Installation manual of residential and industrial sectional doors

12.12.08

Introduction

Thank you for choosing our products!

We are firmly convinced that quality of DoorHan sectional doors will meet your requirements!

Before installation of the doors read carefully these directions for mounting, operation and maintenance of DoorHan sectional doors.

As well as the directions we also recommend to use DoorHan sectional doors hardware catalog informations for door mounting.

Respecting operation, maintenance and mounting recommendations of the directions ensure safe installation and operation of the equipment over a long period.

Do take safety measures while operating and mounting the equipment.

In case of loosing this manual you could make request for directions duplicate and contact us by the following address:

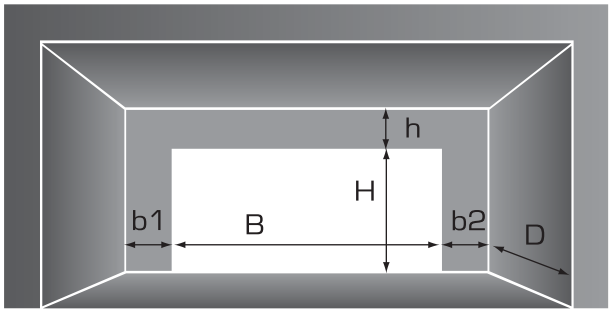
DoorHan, 120, ul. Novaya, s. Akulovo, Odintsovskij r-n, Moskovskaya obl., 143002 Russia.

The manufacturer (DoorHan) does not handle sectional door mounting, maintenance and operation and shall not be held responsible for safety of sectional door mounting, maintenance and operation.

Contents of the manual shall not be basis for any claims.

Sectional door design as well as the present manual are subject to change without notice.

Opening requirements



Required dimensions:
H - opening height (opening bottom-to-top);
B – opening width (distance between left and right edges of the opening);
h – lintel (distance between the top of the opening and the ceiling) not less than 150 mm (without chain electric drive);
b1 and b2 – (distance between opening edge and side interior garage wall) must not be less than 130 mm, if with remote shaft – 500 mm;
D – garage depth (distance between opening edge and interior garage wall) must be more than H+ 500 mm.

By measuring the above mentioned dimensions we recommend to measure each value in not less than 3 points.
By measuring H and B the largest value should be recognized as a final value, by measuring h, D, b1 and b2
the smallest value should be recognized as a final value.

If electric operator is installed

For installation of the doors with the chain electric operator lintel value (h) must not be less than 200 mm.

For installation of the doors with the shaft electric operator one of the side dimensions (b1 or b2) must not be less than 250 mm, and if the shaft is from below it must not be less than 500 mm.

While measuring following additional parameters must be taken into consideration

Opening shape (opening shape can be rectangular or have other shape).

Opening plane surface must be even and smooth. Floor level difference along the whole opening length must not exceed 1 cm.

The space required for door mounting must be free and must not be blocked up.

If preparation of openings by the Customer does not satisfy above mentioned requirements, the Customer should eliminate defects before door mounting.

RESIDENTIAL SECTIONAL DOORS RSD02

Residential sectional doors RSD02 open smoothly and do not need extra space before the garage, they can be compacted inside it. Due to variety of door designs and capability to manufacture up to 5 m wide and 3 m high doors an ideal solution can be found practically for any premise. Rigid framework made of galvanized steel ensures a long service life of the sectional doors, protects from breaking.

H – opening height – 1.8 -3 m;

B – opening width – 2-5 m;

h – headroom (distance between opening top and the ceiling) – not less than 150 mm (a particular track type is defined by the lintel value);

b1 and b2 – distance from opening edge and side internal wall – not less than 130 mm;

D – (distance between opening and internal garage wall) – more than H+500 mm.

8 types of door track system designs.

Large color box of sandwich-panels, wide range of optional equipment.

INDUSTRIAL SECTIONAL DOORS SERIES ISD01

Industrial sectional doors are installed mainly in factories and plants, warehouses, workshops and terminals where they are to satisfy more stringent requirements than standard garage doors do.

As a rule, the industrial sectional doors are heavy constructions operated daily very strongly, they are resistant to wind load and close hermetically production area doorway.

H – opening height – from 2 m up to 8 m;

B – opening width – from 2 m up to 7 m, at high lift – up to 8 m;

h – headroom – not less than 150 mm (particular guide type is defined by the lintel value);

b1 and b2 – not less than 130 mm.

11 types of door track system design

INDUSTRIAL SECTIONAL DOORS SERIES ISD02

Panoramic sectional doors DoorHan (ISD02) are very popular and are installed in modern architecture buildings with window fronts and shop windows, motor shows, exhibition and technical centers, where interior must be seen through clear glasses.

H – opening height – from 2 m up to 8 m;

B – opening width – up to 6 m;

h – headroom (distance between opening top and the ceiling) – not less than 150 mm (for low lift drum from behind);

b1 and b2 - distance between opening edge and side internal wall – not less than 130 mm.

D – depth – more than H+500 mm;

11 types of door track system design.

We recommend to use the following tools for door mounting:

1. Drill

2. Riveting tool

3. Measuring tape 5 m

4. Cross screwdriver

5. Attachments for drill S10, S12

6. Builder's level 0.5 m

7. Pencil

8. Gloves

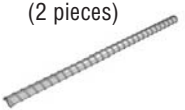
9. Ladder - 2 pieces

10. Set of drilling bits

11. Hammer

12. Protective glasses

13. Mounting driver 0.5 mm (2 pieces)



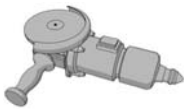
14. Helmet

15. Set of spanners

16. Knife

17. Combination pliers

18. Polishing machine

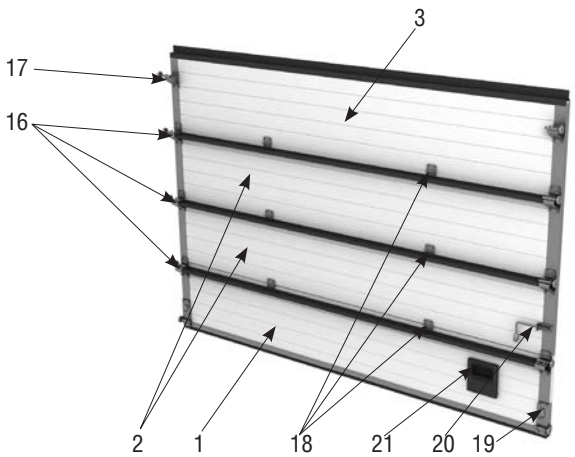


OPTIMAL ERECTION CREW SIZE

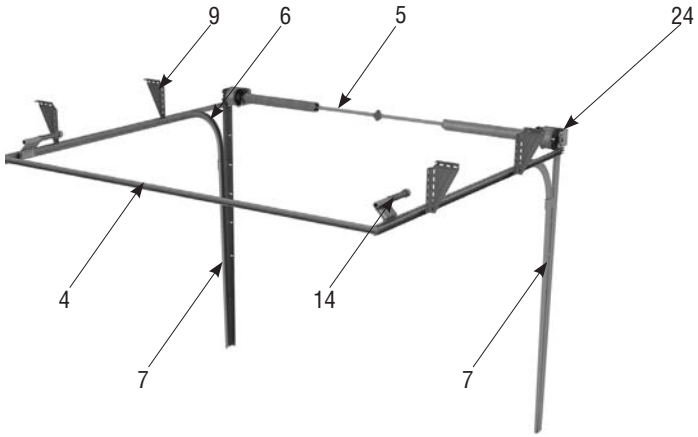
Optimal erection crew size – 2-3 people, depending on door size. In average mounting of one door by one erection screw takes 4-6 hours.

RECOMMENDED MATERIALS AND HARDWARE FOR DOOR MOUNTING

For door mounting different fastening elements can be used, depending on opening material properties. All fasteners must be resistant to corrosion.



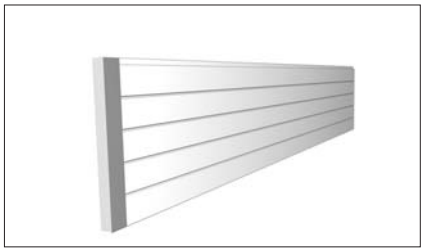
Sectional door leaf



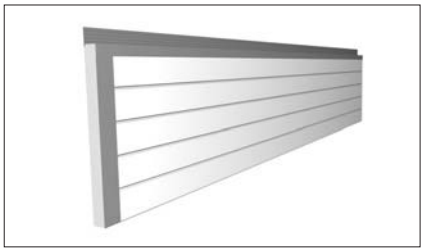
System of tracks and torsion gear

In this manual of sectional door mounting the doors with standard lift are taken as an example. In appendix you can find aspects of sectional doors with different lifts and hardware mounting as well as installation of optional equipment.

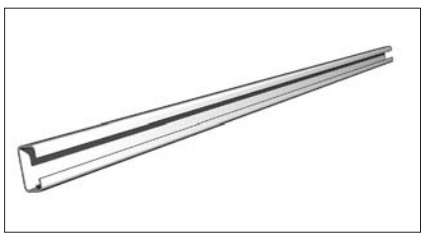
1. Bottom panel 1 piece



2. Middle panel * piece

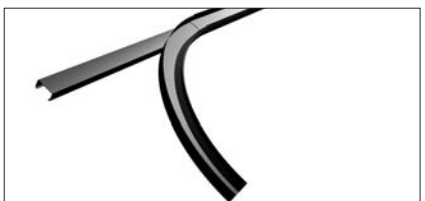


3. Top panel 1 piece



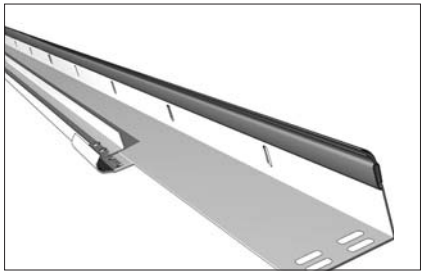
4. C – profile 1 piece

5. Torsion gear in assembly * piece

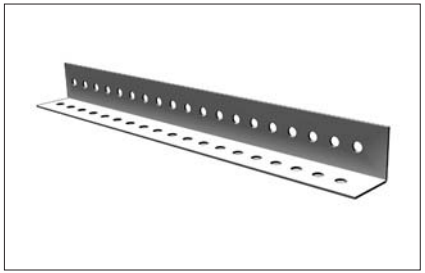


6. Horizontal tracks in assembly 1 pair

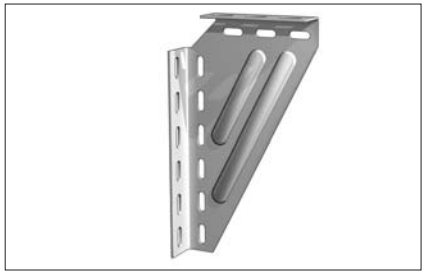
** - quantity depends on door size*
*** - installation depends on the door hardware*



7. Vertical angle in assembly with vertical track and side seal 1 pair

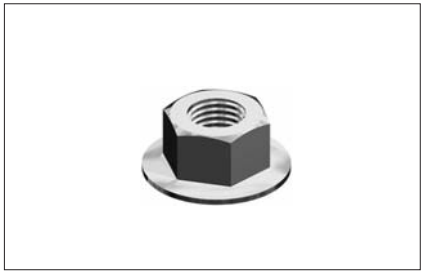


8. Installation profile (32x32x2 mm) ** * piece



9. Multi-purpose corner bracket for fastening to the ceiling ** * piece

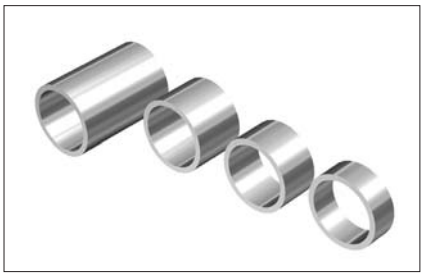
10. Bolt for assembly of guides (1/4'' x 3/4'') * piece



11. Nut (1/4'') * piece

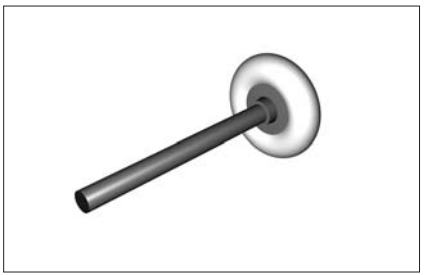
12. Buffer in assembly with fastening ** 2 piece

** - quantity depends on door size*
*** - installation depends on the door hardware*

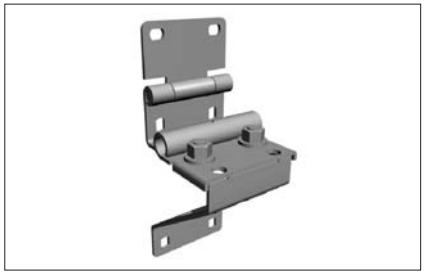


13. Set of cross-bar sleeves 2 sets

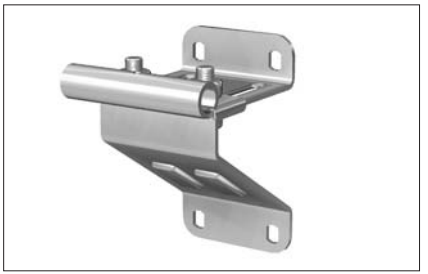
14. Spring bumper ** 1 pair



15. Roller * piece



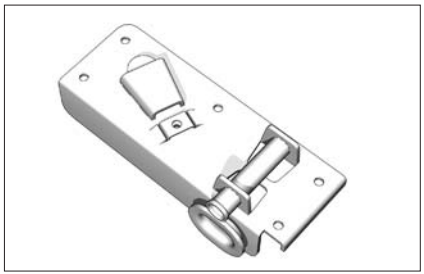
16. Side support with roller holder * piece



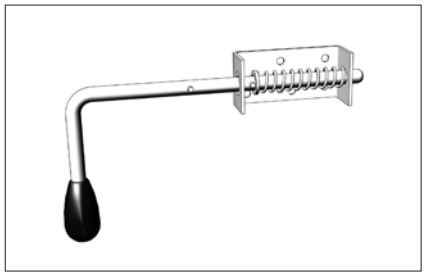
17. Top support with roller holder 2 piece

18. Internal hinge * piece

** - quantity depends on door size*
*** - installation depends on the door hardware*



19. Bottom corner bracket with wedge-operated cable fastening 1** pair



20. Catch 1 piece

21. Handle & footstep for industrial sectional doors 1 piece

24. End support U-shaped bracket 1 pair

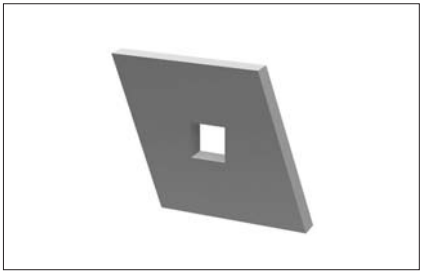
25. Internal support bracket * piece

26. Tapping screw 6.3x38 mm for door panels * piece

** - quantity depends on door size*
*** - installation depends on the door hardware*

27. Bolt with semi-rounded head (M8x25) * piece

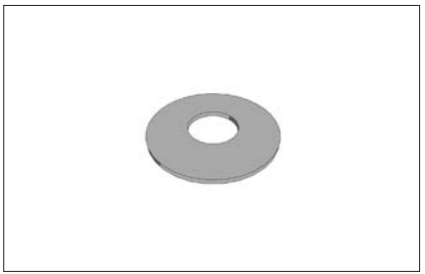
28. Flanged nut (M8) * piece



29. Lock plate * piece

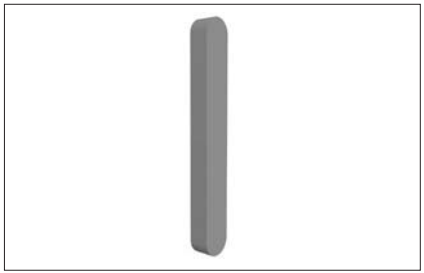
30. Tapping screw (8x70 mm) * piece

31. Dowel key PVC * piece

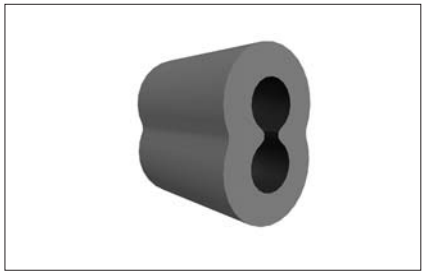


32. Washer 8x24 * piece

** - quantity depends on door size*
*** - installation depends on the door hardware*



33. Bushing key * piece



34. Bushing for cable * piece

** - quantity depends on door size*
*** - installation depends on the door hardware*

SAFETY PROVISIONS

Mounting must be carried out only with working clothes that does not restrain movement, protective helmet and gloves on. During drilling of materials that can cause shaving bouncing, during metal chipping and cutting protective glasses must be used. For respiratory organs protection against construction dust a respirator must be used. Hammer panes must have smooth, slightly convex surfaces without dents, slants, cold hardening, chips and chaps. Hammer shaft length must not be less than 250 mm, hammers must sit fixedly on shafts and wedged. Hand holds of all tools with sharp tips for them must be not less than 150 mm. Wooden hand holds must be tied up with band rings. Impact tools must not have oblique and battered tails, cracks, burrs. Spanners must not have splits and nicks, must match nuts and bolt heads dimensions; spanner fingers must be parallel, must not be worked out and rolled. To transfer working tools to the work place special bag or chest must be used. Use special belts to lay tools during work. Do not put tools in the working cloth pockets.

SAFETY PROVISIONS FOR WORK AT A HEIGHT

• Work at a height 1.5 m and more above the floor surface belongs to work performed at a height. During work at a height safety belt for mounting work must be used. If safety belt fastening to the construction parts is not possible, safety rope extended behind construction parts in advance should be used. In this case work must be performed by 3 erectors. Implements and tools must be fixed to avoid their downfall during work on constructions situated over alive live parts.

• Use of safety belts with metal chain slings at work on constructions located over alive live parts is FORBIDDEN.

• Transfer of door elements, tools and implements for mounting upward must be carried out using an endless rope. The rope must be kept from swinging and approaching live parts by the standing below worker.

It is forbidden:

• to stand under the ladder from which work is carried out;

• to throw up any subjects in order to transfer them upward, transfer must be performed by means of a durable rope.

SAFETY PROVISIONS AT WORK WITH LADDERS

Ladders must be equipped with a safety device to prevent displacement and upset during mounting. Bottom ends of the ladders must have binding with sharp tips for placement on the ground and for placement of ladders on smooth surfaces (metal, slab, concrete) they must be booted in rubber or other slip resistant material.

It is forbidden:

• to work standing on the ladder step at less than.

SAFETY PROVISIONS

1 m distance from its top;

• to operate power tool standing on ladders;

• to work standing on two upper steps of ladders without railing or support;

• presence of more than 1 person on the ladder;

• to stand under the ladder from which work is carried out;

• to put tools on ladder steps.

SAFETY PROVISIONS AT WORK WITH ELECTRIC TOOLS

Only workers that got special training and instruction at place of work and have proper qualification in electrical safety are allowed to operate electrical tools. During mounting work electrical tools that require voltage not more than 380/220 volt should be used. The electric tool type must be selected according to the shock hazard grade of the premise.

Metal case of electric tool that require voltage more than 42 volt alternate current and more than 110 volt constant current for operating in premises with high shock hazard is very dangerous and must be earthed by outside installation. Connection plug must have ground contact. The tool must be connected with electrical supply network that have earth connection. Extension plugs and sockets must have ground contacts. At work with such tools protective means (rubber gloves and shoes) must be worn. Protective means must be tested in accordance with the current legislation.

Before start of work it is necessary to do the following:

- Check of parts set completeness and attachment security;
- Visual inspection of cable(cord), its protective tube, male plug intactness, case isolating parts, handle and brush-holder caps integrity, protective housing presence and intactness;
- Check of earthed circuit intactness (between case and ground contact of male plug);
- Check of switch functioning accuracy;
- Check of electric tool idle running.

Use only intact and checked tools at work. During work avoid breaking and bending of electric drive as well as its laying in places of construction, materials storing and traffic. During work at rainy weather (during snowfall), sites where cable is laid and work with electric tools is carried must be equipped with sheds.

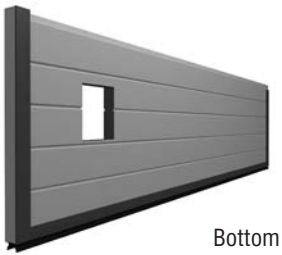
SAFETY PROVISIONS AT ELECTRIC INSTALLATION WORK

Electric installation should comply with the standards of the electrical installation arrangement and with safety regulations for electric plant operating.

MOUNTING OF SECTIONAL DOORS WITH STANDARD LIFT

DoorHan sandwich-panel packing is made of foamed plastic (foam polystyrene), thats why it is light, durable and effective.

Hardware unpacking

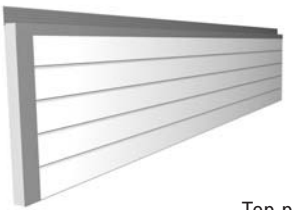


Bottom panel

The bottom panel is delivered as a unit of side caps, an aluminum bottom profile (riveted to the panel) and a bottom rubber seal. The panel has drilled holes for fastening of internal hinges. The side caps are punched to enable fastening of the side supports bottom parts. The panel has operational opening for handle installation (on industrial doors).

Middle panel

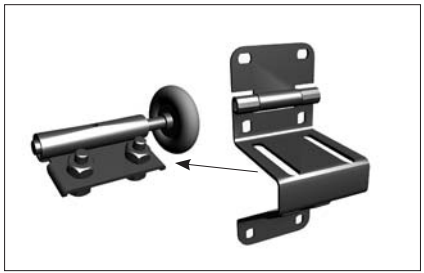
The middle panels are delivered as a unit of side caps (riveted to the panel). The panels have drilled holes for fastening of internal hinges. The side caps are punched to enable fastening of the side supports bottom parts. Quantity depends on opening height.



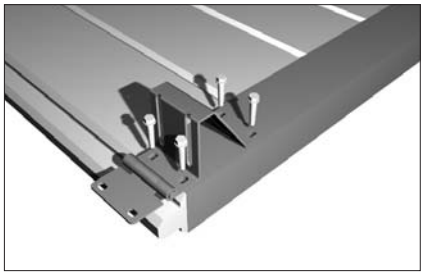
Top panel

The top panel is delivered as a unit of side caps, an aluminum bottom profile (riveted to the panel), a bottom rubber seal.

Assembling of bottom panel

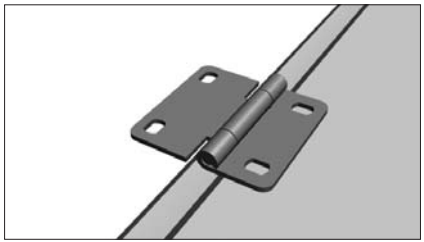


Disconnect the roller holders from the side supports.

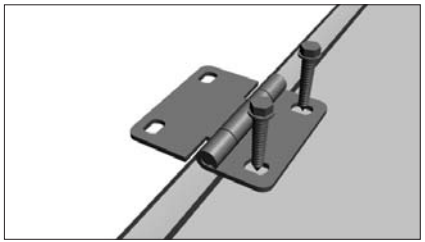


Position the side caps on drilled openings, using 4 tapping screw 6.3x38 mm.

Place the bottom corner bracket on the bottom panel. Mark and drill ∅4.2 mm holes to fasten it. Fix the bracket using 4 tapping screw 6.3x38 mm (as shown in the figure).

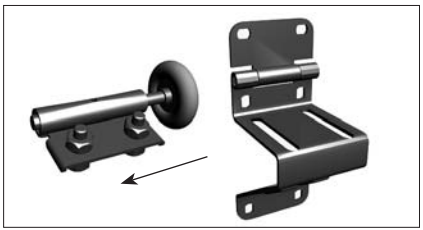


Install the internal hinges on ready-made holes in the panel. The holes in the bottom part of the hinge must index the holes in the panel made at plant.

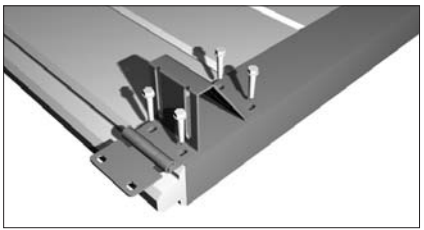


Fix the hinges using two taping screws.

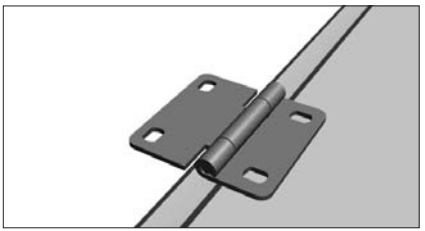
Assembling of middle panels



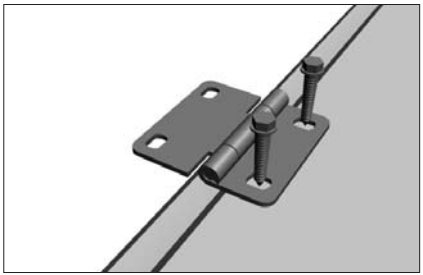
Disconnect the roller holder from the side supports.



Install the side support on the drilled holes.

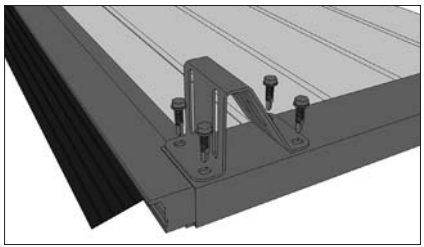


Install the internal hinges on the panel holes made at the manufacturing plant. Holes in the bottom part of the hinge must index the holes in the panel made by the manufacturer.



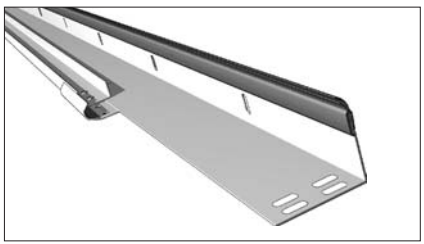
Fix the hinges using taping screws for door panels.

Top panel assembling

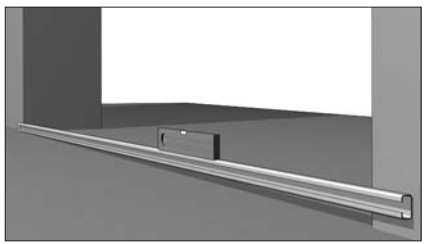


Install the top roller supports and fix using tapping screws for panels.

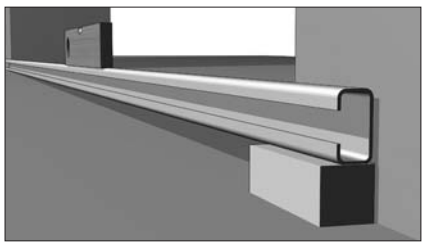
Vertical tracks installation



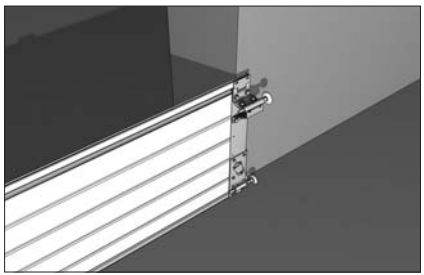
The vertical tracks are delivered in assembly with vertical angle.



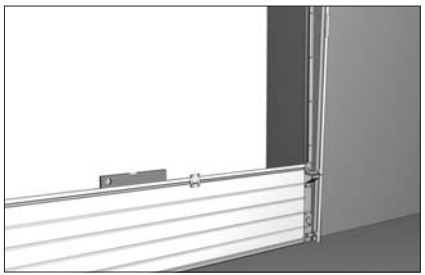
Before installation of the vertical tracks check floor horizontality. For that place the C-profile on the floor and check its horizontality with a builder's level.

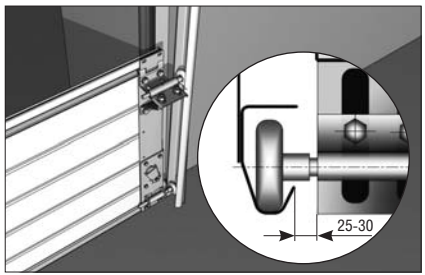


If for C-profile levelling you need plates, these plates must be used during installation of the vertical tracks.

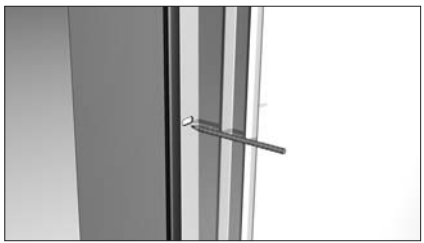


Before installation of the tracks the bottom panel must be installed in an opening so, that its edges overlap the opening evenly on two sides.

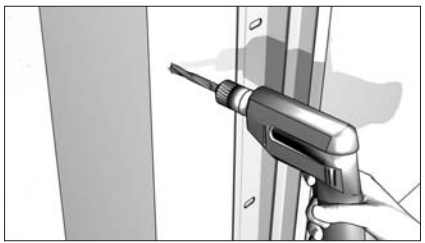




Than install the vertical tracks on the panel. The distance from the edge surface of the panel must be about 25-30 mm.



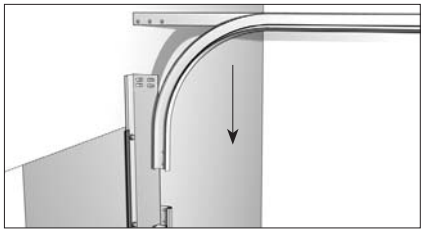
Mark the holes in the opening wall using perforation in the corner support as a templet.



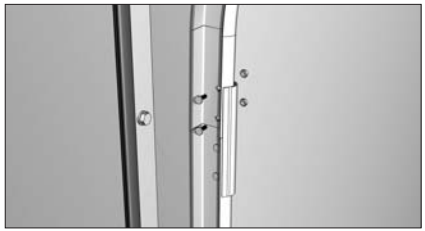
Drill holes ∅12 mm in the opening wall. Hammer in dowels in the holes.

Fix the corner supports to the opening wall using two tapping screws with washers, but do not tighten them. Level the vertical tracks and only then tighten the tapping screws.

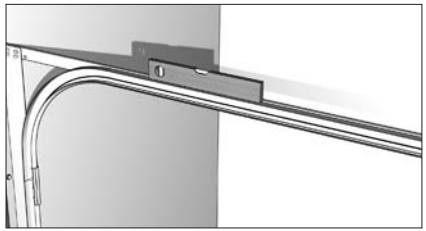
Horizontal track installation



The horizontal tracks are delivered in assembly with a C-profile to increase rigidity of the tracks. The C-profile and the horizontal tracks have the openings for fastening to the vertical tracks and the vertical angle.

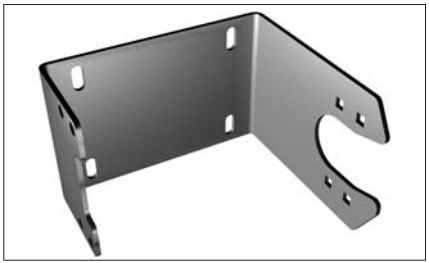


Fasten the horizontal and vertical tracks using two bolts for tracks assembling and nuts and the connection plate, that is positioned in a tracks joint point.

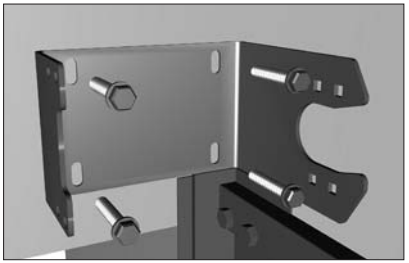


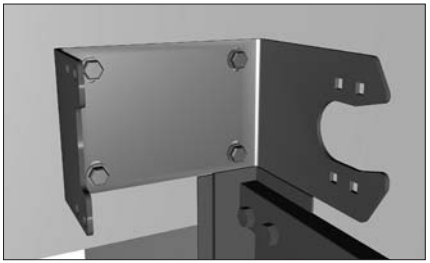
Fix the horizontal track C-profile to the corner support. Before tightening of bolts the tracks must be leveled with a builder's level.

U-shaped end support brackets installation

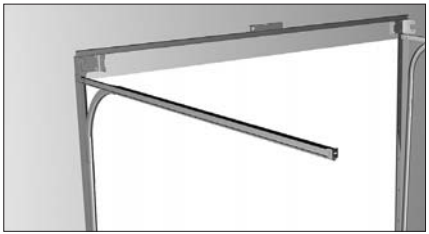


Use of the U-shaped end support brackets ensures high manufacturability of assembling, mounting and adjustment of the torsion gear.





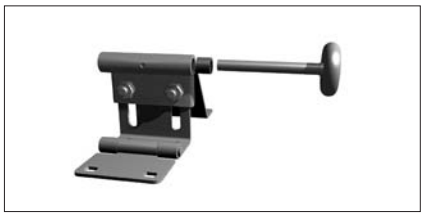
Install the U-shaped bracket close to the corner support, matching the bracket and corner support corners. The external bracket wall must match the corner support plane. According to the perforation in the bracket mark holes for fastening in the opening wall. Drill the marked holes with a drill ∅12 mm. Hammer dowels in the wall. Fix the bracket to the headroom using tapping screws (do not tighten the tapping screws).



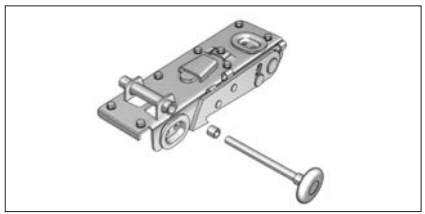
Check horizontality of the brackets installation using the C-profile (use of a laser level is admissible).

ATTENTION: the bracket must be installed in such a way, that the bracket's bend looks upward.

Cross-bar sleeve installation

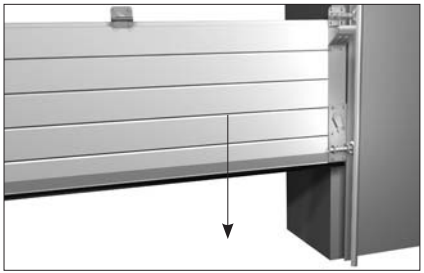


Cross-bar sleeves are used to limit door leaf run along the opening plane. Install the sleeves on the roller axis of the top supports.

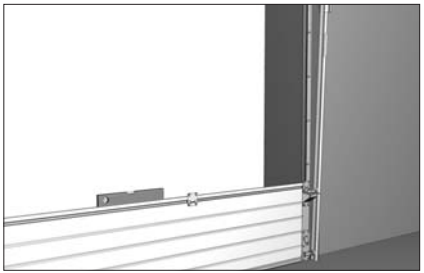


Select and install cross-bar sleeves on the roller axes of the bottom corner brackets according to the bottom corner bracket type.

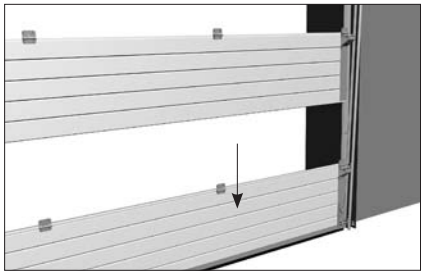
Installation of panels



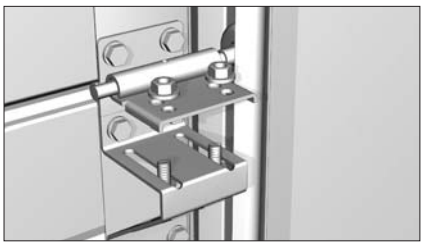
Insert the rollers in the bottom corner bracket roller holders and install bottom panel. Install the rollers with the roller holders on side supports.



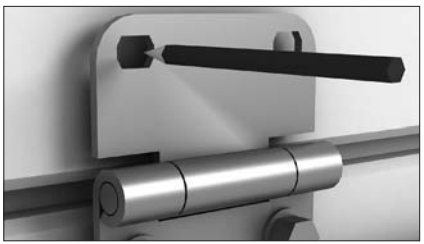
Level the bottom panel with a builder's level. If required use supports of a required thickness.



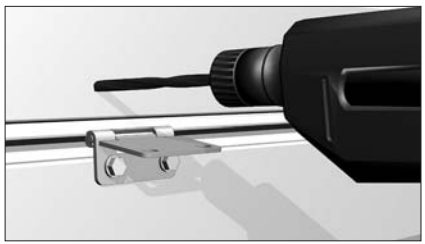
Install other panels in the same way.



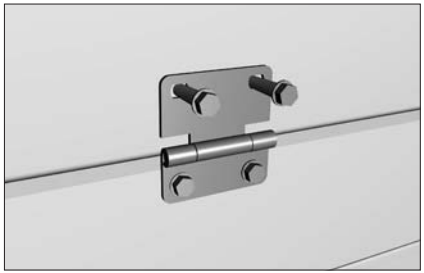
Install the roller holders on the side supports.



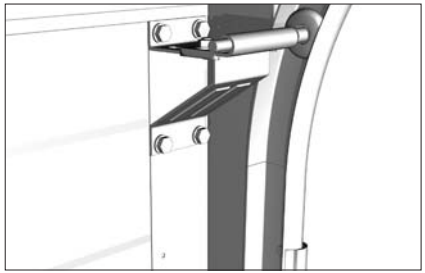
In case if there are no drilled holes of the hinge upper part in the panel, mark the holes for fastening of the internal hinges' upper parts and the side supports.



Drill the marked holes ∅4mm 25-30mm deep.

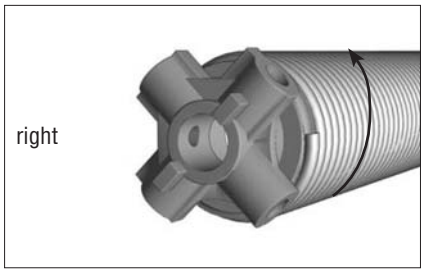


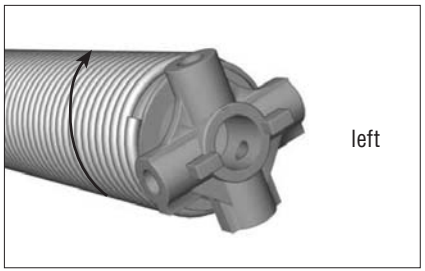
Fix the upper parts of the hinges with tapping screws for panels.



Install the top panel. Make adjustments of the upper roller position to ensure the panels abutment on the opening.

Torsion gear installation

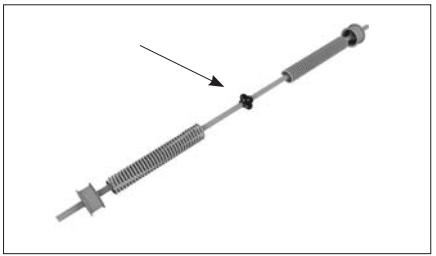




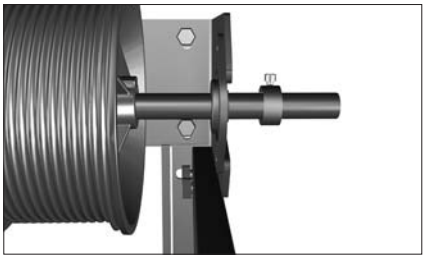
The twisting direction of the springs must match it winding. That is the right spring must be twisted counter-clockwise and the left spring must be twisted clockwise.

Torsion gear is installed in the U-shaped end support brackets and supported additionally with the multi-purpose internal bracket.

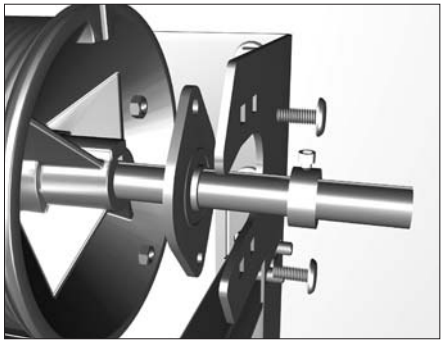
If the shaft consisting of two parts is being installed, use the connection coupler to enable adjustment of the cable.

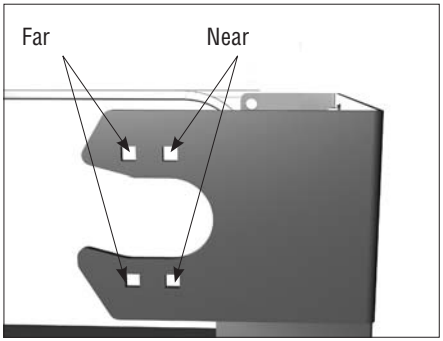


Connect two parts of the shaft using the coupler and having inserted bushing keys in the key slots of both parts of the coupler. Tighten the bolts connecting the coupler's parts.



Install the torsion gear in assembly so, that the end plate with bushing is flush with the bracket's external wall. Put on the shaft the closing ring, it must abut on the bearing.

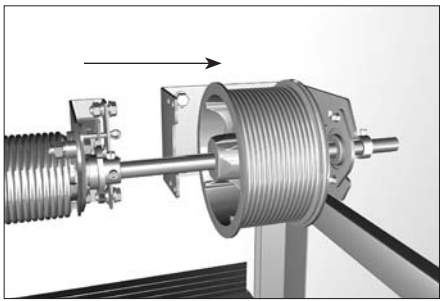


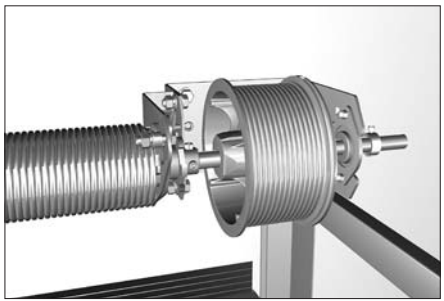


Fasten the end plate with bearing to the U-shaped bracket using two bolts (M10x25) with suitable nuts and washers. Fasten the torsion gear on other side in a similar manner.

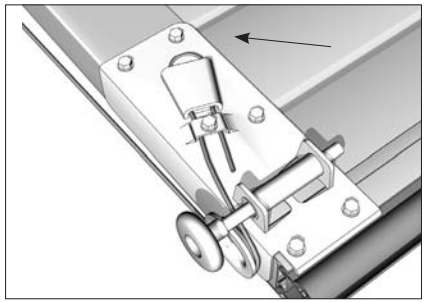
Relation between installation of end plate with bearing and installed end support U-shaped brackets and the type of the drum is represented in the table.

End U-shaped support bracket 127/152 mm	CLOSE	OMI8	OMI12	DH11000	DH11011	OMI54-HL-LD
	FAR	OMI18	OMI54HL			
End U-shaped support bracket 174 mm	CLOSE		OMI11VL	OMI120HL		
	FAR		OMI32	OMI18VL	OMI164HL	
End U-shaped support bracket 174 mm	OMI28VL					



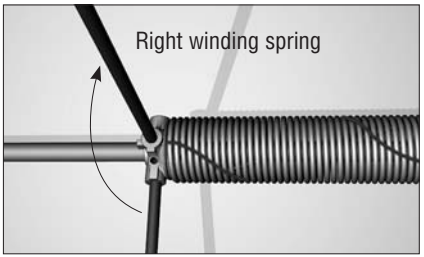


Fasten the spring failure safety device to the U-shaped bracket using 2 sets of fastening units (bolt 10X25, nut M10, spring washer 10).

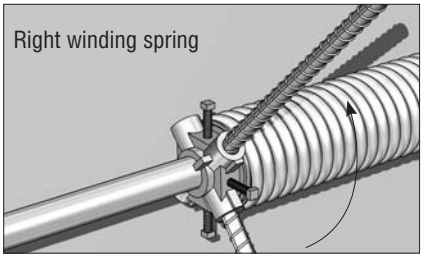


During installation of the bottom corner support run the cable in the wedge-shaped pocket on the bracket, place the wedge in the cable hinge, draw the cable and the wedge in the wedge-shaped pocket and fix with a cramp and a tapping screw. The fifth tapping screw represented by the arrow in the figure must be tighten last of all.

Loading of the spring with cylindrical shaft



There is a special marking strip on the spring, that indicates the amount of spring winds. Design number of spring turns is indicated in the mounting card.

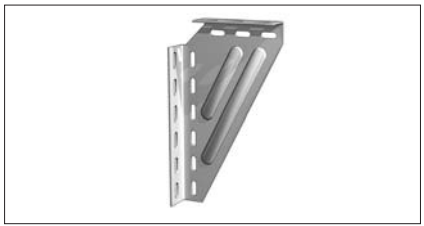


After the spring is loaded block it by putting the supports under the mounting drivers, tighten the bolts of plug fastening to the shaft and remove the mounting drivers.

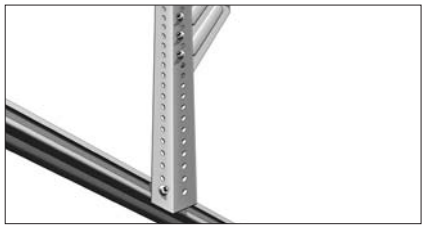
ATTENTION: The spring is loaded by means of two mounting drivers, that are inserted in the special openings in the plug.

Fastening to the ceiling

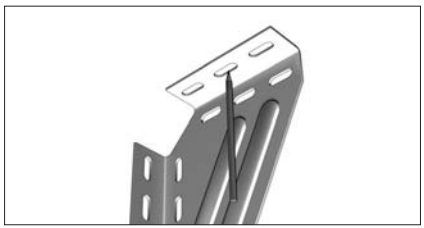
The tracks are fastened to the ceiling by using different bracket types depending on the lintel height and the door leaf dimensions.
A) Fastening with multi-purpose corner brackets.



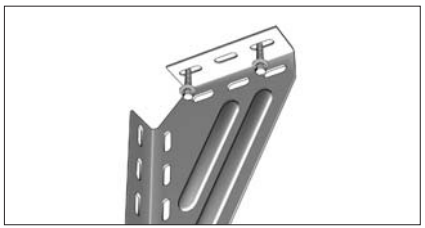
Fasten the bracket to the horizontal track with a lock plate, a bolt and a nut.



If required, corner 32x32 mm is used to extend the bracket.

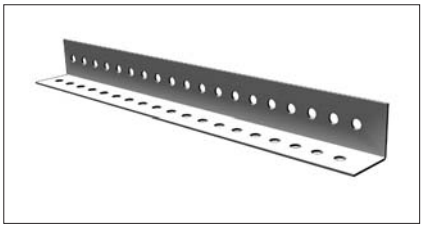


Mark the holes for fastening the bracket to the ceiling.

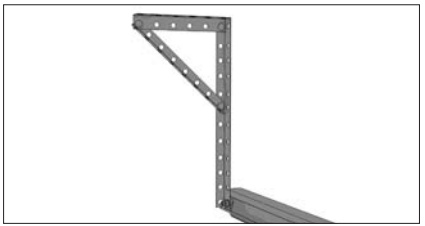


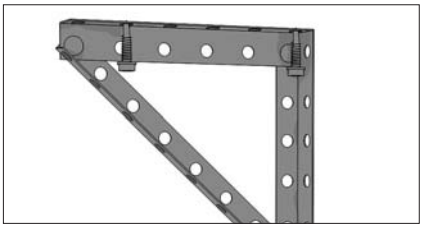
Drill the holes ∅12 mm and insert dowels. Fix the bracket using tapping screws and washers.

B) Fastening by using mounting corners.

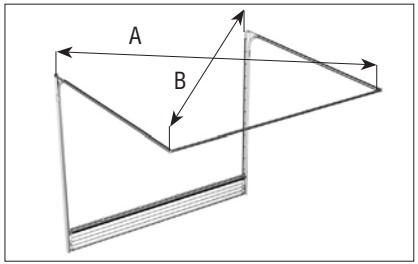


The mounting corners are assembled of punched angle bar 32x32 mm taking into account the spacing between the horizontal tracks and the ceiling.





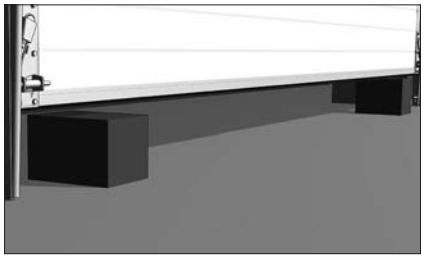
Place the mounting angle against the tracks in the fastening position. Mark and drill openings in the ceiling. Fix the mounting corner with tapping screws, washers and dowels.



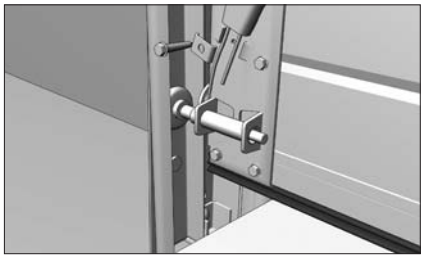
Check tracks horizontality using the builder's level. If required, correct the track's horizontality, moving the holes in the punched angle bar along the slots of the multi-purpose corner bracket. Leveling of the diagonal A and B is admissible, to do it you have to lift the door leaf up to the outermost upper position and to check evenness of the clearances between the door leaf ends and the tracks. Before final fastening of the tracks to the ceiling the spacing between the opposite angles must be checked (diagonals A and B must be equal).

Cable tension adjustment

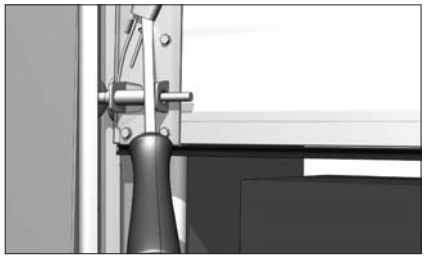
A) Cable tension adjustment using bottom corner brackets with cable adjustability.



Lift slightly the door leaf by ~150 mm and put wooden blocks under the leaf angles. All upper planes of the blocks must be on one level. Release the door leaf until its lower angle touches the wooden block. The second angle must be remain elevated over the block.



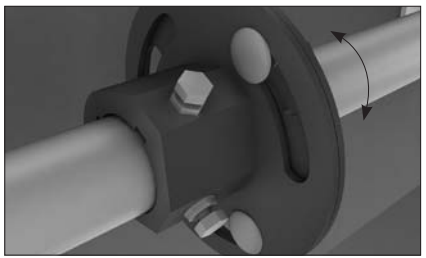
Unscrew the tapping screw fastening free end of the cable, using the cramp of fastening to the bracket's basis, positioned on the elevated angle of the door leaf. Remove the cramp.

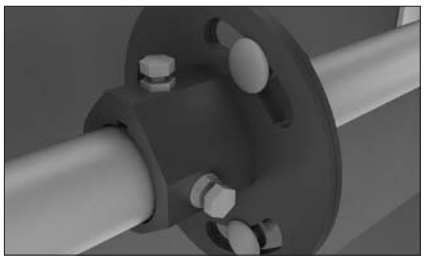


Using a screwdriver lift a little the narrow end of the wedge. Here the cable will loose and slide and the elevated angle of the door leaf will sink. At the moment the door leaf touches the block's surface, hammer the wedge down and fix the free end of the cable with a cramp and a tapping screw. Check again the cable tension (they must be tensioned evenly and must not catch the door construction.

B) Cable tension adjustment using connection coupler with cable adjustability.

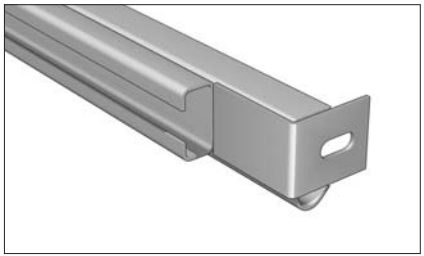
Before making adjustment you need to ascertain that the floor is even (without distortion). Otherwise supports must be laid under the bottom panel of the door leaf.

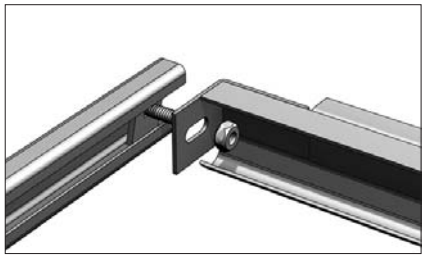




Loose the bolts that connect two parts of the coupler. Make cable tension adjustment by revolving of two parts of the shaft. Fix the new position of the coupler with bolts and nuts.

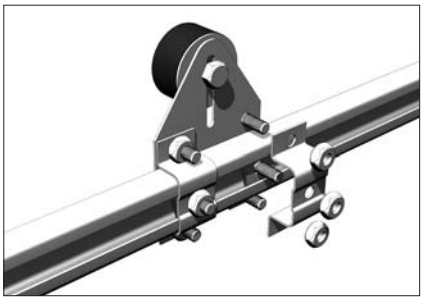
C-profile installation





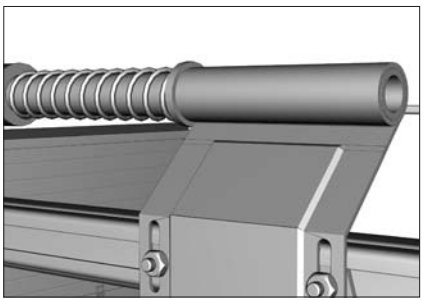
Fasten the C-profile to the horizontal tracks ends with lock plates, bolts and nuts.

Installation of buffers



The buffers are used to limit the door leaf run during its opening. Before installation of the buffers unscrew bolts and nuts and fasten fastening cramps to the lock plates on the C-profile using the bolts. Install the buffers symmetrically relatively the opening axis.

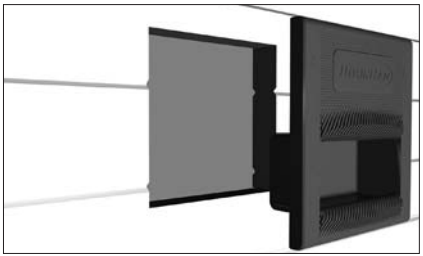
Installation of bumpers



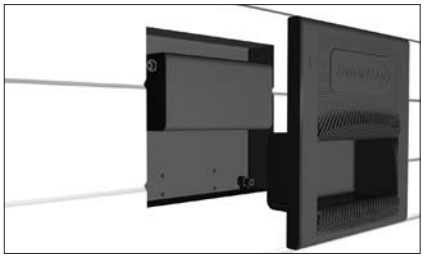
Fasten the bumper to the C-profile on both ends of the tracks using lock plates, bolts and nuts. Install the bumper so, that if the door is opened, the bumper's compressed position is not less than 50 % of its stroke length.

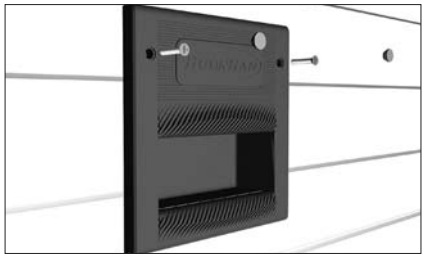
Handle installation

The handle for industrial doors is installed in a ready-made opening in the bottom sandwich-panel.

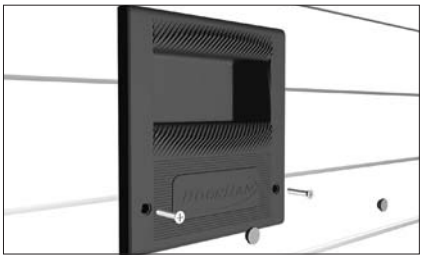


Install 2 parts of the handle asymmetrically relatively each other on different sides of the sandwich-panel.

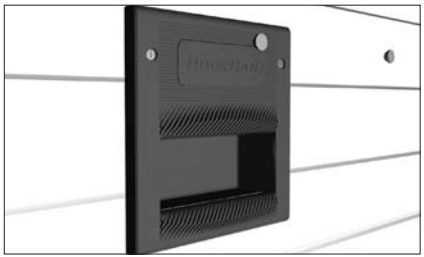




Insert 2 tapping screws on the external side of the door leaf.



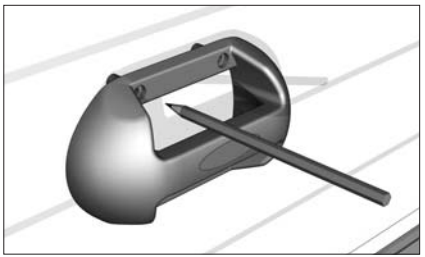
Insert 2 tapping screws on the internal side of the door leaf.



Tighten the tapping screws, in the position of tapping screws install plastic plugs.

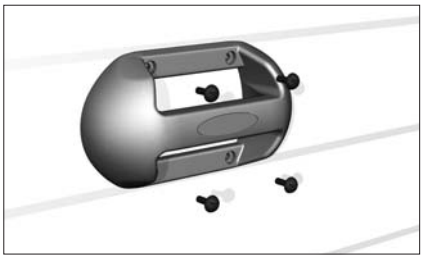
The installation of the handle is over.

Installation of protruding handle and light handle.

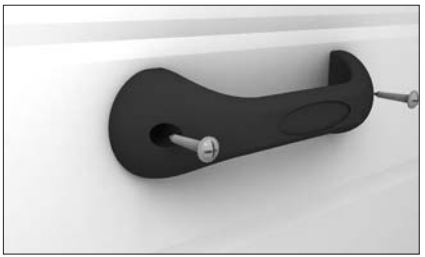


Mark the holes for the installation of the handle.

Drill 4 holes ∅10-12 mm.

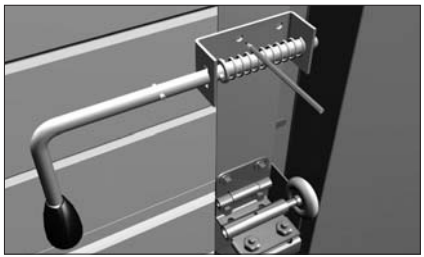


After that fasten the handle with tapping screws ∅4.8x35 mm from handle's set.



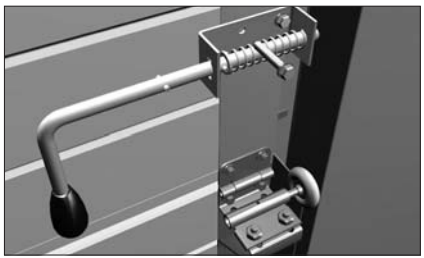
Installation of the light handle is performed in a similar manner.

Catch installation



Install the catch at a suitable height for opening. Mark fastening holes.

Drill holes ∅4.2 mm for fastening of the catch and hole ∅15 in the corner support for wicket latch.



Fasten the catch to the panel using four tapping screws. Check catch functioning.

ATTENTION: The catch must be installed after spring loading in order that the catch latch and the opening in the track were on one axis.

Door run check

After mounting the door movement must be checked. The door must move smoothly without jerks. The rollers must not jam in the tracks. During installation of the doors in any intermediate height position the door must not move spontaneously up or down.

If during the check the horizontal sidesway of the panels is observed, adjust tension of the cables.

If the door leaf does not fir tightly to the opening the roller position should be adjusted. Lift the door leaf by 50 mm and lay wooden blocks under it. The position of the roller holders must be adjusted so, that the rollers abut on the surface of the vertical track cavities. Remove the wooden blocks and close the door. Check the backlash between the door leaf and the opening, it must be 12 mm.

Operation and maintenance

Proper installation and maintenance of the doors secure reliability and long life of the product. To extend durability of your doors follow these instructions. If you open or close the doors manually do use the handle. Do not apply force to open or to close the doors. Jerky opening or closing of the doors is forbidden. If automatic operator is used follow instructions enclosed to the operator.

Do not open the doors by hand if the operator is clutched.

Keep children away from the automatic door control unit (buttons, control panels). Keep children and animals away from the door coverage during its functioning.

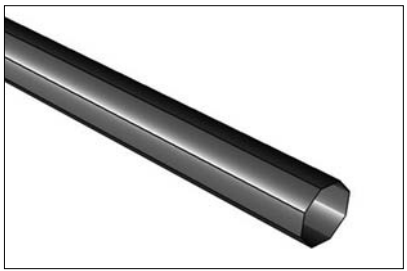
To go or to run under the moving door leaf is strictly prohibited, because it can cause serious injuries.

Do not expose the door to impacts, do not hinder the door free opening and closing. The tracks and the rollers must not be dirty, it can cause unevenness of the movement and if electric drive is available it can cause its overload and breakdown.

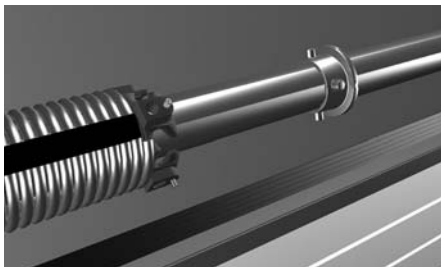
See to it that during the door leaf movement there are no restrictions and debris in the opening. Their presence must cause sidesway and jamming of the door. Do not touch movable parts of the door (rollers, side supports, panels etc) during their functioning to avoid injuries.

In case of misuse of the door the manufacturer shall not be held responsible for its intactness and proper functioning as well as possible injuries and future wrong to people, animals or objects.

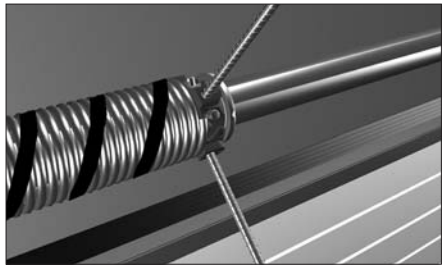
Octagonal shaft, spring cocking



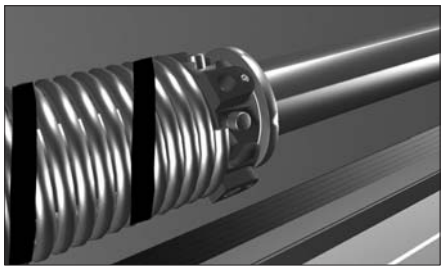
The octagonal shaft is used in the torsion gear of the industrial sectional doors due to its very high strength and reliability. There is no need to use intermediate support brackets. It enables simplified and speeded up mounting as well as improved performance of the doors.

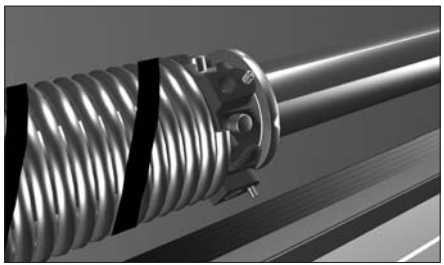


There is a special marking strip on the spring, that indicates the amount of spring winds.



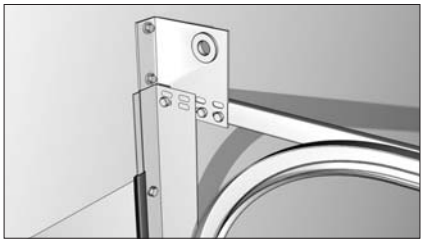
Design number of spring winds is indicated in the installation card or on a special label on the side cap of the middle panel.





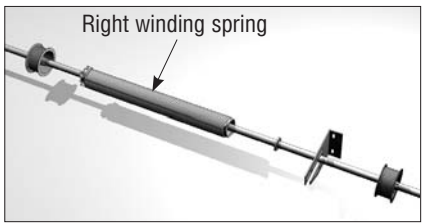
After loading of the spring block it by putting the supports under mounting drivers, insert the stopper in the plugs slots, pull out the mounting driver. Tighten the six-sided screws for fastening the plugs to the shaft.

Installation of end support bracket

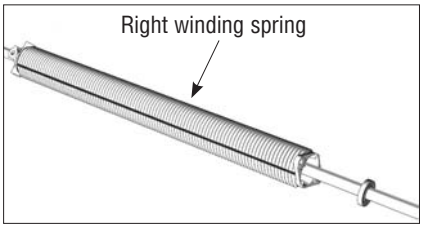


Install the end support bracket in the holes of the corner support. Mark fastening holes in the opening wall using perforation in the bracket. Drill the marked holes ∅8.5 mm in the C-profile and the holes ∅12 mm in the wall. Hammer the dowels in the wall. Fasten to the wall the end support bracket using tapping screws. Fasten the end support bracket, the C-profile and the corner support to each other with bolts M8x25 and nuts.

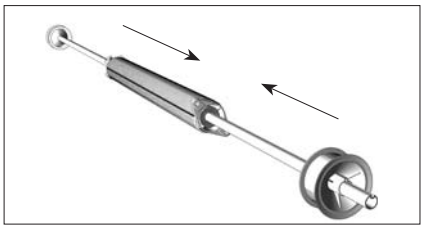
Installation of the torsion gear by using end support brackets.



The torsion gear is installed in the end support brackets and is supported additionally by the internal bracket.

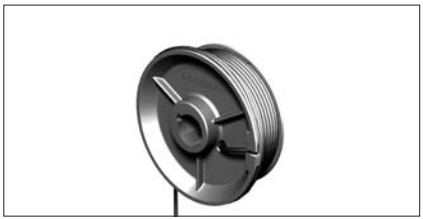


Install the spring in assembly on the shaft. For the right winding spring the flange for fastening to the multi-purpose internal bracket is on the right side. On the side of the bracket the bearing is installed, its narrow side must be inside the plug flange. The left winding spring is installed like mirror reflection.



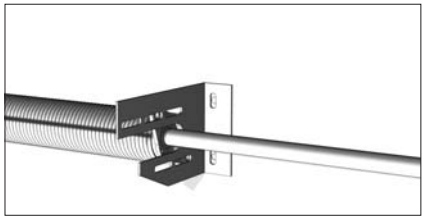
Install on the shaft the drums for cable. The drums have the marking: the left drum marking is (L) and the right one is (R) and must be installed left and right, respectively.

Run the cable through the special technological opening. Tighten the squeezing screw, that is fix the cable.

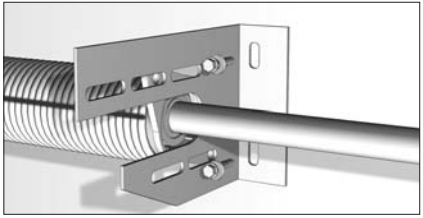


Run the cable through the ear on the safety coil. The amount of winding turns of the cable for each door must be calculated particularly. The data is presented in the mounting card.

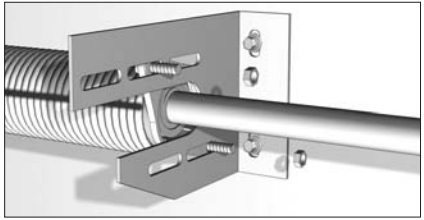
In case of lack of the squeezing screw on the drum drill in the side surface of the drums the holes equal the cable's diameter to run through the running end of the cable.



Raise the assembled component and install in the support brackets' bearing. Mark the holes for multi-purpose internal bracket fastening to the wall.



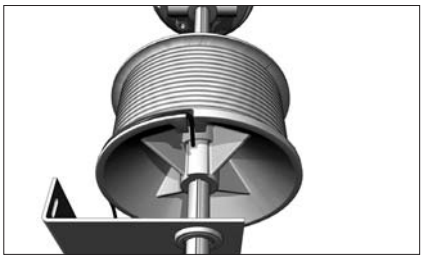
Drill the marked holes ∅12 mm and fix the intermediate bracket with tapping screws, washers and dowels.



Install the bearing in the plug's flange, and then fix the flange with bolts M10x45 and nuts on the multi-purpose internal bracket.

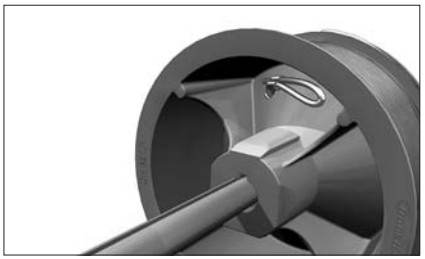
ATTENTION: By installing the balance mechanism with two springs during assembling the right winding spring must be installed on the left part of the shaft and the left winding spring on the right one.

Cable fastening to the drum



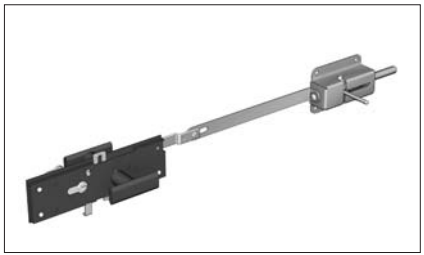
Cut the cable into two equal parts. Run the running unsqueezed with the bushing end of the cable through the drilled hole in the drum, extend it along the tracks up to the bottom corner bracket. Install the drum on the corner bracket and coil it with the cable by the amount of the turns indicated in the mounting card. Fasten the bracket to the shaft with the fastenings bolts.

RECOMMENDED:
In case of the adjustable connection coupler or the bottom corner bracket with fine cable tuning lack you can use the method of cable tension adjustment on the squeezing bushing, running the cable through as shown in the figure. It enables cable adjustment by pickling the cable on the bushing from the drum direction.



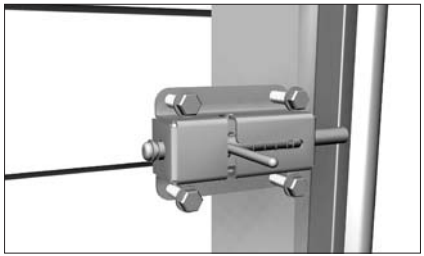
After cable tension adjustment is done fix the cable inserting the squeezing bushing.

Installation of lock for wicket

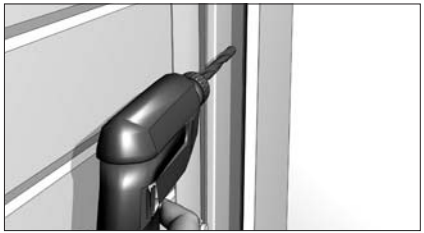


The lock is recommended to be installed on the second panel from below on the right side of the door leaf (the premise inside view).

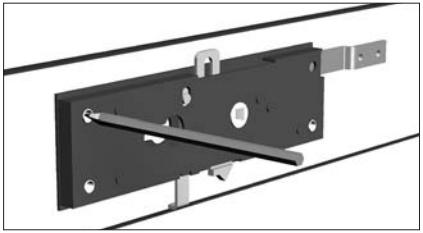
Mark and drill 4 holes ∅4 mm and 15-20 mm deep from the inside of the door to fasten the housing of the catch.



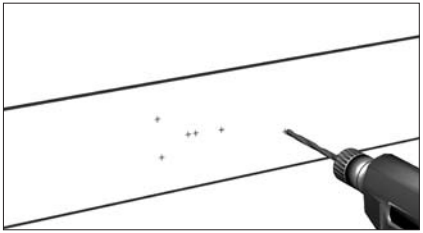
Fasten with 4 tapping screws the catch housing to the door panel.



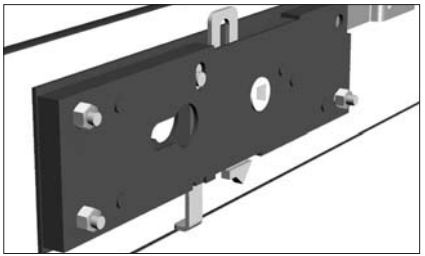
Open the door and drill ∅15 mm hole in the cornet support to enable the lock latch entry.



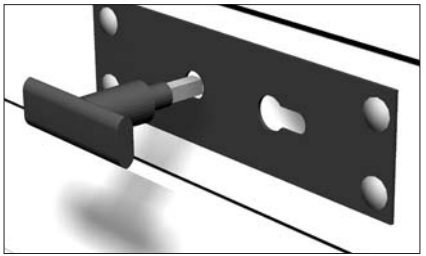
Place the lock housing against the panel taking into account the length of the rod, connecting it with the lock catch and mark the holes for fastening of the lock under the lock handle and its cylinder.

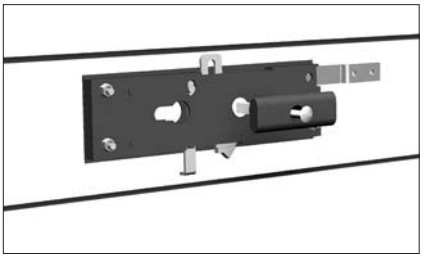


Drill the marked holes 3 holes ∅5.5 mm for fastening of the lock, under the lock handle and cylinder using the drill ∅19 mm.

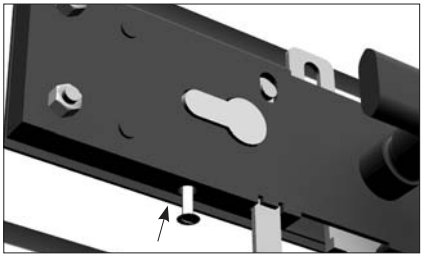


Install the outer support and fasten it by using three screws and nuts, from the lock components set.

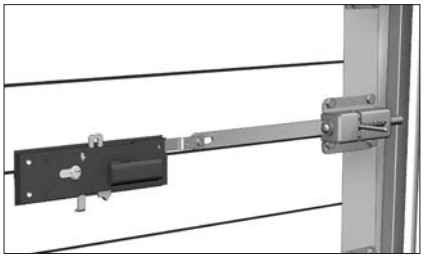




Put the internal handle on the shank. Screw them.



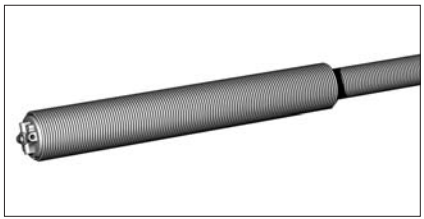
Install the cylinder and fasten it to the lock housing using a screw.



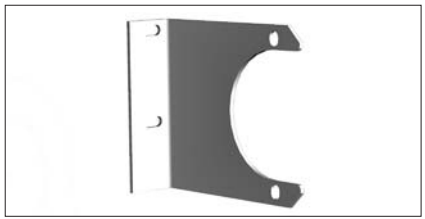
Install the rod, connecting the catch angle and the lock tongue.

After mounting check for the lock latch run smoothness and the catch functioning.

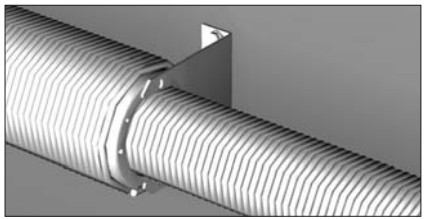
Torsion gear “spring in spring”



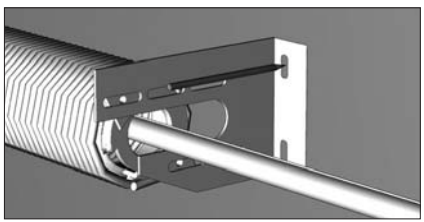
The torsion gear “spring in spring” is installed if the opening height is half as much again the opening width and as a rule is installed on high or vertical lift. In this case the springs 152 mm and 95 mm in internal diameter are used.



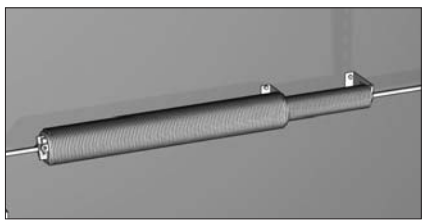
Install an additional bracket for double springs under ∅152 mm spring.



Mark the points for its fastening to the opening wall.

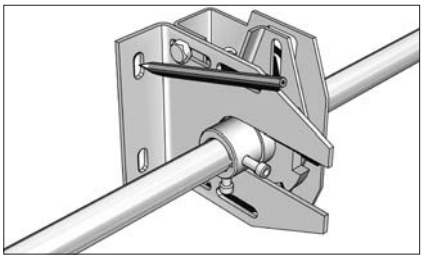


Fix the torsion gear on the shaft using squeezing screws. Install the multi-purpose internal bracket for 95 mm plug fastening and mark the points for its fastening.

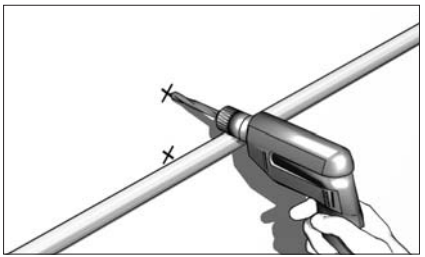


Drill the marked holes. Fix the brackets with dowels and tapping screws and nuts. Fasten the ∅95 mm plug to the support bracket with bolts M10x45 and nuts, ∅152 mm plug must be fixed with 3/8''x11/2' bolt.

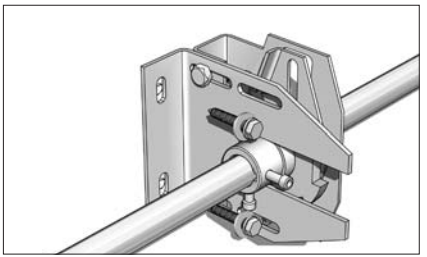
Installation of the spring failure safety device



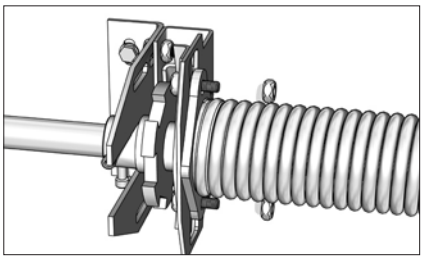
This device is used for the shield fall protection by the spring failure. Place the bracket against the opening wall and mark the position of its fastening to the wall.



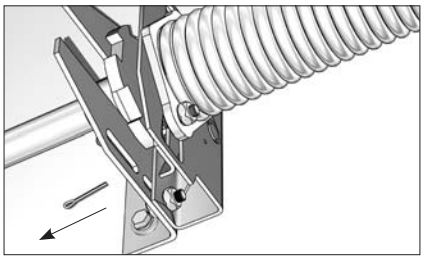
Fasten the spring failure safety device to the opening wall using tapping screws and washers.



Fasten the catch housing to the door panel using 4 tapping screws.



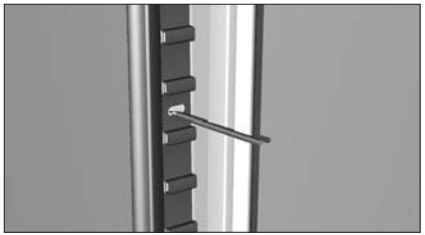
Fasten the spring flange to the catch lever using two bolts and nuts.



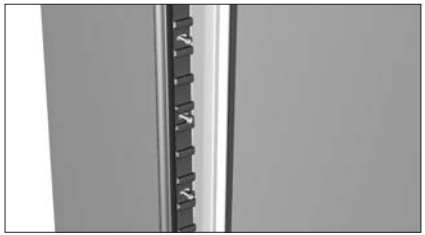
Load the spring by the necessary amount of turns and pull out the stop peg, having released in that way the spring-loaded catch.

Cable safety device

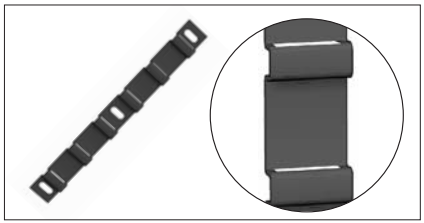
During installing the corner brackets with the cable safety device fasten the plates for safety device on the vertical angle.



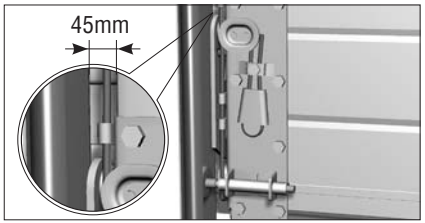
Before installation of the safety device plates mark and drill additional holes, using the plates as a templet.

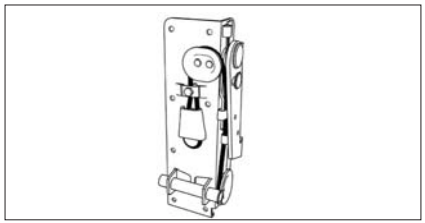


Install the plates on the holes of the corner bracket and fix them simultaneously with the support to the opening wall using tapping screws and washers.



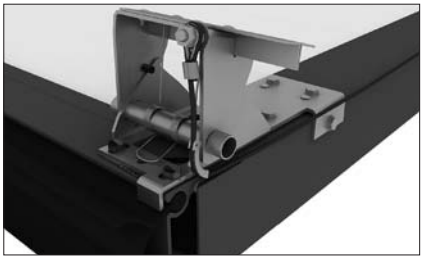
The plates must be installed with perforation (on the lugs) upward.



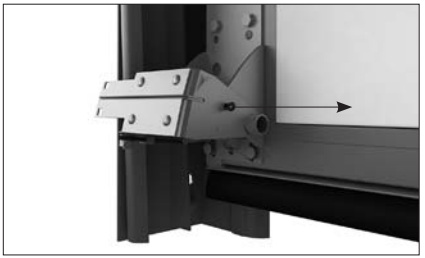


The cable safety device is installed on the door leaf like the bottom corner bracket with cable fine tuning (with wedge-operated cable fastening). During installation of the vertical angle with the cable safety device put the cable in the wedge-shaped pocket on the bracket according to the figure. Run the cable through the clamp on the bracket hook, put the wedge in the cable hinge, draw the cable and the wedge in the wedge-shaped pocket.

Cable break safety device

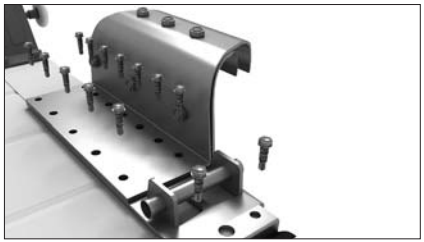


While using the corner bracket with the cable break safety device mark and drill 6 holes 4.2 mm for bracket fastening. Fix it with 6 tapping screws 6.3x38 mm.



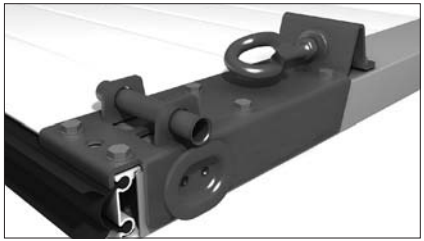
Before start of work take out cable break safety device peg.

Installation of the bottom corner bracket for drum behind

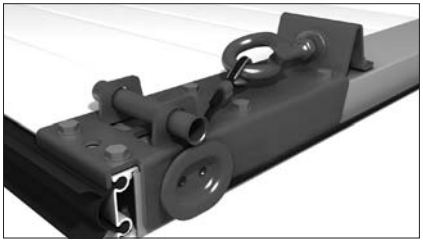


Put the bottom corner bracket for drum behind on the bottom panel, mark and drill holes ∅4.2 mm for bracket fastening. Fix the bracket using tapping screws.

Installation of the bottom corner bracket with the cable tension device.



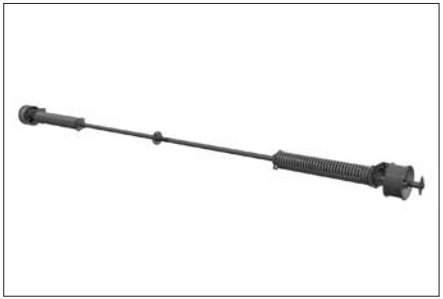
Install the bottom corner bracket with the cable tension device using 6 tapping screws.



Run the cable through the oval disc and fix it on the hook.

Installation of connection coupler for octagonal shaft

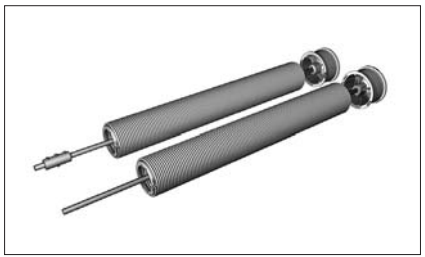
If you are going to install the shaft consisting of two parts use connection coupler.

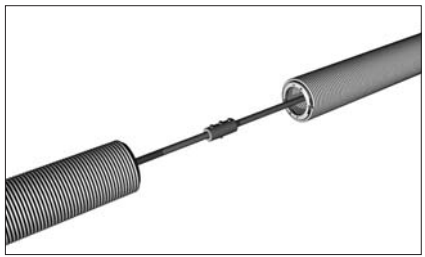


Assemble from the coupler connector plates and bolts the coupler.

Position the connection coupler on two parts of the shaft and fix it on operational openings using tapping screws for metal 6.3x25 for octagonal shaft.

Installation of non-adjustable coupler for cylindrical shaft

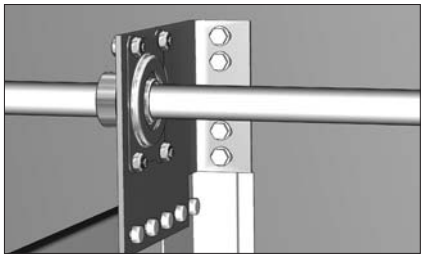




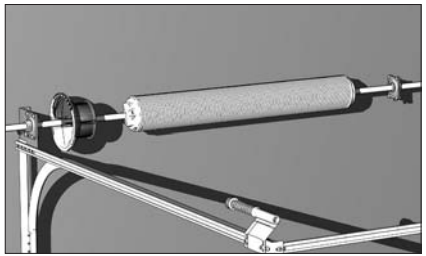
The coupler is installed in a similar manner as the adjustable coupler is.

Installation of the shaft 31.75 mm

In case of installation of 31.75 mm shaft instead of the regular end support and multi-purpose internal brackets the brackets with adjustable bearing are used. The brackets have additional openings for fastening to the wall and to the vertical angle.



Fix the end support bracket to the opening wall using 4 tapping screws and washers and dowels. Depending on the type of the drum position and fix the adjustable bearing on the holes in the bracket. Fix in the same way the second support bracket.

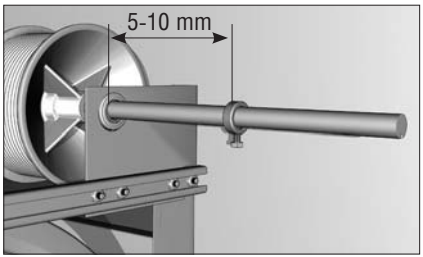


Install the drums, spring and the bearing of the multi-purpose support bracket on the shaft. Insert the shaft in the bearing of the support brackets.

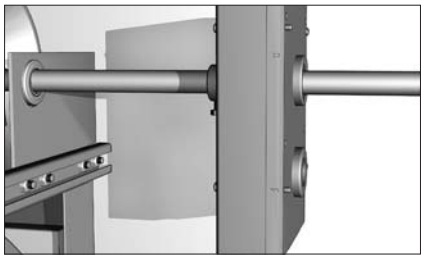
Fasten the multi-purpose internal bracket to the opening wall, mark and drill holes ∅12 mm in the opening wall. Insert dowels and fix the bracket with four tapping screws and washers. Fix the adjustable bearing on the internal bracket using bolted joints M10x45 mm. Fasten the spring flange to the internal bracket.

Manual chain operator installation

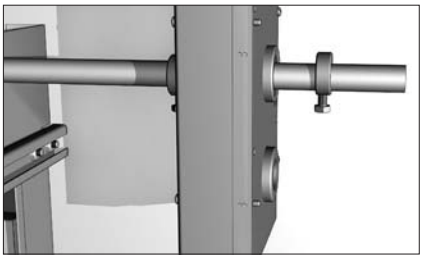
The manual chain operator can be installed on the left or on the right sides of the door.



Put the shaft on the closing ring.

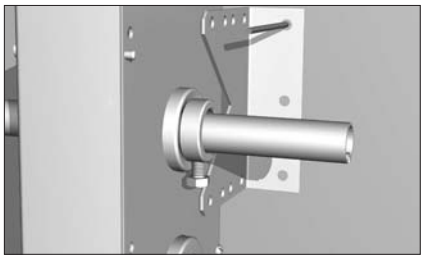


Install on the shaft the manual chain operator, having inserted the bushing key in the key slot before.

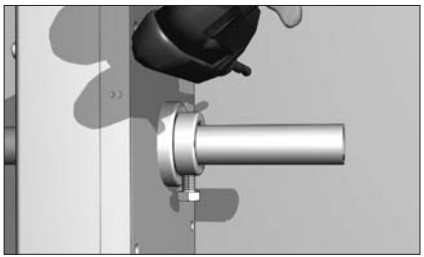


Put on the second closing ring.

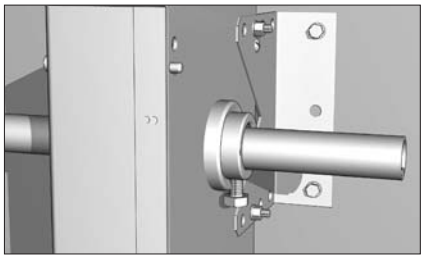
Fix the closing rings on the shaft using bolts M8x25 mm (the bolts must set again the bushing key).



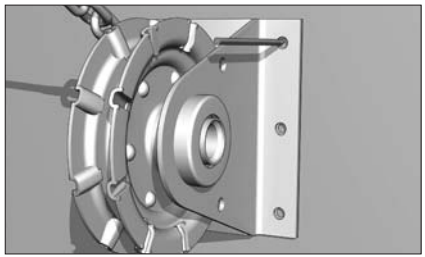
Position the manual chain operator fastening bracket close to the opening wall and the operator. Mark the holes for the bracket fastening to the wall.



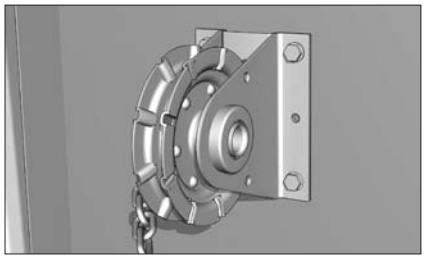
Drill the marked holes ∅12 mm.



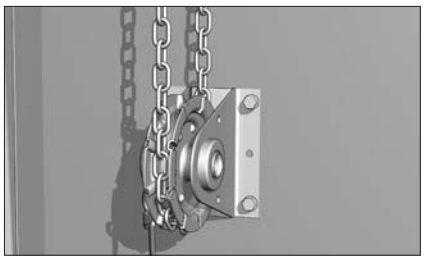
Insert a dowel and fix the manual chain operator fastening bracket to the wall using tapping screws and to the operator with washers and nuts.



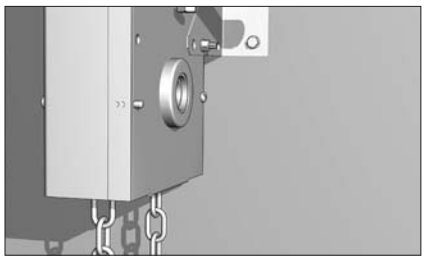
Install the tension roller with the chain holder at 1 m height and on the same axis with the operator. Mark and drill the holes in the wall for the tension roller fastening.

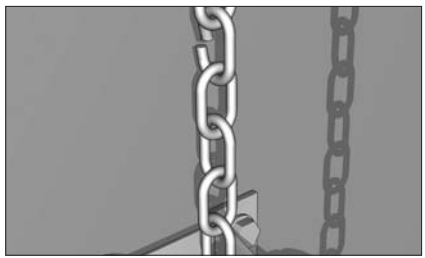


Insert dowel in the drilled holes and fasten the tension roller using tapping screws.



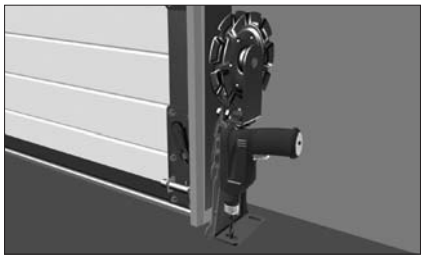
Run the chain through the operator and the tension roller.

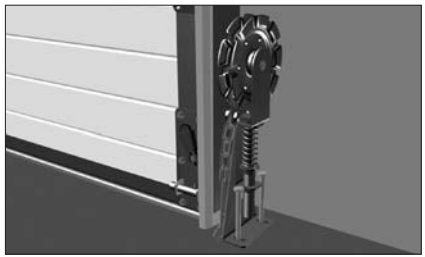




Fasten the chain links using combination pliers.

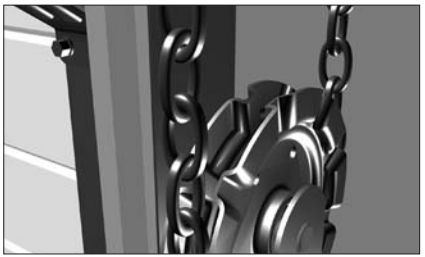
If the tension roller is used

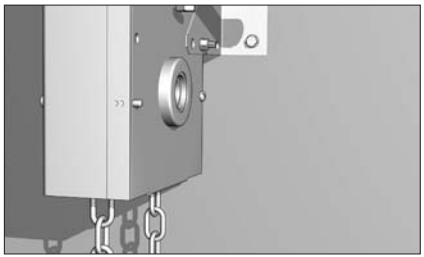


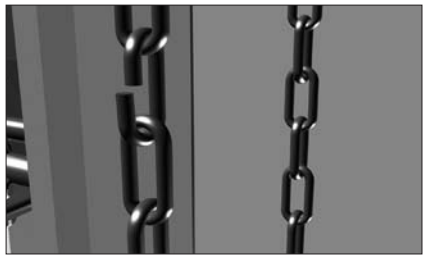


Place the tension roller on the floor on the same axis with the operator. Mark and drill the holes in the floor for the tension roller fastening.

Insert the anchor bolts in the drilled holes and tighten them.







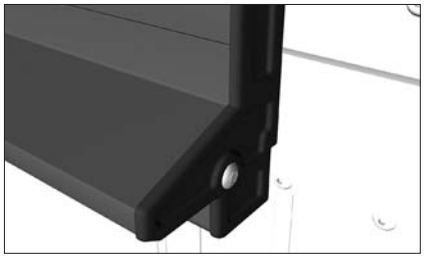
Run the chain through the operator and the tension roller.

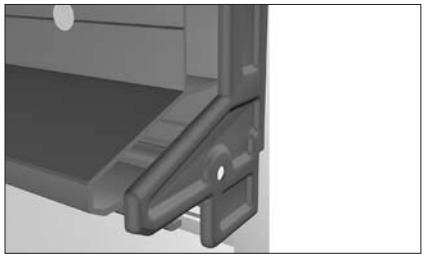
Fasten the chain links using combination pliers.

Pass door closer installation

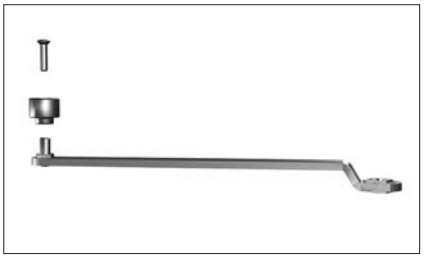
If the door leaf has a pass door, the wicket door closer must be installed.

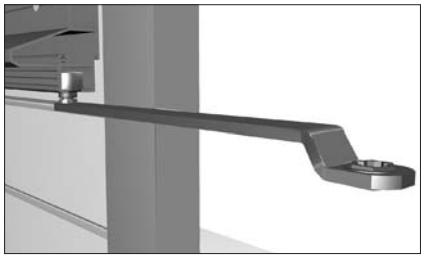
Position the door closer on 4 ready-made holes.



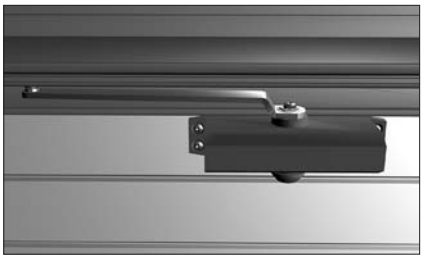


Remove top wicket modifier profile cap from one of the profile ends.

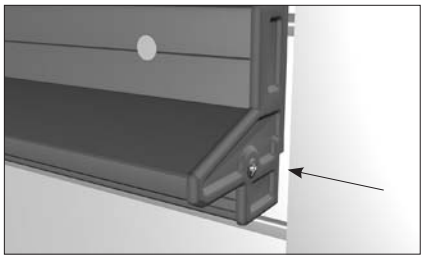




Install the closer lever in the sliding trunk of the door leaf.

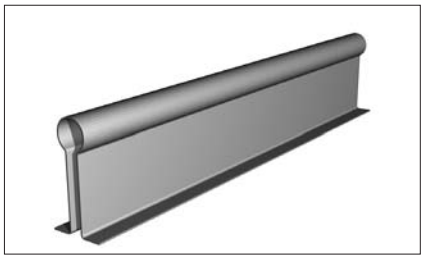


Block the closer lever on the closer mechanism.

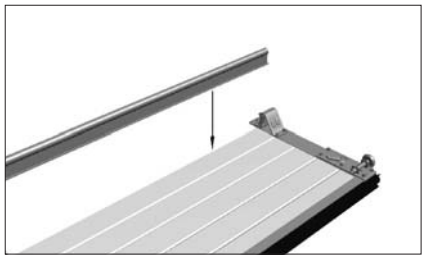


Place the cap back on the profile end and fix it with a tapping screw.

Omega-profile installation



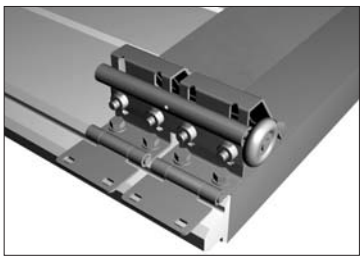
The Omega-profile is installed on the opening with a 4500 mm width of door leaf and if there is increased wind load. The profile is used for the shield reinforcement in both vertical and horizontal positions.



The Omega-profile is recommended to be installed at one level with the side supports and to be fastened to the panel using rivets or tapping screws (on the inside of the panels).

Installation of double side supports

The roller's double (reinforced) side supports are used if the door leaf has large dimensions and the load per roller exceeds 35 kg.



Disassemble the side supports with roller holder. Position the supports on the drilled holes and fix with tapping screws for panels.

Installation of halyard capronic

The halyard capronic is used to close the door by hand if there is a high opening.

One end of the halyard capronic fasten to the roller bushing on the bottom corner bracket.

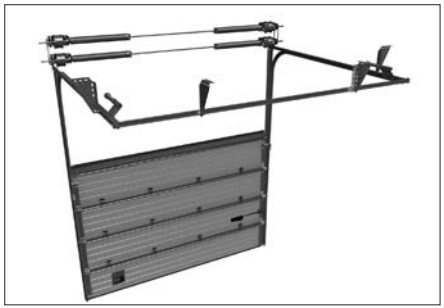
Fasten the second halyard end to any free hole of the corner support or of the end support bracket.

Aspects of vertical and high lift installation

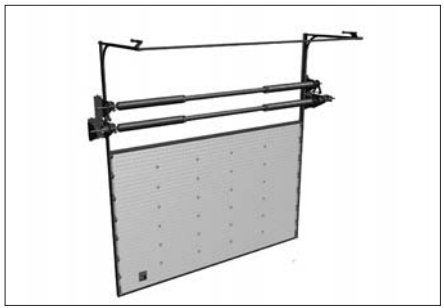
High lift

High lift with below shaft

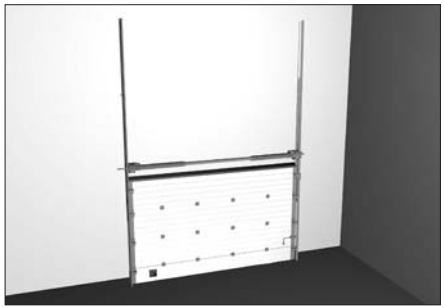
Vertical lift



High lift, two-shaft system

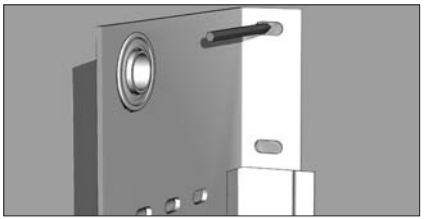


High lift, with shaft, below two-shaft system

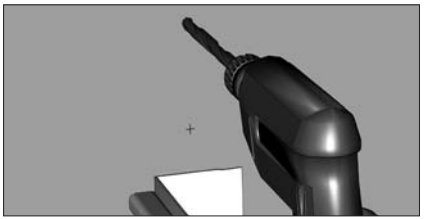


Vertical lift with below shaft

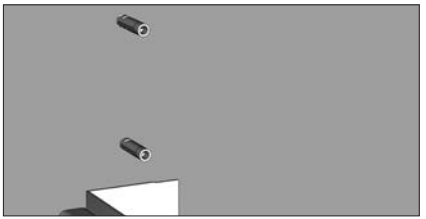
Two-shaft system on end support brackets



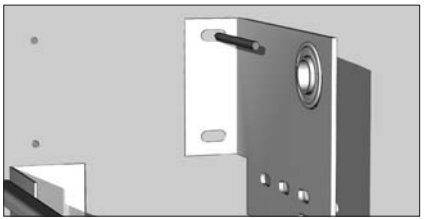
Position the support bracket close to the wall and the corner support, matching the holes in the bracket and in the support. Mark the holes for fastening to the C-profile and the opening wall according o the perforation in the support bracket.



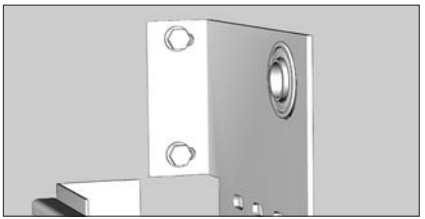
Drill the marked holes (in the wall the hole is ∅12 mm and in the C-profile the hole is ∅8.5 mm).



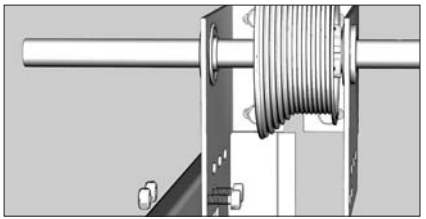
Insert the dowels in the holes in the wall. In a similar manner mark the holes for the bracket fastening on other side of the opening.



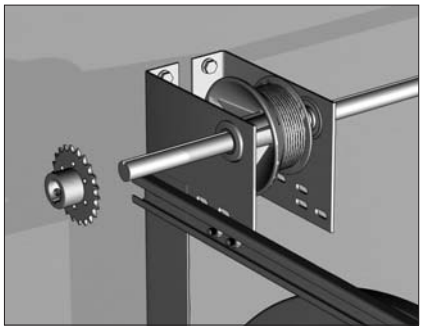
Install symmetrically on the inside the second support bracket, for that position it to the opening wall and mark the points of its fastening to the wall. The distance between the brackets must be enough to place the drum.



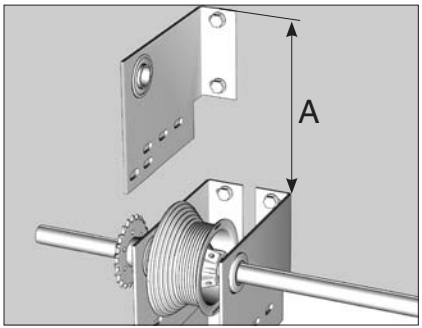
Drill the marked ∅12 mm holes in the wall, insert dowels and fix the bracket using tapping screws. Fix the support bracket on other side of the opening in a similar manner.



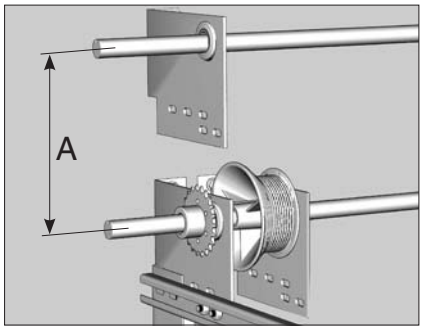
Insert the shaft with spring in the brackets bearing and install the drums. Fasten the right and left brackets to the wall using tapping screws and washers and to the corner brackets and the C-profiles using bolts and nuts.



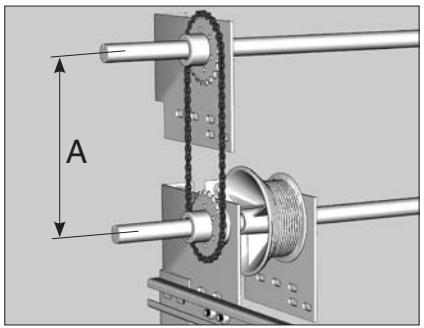
Install the sprocket on the shaft, having inserted the bushing key in the key slot before. Fix the sprocket on the shaft using fastening bolts M8x25 mm. Fasten the sprocket on other side of the shaft in a similar manner .

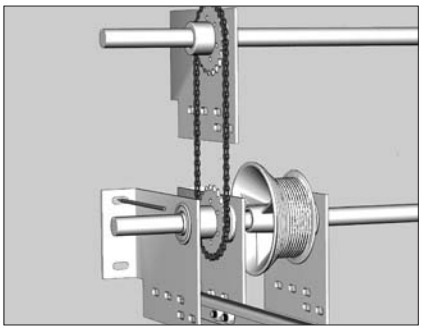


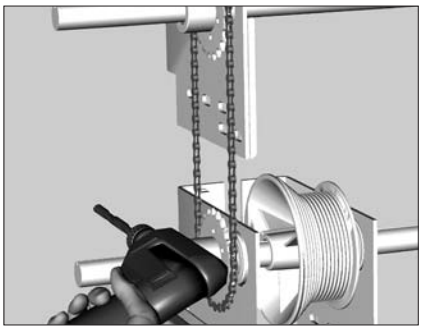
Position the support bracket close to the wall so, that vertically it is in one line with the bottom bracket, fastened to the corner support and to the wall. The center-to-center distance between the shafts (A) can vary from 240 up to 393 mm depending on the lintel height. Install the top support bracket according to these dimensions. The dimension is indicated in the mounting card. In a similar manner fasten the support bracket for the second shaft on other side of the opening.



Install the second shaft with a spring in the top support brackets bearings.

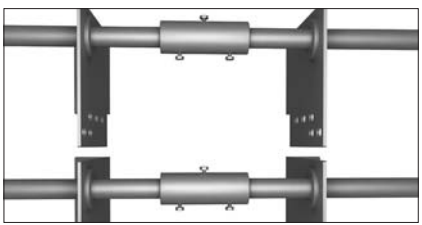






Place on the second shaft the sprocket so, that it has been in one line with the bottom sprocket. Before put on them the chain. If the center-to-center distance between the shaft (A) is less than 393 mm, shorten the chain. Bolt the top sprocket on the shaft. In a similar manner install the sprocket and the chain on other side of the opening.

Install the additional support bracket on the bottom shaft, for that position it to the opening wall, mark and drill the holes for fastening.



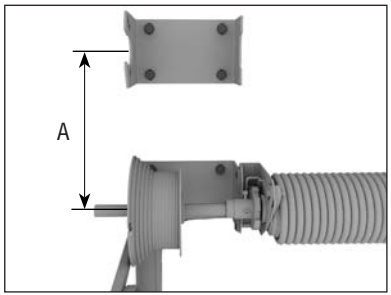
By using of the connection coupler the support brackets must be installed on both sides from the couplers.

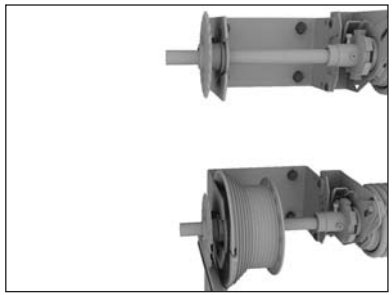
Table 1

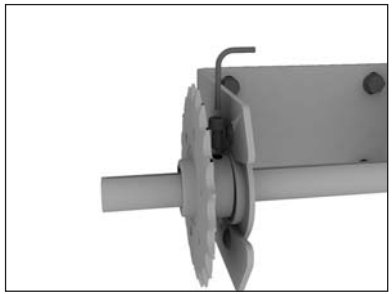
n pieces	108	106	104	102	100	98	96	94	92	90	88	86	84
A мм	392,5	380	367,5	355	342	329,5	317	304	291,5	278,5	266	253,5	240,5

n – amount of chain links including the connection link
(basic amount -108, minimum - 84)
A- center-to-center distance

Two-shaft system on U-shaped end support brackets

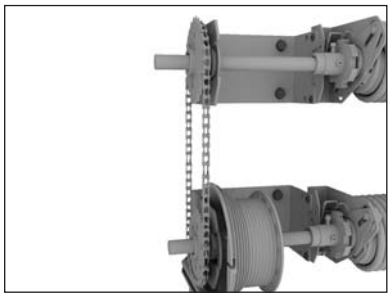






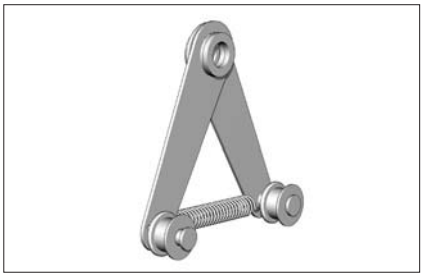
Position the sprockets on the top and bottom shafts so, that they are in one line. put on them the chains before. If the center-to-center distance between the shafts (A) is less than 393 mm shorten the chain according to the table. Install the sprockets on other side of the opening in a similar manner.

Fix the sprockets using fastening bolts.

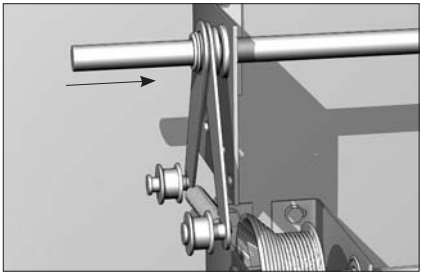


Install the connection chain on the sprockets. Shorten the chain according to the table in the mounting card depending on the center-to-center distance of the shafts position.

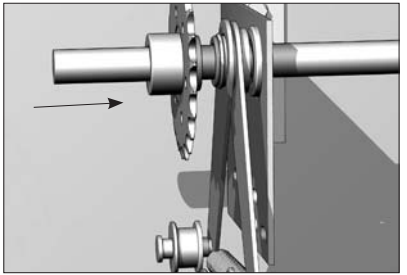
Chain tension device installation



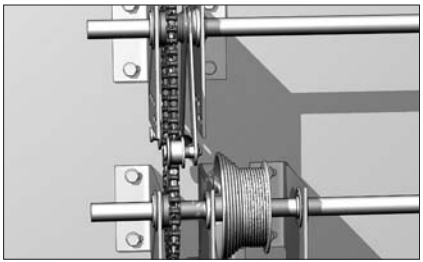
Chain tension device is used to tension the chain during its stretching and damping of the vibrations, arising during its operation.



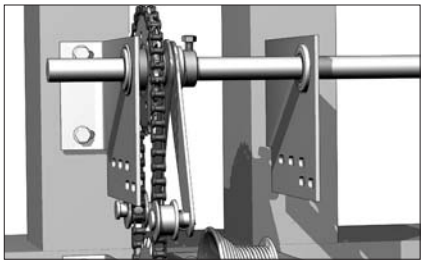
Install the device **on the top shaft** close to the end support bracket before installation of the sprocket and the chain.



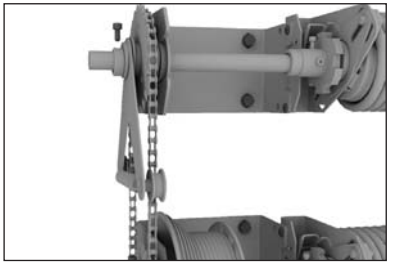
Position the sprocket together with the chain close to the chain tension device.



Position the tension device rollers on the outside of the chain.



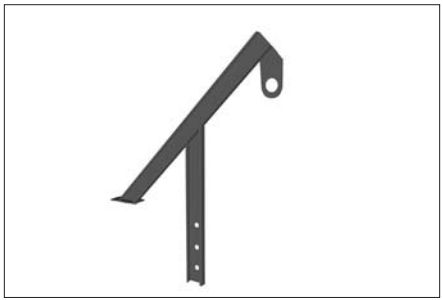
If the end support bracket is far from the sprocket the closing ring can be installed.



Install the tension device on the top shaft. Fix the chain tension device position with the closing ring.

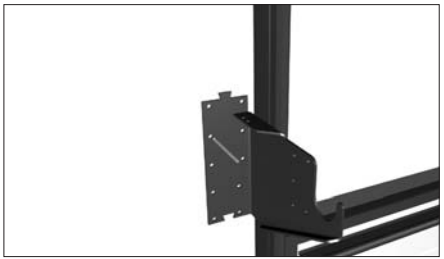
To make easier the industrial sectional door torsion gear mounting we recommend to use the hand hoist and the mounting jig with lifting capacity ~ 500 kg.

hand hoist

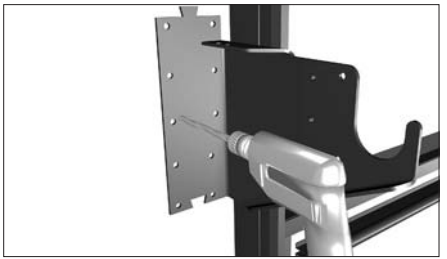


mounting jig

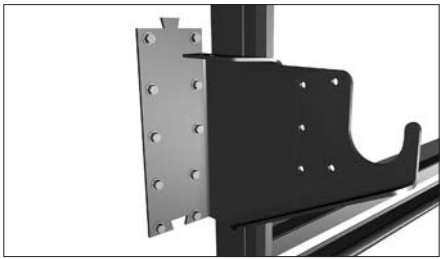
Mounting of torsion gear with remote octagonal shaft

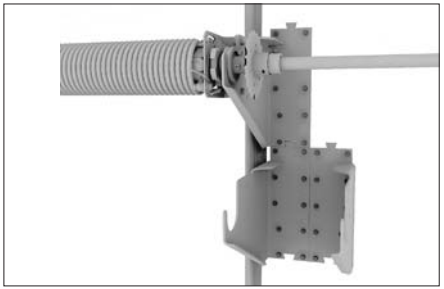


Lean the low shaft remote bracket to the opening wall close to the corner bracket (on the outside) according to the mounting card. Using the perforation in the bracket make marking for its fastening to the wall.



Drill in the wall according to the marking 10 holes ∅12 mm and in the corner support 8 holes ∅7 mm.

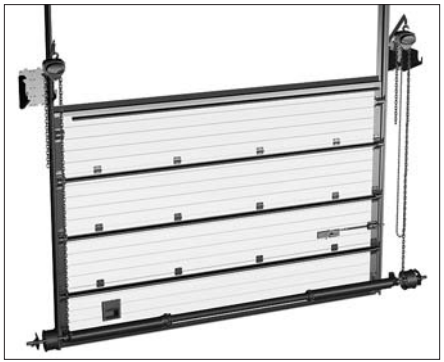




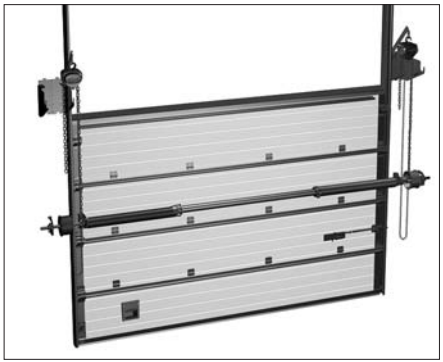
Fasten on the brackets the mounting jig using 5 bolts M10x25.

The second bracket position on the slots of the installed bracket, fasten the bracket to the wall using dowels and tapping screws.

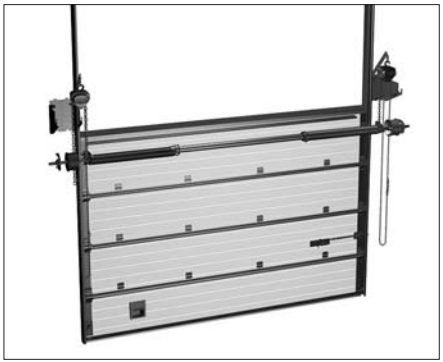
Fasten the hand hoist hanger hook to the special opening on the mounting jig.

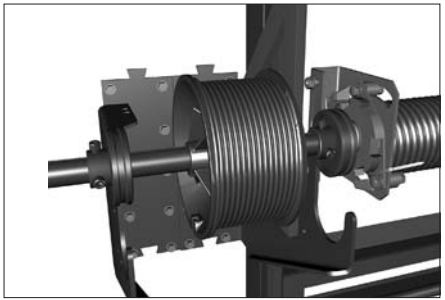


Hook the shaft near the drums, hitching them with the hand hoist load hook, before it loose six-sided screws 8X16 on the torsion gear end bushing for shaft 1.25" so, that the bushing is able to move along the shaft.

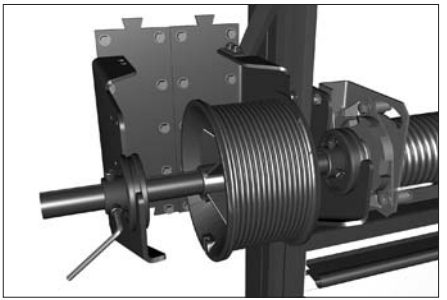


Using the hand hoist, using the manual chain, lift the torsion gear up to the remote brackets.

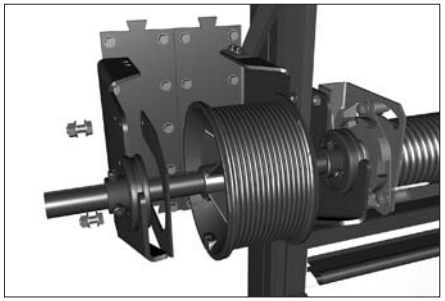




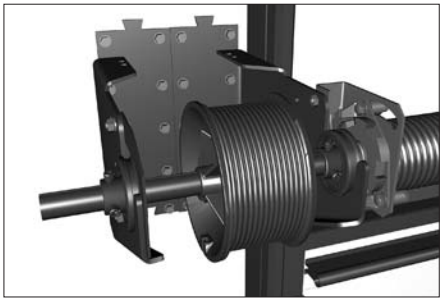
Install the torsion gear in the remote brackets slots positioning the end bushings.



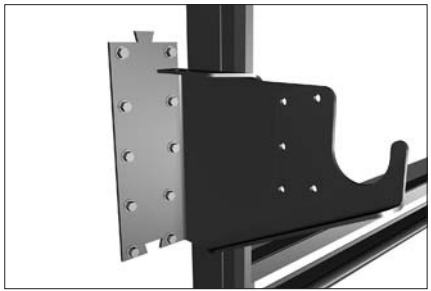
Block the spring failure safety device. Tighten the screws on the end bushings.



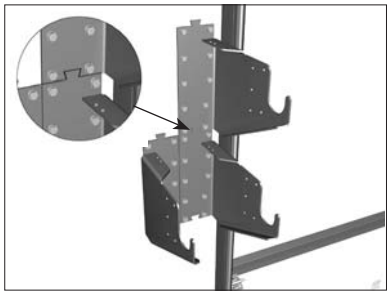
Install the end bushing fixing plate.



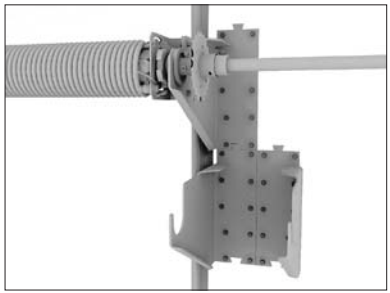
Aspects of two-shaft system of torsion gear with remote octagonal shaft mounting



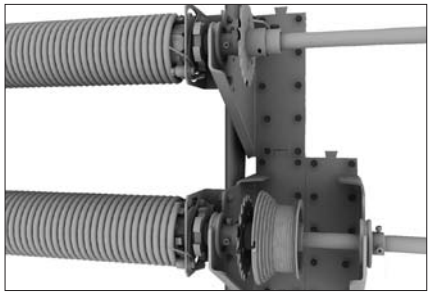
Place the remote brackets for low shaft to the opening wall close to the corner bracket (on the outside) according to the mounting card. fasten them to the wall.



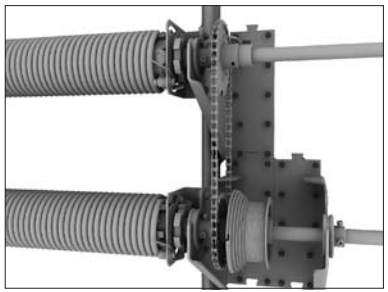
Place the remote bracket for the second shaft tightly to the wall so, that top and bottom bracket slots index.



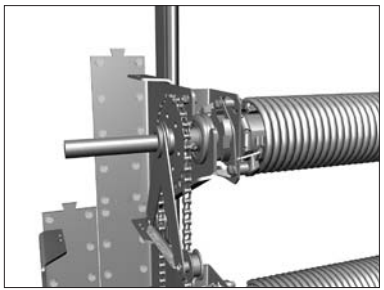
To make mounting easier install first the additional torsion gear (without drums) in the top remote bracket.



Install the second shaft in assembly (with drums).



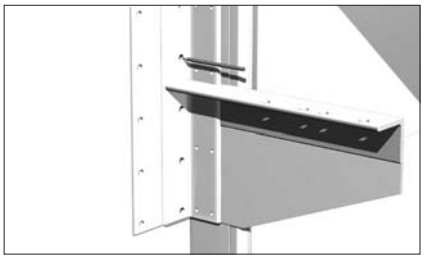
Install the chain on the sprockets of both shafts. **Attention! The sprocket must be on the same axis.**



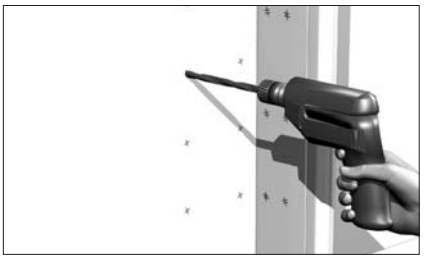
Position the chain tension device on the top shaft and fix it with the closing ring.

Mounting of the torsion gear with cylindrical shaft

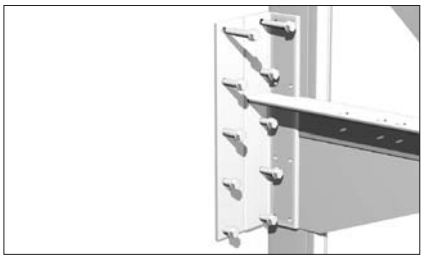
Disassemble the remote shaft bracket with a cramp



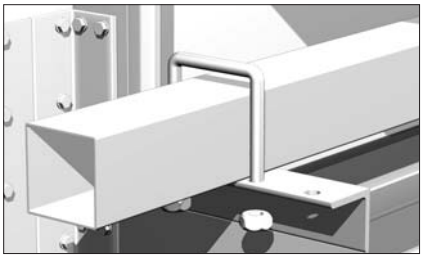
Lean the remote bracket for the low shaft to the opening wall close to the vertical angle (on the outside) according to the mounting card. Using perforation in the bracket make marking for its fastening to the wall and the vertical angle.



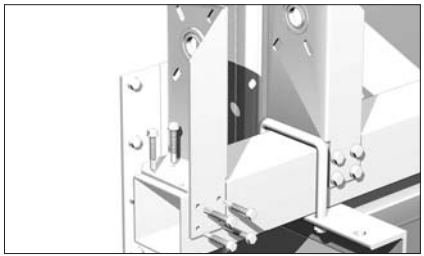
Drill according to the marking 10 holes ∅12 mm in the opening wall and 8 holes ∅7 mm in the vertical angle.



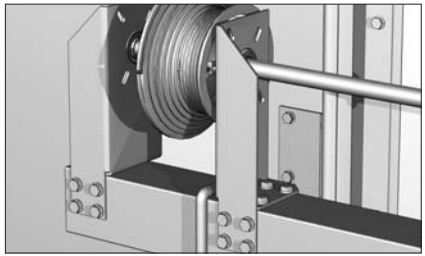
Fasten the bracket to the wall using dowels and tapping screws and to the vertical angle using bolted joints. Install the second bracket on other side of the opening in a similar manner.



Fasten the pipe to the bracket using cramps and nuts according to the mounting card.

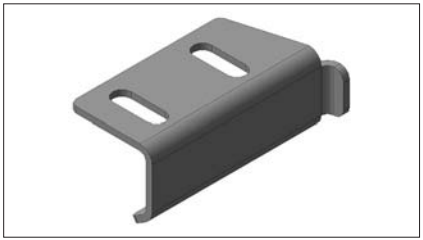


Install the internal remote brackets for drum fastening on the pipe according to the dimensions indicated in the mounting card and fix them using tapping screws for metal.



Insert the shaft with a spring in the brackets bearing and install the drums.

Cable support installation

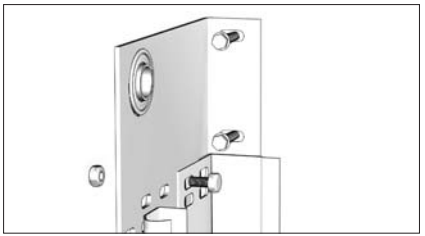


While mounting sectional doors with high / vertical lift, with drum below the cable supports must be installed on the bottom panel side supports in order to prevent fraying of the cable through the side support.

The cable support fasten to the side support using 2 bolts with semi-round head and two suitable nuts. The cable must be extended behind the special ear on the cable support.

Installation of end support brackets at vertical lift

Position the end support bracket along the holes on the corner support and using perforation in the bracket mark the holes for fastening to the opening wall.

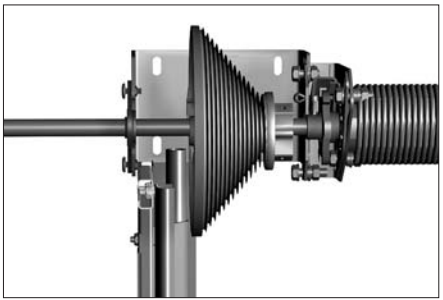


Drill the marked holes ∅12 mm. Hammer dowels in the wall. Fasten the end support bracket and the corner support between each other using bolts M8x25 and nuts.

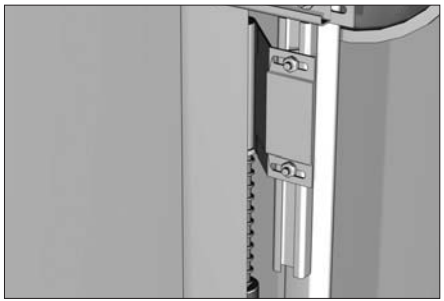
Fasten the end support bracket to the wall using dowels and tapping screws.

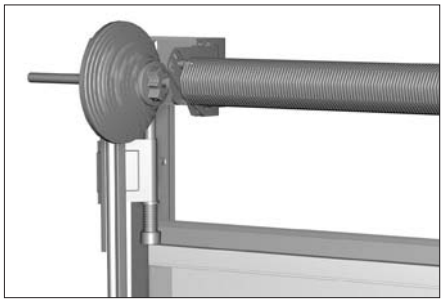
Insert the shaft in assembly with spring and drums in the support brackets.

Installation of bumper at vertikal lift



At vertical lift the bumper is installed on the vertical tracks.

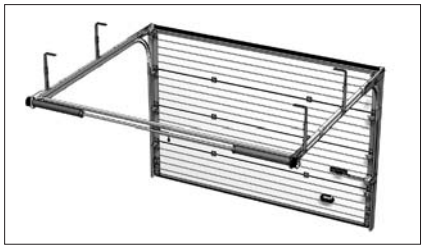




Fasten the bumper to the C-profile on the vertical track according to the figure. Install the bumper so, that when the door is open the bumper's compressed position is not less than 50 % its stroke length. Install the bumper on the second track in a similar manner.

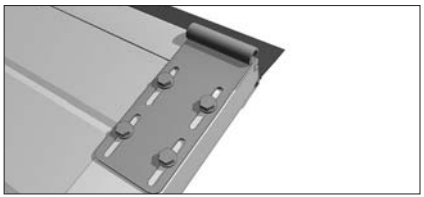
Aspects of low lift mounting

Low lift the drum from the front

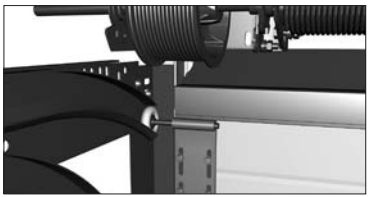


Low lift the drum from behind.

Installation of the top roller support

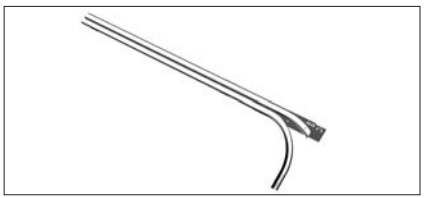


By assembling of the top panel install the top roller supports. Level the corner support edges according to the panel, drill four holes ∅4.2 mm and fix it using tapping screws for door panels.

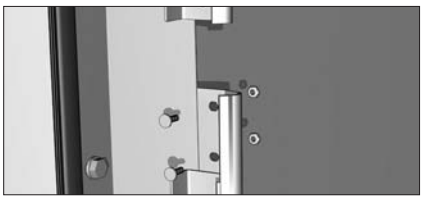


Position the support roller on the top horizontal track. Loose the tapping screws, adjust the upper supports to enable close abutment of the top panel to the head room. Tighten the tapping screws.

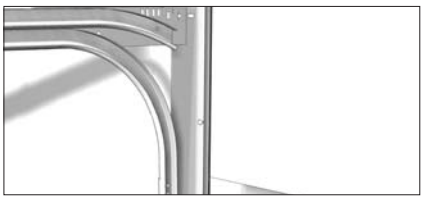
Horizontal tracks installation



The horizontal tracks are delivered in assembly. They are punched to enable their fastening to the vertical tracks.

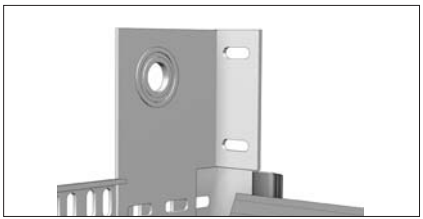


Fasten the horizontal and vertical tracks to each other using two bolts for tracks assembling and the connection plate located in the position of tracks joint.

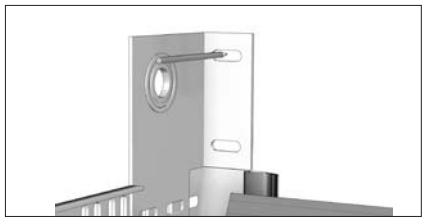


Before bolt tightening the tracks must be leveled using the builder's level.

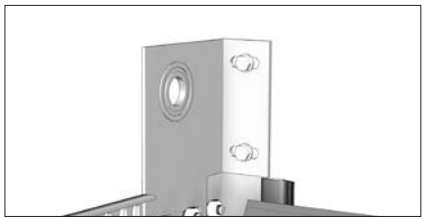
Installation of end support bracket at low lift



Install the support bracket close to the wall and the corner bracket, here the holes in the support bracket, the vertical angle and the bracket for bushing fastening must be indexed.



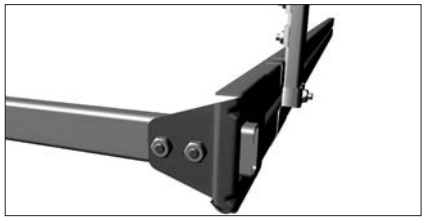
Mark and drill the holes ∅12 mm for fastening to the opening wall using the perforation in the support bracket.



Fasten the bracket to the wall using dowels and tapping screws and washers and to the bracket of pulley fastening and to the vertical angle using bolts and nuts.

C-profile installation

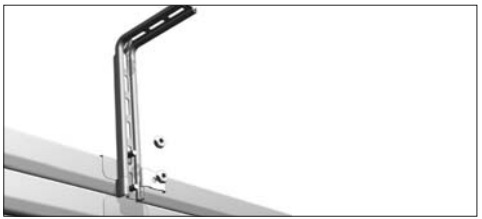
Fix two lock plates on the corner connection bracket using bolts 8X25 mm with semi-rounded heads and nuts.



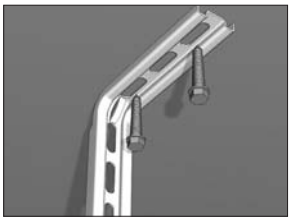
Attach the C-profile, leveling its end along the double track rear surface, run it through the lock plates and holes in the corner connection bracket, tighten it.

Fastening of horizontal tracks to the ceiling

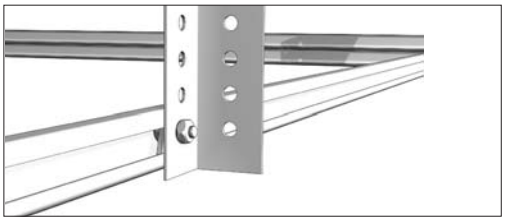
There are two types of brackets applied for tracks fastening to the ceiling depending on the head room height.



A. If the lintel height is up to 400 mm the tracks are fastened using 4 corner brackets, cramps and bolts and nuts. Fasten the multi-purpose bracket to the double tracks using the cramp and the bolt and the nut.

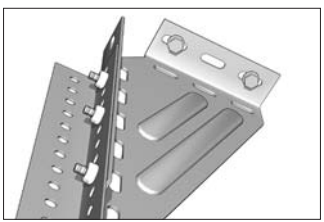


Fasten the corner bracket to the ceiling with tapping screws (2 pieces) and dowels.

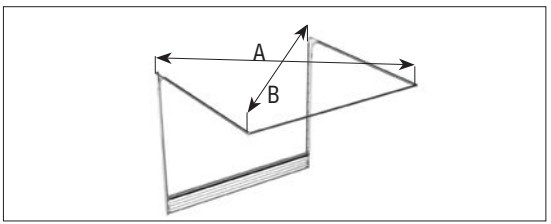


B. If the head room height is more than 400 mm the tracks are fastened using multi-purpose corner brackets, punched angle, punched angle connectors and double tracks and bolts and nuts.

Fastening of the punched angle to the door tracks with low lift is made with the punched angle connector using the cramp, bolts and nuts.



Fix the multi-purpose corner bracket to the punched angle using bolts with semi-round head and flanged nuts.



Check tracks horizontality using the builder's level (adjust if required). Before final fastening of the tracks to the ceiling you must check the distance between alternate angles (diagonal A and B must be equal).

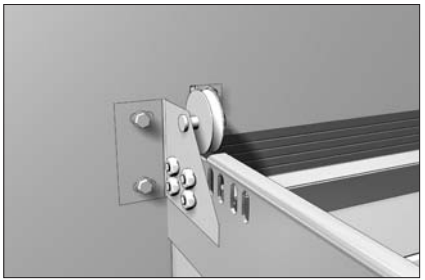
Installation of bumpers

Mark and drill 2 holes ∅8 mm in the bottom horizontal tracks.

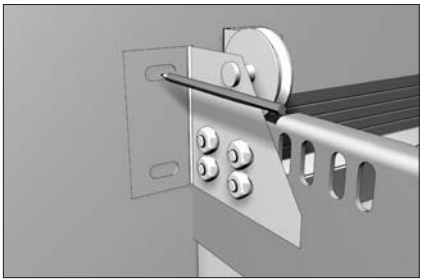
Fix the C-profile using bolts with semi-round head M8x25 and flanged nuts.

Fasten the spring bumper using lock plates and bolts and nuts. Adjust the bumper's position and tighten the nuts.

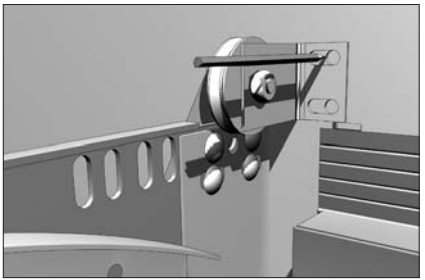
Low headroom, drum from behind, pulley installation

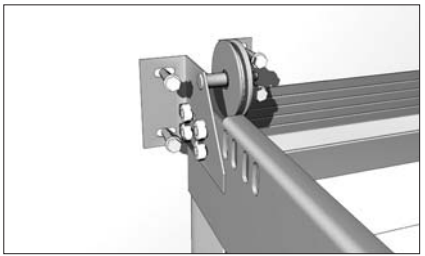


Place the pulley along the holes in the corner bracket and fix it with 4 bolts with semi-rounded head M8X16.



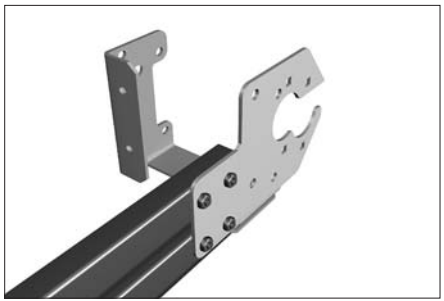
Mark and drill a ∅8 mm hole in the headroom.





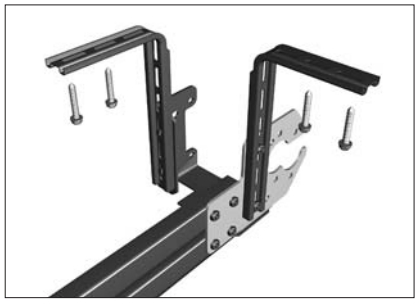
Insert dowels and fasten the end bracket to the wall using tapping screws and washers.

Low headroom lift, drum from behind, mounting of torsion gear with octagonal shaft

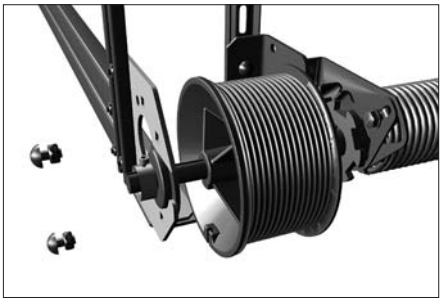


Place on both horizontal tracks the connected construction of the end support bracket for drum behind and safety device fastening bracket for drum behind fastening. Fasten the assembled bracket to the double horizontal tracks using bolts 8X16 with semi-round head and tighten them with nuts.

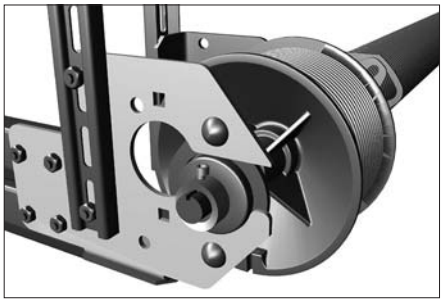
Fix the multi-purpose brackets on the end support bracket for drum from behind and on the safety device fastening bracket for drum from behind using bolts and nuts.



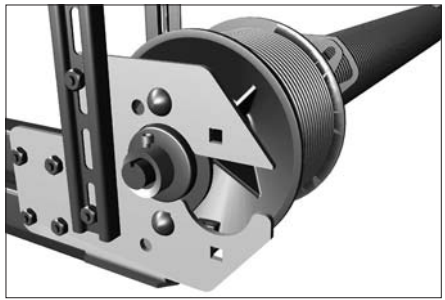
Fasten the multi-purpose bracket to the ceiling using 2 tapping screws.

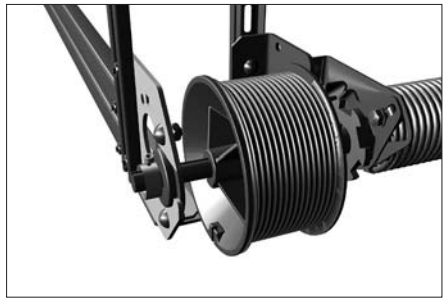


Position the torsion gear in assembly on the U-shaped brackets. using 2 bolts with semi-rounded head (M8X16) fasten the end plate with the bearing to the end support U-shaped bracket. Fasten the spring failure safety device to the end support U-shaped bracket using two sets of fasts (bolt 10X25, nut M10, spring washer 10).



Fasten the end plate with bearing to the end support bracket for drum from behind using 2 bolts with semi-rounded head (M8X16), fix the bolts on the close to the lintel or far from the lintel slots (relatively the opening) depending on the installed drums.



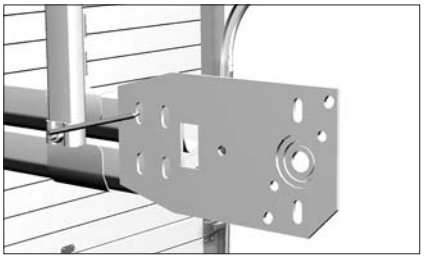


Fasten the spring failure safety device to the end support U-shaped bracket using 2 set of fasts (bolt 10X25, nut M10, spring washer 10).

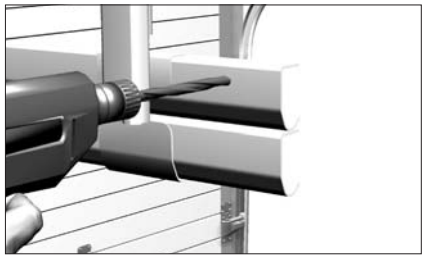
Relation between end plate with bearing installation and installed end support U-shaped brackets (8) and drum type is represented in the table.

End support bracket for drum behind	CLOSE	OMI8	OMI12
	FAR	OMI18 L	

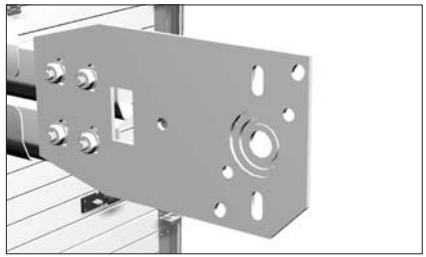
Low headroom lift, drum from behind, mounting of torsion gear with cylindrical shaft



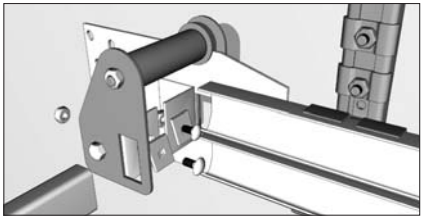
Place the end support bracket against the horizontal tracks on the outside. Mark the holes in the tracks for bracket fastening using perforation in it.

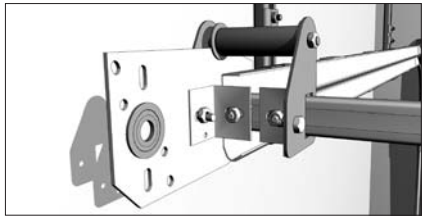


Drill the marked holes ∅8.5 mm.

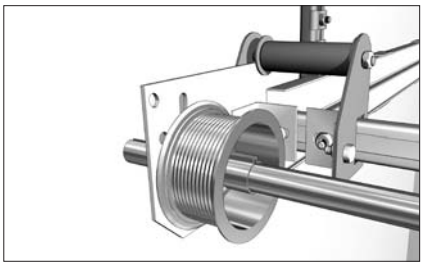


Fasten the end support bracket to the double horizontal tracks using bolts and nuts.

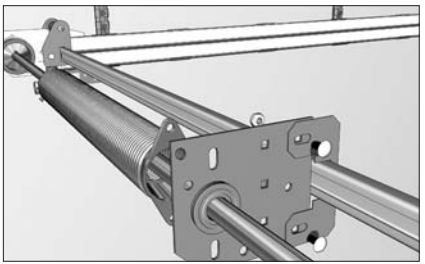


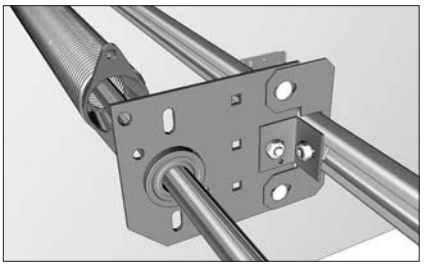


Position and fix the cable guiding roller for drum behind together with the mounting angle for horizontal lath on the end support bracket using a bolt and a nut. Position and fasten the C-profile using mounting angles, lock plates and bolts with semi-rounded head M8x25 and suitable nuts.

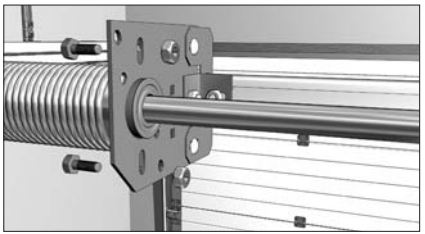


Install the shaft in the end support brackets bearing, having installed the drums, the spring and the fastening bracket for drum behind on it before.

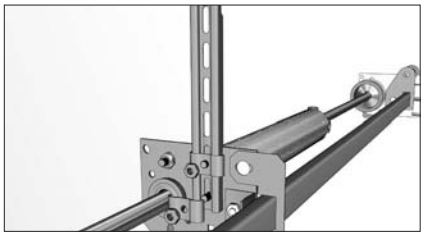




Fasten the fastening bracket for drum behind to the C-profile using the C-profile fastening bracket, the mounting angle for horizontal lath installation, the lock plate and a bolt and a nut.



Fix the spring to the fastening bracket for drum behind using 2 bolts and nuts.



Fasten the assembly to the ceiling using brackets (the bracket type depend on the headroom height).

Dismounting

Unplug the electric drive. Dismount the electric operator according to the manual for electric operator manual. Close the door and loose the spring. Then dismounting must be performed in accordance with this directions in the reverse order.

Upgrading

Installation of the additional equipment or accessories as well as self-replacement or self-adjustment of the components without consulting with the manufacturer is forbidden.

Only original spare parts and accessories are recommended to be applied for installation and operation of the sectional doors.

The manufacturing company shall not be held responsible for possible injuries and wrong done to people, animals or objects in case of unauthorized modification.

Maintenance

The sectional doors do not need any complicated or special maintenance.

Panels that make up the door leaf, have the resistant protective-decorative coating. To keep them nice and tidy we recommend to clean their surface using a moist rag and neutral domestic detergents.

In case of door hinge creaking or roller axes creaking they should be lubricated through the lubrication hole in the central part of the hinge curl or in the central part of the roller holder curl.

If closing or opening of the doors requires force applying, adjust the rollers. If there is a clearance between the roller and the track profile, loose the bolts on the roller holder, move the roller holder along the slots until the roller fits tightly to the track, tighten the loosed bolts on the roller holders.

If there are creaks and knocks in the torsion gears clean them from dust and dirt with a dry rag and streak any lubricant for metal surfaces on the about 3 cm wide area along the spring

The handle is used for manual opening and closing of the door.

If the automatic operator is used follow the manual for the drive.

Do keep the tracks clean. Do not apply lubricants for them!

After about 20000 times of door operation acts an expert should test the spring mechanisms.

Test is carried out by the doors operation intensity:

- up to 5 times a day – every 9 years;
- up to 10 times a day – every 4.5 years;
- up to 20 times a day – every 2.5 years;
- up to 50 times a day – every year.

The doors should be installed, adjusted or repaired only by qualified specialists.

DoorHan, 120, ul. Novaya, s. Akulovo, Odintsovskij r-n,
Moskovskaya obl., 143002 Russia.
Tel: +7 (495) 980-8783
Fax: +7 (495) 937-9550
E-mail: info@doorhan.com
www.doorhan.com