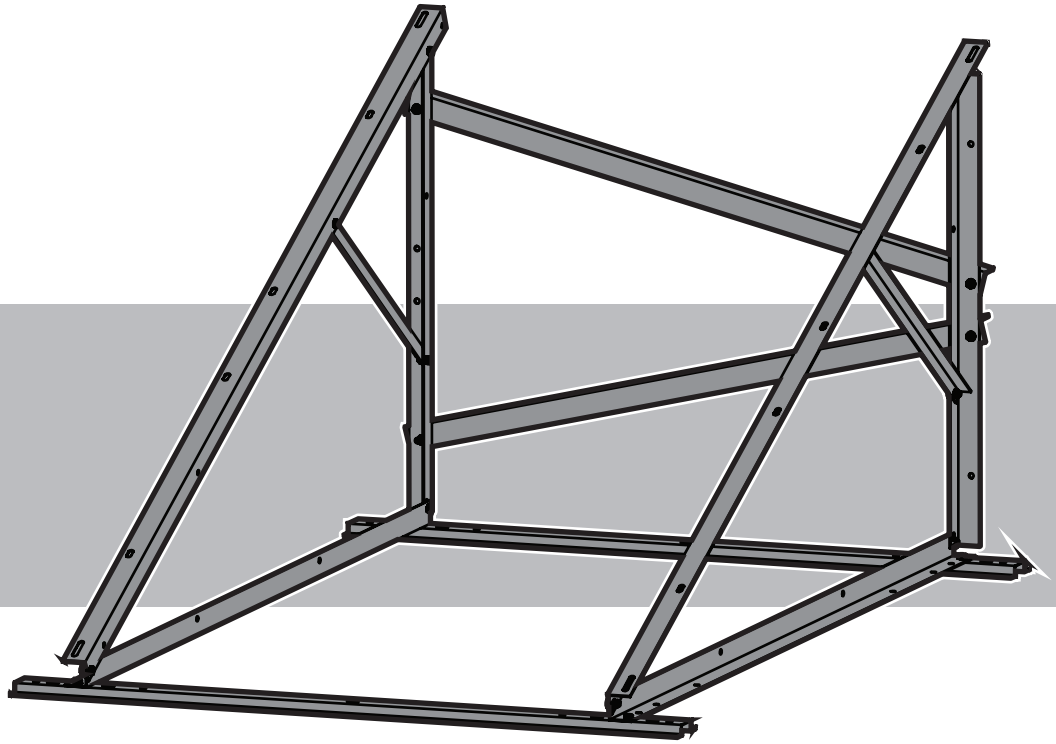
Rinnai

Installation Manual
Roof Frames for Use with Rinnai Solar Hot Water Systems



This system shall be installed in accordance with:

- **Manufacturer's Installation Instructions**
- **Current AS/NZS 3500**
- **All applicable local rules and regulations including local OH&S requirements**

This system must be installed, commissioned and serviced by an Authorised Person.

Issue 3

TABLE OF CONTENTS

WARNINGS & IMPORTANT INFORMATION

SAFETY AND REGULATORY INFORMATION

Installation and commissioning must be performed by authorised persons.

Solar system frames must be installed in accordance with these instructions and all regulatory requirements which exist in your area including those in relation to manual lifting, working at heights and on roofs.

Australian State and Territories have a principal Occupational Health and Safety (OH&S) Act which contains requirements relating to the handling of large, bulky or awkward items and the prevention of falls from elevated surfaces. Persons installing solar hot water systems must be aware of their responsibilities and be adequately trained and qualified, in accordance with local OH&S requirements.

LOCATION – GENERAL INFORMATION

Refer to the Operation / Installation Manual supplied with the hot water system for information on the location and orientation of the hot water system components.

FRAME TYPES

Rinnai Australia has a variety of frames available to enable solar hot water systems to be installed to suit different locations:

Split Systems (including commercial systems)

- Split System Flat Roof Frames – For use on flat roofs and where the roof pitch is too low. This frame allows the collectors to be installed at a suitable inclination.

  NOT SUITABLE FOR USE ON BUILDINGS OVER 10 METRES TALL.
  NOT SUITABLE FOR USE IN CYCLONE AREAS.

- Hi Rise Kits in Conjunction with Split System Flat Roof Frames

  For buildings higher than 10 metres the specifications for securing solar panel frames to the building structure need to be determined on a case by case basis for each building by a person qualified to do so in accordance with the Building Code of Australia (BCA). Such specifications relate to the type of fastenings, the number of fastenings and their embedment into the building structure. They are determined from factors including the geographical location and topography, the prevailing wind conditions, building dimensions, rooftop form and structural materials, and the intended location of the solar panels relative to building internal, edge and corner zones. The BCA references AS1170.2 “Structural Design Actions Part 2: Wind Actions”, AS3600 “Concrete Structures” and AS4100 “Steel Structures” in relation to these specifications.

  A solution may be provided using either kit DDHRKIT2 (2 collector) or DDHRKIT3 (3 collector), in accordance with the instructions in the Rinnai document “High Rise Roof Mounting Frame Installation Instructions (Part Number 15401103)

  NOT SUITABLE FOR USE IN CYCLONE AREAS

- Side and Reverse Split System Frames – These comprise of a split system flat roof frame and a side/ reverse pitch kit. They are used when the collectors must be installed on a roof not facing in the required direction. For example, a reverse frame can be used on a South facing roof and a side pitch frame on an East or West facing roof to enable the system to be oriented to the North.

  NOT SUITABLE FOR USE ON BUILDINGS OVER 10 METRES TALL.
  NOT SUITABLE FOR USE IN CYCLONE AREAS.

- Split System Cyclone Frames – Information on these systems is included in the separate Cyclone Roof Frame Manual.

  NOT SUITABLE FOR USE ON BUILDINGS OVER 10 METRES TALL.

Close Coupled Systems

- Close Coupled Flat Roof Frames – For use on flat roofs or where the roof pitch is too low. This frame allows the system to be installed at a suitable inclination.

  NOT SUITABLE FOR USE ON BUILDINGS OVER 10 METRES TALL.
  NOT SUITABLE FOR USE IN CYCLONE AREAS.

- Side and Reverse Close Coupled Frames – These comprise of a close coupled flat roof frame and a side/ reverse pitch kit. They are used when the system must be installed on a roof not facing within the required range. I.e. a reverse frame can be used on a South facing roof and a side pitch frame on an East or West facing roof to enable the system to be oriented to the North.

  NOT SUITABLE FOR USE ON BUILDINGS OVER 10 METRES TALL.
  NOT SUITABLE FOR USE IN CYCLONE AREAS.

- Close Coupled Cyclone Frames – Information on these systems is included in the separate Cyclone Roof Frame Manual

CLOSE COUPLED FLAT ROOF FRAMES

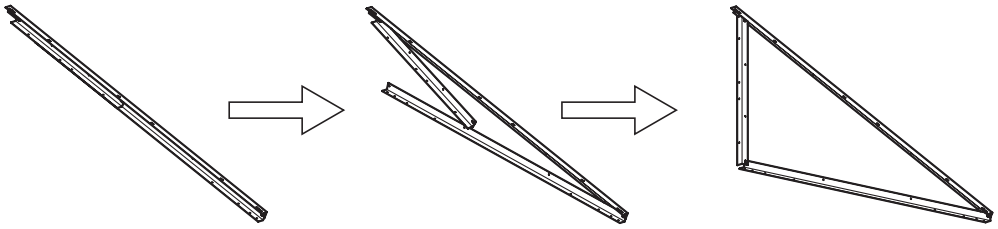
WARNING

This frame is not suitable for use in cyclonic areas.

This frame is not suitable for use on buildings over 10 m height.

ASSEMBLY AND INSTALLATION INSTRUCTIONS

- Assemble the flat roof frame as shown in the relevant diagram of pages 6-8, using the nuts, bolts and washers provided. To simplify the installation, the triangular frame sections are partially assembled as shown below.



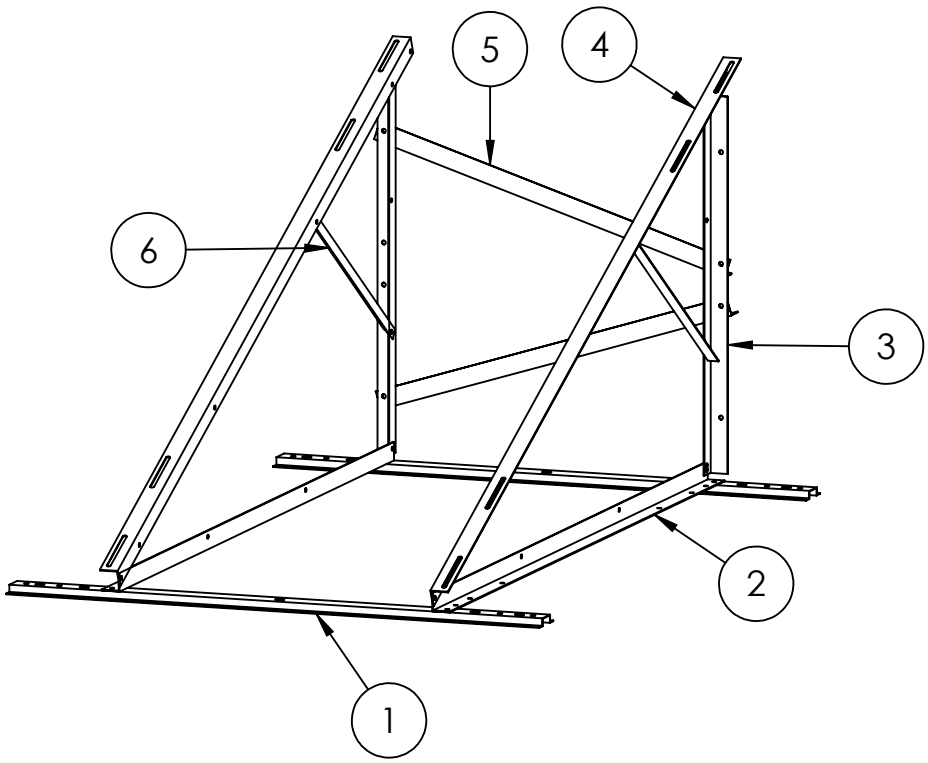
- The support rail lower is attached to the threaded inserts contained in the roof mounting rail.
- Position the frame on the roof ensuring that the roof mounting rails are on suitable load bearing surfaces. If needed adjust the spacing between the roof mounting rails by following the instructions on pages 10 and 11.
- Secure the frame to the roof in accordance with local building authority requirements using a suitable fastening system.
- Complete installation as described in the “Close Coupled Operation / Installation Manual”. Bolts, nuts and washers are supplied with the flat roof frame kit to attach the collector rails and cylinder to the frame.

COMPONENTS – 180 OR 200 LITRE CC CYLINDER WITH 1 OR 2 COLLECTORS.

WARNING

This frame is not suitable for use in cyclonic areas.

This frame is not suitable for use on buildings over 10 m height.



Kit RF180CC12A

Item number	Qty	Description	Part Number
1	2	Roof Mounting Rail - Short	14201097
2	2	Support Rail - Lower	14201191
3	2	Support Leg - Rear	14201150
4	2	Support Rail - Upper	14201200
5	2	Cross Brace – Short (1035)	14201090
6	2	Support Strut - Side	14201153
-	26	3/8 Bolt	22601066
-	18	3/8 Nut	16801056
-	4	3/8 Lock Nut *	16801083
-	26	3/8 Washer	17401058
-	2	Flexi pipe Clip	39601074
-	1	Installation Manual	15401013

* For fastening collector mounting rail to frame

Items 2,3,4 and some of the nuts, bolts and washers come pre-assembled as described on page 5.

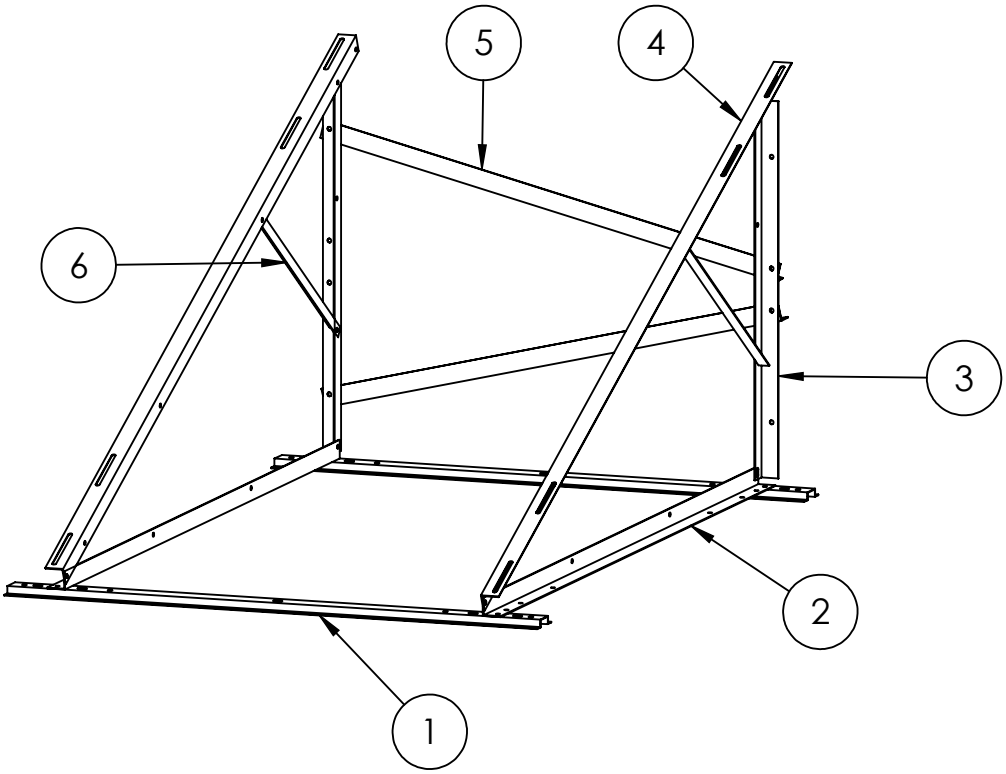
Weight of Frame: 35 kg

COMPONENTS – 330 LITRE CC CYLINDER WITH 2 COLLECTORS.

WARNING

This frame is not suitable for use in cyclonic areas.

This frame is not suitable for use on buildings over 10 m height



Kit RF330CC02A

Item number	Qty	Description	Part Number
1	2	Roof Mounting Rail - Short	14201097
2	2	Support Rail - Lower	14201191
3	2	Support Leg - Rear	14201150
4	2	Support Rail - Upper	14201200
5	2	Cross Brace - long (1320)	14201089
6	2	Support Strut - Side	14201153
-	26	3/8 Bolt	22601066
-	18	3/8 Nut	16801056
-	4	3/8 Lock Nut *	16801083
-	26	3/8 Washer	17401058
-	2	Flexi pipe Clip	39601074
-	1	Installation Manual	15401013

* For fastening collector mounting rail to frame

Items 2,3,4 and some of the nuts, bolts and washers come pre-assembled as described on page 5.

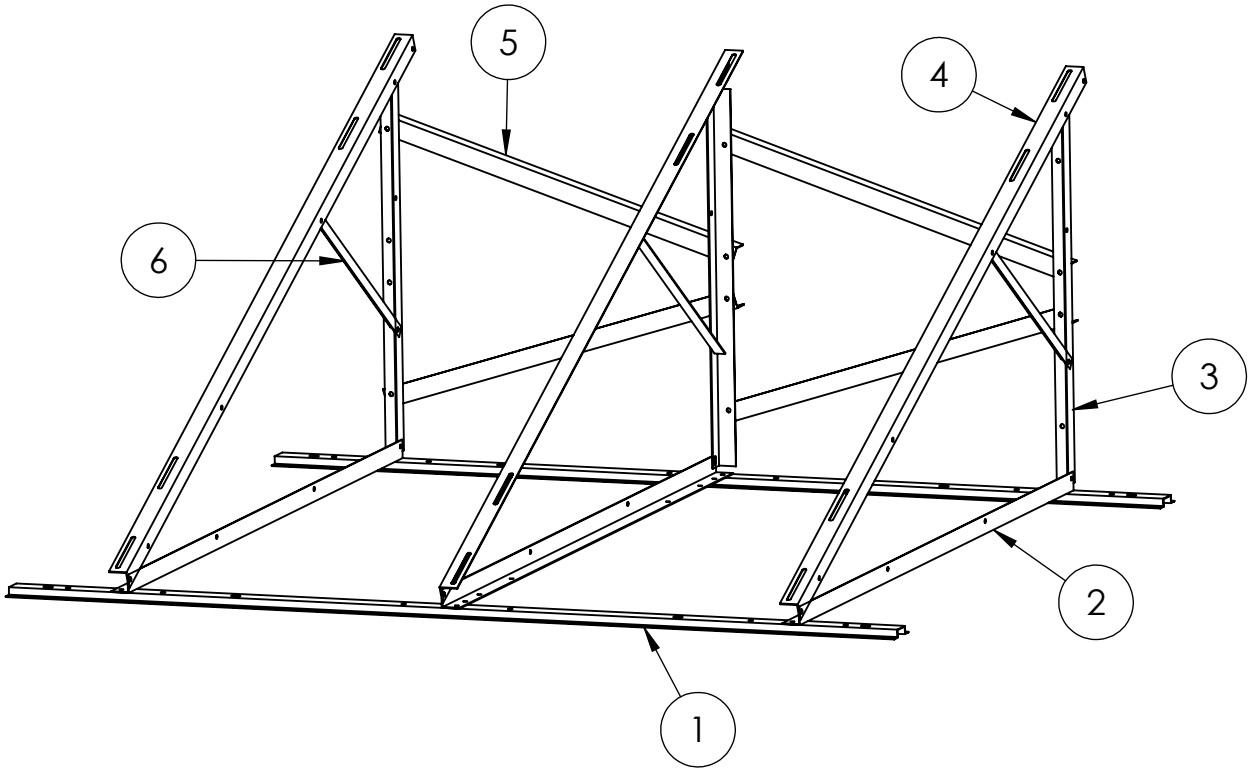
Weight of Frame: 36 kg

COMPONENTS – 330 LITRE CC CYLINDER WITH 3 COLLECTORS.

WARNING

This frame is not suitable for use in cyclonic areas.

This frame is not suitable for use on buildings over 10 m height



Kit RF330CC03A

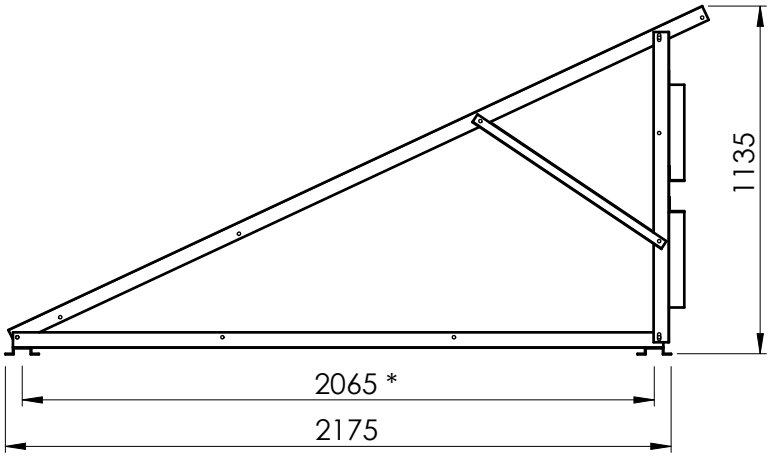
Item number	Qty	Description	Part Number	Packed in Box Number
1	2	Roof Mounting Rail - Long	14201098	2
2	3	Support Rail - Lower	14201191	1
3	3	Support Leg - Rear	14201150	1
4	3	Support Rail - Upper	14201200	1
5	4	Cross Brace – Short (1035)	14201090	2
6	3	Support Strut - Side	14201153	2
-	41	3/8 Bolt	22601066	2
-	29	3/8 Nut	16801056	2
-	6	3/8 Lock Nut *	16801083	2
-	41	3/8 Washer	17401058	2
-	2	Flexi pipe Clip	39601074	2
-	1	Installation Manual	15401013	2

* For fastening collector mounting rail to frame

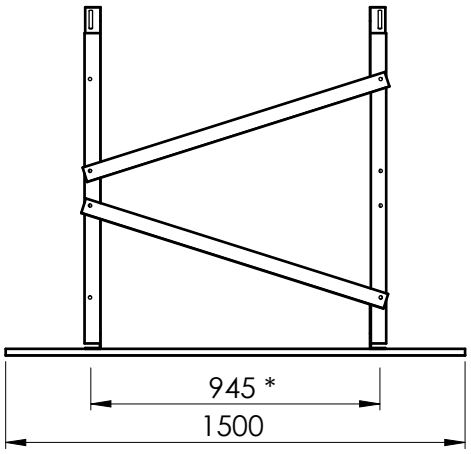
Items 2,3,4 and some of the nuts, bolts and washers come pre-assembled as described on page 5.

Weight of Frame: 55 kg

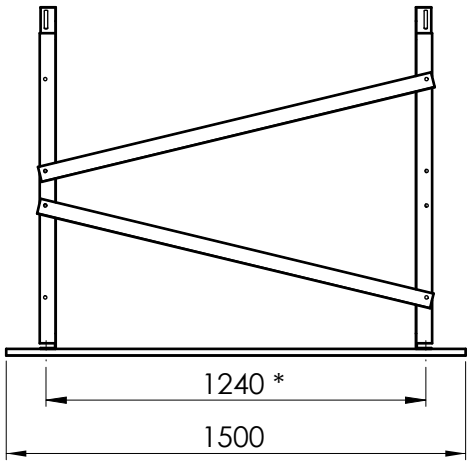
DIMENSIONS



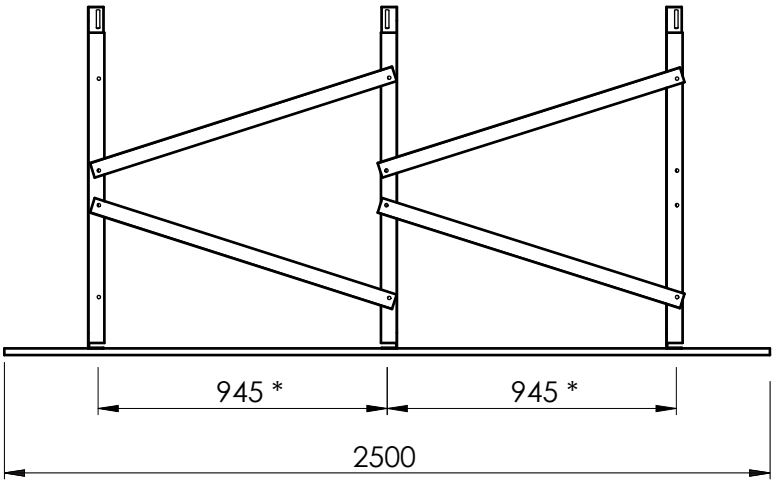
Side Dimensions - Kits RF180CC12A, RFCC3302A, RF330CCT03A



Rear Dimensions - Kit RF180CC12A



Rear Dimensions - Kit RF330CC02A



Rear Dimensions - Kit RF330CC03A

INSTALLATION OPTIONS

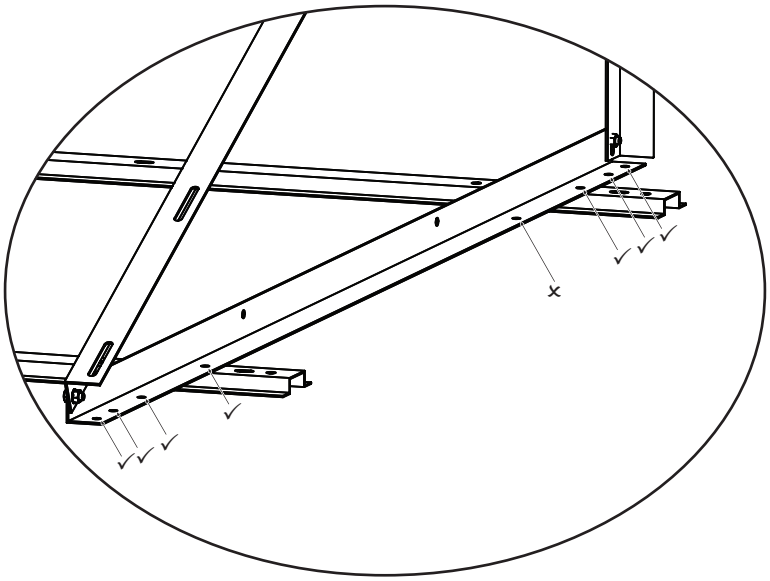
The dimensions shown on the previous page are the standard dimensions used, however the spacing between the roof mounting rails can be reduced by utilising alternate holes in the support bar lower. (See below)

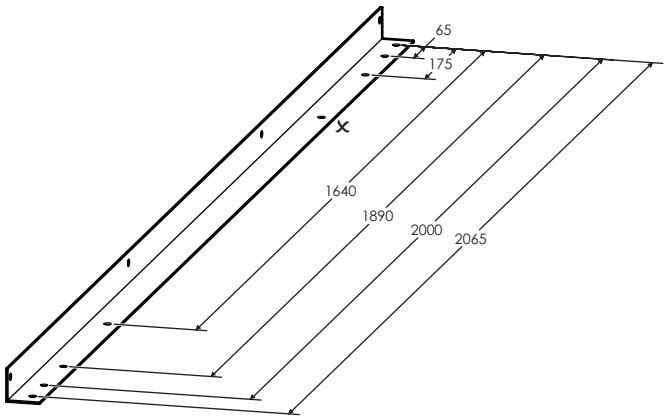
For optimum frame stability is preferable to have the maximum spacing.

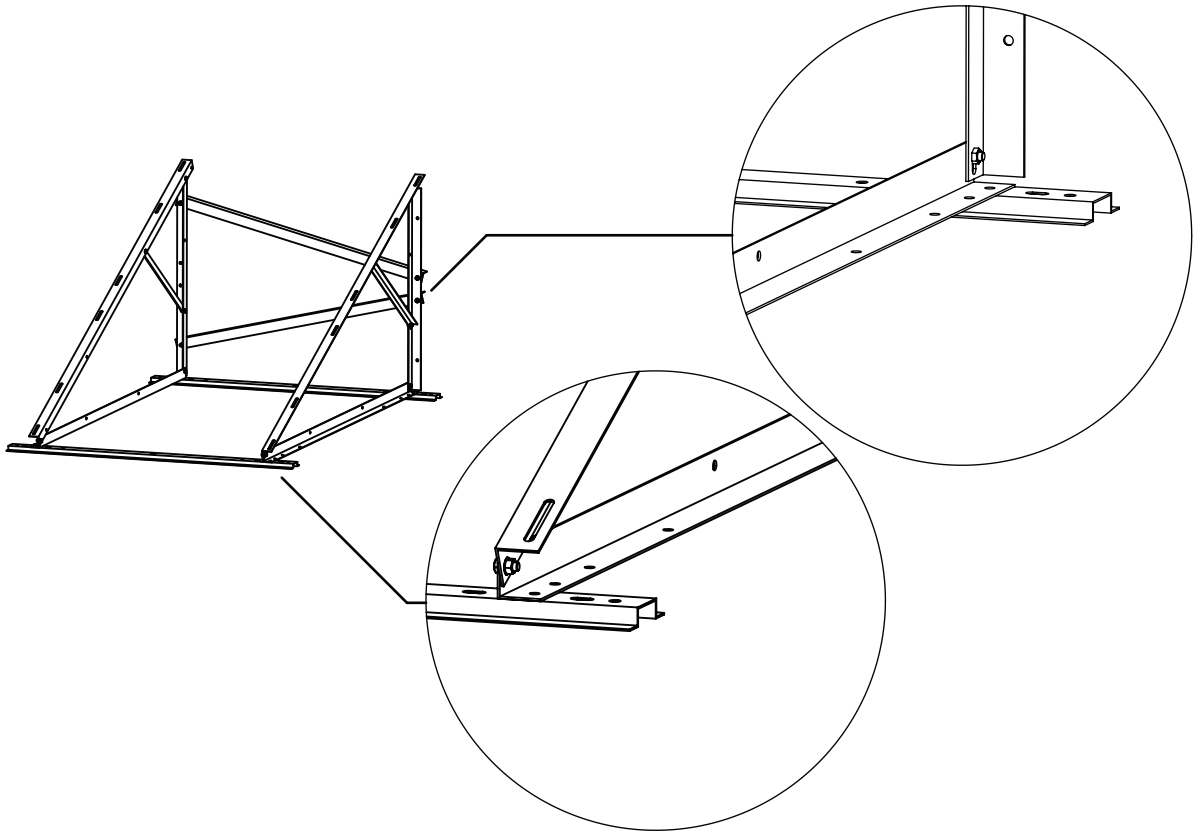
The hole centre dimensions are shown in the diagram below.

The hole marked with an x in the diagram below is not suitable for use with a close coupled solar hot water system as the cylinder will not be adequately supported.

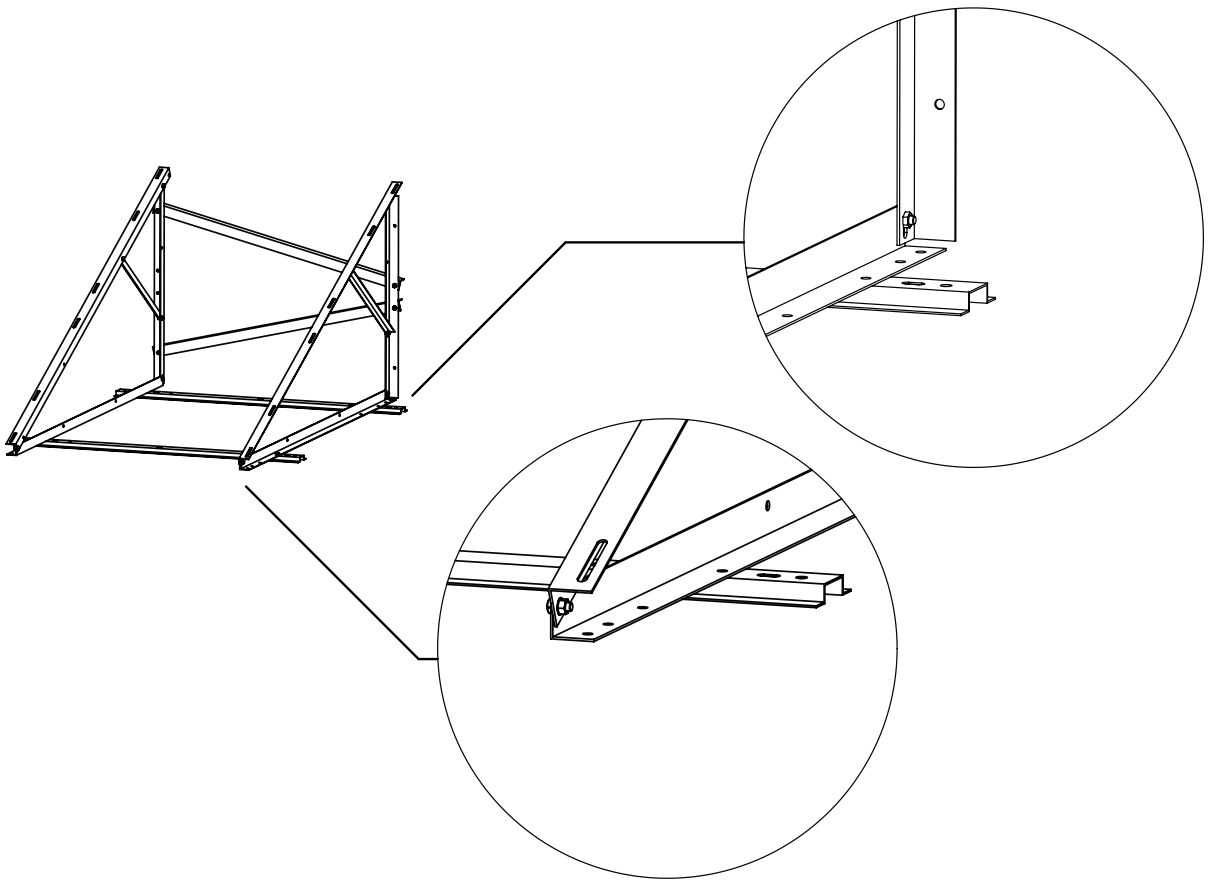
Detailed views of the maximum and minimum spacing are shown on page 11







Close Coupled Flat Roof Frame with Roof Mounting Rails at Maximum Spacing (2065mm) - Preferred Option



Close Coupled Flat Roof Frame with Roof Mounting Rails at Minimum Spacing (1465mm)

SPLIT SYSTEM FLAT ROOF FRAMES

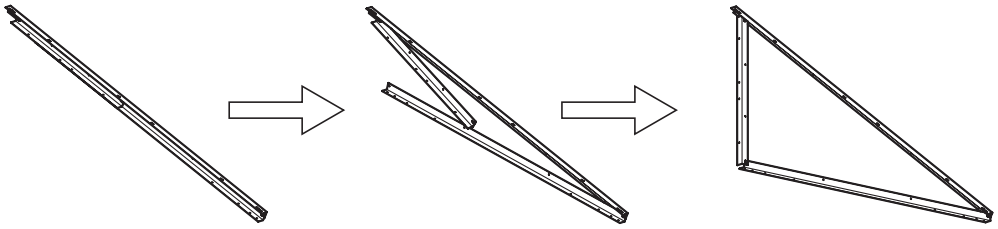
WARNING

This frame is not suitable for use in cyclonic areas.

This frame is not suitable for use on buildings over 10 m height

ASSEMBLY AND INSTALLATION INSTRUCTIONS

- Assemble the flat roof frame as shown in the relevant diagram of pages 6 - 8, using the nuts, bolts and washers provided. To simplify the installation, the triangular frame sections are partially assembled as shown below.



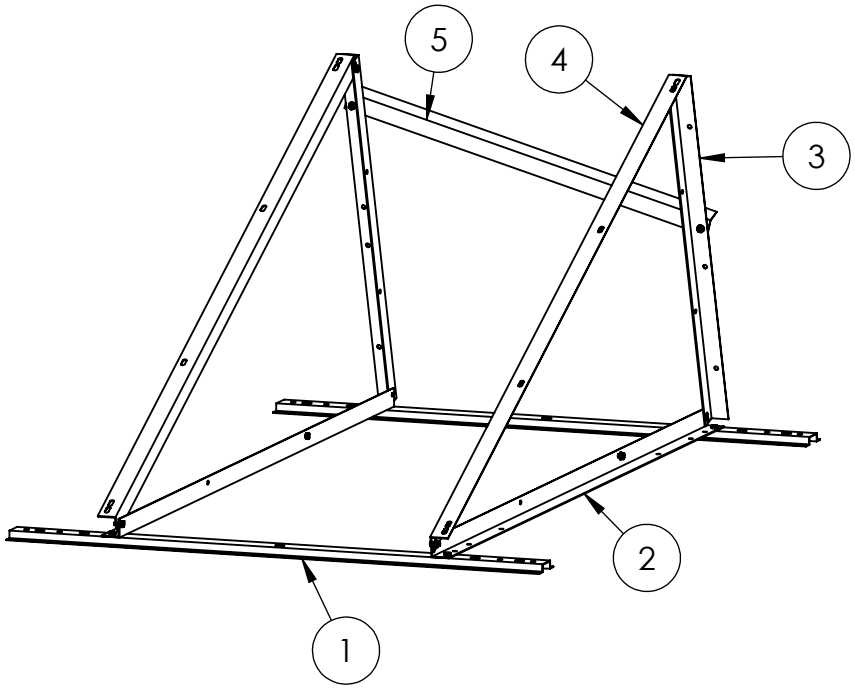
- The support rail lower is attached to the threaded inserts contained in the roof mounting rail.
- Position the frame on the roof ensuring that the roof mounting rails are on suitable load bearing surfaces. If needed adjust the spacing between the roof mounting rails by following the instructions on pages 14 and 15.
- Secure the frame to the roof in accordance with local building authority requirements using a suitable fastening system.
- Complete installation as described in the “Split System Operation / Installation Manual” or the “Commercial Solar Preheat System Operation / Installation Manual”. Bolts, nuts and washers are supplied with the flat roof frame kit to attach the collector rails to the frame.

COMPONENTS – 1 COLLECTOR SPLIT SYSTEM FRAME.

WARNING

This frame is not suitable for use in cyclonic areas.

This frame is not suitable for use on buildings over 10 m height



Kit 33202036

Item number	Qty	Description	Part Number
1	2	Roof Mounting Rail - Short	14201097
2	2	Support Rail - Lower	14201191
3	2	Support Leg - Rear	14201150
4	2	Support Rail - Upper	14201142
5	1	Cross Brace – Short (1035)	14201090
-	16	3/8 Bolt	22601066
-	8	3/8 Nut	16801056
-	4	3/8 Lock Nut *	16801083
-	16	3/8 Washer	17401058
-	1	Installation Manual	15401013

* For fastening collector mounting rail to frame

Items 2,3,4 and some of the nuts, bolts and washers come preassembled as described on page 12.

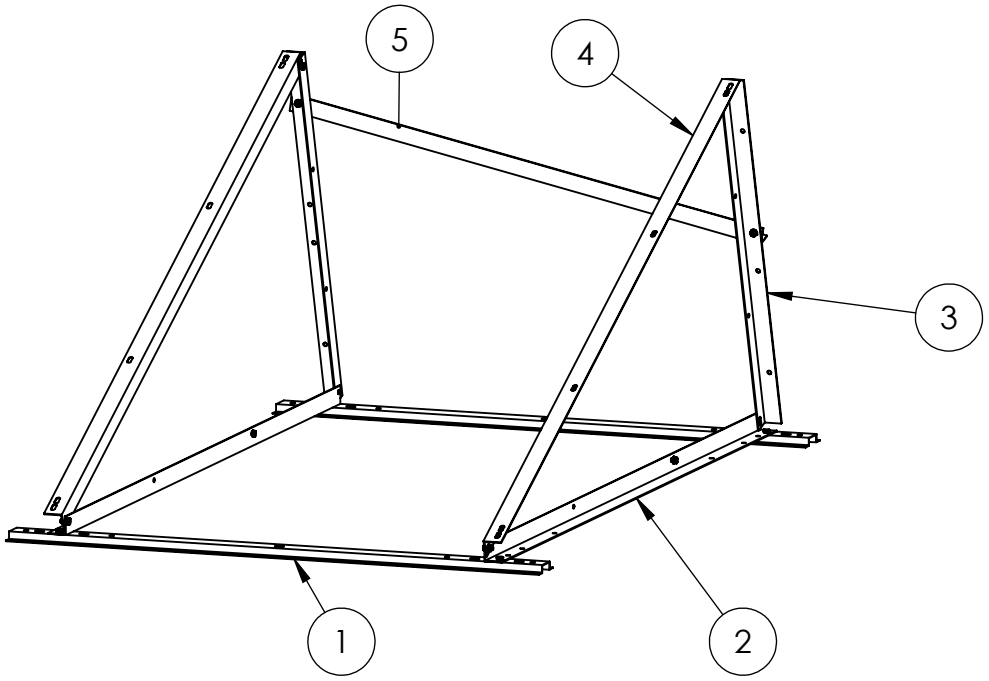
Weight of Frame: 32 kg

COMPONENTS – 2 COLLECTOR SPLIT SYSTEM FRAME..

WARNING

This frame is not suitable for use in cyclonic areas.

This frame is not suitable for use on buildings over 10 m height



Kit 33202037

Item number	Qty	Description	Part Number
1	2	Roof Mounting Rail - Short	14201097
2	2	Support Rail - Lower	14201191
3	2	Support Leg - Rear	14201150
4	2	Support Rail - Upper	14201142
5	1	Cross Brace - long (1320)	14201089
-	16	3/8 Bolt	22601066
-	8	3/8 Nut	16801056
-	4	3/8 Lock Nut *	16801083
-	16	3/8 Washer	17401058
-	1	Installation Manual	15401013

* For fastening collector mounting rail to frame

Items 2,3,4 and some of the nuts, bolts and washers come preassembled as described on page 12.

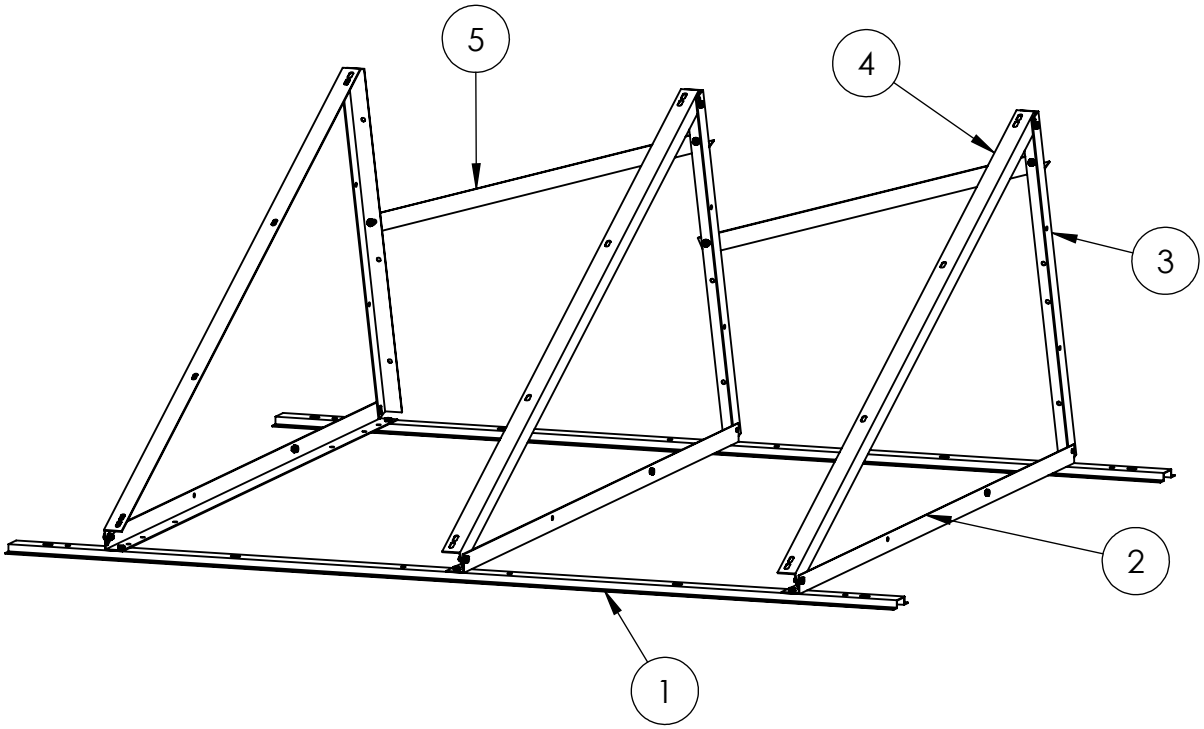
Weight of Frame: 33 kg

COMPONENTS – 3 COLLECTOR SPLIT SYSTEM FRAME

WARNING

This frame is not suitable for use in cyclonic areas.

This frame is not suitable for use on buildings over 10 m height



Kit 33202038

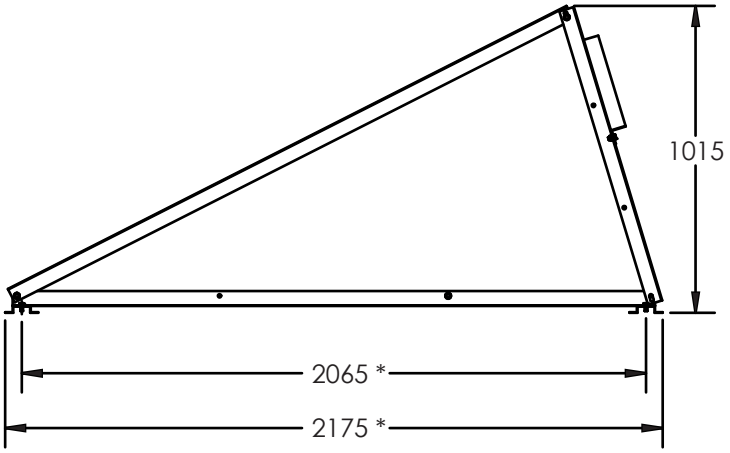
Item number	Qty	Description	Part Number	Packed in Box Number
1	2	Roof Mounting Rail - Long	14201098	2
2	3	Support Rail - Lower	14201191	1
3	3	Support Leg - Rear	14201150	1
4	3	Support Rail - Upper	14201142	1
5	2	Cross Brace – Short (1035)	14201090	2
-	25	3/8 Bolt	22601066	2
-	13	3/8 Nut	16801056	2
-	6	3/8 Lock Nut *	16801083	
-	25	3/8 Washer	17401058	2
-	1	Installation Manual	15401013	2

* For fastening collector mounting rail to frame

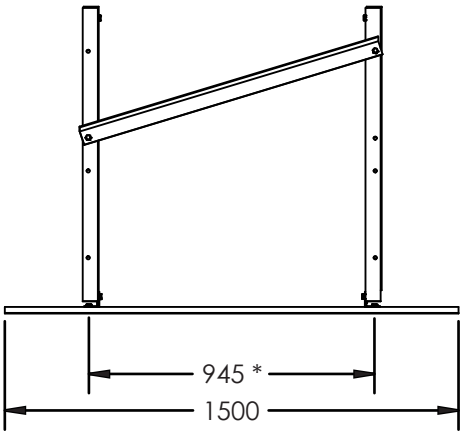
Items 2,3,4 and some of the nuts, bolts and washers come preassembled as described on page 12.

Weight of Frame: 48 kg

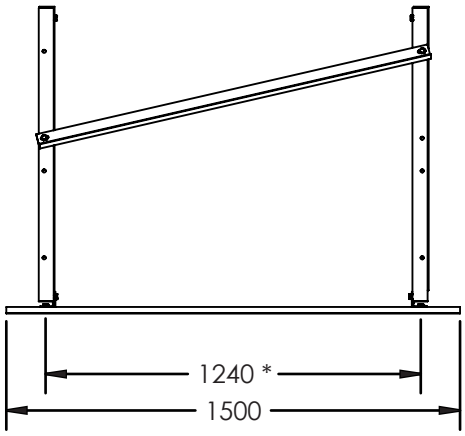
DIMENSIONS



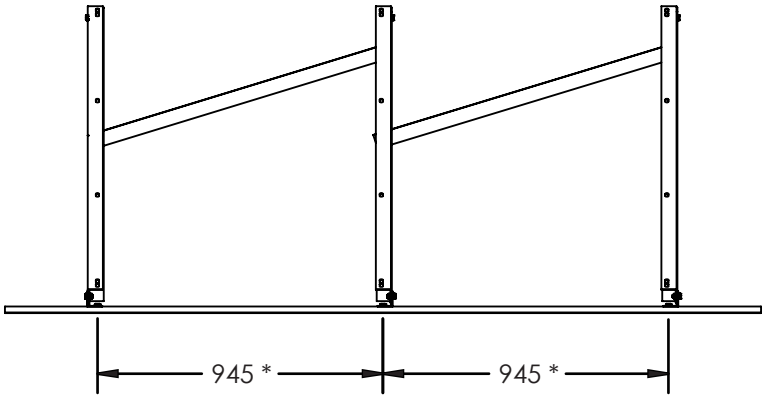
Side Dimensions - All Split Flat Roof Frames



Rear Dimensions
1 Collector Split System Flat Roof Frame



Rear Dimensions
2 Collector Split System Flat Roof Frame



Rear Dimensions
3 Collector Split System Flat Roof Frame

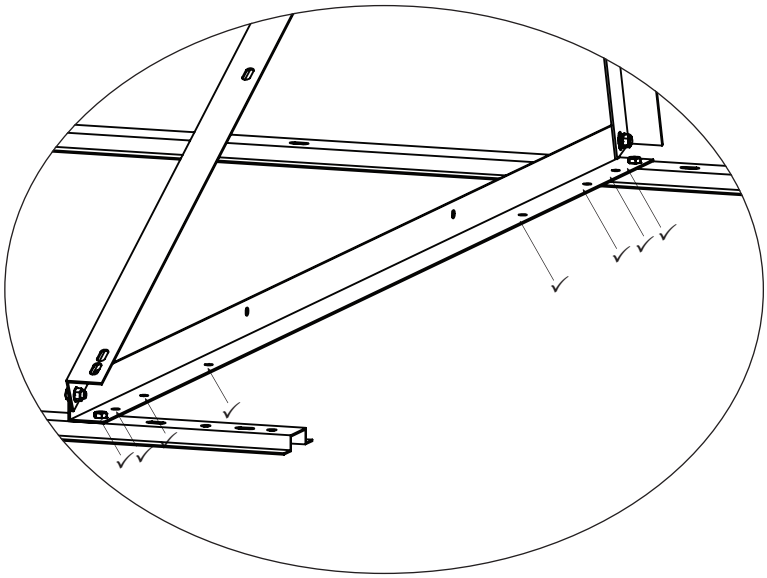
INSTALLATION OPTIONS

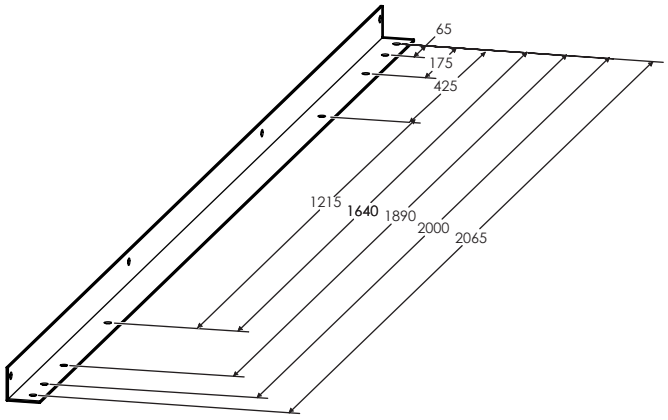
The dimensions shown on the previous page are the standard dimensions used, however the spacing between the roof mounting rails can be reduced by utilising alternate holes in the support bar lower. (See below)

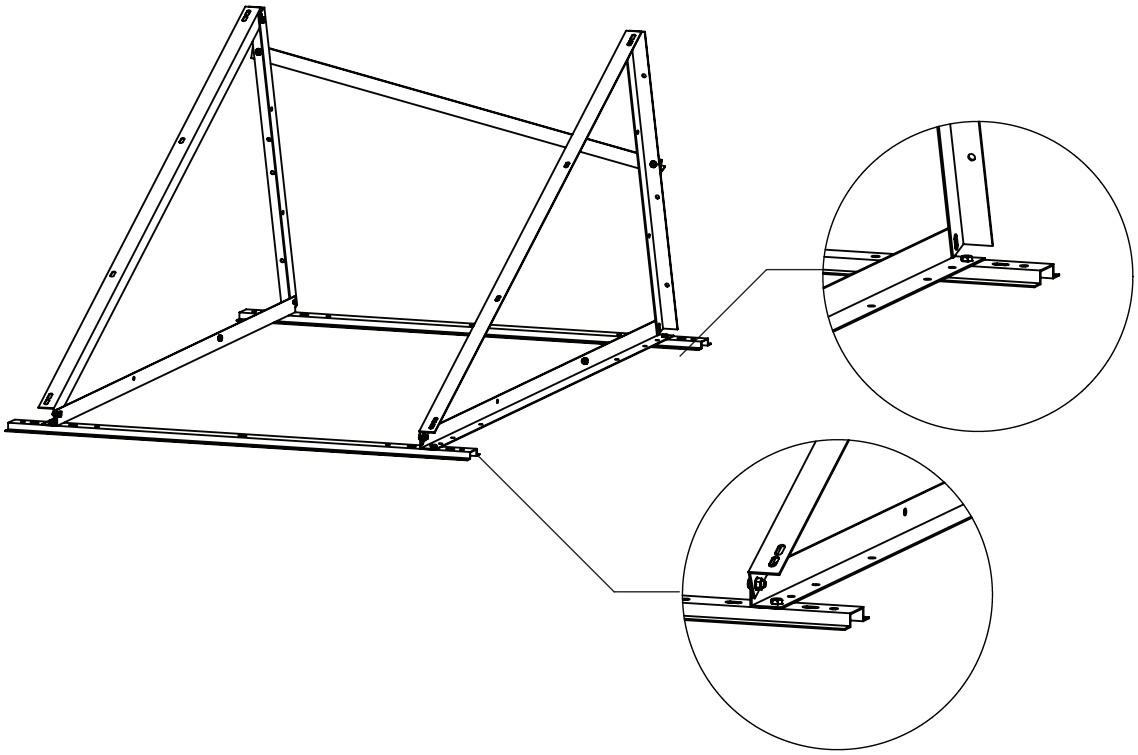
For optimum frame stability is preferable to have the maximum spacing.

The hole centre dimensions are shown in the diagram below.

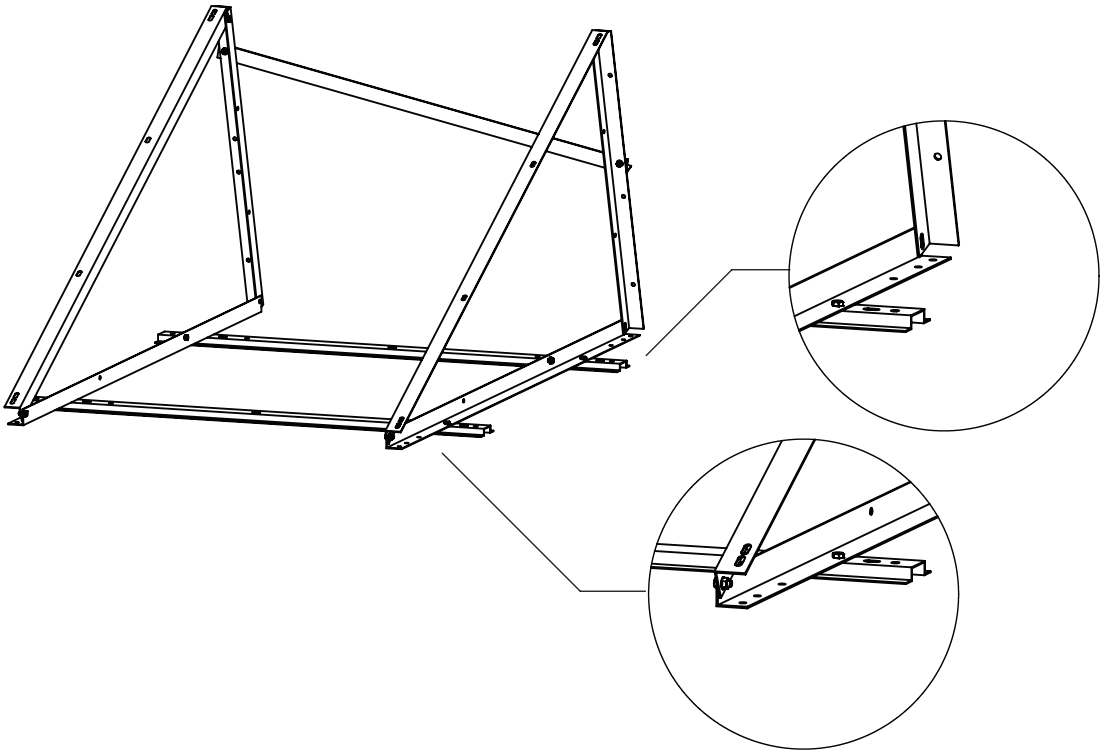
Detailed views of the maximum and minimum spacing are shown on page 18







Split System Flat Roof Frame with Roof Mounting Rails at Maximum Spacing (2065mm) - Preferred Option



Split System Flat Roof Frame with Roof Mounting Rails at Minimum Spacing (1215mm)

SIDE AND REVERSE PITCH ROOF FRAMES

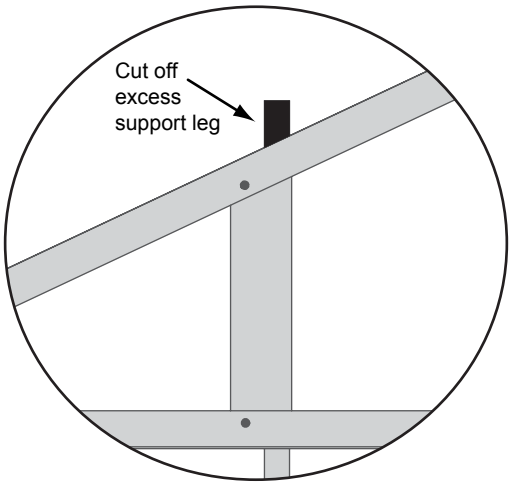
WARNING

This frame is not suitable for use in cyclonic areas.

This frame is not suitable for use on buildings over 10 m height

INSTALLATION

- Side and Reverse pitch kits are used in conjunction with the relevant Split or Close Coupled flat roof frame.
- Assemble the relevant flat roof frame as shown on pages 6-8 or 13-15, except for attaching the roof mounting rails to the frame.
- Attach the leg sockets to the frame.
- Fit the long and short legs into the sockets and attach the pivot brackets to the ends. Use the long and short legs in the correct sockets depending on whether a Reverse Frame or a Side Pitch Frame is required.
- Fasten the pivot brackets to the roof mounting rails.
- Position the frame on the roof ensuring the cylinder (where applicable) and collector load will be adequately supported.
- Adjust the frame to the approximately the correct level. Temporarily clamp in place.
- If necessary, cut the excess from the legs so that they will not protrude into the area where the collector or cylinder will be mounted.



- Secure the frame to the roof in accordance with local building authority requirements using a suitable fastening system.
- Once the frame is fully fastened to the roof, use a spirit level to adjust the frame height on the legs.
- Fit the cross braces between the support leg and socket leg. Depending on the angle of the roof the cross braces may need to be cut down, and new holes drilled.
- Drill the legs through one of the holes in the leg sockets and secure with the nuts and bolts supplied. Remove clamps.
- Complete installation as described in the “Close Coupled Operation / Installation Manual”, “Split System Operation / Installation Manual” or the “Commercial Solar Preheat System Operation / Installation Manual”. Bolts, nuts and washers are supplied with the flat roof frame kit to attach the collector rails and cylinder to the frame.

INSTALLED DIMENSIONS

Depending on the roof pitch, the installed dimensions will vary. Refer to for the flat roof frame dimensions for a guide.

COMPONENTS – KIT FOR USE WITH 1 OR 2 COLLECTORS

This kit can be used with the following frames: RF180CC12A, RF330CC02A, 33202036, or 33202037

WARNING

This frame is not suitable for use in cyclonic areas.

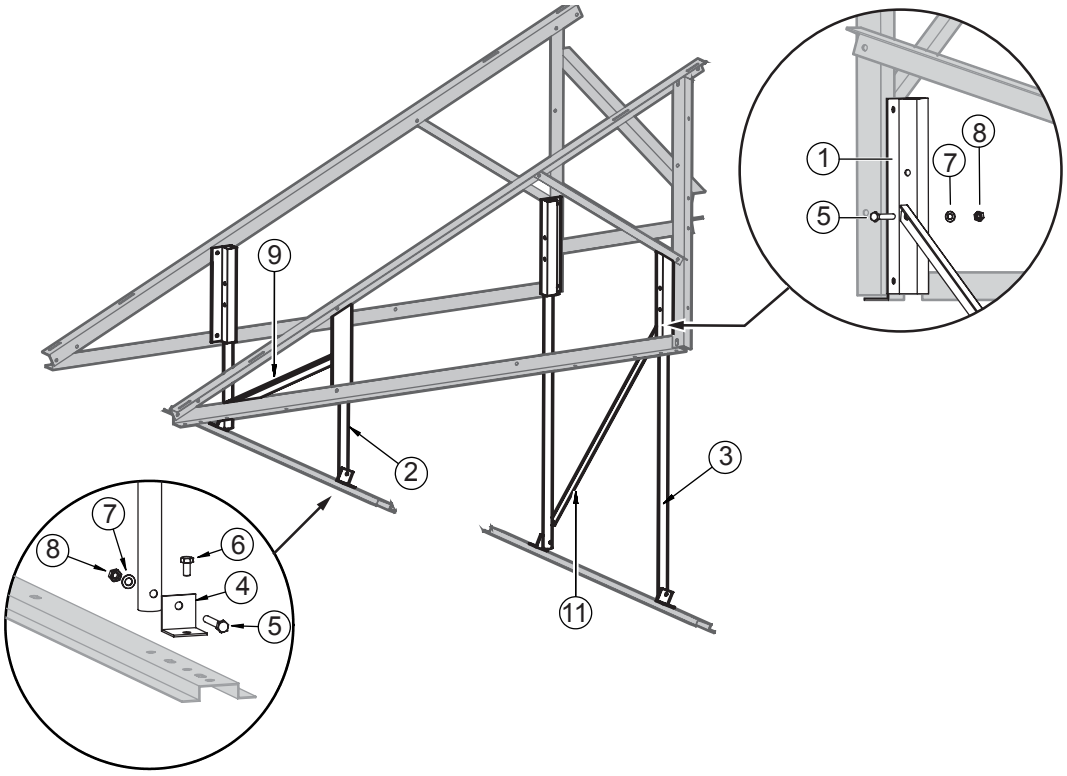
This frame is not suitable for use on buildings over 10 m height

Kit 33202026 - 1 or 2 collectors

Item number	Qty	Description	Part Number
1	4	Socket Leg	14201149
2	2	Support Leg – Short	14201152
3	2	Support Leg – Long	14201151
4	4	Pivot Bracket	14201113
5	10	3/8 Bolt – 63 mm	22601076
6	4	3/8 Bolt – 19 mm	22601066
7	14	3/8 Washer	17401058
8	10	3/8 Nut	16801056
9	1*	Cross Brace 955 mm Only used with RF180CC12A and 33202036 as a reverse pitch frame.	14201203
10	1*	Cross Brace 1200 mm Only used with RF330CC02A and 33202037 as a reverse pitch frame.	14201209
11	2*	Cross Brace 1335 mm Only 1 used when a reverse pitch frame. Both used for a side pitch frame.	14201202
-	1	Installation Manual	15401013

Weight of kit components: 19 kg

* Only 2 of the 4 supplied braces will be used in any installation.

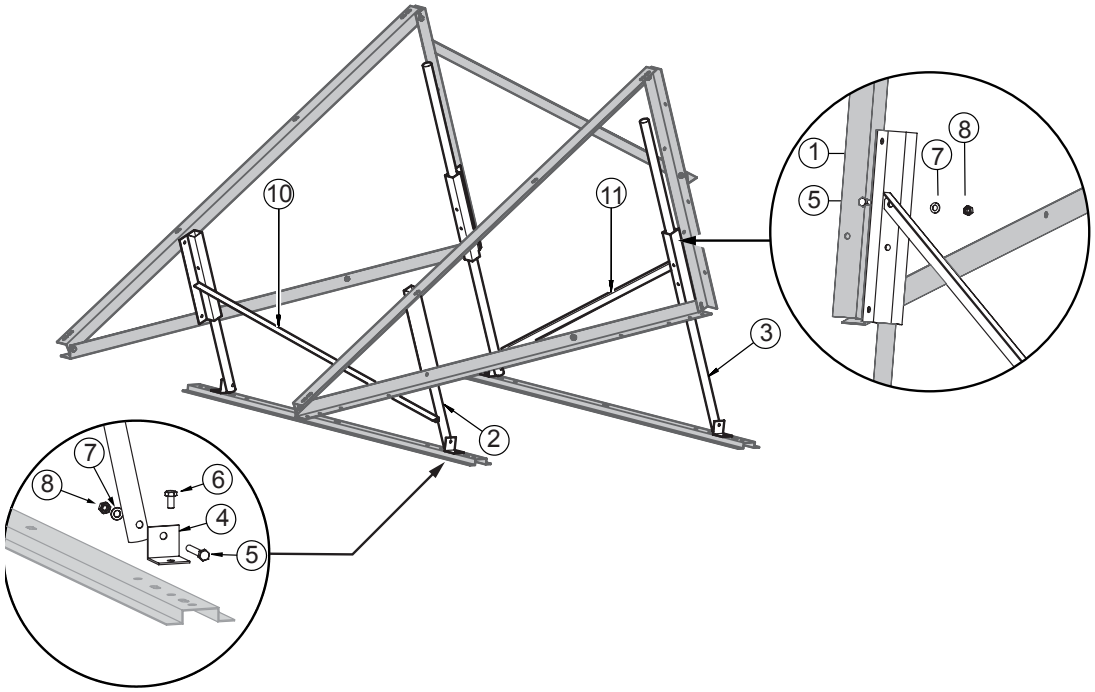


Shown as a Reverse Frame with Close Couple Frame RF180CC12A in grey

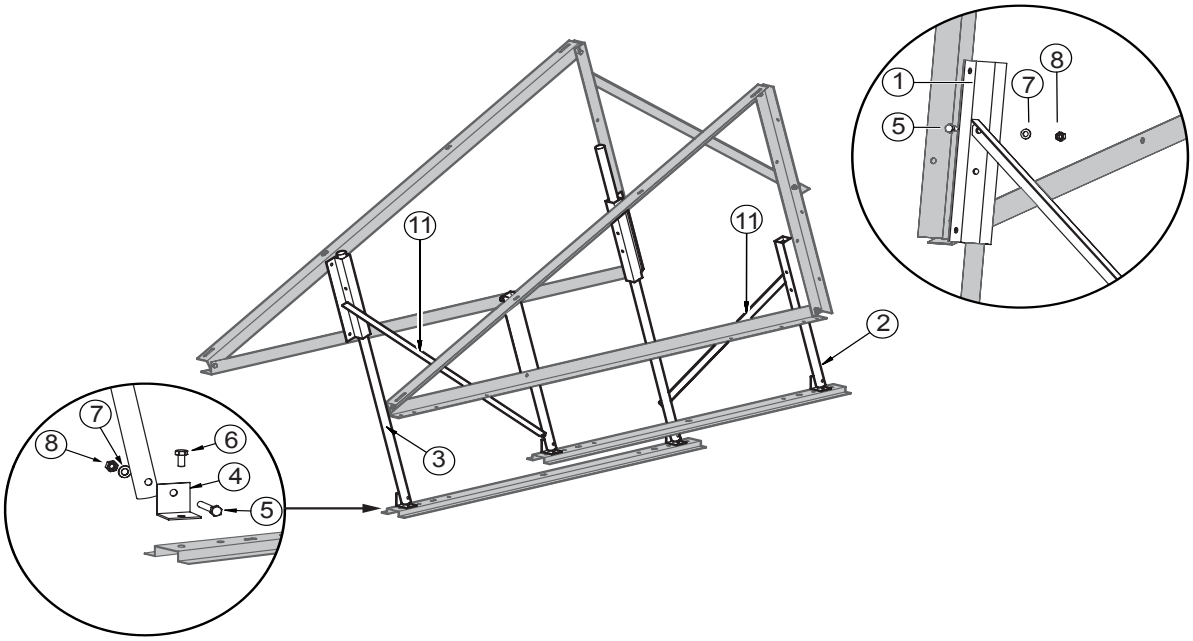
WARNING

This frame is not suitable for use in cyclonic areas.

This frame is not suitable for use on buildings over 10 m height



Shown as a Reverse Pitch Frame with Split System 33202036 in grery.



Shown as a Side Pitch Frame with Split System Frame 33202036 in grey.

COMPONENTS – KIT FOR USE WITH 3 COLLECTORS

WARNING

This frame is not suitable for use in cyclonic areas.

This frame is only to be used as a reverse kit, NOT SUITABLE as a side pitch kit.

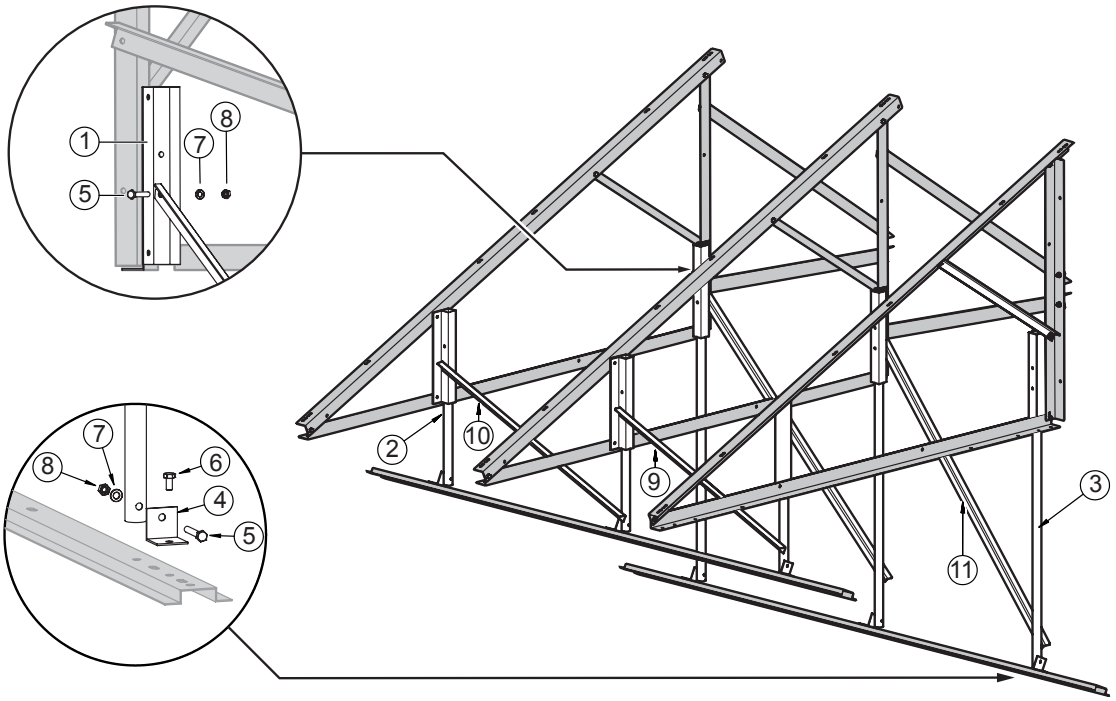
This frame is not suitable for use on buildings over 10 m height

This kit can be used with the following frames: RF330CC03A, 33202038

Kit 33202027 - 3 collectors

Item number	Qty	Description	Part Number
1	6	Socket Leg	14201149
2	3	Support Leg – Short	14201152
3	3	Support Leg – Long	14201151
4	6	Pivot Bracket	14201113
5	16	3/8 Bolt – 63 mm	22601076
6	6	3/8 Bolt – 19 mm	22601066
7	22	3/8 Washer	17401058
8	16	3/8 Nut	16801056
9	1	Cross Brace 955 mm	14201203
10	1	Cross Brace 1200 mm	14201209
11	2	Cross Brace 1335 mm	14201202
-	1	Installation Manual	15401013

Weight of kit components: 26 kg



Shown as a Reverse Frame with CC Frame RF330CC03A in grey

Rinnai

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Hot Water Service Line
Tel: 1800 000 340

Rinnai has a Service and Spare Parts network with personnel who are fully trained and equipped to give the best service on your Rinnai appliance. If your appliance requires service, please call our National Help Line. Rinnai recommends that this appliance be serviced every 3 years.