

WSGB04/10

Code **PM.7.000170.EN**

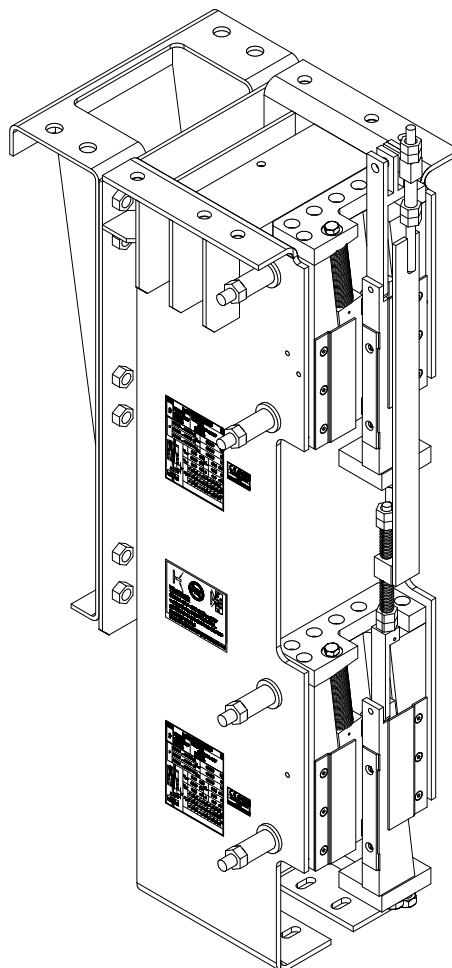
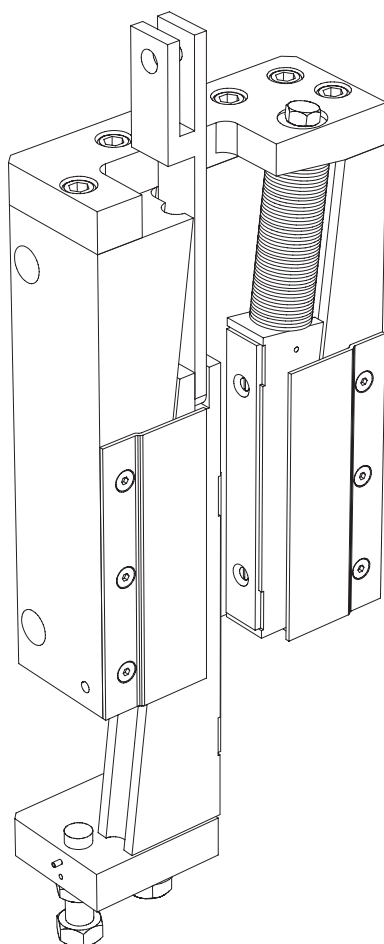
Version **H**

Date **07.08.2020**



* D 7 A M M G B \$ 1 1 1 *

Progressive Type Safety Gear



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





Progressive Type Safety Gear

WSGB04, WSGB10

Operating instructions

Blatt/sheet D7AMMGB.2
Datum/date 11.04.2003
Stand/version H-07.08.2020
Geprüft/approved WAT/KKR

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1 General information prior to installation

1.1 Description and functions

The WSGB04, WSGB10 are progressive safety gears with integrated mechanical servo. This means, that the braking force is limited by a disc spring loaded counter wedge. If the braking force is going to high, the disc springs will be compressed and the counter wedge is decreasing the force.

The safety gears are activated by a movable gripping wedge. The braking force is variable by means of an adjustment screw which is limited the possible way of the gripping wedge.

The basic function of the safety gears is: If the lift car or counterweight exceeds its rated speed upon descent, the overspeed governor cuts in when its tripping speed is reached and triggers the safety gears on the lift car or counterweight via the governor rope. The lift car or counterweight is brought to a standstill and clamps onto the guide rails.

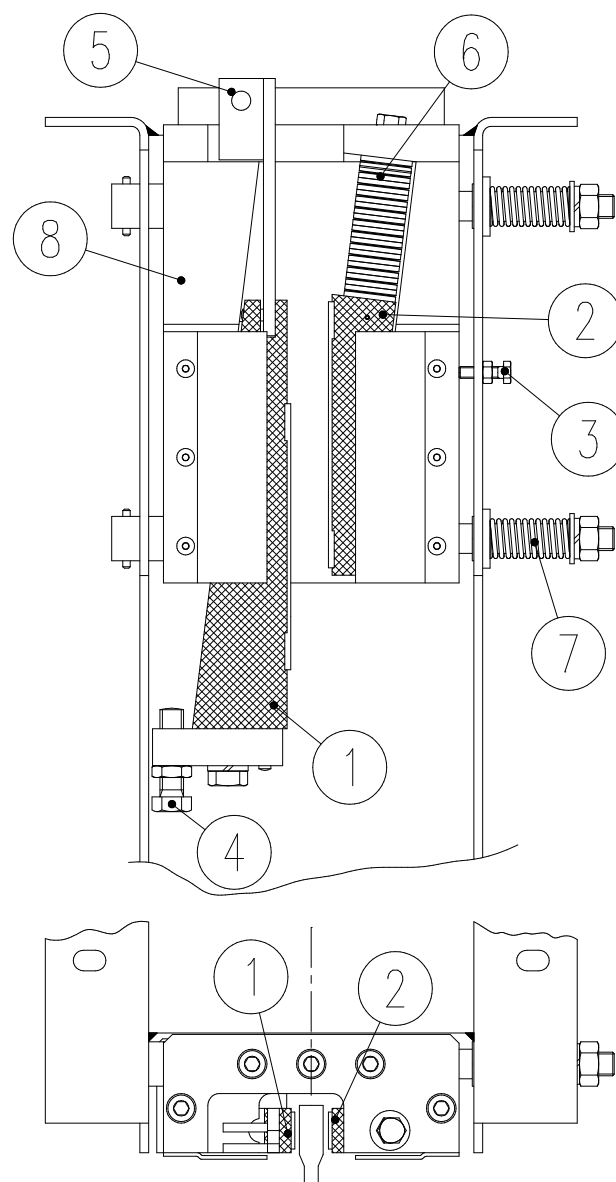
The setting is carried out in the factory (according to the load and rail conditions) and sealed. Later adjustments will not be necessary and are in any case prohibited for safety reasons.

The progressive safety gears are released by lifting the car or counterweight. This returns the clamped brake wedge to its initial positions.

The operating range is defined as follows:

- Elevator speed
 - WSGB04 2,0 - 6,0 m/s
 - WSGB10 2,0 - 8,0 m/s
- width of guide rail head 16 / 19 mm
- max. mass to be gripped

Simplex	$F_{max}=5000\text{kg}$
Duplex	$F_{max}=9500\text{kg}$
- tripping force of the governor
2350N



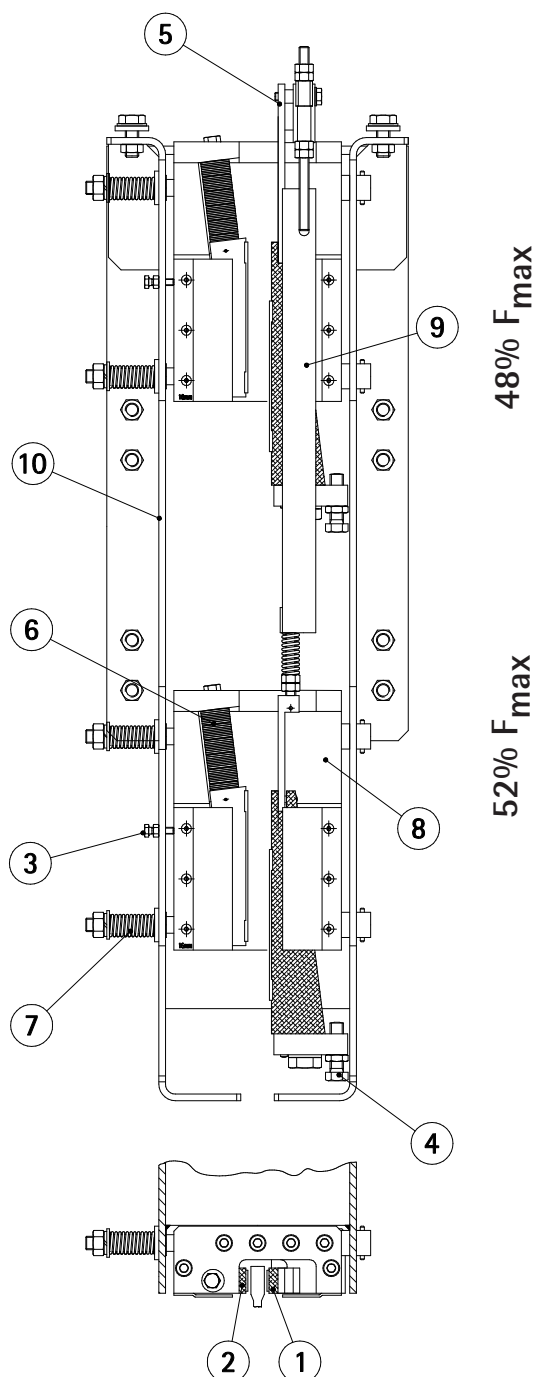
1. Gripping wedge
2. Counter wedge
3. Set screw (alignment of safety gear housing)
4. Adjustment screw (gripping distance)
5. Fixing for lifting lever
6. Safety gear spring
7. Resetting spring
8. Safety gear block

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1. Gripping wedge
2. Counter wedge
3. Set screw (alignment of safety gear housing)
4. Adjustment screw (gripping distance)
5. Fixing for lifting lever
6. Safety gear spring
7. Resetting spring
8. Safety gear block
9. Lifting rod
10. Safety gear housing

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1.2 Liability and guarantee

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

WITTUR 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:

- The use of components other than those installed
- Carrying out modifications, of any kind on the safety gear
- Installing two different brake heads with different index numbers together
- Destruction of the lead seal
- Combining different component types
- Installing progressive safety gears intended for other employment than that stipulated
- Carrying out faulty or improper 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

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

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 safety gears 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 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.

The following should be checked also:

- that the factory and order number correspond
- that the details on the name plate correspond to those on the order
- the elevator speed
- the width and type of guide rail used
- the total load (mass to be gripped)

1.5 Advice for when working on safety components

Safety gears are classified as safety components. It is most important that the standards and guidelines described in this section be complied with as well as those given in the rest of this operating manual.



These instructions, and especially the section on safety precautions, should be read and fully understood before work begins.

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

Safety devices that can only be adjusted after installation should be done so immediately after installation.

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

If it is necessary to disassemble a safety device during servicing or repair, they should be reassembled and comply with the required tests, as soon as the work has been carried out.

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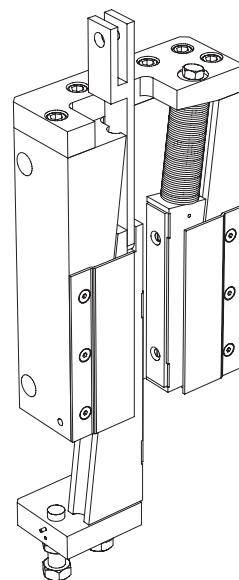
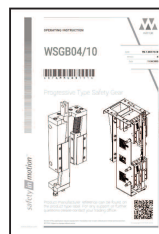
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1.6 Content of supply

1.6.1 Simplex safety gear

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

- Operating instructions manual
- One left handed and one right handed safety gear (adjusted and sealed at the factory)
- Optional safety gear housing (pre-assembled)

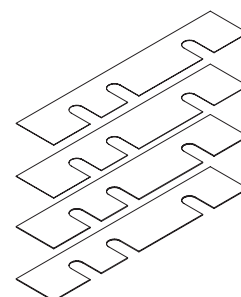
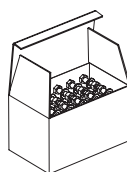
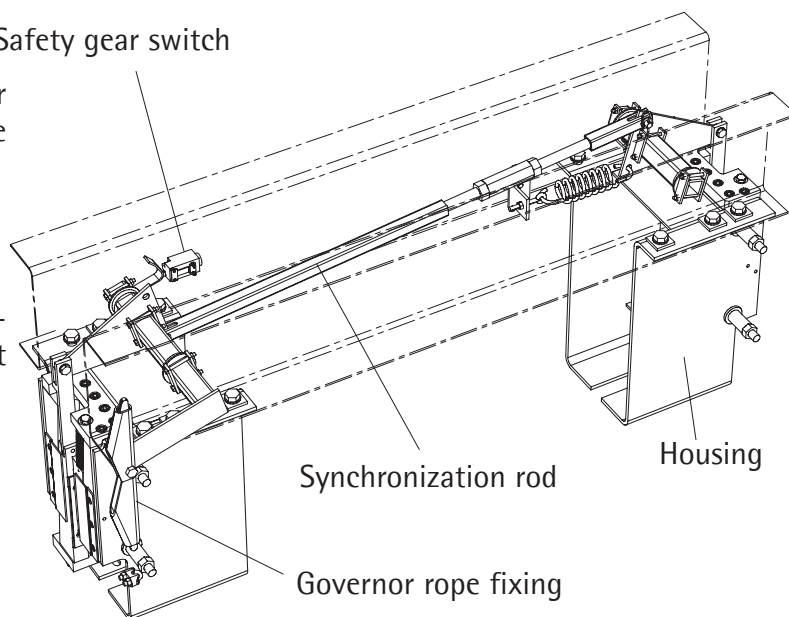


1.6.2 Simplex safety gear with housing and separate synchronization

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

- Operating instructions manual
- One left handed and one right handed safety gear (adjusted and sealed at the factory)
- Safety gear housing (pre-assembled)
- Synchronization incl. safety gear switch and governor rope fixing
- Mounting- and fixing screw-packages
- Shim plates for alignment of Safety gear

Safety gear switch



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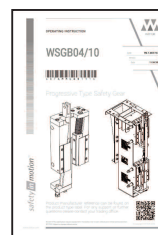
Operating instructions

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1.6.3 Simplex safety gear with housing and integrated synchronization

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

- Operating instructions manual
- One left handed and one right handed safety gear (adjusted and sealed at the factory)
- Safety gear housing and synchronization lever incl. safety gear switch (pre-assembled)



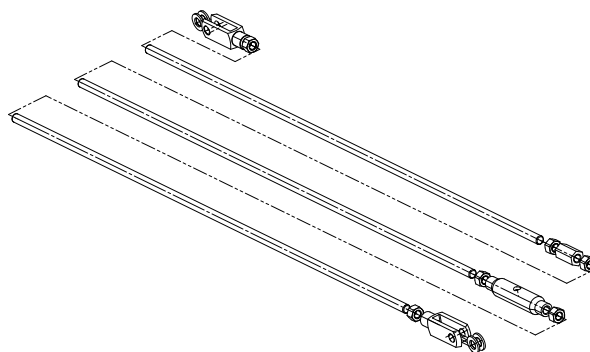
Synchronization lever

Safety gear

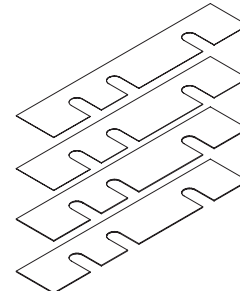
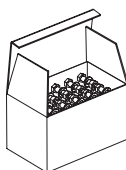
Safety gear housing

Safety gear switch

- Synchronization linkage and governor rope fixing



- Mounting- and fixing screw-packages
- Shim plates for alignment of Safety gear



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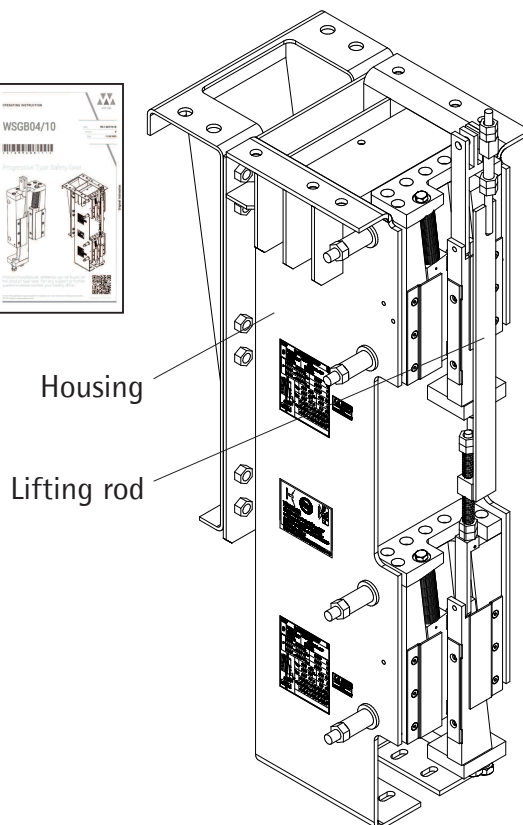
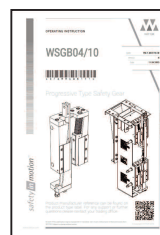
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1.6.4 Duplex safety gear with housing

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

- Operating instructions manual
- Two left handed and two right handed safety gears incl. housing and lifting rod (adjusted and sealed at the factory)



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1.6.5 Duplex safety gear with housing and separate synchronization

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

- Operating instructions manual
- Two left handed and two right handed safety gears incl. housing and lifting rod (adjusted and sealed at the factory)
- Synchronization incl. safety gear switch and governor rope fixing (see Simplex with separate synchronization)
- Mounting- and fixing screw-packages (see Simplex with separate synchronization)
- Shim plates for alignment of Safety gear (see Simplex with separate synchronization)

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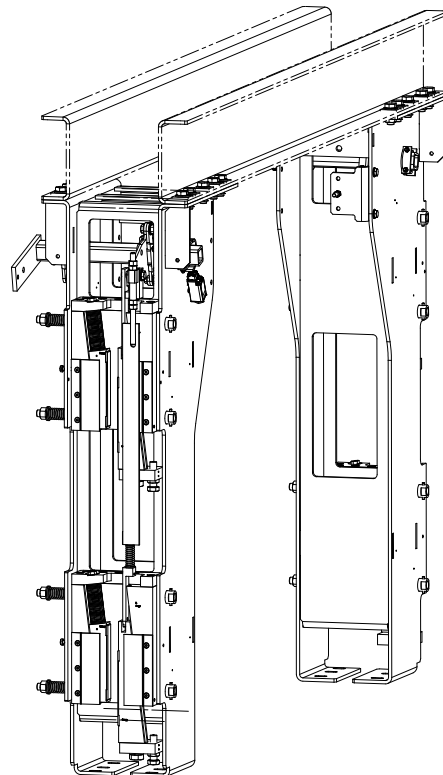
Operating instructions

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1.6.6 Duplex safety gear with housing and integrated synchronization

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

- Operating instructions manual
- Two left handed and two right handed safety gears incl. housing and lifting rod (adjusted and sealed at the factory)
- Synchronization lever incl. safety gear switch (pre-assembled)
- Synchronization linkage and governor rope fixing (see Simplex with integrated synchronization)
- Mounting- and fixing screw-packages (see Simplex with integrated synchronization)
- Shim plates for alignment of Safety gear (see Simplex with integrated synchronization)



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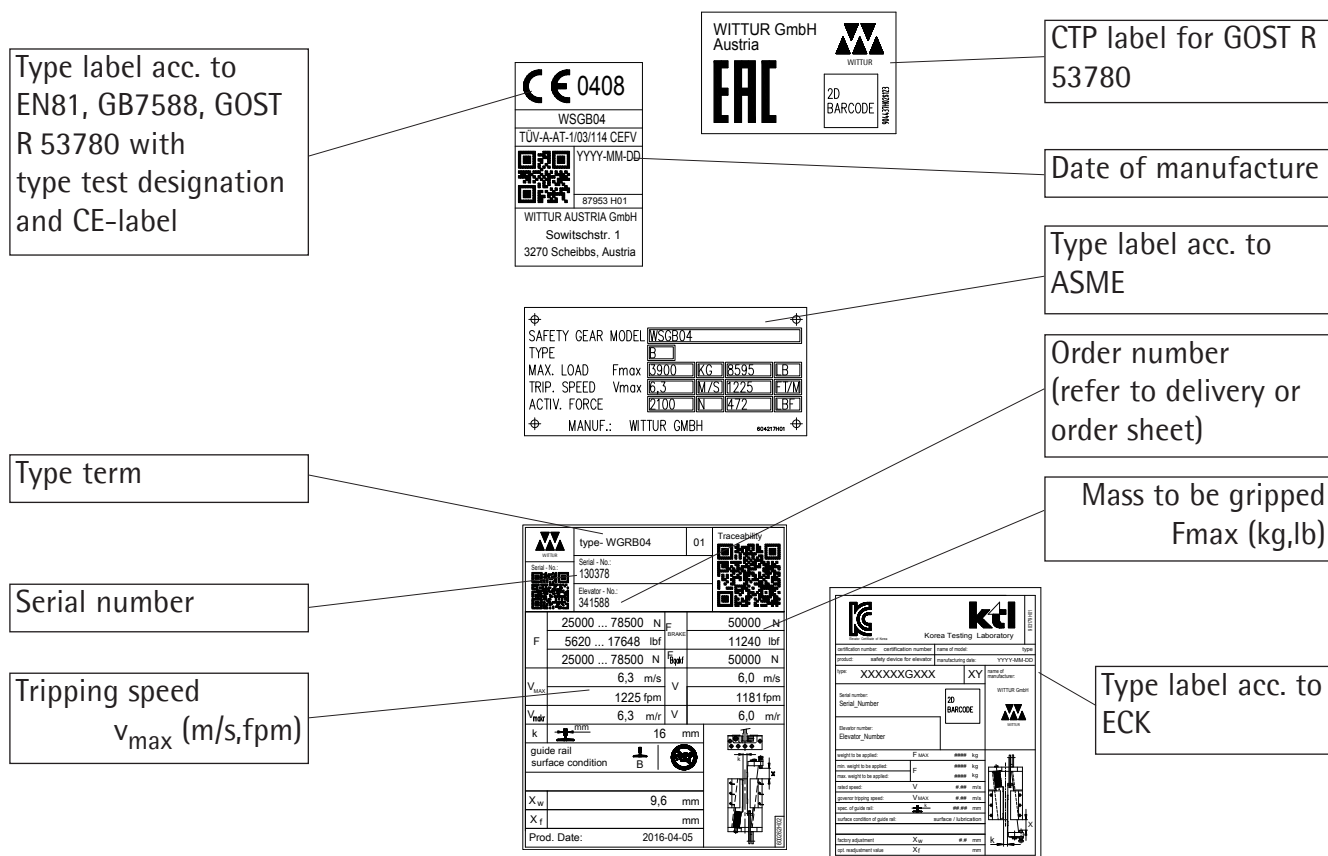
2 Name plate, designation, identification

The safety gear identification indicators are located on the side of the safety gear housing.

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

2.1 Simplex

- Type term of safety gear
- Serial number
- Elevator number
- Tripping speed
- Mass to be gripped

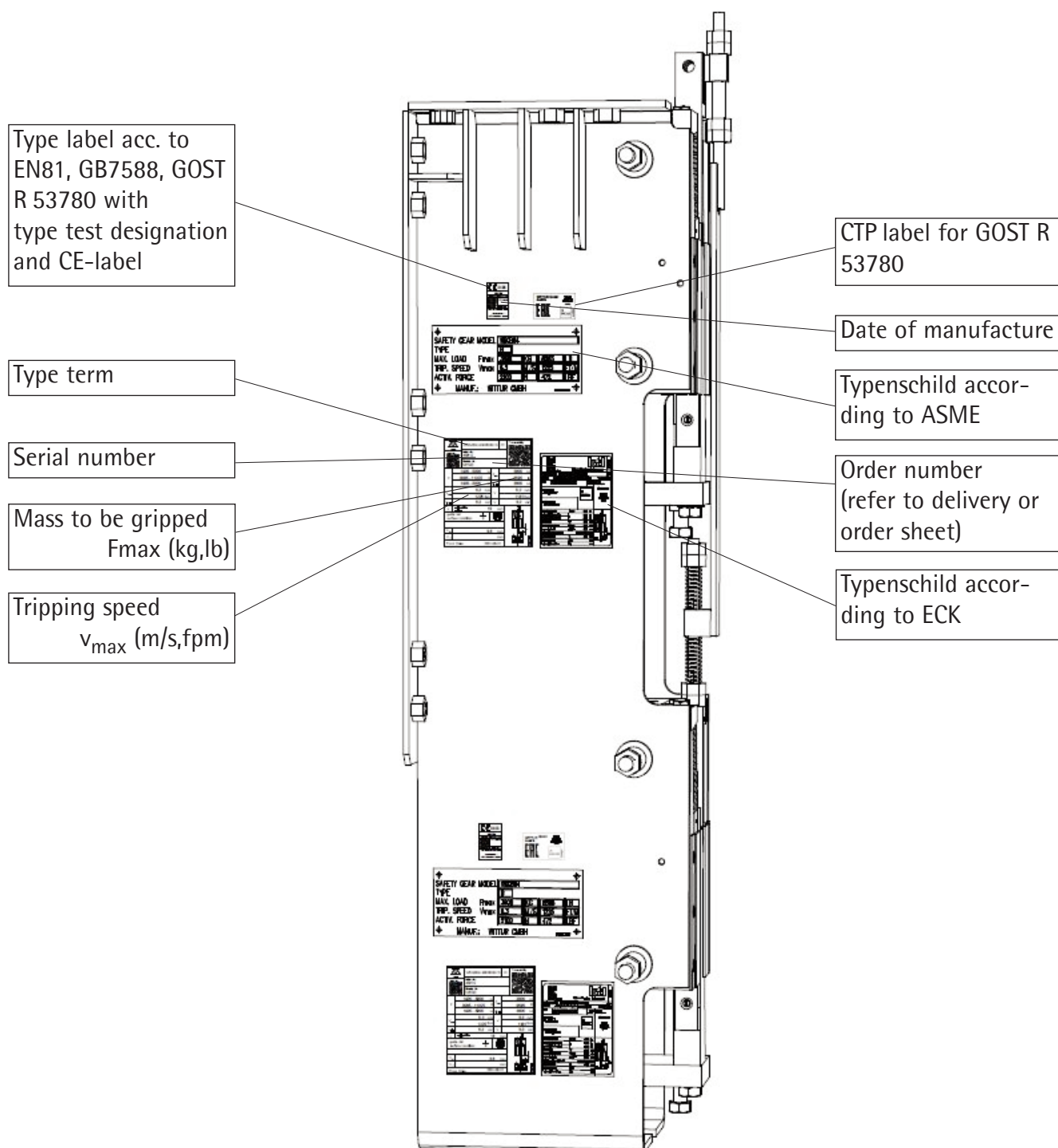


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2.2 Duplex



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3 Installation and adjustment

3.1 Important Note

-  Check the distance between guide rails.
(recommentation: DBG +0/-2mm)
-  Cleaning of the guide rails must be done before installation of the safety gear. If cleaning afterwards the brake-linings get dirty and the friction-factor is reduced dramatically! For proper function of the safety gear the guide rails have to be clean! It is highly recommended to use brake-disc cleaner (or equivalent)! The use of lubricating cleaner is non-permissible.
-  Check with spirit level that the safety gear is mounted vertically.
-  Check the running clearance! (chap. 3.5)
-  Lift the synchronization-lever horizontal and measure the distance between safety gear-adjustment screw and safety gear-block. This must be the same value on the left and right safety gear to prevent unsymmetrical gripping. For readjustment turn the synchronization nut until the distance is the same left and right. (chap. 3.4)
-  Watch for smooth function of the safety gear by lifting the lever by hand. The lever has to return to its previous position itself.

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3.2 Alignment of safety gear block

After installation of the car frame and the guides, the correct centering and adjustment of the safety gear with regard to the rails have to be done.


 Before you install the safety gear the guide rail have to be nonfat, otherwise every parking will contaminate the brake lining.

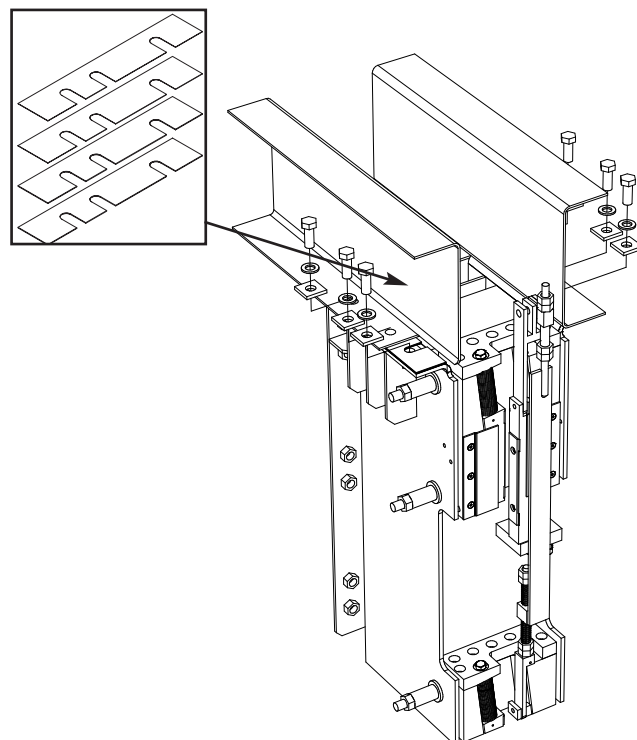
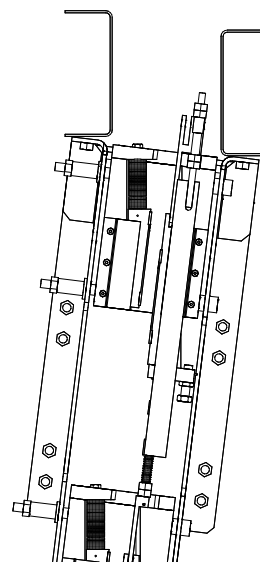
 When mounting in the safety gear, observe the position of the overspeed governor rope. The position of the lifting lever of the rope at the safety gear cannot be changed if the safety gear is built-in.

 Check with a spirit level if the safety gear is installed parallel to the vertical guide rail. If the safety gear is not parallel to the guide rail please use the shim plates which are included in the installation package to avoid a skewed position of the safety gear.

 If safety gear is not exactly parallel to the guide rail, the brake lining touch the guide rail in a wrong way.

- the safety gear does not reach the adjusted braking force
- too low delay

 The distance between housing and guide rail has to be equal on both sides. Check the distance between the two housings (outside-outside) DBG+64, additionally!

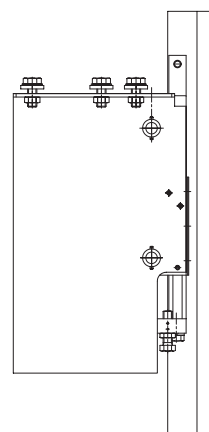
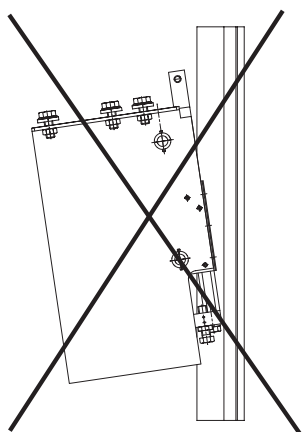
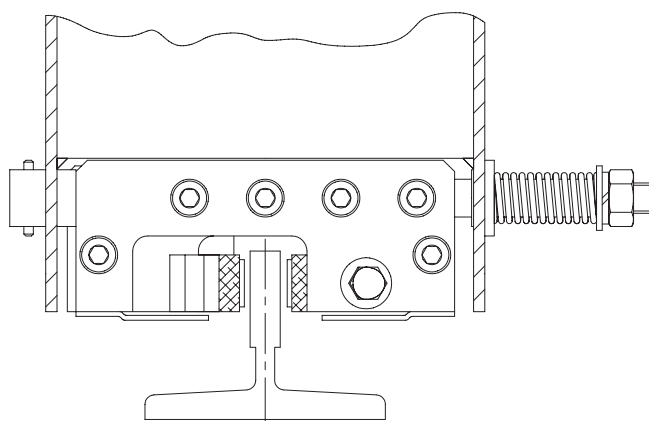
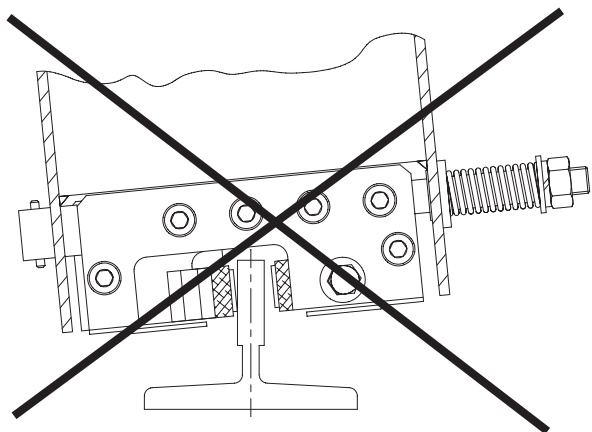


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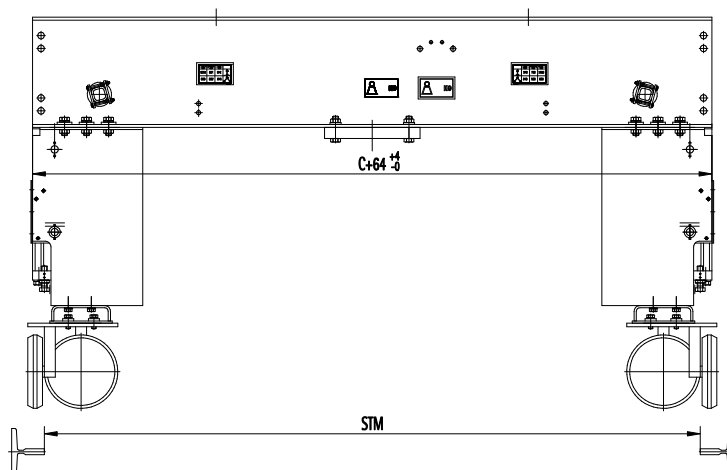
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3.3 Alignment of the safety gear



Check of the distance between safety gear and guide rail:



DBG ... Distance
between guides

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3.4 Gripping wedge synchronization and adjustment


3.4.1 Simplex

(1) Check that the fixing links (5) of the gripping wedges (1) do not rest against the safety gear block (8). Lift the braking wedges with the synchronization and fix it in a position. In the case of a safety gear with housing and integrated synchronization, the position can be set and fixed using the nuts (16) at the stop (15). Both wedges still have to be slack!

(2) Measure the distance between adjusting screw and the safety gear block. The measured dimension is on the Safety gear at Governor side X and have to be on the opposite Safety gear X +0/-1. This adjustment prevents one sided gripping.

(3) Correct the different X dimensions by adjusting of the synchronization.

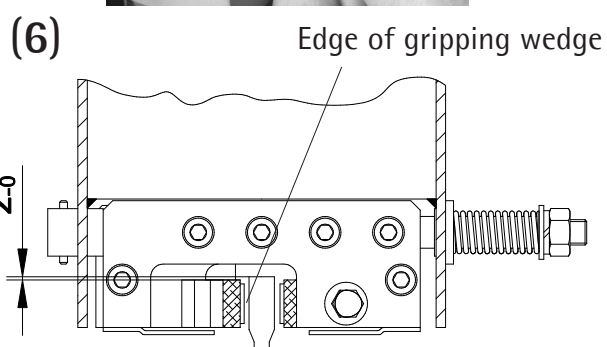
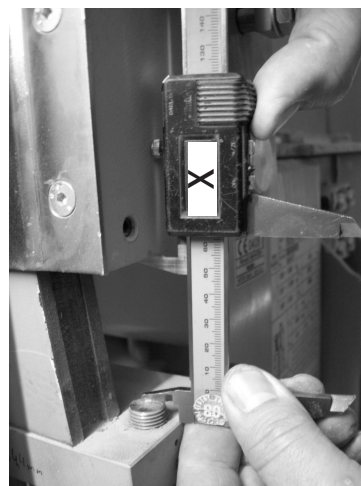
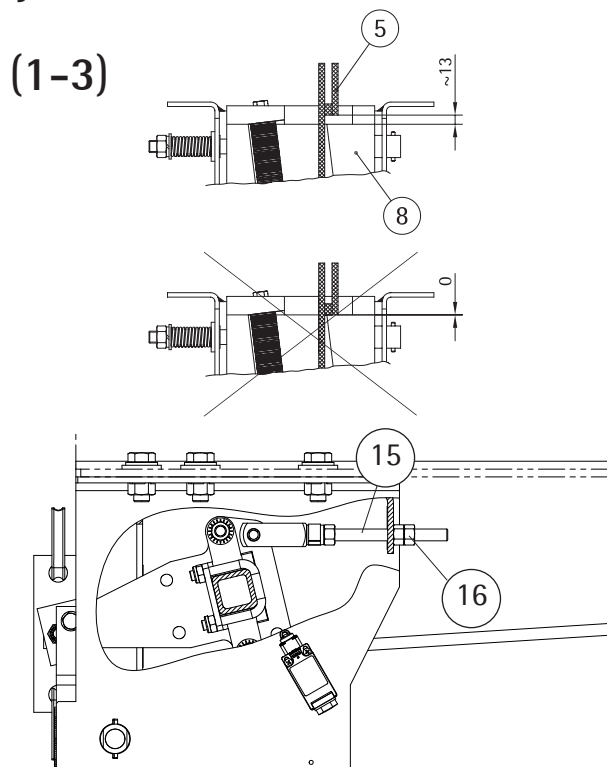
 Adjust the synchronization in accordance with the instructions for the car frame or the counter weight safety gear.

 Changing the adjustment of the safety gear is forbidden!

(4) Activate the synchronization by hand and check that both safety gears are activated at the same time.

(5) Check the horizontal movement of the safety gear to be sure that the counter wedge (2) is able to access the guide rail when the safety gear is activated.

(6) Check the horizontal adjustment of the gripping wedge.



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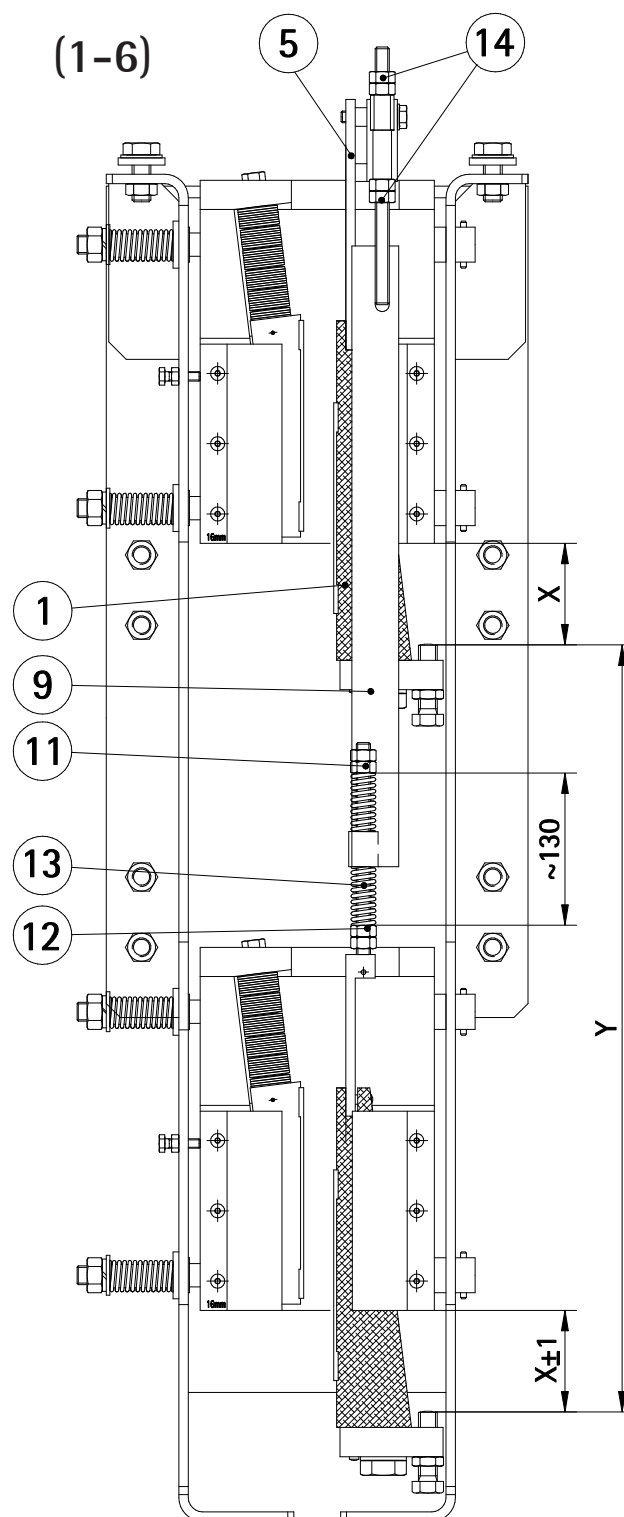
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3.4.2 Duplex

- (1) Adjust the upper pair of safety gears according 3.4.1!
The distance between the adjusting screws and the safety gear block should be according 3.4.1 while the gripping wedges are lifted.
- (2) Adjust the spring (13) by turning the nuts (11,12) until the overall distance from one to the other spring is ~130mm.
Tighten the Nuts!
(This point can be cancelled if no changes were made at the synchronization.)
- (3) Lift the braking wedges (1) and fix it in position. All wedges still have to be slack!
- (4) Slacken the nuts (14). By turning the nuts you can lift or lower the bottom gripping wedge.
- (5) The distance between adjusting screw and safety gear block of the upper safety gear is X. The distance between adjusting screw and safety gear block of the lower safety gear have to be $X \pm 1$.
- (6) Tighten the lock nut (14).



Move the synchronization by hand and check if both safety gears are activated at the same time.

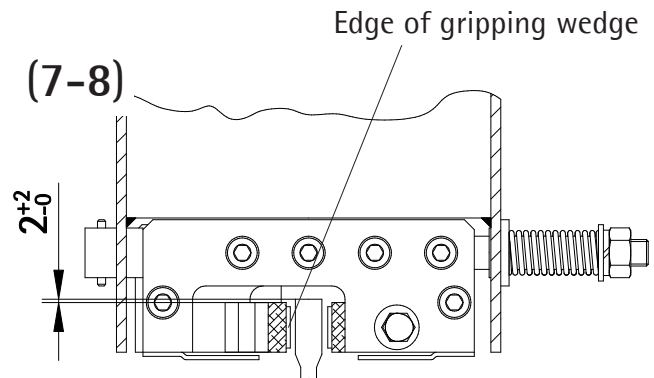


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- (7) Check the horizontal movement of the safety gear to be sure that the counter wedge is able to access the guide rail when the safety gear is activated.
- (8) Check the horizontal adjustment of the gripping wedge.



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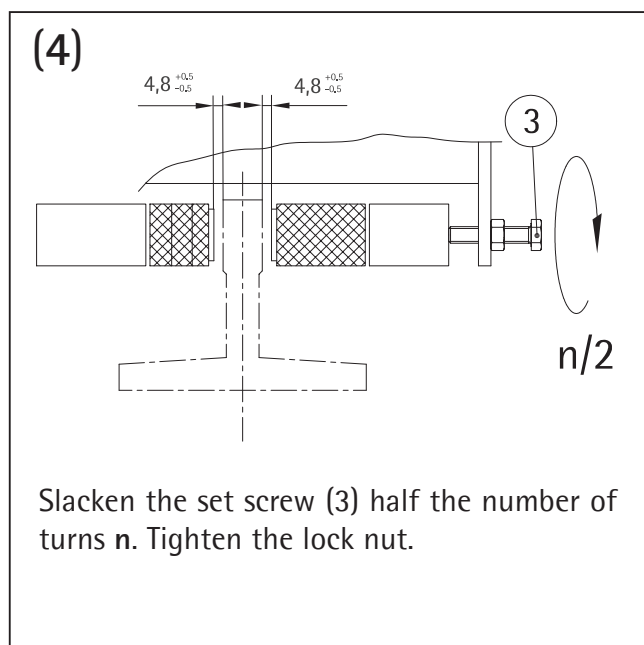
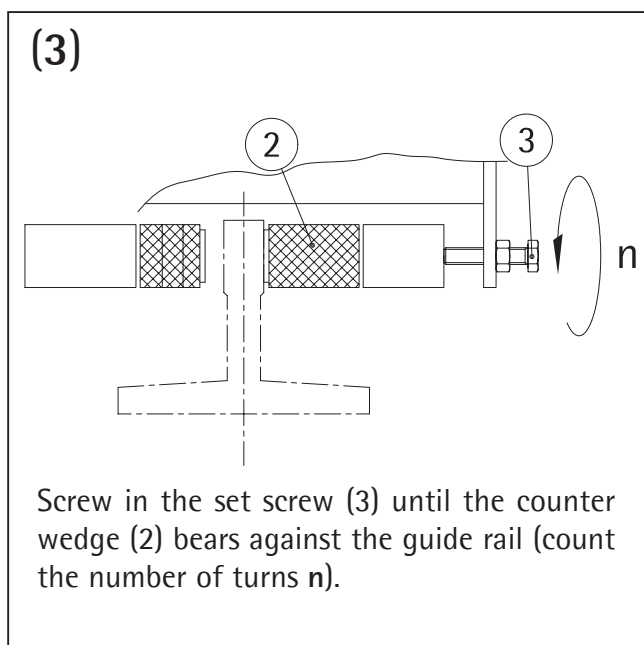
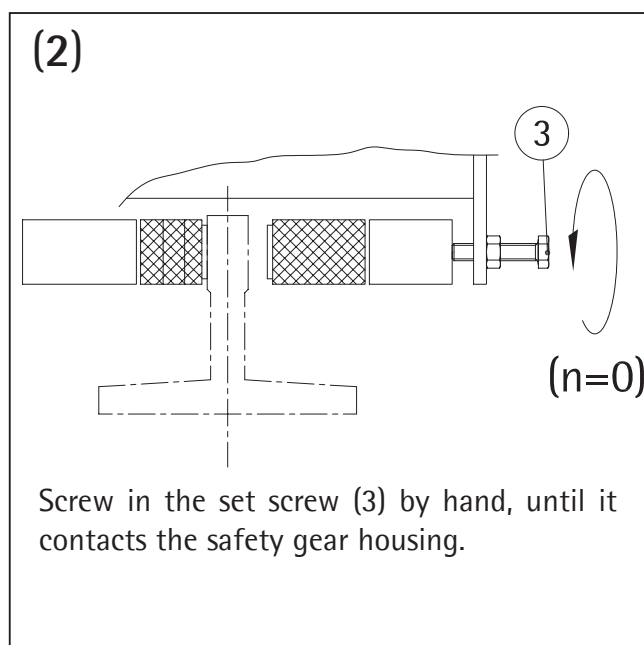
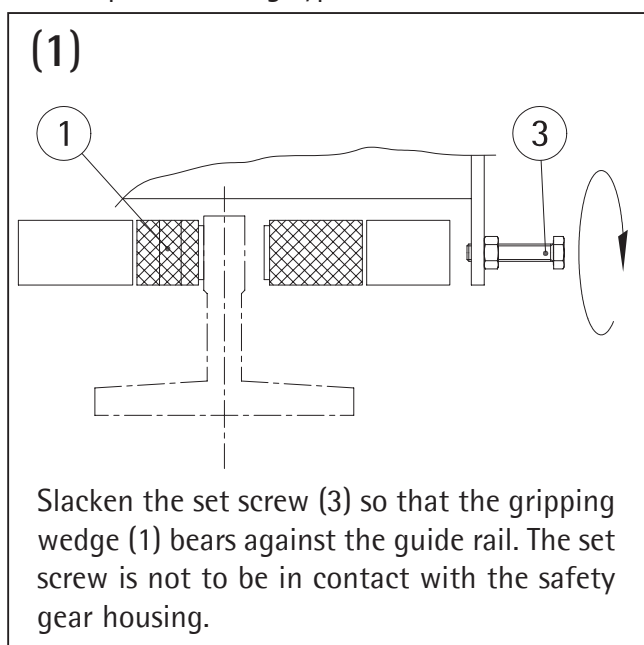
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Datum/date 11.04.2003
Stand/version D-16.02.2010
Geprüft/approved WAT/MZE

3.5 Adjustment of running clearance between guide rails and brake linings

If there is safety gear delivered with safety gear housing adjust the correct running clearance according to below instructions (this is also valid for adequate housing types).



This kind of instruction is valid for WITTUR car frames:
WCF series (WCF10, WCF16, WCF25, WCF35)



Progressive Type Safety Gear WSGB04, WSGB10

Operating instructions

Blatt/sheet D7AMMGB.21
Datum/date 11.04.2003
Stand/version H-07.08.2020
Geprüft/approved WAT/MZE

3.6 Assembling and adjustment of housing and synchronization

H 3.6.1 Safety gear with housing and separate synchronization

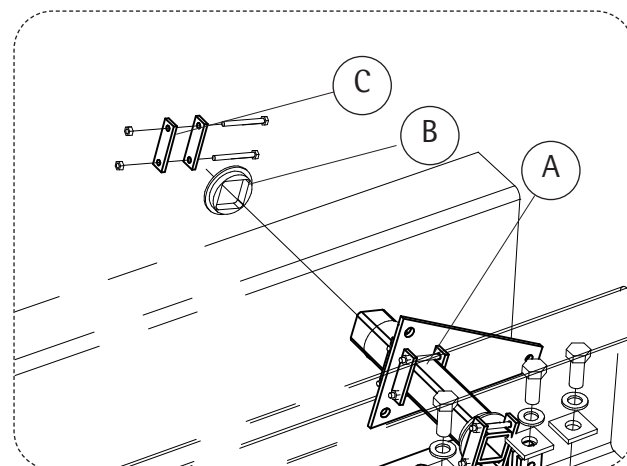
Do the assembling and adjustment as follows:

- (1) Fit the synchronization-axes (A) into the lower cross beam of the car frame - insert the sliding-bushes (B) and fix the axle with the delivered clam-flats (C).
- (2) Mount the safety gear housing (D) to the lower cross beam of the car frame (use screws (E) M16x40)

! ⚙ Take care of tightening torque
Screw M16: 195 Nm

! ⚙ Take care of instructions for alignment stated in chapter 3.1.

- (3) Fasten the safety gear lifting lever (F) to the synchronization-axe (A) and fix the screw with LOCTITE - 270 or equivalent.

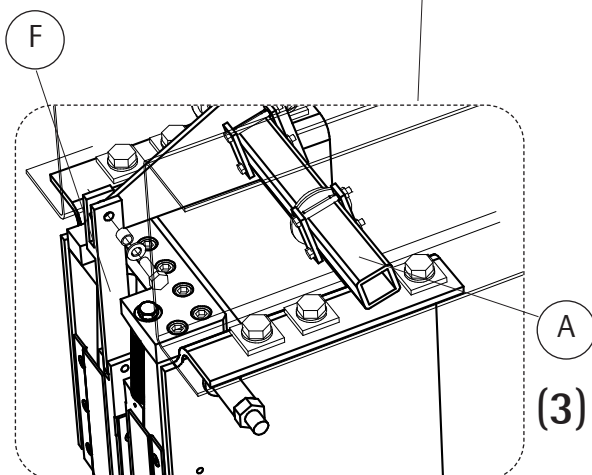


(1)

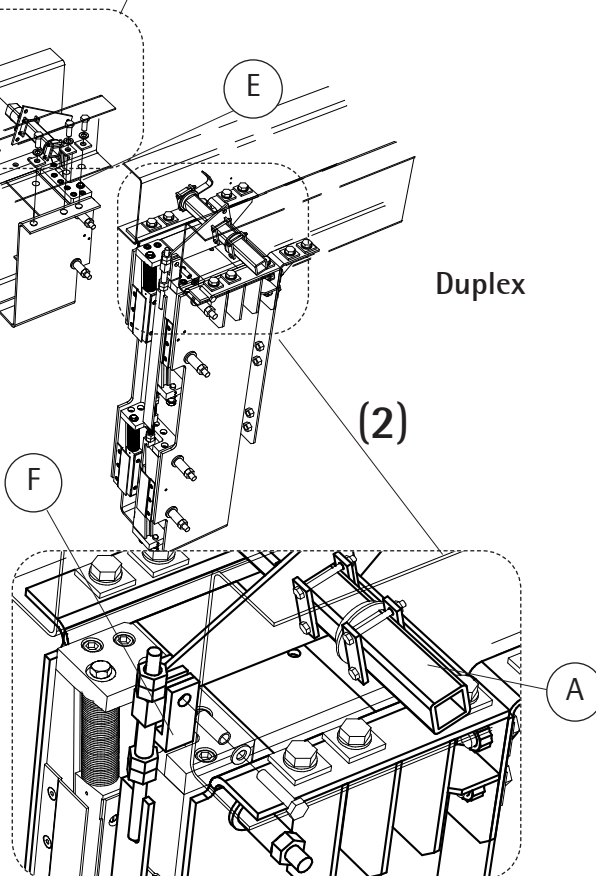
Simplex

Duplex

(2)



(3)



Progressive Type Safety Gear

WSGB04, WSGB10

Operating instructions

Blatt/sheet D7AMMGB.23
Datum/date 11.04.2003
Stand/version H-07.08.2020
Geprüft/approved WAT/KKR

3.6.2 Safety gear with housing and integrated synchronization

If there is safety gear delivered with safety gear housing and integrated synchronization do the assembling and adjustment as follows:

- (1) Mount the safety gear housing (A) to the lower cross beam of the car frame (use screws (B) M16x40)

! Take care of tightening torque
Screw M16: 195 Nm

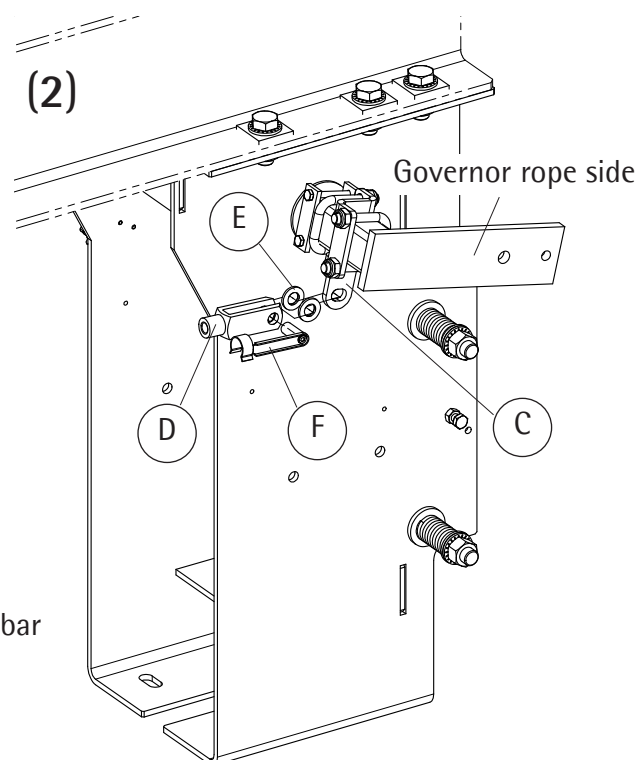
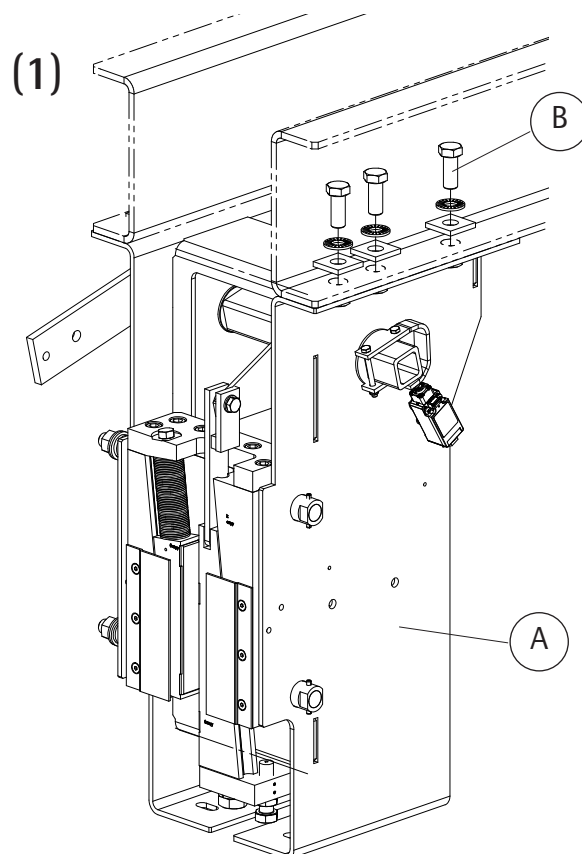
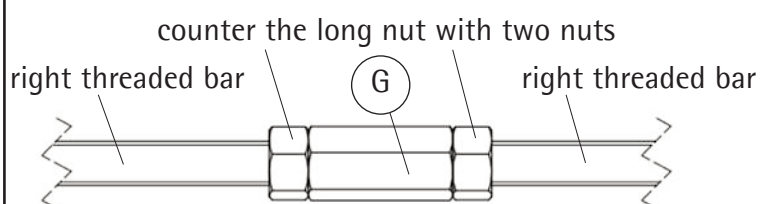
! Take care of instructions for alignment stated in chapter 3.1

- (2) Check if the connecting link (C) on the governor rope side is on the bottom side. Install the fork joint (D) with two plain washers (E) and the pin (F) on both sides.

- (3) Measure the distance X between the two fork joints (D). The total length of the needed threaded bars should be $X - 1 \frac{3}{8}"$ ($X - 35\text{mm}$). This is an empirically determined value, where there is still enough space to set the synchronization with the turnbuckle.

- (4) Cut the threaded bars to reach the needed length ($X - 1 \frac{3}{8}"$) in total. One of the threaded bars must be a left threaded bar.

- (5) The delivery content includes a left threaded bar and two right threaded bars. If you need both right threaded bars, connect them with the long nut (G) and counter the long nut on both sides.



Progressive Type Safety Gear

WSGB04, WSGB10

Operating instructions

Blatt/sheet D7AMMGB.24

Datum/date 11.04.2003


Stand/version H-07.08.2020

Geprüft/approved WAT/KKR

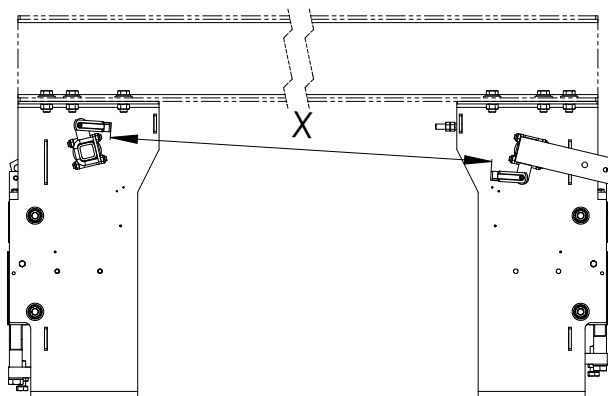
(6) Connect the left threaded bar with the left threaded fork joint and the right threaded bar with the right threaded fork joint and counter both sides with a nut.

(7) Connect the left threaded bar and the right threaded bar with the turnbuckle (H). After setting the synchronization with the turnbuckle, the turnbuckle must be countered on both sides with a nut.

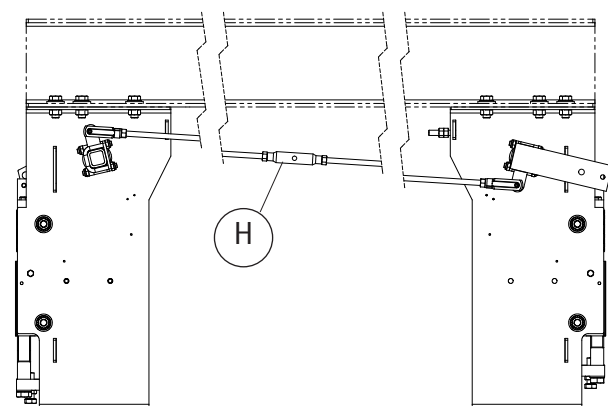
(8) Adjust the synchronization retaining spring (I) with the nut (J) so that the required activation force (according point 4) is achieved. With a travel height more than 150 m (500 ft) is a synchronization retaining spring on both safety gear sides. These must be set equally strong. After adjusting the spring, lock with the second nut.

H !  All screw connections must be screwed far enough and countered with a nut.

(3)

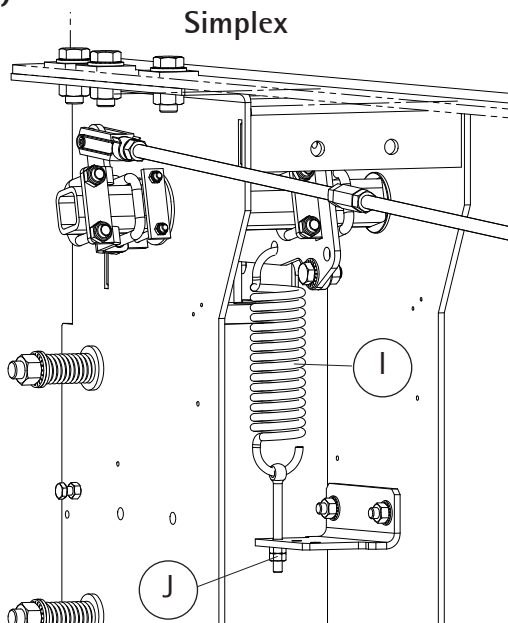


(7)

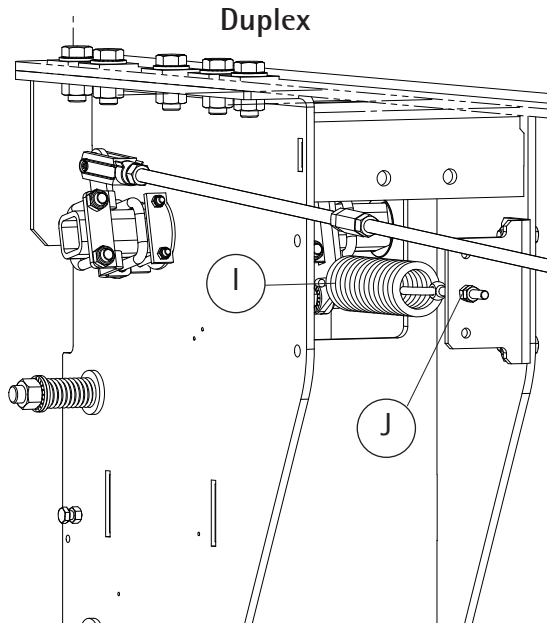


(8)

Simplex



Duplex



Progressive Type Safety Gear WSGB04, WSGB10

Operating instructions

Blatt/sheet D7AMMGB.25
Datum/date 11.04.2003
Stand/version D-16.02.2010
Geprüft/approved WAT/MZE

3.7 Electrical installation of the safety gear contact



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 single polarity 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.

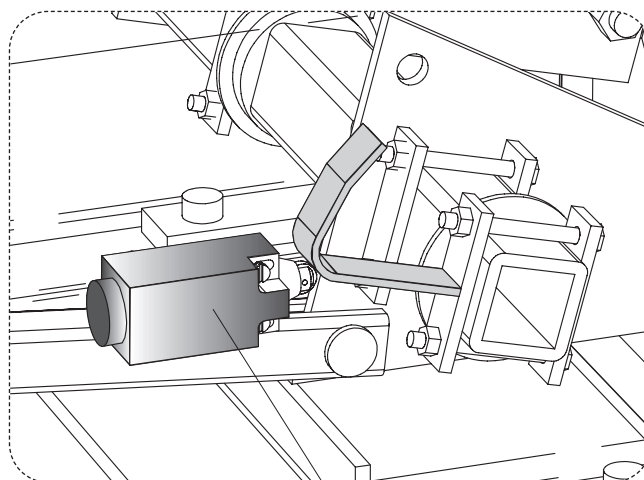
- (1) Connect the contact
- (2) Test the safety gear contact function - adjust if necessary
- (3) Adjust the switch horizontally on its fixing bracket.



Adjusting dimension: 3-5 mm from the guard peak



The contact must brake just before safety gear gripping!

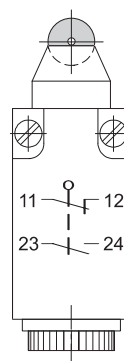


(1-3)

Safety gear contact

3.8 Safety gear contact

- use category: AC 15, A300
 U_e/I_e 240V (3A)
- thermal current: $I_{the} = 10A$
- insulation voltage: $U_i = 250$ VAC (EN81)
300 VAC (ASME)
- protection type: IP 43
- approved in accordance: VDE 0470
IEC/EN 60947-5-1



Progressive Type Safety Gear

WSGB04, WSGB10


Operating instructions


Blatt/sheet D7AMMGB.26
Datum/date 11.04.2003
Stand/version D-16.02.2010
Geprüft/approved WAT/MZE


4 Function testing

Operational reliability of the installation is assured. The quality and function of individual components are subject to thorough inspection and is checked before dispatch from our works. The safety gear 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:
The protective coating of grease is to be carefully removed from the guide rails! Clean the guide rails!

 The cleaning of the guide rail must be done with a disc brake cleaner or a equivalent fluid. It is not allowed to do mechanical cleaning like filing, grinding. If the surface cannot be cleaned properly contact the manufacturer.

 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.

Preparations before tests:

 **The guide rail may NOT be lubricated at all.**

- Check the activating force of the safety gear synchronization (it should be between 400 and 500 N). This value can be higher if the travel is over 75m. Calculate the minimum required force F_1 as follows:

$$F_1 = \text{mass of overspeed governor rope} \times \text{downwards acceleration} \times \text{safety factor (2)}$$

e.g.: $F_{1\min} = 200\text{kg} \times 1,5\text{m/s}^2 \times 2 = 600\text{N}$



This is the minimum force which should be measured on the car frame safety gear synchronization to prevent unintended gripping. If the force is less than the retaining spring of the safety gear synchronization must be adjusted.

- Check the tripping force of the overspeed governor F_2 :

$$F_2 \geq 2 \times F_1$$



The maximum tripping force $F_{2\max}$ of the overspeed governor is 2350N.

Progressive Type Safety Gear

WSGB04, WSGB10

Operating instructions

Blatt/sheet D7AMMGB.27
Datum/date 11.04.2003
Stand/version D-16.02.2010
Geprüft/approved WAT/MZE

4.1 Static functions test

The function of the safety gear is to be checked with empty car and at service speed before the real safety gear test is performed.

- Activate the safety gear actuating lever (or the overspeed governor rope as well by means of the tripping function if available) manually. At the same time, use the emergency control or inspection run control to gradually lower the car.
- Check if both safety gears work at the same time (gripping marks on the guide rails must be on the same height). If the safety gears are not working simultaneously the safety gear synchronization must be readjusted.
- After a few centimeters, the car should be caught on the left and right by the safety gear.
- The safety gear contact should respond
- Then release the safety gear by running up the car. Check that the actuating mechanism and the safety gear contact have returned to their initial positions.



Before starting the dynamic function test, you have to test with nominal weight and a speed of 1,5m/s. From the tripping speed v and the gripping distance s the retardation R can be calculated according to the following formula.

$$R = v^2 / (2 \times s)$$

The retardation R should be within 6 m/s² and 8 m/s²



If the retardation is not correct the safety gear must be replaced (please contact WITTUR).



The real safety gear test can be performed when the above mentioned tests are ok.

Progressive Type Safety Gear

WSGB04, WSGB10

Operating instructions

Blatt/sheet D7AMMGB.28
Datum/date 11.04.2003
Stand/version E-24.08.2011
Geprüft/approved WAT/MZE

4.2 Dynamic functions test



Nobody should be in the lift car or on the car roof when carrying out test runs or functions tests!

Each gripping test has to be documented and a copy of the test report should remain in the elevator book.

In order to ease the releasing of the elevator car from the safety gear do the following:

4.2.1 Testing criteria

Two possibilities to do the tests for car safety gear:

- A) - load the car with 100% of the full load
 - gripping speed = tripping speed of over-speed governor (v_t)
- B) - Simulated safety gear test (EN81, GB7588)
 - load the car with 125% of the full load
 - gripping speed = nominal speed

- When the elevator is equipped with a counterweight safety gear, lock the counterweight safety gear before testing the car safety gear to prevent unintended tripping of counterweight safety gear due to jumping of the counterweight.

- For testing the counterweight safety gear the car safety gear must be locked.

Two possibilities to do the tests for counterweight safety gear:

- C1) - the car must be empty
 - load the counterweight frame
 - gripping speed = tripping speed of over-speed governor (v_t)
- C2) - the car must be empty (EN81, GB7588)
 - load the counterweight frame
 - gripping speed = nominal speed of the counterweight frame (v_n)



After each test or activation of the safety gear check that there are no defects that can impair the normal run of the elevator.



Change the safety gear if there is a damage on it. A visual check is sufficient.



It is recommended to do the test near a door, to unload the weights and make it easier to lift up the elevator after testing the safety gears.



Remove the locking after the safety gear test has been performed!

4.2.2 Procedure of dynamic functions test

- Place the test weights in the centre of the elevator car (only for testing car safety gear).
- Drive the car/counterweight frame to the level near the mid point of the shaft or higher.
- Drive the car/counterweight frame about 2 m to up direction from the level, use service drive.
- In geared elevators accelerate the elevator with the motor. In gearless the acceleration can be done just by opening the motor brake.

Progressive Type Safety Gear

WSGB04, WSGB10

Operating instructions

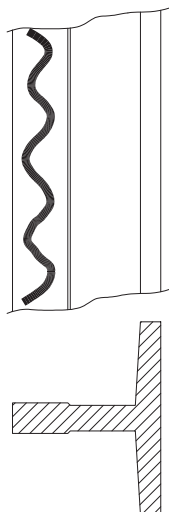
Blatt/sheet D7AMMGB.29
Datum/date 11.04.2003
Stand/version D-16.02.2010
Geprüft/approved WAT/MZE

- Shut down the power supply; keep the brake manually open.
The elevator should accelerate to the tripping speed of the Overspeed governor. When the tripping speed is reached the Overspeed governor must activate the safety gear and the safety gear must stop the elevator.



If this does not work correct (the elevator does not stop after 2 - 3 m) release immediately the motor brake so the elevator is stopped by it.

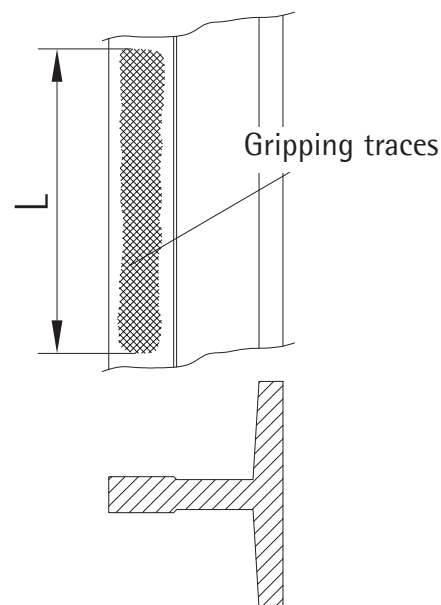
- Drive the elevator in up direction in order to release the safety gear.
Force to lift the elevator after gripping:
 $F = 1,25 \times F_{\max}$ (without rope)
 $F = 0,6 \times F_{\max}$ (with rope)
- Drive the elevator to a floor and remove the test weights from the car (only for testing car safety gear).
- Do the checks described in the following chapters.



4.3 Gripping distance

4.3.1 Measuring of the gripping distance "s"

Measure and calculate the gripping distance "s" as described in the following instruction:



After gripping the wedges leave a slight but definite polished marking length L on the guide rail.

The actual gripping distance s is calculated as follows:

$$s = L - Y - 18 \text{ (cm)}$$

Y ... Distance between safety gears (see figure on page D7AMMGB.014)

y= 0 for Simplex arrangement

Before doing a gripping test, it is recommended to mark the guide rail with a non-greasy pencil in the area where the gripping should happen. This marks the measurement of the gripping distance easier.

Progressive Type Safety Gear

WSGB04, WSGB10

Operating instructions

Blatt/sheet D7AMMGB.30
Datum/date 11.04.2003
Stand/version H-07.08.2020
Geprüft/approved WAT/KKR

4.3.2 Check of gripping distance "s"

Tolerated brake length has to be defined by the system distributor. Check System operating manual for brake distance values. If no tolerated brake distances are defined by the system distributor, the tables from Annex A can be used as a reference.

Read the minimum and maximum tolerated brake distance from the belonging table based on the weight situation of the lift.

- If the braking distance "s" is within the tolerated values, the safety gear is set correctly!
- If the gripping distance "s" is not in the tolerated distance, please check:
 - if the guide rails and the brake-lining are cleaned and nonfat
 - if the mass of the cabin accords with the order
 - the right function of the synchronization

If the failure could get solved, you have to repeat the test after the correction work.

- If the braking distance "s" is out of the tolerated values again, the safety gear must be replaced (please contact WITTUR)

Progressive Type Safety Gear

WSGB04, WSGB10

Operating instructions

Blatt/sheet D7AMMGB.31
Datum/date 11.04.2003
Stand/version D-16.02.2010
Geprüft/approved WAT/MZE

4.3.3 Visual checks after each safety gear tripping

- Inclination of the Car / Counterweight frame:



During gripping the car may not incline more than 5% towards the normal position.



If there is any defect the safety gear must be replaced!

- Safety gear:
Drive the car to the lowest floor and check from the pit following items:
 - existence of brake lining
 - visual defects of safety gear parts
 - friction marks
 - defects on the safety gear housing



After the safety gear test the burrs must be removed from the guide rails.

5 Maintenance, inspection and repair

5.1 Maintenance and inspection

The progressive type safety gear WSGB04, WSGB10 are basically maintenance free. The whole installation is designed so that no large maintenance operations have to be carried out during damage free operation of the installation.



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.

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 arise which could possibly impair operational safety.

Progressive Type Safety Gear

WSGB04, WSGB10

Operating instructions

Blatt/sheet D7AMMGB.32
Datum/date 11.04.2003
Stand/version D-16.02.2010
Geprüft/approved WAT/MZE

5.1.1 General



The guide rail may not be lubricated at all. They have to be dry.

5.1.2 Maintenance and inspection check list

- Check brake shoe/guide rail for free running, and adjust if necessary
- Check brass brake lining for damage or high degree of wear.
- Check state of safety gear and neighboring components for damage, deformation or heavy oxidation (rust).
- Check that the gripping wedge can move freely.
- Check axial play and turning capacity of the safety gear shaft.
- Check lifting rod - spring - activation system of duplex arrangement
- Check even running of left and right safety gear (synchronization).
- Check actuating mechanism and rope/connection for free movement/proper functioning, following check synchronization.
- Check safety gear contact for function/clearance and adjust if necessary (see chapter 3.4).
- Clean system if dirt has built up.

5.1.3 Cleaning of guide rails

Any dust or dirt on the guide rails can have influence to the friction between the guide rail and the safety gear. This means that the guide rails must be cleaned carefully whenever the dirt becomes visible on the guide rails or in minimum once per year.



As cleaning fluid a disc brake cleaner or a similar fluid should be used.



Mechanical cleaning like filing, grinding is not permitted.

5.2 Returning tests

The standard levels of returning tests should not be higher than the standards of the tests before installation.

These returning tests are not allowed to cause wear or stresses that impair the operation reliability of the elevator. The tests must be done with empty car and reduced speed.



The reset of the safety gear must be done by an expert person.

Each gripping test has to be documented and a copy of the test report should remain in the elevator book.

For detailed adjustment dimensions and testing procedures refer to chapter 4. Functions testing.

Progressive Type Safety Gear

WSGB04, WSGB10

Operating instructions

Blatt/sheet D7AMMGB.33
 Datum/date 11.04.2003
 Stand/version E-21.11.2012
 Geprüft/approved WAT/MZE

5.3 Operational life time of the safety gears



After a defined number of tests, shown in the table you have to change the complete safety gear!



Operation of the system without the safety gear, even for short periods of time, is forbidden.

Test Method	Speed	Simplex	Duplex	Simplex	Duplex
	[m/s]	≤ 2500 kg	≤ 5000 kg	> 2500 kg	> 5000 kg
A C1	≤ 2,5	50		50	
	≤ 5,0	47		23	
	≤ 7,5	21		10	
	≤ 10,0	11		6	
B C2	≤ 2,0	50		50	
	≤ 4,0			30	
	≤ 6,0	26		13	
	≤ 8,0	15		7	
Car safety empty car	≤ 2,0			50	
	≤ 4,0	50			
	≤ 6,0			42	
	≤ 8,0	48		24	

5.4 Carrying out repairs

Permitted repair work:



As a rule, the safety gear should neither be taken apart or altered in any other way (sealants, sealing wax). This also applies to repairs. An exception to this is the synchronization (e.g. due to reconstruction work etc). Condition for this, is that the process is carried out properly and functioning is in no way compromised.



It is forbidden to replace faulty or worn parts of the safety gear yourself.

Repairs to the safety gear system which do not directly affect the safety gear (e.g. synchronization, safety gear contact, etc.) must be carried out locally. In other words, all procedures involved in initial installation are also included in the repairs and maintenance schedule.

Such repair work in the safety system must, of course, be carried out correctly and with utmost care, in order to guarantee long-term safe operation of the system.

The reasons are:

- conditions of liability and technical safety
- only original replacement parts may be installed (these are available from manufacturer only).
- repairs are carried out only in pairs and are checked before return.



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



Progressive Type Safety Gear

WSGB04, WSGB10

Operating instructions

Blatt/*sheet* D7AMMGB.34
Datum/*date* 11.04.2003
Stand/*version* H-07.08.2020
Geprüft/*approved* WAT/KKR

5.5 Disposal of Material

Lubricants, oils and other dangerous substances or materials which pollute the environment must be disposed of in conformity with the regulations.

Parts, components and subsystems, which are replaced during a repair and/or modernization, must be disposed of according to the agreement between the owner of the lift and the company having executed the repair/modernization.

Progressive Type Safety Gear

WSGB04, WSGB10

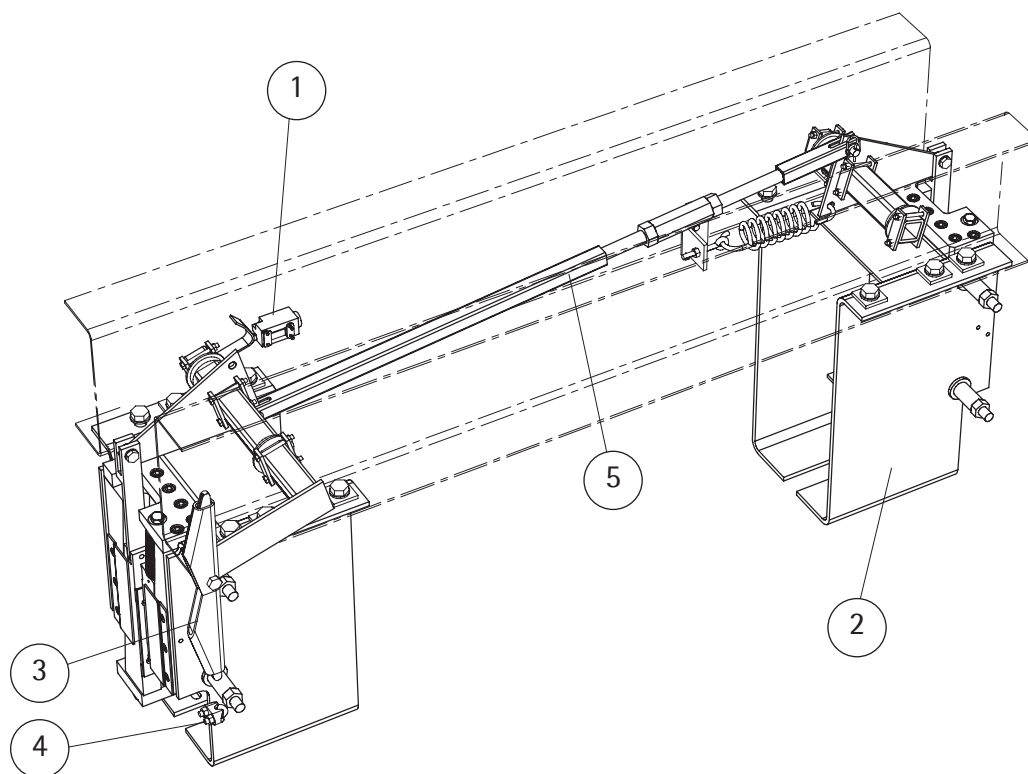
Operating instructions

Blatt/sheet D7AMMGB.35
 Datum/date 11.04.2003
 Stand/version H-07.08.2020
 Geprüft/approved WAT/MZE

5.6 Spare parts list

H 5.6.1 Simplex with separate synchronization

Pos.	Component	Spare part	... used	Number...	Art. No.
1	Safety gear contact	Bernstein	I88-U1Z Riwk	1	258453
2	Safety gear housing	WSGB04, WSGB10 (LB0) always order G01 and G02 WSGB04, WSGB10 (LB1) always order G01 and G02		1 1 1 1	900961G01 900961G02 900966G01 900966G02
3	Rope housing (incl. rope clips - 2pcs. and fixing screw M12)	rope diam. 6-7 mm		1	392772G06L
		rope diam. 8-9 mm		1	392772G08L
		rope diam. 10 mm		1	392772G10
		rope diam. 13 mm		1	392772G13
4	Rope clip	S6,5	DIN1142 rope diam. 6-7 mm	1	259316
		S8	DIN1142 rope diam. 8-9 mm	1	256349
		S10	DIN1142 rope diam. 10 mm	1	252042
		S13	DIN1142 rope diam. 13 mm	1	252459
5	Compl. Synchron.	incl. synchr-rod, contact, lifting lever, axle, spring,		1	611160G..



Progressive Type Safety Gear

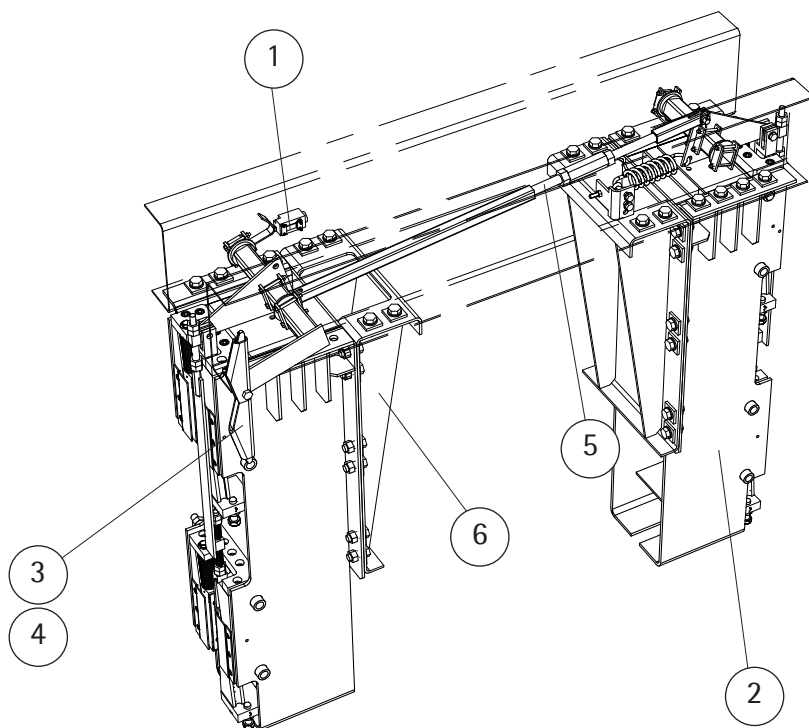
WSGB04, WSGB10

Operating instructions

Blatt/sheet D7AMMGB.36
 Datum/date 11.04.2003
 Stand/version H-07.08.2020
 Geprüft/approved WAT/MZE

H 5.6.2 Duplex with separate synchronization

Pos.	Component	Spare part	... used	Number...	Art. No.
1	Safety gear contact	Bernstein	I88-U1Z Riwk	1	258453
2	Safety gear housing		WSGB04-, WSGB10-Duplex always order G11 and G12	1 1	900966G11 900966G12
3	Rope housing (incl. rope clips - 2pcs. and fixing screw M12)		rope diam. 6-7 mm	1	392772G06L
			rope diam. 8-9 mm	1	392772G08L
			rope diam. 10 mm	1	392772G10
			rope diam. 13 mm	1	392772G13
4	Rope clip	S6,5	DIN1142 rope diam. 6-7 mm	1	259316
		S8	DIN1142 rope diam. 8-9 mm	1	256349
		S10	DIN1142 rope diam. 10 mm	1	252042
		S13	DIN1142 rope diam. 13 mm	1	252459
5	Compl. Synchron.	incl. synchr-rod, contact, lifting lever, axle, spring,		1	611160G..
6	Stiffener		(2 pcs. per housing required)	1	903192G01



Progressive Type Safety Gear

WSGB04, WSGB10

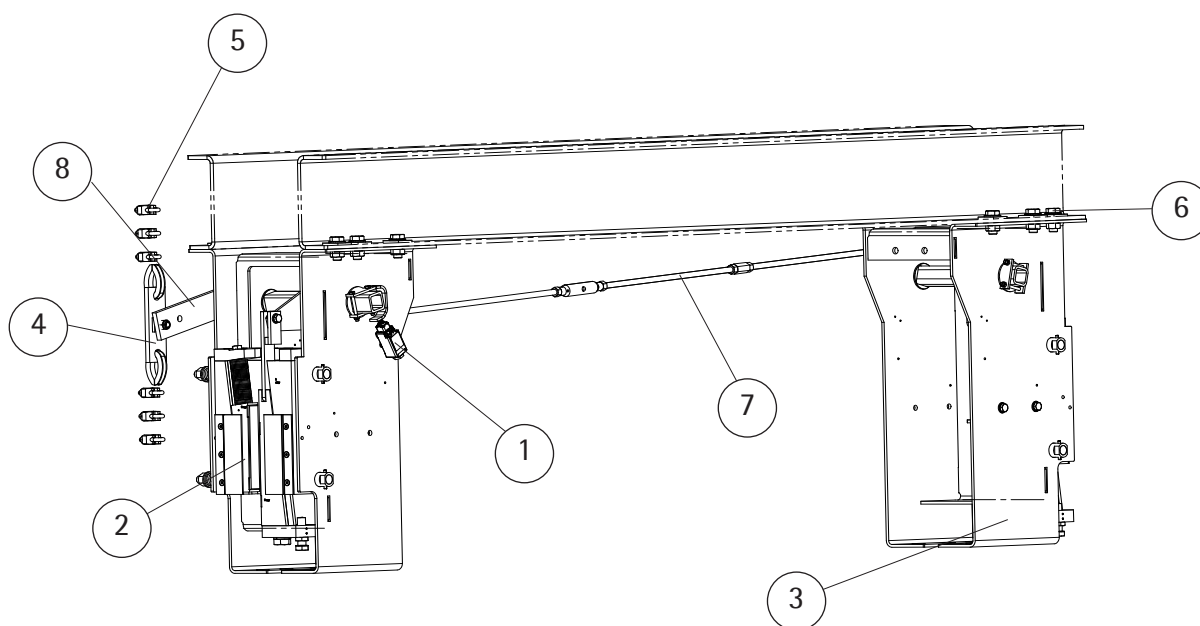
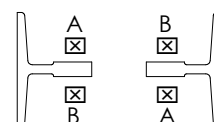
Operating instructions

Blatt/sheet D7AMMGB.37
 Datum/date 21.03.2002
 Stand/version H-07.08.2020
 Geprüft/approved WAT/KKR

5.6.3 Simplex with integrated synchronization

Pos.	Component	Spare part	... used	Number...	Art. No.
1	Safety gear switch	Bernstein	l88-U1Z Riwk	1	258453
2	Safety gear	WSGB04* (a pair of)	guide rail size: 16mm	1	900950A16
		WSGB04* (a pair of)	guide rail size: 19mm	1	900950A19
		WSGB10* (a pair of)	guide rail size: 16mm	1	900951A16
		WSGB10* (a pair of)	guide rail size: 19mm	1	900951A19
3	Safety gear housing		WSGB04, WSGB10 always order A01 and A02	1	1049733A01 1049733A02
4	Rope housing (incl. rope clips - 6pcs. and fixing screw M12)		rope diam. 3/8"	1	604139G01
5	Rope clip	S10 DIN1142	rope diam. 3/8"	1	252042
6	Screw package			1	1057836A01
7	Synchronization linkage		DBG 1-3m	1	1051276A01
8	Synchronization lever		right handed (A) left handed (B)	1	1057967A02 1057967A01

*safety gear data must be stated in the order (serial number, mass to be gripped, nominal speed, tripping speed)



Progressive Type Safety Gear

WSGB04, WSGB10

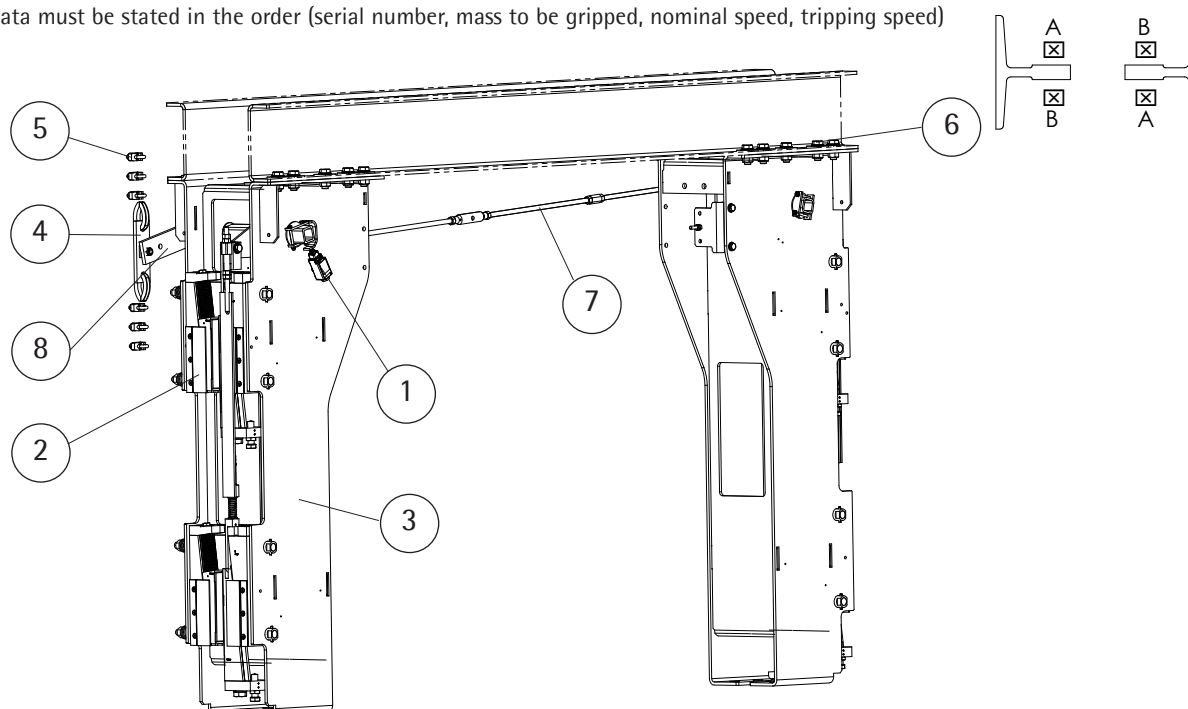
Operating instructions

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 Stand/version H-07.08.2020
 Geprüft/approved WAT/KKR

5.6.4 Duplex with integrated synchronization

Pos.	Component	Spare part	... used	Number...	Art. No.
1	Safety gear switch	Bernstein	l88-U1Z Riwk	1	258453
2	Safety gear	WSGB04* up (a pair of)	guide rail size: 16mm	1	900950A16D
		WSGB04* up (a pair of)	guide rail size: 19mm	1	900950A19D
		WSGB04* down (a pair of)	guide rail size: 16mm	1	900950A16L
		WSGB04* down (a pair of)	guide rail size: 19mm	1	900950A19L
		WSGB10* up (a pair of)	guide rail size: 16mm	1	900951A16D
		WSGB10* up (a pair of)	guide rail size: 19mm	1	900951A19D
		WSGB10* down (a pair of)	guide rail size: 16mm	1	900951A16L
		WSGB10* down (a pair of)	guide rail size: 19mm	1	900951A19L
3	Safety gear housing		WSGB04/10-Duplex always order A01 and A02	1	1050308A01 1050308A02
4	Rope housing (incl. rope clips - 6pcs. and fixing screw M12)		rope diam. 3/8"	1	604139G01
5	Rope clip	S10 DIN1142	rope diam. 3/8"	1	252042
6	Screw package			1	1057836A02
7	Synchronization linkage		DBG 1-3m	1	1051276A01
8	Synchronization lever		right handed (A) left handed (B)	1	1057967A02 1057967A01

*safety gear data must be stated in the order (serial number, mass to be gripped, nominal speed, tripping speed)





Progressive Type Safety Gear WSGB04, WSGB10

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6 Revision Table

Issue	date	description of change	CR
E	15.10.2012	GB 7588 and reviewtable added	CRW-3391
	21.11.2012	GOST R 53780 added, spelling corrected	CRW-4136
	21.11.2012	ECK added	WCR-3077
F	06.04.2016	title page and type label updated, add last page	CRW-6014
G	06.04.2016	logo update	
H	07.08.2020	Safety gear with housing and integrated synchronization added	CRW-10684



Progressive Type Safety Gear

WSGB04, WSGB10

Operating instructions

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ANNEX A

The following brake length diagrams can be used as a reference in case no tolerated brake length is defined by the system distributor.

The tables are showing generic values based on the following conditions:

- Empty car weight / nominal load $P/Q = 0,6 - 2,0$
- Counterweight balancing $b = 0,4 - 0,5$
- No rope masses considered
- No compensation ropes/masses considered
- Shaft efficiency 100% Motor, traction sheave and deflection sheave inertia not considered
- Motor short circuit not considered
- Safety gear is considered as the only braking element

Due to these assumptions the brake distance can differ from the measured values. Therefore tolerated values defined by the system distributor considering the real application boundaries are preferred.

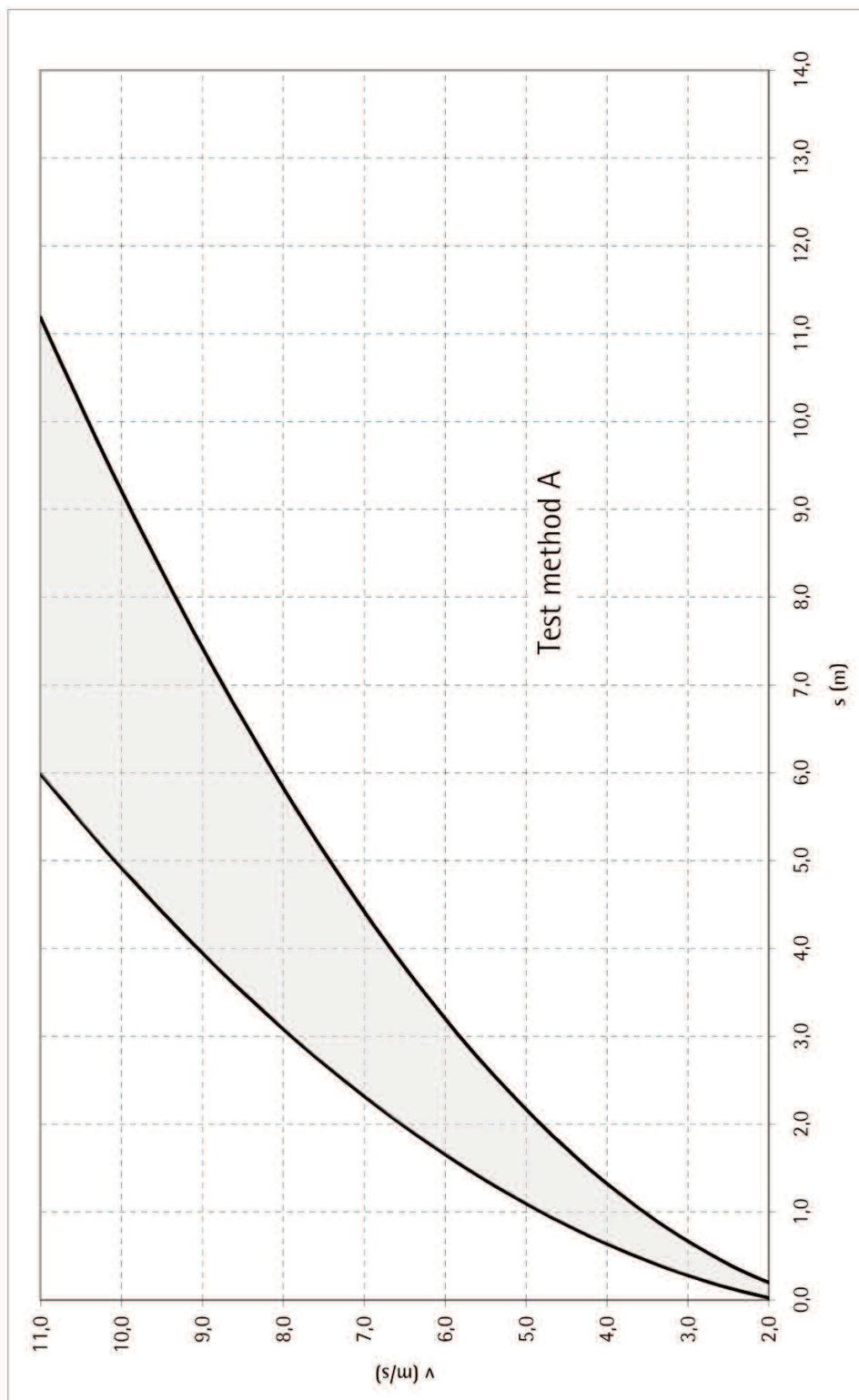
Progressive Type Safety Gear

WSGB04, WSGB10

Operating instructions

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Diagram 1: Test method A



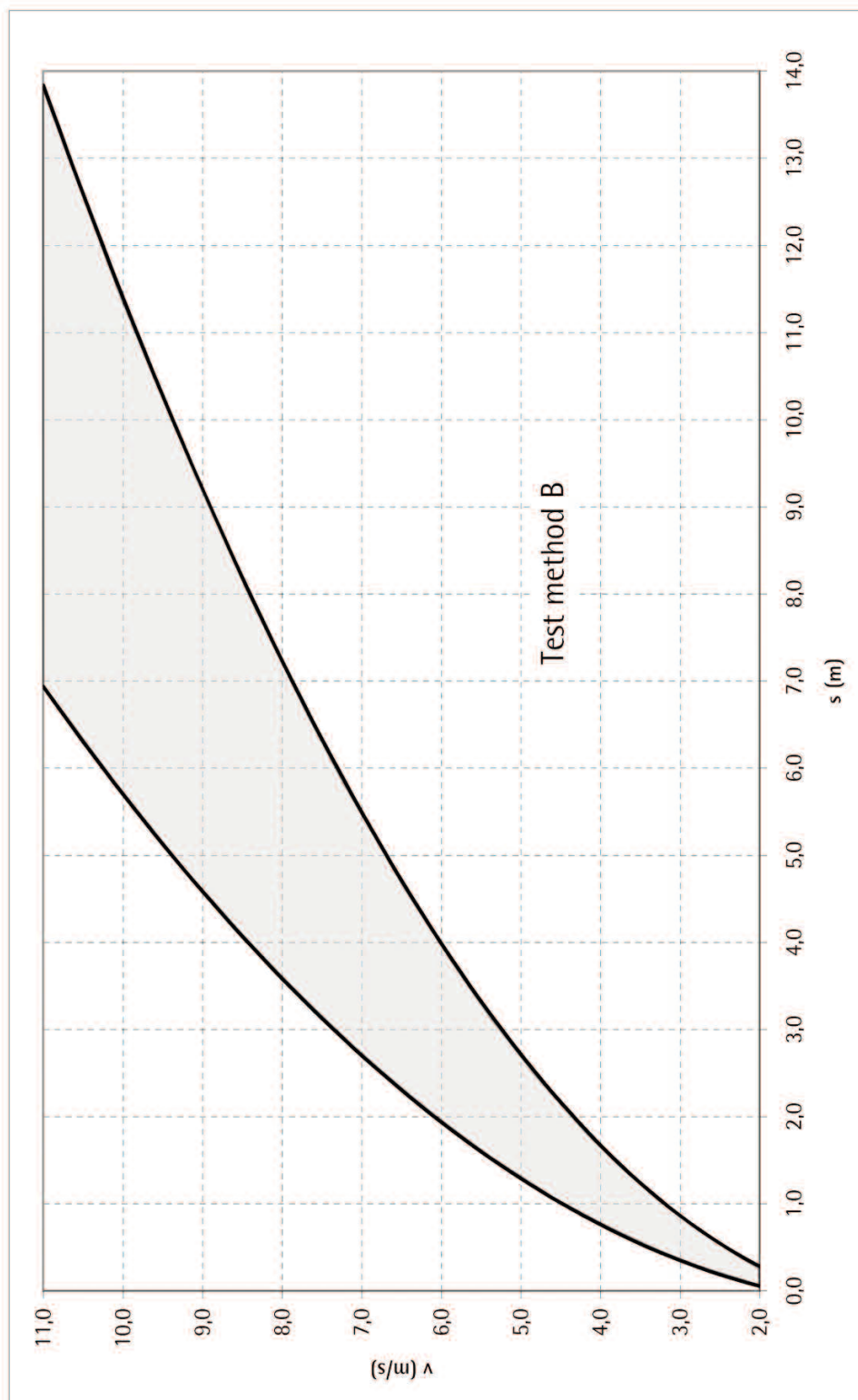
Progressive Type Safety Gear

WSGB04, WSGB10

Operating instructions

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Diagram 2: Test method B



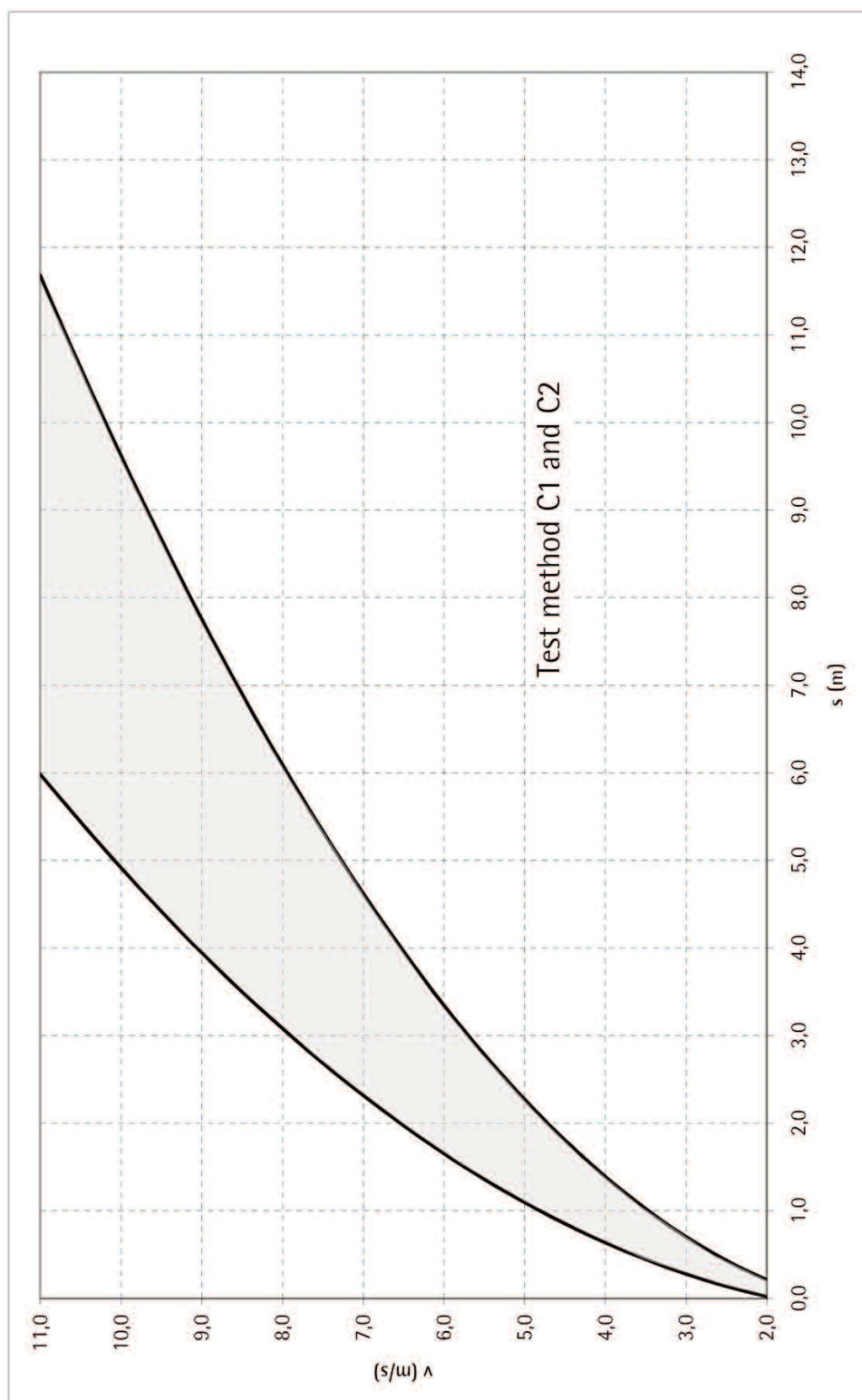
Progressive Type Safety Gear

WSGB04, WSGB10

Operating instructions

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 Stand/version D-16.02.2010
 Geprüft/approved WAT/MZE

Diagram 3: Test method C1 and C2





WITTUR manufacturing locations

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

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Tamil Nadu, India

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