



Ex m Solenoid Operator Type 0519

Operating Instructions

Dear Customer!

To ensure the function and for your own safety, please read these operating instructions carefully before you begin with the installation. If there should still be any questions, please refer to nass magnet GmbH.

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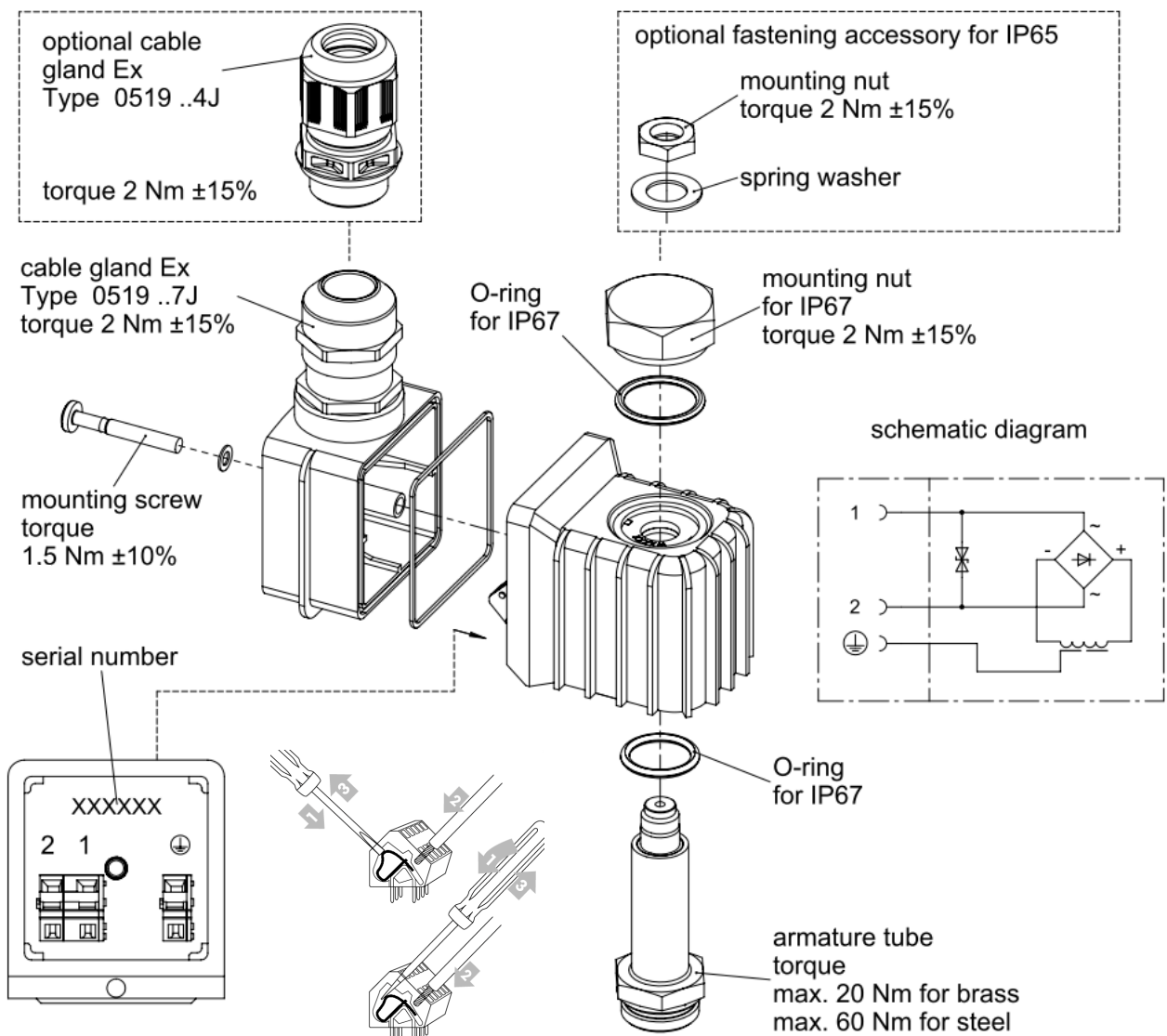
General provisions

- The examination certificate exclusively covers solenoid operators with nass magnet armature assembly and with nass magnet solenoid coil. Please consider the corresponding power levels.
- In the assembled state, the solenoid operator is designed for application in explosive gas atmospheres of Group IIC according to Category 2G (protection type „e mb“), or for application in explosive dust atmospheres of Group IIIC according to Category 2D (protection type „mb tb“). The Equipment Protection Level (EPL) is Gb respectively Db.
- Over and above the applicable general regulations of the technology, the Examination Certificate and these operating instructions refer to special **conditions for safe use (Symbol 'X')**, as well as to further in-service conditions which are absolutely to be considered. However, these operating instructions cannot consider all possible conditions and applications completely and do not replace the regulations valid in each case.
- Do not undertake any impermissible changes to the device! The approval certificate may expire as a result. In case of non-observance of these notes any manufacturer's liability by ourselves is voided. Furthermore, the guarantee on devices and accessories is invalidated. Our general terms and conditions apply.

Installation

- During installation and maintenance the corresponding Ex-specifications, in particular IEC/EN 60079-14, and the national specifications for electrical safety are absolutely to be considered.
- After the removal of the packaging, ensure that no dirt penetrates the system. Furthermore ensure that there is no dirt accumulation in the pipes or in the valve housing.
- Note that in systems under pressure, lines and valves may not be loosened. Assembly and mounting in pressure-free condition only.
- Take suitable precautions in order to exclude unintentional activation or inadmissible impairment.
- Ensure that O-rings and seals are not damaged during installation.
- The centre-to-centre spacing from one device to the other must be at least 55mm.
- Any arbitrary mounting position is admissible, preferably with solenoid coil overhead.

- Fastening torque of the mounting nut: 2.0 Nm.
- The devices are optionally available as protection types IP65 or as IP67. Varied mounting accessories are used, see below.
- **Symbol „X“:** The cables must be suitable for continuous service in a temperature range of $-40\text{ }^{\circ}\text{C}$ to $+105\text{ }^{\circ}\text{C}$. Only permanently wired cables may be entered. The user shall provide for the required strain relief. When using silicone or silicone-containing cables for connection or cables that are not resistant to scoring, these shall be protected against mechanical damage.
- The cable gland is suitable for sheathed cable diameters ranging from 7 to 13mm. Fastening torque: 2.0 Nm. Type 0519 ... 4J has impact protection corresponding to a low level of mechanical risk and requires protected mounting. Type 0519 ... 7J cable glands made of metal have to be included in equipotential bonding (e. g. by the cable shield) or to be protected against electrostatic charging by other means.
- Prevent the connecting cables from being buckled and damaged in order to avoid short circuits and interruptions.
- The rated conductor cross-section may range from 0.5 mm^2 to 2.0 mm^2 . Solid, multi-wire and fine wire conductors may be used.
- The conductor ends must be complete and undamaged when installed in the terminal contact. A suitable tool shall be used.
- The connection box cover may only be opened when the device is de-energised



- Check that all the connections have been mounted correctly before initial operation.
- **Symbol „X“:** Each solenoid operator has to be protected by a fuse. Pay attention to the rating according to the technical data charts of the associated temperature class in section ‘Technical Data’.
- At choice of the material for the valve bodies must be observed:

Metal: The maximum admissible percent by weight may not exceed the following limits according to the desired Equipment Protection Levels:
Group II EPL Gb and Group III EPL Db: in total 7.5% magnesium and titanium;

Plastics: In order to avoid the build-up of electrostatic charges the requirements according to IEC/EN 60079-0 section 7.4 must be observed.
- In order to keep the maximum allowable temperature limits, the size of the attached valve body has to meet the following material-related minimum dimensions:
 - Metal, box-shaped, length sum of the 3 dimensions min. 95 mm – or –
 - Metal, free surface area (not facing the solenoid) min. 5000 mm²
- Before operational start-up of the device in the European Union, it must be ensured that the entire machine and system corresponds to the determinations of the applicable directives of the European Union (e.g. the EMC Directive).
- Please order spare parts using the specific Identification Number which is marked on the devices (label, rating plate).

Operation

- Caution! Risk of injury! The solenoid’s surface can get very hot during continuous operation.
- The operating pressure of the device depends on the armature/valve system employed in each case. The mass magnet standard armature system is suited for up to 12 bars (1200 kPa) and has no extra identification. For operating pressures greater than 12 bars, further documents are available.
- Admissible media are gases and liquids that do not affect the system and the sealing material contained therein. Avoid bringing the device into contact with liquid or corrosive media from the outside.
- Do not strain the system by bending or torsion.
- For all DC operated solenoids, the maximum permissible ripple is 45 %. More ratings can be learned from the technical data charts of the according temperature classes.

Malfunctions

- If malfunctions occur, check the line terminals, the operating voltage and the operating pressure.
- If the failure should persist or if external damage is identifiable, shut down the device by turning off pressure and electric supply.
- Defective devices may not be repaired but must be replaced.

Technical Data – Temperature Class T4 / T130 °C

Solenoid operator

Ex e mb IIC T4 Gb

Ex tb mb IIIC T130°C Db

Degree of protection provided by enclosure IP65 or IP67 (with appropriate accessories)

T4	Suitable for valves up to mass magnet power level 3							
Electric Supply	AC - operation 50...60 Hz or DC - operation max. 45 % ripple							
Supply Voltage Tolerance	-10 % ... +10 %							
Ambient Temperature	-40 °C ... +60 °C							
Media Temperature	-40 °C ... +70 °C							
Type Number	Nominal Voltage		Nominal Current ¹⁾		Nominal Power			Fuse ²⁾
	AC U _{N,AC} [V]	DC U _{N,DC} [V]	AC I _{N,AC} [mA]	DC I _{N,DC} [mA]	AC S _{N,AC} [VA]	AC P _{N,AC} [W]	DC P _{N,DC} [W]	
0519 00 / 7148 ...	12		898	990	10.8	8.8	11.9	1600
0519 00 / 7149 ...	24		439	486	10.5	9.0	11.7	1000
0519 00 / 7153 ...	36		291	322	10.5	9.1	11.6	600
0519 00 / 7150 ...	48		189	209	9.1	8.0	10.0	400
0519 00 / 7151 ...	110		90	100	9.9	8.8	11.0	200
	115	-	95	-	10.9	9.7	-	
	120	-	99	-	11.9	10.6	-	
0519 00 / 7152 ...	125		79	87	9.9	8.8	10.9	150
0519 00 / 7137 ...	220		47	53	10.3	9.2	11.7	100
	230	-	50	-	11.5	10.3	-	
	240	-	52	-	12.5	11.2	-	

Type Number suffix	Further Special Conditions of Safe Use
... 7J	Impact protection corresponding to high mechanical risk level (Group II or III). Metallic Cable Glands are to be included in equipotential bonding (e. g. by cable shield) or to be protected against electrostatic charging by other means.
... 4J	Cable gland impact protection corresponding to low level of mechanical risk (Group II or III), additional protection to be applied if necessary. Other parts of the device provide impact protection corresponding to high level of mechanical risk.

- 1) Rated current for fusing
- 2) Recommended fuse size. Each solenoid operator has to be protected by a fuse according to the rated current (max. 3x rated current according to DIN 41571 or IEC 60127-2-1) resp. a motor protection switch with short-circuit and fast thermal tripping protection (adjusted to the respective rated current of the solenoid). The fuse can be accommodated in the associated supply or must be added separately. The rated fuse voltage has to be equal or higher than the nominal solenoid voltage. The short-circuit breaking capacity has to be equal or higher than the maximum assumed short-circuit current at the installation point (usually 1500 A).

Technical Data – Temperature Class T6 / T80 °C

Solenoid operator

Ex e mb IIC T6 Gb

Ex tb mb IIIC T80°C Db

Degree of protection provided by enclosure IP65 or IP67 (with appropriate accessories)





T6	Suitable for valves up to mass magnet power level 2							
Electric Supply	AC - operation 50...60 Hz or DC - operation max. 45 % ripple							
Supply Voltage Tolerance	-10 % ... +10 %							
Ambient Temperature	-40 °C ... +50 °C							
Media Temperature	-40 °C ... +70 °C							
Type Number	Nominal Voltage		Nominal Current ¹⁾		Nominal Power			Fuse ²⁾ [mA]
	AC U _{N,AC} [V]	DC U _{N,DC} [V]	AC I _{N,AC} [mA]	DC I _{N,DC} [mA]	AC S _{N,AC} [VA]	AC P _{N,AC} [W]	DC P _{N,DC} [W]	
0519 60 / 7196 ...	12		399	440	4.8	3.9	5.3	1000
0519 60 / 7156 ...	24		179	198	4.3	3.7	4.8	500
0519 60 / 7154 ...	36		108	119	3.9	3.4	4.3	250
0519 60 / 7197 ...	48		90	100	4.3	3.8	4.8	200
0519 60 / 7198 ...	110		40	44	4.4	3.9	4.8	100
	115	-	42	-	4.8	4.3	-	
	120	-	43	-	5.2	4.6	-	
0519 60 / 7155 ...	125		31	35	3.9	3.5	4.4	75
0519 60 / 7195 ...	220		20	22	4.4	3.9	4.8	50
	230	-	21	-	4.8	4.3	-	
	240	-	22	-	5.3	4.7	-	

Type Number suffix	Further Special Conditions of Safe Use
... 7J	Impact protection corresponding to high mechanical risk level (Group II or III). Metallic Cable Glands are to be included in equipotential bonding (e. g. by cable shield) or to be protected against electrostatic charging by other means.
... 4J	Cable gland impact protection corresponding to low level of mechanical risk (Group II or III), additional protection to be applied if necessary. Other parts of the device provide impact protection corresponding to high level of mechanical risk.

- 1) Rated current for fusing
- 2) Recommended fuse size. Each solenoid operator has to be protected by a fuse according to the rated current (max. 3x rated current according to DIN 41571 or IEC 6012721) resp. motor protection switch with short-circuit and fast thermal tripping protection (adjusted to the respective rated current of the solenoid). The fuse can be accommodated in the associated supply or must be added separately. The rated fuse voltage has to be equal or higher than the nominal solenoid voltage. The short-circuit breaking capacity has to be equal or higher than the maximum assumed short-circuit current at the installation point (usually 1500 A).

EC Declaration of Conformity

nass magnet GmbH, Hanover, declares and bears sole responsibility for the following Ex products to be in compliance with the safety standards:

Solenoid operator 0519 0 ...		II 2 G II 2 D	Ex e mb IIC T4 Gb Ex tb mb IIIC T130°C Db	
Solenoid operator 0519 6 ...		II 2 G II 2 D	Ex e mb IIC T6 Gb Ex tb mb IIIC T80°C Db	

For the named products the applicable certificate numbers

PTB 11 ATEX 2027 X and IECEx PTB 15.0015X

were issued by Physikalisch Technische Bundesanstalt (notified body no. 0102).

The products are in conformity with the relevant Union harmonisation legislation:

Directive 94/9/EC	Equipment and protective systems intended for use in potentially explosive atmospheres (of 23 March 1994)
Directive 2011/65/EU	on the restriction of the use of hazardous substances in electrical and electronic equipment (recast of 8 June 2011)
Directive 97/23/EC	on the approximation of the laws of the Member States concerning pressure equipment (of 29 May 1997)

Standards references:

EN 60079-0:2012	Explosive atmospheres – Part 0: Equipment - General requirements
IEC 60079-0:2011 (Ed. 6)	Explosive atmospheres – Part 0: Equipment - General requirements
EN 60079-7:2007	Explosive atmospheres – Part 7: Equipment protection by increased safety "e"
IEC 60079-7:2006 (Ed. 4)	Explosive atmospheres – Part 7: Equipment protection by increased safety "e"
EN 60079-18:2009	Explosive atmospheres – Part 18: Equipment protection by encapsulation "m"
IEC 60079-18:2009 (Ed. 3)	Explosive atmospheres – Part 18: Equipment protection by encapsulation "m"
EN 60079-31:2009	Explosive atmospheres – Part 31: Equipment dust ignition protection by enclosure "t"
IEC 60079-31:2008 (Ed. 1)	Explosive atmospheres – Part 31: Equipment dust ignition protection by enclosure "t"
EN 60529:2000	Degrees of protection provided by enclosures (IP code)
DIN VDE 0580:2011	Electromagnetic devices and components - General specifications

Thomas Groetzinger
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Hanover, 01 June 2015