

▲ MARLEY SOLARTILE® 445 WP AG  
INSTALLATION GUIDE





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## MECHANICAL SPECIFICATION

Thickness	70mm
Static roof loading (distributed)	14.5 kg/m <sup>2</sup>
Characteristic wind resistance	4.65 kPa
Ultimate wind design loads	4.65 kPa
Positive design load* (IEC61215)	5.4 kPa
Fire rating (EN 13501-5 / BS 476-3)	B <sub>ROOF</sub> (T <sub>1</sub> , T <sub>2</sub> , T <sub>3</sub> , T <sub>4</sub> ) / AA
Power warranty	90% (10 years), 80% (25 years)
Standards	IEC61215, 61730, TUV, MCS05, MCS012

\* Design resistance to ultimate loads includes a partial material safety factor  
 Tested batten size - 50mm x 25mm, rafter 35mm x 75mm, rafter spacing 600mm. For sarking brackets - softwood sarking boards 100mm

# MARLEY SOLARTILE 445WP ORIENTATIONS



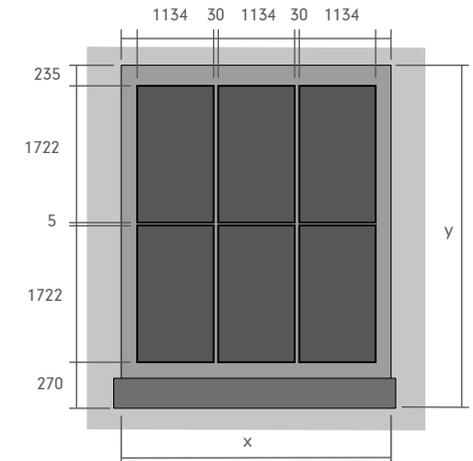
## PORTAIT ORIENTATION

n x m



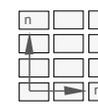
$$x = (m \times 1164) + 230$$

$$y = (n \times 1727) + 500$$



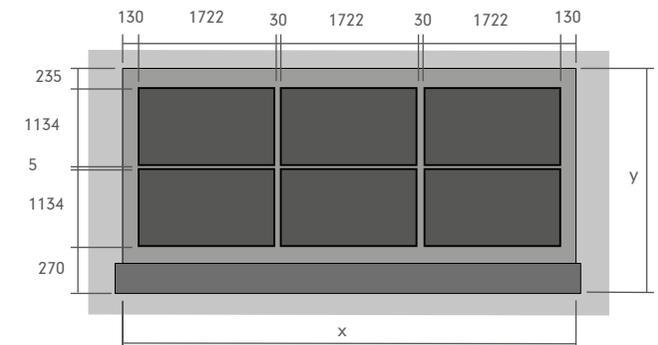
## LANDSCAPE ORIENTATION

n x m

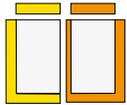


$$x = (m \times 1752) + 230$$

$$y = (n \times 1139) + 500$$

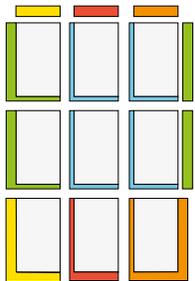


# PORTRAIT ORIENTATION



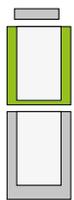
1 x 2

□ Marley SolarTile® MAPV445AG-M10	2
■ MA F16-TL-410	1
■ MA F16-TR-410	1



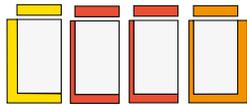
3 x 3

□ Marley SolarTile® MAPV445AG-M10	9
■ MA F16-TL-410	1
■ MA F16-TC-410	1
■ MA F16-TR-410	1
■ MA F16-TY-410	2
■ MA F16-J-410	4



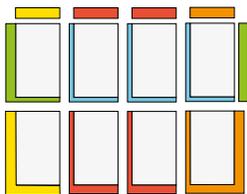
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□ Marley SolarTile® MAPV445AG-M10	2
■ MAVAT16-410	1
■ MA F16-TY-410	1



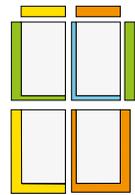
1 x 4

□ Marley SolarTile® MAPV445AG-M10	4
■ MA F16-TL-410	1
■ MA F16-TC-410	1
■ MA F16-TR-410	1



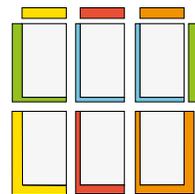
2 x 4

□ Marley SolarTile® MAPV445AG-M10	8
■ MA F16-TL-410	1
■ MA F16-TC-410	2
■ MA F16-TR-410	1
■ MA F16-TY-410	1
■ MA F16-J-410	3



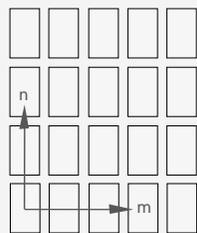
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□ Marley SolarTile® MAPV445AG-M10	4
■ MA F16-TL-410	1
■ MA F16-TC-410	0
■ MA F16-TR-410	1
■ MA F16-TY-410	1
■ MA F16-J-410	1



2 x 3

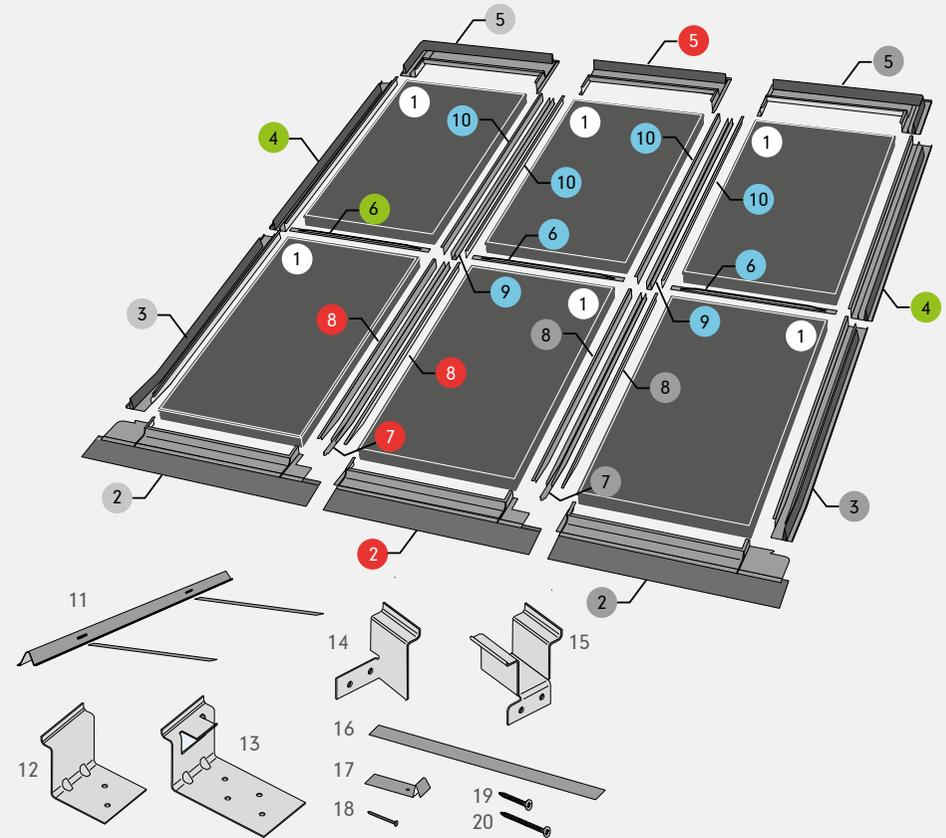
□ Marley SolarTile® MAPV445AG-M10	6
■ MA F16-TL-410	1
■ MA F16-TC-410	1
■ MA F16-TR-410	1
■ MA F16-TY-410	1
■ MA F16-J-410	2



n x m

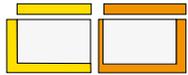
□ Marley SolarTile® MAPV445AG-M10	(n x m)
■ MA F16-TL-410	1
■ MA F16-TC-410	(m-2)
■ MA F16-TR-410	1
■ MA F16-TY-410	(n-1)
■ MA F16-J-410	(n-1) x (m-1)

# PORTRAIT ORIENTATION



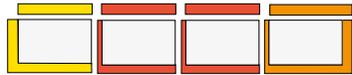
	TL	TC	TR	TY	J
1 Marley SolarTile® PV16					
2 Sill flashing	1	1	1		
3 Lower side flashing	1		1		
4 Upper side flashing				2	
5 Top flashing	1	1	1		
6 Joining strip				1	1
7 Lower gutter	1		1		
8 Lower gutter cover	2		2		
9 Upper gutter					1
10 Upper gutter cover					2
11 Tile support	1	1	1		
12 Rafter bracket	4	4	4		
13 Combi rafter bracket	2		2		
14 Batten bracket	3		3	6	
15 Combi batten bracket	3	3			3
16 Gutter fixing strip		1	1		1
17 Side fixing tab	6		6	12	
18 Nail	6	1	7	12	1
19 4 x 25mm screw	6	6	12	12	6
20 4 x 50mm screw	8	8	8	8	8

# LANDSCAPE ORIENTATION



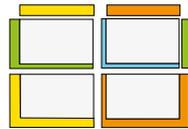
1 x 2

□ Marley SolarTile MAPV445AG-M10	2
■ MA F16-LL-410	1
■ MA F16-LR-410	1



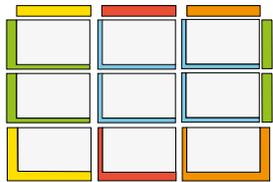
1 x 4

□ Marley SolarTile MAPV445AG-M10	4
■ MA F16-LL-410	1
■ MA F16-LC-410	1
■ MA F16-LR-410	1



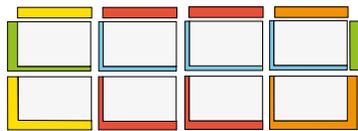
2 x 2

□ Marley SolarTile MAPV445AG-M10	4
■ MA F16-LL-410	1
■ MA F16-LC-410	0
■ MA F16-LR-410	1
■ MA F16-LY-410	1
■ MA F16-LJ-410	1



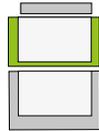
3 x 3

□ Marley SolarTile MAPV445AG-M10	9
■ MA F16-LL-410	1
■ MA F16-LC-410	1
■ MA F16-LR-410	1
■ MA F16-LY-410	2
■ MA F16-LJ-410	4



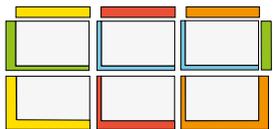
2 x 4

□ Marley SolarTile MAPV445AG-M10	8
■ MA F16-TL-410	1
■ MA F16-TC-410	2
■ MA F16-TR-410	1
■ MA F16-TY-410	1
■ MA F16-J-410	3



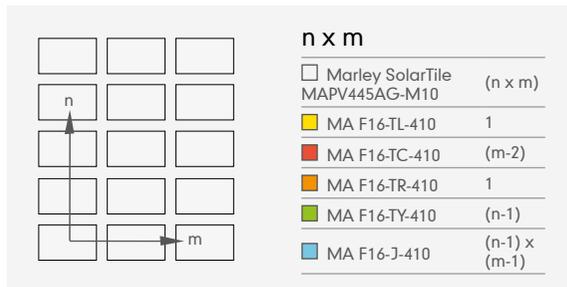
2 x 1

□ Marley SolarTile MAPV445AG-M10	2
■ MAVAL16-410	1
■ MA F16-LY-410	1

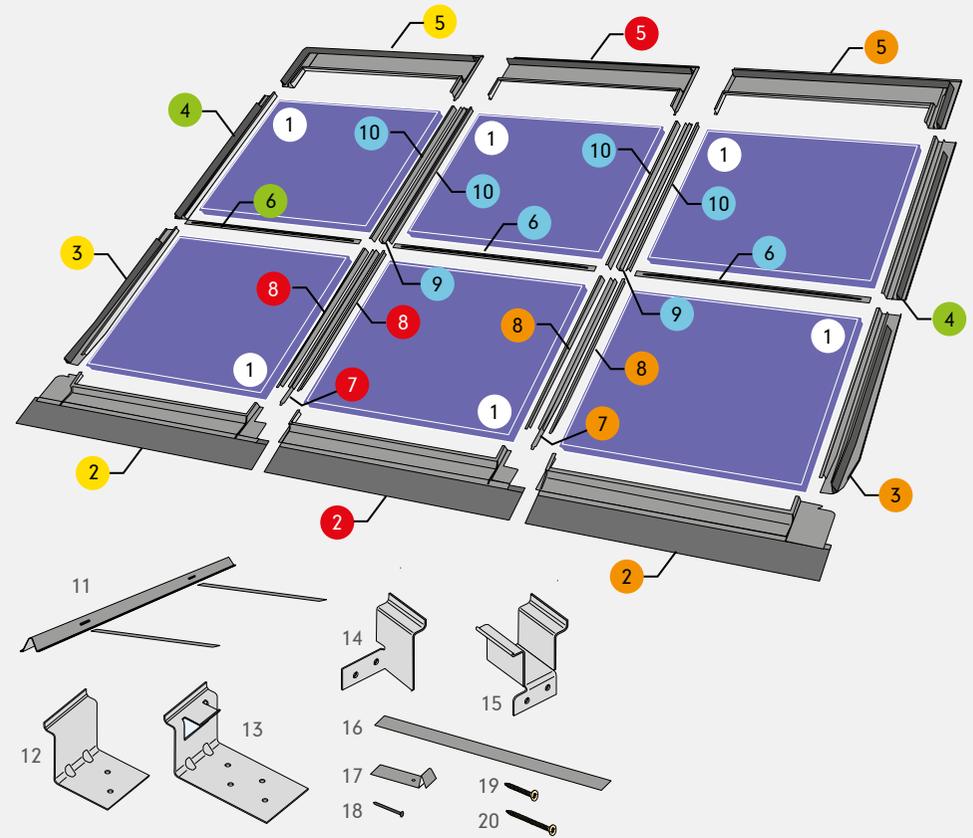


22x 3

□ Marley SolarTile MAPV445AG-M10	6
■ MA F16-LL-410	1
■ MA F16-LC-410	1
■ MA F16-LR-410	1
■ MA F16-LY-410	1
■ MA F16-LJ-410	2

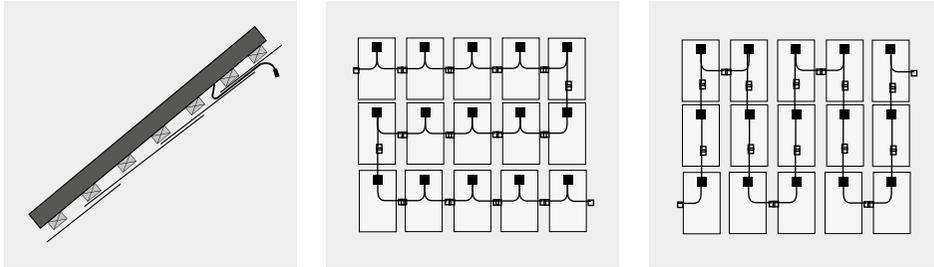


# LANDSCAPE ORIENTATION



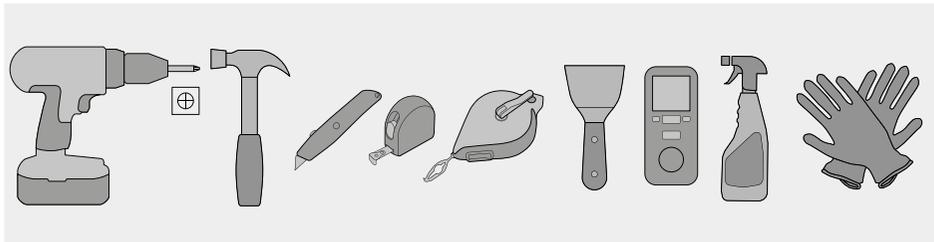
	LL	LC	LR	LY	LJ		LL	LC	LR	LY	LJ
1 Marley SolarTile PV16						11 Tile support	1	1	1		
2 Sill flashing	1	1	1			12 Rafter bracket	6	6	6		
3 Lower side flashing	1		1			13 Combi rafter bracket				3	3
4 Upper side flashing				2		14 Batten bracket	2	2	4		
5 Top flashing	1	1	1			15 Combi batten bracket		2	2		2
6 Joining strip				1	1	16 Gutter fixing strip		1	1		1
7 Lower gutter		1	1			17 Side fixing tab	4	4	8		
8 Lower gutter cover		2	2			18 Nail	4	1	5	8	1
9 Upper gutter					1	19 4 x 25mm screw	4	4	8	8	4
10 Upper gutter cover					2	20 4 x 50mm screw	12	12	12	12	12

# ELECTRICAL



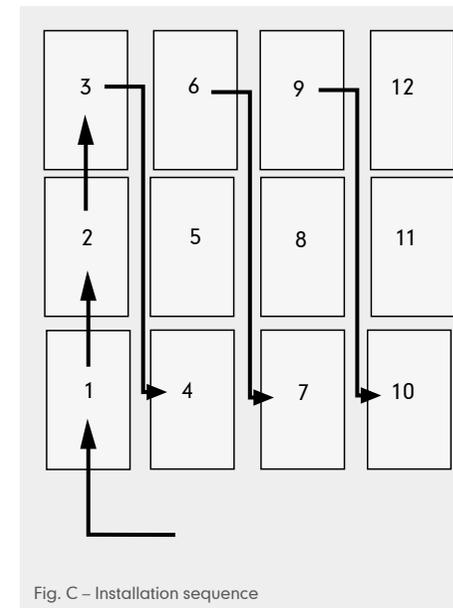
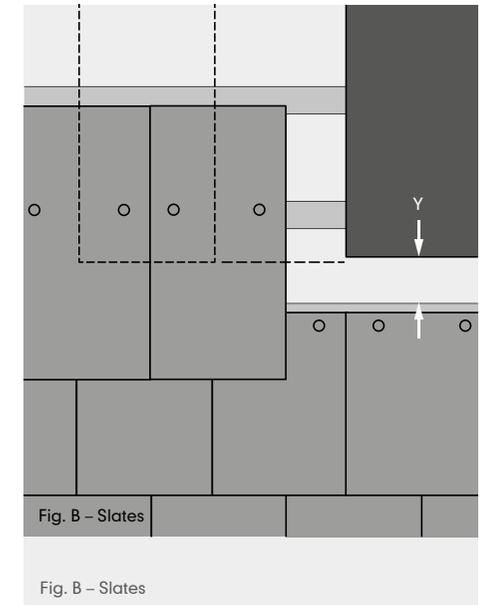
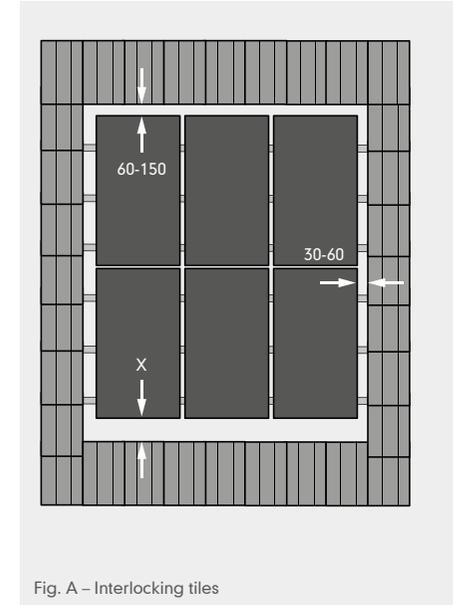
- Electrically test each solar panel as it is installed.
- Cables can be passed through roofing membrane laps for connection inside the building (recommended) or connected to adjacent panels in the batten space.
- Choose to connect panels in rows or columns based on consideration of shading and potential difference.
- Panels can be installed with the junction box at the top or bottom.
- **Important: Use only genuine Staubli MC4 when connecting to modules**

# FIXING GUIDANCE



- Important:**
- Flashings may have sharp edges, wear gloves.
  - The installation must comply with local regulations on lightning protection.
  - Marley recommends that the panel installation is carried out by an installer with roofing competence.
- For best results:
- Don't rush it.
  - Ensure the flashing edges are straight.
  - It may be helpful to lubricate gaskets before pushing in the flashing – use glass cleaner for this.

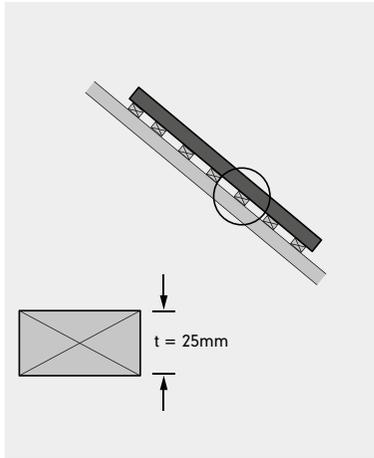
# INSTALLATION OVERVIEW



- A Interlocking tiles – set lower gap 'X' 130-150mm. Reduce for thinner tiles, if unsure - contact us
- B Slate – for best results align the bottom edge of panel with the slate line. This may require that slates below the panels are nailed in advance. If installing before slating, set 'Y' to 130mm.
- C Start at the bottom left of the array. Move to the right as each column is finished.

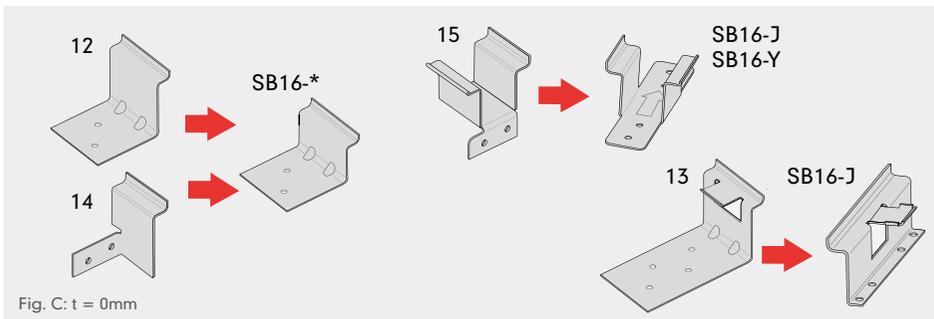
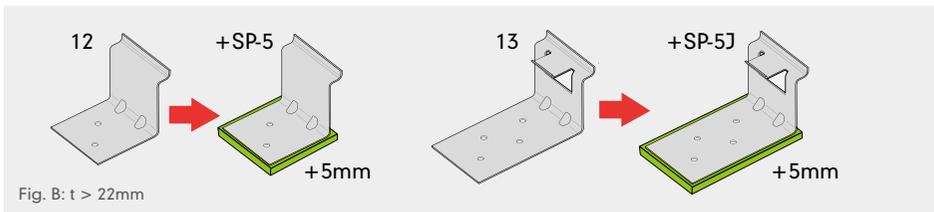
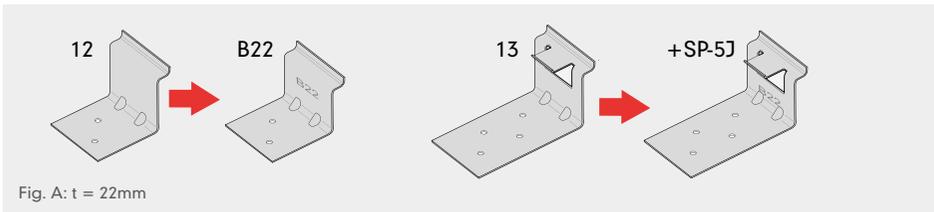
- Important:**
- Marley SolarTile® is intended for installation above a continuous, functional underfelt that terminates in a gutter.

# TILE BATTENS



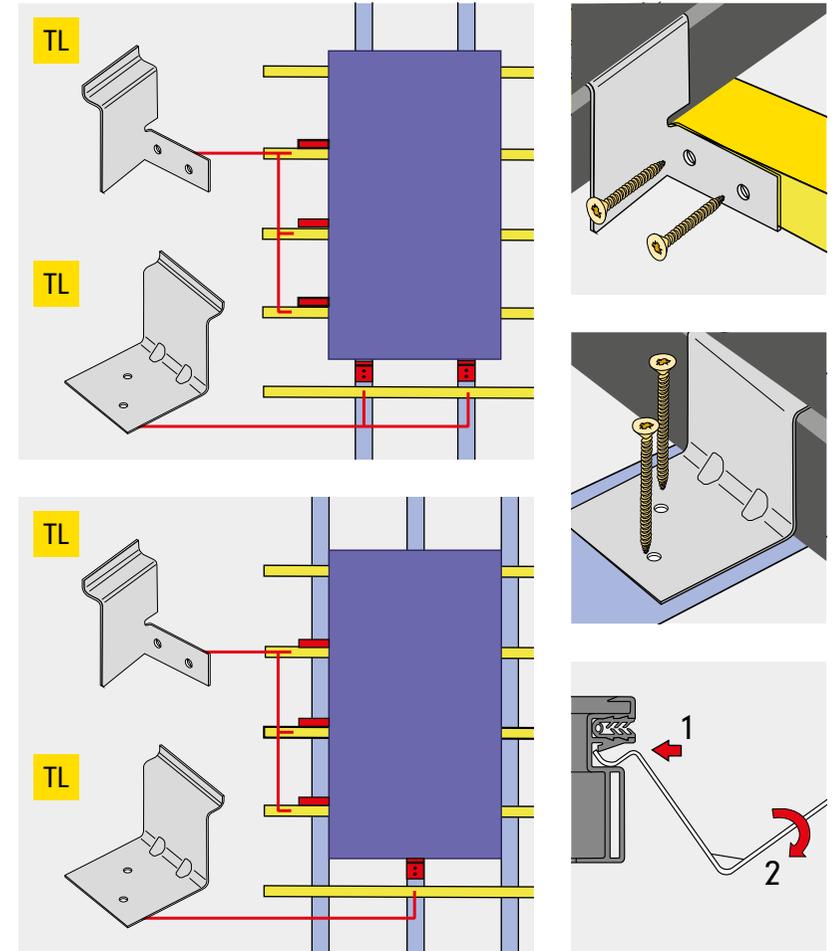
Roofing kits are provided with brackets suitable for tile battens of 25mm thickness.

- A For 22mm tile battens replace Rafter Brackets (12) with brackets from B22 kit. Replace Combi Rafter Brackets (13) with brackets from B22J kit.
- B For tile battens of greater than 25mm thickness, use the required number of 5mm bracket spacers. Use SP-5 for Rafter Bracket (12) and SP-5J for Combi Rafter Bracket (13).
- C For roofing without tile battens (direct fix to deck) replace standard brackets with brackets from Sarking Bracket kits as shown, aligning brackets to screw through into rafters below where they cross panels.



# INSTALLATION SEQUENCE

The following portrait 3 above 3 installation illustrates how the system works for any rectangular array. Landscape installation follows the same principles.

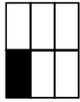
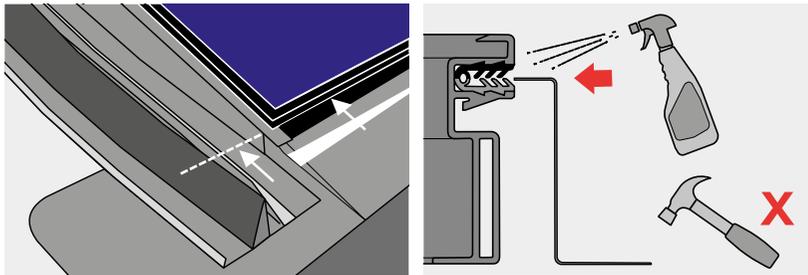
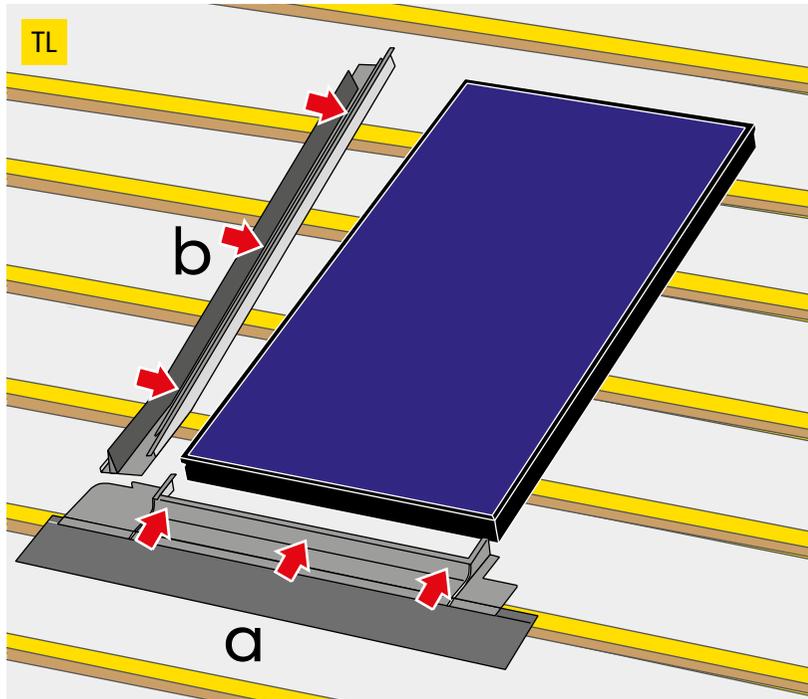


## OPEN THE YELLOW BOX

Start with the bottom left panel. Brackets rotate into the lower slot on the panel frame. Fix the batten brackets (14) to the left side with two 25mm screws (19) each. Fix rafter brackets (12) at the bottom to each rafter the panel crosses with two 50mm screws (20) each.

## INSTALLATION SEQUENCE

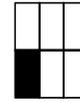
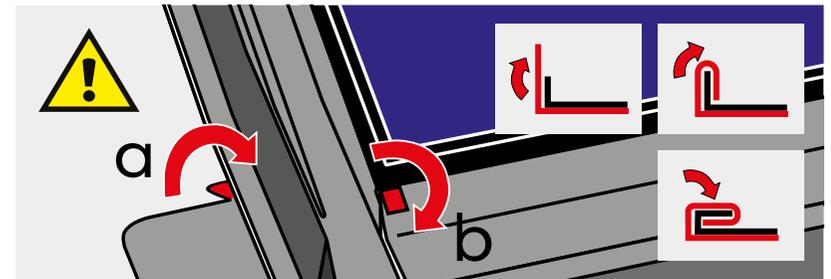
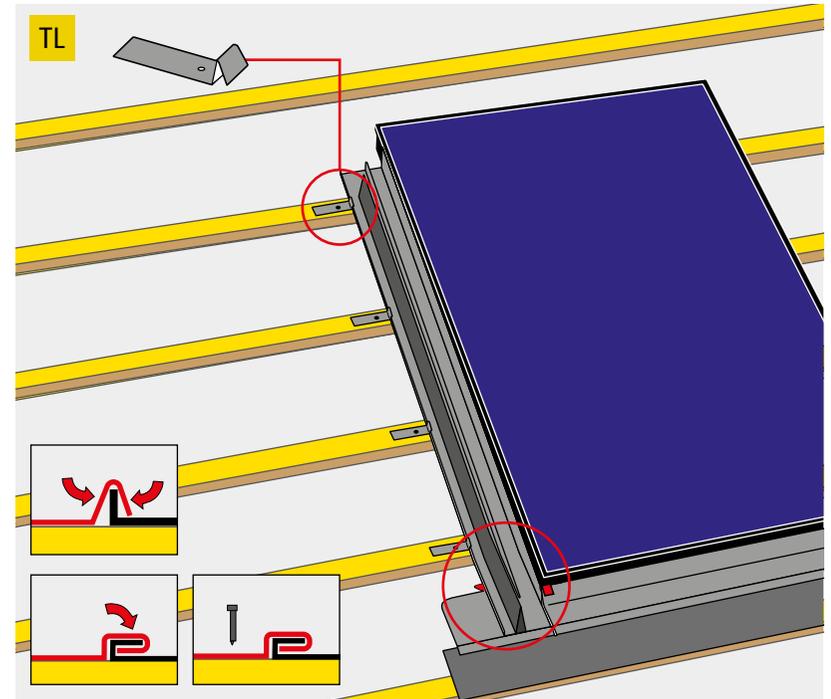
2

Fit the sill flashing (a) then the lower side flashing (b) to the panel. Flashings push into the rubber gasket seal in the upper slot of the panel frame. Take care to align the leading edge just above the yellow line on the gasket. If lubrication is required, use glass cleaning fluid.

## INSTALLATION SEQUENCE

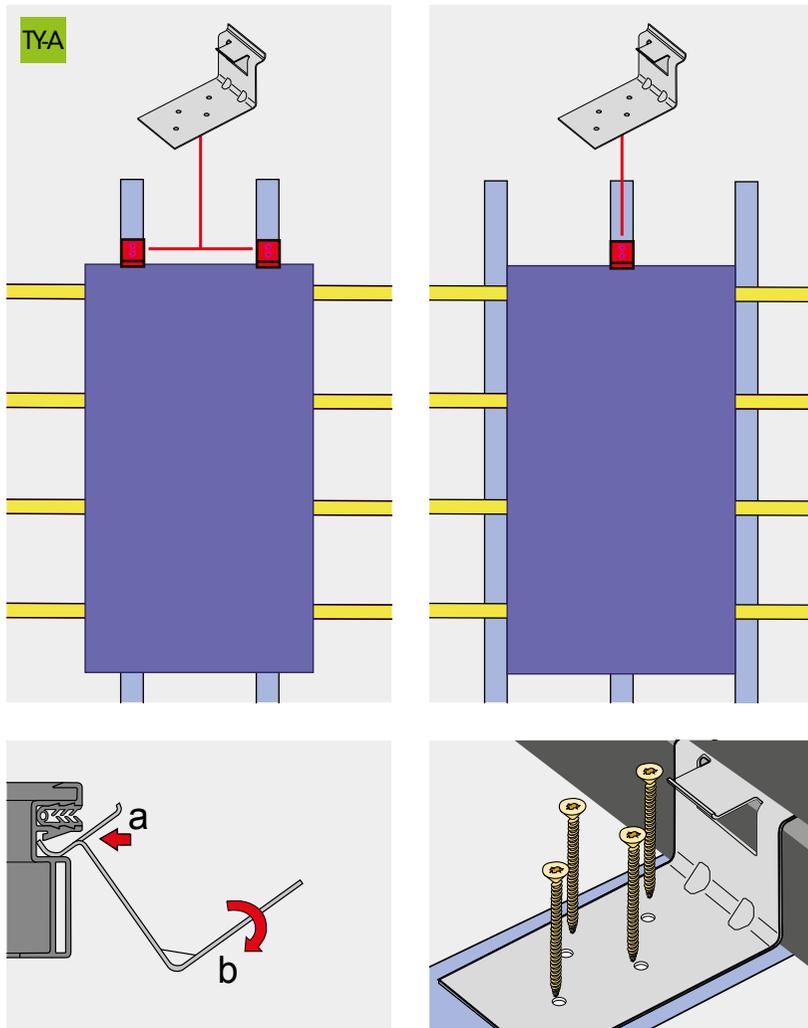
3

Secure the edge of the side flashing using side fixing tabs (17) and nail (18). Fold over the tab on the sill flashing (a) to grip the side flashing. Fold down the tab on the side flashing (b).

## INSTALLATION SEQUENCE

4

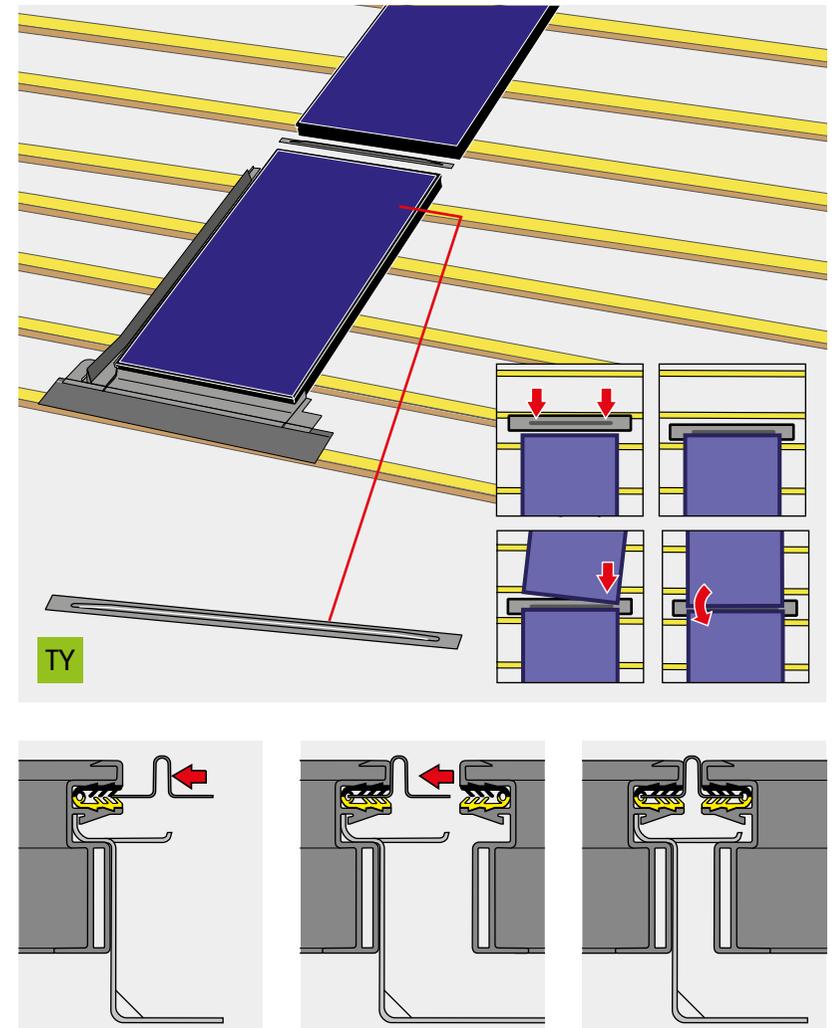


### OPEN THE GREEN BOX

Fix combi rafter brackets (13) to each rafter the panel crosses with four 50mm screws (20) each.

## INSTALLATION SEQUENCE

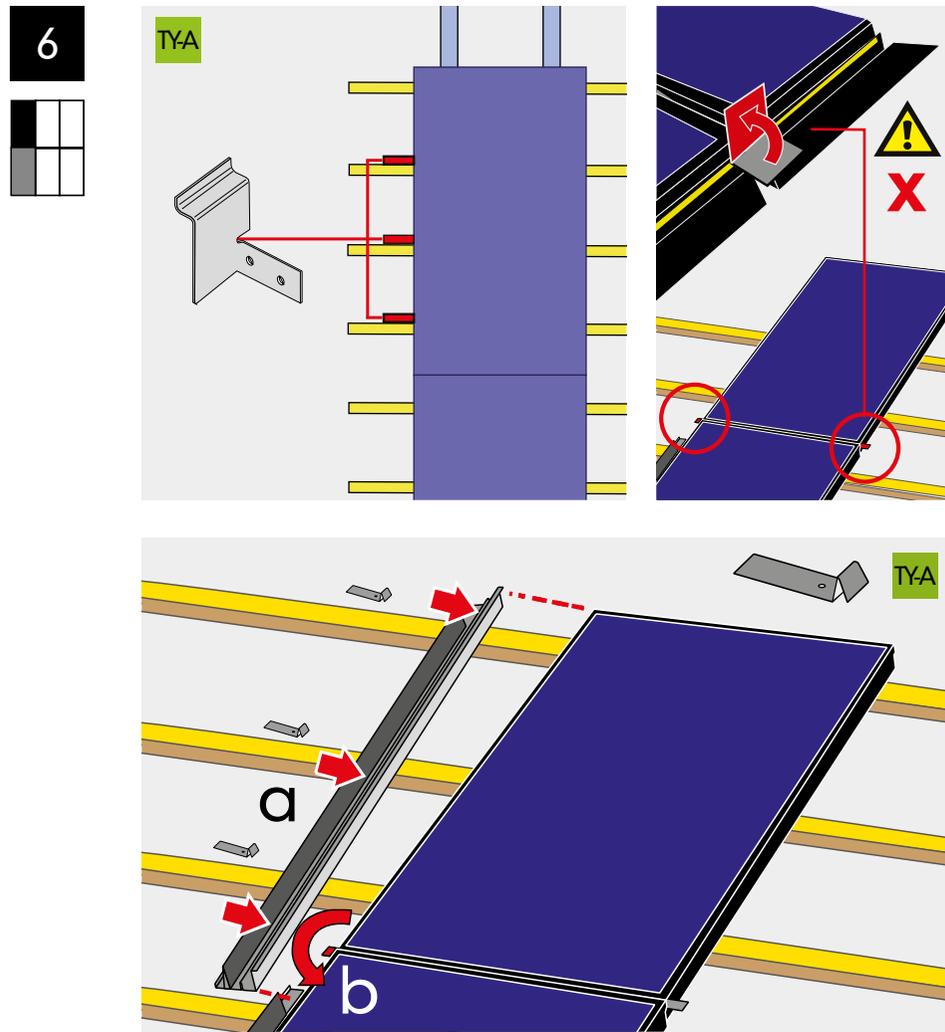
5



Push the joining strip (6) into the gasket on the top face of the lower solar panel. Align to the centre of the panel.

Slide the upper solar panel down the roof to simultaneously engage with the combi-bracket and the joining strip. Aligning the panels on the right corner then rotating the left corner downwards ensures a smooth connection.

## INSTALLATION SEQUENCE

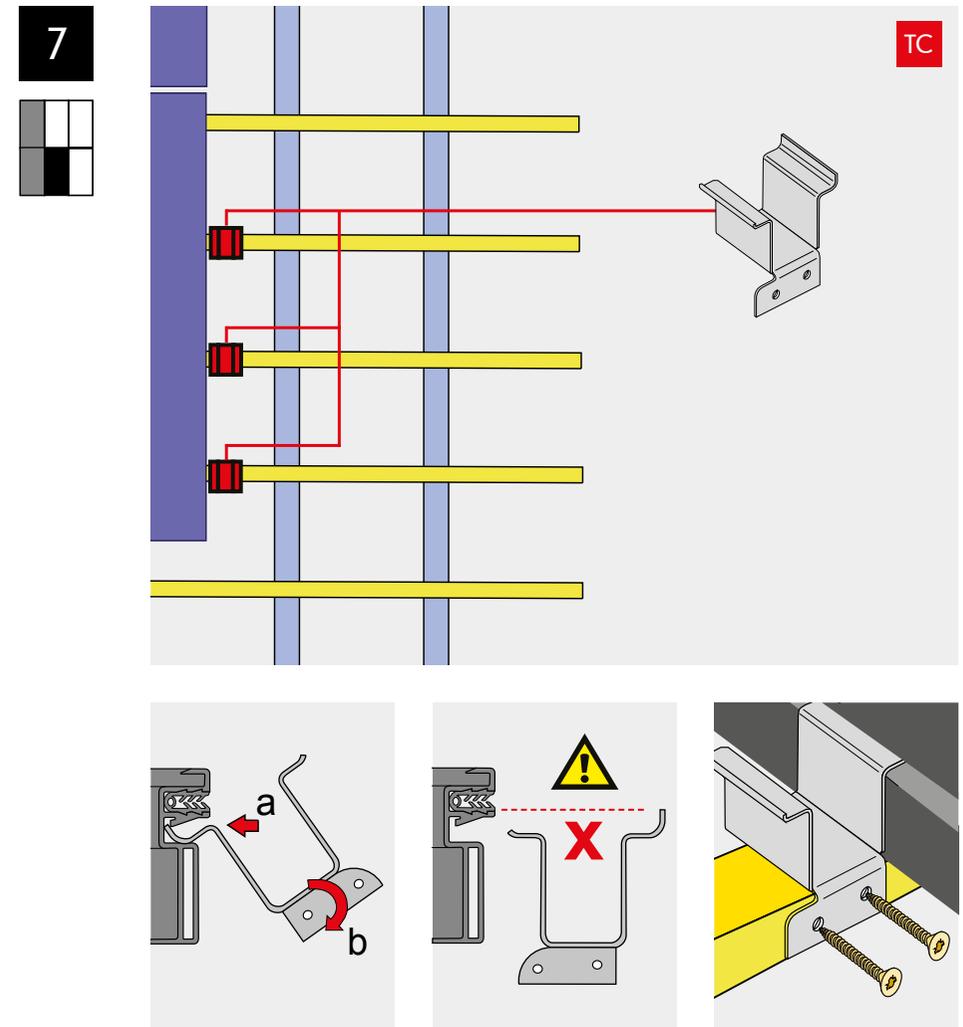


Fix the left side of the solar panel with batten brackets (14) and 25mm screws (19). Push in the upper side flashing (4) and fix the outside edge with side fixing tabs (17).

Fold the protruding end of the joining strip (6) down over the side flashing.

**Important:** Do not fold the protruding end of the joining strip upwards

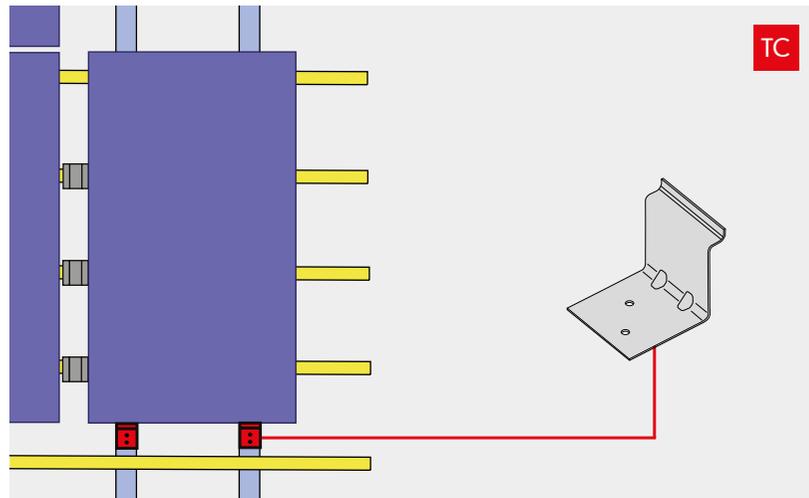
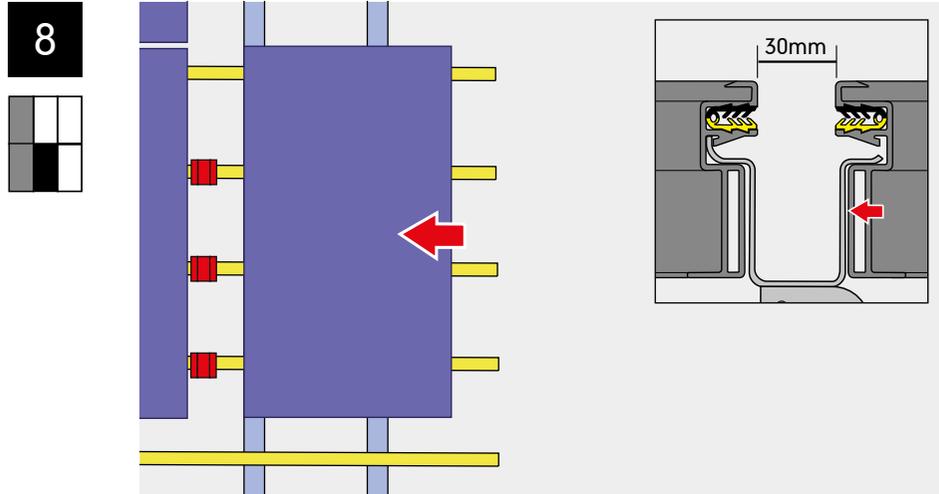
## INSTALLATION SEQUENCE



### RED BOX

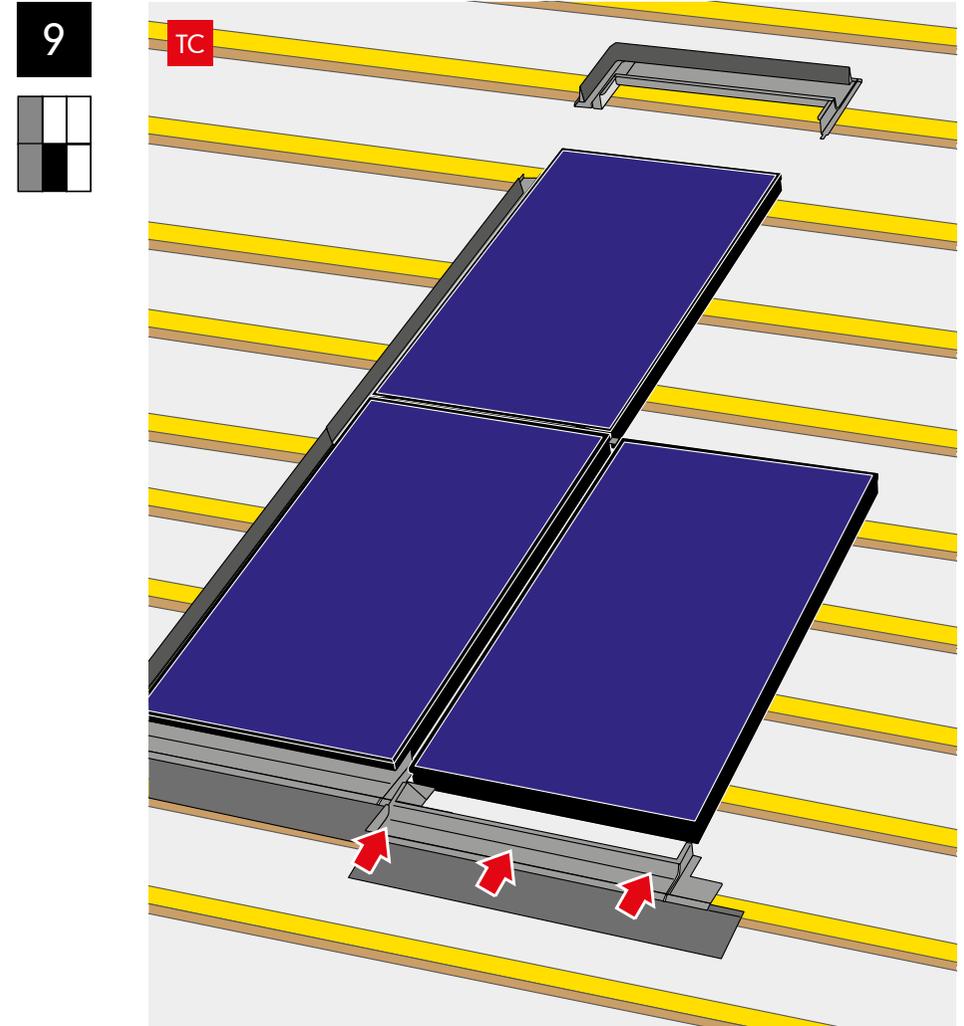
Fix combi-batten brackets (15) to the right hand side of the bottom solar panel. The bracket must be turned so that the side with the taller edge goes into the panel. Fix each brackets with two 25mm screws (19).

## INSTALLATION SEQUENCE



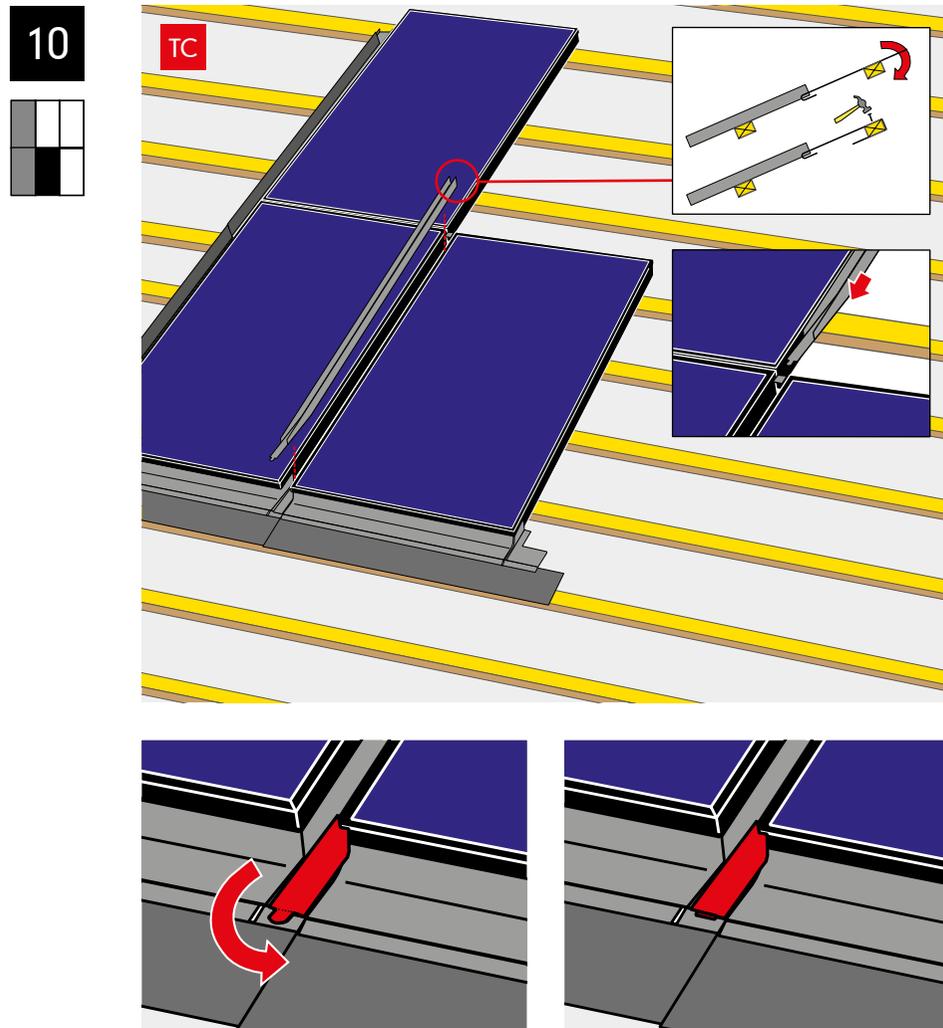
Slide the first panel of the next column sideways to engage with the combi-batten brackets. The bracket sets the gap to 30 mm. Secure the new solar panel to each rafter it crosses with rafter brackets (12) and two 50mm screws (20) each.

## INSTALLATION SEQUENCE



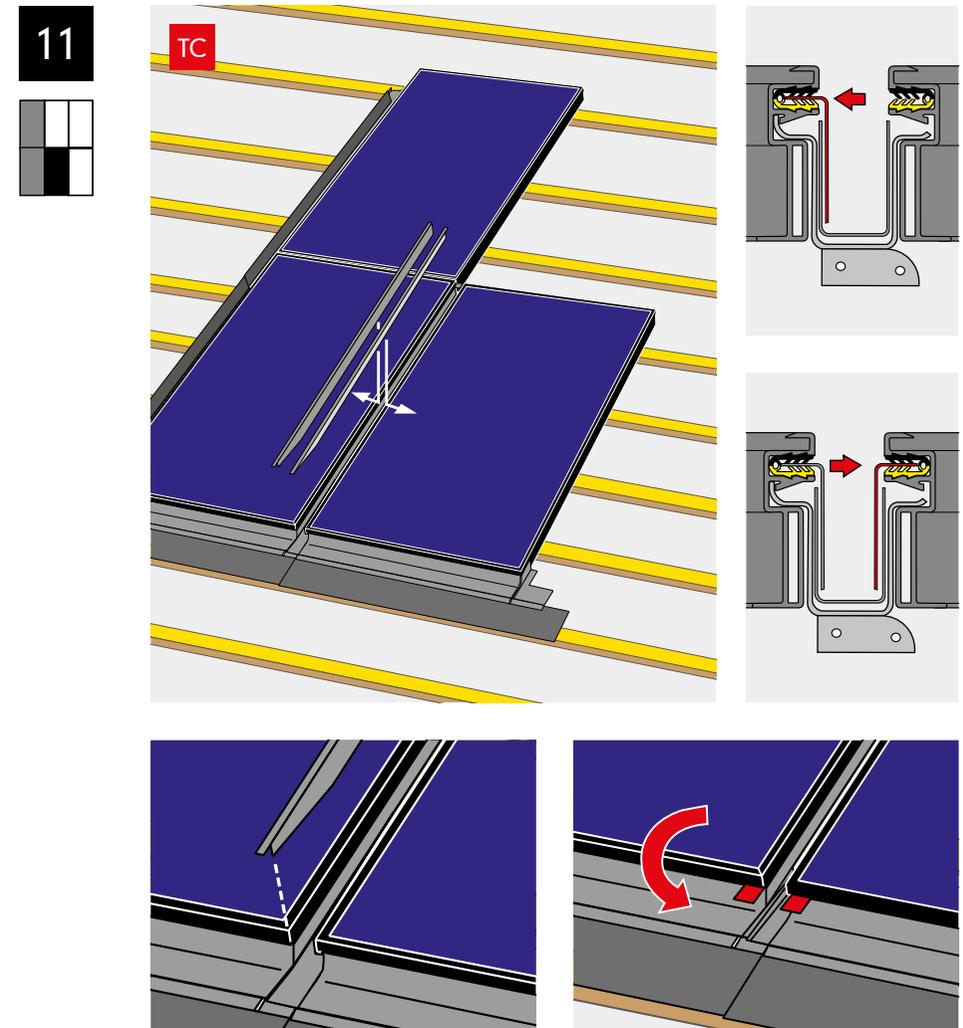
Push the sill flashing (2) into the gasket on the solar panel.

## INSTALLATION SEQUENCE



Slide the lower gutter (7) between the two solar panels from the top. Fold the tab at the bottom behind the sill flashing. Loop the gutter fixing strip (16) into the slot on top of the gutter. Fix the strip to a batten with a nail.

## INSTALLATION SEQUENCE

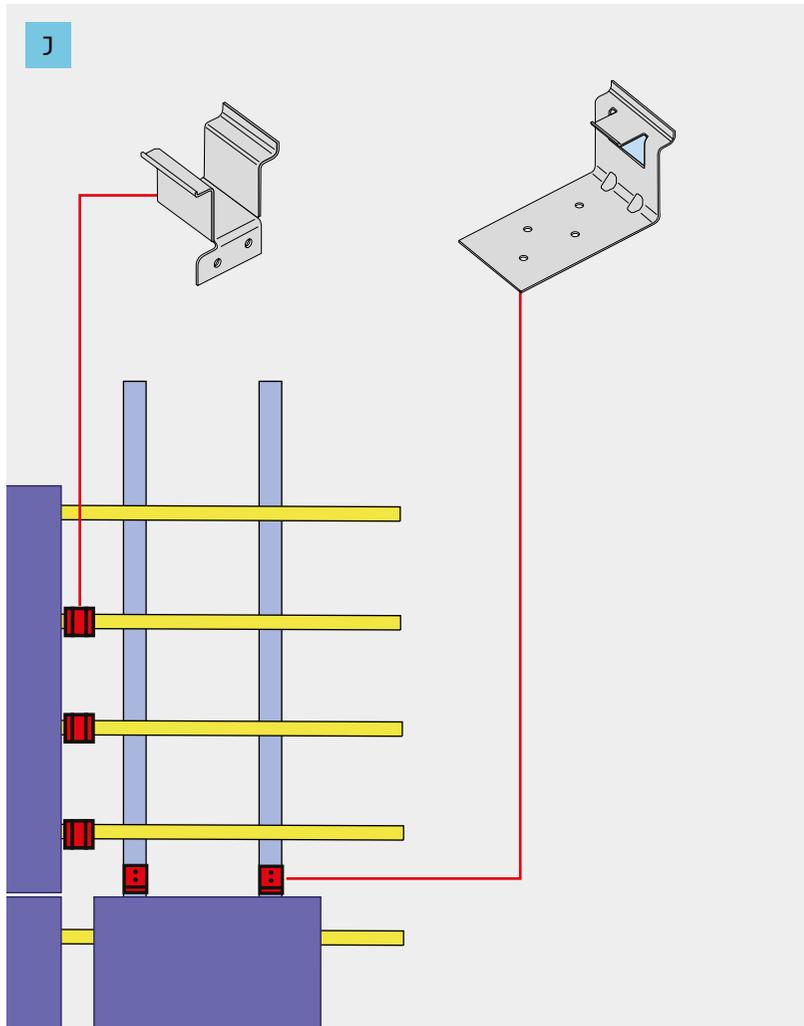
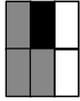


Align the bottom corner of the lower gutter covers (8) with the bottom edge of the solar panel and push the gutter covers into the gasket. Fold down the retaining tabs.

TIP: Installing the combi batten brackets and the upper gutter, before the lower gutter covers, can make this part of the installation quicker and more straightforward.

## INSTALLATION SEQUENCE

12

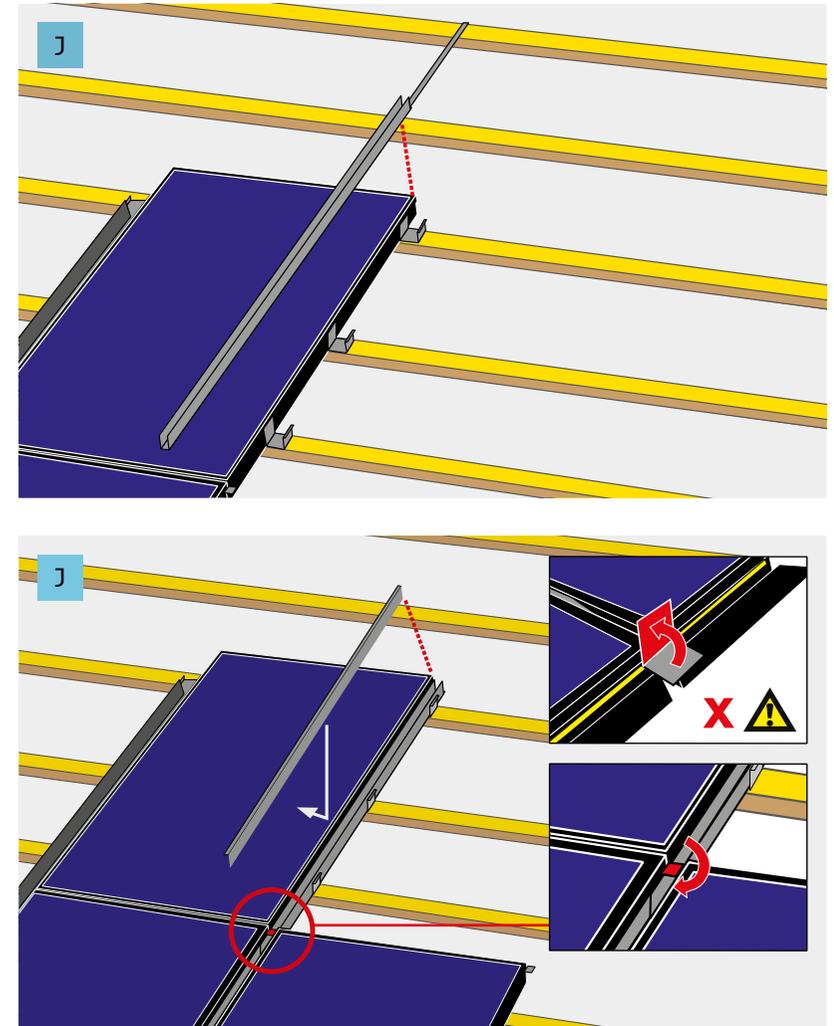
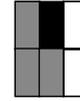


### BLUE BOX

Fix combi-rafter brackets (13) to the top of the panel below and combi-batten brackets (15) to the right hand side of the panel to the left.

## INSTALLATION SEQUENCE

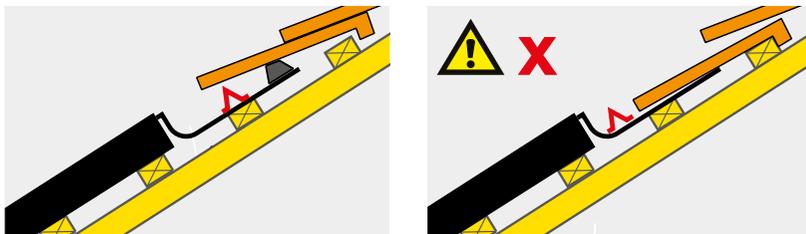
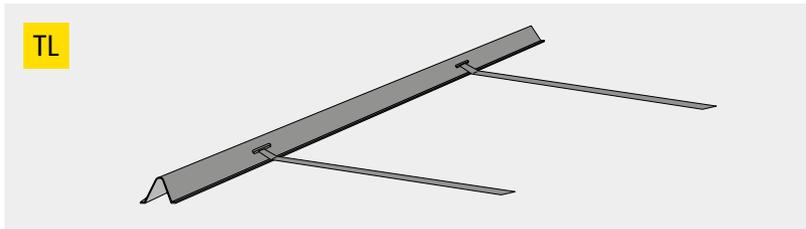
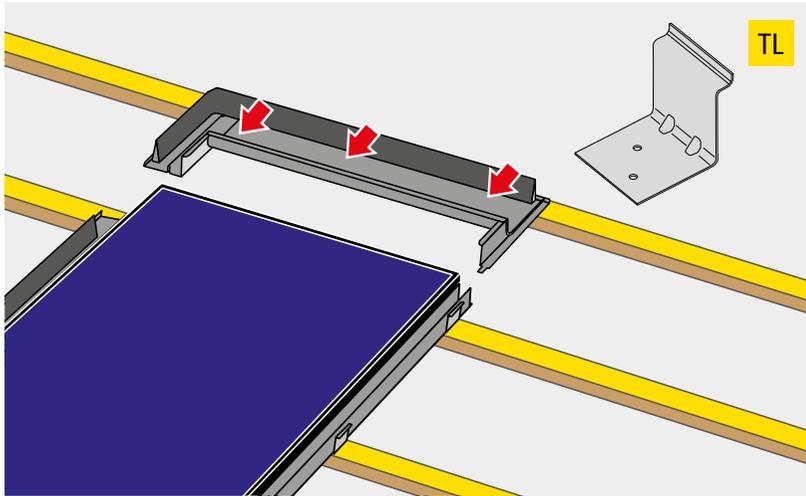
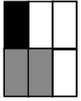
13



Fit the upper gutter (9) between the solar panels and nail the gutter fixing strip to a batten. Push the upper gutter cover (10) into the panel gasket. Fold the end of the joining strip down into the gutter.

## INSTALLATION SEQUENCE

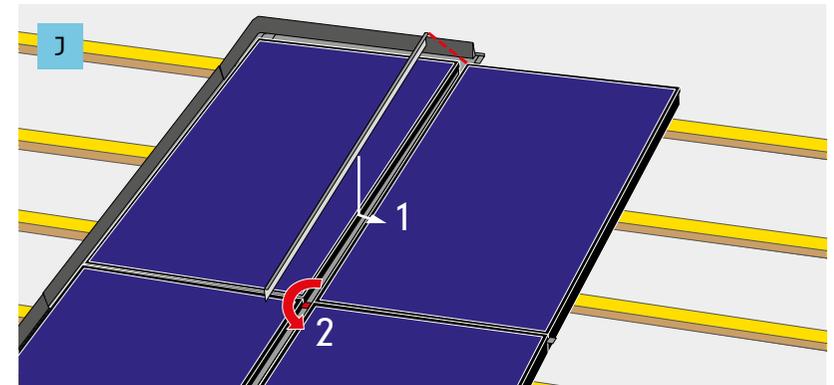
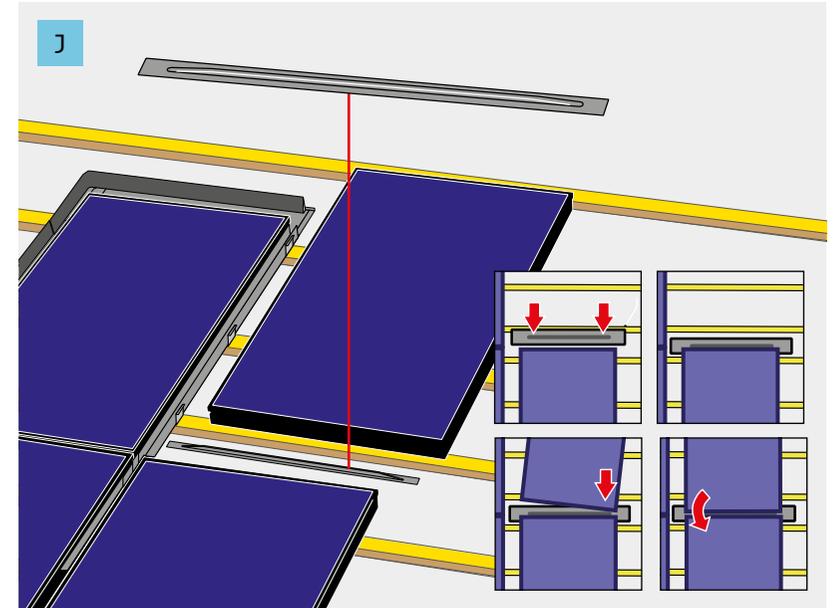
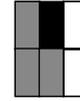
14



For each rafter it crosses, fix a rafter bracket (12) to the top of the top left panel and secure with two 50mm screws (20) each. You may need to add a batten above the panel to support the top flashing. Push the top flashing (5) into the panel gasket. The tile support (11) is needed for some tile types. Feed the two straps under the foam and secure the straps to a batten above.

## INSTALLATION SEQUENCE

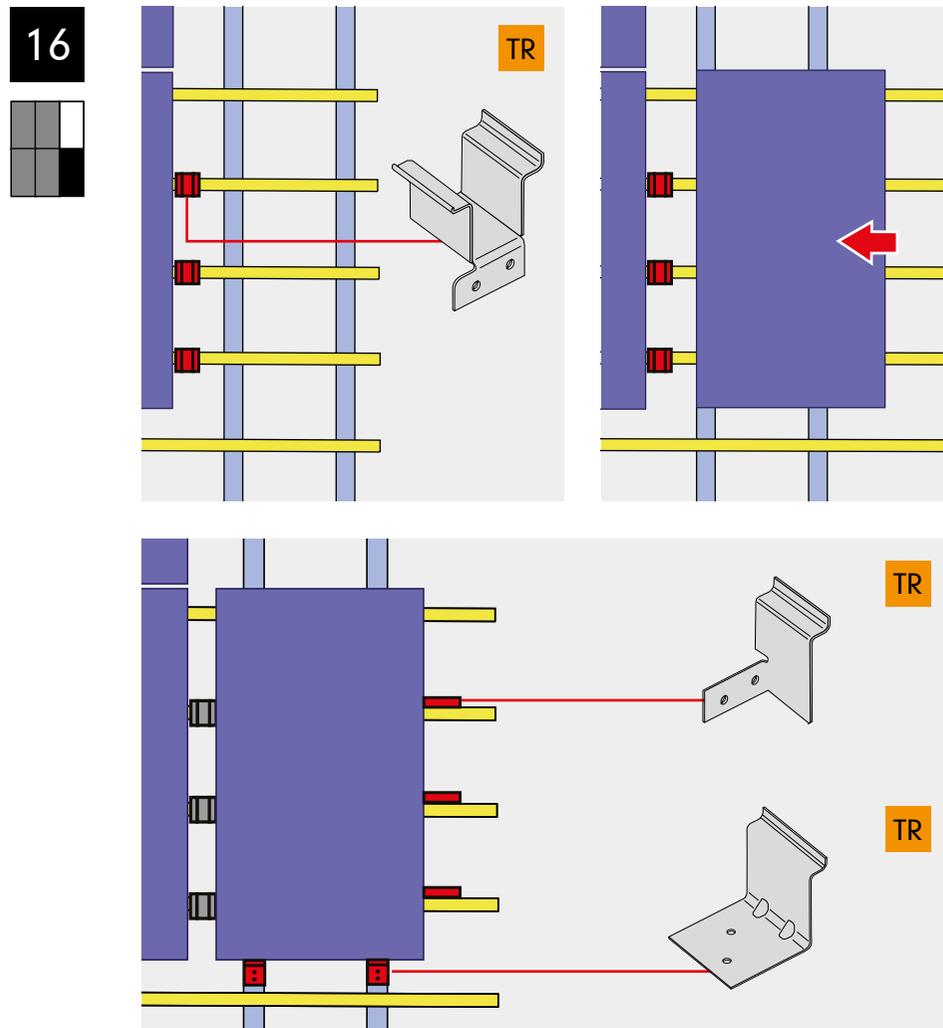
15



Push the joining strip (6) into the gasket in the top edge of the panel below and slide the solar panel in to engage with the joining strip and combi-brackets on two sides.

Fit gutter cover (10) into the panel gasket. Fold the end of the joining strip down into the gutter.

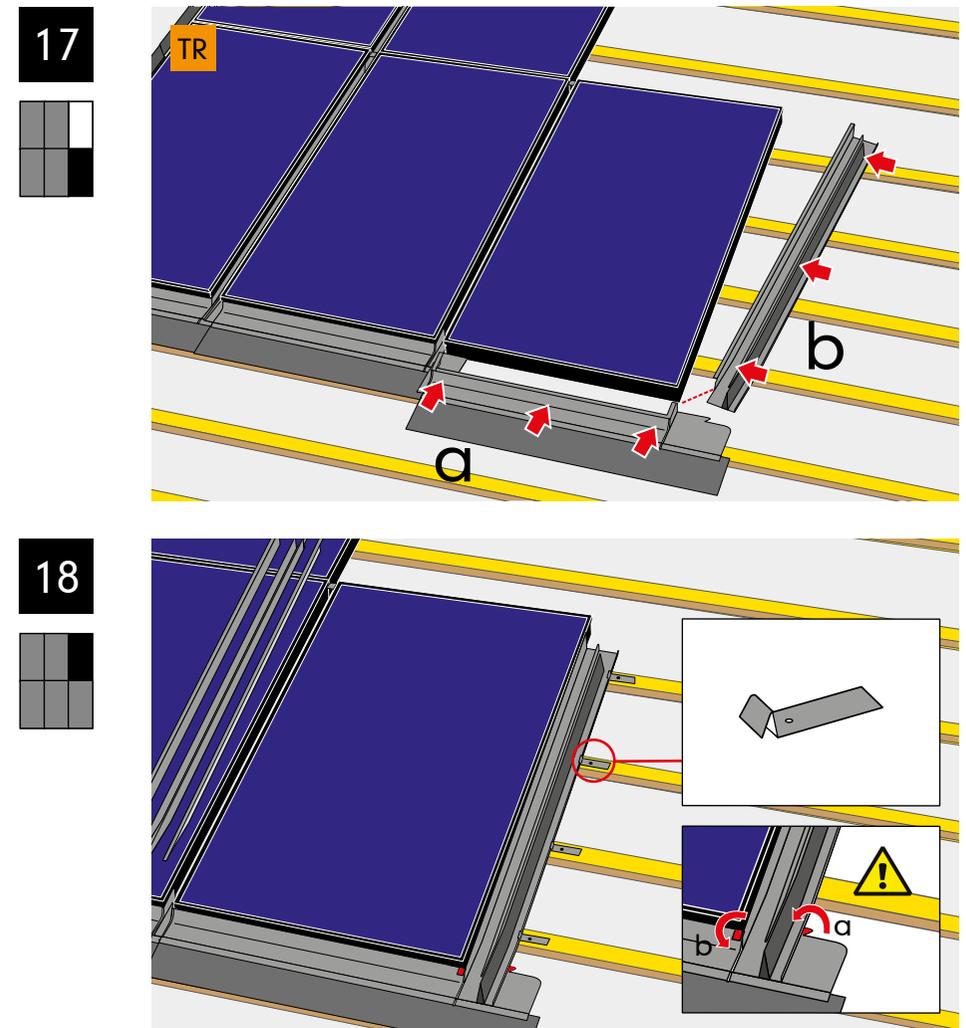
## INSTALLATION SEQUENCE



### ORANGE BOX

Fix three combi-batten brackets (15) to the right hand side of the panel to the left. Slide the new panel into position. Fix with rafter brackets (12) on the bottom edge and batten brackets (14) to the right hand side.

## INSTALLATION SEQUENCE



Push the sill flashing (2) into the gasket at the bottom of the solar panel. Push the lower side flashing (3) into the gasket on the right hand side of the panel.

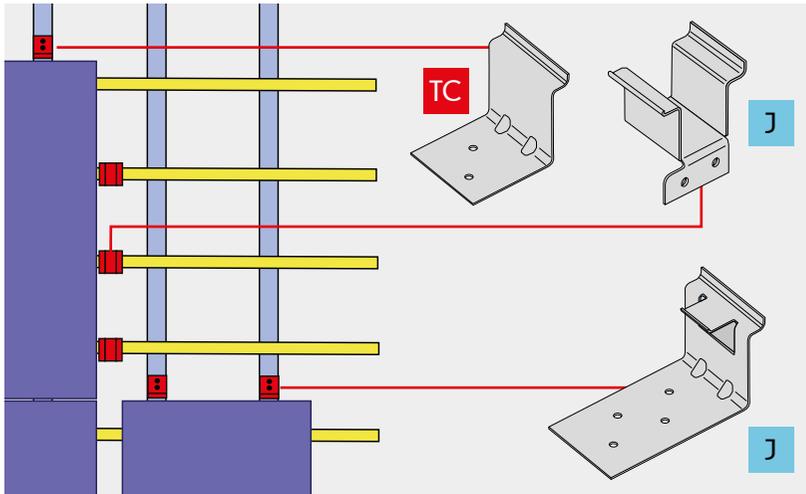
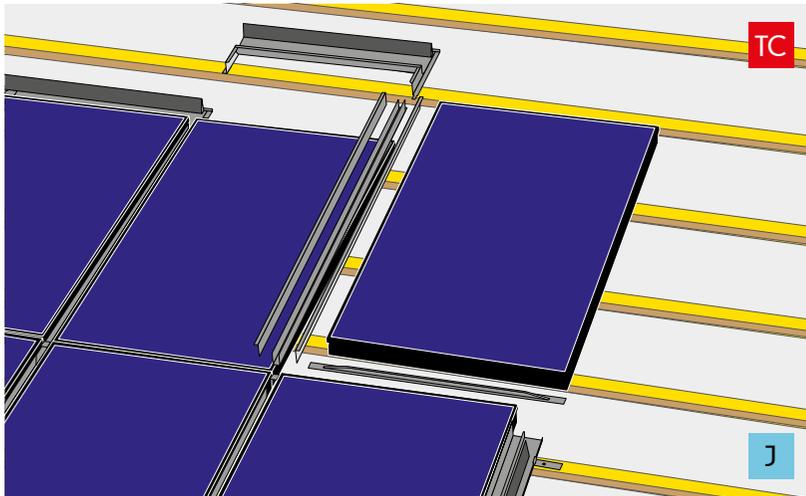
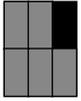
Fit the lower gutter (7), (16) and lower gutter covers (8). See steps 10 and 11.

Fit side fixing tabs (17) and fold over the tab on the sill flashing. See step 3.

TIP: Installing the combi batten brackets and the upper gutter, before the lower gutter covers, can make this part of the installation quicker and more straightforward.

## INSTALLATION SEQUENCE

19

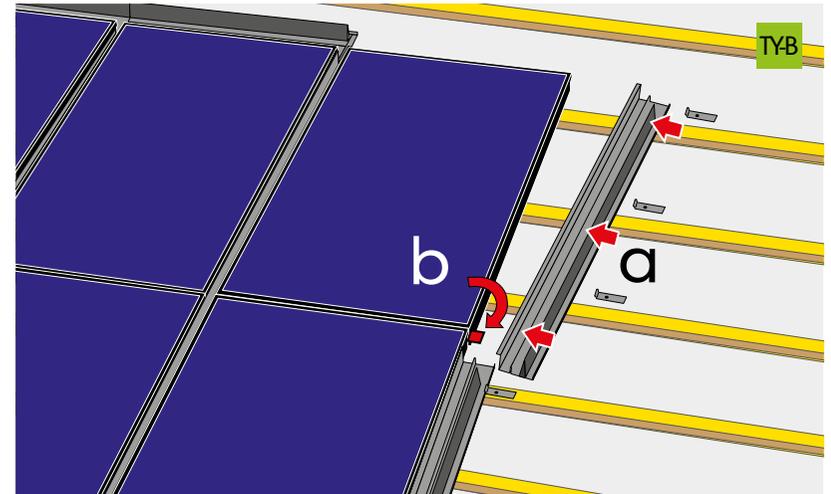
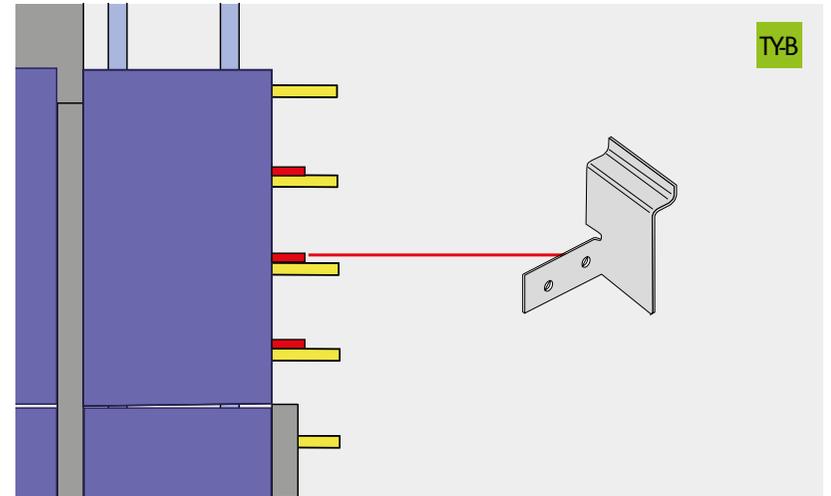
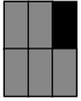


### BLUE BOX

Repeat steps 12 to 15 with TC kit and J kit.

## INSTALLATION SEQUENCE

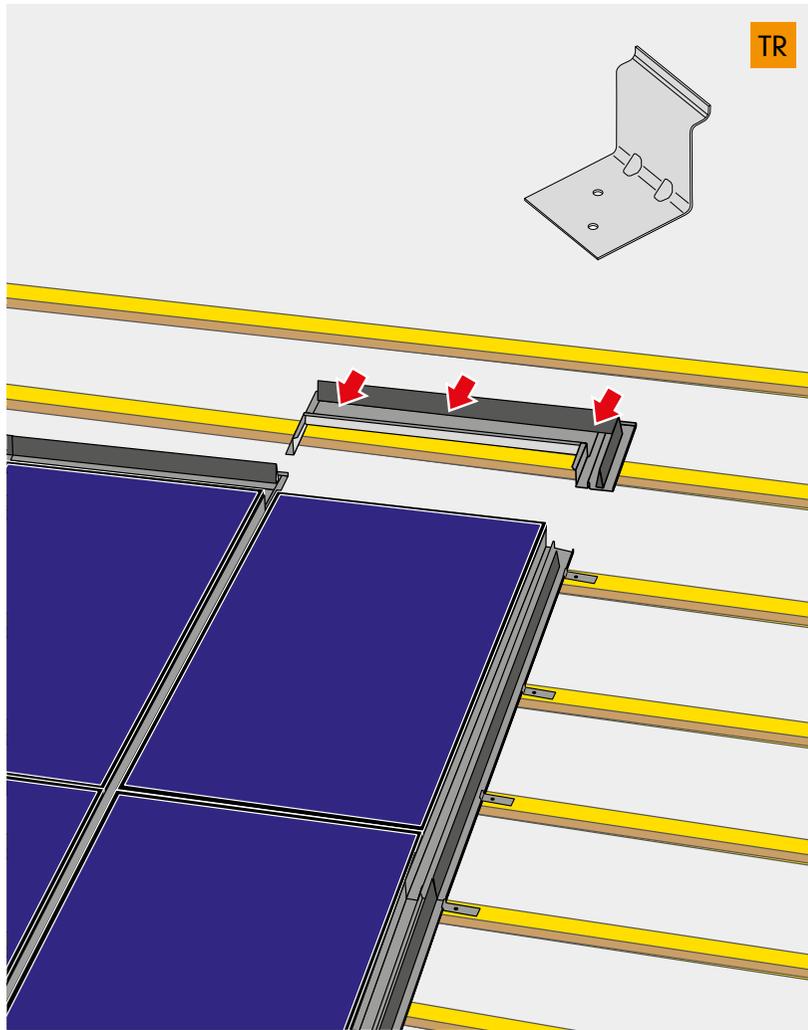
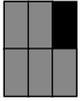
20



Repeat step 6 to fit batten brackets and upper side flashing

## INSTALLATION SEQUENCE

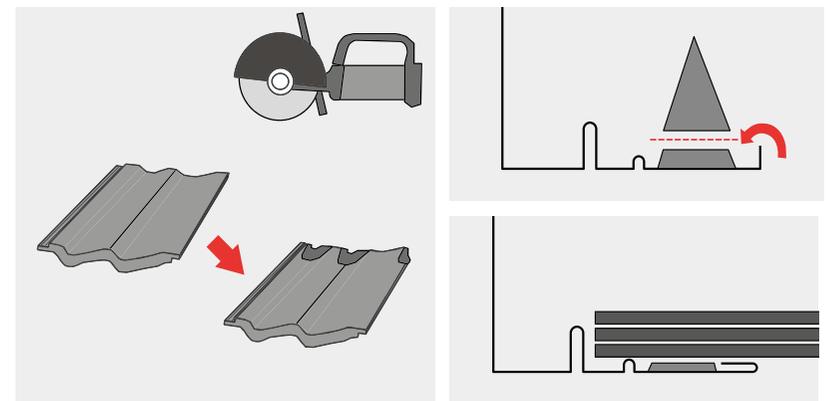
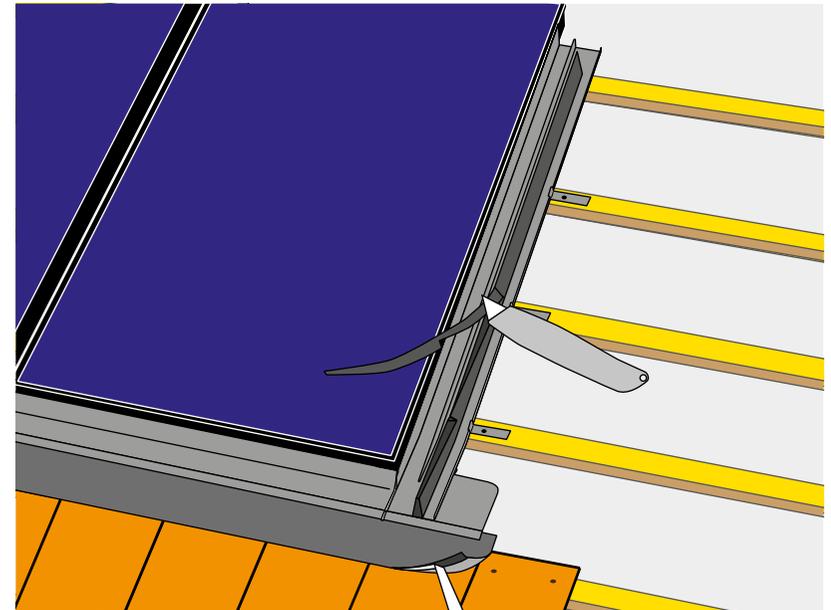
21



Repeat step 14 with TR kit.

## INSTALLATION SEQUENCE

22



Remove the paper strip on the underside of the sill flashing and press down onto the tiles. **Ensure that the bitumen strip is well-bonded to the tiles. In some circumstances, for example a dusty tile surface, the application of a low modulus external silicone sealant will be required to achieve good adhesion.**

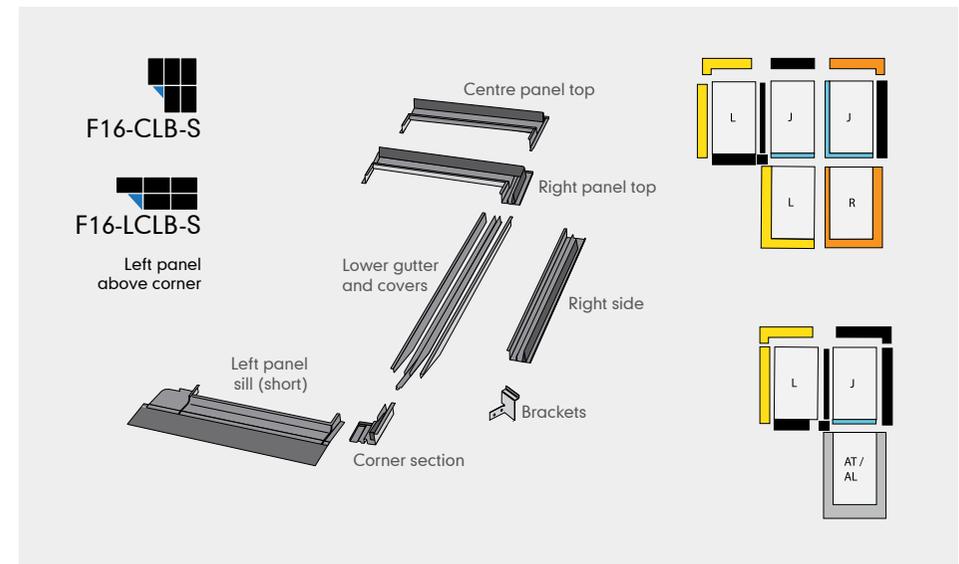
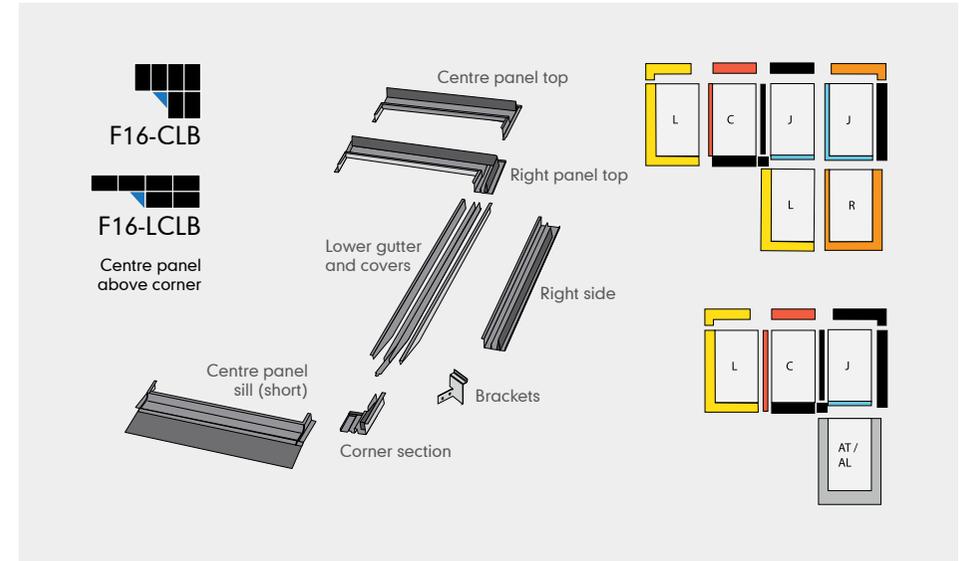
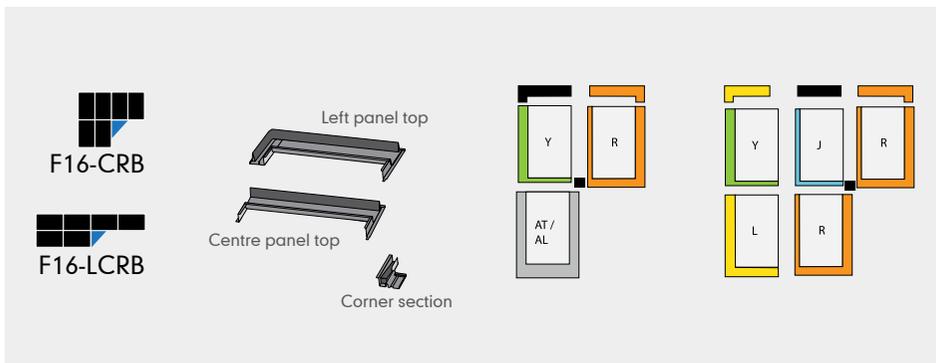
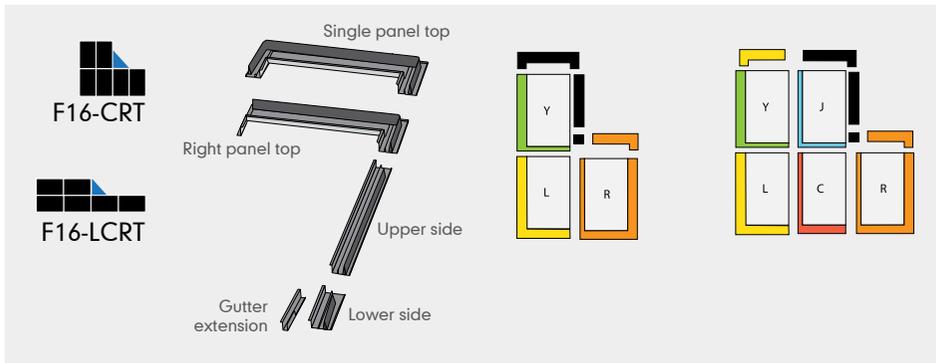
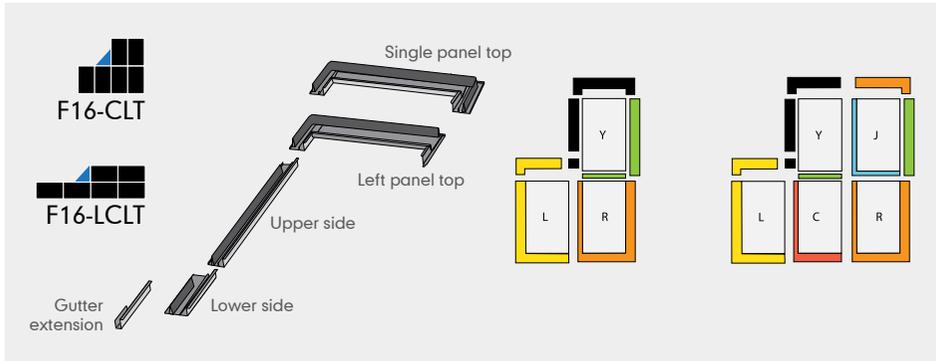
For some tile types it may be necessary to chamfer the high points under the sill flashing. Lighter tiles will sit more neatly if the foam surround is trimmed. For slates, trim the foam to within 10mm of its base and flatten over the outside edge of the flashing.

# CORNER CONFIGURATIONS

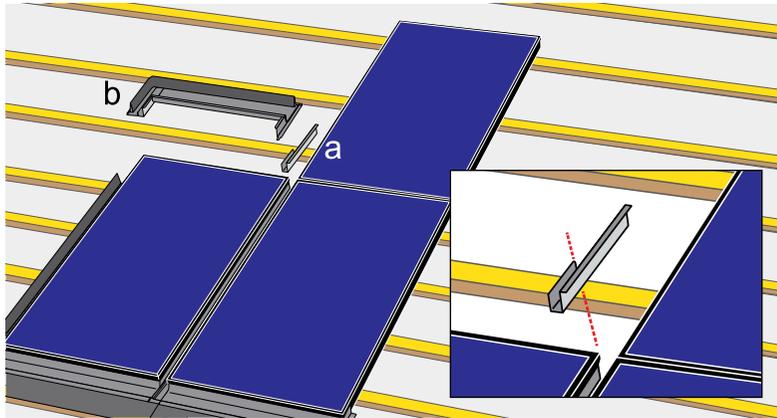


The corner kits are used in addition to standard flashing kits as shown below. These must be read in conjunction with the universal flashing installation (pages 11-31).

■ TL/LL ■ TC/LC ■ TR/LR ■ TY/LY ■ J/LJ



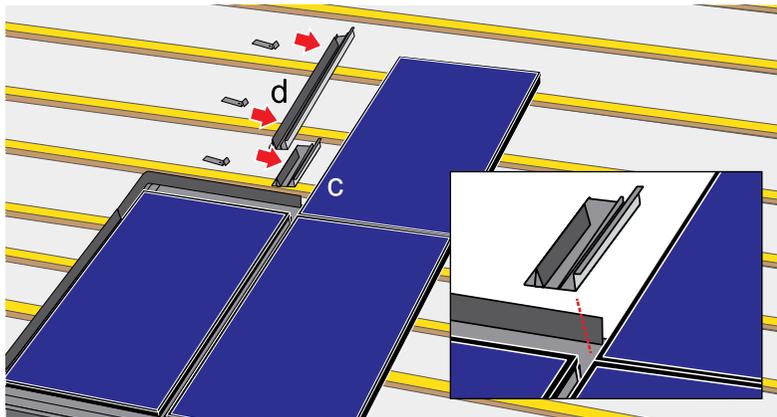
## LEFT TOP CORNER



Brackets for securing the upper panel and side flashing tabs are in the Y flashing kit.

Push the gutter extension (a) into the flashing gasket across the joint between the two right hand panels. The top edge of the full gutter section should be aligned with the top of the lower panels.

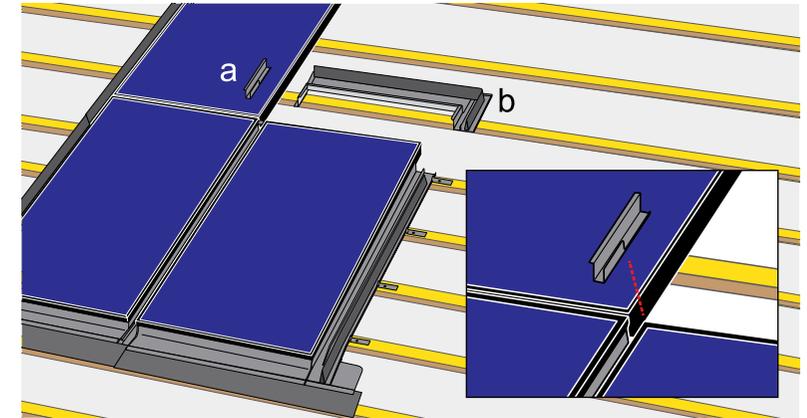
Assemble the top flashing (b).



Assemble the lower side flashing (c) then the upper side flashing (d). The bottom edge of the lower flashing aligns with the bottom edge of the top panel.

The kit contains top flashings for either a single panel or a left panel. Use the flashing suitable for the array and discard the other.

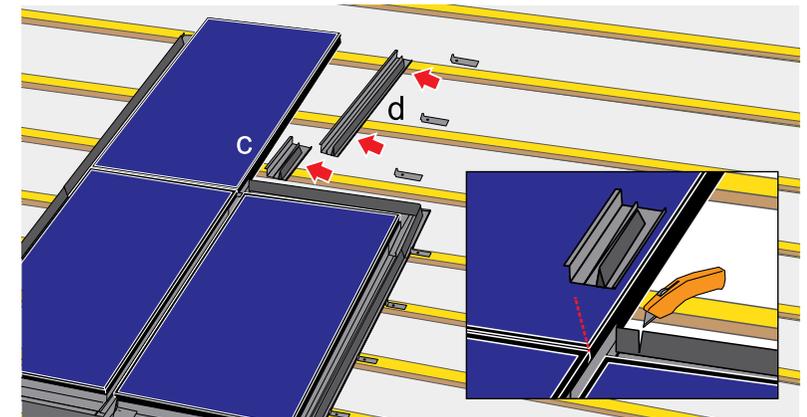
## RIGHT TOP CORNER



Brackets for securing the upper panel and side flashing tabs are in the Y flashing kit.

Push the gutter extension (a) into the flashing gasket across the joint between the two left hand panels. The top edge of the full gutter section should be aligned with the top of the lower panels.

Assemble the top flashing (b).



Assemble the lower side flashing (c) then the upper side flashing (d).

The bottom edge of the lower flashing aligns with the bottom edge of the top panel. Trim the foam as required.

The kit contains top flashings for either a single panel or a right panel. Use the flashing suitable for the array and discard the other.

## RIGHT BOTTOM CORNER



F16-CRB

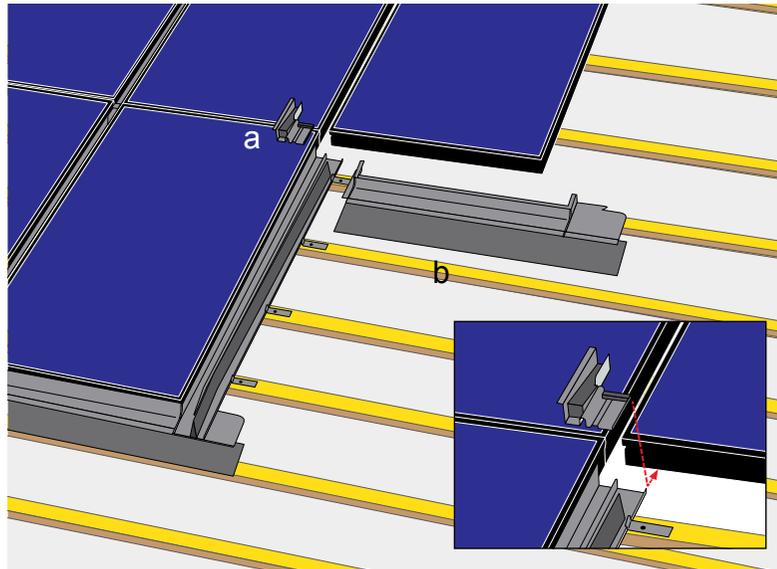


F16-LCRB



Orange  
Stripe Box

The corner section (a) is assembled before the sill flashing (b). Align the top face of the corner section with the bottom of the panel above it. Push the edge of the corner section into the panel gasket across the join between the two left hand panels.



Continue with the gutter flashing between the upper panels in the normal way.

The kit contains a left top and centre top flashing to complete the array. Use the top flashing that suits the array and discard the other.

## LEFT BOTTOM CORNER



F16-CLB



F16-LCLB



F16-CLB-S



F16-LCLB-S



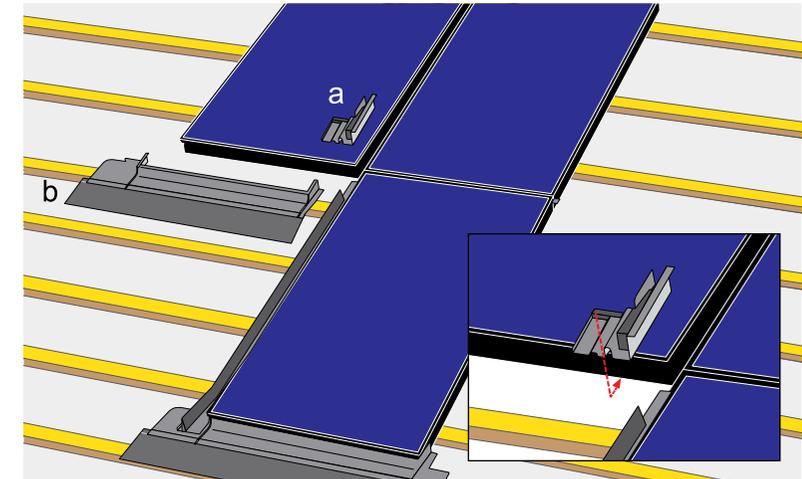
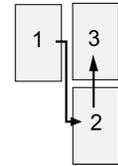
Yellow



Grey

Install panels in columns from bottom to top, starting with the left column and moving to the right.

The kit contains a shortened sill flashing (b) for the panel to the left of the corner. The CLB kit has a centre sill flashing to replace the sill flashing from a TC kit. The CLB-S kit has a left sill flashing to replace the sill from a TL kit.



The corner section (a) is assembled before the sill flashing (b). Align the top face of the corner section with the bottom of the panel above it. Push the edge of the corner section into the panel gasket across the join between the two right hand panels.

A lower gutter and covers for the gap between the two panels above the corner is provided in the kit.

The kit contains a side flashing, side brackets and a right top and centre top flashing to complete the array. Use the top flashing that suits the array and discard the other.



# Here to help

Getting our knowledge to you and your project smoothly and efficiently

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Knowledgeable and friendly staff are available to offer quotations, expert advice, deal with orders and all other enquiries.

Account customers call 08705 626400

Non-account customers call 01283 722588

## ▲ TECHNICAL ADVICE

Our Technical Advisory Service is staffed by a qualified team with specialist knowledge. Call 01283 722330 or e-mail [roofing@marley.co.uk](mailto:roofing@marley.co.uk)

## ▲ TOOLS

Tools and assets that make design and specification as straightforward as possible.

### ROOF SYSTEM SELECTOR

Easy-to-use and comprehensive system finder delivering results from choice of pitch, material or tile type: [marley.co.uk/productselector](http://marley.co.uk/productselector)

### SPECIFICATION TOOLS FOR ROOFING PRODUCTS

Specrite, Estimator and Tilefix are online tools designed to give the specifier and installer all the specification and installation help they need: [marley.co.uk/specrite](http://marley.co.uk/specrite) [marley.co.uk/estimator](http://marley.co.uk/estimator) [marley.co.uk/tilefix](http://marley.co.uk/tilefix)

### CONFIGURATOR

Simple way to generate solar specifications and estimates. It also calculates kWp output to show performance of the system:

[marley.co.uk/solar](http://marley.co.uk/solar)

For specification or estimating support, contact our Technical Advisory Service. Call 01283 722330 or e-mail [roofing@marley.co.uk](mailto:roofing@marley.co.uk)

## ▲ RESOURCES

### FIXING INSTRUCTIONS AND LITERATURE

Fixing and installation literature and videos: [marley.co.uk/resources](http://marley.co.uk/resources)

All current product and technical literature can be downloaded:

[marley.co.uk/downloads](http://marley.co.uk/downloads)



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