

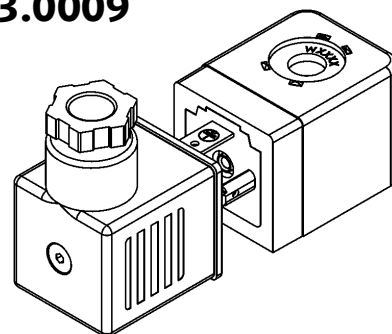
Ex i, t, Solenoid Operator - Type 1262



PTB 09 ATEX 2001



IECEx PTB 13.0009



Operating Instructions

Dear Customer!

To ensure the function and for your own safety, please read these enclosed operating instructions attentively before you begin with the installation. If you still have questions, please contact nass magnet GmbH.

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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 equipment. Furthermore, warranty for the equipment and accessories will become void. Our general terms and conditions apply
- The EC type-examination certificate exclusively covers solenoid operators consisting of armature assembly, solenoid coil and connector manufactured by nass magnet.
- Protection standards applied:

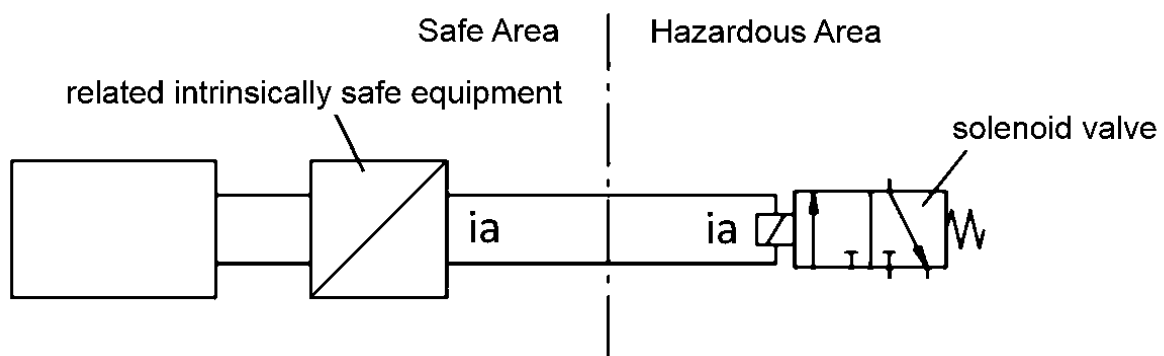
EN IEC 60079-0:2018	IEC 60079-0:2007 (Ed. 5)
EN 60079-11:2012	IEC 60079-11:2011 (Ed. 6)
EN 60079-31:2014	IEC 60079-31:2008 (Ed. 1)
- The explosion protection marking is as follows:

Gas: Ex ia IIC/IIB T6/T4 Gb	Dust: Ex tb IIIC T80°C, T130°C Db.
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The Equipment Protection Level (EPL) Gb is a voluntary restriction of the certified EPL Ga.
- In its installed state the equipment is appropriate for potentially explosive gas atmospheres of Group IIC or IIB and for explosive dust atmospheres of group IIIC. The marking indicates maximum surface temperatures and associated upper limits of the ambient temperature. The intrinsic safety parameters of the equipment are also marked.
- No conditions are specified that require the marking with the symbol "X". Nevertheless, pay attention to all specifications stated in the certificate and in these operating instructions! If in doubt, seek qualified advice!
- These operating instructions cannot consider all possible conditions and applications completely and do not replace the regulations valid in each case.

Assembly and Installation

- At installation and maintenance, it is essential to observe applicable standards for electrical safety and for installations in potentially explosive atmospheres, especially IEC/EN 60079-14.
- Take appropriate measures to exclude unintentional activation or inadmissible impairment during work.
- Before mounting the valve system, check that there is no dirt in the piping or the valve housing.
- Make sure not to damage O-rings and seals during assembly.
- **Caution! Make sure not to detach pipes and valves of pressurised systems!**
- The solenoids are suitable for a side-by-side manifold assembly at 100% duty cycle.
- Mounting is admissible in any position. Preferably the solenoid coil points upwards.
- The solenoid coil can be locked when offset by 45°.
- Observe the tightening torques according to the installation scheme.
- At choice of the material of the valve bodies must be observed:
 - Metal: The maximum admissible percent by weight may not exceed the following limits for EPL Gb and Db:
in total 7.5 % magnesium, titanium and zirconium.
 - 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.
- For potentially explosive dust atmospheres, use only the enclosed plug connector; observe the installation instructions in the section 'Assembly Scheme'.
- Prevent the connecting cables from being buckled or damaged in order to avoid short circuits and interruptions.
- The solenoid must be supplied by an intrinsically safe source (e.g. an isolating amplifier or barrier) where the permissibility of the interconnection has to be assessed expertly. Exemplary block diagram:



- Connection to certified intrinsically safe ia circuits:

Category	IIC	with maximum values	$U_i = 28 \text{ V}$	$I_i = 115 \text{ mA}$	$P_i = 1.6 \text{ W}$
Category	IIB	with maximum values	$U_i = 32 \text{ V}$	$I_i = 195 \text{ mA}$	$P_i = 1.6 \text{ W}$

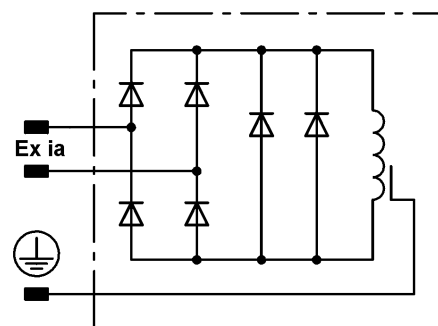
The effective inductance and capacitance of the equipment is negligible low ($L_i = 0$, $C_i = 0$).

- A minimum switch-on current is required to ensure that the solenoid valve is turned on. This current is to be considered at the design of supply and wiring. The solenoid has a temperature-dependent coil resistance due to the specific properties of copper. The warm condition values from the table include a safety margin of 5% for the resistance, 100% duty cycle with minimum switch-on current in a side-by-side manifold assembly and low heat dissipation by the valve. Two exemplary ambient temperatures are shown. Other conditions can be determined specifically.

Winding W	Min switch-on current [mA]	Resistance nominal [Ω] (20 °C)	Resistance +5% Tamb 50 °C [Ω]	Resistance +5% Tamb 85 °C [Ω]	Nominal width ; max. operating pressure [mm]; [kPa]/[bar]
5146	37 (at 1 bar) ... 31,5 (at 8 bar)	275	329 (@ 37mA)	374 (@ 37mA)	0.8 ; 800 / 8
7210	27 (at 1 bar) ... 23 (at 8 bar)	400	481 (@ 27mA)	540 (@ 27mA)	0.6 ; 800 / 8

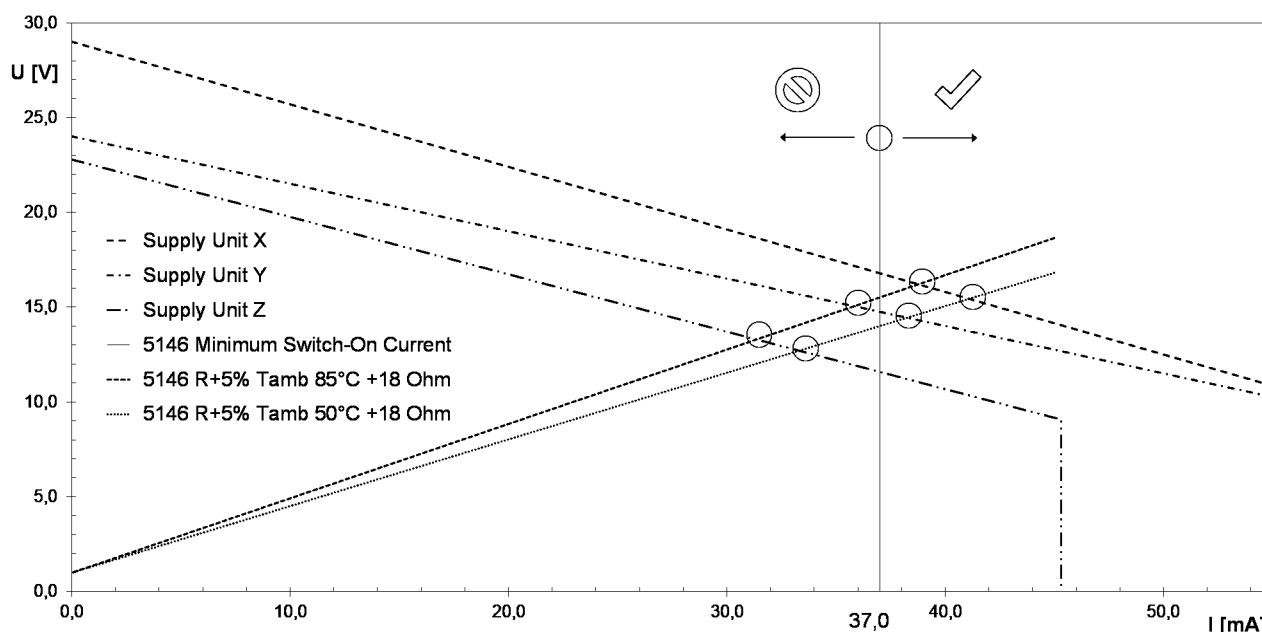
- The characteristics of the supply units can be learnt from the manufacturer's data sheets.
- For the characteristic curve of the solenoid, an offset-voltage of 1.0 V must be taken into account, which is required for the internal electronics. See adjacent schematic diagram.

- As an example, possible characteristic curves for interconnection checks are charted below. Operating, the units work at the point of intersection of the characteristic curves of the solenoid and the supply unit. For a safe switch-on this operating point must be on or to the right of the line of the minimum switch-on current (in this example winding 5146 with operating pressure at 1 bar).



From the resulting operating points, it can be concluded:
Supply unit X is suited whereas supply unit Z is not suited.
Supply unit Y is not suited for higher temperatures.

An additional resistance of 18 Ohms for the supply lines and the series voltage offset of 1 V is accounted for in the characteristic curves of the solenoid shown below.



- The minimum switch-on current is given for a supporting operating pressure (for a series plunger stroke). Higher pressure supports the lifting of the plunger and thus reduces the min switch-on current.
- Before operational start-up of the equipment, it must be ensured that the entire machine or system complies with the local regulations.

Operation

- **Caution! Risk of injury! The solenoid valve can be very hot!**
- The following assignments apply between the marked surface temperature, the permissible ambient temperature range and the permissible media temperature:

	surface temperature gas // dust	ambient temperature	media temperature
	T6 // T80 °C	-40 °C ≤ Ta ≤ +50 °C	max. 70 °C
	T4 // T130 °C	-40 °C ≤ Ta ≤ +85 °C	max. 80 °C

- The equipment's operating pressure depends on the pneumatic system used. The nass magnet standard armature system is suited for up to 1200 kPa / 12 bars and has no extra marking. For other demands please enquire.
- Admissible working media are solely gas and liquids that do not impair the pneumatic system and the gasket material contained therein.
- Prevent the equipment's exterior surfaces from getting in contact with liquid or corrosive media.
- Frequent occurrence of condensate can lead to critical accumulation of water, for which the rated protection class IP65 is not sufficient. Exposure to natural weather is generally not permitted.
- Do not strain the system by bending or torsion.

Maintenance, Servicing

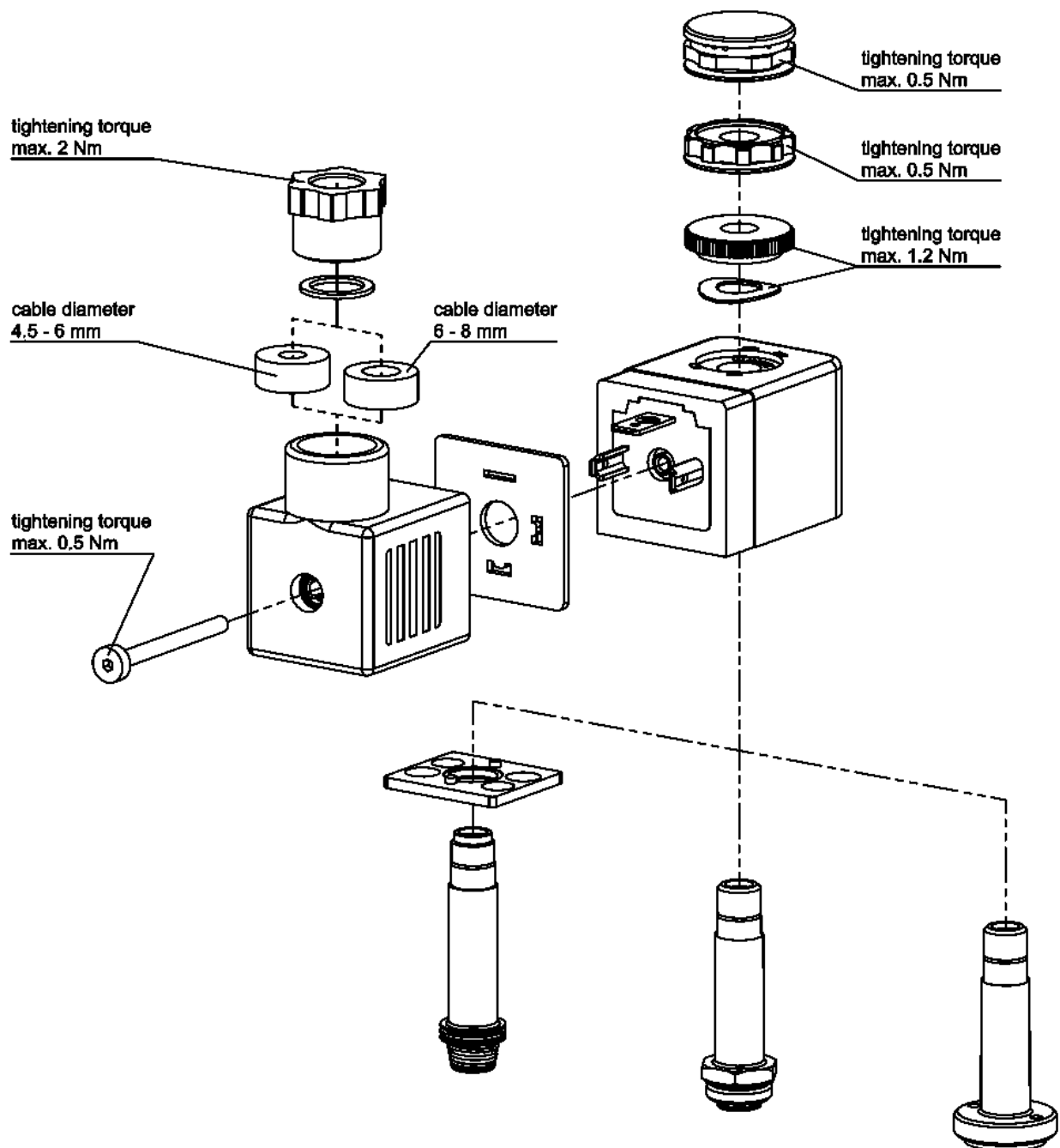
- The solenoid coil is maintenance-free. The valve parts are subject to wear depending on use and should be inspected and checked at appropriate intervals.
- When replacing the valve parts, make sure to use original nass magnet parts. These have been subjected to a required pressure test so as not to impair the safety of the Ex-equipment.

Troubleshooting, Repair

- Proceed with caution in the event of malfunctions! Be sure to observe the precautions to be taken when working on equipment in potentially explosive atmospheres!
- In addition, observe the precautions to be taken when working on equipment under pressure of a compressed medium and under electrical voltage!
- Damaged or defective equipment must not be repaired but must be replaced. Please order the replacement by indicating the identification number provided on the unit, starting with the digits "108-".

Assembly Scheme

- The cable gland is suited for cable diameters of 4.5 to 6 mm or 6 to 8 mm, one gasket ring provided for each range. Only one of them may be installed at a time. The rated conductor cross section may range from 0.5 mm² to 1.5 mm². The tightening torque of the clamp screw is 0.2 to 0.3 Nm. Prevent the cable and wires from being damaged.
- Stranded and fine-stranded conductors with ferrules or solid conductors may be used. When using ferrules, observe the relevant documentation regarding the correct installation, in particular the suitable conductor diameters and the required stripping length. Only one conductor or wire end sleeve may be screwed per terminal. Soldering multi-stranded or fine-stranded wires is not permitted.



EU Declaration of Conformity

This declaration of conformity is issued under the sole responsibility of the manufacturer:

nass magnet GmbH
Eckenerstrasse 4-6
30179 Hannover, Germany

Product, Type-number / Object of the declaration:

Solenoid operator Type 1262 00 to 1262 99

The object of the declaration described above is in conformity with the relevant Community harmonisation legislation:

2014/34/EU

Equipment and protective systems intended for use in potentially explosive atmospheres
(recast of 26 February 2014)

2011/65/EU, with (EU) 2015/863 and (EU) 2018/741

on the restriction of the use of hazardous substances in electrical and electronic equipment
(recast of 8 June 2011, amended 31 March 2015 and 1 March 2018)

Regarding pressure-induced hazards, the relevant requirements of Directive 2014/68/EU are complied with.

Notified body (no.) that performed the EC-type examination and no. of the certificate:

Physikalisch Technische Bundesanstalt (No. 0102), PTB 09 ATEX 2001.

Relevant harmonised standards used and references to the specifications in relation to which conformity is declared. In case of newer editions as referenced in the certificate we confirm that the changed requirements are either not applicable or the products listed above comply with them:

EN IEC 60079-0:2018

Explosive atmospheres – Part 0: Equipment - General requirements

EN 60079-11:2012

Explosive atmospheres – Part 11: Equipment protection by intrinsic safety "i"

EN 60079-31:2014

Explosive atmospheres – Part 31: Equipment dust ignition protection by enclosure "t"

EN IEC 63000:2018

Technical documentation for the assessment of electrical and electronic products with respect to the restriction of hazardous substances

DIN VDE 0580:2011

Electromagnetic devices and components - General specifications

Signed for and on behalf of

nass magnet GmbH, Hannover, 14 June 2021

Patrick Oelkers
General Manager

A handwritten signature in black ink, appearing to read 'P. Oelkers'.