

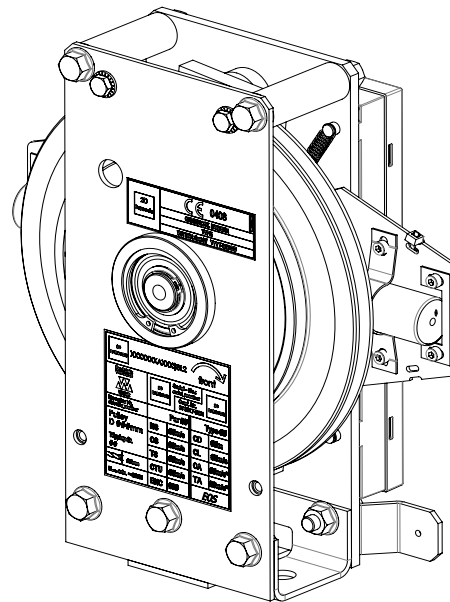
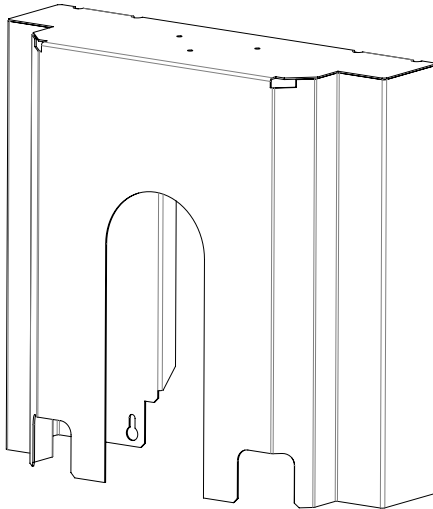
Overspeed governor EOS

Operating instructions

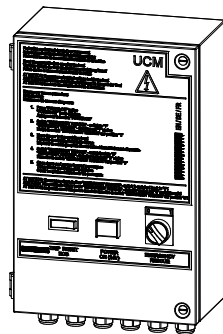
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Datum/date 23.01.2013
Stand/version J-31.07.2017
Geprüft/approved WAT/MZE



Overspeed governor EOS



Original



EOS Electronic Interface with UPS (optional)

www.wittur.com

Product manufacturer reference can be found on the product type label.
For any support or further questions please contact your trading office.



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Subject to change without notice!



Overspeed governor EOS

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1 General information prior to installation

1.1 Description and main functions

The basic function of this safety device is to detect overspeed, open the safety circuit and trigger the safety gear via governor rope - in one or both directions.

An additional function is also available for supervision of car movement with open doors (UCM).

Also the acceleration can be measured to engage the safety gear in case of excessive acceleration - even before tripping speed is reached.

A tension weight is needed to tighten the rope of the governor.

The operating range is defined as follows:

The rotary pulley movement is detected by sensors. This information is derived by a two channel and self checking safety electronics.

In normal run operation the solenoids are powered on and do compress internal springs. If the safety electronics detects any dangerous ride situation (e.g. overspeed) then the safety circuit is opened and the electric supply of the solenoids is switched off. This causes the preloaded springs to expand. Successively the plungers contact the rotating brake discs. This mechanical contact causes the synchronisation plate to twist and trigger the internal brake.

EOS D 200mm

Tripping direction	↓ uni-directional		↑/↓ bi-directional
Max. travel height	80m	120m	120m
Max. distance between overspeed governor and tension weight	85m	130m	130m
Rated speed	NS 0,15m/s ... 2,5m/s		
Min. brake force of the governor	500N	800N	500N
Max. brake force of the governor	1000N	1300N	1000N
Rope diameter/Rope pulley diameter	d = 6,0mm / DB = 200mm d = 6,5mm / DB = 203mm		
Tension force of tension weight	min.	250N	600N
	max.	350N	1.400N
Power consumption	12W permanent 40W temporary (ca. 0,5s)		
Operating temperatur	-5°C ... +55°C *		
Storage temperatur	-20°C ... +60°C		
Air humidity	<95 rH (not condensing)		
Protection class	mechanics IP2x electronics IP4x		
Max. total force onto governor	2.200N		
Applicable for	EN81-1/2:1998+A3/2009 EN81-20:2014 **		

* For lifts according EN81: +5... +40°C; General temperature range if no tighter range is stated in the local valid code: -20...+50°C

** The EN81-20:2014 conformity in the complete system has to be checked on site.



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EOS D 300mm

Tripping direction	↓ uni-directional	↑/↓ bi-directional
Max. travel height	80m	120m
Max. distance between overspeed governor and tension weight	85m	130m
Rated speed	NS 0,15m/s ... 2,5m/s	
Min. brake force of the governor	500N	
Max. brake force of the governor	1000N	
Rope diameter/Rope pulley diameter	d = 6,0mm / DB = 288mm d = 6,5mm / DB = 291mm d = 8,0mm / DB = 300mm	
Tension force of tension weight	min. 250N max. 350N	1.250N 1.400N
Power consumption	12W permanent 40W temporary (ca. 0,5s)	
Operating temperatur	-5°C ... +55°C *	
Storage temperatur	-20°C ... +60°C	
Air humidity	<95 %rH (not condensing)	
Protection class	mechanics IP2x electronics IP4x	
Max. total force onto governor	2.200N	
Applicable for	EN81-1/2:1998+A3/2009 EN81-20:2014**	

* For lifts according EN81: +5... +40°C; General temperature range if no tighter range is stated in the local valid code: -20...+50°C

** The EN81-20:2014 conformity in the complete system has to be checked on site.

1.1.1 Overspeed

When the elevator accelerates and exceeds contact speed then the safety circuit is opened. If the car speed still increases and reaches tripping speed then the internal governor brake is activated and the attached safety gear engaged.

1.1.2 Unintended car movement with open doors (UCM)

The UCM system (Unintended Car Movement) should prevent from uncontrolled car movements with open doors according to chapter 9.11 of EN81-1:1998+A3:2009, chapter 9.13 of EN81-2:1998+A3:2009 or chapter 5.6.7 of EN81-20:2014.

The EOS is used as the detection element, the EOS

Electronic Interface with UPS can be used to provide required functions like the emergency power supply and the braking element could be a safety gear, a motor brake, a guide rail brake or a rope brake. The fulfilling of the standards have to be checked by the operator.

The function to prevent unintended car movement with open doors can be ordered in several different types (see „Type“ on the order form and „Type“ on the type label). „Type 0“ means that there is no UCM functionality (in this case there is no need to connect ENM1 and ENM2). „Type 1“ EOS is used with a braking element activated by the governor rope while „Type 2“ EOS is used with electrically triggered brakes. See the table on the next page for a detailed overview.

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Type - direction	Overspeed detection		UCM detection	
	electric tripping	mechanic tripping	electric tripping	mechanic tripping
0 - uni-directional	↑/↓	↓		
0 - bi-directional	↑/↓	↑/↓		
1 - bi-directional	↑/↓	↑/↓	↑/↓	↑/↓
2 - bi-directional	↑/↓	↑/↓	↑/↓	
2 - uni-directional	↑/↓	↓	↑/↓	

↑/↓...bi-directional
↓...downwards

If the EOS was ordered with the UCM function, the prevention of unintended car movement (UCM) is active as soon as the ENM1 and ENM2 signals are inactive (not connected with +24V). For safety reasons UCM function has to be active when there is no signal at ENM1 and ENM2. Activation of those signals deactivates the UCM function.

The actuation of the UCM function complies with the safety requirements of the EN81 by using two independent signal generators for the ENM1 and ENM2 inputs. The EOS checks the synchronicity of both inputs and generates a secure condition (opening of safety circuit at next stop) if deviations occur. It is also possible to use one secure signal generator, only in this case ENM1 and ENM2 can be connected together directly to the signal generator.


If UCM is active, the output X3 MOVEMENT LIMITED is activated (contact closed). This output can be used to give other components feedback about the condition of the EOS.

If UCM is active, the EOS monitors the current position (relative to the position at which the function was activated and the car movement was completed - the difference is the way) and speed of the car. If the speed at the time of activation of UCM was not zero, the braking of the car (with a certain minimum deceleration) is allowed before UCM is actually set active.

When exceeding the UCM contact distance $CD=0,15m$ or the UCM contact speed $TL=0,3m/s$ or


0,5m/s (depending on ordered parameter) the EOS trips electrically and - dependent of the type - also mechanically

For the operation of the EOS with UCM function certain requirements have to be fulfilled:

- remote trip and remote reset buttons have to be provided
- an emergency power supply has to be provided
-  control of the inputs ENM1 and ENM2 with a signal that meets the safety requirements.
- The signal mentioned above has to be valid even in case of a power fail, if the EOS is supplied by the emergency power supply (emergency rescue)

To facilitate the use of the EOS and the realization of the UCM-System, all four points are provided through the use of the EOS electronic interface with UPS. If the box is used, the UCM-function can be used independently from the lift controller. The safety circuit is the only connection to the lift system.

Operation data (with connected EOS):

- Power supply: 230 V AC $\pm 15\%$
-  Power consumption (battery full): 15 W
- Power consumption (charging): 25 W
- Battery: 24 V; 2,1 Ah (2x12V)

Main supply max. 1A anti-surge fuse.
Safety circuit max. 2A fast acting.

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1.1.3 Remote trip and remote reset (TRIP / RESET)

The rocker switch with the functions TRIP and RESET is directly connected to the corresponding inputs of the EOS.

1.1.4 Emergency power supply (UPS)

After applying the supply voltage (230VAC), the accumulator is automatically charged and then held on charge and regularly tested. The POWER ON button lights up if the EOS is supplied.

In case of a power fail the EOS supply automatically switches to battery supply; POWER ON still lights up. This state is maintained for 30 minutes. Then the output voltage is switched off to conserve battery power for an emergency rescue (POWER ON goes off).

By pressing the POWER ON button the EOS supply is switched on again. The POWER ON button lights up and the EOS is powered up again. This state is maintained for 30 minutes again. Then the output voltage is switched off (POWER ON goes off).

1.1.5 Control of UCM function of the EOS

The inputs ENM1 and ENM2 of the EOS shall be connected to the +24 V supply of the EOS in order to disable the UCM-function of the EOS (to allow movement of the car). This information is taken from the safetycircuit, which usually has a different voltage and electric potential than the EOS. Therefore the EOS electronic interface has integrated a galvanically isolated signal transduction from K1, K2 to ENM1 (channel 1) and independently from this signal also from K1, K2 to ENM2 (Channel 2). (See circuit diagram Chapter 4.1.3)

The states of the two inputs should always be the

same. The state of the inputs is indicated by two LEDs near the connector X6 on the board of the EOS Electronic Interface (see ENM1, ENM2 in chapter 4.8.5).

During a power fail the EOS remains active because of the emergency power supply, but in most cases the safety circuit won't. This means that the signals ENM1 and ENM2 will be inactive. To still be able to perform an emergency rescue the EMERGENCY RESCUE switch activates ENM1 and ENM2 and therefore allows car movement to rescue trapped passengers.



Since the EMERGENCY RESCUE switch deactivates the safety function UCM, the switch simultaneously opens the safety circuit to stop the automatic operation of the lift in this situation. During the emergency rescue, however, it is the responsibility of the rescuing person to activate the UCM function by resetting the switch to „0“ again before the lift doors are opened!

1.1.6 Preventive tripping (optional)

The safety gear will also be engaged if the electronics detect excessive car acceleration (e.g. free-fall) even before tripping speed is exceeded.

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1.2 Liability and guarantee

This instruction handbook is written for people who are familiar with lift servicing and installation. Sufficient knowledge of lifts is essential.

WITTUR does not accept any responsibility for damage caused by improper handling, or for damage caused as a result of actions others than those stated in these operating instructions.

The warranty of the product may be voided if the parts are inappropriately used.

Unless stated otherwise, following is **not** permissible due to technical safety reasons:

- The use of other components than those installed.
- Any kind of modification on the governor.
- The installation of governors for any other purpose than those described or the installation of unsuitable overspeed governors.
- The destruction of any seal.
- The execution of faulty or improper maintenance or inspection checks.
- The use of unsuitable accessories, spare parts or operating material which has neither been released by the WITTUR Company nor consists of original WITTUR spare parts.

1.3 Safety precautions

Installers and servicing personnel are fundamentally responsible for their safety while working. The monitoring and following of all valid safety rules and legal conditions is required in order to prevent personal injury and damage to materials during installation, maintenance and repair work. This refers especially to the corresponding accident prevention rules.



General danger warning



High danger risk warning (i.e. crushing edge, cutting edge etc.).



Risk of damage to machinery parts (i.e. due to incorrect installation, or such like).



Important information sign

These operating instructions belong to the whole installation procedure and must be kept in a safe place at any times (i.e. machine room).

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Before starting installation work:



Only properly trained personnel may carry out work or have access to the installation site.

- attach safety devices to guard (platform or harnesses) to prevent it from falling
- cover any floor openings
- Secure installation tools or objects against accidental falling
- lift shaft openings should be cordoned off and suitable warning signs should be erected when working in shaft openings
- work involving electrical equipment should only be carried out by an electrical engineer or qualified personnel.

1.4 Preparation

Before starting to work it is in your own interest to ascertain the structural and spatial conditions and to check where (workshop or on site) and when installation operations can or must be carried out. It is recommended therefore to take into account all the given circumstances, to plan the various operational sequences in advance, rather than carrying them out prematurely and in an unconsidered manner.

On receipt of the delivery, the goods or components should be checked for correctness and completeness with the order sheet.

Following should be checked:

- that factory and order number do correspond
- that the details on the name plate does correspond to those on the order

1.5 Advice when working on safety components

Overspeed governors are classified as safety components. It is most important to comply with the standards and guidelines described in this section as well as those given in the rest of this operating manual.



These instructions and especially the section of safety precautions, should be read and fully understood before working with the component.

Safety devices require special attention. It is compulsory that they function perfectly to ensure danger free installation operation.

Operation of safety devices installed ex-works must be tested immediately.

If it is necessary to disassemble a safety device during servicing or repair, it must be reassembled immediately after this work has been finished.

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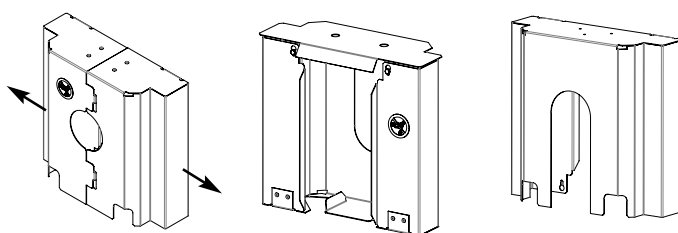
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1.6 Delivery content

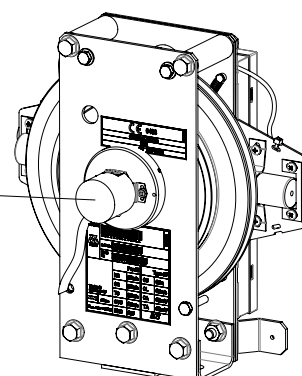
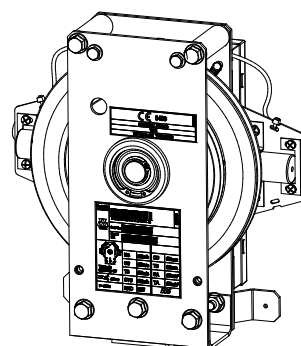
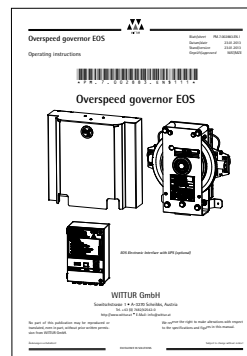
The components have to be checked for damages and completeness. The package contains:

- Operating manual
- Overspeed governor EOS (adjusted and calibrated at factory) incl. safety cover (standard safety cover or split safety cover - optional)

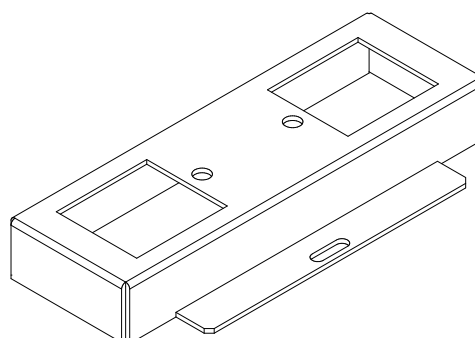


The EN81-20:2014 conformity of the cover has to be checked on site.

- Encoder (optional)



- Base (several types, optional)
- Mounting and fixing screw package (optional)

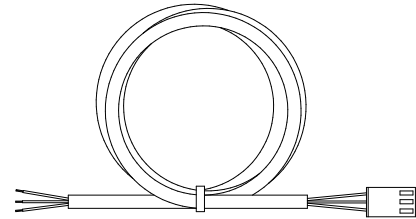


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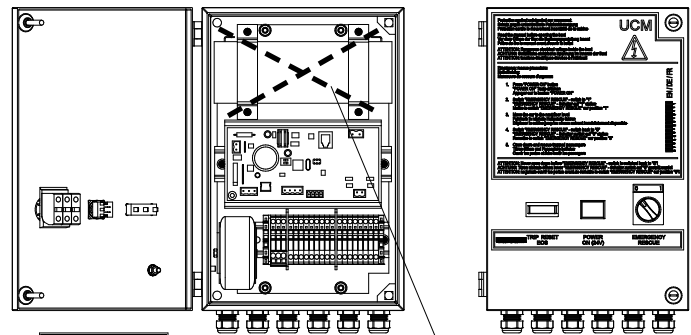
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- Encoder cable 5m (if encoder output is ordered)

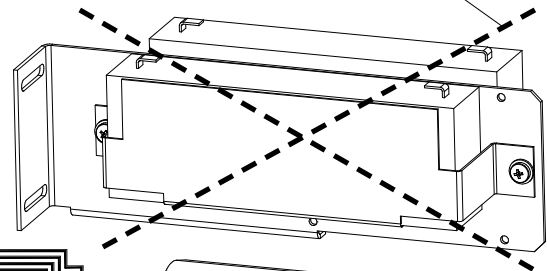


- EOS Electronic Interface with UPS with Box (optional):
Box, switch, electronics, transformer, battery, labels in different languages
- EOS Electronic Interface without UPS with Box (optional)



EOS Electronic Interface with UPS without Box (optional):

EOS Electronic Interface without UPS without Box (optional)



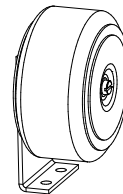
UPS (Accumulators with fixing)



Labels in different languages

Electronics

Transformer with fixing



Trip/Reset rocker switch

Power On button

Emergency Rescue Switch



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Geprüft/approved WAT/MZE

2 Name plate, designation, identification

2.1 General







The governor's identification indicators are located at the front stand and at the electronic box at the back side of the governor stand.

These consist of a name plate and an identification sticker which gives following data:

- Type term of governor
- Serial number
- Elevator number
- Parameter set (see chapter 3.2)
- Nominal speed (NS)
- Safety circuit contact speed (CS)
- Mechanical tripping speed (TS)
- Construction time tripping speed (CTU)
- Encoder (240 pulses/rev.) on/off
- Type regarding UCM function
- UCM contact distance (CD)
- UCM contact speed (CL)
- Safety circuit contact acceleration (CA)
- Mechanical tripping acceleration (TA)
- Rope diameter
- Direction of tripping
- Rope force created during tripping
- Pulley diameter
- Configuration number of type label



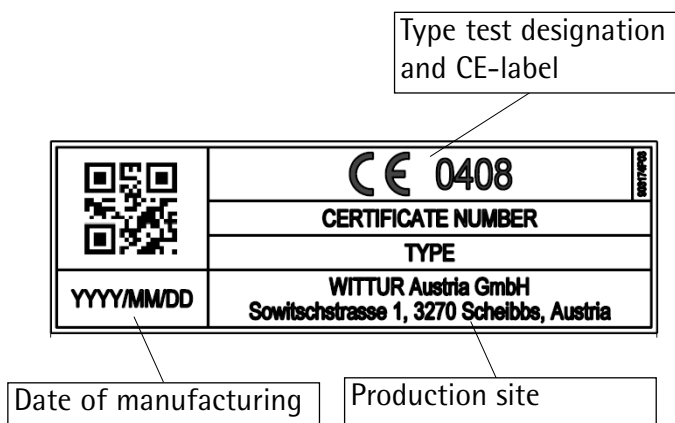
The governor is adjusted, calibrated and sealed at the factory. Readjustment is NOT possible.

Serial number		Serial - No.: serial_number		Tripping direction
Nominal speed		Prod. Date: YYYY-MM-DD	Elevator - No.: elevator_number	Parameter set
Order number - Elevator number (refer to delivery or order sheet)				
Pulley diameter	XXXXXXXXXX\$3L2	Par ##	Type ##	UCM type
Function	Pulley D ###mm	NS ###m/s	CD ##m	UCM contact distance / speed
Rope diameter	Tripping ##	CS ###m/s	CL ###m/s	Safety contact speed / acceleration
Min. brake force	 #.##mm	TS ###m/s	CA ###m/s ²	mechanical tripping speed / acceleration
Construction time tripping speed	 #.##N	CTU ###m/s	TA ###m/s ²	Encoder output 1 = on / 0 = off
	Force min. = ###N	ENC ###	0903174P01	

Overspeed governor EOS

Operating instructions

Blatt/sheet PM.7.002883.EN.13
 Datum/date 23.01.2013
 Stand/version G-15.03.2016
 Geprüft/approved WAT/MZE



2.2 Compatibility



In case of using the EOS as replacement for an older version check that the used parameter is the same.

With parameter Par 1 the certificate no. TÜV-A-AT-1-13-0339EUGB-2 is compatible with TÜV-A-AT-1/08/104CEGB/5 and older versions. All other parameters are not compatible with TÜV-A-AT-1/08/104CEGB/5 or older Versions.



only for EOS D200mm

The parameter shows the predefined setting of the UCM-detection data. Depending on the used parameter the UCM contact speed (CL) and the internal calculation rules vary, what causes different detection delay times in case of UCM between the different parameter sets. Therefore the used EOS parameter set has to be specified in the UCM-system and the EOS could not be changed to other parameters without checking the stopping distances according to chapter 9.11 of EN81-1:1998+A3:2009, chapter 9.13 of EN81-2:1998+A3:2009 or chapter 5.6.7 of EN81-20:2014 and related topics as e.g. apron length.


Overspeed governor EOS


Operating instructions


Blatt/sheet PM.7.002883.EN.14
Datum/date 23.01.2013
Stand/version C-13.10.2014
Geprüft/approved WAT/MZE

3 Mechanical installation


3.1 General


 **Governor rope attached to the car:** When the car travels downwards the governor has to rotate in tripping direction.

 Do not use a hammer for adjustment of the fixing position!

 **Governor attached to the counterweight:** When the counterweight travels downwards the governor has to rotate in tripping direction.

3.1.1 Handling of the EOS

 Don't carry the governor on the electronics box or wires!

 Don't lubricate the governor with oil or grease! This might reduce the governor's breaking force and traction of the governor rope!

 The direction of tripping stated on the type label refers to front view!

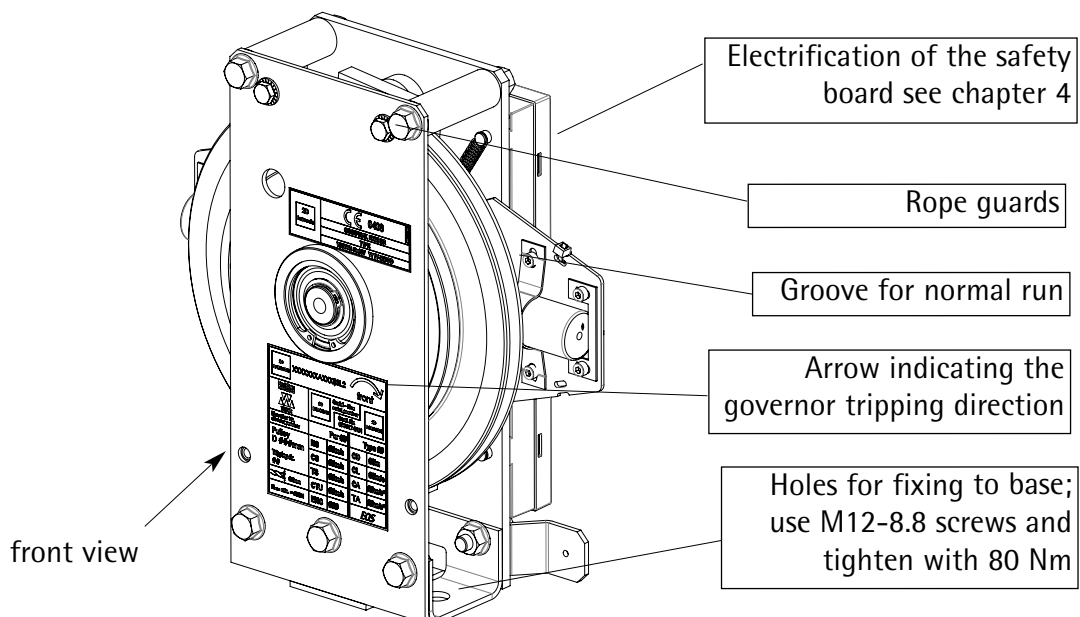
3.1.2 Forces

- Weight of EOS D 200mm: ~12 kg
EOS D 300mm: ~16 kg

- Tension weight: acc. EN81

Brake force of the EOS		Tension weight
uni-directional	500N	250N - 350N
	800N	600N - 1.400N
bi-directional	500N	1.250N - 1.400N

- Min. breaking load of rope: acc. EN81 (safety factor 8)



Overspeed governor EOS

Operating instructions

Blatt/sheet PM.7.002883.EN.15
Datum/date 23.01.2013
Stand/version C-13.10.2014
Geprüft/approved WAT/MZE

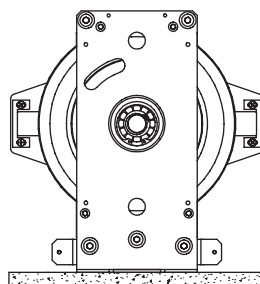
3.1.3 Fixing possibilities



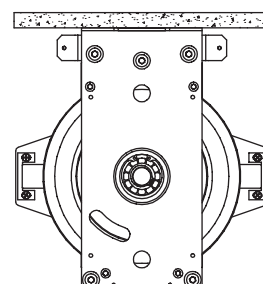
It is intended to fix the device standing.

If the option EOS headfirst was ordered, fix the device in headfirst (hanging) position

standing position



headfirst position (optional)

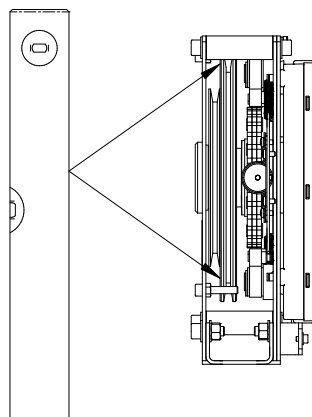


only for EOS
D 200mm

3.1.4 Installation tolerances

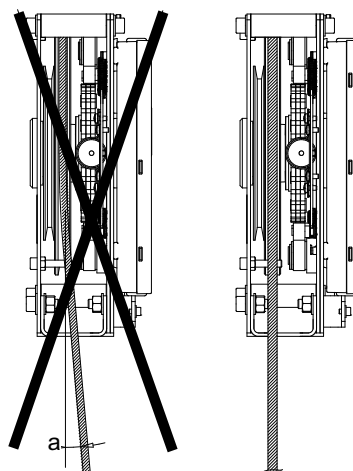


The governor must be installed in the way that the groove is vertical.



The governor rope must run parallel into the wheel groove!

The allowed tolerances of angle α are: max. $\pm 2^\circ$



Overspeed governor EOS

Operating instructions

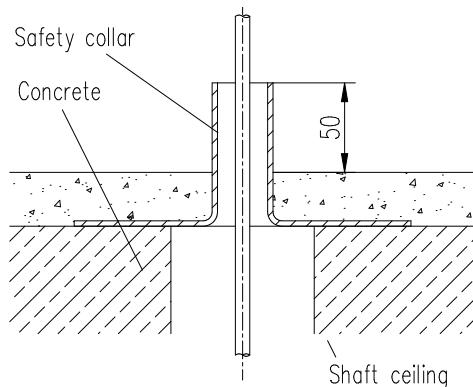
Blatt/sheet PM.7.002883.EN.16
 Datum/date 23.01.2013
 Stand/version 23.01.2013
 Geprüft/approved WAT/MZE


3.2 Mechanical installation of the governor


3.2.1 Installation in the machine room

Preparation


The governor can either be installed directly on the machine room floor or on a support structure.




 Lifts complying with EN81 require the rope aperture to be kept as small as possible and need to be fitted with a collar which is 50 mm high. A corresponding safety collar must be fastened to the floor before installation takes place.

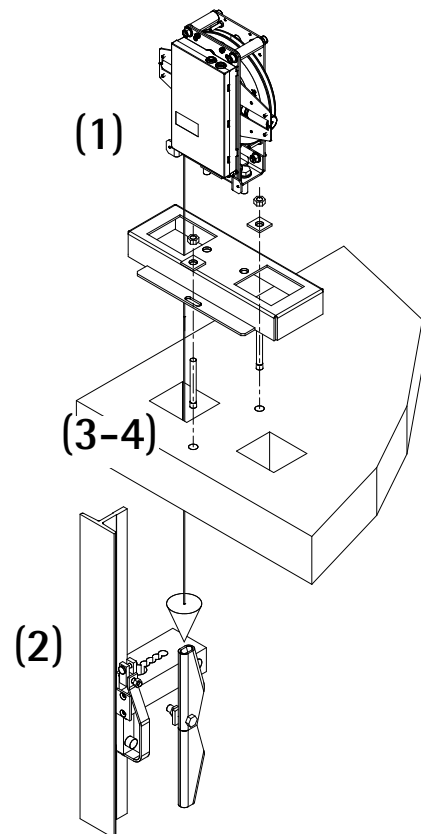
 If a cement floor is to be poured over the concrete after installation, bear this in mind when fitting the collar.

Installation procedure

 Always pay attention to the overspeed governor's rotational direction during each stage of installation.

- (1) If using a support base it must be screwed to the governor.
- (2) Put the governor (with or without base) into correct position and align the plumb line over the centre of the safety gear linkage.
- (3) Mark the drill holes and put the stud anchor in place (stud anchors are delivered with supporting base).
- (4) Fasten down the overspeed governor (with or without supporting base).

 Take care of tightening torque
 Screw M10: 46Nm
 Screw M12: 80Nm





Overspeed governor EOS

Operating instructions


Blatt/sheet PM.7.002883.EN.17
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Stand/version G-15.03.2016
Geprüft/approved WAT/MZE

3.2.2 Shaft head installation


 Observe the applicable safety dimensions for lift installations.

 The overspeed governor is equipped with remote tripping/reset for machine room or for shaft installation.

Installation procedure

 Always pay attention to the overspeed governor's tripping direction during each stage of installation.

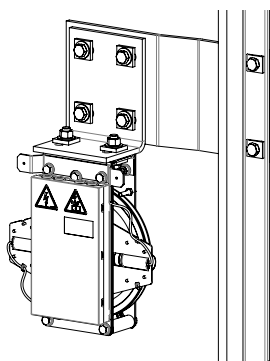
- (1) Check the layout drawing to see whether the overspeed governor is to be fastened to the left or right hand guide rail.
- (2) Fix the guide rail mounting in the desired height to the rail.


 The mounting holes are depending on the model and guide rail used. For guide rails T70-T82 use inner holes, from T89 upwards use outer holes.

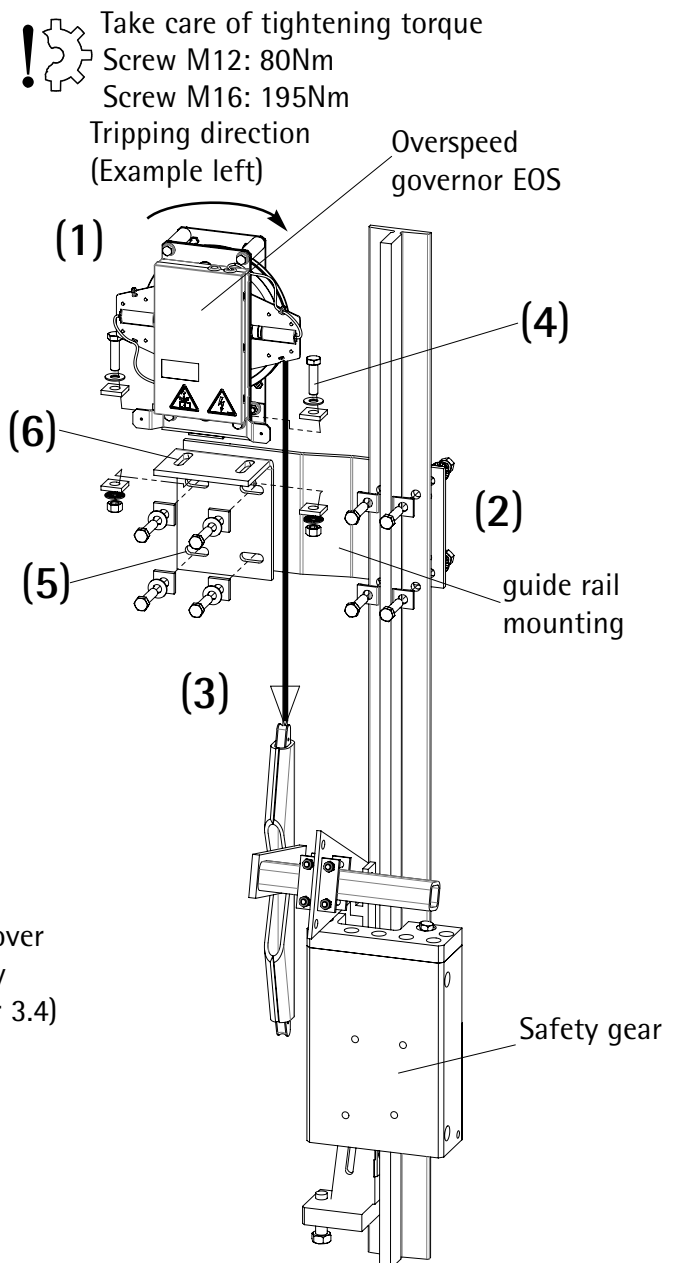
- (3) Put the overspeed governor into the correct position and align it in plumb line over the centre of the safety gear linkage.
- (4) Fasten the overspeed governor to the base.

AK dimension (distance rope centre - guide rail) is adjustable from 140mm to 160mm (5). The distance between rope centre and guide rail rear is adjustable from 35mm to 70mm (6).

EOS headfirst mounting (D 200mm only)



 First mount the cover plate of the safety cover (see chapter 3.4)



Overspeed governor EOS

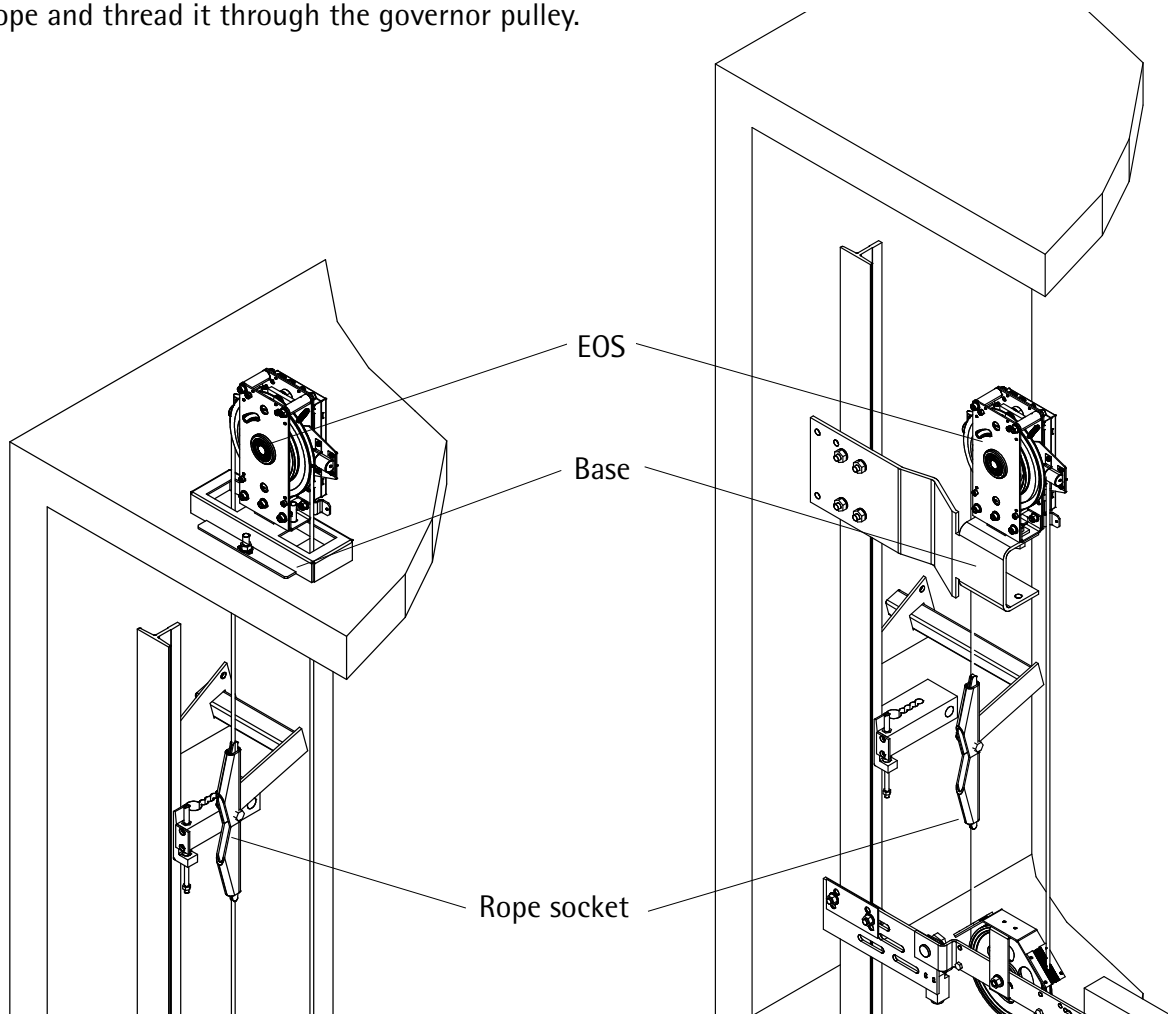
Operating instructions

Blatt/sheet PM.7.002883.EN.18
 Datum/date 23.01.2013
 Stand/version 23.01.2013
 Geprüft/approved WAT/MZE

3.3 Roping of the governor

The governor can only operate perfectly if the governor rope and the tension weight are installed correctly.

- (1) Install the governor mechanically according chapter 3.2.
- (2) Install the tension weight (see operating instruction of tension weight).
- (3) Leave enough extra length on the governor rope and thread it through the governor pulley.
- (4) Connect the first rope end to the rope socket and attach it to the safety gear linkage.
- (5) Thread the rope around the tension weight pulley (see operating instruction of tension weight).
- (6) Connect the second rope end to the rope socket of the safety gear linkage



Overspeed governor EOS

Operating instructions

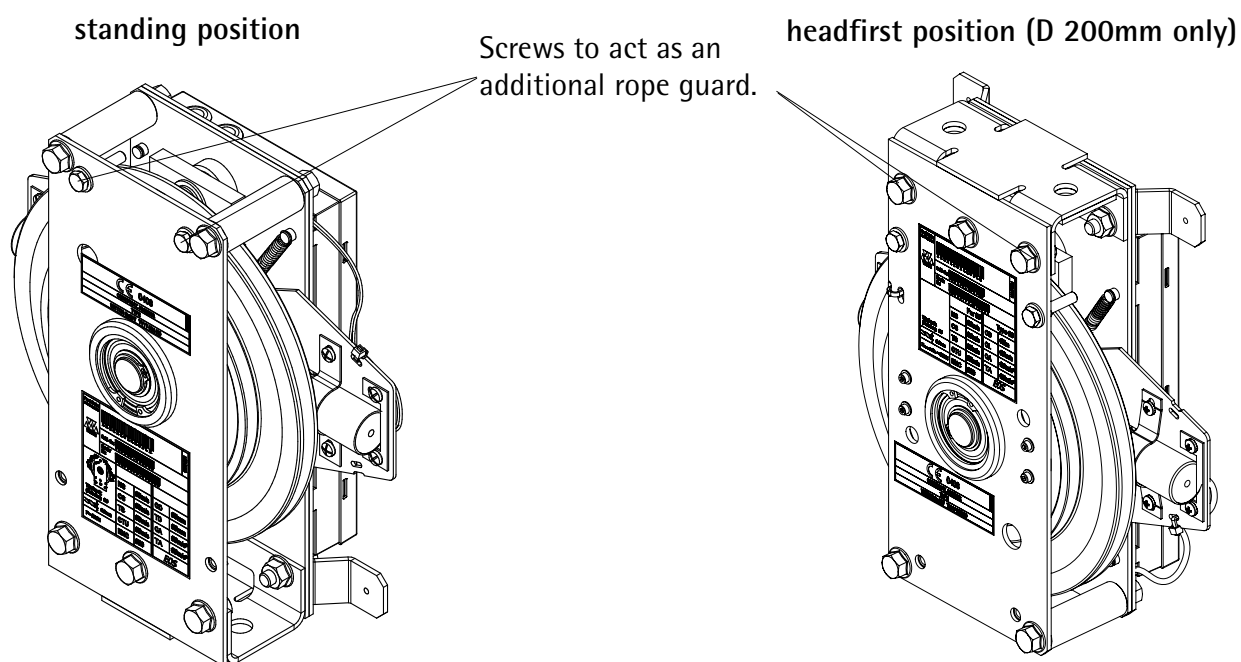
Blatt/sheet PM.7.002883.EN.19
Datum/date 23.01.2013
Stand/version C-13.10.2014
Geprüft/approved WAT/MZE

3.4 Attaching the safety cover and rope guards

The use of the safety-cover is mandatory to protect the device from dirt and any falling objects. It also includes the rope guard.



The use of the safety cover is absolutely necessary!



Overspeed governor EOS

Operating instructions

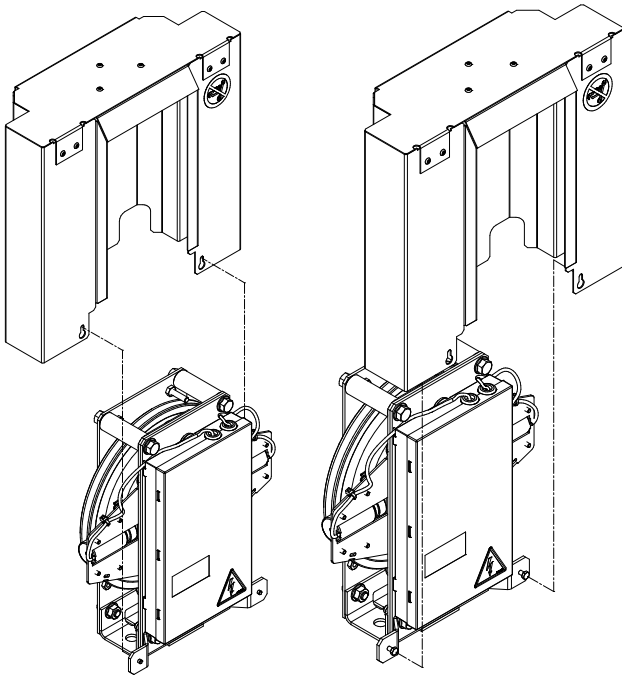
Blatt/sheet PM.7.002883.EN.20
Datum/date 23.01.2013
Stand/version C-13.10.2014
Geprüft/approved WAT/MZE

Standard safety cover at EOS standing position

Put the protection cover on the governor and fix it with screws. These can be fixed from front side or from back side - depending on the accessibility. (see at the picture below)

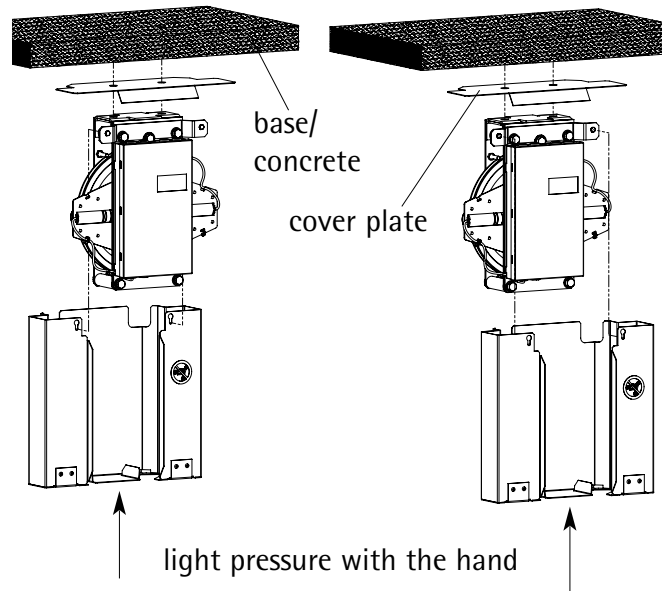


Once the screws are mounted correctly (either from front or backside) after the initial installation it is sufficient to loosen the screws to take off the cover for maintenance purposes.



Standard safety cover for EOS headfirst option (D 200mm only)

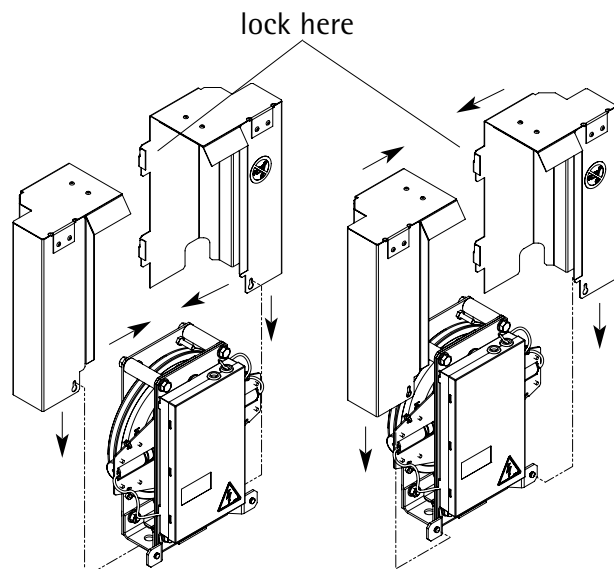
Fix the cover plate with the EOS fixing screws between base/concrete and EOS. Mount the standard headfirst safety cover in the same way like the standard safety cover for EOS standing position. Additional a light pressure with the hand to the bottom of the safety cover is needed to fix the cover. Fix with screws like at the standard safety cover for EOS standing position.



Split safety cover (only for EOS D200mm standing position)

Put the split safety cover from above, from the left and the right side, on the EOS. Lock the single parts on the back side.

This split safety cover can also be fixed from the front or the back side. For the fixing with the screws look at standard safety cover.




Overspeed governor EOS


Operating instructions


Blatt/sheet PM.7.002883.EN.21
Datum/date 23.01.2013
Stand/version G-15.03.2016
Geprüft/approved WAT/MZE


3.5 Installation of the electronic interface (optional)


 The box must be mounted in an upright position. The label must be readable. Ex factory the German / English / French label is affixed. In the accessories kit there are labels in other languages that can be affixed as needed.

Install the EOS electronic interface to the machine-roomwall and wire the box according to the wiring diagramm.


 For machineromless lifts the electronic interface box or even the electronic switches have to be mounted in the lift controller to prevent unattended manipulation.

 Work involving electrical equipment should only be carried out by an electricalfitter or qualified personnel.


 Before carrying out work, switch off all voltage to installation equipment.


 Take note of the following when laying the connection cable:

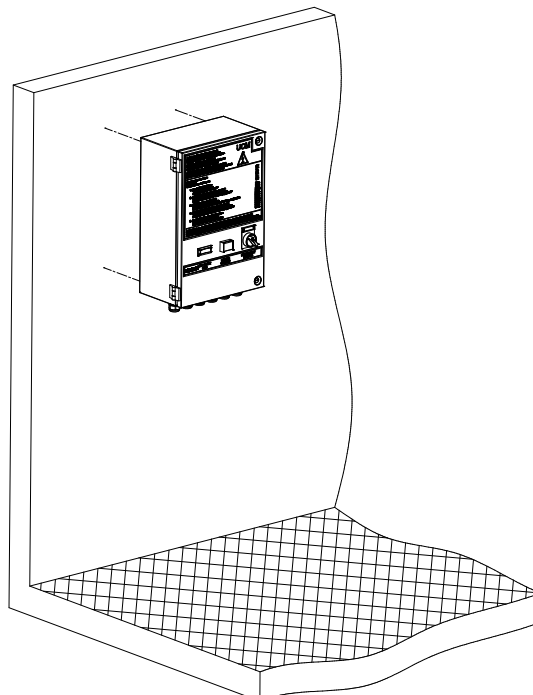
- the single polarity cables have double insulation
- the use and laying of cables is governed by the EMC

 The EMERGENCY RESCUE switch opens the safety circuit of the elevator system.

The electronic interface or even the electronic with battery and transformer should be placed near to the EOS. If this is not possible due to maschineroom or lift controller at the bottom of the shaft check the cable dimensions (see chapter 4.8)

 It is possible to place only the control elements further away from the EOS if needed. In that case no cable dimension change is necessary

 The electronic interface must be installed in upright position



Overspeed governor EOS

Operating instructions

Blatt/sheet PM.7.002883.EN.22
Datum/date 23.01.2013
Stand/version 23.01.2013
Geprüft/approved WAT/MZE

4 Electrical Installation

4.1 Electrical installation of the EOS

4.1.1 Safety

The electronics of the EOS is specially designed, tested and certified to perform safety relevant functions according EN81.

Safety relevant functions of the electronics are internally checked periodically. In the unlikely case of an internal error this is signalized by a flashing CHANGE UNIT-LED (see chapter 4.3.10) immediately. At the next stop of elevator-movement, the safety circuit will be opened to get the elevator out of order to avoid insecure operation.

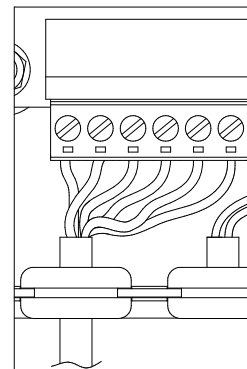
After an internal error of the EOS governor check the supply voltage and apply the RESET signal. This resets the internally stored error-information. Follow the test procedure described in chapter 4.5. When the error arises again, change the unit.

The tripping values are stated on the identification label and can not be changed.



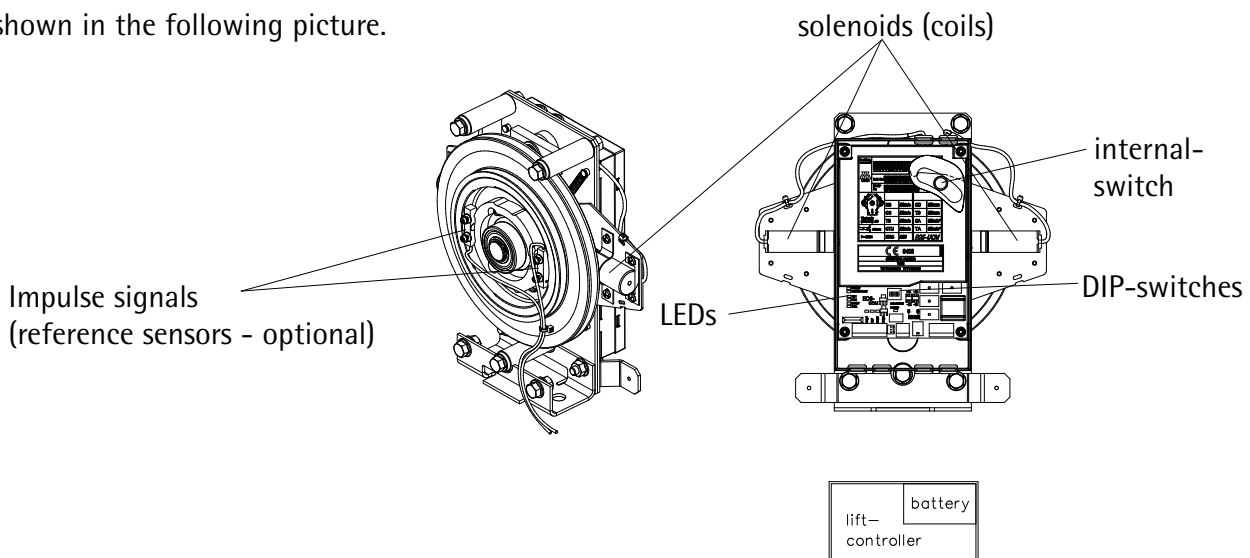
The box protects the electronics only when the cover is applied.

Make sure that neither dust, dirt nor water can reach the electronics as long as the cover is removed! Use the bushing nipples supplied with the EOS to ensure the proper protection of the electronics when the cables are connected.



4.1.2 Interfaces

The interfaces of the EOS electronics board are shown in the following picture.



Overspeed governor EOS

Operating instructions

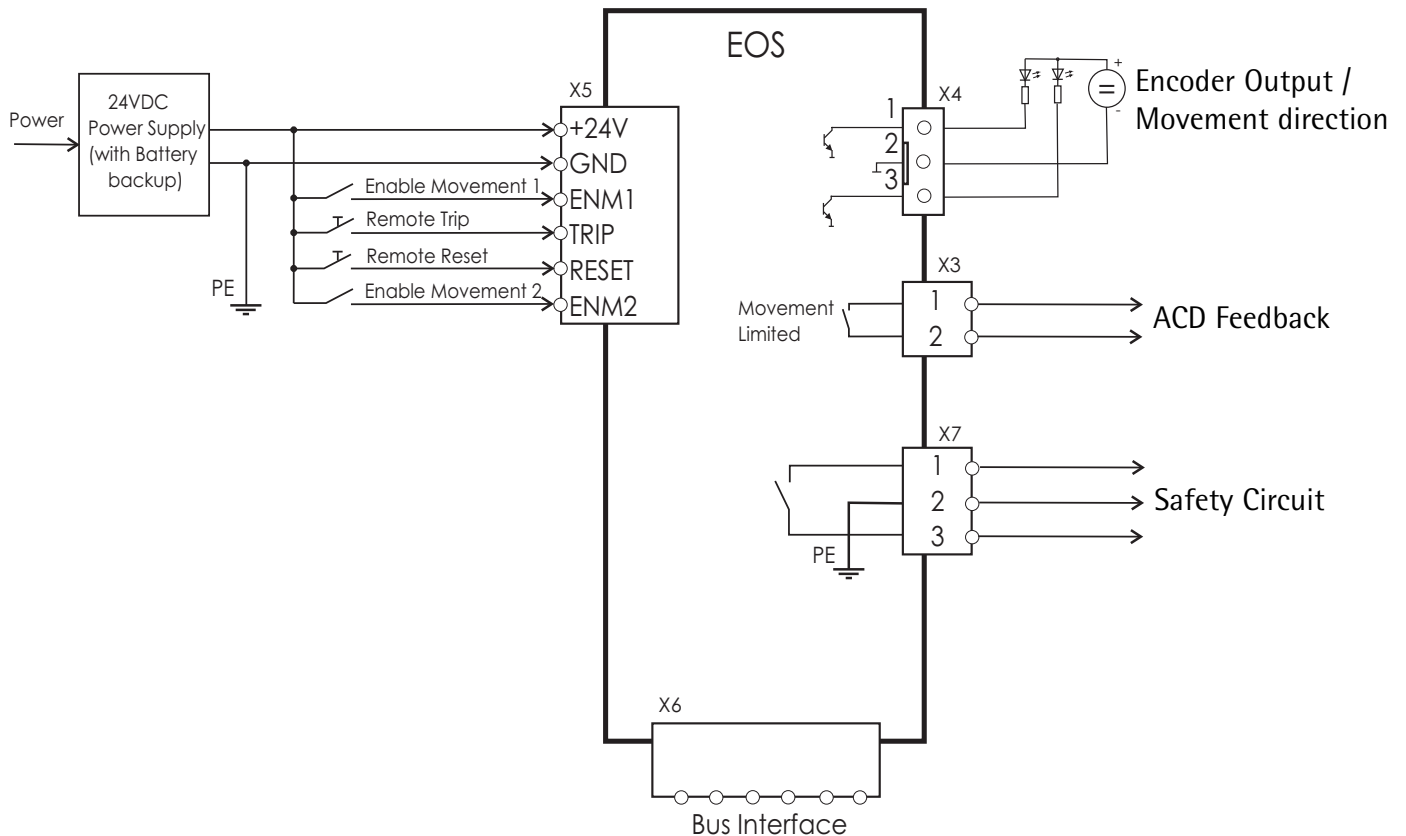
Blatt/sheet PM.7.002883.EN.23
 Datum/date 23.01.2013
 Stand/version 23.01.2013
 Geprüft/approved WAT/MZE

The electronics' interfaces to the lift controller is described in chapter 4.3, additionally there are internal connections to:

- 2 trip coils (powered on in normal run)
- 1 synchronization plate switch (detection of synchronization plate position)

It is highly recommended to install the required momentary switches TRIP (tripping switch) and RESET (reset switch) e.g. for periodical testing of the EOS at an for trained personnel easy accessible position. For electrical connections see chapter 4.3.

4.1.3 Wiring diagram of EOS overspeed governor



Overspeed governor EOS

Operating instructions

Blatt/sheet PM.7.002883.EN.24
Datum/date 23.01.2013
Stand/version A-13.03.2014
Geprüft/approved WAT/MZE

Contact X5

Contact	Name	Explanation
X5/1	+24V	+24 VDC power supply (18 ... 32 VDC tolerance)
X5/2	GND	Protective earth for inputs at X5
X5/3	ENM1	Switch for UCM input 1
X5/4	TRIP	Push button for remote trip
X5/5	RESET	Push button for remote reset
X5/6	ENM2	Switch for UCM input 2

Contact X4

Contact	Explanation
X4/1	Pulse related to speed / Channel 1 of encoder-output (optional)
X4/2	Ground for encoder output (up to 32 VDC)
X4/3	Direction indicator / Channel 2 of encoder output (optional)

Contact X3

Contact	Explanation
X3/1,2	ACD Feedback Max. 0,5A; 125VAC / 2A; 30VDC

Overspeed governor EOS

Blatt/sheet PM.7.002883.EN.25
Datum/date 23.01.2013
Stand/version 23.01.2013
Geprüft/approved WAT/MZE

Operating instructions

4.1.4 Operating Modes

The EOS electronics has two operating modes which can be selected by the switches only (see chapter 4.3.9):

- Construction time use
- Normal operation

"Construction time use" is designed for installation phase of the elevator, when no lift controller can be connected to the EOS and car is moved by chain hoist. You only have to connect power supply and safe operation is assured (with reduced speed limit). Safety circuit contact of the EOS will not be closed, UCM function is deactivated.

After the elevator installation is finished, the electronics must be switched to "normal use"-mode. In this mode, all functions of the EOS electronics are activated and must therefore be connected to the lift control electrics. Especially, the safety circuit contact of the EOS must cause stand still of the elevator when opened due to safety reasons.



Never operate EOS in "normal use" when safety circuit contact of the EOS is not able to stop elevator operation!



Check supply voltage if CHANGE UNIT is on!

4.1.5 Power Supply

Mechanical movement of the governor wheel requires power supply at least. Without power supply, mechanical movement is impossible as a matter of principle.



Never try to make the governor running in another way than by applying the correct voltages! Do not manipulate the mechanical parts!



A back-up battery has to be used for the EOS governor to enable emergency rescue without line power. To allow governor movement the electric power must be available and the ENM1 and ENM2 signals must be ON to switch off the UCM function.



It is obligatory to use back-up battery for EOS!



Make sure that ENM1 and ENM2 signals are activated or can be activated during emergency rescue in case that the EOS is equipped with UCM function!



The governor must be supplied with back-up battery to enable emergency rescue in case of power blackout. The capacity has to be designed to cover the time from power failure until completion of the emergency rescue of entrapped passengers.



Check the function of the standby battery power supply after installation and with each inspection!



Check periodically that CHANGE UNIT is not flashing!

Overspeed governor EOS

Blatt/sheet PM.7.002883.EN.26
Datum/date 23.01.2013
Stand/version D-02.03.2015
Geprüft/approved WAT/MZE

Operating instructions

4.2 Functions

4.2.1 Reset

To enable movement of the governor wheel and operation of the elevator, the solenoids must be switched on and the safety circuit must be closed (operational state).

But if either the solenoids are switched off or the safety circuit contact is opened by the EOS, you must apply a RESET signal for a short time by using the reset input to start reset operation.



The reset-function can only be activated when the elevator is not moving. Check the governor after each reset operation! The synchronization plate has to be horizontal and therefore the safety circuit is closed!

A reset is also possible directly on the electronic board of the EOS. When S1/2 and S1/3 are switched off simultaneously, a reset operation will be executed. See chapter 4.3.8 for further information.

4.2.2 Trip

Safety of mechanical tripping is achieved by using two tripping solenoids which hold the activation springs compressed. Each of them is able to trip the EOS. In any emergency situation both springs are activated by deactivation of the solenoids.

4.2.3 Unintended car movement UCM (optional)

This UCM function is designed to prevent unintended car movements with open doors. When the UCM function is activated, the actual position is stored and supervised. Additionally the speed limits are reduced to lower values.

The UCM function is activated by removing the ENM1 and ENM2 signals (which have to be generated externally and have to be applied on the ENM1 and ENM2 inputs).

The MOVEMENT LIMITED output is active as long as the UCM function is active (see also 4.3.5).

Take care that ENM1 and ENM2 must be active for emergency rescue operation in order to allow car movement without triggering UCM function!

4.2.4 Acceleration detection (optional)

With the EOS also the acceleration can be detected. The excessive acceleration in free fall condition is realized and the safety gear activated. The governor does not wait until tripping speed is exceeded for emergency braking.



When doing standard tests do take care of the acceleration in order to test the tripping speed and avoid acceleration-tripping!

4.2.5 Synchronization plate switch

Due to code requirements, the safety circuit contact must only be closed when governor is in operational state and is able to rotate freely. Therefore the position of the synchronization plate is monitored. If it is twisted due to sabotage or mechanical failure the safety circuit is opened.

Keep this in mind, especially for start up and emergency rescue (see chapter 4.4).

Overspeed governor EOS

Blatt/sheet PM.7.002883.EN.27
Datum/date 23.01.2013
Stand/version J-31.07.2017
Geprüft/approved WAT/MZE

Operating instructions

4.2.6 Direction Indicator

The direction indicator enables the possibility to display the actual direction of rotation and speed via the output (see chapter 4.3.6). When the encoder option is ordered the error indicator (4.2.9) is disabled.

4.2.7 Encoder (optional)

The position information of the governor wheel is available directly at the lift controller interface of the EOS electronics (encoder interface, see chapter 4.3.7) in the form of incremental information including rotation direction (two 90 degree phase shifted signals). When the encoder option is ordered the error indicator (4.2.9) is disabled.

4.2.8 Tripping Indicator (Optional)

The information of the Safety LED and the COIL LED will be shown on the encoder output, this is used for applications where no direct view to the EOS is possible during operation, see capture 4.3.8. Wird diese Option bestellt, wird diese Option bestellt, wird die Error Anzeige (4.2.9) deaktiviert. When this option is ordered the error indicator (4.2.9) is disabled.

4.2.9 Error Anzeige (standard)

Errors and Warnings will be shown on the encoder output, this is used for applications where no direct view to the EOS is possible during operation to see what problem occurred, see capture 4.3.9

4.2.10 Impuls Signal ETS (optional)

The position information of the governor wheel is available as a separate part independent of the EOS electronics (reference signals, see chapter 4.3.8) in the form of incremental information including rotation direction (two 90 degree phase shifted signals).

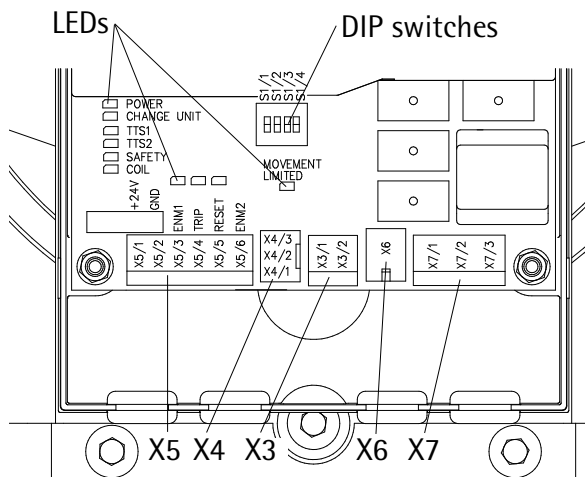
Overspeed governor EOS

Operating instructions

Blatt/sheet PM.7.002883.EN.28
Datum/date 23.01.2013
Stand/version G-15.03.2016
Geprüft/approved WAT/MZE

4.3 Electrical Interface Description

The lift controller interface is on the bottom of the electronics. It can be accessed by removing the cover.



4.3.1 Safety Circuit

The safety circuit contact is provided between X7/1 and X7/3 and has to be inserted into the safety chain of the elevator.

Electrical data of safety circuit (EOS only) (resistive load):

100 VAC / max. 2A bis 250 VAC / max.2 A
30 VDC / max. 2A bis 250 VAC / max.2 A

Max. fuse size: 2A, fast acting

4.3.2 Power Supply

The EOS electronics is designed for a nominal operating voltage of 24VDC (0,5A, 12W). The positive pin of the power supply has to be connected to X5/1, the negative pin (ground) to X5/2. Function is guaranteed for a supply voltage range of 18VDC to 32VDC. Peak power consumption is about 40W.



Too weak power supply may cause problems during reset operation of the EOS or unintended tripping during operation!

Pin X7/2 is internally connected to case and must be connected to protective earth.

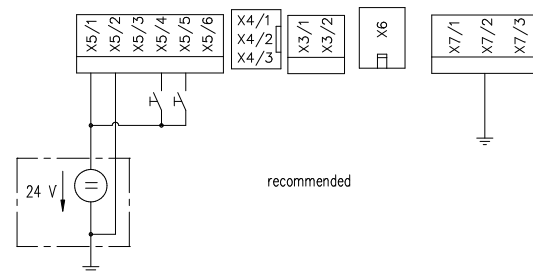


You must use a standby battery power supply for normal operation!

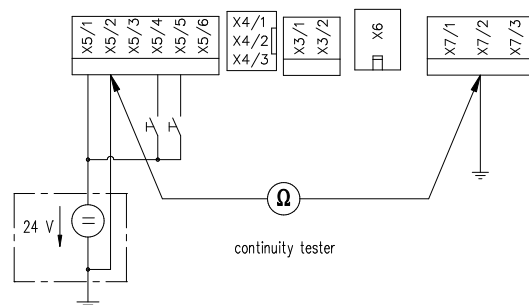


The ground potential of the supply voltage as well as the case must be connected to protective earth due to safety reasons!

It is recommended to do supply voltage connection to ground at the power supply unit as shown in the following schematics.



Check earth connections after installation and with each inspection by using a continuity tester (see schematics).

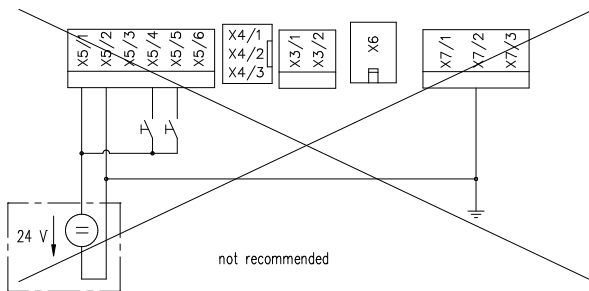


Overspeed governor EOS

Operating instructions

Blatt/sheet PM.7.002883.EN.29
Datum/date 23.01.2013
Stand/version D-02.03.2015
Geprüft/approved WAT/MZE

In case of recommended wiring like described above, you may alternatively check by disconnecting X5/2 and connect X5/2 with X7/2; EOS must operate in this case (see schematics).



Do not forget to restore correct wiring after test!

4.3.4 Reset

Reset input is a high-active input. Connect X5/5 with X5/1 using a switch or push button to generate the RESET signal.



Due to safety reasons, it is not allowed to generate the RESET signal automatically! Do only use a manual switch!

As long as RESET signal is active, coils are both switched off and safety circuit is opened. After RESET signal is deactivated, reset operation is performed. Note that reset operation is time delayed when last reset operation was done within less than 10 seconds. There is also the possibility to reset the EOS directly on board (see 4.3.9).

4.3.3 Trip

Trip input is a high-active input. Connect X5/4 with X5/1 using a push button to generate the TRIP signal.

To enable independent testing of each coil, the TRIP signal causes switch of only one coil. Once a coil is tripped, after the next reset operation, the other coil is tripped by the TRIP signal. With each reset operation, affected coil by TRIP signal will be changed as long as power is on.



The TRIP signal activates just one of the redundant activation pathes! - Only one of the two plungers causes mechanical tripping. - Do not use TRIP input for safety relevant functions. The Trip-function will only activate when the elevator is moving in the tripping direction.

If you want to have "save" stop of the governor wheel, switch of the supply voltage.

Overspeed governor EOS

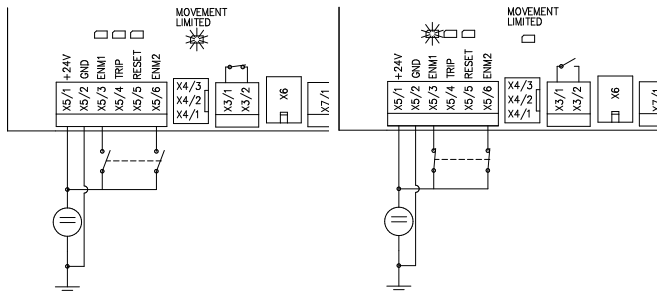
Operating instructions

Blatt/sheet PM.7.002883.EN.30
Datum/date 23.01.2013
Stand/version J-31.07.2013
Geprüft/approved WAT/MZE

4.3.5 UCM function (optional)

The UCM function is controlled by the enable movement (ENM1 and ENM2) inputs. The inputs are high-active inputs which deactivate the UCM function. Connect X5/3 and X5/6 with X5/1 to activate ENM1 and ENM2 signals that enable movement of the car (switches UCM function off). When UCM function is active (ENM1 or ENM2 signal is off), the movement limited output will be activated as soon as movement has been stopped, that means contact between X3/1 and X3/2 will be closed.

The correct activation of the UCM function of the EOS is by accessing the inputs ENM1 and ENM2 through two independent signal generators. The EOS checks the synchronization of the inputs and generates a secure condition (opening of safety circuit at next stop) if a discrepancy is detected.



It is possible to use one secure signal generator, only in this case the inputs ENM1 and ENM2 can be connected directly to each other and the signal generator.

4.3.6 Direction indicator (optional)

The connector X4 provides a signal depending on rotation direction on pin X4/3 and a signal depending on speed on X4/1. Signal load has to be connected between X4/1 and supply voltage as well as X4/3 and supply voltage (see 4.1.3). Supply voltage has to be below 32VDC and 100mA for each channel.



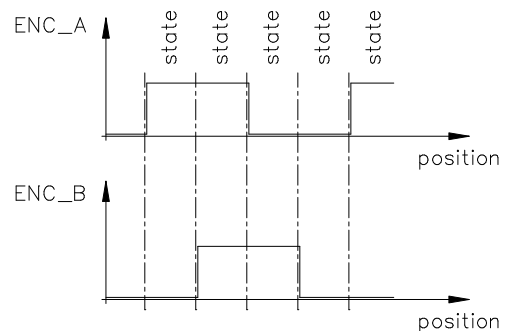
When the direction indicator option is ordered the error indicator (4.3.9) is disabled.

4.3.7 Encoder interface (optional)

Connector X4 provides two 90 degree phase shifted open collector output signals ENC_A, ENC_B and a ground pin (X4/2) which is internally connected to the negative supply voltage pole (X5/2). Signal load has to be connected between X4/1 and supply voltage (for ENC_A) and X4/3 and supply voltage (for ENC_B). Supply voltage may be up to 32 VDC.

One revolution of the governor wheel (360°) causes

240



state changes on the signals ENC_A and ENC_B, which means 60 periods with 4 states each.

When the encoder option is ordered the error indicator (4.3.9) is disabled.

Overspeed governor EOS

Operating instructions

Blatt/sheet PM.7.002883.EN.31
Datum/date 23.01.2013
Stand/version J-31.07.2017
Geprüft/approved WAT/MZE

4.3.8 Tripping Indicator (optional)

The encoder Output X4 shows the state of the safety switch X7 and the state of the tripping coils. The Signal load has to be connected between X4/1 and supply voltage as well as X4/3 and supply voltage (see 4.1.3).

Supply voltage has to be below 32VDC and 100mA for each channel. If the Safety circuit is close, X4/1 and X4/3 are active (switched on). If the Safety Circuit of the EOS gets opened (e.g. by reaching contact speed CS), channel X4/1 will switch off. If the Tripping coils get activated (e.g. by reaching tripping speed TS), channel X4/3 of the encoder output gets switched off. When the encoder option is ordered the error indicator (4.3.9) is disabled.

4.3.9 Error indicator (standard)

The encoder Output X4 shows errors and warnings. The Signal load has to be connected between X4/1 and supply voltage as well as X4/3 and supply voltage (see 4.1.3). Supply voltage has to be below 32VDC and 100mA for each channel.

An Error signal is shown on both channels X4/1 and X4/3 of the encoder output, for error indication see capture 4.6.5. Errors and Warnings are shown on both channels, only in case of mechanical tripping and EOS not reseted (Synchro blade not in horizontal position, see capture 4.2.5) one of the channels is off, depending on the tripping direction.

Overspeed governor EOS


Operating instructions


Blatt/sheet PM.7.002883.EN.32
 Datum/date 23.01.2013
 Stand/version C-13.10.2014
 Geprüft/approved WAT/MZE


4.3.10 Impulse signal (optional reference input signal for emergency-terminal-slowdown-device (ETS))

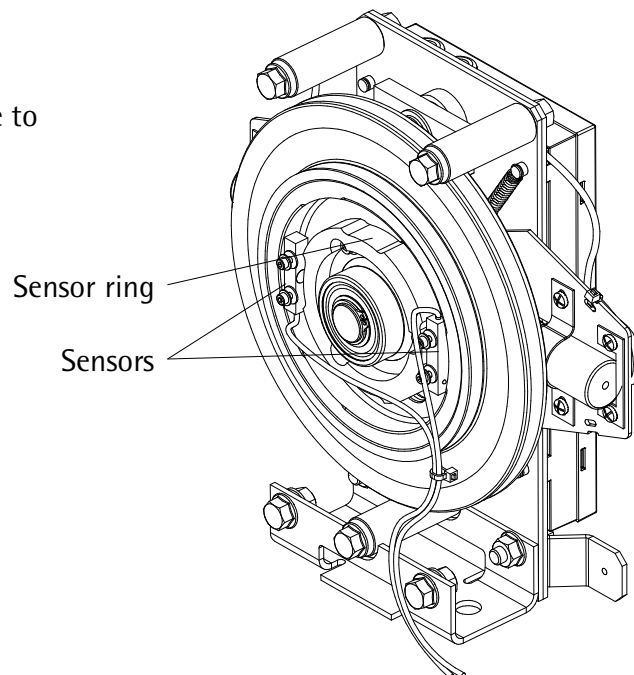
The inductive sensoric's signal is used as additional input for the lift-controller.

illustration without front stand

 ETS only for EOS D200mm

 The signal may be **used only as reference** to another available source.

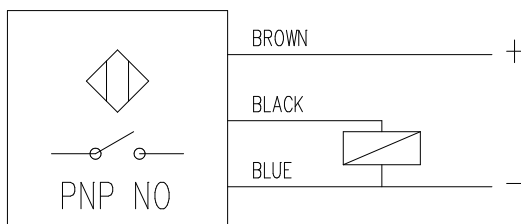
 The encoder is delivered with cable but without plug.



Specification of the sensor

type	Voltage supply range	Voltage drop (sensor on)	max. output current
Acculex SIPC8 - C2 PNP NO	6 .. 30 VDC	< 1.8 V	200 mA

Wiring assignment:



Overspeed governor EOS

Operating instructions

Blatt/sheet PM.7.002883.EN.33
Datum/date 23.01.2013
Stand/version A-13.03.2014
Geprüft/approved WAT/MZE

4.3.11 DIP switches

With the 4 single switches (S1/1 to S1/4) the solenoids can be switched separately (S1/2, S1/3) and the operating mode can be changed from "normal operation" to "construction time use" (S1/1, S1/4).

S1/1	S1/2	S1/3	S1/4	Function
OFF	OFF	OFF	OFF	"construction time use"
ON	OFF	OFF	ON	"normal operation"-mode
OFF	-	-	ON	prohibited state
ON	-	-	OFF	prohibited state
-	OFF	OFF	-	both solenoids on
-	ON	-	-	Solenoid 1 off
-	-	ON	-	Solenoid 2 off

Do not turn on/off S1/1 and S1/4 unless power is off.

When S1/2 and S1/3 are switched off simultaneously, a reset operation will be executed.

ON switch on standing position ↑
headfirst position ↓
OFF switch off standing position ↓
headfirst position ↑
- switch position does not matter

The other LEDs show the status of the board and solenoids:

LED	Function
POWER	○ no power supply ● power supply OK
CHANGE UNIT	○ board OK ✱ internal error* ● check power supply
TTS1, TTS2	○ normal operation** ✱ in construction time use: TTS1 flashes every second TTS2 flashes every meter ● start up operation
SAFETY	○ safety circuit opened ● safety circuit closed
COIL	○ solenoids (coils) off ✱ only 1 solenoid (coil) off ● both solenoids energized; pulley rotation possible

○ LED off
✱ LED flashing
● LED on
⚙ LED flickering

4.3.12 LEDs

Some LEDs are used to show the state of the EOS inputs and outputs:

LED	Function
ENMOVE	○ no input signal at X5/3 ⚙ no input signal at X5/3 ● ENM1 input sign. at X5/3
TRIP	○ no input signal at X5/4 ● TRIP input signal at X5/4
RESET	○ no input signal at X5/5 ● RESET input signal at X5/5
MOVEMENT LIMITED	○ contact X3/1-X3/2 opened ● contact X3/1-X3/2 closed

*) flashing in the same interval but with only short flashing of the LED indicates that the mechanical brake has reached its wear limit.

**) if triggered via TRIP the LEDs show which side of the solenoids has tripped by flashing briefly.

4.3.13 Bus interface

This interface (X6) is reserved for future extensions.

Overspeed governor EOS

Operating instructions

Blatt/sheet PM.7.002883.EN.34
Datum/date 23.01.2013
Stand/version 23.01.2013
Geprüft/approved WAT/MZE

4.4 Start up & Emergency rescue

After reset or if EOS was not tripped before shut down, following steps are executed by the EOS electronics ('TTS1' and 'TTS2' LED's are ON during this procedure):

- The coils are switched off, the safety circuit is interrupted. This state remains for a short time (internal tests are running).
- The coils are switched on (one after the other).
- Wait, until the synchronization plate is in operational state (horizontal).
- Safety circuit will be closed.
- If the EOS was tripped before shut down the coils are not switched on and the safety circuit is still interrupted. After applying of a RESET signal the normal working condition of EOS is restored.

Consequently, a start up or emergency rescue action must be done in the following order:

- If the safety gears are engaged move the car ~5 cm out of the safety gears (move the car against tripping direction).
- Power up the electronics unit and apply a short RESET signal if the governor was tripped.
- Drive the car completely out of the safety gears. The safety circuit will be closed as soon as synchronization plate is in operational state (horizontal position).
- ENM1 and ENM2 must be active for emergency rescue (if UCM option was ordered).

4.5 Test of the electronics - general

During the whole test, LED 'CHANGE UNIT' must remain off.

- Tripping mechanism must be brought into operational state (see chapter 4.4 to get it in operational state). Stop mechanical movements.
- Power off unit. LED 'POWER' must be off. Remove ENM1 and ENM2 signals.

- Switch all DIP switches (S1/1, S1/2, S1/3 and S1/4) off.
- Power on unit. LED 'COIL' must be on after about 3.5 seconds.
- Check that LED 'TTS1' is flashing once per second.
- Check that LED 'TTS2' is flashing once per meter movement of governor rope.
- Power off unit again. Switch DIP switches S1/1 and S1/4 on.
- Power up unit. After about 3.5 seconds, safety circuit must be closed, LED's 'SAFETY', 'MOVEMENT LIMITED' and 'COIL' must go on.
- Apply ENM1 and ENM2 signals. LED 'MOVEMENT LIMITED' must go off.
- Apply a short TRIP signal. LED 'COIL' must be flashing now. Check, that mechanical movement of the governor wheel is not possible.
- Apply a short RESET signal. After about 3.5 seconds, safety circuit must be closed; LED's 'SAFETY' and 'COIL' must be on.
- Apply a short TRIP signal again. LED 'COIL' must be flashing now. Check, that mechanical movement of the governor wheel is not possible.
- Apply a short RESET signal again. LED 'SAFETY' must go on.
- Move synchronization plate into tripped position by hand - LED 'SAFETY' must go off. Make sure that the opened safety circuit disables operation of the elevator.
- Check supply voltage grounding and case grounding according chapter 4.3.2.
- Check the function of the standby power supply.
- Check that ENM1 and ENM2 signals are removed each time the car stops and doors are opened (if "UCM function" is ordered).

Overspeed governor EOS

Blatt/sheet PM.7.002883.EN.35
Datum/date 23.01.2013
Stand/version D-02.03.2015
Geprüft/approved WAT/MZE

Operating instructions

4.6 Trouble shooting

4.6.1 EOS does not start-up

- Check that power supply is OK (LED 'POWER' must be on when X5/1-X5/2 is supplied, see chapter 4.3.2)
- Apply RESET signal
- Check that power supply does not drop below 18V, even during reset operation
- Check that the synchronization plate is in operational state (see chapter 4.4 on how to get it in operational state)
- Check that DIP switches are switched correct (see chapter 4.3.9). Normally, S1/1 and S1/4 are on, S1/2 and S1/3 are off.
- Check that neither TRIP signal nor RESET signal is active
- When 'CHANGE UNIT' LED is on or flashing continuously, proceed as stated in chapter 4.9.

4.6.2 EOS trips when elevator starts

- Make sure that ENM1 and ENM2 signals are applied as long as mechanical movement is running.
- Make sure that movement does not exceed values of position (when ENM1 and ENM2 signals are not active), speed and acceleration as stated at the identification indicators.
- Make sure that synchronization plate is always in operational position during normal operation.

4.6.3 EOS doesn't reset

- If the EOS does not reset after tripping then move the wheel (car) in opposite direction of tripping so that the activation mechanism is free of internal tension forces. Appropriate vertical car moving distance is ~5 cm.
- Push RESET then.
- Move the car completely out of the safety gears.

4.6.4 EOS has opened the safety circuit

The LEDs are as follows:

"POWER"	●	LED on
"COIL"	●	LED on
"TTS1"	✱	LED flashing
"TTS2"	✱	LED flashing

The reasons can be: UCM, overspeed, too high acceleration. EOS isn't mechanically activated.

Overspeed governor EOS

Operating instructions

Blatt/sheet PM.7.002883.EN.36
 Datum/date 23.01.2013
 Stand/version J-31.07.2017
 Geprüft/approved WAT/MZE

4.6.5 Error-codes

The different error codes are visualised with the LEDs TTS1, TTS2 and Change UNIT or with the encoder output if no other option of the encoder is ordered.. The errors are shown as morse-code.

Find the table with the error-codes on the next page. The error-codes are shown like this: long flashes are "-", short flashes are ". ". Warnings are only shown with the LEDs TTS1 and TTS2.

Morsecode	Blinkcode	Warnings	Type
A	.-	UCM contact position limit reached	UCM
I	..	UCM tripping position limit reached	
M	--	UCM contact speed limit reached	
N	-.	UCM tripping speed limit reached	
F	..-	contact speed limit reached (overspeed)	overspeed
Z	---.	tripping speed limit reached (overspeed)	
D	-..	advanced tripping limit reached (overspeed)	
K	-.-	advanced contact limit reached (overspeed)	
O	---	contact acceleration limit reached	acceleration
G	--.	tripping acceleration limit reached	
B	-...	life time warning	lifetime
R	.-.	synchronro plate (solenoid unit) not in neutral position	warnings
S	...	encoder problem	
U	..-	bus communication problem	
W	.-.	remote trip input was activated	remote trip
Morsecode	Blinkcode	Errors	Type
C	.-.	encoder error	errors
H	end of life reached	
J	.---	enable movement signal error	
L	.-..	board temperature too high or low	
P	.-.	internal hardware error	
Q	--.-	bus communication error	
V	...-	internal function check error	
X	-.-.	DIP switch setting wrong or	
X	-.-.	ENMOVE signals different	
Y	-.--	input signal error	

Overspeed governor EOS

Operating instructions

Blatt/sheet PM.7.002883.EN.37
Datum/date 23.01.2013
Stand/version F-21.09.2015
Geprüft/approved WAT/MZE

4.7 Electrical installation of the EOS electronic interface (optional)

The EOS electronic interface requires a supply voltage and a signal which disables the function that monitors uncontrolled car movement. This signal is picked up from the safety circuit and is connected to K1 and K2. If voltage is applied, the UCM monitoring function is deactivated. Therefore a car movement is allowed.

The wiring from the safety circuit to K1 and K2 shall be made so, that there is no voltage between K1 and K2, if the requirements according to EN81-1:1998-A3:2009, chapter 9.11.1 or EN81-20:2014 chapter 5.6.7.1 are NOT met; i.e the shaft door is locked and the cabin door is closed.



There shall only be voltage between K1 and K2, if the shaft door and/or the car door is locked.

Depending on the design of the safety circuit and the ordered EOS electronic interface, various wiring connections shall be provided:

- Safety circuit without parallel loop to the door contacts, electronic interface with box.
- Safety circuit with parallel loop to the door contacts, electronic interface with box.
- Safety circuit with or without parallel loop to the door contacts, electronic interface without box.



In any case, it is necessary to determine whether the above condition is met. Usually it is met by the shown circuits. Nevertheless the right signal transfer has to be checked in any case (using LED ENM1 on the EOS)

If the EOS electronic interface is ordered without the steel box, the wiring shall then be done by yourself. The signal mentioned above has to be connected to X4/1 and X4/2. The rest is wired according to chapter 4.8.2.



If the electronic interface is ordered without accumulators, an emergency power supply of 24 VDC has to be connected to X5/1, X5/2 according to the diagram of chapter 4.7.2.

Mind the requirements of the EN81 for the wiring of the safety circuit between EOS (terminal X7) and the Electronic Interface (terminals PE, S1a, S1b). These requirements must be fulfilled for the connection cable between EOS (terminal X5) and the Electronic Interface (terminals from +24V to ENM2), too.



A wire with cross section 0,75mm² is recommended for distances between the EOS and the Electronic interface up to 20m. For longer distances the cross section has to be increased (doubled distance means doubled wire cross section).

It is possible to place only the control elements further away from the EOS if needed. In this case no cable dimension change is necessary.

The contact of the control of emergency electrical operation, which shall render inoperative state of the overspeed governor, must bypass the Emergency Rescue Switch, too (connect contact to terminals S2a and S2b of the Electronic Interface).

Overspeed governor EOS

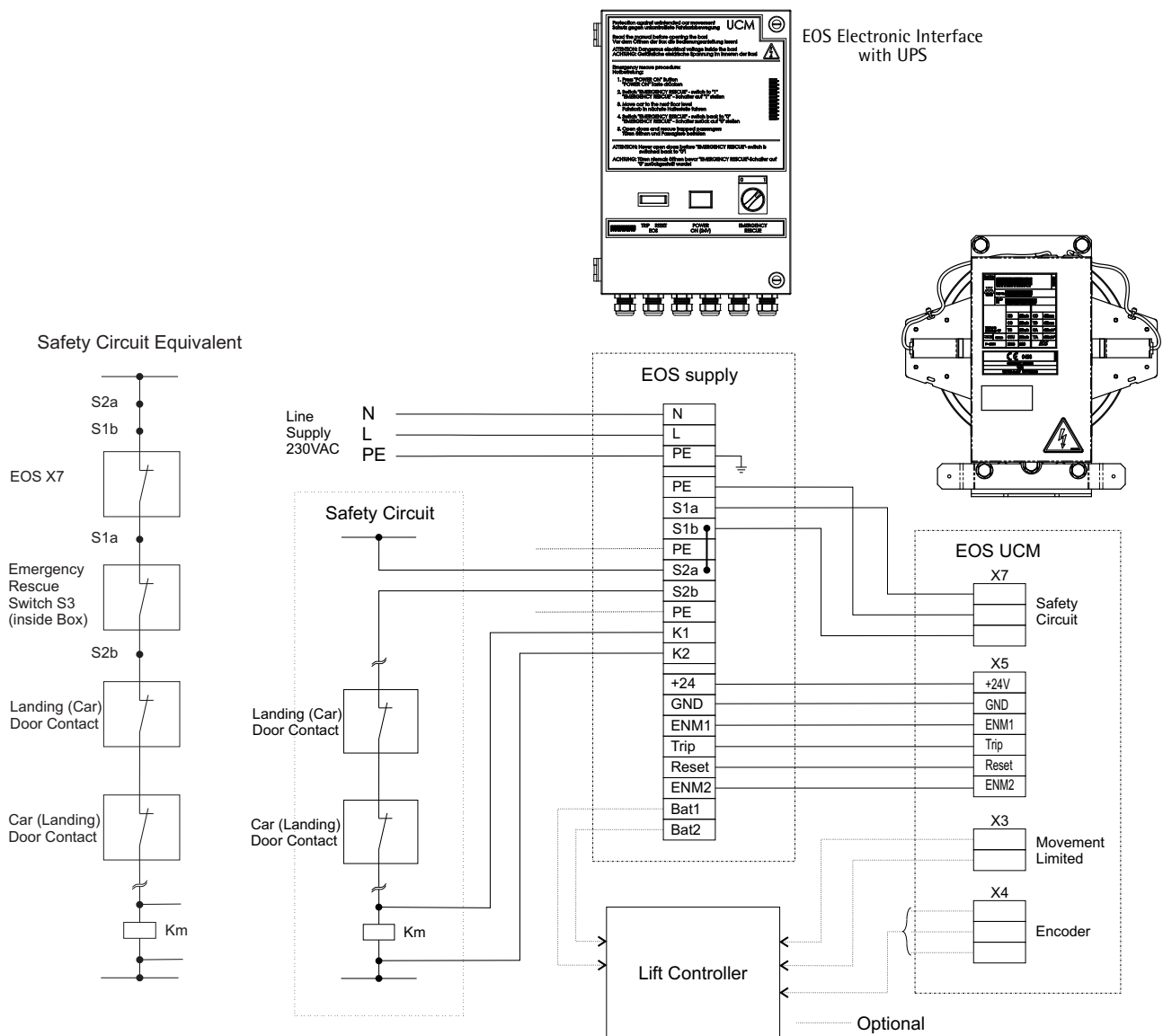
Operating instructions

Blatt/sheet PM.7.002883.EN.38
 Datum/date 23.01.2013
 Stand/version 23.01.2013
 Geprüft/approved WAT/MZE

4.7.1 Wiring diagram of the electronics (with box)

Safety circuit without parallel loop to the door contacts, electronic interface with box

This type occurs in simple installations without advanced door opening and without releveing.



The supply voltage of the main contactors and the brake (Km) is used for the control of the UCM function (inputs K1, K2).

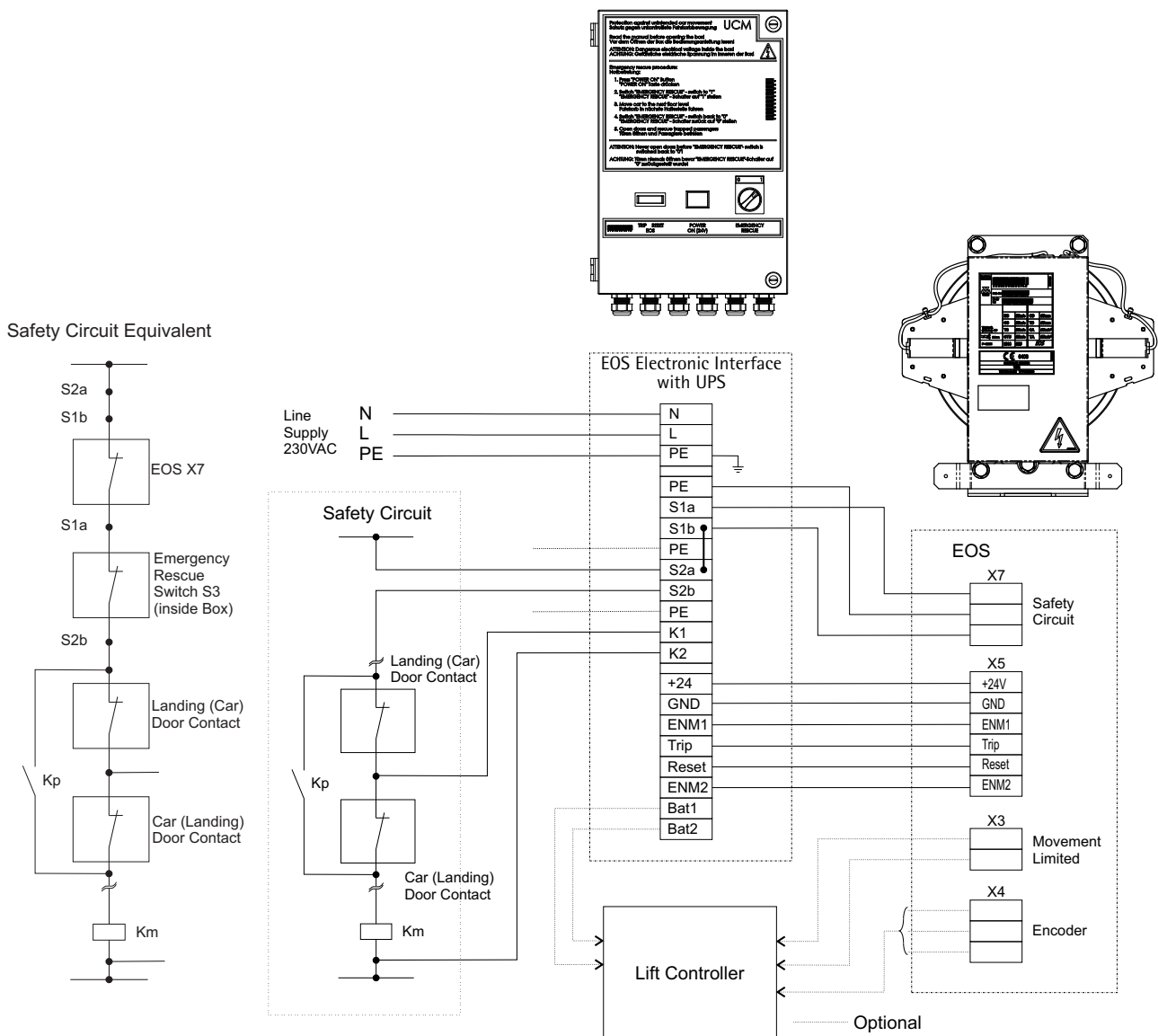
Overspeed governor EOS


Operating instructions

Blatt/sheet PM.7.002883.EN.39
Datum/date 23.01.2013
Stand/version 23.01.2013
Geprüft/approved WAT/MZE

Safety circuit with parallel loop to the door contacts, electronic interface with box

This type occurs in installations with advanced door opening, releveing or other functions which make a bypass of the door contacts necessary.



 The tap between the contacts ensures, that UCM remains active, as long as the doors are open, even if the parallel circuit Kp is closed.

Overspeed governor EOS

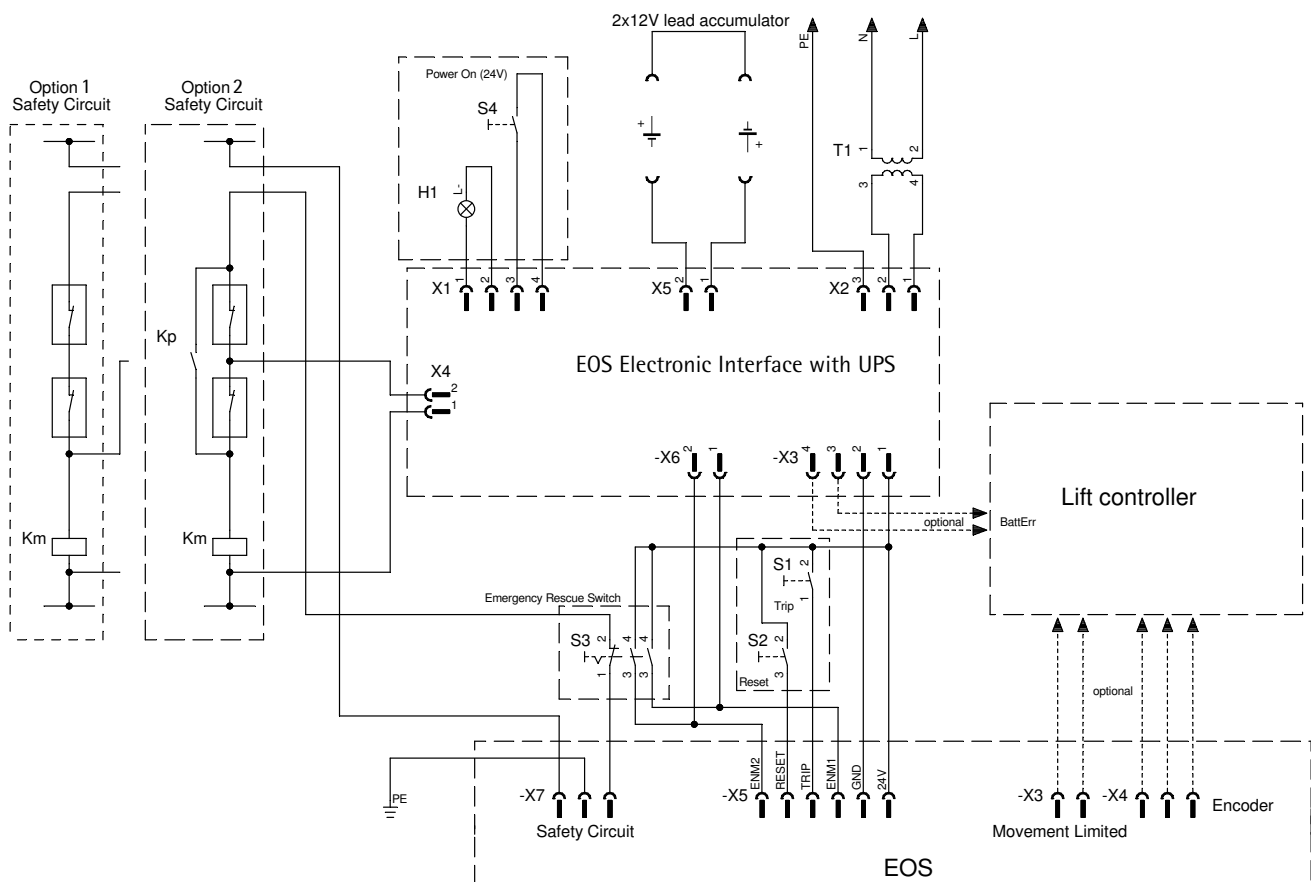
Operating instructions

Blatt/sheet PM.7.002883.EN.40
Datum/date 23.01.2013
Stand/version 23.01.2013
Geprüft/approved WAT/MZE

4.7.2 Wiring diagram of the electronics (without box)

Safety circuit with or without parallel loop to the door contacts, electronic interface without box

If the EOS electronic interface is ordered without the steel box, the wiring shall then be done by yourself. The signal mentioned above has to be connected to X4/1 and X4/2. The rest is wired according to the following diagramm:



Regarding Option 1 and Option 2 of the Safety Circuit see chapter 4.2.1

Overspeed governor EOS

Operating instructions

Blatt/sheet PM.7.002883.EN.41
Datum/date 23.01.2013
Stand/version G-15.03.2016
Geprüft/approved WAT/MZE

4.8 EOS Electronic Interface - Interfaces (optional)

4.8.1 Supply-Voltage for EOS (24 VDC):

with box: terminal +24V and GND
without box: X3/1 and X3/2 on EOS Electronic Interface

Output for EOS supply:

unregulated voltage: 20 - 32VDC
max. 20W continous load
short term load: 36W (1s)

4.8.2 Power Supply X2

X2/1 and X2/2 on EOS electronic interface
It is possible to connect 24VDC directly to this input, instead of using the supplied transformer.

4.8.3 Safety circuit X4

with box: terminal K1 and K2
without box: X4/1 and X4/2 on EOS Electronic Interface

nominal voltage:

100 VAC ... 250 VAC or
48 VDC ... 200 VDC

optically isolated

4.8.4 Accumulator X5

without box: X5/1 and X5/2 on EOS Electronic Interface

24V, 2.1Ah

Runtime: ca. 2-3 hours

Charging time: ca. 16 hours
replace latest after 3 years

If the EOS electronic interface isn't used for a long period of time, the battery must be disconnected in order to avoid deep discharge of the accumulator and thus avoid permanent damage to the accumulator.

For this reason, the built-in accumulator is disconnected ex factory. It has to be connected before operating the EOS Electronic Interface.

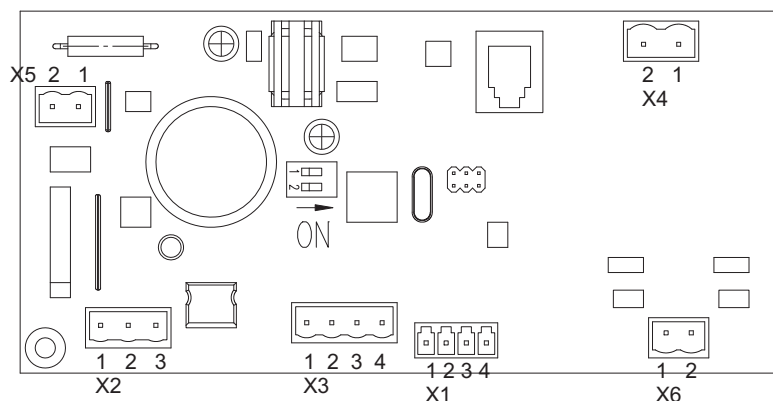
4.8.5 ENM1/ENM2

with box: terminal ENM1 and ENM2
without box: X6/1 and X6/2 on EOS Electronic Interface

These outputs are used by the EOS for UCM functionality

4.8.6 Battery Error

The accumulator is checked periodically (~30h). Therefore the accumulator is loaded with a resistor. The resulting voltage drop is measured and analyzed. So this output can signalize a broken accumulator. In this case the accumulator has to be changed. With the DIP-switches the output can be configured (see chapter 4.10).



Overspeed governor EOS

Operating instructions

Blatt/sheet PM.7.002883.EN.42
Datum/date 23.01.2013
Stand/version J-31.08.2017
Geprüft/approved WAT/MZE

4.9 Description of the LEDs (optional)

LEDs of the EOS Interface Electronic with UPS


POWER	The LED is on if the electronic is active.	
CHARGE	BATT ERR*	Description
OFF	OFF	1. The line power has failed, the EOS is powered from the battery. 2. The electronic performs a battery test 3. The electronic interface has just been started and carries out a startup test
ON	OFF	The accumulator is charging.
ON	ON	The accumulator is discharged deeply. It is charged until it's sure, if it is broken or not (max 30min).
flashing	OFF	The accumulator is fully charged.
OFF	ON	1. There is no accumulator attached. 2. The accumulator is broken.


* This applies only if the DIP switch S1/2 is turned off. If S1/2 is switched ON, the Batt-Err-LED behaves exactly the opposite.

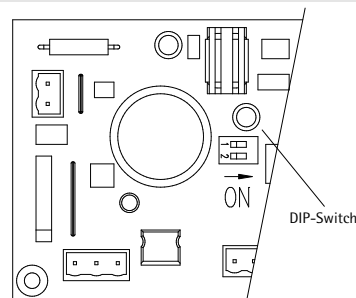
ENM1	ENM2	Description
OFF	OFF	The UCM function of the EOS is activated
ON	ON	The UCM function of the EOS is deactivated
OFF	ON	Invalid state, must not occur in normal operation
ON	OFF	Invalid state, must not occur in normal operation

4.10 DIP-Switches (optional)

	OFF	ON
S1/1	Runtime after line fail: 30 Min.	Runtime after line fail: infinite
S1/2	Battery Error output: NO (normally open)	Battery Error output: NC (normally closed)

 It is recommended to switch S1/1 to OFF

 The Battery Error LED is on if the battery is ok and DIP Switch S1/2 is set to on.
The Battery Error LED is off if the battery is OK and DIP Switch S1/2 is set to off.



Overspeed governor EOS

Operating instructions

Blatt/sheet PM.7.002883.EN.43
Datum/date 23.01.2013
Stand/version A-13.03.2014
Geprüft/approved WAT/MZE

4.11 Electrical installation of the incremental encoder (optional)

This option is (can be) used for measuring the accurate car position. The incremental encoder is mounted on the shaft and is synchron with the rope pulley.

This encoder is delivered with cable but without plug.

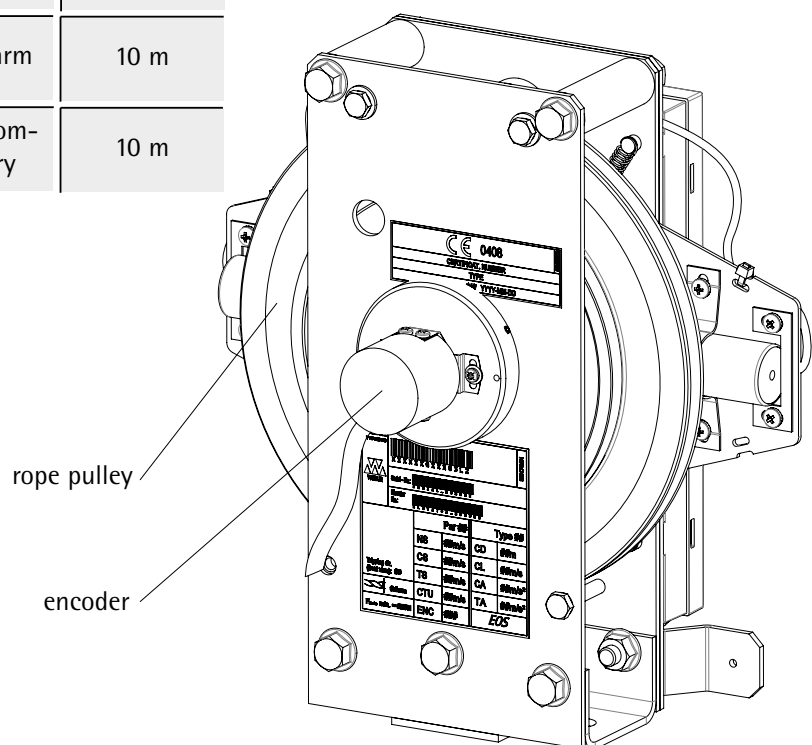


This encoder should only be used as a redundant positioning sensor in combination with a leading encoder placed e.g. on the elevator drive.

This encoder kann be ordered with a power supply of 5 VDC (not short-circuit protected) or 10-30 VDC (short-circuit protected).

Specification of the encoder:

Encoder type RI 36-H (Hengstler)			
Power supply	Accuracy	Output	cable length
5 VDC	1024 pulses per revolution	RS422 +Alarm	10 m
10-30 VDC	1024 pulses per revolution	push-pull complementary	10 m



Wiring assignment:

red	yellow/red	white	white/brown	green	green/brown	yellow	yellow/brown	black	yellow/black
5 VDC or 10-30 VDC	Sense V _{CC}	channel A	channel A invers	channel B	channel B invers	channel N	channel N invers	GND	alarm invers

Overspeed governor EOS

Operating instructions

Blatt/sheet PM.7.002883.EN.44
Datum/date 23.01.2013
Stand/version H-24.01.2017
Geprüft/approved WAT/MZE

5 Function testing

Operational reliability of the installation is assured. The quality and function of individual components are subject to accurate inspection and is checked before dispatch from our works.

The governor system should undergo an operational test before commissioning or before possible inspection from a technical institute.

First test run after installation



Before the first test run:
Clean the guide rails!



Clear all people and objects out of the lift shaft before commencing the test run
Risk of crushing injuries!

The entire lift travel path should be slowly travelled (in inspection mode) before the functions tests is done. Pay attention to the clearance of all fastened parts, especially with regards to the guide brackets/safety gear devices. Find and remove any protruding bolts or any other potential source of damage or injury in advance.



The LED states shown in chapter 5.1 – 5.3 are only for simplification and description. Checking the states is not necessary when the electronic is not seeable from the controller cabinet. This could be in case of machineromless elevators where the EOS is mounted in the shaft or if the tripping direction requires the electronic to be faced towards a wall.

Overspeed governor EOS

Operating instructions

Blatt/sheet PM.7.002883.EN.45
 Datum/date 23.01.2013
 Stand/version 23.01.2013
 Geprüft/approved WAT/MZE

5.1 Static functions test



The **static functions test** must be carried out to check the two-channel functionality:

- Power-on the EOS and apply RESET signal if necessary:

See also chapter 4.3!

The LEDs are as follows:

"POWER"	●	LED on
"CHANGE UNIT"	○	LED off
"TTS1"	○	LED off
"TTS2"	○	LED off
"SAFETY"	●	LED on
"COIL"	●	LED on

- TRIP-input on: Coil1 is released and activates tripping mechanism. Remove TRIP signal.
 "SAFETY" ○ LED off
 "COIL" ★ LED flashing

Remote tripping (TRIP) releases just one coil. Therefore this sequence has to be performed twice.



- Move the car **slowly** (e.g. service drive) in direction of safety gear- and governor-activation until the safety gears have stopped the car movement. Check that the safety circuit is opened now.
- Drive the car out of safety gears slowly (e.g. with service speed; vertical car distance ~5 cm; **stop then**).
- RESET-input on (momentary switch): Coils are powered
 "SAFETY" ○ LED off
 "COIL" ● LED on
- Drive the car completely out of the safety gears **slowly**.
 "SAFETY" ● LED on

- TRIP-input on: Coil2 is released and activates tripping mechanism. Remove TRIP signal.

"SAFETY" ○ LED off
 "COIL" ★ LED flashing

- Move the car **slowly** in direction of safety gear- and governor-activation until the safety gears have stopped the car movement. The safety circuit is opened now.
- Drive the car out of safety gears slowly (e.g. with service speed; vertical car distance ~5 cm; **stop then**).

- RESET-input on (momentary switch): Coils are powered
 "SAFETY" ○ LED off
 "COIL" ● LED on

- Drive the car completely out of safety gears **slowly**.
 "SAFETY" ● LED on

- The safety circuit is closed now and the governor wheel free to move. LED's indication is like after power-on.

The governors tripping speed (as marked on the label) can be checked if the governor's rope is released from the synchronisation linkage and is free to accelerate downwards. The speed can be measured by a tachometer.

Make sure that the governor rope is attached to the synchronisation linkage before any functions test and before the elevator is put into service!

Overspeed governor EOS

Operating instructions

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5.2 Dynamic functional test with remote tripping

Rated speed triggering and triggering with reduced speed is described in this chapter. The safety gears can be checked together with the governor within a single test.



The function of opening the safety circuit has to be checked in both directions of movement – even with uni-directional governor.

Trigger testing is a **dynamic functions test** that can be carried out with or without the lift car rated load.



Nobody is allowed to stay inside the car during test runs or functions tests!

Governor test with remote tripping:

- Power-on of the EOS and apply RESET signal:
See also chapter 4.3.4!

The LEDs are as follows:

"POWER"	●	LED on
"CHANGE UNIT"	○	LED off
"TTS1"	○	LED off
"TTS2"	○	LED off
"SAFETY"	●	LED on
"COIL"	●	LED on

- Give an elevator call in the governor's activation direction.
- TRIP-input on: Coil1 is released and activates tripping mechanism. The safety gear is triggered and stopped the car. Remove TRIP signal.
 "SAFETY" ○ LED off
 "COIL" ✱ LED flashing

- The safety circuit is opened.
- Drive the car out of safety gears **slowly** (e.g. with service speed; vertical car distance ~5 cm; **stop then**).
- RESET-input on (momentary switch): Coils are powered
 "SAFETY" ○ LED off
 "COIL" ● LED on
- Drive the car completely out of the safety gears **slowly**.
 "SAFETY" ● LED on
- The safety circuit is closed now and the governor wheel free to move. LED's indication is like after power on.

Remote tripping (TRIP) releases just one coil. Therefore the sequence described above has to be performed twice if necessary.

- Check that the safety circuit is also opened in case of upwards-overspeed situation.

If the governor is bi-directional then check the functionality in up- and in down-direction!

Alternative: Put the rope into the governors test-groove. Then the angular velocity is about 1.4 times higher than in the standard groove. Check that tripping speed is reached than!

Overspeed governor EOS

Operating instructions

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Geprüft/approved WAT/MZE

5.3 Overspeed functional testing

The test described in this chapter can be performed optional to the procedure described in 5.2.



The function of opening the safety circuit has to be checked in both directions of movement – even with uni-directional governor.

Trigger testing is a **dynamic functions test** that can be carried out with or without the lift car rated load.



Nobody is allowed to be inside the lift car during test runs or functions tests!

Governor test with overspeed:

- Power-on of the EOS and apply RESET signal if necessary:

See also chapter 4.3.4!

The LEDs are as follows:

"POWER"	●	LED on
"CHANGE UNIT"	○	LED off
"TTS1"	○	LED off
"TTS2"	○	LED off
"SAFETY"	●	LED on
"COIL"	●	LED on

- Load the car (e.g. 100% of rated load) that the elevator starts moving in direction of activation (e.g. downwards) while the brake is kept open manually.



Ensure that the resulting acceleration is below the governor's tripping acceleration! – Otherwise the tripping acceleration's value is tested and not tripping speed.

Make sure that the free hoistway is long enough!



- The elevator will accelerate up to tripping speed.

- Then the governor trips (both coils simultaneously!) and engages the safety gears and causes the elevator to stop.

"SAFETY" ○ LED off

"COIL" ○ LED off

- The safety circuit is opened.
- Drive the car out of safety gears **slowly** (e.g. with service speed; vertical car distance ~5 cm; **stop then**).
- RESET-input on (momentary switch): Coils are powered
"SAFETY" ● LED on
"COIL" ● LED on
- Drive car completely out of safety gears **slowly** (e.g. with service speed).
- The safety circuit is closed now and the governor wheel free to move. LED's indication is like after power on.



With gearless drives it is recommended to increase the nominal speed above the tripping speed. To prevent an electrical stop at tripping speed, the electrical tripping gets bridged when you send down the elevator. Before reaching nominal speed, the EOS has to activate the safety gear and the elevator will stop.



Measure the tripping speed by means of a tachometer!

Check the two-channel functionality with static functions test acc. chapter 5.1

Overspeed governor EOS

Operating instructions

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5.4 Tripping speed adjustment



The governor on car and also on counter-weight (CWT) side is adjusted at the factory to the values shown on the type label. This values have to be within EN81 limits as shown below.

NS Nominal/rated speed
TS Tripping speed

The following table shows the limits according EN81:

The measured tripping speed can be compared with the minimum and maximum TS values according the table to ensure proper function of the governor.

The CS-value can be checked by the help of the "SAFETY"-LED. The value has to be lower than TS.



The minimal tripping speed of the
-EOS D200mm is 0,27m/s.
-EOS D300mm is 0,41m/s
* ... normative minimum

NS (m/s)	CAR / CWT (EN81-20)			
	CAR (EN81-1)		CWT (EN81-1)	
	TS (m/s)		TS (m/s)	
	min.	max.	min.	max.
0,15	0,18*	0,80	0,19*	0,88
0,30	0,35	0,80	0,38	0,88
0,37	0,43	0,80	0,47	0,88
0,53	0,61	0,80	0,67	0,88
0,63	0,73	1,00	0,80	1,10
0,70	0,81	1,50	0,89	1,65
0,75	0,87	1,50	0,95	1,65
0,85	0,98	1,50	1,07	1,65
1,00	1,15	1,50	1,26	1,65
1,25	1,44	1,76	1,58	1,93
1,60	1,84	2,15	2,02	2,36
1,80	2,07	2,38	2,27	2,61
2,00	2,30	2,62	2,53	2,88
2,50	2,88	3,22	3,16	3,54

Overspeed governor EOS

Operating instructions

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5.4.1 Check of tripping speed:

The tripping speed must be checked by an authorized person, according to the figures shown on the type label (name plate) before putting the elevator into service. To check tripping speed, use one of the following methods



The resulted figures may not be exactly the same as written on the type label due to acceleration of the governor. But it is still acceptable if the values are within the limits shown in the table in chapter 5.4.



The function of opening the overspeed contact is checked by the safety electronics automatically.

5.4.1.3 Manuall checking on the governor rope

To get the correct tripping speed, the governor rope gets disconnected from the synchronization and accelerated downwards. When reaching the tripping speed, the EOS stops the rope. During this, the top speed must get measured with a tachometer manually. At high speeds, it is possible that the tripping speed is not reached. In this case checking with this method is not possible.



When disconnecting the rope from the synchronization, the safety gear is inoperative. . Then it is very important to make nessesary arrangements for Protection.



5.4.1.1 Manually checking on the Governor pulley

Remove the governor rope from the main groove and measure tripping speed using a manual tachometer. Accelerate the governor pulley manually in tripping direction until governor trips and read the tripping speed. In case of high tripping speeds, maybe you not reach tripping speed manually. Then this method is not applicable.

5.4.1.4 Checking with overspeed

To check the tripping speed at overspeed, use the functional testing mentioned in chapter 5.3

5.4.1.2 Checking with test groove

To get the correct tripping speed, you have to put the rope out of the main groove and lay it down into the test groove. To prevent an electrical stop at tripping speed, the electrical tripping gets bridged when you send down the elevator. Before reaching nominal speed, the EOS has to activate the safety gear and the elevator will stop. During this, the top speed must get measured manually. Attention: Multiply the top value with 1,4 to get the correct tripping speed.

Overspeed governor EOS

Operating instructions

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5.5 Testing the UCM-function (optional)

The UCM functionality of the EOS and the system has to be checked periodically together with the periodical inspection of the elevator done by notified body. If the EOS is operated with the EOS Electronic Interface, the following test instruction can be used. Otherwise, an appropriate test procedure has to be created by the designer of the system.

Step 1: Check the function of the EOS as mentioned in chapter 5.


Step 2 for elevators with machine room: Checking of the UCM System (EOS and braking element):

Put the elevator in a normal operating condition. Open the doors at the landing next to the top landing and keep it open. By this the signals ENM1 und ENM2 of the EOS should go inactive. This can be checked by watching the LEDs ENM1 and ENM2 on the EOS electronic interface.

Now disconnect the signals ENM1 and ENM2 by unplugging the plug X4 from the EOS-electronic interface and then close the door.

Send the elevator with disconnected plug X4 and without load upwards to the top landing. It should be stopped by the UCM function.

Because of the disconnected signals, the UCM function of the EOS remains active after a landing call, even if the doors are closed. The EOS interpretes the following movement of the cabine as an uncontrolled car movement. After reaching the defined position or speed limits the EOS should stop the movement by opening the safety circuit and activating the braking element.

 To check the proper function of the braking element, keep the motor brake manually open. (This is not valid if the motor brake is the UCM-braking element)



It is not allowed to test if the braking element grips by using releveling control or hand wheel, unless it is mentioned in the manual of the braking element.

Measure the distance from the landing sill to the cabin floor. It has to be below a value defined by the designer of the UCM-system.



The same test has to be done also in downward direction with rated load from the landing next to the lowest landing.

Note down the brake distance for both directions and store it with the lift documentation.

For periodical tests only the upward direction with empty car has to be tested.

The resulting stopping distances are dependent on the acceleration, the maximum speed of the elevator and the used braking element. Therefore the designer of the UCM-system has to deliver a diagram or table where the maximum tolerated braking distance depending on elevator speed and acceleration is shown.



After this test connect ENM1 and ENM2 to the EOS again!


Overspeed governor EOS

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Operating instructions

Step 2 **for elevators without machine room:**


Checking of the UCM System (EOS and braking element):

 If the braking element is the motor brake or there is a possibility to open the motor brake in normal operation mode by powder cable or electric **step 2 for elevators with machineroom** is valid. Otherwise proceed with the following instruction.


Put the elevator in emergency rescue mode. Now disconnect the signals ENM1 and ENM2 by unplugging the plug X4 from the EOS-electronic interface at the landing next to the top. By this the signals ENM1 and ENM2 of the EOS should go inactive. This can be checked by watching the LEDs ENM1 and ENM2 on the EOS electronic interface.

Let the elevator ascend with empty car and disconnected plug X4 to the top landing by using the battery mode to open the motor brake.

Because of the disconnected signals, the UCM function of the EOS remains active, even if the doors are closed. The EOS interpretes the following movement of the cabine as an uncontrolled car movement. After reaching the defined position or speed limits the EOS should stop the movement by opening the safety circuit and activating the braking element.


 It is not allowed to test if the braking element grips by using releveing control or hand wheel, unless it is mentioned in the manual of the braking element.

Measure the distance from the landing sill to the cabin floor. It has to be below a value defined by the designer of the UCM-system.

 The same test has to be done also in downward direction with rated load from the landing next to the lowest landing.

Note down the brake distance for both directions and store it with the lift documentation.

For periodical tests only the upward direction with empty car has to be tested.

 The resulting stopping distances are dependent on the acceleration, the maximum speed of the elevator and the used braking element. Therefore the designer of the UCM-system has to deliver a diagram or table where the maximum tolerated braking distance depending on elevator speed and acceleration is shown.

After this test connect ENM1 and ENM2 to the EOS again!

Overspeed governor EOS

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Operating instructions



Step 3: Check the correct control of the UCM function:

- The LED ENM1 of the EOS has to be on, while the cabine moves
- The LED ENM1 of the EOS must be off if the landing door is not locked and the car door is open (Reversal of the assertion in chapter 2).
- The LED ENM1 of the EOS must be off as long as car- and landing doors are both open – even with parallel circuit Kp closed, if existing.
- The test described above must be done using the topmost and the lowermost floor.

Instead of LED ENM1, the state of output MOVEMENT LIMITED can be used for check, too (attention: signal inverted).



If the elektronik of the EOS is not seeable from the controller cabinet (e.g. machine-roomless elevator or fixation with the electronic board faced towards a wall) the test can be also performed via the LEDs in the EOS Electronic Interface and the related clamp.

Step 4: Check the dual channel activation:

The Emergency rescue switch has to be switched to „0“ Close the doors to have a signal on ENM1 and ENM2.

Connect one of the two EOS-Inputs ENM1, ENM2 to GND. After a short period of time (less than one second) the EOS has to establish a save condition by opening the safety circuit. This test has to be done for ENM1 as well as for ENM2



If the elektronik of the EOS is not seeable from the controller cabinet (e.g. machine-roomless elevator or fixation with the electronic board faced towards a wall) the test can be also performed via the LEDs in the EOS Electronic Interface and the related clamps.

5.6 Check of the emergency power supply (UPS)

Before testing the accumuator of the UPS it must be sufficiently charged. During the test, the elevator should not be used.

Test procedure:

- Put the elevator and the EOS in a normal operating condition. The safety circuit has to be closed (SAFETY and COIL LEDs light up),
- Interrupt the line voltage of the EOS Electronic Interface with UPS (e.g. by pulling the plug out of the series terminal). The EOS must remain operational.
- You can either check if this condition is established for 20 minutes or you can check that the battery voltage has not dropped below 23 volts after 5 minutes .
- After applying line voltage again, the CHARGE LED should light up for at least 1 minute.



If the test was not successfull the accumulator has to be replaced

Overspeed governor EOS

Operating instructions

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6. Emergency rescue



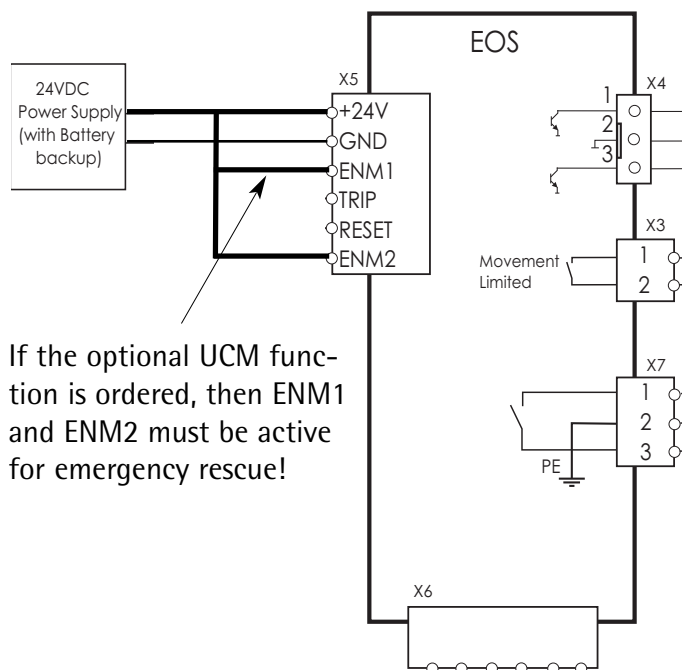
The power supply has to be guaranteed even in case of mains-failure to enable emergency rescue.



Check the battery's capacity periodically according its operating instructions.



Power supply for EOS is required and also ENM1 and ENM2 signals to allow pulley movement without brake engagement if UCM is ordered.



If the optional UCM function is ordered, then ENM1 and ENM2 must be active for emergency rescue!

- Make sure that the capacity of the back-up battery (accu) is big enough to keep the EOS running (18VDC minimum) until a qualified fitter/service personnel has reached the site and has completed the rescue.
- If the back-up battery is working the EOS should not be engaged in case of power-failure.
- If the safety gears are not engaged release the machine brake smoothly and creep with the car to the next floor-level and rescue the trapped passengers.

6.1 Note



After the functional test drive the car slowly out of the grip (~5 cm). Apply the RESET-signal and drive the car completely out of the grip slowly (e.g. with service speed)!

6.2 Emergency rescue and break release with EOS Electronic Interface (optional)

Emergency rescue procedure:

1. Press POWER ON – button; the LED lights up. Press this button even if it is already switched on to reset the 30 minutes of runtime.
2. Switch EMERGENCY RESCUE –switch to „1“. (Doors have to be closed.)
3. Reset the EOS if necessary and pull the car out of the grip - see EOS operating manual.
4. Move the car to the next floor level.
5. Switch EMERGENCY RESCUE –switch back to „0“.
6. Open doors and rescue trapped passengers.



ATTENTION! Never open doors before „EMERGENCY RESCUE“ switch is switched back to „0“!



For Emergency Rescue a battery for replacement is recommended.

Overspeed governor EOS

Operating instructions

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7. Maintenance

7.1 Maintenance and inspection of the EOS

The governor EOS is maintenance-free as long used within proper operation at elevator specific use. Wear limits of rope and rope groove has to be noted. Inspection checks must be carried out at regular intervals to guarantee safe operation.

Alterations, damage or other irregularities should be reported and repaired if possible. Frequent servicing and control checks not only make operation of the installation safer, but also ensure long and reliable service life. It is recommended that control checks and servicing is carried out before legally prescribed functional tests (e.g. before notified body tests).



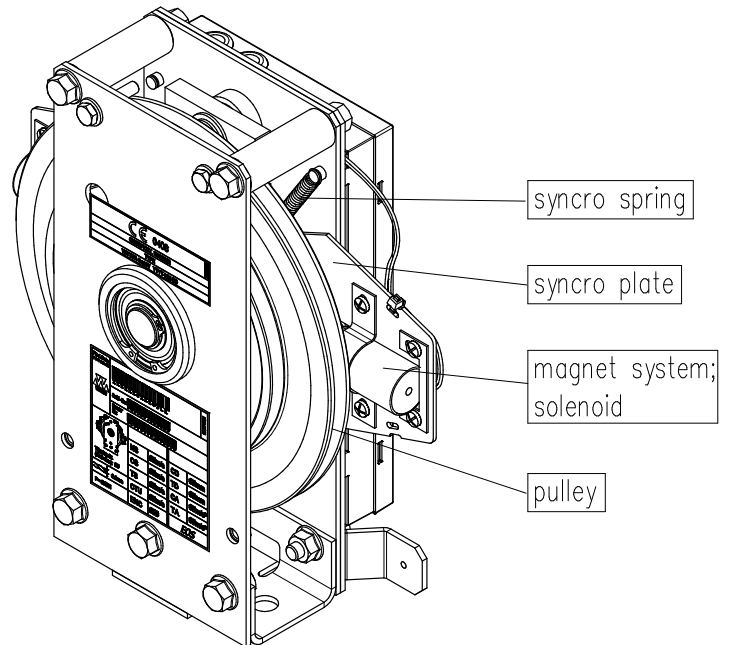
The lift installation must be taken out of use immediately, if any damage or irregularity is recognized which could possibly impair operational safety.



Please contact us at WITTUR if you have any problems or queries.



Maintenance work should be carried out with care by an expert in order to guarantee safe installation operation.



Make sure that the safety cover is reinstalled after maintenance work!

7.1.1 Inspection check list

- Check the battery supply by running the EOS with accu and check the accu according its manual to ensure proper function, which is also needed for emergency rescue! Measure the supply voltage.
- Check the governor visually, especially wear of the pulley groove, condition and cleanliness of synchro springs and magnetsystem.
- Test the governor to see that it is in working order.
- Check the governor and accompanying components for damage and deformation.
- Check the fixing of the governor.
- Check the battery's capacity periodically according its operating instructions.
- Check periodically that the CHANGE UNIT LED is not flashing - see chapter 4.3.9.

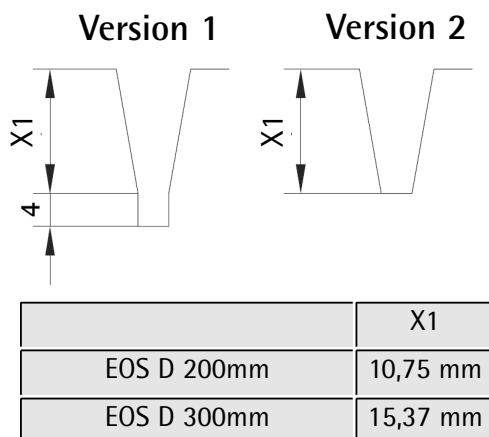
Overspeed governor EOS

Operating instructions

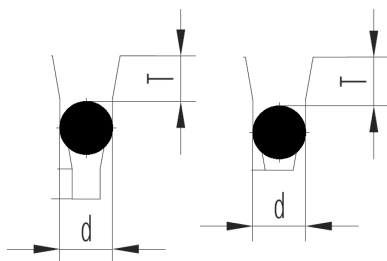
Blatt/sheet PM.7.002883.EN.55
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- Check the operation of the overspeed contact (safety circuit opened).
- Check the two-channel operation of the safety electronics and the magnetsystems by performing the static functions test (see chapter 5.1)
- Check the elongation and condition of the governor rope
- Check easy function when moving the synchro plate with magnets manually. Note: reset of governor needed after moving the synchro plate.
- Check the condition (wearing) of the wheel rope groove:

1. Check the groove type




2. Measure the groove wear (T) in the center of the rope on the top of a strand




3. Compare the measured wear with the table below.


EOS D 200mm	Version 1	Version 2
Tmax for d = 6mm	5mm	3,5mm
Tmax for d = 6,5mm	4mm	2mm

EOS D 300mm	Version 1	Version 2
Tmax for d = 6mm	10mm	8mm
Tmax for d = 6,5mm	8,5mm	4,5mm
Tmax for d = 8mm	4mm	1,5mm

 After reaching the maximum allowed wear (=Tmax), the governor must be replaced!

 Keep the governor clean to ensure proper operation and correct tripping!
Do not lubricate any parts!

- Check the condition of the wheel bearing by listening to the running noise

 Due to the limitation of internal braking force a pigtail-shaped groove wear is permitted as long as the limit (T dimension) is not reached. In case of increased wear of the rope or a replacement of the rope, replacing the governor is recommended.

Overspeed governor EOS

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Operating instructions

7.1.2 Brake force (lifting force) of the EOS governor

Setting of brake force:

The minimum brake force of the D 200mm **uni-directional** governor is **500N** or **800N** (see data label). The minimum brake force of the **bi-directional** governor is **500N** (see data label).

The minimum brake force of the D 300mm **uni-directional** governor is 500N. (see data label). The bi-directional governor has 500N brake force too.

According to EN81 the maximum needed lifting force to operate the safety gear is half the governor's force (safety factor 2 needed).

Influences that will reduce the brake force:

- a) Lubrication inside the brake
- b) Worn out of the breaklining (see lifetime of the brake)
- c) Damaged or broken plate spring

Lifetime of the brake:

- a) Cumulated braking distance 75 metres.
- b) If the brake is activated for more than 1,5 m per test, the brake of the governor must be cooled down for 30 minutes in minimum.



7.1.2.1 Measuring of the brake (lifting) force by 1/2 tension weight mass

- a) Remove the half mass from the tension weight.
- b) Drive the car to a level near the mid point of the shaft or higher.
- c) Drive the car with nominal speed.
- d) After reaching nominal speed activate tripping function by generating the TRIP- signal (as shown in chapter 4.3.3).
- e) Overspeed governor must activate the safety gear.
- f) Reinstall full tension mass on tension weight.



Nobody should be in the lift car, on the car roof or in the shaft when carrying out this test.



Bi-directional governors have to be tested in upward or both directions.



If the safety gear is not activated the overspeed governor must be replaced!

Overspeed governor EOS

Operating instructions

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7.1.2.2 Measuring of the brake (lifting) force with force gauge

- Detach the safety gear lever (1) from the rope anchorage (2)
- Fasten a clamp (3) with a force gauge (4) to the governor rope
- Twist the synchronisation plate manually or activate remote tripping to activate the governor's brake.
- Pull down the force gauge in the tripping direction until the governor pulley and the governor rope start to move. Check that pulley and rope move without sliding.
- The shown value must be higher than double the required force to operate the safety gear.



If the brake force is smaller than mentioned above the overspeed governor must be replaced!



Either 7.1.2.1 or 7.1.2.2 has to be carried out once a year. Each Test has to be documented.



In case of measuring a slightly higher brake force than check with the supplier of the safety gear synchronization if this force is allowed. In case of significant higher force ($>1,3 \times$ maximum brake force) the EOS has to be replaced.

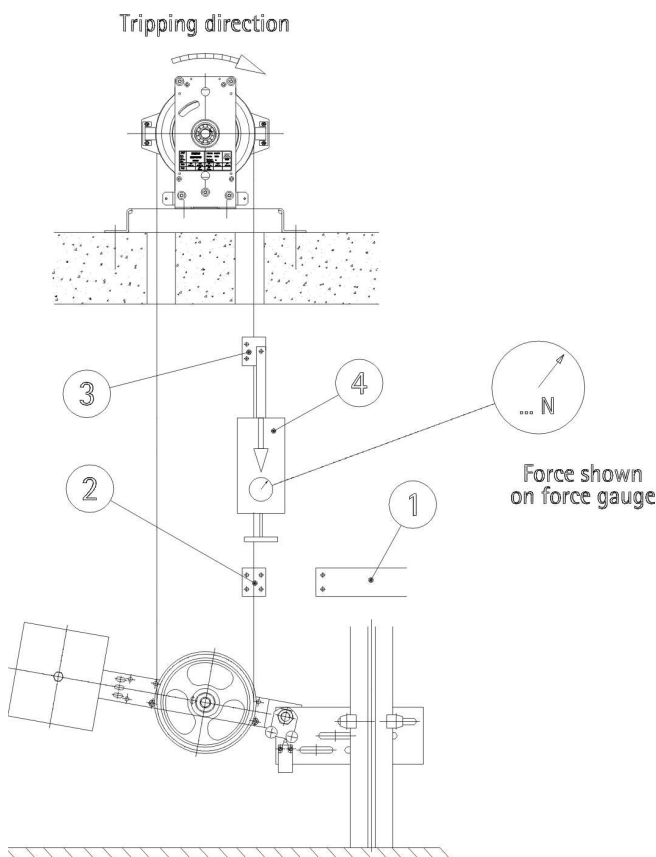


Bi-directional governors have to be tested in upward or both directions.

7.1.3 Sliding force of the rope



If, during this test, the governor rope moves while the governor pulley stand still, the sliding force of the rope inside the V-groove is already smaller than the adjusted brake force. This can be accepted when the force is higher than the min. brake force expected.



Overspeed governor EOS

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7.2 Battery replacement of the EOS interface box (optional)

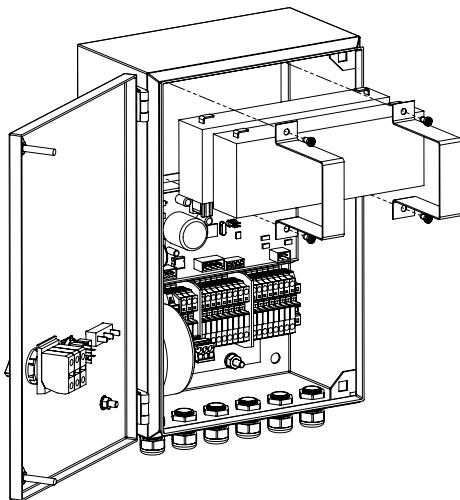
The battery must be replaced as soon as the output BATT ERR is active, but not later than 3 years. Attention: The Battery Error LED can be configured as LED on when the battery is OK or as LED off when the battery is OK, see capture 4.10



Beachte die Battery Error LED verhält sich je nach DIP-Schalter Stellung S1/2 differenziert, siehe Kapitel 4.10 DIP Schalter (optional)

This can be done by performing the following steps:

1. Turn off the power



NOTE! There might still be 230V on the wires.

2. Disconnect the battery.
3. Remove the fixing and change the battery
4. Reassemble in reverse order

7.3 Carrying out repairs



In general EOS has no parts which need to be repaired on site. It is not allowed to remove any seal (sealants, sealing wax). This also applies to repairs. Damage or deformation of the tension weight or mounting supports (i.e. as result of bending or heating) cannot be repaired or straightened.

It is forbidden to replace faulty or worn parts yourself.

Reason:

- Liability and safety engineering reasons



Lift installation operation without governor, even for short periods of time, is forbidden.

Following can be done on site by qualified fitters/service personnel:

- Tensioning the governor rope



Please contact WITTUR if for any reason something is unclear, or you encounter damage that cannot be repaired with the help of these instructions.

Slight additional tensioning of the governor rope may be required after the commissioning of the lift installation or after longer usage.



Pay attention to a proper operation sphere of the tension weight (sufficient movement).

- Move the tension weight on the guide rails or
- Adjust the governor rope tension on the rope socket

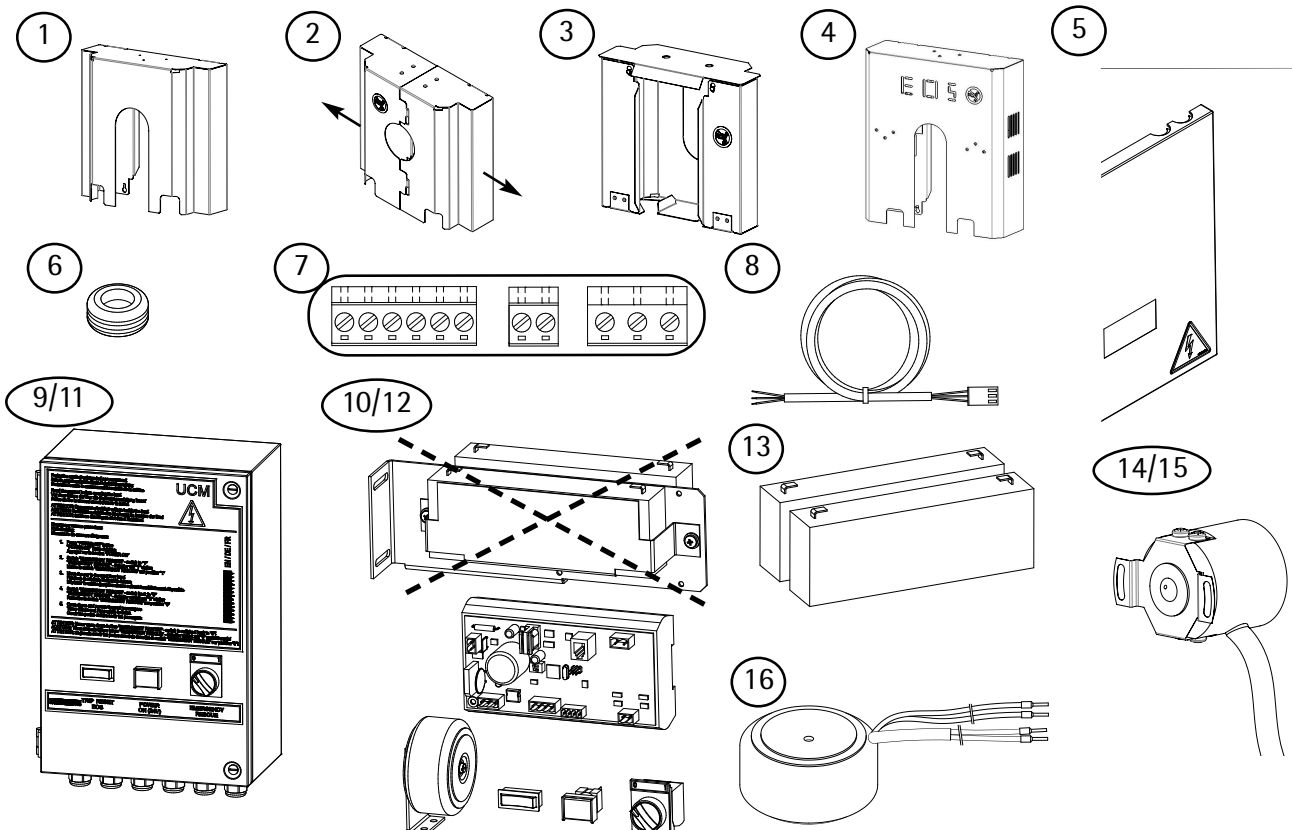
Overspeed governor EOS

Operating instructions

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8. Spare parts list

Pos.	Component	Spare part	Quantity	Art. No.
1	Protection cover (standing position)	Protection cover EOS D200	1	0903139A02
2	Protection cover (standing position)	Split cover EOS D200	1	1005753A02
3	Protection cover (headfirst position)	Protection cover EOS D200	1	1005805A02
4	Protection cover (standing position)	Protection cover EOS D300	1	1009827A01
5	Electronic box	Cover + Sticker	1	0903177A01
6	Electronic box	cabl grommet	1	C1303
7	Electronics	Protective coating for cabl grommets	1	904450G05
8	Encoder cabl	Encoder cabl	1	904401H01
9	EOS Electronic Interface with UPS with box		1	0904400 A01
10	EOS Electronic Interface with UPS without box		1	0904400 A02
11	EOS Electronic Interface without UPS with box		1	0904400 A03
12	EOS Electronic Interface without UPS without box		1	0904400 A04
13	Battery 12V/2,1 Ah (2 pieces needed)		1	253300
14	Incremental encoder RI36-H 5 VDC		1	W002552
15	Incremental encoder RI36-H 10-30 VDC		1	W002553
16	Trafo unit		1	904402 G01



Änderungen vorbehalten!

Subject to change without notice!



WITTUR manufacturing locations

Product manufacturer reference can be found on the product type label.

ARGENTINIA

WITTUR S.A.
Av. Belgrano 2445
Sarandi - Pcia. de Buenos Aires, Argentina

ITALY

WITTUR S.P.A.
Via Macedonio Melloni no 12
43052 Colorno, Italy

AUSTRIA

WITTUR Austria GmbH
Sowitschstrasse 1
3270 Scheibbs, Austria

INDIA

WITTUR Elevator Components India Pvt. Ltd.
Survey nos 45/1B , 3 & 4 , Pondur Village
Sriperumbudur – 602 105
Tamil Nadu, India

BRAZIL

WITTUR LTDA
Rodovia Celso garcia Cid
1406 Cambé Parana, Brazil

SLOVAKIA

WITTUR S.R.O.
Priemysel'ná ulica 2747/7
963 01 Krupina, Slovakia

CHINA

WITTUR Elevator Components (Suzhou) Co. Ltd.
18 Shexing Road, FOHO Economic Development Zone,
Wujiang City, Jiangsu Province,
P.R. China 215214

SPAIN

WITTUR ELEVATOR COMPONENTS S.A.U.
Polig. Ind. Malpica, Calle E - Parcela 8
50016 Zaragoza, Spain

GERMANY

WITTUR ELECTRIC DRIVES GMBH
Offenburger Str. 3
01189 Dresden, Germany

TURKEY

WITTUR Asansör San. ve Tic. A.S.
Y Dudullu Organize – Sanayi Bolgesi n° 13
34776 Istanbul, Turkey