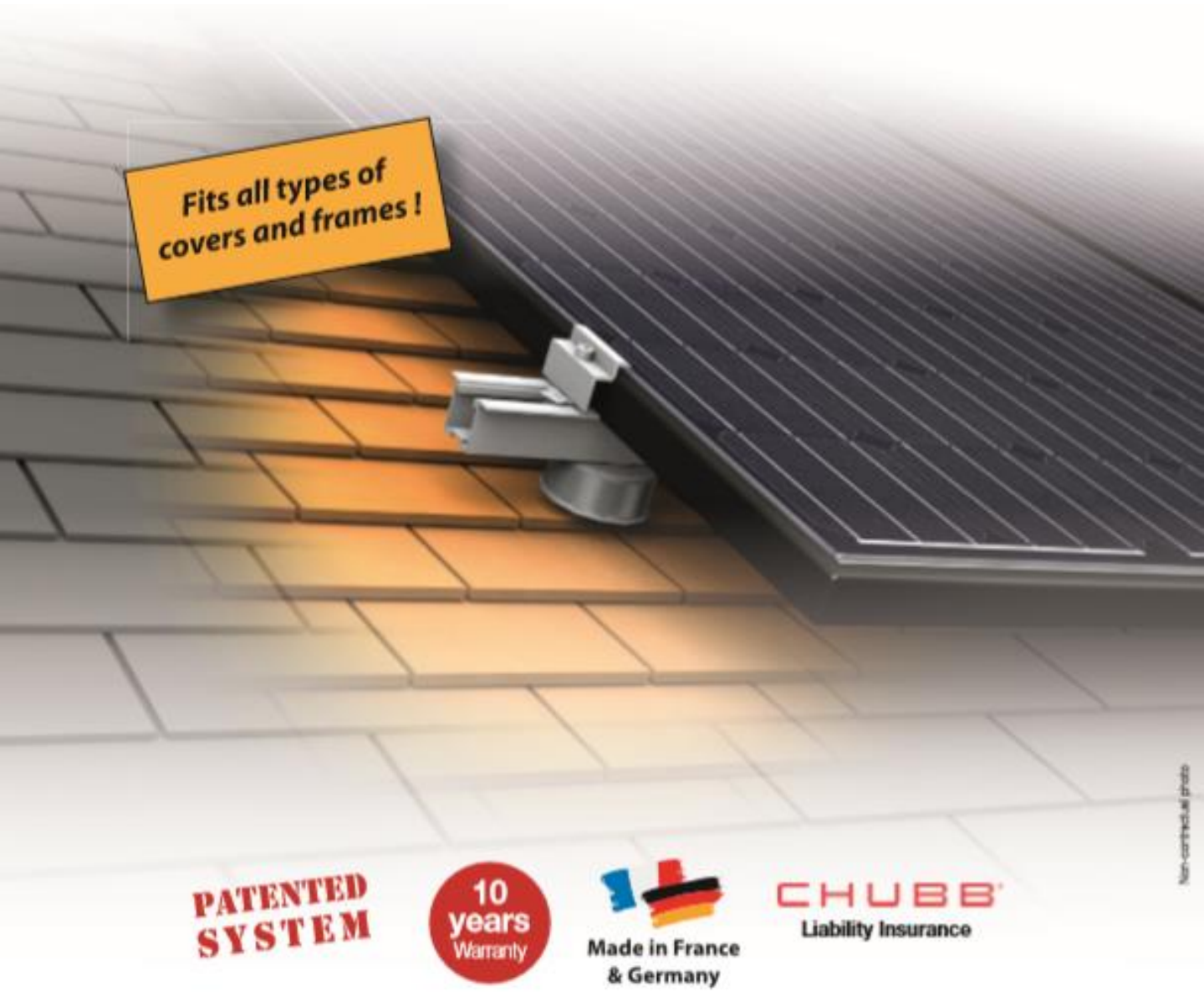
PHOTOVOLTAÏQUE

GSE ON-ROOF SYSTEM™

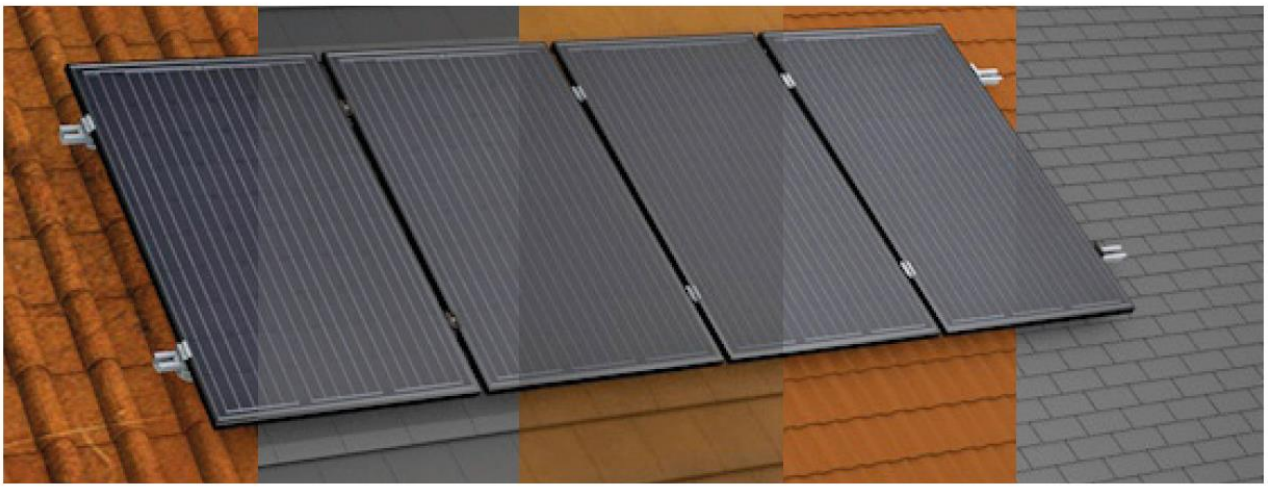
Rooftop mounting system for traditional photovoltaic panels

INSTALLATION MANUAL



www.gseintegration.com

Summary :



Security Instructions :

- The mounting and the commissioning of the installation must be done by a staff whom have been trained and whom are skilled, at risk of causing damage to the installation and/or putting lives in danger.

- Be sure to consider the mounting instructions of the manufacturer of the installed photovoltaic modules and the compatibilty with the GSE ON-ROOF System.

- National and local construction standards as well as the environmental protection directives in force must be respected.

- Safety regulations and accident prevention instructions must be respected. Appropriate anti-fall protection devices must be used for all work at height

- All of our up-to-date technical documentation are available online on the website www.gseintegration.com/media.html. It is therefore imperative, before installation, to check that an updated version is available for the installer.

Dimensioning :

- All installation projects require a preliminary study of the structure of the building and of it's environment to be able to determine it's feasibility.

- The health state underneath the structure and it's flatness must be verified before undertaking all installation works.

- A verification of the loads applied by the system on the structural element to which it's attached must be carried out according to the Eurocode calculations. It's therefore necessary to know the dimensions and the layout of the framework hosting the system.

- A layout software is available for the client at our downloading area : www.gseintegration.com/media.html

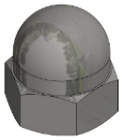
- For any technical support, the GSE Intégration service is available by :
  - Phone : +33.(0).1.70.32.08.00 – Design Office Servce
    - *(Monday to Tuesday 9h30 to 18h00 – Friday 9h30 to 14h30)*
  - E-mail: contact@gseintegration.fr

Fastening Systems

Rail support+ Threaded rod
(3 sizes : H96/H136/H176)

Wood screw
Ø6mm or Ø8mm

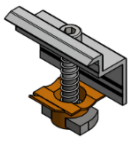
Waterproof washer
Copper Ø8/12mm



Cap nut
M8

Rubber wash
Ø9/13mm

Support cap Silver

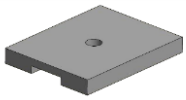


Simple clamp

Double clamp

Rail

Rail connector



Drilling guide

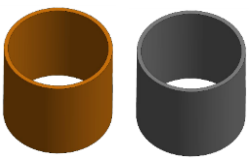
Tile Integration Systems

Collar tray – 2 color
(Flat tiles and slates 400/400mm)

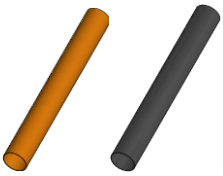
Adjustable tile collar Ø50mm
(Curved tiles)

Tile collar Ø63mm – 3 Colors
(Interlocking flat tiles)

Adjusting Accessories



Adjustable junction collar
Ø63mm / 80mm



Adjustable extension collar
Ø63mm / 500mm

Tools Required (not supplied)

Diamond hole saw
Ø53mm or Ø67mm

Mastic* glue

Embout 6 pans ou
clé à pipe Ø13mm

*Validated glue : Sikaflex 11FC, Sikaflex Flexotuile, Sikaflex High Tack, Nec+ Ft143, Nec+Ft350

Tools Required (not supplied)

Nozzle
T×30 (Ø6) / T×40 (Ø8)

Drill / Screwdriver

Saw

Grinder

Shear

Drill Bit
Ø8mm

LAYING RULES

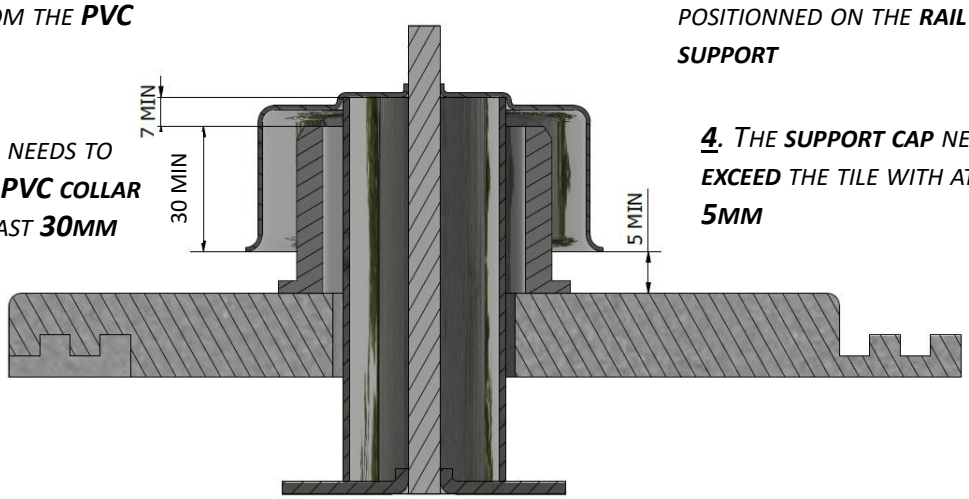
LAYING RULE 1 : INTERLOCKING FLAT TILES (RAIL SUPPORT H136MM)

1**. THE RAIL SUPPORT MUST **EXCEED** FROM THE **PVC COLLAR

2**. THE **SUPPORT CAP** NEEDS TO BE POSITIONNED ON THE **RAIL SUPPORT

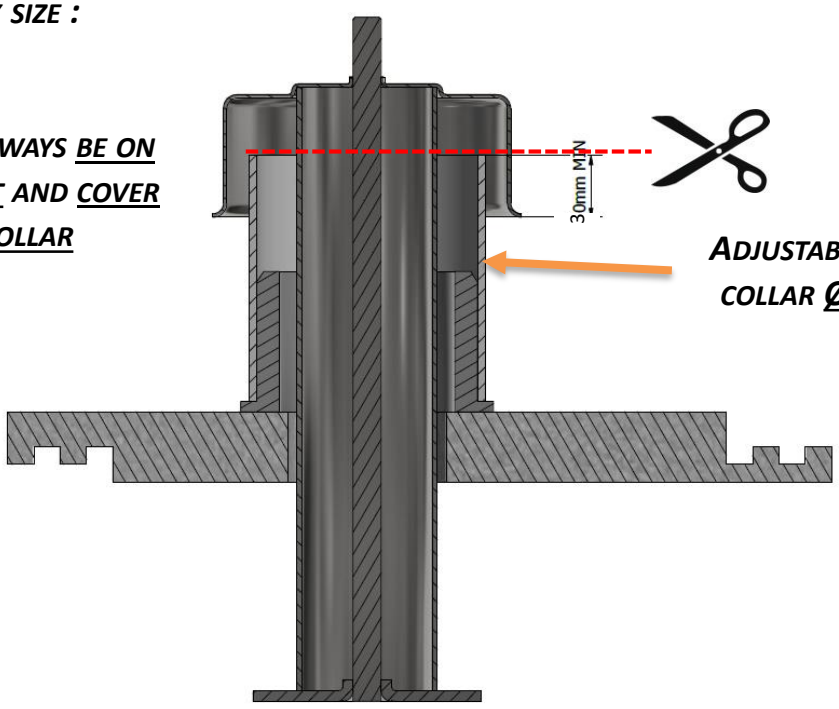
3**. THE **CAP** NEEDS TO COVER THE **PVC COLLAR** WITH AT LEAST **30MM

4**. THE **SUPPORT CAP** NEEDS TO **EXCEED** THE TILE WITH AT LEAST **5MM



IF THE RAIL SUPPORT IS BIGGER THAN INITIAL NEEDED AND / OR THE COVER OF THE CAP ON THE COLLAR IS INSUFFICIENT, USE THE ADJUSTABLE JUNCTION COLLAR Ø63MM / 80MM TO CUT AT THE NECESSARY SIZE :

THE CAP MUST ALWAYS BE ON THE RAIL SUPPORT AND COVER THE PVC COLLAR

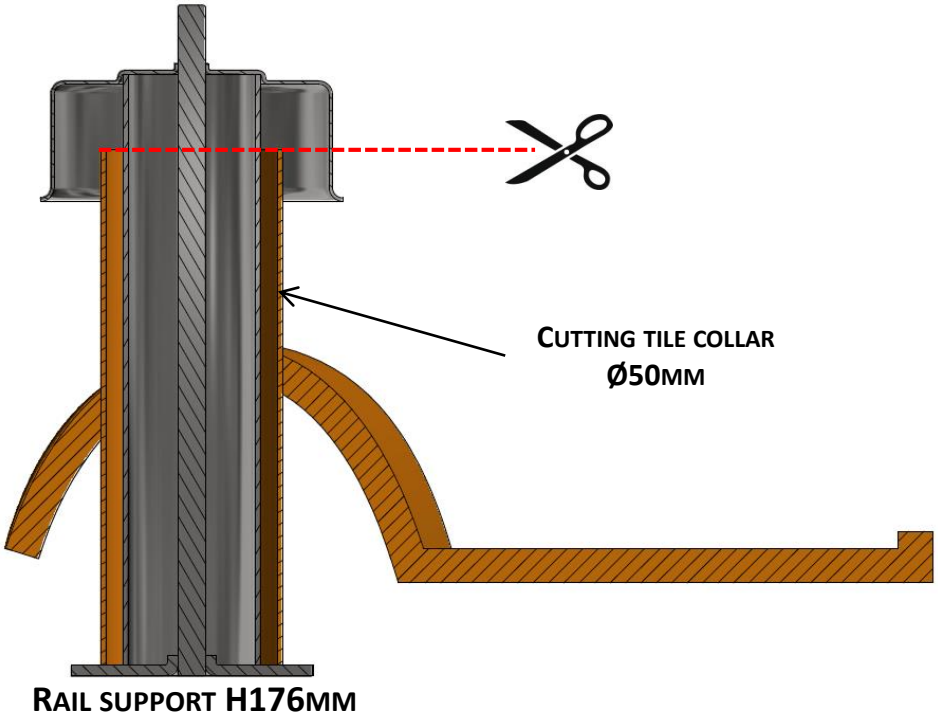


ADJUSTABLE JUNCTION COLLAR Ø65/80MM

LAYING RULES

LAYING RULE 2: CURVED TILES (RAIL SUPPORT H176MM) OU LOW CURVED INTERLOCKING TILES (RAIL SUPPORT H136MM)

EX : CURVED TILES



RAIL SUPPORT H176MM

CUT THE ADJUSTABLE EXTENSION COLLAR Ø50MM WITH A 500MM HEIGHT AT THE NECESSARY SIZE SO THAT :

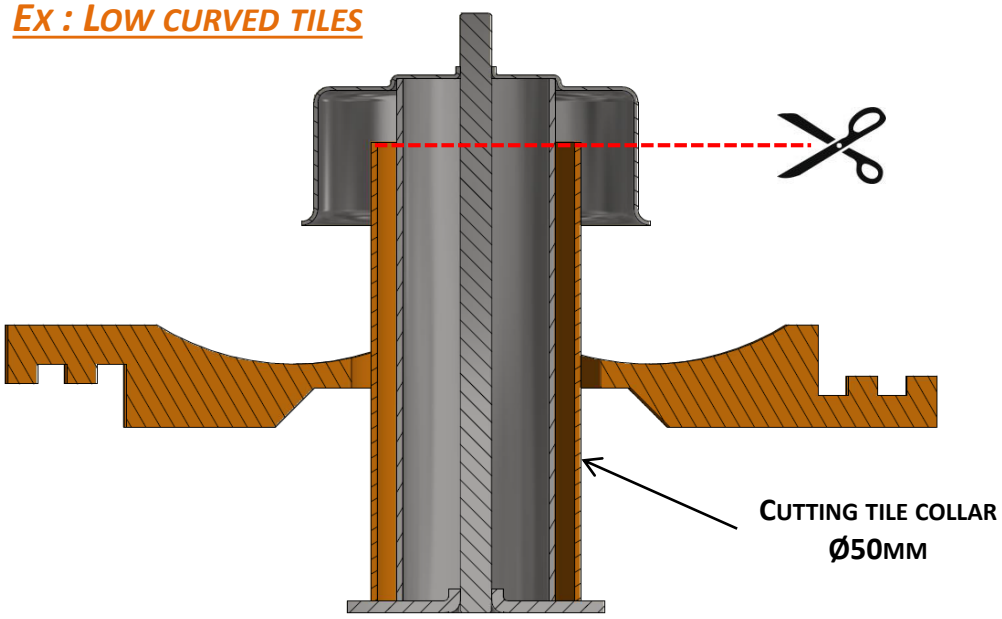
1. *THE **SUPPORT CAP** IS ON THE **RAIL SUPPORT***

2. *THE **CAP** MUST **COVER** THE **PVC COLLAR** AT LEAST **30MM***

3. *THE RAIL SUPPORT MUST **EXCEED** THE **ADJUSTABLE PVC COLLAR***

NEVER DRILL THE WATER FLOW ZONE

EX : LOW CURVED TILES



RAIL SUPPORT H136MM

LAYING RULES

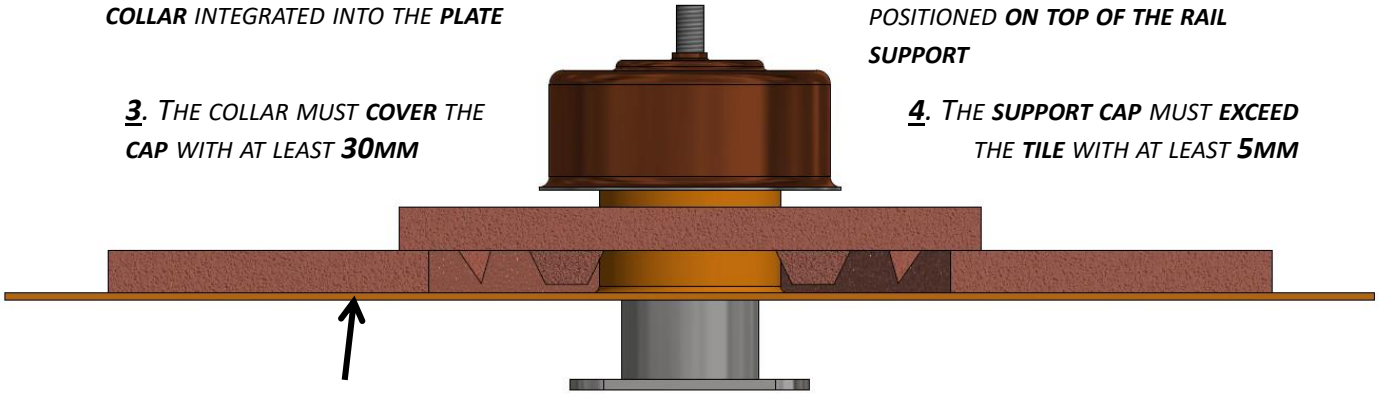
LAYING RULE 3 : FLAT TILES OR SLATES (RAIL SUPPORT H96MM)

*1. THE RAIL SUPPORT MUST **EXCEED** THE **COLLAR** INTEGRATED INTO THE **PLATE***

*2. THE **SUPPORT CAP** MUST BE POSITIONED **ON TOP OF THE RAIL SUPPORT***

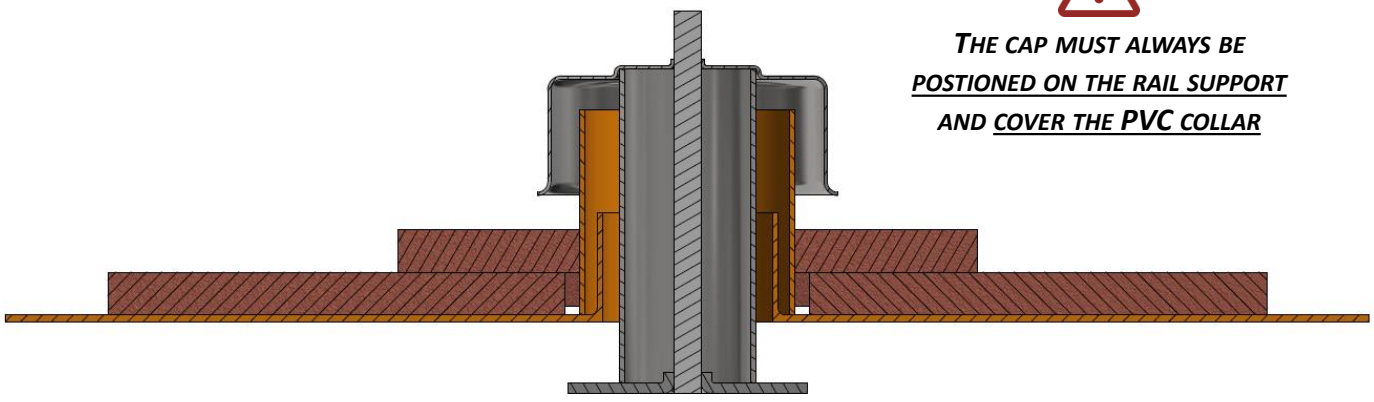
*3. THE COLLAR MUST **COVER** THE **CAP** WITH AT LEAST **30MM***

*4. THE **SUPPORT CAP** MUST **EXCEED** THE **TILE** WITH AT LEAST **5MM***



COLLAR TRAY
TILE OR SLATE

IF THE SUPPORT CAP IS BIGGER THAN NEEDED, IT'S POSSIBLE TO USE THE ADJUSTABLE COLLAR EXTENSION Ø63MM TO CUT AT THE NECESSARY SIZE AND TO PLACE INSIDE THE COLLAR OF THE TRAY :

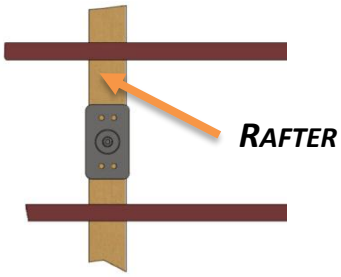


THE CAP MUST ALWAYS BE POSTIONED ON THE RAIL SUPPORT AND COVER THE PVC COLLAR

LAYING RULES

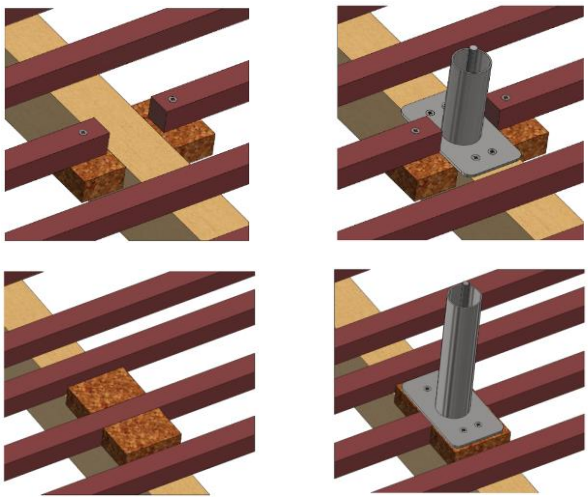
LAYING RULE 4 : POSTIONNING THE RAIL SUPPORT

THE RAIL MUST BE FIXED ON THE RAFTER WITH THE HELP OF TWO SCREWS Ø8MM OR 4 SCREWS Ø6MM



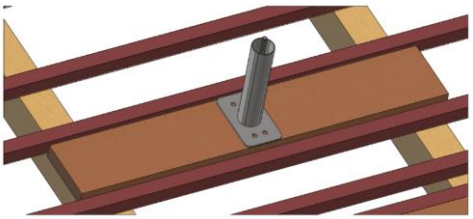
HIGHT ADAPTATION:

- IF THE GAP BETWEEN THE BATTENS ARE TO LITTLE
- IF THE GLOBAL HEIGHT NEEDS TO RAISE THE SUPPORT TO THE HEIGHT OF A BATTEN

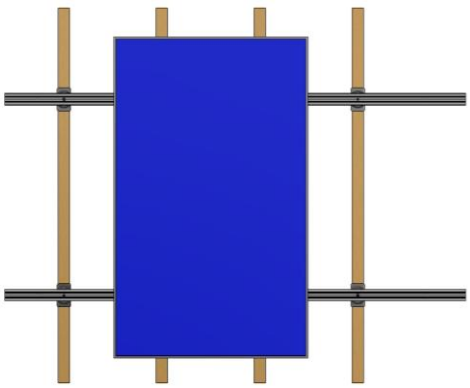


USING A BOARD IS POSSIBLE:

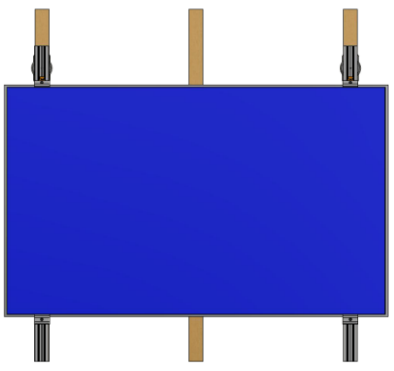
- *THE LOCATION OF THE RAIL SUPPORT DOESN'T FALL ON A RAFTER*
- *YOU'RE IN THE CASE OF A HIGH CURVED TILE*



LAYING RULE 5: PORTRAIT LAYING / LANDSCAPE LAYING



PORTRAIT



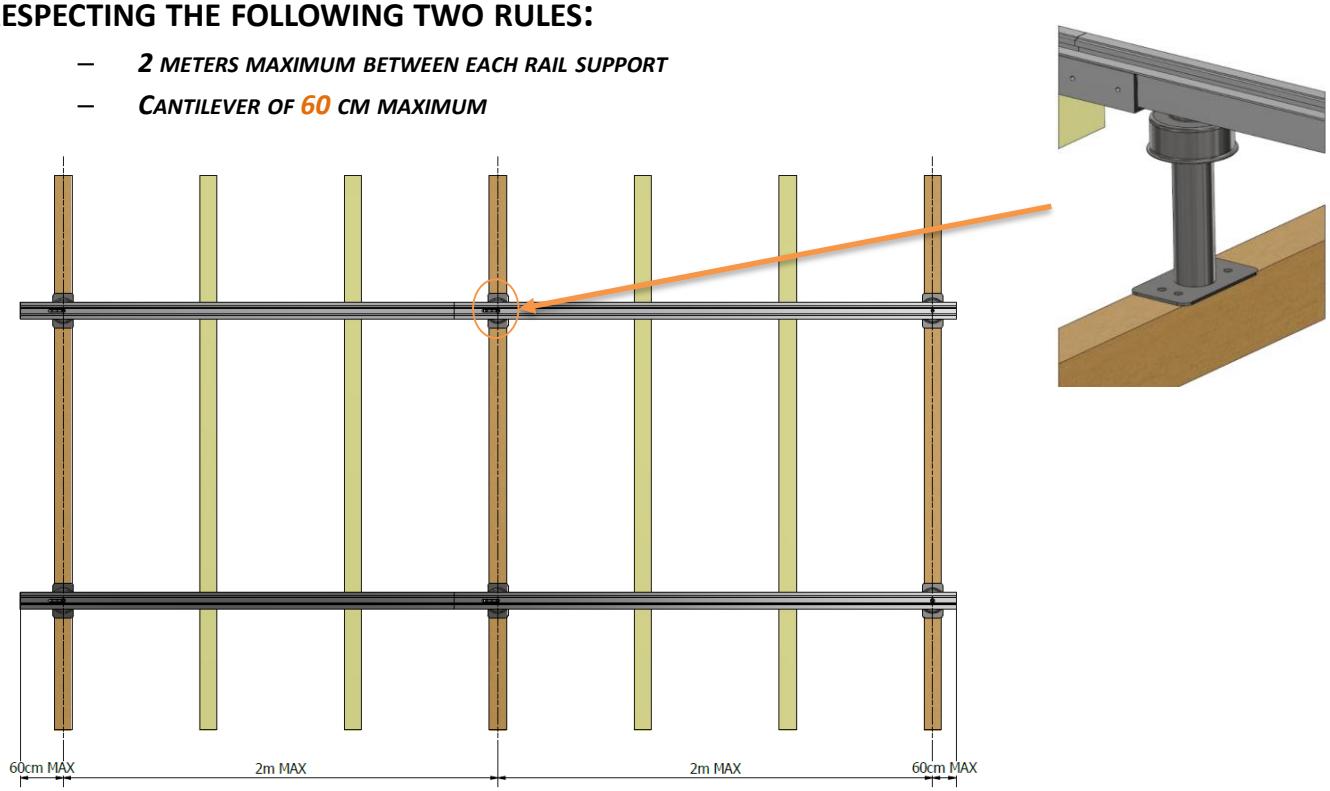
LANDSCAPE

NO NEED FOR CROSSED RAIL !

MOUNTING STEPS

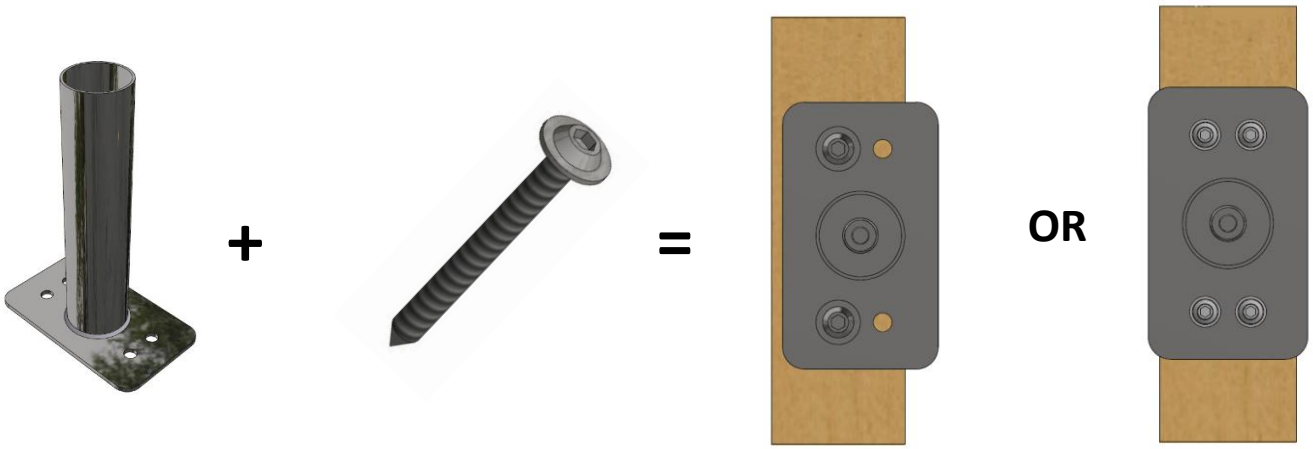
1. SPOT THE LOCATION OF THE DIFFERENT FIXING SUPPORTS ON THE RAFTER BY RESPECTING THE FOLLOWING TWO RULES:

- *2 METERS MAXIMUM BETWEEN EACH RAIL SUPPORT*
- *CANTILEVER OF 60 CM MAXIMUM*



2. SCREW THE FIXING SUPPORTS ON THE RAFTER WITH THE HELP OF 4 SCREWS Ø6MM PER SUPPORT (PROVIDED) OR OF 2 SCREWS Ø8MM

NB: IN THE CASE OF A FIXATION WITH 2 SCREWS Ø8MM, MAKE SURE TO OFFSET THE MOUNTING BRACKET SO THAT THE 2 SCREWS ARE IN THE MIDDLE OF THE RAFTER

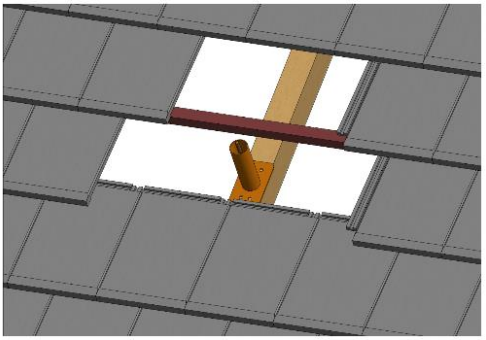


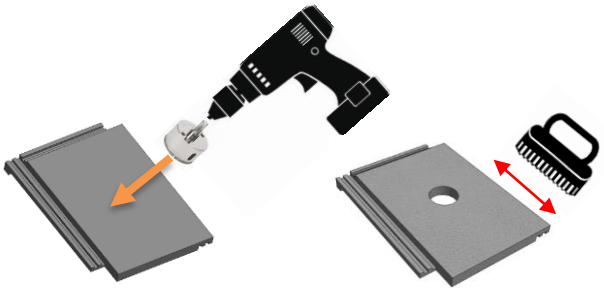
MOUNTING STEPS

3. THERE ARE 3 INSTALLATION TECHNIQUES DEPENDING ON THE ROOF TYPE

3.1. 1ST METHOD : INTERLOCKING FLAT TILES

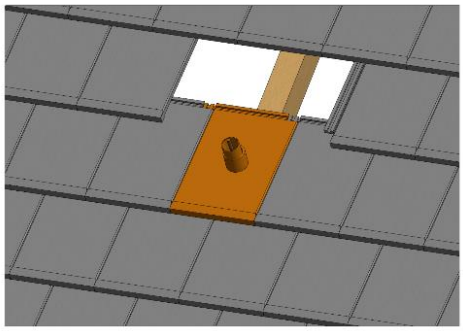
A. USING THE Ø53MM DIAMOND HOLE SAW, DRILL A HOLE IN THE TILE WHERE THE RAIL SUPPORT WILL STAND OUT.

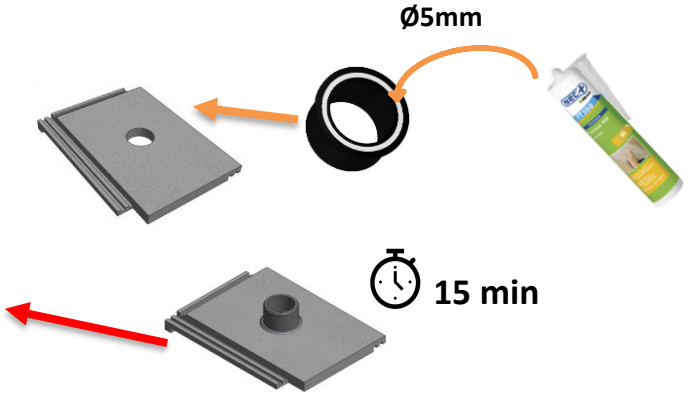




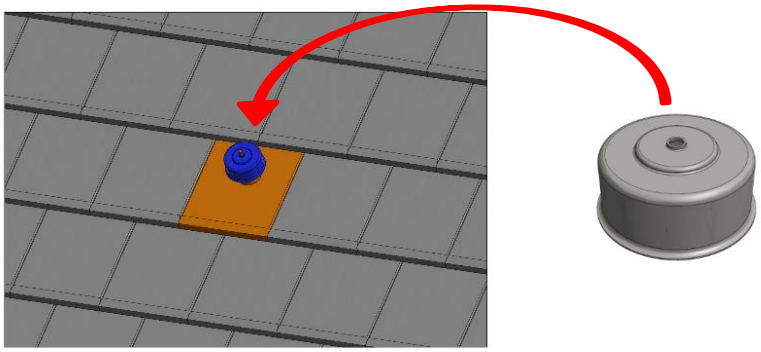
***NB** : IT'S POSSIBLE TO USE A CARDBOARD COPY THE SIZE OF THE TILE TO IDENTIFIY THE EXACT LOCATION WHERE TO DRILL*

B. GLUE THE Ø63MM COLLAR BY USING THE GLUE* ON THE TILE IN THE DRILLED AREA. THEN REPLACE THE TILE ON THE ROOF BY PASSING THE GSE ON-ROOF RAIL SUPPORT IN THE HOLE.





D. PLACE THE SUPPORT CAP ON THE MOUNTING BRACKET TAKING CARE TO CHECK THAT THE BELL COMES TO REST ON THE RAIL SUPPORT TO ENSURE A GOOD SEAL.

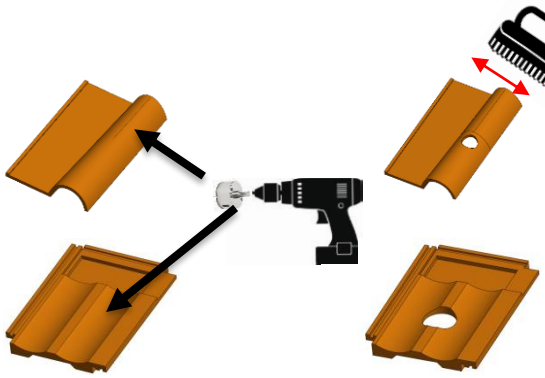


SEE LAYING RULES P.4

MOUNTING STEPS

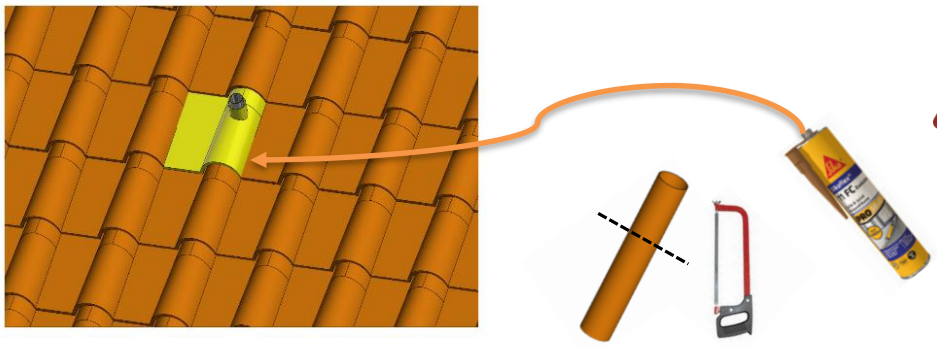
3.2. 2ND METHOD: CURVED TILE OR LOW CURVED TILE

A. USING THE Ø53MM DIAMOND HOLE SAW, DRILL A HOLE IN THE TILE WHERE THE RAIL SUPPORT WILL STAND OUT.



***NB** : IT'S POSSIBLE TO USE FOR EXAMPLE A CARDBOARD COPY THE SIZE OF THE TILE TO LOCATE THE EXACT PLACE WHERE TO DRILL THE TILE.*

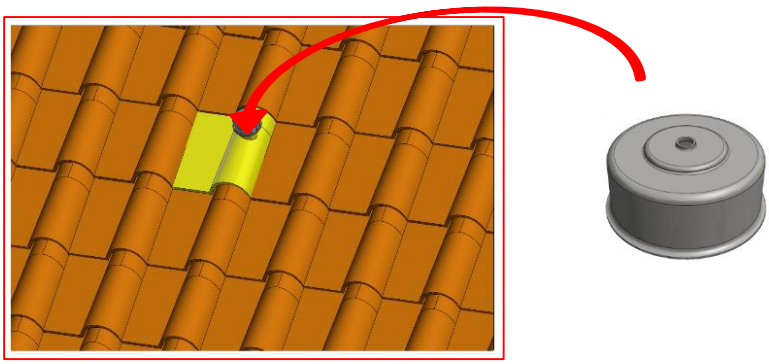
B. CUT A PIECE OF PVC Ø50MM TUBE TO THE REQUIRED LENGTH AND SLIDE IT AROUND THE RAIL. APPLY THE GLUE AROUND IT TO THE CONNECTION WITH THE TILE.



POSITION THE RAIL CORRECTLY ON THE WAVE OF THE TILE

***NB** : SAND THE TUBE WITH SANDPAPER BEFORE REPLACING THE TILE*

C. PLACE THE SUPPORT CAP ON THE RAIL SUPPORT TAKING CARE TO CHECK THAT THE RAIL TUBE FITS INTO THE CAP TO ENSURE A GOOD SEAL AND GOOD MECHANICAL RESISTANCE AROUND THE RAIL.



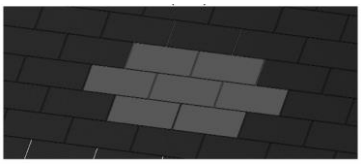
SEE LAYING RULES P.5

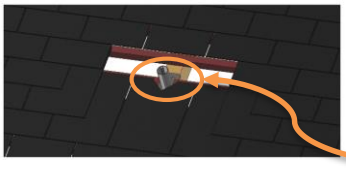
MOUNTING STEPS

3.3. 3RD METHOD : FLAT TILES / SLATE

SLATE :

A. UNCOVER THE SPACE REQUIRED (ABOUT 7 TO 10 SLATES) AND FIX THE RAIL SUPPORT ON THE RAFTER.

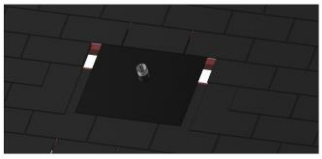




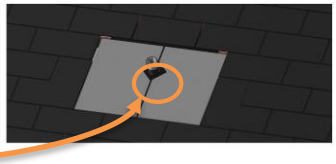
IT MAY BE NECESSARY TO CUT THE SLATE JUST BELOW THE RAIL SUPPORT

B. 2 POSSIBLE SOLUTIONS OF IMPLEMENTATION TO HAVE THE BEST AESTHETIC FINAL RESULT :

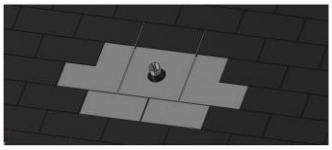
FIRST PLACE THE COLLAR TRAY ON THE RAIL SUPPORT.



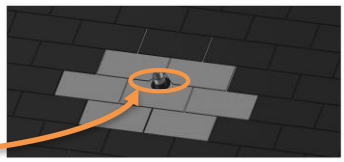
THEN THE TWO SLATES ABOVE (BEVEL AT THE RAIL SUPPORT



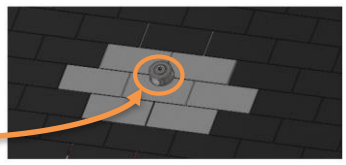
DRILL AND PLACE THE SLATE RIGHT ABOVE THE RAIL SUPPORT

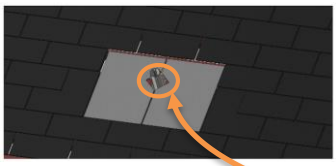


PLACE THE TWO SLATES AT THE TOP OF THE RAIL SUPPORT (BEVEL IF NEEDED)

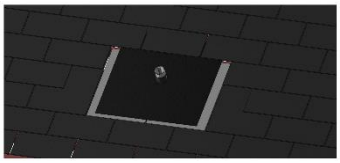


TO FINISH PLACE THE SUPPORT CAP ON THE RAIL SUPPORT

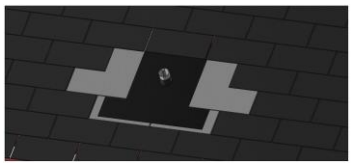




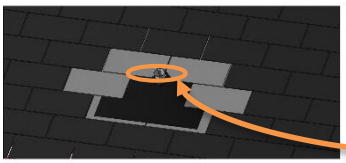
FIRST PLACE THE TOP TWO SLATES AROUND THE RAIL SUPPORT (BEVEL AT THE RAILPLACER FIRST THE COLLAR TRAY ON THE RAIL SUPPORT)



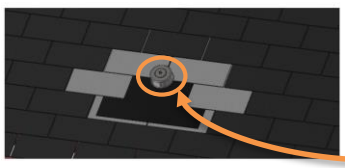
THEN PLACE THE COLLAR TRAY AROUND THE RAIL SUPPORT



THEN THE TWO SLATES ON THE COLLAR TRAY'S SIDES



PLACE THE TWO SLATES AT THE TOP OF THE RAIL SUPPORT (BEVEL IF NEEDED)



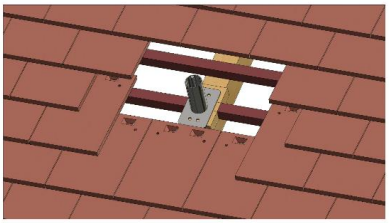
TO FINISH PLACE THE SUPPORT CAP ON THE RAIL SUPPORT

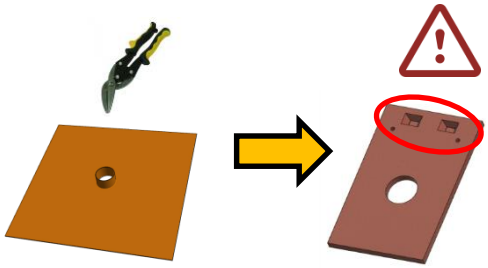
SEE LAYING RULES P.6

MOUNTING STEPS

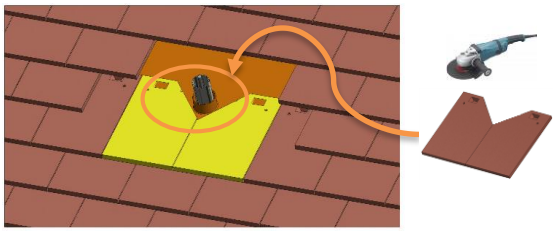
FLAT TILES:

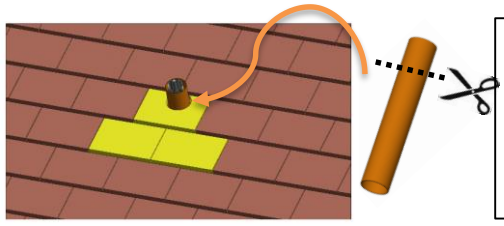
A. CUT THE COLLAR TRAY SO THAT THE PINS OF THE TILES PROTRUDE.



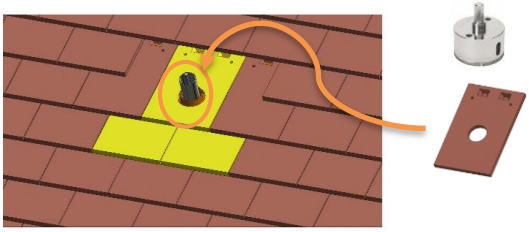


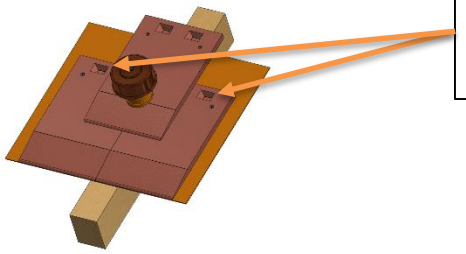
B. BEVEL THE TWO TILES BELOW AS IN THE DIAGRAM IN ORDER TO INSERT THE RAIL SUPPORT, THEN DRILL THE ABOVE TILE BY USING A Ø67MM DIAMOND HOLE SAW TO INSERT IT OVER THE RAIL SUPPORT.





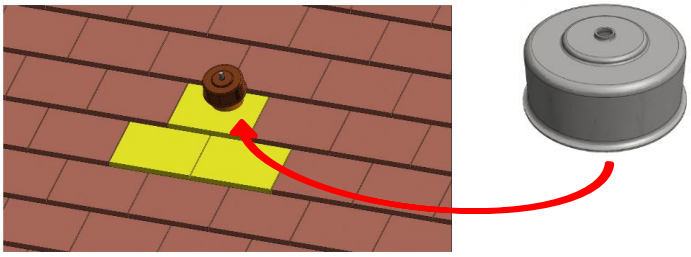
NB : IF THE COLLAR OF THE PLATE DOESN'T PROTRUDE ENOUGH FROM THE TILES, CUT OUT THE Ø63MM ADJUSTABLE COLLAR EXTENSION TO THE REQUIRED SIZE, THEN PLACE IS AROUND THE COLLAR AT THE END OF THE COLLAR TRAY AS SHOWN





BREAK THE « PINS » OF BOTH BOTTOM TILES BEVEL AND HAMMER THE TILES TO THE BATTENS

C. THEN PLACE THE SUPPORT CAP ON THE RAIL SUPPORT BY TAKING CARE TO CHECK THAT THE CAP IS IN CONTACT WITH IT.

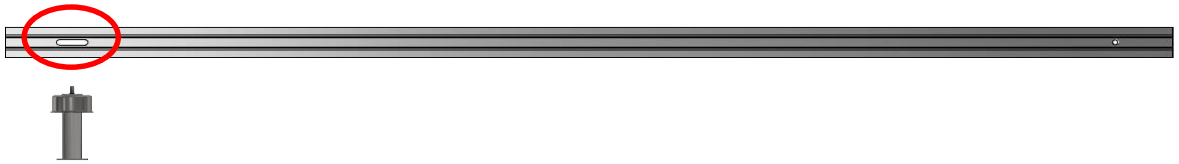


SEE LAYING RULES P.6

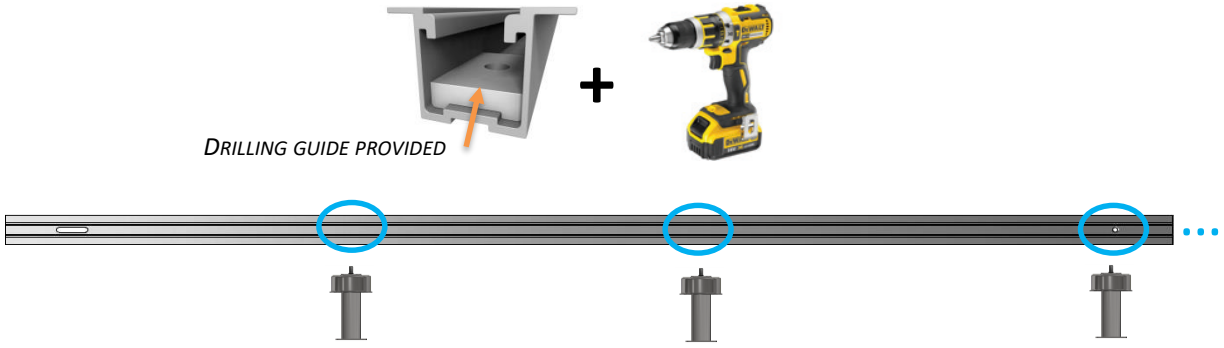
MOUNTING STEPS

4. IDENTITY THE LOCATION OF THE RAIL SUPPORTS ON THE RAIL.

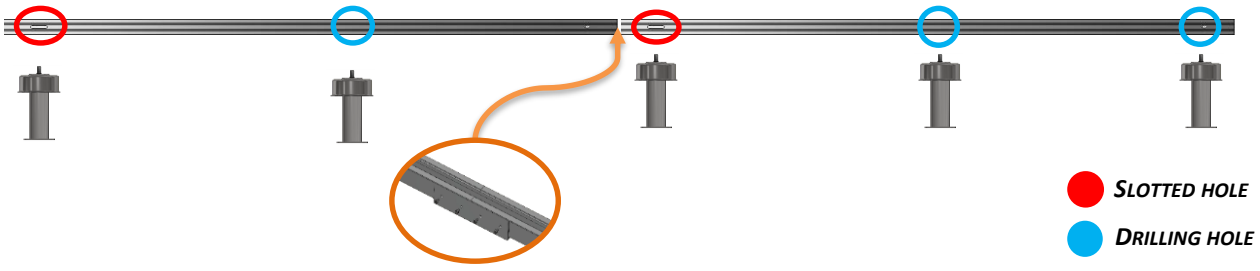
PASS THE THREADED ROD OF THE FIRST RAIL SUPPORT IN THE SLOTTED HOLE OF THE RAIL.



THEN PLACE THE RAIL ABOVE THE FOLLOWING RAIL SUPPORTS AND DRILL A HOLE OF Ø8MM IN THE RAIL AT THE LEVEL OF THE THREADED ROD OF EACH RAIL SUPPORT OF THE DRILLING GUIDE PROVIDED.



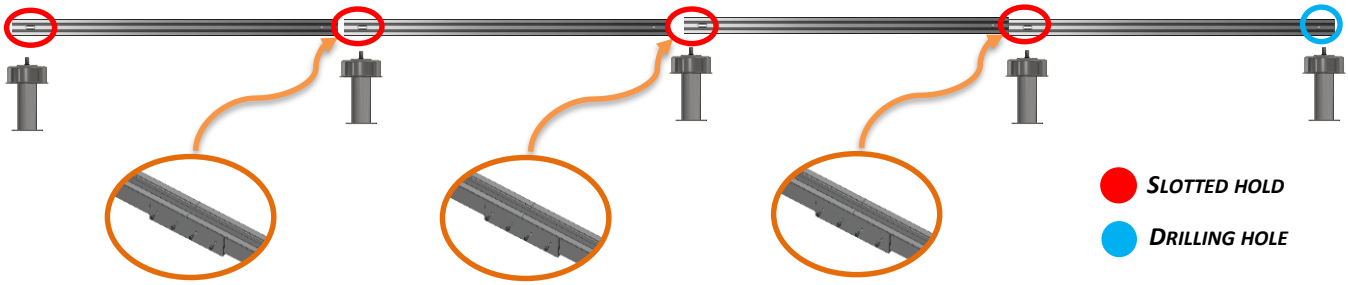
5. IF NECESSARY CONNECT EACH OF THE RAILS WITH A RAIL CONNECTOR.



TIPS AND SPECIAL CASES

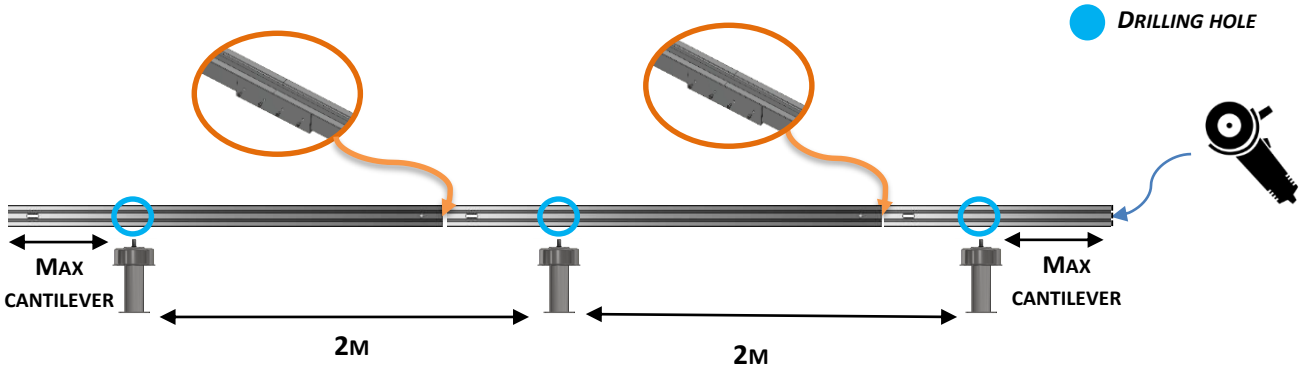
USING OF 2,1M RAILS :

IN THE CASE OF USING 2,1M RAILS , DRILLING ONE HOLE IS ENOUGH. SIMPLY FIX ALL RAIL SUPPORTS IN THE SLOTTED HOLES OF EACH CUTTED RAIL AT THE DESIRED LENGTH, THEN CONNECT THE RAILS WITH THE RAIL CONNECTOR PROVIDED. IT'S SUFFICENT TO JUST DRILL THE LAST HOLE AT THE END OF THE LAST RAIL ON THE RIGHT OF THE FIELD THAT WON'T BE CONNECTED TO ANOTHER RAIL AND TO INSERT THE LAST RAIL SUPPORT.



CASE OF 2L/5C INSTALLATION :

In the case of 10 photovoltaic modules installation in 2 lines and 5 columns with 2.1m rails, it is possible to fix only 3 rail supports per line as in the diagram below without using the slotted hole. Just drill a hole 560mm from the left end of each rail (minimum cantilever) to insert the rod of each 3 rail supports.

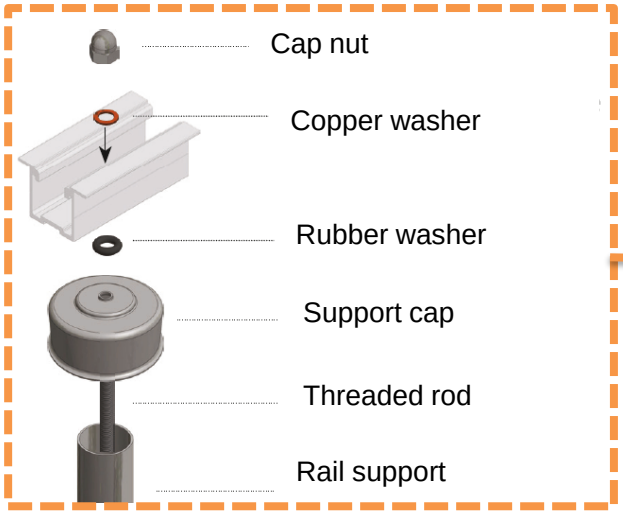


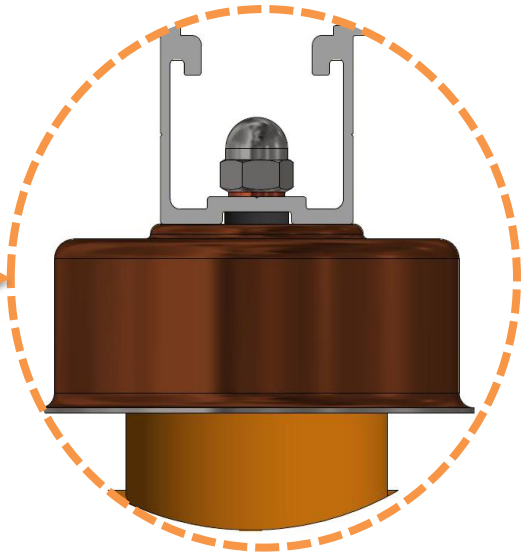
REQUIRED ELEMENTS :

- ✓ SPACING BETWEEN RAIL SUPPORTS : 2 M
- ✓ MAX CANTILEVER : 560 MM
- ✓ MAX MODULE WIDTH : 1008 MM

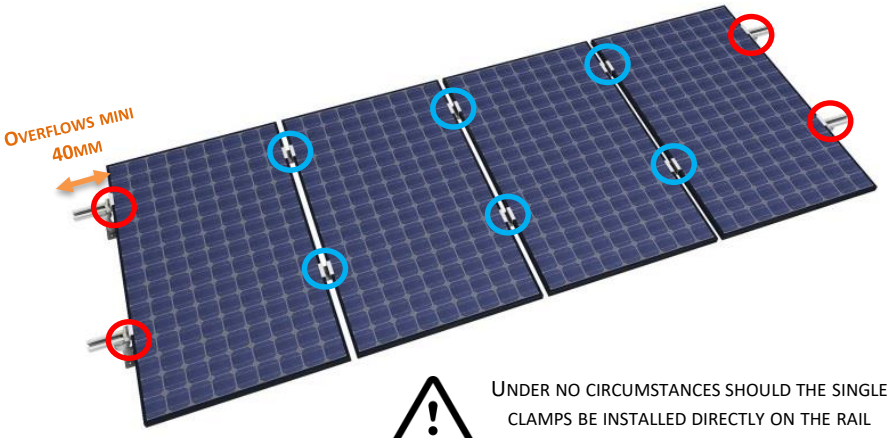
MOUNTING STEPS

6. FINISH ATTACHING THE RAIL ON THE RAIL SUPPORT.

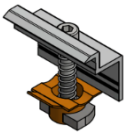




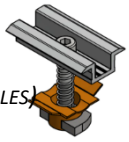
7. ATTACHING THE MODULES



SINGLE CLAMP
(EDGE OF FIELD)



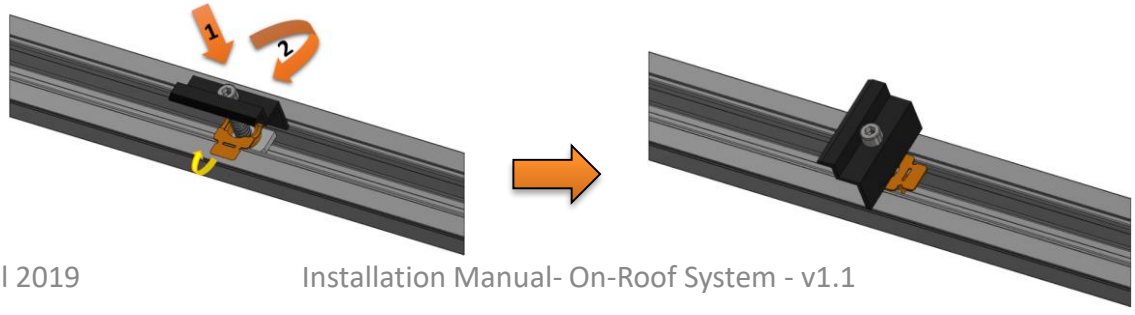
DOUBLE CLAMP
(BETWEEN 2 MODULES)



***CLAMPING CLAMP: 240dN**

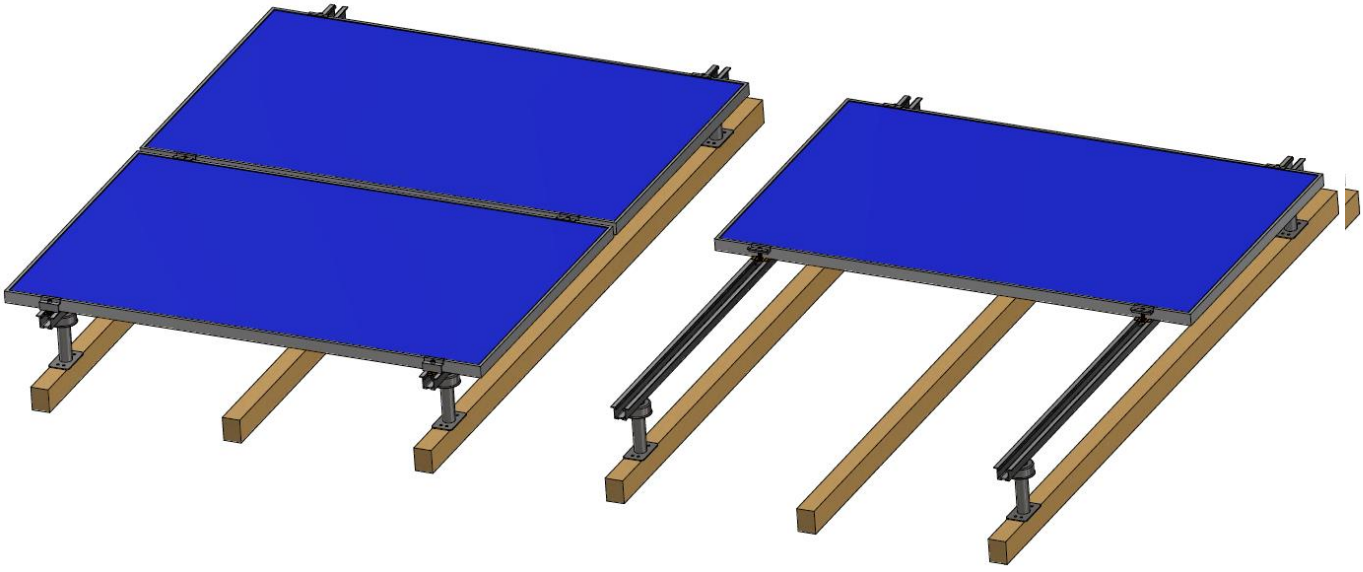
UNDER NO CIRCUMSTANCES SHOULD THE SINGLE CLAMPS BE INSTALLED DIRECTLY ON THE RAIL CONNECTOR OR AT THE ENDS OF THE RAIL.

MOUNTING OF THE CLAMPS:



LANDSCAPE LAY

ALL OF THE ACCESSOIRIES FOR THE LANDSCAPE LAY ARE THE SAME AS THE ONE'S FOR THE PORTRAIT LAY.



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