

INDUSTRIAL SECTIONAL DOORS

LOGISTIC
SOLUTIONS



ASSEMBLY MANUAL

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NOTE

This manual must be read carefully before assembling doors in order to:

- examine the layout of components of a sectional door, whether manual or motorised
- mount the sectional door correctly
- receive instructions for correct maintenance, also for validity of the warranty
- be aware of the risks connected to assembly and use of the doors.

For correct assembly and efficient maintenance, the installer must comply with that stated in this manual and in the "Data sheets" book, which is an integral part of the manual.

When assembly has been completed, the installer must make note of the data given on the spring holder shaft in the maintenance manual:

- Serial number and or job order
- Type
- Opening cycle calculation
- Installer name
- Spring type: single or duplex.

Kopron declines all liability for the consequences deriving from the motorisations installed after installation of the original door with manual function: the assembly of motorised doors is, in fact, different to that of manually operated doors owing to several details linked to safety.

Our technical dept. is at your disposal for information or technical details that may be necessary:

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Telephone: +39 02 921521 - Fax: +39 02 92152920

Our company reserves the right to make any modifications to this manual deemed necessary for improvement of the product.

Check that the following packs are present in every delivery with relative references as illustrated below:

1

GUIDES UNIT

Made up from complete vertical, horizontal guides and template (where envisioned).

2

SPRING HOLDER SHAFT UNIT

Complete with springs, drums, cones, spring/s, joint, anti-breaking devices, screws and splines.

3

PANELS UNIT

Packaging in polythene and polystyrene.

4

ACCESSORIES BOX

With list of pieces, manual and spring holder shaft drawing.

5

MOTORISATION (optional)

Industrial door.

When several doors of the same type are purchased elements in the same category may be enclosed inside the same pack

The packs (guides unit, springs unit, panels unit) can be handled easily using fork lift trucks or transpallets, making sure that they are harnessed using suitably sized lifting devices (e.g.: textile slings or chains with accepted work angles) and sheets of polyester or rubber are placed on the support joints.

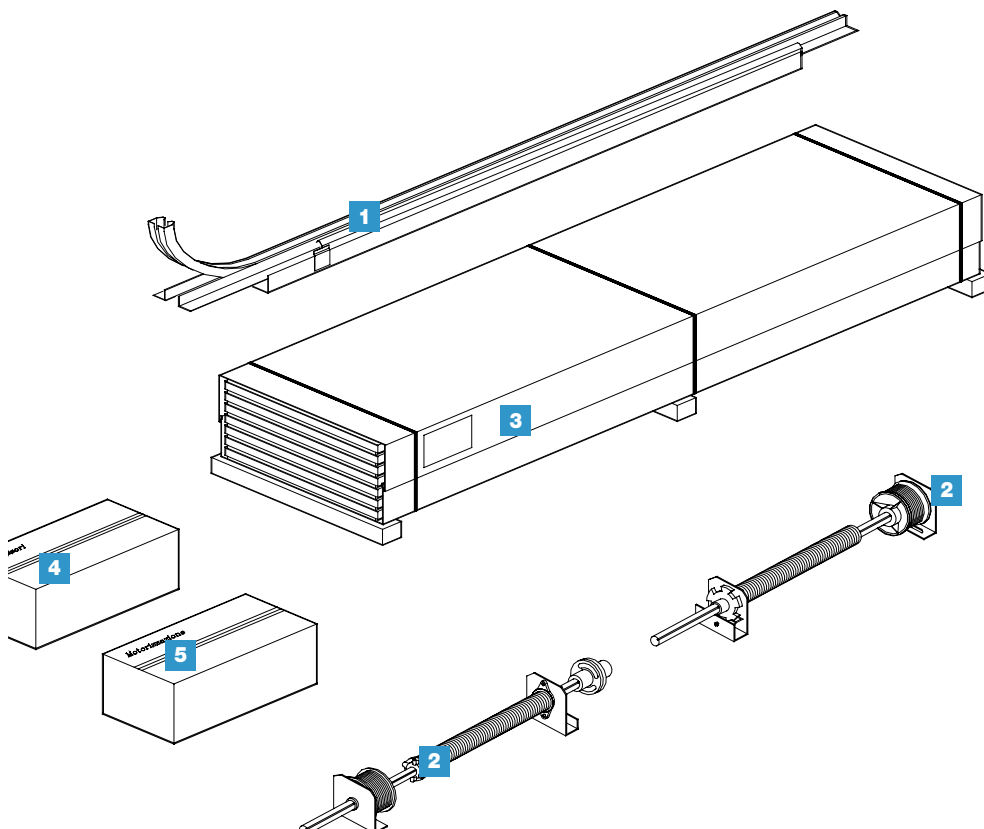
The net weight of the casing can be found on the packaging plate.

The elements relative to the motorisation are in easy-to-handle boxes.

It is recommended to:

- place the packs in a covered, dry place
- only use authorised companies for the disposal of waste materials, thus guaranteeing respect of the laws on this subject.

FIG 1



NOTE

HANDLING THE PACKS

REFERENCE LABELS

1



2



3



4



5



INTRODUCTION

LIST OF TOOLS AND EQUIPMENT RECOMMENDED FOR INSTALLERS FOR THE ASSEMBLY AND SET-UP OF SECTIONAL DOORS

WARNING

RECOMMENDED TOOLS AND EQUIPMENT

- Plumb-line, coloured thread for tracing, marker pens, pencils, spirit level and strike-off board.
- Drill complete with bits for steel.
- Percussion drill complete with $\varnothing$ 6, 8, 10, 12, 14 mm. bits.
- Screwing device.
- Large and small disc grinding wheel.
- Manual or electric lifting winch.
- Toolbox complete with: hammer, series of flat and cross head screwdrivers, set of hexagon wrenches, block clamps (at least two), normal clamps, pliers, 6, 8, 10, 12, 13, 14, 17 face spanners, sheet steel shears, flat and round files. 5 metre ruler, gauge.
- Riveting device with $\varnothing$ 4 mm. rivets.
- Saw for metal.
- Construction clamps.
- EEC-approved extensions with socket and plug, one measuring $l=50$ m and two measuring $l=10$ m with 230 v.
- EEC-approved extension with socket and plug $l=20$ m with 380 v.
- 230 v mobile adapters from industrial socket to civil socket.
- Work site mobile electric control board in compliance with Standards, with sockets, magnet circuit breaker switches, differential to be placed between the user's utilities and the power supply point on site.
- Scaffolding on wheels in compliance with Standards (work platform) suitable for the dimensions and type of door to be installed.
- Fixed ladder (min. 2 m) and extendable ladders $h=9$ m.
- Series of plugs suitable and dimensioned for the type of structure.
- Self-threading and cutting screws.
- Spring load equipment kit.
- All accident-prevention equipment: goggles, ear protection, helmet, gloves, safety belts, accident-prevention shoes, first-aid kit and anything else required for the prevention and signalling of risks in the work place.

Scrupulously respect the specific Standards regarding the plants and the work place:

Presidential Decree n° 547 dated 27-04-1955; Presidential Decree n° 303 dated 19-03-1956; Legislative Decree n° 626 dated 19-09-1994; Legislative Decree n° 494 dated 14-08-1996; law n° 46 dated 05-03-1990, etc. with respective updates and execution regulations.

Check that the measurements of the room coincide with those on the order confirmation and those stated on the packaging and there are no obstructions to installation (pipes, channels...).

Check that the material supplied corresponds with that described in the list of accessories, found inside the relevant box.

When manually operated doors are transformed into motorised doors by a central drive motor, the anchorage point of the motorisation arm must be suitably fixed to the casing using stay-bolts.

Any modifications or set-ups that may be necessary must be evaluated by skilled and expert staff.

Our technical dept. and the after-sales assistance are always at your disposal.

For KPS/SPEC, particular versions of the KPSIN-S-V types, the assembly layout of the spring holder shaft and, depending on the type of door, the relative layouts will all be supplied inside the accessory box. The installers must follow the instructions given in this manual with attention.

The sequence of operations given below must be followed for the correct assembly of all types of doors:

OPERATION 1

Assembly of guide units and vertical angulars

OPERATION 2

Assembly of horizontal guides (where envisioned)

OPERATION 3

Assembly of the spring support shaft

OPERATION 4

Preparation and assembly of panels

OPERATION 5

Assembly of lifting cables

OPERATION 6

Two-bladed spring loading

OPERATION 7

Check door balance

OPERATION 8

Accessories assembly

**BEFORE STARTING
ASSEMBLY****ATTENTION****WARNING**

TYPE

KPSIN

Standard sectional doors for civil and industrial buildings. It is used with minimum opening height (h) equal to 450 or 530 mm according to the dimensions.

KPSIS

Sectional door for industrial buildings. Allows maximum free span from the floor to the ceiling.

KPSIV

Full vertical lift sliding sectional door. Ideal for large openings and/or mainly industrial applications.

KPSIR

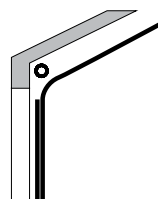
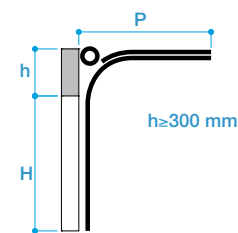
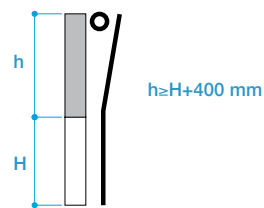
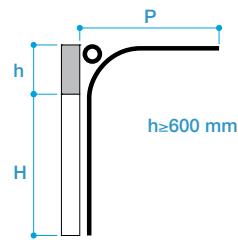
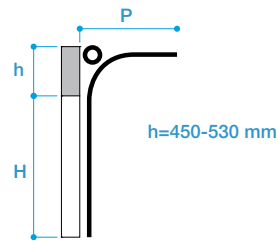
Sectional door for lowered opening (h). It is used for civil or industrial buildings.

KPS/SPEC

Sectional door for special applications. Where the door must slide according to the slope of the roof, obliged by particular construction details.

FIG 2

Manual door



Motorised door or with winch

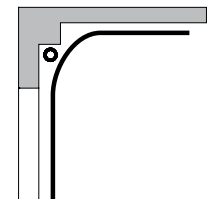
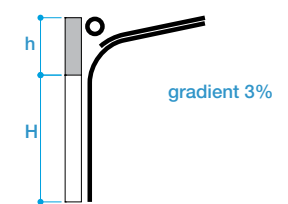
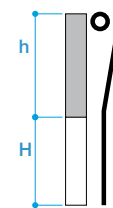
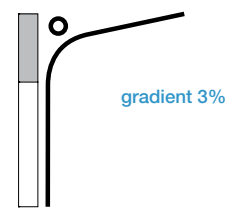
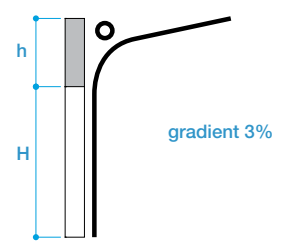
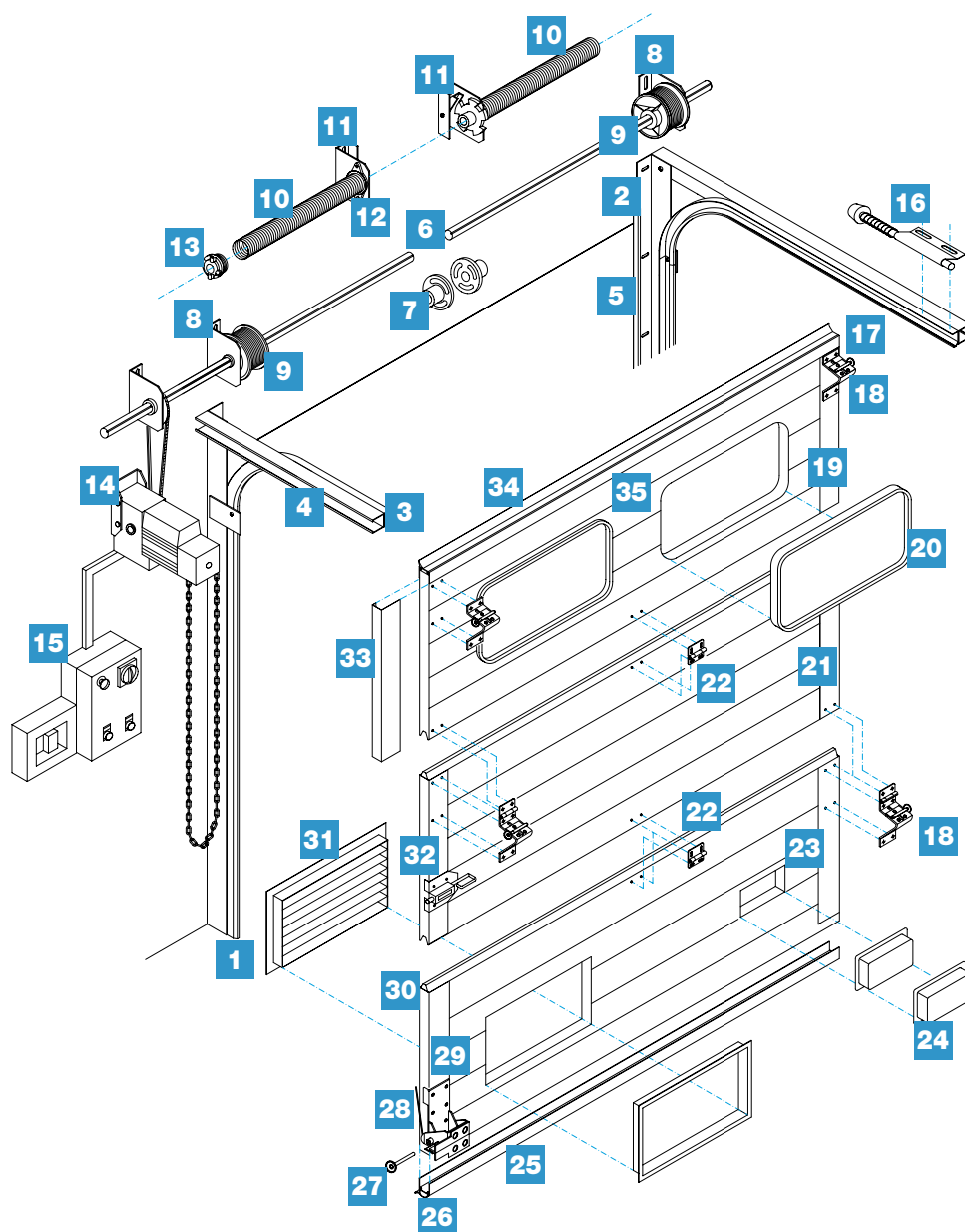


FIG 3



KEY

- 1 VERTICAL GUIDE
- 2 VERTICAL ANGULAR
- 3 HORIZONTAL GUIDE WITH CURVE
- 4 HORIZONTAL REINFORCEMENT
- 5 LATERAL GASKET
- 6 FULL OR HOLLOW MILLED SHAFTS
- 7 MILLED SHAFTS COUPLING JOINT
- 8 MILLED SHAFT SUPPORT BRACKET
- 9 DRUM
- 10 TWO-BLADED SPRING
- 11 SPRING ANTI-BREAKAGE DEVICE
- 12 FIXED CONE
- 13 LOADING CONE
- 14 MOTORISATION
- 15 CONTROL BOARD
- 16 SHOCK ABSORBER DEVICE
- 17 SHORT ROD WHEEL
- 18 WHEELS SUPPORT (BRACKET + BRIDGE)
- 19 UPPER PANEL
- 20 INSPECTION WINDOW
- 21 INTERMEDIATE PANEL
- 22 HINGE
- 23 BASE PANEL
- 24 LIFTING HANDLE
- 25 LOWER GASKET SUPPORT SECTION
- 26 LOWER GASKET
- 27 SHORT ROD WHEEL
- 28 LIFTING CABLE
- 29 ROPES SAFETY CATCH
- 30 BASE LATERAL BOX
- 31 AIRING GRID
- 32 CHAIN
- 33 LATERAL BOX
- 34 UPPER GASKET
- 35 UPPER GASKET SUPPORT SECTION

OPERATION 1

KPSIN-S-V-R TYPES POSITIONING OF INDUSTRIAL DOOR VERTICAL GUIDES

Use the appropriate supplied template to check the distance between the Right and Left guide (L+145).

ALL DOOR TYPES

Check that the floor is perfectly level.

Check the plumbing of the embrasures and the consequent plumbing of the vertical angulars.

Assemble the guide units, fixing them using the Rawplugs for concrete or brick walls or using self-threading and cutting screws for metal structures.

ASSEMBLY OF VERTICAL GUIDES

1

Plumb the vertical guides.

2

Check the level of the upper ends of the two vertical guides.

3

Block the vertical guides with the clamps.

4

Make a hole in the structure at every existing slot on the vertical guides.

5

Fix to the wall.

ASSEMBLY OF GUIDE UNITS AND VERTICAL ANGULARS

FIG 4

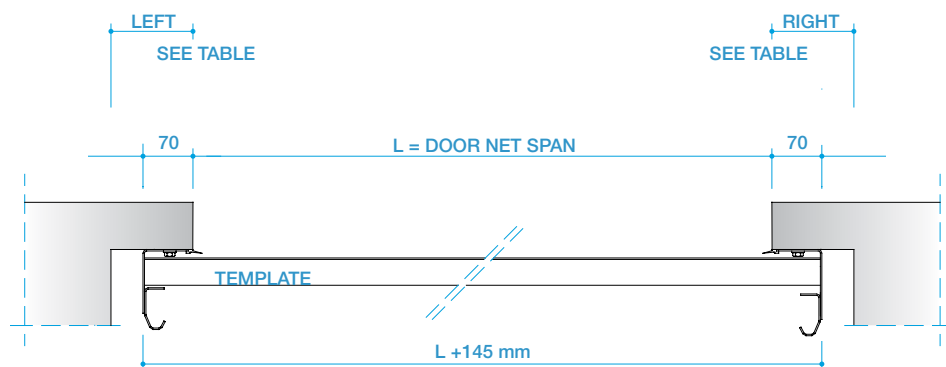


FIG 5

	MANUAL SECTIONAL DOOR		MOTORISED SECTIONAL DOOR
	LEFT	RIGHT	MOTORISED SIDE MINIMUM CLEARANCE
KPSIN	120	120	310
KPSIS	120	120	310
KPSIV	120	120	310
KPSIR	120	120	310
KPS/SPEC	TO BE DETERMINED DEPENDING ON THE DESIGN		

FIG 6

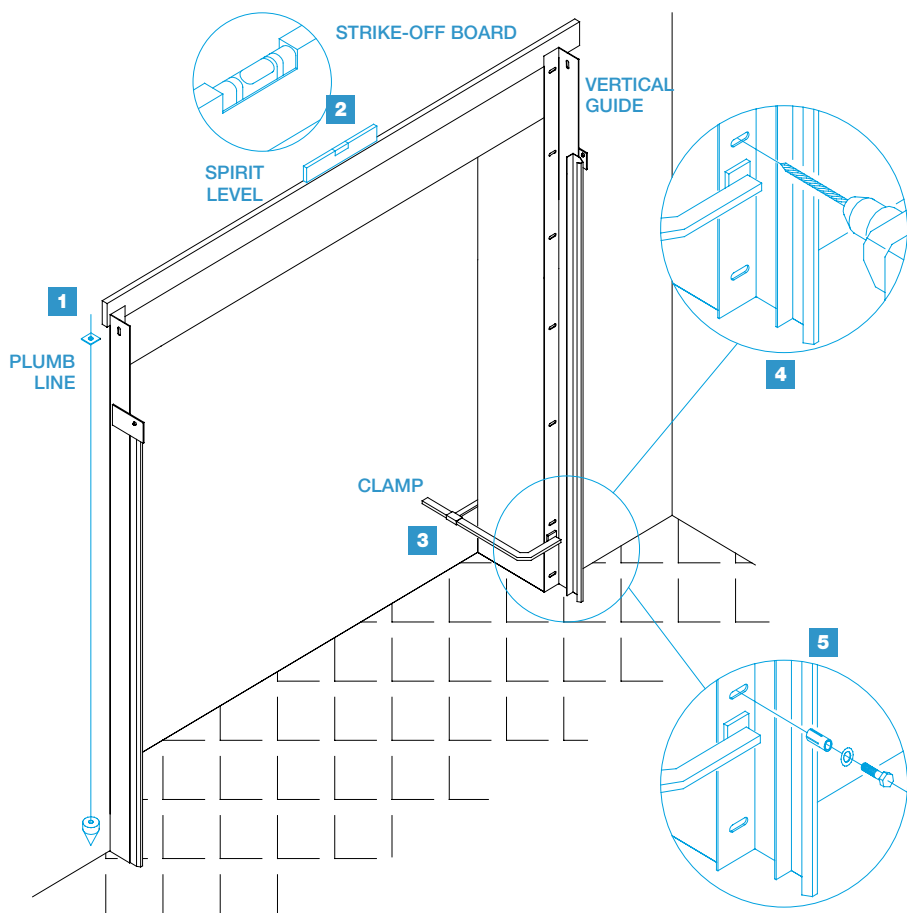
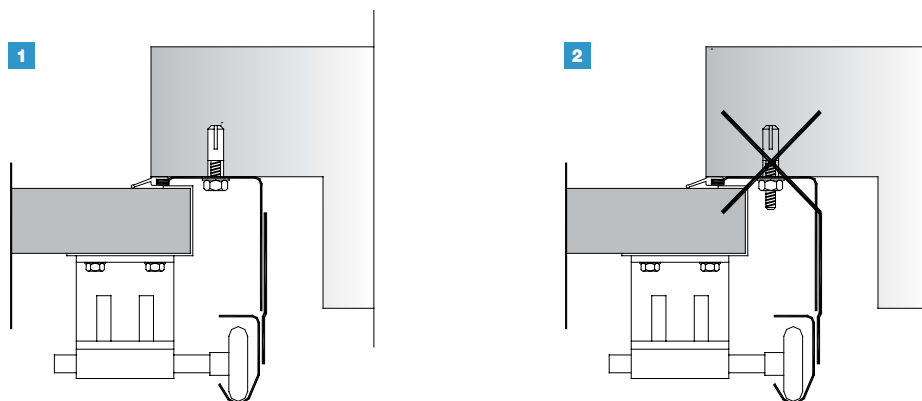


FIG 7

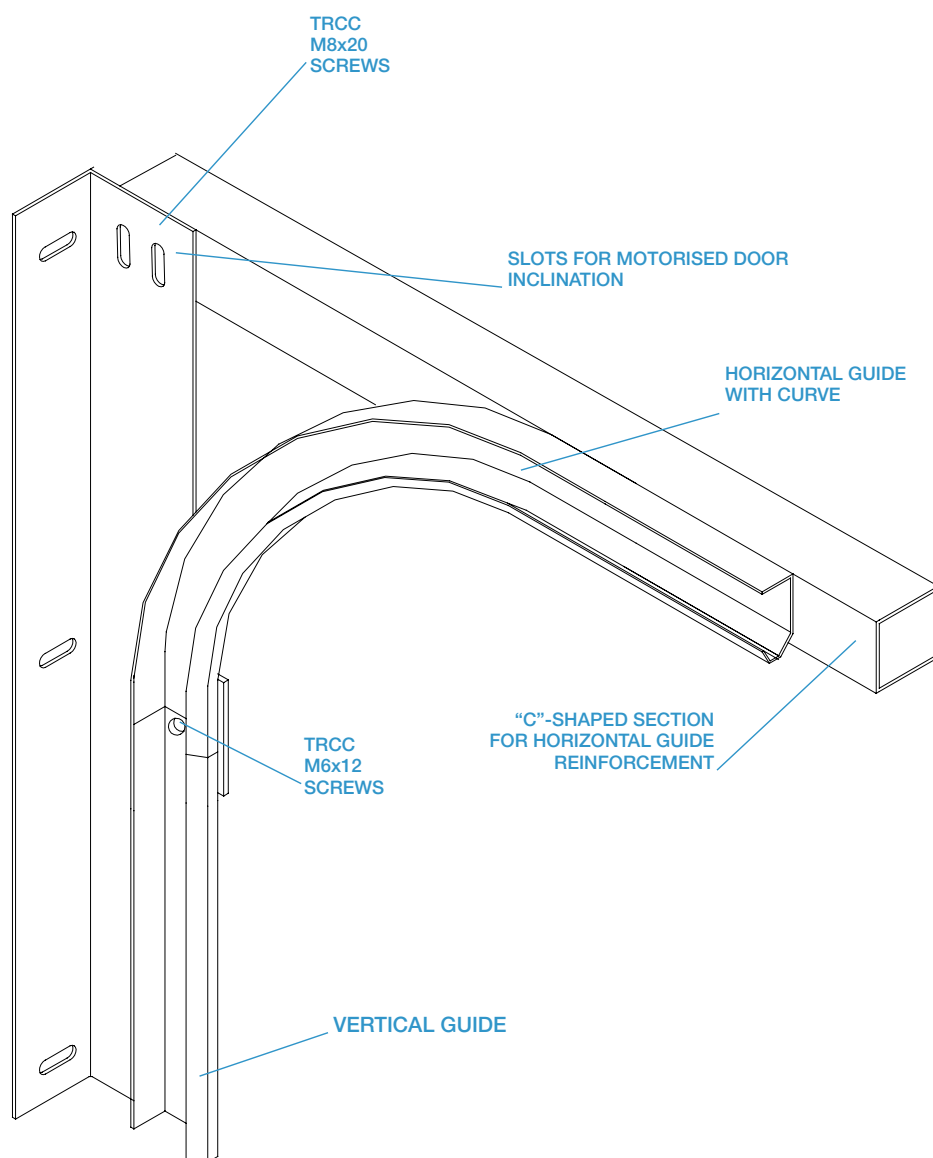


SUITABLE ANCHORAGE FOR VERTICAL GUIDES

Do not use plugs with external threading or tack welding.

- 1 Rawplug.
- 2 Plug with external threading (cannot be used).

FIG 8 KPSIN TYPE



ASSEMBLY OF GUIDE UNITS AND ANGULARS FOR STANDARD DOORS (KPSIN)

Mount the curves onto the vertical angulars already mounted in plumb.

Join and fix the horizontal guide by inserting the bolts into the relevant housing.

Mount the buffers behind the guides.

OPERATION 1

ASSEMBLY OF GUIDE UNITS AND ANGULARS FOR PARTIAL (KPSIS) OR TOTAL (KPSIV) VERTICAL SLIDING DOORS)

The following operations are only valid for the KPSIS type door with High Lift + curve vertical sliding guide.

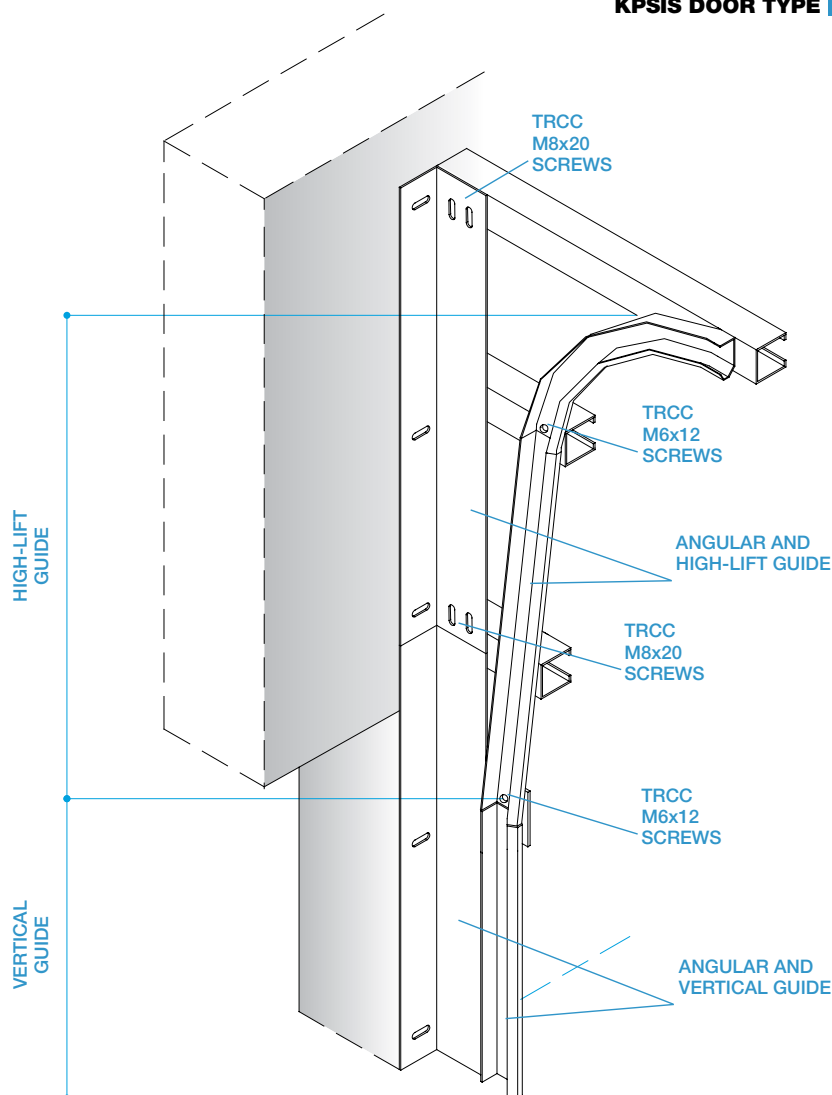
Mount the wall High Lift guides onto the vertical angulars already plumb assembled.

Join and fix the horizontal guide by inserting the bolts into the relevant housing.

Mount the buffers behind the guides.

ASSEMBLY OF GUIDE UNITS AND VERTICAL ANGULARS

KPSIS DOOR TYPE FIG 9



KPSIV DOOR TYPE FIG 10

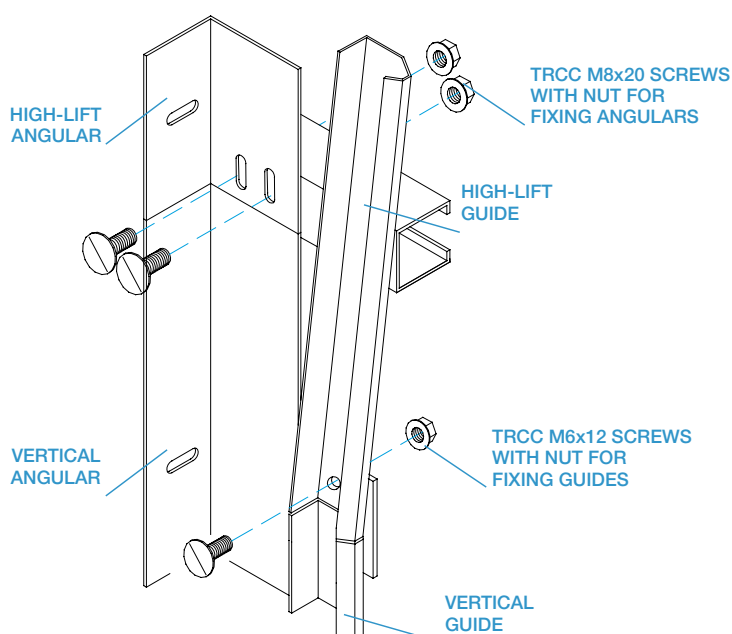
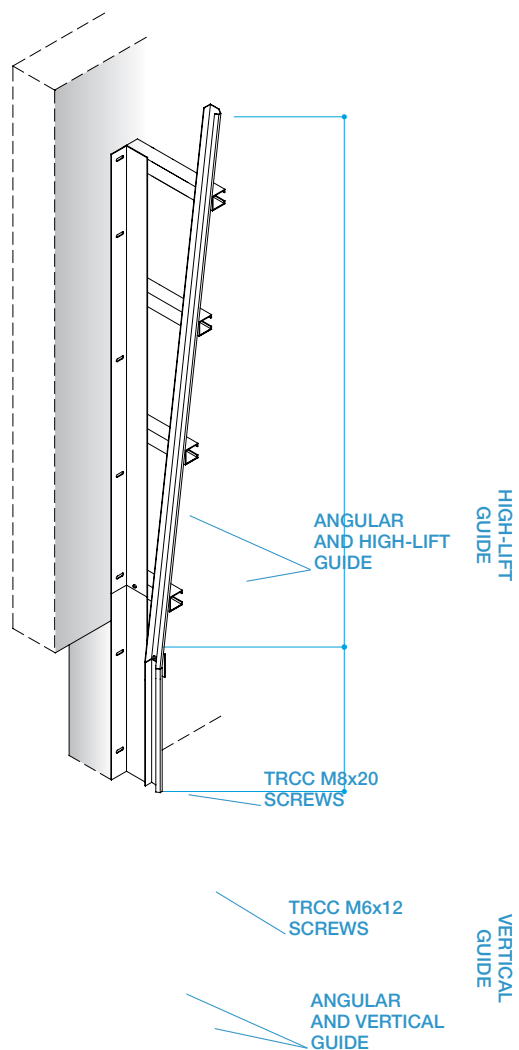
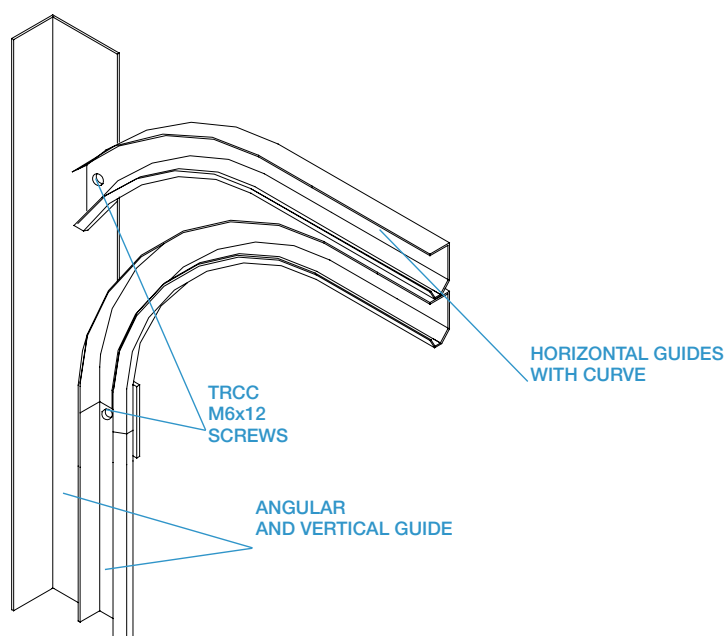


FIG 11 KPSIV DOOR TYPE



ASSEMBLY OF VERTICAL GUIDES (HIGH LIFT) FOR KPSIV TOTALLY VERTICAL SLIDING DOORS

FIG 12 KPSIR DOOR TYPE



OPERATION 2

HORIZONTAL GUIDES ASSEMBLY

For all types except the KPSIV.

Connect the vertical and horizontal angulars using the supplied M8x20 carriage bolts.

Join the vertical guides to the horizontal ones using the supplied M6x12 bolts.

Position the template at the end of the horizontal guides to obtain the height ($L + \text{door span}$) $L + 145$ of the opening and to obtain the diagonals D the same.

Pay attention to the parallelism of the horizontal guides and the gradient. For all types, horizontal guide fixing must be with gradient=0 (level) and never with negative gradient (downwards).

For motorised doors with movement transmitted by a winch, the fixing gradient of the horizontal guides must be upwards by 3%, while the shock absorbers with the door completely open will be loaded to 100%.

When choosing the plugs for ceiling anchorage, particular attention must be given to the stress they must undergo.

To anchor the horizontal guides to the ceiling or supporting structures using suspensions, do not use flexible anchorage devices (chains, rope, etc.) but use sections with suitable flexible strength.

A plate fitting is envisioned for KPSIR type doors for the horizontal guides. It is fixed to cement or brick walls using Rawplugs.

ASSEMBLY OF THE HORIZONTAL GUIDES AND TEMPLATE

Anchor the horizontal guides to the ceiling or the supporting structures using suspensions, respecting the number of fixtures and their positioning.

NOTE

Never use flexible anchorage systems (chains, ropes, etc.). Use sections with suitable flexible strength.

HORIZONTAL GUIDES AND TEMPLATE ASSEMBLY

PARALLELISM OF THE HORIZONTAL GUIDES FIG 13

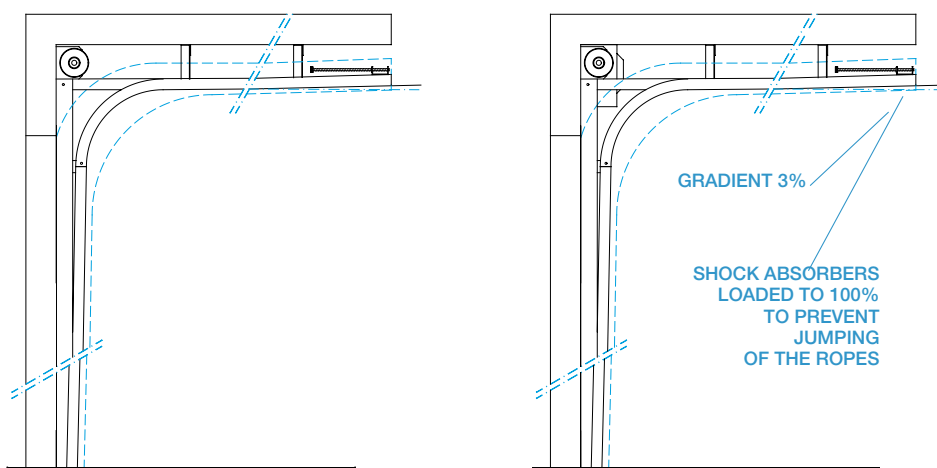


FIG 14

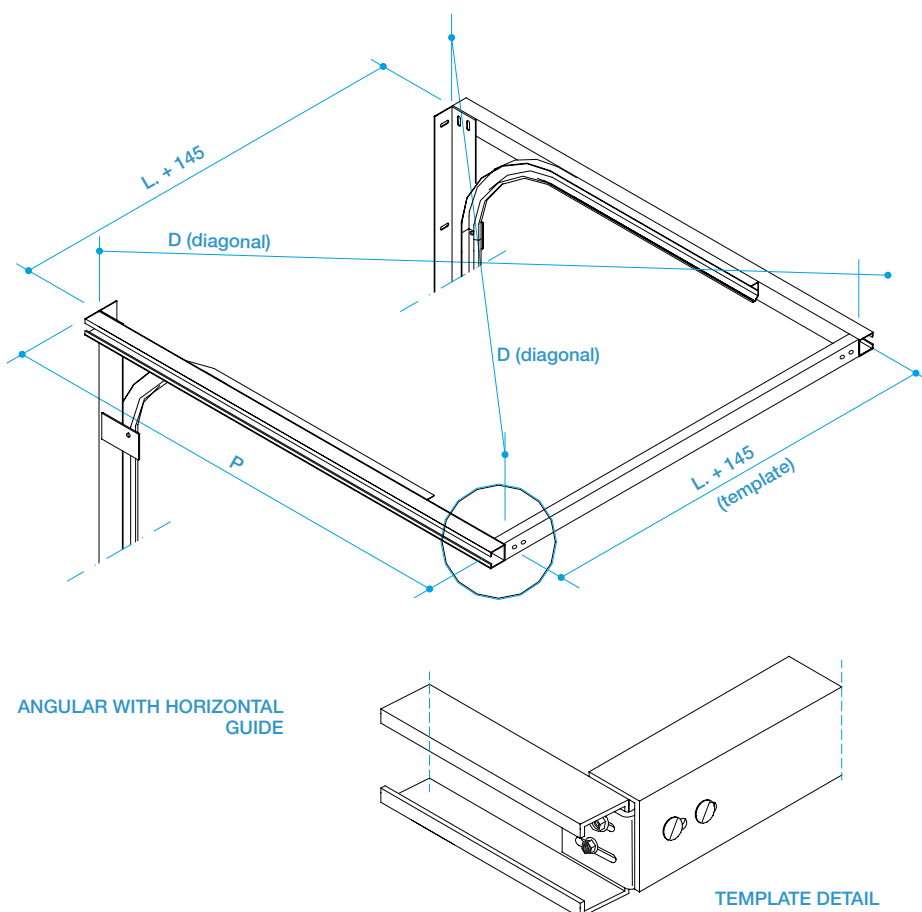


FIG 15 KPSIN DOOR TYPES

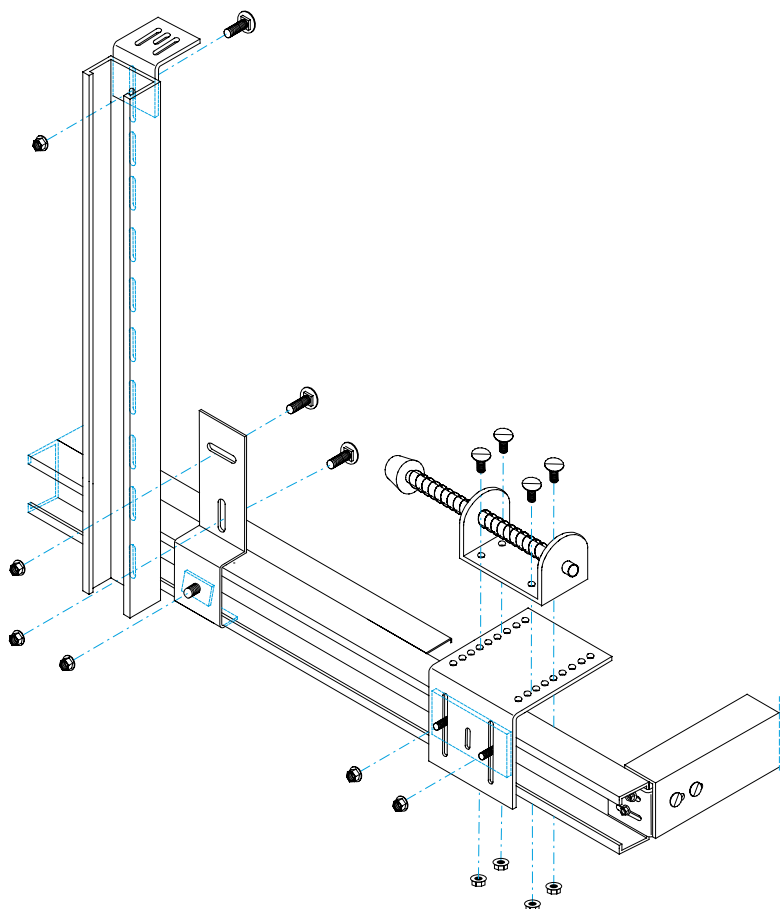


FIG 16 CEILING ANCHORAGE FOR KPSIN DOOR TYPES

P DEPTH	WEIGHT KG	N° OF HOOKS	HEIGHT X
<2500	<200	1RIGHT + 1LEFT	P-500
2500 ÷ 4000	200 ÷ 500	2RIGHT + 2LEFT	(P-500):2 Interm. hooks
>4000	>500	3RIGHT + 3LEFT	(P-500):2 Interm. hooks

FIG 17 CEILING ANCHORAGE FOR KPSIS DOOR TYPES

P DEPTH	WEIGHT KG	N° OF HOOKS	HEIGHT X
<2000	<200	1RIGHT + 1LEFT	P-500
2000 ÷ 3500	200 ÷ 500	2RIGHT + 2LEFT	(P-500):2 Interm. hooks.
>3500	>500	3RIGHT + 3LEFT	(P-500):Interm. hooks.

(*) The weight is intended only as that present on the horizontal guides that can be determined in the following way: Total weight x (H-HL/H)

FIG 18 CEILING ANCHORAGE FOR KPSIR DOOR TYPES

P DEPTH	N° OF HOOKS	HEIGHT X
<1660	2RIGHT + 2LEFT	≤ 1500
1660 ÷ 3160	3RIGHT + 3LEFT	≤ 1500
3170 ÷ 4660	4RIGHT + 4LEFT	≤ 1500

ANCHORAGE OF THE HORIZONTAL GUIDES TO THE CEILING

Given the impossibility to define a unique anchorage standard for all environmental situations in which sectional doors are installed, some technical solutions are given as an example.

Where anchorage is not possible using a section (as indicated in the drawing) chains or steel ropes can be used.

The design and calculation of the anchorage system must be entrusted to a professional technician (surveyor/engineer).

Our offices are at your disposal for and requests for after-sales assistance.

NOTE

Use the following formula to determine the weight:

$$L \times H \times 15 \text{ Kg/m}^2$$

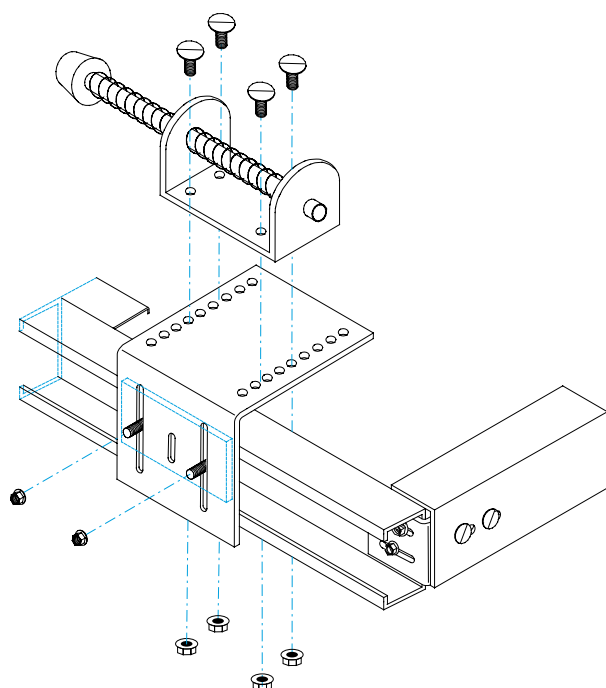
OPERATION 2

SHOCK ABSORBER ASSEMBLY

Assemble the buffers behind the guides as in figure 19.

HORIZONTAL GUIDES AND TEMPLATE ASSEMBLY

KPSIN, KPSIS AND KPSIR TYPES FIG 19



KPSIV DOOR TYPE FIG 20

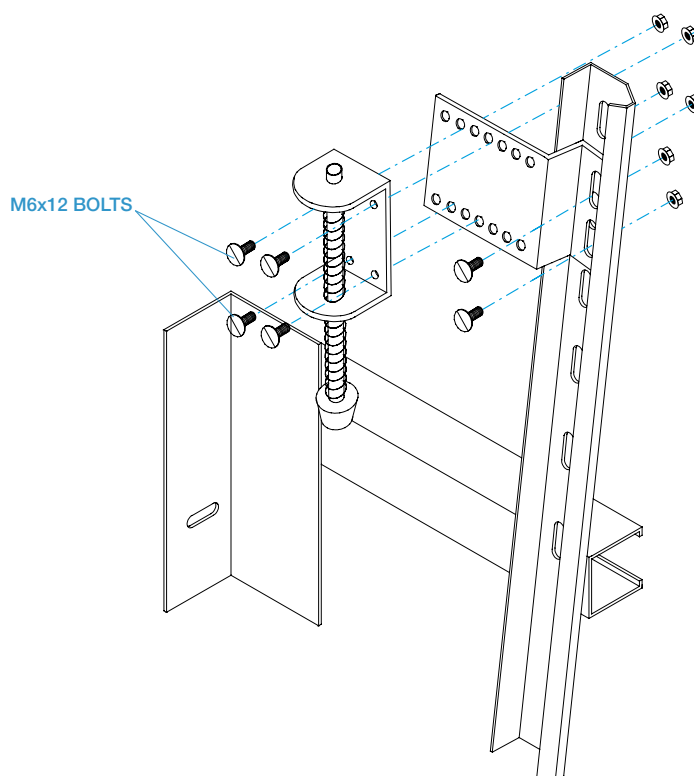


FIG 21 KPSIN AND KPSI_R TYPES

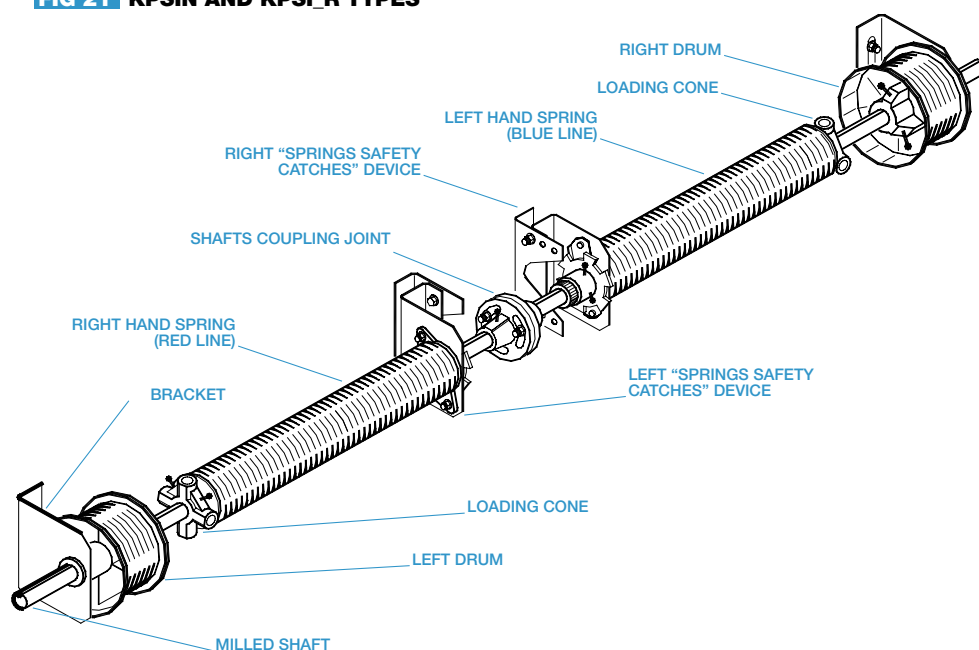


FIG 22 KPSIS DOOR TYPE

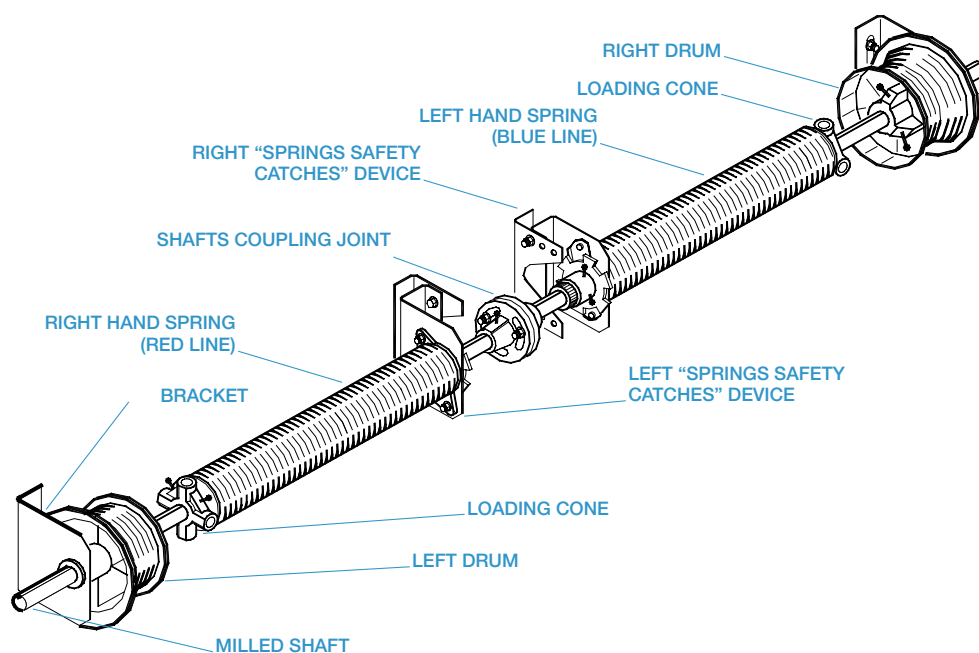
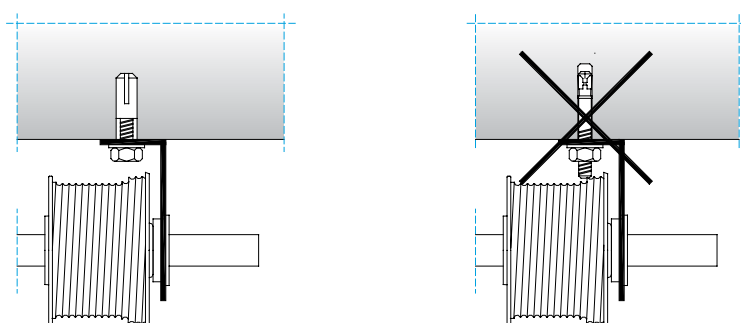


FIG 23



NOTE

The accessory box contains the spring and support bracket position layout.

The construction details of the spring holder shaft are pre-assembled.

STANDARD SYSTEM

The standard system is made up from:

RIGHT HALF-SHAFT

- n° 1 bracket with bearing.
- n° 1 safety device in case of spring breakage.
- n° 1 Right drum.
- n° 1 left hand spring (anti-clockwise coil) with fixing and loading cones.
- n° 1 half-coupling with nuts and bolts.
- n° 2/3 splines for half-coupling and drum.
- n° 1 stop ring (if only one spring is envisioned).

LEFT HALF-SHAFT

- n° 1 bracket with bearing.
- n° 1 safety device in case of spring breakage.
- n° 1 Left drum.
- n° 1 right hand spring (clockwise coil) with fixing and loading cones.
- n° 1 half-coupling with nuts and bolts.
- n° 2-3 splines for half-coupling and drum.
- n° 1 stop ring (if only one spring is envisioned).

NOTE

Depending on the types and dimensions of the doors, the diagram of the position of the brackets, springs and relative components is found in the accessories box.

KPSIN AND KPSIR DOOR TYPES

Refer to fig. 25 for positioning of the external support bracket.

KPSIS DOOR TYPE

Refer to figures 27 and 28 for positioning of the external support bracket.

GENERAL NOTE

- The plugs must not have external threading.
- Avoid tack welding.
- Do not anchor the shaft directly to the external over-door panels.

OPERATION 3

KPSIV TYPE DOORS

Refer to figure 29 for positioning of the external support bracket.

ALL DOOR TYPES

The central brackets must be positioned following the indications in the spring holder shaft drawings of each type of industrial door.

Only a technician can correctly evaluate the reliability of the anchorage and if, on the basis of the case, it is necessary to divide the loads counter-plates can be used, which are available on request.

If anchorage takes place between the metal framework, the counter-plates, which are available on request, will be previously welded.

The components must be assembled starting from the right half-shaft.

Once the shaft has been assembled, insert and block the splines in the relevant seat on the half-couplings.

Couple the half-couplings and block them using the three supplied bolts.

Tighten the stop rings, positioning them fully home with the bracket bearing.

POSITIONING OF THE SPRING HOLDER SHAFT BRACKETS

KPSIN AND KPSIR DOOR TYPE

The bracket must be positioned above the vertical angular except for KPSIN doors with FF 402/32 or M203/7925 drum and springs with $d=152.4$ mm.

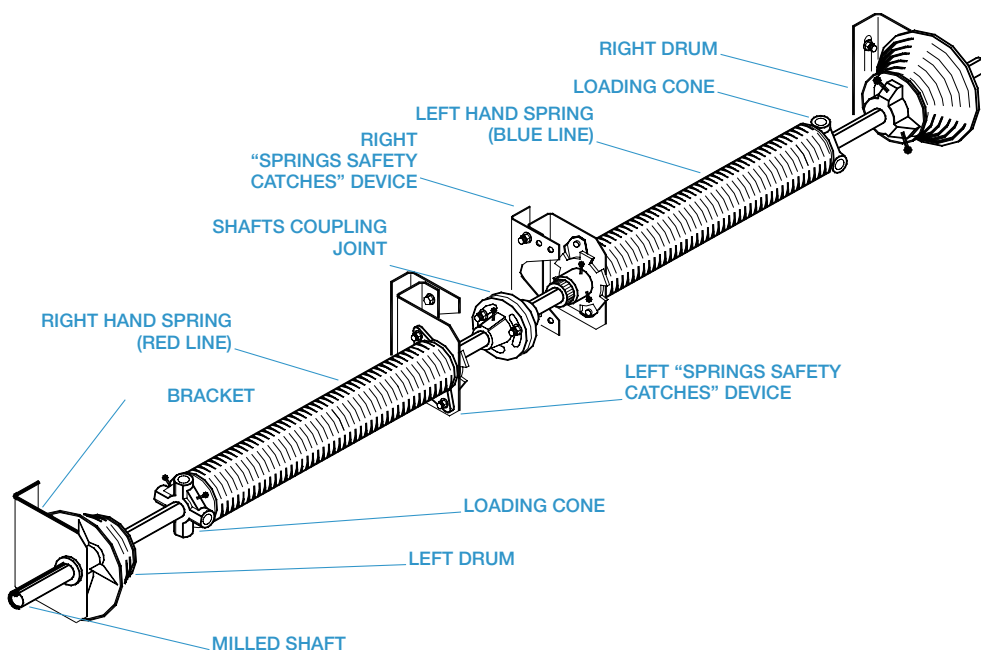
NOTE

Only a skilled technician can indicate the type of plugs to use to fix the brackets and the anti-breakage devices, considering the load and the type of structure.

As each spring anti-breaking device has a maximum working torque of $M_{tadm}=210$ Nm and in the case of spring breakage a maximum stopping torque of $M_t=1050$ Nm the fixings of all brackets must be dimensioned always using an $M_t=1050$ Nm.

SPRING HOLDER SHAFT ASSEMBLY

KPSIS DOOR TYPE FIG 24



KPSIN AND KPSIR DOOR TYPE FIG 25

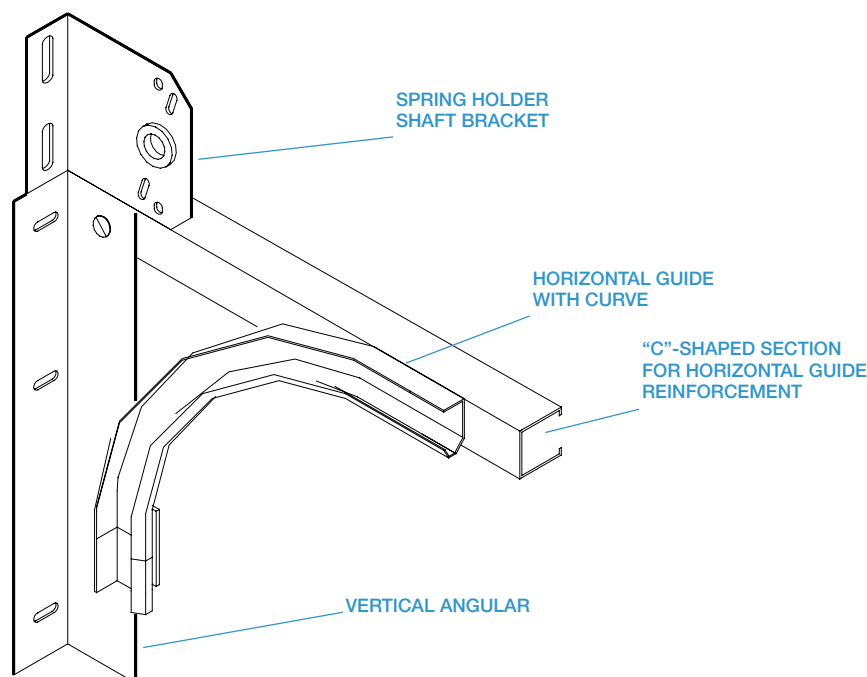


FIG 26 KPSIN DOOR TYPE WITH FF NL/32 OR M203/7925 DRUM

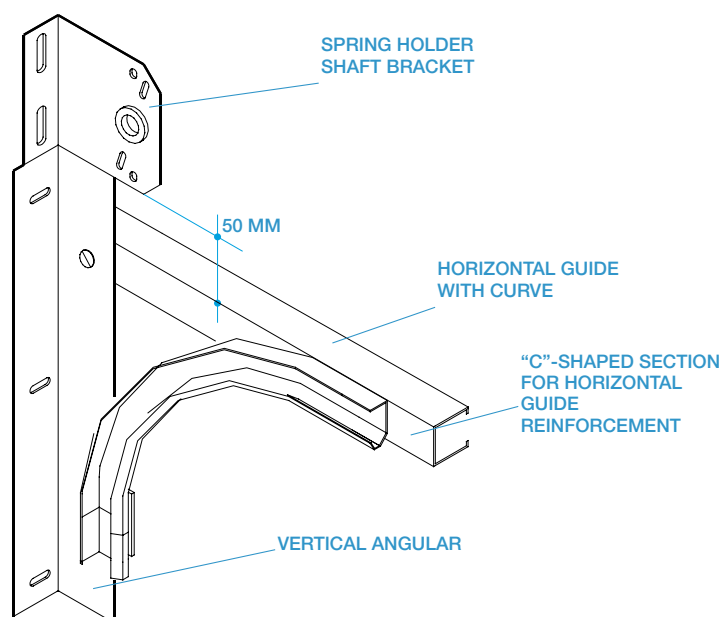


FIG 27 KPSIS TYPE DOOR

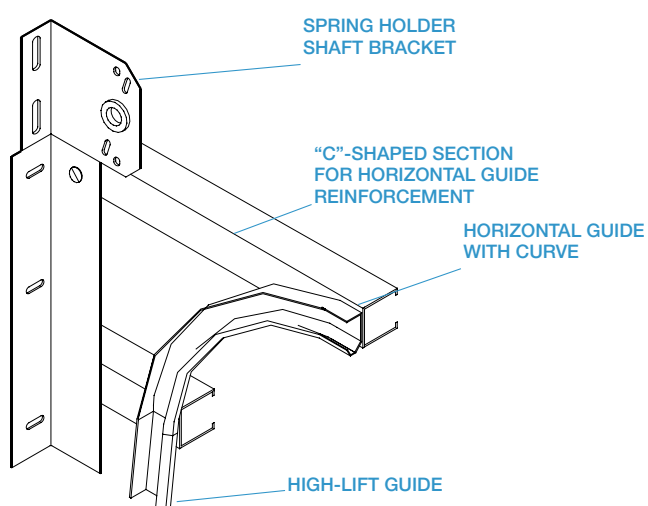
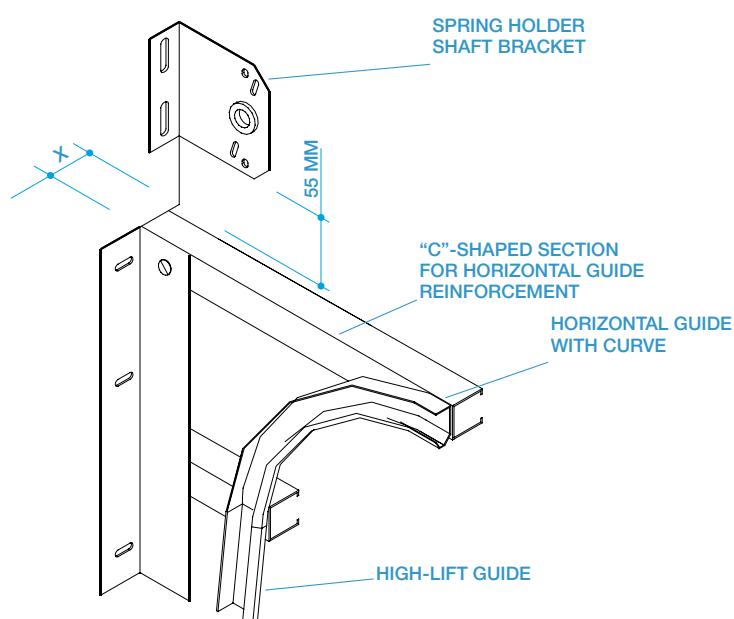


FIG 28 KPSIS TYPE DOOR WITH FF-HL-164 OR 6375-164 DRUMS



KPSIN TYPE

Only for KPSIN doors with FF NL/32 or M203/7925 drum and springs with $d=152.4$ mm: the bracket must be positioned above the vertical angular raised by 50 mm with respect to the horizontal angular.

KPSIS DOOR TYPE

The bracket must be positioned above the vertical angular except for KPSIS doors with FF-HL-164 drum.

KPSIS DOOR TYPE

Only for KPSIS doors with FF-HL-164 or 6375-164 drum:

the bracket must be positioned above the HIGH-LIFT angular at a distance of 55 mm and moved towards the outside (X) of the sufficient space so that the lifting cable is near to the HIGH-LIFT angular.

OPERATION 3

KPSIV DOOR TYPE

The bracket must be positioned above the HI-GH-LIFT angular.

ADDITIONAL BRACKET ASSEMBLY LAYOUT

SPRING ANTI-BREAKAGE SAFETY CATCHES DEVICE

* = Fixing positions on the basis of the type of brackets used.

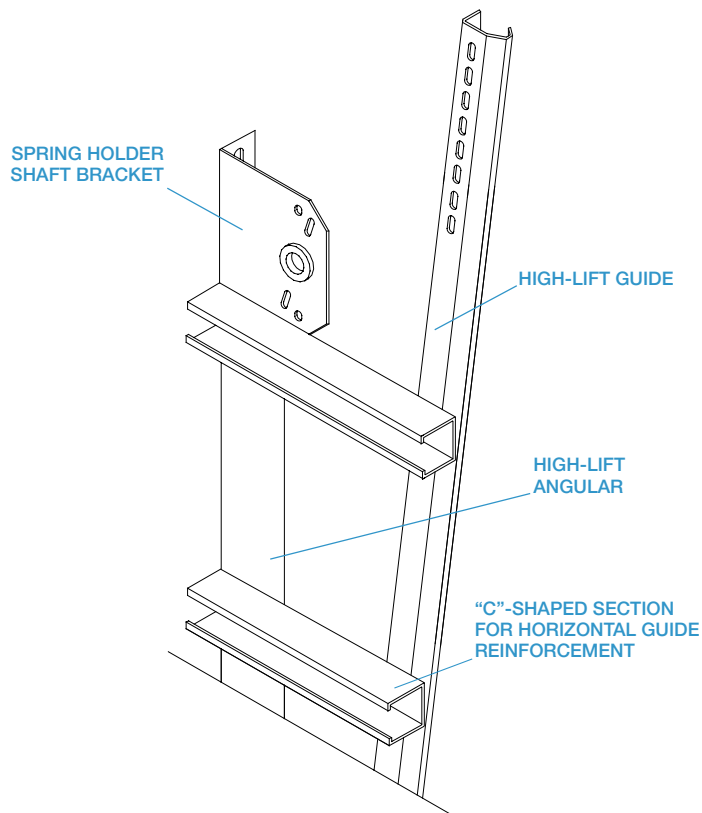
NOTE

Torque accepted for each device = 210 nm.

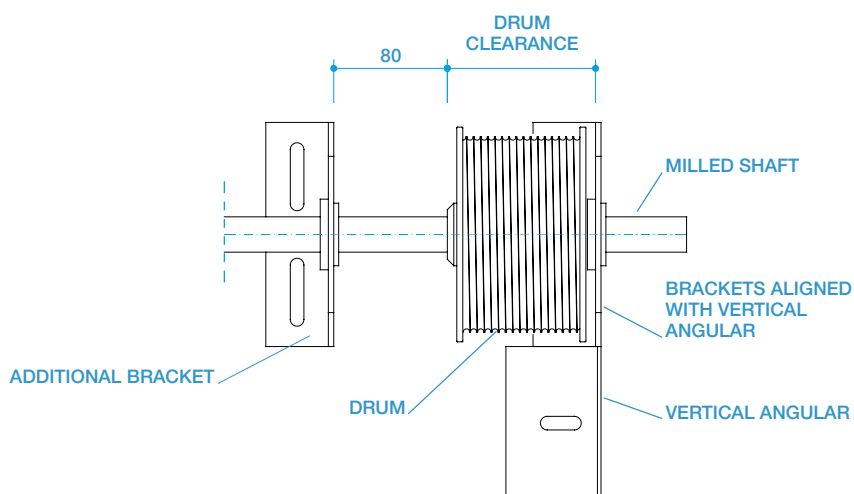
Stopping torque accepted for each device = 1050 nm.

SPRING HOLDER SHAFT ASSEMBLY

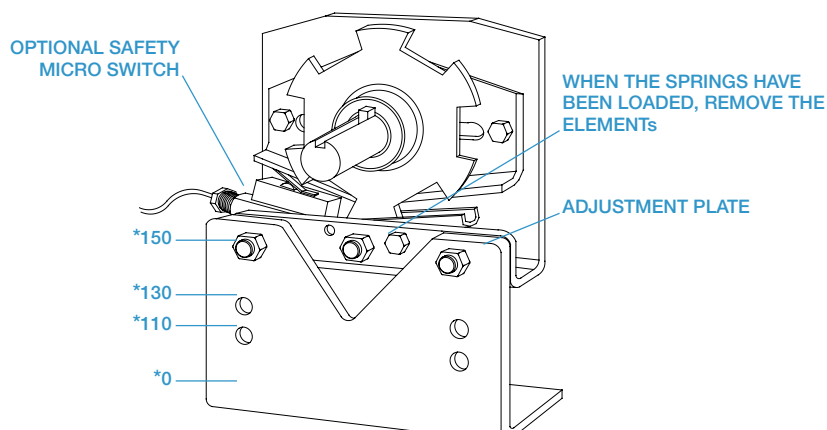
KPSIV DOOR TYPE FIG 29



ADDITIONAL BRACKET ASSEMBLY LAYOUT FIG 30

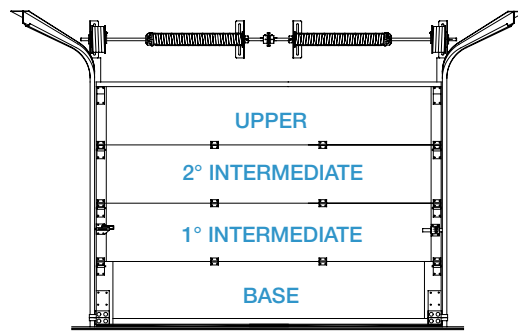


SPRING ANTI-BREAKAGE SAFETY CATCHES DEVICE FIG 31



LAYOUT OF THE MAXIMUM NUMBER OF PANELS AND EXAMPLE OF 4-PANEL DOOR

UPPER
7° INTERMEDIATE
6° INTERMEDIATE
5° INTERMEDIATE
4° INTERMEDIATE
3° INTERMEDIATE
2° INTERMEDIATE
1° INTERMEDIATE
BASE



										H door (mm)
Position	Base	1° intermediate	2° intermediate	3° intermediate	Upper					3120
h panel	610	610	610	610	610					
Position	Base	1° intermediate	2° intermediate	3° intermediate	4° intermediate	Upper				3400
h panel	610	610	610	500	500	500				
Position	Base	1° intermediate	2° intermediate	3° intermediate	4° intermediate	Upper				3730
h panel	610	610	610	610	610	610				
Position	Base	1° intermediate	2° intermediate	3° intermediate	4° intermediate	5° intermediate	Upper			4120
h panel	610	610	610	610	610	500	500			
Position	Base	1° intermediate	2° intermediate	3° intermediate	4° intermediate	5° intermediate	Upper			4340
h panel	610	610	610	610	610	610	610			
Position	Base	1° intermediate	2° intermediate	3° intermediate	4° intermediate	5° intermediate	6° intermediate	Upper		4510
h panel	610	610	610	610	500	500	500	500		
Position	Base	1° intermediate	2° intermediate	3° intermediate	4° intermediate	5° intermediate	6° intermediate	Upper		4840
h panel	610	610	610	610	610	610	610	500		
Position	Base	1° intermediate	2° intermediate	3° intermediate	4° intermediate	5° intermediate	6° intermediate	Upper		4950
h panel	610	610	610	610	610	610	610	610		
Position	Base	1° intermediate	2° intermediate	3° intermediate	4° intermediate	5° intermediate	6° intermediate	7° intermediate	Upper	5230
h panel	610	610	610	610	610	610	500	500	500	
Position	Base	1° intermediate	2° intermediate	3° intermediate	4° intermediate	5° intermediate	6° intermediate	7° intermediate	Upper	5560
h panel	610	610	610	610	610	610	610	610	610	

OPERATION 4

WHEELS SUPPORT AND HINGE ON INTERMEDIATE PANELS

Remove the strip coating from the panels and install the accessories.

Fix the intermediate hinges and the intermediate wheels support bracket.

Doors with reinforced panels can have single or double hinges and wheels support brackets.

Position the first panel between the guides, lifting it from the ground with the aid of 50±80 mm spacers and fix the carriage (with the wheel inserted into the guide) on the bridge of the wheels support bracket.

Prepare the two left and right safety catches brackets with the respective wheels inserted into the hole. Fix the first panel (with lower gasket and handle), the two wheels support brackets and the hinges using the self-threading screws.

NOTE

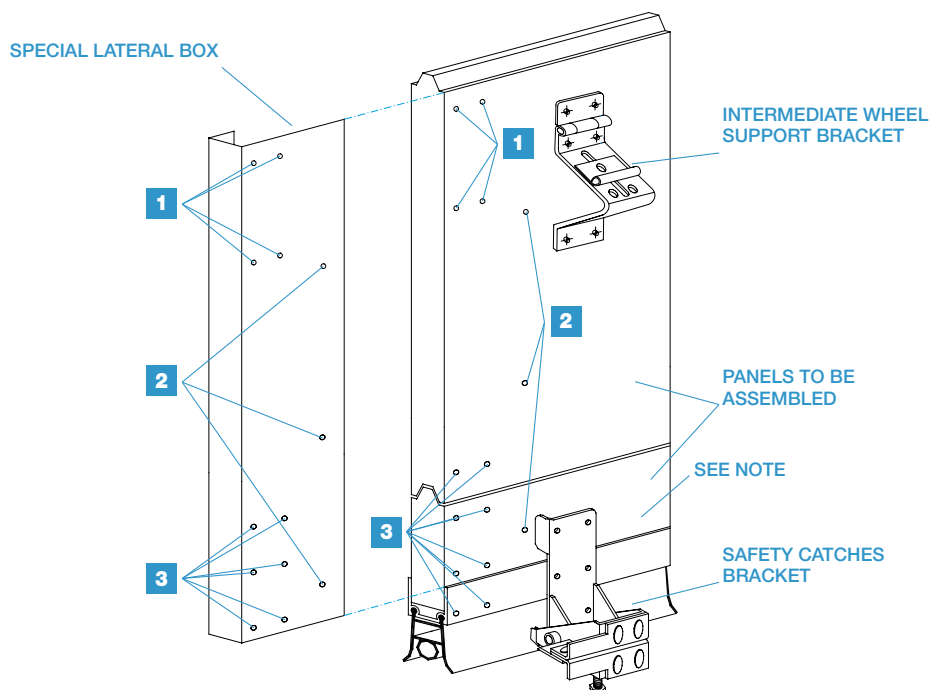
Whenever the first lower or upper panel should be the high section type:

join the two end panels;

insert the two perforated boxes onto the ends of the panels, fixing them with the supplied rivets.

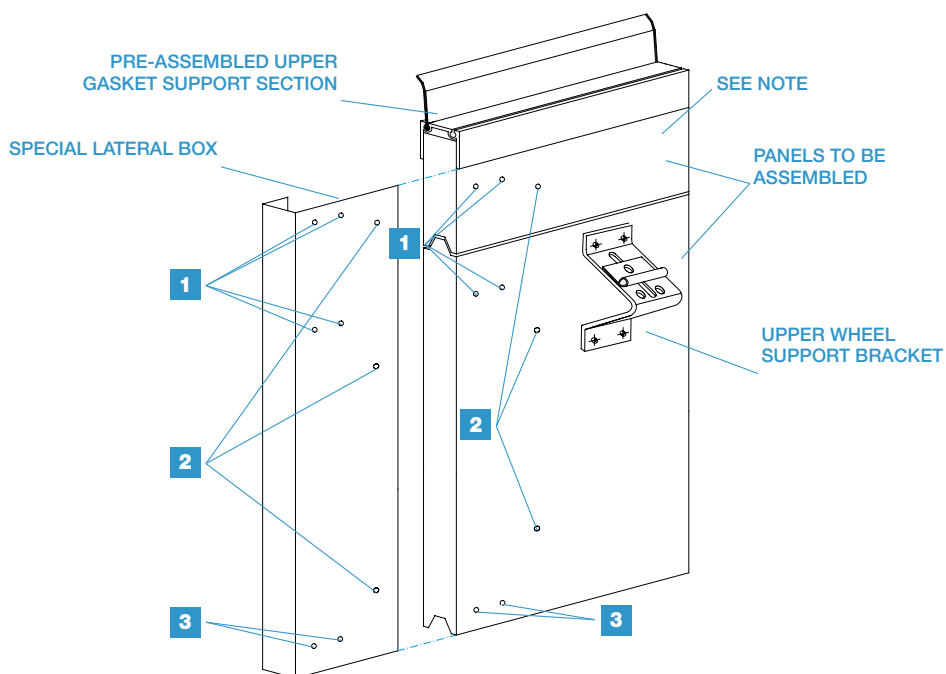
PREPARATION AND ASSEMBLY OF PANELS

HIGH SECTION BASE PANEL FIG 32



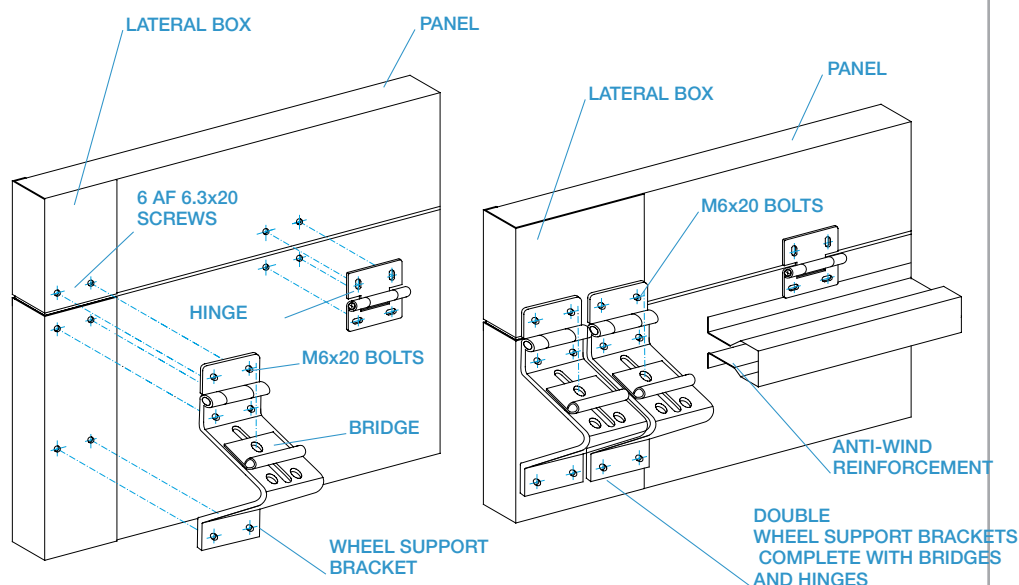
- 1 4 HOLES FOR FIXING THE INTERM. WHEEL SUPPORT BRACKET
- 2 3 HOLES FOR FIXING THE SPECIAL LATERAL BOX
- 3 8 HOLES FOR FIXING THE SAFETY CATCHES BRACKET

UPPER HIGH SECTION PANEL FIG 33



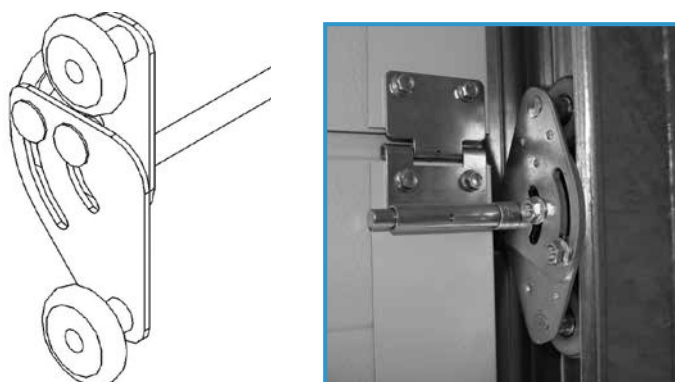
- 1 4 HOLES FOR FIXING THE UPPER WHEEL SUPPORT BRACKET
- 2 3 HOLES FOR FIXING THE SPECIAL LATERAL BOX
- 3 2 HOLES FOR FIXING THE HINGE

FIG 34 SINGLE AND DOUBLE WHEEL SUPPORT AND HINGE ON INTERMEDIATE PANELS



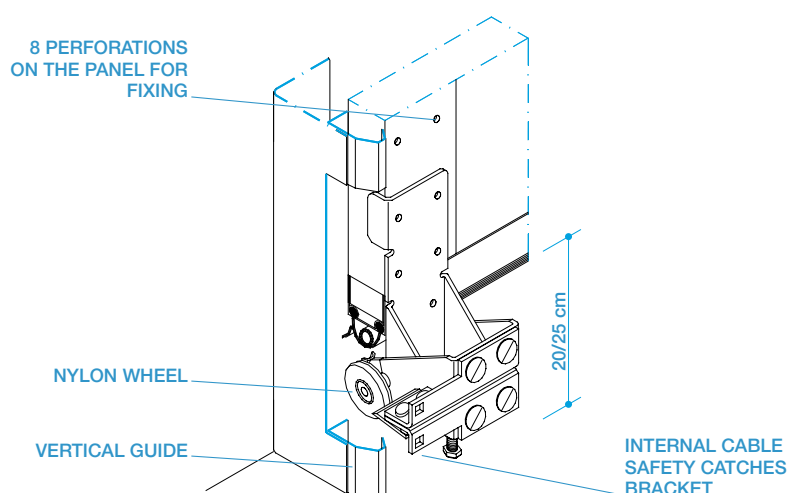
ASSEMBLY OF SINGLE AND DOUBLE WHEEL SUPPORTS ON THE PANELS

FIG 35 TANDEM WHEEL SUPPORT ON INTERMEDIATE PANELS



TANDEM WHEEL SUPPORT ASSEMBLY ON INTERMEDIATE PANELS

FIG 36 SAFETY CATCHES BRACKET ASSEMBLY



SAFETY CATCHES BRACKET ASSEMBLY

Once the safety catch has been fixed in the first lower panel using 8 6.3x25 self-threading screws, after having inserted the wheel into the guide, attach the lifting cables from the thimble side. Check levelling of the panel.

ALL DOOR TYPES

Place the base panel between the guides lifting it 20/25 cm from the ground.

Insert the nylon wheel rod inside the pin of the SAFETY CATCHES bracket and into the vertical guide in the space below the base panel, positioning the safety catches bracket in a way that its 8 holes coincide with the 8 holes in the base panel, fixing it with 8 AF 6.3x25 screws.

OPERATION 4

ALL DOOR TYPES

When the self-locking nut and the screw washer have been removed, insert the thimble and the washer and close the nut.

ALL DOOR TYPES

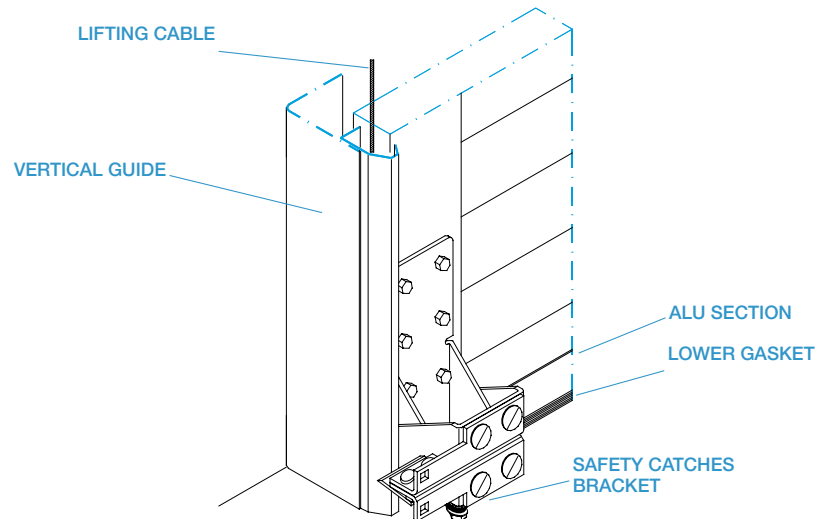
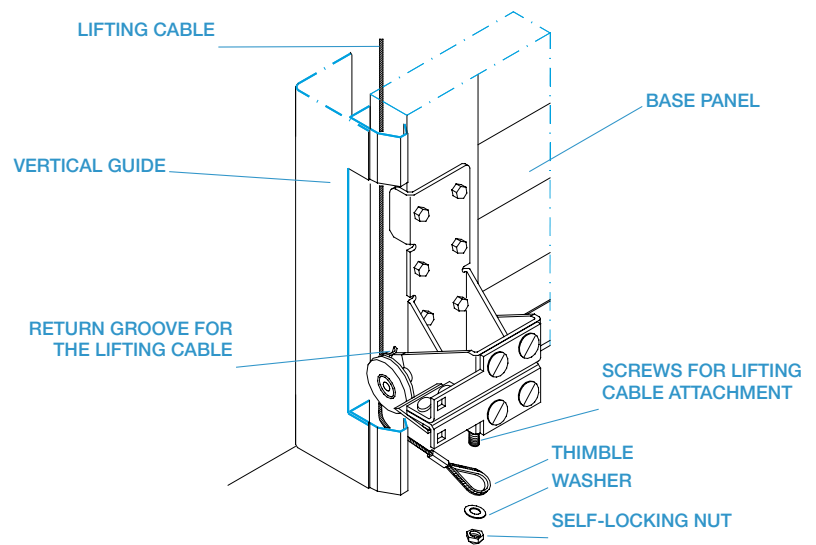
Put the lifting cable in the safety catches bracket and attach the end to the drum.

NOTE

Remove the protective sheath from the knife before commissioning the door.

PREPARATION AND ASSEMBLY OF PANELS

SAFETY CATCHES BRACKET ASSEMBLY 750 FIG 37



SAFETY CATCHES BRACKET ASSEMBLY 400 FIG 38

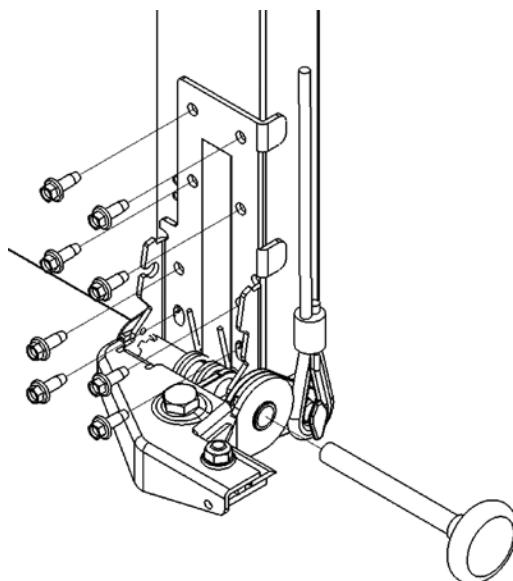
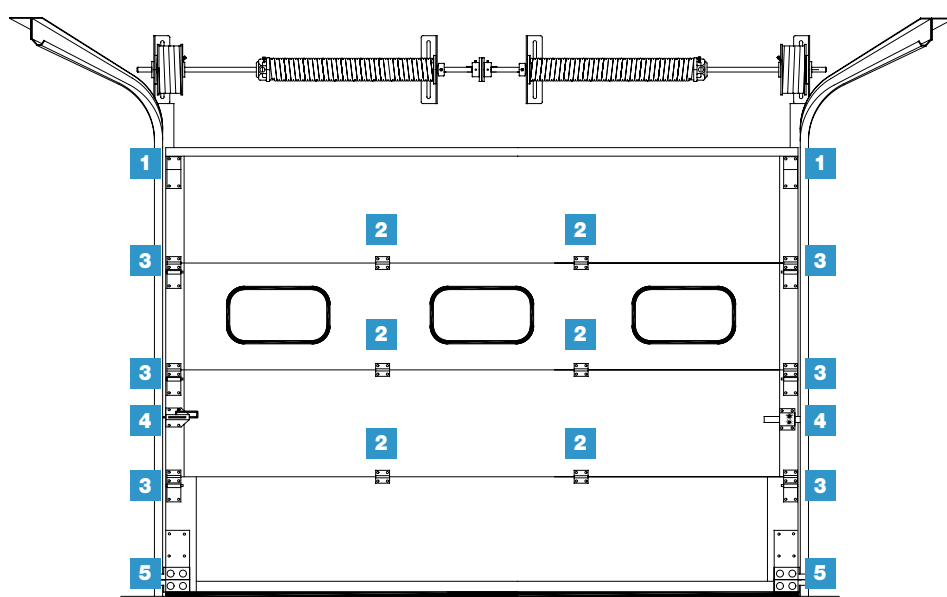


FIG 39 SELF-THREADING SCREWS - ALL TYPES



SELF-THREADING SCREWS

- 1**
4 galvanised 6.3 x 25 self-threading screws
upper wheel support.
- 4 galvanised 6.3 x 25 self-threading screws
wheel support for lowered opening.
- 2**
4 galvanised 6.3 x 25 self-threading screws
hinge.
- 3**
6 galvanised 6.3 x 25 self-threading screws
intermediate wheel supports.
- 4**
4 galvanised 6.3 x 25 self-threading screws
chain.
- 5**
8 galvanised 6.3 x 25 self-threading screws
cables safety catches bracket.

OPERATION 4

UPPER WHEELS SUPPORT

KPSIN, KPSIS AND KPSIV DOOR TYPES

Assemble the wheel support brackets with the respective wheels on the last panel.

KPSIR DOOR TYPE

Insert the nylon wheel rod into the upper wheel support and at the same time place the wheel in the upper horizontal guide.

Approach the wheel support to the upper panel lateral box aligned with the lower ones.

By moving the wheel support up or down the desired compression of the panel on the lateral gasket is obtained.

When the ideal position has been found, make a hole in the centre of the slot using a $\varnothing 4.75$ mm drill bit

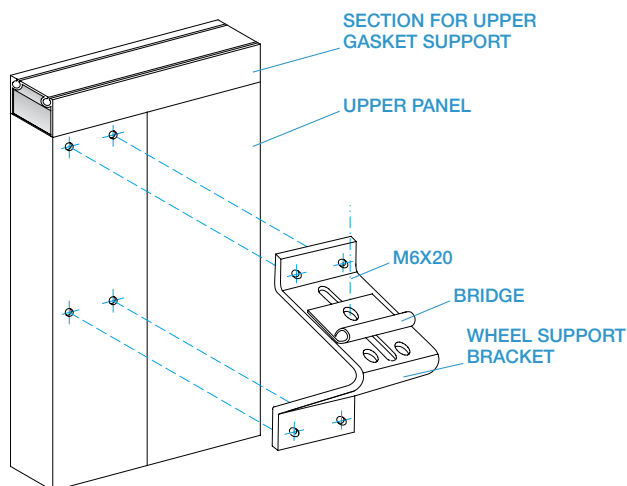
and fix using 6.3 x 25 self-threading screws.

ALL DOOR TYPES

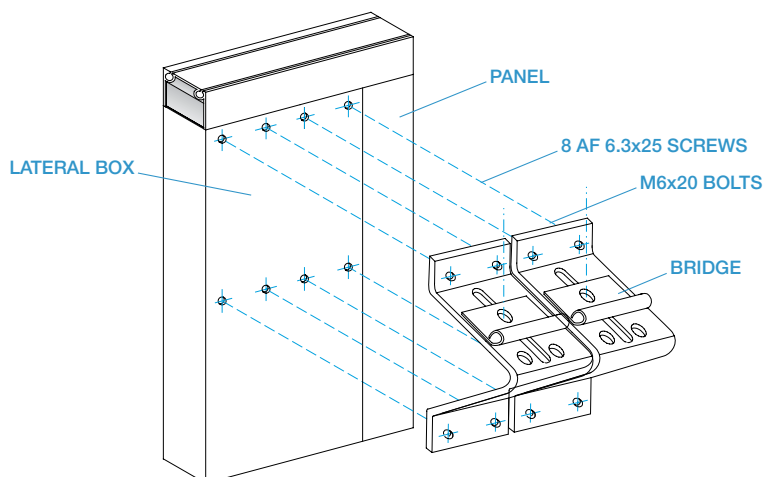
Adjust the wheel support bracket carriages in a way that the panel is in contact with the vertical gasket lip and a minimum space of 1 ± 2 mm remains between the base of the vertical gasket and the panel box.

PREPARATION AND ASSEMBLY OF PANELS

ASSEMBLY OF SINGLE UPPER WHEEL SUPPORT FIG 40



ASSEMBLY OF DOUBLE UPPER WHEEL SUPPORT FIG 41



ASSEMBLY OF FLAT UPPER WHEEL SUPPORT FIG 42

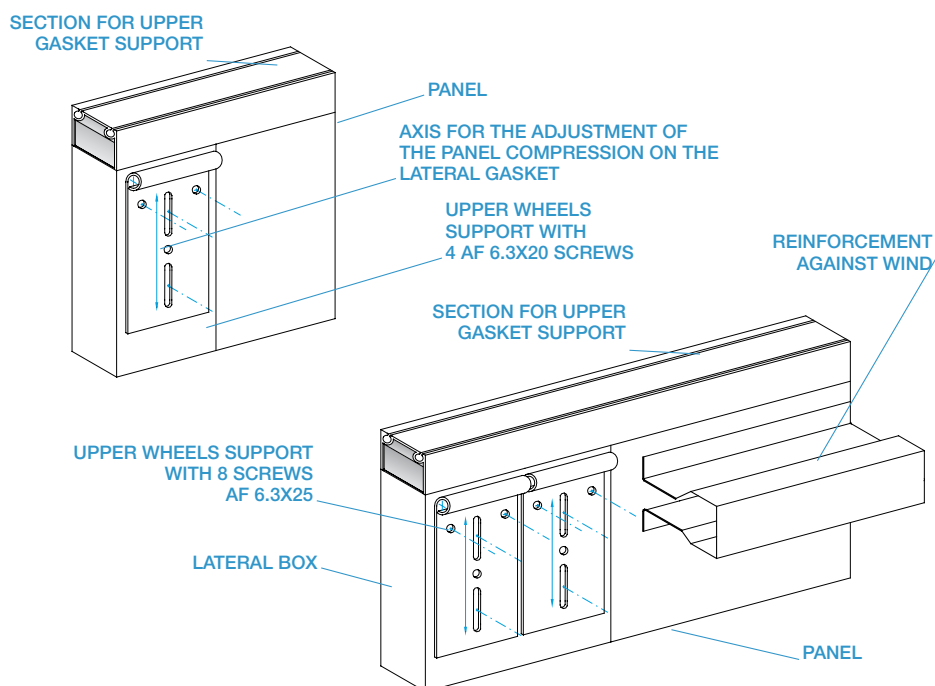


FIG 43 WHEELS SUPPORT ASSEMBLY - ALL TYPES

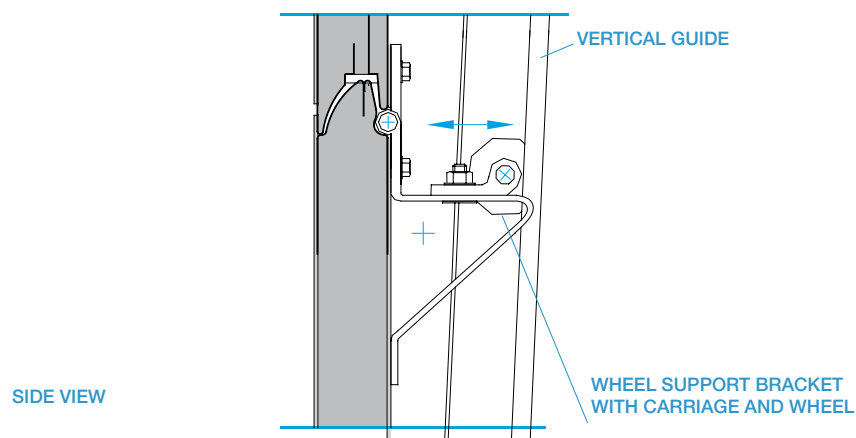


FIG 44 WHEELS SUPPORT ASSEMBLY - ALL TYPES

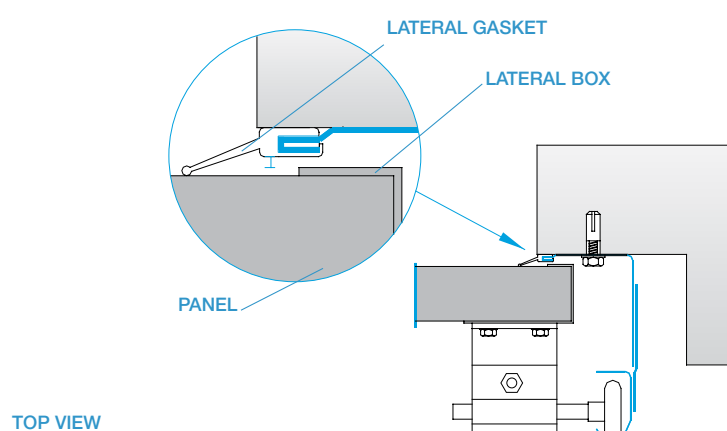


FIG 45 FIXING HINGES - ALL TYPES

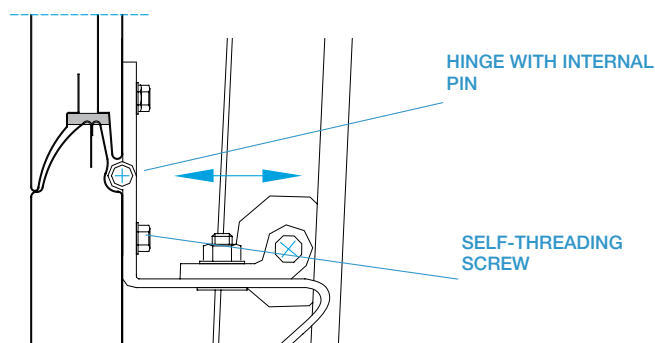
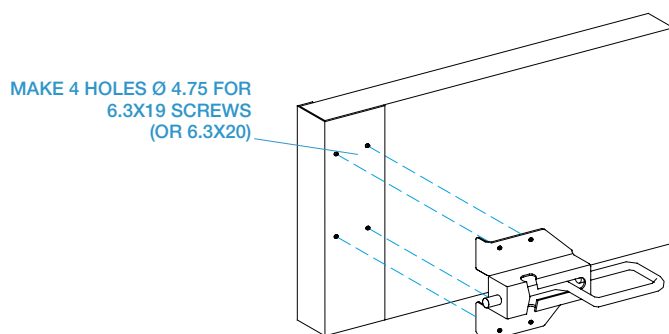


FIG 46 CHAIN ASSEMBLY



NOTE

The carriage must be in contact with the panel, however keeping a space of 2 mm between the base of the gasket and the lateral box of the panel (Fig. 44).

ATTENTION

The hinges must only be assembled as indicated in the diagram. Differently, too much space between the panels will lead to a crushing risk and too little space will lead to damage to the door itself.

CHAIN ASSEMBLY

The chain must be assembled where envisioned following the relative hole on the guide.

OPERATION 5

ALL DOOR TYPES

After having attached the lifting cables to the safety catches bracket, pass the end of the cable behind the nylon wheels, fixing them to the respective drums.

DRUM WITHOUT OPEN SLOT

The end of the cable must be inserted into the hole on the drum and locked using the screw supplied.

Turn the drum in a way to wind the cable into the spiral grooves and put it into tension.

Insert the spline fixing it with the lock-screw.

ALL DOOR TYPES

Insert the spline into the relative seat. Block the drum on the shaft using the relevant screws.

Use a draw-back collet to block the spring holder shaft, keeping the cable just mounted in tension, do the same for the left cable.

Check that the cables are perfectly inserted in the appropriate grooves.

Lock the shafts connection joint using the 3 screws supplied.

WARNING

Spring pre-loading must be performed by expert staff, in compliance with safety standards and respecting the sequence of manoeuvres indicated and using the suitable equipment able to guarantee your safety and that of others.

ALL DOOR TYPES

Recognise the number of load turns stated on the label present on the spring holder shaft bracket (Fig. 49).

Calculate the distance D to determine the space occupied by the spring after the loading operation.

Use a mole grip to block the milled shaft to the wall and use a mole grip and clamp to block the vertical running (Fig. 48).

Block the door casing using a suitable clamp and pressure grip or rather if envisioned with the chain to prevent possible opening of the same during the spring loading phase (these operations are mandatory).

ATTENTION

To load the springs in safe conditions use the **LOADING KIT** (supplied on request)

The spring must be loaded in the direction of the arrow (fig. 50) with the exact number of turns as indicated in figure 49.

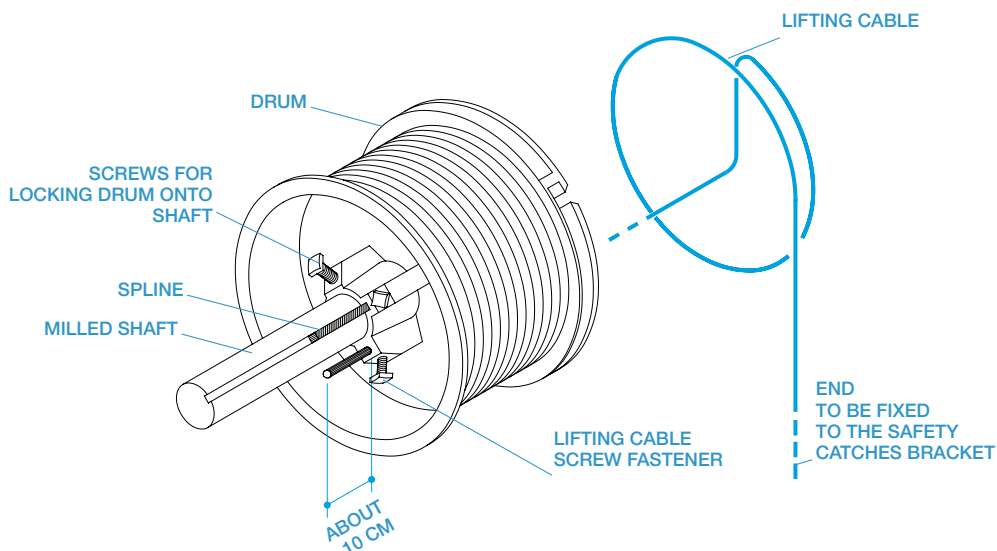
Because the number of turns must correspond to the number of spaces on the coils, if the coils have not covered distance D, move the loading cone manually until this distance has been covered.

NOTE

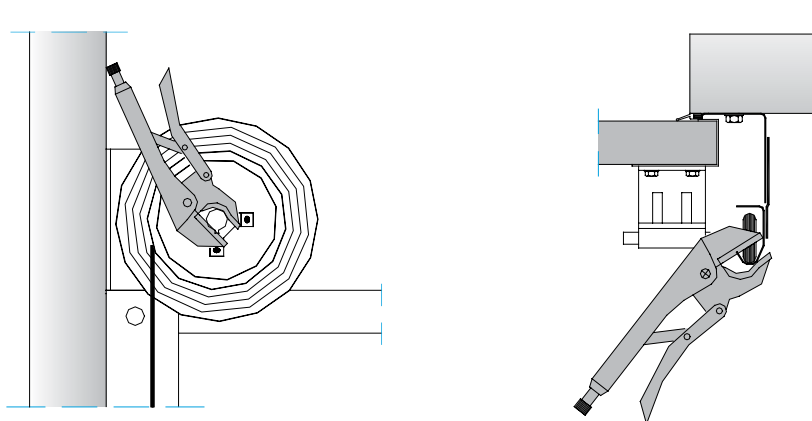
To determine D, multiply the diameter of the spring wire by the number of load turns.

ASSEMBLY OF LIFTING CABLES

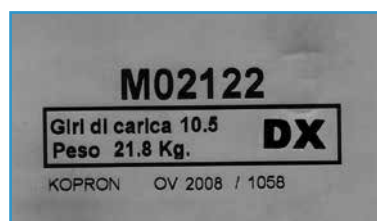
DRUM WITHOUT OPEN SLOT FIG 47



SHAFT AND CASING LOCKING FIG 48



CALCULATE THE SPRING LOAD TURNS FIG 49



LABEL PRESENT ON THE SPRING HOLDER SHAFT BRACKET

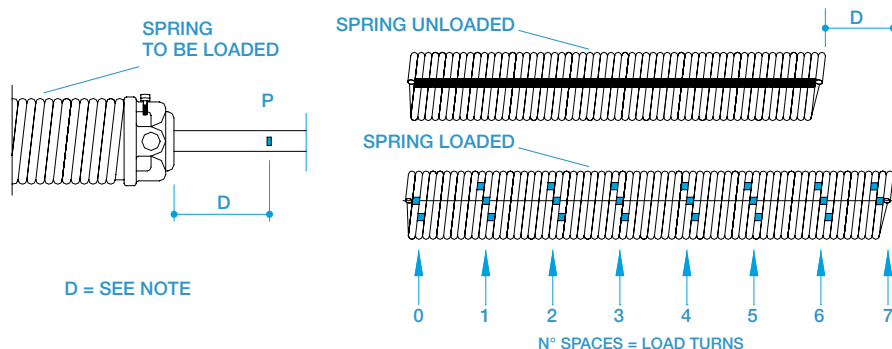
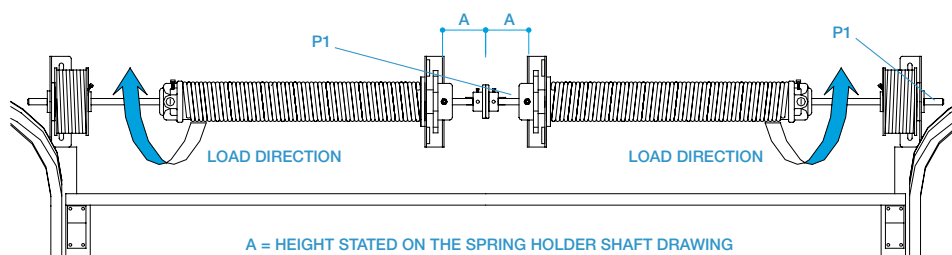
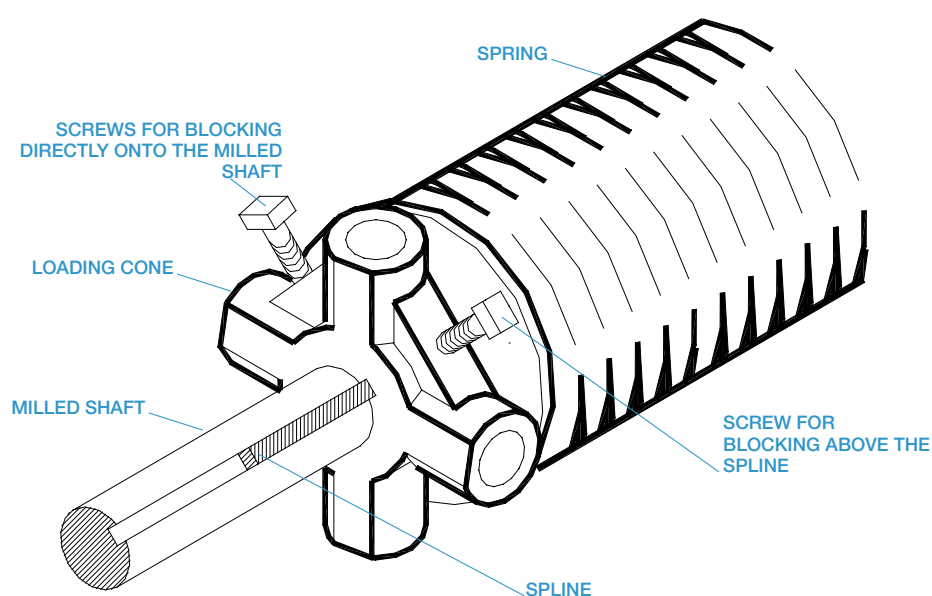


FIG 50 DIRECTION OF ROTATION FOR SPRING LOADING**FIG 51 SPRING HOLDER SHAFT LOCKING**

**ATTENTION: LUBRICATE
THE SPRINGS WHEN INSTALLATION IS
COMPLETED**

The loading cone must be blocked onto the shaft as indicated in figure 48.

Repeat the operations with the other springs and do not damage them with welding sprays

Remove all tools used for blocking, paying particular attention to sudden door movements owing to a greater number of load turns.

NOTE

The use of the chain to block the casing is to be considered a precaution. The suitably positioned block clamps are sufficient.

The loading cones for springs with $\varnothing_i = 95.3$ mm and $\varnothing_i = 152.4$ mm must be assembled with the splines fixed using the supplied screws (pre-assembled).

Only use these two screws for blocking. One above the spline and the other at 90° .

Tightening must take place by screwing until contact with the shaft or spline, screw $1/4$ of a turn more, unscrew by $1/4$ of a turn and tighten with at least $1/2$ turn.

The loading cones for springs with $\varnothing_i = 50.8$ mm must be blocked using just two screws paying attention to tighten one of these into the grooving on the milled shaft.

NOTE

The two-bladed springs must be loaded by specialised staff.

OPERATION 7

CHECK LIFTING CABLE

POSITION

ALL TYPES

It is necessary to check that:

- the cables are inserted into the relative grooves and that they run without meeting any obstructions;
- cable tension is correct;
- the door closure position is perfectly level. If necessary, loosen the three bolts in the milled shafts coupling joint and turn the drive shaft. This operation allows to obtain the correct and equal tension for both cables and to compensate any floor unevenness, within 10 mm, for the width of the door;
- which, during movement (to be activated with caution as excessive spring load could cause the door to lift suddenly) is correctly balanced. To correct balance, after having blocked the casing, act on the number of load turns and springs (an intervention that must be performed at intervals of $\frac{1}{4}$ of a turn at a time).

NOTE

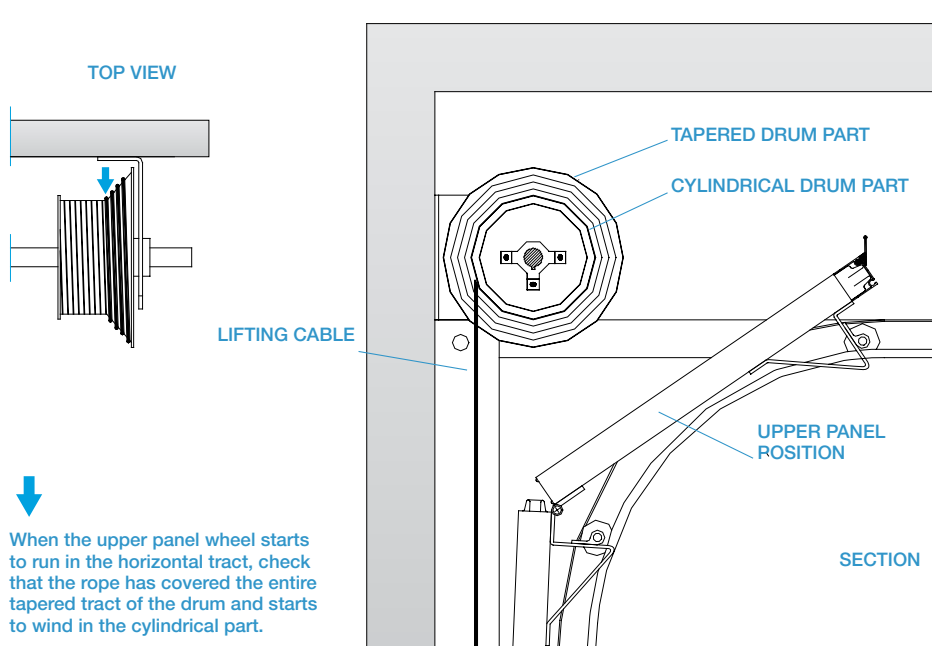
If the springs should break, remove the ratchet block from the anti-fall safety devices to prevent functioning.

KPSIS AND KPSIV DOOR TYPE

For correct balancing, first check the position of the lifting cable as indicated by figures 52-53.

CHECK DOOR BALANCE

KPSIS DOOR TYPE FIG 52



KPSIV DOOR TYPE FIG 53

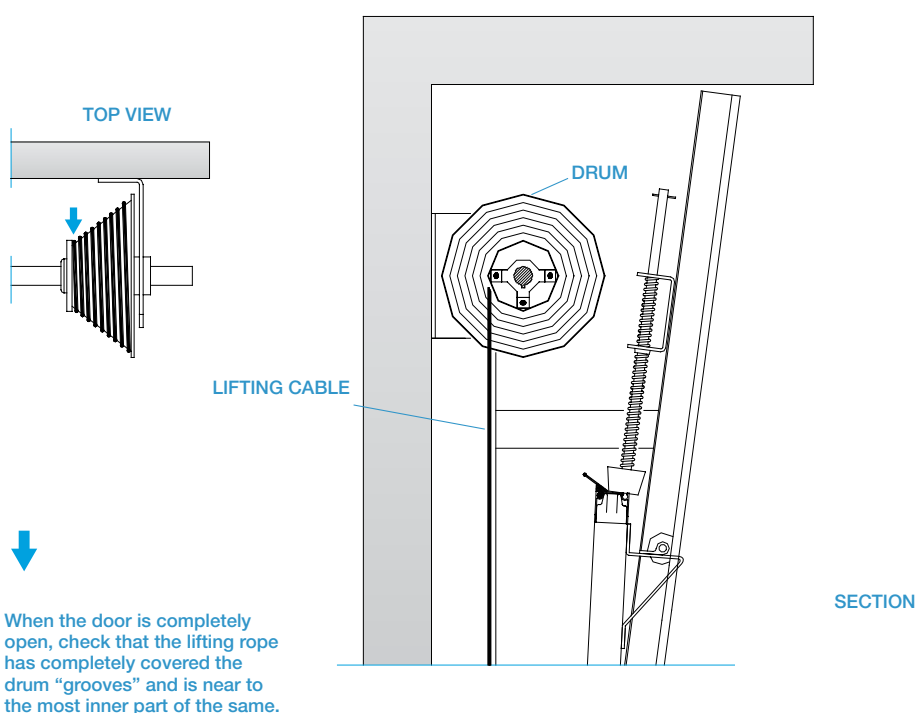
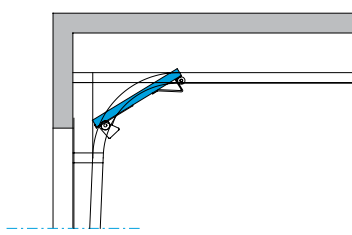
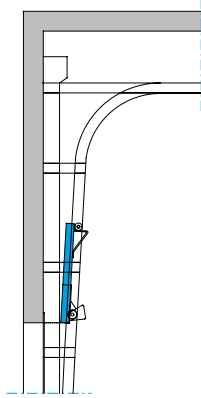
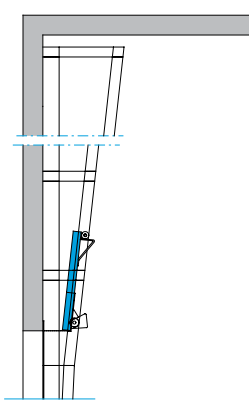
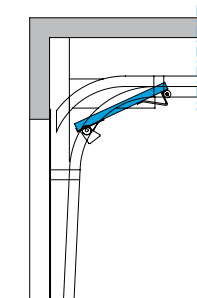


FIG 54 CHECK BASE PANEL POSITION - KPSIN DOOR TYPE**FIG 55 CHECK BASE PANEL POSITION - KPSIS DOOR TYPE****FIG 56 CHECK BASE PANEL POSITION - KPSIV DOOR TYPE****FIG 57 CHECK BASE PANEL POSITION - KPSIR DOOR TYPE**

**CHECK BASE PANEL POSITION
WITH THE DOOR COMPLETELY
OPEN**

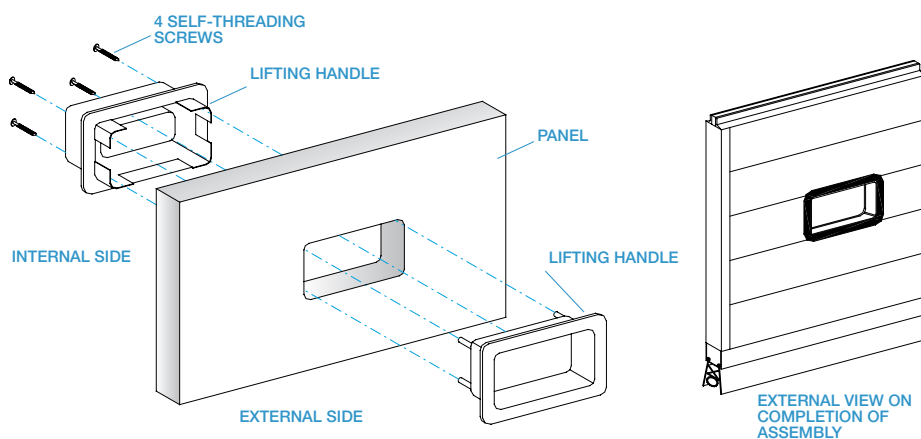
OPERATION 8

ALL DOOR TYPES

The handle, with the projecting part to the inside, must be located in the appropriate milled seat and fixed using the 4 supplied screws.

ACCESSORIES ASSEMBLY

LIFTING HANDLE ASSEMBLY FIG 58



ALL DOOR TYPES

On manual doors, attach the nylon cord to the relevant bracket screwed to the cables safety catches. (Fig. 60)

NYLON CORD ASSEMBLY FIG 59

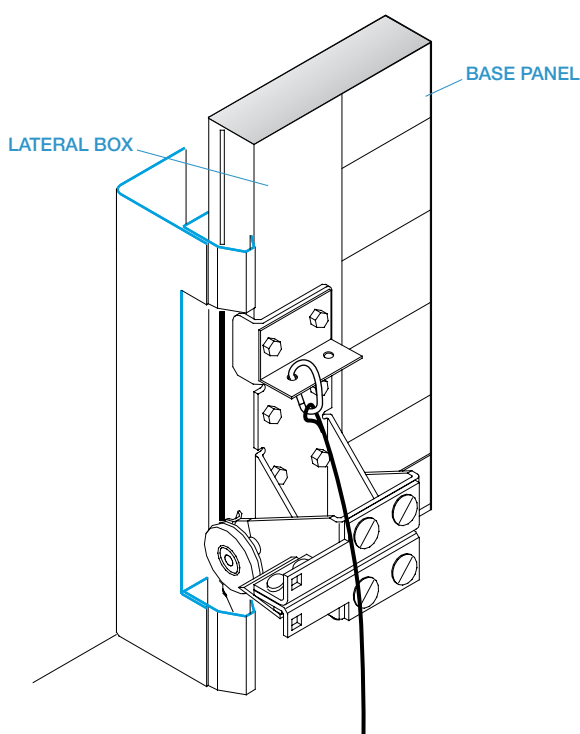


FIG 60

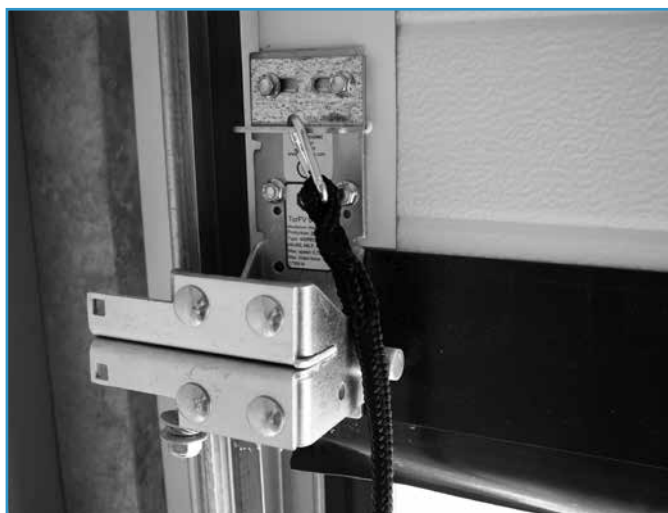
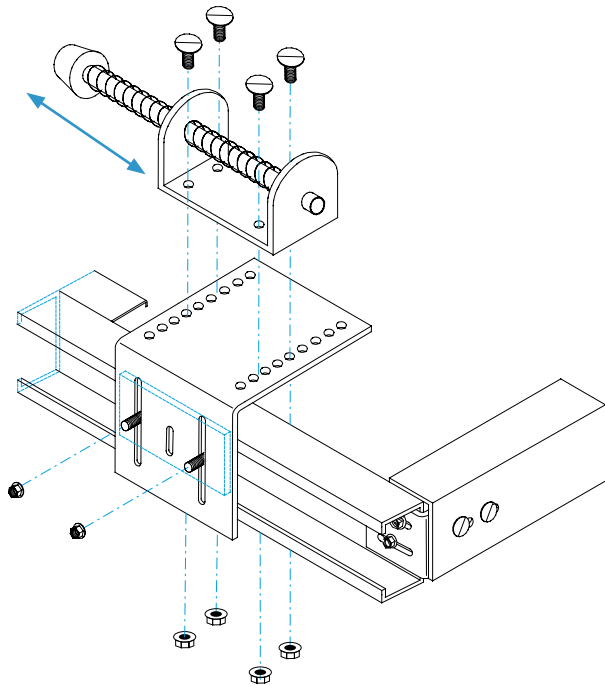


FIG 61 CHECK AND ADJUST KPSIN, KPSIS AND KPSIR SHOCK ABSORBERS**ALL DOOR TYPES**

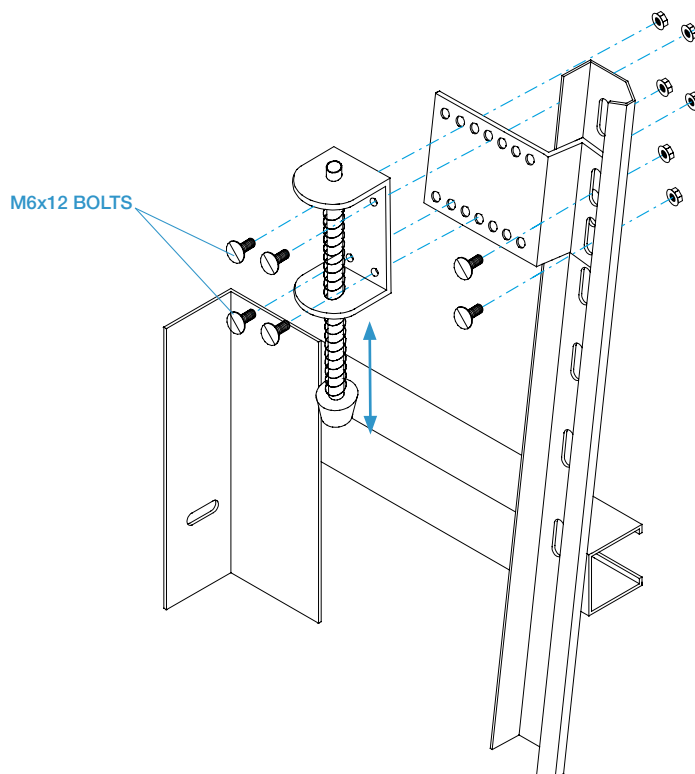
Lift the door completely.

Put the two shock absorbers into contact with the door fixing them, depending on the model, onto the horizontal and vertical guides.

NOTE

In the case of motorised doors the shock absorbers must be compressed, with the door open, to at least 50% of their run so that the cables are always in tension.

Always use the original shock absorbers (ask our offices) if the manually operated door is transformed into a motorised door.

FIG 62 CHECK AND ADJUST KPSIV SHOCK ABSORBERS

OPERATION 8

ALL DOOR TYPES

For assembly of the winch (on request) onto manually operated doors, see figure 63.

NOTE

The manual activation winch installed on the doors must be removed when motorisations are installed. This is to prevent possible injury/damage to persons/objects due to the simultaneous functioning of the motor and the winch.

ASSEMBLY OF THE "PEDESTRIAN" DOOR WITHOUT K-VISION PANELS

For assembly of the panels refer to the panels assembly chapter. For assembly of the door-closing device, follow the specific layouts attached.

ASSEMBLY OF THE "PEDESTRIAN" DOOR WITH K-VISION PANELS

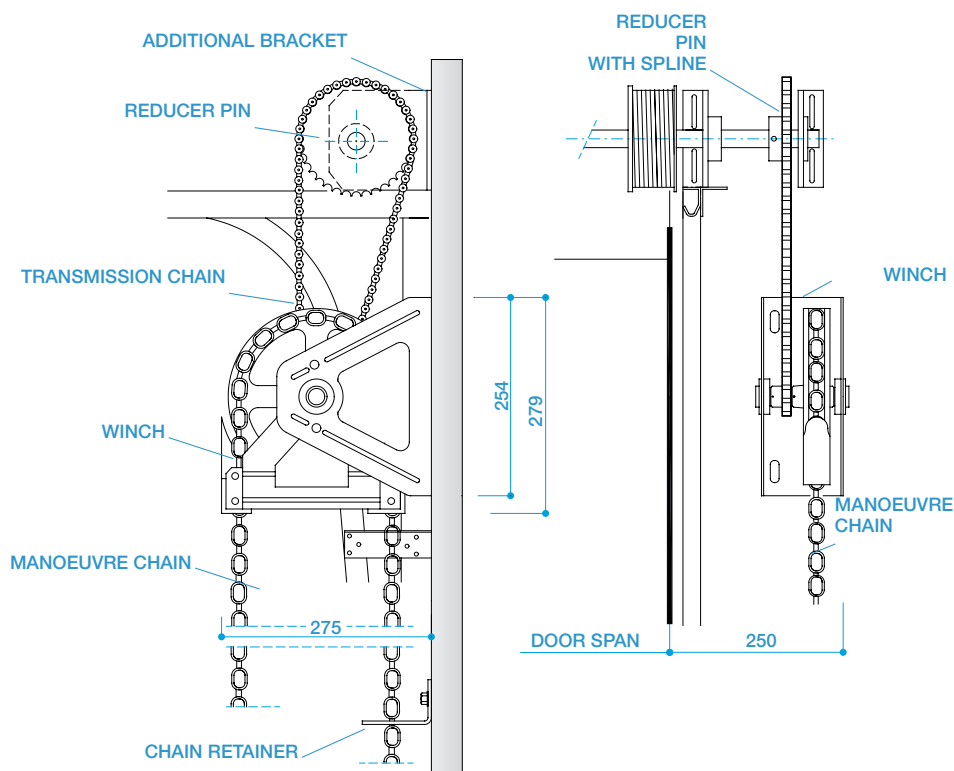
For assembly of the panels refer to the panels assembly chapter.

ATTENTION

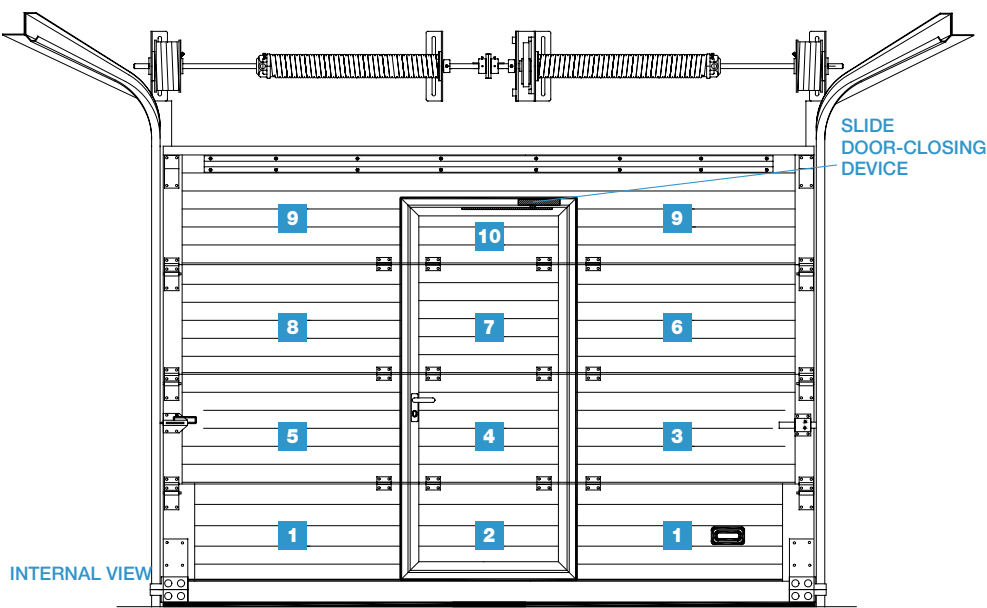
With the pedestrian door the hinge must be assembled as per figure 65.

ACCESSORIES ASSEMBLY

CHAIN WINCH ASSEMBLY FIG 63



PANELS ASSEMBLY ORDER FIG 64



HINGE FOR DOOR ASSEMBLY WITH PEDESTRIAN DOOR FIG 65

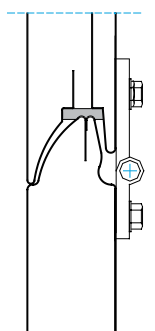
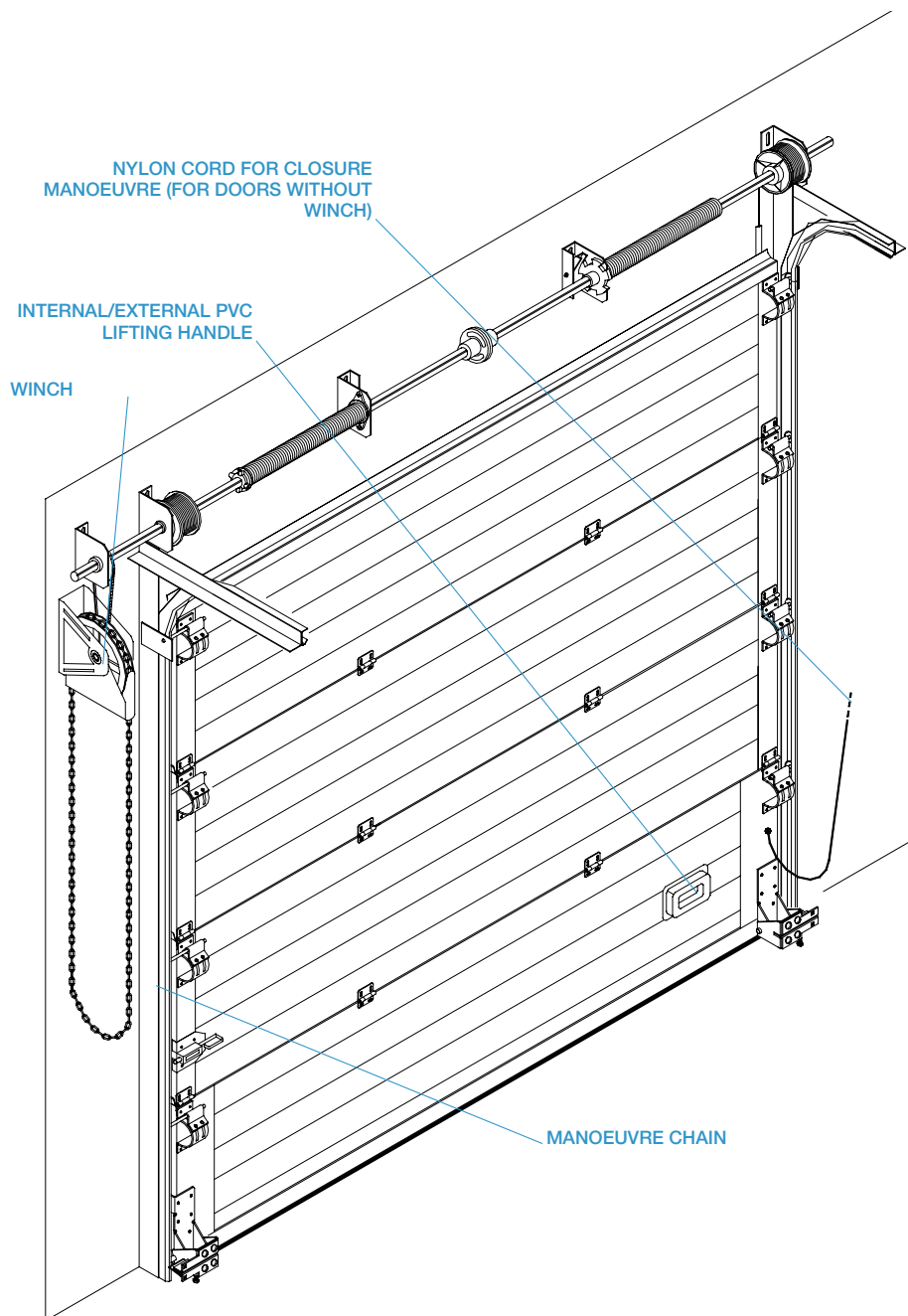


FIG 66 FINAL LAYOUT OF THE ASSEMBLED DOOR

Release any locks or the chain before activating the door.

Make sure that there are no persons, animals or objects in the door manoeuvre area when opening, as they could be hit.

Make sure the pedestrian door is closed correctly.

The opening manoeuvre can be stopped from the inside by acting on the handle or the winch.

The door is opened from the outside using the handle.

Do not leave the door partially open as this could be a source of danger for transiting vehicles.

Check correct door balance during opening. Correct this immediately, if necessary.

The indoor closure operation is smooth and progressive and can be stopped by acting on the handle, the nylon cord and on the winch, if supplied.

Closing from outside is performed using the external handle.

Close the chain and lock if supplied.

Never stop in the door manoeuvre area.

MOTORISATION

All Kopron doors can be motorised; for assembly, follow the instructions attached to the products issued by the manufacturer.

All doors are prepared for the motorisation to be installed on the longest right side of the milled shaft, on the left on request.

GEARED MOTOR ASSEMBLY

The motor can be flushed directly onto the shaft or with chain return transmission.

OPTIONAL

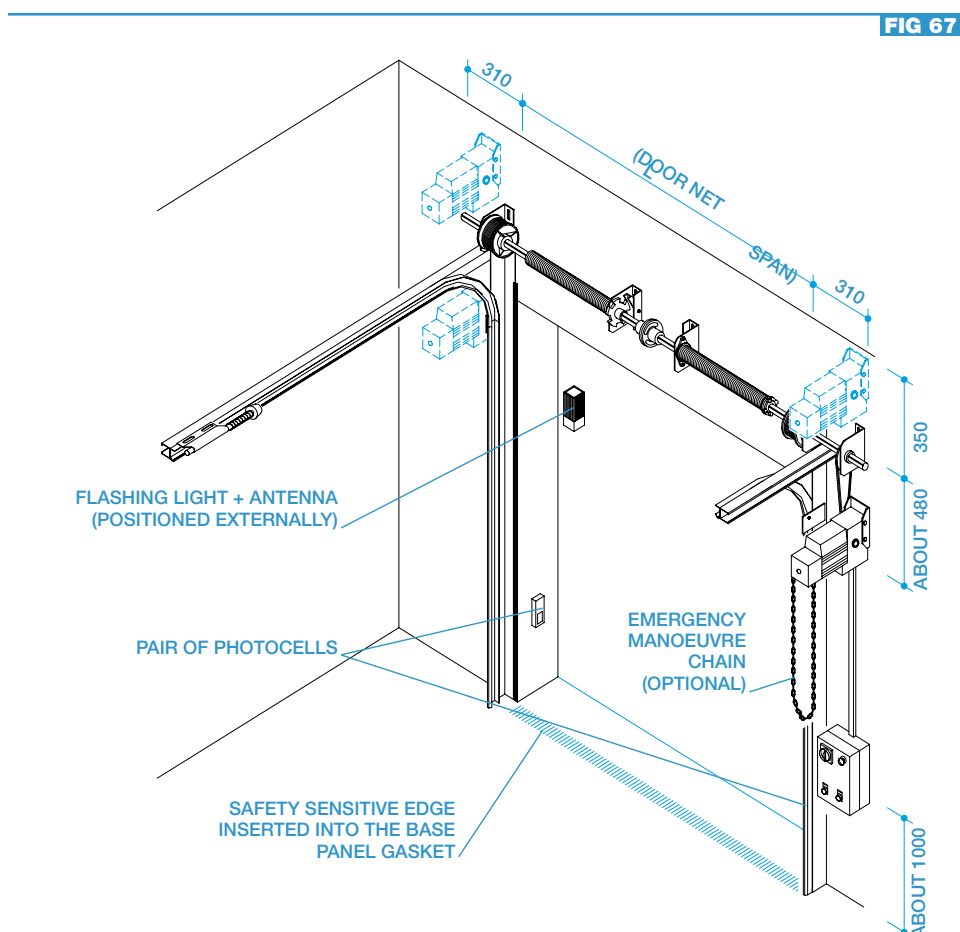
Flashing light, photocells, safety sensitive edge, micro switch for the anti-fall device in case of two-bladed spring breakage and safety device with magnetic sensor if the pedestrian door is present.

Available on request: two or four-channel transmitter, key selector switch for outdoors, photocell column, magnetic and radar detector.

NOTE

The external motor block device is missing from this motorisation.

TECHNICAL FEATURES GEARED MOTORS



TECHNICAL FEATURES GEARED MOTORS		
	SINGLE PHASE	THREE PHASE
Power supply (50Vac-60Hz)	230 (+6 -10%)	400 (+6 -10%)
Electric motor	asynchronous single phase 1450 rpm	asynchronous three phase 1450 rpm
Maximum power absorbed (W)	800	420
Absorbed current (A)	3,5	1,1
Start condenser (µF)	20	-
Winding heat protection (°C)	140	140
Frequency of use (S3)	40%	60%
Max. number of consecutive cycles	5	6
Drive	hollow through shaft diam. 25.4mm (1")	Hollow through shaft diam. 25.4mm (1")
Drive rotation speed (rpm)	23	23
Nominal torque at drive (Nm)	50	70
Max drive revs.	24	24
Protection rating	IP 54	IP 54
Environmental temperature (°C)	-20 / +55	-20 / +55
Max. weight of the geared motor (Kg)	14	14
Oil type	FAAC XD220	FAAC XD220
Quantity of oil (l)	0,9	0,9

Every 3 months of use, check:

- the correct tightness of the screws that block the drums, cones, joints and stop rings on the spring holder shaft
- that the splines are in their seat.
- the robustness of the hinges and the other anchorage elements.
- chain tension.
- the efficiency of the motorisation or the control devices (electric control board, key selector switch, radio control, sensitive edge, photocells, pedestrian door lifting micro switches and springs anti-breaking device.
- door balance.

The hinge pins and the wheel rods must be lubricated with silicone solutions, never using grease. The ropes must be checked every 3 months for the purpose and effect of art. 179 Presidential Decree 547 dated 27/04/1955.

If the door must be balanced, which due to loss of spring load has difficulty moving, follow the procedure given below:

- close the door or block it using the block clamps or chain.
- install the spring load kit on the spring to be loaded, slightly overloading the spring holder shaft to keep it in tension.
- loosen the square-headed screws positioned on the loading cone and load the spring with ½ or 1 turn.
- tighten the screws (make sure that one enters into the groove of the shaft) and disassemble the spring load kit.
- repeat the operation for every spring.
- carefully remove the chain or the blocking clamp to check perfect door functioning.

All checks and maintenance interventions must only be performed by expert staff and only using original spare parts.

If the cables break the safety catches device intervenes automatically to prevent the sudden and uncontrolled fall of the door.

Contact our technical dept. for information regarding correct repairs when damaged parts must be replaced.

Remember that original spare parts must be used and the replacement of the safety device is mandatory.

If the springs break or must be replaced owing to wear (see cycles indicated in the maintenance table), before proceeding with replacement it is a good idea to check the milled shaft as this is also subject to wear. Consult our technical dept.

MAINTENANCE

NOTE

CABLE BREAKAGE

SPRING BREAKAGE

This manual addresses:

designers of work places and environments;
purchasers of a sectional door;
employers, so that the product is used appropriately and safely;
installers for correct and safe assembly;
dealers who take care of delivery to the final customer.

The following pages give a summary of the LIST OF RISKS chapter.

NOTE

Our company periodically organises refresher and training courses regarding the assembly of the doors.

ATTENTION

When the motorised door is in an open or semi-open position, it is prohibited to:
manually disconnect the motor for drive doors;
remove the transmission chain on industrial doors.

The door may suddenly fall to the ground and be ruined.

If the spring is insufficiently loaded, block the casing and carry out the necessary interventions.

WARRANTY

The warranty, with duration of 24 months from the delivery date, covers all Kopron sectional doors regarding the replacement of faulty parts or components, which must be returned and collected from our establishment in Gorgonzola (MI), in Via I Maggio. Correct and periodical routine maintenance is an essential condition for validity of the warranty.

Components subject to wear are not covered by the warranty (wheels, cables, gaskets...) along with carriage, two-blade spring, end run and lifting cable adjustment.

Only sectional doors mounted on national territory can be supplied with after-sales assistance by our company. As long as the product fault is the responsibility of Kopron, during the warranty period the cost of this service is limited to travel and living costs. Differently, the intervention will be the responsibility of the body making the request on the basis of the rates in force at that time.

Any claims will be referred exclusively by the Milan Law Court.

CAUSE	EFFECT	REMEDY
Jumping of the ropes.	Damage or breakage of the ropes or cables.	In the case of deterioration, replace the ropes before winding them onto the drums.
Springs fault (one or both at the same time in the case of DUPLEX springs).*	The door falls.	Insert the spring anti-breakage device for DUPLEX springs. Replace the springs before the end of the number of cycles indicated in the Maintenance register.
Fault in just on spring in the case of DUPLEX springs. *	The door falls.	Change the springs before the end of the number of cycles indicated in the Maintenance register.
Deterioration of the lateral gaskets.	Possibility of trapping or shearing the fingers.	Change the worn gasket.
Deterioration of the lower gasket.	Lack of elastic and deformable surfaces that attenuate the risks of impact and cutting.	Change the worn gasket.
Incorrect assembly of the hinges on wooded doors.	Crushing of the fingers.	Assemble the hinges as indicated in the drawing on page 23.
Derailing caused by casing stop due to friction in the case of motorisation assembled on the shaft.	The casing will fall once the friction has been eliminated.	Block the casing using suitable supports before intervening. Rewind the ropes correctly before removing the obstacles.
Excessive spring load.	Quick door ascent.	Respect the number of load turns prescribed and the procedures indicated on page 28 and 29.
Door partially open.	Impact with persons, vehicles and animals.	Insert adhesives strips indicating clearance.
Door movement with pedestrian door not closed correctly.	Fault or detachment of the pedestrian door.	Warn the staff to close the door correctly and periodically check the door-closing device.
Derailing caused by the casing stopped in the open position and the motor closing down (for motorised doors).	Casing falls due to cable breakage.	Assemble the horizontal guides with slope as indicated on page 14. Load the buffers by 50% with the casing completely open. If the door is transformed from manual to motorised, give the horizontal guides the gradient indicated on page 14. Replace the buffers assembling larger ones and loading them by 50% with the casing entirely open.
Derailing of the casing and its block due to an obstacle during closure.	Casing falls due to cable breakage.	Before removing the obstacle make sure that the ropes are correctly wound onto the drums and check that the door moves upwards manually. To work in safe conditions, place scaffolding or a fork-lift truck under the casing in a way to prevent sudden falling of the same.
Projections and handles.	Risk of trapping limbs and clothes in the gears.	Do not perform maintenance and do not approach the transmission chains, the springs and transmission shaft with moving parts, for your own safety and that of others. The Standard does not envision protections for moving parts installed above 2.5 m.
Springs unloaded due to small pre-loading.	Due to imbalance of the door it does not stay in a stable open position and risks falling suddenly.	Periodically check spring balance and the load status. N.B.: operation to be performed by trained staff.

(*) = Springs mounted one inside the other

DRAGGING RISK

[illegible]

[illegible]

[illegible]



LOOKING AHEAD



Quality Management System
UNI EN ISO 9001:2008 Certified
Factory Production Control
UNI EN ISO 1090
Applicable standard
UNI EN 13241-1
UNI EN 16005
UNI EN 1398
UNI EN 3834-2

CERTIFICAZIONI CERTIFICATIONS

Kopron attraverso le certificazioni di qualità offre un'ulteriore garanzia sull'efficacia e l'efficienza dei propri prodotti.

Through certifications Kopron offer a further guarantee on efficiency and quality of their products.



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