

# Counterweight WCW05, WCW06 & WCW10 (1:1 & 2:1)

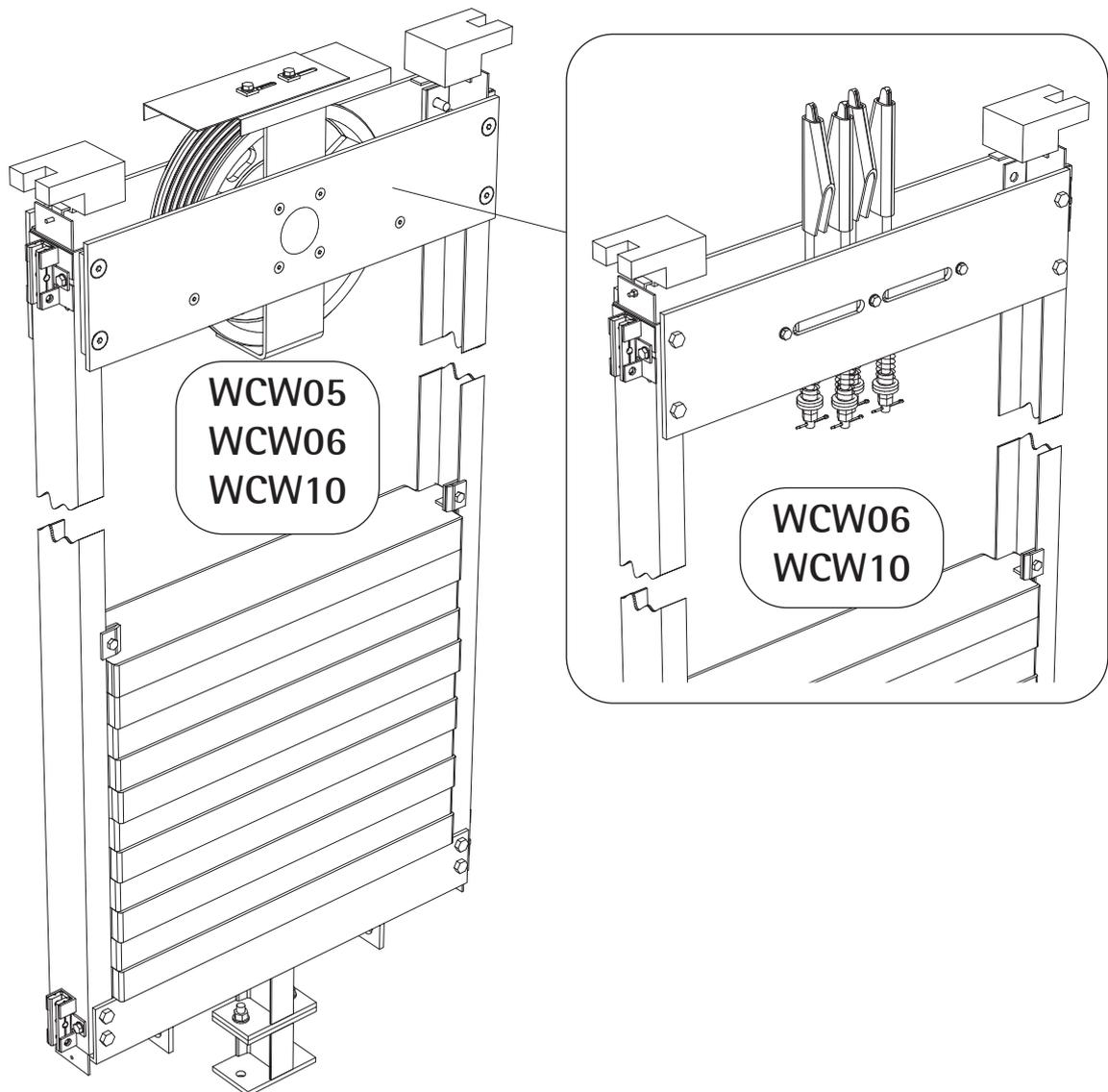
Operating instructions



Blatt/sheet D411MGB.000  
Datum/date 02.05.2002  
Stand/version D-09.10.2023  
Geprüft/approved WAT/KKr

## Counterweight Frame WCW05 WCW06 & WCW10 (1:1 & 2:1 Suspension)

D411MGB 07.2015



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# Counterweight WCW05, WCW06 & WCW10 (1:1 & 2:1)

Operating instructions

Blatt/sheet D411MGB.001  
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Contents	Page
<b>1 General information prior to installation</b>	
1.1 Description and functions .....	3
1.2 Liability and guarantee .....	3
1.3 Safety precautions .....	4
1.4 Preparation .....	4
1.5 Content of supply .....	5
<b>2 Installation</b>	
2.1 Assembling the counterweight frame .....	6
2.2 Mounting the guide shoes .....	7
2.2.1 Guide shoe set SLG7 .....	8
2.2.2 Guide shoe set SLG1 .....	8
2.2.3 Guide shoe set WRG80 .....	9
2.2.4 Guide shoe set WRG100 .....	9
2.3 If safety gear is included .....	10
2.4 Loading counterweight filler bits .....	10
2.4.1 Using steel, cast, concrete or lead counterweight filler bits .....	11
2.5 Locking filler bits .....	11
2.5.1 Standard locking .....	11
2.5.2 Locking when the counterweight frame is fully loaded (top filler bits used) .....	11
2.6 Roping of the counterweight .....	12
2.6.1 1:1 Suspension .....	12
2.6.2 2:1 Suspension .....	15
2.7 Mounting compensation chains .....	16
2.8 Exclusive package (optional) .....	16
<b>3 Function testing</b>	
<b>4 Maintenance, inspection and repair</b>	
4.1 Maintenance and inspection .....	18
4.2.1 Changing the guides/inserts .....	19
4.2.2 Changing the rope pulley .....	19
4.2 Carrying out repairs .....	19



# Counterweight WCW05, WCW06 & WCW10 (1:1 & 2:1)

## Operating instructions

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Datum/date 02.05.2002  
Stand/version D-09.10.2023  
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## 1 General information prior to installation

### 1.1 Description and functions

The counterweight frame series WCW is a counterweight used for passenger- and passenger-goods traction drive elevators.

In side or rear arrangement it is guided in the opposite direction to the lift car movement by at least two guides.

The counterweight frames WCW05, WCW06 & WCW10 are available with 2:1 suspension, and the WCW06 and WCW10 are available with 1:1 suspension. Because of its amount of options and modular assembly it is ideal for all elevator concepts.

The counterweight consists of a frame which can be screwed on and layered inserts (so-called filler bits). Their number varies according to the material used and the total weight.

The counterweight frame operating range is defined as follows:

#### WCW05:

- Total weight  $\leq 1300$  kg
- Dist. betw. guides 425 mm

#### WCW06:

- Total weight  $\leq 1350$  kg
- Dist. betw. guides 470-1020 mm (1:1 & 2:1)

#### WCW10:

- Total weight  $\leq 2500$  kg
- Dist. betw. guides 470-1020 mm (1:1)  
490-1020 mm (2:1)

#### General:

- Height of frame  $\leq 3900$  mm
- Nom. speed 1.6 m/s (WCW05)  
1.75 m/s (WCW06)  
2.5 m/s (WCW10)
- Guide shoes Sliding guide shoe  
Roller guides (WCW06 & 10)

#### Further options:

- Buffer spacers
- Compensation chain fixings
- Filler weights
- Top filler bits fixing
- Safety gear devices Type WCWSG

### 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.

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

- to use a buffer other than the prescribed one
- carrying out modifications, of any kind
- to install the counterweight differently to the description in these operating instructions
- to use the counterweight for a load and speed range different to that prescribed
- 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

# Counterweight WCW05, WCW06 & WCW10 (1:1 & 2:1)

## Operating instructions

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Datum/date 02.05.2002  
Stand/version 02.05.2002  
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### 1.3 Safety precautions

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

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

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



General danger warning



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



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



Important information sign

These operating instructions belong 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 counterweights requires correspondingly well trained fitting engineers. The responsibility of training lies with the company appointed to carry out the work.

### 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 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. It is recommended therefore, taking into account all the given circumstances, to plan the various operational sequences in advance, rather than carrying them out prematurely and in an unconsidered manner.

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

Furthermore check:

- that the factory and order number correspond
- the rail head width and model
- the total weight
- the rope pulley diameter, the number of rope grooves and rope groove diameter are suited to the ropes

# Counterweight WCW05, WCW06 & WCW10 (1:1 & 2:1)

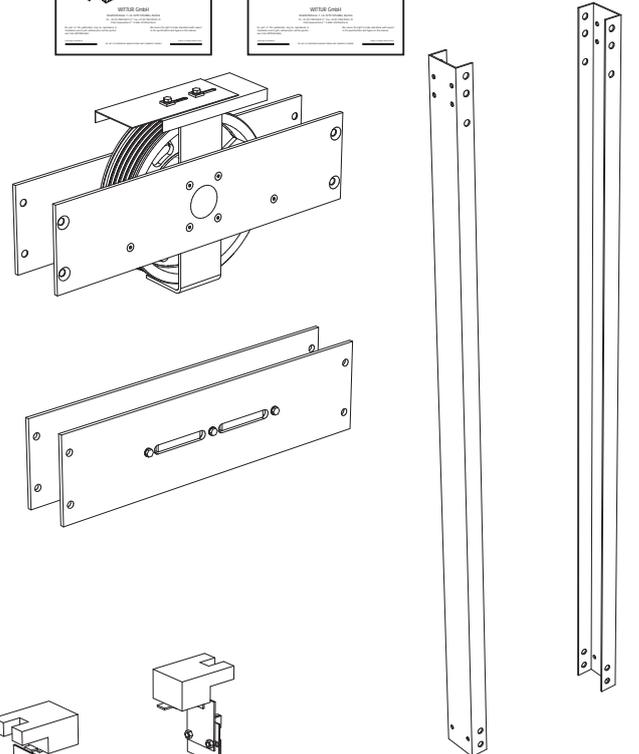
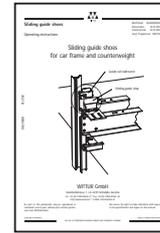
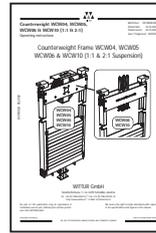
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### 1.5 Content of supply

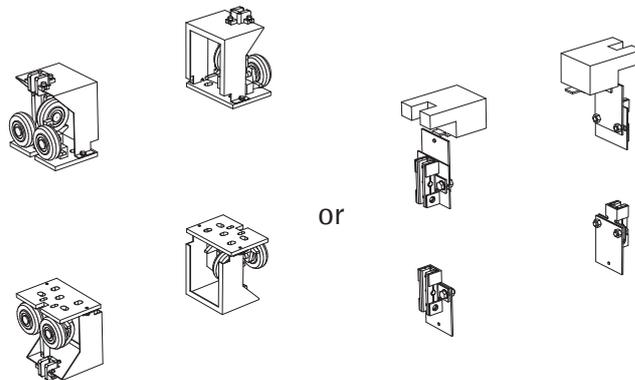
After delivery, check the counterweight frame for damage and for full delivery of parts. The content of supply covers:

- Counterweight operating instructions manual
- Guide shoe operating instructions manual
  
- Counterweight frame (dismantled)
  - Uprights
  - Lower beam
  - Suspension beams (1:1 or 2:1)
  - Rope fasteners (for 1:1 suspension)

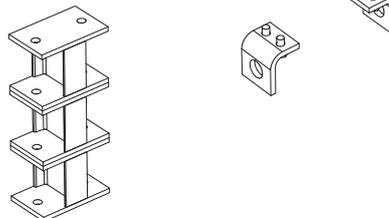


#### Accessories:

- Guide shoes



- Compensation chain fixing brackets

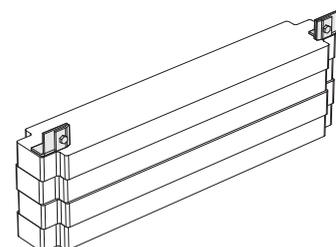
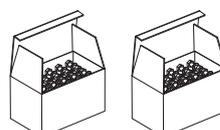


- Buffer spacer

- Screw packages

- Filler bit fixings (different versions)

- Filler bits



# Counterweight WCW05, WCW06 & WCW10 (1:1 & 2:1)

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 Datum/date 02.05.2002  
 Stand/version D-09.10.2023  
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## 2 Installation



If the counterweight incorporates safety gear, move straight to section 2.3!



Check the rectangular alignment of the frame. Remove any soiling or drips of paint from the fastening surfaces.

### 2.1 Assembling the counterweight frame

The counterweight frame is delivered dismantled, as standard. It must be assembled as described.

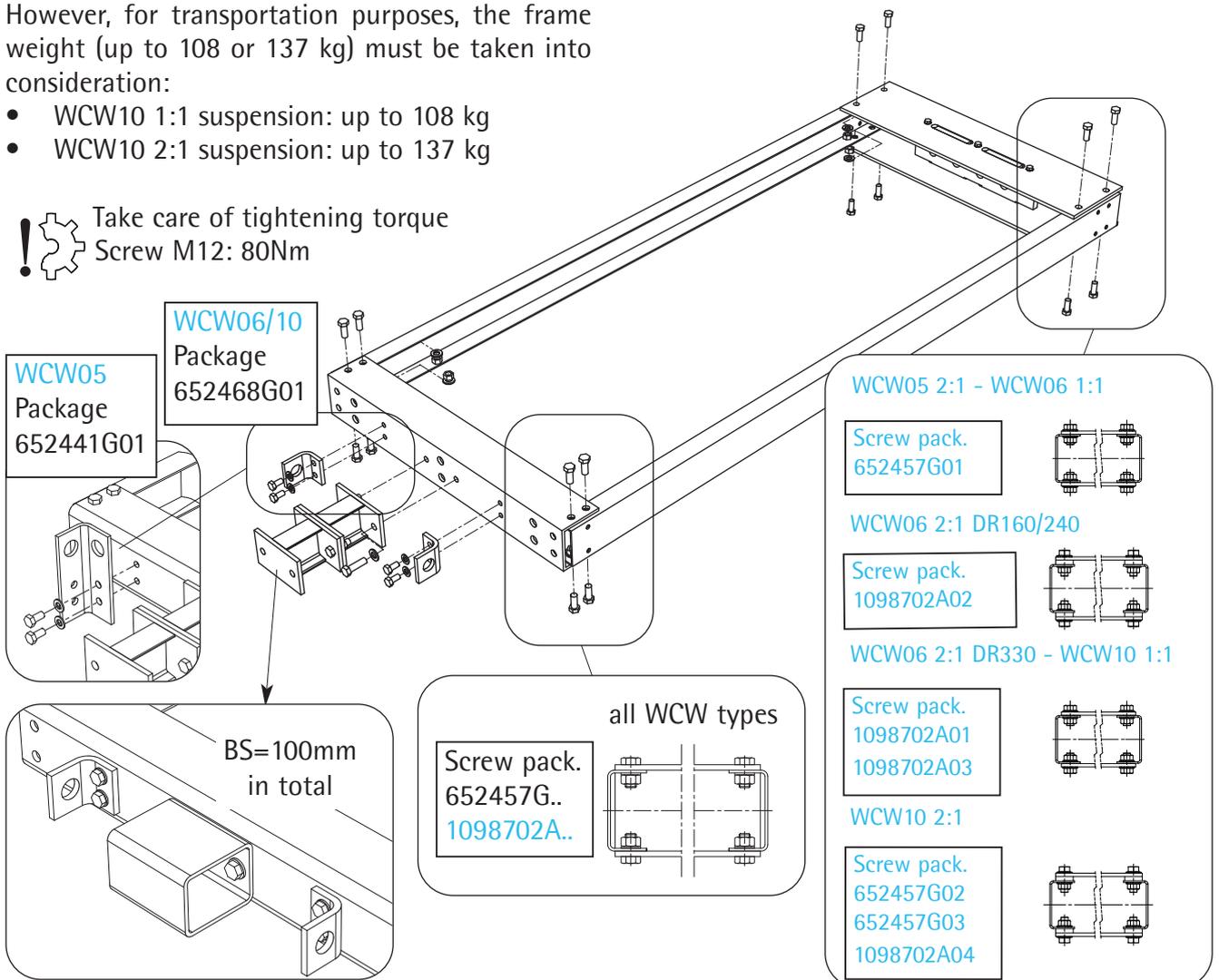
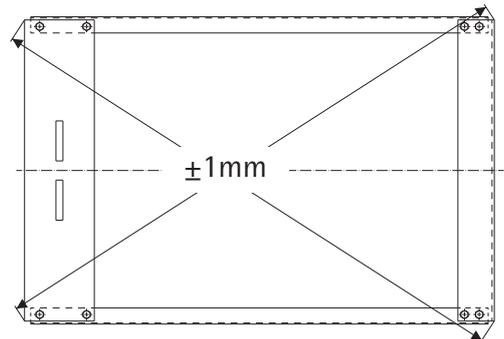
The frame can be mounted in the shaft outside the rail area.

If required, assembly outside the shaft is possible. However, for transportation purposes, the frame weight (up to 108 or 137 kg) must be taken into consideration:

- WCW10 1:1 suspension: up to 108 kg
- WCW10 2:1 suspension: up to 137 kg



Take care of tightening torque  
 Screw M12: 80Nm



# Counterweight WCW05, WCW06 & WCW10 (1:1 & 2:1)

## Operating instructions

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Datum/date 02.05.2002  
Stand/version 02.05.2002  
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## 2.2 Mounting the guide shoes

Depending on the order specifications, sliding or roller guides are supplied for the counterweight frame.



The guide rails should have been already properly set. The distance between the guide rails should be checked before installing the counterweight frame.

### Procedure:

- (1) Install the guide shoes at one side (refer to chapter 2.2.1-4)
- (2) Fit hoist chain to the upper beam / through the pulley
- (3) Lift the frame into the shaft between the guide rails
- (4) Manoeuvre in between guides and push shoes over rail

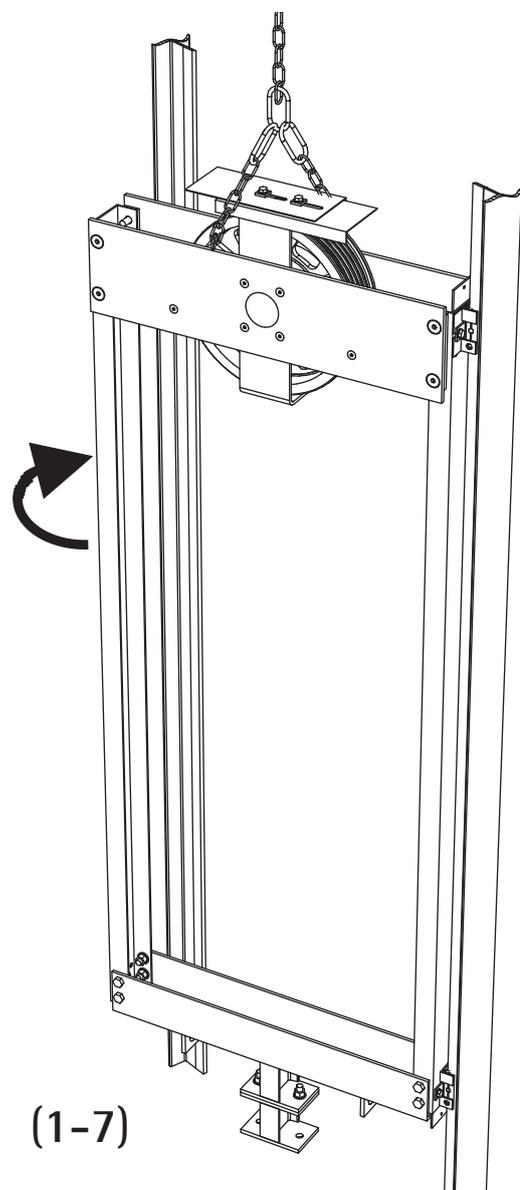


Note the correct position of the frame in the shaft (check layout drawing).

- (5) Lower the frame on to a support frame or installation support.
  - Check the loading figures for the support frames from the relevant documentation.
  - The frame should be secured with a hoisting cloth (or chain) attached either to the hoisting block or the nearest guide fixing. This retainer should only be removed after the suspension ropes have been fitted.
- (6) Fit the upper guide shoe (refer to chapter 2.2.1-4)
- (7) Fit the lower guide shoe (refer to chapter 2.2.1-4)



Take care of tightening torque  
Screw M12: 80Nm

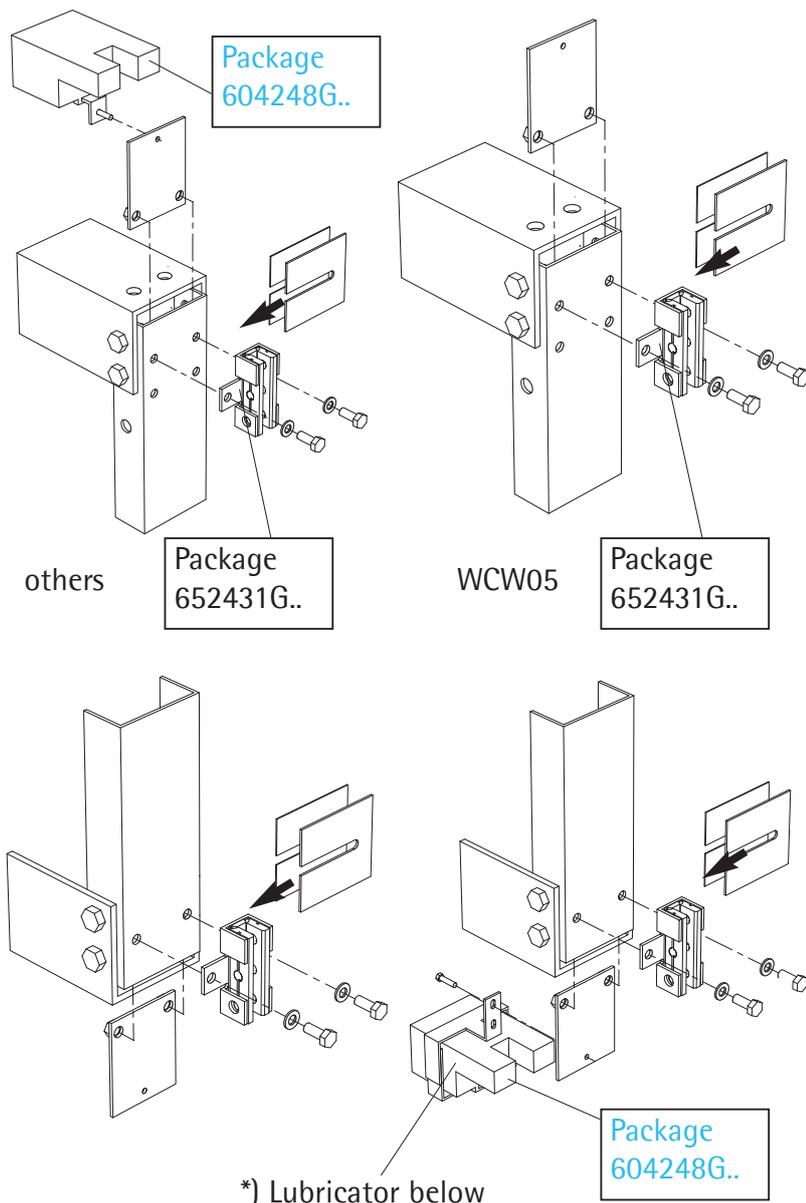


# Counterweight WCW05, WCW06 & WCW10 (1:1 & 2:1)

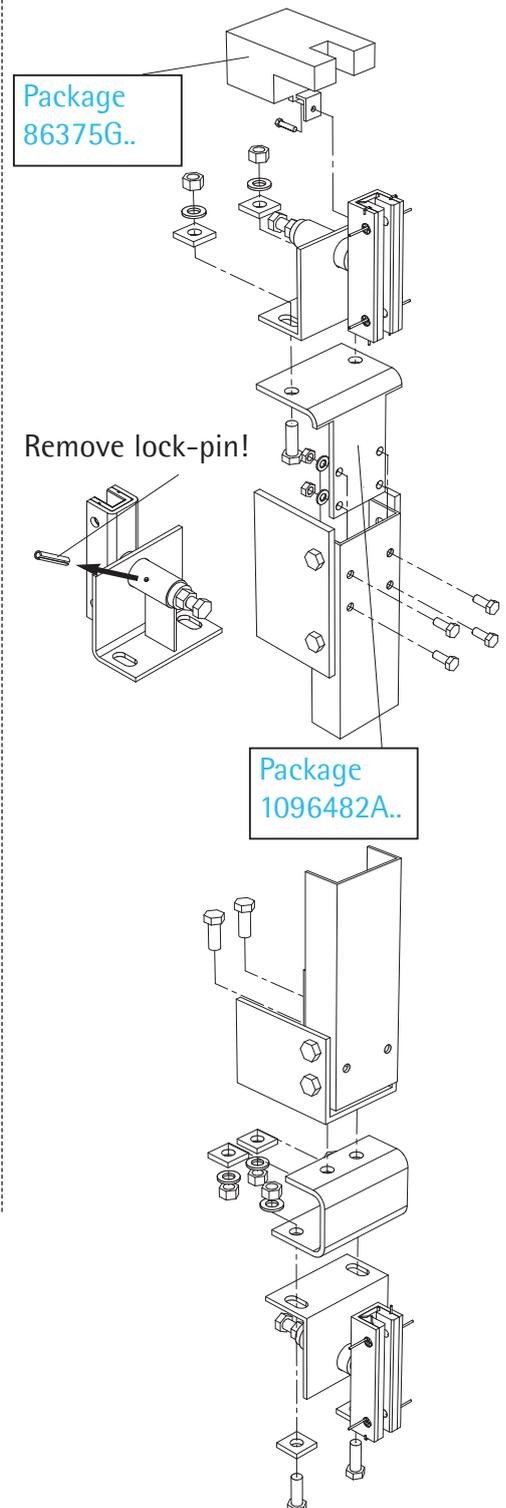
## Operating instructions

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 Stand/version D-09.10.2023  
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### 2.2.1 Guide shoe set SLG7



### 2.2.2 Guide shoe set SLG1



The lubricator is to be mounted below frame if:

- WCW05

The lubricator is always to be mounted above frame on WCW06 and WCW10.



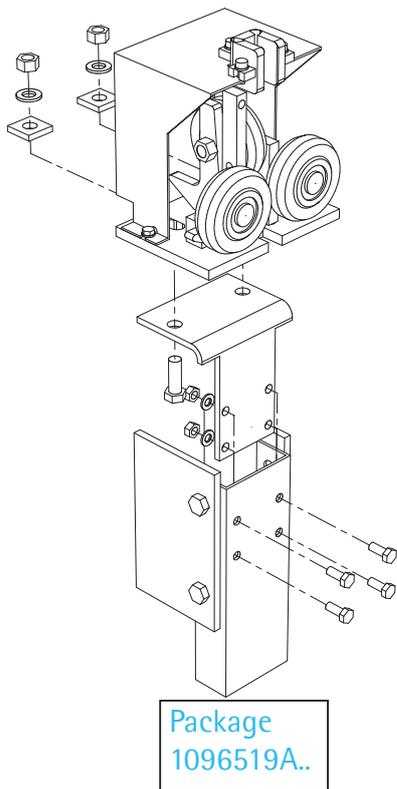
Leave 1 mm gap between sliding inlay and guide rail in total.

# Counterweight WCW05, WCW06 & WCW10 (1:1 & 2:1)

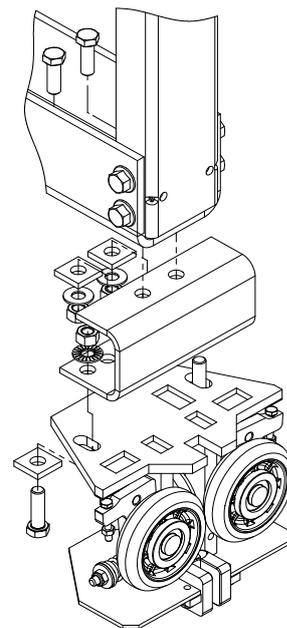
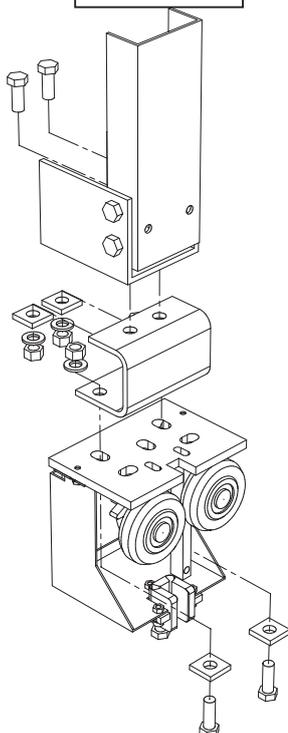
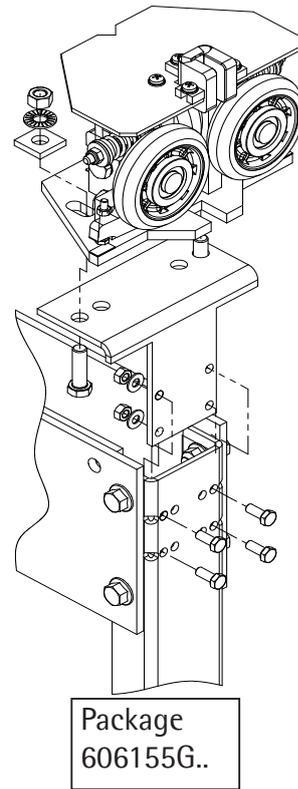
Operating instructions

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## 2.2.3 Guide shoe set WRG80



## 2.2.4 Guide shoe set WRG100



# Counterweight WCW05, WCW06 & WCW10 (1:1 & 2:1)

Operating instructions

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Stand/version 02.05.2002  
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## 2.3 If safety gear is included

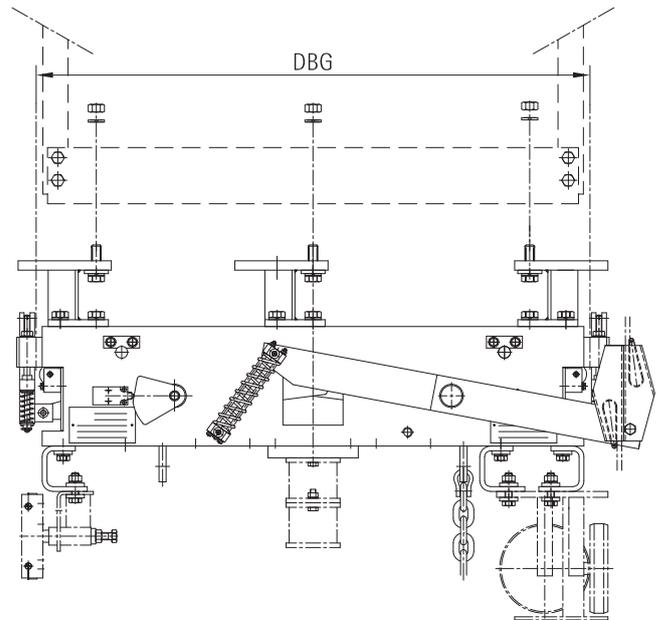


Move on to section 2.4 if safety gear is not included!

- (1) Fit the counterweight safety gear into the guide rails (refer to operating instruction manuals of safety gear).
- (2) Lift the frame (see section 2.2) using a hoist block, and place on top of the safety gear between the guide rails.
- (3) Fix the upper guide shoes
- (4) Fit the counterweight frame to the safety gear

Take care of tightening torque  
Screw M16: 195Nm

Counterweight frame

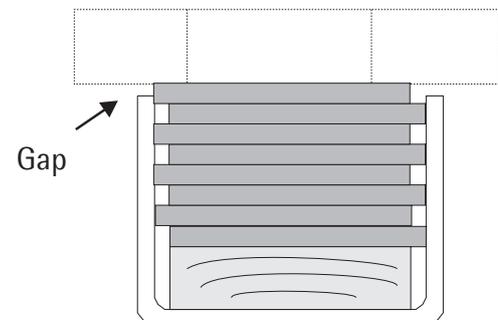


## 2.4 Loading counterweight filler bits

- (1) Load the counterweight frame with the filler bits



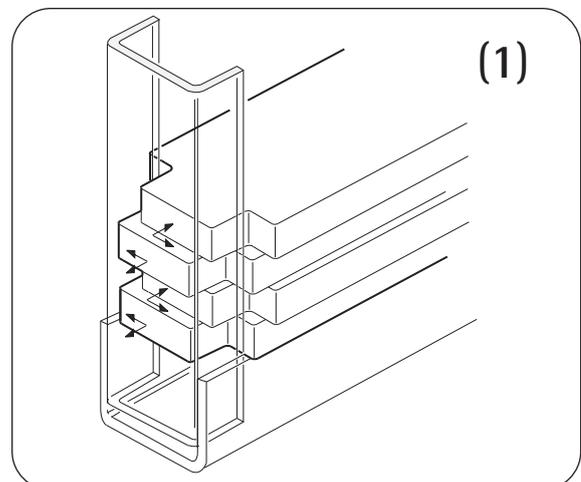
If filler bits capable of fitting inside the lower beam are supplied, load these first. There should be a gap, as shown in the drawing beside, between the top edge of the lower beam and the first wide filler bit.



The filler bits should overlap one another, as shown in the picture.



This ensures that the counterweight is balanced and prevents noise being generated by bits shaking about.



# Counterweight WCW05, WCW06 & WCW10 (1:1 & 2:1)

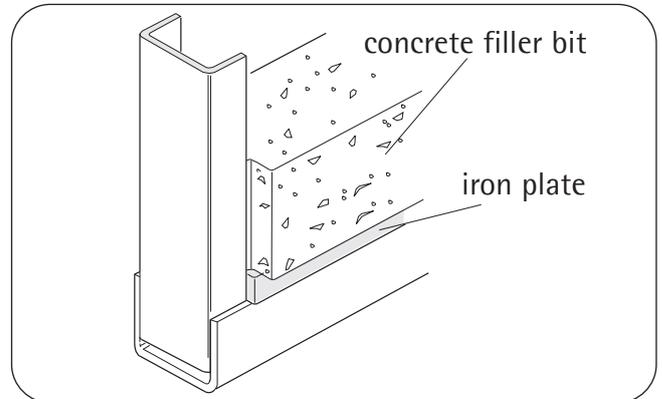
Operating instructions

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## 2.4.1 Using steel, cast, concrete or lead counterweight filler bits

Concrete bits should be loaded on top of a steel or cast iron plate.

If lead filler bits are used, put two steel filler bits in below.

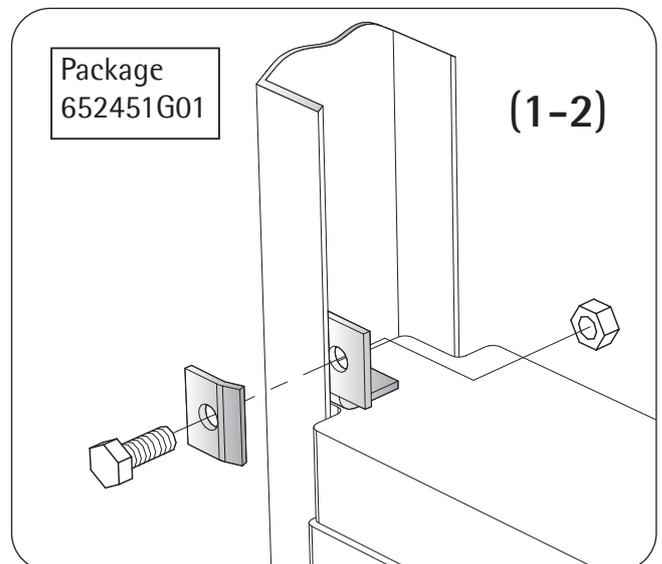


## 2.5 Locking filler bits

### 2.5.1 Standard locking

- (1) Push the fixing clip against topmost filler bit and tight clamps to upright.
- (2) Fit a similar lock in the same way to the other corner

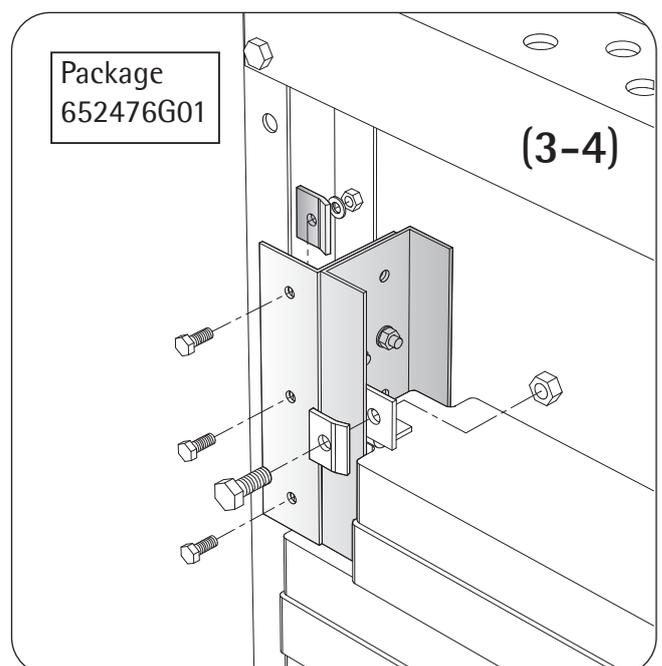
 Take care of tightening torque  
Screw M12: 80Nm



### 2.5.2 Locking when the counterweight frame is fully loaded (top filler bits used)

- (3) Shorter top filler bits are installed above the standard filler bits
- (4) Mount the special fixing bracket to the upright and install then the fixing clip

 Take care of tightening torque  
Screw M8: 23Nm



# Counterweight WCW05, WCW06 & WCW10 (1:1 & 2:1)

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 Datum/date 02.05.2002  
 Stand/version D-09.10.2023  
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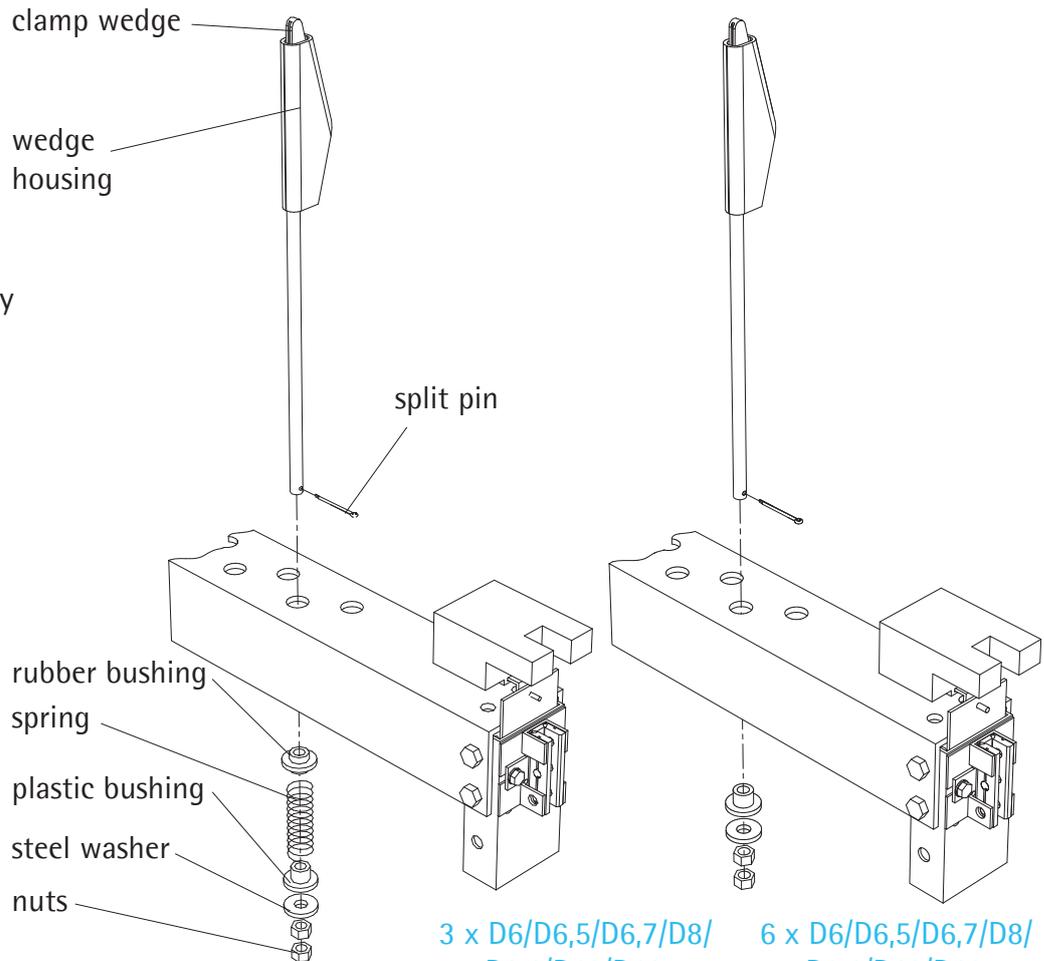
## 2.6 Roping of the counterweight

### 2.6.1 1:1 Suspension

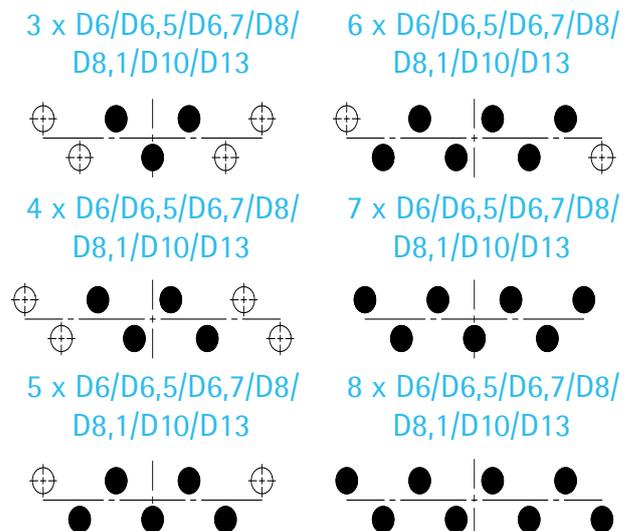
with equalizer springs

without equalizer springs

Rope anchor assembly  
 see figure besides:



Rope arrangement depending on number  
 of ropes see figure besides:



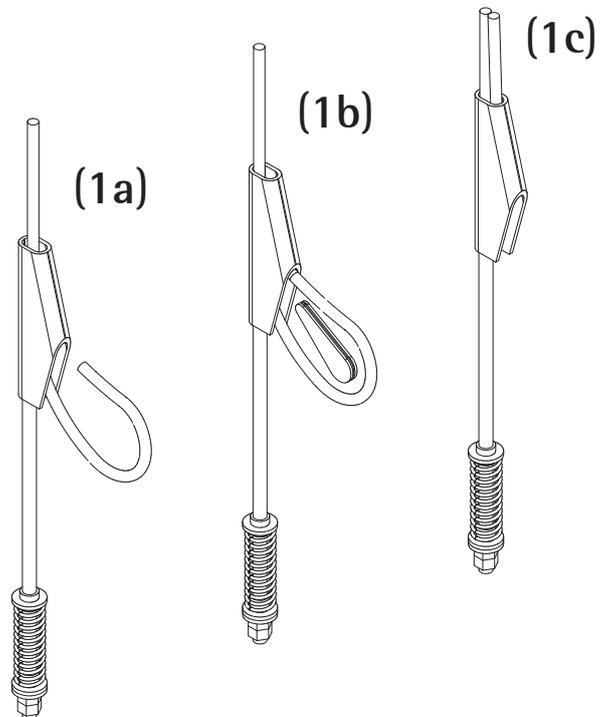
# Counterweight WCW05, WCW06 & WCW10 (1:1 & 2:1)

## Operating instructions

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### (1) Fasten the ropes to the rope anchor:

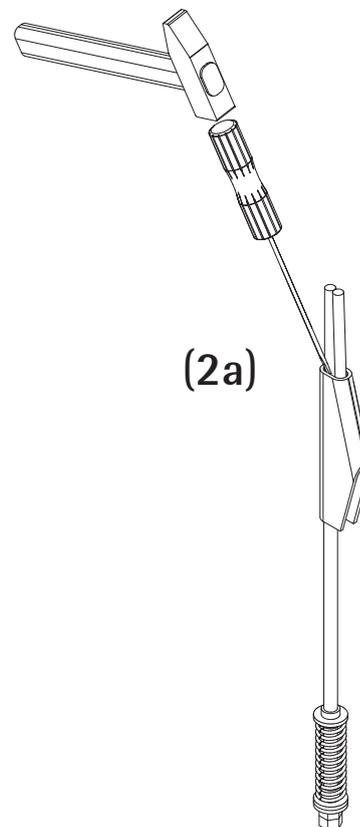
- a) Make a loop on the rope by feeding the end of the rope through the socket and then feed it back. Do not twist the rope, just turn it back.
- b) Insert the wedge and pull the loop into the socket
- c) Simultaneously with an other person pulling the ends of the rope, secure proper seating by hammering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



### (2) Equalize the tension of ropes

 After all ropes are installed as described above, let the weight of the car and/or counterweight 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



### (3) Secure the rope tail-end

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

 Be aware of local laws and regulations concerning tail-end handling methods.

 The rope clip is not delivery content of the car frame!

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

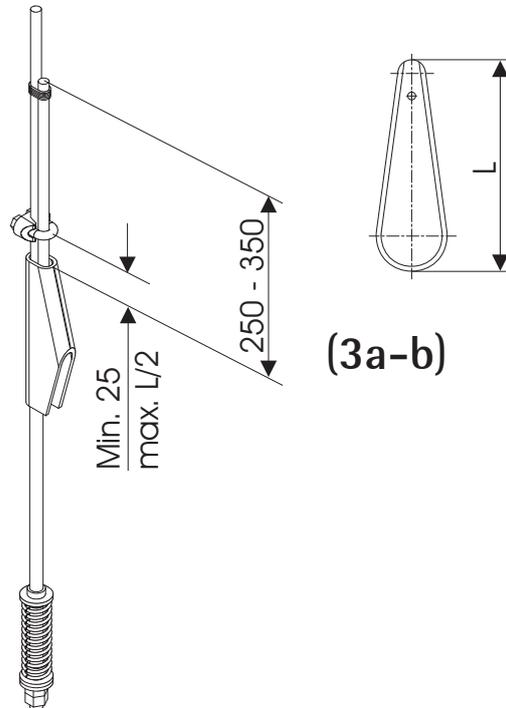
# Counterweight WCW05, WCW06 & WCW10 (1:1 & 2:1)

Operating instructions

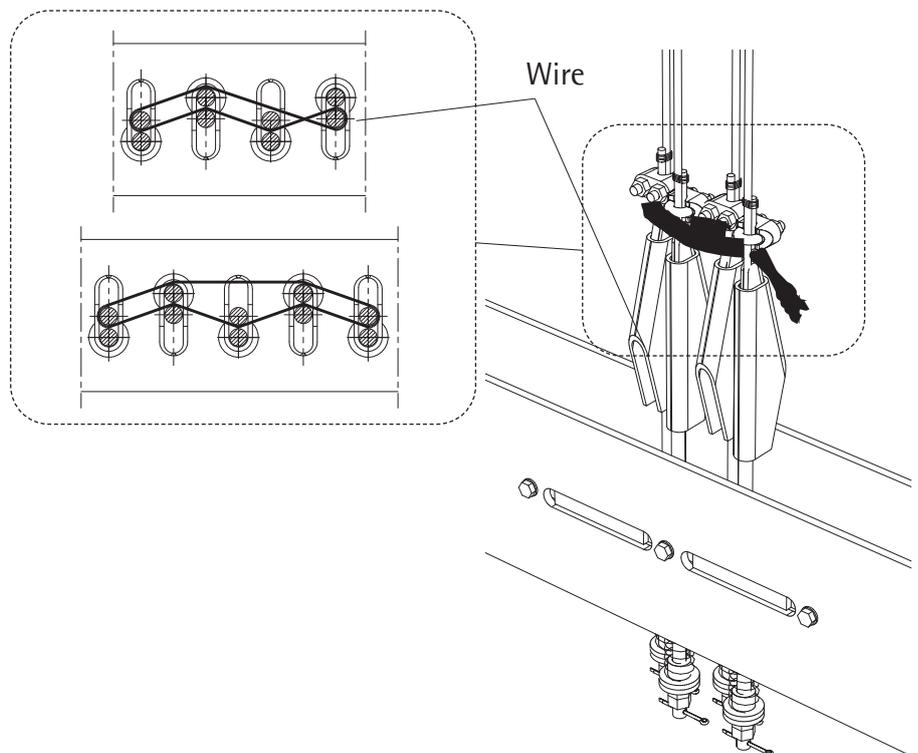
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One main method is described below but any other acceptable local method can be used.

- 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.
- Tie the tail of the dead-end to the live rope using soft steel wire or bundle binder



If rope diameter is 13mm and the wedges are not enough close to each other to prevent full rotation (wedge housing broadens the counterweight when rotating), tie the terminations together using the delivered soft wire. Do not prevent equalization springs working.



# Counterweight WCW05, WCW06 & WCW10 (1:1 & 2:1)

Operating instructions

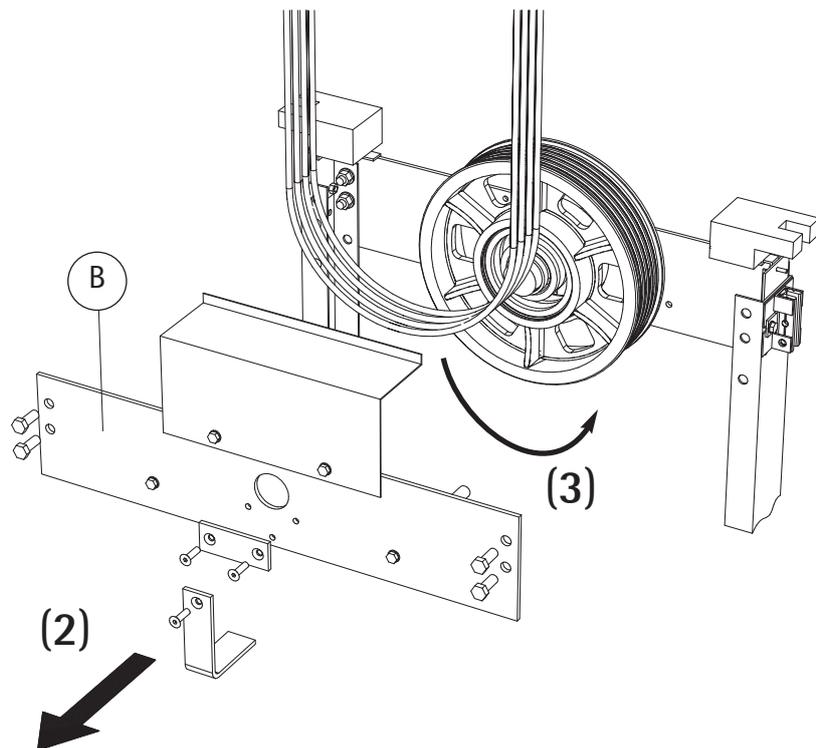
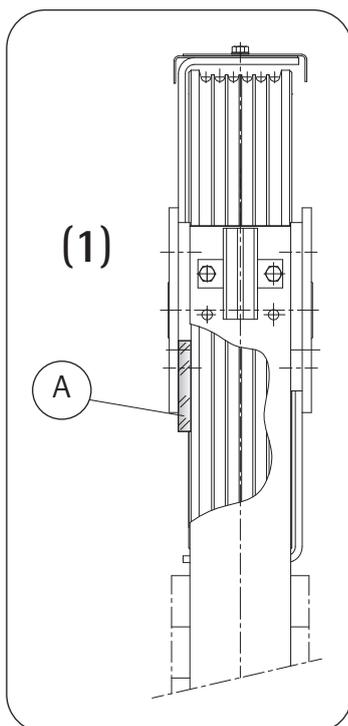
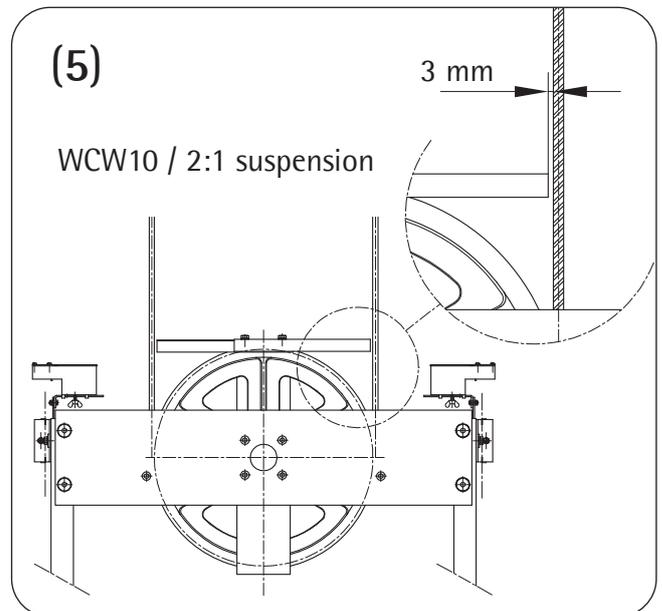
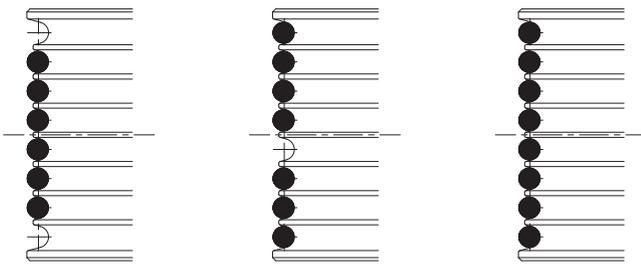
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## 2.6.2 2:1 Suspension

- (1) Support the pulley from the wall side using a piece of wood or metal (A) before removing plate (B)
- (2) Remove plate (B) after taking out all its fixing screws
- (3) Pass the rope round the diverter pulleys
- (4) Replace the cover plate
- (5) Adjust the gap between the ropes and guards to 3 mm!



When used number of ropes is less than the number of grooves on the diverter pulley, the ropes are placed according to the figure below.



# Counterweight WCW05, WCW06 & WCW10 (1:1 & 2:1)

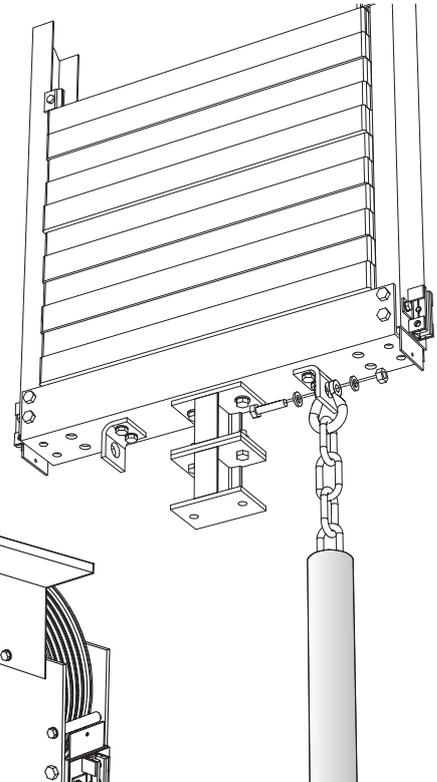
Operating instructions

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## 2.7 Mounting compensation chains

Fix the compensation chains to the fixing supports below the counterweight frame.

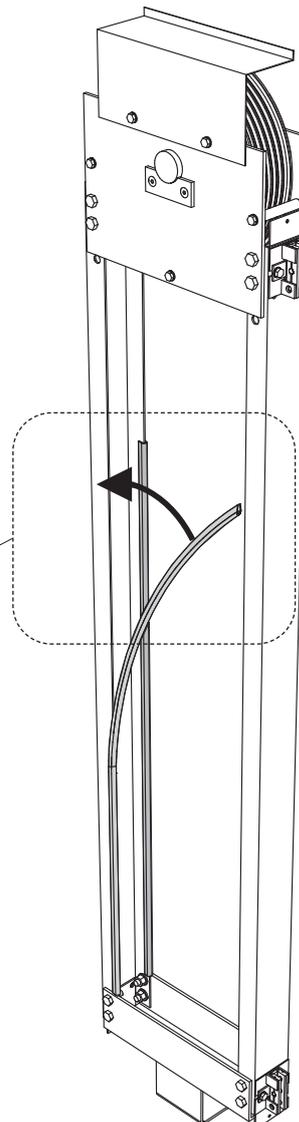
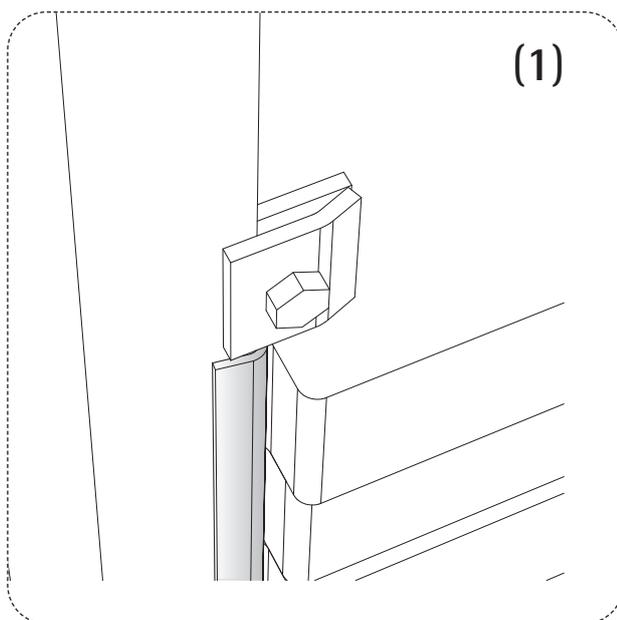
 Use fixing materials delivered with the compensation chains (shackles). Take care about correct chain position (refer to the layout-drawing).



## 2.8 Exclusive package (optional)

If exclusive package is delivered, "U-Clamp strips" are supplied which should be fixed to the uprights to prevent metallic contact (noise) between uprights and filler bits

(1) Cut the stripe in the correct length when mounting.



# Counterweight WCW05, WCW06 & WCW10 (1:1 & 2:1)

## Operating instructions

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Stand/version 02.05.2002  
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### 3 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 counterweight system should undergo an operational test before commissioning or before possible inspection from a technical institute.

#### First test run after installation



Before the first test run:  
Clean the guide rails!



Clear all people and objects 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 regards to the guide brackets/safety gear devices. Find and remove any protruding bolts or other dangerous restrictions well in advance.

Make sure there is ample space:

- in the guide bracket area
- between the counterweight and lift car/cabin
- to the counterweight screen in the pit
- to the wall (over the whole travel)

#### Counterweight check



Proper operation of the lift installation with regard to regulations and safety can be guaranteed only when the corresponding weight compensation with the counterweight is checked before commissioning.



The counterweight normally corresponds with the lift car plus 50% (40%) of the rated load.

#### **Test steps:**

- Load the lift car with test weights up to half the rated load weight (or corresponding value)
- Now move the lift car and counterweight to the same height
- Switch off system and open the brake on the actuator



When there is a state of equilibrium between the counterweight and the loaded lift car, the gear handwinding wheel turns gently in both directions. Lift car or counterweight do not creep down.

If this is not the case, a correction needs to be made to the counterweight by removing or adding counterweight fillers:

#### **Lift car creeps down (counterweight lighter):**

- Remove test weights from the lift car until the gear handwinding wheel can be easily turned both ways
- Determine quantity withdrawn and add counterweight fillers accordingly

#### **Counterweight creeps down (counterweight heavier):**

- Load more test weights in the lift car until the gear handwinding wheel can be easily turned both ways
- Determine loaded quantity and remove counterweight inserts accordingly



Carry out a test again with half the rated load after correcting the counterweight. Now the filler weights need to be fastened again by "filler clamps".

# Counterweight WCW05, WCW06 & WCW10 (1:1 & 2:1)

## Operating instructions

Blatt/sheet D411MGB.018  
Datum/date 02.05.2002  
Stand/version 02.05.2002  
Geprüft/approved WAT/KKr

## 4 Maintenance, inspection and repair

### 4.1 Maintenance and inspection

The WITTUR counterweight 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 should be reported, and repaired if possible. Frequent servicing and control checks not only make operation of the installation safer, but also ensure long and reliable service life.

It is recommended that control checks and servicing 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 counterweight 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 or rollers 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"). The surface of the roller has to be clean & not broken.

#### Rope elongation compensation:

- Preserve taken compensating elements (storing in machine room).
- If there is no compensating element, the rope tension should be increased.

#### 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 wedge area has to be clean. Wedge and roller must not be cracked.
- Check the overspeed governor rope fixing

#### Rope pulley (2:1):

- 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")

#### Rope fixings (1:1):

- Check the springs of the rope fixing are not broken.

#### Rope elongation compensation:

- Preserve taken compensating elements (storing in machine room).
- If there is no compensating element, the rope tension should be increased.

# Counterweight WCW05, WCW06 & WCW10 (1:1 & 2:1)

## Operating instructions

Blatt/sheet D411MGB.019  
Datum/date 02.05.2002  
Stand/version D-09.10.2023  
Geprüft/approved WAT/KKr

### 4.2 Carrying out repairs



As a rule, damage or deformation of a counterweight frame (i.e. as result of bending or heating) cannot be repaired or straightened. The damaged parts should be replaced. Only use WITTUR spare parts.



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.
- Changing the guides / guide shoe inserts
- Changing the rope pulleys



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

#### 4.2.1 Changing the guides/inserts

The components for the guides which are subject-to-wear (sliding guides: inserts; roller guides: rollers) can be delivered individually as spare parts: (see [SM.5.006727.EN](#)).



The distance (play) to the rails (distance between guides) must be readjusted after replacement of the inserts and remounting.

#### 4.2.2 Changing the rope pulley

The rope pulleys can be delivered individually as spare parts ([refer to SM.5.006727.EN](#)).

Procedures for changing a rope pulley:

- Lower the counterweight onto its contact buffer
- Safeguard the lift car against falling
- Release the ropes
- Unscrew the complete rope pulley / axle / axle bracket unit
- Dismantle rope pulley / axle / axle bracket unit
- Replace the rope pulley, and remount the parts following the instructions above in reverse order