

## Solenoid Operator 0513 / 1213

Operating Instructions 108-720-0004 and EC Declaration of Conformity

Dear Customer!

In order to guarantee the function and for your own safety, please read the enclosed operating instructions attentively, before starting installation. Should there still arise any question or queries, please contact nass magnet GmbH.

Phone ++49 (0) 511 6746-0  
Fax ++49 (0) 511 6746-222  
e-mail [vertrieb@nassmagnet.de](mailto:vertrieb@nassmagnet.de)

## Operating Instructions

### General Conditions

- We are not liable for any damage caused by non-observation of this information as well as in case of improper intervention regarding this device. Furthermore, warranty for the devices and accessories will become void.
- Please observe the information given in the present operating instructions as well as the application conditions and admissible data indicated on the imprints / type plates of the respective devices.
- **The PTB approval exclusively covers solenoid operators with nass magnet armature assembly and with nass magnet solenoid coil.**
- Follow the generally accepted technical rules when selecting and operating a unit.
- Take suitable measures to exclude unintentional activation or inadmissible impairment.
- Make sure not to detach pipes and valves of pressurized systems.
- **Caution! Risk of injury! The solenoid's surface can get very hot during continuous operation.**

### Installation

- After removing the packing, make sure that dirt cannot penetrate into the system.
- Before mounting the system, check that there is no dirt in the piping or the valve housing.
- When inserting the system, make sure that the O-ring at the flange respectively the screw-in thread is not damaged.
- If coils are used in manifold assembly (directly side by side) pay attention to the minimum distance according to the temperature class (see technical datas).
- Mounting is admissible in any position. Preferably the solenoid system has to point upwards.
- The solenoid coil can be locked when offset by 90°.
- Tightening torque for fastening nut: 0,5 Nm.
- Electrical connection with the integrated cable of the solenoid coil (wire ends suitable for screw terminals/clamps), in the hazardous area with approved explosion-protected equipment (e.g. terminal box with type of protection Increased Safety "e" according EN 60079-7).
- When connecting the flying leads make sure the wire ends of the leads are properly inserted into the electrical terminal.

- Sharp bendings of the connecting cable and wires must be avoided. In order to avoid short circuits and interruptions a bending radius of  $>40$  must be kept when the part is installed.
- Before initial operation of the device make sure that the overall equipment or unit respectively meets the requirements of the EMC directive.
- Please order spare parts completely by indicating the identification number provided on the units (imprint / type plate).
- At installation and maintenance it is essential to keep to the concerning Ex standards, especially EN 60079-14 and EN 60241-14. The electrical installation has to be carried out by authorized personnel following additional relevant national regulations (in Germany VDE 0100).
- Each solenoid operator has to be protected by a fuse according to the rated current (max. 3x rated current accord. to DIN 41571 or IEC 60127-2-1) resp. motor protection switch with short-circuit and fast thermal tripping protection. The fuse can be accommodated in the associated device or must be added separately. The fuse voltage has to be equal or higher than the rated solenoid voltage. The shutdown capability has to be equal or higher than the max. assumed short-circuit current at the installation point (usually 1500A).  
The maximum permissible ripple for all magnets of DC-design is 20%.
- At choice of the material of the valve bodies must be observed:
  - casting alloy:  
The maximum admissible percent by weight may, in total, not exceed 7.5% magnesium, when, according to the ignition hazard assessment, a risk of ignition by friction, stroke or friction sparks exists.
  - plastic:  
The surface resistance may only be at  $1G\Omega$  to the maximum, or, in case of a surface resistance of  $> 1G\Omega$ , be projected in each direction according to EN 60079-0 by limitation of the surface to max. 20 cm<sup>2</sup>. Interruptions of the surface, e.g. by ribs, allow a separate consideration.

## Operation

- Admissible media are gas and liquids that do not affect the system and the sealing material contained therein.
- The outside surfaces of the solenoid should be free of contact with liquids or corrosives.
- The device's operating pressure depends on the armature/valve system used and amounts to:
 



max. 12 bars	identification	none
max. 16 bars	identification	16, calendar week, year
max. 20 bars	identification	20, calendar week, year
max. 30 bars	identification	30, calendar week, year
max. 40 bars	identification	40, calendar week, year
- Do not strain the system by bending or torsion.
- Prevent the connecting cables from being buckled in order to avoid short circuits and interruptions.



## Troubleshooting

- Check the cable connections, operating voltage and pressure.
- Should the problem persist, remove pressure, disconnect from power supply.  
Defective explosion-proof devices must not be repaired, but must be replaced.

# Certificate of Conformity

Messrs. Nass Magnet GmbH, Hanover, declare and bear sole responsibility for the following Ex products to be in compliance with the safety standards:

Solenoid operator 0513 00 to 0513 49  II 2G Ex mb II T4 IEC Ex m II T4  
Solenoid operator 1213 00 to 1213 49  II 2D Ex tD A21 IP65 T130°C IP65 DIP A21 T130°C

Solenoid operator 0513 50 to 0513 99  II 2G Ex mb II T5 IEC Ex m II T5  
Solenoid operator 1213 50 to 1213 99  II 2D Ex tD A21 IP65 T95°C IP65 DIP A21 T95°C

The homologation certificate with the number

**PTB 00 ATEX 2001X** and **IECEX PTB 05.0006X**

issued by PTB (registration entity no. 0102) is applicable for the solenoid operator.

The solenoid operator is an encapsulated safe electrical work equipment group II, designed for application in atmospheres according to category 2G and 2D (temperature class and surface temperature as per imprint).

The device, which is provided with the CE symbol, meets the following standards:

EN 60079-0: 2006	Electrical apparatus for explosive gas atmospheres - Part 0: General requirements
IEC 60079-0: 2004	Electrical apparatus for explosive gas atmospheres - Part 0: General requirements
EN 60079-18: 2004	Electrical apparatus for explosive gas atmospheres - Part 18: Construction, test and marking of type of protection encapsulation "m" electrical apparatus
IEC 60079-18: 2004	Electrical apparatus for explosive gas atmospheres - Part 18: Construction, test and marking of type of protection encapsulation "m" electrical apparatus
EN 61241-0: 2006	Electrical apparatus for use in the presence of combustible dust - Part 0: General requirements
IEC 61241-0: 2004	Electrical apparatus for use in the presence of combustible dust - Part 0: General requirements
EN 61241-1: 2004	Electrical apparatus for use in the presence of combustible dust - Part 1: Protection by enclosures "tD"
IEC 61241-1: 2004	Electrical apparatus for use in the presence of combustible dust - Part 1: Protection by enclosures "tD"
EN 60079-7: 2007	Explosive atmospheres - Part 7: Equipment protection by increased safety "e"
IEC 60079-7: 2006	Explosive atmospheres - Part 7: Equipment protection by increased safety "e"
DIN EN 60 529: 2000	Degrees of protection provided by enclosures (IP code)
DIN EN 61000-6-4: 2007	Electromagnetic compatibility (EMC) - Part 6-4: Generic standards - Emission standard for industrial environments (met by additional circuitry measures) <sup>1)</sup>
DIN EN 61000-6-2: 2006	Electromagnetic compatibility (EMC) - Part 6-2: Generic standards - Immunity for industrial environments
DIN VDE 0580: 2000	Electromagnetic devices and components - General specifications
Richtlinie 94/9/EG	Equipment and protective systems intended for use in potentially explosive atmospheres

1) Remark to the Electromagnetic Compatibility (emitted interferences):

At the moment there are no regulations (standards) defining wire bounded interferences for DC operated devices. Newer power supply units suppresses interferences caused by switch off effects in the coil.

In AC operated coils / solenoids a rectifier is internally inserted between winding and cable. Therefore at AC coils no inadmissibly interferences can appear.

For DC operated units a shielded cable is required.

Hannover, 2009-12-07



Klaus Kirchheim

General manager

## Technical Data

Supply voltage tolerance +/- 10%

## Temperature Class T4

Solenoid operator



IEC

II 2G Ex mb II T4  
 II 2D Ex tD A21 IP65 T130°C  
 Ex m II T4  
 IP65 DIP A21 T130°C

Type	0513 00 ... 0513 49				1213 00 ... 1213 49			
Current	AC-operation 40...60Hz				DC-operation , max. 20% ripple			
Ambient Temperature								
-Single assembly	-20°C ... +50°C				-20°C ... +50°C			
-Manifold assembly	-20°C ... +40°C				-20°C ... +40°C			
Manifold assembly	yes				yes			
Min. distance	0 mm				0 mm			
Rated Voltage $U_N$ [V]	Rated current <sup>1)</sup> $I_N$ [mA]	Rated Power $P_N$ [VA]	Limited Power $P_G$ <sup>2)</sup> [VA]	Fuse <sup>3)</sup> [mA]	Rated current <sup>1)</sup> $I_N$ [mA]	Rated Power $P_N$ [W]	Limited Power $P_G$ <sup>2)</sup> [W]	Fuse <sup>3)</sup> [mA]
6	-	-	-	-	833	5,0	4,4	1250
12	392	4,7	4,1	800	375	4,5	4,0	630
24	192	4,6	4,0	400	207	4,97	4,4	315
36	-	-	-	-	138	4,98	4,4	200
42	117	4,9	4,3	250	-	-	-	-
48	98	4,7	4,1	200	98	4,7	4,1	160
60	-	-	-	-	77	4,62	4,1	125
110	41	4,5	3,9	80	45	4,99	4,4	80
120	44	5,3	4,6	80	-	-	-	-
125	-	-	-	-	40	4,96	4,4	63
220	22	4,8	4,2	50	-	-	-	-
230	22	5,1	4,4	50	-	-	-	-
240	23	5,5	4,8	50	-	-	-	-

1) (Rated current)

2) Maximum power at the thermal load limit

3) Each solenoid operator has to be protected by a fuse according to the rated current (max. 3x rated current accord. to DIN 41571 or IEC 60127-2-1. The fuse ratings listed above are recommended.) resp. motor protection switch with short-circuit and fast thermal tripping protection. The fuse can be accommodated in the associated device or must be added separately. The fuse voltage has to be equal or higher than the rated solenoid voltage. The shutdown capability has to be equal or higher than the max. assumed short-circuit current at the installation point (usually 1500A).  
 The maximum permissible ripple for all magnets of DC-design is 20%.

# Temperature Class T5

Solenoid operator



II 2G Ex mb II T5  
II 2D Ex tD A21 IP65 T95°C

IEC

Ex m II T5  
IP65 DIP A21 T95°C

Type	0513 50 ... 0513 99				1213 50 ... 1213 99			
Current	AC-operation 40...60Hz				DC-operation , max. 20% ripple			
Ambient Temperature								
-Single assembly	-20°C ... +50°C				-20°C ... +50°C			
-Manifold assembly	-20°C ... +40°C				-20°C ... +40°C			
Manifold assembly	yes				yes			
Min. distance	0 mm				0 mm			
Rated Voltage $U_N$ [V]	Rated current <sup>1)</sup> $I_N$ [mA]	Rated Power $P_N$ [VA]	Limited Power $P_G$ <sup>2)</sup> [VA]	Fuse <sup>3)</sup> [mA]	Rated current <sup>1)</sup> $I_N$ [mA]	Rated Power $P_N$ [W]	Limited Power $P_G$ <sup>2)</sup> [W]	Fuse <sup>3)</sup> [mA]
6	–	–	–	–	451	2,71	2,5	800
12	192	2,3	2,1	400	231	2,77	2,6	400
24	121	2,9	2,5	250	115	2,76	2,6	200
36	-	-	–	–	73	2,64	2,5	125
42	52	2,2	2,0	100	–	–	–	–
48	54	2,6	2,3	100	38	1,84	1,7	63
60	–	–	–	–	30	1,79	1,7	50
110	21	2,3	2,1	40	23	2,55	2,4	32
120	23	2,7	2,4	50	–	–	–	–
125	–	–	–	–	18	2,23	2,1	32
230	9	2,1	1,9	32	–	–	–	–
240	10	2,3	2,1	32	–	–	–	–

1) (Rated current)

2) Maximum power at the thermal load limit

3) Each solenoid operator has to be protected by a fuse according to the rated current (max. 3x rated current accord. to DIN 41571 or IEC 60127-2-1. The fuse ratings listed above are recommended.) resp. motor protection switch with short-circuit and fast thermal tripping protection. The fuse can be accommodated in the associated device or must be added separately. The fuse voltage has to be equal or higher than the rated solenoid voltage. The shutdown capability has to be equal or higher than the max. assumed short-circuit current at the installation point (usually 1500A).  
The maximum permissible ripple for all magnets of DC-design is 20%.