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Type 0121, 0330, 0331

(0124, 0125, 0332, 0333)

2/2- or 3/2-way solenoid valve



Operating Instructions for all variants

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Technical documentation 2507/09_GBen_00893047_968818571_9007200223660043 / 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 Products.

- Enter the article number from the type label in the search bar.

The illustrations in these instructions may vary depending on the product variant.

1.1 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 on 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.

✓ Indicates a result.

Menu Indicates a software user-interface text.

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1.2 Terms and abbreviations

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

Product	Solenoid valve Types 0121, 0330, 0331, (0124, 0125, 0332, 0333)

1.3 Manufacturer

Bürkert Fluid Control Systems

Christian-Bürkert-Str. 13–17

74653 Ingelfingen

GERMANY

The contact addresses are available at Contact.

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2 Safety

2.1 Intended use

The device is designed for controlling, shutting off and dosing neutral and aggressive media with a viscosity of up to 37 mm²/s.

- When using the device, observe the authorised data, and the operating and usage conditions specified in the contract documents and in the operating instructions.
- With a properly connected and assembled cable plug, e.g. Bürkert Type 2518, the device complies with degree of protection IP65 in accordance with DIN EN 60529/ IEC 60529.

The device

- should only be used when in perfect condition; always ensure proper storage, transportation, installation and operation.
- should only be used as intended.

Restrictions

If exporting the device, observe any restrictions that may apply.

2.2 Basic safety instructions

These safety instructions do not make allowance for any unforeseen circumstances or incidents which may arise during installation, operation and maintenance.

Risk of injury from high pressure in the system/device

- Before working on equipment or device, switch off the pressure and deaerate/drain lines.

Risk of injury from electric shock

- Before working on the system or device, switch off the power supply and secure to prevent reactivation.
- Observe the applicable accident prevention and safety regulations for electrical devices.

Risk of burns or fire from hot device surfaces due to prolonged activation time

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

Risk of short circuit/escape of medium due to leaking fittings

- Make sure valve seats are properly seated.
- Carefully screw the valve and pipelines together.

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

A seized core causes the coil to overheat, which leads to functional failure.

- Monitor the working process for proper function.

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General dangerous situations

To prevent injuries, the following must be observed:

- In potentially explosive atmosphere, the device must only be used in accordance with the specifications on the type label. The additional instructions and safety instructions relating to Ex areas enclosed with the device must be adhered to when deploying the device.
- In the UL area, the enclosed UL instructions must be observed.
- Do not make any internal or external modifications to the device and do not subject it to mechanical stress (e.g. by placing objects on it or using it as a step).
- Secure the device against unintentional activation.
- Make sure only trained technicians carry out installation and maintenance work.
- Install devices in accordance with the regulations applicable in the respective country.
- After an interruption in the power supply, ensure that the process is restarted in a controlled manner.
- Observe the general rules of technology.

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3 System description

The pivoted armature valves are direct-acting 2/2- or 3/2-way solenoid valves in a wide range of circuit functions and variants. The solenoid actuator and the medium chamber are separated from each other by a separating membrane system. The valves are fast-acting and have a long service life.

Type 0121	2/2-way or 3/2-way solenoid valve, threaded connection
Type 0330	2/2-way or 3/2-way solenoid valve, threaded connection
Type 0331	2/2-way or 3/2-way solenoid valve, flange connection
Type 0332	Bistable 2/2-way or 3/2-way solenoid valve with 2 coil windings, threaded connection
Type 0333	Bistable 2/2-way or 3/2-way solenoid valve with 2 coil windings, flange connection
Type 0124	2/2-way or 3/2-way solenoid valve, threaded connection
Type 0125	2/2-way or 3/2-way solenoid valve, flange connection

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4 Technical data

4.1 Standards and directives

This product complies with the legal requirements applicable at the time of placing on the market and has been developed and tested in accordance with the relevant European directives/regulations and harmonized standards. The conformity is documented and, if necessary, supported by evidence. The EU Declaration of Conformity can be found behind the respective type on the home page country.burkert.com

4.2 Operating conditions

The following values are indicated on the type label:

- Voltage (tolerance ± 10%)/current type
- Coil power (active power in W – at operating temperature)
- Pressure range
- Body material: (MS=brass, VA=stainless steel, PV=PVC, TE=PTFE, PP=polypropylene, PD=PVDF)
- Seal material: (F=FKM, A=EPDM, B=NBR, C=FFKM)

Ambient temperature	Type 0121: max. +50 °C Other types: max. +55 °C
Storage temperature	-40...80 °C
Duty cycle	For body material Brass or stainless steel: continuous operation 100% duty cycle Plastic: max. permissible duty cycle, see data sheet

NOTICE!

Important note on functional safety

- ▸ During a long period of downtime at least 1–2 switching operations per restart are recommended.

Service life	High switching frequency and high pressure will reduce overall service life
Degree of protection	IP65 in accordance with DIN EN 60529/IEC 60529 with correctly connected and installed cable plug, e.g. Bürkert Type 2518

4.3 Mechanical data

Dimensions	see data sheet
Coil material	Epoxide
Connections	G 1/4 (NPT 1/4, G 1/8, G 3/8, Rc 1/4 on request)

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4.4 Fluidic data

Media	Aggressive, neutral gaseous and liquid media that do not attack the body and seal materials (see resistance chart at country.burkert.com)
Medium temperature	For seal material FKM: 0 °C to +90 °C EPDM: -30 °C to +90 °C NBR: 0 °C to 80 °C FFKM: +5 °C to +90 °C

For UL-listed valves (Type 0330):

Medium	Temperatures	NBR [°C]	EPDM [°C]	FKM [°C]
Air	Medium Environment	0 to +80 0 to +55	-30 to +90 -10 to +55	0 to +90 0 to +55
Water	Medium Environment	+5 to +80 0 to +55	+5 to +90 -10 to +55	+5 to +90 0 to +55
Inert gas	Medium Environment	0 to +80 0 to +55	-30 to +90 -10 to +55	0 to +90 0 to +55
Oil	Medium Environment	-	-	0 to +90 0 to +55
LPG	Medium Environment	-	-	0 to +90 0 to +55
Oxygen	Medium Environment	-	-	0 to +90 0 to +55

Tab. 1: General purpose valve (metallic and non-metallic valve bodies) non-metallic valve bodies are limited to max. 50 °C for medium and environment

Medium	Temperatures	NBR [°F]	EPDM [°F]	FKM [°F]
Air	Medium Environment	+32 to +176 +32 to +131	-22 to +194 +14 to +131	+32 to +194 +32 to +131
Water	Medium Environment	+41 to +176 +32 to +131	+41 to +194 +14 to +131	+41 to +194 +32 to +131
Inert gas	Medium Environment	+32 to +176 +32 to +131	-22 to +194 +14 to +131	+32 to +194 +32 to +131
Oil	Medium Environment	-	-	+32 to +194 +32 to +131
LPG	Medium Environment	-	-	+32 to +194 +32 to +131
Oxygen	Medium Environment	-	-	+32 to +194 +32 to +131

Tab. 2: General purpose valve (metallic and non-metallic valve bodies) non-metallic valve bodies are limited to max. 122 °F for medium and environment

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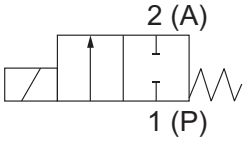
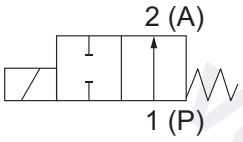
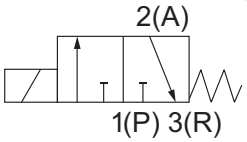
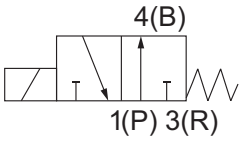
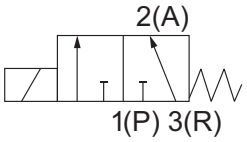
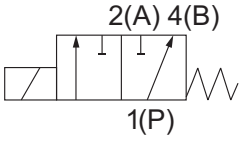
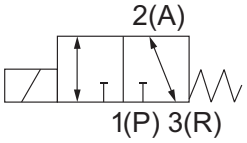
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Medium	Temperatures	NBR [°C]	EPDM [°C]	FKM [°C]
Water	Medium Environment	+5 to +90 0 to +55	+5 to +90 0 to +55	-

Tab. 3: Fire protection service valve (metal valve body only)

Medium	Temperatures	NBR [°F]	EPDM [°F]	FKM [°F]
Water	Medium Environment	+41 to +194 +32 to +131	+41 to +194 +32 to +131	-

Tab. 4: Fire protection service valve (metal valve body only)

A (NC)		2/2-way valve; Normally closed
B (NO)		2/2-way valve; normally open
C (NC)		3/2-way valve, normally closed, outlet A relieved
D (NO)		3/2-way valve, outlet B pressurised in rest position
E		3/2-way mixing valve; in rest position, pressure port P2 is connected to output A, P1 is closed
F		3/2-way distributor valve, pressure port P connected to outlet B in rest position
T		3/2-way valve; can be used universally

Tab. 5: Circuit functions

4.5 Electrical data

Connections	DIN EN 175301-803 (DIN 43 650), Design A for cable plug Type 2518 or 2509

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4.6 Type label

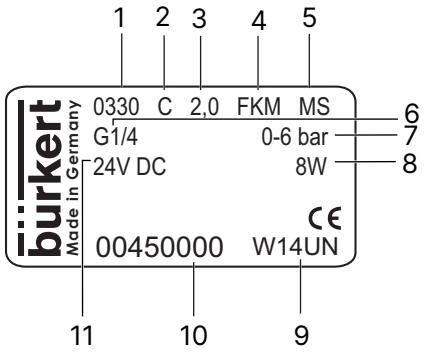


Fig. 1: Description of the type label

1	Type	2	Circuit function
3	Orifice	4	Sealing material
5	Body material	6	Connection type
7	PN	8	Power
9	Manufacture code	10	Article number
11	Voltage		

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5 Installation

5.1 Safety instructions

DANGER!

Risk of injury from high pressure in the system/device

- Before working on equipment or device, switch off the pressure and deaerate/drain lines.

DANGER!

Risk of injury from electric shock

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

WARNING!

Risk of injury due to improper installation

- Installation may only be performed by trained technicians and with the appropriate tools.
- Secure the system against unintentional activation.
- Ensure a controlled restart after installation.

5.2 Before installation

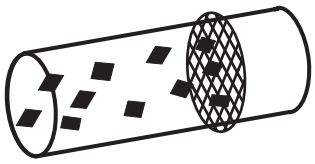
Installation position

The installation position is flexible. Preferably: actuator at the top.

- Check pipelines for soiling and clean if required.

Dirt trap

For safe operation of the solenoid valve, a dirt trap (≤ 500 µm) must be installed before the valve inlet.



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5.3 Installation

- Pay attention to flow direction:
  The device will function properly only if the circuit function is observed.

Device with threaded connection

NOTICE!

Caution! Risk of breakage

- Do not use the coil as a lever arm.

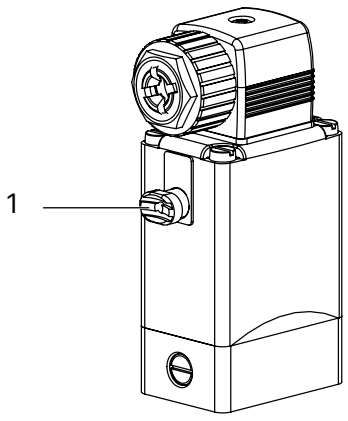
- Use PTFE tape as a seal material.
- Determine the maximum screw-in depth of the connection threads as these do not comply with any standard.
- Hold the device on the body using the appropriate tool (open-ended spanner) and screw into the pipeline.
- Fastening the device: via M4 x 8 holes (brass or stainless steel variant) or self-tapping screws 3.9 DIN 7970 (plastic variant, max. screw-in depth 10 mm) on the underside of the housing at the 38 x 24 hole pattern.

Devices in flange variant

- Fastening the device: using the screws supplied, fasten to base devices or connection plate.
- Tighten the fastening screws on the coil with a maximum torque of 2 Nm.

5.4 Manual override

When manual override is locked, the valve cannot be electrically actuated.



1 Manual override

- Press and hold the manual override.
- Turn manual override clockwise.

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6 Electrical connection

DANGER!

Risk of injury from electric shock

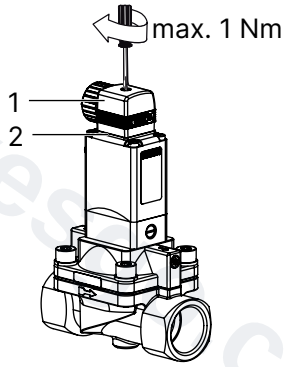
- Before working on the system or device, switch off the power supply and secure against reactivation.
- Observe the applicable accident prevention and safety regulations for electrical devices.

DANGER!

There is a risk of electric shock if the protective conductor is not connected.

- Connect protective conductor and check electrical continuity between coil and body.

Electrical connection of cable plug



1	Cable plug	2	Seal

- Install an approved cable plug, e.g. Type 2518 or other suitable cable plug in accordance with DIN EN 175301-803 Design A

Observe voltage and current type in accordance with type label.

6.1 Standard device

- Connect L1/+ and N/– to terminals 1 and 2 independently of the polarity.
- Connect the protective conductor.
- Attach valve seat and check that it fits properly.
- Screw the cable plug (Type 2518 or 2509 in accordance with DIN EN 175301-803 (DIN 43 650), Design A, order numbers see data sheet) in place, observing the maximum torque of 1 Nm.
- Check electrical continuity between coil and body (protective conductor function).

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6.2 Impulse variant (CF 02)

The terminals in the cable plug are identified with the numerals 1 to 3 according to the terminals on the valve.

- Connect as shown in the following image. Impulse on terminal 1 closes the valve, impulse on terminal 2 opens the valve.
- Attach valve seat and check that it fits properly.
- Screw the cable plug (Type 2518 or 2509 in accordance with DIN EN 175301-803 (DIN 43 650), Design A, order numbers see data sheet) in place, observing the maximum torque of 1 Nm.
- Check electrical continuity between coil and body (protective conductor function).

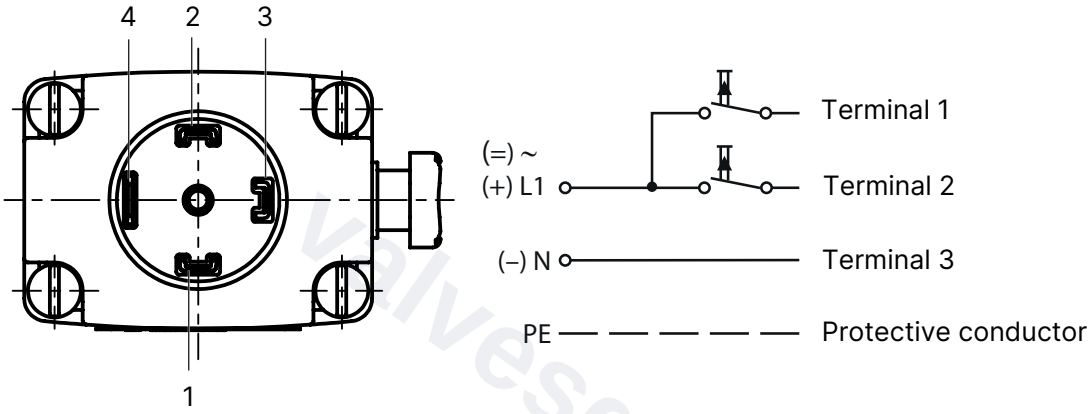


Fig. 2: Electrical connection of the impulse variant (CF 02)

- Avoid impulses being simultaneously generated on both coil windings.
- No additional loads (such as relays or similar devices) must be connected in parallel to the terminals.
- The coil connection that is not under voltage must remain galvanically isolated (i.e. open).
- If two or more valves are switched in parallel, ensure that this requirement is met by using bipolar or multipolar switches.

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6.3 Kick-and-drop electronic variant (coil ACP016)

Information on the ACP016 coil can be found in the corresponding operating instructions at country.burkert.com.

DANGER!

For solenoids with terminal connection box, also note the following:

- Only insert permanent cables and lines.
- Use suitable cable and wiring guides. Observe the information in the operating instructions for Type ACP016.
- In the terminal boxes, only connect wires with terminal connections measuring between 0.5 mm2 and 2.5 mm2.
- Tighten the terminal screws with 0.25 Nm.
- Lock housing lid properly. Tighten lock screw with 2 Nm.
- Check the consistency of the protective earth connection.
- Only open the housing lid when the power is off.
- Connect a maximum of two conductors per terminal.

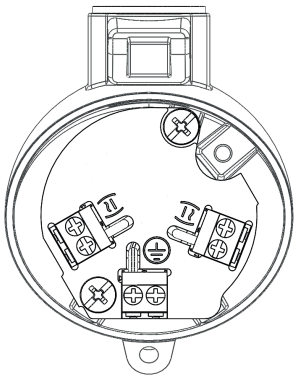
Solenoids with cable outlet

The connection cable is cast with the Type ACP016 solenoid and cannot be removed. Observe the voltage listed on the type label.

Wire colour	Pin assignment
Green-yellow	Protective conductor
Black	Phase/positive pole (+)
Black	Neutral conductor/negative pole (–)

Tab. 6: Wire assignment

Solenoids with terminal box

Terminal box	Position	Pin assignment
	⏚	Protective conductor
	(≃)	Neutral conductor/negative pole (–)
	(≃)	Phase/positive pole (+)

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7 Disassembly

DANGER!

Risk of injury from high pressure in the system/device

- Before working on equipment or device, switch off the pressure and deaerate/drain lines.

DANGER!

Risk of injury from electric shock

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

WARNING!

Risk of injury due to improper disassembly.

- Disassembly may only be performed by trained technicians and with the appropriate tools.

WARNING!

Risk of injury from dangerous fluids

- Before loosening lines or valves, flush out hazardous media, depressurise and drain the lines.

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8 Maintenance, troubleshooting

DANGER!

Risk of injury from high pressure in the system

- Before loosening lines or valves, switch off the pressure and bleed the lines.

DANGER!

Risk of injury from electric shock

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

WARNING!

Risk of injury due to improper maintenance work.

- Maintenance may be carried out only by trained specialist technicians and with the appropriate tools.
- Secure the system against unintentional activation.
- Ensure a controlled restart after maintenance is completed.

8.1 Troubleshooting

If faults occur, check whether

- the device is installed in accordance with regulations,
- the electrical/fluid connections have been properly set up,
- the device is not damaged,
- all screws have been tightened,
- voltage and pressure have been applied,
- and the pipelines are clean.

Fault	Possible cause
Valve does not actuate	Short circuit or coil interrupted
	Operating pressure outside the permitted pressure range
	Manual override locked
Valve does not close	Interior of the valve soiled
	Manual override locked

Repair

Repairs must always be carried out by the manufacturer. The operating data may change if spare parts are replaced by the user.

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9 Logistics

9.1 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.

9.2 Return

No work or tests will be carried out on the device until a valid Contamination Declaration has been received.

- To return a used device to Bürkert, contact the Bürkert sales office. A return number is required.

9.3 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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