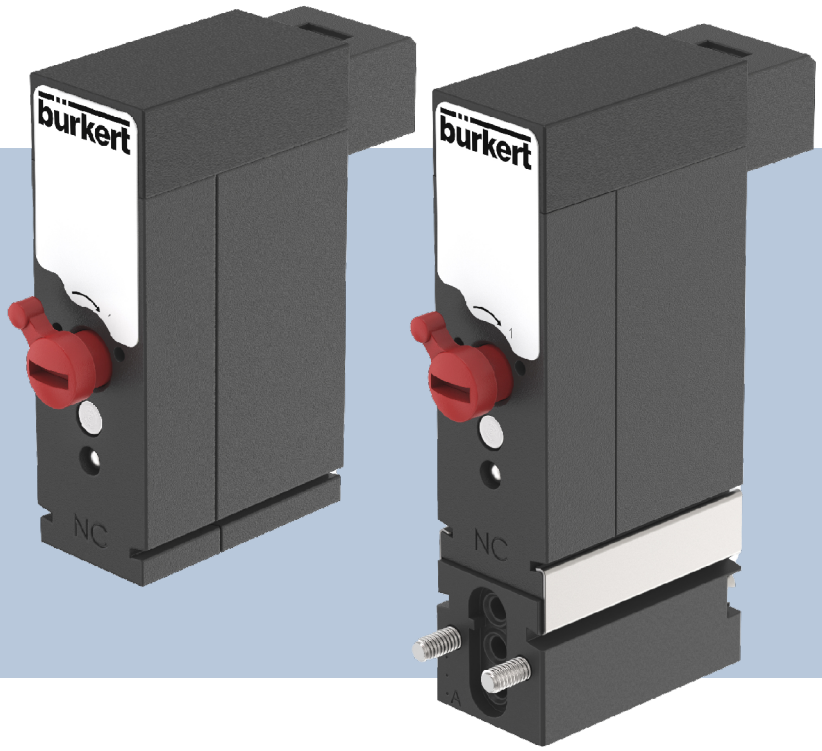
bürkert
FLUID CONTROL SYSTEMS

MAN 1000095070 ML Version: H Status: RL (released | freigegeben) printed: 29.01.2026

Type 6144

3/2-way flipper valve



Operating Instructions for all variants

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Technical documentation 2505/06_GBen_00805579_921809419_9007200176587531 / 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.

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.

Menü Indicates a software user-interface text.

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1.2 Manufacturer

Bürkert Fluid Control Systems

Christian-Bürkert-Str. 13–17

D-74653 Ingelfingen

The contact addresses are available at Contact.

Need more information or additional products?

- Explore the full range of products on our eShop.

1.3 Terms and abbreviations

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

Device	3/2-way flipper solenoid valve, direct-acting type 6144

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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 [▶ 12]

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.

Only use approved devices in a potentially explosive atmosphere

Devices that may be used in potentially explosive atmosphere are labelled with an Ex marking. Additional instructions with Ex labelling are included with these devices.

- In the potentially explosive atmosphere, only use devices that are approved for this purpose.
- When using in a potentially explosive atmosphere, observe the information on the device.

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- When using in a potentially explosive atmosphere, observe the additional instructions with Ex labelling.
- Devices that do not have this Ex labelling and additional instructions must not be used in a potentially explosive atmosphere under any circumstances.

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.

Technical limit values and media

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

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

Medium under pressure

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

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

Electric shock due to electrical components

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

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

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

Hot surfaces and fire hazard

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

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

Working on the device

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

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

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

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

- Monitor valve function.

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3 Product description

The solenoid valve type 6144 controls the flow of gases and liquids. It works like a small switch that is actuated by a magnetic field. By applying a voltage to the solenoid, a magnetic field is generated, which moves the permanent magnet connected to the flipper. The flipper alternately seals one of the two valve seats and connects the other to the working port.

3.1 Product structure

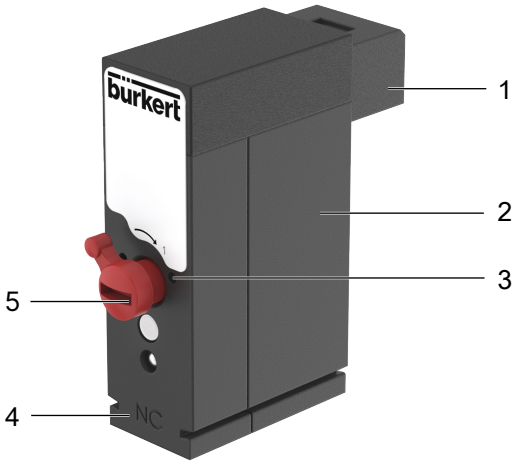

Fig. 1: Structure of Type 6144

1	Electrical connection	2	Body
3	Holes for additional over-rotation protection	4	Fluidic connection
5	Manual override		

Electrical and fluidic connections may vary depending on the product variant. See data sheet.

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3.2 Product identification

3.2.1 Type label

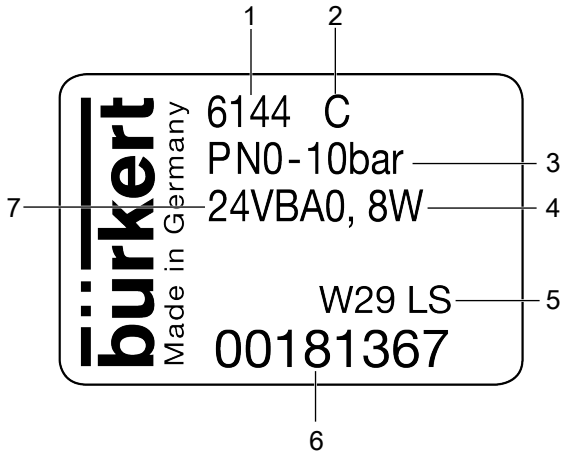


Fig. 2: Type 6144 type label (example)

1	Type	2	Circuit function
3	Operating pressure	4	Nominal power
5	Manufacture code	6	Article number
7	Operating voltage		

3.2.2 Symbols and labelling on the device

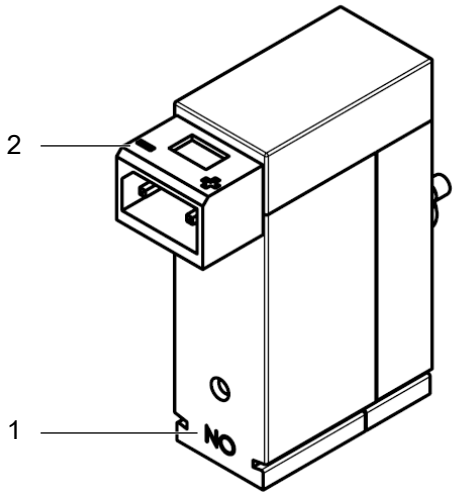
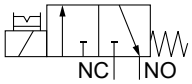
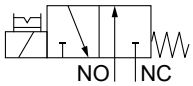
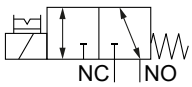
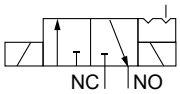
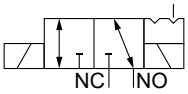


Fig. 3: Symbols on the device

1	Designation of fluidic connections (NC or NO)	2	Designation of the electrical connection

3.3 Circuit function

Icon	Description
	**Circuit function C (WW C), NC** 3/2-way solenoid valve, direct-acting, with manual override normally closed
	**Circuit function D (WW D), NO** 3/2-way solenoid valve, direct-acting, with manual override Normally open
	**Circuit function T (WW T)** 3/2-way solenoid valve, direct-acting, with manual override Flow direction optional
	**Circuit function K (WW K)** 3/2-way impulse valve, direct-acting Note the flow direction
	**Circuit function S (WW S)** 3/2-way impulse valve, direct-acting Flow direction optional

Tab. 1: Circuit function

For further information, see Connect pulse variant electrically [▶ 21]

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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

Ambient temperature	–10...+55 °C
Medium temperature	–10...+55 °C
Medium	filtered compressed air (particle size max. 5 µm), preferably un-lubricated (operation with lubricated air is possible)
	neutral gases
Degree of protection	IP30 with rectangular plug
	IP65 with strand
Protection class	III in accordance with VDE 0580, UL with class II power supply unit
Installation position	any, preferably actuator face up
Operating mode	Continuous operation
Storage temperature	–20...+65 °C

4.3 Mechanical data

Dimensions	Refer to data sheet
Body	PPS, fibre-glass reinforced
Seal	FKM

4.4 Electrical data

Operating voltage	24 V DC, 12 V DC
Voltage tolerance	± 10%
Nominal power	Standard: 0.8 W
	Pulse: switching 0.8 W (pulse length min. 50 ms), holding power 0 W

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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.

DANGER!

Risk of injury from high pressure and discharge of medium.

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

WARNING!

Risk of injury due to outdoor use

- Do not use the device outdoors
- Avoid heat sources that could lead to the permissible temperature range being exceeded.

WARNING!

Risk of injury due to malfunction or escaping medium.

If exhaust air from other processes is used to generate compressed air for the device, seals may be destroyed by the media contained in the exhaust air.

- Only use fresh air for generating compressed air for the device.

NOTICE!

Malfunctions

The valve must be at least 5 mm away from other ferromagnetic materials in order to prevent malfunctioning

Devices designed for use in Zone 2/22

The user must ensure that this unit is protected to IP54 in accordance with EN 60529. For example, by installing it in a suitable housing.

- Clear pipes of any dirt.
- Fit a dirt trap on a dirty medium before the valve inlet (5 µm).

CAUTION!

Danger due to escaping medium.

Leaking connections with incorrectly positioned seal.

- Ensure that the sealing gasket provided fit properly.

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5.1 Installation Bürkert flange

Installation drawing

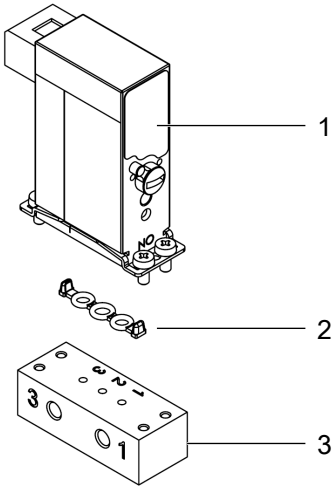

Fig. 4: Installation drawing for Bürkert flange

1	Valve with flange	2	Sealing gasket
3	Manifold		

Hole pattern

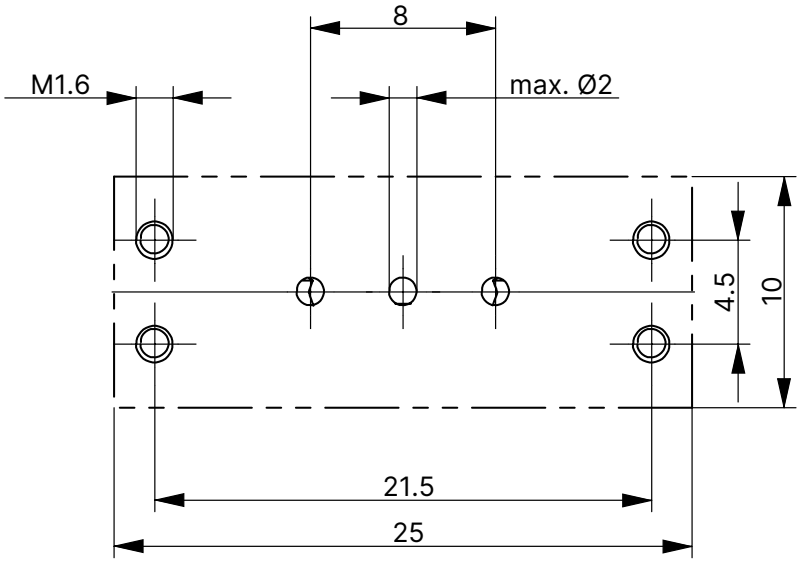

Fig. 5: Installation drawing for Bürkert flange – Hole pattern

- Place sealing gasket in the valve.
- Correctly assign fluid pin assignment 1, 2 and 3 on the valve and manifold.
- Drill holes according to the hole pattern.
- Screw the valve onto the manifold.
- Check the valve for tightness.

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5.2 Installation with Bürkert flange FS35

Installation drawing

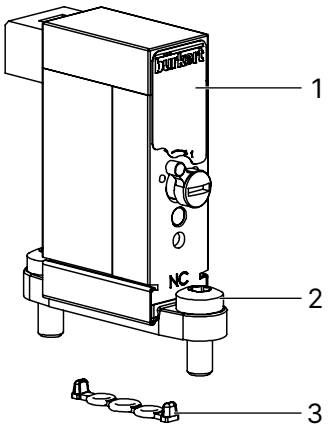

Fig. 6: Installation drawing for Bürkert flange FS35

1	Valve with flange	2	Fastening screws
3	Sealing gasket		

Hole pattern

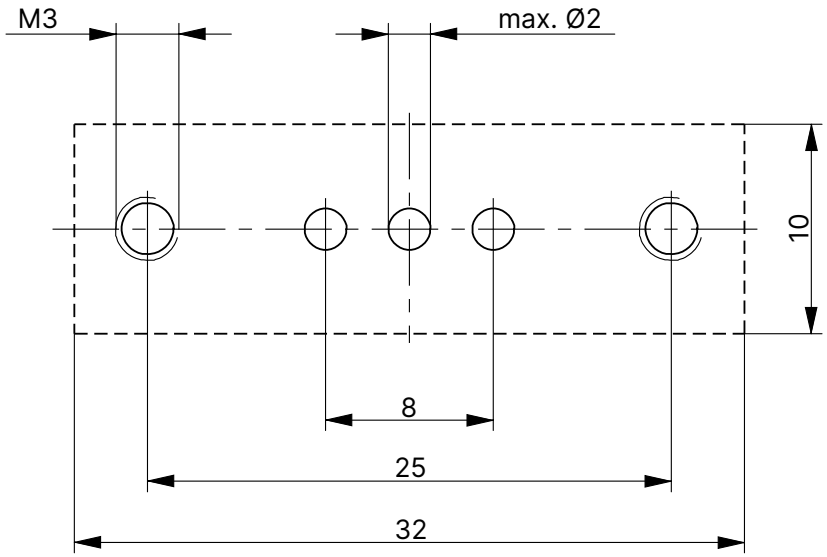

Fig. 7: Installation drawing for Bürkert flange FS35 – Hole pattern

- Place sealing gasket in the valve.
- Correctly assign fluid pin assignment 1, 2 and 3 on the valve and manifold.
- Drill holes according to the hole pattern.
- Screw the valve onto the manifold.
- Check the valve for tightness.

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5.3 Installation with angle flange

Installation drawing

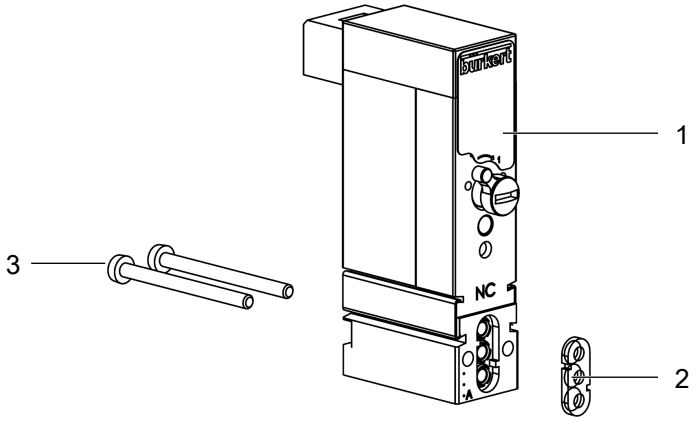

Fig. 8: Installation drawing for angle flange

1	Valve with flange	2	Sealing gasket
3	Fastening screws		

Hole pattern

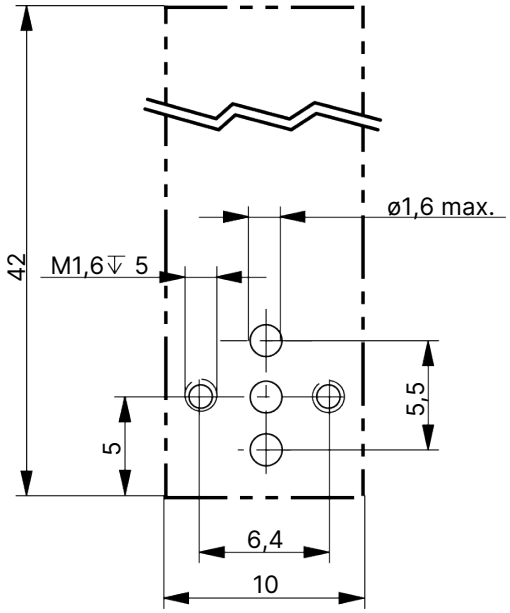

Fig. 9: Installation drawing for angle flange – Hole pattern

- Place sealing gasket in the valve.
- Correctly assign fluid pin assignment 1, 2 and 3 on the valve and manifold.
- Drill holes according to the hole pattern.
- Screw the valve onto the manifold.
- Check the valve for tightness.

5.4 Installation with angle flange FS33

Installation drawing

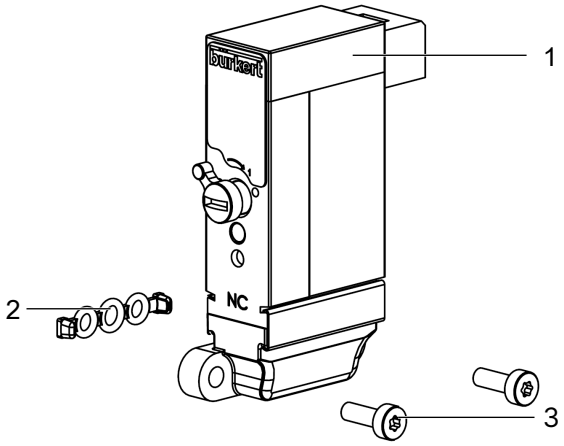

Fig. 10: Installation drawing for angle flange FS33

1	Valve with flange	2	Sealing gasket
3	Fastening screws		

Hole pattern

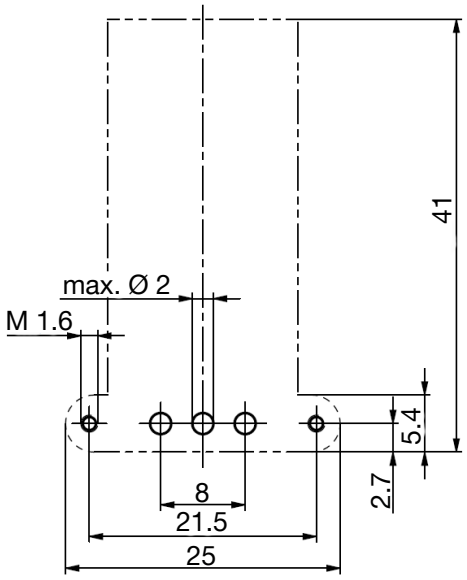

Fig. 11: Installation drawing for angle flange FS33 – Hole pattern

- Place sealing gasket in the valve.
- Correctly assign fluid pin assignment 1, 2 and 3 on the valve and manifold.
- Drill holes according to the hole pattern.
- Screw the valve onto the manifold.
- Check the valve for tightness.

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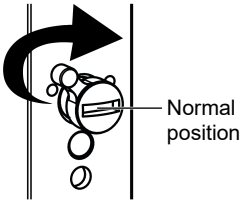
5.5 Override device manually

The valve can be operated manually via manual override

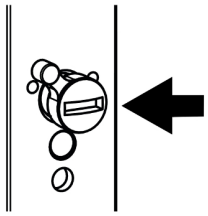
NOTICE!

Damage to manual override by pressing and turning at the same time.
Do not press and turn manual override at the same time.

Switch positions of the manual override



Lock function:
Rotated 90° = latching switching



Push function:
Press = brief actuation

Tab. 2: Switch positions of the manual override

NOTICE!

When manual override is locked, the valve can no longer be electrically actuated.

5.6 Variant description

The position and function of the manual override and the position of the fluidic connections vary depending on the variant (see table below).

Description of the manual override		
Circuit functions	Location of manual override on fluidic port	Possible function of the manual override
WWC	P (NC)	Locks and keys
	R (NO)	Locks
WWD	P (NO)	Locks
	R (NC)	Locks and keys

It is possible to order a variant with additional overwind protection.

If the manual override is used regularly, the variant with additional overwind protection is recommended. This is available on request. The additional overwind protection cannot be fitted retrospectively.

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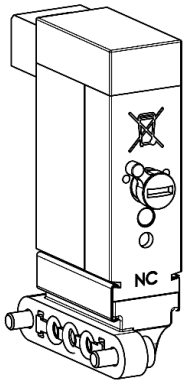
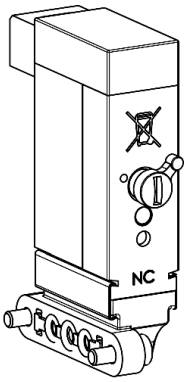
NOTICE!

For devices without overwind protection, do not insert any objects into the holes

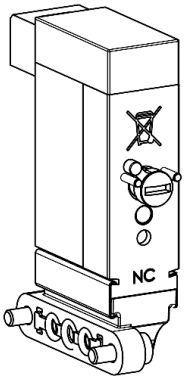
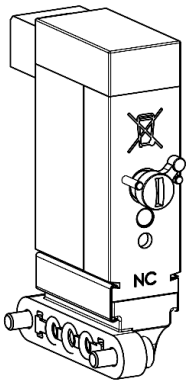
The holes next to the manual override are present on all device variants.

Certain variants of the valve are equipped with additional overwind protection at the factory.

- For devices without additional overwind protection, do not insert any objects into the holes.
- Contact Bürkert service if you have any questions.

Manual override standard	
	
Zero position standard	Switch position standard

Tab. 3: Manual override standard

Manual override with additional overwind protection	
	
Zero position with additional overwind protection	Switch position with additional overwind protection

Tab. 4: Manual override with additional overwind protection

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6 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.

- Create the fluidic connections to the device.

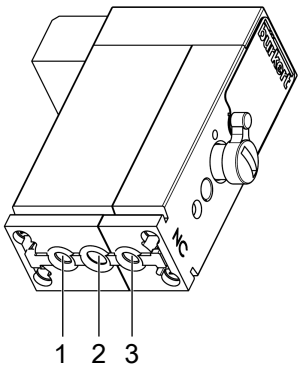

Fig. 12: Position of the fluidic connections

1	NO port	2	Port
3	NC port		

Circuit function	NO port	Port	NC port
Standard			
C	OUT	OUT	IN
D	IN	OUT	OUT
T	IN/OUT	IN/OUT	IN/OUT
Impulse			
K	OUT	OUT	IN
S	IN/OUT	IN/OUT	IN/OUT

Tab. 5: Correct connection

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7 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.

NOTICE!

Device damage

The device is designed for battery voltage. Do not use technical DC voltage. Correct polarity is a prerequisite for the function of the device.

- Connect device electrically.

7.1 Connect pulse variant electrically

- Connect the device according to the following table.

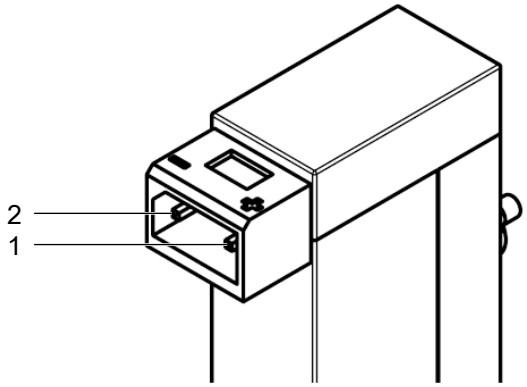

Fig. 13: Electrical connection of the pulse variant

1 Pin +	2 Pin -

Control electronics for pulse variants		Pulse length min. 50 ms	
		1	2
WW K 3/2-way impulse solenoid valve Direct-acting Note the flow direction	NC→ COM (open)	+	–
	COM → NO (open)	–	+
WW S 3/2-way impulse solenoid valve Direct-acting Flow direction optional	NC ⇄ COM (open)	+	–
	COM ⇄ NO (open)	–	+

Tab. 6: Polarity for switching pulse

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8 Maintenance

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.

The device operates maintenance-free if the instructions in this operating instructions are followed.

8.1 Cleaning

NOTICE!

Avoid causing damage with cleaning agents.

- Before cleaning, check that the cleaning agents are compatible with body materials and seals.

- Only use commercially available cleaning agents for external cleaning.

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9 Troubleshooting

Check in case of faults:

- Port connections
- Operating pressure
- Power supply and valve control

If the valve still does not switch, contact Bürkert Service.

10 Logistics

10.1 Transport and storage

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

10.2 Disposal

Environmentally friendly disposal

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

Further information at country.burkert.com

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