

Operations Manual



Thank you for your purchase of solenoid valves from BC-Systemtechnik, Dortmund. This Operations Manual is intended to help you to use the products safely and correctly.

To ensure their functioning, and for your own safety, please read carefully the Reference Manual provided before beginning installation. If questions nevertheless arise, please contact a member of staff of BC-Systemtechnik.

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This Operations Manual applies for actuating solenoids of types

Valve solenoid 1569/xxx	⊕ Ex I M2 Ex mb I	DMT 01 ATEX E 163 X
Valve solenoid 2569/xxx	⊕ Ex II 2G Ex mb IIC T4	
Valve solenoid *.7.**.***	⊕ Ex I M2 Ex ia I Mb	DMT 02 ATEX E 089
Valve solenoid *.8.**.***	⊕ Ex II 2G Ex ia IIC T4 Gb	
Valve solenoid *.6.**.***	⊕ Ex I M2 Ex ia I Mb	DMT 02 ATEX E 089
Valve solenoid *.9.**.***	⊕ Ex II 2G Ex ia IIC T6 Gb	
Valve solenoid *.5.**.***	⊕ Ex I M2 Ex ia I Mb	DMT 02 ATEX E 089
Valve solenoid *.10.**.***	⊕ Ex II 2G Ex ia IIC T4 Gb	

General Conditions

- Failure to observe the Manual or incorrect handling during installation and servicing can lead to damage to the solenoid. This causes the warranty on devices and accessories to lapse, and we are no longer liable in any way whatsoever.
- Please always observe the permitted limits as determined on the type labels and inscriptions of the various devices.
- When selecting and using the devices, please observe the general rules of engineering.
- Keep in mind that connections and valves in systems which come under pressure must not become detached.
- **Warning: danger of injuries! The surface of the solenoid can become very hot in continuous use.**

For use in **areas where there is a risk of explosions**, the construction and VDE regulations must be observed. These are the guidelines determined in detail by the legislator and the specifications for developers of operating equipment and constructors and operators of the devices.

Generally, the valve must be suitable for the actual conditions prevailing on site. For specific information please refer to the operating instructions for the valve.

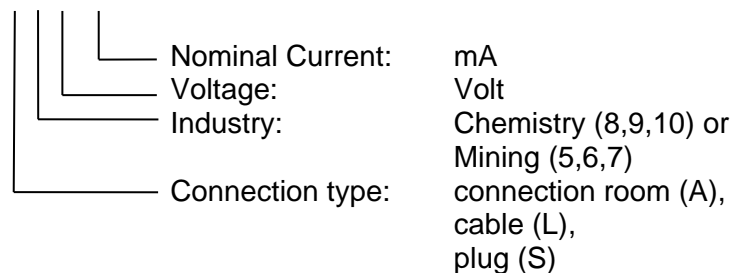
It should be noted that these valves **are not permitted for use with flammable or explosive gases or liquids**. The maximum surface temperature of the non-electric part depends on the operating temperatures of the fluid and the ambient temperature, should be below ignition temperature and should not exceed the specified temperatures.

Type code

Actuating solenoid BC-*569/***



Actuating solenoid BC-*.*.**.***



Description

These solenoids actuate distributing valves which are used to control liquid and gaseous fluids. The valves are constructed without a stuffing box, that is, the fluid does not come into contact with the solenoid. It is thus possible to remove the solenoid without opening the valve system. (Dry principle)

The solenoids are designed for anchor systems of the following sizes:

ø13 mm	(BC-1569 / BC-2569)
ø13 mm or ø14,5 mm	(BC-*.7.**.*** / BC-*.8.**.***) (with pole connectors)
ø 9 mm	(BC-*.6.**.*** / BC-*.9.**.***)
ø18 mm	(BC-*.5.**.*** / BC-*.10.**.***)

The solenoids are designed and constructed for ignition protection classes intrinsically safe (ia) and encapsulated (m), and must be used only with power supplies and valve control components designed, inspected and approved for the respective voltage, current and power.

The actuating solenoids of these types are supplied in three basic variants (connection compartment, plug, cable).

Electrical Parameters

The electrical parameters are determined in the certification. The data is given on the respective type labels, and must absolutely be observed.

	Mining	Chemistry
AC nominal voltage m	24 V, 42 V and 240 V	24 V, 42 V and 240 V
DC nominal voltage ia	12 V and 24 V	12 V and 24 V

Important: Mind maximum input current!

Limits

Maintenance of voltage limits (24 V AC, 42 V AC, 240 V AC or 12 V DC, 24 V DC) and temperature limits and observance of instructions for the device given in the technical specifications and delivery note are prerequisites for correct functioning.

For use in the security area, observe also the national determinations. A Declaration of Conformity is supplied with the Operations Manual in accordance with Directive 2014/34/EU.

Temperature

The ambient temperature must be within the range

$-20^{\circ}\text{C} \leq T_{\text{amb}} \leq +50^{\circ}\text{C}$ (for solenoid valve 1569/2569).

$-20^{\circ}\text{C} \leq T_{\text{amb}} \leq +65^{\circ}\text{C}$ (for solenoid valve *.5/6/7/8/10.**.***) or

$-20^{\circ}\text{C} \leq T_{\text{amb}} \leq +40^{\circ}\text{C}$ (for solenoid valve *.9.**.***) or

Tools

Normal combination wrenches and screwdrivers are required for attaching the solenoids.

Installation

Care must be taken that the pre-mounted device is not borne on the solenoid, and that the solenoid is not used as a lever during installation.

Any installation position may be chosen, but installation with the solenoid vertical is preferable.

Care must also be taken that the valve is securely attached. The pipeline connection must not be used for attachment. Separate attachment can be made with screws, spring ring or nut. This fixing should be carried out only by specialist personnel. The pipe connection of the valve must be made without mechanical tension.

- When installing the valve unit and solenoids, it must be ensured that there is no contamination in the pipes or the valve unit.
- Take care when installing the system that the O-ring on the flange is not damaged.
- Take care when installing and screwing in the connections that the cables and cable ends are correctly installed and connected in the connection clamp.
- Prevent sharp bends in the connecting cables in order to avoid short circuits and interruptions.
- Supply power from certified intrinsically safe electrical circuits. For details please contact a member of staff of BC-Systemtechnik.

The effective induction and capacitance on the connection clamps are negligibly small. The same specifications apply for use in accordance with IEC.

- Function values for the switching function with output resistance of 18 Ohms:
(Example shown for *.6.**.*** and *.9.**.*** solenoid):

Temperature	Minimum switching current	Nominal resistance of the sol.
+20°C	37 mA	275 Ohm
+50°C	37 mA	310 Ohm

- Before bringing the device into operation, it should be ensured that the whole machine or system conforms to the applicable regulations and the requirements of the EMC Directive.

It is imperative that installation is carried out by **specialist personnel** in accordance with the relevant **Operations Manual**.

To **de-install** the device, carry out the installation steps in reverse order. When de-installing, ensure that there is no pressure. Then separate the device from the mains power supply and take the device to authorised specialist personnel.

Operation

- Gas and liquids that do not influence the system and the sealing materials it contains come into consideration as permissible media.
- Avoid bringing the device into contact with fluid or corrosive media from the outside.
- The operating pressure of the device depends on the anchor/valve system used.
- Do not stress the system with deflection or torsion.
- Prevent sharp bends in the connecting cables and lacing in order to avoid short circuits and interruptions.

Maintenance (servicing and rectification of faults)

The devices are solenoids which do not require servicing. In the event of faults, check the cable connections, the electrical data, the operating pressure and correct installation.

Configuration

The solenoids are configured from works.

Familiarisation

When the installation is carried out by trained specialist personnel, no familiarisation period is required, since the device is simple to operate.

Special conditions

For the handling of the **m-solenoid** the following conditions have to be met:

- The connection of the solenoid must be in a casing that conforms to a certified protection type according to DIN EN 50014, 1.2.
- It has to be made sure that the media do not have any harmful effect on the armature assembly of the solenoid.
- The solenoid 1569/xxx may only be used in a mechanically protected environment.
- The solenoid has to be equipped with a thermal fuse with a maximum nominal power of the solenoid valve. The breaking capacity of the fuse has to be larger than the maximum possible short circuit power of the source.

The operation of the **ia-solenoids** is not subject to any special conditions.

Type label

The actuating solenoid is fitted with a type label, in a position offering good visibility, by means of rivets or a rapid adhesive. The labelling is permanently legible. It includes:

name of the manufacturer, address (Post Box) and the trade mark of the manufacturer
type designation, determined by the company BC-Systemtechnik (with year of manufacture)

the symbol Ex I M2 Ex mb I Mb or Ex II 2G Ex mb IIC T4 Gb or
 Ex I M2 Ex ia I Mb or Ex II 2G Ex ia IIC T4 Gb or
 Ex I M2 Ex ia I Mb or Ex II 2G Ex ia IIC T6 Gb

the short code for the ignition protection class applied

symbol for the group of the Ex component

the name of the symbol of the test centre

the number of the certification

information on the ambient temperature

and information on voltages and current

Only the German version is legally valid