

# Rinnai

# HIGH RISE ROOF MOUNTING FRAME INSTALLATION INSTRUCTIONS

**For Use With Rinnai Solar Hot Water Installations:  
High Rise (Residential, Commercial & Remote Environments)**

**This appliance shall be installed in accordance with:**

- Rinnai: Installation Manual Roof Frames for use with Rinnai Solar Hot Water Systems (supplied separately)
- Rinnai: Operation / Installation Manual Commercial Solar Pre-Heat System (supplied separately)
- Current AS/NZS1170.2:2011 on wind actions, AS/NZS4600:2005
- Local Regulations and Municipal Building Codes including local OH&S requirements

This appliance must be installed, maintained and removed by an Authorised Person.

For continued safety of this appliance it must be installed operated and maintained in accordance with the manufacturers instructions.

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# INSTALLATION MANUAL

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# IMPORTANT INFORMATION

## REGULATIONS



WARNING

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.



CAUTION

This instruction **MUST BE** read in conjunction with both the “Installation Manual, Roof Frames for use with Rinnai Solar Hot Water Systems” and “Operation / Installation Manual Commercial Solar Pre-Heat System” also provided. All regulations and health and safety information contained in these manuals **MUST BE** followed.

## INTRODUCTION

Installation of flat roof frames as described in the “Installation Manual Roof Frames for use with Rinnai Solar Hot Water Systems” is limited to buildings less than 10m in height and excludes areas adjacent to the roof edges. This instruction provides information which covers the specific fixing arrangements required for buildings over 10m and up to 100m in height and for all areas of the roof plan.

## LIMITATIONS

- Existing roof structure to be verified for additional loads by suitably qualified and registered structural engineer.
- Surrounding terrain assumed to be flat. Consult structural engineer in undulating terrain for custom design.
- Design specifications limited to a combined angle of roof pitch plus solar collector pitch to be no greater than 30°. For larger angles consult structural engineer for custom design.
- Max single solar collector size 1940x1025mm.
- Drawings in this instruction are for Rinnai mounting rail fixing only.
- For additional fixings outside those specified drill additional holes as required in mounting rail.
- Contact Rinnai for region 'D' fixing specifications.
- It is the installer's responsibility to verify the integrity of the structure to which the solar frame is fixed. Failure to do so may void the warranty and could result in death or serious injury.

## DESIGN CRITERIA

- Suitable for buildings up to 100 m in height
- Solar collector mounting for 2 and 3 collector split systems.
- For use with Rinnai split system flat roof frames and SP200A type collectors.
- Wind speeds and pressures are based on AS/NZS 1170.2.2011.
- Importance level 2.
- Annual probability of exceedance 1:250.
- Topographic multiplier  $m_t = 1$  (flat).
- Terrain category 2.
- Region 'a'  $v = 43$  m/s.
- Region 'b'  $v = 53$  m/s.
- Region 'c'  $v = 62$  m/s.
- All holding down bolts to be hot dipped galvanised.
- Design based on Chemset Maxima ®. An equivalent alternative may be utilised on the written advice of suitably qualified structural engineers.

# DESIGN & LOCATION

## WIND AND CLIMATE DESIGN

When the Rinnai High Rise Roof Mounting Frame is installed in accordance with this installation manual it is compliant with AS1170.2:2011.

This manual (including the drawings) cannot cover all types of buildings and eventualities. For buildings outside the limits stated on the drawings and in this manual contact a suitably qualified and registered structural engineer for a custom design.

AS/NZS1170.2:2011 provides guidance on determining the wind pressures applicable to your system install site, taking into account roof shape and geographic location. Some guidance is given in this document, but you may wish to procure a copy of this standard.

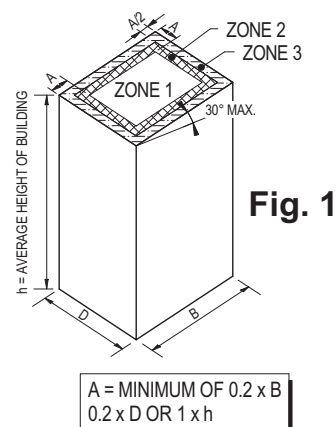
## FIXING LOCATIONS AND ARRAY PLACEMENT

Within the limits specified in this manual, solar collectors can be installed anywhere on the roof, as long as sufficient fixings are used. Higher wind speeds are encountered at roof edges and therefore more fixings are required in these areas.

A roof can be divided into three zones, the internal zone, intermediate zone and the edge zone. The width of these outer zones can be determined based on the length, width and average height of the building.

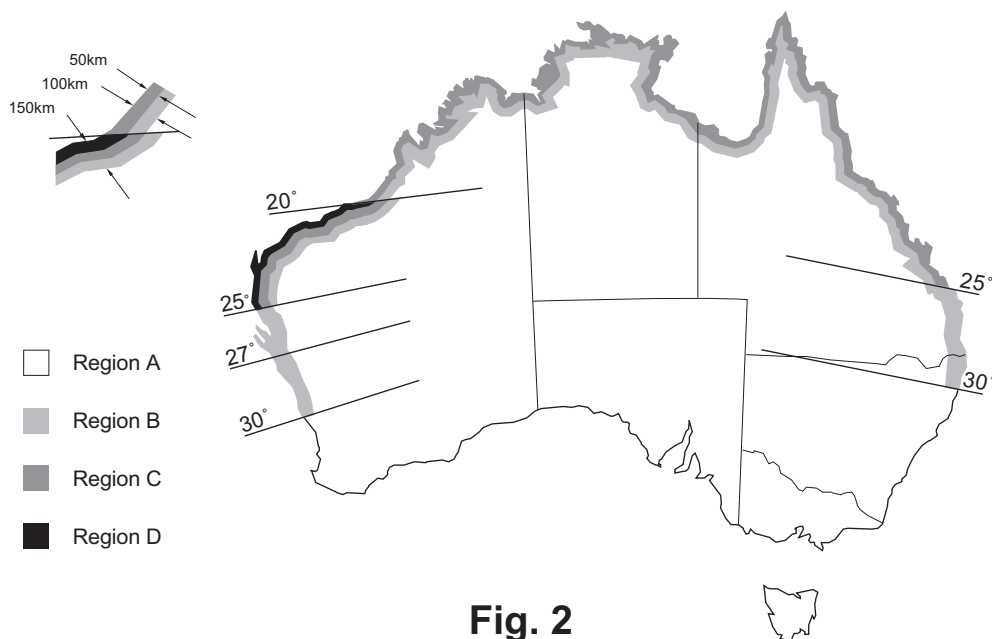
For intermediate or edge zones, fixing spacing must be achieved as per the drawings S001-Concrete roofs (page 11), S002-Steel roofs (page 12) or more closely spaced.

Consistent with the methodology defined in AS1170.2, the width of edge and intermediate zones is determined as shown in Fig. 1.



## AUSTRALIAN WIND REGIONS

For collectors mounted on buildings **over 10m**, the “Commercial High Rise Supplementary Installation Kits” DDHRKIT2 (2 collectors) or DDHRKIT3 (3 collectors) are also required, these are ordered separately from Rinnai.



Indicative selection of towns in Regions A, B, C & D

Region A	Region B		Region C		Region D
Callytharra Springs	Adelaide River	Kyogle	Borroloola	Mackay	Carnarvon
Gascoyne Junction	Atherton	Marble Bar	Broome	Mareeba	Exmouth
Green Head	Biloela	Mullewa	Bundaberg	Millstream	Karratha
Kununurra	Brisbane	Norfolk Island	Burketown	Moreton	Onslow
Lord Howe Island	Christmas Island	Torres Strait Islands	Cairns	Nhulunbuy	Port Hedland
Morawa	Collinsville	Wyndham	Cocos Islands	Normanton	
Toowoomba	Corindi		Darwin	Rockhampton	
Wittanoom	Geraldton		Derby	Townsville	
Bourke	Ivanhoe		Karumba		

# INSTALLATION

## INSTALLATION PROCEDURE

1. Determine the wind region requirement (A, B or C) using Fig. 2 "AUSTRALIAN WIND REGIONS" on page 2.
2. Determine the roof installation zone (1, 2 or 3) using Fig.1 "FIXING LOCATIONS AND ARRAY PLACEMENT" on page 2.
3. Determine the mounting rail fixings using table(s) below:

FIXING FOR MOUNTING RAIL - CONCRETE ROOFS									
ZONE	WIND REGION 'A'			WIND REGION 'B'			WIND REGION 'C'		
	h<10m	10m<h<40m	40m<h<100m	h<10m	10m<h<40m	40m<h<100m	h<10m	10m<h<40m	40m<h<100m
1	AA	AA	AA	AA	AA	AA	AA	AA	AA
2	AA	AA	AA	AA	AA	AA	AA	AA	AA
3	AA	AA	AA	AA	AA	AA	AA	BB	BB

AA - M10 ANCHORS (GRADE 5.8) WITH CHEMSET MAXIMA CAPSULES, 90mm EMBEDMENT  
BB - M10 ANCHORS (GRADE 5.8) WITH CHEMSET MAXIMA CAPSULES, 90mm EMBEDMENT  
PLUS 2 ADDITIONAL M10 ANCHORS (GRADE 5.8) WITH CHEMSET MAXIMA CAPSULES

FIXING FOR MOUNTING RAIL - STEEL ROOFS									
ZONE	WIND REGION 'A'			WIND REGION 'B'			WIND REGION 'C'		
	h<10m	10m<h<40m	40m<h<100m	h<10m	10m<h<40m	40m<h<100m	h<10m	10m<h<40m	40m<h<100m
1	AA	AA	AA	AA	AA	AA	AA	AA	AA
2	AA	AA	AA	AA	AA	AA	AA	AA	BB
3	AA	AA	AA	AA	BB	BB	AA	CC	CC

AA - M8 4.6/S BOLTS  
BB - M10 4.6/S BOLTS  
CC - M10 4.6/S BOLTS PLUS 2 ADDITIONAL M10 4.6/S BOLTS

4. Assemble flat roof frame as described in "Installation Manual Roof Frames for use with Rinnai Solar Hot Water Systems"
5. Mount frame to structure as shown in drawing(s):  
S001 - Concrete roofs (page 11)  
S002 - Steel roofs (page 12)
6. Complete installation of the system as described in "Operation / Installation Manual Commercial Solar Pre-Heat System"
7. For collectors mounted on buildings **over 10m**, the "Commercial High Rise Supplementary Installation Kits" DDHRKIT2 (2 collectors) or DDHRKIT3 (3 collectors) are also required, these are ordered separately from Rinnai.

## ADDITIONAL COMPONENTS

In addition to the components shown in the "Installation Manual Roof Frames for use with Rinnai Solar Hot Water Systems" the following additional components are required and are supplied in the following kits:

Installation	Part. Description / Part No.	Qty.	S001 - Concrete Roofs	S002 - Steel Roofs
2 Collectors	Galvanised sleeve Part No. 36201002	(x4)	Supplied in DDSP2 (MUST BE FITTED)	Supplied in DDSP2 (Fitting is NOT required)
3 Collectors		(x6)	Supplied in DDSP3 (MUST BE FITTED)	Supplied in DDSP3 (Fitting is NOT required)

## WARRANTY

All warranty details are provided in the warranty booklet supplied in the solar controller kit.

## REFERENCES

AS/NZS1170.2:2011 on wind actions

AS3566-2011, self-drilling screws for the building and construction industries.

# CERTIFICATES

## CERTIFICATE - COVER LETTER



16 September 2013

Rinnai Australia  
10-11 Walker Street  
BRAESIDE VIC 3195

### Solar Collector Mounting Frame – Certification of Structural Adequacy

In our capacity as Professional Structural Engineers we have provided consultancy services to analyse and design the fixing arrangement for Rinnai Solar Collector Frames. The design has been produced for a range of building heights up to 100m across the Wind Regions of Australia as defined in AS1170.2:2011.

The fixing arrangements have been detailed on the project structural drawings for concrete and steel roof construction and designed to the appropriated structural codes. Where a proprietary fixing product has been specified, the capacity has been designed in accordance with the manufactures guidelines.

As Professional Structural Engineers within the context of the Building Code of Australia, we hereby certify the structural design of the Solar Collector fixing detail on the following drawings.

- 12ME0541/S001 Revision C3
- 12ME0541/S002 Revision C1

Enclosed are the certification forms as required by the relevant state level building authority.

The certification of the documents above does not constitute certification of the existing roof structure which should be certified as appropriate by a suitably qualified engineer prior to the installation of the frames. The certification is subject to the limitations, Rinnai product and design parameters stated on the drawings.

Structural drawings have been produced to be included within the Rinnai Solar Collector Mounting System Manual. Irwinconsult Pty Ltd ("Irwin") grants to Rinnai Australia Pty Ltd ("Rinnai") a royalty free, non-exclusive, non-transferrable licence of its Copyright in the Works which entitles Rinnai to reproduce the works for the purpose of publication in product manuals.



Joe Bruno  
Director  
Irwinconsult Pty Ltd

12ME0541-20130213-lm1-Rinnai Certification Rev 2.DocxMJ3

Irwinconsult Pty Ltd Level 3, 289 Wellington Parade South, East Melbourne Vic 3002 Australia ABN 89 050 214 894  
t +61 03 9622 9700 f +61 03 9650 6664 mlt@irwinconsult.com.au www.irwinconsult.com.au

Directors Joe Bruno Neil Clarke Phil Gardiner Peter Hale  
Member - Green Building Council Australia

# CERTIFICATES

## CERTIFICATE - NSW

Compliance Certification (for Building Services & or Components)			
Issued under the Building Code of Australia Evidence of suitability Part A2.2 (a) (iii)			
Name of Project	Solar Collector Frame Fixings		
Name of Head Contractor	N/A		
Address of Project	N/A		
Development Consent no.	N/A	Council	-
Construction Certificate no.	N/A		
<b>TYPE OF CERTIFICATE</b> (Tick <input checked="" type="checkbox"/> ) <input checked="" type="checkbox"/> Design <input type="checkbox"/> Installation			
Description / Stage of work	Structural fixing detail of Solar Collector Frame to steel and concrete roofs		
Drawing numbers and specifications	12ME0541/S001 Revision C3, 12ME0541/S002 Revision C1		
I, <b>Joe Bruno</b>			of
Company	<b>Irwinconsult Pty Ltd</b>		Certify that
Address	Level 3, 289 Wellington Parade South, East Melbourne, 3002		
a) each of the building components relating to the discipline and scope of work identified above: <ul style="list-style-type: none"> <li>• has been assessed by me or a person (chosen by me) who was properly qualified to do so, and</li> <li>• has been designed (for a design certificate) and or installed (for an installation certificate) in accordance with the design requirements in order to meet at least the minimum applicable Building Code of Australia 2012 requirements and / or the relevant Australian Standards listed below in appendix A and to be capable of performing to a standard not less than that required.</li> </ul> b) The information contained in this certificate is, to the best of my knowledge and belief, true and accurate.			
Signed			Date
Engineering qualifications / Accredited No.		16/09/13	
		Structural Engineering - C7 No. BPB0828	
<b>Appendix A – Structural</b>			
Australian Standard		BCA 2012 / AS reference	
AS/NZS 1170 - Structural Design Actions Part 0 – 2002 General principles, Part 1 - 2002 Permanent, imposed and other actions / Part 2 - 2002/2011 Wind actions		B1.1, B1.2, Spec B1.2, B1.2, Spec B1.2	
AS 3600 - 2009 Concrete structures		B1.4, Spec A2.3	
AS4100 - 1998 – Steel Structures		Spec A2.3, B1.4	



# CERTIFICATES

## CERTIFICATE - NT (Page 1 of 2)

NORTHERN TERRITORY OF AUSTRALIA  
BUILDING ACT  
SECTION 40 – CERTIFICATE OF COMPLIANCE  
STRUCTURAL DESIGN

**irwinconsult**

shape the present — enrich the future

*All sections must be completed – mark N/A to any question that does not apply*

<b>PROPERTY / PROJECT DETAILS</b>	
Owner (if known):	Rinnai Australia
Lot/Portion Number:	Solar Collection Mounting Frames
Address:	N/A
Location:	N/A
Town / Hundred :	N/A
Description of works : Certification of structural fixing of Rinnai Solar Collector Mounting Frame to steel and concrete roofs	

<b>DOCUMENTS ATTACHED</b>	
Drawing Nos:	Irwinconsult Structural Drawings: 12ME0541/S001 Revision C3, 12ME0541/S002 Revision C1
Other:	

<b>DESIGN BASIS</b> (please list relevant Standards used in the design)			
AS1170.0:2002, AS1170.1: 2002, AS1170.2:2011, AS3600:2009, AS4100:1998.			
Class of Building (BCA): N/A		Type of Construction (BCA volume 1 §C1.1): N/A (eg. Type A fire-resisting construction)	
Building Importance Level (BCA Table B1.2a): 2		Annual Probability of Exceedance for Wind (BCA Table 1.2b): 1 in 250 (ULS) and 1 in 20 (SLS)	
Region: A-C	Regional ultimate wind speed $V_R$ (m/s): Up to 62	Terrain Category:2	Reference height (m): 0-100
$M_{z,cat}$ : 1.4 max	$M_s$ : 1.0	$M_i$ : 1.0	$M_d$ : 1.0
		$V_{des}$ Design Wind Speed at reference height (m/s): 37-87	
Internal Pressure Coefficients ( $C_{pi}$ ):		N/A	
External Pressure Coefficients ( $C_{pe}$ ):		Walls	N/A
		Roof	N/A
Net Pressure Coefficients: ( $C_{p,n}$ )		Roof / Walls	Varies
Imposed Loads, kPa		Floor / Roof	Varies
Earthquake Design Category, EDC (Table 2.1 of AS 1170.4):			
Class of Sub-Soil (Section 4): N/A			
Safe Foundation Bearing Capacity: N/A Site classification (AS2870): N/A			

### COMMENTS / EXCLUSIONS (Exclusions to this Certificate must be clearly identified).

The following items are excluded and shall be certified separately:

- Building structure and supporting structure to which the frames are being fixed

#### Comments:

Certification is for the generic design of structural fixings of Rinnai Solar Collector Frames (Frame models listed on the referenced drawings) to steel and concrete roofs.

Wind loads for the design have been calculated for regions A to C and a reference height of up to 100m. Contractor installing the product is to use the information on the drawings with the appropriate wind regions and building heights.

12ME0541-20120328-Im1-Certification NT.DocxMJ3

Irwinconsult Pty Ltd Level 3, 289 Wellington Parade South, East Melbourne Vic 3002 Australia ABN 89 050 214 894  
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Directors: Greg Bosaid Joe Bruno Alek Cirakovic Neil Clarke Phil Gardiner Peter Hale  
Member - Green Building Council Australia

# CERTIFICATES

## CERTIFICATE - NT (Page 2 of 2)

<b><u>CERTIFICATION BY STRUCTURAL ENGINEER</u></b>			
Company Name <b>IRWINCONSULT PTY LTD</b>		Company NT Registration Number <b>18235ES</b>	
We certify that reasonable care has been taken to ensure that the structural engineering aspects of the works as described above have been designed in accordance with the requirements of the Building Code of Australia and the Northern Territory Building Regulations.			
Name (print clearly) <b>Joseph Bruno</b>	Individual NT Registration Number <b>58575ES</b>	Signature 	Date <b>16.09.13</b>



# CERTIFICATES

CERTIFICATE - QLD (Page 1 of 2)

## Compliance Certificate for building Design or Specification

# 15

### NOTE

This is to be used for the purposes of section 10 of the *Building Act 1975* and/or section 46 of the *Building Regulation 2006*.

**RESTRICTION:** A building certifier (class B) can only give a compliance certificate about whether building work complies with the BCA or a provision of the QDC. A building certifier (Class B) can not give a certificate regarding QDC boundary clearance and site cover provisions.

### 1. Property description

This section need only be completed if details of street address and property description are applicable.

EG. In the case of (standard/generic) pool design/shell manufacture and/or patio and carport systems this section may not be applicable.

The description must identify all land the subject of the application.

The lot & plan details (eg. SP / RP) are shown on title documents or a rates notice.

If the plan is not registered by title, provide previous lot and plan details.

Street address (include no., street, suburb / locality & postcode)

	Postcode
--	----------

Lot & plan details (attach list if necessary)

--

In which local government area is the land situated?

--

### 2. Description of component/s certified

Clearly describe the extent of work covered by this certificate, e.g. all structural aspects of the steel roof beams.

Structural fixing of Rinnai Solar Collector frames to steel and concrete roofs.

A set of generic drawings have been produced covering wind loading conditions in Regions A to C across Australia.

Tabulated data on the drawings enables the installing Contractor to select the required structural fixing detail based on region, base structure and building height


### 3. Basis of certification

Detail the basis for giving the certificate and the extent to which tests, specifications, rules, standards, codes of practice and other publications, were relied upon.

Design carried out to the following Australian Standards

AS1170.0:2002

AS1170.1:2002

AS1170.2:2011

AS3600:2009

AS4100:1998

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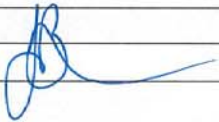
### LOCAL GOVERNMENT USE ONLY

Date received		Reference Number/s		Approved form 15 Version 2 11/11
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# CERTIFICATES

## CERTIFICATE - QLD (Page 2 of 2)

Form 15 continued

<p><b>4. Reference documentation</b> Clearly identify any relevant documentation, e.g. numbered structural engineering plans.</p>	<table border="1"> <tr><td>12ME0541/S001 Revision C3</td></tr> <tr><td>12ME0541/S002 Revision C1</td></tr> <tr><td> </td></tr> <tr><td> </td></tr> <tr><td> </td></tr> <tr><td> </td></tr> <tr><td> </td></tr> <tr><td> </td></tr> </table>	12ME0541/S001 Revision C3	12ME0541/S002 Revision C1						
12ME0541/S001 Revision C3									
12ME0541/S002 Revision C1									
<p><b>5. Building certifier reference number</b></p>	<p>Building certifier reference number</p> <input type="text"/>								
<p><b>6. Competent person details</b> A competent person for building work, means a person who is assessed by the building certifier for the work as competent to practise in an aspect of the building and specification design, of the building work because of the individual's skill, experience and qualifications in the aspect. The competent person must also be registered or licensed under a law applying in the State to practice the aspect.</p> <p>If no relevant law requires the individual to be licensed or registered to be able to give the help, the certifier must assess the individual as having appropriate experience, qualifications or skills to be able to give the help.</p> <p>If the chief executive issues any guidelines for assessing a competent person, the building certifier must use the guidelines when assessing the person.</p>	<p>Name (in full) <input type="text" value="Joseph Bruno"/></p> <p>Company name (if applicable) <input type="text" value="Irwinconsult"/></p> <p>Contact person <input type="text"/></p> <p>Phone no. business hours <input type="text" value="+61 3 9622 9700"/></p> <p>Mobile no. <input type="text"/></p> <p>Fax no. <input type="text"/></p> <p>Email address <input type="text"/></p> <p>Postal address <input type="text" value="Level 3, 289 Wellington Parade South"/> <input type="text" value="East Melbourne, VIC"/> <input type="text" value="Postcode 3002"/></p> <p>Licence or registration number (if applicable) <input type="text" value="RPEQ09894"/></p>								
<p><b>7. Signature of competent person</b> This certificate must be signed by the individual assessed by the building certifier as competent.</p>	<p>Signature </p> <p>Date <input type="text" value="16-9-2013"/></p>								

The Building Act 1975 is administered by  
the Department of Local Government and Planning



# CERTIFICATES

## CERTIFICATE - VIC



### certificate of compliance – design

Building Act 1993 - Victoria

Building Regulations 2006

Regulation 1507

to

relevant building surveyor

postal address

post code

from

building practitioner

Joseph Bruno

category class Civil

property details

postal address

Level 3, 289 Wellington Parade South

post code 3002

municipality

East Melbourne

compliance

I did prepare the design and I certify that the part of design described as:

- **Solar Collector Mounting Frame Fixing Arrangement**

complies with the design intent of the relevant provisions of the following Australian Standards:

- **AS1170.0:2002, AS1170.1:2002, AS1170.2:2011, AS3600:2009, AS4100:1998**

design documents

drawing nos.

12ME0541/S001 Rev C3, 12ME0541/S002 Rev C1

prepared by

Irwinconsult

dated 03.04.13

reference documents

specification

prepared by

dated

computations

High-rise Solar Collector Roof Mounting Frames Report Pages 1-1 to 6-20

prepared by

Irwinconsult

dated 03.04.13

test reports

prepared by

dated

other

documents

prepared by

dated

signature

building practitioner

Joseph Bruno

registration no.

EC 22131

date 16.09.13

The certifier has taken all reasonable steps in preparing this certification.

company statement

This form and the above certification has been made for and on behalf of Irwinconsult Pty Ltd.

director

Irwinconsult Pty Ltd

date 16.09.13

12ME0541-20120328-im1-Certification VIC.docx,MJ3

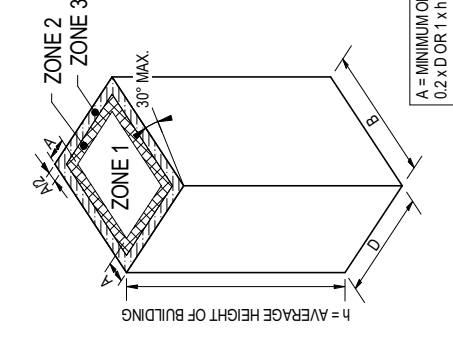


FIXING FOR MOUNTING RAIL				
ZONE	WIND REGION 'A'		WIND REGION 'B'	
	h<10m	10m<h<40m	40m<h<100m	h<10m
1	AA	AA	AA	AA
2	AA	AA	AA	AA
3	AA	AA	AA	AA

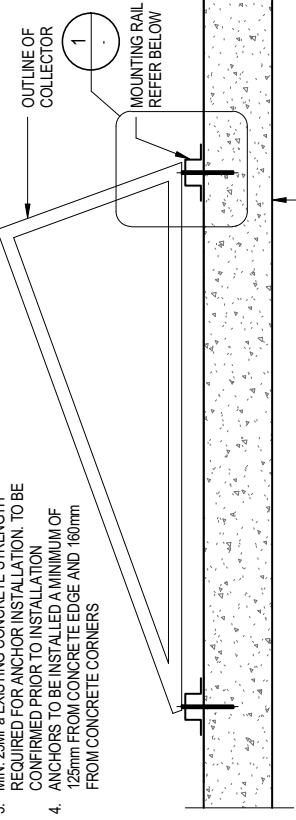
<b>PRODUCT NAME</b>
RINNAI SPLIT SYSTEM HIGH RISE MOUNTING SYSTEM
<b>PRODUCT DESCRIPTION</b>
SOLAR COLLECTOR MOUNTING FOR 2 AND 3 COLLECTOR SPLIT SYSTEMS FOR USE WITH RINNAI SPLIT SYSTEM HIGH RISE ROOF DECKS SP200A TYPE COLLECTORS

<b>DESIGN CRITERIA</b>
WIND SPEEDS AND PRESSURES ARE BASED ON AS/NZS 1170.2:2011
IMPORTANCE LEVEL 2
ANNUAL PROBABILITY OF EXCEEDANCE 1250
TOPOGRAPHIC MULTIPLIER M <sub>t</sub> = 1 (FLAT)
TERRAIN CATEGORY 2
REGION 'A' V <sub>w</sub> = 43 m/s
REGION 'B' V <sub>w</sub> = 43 m/s
REGION 'C' V <sub>w</sub> = 43 m/s
REGION 'D' V <sub>w</sub> = 43 m/s
ALL HOLDING DOWN BOLTS TO BE HOT DIPPED GALVANISED
DESIGN BASED ON RAINSET CHEMSET MAXIMA EQUIVALENT ALTERNATIVE MAY BE UTILISED SUBJECT TO APPROVAL BY A CERTIFIED STRUCTURAL ENGINEER

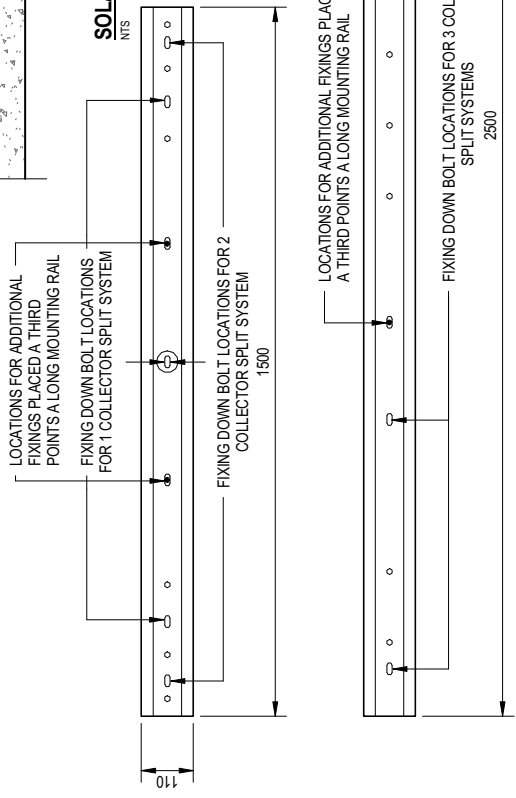
<b>LIMITATIONS</b>
EXISTING ROOF STRUCTURE TO BE VERIFIED FOR ADDITIONAL LOADS BY SUITABLY QUALIFIED STRUCTURAL ENGINEER
EXISTING ROOF FINISH TO BE FLAT
CONSULT STRUCTURAL ENGINEER IN UNUSUAL TERRAIN FOR CUSTOM DESIGN
DESIGN LIMITED TO A COMBINED ANGLE OF ROOF PITCH PLUS SOLAR COLLECTOR PITCH TO BE NO GREATER THAN 30°
ALL SOLAR COLLECTORS TO BE CERTIFIED SEPARATELY
ALL SOLAR COLLECTORS TO BE R400/1000
THIS DRAWING IS FOR MOUNTING RAIL FIXING ONLY
FOR ADDITIONAL FIXINGS DRILL ADDITIONAL SLOTS AS REQUIRED IN MOUNTING RAIL
CONTACT RINNAI FOR REGION 'D' FIXING SPECIFICATIONS OF STANDARD 'D' FIXING
LIMITED TO USE OF STANDARD 'D' FIXING 90x10x1025mm
SOLAR COLLECTORS



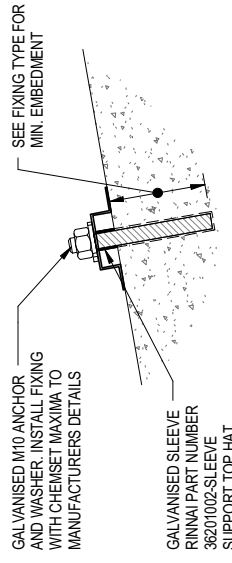
- NOTES
- 1. LOCATIONS OF FIXINGS AS SHOWN BELOW
  - 2. WIND REGION DEFINED IN AS1170.2
  - 3. MIN. 25MPa EXISTING CONCRETE STRENGTH REQUIRED FOR ANCHOR INSTALLATION. TO BE CONFIRMED PRIOR TO INSTALLATION
  - 4. ANCHORS TO BE INSTALLED A MINIMUM OF 125mm FROM CONCRETE EDGE AND 180mm FROM CONCRETE CORNERS



CONCRETE ROOF INSTALLATION ZONES



SOLAR COLLECTOR FIXING TO CONCRETE SECTION



FIXING INTO CONCRETE DETAIL



SOLAR COLLECTOR MOUNTING RAIL FOR 2 AND 3 COLLECTOR SPLIT SYSTEM

SCALE 1:10

CONSTRUCTION ISSUE

<div><div></div><div>irwinconsult</div></div>				Level 3, 289 Wellington Parade South East Melbourne VIC 3002 t +61 3 9822 9700 f +61 3 9650 6664 mhb@irwinconsult.com.au AEN 89 050 214 894				Client <b>RINNAI AUSTRALIA</b>				Drawing Title <b>SOLAR COLLECTOR ROOF FIXING TO CONCRETE ROOF</b>				Project <b>SOLAR COLLECTOR ROOF MOUNTING FRAME RAIL FIXINGS</b>															
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C3	ISSUED FOR CONSTRUCTION	BD	07/02/2013	C2	ISSUED FOR CONSTRUCTION	BD	05/07/2013	C1	ISSUED FOR CONSTRUCTION	BD	03/04/2013	P3	PRELIMINARY ISSUE	TN	12/02/2013	P2	PRELIMINARY ISSUE	TN	05/02/2013	P1	PRELIMINARY ISSUE	TN	05/02/2013								
Issue	Description	By	Date																	Scale at A3 As indicated				Sheet No. S001				Issue C3			

# DRAWING S002: STEEL ROOFS

FIXING FOR MOUNTING RAIL					
ZONE	WIND REGION 'A'		WIND REGION 'B'		WIND REGION 'C'
	h<10m	40m<h<100m	h<10m	40m<h<100m	h<10m
1	AA	AA	AA	AA	AA
2	AA	AA	AA	AA	AA
3	AA	AA	AA	BB	CC

NOTES

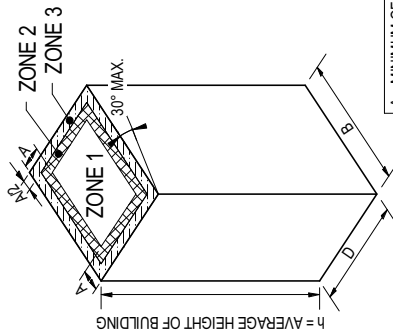
AA - M6 4.6S BOLTS

BB - M10 4.6S BOLTS

CC - M10 4.6S BOLTS PLUS 2 ADDITIONAL M10 4.6S BOLTS

1. LOCATIONS OF FIXINGS AS SHOWN BELOW

2. WIND REGION DEFINED IN AS1170.2



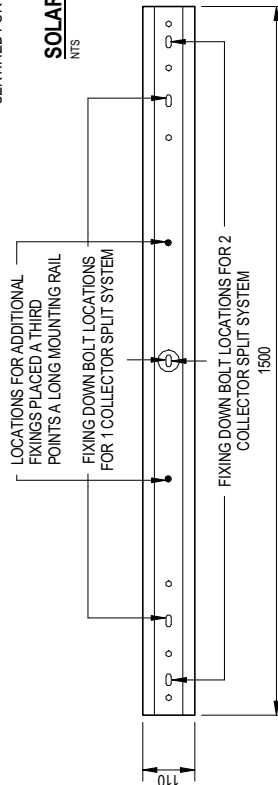
## STEEL ROOF INSTALLATION ZONES

NTS

PURLINS TO BE INDEPENDENTLY CERTIFIED FOR ADDITIONAL LOADING

## SOLAR COLLECTOR FIXING TO STEEL SECTION

NTS



## SOLAR COLLECTOR MOUNTING RAIL FOR 2 AND 3 COLLECTOR SPLIT SYSTEM

SCALE 1:10

Issue	Description	By	Date
C1	CONSTRUCTION ISSUE	TN	03.04.13
P2	PRELIMINARY ISSUE	TN	13.03.13
P1	PRELIMINARY ISSUE	TN	12.02.13

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Project	Client	Date	Drawn	Checked	Approved
HIGH RISE SOLAR COLLECTOR ROOF MOUNTING FRAME RAIL FIXINGS	RINNAI AUSTRALIA	FEB. 2013	TN	EB	JB

Sheet No.	Issue
12AUE041	S002
C1	C1

## PRODUCT NAME

RINNAI SPLIT SYSTEM HIGH RISE MOUNTING SYSTEM

## PRODUCT DESCRIPTION

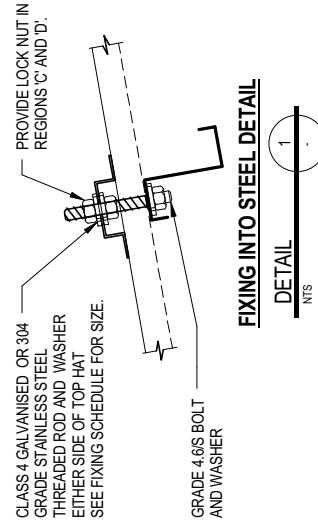
- SOLAR COLLECTOR MOUNTING FOR 2 AND 3 COLLECTOR SPLIT SYSTEMS FOR USE WITH RINNAI SPLIT SYSTEM
- FIXING INTO STEEL ROOF
- SP200A TYPE COLLECTORS

## DESIGN CRITERIA

- WIND SPEEDS AND PRESSURES ARE BASED ON AS/NZS 1170.2:2011
- IMPORTANCE LEVEL 2
- ANNUAL PROBABILITY OF EXCEEDANCE 1/250
- TOPOGRAPHIC MULTIPLIER M = 1 (FLAT)
- TERRAIN CATEGORY 2
- REGION 'A' V<sub>0</sub> = 43 m/s
- REGION 'B' V<sub>0</sub> = 53 m/s
- REGION 'C' V<sub>0</sub> = 62 m/s
- ALL HOLDING DOWN BOLTS TO BE HOT DIPPED GALVANISED

## LIMITATIONS

- EXISTING ROOF STRUCTURE TO BE VERIFIED FOR ADDITIONAL LOADS BY SUITABLY QUALIFIED STRUCTURAL ENGINEER
- SURROUNDING TERRAIN ASSUMED TO BE FLAT. CONSULT STRUCTURAL ENGINEER IN UNDULATING TERRAIN FOR CUSTOM DESIGN
- EXISTING ROOF STRUCTURE TO BE VERIFIED FOR PITCH PLUS SOLAR COLLECTOR PITCH TO BE NO GREATER THAN 30°
- SOLAR COLLECTOR CERTIFIED SEPARATELY
- MAX SOLAR COLLECTOR SIZE: 1900x1025mm
- THIS DRAWING IS FOR MOUNTING RAIL FIXING ONLY
- EXISTING ROOF STRUCTURE TO BE VERIFIED FOR ADDITIONAL HOLES AS REQUIRED FOR MOUNTING RAIL
- CONTACT RINNAI FOR REGION 'D' FIXING SPECIFICATIONS



## CONSTRUCTION ISSUE

# Rinnai

**Rinnai Australia Pty. Ltd.** ABN 74 005 138 769

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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.

Internet: [www.rinnai.com.au](http://www.rinnai.com.au) E-mail: [enquiry@rinnai.com.au](mailto:enquiry@rinnai.com.au)

## National Help Lines

Customer Care Centre  
Tel: 1300 555 545\* Fax: 1300 555 655\*

*\*Cost of a local call higher from mobile or public phones.*  
Hot Water Service Line  
Tel: 1800 000 340