

Type 6164

2/2- and 3/2-way cartridge solenoid valve



Operating Instructions

We reserve the right to make technical changes without notice.

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1 OPERATING INSTRUCTIONS

The operating instructions describe the entire life cycle of the device. Keep these instructions in a location which is easily accessible to every user, and make these instructions available to every new owner of the device.

Important safety information.

Read the operating instructions carefully and thoroughly. Study in particular the chapters entitled “[Basic safety instructions](#)” and “[Authorized use](#)”.

- ▶ The operating instructions must be read and understood.

1.1 Definition of term

The term “device” used in these instructions always stands for the cartridge solenoid valve Type 6164.

1.2 Symbols

The following means of representation are used in these instructions.



DANGER!

Warns of an immediate danger!

- ▶ Failure to observe the warning may result in a fatal or serious injury.



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 this warning may result in a moderate or minor injury.

NOTE!

Warns of damage to property!



Indicates important tips and recommendations.



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

- ▶ designates instructions for risk prevention.

→ designates a procedure which you must carry out.

2 AUTHORIZED USE

Non-conforming use of the cartridge solenoid valve Type 6164 may be a hazard to people, nearby equipment and the environment.

- ▶ The cartridge solenoid valve has been designed for application as a pneumatic valve. It controls neutral gases.
- ▶ Do not use the Type 6164 outdoors.
- ▶ In the potentially explosive area use Type 6164 only according to the specification on the separate Ex identification. To use the device, observe the additional information with safety instructions for the Ex area enclosed with the device.
- ▶ Do not use devices without a separate Ex identification in the potentially explosive area.
- ▶ Only use the device in combination with installation dimensions recommended by Bürkert.
- ▶ The device must be used in compliance with the characteristics and commissioning and use conditions specified in the contractual documents and in the user manual.
- ▶ Correct transportation, correct storage and installation and careful use and maintenance are essential for reliable and faultless operation.
- ▶ Use the device 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 in the system or device.

- ▶ Before working on the system or device, cut off the pressure and deaerate or drain lines.

Risk of injury due to electrical shock.

- ▶ Before working on the system or device, switch off and isolate the power supply to prevent reactivation of the device.
- ▶ Observe applicable accident prevention and safety regulations for electrical equipment!

Risk of burns or risk of fire if used for a prolonged duty cycle through hot device surface.

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

General hazardous situations.

To prevent injury, ensure:

- ▶ Secure the device from unintentional actuation.
- ▶ Only trained technicians may perform installation and maintenance work.
- ▶ Install the valves in accordance with the valid regulations of the respective country.
- ▶ After an interruption in the power supply, ensure that the process is restarted in a defined or controlled manner.
- ▶ Observe the general rules of technology.

To prevent damage to property of the device, ensure:

- ▶ Do not use the cartridge solenoid valve for fluids.
- ▶ Do not feed aggressive or combustible media into the media connections of the system.
- ▶ Do not carry out any external modifications to the devices.

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
E-mail: info@burkert.com

International

Contact addresses are found on the Internet under:
country.burkert.com

4.2 Warranty

The warranty is only valid if the device Type 6164 is used as authorized in accordance with the specified application conditions.

4.3 Information on the Internet

The operating instructions and data sheets for Type 6164 can be found on the Internet at: country.burkert.com

5 TECHNICAL DATA

5.1 Operating conditions



WARNING!

Risk of injury due to malfunction if device used outdoors.

- ⓘ Do not use the device outdoors and avoid heat sources which may cause the permitted temperature range to be exceeded.

Permitted temperature¹⁾

Design	Ambient temperature	Medium temperature
Standard	-10...+55 °C	-10...+55 °C
Special design (variable code NF22 in the device key)	-20...+55 °C	-20...+55 °C

¹⁾ Deviating temperature ranges will be approved after technical clarification.

NOTE!

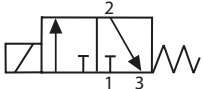
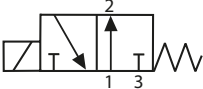
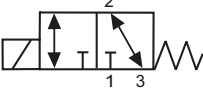
The specifications with respect to the ambient temperature apply in general to a single valve installation and to a row of valves installed in a brass block (voltage tolerance $\pm 10\%$; duty cycle 100 %). If installation materials or installation situations differ, the specified ambient temperature can be reached by reducing the voltage tolerance to $\pm 5\%$.



If parts of the compressed air network are subject to lower temperatures than the ambient temperature, select the humidity class so that the pressure dew point is 10 K below the minimum expected temperature to prevent the risk of icing over. To do this, observe DIN ISO 8573-1.

- Medium: compressed air, neutral and gaseous media (filtering 10 μm), technical vacuum
- Life time: if devices have device key NL07 (installation without lubrication), the life time will be reduced accordingly
- Degree of protection: in the installed state depending on the electrical connection:
 Pins: IP00
 Special plug: IP40
 Wires: IP54
- Protection class: 3 according to IEC 61140

5.2 Fluidic data

Circuit function		
C		3/2-way valve, direct-acting, de-energized output 2 depressurized
D		3/2-way valve, direct-acting, de-energized output 2 pressurized
T		3/2-way valve, universally applicable

Fluidic connections		
1	P	Pressure port
2	A	Working port
3	R	Exhaust air port

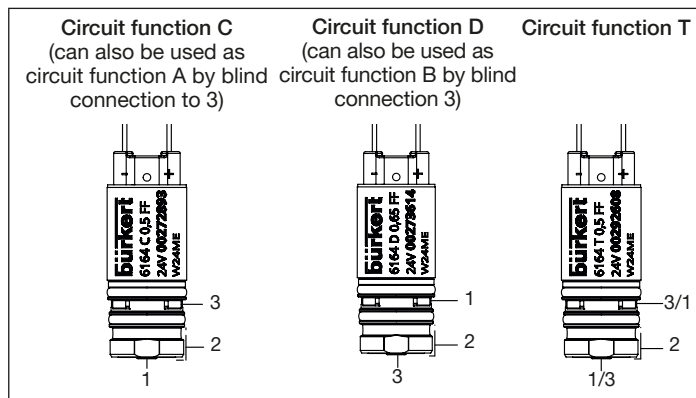


Fig. 1: Fluidic connections

5.3 Designation



Fig. 2: Designation on the device (example)

6 INSTALLATION

6.1 Safety instructions



DANGER!

Risk of injury from high pressure in the system or device.

- ▶ Before working on the system or device, cut off the pressure and deaerate/drain lines.
- ▶ Observe applicable accident prevention and safety regulations for electrical equipment.



WARNING!

Risk of injury from improper installation.

- ▶ Installation may be carried out only by trained technicians and with the appropriate tools. Warning: Sharp solder pins.

Risk of injury due to inadvertent switching on of the system and uncontrolled restart.

- ▶ Secure system against unintentional activation.
- ▶ Following installation, ensure a controlled or defined restart.

6.2 Installation space of the cartridge solenoid valve

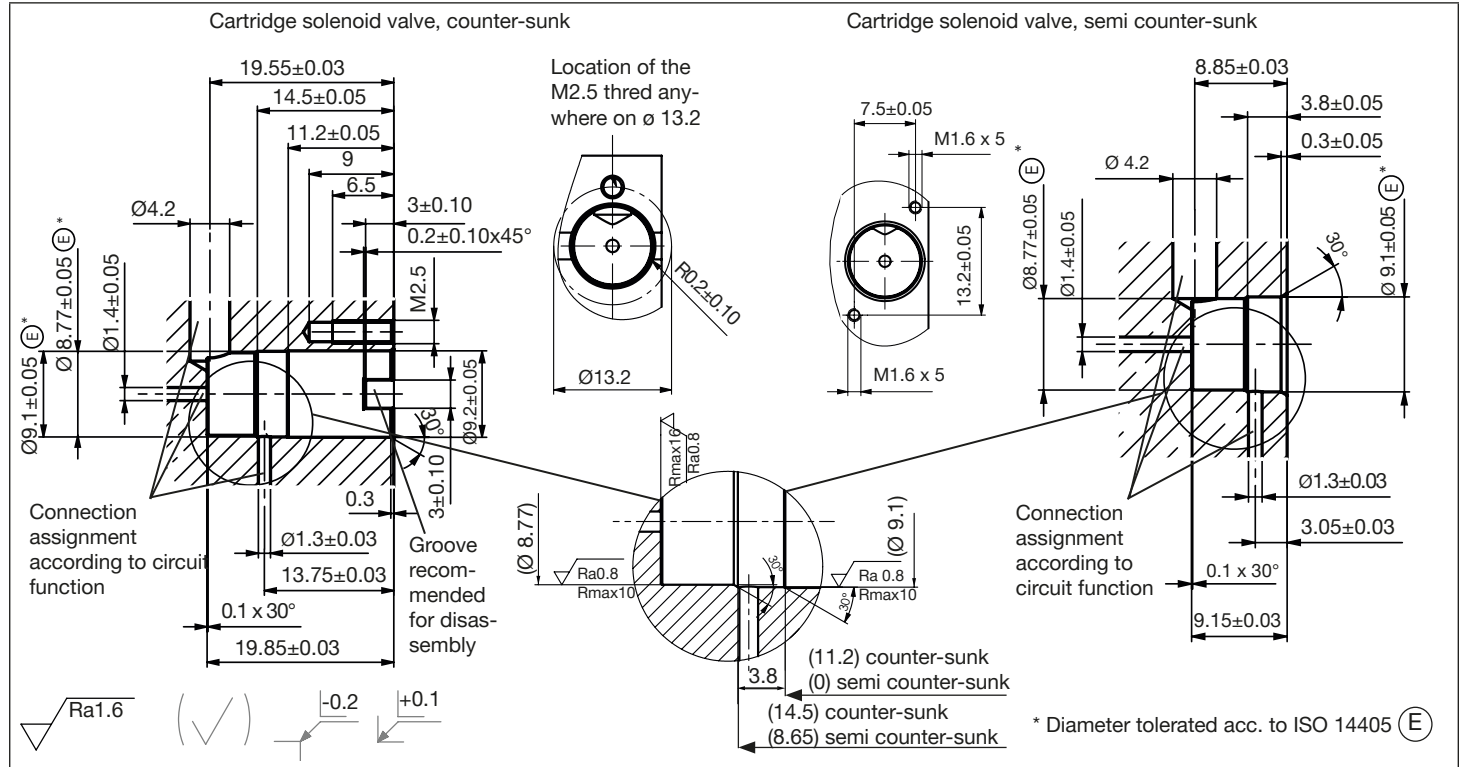


Fig. 3: Installation space for counter-sunk and semi counter-sunk cartridge solenoid valve

6.3 Installation of Type 6164

→ Check the O-rings at the valve and the installation space for cleanliness.

! Outer O-rings are provided with an anti-friction coating at the factory. If required, use a suitable lubricant (e.g. water) during installation.

→ Define the alignment of the electrical contacting, use the front bore for this purpose (see “Fig. 4” right).

NOTE!

Damage to device caused by transverse forces on encapsulation or pin.

▶ Do not touch the socketing or pin.

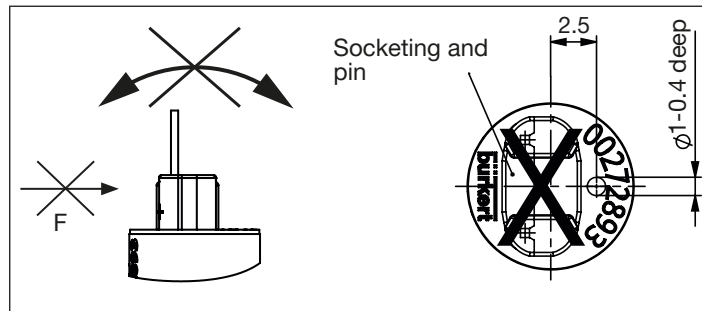


Fig. 4: Alignment of the electrical contacting

→ Install the valve (it can no longer be moved when installed).
In the case of the semi counter-sunk model, the pins can be

aligned in relation to the screw axis only in the areas highlighted in gray (see “Fig. 5”).

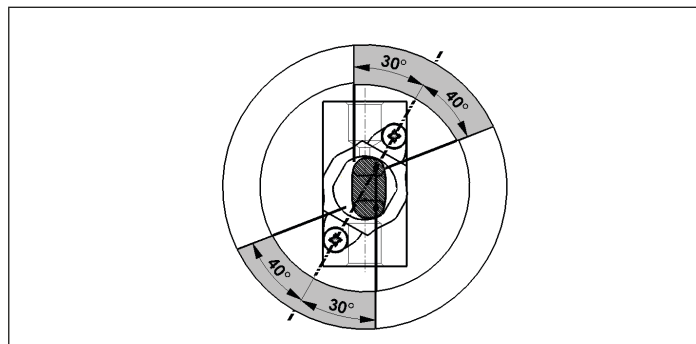


Fig. 5: Alignment of the pins for the semi counter-sunk valve

→ Secure the valve using the supplied fasteners (screw, bracket). To ensure that the valve functions perfectly, screw the screw head as far as the block support and ensure that the bracket is correctly positioned.

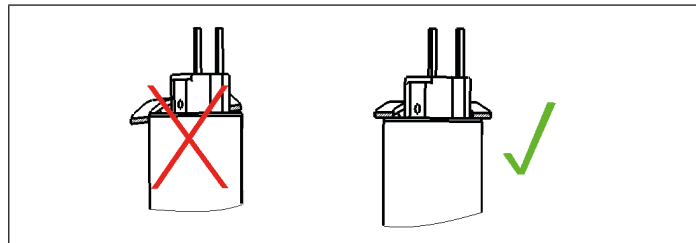


Fig. 6: Correct position of the bracket

- Observe tightening torques:
- counter-sunk valves max. 0.65 Nm,
 - semi counter-sunk valves depending on material of the mounting block (e.g. brass max. 0.12 Nm).

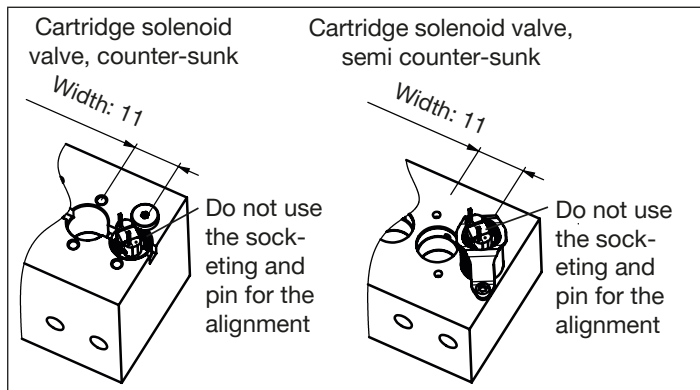


Fig. 7: Installation of the cartridge solenoid valve

- Contact the valve electrically.

6.4 Electrical connection

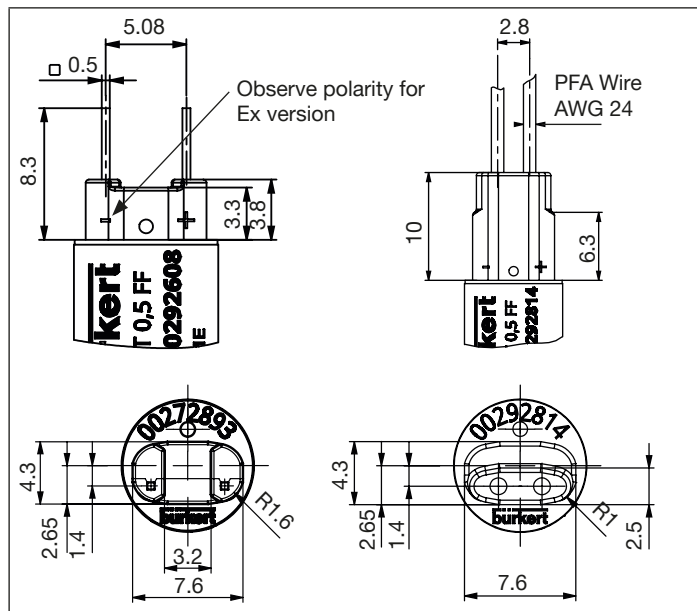


Fig. 8: Electrical connection



When directly soldering pins, do not exceed maximum soldering temperature of 350 °C short term.

6.5 Electrical installation

Voltage supply:	DC, Tolerance $\pm 10\%$ UL recognized (Code PU01): only for connection to a NEC Class 2 supply
Power consumption:	0.7 W (standard) see data sheet for further versions
Nominal operating mode:	Continuous operation, on time 100 %

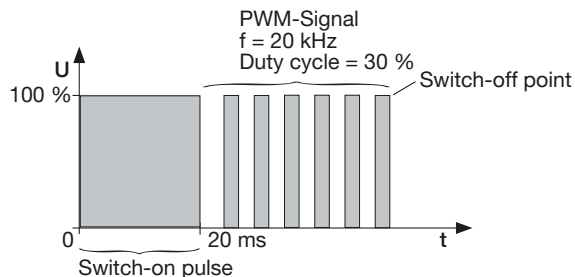
All devices of Type 6164 with the LT feature in the device key must be operated with an external power reduction.

NOTE!

Malfunction due to overheating.

If devices with the LT feature in the device key are operated without a power reduction, overheating may occur.

If a power reduction is applied, the following parameters must be used:



Characteristic values for intermittent operation according to DIN VDE 0580:

t_{SD} - Cycle time

t_{ED} - Duty cycle

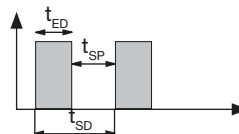
t_{SP} - De-energized pause

ED - Relative duty cycle

SH - Switching frequency

$$t_{SD} [s] = \frac{60}{SH \left[\frac{1}{\text{min}} \right]}$$

$$t_{ED} [s] = \frac{ED [\%]}{100} \times t_{SD} [s]$$



$$t_{SP} [s] = t_{SD} [s] - t_{ED} [s]$$

Permitted operating conditions during intermittent operation:

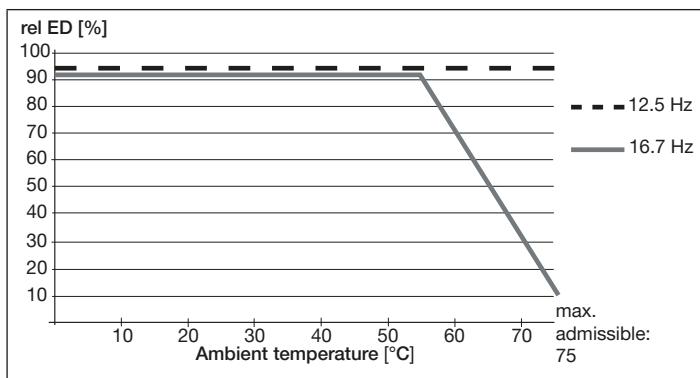


Fig. 9: Relative duty cycle (ED)

7 MAINTENANCE, TROUBLESHOOTING



WARNING!

Risk of injury from improper maintenance work.

- ☒ Maintenance may be carried out only by trained technicians and with the appropriate tools.
- ☒ Secure system against unintentional activation.
- ☒ Following maintenance, ensure a controlled restart.

7.1 Maintenance

The device is maintenance-free under normal conditions.

7.2 Troubleshooting

In case of a fault, check:

- Port connections in accordance with circuit function.
- Operating pressure.
- Voltage supply and valve control.

If the valve still fails to respond, please contact the Bürkert Service dept.

8 SHUTDOWN

8.1 Safety instructions



DANGER!

Risk of injury from high pressure in the system or device.

- ▶ Before working on the system or device, cut off the pressure and deaerate or drain lines.



WARNING!

Risk of injury from improper disassembly.

- ▶ Disassembly may be carried out only by trained technicians and with the appropriate tools. Warning: Sharp solder pins.

8.2 Disassembly

Disassembly of type 6164 is not intended. If disassembly is still necessary, proceed as follows:

- Switch off the pressure and drain the lines.
- Remove the electrical contacts.
- Loosen the fasteners (screw, bracket).
- Use suitable pliers to take hold of the valve in the provided groove and extract it out.

NOTE!

Damage to device caused by transverse forces on encapsulation or pin.

- ▶ Do not touch the socketing or pin.

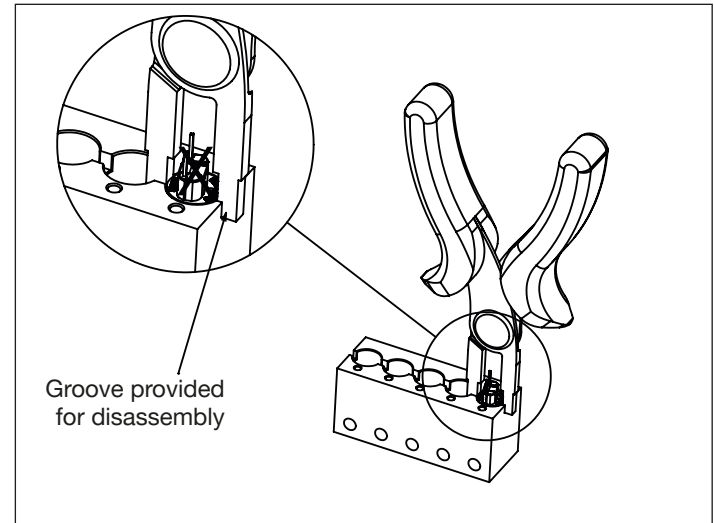


Fig. 10: Extracting a cartridge solenoid valve

- Prior to installation of a new valve, thoroughly clean the installation space.

9 TRANSPORT, STORAGE, DISPOSAL

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: -10...+55 °C.

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 country.burkert.com.

country.burkert.com