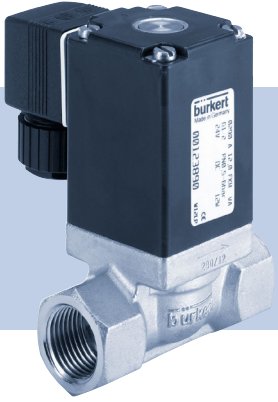
bürkert
FLUID CONTROL SYSTEMS

Type 0290

2/2-way solenoid valve
2/2-Wege Magnetventil
Electrovanne à 2/2 voies



Operating Instructions

Bedienungsanleitung
Manuel d‘utilisation

По вопросам продаж и поддержки обращайтесь:

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1 OPERATING INSTRUCTIONS

The operating instructions contain important information.

- Read the operating instructions carefully and follow the safety instructions in particular, and also observe the operating conditions.
- Operating instructions must be available to each user.
- The liability and warranty for the device are void if the operating instructions are not followed.

1.1 Symbols

▸ designates an instruction to prevent risks.

→ designates a procedure which you must carry out.

Warning of injuries:

⚠ **DANGER!**
Immediate danger. Serious or fatal injuries.

⚠ **WARNING!**
Possible danger. Serious or fatal injuries.

⚠ **CAUTION!**
Danger. Moderate or minor injuries.

Warning of damage:

NOTE!

2 INTENDED USE

Incorrect use of the solenoid valve Type 0290 can be dangerous to people, nearby equipment and the environment.

- The device is designed for dosing, blocking, filling and aerating media.
- Provided the cable plug is connected and installed correctly, e.g. Bürkert type 2508, the device satisfies protection class IP65 in accordance with DIN EN 60529 / IEC 60529.
- Use according to the permitted data, operating conditions and conditions of use specified in the contract documents and operating instructions. These are described in the chapter entitled „4 Technical Data“.
- The device may be used only in conjunction with third-party devices and components recommended and authorised by Bürkert.
- Correct transportation, correct storage and installation and careful use and maintenance are essential for reliable and problem-free operation.
- Use the device only as intended.

2.1 Definition of term

In these operating instructions, the term “device” always refers to the solenoid valve Type 0290.

2.2 Approvals

Devices which bear the type approval mark were approved at the Kraftfahrtbundesamt under the type approval number

e1*72/245*2006/96*5791*00

and are put into circulation with the indicated type approval mark.

e 1
03 5791

You can obtain an excerpt from the type approval from the address below

Bürkert Werke GmbH
Zulassungsbeauftragter
Christian-Bürkert-Str. 13-17

3 BASIC SAFETY INSTRUCTIONS

These safety instructions do not make allowance for any contingencies and events which may arise during installation, operation and maintenance.

Danger – high pressure.

- Before loosening the lines and valves, turn off the pressure and vent the lines.

Risk of electric shock.

- Before reaching into the 0290, switch off the power supply and secure to prevent reactivation.
- Observe applicable accident prevention and safety regulations for electrical equipment.

Risk of burns/Risk of fire if used continuously through hot device surface.

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

Risk of injury due to malfunction of valves with alternating current (AC).

Sticking core causes coil to overheat, resulting in a malfunction.

- Monitor process to ensure function is in perfect working order.

Risk of short-circuit/escape of media through leaking screw joints.

- Ensure seals are seated correctly.
- Carefully screw valve and connection lines together.

Opening the valve briefly

If the pressure increases suddenly with the valve closed, the valve may open for a short time.

- Take safety precautions as required with hazardous media.

General hazardous situations. To prevent injury, ensure that:

- The system cannot be activated unintentionally.
- Installation and repair work may be carried out by authorized technicians only and with the appropriate tools.
- The device may be operated only when in perfect condition and in consideration of the operating instructions.
- The general rules of technology apply to application planning and operation of the device.
- The device may only be used in the explosion-protected area if an appropriate additional identification is attached to the type label. For use observe the additional information enclosed with the device together with safety instructions for the explosion risk area.
- After an interruption in the power supply or pneumatic supply, ensure that the process is restarted in a defined or controlled manner.

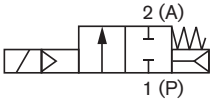
To prevent damage to property of the device, ensure:

- Do not physically stress the device (e.g. by placing objects on it, using it as a screwing aid, standing on it or using it as a lever arm).
- Do not make any external modifications to the device bodys. Do not paint the body parts or screws.

- **Coil power consumption** (active power in W - at operating temperature)
- **Pressure range**
- **Body material** brass (MS) or stainless steel (VA)
- **Seal material** FKM, EPDM, NBR

* see description of type label below

Operating principle 2/2-way valve:

A (NC)		2/2-way valve, direct-acting, normal output A unloaded

Type of protection: IP65 in accordance with DIN EN 60529 / IEC 60529 with correctly connected and installed device socket, e.g. Bürkert Type 2508

Ambient temperature: max. +55 °C
or see electrical operating conditions

The following values must also be observed for valves with UL/UR approval:				
Fluid	Temperatures [°F]	Seal materials		
		EPDM	NBR	FKM
Air	Fluid	-22...+194	+14...+176	+32...+194
	Ambient	-22...+130	+14...+130	+32...+130
Water	Fluid	+50...+194	+50...+176	+50...+194
	Ambient	+32...+130	+32...+130	+32...+130
Inert gas	Fluid	-22...+194	+14...+176	+32...+194
	Ambient	-22...+130	+14...+130	+32...+130

Permitted medium temperature depending on seal material and coil model:

Seal material	Model with High-power coil or rectifier AC/DC*	Model without electronics 50 Hz, 60 Hz*
NBR	-10...+80 °C	-10...+80 °C
FKM	0...+90 °C	0...+120 °C
EPDM	-30...+90 °C	-30...+100 °C

* Type label information

Permitted media depending on seal material:

Seal material	Permitted media
NBR	Neutral media, compressed air, water, hydraulic oil
FKM	Per-solutions, hot oils
EPDM	Oil and grease-free media e.g. hot water

Operating duration

Unless otherwise indicated on the type label, the solenoid system is suitable for continuous operation.

For variant with high-performance coil determine the maximum number of circuits according to the electrical operating conditions. This concerns devices with the following power (type label information):

80/6 W 90/7 W 100/9 W

120/8.5 W 120/10 W 130/9 W 145/10 W

Electrical operating conditions

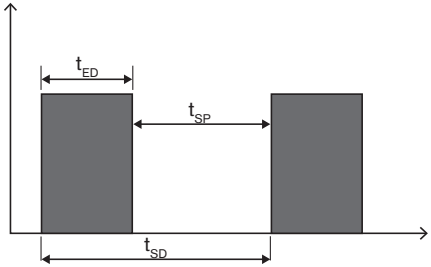
	With high-performance electronics AC/DC	Without electronics 50 Hz, 60 Hz
Ambient temperature (intermittent duty „Fig. 2“)	max. +70 °C	max. +55 °C
Operating mode (according to DIN VDE 0580)	Long-term operation Intermittent duty (Determination of the permitted operating parameters see „Fig. 1“ und „Fig. 2“)	Long-term operation Intermittent duty
Temperature protection switch	Device has a resettable temperature protection switch which switches the device off if unacceptable heating occurs during intermittent duty. Switches on again only after cooling down and after a new switching request.	without

Tab. 1: Electrical operating conditions

Intermittent operation for version with high-performance electronics AC/DC

Characteristic values (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



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

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

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

Fig. 1: Characteristic values intermittent operation for version with highperformance electronics AC/DC

Permitted operating parameters

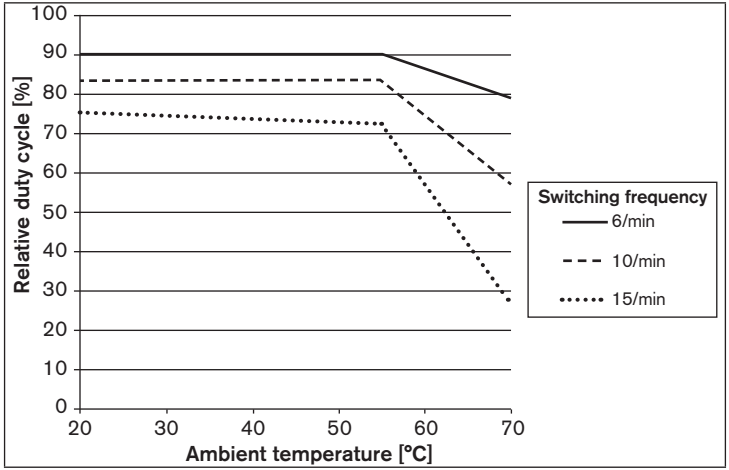


Fig. 2: Relative duty cycle (ED) depending on switching frequency and ambient temperature

Important information for functional reliability during continuous operation: If standstill for a long period at least 1-2 activations per day are recommended.

Service life
High switching frequency and high pressures reduce the service life.

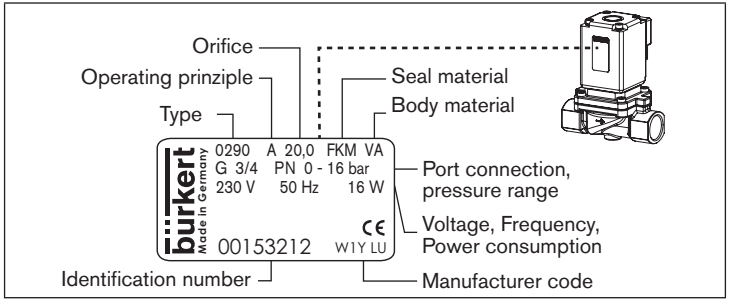
4.2 Conformity

In accordance with the EU Declaration of conformity, Type 0290 is compliant with the EU Directives (if applicable).

4.3 Standards

The applied standards, which verify conformity with the EU Directives, can be found on the EU-Type Examination Certificate and / or the EU Declaration of Conformity (if applicable).

4.4 Type label (Example)



5 INSTALLATION

5.1 Safety instructions

DANGER!

Risk of injury from high pressure in the equipment.

- Before loosening the pipes and valves, turn off the pressure and vent the pipes.

Risk of injury due to electrical shock.

- Before reaching into the device or the equipment, switch off the power supply and secure to prevent reactivation.
- Observe applicable accident prevention and safety regulations for electrical equipment.

WARNING!

Risk of injury from improper installation.

- Installation may be carried out by authorized technicians only and with the appropriate tools.

Risk of injury from unintentional activation of the system and an uncontrolled restart.

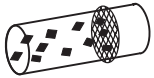
- Secure system from unintentional activation.
- Following assembly, ensure a controlled restart.

5.2 Before installation

Installation position: Installation can be in any position.
Preferably: Actuator upright.

→ Prior to installation check pipelines for dirt and, if required, clean.

Dirt filter: To ensure that the solenoid valve functions reliably, a dirt filter (≤ 400 µm) must be installed in front of the valve inlet.



NOTE!

For devices with approval according to the European Gas Appliances Directive it is essential to install the filter.

5.3 Installation

Sealing material must not get into the device.

→ Hold the device with a suitable tool (open-end wrench) on the body and screw into the pipeline.

NOTE!

Caution risk of breakage.

- Do not use the coil as a lever arm.

→ Observe direction of flow:
The arrow on the body indicates the direction of flow (no function in opposite flow direction).

5.4 Electrical installation

DANGER!

Risk of injury due to electrical shock.

- Before reaching into the system, switch off the power supply and secure to prevent reactivation.
- Observe applicable accident prevention and safety regulations for electrical equipment.

WARNING!

Danger of electrical shock if the protective conductor contact between the coil and body is missing.

- Always connect protective conductor.
- Check electrical continuity between coil and body.

Risk of short-circuit or escape of media through leaking screw joints.

- Ensure seals are seated correctly.
- Carefully screw together coil and device socket or valve and pipelines.

Note the voltage and current type as specified on the label.
Maximum residual ripple for direct current 10 %.

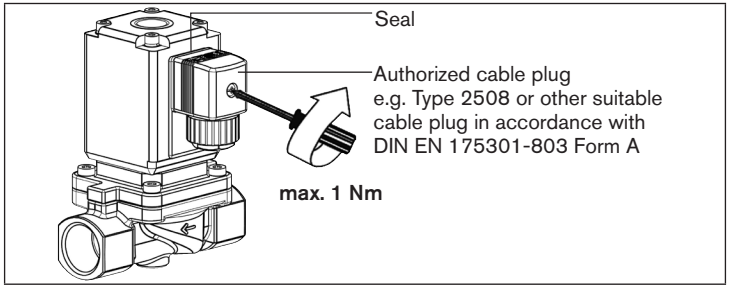


Fig. 3: Electrical installation

→ Tighten cable plug (for permitted types see data sheet), observing max. torque 1 Nm.

→ Check that seal is fitted correctly.

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

6 MAINTENANCE, TROUBLESHOOTING

6.1 Safety instructions

DANGER!

Risk of injury from high pressure in the equipment.

- Before loosening the lines and valves, turn off the pressure and vent the lines.

Risk of injury due to electrical shock.

- Before reaching into the system, switch off the power supply and secure to prevent reactivation.
- Observe applicable accident prevention and safety regulations for electrical equipment.

WARNING!

Risk of injury from improper maintenance.

- Maintenance may be carried out by authorized technicians only and with the appropriate tools.

Risk of injury from unintentional activation of the system and an uncontrolled restart.

- Secure system from unintentional activation.
- Following maintenance, ensure a controlled restart.

6.2 Malfunctions

If malfunctions occur, check whether:

- the device has been installed according to the instructions,
- the electrical and fluid connections are correct,
- the device is not damaged,
- all screws have been tightened,
- the voltage and pressure have been switched on,
- the pipelines are clean.

Malfunction	Possible cause
Valve does not switch	Short-circuit or coil interrupted
	Medium pressure outside the permitted pressure range
	core / core area is dirty
Valve does not close	Internal space of the valve is dirty

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

7 SPARE PARTS

CAUTION!

Risk of injury and/or damage by the use of incorrect parts.

Incorrect accessories and unsuitable spare parts may cause injuries and damage the device and the surrounding area.

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

7.1 Ordering spare parts

The spare parts sets SET 1 (coil set) or SET 3 (wearing parts set) can be ordered by quoting the identification number of the device.

NOTE!

For variants with approval a repair may be carried out by Bürkert only.

7.2 Overview of replacement spare sets

SET 1 = coil set
SET 3 = wearing parts set

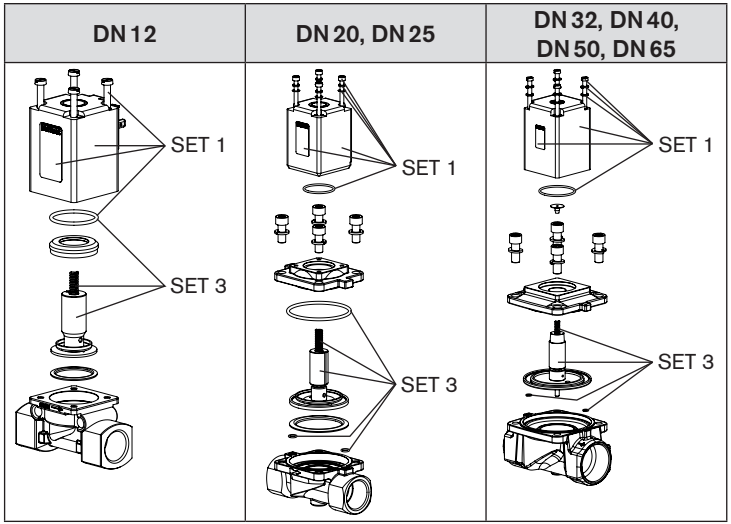


Fig. 4: Overview of replacement spare sets

8 PACKAGING, TRANSPORT, STORAGE, DISPOSAL

NOTE!

Transport damages.

Inadequately protected equipment may be damaged during transport.

- During transportation protect the device against wet and dirt in shock-resistant packaging.
- Avoid exceeding or dropping below the allowable storage temperature.

Incorrect storage may damage the device.

- Store the device in a dry and dust-free location.
- Storage temperature -40...+80 °C.

Damage to the environment caused by device components contaminated with media.

- Dispose of the device and packaging in an environmentally friendly manner.
- Observe applicable regulations on disposal and the environment.

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