

Hydraulic Car Frame

WLF06 / WLF10 / WLF16 / WLF20

Operating instructions

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Hydraulic Car Frame WLF06 / WLF10 / WLF16 / WLF20



Car frame
Suspension 2:1

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1 General information prior to installation

1.1 Description and functions

The hydraulic car frame series WLF is a car frame used for passenger- and passenger-goods lift according to EN 81-2.

F | WLF06 and WLF10 belongs to the group of elevators which have off-centre guidance. It has been designed for easy shaft access even when it is pre-assembled.

F | The frames are available for 2:1 rope hydraulic suspensions (all adequate accessories - guide rail brackets, cylinder brackets, buffer stands, ... could be delivered with the car frame package).

The built-in safety devices are set, synchronized and lead sealed ex-works, according to the order. For reasons of safety, it is forbidden to readjust these settings once they have been made.

The WLF car frame operating range is defined as follows:

F |

WLF06:

- All up load $\leq 1550 \text{ kg}$ ($Q \leq 630 \text{ kg}$)
- Car depth $\leq 2000 \text{ mm}$
- Car width $\leq 1300 \text{ mm}$

WLF10:

- All up load $\leq 2500 \text{ kg}$ ($Q \leq 1000 \text{ kg}$)
- Car depth $\leq 2500 \text{ mm}$
- Car width $\leq 1750 \text{ mm}$

WLF16:

- All up load $\leq 3500 \text{ kg}$ ($Q \leq 1600 \text{ kg}$)
- Car depth $\leq 3300 \text{ mm}$
- Car width $\leq 2050 \text{ mm}$

General:

- Nominal speed $\leq 1.0 \text{ m/s}$
- Safety gear devices: Roller type SG
Progressive type SG
- Guide: Sliding guide shoe

Further options:

- Load weighing system
- Overspeed governor linkage
- Car supporting extension beams
- Travelling cable hanger

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 accept no responsibility for damage caused by improper handling, or for damage caused as a result of actions other than those stated in these operating instructions.

The WITTUR guarantee may be voided if parts other than those described in these instructions are installed, or if the component has been used other than described in these instructions.

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Unless stated otherwise, the following are not permissible due to technical safety reasons:

in connection with safety gear devices

- The use of safety gear devices or brake components other than those installed
- Carrying out modifications, of any kind, on brake components
- Destroying of seals
- Modification of the actuating mechanism
- Readjustment of settings have been made ex-works

in connection with the overspeed governor

- installing a model either of the wrong type of manufacture or one not in compliance with specifications

- undertaking alterations of any type whatsoever

the WITTUR slack rope device


- to use it together with a safety gear device other than the specified
- to modify its construction

furthermore


- Frame modification
- Carrying out faulty or improper maintenance, maintenance or inspection checks
- Using 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

WITTUR machine installation or repair engineers are chiefly responsible for the safe operation of machinery.

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

It is essential to comply with and be familiar of all safety rules and legal obligations in order to avoid personal / product damage during installation, maintenance and repair work.

 Important information sign

Important safety advice and danger warnings are emphasised with the following symbols:



General danger warning



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

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

The proper assembly and installation of WITTUR car frames requires correspondingly well trained fitting engineers. The responsibility of training lies with the company appointed to carry out the work.

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Before starting installation work:



Only properly trained personnel may carry out work, or be allowed access to the installation site.

- Attach safety devices to guard against falling (platform or harnesses)
- 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 Work instructions

1.4.1 Hydraulic components

Basic instructions are given in the following section which are always to be observed without fail during work on hydraulic installations. It will be assumed in later chapters that these instructions are already known, and for that reason they will not as a rule be given again.

Work safety

Work which is improperly carried out can lead to serious accidents, as can inattention.

- For your own safety, never work with greasy hands
- Remove immediately all oil spots on the floor and on any tools
- Never loosen threaded joints or screwed connections as long as the installation is standing under pressure
- Lower lift car to the contact buffers
- Secure installation against involuntary startup or switching-on by placing a padlock over the main switch
- Hydraulic oil is flammable. Be careful when welding.

Cleanliness

Impurities in hydraulic systems lead to increased wear, installation disruptions or even to demolitions. For that reason, it is important to practice the greatest possible level of cleanliness!

- Before loosening screwed connections or threaded joints, clean their external surroundings
- Close oil connections with protection covers in order to prevent dirt from entering

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- Protection covers, protective pipes, packing made of oiled paper, and similar things should not be removed until immediately before installation work commences
- Use no waste cotton or wool for cleaning oil tanks, pipes, flanges or similar things due to the possibility of leaving fibre residues
- Clean pipes of any soiling (chips, forge scales, sand, etc.) before installation. Welded pipes in particular should be sprayed out or subjected to a caustic rinse.
- Take care to ensure clean sealing surfaces prior to installation
- Cover all elastic packings, bearings of moveable components as well as sliding joint surfaces (such as for example piston rods) prior to lacquering and painting. This is of particular importance when working with lacquers containing nitrocellulose or when masonry or welding work is planned.
- Use a filter screen when filling with oil

Installation

During installation work or when replacing components, the following are to be observed as general principles:

- Use only operating material which has been released by the WITTUR Company (such as hydraulic oils) and only original WITTUR spare parts. Sealing materials such as silicone, hemp, Teflon tape or putty are not allowed, because particles shed by them could enter the hydraulic system.
- When selecting pipes (only seamless precision steel pipes), hoses, screwed connections, threaded joints and similar things, note proper pressure levels
- Install components and pipes according to regulations and free from stresses. Take into account possible heat expansion and noise transmission.
- Lay hose lines only with authorised bending radii
- Convince yourself prior to installation that seal-

ing surfaces are undamaged, level and clean

- Lightly oil packings prior to installation and ensure that they sit properly
- Tighten mounting bolts of valves or sealing surfaces equally with the prescribed torque

Maintenance

For inspection and maintenance, the following apply as fundamental principles:

- Replace damaged pipes and hose lines immediately
- Eliminate leakages and/or their causes without delay
- Take care of strange or excessive noise development in pumps, at clutches, suspensions, etc.
- Keep the installation free of dirt and clean it regularly. That way, damage, leakages, etc. can be recognised more easily.

Other



Dispose of waste oil and wastes containing oil in an environmentally-responsible manner.



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1.4.2 Safety components

The following are numbered among the group of safety components:

- Overspeed governor
- Slack rope device
- Safety gear device
- Contact buffer
- Pipe rupture valve

It is absolutely mandatory that the standards and instructions belonging to these components be observed, including those specified in the respective operating instructions.



For that reason, the respective operating instructions must be read and understood before commencing work on these components.

1.4.3 Electrical safety devices

Electrical safety devices require special care. Their perfect functioning is a precondition for the danger-free operation of the overall installation.

For electrical safety devices which cannot be adjusted until after installation, adjustment must take place immediately following their installation.

If electrical safety devices are already preadjusted at the factory, their function must be checked immediately.

If the disassembly of electrical safety devices is necessary for maintenance or maintenance operations, then they are to be reassembled immediately following completion of these tasks and checked accordingly.

1.5 Preparation

Before beginning installation work it is in your own interest to ascertain the constructional and spatial conditions. Where (workshop or on site) and when which installation operations can or must be carried out.

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

The details on the name plates should be compared with the order sheet and also check:

- that the factory and order number correspond
- the rail head width and model
- the total load (G)
- the tripping speed
- for 2:1 suspension: the rope pulley diameter, the number of rope grooves and rope groove diameter are suited to the ropes

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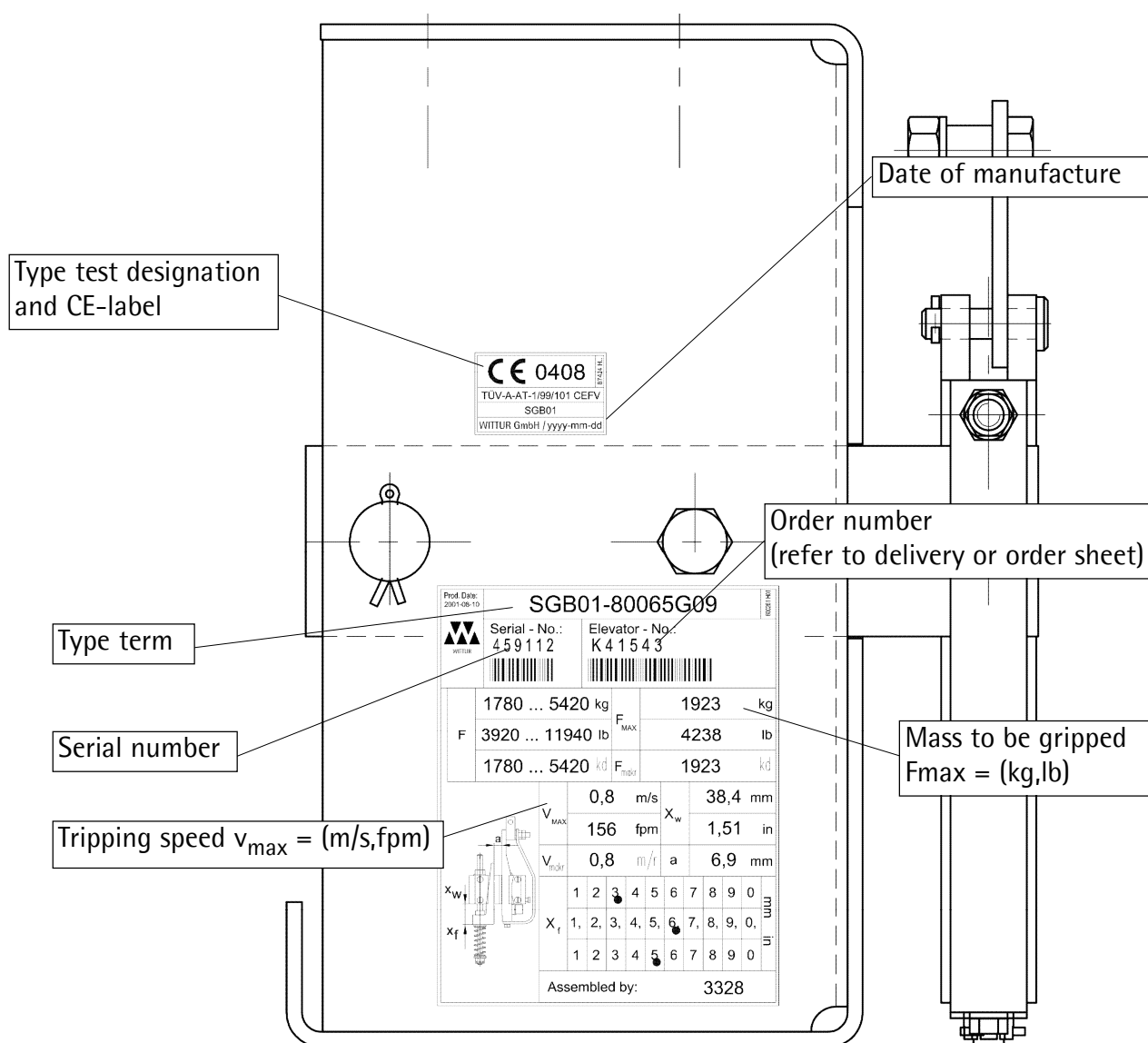
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1.6 Safety gear name plate

If WLF car frame is delivered with safety gear, the identification indicators are located on the side of the safety block. These consist of a name plate and an identification sticker.



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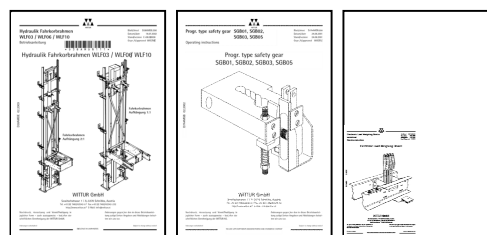
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1.7 Scope of supply

After delivery, check the lift car frame for damage and for full delivery of parts. The content of supply covers:

- Car frame operating instructions manual
- Safety gear operating instructions manual (Suspension 2:1)
- Load weighing device operating instr. manual (optional)
- Overspeed governor and tension weight instr. manual (optional)



The state of car frame:

Not pre-assembled (uprights preassembled with guide shoes, safety gear and slack rope device (except WLF16)- all other parts which belong to car frame like synchronization, diagonals, cross beams, ... are separately put into the package)

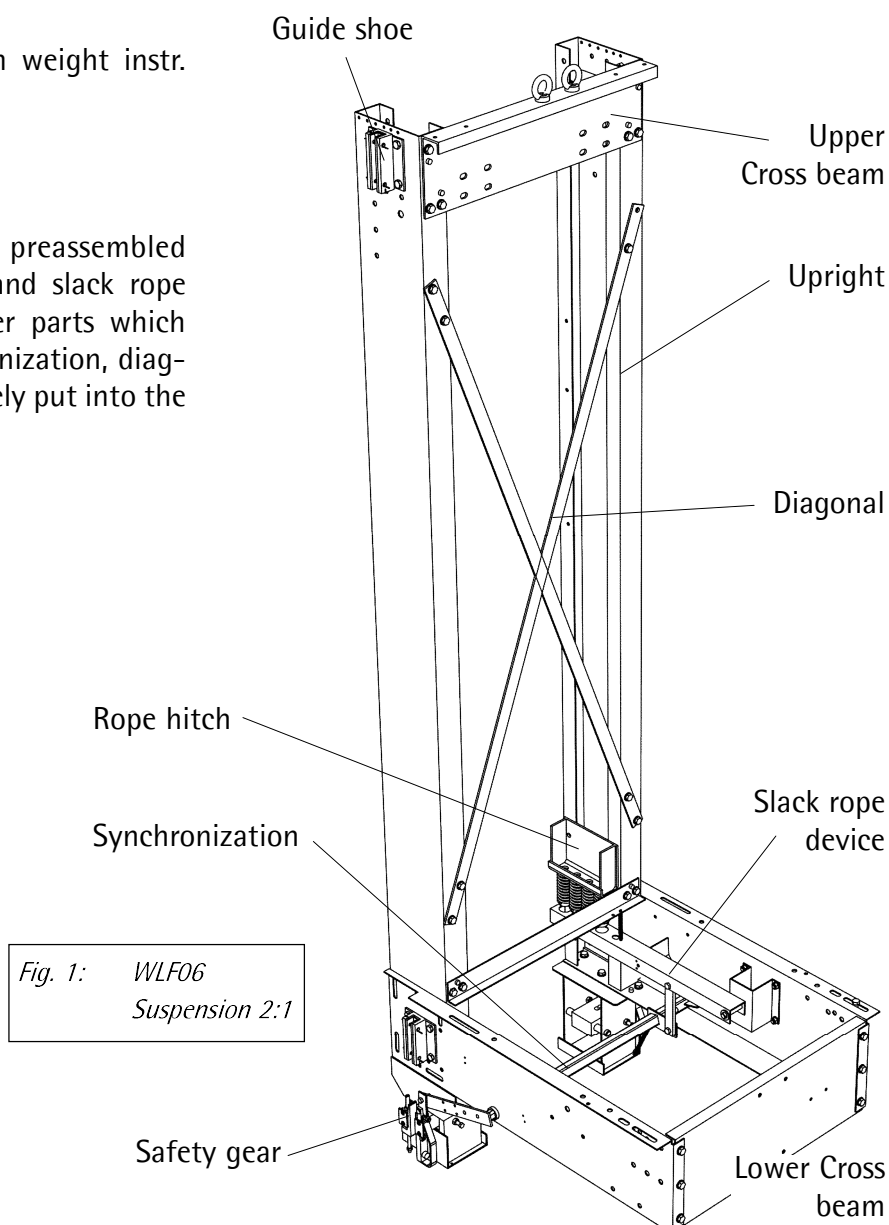


Fig. 1: WLF06
Suspension 2:1

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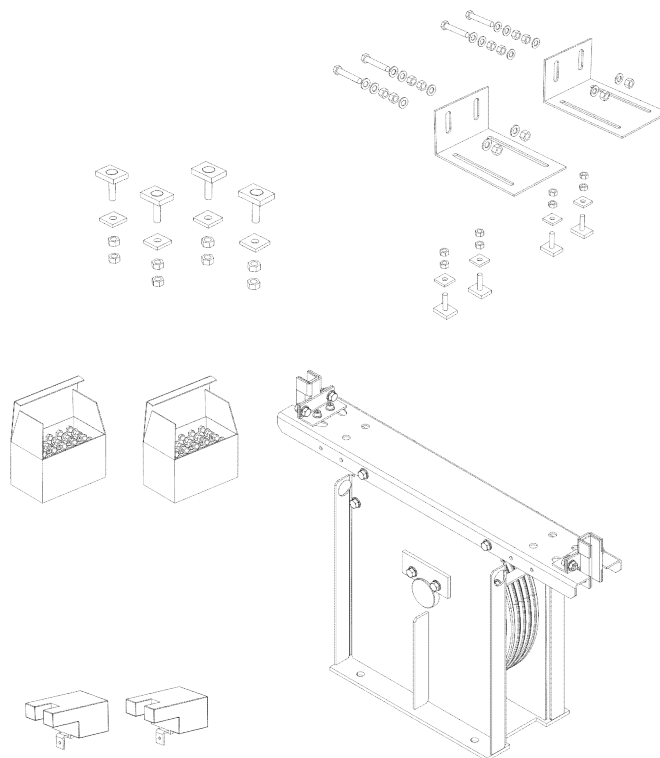
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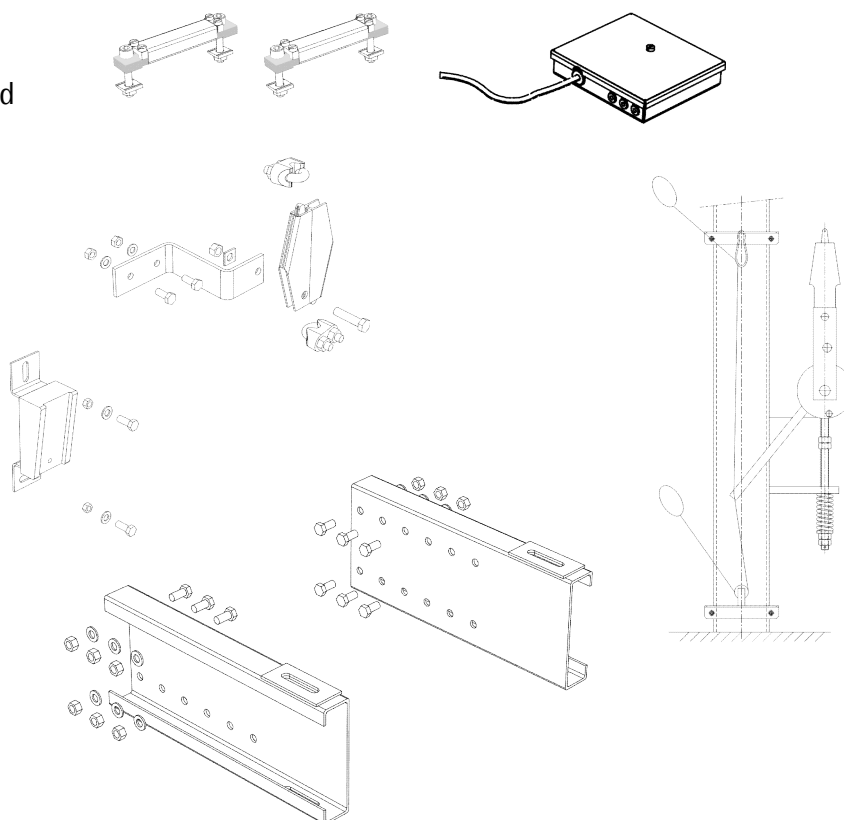
Accessories:

- Upper car fixing
- Lower car fixings
- Screw packages
- Top pulley + Rope fasteners (2:1)
- Guide rail lubricators



Optional parts:

- Load weighing device pre-mounted (sensors including amplifier box)
- Overspeed governor linkage
- Slack rope test equipment
- Travelling cable hanger
- Car frame extension beams



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Shaft components:

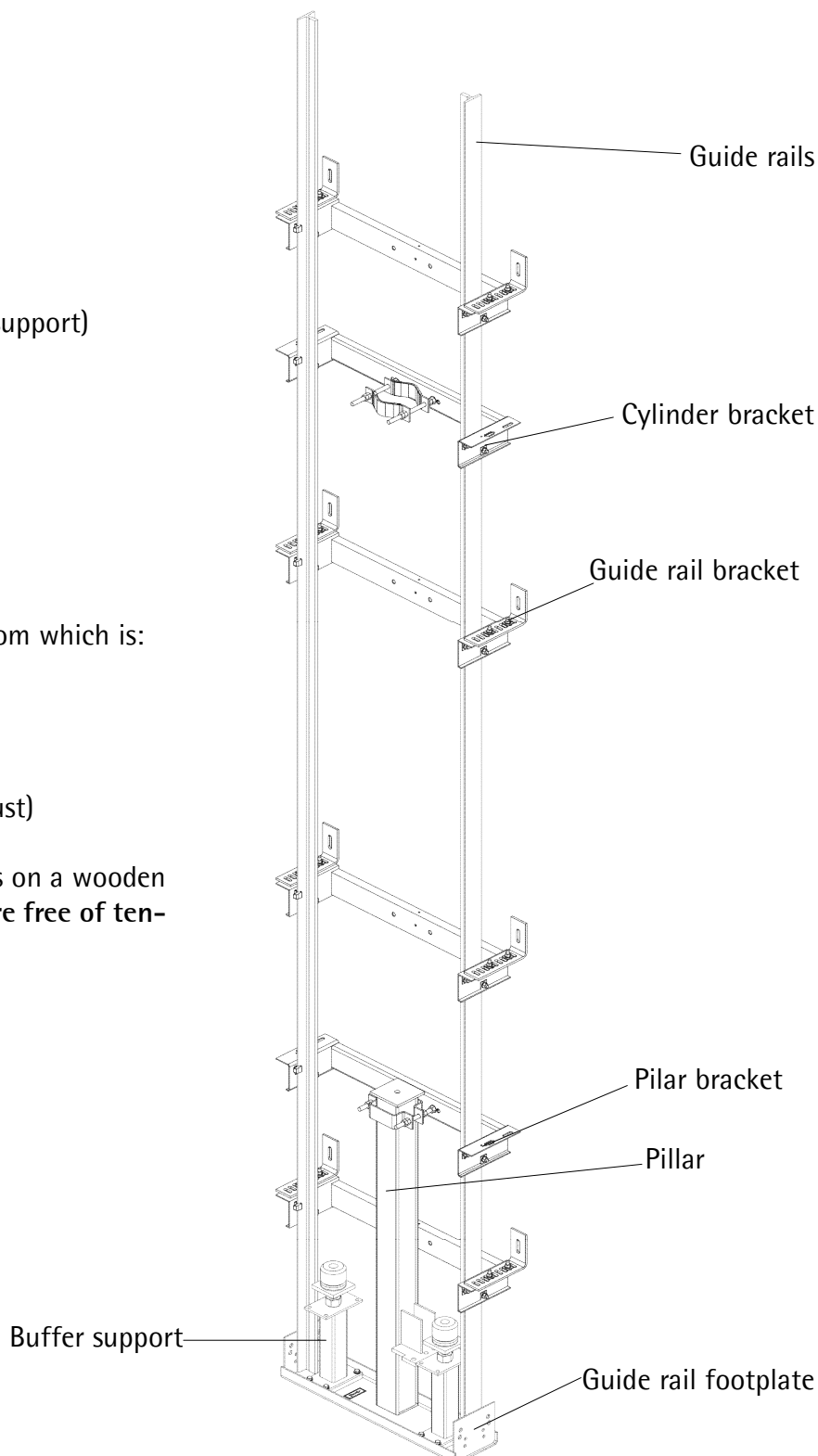
- Guide rails
- Guide rail brackets
- Cylinder brackets
- Pillar brackets
- Guide rail footplate (incl. buffer support)
- Pillar

1.7.1 Notes on storage

For best possible storage keep in a room which is:

- lockable
- heatable
- dry and
- free of dust (especially cement dust)

 For storage rest the guide rails on a wooden support and make sure they are **free of tension** and do not sag!



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2 Installation

2.1 Installation of the guide rail brackets

The bracket installation is the most crucial phase in the procedure. This determines the guide rail alignment, elevator car and landing door positions as usual.

Moreover, many mounting parts are fixed in relation to the guide rails.



Mounting the guide rails must therefore be carried out with great care!

2.1.1 Before installing

The following section describes the preparatory and inspection work imperative for mounting guide rails.



Before commencing installation:

- check delivered guide rails and erection material for correctness, completeness and perfect condition
- thoroughly inspect assembly area (dry, clean well; no other objects or installations in the well; no structural damage etc.)

Determining the well dimensions:



Determine the dimensions of the well shaft the help of two plumb lines.

Make sure the line between the two plumb lines is parallel to the landing sill (see figure).

Set the final, exact position of the gauge between the rails according to the smallest measured well depth and well width.

Determine the distances 1- 6 on each floor.



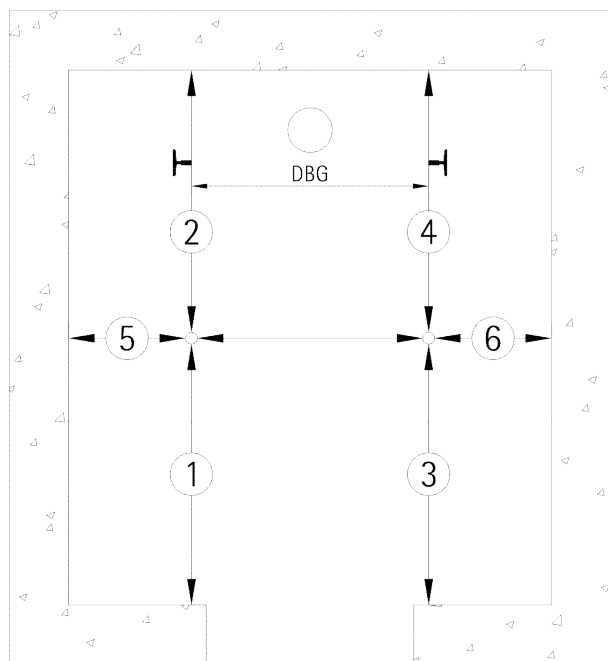
Then compare the actual well dimensions with those given in the project plans.

Shift the gauge between the rails accordingly if necessary.

Checking the door positions:



Check the positions of all the landing doors before determining the exact positions of the guide rails in the well.



Determine the max. deviation on the left and right side. Then determine the axis which makes the least or no corrections necessary to all the landing door openings.


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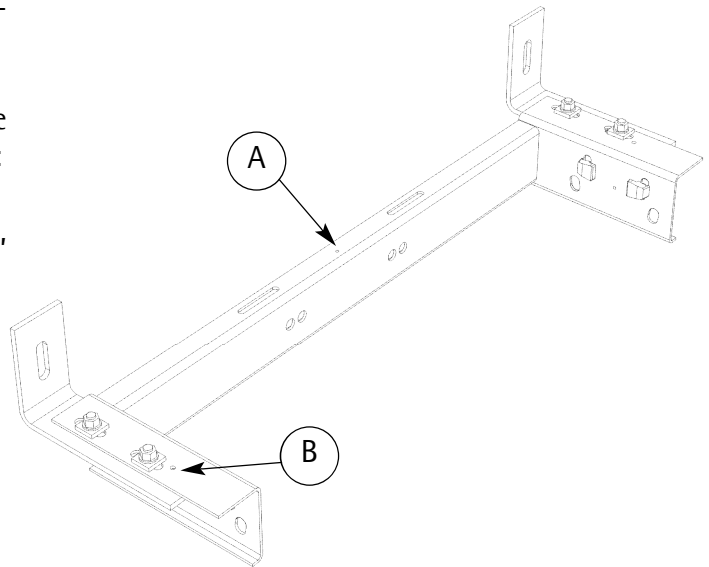
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2.1.2 Fixing the guide rail bracket


 Observe the local regulations when mounting brackets (anchor rail or wall anchor).

WLF guide rails brackets have several reference points that can be used for plumbing and aligning:

- A Bracket centre line (between guiderails, WLF16/WLF20)
- B Guide rail centre line (WLF06/WLF10)



Installation procedure:

 Before you begin, check whether number, position, and type of all anchor inserts correspond with the specifications in the project documents.
In particular check for precise horizontal position.
Remove any dirt (styrofoam, remains from cleaning) from anchor inserts if necessary.



Take special care about the right locations and division of the guide rail brackets over the whole shaft height given from the layout drawing!

- Mount the topmost guide rail bracket according to drawing. Make sure to align centre of bracket with plumb line / reference line of the centre of the car frame
- Attach one plumb line each on the right and left side on level of guide rail centre line of the top guide rail bracket
- Align all other brackets with these two outer plumb lines



Because the brackets are manufactured to a high tolerance it is only necessary to ensure that they are installed plumb and secure. It is not necessary to plumb and "bone" the guiderails themselves.


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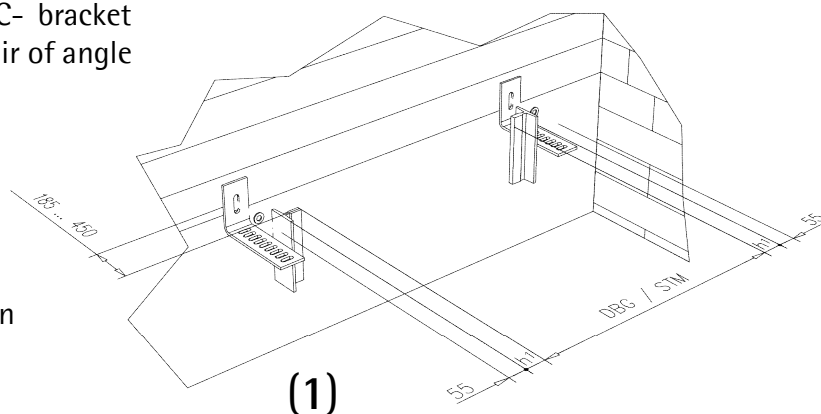
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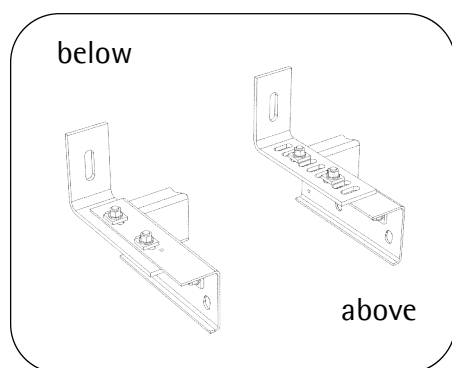
WLF brackets are composed of a main C- bracket which the guide rails are fixed to and a pair of angle brackets which bolt to the wall.

 The material for the wall fixing is not included in the delivery!

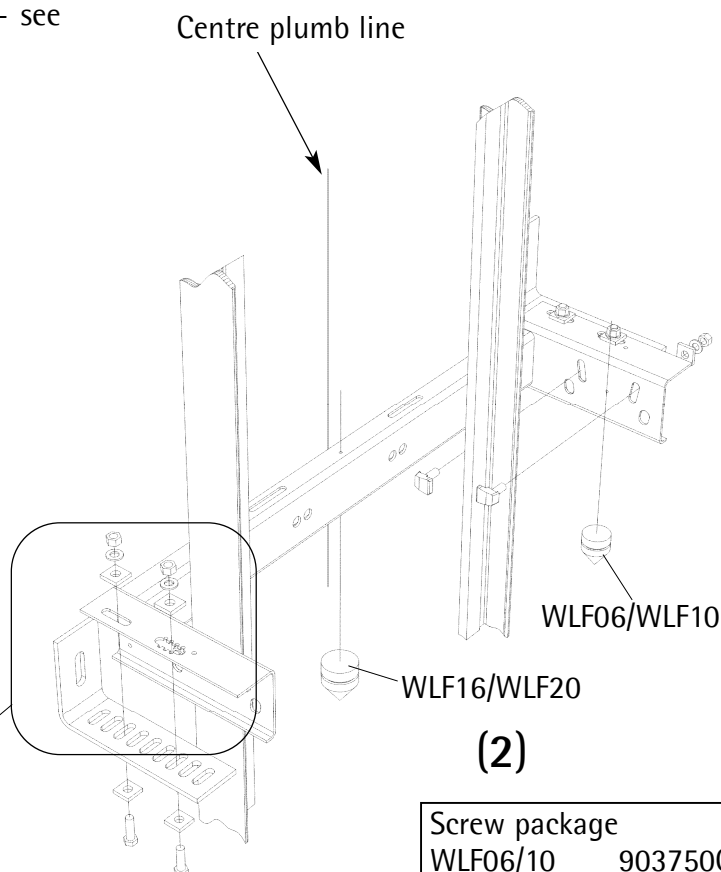
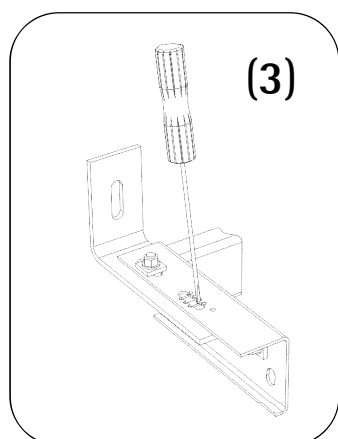
- (1) Mount the angle brackets to the wall and adjust them to the correct position (see layout drawing)




 The angle brackets can be placed above or below the C-bracket (it is, however, recommended to fit these below C bracket - see figure).



- (2) Lift the C-bracket onto (or below) the angel bracket - adjust it according to the plumb lines and fix it



Screw package	
WLF06/10	903750G..
WLF16	903980G..

 The teeth on the C-bracket can be used to adjust its position, using a screwdriver as a lever.

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2.2 Installation of the guide rail foot-plate WLF06 / WLF10 / WLF16 / WLF20

The footplates are installed at the same time as the two lowest guiderail sections.

- Check shaft floor for flatness (remove any mortar spatters which may be present)
- Check whether the shaft floor is provided with an oil proof coating

(1) Place the footplate under the guiderail base.

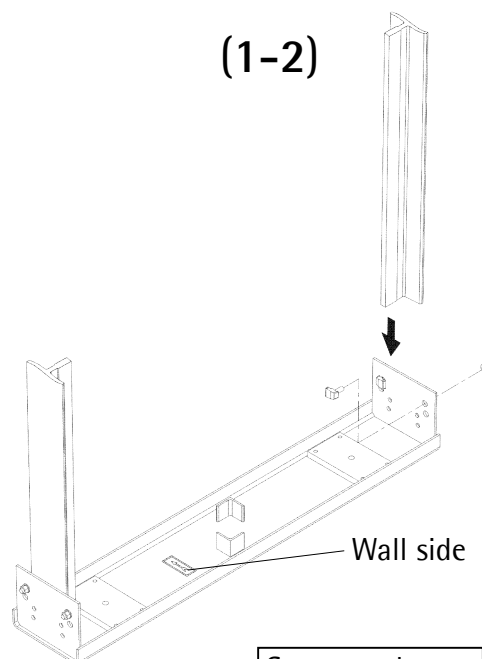
(2) Attach lowermost guide rails to the

- footplate and
- guide rail brackets

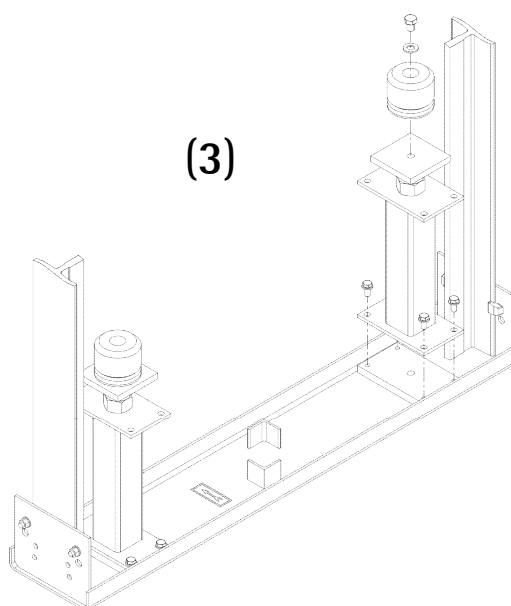


If guiderail fixing clips are loose it is possible to have the guide straight into the footplate without taking it apart.

(3) Mount the buffer bracket and check that the buffers are fitted at the correct height (layout drawing)



Screw package
903990G..



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2.3 Fastening the guide rails

The guide rails must be faultless and installed with accuracy in order that the ride is smooth and comfortable.

 Take care of the configuration of the lowermost guide rails because this is depending upon the shaft height.

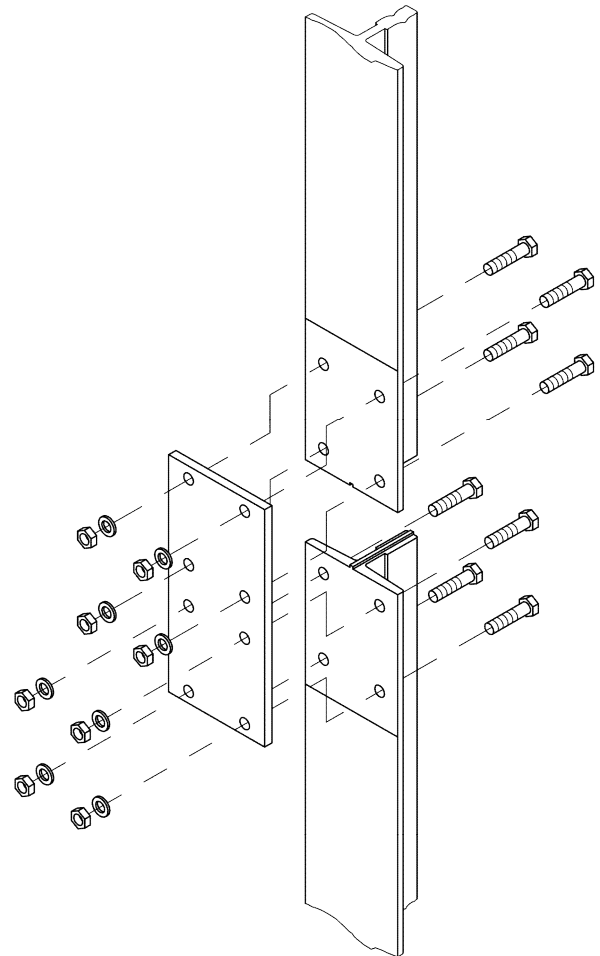
 Clean the slot and key before joining the guide rails together, as well as the rubbing surface of the fishplate to prevent the formation of any gaps.

- Lift the rails into position



Do not stay under suspended load.

- Align the joint using a 1 metre straight edge / spirit level and tighten the joint.
- Screw the guide rails together with fishplates
- Ensure that there is a clean joint face
- First tighten the nuts outside, then the nuts at the centre and finally tighten all nuts crosswise strong.
- Fasten all additional guide rails from bottom to top with clamping clips to the guide rail brackets



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2.3.1 Aligning guide rails

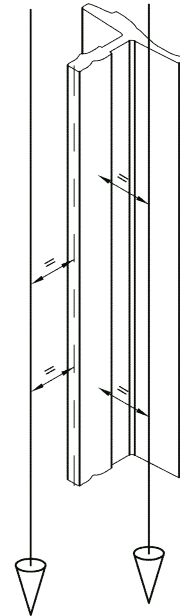


Check the position of the guide rails with the aid of the drawing provided!

- Use only the auxiliary screws for making adjustments.

The clamping clips of the guide rails remain tightly screwed during this process.

- Set each guide rail in a precise vertical position using two plumb lines



Correct state:

- Check whether the rubbing surfaces of the guide rails are level

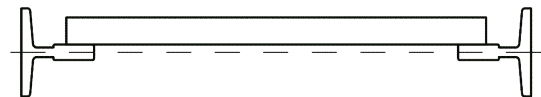
Guide rails laterally offset:

- Open clamping clips. This permits the guide rail to be shifted by about 1 mm on each side.

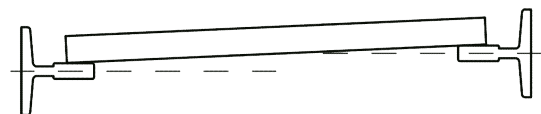
Non-parallel rubbing surfaces:

- Check attachment surfaces for levelness. Remove any soiling or drops of paint which may be present.
- Check guide rail brackets for warping. Align them where necessary.

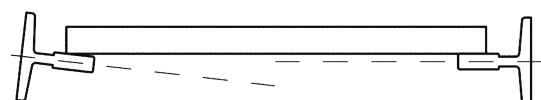
Correct state



Laterally offset



Not parallel



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Blatt/sheet PM.3.002147.EN.18
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Stand/version A-05.11.2010
Geprüft/approved WAT/KKR

2.3.2 Cylinder - and pillar brackets

The cylinder - and pillar brackets for 2:1 suspended car frames are from same design than the guide rail brackets (for installation refer to chapter 2.1.2).



When mounting the brackets, pre-assemble the threaded rods (only) before fixing the C-bracket to the angle bracket!



In case of 1 Cylinder - and pillar bracket each: Fix each bracket on top most possible position.



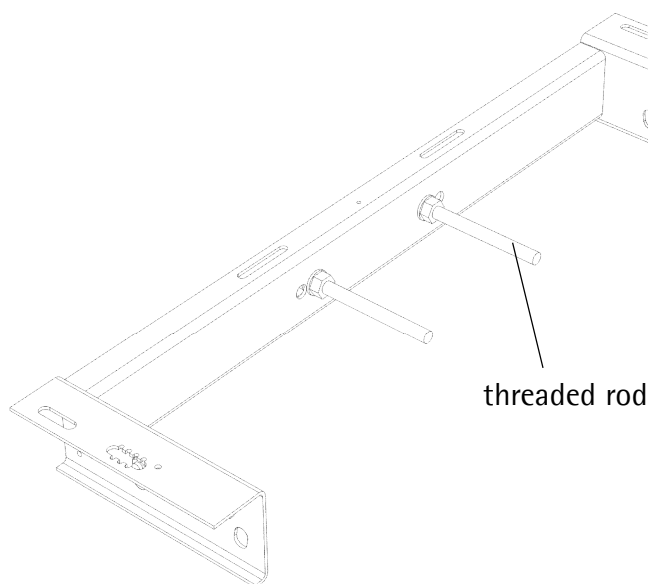
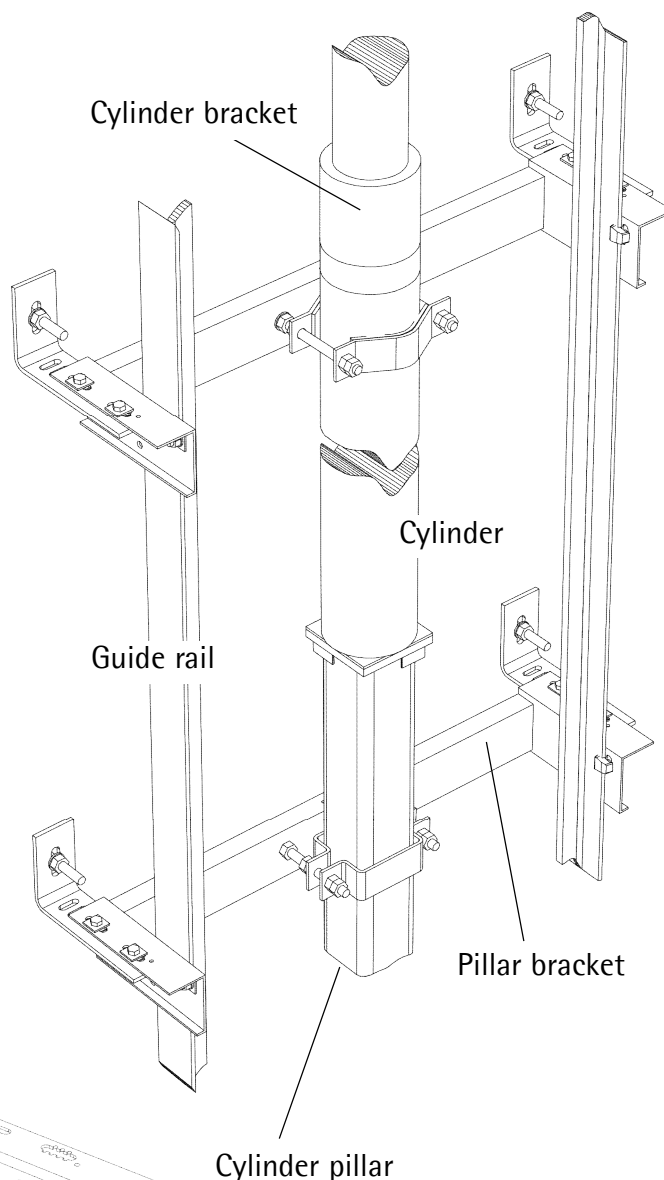
In case of 2 Cylinder - and pillar brackets each: Fix one bracket each on top most possible position and one in the middle of the Cylinder and Pillar.



Cylinder - and pillar brackets are without angle brackets available. In this case the Cylinder - and pillar brackets are fixed only to the guide rails!



Observe tightening torque
Screw M12: 80 Nm
M16:195 Nm



Hydraulic Car Frame

WLF06 / WLF10 / WLF16 / WLF20

Operating instructions

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2.4 Mounting the pillar

The cylinder pillar is secured with pillar brackets (refer to chapter 2.1.3).

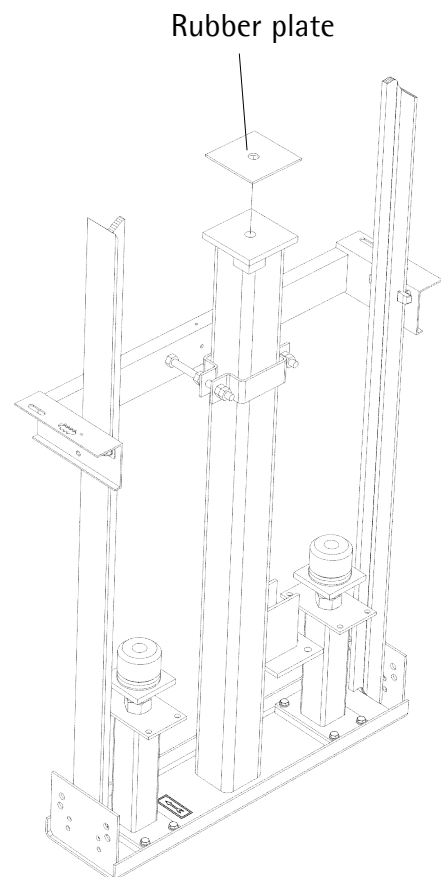
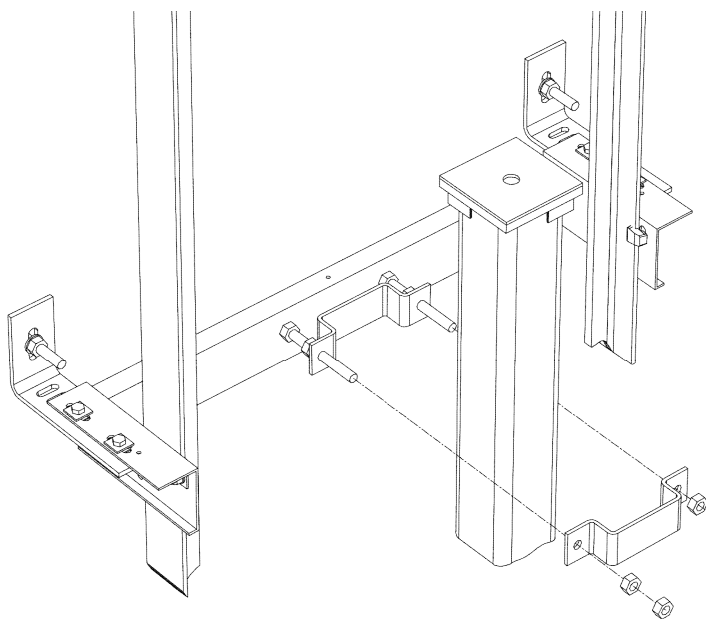
If no pillar is delivered the cylinder is placed directly onto the guide rail footplate (refer to chapter 2.2).

- Lift the cylinder pillar into the shaft
- Align the pillar and fix it with the topmost pillar fixing bracket



Make sure of the correct position in relation to the distance between guides (DBG)!

- Locate all further fixings evenly on the entire length of the pillar (according the layout)



Hydraulic Car Frame

WLF06 / WLF10 / WLF16 / WLF20

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 Geprüft/approved WAT/KKR

2.5 Lifting the cylinder to the lift well



Additional instructions for installing hydraulic components can be found in the separate instructions from the "Hydraulic Components" supplier.

- Unpack the cylinder



Protect the rupture valve against any damage when transporting.

- Transport the cylinder carefully to the entrance floor near the lift well opening



Do not stay under suspended load.

- Lift the cylinder between guide rail brackets (about 100mm above final position) and secure it against falling with e.g. a strap belt to the next guide rail bracket.

2.5.1 Securing the cylinder

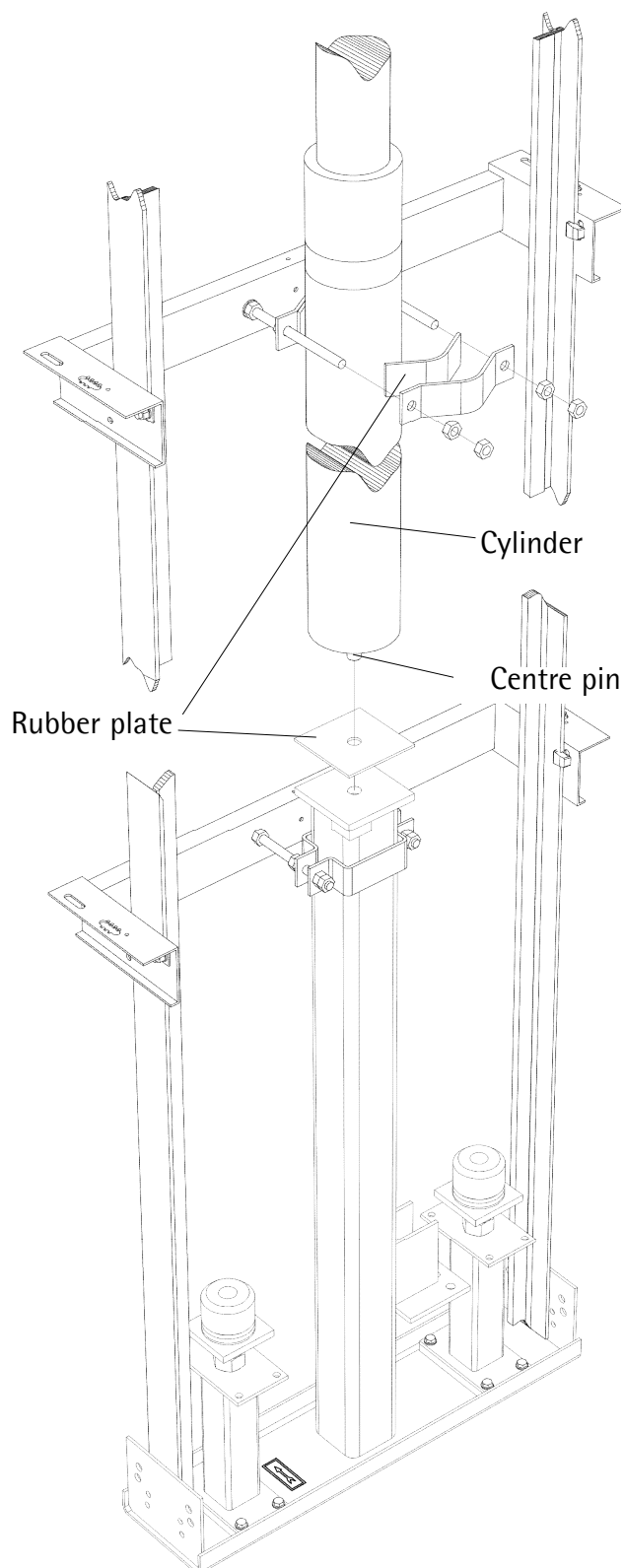
The cylinder pillar is secured with pillar brackets (refer to chapter 2.4).

If no pillar is delivered the cylinder is placed directly onto the guide rail footplate (refer to chapter 2.2).

- Place mounting for cylinder



Make sure of the correct position in relation to the distance between guides (DBG)!



Hydraulic Car Frame

WLF06 / WLF10 / WLF16 / WLF20

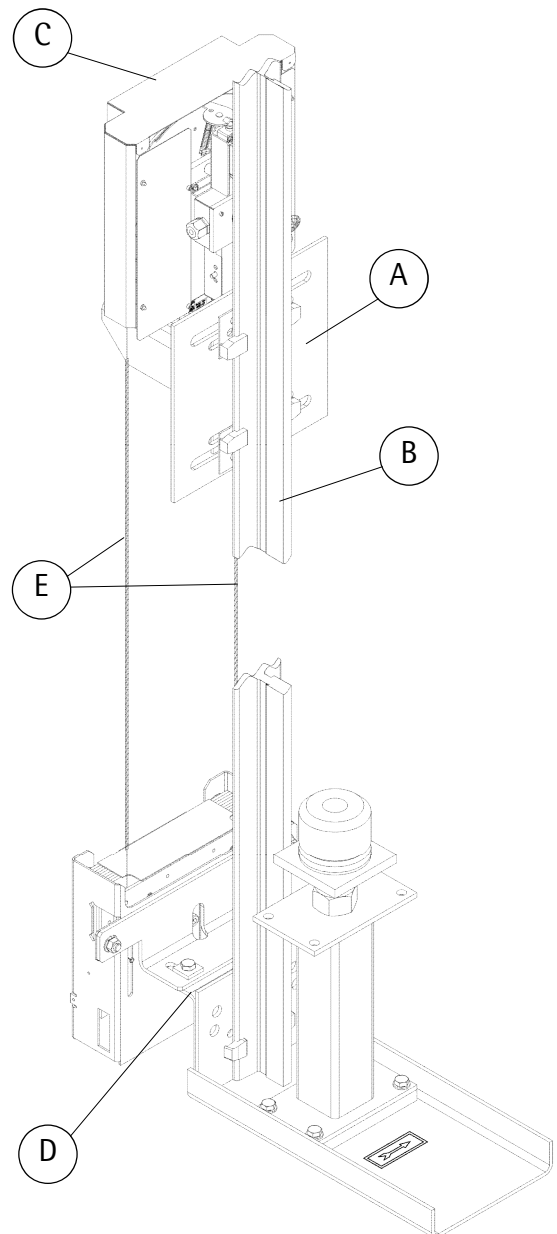
Operating instructions

Blatt/sheet PM.3.002147.EN.21
Datum/date 26.05.2010
Stand/version A-05.10.2010
Geprüft/approved WAT/KKR

2.6 Mounting the governor package (optional)

- Fix the governor base (A) to the guide rail (B).
- Mount the overspeed governor (C) to the governor base (A).
- Fix the tension weight fixing bracket (D) like the drawing.
- Mount the governor rope (E) like the drawing.

technical details see D7A0MDE.000



Hydraulic Car Frame


WLF06 / WLF10 / WLF16 / WLF20

Operating instructions


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Stand/version 26.05.2010
Geprüft/approved WAT/KKR

2.7 Placing the car frame between the guide rails


2.7.1 Car frame WLF06 / WLF10


 The car frame is supplied partially preassembled at the construction site.
Complete assembly takes place in the shaft pit.

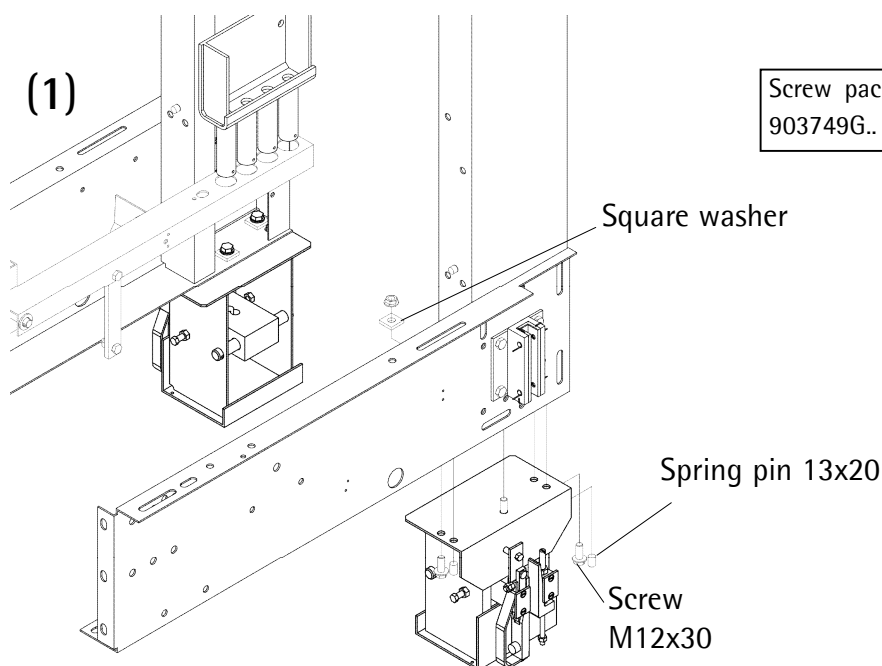
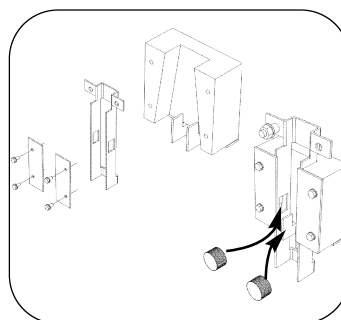
Procedure:

 The guide rails and other shaft components should have been already properly set

(1) Mount the safety gear to the side Components and move them into the shaft.

 The side components weigh up to 120 kg.
Use the lifting devices in the shaft for assistance.

 Put in the roller if roller type safety gear is delivered!



Hydraulic Car Frame

WLF06 / WLF10 / WLF16 / WLF20

Operating instructions

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Geprüft/approved WAT/KKR

- (2) Carefully attach the side components with the guides to the guide rails



Immediately fasten the side components to the guide rails using bar clamps (or ropes).

- (3) Place cross-beams (B, C, D) between the side components and fasten it. Precisely adjust the distance between guides by use of delivered spring pins.



Observe tightening torque
Screw M12: 80 Nm

- (4) Fasten the reinforcing tie bars (E, F). Put rubber strip in between.

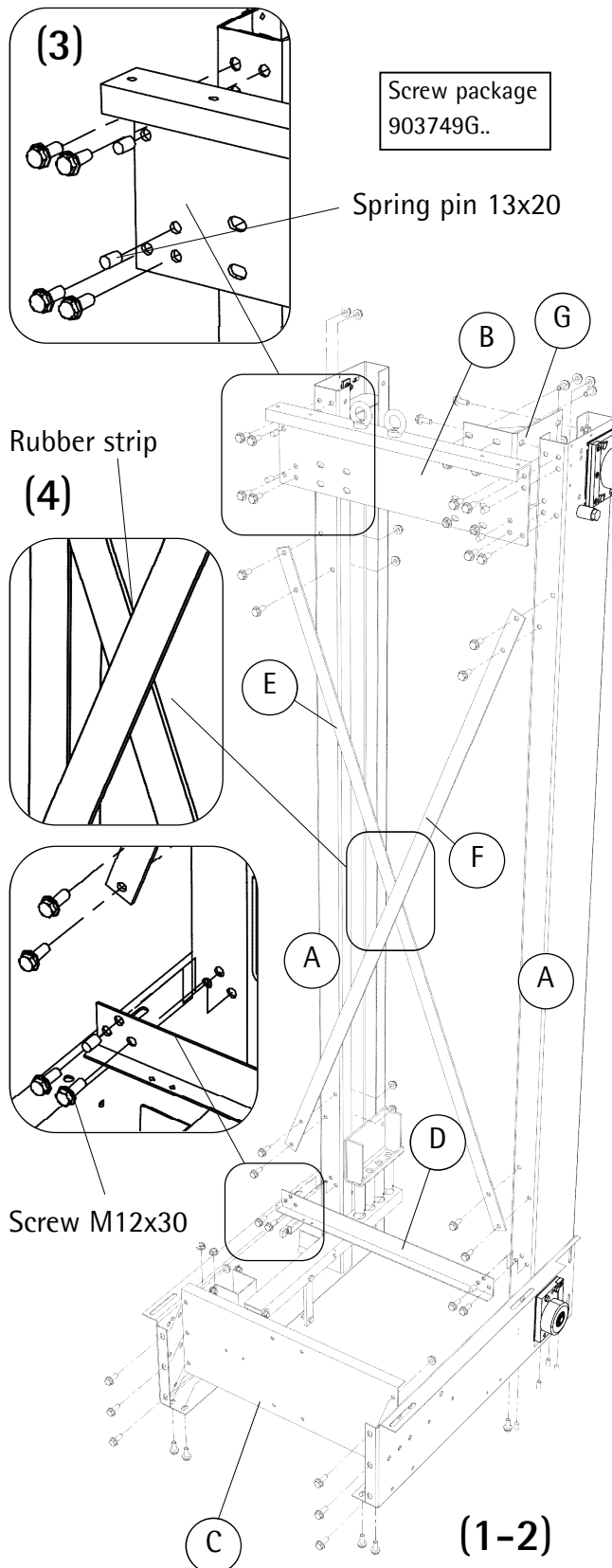


It is **ESSENTIAL** to fit the tie bar (E) **FIRST** (it must be between the cylinder and the second tie bar (F).

If the tie bar (F) is at the back it can buckle during safety gear and rupture valve tests and may foul the rupture valve.



Fastening the stiffener (G) at BLF10, car frame suspension 2:1 and distance between guides C=1100mm.



Hydraulic Car Frame

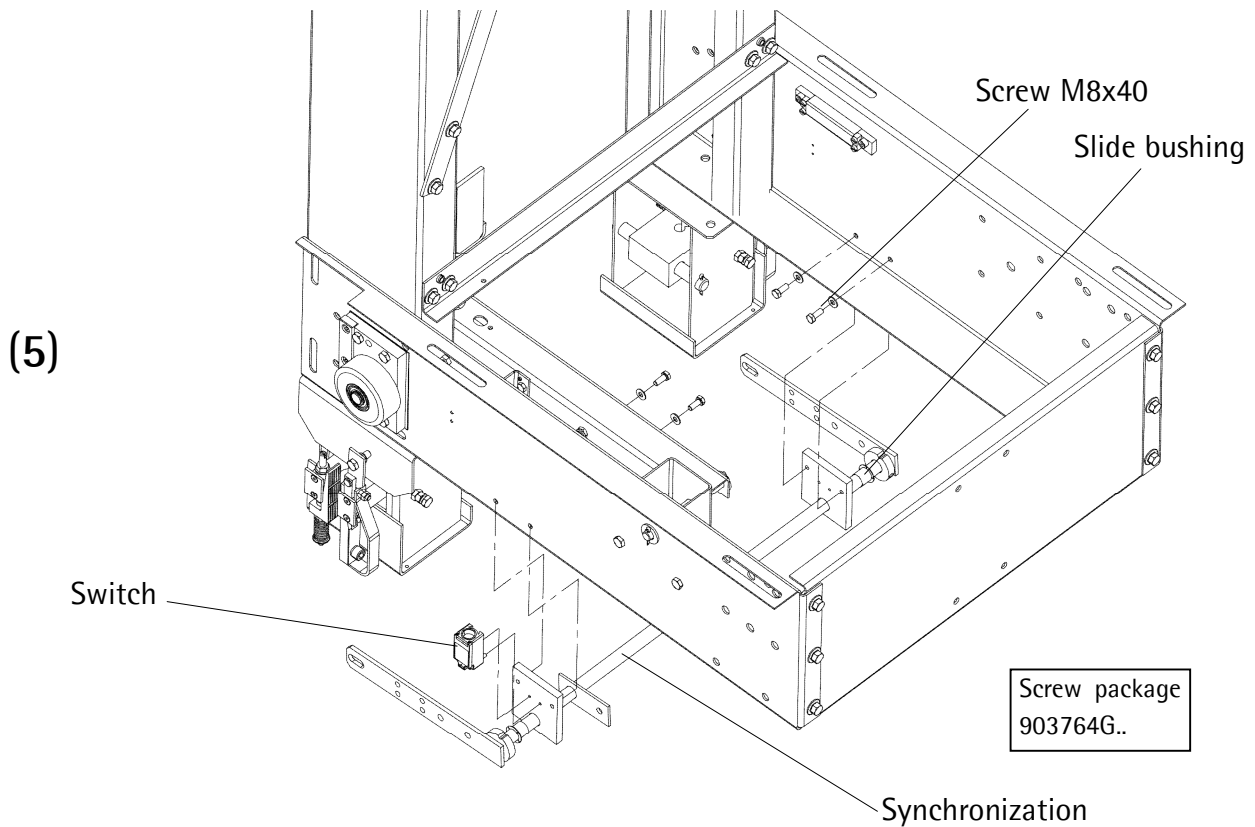
WLF06 / WLF10 / WLF16 / WLF20

Operating instructions

Blatt/*sheet* PM.3.002147.EN.24
Datum/*date* 26.05.2010
Stand/*version* 26.05.2010
Geprüft/*approved* WAT/KKR

WLF06 / WLF10 with 2:1 Suspension:

(5) Fix the synchronization and the switch.



Hydraulic Car Frame

WLF06 / WLF10 / WLF16 / WLF20

Operating instructions

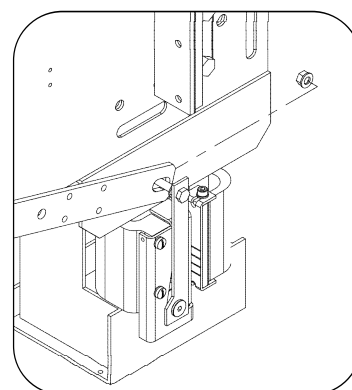
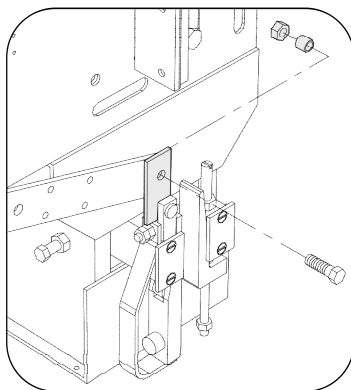
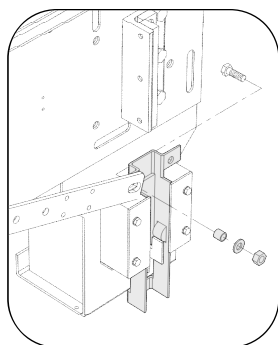
Blatt/sheet PM.3.002147.EN.25
 Datum/date 26.05.2010
 Stand/version 26.05.2010
 Geprüft/approved WAT/KKR

- (6) Connect the activation lever of the safety gear with the synchronization lever

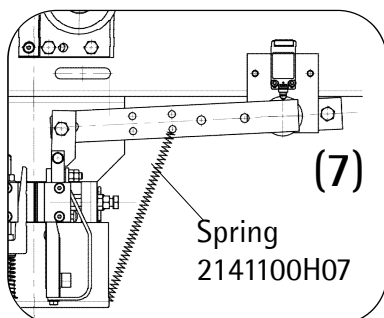


Put in the roller if roller type safety gear is delivered!

(6)



- (7) Hang in the synchronisation return spring



- (8) Hang in the slack rope see-saw spring

- (9) Connect the see-saw with the synchronization rod (Note, the connection between synchronization and slack rope see-saw is not delivered if an overspeed governor is used)



Observe tightening torque
 Screw M10: 46Nm

Spring
 903748H01

(8)

(9)

Screw
 M10x30

Hydraulic Car Frame

WLF06 / WLF10 / WLF16 / WLF20

Operating instructions

Blatt/*sheet* PM.3.002147.EN.26
 Datum/*date* 26.05.2010
 Stand/*version* 26.05.2010
 Geprüft/*approved* WAT/KKR

2.7.2 Car frame WLF16 / WLF20



The car frame is supplied partially pre-assembled at the construction site. Complete assembly takes place in the shaft pit itself.

Procedure:



The guide rails and other shaft components should have been already properly set

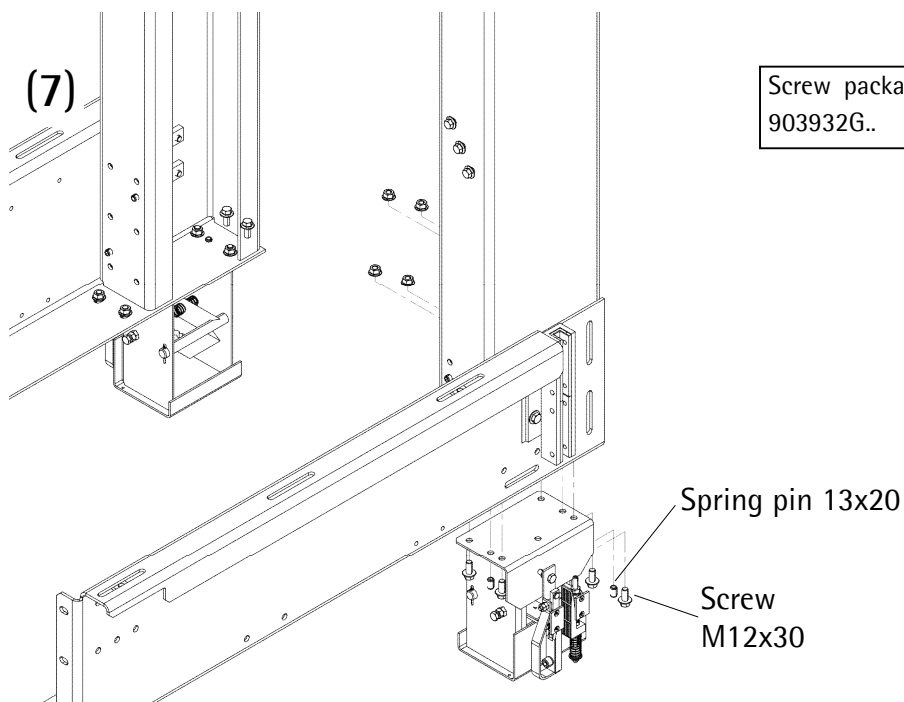
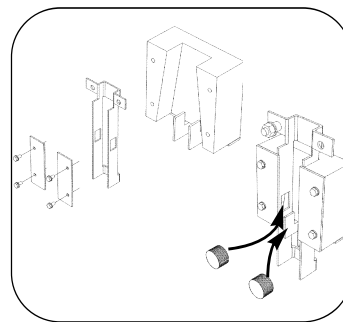


Put in the roller if roller type safety gear is delivered!

(1) Mount the safety gear to the side components and move them into the shaft.



The side components weigh up to 180 kg. Use the lifting devices in the shaft for assistance.



Hydraulic Car Frame

WLF06 / WLF10 / WLF16 / WLF20

Operating instructions

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Geprüft/approved WAT/KKR

- (2) Carefully attach the side components with the guides to the guide rails

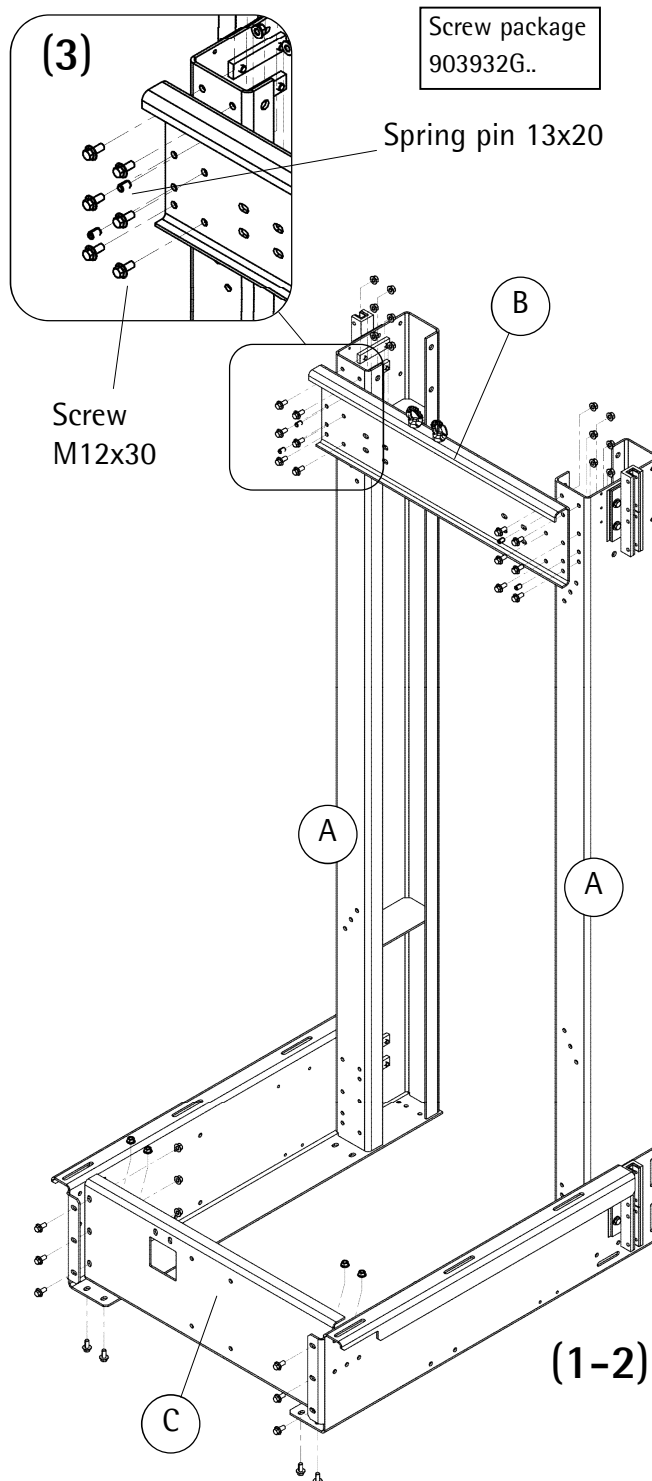


Immediately fasten the side components to the guide rails using bar clamps (or ropes).

- (3) Place cross-beams (B, C) between the side components and fasten them. Precisely adjust the distance between guides by use of delivered spring pins.



Observe tightening torque
Screw M12: 80 Nm



Hydraulic Car Frame

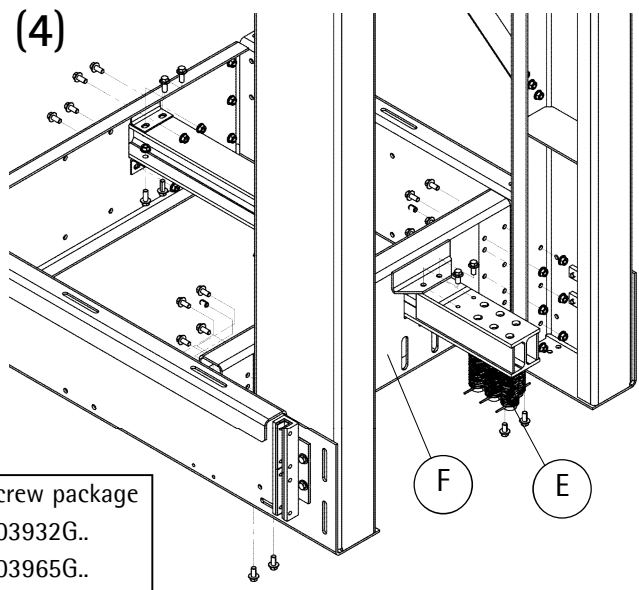
WLF06 / WLF10 / WLF16 / WLF20

Operating instructions

Blatt/sheet PM.3.002147.EN.28
 Datum/date 26.05.2010
 Stand/version F-23.03.2023
 Geprüft/approved WAT/KKR

WLF16 / WLF20 with 2:1 Suspension:

- (4) Place rope fixing bracket (E) and lower cross-beam (F) between the side components and fasten them. Precisely adjust the distance between guides by use of delivered spring pins.



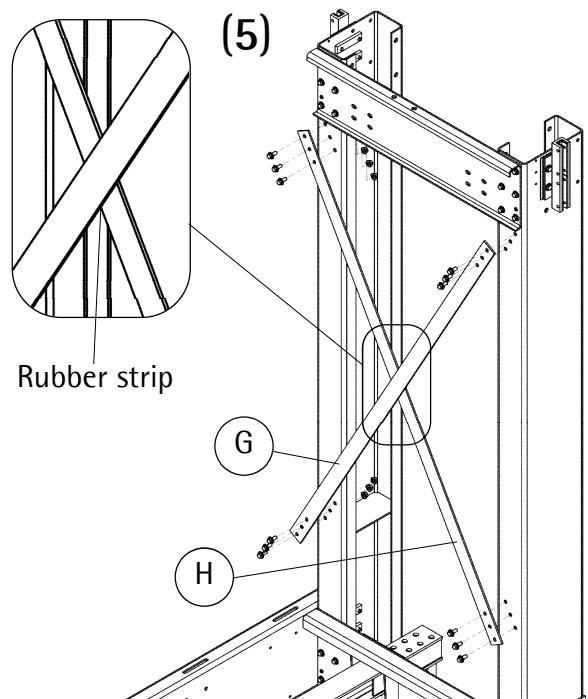
WLF16 / WLF20 with 2:1 Suspension:

- (5) Fasten the reinforcing tie bars (G, H). Put rubber strip in between.



It is ESSENTIAL to fit the tie bar (H) FIRST (it must be between the cylinder and the second tie bar (G).

If the tie bar (G) is at the back it can buckle during safety gear and rupture valve tests and may foul the rupture valve.



Hydraulic Car Frame

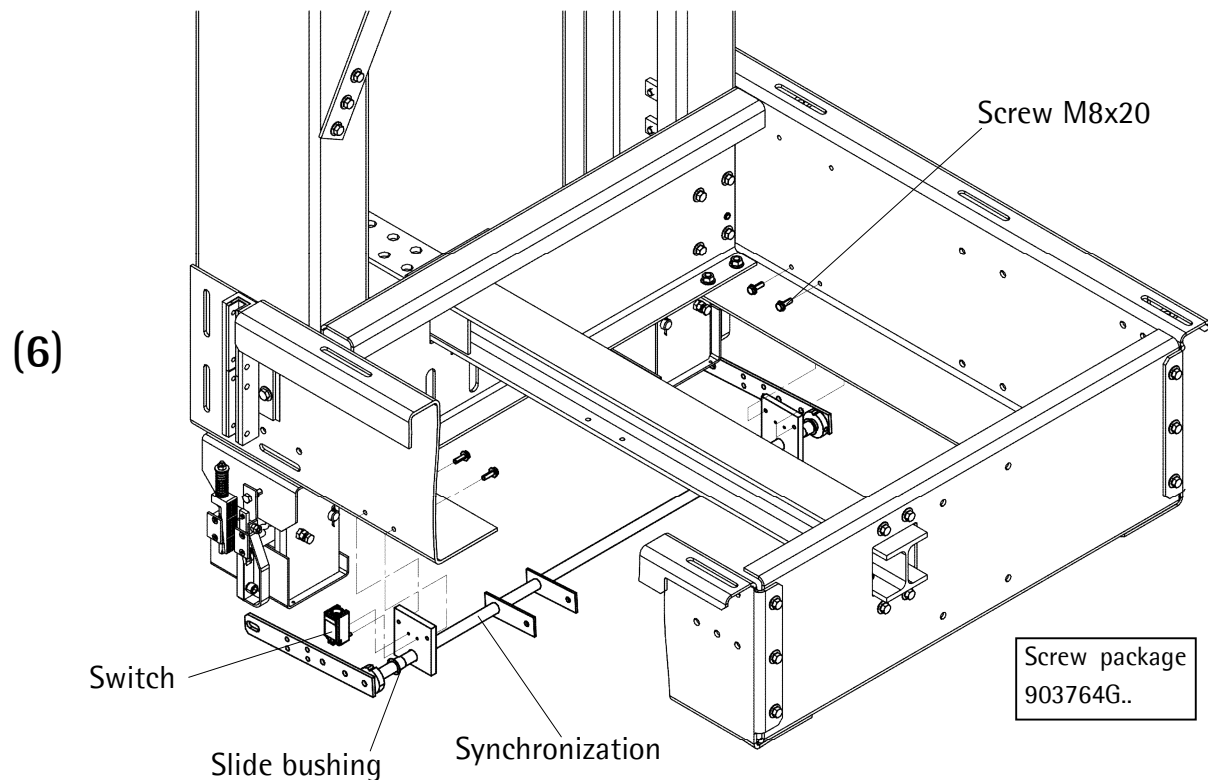
WLF06 / WLF10 / WLF16 / WLF20

Operating instructions

Blatt/sheet PM.3.002147.EN.29
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Stand/version 26.05.2010
Geprüft/approved WAT/KKR

WLF16 / WLF20 with 2:1 Suspension:

(6) Fix the synchronization and the switch.



Hydraulic Car Frame

WLF06 / WLF10 / WLF16 / WLF20

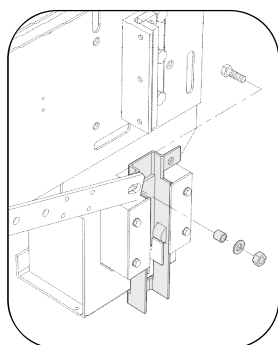
Operating instructions

Blatt/sheet PM.3.002147.EN.30
 Datum/date 26.05.2010
 Stand/version 26.05.2010
 Geprüft/approved WAT/KKR

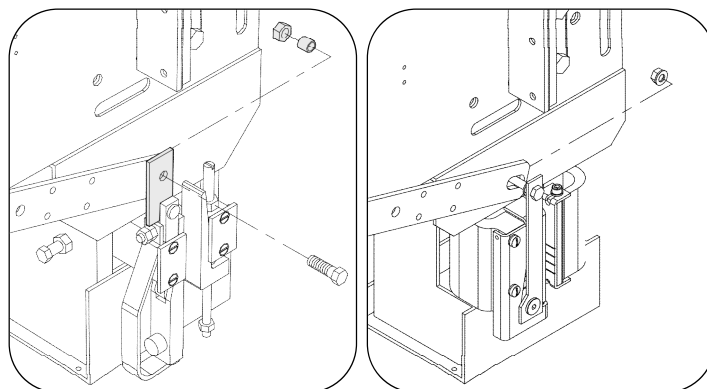
- (7) Connect the activation lever of the safety gear with the synchronization lever



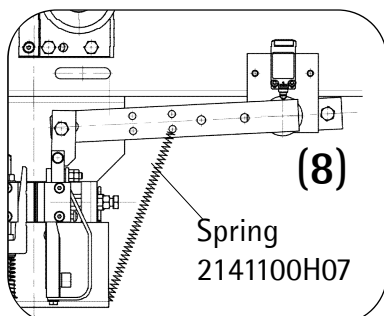
Put in the roller if roller type safety gear is delivered!



(7)



- (8) Hang in the synchsonisation return spring

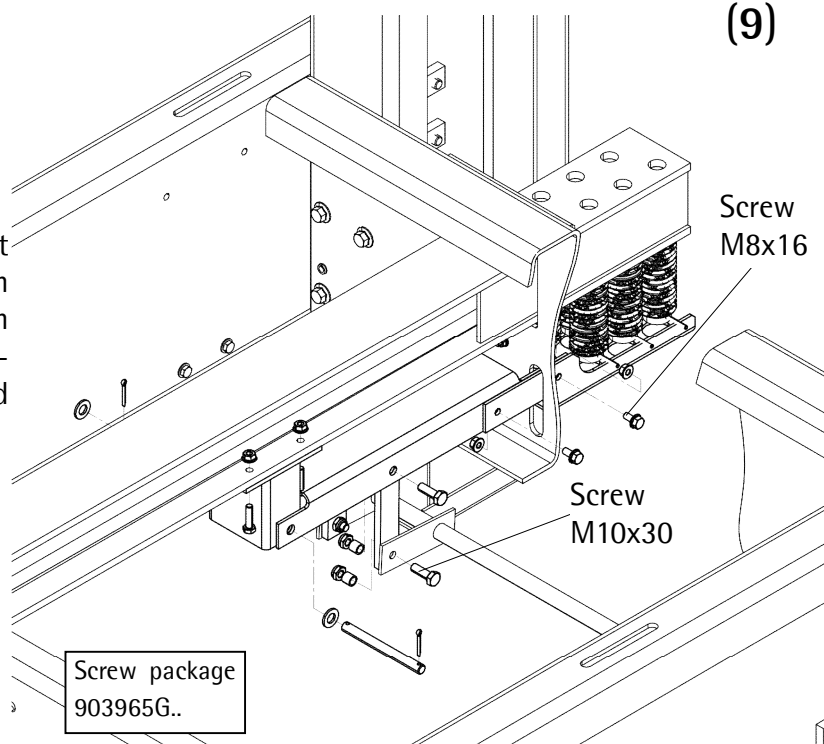


- (9) Fix the slack rope device and connect the see-saw with the synchronization rod (Note, the connection between synchronization and slack rope see-saw is not delivered if an overspeed governor is used)



Observe tightening torque
 Screw M10: 46Nm

(9)



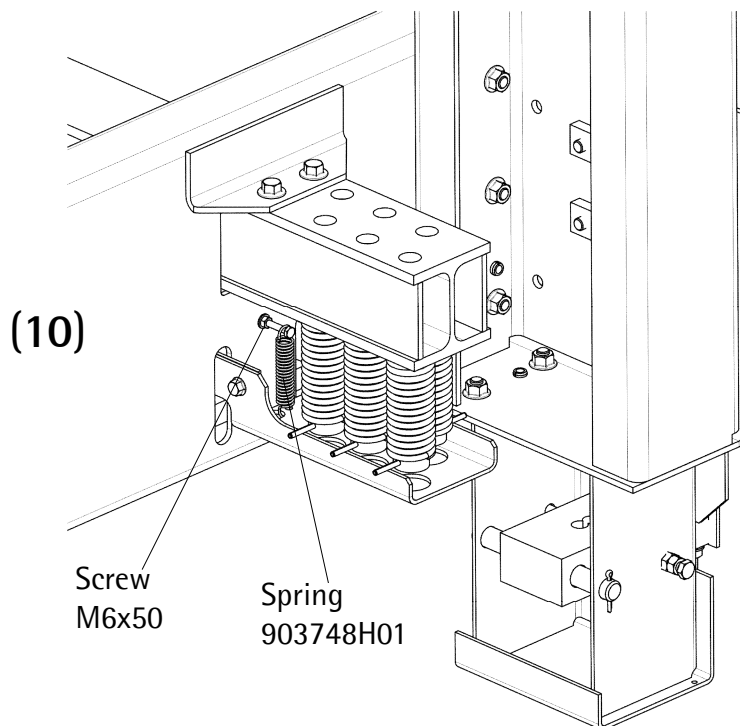
Hydraulic Car Frame

WLF06 / WLF10 / WLF16 / WLF20

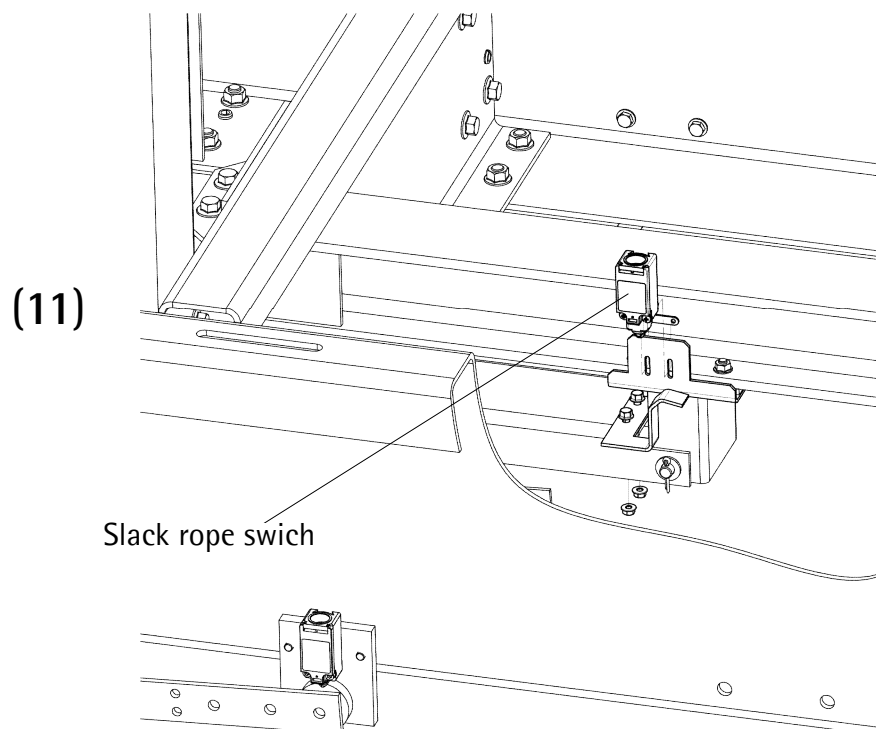
Operating instructions

Blatt/sheet PM.3.002147.EN.31
Datum/date 26.05.2010
Stand/version 26.05.2010
Geprüft/approved WAT/KKR

(10) Hang in the slack rope see-saw spring



(11) Fix the slack rope switch (Note, the slack rope switch is only delivered if an overspeed governor is used)



Hydraulic Car Frame

WLF06 / WLF10 / WLF16 / WLF20

Operating instructions

Blatt/sheet PM.3.002147.EN.32
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 Geprüft/approved WAT/KKR

2.8 Alignment of the car frame


The WLF car frame is delivered with set guide shoes, so normally no adjustment is required.


The car frame is aligned only in the distance between guides. For this, the following is to be observed:

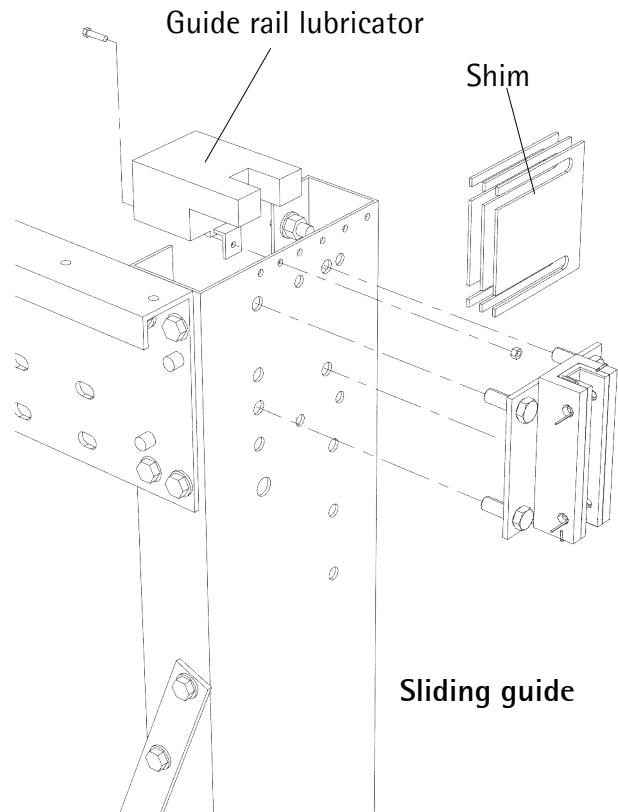
- The lift car take-up points must lie in a single level and be "plumb"
- The guides shall not jam or stick
- The amount of play in the distance between guides shall be approx. 0.5 - 1 mm

2.8.1 Sliding guide shoe

The distance between guides of the car frame is adjusted using the delivered metal shims.

!  Observe tightening torque
 Screw M12: 80 Nm

!  Select the guide lubricant according to the safety gear operating instructions



Hydraulic Car Frame

WLF06 / WLF10 / WLF16 / WLF20

Operating instructions

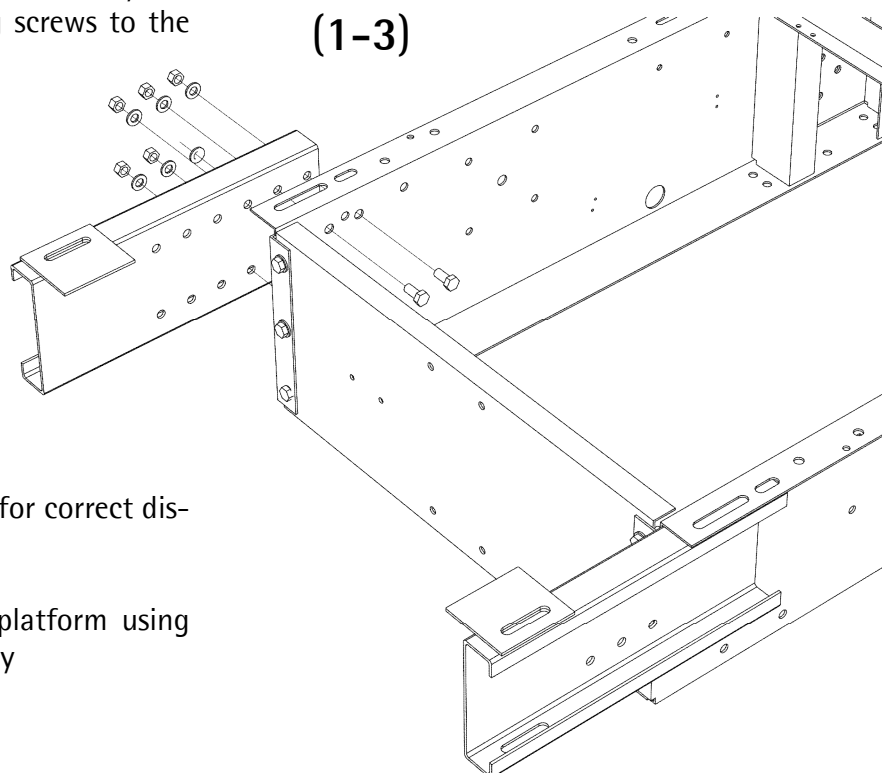
Blatt/sheet PM.3.002147.EN.33
Datum/date 26.05.2010
Stand/version 26.05.2010
Geprüft/approved WAT/KKR

2.9 Mounting of the car frame extension beams

Extension beams are delivered when full support of car floor is required. Included in the delivery are two extension beams and the fixing screws to the car frame.

Screw package
903732G07

(1-3)



(1) Place the extension beams



Refer to the layout drawings for correct distance.

(2) Check the alignment with the platform using spirit level and adjust if necessary

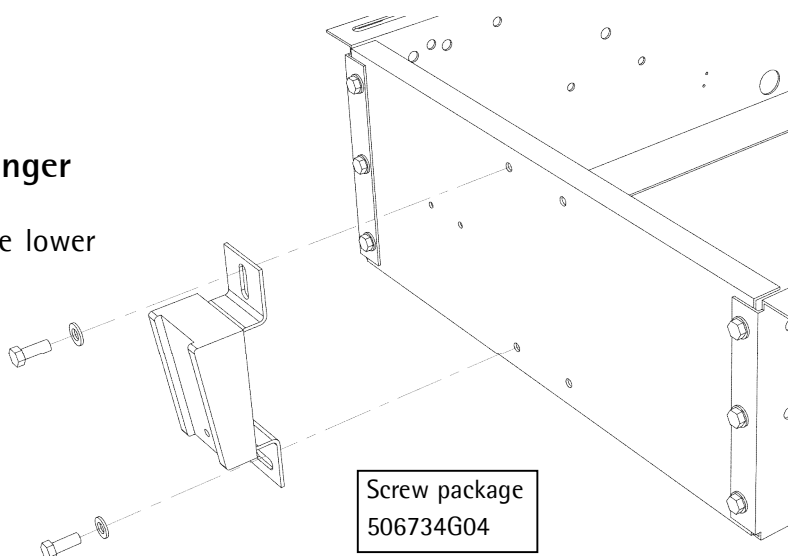
(3) Tighten the bolts



Observe tightening torque
Screw M12: 80 Nm

2.10 Fixing the travelling cable hanger

Mount the travelling cable hanger(s) to the lower cross beam



Screw package
506734G04

Hydraulic Car Frame

WLF06 / WLF10 / WLF16 / WLF20

Operating instructions

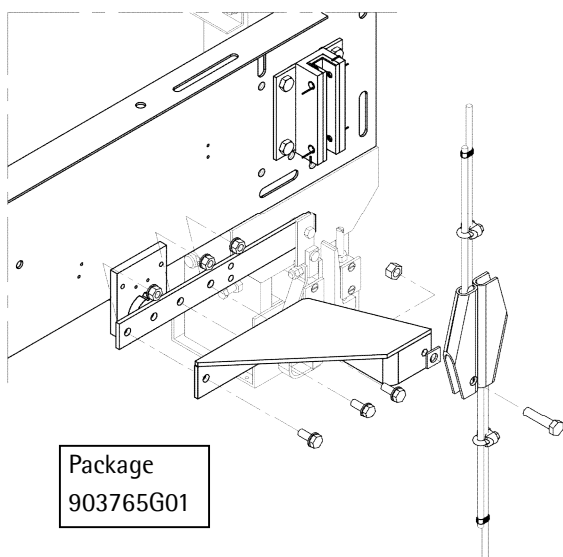
Blatt/sheet PM.3.002147.EN.34
Datum/date 26.05.2010
Stand/version 26.05.2010
Geprüft/approved WAT/KKR

2.11 Overspeed governor rope fixing

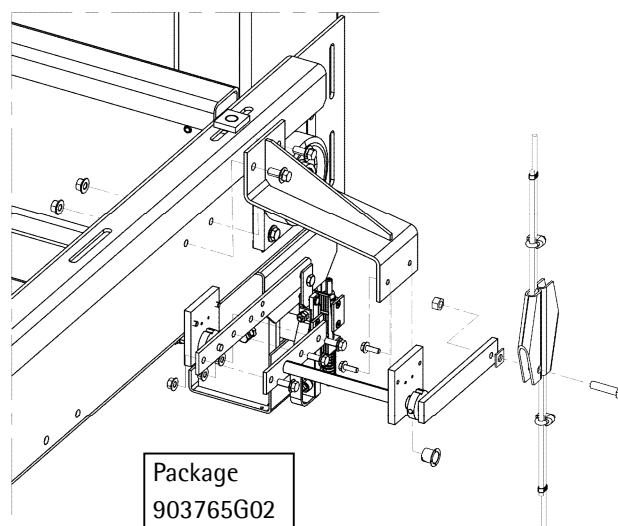
Car frame WLF can be delivered with overspeed governor rope fixing (for safety gear activation with overspeed governor and not by slack rope device).

Mount the OSG rope fixing to the synchronization lever

WLF06 / WLF10



WLF16 / WLF20

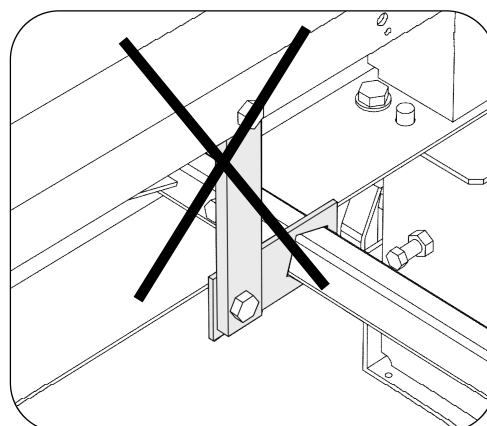


Refer to the layout drawings for correct position.



Only OSG rope with diameter 6 - 6.5 mm could be used.

Note, the connection between synchronization and slack rope see-saw is not delivered (refer to chapter 2.6)!



Hydraulic Car Frame

WLF06 / WLF10 / WLF16 / WLF20

Operating instructions

Blatt/sheet PM.3.002147.EN.35
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Stand/version C-08.03.2011
Geprüft/approved WAT/KKR

2.12 Installing the rope pulley yoke (2:1 suspension)

Each roping system has its own top diverter pulley assembly; all of them can be installed completely pre-assembled (as delivered).



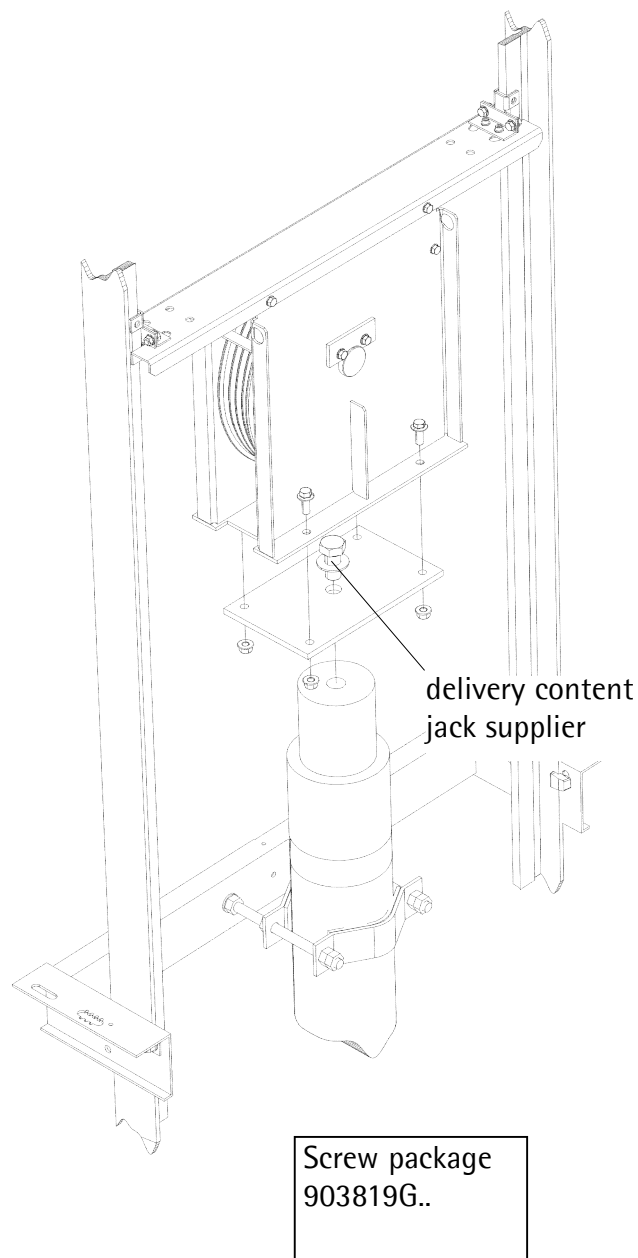
During installation it is necessary to have a lifting device in the shaft!

- Lift the top pulley beam between the guides using hoist
- Lower the top pulley beam on top of the cylinder adapter piece
- Connect the top pulley beam with piston rod and align it



The amount of play in the distance between guides shall be ca. 0.5 - 1 mm.

- Tighten the cylinder brackets



Hydraulic Car Frame

WLF06 / WLF10 / WLF16 / WLF20

Operating instructions

Blatt/*sheet* PM.3.002147.EN.36
Datum/*date* 26.05.2010
Stand/*version* F-23.03.2023
Geprüft/*approved* WAT/KKR

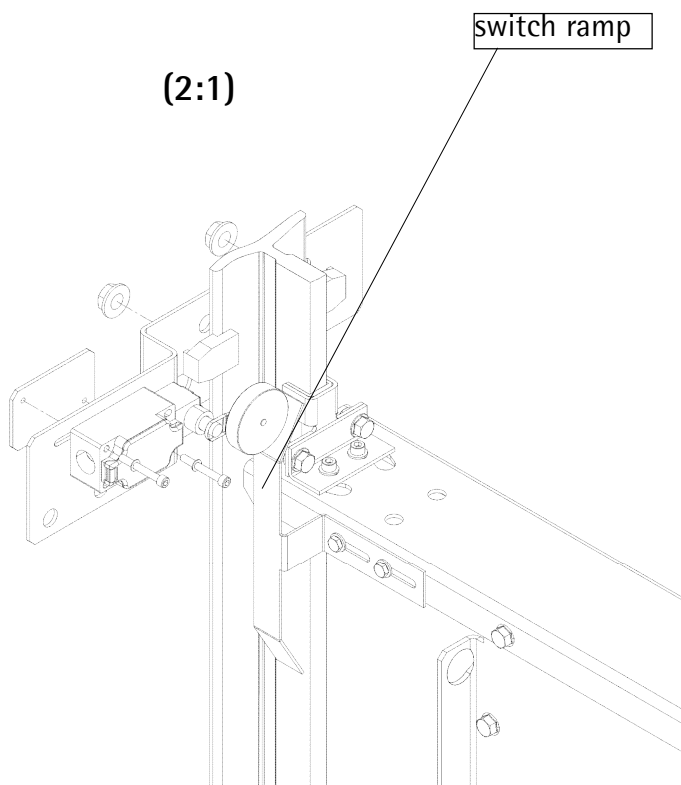
2.13 Limit switch

- 1) Mount the limit switch as shown in the picture.
- 2) Mount the switch ramp on the pulley head (2:1)

The switch has to operate after to go through the upper crossing.



The adjustment of the switch has to secure the tripping of them. However the switch must not be charged over the end of the switch stroke. The mechanical tripping and the electrical tripping must be guaranteed after mounting.



Hydraulic Car Frame

WLF06 / WLF10 / WLF16 / WLF20

Operating instructions

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 Geprüft/approved WAT/KKR

2.14 Roping of 2:1 suspension

The ropes run together over a roller on top of the cylinder to the car frame.

The ropes can be put into place once the rope pulley and the car frame are installed.

2.14.1 Routing the ropes

- Fix the first end of the ropes to the cylinder pillar – remove the rope guards of the pulleys for roping.

- Mount the slack rope testing device either in the first fixing position (like figure) or if necessary in the last fixing position to the shaft wall.



- Mount both pillar clamps (1) for the slack rope testing device. Adjust the position of the pillar clamps (1) with the slack rope testing device.

- Mount the guide roller (2) and the snap hook (3)

- Install the ropes of the slack rope testing device:

Route the rope with the green handle around the guide roller (2) of the slack rope testing device.

Thread the rope with the white handle through the snap hook (3).

- Route ropes one by one around the pulleys



WLF06 / WLF10:

If there is only 2 ropes leave the grooves in the middle empty.

If there is only 3 ropes leave the second groove counted from the car frame empty.

WLF16 / WLF20:

If there is only 4 ropes leave the grooves in the middle empty.

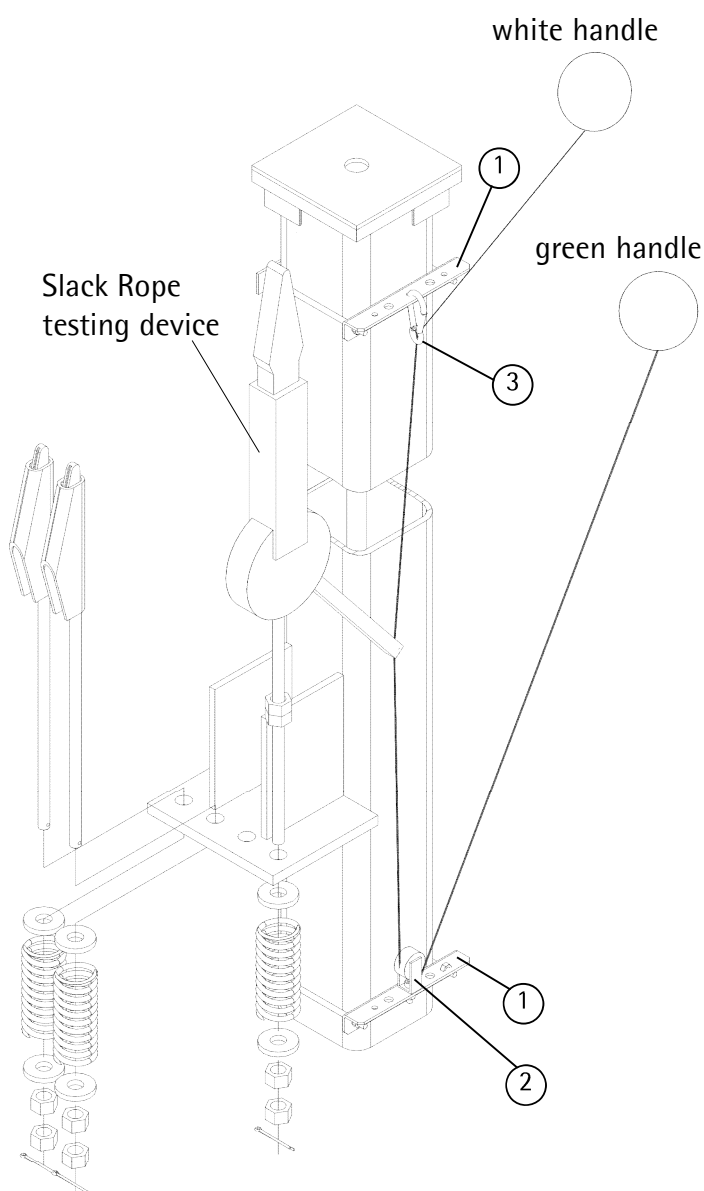
If there is only 5 ropes leave the third groove counted from the car frame empty.

The installation drawing shall indicate unambiguously what groove to be left empty.

- Lower the car frame side ends of the ropes down to the shaft pit
- Reinstall the rope guards of the pulleys



The ropes are not permitted to overlap one another!



Hydraulic Car Frame

WLF06 / WLF10 / WLF16 / WLF20

Operating instructions

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2.14.2 Fastening the ropes to the car frame

(1) Slide the rope fixings into position



The car must be parked and secured

(2) Secure the rope fixings to the car frame using 2 nuts, washers and a split pin



Secure the rope locks with anchoring wire against twisting and making contact (noise generation).



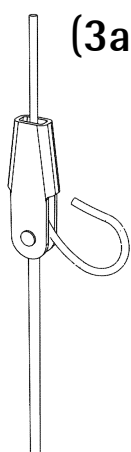
Check the rope hitch for solid placement!



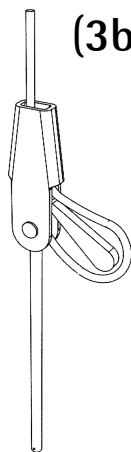
For correct rope anchor assembly see figure.

(3) Fasten the ropes to the rope fastener:

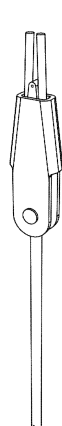
- Make a loop on the rope by feeding the end of the rope through the socket and then feed it back. Do not twist the rope, just turn it back.
- Insert the wedge and pull the loop into the socket
- Simultaneously with an other person pulling the ends of the rope, secure proper seating by hammering the wedge with wooden block.



(3a)

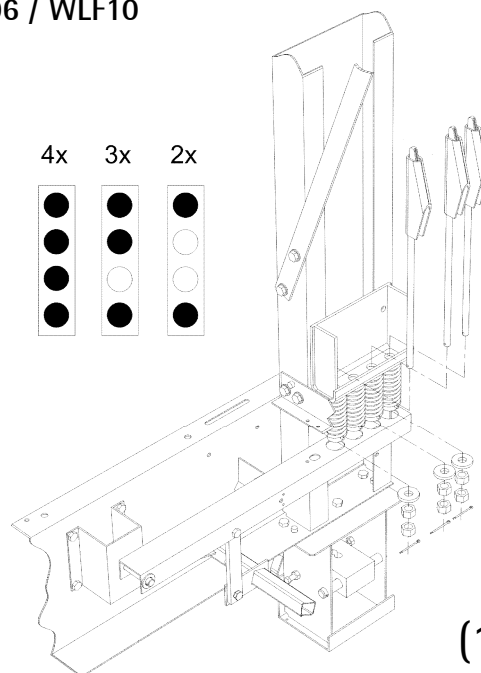


(3b)



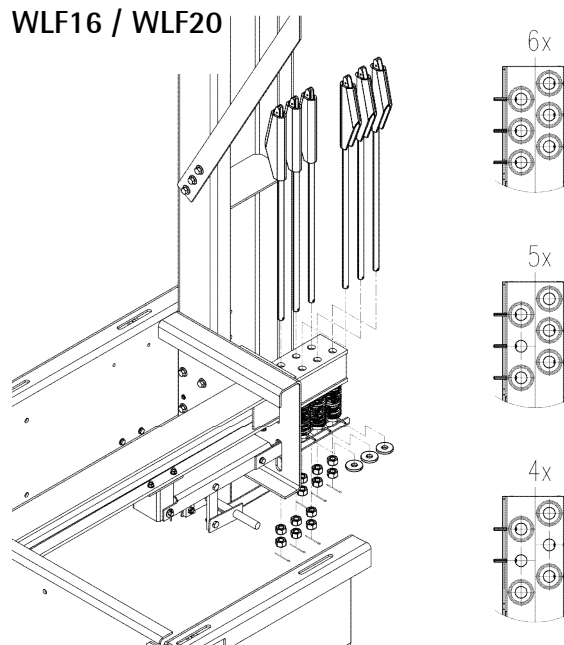
(3c)

WLF06 / WLF10



(1-2)

WLF16 / WLF20



Hydraulic Car Frame

WLF06 / WLF10 / WLF16 / WLF20

Operating instructions

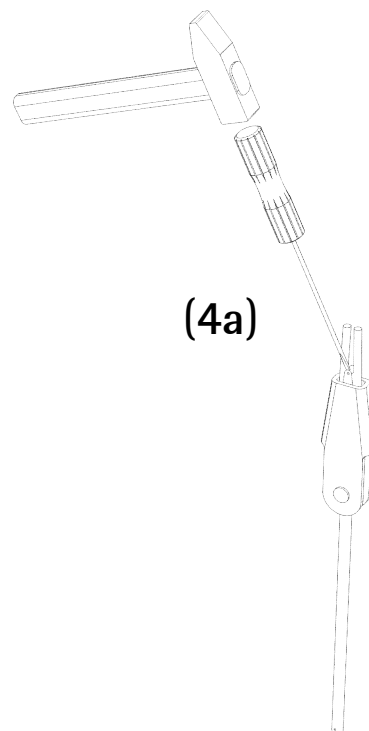
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(4) Equalize the tension of ropes



After all ropes are installed as described above, let the weight of the car rest on ropes to seat the wedges and ropes into the socket firmly. If any rope is tighter than the others, it can be equalized as follows:

- a) Tap the wedge outwards until the rope slides, using a hammer and a drift pin, which is inserted into the top of the rope socket between



(4a)

(5) Secure the rope tail-end

Properly made tail-end securing will prevent wedge from falling out if rope suddenly get loose.



Observe the local laws and regulations concerning tail-end handling methods.



The rope clip is in the delivery content of the car frame!



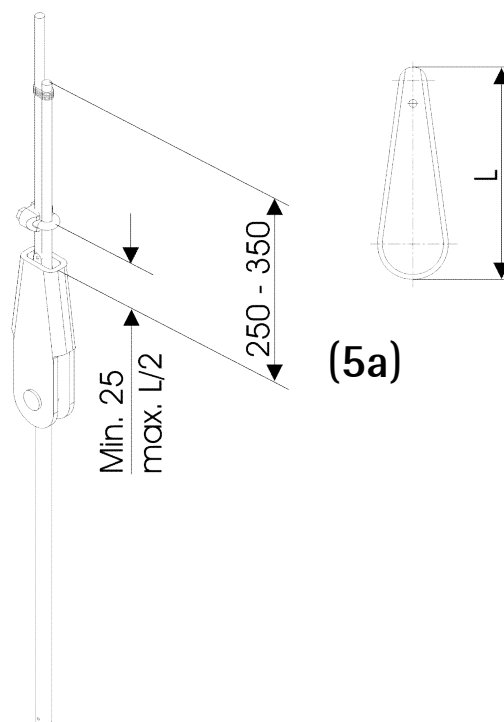
The rope clips should be used and tighten to torque recommended by the manufacturer.

One main method is described below but any other acceptable local method can be used.

- a) Secure the tail-end of the rope to the live-end with a rope clip from 25mm to $L/2$ of the wedge. The U-bolt must be fitted to the dead-end of the rope and the saddle must be fitted to the load bearing end of the rope.



If the rope are not enough close to each other to prevent full rotation, tie the terminations together by using the delivered wire. Do not prevent equalization springs working.



(5a)

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2.15 Car installation



Observe the safety measures for work performed on elevator installations.

If car frame extension beams (option) are provided, then this is to be installed first (see chapter 2.8).

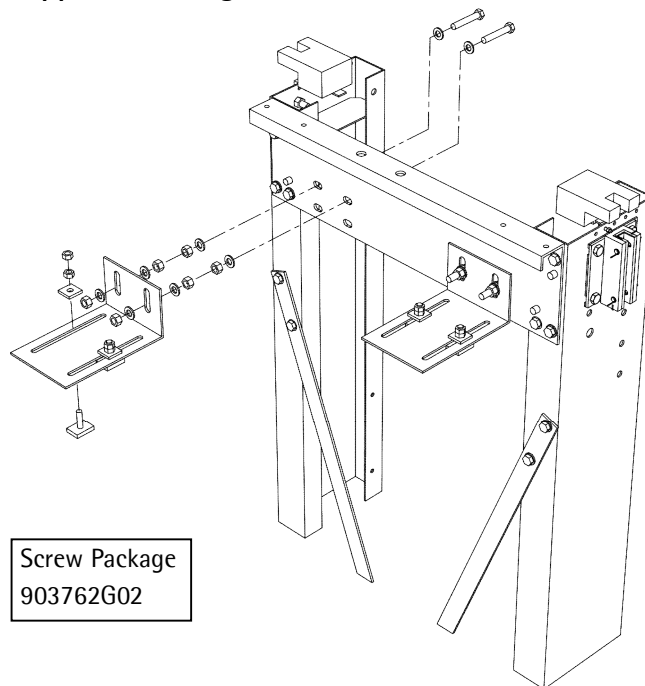
Install car in accordance with the corresponding operating instructions:

- Lay floor down and screw tight
- Fasten side walls
- Put ceiling in place
- Mount car bracket.

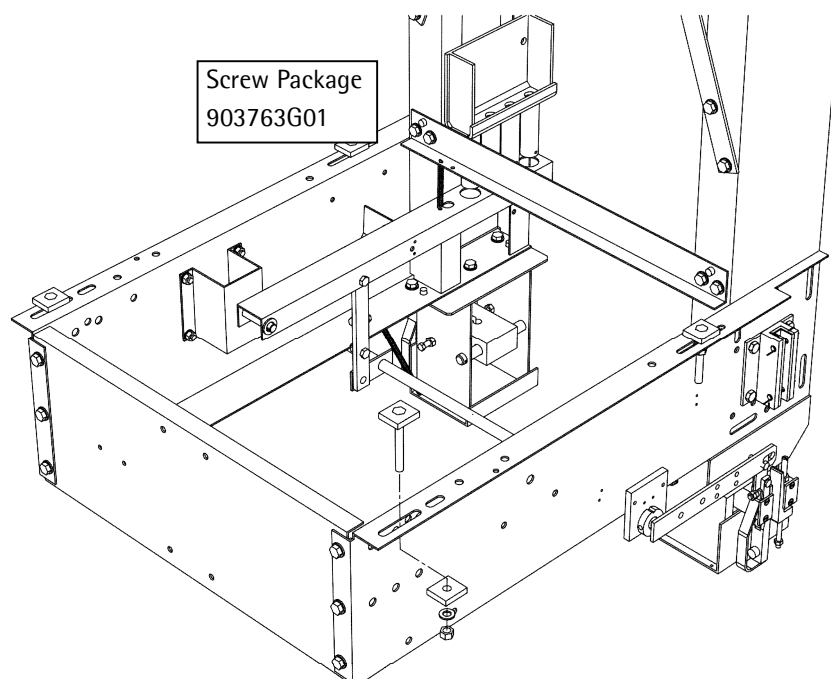


Take care of tightening torque
Screw M12: 80Nm

Upper car fixing



Lower car fixture



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2.16 Electrical installation



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



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



Take note of the following when laying the connection cable:

- that the unipolar cables have double insulation
- the use and laying of cables is governed by the EMC

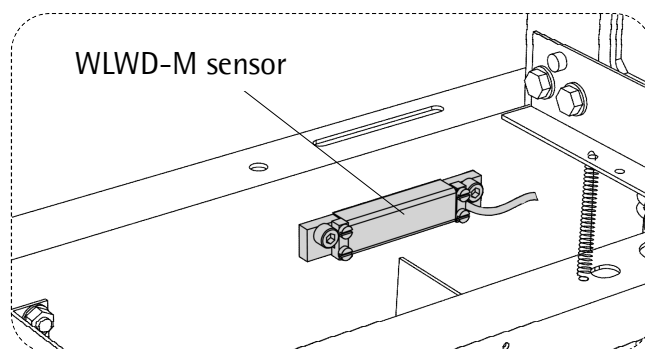


The safety gear contact opens the lift installation's remotely controlled safety circuit.

2.16.1 Load weighing device WLWD-M

The load weighing sensors (pre-installed and set in the factory) are placed on the car support beams below the car (the standard delivery content includes also a box with the central unit).

For setup of the load weighing device WLWD-M refer to the operating instructions manual.



2.16.2 Safety gear, slack rope and limit switch

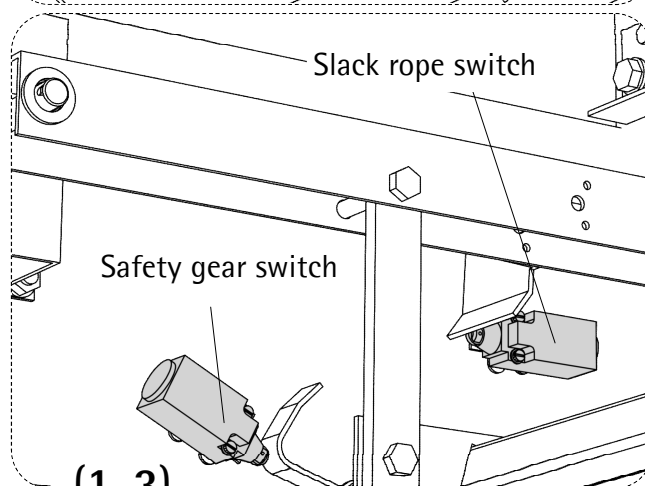
- (1) Connect the contact
- (2) Test the switch function
- (3) Adjust the switch if necessary



Adjusting dimension: 3-5 mm from the guard peak

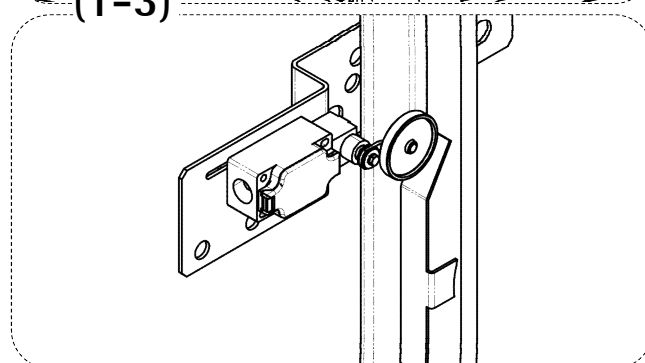


Safety gear contact must break just before safety gear gripping!



2.16.3 Overspeed limiter

For connection and installation of the overspeed limiter refer to the separate operating instructions manual.



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3 Adjustment tasks


3.1 Safety gear device and synchronization

If WLF is delivered pre-assembled, the safety gear device (safety gear, synchronization, safety gear contact) is delivered pre-adjusted. Therefore no additional assembling of the safety gear device is needed.


If the car frame is delivered not pre-assembled, the safety gear housing, the switch and the synchronization has to be assembled during installation (refer to chapter 2.6.).

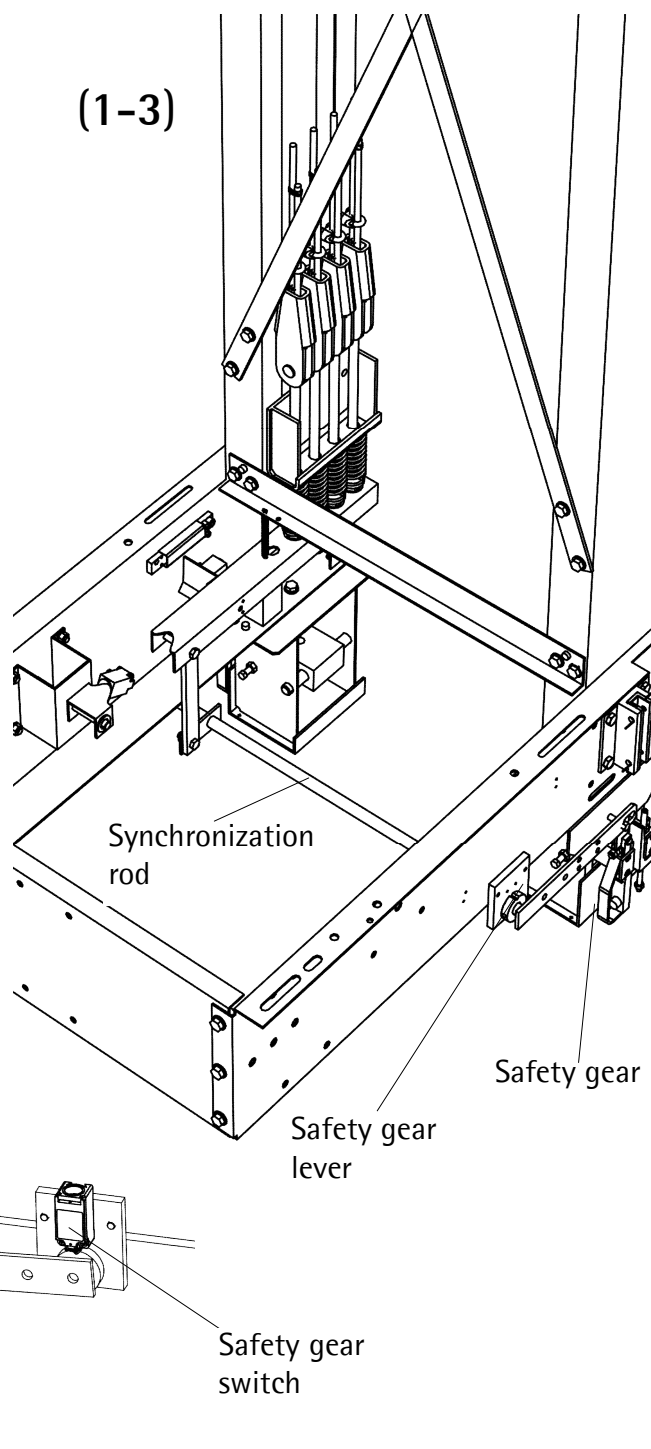
- (1) Operate the safety gear lever by hand and check that both safety gears begin gripping at the same time
 ... If not, please contact us at WITTUR for technical support

- (2) Check the safety gear switch contact function - adjust if necessary

 The contact must break just before safety gear gripping!

- (3) Adjust the safety gear in accordance with the operating instruction manual of the corresponding safety gear

 Take care of required safety gear running clearance.



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3.2 Slack rope seesaw


The slack rope seesaw is delivered pre-adjusted in the factory.

- (1) Operate the seesaw by hand and check that both safety gears begin gripping at the same time (if safety gear is to be actuated by slack rope device)
... If not, please contact us at WITTUR for technical support.

- (2) Check the slack rope switch contact function - adjust if necessary

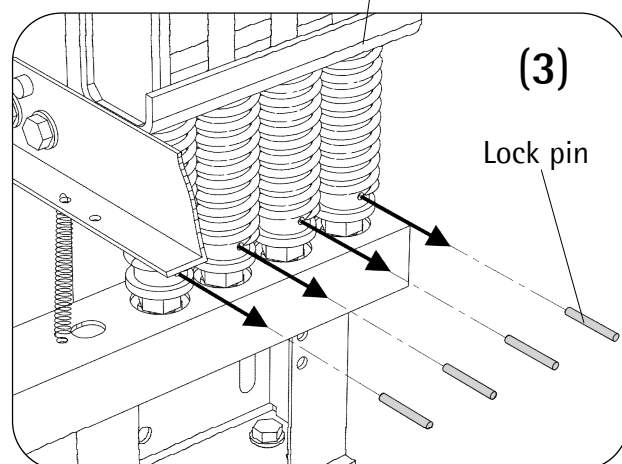
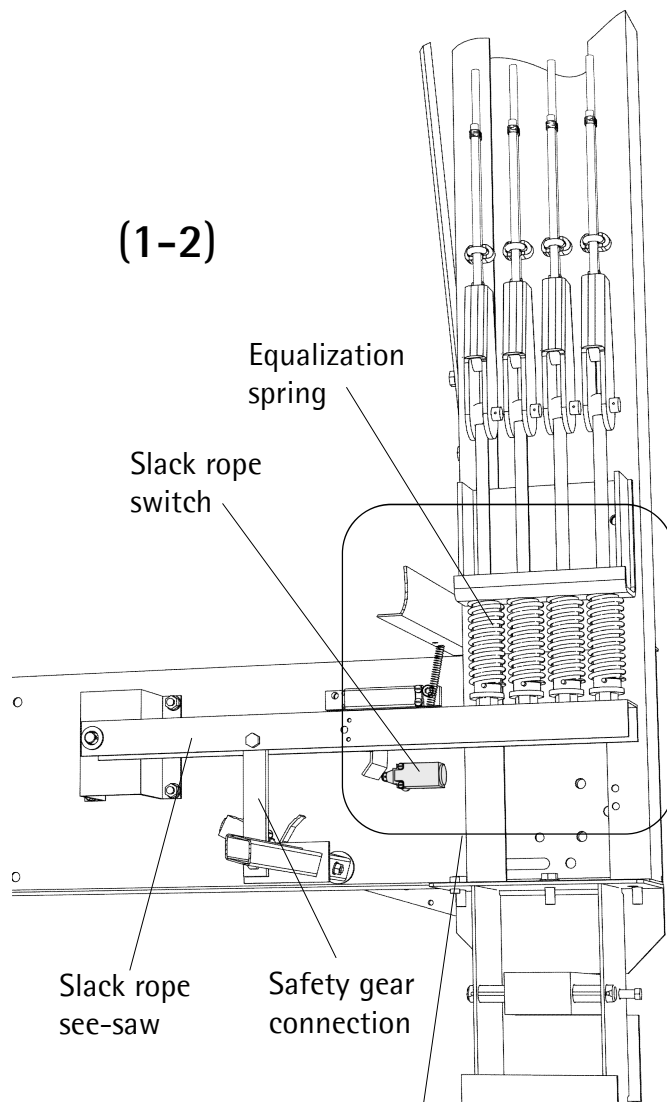
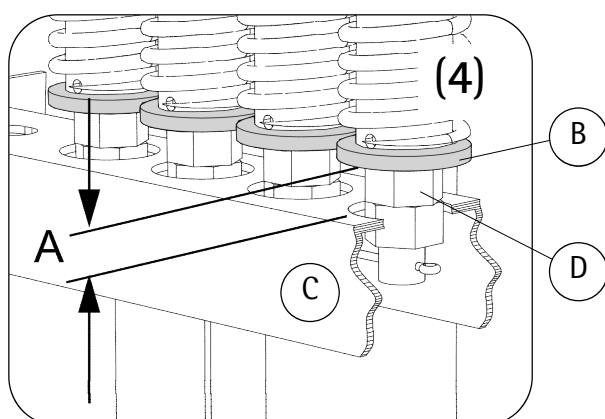


The contact must break just before safety gear gripping!

- (3)  Remove lock pins below slack rope activation springs!

- (4) Check that the distance (A) between rope fastener contact washer (B) and the see-saw (C) by tensioned ropes is adjusting that an untensioned rope will activate the seesaw by means of the spring

- Lock the nut with the counter-nut and secure with the pin




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3.3 Adjustment of underrun and overtravel


 Prior to the first test run:
 Clean the guide rails!

 No individuals are permitted to be in either the shaft or the lift car during test runs.
Risk of crushing !!
 Clear all objects from the shaft. Screw projections and other dangerous narrow points should be located and eliminated in advance as much as possible.

 Wait to carry out adjustments after **all** lift components have been installed completely.

Overtravel:


- Set limit switch at the top
- Carefully move the jack to the piston end limit

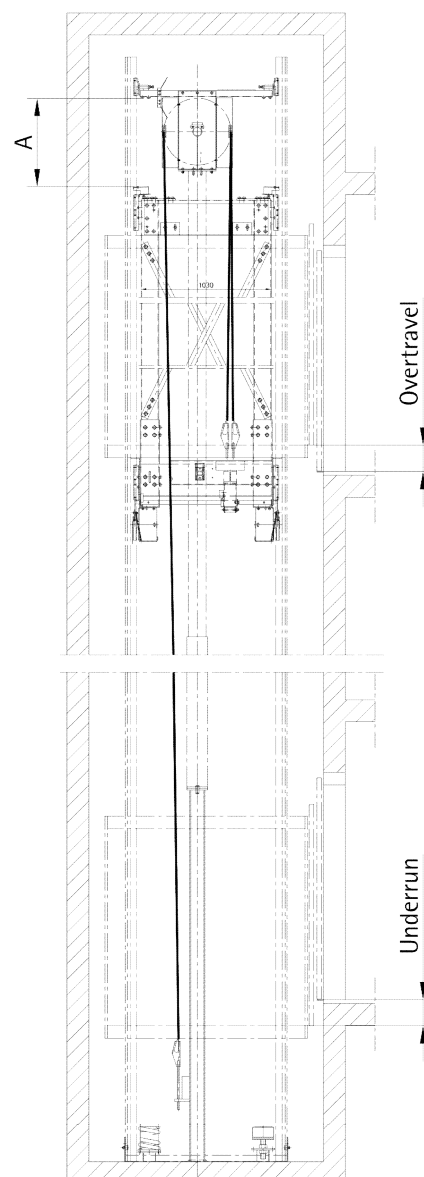
 For the last 300 mm of the height of the lift, pay close attention to the clearance A between the upper edge of the car frame (guide rail lubricator) and the lower edge of the rope pulley yoke guide. In case of collision, loosen the ropes as much as needed until clearance A at least $100 \text{ mm} + 0.035 \cdot v^2$ [m/s] in the uppermost position of the piston.

Afterwards, inspect the following:


- The upper overtravel must have been travelled through
 -->for 2:1 = 210mm
- The limit switch must have responded
- The prescribed safety space must be present above the lift car roof
 (EN81-2: $1000 \text{ mm} + 0.035 v^2$).

Adjust rope length as needed.

 Afterwards, effect a rope tension which is as equalised as possible.



Underrun:

- Lower piston until the frame comes into contact with the buffer. The piston must now be able to arrive at a level which is still at least around 45 % of the buffer height (2:1 suspension), without reaching the end limit.
-  Installations according to EN 81-2: If the lift car rests on the buffer while loaded with rated load, then the clearance between the threshold of the lowermost stop and the lift car floor may not measure more than 120 mm.
- Check lower safety space

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4 Function testing

Operational reliability of the installation is assured, assuming that all guide lines were adhered to during proper installation. The quality and function of individual components are subject to thorough inspection and is checked before dispatch from our works. Once installation fitting is complete, the lift car frame 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!



Remove all people and objects from 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. Attention should be paid to the clearance of all fastened parts, especially with regard to the guide brackets/safety gear devices. Find and remove any protruding bolts or other dangerous restrictions well in advance.

Safety clearance inspections at the bottom of the shaft and shaft head (observe the applicable regulations/guidelines):

4.1 Safety gear testing (2:1 suspension)



Nobody must not be in the lift car when carrying out test runs or functions tests!



Examine the lift car frame for changes after carrying out the safety gear test:

- deformation of components
- that the screws are firmly in place
- signs of damage or wear on the rope pulleys, guides and suspension points

4.1.1 With overspeed governor

Static and dynamic function testing

The procedures vary depending on the safety gear device. For details refer to the operating instructions of the relevant safety gear device.

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4.1.2 With slack rope device

The slack rope device replaces the overspeed governor and complies with EN 81-2.

Preparation:

- Screw nuts (2) downwards till 10mm to the rope fixing bracket (see Figure).
- Draw trip rope (3) (white handle) and reset rope (4) (green handle) out of the pit to a safe location (e. g. machine room).
- Remove saftey bolt (1) for testing operation

Carrying out the safety gear test:

- Move car all the way to the top and then travel downwards at the rated speed,
- Pull trip rope (white handle) **outside** the shaft to activate the slack rope testing device

As a result of the triggering of the slack rope, the elevator must be stopped in balance by both the right and the left safety gear after a few centimetres of movement.

At the same time, the safety gear switch must have interrupted the controller safety circuit.

Restarting:

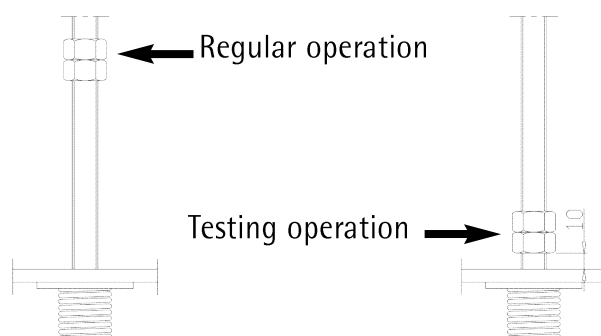
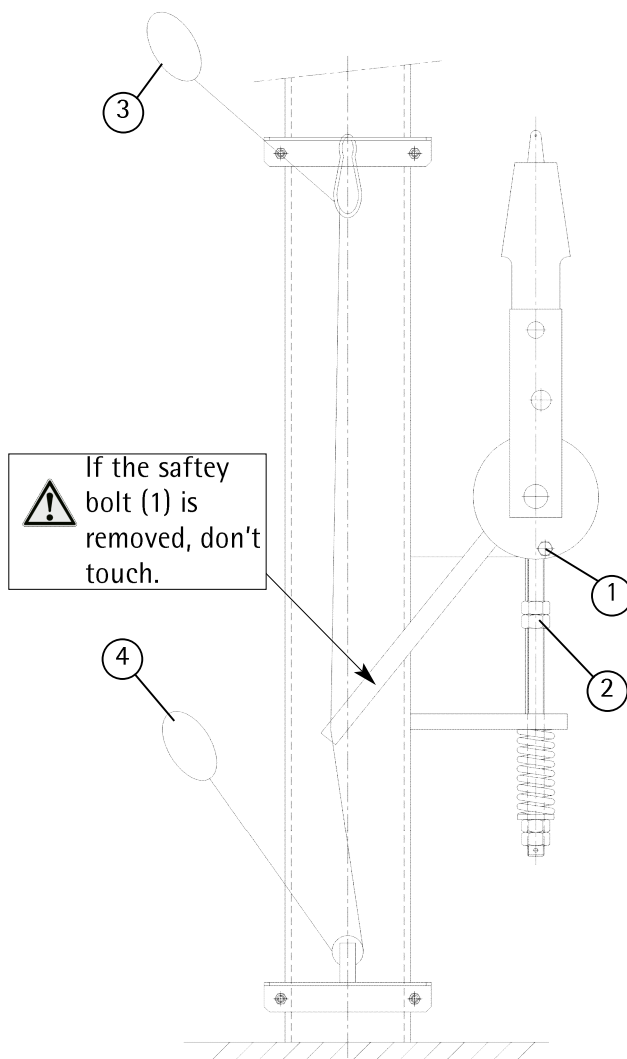
- Power off the main switch of the installation.
- Push the hand-emergency-drain at the valve and reduce the piston of the cylinder a few centimetres.
- Pull reset rope (green handle), after the cylinder-lowering, **outside** the shaft to release the slack rope testing device.
- Release the safety gear device by operating the hand pump and at same time check if the ropes rest in the right position in the guide pulley.

Actuating rod and safety gear must return to initial position.

- Power up the main switch of the installation.
- Screw nuts (2) back into the uppermost position,

fasten it and insert again the saftey bolt (1).

- Make a test run.



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4.2 Additional testing positions

- Rail surface (traces of safety gear operation)
- Equalised rope tension
- Parallel rope action (for example proper position of the suspension ropes in the grooves of the diverter pulley)
- Condition of rope suspensions in accordance with regulations
- Guide characteristics (it is possible that an adjustment of the guides is required)
- Tension of the frame diagonals at the car (the two frame diagonals should be equally stressed)
- Prescribed safety clearance
- Testing of the load weighing device (see corresponding operating instructions)

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5 Maintenance, inspection and repair

5.1 Maintenance and inspection

The WITTUR lift car frame requires little servicing. Inspection checks must be carried out at regular intervals (minimum twice a year with each service) to guarantee safe operation. Alterations, damage or other irregularities have to be reported, and repaired. 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 be carried out before legally prescribed functional tests (e.g. before TÜV tests).



The lift installation must be immediately taken out of use should any damage or irregularities to the lift car frame arise which could possibly impair operational safety.



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



Maintenance work should be expertly carried out with utmost care in order to guarantee safe installation operation.

WITTUR car frame maintenance and inspection check list

General:

- Visual inspection for general irregularities (i.e. dirt build up, corrosion, deformation, fracturing etc.)
- Check the screw connections

Lubricators:

- Replenish
- Check the felt inserts for damage, replace if necessary

Guides:

- Check inserts at every service call. Replace the sliding inlays by new one if the running clearance is more than 2mm (refer to the Chapter "Carrying out repairs").

Rope pulley:

- Signs of wear on the rope pulley; replace if necessary
- Check the condition of the rope pulley bearings by listening to the running noise (refer to the Chapter "Carrying out repairs")

Safety gear devices:

- Check the operation of the safety gear device at every service call. Refer to the operating instructions of the installed safety device.
- The surface of the parts has to be clean. Parts must not be cracked.
- Check the overspeed governor rope fixing

Synchronization:

- Check the operation - the safety gear must grip at the same time on both ends

Rope fixings and slack rope device:

- Check ropes and rope fixings
- Check that the springs of the rope fixing are not broken
- Check the function of the see-saw

Hydraulic Components:



See operating instructions of hydraulic components.

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5.2 Carrying out repairs



As a general rule, damage to and/or warping of the car frame must not be repaired and/or straightened out under any circumstances (as for example by applying heating and bending). The damaged components must be replaced. Use only WITTUR spare parts when doing so.



Repairs should be expertly carried out with utmost care in order to guarantee safe installation operation.



Follow all the local safety instructions during the maintenance work.

The following repairs should be carried out on site by qualified fitters/service personnel:

- The sanding down of rust (i.e. caused as result of damage to the undercoat) and application of a suitable paint sealant
- Replacing the guides / guide shoe inserts
- Replacing the rope pulleys
- Replacing of ropes



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

5.2.1 Replacing the guides/inserts

The components for the guides which are subject-to-wear (sliding guides: inserts) can be delivered individually as spare parts: (see Chapter "Spare parts").



The distance (play) to the rails (distance between guides) must be readjusted after replacement of the inserts and remounting. In addition, if rail lubricator are in use replenish it with oil.

5.2.2 Rope replacement



See chapter 2.13.



Observe correct rope passage!

5.2.3 Replacing the rope pulley

The rope pulleys can be delivered individually as spare parts (refer to "Spare parts" chapter).

Procedures for changing a rope pulley:

- Lower the lift car onto its contact buffer
- Relieve tension from ropes
- Erect scaffolding in the shaft
- Unscrew cladding plates on the rope pulley yoke
- Secure pulleys against falling
- Dismantle rope pulley / axle / axle bracket unit
- Replace the rope pulley, and remount the parts following the instructions above in reverse order



Make sure that no kinks occur while restoring tension to the ropes!

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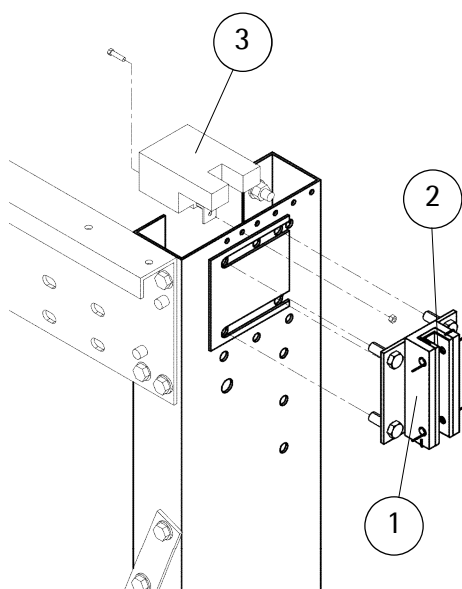
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5.3 Spare parts list

5.3.1 Car frame

Pos	Component	Type	Spare part			Number...	Art. No.
1	Guide shoe complete	SLG11	WLF06/10	Rail width	9 mm	1	903810G09E
		SLG11	WLF06/10	Rail width	16 mm	1	903810G16E
		SLG11H	WLF16	Rail width	16 mm	1	903940G16E
2	Guide shoe accessories	Sliding inlay	self lubricated	Rail width	9 mm	1	903712H09
		Sliding inlay	self lubricated	Rail width	16 mm	1	903712H16
3	Lubricator			Rail width	9 mm	1	86375G09
				Rail width	16 mm	1	86375G16



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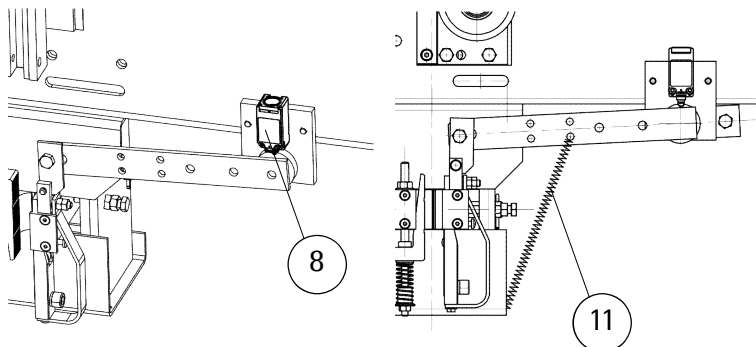
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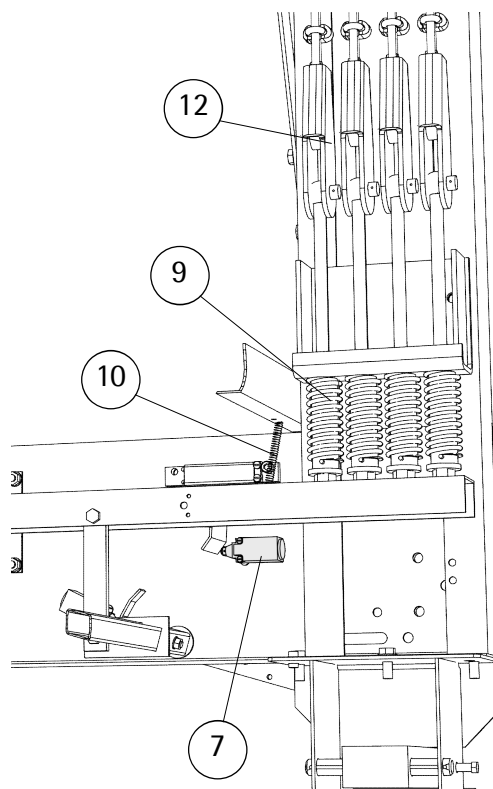
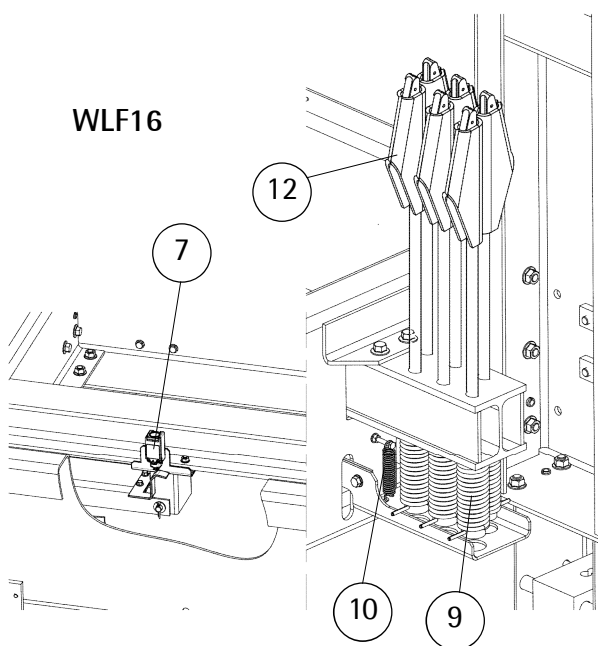
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Pos	Component	Type	Spare part	Number...	Art. No.
7	Slack rope switch	Bernstein	I88-U1Z Riwk	1	258453
8	Safety gear switch	Bernstein	I88-A2Z	1	265244
9	Spring	Compression spring	Slack rope device spring	1	903746H01
10	Spring	Tension spring	Slack rope device spring	1	903748H01
11	Spring	Tension spring	Synchronizationspring	1	2141100H07
12	Rope anchor		Rope diam. 8 mm	1	600242G01
			Rope diam. 10/11 mm	1	600242G03
			Rope diam. 13 mm	1	600242G07

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WLF06 / WLF10



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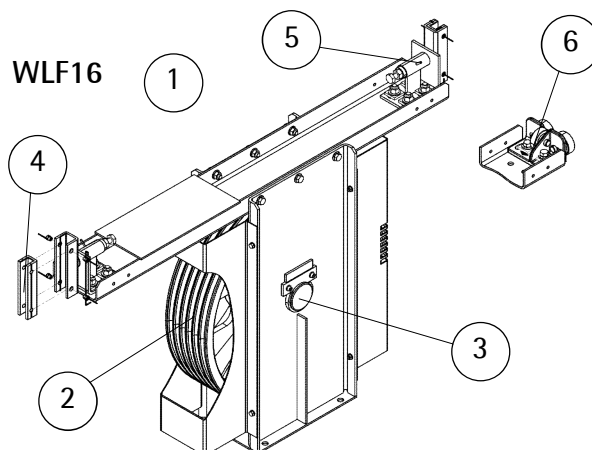
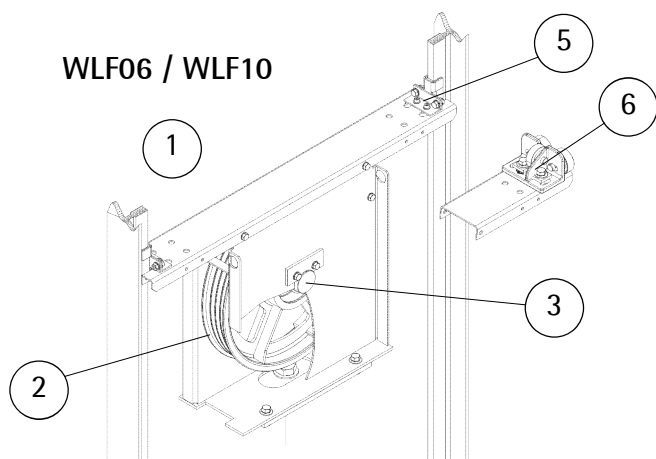
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5.3.2 Diverting pulleys

Pos	Component	Type	Spare part	Number...	Art. No.
1	Diverting pulley complete	Diverting pulley	WLF06/10 DBG=800 DL10	1	903820G02
		Diverting pulley	WLF10 DBG=800 DL11	1	903820G04
		Diverting pulley	WLF10 DBG=1100 DL10	1	903820G03
		Diverting pulley	WLF10 DBG=1100 DL11	1	903820G05
		Diverting pulley	WLF16 DBG=1100	1	903945G01
		Diverting pulley	WLF16 DBG=1500	1	903945G02
2	Rope pulley incl bearing	Rope pulley	WLF06/10 DR400 max 4xDL10	1	903815G01
		Rope pulley	WLF10 DR440 max 4xDL11	1	903816G01
		Rope pulley	WLF16 DR530 max 6xDL13	1	52020G02
3	Axle	Pulley axle	WLF06/10 DR330/400/440	1	652449H04
		Pulley axle	WLF16 DR530	1	903953H01
4	Guide shoe accessories	Sliding inlay	WLF16 16mm	1	903712H16
5	Guide shoe complete	Sliding guide shoe	WLF06/10 9mm	1	904428G09
		Sliding guide shoe	WLF06/10 16mm	1	904428G16
		Sliding guide	WLF16 16mm	1	903707G16E
6	Roller guide complete	Roller guide	9/16mm	1	C1308



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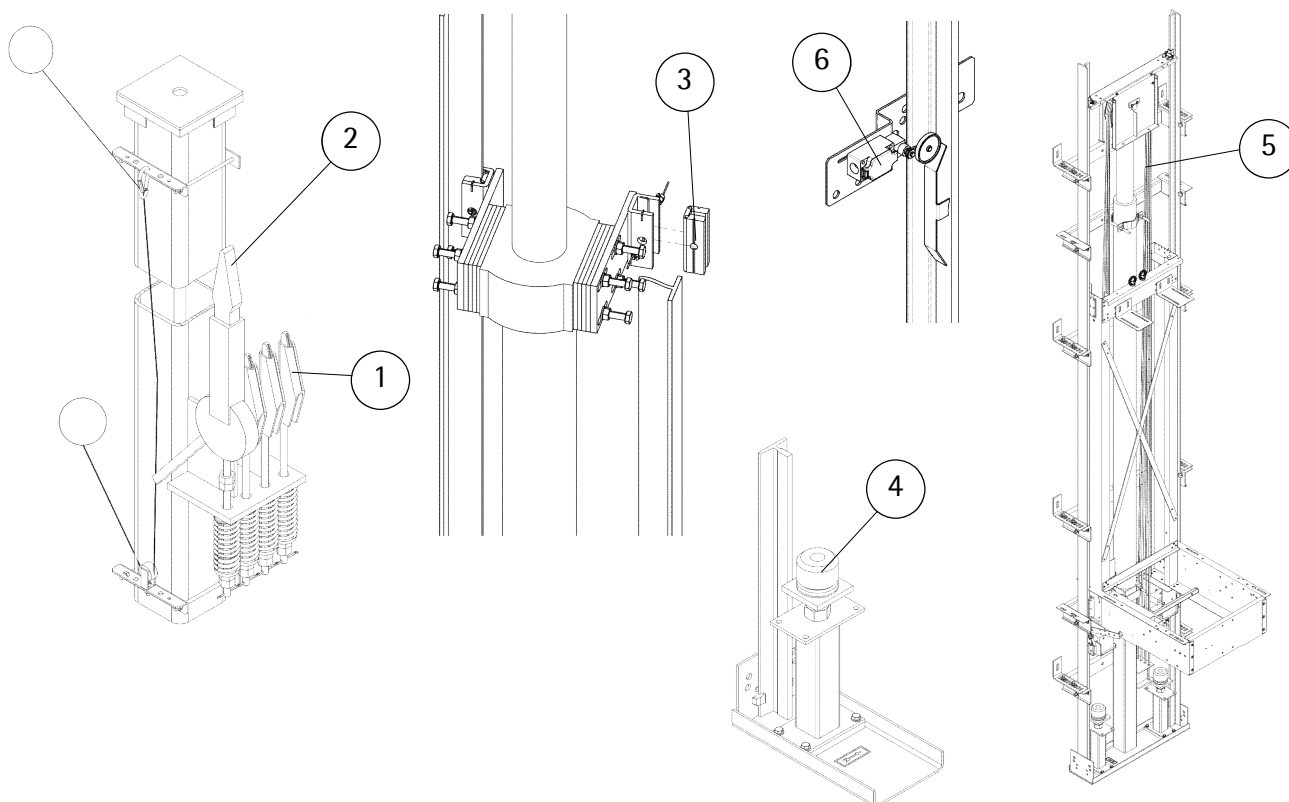
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5.3.3 Shaft components

Pos	Component	Type	Spare part	Number...	Art. No.
1	Rope anchor incl. compensation spring		Rope diam. 8 mm	1	903706G01
			Rope diam. 10/11 mm	1	903706G02
			Rope diam. 13 mm	1	903706G03
2	Slack rope testing device inkl. compensation spring		Rope diam. 8 mm	1	903706G04
			Rope diam. 10/11 mm	1	903706G05
			Rope diam. 13 mm	1	903706G06
3	Step track accessories	Sliding inlay	Rope diam. 5 mm	1	652437G05
4	Buffer		ETN EN2 100x80	1	C1305
5	Traction rope		Rope diam. 8 mm	1	C1309
			Rope diam. 10 mm	1	C1310
			Rope diam. 11 mm	1	C1311
			Rope diam. 13 mm	1	C1312
6	Limitswitch	Bernstein	ENK-U1Z AHSGU-V	1	C0500



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5.3.4 Overspeed limiter / Tension weight

Pos	Component	Type	Spare part	Number...	Art. No.
1	Rope anchor		Rope diam. 6 mm	1	392772G06
2	Limiter rope		Rope diam. 6 mm	1	274165
3	Overspeed limiter	OL35		1	903705G02
4	Tension weight accessories	Bernstein	ENK-U1Z AHSGU	1	811720G01

