>
</tbody>
</table>
6.5.1 Permitted temperature ranges

Minimum temperatures
- Environment: -25 °C (-13 °F)
- Medium: -10 °C (14 °F)

Maximum temperatures
- Environment: depending on the medium temperature; see temperature graph below.
- Medium: depending on the ambient temperature; see temperature graph below.
  - On devices with seat seal PTFE/steel, max. +130 °C (266 °F) absolute.
  - On devices with seat seal PEEK/steel, max. +185 °C (365 °F) absolute.

Temperature graph

The maximum permitted temperature for the surrounding area and the medium depend on each other. The permitted maximum temperatures of the device versions can be determined from the characteristics of the temperature graph.

The values were determined under the following maximum operating conditions: Orifice DN32 when 100% duty cycle at 16 bar medium pressure.

For deviating operating conditions an individual verification can be performed. Please contact your Bürkert office for more information.

* Service life of the SAFEPOS energy-packs depends on the medium temperature and the ambient temperature (see chapter Electrical data).
6.6 General technical data

Materials
- Actuator: PPS and aluminum powder-coated
- Valve body: 316L
- Body connection: 316L / 1.4401
- Spindle: 1.4401 / 1.4404
- Spindle guide: 1.4401 / 1.4404/316L with carbon-filled PTFE
- Packing gland: PTFE V-rings with spring compensation (carbon-filled PTFE)

Seal material
- Sealing element: EPDM
- actuator housing: See type label
- Valve seat seal: See type label

Fluid connection
Connection types:
- Socket connection G ½...G 2 (NPT, RC on request)
- Welded connection in accordance with EN ISO 1127 (ISO 4200), DIN 11850 series 2
- Also for straight seat valves of Type 3321:
- Flanged connection in accordance with DIN 2634, ANSI B16.5 class 150, JIS 10K

Other fluid connections on request
- by connection terminals or circular plugs
- any position, preferably with actuator face up

6.7 Electrical data

DANGER!

Electric shock.
Protection class III is only guaranteed if a SELV power supply unit or PELV power supply unit is used.

Protection class
3 in accordance with DIN EN 61140 (VDE 0140)

Electrical connections
- Cable gland, 2 x M20 or 2 circular plug-in connectors M12, 5-pin and 8-pin

Operating voltage
24 V ± 10 % max. residual ripple 10 %

Operating current [A]*
max. 3 A including actuator at max. load and charging current of the optional SAFEPOS energy-pack (charging current approx. 1 A) for the design of the power supply unit

Standby consumption [W]*
min. 2 W, max. 4 W

Average consumption [W]*
- Electronics without actuator standard consumption: typically 3 W
- SAFEPOS energy-pack: 0.5 W

Energy consumption actuator for 1 cycle [Ws]*
(see following graphs)

* All values refer to a supply voltage of 24 V at 25 °C.
Type 3320, 3321
Technical data

**Fig. 6: Energy consumption actuator, Type 3320**

**Fig. 7: Energy consumption actuator, Type 3321**

SAFEPOS energy-pack:
- Charging time: maximum 100 seconds (depending on the conditions of use)
- Service life: Up to 10 years (depending on the conditions of use).
- The determined service life of 5 years was determined under the following conditions:
  - Ambient temperature: 30 °C
  - Medium temperature: 165 °C
  - Duty cycle: 100%
  - Medium pressure: 5 bar
  - Orifice: DN32
Technical data

Type 3320, 3321

NOTE!
Consider voltage drop in supply line. Example: with a cable cross-section of 0.34 mm² a copper cable may have a maximum length of 8 meters.

Digital outputs (optional):
Current limit: 100 mA

Digital inputs:
for position signal: 0...5 V = log “0”, 10...30 V = log “1” inverted input reversed accordingly (input current < 6 mA)

Communications interface:
Connection to PC via USB büS interface set

Communications software:
Bürkert Communicator

The digital outputs are not galvanically isolated for the operating voltage. They refer to the operating voltage GND. Current limit: in the event of an overload the output voltage is reduced.

6.8 Kv values for Types 3320 and 3321

Kv value water [m³/h]
Flow-rate factor: Measurement at +20 °C, 1 bar pressure at valve input and free output.

<table>
<thead>
<tr>
<th>DN</th>
<th>Kv value water [m³/h] for underseat valve</th>
<th>Cv value (gal/min) for underseat valve</th>
</tr>
</thead>
<tbody>
<tr>
<td>15</td>
<td>5</td>
<td>5.8</td>
</tr>
<tr>
<td>20</td>
<td>11</td>
<td>12.7</td>
</tr>
<tr>
<td>25</td>
<td>18</td>
<td>20.8</td>
</tr>
<tr>
<td>32</td>
<td>31</td>
<td>35.8</td>
</tr>
<tr>
<td>40</td>
<td>42</td>
<td>48.6</td>
</tr>
<tr>
<td>50</td>
<td>62</td>
<td>71.7</td>
</tr>
</tbody>
</table>

Tab. 2: Kv values for Type 3320

<table>
<thead>
<tr>
<th>DN</th>
<th>Kv value water (m³/h) for underseat valve</th>
<th>Cv value (gal/min) for underseat valve</th>
</tr>
</thead>
<tbody>
<tr>
<td>15</td>
<td>4.7</td>
<td>5.4</td>
</tr>
<tr>
<td>20</td>
<td>8.1</td>
<td>9.4</td>
</tr>
<tr>
<td>25</td>
<td>13</td>
<td>15.0</td>
</tr>
<tr>
<td>32</td>
<td>18.1</td>
<td>20.9</td>
</tr>
<tr>
<td>40</td>
<td>31</td>
<td>35.8</td>
</tr>
<tr>
<td>50</td>
<td>45</td>
<td>52.0</td>
</tr>
</tbody>
</table>

Tab. 3: Kv values for Type 3321
7 INSTALLATION OF THE VALVE

7.1 Safety instructions

WARNING

Risk of injury from improper assembly.
› Assembly may be carried out only by trained technicians and with the appropriate tools.
› Secure system against unintentional activation.
› After installation, ensure that the process is restarted in a controlled manner. Observe sequence.
  1. Apply supply voltage.
  2. Charge the device with medium.

CAUTION

Risk of injury due to a heavy device.
A heavy device can fall down during transport or during installation and cause injuries.
› Transport, install and dismantle a heavy device with the help of another person.
› Use appropriate tools.

NOTE!

Damage to valve body, seat seal or diaphragm.
› To prevent damage, the device must be in the MANUAL operating state during installation.
  Devices are delivered with the MANUAL operating state preset.

7.2 Devices with socket connection or flange connection

7.2.1 Installation requirements

Installation position: any position; preferably with actuator facing up.

Direction of flow: If a direction of inflow is required, this is specified on the type label by an arrow and the numbers 1 and 2. The numbers 1 and the 2 stand for identification also on the valve body. Direction of inflow see chapter “5 Structure and Function”

Pipelines: Ensure that the pipelines are aligned.

Filter: Required for devices with approval in accordance with EN 161.

In accordance with DIN EN 161 "Automatic Shut-off Valves for Gas Burners and Gas Appliances", a strainer must be installed upstream of the valve in the pipeline to prevent a 1 mm test pin from penetrating.

Preparation: Clean pipelines (sealing material, swarf, etc.).

NOTE!

Note the following when installing the device in the plant.
The device and the relief bore must be accessible to allow inspection and maintenance work.
7.2.2 Installation

DANGER
Risk of injury from high pressure.
▶ Before working on the system, switch off the pressure and vent or drain lines.

WARNING
Risk of crushing due to mechanically moving parts.
▶ Keep clear of the openings in the valve body.

→ Connect valve body to pipeline.

⚠ Ensure installation is de-energized and low-vibration

Holding device
To protect the valve actuator from damage due to forces and vibrations, a holding device is recommended. This is available as an accessory. See operating instructions on the homepage www.buerkert.com.

7.3 Installation of devices with welded connection

The electromotive valves must not be welded with mounted actuator into the pipeline. Installation in the pipeline is therefore divided into the following steps:

1. Prepare removal of the actuator.
2. Remove the actuator.
3. Weld valve body into the pipeline.
4. Mount actuator on the valve body.

7.3.1 Preparing removal of the actuator

NOTE!

Damage to valve body, seat seal or diaphragm.
To prevent damage, the valve must be open when removing the actuator.

→ If the valve is closed: Open the valve using the mechanical manual control. “12.2 Actuating valve mechanically”.

WARNING
Risk of crushing due to mechanically moving parts.
▶ Switch off supply voltage.
▶ Devices with SAFEPOS energy-pack: Completely drain SAFEPOS energy-pack. Wait until LED illuminated ring goes out; the LED status must not be in LED off mode.
▶ Keep clear of the openings in the valve body.
7.3.2 Removing the actuator

→ Clamp the valve body into a holding device.
→ Place a suitable open-end wrench on the body connection.

⚠️ Do not unscrew the body connection with a tool which could damage the body connection (e.g. pipe wrench).
→ Unscrew the actuator off the valve body.

Mechanical position indicator
Valve position
Open

Closed
When unscrewing the actuator, the valve must not be closed.

Body connection
Valve body

Fig. 8: Installation of electromotive actuator (angle seat valve shown in the example)

7.3.3 Installation requirements

Installation position: any position

Direction of flow: If a direction of inflow is required, this is specified on the type label by an arrow and the numbers 1 and 2. The numbers 1 and the 2 stand for identification also on the valve body. Direction of inflow see chapter “5 Structure and Function”

Pipelines: Ensure that the pipelines are aligned.

Filter: Required for devices with approval in accordance with EN 161.

In accordance with DIN EN 161 "Automatic Shut-off Valves for Gas Burners and Gas Appliances", a strainer must be installed upstream of the valve in the pipeline to prevent a 1 mm test pin from penetrating.

Preparation: Clean pipelines (sealing material, swarf, etc.).

7.3.4 Welding valve body into the pipeline

⚠️ DANGER

Risk of injury from high pressure.

▶ Before working on the system, switch off the pressure and vent or drain lines.

NOTE!

Damage to the electronics of the actuator by the effect of heat.

• Before welding in the valve body, remove the actuator.

→ Weld valve body into the pipeline.

⚠️ Ensure installation is de-energized and low-vibration.
### 7.3.5 Mounting actuator on the valve body

→ ! Before mounting the actuator, check whether the graphite seal of the valve body is available and undamaged.

→ Replace damaged or missing graphite seal.

![Graphite seal of the valve body](Image)

**DANGER**

<table>
<thead>
<tr>
<th>Danger if incorrect lubricants used.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unsuitable lubricant may contaminate the medium. In oxygen applications there is a risk of an explosion.</td>
</tr>
<tr>
<td>▶ Only use approved lubricants for specific applications, such as oxygen or analytical applications.</td>
</tr>
</tbody>
</table>

→ If required, grease the external thread of the body connection (e.g. with Klüber paste UH1 96-402 from Klüber).

→ Place the external thread on the internal thread of the body connection. See “Fig. 8: Installation of electromotive actuator (angle seat valve shown in the example)”.

→ Place a suitable open-end wrench on the body connection.

→ ! Do not screw on the body connection with a tool which could damage the body connection (e.g. pipe wrench).

**WARNING**

Risk of injury due to non-observance of the tightening torque.

Non-observance of the tightening torque is hazardous as the device may be damaged.

▶ Observe tightening torque.

→ Screw actuator onto the valve body.

<table>
<thead>
<tr>
<th>Orifice connection (valve body) [DN]</th>
<th>Tightening torque for body connection [Nm]</th>
<th>[lbf ft]</th>
</tr>
</thead>
<tbody>
<tr>
<td>10/15</td>
<td>45 ±3</td>
<td>33 ±2</td>
</tr>
<tr>
<td>20</td>
<td>50 ±3</td>
<td>37 ±2</td>
</tr>
<tr>
<td>25</td>
<td>60 ±3</td>
<td>44 ±2</td>
</tr>
<tr>
<td>32</td>
<td>65 ±3</td>
<td>48 ±2</td>
</tr>
<tr>
<td>40</td>
<td></td>
<td></td>
</tr>
<tr>
<td>50</td>
<td>70 ±3</td>
<td>52 ±2</td>
</tr>
<tr>
<td>65</td>
<td>100 ±3</td>
<td>74 ±2</td>
</tr>
<tr>
<td>80</td>
<td>120 ±5</td>
<td>89 ±2</td>
</tr>
<tr>
<td>100</td>
<td>150 ±5</td>
<td>111 ±2</td>
</tr>
</tbody>
</table>

**Tab. 4:** Tightening torques for body connection
Installation of the valve

Holding device
To protect the valve actuator from damage due to forces and vibrations, a holding device is recommended. This is available as an accessory. See operating instructions on the homepage www.buerkert.com.

7.3.6 After installation
→ Connect the device electrically.
The position of the connections can be aligned by rotating the actuator through 360°. For description see chapter “7.4 Rotating the actuator”.

A description of the electrical connection can be found in chapter “8 Electrical installation”.

NOTE!
Damage to valve body, seat seal or diaphragm.
▷ To prevent damage, first run the X.TUNE function after making the electrical connection. Only then reset the operating state to AUTOMATIC.

→ Run X.TUNE function to adjust the end position. See operating instructions on the homepage www.buerkert.com.

7.4 Rotating the actuator
The position of the connections can be aligned by rotating the actuator through 360°.

NOTE!
Damage to the seat seal and seat contour when valve is closed.
If the valve is closed when the actuator is rotated, the seat seal and the seat contour may be damaged.
▷ If the valve is closed: Before rotating the actuator, open the valve using the mechanical manual control. For description see “12.2 Actuating valve mechanically”.

→ In the case of devices which are not installed, clamp the valve body in a holding device.
→ Place an open-end wrench (width across flats M41) on the hexagon of the actuator.

WARNING
If incorrect direction of rotation, risk of injury due to discharge of medium and pressure release.
If the direction of rotation is wrong, the body connection may become detached.
▷ Rotate actuator in the indicated direction only (see “Fig. 10: Rotating the actuator”).

→ Rotate the actuator clockwise and move it into the required position.
If the actuator is installed in such a way that it can be turned in a counter-clockwise direction only, observe the following safety warning:

**WARNING**

Risk of injury due to discharge of medium and pressure release.

If the actuator is turned in a counter-clockwise direction, the body connection may become detached.

- When turning the actuator in a counter-clockwise direction, counter with a 2nd open-end wrench on the hexagon of the body connection.

7.5 **Holding device**

→ Attach holding device to the pipe between valve body and actuator as shown in the diagram.

If there is a relief bore:

**NOTE!**

Ensure that the relief bore, which is used to detect leakages, is not covered.

→ Fix the holding device in place using suitable means.

---

*Fig. 10: Rotating the actuator*

*Fig. 11: Attaching the holding device*
8 ELECTRICAL INSTALLATION

The electromotive valve is available with one of 2 different connection variants:
- With circular plug-in connector (multi-pole model)
- Cable gland with connection terminals

Signal values

Operating voltage: 24 V
Digital input for control signal: 0...5 V = log “0”; 10...30 V = log “1”

8.1 Electrical installation with circular plug-in connector

8.1.1 Safety instructions

WARNING

Risk of injury from improper installation.
- Installation may be carried out by authorized technicians only and with the appropriate tools.
- Observe the general rules of technology during installation.

Risk of injury from unintentional activation of the system and uncontrolled restart.
- Secure system against unintentional activation.
- Following installation, ensure a controlled restart.

NOTE!

To ensure electromagnetic compatibility (EMC), the functional ground must be grounded with a short cable (max. 1m). The functional ground must have a cross-section of at least 1.5 mm².

Selection of the connection line:
When selecting the connection line, consider the length and cross-section of the individual wires, and the voltage drop with reference to the maximum supply current.

→ Connect the device according to the tables.
→ When the operating voltage has been applied, make the required basic settings and adjustments for the electromotive valve. For a description see chapter “9 Start-up”

8.1.2 Description of the circular plug-in connectors

Fig. 12: Description of the circular plug-in connectors
8.1.3 X1 – M12 circular plug, 8-pole

<table>
<thead>
<tr>
<th>Pin</th>
<th>Wire color*</th>
<th>Assignment (from point of view of the device)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Input signals from the control center (e.g. PLC)</td>
</tr>
<tr>
<td>1</td>
<td>white</td>
<td>Digital input + 0...5 V (log. 0) 10...30 V (log. 1)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Output signals to the control center (e.g. PLC) – (required for analog output and/or digital output option only)</td>
</tr>
<tr>
<td>4</td>
<td>yellow</td>
<td>Digital output 1 24 V / 0 V</td>
</tr>
<tr>
<td>3</td>
<td>green</td>
<td>Digital output 2 24 V / 0 V</td>
</tr>
<tr>
<td>2</td>
<td>brown</td>
<td>Digital inputs and digital outputs GND</td>
</tr>
</tbody>
</table>

* The indicated wire colors refer to the connection cable, part no. 919061, available as an accessory.

Tab. 5: X1 – M12 circular plug, 8-pole

8.1.4 X3 – M12 circular plug, 4-pole or 5-pole, operating voltage

<table>
<thead>
<tr>
<th>Pin</th>
<th>Wire color</th>
<th>Assignment (from point of view of the device)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>without büS network 4-pole connection*</td>
</tr>
<tr>
<td>1</td>
<td>-</td>
<td>CAN shield</td>
</tr>
<tr>
<td>2</td>
<td>white red</td>
<td>24 V ± 10 % max. residual ripple 10 %</td>
</tr>
<tr>
<td>3</td>
<td>blue black</td>
<td>GND / CAN_GND</td>
</tr>
<tr>
<td>4</td>
<td>- white</td>
<td>CAN_H</td>
</tr>
<tr>
<td>5</td>
<td>- blue</td>
<td>CAN_L</td>
</tr>
</tbody>
</table>

* The indicated wire colors refer to the M12 connection cable, 4-pole, part no. 918038, available as an accessory.

Tab. 6: X3 – M12 circular plug, 4-pole or 5-pole, operating voltage
Electrical installation with or without büS network:
To be able to use the büS network (CAN interface), a
5-pole circular plug and a shielded 5-wire cable must
be used.
If the büS network is not used, a 4-pole circular plug
can be used as a counterpart.

8.2 Electrical installation with cable gland

8.2.1 Safety instructions

WARNING

Risk of injury from improper installation.
▷ Installation may be carried out by authorized technicians
   only and with the appropriate tools.
▷ Observe the general rules of technology during installation.

Risk of injury from unintentional activation of the system and
uncontrolled restart.
▷ Secure system against unintentional activation.
▷ Following installation, ensure a controlled restart.

NOTE!

To ensure electromagnetic compatibility (EMC), the func-
tional ground must be grounded with a short cable (max. 1m).
The functional ground must have a cross-section of at least
1.5 mm².

8.2.2 Access to the connection terminals
To access the terminals, open the device as described below.

Devices with ATEX approval or IECEx approval.
The devices are secured with a special cover. The removal
of the cover is described in the additional manual for electro-
motive valves with ATEX approval and IECEx
approval.

1. Removing dummy cover:
→ To release, rotate the dummy cover counter-clockwise by 90°
   and remove from the actuator housing.

2. Removing LED and storage module:
→ Remove the 2 fastening screws (hexagon head key, width
   across flats 3 mm).
→ Take hold of the LED and storage module on both sides of
   the metal housing and lift out.
2. Removing LED and storage module:

   → Loosen the 4 fastening screws (T25 hexagonal socket round screws). The screws are integrated in the actuator cover to prevent them from falling out.

   → Remove the actuator cover.

   The connection terminals are now accessible.

3. Removing actuator cover:

   → Push the cables through the cable gland.

   NOTE!

   Allow for connection to spring-type terminals.
   ▶ Minimum length of the wire end ferrule: 8 mm
   ▶ Maximum cross-section of the wire end ferrule: 1.5 mm² (without collar), 0.75 mm² (with collar).

   → Strip at least 8 mm insulation from the wires and crimp on wire end ferrules.

   → Connect the wires. The terminal assignment can be found in the tables below, starting on Page page 25.

   → Tighten the union nut of the cable gland (tightening torque approx. 1.5 Nm (1.1 lbf ft)).

   NOTE!

   Damage or malfunction due to ingress of dirt and moisture.
   To comply with the degree of protection IP65:
   ▶ Close all unused cable glands with dummy plugs.
   ▶ Tighten the union nuts on the cable glands. Tightening torque depends on cable size or dummy plug approx. 1.5 Nm (1.1 lbf ft).
Type 3320, 3321
Electrical installation

8.2.4 Terminal assignment – input signal from the control center (e.g. PLC)

<table>
<thead>
<tr>
<th>Terminal</th>
<th>Assignment (from point of view of the device)</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>Digital input +</td>
</tr>
<tr>
<td></td>
<td>0...5 V (log. 0)</td>
</tr>
<tr>
<td></td>
<td>10...30 V (log. 1)</td>
</tr>
<tr>
<td>4</td>
<td>Digital input GND</td>
</tr>
<tr>
<td></td>
<td>specific to operating voltage GND (terminal GND)</td>
</tr>
<tr>
<td>8</td>
<td>Digital output 1</td>
</tr>
<tr>
<td></td>
<td>24 V / 0 V</td>
</tr>
<tr>
<td>6</td>
<td>Digital output 2</td>
</tr>
<tr>
<td></td>
<td>24 V / 0 V</td>
</tr>
<tr>
<td>7</td>
<td>Digital output GND</td>
</tr>
</tbody>
</table>

Tab. 7: Terminal assignment – input signal from the control center (e.g. PLC)

Fig. 16: Connecting the cables
→ Connect the device according to the tables.
8.2.5 Terminal assignment - operating voltage and büS network

<table>
<thead>
<tr>
<th>Terminal</th>
<th>Assignment (from point of view of the device)</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>CAN shield</td>
</tr>
<tr>
<td>9</td>
<td>GND</td>
</tr>
<tr>
<td>1*</td>
<td>CAN_GND</td>
</tr>
<tr>
<td></td>
<td>! Do not connect unless a separate line is used for CAN.</td>
</tr>
<tr>
<td>2*</td>
<td>CAN_H</td>
</tr>
<tr>
<td>3*</td>
<td>CAN_L</td>
</tr>
</tbody>
</table>

Tab. 8: Terminal assignment - operating voltage and büS network

* Electrical installation of büS network:
Terminals 1, 2 and 3 (CAN interface) are for the connection of the büS network.
Terminal 1 is bridged internally with terminal 9, but is not designed for the operating voltage.

8.2.6 Closing the device

NOTE!

Damage or malfunction due to ingress of dirt and moisture.
Before closing the device, comply with the degree of protection IP65 by ensuring that:

▶ The seal must be inserted in the actuator housing/actuator cover and must not be damaged.
▶ The sealing surfaces must be clean and dry.

1. Attaching the actuator cover
→ Place actuator cover on the actuator housing.
→ Slightly screw in the 4 fastening screws (T25 hexagonal socket round screws) crosswise, firstly by hand and then tighten (tightening torque: 5.0 Nm (3.7 lbf ft)).

2. Inserting LED and storage module
→ Insert LED and storage module and fix with the 2 fastening screws (tightening torque: 1.1 Nm (0.8 lbf ft)).

3. Closing device with dummy cover
→ Put on dummy cover and rotate clockwise by 90° until it engages.
9 START-UP

9.1 Safety instructions

WARNING

Risk of injury due to improper operation. Improper operation may result in injuries as well as damage to the device and the surrounding area.

- The operating personnel must know and have understood the contents of the operating instructions.
- Observe the safety instructions and intended use.
- Only adequately trained personnel may start up the equipment/the device.

NOTE!

Observe for devices which were removed for installation. If the actuator was removed, the X.TUNE function must be run again before commissioning. See chapter “9.4 Adjusting the mechanical end position – running X.TUNE”, page 29.

Fig. 17: Closing the device

→ When the operating voltage has been applied, make the required basic settings and adjustments for the electromotive valve. For a description see chapter “9 Start-up”, page 27.
9.2 Setting operating state
Devices are delivered with the MANUAL operating state preset. Set the operating state to AUTOMATIC for start-up. Description see chapter “11.1 Switching operating state, AUTOMATIC – MANUAL”.

9.3 Basic settings
In the case of devices in the as-delivered state, all basic settings required for start-up have already been made at the factory.

Overview of basic factory settings:

<table>
<thead>
<tr>
<th>Device version</th>
<th>Basic factory settings</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Signal type</td>
</tr>
<tr>
<td></td>
<td>Standard</td>
</tr>
<tr>
<td></td>
<td>Option gateway</td>
</tr>
</tbody>
</table>

There are different ways of making basic settings on the device.
- **Basic setting on the PC or tablet**
- **Possible for all device types and device variants.**
  The setting is made in the “Bürkert Communicator” PC software which can be downloaded free of charge from the Bürkert homepage.
  In addition to the PC software, the USB büS interface set, available as an accessory, is required. Communication is established by the büS service interface of the device (see “13.3 Access to the büS Service interface”).
- **Adjusting the position controller (X.TUNE function) using 2 capacitive buttons on the device.**

Tab. 9: Basic factory settings
9.4 Adjusting the mechanical end position – running X.TUNE

When the X.TUNE function is run, the electronic actuator is adjusted to the physical stroke of the actuating element used. Devices are delivered with the X.TUNE function run at the factory.

**NOTE!**

Do not run X.TUNE without requirement.
The X.TUNE function must be run again only when the actuator has been removed afterwards or the valve body has been changed.

**WARNING**

Danger due to uncontrolled process after running the X.TUNE function.

If the X.TUNE is run under medium pressure, the actuator will be incorrectly adjusted. This will result in an uncontrolled process.

- Never run the X.TUNE under medium pressure.
- Secure system against unintentional activation.

9.4.1 Adjustment using the buttons in the device

The 2 buttons for running the X.TUNE are located under the dummy cover.

Running the X.TUNE function:

Ensure that no medium pressure is applied. Do not run the X.TUNE unless it is absolutely essential.

→ Simultaneously hold down the OPEN and CLOSE buttons for 5 s.

When the X.TUNE is running, the LED illuminated ring is lit orange. When the X.TUNE ends, the LED illuminated ring is reset to its previous status.
9.4.2 Adjustment on the PC

The PC software Bürkert communicator can be down-loaded free of charge from the Bürkert homepage. To do this, the USB büS interface set, available as an accessory, is required.

Communication is established by the büS service interface of the device.

To run the X.TUNE function, you must change to the detailed view maintenance for position controller.

Changing to detailed view:

→ In the navigation area select **Position controller**.

→ Change to **MAINTENANCE**.

✔ You are in the detailed view maintenance.

Running the X.TUNE function:

⚠️ Ensure that no medium pressure is applied.

→ Select **CALIBRATION**.

→ Select **X.TUNE**.

The following text appears: “Choose seal material (see type label)!”

→ Choose seal material.

The following question appears: “Do you really want to start the X.TUNE?”

⚠️ Do not confirm the question unless it is absolutely essential to run the X.TUNE.

→ Start X.TUNE.

✔ The X.TUNE function is running.

⚠️ If the X.TUNE is canceled due to an error, a message appears (see table below).

### Possible messages when X.TUNE is canceled

<table>
<thead>
<tr>
<th>Description</th>
<th>Possible error message following cancellation of the X.TUNE function</th>
</tr>
</thead>
<tbody>
<tr>
<td>There are device errors.</td>
<td>There is an error which is preventing X.TUNE from running.</td>
</tr>
<tr>
<td>Time limit exceeded.</td>
<td>The X.TUNE could not be run within the time limit due to an error.</td>
</tr>
<tr>
<td>Motor current is too high.</td>
<td>The motor current is too large for running the X.TUNE function.</td>
</tr>
<tr>
<td>Lower end position of the valve is not detected.</td>
<td>The lower end position of the valve cannot be detected by the position sensor.</td>
</tr>
</tbody>
</table>
10 OPERATION

WARNING

Danger due to improper operation.
Improper operation may result in injuries as well as damage to the device and the area around it.

- The operating personnel must know and have understood the contents of the operating instructions.
- Observe the safety instructions and intended use.
- Only adequately trained personnel may operate the equipment/the device.

There are different control elements available for operation of the device.

- **Standard device**
  - The device is operated using 2 capacitive buttons and 4 DIP switches.

- **Additional operating option**
  - The device can be set alternatively also on a PC or tablet. The setting is made by the büS service interface and by using the “Bürkert Communicator” software. To do this, the USB büS interface set, available as an accessory, is required.

10.1 Display elements

**Representation of the display elements:**

![Display elements diagram]

**10.1.1 LED illuminated ring**

The transparent LED illuminated ring, which transmits the light of the LEDs outwards, is attached to the dummy cover. The device status is indicated by a lit, flashing or rapidly flashing LED illuminated ring in one color or in alternating colors.

* A complete description of the device statuses, errors and warnings, which are displayed in LED mode, can be found in the operating instructions on the homepage [www.buerkert.com](http://www.buerkert.com).

*Fig. 19: Display elements*
10.1.2 Mechanical position indicator

The valve position can be read off on the mechanical position indicator even if the supply voltage fails (see “Fig. 19: Display elements”)

10.2 Control elements

Representation of the control elements:

![Control elements diagram]

**10.2.1 DIP switches**

**Settings**

- **Switch 1:** Activate or deactivate safety position. See chapter “11.2”, page 34.
- **Switch 2:** Select safety position between NO and NC. See chapter “11.2”, page 34.
- **Switch 3:** Not used.
- **Switch 4:** For switching between AUTOMATIC mode and MANUAL mode. See chapter “11.1”, page 33.

**10.2.2 OPEN button and CLOSE button**

Electrical manual control:
- Open valve: Press OPEN button
- Close valve: Press CLOSE button

Running X.TUNE (Autotune): For description see chapter “9.4 Adjusting the mechanical end position – running X.TUNE”.

**10.2.3 Mechanical Manual Control**

When the supply voltage is not applied, e.g. during installation or in the event of a power failure, the valve can be opened or closed with the mechanical manual control.

For description see chapter “12.2 Actuating valve mechanically”
Basic functions

The basic functions are set via the DIP switch position.

<table>
<thead>
<tr>
<th>DIP switches</th>
<th>Basic function</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Activate or deactivate safety position</td>
</tr>
<tr>
<td>2</td>
<td>Set safety position and effective direction (NC and NO)</td>
</tr>
<tr>
<td>3</td>
<td>Not used</td>
</tr>
<tr>
<td>4</td>
<td>For switching between AUTOMATIC mode and MANUAL mode</td>
</tr>
</tbody>
</table>

Tab. 11: Overview of basic functions

11.1 Switching operating state, AUTOMATIC – MANUAL

Factory setting: Devices are delivered with the MANUAL operating state preset.

The operating state is switched with DIP switch 4 which is located under the dummy cover.

Devices with ATEX approval or IECEx approval.

The devices are secured with a special cover. The removal of the cover is described in the additional manual for electromotive valves with ATEX approval and IECEx approval.

→ To release, rotate the dummy cover counter-clockwise by 90° and remove from the actuator housing.

→ Push DIP switch 4 downwards. The device is now in AUTOMATIC operating state.

Fig. 21: Setting AUTOMATIC operating state
Close the dummy cover.

### 11.2 Setting safety position and effective direction

The effective direction and the safety position are set using DIP switches 1 and 2.

<table>
<thead>
<tr>
<th>DIP 2 (NC/NO)</th>
<th>DIP 1 (Safety position activated / deactivated)</th>
<th>Safety position</th>
<th>Set-point value (0...5V)</th>
<th>Set-point value (10...30V)</th>
</tr>
</thead>
<tbody>
<tr>
<td>NC OFF</td>
<td>ON Closed</td>
<td>Closed</td>
<td>Closed</td>
<td>Open</td>
</tr>
<tr>
<td>OFF OFF</td>
<td>None (actuator stops)</td>
<td>Closed</td>
<td>Open</td>
<td></td>
</tr>
<tr>
<td>ON ON</td>
<td>Open</td>
<td>Open</td>
<td>Closed</td>
<td></td>
</tr>
<tr>
<td>NO ON</td>
<td>Off None (actuator stops)</td>
<td>Open</td>
<td>Closed</td>
<td></td>
</tr>
</tbody>
</table>

Tab. 12: Setting effective direction and safety position

### 12 MANUAL ACTUATION OF THE VALVE

The valve can be manually actuated in 2 ways: electrically or mechanically. Electrical manual control is usually used to open and close the valve manually. Mechanical manual control is used to open and close the valve in the event of a power failure. Mechanical manual control may be used in a de-energized state only.

#### 12.1 Actuating valve electrically

The valve is manually and electrically actuated by pressing 2 buttons which are located on the LED and storage module under the dummy cover.

To actuate the valve, the device must be in MANUAL operating state.

The 2 buttons for opening and closing the valve are located under the dummy cover.

Devices with ATEX approval or IECEx approval.

The devices are secured with a special cover. The removal of the cover is described in the additional manual for electromotive valves with ATEX approval and IECEx approval.
**Type 3320, 3321**

**Manual actuation of the valve**

→ To release, rotate the dummy cover counter-clockwise by 90° and remove from the actuator housing.

→ Set DIP switch 4 to ON. The device is now in MANUAL operating state (see “Fig. 22”).

**Fig. 22: Setting MANUAL operating state**

**Fig. 23: Electrical manual actuation of devices**

→ Using the OPEN button and CLOSE button, open or close the valve (see “Fig. 23”).

→ Reset DIP switch 4 downwards. The device is back in the AUTOMATIC operating state.

→ Close the dummy cover.
12.2 Actuating valve mechanically

When the supply voltage is not applied, e.g. during installation or in the event of a power failure, the valve can be opened or closed with the mechanical manual control.

**NOTE!**

The mechanical manual control may be used in a de-energized state only, otherwise the device may be damaged.

Devices with ATEX approval or IECEx approval.

The devices are secured with a special cover. The removal of the cover is described in the additional manual for electromotive valves with ATEX approval and IECEx approval.

→ To release, rotate the dummy cover counter-clockwise by 90° and remove from the actuator housing.

Fig. 24: Removing dummy cover from the actuator housing

→ To adjust the valve, use a hex key with 3 mm width across flats.

**NOTE!**

Maximum tightening torque 2 Nm (1.5 lbf ft).

If the tightening torque is exceeded on reaching the valve end position, the mechanical manual control will be damaged.

The position indicator must detect when the valve reaches the end positions (see “Fig. 25”).

→ Applying a gentle pressure, couple the mechanical manual control and simultaneously turn the hex key (see “Fig. 26”).

Fig. 25: Mechanical position indicator
Type 3320, 3321
Fieldbus gateway

Mechanical Manual Control

Open valve
Press and rotate
Close valve

Fig. 26: Mechanical Manual Control

→ Move valve to the required position.

⚠️ Maximum tightening torque 2 Nm (1.5 lbf ft).
Open (rotate counter-clockwise), close (rotate clockwise).

→ After reaching the required valve position, remove the hex key.
The mechanical manual control automatically decouples.

13 FIELDBUS GATEWAY
EtherNet/IP, PROFINET, Modbus TCP

Display module
Fieldbus gateway

Fieldbus connection M12 (2 Port Ethernet Switch)

Fig. 27: Fieldbus gateway with display module

13.1 Technical data

Network speed 10/100 mbps
Auto negotiation Yes
Auto MDI/MDI-X Yes
Switch function Yes
Network diagnostics Yes, with error telegram
MAC-ID Individual identification number, stored in the module and on the outside of the device (see rating plate)
Device name Ethernet (factory setting) XXX (name can be changed)

Interface for service and system update Internal mini USB (may be used only by technicians who have been trained for this task)
13.2 Electrical connection
The EtherNet/IP is connected with a circular plug-in connector M12, 4-pole.

<table>
<thead>
<tr>
<th>Pin</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Transmit +</td>
</tr>
<tr>
<td>2</td>
<td>Transmit –</td>
</tr>
<tr>
<td>3</td>
<td>Receive +</td>
</tr>
<tr>
<td>4</td>
<td>Receive –</td>
</tr>
</tbody>
</table>

**Tab. 13: Electrical assignment EtherNet/IP**

**NOTE!**
To ensure electromagnetic compatibility (EMC), a shielded Ethernet cable must be used. Ground the cable shield on both sides, i.e. on each of the connected devices.

As the metal housing of the M12 circular plug-in connector is connected to the actuator housing, the functional ground must be grounded on the actuator housing. For the grounding use a short line (max. 1m) with a cross-section of at least 1.5 mm².

![Functional earth](image)

**Fig. 28: Functional earth**

13.3 Access to the büS Service interface
The büS Service interface is located inside the fieldbus gateway. To access, open the cover using a screwdriver.

![büs Service interface for fieldbus gateway version](image)

**Fig. 29: büS Service interface for fieldbus gateway version**
14 MAINTENANCE, TROUBLESHOOTING

Maintenance work is described in the separate repair and maintenance instructions. The fault description can be found in the operating instructions. Both sets of instructions can be found on our homepage www.buerkert.com.

14.3.1 Visual inspection
Perform regular visual inspections according to the conditions of use:
→ Check medium connections for leak-tightness.
→ Check relief bores on the pipe for leaks.

15 CLEANING
Do not use alkaline cleaning agents to clean the surfaces of the device.

16 ACCESSORIES

16.1 Communications software
The PC software Bürkert-Communicator is designed for communication with Bürkert devices.

A detailed description for installing and operating the PC software can be found in the associated operating instructions.

Download the software from: www.burkert.com.

16.1.1 USB interface
To communicate with the devices, the PC requires a USB interface and the USB büS interface set available as an accessory.

<table>
<thead>
<tr>
<th>USB büS interface set</th>
<th>Order no.</th>
</tr>
</thead>
<tbody>
<tr>
<td>büS stick set 1</td>
<td>772426</td>
</tr>
<tr>
<td>(including power supply, büS stick, load resistor, Y-distributor, 0.7 m cable with M12 plug)</td>
<td></td>
</tr>
<tr>
<td>büS stick set 2</td>
<td>772551</td>
</tr>
<tr>
<td>(including büS stick, load resistor, Y-distributor, 0.7 m cable with M12 plug)</td>
<td></td>
</tr>
<tr>
<td>büS adapter for büS service interface (M12 to büS service interface micro USB)</td>
<td>773254</td>
</tr>
</tbody>
</table>

Tab. 14: Components USB büS interface set
18 PACKAGING, TRANSPORT AND STORAGE

NOTE!

Transport damage.
Inadequately protected devices may be damaged during transportation.
- Protect the device against moisture and dirt in shock-resistant packaging during transportation.
- Prevent the temperature from exceeding or dropping below the permitted storage temperature.

Incorrect storage may damage the device.
- Store the device in a dry and dust-free location.
- Storage temperature -40...+70 °C.

19 DISPOSAL

NOTE!

Damage to the environment caused by parts contaminated with media.
- Dispose of the device and packaging in an environmentally friendly manner.
- Observe applicable disposal and environmental regulations.

Observe the national waste disposal regulations.

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17 DISASSEMBLY

17.1 Safety instructions

**DANGER**

Risk of injury from high pressure and discharge of medium.
If the device is under pressure when removed, there is a risk of a sudden pressure release and discharge of medium.
- Before removing the device, switch off the pressure and vent or drain the lines.

**CAUTION**

Risk of injury due to a heavy device.
A heavy device can fall down during transport or during installation and cause injuries.
- Transport, install and dismantle a heavy device with the help of another person.
- Use appropriate tools.

→ Disconnect the electrical connection.
→ Remove device.

Information on Type 3320, 3321 can be found on the Internet at [www.burkert.com](http://www.burkert.com)
- Additional accessories (in the operating instructions),
- Spare parts (in the service instructions).