SOLAR INSTALLATION GUIDE

JUNE 2020

MECHANICAL SPECIFICATION

Thickness	69mm
Static roof loading (distributed)	12.9 kg/m^2
Characteristic wind resistance	5.32 kPa
Ultimate wind design loads	5.40 kPa
Positive design load* (IEC61215)	kPa
Fire rating (EN 13501-5 / BS 476-3)	B$_{ROOF}$ (T$_1$, T$_2$, T$_3$, T$_4$) / AA
Power warranty	90% (10 years), 80% (25 years)
Standards	IEC61215, 61730, TUV, MCS012

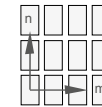* Design resistance to ultimate loads includes a partial material safety factor

Tested batten size - 50mm x 25mm, rafter 35mm x 75mm, rafter spacing 600mm. For sarking brackets - softwood sarking boards 100mm
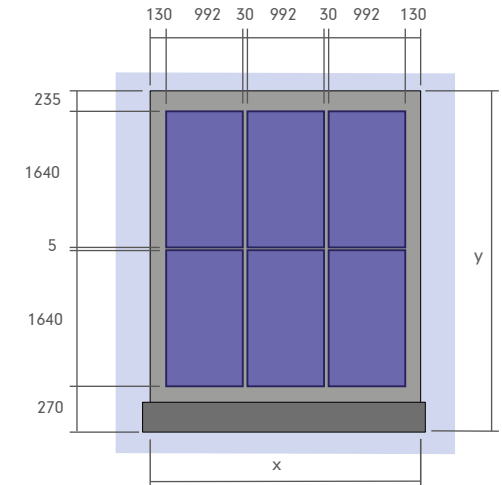
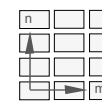# SOLAR TILE ORIENTATIONS

PORTAIT ORIENTATION

n x m

$x = 260 + (m \times 992) + ([m\text{-}1] \times 30)$
$y = 505 + (n \times 1640) + ([n\text{-}1] \times 5)$
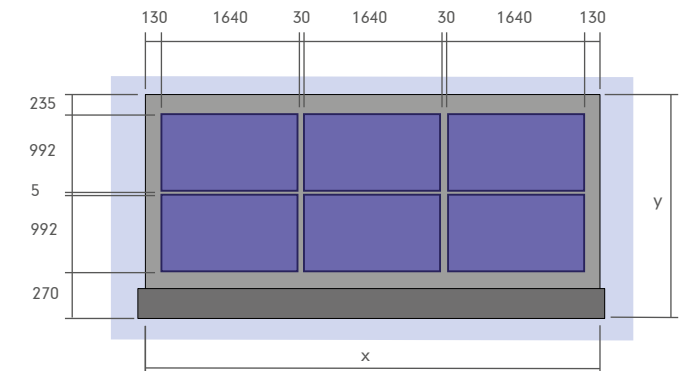
130 992 30 992 30 992 130

235

1640

5

1640

270

y

x

LANDSCAPE ORIENTATION

130 1640 30 1640 30 1640 130

235

992

5

992

270

n x m

$x = 260 + (m \times 1640) + ([m\text{-}1] \times 30)$
$y = 505 + (n \times 992) + ([n\text{-}1] \times 5)$

y

x

1 x 2
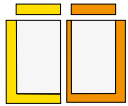
☐ Marley SolarTile® PV16	2
🟨 F16-TL	1
🟧 F16-TR	1

1 x 4
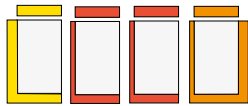
☐ Marley SolarTile® PV16	4
🟨 F16-TL	1
🟥 F16-TC	1
🟧 F16-TR	1

2 x 2
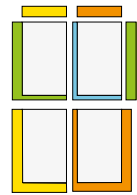
☐ Marley SolarTile® PV16	4
🟨 F16-TL	1
🟥 F16-TC	0
🟧 F16-TR	1
🟩 F16-TY	1
🟦 F16-J	1

3 x 3
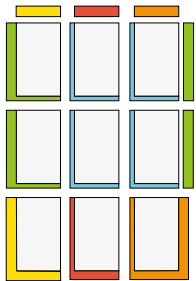
☐ Marley SolarTile® PV16	9
🟨 F16-TL	1
🟥 F16-TC	1
🟧 F16-TR	1
🟩 F16-TY	2
🟦 F16-J	4

2 x 4
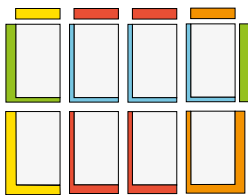
☐ Marley SolarTile® V16	8
🟨 F16-TL	1
🟥 F16-TC	2
🟧 F16-TR	1
🟩 F16-TY	1
🟦 F16-J	3

2 x 3
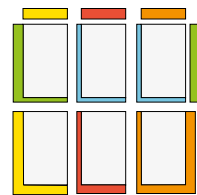
☐ Marley SolarTile® PV16	6
🟨 F16-TL	1
🟥 F16-TC	1
🟧 F16-TR	1
🟩 F16-TY	1
🟦 F16-J	2

2 x 1
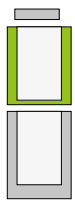
☐ Marley SolarTile® PV16	2
⬜ VAT16	1
🟩 F16-TY	1

n x m

☐ Marley SolarTile® PV16	(n x m)
🟨 F16-TL	1
🟥 F16-TC	(m-2)
🟧 F16-TR	1
🟩 F16-TY	(n-1)
🟦 F16-J	(n-1) x (m-1)
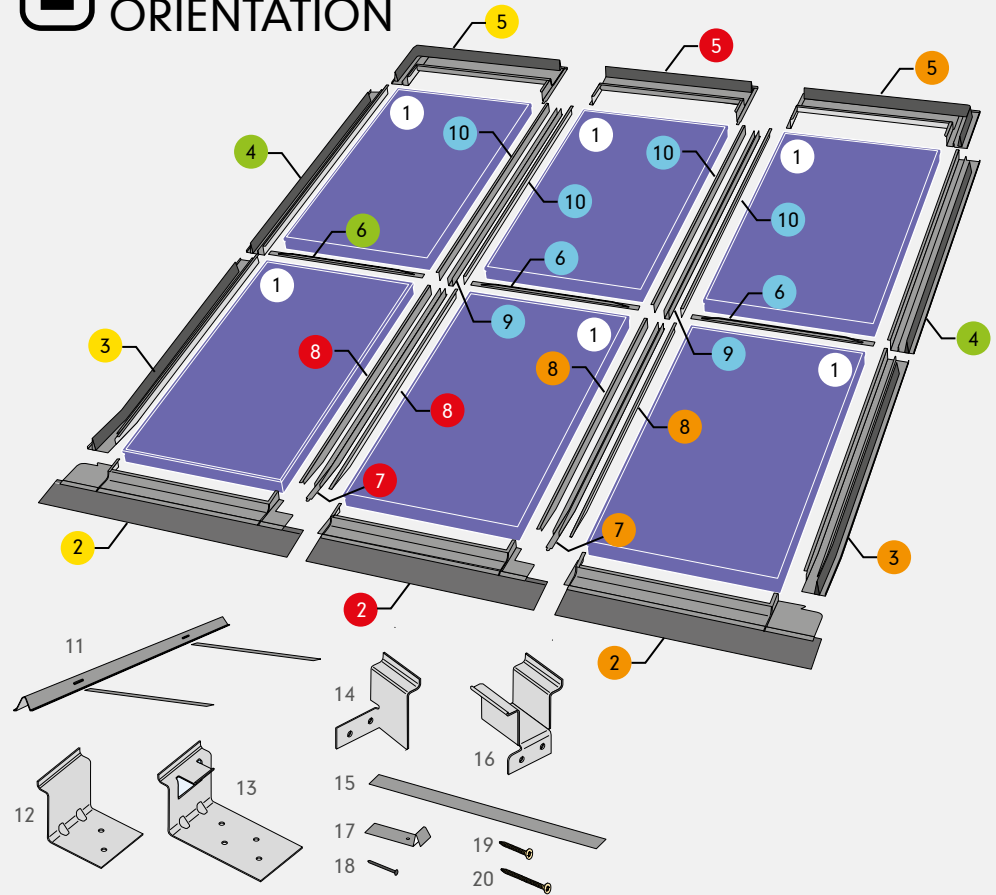
		TL	TC	TR	TY	J
1	Marley SolarTile® PV16					
2	Sill flashing	1	1	1		
3	Lower side flashing	1		1		
4	Upper side flashing				2	
5	Top flashing	1	1	1		
6	Joining strip				1	1
7	Lower gutter	1		1		
8	Lower gutter cover	2		2		
9	Upper gutter					1
10	Upper gutter cover					2

		TL	TC	TR	TY	J
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

1 x 2

☐ Marley SolarTile PV16	2
🟨 F16-LL	1
🟧 F16-LR	1

1 x 4
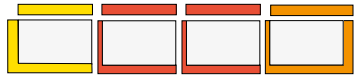
☐ Marley SolarTile PV16	4
🟨 F16-LL	1
🟥 F16-LC	1
🟧 F16-LR	1

2 x 2
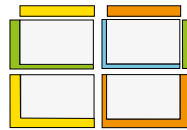
☐ Marley SolarTile PV16	4
🟨 F16-LL	1
🟥 F16-LC	0
🟧 F16-LR	1
🟩 F16-LY	1
🟦 F16-LJ	1

3 x 3
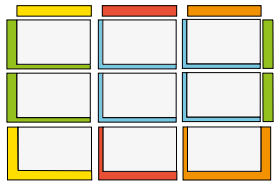
☐ Marley SolarTile PV16	9
🟨 F16-LL	1
🟥 F16-LC	1
🟧 F16-LR	1
🟩 F16-LY	2
🟦 F16-LJ	4

2 x 4
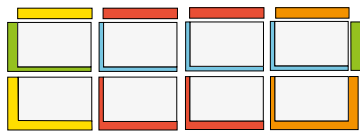
☐ Marley SolarTile PV16	8
🟨 F16-TL	1
🟥 F16-TC	2
🟧 F16-TR	1
🟩 F16-TY	1
🟦 F16-J	3

2 x 1
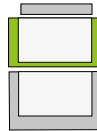
☐ Marley SolarTile PV16	2
⬜ VAL16	1
🟩 F16-LY	1

22x 3
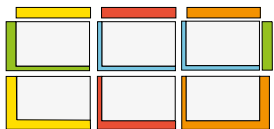
☐ Marley SolarTile PV16	6
🟨 F16-LL	1
🟥 F16-LC	1
🟧 F16-LR	1
🟩 F16-LY	1
🟦 F16-LJ	2
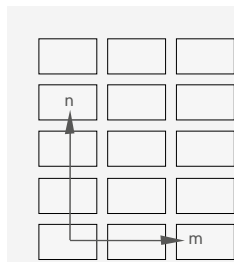
n x m

☐ Marley SolarTile PV16	(n x m)
🟨 F16-TL	1
🟥 F16-TC	(m-2)
🟧 F16-TR	1
🟩 F16-TY	(n-1)
🟦 F16-J	(n-1) x (m-1)
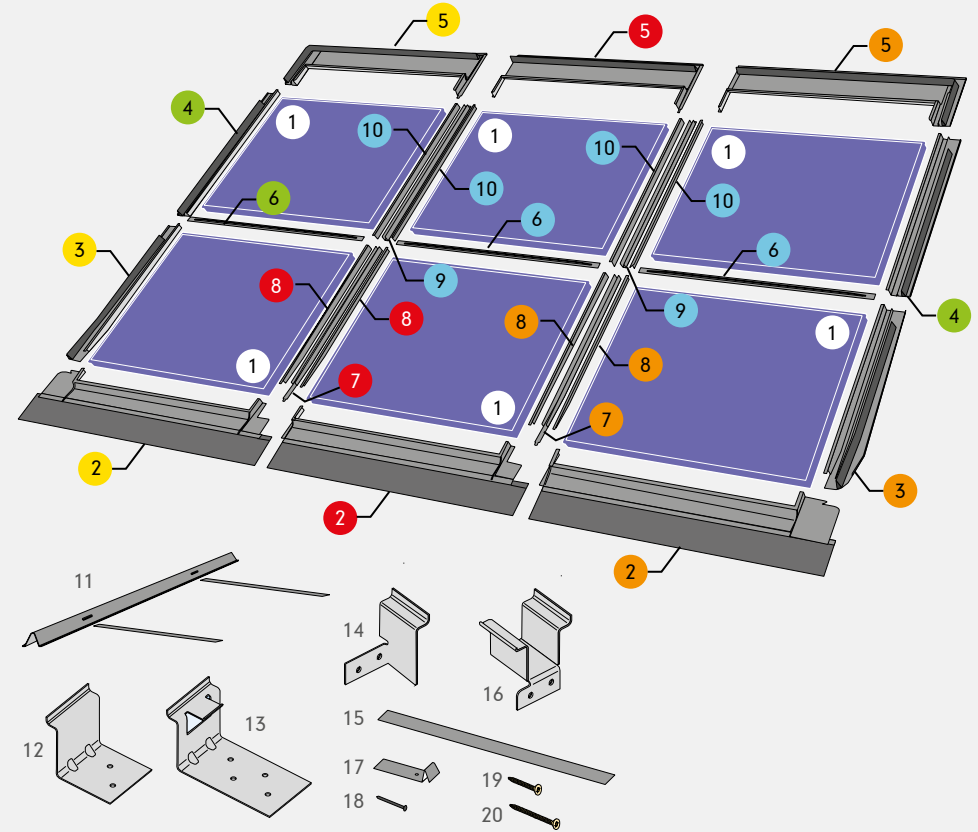
		LL	LC	LR	LY	LJ
1	Marley SolarTile PV16					
2	Sill flashing	1	1	1		
3	Lower side flashing	1		1		
4	Upper side flashing				2	
5	Top flashing	1	1	1		
6	Joining strip				1	1
7	Lower gutter		1	1		
8	Lower gutter cover		2	2		
9	Upper gutter					1
10	Upper gutter cover					2

		LL	LC	LR	LY	LJ
11	Tile support	1	1	1		
12	Rafter bracket	6	6	6		
13	Combi rafter bracket				3	3
14	Batten bracket	2		2	4	
15	Combi batten bracket		2	2		2
16	Gutter fixing strip		1	1		1
17	Side fixing tab	4		4	8	
18	Nail	4	1	5	8	1
19	4 x 25mm screw	4	4	8	8	4
20	4 x 50mm screw	12	12	12	12	12

ELECTRICAL
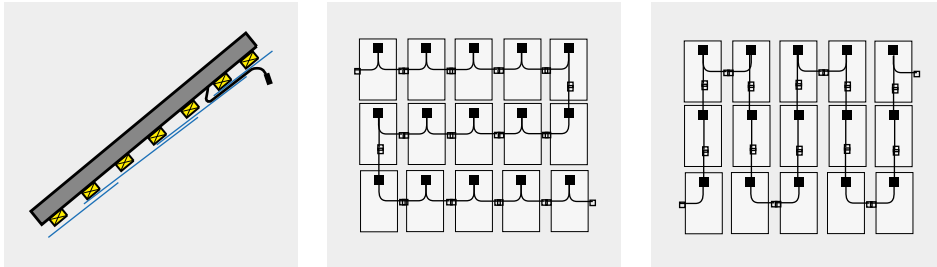
- Electrically test each solar panel as it is installed.

- 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
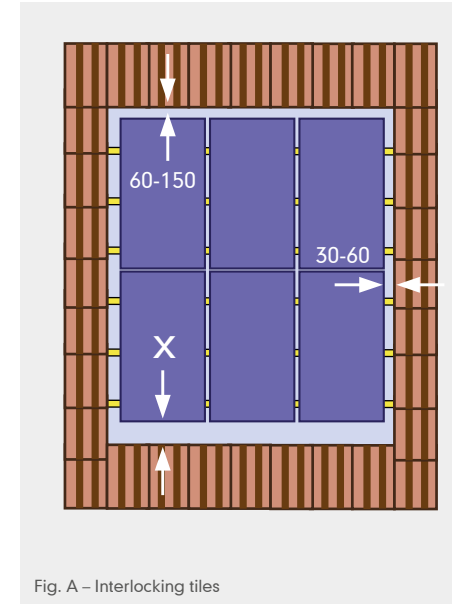
Fig. A – Interlocking tiles
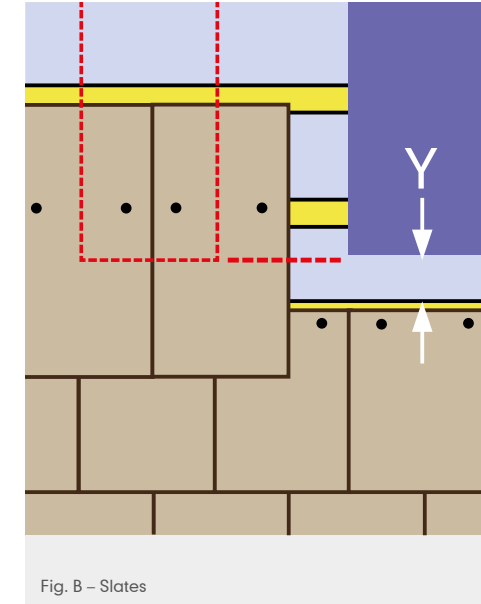
Fig. B – Slates
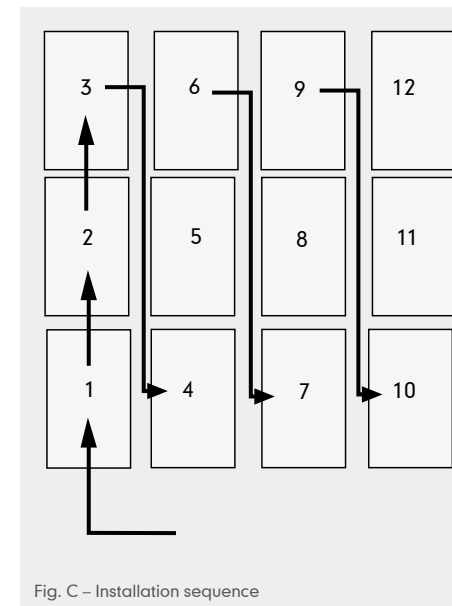
Fig. C – Installation sequence

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

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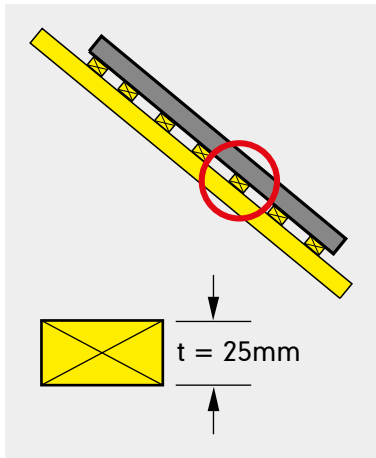
Roofing kits are provided with brackets suitable for tile battens of 25mm thickness.

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.

12 → B22

13 → +SP-5J

Fig. A: t = 22mm

12 → +SP-5 +5mm

13 → +SP-5J +5mm

Fig. B: t > 22mm

12 → SB16-*

14 →

15 → SB16-J SB16-Y

13 → SB16-J
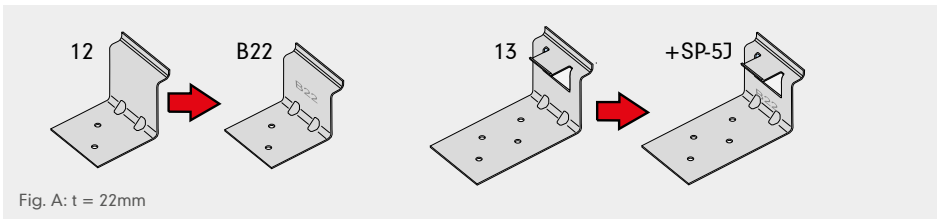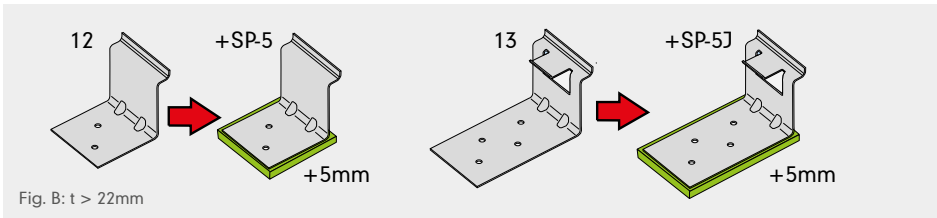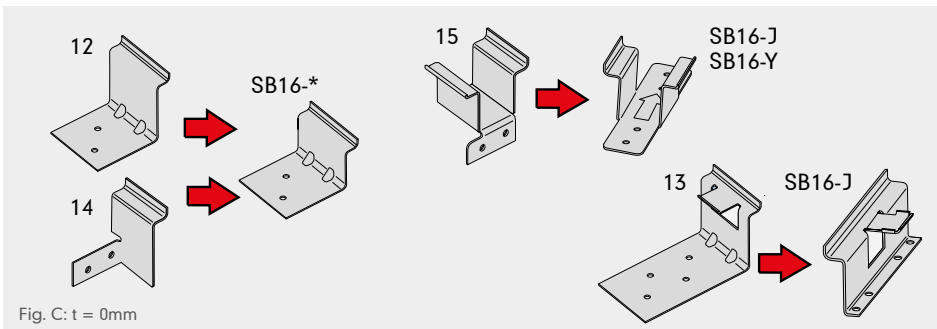
Fig. C: t = 0mm

INSTALLATION SEQUENCE

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

1

TL

TL

TL

TL

1

2
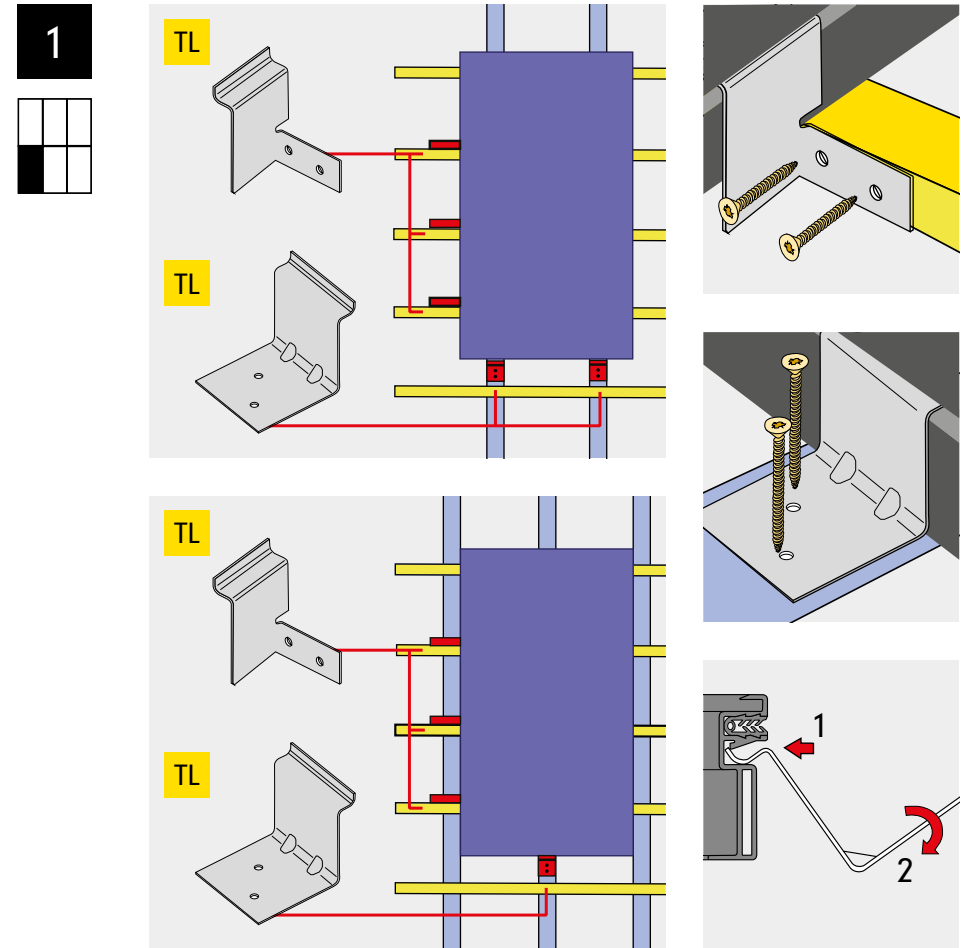
OPEN THE YELLOW BOX

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.
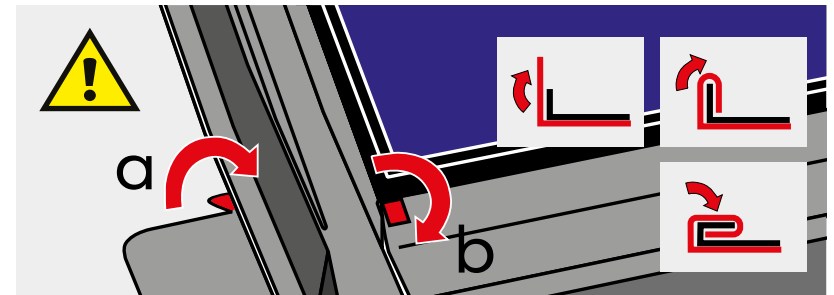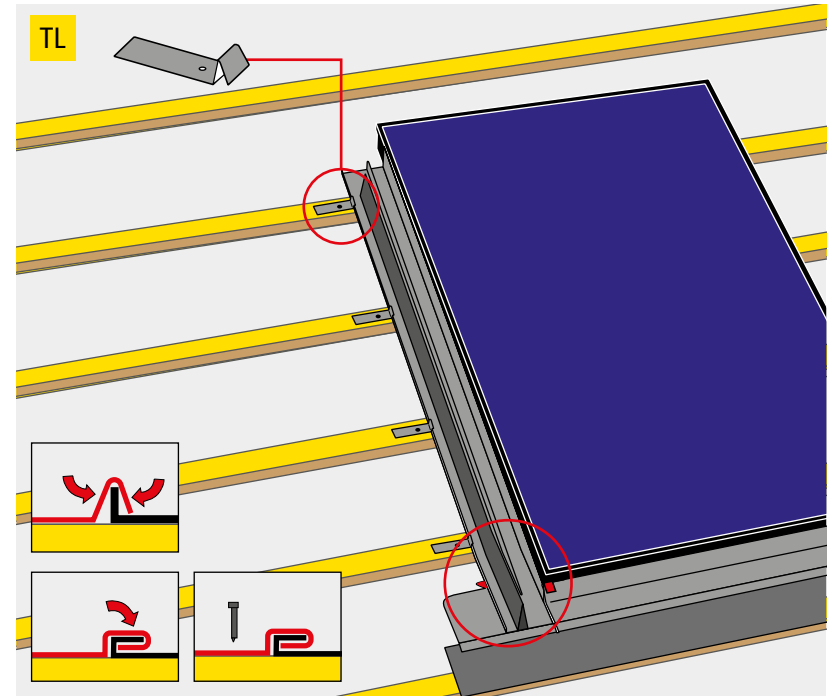
INSTALLATION SEQUENCE

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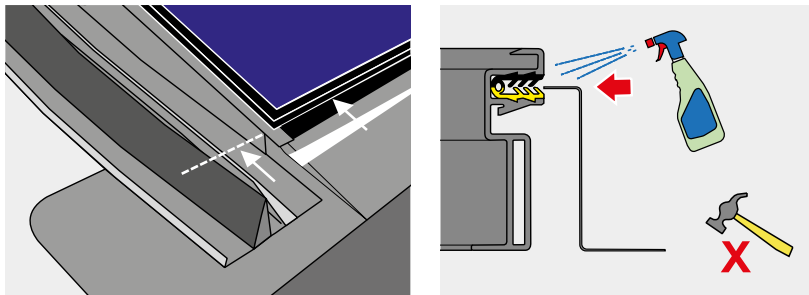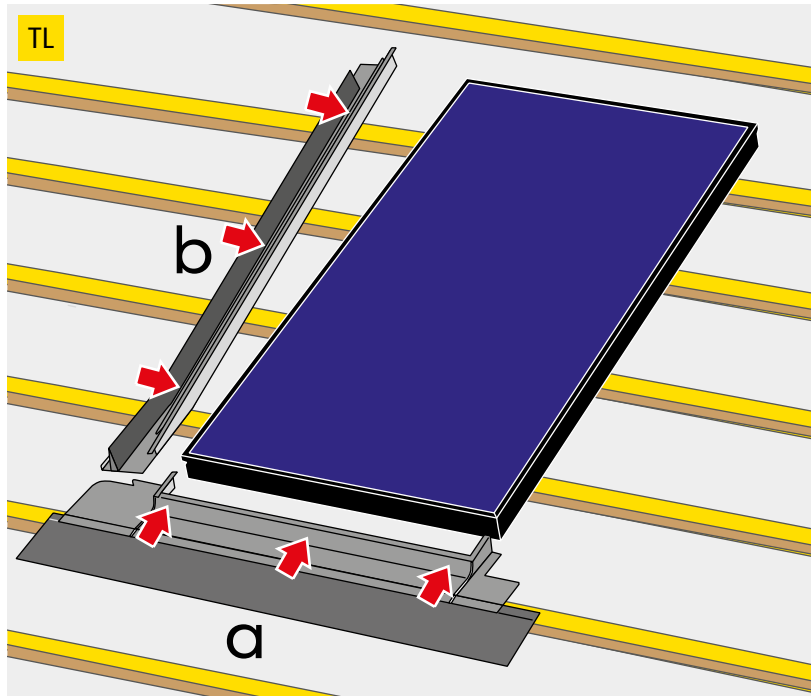
Fit the sill flashing (a) then the lower side flashing (b) to the panel. Flashings push into the rubber gasket seal in the upper slot of the panel frame. Take care to align the leading edge just above the yellow line on the gasket. If lubrication is required, use glass cleaning fluid.
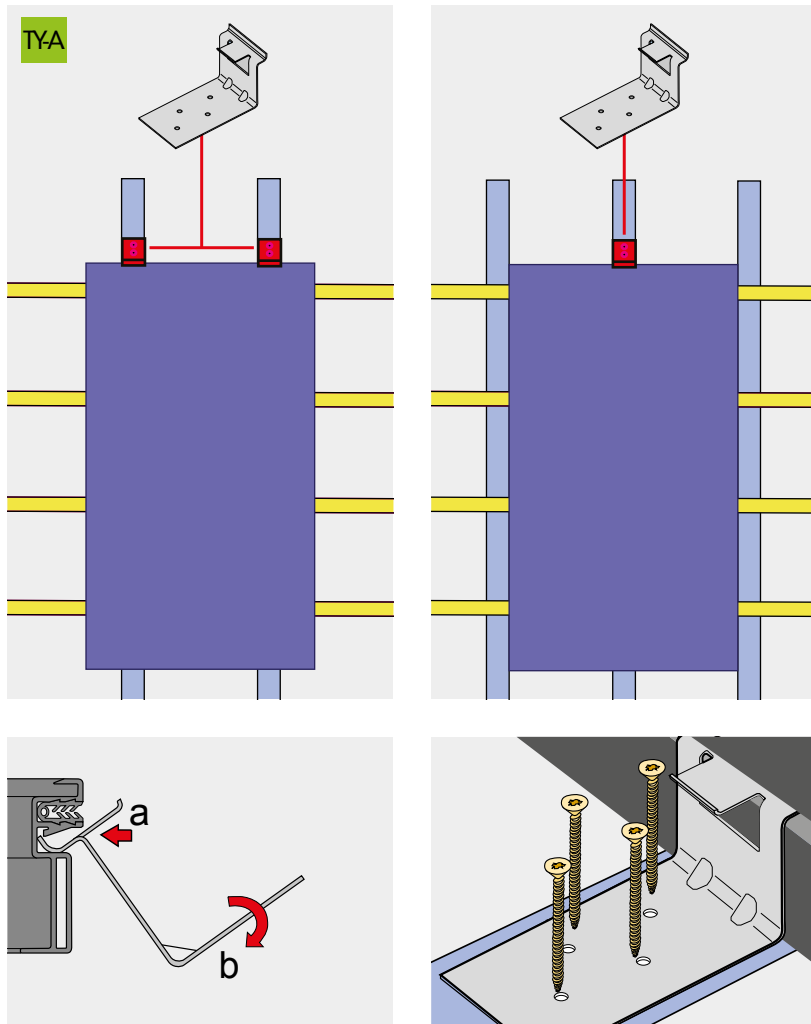
INSTALLATION SEQUENCE

3 | TL

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).

4

TY-A

OPEN THE GREEN BOX

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

5

TY

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

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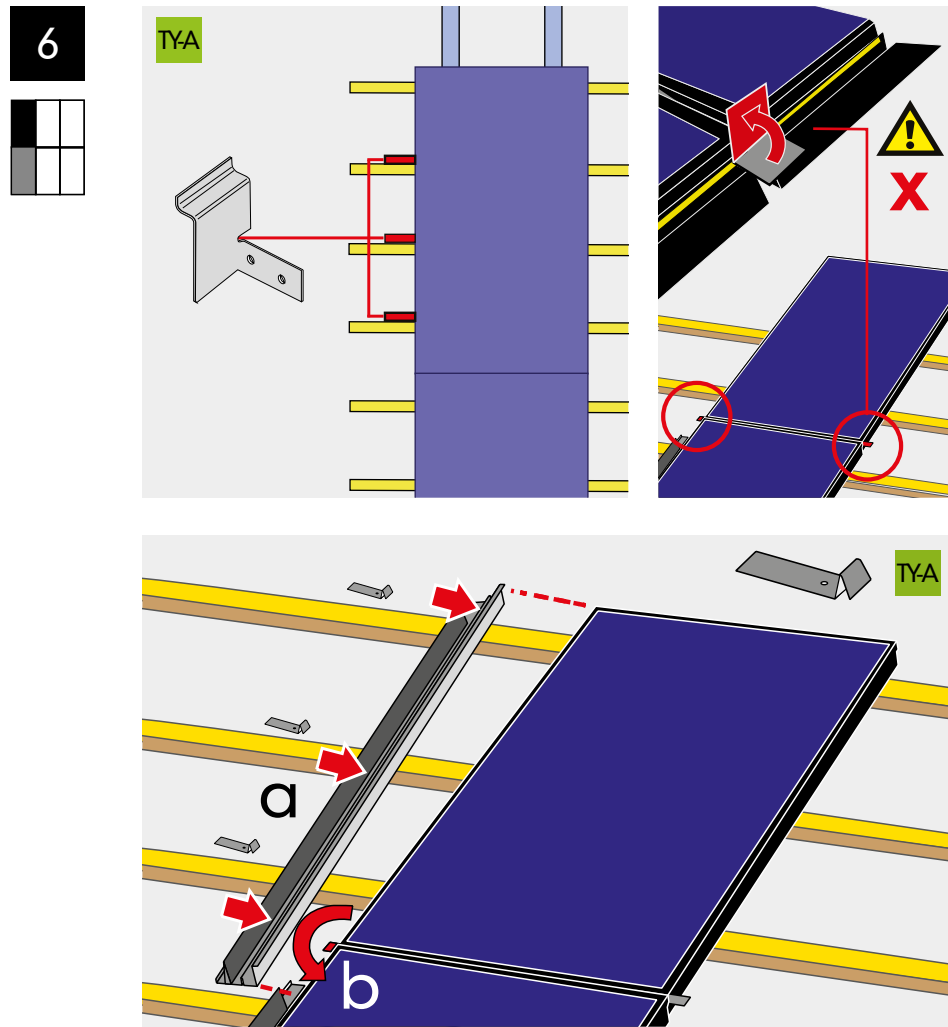
Fix the left side of the solar panel with batten brackets (14) and 25mm screws (19). Push in the upper side flashing (4) and fix the outside edge with side fixing tabs (17).

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

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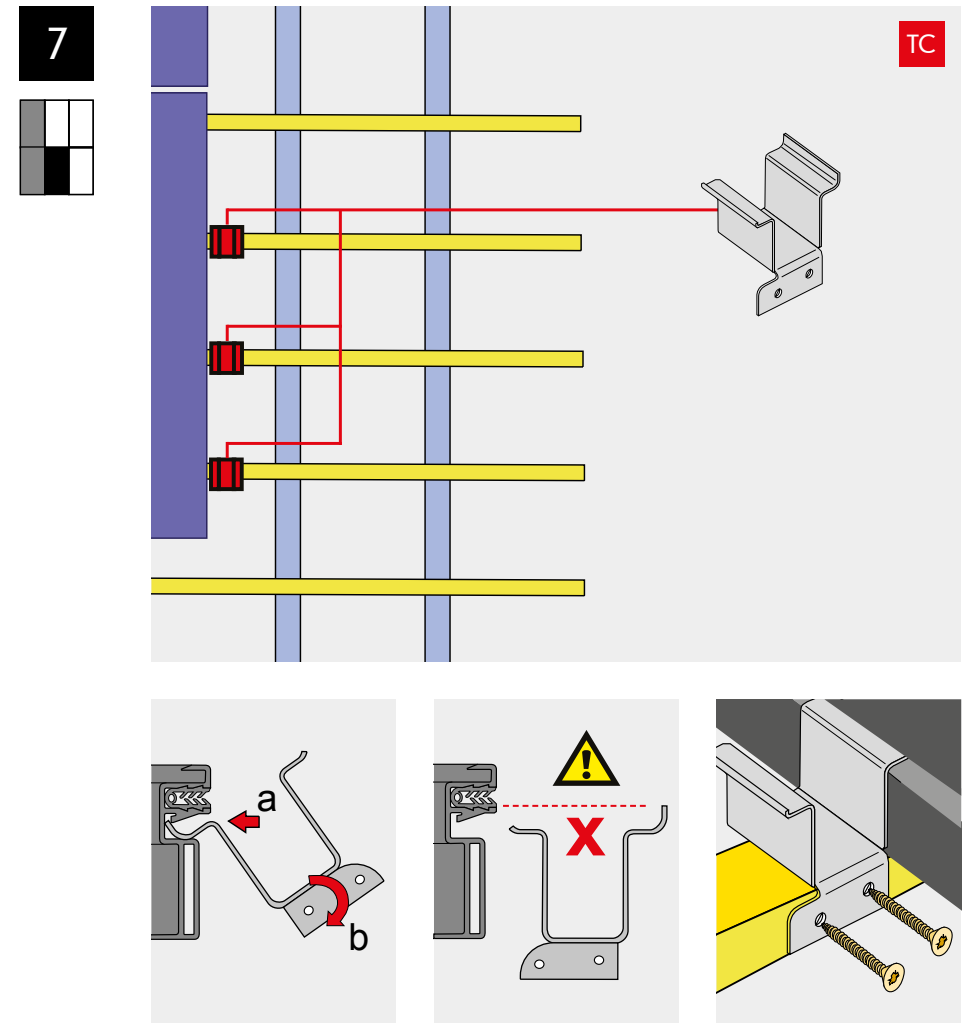
RED BOX
Fix combi-batten brackets (15) to the right hand side of the bottom solar panel. The bracket must be turned so that the side with the taller edge goes into the panel. Fix each brackets with two 25mm screws (19).

8
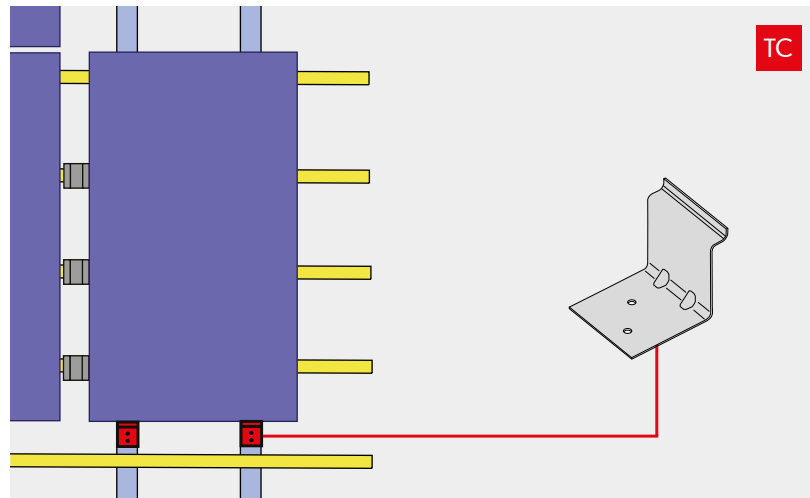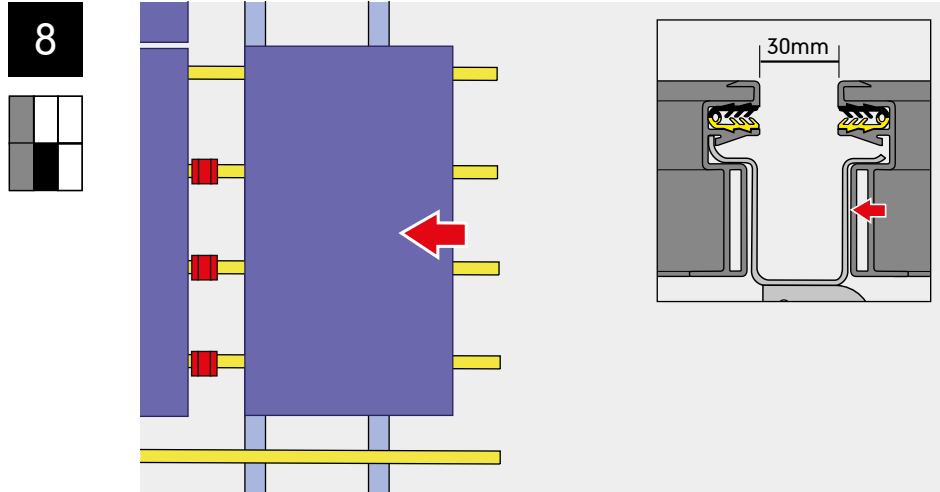
Slide the first panel of the next column sideways to engage with the combi-batten brackets. The bracket sets the gap to 30 mm. Secure the new solar panel to each rafter it crosses with rafter brackets (12) and two 50mm screws (20) each.

9
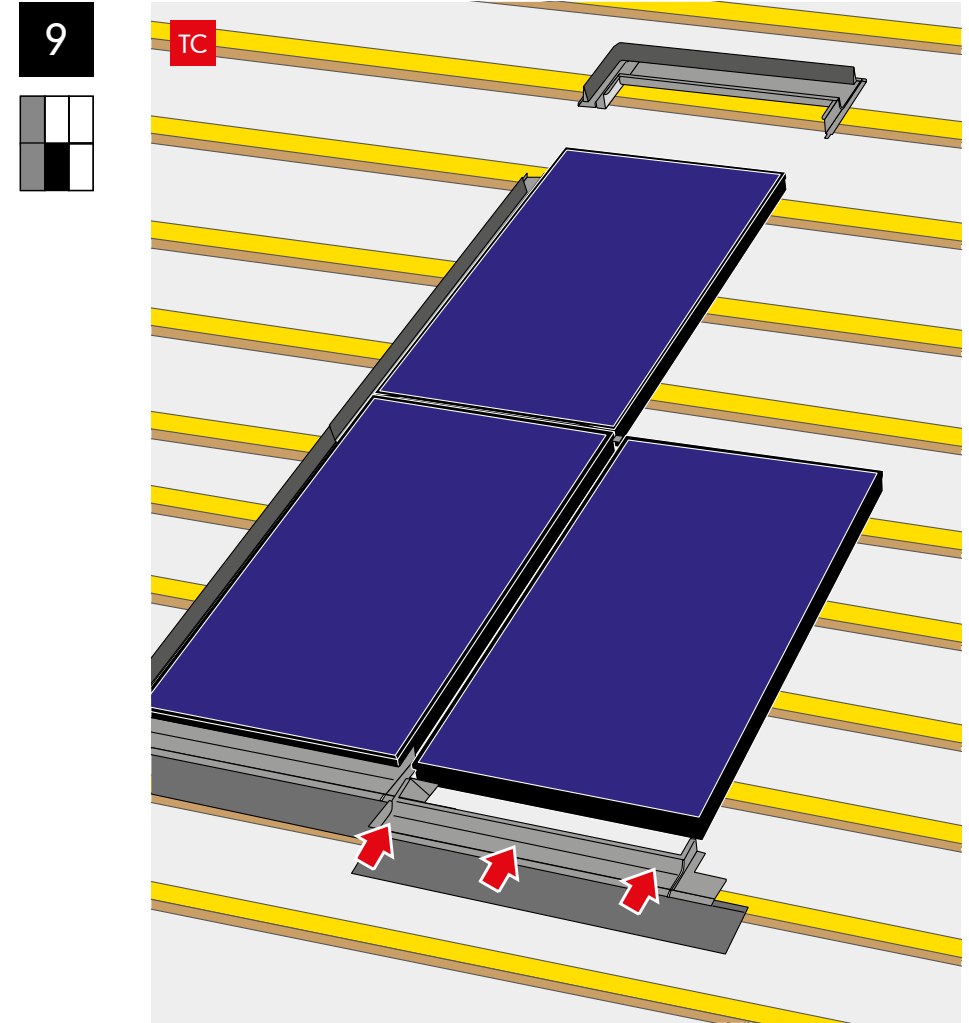
Push the sill flashing (2) into the gasket on the solar panel.

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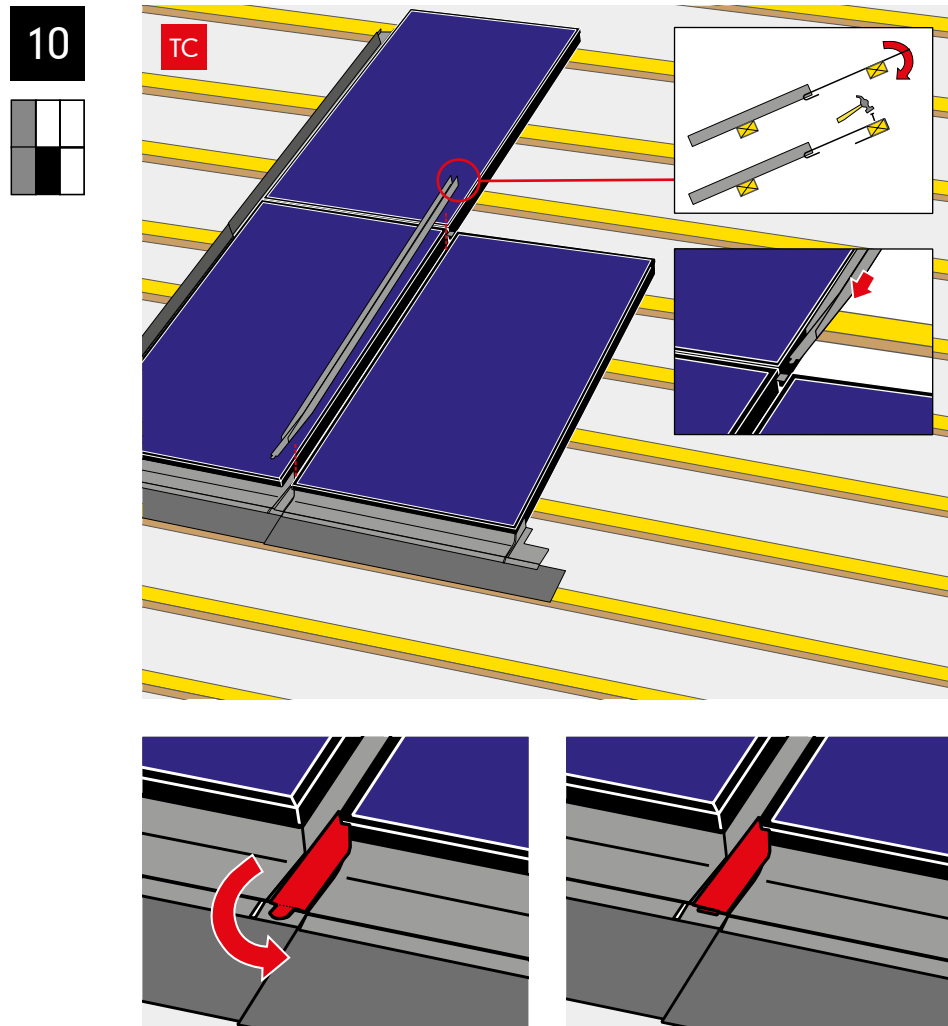
Slide the lower gutter (7) between the two solar panels from the top. Fold the tab at the bottom behind the sill flashing. Loop the gutter fixing strip (16) into the slot on top of the gutter. Fix the strip to a batten with a nail.

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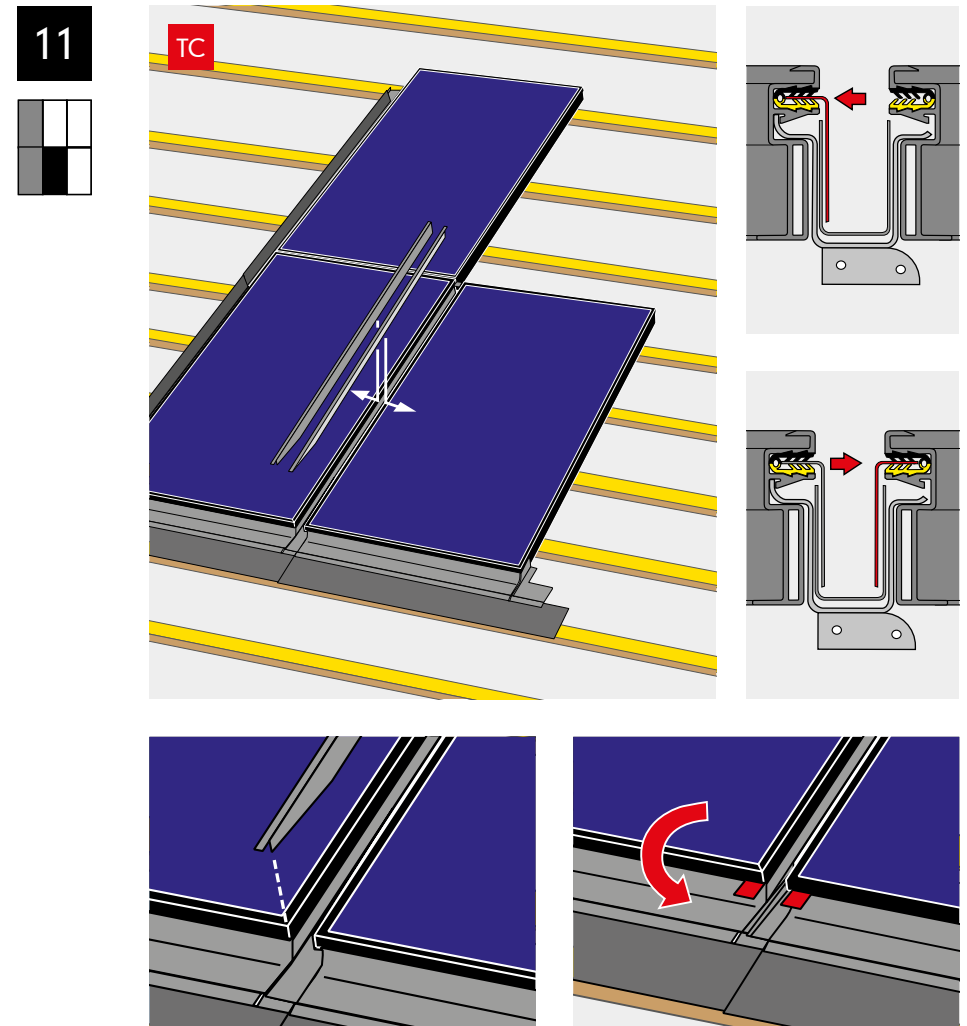
Align the bottom corner of the lower gutter covers (8) with the bottom edge of the solar panel and push the gutter covers into the gasket. Fold down the retaining tabs.

12

J
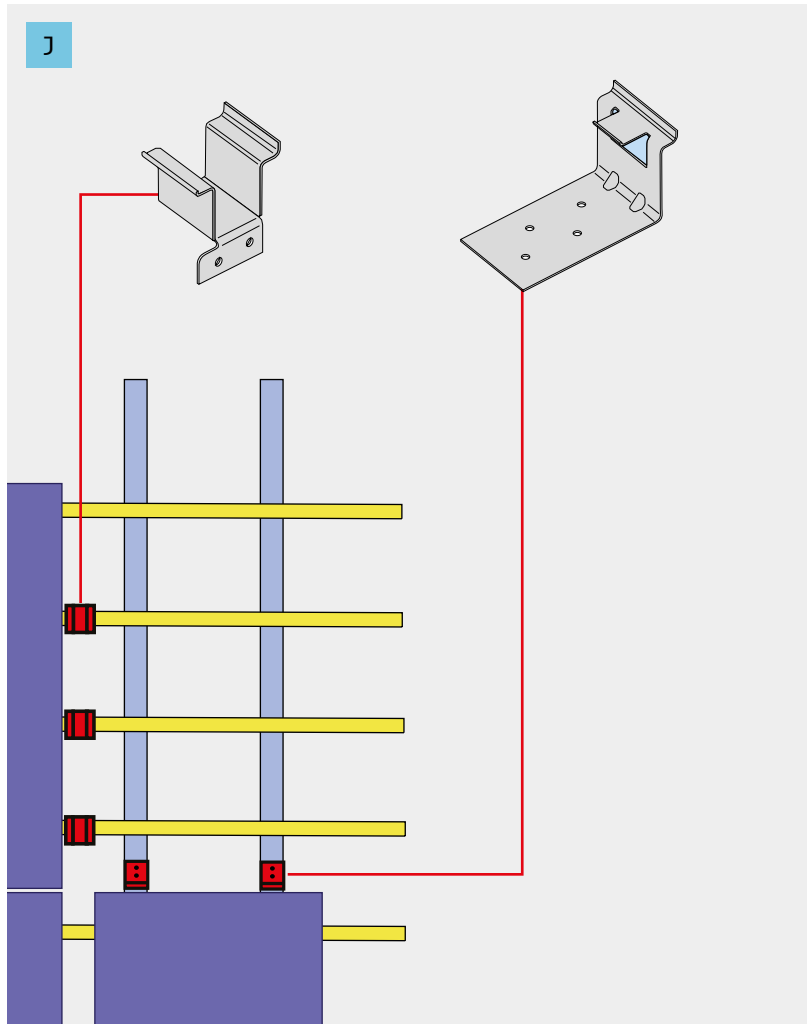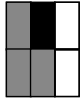
BLUE BOX

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.
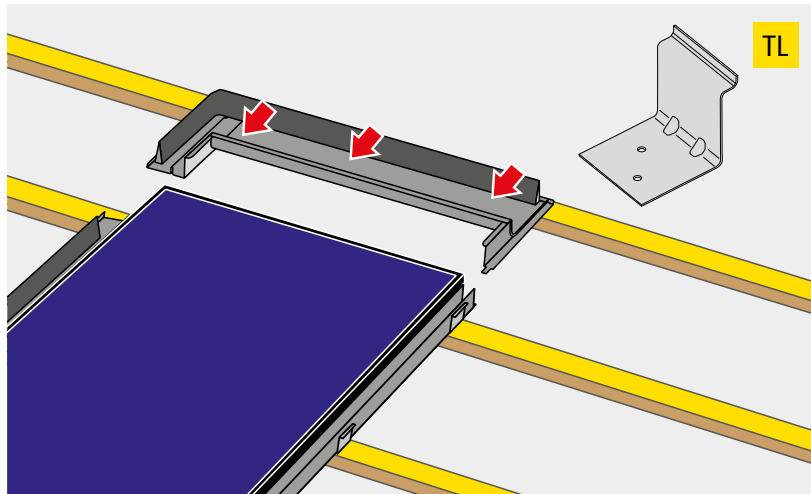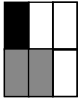
13

J

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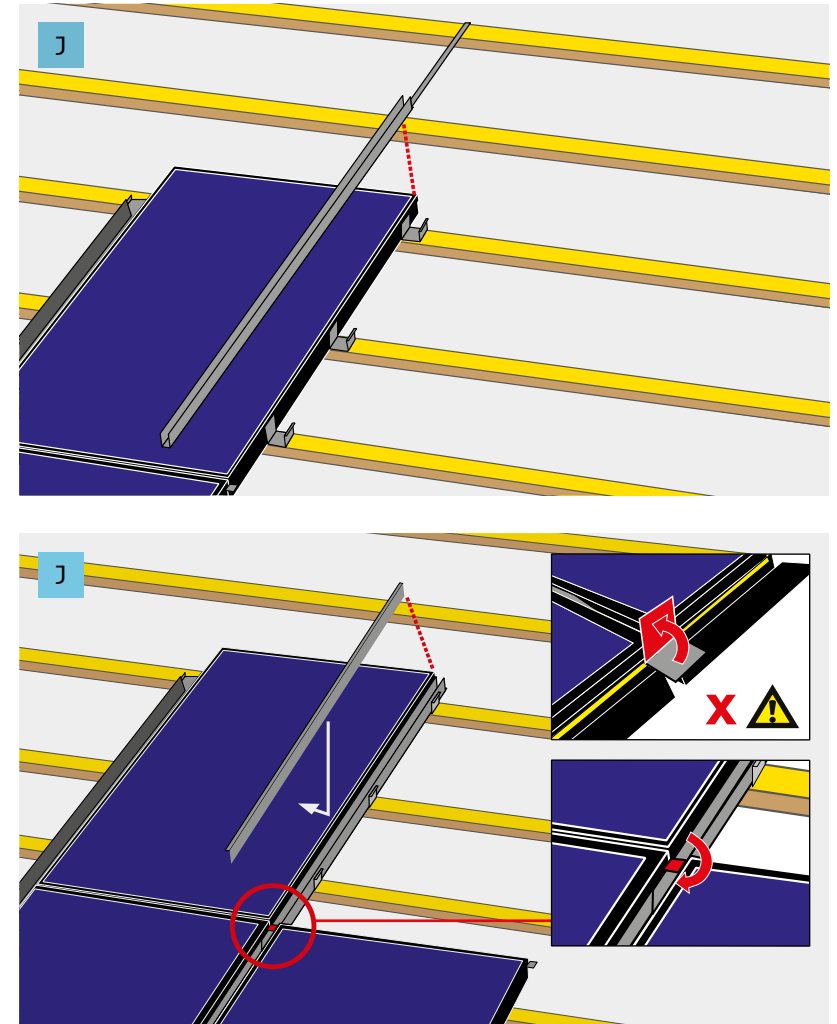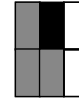
Fit the upper gutter (9) between the solar panels and nail the gutter fixing strip to a batten. Push the upper gutter cover (10) into the panel gasket. Fold the end of the joining strip down into the gutter.

14

TL

TL
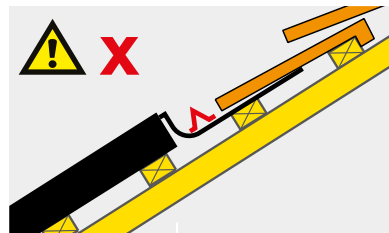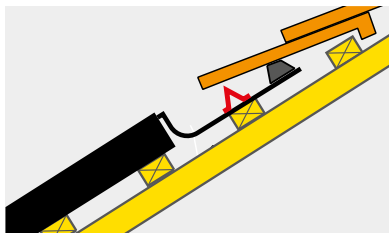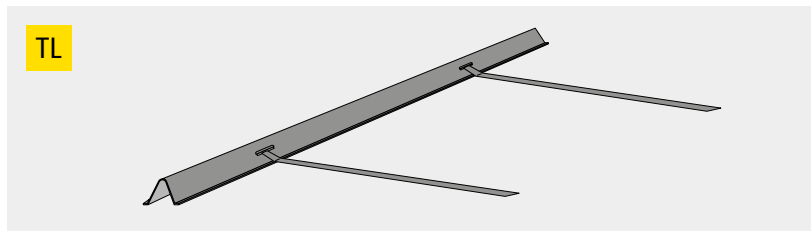
For each rafter it crosses, fix a rafter bracket (12) to the top of the top left panel and secure with two 50mm screws (20) each. You may need to add a batten above the panel to support the top flashing. Push the top flashing (5) into the panel gasket. The tile support (11) is needed for some tile types. Feed the two straps under the foam and secure the straps to a batten above.
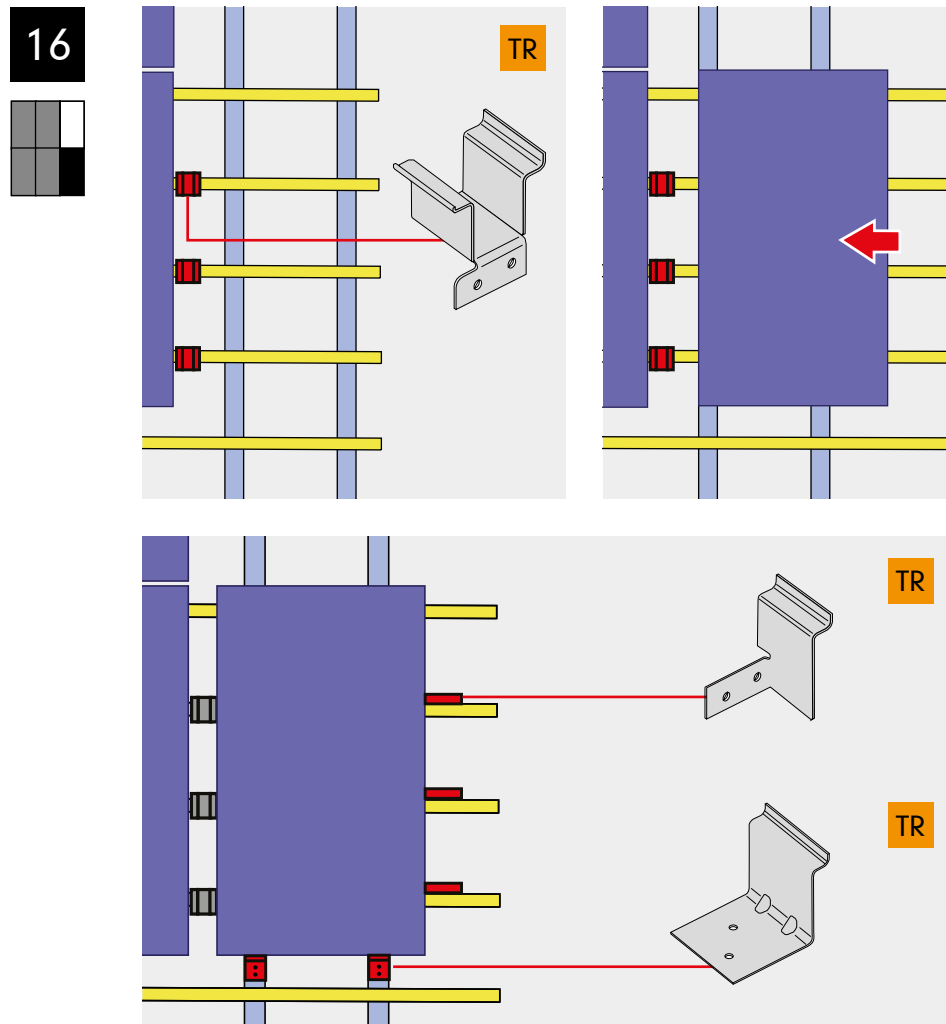
15

J

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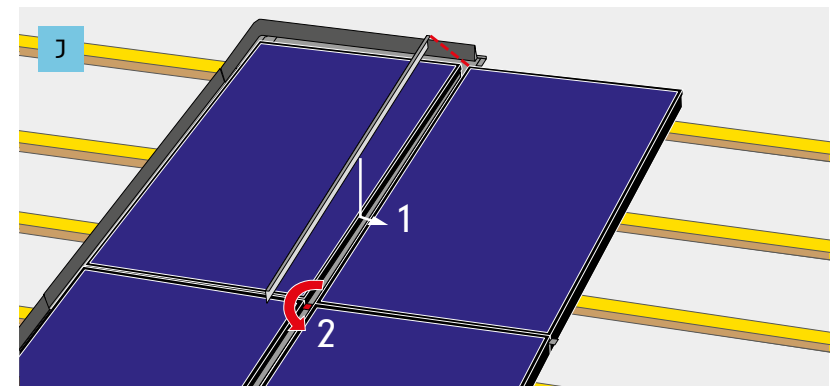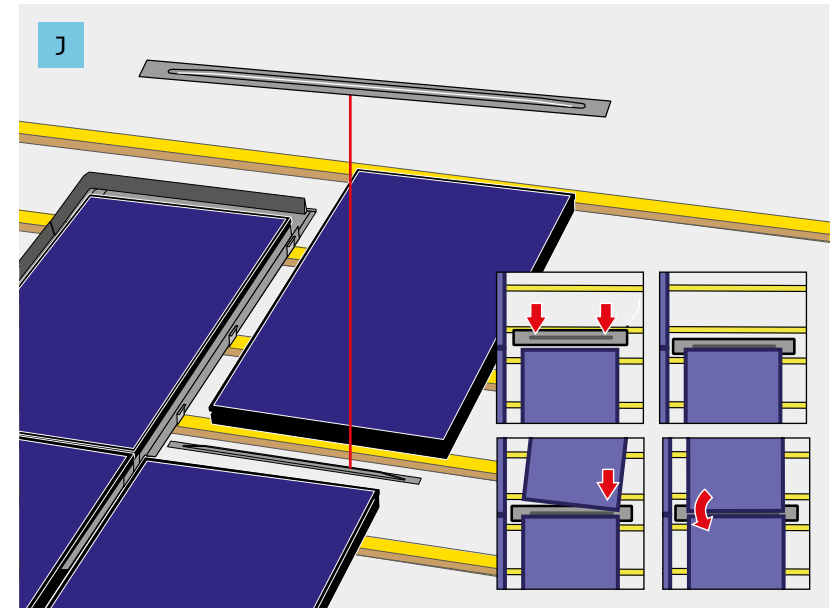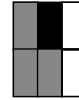
Push the joining strip (6) into the gasket in the top edge of the panel below and slide the solar panel in to engage with the joining strip and combi-brackets on two sides.

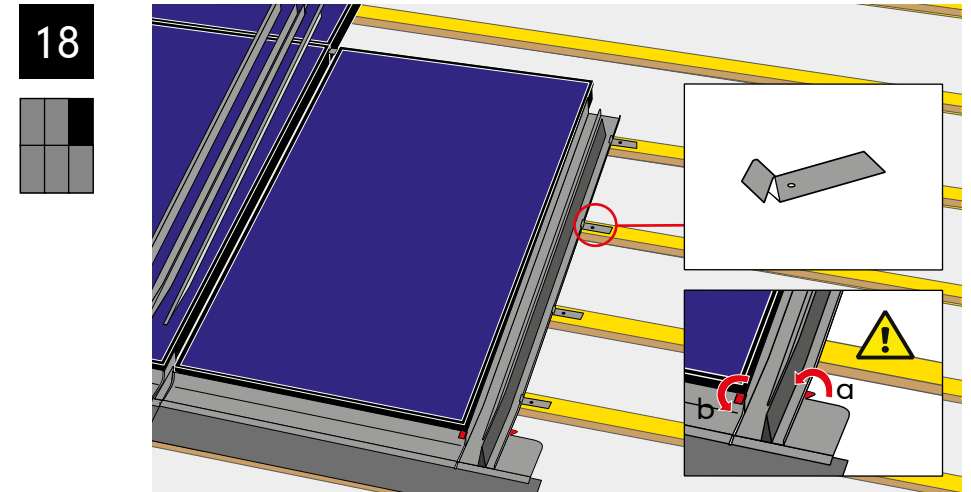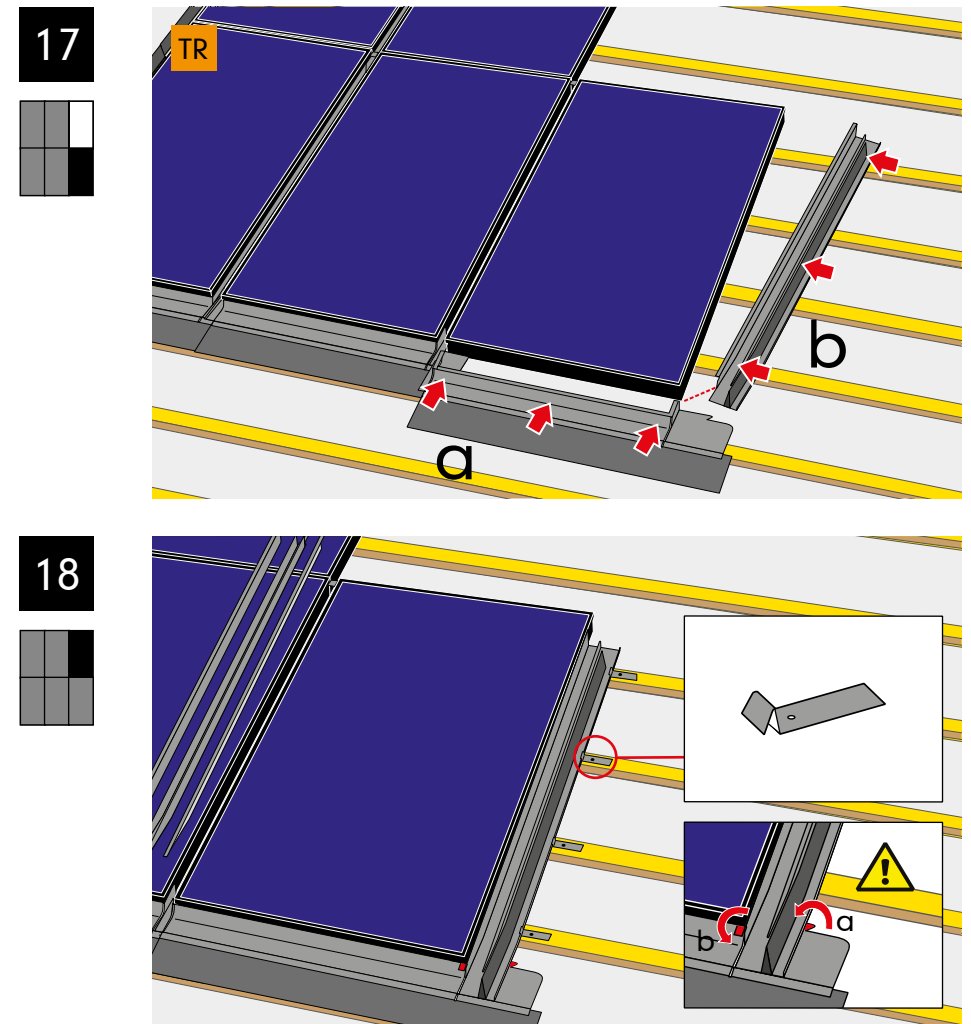Fit gutter cover (10) into the panel gasket. Fold the end of the joining strip down into the gutter.

16 TR

TR

TR

TR

17 TR

a

b

18

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.

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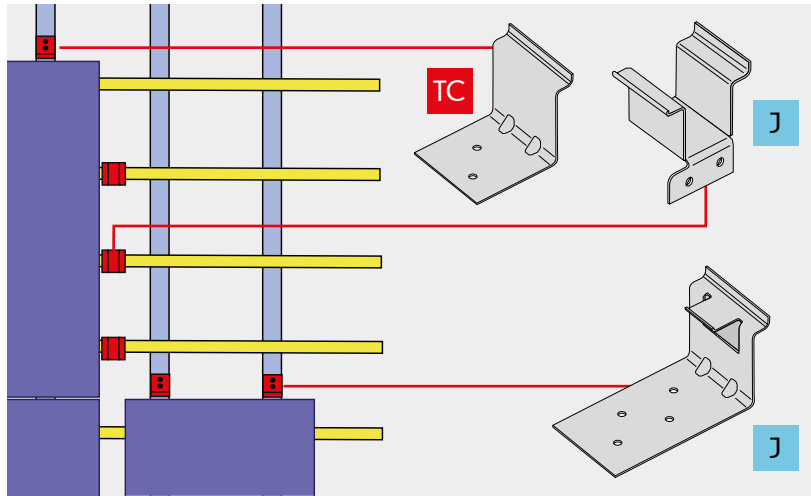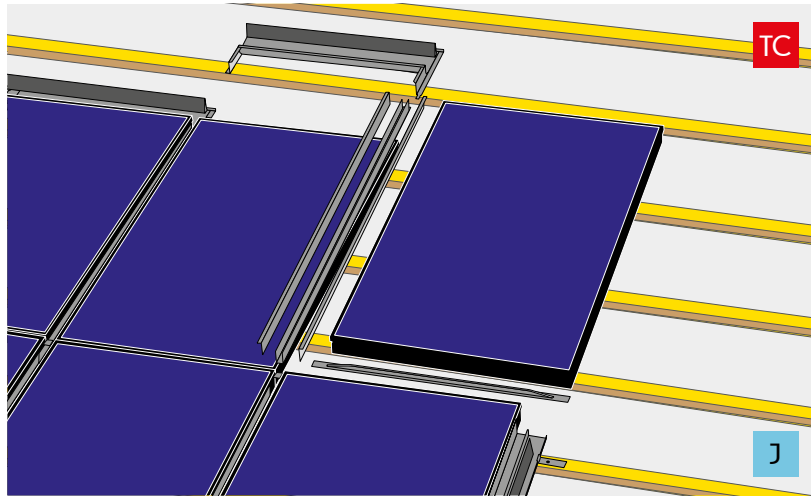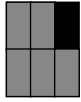
Fit the lower gutter (7), (16) and lower gutter covers (8). See steps 10 and 11.

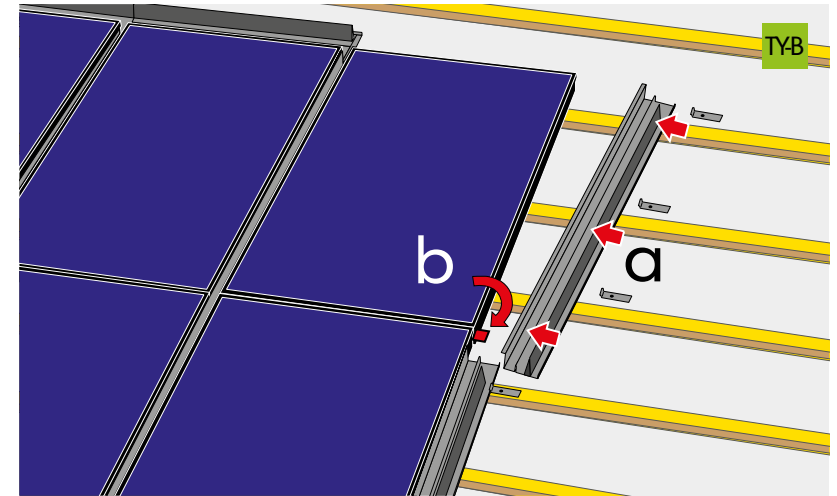Fit side fixing tabs (17) and fold over the tab on the sill flashing. See step 3.

a

b

19

TC

J

TC

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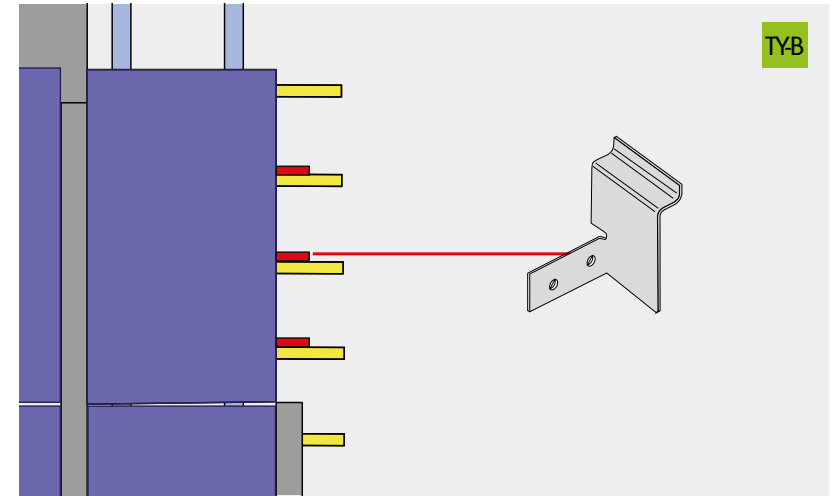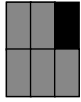
BLUE BOX
Repeat steps 12 to 15 with TC kit and J kit.

20

TY-B

TY-B

b
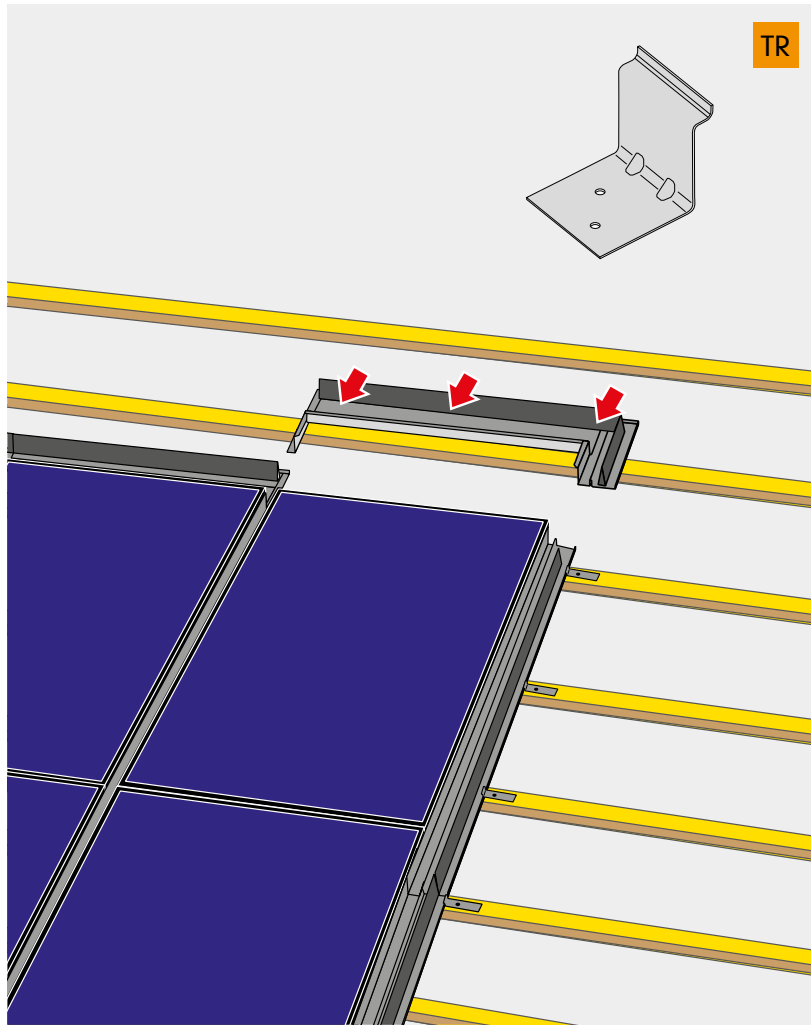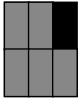
a

Repeat step 6 to fit batten brackets and upper side flashing
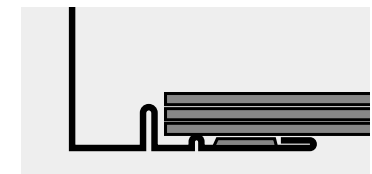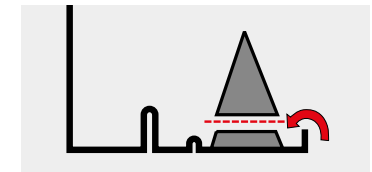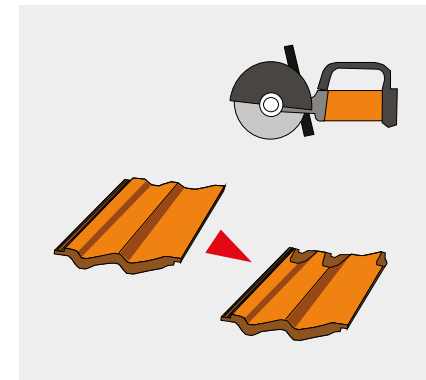
INSTALLATION SEQUENCE

21

Repeat step 14 with TR kit.

INSTALLATION SEQUENCE

22
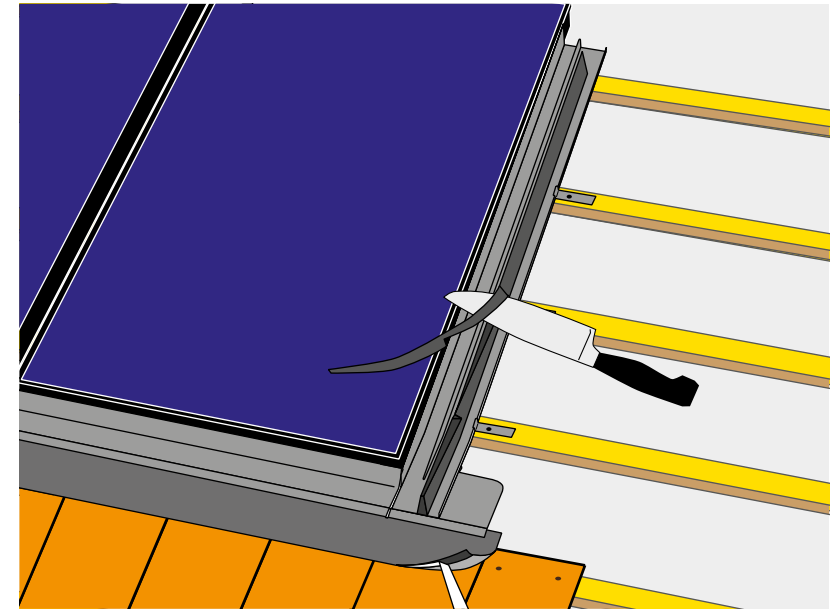
Remove the paper strip on the underside of the sill flashing and press down onto the tiles. Ensure that the bitumen strip is well-bonded to the tiles. In some circumstances, for example a dusty tile surface, the application of a low modulus external silicone sealant will be required to achieve good adhesion.

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.

Here to help

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