"Anti-Cyclone Frame"

INSTALLATION INSTRUCTIONS

FOR THERMOSIPHON SOLAR WATER HEATER SYSTEMS

This frame must be installed and serviced by an authorised person.
Please leave this guide with the householder.

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CONTENTS

HOUSEHOLDER – This installation instruction booklet is intended for the installer but you may find it of interest.

ABOUT THE ANTI-CYCLONE FRAME

This installation instruction is used with two model anti-cyclone frames. These frames are:

- Kit 12106887 Thermosiphon One Collector Anti-Cyclone Frame
- Kit 12106888 Thermosiphon Two Collector Anti-Cyclone Frame

LIST OF COMPONENTS

Component Part No	Kit 12106887 Thermosiphon One Collector Anti-Cyclone Frame Component Description	Quantity
341562	Cyclone frame base plate sub-assembly 1 collector system (1400 mm x 146 mm x 2 mm)	2
342558	Cyclone U frame – slot (2465 mm x 138 mm x 3 mm)	2
342553	Collector rail HD (5 mm thick web) 1 collector system	1
342555	Rail tank / collector (900 mm centres) 1 collector system	1
	Contents of polythene bag	1
330350	Screw set 5/16” x 3/4” SS	14
330354	Washer 5/16” SS	16
330806	Nut 5/16” SS	10
080071	Screw Tek No. 14 x 20	2
344120	Collector clamp Cat D cyclone (aluminium)	2
344121	Clamp tank Cat D cyclone (aluminium)	2
343038	Rheem tank clamp (tank clamp round tank – galvanised steel)	2
347597	Installation instructions	1

Component Part No	Kit 12106888 Thermosiphon Two Collector Anti-Cyclone Frame Component Description	Quantity
341564	Cyclone frame base plate sub-assembly 2 collector system (1400 mm x 146 mm x 2 mm)	2
342558	Cyclone U frame – slot (2465 mm x 138 mm x 3 mm)	4
342551	Collector rail HD (5 mm thick web) 2 collector system	1
342556	Rail tank / collector (900 mm centres) 2 collector system	1
	Contents of polythene bag	1
330350	Screw set 5/16” x 3/4” SS	24
330354	Washer 5/16” SS	28
330806	Nut 5/16” SS	16
080071	Screw Tek No. 14 x 20	2
344120	Collector clamp Cat D cyclone (aluminium)	4
344121	Clamp tank Cat D cyclone (aluminium)	2
343038	Rheem tank clamp (tank clamp round tank – galvanised steel)	2
347597	Installation instructions	1

MODEL TYPE

The anti-cyclone frame mounting kit is designed for pitched roof installations. The frame, when installed using the “On Roof Mounting” connection method, is rated to:

Wind Region	D	Terrain category	TC2
Wind velocity	88 m / s	Height (Hz)	10 m

Certification is pending for the “Clear of Roof Mounting” method of installation.

The frame is suitable for:

Thermosiphon One Collector Anti-Cyclone Frame Kit 12106887	**Thermosiphon Two Collector Anti-Cyclone Frame Kit 12106888**
Rheem Thermosiphon Systems (including rebranded systems using the same tank design)	**Rheem Thermosiphon Systems** (including rebranded systems using the same tank design)
52S160 tank with one collector	52S300 tank with two collectors
Sunheat Thermosiphon Systems (including rebranded systems using the same tank design)	**Sunheat Thermosiphon Systems** (including rebranded systems using the same tank design)
160D direct system tank with one collector	300D direct system tank with two collectors
180C indirect system tank with one collector	300C indirect system tank with two collectors
Solahart Thermosiphon Systems (including rebranded systems using the same tank design)	**Solahart Thermosiphon Systems** (including rebranded systems using the same tank design)
150F, 150J, 150K, 150L tank with one collector	180F, 180J, 180K, 180L tank with two collectors
180F, 180J, 180K, 180L tank with one collector	220F, 220J, 220K, 220L tank with two collectors
220F, 220J, 220K, 220L tank with one collector	300F, 300J, 300K, 300L tank with two collectors

PARTS SUPPLIED

This kit contains the parts required, including tank clamps, collector clamps, nuts, bolts and washers, for assembling the frame and attaching the solar storage tank and solar collectors to the frame. It does not include the hardware for mounting the frame to the roof.

The tank clamps, collector clamps, nuts, bolts and washers supplied with this kit shall be used and they replace the tank clamps, collector clamps, nuts, bolts and washers that may be supplied in the parts kit or pipe kit supplied with the solar water heater.

LOCATION

The installation of a thermosiphon solar water heater system on this frame, using the “On Roof Mounting” connection method, subject to its rating not being exceeded:

- provides an acceptable method of installation where it is necessary to satisfy the requirements of the Building Code of Australia for high wind areas, and
- is suitable for installation with a thermosiphon solar water heater in geographic locations within Wind Regions C and D as defined in the Building Code of Australia, Australian Standard AS 4055-2006 and the Australian / New Zealand Standard AS/NZS 1170.2:2002.

Refer to the Installation Instructions and Owner’s Guide supplied with the solar water heater in order to determine the most suitable direction for facing the system. Choose a mounting location with direction in mind that will allow the frame to be centrally located over at least either two rafters (one collector system) or three rafters (two collector system) and also provide the base plate sub-assemblies with suitable fixing access to the roof battens.

The installer must ensure the structural integrity of the building is not compromised by the solar water heater and frame installation and the roof structure is suitable to carry the full weight of the solar storage tank, solar collector(s) and frame. If in doubt the roof structure should be suitably strengthened. Consult a structural engineer.

ASSEMBLY DIAGRAMS

SOLAR STORAGE TANK WITH FLAT BASE – FRAME ASSEMBLY

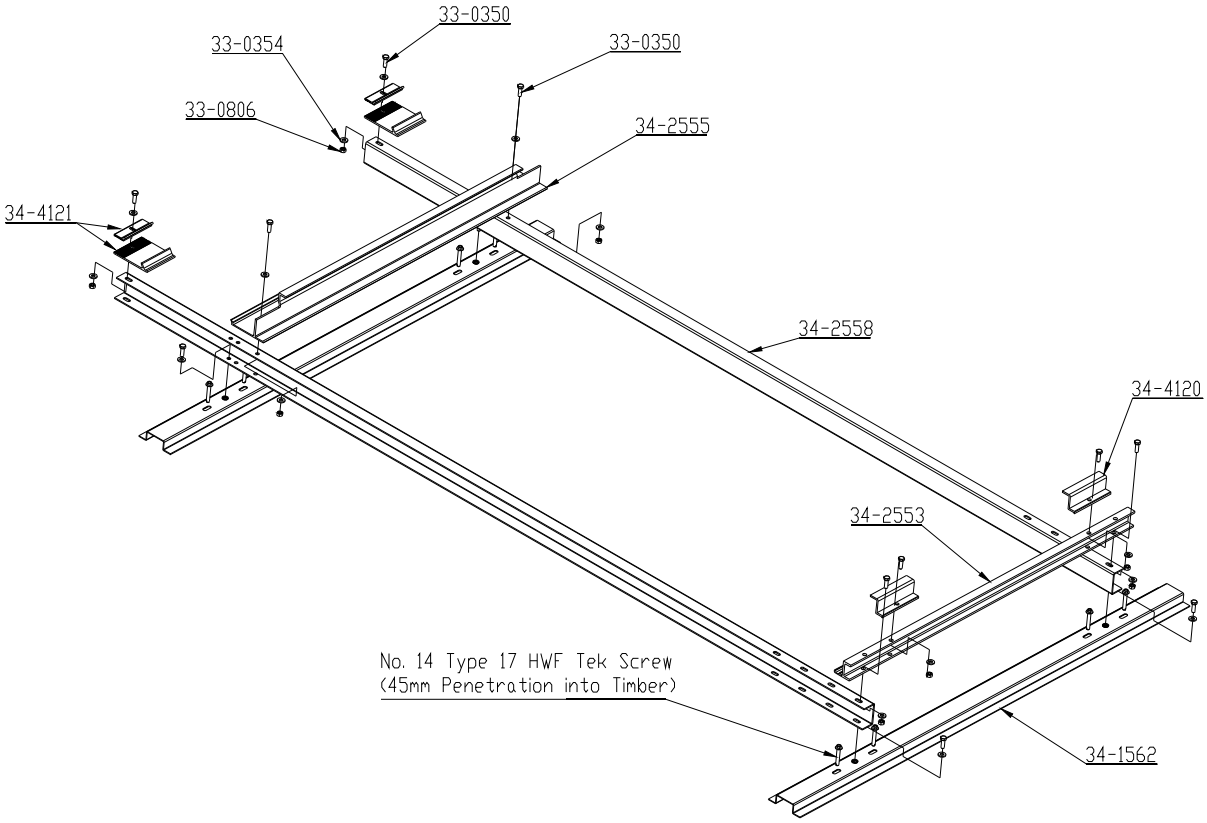

Diagram 1 – One Collector Anti-Cyclone Frame Kit No 12106887

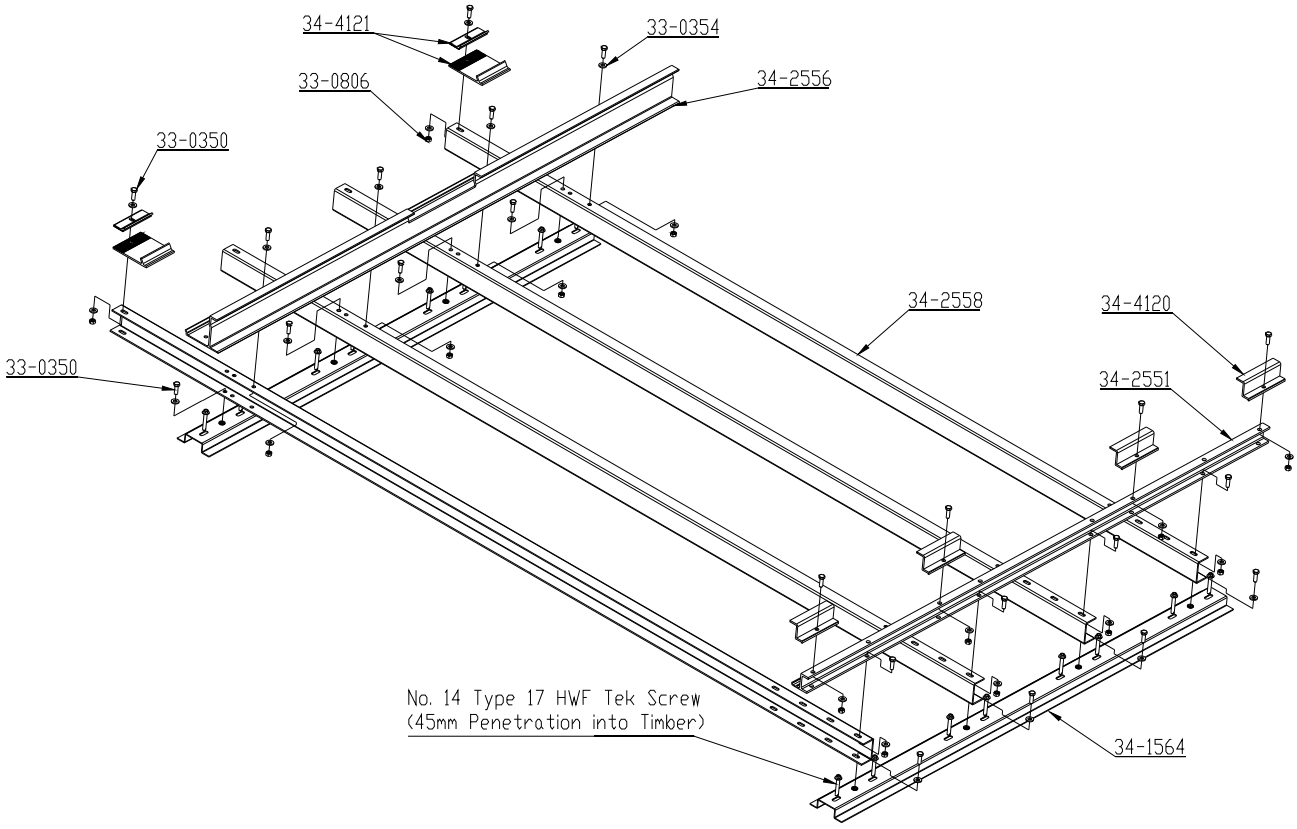

Diagram 2 – Two Collector Anti-Cyclone Frame Kit No 12106888

SOLAR STORAGE TANK WITH Z-SECTION FEET – FRAME ASSEMBLY

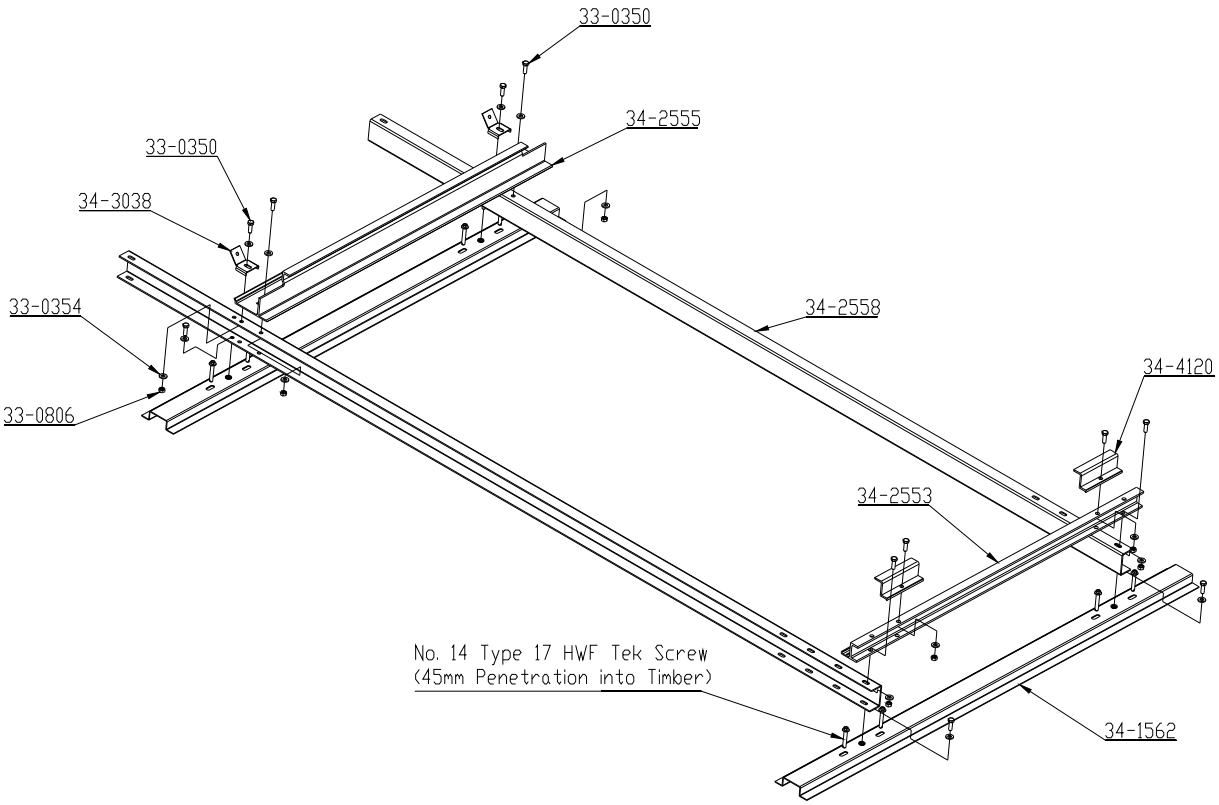

Diagram 3 – One Collector Anti-Cyclone Frame Kit No 12106887

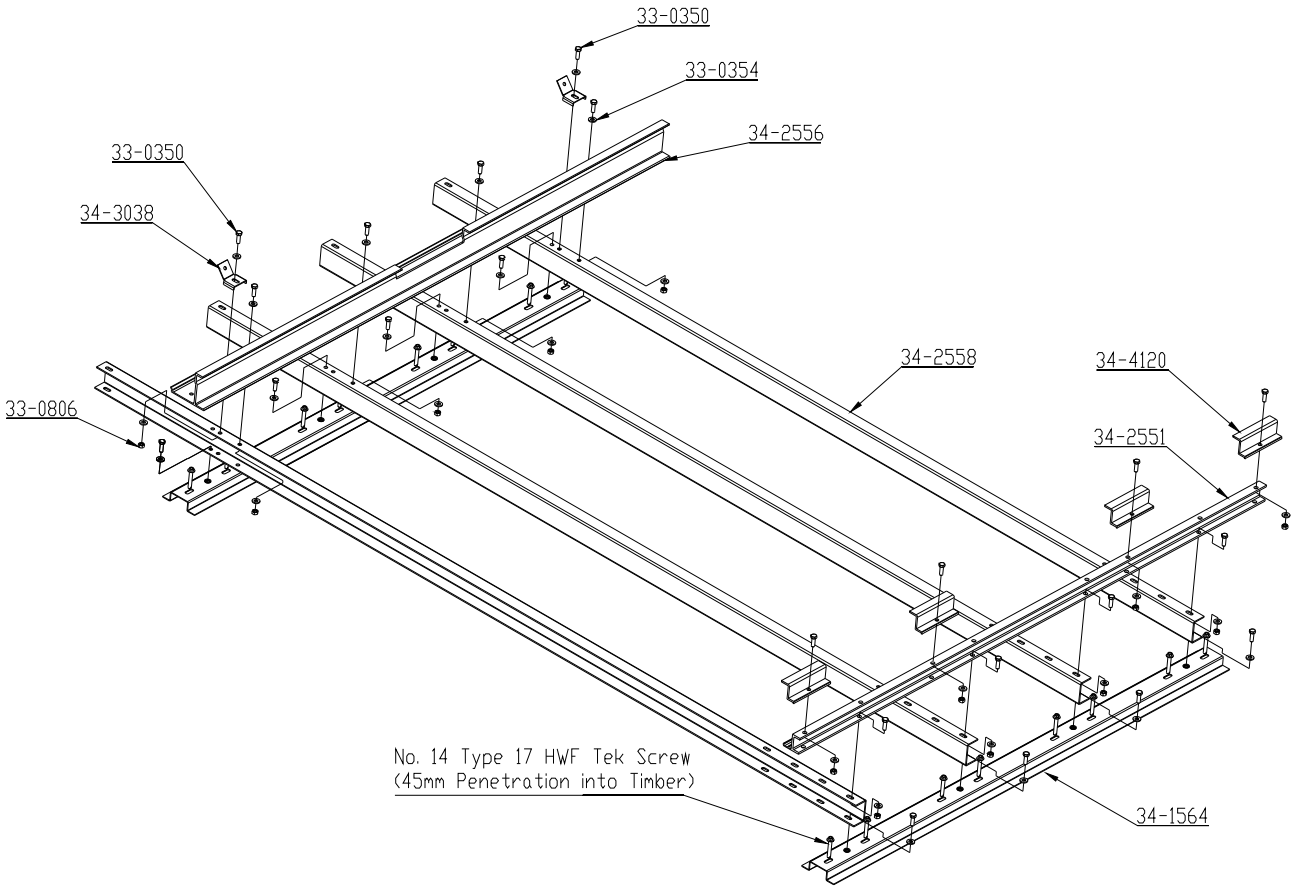

Diagram 4 – Two Collector Anti-Cyclone Frame Kit No 12106888 Assembly

ON ROOF MOUNTING

The “On Roof Mounting” method is suitable for roof types other than tiled roofs.

Refer to the assembly diagrams 1 and 2 if installing a system with a solar storage tank with a Solahart style flatter base, or to assembly diagrams 3 and 4 if installing a system with a solar storage tank with Z-section feet.

To assemble the anti-cyclone frame and install on the roof:

- Determine the position on the roof where the frame and solar water heater is to be installed.
    - Select the position of the two roof battens to which the anti-cyclone frame is to be fixed.
        - The roof battens are to be a minimum 75 mm x 50 mm hardwood timber and securely fixed to each rafter or truss.
        - The roof battens are to be continuous over not less than two rafters or trusses for a one collector frame and not less than three rafters or trusses for a two collector frame.
    - The centre to centre distance between the two roof battens is to be either 1800 mm, 1890 mm, 1980 mm or 2070 mm. Check this distance with the distance between the two holes on a U-frame which are to be used to secure the base plates to the U-frames and ensure the distances are equal.
- Loosely fit the base plates and the U-frames together, securing a bolt provided into each nutsert in the base plates.
    - There are three holes provided from approximately 365 mm to 450 mm from one end of the U-frame. This is the top end of the U-frame, is to be installed toward the ridge of the roof and is the end which will support the solar storage tank.
        - The first hole of these three, closest to the top end of the U-frame (365 mm from the end), must be used to secure the U-frame to the base plate.
    - There are four slotted holes provided at the other end of the U-frame. This is the bottom end of the U-frame, is to be installed toward the roof gutter and is the end which will support the solar collector(s).
        - Select the slotted hole that provides the correct batten to batten centre distance from the hole used to secure the top base plate top to the top end of the U-frame.
    - Square up the frame by making sure the diagonals are equidistant and tighten up the bolts in the nutserts. Ensure the centre to centre distance between the base plates is equal to the centre to centre distance between the two roof battens.
- Position the assembled frame on the roof over the area where it is to be installed, ensuring the base plates are located over the two roof battens.
    - The frame should be located such that the Tek screws or M8 bolts are as close as possible to the rafters or trusses.
- Mark the locations where the Tek screws or M8 bolts are to penetrate the roof material.
    - No. 14 Type 17 HWF Tek Screws are required to fix the base plate to timber battens.
    - The Tek screws penetrate both the top and bottom base plate through the slotted holes, one on either side of each of the U-frames.
    - There are four fixing points on each base plate for a one collector frame and eight fixing points on each base plate for a two collector frame.
- Drill through the roof cladding and into the battens.

- *Timber battens:* Fasten the base plates to timber roof battens using No. 14 Type 17 HWF Tek screws. The Tek screws must penetrate at least 45 mm into the roof battens. This is the minimum fixing requirement. Refer to diagram 5 on page 10 for a connection detail.

- Fit the collector rail to each of the U-frames, securing with bolts, washers and nuts provided. Use the lowest of the four holes located at the bottom end of the U-frame. Place the washer on the nut side. Tighten up the nuts and bolts.

- Fit the tank / collector rail to each of the U-frames, securing with bolts, washers and nuts provided. Use the lowest of the three holes in the U-frame, located adjacent to the top base plate. Tighten up the nuts and bolts.

- *Solar storage tank with Z-section feet:*

  - Fit the two Rheem tank clamps to the two outside U-frames, using bolts, washers and nuts provided.

    - Use two washers per fixing, one under the bolt head and the other under the nut.

    - Use the middle of the three holes provided approximately 385 mm from the top end of the U-frame. This is the hole immediately adjacent to the top tank / rail collector.

    - Tighten the nuts and bolts.

- *Solar storage tank with flat base:*

  - Loosely secure the two tank clamps to the two outside U-frames, using bolts, washers and nuts provided.

    - It is necessary to part the top and bottom halves of the tank clamps along the part line to obtain the two pieces.

    - Place the narrower top half over the wider bottom half of the tank clamp, ensuring the serrated profiles fit together.

    - Use the slotted hole, approximately 20 mm from the top end of the U-frame.

    - Use two washers per fixing, one under the bolt head and the other under the nut.

- Refer to “Installation of Solar Storage Tank and Solar Collectors” on page 15 to complete the installation.

Notes:

- Penetrations through the roofing material must be:

  - at the high point of the roof or metal sheet profile;

  - made neatly and kept as small as practicable;

  - waterproofed upon installation of the Tek screws.

- Care should be taken not to mark Colorbond or other metal roof sheet with a marking pen and to remove all swarf from the metal roof as these can cause deterioration of the metal roofing material.

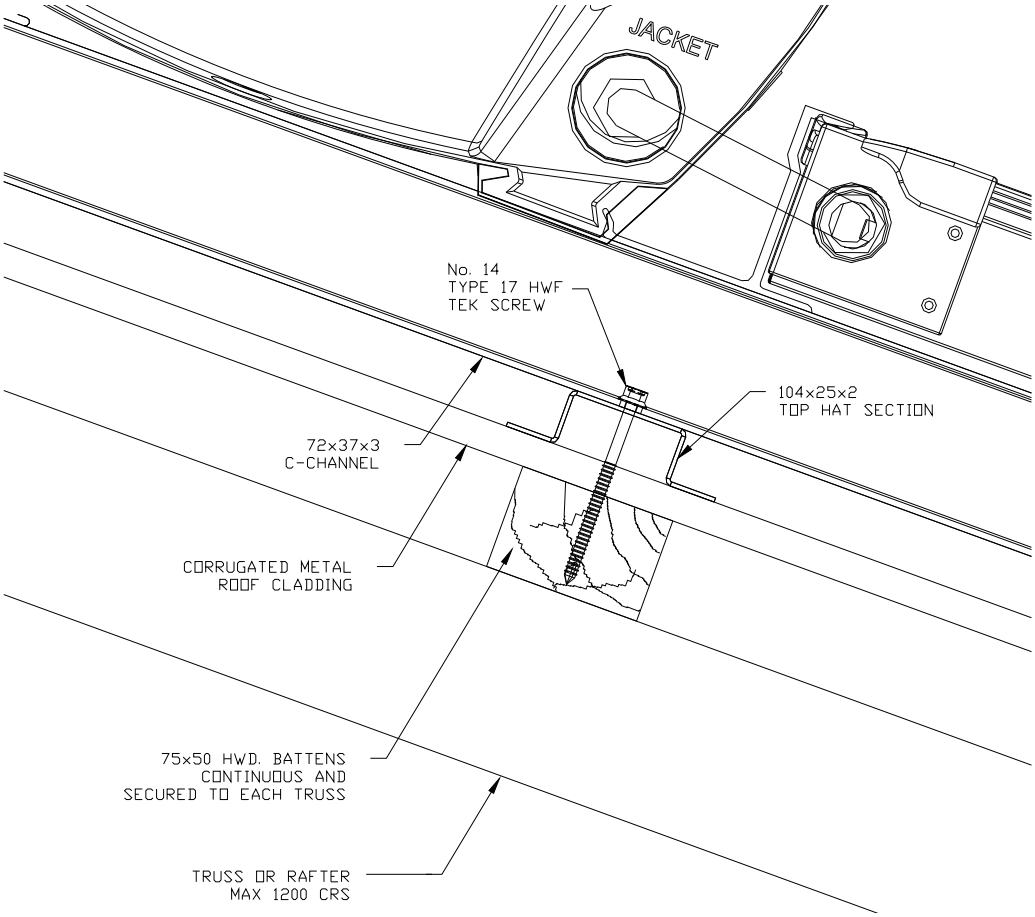

Diagram 5 – On Roof Mounting Tek Screw Into Timber Batten

CLEAR OF ROOF MOUNTING

The “Clear of Roof Mounting” method must be used for a tile roof. It is optional for other roof cladding types.

Refer to the assembly diagrams 1 and 2 if installing a system with a solar storage tank with a Solahart style flatter base, or to assembly diagrams 3 and 4 if installing a system with a solar storage tank with Z-section feet.

To assemble the anti-cyclone frame and install on the roof:

- Determine the position on the roof where the frame and solar water heater is to be installed.
  - Select the position of the two roof battens to which the anti-cyclone frame is to be fixed.
    - The roof battens are to be continuous over not less than two rafters or trusses for a one collector frame and not less than three rafters or trusses for a two collector frame.
  - The centre to centre distance between the two roof battens is to be either 1800 mm, 1890 mm, 1980 mm or 2070 mm. Check this distance with the distance between the two holes on a U-frame which are to be used to secure the base plates to the U-frames and ensure the distances are equal.
- Measure the distance between the fixing holes in the base plates and mark the locations where the threaded rods are to penetrate the roof material.
  - M12 threaded rods are required to fix the base plate to battens.
  - The M12 threaded rods penetrate both the top and bottom base plate through the slotted holes, one on either side of each of the U-frames.
  - There are four fixing points on each base plate for a one collector frame and eight fixing points on each base plate for a two collector frame.
- Loosely fit the base plates and the U-frames together, securing a bolt into each nutsert in the base plates.
  - There are three holes provided from approximately 365 mm to 450 mm from one end of the U-frame. This is the top end of the U-frame, is to be installed toward the ridge of the roof and is the end which will support the solar storage tank.
    - The first hole of these three, closest to the top end of the U- frame (365 mm from the end), must be used to secure the U-frame to the base plate.
  - There are four slotted holes are provided at the other end of the U-frame. This is the bottom end of the U-frame, is to be installed toward the roof gutter and is the end which will support the solar collector(s).
    - Select the slotted hole that provides the correct batten to batten centre distance from the hole used to secure the top base plate top to the top end of the U-frame.
  - Square up the frame by making sure the diagonals are equidistant and tighten up the bolts in the nutserts. Ensure the centre to centre distance between the base plates is equal to the centre to centre distance between the two roof battens.
- Drill through the roof cladding and the battens.
- Install the mounting rods in the roof as per diagrams 6, 7 and 8 to match up with the fixing points in the base plate.
- Line up the threaded rods with the fixing points on the base plates and place the frame over the top of the threaded rods so it rests on the washers and nuts.
  - Check with a spirit level that the base is level.
    - It may be necessary to adjust the level of the nut on a threaded rod to raise or lower a section of the frame.
- Fasten the frame to the threaded rods, securing with washers and nuts.

- Fit the collector rail to each of the U-frames, securing with bolts, washers and nuts provided. Use the lowest of the four holes located at the bottom end of the U-frame. Place the washer on the nut side. Tighten up the nuts and bolts.
- Fit the tank / collector rail to each of the U-frames, securing with bolts, washers and nuts provided. Use the lowest of the three holes in the U-frame, located adjacent to the top base plate. Tighten up the nuts and bolts.
- *Solar storage tank with Z-section feet:*
  - Fit the two Rheem tank clamps to the two outside U-frames, using bolts, washers and nuts provided.
    - Use two washers per fixing, one under the bolt head and the other under the nut.
    - Use the middle of the three holes provided approximately 385 mm from the top end of the U-frame. This is the hole immediately adjacent to the top tank / rail collector.
    - Tighten the nuts and bolts.
- *Solar storage tank with flat base:*
  - Loosely secure the two tank clamps to the two outside U-frames, using bolts, washers and nuts provided.
    - It is necessary to part the top and bottom halves of the tank clamps along the part line to obtain the two pieces.
    - Place the narrower top half over the wider bottom half of the tank clamp, ensuring the serrated profiles fit together.
    - Use the slotted hole, approximately 20 mm from the top end of the U-frame.
    - Use two washers per fixing, one under the bolt head and the other under the nut.
- Refer to “Installation of Solar Storage Tank and Solar Collectors” on page 15 to complete the installation.

Notes:

- Penetrations through the roofing material must be:
  - at the high point of the roof tile or metal sheet profile;
  - made neatly and kept as small as practicable;
  - waterproofed upon installation of the threaded rods.
- Care should be taken not to mark Colorbond or other metal roof sheet with a marking pen and to remove all swarf from the metal roof as these can cause deterioration of the metal roofing material.

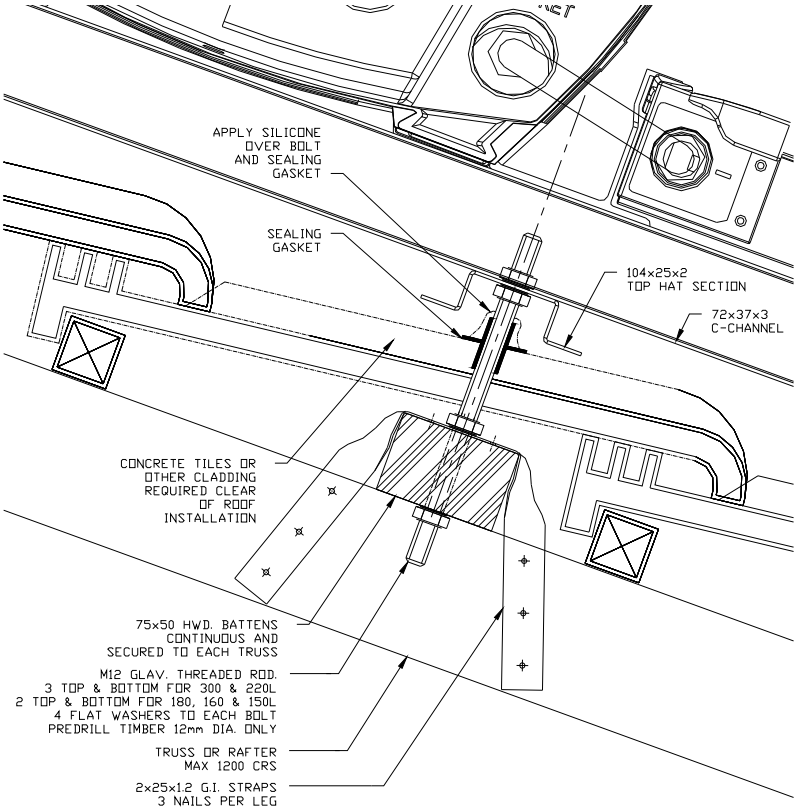

Diagram 6 – Clear of Roof Mounting Threaded Rod Method 1

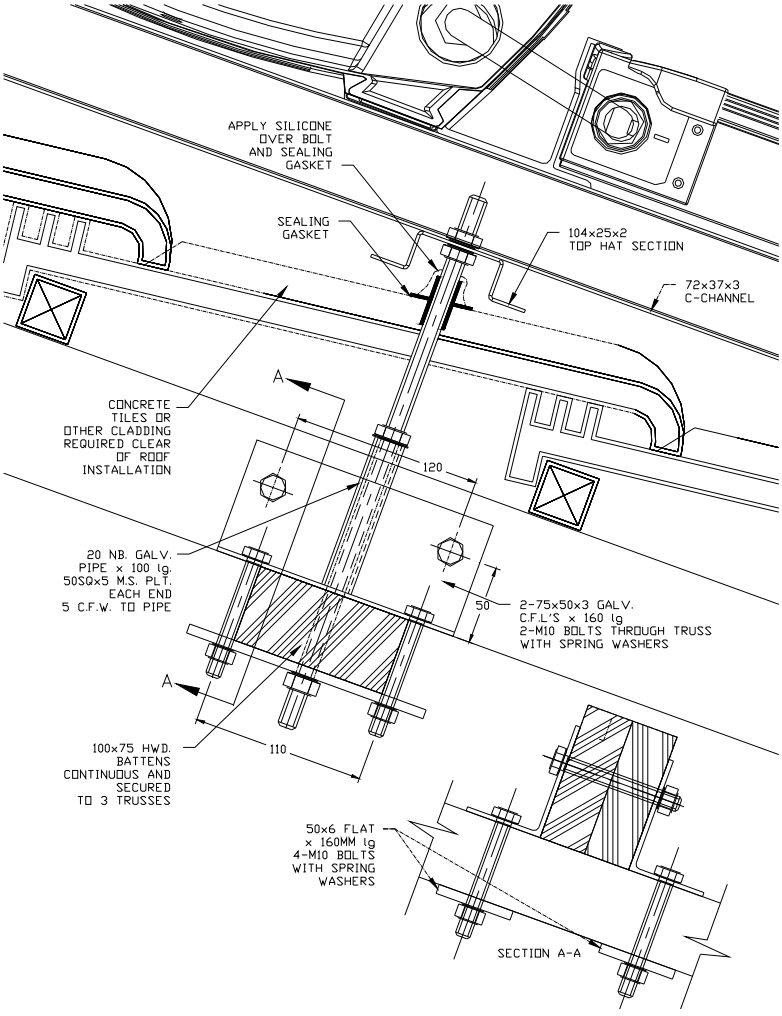

Diagram 7 – Clear of Roof Mounting Threaded Rod Method 2

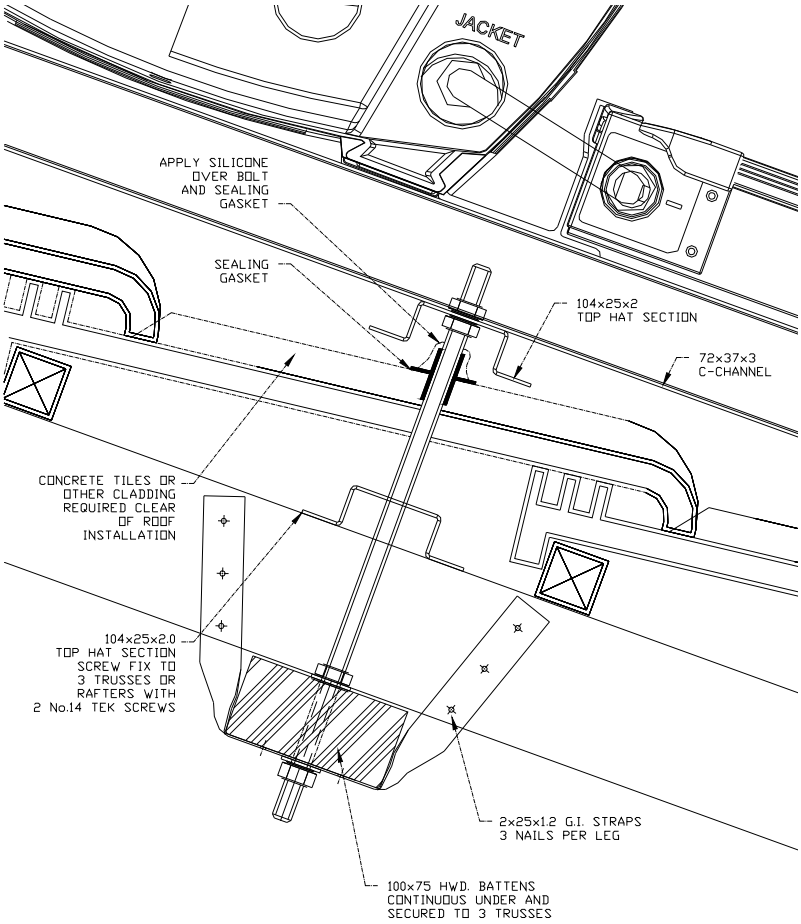

Diagram 8 – Clear of Roof Mounting Threaded Rod Method 3

INSTALLATION OF SOLAR STORAGE TANK AND SOLAR COLLECTORS

To install the solar storage tank and the solar collectors onto the frame:

- Position the top of the first solar collector into the tank / collector rail and the bottom of the solar collector onto the bottom collector rail.
- Insert the two collector unions (two collector system) into the sockets of the first solar collector and loosely screw each gland nut into its socket.
- Position the top of the second solar collector (two collector system) into the tank / collector rail and the bottom of the solar collector onto the bottom collector rail.
- Slide the second solar collector over the two collector unions and loosely screw each gland nut into its socket.
- Centralise the solar collector(s) on the frame and tighten the gland nuts (two collector system).
- Fit the collector clamps, two per solar collector, to the bottom collector rail, using bolts, washers and nuts provided (with the washer under the nut), and loosely secure the solar collectors to the frame. Place the washer on the nut side.
- *Solar storage tank with Z-section feet:*
  - Place the solar storage tank on the frame and centralise.
  - Ensure the lower foot of the solar storage tank is placed under the lip of each Rheem tank clamp.
- *Solar storage tank with flat base:*
  - Place the solar storage tank on the frame and centralise.
  - Ensure the lower foot of the solar storage tank is placed against the lip of the tank / collector rail.
  - Ensure the higher foot of the solar storage tank is placed within the two lips of each tank clamp. The lip of the bottom half of each tank clamp must be hard up against the tank foot.
- Conduct a final alignment of the solar storage tank and solar collectors.
  - It is necessary to achieve perfect alignment in order for the pipe work to fit up correctly.
- Refer to the Installation instructions and Owner's Guide supplied with the water heater for details to complete for the solar storage tank and solar collector installation.
- When the solar hot and solar cold pipes are in position and connected to the solar storage tank and solar collectors, tighten up the nut and bolt at each collector clamp to secure the solar collector(s).
- *Solar storage tank with Z-section feet:*
  - Secure the Z-section foot at the top end of the solar storage tank to each of the U-frames, using bolts, washers and nuts provided. Tighten up the nuts and bolts.
  - Secure each tank clamp to the Z-section foot at the bottom end of the solar storage tank, using a No. 14 x 20 Tek screw provided.
- *Solar storage tank with flat base:*
  - Tighten up the nut and bolt at each tank clamp to secure the solar storage tank.