

# SCHIENLE

## MAGNETTECHNIK

### Operating instructions

### Intrinsic safe solenoid

protection class  II 1G Ex ia IIC T6

 II 1D Ex ia IIIC T80°C

Type : 01 EX07 047x qzyz

 ATEX 95

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## 1 Introduction

The solenoid was designed, manufactured and tested in compliance with the standards and regulations generally applicable within the European Union (e.g. ATEX 95). On leaving the factory the solenoids safety-related conditions were proven to be faultless.

In order to maintain this status and to ensure safe operation, the operator has to read and observe the notes and warnings contained within this operating instruction.

The solenoid must only be installed and wire-connected by a qualified technician who is familiar with , works according to the generally accepted engineering standards, the latest legal regulations and standards of explosion protection.

## 2 Usage

The solenoid is provided for use in equipment protection level (EPL) Ga. The device is mounted on a hydraulic device. With this structure an actual heat conduction is warranted. Inside the solenoid, an electrical coil is installed. The activated coil generates a magnetic field, which executes a force on the solenoid movable part. This force changes the pressure or the flow rate of the medium and causes a hydraulic actuation which initiates further actuations.

An accurate dimension you can find on the page 9, figure 4.

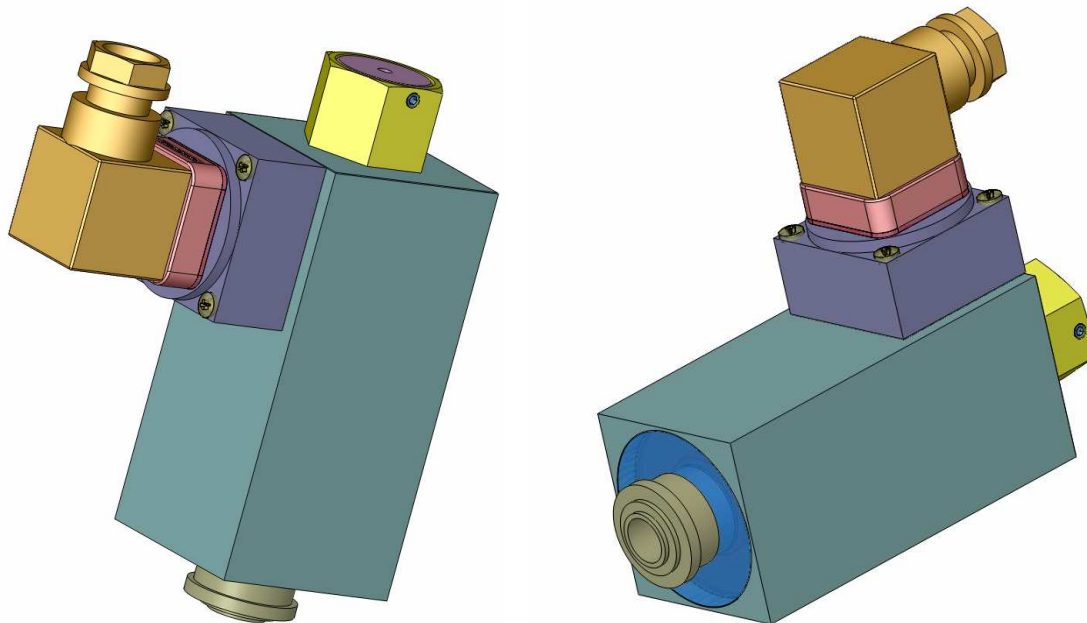


Figure 1 — Explosion-proof solenoid

### 3 Versions

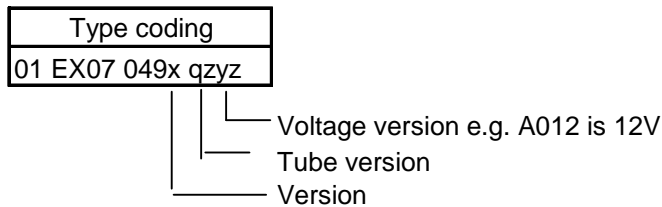
#### 3.1 Type coding

The solenoid is manufactured with different supply voltage and the same power input. The mechanical structure remains the same.

**Table 1 Versions**



Version	Labeling	Indication in the type coding
Intrinsic safe	 Ex II 1G Ex ia IIC T6	B
	 Ex II 1D Ex ia IIIC T80°C	

**Table 2 Type coding**



Example : 01 EX07 049B A012 is run with a 12V coil

**Table 3 Voltage versions and current consumption**

Version	Voltage	Resistance	Limiting current	Suppressor	EX - Labeling
	$U_N$	$R_{20}$	$I_G$		
	[VDC]	[Ω]	[A]		
01 EX07 049B A012	12	150	0,08	2x free wheeling diode 1x bridge rectifier	 Ex II 1G Ex ia IIC T6  Ex II 1D Ex ia IIIC T80°C

### 3.2 Label

#### 3.2.1 Protection class intrinsic safe, EPL Ga – Version B



Figure 2 — Type label

## 4 Technical data

### 4.1 General parameters

- Protection type EN 60529, IEC 60529: IP 65
- Operating pressure: max. 300 bar
- Cracking pressure (static): 900 bar
- Coils and coil area are moulded water-proof and indecomposable.
- Insulation class according to DIN VDE 0580 „F“ (155C°)
- Protection (casing): Zinc-nickel coated
- Maximum temperature of medium (normally hydraulic oil): 70°C
- Ambient temperature: -20°C until +40°C

### 4.2 Electrical data

#### 4.2.1 Generally

The electrical data vary depending on the version of the solenoid, see point 3, table 3.

#### 4.2.2 Intrinsic safe – versions

This device is classified for device category 1G and 1D.

- Nominal voltage:  $U_N = 12[V\ DC]$
- Limiting current:  $I_G = 0,08 [A]$
- Input voltage:  $U_i \leq 21 [V]$  (Suggestion BXNE412002 Fa. Georgin)
- Input current:  $I_i = 0,4 [A]$  (Suggestion BXNE412002 Fa. Georgin)
- Input power:  $P_i = 2 [W]$
- Resistance at 20°C:  $R_{20} = 150 [\Omega] \pm 5\%$
- Power-on-time: S1 (100%ED)
- Cold power:  $P_{20} = 1,22 [W]$
- Protection circuit: Free whiling diodes and bridge rectifier

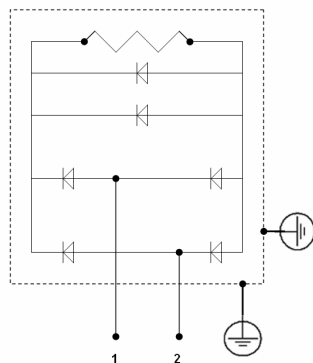


Figure 3 — Electrical connection

## 5.0 Installation and implementing

### 5.1 Generally

The protection class is performed on the label of the solenoid.

The maximum ambient temperature range of  $-20^{\circ}\text{C}$  up to  $+40^{\circ}\text{C}$  and the maximum temperature of the medium (as a rule hydraulic oil) of  $70^{\circ}\text{C}$  shall not be overstepped.

It is the users duty to ensure free and unhindered heat emission during the operation. That means that the solenoid shall neither be covered nor stored adjacent to heat sources during the operation. Care is to be given that the solenoid is not subjected to direct sunlight during operation.

The connection cable must be passed sufficiently protected.

Additionally, the solenoid must be connected to ground via the purpose-built ground clamp at the connector casing.

The maximum cable capacities and inductivities must be keep. The activation should be installed outside the EX-area. The connection cable must be marked with a blue colour on the intrinsic safe side.

### 5.2 Mounting, Demounting

The solenoid consists of several individual components. These components are fine-tuned to one another and shall not be replaced or demounted individually.

### 5.3 Solenoid with the protection class intrinsic safety

Here the protection class „i<sub>a</sub>“ applies. The colour of the cable is light blue.

Intrinsically safe devices („Ex i“) shall only be operated with an intrinsically safe power supply unit, (U<sub>0</sub>, I<sub>0</sub>, P<sub>0</sub>). Schienle GmbH suggests BXNE412002 company Georgin.

Intrinsically safe circuits with intrinsically safe power supply units shall be galvanic separated from one another and from other not - intrinsically safe circuits.

## 6 Maintenance, service, troubleshooting

The solenoid is largely maintenance-free. The electrical connection shall regularly be inspected on damages (visual inspection).

The solenoid's surface is to be checked to dust deposits and is to be cleansed at regular intervals.

The user must not try to open or to repair the device. When failure or damage occurs, the device is to be replaced.

## 7 Norms and regulations

**Regulation 94/9/EG** of European parliament and of the European council  
(known as ATEX 95)

**Regulation 1999/92/EG** of European parliament and of the European council  
(known as ATEX 137)

**DIN VDE 0580**, release 2000-07

Electromagnetic devices and components - general requirements

**EN 60079-0** Explosive atmospheres - Part 0: Equipment - General requirements (IEC 60079-0:2007);  
German version EN 60079-0:2009

**EN 60079-11** Explosive atmospheres - Part 11: Equipment protection by intrinsic safety "i"  
(IEC 60079-11:2006); German version EN 60079-11:2007

**EN 60079-25** Electrical apparatus for explosive gas atmospheres - Part 25: Intrinsically safe systems  
(IEC 60079-25:2003); German version EN 60079-25:2004

## 8 Hints of security – read carefully !

- When failure, external damage or defect (also significant corrosion) occurs, the device has to be shut down and replaced.
- No sedimentations on the solenoid surface shall affect the heat emission.
- In order not to affect the readability of the solenoid label, the solenoid must not be varnished.
- Before executing any operation, the solenoid shall be disconnected from the power supply.
- A solenoid shall always be replaced. It must never be repaired!
- No modifications, which could affect the explosion-safety, must be carried out on the solenoid, on the cable gland or on the cable.
- A solenoid must not be operated separately from the hydraulic valve. See point 5.0
- A solenoid must only be demounted in a non-explosive-area.
- A system approval for the concrete circuit is not necessary when using the suggested intrinsic safe power supply unit BXNE412002, Georgin company.

**Any warranty claims are denied in case the regulations in this operating manual are not observed !**



## 9 Drawing

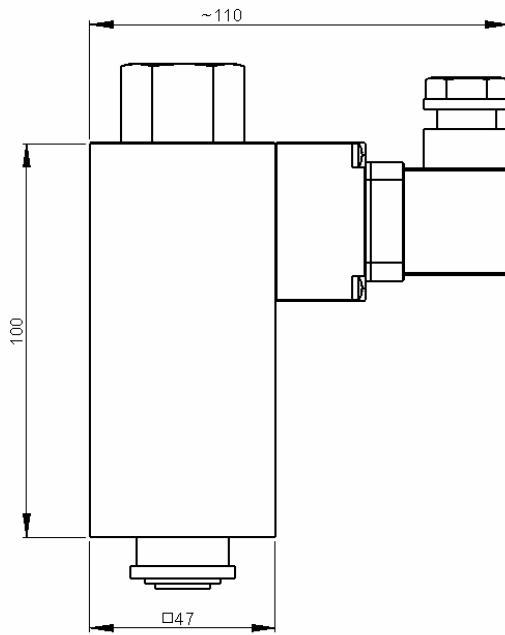


Figure 4 — Drawing