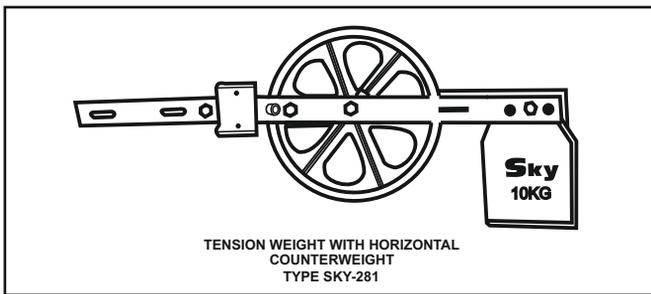
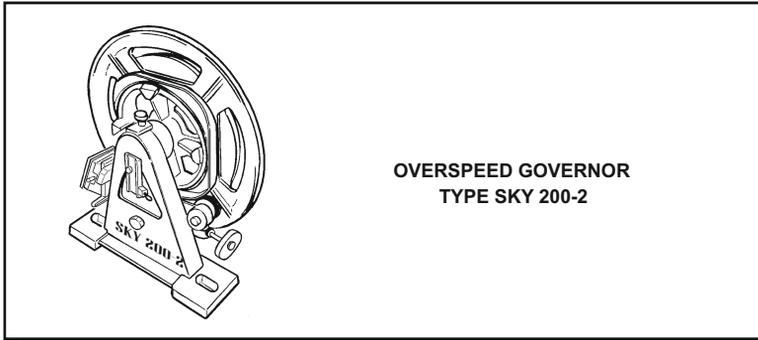




Sky Elevator[®]

Elevator Spare Parts Manufacturing

INSTRUCTION, USE AND MAINTENANCE MANUAL FOR SKY 200-2





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* SKY 200-2 = Bidirectional intervention
 SKY 281 = Down direction intervention

1 GENERAL INFORMATION BEFORE BEGINNING THE ASSEMBLY

1.1 DESCRIPTION, OPERATION MODE

The overspeed governor is a safety device which turns on when the allowed speed of the elevator car is exceeded.

If the elevator car, during its upward/downward run, exceeds its nominal permissible speed, (until the tripping speed is reached), the overspeed governor turns on and, in turn, releases – on the overspeed governor rope – a brake mechanism, called safety gear, which is located on the elevator car. The elevator car stops and is kept back by the guides.

The same overspeed governor (fig. 1) is made up of pulley with:

- governor wheel (1) with trapezoidal undercut groove to house the overspeed governor rope
- test grooves for operation tests (2)
- cam rim (3);
- eccentric stop (4).

The rope, secured to the clamp of the safety gear and stretched by a weight, operates the governor wheel (1) through its own pressure in the trapezoidal undercut groove.

Beside the trapezoidal groove, a cam rim (3) with eccentric stop (4) is also mounted on the governor wheel. Such rim allows the pendulum (6) to operate with an upward/downward oscillating motion, by means of a pulley mounted on a ball bearing.

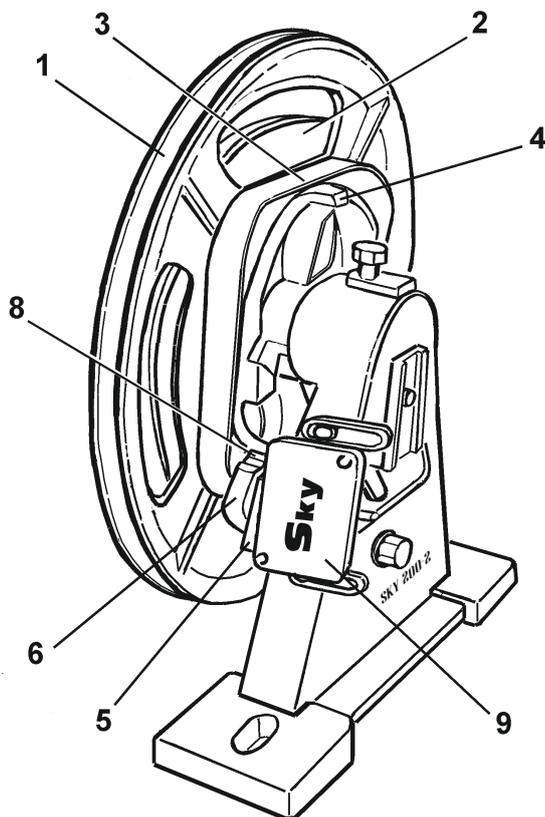


Fig. 1
Overspeed governor

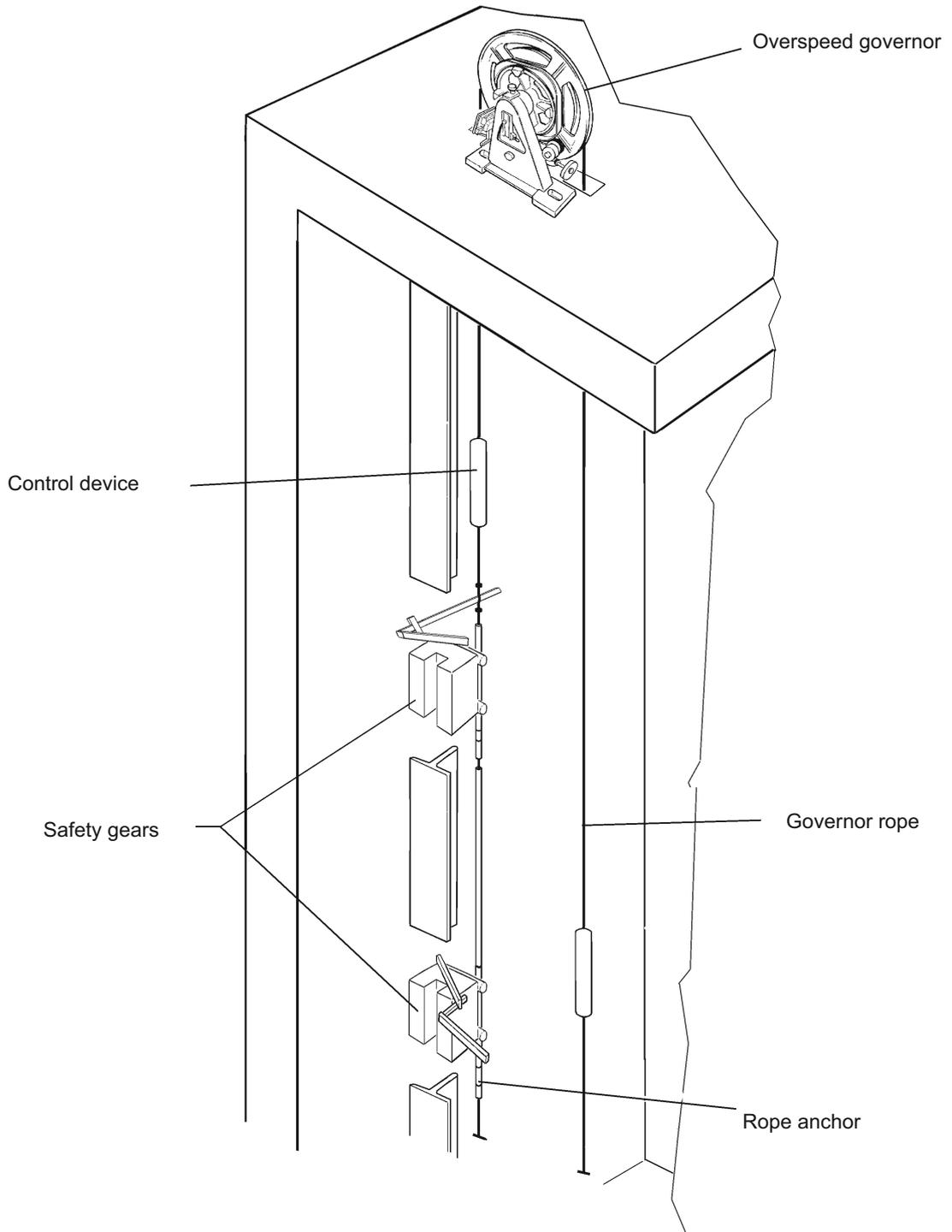
The pendulum is drawn to the cam rim by a preloaded tension spring, corresponding to the scheduled tripping speed.

By reaching the tripping speed, the swing of the pendulum on the cam becomes so extended, that the oscillating dog clutch (8) meets the peripheral guide of the eccentric stop, where it is clamped.

A plate (5) applied on the pendulum operates the safety switch (9) before the mechanical clamping of the pendulum. Through it, the control power of the plant is switched off.

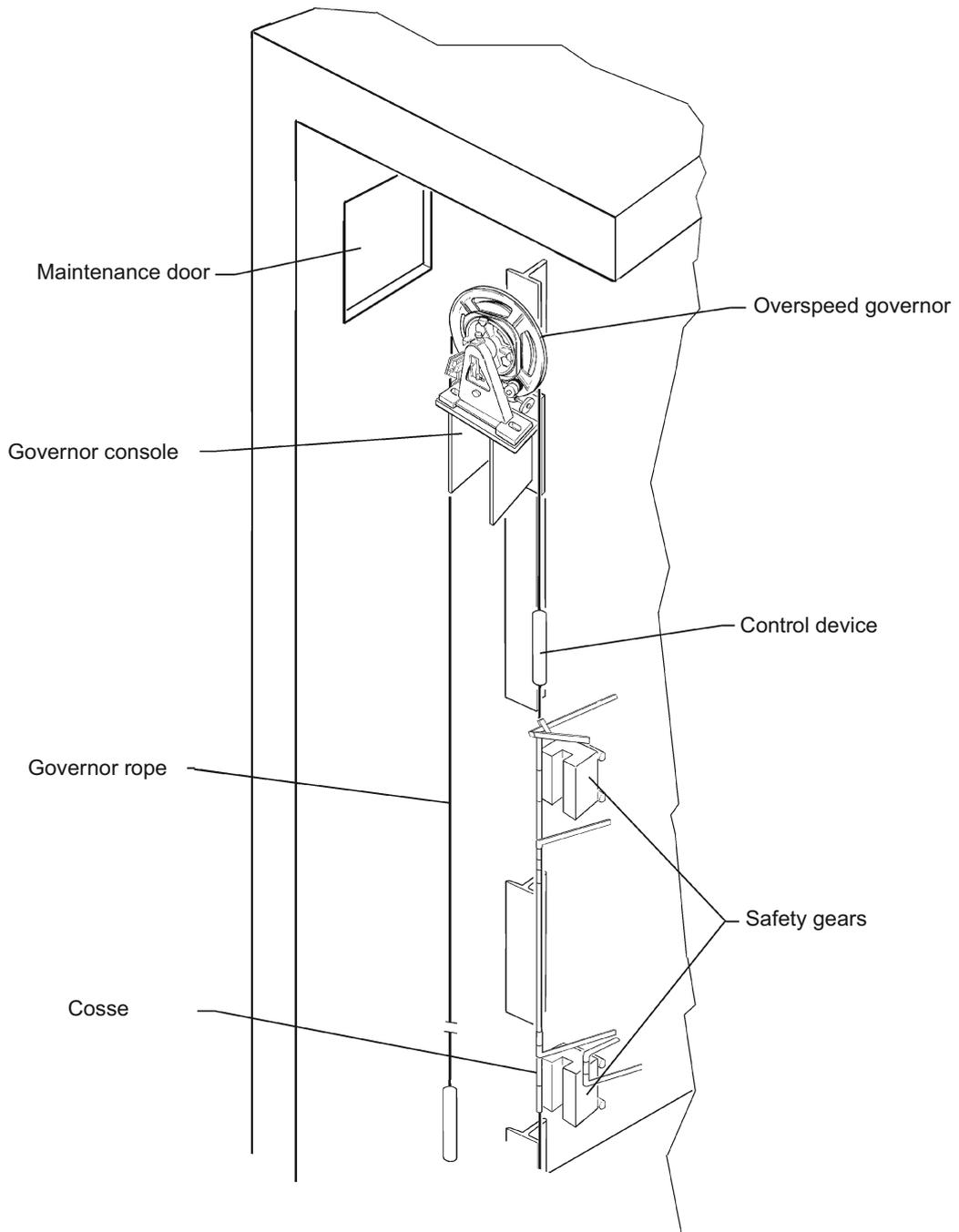


The overspeed governor can be supplied for the assembly in the engine room.
DISPOSITION IN THE ENGINE ROOM





For the assembly on the top of the elevator shaft, the overspeed governor must be easily accessible from the outside (e.g. through a maintenance door).
DISPOSITION ON THE TOP OF THE ELEVATOR SHAFT





1.2 RESPONSIBILITY AND GUARANTEE

These operating instructions are addressed to persons, who are well acquainted with the assembly of elevators. Thorough knowledge of the elevator construction and maintenance are necessary. The firm P.F.B. declines any responsibility for damages, deriving from not workmanlike or similar actions, that have not been carried out according to the following operating instructions and that therefore may damage the characteristics of the product.

P.F.B.'s guarantee may not be valid if the component part is used in a different way than that described in these instructions.

For technical security reasons, **it is not allowed:**

- *assembling of wrong overspeed governors, or governors destined to other applications than the intended one*
- *introduction of changes of any kind to the overspeed governor.*

1.3 SAFETY PRECAUTIONS

Generally the fitters are themselves responsible for the safety of the work.

The observance and respect of all the safety regulations in force and the legal rules are necessary to avoid damages to persons and to the product during the assembly, maintenance and repair.

Instructions that should be particularly considered regarding safety and damage prevention are pointed out with the following symbols:



ATTENTION! Indication of danger. It indicates situations, that involve risks for the persons and stresses out behavioural procedures.



DANGER! Indication of danger of possible damages to the structural element and to its component parts (e.g.: mistakes in the assembly, etc.).



IMPORTANT! Indication of useful information.

The following operating instructions are an integral part of the whole plant. They must be kept in a protected and easily accessible place (such as for instance in the engine room).

1.4 WORKING INSTRUCTIONS ON SAFETY STRUCTURAL ELEMENTS

Overspeed governors belong to the safety structural elements group. It is absolutely necessary to observe the rules and regulations that refer to this structural element, including the information given in the operating instructions.



For that reason, before beginning to work on this component part, the following operating must be read and understood, in particular with regard to the chapter concerning "safety precautions".

Safety devices need particular attention. Their perfect functioning is essential for a safe operation of the plant.

The regulation of the safety devices, that can be set only after the assembly, must be carried out immediately after the assembly itself.

If safety devices are already preset at the factory, their operations have to be immediately tested.

Should it be necessary to disassemble the safety devices during maintenance or repair, when terminated they have to be immediately reassembled and adequately tested.

In these instructions, the following safety devices are described:

- **safety switch on the overspeed governor (adjusted in the factory)**
- **safety switch on the tension weight with counterweight (only in the plants that are in conformity with EN81).**



1.5 OPERATIONS SCHEDULING

Before beginning the assembly, it must be made clear, in one's own interests, which are the constructional conditions and conditions relating to the space available, in order to carry out the assembly works in a safety conditions and following a logical order.

It is therefore advisable, considering all the given circumstances, to mentally simulate the various processes before the assembly activity is inconsiderately or hastily undertaken.

On receipt of the supply, it is necessary to check the goods, by comparing each single part with the purchase order, in order to verify their conformity and completeness.

The data contained in the type-plate have to be compared with the order.

1.6 TYPE-PLATE, TEST MARK, IDENTIFICATION

The type-plate of the OVERSPEED GOVERNOR is attached to the structure on the side. The retailer of the plant is responsible for it being legible.

 Skyelevator®	COSTRUTTORE / MANUFACTURER- Sky Elevator			
	LIMITATORE DI VELOCITA A'R1LR OVERSPEED GOVERNOOR R1LR			
	N'MACCH./PRODUCT.NR	N'IMPIANTO/ REF.NR	ANNO / YEAR	
	SKY 201	???????????	2021	
	VEL.NOMINALE / NOMINAL SPEED	VEL.ENTERV./ TRIPPING SPEED		
	1.00 m/s	1.25 m/s		
www.sky-elevator.com				



1.7 CONSTITUTION OF SUPPLY

Fig. 1
Overspeed governor Type SKY 200-2

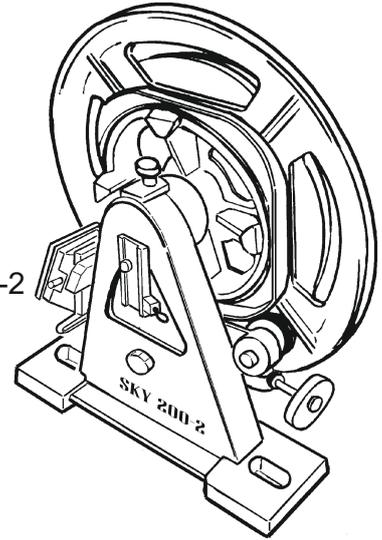


Abb. 1

Fig. 2
Tension weight with horizontal counterweight for the guide and tension of the rope (optional with safety switch for the version in conformity to EN 81).

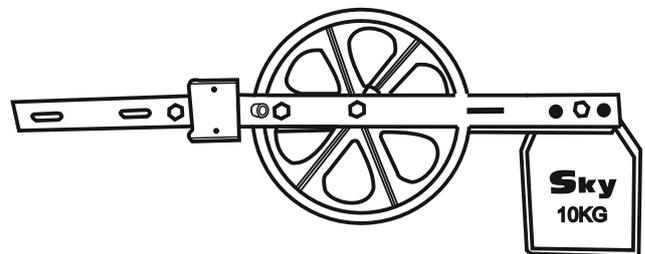


Abb. 2

2 ASSEMBLY



For all the assembly works in the engine room or in the elevator shaft, it should be made clear that:



The entrance into the assembly area, resp. the execution of all works can be carried out only by skilled workers.

In particular, the following safety measures should be respected:



Fix the anti-fall protection device (working platform, for safety of the persons);



- cover the hole in the floor;
- secure the assembly tools and other objects to avoid falls;
- in case the works have to be executed in the elevator shaft, lock the doorways and attach the appropriate warning sign.

2.1 ASSEMBLY OF THE OVERSPEED GOVERNOR

2.1.1 ASSEMBLY IN THE ENGINE ROOM

PREPARATION

The assembly of the overspeed governor occurs either directly on the floor in the engine room or on a support.



Floor and support must resist to a pressure of 25 kN



In the elevators in conformity to EN 81, the passing openings of the rope should be kept as small as possible and must be fitted with safety rings 50mm high.



For elevators in conformity to TRA, the same procedure is recommended.



Before the assembly takes place, it is necessary to fix an adequate safety ring on the floor.



If, after the assembly on the cement, a stone floor is laid down, its height should be considered (fig. 1)

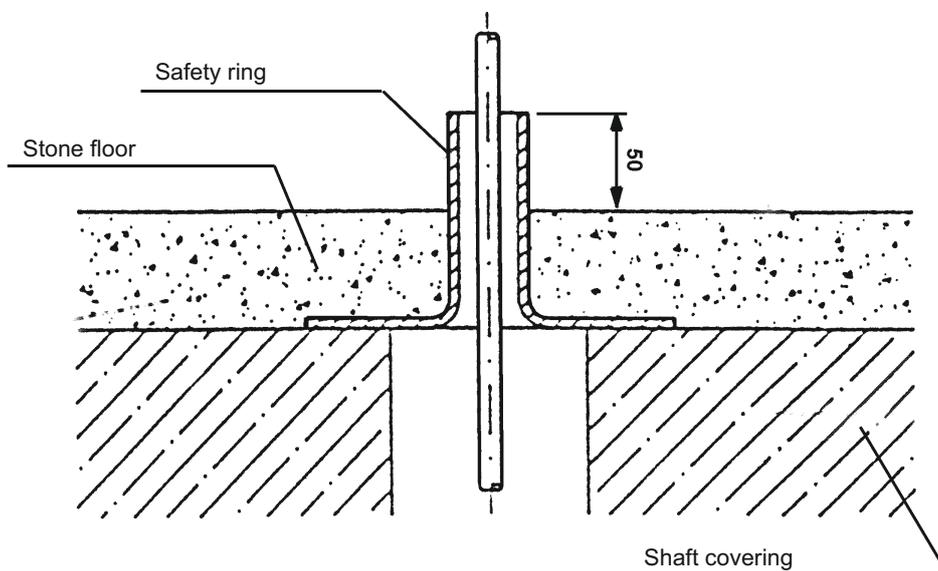


Fig. 1



ASSEMBLY STEPS

- If a support is used, first of all screw it on together with the overspeed governor (fig. 1).
- Place the overspeed governor on the passing opening of the rope and align it with the plumb line to the brake device, i.e. the safety gear (fig. 2).
- Mark the drilled holes and place the inserts (the inserts must resist to the operation load of at least 2 kN).
- Fix the overspeed governor (fig. 3).

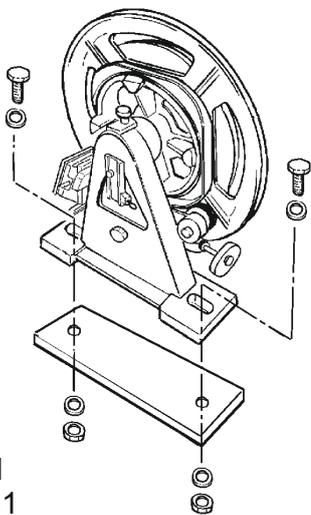


Fig. 1
Abb. 1

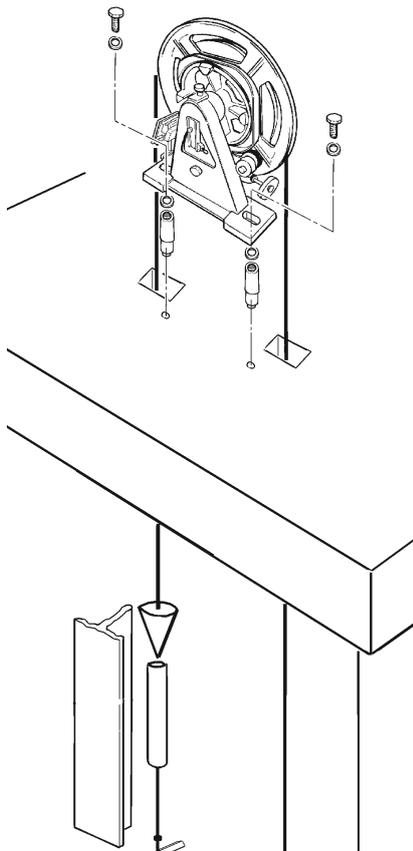


Fig. 2
Abb. 2

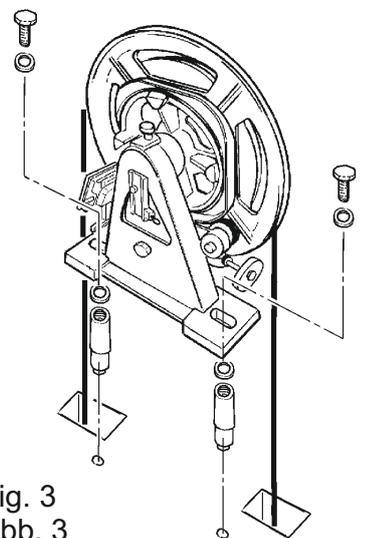


Fig. 3
Abb. 3

27



2.1.2 ASSEMBLY ON THE TOP OF THE ELEVATOR SHAFT



Safety measures, referring to works on elevator plants, must be observed.

Mount the overspeed governor as shown in fig. 1 and 2 (or in an opposite way).



In case of assembly in the elevator shaft, the overspeed governor must be easily accessible from the outside (e.g. through an inspection door for maintenance operations).

2.2 ASSEMBLY OF THE ROPE OF THE OVERSPEED GOVERNOR/TENSION WEIGHT WITH HORIZONTAL AND VERTICAL COUNTERWEIGHT



A technically perfect operation of the overspeed governor is only possible with a correct assembly of the governor rope itself and of the tension weight with counterweight.

While determining at which height the tension weight with counterweight has to be mounted, it must be made clear that:

- in no case, the counterweight must touch the floor (fig. 1 and 2), otherwise, the function of the overspeed governor is put out of operation;
 - when the framework of the elevator car reaches its lowest position (by the compressed buffer), the lower rope-anchor and the downward remaining rope-end must not meet the pulley of the tension weight.
- Cut the overspeed governor rope sufficiently and lay it down on the rope pulley of the tension weight.
 - Supply the first rope-end with the rope-anchor (fig. 1 and 2) and attach it to the safety gear.
 - Let the second piece of rope drop inside the elevator shaft.

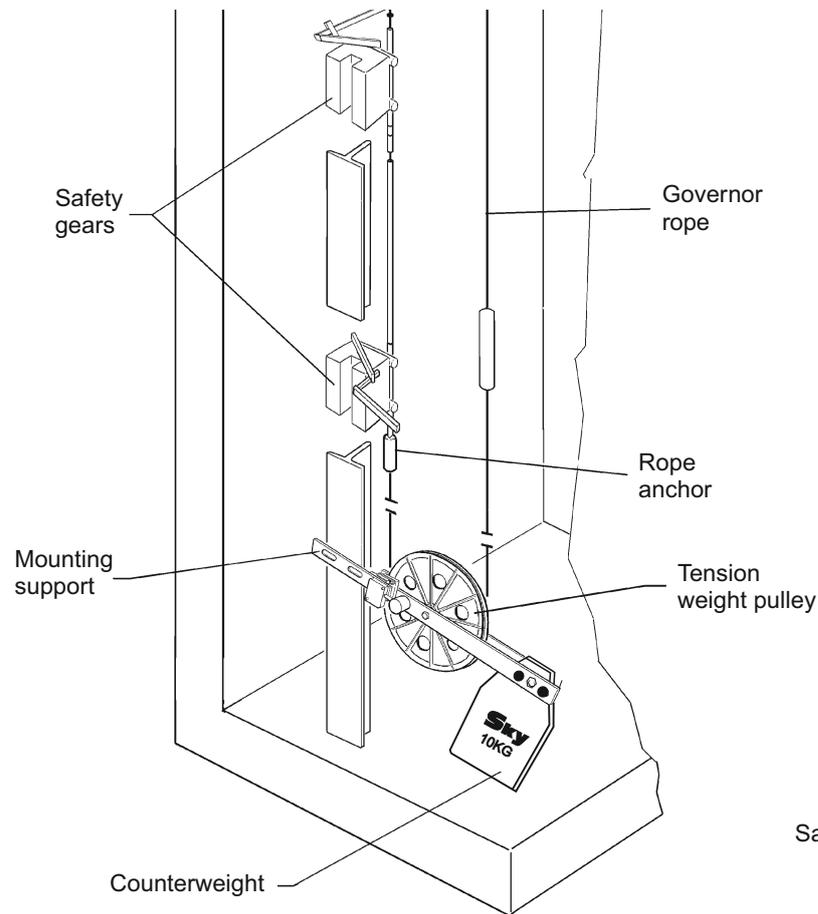


Fig. 1

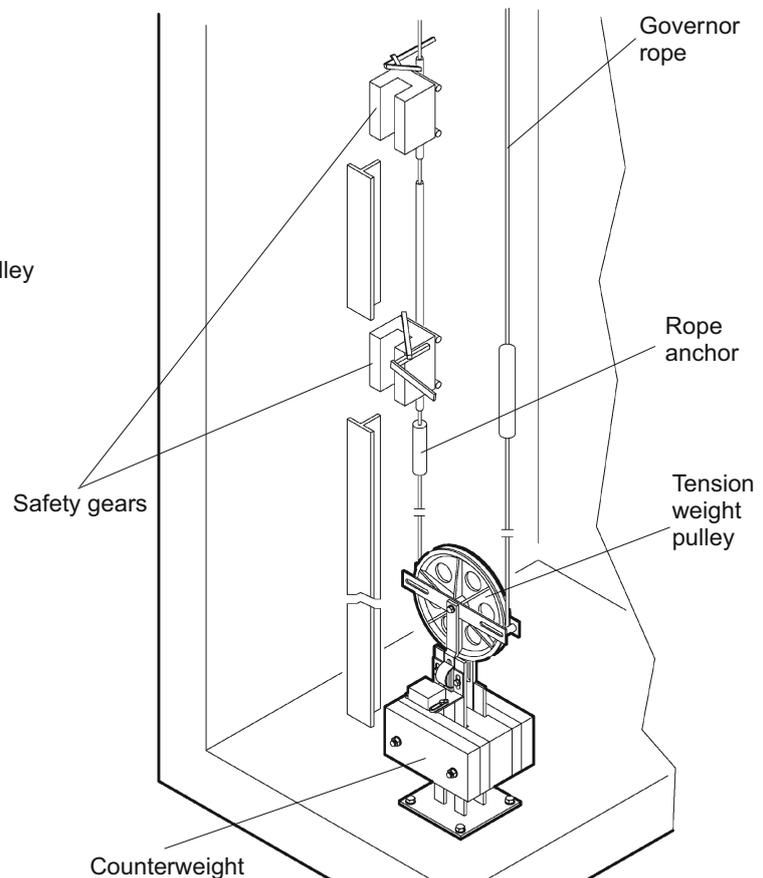


Fig. 2

TENSION PULLEY WITH HORIZONTAL COUNTERWEIGHT



- Mount the mounting support at about 450 mm (approx. value, fig. 3) on the bottom of the shaft.
- Hold the counterweight, until it is in an oblique position (fig. 3).
- In the presence of a brake mechanism acting upwards, mount the second rope-end to the rope-anchor of the brake device

or:

- Supply the second rope-end with the rope-anchor and attach it to the safety gear.
- Remove the support in order to stretch the rope.



If the assembly has been properly carried out, the counterweight should take a slightly upward angled position (fig. 3).

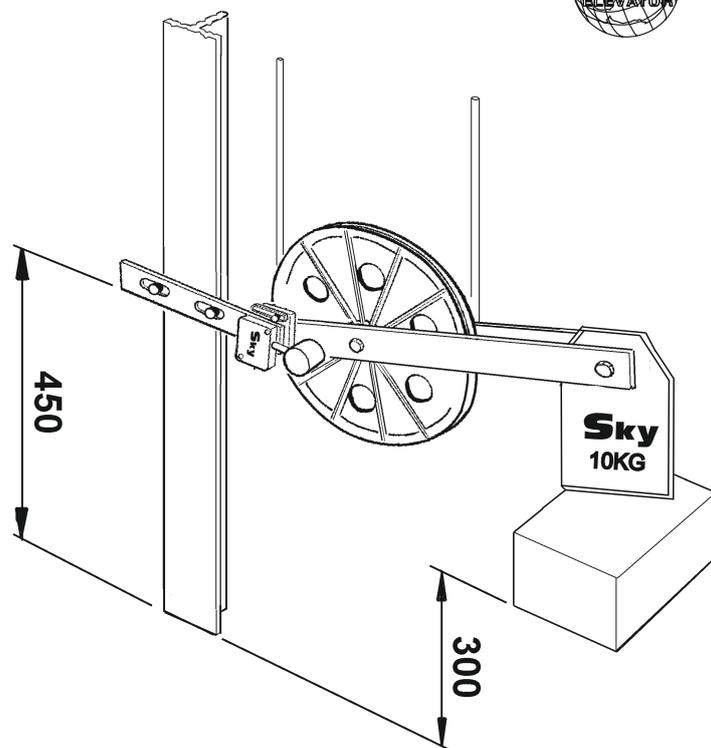


Fig. 3

TENSION PULLEY WITH VERTICAL COUNTERWEIGHT



- Mount the leading plate of the counterweight to achieve perfect alignment between the pulley of the overspeed governor and the pulley of the tension weight (fig. 4).
- Hold the counterweight, until it reaches a height of about 120 mm from the bottom of the shaft (approx. value) (fig. 4).

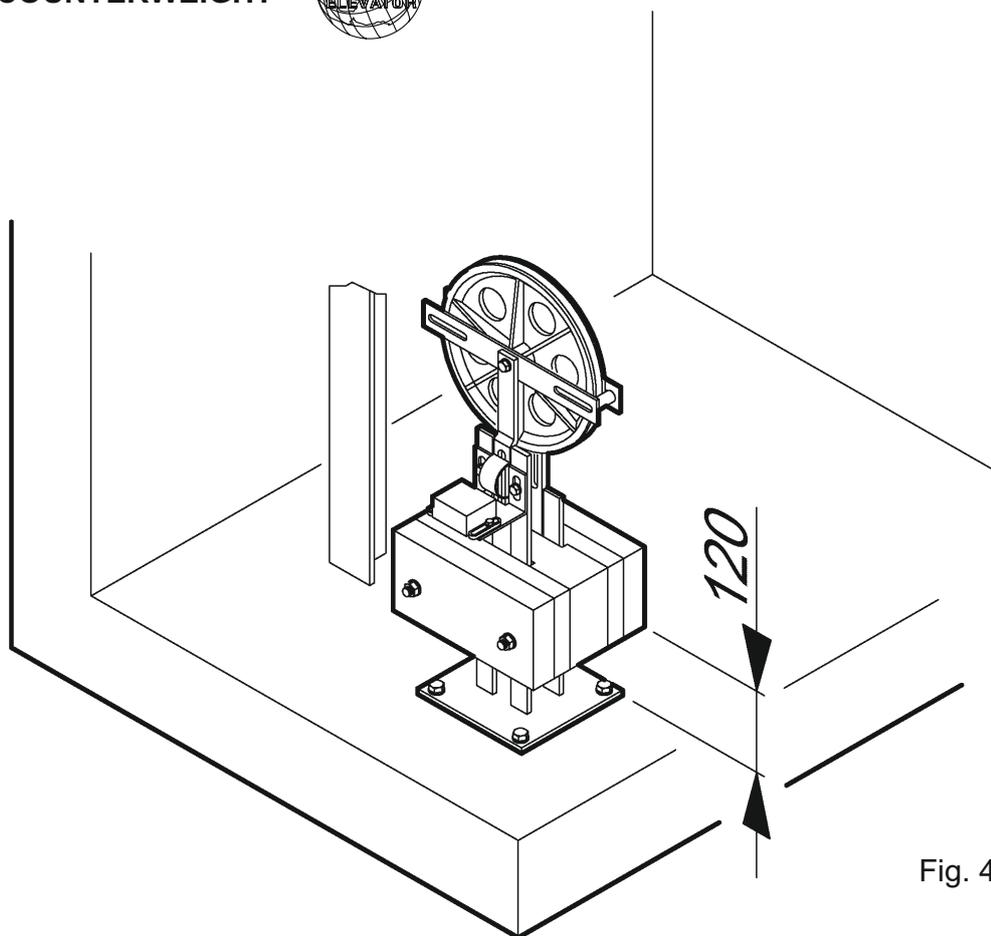


Fig. 4

2.3 ELECTRIC INSTALLATION OF THE SAFETY SWITCHES



All the works concerning the electrical equipment should only be carried out by specialized electricians, skilled workers.



Before beginning operations, turn off the power of all the parts of the plant.



When laying the connection cables, take care that:

- unipolar cables have a double coating
- the use and laying of the cables are carried out according to the EMV rules and regulations.

The safety switches disconnect the safety circuit of the elevator plant.

The following safety switches must be connected:

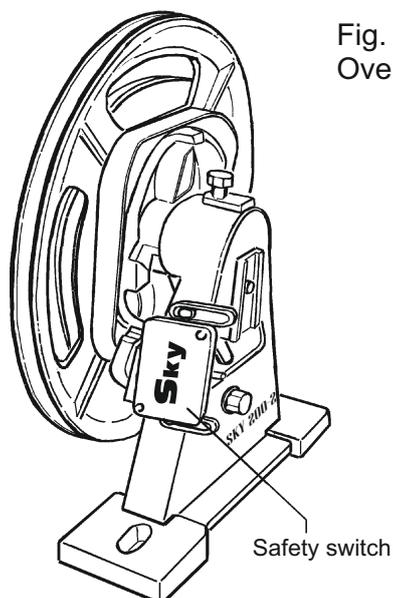


Fig. 1
Overspeed governor type SKY 200-2 - SKY 281

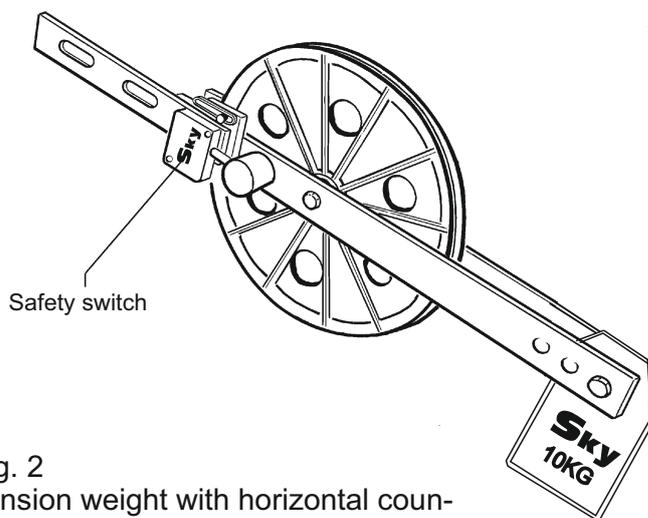


Fig. 2
Tension weight with horizontal counterweight complete with safety switch (only in the plants in conformity to EN 81).

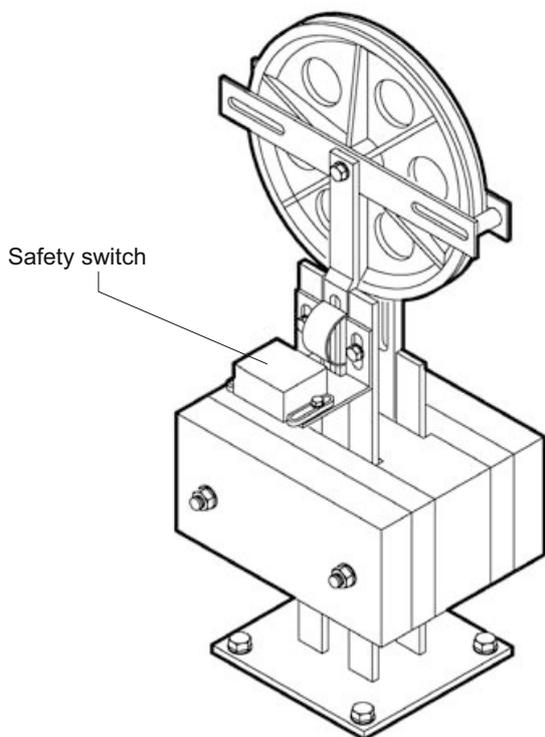


Fig. 3
Tension weight with vertical counterweight complete with safety switch (only in the plants in conformity to EN 81).

3 SETTING UP OPERATIONS

3.1 OVERSPEED GOVERNOR

The safety switch of the overspeed governor has already been set in the factory. Its position is fixed with sealing-wax and it cannot be modified.



The setting up of the safety switch on the overspeed governor is not necessary.

3.2 TENSION WEIGHT WITH COUNTERWEIGHT (EN 81 and TRA)

Only in plants in conformity to EN 81:

a) with tension pulley with horizontal counterweight:

- shift the mounting clamp of the tension weight with counterweight in such a way that the safety switch does not become operative (fig. 1, pos. 1).



At the same time take into consideration the stretching of the rope!

- On the safety switch, adjust the horizontal connecting position on the slots (fig. 1, pos. 2).
- After the assembly, release the tension rope and check the control function by moving the tension arm. Then fix the position with sealing-wax or similar.
- After the insertion, the tripping pin of the safety switch must be reset by hand in the starting position.

b) with tension pulley with vertical counterweight:

- Move the mounting plate of the safety switch in the vertical direction (fig. 2 – pos. 1) in such a way that the switch does not activate.
- On the switch, adjust the horizontal connecting position on the slots (fig.2 – Pos. 2).
- After the assembly, release the overspeed governor rope and check the control function by moving the counterweight slowly downwards on the guide rail and paying close attention. Then fix the position with sealing wax or similar.
- Following the insertion, the tripping pin of the safety switch must be reset in the starting position.

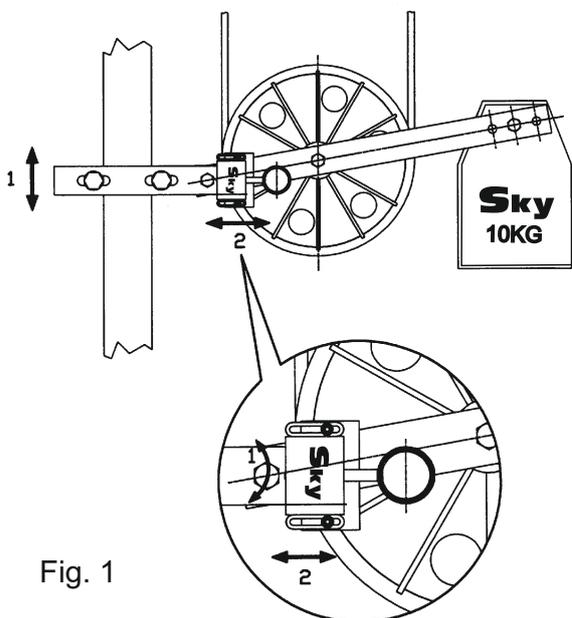


Fig. 1

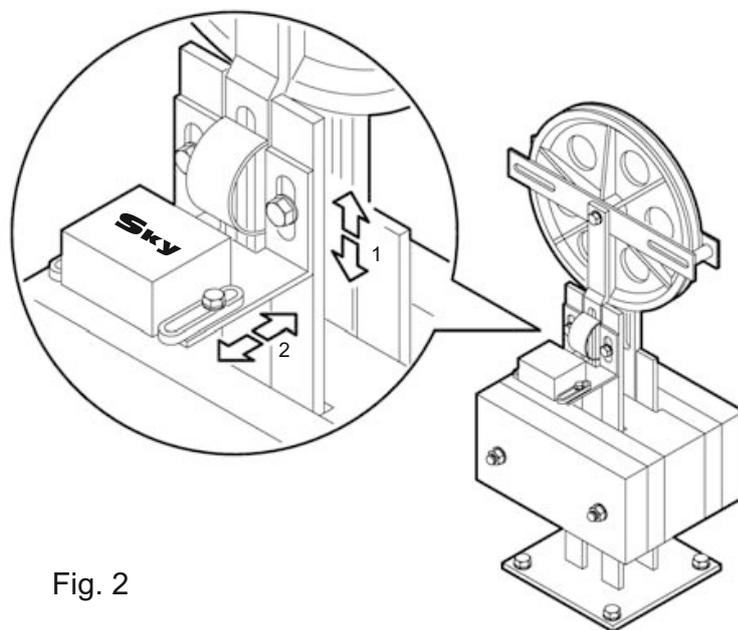


Fig. 2



4 OPERATION TESTING

Although quality and operation of each component are controlled by the factory at the delivery, before sale, eventually, before the final test of the plant, an operation testing should be carried out.

TEST RUN AFTER THE ASSEMBLY



Clean the guides before the first test run takes place.



Before the beginning of the run, leave the elevator shaft free from persons and objects.

Before the general test takes place, it is necessary to slowly run through the whole area of action (with inspection control device). After that, verify the distance to be sufficient for all fastening parts (particularly in the fixing area of the guides and of the governor rope).

If possible before that, locate and remove screw projections and other dangerous narrow points.

Subsequently, a static function test has to be carried out:

- operate by hand the overspeed governor: press down the rocker lever;
- drive the elevator cars *slowly* downwards.



The overspeed governor must release the safety gear.

The safety switch must release and switch off the safety circuit of the elevator plant.

With a slow movement upwards and/or downwards, place the overspeed governor and the safety gear backwards.

CONTROL OF ALL OPERATIONS

Subsequently, the release is to be controlled at a nominal speed, as well as the relative safety devices.

The control of the release is to be carried out as a dynamic function test, with or without rated load of the elevator car.



During test runs, no-one must stay in the elevator car.

Lay down the governor rope into the test groove and drive the elevator car at nominal speed downwards/upwards.

Alternatively, the overspeed governor can be operated also by hand, by pressing the rocker lever down.

The safety switch must release and switch off the safety circuit of the elevator plant.

With a slow movement downwards/upwards, bring the overspeed governor and the brake device (the safety gear) back again.

CONTROL OF THE SAFETY DEVICE FOR ROPE TENSION

The safety switch on the tension weight with counterweight is controlled by removing the rope of the overspeed governor from the rope pulley.

When the control is finished, the release pin of the safety switch must be reset by hand.

5 MAINTENANCE, CONTROL AND REPAIR



5.1 MAINTENANCE AND CONTROL

Generally, the overspeed governor and respective tension weight with counterweight do not need any maintenance.

The whole plant has been conceived in such a way that, with proper use without damages, there is no need for important maintenance interventions.

According to the frequency of use, controls of the plant should be carried out periodically.

 After substantial changes or after an accident, it is necessary to carry out a control of the plant (see EN 81-2, annex E2).
This is necessary especially when safety devices are changed.

Changes, damages or other irregularities must be notified and, if necessary, repaired within the limits of the allowed feasibility.

 Periodical controls increase, not only the safety, but also the trouble-free and long-life operation of the plant!

Particularly recommended are controls and maintenance operations before the operating tests foreseen by the law take place.

Please contact your supplier if there are any doubts regarding the operation efficiency of the components of the plant.

MAINTENANCE AND CONTROL SCHEDULE

- Check every 6 (six) months the operation efficiency of the overspeed governor.
- Check the damage or the distortions of the overspeed governor and respective structural elements.
- Check the wear of the undercut grooves of the overspeed governor and the grooves of the tension pulley.

 Danger of tear to the rope! When the governor rope runs in an irregular way, that is to say when the outline of the rope remains stamped in the groove of the overspeed governor.

- Control that the rocker lever is easily movable. If necessary, replace it.
- Control the safety switch by hand (manual release).
- Keep the plant clean from dirt and particularly the signs and the type-plates must always be kept legible.

5.2 EXECUTION OF REPAIRS

Generally, also in case of repairs, the overspeed governor cannot be disassembled or modified in any other way (sealing, sealing-wax).

 It is not allowed the spontaneous replacement of parts or element groups due to defects or severe wear.

The reasons are the following:

- rules and regulations concerning guarantee and safety technical dispositions;
- only original spare-parts must be mounted.

 It is not allowed to operate the elevator plant, even if temporarily, without the overspeed governor.



TENSION OPERATION OF THE GOVERNOR ROPE

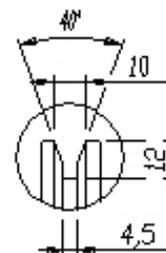
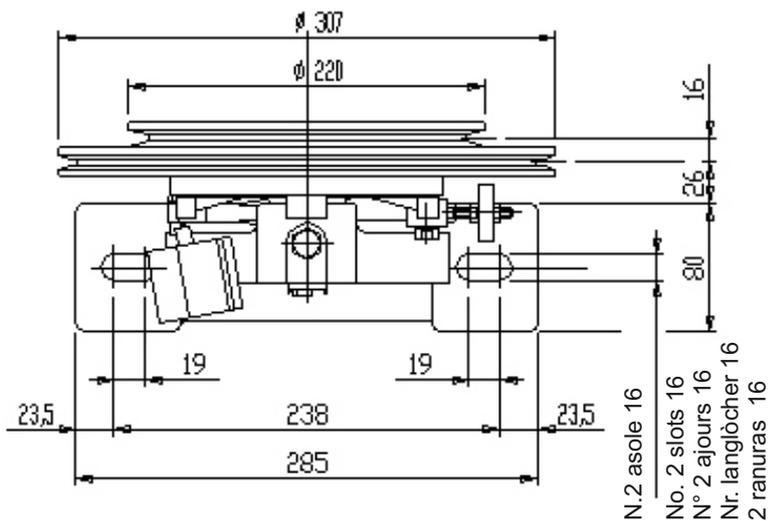
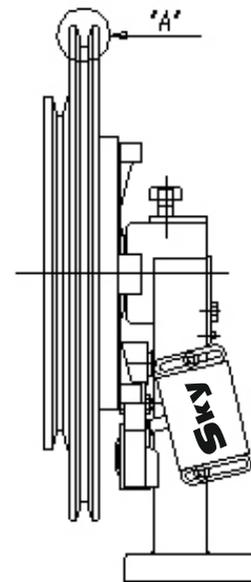
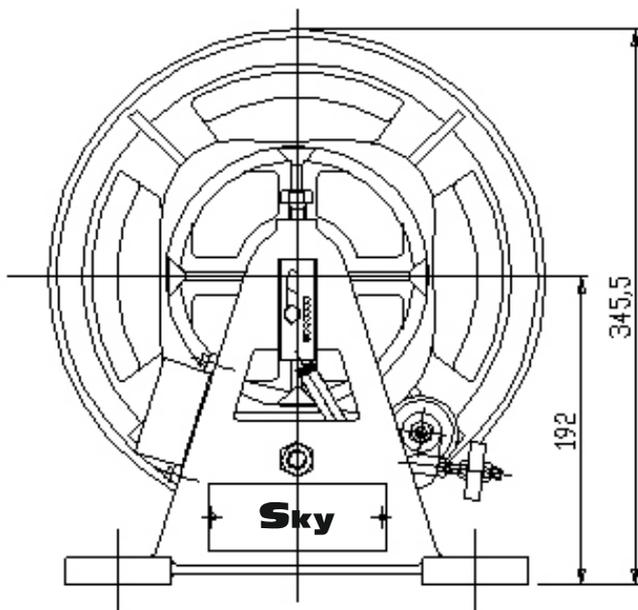
After starting and running the plant for a longer time, it might be necessary to slightly stretch the governor rope again.



Pay attention to the minimum distance between the shaft bottom and the counterweight (s. **PAR. 2.2**).



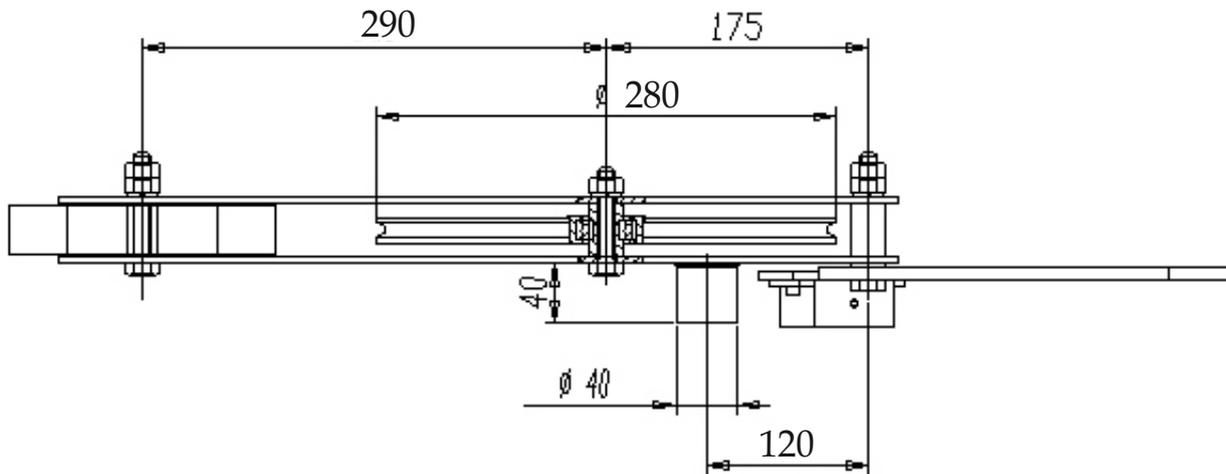
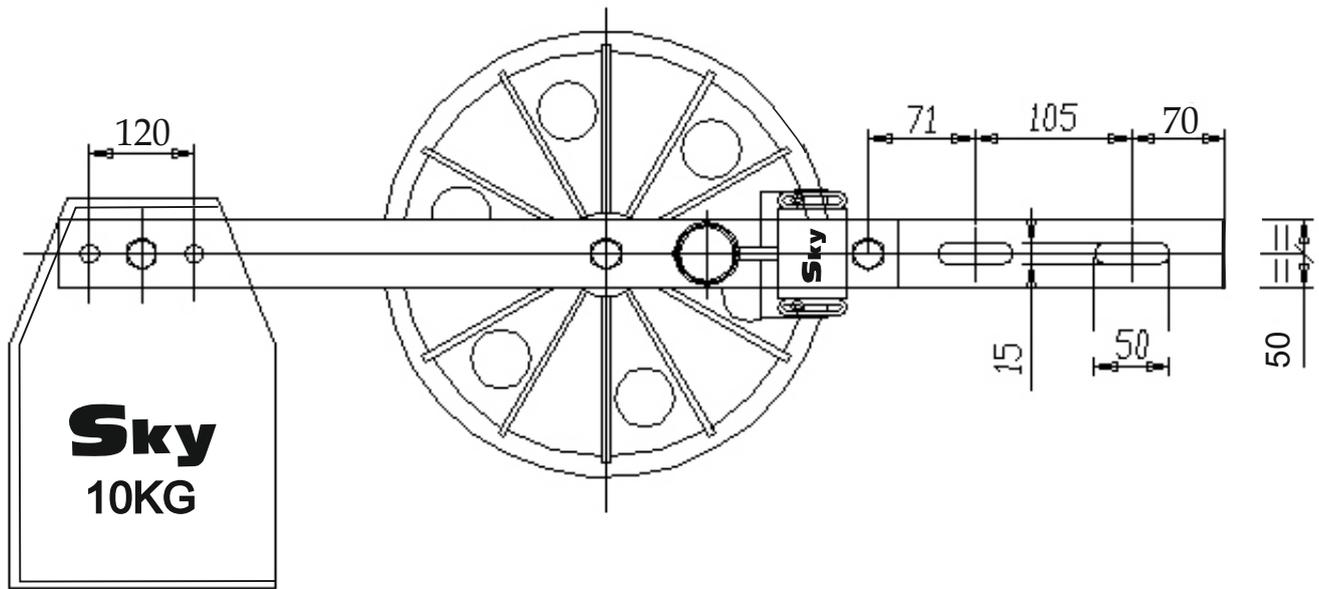
6 TECHNICAL DATA 6.1 OVERSPEED GOVERNOR TYPE SKY 200-2 - SKY 281



Ingrandimento "A"
"A" inset
Agrandissement "A"
Vergrößerung "A"
Ampliación "A"

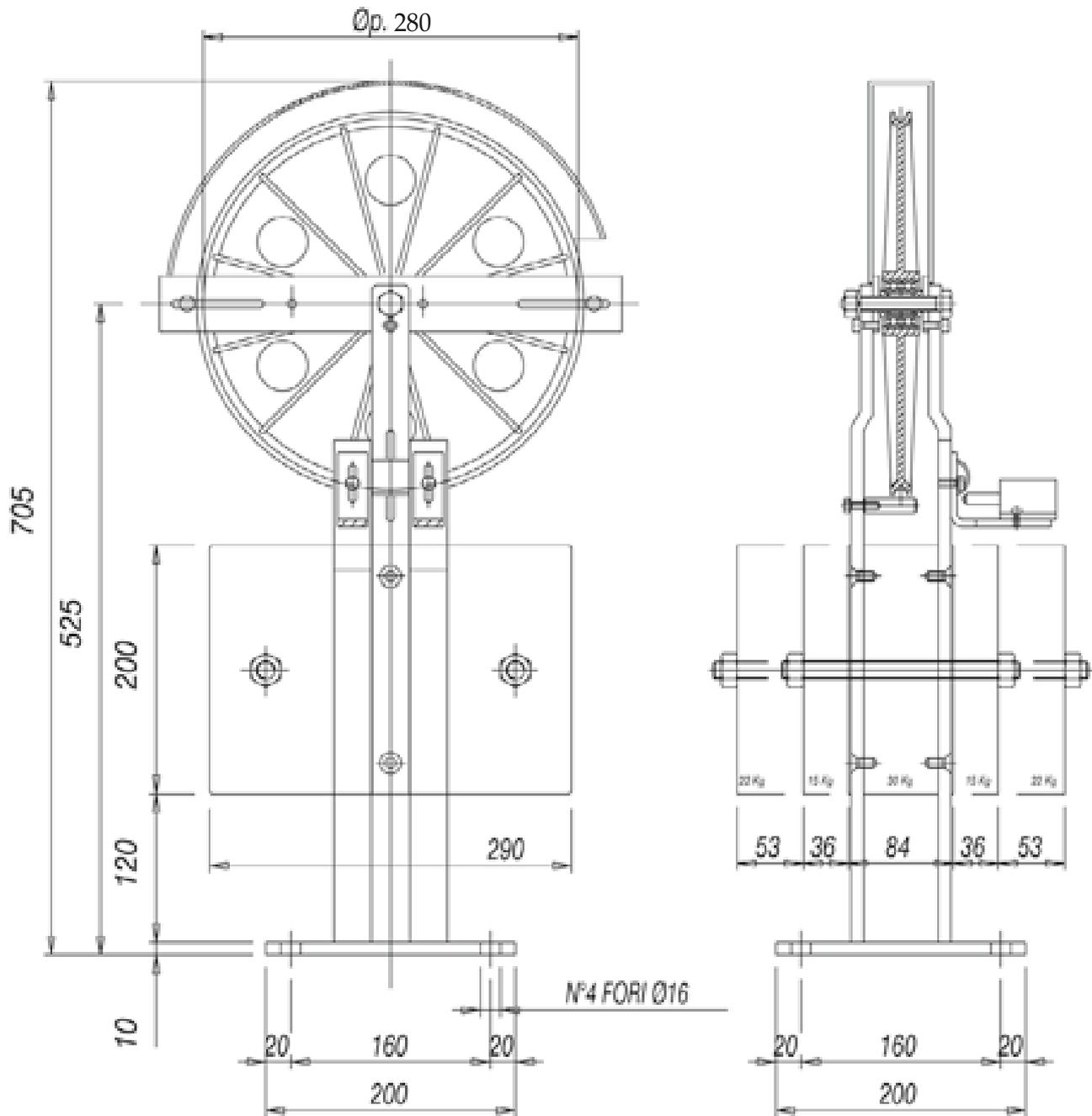


6.2 TENSION WEIGHT WITH HORIZONTAL/VERTICAL COUNTERWEIGHT





6.2 TENSION WEIGHT WITH HORIZONTAL/VERTICAL COUNTERWEIGHT



Skyelevator®

Componenti meccanici per ascensori - Mechanical lift components
SKY ELEVATOR

<http://www.skyelevator.de>

- E-mail: sky@skyelevator.de

<http://www.sky-elevator.it>

- E-mail: sky@sky-elevator.it

<http://www.sky-elevator.bg>

- E-mail: sky@sky-elevator.bg

<http://www.sky-elevator.com>

- E-mail: sky@sky-elevator.com

Manufactured Date: 2021

Serial Number :