



# Solenoid actuator

Series MG004m, MG008m, MG005A7m, MG008A8m

With - protection for use for correct purpose in explosion zone 1 according to 2014/34/EU (ATEX) 



## Operating Instructions

(translation)

### Explosion protection

The solenoid actuators and integrated solenoid valve controllers conform to explosion protection type "mb" category II2G and can be used in zones in which explosive gas, vapour, mist or air mixtures may occur, i.e. in explosion zone 1. The electrical and thermal parameters of the individual variants can be obtained from the respective type plates. The explosion protection relates to the operation of the device. For installation, maintenance or repairs, it is imperative that the relevant explosion protection regulations, especially EN 60079-14 (VDE 0165 T1), are observed. The electrical installation must be carried out by a qualified electrician or under the supervision thereof, taking the relevant national regulations into consideration (in Germany VDE 0100). Prior to installation, the constraints of the device marking must be compared with the intended operating conditions in order to ensure that it is used for its intended purpose.

### Basics

Valve / solenoid actuator combinations are delivered fully assembled and tested as standard. When solenoid actuators are replaced or exchanged, it must be ensured that combination with a UNI fitting is approved and that the magnet is properly attached to the fitting (e.g. with the permissible tightening torque). The device-specific serial number for unequivocal identification and the year of build can be obtained from the type plate.



Solenoid actuators are electrotechnical components that are inoperative without the associated valve and may not be operated on their own! For outdoor installations always use solenoid actuators with a IP65 rating and a rain cover. Solenoid actuators which are obviously damaged must not be installed and must be replaced. If the solenoid actuators are exposed to special types of external stress, additional protective measures are required and must be provided by the operator. Any modifications to the device which are undefined or have not been agreed can have a negative influence on the explosion protection, and in the worst case it may even be cancelled out altogether. UNI Geräte does not accept liability for damage (to the device / beyond) caused by modification(s) to the device. The same applies to warranty claims.

### Description of the device

The solenoid actuator (pot magnet) is used as a drive unit for valves. Constructionally the actuator consists of a magnet housing (tube, base, magnetic disk and lid), a coil and electronics. Depending on the version, the solenoid actuator may be operated with DC or AC voltage. The version that runs off AC voltage has a built-in rectifier. Therefore when energised, direct current flows through the coils of all types. The solenoid actuators of type MG...m have a conventional coil with a winding and resulting average sustained pickup forces with average current consumption during continuous operation. The solenoid actuators of type MG...A.m on the other hand have two windings on their coil body. One pickup winding and one holding winding. The TS200 built-in valve controller (rudimentary in "...A..." actuators) switches over from the higher pickup power to the lesser holding winding power after a defined period of time. In this way, very high pull-in forces can be achieved for short periods with low power consumption and continuous (hold-in) operation at the same time.

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## Special Conditions

1. Since temperatures of greater than 70°C occur at the cable inlet of the solenoid actuators and temperatures of greater than 80°C occur at the wire branch, these operating materials must also be marked with the higher temperature (information sign below the cable inlet). This means that only a heat-resistant connecting cable may be used.
2. The solenoid actuators must be protected against the dangerous effects of short circuits, earth faults and overloading. A line-side fuse that is appropriate for the rated current (max. 3xIB acc. to IEC 60127-2-1) must be selected. A line-side motor circuit breaker - with short-circuit and thermal instantaneous tripping - must be adjusted for the rated current. If the magnet has very low rated currents, fusing with the lowest current value in keeping with the stated IEC standard is sufficient. Protective devices must be of the kind that prevent automatic reactivation under fault conditions. The fusing rated voltage must match or exceed the specified nominal voltage of the solenoid actuator. The breaking capacity of the fuse link must match or exceed the maximum short-circuit current that is expected at the place of installation (usually 1500 A).
3. If a silicone (or silicone-containing) connecting cable or a cable that is not scratch-resistant is being used, it must be protected against mechanical damage (e.g. by an interrupted tube system with edge protection).
4. A maximum permissible ripple of 20% applies to all solenoid actuators with the direct current design.

## Electrical connection

The diameter range / clamping range of the cable gland must be noted and adhered to. Where a flexible connecting line is used, insulated wire-end sleeves with plastic collars conforming to DIN 46228 part 4 must be used. The voltage supply at the solenoid actuator must lie within the range of -15% to +10%. The appropriate circuit diagram can be obtained from the connection diagrams at the end of these operating instructions. To guarantee an IP65 degree of protection, the cover of the magnet housing must be refitted carefully. Versions which are delivered with a connecting cable from the factory are ready for use, i.e. the terminal compartment does not need to be opened.

## CE markings

The Council of the European Union has issued common directives for the free movement of goods within the Union, which specify minimum requirements for health and safety protection. The CE mark confirms that products are compliant with the EU directives, i.e. compliant with the relevant standards, particularly the harmonized ones.

### Notes concerning directive 2014/34/EU (Explosion protection directive ATEX):



The solenoid actuators fulfil the relevant requirements of directive 2014/34/EU; they are therefore marked with the CE symbol in accordance with Annex X of the directive. The declaration of conformity is enclosed.

### Note concerning directive 2014/30/EU (EMC directive):

The solenoid actuators fulfil the requirements of the product family standards to be used in the industrial sector and also in the residential, business and commercial sectors as well as in small businesses. When AC and DC versions are being used, the user must provide a suitable line filter (e.g. X-capacitor 47 nF) at the power supply input in order to attenuate the physically-related cable-bound switch-off interference of the solenoid. Solenoid actuators as drive elements for valves do not represent independently operating devices in the sense of the EMC directive, and are only subjected to further processing or installed into a machine by specialist companies. Starting up is not allowed until it has been established that the entire machine or system complies with the provisions of the EMC directive.

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## Operation

100% duty cycles are also permitted at the most unfavourable ambient temperatures.



### **Danger!**

The solenoid actuator may become hot during operation. Risk of injury if touched!

During operation, it must be ensured that neither the maximum permissible ambient and fluid temperatures nor the limit performance (overvoltage) are exceeded. The solenoid actuator must be protected from overloading if necessary. All solenoid actuators are connected with a varistor. To avoid potentially damaging induction voltage, the user must take suitable measures that go beyond the protective measures of the built-in varistor if necessary.

## Disassembly of the solenoid actuator

Take the solenoid actuator out of service and isolate it from the supply.



### **Danger!**

The solenoid actuator may become hot during operation. Risk of injury when touched!

Undo Allen bolt (900) and remove with washer (906). Remove the magnet housing cover (105) from the solenoid actuator. Disconnect the electrical cables from the terminals (706, 717) and remove from the actuator. Undo and remove the connecting bolt (501/2). Remove the magnetic plate (500/2) Undo and remove the connecting bolt (501/1). The actuator can then be removed from the valve.

Assembly takes place in reverse order.

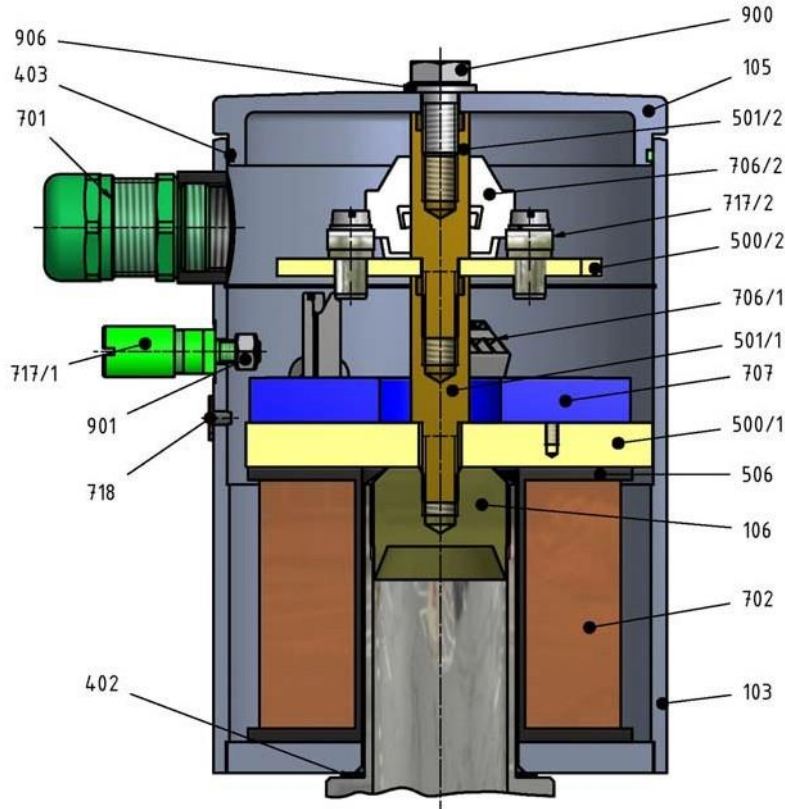
# Solenoid actuator

Series MG004m, MG008m, MG005A7m, MG008A8m

With  $\text{Ex}$ - protection for use for correct purpose in explosion zone 1 according to 2014/34/EU (ATEX)  $\text{CE}$



## Sectional drawing



Item	Designation	Item	Designation
103	Magnet housing	702	Solenoid coil
105	Magnet housing cover	706/X	Terminal
106	Valve housing upper section	707	Transistor control (TS....)
402	Gasket	717/1	Earthing terminal
403	O-ring	717/2	Earthing terminal
500/1	Magnetic plate (lower)	718	Earthing symbol
500/2	Magnetic plate (upper)	900	Hex bolt
501/X	Connecting pin	901	Hex nut
506	Coil body	906	Washer
701	Cable gland		

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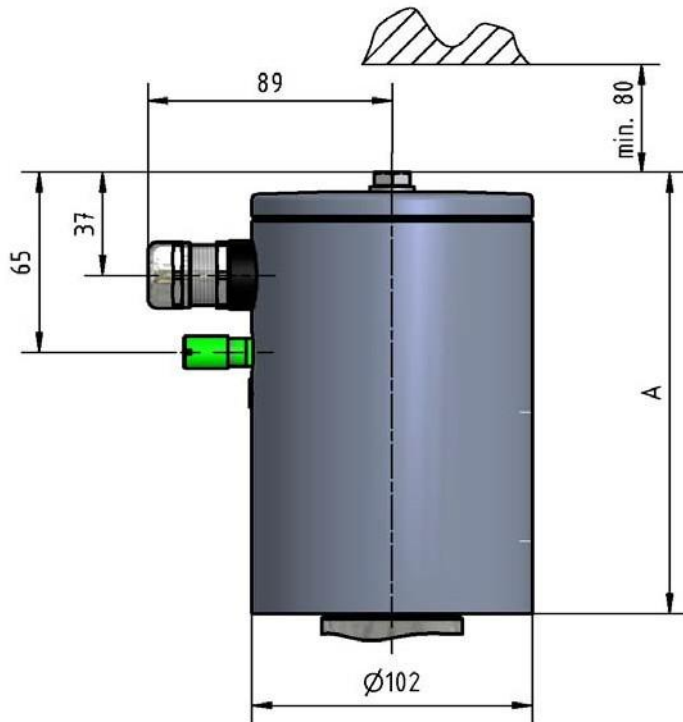
# Solenoid actuator

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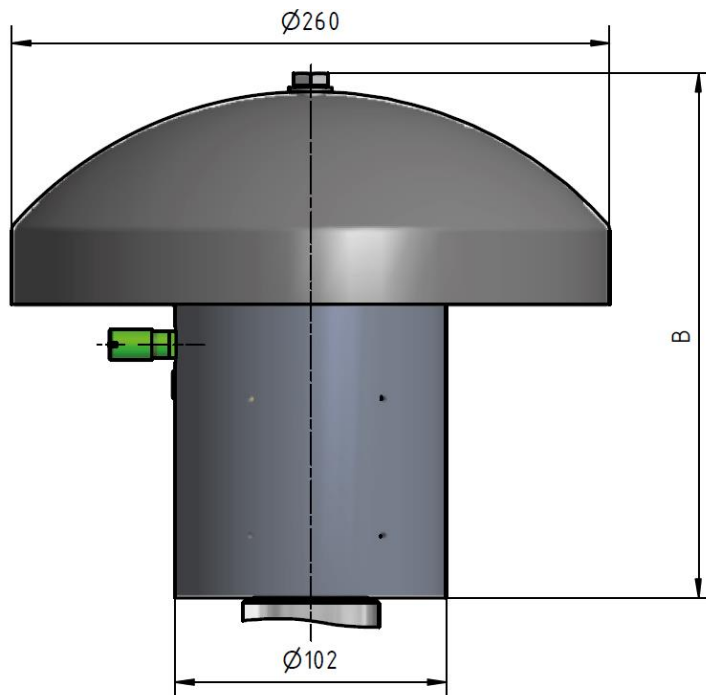


## Dimensioned drawing



Typ	A	B
MG004m	141	187
MG008m	160	206
MG005A7m	141	187
MG008A8m	160	206



## Version with rain hood



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# Solenoid actuator

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Tightening torques of the connecting bolt (501) and the hexagon bolt (900)

Tightening torque Item 501 + 900	Thread size
4.6 Nm	M6
11 Nm	M8

## Technical data

Protection type:		IP65
Ambient temperature:		-20°C to +60°C
Fluid temperature:	Magnet core in the fluid	-20°C to +60°C
	Magnet core not in the fluid	No influence
Switching frequency:	MG004m, MG008m	1000c/h
	MG005A7m, MG008A8m	600c/h
Switch-on time:		100%

### MG004m

Nominal voltage	Nominal power W	Rated current mA	Ignition protection type	Perm. rel. humidity %	Weight kg	Circuit diagram
24 VDC	10	624	Ex mbe II T4 Gb	95	3.2	AP01
100 VDC		230				AP01
110 VAC		230				AP02
230 VAC		117				AP02

### MG008m

Nominal voltage	Nominal power W	Rated current mA	Ignition protection type	Perm. rel. humidity %	Weight kg	Circuit diagram
24 VDC	30	1956	Ex mbe II T4 Gb	95	4.3	AP01
100 VDC		477				AP01
110 VAC		477				AP02
230 VAC		226				AP02

### MG005A7m

Nominal voltage	Nominal power W	Rated current mA	Ignition protection type	Perm. rel. humidity %	Weight kg	Circuit diagram
24 VDC	30/3	1648	Ex mbe II T5 Gb	95	3.3	AP03
100 VDC		327				
110 VAC		327				
230 VAC		193				

### MG008A8m

Nominal voltage	Nominal power W	Rated current mA	Ignition protection type	Perm. rel. humidity %	Weight kg	Circuit diagram
24 VDC	50/5	2741	Ex mbe II T5 Gb	95	4.3	AP03
100 VDC		546				
110 VAC		546				
230 VAC		321				

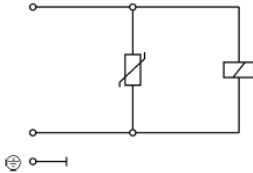
# Solenoid actuator

Series MG004m, MG008m, MG005A7m, MG008A8m

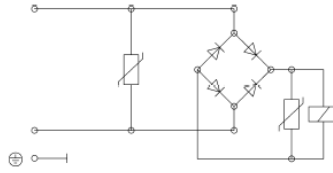
With  $\text{Ex}$ - protection for use for correct purpose in explosion zone 1 according to 2014/34/EU (ATEX)  $\text{CE}$



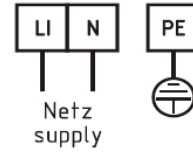
AP01



AP02



AP03





## Note

The solenoid actuator must also be earthed via the explosion protection mantle terminal on the housing (171/1)

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## EU - Konformitätserklärung EU - Declaration of Conformity



**UNI-Geräte E. Mangelmann**  
elektrotechnische Fabrik GmbH  
Holtumsweg 13  
D – 47649 Weeze

erklärt hiermit in alleiniger Verantwortung,  
*declares in its sole responsibility,*

dass das Produkt: Elektromagnetantrieb  
*that the product: Solenoid drive*


vom Typ: MG004m, MG008m, MG005A7m, MG008A8m  
*of type:*

Der oben beschriebene Gegenstand der Erklärung erfüllt die einschlägigen Harmonisierungsvorschriften der Union.  
*The object of the declaration described above complies with the relevant community harmonization legislation of the Union.*

EU-Richtlinien 2014/34/EU Explosionsschutzrichtlinie ATEX  
*EC-Directives ATEX directive*  
2014/30/EU EMV Richtlinie  
*EMC directive*

Angewandte technische Spezifikationen EN 60079-0, EN 60079-7, EN 60079-18  
*Applied technical specifications EN 161, EN 13611*

EG-Baumusterprüfbescheinigung PTB 04 ATEX 2096 X  
*EC-Type Examination Certificate*

Kennzeichnung  II2G Ex mbe IIC T4 oder / or T5 Gb   
*Marking*

Weeze, 20.04.2016

**Ralf Kammer**  
Leiter Technisches Büro  
Head of Technical Department

**Daniel Brünkmans**  
Explosionsbeauftragter  
Head of Explosion Protection

250.000.159-06

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