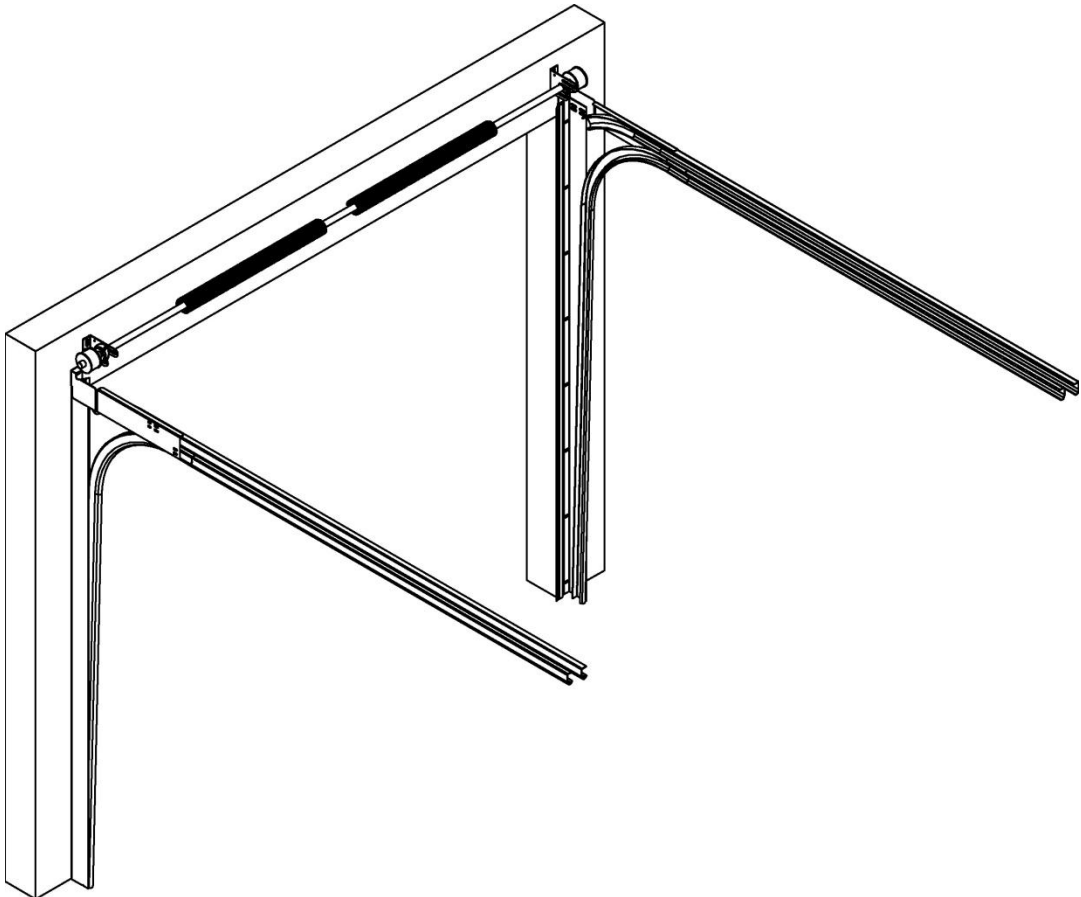




**sakumetall**



# **RES350**

**Home garage sectional door for up to 350mm lintels**








INSTALLATION MANUAL

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**ATTENTION! GENERAL WARNINGS!**

Several precautionary measures must be observed when installing, using and maintaining the door set. For safety purposes, make sure to cautiously follow the warnings and instructions provided below! In case of any doubt, please contact your supplier.

-  The present manual only handles the installation of the door set.
-  For installing additional elements, separate instructions must be obtained.
-  Before commencing work, read this manual carefully.
-  Certain parts of the door set may be with sharp or serrated edges.
-  We recommend wearing protective gloves.
-  All parts necessary for installing the present lifting door are delivered with the set. Adding other parts to the door may have an impact on the safety of the door as well as on the validity of warranty.
-  Strong forces occur when tightening the springs Use the right tools and make sure that you are in a secure position when performing the works.

Make sure there is enough light in the place of installation.

Remove all excessive items and dirt.

The presence of unauthorised persons is prohibited. Other persons (especially children!) may be exposed to danger.

## INTRODUCTION

Saku Metall offers a wide selection of lifting doors. The door set RES350 has the following qualities:

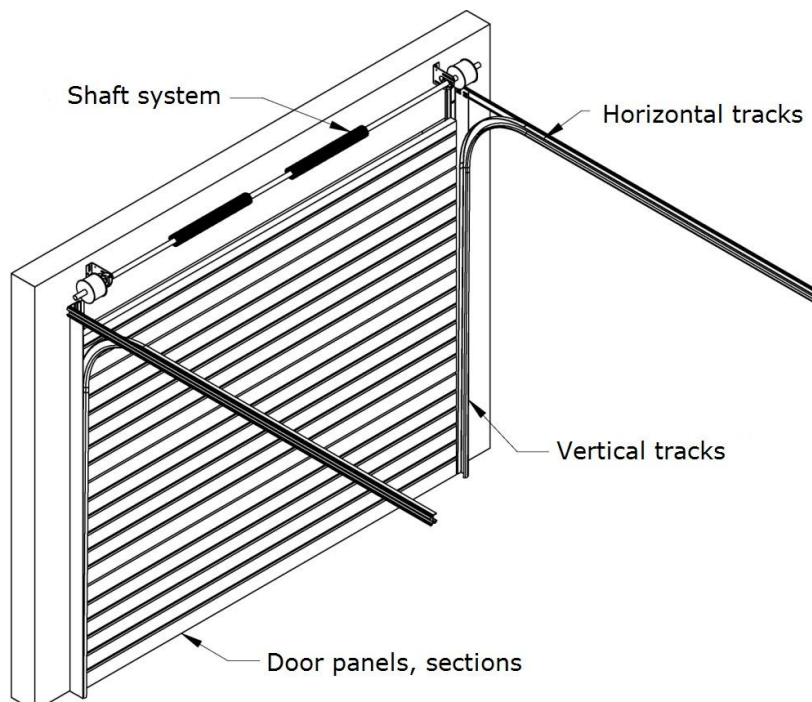
- ✓ Suits for one and two car garages; the aperture width is up to 5000 mm, the weight of the door sheet is up to 160 kg;
- ✓ The springs are located in the lintel above the door aperture;
- ✓ Equipped with spring break protections and the wire rope is located inside the sliding tracks, corresponding to CE standards;
- ✓ Space saving dimensions.

This manual only includes instructions for proper installation of the door set. In order to get a more profound manual, please contact your supplier, who must also see that the rest of the door also corresponds to CE standards.

The lifting door set consists of the following parts:

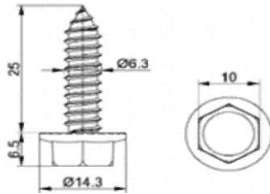
- Sliding tracks (vertical and horizontal);
- Door panels;
- Standard parts and fixing devices (including the spring break protection, installation profiles for horizontal sliding tracks);
- Fixing devices (self-drilling screws, bolts, nuts, hinges, brackets, roll holders, etc.) according to the chosen door type;
- Cables, cable eyes and locks;
- Pipe shaft;
- Torsion springs according to the dimensions of the doors;
- Package.

Good luck for installing the door. If anything has remained unclear or you have any questions, please contact with the company that delivered the door set.

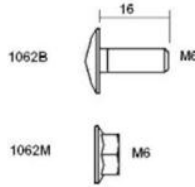


### ENCLOSED FIXING MATERIALS

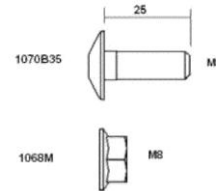
Self drilling screw; 1055BV  
(wrench nr10)



Bolt M6x16; 1062B  
Nut M6; 1062M



Bolt M8x25; 1070B35  
Nut M8; 1068



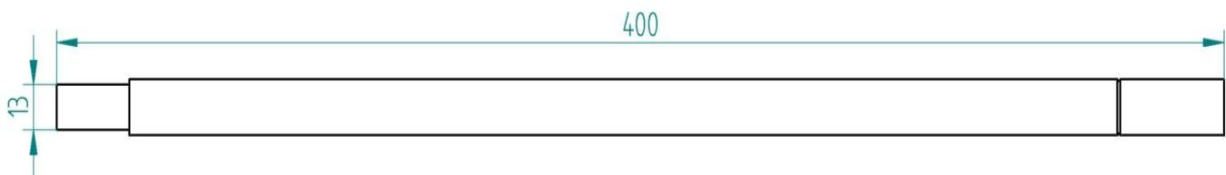
For attaching vertical angle irons to the walls and horizontal sliding tracks to the ceiling

- Hexagonal screw 8x70 mm;
- Dowel 10x80 mm;
- Washer 8x30 mm.

### TOOLS NEEDED FOR PROPER AND FAST ASSEMBLY

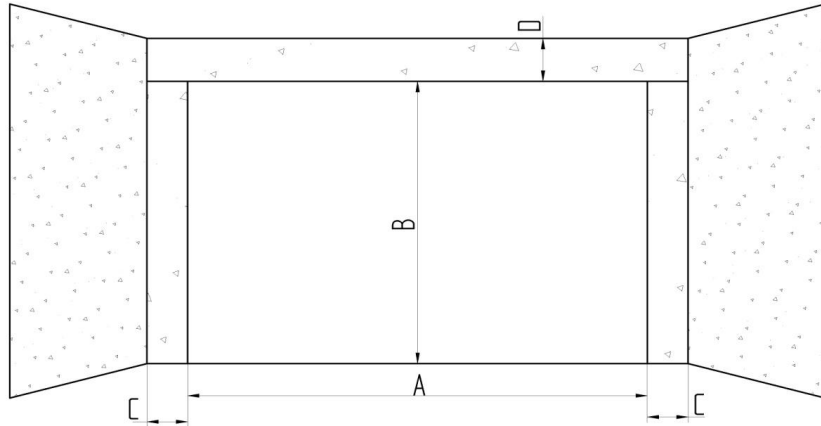
- |                                         |              |
|-----------------------------------------|--------------|
| (Battery)drill                          | drill 4 mm   |
|                                         | drill 4.5 mm |
|                                         | drill 6.5 mm |
|                                         | dowel 10 mm  |
|                                         | dowel 13 mm  |
| Hexagonal key                           | 4 mm         |
| Wrench                                  | 10 mm        |
| Wrench                                  | 13 mm        |
| Wrench                                  | 15 mm        |
| Wrench                                  | 17 mm        |
| Alan key                                |              |
| Monkey wrench                           |              |
| Clamp                                   |              |
| Spirit level                            |              |
| 2 blocks with the height of 20 to 40 mm |              |

Pipes (levers) for tensioning springs –  $\varnothing$ 13 mm, length at least 400 mm.



## CONTROLLING DIMENSIONS

Before installation, control the dimensions of the door aperture according to the present figure.



A = width of the aperture (CW);  
 B = height of the aperture (CH);  
 C = side width;  
 D = lintel height.

## ROOM NECESSARY FOR ASSEMBLY

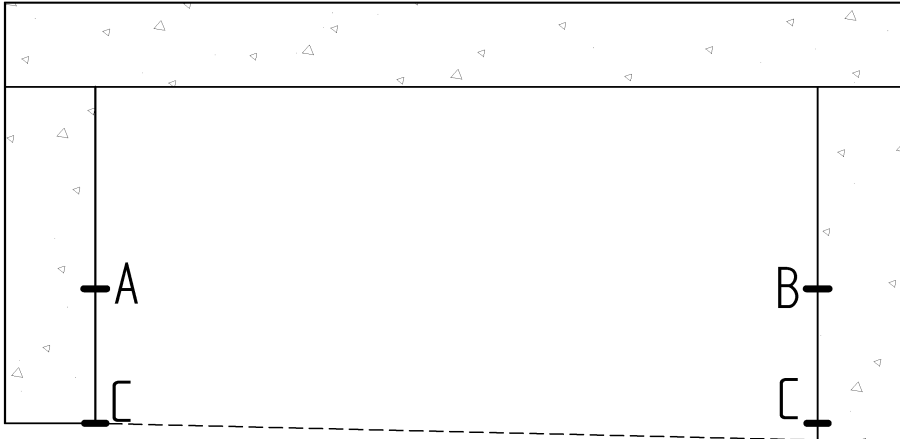
Side width C: at least 100mm

Lintel height D: at least 350mm near springs;

**Note 1) The necessary lintel height depends on the height of the electric drive.**

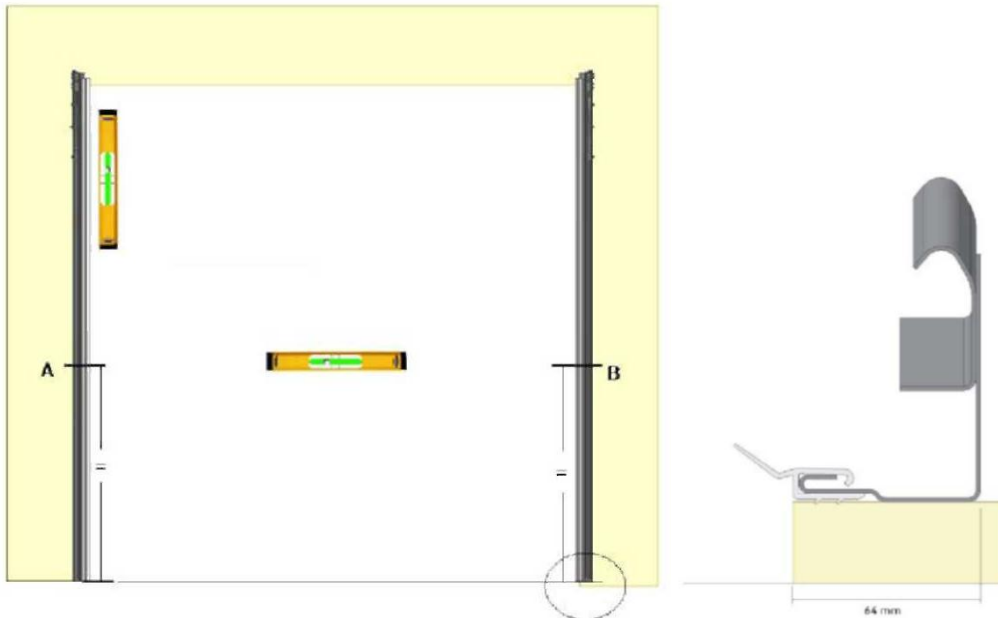
### INSTALLATION OF VERTICAL SLIDING TRACKS

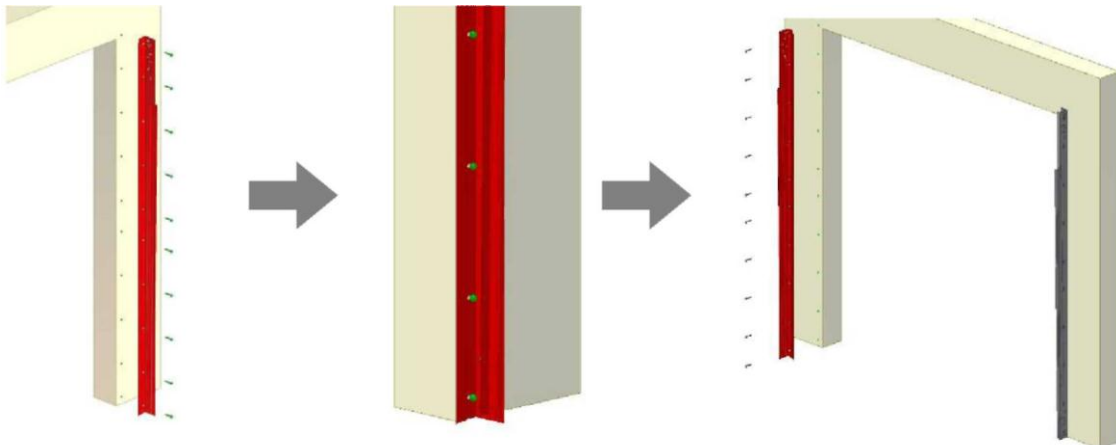
Mark the heights „A” and „B” to the both sides of the door aperture by using a spirit level. Then mark side width „C” to the equal distance from signs „A” and „B”.



Fix both vertical sliding tracks in a way that their bottom surface is located on line C and longitudinal edge of the seal located at the angle is aligned with the vertical edge of the door aperture. The installed vertical sliding tracks must be parallel.

If the floor surface is tilted, the height of the lower vertical sliding track must be raised (for instance, with a wedge).



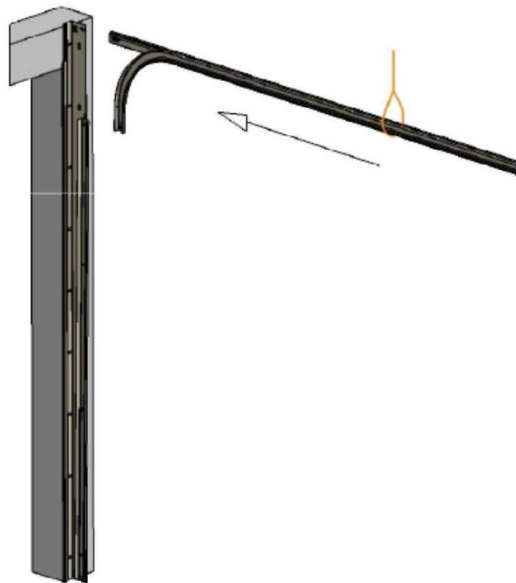


### **PREPARATION OF THE HORIZONTAL SLIDING TRACK SET**

At the beginning of installation, hang the horizontal sliding track to the ceiling with a rope in order to hold the track up during the assembly. Attach horizontal sliding tracks to the side plate on the vertical sliding track.

From the inside, put two bolts through the hole in both horizontal sliding tracks.

Align the external edge of the curve of the vertical sliding track with the respective edge. Tighten M6 collar nuts (1062M) with hand.

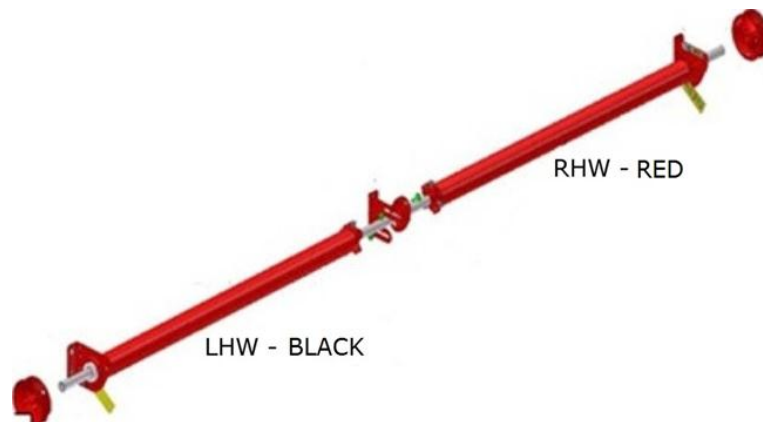


### **PREPARATION AND ASSEMBLY OF THE SPRING SET**

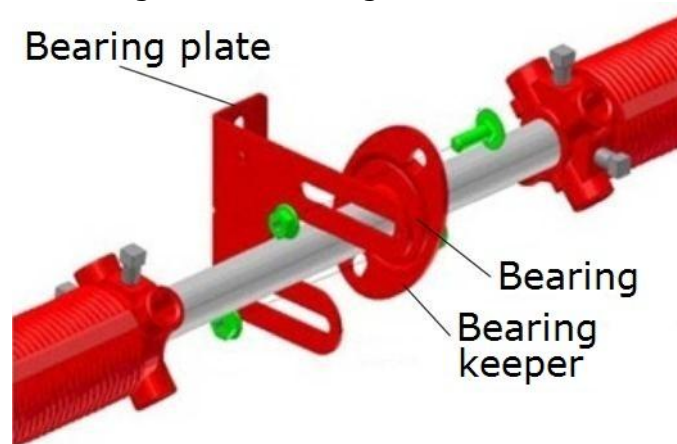
Depending on the weight of the door, it may have more than one spring. Springs are divided into counter clockwise and clockwise helix springs. A spring with counter clockwise helix or left hand spring is marked with a black end, a spring with clockwise helix or right hand spring is marked with a red end.



Slide both springs on the pipe shaft. When looked from the inside, the left hand spring must be on the left and right hand spring on the right.

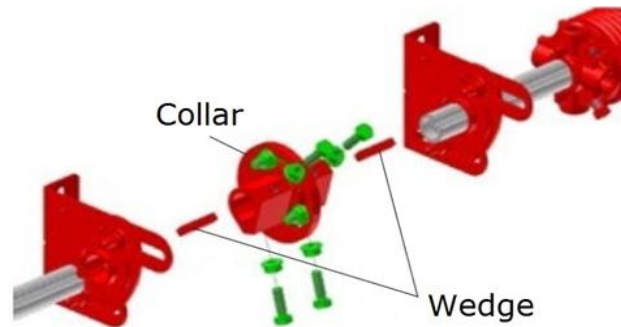


Between the springs there are a bearing and a bearing keeper, which fixes the support bearing to the bearing case.

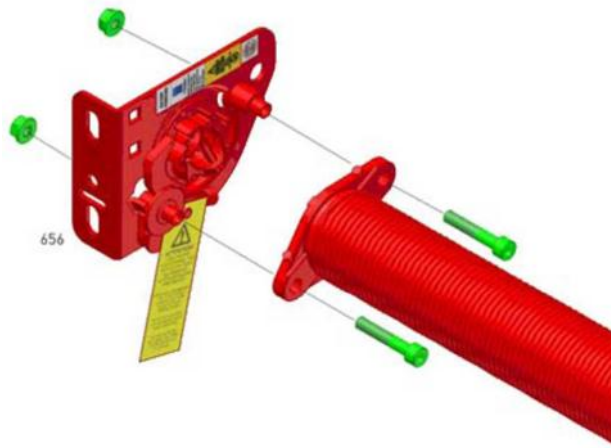


If the width of the door aperture is over 3000 mm (CW > 3000)

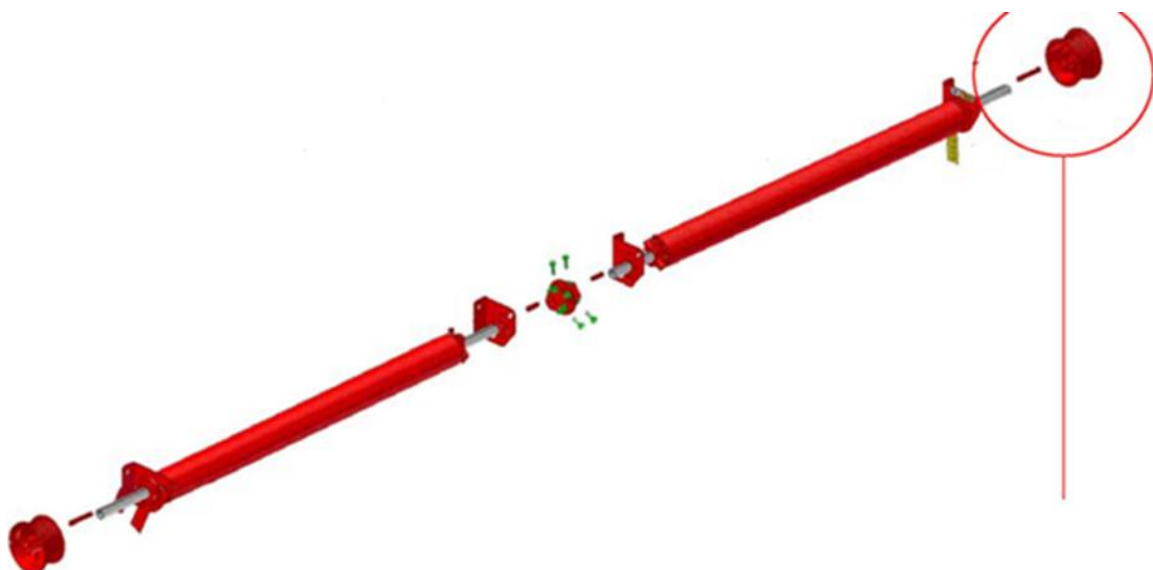
Slide the springs on both pipe shafts. The shafts are of different length in order to avoid the placement of the connection gasket in the centre — in case of an automated door, above the control engineering device and the door connection profile. The left hand spring with the black end must be placed on the left. Slide a bearing and a bearing keeper on both shafts, tighten them to the bearing case with two M8 bolts and nuts. After that, connect the shaft parts with a connection gasket and wedges.



Fix spring break protections (651LH/RH and 667LH/RH) to spring ends, following the figures that are enclosed in the package of the protections. NB! Read the manual of spring break protections.

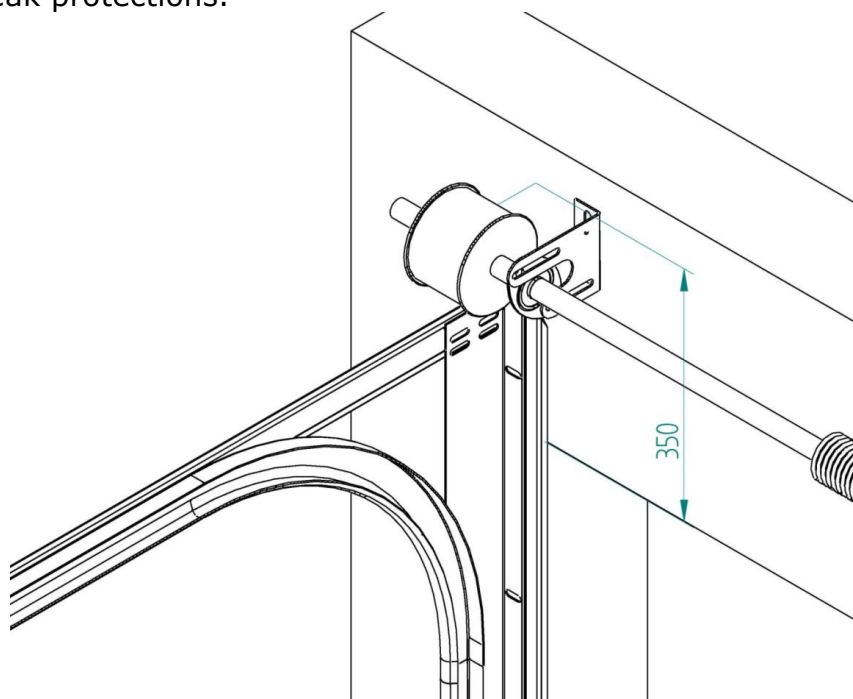


Slide a drum on both shaft ends. Place the drum with marker RH to the right. Tighten the drum bolts with hand to fix the drum to the pipe shaft





Install the shaft and springs on the wall by using the bearing case and spring break protections.

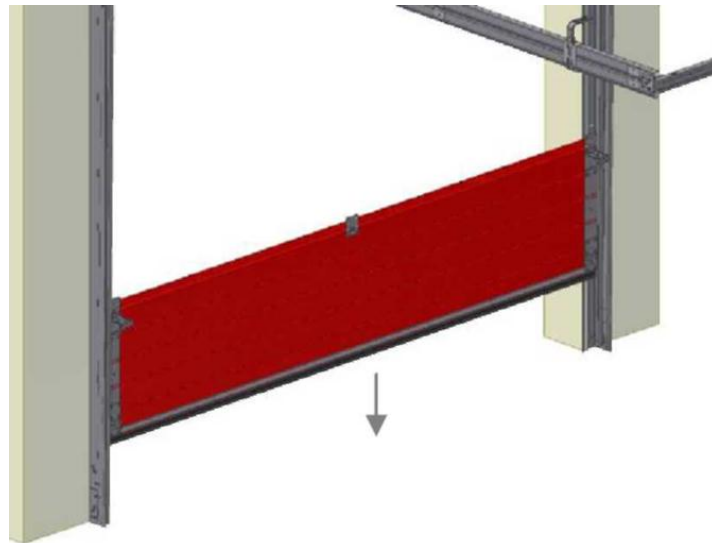


## **DOOR PANELS ASSEMBLY**

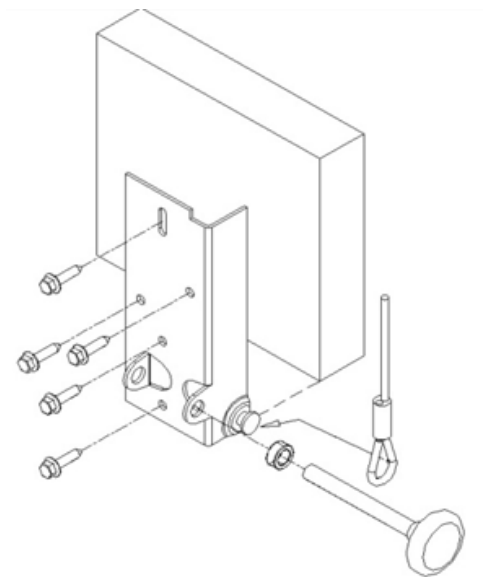
### General note

In order to facilitate the assembly of the door panel, the side and central hinges are fixed to the panels and holes have been pre-drilled for self-drilling screws.

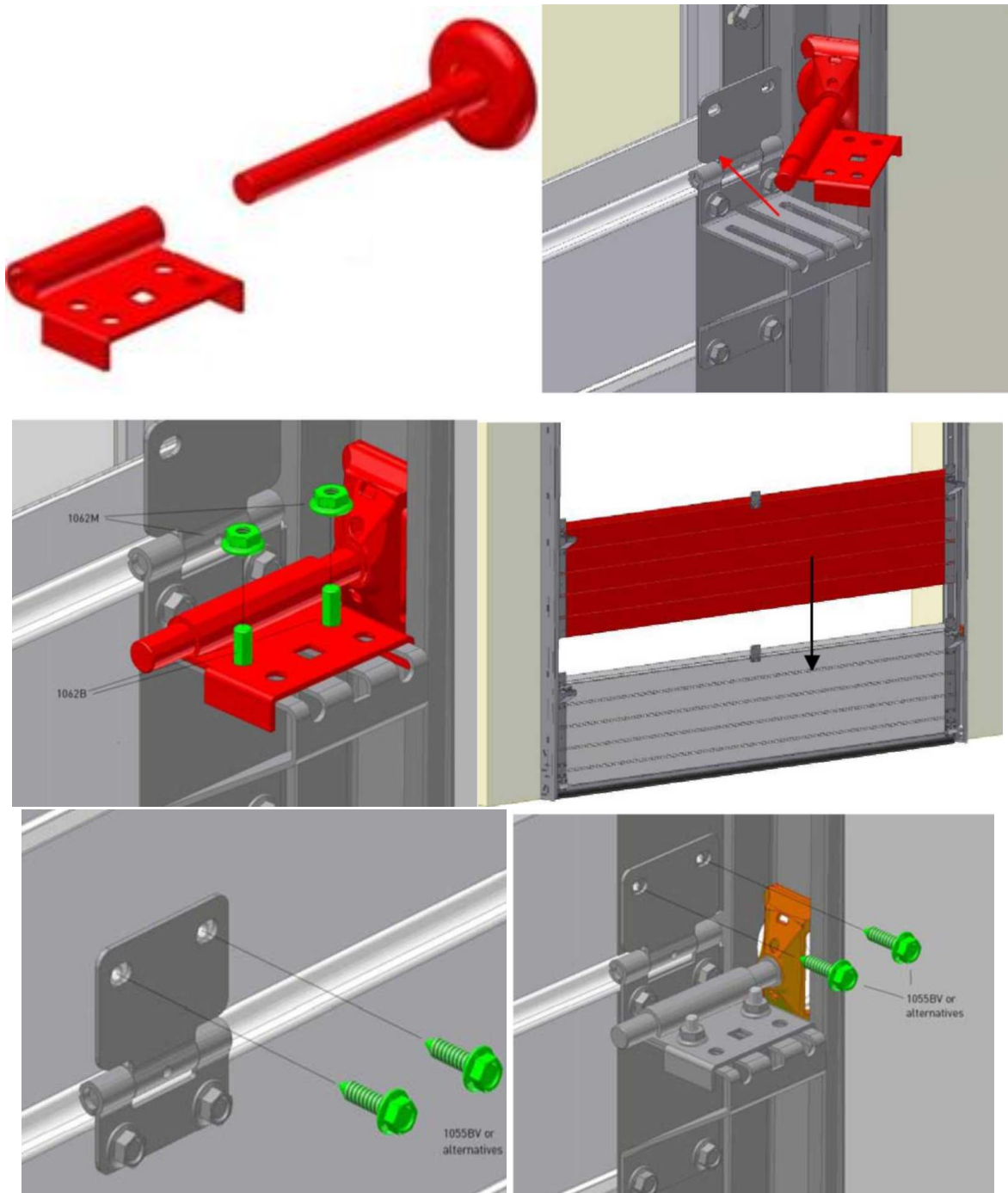
Place the lower panel between the vertical sliding tracks in a way that the panel would reach 20 mm over the door aperture edges from both sides.



Place the wire rope eye (k3x if  $CW < 3000$ , k4x if  $CW > 2500$ ) to the lower bracket. Slide the spacer on the shaft of the roller (2066-07) and install the roller through the holes in the bracket. Push the roller into the sliding track and place the lower door panel between the sliding tracks at its correct height (against the door closing plane).

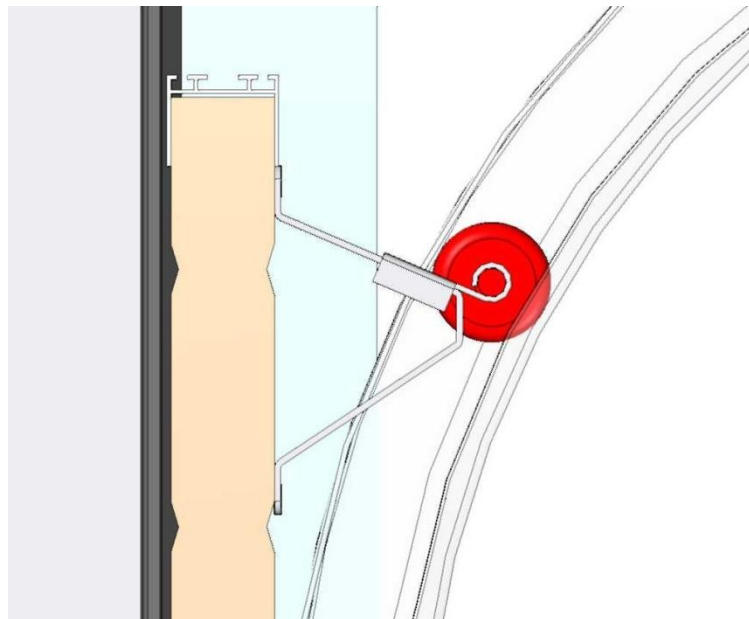
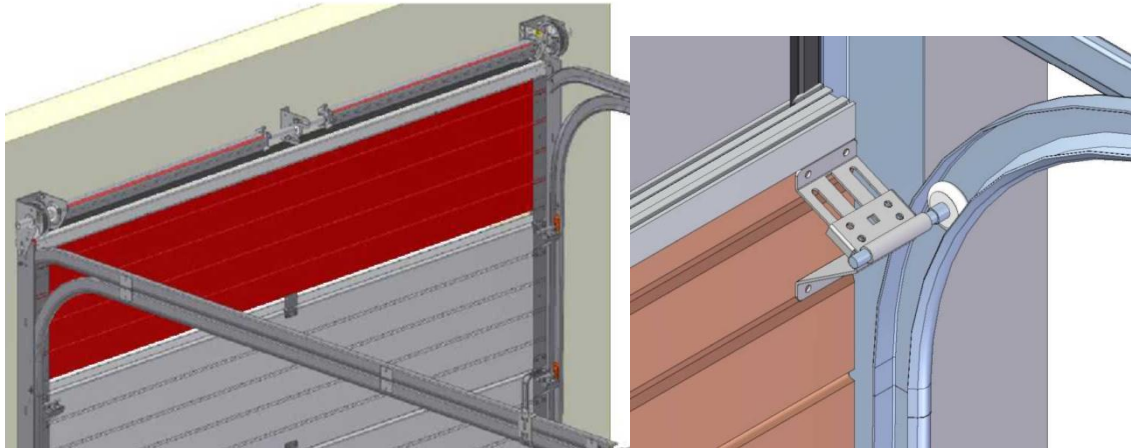


Place the rest of the panels on their places and fix the side and central hinges to the panels.



When installing rollers on side hinges, place the rollers in a way that the slot between the panel and the side seal would be minimal (the panel is pushed against the seal). The roller may not be under stress — it must be rotatable with hand.

Install the roller to the upper bracket and place its wheel into the upper sliding track that has the shorter curve.

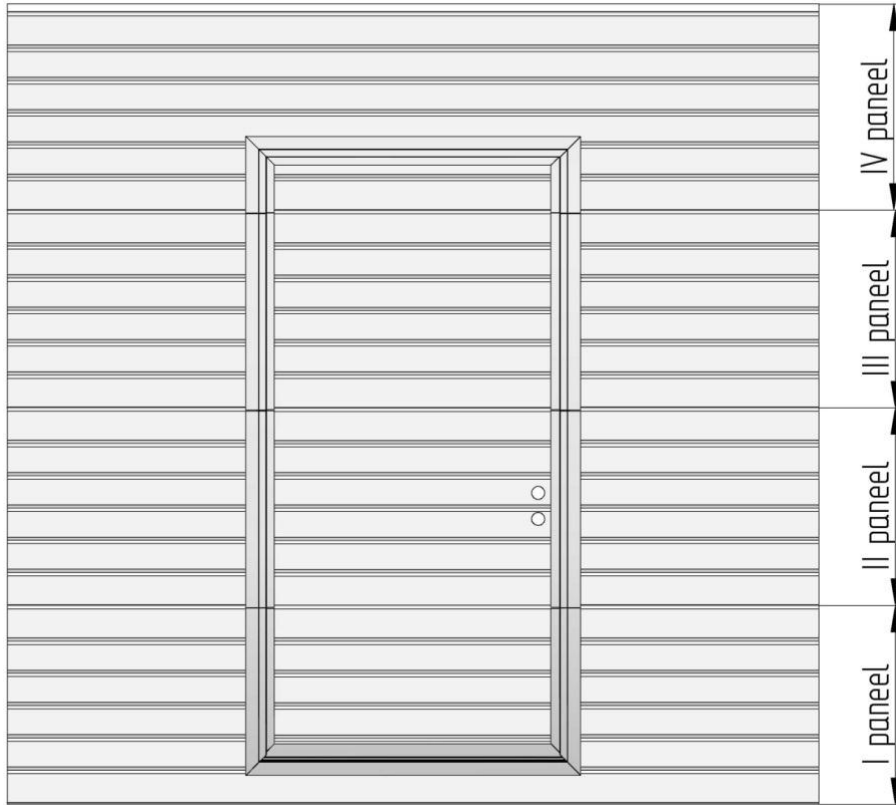


## **ASSEMBLY OF THE DOOR PANELS OF A GARAGE DOOR WITH A PEDESTRIAN DOOR**

The sequence of the assembly of the door panels of a garage door with a pedestrian door is similar to that of a usual garage door: the assembly process starts from the lower panel and the panels are installed on top of each other in the right sequence.

When compiling a door sheet, the same tips should be followed that are provided for a garage door without a pedestrian door (see previous chapter). Also, it must be observed that the pedestrian door profiles are aligned and the opening and closing of the pedestrian door would not be hindered in any way.

Pass door position. Inside view.



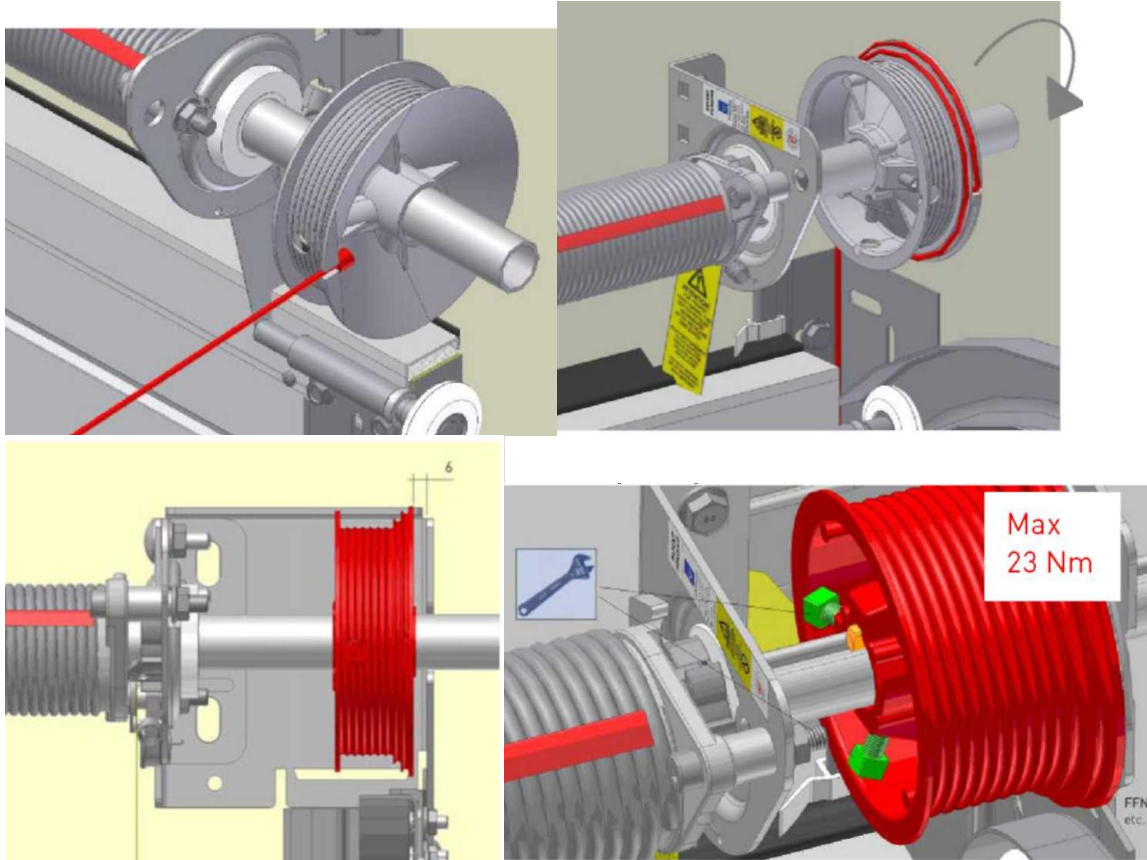
Instructions for installing the lock and door closer on the pedestrian door can be found from the packages of the respective details.

## **INSTALLATION OF THE WIRE ROPE AND TIGHTENING OF THE SPRING SET**

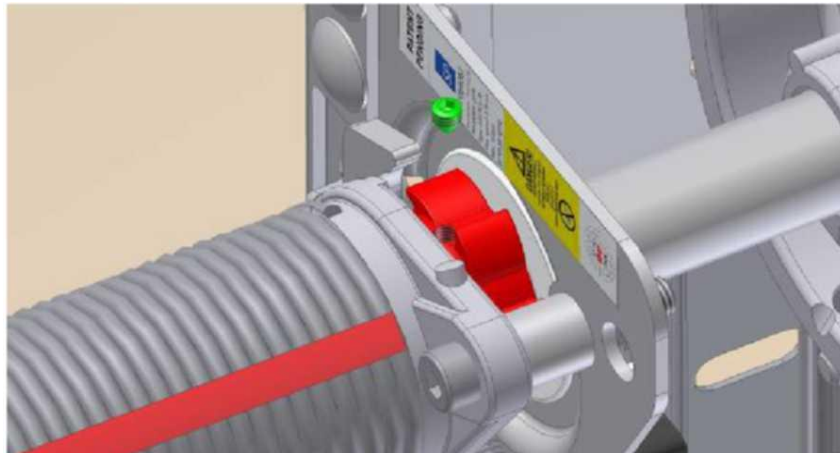


Lead the wire rope from the lower panel and behind the rollers to the drums above the door aperture. Fix the wire rope by pushing the end of the wire rope through the aperture in the drum and fix it by tightening the hexagonal screw. Turn the drum until the wire rope is tightened.





Fix the drum to the shaft with the help of a wedge and screws on the drum.



Install the other wire rope in the same manner. Both wire ropes must be equally tightened until the door panel is completely levelled.

Make sure that the door would not raise up. For instance, this can be checked by placing wrenches into vertical sliding tracks.

Tighten the springs by the number of predetermined turns (**see the enclosed information sheet**), pull the spring loose by approximately 5



mm (in order to reduce friction) and attach the spring to the pipe shaft by using the screws that are fixed to the spring end (17 Nm).

**CAUTION!**

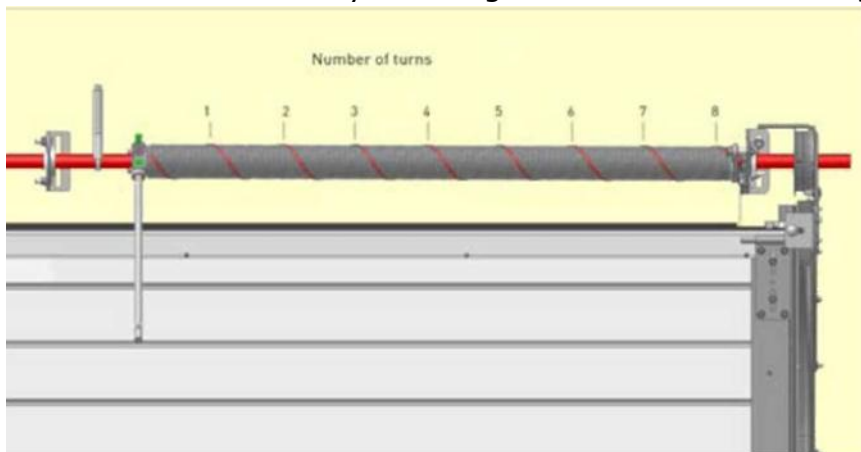
**Tightened torsion springs are under severe tension. Be careful when working with them.**

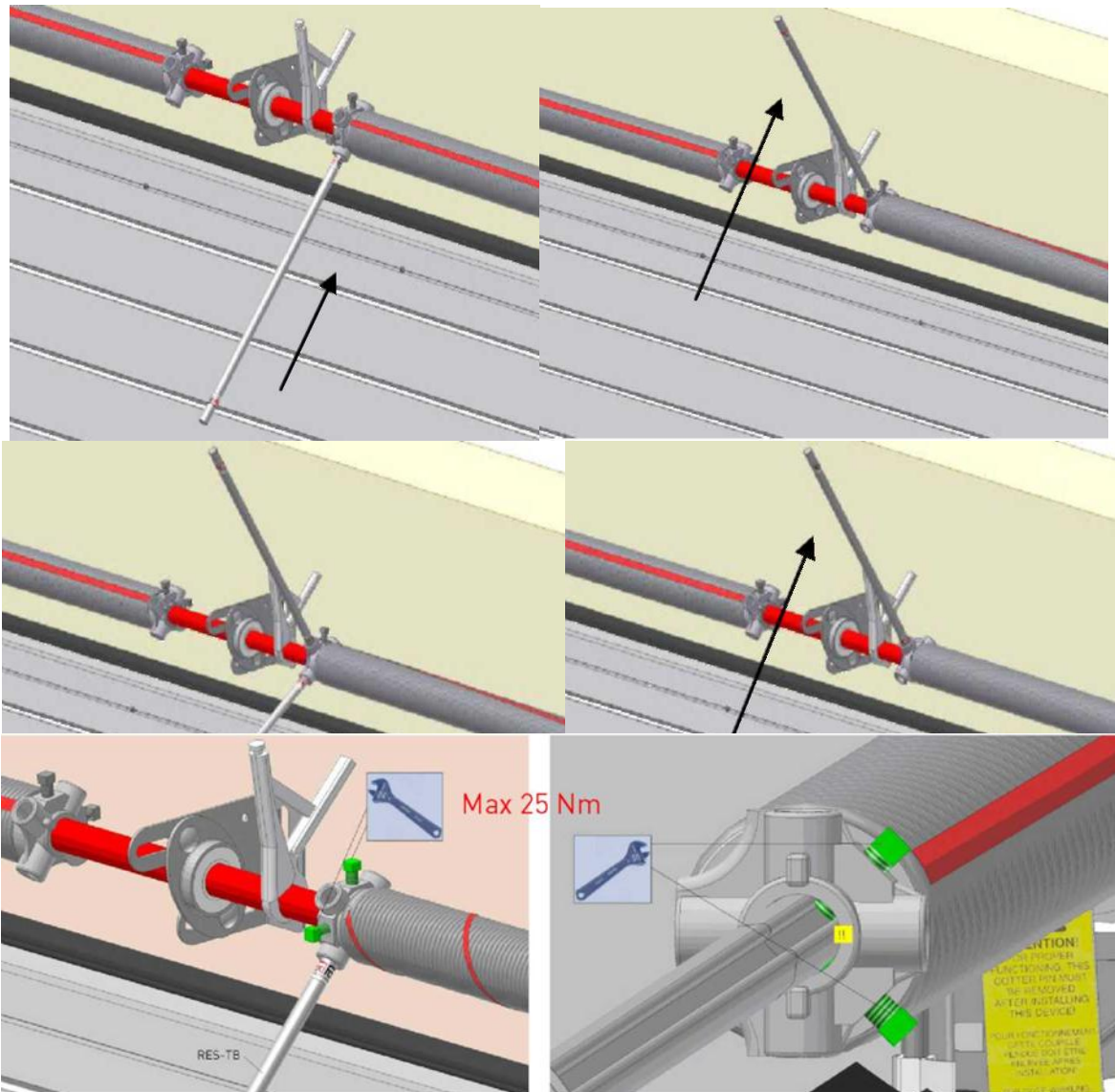
**Maintenance and repair works may only be conducted by experienced and trained lifting door installers.**

**Use the right details and calibrated tension levers.**

### TIGHTENING OF TORSION SPRINGS

- a) Make sure that the marking on the spring forms a straight line.
  - b) Place the first tension lever completely into the hole in the spring end.
  - c) Turn the first lever by a quarter of a turn, so that the spring would be tightened.
  - d) Place the second tension lever completely into the next tightening hole.
  - e) Take the spring tension from the first tension lever to the second one.
  - f) Remove the first tension lever from the hole.
  - g) Turn the other tension lever by a quarter of a turn, so that the spring would be tightened.
  - h) Repeat steps 2-7 until the springs have been tensioned by the required number of turns.
  - i) ) Fix the tightening end by fixing the bolts of the tightening end to the pipe shaft.
  - j) Remove the last tension lever.
- k) Control the number of turns by counting the turns of the marking line.





Remove the limiters from the sliding tracks and control whether the door is correctly balanced. If not, adjust the tension of the springs. It is allowed to tighten or loose the springs only by 1 turn maximum.

**Adjust the tension of both springs in an equal amount.**

### ADJUSTING SPRING TENSION

- a) Place the first tension lever completely into the tightening hole.
- b) Shift the spring tension onto the tension lever.
- c) Loosen the tightening end bolts.
- d) Turn the first tightening lever into the necessary direction.
- e) Place the second tension lever completely into the following tightening hole.
- f) Shift the spring tension from the first tension lever to the second tension lever.
- g) Remove the first tension lever from the hole.

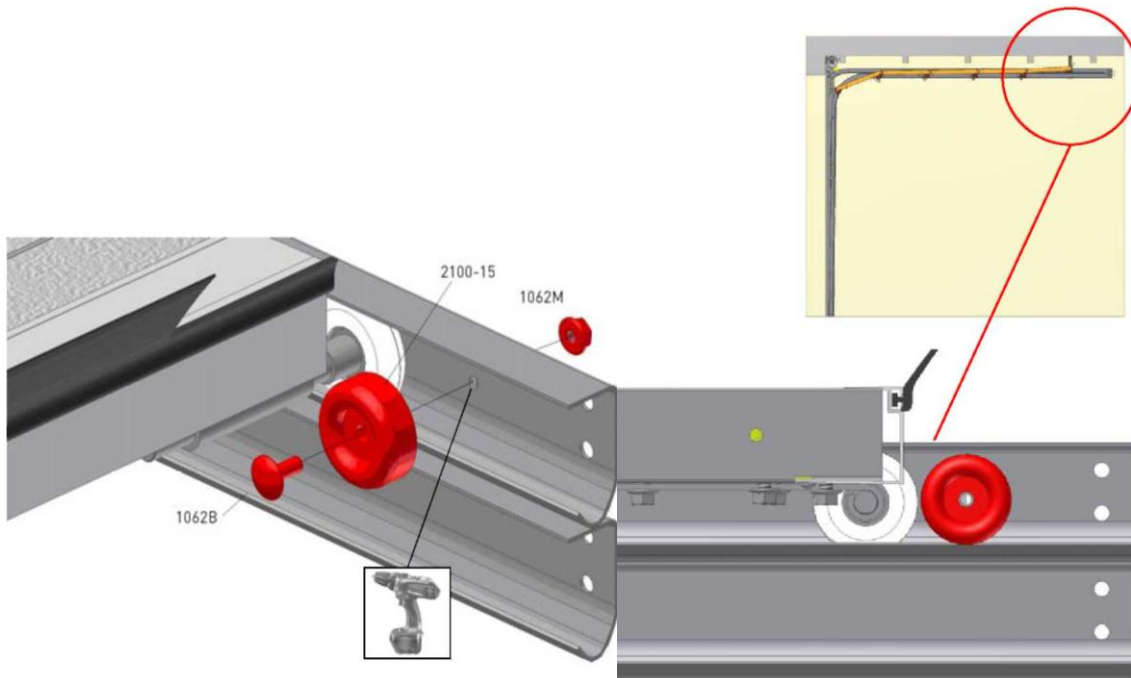
- h) Turn the second tension lever by a quarter of a turn into the necessary direction.
- i) Place the first tension lever completely into the next tightening hole.
- j) Shift the spring tension from the second tension lever to the first tension lever.
- k) Repeat steps 4-10 until the necessary adjustment has been made.
- l) Fix the tightening end by fixing the bolts of the tightening end to the pipe shaft.
- m) Remove the last tension lever.

If the door panel does not hang completely horizontally on the wire ropes in a(n) (almost) completely closed position, there are three adjustment alternatives:

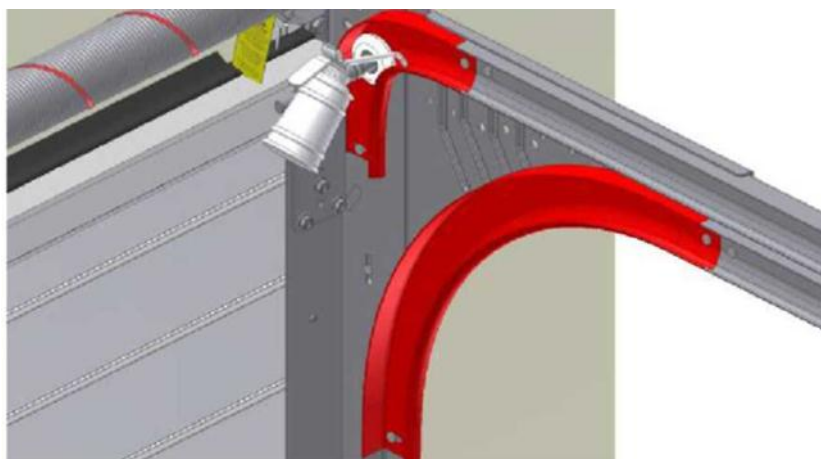
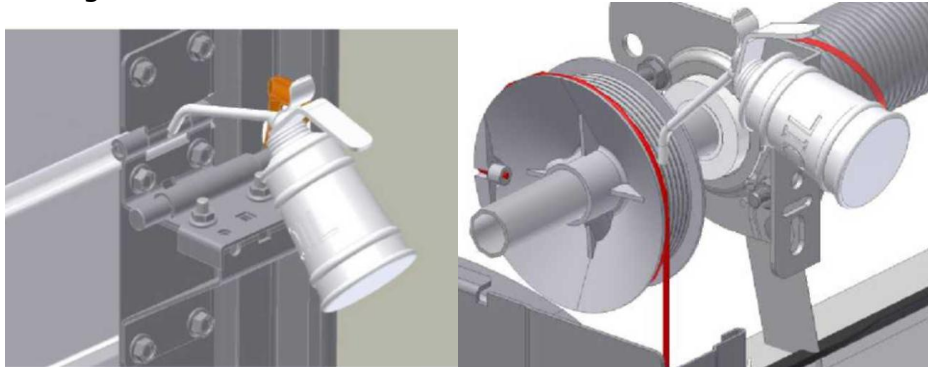
- A. If the connection/hanging profile behind the horizontal sliding tracks has not been completely installed into the slots of the bearing plate support, it can be shifted in relation to horizontal sliding tracks.
- B. Loosen the wire rope drum fixing bolts and release the drum from the pipe shaft. In case of small shift there is a threat that the bolts may slide back into their old holes and the adjustment cannot be made.
- C. If a connection joint has been used, it may be adjusted to improve the horizontality of the door.

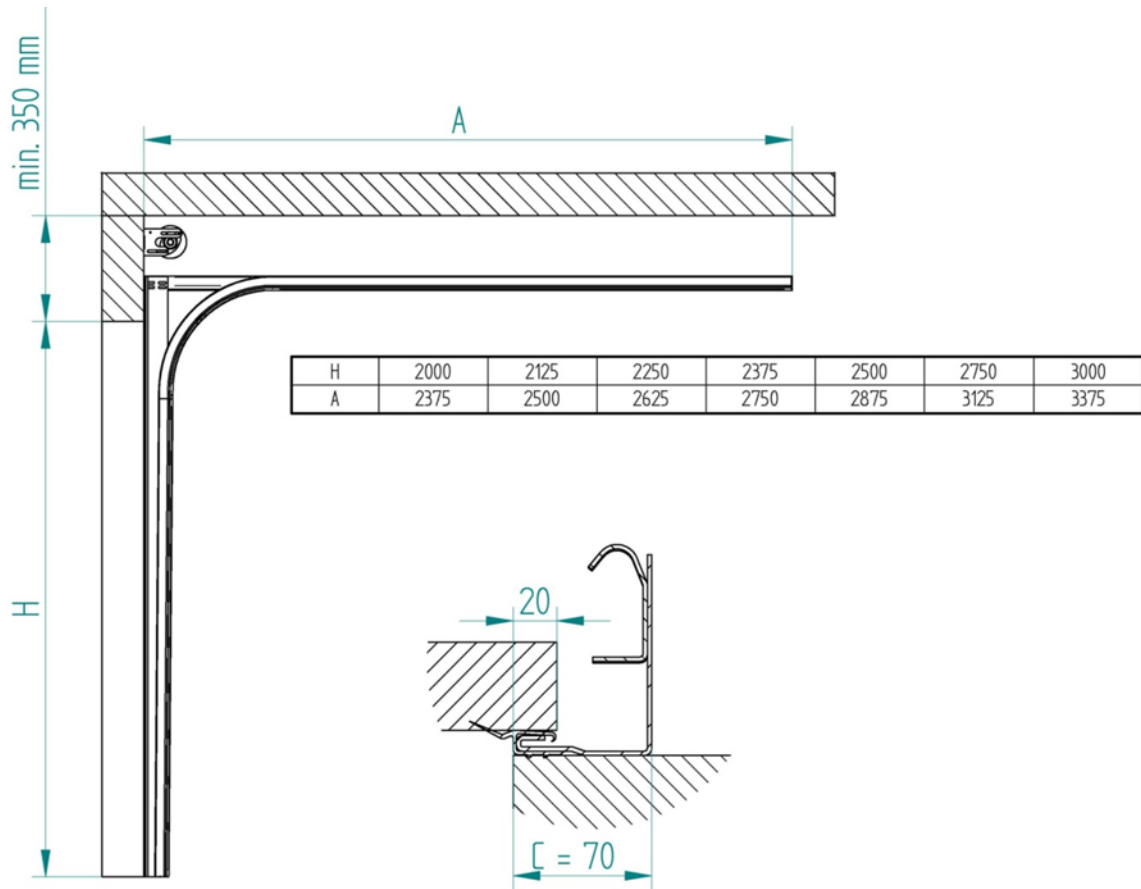
Close the door and fix the door panel. Loosen two cutting screws (1055BV) which fix the holder of the upper roller, so that it could be moved a little. Push the upper panel against the upper (side) seal and push the upper roller holder as far as possible (so that the slot between the door panel and the seal would be minimal). In case of a manually lifted door, the carrying roll must be moved downwards. The carrying roll is located tightly in the roundness of the carrying sliding tracks. In case of a door with an electric drive, the carrying roll must be moved upwards. The carrying roll is located tightly against the flat part of the carrying tracks. Retighten the two cutting screws. If the upper panel cannot be pushed from outside to the inside, the rest of the cutting screws may also be tightened.

## FINAL ADJUSTMENT OF THE DOOR



Fix the rubber limiter to the ends of the horizontal sliding track ends with a bolt (M6x16) and a nut (M6).  
Grease the springs, hinges, rollers and roller movement ways inside the sliding tracks.





 From the "Lifting door user and maintenance manual" you will find recommendations and tips for safe and long-term usage of the lifting door.