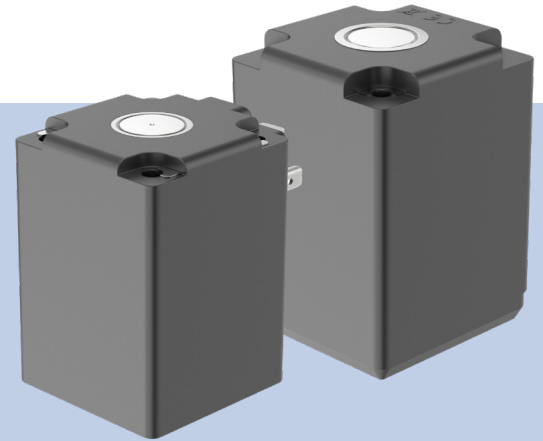


Solenoid coil Type 0243 / 0256

with connector Type 2509

Device with Hazardous Locations Class I Zone 2 Listing



Operating Instructions

We reserve the right to make technical changes without notice.
Technische Änderungen vorbehalten.
Sous réserve de modifications techniques.

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Operating Instructions 2406/01_EU-ML_00815483 / Original EN

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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 them available to every new owner of the device.

Operating instruction contain important information.

- ▶ Read the operating instructions carefully and follow the safety instructions in particular.
- ▶ 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 Terms and abbreviations

The terms and abbreviations in these instructions represent the following definitions:

Device/system	Solenoid coils 0243/0256 with connector Type 2509
Ex area	Potentially explosive atmosphere
Ex approval	Approval for potentially explosive atmosphere
Hazardous Locations	Explosion protection area USA/CA

1.2 Symbols

The following symbols are used in these instructions.



DANGER!

Warns of an immediate danger.

- ▶ Failure to observe these instructions will result in death or serious injuries.



WARNING!

Warns of a potentially hazardous situation.

- ▶ Failure to observe these instructions may result in serious injuries or death.



CAUTION!

Warns of a potential danger.

- ▶ Failure to observe these instructions may result in moderate or minor injuries.

NOTE!

Warns of damage!



Important tips and recommendations.



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

- ▶ Highlights instructions to avoid a danger.
- Highlights a procedure which you must carry out.

2 INTENDED USE

Non-authorized use of the solenoid coils Type 0243/0256 with 2509 may be a hazard to people, nearby equipment and the environment.

The solenoid coils Type 0243/0256 with 2509 are used to activate valves which control the gaseous or liquid media.

- ▶ A valve controlled by a solenoid 0243/0256 with 2509 may be used solely for the media specified in the data sheet and for use in Class I Zone 2 Hazardous Locations¹.
- ▶ The solenoid coil may be used only in conjunction with third-party devices and components recommended and authorized by Bürkert.
Variants with UL listing are only authorised for Type 2509 cable plugs.
- ▶ Only use the device for its intended purpose.

1) The NEC (NFPA70) article 501.5 and CSA C22.1 section 18 permits the following:

Equipment listed and marked in accordance with 505.9(C)(2) for use in Zone 0, 1, or 2 locations shall be permitted in Class I, Division 2 locations for the same gas and with a suitable temperature class.

2.1 Applied standards

USL - U.S. Listed certification in accordance with UL 429 and

UL 60079-0	EXPLOSIVE ATMOSPHERES - PART 0: EQUIPMENT - GENERAL REQUIREMENTS	Edition 7 - Revision Date 04/15/2020
UL 60079-7	STANDARD FOR EXPLOSIVE ATMOSPHERES - PART 7: EQUIPMENT PROTECTION BY INCREASED SAFETY "E"	Edition 5 - Revision Date 2017/04/21

CNL - Canada Listed certification in accordance with CSA C22.2 NO. 139 and

CSA C22.2 No 60079-0	EXPLOSIVE ATMOSPHERES - PART 0: EQUIPMENT - GENERAL REQUIREMENTS	Edition 4 – Issue Date 02/2019
CSA C22.2 No 60079-7	STANDARD FOR EXPLOSIVE ATMOSPHERES - PART 7: EQUIPMENT PROTECTION BY INCREASED SAFETY "E"	Edition 2 - Issue Date 2016/10/01

3 BASIC SAFETY INSTRUCTIONS

These safety instructions do not take into account any unforeseen circumstances and events which occur during installation, operation and maintenance.

The operator is responsible for observing the location-specific safety regulations, also with reference to personnel.



Risk of injury due to high pressure in the system or device.

- ▶ Before working on the system or device, switch off the pressure and ventilate or empty the lines.

Risk of injury due to 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.

Risk of burns or fire from hot device surfaces due to prolonged operation.

The solenoid can become very hot during continuous operation.

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



Risk of explosion.

Solenoids and valve bodies form a closed system after installation. When used in a potentially explosive atmosphere, there is a risk of explosion when the system is opened while in operation.

- ▶ Do not dismantle or open the system during operation.

Risk of explosion due to electrostatic discharge.

If there is a sudden discharge of electrostatically charged devices or people, there is a risk of explosion in the Ex area.

- ▶ Use suitable measures to ensure that electrostatic charges cannot occur in the Ex area.
- ▶ The device must not be used in areas with processes that generate heavy charges, involve automated grinding or cutting, the spraying of electrons (e.g. near electrostatic painting equipment) or generate pneumatically propelled dust.
- ▶ Clean the device surface by gently wiping it with a damp or anti-static cloth only.

To avoid the risk of explosions, the following must be observed in the Ex area:

- ▶ Information about temperature class, ambient temperature, degree of protection and voltage on the type label for the Ex area.
- ▶ Installation, operation and maintenance may only be performed by qualified personnel.

- ▶ Observe applicable safety regulations (as well as national safety regulations), as well as the general rules for the technology during setup and operation.
- ▶ Repairs may only be carried out by the manufacturer.
- ▶ Do not subject the device to mechanical and/or thermal stresses which exceed the limits described in the operating instructions.
- ▶ Do not disconnect connector while circuit is live

General hazardous situations.

To prevent injuries, observe the following:

- ▶ Secure the device or system against unintentional activation.
- ▶ Note the flow direction when installing.
- ▶ Following an interruption in the power supply, ensure that the process is restarted in a controlled manner.
- ▶ Do not use the device as a lever when screwing the valve into the line.

4 GENERAL NOTES

4.1 Contact addresses

Germany

Bürkert Fluid Control Systems
Sales Centre
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@buerkert.com

International

The contact addresses can be found on the back pages of the printed operating instructions.

They are also available online at: country.burkert.com

4.2 Warranty

A precondition for the warranty is that the solenoid coil types 0243 and 0256 are used as intended in consideration of the specified application conditions.

4.3 Information on the Internet

Operating instructions and data sheets for Bürkert products can be found online at: country.burkert.com

5 OPERATIONAL CONDITIONS OF THE DEVICES

5.1 Special conditions

- ▶ Only use the device in an area which has pollution degree 2 at least, as defined in IEC 60664-1.
- ▶ Ensure that the transient protection has been set to a value which does not exceed 140% of the rated peak voltage value on the supply connections of the device.
- ▶ Use the device only in a mounting position where it is protected against impact.

Installation advice

The information for the authorised ambient temperature concerns the single installation of the solenoids. If multiple solenoids are installed in one valve block:

- ▶ Prevent mutual heating by using a suitable distance.



WARNING!

Hazard due to electrostatic discharge.

If there is a sudden discharge of electrostatically charged devices or people, there is a risk of explosion in the Ex area.

- ▶ Use suitable measures to ensure that electrostatic charges cannot occur in the Ex area.
- ▶ The device must not be used in areas with processes that generate heavy charges, involve automated grinding or cutting, the spraying of electrons (e.g. near electrostatic painting equipment) or generate pneumatically propelled dust.
- ▶ Clean the device surface by gently wiping it with a **damp** or **anti-static cloth** only.

5.2 Structure

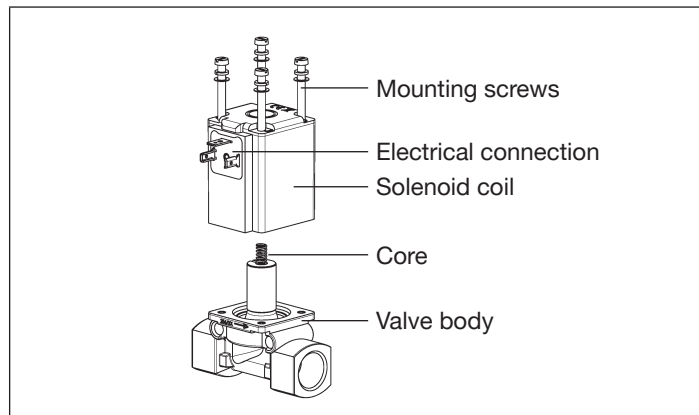


Fig. 1: Solenoid valve type 0290 with solenoid coil type 0256

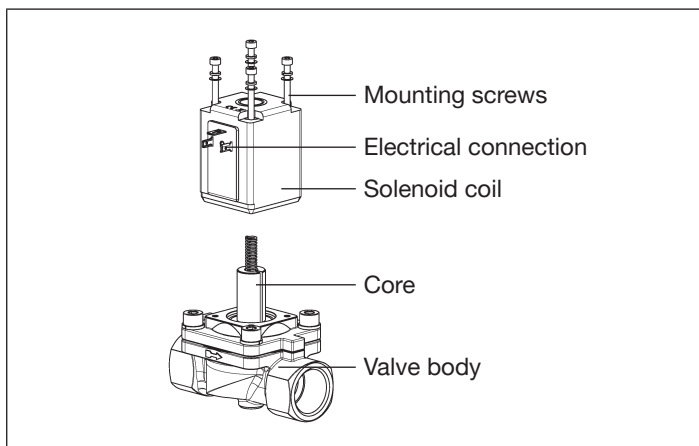


Fig. 2: Solenoid valve type 0290 with solenoid coil type 0243

5.3 Operating conditions

The valve provides a cooling function for the solenoid coil. The solenoid coil may not be operated without a valve. The valve body must meet the following requirements:

- Material
Metal (brass, stainless steel)
- Size not less than
60 mm by 60 mm by 52 mm for coils type 0243
40 mm by 40 mm by 38 mm for coils type 0256

5.4 Operating temperature range

Observe the operating temperature range specified in the electrical data for all valve types.

5.5 Supply connection

For connections, use wires suitable for at least +90 °C (+194 °F).

6 TECHNICAL DATA

6.1 Safety instructions



DANGER!

Risk of explosion.

If the technical safety information and values listed on the type label are not observed and complied with, dangerous situations could occur.

- ▶ Observe the degree of protection and temperature class for operating the device.

Exceeding the voltage stated on the type label is a technical safety risk that can cause the device to overheat.

- ▶ Do not connect the device to voltage higher than the one specified on the type label.

6.2 Standards and directives

The device complies with the relevant EU harmonisation legislation for non-Ex environments. In addition, the device also complies with the requirements of the laws of the United Kingdom for non-Ex environments.

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

6.3 Type label for Ex area

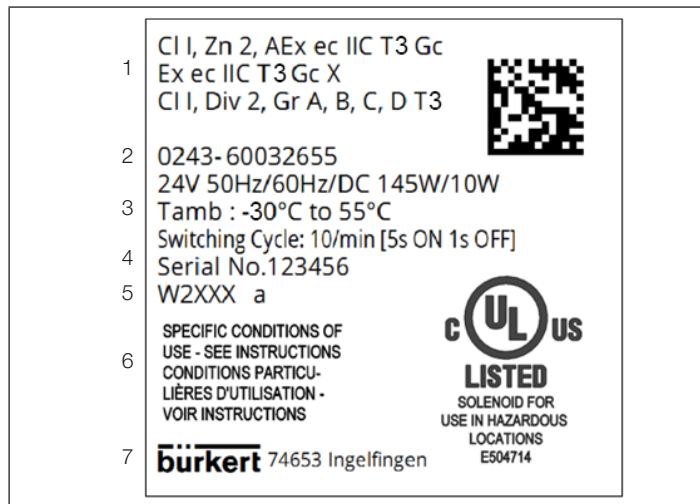


Fig. 3: Location and description of the Ex type label

Item	Description	Details
1 ²	Zone / Division Marking	CI I, Zn 2, AEx ec IIC T3 Gc Ex ec IIC T3 Gc X CI I, Div 2, Gr A,B,C,D T3
2	Type No. - ID No.	0243-60032655
3	Ratings	24 V 50 Hz, 60 Hz or DC 145W/10W Tamb: -30 °C...+55 °C Switched Cycle: 10/min [5s ON 1s OFF]
4	Serial No.	123456
5	Factory- /Date-Code	W2XXX a
6	Warnings / UL Mark	
7	Trandemark	

Tab. 1: Description of the Ex type label details

2) ANSI/UL 60079-0 National Deviation 29.19.1DV.1 and CAN/CSA-C22.2 No. 60079-0 Canadian Deviation 29.1A permits the following: Electrical equipment complying with all applicable Class I, Zone 0, Zone 1, or Zone 2, Group IIA requirements for any of the Class I, Zone 0, Zone 1, or Zone 2 types of protection are permitted to additionally be marked Class I, Division 2, Group D - along with the appropriate temperature class.

6.4 INSTALLATION AND DISASSEMBLY



DANGER!

Risk of injury due to high pressure in the system or device.

- ▶ Before working on the system or device, switch off the pressure and ventilate or empty the lines.

Risk of injury due to 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.

Risk of burns or fire from hot device surfaces due to prolonged operation.

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

Danger of short circuit due to damaged connection cables.

- ▶ Solenoid connection cables must be attached firmly and protected from damage.

Risk of explosion.

Solenoids and valve bodies form a closed system after installation. When used in a potentially explosive atmosphere, there is a risk of explosion when the system is opened while in operation.

- ▶ Do not dismantle or open the system during operation.
- ▶ Before connecting the cable plug ensure that all contacts as well as the terminal room are clean and dry.



DANGER!

Risk of explosion due to electrostatic discharge.

If there is a sudden discharge of electrostatically charged devices or people, there is a risk of explosion in the Ex area.

- ▶ Use suitable measures to ensure that electrostatic charges cannot occur in the Ex area.
- ▶ The device must not be used in areas with processes that generate heavy charges, involve automated grinding or cutting, the spraying of electrons (e.g. near electrostatic painting equipment) or generate pneumatically propelled dust.
- ▶ Clean the surface of the solenoid valve by gently wiping it with a damp or anti-static cloth only.



WARNING!

Risk of injury due to improper installation.

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

6.5 Installing the cable plug



Device must be installed in accordance with Article 505 of the National Electrical Code (ANSI/NFPA 70) for installation in the United States, or Section 18 of the Canadian Electrical Code for installations in Canada.



Detailed installation instructions can be found in the operating instructions of the respective valve and/or online at: country.burkert.com



An exact description of the installation can be found in the operating instructions for the cable plug attached to each cable plug and/or online at: country.burkert.com via searching for 2509.

6.6 Electrical connection



DANGER!

Risk of injury due to electric shock.

- ▶ Before reaching into the system, switch off the power supply and secure against reactivation.
- ▶ Observe the applicable accident prevention and safety regulations for electrical devices.

If there is no electrical contact between the metal valve components and the protective conductor of the solenoid, there is a risk of electric shock.

- ▶ Always connect the protective conductor.
- ▶ Check electrical continuity between the protective conductor of the solenoid and the core guide tube of the valve.

If solenoid coils feature a terminal box, also observe the following:

- ▶ Insert permanently installed cables and lines only.

6.7 Disassembly



DANGER!

Risk of injury due to high pressure in the system or device.

- ▶ Before working on the system or device, switch off the pressure and ventilate or empty the lines.

Risk of injury due to 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 should be performed only by trained personnel using suitable tools!

Risk of injury due to medium leaking out of loose connections.

- ▶ Carefully seal connection lines.

→ Disconnect electrical connection.

→ Disconnect valve body from the pipeline.

7 START-UP



WARNING!

Risk of injury due to improper operation.

Improper operation may result in injuries as well as damage to the device and the area around it.

- ▶ Before start-up, ensure that the operating personnel are aware of and have completely understood the contents of the operating instructions.
- ▶ The safety instructions must be followed and the device used only as intended.
- ▶ Only adequately trained personnel may start up the system or device.

Before start-up, ensure that

- The device is installed according to regulations,
- the connection has been properly made,
- the device is not damaged,
- all screws have been tightened.

8 MAINTENANCE, REPAIRS, TROUBLESHOOTING

8.1 Maintenance

The solenoid coil types 0243 and 0256 are maintenance-free if the operating conditions described in the instructions are observed.

8.2 Repair



DANGER!

Risk of injury due to improper repair.

The safety and function of the solenoid coil types 0243 and 0256 are and the accompanying solenoid valve can only be guaranteed after a repair if the repairs were done by the manufacturer.

- ▶ **Only** have the device repaired by the manufacturer!

8.3 Troubleshooting

In the case of malfunction, ensure that

- the device is installed according to regulations,
- the connection has been properly made,
- the device is not damaged,
- voltage and pressure have been applied,
- the pipelines are free,
- all screws have been tightened.

9 TRANSPORT, STORAGE, PACKAGING

NOTE!

Transport damage.

Inadequately protected devices may be damaged during transport.

- ▶ Use shock-resistant packaging to protect the device against moisture and dirt during transport.
- ▶ Avoid exceeding or falling below the permitted storage temperature.

Incorrect storage may damage the device.

- ▶ Permitted storage temperature $-30 \dots +55 \text{ }^{\circ}\text{C}$
($-22 \dots +131 \text{ }^{\circ}\text{F}$).
- ▶ Store the device in a dry and dust-free location.

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

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

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