bürkert
FLUID CONTROL SYSTEMS

MAN 1000670506 EN Version: A Status: RL (released | freigegeben) printed: 09.10.2026

Type 6511

5/2-way solenoid valve for pneumatic applications

Operating Instructions

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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.

Device	5/2-way solenoid valve for pneumatic applications, Type 6511
bar	Unit for relative pressure

1.3 Manufacturer

Bürkert Fluid Control Systems

Christian-Bürkert-Str. 13–17

74653 Ingelfingen

GERMANY

The contact addresses are available at Contact.

Need more information or additional products?

- Explore the full range of products on our eShop.

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2 Safety

2.1 Intended use

The device is designed to control the flow of media. The permissible media are listed in chapter Technical data [▶ 11]

Prerequisites for safe and trouble-free operation are proper transport, storage, installation, commissioning, 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 use the device outdoors.
- 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.

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.

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

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 devices and components recommended or approved by Bürkert.

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.

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.

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.

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 [▶ 11] and information on the type label.
- Only feed media into the media ports that are listed in the chapter Technical data [▶ 11].
- Observe the safety data sheet for the media used.

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Electrostatically sensitive components and assemblies

The device contains electronic components that are susceptible to the effects of electrostatic discharging (ESD). Components that come into contact with electrostatically charged persons or objects are at risk. In the worst case scenario, these components will be destroyed immediately or fail after start-up.

- Meet the requirements specified by EN 61340-5-1 to minimise or avoid the possibility of damage caused by a sudden electrostatic discharge.
- Do not touch electronic components when the supply voltage is connected.

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3 Product description

The solenoid valve consists of a Type 6144 flipper solenoid valve as a pilot valve and a pneumatic seat valve. The flipper operating principle permits switching at high pressures with low power consumption and short switching times.

The solenoid valves can be used either individually or as a valve block on modular pneumatic base modules.

3.1 Product structure

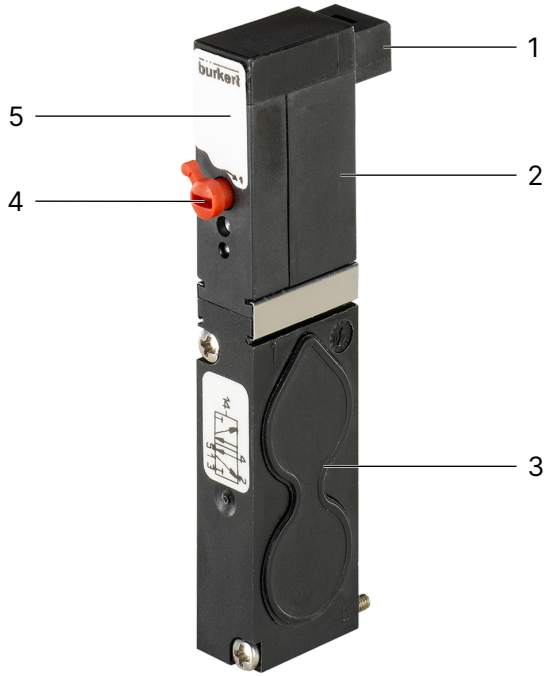

Fig. 1: 5/2-way solenoid valve, Type 6511

1	Electrical connection	2	Flipper solenoid valve Type 6144
3	5/2-way pneumatic seat valve	4	Manual override
5	Type label		

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3.2 Type label

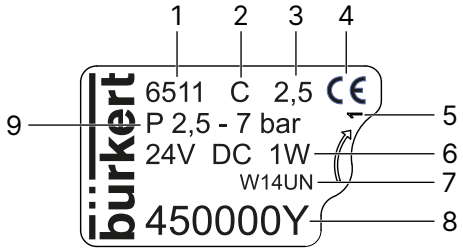
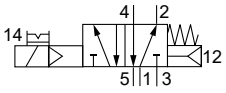


Fig. 2: Type label for Type 6511 (example)

1	Type	2	Circuit function
3	Orifice	4	CE marking
5	Switch position manual override	6	Operating voltage
7	Manufacture code	8	Article number
9	Operating pressure		

3.3 Circuit function



Circuit function H (CF H)
5/2-way solenoid valve, pilot-operated, with manual override
Pressurisation via working port (1), therefore one of the two ports (2) or (4) is under pressure.

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4 Technical data

4.1 Standards and directives

The device complies with the valid EU harmonisation legislation.

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

4.2 Operating conditions

When temperatures are below 0 °C, operation is restricted to dried air.

The pilot pressure for pneumatic actuation depends on the pressure of the flow medium, which must not exceed 7 bar.

Observe the permissible pressure range on the type label. Pressure difference between working port 1 and 3/5 ≥2.5 bar.

Medium	filtered compressed air (particle size max. 5 µm), preferably un-lubricated (operation with lubricated air is possible)
	neutral gases
Operating pressure	≥ 2.5 bar
Medium temperature	−10...+50 °C
Ambient temperature	max. +55 °C
Storage temperature	−40...+80 °C
Degree of protection (EN 60529 / IEC 60529)	IP40
Installation position	Any, preferably actuator face up
Seal material	FKM/NBR

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5 Installation

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

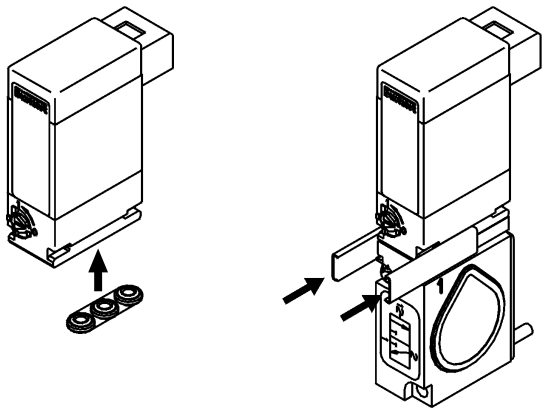
- Read and observe the chapter Safety [▶ 6] before working on the device or system.

5.1 Preparatory work

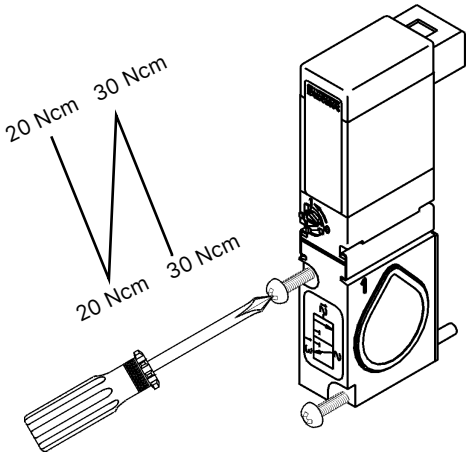
Any installation position, preferably actuator face up.

- Check pipelines for soiling and clean if required.
- Fit a dirt trap on a dirty medium before the valve inlet (mesh size ≤ 0.5 mm).

5.2 Valve installation



- Insert seal into pilot valve.
- Connect the pilot valve and seat valve with the two clips.



- Tighten both screws crosswise in 2 steps.
  Step 1: 20 Ncm
  Step 2: 30 Ncm

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5.3 Construction of valve blocks

Pneumatic basic modules are available as accessories (see Type SVVI under country.burkert.com).

By combining 2-way and 3-way basic modules, valve blocks of any size can be configured.

Further information on the construction of valve blocks can be found at country.burkert.com > Type 8640

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6 Electrical connection

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.

6.1 Connection variants

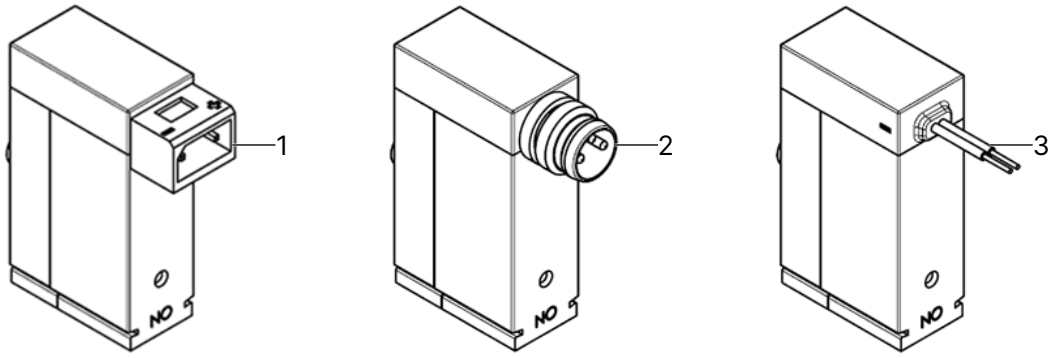


Fig. 3: Connection variants pilot valve Type 6144

1	Rectangular connector	2	Circular plug M8
3	Strands		

6.2 Pin assignment

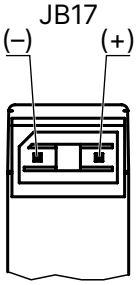
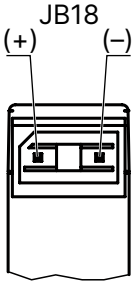
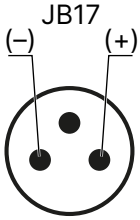
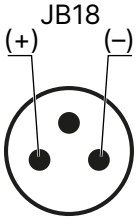
Voltage tolerance ±10%.

Heating the coil at 100% duty cycle and maximum ambient temperature:

- in single assembly to approx. +105 °C
- in block construction to approx. +120 °C

NOTICE!

Observe specifications on the type label regarding voltage and current type

Rectangular connector (JF80)		Circular plug (JF79)	
JB17	JB18	JB17	JB18
			

Tab. 1: Pin assignment for pilot valve 6144, 3/2-way and 5/2-way

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7 Fluidic connection

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.

7.1 Pilot valve pin assignment

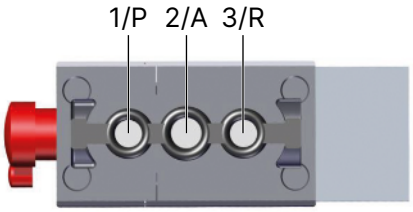

Fig. 4: Working port 1/P is always on the side of the manual override

7.2 Pin assignment for seat valve

Make the pressure supply as large as possible.

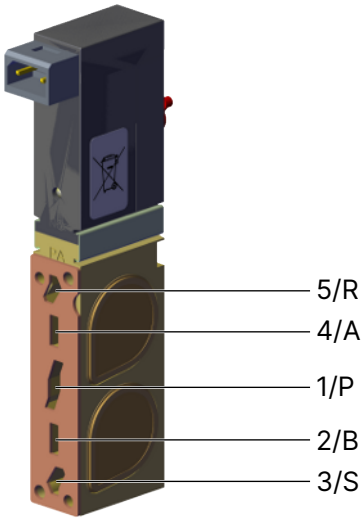

Fig. 5: Pin assignment for 5/2-way valve

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8 Commissioning

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.

8.1 Before start-up

- Check connections, voltage and operating pressure.
- Make sure that the maximum operating data (see type label) are not exceeded.
- Ensure correct pin assignment of ports 1, 3 and 5. These must not be switched under any circumstances.
- For electrical operation, unlock the manual override.

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9 Pilot valve manual override

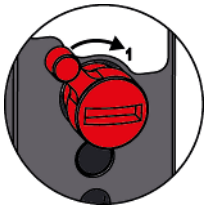
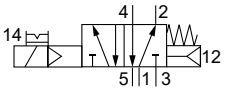
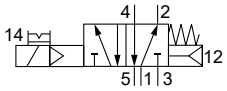


Fig. 6: Pilot valve manual override

To manually switch the valve, turn the manual override in the direction of the arrow to number 1. The valve remains fixed in the switched state until the manual override is turned back to its original position.

Manual override position	Switching function	Circuit function	Symbol
0	AUTO		
0	1/P → 2/B 4/A → 5/R	H	
1	1/P → 4/A 2/B → 3/S	H	

Tab. 2: Operating principle of manual override CF H

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10 Maintenance

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.

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11 Troubleshooting

11.1 Valves do not switch

Cause	Solution
Manual override of the valves not in neutral position.	▸ Bring the manual override into the neutral position.
Pressure supply insufficient or not available.	▸ Set up the largest possible volume of pressure supply (also for upstream devices such as pressure controllers, maintenance units, on/off valves, etc.).
No or too low operating voltage.	▸ Check the electrical connection.
	▸ Ensure the operating voltage is correct.

11.2 Valves switch with a delay or blow off at the exhaust ports

Cause	Solution
Pressure supply insufficient or not available.	▸ Set up the largest possible volume of pressure supply (also for upstream devices such as pressure controllers, maintenance units, on/off valves, etc.).
Valves are not in home position (de-energised) during pressure build-up.	▸ Pressurise the valve block before switching the valves.
Insufficient ventilation of the exhaust air ducts due to too small or dirty silencers (back pressure).	▸ Use suitably sized silencers or expansion vessels.
	▸ Clean the dirty silencers.
Impurities or foreign objects in the pilot valve or main valve.	▸ Apply pulsed pressure to the exhaust air ducts to blow out the impurities.
	▸ If this measure is unsuccessful, install a new pilot valve or main valve.

11.3 Valve block leaking

Cause	Solution
Missing or crushed O-rings between the modules.	▸ Determine the location of the leak and replace any missing seals.
Missing or incorrectly positioned flat seals between valve and base plate.	▸ Insert missing seals or replace damaged seals.

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12 Spare parts and accessories

Risk of injury and/or damage due to incorrect parts.

- Use only original accessories and original spare parts from Bürkert.

Order the parts directly on our eShop.

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13 Logistics

13.1 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.

13.2 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.

13.3 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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