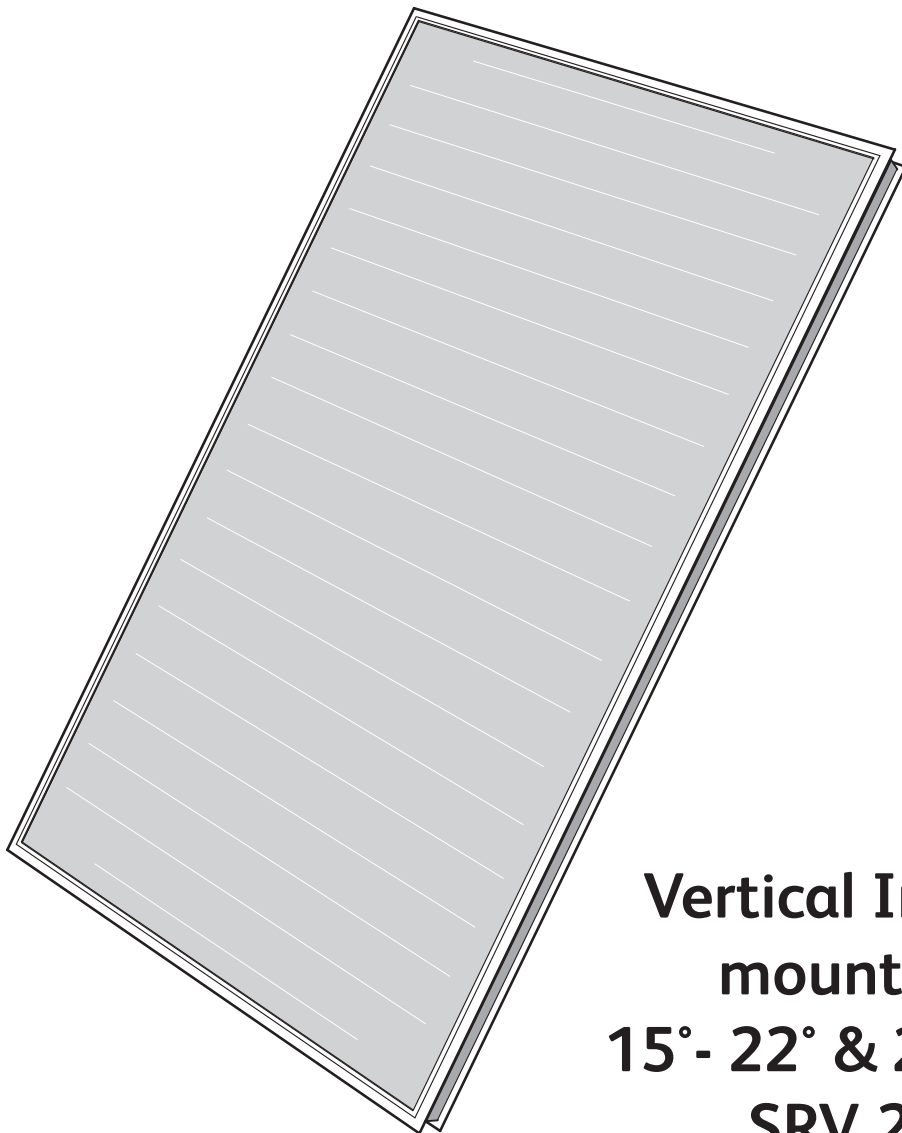


Glow·worm

Clearly Solar

Solar Thermal Flat Plate Collector Installation Instructions



**Vertical In-roof
mounting
15° - 22° & 22° - 75°
SRV 2.3**

Guarantee Registration

These Clearly Solar Flat Plate collectors come with a comprehensive manufacturer's guarantee. Details of the guarantee, and the terms and conditions that apply can be found on the Guarantee registration card. We recommend you complete and return this as soon as possible.

Customer Service:

01773 596510

Technical Helpline:

01773 828300

General and Sales enquiries:

Tel. 01773 824639

Fax: 01773 820569

To register your Glow-worm appliance call:

0800 0732142

Benchmark places responsibilities on both manufacturers and installers. The purpose is to ensure that customers are provided with the correct equipment for their needs, that it is installed, commissioned and serviced in accordance with the manufacturer's instructions by competent persons and that it meets the requirements of the appropriate Building Regulations. The Benchmark Checklist can be used to demonstrate compliance with Building Regulations and should be provided to the customer for future reference.

Installers are required to carry out installation, commissioning and servicing work in accordance with the Benchmark Code of Practice which is available from the Heating and Hotwater Industry Council who manage and promote the Scheme.

Visit www.centralheating.co.uk for more information.



These instructions must be handed to the user on completion of the installation.

CONTENTS	DESCRIPTION	SECTION	PAGE
GENERAL INFORMATION	Warnings		4
	Important Information		4
	Statutory Requirements		5
TECHNICAL SPECIFICATION	Technical Specification	1	6
	Technical Data	2	7
ROOF MOUNTING	Solar Collector and Hydraulic Connection Arrangement	3	8
	Hydraulic Connection Kits	4	9
	Single Collector Flashing Kit - 22-75°	5	10
	Two Collector Flashing Kit - 22-75°	6	16
	One Collector Extension Kit - 22-75°	7	23
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WARNINGS

Metal Parts

This collector contains metal parts (components) and care should be taken when handling, with particular regard to edges.

Risk of death from falls and falling objects

Observe the national regulations for working at heights.

Danger of burning and scalding

The collectors can reach 200°C.

Do not remove the factory fitted sun protective film until the commissioning is to be completed.

Sealed Components

Under no circumstances must the user interfere with or adjust sealed parts.

Important Information

General

These instructions must be handed to the user on completion of the installation.

This installation instruction applies exclusively to the mounting of the solar collector.

The solar collector is one component in a solar system and it is recommended that you read all other component(s) literature prior to installation.

We accept no liability for any damage caused by failure to observe these instructions.

Control of Substances Hazardous to Health

Under Section 6 of The Health and Safety at Work Act 1974, we are required to provide information on substances hazardous to health.

The adhesives and sealants used in this appliance are cured and give no known hazard in this state.

Solar fluid

For solar fluid safety data, please refer to Clearly Solar System Hydraulics literature.

Manual Handling

With regards to the "Manual Handling Operations, 1992 Regulations", this product exceeds the recommended weight for a one man lift.

Recommend 2 person lift. Ensure safe lifting techniques are used – keep back straight – bend using legs. Keep load as close to body as possible. Ensure co-ordinated movements during lift. Clear the route before attempting the lift. If removing from truck straddle the load and tilt forwards to facilitate secure grip. Do not twist – reposition feet instead. Take care to avoid trip hazards, slippery or wet surfaces and when climbing steps or ladders. Always use assistance if required.

Installation of the solar collector will require a risk assessment.

Testing and Certification

This solar collector is tested and certificated for safety and performance. It is, therefore, important that no alteration is made, without permission, in writing, by Glow-worm. Any alteration not approved by Glow-worm, could invalidate the certification, warranty and may also infringe the current issue of the statutory requirements.

CE Mark

The CE mark on the solar collector indicates that it complies with the basic requirements of the applicable directives as stated on the data label.

Damage from lightning

If the installation height is more than 20m, electro-conductive components must be connected to a lightning protection device.

Frost Protection

Under no circumstances should water be in the solar collector if there is a danger of frost.

After pressurisation and flushing, the solar collector(s) may contain water residue.

Water remaining in the solar circuit will dilute the fluid.

Immediately fill the solar system with solar fluid. Check the fluid concentration with a frost protection tester.

Statutory Requirements

IMPORTANT

Where no British Standards exists, materials and equipment should be fit for their purpose and of suitable quality and workmanship.

The installation of this solar collector must be carried out by a **competent person** in accordance the rules in force in the countries of destination.

Manufacturer's instructions must not be taken as overriding statutory requirements.

Statutory Requirements

In GB, the installation of the solar collector must comply with the requirements of the current issue of the following regulations:

The manufacturer's instructions supplied.

The appropriate Buildings Regulations either The Building Regulations, The Building Regulations (Scotland), The Building Regulations (Northern Ireland).

Working at Heights Regulations 2005.

Lightning protection requirements.

Equipotential bonding of electrical installations.

The Health and Safety at Work Act

Control of Substances Hazardous to Health (COSHH).

The Current I.E.E. Wiring Regulations.

The Water Supply (water fittings) Regulations 1999 or the Water Byelaws 2000 (Scotland).

Where no specific instructions are given, reference should be made to the relevant British Standard Code of Practice.

Regulations for the prevention of accidents

At all times follow the national regulations on working at heights.

Make sure there is suitable safety equipment such as scaffolding or protective walls to prevent falling from roofs.

Fall protection systems such as the Glow-worm fall protection system (item no. 0020054985) also has a fall arresting device if the roof scaffold and protective roof wall are inappropriate for the specific task.

Only use tools and equipment such as lifting gear or ladders in accordance with the lifting regulations.

Cordon off areas below the working area sufficiently to protect people from falling objects.

Mark the working area, for example with warning signs as described by the national regulations.

1 Technical Specification

Design Description

The Clearly Solar collector, collects the available solar radiation and transfers the heat through the solar fluid to be utilised by the system.

It has been designed to compliment the complete range of Glow-worm solar system components.

The kits are suitable for roof pitches between 15°- 75°, please choose from the table below.

The solar thermal flat plate collector includes a saltwater-resistant aluminium frame as well as a copper surface absorber with a high selective coating.

The flat plate collector has a CFC-free, standstill temperature-resistant mineral wool insulation for long-life and excellent heat insulation.

Hydraulic connections are push-fit with double 'O' ring sealing. The sensor sleeve is integrated into the hydraulic flow connection.

The following kits are available and dependant upon the number of collectors, the quantities required are listed in the following tables and illustrated in the appropriate sections:-

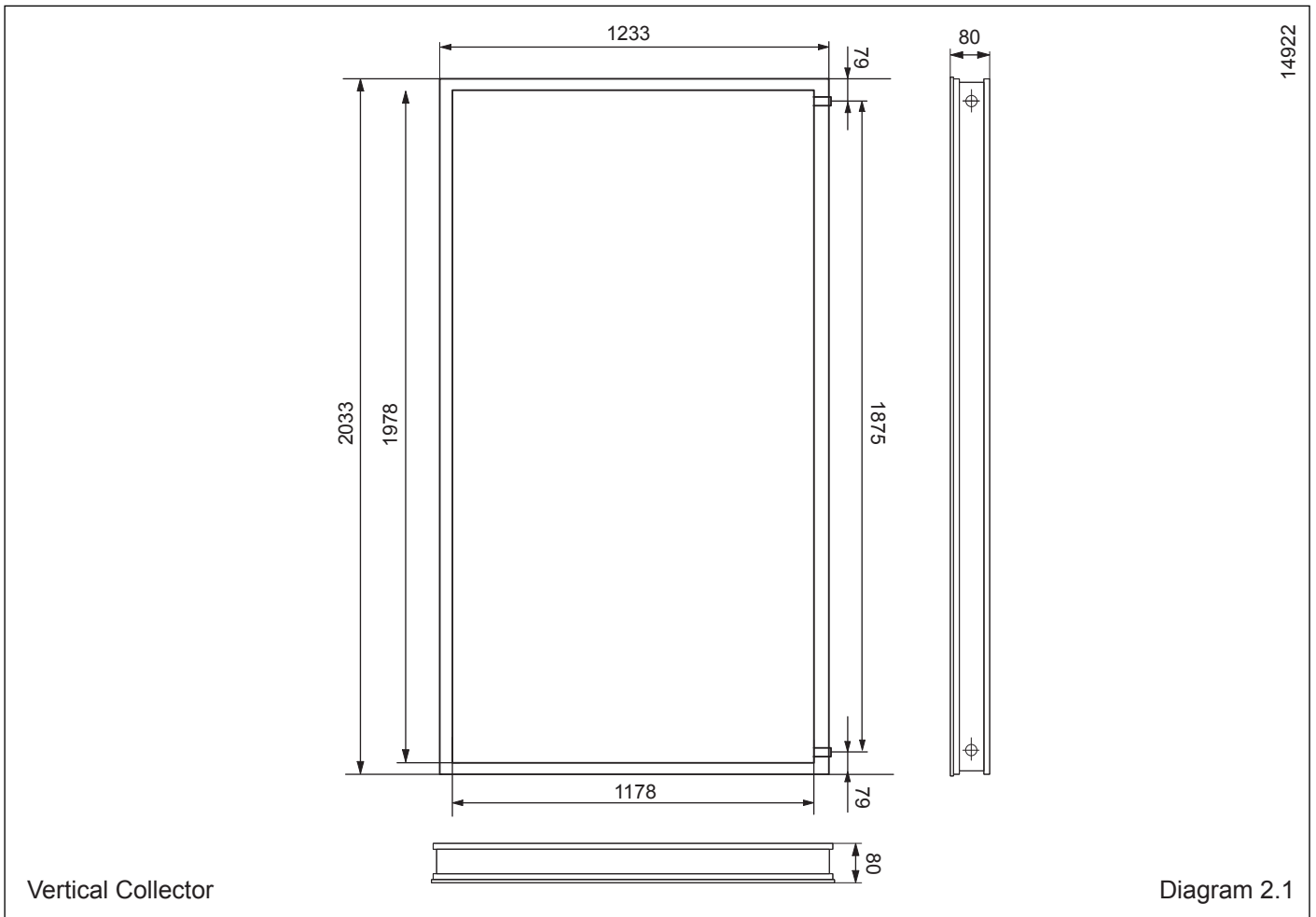
15-22° roof angle

Number of collectors	2	3
Two panel collector flashing kit - Section 8 Part number 0020059886	1	-
Three panel collector flashing kit - Section 9 Part number 0020059888	-	1
Easy fit hydraulic connection set - Section 4 Part number 0020065271	1	1
Easy fit hydraulic extension set - Section 4 Part number 0020059909	1	2

22-75° roof angle

Number of collectors	1	2	3	4	5	6	7	8	9	10	11	12
Single panel collector flashing kit - Section 5. Part number 0020060316	1	-	-	-	-	-	-	-	-	-	-	-
Two panel collector flashing kit - Section 6. Part number 0020060318	-	1	1	1	1	1	1	1	1	1	1	1
One panel extension kit - Section 7 Part number 0020060327	-	-	1	2	3	4	5	6	7	8	9	10
Easy fit hydraulic connection set - Section 4. Part number 0020065271	1											
Easy fit hydraulic extension set - Section 4. Part number 0020059909	-	1	2	3	4	5	6	7	8	9	10	11

2 Technical Data



Appliance designation	Unit.	Clearly Solar	
Absorber type		Serpentine	
Gross area	m ²	2.51	
Aperture surface area	m ²	2.35	
Absorber surface area	m ²	2.33	
Absorber		Aluminium (vacuum coated) 0.5 x 1178 x 1978	
Dimensions (L x W x H)	mm	2033 x 1233 x 80	
Weight (Dry)	kg	38	
Fluid content	l	1.85	
Copper pipe connection, flat-face	Ø mm	G 3/4" (DN16)	
Insulation thickness	mm	40	
Max. operating pressure	bar	10	
Glass type		Solar safety glass (prismatic structure)	
Glass covering	mm	3.2 (thickness) x 1233 x 2033	
Coating		High selective (blue)	$\alpha = 95\%$ $\epsilon = 5\%$
Transmission	%	$\tau = 91$	
Back wall insulation	mm, W/m ² K, kg/m ³	40 $\lambda = 0.035$ $\rho = 55$	
Stagnation temperature	°C	210	
Efficiency η_0	%	80	
Heat capacity	Ws/m•K	5014	
Heat loss factor k_1	W/m ² •K	3.7	
Heat loss factor k_2	W/m ² •K ²	0,012	

3 Solar Collector and Hydraulic Connection Arrangement

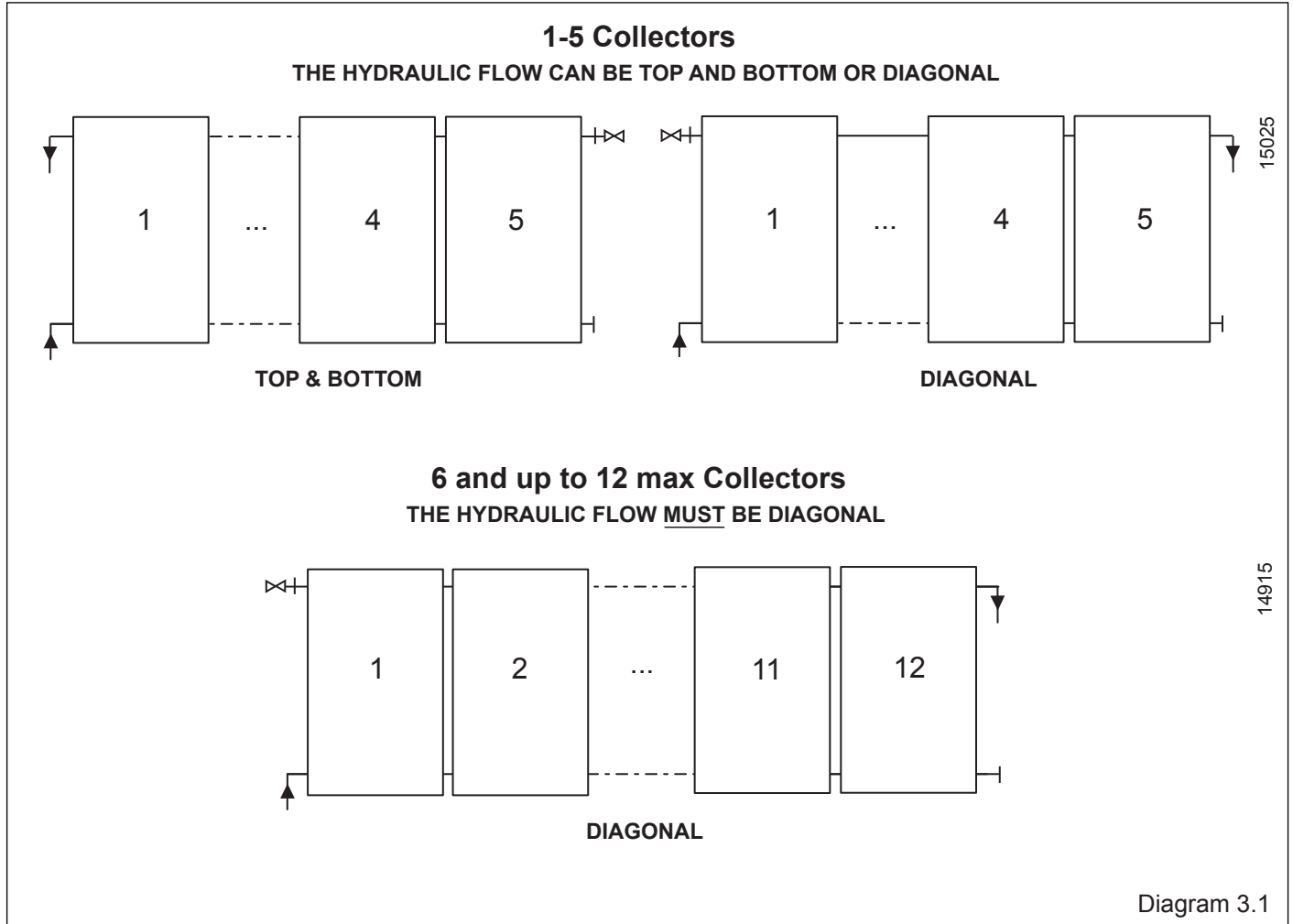
Solar Collector

The recommended collector arrangements are shown below.

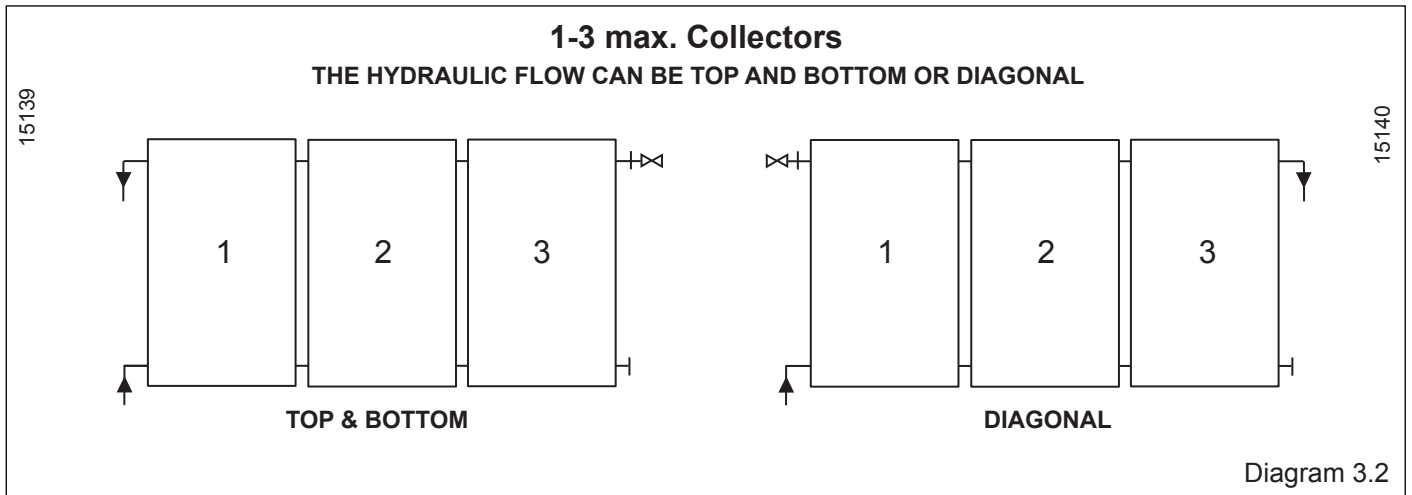
Hydraulic Connections

It is recommended that the hydraulic connections should be made as shown below.

Roof Pitch 22°-75°

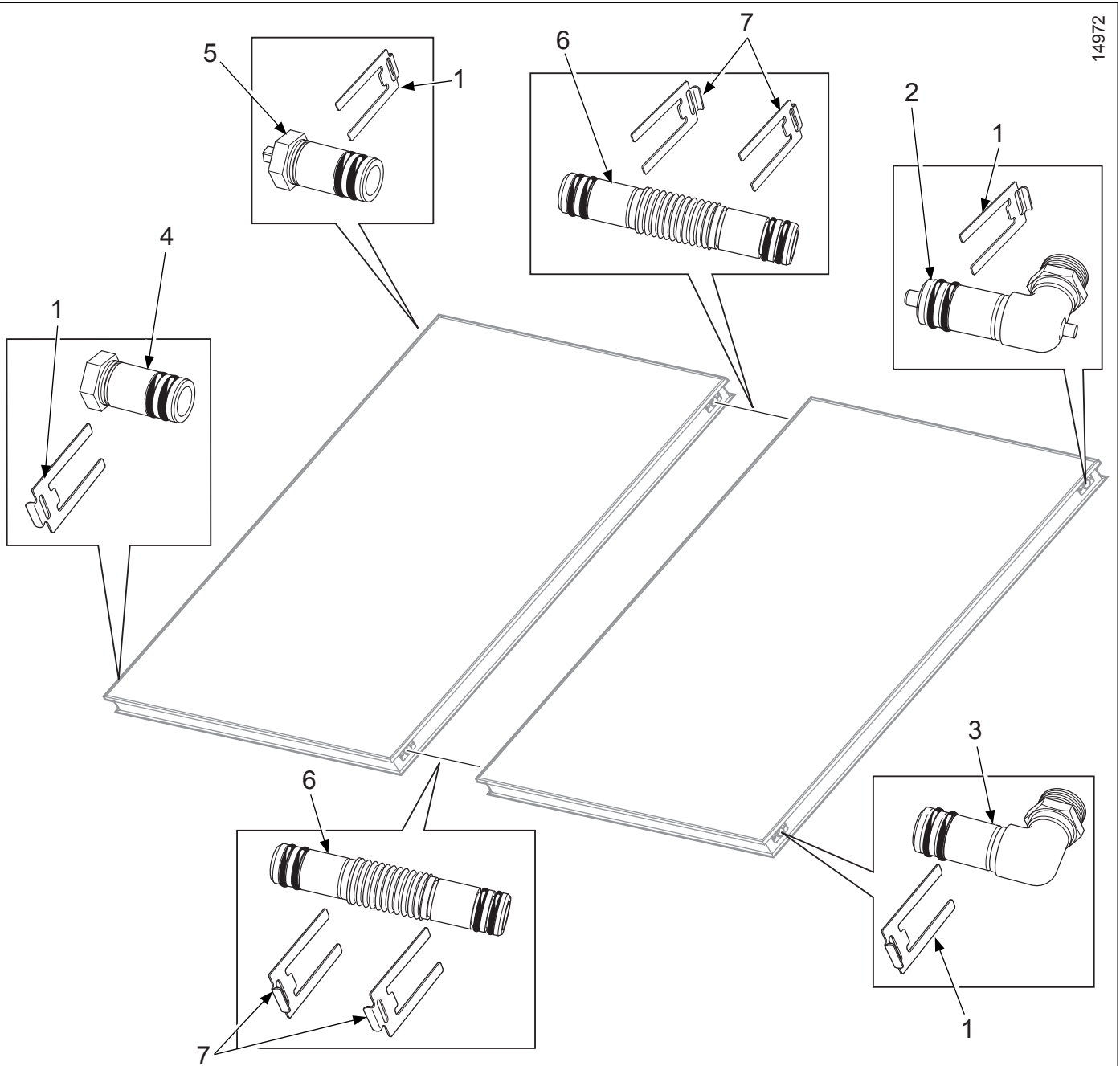


Roof Pitch 15°-22°



4 Hydraulic Connection Kits

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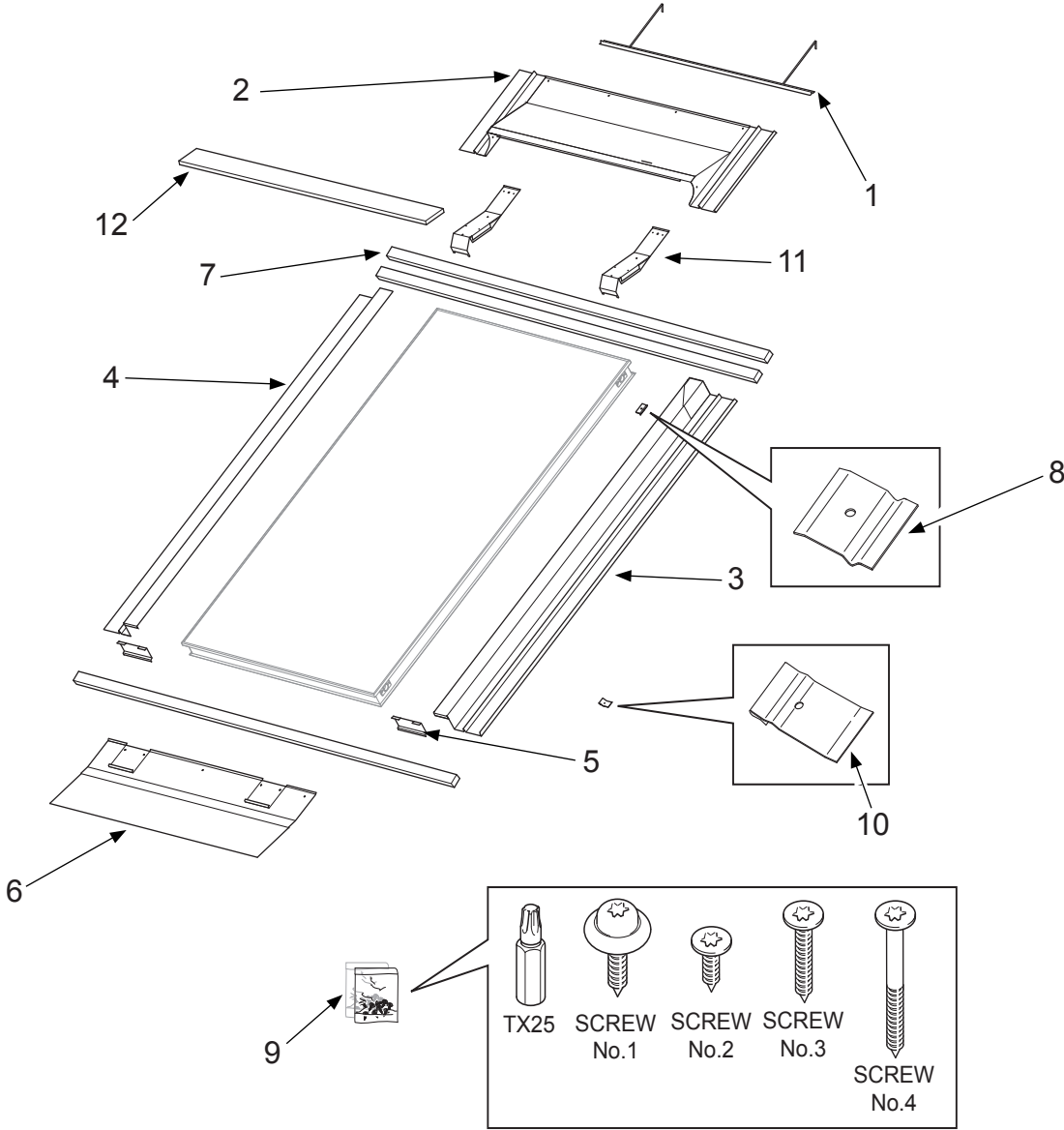


Easy fit hydraulic connection set - Part No. 0020065271		
Part	Description	Qty.
1	Securing clip	4
2	Flow connection	1
3	Return (inlet)	1
4	Lower plug	1
5	Upper plug (with ventilation)	1
Easy fit hydraulic extension set - Part No. 0020059909		
Part	Description	Qty.
6	Pipe coupling	2
7	Securing clip	4

Diagram 4.1

5 Single Collector Flashing Kit - 22° - 75°

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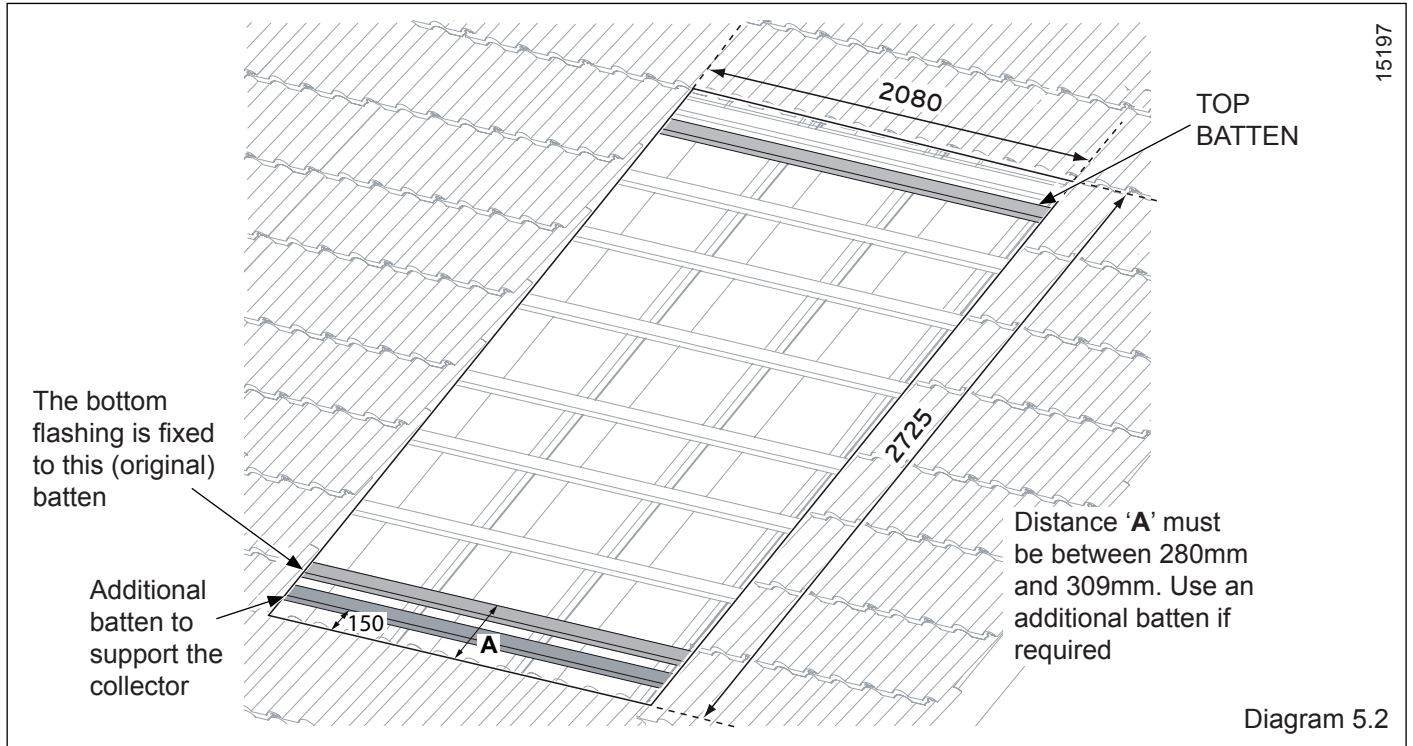
1 collector in-roof kit for roof angle 22-75° - Kit No. 0020060316		
Part	Description	Qty.
1	Tile bar	1
2	Ridge plate	1
3	Right side section	1
4	Left side section	1
5	Profile end	2
6	Lower flashing	1
7	Roof batten	3
8	Inner clamp	9
9	Screws No.1 Screws No.2 Screws No.3 Screws No.4	16 15 7 6
10	External clamp	10
11	Support plate	2
12	Support board	1

Diagram 5.1

5 Single Collector Flashing Kit - 22° - 75°

Roof Requirements

Refer to the diagram and table below and confirm the roof requirements before installation.



IMPORTANT

- Do not remove the protection film until the system is to be commissioned.
- With due regard to the complete weight of the solar collector system, (refer to technical data) ensure the roof rafters and battens are in good condition and have sufficient load carrying capacity and the battens are secure.
- If you are using the existing roof battens for fixing, ensure that they are secured at each rafter.

5.1 Installation

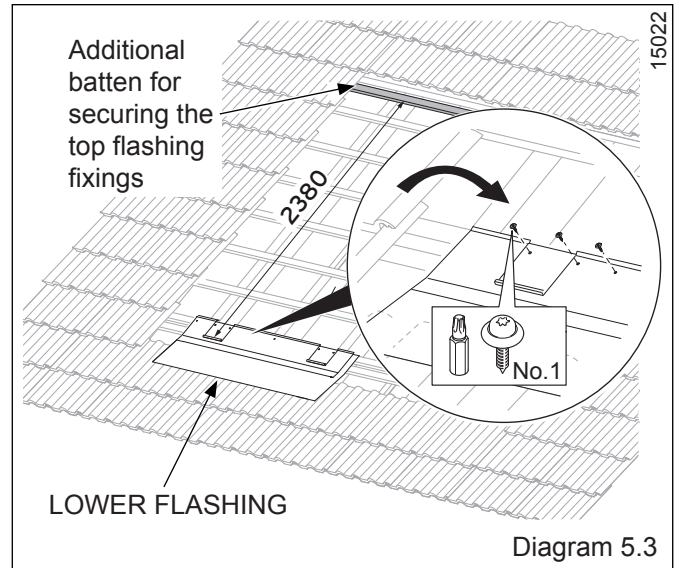
NOTE: Ensure adequate provision has been made for the flow and return pipes to enter/exit the roof space, dependant on their location. The preferred hydraulic scheme will determine their location, refer to Section 3.

Refer to diagram 5.1 and check the contents of the kits prior to commencing work on the roof.

Based on the dimensions, above, remove the roof covering.

Fix the lower flashing support batten, see diagram 5.2.

Position the lower flashing onto the roof batten and secure with the six screws (no.1) and Torx bit supplied, see diagram 5.3.



5 Single Collector Flashing Kit - 22° - 75°

Position the collector, protective side uppermost into the location channel as shown in diagram 5.4.

NOTE: The design is symmetrical and does not have a top or bottom.

Secure the collector with the clamps and screws provided, see diagram 5.5.

With regards to the hydraulic system you have chosen, insert and secure the hydraulic connections, see diagram 5.6.

Insert the collector sensor into the appropriate elbow (flow, top), see diagram 5.6. The collector sensor is packed with the Fluropro controller, part no. 0020054960.

Mount the plug with the bleed valve in the opposite top position.

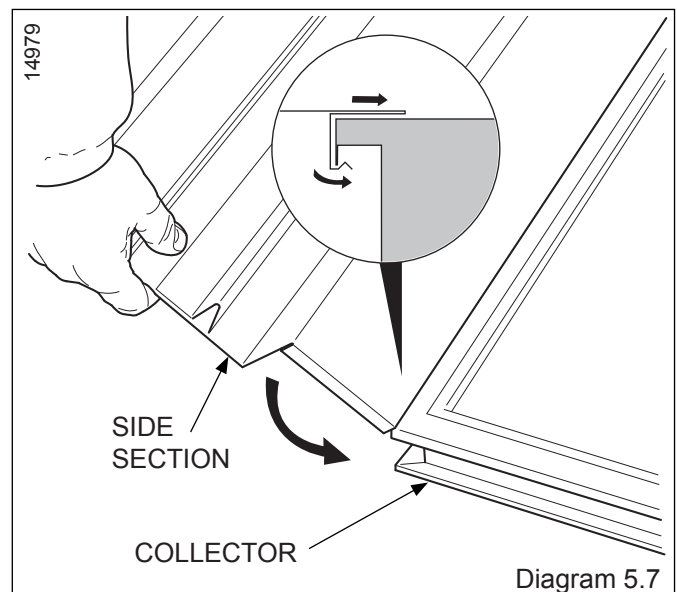
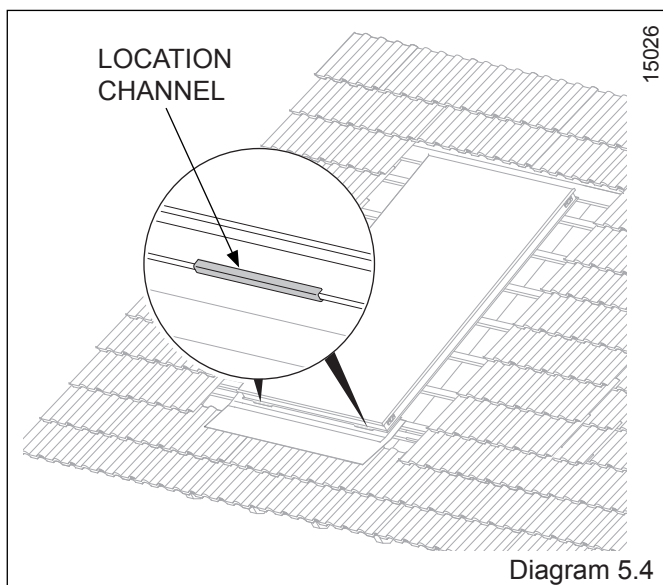
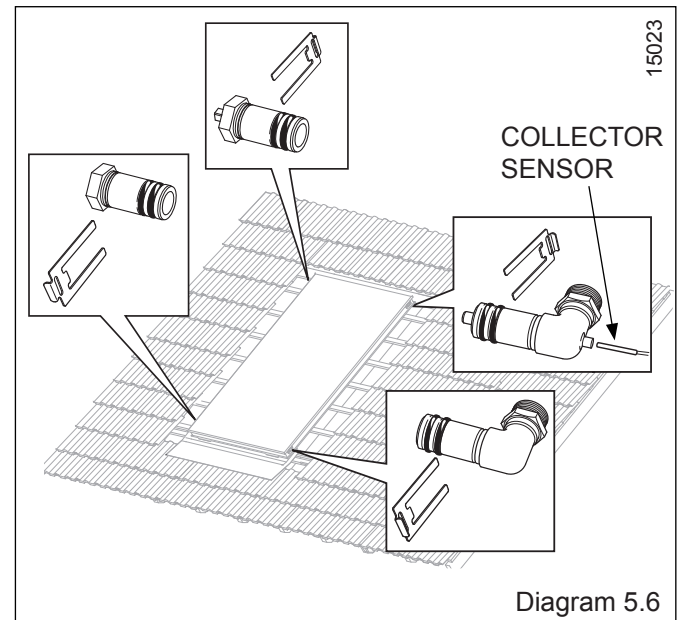
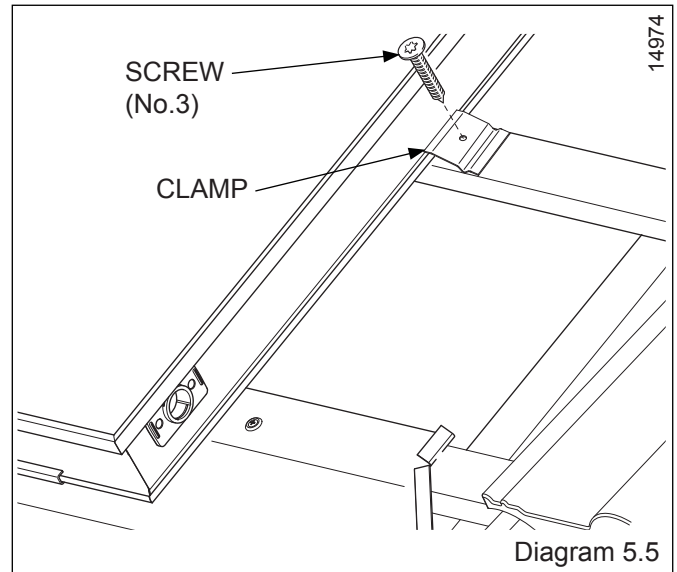
Connect the collector to the system circuit.

Ensure that all of the following steps have been performed:-

- All the connections have been fixed with securing clips.
- All hydraulic connections laid properly.
- The collector sensor has been connected.
- The collector is connected to a lightning protection device.
- A pressure test.
- All insulation is intact.

NOTE: After initial commissioning and according to the season, high outside temperature oscillations can cause condensation in the collector, this is normal.

Fit the side sections to the collector frame, ensure that it is pushed into place on the collector edge, see diagram 5.7.



5 Single Collector Flashing Kit - 22° - 75°

Secure the side sections to the roof battens with the supplied clamps, screws (No. 2) and Torx bit supplied, see diagram 5.8.

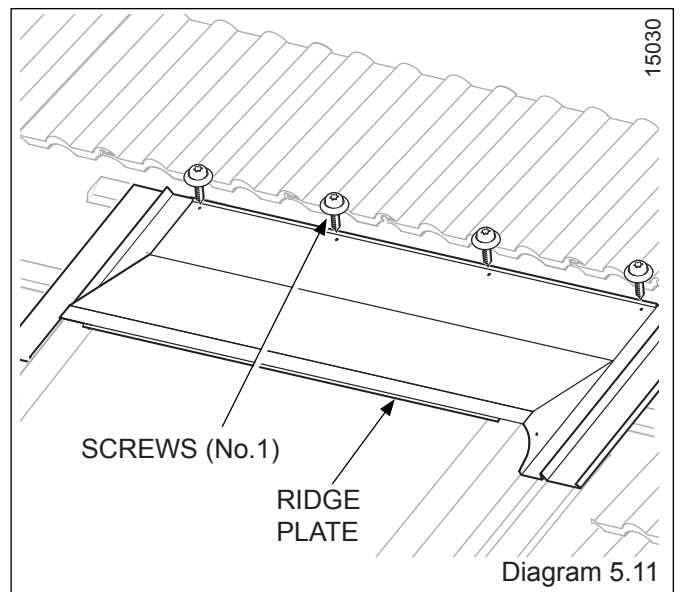
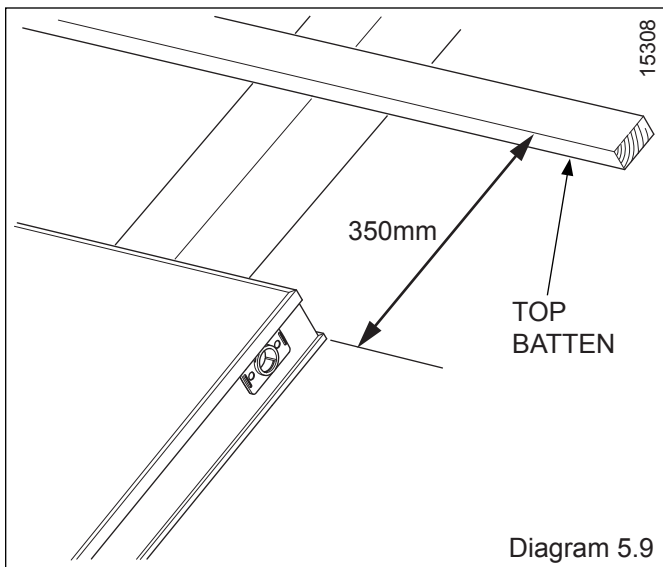
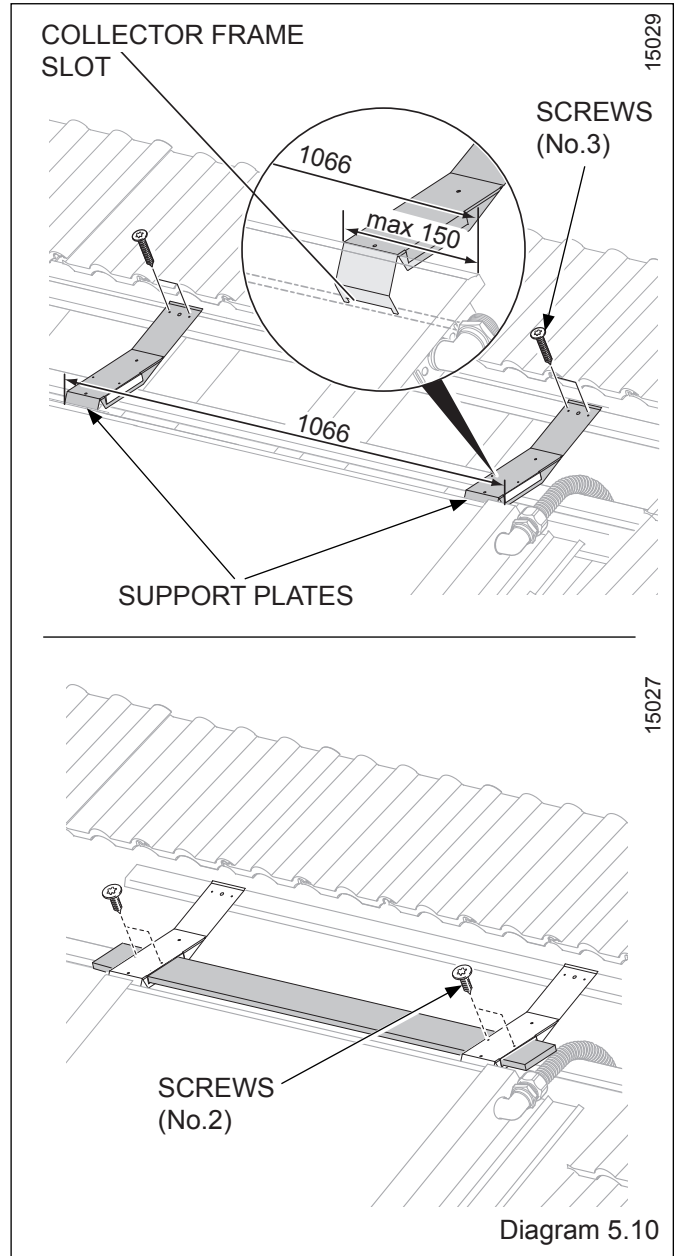
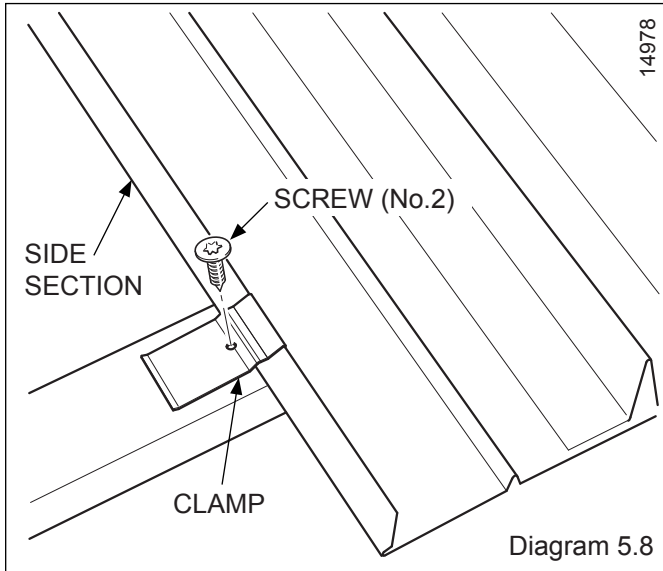
5.2 Support plates/board

Fix the top batten into position as shown in diagram 5.9. Mount the support plates above the collector and make sure that the support plates are on the collector frame slot, see diagram 5.10.

Fix the support plates to the top roof batten with two screws (No.3) using the supplied Torx bit. Slide the board through the support plates. Fix the board to the support plates with two screws (No. 2) using the supplied Torx bit, see diagram 5.10.

Slide the ridge plate on the support plates, see diagram 5.12. Make sure that the ridge plates are above the side sections and engaged in the corresponding rail (A).

Fix the ridge plate to the roof battens with the screws (No. 1) using the supplied Torx bit, see diagram 5.11.



5 Single Collector Flashing Kit - 22° - 75°

5.3 Riveting the frame

Drill a 4.5 mm diameter hole through the ridge plates on the marks on the left and right hand respectively, see diagram 5.12.

Rivet the ridge plate to the side section.

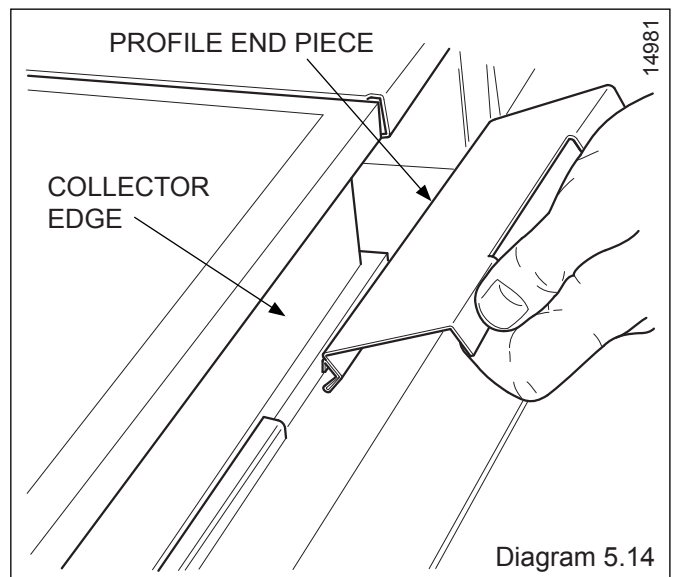
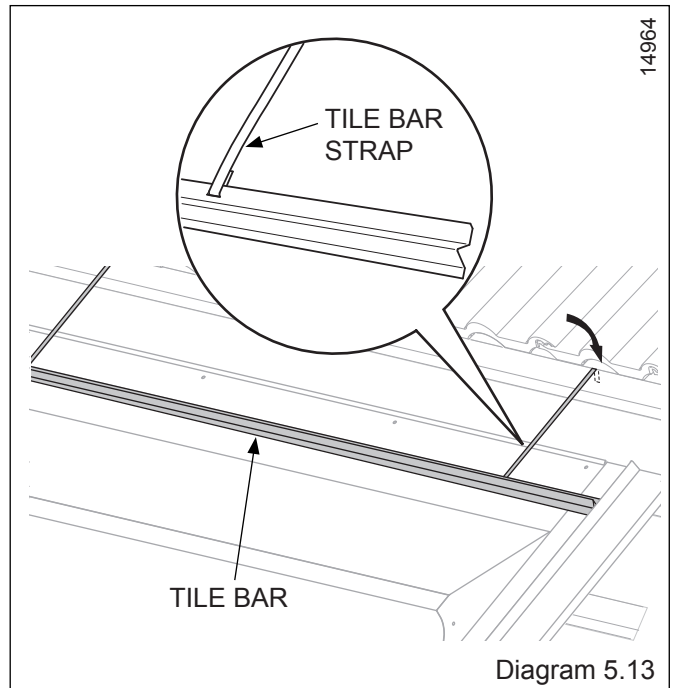
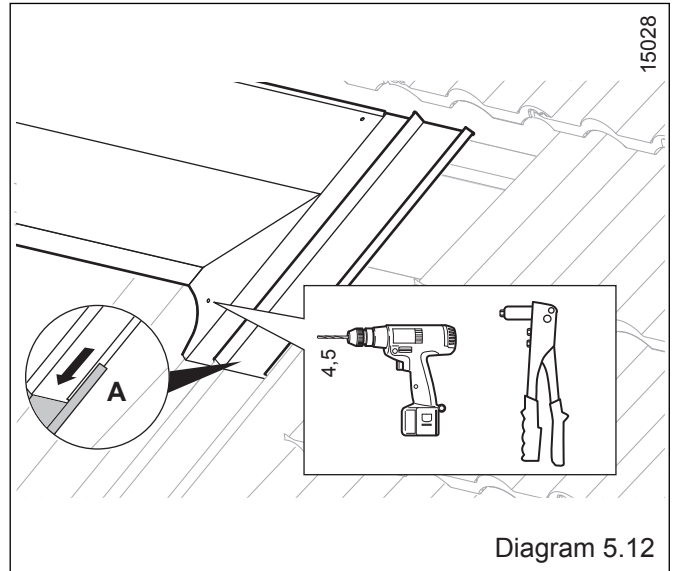
5.4 Tile Bars

Place the tile bars on the ridge plates.

Bend the metal bands and hook the tile bars to the roof batten from the top, see diagram 5.13.

5.5 Covering the profile ends

Cover the side profile ends and the collector joints with the profile end pieces, see diagram 5.1 for profile end location. Fit the profile end pieces to the bottom of the collector edge and then tilt them up, until they lock in the upper collector edge, see diagram 5.14.



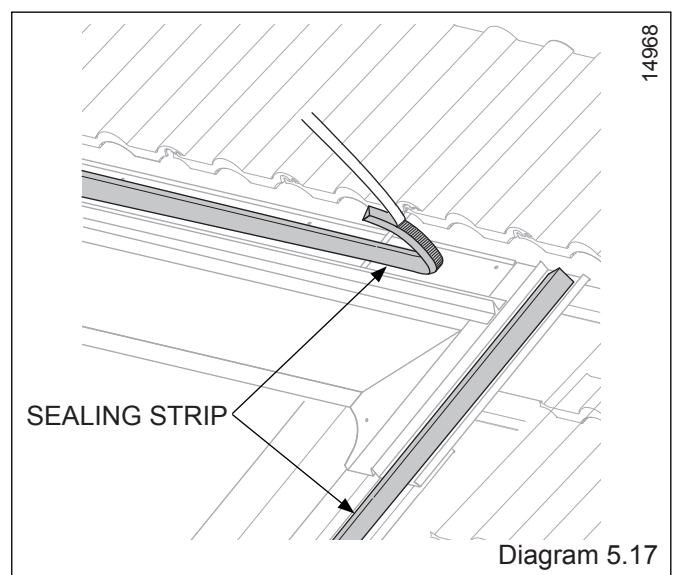
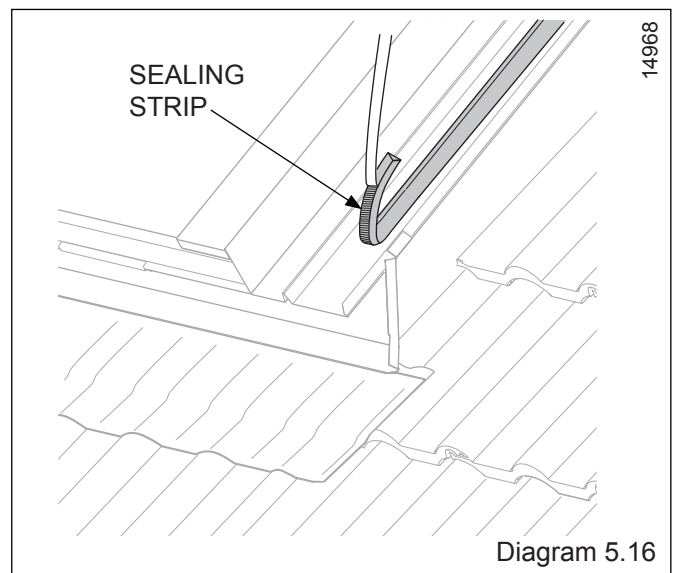
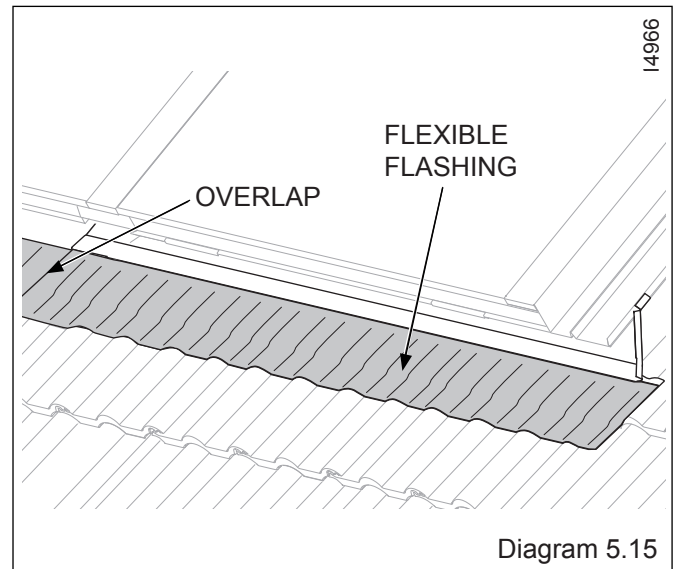
5 Single Collector Flashing Kit - 22° - 75°

5.6 Flexible flashing

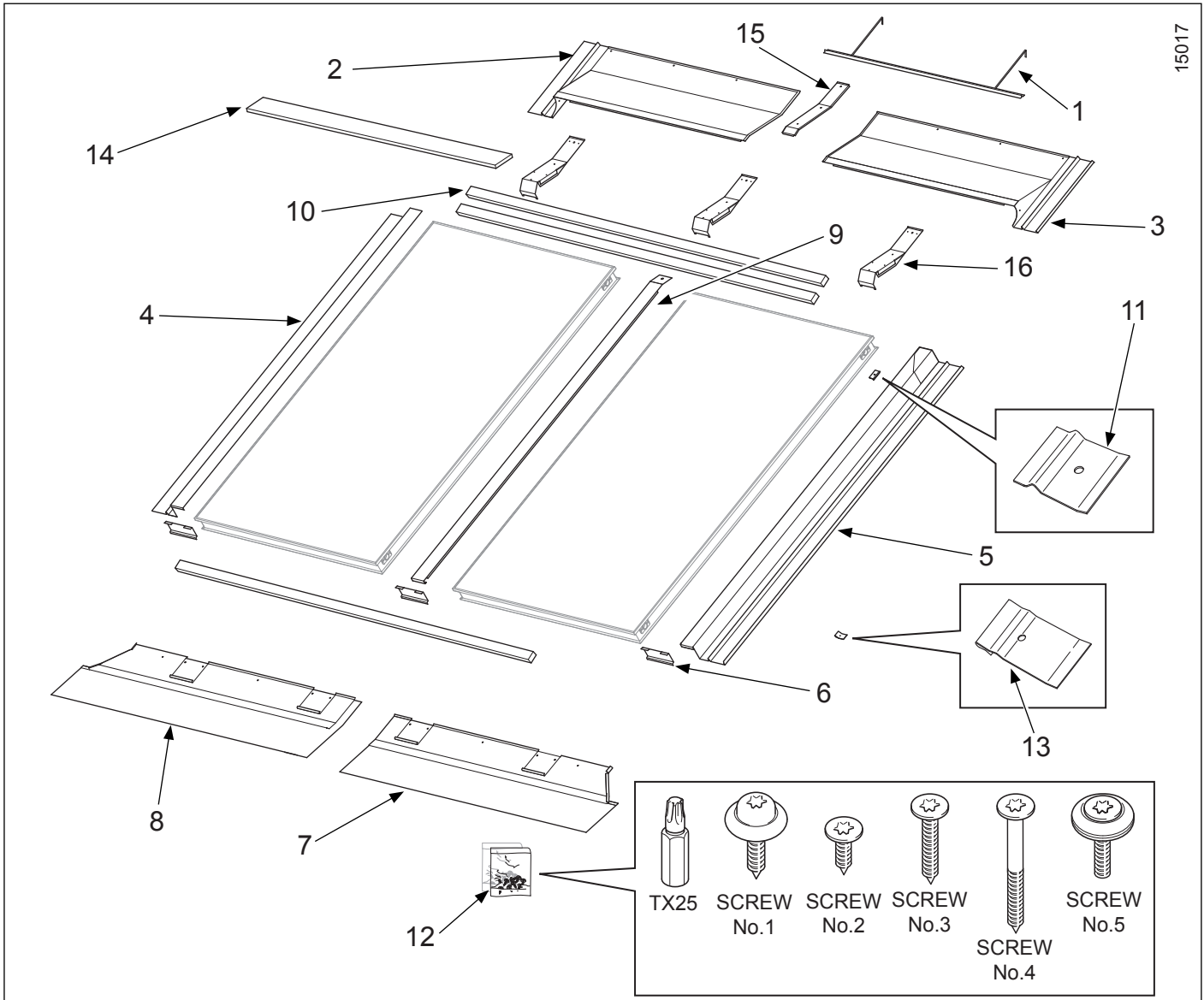
NOTE: Ensure that the adhesive surface is dry and free from dust and grease.
Remove the protection film from the adhesive surface of the flexible flashing.
Contour the flexible protection to the tile shape, see diagram 5.15.

5.7 Sealing strip

Attach the self adhesive sealing strip on the side sections of the collector frame as shown in diagram 5.16 and also on the ridge plates, see diagram 5.17.
If necessary carefully cut the sealing strip with a trimming knife.



6 Two Collector Flashing Kit - 22° - 75°



2 collector in-roof kit for roof angle 22-75° - Kit No. 0020060318		
Part	Description	Qty.
1	Tile bar	2
2	Left ridge plate	1
3	Right ridge plate	1
4	Left side section	1
5	Right side section	1
6	Profile end	3
7	Right lower flashing	1
8	Left lower flashing	1
9	Intermediate plate	1
10	Roof batten	3
11	Inner clamp	9

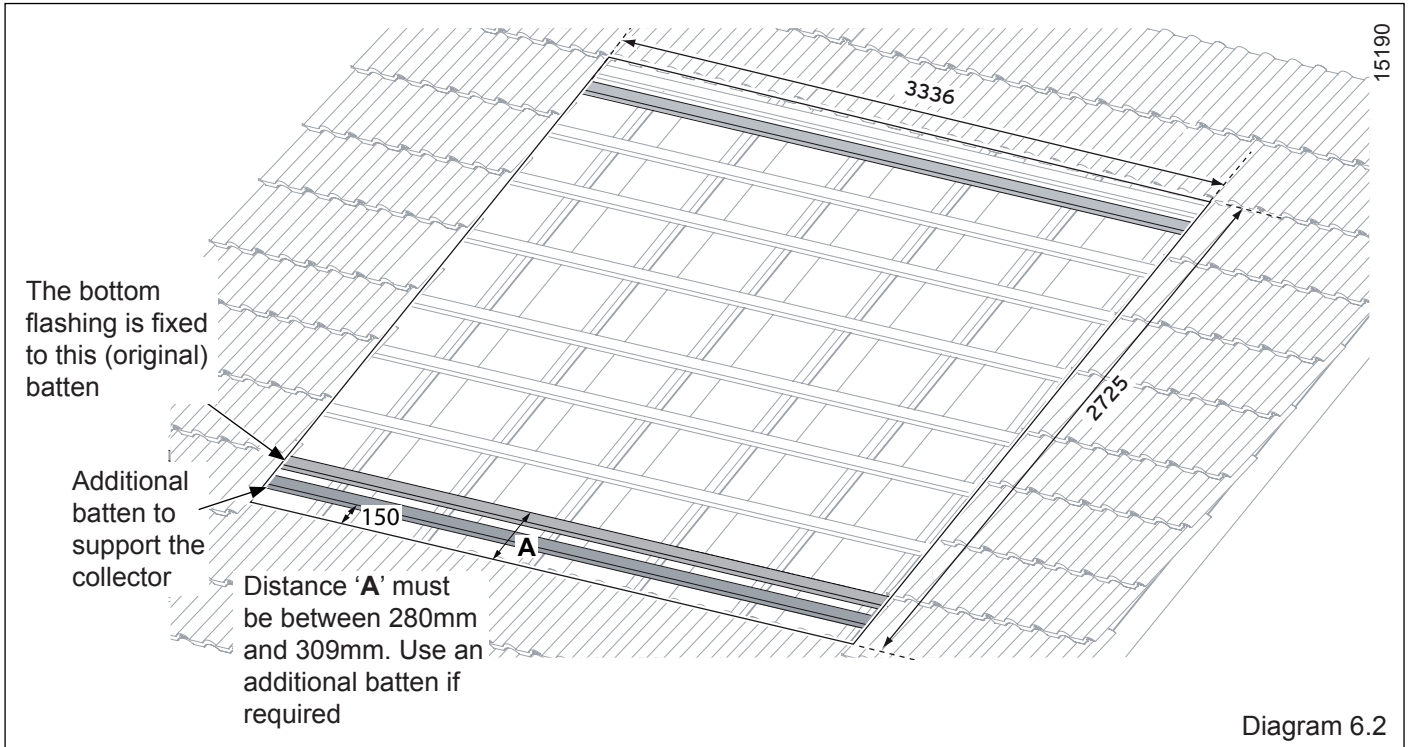
Part	Description	Qty.
12	Screws No.1	28
	Screws No.2	17
	Screws No.3	10
	Screws No.4	10
	Screws No.5	3
13	External clamp	10
14	Support board	1
15	Upper ridge plate coupling	1
16	Support plate	3

Diagram 6.1

6 Two Collector Flashing Kit - 22° - 75°

Roof Requirements

Refer to the diagram and table below and confirm the roof requirements before installation.



IMPORTANT

- Do not remove the protection film until the system is to be commissioned.
- With due regard to the complete weight of the solar collector system, (refer to technical data) ensure the roof rafters and battens are in good condition and have sufficient load carrying capacity and the battens are secure.
- If you are using the existing roof battens for fixing, ensure that they are secured at each rafter.

6.1 Installation

NOTE: Ensure adequate provision has been made for the flow and return pipes to enter/exit the roof space, dependant on their location. The preferred hydraulic scheme will determine their location, refer to Section 3.

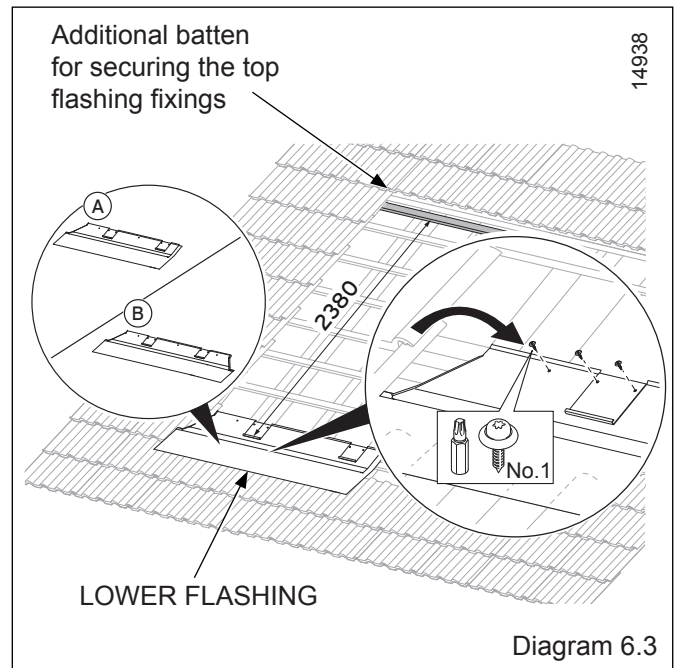
Refer to diagram 6.1 and check the contents of the kits prior to commencing work on the roof.

Based on the dimensions, above, remove the roof covering.

Fix the lower flashing support batten, see diagram 6.2.

Position the left lower flashing onto the roof batten and secure with six securing screws (no.1), with Torx bit supplied, see diagram 6.3.

Slide the right lower flashing up to the mark on the left lower flashing, see diagram 6.4. Screw the right lower flashing onto the roof batten and secure with six securing screws (no.1) and Torx bit supplied.



6 Two Collector Flashing Kit - 22° - 75°

Position the collector protective side uppermost into the location channel as shown in diagram 6.5.

NOTE: The design is symmetrical and does not have a top or bottom.

Insert the pipe couplings into the hydraulic socket connection, see diagram 6.5. The pipe coupling should be inserted up to the stop and secured with its securing clip.

Place the next collector into its position as previously described, then push the collector, ensuring engagement of the pipe coupling, see diagram 6.6, and align with the marks on the flashing as shown in diagram 6.5. Secure the clamps to the battens with the screws (No.3) and Torx bit supplied, see diagram 6.7.

For securing between collectors the inner clamp should be secured as shown and grip both collector edges, see diagram 6.8.

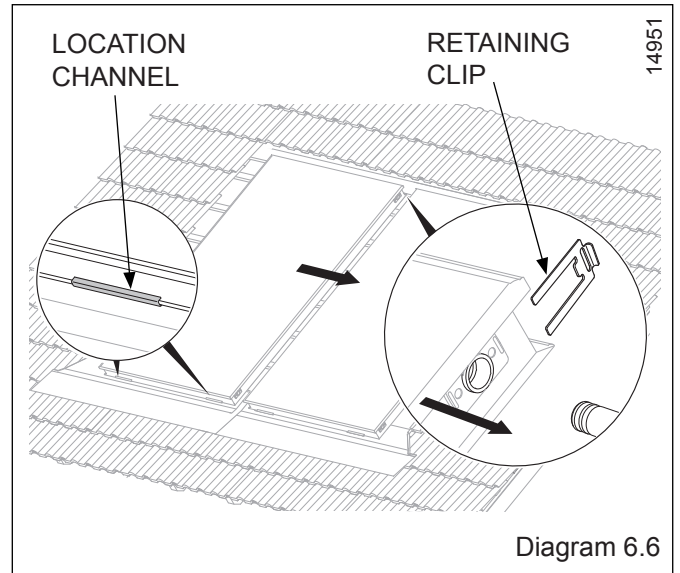


Diagram 6.6

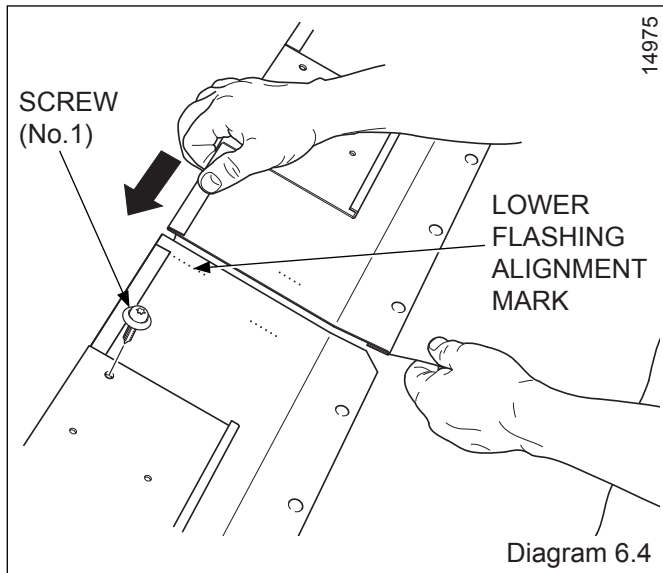


Diagram 6.4

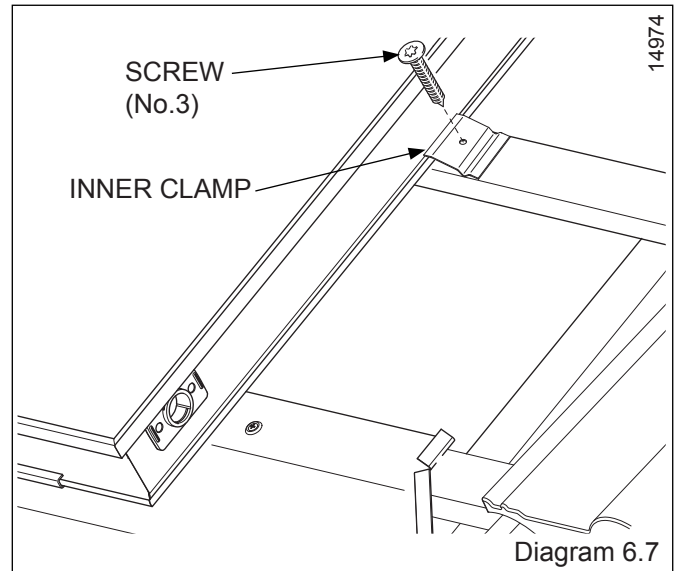


Diagram 6.7

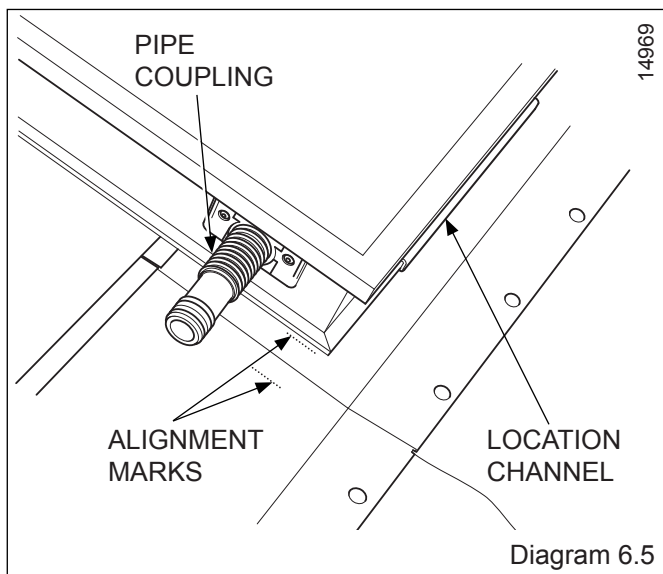


Diagram 6.5

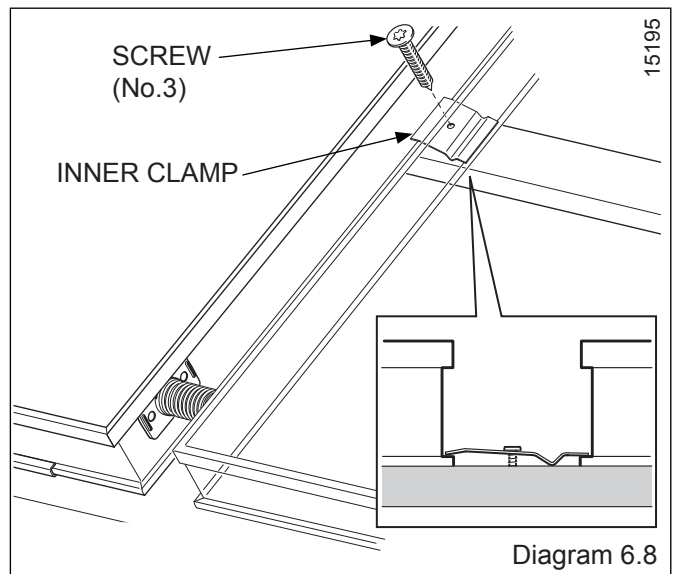


Diagram 6.8

6 Two Collector Flashing Kit - 22° - 75°

With regards to the hydraulic system you have chosen, insert and secure the hydraulic connections, see diagram 6.9.

Insert the collector sensor into the appropriate elbow (flow, top), see diagram 5.7. The collector sensor is packed with the Fluropro controller, part no. 0020054960.

Mount the plug with the bleed valve in the opposite top position.

Connect the collector Flow and Return to the system circuit.

Ensure that all of the following steps have been performed:-

- All the connections have been fixed with securing clips.
- All hydraulic connections laid properly.
- The collector sensor has been connected.
- The collectors are connected to a lightning protection device.
- A pressure test.
- All insulation is intact.

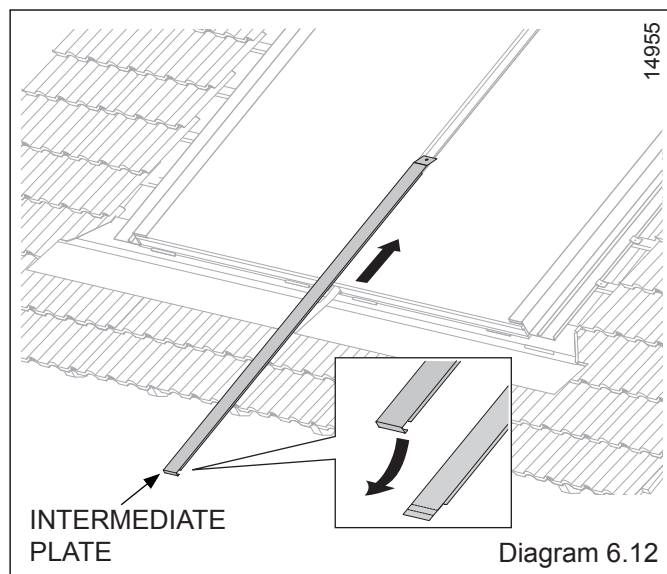
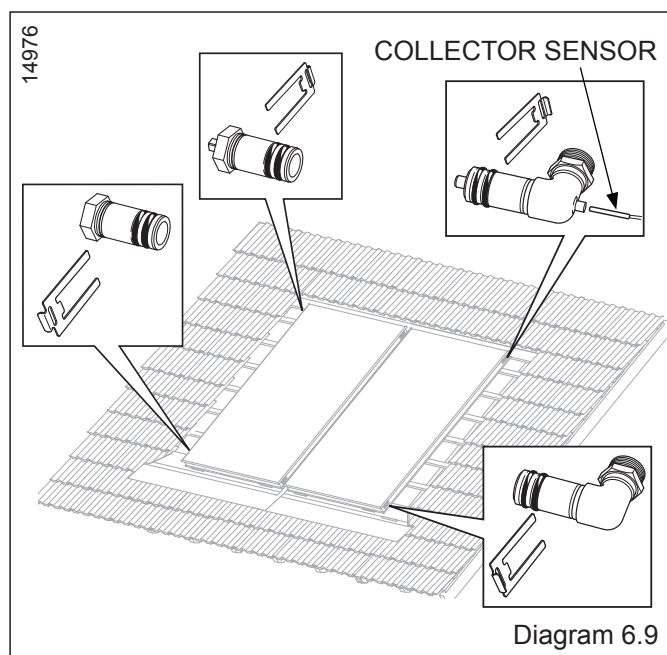
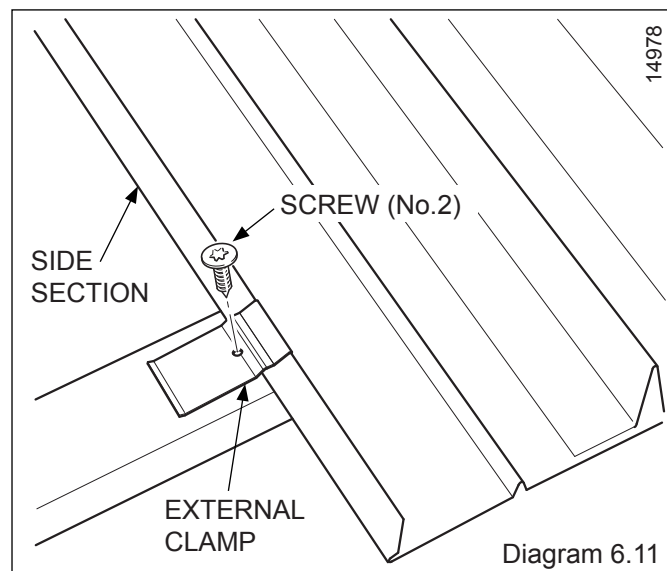
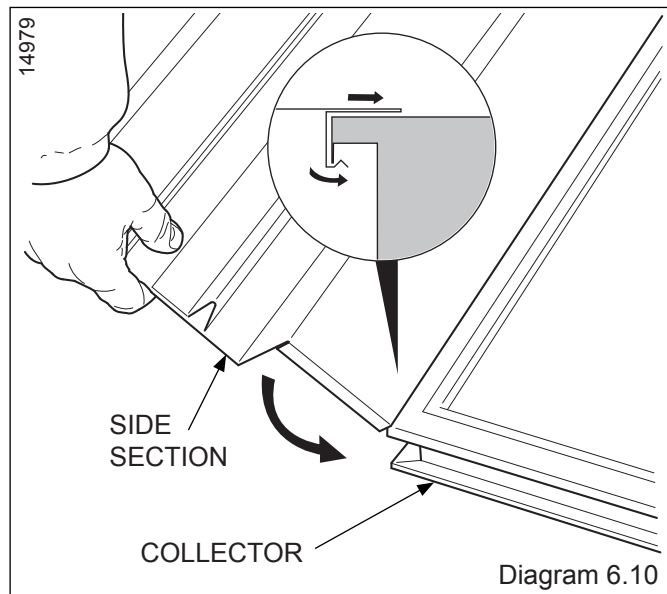
NOTE: After initial commissioning and according to the season, high outside temperature oscillations can cause condensation in the collector, this is normal.

Fit the side sections to the collector frame, ensure that they are pushed into place on the collector edge, see diagram 6.10.

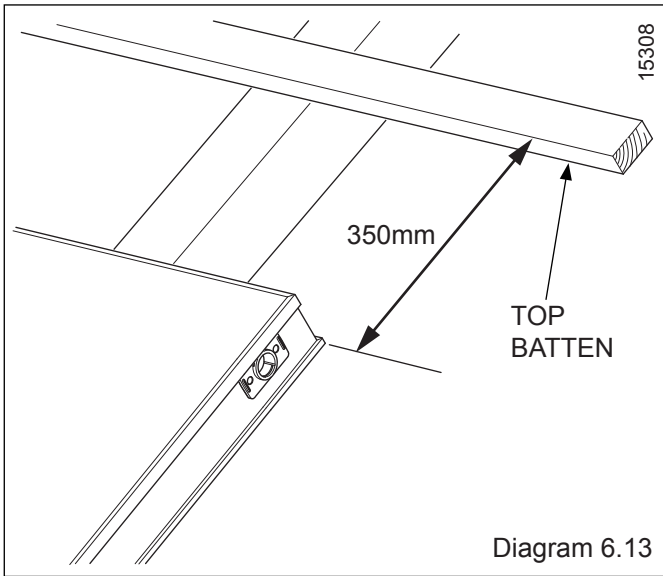
Secure the side sections to the roof battens with the supplied clamps, screws (No. 2) and Torx bit supplied, see diagram 6.11.

Slide the intermediate plate from below and between the collectors, until it is flush with the lower collector edge, see diagram 6.12.

NOTE: If it's not possible to mount the intermediate plate from below (because of dormers, etc.), carefully bend up the intermediate plate (see inset diagram 6.12), slide the plate from the top between the collectors and bend it down again.



6 Two Collector Flashing Kit - 22° - 75°



6.2 Support plates/board

Fix the top batten into position as shown in diagram 6.13.

Mount the support plates above the collector:

- one on the external edge (max. 150 mm from the edge)
- one per collector joint (central).

Make sure that the support plates are on the collector frame slot, see diagram 6.13.

Fix the support plates to the top roof batten with two screws (No.3) using the supplied Torx bit.

Slide the board through the support plates.

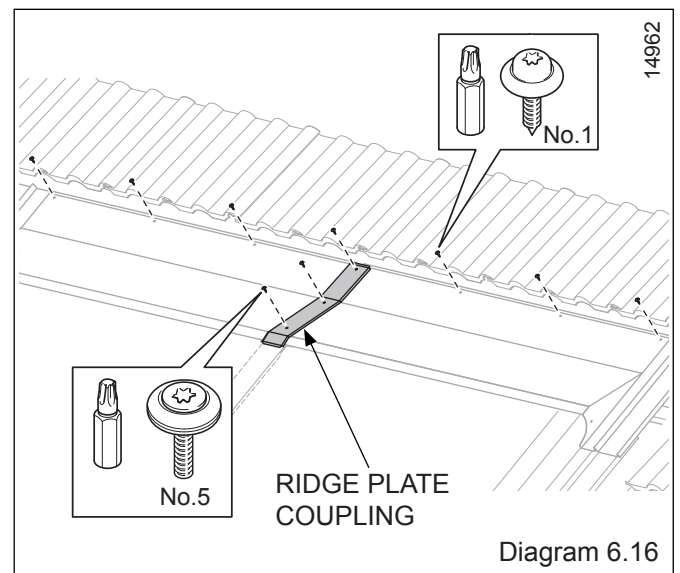
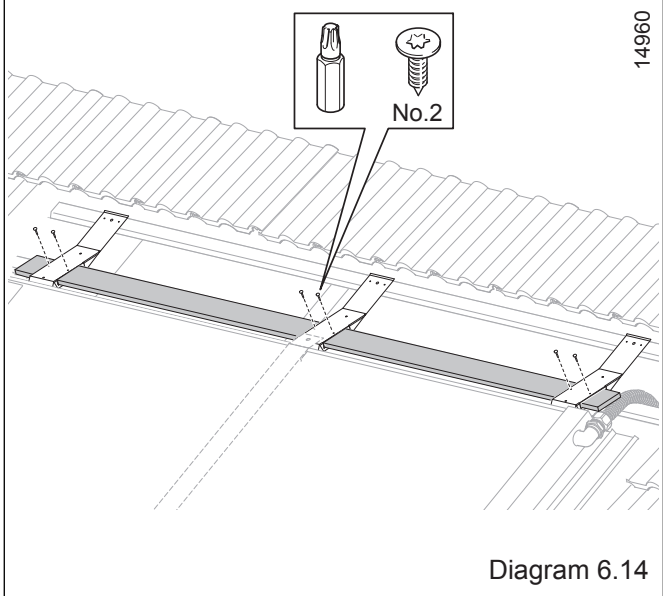
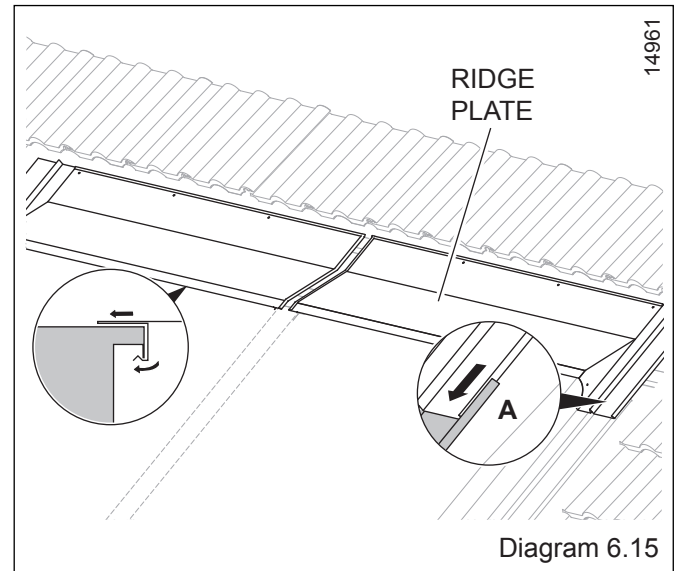
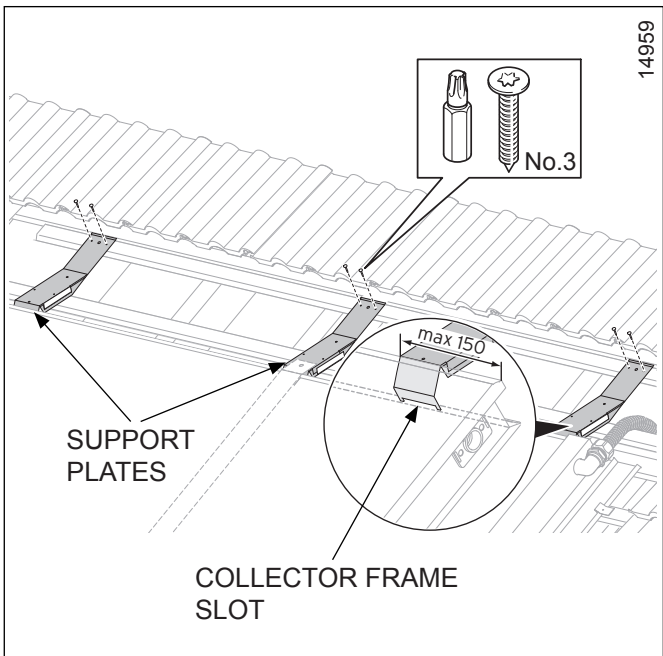
Fix the board to the support plates with two screws (No. 2) using the supplied Torx bit, see diagram 6.14.

Slide the ridge plates on the support plates, see diagram 6.15.

Make sure that the ridge plates are above the side sections and engaged in the corresponding rail (A).

Fix the ridge plates to the roof battens with the screws (No. 1) using the supplied Torx bit.

Fix the ridge plate coupling to the ridge plate joint with three screws (No. 5) using the supplied Torx bit, see diagram 6.16.



6 Two Collector Flashing Kit - 22° - 75°

6.3 Riveting the frame

Drill a 4.5 mm diameter hole through the ridge plates on the marks on the left and right hand respectively, see diagram 6.17.

Rivet the ridge plate to the side section.

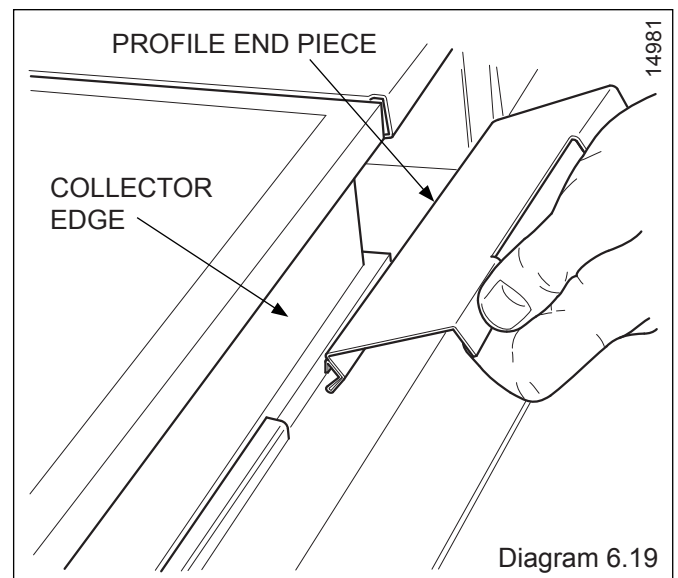
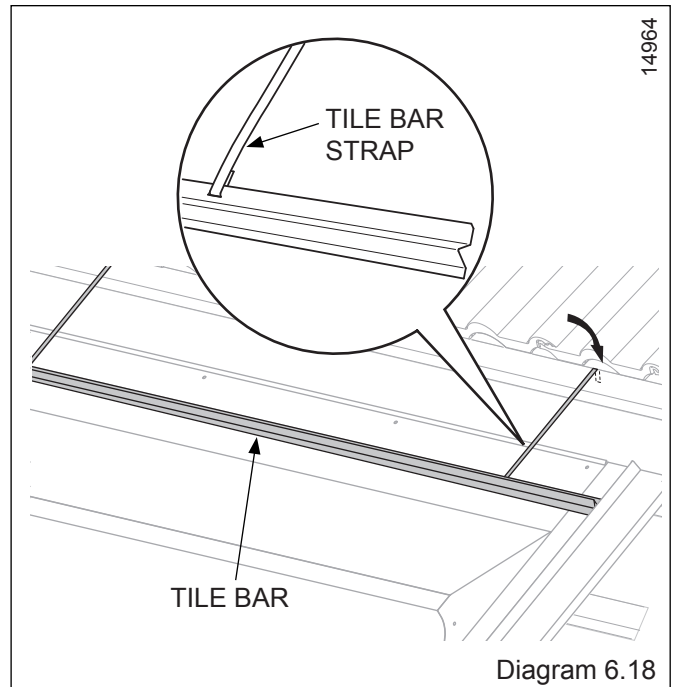
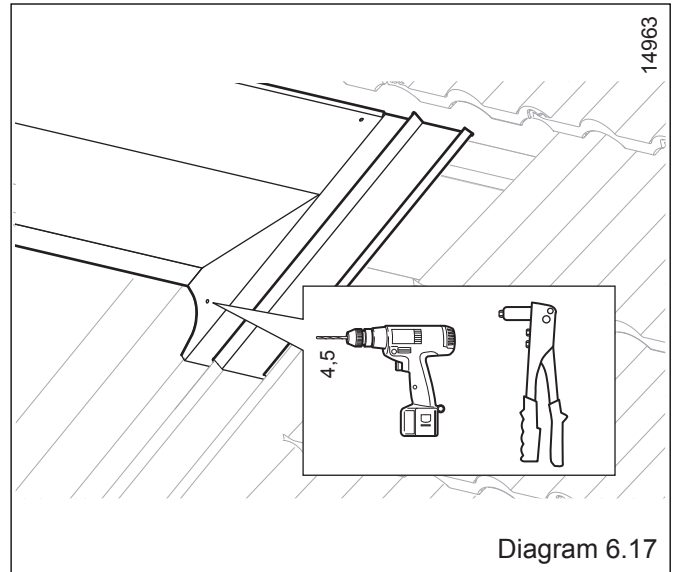
6.4 Tile Bars

Place the tile bars on the ridge plates.

Bend the metal bands and hook the tile bars to the roof batten from the top, see diagram 6.18.

6.5 Covering the profile ends

Cover the side profile ends and the collector joints with the profile end pieces, see diagram 6.1 for profile end location. Fit the profile end pieces to the bottom collector edge and then tilt them up, until they lock in the upper collector edge, see diagram 6.19.



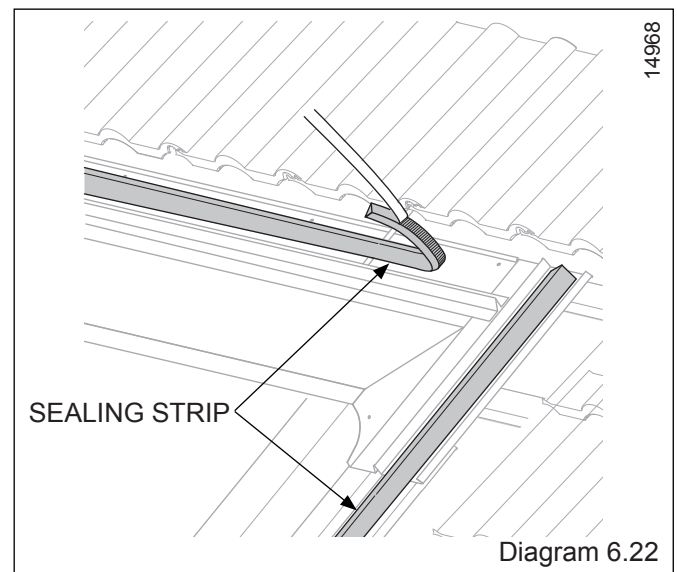
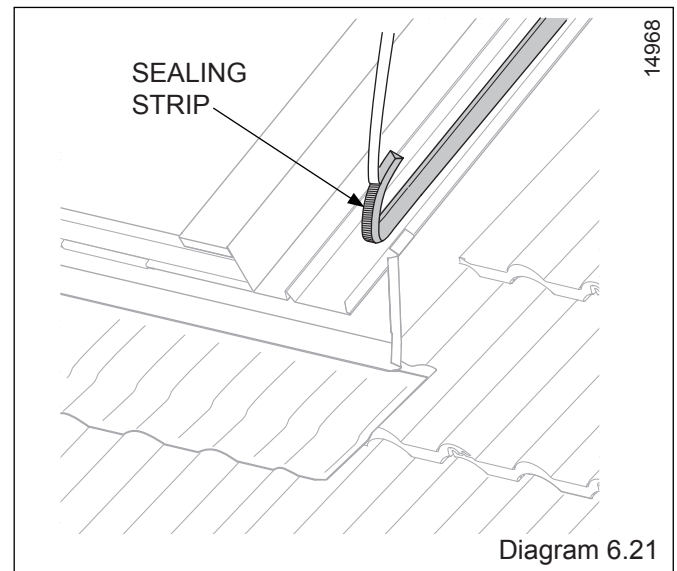
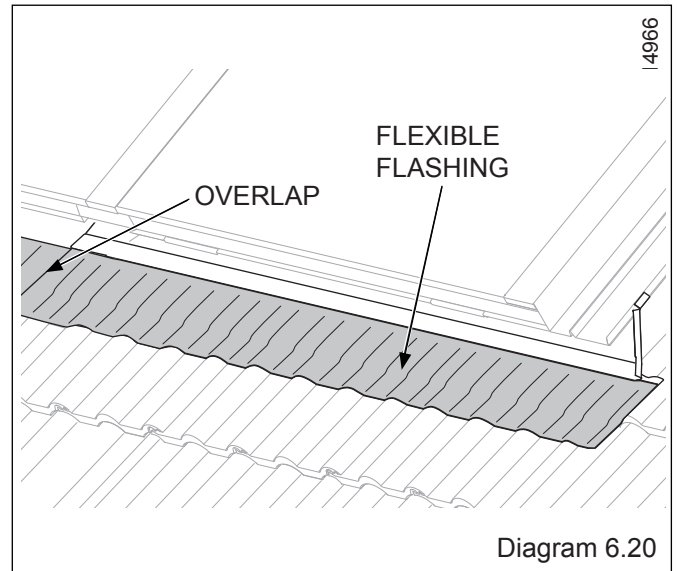
6 Two Collector Flashing Kit - 22° - 75°

6.6 Flexible flashing

NOTE: Ensure that the adhesive surface is dry and free from dust and grease.
Remove the protection film from the adhesive surface of the flexible flashing.
Contour the flexible flashing to the tile shape, see diagram 6.20.

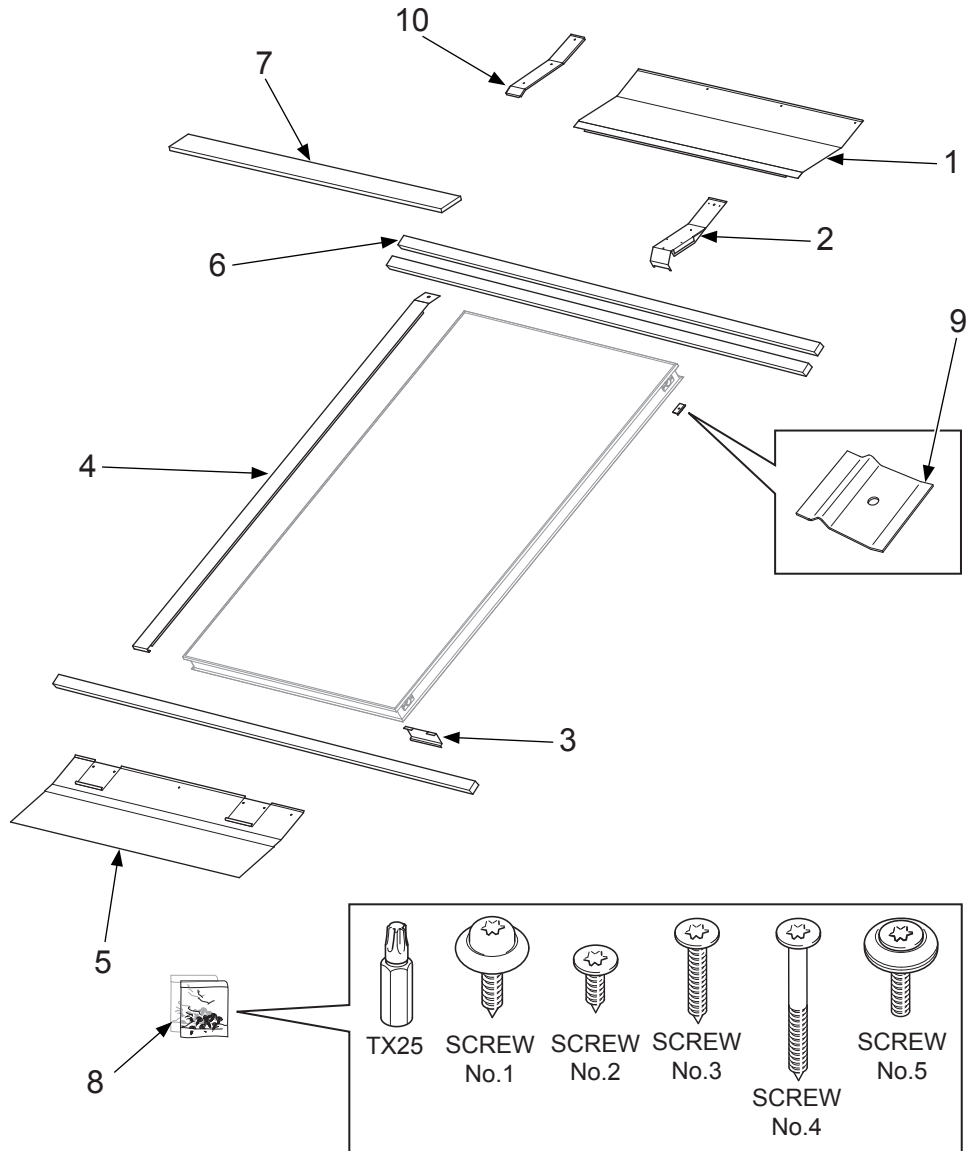
6.7 Sealing strip

Attach the self adhesive sealing strip on the side sections of the collector frame as shown in diagram 6.21 and also on the ridge plates, see diagram 6.22.
If necessary carefully cut the sealing strip with a trimming knife.



7 One Collector Extension Kit - 22° - 75°

15019



One collector extension kit for roof angle 22-75° - Kit No. 0020060327		
Part	Description	No. OFF
1	Ridge plate extension	1
2	Support plate	1
3	Profile end	1
4	Intermediate plate	1
5	Lower flashing	3
6	Roof batten	3
7	Support board	3
8	Screws No.1	12
	Screws No.2	2
	Screws No.3	3
	Screws No.4	4
	Screws No.5	2
10	Upper ridge plate coupling	1

Diagram 7.1

7 One Collector Extension Kit - 22° - 75°

Roof Requirements

Refer to the diagram and table below and confirm the roof requirements before installation.

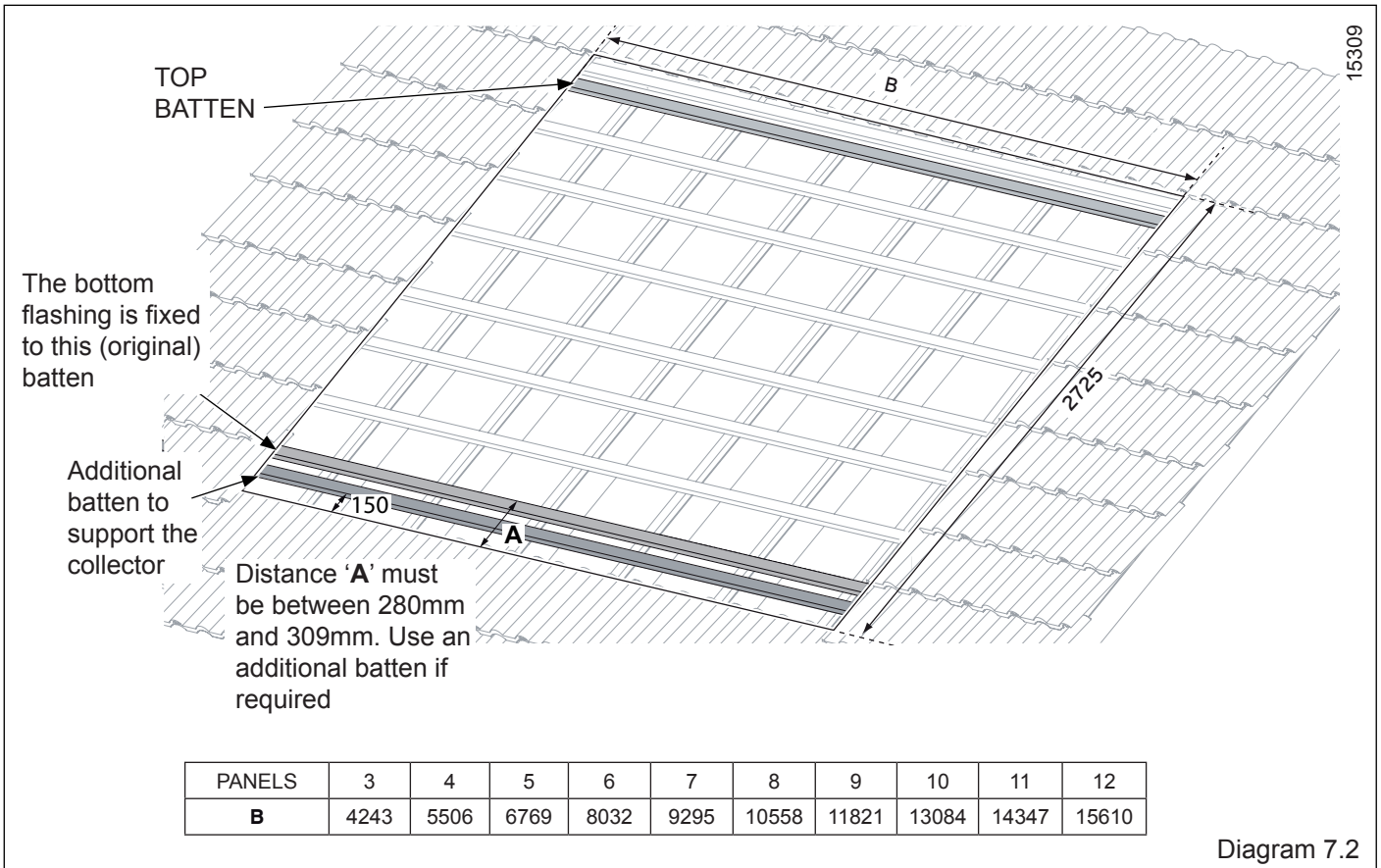


Diagram 7.2

IMPORTANT

The one collector extension kit compliments the two collector kit and is required to complete multi-collector installations up to twelve.

- Do not remove the protection film until the system is to be commissioned.
- With due regard to the complete weight of the solar collector system, (refer to technical data) ensure the roof rafters and battens are in good condition and have sufficient load carrying capacity and the battens are secure.
- If you are using the existing roof battens for fixing, ensure that they are secured at each rafter.

7.1 Installation

NOTE: Ensure adequate provision has been made for the flow and return pipes to enter/exit the roof space, dependant on their location. The preferred hydraulic scheme will determine their location, refer to Section 3.

Refer to diagram 7.1 and check the contents of the kits prior to commencing work on the roof.

Based on the dimensions above, remove the roof covering.

Fix the lower flashing support batten, see diagram 7.2.

Position the lower flashing onto the roof batten and secure with the six screws (No.1) and Torx bit supplied, see diagram 7.3.

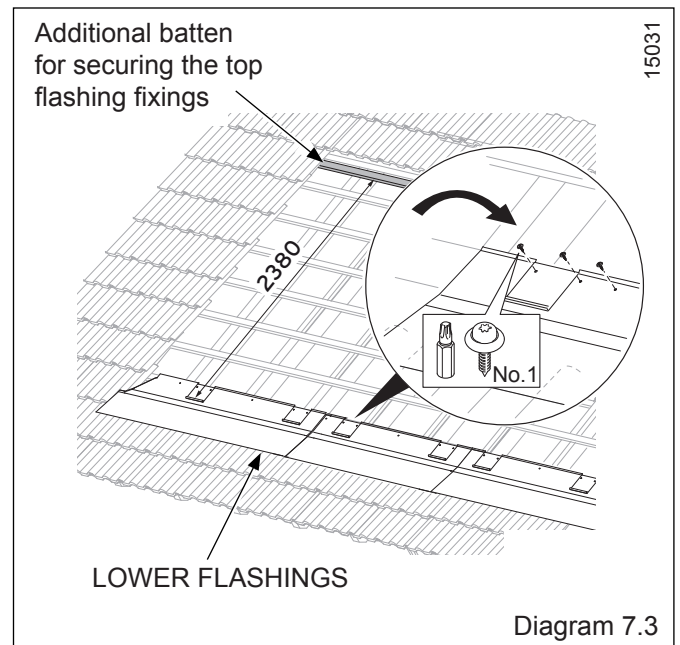


Diagram 7.3

7 One Collector Extension Kit - 22° - 75°

Slide the right lower flashing up to the mark on the left lower flashing, see diagram 7.4. Screw the right lower flashing onto the roof batten and secure with six securing screws (no.1) and Torx bit supplied.

Position the collector protective side uppermost into the location channel as shown in diagram 7.5.

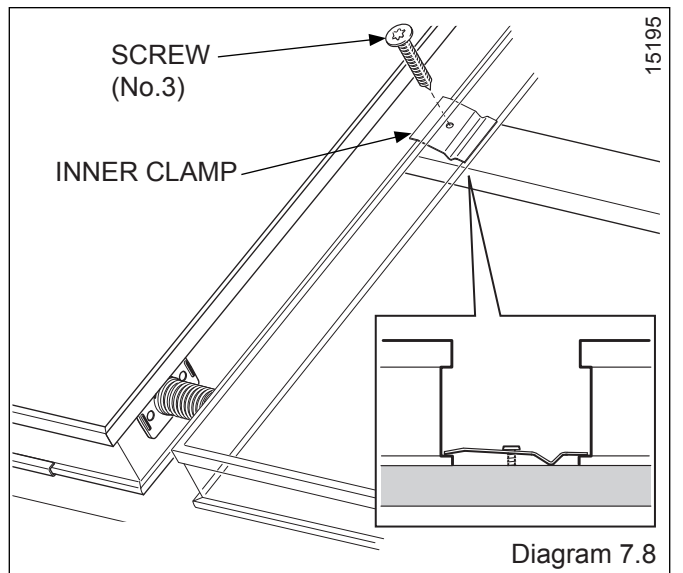
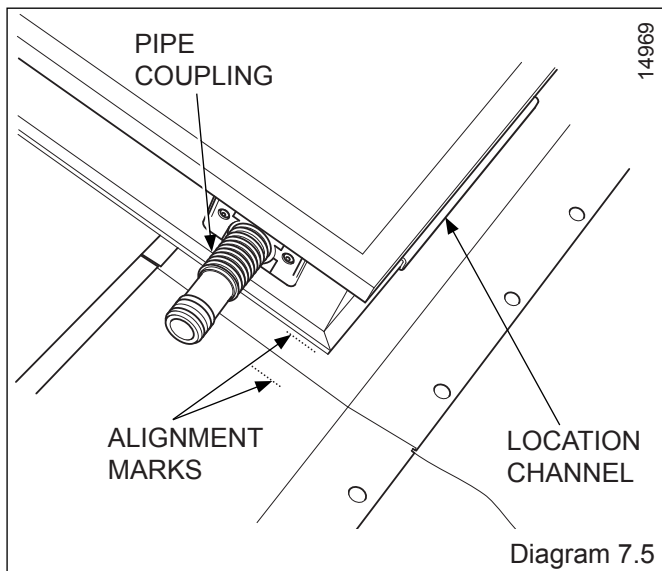
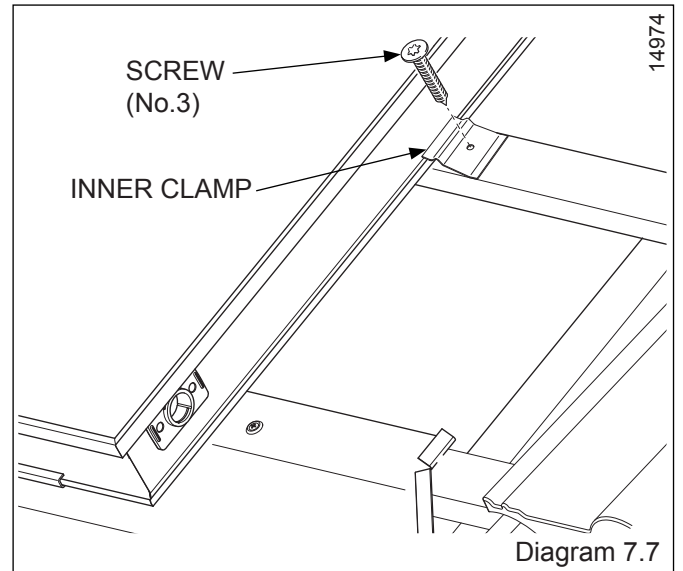
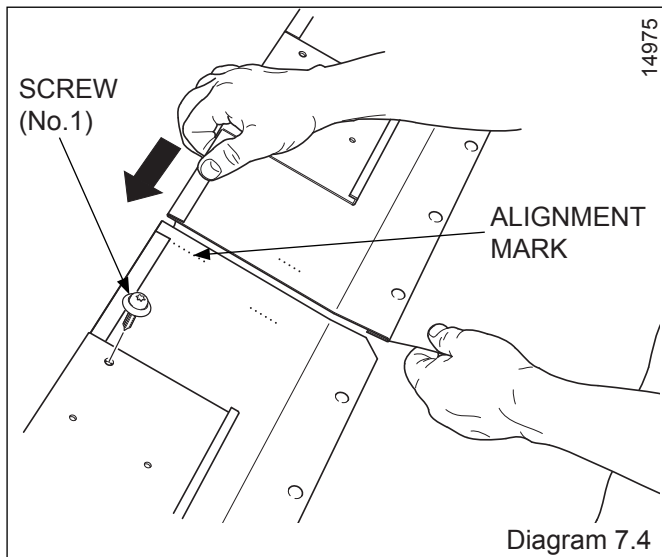
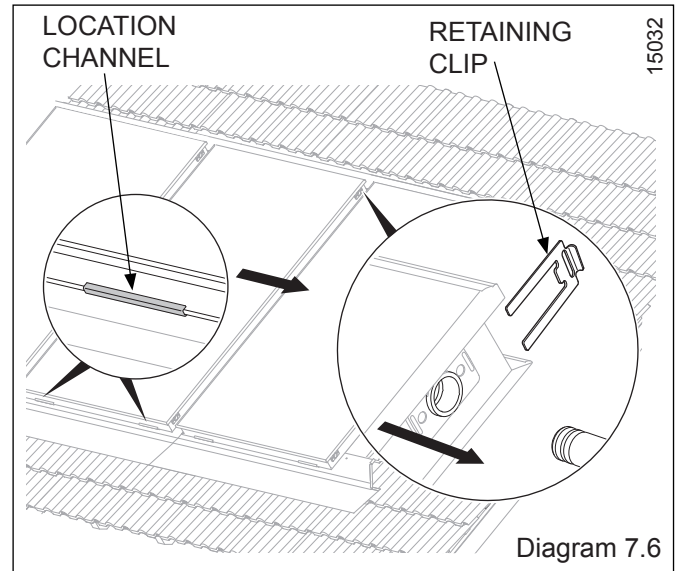
NOTE: The design is symmetrical and does not have a top or bottom.

Insert the pipe couplings into the hydraulic socket connection. The pipe coupling should be inserted up to the stop and secured with its securing clip.

Place the next collector into its position as previously described, then push the collector, ensuring engagement of the pipe coupling, see diagram 7.6, and align with the marks on the flashing.

With the screws (No.3) and clamps and Torx bit supplied, secure to the roof battens, see diagram 7.7.

For securing between collectors the inner clamp should be secured as shown and grip both collector edges, see diagram 7.8.



7 One Collector Extension Kit - 22° - 75°

With regards to the hydraulic system you have chosen, insert and secure the hydraulic connections, see diagram 7.9.

Insert the collector sensor into the appropriate elbow (flow, top), see diagram 7.9. The collector sensor is packed with the Fluropro controller, part no. 0020054960.

Mount the plug with the bleed valve in the opposite top position.

Connect the collector to the system circuit.

Ensure that all of the following steps have been performed:-

- All the connections have been fixed with securing clips.
- All hydraulic connections laid properly.
- The collector sensor has been connected.
- The collectors are connected to a lightning protection device.
- A pressure test.
- All insulation is intact.

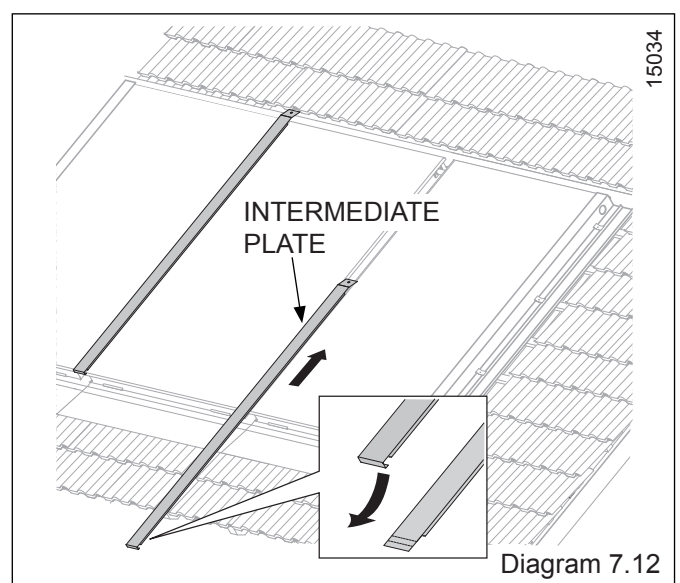
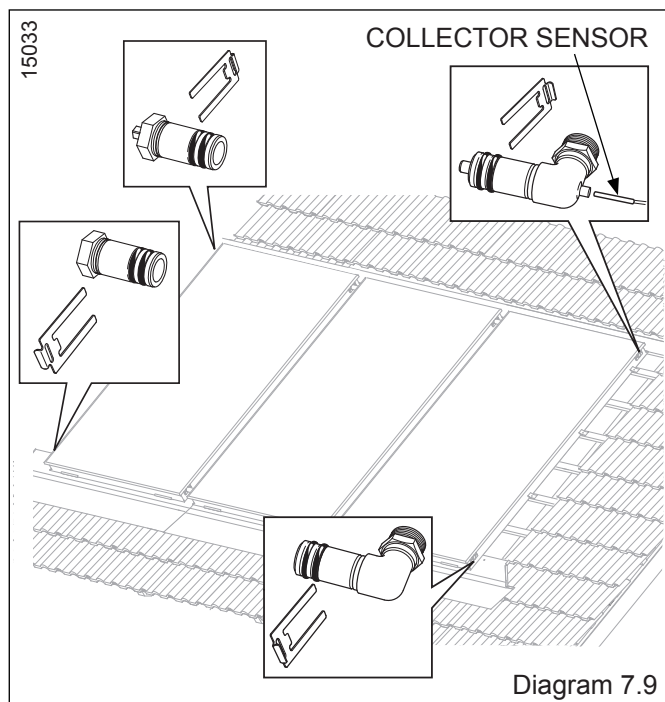
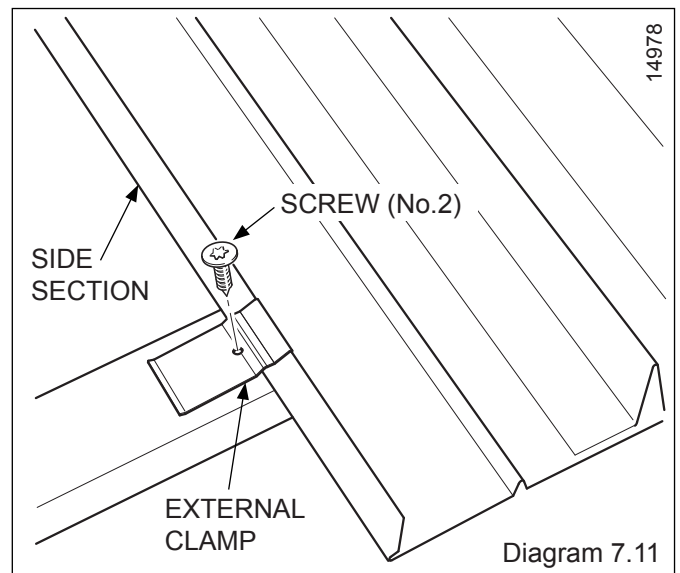
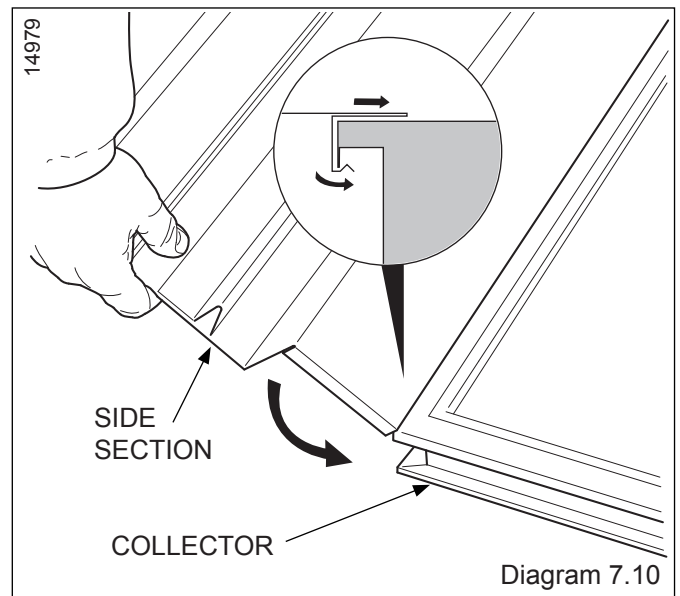
NOTE: After initial commissioning and according to the season, high outside temperature oscillations can cause condensation in the collector, this is normal.

Fit the side sections to the collector frame, ensure that they are pushed into place on the upper collector edge, see diagram 7.10.

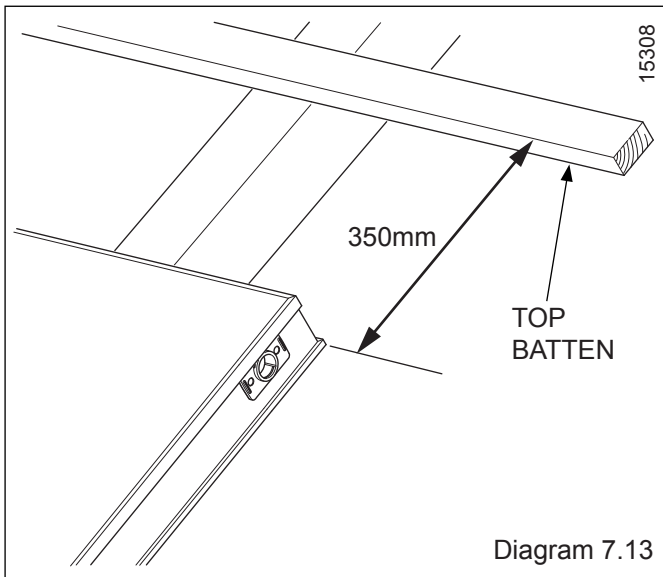
Secure the side sections to the roof battens with the supplied clamps and screws (No. 2) using the supplied Torx bit, see diagram 7.11.

Slide the intermediate plate from below and between the collectors, until it is flush with the lower collector edge, see diagram 7.12.

NOTE: If it's not possible to mount the intermediate plate from below (because of dormers, etc.), carefully bend up the intermediate plate (see inset diagram 7.12), slide the plate from the top between the collectors and bend it down again.



7 One Collector Extension Kit - 22° - 75°



7.2 Support plates/board

Fix the top batten into position as shown in diagram 7.13.

Mount the support plates above the collector:

- one on the external edge (max. 150mm from the edge)
- one per collector joint (central).

Make sure that the support plates are on the collector frame slot, see diagram 7.14.

Fix the support plates to the top roof batten with two screws (No. 3) using the supplied Torx bit.

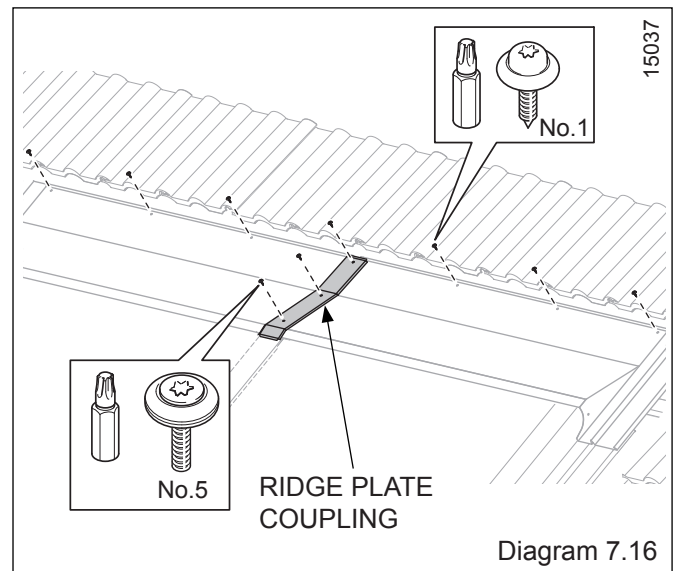
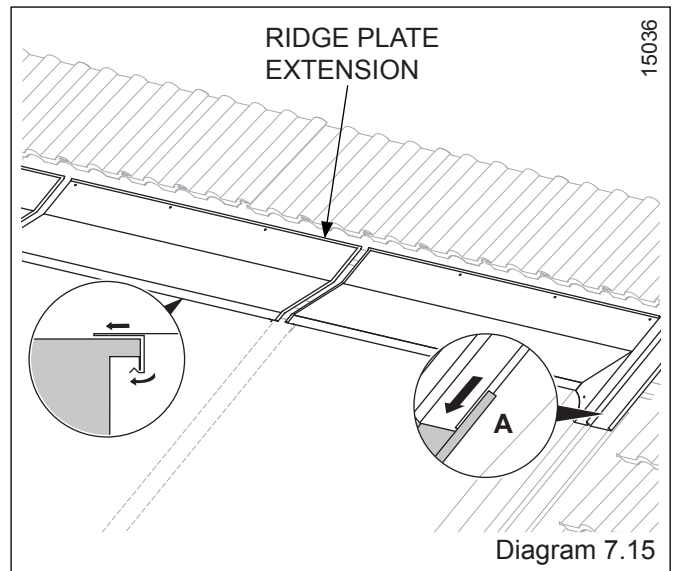
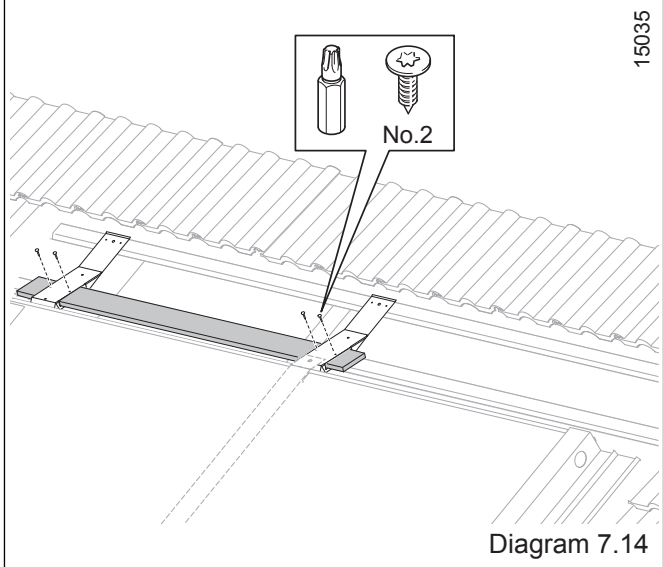
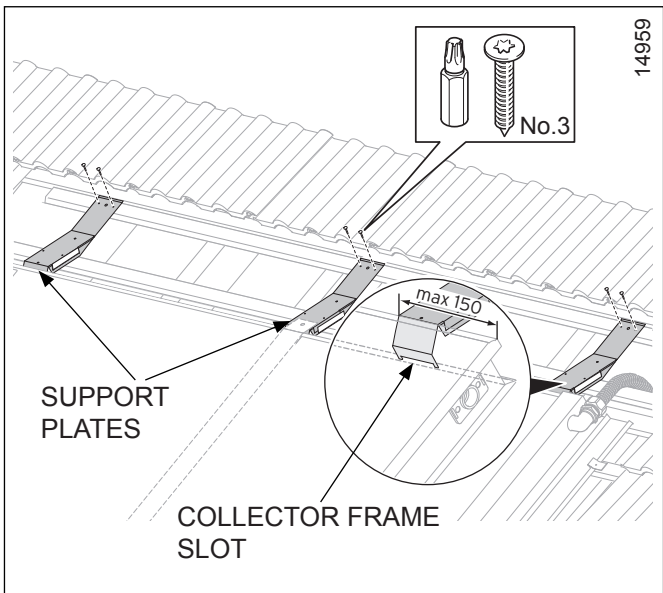
Slide the boards through the support plates.

Fix the boards to the support plates with two screws (No. 2) using the supplied Torx bit, see diagram 7.14.

Slide the ridge plate extension on the support plates, see diagram 7.15. Make sure that the ridge plates are above the side sections and slip in the corresponding rail (A).

Fix the ridge plates to the roof battens with the screws (No. 1) using the supplied Torx bit.

Fix the ridge plate coupling to the ridge plate joint with three screws (No. 5) using the supplied Torx bit, see diagram 7.16.



7 One Collector Extension Kit - 22° - 75°

7.3 Riveting the frame

Drill a 4.5 mm diameter hole through the ridge plates on the marks on the left and right hand respectively, see diagram 7.17.

Rivet the ridge plate to the side section.

7.4 Tile Bars

Place the tile bars on the ridge plates.

Bend the metal bands and hook the tile bars to the roof batten from the top, see diagram 7.18.

7.5 Covering the profile ends

Cover the side profile ends and the collector joints with the profile end pieces, see diagram 7.1 for profile end location. Fit the profile end pieces to the bottom of the collector edge and then tilt them up, until they lock in the upper collector edge, see diagram 7.19.

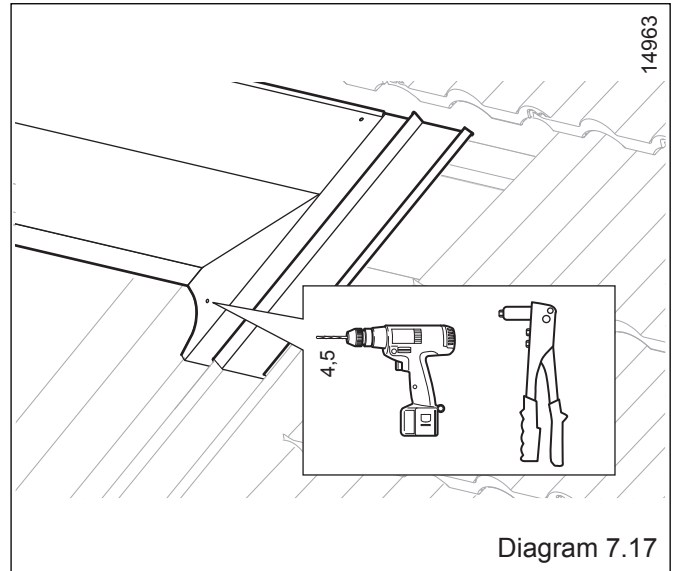


Diagram 7.17

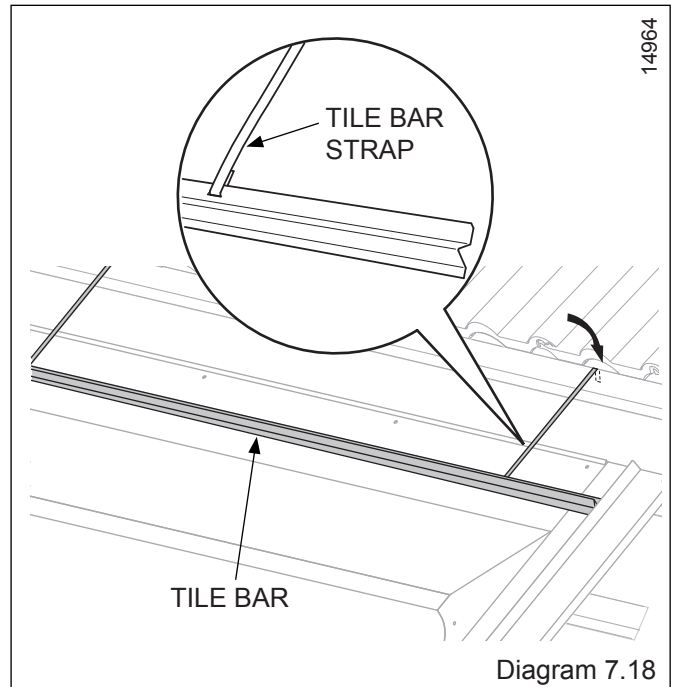


Diagram 7.18

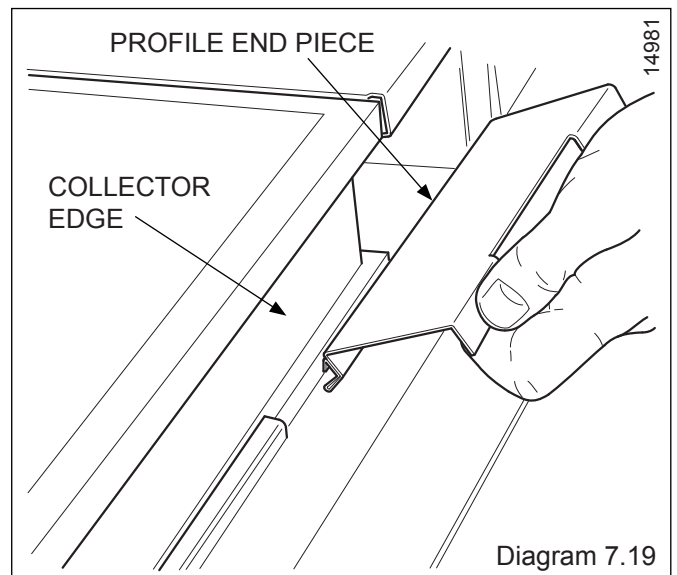


Diagram 7.19

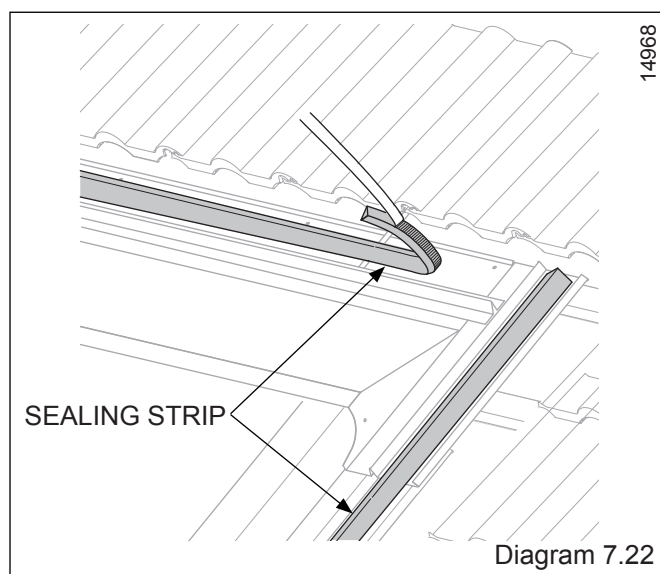
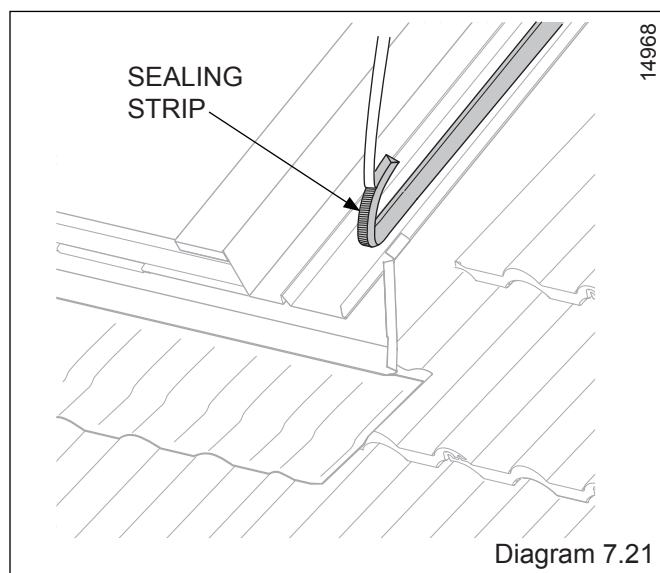
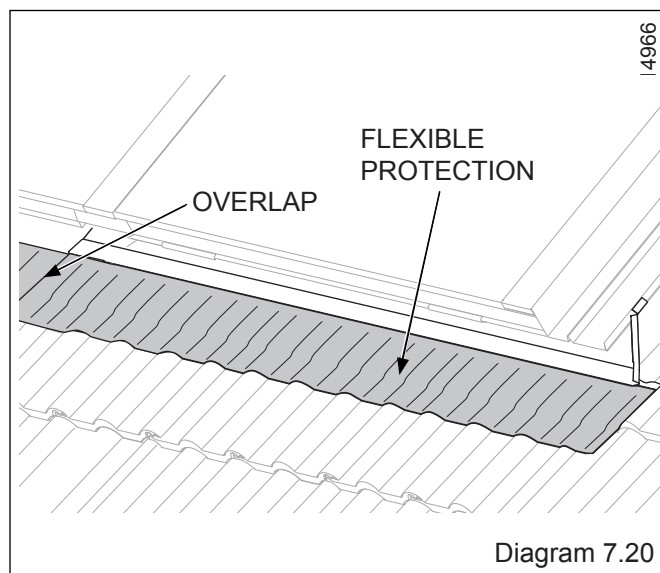
7 One Collector Extension Kit - 22° - 75°

7.6 Flexible protection

NOTE: Ensure that the adhesive surface is dry and free from dust and grease.
Remove the protection film from the adhesive surface of the flexible protection.
Contour the flexible protection to the tile shape, see diagram 7.20.
Stick the flexible protection to parts that overlap.

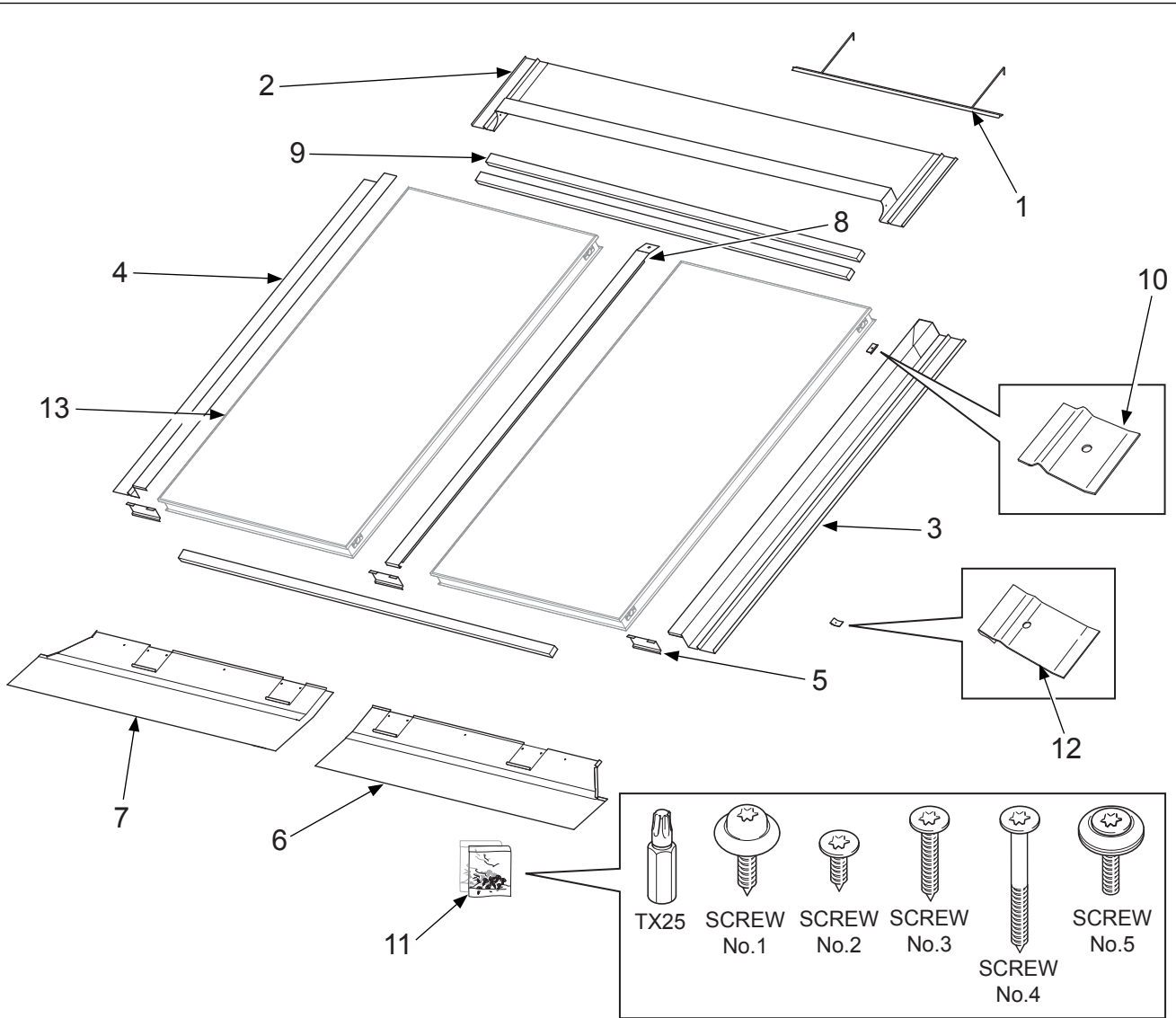
7.7 Sealing strip

Attach the self adhesive sealing strip on the side sections of the collector frame as shown in diagram 7.21 and also on the ridge plates, see diagram 7.22.
If necessary carefully cut the sealing strip with a trimming knife.



8 Two Collector Flashing Kit - 15° - 22°

15020



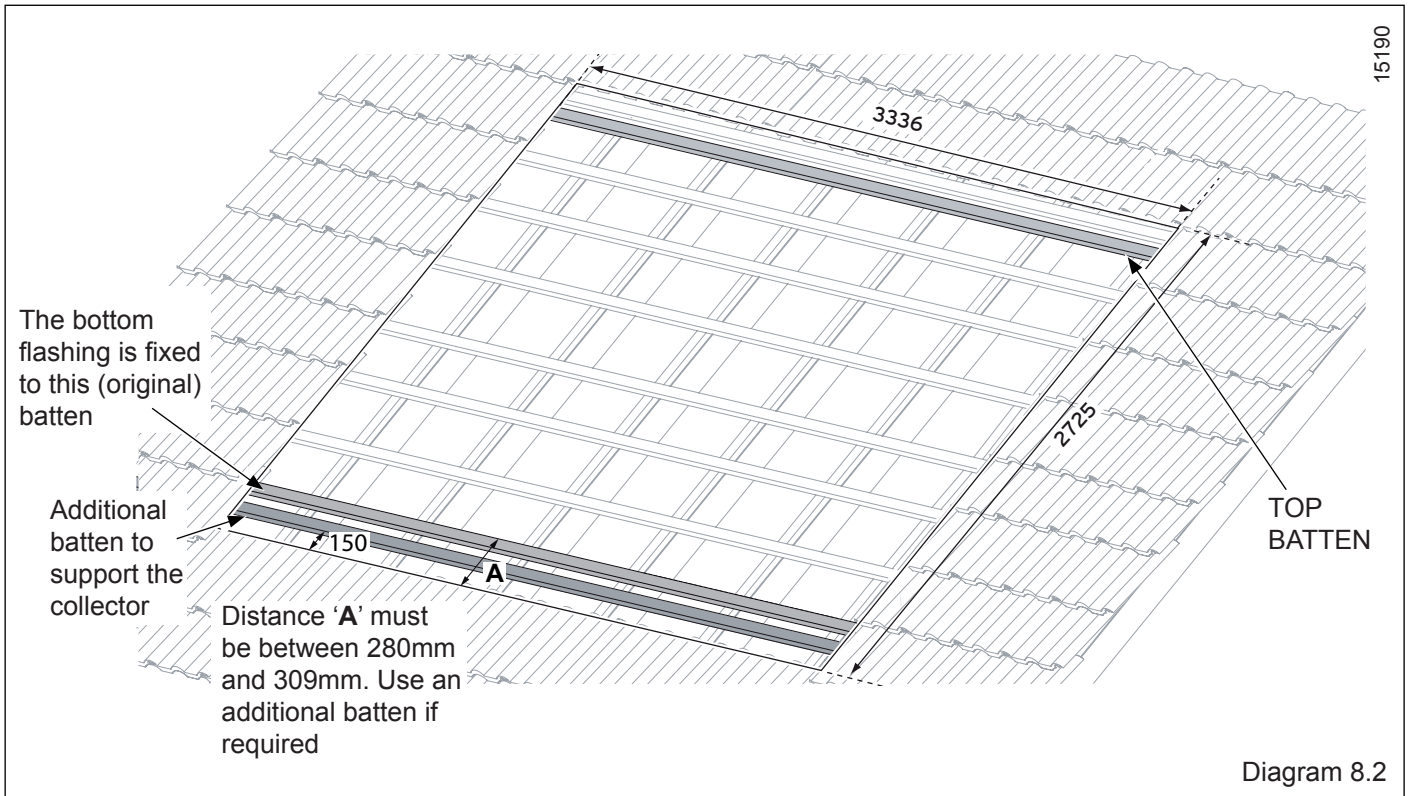
2 collector in-roof kit for roof angle 15-22° - Kit No. 0020059886		
Part	Description	No. OFF
1	Tile bar	2
2	Ridge plate 2 solar collector panels	1
3	Right side section	1
4	Left side section	1
5	Profile end	3
6	Right front section	1
7	Left front section	1
8	Intermediate plate	1
9	Roof batten	3
11	Screws No.1 Screws No.2 Screws No.3 Screws No.4 Screws No.5	28 17 10 10 3
12	External clamp	10
13	Solar collector panel	2

Diagram 8.1

8 Two Collector Flashing Kit - 15° - 22°

Roof Requirements

Refer to the diagram and table below and confirm the roof requirements before installation.



IMPORTANT

- Do not remove the protection film until the system is to be commissioned.
- With due regard to the complete weight of the solar collector system, (refer to technical data) ensure the roof rafters and battens are in good condition and have sufficient load carrying capacity and the battens are secure.
- If you are using the existing roof battens for fixing, ensure that they are secured at each rafter.

8.1 Installation

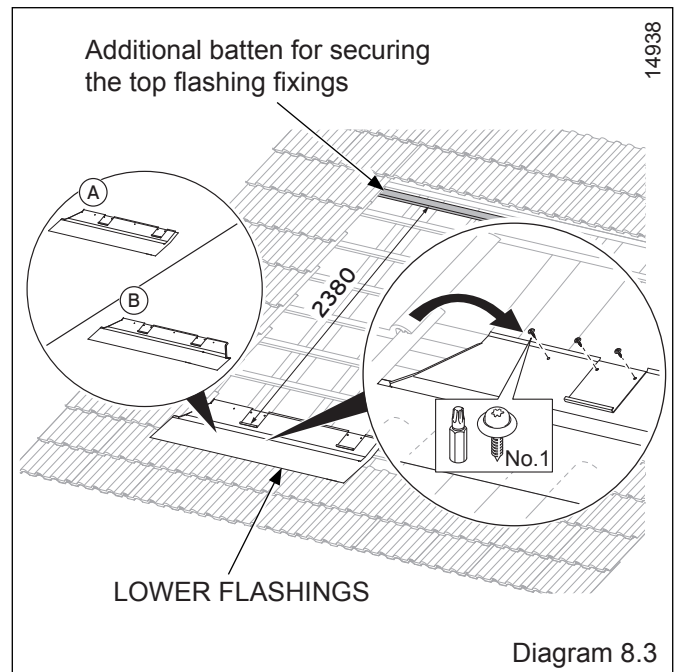
NOTE: Ensure adequate provision has been made for the flow and return pipes to enter/exit the roof space, dependant on their location. The preferred hydraulic scheme will determine their location, refer to Section 3.

Refer to diagram 8.1 and check the contents of the kits prior to commencing work on the roof.

Based on the dimensions, above, remove the roof covering.

Fix the lower flashing support batten, see diagram 8.2.

Position the left lower flashing onto the roof batten and secure with six securing screws (no.1), with Torx bit supplied, see diagram 8.3.



8 Two Collector Flashing Kit - 15° - 22°

Slide the right front section up to the mark on the left front section, see diagram 8.4. With six securing screws (no.1), screw the right front section to the roof batten using the supplied Torx bit.

Position the collector panel protective side uppermost into the location channel as shown in diagram 8.5.

NOTE: The design is symmetrical and does not have a top or bottom.

Insert the pipe couplings into the hydraulic socket connection. The pipe coupling should be inserted up to the stop. Place the next collector into its position as previously described, then push the collector, ensuring engagement of the pipe coupling, see diagram 8.6, and align with the marks on the flashing.

With the screws (No.3) and clamps and Torx bit supplied, secure to the roof battens, see diagram 8.7.

For securing between collectors the inner clamp should be secured as shown and grip both collector edges, see diagram 8.8

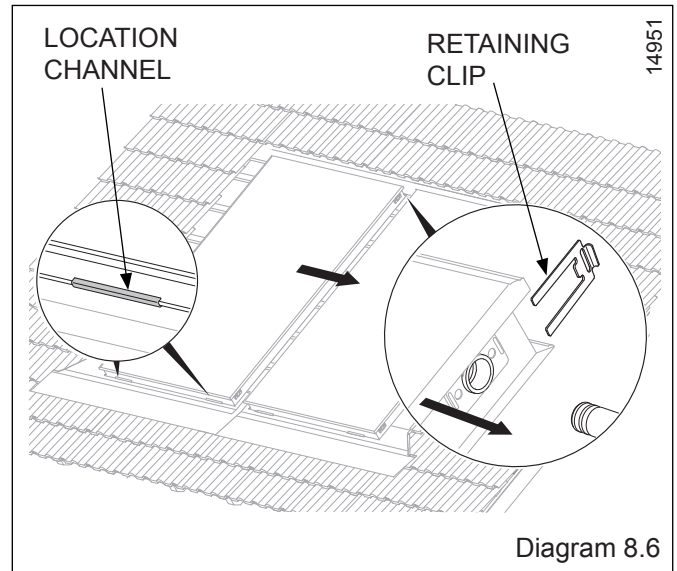


Diagram 8.6

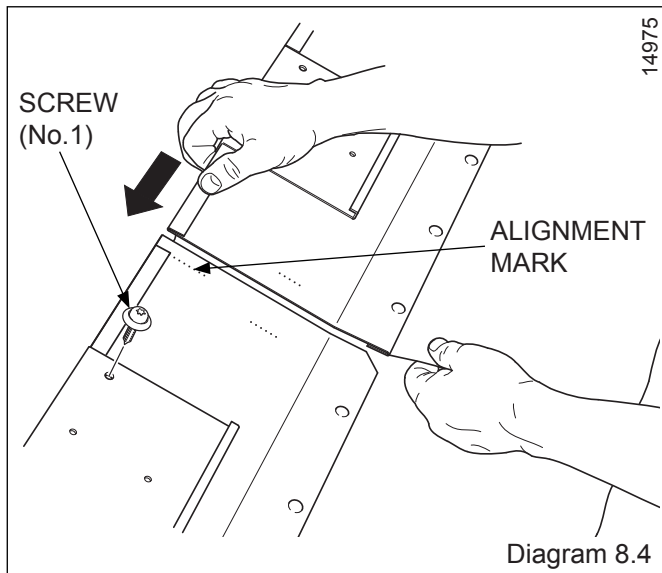


Diagram 8.4

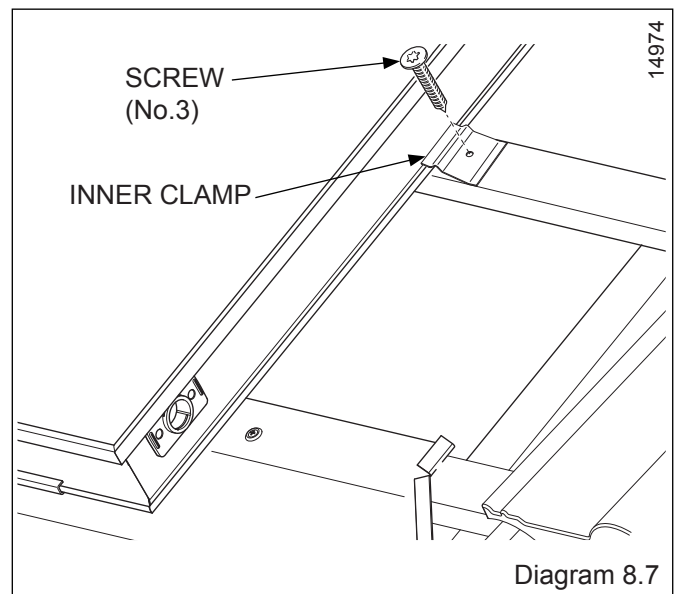


Diagram 8.7

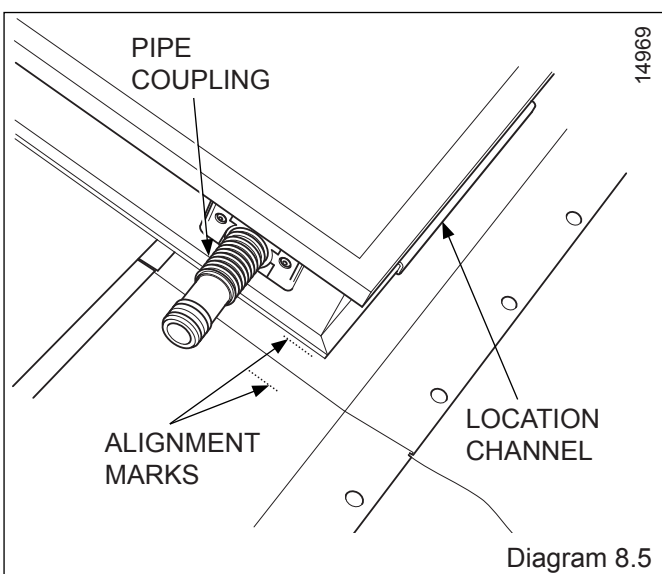


Diagram 8.5

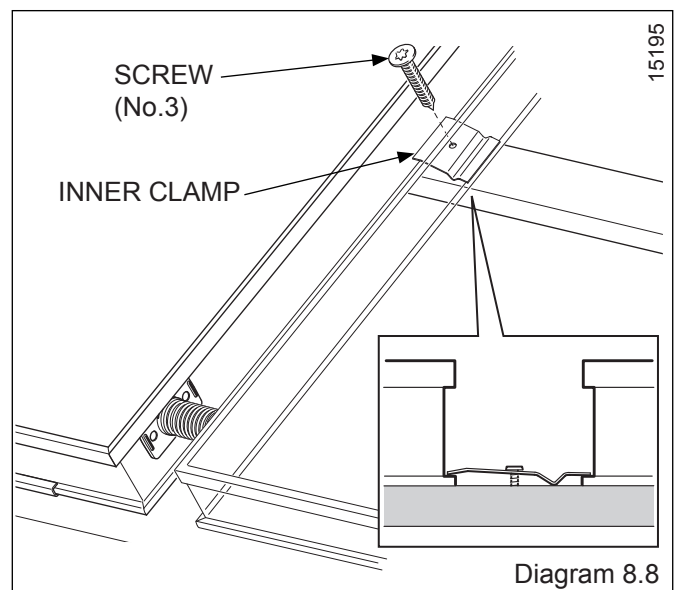


Diagram 8.8

8 Two Collector Flashing Kit - 15° - 22°

With regards to the hydraulic system you have chosen, insert and secure the hydraulic connections, see diagram 8.9.

Insert the collector sensor into the appropriate elbow (flow, top), see diagram 8.9. The collector sensor is packed with the Fluropro controller, part no. 0020054960.

Mount the plug with the bleed valve in the opposite top position.

Connect the collector Flow and Return to the system circuit.

Ensure that all of the following steps have been performed:-

- All the connections have been fixed with securing clips.
- All hydraulic connections laid properly.
- The collector sensor has been connected.
- The collectors are connected to a lightning protection device.
- A pressure test.
- All insulation is intact.

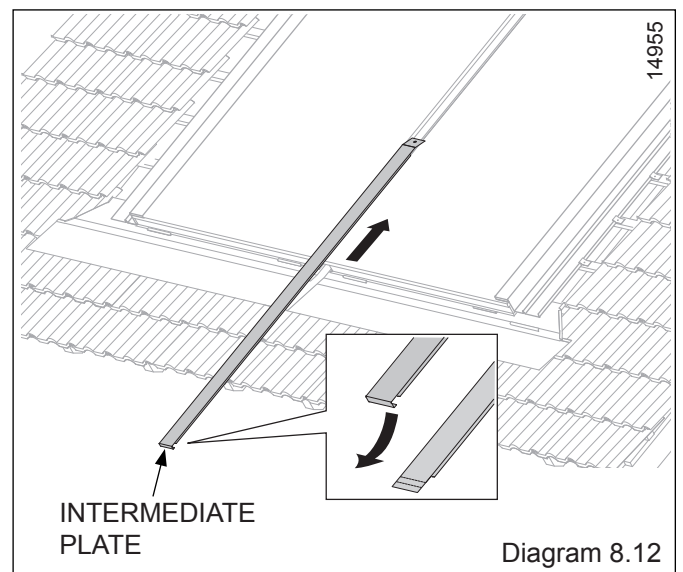
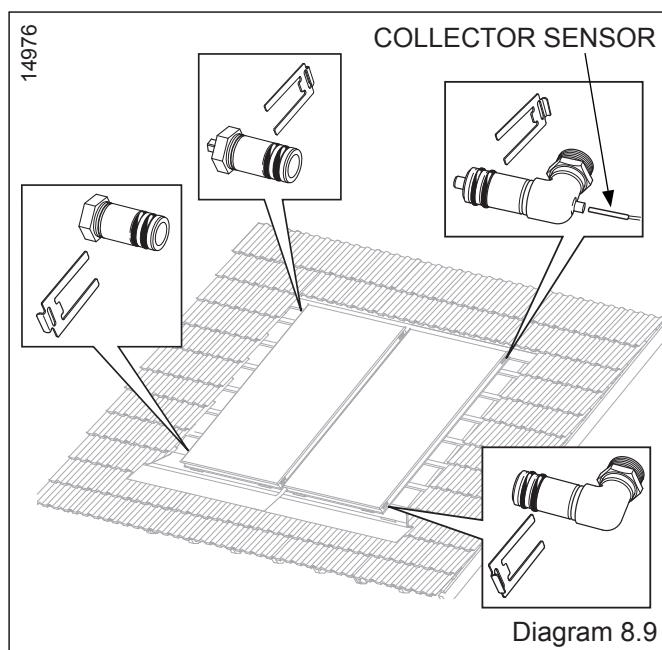
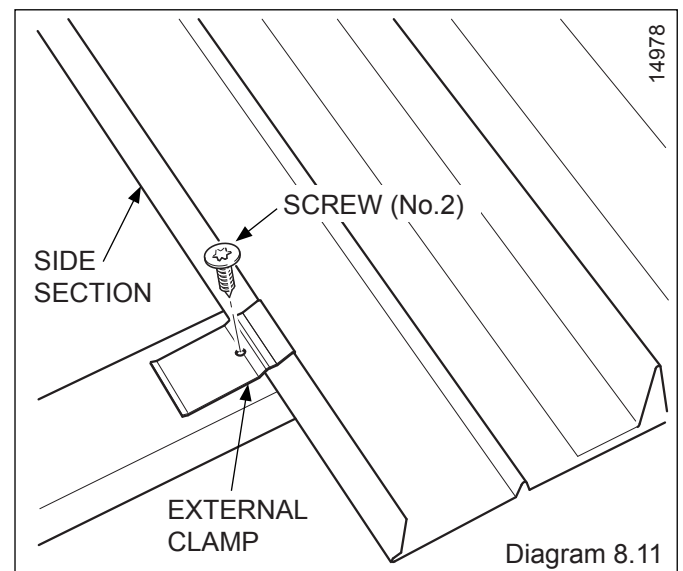
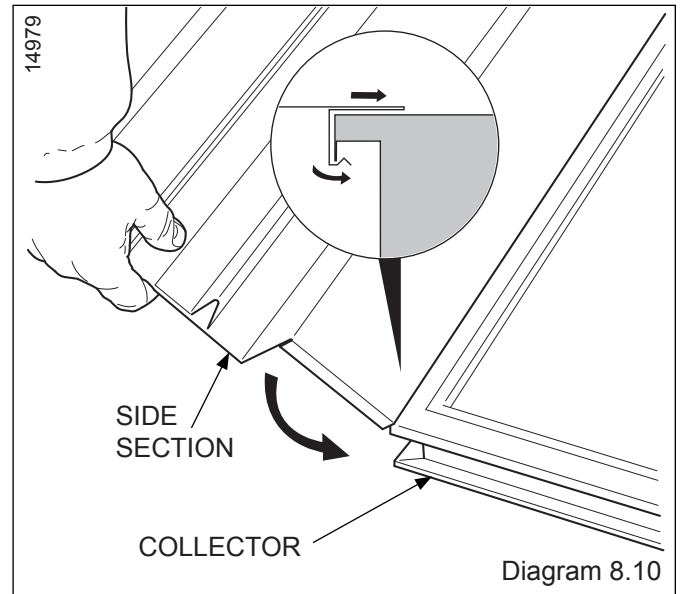
NOTE: After initial commissioning and according to the season, high outside temperature oscillations can cause condensation in the collector, this is normal.

Fit the side sections to the collector frame, ensure that they are pushed into place on the upper collector edge, see diagram 8.10.

Secure the side sections to the roof battens with the supplied clamps, screws (No. 2) and Torx bit supplied, see diagram 8.11.

Slide the intermediate plate from below and between the collectors, until it is flush with the lower collector edge, see diagram 8.12.

NOTE: If it's not possible to mount the intermediate plate from below (because of dormers, etc.), carefully bend up the intermediate plate (see inset diagram 8.12), slide the plate from the top between the collectors and bend it down again.



8 Two Collector Flashing Kit - 15° - 22°

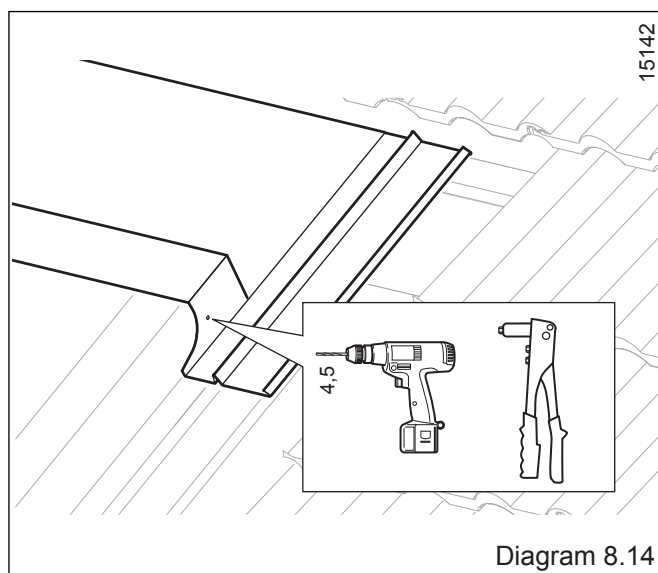
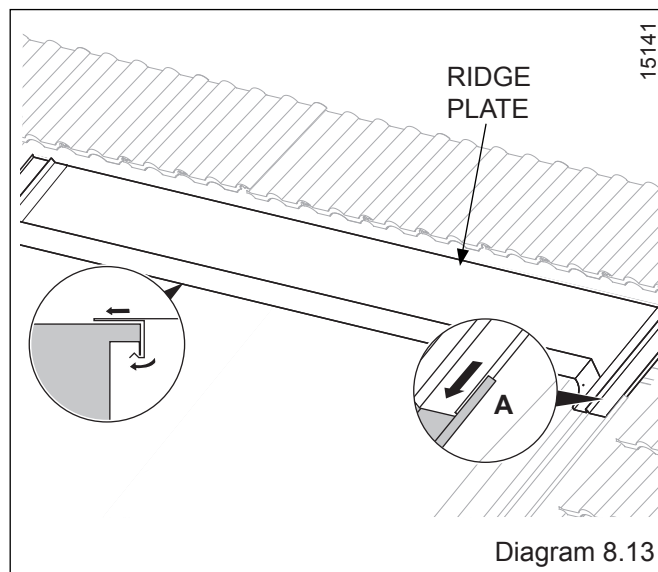
8.2 Ridge plate

Slide the ridge plate on both collectors.
Make sure that the ridge plate is above the side sections and slides in the corresponding rail (A), see diagram 8.13.

8.3 Riveting the frame

Drill a 4.5 mm diameter hole through the ridge plates on the marks on the left and right hand respectively, see diagram 8.14.

Rivet the ridge plate to the side section.



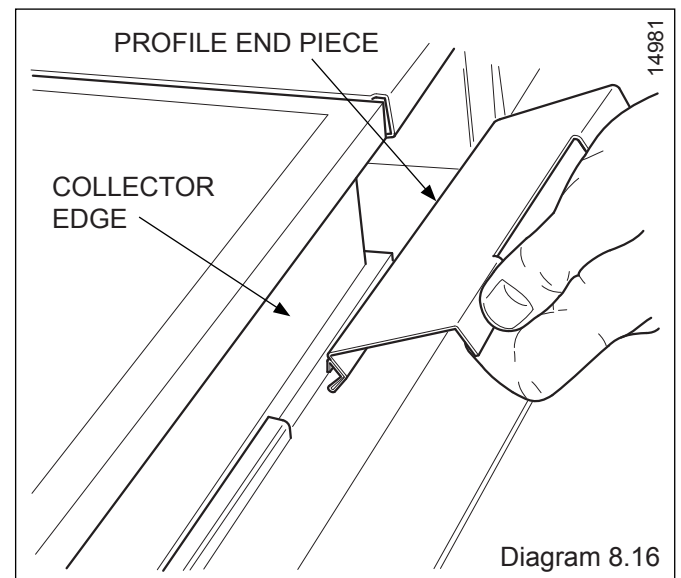
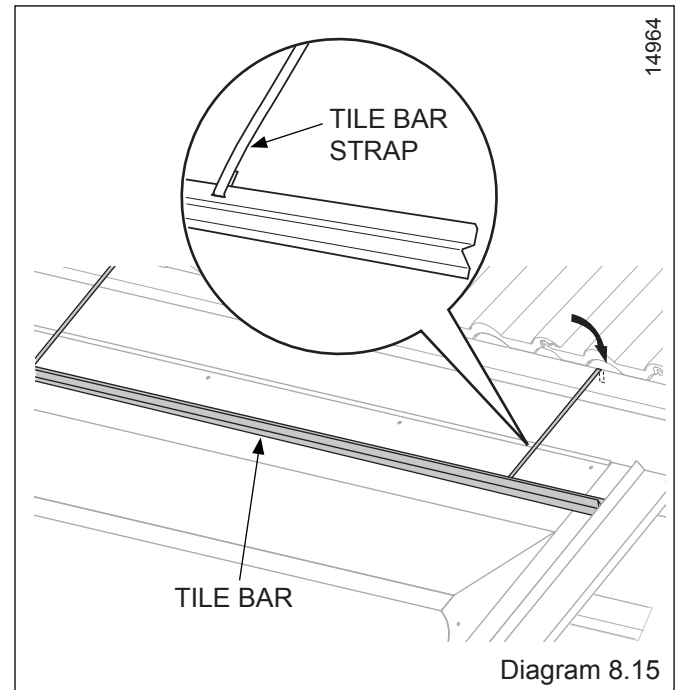
8 Two Collector Flashing Kit - 15° - 22°

8.4 Tile Bars

Place the tile bars on the ridge plates.
Bend the metal bands and hook the tile bars to the roof batten from the top, see diagram 8.15.

8.5 Covering the profile ends

Cover the side profile ends and the collector joints with the profile end pieces, see diagram 8.1 for profile end location. Fit the profile end pieces to the bottom of the collector edge and then tilt them up, until they lock in the upper collector edge, see diagram 8.16.



8 Two Collector Flashing Kit - 15° - 22°

8.6 Flexible flashing

NOTE: Ensure that the adhesive surface is dry and free from dust and grease.

Remove the protection film from the adhesive surface of the flexible protection.

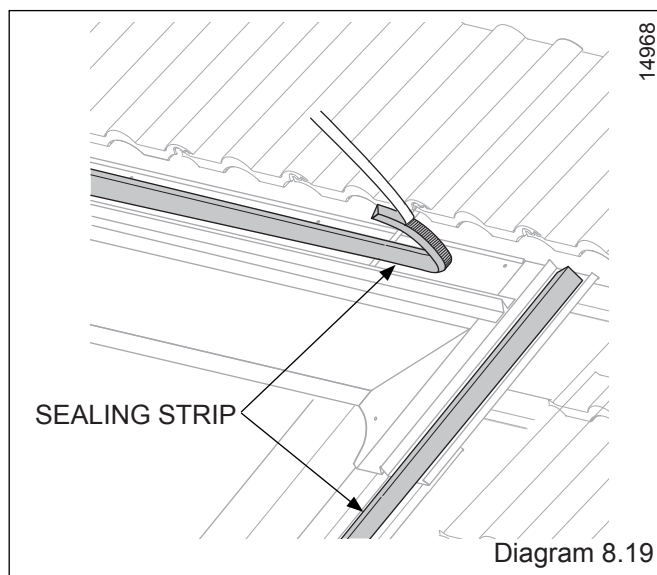
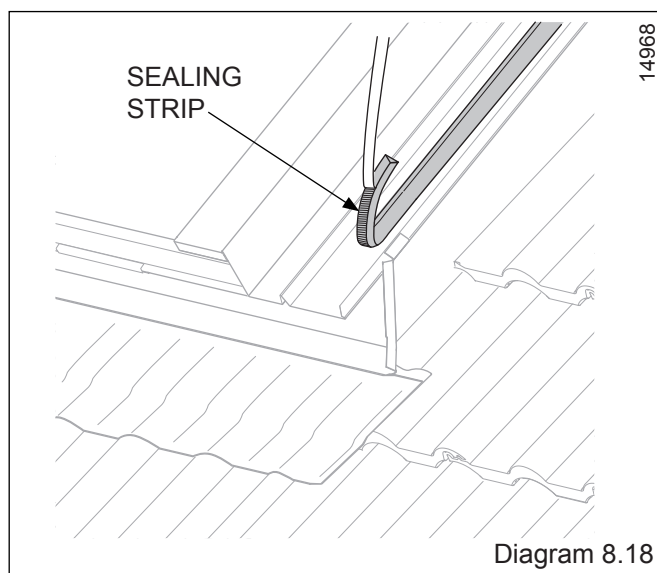
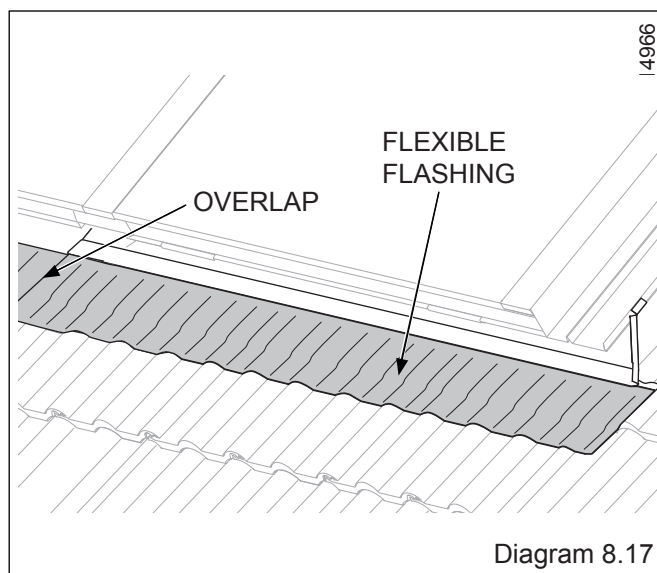
Contour the flexible protection to the tile shape, see diagram 8.17.

Stick the flexible flashing to parts that overlap.

8.7 Sealing strip

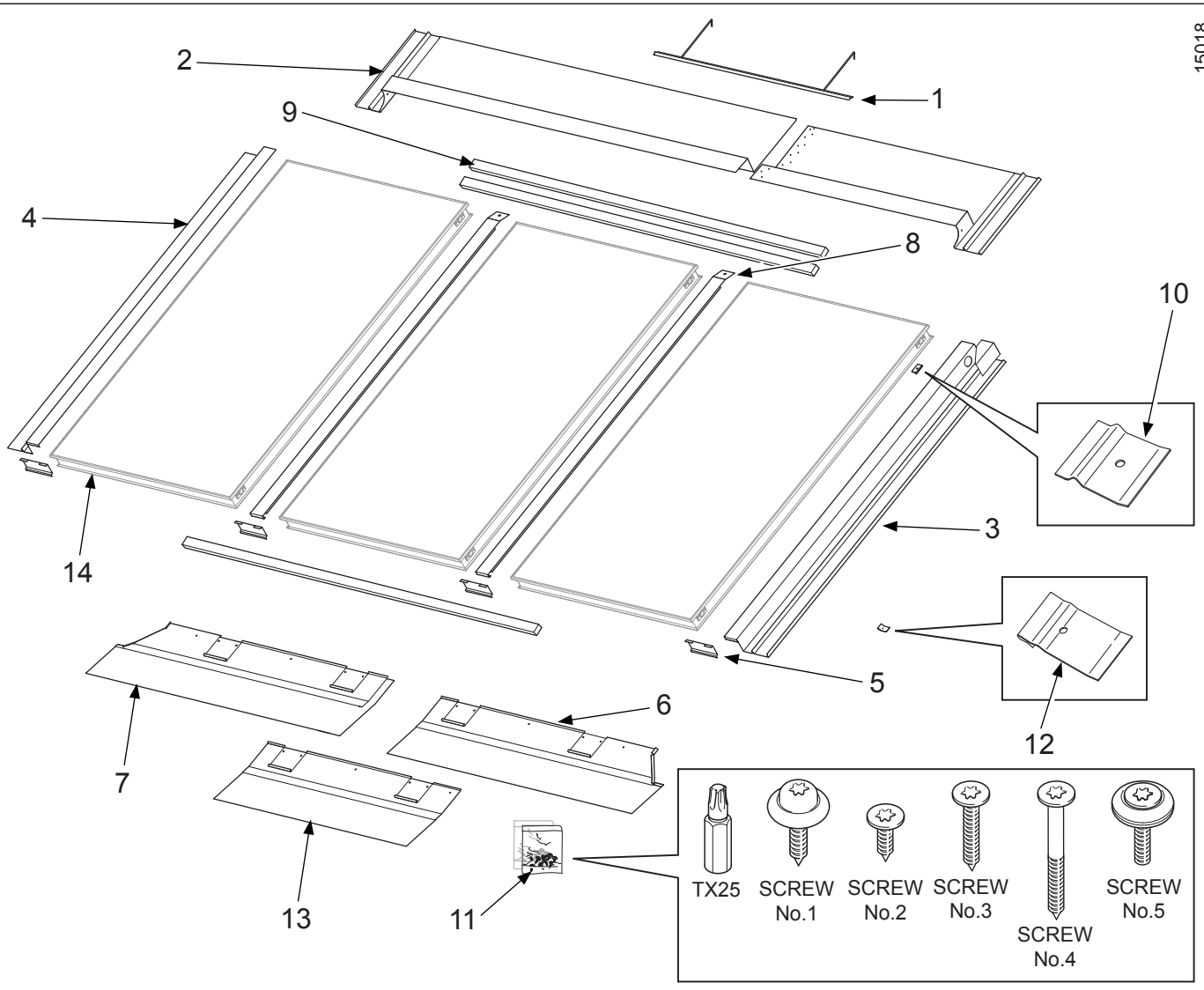
Attach the self adhesive sealing strip on the side sections of the collector frame as shown in diagram 8.18 and also on the ridge plates, see diagram 8.19.

If necessary carefully cut the sealing strip with a trimming knife.



9 Three Collector Flashing Kit - 15° - 22°

15018



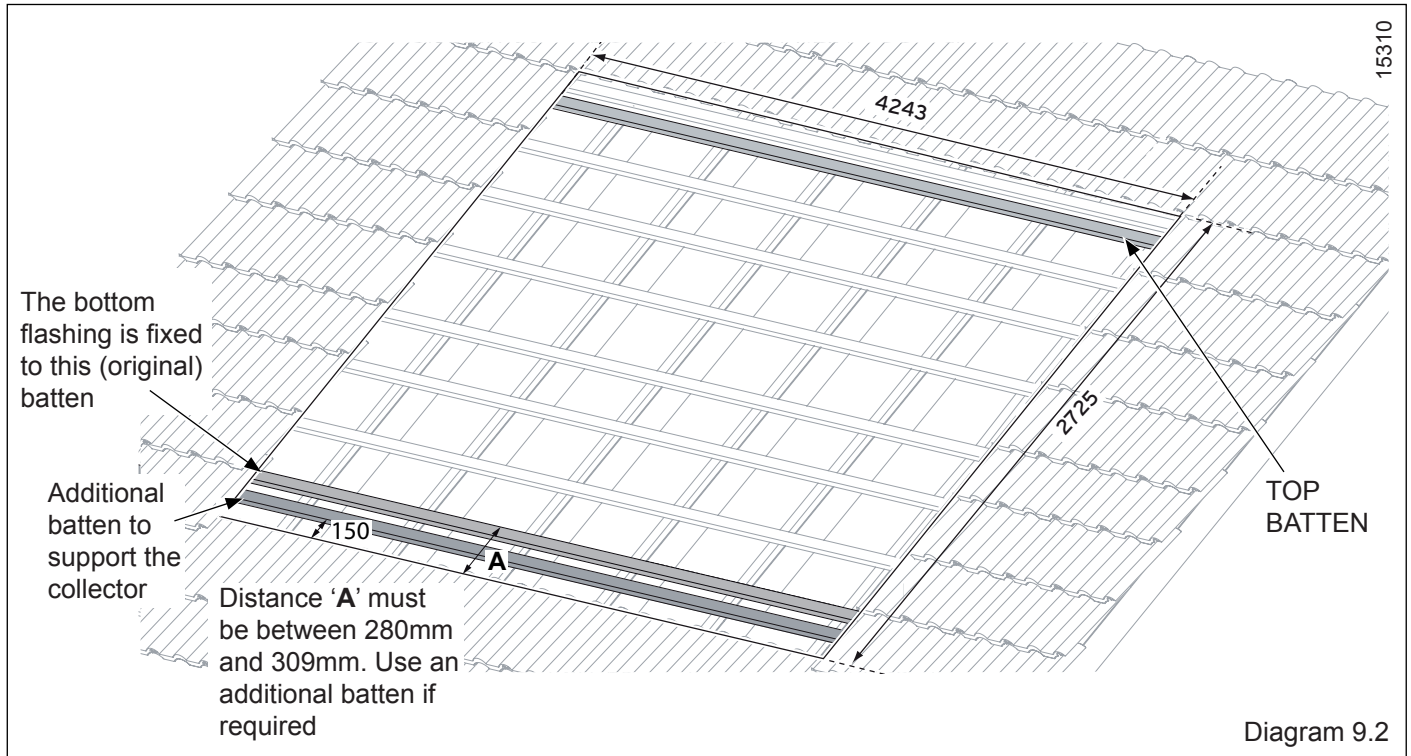
3 collector in-roof kit for roof angle 15-22° - Kit No. 0020059888		
Part	Description	No. OFF
1	Tile bar	3
2	Ridge plate 3 solar collector panels	1
3	Right side section	1
4	Left side section	1
5	Profile end	4
6	Right front section	1
7	Left front section	1
8	Intermediate plate	2
9	Roof batten	3
10	Inner clamp	12
11	Screws No.1	40
	Screws No.2	19
	Screws No.3	13
	Screws No.4	14
	Screws No.5	5
12	External clamp	10
13	Central front section	1
14	Solar collector panel	3

Diagram 9.1

9 Three Collector Flashing Kit - 15° - 22°

Roof Requirements

Refer to the diagram and table below and confirm the roof requirements before installation.



IMPORTANT

- Do not remove the protection film until the system is to be commissioned.
- With due regard to the complete weight of the solar collector system, (refer to technical data) ensure the roof rafters and battens are in good condition and have sufficient load carrying capacity and the battens are secure.
- If you are using the existing roof battens for fixing, ensure that they are secured at each rafter.

9.1 Installation

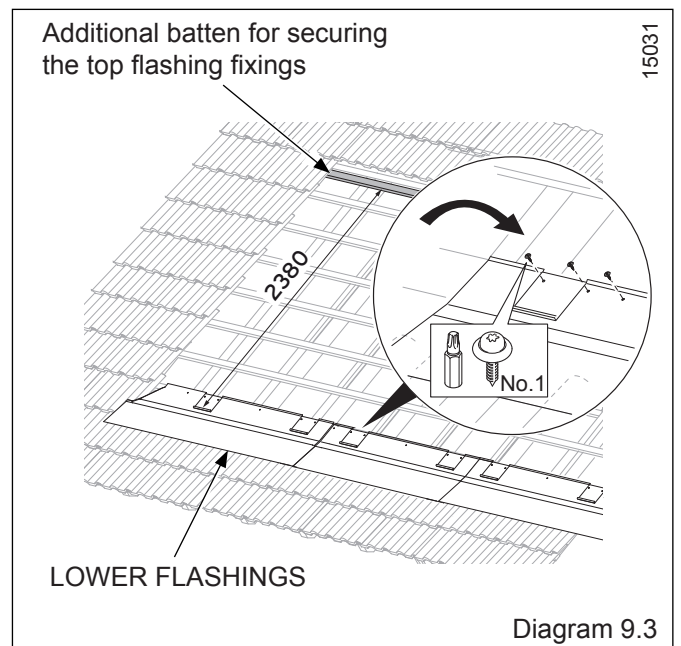
NOTE: Ensure adequate provision has been made for the flow and return pipes to enter/exit the roof space, dependant on their location. The preferred hydraulic scheme will determine their location, refer to Section 3.

Refer to diagram 9.1 and check the contents of the kits prior to commencing work on the roof.

Based on the dimensions, above, remove the roof covering.

Fix the lower flashing support batten, see diagram 9.2.

Position the left lower flashing onto the roof batten and secure with six securing screws (no.1), with Torx bit supplied, see diagram 9.3.



9 Three Collector Flashing Kit - 15° - 22°

Slide the right lower flashing up to the mark on the left lower flashing, see diagram 9.4. Screw the right lower flashing onto the roof batten and secure with six securing screws (no.1) and Torx bit supplied.

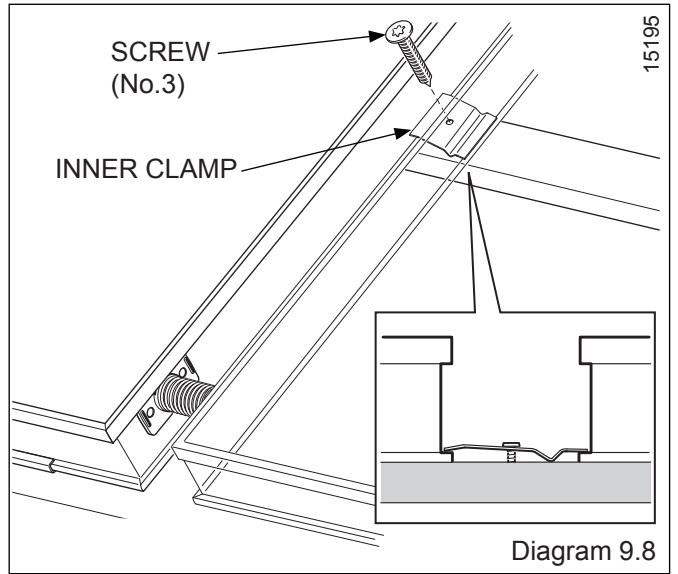
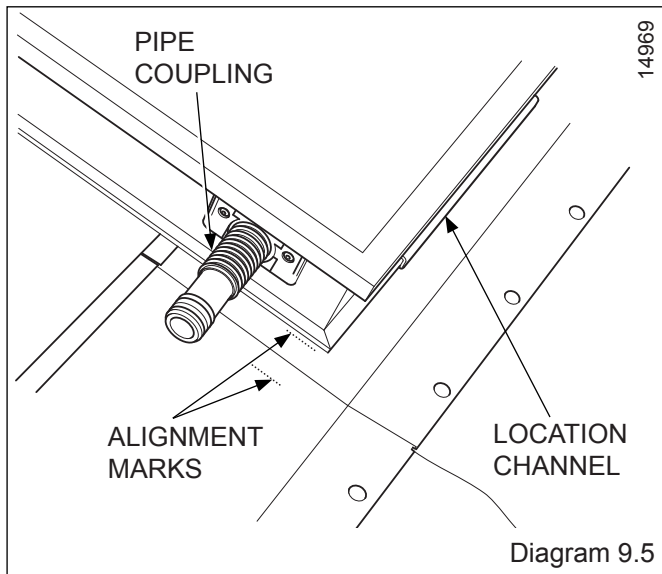
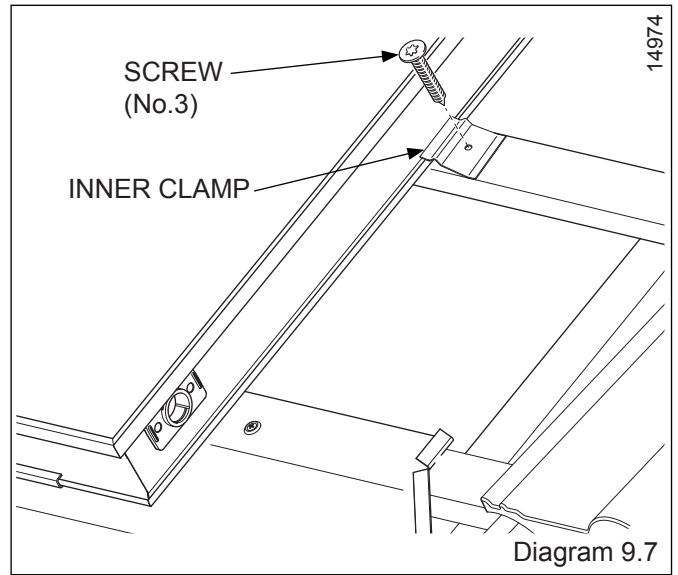
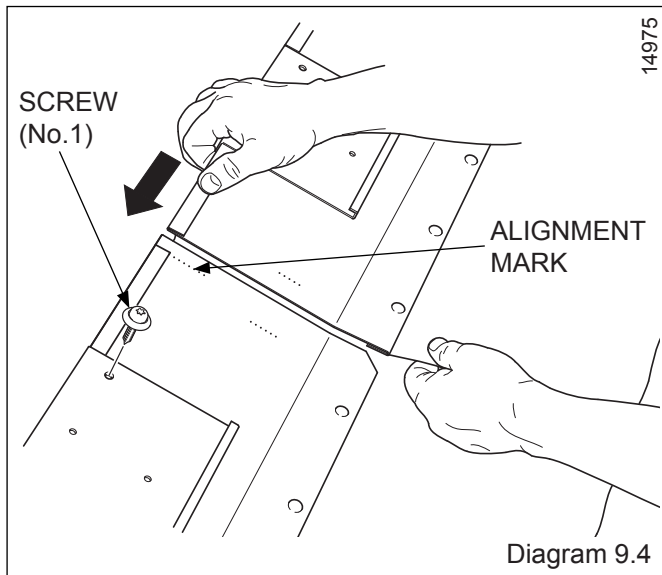
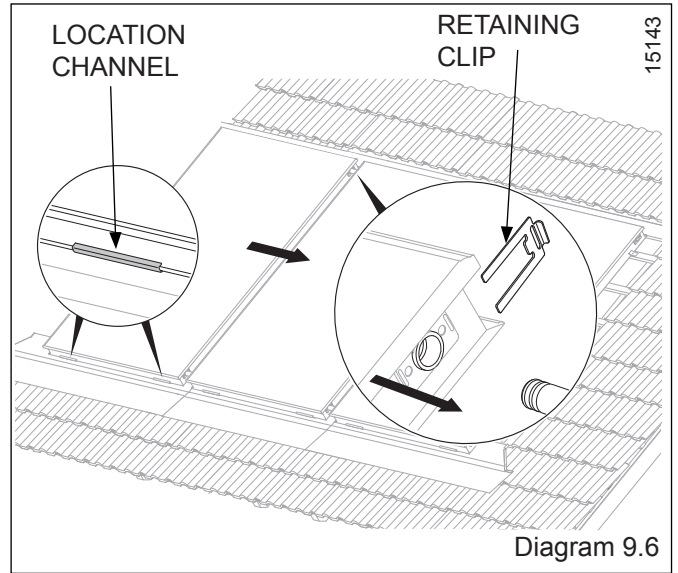
Position the collector panel protective side uppermost, (note that the design is symmetrical and there is no top or bottom) into the location channel as shown in diagram 9.5.

Insert the pipe couplings into the hydraulic socket connection. The pipe coupling should be inserted up to the stop and secured with its securing clip.

Place the next collector into its position as previously described, then push the collector, ensuring engagement of the pipe coupling, see diagram 9.6, and align with the marks on the flashing.

With the screws (No.3) and clamps and Torx bit supplied, secure to the roof battens, see diagram 9.7.

For securing between collectors the inner clamp should be secured as shown and grip both collector edges, see diagram 9.8.



9 Three Collector Flashing Kit - 15° - 22°

With regards to the hydraulic system you have chosen, insert and secure the hydraulic connections, see diagram 9.9.

Insert the collector sensor into the appropriate elbow (flow, top), see diagram 9.9. The collector sensor is packed with the Fluropro controller, part no. 0020054960.

Mount the plug with the bleed valve in the opposite top position.

Connect the collector Flow and Return to the system circuit.

Ensure that all of the following steps have been performed:-

- All the connections have been fixed with securing clips.
- All hydraulic connections laid properly.
- The collector sensor has been connected.
- The collectors are connected to a lightning protection device.
- A pressure test.
- All insulation is intact.

NOTE: After initial commissioning and according to the season, high outside temperature oscillations can cause condensation in the collector, this is normal.

Fit the side sections to the collector frame, ensure that they are pushed into place on the upper collector edge, see diagram 9.10.

Secure the side sections to the roof battens with the supplied clamps, screws (No. 2) and Torx bit supplied, see diagram 9.11.

Slide the intermediate plate from below and between the collectors, until it is flush with the lower collector edge, see diagram 9.12.

NOTE: If it's not possible to mount the intermediate plate from below (because of dormers, etc.), carefully bend up the intermediate plate (see inset diagram 9.12), slide the plate from the top between the collectors and bend it down again.

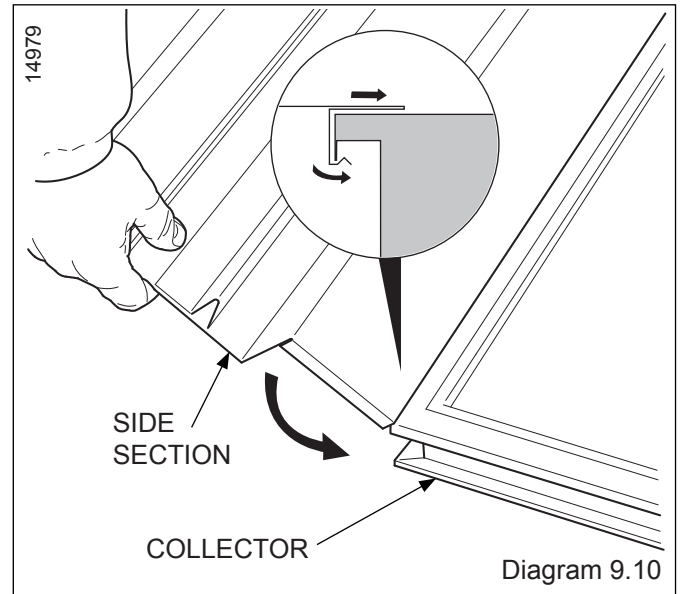


Diagram 9.10

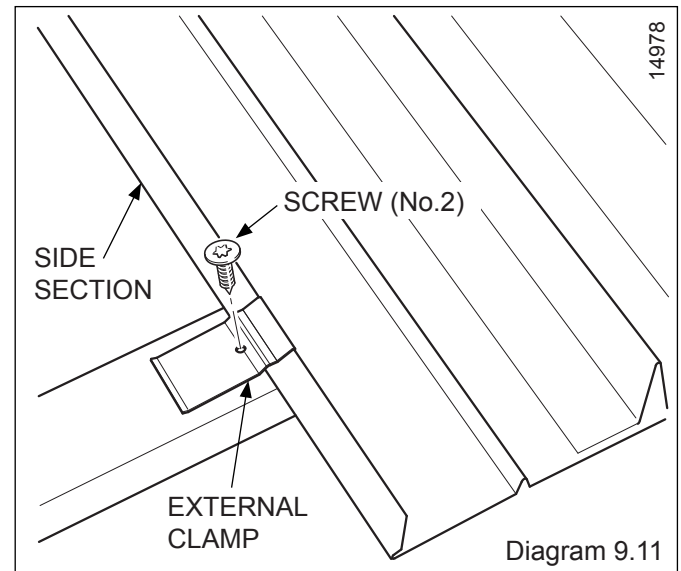


Diagram 9.11

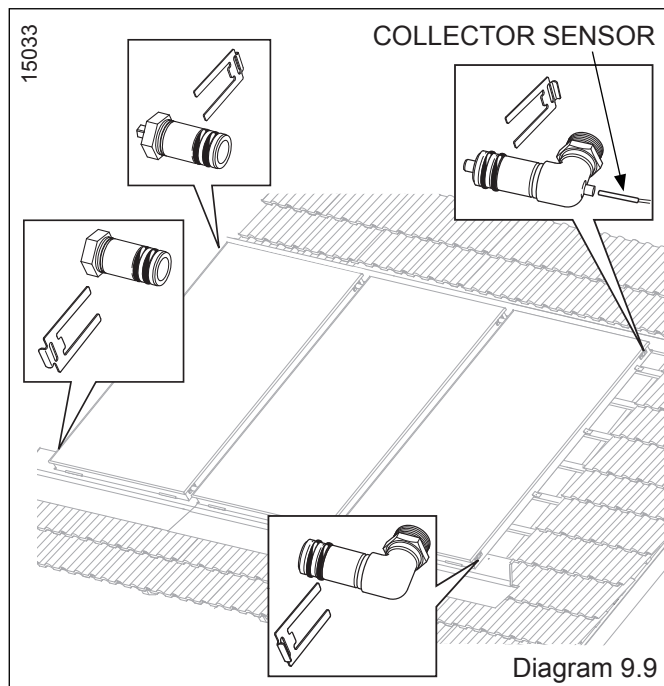


Diagram 9.9

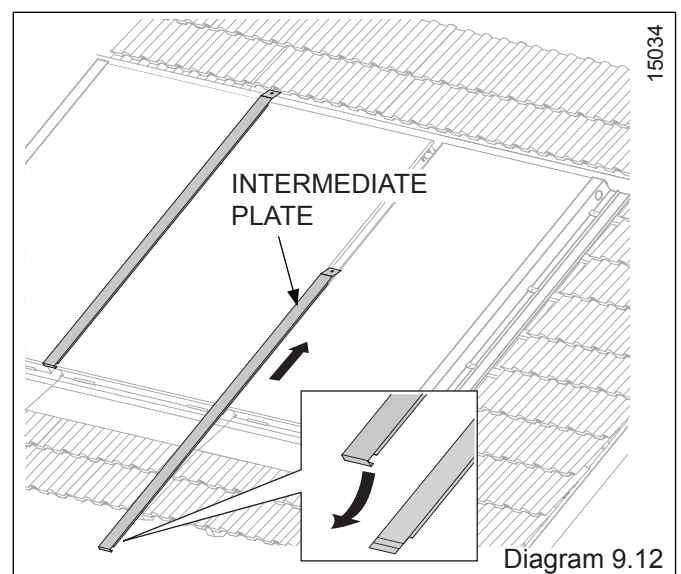


Diagram 9.12

9 Three Collector Flashing Kit - 15° - 22°

9.2 Ridge Plates

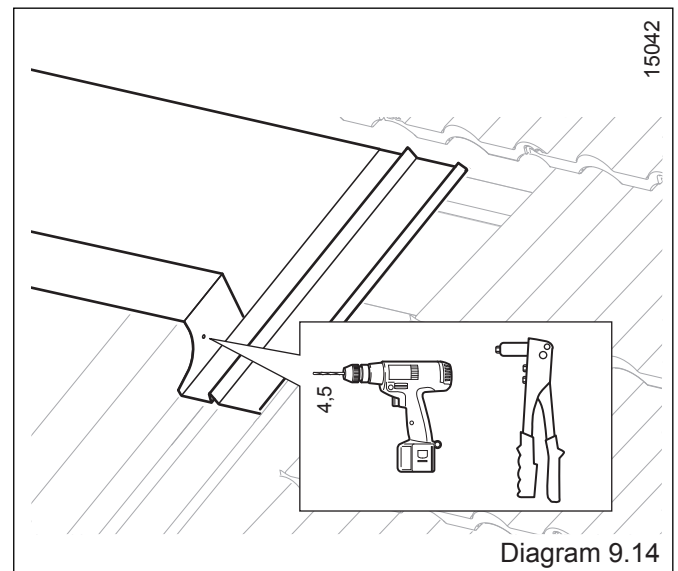
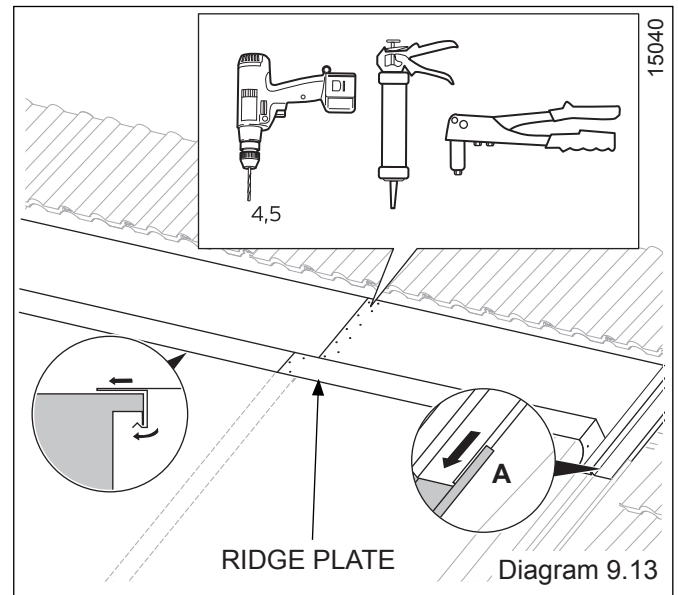
Refer to diagram 9.13 and drill holes in the left ridge plate passing through the holes in the right ridge plate. Apply silicone to the overlapping parts of the ridge plates. Rivet the ridge plates together. Slide the ridge plates on the collectors. Make sure that the ridge plates are above the side sections and slip in the corresponding rail (A).

Fix the ridge plates to the roof battens with the screws (No. 1) using the supplied Torx bit.

9.3 Riveting the frame

Drill a 4.5 mm diameter hole through the ridge plates on the marks on the left and right hand respectively, see diagram 9.14.

Rivet the ridge plate to the side section.



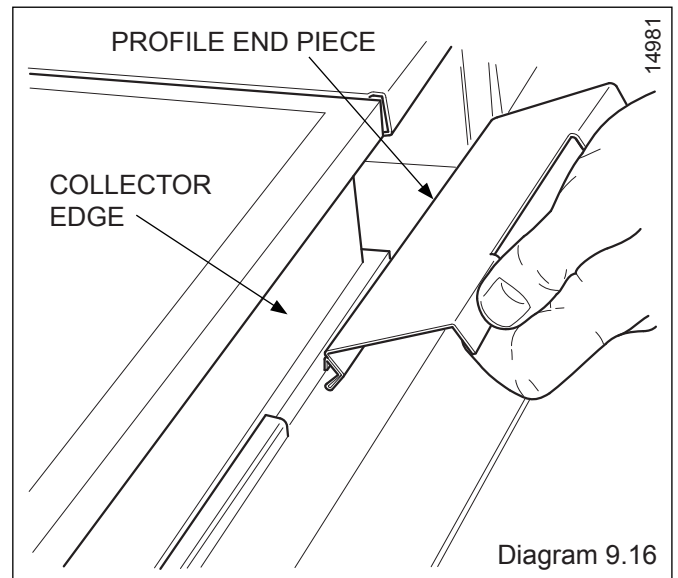
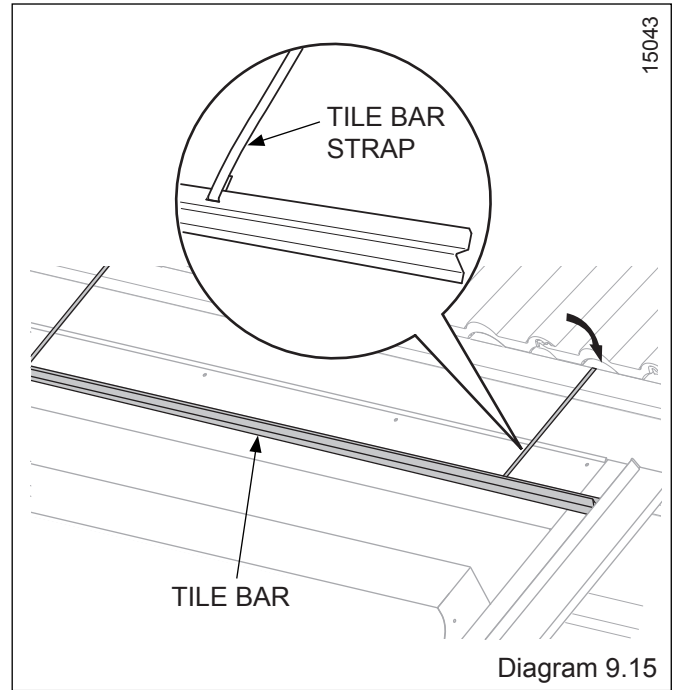
9 Three Collector Flashing Kit - 15° - 22°

9.4 Tile Bars

Place the tile bars on the ridge plates.
Bend the metal bands and hook the tile bars to the roof batten from the top, see diagram 9.15.

9.5 Covering the profile ends

Cover the side profile ends and the collector joints with the profile end pieces, see diagram 9.1 for profile end location.
Fit the profile end pieces to the bottom of the collector edge and then tilt them up, until they lock in the upper collector edge, see diagram 9.16.



9 Three Collector Flashing Kit - 15° - 22°

9.6 Flexible flashing

NOTE: Ensure that the adhesive surface is dry and free from dust and grease.

Remove the protection film from the adhesive surface of the flexible protection.

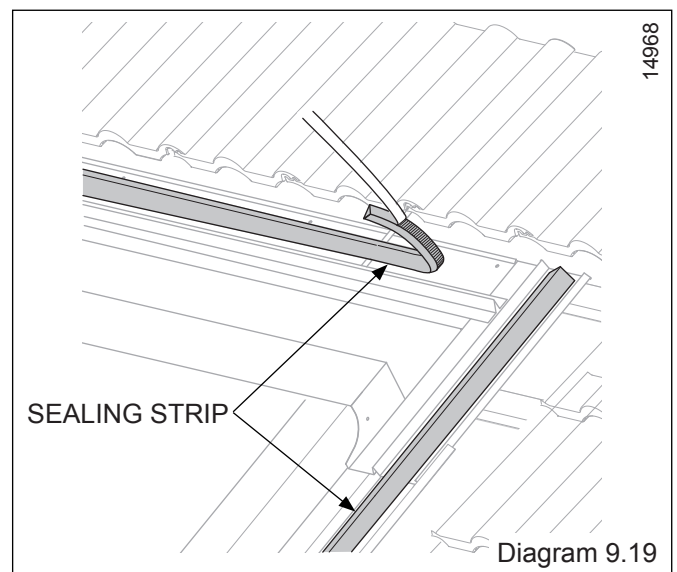
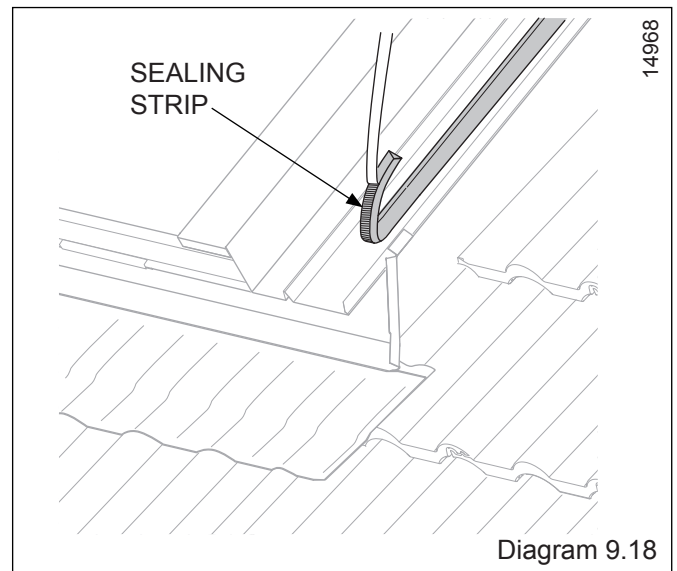
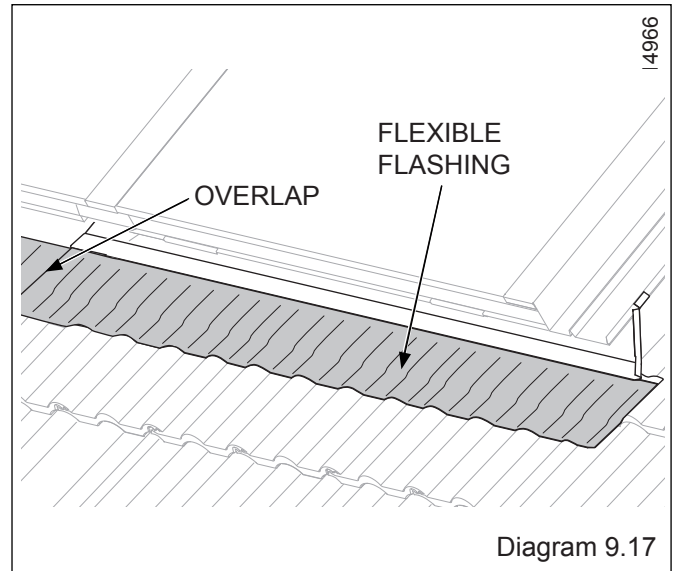
Contour the flexible flashing to the tile shape, see diagram 9.17.

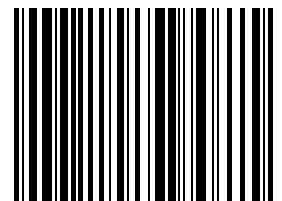
Stick the flexible flashing to parts that overlap.

9.7 Sealing strip

Attach the self adhesive sealing strip on the side sections of the collector frame as shown in diagram 9.18 and also on the ridge plates, see diagram 9.19.

If necessary carefully cut the sealing strip with a trimming knife.





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*Because of our constant endeavour for improvement, details
may vary slightly from those shown in these instructions.*

Glow-worm, Nottingham Road, Belper, Derbyshire. DE56 1JT