

installation manual

## IND-HWS

hardware set for  
industrial overhead  
doors

max. w = 8,0m

max. h = 6,0m

max. kg = 700kg

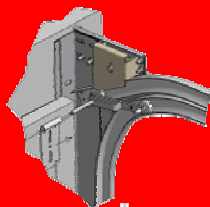
NL, VL, HL, LHR, FTR,  
FLH, FHL



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2005




NEW!  
CE-LHR  
system  
(patent  
pending)



**ATTENTION! GENERAL WARNINGS!**

To install, use and maintain this door safely, a number of precautions must be taken. For the safety of all concerned pay heed to the warnings and instructions given below! If in doubt, contact your supplier.

- ✓ SPECIAL SAFETY WARNINGS OR REMARKS IN THIS MANUAL ARE INDICATED WITH THIS SYMBOL:  READ THESE WARNINGS CAREFULLY.
- ✓ This manual has been written for use by experienced fitters and as such is not suitable for d.i.y. purposes or for use by trainee fitters.
- ✓ This manual describes the installation of the hardware set components, door sections (panels) and refers to installation manuals of the electrical operators. Be sure to supplement this manual if needed with instructions for any additional components not described in this manual.
- ✓ Before starting, read this manual carefully!
- ✓ Certain components may be sharp or have jagged edges. As such you are advised to wear safety gloves.
- ✓ All the components which have been supplied are designed for use with this specific overhead door. Replacement or adding additional components may have an adverse effect on the safety of, and the guarantee on, the door. Also the CE-approval which has been granted to this door combination will be cancelled when components are changed or installation is not done according to this manual! Installer is responsible for this.
- ✓ During tensioning, springs can exert large forces. Work carefully. Use the proper equipment. Ensure that you are standing in a steady position.
- ✓ Ensure that there is sufficient light during installation. Remove obstacles and dirt. Make sure that there is no one else present other than the fitters. Other people (children!) may get in the way or endanger themselves during the installation.
- ✓ Ensure that the building is constructed strong enough to carry the overhead door construction. It is the responsibility of the installing company to use fixing materials which are strong enough and equipped to fix the overhead door to the building.
- ✓ A power operated overhead door may not be equipped with a pull cord (rope). Be sure that this has been removed when a manual operated door is being equipped with an E-operator.
- ✓ Environments closed by an electrical operated overhead door with operators which are not disconnectable and where the door cannot be manual operated must be equipped with a pass door.
- ✓ Cutting of the bottom section is not allowed. The forces on cable break devices and bottom brackets are too high. Cutting is weakening the construction of the door on this critical point.

This door can only be taken into use, when all instructions are followed and:



- ✓ the installer has checked the combination of hardware, panel and e-operator as being approved and safe. Make sure to check the max. peak force and the proper functioning of the safety edge system in combination with the operator.
- ✓ all documentation has been handed over to the end-user: Ila Declaration of conformity, User Guide, Maintenance Instructions, Dismantling instructions, Service Log Book and this manual.
- ✓ a CE-identification plate has been placed on the door.
- ✓ user has been given instructions and demonstration of the proper use and functioning of the door.

## GUARANTEE, CONDITIONS AND TERMS

The general terms and conditions of delivery and payment issued by the Metaalunie and designated as METAALUNIE CONDITIONS are fully applicable to all our quotations, contracts and their implementation. We expressly reject all other terms and conditions. On request we will send you a copy of these terms and conditions free of charge. A copy may also be downloaded from our website [www.flexiforce.nl](http://www.flexiforce.nl).

Flexi-Force strives to deliver 100 % in conformance with the order. In practice, in spite of all our controls, this is not always possible. However we will rectify any errors as quickly as possible, in order to minimise the inconvenience caused to you or the user. As such, it is important that you inform us as soon as possible about any problem with the delivery (include the order number and week of production) and give us the opportunity to offer a suitable solution.

Flexi-Force will only reimburse third party costs if we have given explicit permission for this in advance. The reimbursement is based on normal rates and travelling expenses over distances of 1 hour away at most.

For large-scale projects we strongly advise you to first install 1 door completely before installing the other doors. In this way, any errors can be detected early on and rectified comparatively cheaply.

This manual does not confer any rights. Technical modifications may be made without written notice.

Flexi-Force has endeavoured to design and put together this hardware set in conformance with the applicable CE-norms. However, we recommend to check our configuration against any local national specification.

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Tel. +31-(0)342-427777, [ff@flexiforce.nl](mailto:ff@flexiforce.nl)

## APPLICABLE CE DIRECTIVES AND RESTRICTIONS:

Industrial overhead doors brought into the European market must follow the EMC-Directive\*, Low Voltage Directive\*, Machine Directive\* and Construction Products Directive, issued by CEN.

(\* = only power-operated doors)

Flexi-Force has developed and constructed this hardware set according to these directives. This gives a restriction to the max. forces and dimensions of industrial doors:

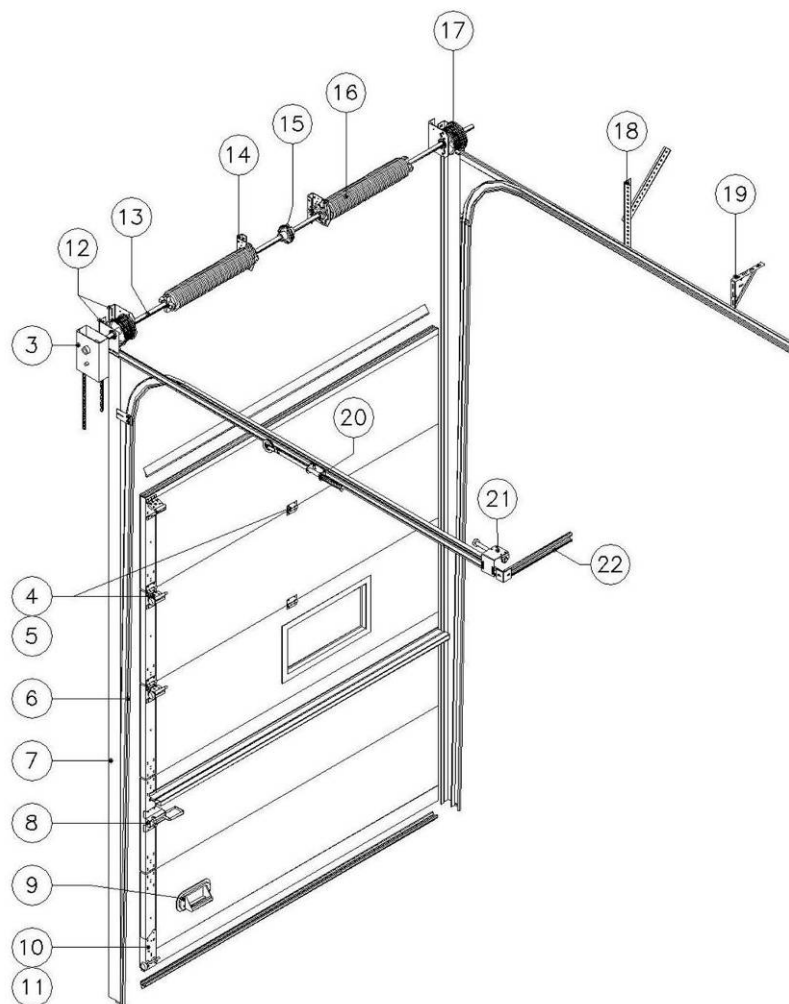
- Max width : 8 meter
- Max height : 6 meter
- Max door weight : 700 kg
- Standard equipped with anti-drop protection: Cable break device and spring breaking device
- Other safety accessories: roller protection (580CEN, 581CEN), bottom safety edge system (when power operated), slack cable device, cable inside track system.
- Tested for CE when selecting the proper Flexi-Force components, and combining with tested panels and operator/control unit combinations.
- Use of finger safe sections for door heights <2,75m.
- Cables outside the track system are not allowed, unless the cables are covered.



Flexi-Force has applied the mandated INITIAL TYPE TESTING for doors described in this manual, at the SP-Institute in Sweden (as Notified Body Nr. 0402). The INITIAL TYPE TESTING REPORT that has been rewarded, can be transferred to the door producing company when truly declared conformity is done. This is needed to complete your CE technical construction file according to product standard EN13241-1. The ITTR-number should be placed on the CE-plate on the door.

The article codes of the parts are given in (parentheses). This door can only be installed according to the CE-certificate if all parts are according to the parts lists of the SP-certificate. See [www.flexiforce.com](http://www.flexiforce.com).

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User manual Enclosure on request

Installation and user instructions electric operator (option) Enclosure on request

SP – Initial Type Testing Report and other approvals On request




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## 1 GENERAL

### SPECIFICATION OF DELIVERY HARDWARE SET

With the Flexi-Force supplied hardware set for industrial doors, depending on selected door dimensions and lift systems, the next mentioned articles are included in the standard delivery.

 Check, before starting the installation, if your set has been delivered according to the packing list!



#### The set contains:

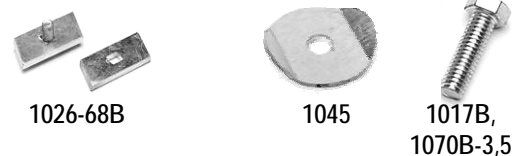
- cable drums
- side bearing plates
- intermediate bearing plates
- spring breaking device\*
- shaft with key way
- roller bearings
- vertical track set with angle
- side seal
- horizontal track set with reinforcement and curve
- coupler\*
- rollers
- assembled torsion springs, black or powder coated
- suspension profiles
- chain hoist with chain or rope\*
- intermediate hinges
- side hinges
- toproller bracket
- bottom bracket or cable break device\*
- lock or slide bolt\*
- grip\*
- springbumpers\*
- cables
- keys
- triangular plate\*
- cable tension set\*
- box beam\*
- fixing material

#### Not supplied in the set:

- windows
- top/bottom profile with seal
- needed material for fixing to the wall
- endcaps
- struts



#### Fixing material:



\* these articles are selected by option and therefore can be missing in the set.



#### **ATTENTION!**

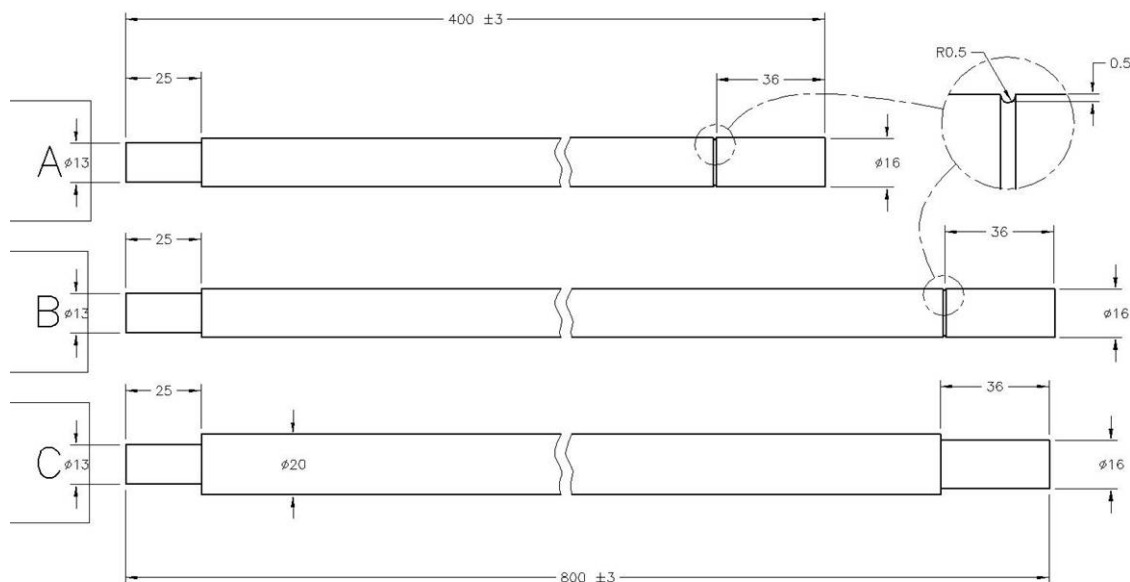
Adding other components or using different fixing materials can influence the safety and quality of our configured set. We take no responsibility for sets which differ on the level of components from our original configuration packing list.



## MINIMAL NEEDED TOOLS AND EQUIPMENT

Effective and safe assembly requires that the proper tools be used. Below a list of the tools required at a minimum.

- Cord (rope)
- tension irons (as per drawing)
- grip or gluing clamp (to block the door)
- grease and oil
- CE plate and warning labels
- spirit level or transparent hose
- chain punch (for 721A)
- measuring tape
- protractor (for roofline matching system)
- screwdriver with straight blade
- screwdriver with crossed blade
- pliers (for split pin)
- iron file
- jigsaw
- socket/open-end/ring spanners, size:
  - 5,5
  - 8
  - 10
  - 13
  - 14 or 9/16"
  - 15
  - 17
  - 24 (for 440REGL)
- socket keys, size 3 and 4
- drilled hole diameters:
  - Ø 5
  - Ø 7
  - Ø 10
  - Ø 13
  - Ø 15
  - Ø 16
- pliers for system plugs (E-transmission, article code 97030)
- cable clamps 511C and 531 (not required for standard set)



Type	Use		Remarks
	Ø13	Ø16	
A	FF2.00, FF2.63TAI,	FW95, FF3.75TAI,	Light springs
B	FW51, FW67	FW3.75LETAI, FF6.00	General use
C			Heavy springs

Tension irons to use with Flexi-Force spring fittings.

## INSTALLATION GENERAL

### Checking dimensions

Before assembling the set the details below should be checked on the basis of this figure..

- A = Clear width (packing list)
- B = Clear height (packing list)
- C = Side area (see 10. Bottom brackets)
- D = Top area (see 2. Lift systems)

Bases for further instructions are:

Panelwidth including end caps =  $A + 45$  mm.

Panelheight stapled incl. bottom rubber =  $B + 25$  mm



NB! The material used for mounting the track set and the spring system to the wall or roof, is not a part of the delivery. Use proper material for this, conform the norms and proper for the material in which you mount.

### Checking built-in depth

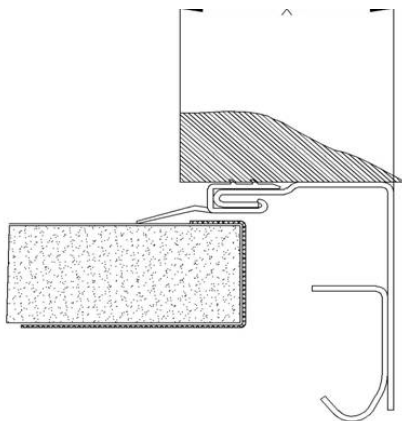
Check if there is sufficient space available for the track set (see 2. Lift systems).

### Checking section width

When the section length (door panel width) differs from the above mentioned data, all sizes related to the side-space change.

### Checking vertical track set

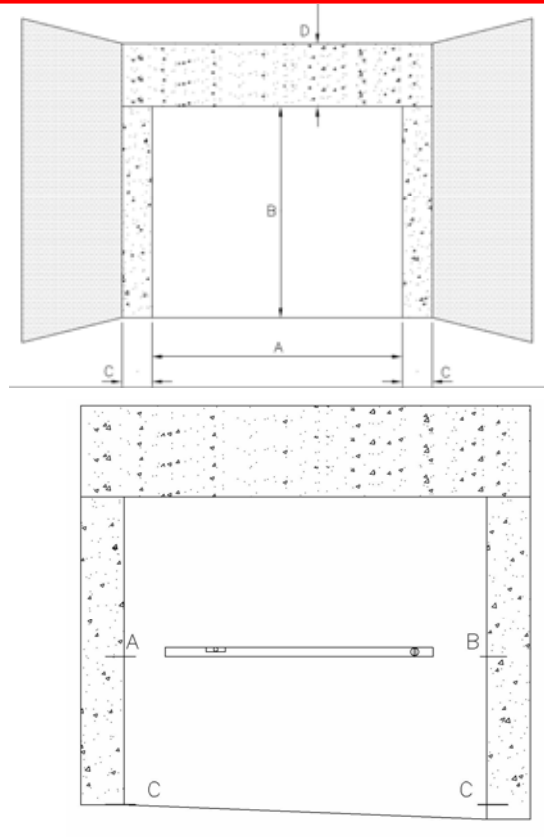
First mark "A" en "B" on both piers using a spirit level or water level hose and then mark "C" (picture)



Size X (Picture) is being determined by the bottom bracket type delivered to the set. (See 10, Bottom brackets).

### Installation track set

The table below refers to (see 2 Lift systems) the equivalent page of the manual, belonging to the actual lift system.



Fit both vertical tracks with the lower surface on mark line C (picture). The two bearing tracks should be parallel to one another.

For sloping floors, one of the bearing tracks may be compensated (for example with a wedge).

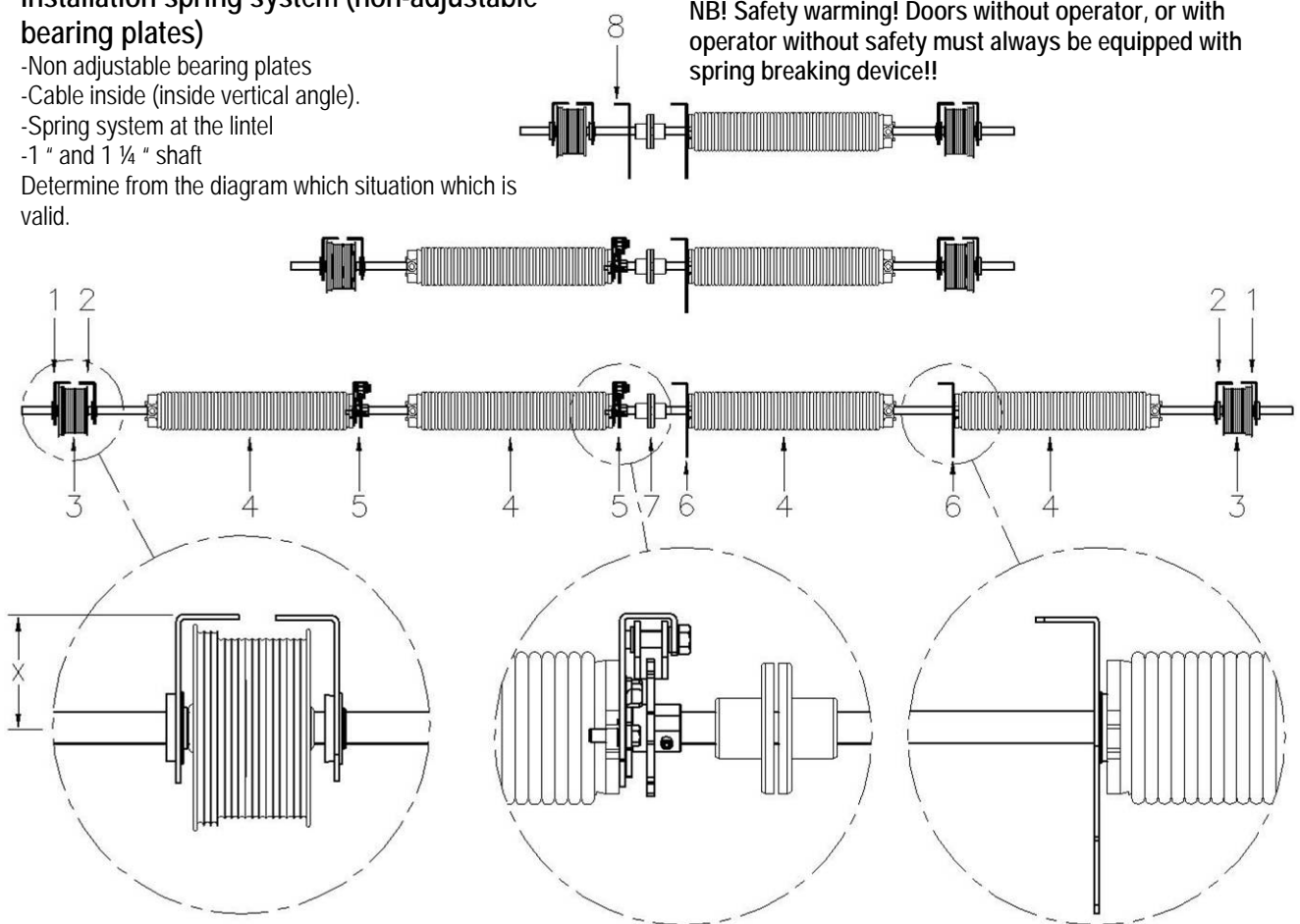
	System	Page Nr.
NL	Normal	15
VL	Vertical	18
HL	High	17
FHL	Following High Lift	21
LHR	Low Head Room	16
FLH	Following Low Lift	20
FTR	Following Normal	19

## Installation spring system (non-adjustable bearing plates)

- Non adjustable bearing plates
- Cable inside (inside vertical angle).
- Spring system at the lintel
- 1" and 1 1/4" shaft

Determine from the diagram which situation which is valid.

**NB! Safety warning! Doors without operator, or with operator without safety must always be equipped with spring breaking device!!**



Situation	Size X (mm)	1	2 *	3	4	5	6	7	8
Non adjustable 1"	86	305-4B	315-4B	fix drums with 2 safety wraps to outside	LHW = black RHW = red	670 or 675	USA-8 USA-B	708-90 703ST 705ST100	USA-8 USA-B 325
	111	306-4B	316-4B			670+661 675+322BAS			
	127	307-4B	317-4B			(675+674HOEK+322BAS) or (675) or (670/675+322BAS)			
152	308-4B	318-4B	675-5/4" + 674HOEK 322BAS			704ST 706ST100	-		
Non adjustable 1 1/4"	152	308-4CP	308-4C						

\* = only for 6"spring and/or W>5000



**ATTENTION!** Installation method torsion springs: from the middle (stationary plug) to the side (winder plug)

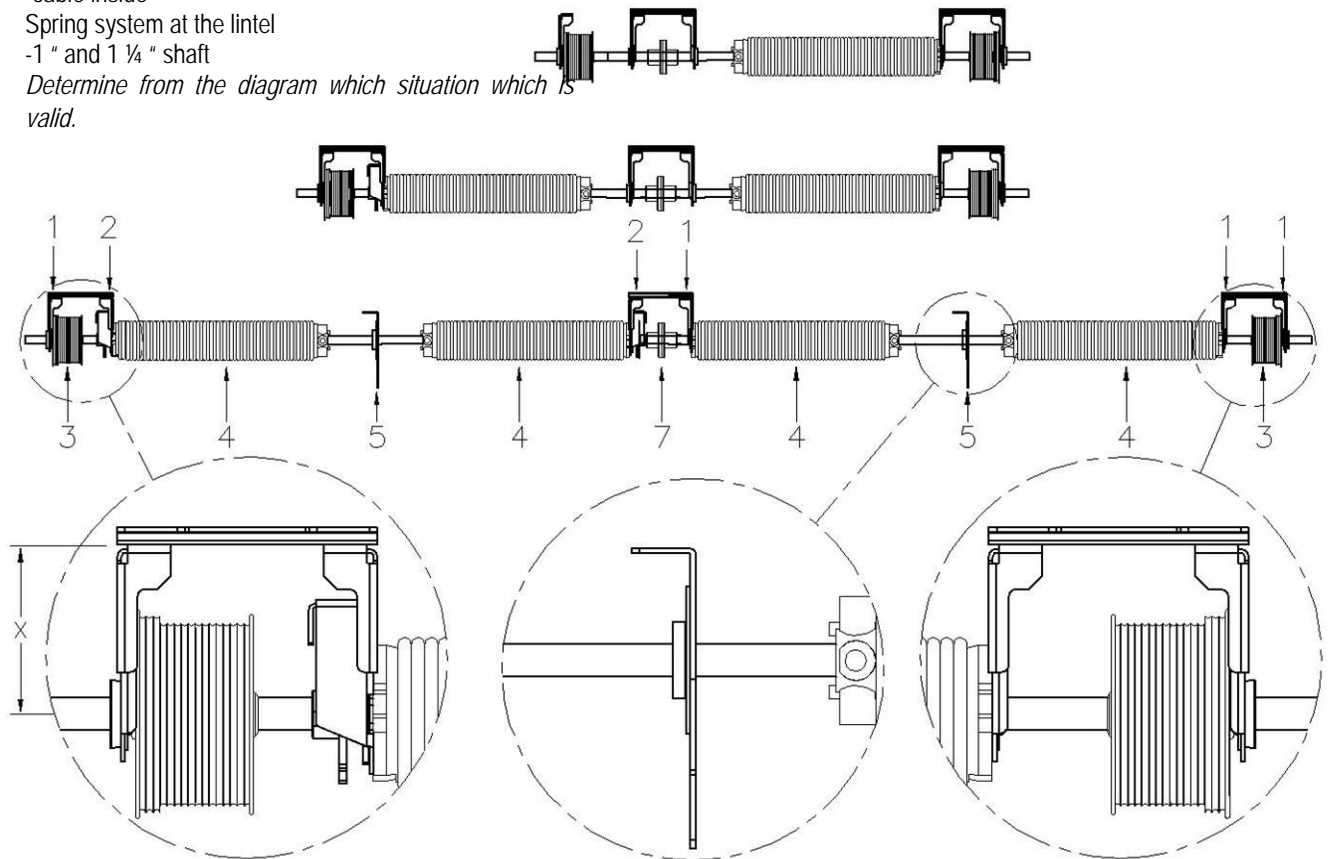
## Installation spring system (adjustable bearing plates)

- Adjustable bearing plates
- cable inside
- Spring system at the lintel
- 1" and 1 1/4" shaft

Determine from the diagram which situation which is valid.



**ATTENTION!** Installation method torsion springs: partly from side (stationary plug to the middle (winder plug)



Situation	Size X (mm)	1	2	3	4	5	6
Adjustable 1"	86	322BAS USA-B	675	Fix drums with 2 safety wraps to the outside	LHW = black RHW = red	USA-8 USA-B 325	708-90 703ST 705ST100
	>86	322BAS 323LAG-B	675 322BAS				
	152		675 322BAS 674HOEK				
Adjustable 1 1/4"	86	322BAS USA-A	308-4C				
	>86	322BAS 323LAG USA-A	675-5/4 322BAS			USA-8 USA-B 325	704ST 706ST100
	152		675-5/4 322BAS 674HOEK				
With Wall plate	86-152	321WAL					

Fit the bearing plates (1) to the wall. Trace a centre line (spirit level) between the two side bearing plates in order to be able to fit the remaining bearing plates and the shaft in proper alignment.

Fit the remaining parts to the shaft (See assembly spring package, bearing plates and spring break device).

Secure a rope with loop to the structure to support the shaft during assembly. Fit the spring package to the wall.

## Assembly door panels

For fitting purposes the assumption has been made that the panels are already fitted with end caps, top and bottom profile and top/bottom rubber.

Remove the protective foil from the panels.

(See 4 Hinges / top roller holders)

Fit base of the side hinges to the panels. The position will in many instances be determined by the holes in the end caps.

For doors > 5000 clear width double side hinges will be used as standard.

Make sure that the space between panel and vertical track is no more than 10mm. Bushes on the roller shafts of the top section and bottom section must be used. On LHR doors, do not put bushes on the 593 rollers.

Fit the lower hinge blades of the intermediate hinges at equal intervals to the panel. The number of intermediate hinges to be fitted to one panel is determined as in the table below, unless ordered otherwise.

Clear width [mm]	Intermediate hinges [pieces]
0000 – 2749	1
2750 – 3999	2
4000 – 4999	3
5000 – 5999	4
6000 – 6999	5
7000 – 7999	6
8000 – 8999	7

Place the lower panel in the clear width and support it with a pair of blocks.

(See 10 Bottom brackets)

Place the rollers (where necessary beforehand; type dependent) in the bottom brackets and fit the bottom brackets (with secured cables) to the panel in such fashion that the rollers are already located in the track.

Remove the blocks and fit the slides with roller on the hinge blocks.

Place the first intermediate panel on the lower panel such that the edges are aligned. Secure for the time being with

a glue clamp or similar. Fit first the side hinges and then the intermediate hinge.

Repeat this procedure with the other intermediate panels. Place finally the top panel. Secure this also temporarily with a glue clamp or similar. Fit the side hinges and then the intermediate hinges.

Fit the accompanying top roller holder as per specification (See 4 Hinges / top roller holders).

## Fitting cable and tensioning the spring package

Align the shaft.

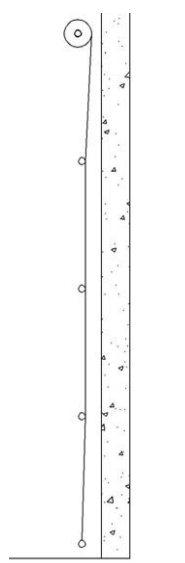
Roll out the steel cables until all the kinks have disappeared (already secured to the bottom bracket).

Guide the first cable from the bottom bracket, behind the bearing roller shafts to the cable drum (See figure).

Feed the cable into the drum and secure it with the screw in the drum.

The cable should protrude from the drum (see 17 cable drums or download the specification sheets from our site [www.flexiforce.com](http://www.flexiforce.com))

Slide the cable drum against the bearing plate and rotate the drum such that the windings (min. 2 safety windings) rest next to each other in the grooves of the drum.



When the cable is taut the shaft should be turned such that the keyways in the shaft and drum correspond to each other.

Fit the key and tighten the setscrews in the drum (10 Nm).

Block the shaft with for example a clamp.

Place a locking pin in the spring break device such that the pawl is free of the pawl wheel.

Secure the other cable in the same fashion. Both cables should be under equal tension while the door panel is perfectly level.

Protect the door from rising. This can be achieved for example by placing clamps on the vertical track.

Tension the springs by the number of turns prescribed (see label springs and packaging list in the box), pull the spring  $\pm 5$  mm apart (to reduce friction) and secure the spring to the shaft using the screws of the tension plug (25Nm).



### CAUTION !

Torsion springs are under high tension. Exercise at all times great caution. Installation, maintenance and repair should be carried out only by experienced and properly trained overhead door fitters. Use properly fitting and maintained tension irons (see drawing).

### Tensioning the spring

1. Ensure that the brand strip on the spring forms a straight line.
2. Insert the 1<sup>st</sup> tensioning iron fully into the tensioning aperture.
3. Turn the 1<sup>st</sup> tensioning iron a quarter turn so that the spring is tensioned.
4. Insert the 2<sup>nd</sup> tensioning iron fully into the next tensioning aperture.
5. Take over the tensioning of the spring from the 1<sup>st</sup> tensioning iron with the 2<sup>nd</sup> tensioning iron..
6. Remove the 1<sup>st</sup> tensioning iron from the aperture.
7. Turn the 2<sup>nd</sup> tensioning iron a quarter turn so that the spring is tensioned.
8. Repeat steps 2 through 7 for as long as it takes for the spring to make the prescribed number of turns.
9. Secure the spring plug to the shaft by fitting the key and tightening the bolts in the tensioning plug on the shaft.
10. Remove the last tensioning iron.
11. Check the number of turns by counting the number of turns that the brand strip has made.

Remove the blocking of the door in the track and from the shaft and check that the door is properly balanced. Should this not be the case then correct by de-tensioning and/or tensioning of the springs by at most 1 turn per spring. Ensure that both springs are corrected equally.

### Correction of the spring tension

1. Insert the 1<sup>st</sup> tensioning iron fully into the tensioning aperture.
2. Take over the tension of the spring with this tensioning iron.
3. Loosen the bolts in the tensioning plug and remove the key.
4. Turn the 1<sup>st</sup> tensioning iron in the direction required.
5. Insert the 2<sup>nd</sup> tensioning iron fully into the next tensioning aperture.
6. Take over the tensioning of the spring from the 1<sup>st</sup> tensioning iron with the 2<sup>nd</sup> tensioning iron..
7. Remove the 1<sup>st</sup> tensioning iron from the aperture.
8. Turn the 2<sup>nd</sup> tensioning iron a quarter turn in the direction required.

9. Insert the 1<sup>st</sup> tensioning iron fully into the tensioning aperture.
10. Take over the tensioning of the spring from the 2<sup>nd</sup> tensioning iron with the 1<sup>st</sup> tensioning iron.
11. Repeat steps 4 through 10 until the correction required has been made.
12. Secure the spring plug to the shaft by fitting the key and tightening the bolts in the tensioning plug on the shaft.
13. Remove the last tensioning iron.

### Fitting spring bumpers

(See 21 Spring bumpers)

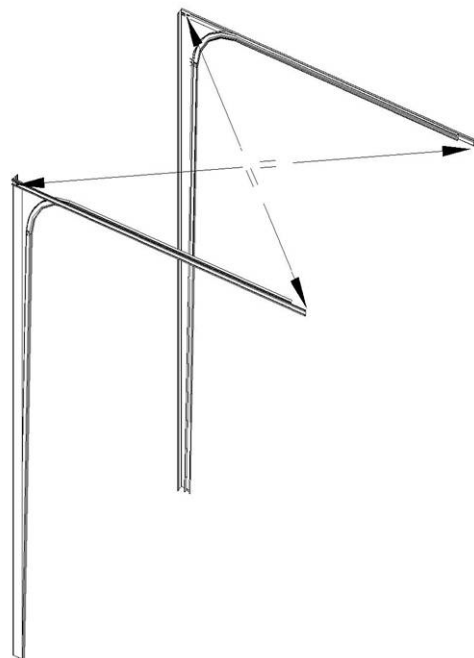
Fit the spring bumper in accordance with the appropriate instruction.

### Suspension horizontal track set

Set the door in the opened position so that the horizontal track that can still move freely is able to adjust to the door panels.

Ensure that the bearing rollers on left and right have the same play so that rail and door panel run parallel.

Conduct a cross measurement as per the figure to check the adjustment.



Secure further in this position the suspension of the horizontal track set.

## Completing the door

Cord / Chain operation: See 3 Controls  
Handgrip / Foot pedal: See 9 Handgrips  
Lock : See 8 Locks

- Lubricate all hinges and bearing rollers with one drop of oil.
- Grease the cables
- Grease the bearing roller shafts.
- The torsion springs are already lightly oiled.
- Place your CE identification plate on the door together with any warning labels required.

## Option electrical operator

This should be assembled in accordance with the handbook supplied with the operator.



### **ATTENTION!**

The assembly of door sections is not included in this handbook since Flexi-Force does not supply panels. For this we refer you to the supplier of the panels or to other sources in the market.

## 2. BUILD-IN SYSTEMS

### 2.1 NL, Normal lift 2"

#### Distinguishing feature

With Normal systems the door turns through the bend directly above the clear height and the horizontal section consists of a single rail. See figure.

#### Tracks

The track system of the Normal System consists of a vertical and a horizontal section.

#### Vertical track set

This is made up of a left-hand and right-hand assembled corner lines with a guide track and side seal (See 7 Vertical corner lines).

#### Horizontal track set

The horizontal track set consists of a left-hand and right-hand bend and a reinforcement profile that is secured to the bend and the straight guide track.

#### Assembly vertical track set

Slide the side seal onto the corner line and shorten this where necessary. Secure the vertical track set level to the pendent (See 1 General).

Ensure that the side seal cannot be displaced. When necessary deform the rim of the corner line above the side seal.

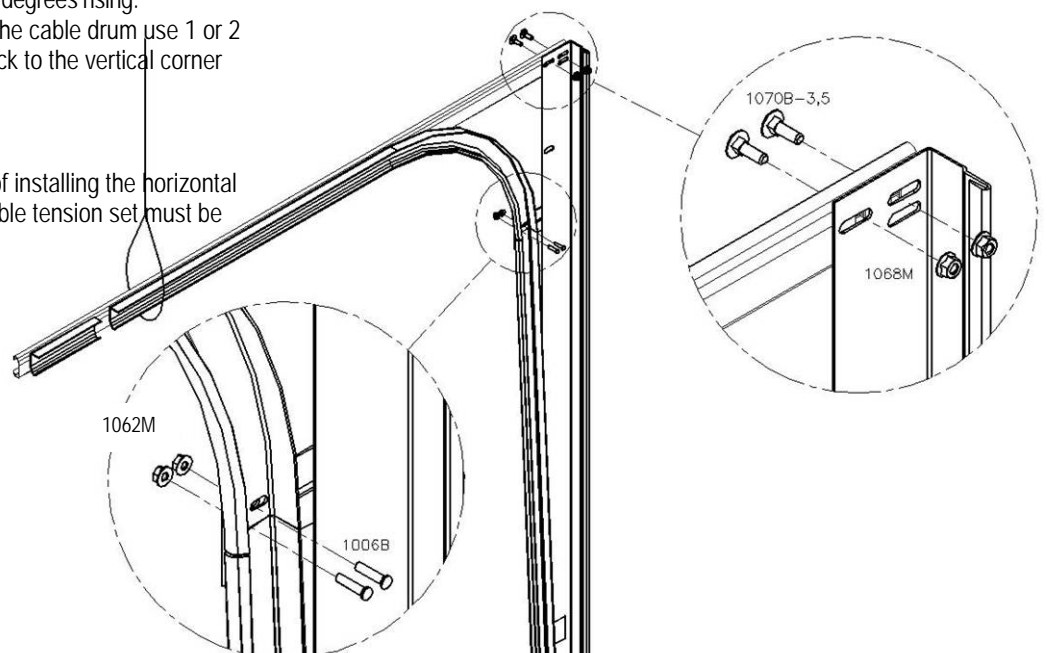
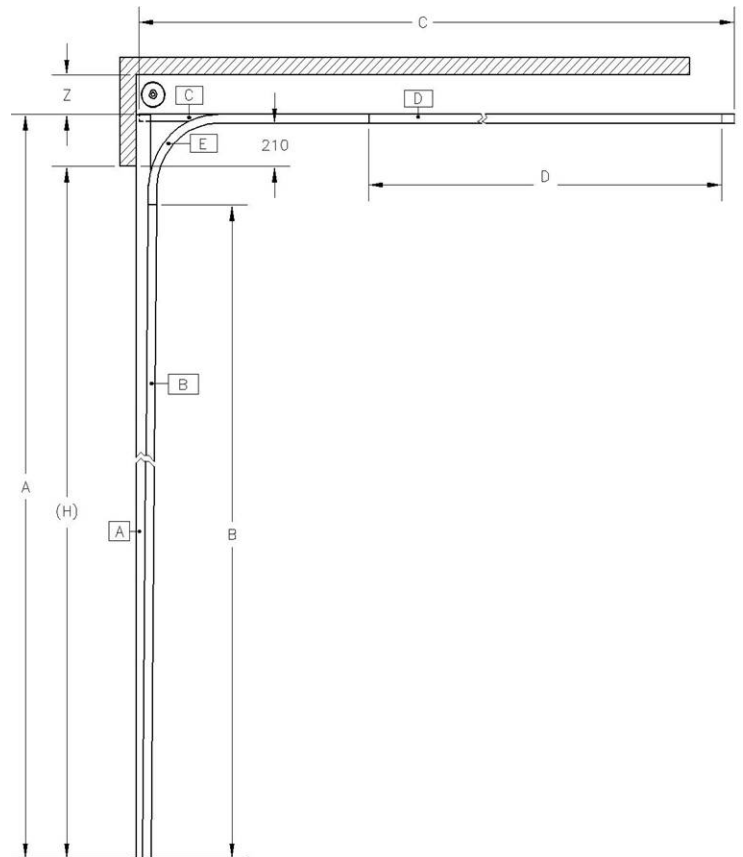
#### Assembly horizontal track set

Secure a piece of cord to the ceiling or roof structure. See figure. Adjust the horizontal track set 0-1 degrees rising. Tighten all bolts. Depending on the cable drum use 1 or 2 bolts to secure the horizontal track to the vertical corner line.



#### Warning:

Power-operated doors: In case of installing the horizontal track set on horizontal level a cable tension set must be installed to prevent slack cables.





## 2.2 CE-LHR, Low Head Room System 2" (max b x h = 5,0 x 5,0m, max kg = 300)

### Distinguishing feature

With CE-LHR systems the door turns through the bend directly above the clear height. The horizontal section consists of a double track. See figure.

### Tracks

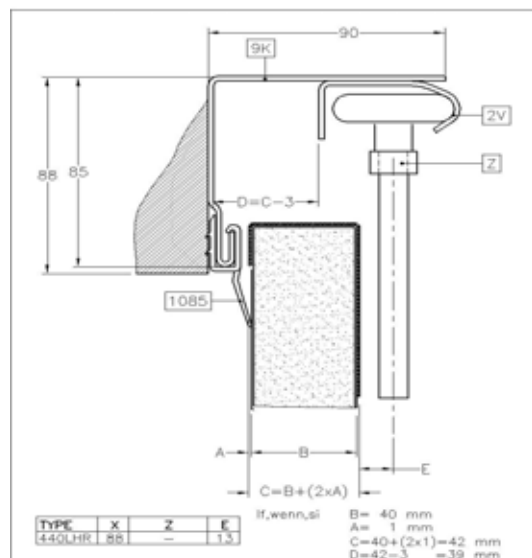
The track system of the LHR System consists of a vertical and a horizontal section.

#### Vertical track set

This is made up of a left-hand and right-hand assembled corner lines with a guide track and side seal (See 7 Vertical corner lines).

#### Horizontal track set

The horizontal track set consists of a left-hand and right-hand section with a double bend, straight tracks and a reinforcement profile. The bends and the straight guide tracks are fitted to each other by connection plates and a side plate. The side plate is fitted with a return pulley.



### Assembly vertical track set

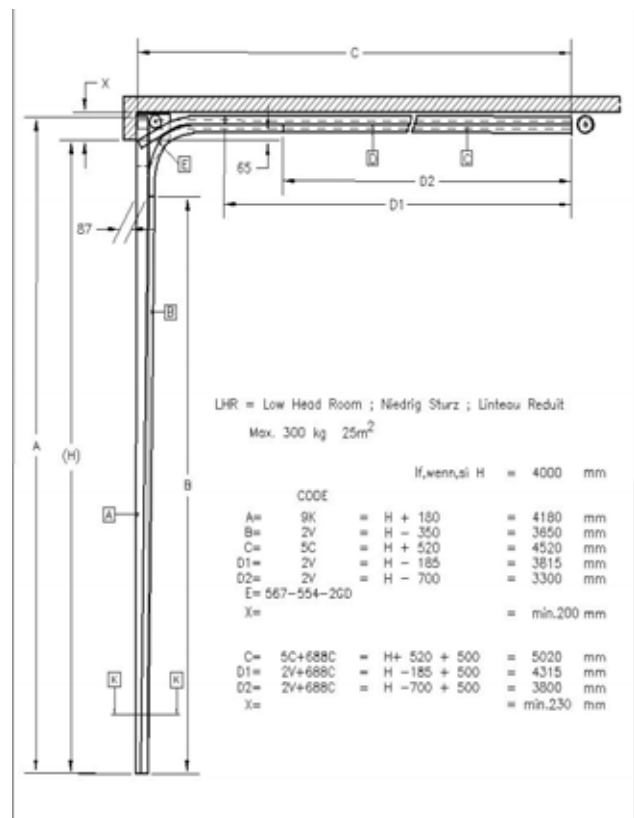
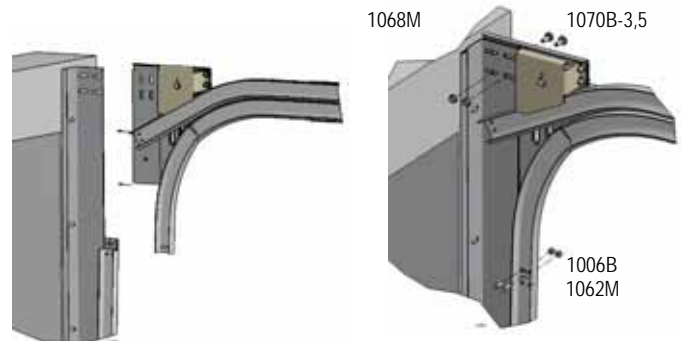
Slide the side seal onto the corner line and shorten this where necessary. Secure the vertical track set level to the pendent (See 1 General).

Ensure that the side seal cannot be displaced. When necessary deform the rim of the corner line above the side seal.

### Assembly horizontal track set

Secure a piece of cord to the ceiling or roof structure. See figure at normal system.

Adjust the horizontal track. Tighten all bolts.



### Warning:

Power-operated doors: In case of installing the horizontal track set on horizontal level a cable tension set must be installed to prevent slack cables.



Download detailed manual  
CE-LHR from  
[www.flexiforce.com](http://www.flexiforce.com)

## 2.3 HL, High lift 2"

### Distinguishing feature

With High Systems the door rises vertically first above the clear height before the upper panel turns through the bend. See figure.

### Tracks

The track system of the High System consists of a vertical and a horizontal section.

#### Vertical track set

This is made up of a left-hand and right-hand corner line with a guide track and side seal (See 7 Vertical corner lines).

For large clear heights and/or large high-lift the vertical track set is supplied in two sections.

#### Horizontal track set

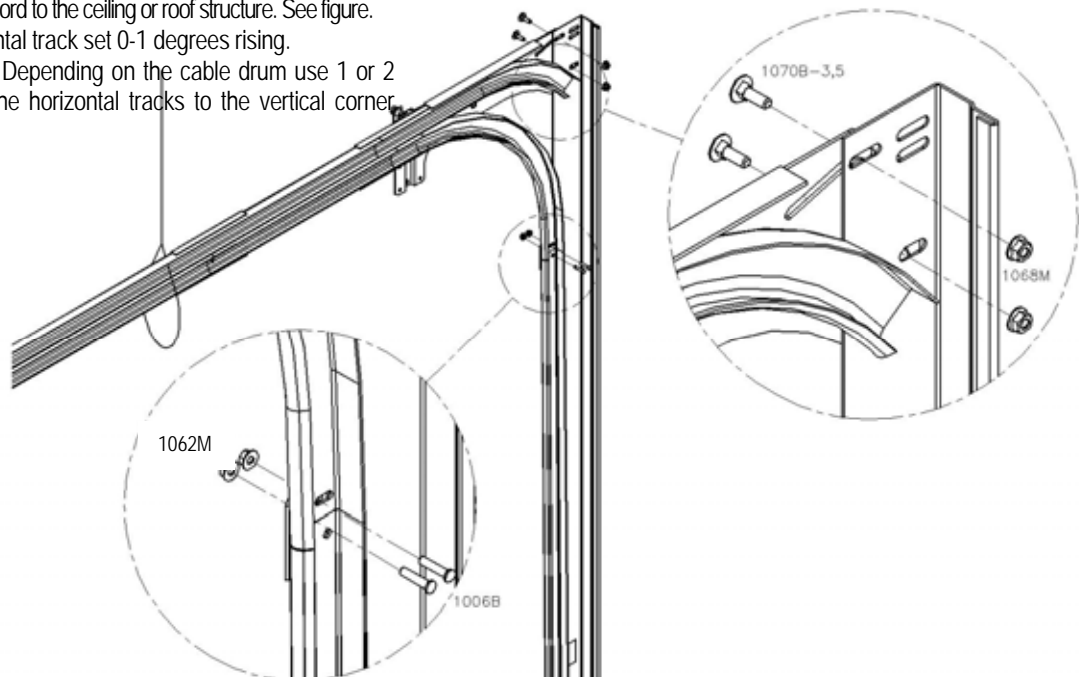
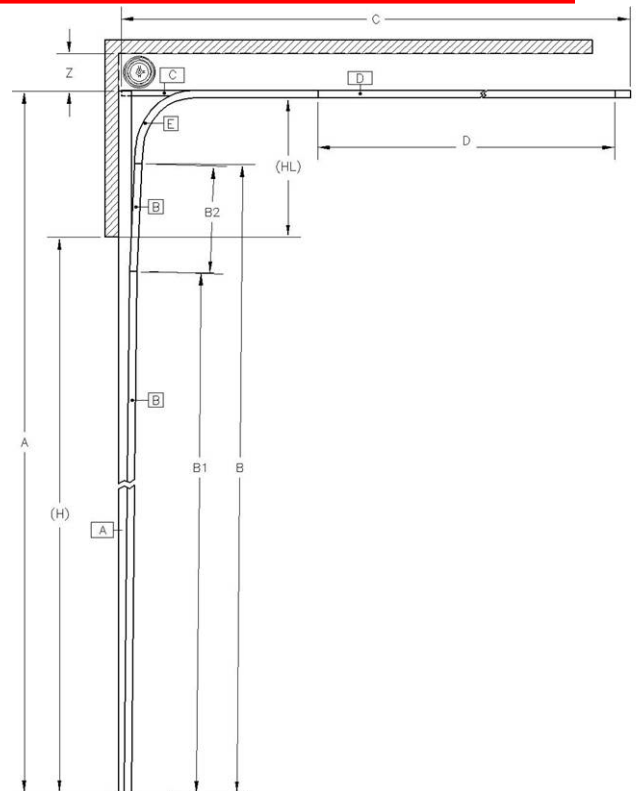
The horizontal track set consists of a left-hand and right-hand bend and a reinforcement profile that is secured to the bend and the straight guide track.

### Assembly vertical track set

Slide the side seal onto the corner line and shorten this where necessary. Secure the vertical track set level to the pendent (See 1 General). Ensure that the side seal cannot be displaced. When necessary deform the rim of the corner line above the side seal.

### Assembly horizontal track set

Secure a piece of cord to the ceiling or roof structure. See figure. Adjust the horizontal track set 0-1 degrees rising. Tighten all bolts. Depending on the cable drum use 1 or 2 bolts to secure the horizontal tracks to the vertical corner line.



## 2.4 VL, Vertical lift 2"

### Distinguishing feature

With Vertical systems the door rises straight upward. See figure.

### Tracks

The track system of the Vertical system consists only of a vertical section.

### Vertical track set

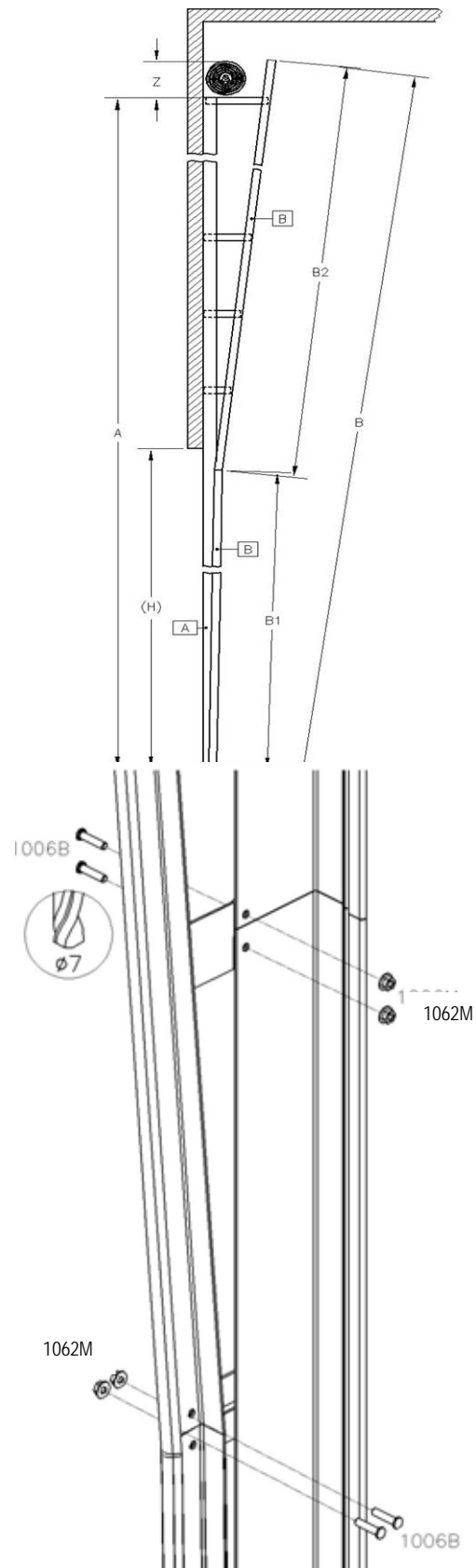
This is made up of a left-hand and right-hand corner line with a guide track and side seal (See 7 Vertical corner lines).

For large clear heights the vertical track set is supplied in two sections.

### Assembly vertical track set

Slide the side seal onto the corner line. Secure the vertical track set level to the pendent (See 1 General).

When the vertical set consists of two sections then assemble as depicted in the figure. For a single vertical set only the lower fastener is present.



## 2.5 FTR, Following The Roof System, Normal 2"

### Distinguishing feature

With FTR-Normal systems the door turns through the bend directly above the clear height and then tracks the angle of the roof. The horizontal section consists of a single track. See figure.

### Tracks

The track system of the FTR-System consists of a vertical and a horizontal section.

#### Vertical track set

This is made up of a left-hand and right-hand assembled corner line with a guide track and side seal (See 7 Vertical corner lines).

#### Horizontal track set

The horizontal track set consists of a left-hand and right-hand bend and a reinforcement profile that is secured to the bend and the straight guide track.

### Assembly vertical track set

Slide the side seal onto the corner line and shorten this where necessary. Secure the vertical track set level to the pendent (See 1 General).

Ensure that the side seal cannot be displaced. When necessary deform the rim of the corner line above the side seal.

### Assembly horizontal track set

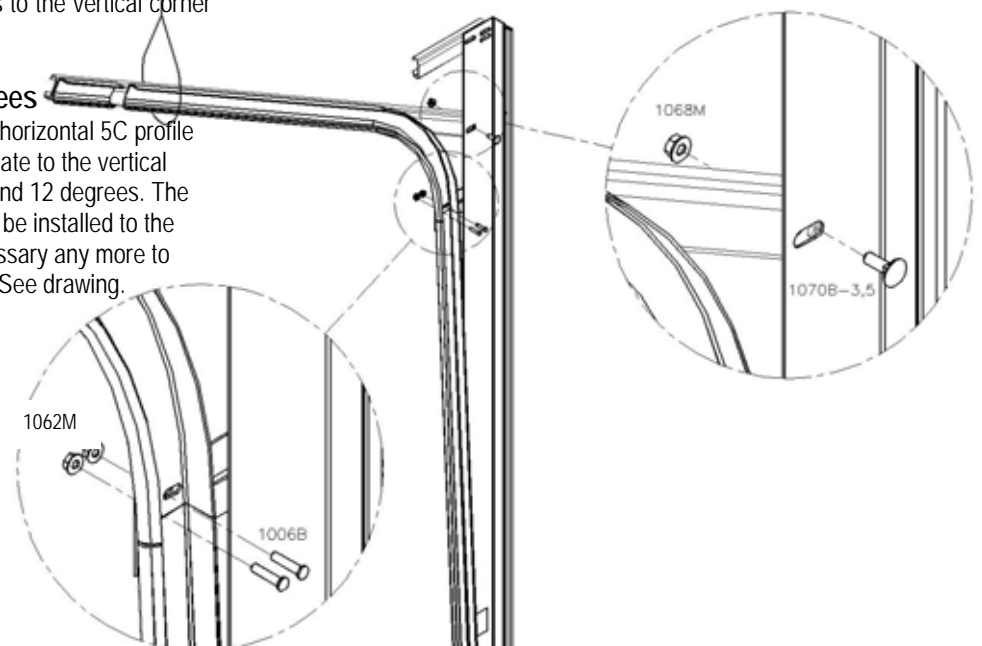
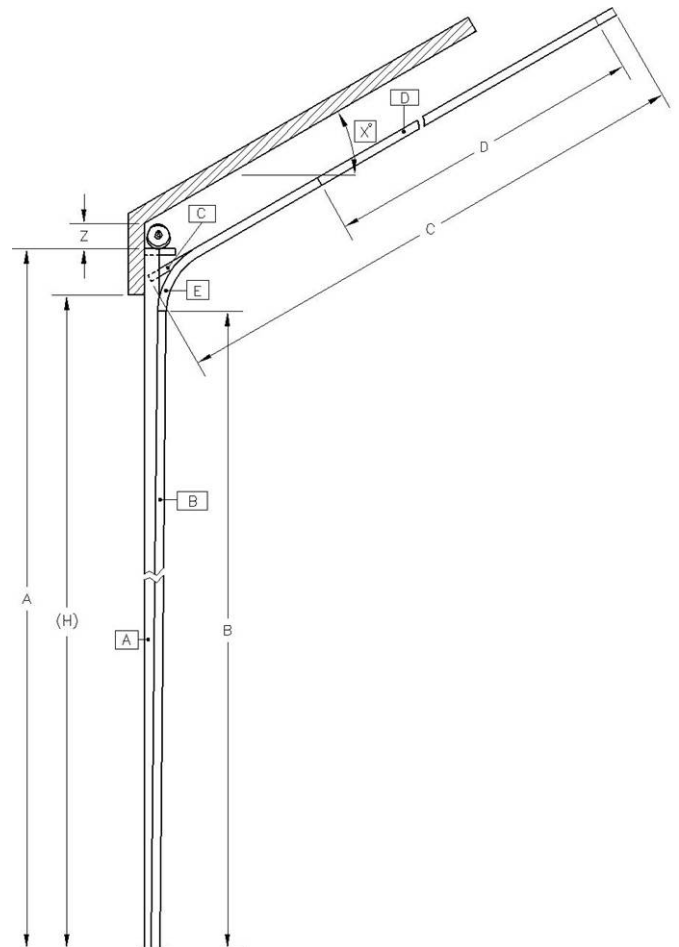
Secure a piece of cord to the ceiling or roof structure. See figure.

Adjust the horizontal track lining with the roof.

Tighten all bolts. Depending on the cable drum use 1 or 2 bolts to secure the horizontal tracks to the vertical corner line.

### FTR between 3 and 12 degrees

To improve the connection with the horizontal 5C profile we will install an extra connection plate to the vertical angle in case of a FTR between 3 and 12 degrees. The 5C profile will be shortened and will be installed to the new connection plate. It is not necessary any more to produce holes in the vertical angle. See drawing.



## 2.6 CE-FLH, Following The Roof System, Low 2", (max b x h= 5,0x5,0m, <300kg)

### Distinguishing feature

With CE-FLH-systems the door turns through the bend directly above the clear height and then tracks the angle of the roof. The horizontal section consists of a double track. See figure.

### Tracks

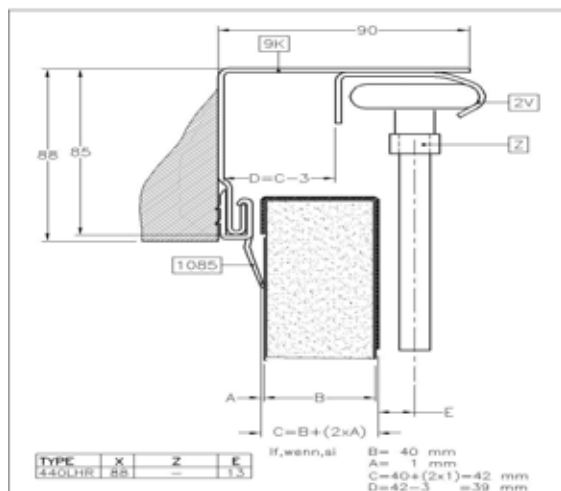
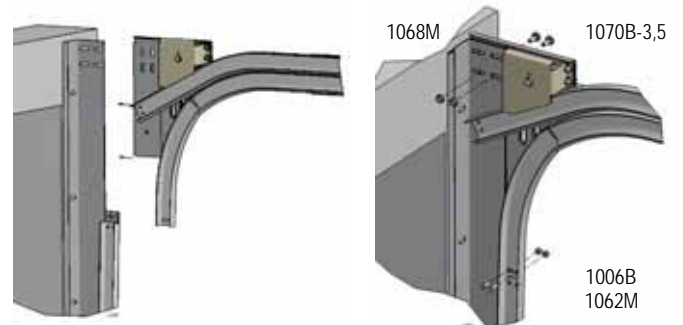
The track system of the FLH-System consists of a vertical and a horizontal section.

#### Vertical track set

This is made up of a left-hand and right-hand assembled corner lines with a guide track and side seal (See 7 Vertical corner lines).

#### Horizontal track set

The horizontal track set consists of a left-hand and right-hand section with a double bend, straight tracks and a reinforcement profile. The bends and the straight guide tracks are fitted to each other by connection plates and a side plate. The side plate is fitted with a return pulley.



### Assembly vertical track set

Slide the side seal onto the corner line and shorten this where necessary. Secure the vertical track set level to the pendent (See 1 General).

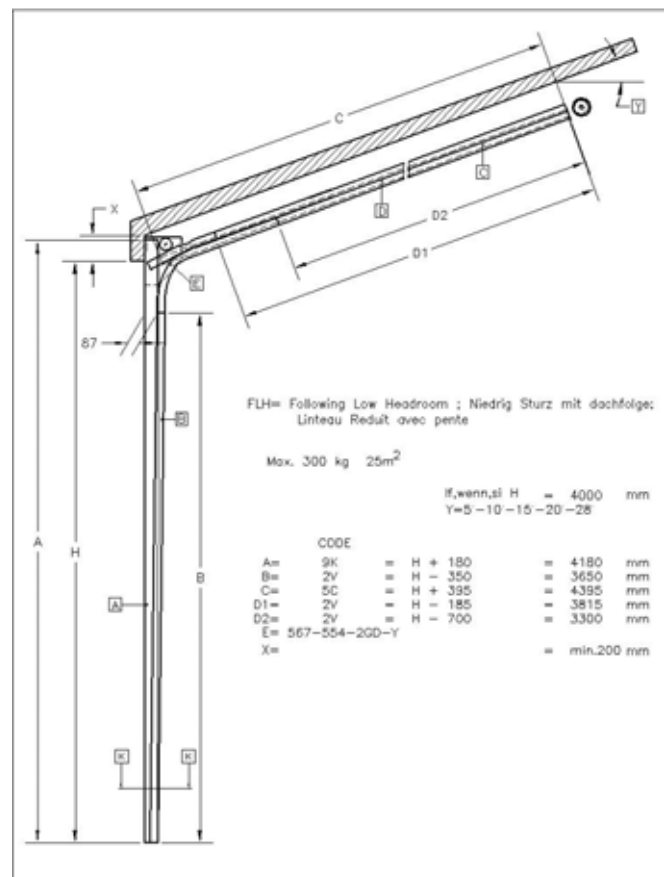
Ensure that the side seal cannot be displaced. When necessary deform the rim of the corner line above the side seal.

### Assembly horizontal track set

Secure a piece of cord to the ceiling or roof structure. See figure at normal system.

Adjust the horizontal track lining with the roof.

Tighten all bolts.



## 2.7 FHL, Following The Roof System, High 2"

### Distinguishing feature

With FHL-Systems the door first rises directly above the clear height and then, after turning through the bend tracks the angle of the roof. The FHL track section consists of one single track. See figure.

### Tracks

The track system of the FHL-System consists of a vertical and a horizontal section.

#### Vertical track set

This is made up of a left-hand and right-hand assembled corner line with a guide track and side seal (See 7 Vertical corner lines).

For large clear heights and/or large high-lift the vertical track set is supplied in two sections.

#### Horizontal track set

The horizontal track set is constructed from a left-hand and a right-hand bend and a reinforcement profile that is secured to the bend and the straight guide track.

#### **Assembly vertical track set**

Slide the side seal onto the corner line and shorten this where necessary. Secure the vertical track set level to the pendent (See 1 General).

When the vertical set consists of two sections then assemble as depicted in the figure. For a few vertical sets only the lower fastener is present.

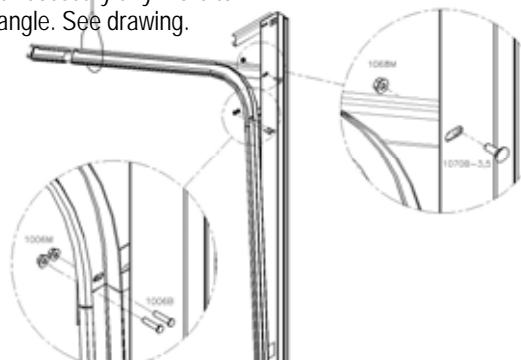
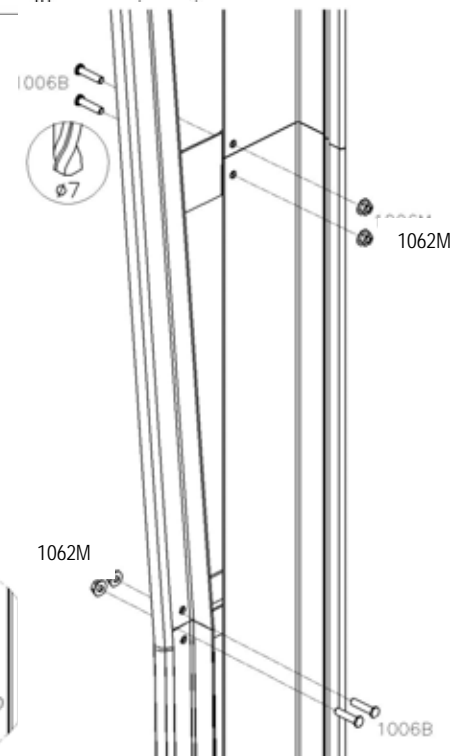
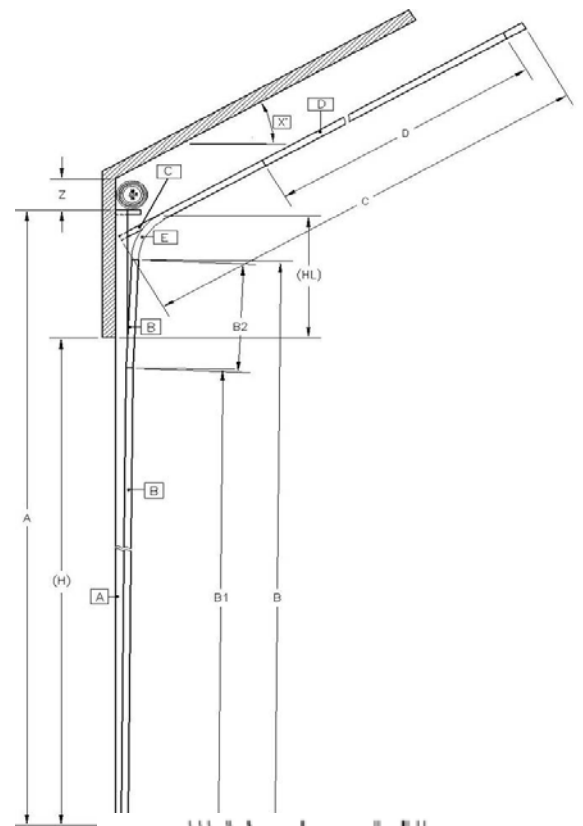
#### **Assembly horizontal track set**

Secure a piece of cord to the ceiling or roof structure. See figure. Adjust the horizontal track lining with the roof.

Tighten all bolts. Depending on the cable drum use 1 or 2 bolts to secure the horizontal tracks to the vertical corner line.

### FHL between 3 and 12 degrees

To improve the connection with the horizontal 5C profile we will install an extra connection plate to the vertical angle in case of a FTR between 3 and 12 degrees. The 5C profile will be shortened and will be installed to the new connection plate. It is not necessary any more to produce holes in the vertical angle. See drawing.



## 3. OPERATION

### 3.1 Rope operation

Fit the cord supplied using the clip and coupling to the bottom console at a point on the corner line at shoulder height.



#### WARNING!

Do not use a rope on power operated doors!

### 3.2 Chain hoist 1:1, type 722A

The 722A chain hoist (transmission ratio 1:1) is suitable for 1" spindles.

The set consists of the following parts:

- Chain guide
- Sprocket wheel
- Manual chain 8 metre
- Chain stop
- Adjustment ring
- Key

#### Order of assembly (see figure)

Check whether the chain of the chain hoist to be fitted can run freely and whether the chain stop can be fitted.

Slide the adjustment ring onto the spindle. Then slide the chain guide and the sprocket wheel with the chain onto the spindle.

Tighten the adjustment ring and slide the guide with sprocket wheel against it. Apply the key between sprocket wheel and spindle and tighten the securing screw of the sprocket wheel.

*Now secure the chain stop on the edge of the vertical corner line or elsewhere on the structure (Height indication 1250mm)*

*Depending on the height of the spindle the chain should be shortened or an extra separate length of chain supplied that can be inserted.*

*This can be arranged simply by bending a link open and then shut (Height indication floor to underside chain 750mm)*

*Ensure that the manual chain is not distorted!*

### 3.3 Chain hoist 1:3, type 721A

The 721A chain hoist (transmission ratio 1:3) is suitable as standard for 1" spindles.

The set consists of the following parts:

- Frame with sprocket wheel and gear wheel (small)
- Manual chain 8 metre
- Chain stop
- Sprocket wheel (large)
- (Bicycle) Chain
- Key

#### Order of assembly (see figure)

Check whether the chain of the chain hoist to be fitted can run freely and whether the chain stop can be fitted.

Slide the large sprocket wheel onto the spindle. Determine the position of the frame. Then fit the frame hand-tight to the wall. Place the (bicycle) chain on the gear wheels and connect both ends with the connection link. Apply the key between gear wheel and spindle and tighten the securing screws of the gear wheel.

Tension the (bicycle) chain by sliding the frame into the slotted holes and secure the frame. Depending on the position of the frame the (bicycle) chained should be shortened or lengthened. *See for further instructions italicized text at 722A.*

### 3.4 Chain hoist 1:4, type 724

The 724A chain hoist (transmission ratio 1:4) is suitable as standard for 1" spindles.

The set consists of the following parts:

- Casing with sprocket wheel
- Manual chain 8 metre
- Chain stop
- Connector
- Key

#### Order of assembly (see figure)

Check whether the chain of the chain hoist to be fitted can run freely and whether the chain stop can be fitted.

*Allow the spindle to protrude circa 60mm from the bearing plate.*

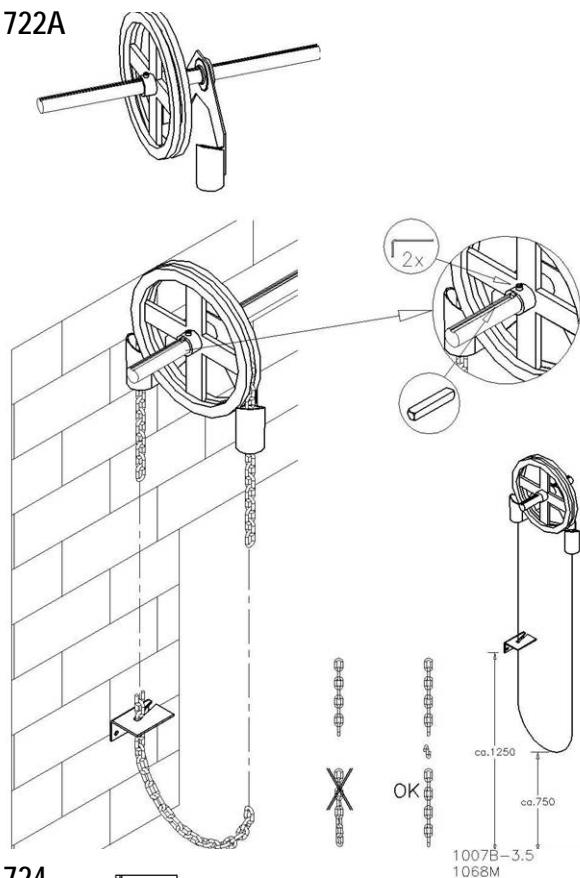
*Slide the connector onto the spindle of the chain hoist and fit the key supplied.*

*Slide the chain hoist with the connector onto the spindle and secure the entire assembly to the bearing plate with a bolt (see drawing).*

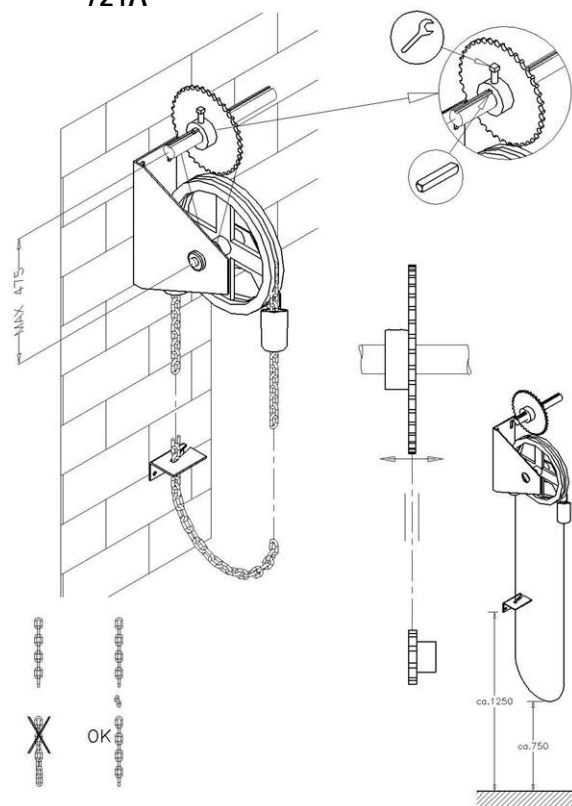
*Secure the connector by tightening both screws.*

*See for further instructions italicized text at 722A.!*

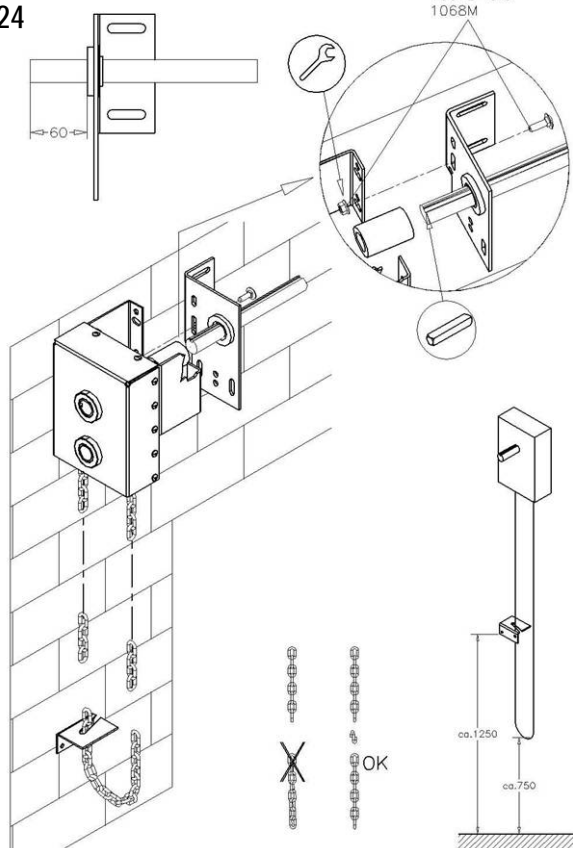
722A



721A

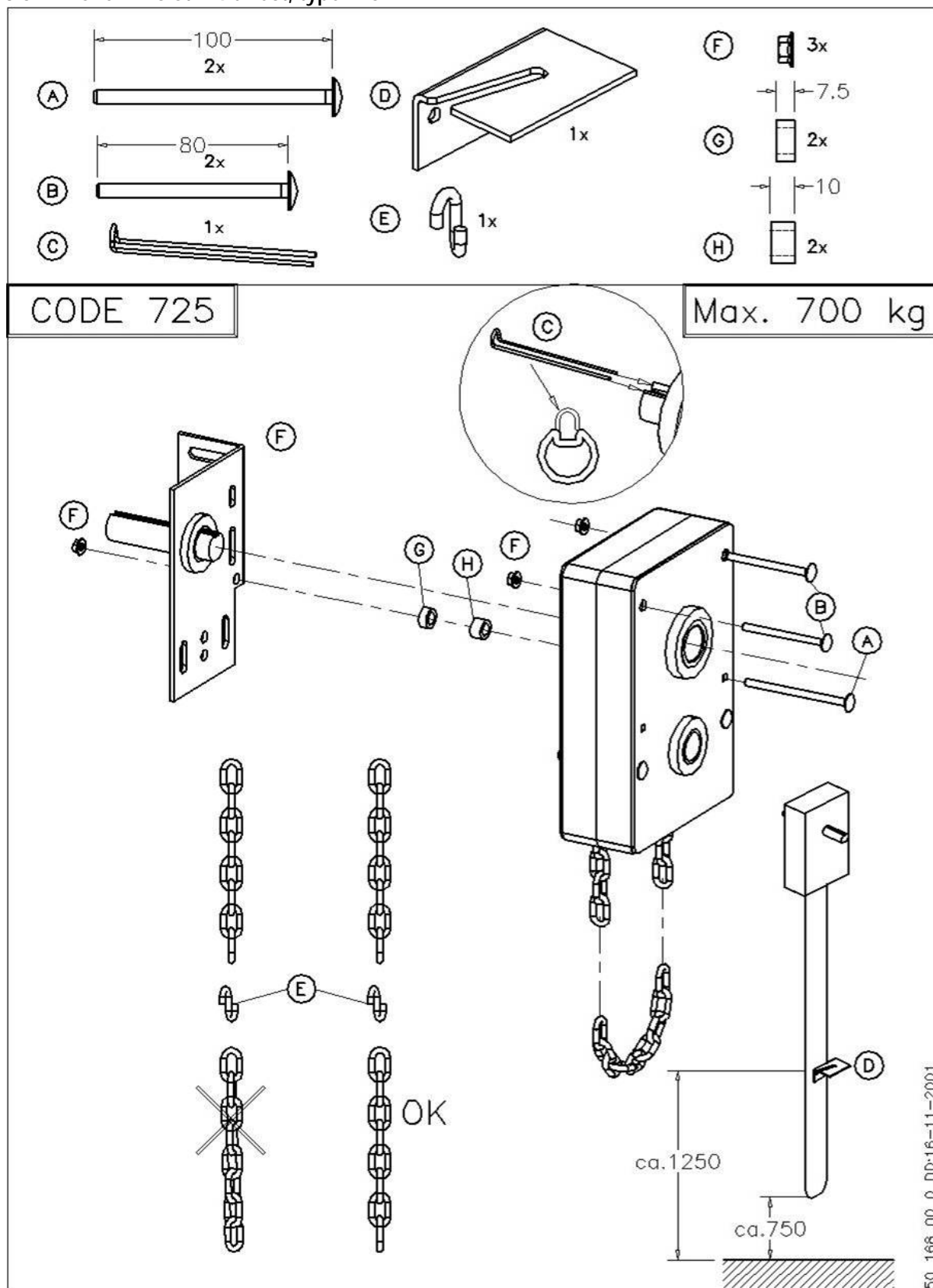


724





## 3.5 Chain Hoist 1:4 direct, type 725



### 3.6 Option: Reducing socket 1" -> 1 1/4"

When the door is produced with a 1 1/4" spindle and a (1") chain hoist a reducing socket set is supplied with the spindle.

The set consists of the following parts:

- 702ST-1/2 Coupler 1"-1 1/4"
- 700A38 Key, 2 pieces
- 702-0250Z Galvanized spindle, length 25 cm

#### Assembly

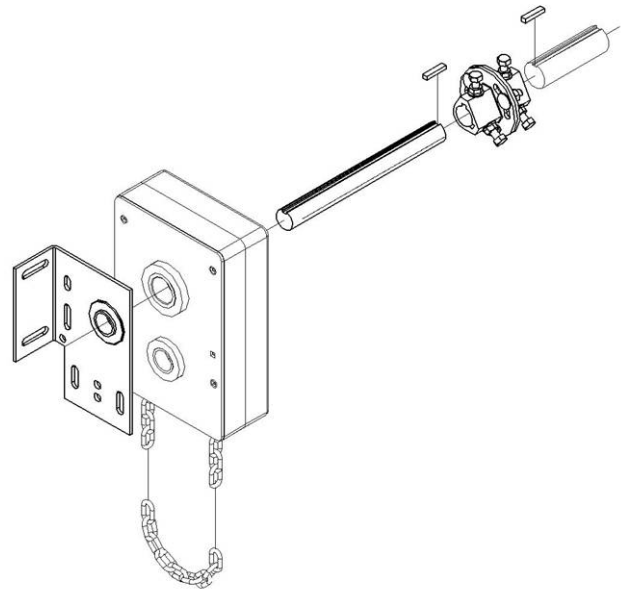
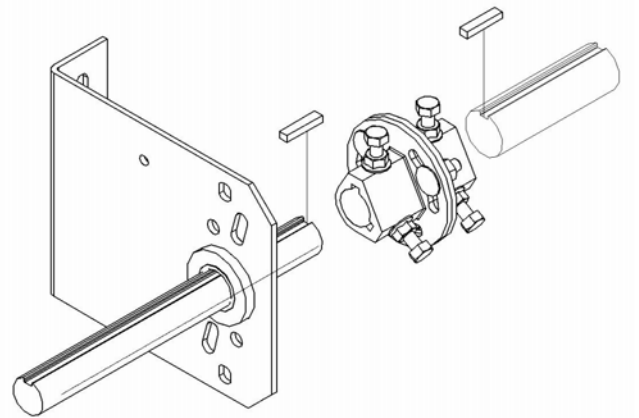
Slide the connector onto the 1 1/4" spindle, fit the key and tighten the securing bolts.

Insert the 1" spindle in the other socket half, also fitting the key here and tighten the securing bolts.

Where necessary shorten the spindle.

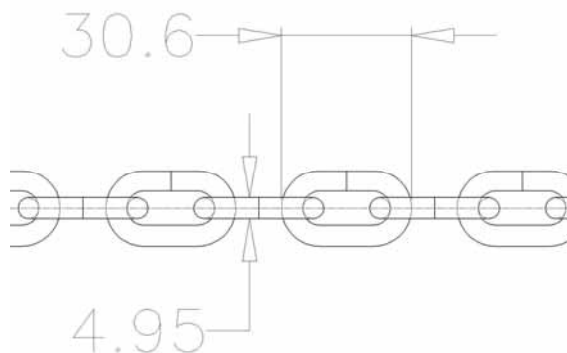
The extra bearing plate that may need to be fitted to support or secure the spindle / chain hoist is not included in the delivery.

See also assembly instructions for chain hoist.



### 3.7 Extra Chain

When the spindle is placed at greater heights an extra separate chain is supplied for extension of the chain. Extension (insertion) can be realized easily by opening and then closing a link. The article involved is 723A manual chain.



In case of malfunctioning of the motor and the door is suitable for manual operation, the manual power necessary to open or close the door may not be higher than 390N (for industrial doors).

When using an E-operator check if the combination of operator, control unit and safety edge is approved according to EN13241-1.

### 3.8 Electrical operation

For the instructions of the electrical operator for the industrial overhead door we refer to the manual supplied with the motor.

In case an industrial overhead door can be manually operated as well, the door must be equipped with options to make manual operation possible. Options are for example grips. Furthermore it must be possible to disconnect the operator to prevent electrical and manual operation at the same time.

The minimum distance between the vertical track and control unit of the motor must be 1.5 meters.

## 4. HINGES

### 4.1 Intermediate hinges, galvanised

- 450HZ See Picture
- 447DOUB See Picture
- 420HZ+10RES See Picture
- 450HZ+10 See Picture

### 4.2 Intermediate hinges, RVS

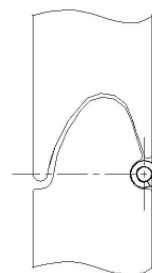
- 450H304 See Picture

### 4.3 Side hinges, galvanised

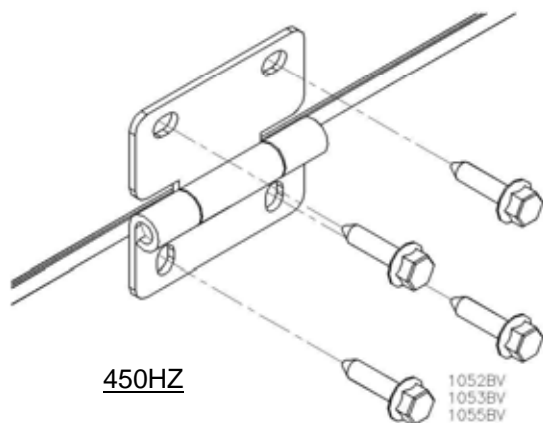
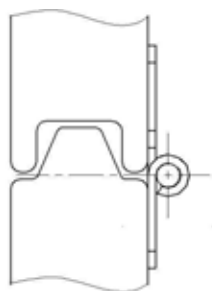
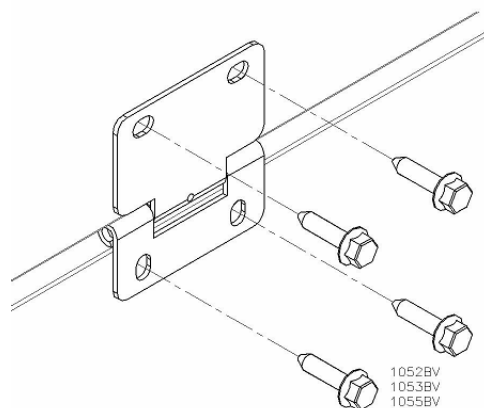
- 450CZ See Picture
- 420CZ+10RES See Picture
- 450CZ+10 See Picture

### 4.4 Side hinges, galvanised

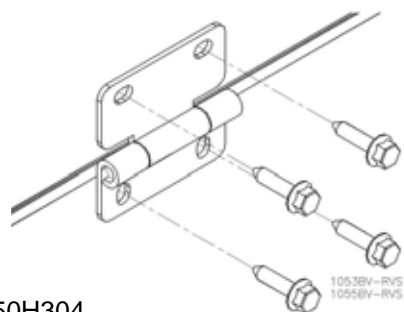
- 450C304 See Picture



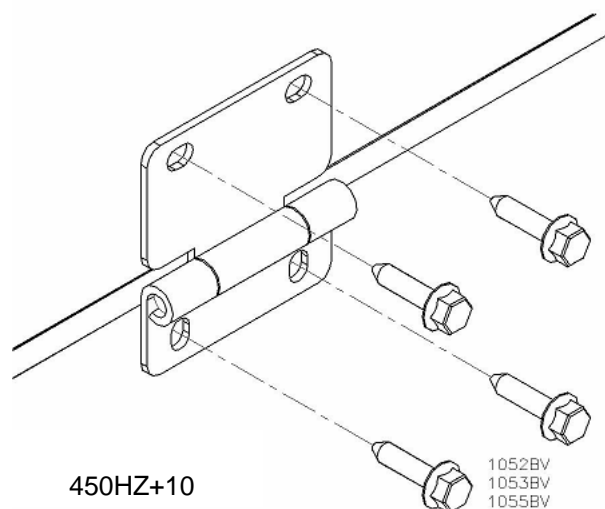
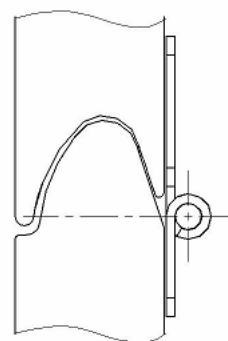
420HZ+10RES



450HZ

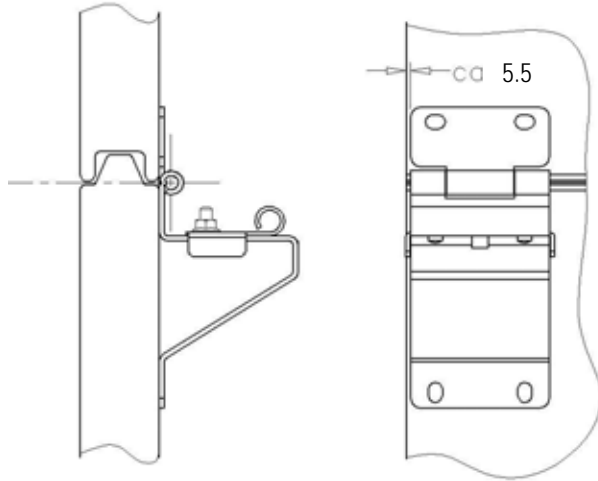


450H304

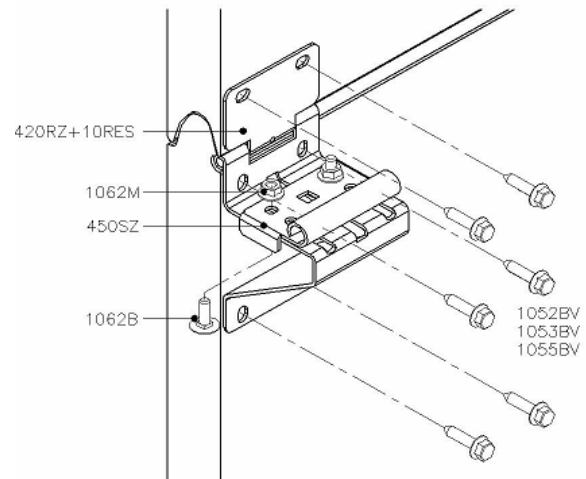
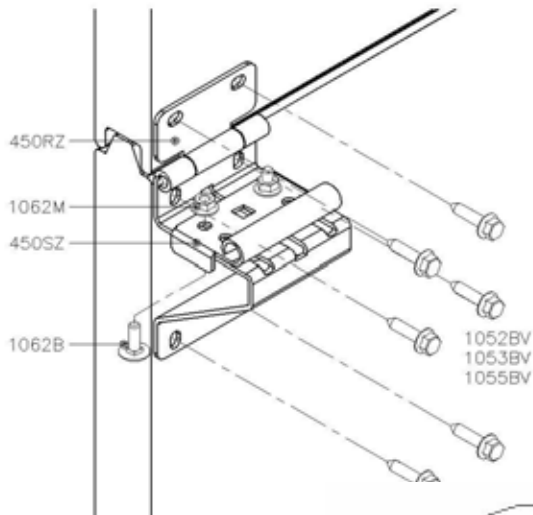
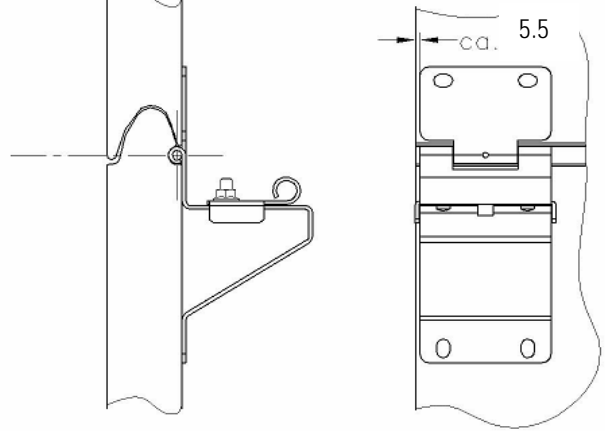


450HZ+10

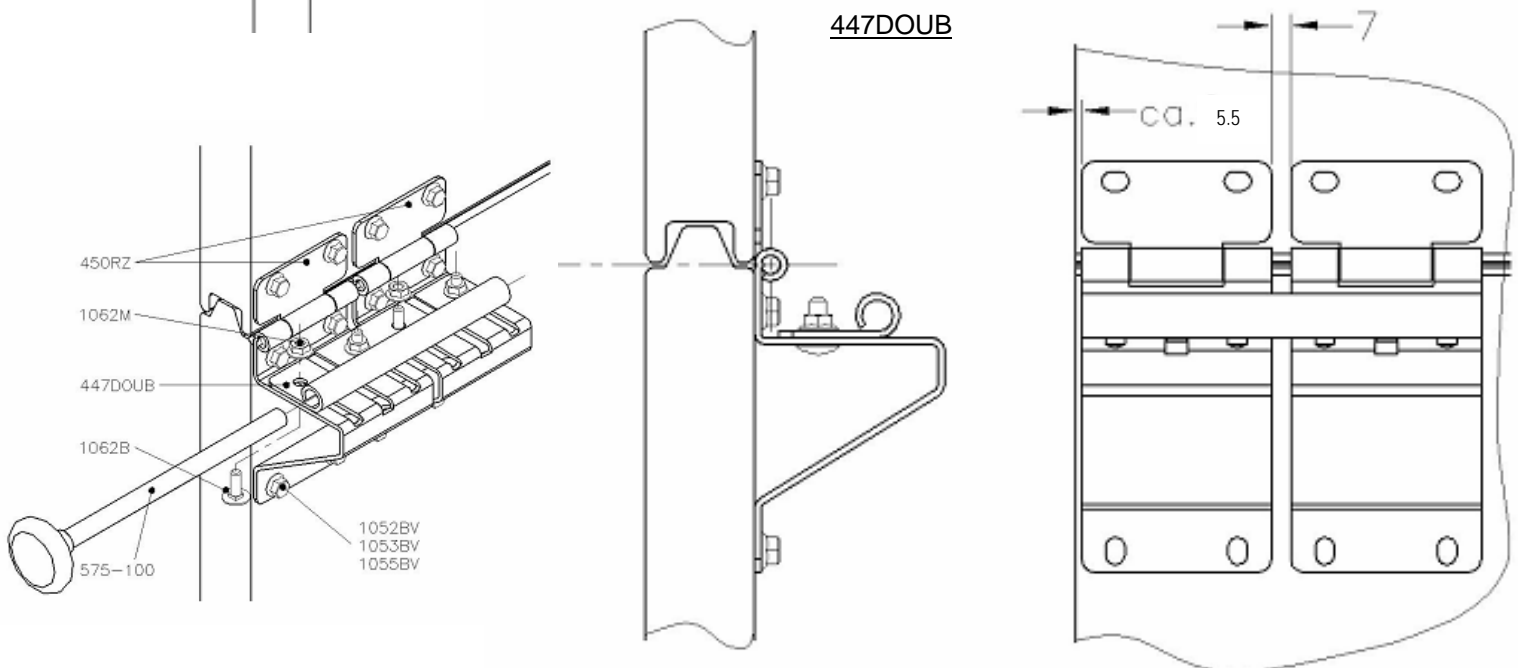
450CZ



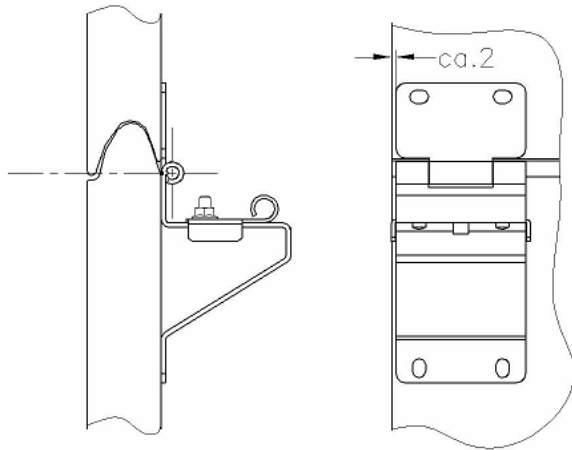
420CZ+10RES



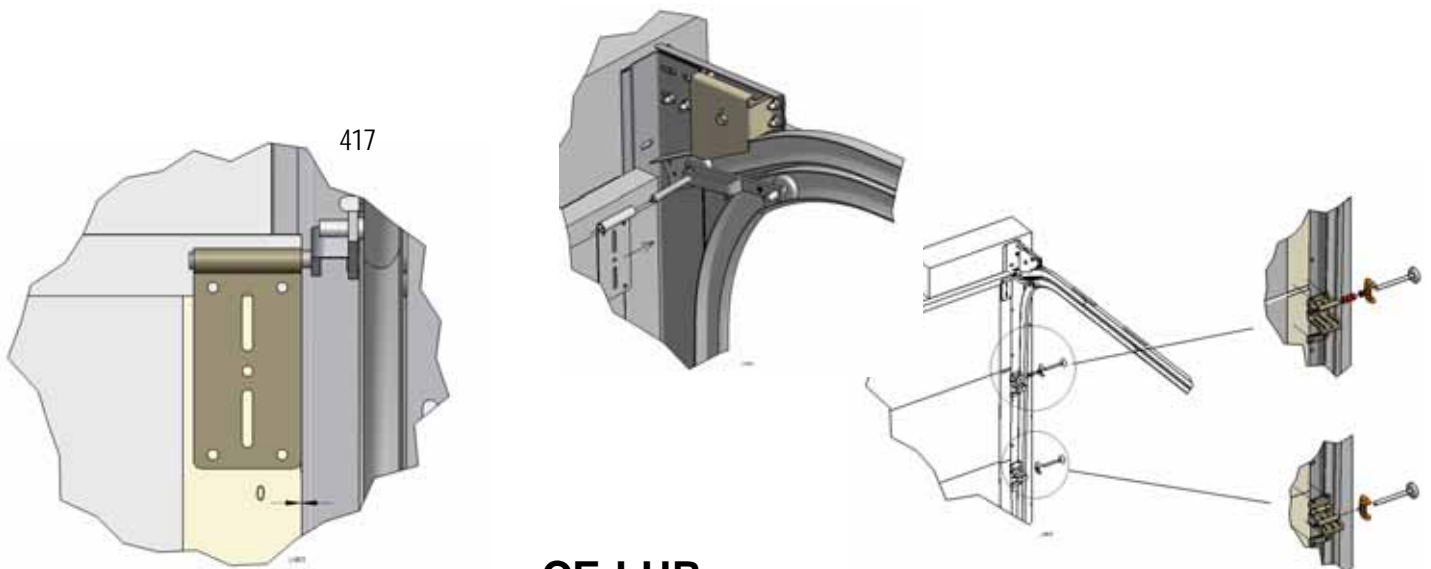
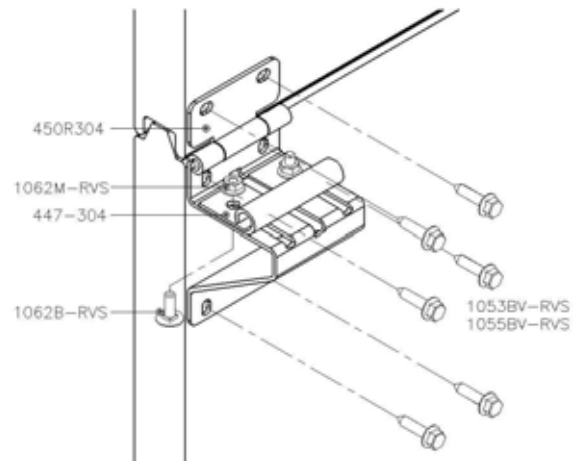
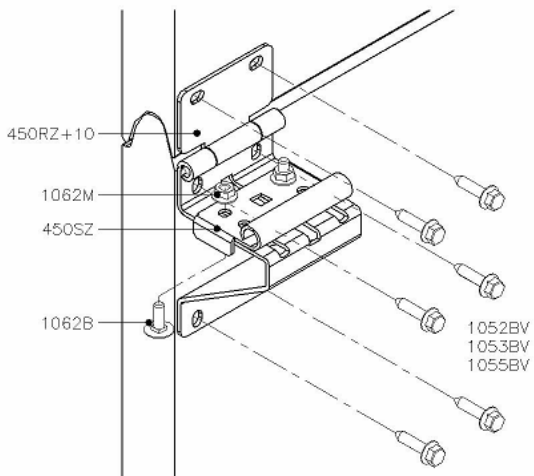
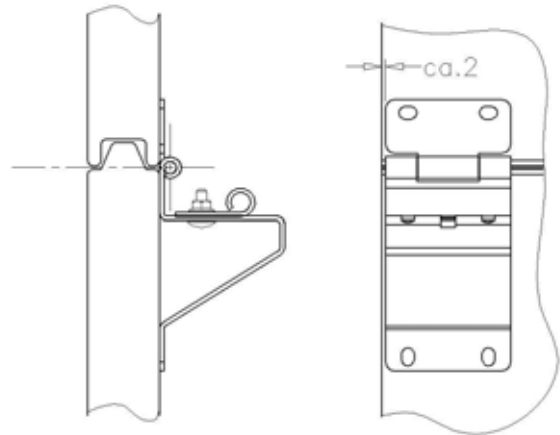
447DOUB



450CZ+10



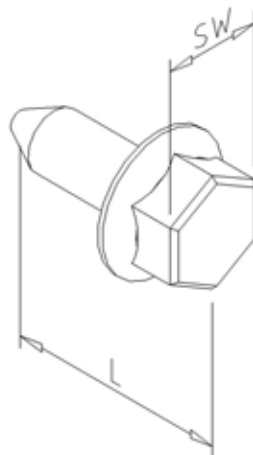
450C304



**CE-LHR**

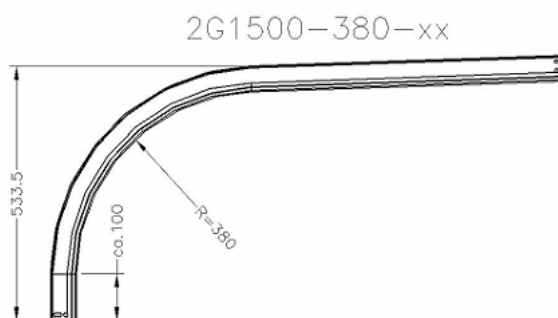
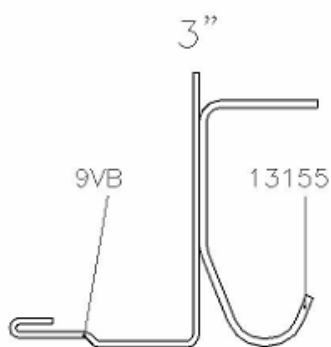
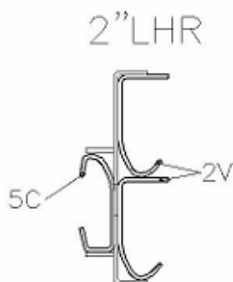
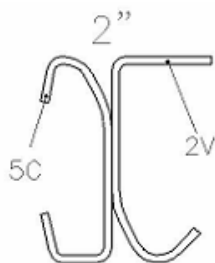
## 5. SCREWS

TYPE	L [mm]	SW [mm]	Max. torque [Nm]
1052BV	16	10	9.8
1053BV	35		
1055BV	25		
1053BV-RVS	35		-
1055BV-RVS	25		-



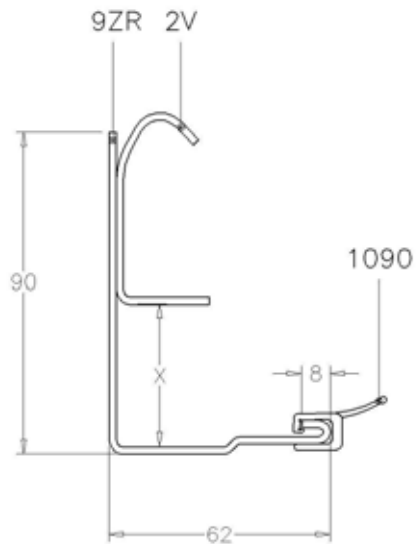
Material thickness [mm]	Drill diameter [mm]	
	Steel	Aluminium
0-1.38	4.9	-
1.38-1.75	5.5	-
1.75-2.00	5.2	5.0
2.00-3.00	5.3	5.2
3.00-4.00	5.8	5.3

## 6. TRACK

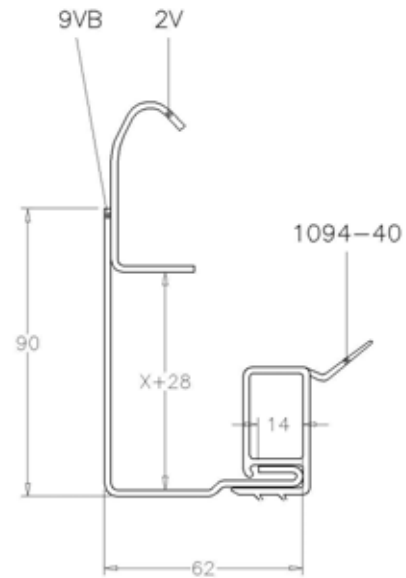


## 7. VERTICAL ANGLE

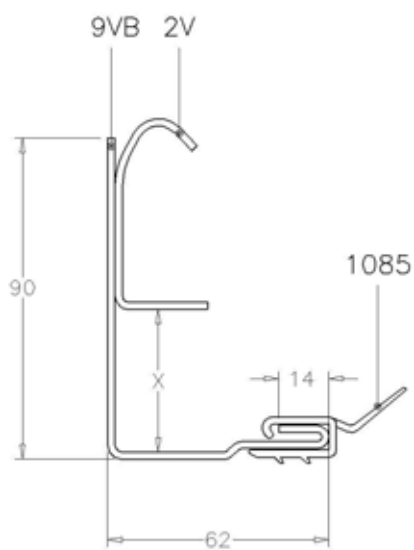
### 7.1 9ZR and 1090 (2" track)



### 7.3 9VB and 1094-40 (2" track)

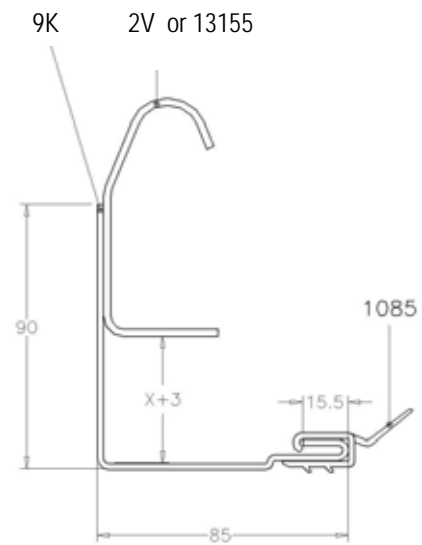


### 7.2 9VB and 1085 (2" track)



### 7.4 9K and 1085 (3" track)

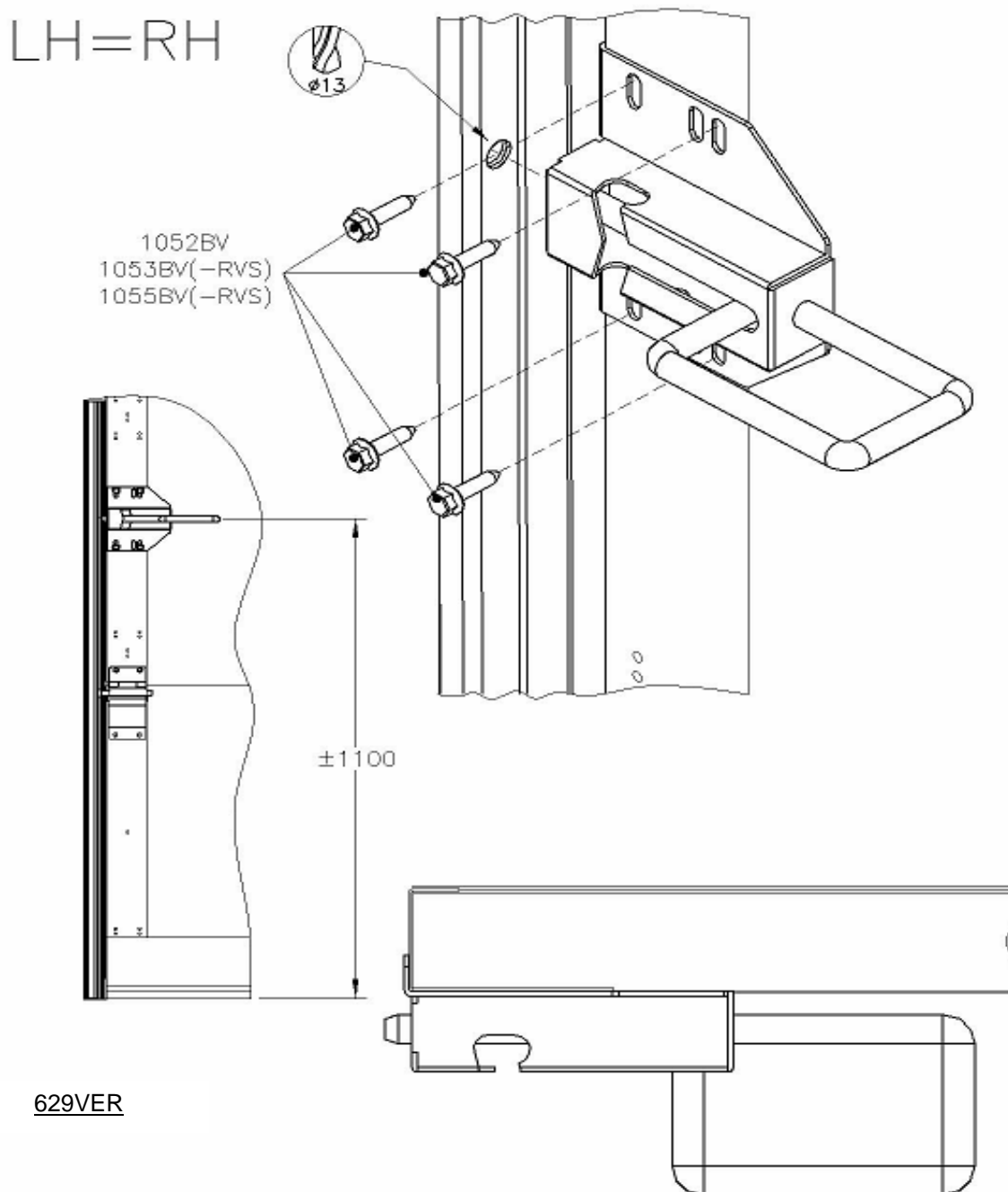
### 7.5 9K and 1085 (2" track)



## 8. LOCKS

- Slide bolt 629VER See Picture
- Slide bolt 630D See Picture
- Slide bolt 632 See Picture
- Cilinder lock 635 See Picture
- Cilinder lock 637-40/50 See Picture
- Cilinder lock 638-40/56 See Picture

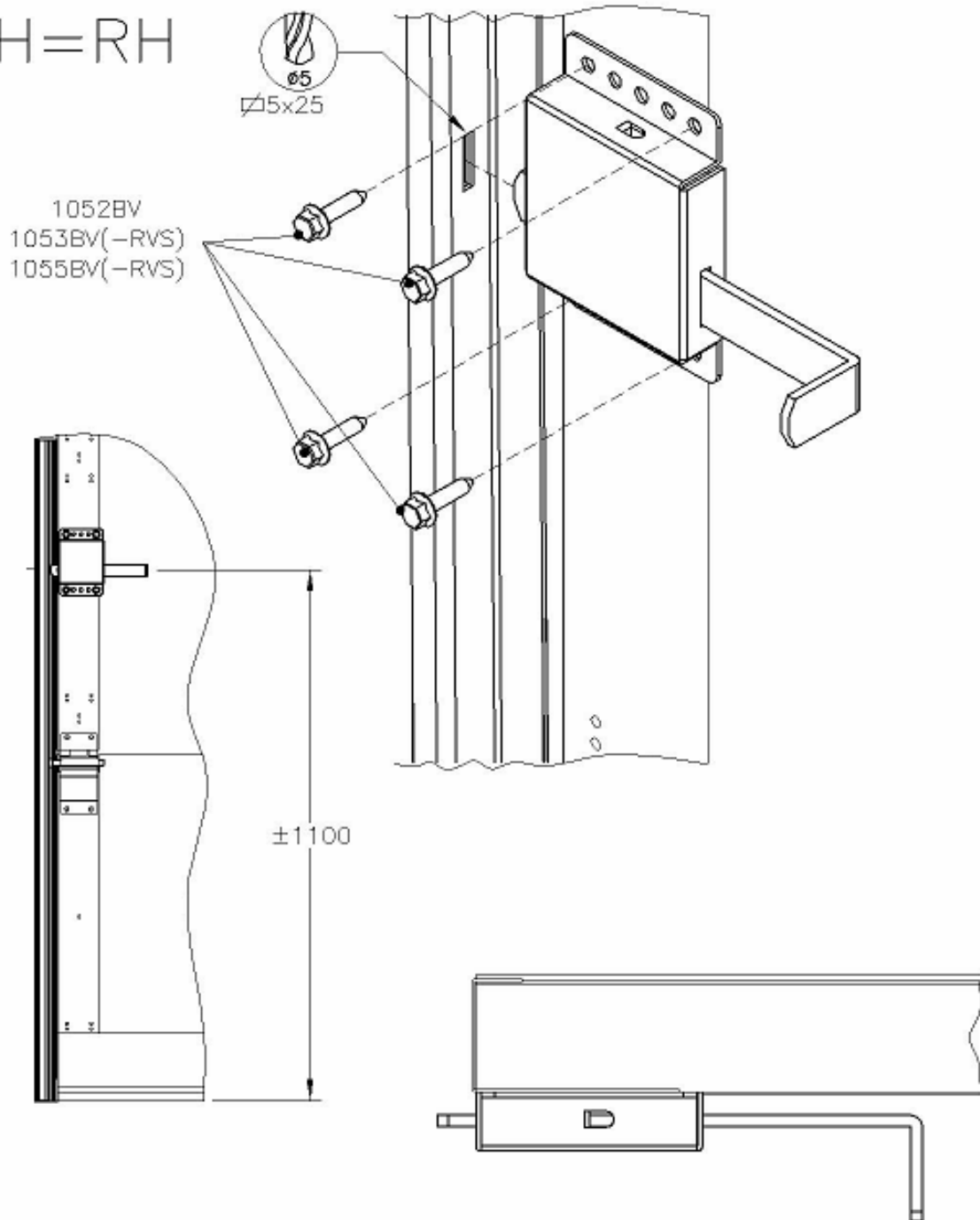
- Cilinder lock 668-40 See Picture
- Cilinder lock 632LHR See Picture
- Cilinder lock 669S See Picture





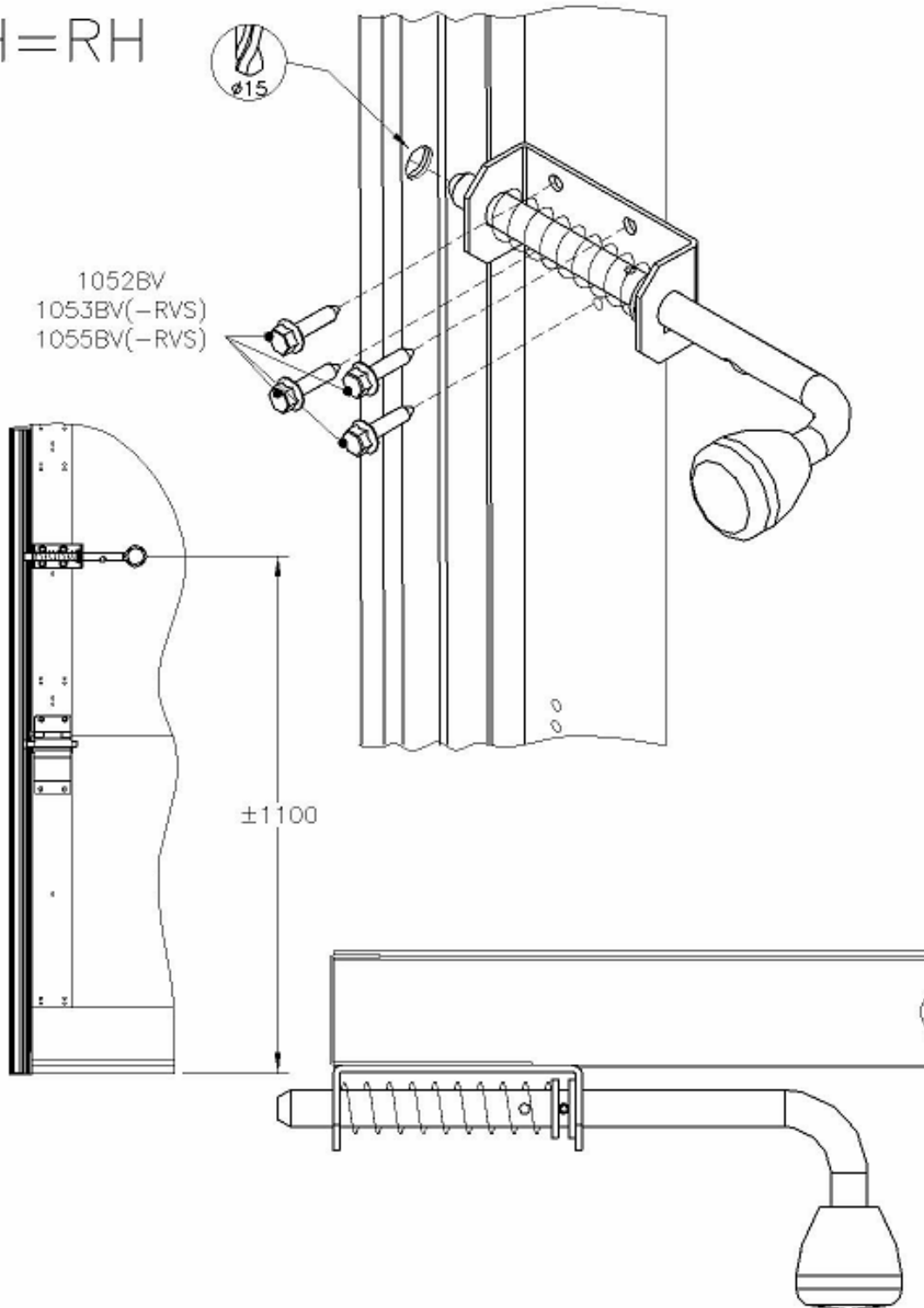
630D

LH=RH



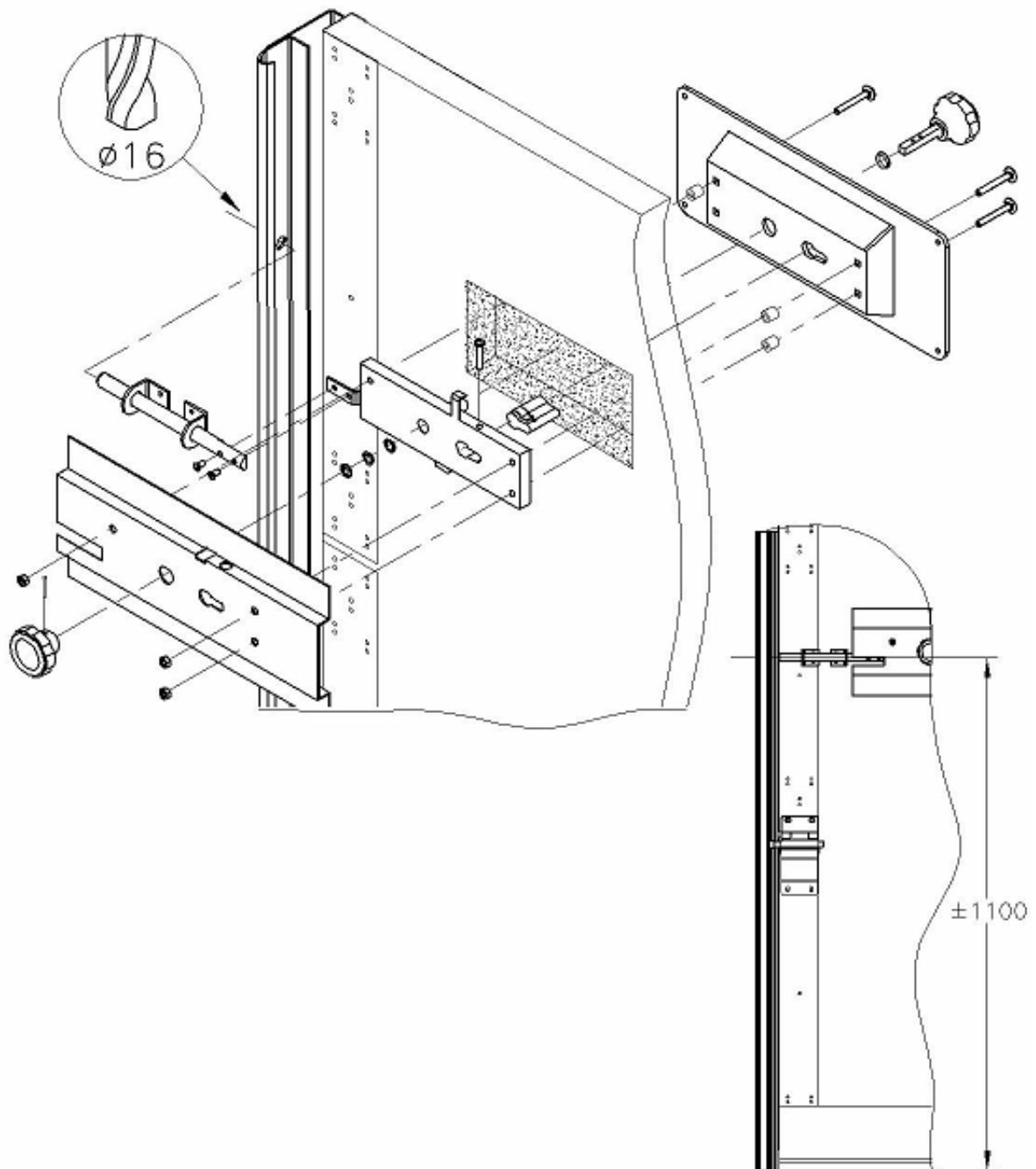
632 / 632LHR

LH=RH



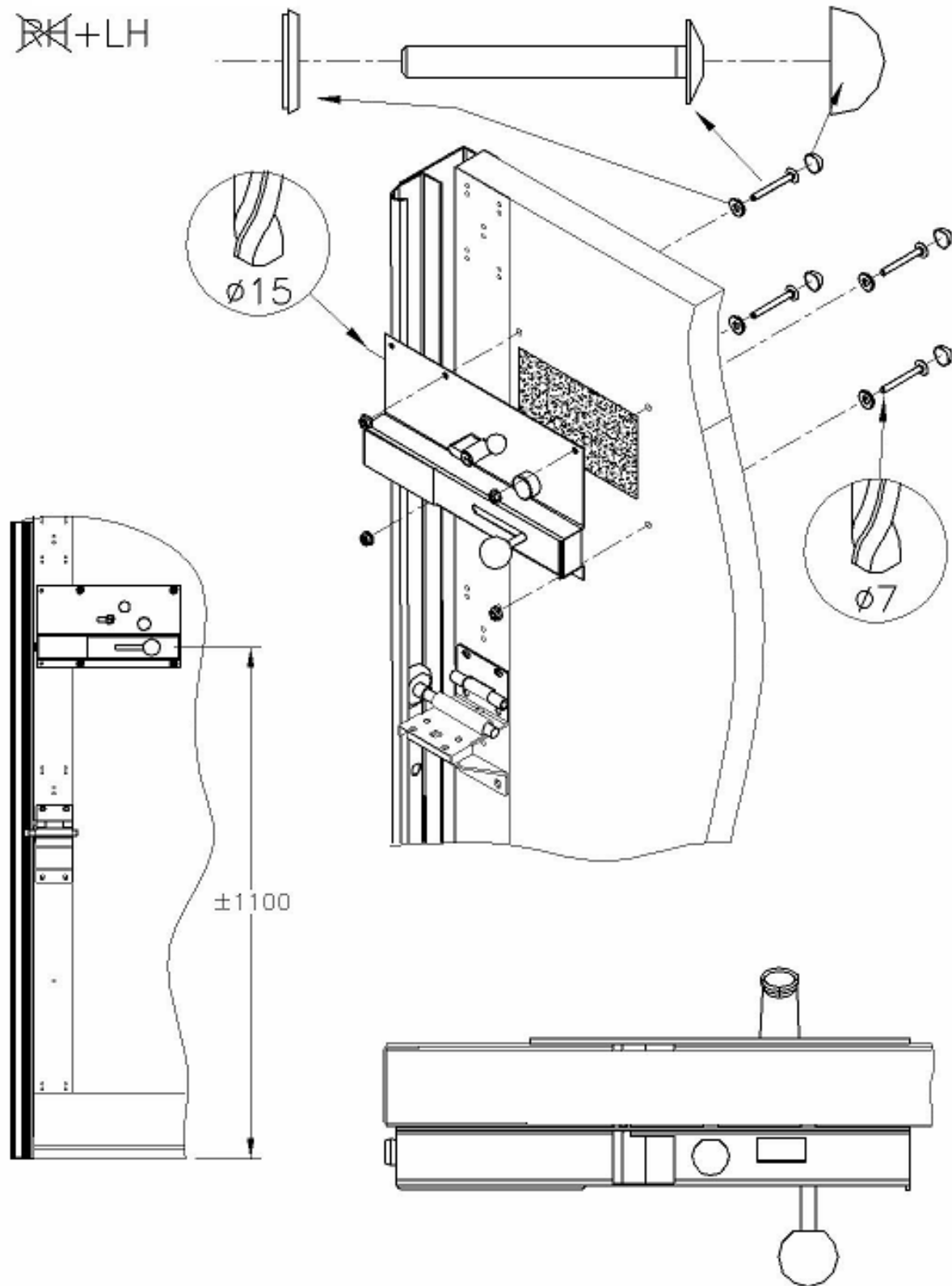
635

~~R~~+LH



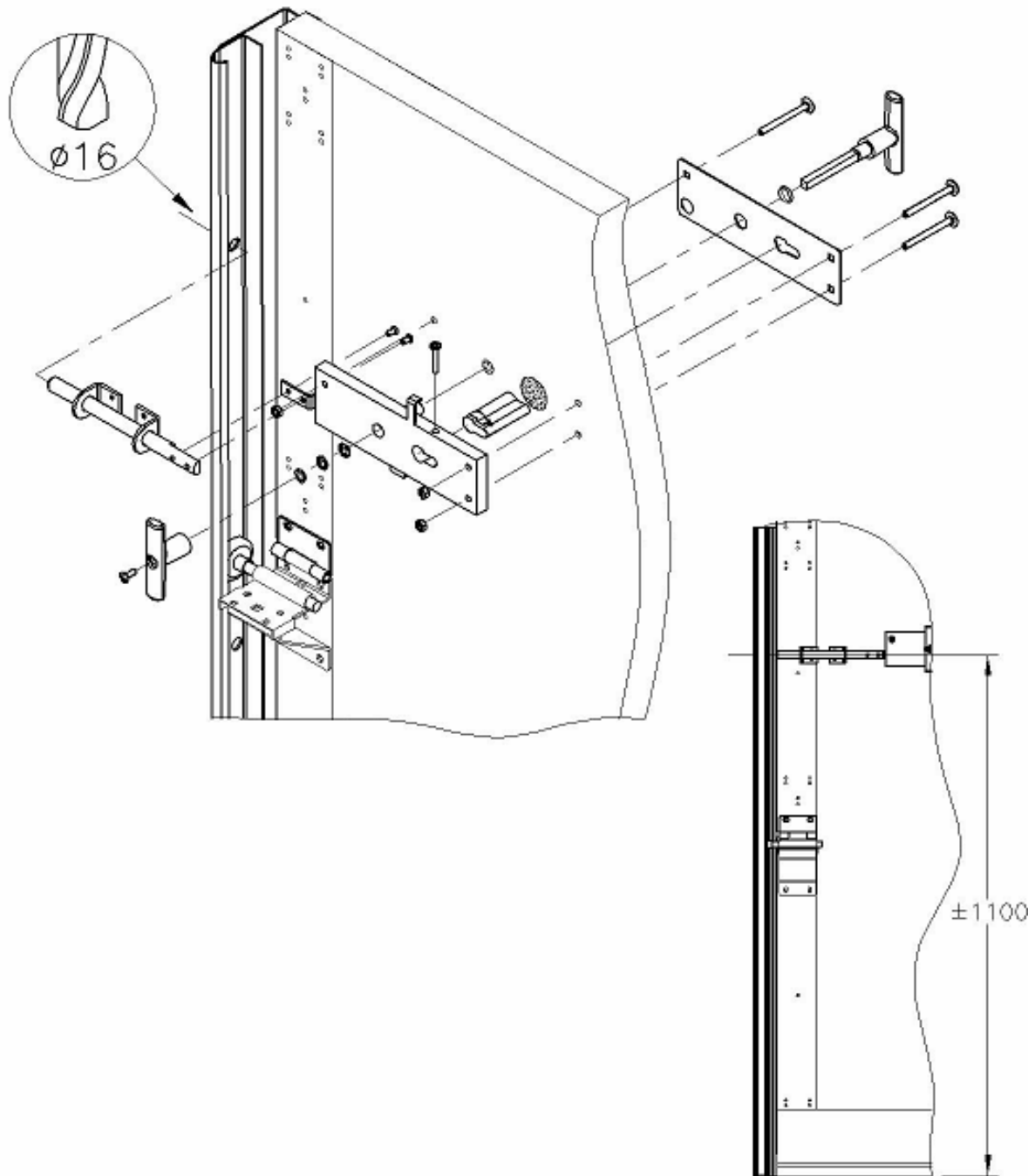
637-40/50

⊗+LH

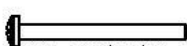





✕+LH

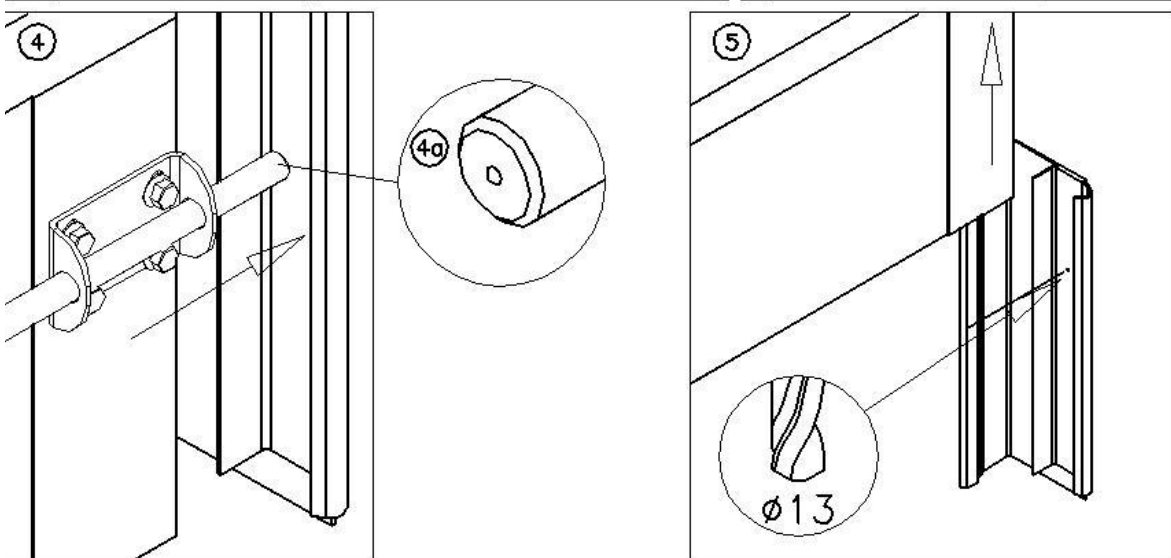
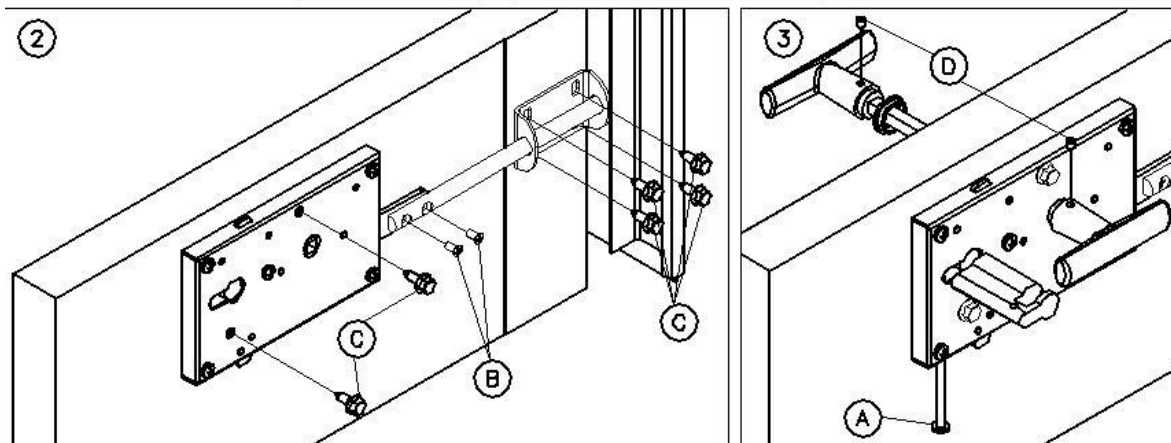
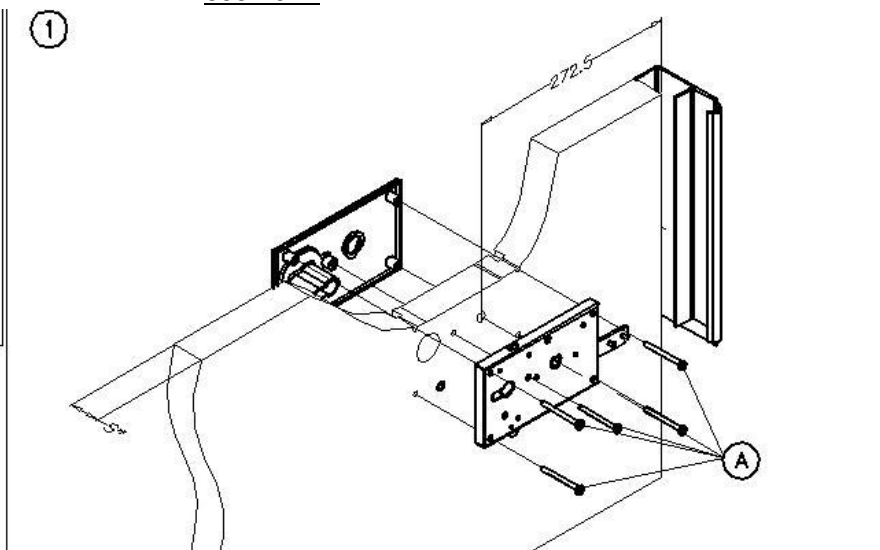
638-40/56



## 668-40BL

- (A)  M5x55(65)\* 6x
- (B)  M5x10 2x
- (C)  6,3x25 6x
- (D)  M5x5 2x

\*s=38-41: M5x55  
s=48-51: M5x65



### 637, 638 and 668-40BL

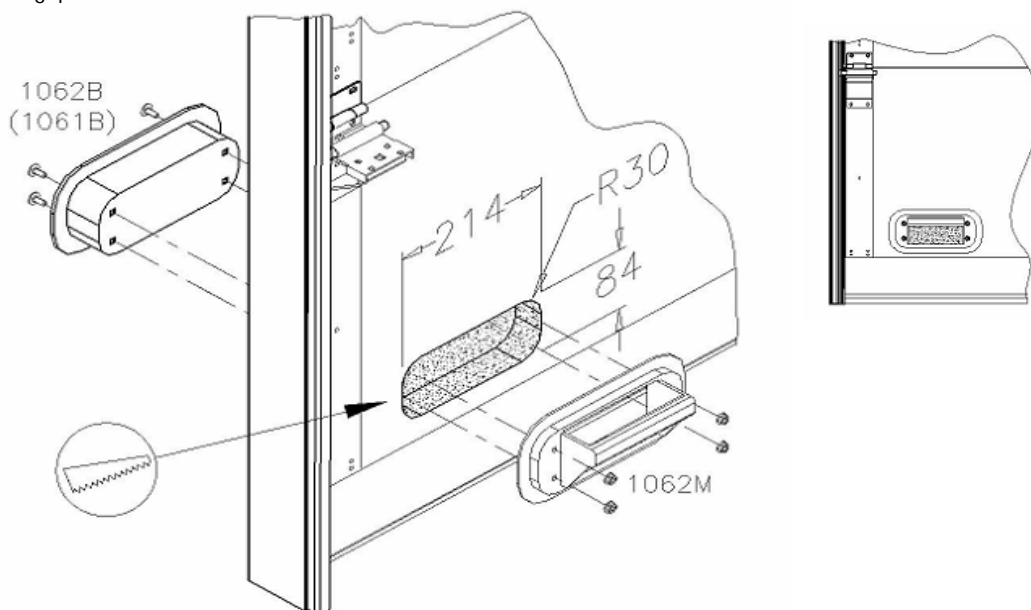
The T-grip must be installed in such way, that in case of an unlocked door, the T-grip is situated in the horizontal position.

## 9. GRIPS

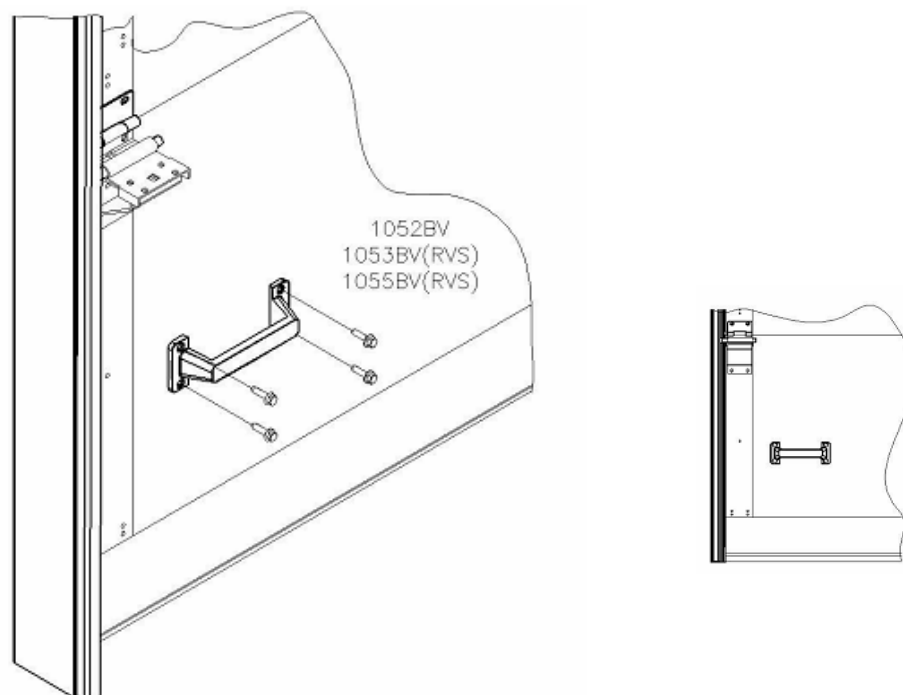
### General

To minimize the risk that the end user will come close to dangerous areas (for example the vertical tracks) during the use of the overhead door, we strongly recommend to place the grips for (electrical operated) doors in the middle of the door width or at least 1,5 meter from the vertical tracks. Furthermore we recommend to install more than 1 grip on the door.

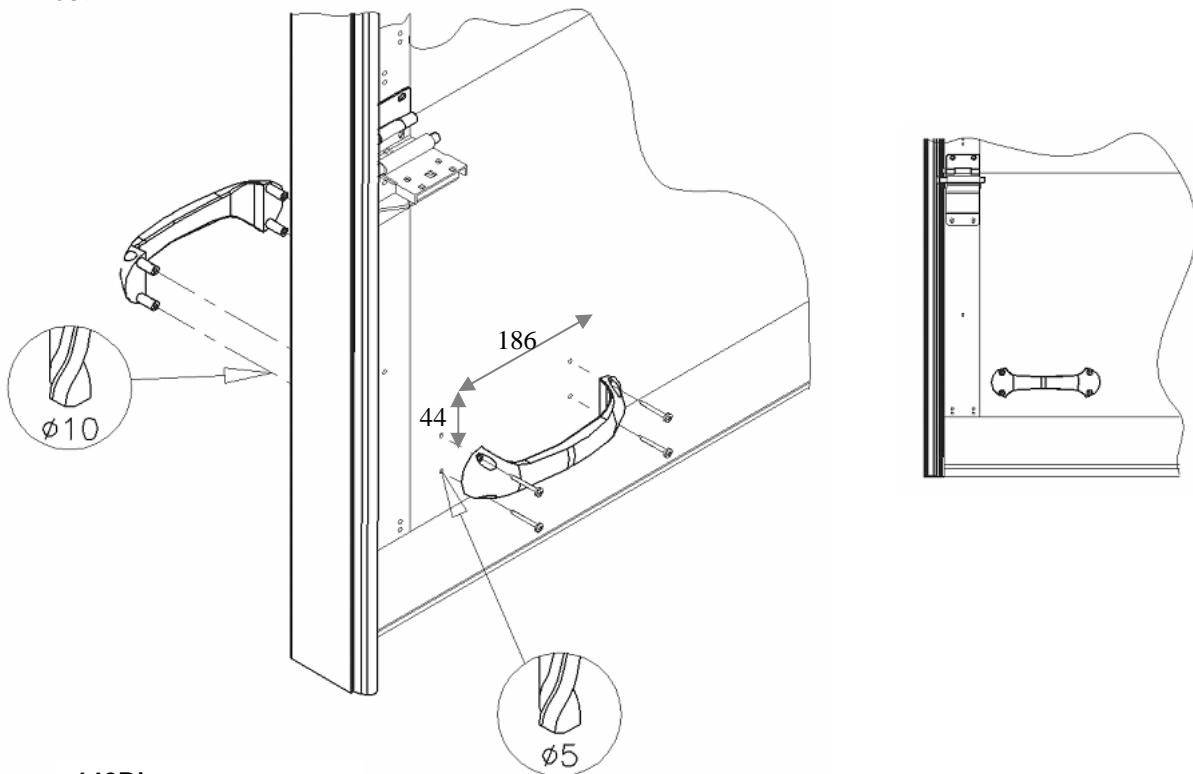
### 640T



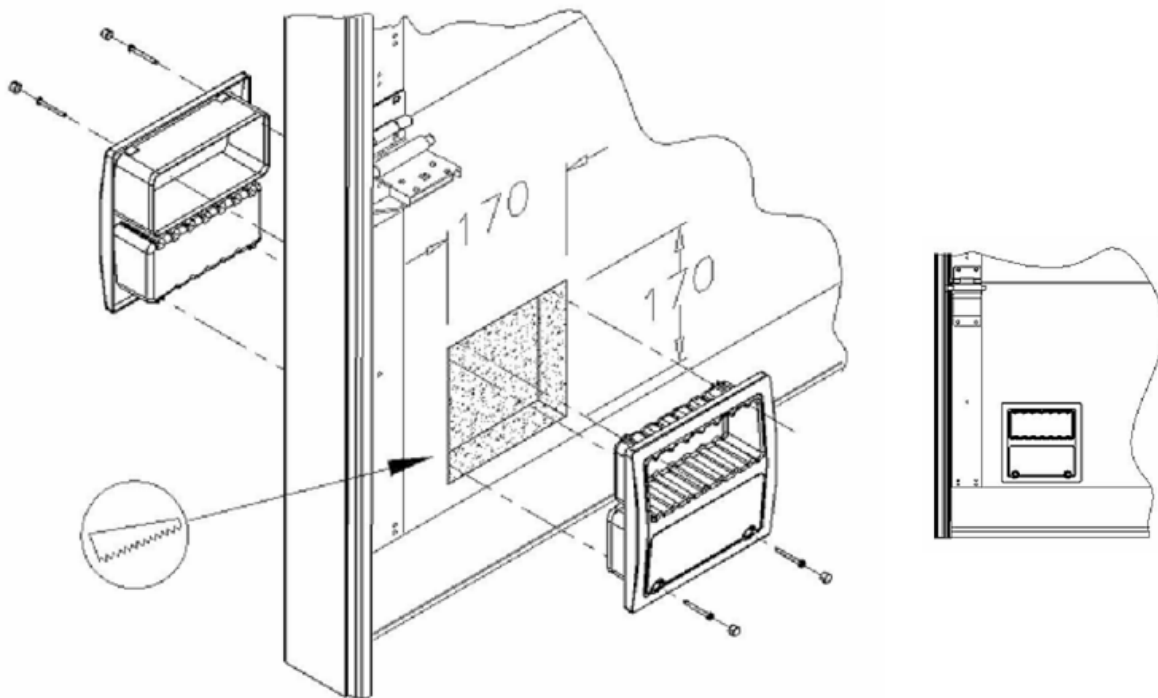
### 634



639BL



642BL





## 10 BOTTOM CONSOLES AND VERTICAL TRACK SET

### 10.1 Vertical track set

The distance between the vertical angles is determined by the type of bottom console or cable break safety device.

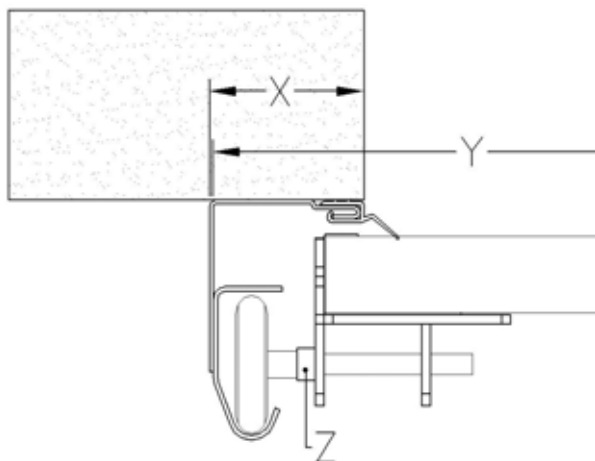
Basic criteria for application of the table below:

- 1) panel width=Clear width+45mm
- 2) oscillation 10mm.

The latter is the free lateral movement that a door panel is able to make between the vertical tracks, required for smooth operation without too much friction.

Type	2" TRACK SYSTEM		3" TRACK SYSTEM	
	X (mm)	Z Fill with spacer bush	X	Z Fill with spacer bush
425HD	75	2066-10 (10mm)	87	2066-05 (5mm)
427SX	70	2066-10 (10mm)		
427S-RVS	71	2066-10 (10mm)		
428TAI	71			
429	64			
430HD	65	-	87	2066-05 (5mm)
432	64			
437	64			
437VERS	64			
437RVS	64	2066-05 (5mm)		
440-600	74			
440-REGL	76			
440-HD	74			
440-3"	-	-	92	-
440LHR	88	-		

(9K profile has been used)



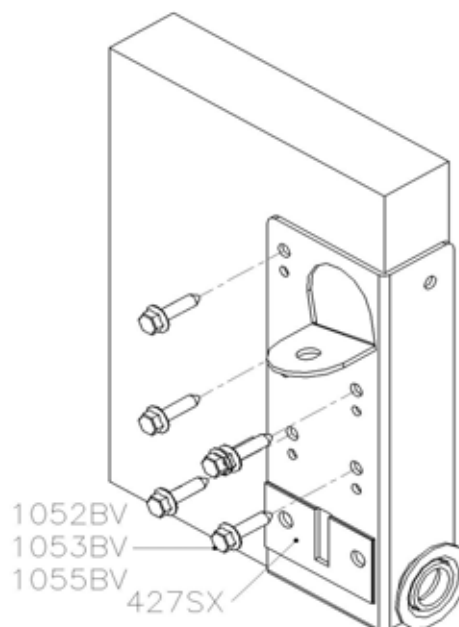
### 10.2 Bottom console 427SX

The bottom console 427SX consists of the following parts:

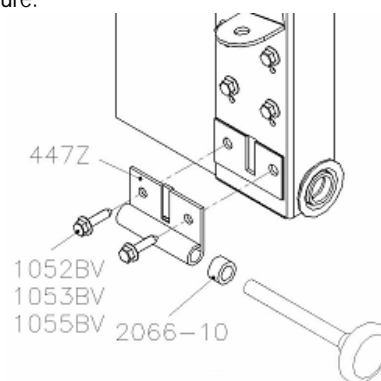
- Console 427SX
- Self-tapping screws -
- Bearing roller holder 447Z
- Spacer bush 10mm 2066-10
- Eye bolt (with cable) 427OOG/1050B
- Flanged nut M10 1058F

#### Order of assembly

Position the bottom console on the panel such that the side and underside are flush with the panel. Secure the console with 5 self-tapping screws. See figure.



Fit the spacer bush to the bearing roller. Fit the bearing roller holder to the spindle of the bearing roller. Place the bearing roller with spacer bush and bearing roller holder in the vertical guide tracks at the level of the console. Secure the bearing roller holder with 2 self-tapping screws. See figure.

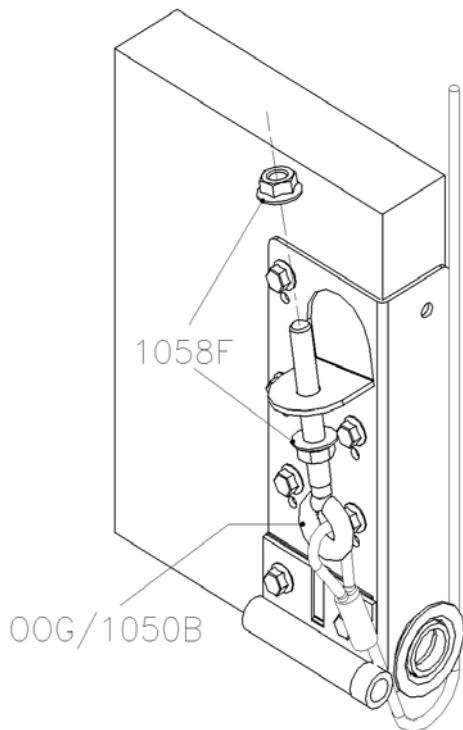


Because of the critical function of the bottom bracket, it is not allowed to cut the bottom section. This weakens the construction and will lead to a dangerous situation!!!

The cable is secured to the console with an eyebolt. First tighten as far as possible an M10 flanged nut on the eye bolt. Guide the cable around the reverse pulley of the console, insert the eyebolt from below through the console and tighten the 2<sup>nd</sup> nut on the eyebolt. See figure.



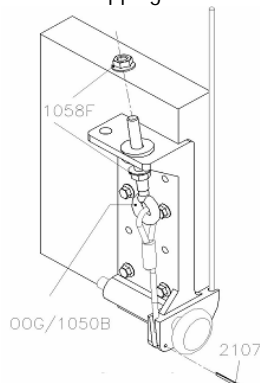
To prevent the console distorting or breaking, the cable may only be set looser (adjust eye downwards).



### 10.3 428TAI bodemconsole

Bottom console 428TAI consists of the following parts:

- Console 428TAI
- Self-tapping screws -

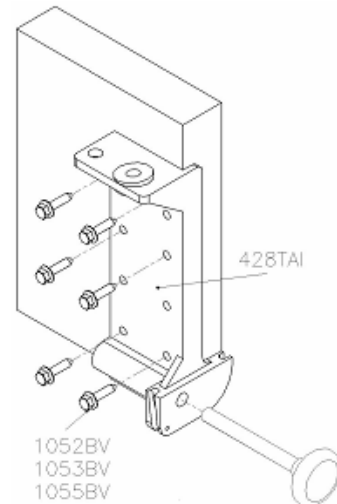


- Eye bolt (with cable) 4270OG/1050B
- Flanged nut M10 1058F
  
- Split pin 2107

#### Order of assembly

Insert the bearing roller into the bottom console and "turn" this in the vertical guide tracks. One of the two bottom consoles may be fitted beforehand to the panel. Position the bottom console on the panel such that the side and underside are flush with the panel. Secure the console with 6 self-tapping screws. See figure.

The cable is secured to the console with an eyebolt. First tighten as far as possible an M10 flanged nut on the eye bolt. Guide the cable around the reverse pulley of the console, insert the eyebolt from below through the



console and tighten the 2<sup>nd</sup> nut on the eyebolt. Now insert the split pin as per drawing into the aperture designed for that purpose and bend its ends out. The aperture next to the eyebolt serves to secure when required a cord for manual operation. See figure.



To prevent the console distorting or breaking, the cable may only be set looser (adjust eye downwards).

Because of the critical function of the bottom bracket, it is not allowed to cut the bottom section. This weakens the construction and will lead to a dangerous situation!!!



## 10.4 429 Bottom console

Bottom console 429 consists of the following parts:

- Console 429
- Self-tapping screws -
- Split pin -
- Pin -

### Order of assembly

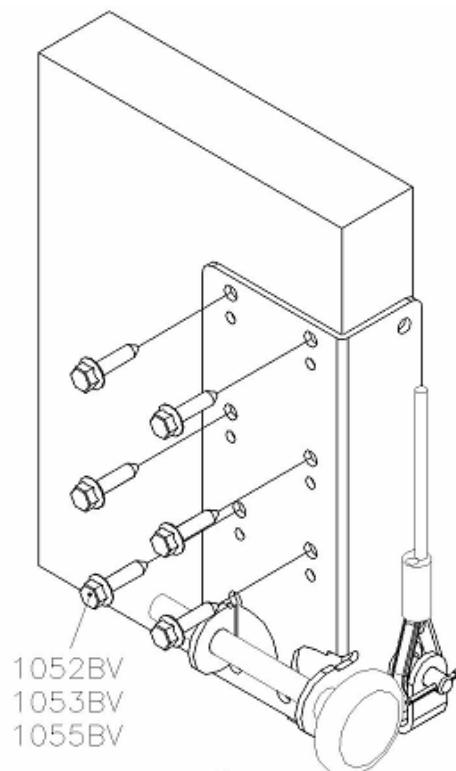
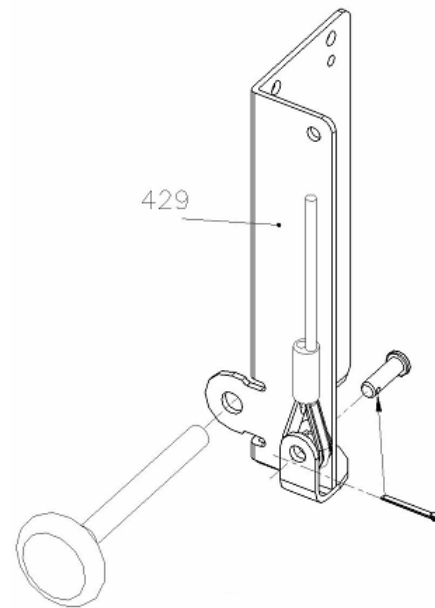
Secure the cable to the console by inserting the pin from the interior through the console and the loop in the cable. Secure the pin with the split pin and bend the extremities of the split pin out. Insert the bearing roller in the bottom console. See figure.

Now "rotate" the bearing roller with console in the vertical guide tracks. One of the two bottom consoles may be fitted beforehand on the panel.

Position the bottom console on the panel such that the side and underside are flush with the panel. Secure the console with 6 self-tapping screws. See figure.



Because of the critical function of the bottom bracket, it is not allowed to cut the bottom section. This weakens the construction and will lead to a dangerous situation!!!



## 10.5 432 Bottom console

Bottom console 432 consists of the following parts:

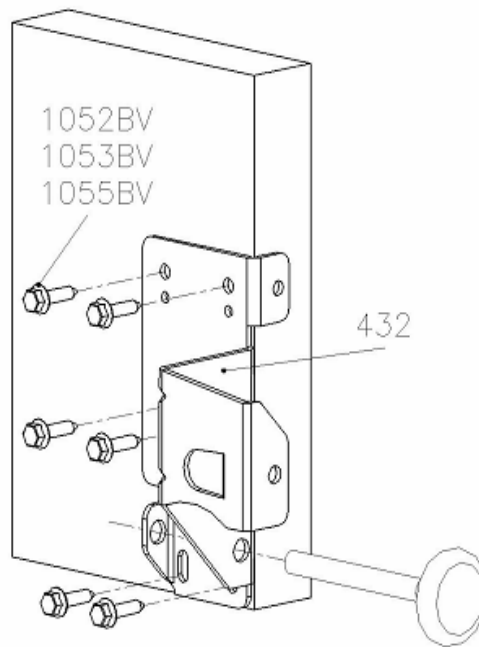
- Console 432
- Self-tapping screws -
- Split pin -
- Pin -

### Order of assembly

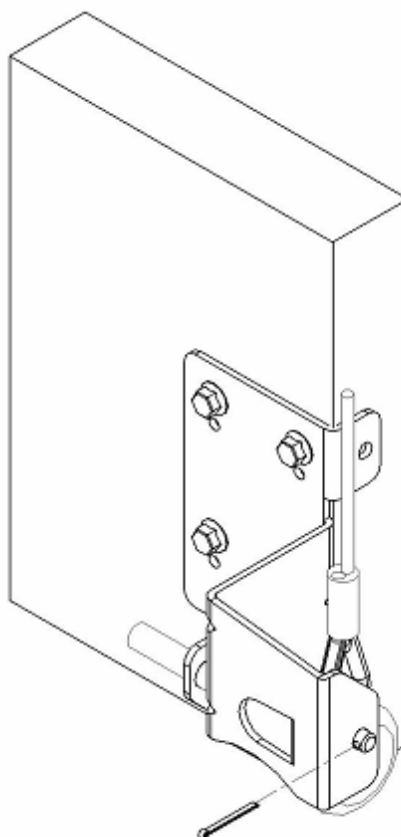
Insert the bearing roller into the bottom console. "Rotate" the bearing roller with console in the vertical guide tracks. One of the two bottom consoles may be fitted beforehand on the panel.

Position the bottom console on the panel such that the side is flush with the panel. The underside of the console should be level with the underside of the panel. Secure the console with 6 self-tapping screws. See figure.

Secure the cable to the console by inserting the pin through the console and the loop in the cable. Secure the pin with the split pin and bend the extremities of the split pin out. See figure.



Because of the critical function of the bottom bracket, it is not allowed to cut the bottom section. This weakens the construction and will lead to a dangerous situation!!!



## 10.6a 437 bottom console + 437VERS

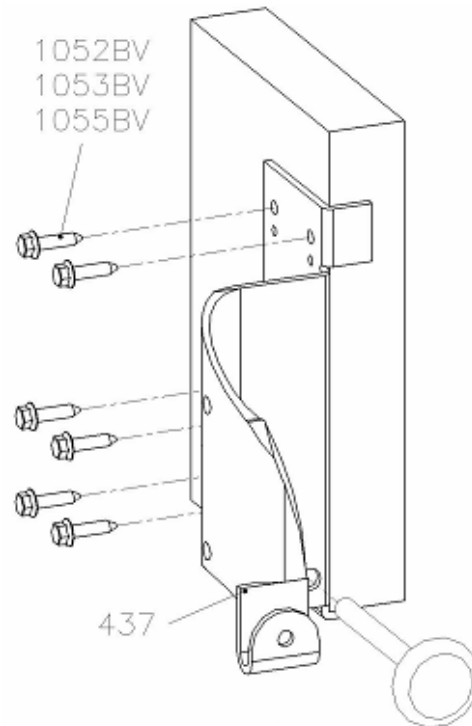
Bottom console 437 consists of the following parts:

- Console 437
- Self-tapping screws -
- Split pin 2107
- Pin 1042

### Order of assembly

Insert the bearing roller into the bottom console. "Rotate" the bearing roller with console in the vertical guide tracks. One of the two bottom consoles may be fitted beforehand on the panel. Position the bottom console on the panel such that the side and underside are flush with the panel. Secure the console with 6 self-tapping screws. See figure.

Secure the cable to the console by inserting the pin through the console and the loop in the cable. Secure the pin with the split pin and bend the extremities of the split pin out. See figure.



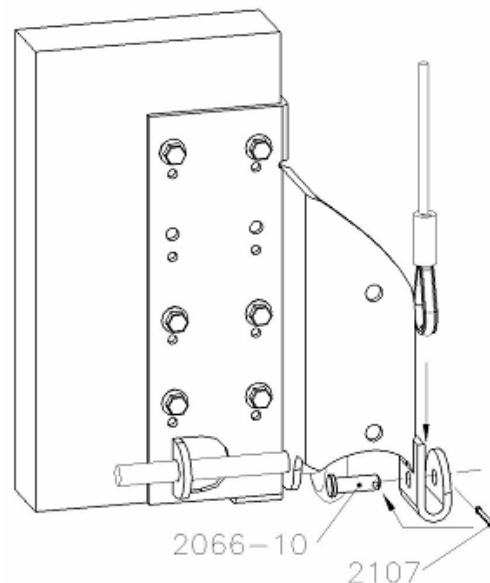
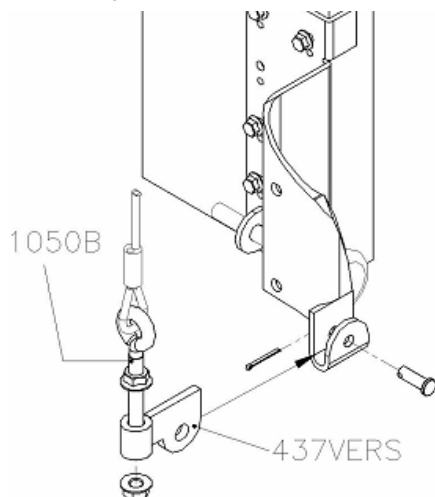
## 10.6b 10.6b 437VERS + 437 bottom console

The cable adjustment bracket 437VERS consists of the following parts:

- Bracket 437VERS
- Eyebolt M10 1050B
- Nuts M10 1058F

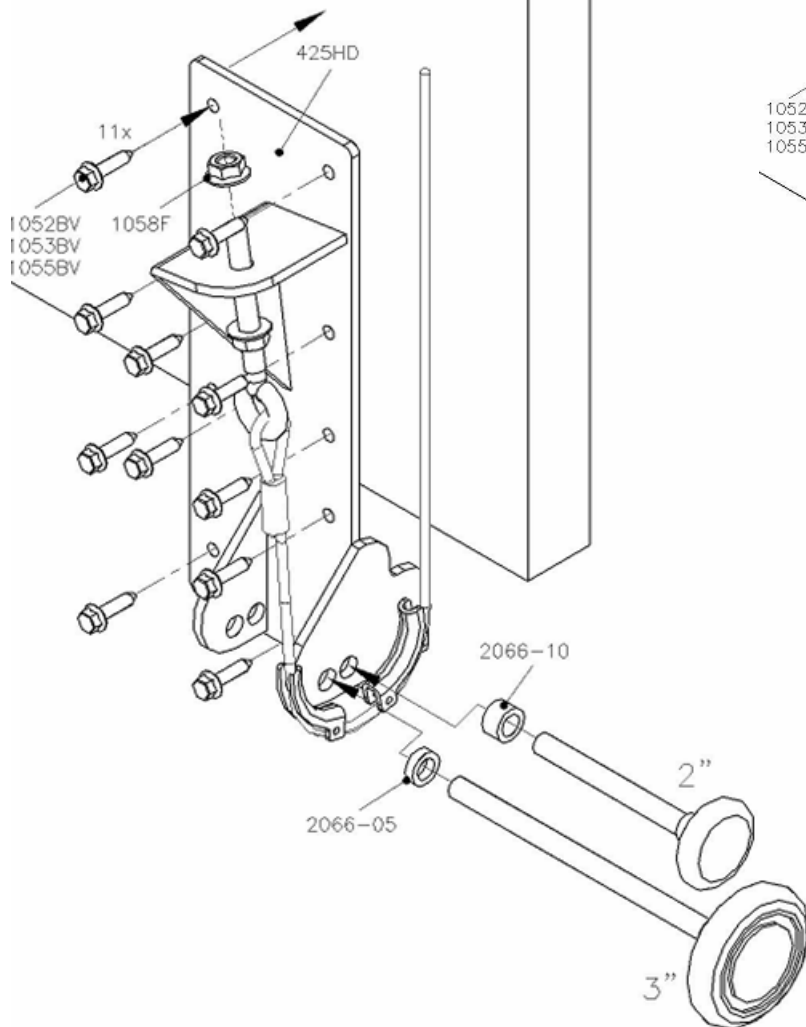
### Order of assembly

Secure the bracket to the console by inserting the pin through the console and the aperture of the bracket. Secure the pin with the split pin and bend the extremities of the split pin out. The cable should be secured to the bracket with an eyebolt. First tighten an M10 flanged nut as far as possible on the eyebolt. Insert the eyebolt from above through the bracket and tighten the 2<sup>nd</sup> nut on the eyebolt. See figure.

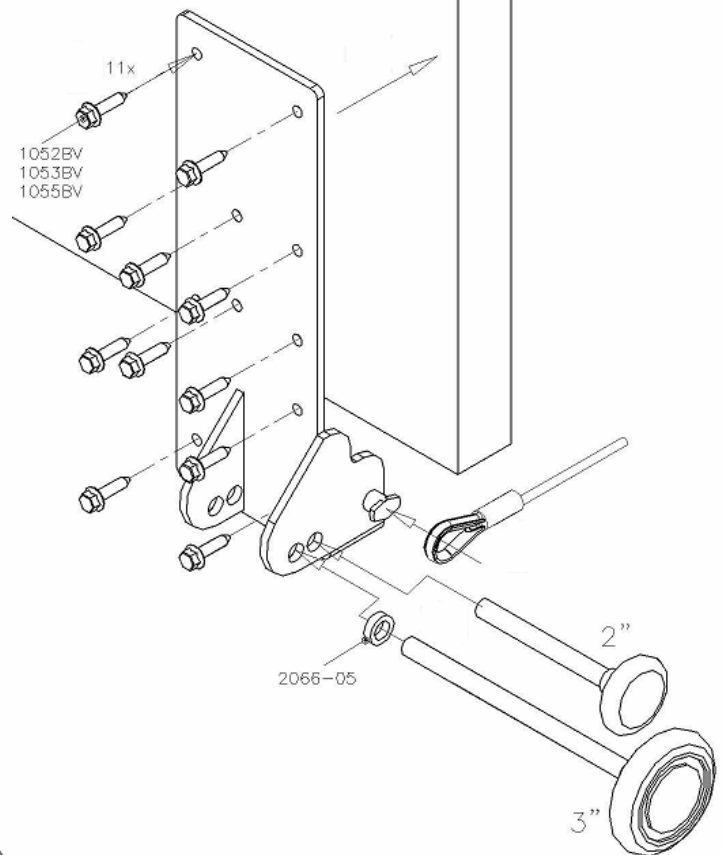


Because of the critical function of the bottom bracket, it is not allowed to cut the bottom section. This weakens the construction and will lead to a dangerous situation!!!

## 10.7 Bottom console 425HD



## 10.8 Bottom console 430HD



Because of the critical function of the bottom bracket, it is not allowed to cut the bottom section. This weakens the construction and will lead to a dangerous situation!!!

10.9 440-600 etc. Cable break devices

Download separate manual from  
[www.flexiforce.com](http://www.flexiforce.com)



## 10.16 427S-RVS bottom console

Bottom console 427S-RVS consists of the following parts:

- |                         |           |
|-------------------------|-----------|
| ▪ Console RVS           | 427S-RVS  |
| ▪ Self-tapping screws   | -         |
| ▪ Bearing roller holder | 447-304   |
| ▪ Spacer bush 10mm      | 2066-10   |
| ▪ Eyebolt (with cable)  | 2530RVS   |
| ▪ Flanged nut M8        | 2535M-RVS |

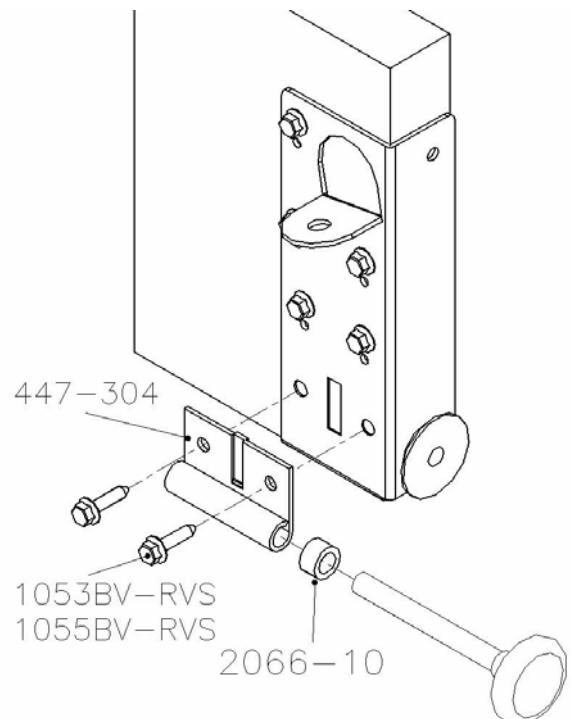
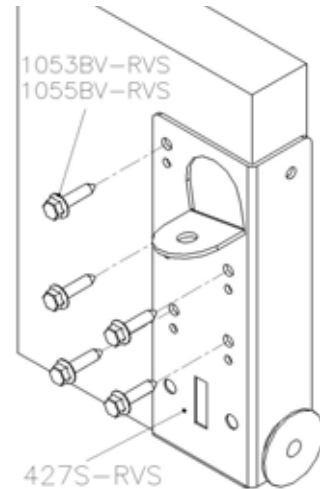
### Order of assembly

Position the bottom console on the panel such that the side and underside are flush with the panel. Secure the console with 5 self-tapping screws. See figure.

Fit the spacer bush to the bearing roller. Fit the bearing roller holder to the spindle of the bearing roller. See figure 80. Place the bearing roller in the vertical guide tracks at the level of the console. Secure the bearing roller holder with 2 self-tapping screws.

The cable is secured to the console with an eyebolt. First tighten as far as possible an M8 flanged nut on the eye bolt. See figure.

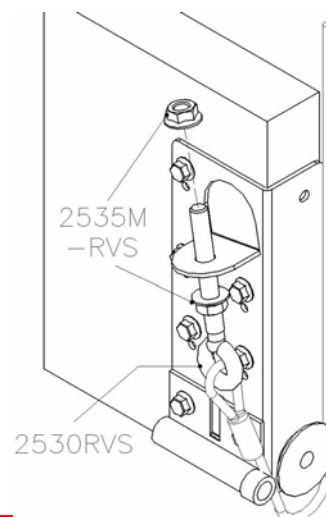
Guide the cable around the reverse pulley of the console, insert the eyebolt from below through the console and tighten the 2<sup>nd</sup> nut on the eyebolt. See figure.



In order to prevent deformation or breaking of the cable, the cable may only be set more loose !!



Because of the critical function of the bottom bracket, it is not allowed to cut the bottom section. This weakens the construction and will lead to a dangerous situation!!!





## 10.17 437RVS bottom console

Bottom console 437RVS consists of the following parts:

- |                           |           |
|---------------------------|-----------|
| ▪ Console RVS             | 437-RVS   |
| ▪ Self-tapping screws RVS | -         |
| ▪ Bolt M8x35 RVS          | 2535B-RVS |
| ▪ Nut M8 RVS              | 2535M-RVS |
| ▪ Spacer bush             | 2066-05   |

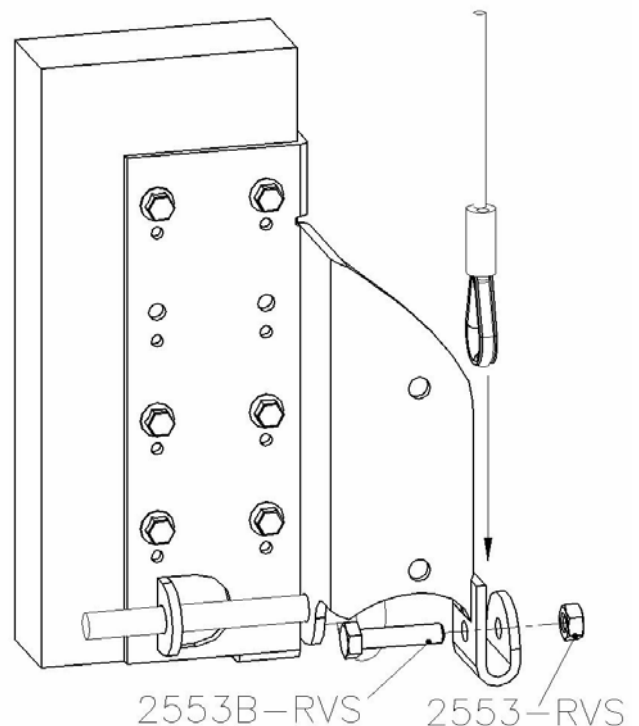
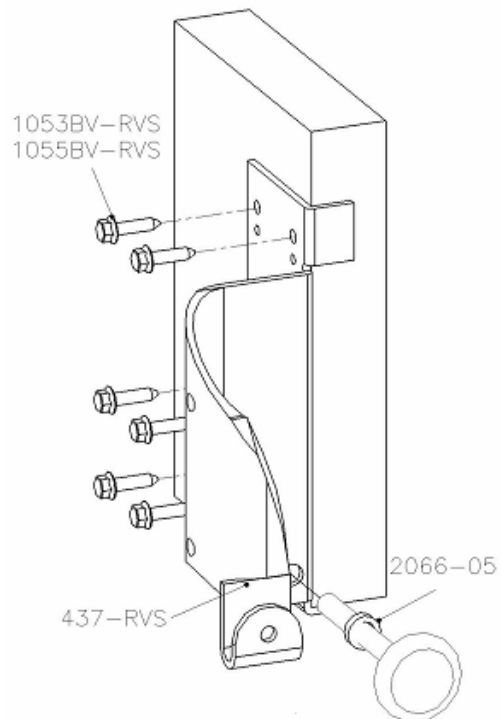
### Order of assembly

Place the spacer bush on the bearing roller. Insert the bearing roller into the bottom console.

"Rotate" the bearing roller with console in the vertical guide tracks.

Position the bottom console on the panel such that the side is flush with the panel. Secure the console with 6 self-tapping screws. See figure.

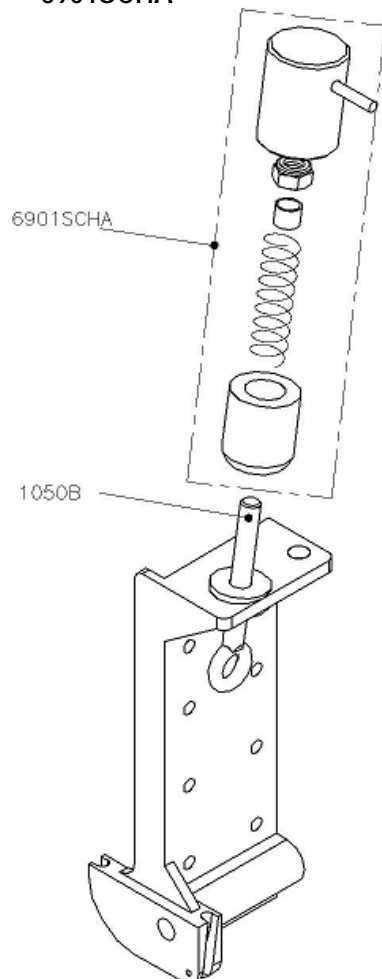
Secure the cable to the console by inserting the bolt M8x35 from within through the console and the loop in the cable. Then tighten the nut on the bolt. See figure.



Because of the critical function of the bottom bracket, it is not allowed to cut the bottom section. This weakens the construction and will lead to a dangerous situation!!!

## 11. BOTTOM CONSOLE SWITCHES

### 11.1 6901SCHA



### 11.2 440SWL/R/440KAP

Please see separate manual cable break devices.

## 12. BEARING PLATES

### 12.1 Non adjustable bearing plates

- Side bearing plates 305-4B, 3086S etc. See Picture
- Side bearing plates 318-4CP See Picture
- Center bearing plates 315-4B, 3086C etc. See Picture
- Side bearing plates 318-4C See Picture
- Bearing plates 320-4 See Picture

### 12.2 Adjustable bearing plates

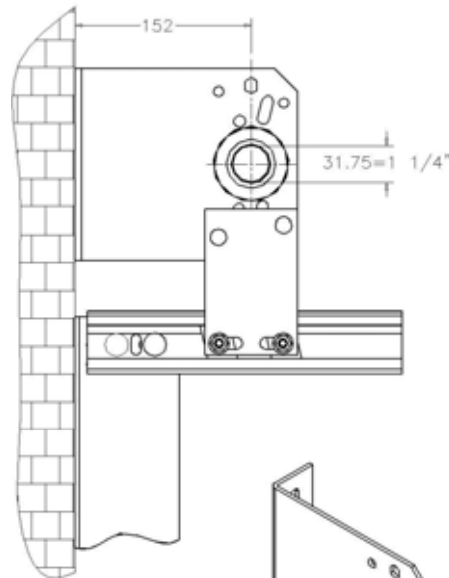
- Base plate 322BAS See Picture
- Bearing plate 323LAG See Picture
- 323LAG-B See Picture

### 12.3 Universal bearing plates

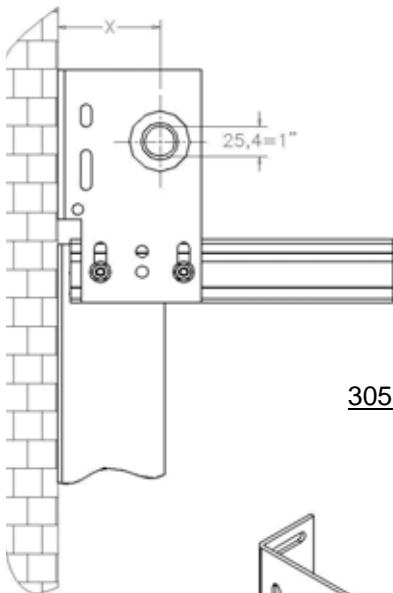
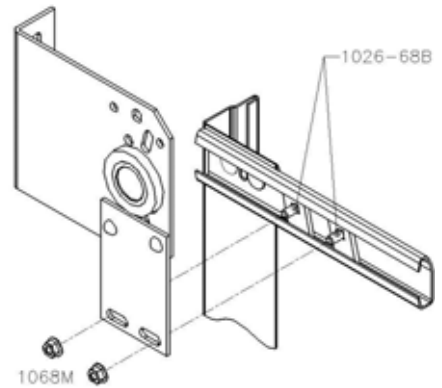
- Interm. Bearing plate USA-8 + retainer See Pict.
- Interm. Bearing plate USA-8 + fitting See Picture

### 12.4 Several

- Wall plate 321WAL See Picture
- Bearing 1 1/4" USA A See Picture
- Bearing 1" USA B See Picture
- Retainer 325 See Picture

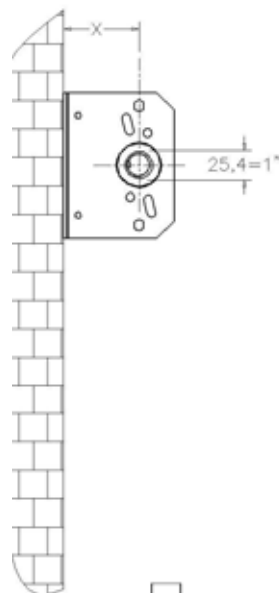
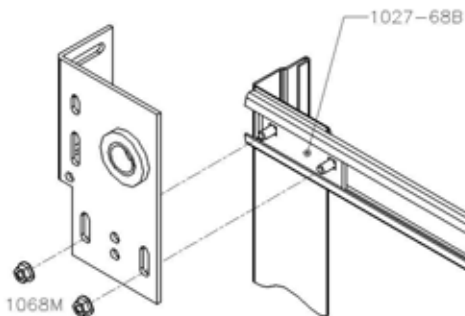


318-4CP



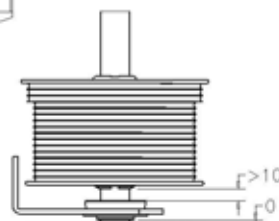
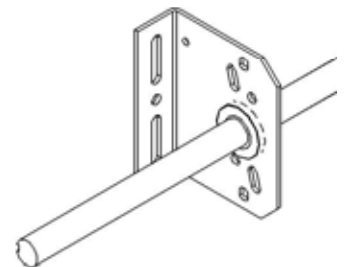
	X
305-4B	86
306-4B	111
307-4B	127
308-4B	152

305-4B / 3086S etc.

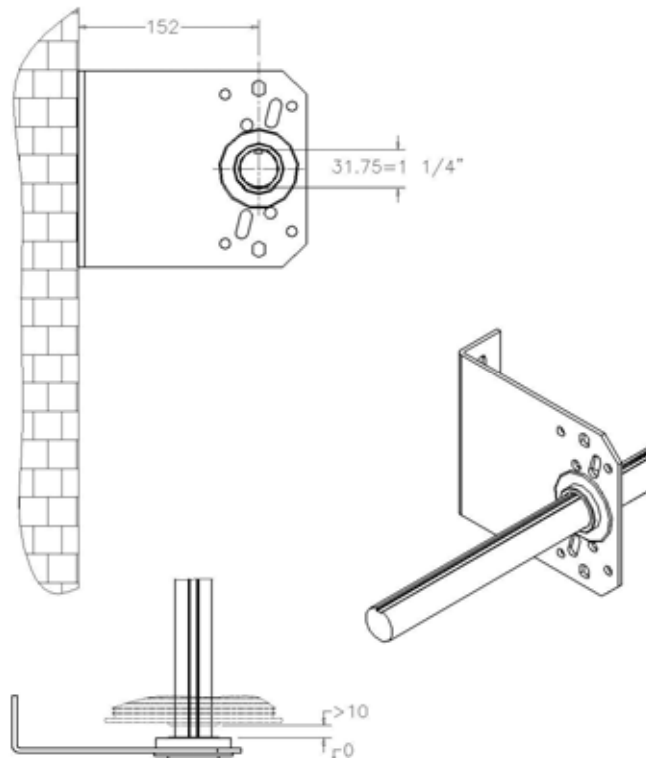


	X
315-4B	86
315-4B	111
315-4B	127
315-4B	152

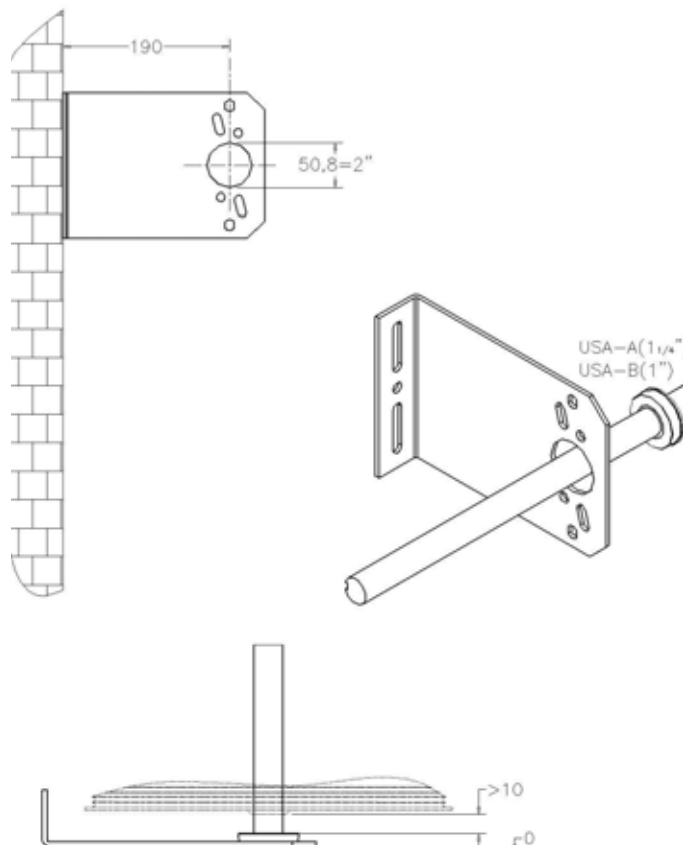
315-4B / 3086C etc

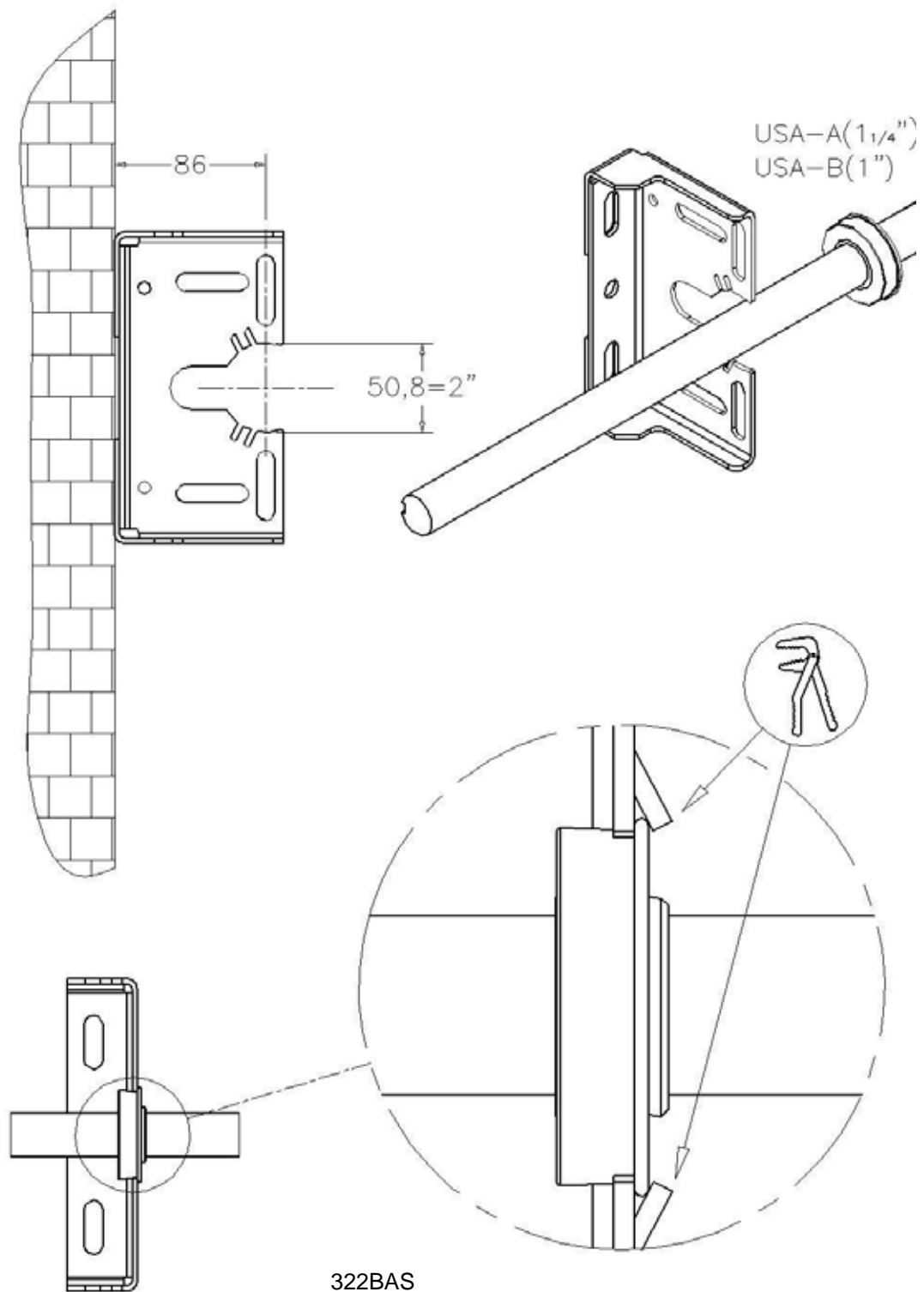


318-4C etc.

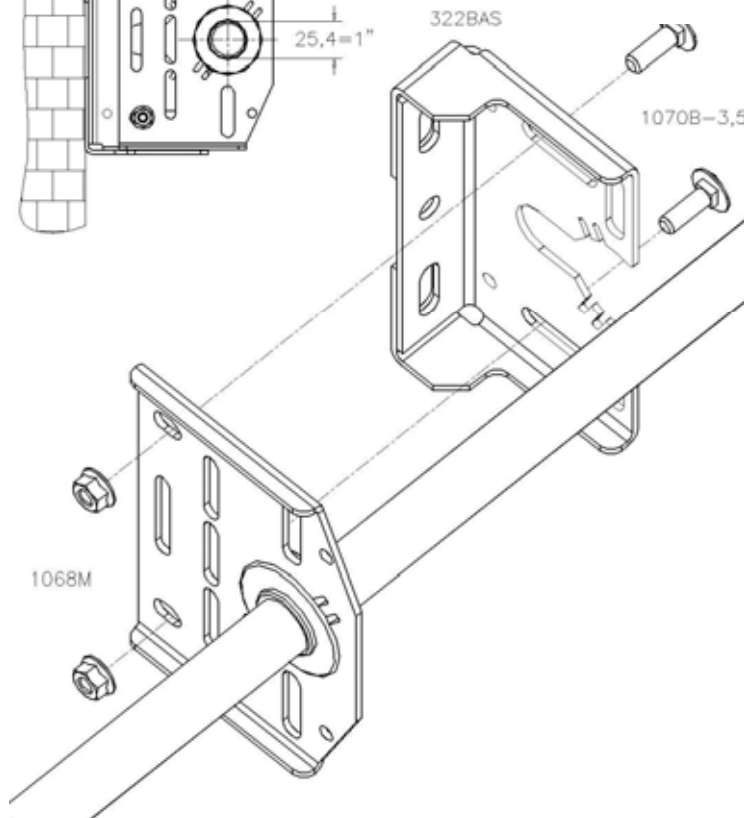
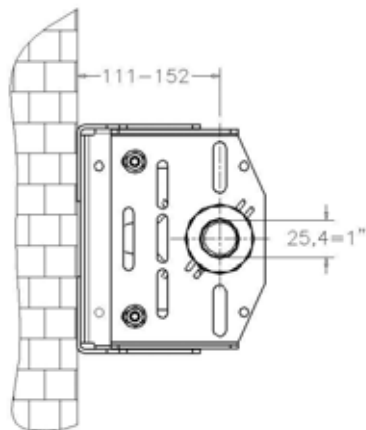
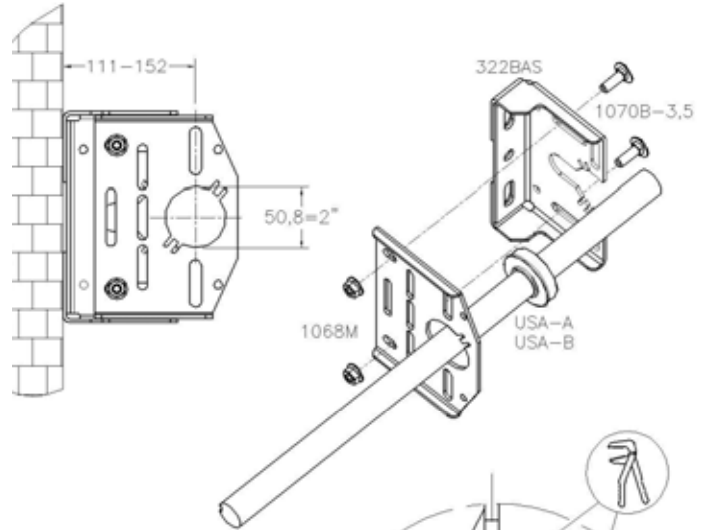


320-4 etc.

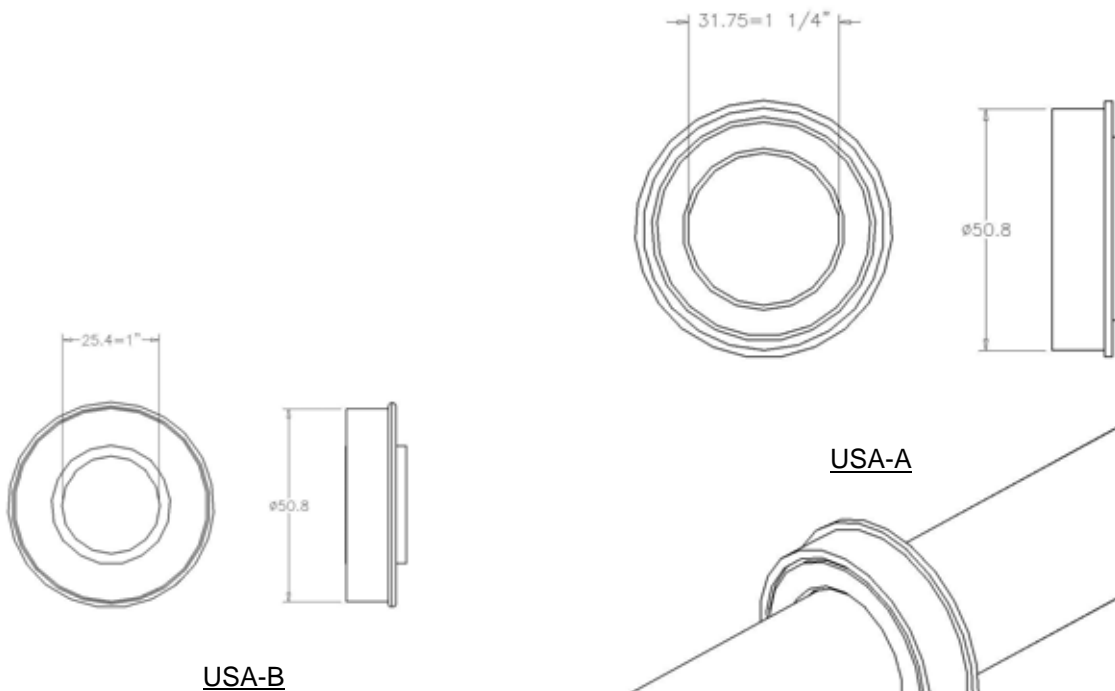
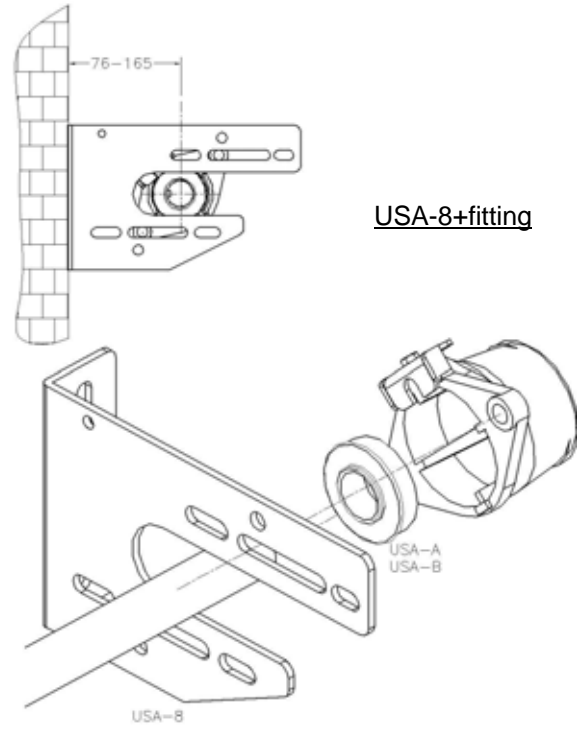
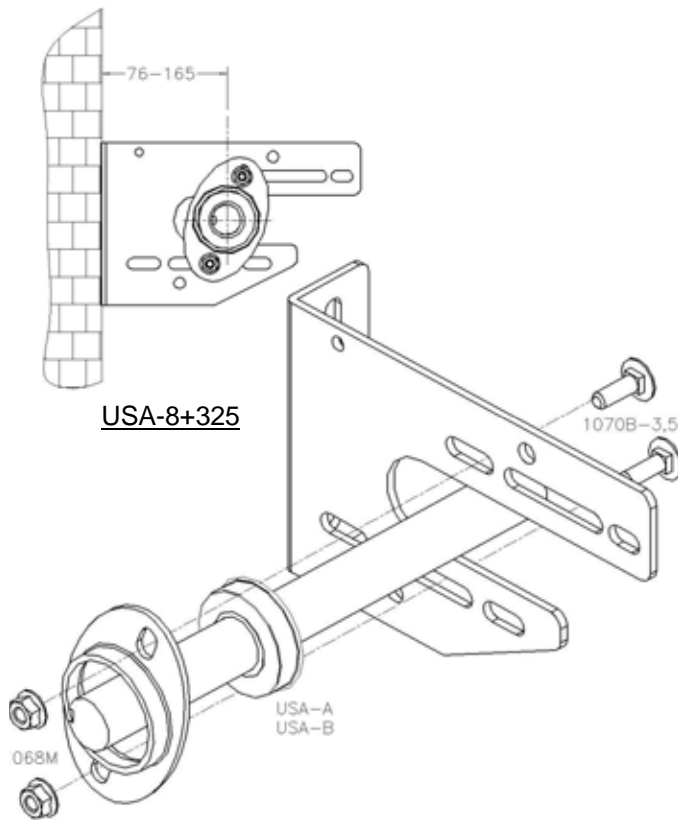


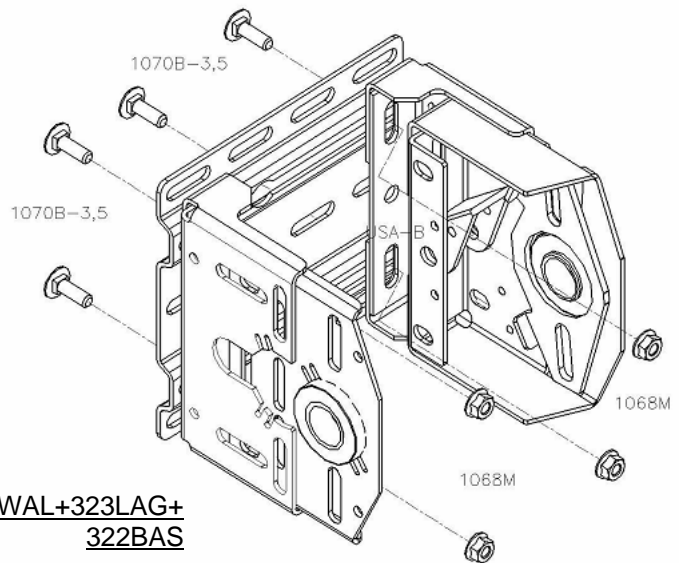
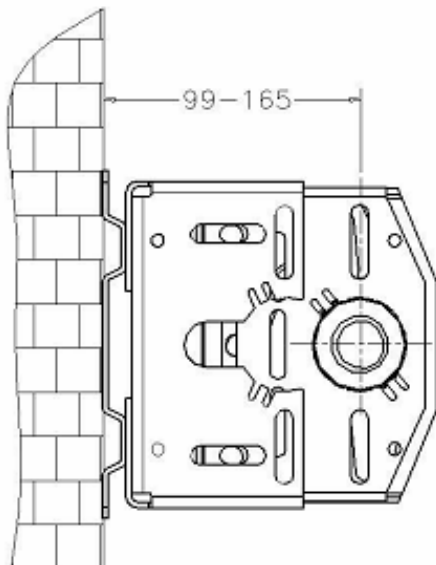


323LAG



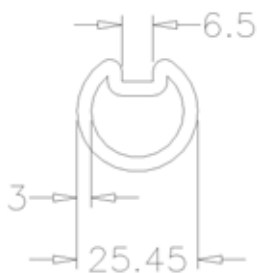
323LAG-B





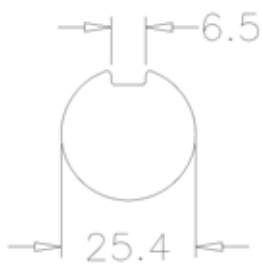
321WAL+323LAG+  
322BAS

### 13. SHAFTS



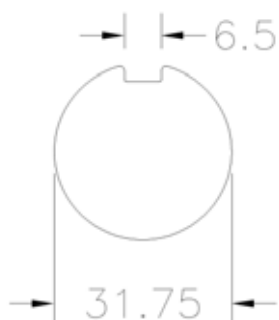
#### KEY-WAYED TUBE (1")

Article code 705GB-.....



#### KEY WAYED SOLID, 1"

Article codes  
702K-.... (black)  
702....Z (galvanised)



#### KEY WAYED SOLID SHAFT, 1 1/4"

Article code 699-....Z

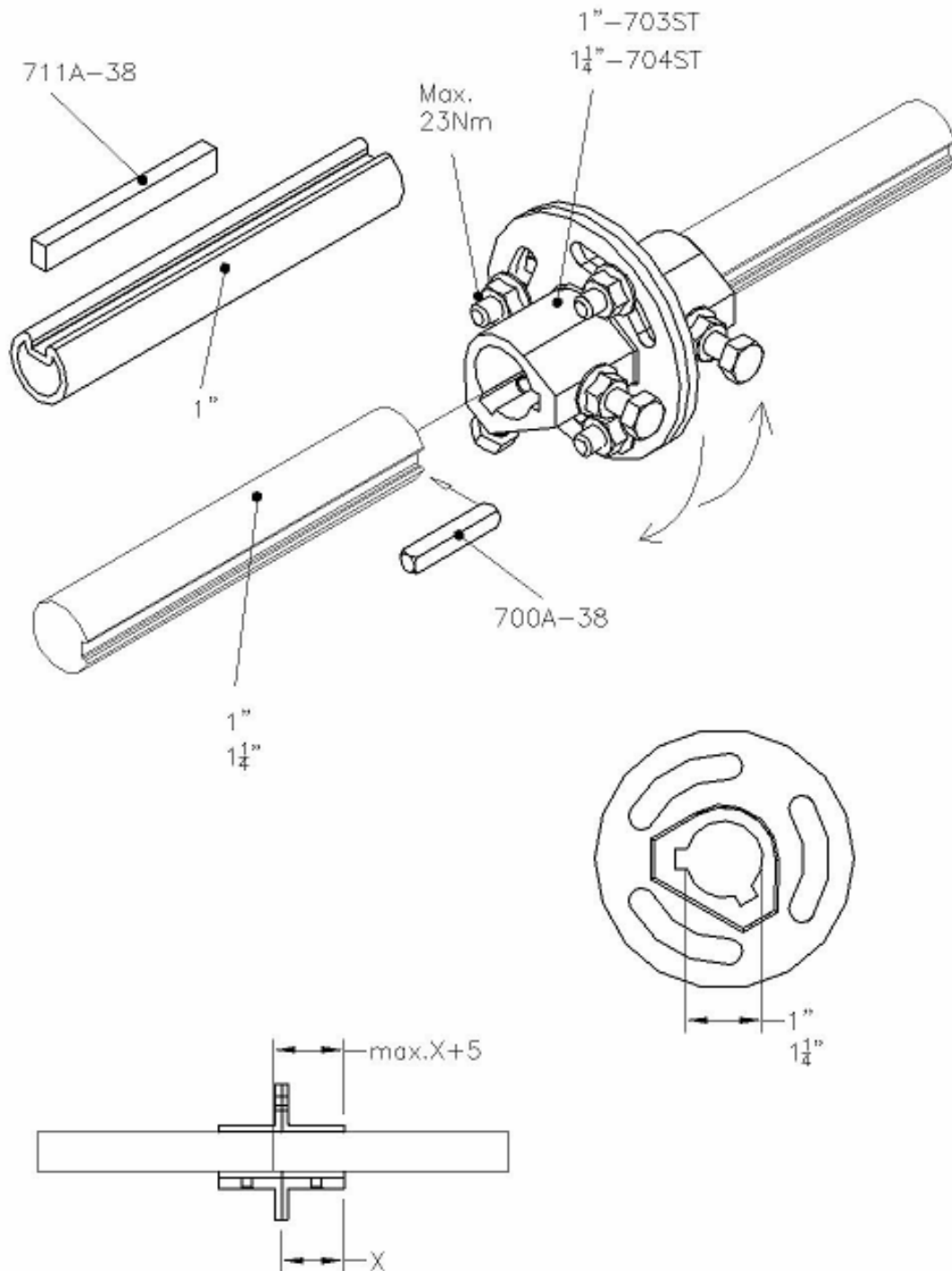


14. SPRING BREAKING DEVICE (SBD)  
670LH/RH, 675LH/RH, 675LH/RH-5/4

Please see separate manual 670 spring breaking devices.

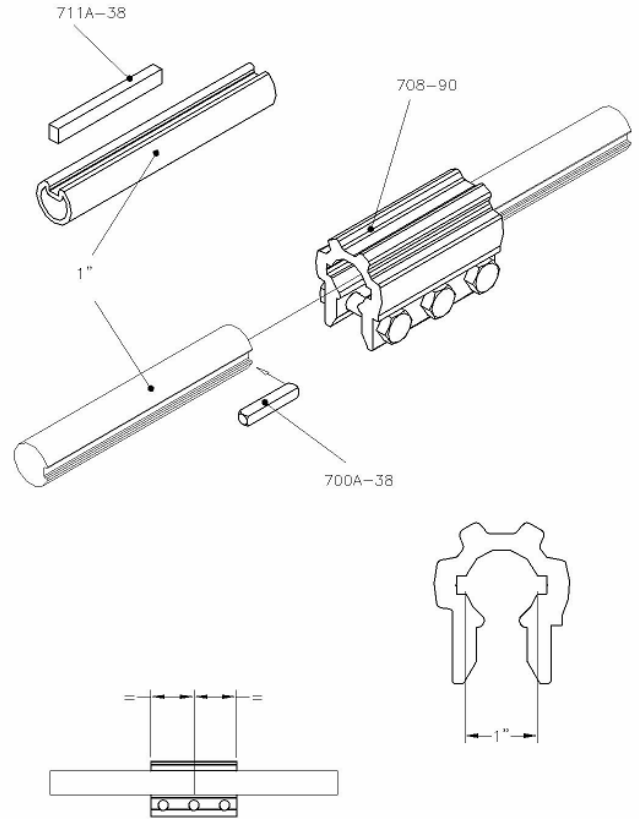
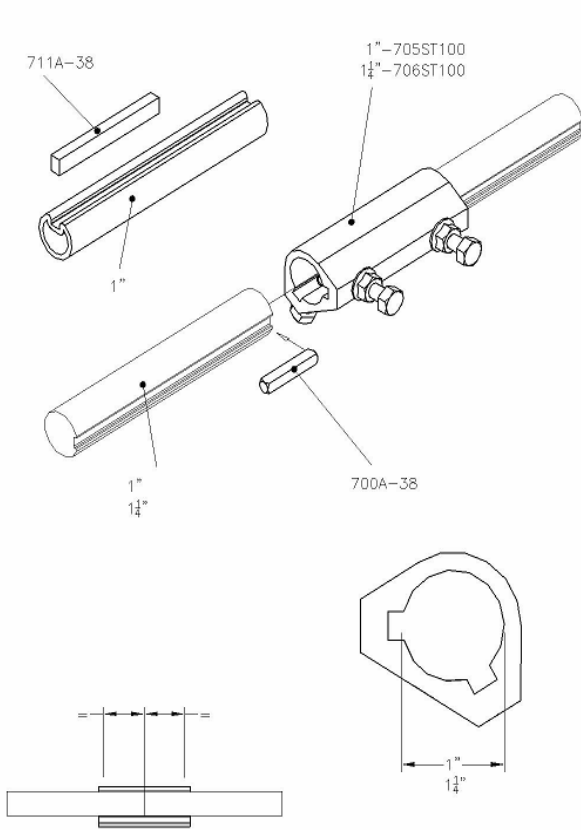


## 15. COUPLERS 703ST, 704ST. ADJUSTABLE COUPLER



## 705ST100, 706ST100 FIXED COUPLER

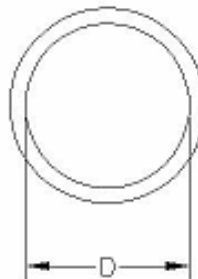
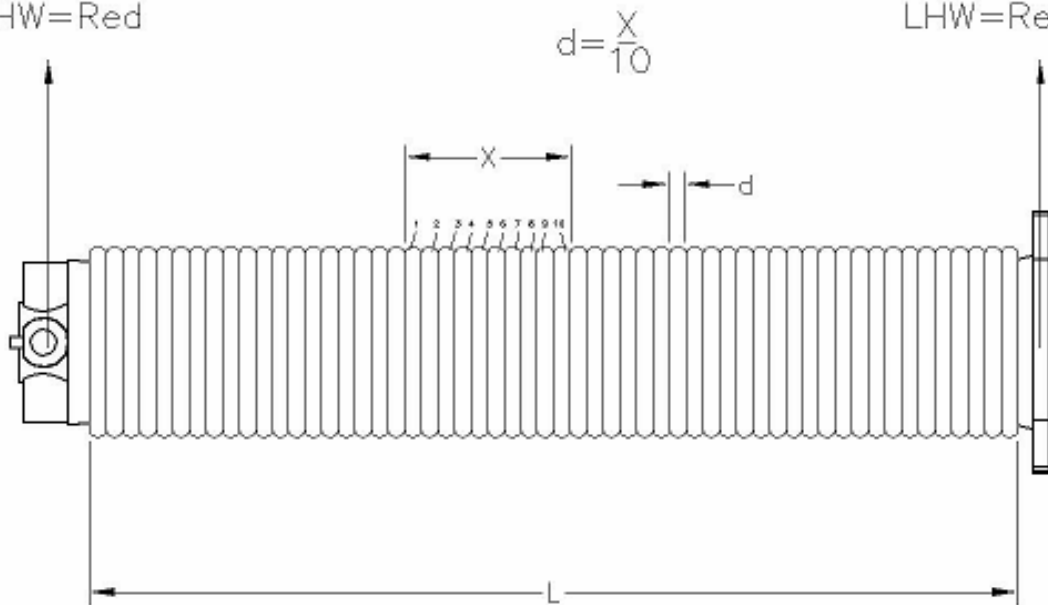
## 708-90, FIXED COUPLER



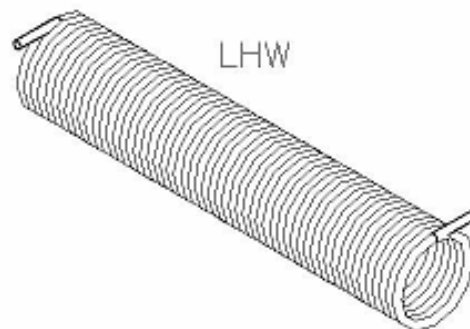
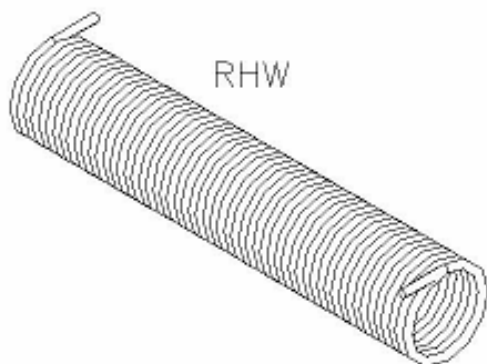
## 16. TORSION SPRINGS

RHW=Black  
LHW=Red

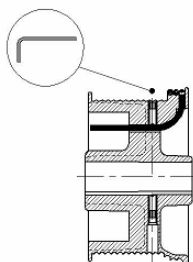
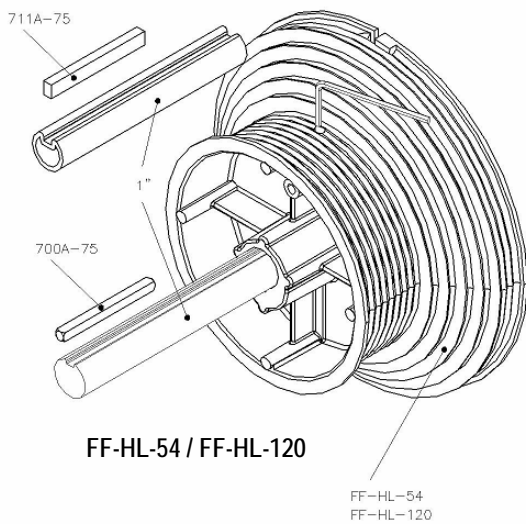
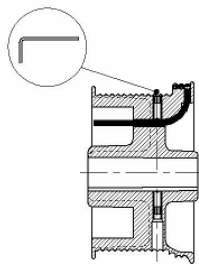
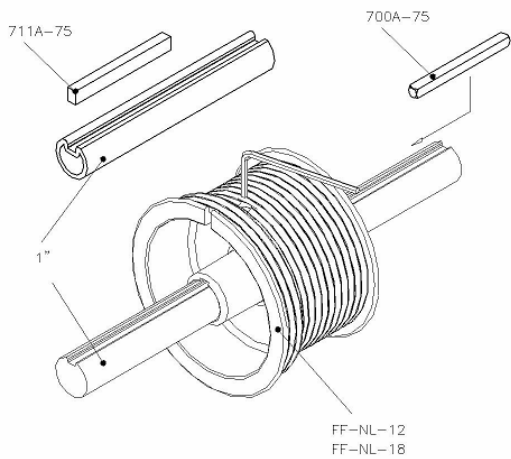
RHW=Black  
LHW=Red



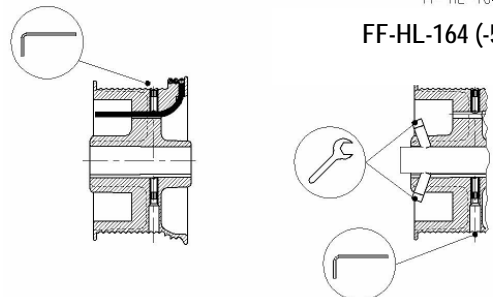
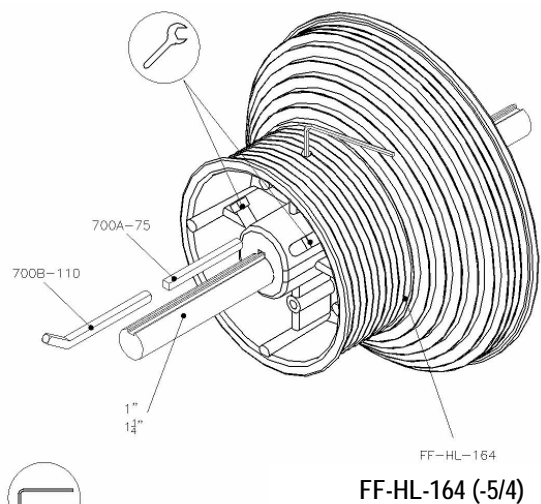
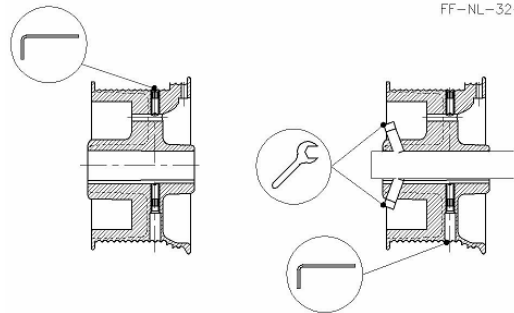
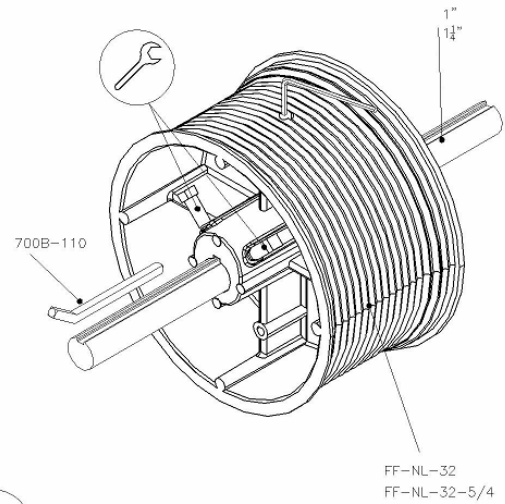
	<u>D</u>
2"	51mm
2 5/8"	67mm
3 3/4"	95mm
6"	152mm

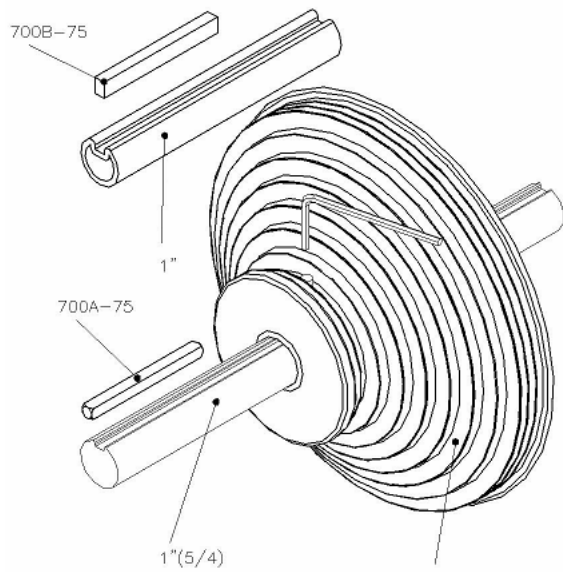


## 17. CABLE DRUMS FF-NL-12, FF-NL-18

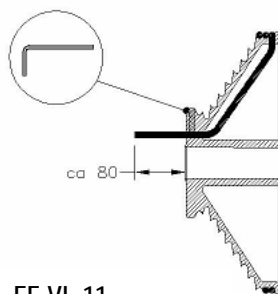


## FF-NL-32 (-5/4)

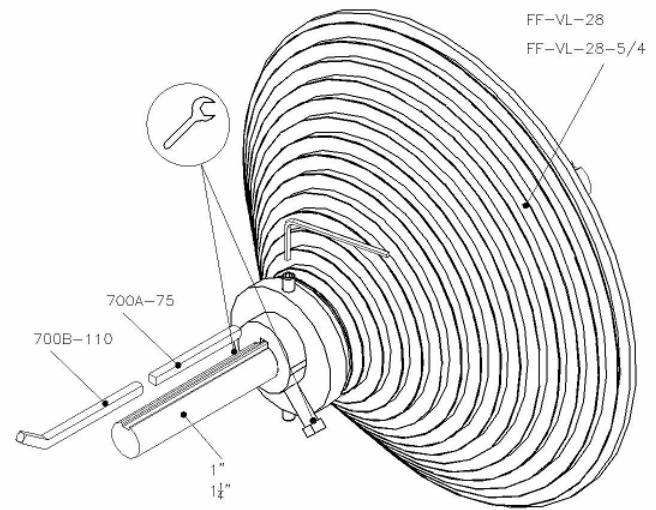




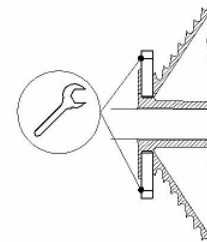
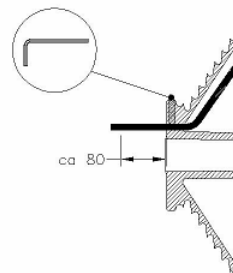
FF-VL-11  
FF-VL-18  
FF-VL-18-5/4



FF-VL-11  
FF-VL-18 (-5/4)

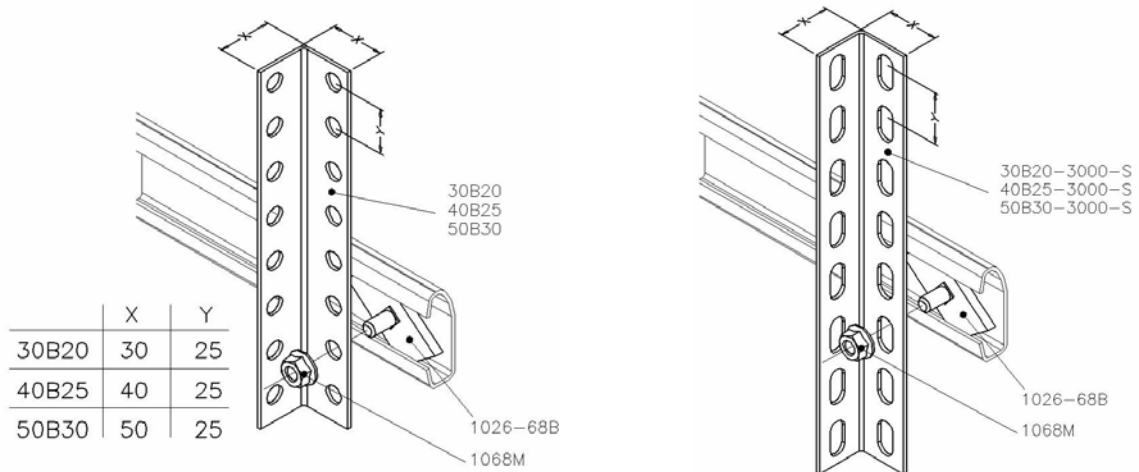


FF-VL-28  
FF-VL-28-5/4

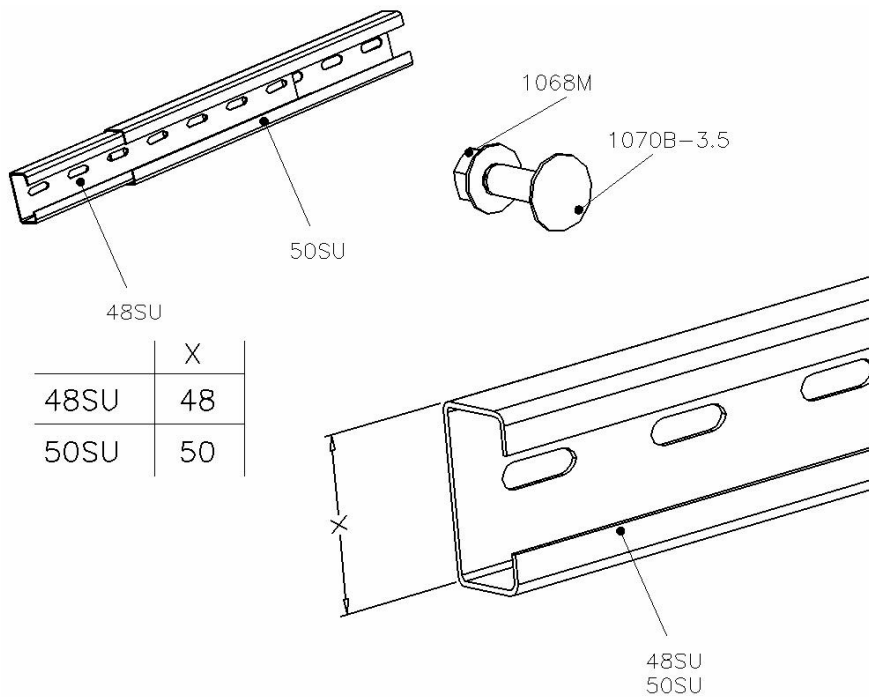


FF-VL-28  
FF-VL-28 (-5/4)

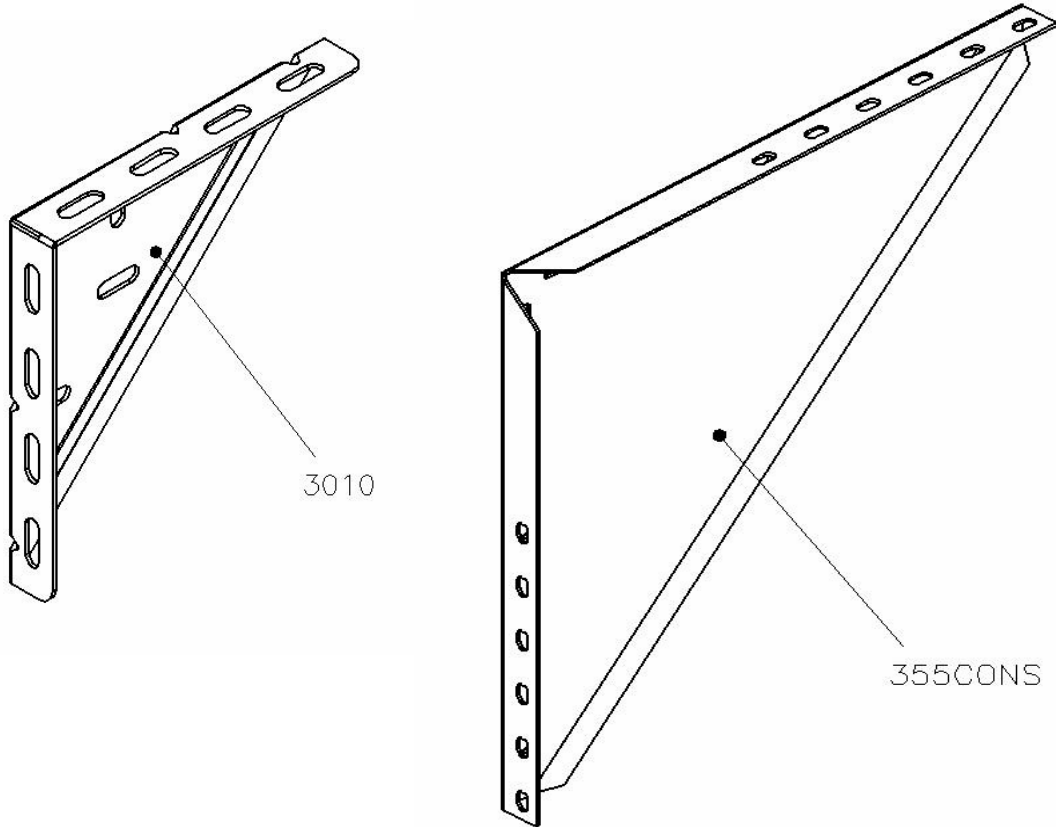
## 18. SUSPENSION SYSTEMS



### 48SU, 50SU



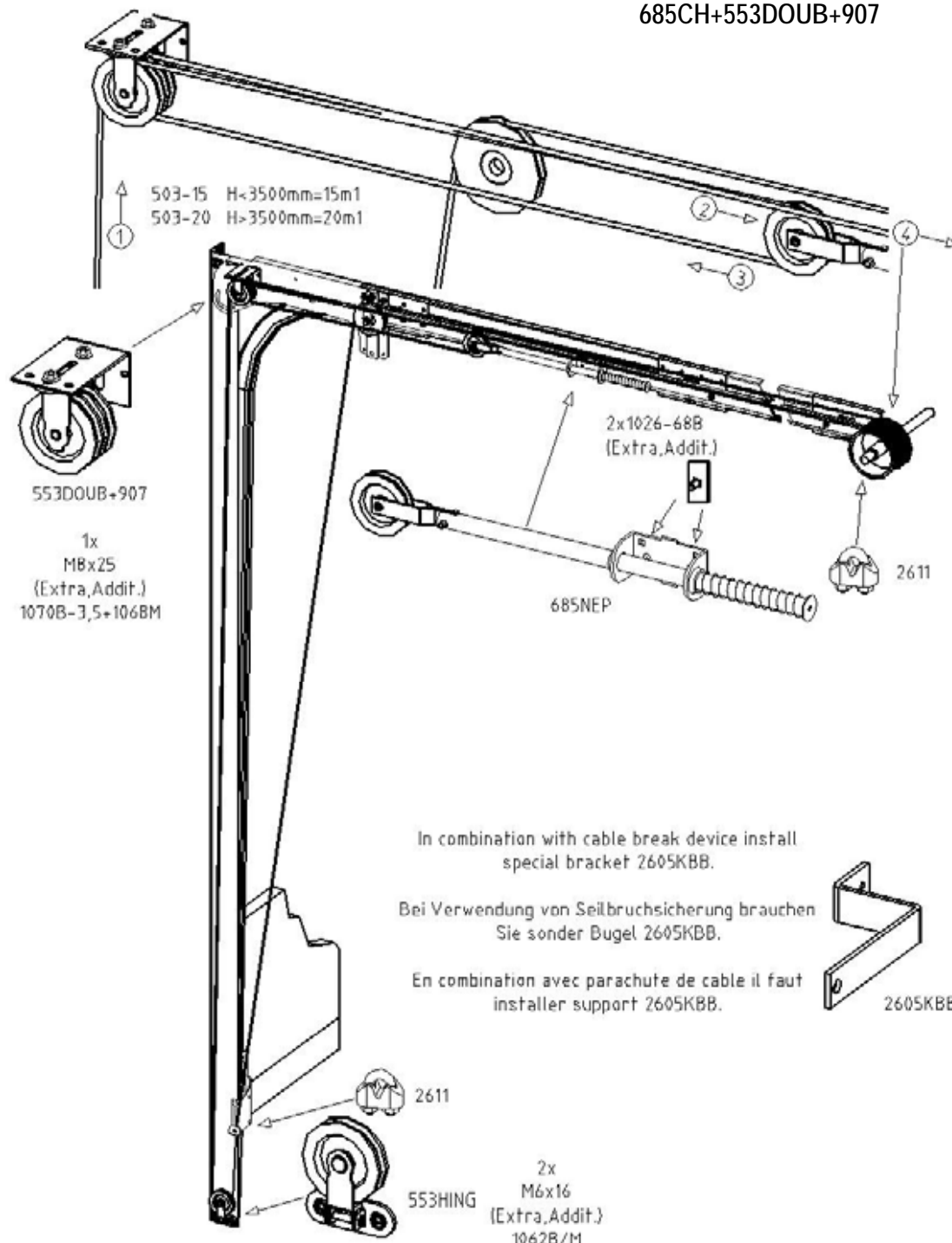
19. TRIANGULAR PLATE

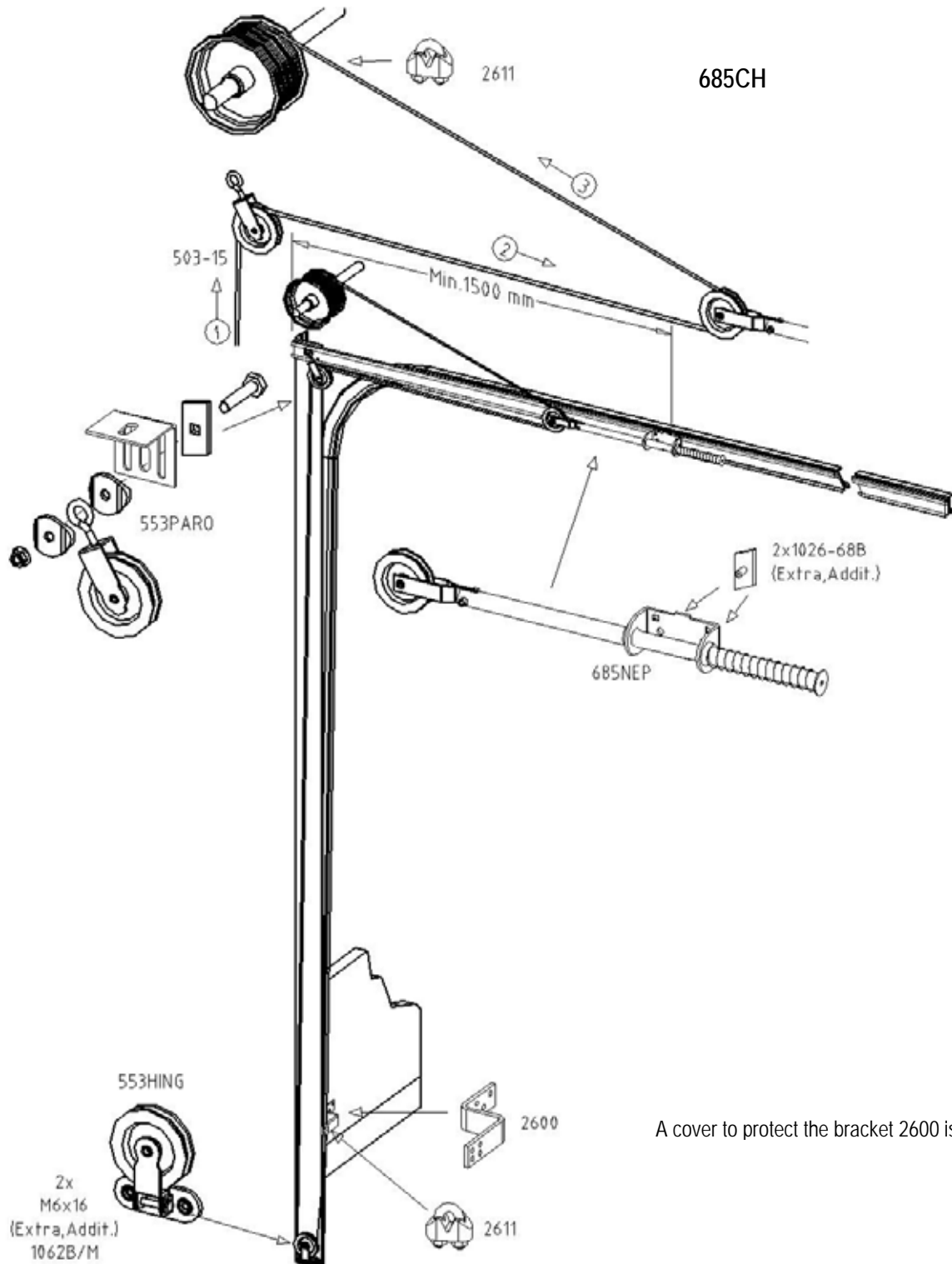




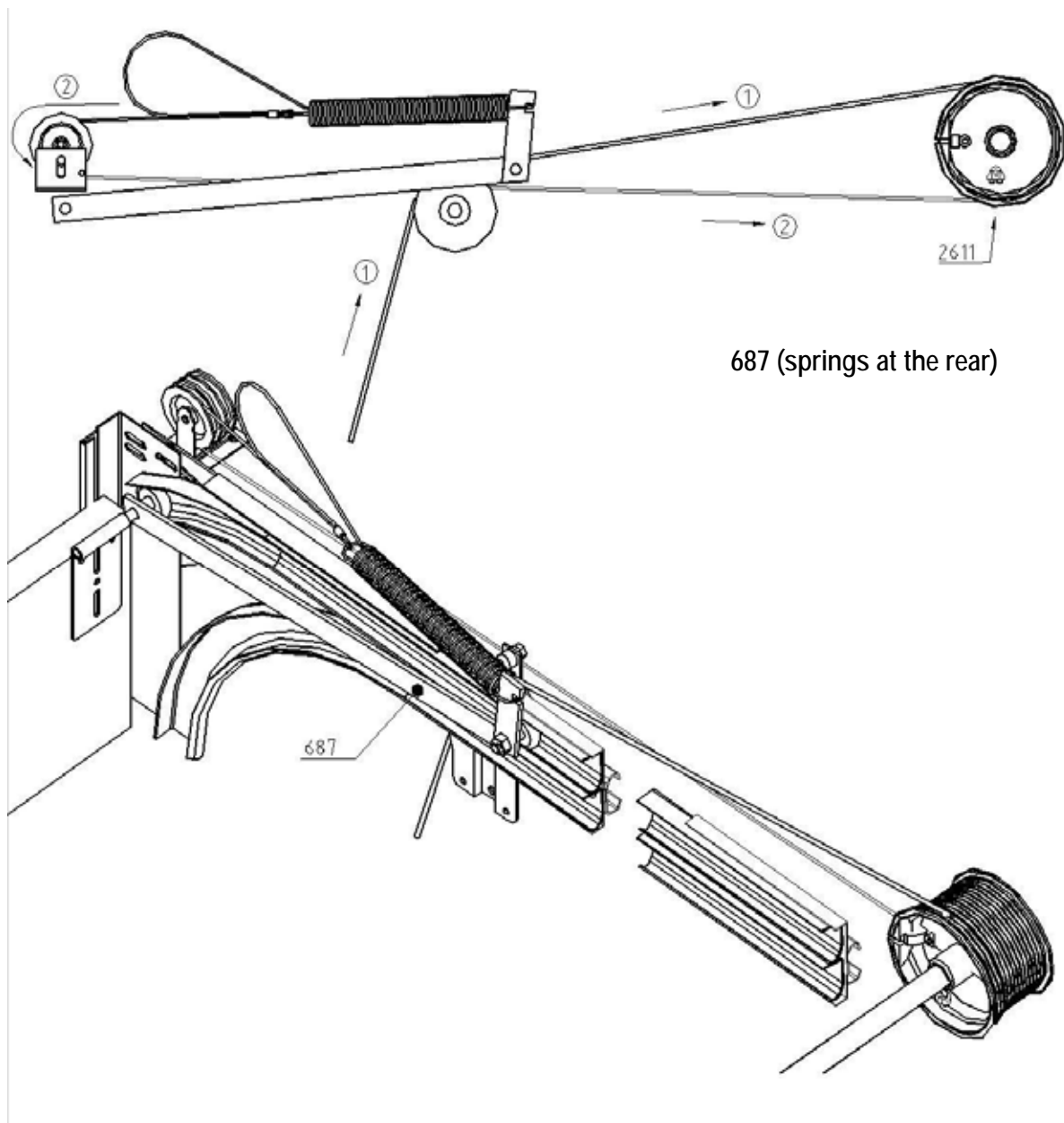
## 20. CABLE TENSIONING SETS

685CH+553DOUB+907

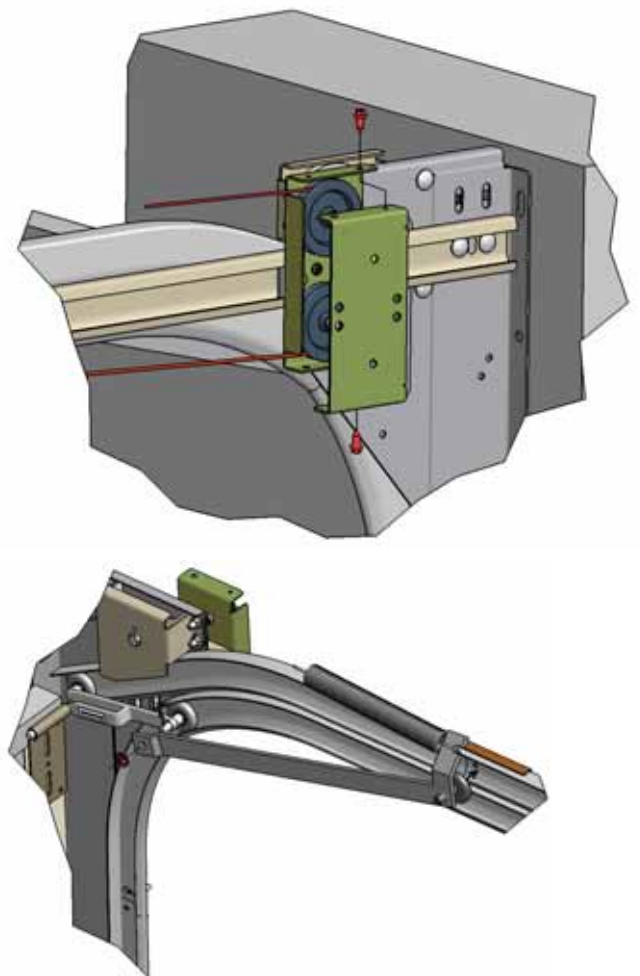
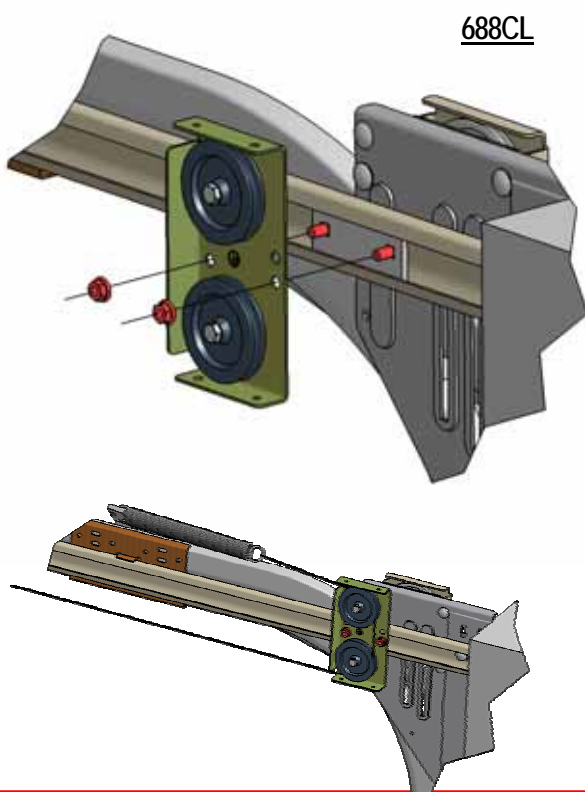
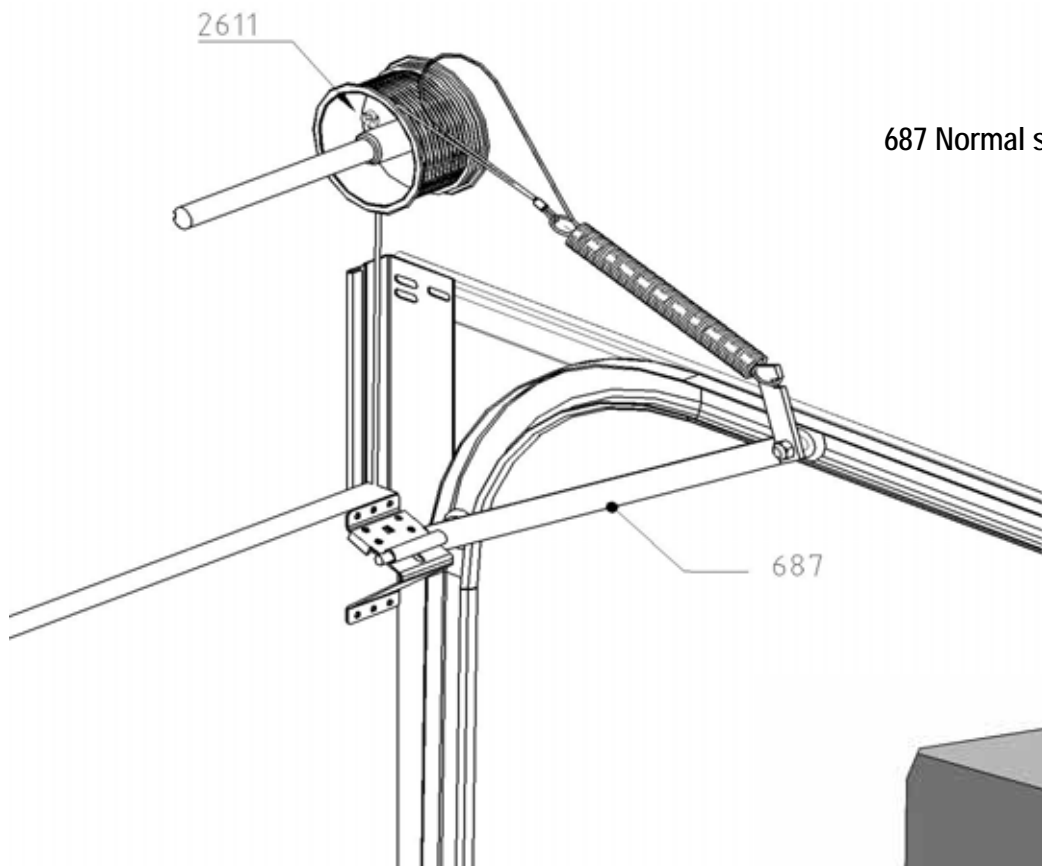




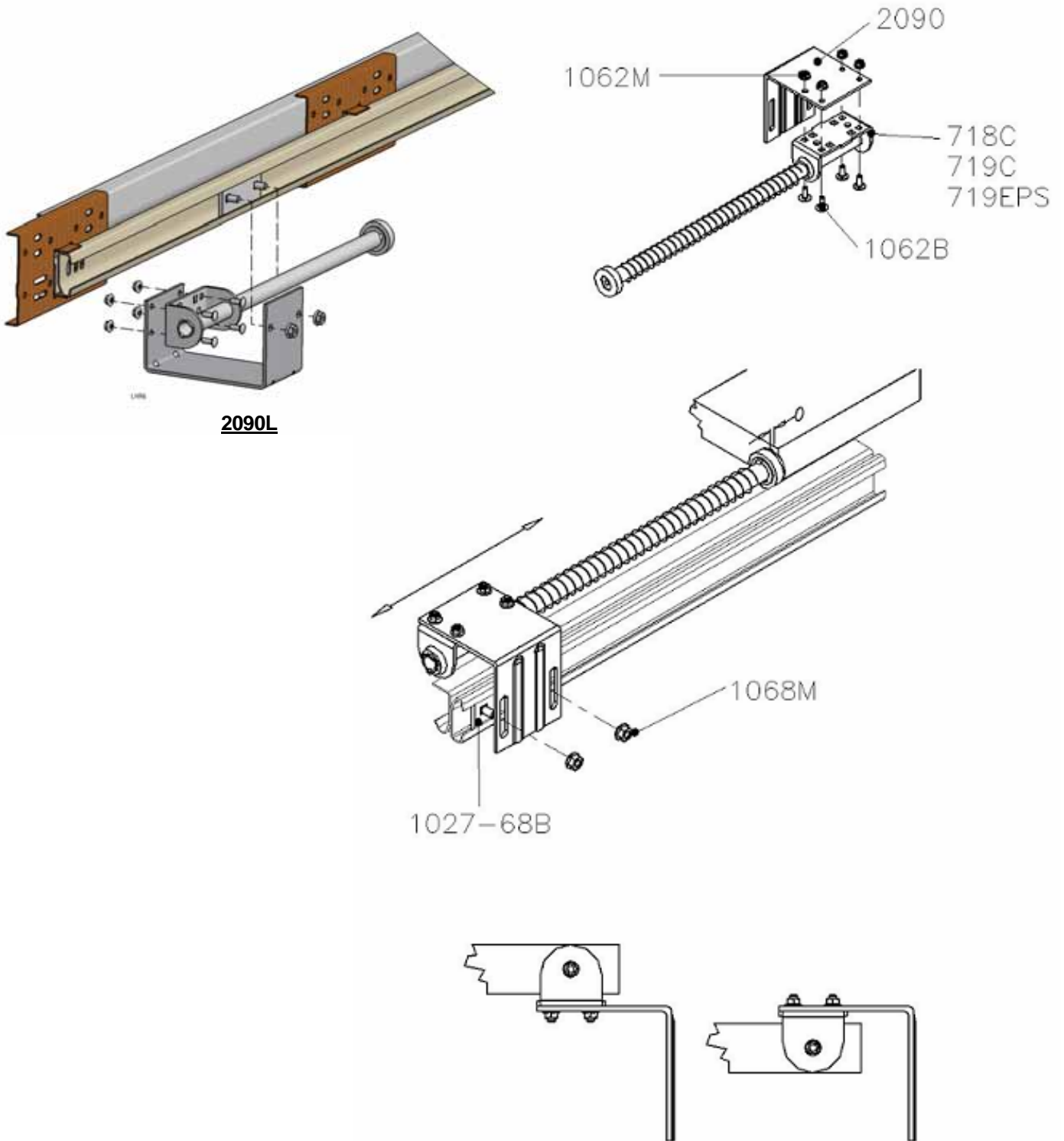
A cover to protect the bracket 2600 is required.



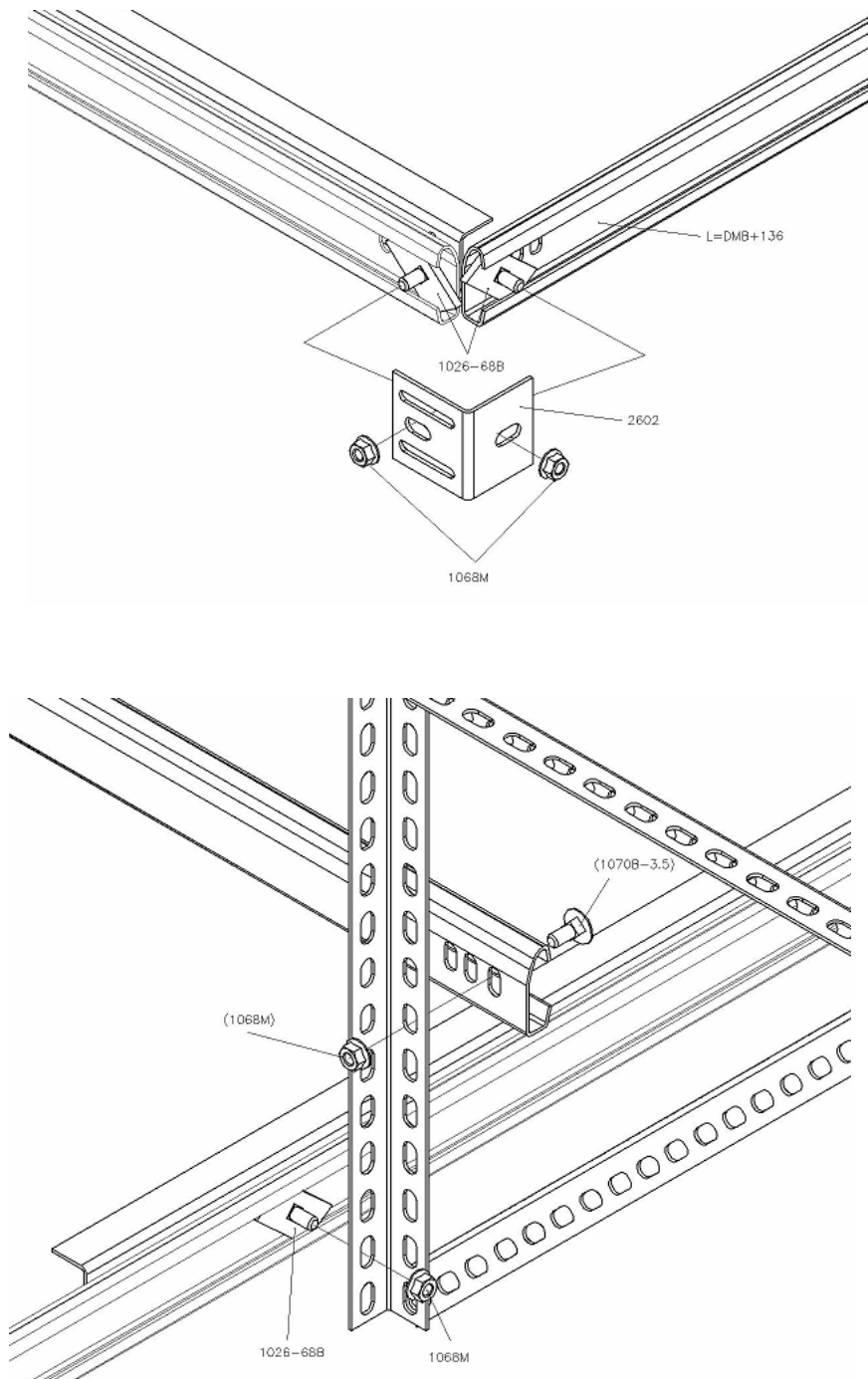
687 (springs at the rear)



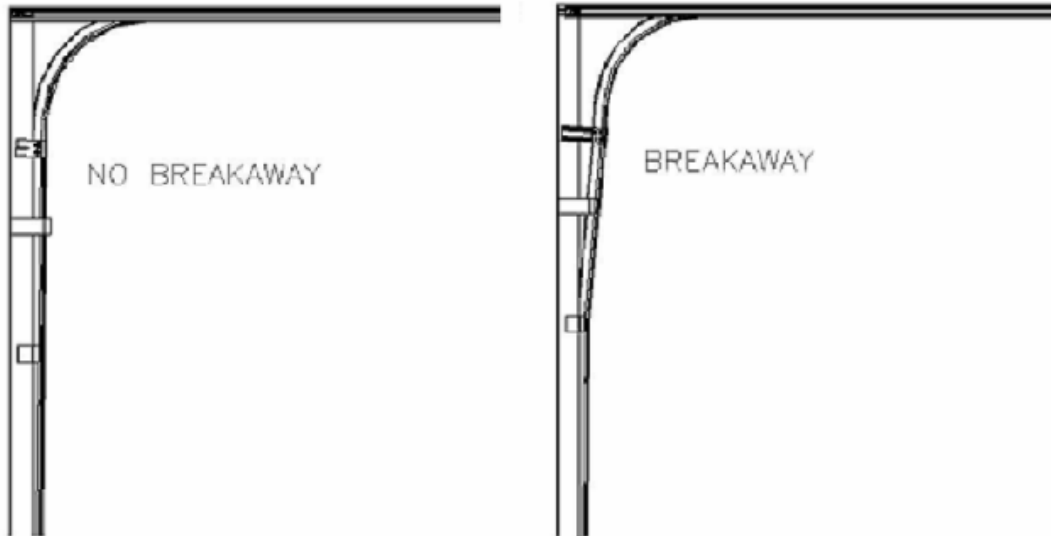
## 21. SPRING BUMPERS



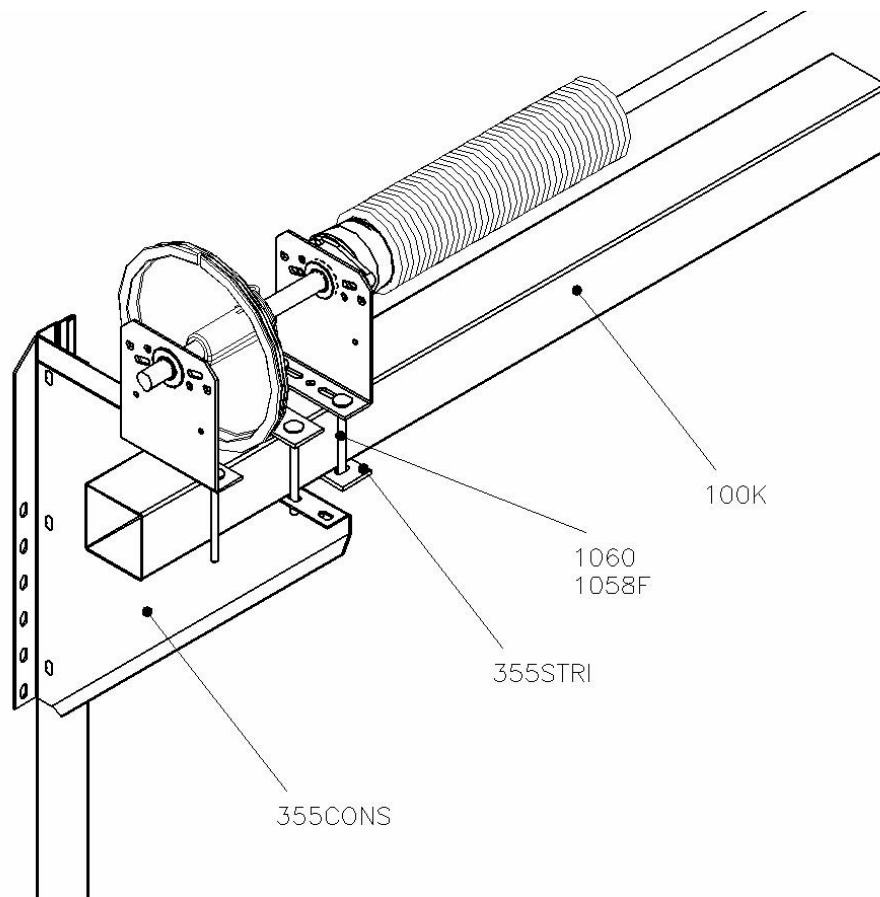
## 22. HORIZONTAL CONNECTION TRACK



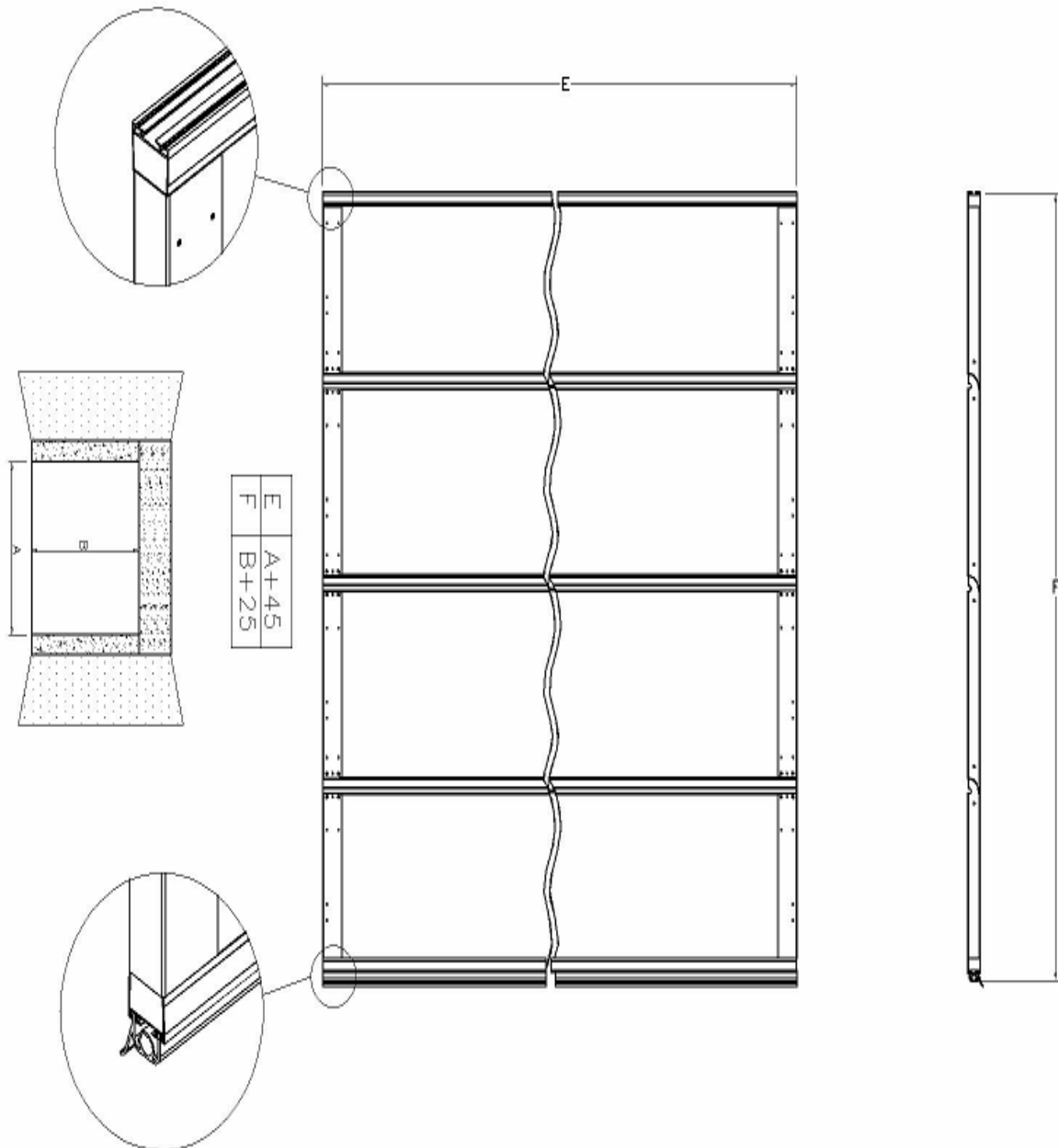
## 23. BREAK AWAY



## 24. HORIZONTAL SPRING CONSTRUCTION



## 25. PANELPRODUCTION





## 26. DISMANTLING OF THE OVERHEAD DOOR



### ATTENTION! WARNING!

To dismantle an existing overhead door, a number of precautions must be taken. For the safety of all concerned pay heed to the warnings and instructions given below! If in doubt, contact your supplier.

Dismantling should only be carried out by experienced fitters. This manual is not suitable for d.i.y. purposes or for use by trainee fitters.

This manual only describes the installation/dismantling of hardware for overhead doors and as such must be supplemented with instructions for any additional components.



### CAUTION !

Torsion springs and bottom brackets are under high tension. Exercise at all times great caution. Use properly fitting and maintained tension irons (see drawing).

### STEP 1. De-tensioning the torsion spring(s)



Start dismantling of the door by closing the door and securing its movement with a clamp on the vertical track.

First the tension on the torsions springs and cable has to be released. Do this by following these instructions :

- 1 Insert the 1<sup>st</sup> tensioning iron fully into the tensioning aperture.
- 2 Take over the tension of the spring with this tensioning iron.
- 3 Loosen the bolts in the tensioning plug and remove the key.
- 4 Turn the 1<sup>st</sup> tensioning iron in the direction required.
- 5 Insert the 2<sup>nd</sup> tensioning iron fully into the next tensioning aperture.

- 6 Take over the tensioning of the spring from the 1<sup>st</sup> tensioning iron with the 2<sup>nd</sup> tensioning iron.
- 7 Remove the 1<sup>st</sup> tensioning iron from the aperture.
- 8 Turn the 2<sup>nd</sup> tensioning iron a quarter turn in the direction required.
- 9 Insert the 1<sup>st</sup> tensioning iron fully into the tensioning aperture.
- 10 Take over the tensioning of the spring from the 2<sup>nd</sup> tensioning iron with the 1<sup>st</sup> tensioning iron.
- 11 Repeat steps 4 through 10 until all tension is released.
- 12 Remove the last tensioning iron.

**STEP 2.** Disconnect the electrical operator. Follow any instructions given in the separate manual of the operator.

**STEP 3.** Loosen the cable drums and remove the keys. Act carefully, there might be some tension left on the cable. Check if the cable is slack. Remove the cable by disconnecting it from the bottom bracket and cable drum.

**STEP 4.** Dismantle the horizontal track construction.

**STEP 5.** Remove the panels one by one from the vertical track construction, starting with the top panel. Do this by loosening the hinges and rollers first.

**STEP 6.** Remove the shaft construction from the lintel, after you have dismantled the E-operator from the shaft. If the shaft is divided and connected with a coupler, first disconnect the coupler and carefully remove both halves of the shaft system.



Attention ! Watch out for parts that might slide of the shaft, such as cable drums, bearings or keys.

**STEP 7.** Remove vertical tracks and angles from the building construction.

**STEP 8.** Make sure that you remove all the parts and panels in an environment kindly way. Check with your local authorities where and how you can leave this as carbage.



FOR ANY DETAILS ON THESE DISMANTLING INSTRUCTIONS, WE REFER TO THE INSTALLATION CHAPTERS OF THIS MANUAL WHERE DRAWINGS AND DETAILS ARE DISPLAYED.

TROUBLESHOOTING :

## *What should I check if the door is not balanced properly?*

When a door is not well in balance, then it is necessary to check first the following details :

### Is the given information correct :

- weight of the door leaf (including hardware)
- is the division of the weight equal on each panel, or are there panels with a different weight than the others, for instance by the application of different panels (glass, pass door with heavy profiles).

### Were the correct parts supplied and fitted?

Especially the drums and springs are important :

- correct dimensions supplied ?

### Is the door properly installed?

- horizontal tracks really horizontally and not with inclination.
- for High Lift doors : shaft on the correct height? Otherwise the cable length is not correct and the door is badly balanced.

### Were modifications made afterwards ?

- check if any changes were made during the fitting, or if a pass door was fitted later, or any reinforcement profiles fitted etc.

## **WHAT TO DO AFTER SPRING BREAK OR CABLE BREAK?**

***NB! Also make sure to instruct the user about this!***

After spring breaking the door will be stopped by the 670LH/RH or 675LH/RH spring break device. The end user must contact immediately a qualified overhead door mechanic. The spring breaking device is a so called "one-shot" device. After it has acted, it must be replaced, together with springs, spring pulgs, shafts and all other damaged components. The door has to be inspected thouroughly.

We refer to the separate manual for the 670/675 spring break devices on our website:

[www.flexiforce.com](http://www.flexiforce.com) / downloads / manuals.

After cable breaking, the door will be stopped by the second cable, which is designed to be strong enough to hold the weight of the door. Again, qualified overhead door mechanics must inspect the door and replace the cables and CBD or bottom brackets together with all possibly damaged components, such as: roller carriers,

rollers, etc. In case of a serious damage of the bottom panel and/ or end caps, these 2 components should be replaced as well. The determination if a component should be replaced is the responsibility of the installer. Please contact the supplier in case of any doubt.

The door should be inspected thouroughly after every accident to check if there are any other damages that should be repaired. For example, the following components must be replaced as well: hinges, track sets, construction of the left and right corner plate in case of LHR.

## PANEL-HINGE OVERVIEW

### Overview industrial panels <> Flexi-Force hinges

Panel	Intermediate hinge	Side hinge		Endcaps
ADK panels	450HZ50	450RZ-ED		
Bremet Monowall	450HZ	450CZ		
Bremet Secuwall	420HZ+10RES	420CZ+10RES		
Devokon 42mm and 50mm	450HZ	450CZ		
Kingspan/ Apco fingersafe	423HZ	423CZ+10R		
Ryterna	450HZ	450CZREV		
Tecsedo	450HZ	450CZ		
Tekla	450HZ+10	450CZ+10REV		
Thyssen fingersafe	450HZ+10	450CZ+10REV		
Thyssen non-fingersafe	450HZ	450CZ		
Ward 80mm	450HZ	450CZ		

## MAINTENANCE AND REPLACEMENT OF PARTS INDUSTRIAL OVERHEAD DOORS

An overhead door should be maintained and checked regularly to ensure safe operation and use. This is described in the EN-norms.

### GENERAL:

- 1 Torsion springs, brackets and other components which are attached to the springs and cables, are under extreme tension. If not handled properly, injuries or damages might occur!  
**So, working on these components may only be carried out by qualified overhead door mechanics!**
- 2 Replacement of broken or wearied components should always be done by qualified overhead door mechanics.
- 3 When checking the door, always disconnect the electrical main power supply. Make sure that it is blocked against re-engaging without you knowing it.

### REGULAR MAINTENANCE:

#### After installation:

- |  |          |
|--|----------|
| 1. Grease running part of the tracks         | MECHANIC |
| 2. Grease the bearings of the rollers        | MECHANIC |
| 3. Grease the shafts of the rollers          | MECHANIC |
| 4. Grease the bearings of the shaft          | MECHANIC |
| 5. Grease the hinge pins                     | MECHANIC |
| 6. Grease the lock                           | MECHANIC |
| 7. Protect the panels with carwax            | USER     |
| 8. Grease the rubbers slightly with vasaline | USER     |

#### After 3 months:

- |  |          |
|--|----------|
| 1. Complete inspection visually                | MECHANIC |
| 2. Check balancing system and adjust if needed | MECHANIC |

#### Every 6 months:

- |  |      |
|--|------|
| 1. Check side seals on damage or wear and tear             | USER |
| 2. Check top seal on damage or wear and tear               | USER |
| 3. Check bottom seal on damage or wear and tear            | USER |
| 4. Grease all above mentioned points                       | USER |
| 5. Clean the panels  | USER |
| 6. Clean the windows (only water wash, do not use cloth)   | USER |
| 7. Remove dirt and waste from the door or its surroundings | USER |

#### Every 12 months (or after every 7500 cycles):

- |  |          |
|--|----------|
| 1. Check or test the fixation of the springs to the fittings       | MECHANIC |
| 2. Check the balance of the door and adjust if needed              | MECHANIC |
| 3. Check the cables for damage or wear and tear                    | MECHANIC |
| 4. Check the cable connection points on drums and bottom bracket   | MECHANIC |
| 5. Check the roller on wear and free moving space                  | MECHANIC |
| 6. Check the hinges on breaking and wear and tear                  | MECHANIC |
| 7. Check the panels on damage, wear and roust                      | MECHANIC |
| 8. Check the spring breaking device acc. to instructions in manual | MECHANIC |
| 9. Check the manual operation of the door                          | MECHANIC |
| 10. Check cable pulleys on wear and tear                           | MECHANIC |
| 11. Check panel sealing on wear and tear                           | MECHANIC |
| 12. Check cable break device on functioning                        | MECHANIC |
| 13. Check position of hinge pin of CBD                             | MECHANIC |
| 14. Check bolt and screw connections of spring break device        | MECHANIC |

15. Check connections of the pawl wheel	MECHANIC
16. Check side seals on damage or wear and tear	MECHANIC
17. Check bottom seal on damage or wear and tear	MECHANIC
18. Check top seal on damage and wear and tear	MECHANIC
19. Check cable tension set on functioning	MECHANIC
20. Grease the springs	MECHANIC
21. Grease bearings of rollers	MECHANIC
22. Grease running parts of the tracks	MECHANIC
23. Grease the bearings of the shafts	MECHANIC

**After two years (or after every 15000 cycles):**

1. Grease all the above mentioned points	MECHANIC
2. Check or test the fixation of the springs to the fittings	MECHANIC
3. Check the balance of the door and adjust if needed	MECHANIC
4. Check the cables for damage or wear and tear	MECHANIC
5. Check the cable connection points on drums and bottom bracket	MECHANIC
6. Check the roller on wear and free moving space	MECHANIC
7. Check the hinges on breaking and wear and tear	MECHANIC
8. Check the panels on damage, wear and roust	MECHANIC
9. Check the spring breaking device acc. to instructions in manual	MECHANIC
10. Check the manual operation of the door	MECHANIC
11. Check side seals on damage or wear and tear	MECHANIC
12. Check top seal on damage or wear and tear	MECHANIC
13. Check bottom seal on damage or wear and tear	MECHANIC
14. Check the shaft on wear and tear or damage	MECHANIC
15. Check the bottom bracket on wear and tear and damage	MECHANIC
16. Check the connection of the drum to the shaft (keys!)	MECHANIC
17. Check and re-fix the bolt of the coupler	MECHANIC
18. Check the connections of the track system	MECHANIC
19. Check the suspension of the door to the lintel and ceiling	MECHANIC
20. Grease the springs	MECHANIC
21. Check bolt and screw connections of spring break device	MECHANIC
22. Check connections of the pawl wheel	MECHANIC
23. Check cable tension set on functioning	MECHANIC
24. Grease springs	MECHANIC
25. Grease bearings of rollers	MECHANIC
26. Grease running parts of the tracks	MECHANIC
27. Grease the bearings of the shafts	MECHANIC
28. Grease the hinge pins	MECHANIC
29. Grease the lock	MECHANIC
30. Grease the shafts of the rollers	MECHANIC

**After spring break:**

- ✓ Replace springs and spring break device
- ✓ Check the shaft on damage and replace if necessary

See instructions on page XX of this manual and look into the manual of the spring breaking device 670/675 (download manual from internet [www.flexiforce.com](http://www.flexiforce.com))

**NB! Do not touch any connection or part of the door after spring break. Wait until qualified mechanics arrive at the scene!**

**After cable break:**

- ✓ Replace cable with connections
- ✓ Replace cable break device
- ✓ Check tracks and service or replace

See instructions on page 33 of this manual and look into the manual of the cable break device 440-600etc. (download manual from internet [www.flexiforce.com](http://www.flexiforce.com))

**NB! Do not touch any connection or part of the door after cable break. Wait until qualified mechanics arrive at the scene!**

Use for greasing : PTFE or SAE20  
Use for cleaning : Soft soap with water. Do not use aggressive soap or cloth.