



Solenoid Drive

Series MG004m, MG008m, MG005A7m, MG008A8m

With - protection for intended use in
ex- zone 1 in accordance with 2014/34/EU (ATEX 95) 



Operating instructions

(translation)

Explosion protection

The explosion protection is an option and is indicated by an Ex type plate on the solenoid actuator. The solenoid actuators and integrated solenoid valve controllers conform to explosion protection type "na" category II3G and can be used in zones in which explosive gas, vapour, mist or air mixtures may occur, i.e. in explosion zone 2. The electrical and thermal parameters of the separate variants can be obtained from the respective type plates. The explosion protection applies to 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 work must be carried out by, or under the supervision of, a skilled electrician, with additional observance of the relevant national regulations (VDE 0100 in Germany). Prior to installation, the constraints of the device marking must be compared against the envisaged operating conditions to ensure operation is as intended.

Basics

Valve – solenoid actuator – combinations are supplied fully assembled and tested as standard. When replacing or changing solenoid actuators, care should be taken that the combination with a UNI valve is approved and the magnet is properly secured to the valve (permissible tightening torque, for example). 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 also may not be operated for themselves alone! For outdoor installations always use solenoid actuators with a IP65 rating and a rain cover. Any solenoid actuators showing signs of damage are not to be installed and must be replaced. If the solenoid actuators are subject to external loads of an exceptional kind, additional protective measures are to be taken by the operator, if required. Any undefined or unsuitable changes to the device may negatively influence the explosion protection and in the worst case even render it totally ineffective. UNI devices shall accept no liability for any loss or damage (to the device/over and above this) which have been brought about by change(s) to the device. The same applies for claims under the warranty.

Description of the device

The solenoid actuator (pot magnet) is used as an actuating 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... have a conventional coil with a winding and resulting average sustained pickup forces with average current consumption in continuous operation. The solenoid actuators of type M005A7m and MG008A8m on the other hand have two windings on their coil body. One pickup and one holding winding. The TS200 built-in valve controller (rudimentary in "...A..." actuators) switches over after a defined time from the higher pickup power to the lesser holding winding power. In this way, very high pickup forces can be achieved short-term with simultaneous low current consumption in sustained (holding) operation.

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Special condition for safe use

1. Since temperatures higher than 70°C occur at the cable entry and higher than 80°C at the core junction, this equipment must be additionally marked with the higher temperature (label at the cable entry). Only a heat-resistant cable may be connected.
2. The solenoid actuators need to be protected against the dangerous consequences of short circuits, earth faults and overloads. A line-side fuse appropriate to the rated current (max. 3xIB acc. to IEC 60127-2-1) is to be chosen. A line-side motor circuit breaker - with short-circuit and thermal instantaneous tripping - is to 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 prevents automatic reconnection 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 expected at the place of installation (usually 1500 A).
3. When a silicon (or silicon containing) connection lead is used or if the connecting lead is not scratch proof respectively, this has to be protected from mechanical damage (e.g. interrupted tube system with edge protection).
4. A maximum permissible ripple of 20% is valid for all magnets of dc-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 are to be used. The voltage supply at the solenoid actuator must lie within the range -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 magnetic housing lid must be refitted carefully. Versions supplied with a connecting cable ex works are ready for use, i.e. the connection compartment does not need to be opened again.

CE-Identification

The Council of the European Community passed common directives for the free movement of goods within the European Community, which determine the minimum requirements for safety and health protection. The CE-identification confirms, that the products correspond to the EC directives, i.e. are in agreement with the relevant, especially harmonized standards.

Note concerning directive 2014/34/EU (explosion protection directive ATEX 95):

The solenoid drives (MG..Xn, MG..A..Xn, MG..A..C..Xn) fulfil the relevant requirements of directive 2014/34/EU; therefore they have the CE-identification as per annex X of the directive. The declaration of conformity is included.

Note concerning directive 2014/30/EU (EMV-Directive):

The solenoid drives fulfil the requirements of the specification to be applied of the product families concerning the industrial sector as well as the sectors of private housing, business and trading, as well as of small businesses.

On using of AC- and DC-variants the user must provide a suitable mains filter (e.g. X-capacitor 47 nF) at the mains entrance to attenuate the physically caused line-related turn-off current of the solenoid.

In the sense of the EMV-directives solenoid drives with driving elements for valves are not regarded as independently operable appliances and are only processed further by expert companies, or respectively installed into a machine. They must not be started up until it was determined that the machine, or respectively, the complete line, corresponds to the regulations of the EMV-directives.



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Operation

100% ED are permitted even in case of the most unfavourable ambient conditions permissible.



Danger!

During operation the solenoid drive may get hot. Don't touch, danger of injuries!

During operation it must be guaranteed, that neither the maximum permitted ambient temperature or of the fluid nor the load limit (excess voltage) will be exceeded. If necessary the solenoid drive is to be protected against overcharging. All solenoid drives are wired with a varistor. To avoid induced voltage, which may cause damage of the line, the user must provide protective measures in case of necessity which go beyond the installed varistor.

Dismounting of the solenoid drive

Stop the solenoid drive and cut off voltage supply.



Danger!



During operation the solenoid drive may get hot. Don't touch, danger of injuries!

Loosen hex. head screw (900) and remove it including washer (906). Remove solenoid housing cover (105) from solenoid drive. Loosen electric cables from binders and grounding terminal (706, 717) and remove from drive. Loosen and remove connecting bolt (501/2). Take out magnet plate (500/2). Loosen and remove connecting bolt (501/1). Finally the drive may be taken off the valve.

Assembly will be done in reverse order.

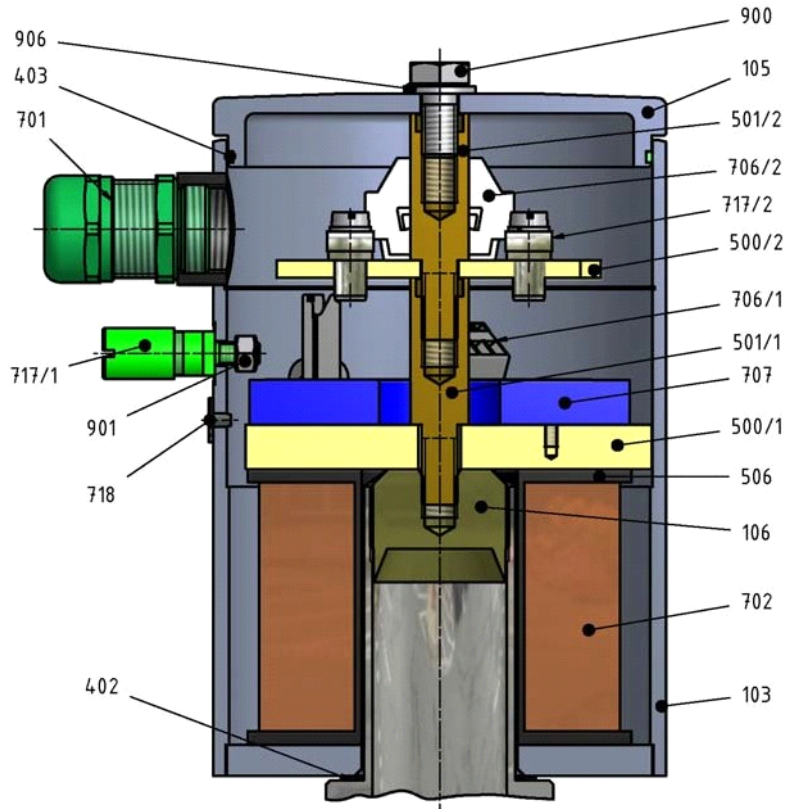
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Sectional drawing



Item	Description	Item	Description
103	Solenoid housing	702	Solenoid coil
105	Solenoid housing cover	706/X	Binder
106	Upper part of valve housing	707	Transistor controller (TS....)
402	Gasket	717/1	Grounding terminal
403	O-Ring	717/2	Grounding terminal
500/1	Magnet plate (down)	718	Ground sign
500/2	Magnet plate (top)	900	hex. head screw
501/X	Conneting bolt	901	hex. nut
506	Spool body	906	Washer
701	Cable gland		

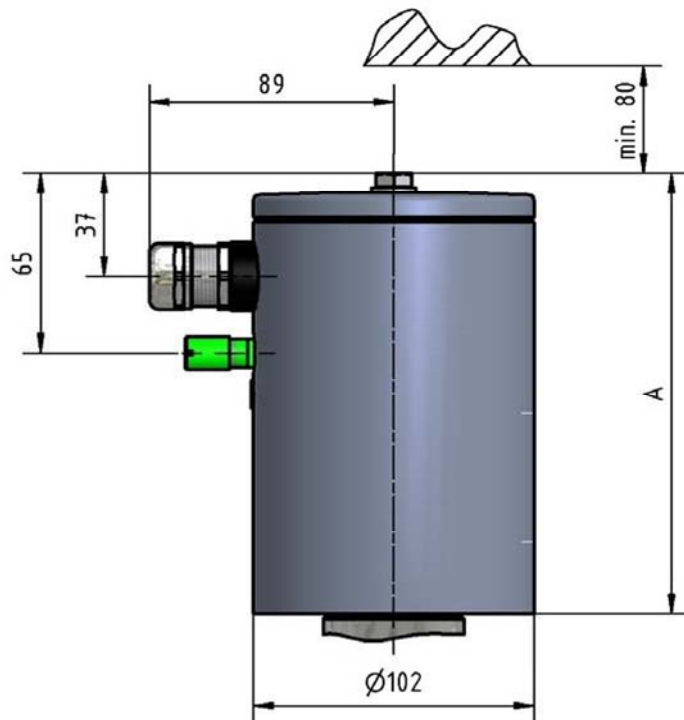
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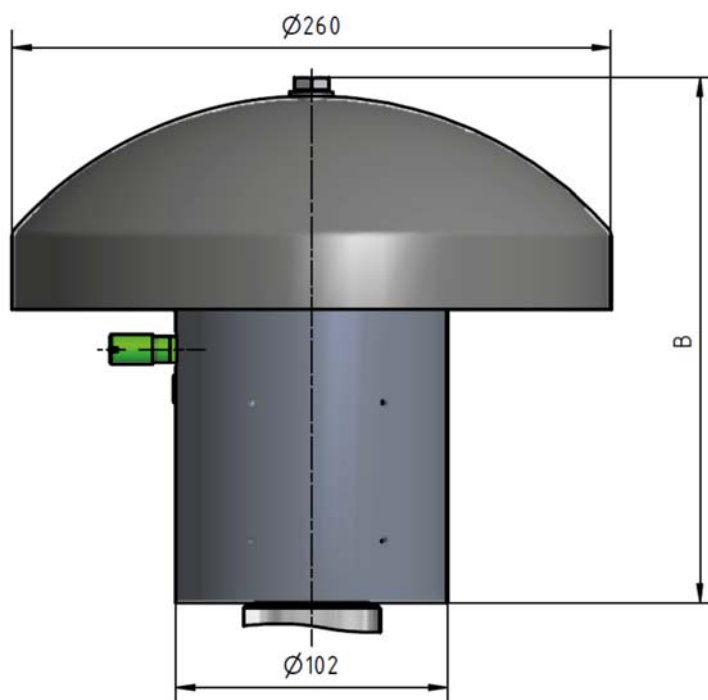


Dimensional drawing





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

Design with rain protection



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Screw torques of the connecting pin (501) and the hexagonal head screw (900)

Screw torque Pos. 501 + 900	Thread size
4.6 Nm	M6
11 Nm	M8

Technical Data

Protective system:	IP65
Ambient temperature:	-20°C to +60°C
Temperature of fluid:	solenoid core in fluid -20°C to +60°C solenoid core not in fluid no influence
Switching cycles:	MG004m, MG008m 1000c/h MG005A7m, MG008A8m 600c/h
Duty cycle:	100%

MG004m

Nominal voltage	Nominal capacity W	Design current mA	Protection class	Admissible relative air humidity in %	Wight kg	Wiring 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 capacity W	Design current mA	Protection class	Admissible relative air humidity in %	Wight kg	Wiring 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 capacity W	Design current mA	Protection class	Admissible relative air humidity in %	Wight kg	Wiring 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 capacity W	Design current mA	Protection class	Admissible relative air humidity in %	Wight kg	Wiring diagram
24 VDC	50/5	2741	Ex mbe II T5 Gb	95	4,3	AP03
100 VDC		546				
110 VAC		546				
230 VAC		321				

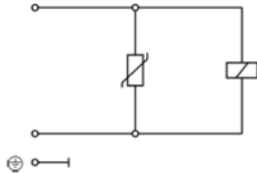
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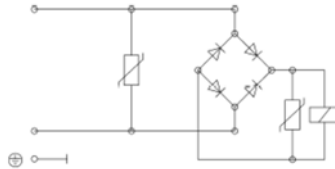
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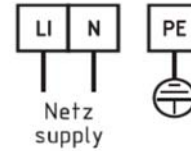
AP01



AP02



AP03



NOTICE!

The solenoid drive must be **additionally** grounded via the ex-grounding terminal (717/1) at the housing.

