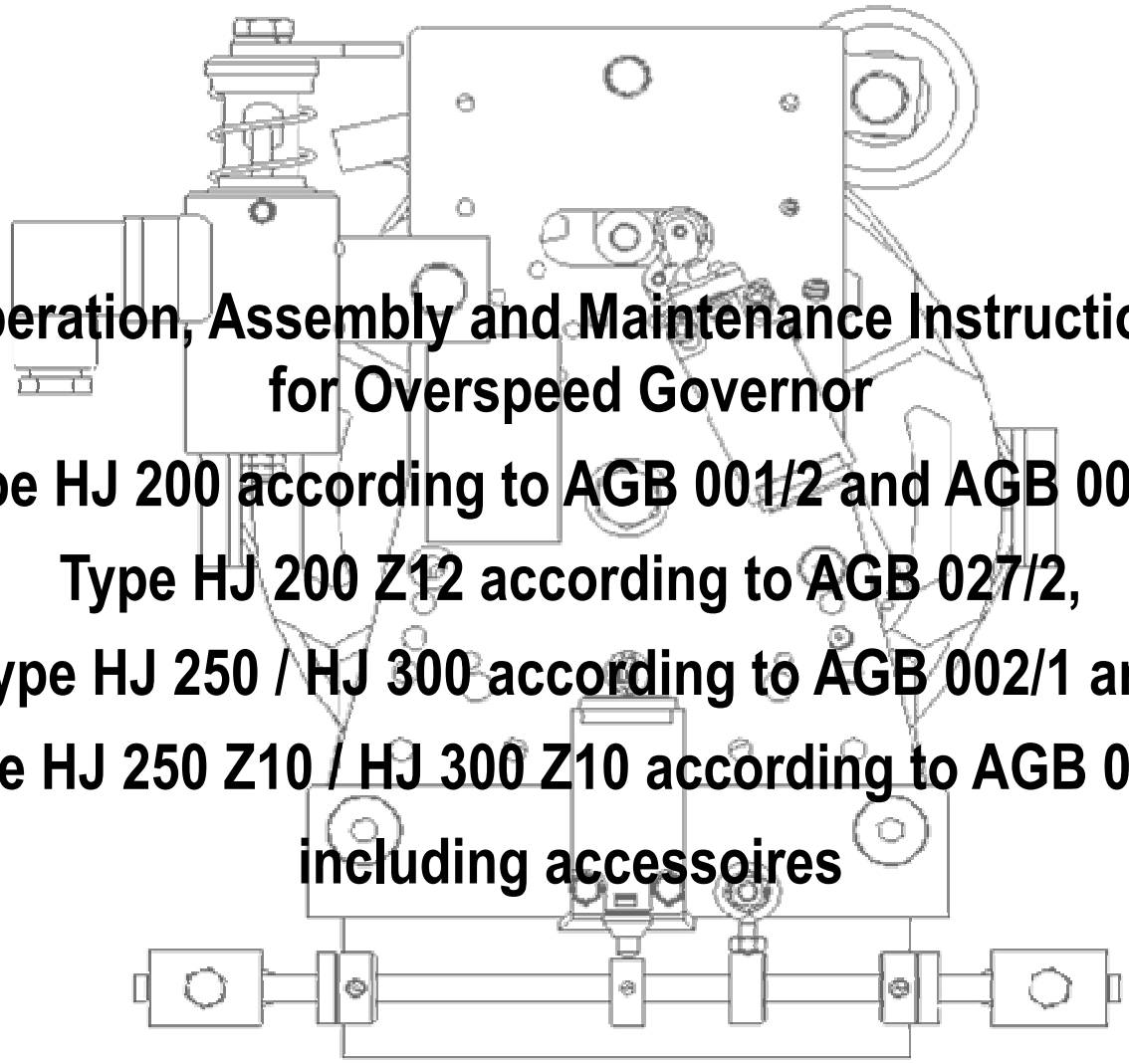
Hans Jungblut GmbH & Co. KG
Sicherheitstechnik für Aufzüge



Operation, Assembly and Maintenance Instructions for Overspeed Governor

Type HJ 200 according to AGB 001/2 and AGB 001/3,

Type HJ 200 Z12 according to AGB 027/2,

Type HJ 250 / HJ 300 according to AGB 002/1 and

Type HJ 250 Z10 / HJ 300 Z10 according to AGB 031/2

including accessoires

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TÜV CERT
DIN EN ISO 9001:2000
Zertifikat: 09 100 5250

1. General introductory information

These operation, installation and maintenance instructions are intended for qualified staff of installation companies, which fit overspeed governors and accessories for Hans Jungblut GmbH & Co. KG, hereafter referred to as JUNGBLUT. It is also intended for qualified staff that carries out maintenance.

These operation, installation and maintenance instructions do not contain any information or details of design calculations for tensioning weights, overspeed governors and clamping forces.

Illustrations in this document are indicative only and may differ from the actual product supplied, but give the basic functions.

Type of overspeed governor, permissible nominal speed v[m/s], pre-set tripping speed v_1 [m/s] as well as permissible rope diameter and corresponding design test certificate number are given on the type plate (see chapter 3.7).

Read the operation, installation and maintenance instructions carefully before fitting and operating the overspeed governor and accessories. Pay particular attention to safety and installation advice given.

The operation, installation and maintenance instructions are part of the scope of delivery for overspeed governor and accessories. Keep this manual safe. When transferring overspeed governor and accessories, the manual must be given to the new operator.

1.1. Definition of technical terms

- **Device**

The term 'device' denotes an lift/lift driven by hydraulic or electric power, a storage and retrieval device or other lifting equipment. The terms 'lift' or 'lift' are used interchangeably.

- **Lift/lift manufacturer**

The lift/lift manufacturer (planner, manufacturer, installation company) brings the device and all relevant components into service, including the overspeed governor and other accessories.

- **Customer / end user**

The customer or end user is the customer of the lift/lift manufacturer and may also be the operator of the device.

- **Operator**

The operator is responsible for the proper operation of the device as well as for regular maintenance.

- **Qualified personnel**

Qualified personnel have sufficient knowledge of lift construction or have acquired the necessary qualifications in training.

- **Qualified electrician**

A qualified electrician has sufficient knowledge of electrical installations or has acquired the necessary qualifications in training.

- **Maintenance and overhaul**

Maintenance comprises all activities which ensure the safe and proper functioning of the device and its components after installation and during service life (maintenance).

Overhaul comprises all activities which restore the safe and proper functioning of the device and its components after installation and during service life (repair).

1.2. Definition of symbols

These operation, installation and maintenance instructions contain the following symbols, key words and signs:

Type and source of danger!

The sign with the label „danger“ denotes possible danger of personal injury.

Type and source of danger!

The sign with the label „caution“ warns of technical., environmental and property damage.

Note:

This symbol does not denote safety instructions, but denotes information to better understand processes and functionality for optimum use of the device.

2. Safety instructions

- Safety components by JUNGBLUT may only be installed by trustworthy, authorized, trained and fully instructed qualified personnel. The installation company or the operator respectively is responsible for selection and training of personnel.
- Make sure the locking varnish on fasteners is not damaged.
- If the locking varnish is damaged, full functionality of the overspeed governor is no longer guaranteed. The overspeed governor must no longer be operated and needs to be sent to JUNGBLUT for inspection.
- Installation and maintenance must be carried out according to the procedures set out in this operation, installation and maintenance manual. Installation and maintenance personnel must have read and understood these instructions.
- All work must be carried out observing the valid norms, national laws and regulations. (e. g. in Germany, accident prevention guidelines and industrial safety regulations.)
- Work on electrical equipment of the device must only be carried out by qualified personnel or by instructed persons under supervision of a qualified electrician in accordance with electro technical norms, rules and regulations.
- Lines disconnected from power must be secured against unintentional re-connection to power.
- Ensure there is no voltage and connect the device to earth.
- Cover adjacent live parts.
- These instructions do not give authorization for any changes, modifications or conversions to be made to the overspeed governor and its accessories. The installation company is explicitly only permitted to fit or exchange the following components: rotary encoder, emergency limit switch (combi unit), free fall protection device, spherical roller

with bolt, remote triggering and rope protection device. For easier replacement of ropes, the rope protection device may be removed for this purpose.

- Mounting or installing fastening elements e.g. for cables/piping (pipe clamps, cable screw connections, cable ties or similar elements) to the overspeed governor is not allowed.
- Ensure that working envelope or operating area of the safety pendulum is not impaired (e.g. by pipes etc.)
- Only carry out maintenance and troubleshooting if the device or parts of the device are shut down. Do not commence with the work unless all rotating and moving parts have come to a halt. Secure the device or parts of it against unintentional starting up as well as against unintentional switching on.
- For all installation and maintenance work the following health and safety measures must be observed: install fall protection devices, cover floor openings, secure tools and other loose items to prevent accidental falling. For work in the shaft: block doorways and put up warning signs.
- Ensure before startup of the device that no persons are in danger when the device is operating.
- The operation of the device with overspeed governor (even if only temporary) is not permitted!
- When working with oils, grease and other chemical substances, all relevant safety guidelines and safety data sheets must be observed.

3. Intended use

JUNGBLUT overspeed governors are tested safety components for cable and hydraulic lifts and similar means of handling and lifting equipment, such as storage and retrieval devices.

The overspeed governor controls the nominal speed of the lift cabin. Monitoring is carried out depending on type in one or two directions of rotation. For single-acting overspeed governors the permissible direction of rotation marked by an arrow must be observed (see chapter 4.2).

The designated use is determined by the lift manufacturer. JUNGBLUT overspeed governors HJ 200, HJ 250, HJ 300 and accessories are manufactured according to customer specification and calibrated for the specific customer requirements.

Overspeed governors HJ 200, HJ 250, HJ 300 and accessories were developed for indoor use in dry buildings. For location of installation, the same conditions apply as for storage conditions for overspeed governors HJ 200, HJ 250, HJ 300 and accessories (see also storage conditions, chapter 3.3)

Air quality of the location should correspond to the usual environmental conditions.

The general dust limit of 10mg /m³ must be observed.

Dust-producing environments must be avoided. Environments with corrosive and flammable gases, mist, oil fumes, dripping water and salt laden air are to be avoided. Special models are suited for use in cold environments (ambient temperature < 0°C). These models are marked with a special label.

Overspeed governors are not explosion proof. Special explosion proof safety switches are available on request.

Maintenance on overspeed governors must only be carried out by JUNGBLUT.

Any other use not listed here is considered improper. JUNGBLUT shall not liable for any resulting damage. Any risk lies entirely with the operator or the installation company respectively. Intended use also includes compliance with all instructions in the operation, installation and maintenance manual, namely observing the installation and maintenance requirements.

3.1. Warranty and liability exclusions

Warranty and liability claims for personal injury and damage to property are excluded, if caused by one or more than one of the following:

- inappropriate use of overspeed governor HJ 200, HJ 250, HJ 300 and accessories,
- improper installation, operation, handling and service of overspeed governor HJ 200, HJ 250, HJ 300 and accessories,
- inadequate monitoring of wear parts of overspeed governor HJ 200, HJ 250, HJ 300 and accessories,
- improper and unauthorised repairs,
- use of non-original spare parts,
- Catastrophes caused by foreign bodies and force majeure.

3.2. Spare parts

Only original spare parts and accessories must be used. Safe and stress-resistant construction and manufacture is not guaranteed for third-party components.

Operating licence becomes invalid if this is not observed!

The following spare parts and accessories are available for retrofit:

- spherical roller with bolt,
- remote triggering,
- emergency limit switch (combi unit),
- creeping protection,
- rope protection device (RPD),
- retrofit kit for rotary encoder (must be specified when ordering overspeed governor as part of scope of delivery)

3.3. Storage

If overspeed governors HJ 200, HJ 250, HJ 300 and accessories are in interim storage before installation, all parts must remain in original packaging and protected from humidity. For storage, the following conditions are required:

- room temperature 0 °C to 50 °C
- Relative humidity max. 80 % at 20 °C, no condensation or icing

For components which have already been installed but are not yet in operation, the same conditions apply. In addition, these components must be protected from contamination such as mortar residue, oil/grease and dust.

3.4. Responsibility of the manufacturer

In accordance with EU directive 95/16/EC Lifts, the manufacturer is responsible for the design, manufacture, installation and sale including CE mark of the device and issuing an EU certificate of conformity.

Products included in JUNGBLUT's scope of delivery must be carefully selected, used as intended and installed observing information in these operation, installation and maintenance instructions.

Calculation of clamping forces is the responsibility of the lift manufacturer.

Correct calculation of clamping forces and depending on this, correct selection of components, guarantees trouble-free operation of the device.

Too high or too low clamping forces lead to faulty or complete lack of triggering of the safety gear and to damage to device components.

Contributing factors include:

- diameter of governor rope,
- tensioning weight,
- oil, grease or dirt on the governor rope and components in contact with the rope.

DANGER!

Risk of malfunction

Too high clamping forces lead to increased wear of the conical groove.

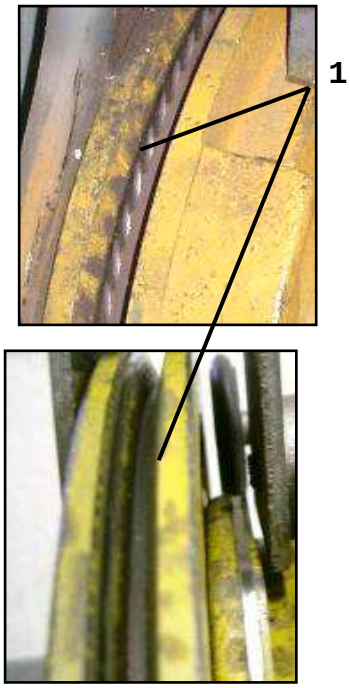
A worn conical groove (1) affects clamping force negatively. An overspeed governor with worn conical groove must not be kept in operation.

► Observe clamping force threshold when specifying and selecting an overspeed governor.

► Observe permissible governor rope diameter on type plate of overspeed governor, see chapter 3.7.

► Observe 8 fold rope safeties when selecting governor rope in accordance with EN 81-1/2, 9.9.6.2.

► Inspect wear of conical groove regularly.



Screw fittings for overspeed governor and tensioning device must conform to technical specifications.

Information and guidance in these operation, assembly and maintenance instructions must be incorporated in the operating instructions and documentation of the lift and supplemented with plant-specific information. A simple transfer of these instructions to the operator is not sufficient.

The operator is responsible for the correct operation of the device and maintenance at regular intervalls.

In particular, the following information must be observed and provided to the operator:

- As the future application of the devices described below is not known to JUNGBLUT, the manufacturer is obliged to inform the end customer or operator of additional safety information and maintenance work.
- Information about maintenance of overspeed governor and accessories must be incorporated in the maintenance manual of the device.
- Maintenance on the overspeed governor must only be carried out by JUNGBLUT.
- The operating parameters for electromagnets (duty cycle / operating period) must be communicated to the operator.

Relevant European standards and guide lines: EN-81, guideline /16/EC, EN 13015, EN 12385, EN 12016

3.5. Transport, packaging and disposal

- **Packaging**

The goods will be, unless otherwise agreed, delivered in reinforced cartons. For protection, the product is wrapped in padded packaging paper. The packaging must be disposed of in accordance with national and environmental regulations.

In the case of a return or transport for other reasons the overspeed limiter must also be protected by packaging paper and packed in a sturdy box.

Upon receipt of the goods, check packaging for damage. Compare your order details with type plate on overspeed governor (see chapter 3.7) and check for completeness. Log transport damage immediately to JUNGBLUT. If goods are stored in interim storage, correct storage conditions (see chapter 3.3) must be observed .Bei Rücksendung oder Transport aus anderen Gründen muss der Geschwindigkeitsbegrenzer ebenfalls durch Packpapier geschützt und in einem stabilen Karton verpackt werden.

- **Transport**

Overspeed governors can be top heavy, depending on the type. They must be carefully transported and secured against tipping.

Depending on the weight of the tensioning device, suitable lifting equipment must be used. Ensure it is safely secured during transport.

- **Disposal**

Used products and product parts must be disposed of in accordance with national and environmental regulations.

3.6. Signs on the speed limiter device

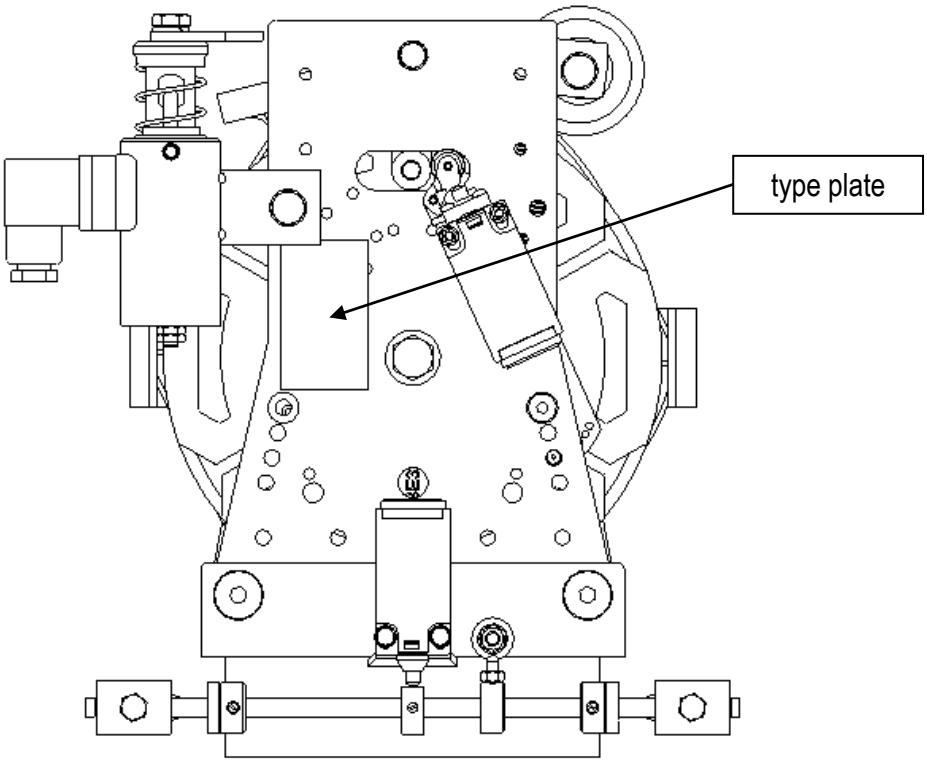
Depending on the type of overspeed governor, the following label may be attached:

DANGER!

Danger! High Voltage!

Accessories for the overspeed limiter are operated with 12/24 V_{DC} or 230 V_{AC} depending on lift plan and mounted components.

3.7. Technical data, type plate



Hans Jungblut GmbH & Co.KG
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D-51107 Köln
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Type:	**HJ 200 O**
No:	**201087654**
Year:	**2010**
Nominal speed v:	**1.00 m/s**
Tripping speed v1:	**1.40 m/s**
Rope-Ø:	**6.0-6.5 mm**

EC type examination certificate:
AGB 001/2
CE **0035**

Hans Jungblut GmbH & Co.KG
Ostheimer Str. 171
D-51107 Köln
www.jungblut.de

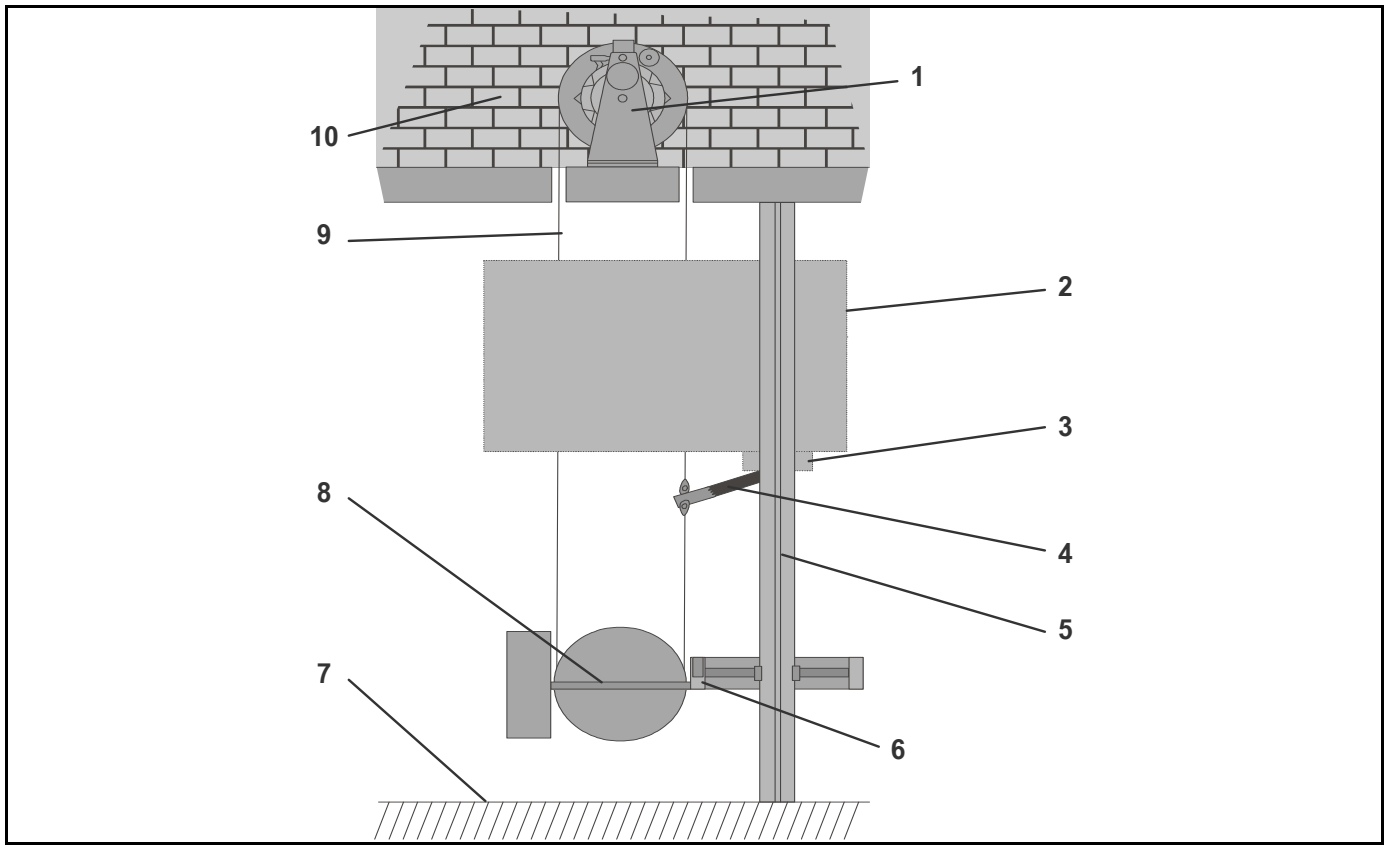
Type:	**HJ 300 U**
No:	**201098765**
Year:	**2010**
Nominal speed v:	**2.50 m/s**
Tripping speed v1:	**3.20 m/s**
Rope-Ø:	**6.0-8.0 mm**

EC type examination certificate:
AGB 002/1
CE **0035**

- Type: type of overspeed governor, see chapter 4.2.1)
- No.: serial number
- Year: year of manufacture
- Nominal speed v: nominal speed (v [m/s])
- Tripping speed v_1: tripping speed (v_1 [m/s])
- Tripping speed v1 [m/s] is factory-set by JUNGBLUT according to customer specifications. The set tripping speed is sealed and must not be altered.
- Rope- Ø: rope diameter (permissible governor rope diameter in mm)
- Type examination certificate: design test certificate number
- CE 0035: EU-declaration of conformity and code of product control authority
  (TÜV Rheinland)

4. Description

4.1. Installation example



1 Overspeed governor (see chapter 4.2)
2 lift cabin
3 safety gear
4 safety lever
5 guide rail
6 slack rope switch (see chapter 4.4)
7 shaft floor
8 tensioning device (see chapter 4.4)
9 governor rope (see chapter 4.5)
10 engine room

Note:

The JUNGBLUT product range comprises overspeed governors, tensioning devices and ropes.

Fasteners or catching devices are not included in the scope of delivery for JUNGBLUT overspeed governors.

The lift manufacturer must ensure that all parts are selected and compiled in accordance with valid norms, laws and guidelines.

Installation and maintenance must be carried out following manufacturer guidelines.

Operation (see chapter 4.1)

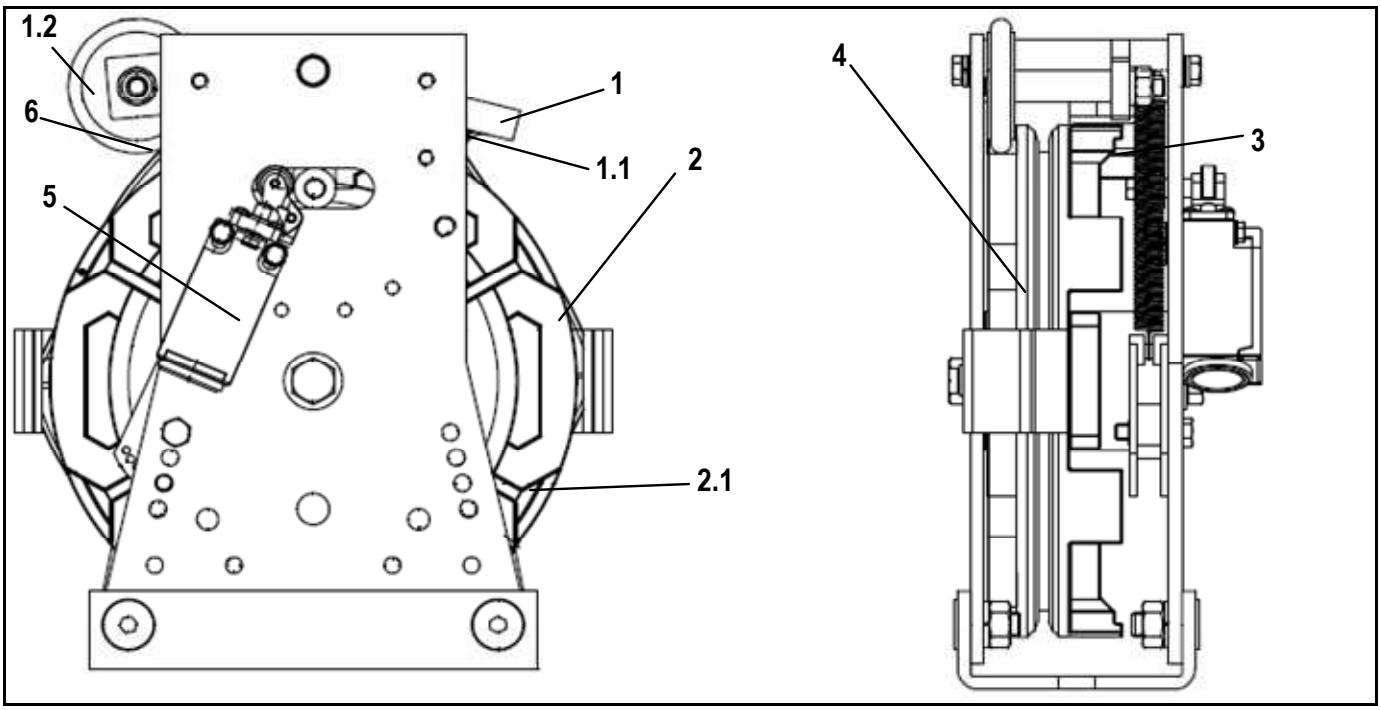
The overspeed governor ensures that the safety gear is activated and the lift cabin is stopped upon reaching threshold speed.

In the installation example the overspeed limiter (1) is mounted in the machine room (10). The governor rope (9) is guided through a tensioning device (8) in the shaft. The safety lever (4) is connected to the safety gear (3), which is mounted to the governor rope.

If the overspeed governor is triggered, the build-up of friction force in the governor rope releases the safety gear.

The safety gear is designed so that it locks the lift to its guides (5).

4.2. Overspeed governor



Components and units

1. Safety pendulum with
   - o catch (1.1) and
   - o spherical roller (1.2)
1. Governor wheel with blocking ring (2.1)
2. tension spring
3. conical groove
4. curve wheel with curve cams
5. safety switch

Operation

The spherical roller (1.2) is pulled onto the cam (6) through the action of a tensioning spring (3) If the governor wheel (2) is driven by the governor rope, the spherical roller moves onto the cam wheel. Spring forces in combination with the cam profile bring the spherical roller into contact with the cam wheel.

Upon reaching tripping speed v1 [m/s], the spherical roller is raised against the spring force, until the catch (1.1) engages the lock ring (2.1) on the opposite side of the pendulum. The governor wheel is immediately locked. Friction (clamping) forces build up between governor wheel and conical groove (4) which trigger the safety gear (see No 3 of figure in chapter 4.1). The clamping force is determined in particular by the weight of the tensioning device (see chapter 4.4 and 5.2.1).

Simultaneously, the safety pendulum (1) triggers an optional safety switch (5), which interrupts the safety circuit of the device. The types of safety switches are described in chapter 4.3.3 and 4.3.4.

4.2.1. Overspeed governor types

Overspeed governor	AGB	Directions of rotation	Rope diameter [mm]	Nominal speed V [m/s]	Tripping speed v1 [m/s]
HJ 200 SB O	001/2; 001/3	2	6 - 6,5	1,60	0,50 - 2,02
HJ 200 SB U	001/2; 001/3	2	6 - 6,5	1,25	0,24 - 1,50
HJ 200 SB O - H	001/2; 001/3	2	6 - 6,5	1,60	0,50 - 2,02
HJ 200 SB O - Z6	001/2; 001/3	1	6 - 6,5	1,60	0,50 - 2,02
HJ 200 SB U - Z6	001/2; 001/3	1	6 - 6,5	1,25	0,24 - 1,50
HJ 200 SB O - Z6 - H	001/2; 001/3	1	6 - 6,5	1,60	0,50 - 2,02
HJ 200 SB O - Z12	027/2	1	6 - 6,5	1,01	0,24 - 1,16
HJ 200 SB U - Z12	027/2	1	6 - 6,5	1,01	0,24 - 1,16
HJ 200 SB O - Z12 - H	027/2	1	6 - 6,5	1,01	0,24 - 1,16
HJ 250 SB U	002/1	2	6 - 8	2,10	0,37 - 2,64
HJ 250 SB U - Z5	002/1	1	6 - 8	2,10	0,37 - 2,64
HJ 250 SB U - Z10	031/2	1	6 - 8	1,39	0,22 - 1,60
HJ 300 SB U	002/1	2	6 - 8	3,00	0,45 - 3,70
HJ 300 SB U - Z5	002/1	1	6 - 8	3,00	0,45 - 3,70
HJ 300 SB U - Z10	031/2	1	6 - 8	1,74	0,25 - 2,00

NV = narrow design version
O = overhead safety pendulum
U = under-located safety pendulum
S = suspended design

Z5: single acting overspeed governor with 5 safety cams (HJ 250/300)
Z6: single acting overspeed governor with 6 safety cams (HJ 200)
Z10: single acting overspeed governor with 10 safety cams (HJ 250/300)
Z12: single acting overspeed governor with 12 safety cams (HJ 200)

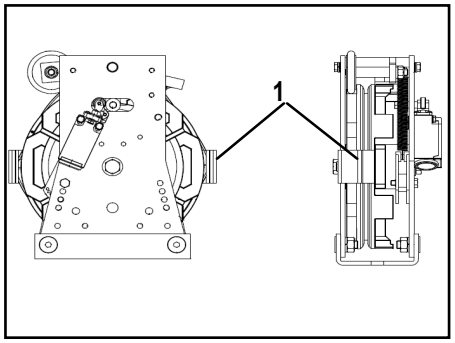
All overspeed governors are supplied with hardened conical grooves.

Versions AGB 001/2 and AGB 001/3 are identical with the exception of the omission of conical groove diameter r=7mm on AGB 001/3. Emergency limit switch cannot be used with AGB 001/3.

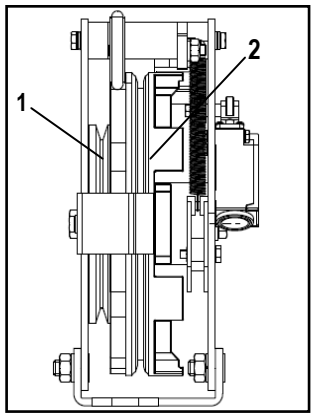
4.3. Accessories for overspeed governor

4.3.1. Rope protection device

Overspeed governors can be supplied by JUNGBLUT with a removable rope protection device (1) in accordance with EN 81-1, 9.7.1 (be careful to select correct type!).



4.3.2. Test groove



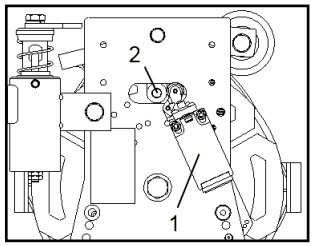
Tripping function of the overspeed governor can be tested at operating speed with help of a test groove (1) without undoing mechanical connections, such as rope lock or safety lever.

The test groove has a smaller diameter than the governor wheel (2). The ratio of the diameters equals the ratio of nominal speed v and tripping speed v_1.

For the test, the governor rope must be repositioned in the test groove.

When a retrofit emergency limit switch (combi unit) is ordered, it important to also specify the test groove. This ensures delivery of the correct emergency limit switch with the appropriate rope protection device.

4.3.3. Safety switch



The optional safety switch (1) is activated by the movement of the pendulum (2) when it reaches the tripping speed v1 and thus switches off the lift controls. Depending on the version, a ratcheting or sliding safety switch is equipped with opening and/or shutting contacts. The lift manufacturer must integrate at least one of these contacts in the safety circuit of the lift.

4.3.4. Preliminary switch off

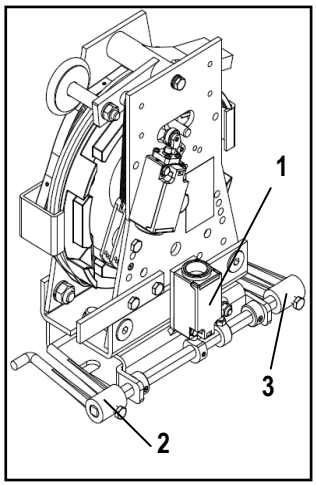
The Preliminary switch off is a type of safety switch, it switches the lift systems control off before it reaches activation speed v1. For this purpose, a special positioning switch (1) is aligned with the pendulum (2).

The positioning switch is factory-set in accordance with EN 81 by JUNGBLUT. Cut-out occurs at a minimum of 115% of nominal speed. The position of the switch is marked with locking varnish and must not be altered.

The pre-circuit breaker is equipped with an electromagnetic reset feature. The lift manufacturer must integrate the reset feature with an appropriate sensor in the lift systems control with special attention to the nominal voltage of the magnet.

In general, it is recommended in accordance with EN-81-1/2 to use an overspeed governor with Preliminary switch off for lifts with a maximum nominal speed v of over 1.00 m/s.

4.3.5. Emergency limit switch (combi unit)



The emergency limit switch (combi unit) limits upward and downward movement (1).

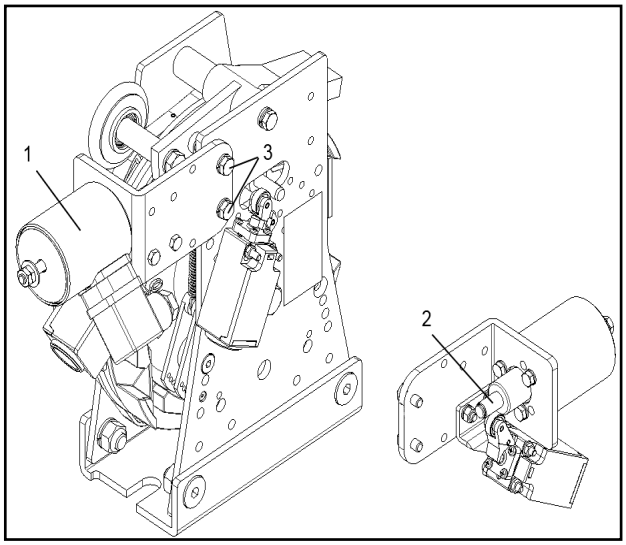
Coil springs (two coil springs, supplied) are fastened to the governor rope with rope clamps. When passing the top and bottom endpoints, the coil spring concerned activates one of the selector forks (2) or (3) of the emergency limit switch.

The emergency limit switch must be integrated in the safety circuit of the lift system control.

The emergency limit switch may also be retrofitted to the overspeed governor. Emergency limit switch, a special rope protection device and necessary fasteners are supplied. Instructions in the separate instruction manual must be observed.

If the overspeed governor is fitted in the shaft, this feature is not available. If the governor is fitted as a hanging version at the top of the shaft, a special version of emergency limit switch is required.

4.3.6. Creeping protection



During operation, the plunger (2) of the electromagnet (1) is retracted. When the lift cabin stops at a floor the electromagnet is switched off. The plunger extends through the electromagnet's spring force.

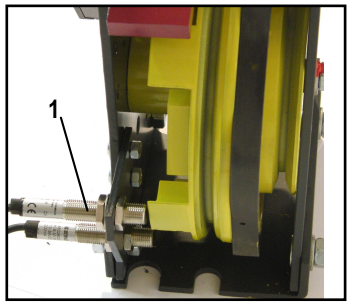
When the lift cabin falls or rises (the governor wheel turns), the plunger blocks the safety pendulum and the overspeed governor is activated.

The overspeed governor can be retrofitted (all fasteners supplied). Installation instructions must be observed.

Please observe information regarding power supply on type plate of the solenoid.

In addition, there is a second type plate on the solenoid indicating the type examination certificate no. TÜV-A-AT-1/11/248TSA3. Observe instructions of the type examination certificate closely! Mounting set "creeping protection" was certified by type examination certificate TÜV-A-AT-1/11/248TSA3 as a subsystem "tripping element" of a protection device against unintended movement of the lift car in acc. with EN81-1/2:1998+A3:2009. When using a creeping protection in acc. with A3:2009, closely observe instructions and information of the type examination certificate concerning geometries, response times, life cycle of parts, (emergency) power supply and other conditions of use. The creeping protection device as defined in this chapter to be exclusively used for types HJ 200 AGB 001/2, AGB 001/3, HJ 250 / HJ 300 AGB 002/1!

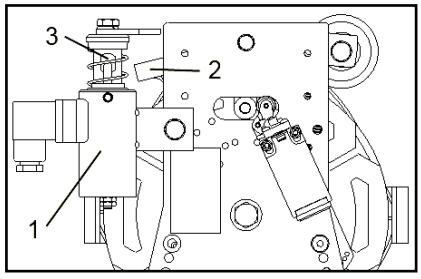
4.3.7. Magnetic switch and inductive proximity switch



A magnetic switch or inductive proximity switch (1) can measure distance travelled and indicate direction of rotation.

Please indicate preferred version when ordering.

4.3.8. Electrical remote triggering



The remote triggering controls the tripping device, when the overspeed governor is not accessible, for example when fitted in a shaft.

The remote triggering pulls the safety pendulum (2) down over the anchor rod (3) of the electromagnet (1). The catch of the safety pendulum engages in the lock ring and blocks the governor wheel when it turns. The catch mechanism is triggered.

Operation of the remote triggering must be secured against unauthorized access, for example by using a key switch (not included).

Duty cycle period must be observed (see type plate of the solenoid).

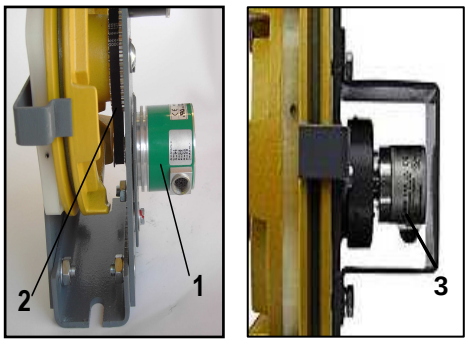
This functional test may be performed alternatively also by way of the creeping protection device up

to a maximum rated speed of v=2.00m/s (refer to chapter 4.3.6). To this purpose, switch solenoid currentless (in operation mode), so that the arresting pendulum will catch.

4.3.9. Rotary encoder

Rotary encoders (1) may be used for shaft monitoring. The following three types may be fitted:

- Rotary encoder with stub shaft, radial drive via toothed belt (2),
- Rotary encoder with hollow shaft (3), direct axial drive via shaft, or
- Rotary encoder with hollow shaft, indirect axial drive via shaft. (upon request)



4.3.10. Governor ropes

The following three types are available:

- High strength overspeed governor rope 250T diameter 6.5mm
- Overspeed governor rope 6 x 19 W-FC diameter 6.5mm
- Overspeed governor rope 6 x 19 W-FC diameter 8.0mm

4.3.11. Double magnet ring sensor

The double magnet ring sensor collects speed and acceleration data for establishing the unintended car movement with doors open. Two sensor units operating entirely independently from each other detect the rotational movement of the wheel (via a magnetic ring installed at the hub of the overspeed governor's wheel) and forward these data to the evaluation unit. High resolution allows using the sensors also for the purposes of shaft-copying.

Impulses per rotation of the overspeed governor wheel:

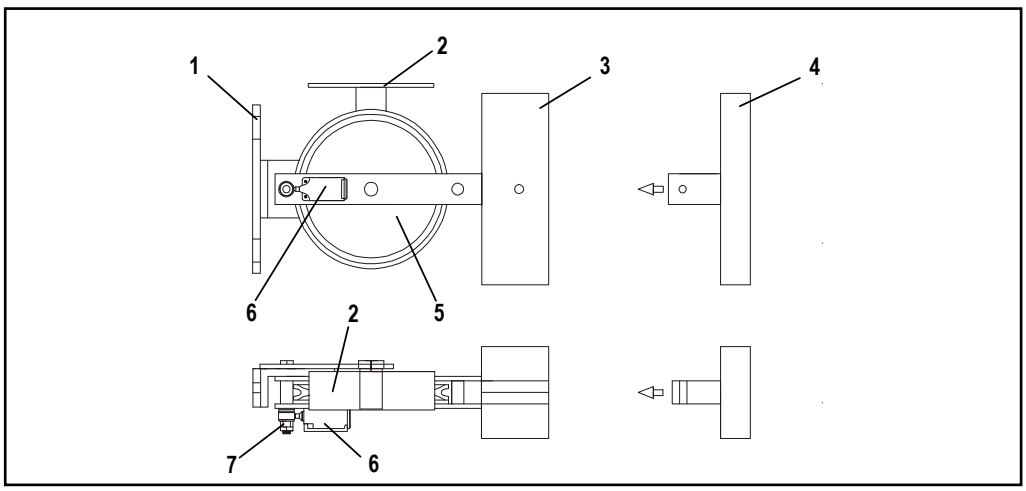
- DMS 200 – 2592 impulses, DMS 250 – 3200 impulses, DMS 300 – 3840 impulses.

The "double solenoid ring sensor" was certified by type examination certificate TÜV-A-AT-1/11/256CEES/1 as a subsystem of a protection device against unintended car movement in acc. with EN81-1/2:1998+A3:2009. **Ensure that the instructions of this type examination certificate are closely observed!**

4.4. Tensioning device

Components and units

1. console
2. protective cover
3. tensioning weight
4. additional weight
5. rope pulley
6. slack rope switch
7. switching cams



Operation

The governor rope is tensioned by the gravitational force of the tensioning weights (3) and redirected via a pulley (5).

The pulley is located vertically above the governor wheel of the overspeed governor (see chapter 4.1)

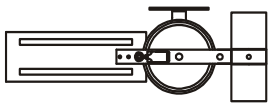
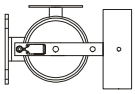
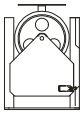
The clamping force is affected by the tensioning weight. The tensioning weight must be selected depending on the gripping device used. Clamping force can be increased with the help of an additional weight (4).

In addition, in accordance with EN 81-1, 9.7.1, the bottom pulley of the tensioning weight must be protected against falling objects with a protective cover (2). Adequate protective covers to protect segments between ropes are available from JUNGBLUT.

The slack rope switch (6) controls the governor rope. If the governor rope breaks or stretches, the tensioning weight activates the relevant devices as determined in the lift plan.

The slack rope switch comes in a „sliding grip“ or „ratcheting grip“ version.

4.4.1. Types of tensioning device

LG-2 frame LG-3-frame		Tensioning weight LG-2 for GB HJ 200 and LG-3 for HJ 250 / HJ 300 with frame for mounting on the guiding rail
LG-2-console LG-3-console		Tensioning weight LG-2 for GB HJ 200 and LG-3 for HJ 250 / HJ 300 with console for mounting on the wall
SG-2 SG-3		Tensioning weight SG-2 for GB HJ 200 and SG-3 for HJ 250 / HJ 300 direct action, (upright) in guidance frame

4.5. Governor ropes

A flexible, non-twisting und rotation-resistant steel rope must be used, in accordance with EN 12385-5.

The diameter of the governor rope must comply with the specifications on the type plate of the overspeed governor (see chapter 3.7)

When selecting a rope, note that 8-fold rope safety according to EN 81-1/2, 9.9.6.2 must be observed.

4.6. Safety device in acc. with DIN EN 81-A3

A safety device in acc. with DIN EN 81-A3 is a safety system consisting of the components overspeed governor (chapter 4.2) with double solenoid ring sensor (chapter 4.3.11) and creeping protection with power supply 24 VDC (chapter 4.4.6) and electronic monitoring box SA3-S.

The entire system was certified by type examination certificate TÜV-A-AT-1/11/256CEES/1 as a safety device against unintended car movement in acc. with EN81-1/2:1998+A3:2009; the system is delivered in prewired condition.

Ensure that instructions of the type examination certificate and instructions of "Assembly & Commissioning Manual and Service Manual of Electronic Monitoring Box SA3-S" are observed closely!

5. Installation

5.1. General notes

Installation and electrical connection must be carried out by specially trained staff, in compliance with EN 60204 part 1, Electrical equipment of machines, part 1: General requirements. Installation instructions of the manufacturer as well as the relevant safety regulations must also be observed.

For more information concerning connection measurements and electrical connection of accessories see signs on the relevant components or refer to the accompanying technical information.

The manufacturer of the device is responsible for the general planning of the system.

Note information regarding installation locations, fastenings and screws.

For electrical connections, installation and connection instructions as well as safety and operating instructions in the manufacturer's manual for the individual components must be observed. In particular, the maximum duty cycle and power supply of the electromagnet must be observed (also see type plate on the electromagnet).

Upon completion of installation, carry out a functionality check for all components fitted according to chapter 5.3.

DANGER!

Danger of falling! Risk of injury from falling objects!

When working in the shaft or engine room there is a risk of falling or risk of injury to persons from falling tools or other loose objects.

- ► Wear your protective clothing (helmet and protective gloves when fitting the rope)
- ► Provide a secure footing.
- ► Wear and attach your fall protection equipment securely.
- ► Cover the floor openings.
- ► Secure tools and other loose items to prevent accidental falling.
- ► Obstruct the door opening during work in the shaft. Put up warning signs.

DANGER!

Risk of serious accidents!

Risk of free-fall of the lift cabin!

► Do not operate the lift without overspeed governor.

DANGER!

Danger of becoming caught in the equipment's moving parts and danger of crushing.

Risk of unintended sudden start of device!

- ► Alle Arbeiten nur im ausgeschalteten Zustand der Anlage bzw. in Ausnahmefällen in der Betriebsart „Inspektionsfahrt“ durchführen.
- ► Prior to commencing work, switch the device off and secure against unintended restart.
- ► The whole installation and maintenance area must be widely cordoned off.

5.2. Installation of overspeed governor and tensioning device

5.2.1. Installing the tensioning device

- ► Inspect the tensioning device for damage.
- ► Check for freedom of movement of the rope pulley by turning.

DANGER!

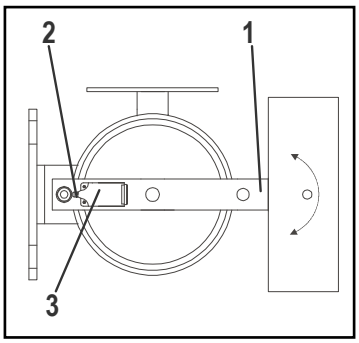
Danger of becoming caught in the equipment's moving parts and danger of crushing

Danger of crushing at the lever if the tensioning weight or the lever falls down as well as danger of moving parts between tensioning pulley and rope.

Only use suitable tools for supporting the tensioning weight.

Ensure a stable support.

- **Check slack rope switch, type LG**
  (type SG, see chapter **Fehler! Verweisquelle konnte nicht gefunden werden.**)
  - ► Swing mounting frame (1) up or down by about 15° degrees.
  - ► Selector plunger (2) must be pushed into the switch housing (3).
  - ► If the switch is not actuated, the tensioning device must be returned to JUNGBLUT for inspection.

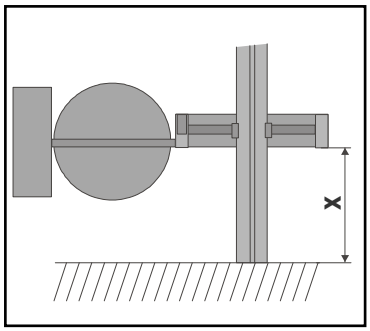


Note:

Make sure to reset the slack rope switch once it is triggered during operation.

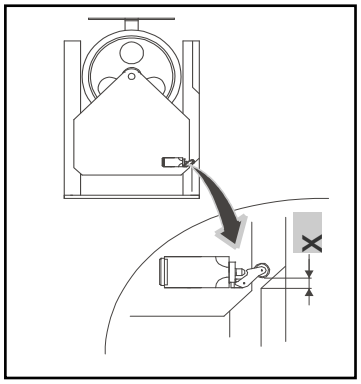
- **Fitting LG-console of the tensioning device**
  - ► Fit tensioning device in correct position in compliance with measurements set out in lift plan.

- **Fitting LG-frame of the tensioning device**
  - ► Fit tensioning device on frame with clamping screws in accordance with measurements x (LG-2 x= ca 300 mm; LG-3 x= ca 375 mm).



- **Pre-adjust tensioning device LG**
  - ► Support the tensioning device until mounting frame is angled upwards by about 5°.

- **Fitting tensioning device SG**
  - ► Fit tensioning device in correct position as set out in lift plan.
  - ► Check for freedom of movement of the tensioning device and the tensioning weight.



► Support the tensioning weight until x = 5 cm is reached.

5.2.2. Installating overspeed governor

► Inspect overspeed governor and attachments for damage.

► Check for correct sense of rotation of overspeed governor (check for arrow marked on overspeed governors which trigger in one direction only)

► Push the safety pendulum down with one hand and turn the governor wheel with the other until the catch blocks the wheel. Ensure the electrical safety switch is activated by this operation. Then turn the governor wheel in the opposite direction and ensure the safety pendulum returns to its original position. Also ensure smooth running of the pendulum, this is crucial for the correct functioning of the overspeed governor.

► The installation surface must be level, even and big enough to safely absorb forces occuring in operation. Also allow for adequate specifications of mounting screws in this regard.

► For suspended models the installation surface must be level and even and dimensioned so that it can safely absorb all occuring forces. Appropriate specifications for fasteners must be observed.

► For models suspended in a pit shaft a suitable guidance frame must be used for the tensioning weight.

► Observe required clearance and smooth running of all components mounted to the overspeed governor.

► Install overspeed governor in positon required by lift plan.

- **Model with rotary encoder**
  - ► The rotary encoder needs to be installed following the assembly instructions supplied separately.
- **Model with retrofit kit remote triggering**
  - ► The retrofit kit remote triggering needs to be installed following the assembly instructions supplied separately.

Note:

For lifts according to EN 81, rope openings must be kept to a minimum and fitted with a protection sleeve of 50 mm height.

► Check if the governor rope conforms with permissible governor rope diameter on type plate, see chapter 3.7.

DANGER!

Danger of severe accidents through malfunction!

The diameter of the governor rope affects the clamping force and functionality of the safety gear.

Too low or too high clamping forces lead to faulty or complete lack of triggering of the safety gear and damage to device components.

Note information on type plate of overspeed governor.

► Feed the governor rope into the conical groove of the overspeed governor.

- **Model with emergency limit switch (combi unit)**

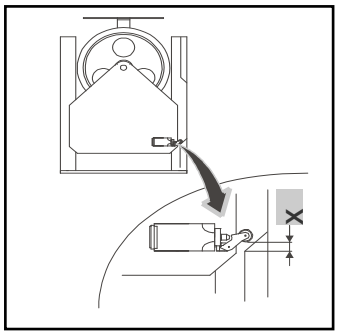
- ► Feed the switches onto the governor rope, see separate instructions.
- ► Feed both ends of the governor rope into the shaft towards the tensioning weight, and through the opening in the machine room, if needed.

DANGER!

Risk of serious accidents caused by malfunction!

When fitting wire ropes, ensure they are not twisted. Torsional movement of the rope in the conical groove increases wear and alters the clamp force. Clamp force can increase to such an extent that the governor rope does not slip through when the overspeed governor is triggered and the gripping device may be damaged or the governor rope may break respectively.

- ► Let the governor rope ends hang freely in the shaft.
- ► In this position, bring the governor rope ends together.
- ► Feed one end around the rope pulley.
- ► Connect rope ends with safety lever in safety gear according to installation instructions of lift manufacturer.
- ► The rope is tensioned by removing support from the tensioning weight/tensioning device.



- **Slack rope switch, type SG, check**
  (type LG, see chapter 5.2.1)
  - ► check for distance travelled to lower switch-point when tensioning device is installed. Measurement x = max. 5 cm

- **Fit tensioning device LG**
  - ► Check if the lever of the tensioning device is horizontal or angled upwards by up to max. 5°.

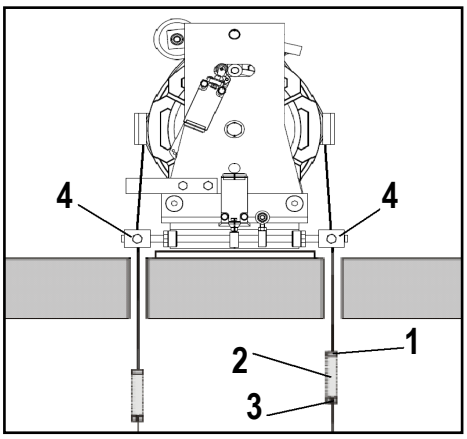
- **Check governor rope and rope guidance**
  - ► Check governor rope and remove dirt, grease, mortar spatter, etc, if required with appropriate means.
  - ► Check vertical position of governor rope with spirit level or a plumb.
  - ► Check if the governor ropes are aligned correctly in the conical groove of the governor wheel.

- **Check friction clamp force**

In order to measure the clamp force, a spring balance can be hooked into the rope construction. The overspeed governor must be blocked with the safety pendulum to carry out the measurement.

- **Model with emergency limit switch (combi unit)**
  - ► Fit the switch springs in the correct position on the governor rope, see separate installation instructions.
  - ► Connect the electrical components to power source according to lift plan and manufacturer manual. In particular, observe notes in EN 60204 part 1, Electrical equipment of machines, part 1: General requirements.

- ► Sofern notwendig und der Geschwindigkeitsbegrenzer zugänglich ist, sichern Sie diesen durch eine Schutzhaube vor direkten Zugriff. Beachten sie hierzu insbesondere die Hinweise der EN 81-1/2, Ziffer 9.7, Tabelle 2.
- ► If needed and the overspeed governor is exposed, secure it with a protective cover. In particular, observe notes in EN 81-1/2, point 9.7, chart 2.
- ► Fit protective cover on rope pulley of tensioning device.
- ► Thread rope guidance (1) and coil spring (2) onto the governor rope.
- ► When in horizontal position, push selector forks (4) into correct lateral position and tighten clamp screws.
- ► Upon completion of installation, carry out a functionality check of the device (see chapter 5.4).



5.3. Performance test

5.3.1. General notes

DANGER!

Danger of falling! Risk of injury from falling objects!

When working in the shaft or engine room there is a risk of falling or risk of injury to persons from falling tools or other loose objects.

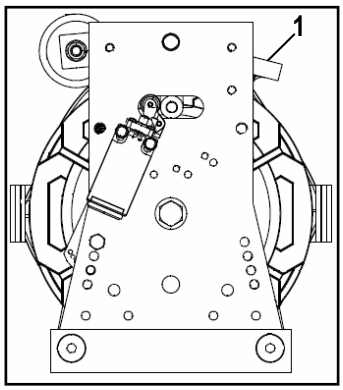
- ► Wear your protective clothing (helmet and protective gloves when fitting the rope)
- ► Provide a secure footing.
- ► Wear and attach your fall protection equipment securely.
- ► Cover the floor openings.
- ► Secure tools and other loose items to prevent accidental falling.
- ► Obstruct the door opening during work in the shaft. Put up warning signs.

- ► Firstly, carry out all system-specific checks according to manufacturer specifications.
- ► Check for sufficient safe distance of all moving fastening components of the device.
- ► Ensure that no persons or objects are in the danger zone.

5.3.2. Check governor rope guidance

- ► During the test run, inspect the running of the governor rope.
- ► If any oscillations or swinging movements occur in the governor rope or tension weight, stop the test run immediately.
- ► If any oscillations occur or the tension weight swings, check the running of the governor rope, rope tension and inspect the governor rope for damage.
- ► Ensure the governor rope runs in the correct vertical fashion.
- ► If the governor rope is not running in a correct vertical fashion, check guidance and positioning of components.

5.3.3. Check triggering of safety switch and catch mechanism



- **Overspeed governor without remote triggering**
  - ► When the device is not operating, push the square face (1) of the safety pendulum with a tool (eg a piece of wood) into the blocking ring of the governor wheel.

- **Overspeed governor with remote triggering**

CAUTION!

Risk of damage or defect!

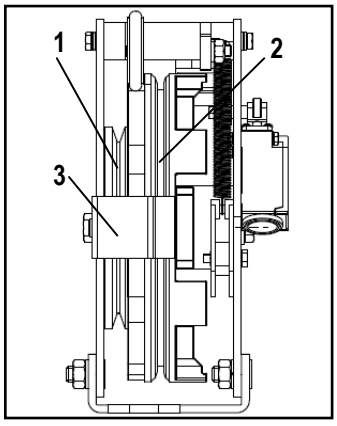
The solenoid must only be operated for a short period of time.

Do not exceed the maximum operating period (see information on type plate of solenoid!).

- ► Switch the device on.
- ► Operate the remote triggering.
- ► The overspeed governor must trigger the safety device and interrupt the safety circuit.
- ► If the overspeed governor is not triggered, see chapter 8.
- ► Operate the device in the opposite direction, which will assist the release of the governor wheel lock.
- ► Repeat the check for a second direction of rotation.

5.3.4. Check trigger speed

(for overspeed governors with optional test groove)



- ► Place a support underneath the tensioning weight/tensioning device.
- ► After disassembly of the rope protection device (3) take off governor rope from its original position on the governor wheel (2) and position it in the test groove (1) .
- ► Remove the base of the tension rope or the tensioning device respectively.
- ► Check the tension of the governor rope. If the tension is not sufficient, the rope must be retensioned for the test.
- ► Switch the device on.
- ► The overspeed limiter must – at nominal speed – trigger the gripping device and interrupt the safety circuit of the device.
- ► If the overspeed governor is not triggered, it must not be operated again and needs to be sent to JUNGBLUT for inspection.
- ► After the check is completed, take the governor rope off the test groove and position it on the governor wheel and fit the rope protection device.

5.3.5. Check Preliminary switch off

- **Electromagnetic resetting of switch**

CAUTION!

Risk of damage or defect!

The solenoid must only be operated for a short period of time.

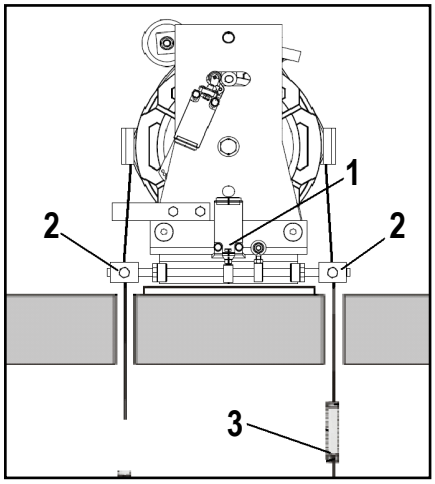
not exceed the maximum switch on period of 3 seconds.

► Ensure the locking varnish on the fastener screws is undamaged. If the locking varnish is damaged, full functionality of the overspeed governor is no longer guaranteed. The overspeed governor must no longer be operated and needs to be sent to JUNGBLUT for inspection.

► Operate switch resetting. If the switch does not reset itself, see chapter 8.

- **Resetting switch manually**

► Pull out engaged selector pin.



5.3.6. Check emergency limit switch (combi unit)

- **Check functioning of emergency limit switch**

► Switch the device off.

► Swing the selector forks (2) upwards. The selector plunger in the emergency limit switch (1) must be triggered.

- **Check performance of emergency limit switch**

► Switch the device on.

► When passing the final points marked by the rope clamps the relevant coil spring (3) triggers one of the selector forks in the emergency limit switch. Relevant devices as determined in the device control systems must be triggered.

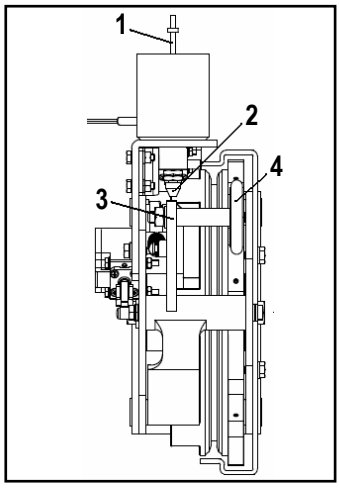
► The position of the coil springs on the ropes must be checked after operating the switch while the device is running.

5.3.7. Creeping protection

Ensure the locking varnish on the fastener screws is undamaged. If the locking varnish is damaged, full functionality of the overspeed governor is no longer guaranteed.

The overspeed governor must no longer be operated and needs to be sent to JUNGBLUT for inspection.

- **Check performance of creeping protection and electro magnet**



► Pull back the rear plunger (1) from the magnet as far as it will go.

► Turn the governor wheel until the rubber roller (4) is positioned exactly above one of the cams. Let go of the rear plunger.

► Turn the governor wheel further and check if the pendulum blocks the wheel. Repeat the check for a possible second direction of rotation.

► The front plunger (2) must be pushed by the coil spring below the pendulum (rubber roller attachment).

► If this feature is not functioning, the overspeed governor must no longer be operated and needs to be sent to JUNGBLUT for inspection.

5.3.8. Check magnetic switch and proximity switch

► Ensure the locking varnish on the fastener screws is undamaged.

If the locking varnish is damaged, full functionality of the magnetic switch or proximity switch is no longer guaranteed. The overspeed governor must no longer be operated and needs to be sent to jJUNGBLUT for inspection.

► Turn the governor wheel.

► Features implemented in the device control systems must be triggered.

6. Disassembly

Disassembly is analogous to assembly, in reverse order. Make all necessary safety precautions before dismantling (see chapter 5.1) Note disposal instructions in chapter 3.5.

7. Repair, maintenance and service

7.1. General notes

Components which are not in perfect condition must be replaced immediately.

To ensure proper functioning of the device, all work specified in the maintenance, repair and service instructions must be carried out. Also note the manufacturer's manual for accessory parts.

Maintenance and service must be carried out by trained personnel. Work on power supply must only be carried out by specially trained personnel (see chapter 1.1).

All work must be documented in a maintenance log book.

All screw fittings for governor wheel and safety pendulum are marked with locking varnish. If the locking varnish is damaged, functionality of the overspeed governor is not guaranteed. The overspeed governor must no longer be operated and must be returned to JUNGBLUT for inspection.

Tension lever of the spring must not be altered. If the seal wire or locking varnish is damaged, correct setting of the trigger speed is no longer guaranteed. The overspeed governor must no longer be operated and must be returned to JUNGBLUT for maintenance.

Safety switch and accessories are factory-set and secured with locking varnish. Safety switch and accessories must not be altered (exception: rotary encoder, remote triggering, spherical roller, emergency limit switch (combi unit) and free fall protection device). If the locking varnish is damaged, the correct setting is no longer guaranteed. The overspeed limiter must no longer be operated and must be returned to JUNGBLUT for maintenance.

DANGER!

Danger of becoming caught in the equipment's moving parts and danger of crushing

Risk of unintended sudden start of device!

All work must only be carried out when the device is switched off or, in exceptional cases, whilst in test run mode. Switch off device before commencing work and secure against unintended restart.

The whole maintenance area must be widely cordoned off.

DANGER!

Danger of falling! Risk of injury from falling objects!

When working in the shaft or engine room there is a risk of falling or risk of injury to persons from falling tools or other loose objects.

- ► Wear your protective clothing (helmet and protective gloves when fitting the rope).
- ► Provide a secure footing.
- ► Wear and attach your fall protection equipment securely. Cover the floor openings.
- ► Secure tools and other loose items to prevent accidental falling.
- ► Obstruct the door opening during work in the shaft. Put up warning signs.

7.2. Maintenance chart

To ensure functionality of the overspeed governor, the governor rope must be free of dirt and may only have a slight film of oil or grease.

Governor wheels and rope pulleys are equipped with maintenance free ball bearings and must not be lubricated by the user.

The maintenance interval for up to 3000 annual operating hours is 6 months. If operated more than 3000 operating hours, the maintenance interval is 3 months. When used in a cold environment, the maintenance interval is generally 3 months.

Inspection for the overspeed governor by JUNGBLUT is recommended after 10 years or after 25 000 operating hours at the latest. Run a systems check after major alterations or after an accident (EN 81-1/2, annex E2).

Component	Maintenance	Activity	See chapter
Overspeed governor and accessories (except rotary encoder, remote triggering, spherical roller, combi unit and creeping protection)	Visual inspection of the screw fitting marked with locking varnish. Visual inspection of the seal wire on the tension lever of the spring. If the locking varnish or the seal wire is damaged, the correct functionality of the overspeed governor is no longer guaranteed. The overspeed governor must no longer be operated.	Overspeed governor must be sent to JUNGBLUT for inspection.	
Safety device SA3-S	Visual inspection, mechanical inspection, functional test.		11, in the manual to SA3-S
Overspeed governor	Functionality test		5.3.3, 5.3.4
Governor wheel	Visual inspection of governor wheel and conical groove for grease and dirt.	clean	
	Visual inspection of conical groove. If visual rope impressions are present, the overspeed governor must no longer be operated. The functionality of the overspeed governor is no longer guaranteed. When the overspeed governor responds the rope can break. The gripping device can be damaged.	Overspeed governor must be sent to inspection.	
Pendulum roller	Visual inspection Slightly lift the safety pendulum at the axis of the spherical roller and inspect for free movement of bearings and spherical roller by turning the spherical roller. Check all screw connections	If spherical roller and bolt movement is restricted or in case of bearing play, they need to be exchanged by a qualified technician. In case of loosened bolts/screws, re-tighten bolts/screws	

Component	Maintenance	Activity	See chapter
Safety pendulum	Push down safety pendulum using the catch. Safety pendulum must move freely. There must be no restriction of movement upon inspection. If the safety pendulum is stiff or catches when pushing down, the overspeed governor must no longer be operated. The safety pendulum must **not** be lubricated!	Overspeed governor must be sent to JUNGBLUT for inspection.	
Tension spring	Visual inspection for wear, deformation, strain. If the tension spring is damaged, the overspeed governor must no longer be operated. The functionality of the overspeed governor is no longer guaranteed.	Overspeed governor must be sent to JUNGBLUT for inspection.	
Governor rope	Visual inspection for broken strands, deformation, dirt, grease etc.	Clean or exchange respectively	5.2.2
Slack rope switch	Check functionality. type LG type SG		5.2.1 5.2.2
Tension weight	Visual inspection of position. Check for freedom of movement.	In case of elongation, re-adjust tension weight shorten the rope and re-install accordingly.	5.2.1 5.2.2
Functionality test	Carry out functionality test and check trigger speed accordingly		see chapter 5.3

Get in touch with JUNGBLUT, if you have any concerns regarding the functionality of any components of the overspeed governor.

8. Faults

8.1. Trouble shooting

After trouble shooting, carry out a functionality test of the entire device according to manufacturer specifications or according to chapter 5.3 respectively.

Electrical faults may only be rectified by a qualified electrician.

Component	Fault and trouble shooting	see chapter
Emergency limit switch (combi unit)	If the emergency limit switch (combi unit) was triggered during operation, the position of the coil springs must be checked.	
Pre-circuit breaker	If the pre-circuit breaker was triggered during operation, the switch must be reset after trouble shooting.	5.3.5
Slack rope switch	If the slack rope switch was triggered, check the governor rope, tension device, etc. The governor rope may have to be shortened accordingly. Catching slack rope switches must be reset.	5.2.1, 5.2.2
Safety device	If not triggering:	
	inspect conical groove for wear	
	inspect governor rope for wear and dirt	5.2.2
	check tension of governor rope	
	check tensioning device for freedom of movement and positioning	5.2.2
	check safety device	5.2.1, 5.2.2

If faults cannot be rectified, contact technical support at JUNGBLUT