

Solenoid Operator 0516 / 1216

Operating Instructions NN 8220 126 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.

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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 flange O-ring will not be damaged.
- If coils are used in manifold assembly (directly side by side) pay attention to the minimum distance according 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 in 45° steps.
- 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 50019).

- If connecting the lead wires make ensure the wire ends of the leads are properly inserted to the electrical terminal.
- Connecting cable and wires should be free of sharp bends in order to avoid short circuits and interruptions.
- Before initial operation of the device make sure that the overall equipment or unit respectively meets the requirements of the EMC directive.
- At a ambient temperature from -40°C to -50°C the connecting cable must be laid stationary.
- 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 50281-1-2. 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. 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%.
- Valve-housing material: Casting alloy: Mg contents < 6%
Synthetic material: according to EN 50014, surface resistance < 1 GΩ or surface area including solenoid coil surface limited to max. 20 cm² projected to all directions.

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 devices maximum operating pressure depends on the armature assembly or valve system used. Caution should be exercised to make sure the maximum operating pressure of 20 bar of the product is not exceeded.
- Do not strain the system by bending or torsion.
- Prevent the connecting cables and strands from being buckled in order to avoid short circuits and interruptions.

Troubleshooting

- Check the cable connections, operating voltage and pressure.
- Should 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, Hannover, declare and bear sole responsibility for the following EEx products to be in compliance with the safety standards:

Solenoid operator 0516 00 to 0516 29		II 2G EEx ma II T4	IEC	Ex m II T4
Solenoid operator 1216 00 to 1216 29		II 2D IP65 T130°C		IP65 DIP A21 T130°C
Solenoid operator 0516 30 to 0516 59		II 2G EEx ma II T5	IEC	Ex m II T5
Solenoid operator 1216 30 to 1216 59		II 2D IP65 T95°C		IP65 DIP A21 T95°C
Solenoid operator 0516 60 to 0516 99		II 2G EEx ma II T6	IEC	Ex m II T6
Solenoid operator 1216 60 to 1216 99		II 2D IP65 T80°C		IP65 DIP A21 T80°C

The Homologation Certificate and the Certificate of Conformity with the numbers:

PTB 04 ATEX 2015 X and IECEx PTB 05.0009X

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

The solenoid operator is an encapsulated safe electrical work equipment group IIC, 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 50014:	Electrical apparatus for potentially explosive atmospheres
1997	(General requirements)
IEC 60079-0:	Electrical apparatus for explosive gas atmospheres
2000	(General requirements)
EN 60079-18:	Electrical apparatus for potentially explosive atmospheres
2004	(Encapsulation m)
IEC 60079-18:	Electrical apparatus for explosive gas atmospheres
1992	(Encapsulation m)
EN 50281-1-1:	Electrical apparatus for use in the presence of combustible dust
1999	
IEC 61241-1-1:	Electrical apparatus for use in the presence of combustible dust
1999	
DIN EN 60529:	Degrees of Protection provided by Enclosures (IP Code)
2000	
DIN EN 61000-6-4:	Electromagnetic Compatibility, Interference Emissions, Industrial Sector
2002	(met by additional circuitry measures) ¹⁾
DIN EN 61000-6-2:	Electromagnetic Compatibility, Interference Immunity Industrial Sector
2002	
DIN VDE 0580:	Electromagnetic Devices and components (General specifications)
2000	

Richtlinie 94/9/EG Equipment 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 2007-01-10



Klaus Kirchheim
General manager

Technical Data

supply voltage tolerance +/- 10%

nominal pressure according armature / valve system, max. 20 bar

Temperature Class T4

Solenoid Operator



II 2G EEx ma II T4

II 2D IP65 T130°C

IEC

Ex m II T4

IP65 DIP A21 T130°C

Type	0516 00 ... 0516 29				1216 00 ... 1216 29			
Current	AC-operation 50...60Hz				DC-operation , max. 20% ripple			
Ambient Temperature								
-Single assembly	-50°C ... +60°C				-50°C ... +50°C			
-Manifold assembly	-50°C ... +60°C				-50°C ... +50°C			
max. media temperature	80°C				80°C			
Manifold assembly min. distance	yes 0 mm				yes 0 mm			
Rated Voltage U_N [V]	Rated current I_N ¹ [mA]	Rated Power P_N [VA]	Limited Power P_G ²⁾ [VA]	Fuse ³⁾ [mA]	Rated current I_N ¹ [mA]	Rated Power P_N [W]	Limited Power P_G ²⁾ [W]	Fuse ³⁾ [mA]
6	—	—	—	—	815	4,9	4,1	1600
12	380	4,6	3,6	1000	471	5,6	4,6	1000
24	171	4,1	3,3	400	218	5,2	4,3	500
32	—	—	—	—	145	4,7	3,9	315
36	134	4,8	3,9	315	—	—	—	—
42	135	5,7	4,5	315	—	—	—	—
48	116	5,6	4,5	250	106	5,1	4,2	200
60	—	—	—	—	85	5,1	4,2	200
110	43	4,7	3,8	100	54	5,9	4,9	100
120	47	5,7	4,6	125	—	—	—	—
125	—	—	—	—	48	6,0	5	100
220	22	4,8	3,9	63	27	6,0	5	63
230	23	5,3	4,2	63	—	—	—	—
240	24	5,8	4,6	63	—	—	—	—

1) dimensioning 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. 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%.

Temperature Class T5

Solenoid Operator



II 2G EEx ma II T5
II 2D IP65 T95°C

IEC

Ex m II T5
IP65 DIP A21 T95°C

Type	0516 30 ... 0516 59				1216 30 ... 1216 59			
Current	AC-operation 50...60Hz				DC-operation , max. 20% ripple			
Ambient Temperature								
-Single assembly	-50°C ... +50°C				-50°C ... +50°C			
-Manifold assembly	-50°C ... +50°C				-50°C ... +40°C			
max. media temperature	80°C				80°C			
Manifold assembly min. distance	yes 0 mm				yes 0 mm			
Rated Voltage U_N [V]	Rated current I_N ¹ [mA]	Rated Power P_N [VA]	Limited Power P_G ²⁾ [VA]	Fuse ³⁾ [mA]	Rated current I_N ¹ [mA]	Rated Power P_N [W]	Limited Power P_G ²⁾ [W]	Fuse ³⁾ [mA]
6	—	—	—	—	531	3,2	3,0	1000
12	212	2,5	2,4	500	267	3,2	3,0	500
24	124	2,5	2,4	315	136	3,3	3,0	315
32	—	—	—	—	110	3,5	3,3	250
36	77	2,8	2,6	200	—	—	—	—
42	75	3,1	3,0	200	—	—	—	—
48	66	3,2	3,0	160	68	3,3	3,1	160
60	—	—	—	—	55	3,3	3,1	125
110	27	3,0	2,8	80	33	3,6	3,4	80
120	29	3,5	3,3	80	—	—	—	—
125	—	—	—	—	28	3,5	3,3	63
220	13	2,8	2,6	32	14	3,0	2,8	40
230	14	3,1	2,9	32	—	—	—	—
240	15	3,6	3,4	40	—	—	—	—

1) dimensioning 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. 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%.

Temperature Class T6

Solenoid Operator



II 2G EEx ma II T6
II 2D IP65 T80°C

IEC

Ex m II T6
IP65 DIP A21 T80°C

Type	0516 60 ... 0516 99				1216 60 ... 1216 99			
Current	AC-operation 50...60Hz				DC-operation , max. 20% ripple			
Ambient Temperature								
-Single assembly	-50°C ... +50°C				-50°C ... +50°C			
-Manifold assembly	-50°C ... +40°C				-50°C ... +40°C			
max. media temperature	70°C				70°C			
Manifold assembly min. distance	yes 1 mm				yes 2 mm			
Rated Voltage U_N [V]	Rated current I_N ¹ [mA]	Rated Power P_N [VA]	Limited Power P_G ²⁾ [VA]	Fuse ³⁾ [mA]	Rated current I_N ¹ [mA]	Rated Power P_N [W]	Limited Power P_G ²⁾ [W]	Fuse ³⁾ [mA]
6	—	—	—	—	435	2,6	2,5	1000
12	158	1,9	1,8	400	214	2,6	2,4	500
24	80	1,9	1,8	200	109	2,6	2,5	250
32	—	—	—	—	82	2,6	2,5	200
36	60	2,2	2,0	160	—	—	—	—
42	56	2,3	2,2	160	—	—	—	—
48	50	2,4	2,3	125	54	2,6	2,5	125
60	—	—	—	—	44	2,6	2,5	100
110	22	2,4	2,3	63	24	2,6	2,5	63
120	18	2,2	2,0	50	—	—	—	—
125	—	—	—	—	21	2,6	2,4	50
220	11	2,4	2,3	32	12	2,6	2,5	32
230	9	2,1	1,9	32	—	—	—	—
240	10	2,4	2,3	32	—	—	—	—

1) dimensioning current

2) maximum power at the thermal load limit

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