

Approved Building Consent Documents

Please Note: A copy of the stamped approved documents must be available on site for all inspections.

Inspection booking timeframes

Call received	before 3pm inspection will be done	after 3pm inspection will be done
Monday	Wednesday	Thursday
Tuesday	Thursday	Friday
Wednesday	Friday	Monday
Thursday	Monday	Tuesday
Friday	Tuesday	Wednesday

Building inspections and enquiries phone: 03 347 2839

Please ensure all work for inspection is ready the day before. Incomplete work requiring re-inspection will incur an additional inspection fee.



**RECORD OF TITLE
UNDER LAND TRANSFER ACT 2017
FREEHOLD
Search Copy**




R.W. Muir
Registrar-General
of Land

Identifier **887801**
Land Registration District **Canterbury**
Date Issued 23 July 2019

Prior References
CB39A/507

State Fee Simple
Area 663 square metres more or less
Legal Description Lot 33 Deposited Plan 535457

Registered Owners
Jaspreet Singh and Inderjeet Kaur

Interests

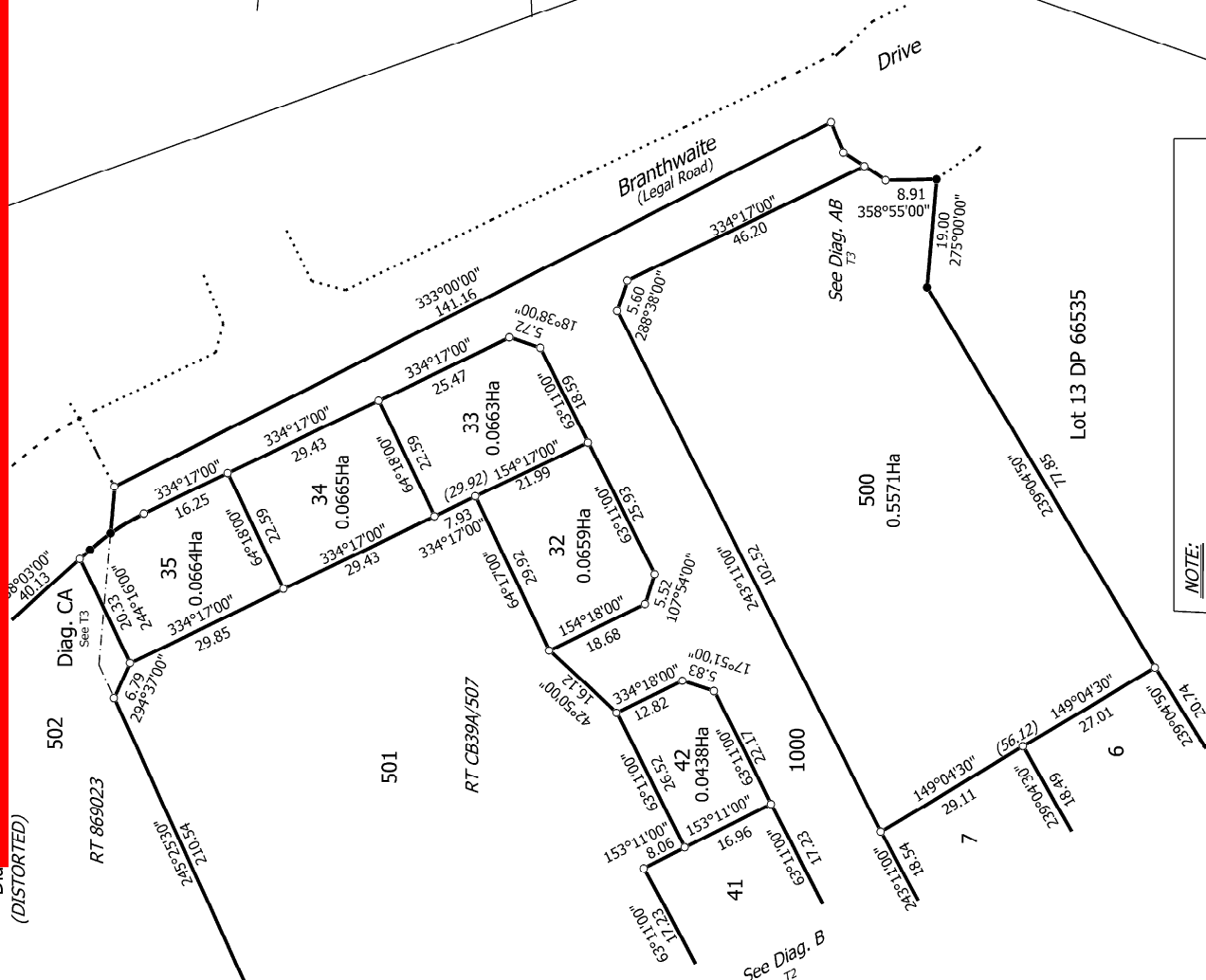
Subject to Part IV A Conservation Act 1987
Subject to Section 11 Crown Minerals Act 1991
11482545.8 Consent Notice pursuant to Section 221 Resource Management Act 1991 - 23.7.2019 at 2:10 pm
Land Covenant in Covenant Instrument 11482545.13 - 23.7.2019 at 2:10 pm
11573505.3 Mortgage to Bank of New Zealand - 11.10.2019 at 3:51 pm

SDC - Approved Building Consent Document - BC1922253 - Pg 2 of 184 - 8/01/2020 - parkea



Diag. CA
(DISTORTED)

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NOTE:
Lot 1000 is to vest in the Selwyn District Council as Road

T 3/3

Surveyor Ref: 12963 Bailey 1

Land District: Canterbury

Lots 6-16, 32-42, 500, 501, 502, 1000 and 1001 being Subdivision of Lot 14 DP

Surveyor: Craig William Hurford
Firm: Survus Contracting Ltd

Title Plan

LT 535457
Approved on: 24/07/2019

Digitally Generated Plan

Generated on: 24/07/2019 2:37pm Page 9 of 9



BUILDING
PROJECT
CERTAINTY

06 November 2019,

Generation Homes Ltd
1 Richmond Avenue
Halswell
CHRISTCHURCH 8025

Attention: Mr E Beker

Dear Evan

SHALLOW GEOTECHNICAL INVESTIGATION REPORT AT LOT 33, BRANTHWAITE, ROLLESTON.

We are pleased to confirm that we have completed our site investigation on the site above to determine the design bearing capacity and to recommend the suitable foundation types for your project. Results of the tests are appended for your information.

Background

We understand that you are intending to construct a single level dwelling with pressed metal tile roofing, brick cladding and an on-grade concrete foundation.

Site Description

Geology

The mapping of the geology for the area¹ shows it to be underlain by grey river alluvium beneath plains or low-level terraces.

Technical Category

The site is mapped in the New Zealand Geotechnical Database² as being inside the Canterbury Earthquake Recovery Authority (CERA) "Green Zone" and is designated by the Ministry of Business, Innovation and Employment (MBIE) as N/A - Rural & Unmapped which carries the following description.

Normal consenting procedures apply in these areas. Technical Category N/A means that non-residential properties in urban areas, properties in rural areas or beyond the extent of land damage mapping, and properties in the Port Hills and Banks Peninsula have not been given a Technical Category.

POSTAL ADDRESS:

PO Box 36 258
Merivale
Christchurch 8146

CONTACT:

Free: 0508 PROCERTO
T: (03) 669 3349
E: roy@procerto.co.nz

www.procerto.co.nz

Previous Investigations

The database does not include any test results on immediately adjoining sites. There are however numerous test results in the area. The results indicate quite variable conditions but with good bearing capacity and are consistent with our investigation.

A detailed subdivision geotechnical report dated 16 February 2017 has been completed by Aurecon which concludes in Section 4.5 that the site can be considered to achieve TC1 performance levels.

Recommended Approach

The Ministry of Business, Innovation and Employment has developed guidance documents for the repairing and rebuilding of houses affected by the Canterbury earthquakes³ which include recommendations for geotechnical investigations.

For normal sites, outside of the DBH Mapping area a shallow subsurface investigation procedure is recommended and therefore no deep investigation or site-specific liquefaction analysis has been undertaken.

Site Investigation Results

Our site investigation was completed on the 05th November 2019 to establish the nature and bearing capacity of the soil. The site investigation consisted of three Scala penetrometer tests undertaken in accordance with the recommendations of NZS 3604⁴ to determine the bearing capacity, and one hand auger bore log with soil descriptions in accordance with the NZ Geotechnical Society Guidelines⁵ to determine the sub-surface soil type (refer attached plan for locations). Penetrometer test results and site bore logs are attached.

The hand auger bore log results generally indicate an organic silty topsoil layer overlaying silty firm moist soil. The water table was not encountered. Hand augers could not continue beyond 500mm due to the density of the materials.

The Scala Penetrometer tests indicate that a Geotechnical Ultimate Bearing Capacity (UBC) of 300kPa, which equates to an Allowable Bearing Capacity of 100kPa, is achieved and maintained at depth of 100mm below the existing ground level.

Conclusion and Foundation Options

The site testing indicates that suitable bearing capacity for standard NZS 3604 foundations or waffle slab is achieved at 100mm below ground level (BGL).

The foundation should be founded below the topsoil layer at 400mm below ground level.

Site preparation should ensure that all grass & organic topsoil material is removed prior to the construction of foundations or placement of gravel fill in accordance with MBIE document section 5.3 & NZS3604:2011 clause 7.5.9.2. Where filling is required, well compacted hard fill (AP65 or AP40) shall be used to backfill up to founding level and shall be compacted in layers no greater than 150mm thick.

Please contact us after excavation is complete and before construction of the foundations so that we may verify the conditions on site and sign off the foundation design.

References

¹ Forsyth, P.J.; Barrell, D.J.A; Jongens, R. (compilers) 2008. Geology of the Christchurch Area. Institute of Geological and Nuclear Sciences 1:250 000 geological map 16. 1 sheet + 67 p. Lower Hutt, New Zealand. GNZ Science.

² New Zealand Geotechnical Database (<https://www.nzgd.org.nz>)

³ Department of Building & Housing Guidance Document, “Repairing and rebuilding houses affected by the Canterbury Earthquakes”. Version 3, December 2013.

⁴ NZS 3604:2011 Timber-framed buildings sets a minimum standard for the design and construction of timber-framed buildings.

⁵ New Zealand Geotechnical Society, 2005: Guidelines for the Field Classification and Description of Soil and Rocks for Engineering Purposes.

Limitations

This Limitation shall be read in conjunction with the IPENZ/ACENZ Standard Terms of Engagement for Consultant Engagement.

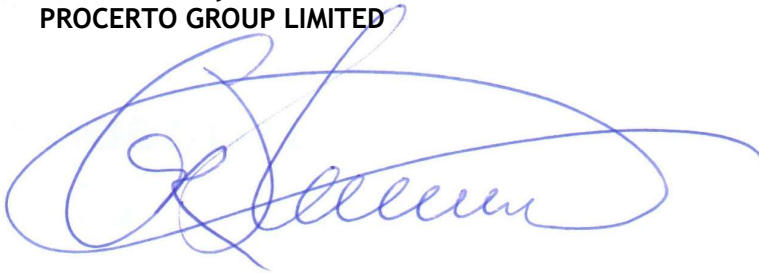
This report has been prepared for the use of the client referred to in the agreement for consultant engagement and for the purposes described in the background above. No liability is accepted for the use of any part of this report for any other purpose or by any other person or entity.

Assessments made in this report are made based on the ground conditions indicated from published sources as described in the references above. Subsurface investigations and site inspections have been completed based on accepted usual industry practice in representative sample locations. Variations in site conditions may exist between test locations and have therefore not been accounted for in this report.

We trust the enclosed is sufficient for your needs now, however should you have any queries please do not hesitate to contact the undersigned. Thank you for using Procerto for this work, we look forward to assisting you in the future.

Yours faithfully

PROCERTO GROUP LIMITED



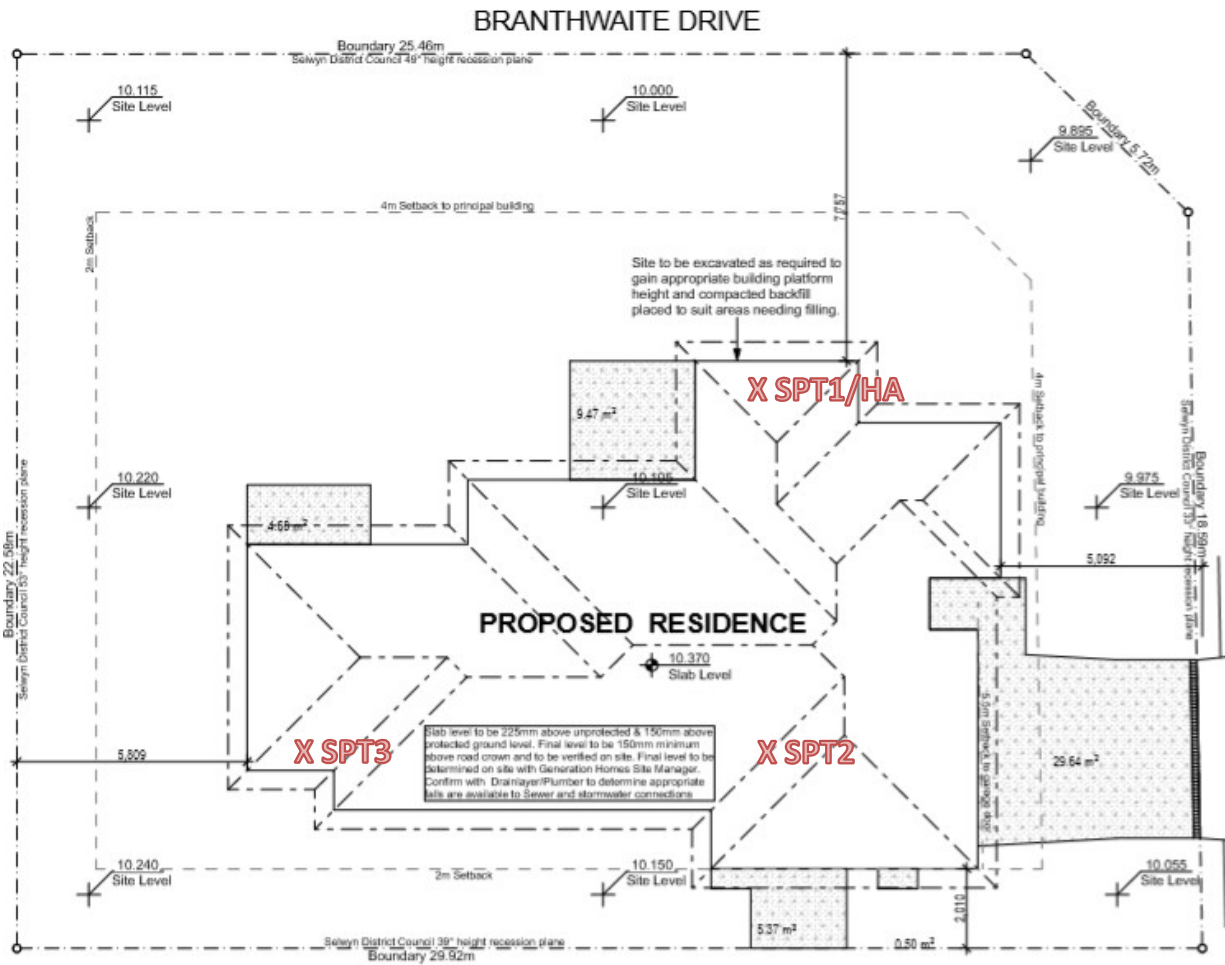
ROY HAMILTON
Director

Cell 021 968 613
roy@procerto.co.nz


Enclosed:

- Site Location Plan
- Hand Auger Borehole and Scala Penetrometer Logs

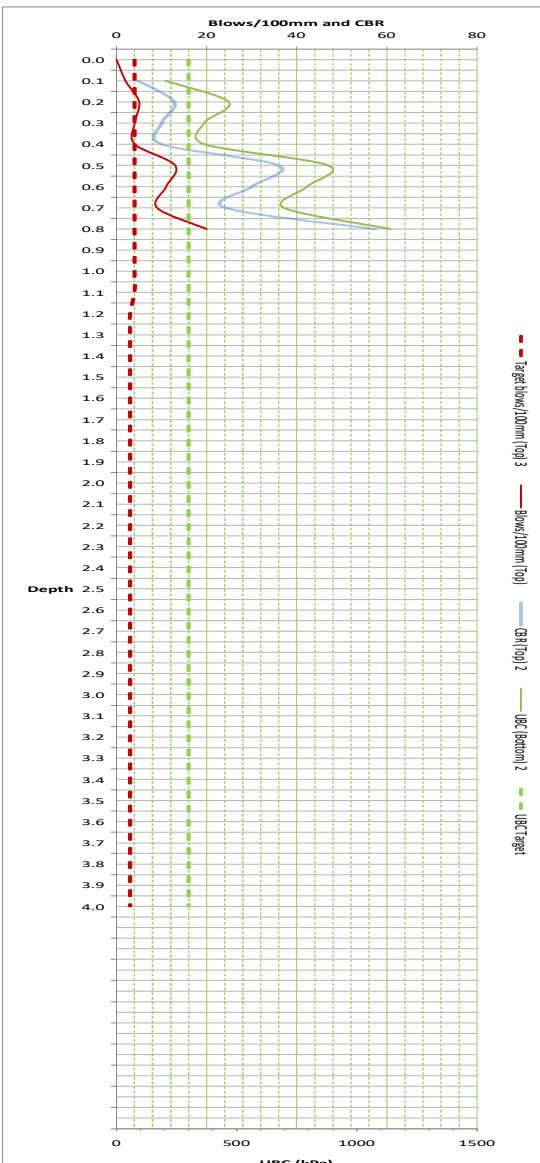
SITE LOCATION



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 BUILDING PROJECT CERTAINTY		Doc No: G1 Rev No: 1a Page: 1 of 1		F 1				
Bore Log / Scala Penetrometer (DCP) Test Results								
Job Name: Lot 33, Branthwaite		Job No: J000545		Date: 6/11/2019				
Client: Generation Homes		Client Contact: Evan Beker		Issue No: 1				
Date of Test: 5/11/2019		Logged by: RH, SD		MBIE Site Classification: TC1				
Time of Test: 2:20pm		Weather: Warm, Dry		CERA Classification: Green				
Test Location: DCP 2		Equipment used: DCP		Site Level: 43m approx				
		Log Graphs						
Depth	Soil Description	USCS 4	Graph Log 5	Water Table	Blows/100mm (Top)	mm/blow	CBR (Top) 2	UBC (Bottom) 2
0.0					0	4		
0.1					2	4	5	204
0.2					5	4	13	466
0.3					4	4	10	365
0.4					4	4	10	365
0.5					13	4	36	879
0.6					11	4	30	792
0.7					9	4	24	697
0.8	END OF TEST		R		20	4	57	1141
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1.0								
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TYPE	COARSE					FINE			ORGANIC
	Boulders	Cobbles	Gravel	Sand	Silt	Clay	Organic Soil		
Size Range (mm)	>200	60-200	20-60	0.6-0.075	0.075-0.006	0.006-0.002			
Graphic Symbol									



Notes:

- Dynamic Cone Penetrometer and Test Bore log tests give an indication of the ground condition at the location of the tests only. While they are representative of typical conditions across the site, they do not identify variations in the ground away from the test locations. This report does not cover slope stability or suitability of the site for building.
- Dynamic Cone Penetrometer Ultimate Bearing Capacity and CBR from correlations from Stockwell, M.J. Determination of allowable bearing pressure under small structures. New Zealand Engineering, Vol. 32, No. 6, June 1977: 132-135.
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Issue Date 6/11/2019

Signed

GR HAMILTON

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Notes: 1 Dynamic Cone Penetrometer and Test Bore log tests give an indication of the ground condition at the location of the tests only. While they are representative of typical conditions across the site, they do not identify variations in the ground away from the test locations. This report does not cover slope stability or suitability of the site for building. 2 Dynamic Cone Penetrometer Ultimate Bearing Capacity and CBR from correlations from Stockwell, M.J. Determination of allowable bearing pressure under small structures. New Zealand Engineering, Vol. 32, No. 6, June 1977: 132-135. 3 NZS3604:2011 "Good Ground" Criteria: Number of blows / 100mm of penetration below underside of footing: 5 blows / 100mm to a depth equal to twice the width of the widest footing and 3 blows / 100mm at depths greater than twice the width of the footing. 4 The Unified Soil Classification System (USCS) is a soil classification system used in engineering and geology to describe the texture and grain size of a soil. The classification system can be applied to most unconsolidated materials, and is represented by a two-letter symbol. 5 Field Description of Soil and Rock, Guideline for the Field Classification and Description of Soil and Rock for Engineering Purposes, NZ Geotechnical Society Inc, 2005																																																																																																																																																																																																																																																																																																																																																																																																	
Issue Date: 6/11/2019		Signed:		GR HAMILTON																																																																																																																																																																																																																																																																																																																																																																																													

Memorandum from licensed building practitioner: Certificate of design work

Section 45 and Section 30C, Building Act 2004

Please fill in the form as fully and correctly as possible.

If there is insufficient room on the form for requested details, please continue on another sheet and attach the additional sheet(s) to this form.

THE BUILDING

Street address: Lot 33

Suburb: Branthwaite Subdivision

Town/City: Rolleston

Postcode: 0991

THE OWNER

Name(s): Generation Homes (Christchurch South) Limited

Mailing address: As above

Suburb:

PO Box/Private Bag:

Town/City:

Postcode:

Phone number:

Email address: EvanB@generation.co.nz

BASIS FOR PROVIDING THIS MEMORANDUM

I am providing this memorandum in my role as the: Please tick the option that applies (✓)	
(X)	sole designer of all of the RBW design outlined in this memorandum – I carried out all of the RBW design myself – no other person will be providing any additional memoranda for the project
(X)	lead designer who carried out some of the RBW design myself but also supervised other designers – this memorandum covers their RBW design work as well as mine, and no other person will be providing any additional memoranda for the project
(X)	lead designer for all but specific elements of RBW – this memorandum only covers the RBW design work that I carried out or supervised and the other designers will provide their own memoranda relating to their specific RBW design
(✓)	specialist designer who carried out specific elements of RBW design work as outlined in this memorandum – other designers will be providing a memorandum covering the remaining RBW design work

IDENTIFICATION OF DESIGN WORK THAT IS RESTRICTED BUILDING WORK (RBW)

I, Graeme Roy Hamilton carried out / supervised the following design work that is restricted building work

PRIMARY STRUCTURE: B1

Design work that is restricted building work	Description	Carried out/ supervised	Reference to plans and specifications
<i>Tick (✓) if included</i> <i>Cross (X) if excluded</i>	<i>[If appropriate, provide details of the restricted building work]</i>	<i>[Specify whether you carried out this design work or supervised someone else carrying out this design work]</i>	<i>[If appropriate, specify references]</i>

Primary structure

All RBW Design work relating to B1	(X)		(X) Carried out (X) Supervised	
Foundations and subfloor framing	(√)	<i>Waffle slab foundation</i>	(√) Carried out (√) Supervised	<i>Refer Procerto Drawings</i>
Walls	(X)		(X) Carried out (X) Supervised	
Roof	(X)		(X) Carried out (X) Supervised	
Columns and beams	(X)		(X) Carried out (X) Supervised	
Bracing	(X)		(X) Carried out (X) Supervised	
Other	(X)		(X) Carried out (X) Supervised	

EXTERNAL MOISTURE MANAGEMENT SYSTEMS: E2

All RBW design work relating to E2	(X)		(X) Carried out (X) Supervised	
Damp proofing	(X)		(X) Carried out (X) Supervised	
Roof cladding or roof cladding system	(X)		(X) Carried out (X) Supervised	
Ventilation system (for example, subfloor or cavity)	(X)		(X) Carried out (X) Supervised	
Wall cladding or wall cladding system	(X)		(X) Carried out (X) Supervised	
Waterproofing	(X)		(X) Carried out (X) Supervised	
Other	(X)		(X) Carried out (X) Supervised	

FIRE SAFETY SYSTEMS: C1 – C6

Emergency warning systems, evacuation and fire service operation systems, suppression or control systems, or other	(X)		(X) Carried out (X) Supervised	
--	-----	--	-----------------------------------	--

Note: The design of fire safety systems is only restricted building work when it involves small-to-medium apartment buildings as defined by the Building (Definition of Restricted Building Work) Order 2011.

Note: continue on another page if necessary.

WAIVERS AND MODIFICATIONS

Waivers or modifications of the building code are required () Yes (X) No

If Yes, provide details of the waivers or modifications below:

Clause	Waiver/modification required
<i>[List relevant clause numbers of building code]</i>	<i>[Specify nature of waiver or modification of building code]</i>

Note: continue on another page if necessary.

ISSUED BY

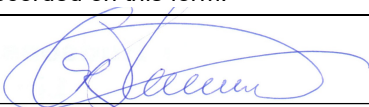
Name: Graeme Roy Hamilton	LBP or Registration number: 127491
The practitioner is a:	(X) Design LBP (X) Registered architect (√) Chartered professional engineer
Design Entity or Company (optional): Procerto Group Limited	
Mailing address (if different from below): PO Box 36 258, Merivale, Christchurch 8146	
Street address / Registered office: 1613 Homebush Road	
Suburb: RD1	Town/City: Darfield
PO Box/Private Bag:	Postcode: 7571
Phone number: 03 669 3349	Mobile: 021 968 613
After Hours:	Fax:
Email address: roy@procerto.co.nz	Website: www.procerto.co.nz

DECLARATION

I Graeme Roy Hamilton *[name of practitioner]*, LBP,

state that I have applied the skill and care reasonably required of a competent design professional in carrying out or supervising the Restricted Building Work (RBW) described in this form, and that based on this, I also state that the RBW:

- Complies with the building code; or
- ~~Complies with the building code subject to any waiver or modification of the building code recorded on this form.~~

Signature: 

Date: 6 November 2019

PRODUCER STATEMENT – PS1 – DESIGN

(Guidance on use of Producer Statements (formerly page 2) is available at www.engineeringnz.org)

ISSUED BY:
(Design Firm)

TO:
(Owner/Developer)

TO BE SUPPLIED TO:
(Building Consent Authority)

IN RESPECT OF:
(Description of Building Work)

AT:
(Address)

Town/City: LOT DP SO
(Address)

We have been engaged by the owner/developer referred to above to provide:

.....
(Extent of Engagement)

services in respect of the requirements of Clause(s).....of the Building Code for:

☐ All or ☐ Part only (as specified in the attachment to this statement), of the proposed building work.

The design carried out by us has been prepared in accordance with:

☐ Compliance Documents issued by the Ministry of Business, Innovation & Employment.....or
(verification method/acceptable solution)

☐ Alternative solution as per the attached schedule.....

The proposed building work covered by this producer statement is described on the drawings titled:

.....and numbered;
together with the specification, and other documents set out in the schedule attached to this statement.

On behalf of the Design Firm, and subject to:

- (i) Site verification of the following design assumptions
- (ii) All proprietary products meeting their performance specification requirements;

I believe on reasonable grounds that a) the building, if constructed in accordance with the drawings, specifications, and other documents provided or listed in the attached schedule, will comply with the relevant provisions of the Building Code and that b), the persons who have undertaken the design have the necessary competency to do so. I also recommend the following level of construction monitoring/observation:

☐ CM1 ☐ CM2 ☐ CM3 ☐ CM4 ☐ CM5 (Engineering Categories) or ☐ as per agreement with owner/developer (Architectural)

I, am: ☐ CPEng # ☐ Reg Arch #
(Name of Design Professional)

I am a member of: ☐ Engineering New Zealand ☐ NZIA and hold the following qualifications:.....

The Design Firm issuing this statement holds a current policy of Professional Indemnity Insurance no less than \$200,000*.

The Design Firm is a member of ACENZ: ☐

SIGNED BY (Signature)
(Name of Design Professional)

ON BEHALF OF Date
(Design Firm)

Note: This statement shall only be relied upon by the Building Consent Authority named above. Liability under this statement accrues to the Design Firm only. The total maximum amount of damages payable arising from this statement and all other statements provided to the Building Consent Authority in relation to this building work, whether in contract, tort or otherwise (including negligence), is limited to the sum of \$200,000.*

This form is to accompany **Form 2 of the Building (Forms) Regulations 2004** for the application of a Building Consent.
THIS FORM AND ITS CONDITIONS ARE COPYRIGHT TO ACENZ, ENGINEERING NEW ZEALAND AND NZIA



BUILDING
PROJECT
CERTAINTY

6 November 2019

Generation Homes Ltd
1 Richmond Avenue
Halswell
CHRISTCHURCH 8025

Attention: Mr E Beker

Dear Evan,

ENGINEERING INSPECTIONS - LOT 33, BRANTHWAITE, ROLLESTON

Further to the provision of our Design Producer Statement (PS1) for the works above, we advise that the following inspections will be required to allow us to establish that the works have been constructed in accordance with our design proposals and that any design assumptions that we have made are appropriate. The inspections will be required before we can issue the Construction Review Producer Statement (PS4) for inclusion with the application for the Code Compliance Certificate for the works.

The required inspections include:

1. An inspection during the foundation construction to confirm that the foundation conditions are consistent with the geotechnical report.
2. Inspection of the reinforcing steel before concrete is poured.

Please ensure that we are advised of the status of the works at least three days in advance of the above activities occurring to allow us to book the required inspections into our schedule.

Please contact the undersigned if you have any queries regarding the inspection schedule above

Yours faithfully

PROCERTO GROUP LIMITED

ROY HAMILTON
Director

Cell 021 968 613
roy@procerto.co.nz

POSTAL ADDRESS:

PO Box 36 258
Merivale
Christchurch 8146

CONTACT:

Free: 0508 PROCERTO
T: (03) 669 3349
E: roy@procerto.co.nz

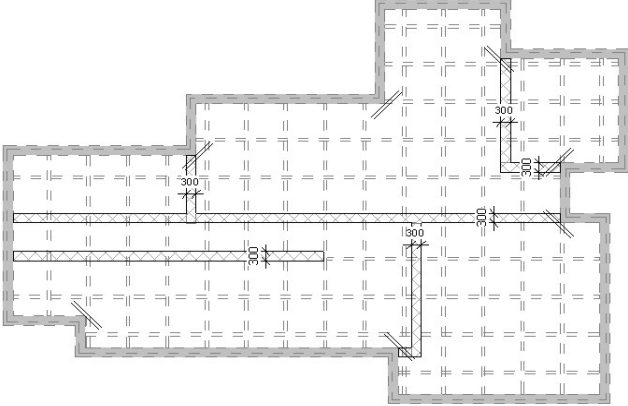
www.procerto.co.nz

DESIGN CALCULATIONS

FOR

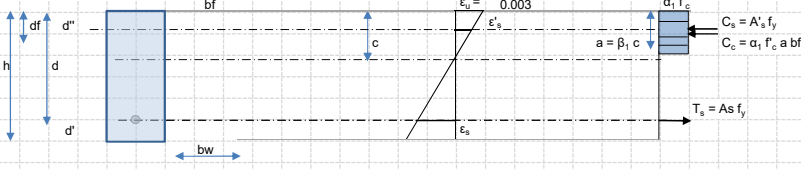
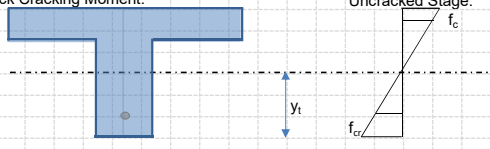
Branthwaite Lot 33

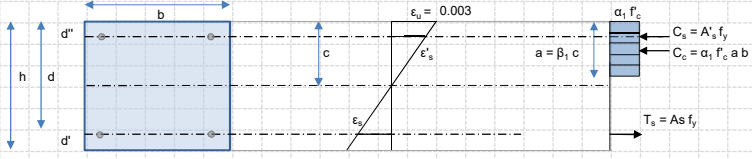
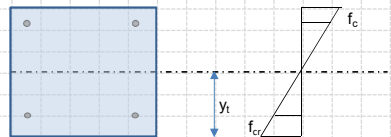
6/11/2019

calculation sheet		procerto									
Job No:	J000545	Job Name:	Branthwaite Lot 33								
Description:		Foundation Design									
		Page	1 of 5								
		Date:	6/11/2019								
		By:	GRH								
<p>INTRODUCTION</p> <p>A new home is proposed. The foundation conditions are TC1 and require specific design.</p> <p>The design will need to be in accordance with the results of the site specific geotechnical investigation completed by Procerto Group Ltd on 21 March 2019. This confirms that 100kPa allowable bearing capacity is achieved at 300mm B.G.L.</p> <p>METHODOLOGY</p> <ol style="list-style-type: none"> 1) Consider structure and develop structural model 2) Review MoBIE Guidelines and NZ Standards to confirm design requirements 3) Confirm Assumptions (If any) 4) Calculate loads 5) Determine applicable load combinations 6) Check current proposed structure 7) Design new structural elements 8) Design structural components 9) Detail structural components <p>1) EXISTING / NEW STRUCTURE</p> <p>The proposed design is shown below</p>  <p>2) GUIDELINES AND STANDARDS</p> <p>The design will be undertaken in accordance with the following documentation:</p> <ol style="list-style-type: none"> 1) Ministry of Business, Innovation and Employment (MoBIE) - New Zealand Building Code - Clause B1 Structure 2) AS/NZS 1170.0:2002 Structural design actions. Part 0: General principles 3) AS/NZS 1170.1:2002 Structural design actions. Part 1: Permanent, imposed and other actions 4) AS/NZS 1170.2:2011 Structural design actions. Part 2: Wind actions 5) AS/NZS 1170.3:2003 Structural design actions. Part 3: Snow and Ice Actions 6) AS/NZS 1170.5:2004 Structural design actions. Part 5: Earthquake actions - New Zealand 7) NZS 3603:1993 Timber structures standard 8) AS/NZS 1748.1:2011, Timber - Solid - Stress-graded for structural purposes - General requirements 9) NZS 3404 Parts 1 and 2:1997, Steel Structures Standard <p>3) ASSUMPTIONS</p> <p>The building is categorised as Importance Level 2.</p> <p>For a 50 year working life the annual probability of exceedance for events is</p> <table border="1"> <thead> <tr> <th>ULS</th> <th>SLS</th> </tr> </thead> <tbody> <tr> <td>Wind 1/500</td> <td>All 1/25</td> </tr> <tr> <td>Snow 1/150</td> <td></td> </tr> <tr> <td>Earthquake 1/500</td> <td></td> </tr> </tbody> </table> <p>AS/NZS 1170.0:2002 Table 3.2</p> <p>AS/NZS 1170.0:2002 Table 3.3</p> <p>IL2</p> <p>Reviewed:</p> <p>Approved:</p>				ULS	SLS	Wind 1/500	All 1/25	Snow 1/150		Earthquake 1/500	
ULS	SLS										
Wind 1/500	All 1/25										
Snow 1/150											
Earthquake 1/500											

calculation sheet				procerto	
Job No: J000545		Job Name: Branthwaite Lot 33			
Description: Foundation Design				Page 2 of 5 Date: 6/11/2019 By: GRH	
4) CALCULATE LOADS					
a) Permanent Load (G)					
Roof	Cladding	Metrotile Roofing	0.00	0.35	kPa
	Sarking		-		
	Misc.	Wiring, sisalation, fittings and netting etc.	0.02		
	Building Paper	Inc Above	-		
	Batts	R3.2	0.03		
	Truss	150x50 SG8 @ 900crs. (x3 for chords and web)	0.20		
	Battens	70x35 SG8 @ 900crs.	0.01		
	Ceiling	13mm Gib	0.09		
Int. Wall	Misc.	Wiring, sisalation, fittings and netting etc.	0.02	0.25	kPa
	Building Paper	Inc Above	-		
	Batts	R3.2	0.03		
	Framing	90x45 SG8 @ 600crs. x2	0.06		
	Lining	10mm Gib x2	0.14		
Ext. Wall	Cladding	Brick Veneer 70mm	1.33	1.51	kPa
	Netting	Wiring, sisalation and fittings	0.02		
	Building Paper	Inc Above	-		
	Batts	R3.2	0.03		
	Framing	90x45 SG8 @ 600crs. (EW)	0.06		
	Lining	10mm Gib	0.07		
Ext. Wall 2	Cladding	Linea Weatherboard 150	0.25	0.43	kPa
Floor	Finish	Carpet		0.14	kPa
b) Live Load (Q)					
		Uniformly distributed, kPa	Concentrated, kN		
	Roof	0.25	1.1		AS/NZS 1170.1:2002 T3.1
	Floor	1.50	1.8		AS/NZS 1170.1:2002 T3.2
	Balcony	2.00	1.8	over 350mm ²	
	Stairs	2.00	2.7		
	Non Habitable Roof Space	0.50	1.4		
	Garage	2.50	13		
	Area Reduction Factor	$\psi_a =$	1.00	A = 15 m ²	AS/NZS 1170.1:2002 3.4.2
c) Wind Load (W) Dead and live loads are dominating in this design.					
d) Snow Load (S)					
e) Earthquake Load (E)					
5) LOAD COMBINATIONS					
	ULS	SLS			
	1.35G	G	$\psi_s =$	0.7	AS/NZS 1170.0:2002 4.3
	1.2G + 1.5Q	G + ψ_s Q	$\psi_l =$	0.4	AS/NZS 1170.0:2002 Table4.1
	1.2G + 1.5 ψ_l Q	G + ψ_l Q	$\psi_c =$	0.4	
	1.2G + W _u + ψ_c Q	W _s			
	0.9G + W _u	E _s			
	G + E _u + ψ_c Q				
	1.2G + S _u + ψ_c Q				
6) CHECK CURRENT PROPOSED STRUCTURE					
a) Check Load					
Design requirements (ULS for TC1) from SpaceGass:					
		Mid. Loss Support			
	M*	V*	Δ^*		
	kNm	kN	mm		
Slab Edge	1.75	6.37	0.37		
Int. Rib	0.66	2.98	0.37		
Int. Thick.	0.96	2.53	0.33		
Reviewed:					
Approved:					

calculation sheet		procerto																													
Job No:	J000545	Job Name:	Branthwaite Lot 33																												
Description:		Foundation Design																													
		Page	3 of 5																												
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		By:	GRH																												
<p>b) Check Slab Edge</p> <p>Design Criteria : 300 kPa ULS at 0.3m B.E.G.L. Lower limit of acceptable soil strength: 150 kPa (raw)</p> <p>Slab Edge Section and Properties:</p> <table border="0"> <tr> <td>h = 300 mm</td> <td>A_s = 226 mm²</td> <td>f_c = 20 MPa</td> <td>Reinforcement Class : E</td> </tr> <tr> <td>b = 300 mm</td> <td>A'_s = 197.92 mm²</td> <td>f_{co} = 50 MPa</td> <td>Mesh: 3 6</td> </tr> <tr> <td>d' = 50 mm</td> <td>β₁ = 0.85</td> <td>f_y = 500 MPa</td> <td>Top: 1 HD 12</td> </tr> <tr> <td>d' = 75 mm</td> <td>α₁ = 0.85</td> <td>f_{yt} = 300 MPa</td> <td>Bottom: 2 HD 12</td> </tr> <tr> <td>d = 225 mm</td> <td>ρ = 0.0034</td> <td>E_c = 20.12 GPa</td> <td></td> </tr> <tr> <td>a = 22.176 mm</td> <td>ρ_{min} = 0.002</td> <td>E_s = 200 GPa</td> <td></td> </tr> <tr> <td>c = 26.089 mm</td> <td>ρ_{max} = 0.010 ≤ 0.025</td> <td>η = 9.94</td> <td></td> </tr> </table> <p>Check Flexural Strength:</p> <p>Nominal flexural strength: $M^* \leq \phi M_n$</p> <p>M_n = 24.19 kNm φ = 0.85 φM_n = 20.56 kNm ≥ M* = 1.75 OK</p> <p>Check Cracking Moment: Uncracked Stage:</p> <p>Cracking Moment: $M_{cr} = \frac{f_r I_g}{y_t}$</p> <p>λ = 1.0 for concrete with no lightweight aggregates f_r = 2.68 MPa</p> <p>Uncracked Stage:</p> <p>y_t = 151.65 mm I_g = 686.12 10⁶ mm⁴ M_{cr} = 12.1 kNm > M* = 1.75 Concrete uncrack</p> <p>Cracked Stage:</p> <p>y² + 14.99 y - 3372 = 0 y = 51.1 mm I_{cr} = 81.3 10⁶ mm⁴ M_{cr} = 4.3 kNm</p> <p>Check Shear Strength Provided by Concrete:</p> <p>Nominal shear strength: $V_c = v_c A_{cv}$</p> <p>v_b = 0.46 MPa k_d = 1.00 k_a = 1.00 V_c = k_d k_a v_b = 0.46 MPa A_{cv} = 90000 mm² φ = 0.75 φV_c = 31.25 kN V* = 6.37 < φV_c / 2 OK</p> <p>Analysis Results:</p> <p>Refer attached SpaceGass analysis reports for bending, shear and deflection. Design is consistent with the requirements of MBIE Guidelines Clause 5.4 Deflection (Max over 2.0m cantilever) = 0.37 mm is 1 in 5405.4 < 1 in 200 OK</p>				h = 300 mm	A _s = 226 mm ²	f _c = 20 MPa	Reinforcement Class : E	b = 300 mm	A' _s = 197.92 mm ²	f _{co} = 50 MPa	Mesh: 3 6	d' = 50 mm	β ₁ = 0.85	f _y = 500 MPa	Top: 1 HD 12	d' = 75 mm	α ₁ = 0.85	f _{yt} = 300 MPa	Bottom: 2 HD 12	d = 225 mm	ρ = 0.0034	E _c = 20.12 GPa		a = 22.176 mm	ρ _{min} = 0.002	E _s = 200 GPa		c = 26.089 mm	ρ _{max} = 0.010 ≤ 0.025	η = 9.94	
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Description: Foundation Design		Page 4 of 5	Date: 6/11/2019																												
		By: GRH																													
<p>c) Check Internal Rib Internal Thickening Section and Properties:</p>  <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 25%;">h = 300 mm</td> <td style="width: 25%;">As = 113.1 mm²</td> <td style="width: 25%;">fc = 20 MPa</td> <td style="width: 25%;">Reinforcement Class : E</td> </tr> <tr> <td>b = 100 mm</td> <td>As = 84.823 mm²</td> <td>fcd = 50 MPa</td> <td>Mesh: 3 6</td> </tr> <tr> <td>d' = 75 mm</td> <td>β1 = 0.85</td> <td>fy = 500 MPa</td> <td>Top: 0 HD 12</td> </tr> <tr> <td>d'' = 50 mm</td> <td>α1 = 0.85</td> <td>fyt = 500 MPa</td> <td>Bottom: 1 HD 12</td> </tr> <tr> <td>d = 225 mm</td> <td>ρ = 0.0050</td> <td>Ec = 20.12 GPa</td> <td></td> </tr> <tr> <td>a = 33.26 mm</td> <td>ρmin = 0.002</td> <td>Es = 200 GPa</td> <td></td> </tr> <tr> <td>c = 39.13 mm</td> <td>ρmax = 0.010 ≤ 0.025</td> <td>η = 9.94</td> <td></td> </tr> </table> <p>Check Flexural Strength: Nominal flexural strength: $M^* \leq \phi M_n$ $M_n = 11.78 \text{ kNm}$ $\phi = 0.85$ $\phi M_n = 10.02 \text{ kNm} \geq M^* = 0.66 \text{ OK}$</p> <p>Check Cracking Moment:  Cracking Moment: $M_{cr} = \frac{f_r I_g}{y_t}$ $\lambda = 1.0$ for concrete with no lightweight aggregates $f_r = 2.68 \text{ MPa}$ Uncracked Stage: $y_t = 152.44 \text{ mm}$ $I_g = 230.5 \times 10^6 \text{ mm}^4$ $M_{cr} = 4.1 \text{ kNm} \geq M^* = 0.66 \text{ Concrete uncrack}$</p> <p>Check Shear Strength Provided by Concrete: Nominal shear strength: $V_c = v_c A_{cv}$ $v_b = 0.54 \text{ MPa}$ $k_d = 1.00$ $k_a = 1.00$ $V_c = k_d k_a v_b = 0.54 \text{ MPa}$ $A_{cv} = 30000 \text{ mm}^2$ $\phi = 0.75$ $\phi V_c = 12.10 \text{ kN}$ $V^* = 2.98 < \phi V_c / 2 \text{ OK}$</p> <p>Analysis Results: Refer attached SpaceGass analysis reports for bending, shear and deflection. Design is consistent with the requirements of MBIE Guidelines Clause 5.4 Deflection (Max over 2.0m cantilever) = 0.37 mm is 1 in 5405.4 < 1 in 200 OK</p>				h = 300 mm	As = 113.1 mm ²	fc = 20 MPa	Reinforcement Class : E	b = 100 mm	As = 84.823 mm ²	fcd = 50 MPa	Mesh: 3 6	d' = 75 mm	β1 = 0.85	fy = 500 MPa	Top: 0 HD 12	d'' = 50 mm	α1 = 0.85	fyt = 500 MPa	Bottom: 1 HD 12	d = 225 mm	ρ = 0.0050	Ec = 20.12 GPa		a = 33.26 mm	ρmin = 0.002	Es = 200 GPa		c = 39.13 mm	ρmax = 0.010 ≤ 0.025	η = 9.94	
h = 300 mm	As = 113.1 mm ²	fc = 20 MPa	Reinforcement Class : E																												
b = 100 mm	As = 84.823 mm ²	fcd = 50 MPa	Mesh: 3 6																												
d' = 75 mm	β1 = 0.85	fy = 500 MPa	Top: 0 HD 12																												
d'' = 50 mm	α1 = 0.85	fyt = 500 MPa	Bottom: 1 HD 12																												
d = 225 mm	ρ = 0.0050	Ec = 20.12 GPa																													
a = 33.26 mm	ρmin = 0.002	Es = 200 GPa																													
c = 39.13 mm	ρmax = 0.010 ≤ 0.025	η = 9.94																													
		Reviewed:																													
		Approved:																													

calculation sheet		procerto	
Job No:	J000545	Job Name:	Branthwaite Lot 33
Description:	Foundation Design		Page 5 of 5 Date: 6/11/2019 By: GRH
d) Check Internal Thickening Slab Edge Section and Properties: 			
$h = 300 \text{ mm}$ $b = 300 \text{ mm}$ $d'' = 50 \text{ mm}$ $d' = 75 \text{ mm}$ $d = 225 \text{ mm}$ $a = 22.176 \text{ mm}$ $c = 26.089 \text{ mm}$	$A_s = 226 \text{ mm}^2$ $A'_s = 311.02 \text{ mm}^2$ $\beta_1 = 0.85$ $\alpha_1 = 0.85$ $\rho = 0.0034$ $\rho_{\min} = 0.002$ $\rho_{\max} = 0.010 \leq 0.025$	$f'_c = 20 \text{ MPa}$ $f_{co} = 50 \text{ MPa}$ $f_y = 500 \text{ MPa}$ $f_{yt} = 300 \text{ MPa}$ $E_c = 20.12 \text{ GPa}$ $E_s = 200 \text{ GPa}$ $\eta = 9.94$	Reinforcement Class : E Mesh: 3 6 Top: 2 HD 12 Bottom: 2 HD 12
Check Flexural Strength: Nominal flexural strength: $M^* \leq \phi M_n$ $M_n = 24.19 \text{ kNm}$ $\phi = 0.85$ $\phi M_n = 20.56 \text{ kNm} \geq M^* = 0.96 \quad \text{OK}$			
Check Cracking Moment: Uncracked Stage: 			
Cracking Moment: $M_{cr} = \frac{f_r I_g}{y_t}$ $\lambda = 1.0$ for concrete with no lightweight aggregates $f_r = 2.68 \text{ MPa}$			
Uncracked Stage: $y_t = 151.65 \text{ mm}$ $I_g = 686.12 \times 10^6 \text{ mm}^4$ $M_{cr} = 12.1 \text{ kNm} > M^* = 0.96 \quad \text{Concrete uncrack}$			
Cracked Stage: $y^2 + 14.99 y - 3372 = 0$ $y = 51.1 \text{ mm}$ $I_{cr} = 81.3 \times 10^6 \text{ mm}^4$ $M_{cr} = 4.3 \text{ kNm}$			
Check Shear Strength Provided by Concrete: Nominal shear strength: $V_c = v_c A_{cv}$ $v_b = 0.46 \text{ MPa}$ $k_d = 1.00$ $k_a = 1.00$ $V_c = k_d k_a v_b = 0.46 \text{ MPa}$ $A_{cv} = 90000 \text{ mm}^2$ $\phi = 0.75$ $\phi V_c = 31.25 \text{ kN} \quad V^* = 2.53 < \phi V_c / 2 \quad \text{OK}$			
Analysis Results: Refer attached SpaceGass analysis reports for bending, shear and deflection. Design is consistent with the requirements of MBIE Guidelines Clause 5.4 Deflection (Max over 2.0m cantilever) = 0.33 mm is 1 in 6060.6 < 1 in 200 OK			
Reviewed: Approved:			

The Procerto logo features the word "procerto" in a lowercase, sans-serif font. The "pro" is in black, and "certo" is in green. The logo is enclosed in a thin black rectangular border.

BUILDING PROJECT CERTAINTY

SPACE GASS 12.80 - Procerto Group Limited

Path: ...0545 - Branthwaite Lot 33 - Engineering Services\TC1 Bk WAFFLE SLAB

Designer: Date: Tuesday, November 5, 2019 5:36 PM Page: 1

ANALYSIS STATUS REPORT

Job name TC1 Bk WAFFLE SLAB
Location D:\Dropbox (H Group)\Procerto\Generation Homes Christchurch...

Length units m
Section property units mm
Material strength units MPa
Mass density units T/m³
Temperature units Celsius
Force units kN
Moment units kNm
Mass units T
Acceleration units g's
Translation units mm
Stress units MPa

Nodes 175 (32765)
Members 309 (32765)
Plates 136 (32765)
Restrained nodes 175 (32765)
Nodes with spring restraints 175 (32765)
Section properties 3 (32765)
Material properties 1 (999)
Constrained nodes 0 (32765)
Member offsets 0 (32765)
Plate strips 0 (32765)

Node loads 5 (250000)
Prescribed node displacements 0 (250000)
Member concentrated loads 0 (250000)
Member distributed forces 192 (250000)
Member distributed torsions 0 (250000)
Thermal loads 0 (250000)
Member prestress loads 0 (250000)
Plate pressure loads 272 (250000)
Self weight load cases 1 (10000)

Lumped masses 0 (250000)
Spectral load cases 0 (10000)
Harmonic load cases 0 (10000)
Transient load cases 0 (10000)

Combination load cases 2 (10000)
Load case titles 6 (10000)

Static analysis Y
Buckling analysis N
Dynamic frequency analysis N
Spectral response analysis N
Harmonic response analysis N
Transient response analysis N
Ill-conditioned N
Non-linear convergence Y
Frontwidth/Bandwidth 56
Total degrees of freedom 700
Static load cases 4 (10000)
Mass load cases 1 (10000)
Step load cases 0 (10000)

COMBINATION LOAD CASES

Load case 10: 1.2G+1.5Q

1.200 * Load case 1: Gr
1.200 * Load case 2: Gw
1.200 * Load case 3: Gf
1.500 * Load case 4: Qf

Load case 11: G+0.4Q

1.000 * Load case 1: Gr
1.000 * Load case 2: Gw
1.000 * Load case 3: Gf
0.400 * Load case 4: Qf

LOAD CASE TITLES

Load Case	Title
1	Gr
2	Gw
3	Gf
4	Qf
10	1.2G+1.5Q
11	G+0.4Q

LOAD CATEGORIES

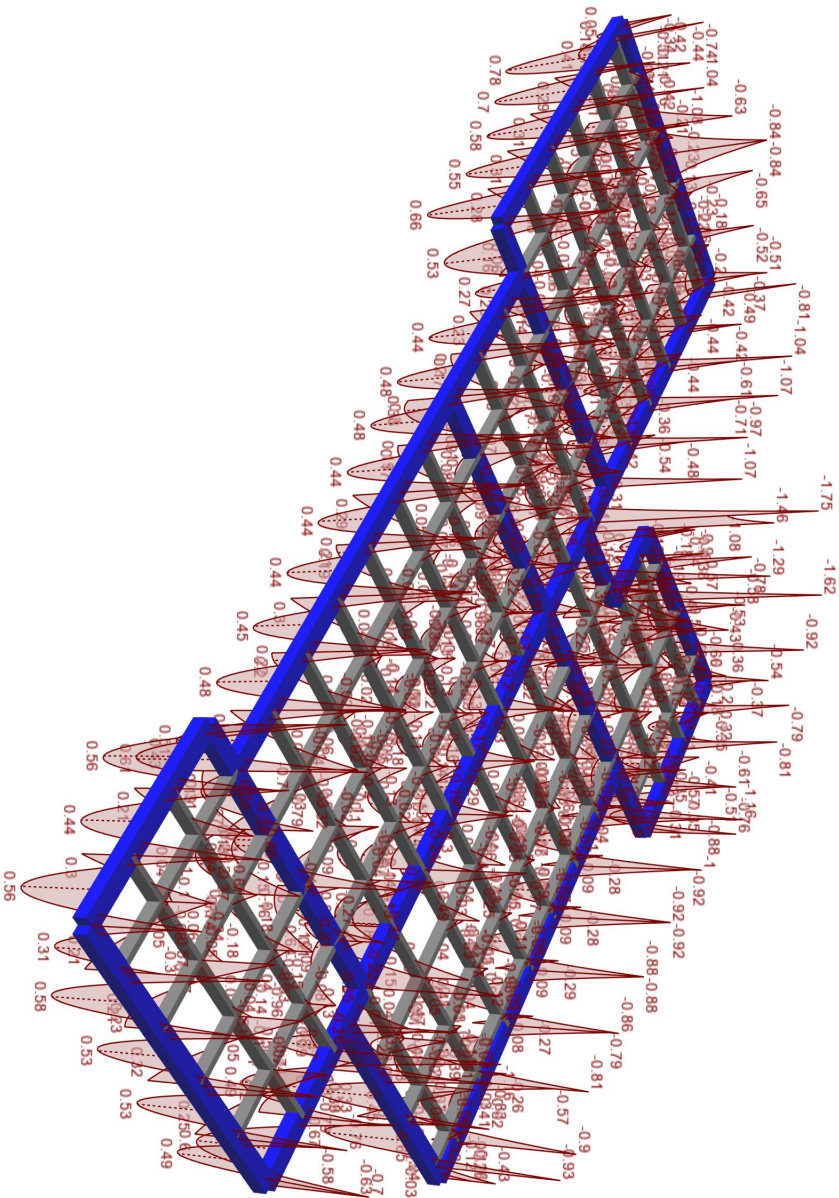
Category: 1
Title: Datasheet loads
Source: User
Version: 12.80.1690
Username: Procerto Alice
Notes: Generated from a datasheet

procerto

BUILDING
PROJECT
CERTAINTY

SPACE GASS 12.80 - Procerto Group Limited
Path: ...0545 - Branthwaite Lot 33 - Engineering Services\TC1 Bk WAFLE SLAB
Designer: Date: Tuesday, November 5, 2019 5:38 PM Page: 1

Load case 10
10 (SW) 1.2G+1.5Q



Viewpoint (45,-30), Moments

Materials:

1 CONC2009.20

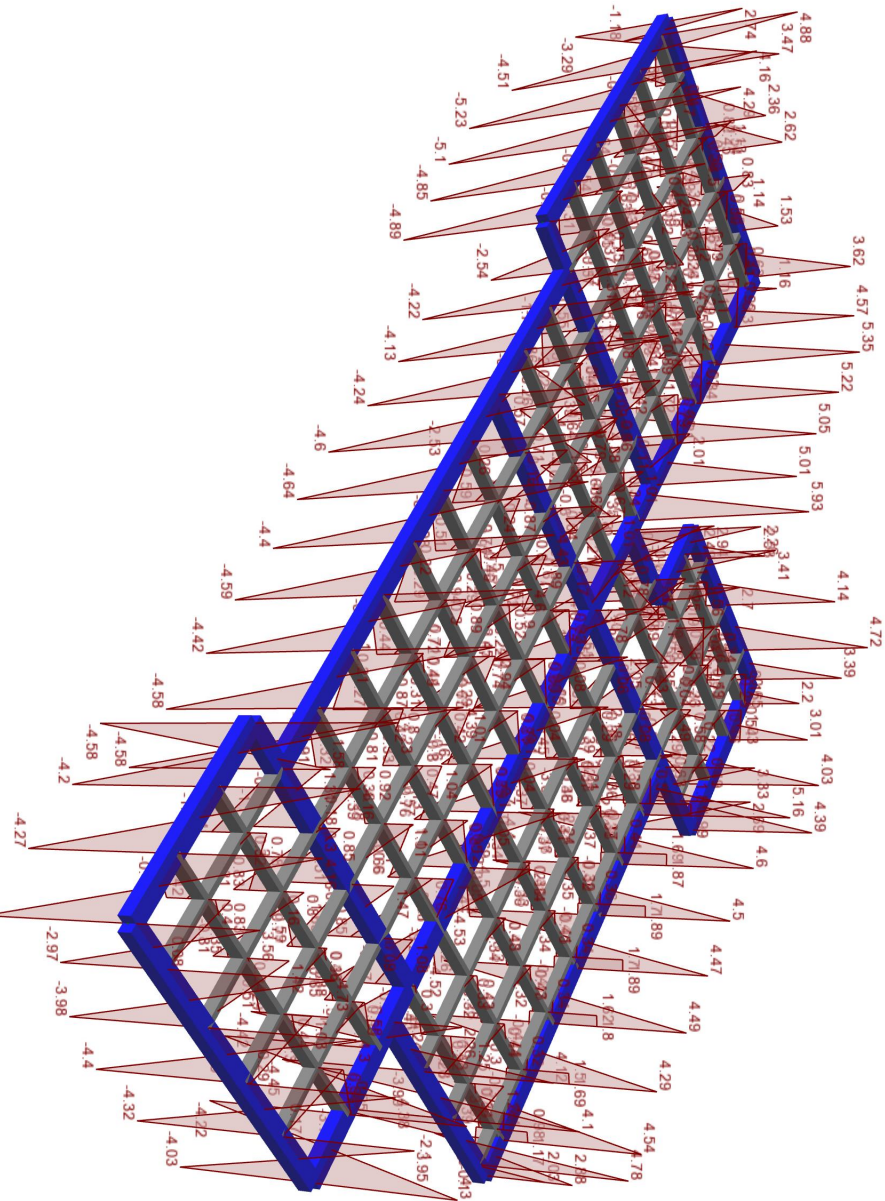
Sections:
1 Rib 220x100
2 Edge 220x300

procerto

BUILDING PROJECT CERTAINTY

SPACE GASS 12.80 - Procerto Group Limited
 Path: ...0545 - Branthwaite Lot 33 - Engineering Services\TC1 Bk WAFFLE SLAB
 Designer: Date: Tuesday, November 5, 2019 5:38 PM Page: 1

Load case 10
 10 (SW) 1.2G+1.5Q



Materials:

1 CONC20/25

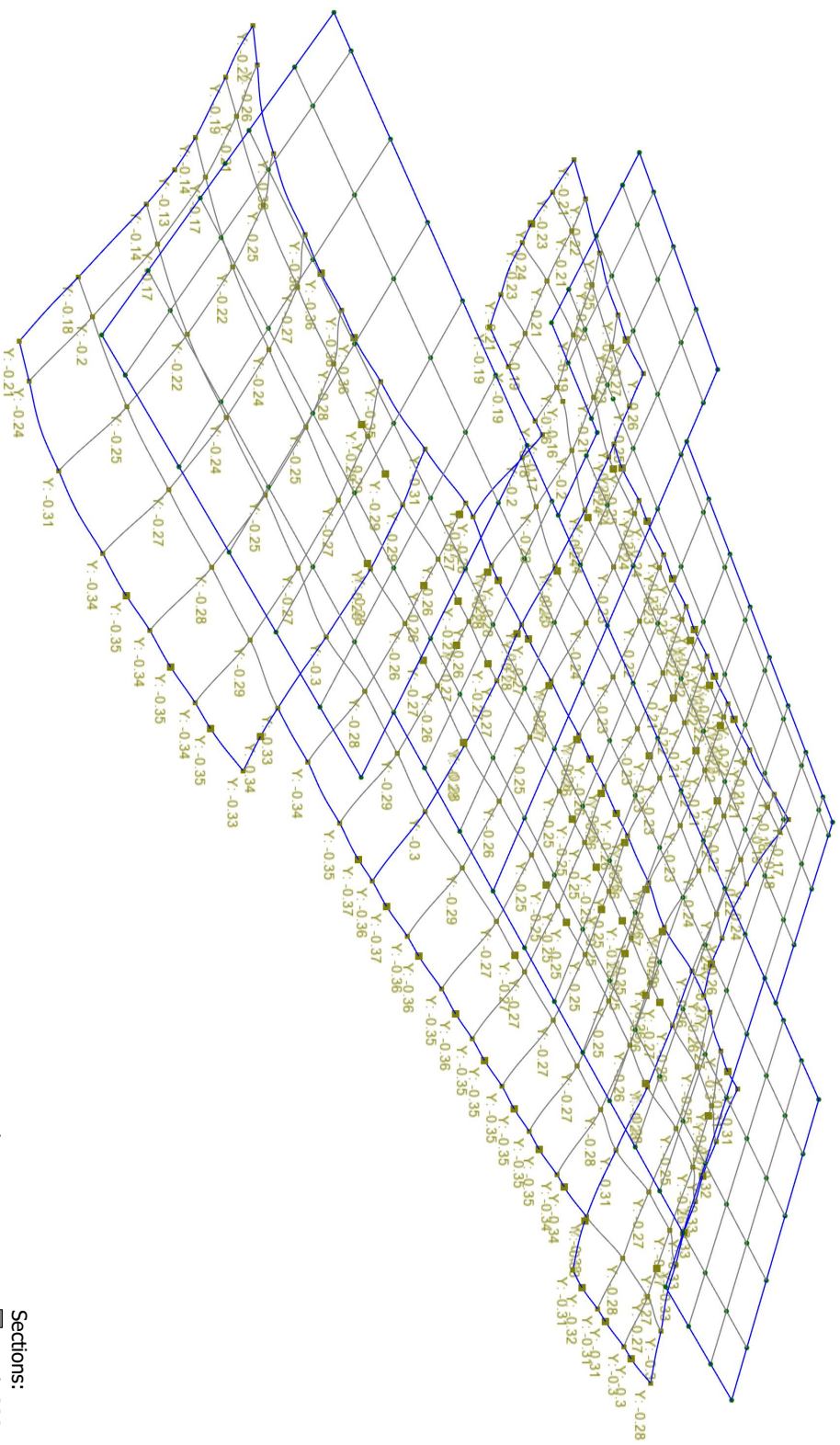
Sections:
 1 Rib 220x100
 2 Edge 220x300

procerto

BUILDING PROJECT CERTAINTY

SPACE GASS 12.80 - Procerto Group Limited
Path: ...0545 - Branthwaite Lot 33 - Engineering Services\TC1 Bk WAFLE SLAB
Designer: Date: Tuesday, November 5, 2019 5:39 PM Page: 1

Load case 11
11 (SW) G+0.4Q





Correspondence from : **AUCKLAND**
40 Neales Road, East Tamaki 2013
PO Box 58-014, Botany 2163
Phone: 09 274 7109
Fax: 09 274 7100

CHRISTCHURCH
14 Pilkington Way, Wigram 8042
PO Box 8387, Riccarton 8440
Phone: 03 348 8691
Fax: 03 348 0314

www.mitek.nz.co.nz

Printed: 13:18:35 22 Oct 2019

MiTek 20/20 Engineering 4.7.301.0

PRODUCER STATEMENT for MiTek 20/20® TRUSS DESIGN - Version 4.7

ISSUED BY:

MiTek New Zealand Limited

TO:

Placemakers National Estimating Unit (NEU)

IN RESPECT OF:

MiTek® Truss Designs

This producer statement covers the MiTek 20/20® truss design and the structural performance of the GANG-NAIL® connector plate for the job reference **00177446** and may be used by a Building Consent Authority to assist in determining compliance with the New Zealand Building Code.

The MiTek 20/20® truss design program has been developed by MiTek New Zealand Limited for the design of MiTek® timber roof, floor and attic trusses in New Zealand. The truss designs computed by MiTek 20/20® are prepared using sound and widely accepted engineering principles, and in accordance with compliance documents of the New Zealand Building Code and Verification Method B1/VM1; and internationally accepted standard ANSI/TPI 1 - 2002 as an alternative solution, to satisfy the requirements of Clause B1 of the New Zealand Building Code.

On behalf of **MiTek New Zealand Limited**, and subject to:

- i) All proprietary products meeting their performance specification requirements
- ii) The provision of adequate roof bracing and overall building stability
- iii) Correct selection and placement of GANG-NAIL connector plates
- iv) Correct input of Truss Design Data as shown in the Fabricator Design Statement for this job
- v) The design being undertaken by the accredited fabricator under the terms of the software licence
- vi) Timber is graded to the requirements of NZS 3603:1993
- vii) Minimum timber treatment for these MiTek® trusses shall be in accordance with B2/AS1 Table 1A and the relevant sections of NZS 3602:2003

I believe on reasonable grounds that the trusses, if constructed in accordance with the MiTek 20/20® truss design and shop drawings, will comply with the relevant provisions of the New Zealand Building Code.

MiTek New Zealand Limited holds a current policy of Professional Indemnity Insurance no less than \$500,000.

On behalf of **MiTek New Zealand Limited**,

Date: Tuesday, 22 October 2019

Engineering, BE (Hons), CPEng, IntPE, MIPENZ (ID: 146585)
TECHNICAL SERVICES MANAGER, MiTek New Zealand Limited

SD Approved Building Consent Document BC 162253 of 184 13/01/2020 - pakea

Job: 00177446	Client: Generation Homes Christchurch South	Site: Lot 33A Branthwaite 33 Branthwaite Drive Rolleston Selwyn
Description: Building Consent No.: MiTek 20/20 Engineering 4.7.301.0	Phone:	Phone:

MITEK FABRICATOR DESIGN STATEMENT

This statement is issued by MiTek accredited fabricator **Placemakers National Estimating Unit (NEU)**, being licensed to use the MiTek 20/20® software, to the client listed above and may be used by the Building Consent Authority to assist in determining compliance with the New Zealand Building Code.

MiTek 20/20® TRUSS DESIGN DATA

The MiTek 20/20® computer design for this job is based on the following design parameters entered into the program. The Fabricator shall ensure that these job details are current and relevant to the project for the design of the MiTek® trusses.

Job Details	Importance Level : 2	Design Working Life : 50 years
Roof Truss		
Member Group: NEU-H1.2	Pitch: 25.000 deg	Nominal Overhang: 600 mm
Material: MetroTile Shake	Ceiling	Wind
Dead Load: 0.300 kPa	Material: Gib Board 13mm	Area: High (44.0 m/s)
Restraints: 400 mm centres	Dead Load: 0.200 kPa	Pressure Coeff: Cpe = varies; Cpi = -0.30, 0.20
Live Load: Qur = 0.250 kPa	Restraints: 600 mm centres	Snow
Qc = 1.100 kN	Live Load: Qc = 1.400 kN	Location: Christchurch (N4) at 100 m
		Open Ground Load: 0.900 kPa
		Basic Roof Load: 0.441 kPa

The minimum timber treatment for these MiTek® trusses shall be in accordance with B2/AS1 Table 1A and the relevant sections of NZS 3602:2003. The timber for these MiTek® trusses shall be graded to the requirements of NZS 3603:1993. Proprietary fixings and timber connectors shall be selected in accordance with NZS3604:2011 Section 4 - Durability.


MiTek® Truss List

Legend: * = detail only, ? = input only, ✕ = failed design, Ø = non certified, Unmarked trusses = designed successfully, LB = lateral bracing required
GB = gable brace required

Truss	Qty	Span (mm)	Pitch (deg)	Spacing (mm)	Truss	Qty	Span (mm)	Pitch (deg)	Spacing (mm)	Truss	Qty	Span (mm)	Pitch (deg)	Spacing (mm)
GT01	1	3338	25.000	900	J07	1	1812	25.000	900	*R10	1	1135	25.000	900
GT02	1	8100	25.000	900	J07A	1	1812	25.000	900	*R10A	1	1135	25.000	900
GT03	1	6470	25.000	900	J07B	1	1812	25.000	900	T01	2	8100	25.000	900
GT04	1	3680	25.000	900	J07C	1	1812	25.000	900	T02	1	4320	25.000	900
GT05	1	3880	25.000	900	J07D	1	1812	25.000	900	T02A	2	4320	25.000	900
GT06	1	8100	25.000	900	J08	1	1817	25.000	900	T03	1	6470	25.000	900
GT07	1	3880	25.000	900	J08A	1	1817	25.000	900	T04	1	3380	25.000	900
GT08	1	5800	25.000	900	J08B	1	1817	25.000	900	T04A	1	3380	25.000	900
*HE01	1	1854	18.249	900	J09	1	1917	25.000	900	T05	1	1013	25.000	900
*HE02	1	811	18.249	900	J09A	1	1917	25.000	900	T06	1	6970	25.000	900
*HE03	1	1232	18.249	900	J09B	1	1917	25.000	900	T07	2	3338	25.000	900
*HE03A	1	1232	18.249	900	J10	1	1422	25.000	900	T08	1	3880	25.000	900
*HE04	1	6544	18.249	900	J10A	1	1422	25.000	900	T08A	1	3880	25.000	900
*HE05	1	5392	18.249	900	J10B	1	1422	25.000	900	T09	2	5800	25.000	900
*HE06	2	4685	18.249	900	J10C	1	1422	25.000	900	T10	2	3680	25.000	900
*HE07	2	3419	18.249	900	J10D	1	1422	25.000	900	T11	1	4028	25.000	900
*HE08	1	2091	18.249	900	J10E	1	1422	25.000	900	T12	1	4073	25.000	900
*HE09	1	3046	18.249	900	J10F	1	1422	25.000	900	TG01	1	5470	25.000	900
*HE0	2	3560	18.249	900	*R01	1	1649	25.000	900	TG02	1	6490	25.000	900
*HE01	2	5406	18.249	900	*R02	1	1040	25.000	900	TR01	1	5800	25.000	900
J01	1	4028	25.000	900	*R03	10	913	25.000	900	V01	1	1523	25.000	900
J02	1	3127	25.000	900	*R03A	10	913	25.000	900	V02	1	1357	25.000	900
J02A	1	3127	25.000	900	R04	1	901	25.000	900	V03	1	1170	25.000	900
J03	1	2227	25.000	900	*R04A	1	900	25.000	900	V04	1	2070	25.000	900
J03A	1	2227	25.000	900	*R05	1	1125	25.000	900	V05	1	1468	25.000	900
J04	1	1327	25.000	900	*R06	1	1525	25.000	900	V06	1	2760	25.000	900
J04A	1	1327	25.000	900	*R06A	1	1525	25.000	900	V07	1	1887	25.000	900
J05	1	2312	25.000	900	*R07	1	930	25.000	900	V08	1	2604	25.000	900
J05A	1	2312	25.000	900	*R08	1	1530	25.000	900	V09	1	838	25.000	900
J06	1	1412	25.000	900	*R09	1	1630	25.000	900	V10	1	1383	25.000	900
J06A	1	1412	25.000	900	*R09A	1	1630	25.000	900					

Total quantity : 119

The computer design input has been carried out by:

Signed: 

Name of Detailer: Robert Wenham

On behalf of: PlaceMakers NEU

Date: ...Tuesday, 22 October 2019....

Position: Estimator



HORNBY

69 SHANDS RD (03) 344 8950

FRAME & TRUSS MANUFACTURING

PlaceMakers Hornby: 69 Shands Road, Hornby
Phone: 03-344-8923
Fax: 03-349-8923
Email: estimations.hornby@placemakers.co.nz

Att: *Selwyn District Council*

PlaceMakers Hornby has been engaged to manufacture the Frames & Trusses for the following building project.

Job Number: 19-00177446
Job Name: *Lot 33A Branthwaite*
Site Address: *Lot 33A Branthwaite Estate, Rolleston*
Date: 24/10/2019
Building Consent No:
(To be provided by applicable district council)

With the understanding PlaceMakers Hornby are the chosen Frame and Truss manufacturers, we have enclosed the following applicable documentation to support completion of the above building consent application:

- Covering Letter.
- Mitek PS1 Truss Producer Statement.
- Mitek Truss Layout.
- Mitek Truss fixing list.
- Lintels falling outside NZS 3604:2011 due to girder truss loading sized.
- Internal load bearing walls indicated on layout.
- Point loads exceeding 10kn indicated on layout, Mitek slab thickening solution indicated where applicable.
- Supporting documents: lintel & beam certification/producer statements, proposed lintel fixing method, proposed stud to top plate fixing method, proposed slab thickening method, proposed roof plane bracing method, SED truss fixing bearing reactions. Important production notes.

The Structure has been designed under the following parameters:

Wind Zone: *High*
Snow Load: *0.900kPa*
Earthquake Zone: *2*
Roof Material: *MetroTile Shake Pressed Metal Tile*

The enclosed truss design is a best representation of the final manufactured trusses, we can advise full as built Frame and Truss layouts showing all specific truss fixings - top plate fixings - lintel fixings required will be provided at the time of Truss manufacture to both the building owner and appropriate district council.

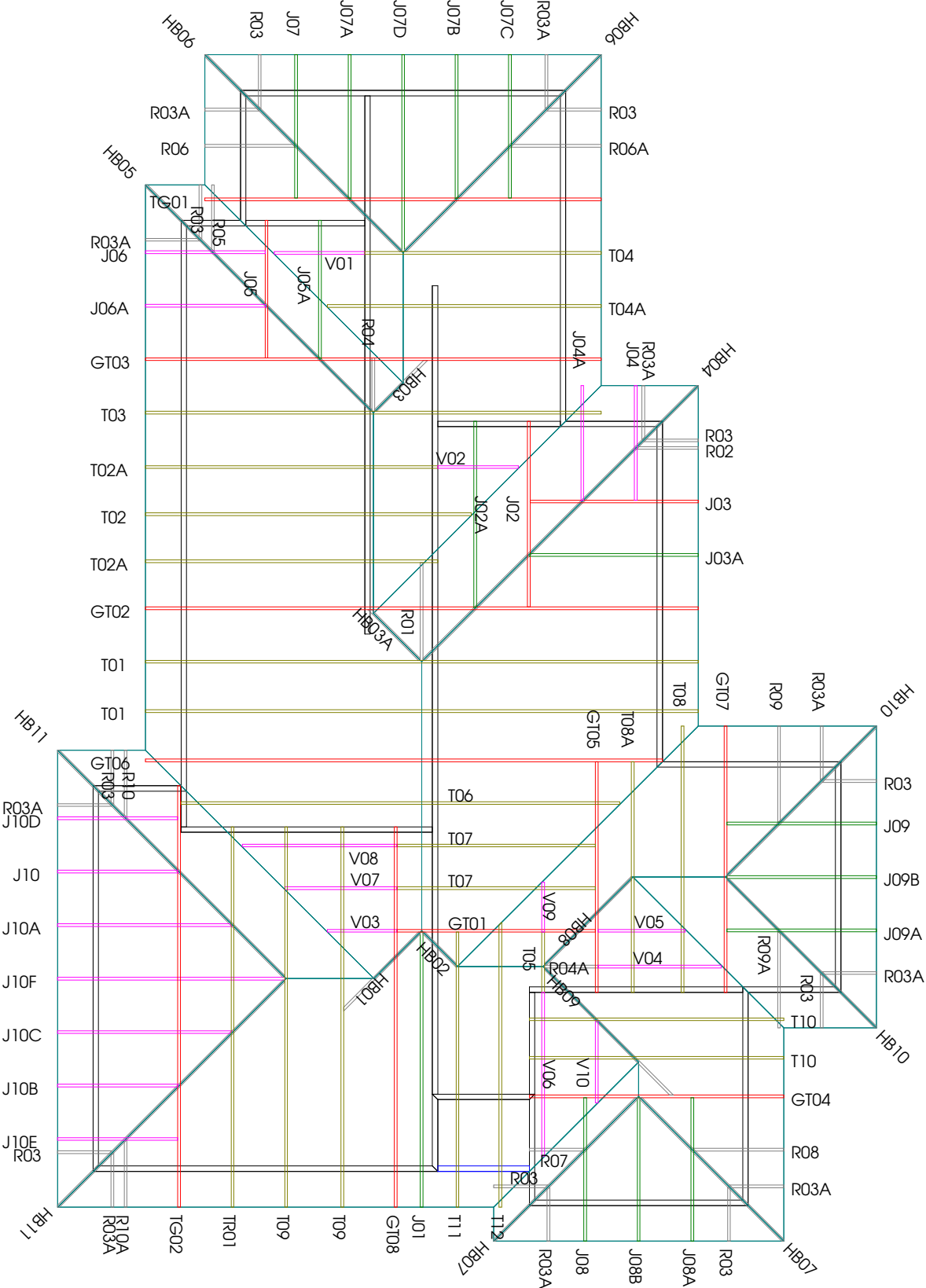
PlaceMakers Hornby reserves the right to remove this truss design from council.

Acknowledgement of this letter along with the building consent number by email or fax to our office would be appreciated.

Kind regards,

PlaceMakers Hornby

Layout is null and void if trusses not supplied by PlaceMakers





Know how. Can do.

Site Address :
 Lot 33A Branthwaite
 33 Branthwaite Drive
 Rolleston
 Selwyn

Sheet Title :
**For Building Consent
 Buildable Truss Layout**

Job Details:
 Roof Pitch : 25.000 Deg
 Roof Material : MetroTile Shake
 Ceiling Material : Gfb Board 13mm
 Wind Zone : High

Truss Centres : 900 mm
 Roof Live Load : 0.250kPa
 Floor Live Load : kPa
 Wind Speed : 44.0 m/s



Job Title :
 00177446

Sheet :
 1

Revision Number :

Date : 22 Oct 2019
 Scale : 1:100

Drawn : Robert Wenham
 System : AutoCAD 2019

Roof Snow Load : 0.44 kPa
 Roof Live Load : 0.25 kPa

Approved Building Consent Document - 181184 - 8101/2020 - parkea

PrimeCad v4.7.301

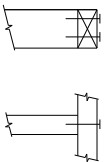
Stud to top plate fixing details

Layout is null and void if trusses not supplied by PlaceMakers

Type A is minimum fixing required unless specified otherwise

FIXING TYPE A
0.7kN

2/90x3.33 plain steel wire
nails driven vertically into
stud.

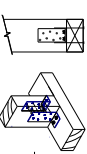


FIXING TYPE B
4.7kN

2 x 90mm x 3.15 dia. plain steel wire nails driven vertically into stud.

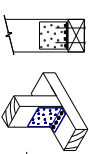
AND

Plus 2x LUMBERLOK
CPC40



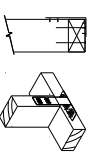
Recommended for internal wall options to avoid lining issues.

**PLUS LUMBERLOK
6 kN Stud Anchor
(CPC80)**



OR

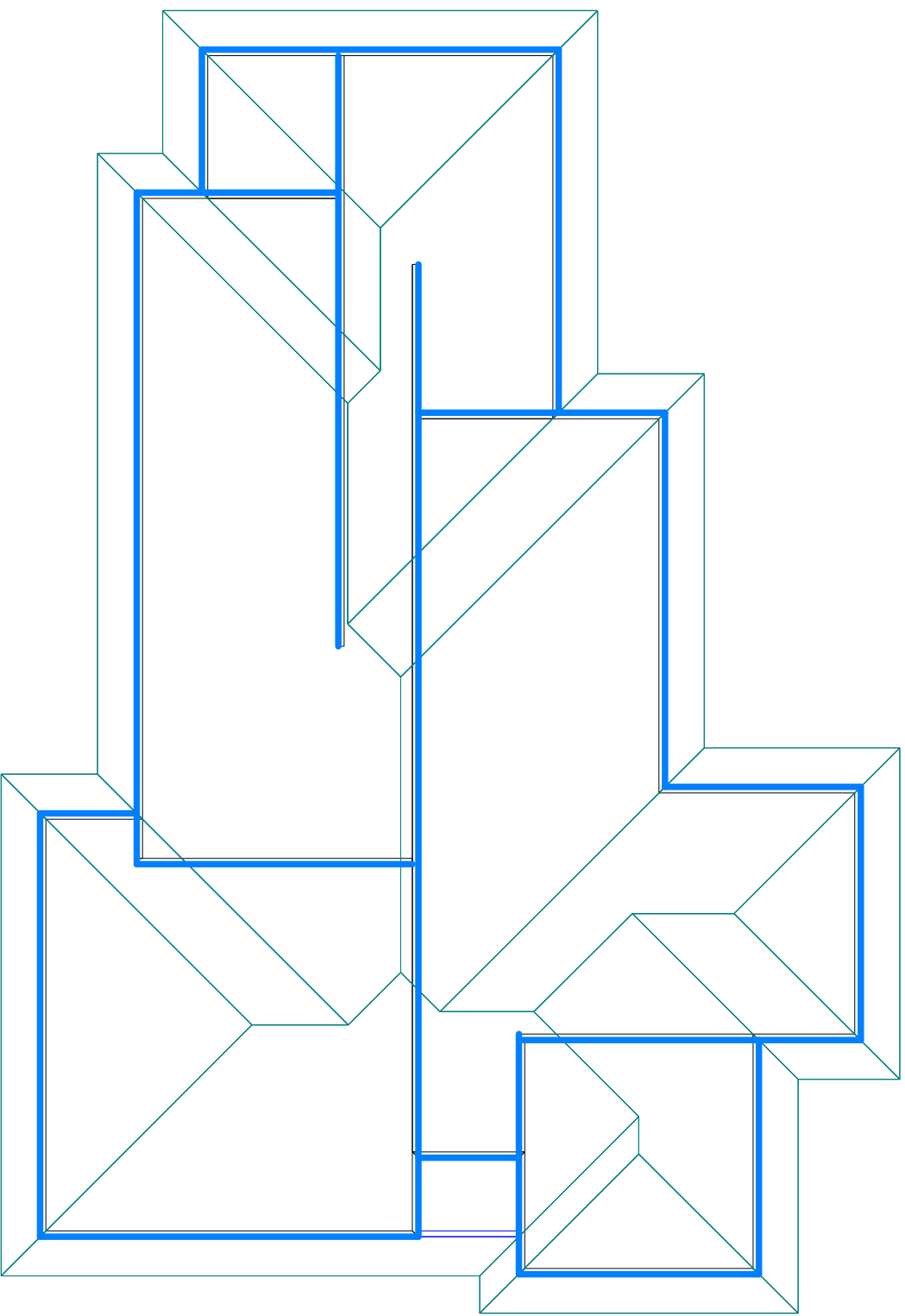
**Plus LUMBERLOK
Stud Strap
(One face only)**



NOTES:

Refer to:
LUMBERLOK Wall Fixing Chart - Stud to Top Plate
Fixing Schedule 09/2011

(Alternative to NZS3604:2011 Table 8.18)



Site Address :

Lot 33A Branthwaite
33 Branthwaite Drive
Rolleston
Selwyn

Sheet Title :

For Building Consent Stud To Top Plate Fixing

Job Details:

Roof Pitch	: 25.000 Deg
Roof Material	: Metro Tile Snake
Ceiling Material	: Gib Board 13mm
Wind Zone	: High

Introduction

Truss Centres : 900 mm
Roof Live Load : 0.250kPa
Floor Live Load : kPa
Wind Speed : 44.0 m/s



PrimeCad v4.7.301

Job Title :

00177446

Sheet

Revision Number :

SDC -- Approved Building Consent Document - BC192253 - Pg 33 of 184 - 8/01/2020 - parkea

Truss Fixings

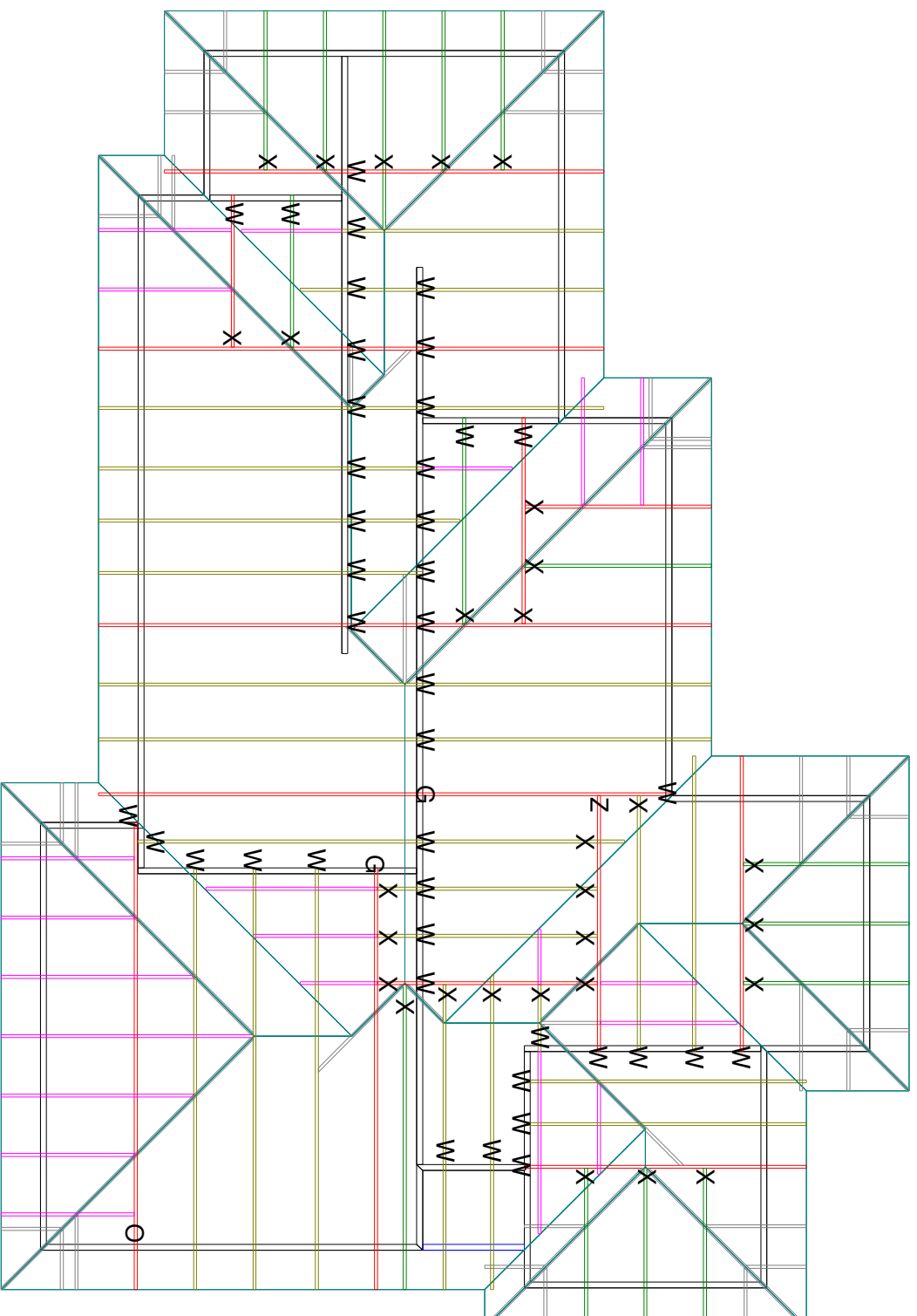
Layout is null and void if trusses not supplied by PlaceMakers

-
- X - LUMBERLOK JH47x90 Joist Hanger
- Z - LUMBERLOK JH47x120 Joist Hanger
- P - LUMBERLOK JH47x190 Joist Hanger
- E - LUMBERLOK JH95x165 Joist Hanger
- O - Pair of LUMBERLOK CT200 Ceiling Ties
- H - LUMBERLOK CT400 Cyclone Tie
- B - LUMBERLOK CT600 Cyclone Tie
- M - Pair of LUMBERLOK Multi Grips
- NP - LUMBERLOK Nylon Plate
- N - LUMBERLOK N21 Diagonal Cleat
- W - Pair of LUMBERLOK CPC40 Cleats
- K - LUMBERLOK TTP 16kN Truss to Top Plate set
- G - LUMBERLOK TTP 9kN Truss to Top Plate set

NOTES:

All other areas must have at the minimum 2/ 90x3.15mm skew nails + 2 wire dogs (4.7kN) for truss to top plate connections.

Refer to:
LUMBERLOK Timber Connectors Characteristic
Loadings Data brochure 03/4



Sheet Title :
For Building Consent
Truss Fixings

Job Details:

Roof Pitch	: 25.000 Deg
Roof Material	: Metro Tile Shake
Ceiling Material	: Gib Board 13mm
Wind Zone	: High

Truss Centres : 900 mm
Roof Live Load : 0.250 kPa
Floor Live Load : kPa
Wind Speed : 44.0 m/s



PrimeCad v4.7.301

Job Title	
-----------	--

00177446

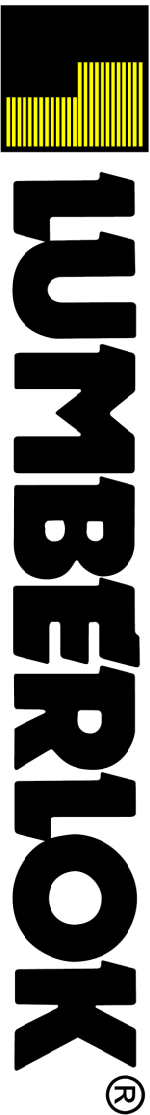
Sheet:

Revision Number :

Site Address :
Lot 33A Branthwaite
33 Branthwaite Drive
Rolleston
Selwyn

SDC - Approved Building Consent Document - BC192253 - Pg 34 of 184 - 8/01/2020 - parkea

Revision Number:

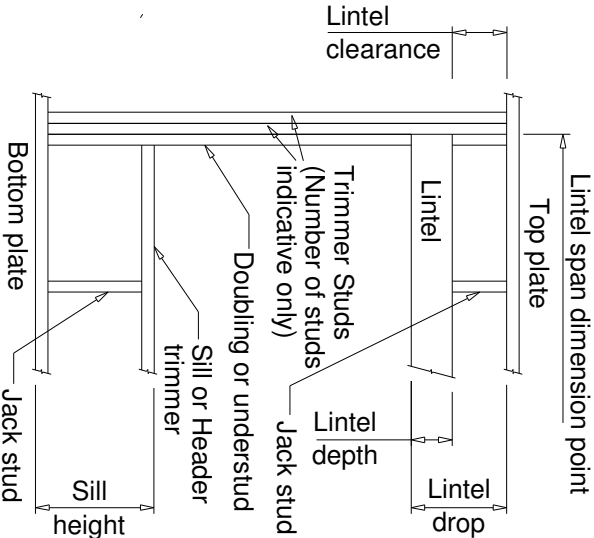


LINTEL FIXING SCHEDULE
ALTERNATIVE TO TABLE 8.14 & FIGURE 8.12
NZS 3604:2011

NOTE:

- ★ All fixings are designed for vertical loads only. Dead loads include the roof weight and standard ceiling weight of 0.20 kPa.
- ★ Refer to Table 8.19 NZS 3604:2011 for nailing schedule to resist horizontal loads.
- ★ These fixings assume the correct choice of rafter/truss to top plate connections have been made.
- ★ All fixings assume bottom plate thickness of 45mm maximum. Note: TYLLOK options on timber species. Wall framing arrangements under girder trusses are not covered in this schedule.
- ★ All timber selections are as per NZS 3604:2011

DEFINITIONS



Lintel Supporting Girder Trusses:

Roof Tributary Area	Light Roof		Heavy Roof	
	Wind Zone		Wind Zone	
	L, M, H	VH	L, M, H	VH
8.6 m ²	G	G	H	G
11.6 m ²	G	H	H	G
12.1 m ²	G	H	H	G
15.3 m ²	H	H	G	H
19.1 m ²	H	-	G	H
20.9 m ²	H	-	H	H
21.8 m ²	H	-	H	-
34.3 m ²	-	-	H	-

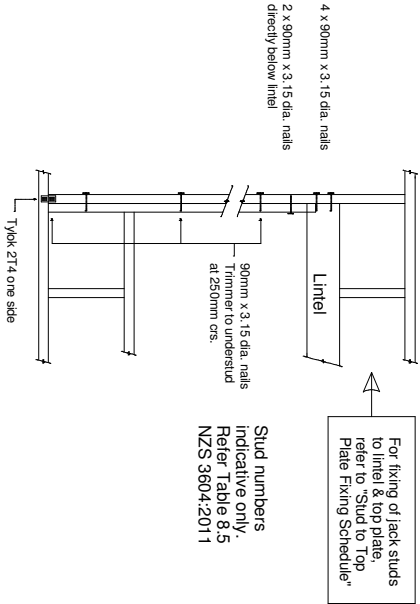
- Notes:
- 1) Roof Tributary Area = approx. 1/2 x (Total roof area on girder and rafter trusses supported by Lintel)
 - 2) Assumed girder truss is at mid-span or middle third span of lintel
 - 3) Use similar fixings for both ends of lintel
 - 4) All other cases require specific engineering design.

SELECTION CHART FOR
LINTEL FIXING

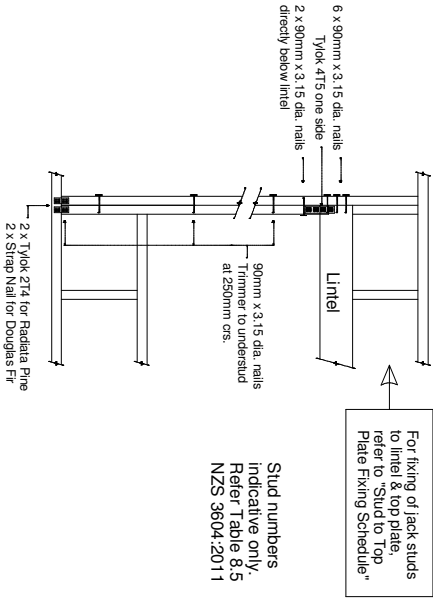
Lintel Span	Loaded Dimension (See Fig 1.3 NZS 3604:2011)	Light Roof Wind Zone				Heavy Roof Wind Zone			
		L	M	H	VH	L	M	H	VH
1.0	2.0	E	E	E	E	E	E	E	E
3.0	3.0	E	E	F	F	E	E	F	F
4.0	4.0	E	F	F	F	E	F	F	F
5.0	5.0	E	F	F	F	E	F	F	F
6.0	6.0	E	F	F	F	E	F	F	F
1.2	2.0	E	E	F	F	E	E	F	F
3.0	3.0	E	F	F	F	E	F	F	F
4.0	4.0	E	F	F	F	E	F	F	F
5.0	5.0	E	F	F	F	E	F	F	F
6.0	6.0	E	F	F	F	E	F	F	F
1.5	2.0	E	E	F	F	E	E	F	F
3.0	3.0	E	F	F	F	E	F	F	F
4.0	4.0	E	F	F	F	E	F	F	F
5.0	5.0	E	F	F	F	E	F	F	F
6.0	6.0	E	F	F	F	E	F	F	F
2.0	2.0	E	F	F	F	E	F	F	F
3.0	3.0	E	F	F	F	E	F	F	F
4.0	4.0	E	F	F	F	E	F	F	F
5.0	5.0	E	F	F	F	E	F	F	F
6.0	6.0	E	F	F	F	E	F	F	F
2.4	2.0	E	E	F	F	E	E	F	F
3.0	3.0	E	F	F	F	E	F	F	F
4.0	4.0	E	F	F	F	E	F	F	F
5.0	5.0	E	F	F	F	E	F	F	F
6.0	6.0	E	F	F	F	E	F	F	F
3.0	2.0	E	F	F	F	E	F	F	F
4.0	3.0	E	F	F	F	E	F	F	F
5.0	4.0	E	F	F	F	E	F	F	F
6.0	5.0	E	F	F	F	E	F	F	F
3.6	2.0	E	F	F	F	E	F	F	F
4.0	3.0	E	F	F	F	E	F	F	F
5.0	4.0	E	F	F	F	E	F	F	F
6.0	5.0	E	F	F	F	E	F	F	F
4.2	2.0	E	F	F	F	E	F	F	F
3.0	3.0	E	F	F	F	E	F	F	F
4.0	4.0	E	F	F	F	E	F	F	F
5.0	5.0	E	F	F	F	E	F	F	F
6.0	6.0	E	F	F	F	E	F	F	F
4.5	2.0	E	F	F	F	E	F	F	F
3.0	3.0	E	F	F	F	E	F	F	F
4.0	4.0	E	F	F	F	E	F	F	F
5.0	5.0	E	F	F	F	E	F	F	F
6.0	6.0	E	F	F	F	E	F	F	F
4.8	2.0	E	F	F	F	E	F	F	F
3.0	3.0	E	F	F	F	E	F	F	F
4.0	4.0	E	F	F	F	E	F	F	F
5.0	5.0	E	F	F	F	E	F	F	F
6.0	6.0	E	F	F	F	E	F	F	F
5.1	2.0	E	F	F	F	E	F	F	F
3.0	3.0	E	F	F	F	E	F	F	F
4.0	4.0	E	F	F	F	E	F	F	F
5.0	5.0	E	F	F	F	E	F	F	F
6.0	6.0	E	F	F	F	E	F	F	F
5.4	2.0	E	F	F	F	E	F	F	F
3.0	3.0	E	F	F	F	E	F	F	F
4.0	4.0	E	F	F	F	E	F	F	F
5.0	5.0	E	F	F	F	E	F	F	F
6.0	6.0	E	F	F	F	E	F	F	F

LINTEL FIXING OPTIONS

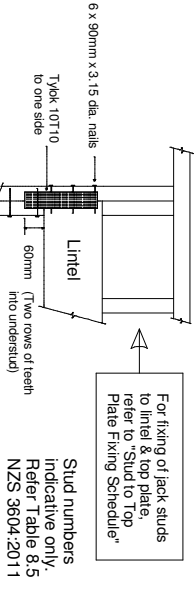
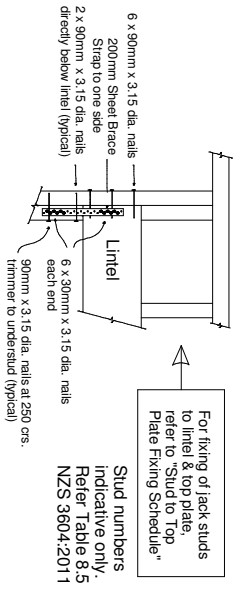
TYPE E
1.4kN



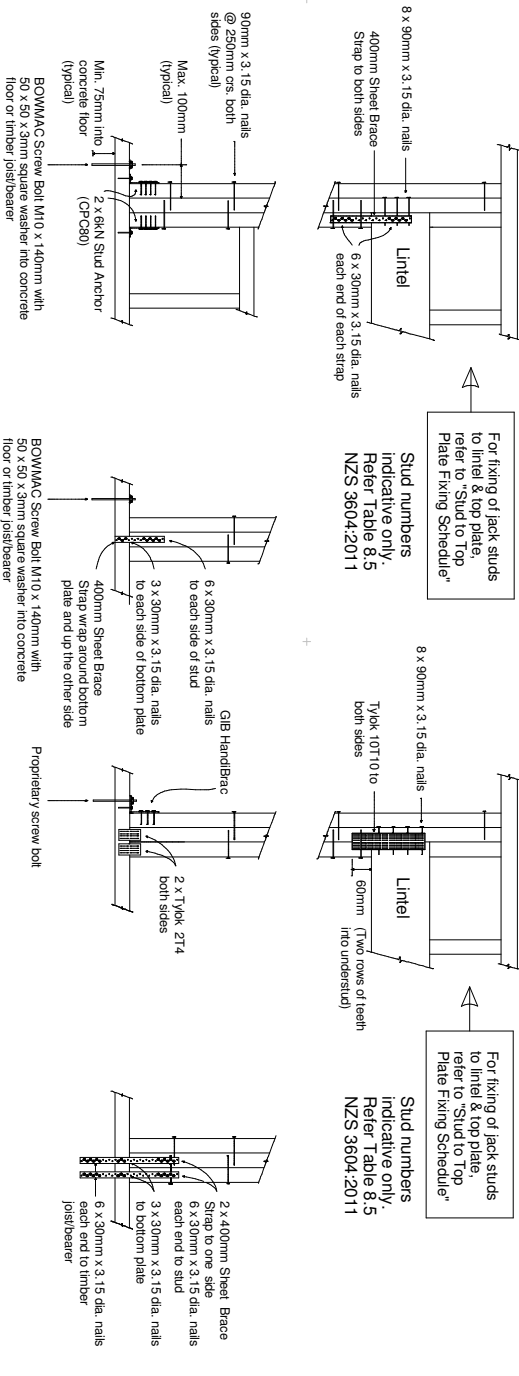
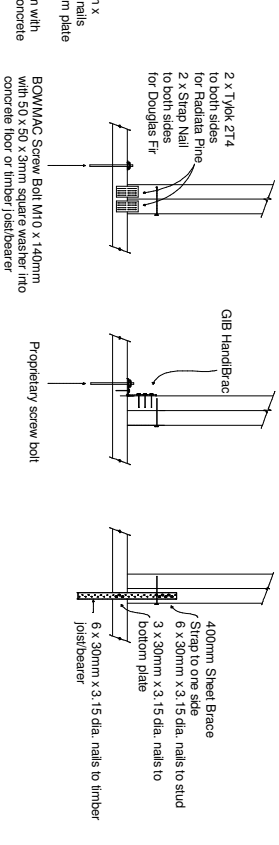
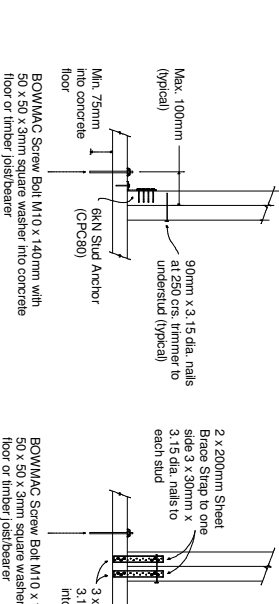
TYPE F
4.0kN



TYPE G
7.5kN



TYPE H
13.5kN



Job No: 19-00177446
Job Name: 33A Branthwaite

Client: Generation Homes
Building Consent No:

Site: 33 Branthwaite Drive

DESIGN STATEMENT
MiTek Beam Program v1.11 September 2017

Certification of MiTek Beam Program v1.11 September 2017

The MiTek Beam Program v1.11 September 2017 has been developed by MiTek New Zealand Ltd for the design of these beams: Timber, Glulam, GANGLAM and GANG-NAIL FLITCH BEAMS. The beam designs calculated by this program are prepared using sound and widely accepted engineering principles, and in accordance with Compliance Documents of the New Zealand Building Code and Verification Method B1/VM1 to satisfy the requirements of Clause B1 of the Building Code. We believe on reasonable grounds that these beams for the proposed building, if constructed in accordance with the drawings, specifications and other documents provided will comply with the relevant provisions of the NZ Building Code. This is subject to all proprietary products meeting their performance specification requirements; the provision of adequate bracing and fixings; and the correct input of design data carried out by suitably trained personnel. This document may be used by the Building Consent Authority to assist in determining compliance with the New Zealand Building Code.

Summary of MiTek Beam Program v1.11 September 2017 Data and Output

Roof		Wind		Wall	
Weight:	light + ceiling	Area/Speed:	high (44.0 m/s)	Type:	NA
Dead Load:	0.45 kPa				
Live Load:	0.25 kPa	Snow		Floor	
		Area:	0.441 kPa	Live Load:	NA

Beam List

Opening Label	Beam Material	Beam Size	Beam Length	Design Status	Opening Label	Beam Material	Beam Size	Beam Length	Design Status
D1	MSG8/VSG8	2/140x45	1300	OKAY					
D2	MSG8/VSG8	2/140x45	1815	OKAY					
D3	MSG8/VSG8	2/240x45	1815	OKAY					
D4	MSG8/VSG8	2/240x45	2015	OKAY					
W1	MSG8/VSG8	2/140x45	1210	OKAY					
W2	MSG8/VSG8	2/90x45	615	OKAY					
W3	MSG8/VSG8	2/140x45	1515	OKAY					
W4	MSG8/VSG8	2/190x45	1515	OKAY					
W5	MSG8/VSG8	2/90x45	615	OKAY					
W6	MSG8/VSG8	2/140x45	1615	OKAY					
W7	MSG8/VSG8	2/140x45	1515	OKAY					
W8	MSG8/VSG8	2/190x45	1515	OKAY					
W9	MSG8/VSG8	2/90x45	615	OKAY					
W10	MSG8/VSG8	2/90x45	615	OKAY					
W11	MSG8/VSG8	2/190x45	1915	OKAY					
W12	MSG8/VSG8	2/90x45	715	OKAY					
W13	MSG8/VSG8	2/90x45	715	OKAY					
GD	PROLAM PL17	315x90	4830	OKAY					
810 ID1	MSG8/VSG8	2/90x45	810	OKAY					
810 ID2	MSG8/VSG8	2/140x45	810	OKAY					

GANGLAM plating details indicated with RD (regular duty plating), HD (heavy duty plating) and SHD (super heavy duty plating)

The computer design input has been carried out by:

Signed: 

Date: ...Tuesday, 22 October 2019....

Name of Detailer: Robert Wenham

Position: Estimator

On behalf of: PlaceMakers NEU

Roof Weight light + ceiling
Wind Zone high (44.0 m/s)
Snow Load 0.441 kPa

[illegible]

Point Load 1	
Girder Span (mm)	5470
Setback (mm)	1815
Location (mm)	730

[illegible][illegible]

Beam Status	OKAY	OKAY	OKAY	OKAY	OKAY	OKAY	OKAY	OKAY
Beam Material	MSG8/VSG8	MSG8/VSG8	MSG8/VSG8	MSG8/VSG8	MSG8/VSG8	MSG8/VSG8	MSG8/VSG8	MSG8/VSG8
Beam Size	2/140x5	2/140x5	2/240x5	2/140x5	2/90x5	2/140x5	2/140x5	2/140x5
Beam Deflection	0.64mm	1.21mm	0.99mm	0.5mm	2.90mm	1.24mm	0.73mm	0.87mm
Beam Length	1300	1815	2015	1210	615	1515	1515	1615

Roof Weight light + ceiling
Wind Zone high (44.0 m/s)
Snow Load 0.441 kPa

[illegible]

Point Load 1		Point Load 2		Point Load 3		Point Load 4	
Girder Span (mm)	3680	6490	5470	6470			
Setback (mm)	1917	1422	1812	2312			
Location (mm)	1129	937	672	152			

Girder Span (mm)	Setback (mm)	Location (mm)
5800	687	
	202	

Point Load 3	
Girder Span (mm)	
Setback (mm)	
Location (mm)	

Beam Status	OKAY	OKAY	OKAY	OKAY	OKAY	OKAY	OKAY	OKAY	OKAY
Beam Material	MSG8/VSg8	MSG8/VSg8	MSG8/VSg8	MSG8/VSg8	MSG8/VSg8	MSG8/VSg8	PROLAM PL 17	MSG8/VSg8	MSG8/VSg8
Beam Size	2/140x5	2/190x5	2/90x5	2/190x5	2/90x5	2/90x5	3/5x90	2/90x5	2/140x5
Beam Deflection	0.77mm	0.94mm	0.07mm	1.12mm	0.13mm	0.13mm	5.26mm	0.71mm	0.26mm
Beam Length	1515	1515	615	615	715	715	4830	810	810

Roof Weight light + ceiling
Wind Zone high (44.0 m/s)
Snow Load 0.441 kPa

[illegible]

Not in use in this version

Point Load 1	
Girder Span (mm)	
Selback (mm)	
Location (mm)	

[illegible]

Point Load 3	
Girder Span (mm)	
Sealback (mm)	
Location (mm)	

[illegible]

Memorandum from licensed building practitioner: Certificate of design work

Section 45 and section 30C, Building Act 2004

Please fill in the form as fully and correctly as possible.

If there is insufficient room on the form for requested details, please continue on another sheet and attach the additional sheet(s) to this form.

THE BUILDING	
Street address: Lot 33 Branthwaite Drive	
Suburb: Branthwaite	
Town/City: Rolleston	Postcode: 7615

THE OWNER(S)	
Name(s): Jaspreet Singh and Inderjeet Kaur	
Mailing address: 5 Brookside Terrace	
Suburb: Bryndwr	PO Box/Private Bag:
Town/City: Christchurch	Postcode: 8053
Phone number: 027 391 1611	Email address: jaspreetpadiala72@gmail.com

BASIS FOR PROVIDING THIS MEMORANDUM

I am providing this memorandum in my role as the: Please tick the option that applies ☒

- ☐ **sole** designer of all of the RBW design outlined in this memorandum – I carried out all of the RBW design work myself – no other person will be providing any additional memoranda for the project
- ☐ **lead** designer who carried out some of the RBW design myself but also supervised other designers – this memorandum covers their RBW design work as well as mine, and **no other** person will be providing any additional memoranda for the project
- ☒ **lead** designer for all but specific elements of RBW – this memorandum only covers the RBW design work that I carried out or supervised and the **other** designers will provide their own memorandum relating to their specific RBW design
- ☐ **specialist** designer who carried out specific elements of RBW design work as outlined in this memorandum – other designers will be providing a memorandum covering the remaining RBW design work

IDENTIFICATION OF DESIGN WORK THAT IS RESTRICTED BUILDING WORK (RBW)

I Phil Stanfield carried out / supervised the following design work that is restricted building work

PRIMARY STRUCTURE B1

Design work that is RBW	Description of RBW	Carried out or supervised	Reference to plans and specifications
Tick <input checked="" type="checkbox"/> if included. Cross <input type="checkbox"/> if excluded	If appropriate, provide details of the RBW	Tick <input checked="" type="checkbox"/> whether you carried out this design work or supervised someone else carrying out this design work	If appropriate, specify references
All RBW design work relating to B1 <input checked="" type="checkbox"/>		<input type="checkbox"/> Carried out <input checked="" type="checkbox"/> Supervised	
Foundations and subfloor framing <input checked="" type="checkbox"/>	Design completed by engineer	<input type="checkbox"/> Carried out <input type="checkbox"/> Supervised	

Design work that is RBW	Description of RBW	Carried out or supervised	Reference to plans and specifications
Tick <input checked="" type="checkbox"/> if included. Cross <input checked="" type="checkbox"/> if excluded	If appropriate, provide details of the RBW	Tick <input checked="" type="checkbox"/> whether you carried out this design work or supervised someone else carrying out this design work	If appropriate, specify references
Walls	<input checked="" type="checkbox"/>	<input type="radio"/> Carried out <input checked="" type="radio"/> Supervised	
Roof	<input checked="" type="checkbox"/> Design completed by Placemakers Refer to Truss Design and docs completed by Placemakers	<input type="radio"/> Carried out <input checked="" type="radio"/> Supervised	
Columns and beams	<input checked="" type="checkbox"/> Design completed by Placemakers Refer to Truss Design and docs completed by Placemakers	<input type="radio"/> Carried out <input checked="" type="radio"/> Supervised	
Bracing	<input checked="" type="checkbox"/>	<input type="radio"/> Carried out <input checked="" type="radio"/> Supervised	
Other	<input checked="" type="checkbox"/>	<input type="radio"/> Carried out <input type="radio"/> Supervised	

Design work that is RBW	Description of RBW	Carried out or supervised	Reference to plans and specifications
Tick <input checked="" type="checkbox"/> if included. Cross <input type="checkbox"/> if excluded	If appropriate, provide details of the RBW	Tick <input checked="" type="checkbox"/> whether you carried out this design work or supervised someone else carrying out this design work	If appropriate, specify references
EXTERNAL MOISTURE MANAGEMENT SYSTEMS E2			
All RBW design work relating to E2	<input checked="" type="checkbox"/>	<input type="checkbox"/> Carried out <input checked="" type="checkbox"/> Supervised	
Damp proofing	<input checked="" type="checkbox"/>	<input type="checkbox"/> Carried out <input checked="" type="checkbox"/> Supervised	
Roof cladding or roof cladding system	<input checked="" type="checkbox"/>	<input type="checkbox"/> Carried out <input checked="" type="checkbox"/> Supervised	
Ventilation system (for example, subfloor or cavity)	<input checked="" type="checkbox"/>	<input type="checkbox"/> Carried out <input checked="" type="checkbox"/> Supervised	
Wall cladding or wall cladding system	<input checked="" type="checkbox"/>	<input type="checkbox"/> Carried out <input checked="" type="checkbox"/> Supervised	
Waterproofing	<input checked="" type="checkbox"/>	<input type="checkbox"/> Carried out <input checked="" type="checkbox"/> Supervised	
Other	<input type="checkbox"/>	<input type="checkbox"/> Carried out <input type="checkbox"/> Supervised	

Design work that is RBW	Description of RBW	Carried out or supervised	Reference to plans and specifications
Tick <input checked="" type="checkbox"/> if included. Cross <input checked="" type="checkbox"/> if excluded	If appropriate, provide details of the RBW	Tick <input checked="" type="checkbox"/> whether you carried out this design work or supervised someone else carrying out this design work	If appropriate, specify references
FIRE SAFETY SYSTEMS: 61 - 66			
Emergency warning systems Evacuation and fire service operation systems <input checked="" type="checkbox"/> Suppression or control systems Other		<input type="radio"/> Carried out <input type="radio"/> Supervised	
Note: The design of fire safety systems is only restricted building work when it involves small-to-medium apartment buildings as defined by the Building (Definition of Restricted Building Work) Order 2011.			

WAIVERS AND MODIFICATIONS	
Waivers or modifications of the Building Code are required. <input type="radio"/> Yes <input checked="" type="radio"/> No	
If Yes, provide details of the waivers or modifications below:	
Clause	Waiver/modification required
List relevant clause numbers of building code	Specify nature of waiver or modification of building code required

ISSUED BY

Name and contact details of the licensed building practitioner who is licensed to carry out or supervise design work that is restricted building work.

Name: **Phil Stanfield**

LBP or Registration number: **BP109889**

The practitioner is a: ☒ Design LBP ☐ Registered architect ☐ Chartered professional engineer

Design Entity or Company (optional):

Mailing address (if different from below): **PO Box 652 Palmerston North**

Street address/Registered office: **85 Lombard Street Palmerston North**

Suburb: **Central**

Town/City: **Palmerston North**

PO Box/Private Bag: **PO Box 652**

Postcode: **4440**

Phone number: **06 353 0217**

Mobile: **021 728 784**

After hours:

Fax:

Email address: **phil@emerge-arch.co.nz**

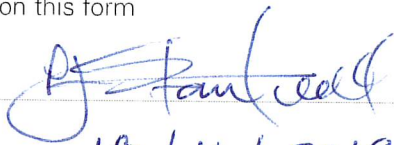
Website: **www.emerge-arch.co.nz**

DECLARATION

I Phil Stanfield LBP, state that I have applied the skill and care reasonably required of a competent design professional in carrying out or supervising the Restricted Building Work (RBW) described in this form, and that based on this, I also state that the RBW:

- Complies with the building code, or
- Complies with the building code subject to any waiver or modification of the building code recorded on this form

Signature:



Date:

18 / 11 / 2019



APPLICATION TO FORM A VEHICLE CROSSING (ENTRANCEWAY)

Made under Section 335 Local Government Act.

Please read the Specific Conditions of the Vehicle Crossing Information Pack before making the application.

Please provide as much information as possible.

Your permit is valid for 12 months with your vehicle crossing to be completed within that period.

It is the property owner's responsibility to arrange and pay for the construction of a vehicle crossing.

The vehicle crossing must be formed to top course stage prior to the commencement of any building work.

1) PROPERTY OWNER

CONTRACTOR

Name: Evan Beker(Director Generation Homes CHCH South)

Contact Name: TBC

Postal Address: PO Box 37163, Halswell/Christchurch 8245

Postal Address: _____

Phone No: (03) 741 1854 / 021 84 00 88

Phone No: _____

Email: evanb@generation.co.nz

Email: _____

2) ADDRESS OF PROPOSED VEHICLE CROSSING

Street: Lot 33 Branthwaite Drive (vehicle crossing to be located on side street off Branthwaite Drive)

Town/area: Rolleston

Legal Description/Valuation Number: Lot 33 DP 535457

3) LOCATION SKETCH

Please ✓ type of vehicle crossing:

Residential ☒

Rural ☐

Commercial/Industrial ☐

Please ✓ if the entranceway crosses a swale or water race ☐

<p>Please sketch above the location, width of vehicle crossing and distances to the nearest vehicle crossings on the same side of the road. If more relevant (eg when adjacent vehicle crossings have yet to be formed) please show distance to neighbouring boundaries or nearest intersection if by corner.</p>	

TO COMPLETE THIS APPLICATION, PLEASE READ AND SIGN THE REVERSE SIDE OF THIS SHEET


4) VEHICLE CROSSING INSPECTIONS

- I will notify the Council two working days prior to excavation to confirm location and make arrangements for consequent inspections.
- Telephone numbers: Rolleston (03) 3472800, Darfield direct line (03) 3188338

5) DECLARATION

- I will construct a vehicle crossing (entranceway) that complies with any Resource Consent and meets Council specifications from the formed roadway to my property. Between the initial construction and final surfacing of the vehicle crossing, the crossing will be kept in good condition to allow for the safe passage of pedestrians.
- I note that stamped concrete, coloured concrete, cobbles and non-standard paving blocks are **NOT** permitted.
- I understand that all costs are the responsibility of the property owner and that a vehicle crossing that does not meet Council specifications will be upgraded at the property owner's cost.
- I understand that I will be responsible for the costs associated with any repair work required as a result of settlement or poor workmanship during a 12-month period of maintenance.

Owner's Signature

Signature:  Name: Rhys James of ECAD Limited Date: 21 / 11 / 2019

pp on behalf Evan Becker (Director Generation Homes CHCH South)

Postal: Selwyn District Council, PO Box 90, Rolleston 7643

Telephone: (03) 3472800

Email: transportation@selwyn.govt.nz

FOR OFFICE USE ONLY

Entered onto Vehicle Crossing database VC N°: _____

INSPECTION TYPE	YES	NO	DATE	COMMENTS	INSPECTED BY:
Location					
Excavation					
Basecourse completed satisfactorily					
Final surfacing completed satisfactorily					
Additional Inspections					

Please file copy on Property File when Vehicle Crossing completed

☐

Rhys James

Subject: RE: Branthwaite Asbuits

Hi Rhys,

Please find attached design plans for Stage 1

I have also attached a dwg of the boundaries, I just wanted to make sure that you have the latest boundaries for Lot 109 as I know that on the earlier version of the plans there was no splay on the road entering the neighbouring cul-de-sac road.

Also re soakage testing – we did not actually do these as we based our soakage rates for the ECAN consent on the subsoil ground conditions and similar soakage rates from other sites etc. - we based the rates on 3000 mm/hr

Cheers

Kind regards



Craig Hurford BSurv.Hons

Survey and Operations Manager

4 Meadow Street, Papanui,

Christchurch 8052

PO Box 5558, Papanui, Christchurch

☎ 03 352 5599

✉ craig@survus.co.nz

🌐 www.survus.co.nz

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GAS CONTINUOUS FLOW



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Hot water for the whole family

STEADY, HOT & STRONG

INSTALL A RHEEM™

Go with the Flow[®]

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WITH RHEEM GAS CONTINUOUS FLOW

Rheem gas continuous flow water heaters deliver hot water when you need it, for as long as you need it.¹

Unlike traditional storage water heaters, gas continuous flow water heaters only heat water on demand rather than heating and storing water until needed. Appliances can be conveniently mounted to, or recessed into, your exterior wall, taking up less space. They are ideal for homes with high peak loads or when hot water is required occasionally such as at a holiday home.

Either connected to Natural Gas or to ULPG storage bottles, the water temperature is pre-set on the appliance, or is adjustable with EZiSET[®] or with optional remote temperature controllers installed indoors.

In homes where there is a high demand for water, or in colder areas where ambient water temperature is low, two appliances can be linked together using the Rheem EZ Link[®] system to supply twice the flow.

HOW CONTINUOUS FLOW WORKS

The water heater operates automatically, heating the water as it passes through the appliance. When a hot tap is opened, the gas burners ignite to provide immediate heating of the water. The heat produced by the burner is transferred to the water through the heat exchanger. The gas burners extinguish when the hot tap is closed.

Rheem Gas Continuous Flow

- Flamesafe overheat protection
- 6 star energy rating
- Digital display for easy fault diagnosis and service
- Frost protection
- Rheem EZ Link[®] compatible to link two units for increased supply
- Indoor and outdoor models
- Control your water temperature with EZiSET[®] or remote controllers

16L - 27L per minute

Natural Gas or ULPG

¹Providing gas, water and power are available

Always ensure you use a registered professional for all your plumbing and gasfitting needs.



Gas Continuous Flow solutions for every home



Outdoor - Rheem 16

1–1.5 Bathrooms, 1–3 people
An ideal solution for compact home sites, baches, cribs or apartments.



Outdoor - Rheem 20

1.5–2 Bathrooms, 2–4 people
Medium capacity model ideal for small to medium sized homes and apartments.



Outdoor - Rheem 26

2–3 Bathrooms, 4–6 people
A popular model in more temperate areas, with the capacity to suit most homes.



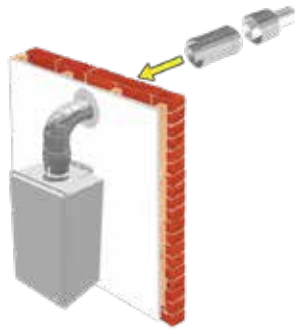
Outdoor - Rheem 27

2.5–3 Bathrooms, 4–6 people
Our most popular capacity, ideal for larger families with limited space and high demands for hot water.



Indoor - Rheem 27

2.5–3 Bathrooms, 4–6 people
The only Rheem indoor gas continuous flow model (must be flued to the outside of the building).



Indoor Model Flue Kit

The Indoor model must be installed using a certified Rheem flue system. Always check with local authorities that the installation complies with all regulations applicable in your area.



EZiSET®

Set your ideal water temperature and bath level from your smartphone. Ask your plumber/gasfitter to install the EZiSET® control module, download the EZiSET® app and you're in control via your home wifi.



Recess Box

Recess box comes with door and mounting brackets to fit various models.



Pipe Cover

Designed to cover pipework and valves.



EZ Link® Kit

Links two units together and provides staged heating to reduce wear and energy use. Kit contains 1.8m cable and fittings.



Standard



Deluxe

Remote Temperature Controllers

Deluxe controllers offer a 'bath fill' function for added convenience and safety.

WHY CHOOSE RHEEM?



ENERGY EFFICIENT

All Rheem gas continuous flow water heaters have a 6 star energy rating.



FLAMESAFE OVERHEAT PROTECTION SYSTEM

Automatically shuts down the unit should a fault occur.



FROST PROTECTION

All models of gas continuous flow water heaters are frost protected down to -20°C (power must remain to the unit for the frost protection function to operate).



10 YEAR WARRANTY

Rheem offer a 10 year warranty on the heat exchanger and a 3 year warranty on parts and labour.



TWICE THE FLOW

Two units can be linked together using the Rheem Ezi Link® system to supply twice the flow. Ideal for homes with high water demand or in climates with cooler incoming water.



FULL TECH SUPPORT

Rheem has a national service and network of after sales professionals to provide expert technical advice and fast service.



YOU'RE IN CONTROL

Set your ideal water temperature and bath level with the new Rheem EZiSET®. Just ask your plumber/gasfitter to install the EZiSET® control module, download the EZiSET® app to your smartphone and you're in control via the security of your home wifi – it's that easy. (EZiSET® is compatible with all the models in this brochure)



Optional standard and deluxe temperature controllers allow easy setting of water temperatures. Deluxe controllers offer a 'bath fill' mode and shut off safety features.

COMMERCIAL PRODUCTS

Our commercial gas continuous flow water heater range includes a 82°C model. From luxury homes to the largest commercial hot water application imaginable, Rheem can deliver to any requirements

For more information visit www.rheem.co.nz or call 0800 657 336.

Trusted by Plumbers

Rheem New Zealand Limited

475 Rosebank Road, Avondale 1026
PO Box 19011, Avondale, Auckland 1746

Freephone 0800 657 336
www.rheem.co.nz

All specifications contained in this brochure are subject to change without notice.

Please check the specifications are current at the time of ordering.

All information is current at the time of publication (February 2019).

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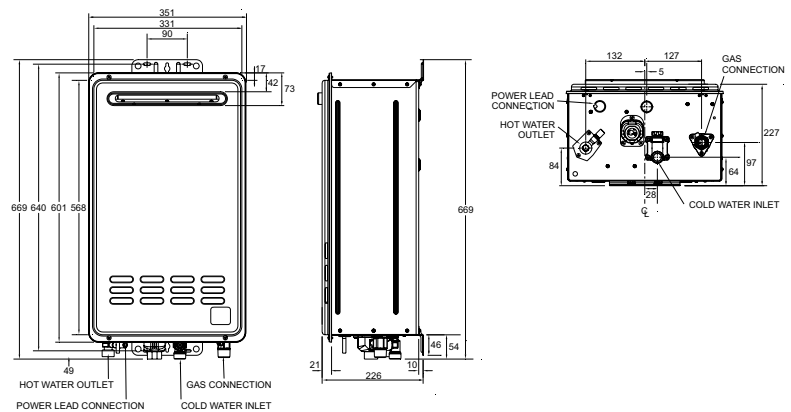
www.rheem.co.nz

Rheem Gas Continuous Flow Product Data

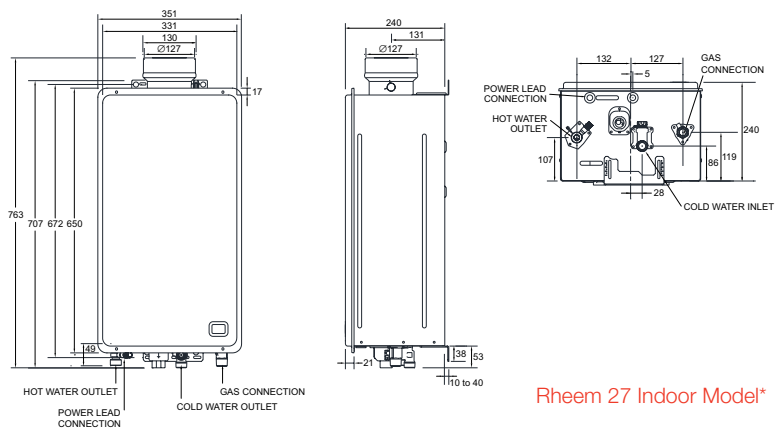


	Rheem 16	Rheem 20	Rheem 26	Rheem 27	Indoor 27*
Model Number	874816NFZ/LFZ	874820NFZ/LFZ	874826NFZ/LFZ	874627NFZ/LPZ	864627NFZ/LPZ
Nominal L/Min @25°C Rise	16L/Min	20L/Min	26L/Min	27L/Min	27L/Min
Gas Input Max	126 MJ/hr	157 MJ/hr	199 MJ/hr	205 MJ/hr	205 MJ/hr
Gas Type	NG or ULPG	NG or ULPG	NG or ULPG	NG or ULPG	NG or ULPG
Gas Connection	R ¾ / 20	R ¾ / 20	R ¾ / 20	R ¾ / 20	R ¾ / 20
Min Gas Supply Pressure NG/ULPG	1.13 kPa/ 2.75 kPa	1.13 kPa/ 2.75 kPa	1.13 kPa/ 2.75 kPa	1.13 kPa/ 2.75 kPa	1.13 kPa/ 2.75 kPa
Water Pressure (kPa) Min-Max	120-1000	120-1000	120-1000	140-1000	140 - 1000
Minimum Flow Rate	2.0L/Min	2.0L/Min	2.0L/Min	2.0 L/Min	2.0 L/Min
Cold Water Connection	R ¾ / 20	R ¾ / 20	R ¾ / 20	R ¾ / 20	R ¾ / 20
Hot Water Connection	R ¾ / 20	R ¾ / 20	R ¾ / 20	R ¾ / 20	R ¾ / 20
Approx. Weight (empty)	16kg	16kg	16kg	23kg	24kg
Freeze Protection	Yes	Yes	Yes	Yes	Yes

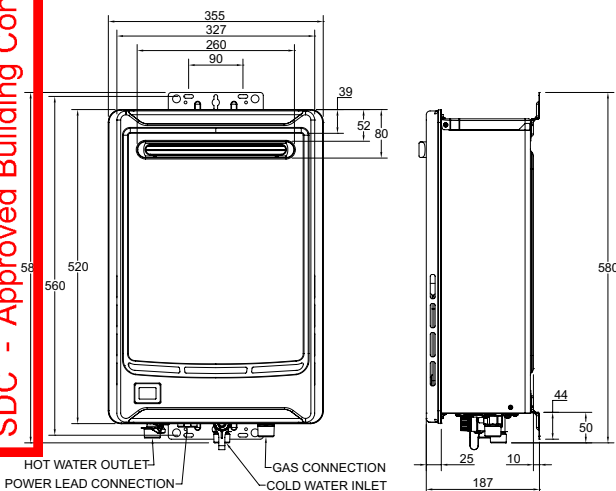
Continuous Flow Accessories	Part No.
Horizontal Flue Kit Side Exit	318278
Horizontal Flue Kit Rear Exit	318279
Vertical Flue Kit	318280
Recess Box - For Rheem 27	320316
Recess Box - For Rheem 16, 20 & 26	318994
Pipe Cover - For Rheem 27	320116
Pipe Cover - For Rheem 16, 20 & 26	320117
EZiSET® Kit	052310
EZ Link® Cable	290141
Standard Kitchen Temperature Controller	A299850
Standard Bathroom 1 Temperature Controller	A299851
Standard Bathroom 2 Temperature Controller	A299852
Deluxe Kitchen Temperature Controller	A299861
Deluxe Bathroom 1 Temperature Controller	A299862
Deluxe Bathroom 2 Temperature Controller	A299863



Rheem 27 Outdoor Model

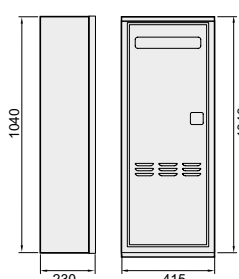


Rheem 27 Indoor Model*



Rheem 16, 20 & 26
Outdoor Models

Recess Box



*Rheem 27 Indoor Flue System

A certified Rheem coaxial flue system must be used with all Rheem 27 indoor models. There are three indoor flue kits available:- Horizontal Side Exit, Horizontal Rear Exit and Vertical. Please contact your local plumber, plumbing merchant or Rheem Customer Service on 0800 657 336 to discuss the best solution for your needs. The Rheem flue system uses a twin pipe design (one pipe inside the other); an inner pipe of stainless steel for exhaust, and an outer steel pipe for inlet air. This flue system can exhaust either through a roof or wall. (Subject to Building Regulations).

You'll love the convenience

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STEADY, HOT & STRONG

INSTALL A RHEEM™

Image source: Voda Plumbingware

Owner's Guide and Installation Instructions



Continuous Flow Gas Water Heater

*874, 876 series
812, 816, T16, 820, 826, T26 models*



*This water heater must be installed and serviced by a qualified person.
Please leave this guide with the householder.*

⚠ Warning: Upon completion of the installation and commissioning of the water heater, leave this guide with the householder or a responsible officer. **DO NOT** leave this guide inside of the cover of the water heater, as it may interfere with the safe operation of the water heater or ignite when the water heater is turned on.

PATENTS

This water heater may be protected by one or more patents or registered designs in the name of Rheem Australia Pty Ltd, Rheem New Zealand Limited or Paloma Co., Ltd.

Rheem Australia Pty Ltd and Rheem New Zealand Limited are the suppliers of the Rheem range of continuous flow gas water heaters, manufactured by Paloma Co., Ltd., a world leader in water heater technology and manufacture.

TRADEMARKS

® Registered trademark of Rheem Australia Pty Ltd., or Rheem New Zealand Limited.

™ Trademark of Rheem Australia Pty Ltd., or Rheem New Zealand Limited.

Note: Every care has been taken to ensure accuracy in preparation of this publication.
No liability can be accepted for any consequences, which may arise as a result of its application.

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HOUSEHOLDER - We recommend you read pages 4 to 44.
The other pages are intended for the installer but may be of interest.

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This Owner's Guide and Installation Instructions is shared for the Australian and New Zealand markets.

Where the content of this document is specific to either market, it is marked with either AU for Australian specific content or NZ for New Zealand specific content.

The 874816, 874820, 874826 natural gas and Universal LP Gas models
are the only models sold in New Zealand.
References to propane gas models do not apply to the New Zealand market.

The Universal LP Gas models are not sold in Australia.
References to these models do not apply to the Australian market.

The 876 series water heaters are not sold in New Zealand.
References to these models do not apply to the New Zealand market.

ABOUT YOUR WATER HEATER

WATER HEATER APPLICATION

This water heater is designed for use in a single family domestic dwelling for the purpose of heating potable water. Its use in an application other than this may shorten its life.

MODEL TYPE

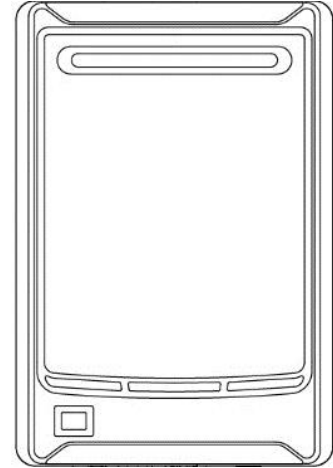
The Rheem® continuous flow gas water heater model you have chosen is for outdoor installation only.

The water heater has a maximum preset outlet temperature setting of:

- 874 series 75°C
- 876 series 50°C

Note: The 876 series water heater is marked “THIS APPLIANCE DELIVERS WATER NOT EXCEEDING 50°C IN ACCORDANCE WITH AS 3498” on the front panel.

- This model **must not** be installed as an in-series gas booster to a solar water heater, as water temperature greater than 50°C can be delivered from the water heater contravening its compliance to AS 3498.



MAINS PRESSURE

The water heater is designed for direct connection to the mains water supply. If the mains supply pressure in your area exceeds that [shown on page 48](#), a pressure limiting valve must be fitted. The supply pressure should be greater than 120 kPa for the rated flow and performance to be achieved.

WATER HEATER OPERATION

The water heater operates automatically, heating water as it passes through the water heater. When a hot tap is opened, the gas burners ignite to provide immediate heating of the water. The heat produced by the burner is transferred to the water through the heat exchanger. The water is heated to a constant temperature by the automatic adjustment of the gas supply to the burner to suit the water flow rate (refer to “[Temperature Control](#)” on pages 11 to 40). The gas burners extinguish when the hot tap is closed.

Automatic safety controls are fitted to the water heater to provide safe and efficient operation.

REDUCED HOT WATER FLOW WHEN HEAT EXCHANGER IS COLD

At a cold start-up, i.e. when the water heater has not operated for some time (which is most often first thing in the morning), the initial flow of hot water may be reduced for a period of 5-10 seconds while the heat exchanger warms up. **This is both an energy and water saving feature of this water heater.** Once the heat exchanger has warmed up the hot water flow will increase and remain at normal flow levels. This feature will only occur at a cold start-up and not when the heat exchanger is already warm from a recent use of hot water.

GAS BOOSTING FOR A SOLAR WATER HEATER

The 874 series water heater may be installed as an in-series gas booster to a solar water heater.

Water stored in the solar storage tank passes through the in-series gas booster when a hot tap is opened. The in-series gas booster is for heating water at times of low solar energy gain, such as during cloudy or rainy weather, or during colder months.

The in-series gas booster operates automatically. When the solar heated water temperature is below 58°C, the in-series gas booster heats the water to its preset outlet temperature setting.

Solar heated water can reach temperatures up to 70°C to 80°C for a Premier Loline and Loline pumped system and possibly higher for a Hiline and Premier Hiline thermosiphon system. When the solar heated water temperature is 58°C or higher, the flow passes through the in-series gas booster without boosting.

For information relating to the function and operation of the solar water heater, refer to the Owner's Guide and Installation Instructions supplied with the solar water heater.

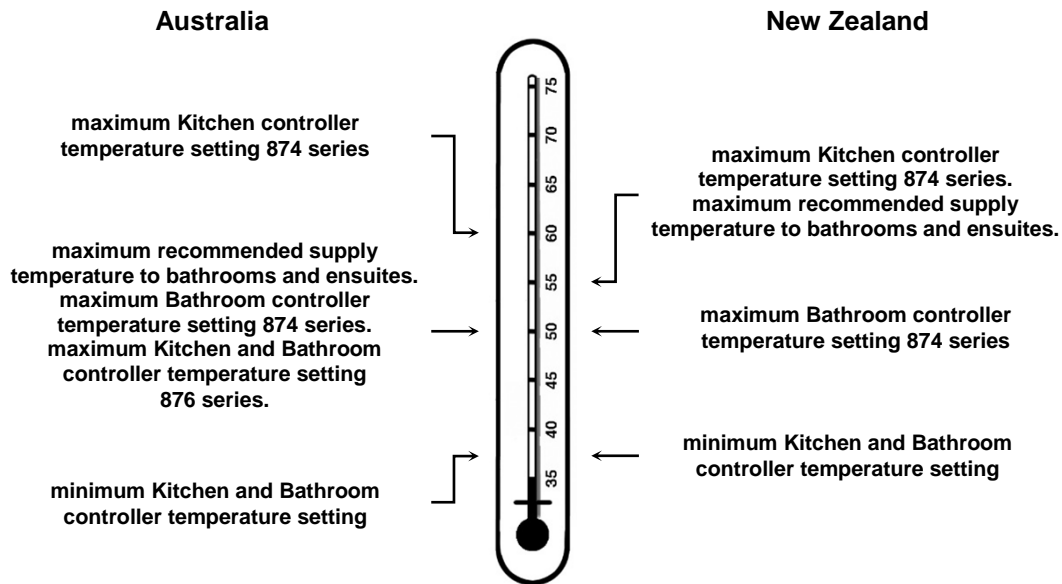
HOW HOT SHOULD THE WATER BE?

The water heater may be installed with one or more user adjustable temperature controllers, which allow you to choose the most suitable temperature for your hot water needs (refer to “Temperature Control” on page 11).

If a controller is not installed, the water heater heats the water to the preset outlet temperature setting. The factory preset outlet temperature setting is:

- 874 series 60°C – AU 55°C – NZ
- 876 series 50°C

Note: The preset outlet temperature setting of this water heater cannot be adjusted by the householder. The setting can only be adjusted by the installer, Rheem Service or their nearest Accredited Service Agent / Centre.



Note: Australian Standard AS 3498 and New Zealand Building Code Clause G12 requires that a water heater provides the means to inhibit the growth of Legionella bacteria in potable water. When this water heater is used as an in-series booster for a solar water heater it can satisfy these AS 3498 and Clause G12 requirements provided it is energised, the booster preset outlet temperature setting is 70°C, and that a remote temperature controller is not used.

⚠ Warning: Temperature controllers **must not** be fitted to this water heater (874 series) if it is installed as an in-series gas booster with a solar water heater system because water at a temperature much higher than the controller setting can be delivered. If a solar water heater is installed to an existing water heater installation, then all controllers **must be** disconnected and removed.

If this water heater is installed as part of a solar water heater system, the system can deliver water at temperatures from 58°C up to 80°C and possibly higher depending upon the model of solar water heater installed.

HOTTER WATER INCREASES THE RISK OF SCALD INJURY

This water heater can deliver water at temperatures which can cause scalding. Check the water temperature before use, such as when entering a shower or filling a bath or basin, to ensure it is suitable for the application and will not cause scald injury.

We recommend and it may be required by regulations that an approved temperature limiting device be fitted into the hot water piping to the bathroom and ensuite when an 874 series water heater is installed. This will keep the water temperature below 50°C – AU or 55°C – NZ at the bathroom and ensuite. The risk of scald injury will be reduced and if no controllers are installed and the preset outlet temperature setting has not been adjusted below 55°C or if a Kitchen controller is installed, still allow hotter water to the kitchen and laundry.

An 876 series water heater will not deliver temperatures exceeding 50°C, in accordance with AS 3498. There is no need to fit a temperature limiting device to satisfy the requirements of AS/NZS 3500.4, if an 876 series water heater is installed in an application where 50°C is the maximum permissible hot water temperature at the outlet of a sanitary fixture used primarily for personal hygiene purposes.

SAFETY

This water heater is supplied with temperature sensors, a FlameSafe® protection system and a pressure relief valve. These devices must not be tampered with or removed. The water heater must not be operated unless each of these devices is fitted and is in working order.

If the power supply cord or plug is damaged, it must be replaced by a qualified person in order to avoid a hazard. The power supply cord and plug must be replaced with a genuine replacement part available from Rheem. Phone Rheem Service or their nearest Accredited Service Agent / Centre to arrange for an inspection.

The Rheem warranty may not cover faults if relief valves or other safety devices are tampered with or if the installation is not in accordance with these instructions.

⚠ WARNINGS

- This water heater is only intended to be operated by persons who have the experience or the knowledge and the capabilities to do so.
- This water heater is not intended to be operated by persons with reduced physical, sensory or mental capabilities i.e. the infirm, or by children. Children should be supervised to ensure they do not interfere with the water heater.
- The water heater uses 240 Volt AC electrical power for operation of the control systems and the combustion fan. The removal of the front panel will expose 240 V wiring. It must only be removed by a qualified person.
- The power lead from the water heater must be plugged into a weatherproof electrical outlet. Take care not to touch the power plug with wet hands.
- For continued safety of this water heater it must be installed, operated and maintained in accordance with the Owner's Guide and Installation Instructions.
- Do not modify this water heater.
- Do not use or store **flammable materials** in or near this water heater. Flammable liquids (such as petrol), combustible materials (such as newspapers) and similar articles must be kept well away from the water heater and the flue terminal.
- Do not spray **aerosols** in the vicinity of this water heater while it is in operation. Gases from many aerosol sprays are flammable, or may become corrosive when drawn into a flame.
- Do not store **swimming pool chemicals, household cleaners**, etc., near the water heater.
- Do not place articles on or against this water heater, or in contact with the flue terminal. Ensure the flue terminal is not obstructed in any way at any time.
- Do not use Propane / Butane gas mixtures in a Propane model. A Propane model is designed to operate on Propane only. The use of Propane / Butane mixture, such as automotive LP gas fuel, in a Propane model is unsafe and can cause damage to the water heater.



Note: LP gas models sold in New Zealand are designed to operate on the Propane / Butane mixture supplied in New Zealand. An LP gas model has an LFZ suffix in its model number.

PRECAUTIONS

The water heater must be maintained in accordance with the Owner's Guide and Installation Instructions. Refer to "General Maintenance" on page 7, "Minor Maintenance Every Six Months" on page 7 and "Major Service Every Five Years" on page 8.

If this water heater is to be used where an uninterrupted hot water supply is necessary for your application or business you should ensure that you have back-up redundancy within the hot water system design. This should ensure the continuity of hot water supply in the event that this water heater were to become inoperable for any reason. We recommend you seek advice from your plumber or specifier about your needs and building back-up redundancy into your hot water supply system.

GENERAL MAINTENANCE

The jacket of the water heater can be cleaned with a soft cloth and warm mild soapy water. Under no circumstances should abrasive materials or powders be used.

The area around the water heater can be sprayed with insecticide to rid the area of insects. Insects encroaching into or nesting in the water heater can interfere with the operation of the water heater and also damage components.

- Switch off the electrical supply at the power outlet to the water heater and only spray the insecticide when the water heater is not operating.

Gases from many aerosol sprays are flammable, or may become corrosive when drawn into a flame.

- Wait a few minutes to allow any aerosol gases to dissipate before switching on the electrical supply at the power outlet to the water heater.

MINOR MAINTENANCE EVERY SIX MONTHS

It is recommended minor maintenance be performed every six (6) months. Minor maintenance can be performed by the dwelling occupant.

The minor maintenance includes:

- Inspect around the air inlet, flue terminal and the water heater in general for plant growth.
 - Trim back any shrubs, bushes or other plants which have encroached around the water heater.

Plant growth across the air inlet and flue terminal can interfere with the performance of the water heater.
- Inspect around the water heater for insect infestations, such as ants.
 - Spray insecticide around the water heater if necessary to rid the area of insects. Do not spray the surface or into the air inlet or flue terminal of the water heater.
 - Switch off the electrical supply at the power outlet to the water heater and only spray the insecticide when the water heater is not operating.

Gases from many aerosol sprays are flammable, or may become corrosive when drawn into a flame.

 - Wait a few minutes to allow any aerosol gases to dissipate before switching on the electrical supply at the power outlet to the water heater.

Insects encroaching into or nesting in the water heater can interfere with the operation of the water heater and also damage components.

MAJOR SERVICE EVERY FIVE YEARS

For safe and efficient operation, it is recommended a major service be conducted on the water heater every five (5) years.

⚠ Warning: Servicing of a water heater must only be carried out by qualified personnel. Phone Rheem Service or their nearest Accredited Service Agent / Centre.

Note: The major service and routine replacement of any components, if required, are not included in the Rheem warranty. A charge will be made for this work. Only genuine replacement parts should be used on this water heater.

The major service includes the following actions:

- Check and if necessary adjust the gas pressure.
- Check the operation of and clean the burner.
- Check and clean the line strainer.
- Visually check the unit for any potential problems.
- Inspect all connections.

TO TURN OFF THE WATER HEATER

If it is necessary to turn off the water heater:

- Turn off the controller(s) (if fitted) by pressing the on / off (⏻) button.
The on / off operating light will go out and the priority light, if it is on, will go out.
- Switch off the electrical supply at the power outlet to the water heater if there is no risk of freezing conditions occurring (refer to note below).
- Close the gas isolation valve at the inlet to the water heater.
- Close the cold water isolation valve at the inlet to the water heater.

Note: If there is a risk of freezing conditions, the electrical supply to the water heater should not be switched off unless the water heater is drained, otherwise damage could result (refer to [“Frost Protection”](#) on page 9 and [“Draining the Water Heater”](#) on page 9).

TO TURN ON THE WATER HEATER

- Screw in the drain plugs at the cold water inlet and hot water outlet of the water heater if the water heater has been drained.
- Open all of the hot taps in the house (don't forget the shower).
- Open the cold water isolation valve fully at the inlet to the water heater.
Air will be forced out of the taps.
- Close each tap as water flows freely from it.
- Open the gas isolation valve fully at the inlet to the water heater.
- Plug in the power supply cord at the power outlet.
- Switch on the electrical supply at the power outlet to the water heater.
- Turn on a controller, if one is fitted, by pressing the on / off (⏻) button.

The on / off operating light and the priority light will both glow.

The water heater will operate automatically when you open a hot tap.

CIRCULATED HOT WATER FLOW AND RETURN SYSTEM

A Rheem 874 series continuous flow water heater can be installed as part of a circulated hot water flow and return system in a building. Refer to [“Circulated Hot Water Flow and Return System”](#) on page 51 for further information and notes on this type of installation.

GOING ON HOLIDAYS

If you are going on holidays, it is not necessary to turn the water heater off. If it is necessary to turn off the water heater, refer to [“To Turn Off The Water Heater”](#) on page 8.

FROST PROTECTION

The water heater has a frost protection system. The frost protection system will protect the water heater from damage, by preventing ice forming in the waterways of the water heater, in the event of freezing conditions occurring.

Notes:

- The frost protection system will be rendered inoperable if electrical power is not available at the water heater. Damage caused by freezing due to the unavailability of power at the water heater is not covered by the Rheem warranty (refer to [“Terms of the Rheem Warranty”](#) on page 86).
- If it is necessary to switch the power off to the water heater and there is a risk of freezing, then it is necessary to drain the water heater (refer to [“Draining the Water Heater”](#) on page 9).
- Pipe work to and from the water heater must be adequately insulated to prevent freezing.
- The water heater is not suitable for installation in areas where the ambient temperature falls below -20°C (including wind chill factor).
- Refer to [“Terms of the Rheem Warranty”](#) on page 86.

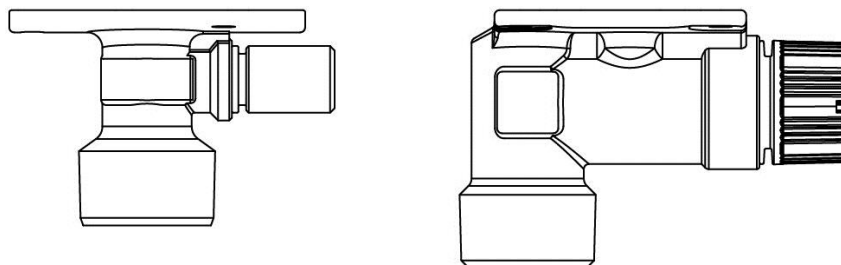
DRAINING THE WATER HEATER

- Turn off the water heater (refer to [“Turn Off The Water Heater”](#) on page 8).
- Open a hot tap (preferably the shower outlet).
- Unscrew the two drain plugs, one each at the cold water inlet and hot water outlet, on the underside of the water heater.

Water will drain from the water heater.

- When water stops flowing from the water heater, close the hot tap.

Note: It is recommended not to screw the drain plugs back in, until the water heater is to be turned on again.



HOW DO I KNOW IF THE WATER HEATER IS INSTALLED CORRECTLY?

Installation requirements are [shown on pages 45 to 58](#). The water heater must be installed:

- by a qualified person, and
- in accordance with the installation instructions, and
- in compliance with Standards AS/NZS 3500.4, and either AS 5601 or AS/NZS 5601.1 as applicable under local regulations, and all local codes and regulatory authority requirements.

The Gas installations Standards AS 5601 and AS/NZS 5601.1 place limitations on the location of a gas water heater within a covered area. Refer to [“Installation within a Covered Area”](#) on page 47.

In New Zealand, the installation must conform to Clauses G11, G12 and H1 of the New Zealand Building Code.

⚠ Warning: Temperature controllers **must not** be fitted to this water heater (874 series) if it is installed as an in-series gas booster with a solar water heater system because water at a temperature much higher than the controller setting can be delivered. If a solar water heater is installed to an existing water heater installation, then all controllers **must be** disconnected and removed.

The pipe work between the solar storage tank (if one is installed) and the in-series gas booster has a minimum recommended pipe size of DN20, **MUST BE** of copper and be fully insulated in accordance with the requirements of AS/NZS 3500.4. The insulation must be weatherproof and UV resistant if exposed. The insulation must be fitted up to the connections on both the solar storage tank and the in-series gas booster.

VICTORIAN CUSTOMERS

Notice to Victorian Customers from the Victorian Plumbing Industry Commission. This water heater must be installed by a licensed person as required by the Victorian Building Act 1993.

Only a licensed person will give you a Compliance Certificate, showing that the work complies with all the relevant Standards. Only a licensed person will have insurance protecting their workmanship for 6 years. Make sure you use a licensed person to install this water heater and ask for your Compliance Certificate.

DOES THE WATER CHEMISTRY AFFECT THE WATER HEATER?

The water heater is suitable for most public water supplies, however some water chemistries may have detrimental effects on the water heater, its components and fittings. Refer to [“Water Supplies”](#) on page 41.

If you are in a known harsh water area or you are not sure of your water chemistry, have your water checked against the conditions [described on page 41](#).

HOW LONG WILL THE WATER HEATER LAST?

The water heater is supported by a manufacturer's warranty ([refer to page 86](#)). There are a number of factors that will affect the length of service the water heater will provide. These include but are not limited to the water chemistry, the water pressure, the water temperature (inlet and outlet) and the water usage pattern. Refer to [“Precautions”](#) on page 7.

TEMPERATURE CONTROL

CONTROLLERS

The Rheem 874 and 876 series can be installed with Rheem controllers to enable the user to control the temperature of the delivered water from the outlet of the water heater. There are two families of Rheem controllers suitable for installation with this water heater. These are the standard controllers and the Deluxe controllers.

Standard Controllers

There are three types of standard controller. They are the Kitchen controller (Rheem AU - Part 299850, NZ - Part A299850), Bathroom 1 controller (Rheem AU - Part 299851, NZ - Part A299851) and the Bathroom 2 controller (Rheem AU - Part 299852, NZ - Part A299852). These part numbers include the controller cable supplied with the controller.

The standard controllers are identified by a 'K' (Kitchen controller), 'B1' (Bathroom 1 controller) or 'B2' (Bathroom 2 controller) located on the front bottom left hand corner of the standard controller.

Deluxe Controllers

There are three types of Deluxe controller. They are the Kitchen Deluxe controller (Rheem AU - Part 299858, NZ - Part A299861), Bathroom 1 Deluxe controller (Rheem AU - Part 299859, NZ - Part A299862) and the Bathroom 2 Deluxe controller (Rheem AU - Part 299860, NZ - Part A299863). These part numbers include the controller cable supplied with the controller.

The Deluxe controllers are identified by a 'K' (Kitchen Deluxe controller), 'B1' (Bathroom 1 Deluxe controller) or 'B2' (Bathroom 2 Deluxe controller), located under the front panel, to the bottom left hand corner adjacent to the BATH FILL VOLUME label.

The Deluxe controllers offer additional functions to the standard controllers. These are:

- An assistance call function, which provides a voice prompt when pressed and will sound on all controllers. This is useful should a family member require assistance when in the bathroom.
- A Bath Fill function, which is designed to allow the water heater to deliver a selected volume of water at a selected temperature.

Bath filling takes place when the hot tap is opened. When the set volume has been delivered, the water flow from the water heater ceases. Refer to "[Bath-Fill Function](#)" on page 32.

Note: The bath level should be monitored periodically while this function is in use to avoid the possibility of the bath overflowing. The Bath Fill function should also be used with caution until you are familiar with its operation.

⚠ Warning: Baths should not be left unattended whenever young children are present.

⚠ Warning: Temperature controllers **must not** be fitted to this water heater (874 series) if it is installed as an in-series gas booster with a solar water heater system because water at a temperature much higher than the controller setting can be delivered. If a solar water heater is installed to an existing water heater installation, then all controllers **must be** disconnected and removed.

Notes:

- Where more than one controller is installed, the second or third controller must be of the same family.
- A standard controller can only be installed with another standard controller(s) and a Deluxe controller can only be installed with another Deluxe controller(s). A standard controller(s) and a Deluxe controller(s) cannot be connected to the same water heater.
- One, two or three controllers can be installed. Only one of each type of controller can be connected to the water heater. Therefore, a maximum of three controllers only can be connected to each water heater.
- A Bathroom 2 controller can only be installed if a Bathroom 1 controller is installed and a Bathroom 2 Deluxe controller can only be installed if a Bathroom 1 Deluxe controller is installed.
- Other manufacturers' controllers are not suitable to and cannot be installed with this water heater.

TEMPERATURE CONTROL – STANDARD

STANDARD CONTROLLER FUNCTIONS

If one or more controllers are installed, at least one must be on for the water heater to operate. If all controllers are off, the water heater will only deliver cold water.

on / off (⏻) button – This button must be pressed once to turn on the controller.

A controller cannot be turned on if water is flowing from a hot tap.

To turn off a controller, press the on / off (⏻) button once. The light will go out.

A controller can be turned off whilst water is flowing.

on / off operating light – The on / off operating light on the on / off (⏻) button will glow when the controller is turned on.

The light will go out when the controller is turned off.

priority light – This light will glow on a controller when that controller has priority.

The Bathroom controller(s), if they are turned on, have priority over the Kitchen controller.

Priority means that controller has control of the water heater temperature setting.

The water temperature setting can only be adjusted by the controller that has priority.

in use light – This light will glow on all controllers, whether they are on or off, when hot water is flowing, regardless of which controller has priority.

display panel – The current temperature setting is displayed on all controllers (whether hot water is flowing or not), when any controller is on.

If all controllers are off, then the display remains blank.

The water volume can also be displayed on the Kitchen controller. The x 10L symbol glows when the water volume is displayed.

up (▲) button – The up (▲) button increases the temperature and water volume settings.

Refer to [“Temperature Adjustment – Standard Controller”](#) on page 15 and [“Water Volume Function”](#) on page 20.

down (▼) button – The down (▼) button decreases the temperature and water volume settings.

Refer to [“Temperature Adjustment – Standard Controller”](#) on page 15 and [“Water Volume Function”](#) on page 20.

water volume (📊) button (Kitchen controller only) – This feature enables an alarm to sound when a set volume of water has flowed through the water heater.

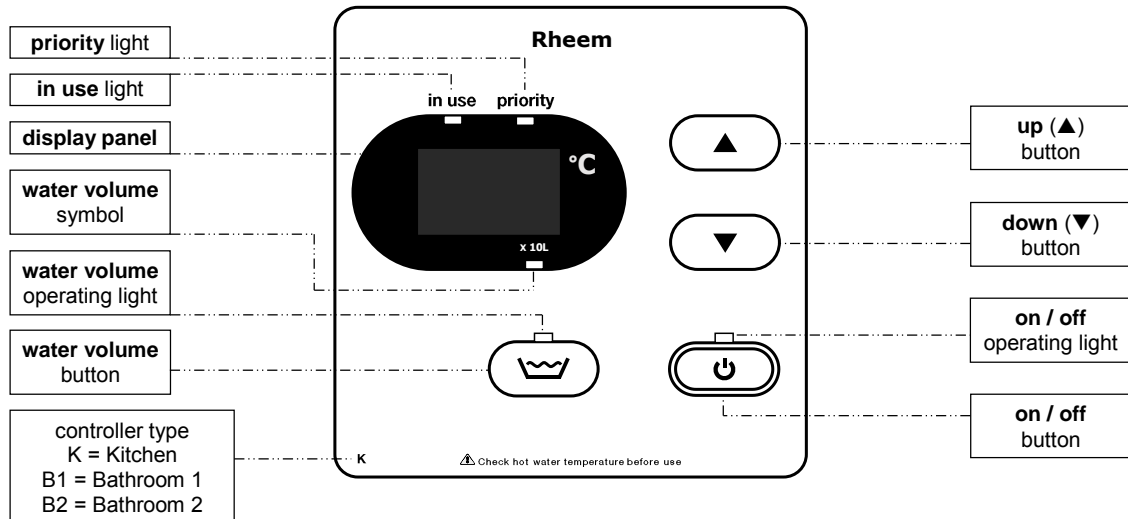
Refer to [“Water Volume Function”](#) on page 20.

water volume operating light – The water volume operating light on the water volume (📊) button will glow when the water volume (📊) button is pressed and the water volume function is turned on.

The light will go out when the water volume (📊) button is pressed and the water volume function is turned off.

water volume symbol – The x 10L symbol below the display panel glows when the water volume function is turned on and the water volume is displayed.

STANDARD CONTROLLER



Note: water volume (👑) button, water volume operating light and water volume symbol are on the Kitchen controller only.

SILENCING A CONTROLLER – STANDARD

The controller emits a sound whenever a button is pressed. This sound can be turned off to provide silent operation.

To turn off the sound:

- Press the on / off (🔌) button, to deactivate the controller (on / off operating light is off).
- Press and hold the up (▲) button.
- Press the on / off (🔌) button, whilst the up (▲) button is pressed.

The sound for the controller is deactivated. Repeat this procedure on the other controllers if you wish to deactivate their sound. To restore the sound, repeat this procedure.

TEMPERATURE SETTINGS – STANDARD CONTROLLER

The temperature settings of each type of controller are:

- Bathroom 1 & 2 37°C to 46°C (in 1°C increments), 48°C, 50°C
- Kitchen 37°C to 46°C (in 1°C increments), 48°C, 50°C*, 55°C**, 60°C

* limited to 50°C on an 876 series model.

** NZ – limited to 55°C.

Temperature settings

37	38	39	40	41	42	43	44	45	46	48	50	55	60
warm			average hot shower				hot			very hot			

The installation of a Bathroom controller(s) only (i.e. no Kitchen controller) limits the temperature setting of the water heater to a maximum of:

- 874 series 50°C
- 876 series 50°C

regardless of the preset outlet temperature setting of the water heater.

The installation of a Kitchen controller will allow a maximum temperature setting of:

- 874 series 60°C – AU 55°C – NZ
- 876 series 50°C

regardless of the preset outlet temperature setting of the water heater.

If there is no controller installed, the water heater defaults to the preset outlet temperature setting. This may be up to:

- 874 series 75°C
- 876 series 50°C

Refer to “[How Hot Should The Water Be?](#)” on page 5.

On a building fitted with a temperature limiting device such as a tempering valve and where an 874 series water heater is installed without a separate untempered hot water line to the kitchen, laundry or other non-ablution area, although the Kitchen controller will be able to display temperatures above 50°C and the water leaving the water heater will be at the set temperature, the maximum water temperature which can be delivered to the hot water outlets in these locations is determined by the temperature setting of the temperature limiting device. This is usually 50°C.

On a building fitted with a temperature limiting device set to 50°C, to enable the delivery of water temperatures above 50°C to the kitchen, laundry or other non-ablution area, separate untempered pipe work must be installed from the water heater to the hot water outlets in these locations.

TEMPERATURE ADJUSTMENT – STANDARD CONTROLLER

- A controller must be on and have priority to be able to adjust the temperature setting.
- The temperature adjustment is made by pressing the up (▲) button or down (▼) button.
- The maximum temperature setting for the controllers are:

	Kitchen	Bathroom
874 series	60°C – AU, 55°C – NZ	50°C
876 series	50°C	50°C

- Each press of the up (▲) button will increase the temperature setting by one increment.
- Pressing and holding the up (▲) button will scroll the temperature setting up to a maximum 43°C if there is hot water flowing or 45°C if there is no hot water flowing.
- From the 45°C setting, the up (▲) button must be pressed once for each increase in temperature increment.
- The temperature setting cannot be increased above 43°C whilst hot water is flowing.
- The minimum temperature setting for each type of controller is 37°C.
- Each press of the down (▼) button will decrease the temperature setting by one temperature increment.
- Pressing and holding the down (▼) button will scroll down the temperature setting.
- The temperature setting can be decreased from any temperature setting whether the hot water is flowing or not.

TEMPERATURE CONTROL – STANDARD

KITCHEN CONTROLLER – STANDARD

The Kitchen controller allows the user to select the temperature setting for the hot water to be used in the kitchen and laundry. It has a minimum temperature setting of 37°C and a maximum temperature setting of:

- 874 series 60°C – AU 55°C – NZ
- 876 series 50°C

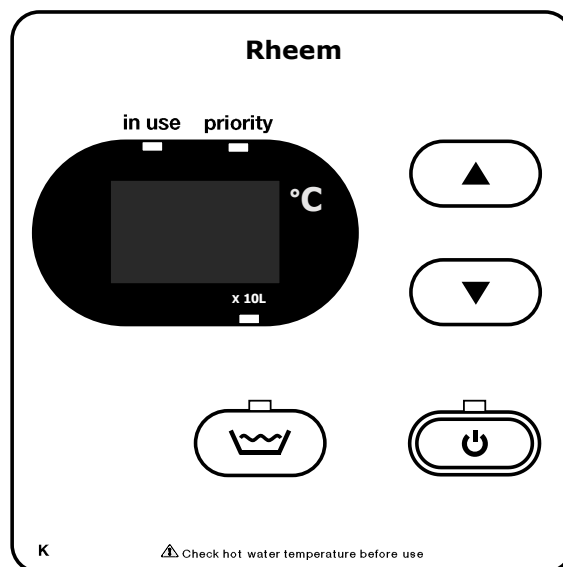
The Kitchen controller does not have priority if a Bathroom controller is on.

Notes on the Kitchen controller:

- The controller cannot be turned on whilst a hot tap is open.
- The Kitchen controller must be on and have priority in order to adjust the temperature setting on the Kitchen controller.
- The Bathroom controller(s) can be turned off from the Kitchen controller.
 - Press and hold the on / off (⏻) button on the Kitchen controller for three seconds.

This turns off all the controllers and the displays go blank.

If hot water is flowing from a hot tap, it will go cold.



Kitchen Controller

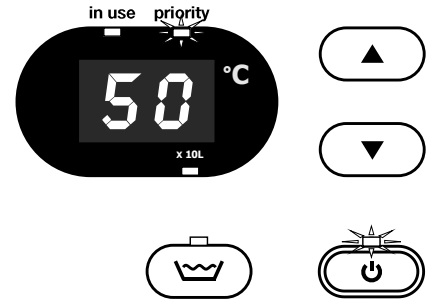
To operate the Kitchen controller:

1. Turn off the Bathroom controller(s)

- If a temperature setting is displayed and the priority light is not glowing, it is necessary to turn off the Bathroom controller(s) to gain priority.
- Refer to the [notes on the Kitchen controller](#) on page 16.

2. Turn on the Kitchen controller

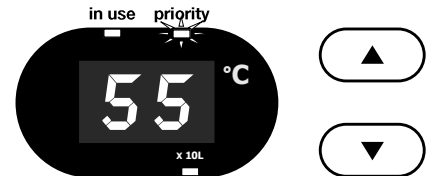
- Press the on / off (⏻) button.
- The on / off operating light and the priority light will both glow.
- The previous Kitchen controller temperature setting will be displayed on the temperature display panel.



3. Select the temperature setting

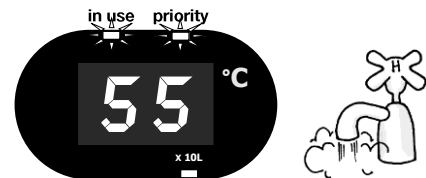
- Press the up (▲) button or down (▼) button.
- Refer to [“Temperature Adjustment – Standard Controller”](#) on page 15.

The selected temperature setting will be displayed on all controllers.



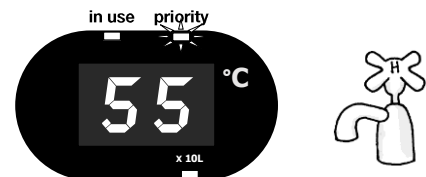
4. Open the hot tap.

The in use light will glow on all controllers.



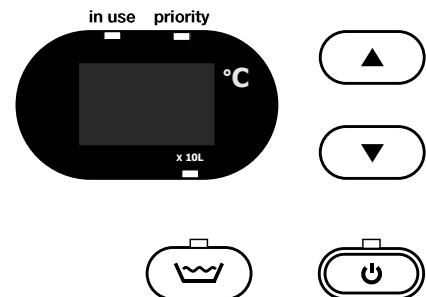
5. Close the hot tap.

The in use light will go out on all controllers, if no other hot tap is open.



6. Turn off the Kitchen controller

- Press the on / off (⏻) button.
- The priority light and on / off operating light will go out and the temperature display will go blank.



Important: Turn off the Kitchen controller after hot water usage is finished in the kitchen and / or laundry. Refer to [Important](#) note for Bathroom controllers on page 18.

BATHROOM CONTROLLERS – STANDARD

The Bathroom controller(s) allows the user to select the temperature setting for the hot water to be used in the bathroom. They have a minimum temperature setting of 37°C and a maximum temperature setting of:

- 874 series 50°C
- 876 series 50°C

The Bathroom controllers operate in tandem. Whenever an operation is selected on one Bathroom controller, it is also set on the other Bathroom controller. The Bathroom controllers automatically have priority if they are on.

Important: It is important to turn on the Bathroom controller before opening a hot tap in the bathroom (priority is automatically gained). If the Bathroom controller is not on and the Kitchen controller is on (has priority), then it is possible to receive water at a temperature higher than expected from a hot tap in the bathroom. This temperature could be up to:

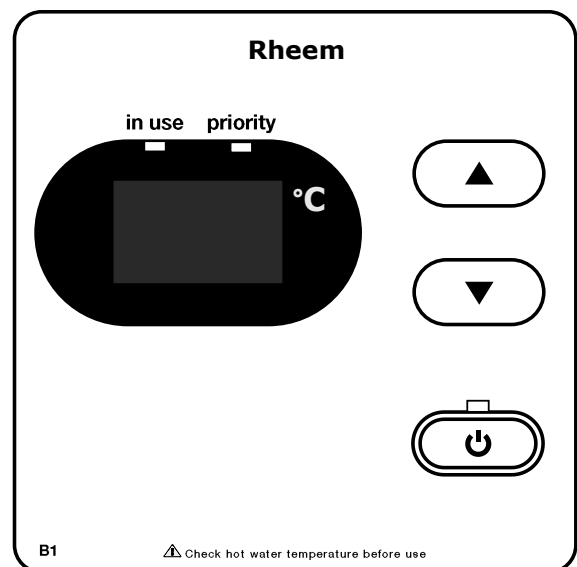
- 874 series 50°C if a temperature limiting device is installed in the hot pipe to the bathroom or up to 60°C – AU or 55°C – NZ if a temperature limiting device is not installed.
- 876 series 50°C

Notes on the Bathroom controllers:

- The controller cannot be turned on whilst a hot tap is open.
- When a Bathroom controller is turned on, it gains priority from the Kitchen controller.
- The Bathroom controller must be on in order to adjust the temperature setting on the Bathroom controller.
- The Kitchen controller can be turned off from a Bathroom controller.
 - Press and hold the on / off (⏻) button on a Bathroom controller for three seconds.
 - This turns off all the controllers and the displays go blank.
 - If hot water is flowing from a hot tap, it will go cold.
- **⚠ Warning:** It is advised to leave the Bathroom controller on after hot water usage is finished in the bathroom. **Turning off a controller in one bathroom will also turn off the controller in the other bathroom.** The Kitchen controller will gain priority if it is on and the temperature setting can be up to:
 - 874 series 60°C – AU 55°C – NZ
 - 876 series 50°C

If a hot tap is open in another bathroom, the water will be delivered at:

- For an 874 series model – up to 50°C if a temperature limiting device is installed in the hot pipe to the bathroom or up to 60°C – AU or 55°C – NZ if a temperature limiting device is not installed.
- For an 876 series model – up to 50°C.

**Bathroom Controller**

To operate a Bathroom controller:

1. Turn off the Kitchen controller

- If a temperature setting is displayed and the priority light is not glowing, it is advised to turn off the Kitchen controller.

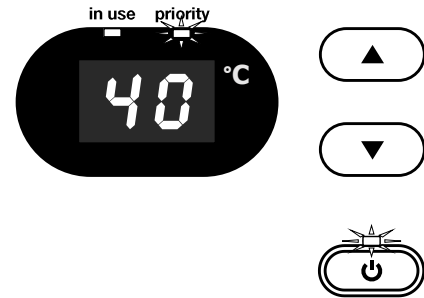
Refer to the [notes on the Bathroom controllers](#) on page 18.

2. Turn on the Bathroom controller

- Press the on / off (⏻) button.

The on / off operating light and the priority light will both glow.

The temperature setting of 40°C will be displayed on the temperature display panel.



3. Select the temperature setting

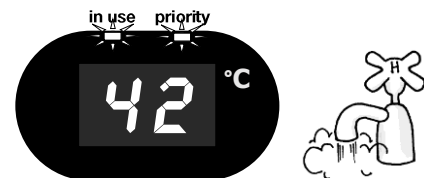
- Press the up (▲) button or down (▼) button.
- Refer to [“Temperature Adjustment – Standard Controller”](#) on page 15.

The selected temperature setting will be displayed on all controllers.



4. Open the hot tap

The in use light will glow on all controllers.



5. Close the hot tap

The in use light will go out on all controllers, if no other hot tap is open.

It is advised not to turn off the Bathroom controller(s).

- Refer to the [warning](#) in the notes on page 18.



WATER VOLUME FUNCTION

The water volume function is designed to warn by an alarm (beeping sound), that a certain volume of water has been delivered from the water heater. **It does not stop either the flow of or the heating of water.** This function is useful if a bath is being filled, or measuring the water consumed by the use of a shower.

The water volume function can only be set by the Kitchen controller. Refer to the [notes on the water volume function](#) on page 21.

To operate the water volume alarm:

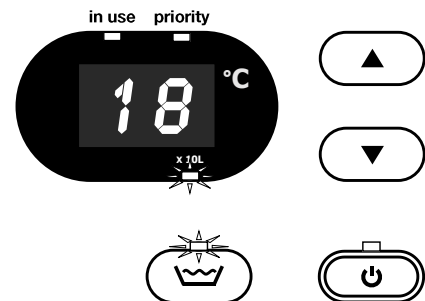
1. Turn on the water volume function

- Press the water volume (👑) button.

The water volume operating light will glow.

The current set water volume (in litres divided by 10) will be displayed and the x 10L indicator will also glow.

E.g. the factory preset water volume of 180 litres is shown as 18 x 10L.



2. Adjust the water volume setting (if necessary)

- To adjust the water volume setting, press the up (▲) button to increase the water volume or the down (▼) button to decrease the water volume.

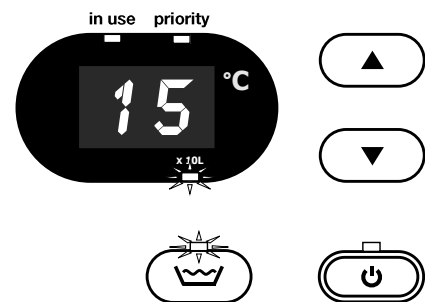
Each press of the up (▲) button or down (▼) button will change the water volume setting by 10 litres.

Pressing the up (▲) button or down (▼) button continuously will scroll the water volume setting.

Fifteen seconds after the water volume has been selected, the water volume operating light will start to flash and the selected water volume is set.

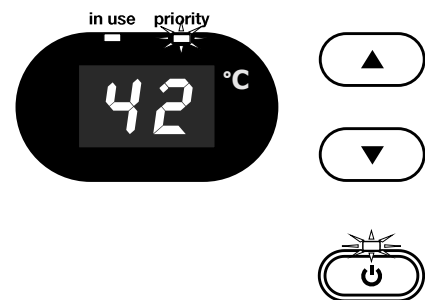
The water volume operating light will continue to flash until the alarm sounds.

A maximum of 500 litres (50 and x 10L displayed) and a minimum of 10 litres (1 and x 10L displayed) can be set with the water volume function.



3. Set the water temperature

- Turn on the controller for the room where the hot water is to be used.
- Gain priority (if using the Kitchen controller).
- Select the temperature setting.

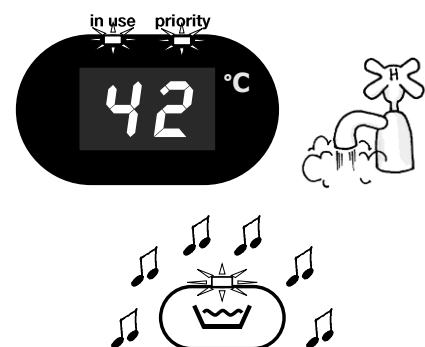


4. Open the hot tap

The in use light will glow on all controllers.

Measurement of the water flow at the water heater will commence when a hot tap is open and the water volume operating light is flashing.

The alarm will sound when the set volume of water has passed through the water heater.

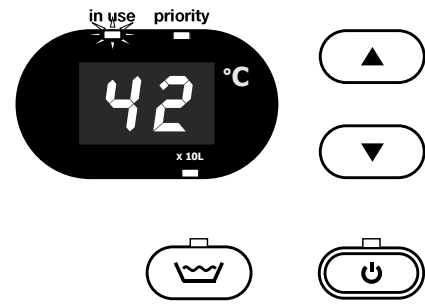


5. Turn off the alarm

- Press the water volume (🚰) button to turn off the alarm.

The water volume operating light goes out and 0 x 10L is displayed momentarily on the controller.

The temperature setting of the controller with priority is then displayed.



6. Close the hot tap

If it is a Bathroom controller which is in use and has priority, then it is advised to leave the controller on.

- Refer to the **warning** in the notes on page 18.

If it is the Kitchen controller which is in use and has priority, then it is advised to turn the controller off.

- Refer to **Important** note for Bathroom controllers on page 18.



Notes on the water volume function:

- The water volume can only be set by the Kitchen controller.
- The Kitchen controller does not require priority nor to be on in order to set the water volume function.
- The water volume function can be set whilst a hot tap is open.
- The water volume alarm will only sound from the Kitchen controller.
- The water volume alarm will still sound if the Kitchen controller has been silenced (refer to “**Silencing A Controller**” on page 13).
- The factory preset water volume is 180 litres.
- If a hot tap is not opened for one hour after the new water volume has been set, then the setting will be automatically cancelled. The water volume resets to the previously set water volume (or the factory preset water volume if no water volume has previously been set).
- To display the remaining water volume while water is being drawn, press the water volume (🚰) button. After a few seconds, the display returns to the temperature setting.
- To turn off the water volume function before the alarm sounds, press the water volume (🚰) button twice.
- The water volume is measured as the water flows through the water heater. Therefore if more than one hot tap is open, the alarm will respond to the total water volume drawn from all taps and the expected water volume from the first tap will be decreased.
- If the hot tap is closed before the set water volume flows through the water heater and the water volume (🚰) button is left on, then the alarm will sound when the remaining water volume is consumed during a later operation. To prevent the alarm from sounding, press the water volume (🚰) button twice to turn it off.

TEMPERATURE CONTROL – DELUXE

DELUXE CONTROLLER FUNCTIONS

If one or more Deluxe controllers are installed, at least one must be on or the Bath Fill function activated for the water heater to operate. If all Deluxe controllers and the Bath Fill function are off, the water heater will only deliver cold water.

on / off (⏻) button – The on / off (⏻) button must be pressed once to turn on the Deluxe controller. A Deluxe controller cannot be turned on if water is flowing from a hot tap.

To turn off a Deluxe controller, press the on / off (⏻) button once. A Deluxe controller can be turned off whilst water is flowing.

on / off operating light – The on / off operating light on the on / off (⏻) button will glow when the Deluxe controller is turned on.

The light will go out when the Deluxe controller is turned off.

PRIORITY light – The PRIORITY light will glow on a Deluxe controller when the controller has priority. The Bathroom Deluxe controller(s), if they are turned on, have priority over the Kitchen Deluxe controller.

PRIORITY means that particular Deluxe controller has control of the water heater temperature setting. The water temperature setting can only be adjusted by a Deluxe controller that has priority and is displaying the PRIORITY light.

operating light – The operating light will glow on all Deluxe controllers, whether they are on or off, when hot water is flowing, regardless of which Deluxe controller has priority.

temperature display panel – The current temperature setting is displayed in °C on all Deluxe controllers (whether hot water is flowing or not), when any Deluxe controller is on. If all Deluxe controllers are off, the display remains blank.

up (▲) button – The up (▲) button increases the water temperature setting.

Refer to “[Temperature Adjustment – Deluxe Controllers](#)” on page 27.

down (▼) button – The down (▼) button decreases the water temperature setting.

Refer to “[Temperature Adjustment – Deluxe Controllers](#)” on page 27.

assistance call (📞) button – Pressing this button sounds an alert message on all Deluxe controllers, indicating that assistance is required in the room from which the assistance call (📞) button was activated.

speaker – The audio of the voice prompts and chimes is emitted from the speaker.

bath fill (🛀) button – The bath fill (🛀) button must be pressed once to turn on the Bath Fill function.

When the Bath Fill function is turned on, the last selected bath fill water volume in litres will be displayed in the bath fill water volume display panel and the last selected bath fill temperature in °C will be displayed in the temperature display panel.

The bath fill water volume and temperature can be adjusted by using the BATH FILL VOLUME and BATH FILL TEMPERATURE buttons located behind the hinged panel on the lower half of the Deluxe controller. Refer to “[Bath-Fill Function](#)” on page 32.

To turn off the Bath Fill function, press the bath fill (🛀) button.

bath fill operating light – The bath fill operating light on the bath fill (🛀) button will glow when the bath fill (🛀) button is pressed and the Bath Fill function is turned on.

The light will flash when the Bath Fill function is complete but before the Bath Fill function has been turned off.

The light will go out when the bath fill (🛀) button is pressed and the Bath Fill function is turned off.

bath fill water volume display panel – The selected bath fill water volume is displayed in litres on all Deluxe controllers.

The selected bath fill water volume is displayed whenever the Bath Fill function is on (refer to “[Bath-Fill Function](#)” on page 32) or when the bath fill water volume is being adjusted and the Bath Fill function is off.

If the bath fill water volume is being adjusted and the Bath Fill function is off, then the bath fill water volume display panel goes blank three (3) seconds after a BATH FILL VOLUME button is last pressed.

At other times, if the Bath Fill function is off, the bath fill water volume display panel remains blank.

bath fill indicator light – this light in the display panel will glow when the bath fill water volume is displayed.

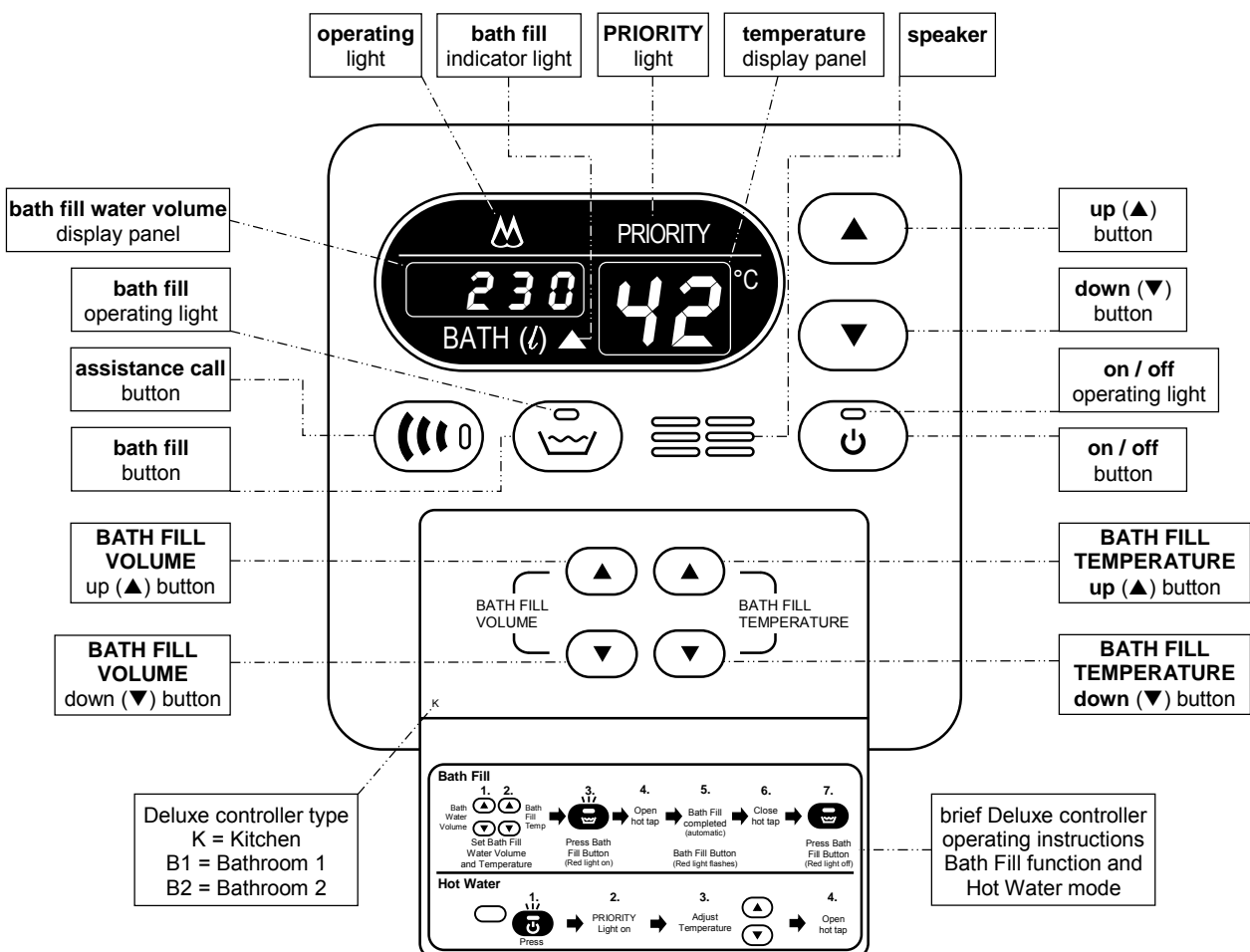
BATH FILL TEMPERATURE up (▲) button – The up (▲) button increases the bath fill water temperature setting (refer to “[Temperature Adjustment – Deluxe Controllers](#)” on page 27 and to “[Bath-Fill Function](#)” on page 32).

BATH FILL TEMPERATURE down (▼) button – The down (▼) button decreases the bath fill water temperature setting (refer to “[Temperature Adjustment – Deluxe Controllers](#)” on page 27 and to “[Bath-Fill Function](#)” on page 32).

BATH FILL VOLUME up (▲) button – The up (▲) button increases the bath fill water volume setting in increments of 10 litres up to 500 litres. A further setting of 990 litres can be selected.

BATH FILL VOLUME down (▼) button – The down (▼) button decreases the bath fill water volume setting from 990 litres to 500 litres and in increments of 10 litres from 500 litres down to 10 litres.

DELUXE CONTROLLER



VOICE PROMPT AND OPERATING TONE

The Deluxe controllers have a series of voice prompts and operating tones which sound during certain operations.

The voice prompts and operating tones sound from all Deluxe controllers, regardless of which Deluxe controller is being operated at the time.

Voice Prompt

The voice prompts are:

- When either the up (▲) button or BATH FILL TEMPERATURE up (▲) button is pressed
“hot water temperature has been increased”
- When either the down (▼) button or BATH FILL TEMPERATURE down (▼) button is pressed
“hot water temperature has been decreased”
- When the BATH FILL VOLUME up (▲) button is pressed
“Caution, bath fill water volume has been increased, bath may overflow”
- When the BATH FILL VOLUME down (▼) button is pressed
“bath fill water volume has been decreased”
- When the bath fill (🚰) button is pressed to turn on the Bath Fill function
“please set bath water volume and bath temperature, then open the hot water tap”
- When the set bath fill water volume has been delivered from the water heater during the Bath Fill function
“the bath is ready, please turn off the hot water tap and press the bath fill (🚰) button to finish”
- When the bath fill (🚰) button is pressed to halt the Bath Fill function before it is complete
“bath filling has been stopped, please turn off the hot water tap and press the bath fill (🚰) button to finish”
- When the bath fill (🚰) button is pressed to turn the Bath Fill function off and the hot tap has not been turned off
“please ensure the bath hot water tap is turned off”
- When the Deluxe controllers have been turned off during the Bath Fill function
“bath filling has been stopped”
- When the assistance call (🔊) button is pressed
“assistance required, assistance required”

Operating Tone

The operating chime will sound when the temperature adjustment up (▲) button or down (▼) button is pressed and the voice prompt is not speaking.

The operating beep will sound for each change in temperature increment when a BATH FILL TEMPERATURE adjustment button is pressed or scrolled, whether the voice prompt is speaking or not.

The operating beep will sound for each change in volume increment when a BATH FILL VOLUME adjustment button is pressed or scrolled and the voice prompt is not speaking.

Adjusting the Volume of the Voice Prompt and Operating Tone

The volume of the voice prompt and the operating tone can be adjusted to a level comfortable for you. The volume of the voice prompt and the operating tone can be adjusted independently of each other. The volume levels on a Deluxe controller are adjusted independently of another Deluxe controller.

The voice prompt and / or operating tone can also be turned off on an individual or all Deluxe controllers so they do not sound at all.

The factory default volume setting of both the voice prompt and operating tone is medium [med]. If there is an interruption to the water heater power supply, the volume of both the voice prompt and operating tone returns to the default setting.

When adjusting the volume levels, the operating tone volume level is indicated by a chime, followed by the voice prompt volume level which is indicated by two beeps. If during the volume setting procedure only the chime is audible, this indicates the voice prompt is off. If during the volume setting procedure only the two beeps is audible, this indicates the operating tone is off.

To adjust or turn off the volume for the voice prompt and operating tone:

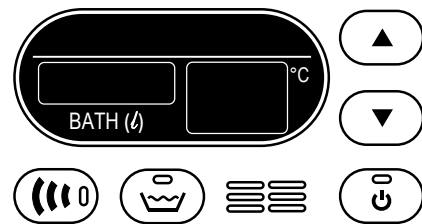
- Turn off all Deluxe controllers.
- Press and hold the up (▲) button, then within four (4) seconds press the on / off (⏻) button.

Each press of the on / off (⏻) button will change the voice prompt and operating tone in the following sequence:

- operating tone [MAX], voice prompt [OFF]
- operating tone [MIN], voice prompt [MIN]
- operating tone [MIN], voice prompt [OFF]
- operating tone [OFF], voice prompt [OFF]
- operating tone [MAX], voice prompt [MAX]
- operating tone [MED], voice prompt [OFF]
- operating tone [MED], voice prompt [MED]

This order then repeats.

Note: If the on / off (⏻) button is not pressed within four (4) seconds of the up (▲) button being pressed, “CL” will start flashing on the temperature display panel. If this occurs, release the up (▲) button and recommence the procedure.



ASSISTANCE CALL FUNCTION

A Deluxe controller has an assistance call (🔊) button. Should assistance be required, such as when in the bathroom, a voice prompt will sound on all Deluxe controllers to notify others that assistance is required.

The Deluxe controller does not have to be on for the assistance call function to be activated and the function can be activated during any operation.

To Call for Assistance

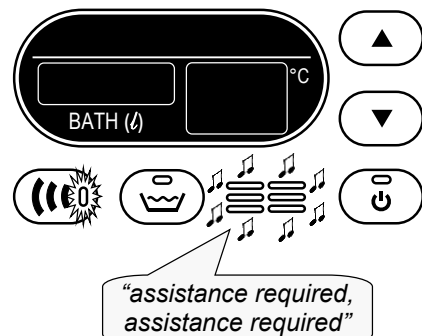
To operate the assistance call function:

1. **Press the assistance call (🔊) button.**

The voice prompt will sound on all Deluxe controllers,

“assistance required, assistance required”

The red light in the assistance call (🔊) button will glow on all Deluxe controllers for the duration of the voice prompt.



TEMPERATURE SETTINGS – DELUXE CONTROLLERS

The temperature settings of each type of Deluxe controller are:

- Bathroom 1 & 2 Deluxe 37°C to 46°C (in 1°C increments), 48°C*, 50°C
 - Kitchen Deluxe 37°C to 46°C (in 1°C increments), 48°C*, 50°C**, 55°C***, 60°C
- * limited to 48°C when the Bath Fill function is set with 874 and 876 series models.
 ** limited to 50°C on an 876 series model.
 *** NZ – limited to 55°C.

Temperature settings

37	38	39	40	41	42	43	44	45	46	48	50	55	60
warm			average hot shower				hot			very hot			

The installation of a Bathroom Deluxe controller(s) only (i.e. no Kitchen Deluxe controller) limits the temperature setting of the water heater to a maximum of:

- 874 series 50°C
- 876 series 50°C

regardless of the preset outlet temperature setting of the water heater.

The installation of a Kitchen Deluxe controller will allow a maximum temperature setting of:

- 874 series 60°C – AU 55°C – NZ
- 876 series 50°C

regardless of the preset outlet temperature setting of the water heater.

If there is no controller installed, the water heater defaults to the preset outlet temperature setting. This may be up to:

- 874 series 75°C
- 876 series 50°C

Refer to [“How Hot Should The Water Be?”](#) on page 5.

On a building fitted with a temperature limiting device such as a tempering valve and where an 874 series water heater is installed without a separate untempered hot water line to the kitchen, laundry or other non-ablution area, although the Kitchen Deluxe controller will be able to display temperatures above 50°C and the water leaving the water heater will be at the set temperature, the maximum water temperature which can be delivered to the hot water outlets in these locations is determined by the temperature setting of the temperature limiting device. This is usually 50°C.

On a building fitted with a temperature limiting device set to 50°C, to enable the delivery of water temperatures above 50°C to the kitchen, laundry or other non-ablution area, separate untempered pipe work must be installed from the water heater to the hot water outlets in these locations.

TEMPERATURE ADJUSTMENT – DELUXE CONTROLLERS

- A controller must be on with the PRIORITY indicator displayed to be able to adjust the temperature setting.
- The temperature adjustment is made by pressing the up (▲) button or down (▼) button.
- The minimum temperature setting for each type of controller is 37°C.
- The maximum temperature setting for the controllers are:

	Kitchen	Bathroom
874 series	60°C – AU, 55°C – NZ	50°C
876 series	50°C	50°C

- Each press of the up (▲) button will increase the temperature setting by one increment.
- Pressing and holding the up (▲) button will scroll the temperature setting up to a maximum 43°C if there is hot water flowing or 45°C if there is no hot water flowing.
- From the 45°C setting, the up (▲) button must be pressed once for each increase in temperature increment.
- The temperature setting cannot be increased above 43°C whilst hot water is flowing.
- Each press of the down (▼) button will decrease the temperature setting by one temperature increment.
- Pressing and holding the down (▼) button will scroll down the temperature setting.
- The temperature setting can be decreased from any temperature setting whether the hot water is flowing or not.

Note: A Deluxe controller sounds a double beep at the 42°C temperature setting, if the voice prompt is not speaking, when either the up (▲) button or down (▼) button has been pressed. The double beep does not sound at the 42°C temperature setting when the BATH FILL TEMPERATURE up (▲) button or BATH FILL TEMPERATURE down (▼) button is pressed.

TEMPERATURE CONTROL – DELUXE

KITCHEN CONTROLLER – DELUXE

The Kitchen Deluxe controller allows the user to select the temperature setting for the hot water to be used in the kitchen and laundry. It has a minimum temperature setting of 37°C and a maximum temperature setting of:

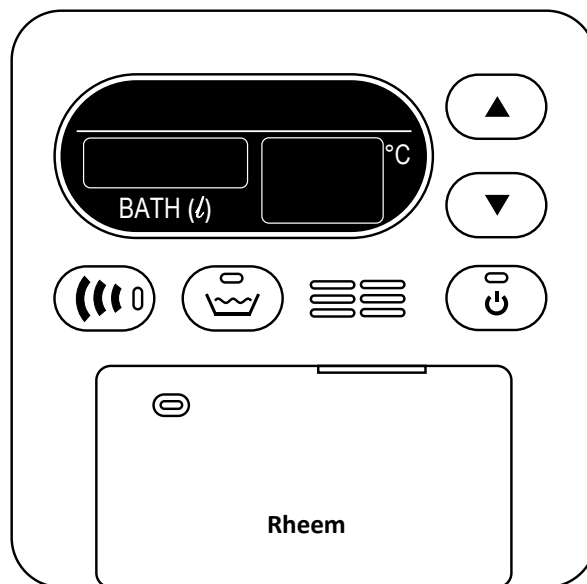
- 874 series 60°C – AU 55°C – NZ
- 876 series 50°C

The Kitchen Deluxe controller does not have priority (PRIORITY light is off) if a Bathroom Deluxe controller is on.

Notes on the Kitchen Deluxe controller:

- The Deluxe controller cannot be turned on whilst a hot tap is open.
- The Kitchen Deluxe controller must be on and have priority (PRIORITY light glows) in order to adjust the temperature setting on the Kitchen Deluxe controller.
- The Bathroom Deluxe controller(s) can be turned off from the Kitchen Deluxe controller.

Press and hold the on / off (⏻) button on the Kitchen Deluxe controller for three seconds. This turns off all the Deluxe controllers, including the Bath Fill function if it is on, the displays go blank and the lights go out. If hot water is flowing from a hot tap, it will go cold.

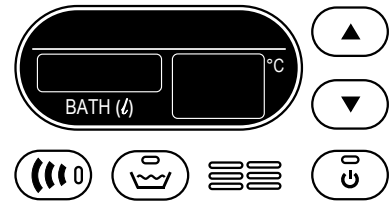


Kitchen Deluxe Controller

To operate the Kitchen Deluxe controller:

1. Turn off the Bathroom Deluxe controller(s)

- If a temperature setting is displayed and the PRIORITY light is not glowing, it is necessary to turn off the Bathroom Deluxe controller(s) to gain priority.
- Refer to the notes on the [Kitchen Deluxe controller](#) on page 28.

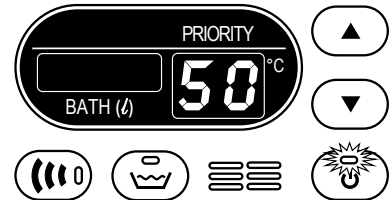


2. Turn on the Kitchen Deluxe controller

- Press the on / off (⏻) button.

The on / off operating light and the PRIORITY light will both glow.

The previous Kitchen Deluxe controller temperature setting will be displayed on the temperature display panel.



3. Select the temperature setting

- Press the up (▲) button or down (▼) button.

When the up (▲) button is pressed, the voice prompt will sound;

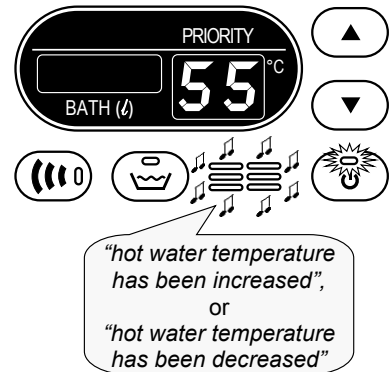
"hot water temperature has been increased"

When the down (▼) button is pressed, the voice prompt will sound;

"hot water temperature has been decreased"

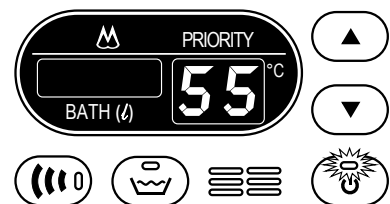
- Refer to ["Temperature Adjustment – Deluxe Controllers"](#) on page 27.

The selected temperature setting will be displayed on all Deluxe controllers.



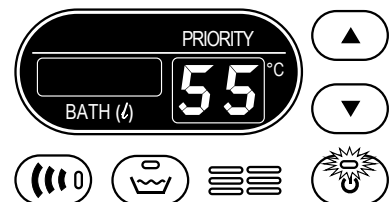
4. Open the hot tap.

The operating light will glow on all Deluxe controllers.



5. Close the hot tap.

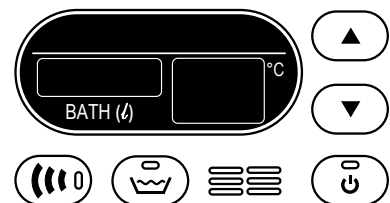
The operating light will go out on all Deluxe controllers, if no other hot tap is open.



6. Turn off the Kitchen Deluxe controller

- Press the on / off (⏻) button.

The PRIORITY light and the on / off operating light will go out and the temperature display panel will go blank.



Important: Turn off the Kitchen Deluxe controller after hot water usage is finished in the kitchen and / or laundry. Refer to [Important](#) note for Bathroom Deluxe controllers on page 30.

BATHROOM CONTROLLERS – DELUXE

The Bathroom Deluxe controller(s) allows the user to select the temperature setting for the hot water to be used in the bathroom. They have a minimum temperature setting of 37°C and a maximum temperature setting of 50°C:

- 874 series 50°C
- 876 series 50°C

The Bathroom Deluxe controllers operate in tandem. Whenever an operation is selected on one Bathroom Deluxe controller, it is also set on the other Bathroom Deluxe controller. The Bathroom Deluxe controllers automatically have priority (PRIORITY light glows) if they are on.

Important: It is important to turn on the Bathroom Deluxe controller before opening a hot tap in the bathroom (priority is gained automatically and the PRIORITY light glows). If the Bathroom Deluxe controller is not on and the Kitchen Deluxe controller is on (will have priority and the PRIORITY light glows), then it is possible to receive water at a temperature higher than expected from a hot tap in the bathroom. This temperature could be up to:

- 874 series 50°C if a temperature limiting device is installed in the hot pipe to the bathroom or up to 60°C – AU or 55°C – NZ if a temperature limiting device is not installed.
- 876 series 50°C

Notes on the Bathroom Deluxe controllers:

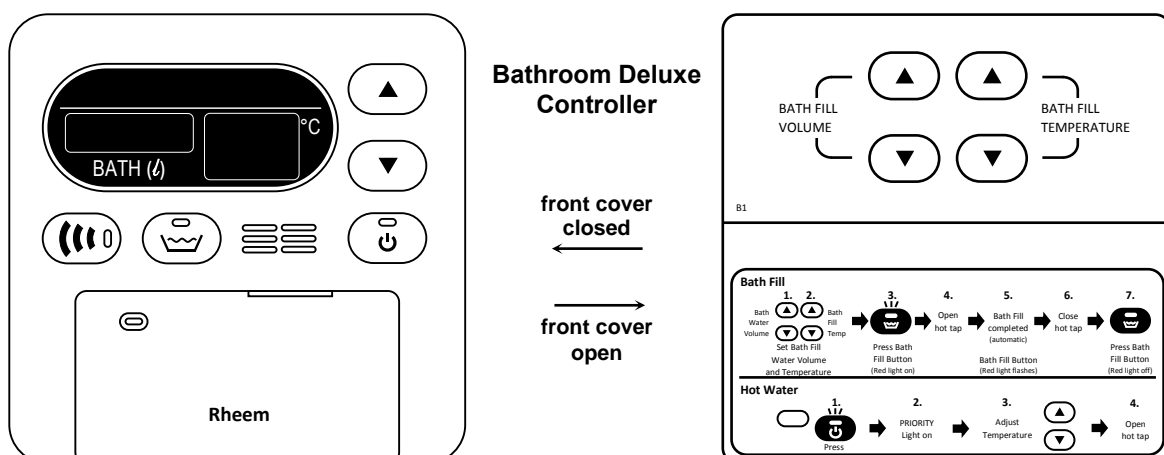
- The Deluxe controller cannot be turned on whilst a hot tap is open.
- When a Bathroom Deluxe controller is turned on, it gains priority (PRIORITY light glows) from the Kitchen Deluxe controller.
- The Bathroom Deluxe controller must be on in order to adjust the temperature setting on the Bathroom Deluxe controller.
- The Kitchen Deluxe controller can be turned off from a Bathroom Deluxe controller.

Press and hold the on / off (⏻) button on the Bathroom Deluxe controller for three seconds. This turns off all the Deluxe controllers, including the Bath Fill function if it is on, the displays go blank and the lights go out. If hot water is flowing from a hot tap, it will go cold.

- **⚠ Warning:** It is advised to leave the Bathroom Deluxe controller on after hot water usage is finished in the bathroom. **Turning off a Bathroom Deluxe controller in one bathroom will also turn off the Bathroom Deluxe controller in the other bathroom.** The Kitchen Deluxe controller will gain priority (PRIORITY light glows) if it is on and the temperature setting can be up to:

- 874 series 60°C – AU 55°C – NZ
- 876 series 50°C

If a hot tap is open in another bathroom, the water will be delivered at: for an 874 series model – up to 50°C if a temperature limiting device is installed in the hot pipe to the bathroom or up to 60°C – AU or 55°C – NZ if a temperature limiting device is not installed; or for an 876 series model – up to 50°C.

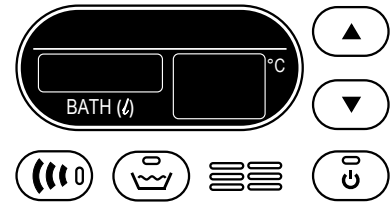


To operate a Bathroom Deluxe controller:

1. Turn off the Kitchen Deluxe controller

- If a temperature setting is displayed and the PRIORITY and on / off operating lights are not glowing, it is advised to turn off the Kitchen Deluxe controller.

Refer to the notes on the [Bathroom Deluxe controllers](#) on page 30.

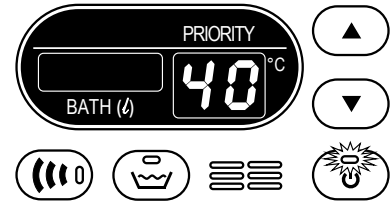


2. Turn on the Bathroom Deluxe controller

- Press the on / off (⏻) button.

The on / off operating light and the PRIORITY light will both glow.

The temperature setting of 40°C will be displayed on the temperature display panel.



3. Select the temperature setting

- Press the up (▲) button or down (▼) button.

When the up (▲) button is pressed, the voice prompt will sound;

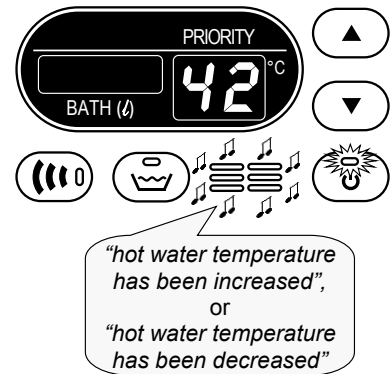
"hot water temperature has been increased"

When the down (▼) button is pressed, the voice prompt will sound;

"hot water temperature has been decreased"

- Refer to ["Temperature Adjustment – Deluxe Controllers"](#) on page 27.

The selected temperature setting will be displayed on all Deluxe controllers.



4. Open the hot tap

The operating light will glow on all Deluxe controllers.



5. Close the hot tap

The operating light will go out on all Deluxe controllers, if no other hot tap is open.

It is advised not to turn off the Bathroom Deluxe controller(s).

- Refer to the [warning](#) in the notes on page 30.



BATH FILL FUNCTION

The Bath Fill function is designed to allow the water heater to deliver a selected volume of water at a selected temperature. The Bath Fill function commences when the bath fill (🛀) button is on and a hot tap is opened. When the set volume has been delivered, the water flow from the water heater ceases and heating stops. It is also useful for controlling the water volume used by a shower or other application.

Note: The bath level should be monitored periodically while this function is in use to avoid the possibility of the bath overflowing. The Bath Fill function should be used with caution until you are familiar with its operation.

⚠ Warning: Baths should not be left unattended whenever young children are present. After using the Bath Fill function, check the water temperature before entering a bath, to ensure it is suitable and will not cause scald injury.

The Bath Fill function can be set and turned off at any of the Deluxe controllers. Refer to the [notes](#) on page 38.

Bath Fill Function – Brief Guide

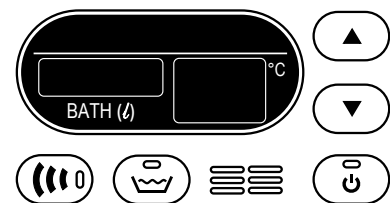
This guide provides a brief instruction on the operating sequence of the Bath Fill function. It is recommended to read the explanatory notes and become familiar with each step in the Bath Fill function. Refer to [“Bath Fill Function – Explanatory Notes”](#) on page 34.

To operate the Bath Fill function:

1. Turn off all Deluxe controllers

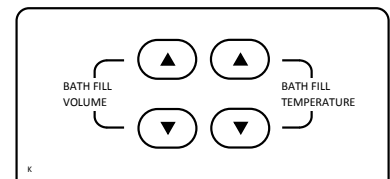
- It is advised to turn off all Deluxe controller(s) before activating the Bath Fill function.

Refer to the notes on the [Bathroom Deluxe controllers](#) on page 30.



2. Pull down the front panel on the Deluxe controller.

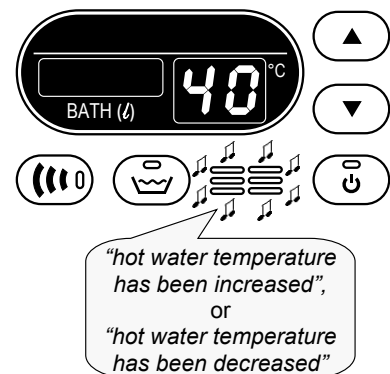
The BATH FILL VOLUME and BATH FILL TEMPERATURE up (▲) and down (▼) buttons will be exposed.



3. Set the Bath Fill temperature

- Press the BATH FILL TEMPERATURE up (▲) button or the BATH FILL TEMPERATURE down (▼) button to select the desired bath fill temperature.
- Refer to [“Temperature Adjustment – Deluxe Controllers”](#) on page 27.

The selected temperature setting will be displayed on all Deluxe controllers.



4. Set the bath fill water volume

- Press the BATH FILL VOLUME up (▲) button or the BATH FILL VOLUME down (▼) button to select the desired bath fill water volume. Each press will change the water volume setting by 10 litres.

Pressing the BATH FILL VOLUME up (▲) button or BATH FILL VOLUME down (▼) button continuously will scroll the water volume setting.

A maximum volume of 990 litres and a minimum volume of 10 litres can be set. The volume changes in 10 litre increments.

The selected bath fill water volume will be displayed and the bath fill indicator light will glow on all Deluxe controllers.



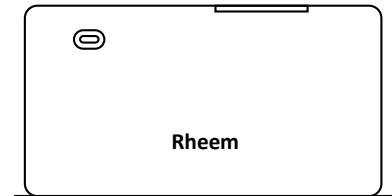
5. Close the front panel on the Deluxe controller.

6. Turn on the Bath Fill function

- Press the bath fill (🚿) button.

On all Deluxe controllers:

- The bath fill operating light will glow.
- The bath fill temperature setting will appear on the temperature display panel.
- The bath fill water volume will appear on the bath fill water volume display panel.
- The bath fill indicator light will glow.



7. Open the hot tap.

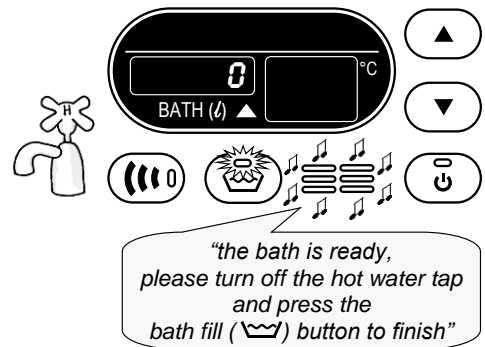
The operating light will glow on all Deluxe controllers.

Measurement of the water flow at the water heater will commence when the hot tap is opened.

When the set volume of water has passed through the water heater:

- Water flow from the hot tap will cease.
- The operating light will go out.
- The bath fill water volume display panel will show 0 litres.
- The temperature display will go blank.
- The bath fill operating light will commence to flash
- The voice prompt will sound;

"the bath is ready, please turn off the hot water tap and press the bath fill (🚿) button to finish"



8. Close the hot tap.

9. Turn off the Bath Fill function

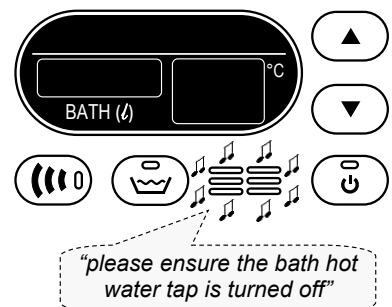
- Press the bath fill (🚿) button.

The bath fill operating light and bath fill indicator light will go out.

The bath fill water volume display will go blank.

Note: If the hot tap has not been turned off, the voice prompt will sound;

"please ensure the bath hot water tap is turned off"



Bath Fill Function – Explanatory Notes

To operate the Bath Fill function:

1. Turn off all Deluxe controllers

- It is advised to turn off all Deluxe controller(s) before activating the Bath Fill function.

Refer to the notes on the [Bathroom Deluxe controllers](#) on page 30.

The Deluxe controllers do not need to be on to set the bath fill temperature and bath fill water volume and to turn on the Bath Fill function.

2. Pull down the front panel on the Deluxe controller.

The BATH FILL VOLUME and BATH FILL TEMPERATURE up (▲) and down (▼) buttons will be exposed.

3. Set the bath fill temperature

- Press the BATH FILL TEMPERATURE up (▲) button or the BATH FILL TEMPERATURE down (▼) button.

The first press of either the BATH FILL TEMPERATURE up (▲) button or the BATH FILL TEMPERATURE down (▼) button will bring up the last selected bath fill temperature setting.

While the bath fill temperature is displayed, each subsequent press of the BATH FILL TEMPERATURE up (▲) button or BATH FILL TEMPERATURE down (▼) button will change the temperature setting.

Refer to [“Temperature Adjustment – Deluxe Controllers”](#) on page 27.

When the BATH FILL TEMPERATURE up (▲) button is pressed and the temperature setting is increased, the voice prompt will sound;

“hot water temperature has been increased”

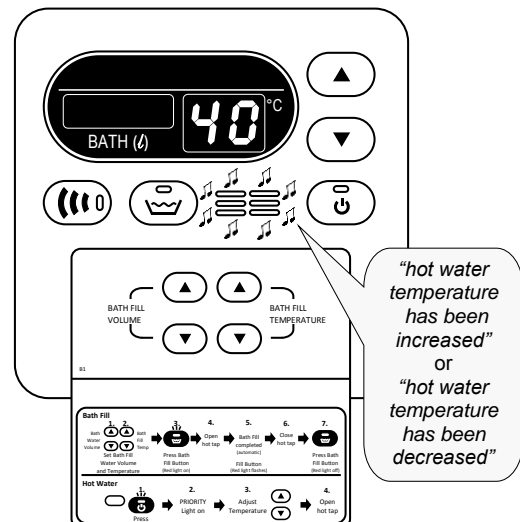
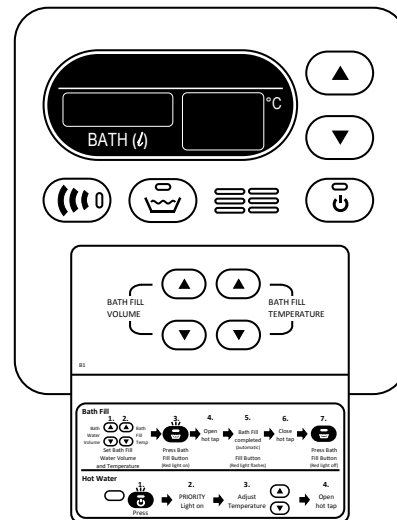
When the BATH FILL TEMPERATURE down (▼) button is pressed and the temperature setting is decreased, the voice prompt will sound;

“hot water temperature has been decreased”

The selected temperature setting will be displayed in the temperature display panel and will be displayed on all Deluxe controllers.

The temperature display panel will go blank 3 seconds after the last press of either of the bath fill temperature adjustment buttons.

The bath fill temperature setting will be remembered when the bath fill (🛀) button is pressed “on”.



4. Set the bath fill water volume

- Press the BATH FILL VOLUME up (▲) button or the BATH FILL VOLUME down (▼) button.

The first press of either the BATH FILL VOLUME up (▲) button or the BATH FILL VOLUME down (▼) button will display the last selected bath fill water volume setting in the bath fill water volume display panel and the bath fill indicator light will glow.

While the bath fill water volume is displayed, each subsequent press of the BATH FILL VOLUME up (▲) button or BATH FILL VOLUME down (▼) button will change the water volume setting by 10 litres.

When the BATH FILL VOLUME up (▲) button is pressed and the water volume setting is increased, the voice prompt will sound;

“caution, bath fill water volume has been increased, bath may overflow”

When the BATH FILL VOLUME down (▼) button is pressed and the water volume setting is decreased, the voice prompt will sound;

“bath fill water volume has been decreased”

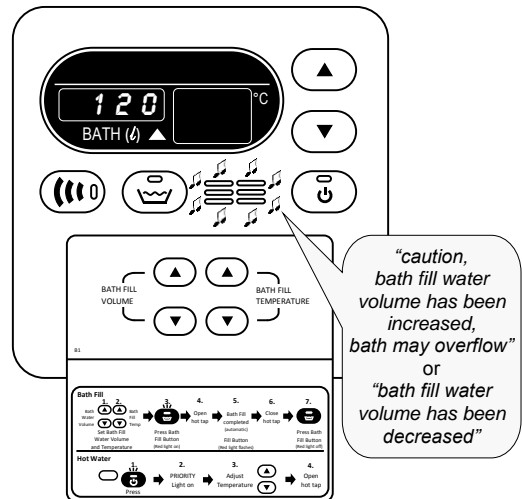
Pressing the BATH FILL VOLUME up (▲) button or BATH FILL VOLUME down (▼) button continuously will scroll the water volume setting.

A maximum volume of 990 litres and a minimum volume of 10 litres can be set. The maximum volume of 990 litres is achieved in 10 litre increments up to 500 litres, then 990 litres is the next setting.

The selected bath fill water volume will be displayed and the bath fill indicator light will glow on all Deluxe controllers.

The bath fill water volume display panel will go blank and the bath fill indicator light will go out 3 seconds after the last press of either of the volume adjustment buttons.

The set volume will be remembered when the bath fill (🛀) button is next pressed “on”.



5. Close the front panel on the Deluxe controller.

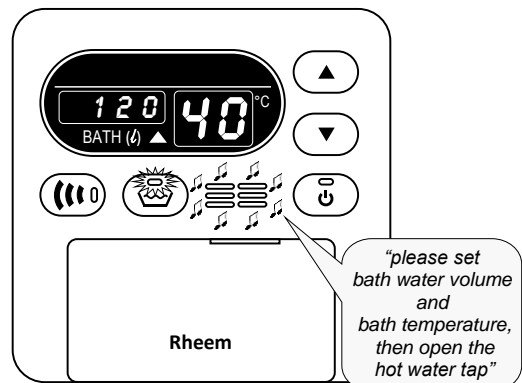
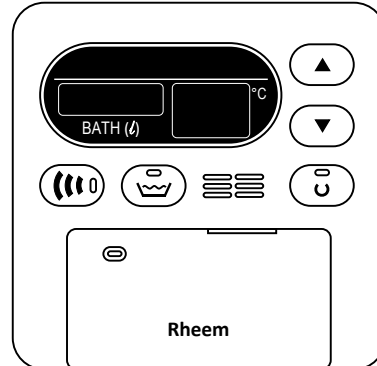
6. Turn on the Bath Fill function

- Press the bath fill (🛀) button.

On all Deluxe controllers:

- The bath fill operating light will glow.
- The bath fill temperature setting will appear on the temperature display panel.
- The bath fill water volume will appear on the bath fill water volume display panel.
- The bath fill indicator light will glow.
- The voice prompt will sound;

“please set bath water volume and bath temperature, then open the hot water tap”



7. Open the hot tap.

The operating light will glow on all Deluxe controllers.

Measurement of the water flow at the water heater will commence when the hot tap is opened.

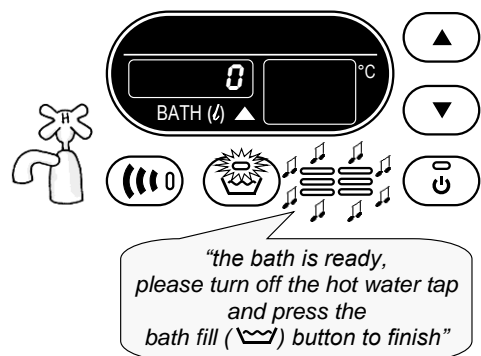
Notes:

- If a second hot tap is opened when the Bath Fill function is turned on, the set bath fill water volume expected from the first hot tap will be reduced by the volume which flows through the second hot tap.
- The bath fill temperature setting and bath fill water volume setting can also be adjusted whilst a hot tap is open and the Bath Fill function is operating.

When the set volume of water has passed through the water heater:

- Water flow from the hot tap will cease.
- The operating light will go out.
- The bath fill water volume display panel will show 0 litres.
- The temperature display will go blank.
- The bath fill operating light will commence to flash.
- The voice prompt will sound;

"the bath is ready, please turn off the hot water tap and press the bath fill (🛀) button to finish"



8. Close the hot tap.

9. Turn off the Bath Fill function

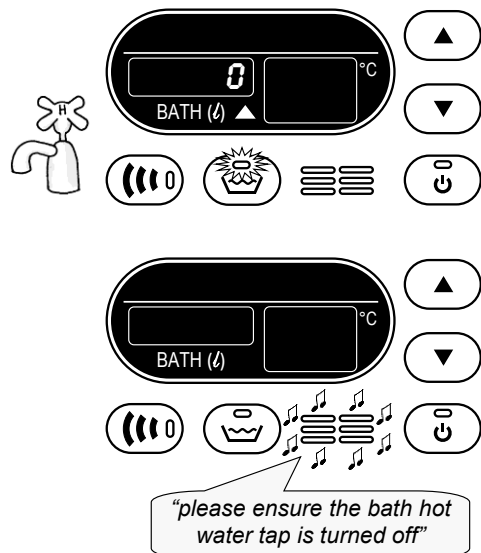
- Press the bath fill (🛀) button.

The bath fill operating light and bath fill indicator light will go out.

The bath fill water volume display will go blank.

Note: If the hot tap has not been turned off, the voice prompt will sound;

"please ensure the bath hot water tap is turned off"



Turning Off Bath Fill Function During Its Operation

The bath fill operation can be interrupted by pressing the bath fill (🚿) button before completion of the bath fill operation.

If it is necessary to turn off the Bath Fill function before the operation is complete, during [Step 7](#):

- Press the bath fill (🚿) button.

At this first press of the bath fill (🚿) button:

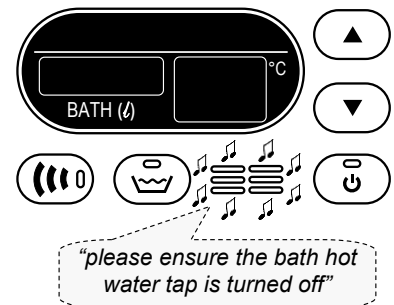
- The operating light will go out.
- The bath fill operating light will flash.
- The voice prompt will sound;
"bath filling has been stopped, please turn off the hot water tap and press the bath fill (🚿) button to finish"
- The bath fill water volume display will go blank.
- The temperature display will go blank.
- The bath fill indicator light will go blank.
- After a few seconds, water flow from the hot tap will cease.
- The bath fill water volume display will then show 0 litres.
- The bath fill indicator light will recommence to glow.



- Close the hot tap.
- Press the bath fill (🚿) button again.

At this second press of the bath fill (🚿) button:

- The bath fill operating light and bath fill indicator light will go out.
- The bath fill water volume display will go blank.
- Note: If the hot tap has not been turned off, the voice prompt will sound;
"please ensure the bath hot water tap is turned off"



Notes on the Bath Fill function:

- The Bath Fill function can be set, turned on and turned off at any of the Deluxe controllers.
- The Deluxe controllers do not require to have priority (PRIORITY light glowing) or be on in order to set the bath fill water volume or bath fill temperature or to turn the bath fill (🚰) button on.
- The bath fill (🚰) button cannot be turned on whilst a hot tap is open.
- The bath fill water volume and the bath fill temperature settings can be adjusted whilst a hot tap is open.
- If a hot tap is not opened for six hours after the new bath fill water volume and bath fill temperature have been set, whilst the bath fill (🚰) button is on, the settings will be automatically cancelled and will reset to the previous settings or to the factory default settings if no previous settings have been set.
- The factory default bath fill water volume setting is 180 litres.
- The factory default bath fill temperature setting is 40°C.
- The Bath Fill function will automatically have priority when the bath fill (🚰) button is pressed and the Bath Fill function is turned on. If the PRIORITY light is glowing on a Deluxe controller, it will go out. The PRIORITY light on a Deluxe controller will not glow whenever the BATH Fill operating light is on.
- Whilst water is flowing from a hot tap during the bath fill operation (bath fill operating light is on), a Deluxe controller cannot be turned on or off:
 - if it is on, pressing the on / off (🔌) button will not turn it off.
 - if it is off, pressing the on / off (🔌) button will not turn it on.
- Whilst there is no water flowing from a hot tap and the bath fill operating light is on, a Deluxe controller can be turned on (on / off (🔌) button glows), but it will not gain priority (PRIORITY light will not glow).
- Pressing the up (▲) button or down (▼) button above the on / off (🔌) button during the bath fill operation (bath fill operating light is on) will not adjust the temperature setting.

Important

- Ensure all hot taps are turned off after a bath fill operation is complete and before pressing the bath fill (🚰) button “off”. Otherwise;
 - Water will flow from the hot tap when the bath fill (🚰) button is pressed “off”.
The water will be cold if all Deluxe controllers are off, or hot if a Deluxe controller has PRIORITY.
 - The voice prompt will also sound;
“please ensure the bath hot water tap is turned off”.

Opening a Second Hot Water Tap During Bath Fill Operation

- The bath fill water volume is measured as the water flows through the water heater. If more than one hot tap is open, the Bath Fill function will measure the total water volume drawn from all taps and the expected water volume from the first tap will be decreased.
 - If the hot water supply should cease unexpectedly, check to see if the bath fill operating light is flashing.
 - If the bath fill operating light is flashing, this indicates the set bath fill water volume has been delivered and the bath fill operation is complete.
 - If further hot water is required for the application:
 - Turn off the hot tap.
 - Press the bath fill (🛀) button to turn off the Bath Fill function.
 - Recommence the Bath Fill procedure from Step 3, ensuring the water volume is adjusted to the volume required to complete the application.

Early Completion of Bath Fill Operation

- If the hot tap is closed before the set water volume flows through the water heater and the bath fill (🛀) button is left on, the Bath Fill function remains active for six hours.
 - If during this time a hot tap is turned on, the bath fill operation continues until the remaining bath fill water volume is consumed, then

The water flow will cease and the voice prompt will sound;

“the bath is ready, please turn off the hot water tap and press the bath fill (🛀) button to finish”

 - Close the hot tap.
 - Press the bath fill (🛀) button.
 - To prevent the bath fill operation completing and interrupting the hot water supply, whilst the hot tap is off, then
 - press the bath fill (🛀) button twice to turn it off.

The first press of the bath fill (🛀) button causes the bath fill operating light to flash and the voice prompt will sound;

“bath filling has been stopped, please turn off the hot water tap and press the bath fill (🛀) button to finish”

The second press of the bath fill (🛀) button causes the bath fill operating light to go off.

Interrupting Bath Fill Operation

- The bath fill operation can be interrupted by:
 - Pressing the bath fill (🛀) button before completion of the bath fill operation.

Refer to [“Turning Off Bath Fill Function During Its Operation”](#) on page 37.

or by
 - Pressing and holding the on / off (🔌) button on any Deluxe controller for three seconds.

This turns off all the Deluxe controllers, including the Bath Fill function. The displays go blank and the lights go out.

A voice prompt will sound;

“bath filling has been stopped”

Hot water flowing from a hot tap will go cold.

 - Turn off the hot tap.

Operation of the Bath Fill function whilst a Deluxe Controller has priority

It is recommended the Bath Fill function be set and operated with the Deluxe controllers turned off (refer to [Step 1](#) on page 34).

However, if a Deluxe controller has PRIORITY during the setting and operation of the Bath Fill function, then the following additional events occur:

During Step 3, when the bath fill temperature is being set

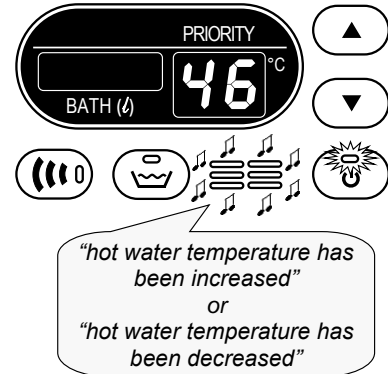
- The temperature setting of the PRIORITY Deluxe controller will display in the temperature display panel three seconds after the BATH FILL TEMPERATURE button is last pressed.

When the Deluxe controller temperature setting is higher than the bath fill temperature setting, the voice prompt will sound;

"hot water temperature has been increased"

When the Deluxe controller temperature setting is lower than the bath fill temperature setting, the voice prompt will sound;

"hot water temperature has been decreased"



During Step 6, when the bath fill (👑) button is pressed to turn the Bath Fill function on

The Bath Fill function has priority when operating. When the bath fill (👑) button is pressed, the Bath Fill function will gain priority and over-ride the settings of all Deluxe controllers if they are on.

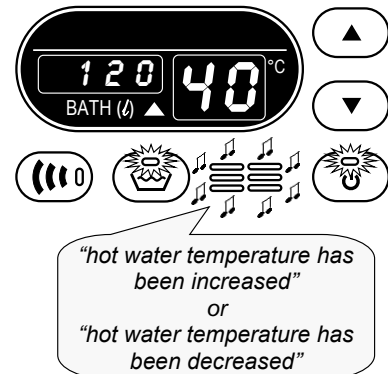
- The PRIORITY light will go out if it is on.
- The bath fill temperature setting will replace the temperature setting in the temperature display panel.

When the bath fill temperature setting is lower than the Deluxe controller temperature setting, the voice prompt will sound;

"hot water temperature has been decreased"

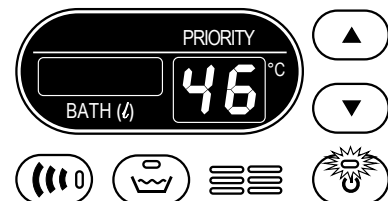
When the bath fill temperature setting is higher than the Deluxe controller temperature setting, the voice prompt will sound;

"hot water temperature has been increased"



During Step 9, when the bath fill (👑) button is pressed to turn the Bath Fill function off

- The PRIORITY light will glow on the Deluxe controller which has priority.
- The temperature setting of the PRIORITY Deluxe controller will display in the temperature display panel.

**Notes**

- If it is a Bathroom Deluxe controller which is in use and it is on, i.e. it has priority and the PRIORITY light is glowing, then it is advised to leave the controller on.

Refer to the [warning](#) in the notes on page 30.

- If it is the Kitchen Deluxe controller which is in use and it is on, i.e. it has priority and the PRIORITY light is glowing, then it is advised to turn the controller off.

Refer to [Important](#) note for Bathroom controllers on page 30.

WATER SUPPLIES

This water heater must be installed in accordance with this advice to be covered by the Rheem warranty.

This water heater is manufactured to suit the water conditions of most public reticulated water supplies. However, there are some known water chemistries which can have detrimental effects on the water heater and its operation and / or life expectancy. If you are unsure of your water chemistry, you may be able to obtain information from your local water supply authority. This water heater should only be connected to a water supply which complies with these guidelines for the Rheem warranty to apply.

CHANGE OF WATER SUPPLY

The changing or alternating from one water supply to another can have a detrimental effect on the operation and / or life expectation of a heat exchanger in a continuous flow water heater.

Where there is a changeover from one water supply to another, e.g. a rainwater tank supply, bore water supply, desalinated water supply, public reticulated water supply or water brought in from another supply, then water chemistry information should be sought from the supplier or it should be tested to ensure the water supply meets the requirements given in these guidelines for the Rheem warranty to apply.

SATURATION INDEX

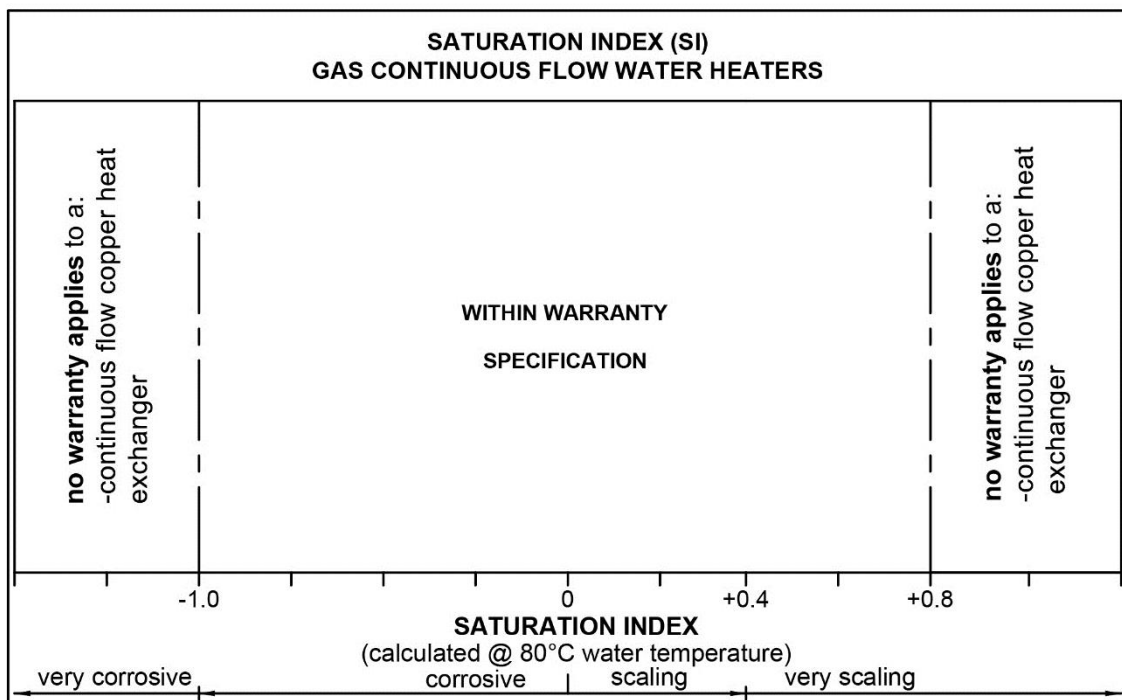
The saturation index (SI) is used as a measure of the water's corrosive or scaling properties. The saturation index figures stated are calculated using a water temperature of 80°C.

In a corrosive water supply, the water can attack copper parts and cause them to fail. Where the saturation index is less than -1.0, the water is very corrosive and the Rheem warranty does not apply to a copper heat exchanger in a continuous flow water heater.

In a scaling water supply calcium carbonate is deposited out of the water onto any hot metallic surface. Where the saturation index exceeds +0.80, the Rheem warranty does not apply to a copper heat exchanger in a continuous flow water heater.

Water which is scaling may be treated with a water softening device to reduce the saturation index of the water.

Refer to the [Saturation Index chart](#) on page 41.



SAVE A SERVICE CALL

Check the items below before making a service call. You will be charged for attending to any condition or fault, which is not related to manufacture or failure of a part (refer to [“Terms of the Rheem Warranty”](#) on page 86).

NO DISPLAY ON THE CONTROLLER

- Is the controller turned on?

Press the on / off (⏻) button (refer to [“Temperature Control”](#) on pages 11 to 40).

- Is the water heater plugged in and the power outlet switched on?
- Is power available in the house?

Try using another electrical appliance.

COLD WATER FROM THE HOT TAP

- Is the controller turned on?

Press the on / off (⏻) button (refer to [“Temperature Control”](#) on pages 11 to 40).

- Close the hot tap, wait 10 seconds and open the hot tap again.
- Is the hot tap open enough?

The burners will not light if the flow rate is less than 2.0 L / min.

- Is the water heater plugged in and the power outlet switched on?
- Is power available in the house?

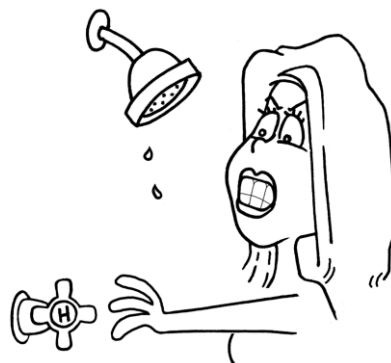
Try using another electrical appliance.

- Is the isolation valve in the gas line open?
- Is there a gas supply to the rest of the house?

Try lighting another gas appliance.

- Has the gas line been purged of air after installation?

Refer to your plumber.



WATER IS TOO HOT OR NOT HOT ENOUGH

- Does the controller you are using have priority? (refer to [“Temperature Control”](#) on pages 11 to 40)

Note: For an 876 series water heater, 50°C is the maximum available temperature setting.

REDUCED HOT WATER FLOW WHEN HEAT EXCHANGER IS COLD

At a cold start-up, i.e. when the water heater has not operated for some time (which is most often first thing in the morning), the initial flow of hot water may be reduced for a period of 5-10 seconds while the heat exchanger warms up. **This is both an energy and water saving feature of this water heater.** Once the heat exchanger has warmed up the hot water flow will increase and remain at normal flow levels. This feature will only occur at a cold start-up and not when the heat exchanger is already warm from a recent use of hot water.

NO WATER FROM THE HOT TAP

No flow of water from the hot tap may indicate a restriction in or failure of the cold water supply to the water heater. Check for water flow at other taps and that the cold water isolation valve ([refer to page 59](#)) is fully open.

WATER FLOW FLUCTUATES

More than one or two hot taps (12, 16 and 20 models) or more than two or three hot taps (26 models) in use at the same time may cause a decrease in the hot water flow from the taps. This can also be evident if the water heater has been installed as an in-series gas booster to a solar water heater and the solar heated water is at a low temperature.

- Are there more than one or two hot taps (12, 16 and 20 models) or more than two or three hot taps (26 models) open, or are appliances such as a dishwasher or washing machine, in use at the same time?

Ensure only one or two hot taps (12, 16 and 20 models) or no more than two or three hot taps (26 models) or appliances are on at the one time.

- Check the flow of hot water from each tap to see if one or more outlets are using more water than you think.

Have your plumber install a flow control valve to each shower outlet, basin and sink to reduce water usage.

GAS BOOSTER OPERATING TOO FREQUENTLY

If the water heater is installed as an in-series gas booster to a solar water heater, you may find that the water heater operates more frequently than expected. This will occur when the solar heated water temperature is lower than 58°C, which may be experienced during periods of low solar energy gain or if there has been heavy hot water usage. Factors to consider are:

- **Hot tap not used recently**

If a hot tap has not been used for a while, the water in the pipe work between the solar storage tank and the in-series gas booster may have cooled down. The in-series gas booster will sense the cooler water and this will cause the burners on the water heater to ignite and boost the water temperature when a hot tap is first turned on. The burners will extinguish when solar heated water of 58°C or higher from the solar storage tank reaches the in-series gas booster (refer also to "[Fan Continues to Run after Water Heater Operation Stops](#)" on page 44).

- **Insufficient sunlight**

Insufficient sunlight due to cloudy weather during hotter months or low solar energy contribution in colder months may mean the in-series gas booster operates more often.

- **Collectors shaded**

If trees or other objects shade the solar collectors or if the glass is dirty, the effectiveness of the solar collectors will be greatly reduced. Have the trees trimmed or the solar collectors relocated if the obstruction is permanent or clean the collector glass.

Ensure the glass on your solar collectors is free of dust, salt spray or any other matter, which may reduce the effectiveness of the solar collectors. If the collector glass becomes dirty, hose down or if the solar collectors are accessible, wash the collector glass with water and a soft brush when the solar collectors are cool.

- **Collector area is too small**

For most installations, the number of solar collectors recommended in Rheem literature has been proven to provide the required solar energy to meet the average family needs. However, in some circumstances, it may be necessary to install an additional solar collector.

- **Are you using more hot water than you think?**

Is one outlet (especially the shower) using more hot water than you think?

Very often it is not realised the amount of hot water used, particularly when showering. Carefully review the family's hot water usage. As you have installed an energy saving appliance, energy saving should also be practised in the home. Adjust your water usage pattern to take advantage of maximum solar gains.

Have your plumber install a flow control valve to each shower outlet, basin and sink to reduce water usage.

- **Water heater size**

Do you have the correct size water heater for your requirements?

The sizing guide in the sales literature and on the Rheem website (AU – www.rheem.com.au or NZ – www.rheem.co.nz) suggests average sizes that may be needed.

FAN CONTINUES TO RUN AFTER WATER HEATER OPERATION STOPS

It is the normal operation of the water heater for the fan to continue running after heating of the water is finished. The fan may run for up to two minutes after the burners extinguish, to prepare for the next ignition.

CLOUDS OF WHITE 'VAPOUR' FROM THE FLUE TERMINAL

During the heating cycle, it is not unusual to see water vapour clouds steaming from the flue terminal, particularly on cold days. This is normal operation of the water heater.

PRESSURE RELIEF VALVE DISCHARGING

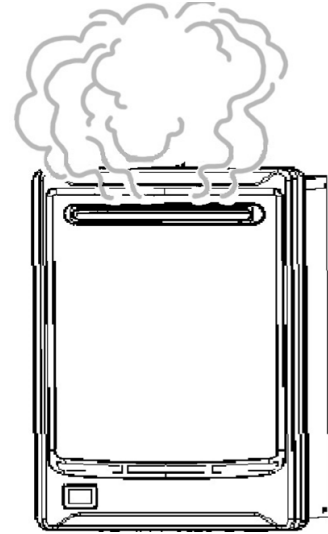
A pressure relief valve is incorporated into the water heater controls. This valve protects the water heater, by allowing water to escape, in the event of excessive pressure build-up in the waterways.

- **Normal operation**

A small volume of water may discharge from the bottom of the water heater when a hot tap is suddenly closed.

- **Continuous dribble**

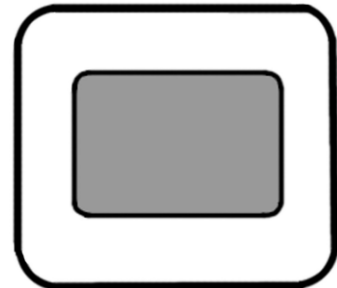
A continuous dribble may indicate the water supply pressure is above the design pressure for the water heater. If so, a pressure limiting valve must be installed on the cold water supply pipe to the water heater (refer to "[Mains Water Supply](#)" on page 48).

**ERROR CODE**

The water heater provides a diagnostic error code in the event of an interruption to its operation. The error code is displayed on the controller(s) (if installed) and on the LED display on the front of the water heater as a numerical value. If an error code appears:

- Close the hot tap, turn off the controller(s) and switch off the electrical supply to the water heater.
- Check the gas isolation valve at the gas inlet to the water heater is fully open.
- Wait 5 minutes, then switch on the electrical supply to the water heater, turn on a controller and open a hot tap.

If the error code persists, take note of the numerical code, turn off the hot tap and turn off the controller(s). Phone Rheem Service or their nearest Accredited Service Agent / Centre to arrange for an inspection.

**HIGHER THAN EXPECTED GAS BILLS**

Should you at any time, feel your gas bill is higher than expected, we suggest you check the following points:

- Is one outlet (especially the shower) using more hot water than you think?

Carefully review the family's hot water usage. Inexpensive flow control valves can be easily fitted to the shower outlets to reduce water usage.

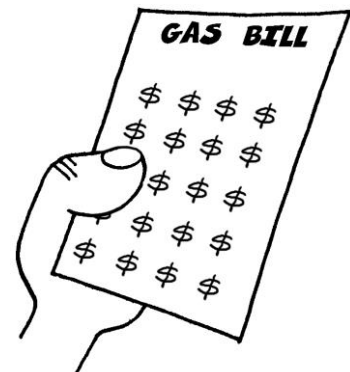
- Is the in-series gas booster operating too frequently?

Refer to "[Gas Booster Operating Too Frequently](#)" on page 43.

- Has there been an increase in hot water usage?

An increase in hot water usage will result in an increase in water heater operation.

- Has your water heating tariff rate been increased by your gas retailer since your previous bill?



IF YOU HAVE CHECKED ALL THE FOREGOING AND STILL BELIEVE YOU NEED ASSISTANCE, PHONE RHEEM SERVICE OR THEIR NEAREST ACCREDITED SERVICE AGENT / CENTRE.

INSTALLATION – WATER HEATER

**THIS WATER HEATER IS FOR OUTDOOR INSTALLATION ONLY.
THIS WATER HEATER IS NOT SUITABLE FOR POOL HEATING.
Check the water heater is suitable for the gas type available.
(refer to the rating label on the water heater)**

INSTALLATION STANDARDS

The water heater must be installed:

- by a qualified person, and
- in accordance with the installation instructions, and
- in compliance with Standards AS/NZS 3500.4, and either AS 5601 or AS/NZS 5601.1 as applicable under local regulations, and all local codes and regulatory authority requirements.

The Gas installations Standards AS 5601 and AS/NZS 5601.1 place limitations on the location of a gas water heater within a covered area. Refer to [“Installation within a Covered Area”](#) on page 47.

In New Zealand the installation must conform to Clauses G11, G12 and H1 of the New Zealand Building Code.

All packaging materials must be removed from the water heater prior to its installation.

WATER HEATER APPLICATION

This water heater is designed for use in a single family domestic dwelling for the purpose of heating potable water. Its use in an application other than this may shorten its life.

If this water heater is to be used where an uninterrupted hot water supply is necessary for the application or business, then there should be back-up redundancy within the hot water system design. This should ensure the continuity of hot water supply in the event that this water heater was to become inoperable for any reason. We recommend you provide advice to the system owner about their needs and building back-up redundancy into the hot water supply system.

The 874 series of water heater may be installed as an in-series gas booster to a solar water heater. For information relating to the function and operation of the solar water heater, refer to the Owner's Guide and Installation Instructions supplied with the solar water heater.

Note: The 876 series water heater is marked “THIS APPLIANCE DELIVERS WATER NOT EXCEEDING 50°C IN ACCORDANCE WITH AS 3498” on the front panel.

- This model **must not** be installed as an in-series gas booster to a solar water heater, as water temperature greater than 50°C can be delivered from the water heater contravening its compliance to AS 3498.

Note: Australian Standard AS 3498 and New Zealand Building Code Clause G12 requires that a water heater provides the means to inhibit the growth of Legionella bacteria in potable water. When this water heater is used as an in-series booster for a solar water heater it can satisfy these AS 3498 and Clause G12 requirements provided it is energised, the booster preset outlet temperature setting is 70°C, and that a remote temperature controller is not used.

WATER HEATER LOCATION

The water heater is suitable for outdoor installation only and should be installed close to the most frequently used outlet and its position chosen with safety and service in mind. If this water heater is part of a solar water heater system, it should also be installed close to the solar storage tank. Make sure people (particularly children) will not touch the flue terminal. The flue terminal and air inlet must be clear of obstructions and shrubbery.

Clearance must be allowed for servicing of the water heater. The water heater must be accessible without the use of a ladder or scaffold. Make sure the entire front panel can be removed for service. You must be able to read the information on the rating plate. Remember you may have to take the entire water heater out later for servicing.

INSTALLATION – WATER HEATER

This water heater must be installed vertically upright with the water, gas and power connections on the underside, pointing toward the ground. The back of the water heater can be either against a wall or supported by a frame.

Note: The water heater must be well secured to the wall or frame using two fasteners each at the top and bottom of the unit (refer to pages 54 and 55 for the [weight of the water heater](#) and [mounting hole positions](#)). Use the screws provided only if they are suitable for the wall or frame type. Otherwise select and use alternative fasteners suitable for the application. The fasteners must be capable of bearing the full weight of the water heater so it may not work loose nor impose any load on the gas and water pipe work connected to the water heater. Refer to the fastener manufacturer's information and recommendations for the type of fastener to use for the wall or frame type and load bearing requirements.



Alternatively the water heater can be recessed into a wall (refer to [“Recess Installation”](#) on page 48).

For a single water heater installation, refer to the [typical installation diagram](#) on page 58.

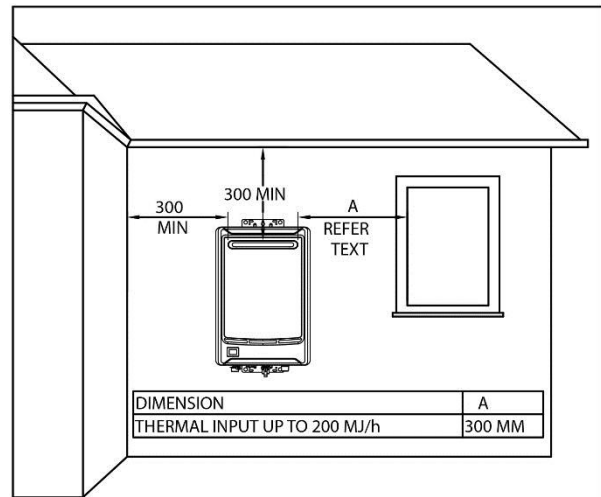
For a dual water heater installation using the EZ Link system, refer to [“EZ Link System Dual Installation”](#) on page 63 and the [typical installation diagram](#) on page 67.

The water heater must not be installed in an area with a corrosive atmosphere where chemicals are stored or where aerosol propellants are released. Remember the air may be safe to breathe, but when it goes through a flame, chemical changes take place which may attack the water heater.

A secondary flue is not required. The water heater must not be installed indoors or in a confined space.

The water heater must be located to ensure that the location of the flue terminal complies with the requirements of AS 5601 or AS/NZS 5601.1, as applicable under local regulations. As a guide the following requirements are extracted from the Gas Installations Standard. The distances are measured along the wall behind the water heater.

- At least 300 mm between the top of the flue terminal and the eaves.
- At least 300 mm between the flue terminal and the edge of any opening into the building, such as an openable door or window, measured horizontally*.
- At least 1500 mm between the top of the flue terminal and the edge of any opening into the building, such as an openable window, measured vertically.
- At least 300 mm between the flue terminal and a return wall or external corner, measured horizontally*.
- At least 1500 mm between the flue terminal and any opening into a building, in the direction of the flue discharge.
- At least 500 mm between the flue terminal and a fence, wall or other obstruction, in the direction of the flue discharge.



Note: * If these horizontal distances cannot be achieved, AS/NZS 5601.1 states an equivalent horizontal distance measured diagonally from the nearest discharge point of the flue terminal to the opening may be deemed to comply. Check with the local regulator.

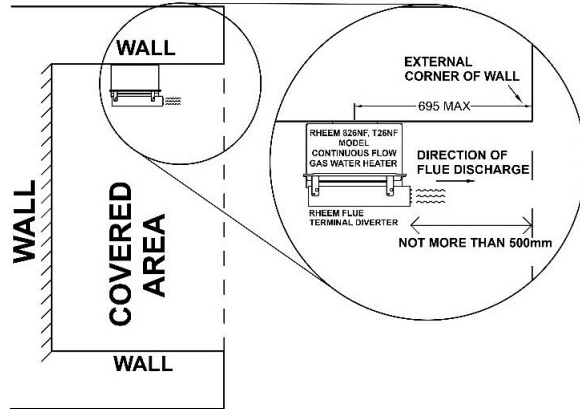
INSTALLATION WITHIN A COVERED AREA

The water heater must be located such that the installation meets the requirements of either AS 5601 or AS/NZS 5601.1 as applicable under local regulations. There must be sufficient ventilation so the water heater has an adequate supply of combustion air and the flue products are dispersed safely. It is the licensed installer's responsibility to ensure the installation complies with the relevant sections of the prevailing Gas installations Standard.

Installation of this water heater is permitted within a covered area open on at least two sides, if its flue terminal is located to ensure a free flow of air across it is achieved.

AS/NZS 5601.1 also allows the installation of a continuous flow gas water heater within a covered area open on one side only if the flue terminal is within 500 mm of the opening, is discharging in the direction of the opening, there are no openings into the building along the wall within the 500 mm distance and the terminal is located to ensure a free flow of air across it is achieved.

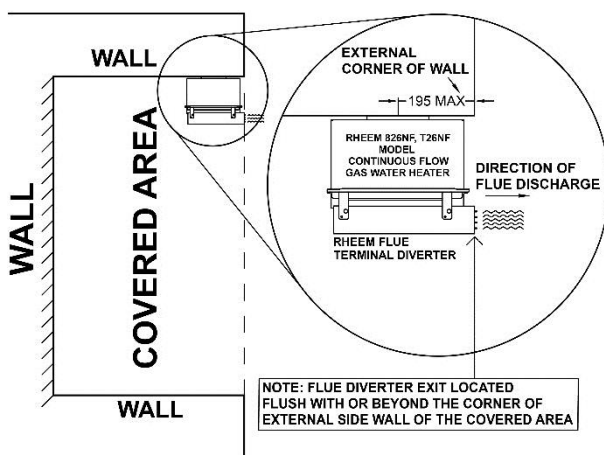
A Rheem 874 or 876 series 812NF, T16NF, 826NF or T26NF model (AU only) fitted with a Rheem Flue Terminal Diverter (kit number 299287) in accordance with its installation instructions, can be installed to meet this requirement.



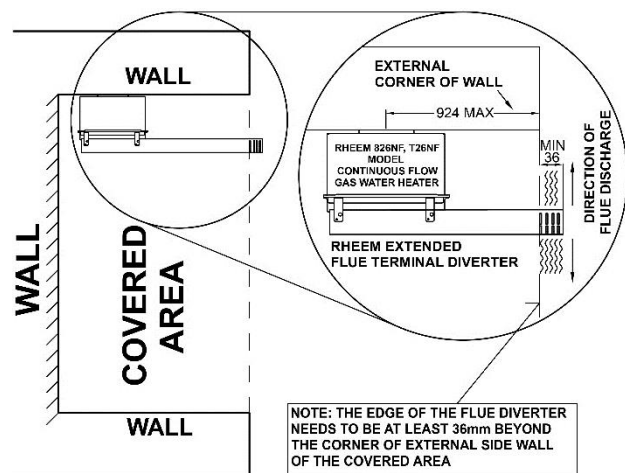
812NF, T16NF, 826NF or T26NF model with a Flue Terminal Diverter installed in compliance with AS/NZS 5601.1

A Rheem 874 or 876 series 812NF, T16NF, 826NF or T26NF model (AU only) fitted with a Rheem Flue Terminal Diverter (kit number 299287), or a Rheem 874 or 876 series 826NF or T26NF model (AU only) fitted with a Rheem Extended Flue Terminal Diverter (kit number 299285), can also be installed on a side wall within a covered area (open on one side only) and meet the installation requirements of AS 5601 and AS/NZS 5601.1, if positioned so that the outlet of the Flue Terminal Diverter is level with or beyond the outer edge of the side wall of the covered area.

A Rheem Flue Terminal Diverter or Extended Flue Terminal Diverter can be fitted to these water heaters (AU only) if installed in a recess box. Refer to ["Recess Installation"](#) on page 48.



812NF, T16NF, 826NF or T26NF with a Flue Terminal Diverter installed in compliance with AS 5601 and AS/NZS 5601.1



826NF or T26NF with an Extended Flue Terminal Diverter installed in compliance with AS 5601 and AS/NZS 5601.1

PIPE COVER

The pipe work to the water heater can be housed within a pipe cover. A pipe cover kit (Rheem AU – Part 299426, NZ – Part 320117) is available for such an installation. Refer to the installation instructions which accompany the pipe cover kit.

RECESS INSTALLATION

The water heater can be installed recessed into a wall. A recess box (Rheem AU – Part 299427, NZ – Parts 318994 [recess box enclosure kit] and 318995 [recess box door kit]) is available for such an installation. Refer to the installation instructions which accompany the recess box kit for information on its installation.

The rating plate on the side of the water heater should be moved to or the information on it, including the water heater serial number, manufacture date and model number, indelibly copied onto either the front panel of the water heater or to another position which is visible when the water heater is installed so the householder or responsible officer can access the water heater details when required. An additional rating label is supplied attached to the inside of the front cover of the water heater. This is for a service person to access the water heater details when required.

Note: If the recess box is installed under a covered area, refer to “[Installation within a Covered Area](#)” on page 47.

FROST PROTECTION

The water heater has a frost protection system. The frost protection system will protect the water heater from damage, by preventing ice forming in the waterways of the water heater, in the event of freezing conditions occurring.

The frost protection system will be rendered inoperable if electrical power is not available at the water heater. Damage to the water heater caused by freezing of the pipe work to or from the water heater is not covered under the Rheem warranty. Refer to AS/NZS 3500.4 for precautions to be taken for installations in frost prone areas. The water heater is not suitable for installation in areas where the ambient temperature falls below - 20°C (including wind chill factor).

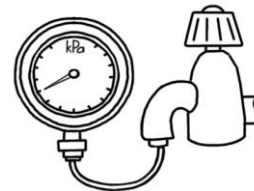
The cold water line to the water heater must be insulated with suitable thickness insulation if freezing conditions are likely to occur. The insulation must be fitted to the underside of the water heater and be weatherproof and UV resistant if exposed.

MAINS WATER SUPPLY

Where the mains water supply pressure exceeds that shown in the table below, an approved pressure limiting valve that does not have non-return valve characteristics (such as an RMC PSL series valve) is required and should be fitted as shown in the installation diagram ([refer to page 58](#)).

Model	12 to 26
Relief valve setting	1750 kPa
Max. mains supply pressure	1000 kPa
Min. mains supply pressure *	120 kPa

* minimum water supply pressure required to achieve the rated flow and performance

**Notes:**

- It is not recommended to install this water heater with a low pressure water supply.
- A minimum water supply pressure of 120 kPa is required to achieve the rated flow and performance of the water heater.
- If this water heater is installed as an in-series gas booster for a solar water heater, the maximum water supply pressure to the solar water heater, without an expansion control valve (ECV), is generally 800 kPa, however it may be less than this for some models. Refer to the Owner's Guide and Installation Instructions supplied with the solar water heater for maximum mains supply pressure details.
- If sludge or foreign matter is present in the water supply, it is recommended a suitable filter be incorporated in the cold water line to the water heater.
- This water heater is not suitable for connection to bore water or spring water unless a water treatment device is fitted.
- Refer to “[Water Supplies](#)” on page 41 for further information on water chemistry.

HOT WATER DELIVERY

This water heater can deliver water at temperatures which can cause scalding.

It is necessary and we recommend that a temperature limiting device be fitted between an 874 series water heater and the hot water outlets in any ablution and public areas such as a bathroom, ensuite or public amenities, to reduce the risk of scalding. The installing plumber may have a legal obligation to ensure the installation of this water heater meets the delivery water temperature requirements of AS/NZS 3500.4 so that scalding water temperatures are not delivered to a bathroom, ensuite or other ablution or public area.

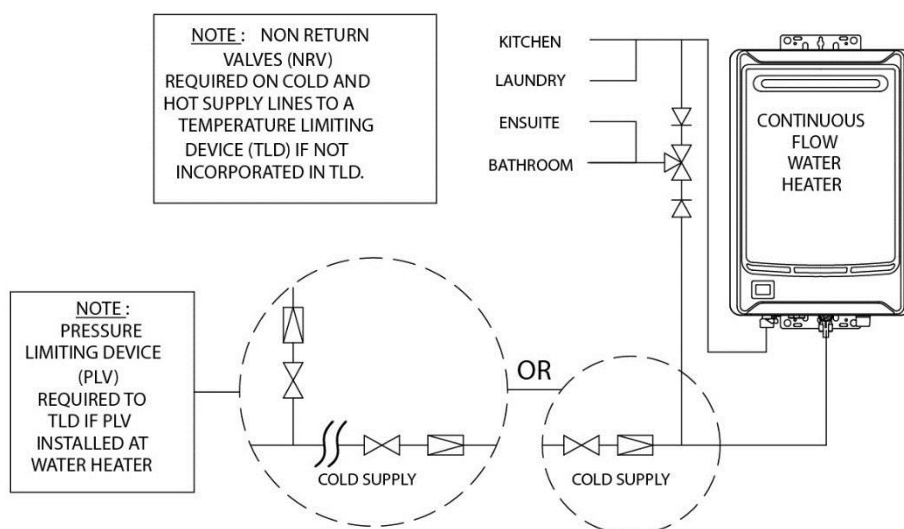
The temperature limiting device must be of a type suitable for use with a continuous flow gas water heater and should have:

- a specified 'minimum temperature differential' between the hot water inlet and the tempered water outlet of no greater than 10°C, and
- a specified 'maximum permitted pressure variation' in the supply between the hot water inlet and the cold water inlet of no less than 15%.

Refer to the specifications of the temperature limiting device.

Where a temperature limiting device is installed adjacent to the water heater, the cold water line to the temperature limiting device can be branched off the cold water line either before or after the isolation valve and pressure limiting valve to the water heater.

If a pressure limiting valve is installed on the cold water line to the water heater and the cold water line to a temperature limiting device branches off before this valve or from another cold water line in the premises, then a pressure limiting valve of an equal pressure setting may be required prior to the temperature limiting device.



Two Temperature Zones Using a Temperature Limiting Device

An 876 series water heater will not deliver temperatures exceeding 50°C in accordance with AS 3498. There is no need to fit a temperature limiting device to satisfy the requirements of AS/NZS 3500.4, if an 876 series water heater is installed in an application where 50°C is the maximum permissible hot water temperature at the outlet of a sanitary fixture used primarily for personal hygiene purposes. Refer to ["Water Temperature Diagrams"](#) on page 53.

Gas Booster for a Solar Water Heater

The temperature limiting device used with an 874 series in-series gas booster as part of a solar water heater installation must be of a type suitable for use with a solar water heater and have the capability of receiving a hot water supply temperature of up to 99°C.

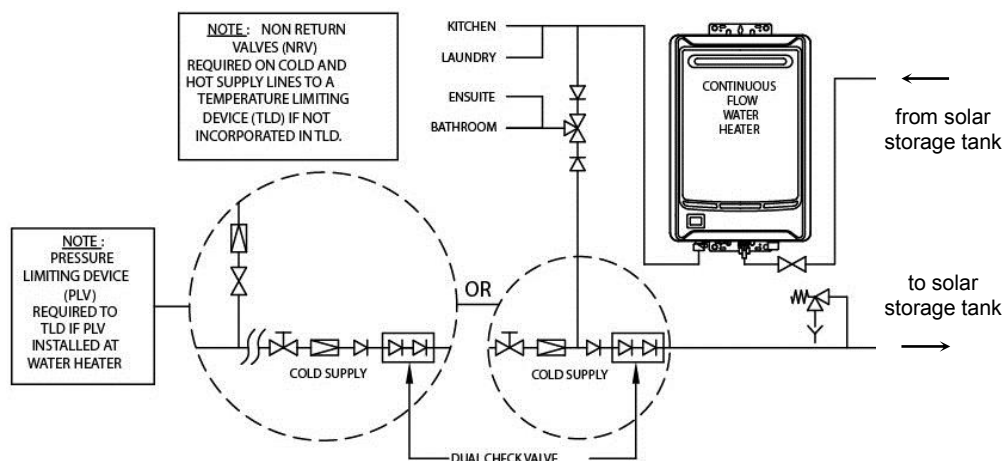
Warning: Temperature controllers **must not** be fitted to this water heater (874 series) if it is installed as an in-series gas booster with a solar water heater system because water at a temperature much higher than the controller setting can be delivered. If a solar water heater is installed to an existing water heater installation, then all controllers **must be** disconnected and removed.

Where a temperature limiting device is installed adjacent to the in-series gas booster, the cold water line to the temperature limiting device can be branched off the cold water line either before or after the isolation valve and pressure limiting valve to the solar storage tank, but it **MUST BE** before the non-return valve prior to an open circuit system. The cold water line to the temperature limiting device can be branched off the cold water line either before or after the non-return valve prior to a closed circuit system. If an expansion control valve is required, it must always be installed after the non-return valve and be the last valve prior to the solar storage tank.

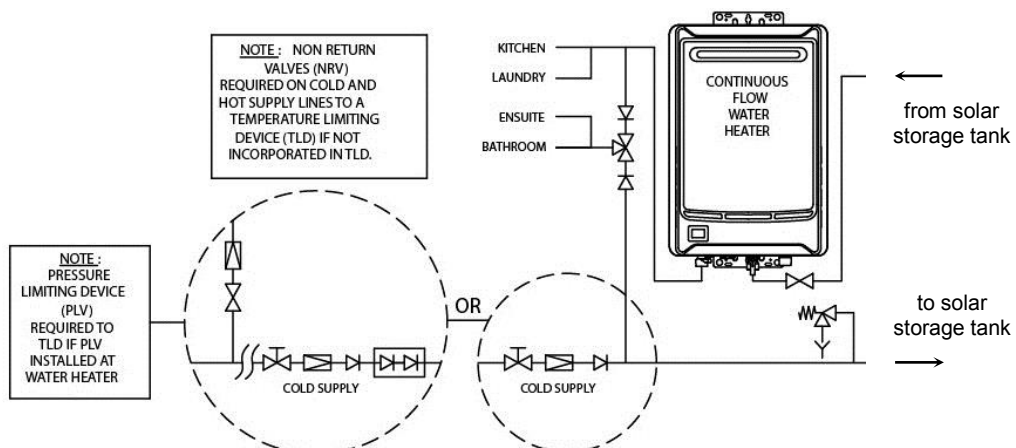
Warning: A non-return valve **MUST BE** installed on the cold water line to the solar storage tank **AFTER** the cold water branch to a temperature limiting device prior to an open circuit system. Due to the higher water temperatures generated under certain conditions in the solar collectors of an open circuit solar water heater, an additional effective back-flow prevention device also should be used as an extra safeguard. Valve manufacturer RMC recommends Dual Check Valve model N7150, as being suitable for this application.

If a combination isolation valve and non-return valve (duo or trio valve) is installed on the cold water line to an open circuit solar water heater and the cold water line to the temperature limiting device branches off after this valve, then a second non-return valve must be installed between the cold water branch and the solar storage tank. Due to the higher water temperatures generated under certain conditions in the solar collectors of an open circuit pumped solar water heater, an effective back-flow prevention device should be used as the second non-return valve as an extra safeguard. Valve manufacturer RMC recommends Dual Check Valve model N7150, as being suitable for this application.

If a pressure limiting valve is installed on the cold water line to the solar water heater and the cold water line to a temperature limiting device branches off before this valve or from another cold water line in the premises, then a pressure limiting valve of an equal pressure setting may be required prior to the temperature limiting device.



**In-series Gas Booster as part of an Open Circuit Solar Water Heater Installation
Two Temperature Zones Using a Temperature Limiting Device**



**In-series Gas Booster as part of a Closed Circuit Solar Water Heater Installation
Two Temperature Zones Using a Temperature Limiting Device**

CIRCULATED HOT WATER FLOW AND RETURN SYSTEM

A Rheem 874 series continuous flow water heater can be installed as part of a circulated hot water flow and return system in a building.

Notes:

- the preset outlet temperature setting of the water heater must be set to at least 60°C.

Water should not be circulated from a water heater with a temperature setting of less than 60°C.

In New Zealand an approved UV sterilisation or chlorine disinfection system may be used if the temperature setting of the water heater is less than 60°C.

- the return water temperature to the water heater must not be less than 55°C.

If the water temperature decreases by more than 5°C due to heat loss from the ring main, the preset outlet temperature setting of the water heater must be set to above 60°C to ensure the return water temperature is not less than 55°C.

- temperature controllers should not be installed with this water heater as part of a circulated hot water flow and return system, including when installed as part of an EZ Link System dual installation.

The circulator must be:

- sized and set to provide a minimum flow rate of 3.0 L/min through the recirculated hot water flow and return system, and
- either thermostatically and / or timer controlled.

The circulator **must not** be set to operate continuously, i.e. 24 hours per day.

⚠ Warning: A Rheem 876 series continuous flow water heater **must not** be installed as part of a circulated hot water flow and return system in a building.

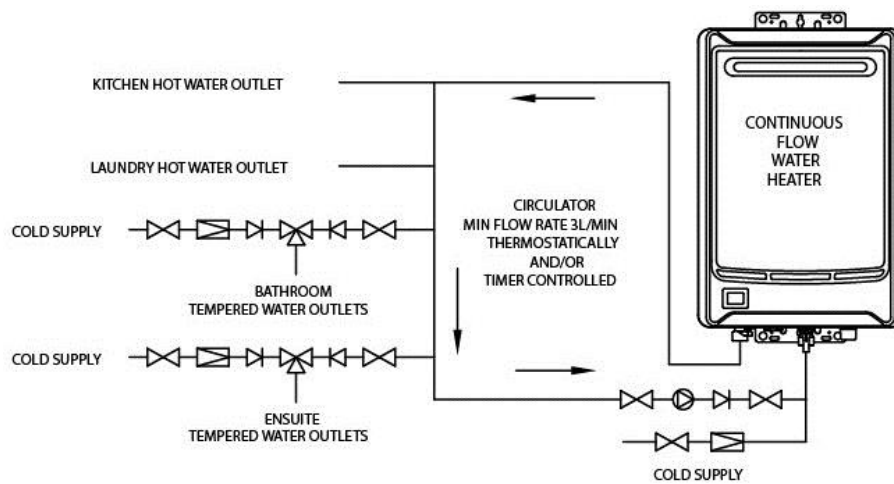
Temperature Limiting Device

A temperature limiting device cannot be installed in circulated hot water flow and return pipe work. The tempered water from a temperature limiting device cannot be circulated. Where a circulated hot water flow and return system is required in a building, a temperature limiting device can only be installed on a dead leg, branching off the circulated hot water flow and return pipe.

If circulated tempered water were to be returned back to the water heater, depending on the location of the return line connection on the water supply line to the water heater, then either:

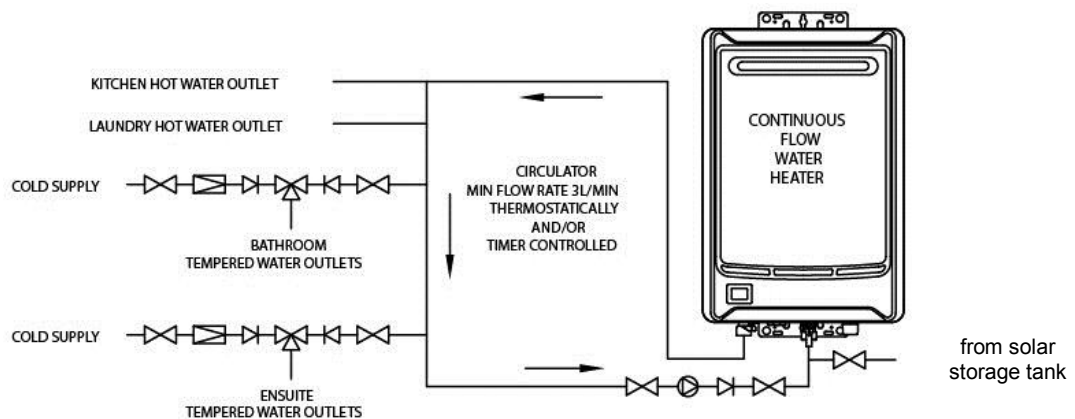
- water will be supplied to the cold water inlet of the temperature limiting device at a temperature exceeding the maximum recommended water supply temperature, or
- when the hot taps are closed no water will be supplied to the cold water inlet of the temperature limiting device whilst hot water will continue to be supplied to the hot water inlet of the temperature limiting device.

These conditions may result in either water at a temperature exceeding the requirements of AS/NZS 3500.4 being delivered to the hot water outlets in the ablution areas, or the device closing completely and not delivering water at all, or the device failing. Under either condition, the operation and performance of the device cannot be guaranteed.



NOTE: A PLV IS REQUIRED TO BE INSTALLED ON THE COLD SUPPLY LINE TO THE TEMPERING VALVE IF A PLV IS INSTALLED ON THE COLD SUPPLY LINE TO THE WATER HEATER.
NON RETURN VALVES (NRV) REQUIRED ON COLD AND HOT SUPPLY LINES TO A TEMPERATURE LIMITING DEVICE (TLD) IF NOT INCORPORATED INTO TLD.

Circulated Hot Water Flow and Return Continuous Flow Gas Water Heater



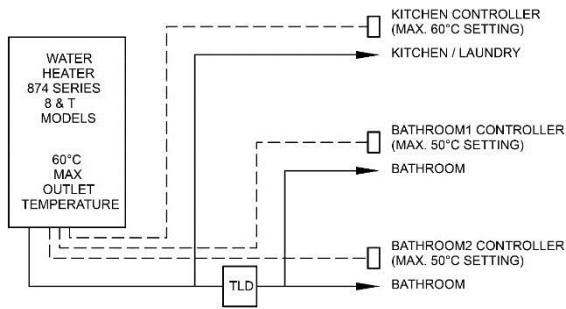
NOTE: A PLV IS REQUIRED TO BE INSTALLED ON THE COLD SUPPLY LINE TO THE TEMPERING VALVE IF A PLV IS INSTALLED ON THE COLD SUPPLY LINE TO THE WATER HEATER.
NON RETURN VALVES (NRV) REQUIRED ON COLD AND HOT SUPPLY LINES TO A TEMPERATURE LIMITING DEVICE (TLD) IF NOT INCORPORATED INTO TLD.

Circulated Hot Water Flow and Return In-series Gas Booster as part of a Solar Water Heater Installation

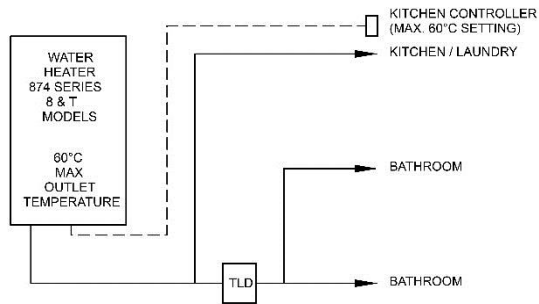
REDUCING HEAT LOSSES

The hot water line from the water heater and the pipe work between the solar storage tank, if one is installed, and the in-series gas booster must be insulated in accordance with the requirements of AS/NZS 3500.4. The insulation must be weatherproof and UV resistant if exposed. The insulation must be fitted up to the connections on the both the underside of the water heater and the solar storage tank.

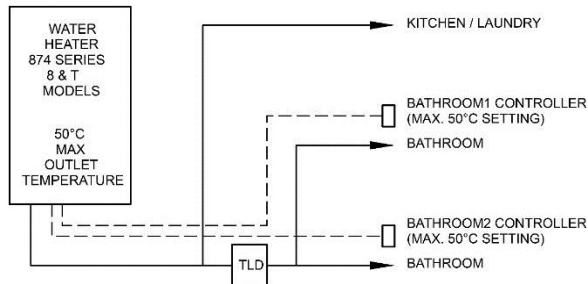
WATER TEMPERATURE DIAGRAMS



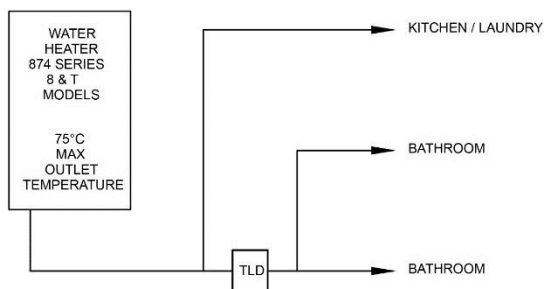
Note: NZ - Kitchen Controller max setting is 55°C
874 Series - Kitchen and Bathroom Controllers



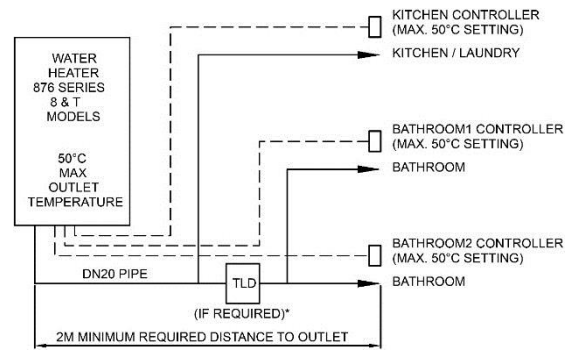
Note: NZ - Kitchen Controller max setting is 55°C
874 Series - Kitchen Controller Only



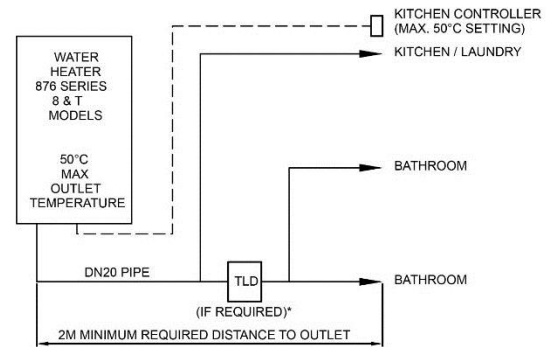
874 Series - Bathroom Controllers Only



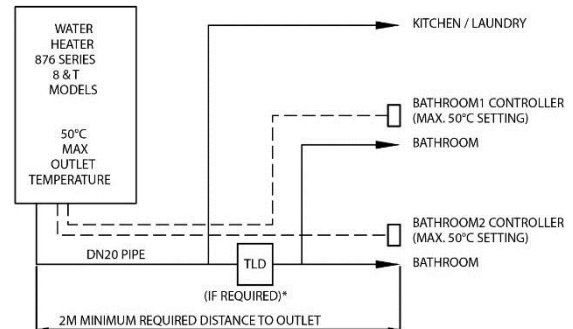
874 Series - No Controllers



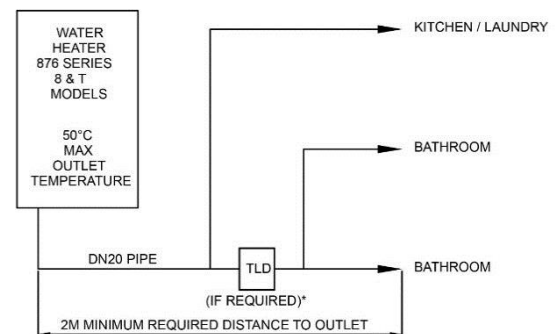
876 Series – Kitchen and Bathroom Controllers



876 Series - Kitchen Controller Only



876 Series - Bathroom Controllers Only



876 Series - No Controllers

Notes:

- Temperature Limiting Devices – refer to “Hot Water Delivery” on page 49.
- Factory preset outlet temperature setting is:
 - 874 series 60°C – AU, 55°C – NZ
 - 876 series 50°C

TECHNICAL DATA

Models		874812 876812 NF, PF	874816, 874T16 876T16 NF, NFZ, PF, LFZ	874820 876820 NF, NFZ PF, LFZ	874826 - LFZ	874826, 874T26 876826, 876T26 NF, NFZ, PF
Gas type suffix						
Water heating capacity @ 40°C rise	litres / min	7.5	10	12.5	15	16.2
Nominal capacity @ 25°C rise	litres / min	12	16	20	24	26
Mass Empty (unpacked)	kg	16	16	16	16	16

Gas Details	Hourly Gas Consumption (MJ)				Min. Gas Pressure (kPa)	Max. Gas Pressure (kPa)	Injector Size (mm) 40 x injectors per water heater
	812 -	816 T16	820 -	826 T26	812, 816, T16, 820, 826, T26		812, 816, T16, 820, 826, T26
Natural	94	126	157	199	1.13	3.50	20 x Ø 1.55 + 20 x Ø 1.03
Propane	94	126	157	199	2.75	3.50	20 x Ø 1.10 + 20 x Ø 0.73
Universal LP Gas	-	126	157	188	2.75	3.50	20 x Ø 1.10 + 20 x Ø 0.73

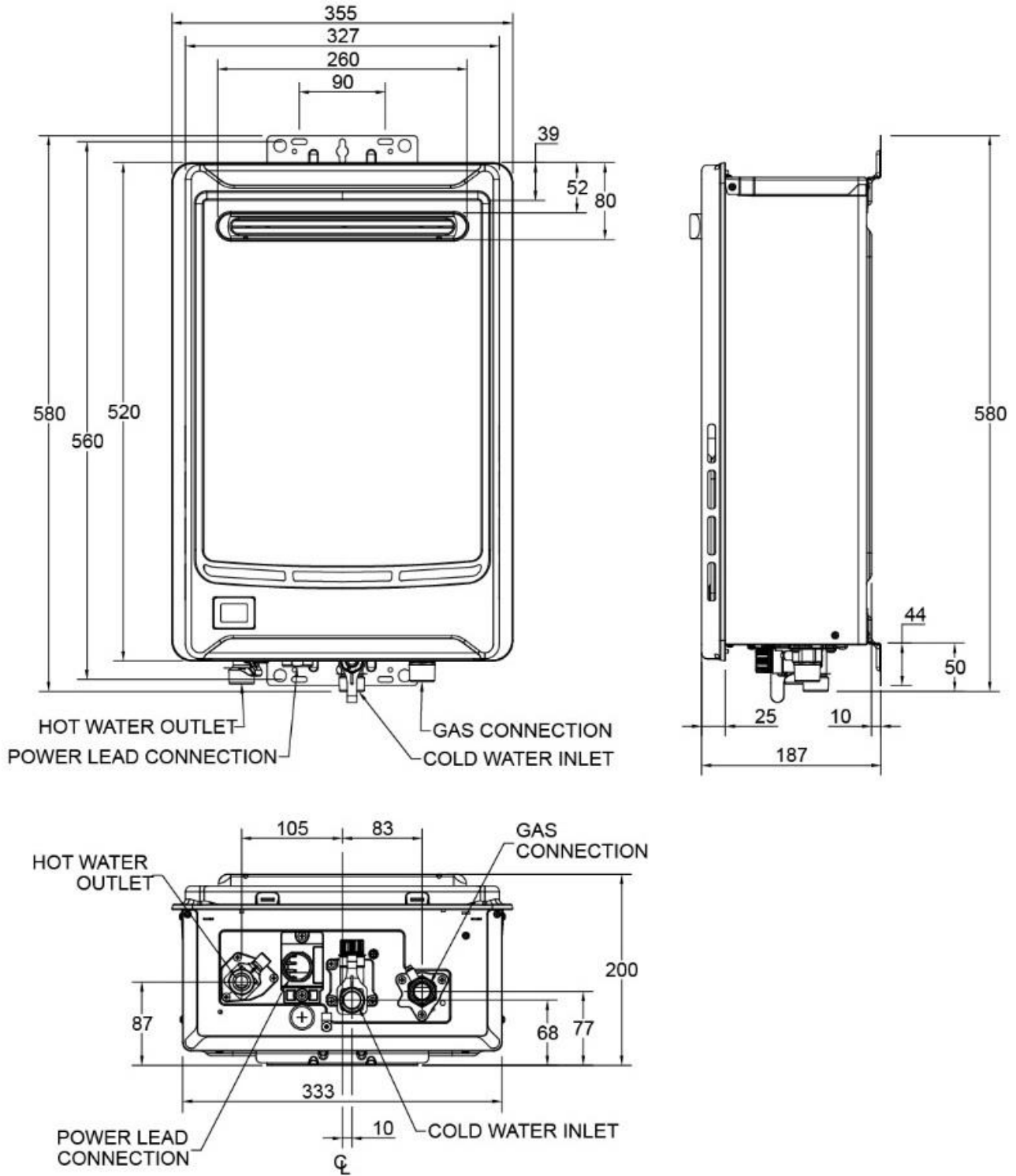
Gas Details	Test Point Gas Pressure (kPa)							
	minimum				maximum			
	812 -	816 T16	820 -	826 T26	812 -	816 T16	820 -	826 T26
Natural	0.15	0.15	0.15	0.15	0.38	0.40	0.57	0.92
Propane	0.19	0.19	0.19	0.19	0.40	0.43	0.62	0.98
Universal LP Gas	-	0.20	0.20	0.20	-	0.41	0.61	0.92

Technical data is subject to change.

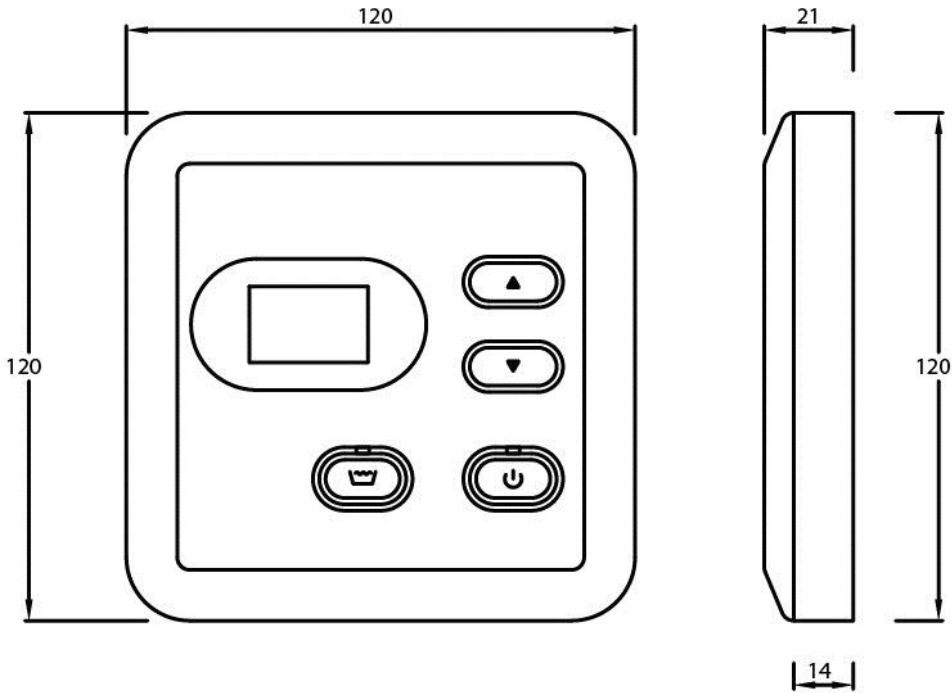
Model numbers

- Gas type Letter N, P or L is included in the model number to denote gas type.
N = Natural, P = Propane (AU), L = Universal LP Gas (NZ).
E.g. 874826NF, 874826PF, 874826LFZ.
- Frost protection Letter F is included in the model number to denote frost protection.
- New Zealand models Letter Z is included in the model number to denote New Zealand models.
E.g. 874826NFZ, 874826LFZ.
- Solar boosters /J is included in the model number to denote a Joey Grey coloured jacket.
These models are used as solar booster water heaters.
Available on 874820NF/J, 874826NF/J, 874826PF/J models only in Australia.

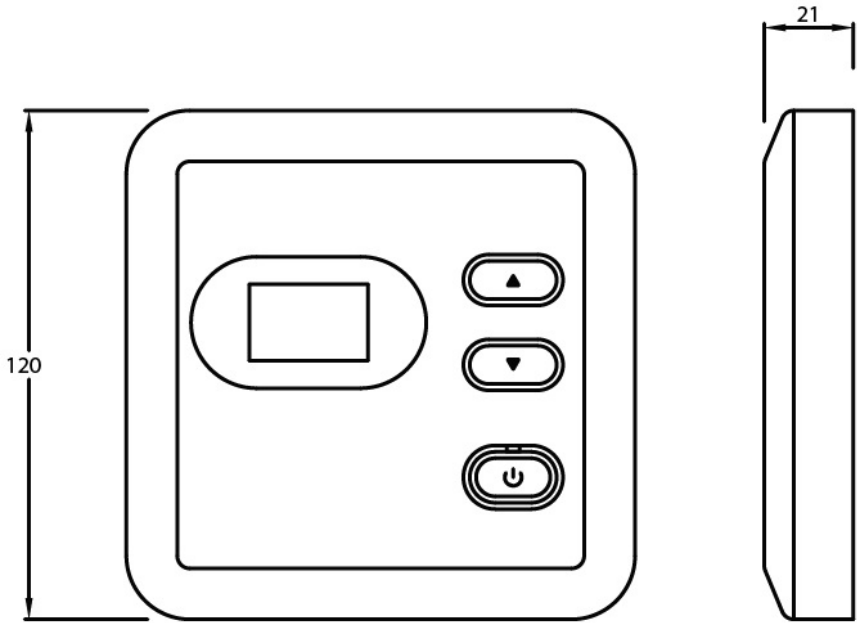
DIMENSIONS – WATER HEATER



DIMENSIONS – STANDARD CONTROLLERS



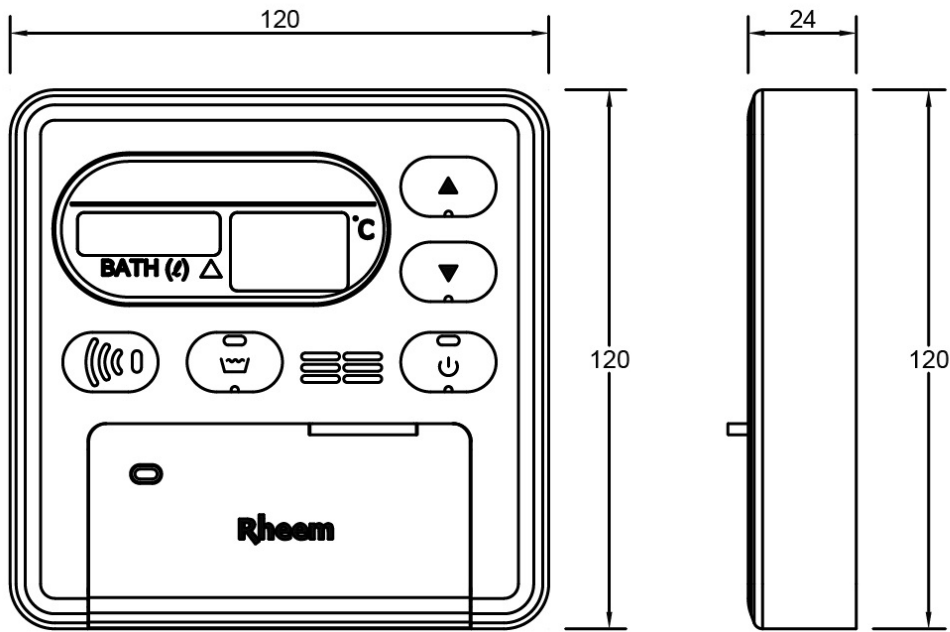
Kitchen Controller (Standard)



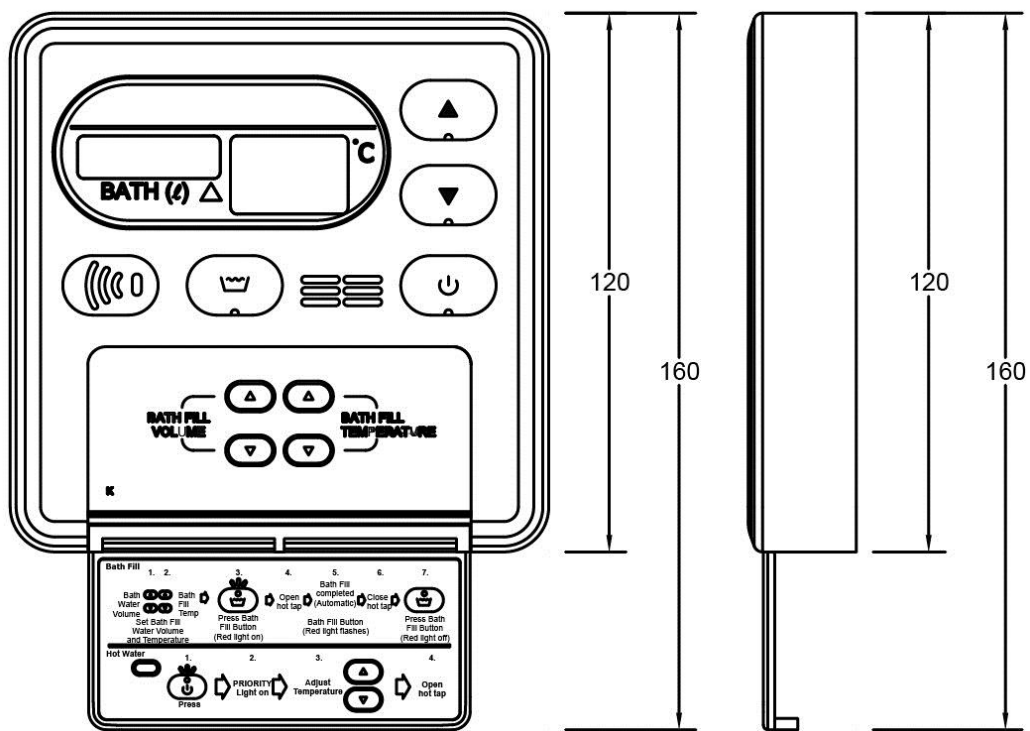
Bathroom Controller (Standard)

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DIMENSIONS – DELUXE CONTROLLERS

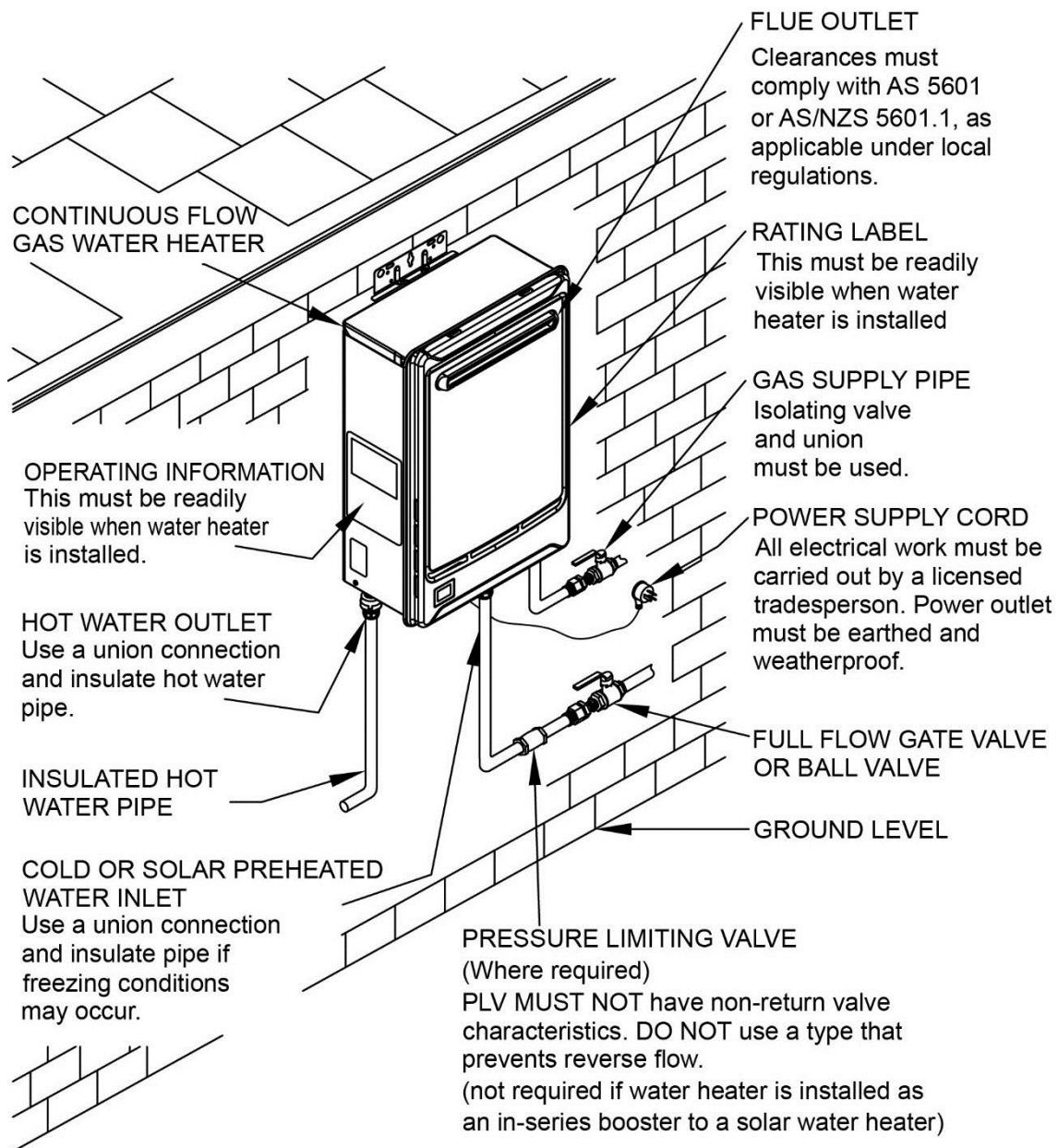


Deluxe Controller – Cover Closed



Deluxe Controller – Cover Open

TYPICAL INSTALLATION – OUTDOOR LOCATION



CONNECTIONS – PLUMBING

All plumbing work must be carried out by a qualified person and in compliance with the Standard AS/NZS 3500.4 and all local codes and regulatory authority requirements.

All gas work must be carried out by a qualified person and in compliance with the Standard AS 5601 or AS/NZS 5601.1, as applicable under local regulations, and all local codes and regulatory authority requirements.

In New Zealand the installation must conform to Clauses G11, G12 and H1 of the New Zealand Building Code.

CONNECTION SIZES

Hot water connection	R 3/4
Cold water connection	R 3/4
Gas inlet	R 3/4

WATER INLET AND OUTLET

All pipe work must be cleared of foreign matter before connection and purged before attempting to operate the water heater. All olive compression fittings must use brass or copper olives. Use an approved thread sealant such as Teflon tape on all threaded joints.

A full flow gate valve or ball valve must be installed on the cold water line or solar preheat water line to the water heater. **A non-return valve or stop tap must not be installed.** An acceptable arrangement is shown in the diagram. Refer also to “Hot Water Delivery” on page 49 and to “Mains Water Supply” on page 48.

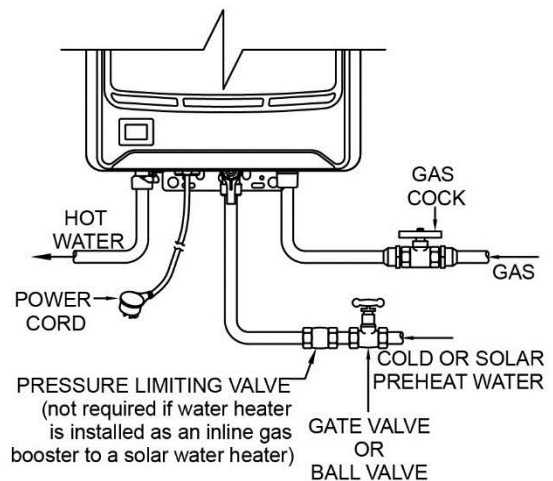
A disconnection union must always be provided at the cold water inlet and hot water outlet on the water heater to allow for disconnection of the water heater.

Insulation used on the cold and hot water lines must extend up to the cold water inlet and hot water outlet of the water heater.

This water heater is intended to be permanently connected to the water mains and not connected by a hose-set. A braided flexible hose or semi-flexible connector may be used for connection to the water heater, where permitted by AS/NZS 3500.4.

Notes:

- It is essential all pipe connections be correctly aligned, otherwise component connections within the water heater may be strained and / or components themselves misaligned. It is recommended also, wherever possible, pipe connections be made at the water heater first and final pipe runs be made in soft copper pipe to allow some adjustment for misalignment.
- Use the spanner flats on the water heater fittings and take care to avoid twisting the water inlet and outlet pipes inside the jacket.



**Gas Water Heater
Cold (or Solar Preheat) and Hot Water
and Gas Connection Details**

PIPE SIZES

The pipe sizing for hot water supply systems should be carried out by persons competent to do so, choosing the most suitable pipe size to ensure adequate flow for each individual application. Reference to the technical specifications of the water heater and local regulatory authority requirements must be made.

To achieve true mains pressure operation, the cold water line to the water heater should be the same size or bigger than the hot water line from the water heater.

The minimum recommended cold pipe or solar preheat pipe and hot pipe size is DN20.

IN-SERIES BOOSTER

The pipe work between the solar storage tank (if one is installed) and the in-series gas booster has a minimum recommended pipe size of DN20, **MUST BE** of copper and be fully insulated with a closed cell type insulation or equivalent in accordance with the requirements of AS/NZS 3500.4.

The insulation must be weatherproof and UV resistant if exposed. The insulation must be fitted up to the connections on both the solar storage tank and the in-series gas booster. A full flow isolation valve must be installed on the water line to the in-series gas booster.

GAS INLET

The gas connection is made at the underside of the water heater. The pipe work must be cleared of foreign matter before connection and purged before attempting to operate the water heater. An isolation valve and disconnection union must be installed to allow servicing and removal of the water heater (refer to the [diagram on page 59](#)).

Note: Refer to the Gas Installations Standard AS 5601 or AS/NZS 5601.1 for the correct method of sizing the gas supply pipe to the water heater. The pipe size selection must take into account the high gas input of this water heater ([refer to table on page 54](#)) as well as all of the other gas appliances in the premises.

⚠ Warning: Always isolate the water heater before pressure testing the gas supply system. Disconnect the water heater after the isolation valve to prevent the risk of serious damage to the gas control. The Rheem warranty does not cover damage of any nature resulting from failure to observe this precaution. Refer to rating label for gas types and pressures.

CONNECTIONS – ELECTRICAL

All electrical work and permanent wiring must be carried out by a qualified person and in accordance with the Wiring Rules AS/NZS 3000 and all local codes and regulatory authority requirements.

⚠ Warning: Temperature controllers **must not** be fitted to this water heater (874 series) if it is installed as an in-series gas booster with a solar water heater system because water at a temperature much higher than the controller setting can be delivered. If a solar water heater is installed to an existing water heater installation, then all controllers **must be** disconnected and removed.

The water heater is supplied with a 1.8 metre lead and plug and requires a weatherproof 240 V 50 Hz general purpose outlet (GPO) to be located within 1.2 metres of the installation. The GPO must be clear of the flue exhaust, draining water, gas supply pipe and water connections.

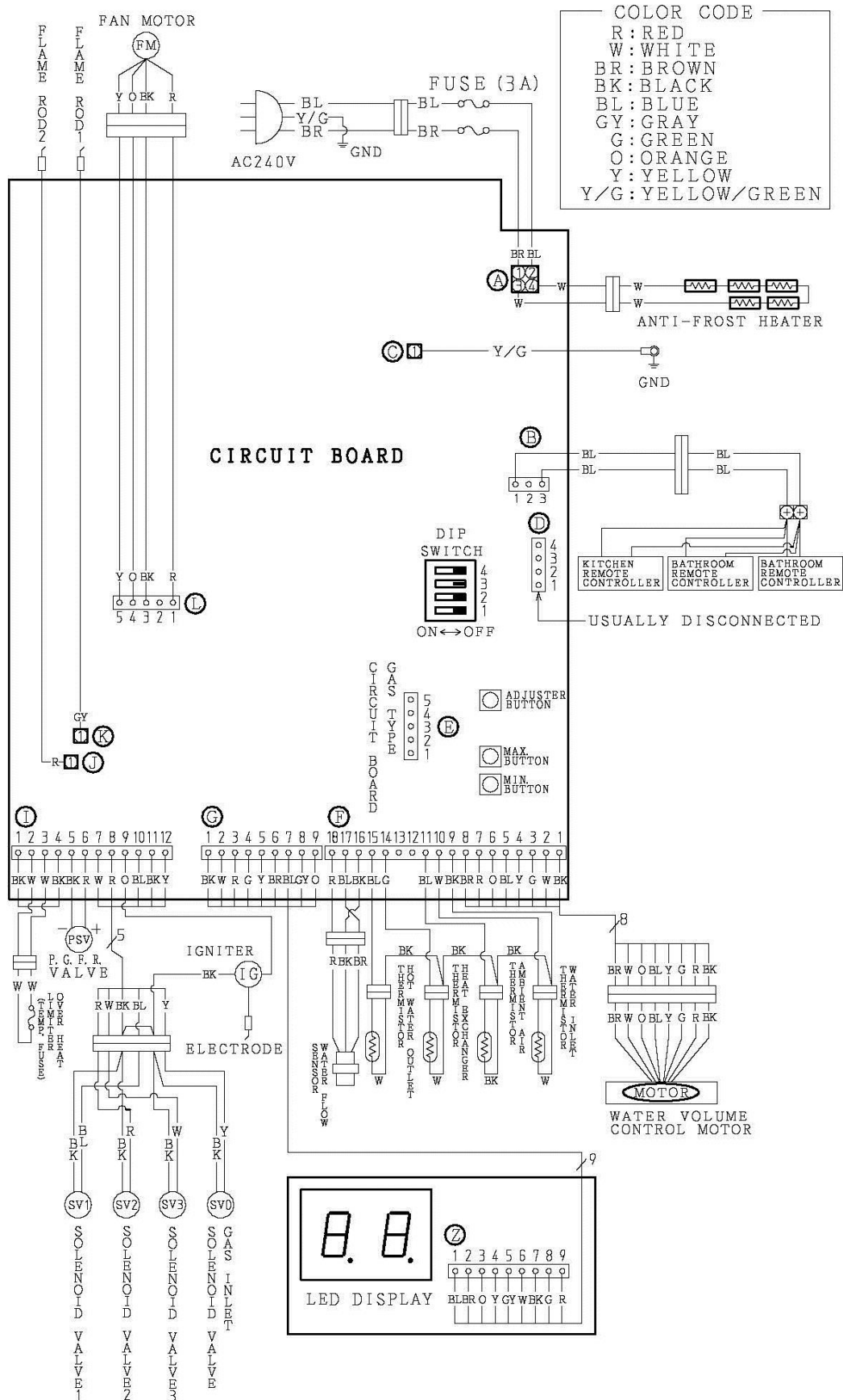
The power consumption of the water heater is:

Power consumption (watts) - Burner on, anti-frost device inactive				
Model	874812, 876812	874816 874T16, 876T16	874820, 876820	874826, 876826 874T26, 876T26
Natural	33	38	44	54
Propane	36	40	50	59
Universal LG Gas	-	38	47	59

Power consumption (watts) - Burner on, anti-frost device active				
Model	874812, 876812	874816 874T16, 876T16	874820, 876820	874826, 876826 874T26, 876T26
Natural	101	106	112	122
Propane	104	108	118	127
Universal LG Gas	-	106	115	127

The water heater will only operate on a sine wave at 50 Hz. Devices generating a square wave cannot be used to supply power to the water heater.

WIRING DIAGRAM

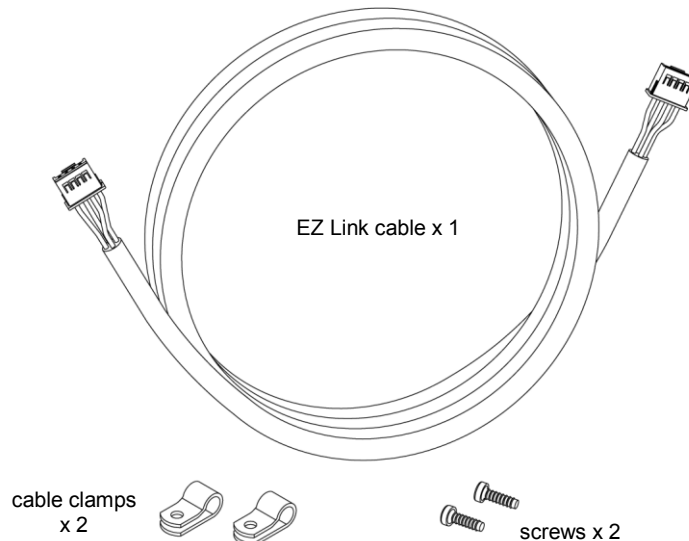


Wiring Diagram – 874, 876 Series 812, 816, T16, 820, 826, T26 Models

EZ LINK SYSTEM DUAL INSTALLATION

The EZ Link® system is designed to electronically control two continuous flow gas water heaters and have them operate as one. One or both water heaters may be in operation, depending upon the hot water demand. The second water heater will only operate when the hot water demand exceeds the capacity of the first water heater to supply.

The EZ Link system is suitable for installation with Rheem 874 and 876 series 812, 816, T16, 820, 826 and T26 model continuous flow gas water heaters. The EZ Link Kit PN 299291 is required for the installation.



EZ Link Kit – PN 299291

Notes:

- Only two continuous flow gas water heaters can be installed with an EZ Link system.
- The EZ Link system will vary the start-up sequence of the two water heaters.
- The two continuous flow water heaters must be of the same model. The performance of two different model water heaters manifolded together cannot be guaranteed.
- It is recommended the two water heaters be set with the same preset outlet temperature setting.
- A temperature controller(s) may be installed but is not required to be installed with the EZ Link system on a Rheem 874 and 876 series 812, 816, T16, 820, 826 and T26 model dual installation. The controller can be either a standard or Deluxe controller.
- If the EZ Link system is used with a water heater with a preset outlet temperature greater than 60°C and a temperature controller is installed, the maximum outlet temperature of the water heater will be limited by the maximum temperature setting of the temperature controller.
- Two 874 series 812, 816, T16, 820, 826 or T26 model water heaters manifolded together and with an EZ Link system installed can be used as an in-series gas booster system to a solar water heater installation so long as a temperature controller is not installed.

⚠ Warning: Temperature controllers **must not** be fitted to a water heater as part of a solar water heater system because water at a temperature much higher than the controller setting can be delivered.

DUAL INSTALLATION

The two water heaters can be installed side by side with minimal clearance between them. Rheem 874 and 876 series 812, 816, T16, 820, 826 and T26 models are certified for installation with an exemption from the 300 mm minimum clearance requirements between flue terminals, as stated in AS 5601, clause 5.13.6.5 and AS/NZS 5601.1, clause 6.9.3.

Install two water heaters of the same model in a parallel plumbing arrangement. It is good practice, but not essential, to install the two water heaters in an Equa-Flow® plumbing arrangement. There are basic installation requirements which must be followed:

1. The pipe work must be sized to meet the requirements of both AS/NZS 3500.4 and the application. It is recommended to use minimum DN25 pipe for the cold water line, cold and hot headers and hot water line and DN20 for the cold and hot water branch lines of each water heater.
2. A full flow gate valve or ball valve must be installed on the cold water line to the system. A non-return valve or stop tap must not be installed.
3. A full flow gate valve or ball valve (not a stop tap) should be installed on both the cold water branch and hot water branch of each water heater.
4. An isolation valve must be installed on the gas branch of each water heater.
5. Non-return valves or pressure limiting valves must not be installed on the branch lines to the water heaters.
6. All fittings, valves and branch lines should be matched sets to each of the water heaters.
7. Sufficient space must be left to enable access, servicing or removal of either water heater.

Refer to the '[Typical Two Unit Manifold with EZ Link Connection](#)' diagram on page 67 for installation and plant layout details.

RATING LABEL INFORMATION

There is information on the rating label located on the right hand side of the water heater, which may be required for future warranty and service requirements. This information will be hidden on the left hand water heater if the two water heaters are installed with minimal clearance between them.

Move the rating label to or indelibly copy the water heater serial number, manufacture date and model number from the label onto the left hand side or front panel of the left hand water heater or to another position which is visible when the water heater is installed so the householder or responsible officer can access the water heater details when required.

A second rating label is attached to the inside of the front cover. This is for a service person to access the water heater details when required.

TEMPERATURE CONTROLLER

A temperature controller(s) may be installed but is not required to be installed on the Rheem 874 and 876 series 812, 816, T16, 820, 826 and T26 model water heaters with the EZ Link system. The controller can be either a standard or Deluxe controller.

⚠ Warning: Temperature controllers **must not** be fitted to a water heater as part of a solar water heater system because water at a temperature much higher than the controller setting can be delivered.

Connect a temperature controller to one only of the two water heaters. Up to three temperature controllers of the same family can be installed to this water heater. Refer to "[Installation – Controllers](#)" on page 68.

The water heater connected with the temperature controller(s) will become the 'master' water heater. The installed temperature controller(s) will control the temperature and functionality of both water heaters.

The maximum outlet temperature of the water heaters will be limited by the maximum temperature setting of the temperature controller.

A temperature controller should not be installed if two 874 series 812, 816, T16, 820, 826 or T26 model water heaters are installed with an EZ Link system and they are part of a circulated hot water flow and return system in a building. Refer to "[Circulated Hot Water Flow And Return System](#)" on page 51.

EZ LINK CABLE CONNECTION

The references in steps 8 to 11 are to the 'Control Board with EZ Link Connection' diagram on page 66. To connect the EZ Link cable to the water heaters:

1. Close any hot taps and ensure the burners on both water heaters are not operating.
2. Switch off the electrical supply at the power outlet to each water heater.
3. Remove the top and bottom cover strips to gain access to the front panel screws by pressing on the two ridged finger points and gently pulling forward.
4. Remove the screws holding the front panel to the jacket on each water heater.
5. Gently disengage the front panel and pull forward to remove from each water heater.
6. Remove the screw securing the Control Board on each water heater. Discard the screws.
7. Gently pull forward the Control Board on each water heater to improve access to the cable connector.
8. Connect one end of the EZ Link cable to the first water heater.

If a controller(s) is connected to one of the water heaters, then this is the 'master' or 'first' water heater.

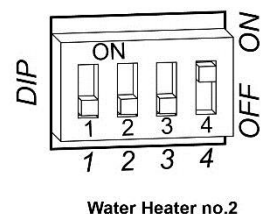
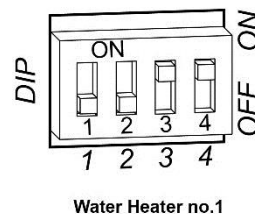
- Draw the cable through the cable grommet on the underside of the water heater.
- Plug the cable into the four pin connector marked "E" in the mid right-hand side of the Control Board (refer to the [Control Board](#) diagram).

The connector will only fit one way.

- Press until the connector snaps into place.

9. Switch DIP switch 4 to the on (up) position on the first water heater (refer to the [Control Board](#) diagram).

- If a temperature controller is not installed, then also switch DIP switch 3 to the on (up) position on the first water heater.



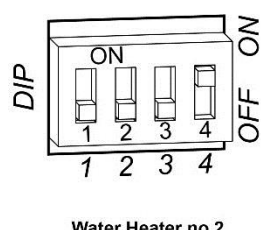
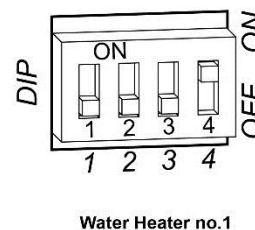
**dip switch settings
without temperature controller**

10. Connect the other end of the EZ Link cable to the second water heater.

- Draw the cable through the cable grommet on the underside of the water heater.
- Plug the cable into the connector marked "E" in the mid right-hand side of the Control Board (refer to the [Control Board](#) diagram).

The connector will only fit one way.

- Press until the connector snaps into place.



**dip switch settings
with temperature controller connected**

11. Switch DIP switch 4 to the on (up) position on the second water heater (refer to the [Control Board](#) diagram).
12. Refit the control board and secure the EZ Link cable with the clamp and screw provided to the top right of the Control Board to each water heater. This also secures the Control Board in position.
13. Refit the front panel and screws to each water heater.
14. Refit the cover strips to the top and bottom of the front panel by inserting the two posts into the two recesses and gently pushing into position.
15. Check the main gas isolation valve and the isolation valves at the gas inlet to each water heater are fully open.
16. Switch on the electrical supply at the power outlets to the water heaters.

17. Turn on the controller by pressing the on / off (⏻) button, if one is installed.

The on / off operating light and the priority light will both glow.

18. Check to ensure the flow from each connected hot tap is sufficient to operate a water heater.

- Open each hot tap independently.

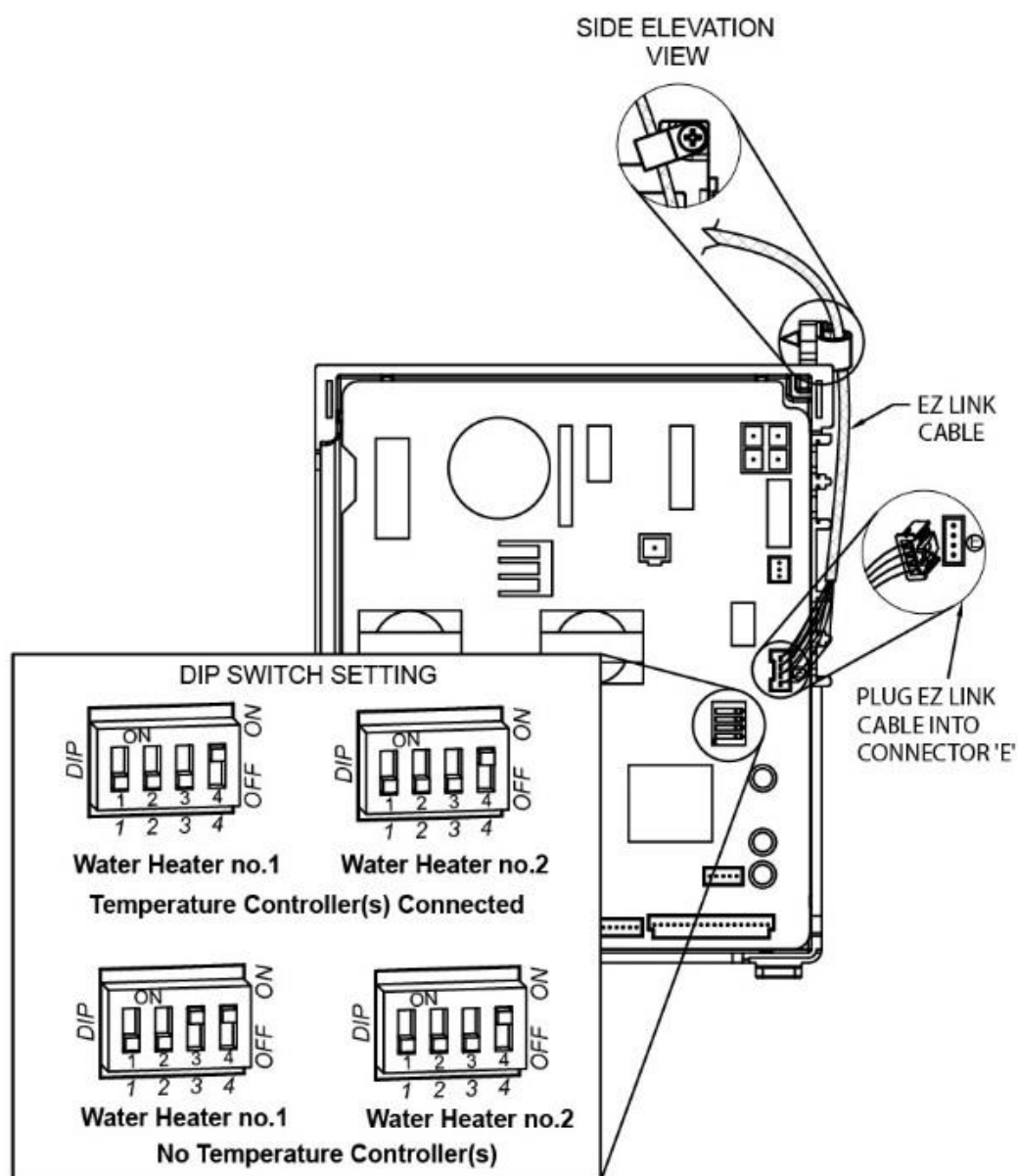
One of the water heaters will operate automatically.

The minimum operating flow rate for each water heater is 2.0 Litres per minute.

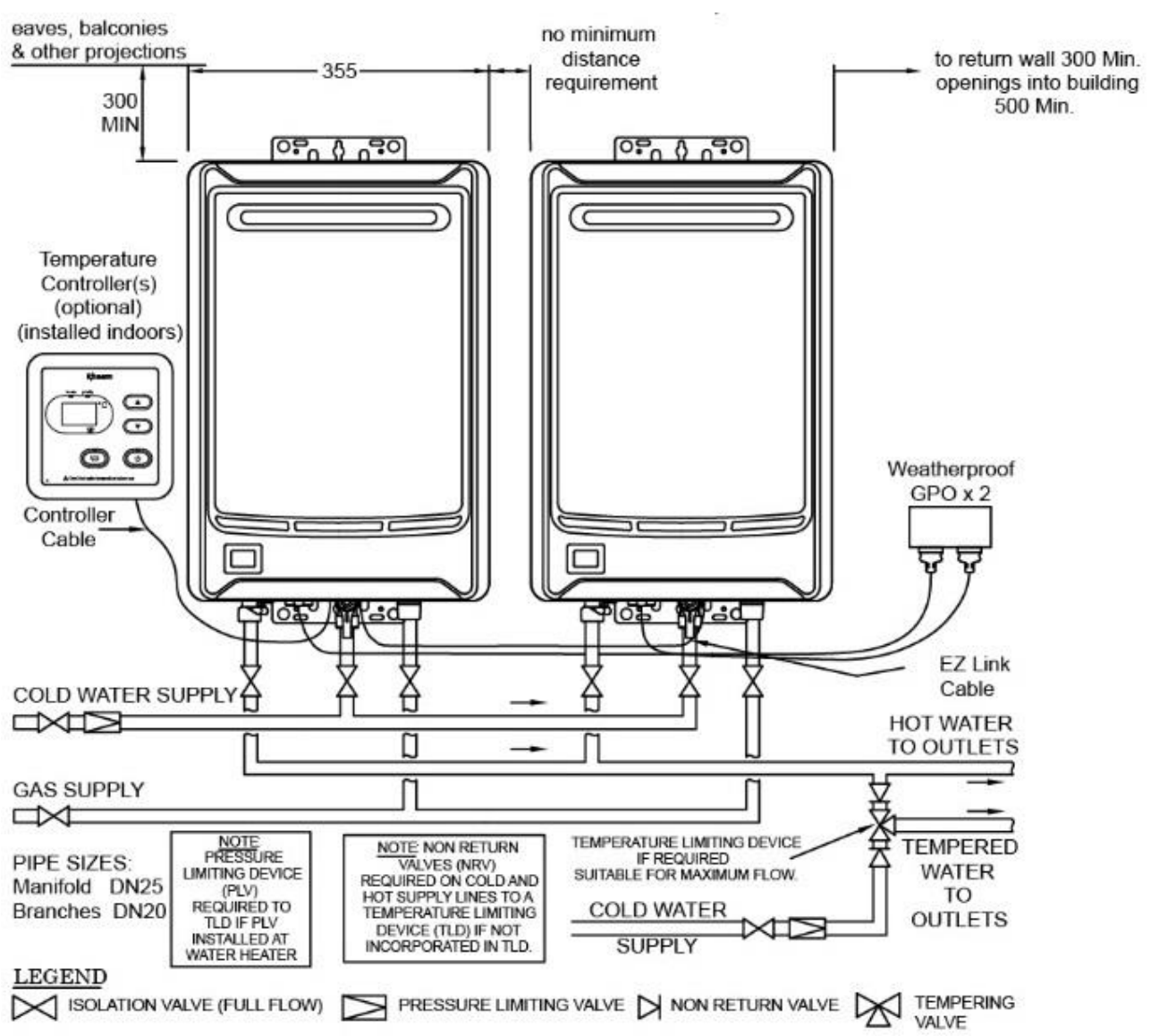
19. Increase the hot water flow by turning on multiple hot taps until both of the water heaters operate to ensure the EZ Link system is working correctly.

20. Turn off the hot taps.

Refer to [“Commissioning”](#) on page 75 for details on completing the installation.



Control Board with EZ Link Connection
874 and 876 series 812, 816, T16, 820, 826 and T26 models



Typical Two Unit Manifold with EZ Link Connection
874 and 876 series 812, 816, T16, 820, 826 and T26 models

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INSTALLATION – CONTROLLERS

CONTROLLERS

The Rheem 874 and 876 series can be installed with Rheem controllers to enable the user to control the temperature of the delivered water from the outlet of the water heater.

There are two families of Rheem controllers suitable for installation with this water heater. These are the standard controllers and the Deluxe controllers.

Standard Controllers

There are three types of standard controller. They are the Kitchen controller (Rheem AU - Part 299850, NZ - Part A299850), Bathroom 1 controller (Rheem AU - Part 299851, NZ - Part A299851) and the Bathroom 2 controller (Rheem AU - Part 299852, NZ - Part A299852). These part numbers include the controller cable supplied with the controller.

The standard controllers are suitable for use on all 874 and 876 series models.

The standard controllers are identified by a 'K' (Kitchen controller), 'B1' (Bathroom 1 controller) or 'B2' (Bathroom 2 controller) located on the front bottom left hand corner of the standard controller.

Deluxe Controllers

There are three types of Deluxe controller. They are the Kitchen Deluxe controller (Rheem AU - Part 299858, NZ - Part A299861), Bathroom 1 Deluxe controller (Rheem AU - Part 299859, NZ - Part A299862) and the Bathroom 2 Deluxe controller (Rheem AU - Part 299860, NZ - Part A299863). These part numbers include the controller cable supplied with the controller.

The Deluxe controllers are suitable for use on all 874 and 876 series models.

The Deluxe controllers are identified by a 'K' (Kitchen Deluxe controller), 'B1' (Bathroom 1 Deluxe controller) or 'B2' (Bathroom 2 Deluxe controller), located under the front panel, to the bottom left hand corner adjacent to the BATH FILL VOLUME label.

The standard and Deluxe controllers are designed to be hard wired into the water heater using either the Kitchen controller cable or the Bathroom controller cable.

Notes:

- Where more than one controller is installed, the second or third controller must be of the same family.
- A standard controller can only be installed with another standard controller(s) and a Deluxe controller can only be installed with another Deluxe controller(s). A standard controller(s) and a Deluxe controller(s) cannot be connected to the same water heater.
- One, two or three controllers can be installed. Only one of each type of controller can be connected to the water heater. Therefore, a maximum of three controllers only can be connected to each water heater.
- A Bathroom 2 controller can only be installed if a Bathroom 1 controller is installed and a Bathroom 2 Deluxe controller can only be installed if a Bathroom 1 Deluxe controller is installed.
- An additional Kitchen controller cable or Bathroom controller cable can be used if an extension of the cable length is required.

It will be necessary to cut an opposite end off both cables to be installed in order to wire them together. Alternatively, the cables may be extended using two-core flex with a minimum cross-sectional area of 0.5 mm².

- Other manufacturers' controllers are not suitable to and cannot be installed with this water heater.

⚠ Warning: Temperature controllers **must not** be fitted to this water heater (874 series) if it is installed as an in-series gas booster with a solar water heater system because water at a temperature much higher than the controller setting can be delivered. If a solar water heater is installed to an existing water heater installation, then all controllers **must be** disconnected and removed.

Location – The controllers must be installed in dry, shaded and clean locations.

Do not install the controllers:

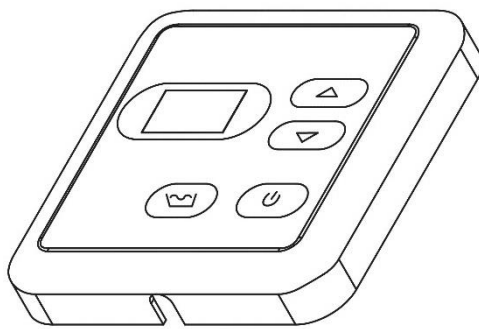
- Near a heat source, such as a cook top, stove or oven. Heat, steam and smoke will interfere with the electronic components of the controllers.
- In direct sunlight.
- In or near a wet area. The controllers are not waterproof. Water may damage the controllers.
- Outdoors. The controllers are not weatherproof.

KITCHEN CONTROLLER

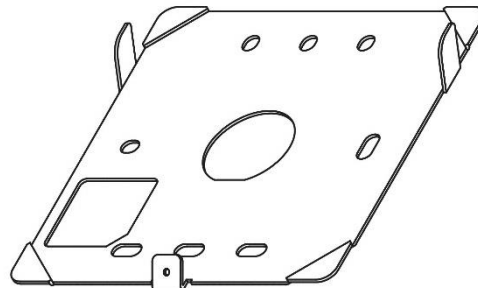
The standard Kitchen controller (Rheem AU - Part 299853, NZ - Part A299850) or Kitchen Deluxe controller (Rheem AU - Part 299861, NZ - Part A299861) is to be installed in the kitchen or laundry only. It has a minimum temperature setting of 37°C and a maximum temperature setting of:

- 874 series 60°C – AU 55°C – NZ
- 876 series 50°C

Choose a suitable location for the Kitchen controller, away from water, heat and sunlight.



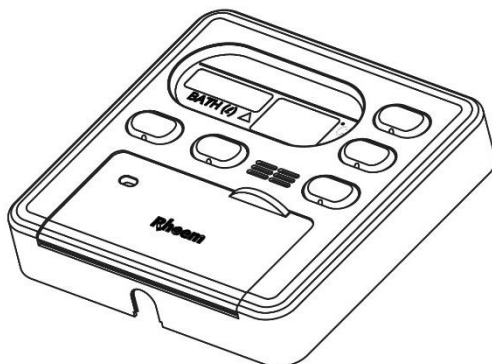
Kitchen controller (standard)



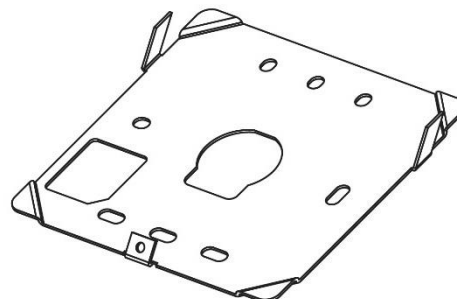
base plate

screw x 2    controller screw

Kitchen Controller (Standard) Components



Kitchen Deluxe controller



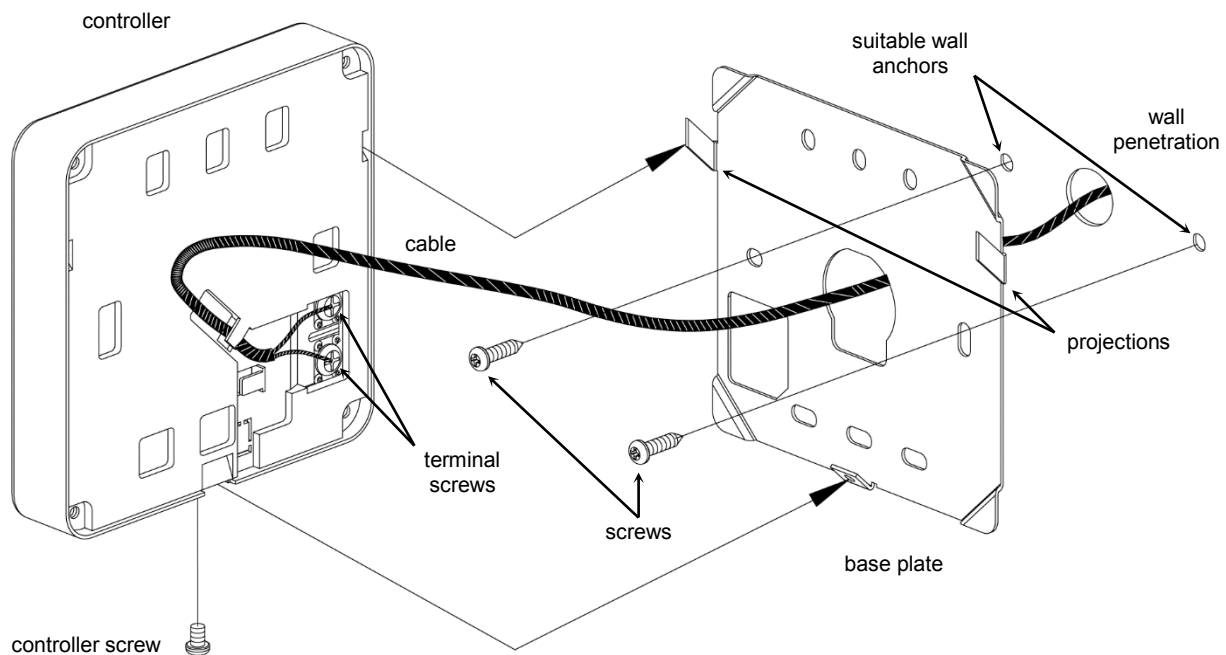
base plate

screw x 2    controller screw

Kitchen Deluxe Controller Components

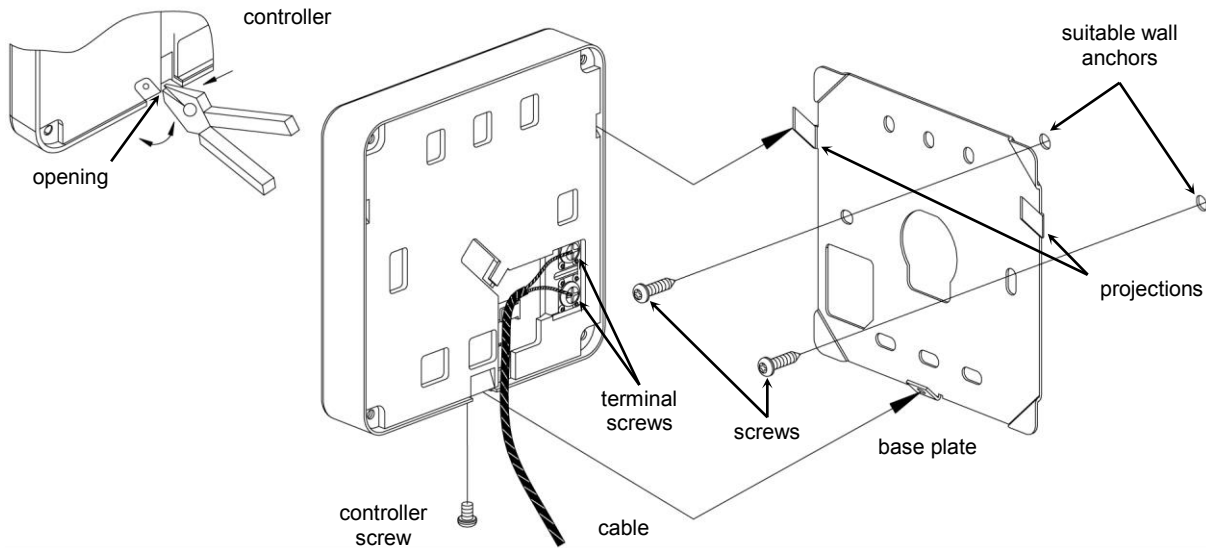
Wiring installation:

1. Penetrate the wall with a 30-35 mm hole at the controller location.
2. Install the Kitchen controller cable between the location of the controller and the water heater.
3. Remove the base plate from the controller.
4. Draw the cable through the central hole in the base plate.
5. Fix the base plate to the wall using suitable screws and wall anchors.
Ensure the projections in the base plate are pointing upwards.
6. Connect the cable to the two terminals on the back of the controller (connections are not polarity sensitive).
Ensure the connecting screws are seated tightly.
7. Place the controller over the base plate.
Ensure the projections in the base plate fit into the housings in the controller.
8. Fix the controller to the base plate at the bottom of the controller, using the controller screw provided.
9. Proceed to [“Connecting the Controller\(s\) to the Water Heater”](#) on page 74.



**Kitchen Controller (Standard and Deluxe) Installation
Concealed Cable**

If it is necessary to have an exposed wiring installation, follow this procedure omitting Steps 1 and 4, and make an opening in the thin section in the underside of the controller to accommodate the cable (as shown in the diagram), prior to Step 6.



**Kitchen Controller (Standard and Deluxe) Installation
Exposed Cable**

BATHROOM 1 AND BATHROOM 2 CONTROLLERS

If only one Bathroom controller is to be installed, the standard Bathroom 1 Controller (Rheem AU - Part 299854, NZ - Part A299851) or the Bathroom 1 Deluxe controller (Rheem AU - Part 299862, NZ - Part A299862) must be used. If two Bathroom controllers are to be installed, one must be a standard Bathroom 1 controller and the other must be a standard Bathroom 2 controller (Rheem AU - Part 299855, NZ - Part A299852) or one must be a Bathroom 1 Deluxe controller and the other must be a Bathroom 2 Deluxe controller (Rheem AU - Part 299863, NZ - Part A299863).

They have a minimum temperature setting of 37°C and a maximum temperature setting of:

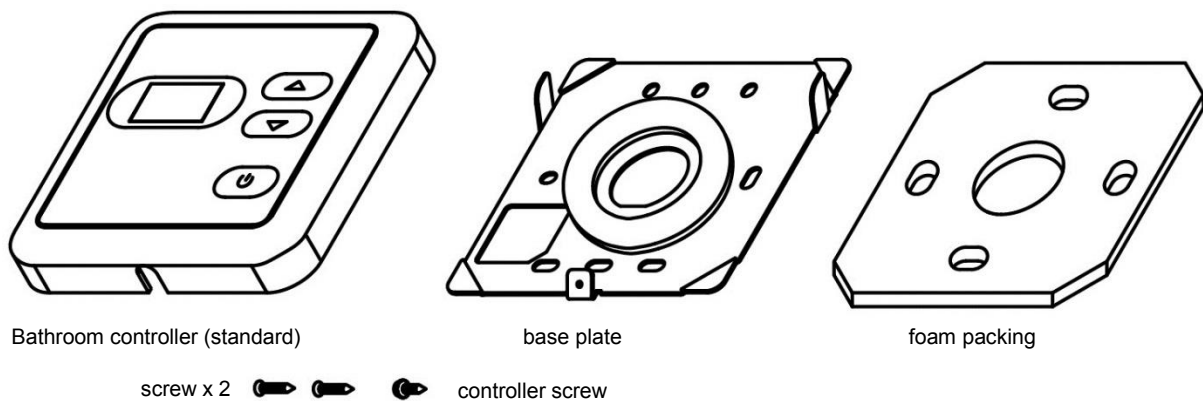
- 874 series 50°C
- 876 series 50°C

The method of installation for the standard Bathroom 1 and Bathroom 2 controllers and the Bathroom 1 Deluxe and Bathroom 2 Deluxe controllers is identical.

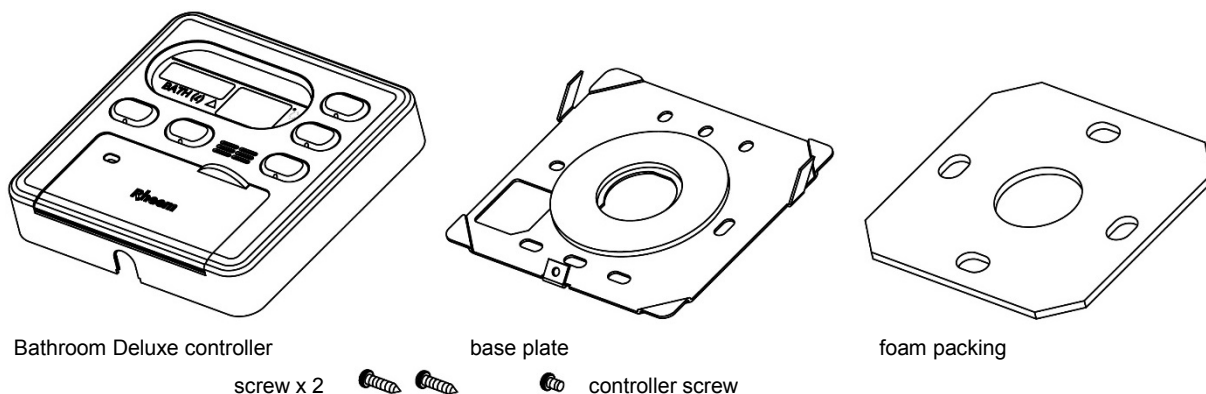
Choose a suitable location for each Bathroom controller, away from water, heat, and sunlight. The Bathroom controllers are supplied with a 250 mm length of wire with connectors to mate with the Bathroom controller cable.

Notes:

- It is not recommended to have exposed wiring in a bathroom.
- Do not apply sealant to the controller cable.



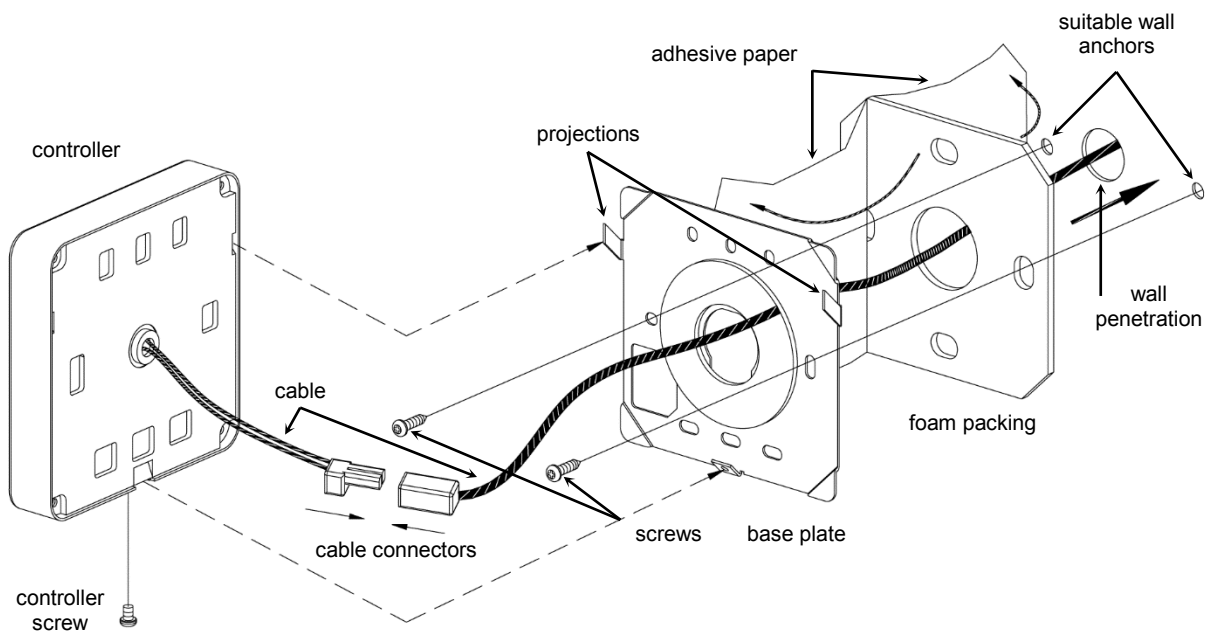
Bathroom 1 and Bathroom 2 Controller Components



Bathroom 1 Deluxe and Bathroom 2 Deluxe Controller Components

Wiring installation:

1. Penetrate the wall with a 30-35 mm hole at the controller location.
2. Install the supplied cable between the location of the controller and the water heater.
3. Remove the base plate from the controller.
4. Peel off one side of the adhesive paper from the foam packing and adhere to the back face of the base plate. This is the side without the projections.
5. Peel off the remaining adhesive paper from the foam packing.
6. Draw the cable through the central hole in the base plate.
7. Fix the base plate to the wall using suitable screws and wall anchors.
Ensure the projections in the base plate are pointing upwards.
8. Plug the controller wire into the Bathroom controller cable.
9. Place the controller over the base plate.
Ensure the projections in the base plate fit into the housings in the controller.
10. Fix the controller to the base plate at the bottom of the controller, using the screw provided.
11. Proceed to [“Connecting the Controller\(s\) to the Water Heater”](#) on page 74.



Bathroom Controller (Standard and Deluxe) Installation

CONNECTING THE CONTROLLER(S) TO THE WATER HEATER

To connect the controller(s) to the water heater:

1. Ensure the electrical supply to the water heater is switched off.
2. Unscrew and gently flip down the electrical cover on the underside of the water heater.
3. Draw the cable(s) through the electrical cover.

4. Connect a cable lug from each cable to each of the remote controller terminals. Each cable has two cable lugs.

Ensure the terminal screws are seated firmly and there are no excess wire loops inside of the electrical cover.

- The cable connections are non-polarised.
- Three cable lugs, one from each controller, can be connected to each remote controller terminal.

5. Place the cable(s) in the cable holder notches.

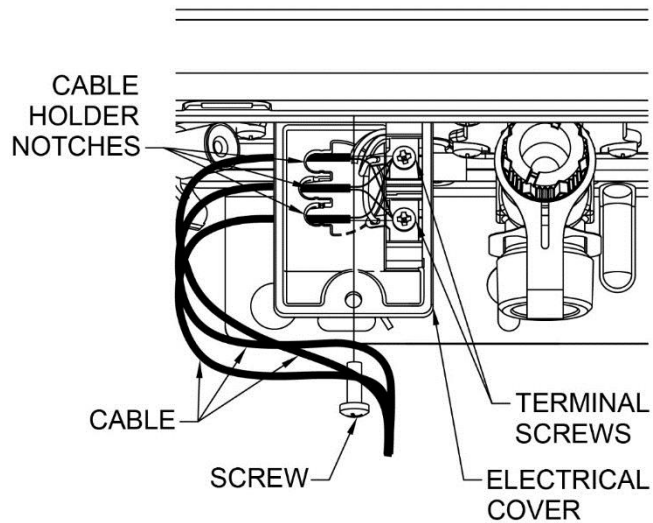
It is important to seat the cables into the cable notches. Failure to do this may cause an unstable contact or even disconnection of the cables from the terminals if the cables were to be pulled.

6. Refit the electrical cover to the water heater and replace the screws.
7. Switch on the electrical supply to the water heater.

Upon completion of the installation of the controllers, it is necessary to test their operation through the complete range of functions (refer to [“Temperature Control”](#) on pages 11 to 40).

Upon completion and testing of the installation, explain to the householder the functions and operation of the controllers and the water heater.

If it is necessary to turn off the water heater on completion of the installation, such as on a building site or where the premises is vacant, follow the procedure [“To Turn Off the Water Heater”](#) on page 84.



COMMISSIONING

All water heaters are tested and adjusted before dispatch from the factory, however further adjustments may become necessary because of local conditions.

TO TURN ON THE WATER HEATER

- Open all of the hot taps in the house (don't forget the shower).
- Open the cold water isolation valve fully at the inlet to the water heater.
Air will be forced out of the taps.
- Close each tap as water flows freely from it.
- Check the pipe work for leaks.
- Open the gas isolation valve fully.
- Check the gas pipe work for leaks.
- Plug in the water heater at the power outlet and switch on the electrical supply.
- Turn on a controller, if one is fitted, by pressing the on / off (⏻) button.
The on / off operating light and the priority light will both glow.
- Open a hot tap.
The water heater will operate automatically.
- Check to ensure the flow from each connected hot tap is sufficient to operate the water heater.
The minimum operating flow rate for all models is 2.0 litres per minute.
- Check and if required adjust the preset outlet temperature setting of the water heater.
Refer to "[Preset Outlet Temperature Setting](#)" on page 79.
- Check and if required adjust the outlet compensation temperature adjustment on an AU – 876 series or NZ – 874 series water heater.
Refer to "[Outlet Compensation Temperature Adjustment](#)" on page 81.

The automatic water governor incorporated in the water heater is not adjustable.

To complete the installation, it is necessary to check the gas supply pressure at the inlet to the water heater (refer to "[Gas Inlet Pressure](#)" on page 75), the minimum test point pressure and the maximum test point pressure (refer to "[Burner Gas Pressure](#)" on page 77).

Upon completion and testing of the installation, ensure the controller(s) is turned off (if fitted). Explain to the householder or a responsible officer the functions and operation of the water heater and the controllers (if fitted).

⚠ Warning: Upon completion of the installation and commissioning of the water heater, leave this guide with the householder or a responsible officer. **DO NOT** leave this guide inside of the cover of the water heater, as it may interfere with the safe operation of the water heater or ignite when the water heater is turned on.

GAS INLET PRESSURE

IMPORTANT - CHECK the gas supply pressure at the inlet to the water heater with the water heater and all other gas burning appliances in the premises operating (burners alight). The minimum gas supply pressure is:

Natural Gas	1.13 kPa	Propane, LP Gas	2.75 kPa
-------------	----------	-----------------	----------

If this minimum cannot be achieved, it may indicate the meter or the gas line to the water heater is undersized. It is important to ensure that an adequate gas supply pressure is available to the water heater when other gas burning appliances, on the same gas supply, are operating.

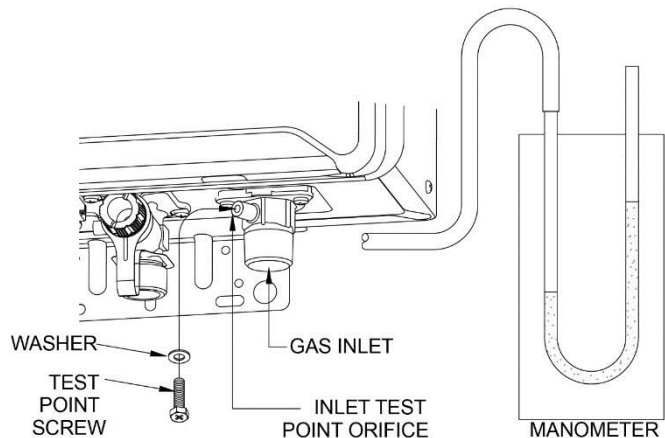
Gas Inlet Test Point Pressure

To check the gas inlet pressure:

1. Close any hot taps and ensure the burners are not operating.
2. Close the gas isolation valve at the gas inlet to the water heater.
3. Locate the gas inlet test point on the gas connection to the water heater.

- Remove the test point screw and washer from the test point orifice.
- Connect the manometer.

4. Open the gas isolation valve fully at the gas inlet to the water heater.
5. Observe the gas pressure reading on the manometer.



If the manometer reading is between the minimum and maximum inlet gas pressure ratings on the rating label, no adjustment is required.

If the manometer reading is below the minimum inlet gas pressure rating on the rating label, then either the gas pipe to the water heater is undersized and needs to be rectified or adjustment is required at the gas regulator.

If the manometer reading is above the maximum inlet gas pressure ratings on the rating label, then adjustment is required at the gas regulator.

6. Switch on the electrical supply at the power outlet to the water heater if it is not already switched on and turn on a controller, if one is fitted, by pressing the on / off (⏻) button.
7. Open a hot tap fully and ensure the burners are fully ignited.
- It may be necessary to open a second tap.
8. Turn on all other gas burning appliances in the house which are on the same gas supply.
9. Observe the gas pressure reading on the manometer.

If the manometer reading is between the minimum and maximum inlet gas pressure ratings on the rating label, no adjustment is required.

If the manometer reading is below the minimum inlet gas pressure rating on the rating label, then either the gas pipe to the water heater is undersized and needs to be rectified or adjustment is required at the gas regulator.

If the manometer reading is above the maximum inlet gas pressure ratings on the rating label, then adjustment is required at the gas regulator.

10. Turn off the other gas burning appliances in the house.
11. If an adjustment was made during Step 9, repeat this procedure from Step 5.
12. Close the hot tap(s).
13. Close the gas isolation valve at the inlet to the water heater.
14. Remove the manometer and refit and tighten the test point screw and washer.
15. Open the gas isolation valve fully at the gas inlet to the water heater.
16. Open a hot tap again so the burners ignite.
17. Test for gas leaks.
18. Close the hot tap.

BURNER GAS PRESSURE

It is necessary to check the burner gas pressure at both the minimum and maximum operational settings. To check and if necessary adjust the operational gas pressures, the electrical supply to the water heater must be switched on, the burners ignited and hot water must be flowing from a hot tap.

⚠ Warning: The removal of the front panel will expose 240 volt wiring. Take care not to touch wiring terminals.

Note: If an 874 series model is installed as an in-series gas booster for a solar water heater, then during this procedure the temperature of the water entering the in-series gas booster must be below 58°C. Otherwise the gas burners will not ignite and the operational gas pressures cannot be measured.

Minimum test point gas pressure

Refer to the rating label on the water heater for the minimum test point gas pressure.

1. Close any hot taps and ensure the burners are not operating.
2. Turn off the controller(s), if one is fitted, by pressing the on / off (⏻) button and switch off the electrical supply at the power outlet to the water heater.
3. Remove the top and bottom cover strips to gain access to the front panel screws by pressing on the two ridged finger points and gently pulling forward.
4. Remove the screws holding the front panel to the jacket.
5. Gently disengage the front panel and pull forward to remove from the water heater.
6. Locate the burner pressure test point on the main burner manifold
 - Remove the test point screw and washer from the test point orifice.
 - Connect the manometer.
7. Switch on the electrical supply at the power outlet to the water heater and turn on a controller, if one is fitted, by pressing the on / off (⏻) button.
The priority light and the on / off operating light will both glow.
8. Open the gas isolation valve fully at the gas inlet to the water heater, if not already open.
9. Open a hot tap slowly until the burners ignite.
10. Press and hold down the MIN button and observe the reading on the manometer.

- "1L" is shown on the LED display.

11. Release the MIN button.

If the manometer reading observed in step 10 agrees with the rating label, no further adjustment is required.

12. To adjust, press and hold down the adjuster button.

- "LH" is shown on the controller display.

Note: The adjuster button must be held down continuously through steps 12 to 14.

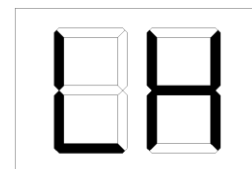
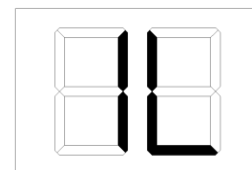
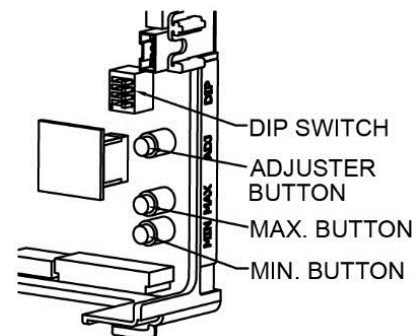
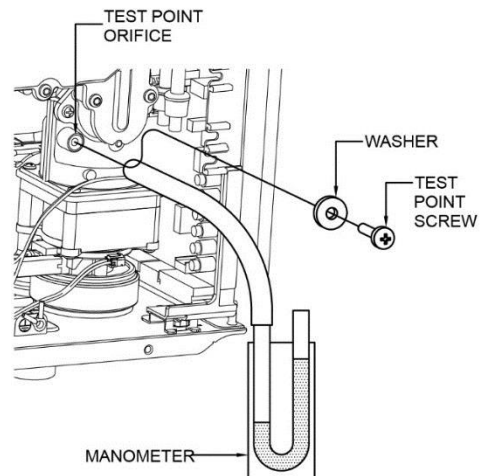
13. Press and hold down the MIN button and observe the reading on the manometer.

- The manometer reading will change as the test point gas pressure adjusts.

Note: While the MIN button is pressed, the gas pressure will at first increase then decrease, cycling between an upper gas pressure limit (59 on the LED display) and a lower gas pressure limit (01 on the LED display).

14. Release the MIN button when the reading on the manometer agrees with the rating label.

15. Release the adjuster button.



Notes:

- If the burners extinguish and an error code 11 or 12 starts to flash on the LED display:
 - release the MIN and adjuster buttons
 - close the hot tap
 - clear the error code (refer to [“Clearing Error Code”](#) on page 78)
 - recommence the procedure from Step 9.
- If the adjuster button is released before Step 14, clear any error code (if displayed) and recommence the procedure from Step 9.

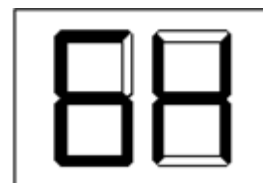
Maximum test point gas pressure

Refer to the rating label on the water heater for the maximum test point gas pressure.

Follow Steps 9 to 15 of the [“Minimum test point gas pressure”](#) procedure on page 77, but open the hot tap fully and use the MAX button instead of the MIN button. It may be necessary to open two or three hot taps fully, depending upon the model of water heater and the incoming cold water temperature.

Notes:

- In Step 10, “6H” will be shown on the LED display.
- In Step 13 While the MAX button is pressed, the gas pressure will at first increase then decrease, cycling between an upper gas pressure limit (39 on the LED display) and a lower gas pressure limit (01 on the LED display).



After setting the minimum and maximum test point gas pressures:

- Close the hot tap.
- Remove the manometer and refit and tighten the test point screw and washer.
- Open a hot tap again so the burners ignite.
- Test for gas leaks.
- Close the hot tap.
- Turn off the controller by pressing the on / off (⏻) button.
- Switch off the electrical supply at the power outlet to the water heater
- Refit the front panel and screws to the water heater.
- Refit the cover strips to the top and bottom of the front panel by inserting the two posts into the two recesses and gently pushing into position.

Clearing Error Code

If an error code does appear on the LED display during the commissioning process, it will be necessary to clear the error in order to complete the installation.

To clear an error code:

- Turn off the controller, if one is fitted, by pressing the on / off (⏻) button.
- Switch off the electrical supply at the power outlet to the water heater.
- Check the gas isolation valve at the gas inlet to the water heater is fully open.
- Wait five (5) minutes.
- Switch on the electrical supply at the power outlet to the water heater.
- Turn on the controller by pressing the on / off (⏻) button.

PRESET OUTLET TEMPERATURE SETTING

The factory preset outlet temperature setting of the water heater is:

- 874 series 60°C – AU, 55°C – NZ
- 876 series 50°C

If a temperature controller is connected to the water heater, this will override the preset outlet temperature setting and the maximum temperature setting will be:

Maximum Outlet Temperature	874 series	876 series
Kitchen controller connected	60°C – AU, 55°C – NZ	50°C
Bathroom controller only connected	50°C	50°C

It is usually not necessary to adjust the factory preset outlet temperature setting of the water heater, unless the customer has a particular requirement for this to be done or it is to be installed as an in-series gas booster to a solar water heater.

Refer to [“To Check or Adjust the Preset Outlet Temperature Setting”](#) on page 79 to check or if required to adjust the preset outlet temperature setting of the water heater.

Gas Booster for a Solar Water Heater

Note: Australian Standard AS 3498 and New Zealand Building Code Clause G12 requires that a water heater provides the means to inhibit the growth of Legionella bacteria in potable water. When this water heater is used as an in-series booster for a solar water heater it can satisfy these AS 3498 and Clause G12 requirements provided it is energised, the booster preset outlet temperature setting is 70°C, and that a remote temperature controller is not used.

It will be necessary to check and if required to adjust the preset outlet temperature setting of the continuous flow water heater when:

- it is installed as an in-series gas booster to a solar water heater
- it is an existing continuous flow water heater and a solar water heater is then installed.

Notes:

- Consideration must be given to the delivery temperature to any ablution and public areas such as a bathroom, ensuite or public amenities. Refer to [“Hot Water Delivery”](#) on page 49 and to [“Schematics of Two Temperature Zones Using A Temperature Limiting Device”](#) on page 50.
- The 876 series water heater, marked “THIS APPLIANCE DELIVERS WATER NOT EXCEEDING 50°C IN ACCORDANCE WITH AS 3498” on the front panel, **must not** be installed as an in-series gas booster to a solar water heater, as water temperature greater than 50°C can be delivered from the water heater contravening its compliance to AS 3498.

TO CHECK OR ADJUST THE PRESET OUTLET TEMPERATURE SETTING

The temperature setting will be displayed on the LED display. The preset outlet temperature settings are:

- 874 series 38°C, 40°C, 42°C, 43°C, 45°C*, 48°C, 50°C, 55°C, 60°C**, 65°C, 70°C, 75°C
 * NZ – 45°C is a preset outlet temperature setting for New Zealand models only.
 ** AUS – 60°C is a preset outlet temperature setting for Australian models only.
- 876 series 38°C, 40°C, 42°C, 43°C, 45°C, 48°C, 50°C

It is necessary to have the electrical supply to the water heater switched on during stages of checking or adjusting the preset outlet temperature setting procedure.

⚠ Warning: The removal of the front panel will expose 240 volt wiring. Take care not to touch wiring terminals. The adjustment must be carried out by a qualified person.

⚠ Warning: This procedure will involve the adjustment of dip switches. Adjustment of a dip switch should only be made with an insulated tool.

To check or adjust the preset outlet temperature setting:

1. Switch off the electrical supply at the power outlet to the water heater.
2. Remove the top and bottom cover strips to gain access to the front panel screws by pressing on the two ridged finger points and gently pulling forward.
3. Remove the screws holding the front panel to the jacket.
4. Gently disengage the front panel and pull forward to remove from the water heater.
5. Close the cold water isolation valve at the inlet to the water heater.
6. Switch on the electrical supply at the power outlet to the water heater.

Note: Wait five (5) seconds for the electronic system to initialise.

7. Switch DIP switches 3 and 4 to the on (up) position on the PCB.

The current preset outlet temperature setting will show on the LED display.

If the temperature displayed on the LED display is the desired preset outlet temperature setting, then proceed to step 9, as no further adjustment is necessary.

8. Press the MAX button to increase or the MIN button to decrease the preset outlet temperature setting.

Each press of the MAX or MIN button will increase or decrease the preset temperature by one increment.

The MAX and MIN buttons are located below the DIP switches and adjuster button.

874 series

The increments are 38°C, 40°C, 42°C, 43°C, 45°C*, 48°C, 50°C, 55°C, 60°C**, 65°C, 70°C, 75°C.

* 45°C – NZ models only ** 60 °C – AU models only

876 series

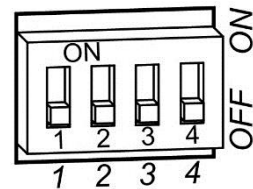
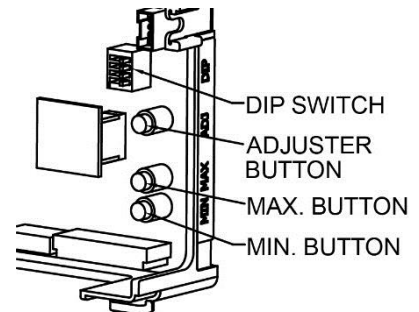
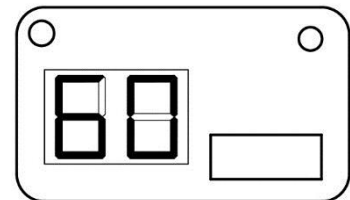
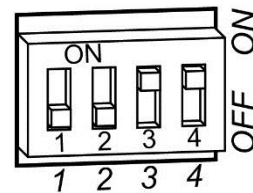
The increments are 38°C, 40°C, 42°C, 43°C, 45°C, 48°C, 50°C.

9. Switch DIP switches 3 and 4 to the off (down) position.

The LED display will go blank.

Note: Wait five (5) seconds for the setting to be saved. The preset outlet temperature setting is now set.

10. Switch off the electrical supply at the power outlet to the water heater.
11. Refit the front panel and screws to the water heater.
12. Refit the cover strips to the top and bottom of the front panel by inserting the two posts into the two recesses and gently pushing into position.
13. Open the cold water isolation valve fully at the inlet to the water heater.
14. Switch on the electrical supply at the power outlet to the water heater.



OUTLET TEMPERATURE COMPENSATION ADJUSTMENT

The outlet temperature compensation adjustment function is only applicable to:

- AU – Australian 876 series 812, T16, 820, 826 and T26 model water heaters

The maximum outlet temperature may be adjusted to compensate for temperature losses in the pipe work between the water heater outlet and sanitary fixtures. The 876 series is available in Australia only.

- NZ – New Zealand 874 series 816, 820 and 826 model water heaters

The maximum outlet temperature may be adjusted to compensate for any minor over-heating of the water by the water heater. This is to ensure the water temperature does not exceed 55°C at sanitary fixtures.

This procedure cannot be conducted on an Australian 874 series water heaters.

Warnings

- After adjustment, the water temperature from the first tap in the hot water pipe work used for personal hygiene purposes after the water heater, such as in a bathroom or ensuite, **MUST NOT** exceed:
 - The temperature displayed on a temperature controller connected to the water heater, or
 - AU – 50°C if a temperature controller is not connected to an 876 series water heater, or
 - NZ – 55°C if a temperature controller is not connected to an 874 series water heater.
- If there is a tap, such as a kitchen or laundry tap, in the hot water pipe work between the water heater and the first tap used for personal hygiene purposes, then it is possible for:
 - AU – a water temperature to be delivered from that tap of up to 3°C higher than the setting shown on the controller.
 - NZ – a water temperature to be delivered from that tap of up to 2°C lower than the setting shown on the controller.

It is necessary to have the electrical supply to the water heater switched on during stages of the outlet temperature compensation adjustment procedure.

Warnings

- The removal of the front panel will expose 240 volt wiring. Take care not to touch wiring terminals. The adjustment must be carried out by a qualified person.
- This procedure will involve the adjustment of dip switches. Adjustment of a dip switch should only be made with an insulated tool.

Before Commencing the Procedure

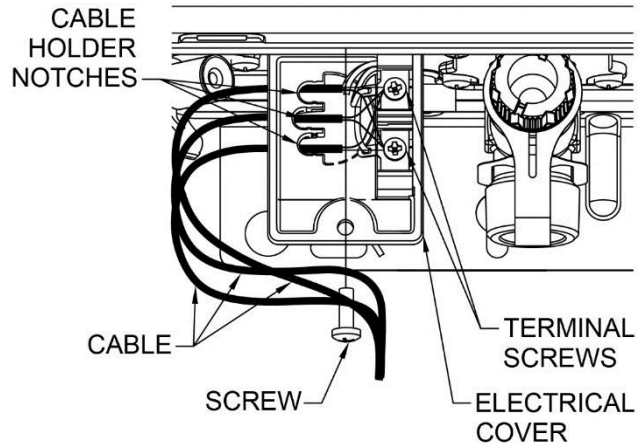
This procedure cannot be conducted:

- With a temperature controller connected to the water heater.
 - A temperature controller(s) connected to the water heater must be disconnected prior to the commencement of this procedure. Refer to [“Disconnecting a Temperature Controller\(s\)”](#) on page 82.
- With an EZ Link system set up on the water heaters.
 - The DIP switches need to be reset to the off (down) position on both water heaters prior to the commencement of this procedure.
 - The EZ Link cable does not need to be disconnected.
 - The Outlet Temperature Compensation Adjustment procedure has to be performed individually on both water heaters.
 - Whilst the procedure is being conducted on one water heater, the other water heater has to be isolated by turning off the cold water isolation valve to the water heater.

Disconnecting a Temperature Controller(s)

To disconnect the temperature controller(s):

1. Switch off the electrical supply at the power outlet to the water heater.
2. Unscrew and gently flip down the electrical cover on the underside of the water heater.
3. Loosen the terminal screws to release the cable lugs.
4. Withdraw the cable lugs, ensuring they are well clear of the terminals.



Note: Prior to the commencement of this procedure, the preset outlet temperature setting of the water heater must be set to:

- AU – 50°C for an Australian model 876 series water heater, or
- NZ – 55°C for a New Zealand model 874 series water heater.

This procedure cannot be performed if the preset outlet temperature is set below 50°C (AU – 876 series model) or above or below 55°C (NZ – 874 series model). Refer to [“To Check or Adjust the Preset Outlet Temperature Setting”](#) on page 79.

Outlet Temperature Adjustment

To adjust the outlet temperature:

1. Switch on the electrical supply at the power outlet to the water heater.
2. Locate the first hot tap in the hot water pipe work after the water heater used for personal hygiene purposes.
3. Turn on the hot tap.
4. Using a thermometer, measure the temperature of the water from the tap, until the temperature stops increasing.

If the water temperature is:

- AU – below 50°C for an 876 series model, the maximum outlet temperature of the water heater can be adjusted upwards, or
- NZ – above 55 °C for an 874 series model, the maximum outlet temperature of the water heater can be adjusted downwards.

5. Turn off the hot tap.
6. Switch off the electrical supply at the power outlet to the water heater.
7. Remove the top and bottom cover strips to gain access to the front panel screws by pressing on the two ridged finger points and gently pulling forward.
8. Remove the screws holding the front panel to the jacket.
9. Gently disengage the front panel and pull forward to remove from the water heater.
10. Switch on the electrical supply at the power outlet to the water heater.

Note: Wait five (5) seconds for the electronic system to initialise.

11. Switch DIP switch 3 to the on (up) position on the PCB.

The current outlet temperature setting will show on the LED display.

12. AU – 876 series: Press the MAX button once to increase the outlet temperature setting to the next increment.

The MAX button is located below the DIP switches and adjuster button, and above the MIN button.

Each press of the MAX button will increase the outlet temperature setting by one increment.

The outlet temperature setting will show on the LED display.

The outlet temperature setting increments above 48°C are:

- 50°C, 51°C, 52°C, 53°C, 54°C*.

(* 54°C applies to 876 series 812, T16, 820 models only)

13. NZ – 874 series: Press the MIN button once to decrease the outlet temperature setting to the next increment.

The MIN button is located below the DIP switches, adjuster button and the MAX button.

Each press of the MIN button will decrease the outlet temperature setting by one increment.

The outlet temperature setting will show on the LED display.

The outlet temperature setting increments below 55°C are:

- 54°C, 53°C.

14. Switch DIP switch 3 to the off (down) position on the PCB.

The LED display will go blank.

Note: Wait five (5) seconds for the setting to be saved.

15. Check the water temperature at the hot tap by repeating steps 2 to 5.

16. AU – 876 series:

- if the water temperature is still below 50°C and requires to be increased, repeat steps 11, 12 and 14, followed by steps 2 to 5 until an acceptable water temperature not exceeding 50°C is measured at the same hot tap.

- if the water temperature exceeds 50°C then;

- switch DIP switch 3 to the on (up) position on the PCB.

The outlet temperature setting will show on the LED display.

- press the MIN button once to decrease the outlet temperature setting to the next increment.

Each press of the MIN button will decrease the outlet temperature by one increment.

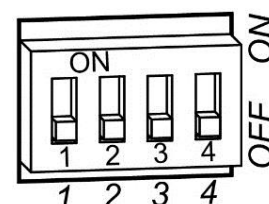
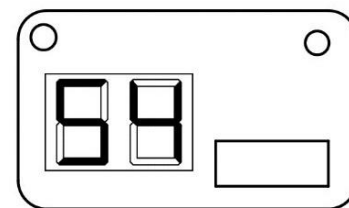
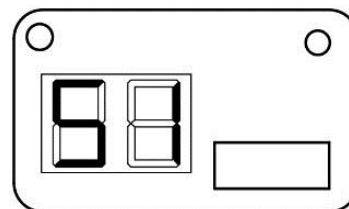
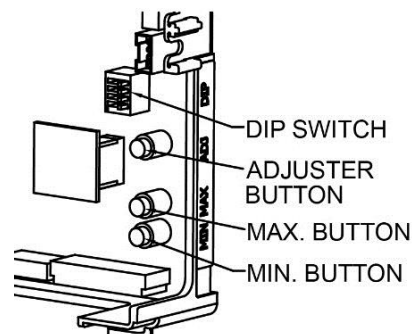
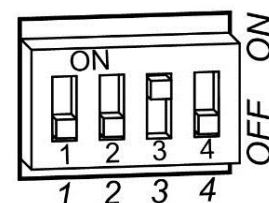
The MIN button is located below the DIP switches, adjuster button and MAX button.

- switch DIP switch 3 to the off (down) position on the PCB.

The LED display will go blank.

Note: Wait five (5) seconds for the setting to be saved.

- repeat steps 2 to 5 to confirm the water temperature does not exceed 50°C.



17. NZ – 874 series:

- if the water temperature is still above 55°C and requires to be decreased, repeat steps 11, 13 and 14, followed by steps 2 to 5 until an acceptable water temperature not exceeding 55°C is measured at the same hot tap.
- if the water temperature is below 55°C then;
 - switch DIP switch 3 to the on (up) position on the PCB.
The outlet temperature setting will show on the LED display.
 - press the MAX button once to increase the outlet temperature setting to the next increment.
Each press of the MAX button will increase the preset temperature by one increment.
The MAX button is located below the DIP switches and adjuster button.
 - switch DIP switch 3 to the off (down) position on the PCB.
The LED display will go blank.
Note: Wait five (5) seconds for the setting to be saved.
 - repeat steps 2 to 5 to confirm the water temperature does not exceed 55°C.

18. Switch off the electrical supply at the power outlet to the water heater.

19. Reconnect the controller cables (if a temperature controller is fitted), by following step 4 of the procedure [“Connecting the Controller\(s\) to the Water Heater”](#) on page 74.

20. Reset the DIP switches if the water heater is part of an EZ Link system installation, by following steps 9 and 11 of the procedure [“EZ Link Cable Connection”](#) on page 65.

21. Refit the front panel and screws to the water heater.

22. Refit the cover strips to the top and bottom of the front panel by inserting the two posts into the two recesses and gently pushing into position.

23. Switch on the electrical supply at the power outlet to the water heater.

TO TURN OFF THE WATER HEATER

If it is necessary to turn off the water heater on completion of the installation, such as on a building site or where the premises is vacant, then:

- Turn off the controllers(s) (if fitted) by pressing the on / off (⏻) button.
The on / off operating light will go out and the priority light, if it is on, will go out.
- Switch off the electrical supply at the power outlet to the water heater (refer to note below).
- Close the gas isolation valve at the inlet to the water heater.
- Close the cold water isolation valve at the inlet to the water heater.
- Drain the water heater if there is a risk of freezing conditions occurring (refer to [“Draining The Water Heater”](#) on page 85).

Notes:

- The frost protection system will be rendered inoperable if electrical power is not available at the water heater.
- Damage caused by freezing due to the unavailability of power at the water heater is not covered by the Rheem warranty (refer to [“Terms of the Rheem Warranty”](#) on page 86).
- If the power has been switched off to the water heater and there is a risk of freezing, then it is necessary to drain the water heater (refer to [“Draining the Water Heater”](#) on page 85).

DRAINING THE WATER HEATER

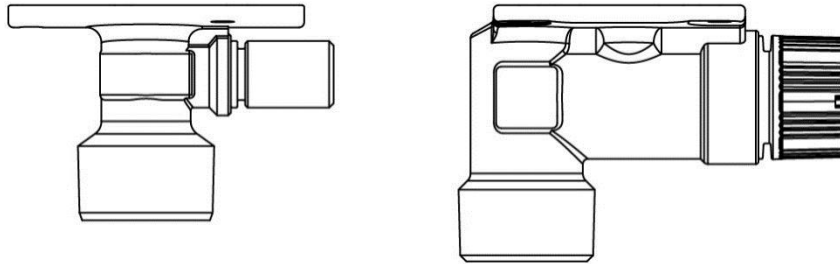
To drain the water heater:

- Turn off the water heater (refer to “[Turn Off The Water Heater](#)” on page 84).
- Open a hot tap (preferably the shower outlet).
- Unscrew the two drain plugs, one each at the cold water inlet and hot water outlet, on the underside of the water heater.

Water will drain from the water heater.

- When water stops flowing from the water heater, close the hot tap.

Note: It is recommended not to screw the drain plugs back in, until the water heater is to be turned on again.



RHEEM CONTINUOUS FLOW GAS WATER HEATER WARRANTY – AUSTRALIA AND NEW ZEALAND ONLY

874, 876 SERIES 812, 816, T16, 820, 826, T26 MODELS

1. THE RHEEM WARRANTY – GENERAL

- 1.1 This warranty is given in Australia by Rheem Australia Pty Limited ABN 21 098 823 511 of 1 Alan Street, Rydalmere New South Wales, and in New Zealand by Rheem New Zealand Limited of 475 Rosebank Road Avondale Auckland 1026, the suppliers of Rheem continuous flow gas water heaters.
- 1.2 Rheem offer a trained and qualified national service network who will repair or replace components at the address of the water heater subject to the terms of the Rheem warranty. Rheem Service, in addition can provide preventative maintenance and advice on the operation of your water heater. The Rheem Service contact number in Australia is 131031, with Contact Centre personnel available 24 hours, 7 days a week to take your call and if necessary to arrange a service call for during normal working hours Monday to Friday (hours subject to change) or in New Zealand on 0800 657 335.
- 1.3 For details about this warranty, you can contact us in Australia on 131031 or by email at warrantyenquiry@rheem.com.au (not for service bookings), or in New Zealand on 0800 657 335 or by email at rheem@rheem.co.nz (not for service bookings).
- 1.4 The terms of this warranty and what is covered by it are set out in sections 2 and 3 and apply to water heaters manufactured after 1st June 2017.
- 1.5 If a subsequent version of this warranty is published, the terms of that warranty and what is covered by it will apply to water heaters manufactured after the date specified in the subsequent version.

2. TERMS OF THE RHEEM WARRANTY AND EXCLUSIONS TO IT

- 2.1 The decision of whether to repair or replace a faulty component is at Rheem's sole discretion.
- 2.2 If you require a call out and we find that the fault is not covered by the Rheem warranty, you are responsible for our standard call out charge. If you wish to have the relevant component repaired or replaced by Rheem, that service will be at your cost.
- 2.3 Where a failed component or cylinder is replaced under this warranty, the balance of the original warranty period will remain effective. The replacement does not carry a new Rheem warranty.
- 2.4 Where the water heater is installed outside the boundaries of a metropolitan area as defined by Rheem or further than 25 km from either a regional Rheem branch office or an Accredited Rheem Service Agent / Centre's office, the cost of transport, insurance and travelling between the nearest branch office or Rheem Accredited Service Agent / Centre's office and the installed site shall be the owner's responsibility.
- 2.5 Where the water heater is installed in a position that does not allow safe or ready access, the cost of that access, including the cost of additional materials handling and/or safety equipment, shall be the owner's responsibility. In other words, the cost of dismantling or removing cupboards, doors or walls and the cost of any special equipment to bring the water heater to floor or ground level or to a serviceable position is not covered by this warranty.
- 2.6 This warranty only applies to the original and genuine Rheem water heater in its original installed location and any genuine Rheem replacement parts.
- 2.7 The Rheem warranty does not cover faults that are a result of:
 - a) Accidental damage to the water heater or any component (for example: (i) Acts of God such as floods, storms, fires, lightning strikes and the like; and (ii) third party acts or omissions).
 - b) Misuse or abnormal use of the water heater.
 - c) Installation not in accordance with the Owner's Guide and Installation Instructions or with relevant statutory and local requirements in the State or Territory in which the water heater is installed.
 - d) Connection at any time to a water supply that does not comply with the water supply guidelines as outlined in the Owner's Guide and Installation Instructions.
 - e) Repairs, attempts to repair or modifications to the water heater by a person other than Rheem Service or a Rheem Accredited Service Agent / Centre.

RHEEM CONTINUOUS FLOW GAS WATER HEATER WARRANTY – AUSTRALIA AND NEW ZEALAND ONLY

874, 876 SERIES 812, 816, T16, 820, 826, T26 MODELS

- f) Faulty plumbing or faulty gas or power supply.
 - g) Failure to maintain the water heater in accordance with the Owner's Guide and Installation Instructions.
 - h) Transport damage.
 - i) Fair wear and tear from adverse conditions (for example, corrosion).
 - j) Cosmetic defects.
 - k) Ice formation in the waterways of a water heater: where the electricity supply has been switched off or has failed and the water heater has not been drained in accordance with the instructions; or due to an ambient temperature below -20°C (including wind chill factor).
- 2.8 Subject to any statutory provisions to the contrary, this warranty excludes any and all claims for damage to furniture, carpet, walls, foundations or any other consequential loss either directly or indirectly due to leakage from the water heater, or due to leakage from fittings and/or pipe work of metal, plastic or other materials caused by water temperature, workmanship or other modes of failure.
- 2.9 If the water heater is not sized to supply the hot water demand in accordance with the guidelines in the Rheem water heater literature, any resultant fault will not be covered by the Rheem warranty.
- 2.10 In New Zealand this warranty excludes to the extent permissible all implied warranties set out in the Sale of Goods Act 1908 (New Zealand) and all guarantees set out in the Consumers Guarantees Act 1993 (New Zealand) to the extent that the goods are acquired for the purpose of resupply in trade consumption in the course of a process of production or manufacture or repairing or treating in trade other goods or fixtures on land.

3. WHAT IS COVERED BY THE RHEEM WARRANTY FOR THE WATER HEATERS DETAILED IN THIS DOCUMENT

- 3.1 Rheem will repair or replace a faulty component of your water heater if it fails to operate in accordance with its specifications as follows:

What components are covered	The period from the date of installation in which the fault must appear in order to be covered	What coverage you receive
All components	Year 1	Repair and/or replacement of the faulty component, free of charge, including labour.
All components (only if the water heater is installed in a single-family domestic dwelling)	Years 2 & 3	Repair and/or replacement of the faulty component, free of charge, including labour.
The heat exchanger (only if the water heater is installed in a single-family domestic dwelling)	Years 4 to 10	Replacement heat exchanger, free of charge. Installation and repair labour costs are the responsibility of the owner.

RHEEM CONTINUOUS FLOW GAS WATER HEATER WARRANTY – AUSTRALIA AND NEW ZEALAND ONLY

874, 876 SERIES 812, 816, T16, 820, 826, T26 MODELS

4. ENTITLEMENT TO MAKE A CLAIM UNDER THIS WARRANTY

- 4.1 To be entitled to make a claim under this warranty you need to:
- Be the owner of the water heater or have consent of the owner to act on their behalf.
 - Contact Rheem Service without undue delay after detection of the defect and, in any event, within the applicable warranty period.
- 4.2 You are **not** entitled to make a claim under this warranty if your water heater:
- Does not have its original serial numbers or rating labels.
 - Is not installed in Australia or New Zealand.

5. HOW TO MAKE A CLAIM UNDER THIS WARRANTY

- 5.1 If you wish to make a claim under this warranty, you need to:
- Contact Rheem on 131031 in Australia or 0800 657 335 in New Zealand and provide owner's details, address of the water heater, a contact number and date of installation of the water heater or if that's unavailable, the date of manufacture and serial number (from the rating label on the water heater).
 - Rheem will arrange for the water heater to be tested and assessed on-site.
 - If Rheem determines that you have a valid warranty claim, Rheem will repair or replace the water heater in accordance with this warranty.
- 5.2 Any expenses incurred in the making of a claim under this warranty will be borne by you.

6. THE AUSTRALIAN CONSUMER LAW

- 6.1 In Australia, our goods come with guarantees that cannot be excluded under the Australian Consumer Law. You are entitled to a replacement or refund for a major failure and for compensation for any other reasonably foreseeable loss or damage. You are also entitled to have the goods repaired or replaced if the goods fail to be of acceptable quality and the failure does not amount to a major failure.
- 6.2 The Rheem warranty (set out above) is in addition to any rights and remedies that you may have under the Australian Consumer Law.

7. THE CONSUMER GUARANTEES ACT 1993 (NEW ZEALAND)

- 7.1 In New Zealand, our goods come with guarantees that cannot be excluded under the Consumer Guarantees Act 1993 (New Zealand). If the goods fail to comply with the applicable guarantees set out under the Consumer Guarantees Act 1993 (New Zealand) being the guarantee as to acceptable quality, the guarantee as to correspondence with description or the guarantee as to repair and parts, or if the goods fail to comply with any express guarantee given by Rheem, then you are entitled to a replacement or refund and for compensation for any other reasonably foreseeable loss or damage.
- 7.2 The Rheem warranty (set out above) is in addition to any rights and remedies that you may have under the Consumer Guarantees Act 1993 (New Zealand).

RHEEM AUSTRALIA PTY LTD, A.B.N. 21 098 823 511, www.rheem.com.au, www.rheem.co.nz
For Service Telephone 131 031 AUSTRALIA or 0800 657 335 NEW ZEALAND



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Installation Manual

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WE VALUE YOUR FEEDBACK

To continue with the development of our products and systems, we value your input. Please send any suggestions, including your name, contact details, and relevant sketches to:

Ask James Hardie™
literaturefeedback@jameshardie.co.nz

1 Introduction

James Hardie manufactures a range of rigid air barriers such as HomeRAB™ Pre-Cladding and RAB™ Board.

1.1 HomeRAB Pre-Cladding is a 4.5mm thick fibre cement sheet which is sealed on the face and edges and is used as a rigid air barrier for residential buildings within the scope of NZS 3604. HomeRAB Pre-Cladding is manufactured in New Zealand by James Hardie and complies with the requirements of AS/NZS 2908.2.

It acts as temporary weather protection during construction, ideal for renovations or new construction. It is suitable for use as rigid underlay in residential buildings as per section 9.1.4 of E2/AS1 and complies with the requirements of Table 23 of E2/AS1. HomeRAB Pre-Cladding is suitable to withstand wind pressures experienced in all wind zones up to and including Very High (VH) wind zone as specified in NZS 3604. HomeRAB Pre-Cladding doesn't get fatigued or tear under the wind pressures exerted on it in the long term. HomeRAB Pre-Cladding has been tested to withstand wind pressures up to VH wind zone.

1.2 RAB Board 6mm is a 6mm thick fibre cement sheet which is sealed on the face and edges and is suitable for use as a rigid air barrier in Extra High (EH) wind zones or in wind pressures up to 4.5kPa.

It complies with the requirements of Table 23 of E2/AS1.

It is suitable for use as rigid underlay as per the requirement of section 9.1.4 of E2/AS1. RAB Board 6mm is also suitable to withstand high wind pressures experienced on building facades where it creates a wind barrier which equalises pressure within the cavity to the external pressures. Flexible underlays can deteriorate caused by positive/negative pumping actions created by gusting winds within the cavity and on building facade.

Due to these pressures a flexible underlay may not perform as desired in the long term. RAB Board 6mm has been tested to withstand wind pressures up to 4.5kPa(ULS).

1.3 RAB Board 9mm is a 9mm thick fibre cement sheet which is sealed on the face and edges and is suitable for use as a rigid air barrier in Extra High (EH) wind zones or in wind pressures up to 4.5kPa.

RAB Board 9mm is suitable for specific design shear wall for residential or commercial applications where the structural design require strong/stiffer shear walls.

RAB Board 9mm is an ideal rigid backing substrate for use behind the façade cavities to improve the acoustic performance of the wall assembly. The continuity of RAB Board 9mm on the exterior of framing with its heavier mass cuts down the environmental noise, blocks noise flanking paths and therefore enhances the overall acoustic performance of building facades.

It complies with the requirements of Table 23 of E2/AS1.

It is suitable for use as rigid underlay as per the requirement of section 9.1.4 of E2/AS1. RAB Board is also suitable to withstand high wind pressures experienced on building facades where it creates a wind barrier which equalises pressure within the cavity to the external pressures. Flexible underlays can deteriorate

caused by positive/negative pumping actions created by gusting winds within the cavity and on building facade.

Due to these pressures a flexible underlay may not perform as desired in the long term. RAB Board 9mm is suitable for use for wind pressures up to 4.5kPa(ULS).

1.4 James Hardie rigid air barriers provide the following benefits:

- Resistant to moisture damage and rotting when installed correctly
- Integral sealer applied on the face and edges repels moisture rapidly and helps resist moisture penetration
- Provides temporary weathertightness to the building envelope until the final claddings are installed
- Provides general rigidity to the entire structure
- An efficient way to achieve structural bracing

This manual covers the use of HomeRAB Pre-Cladding and RAB Board in external wall pre-cladding applications only. Further information relating to HomeRAB Pre-Cladding and RAB Board is also available in the following James Hardie design manuals:

- Fire and Acoustic Design Manual
- Bracing Design Manual

The Specifier or other responsible party for the project must ensure that the information in this manual is appropriate for the intended application and that specific design and detailing is undertaken for areas which are not covered in this manual.

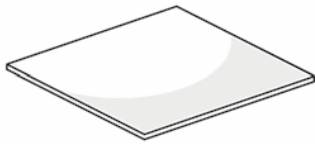
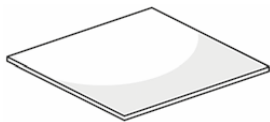
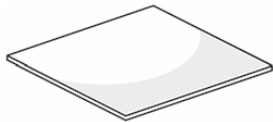
James Hardie rigid air barriers have been tested to comply with the performance requirements of the New Zealand Building Code (NZBC).

James Hardie rigid air barriers have been BRANZ appraised. This should be read in conjunction with this installation manual. BRANZ Appraisal No. 611 can be viewed on www.jameshardie.co.nz or www.branz.co.nz.

1.5 Make sure your information is up to date

When specifying or installing James Hardie products, ensure you have the current manual. If you're not sure you do, or you need more information, visit www.jameshardie.co.nz or Ask James Hardie on 0800 808 868.

Table 1

HomeRAB Pre-Cladding			
Product	Description	Sheet Sizes	
	HomeRAB Pre-Cladding A fibre cement sheet with a green water repellent sealer applied on the face and edges. Installed with green side facing out. Approximate mass: 6.5 kg/m ²	Thickness: 4.5mm	
		Length (mm)	Width (mm) Code
		2450	1200 404766
		2750	1200 404768
		3000	1200 404916
RAB Board 6mm			
Product	Description	Sheet Sizes	
	RAB Board A fibre cement sheet with a green water repellent sealer applied on the face and edges. Installed with green side facing out. Approximate mass: 8.6 kg/m ²	Thickness: 6mm	
		Length (mm)	Width (mm) Code
		2450	1200 402980
		2750	1200 405131
		3000	1200 402981
RAB Board 9mm			
Product	Description	Sheet Sizes	
	RAB Board A fibre cement sheet with a green water repellent sealer applied on the face and edges. Installed with green side facing out. Approximate mass: 12.2 kg/m ²	Thickness: 9mm	
		Length (mm)	Width (mm) Code
		2450	1200 405132
		2750	1200 404972
		3000	1200 404971

NOTE: All dimensions and masses provided are approximate only and are subject to manufacturing tolerances. Masses are based on Equilibrium Moisture Content (EMC) of product.

Table 2

Accessories/tools supplied by James Hardie			
	HomeRAB 4.5 Horizontal Flashing 3000mm long for horizontal joints CODE: 305798		HardieBlade™ Saw Blade 185mm diameter, Poly diamond blade for fast, clean cutting of James Hardie fibre cement. CODE: 300660
	RAB 6mm Horizontal Flashing 3000mm long for horizontal joints CODE: 305152		HardieKnife™ For easy cutting of fibre cement sheets. CODE: 305926
	RAB 9mm Horizontal Flashing 3000mm long for horizontal joints CODE: 305945		

Table 3

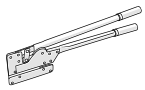

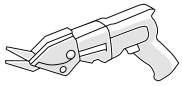

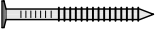


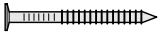


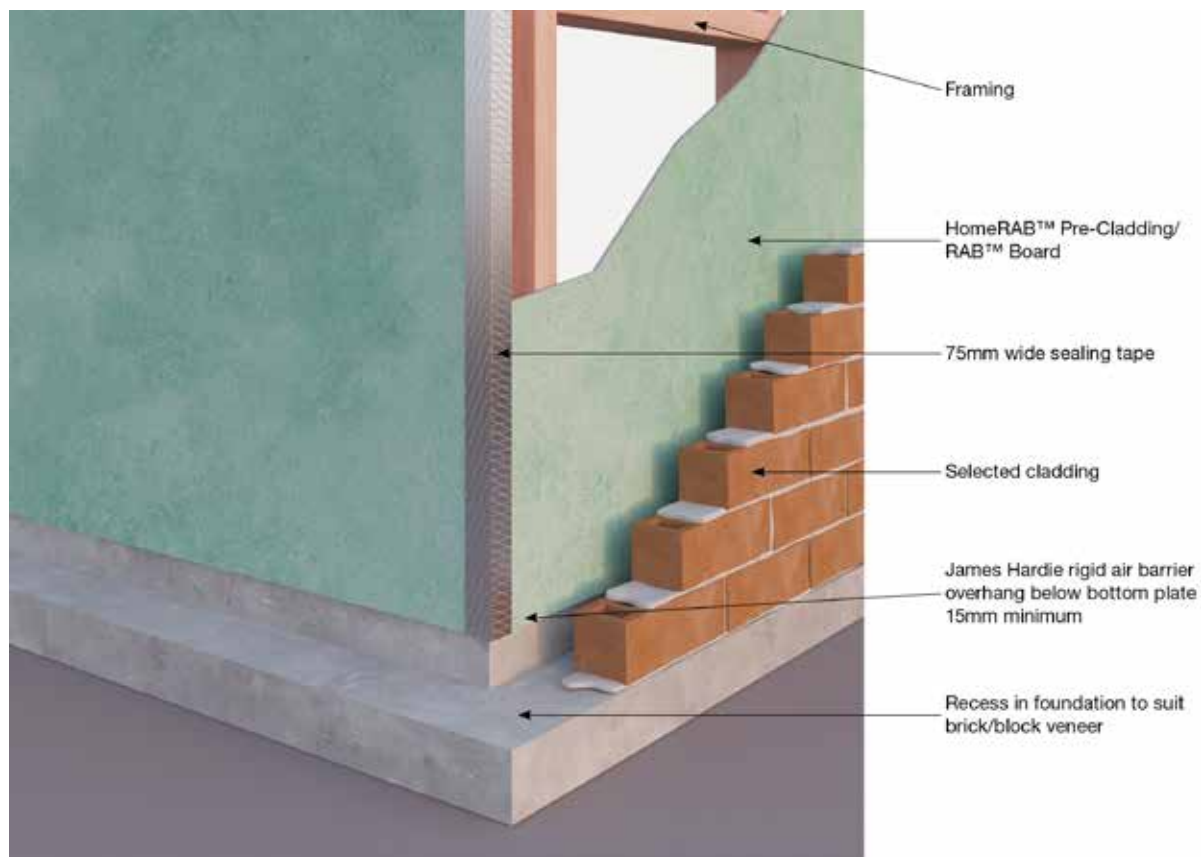
Components not supplied by James Hardie			
James Hardie recommends the following products for use in conjunction with its James Hardie rigid air barriers. James Hardie does not manufacture these products and does not provide a warranty for their use. Please contact component manufacturer for information on their warranties and further information on their products.			
	Hand guillotine Guillotine for cutting fibre cement.		Sealing tape/window flashing tape Tape used to seal vertical joints and flash around window, door and pipe penetrations. SUPER-STICK Building Tape® - Marshall Innovations 0800 776 9727 3M™ All Weather Flashing Tape 8067 3M™ 0800 474 787
	Electric shear/fibreshear		
 	Fibre cement nails 40 x 2.8mm hot dipped galvanised HardieFlex™ nails as per Table 5. 40 x 2.8mm stainless steel HardieFlex™ nails as per Table 5.		General installation - Nail gun and nails <ul style="list-style-type: none"> Galvanised/stainless steel round head gun nails minimum length required for specific application.
 	Fibre cement nails 50 x 2.8mm hot dipped galvanised HardieFlex™ nails as per Table 5. 50 x 2.8mm stainless steel HardieFlex™ nails as per Table 5.		
	Tusk 160mm diameter blade Blade for fast, clean cutting of James Hardie fibre cement		Bracing installation - Nail gun and nails <ul style="list-style-type: none"> Galvanised/stainless steel round head gun nail minimum length required for specific application. Refer to Section 4.3.

Figure 1: James Hardie Rigid Air Barriers with Linea™ Weatherboard



Figure 2: James Hardie Rigid Air Barriers with brick/block cladding



2 Safe working practices

2.1 STAY HEALTHY WHEN WORKING WITH BUILDING PRODUCTS CONTAINING CRYSTALLINE SILICA

Crystalline Silica

What is it? Why and when is it a health hazard?

Crystalline Silica is

- Commonly known as sand or quartz
- Found in many building products e.g. concrete, bricks, grout, wallboard, ceramic tiles, and all fibre cement materials

Why is Crystalline Silica a health hazard?

- Silica can be breathed deep into the lungs when present in the air as a very fine (respirable) dust
- Exposure to silica dust without taking the appropriate safety measures to minimise the amount being breathed in, can lead to a potentially fatal lung disease – silicosis – and has also been linked with other diseases including cancer. Some studies suggest that smoking may increase these risks
- The most hazardous dust is the dust you cannot see!

When is Crystalline Silica a health hazard?

- It's dangerous to health if safety protocols to control dust are not followed when cutting, drilling or rebating a product containing crystalline silica
- Products containing silica are harmless if intact (e.g. an un-cut sheet of wall board)

FAILURE TO ADHERE TO OUR WARNINGS, SAFETY DATA SHEETS AND INSTALLATION INSTRUCTIONS WHEN WORKING WITH JAMES HARDIE PRODUCTS MAY LEAD TO SERIOUS PERSONAL INJURY OR DEATH.

2.2 AVOID BREATHING IN CRYSTALLINE SILICA DUST!

Safe working practices

- 👎 NEVER use a power saw indoors or in a poorly ventilated area
- 👎 NEVER dry sweep
- 👍 ALWAYS use M Class extractor unit as a minimum and always hose down with water/wet wipe for clean up
- 👎 NEVER use grinders
- 👍 ALWAYS use a circular sawblade specifically designed to minimise dust creation when cutting fibre cement – preferably a sawblade that carries the HardieBlade™ logo or one with at least equivalent performance
- 👍 ALWAYS follow tool manufacturers' safety recommendations
- 👍 ALWAYS expose only the minimum required depth of blade for the thickness of fibre cement to be cut
- 👍 ALWAYS wear an approved properly-fitted, approved dust mask (P1 or P2) or respirator

Use one of the following methods based on the required cutting rate:

BEST

- HardieKnife™
- Hand guillotine
- Fibreshear

BETTER

- Dust reducing circular saw equipped with HardieBlade™ Saw Blade and M Class extractor unit.

Working outdoors

- 👍 Make sure you work in a well ventilated area
- 👍 Position cutting station so wind will blow dust away from yourself and others in the working area
- 👍 Cut products with either a HardieKnife™ or fibre cement shears or, when not feasible, use a HardieBlade™ Saw Blade (or equivalent) and a dust-reducing circular saw attached to a M Class extractor unit
- 👍 When sawing, sanding, rebating, drilling or machining fibre cement products, always:
 - Wear your P1 or P2 mask (correctly fitted in accordance with manufacturers' instructions) and when others are close by, ask them to do the same
 - If you are not clean shaven, then use a powered air respirator with a loose fitting head top
 - Wear safety glasses
 - Wear hearing protection
 - When others are close by, ask them to do the same

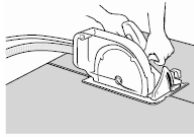
Working indoors

- 👎 Never cut using a circular saw indoors
- 👍 Position cutting station in a well ventilated area
- 👍 Cut ONLY using a HardieKnife™, hand guillotine or fibreshears (manual, electric or pneumatic)
- 👍 Make sure you clean up BUT never dry sweep. Always hose down with water/wet wipe or use an M Class extractor unit

IF CONCERN STILL EXISTS ABOUT EXPOSURE LEVELS OR YOU DO NOT COMPLY WITH THE ABOVE PRACTICES, YOU SHOULD ALWAYS CONSULT A QUALIFIED INDUSTRIAL HYGIENIST.

Working Instructions

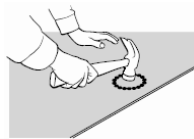
- Refer to Recommended Safe Working Practices before starting any cutting or machining of product

**HardieBlade™ Saw Blade**

The HardieBlade™ Saw Blade used with a dust-reducing saw is ideal for fast, clean cutting of James Hardie fibre cement products. A dust-reducing saw uses a dust deflector or a dust collector connected to a vacuum system. When sawing, clamp a straight-edge to the sheet as a guide and run the saw base plate along the straight edge when making the cut

Hole-Forming**For smooth clean cut circular holes:**

- Mark the centre of the hole on the sheet
- Pre-drill a 'pilot' hole
- Using the pilot hole as a guide, cut the hole to the appropriate diameter with a hole saw fitted to a heavy duty electric drill

**For irregular holes:**

- Small rectangular or circular holes can be cut by drilling a series of small holes around the perimeter of the hole then tapping out the waste piece from the sheet face
- Tap carefully to avoid damage to sheets, ensuring that the sheet edges are properly supported

2.3 STORAGE AND DELIVERY**Keeping products and people safe****Off loading**

- James Hardie products should be off-loaded carefully by hand or by forklift
- James Hardie products should not be rolled or dumped off a truck during the delivery to the jobsite

Storage**James Hardie products should be stored:**

- In their original packaging
- Under cover where possible or otherwise protected with a waterproof covering to keep products dry
- Off the ground – either on a pallet or adequately supported on timber or other spacers
- Flat so as to minimise bending

James Hardie products must not be stored:

- Directly on the ground
- In the open air exposed to the elements

JAMES HARDIE IS NOT RESPONSIBLE FOR DAMAGE DUE TO IMPROPER STORAGE AND HANDLING.

2.4 TIPS FOR SAFE AND EASY HANDLING**Weatherboard products**

- Do not lift planked products flat and in the middle
- Carry the products on the edge
- If only one person is carrying the product, hold it in the middle and spread arms apart to better support the product
- If two people are carrying the plank, hold it near each end and on edge
- Exercise care when handling weatherboard products to avoid damaging the edges/corners

Sheet products

- Carry with two people
- Hold near each end and on edge
- Exercise care when handling sheet products to avoid damaging the edges/corners

3 Applications

HomeRAB Pre-Cladding is suitable for use as a rigid air barrier for residential buildings up to and including VH wind zone within the scope of NZS 3604 and E2/AS1. HomeRAB Pre-Cladding is fixed directly to the framing. The vertical joints are sealed over the face of the HomeRAB Pre-Cladding. HomeRAB Pre-Cladding is suitable for use behind all James Hardie claddings or alternative claddings such as brick, timber weatherboard, EIFS etc.

RAB Board is suitable for use as a rigid air barrier in EH wind zone in residential or SED project applications to withstand high wind pressures in conjunction with cladding/commercial facades. In these applications, RAB Board is fixed directly to the framing. The vertical joints are sealed over the face of the RAB Board using joint flashing tape.

3.1 JAMES HARDIE RIGID AIR BARRIER

James Hardie rigid air barriers can remain exposed to the external elements for maximum 180 days prior to the external cladding being installed.

The James Hardie rigid air barriers can be used as a backing board behind stucco plasters. Refer to James Hardie Stucco Solution technical specification, E2/AS1 'External Moisture' clause of the NZBC and BRANZ 'Weathertight Solutions Stucco' for further information on stucco plaster. The RAB Board can also be used as a backing board behind other proprietary claddings which comply with the NZBC requirements. Proprietary cladding must be installed as per their manufacturing specifications. In these applications, a building underlay must be used as a slip layer to cover RAB Board and ensure a separation between mortars and RAB Board. The RAB Board is fixed over a minimum 18mm thick cavity batten for these applications. The RAB Board may also be required over the framing to withstand high wind pressures within the cavity.

The claddings/facades used over James Hardie rigid air barriers must satisfy the various performance requirements of the NZBC.

Horizontal profiled metal and uPVC claddings must not be direct fixed over James Hardie rigid air barriers. These must be fixed over an underlay or overlay the James Hardie rigid air barrier using the cavity construction method.

Vertical profiled metal cladding can be direct fixed over James Hardie rigid air barriers with a flexible underlay separator to comply with manufacturers recommendations.

The cladding fastener length must be increased by 5mm minimum to maintain the required nail pull out strength.

In case of gable end trusses sitting on top plates of external wall frame, the frame size must comply with the minimum timber sizes stipulated for wall frames in Section 8 of the NZS 3604.

3.1.1 Temporary weather protection

Installation of internal lining can be started after James Hardie rigid air barriers have been installed on the exterior of the building envelope. In order to achieve this, all sheet joints and penetrations must be sealed and the roof, soffit lining, windows/doors (including head flashings and airseals) must have been installed to ensure the building is weathertight before starting the installation of internal linings. The insulation, electrical cables, plumbing and any other services required in external walls must be installed and inspected by the building consent authority before starting the installation of internal linings. The internal lining and services must be installed in accordance with their manufacturer's product literature and comply with the NZBC requirements.

The claddings must be installed within 180 days after the installation of James Hardie rigid air barriers.

3.1.2 Bracing

For bracing application the James Hardie rigid air barriers must be installed as per HomeRAB Pre-Cladding/RAB Board bracing details in the James Hardie Bracing Design Manual. Bracing with rigid air barriers can only be achieved when fixed direct to frame. The board must be fixed in accordance with the bracing details to all framing. For further information on bracing refer to Section 6 and the James Hardie Bracing Design Manual or Ask James Hardie on 0800 808 868.

3.1.3 Fire rated wall construction

RAB Board is classified as 'Non-Combustible Material'. For fire rated wall applications RAB Board must be installed as per the current James Hardie Fire and Acoustic Design Manual. RAB Board is suitable to achieve fire ratings up to 60 minutes when installed in accordance with fire systems specifications published in the James Hardie Fire and Acoustic Design Manual. The board must be fixed with HardieFlex nails at 150mm centres to all framing.

3.2 STUD TO TOP PLATE FIXING

Refer to Section 5.2, Figures 16 and 17 for alternative stud to top plate connection.

3.3 SEISMIC DEFLECTIONS

RAB Board is suitable for use as rigid backing in buildings where the structure is designed to expect the lateral inter-storey seismic deflections. The seismic deflections can have a significant effect on the performance of the façade system and its components, therefore it is crucial to first understand the amount of inter-storey deflections and then to choose a suitable rigid air barrier and façade system that has been tested to meet the performance appraised.

James Hardie has a range of tested cladding/façade systems with RAB Board that are suitable for a range of seismic deflection. For further design and installation guidance, refer to clause 5.3.3 of this manual and Figure 26.

4 Framing and fixings

4.1 FRAMING

The timber framing shall be in accordance with NZS 3604 or comply with the specific engineering design requirements. The timber treatment must comply with NZBC Acceptable Solution B2/AS1 requirements.

The minimum framing size required for fixing James Hardie rigid air barriers is 90 x 45mm. Ensure that the framing is suitable for installing the selected cladding. Refer to cladding installation manual for further information about the framing requirements.

For specific engineering design projects where the timber framing differs from what's been provided in this manual, Ask James Hardie on 0800 808 868.

Table 4

Product	Wind zone	Framing centres (max)
HomeRAB Pre-Cladding	Up to and including H (High)	600mm
HomeRAB Pre-Cladding	Very High	400mm
RAB Board	Up to and including VH (Very High)	600mm
RAB Board	EH (Extra High) & SED (above 1.5kPa to 4.5kPa)	400mm

NOTE:

- HomeRAB Pre-Cladding must not be used in EH, SED wind zones and on fire rated wall application. Use RAB Board instead

4.2 FIXINGS

James Hardie rigid air barriers must be installed with its sealed face towards the external cladding and unsealed face towards the framing. The sealer applied on the face helps the board to drain the moisture freely over the face and keeps it dry.

- Nails must finish flush with board surface

The HomeRAB Pre-Cladding and RAB Board are fixed as described below.

HomeRAB Pre-Cladding and RAB Board can either be gun nailed or hand nailed. It is recommended to use gun nails to cut down installation time. When gun nailing, follow nail gun manufacturer's instructions for correct operation of tool and site safety requirements.

- Nails must have a minimum clearance of 12mm from the sheet edges and a minimum of 50mm horizontally and 75mm vertically from the sheet corners
- When using a nail gun the gun nails must have a full round head to provide the required holding power, and minimum length of the hand nail

Note:

- Refer to Table 5 regarding nail sizes and fixing centres for various applications

Table 5

HomeRAB Pre-Cladding/RAB Board 6mm			
Application	Type of nail	Nailing centres to all framing	Nailing option
General	40 x 2.8mm HardieFlex nail	200mm	Gun nail or hand nail
Fire rating	40 x 2.8mm HardieFlex nail	150mm	Gun nail or hand nail
Bracing	40 x 2.8mm HardieFlex nail	100mm 150mm	Gun nail or hand nail
Stucco plaster (over cavity)	60 x 3.15mm HardieFlex nail	200mm	Gun nail or hand nail

RAB Board 9mm			
Application	Type of nail	Nailing centres to all framing	Nailing option
General	50 x 2.8mm HardieFlex nail	200mm	Gun nail or hand nail
Fire rating	50 x 2.8mm HardieFlex nail	150mm	Gun nail or hand nail
Bracing	50 x 2.8mm HardieFlex nail	100mm 150mm	Gun nail or hand nail

NOTE:

- Nails must finish flush with board surface
- Nails must have minimum clearance of 12mm from the sheet edges and a minimum of 50mm horizontally and 75mm vertically from the sheet corners
- Do not use D-head nails

4.3 FASTENER DURABILITY

Fasteners must have the appropriate level of durability required for the intended project to comply with the NZBC. This is of particular importance in coastal areas, areas subject to salt spray and other corrosive environments. Refer to Table 6 for information regarding the types of nails to use to comply with the durability requirements of the NZBC.

Table 6

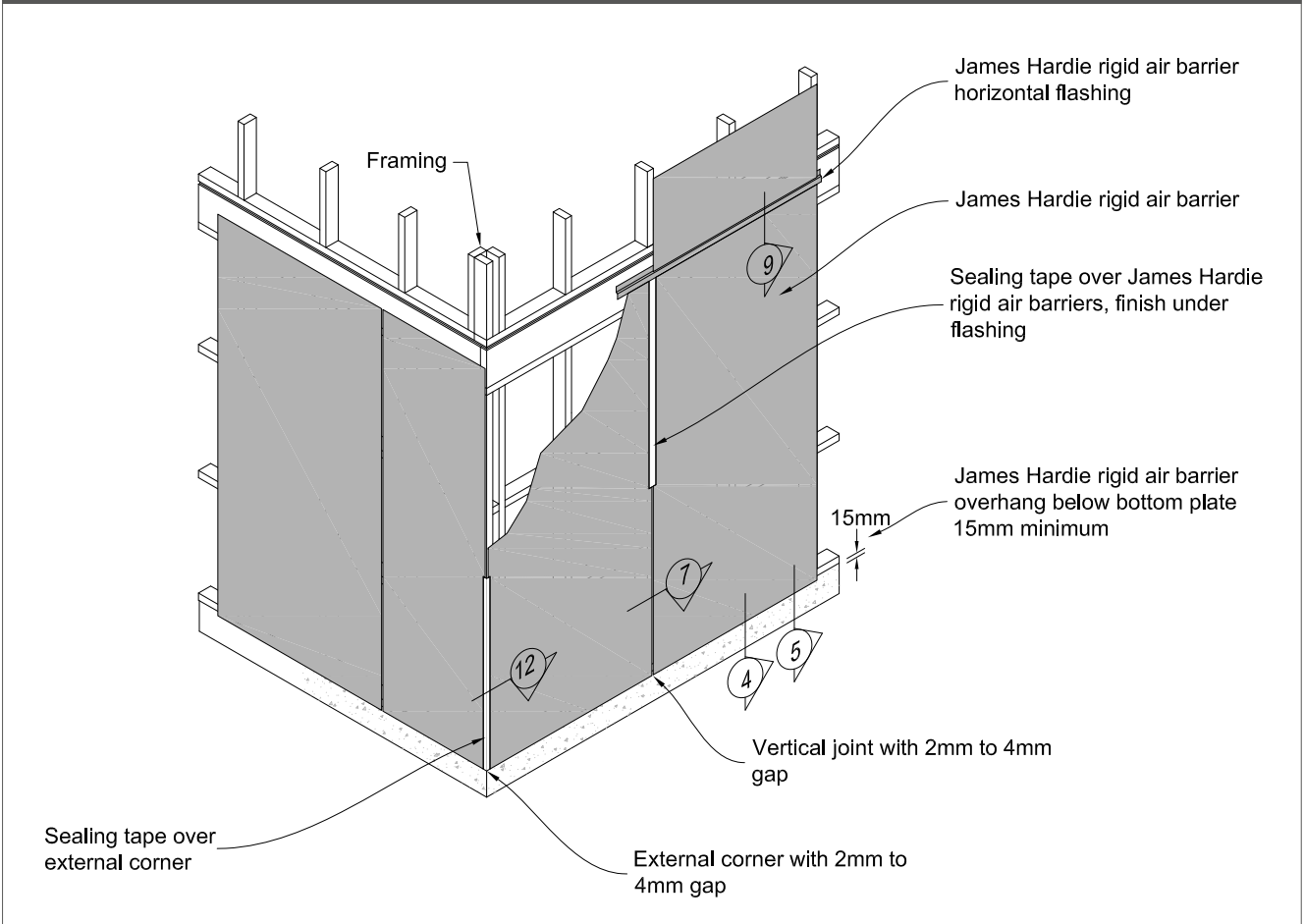
Exposure conditions and nail selection prescribed by NZS 3604		
Zone	Application	Nail material
D (Sea Spray) * and Geothermal hot spots	General	Stainless steel 304/316
	Fire	
	Bracing	
C and B	General	Hot dip galvanised**
	Fire	
	Bracing	

*Where local knowledge dictates that increased durability is required use stainless steel nails

** Hot dip galvanised must comply with AS/NZS 4680

Fasteners must be fully compatible with all other materials that they are in contact with to ensure the durability and integrity of the assembly. Contact fastener manufacturers for more information. Also refer to Table 20 and 21 of E2/AS1 for further information about the suitable fastening materials and their compatibility with other materials.

Figure 3: James Hardie rigid air barriers layout



4.4 CLEARANCES

James Hardie rigid air barriers must extend below the bottom plate by 15mm minimum over concrete foundation and 15mm past floor joist of timber foundation. James Hardie rigid air barriers must maintain a 100mm minimum clearance between the bottom edge of the sheet and the finished ground.

Check cladding manufacturer for minimum clearances required for the selected cladding.

Figure 4: Foundation detail — direct fix cladding

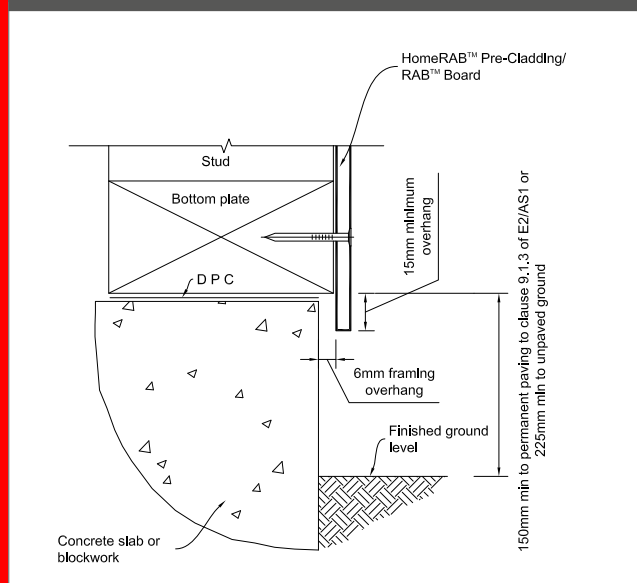
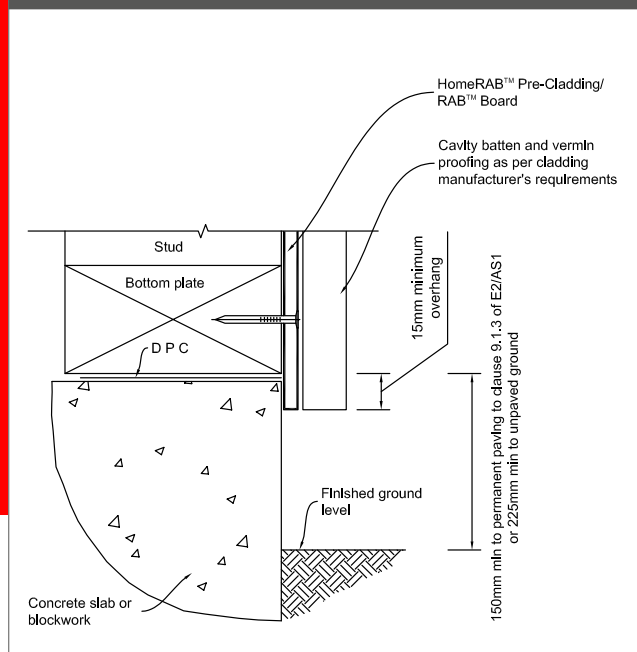
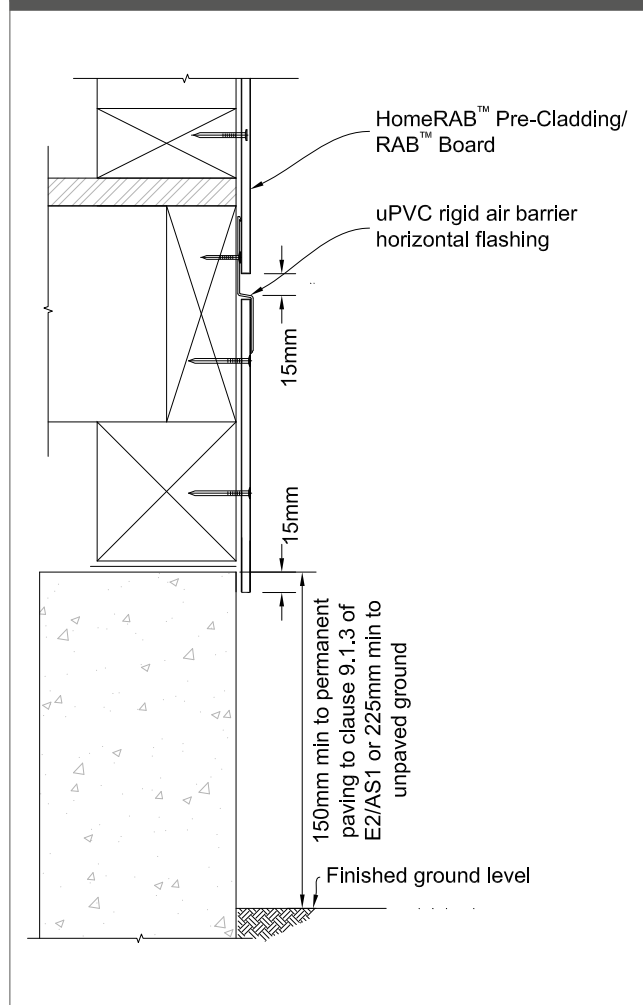


Figure 5: Foundation detail — cavity fix cladding



Maintain the required clearances between the bottom plate and top of ground to comply with the NZBC and NZ standards. The adjacent finished ground must slope away from the building in accordance with the NZBC requirements. Do not install James Hardie rigid air barriers in such a way that it may remain in contact with standing water.

Figure 6: Foundation detail – timber foundation



5 Installation

5.1 BOARD LAYOUT

When using James Hardie rigid air barrier, building underlays are not required over the framing. HomeRAB Pre-Cladding/RAB Board have been tested and comply with the performance requirements of Table 23 of Clause E2 of the NZBC. The sheets are jointed keeping a gap of 2-4mm maximum between the sheet edges. The board must be cleaned of any dust before fixing the jointing tape over the joint.

Cut edges where exposed must be primed prior to installation with Dulux® 1 Step, Resene Quick Dry or similar.

The bottom edge of James Hardie rigid air barriers must overhang below the bottom plate by 15mm minimum, refer to Figures 4 and 5.

5.1.1 Vertical joints

Vertical joints must be sealed to stop the moisture ingress into the framing behind James Hardie rigid air barrier. The vertical joints are sealed over by running a 75mm wide sealing tape e.g. SUPER-STICK Building Tape/3M All Weather Flashing Tape 8067.

The sealing tapes must be pressed hard over the James Hardie rigid air barriers surface while fixing so that they achieve the required bond. The sealing tapes must not be exposed to elements for more than 180 days. This achieves the required protection when the cladding is installed. The claddings must be installed within 180 days.

NOTE: Refer to sealing tape manufacturers recommendations regarding the installation of their sealing tapes in cold climate

conditions. It is recommended to warm up the sealing tapes eg when the air and substrate temperatures are below 10°C. Check with tape manufacturer for their recommendations

5.1.2 Horizontal joints

The horizontal joint of James Hardie rigid air barriers must be flashed using a uPVC horizontal flashing or alternatively aluminium or colour steel Z flashings can also be used. Refer to Figures 8, 9 and 10. Leave a gap of 15mm minimum at the solid timber floor joist or as specified by the project engineer. The flashing must be lapped by a 35mm minimum on both sides of the joint.

For walls longer than 3m, horizontal uPVC flashing must be lapped by 50mm minimum and silicone sealed.

Rigid air barriers must not be fixed into floor joists.

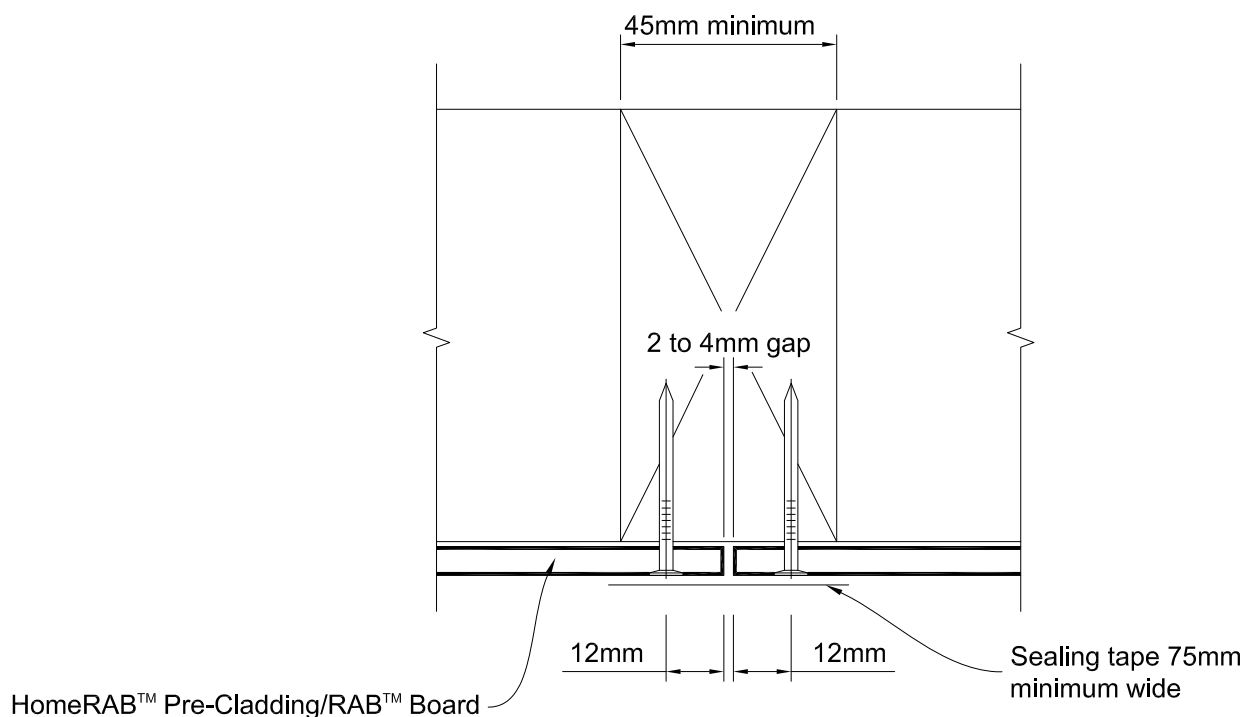
5.1.3 Internal/external corners

James Hardie rigid air barrier corner joints must be sealed using a 75mm minimum wide sealing tape.

When using a uPVC horizontal flashing in horizontal joints, the internal and external corner flashing joints must be sealed using a 75mm minimum wide joint sealing tape. Refer to Figures 13a, 13b and 13c.

When using James Hardie rigid air barrier as a backing board for stucco plaster, the vertical joints of James Hardie rigid air barrier are not required to be sealed using flashing tapes. The horizontal joints at floor level and in tall walls must be flashed to satisfy the requirements of clause E2 of the NZBC.

Figure 7: Vertical joint



5.1.4 Flexible underlay

James Hardie rigid air barriers can also be used in conjunction with flexible underlay in accordance with Section 9.1.7.2 of E2/AS1. When installing rigid underlay as per E2/AS1 requirements, its horizontal and vertical joint does not require to be sealed with flashing tapes, but instead, a flexible underlay is applied over the entire rigid air barrier in accordance with Section 9.1.7.1. The

flexible underlay must comply with Table 23 of E2/AS1. The wall openings must be flashed in accordance with E2/AS1 and this installation manual.

Figure 8: Horizontal joint flashing - tall wall

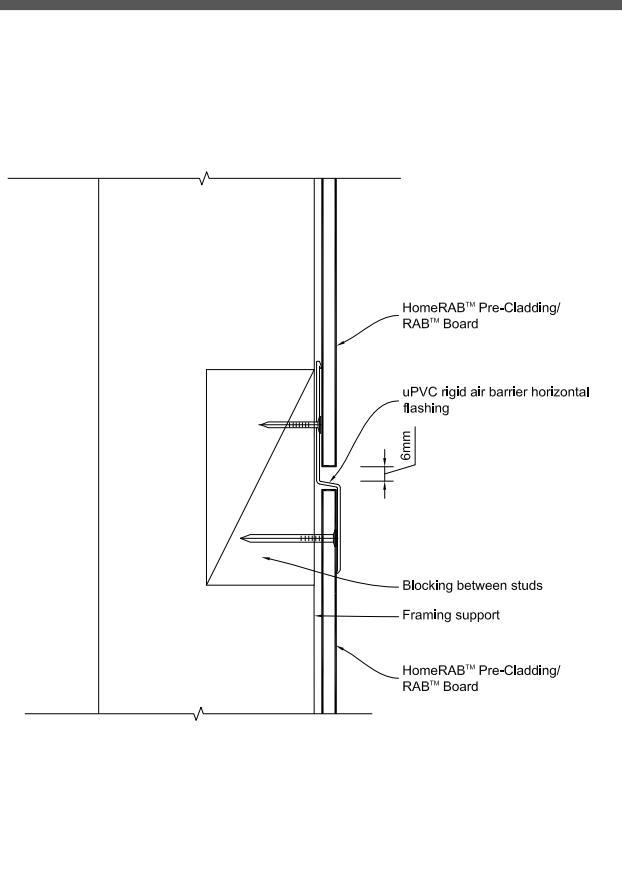


Figure 9: Horizontal joint/flashing - floor joist

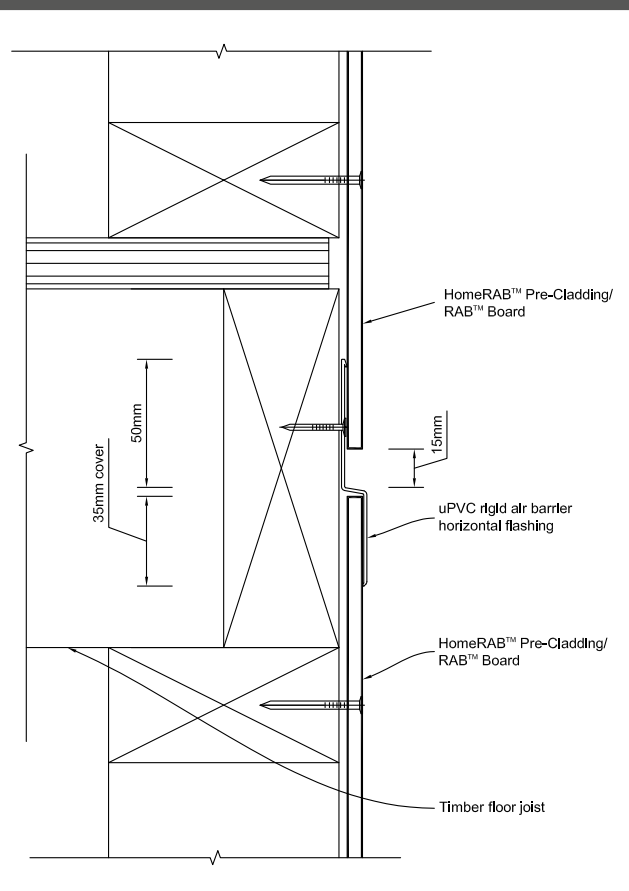


Figure 10: Horizontal joint flashing - concrete beam

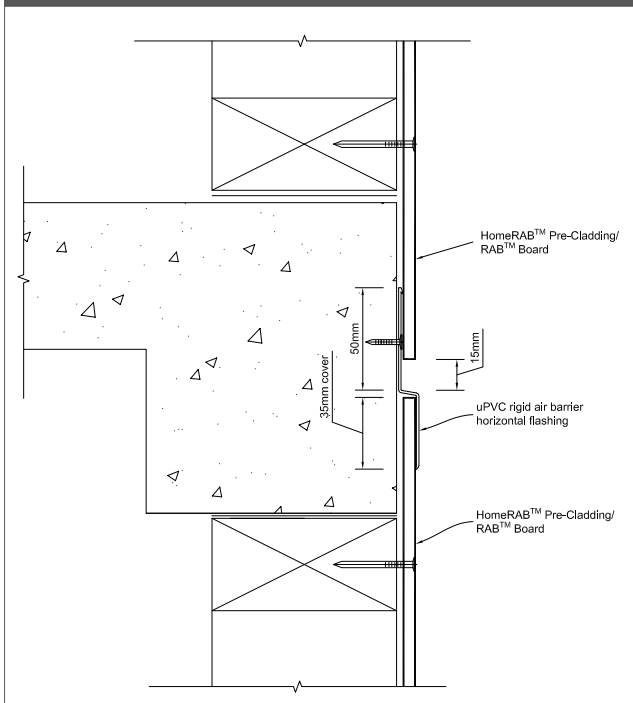


Figure 11: Internal corner joint

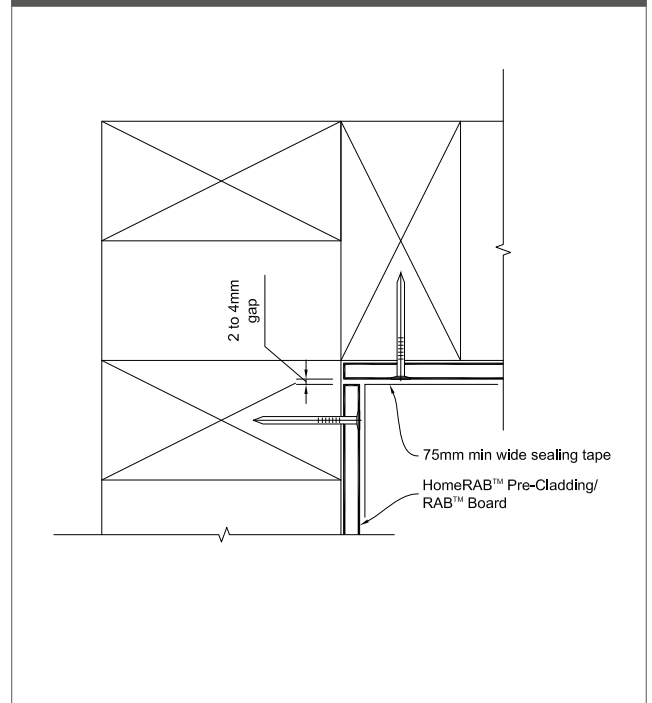


Figure 12: External corner joint

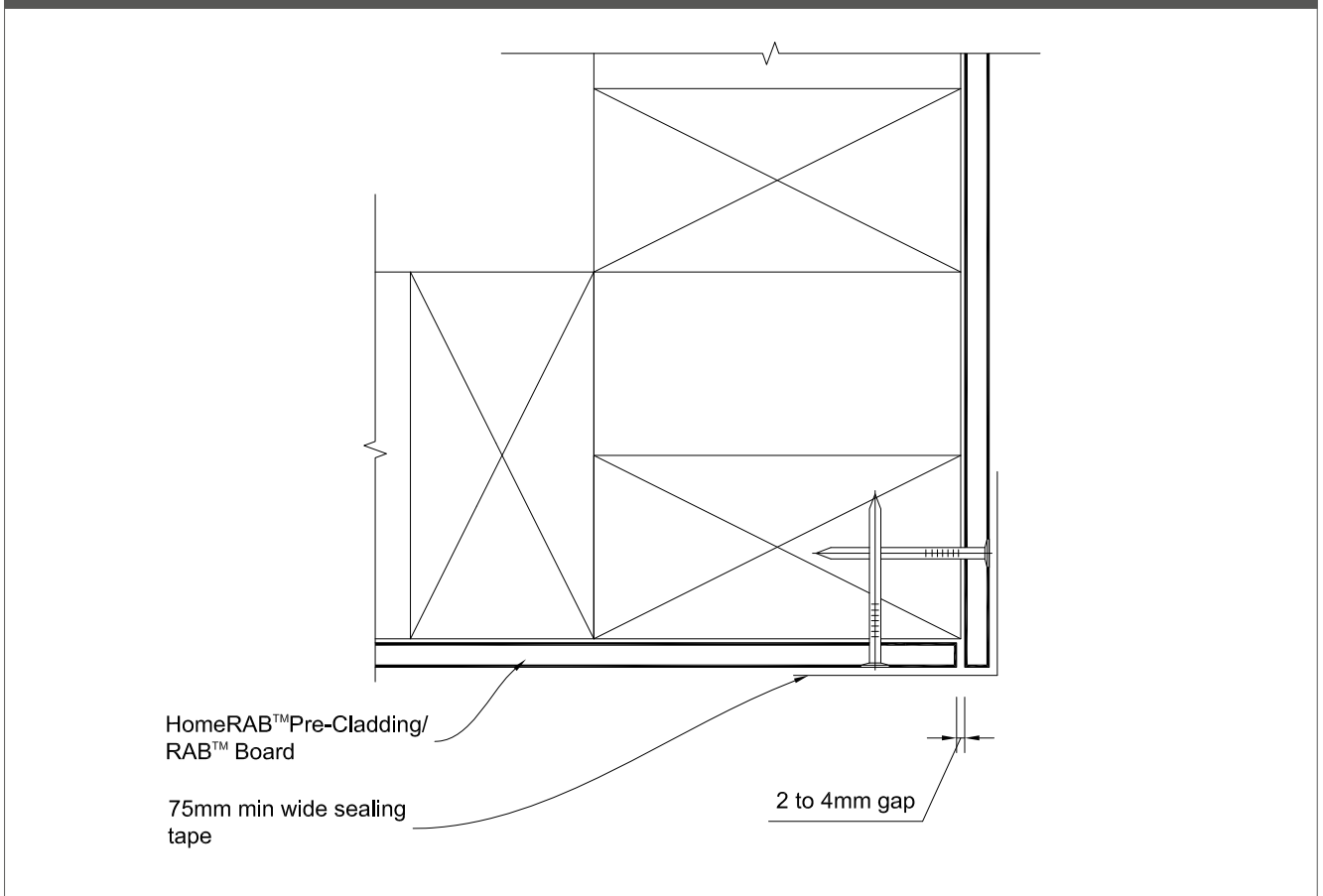


Figure 13a: Corner junction to horizontal joint

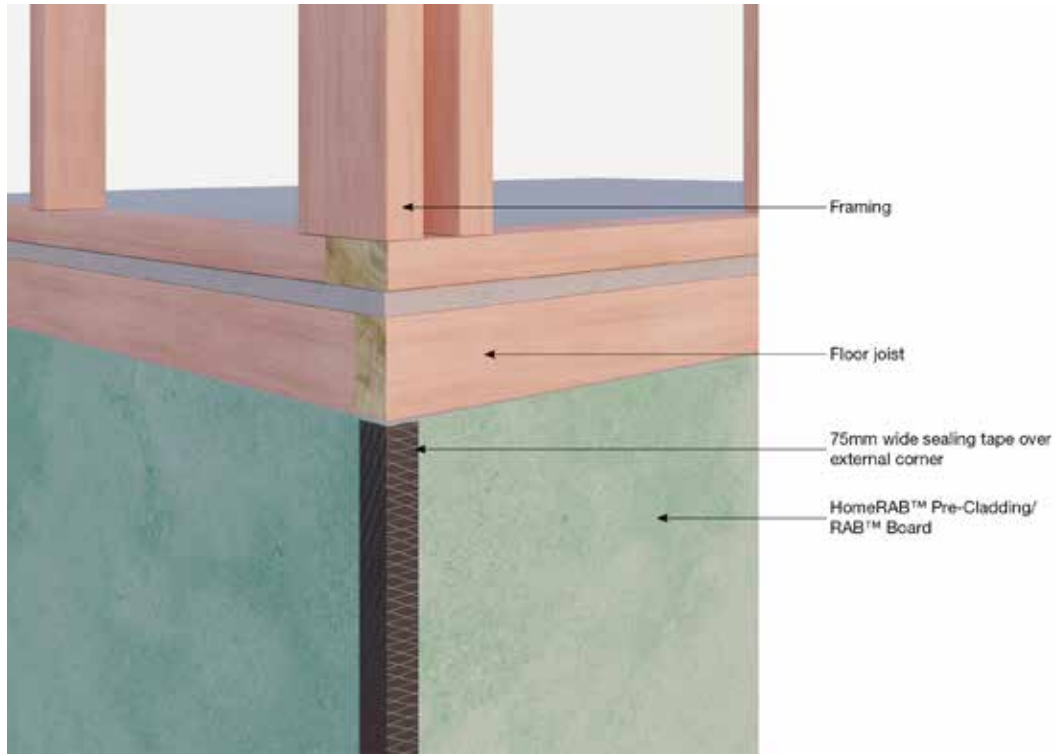


Figure 13b: Corner junction to horizontal joint

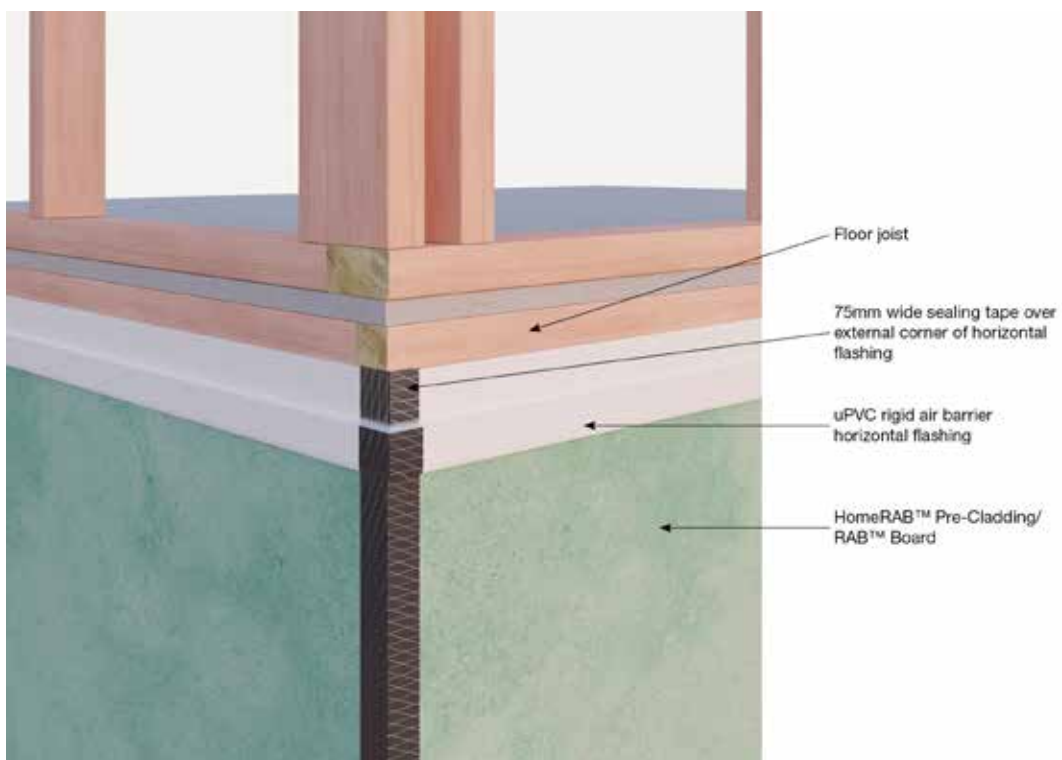


Figure 13c: Corner junction to horizontal joint

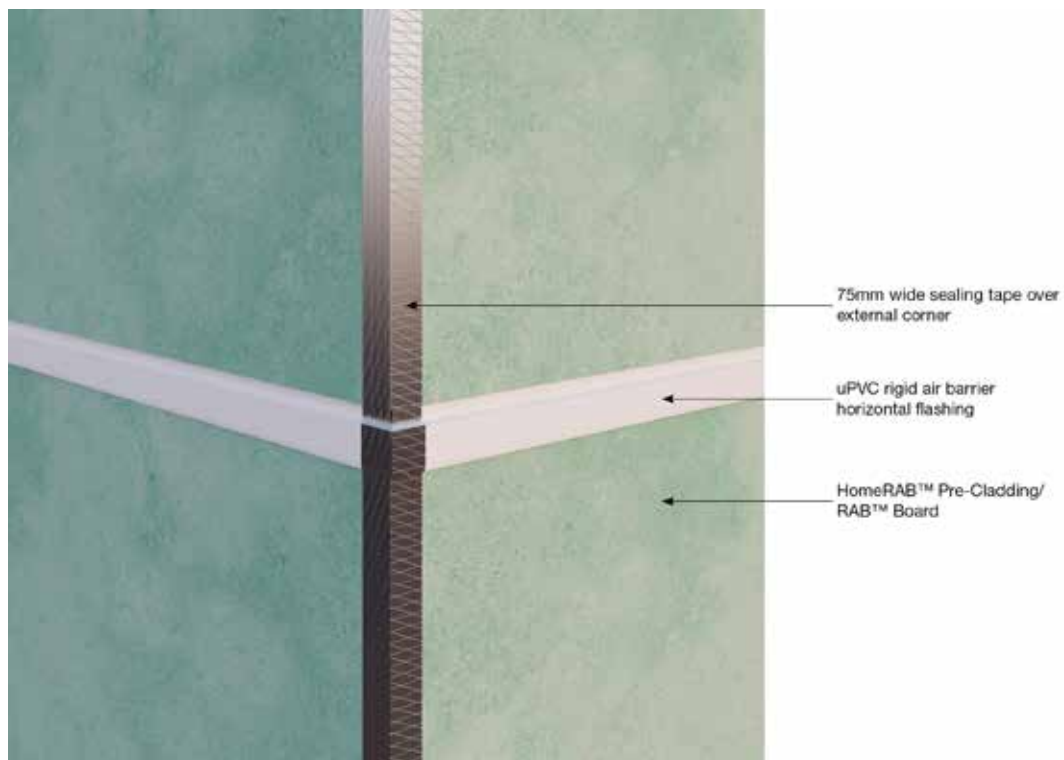


Figure 14: RAB Board used as backing board for stucco plaster/proprietary cladding systems

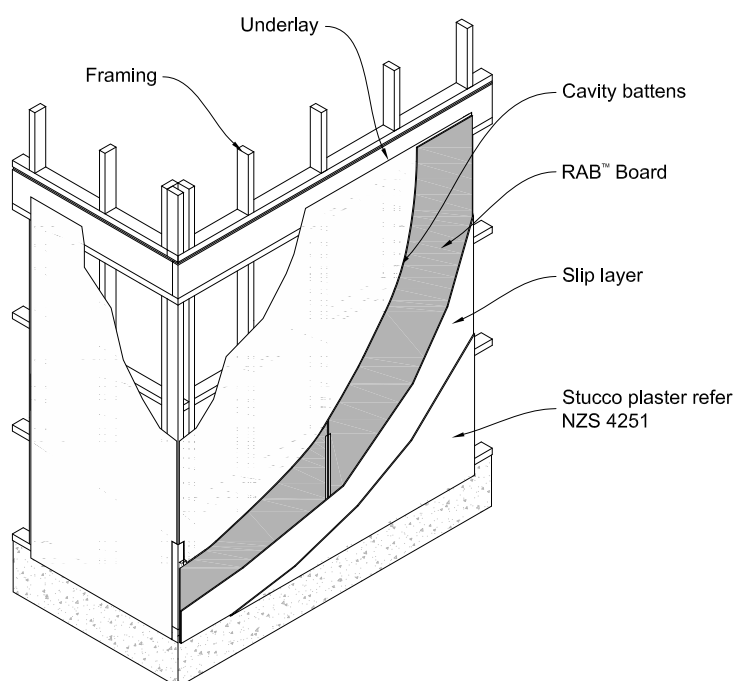
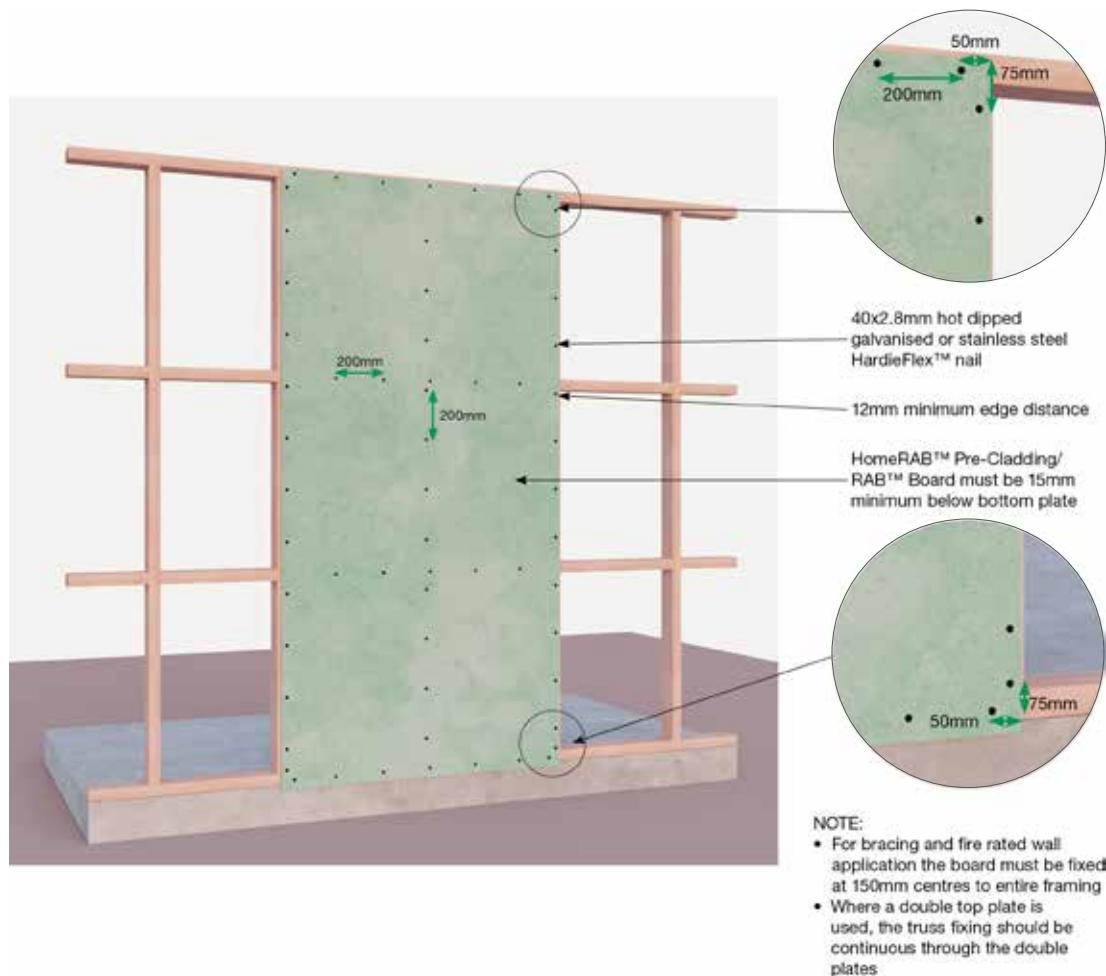


Figure 15: Sheet Fixing - General Application



5.2 STUD TO TOP PLATE FIXING

Table 8.18 of NZS 3604 specifies two types of fixings i.e. Type-A with a fixing capacity of 0.7kN and Type-B with a fixing capacity 4.7kN. HomeRAB Pre-Cladding or RAB Board rigid air barriers have been tested and are verified as suitable alternatives to achieve the required stud top plate connectivity as mentioned above and no special use of straps/plates or wire dogs etc. is required.

For a 0.7kN connectivity, the standard fixing of HomeRAB Pre-Cladding and RAB Board using 40 x 2.8mm HardieFlex nails at 200mm centres maximum will achieve this.

For a 4.7kN connectivity, fix HomeRAB Pre-Cladding or RAB Board using 40 x 2.8mm HardieFlex nails or gun nail at 75mm centres maximum to top plate with a minimum edge distance of 20mm. Refer to Figure 16.

Figure 16: Stud to top plate connection

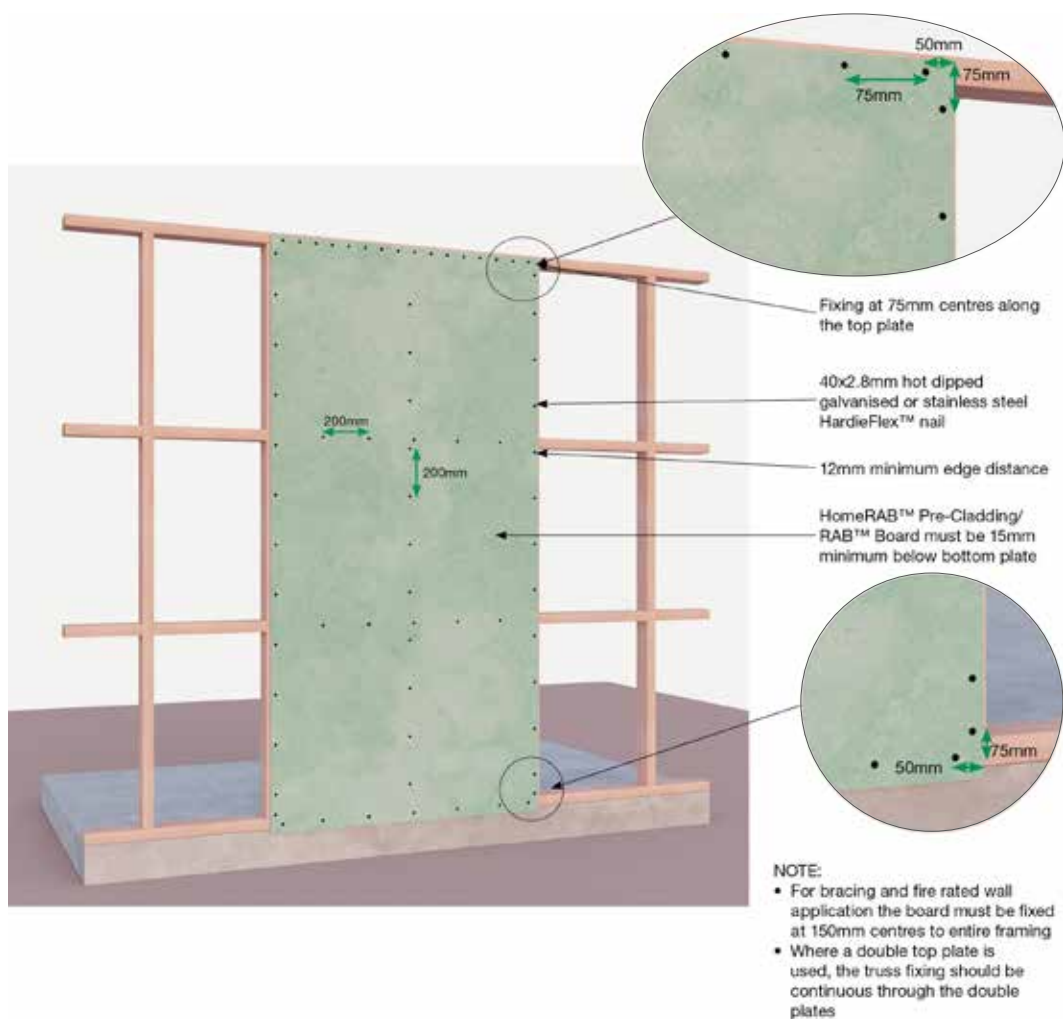
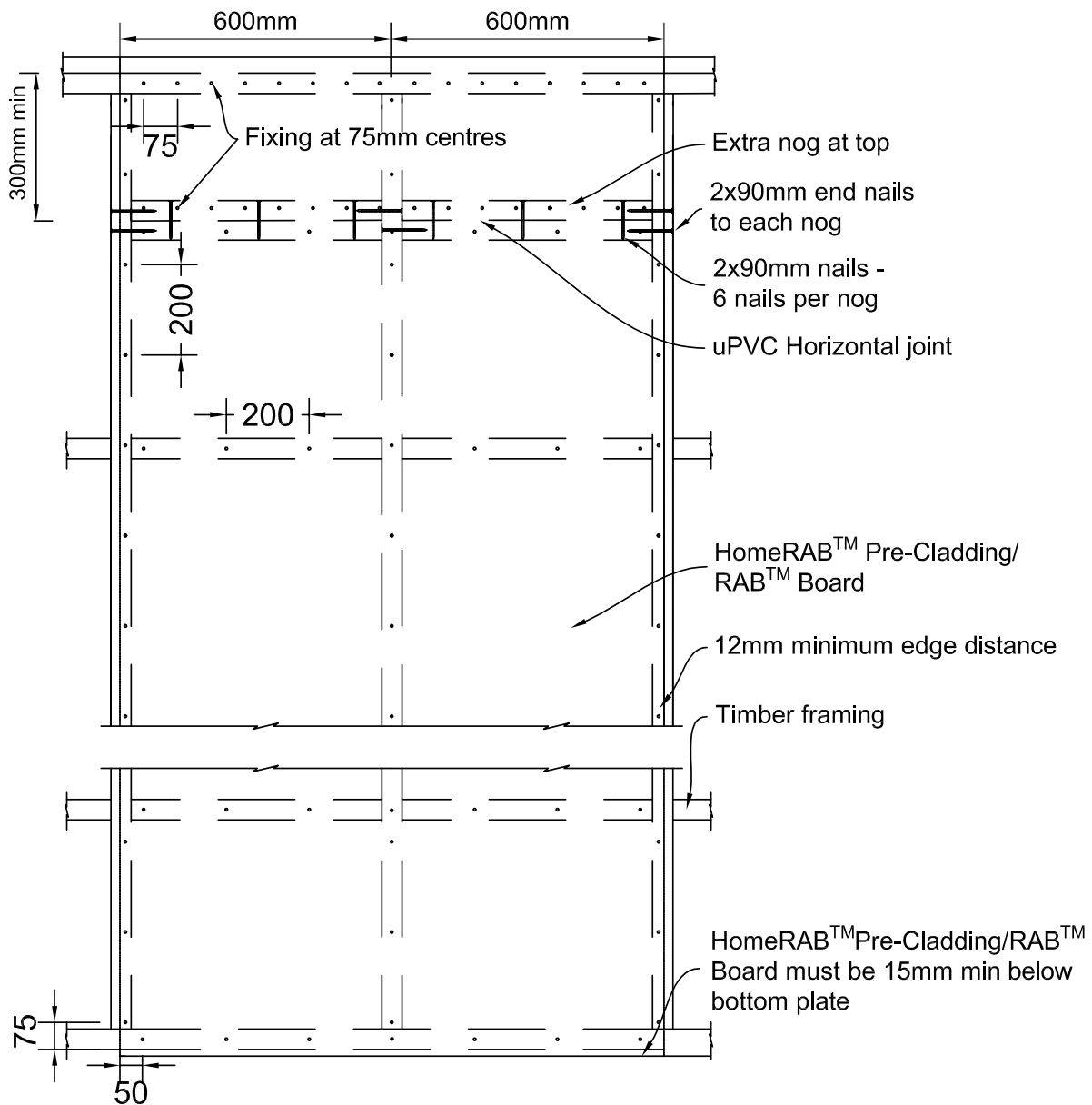


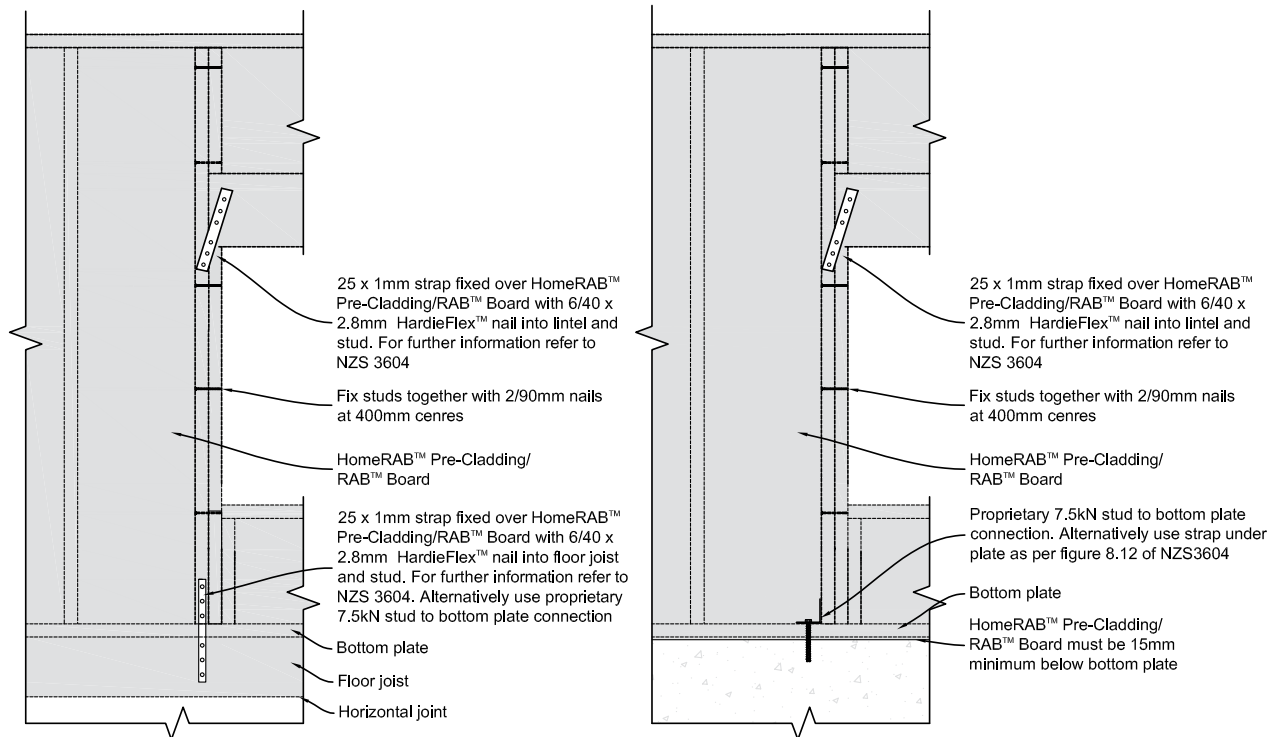
Figure 17: Stud to top plate connection - tall wall



Note:

1. Where a double top plate is used, the truss fixing should be continuous through the double plates.
2. For bracing and fire rated wall application, the board must be fixed at 150mm c/c to entire framing.

Figure 18: Lintel connection



5.3 FLASHINGS

The exposed timber framing around the window jamb can be covered with a 150mm minimum wide flashing tape or a sealing tape refer to Figures 19 and 20. The window sill must be dressed with a 150mm minimum wide flashing tape. The tape is sealed over the face of the James Hardie rigid air barrier.

The James Hardie rigid air barrier surface must be clean, free of grime and dry before the tapes are applied. Some tape manufacturers require a primer tak spray be applied before fixing the tapes to the board surface to achieve a better tape adhesion. Check with the tape manufacturers for further information regarding minimum requirements etc.

Figure 19: Window sealing with flashing tapes

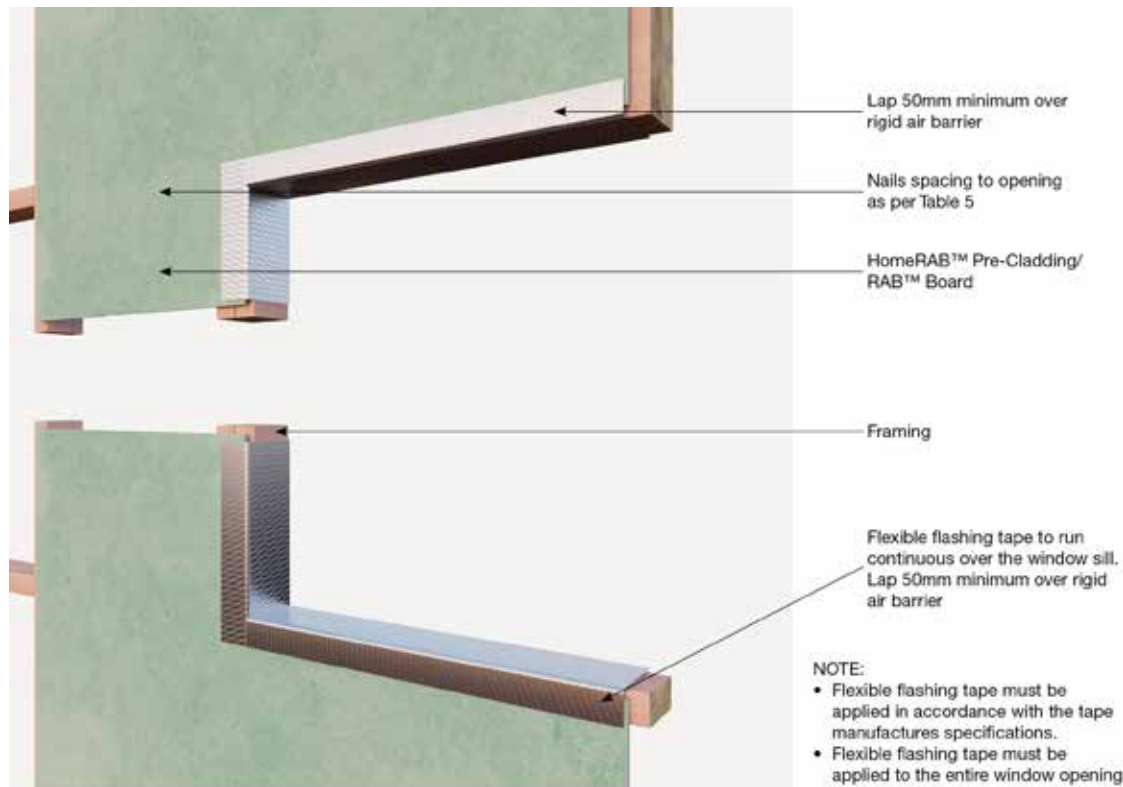


Figure 20: Window jamb with flashing tape

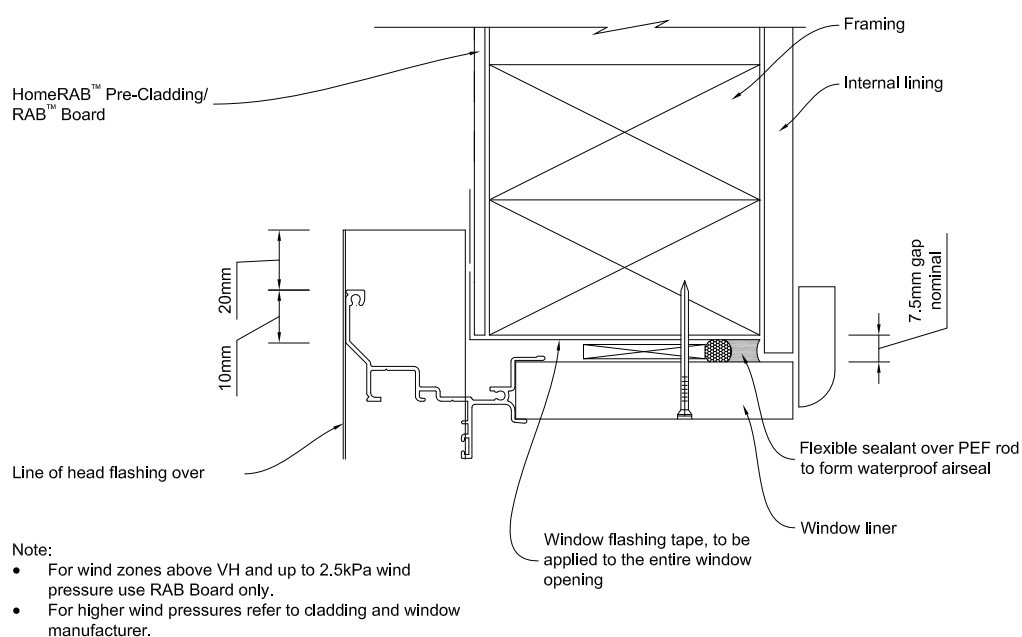


Figure 21: James Hardie rigid air barriers to standard soffit

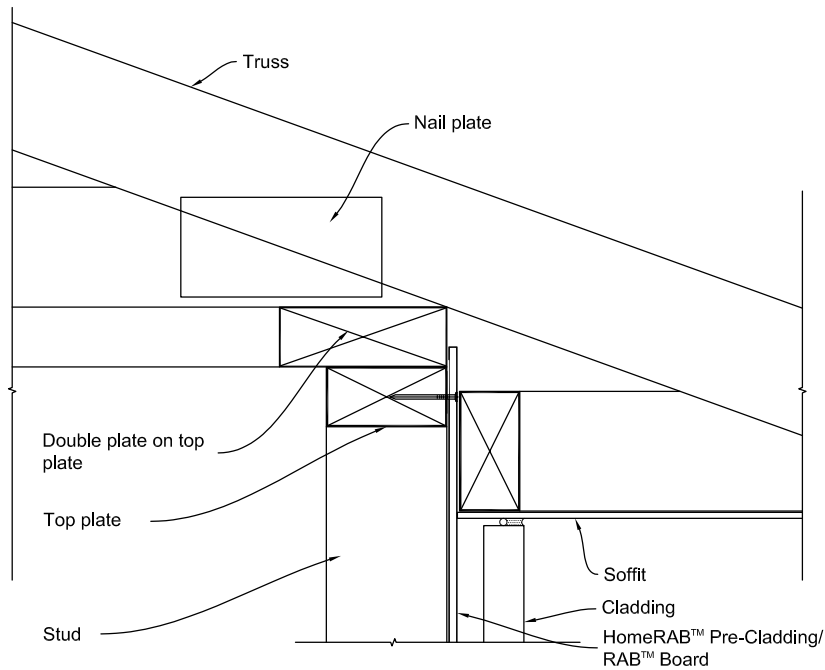
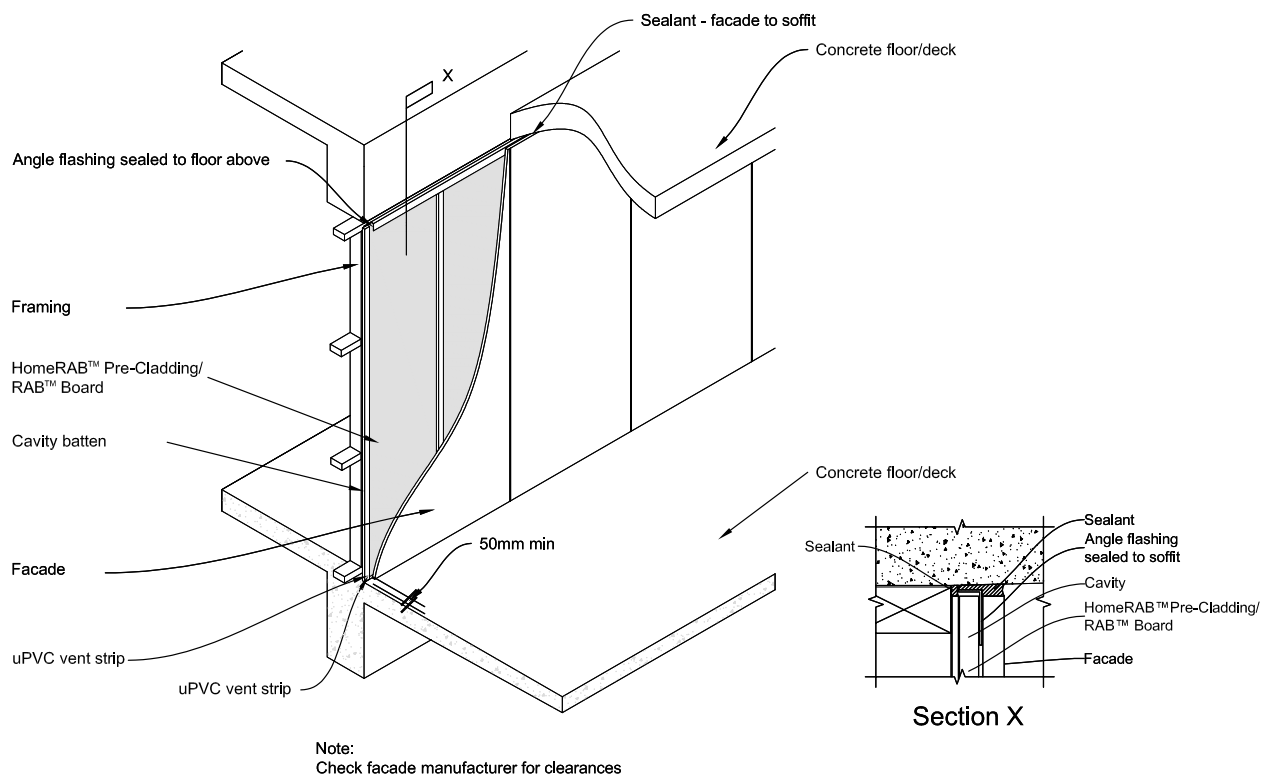


Figure 22: RAB Board to concrete slab junction



5.3.1 Penetrations

The pipe penetrations through James Hardie rigid air barrier must be sealed securely using a flexible flashing tape. Maintain a 100mm minimum cover of flashing over the board around the penetration.

5.3.2 Balustrade to wall junctions

The junctions between balustrades to wall should be appropriately flashed. Refer to E2/AS1 of the NZBC for information and flashing details.

Figure 23: Pipe penetration through James Hardie rigid air barriers

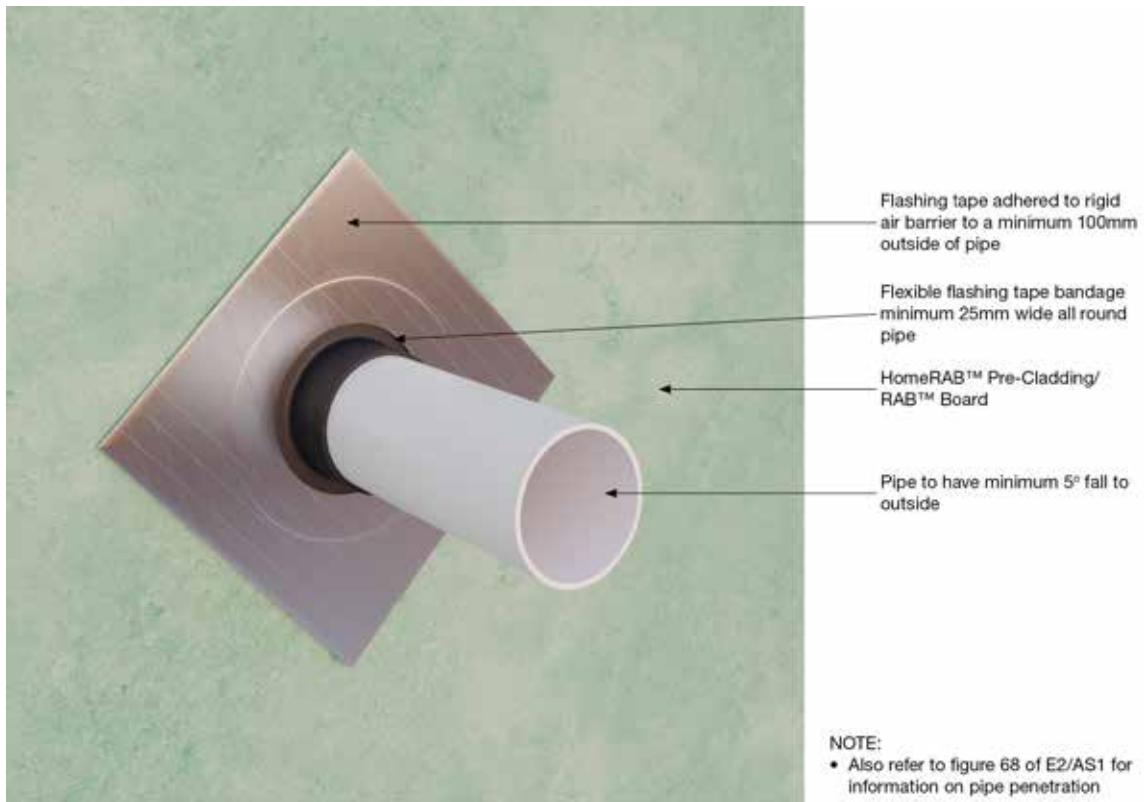


Figure 24: Flashing at balustrade

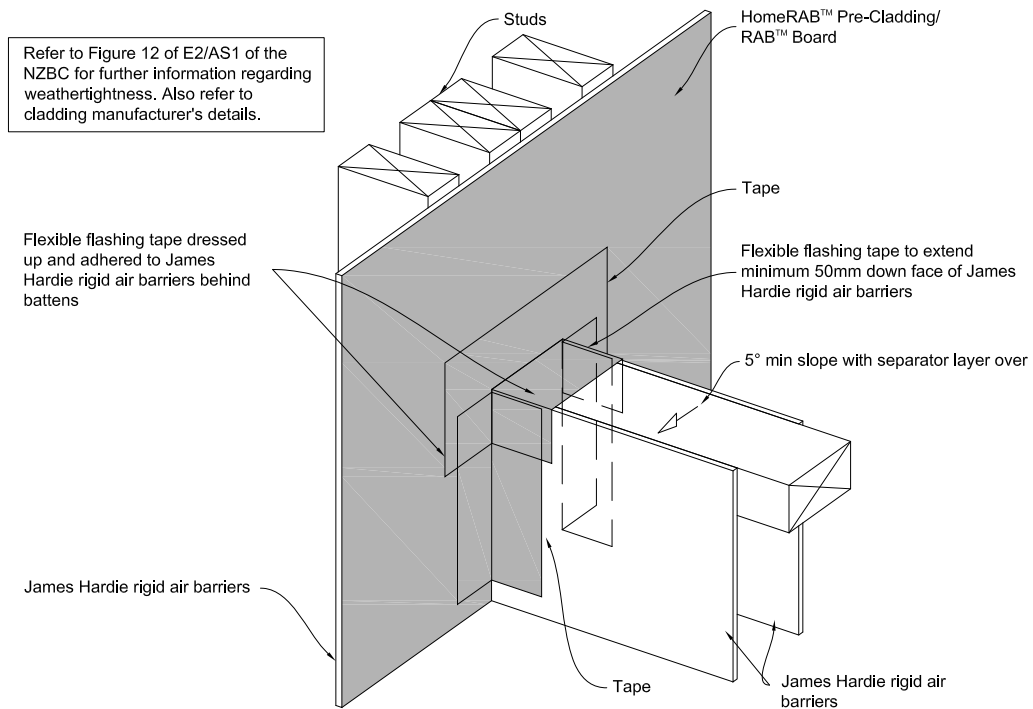
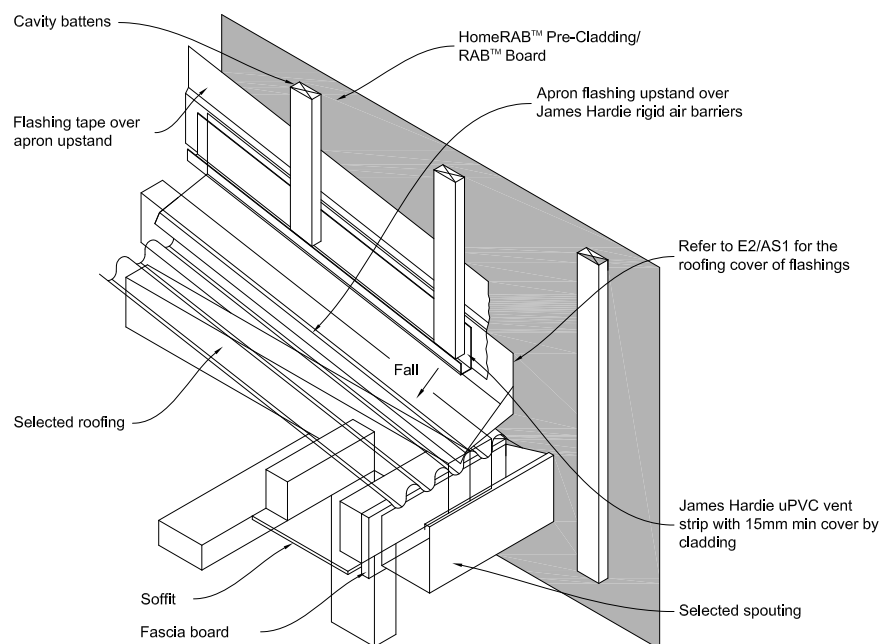


Figure 25: Apron flashing



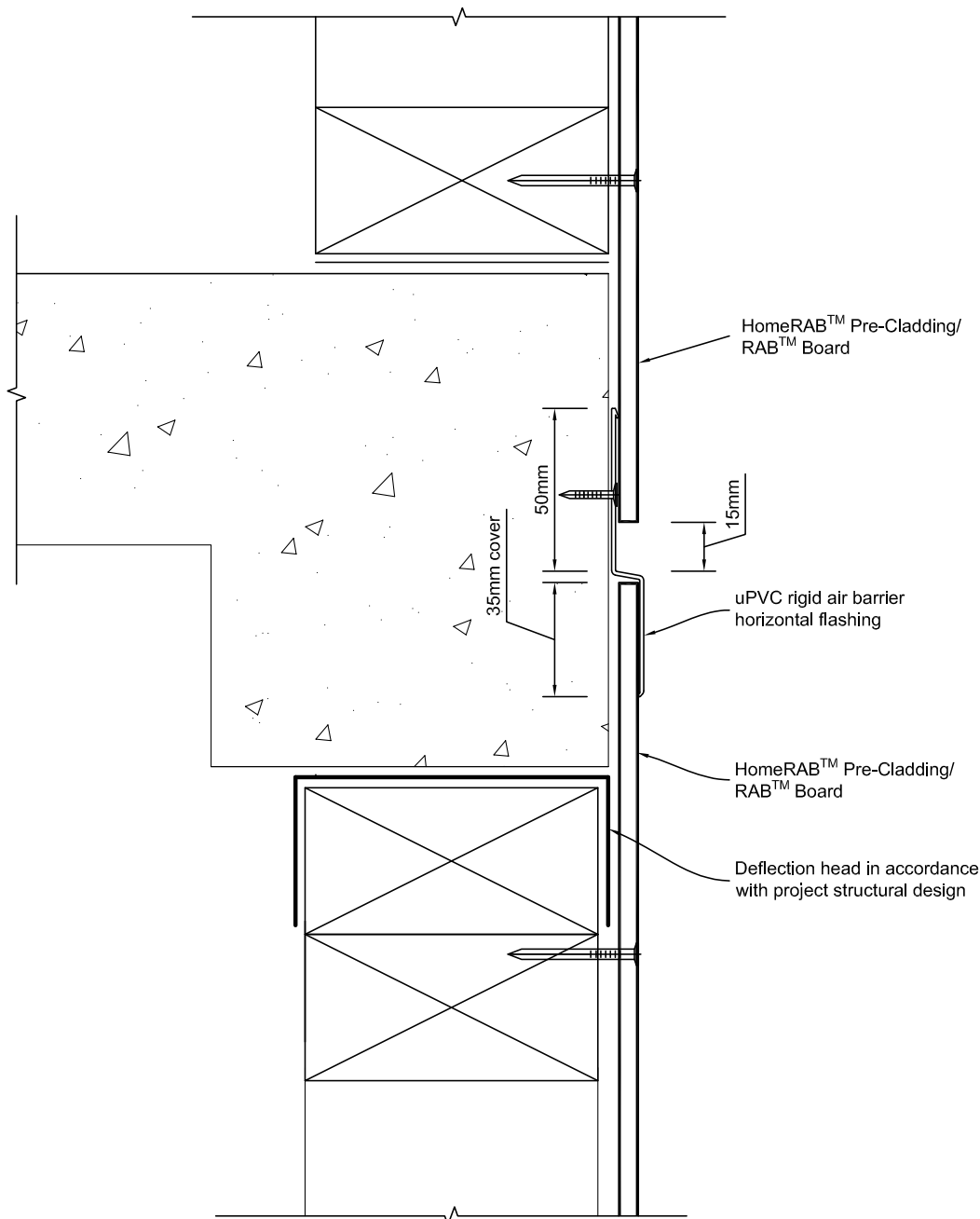
5.3.3 Inter-storey deflections

When installing James Hardie rigid air barriers, a horizontal joint in the RAB Board must be incorporated between sheets at each floor level to accommodate for the inter-storey deflections. Refer to Figures 9 and 10.

For the specific engineering design (SED), where structures are subject to high wind pressures and designed with inter-storey

seismic deflections, the use of 6mm or 9mm RAB Board is recommended. RAB Board, when fixed as per this installation manual, is readily capable of withstanding Serviceability Limit State (SLS) deflections up to span/180. For structures where greater inter-storey seismic deflections are expected, a deflection head should be used, as per the project structural engineer's design and detailing. Refer to Figure 26.

Figure 26: Deflection head



6 Bracing

James Hardie rigid air barriers are suitable for bracing applications. Given below are various bracing systems that have been tested and the bracing values published. Refer to bracing system details for bracing installation or refer to James Hardie Bracing Design Manual for further information.

6.1 BOTTOM PLATE FIXING/ HOLD DOWN RESTRAINTS

The timber framing must be fixed in accordance to table 8.19 of NZS 3604. Additional hold down restraints must be provided as per each bracing system's requirements. Refer to bracing systems details.

6.7.1 Concrete foundation

Pydra brace anchor kits or GIB Handibrac® with a 15kN minimum uplift capacity holding down bolt can be used as end restraints.

6.7.2 Timber foundation

Pydra brace anchor kits or GIB Handibrac® with a M12 x 150mm holding down bolt can be used as end restraints. Alternatively, holding down straps as per NZS 3604 can also be used.

6.2 FASTENER DURABILITY AND SIZE

Coach screws and holding down (HD) bolts, where used, must be M12 hot-dipped galvanised steel fitted with 50 x 50 x 3mm galvanised washers. The holding down bolts and washers must have a protective coating as per Table 4.2 of NZS 3604.

PRE-CLADDINGS:

All nails for fixing the pre-cladding bracing panels in Zone D must be Grade 304/316 stainless steel in accordance with NZS 3604.

All nails for fixing the pre-cladding bracing panels for Zone B and Zone C can be Grade 304/316 stainless steel or hot dipped galvanised steel nail.

Note: Fastener sizes are given in the respective details section for each product or system.

6.3 SHEET NAILING

Nails can be hand driven or gun nailed at a minimum edge distance as shown in the bracing details within this specification. This also applies to dimensions from corners, vertically and horizontally. The sheets must be held hard against the framing during nailing to minimise sheet break-out at the back of sheet. Always drive all nails flush with the sheet surface. For sheet/panel systems do not punch the nail below the surface as it reduces the nail's holding power.

Fix all sheets from the centre working towards outer edges to avoid drumminess. Fixings at 150mm maximum centres when hand nailing.

Gun nails can be used on some bracing systems with fixings at 100mm maximum centres. Must use a 6.85mm Ø round head coil nail with a pneumatic nail gun. **Refer to bracing tables for hand or gun nail options available.**

6.4 SHEET ORIENTATION

For the bracing systems specified in this manual, all flat sheets must be fixed vertically with the exception of Villaboard™ Lining, which can either be fixed vertically or horizontally as per the bracing systems details.

Full-height sheets must be used for walls up to 3000mm in height. When bracing walls height exceed 3000mm, sheet jointing is acceptable. Only one horizontal sheet joint is permitted within the element height. The maximum height of bracing wall is limited to 4800mm.

A site cut bracing sheet must be minimum 300mm wide when used in a bracing element. Refer to Figure 16.

Always ensure that the sheet joint is on the centre line of the stud or nog to achieve sufficient cover of fixings.

In internal walls the lining sheet used for bracing must stop 6mm above the finished floor.

6.5 SERVICE PENETRATIONS

Holes/penetrations up to 100 x 100mm positioned no closer than 200mm of the edge or another penetration, are allowed for services. Maximum of two service penetrations are recommended per sheet.

No window/door penetrations are allowed within the bracing elements.

Table 7

HomeRAB™ Pre-Cladding vertically fixed									
System number	Length	Hold down	Refer figures	BU/M		kN/m		Fixing method	
				Wind	Earthquake	Wind	Earthquake	Hand nail	Gun nail
Hpn	1200	N	27	67	71	3.4	3.6	✓	
HP	400	Y	28,32,33,34	85	91	4.3	4.6	✓	E
	600	Y	28,32,33,34	99	103	5.0	5.2	✓	E
	1200 to 2400	Y	29,32,33,34	133*	104	6.7	5.2	✓	E
	2400 to 4800	Y	29,32,33,34	141*	67	7.1	3.4	✓	E

*A limit of 120BUs/m maximum applies to timber floors and 150BUs/m maximum to concrete floors built as per NZS 3604: 2011 unless a specific engineering design is carried out to ensure the uplift force generated by bracing elements does not exceed the maximum limit for each floor type.

Table 8

HomeRAB™ Pre-Cladding vertically fixed with 10mm GIB® Standard plasterboard									
System number	Length	Hold down	Refer figures	BU/M		kN/m		Fixing method	
				Wind	Earthquake	Wind	Earthquake	Hand nail	Gun nail
HPg	400	Y	28,30,32,33,34	90	98	4.5	4.9	✓	E
	600	Y	28,30,32,33,34	127*	136*	6.4	6.8	✓	E
	1200 to 2400	Y	29,31,32,33,34	164*	138*	8.2	6.9	✓	E

*A limit of 120BUs/m maximum applies to timber floors and 150BUs/m maximum to concrete floors built as per NZS 3604: 2011 unless a specific engineering design is carried out to ensure the uplift force generated by bracing elements does not exceed the maximum limit for each floor type.

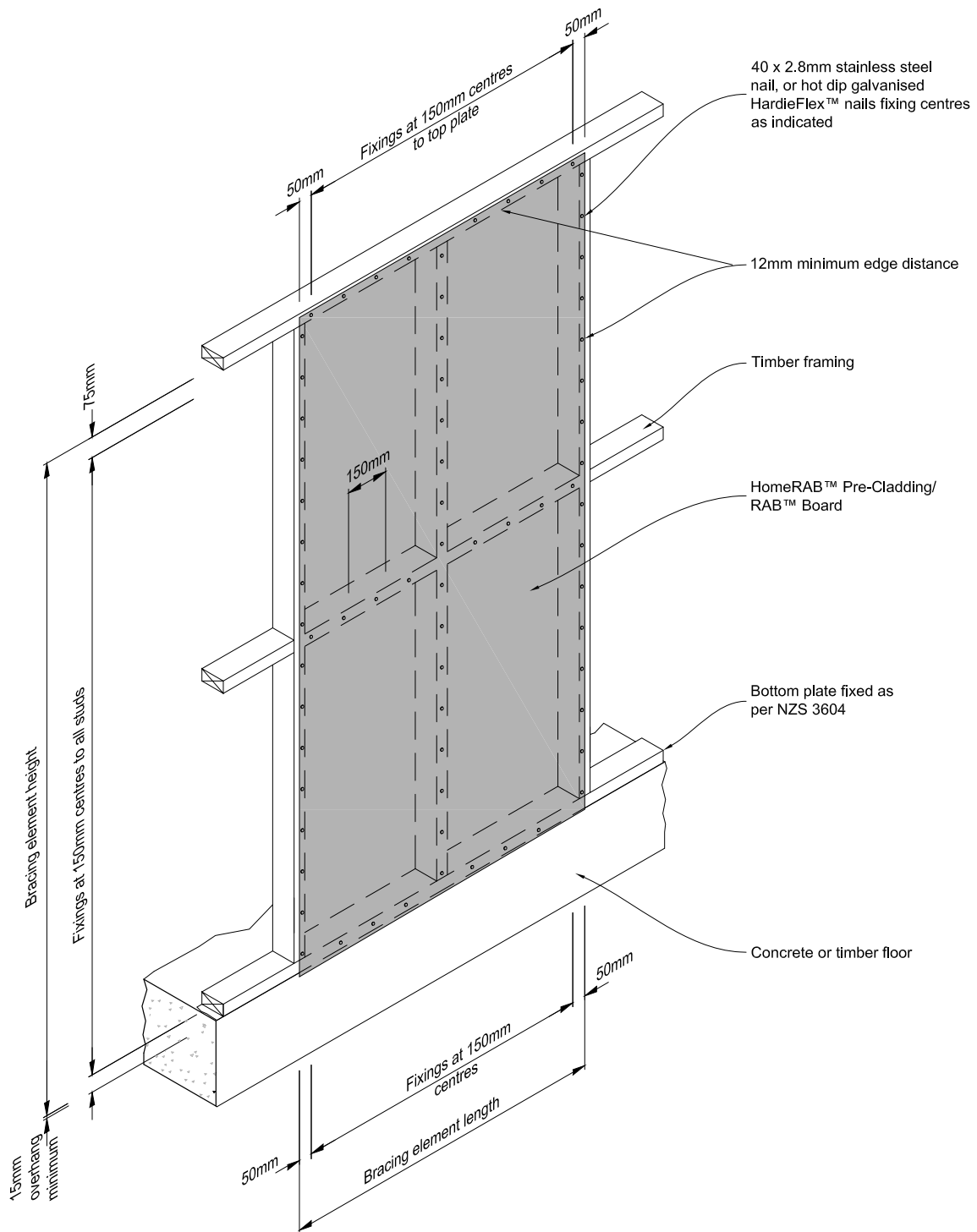
Table 9

RAB™ Board 6mm or 9mm									
System number	Length	Hold down	Refer figures	BU/M		kN/m		Fixing method	
				Wind	Earthquake	Wind	Earthquake	Hand nail	Gun nail
JHDn	1200	N	27	118	102	5.9	5.1	✓	
JHD	400	Y	28,32,33,34	83	107	4.2	5.4	✓	E & P
	600	Y	28,32,33,34	99	107	5.0	5.4	✓	E & P
	1200 to 2400	Y	29,32,33,34	154*	140*	7.7	7.0	✓	E & P
	2400 to 4800	Y	29,32,33,34	133*	150*	6.7	7.5	✓	E & P

*A limit of 120BUs/m maximum applies to timber floors and 150BUs/m maximum to concrete floors built as per NZS 3604: 2011 unless a specific engineering design is carried out to ensure the uplift force generated by bracing elements does not exceed the maximum limit for each floor type.

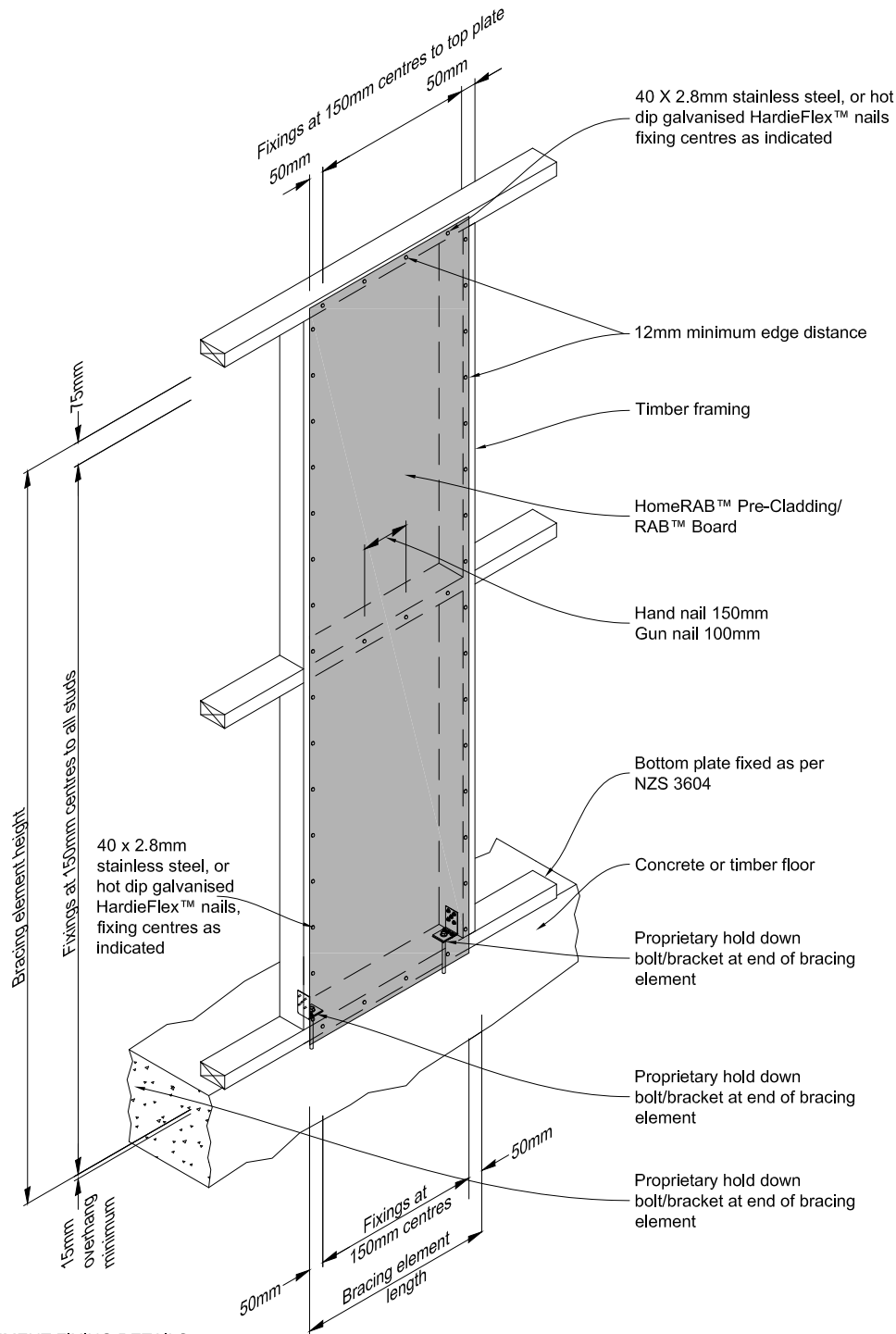
E = Ecko Pneumatic wireless coil nail
P = Paslode RounDrive ring shank nail

Figure 27: 1200mm HomeRAB™ Pre-Cladding or RAB™ Board to concrete or timber floor
- no hold down brackets



Product	System	Minimum length
HomeRAB™ Pre-Cladding	HPn	1200mm
RAB™ Board	JHDn	1200mm

Figure 28: 400/600mm HomeRAB™ Pre-Cladding or RAB™ Board to concrete or timber floor



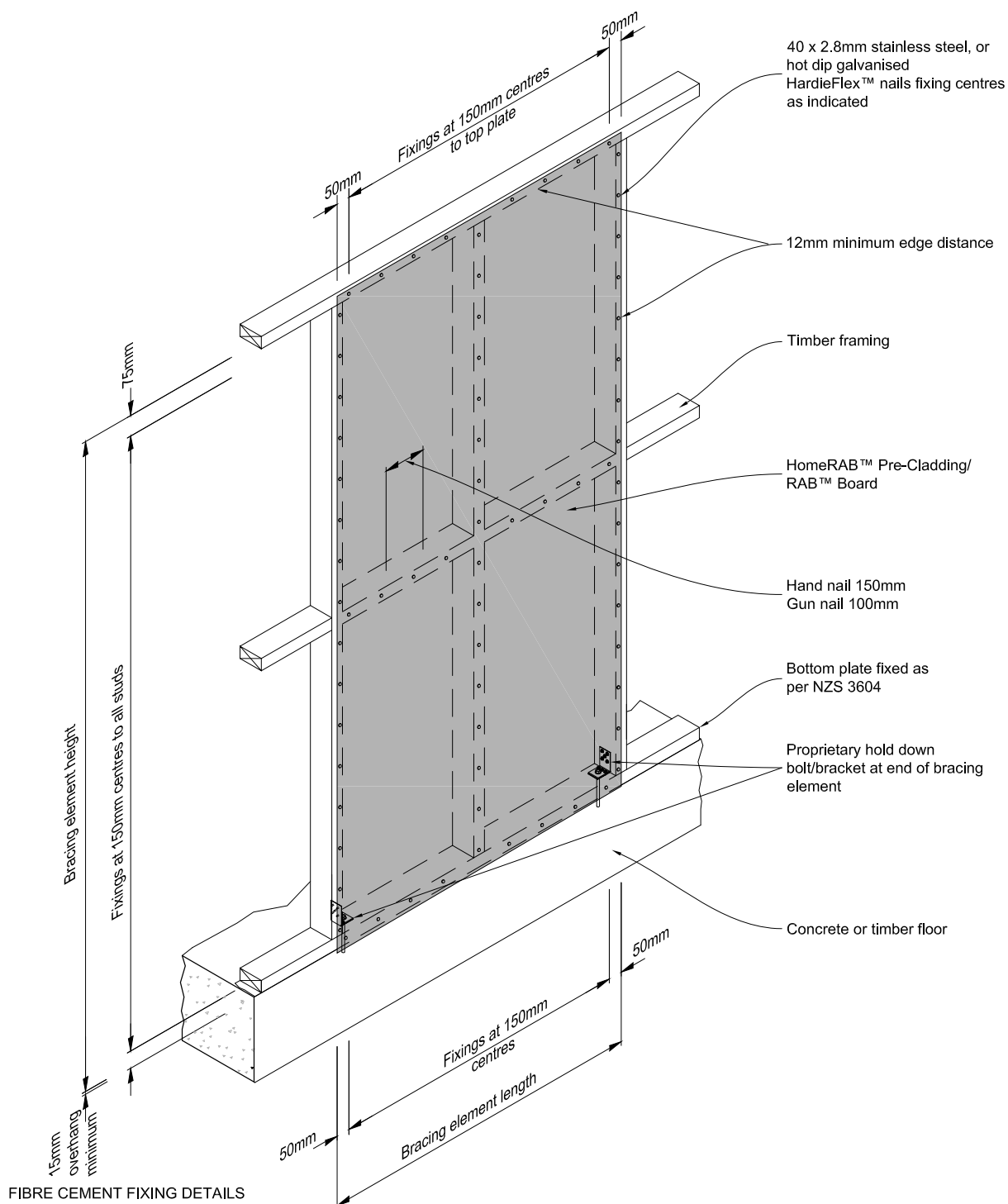
FIBRE CEMENT FIXING DETAILS

Notes for Figure 28:

- **Concrete floor** bottom plate fixing:- Ramset bracing anchor kit Concrete or GIB Handibrac® with 15kN anchor at each end of bracing element
- **Timber floor** bottom plate fixing:- Ramset bracing anchor kit Wood or GIB Handibrac® with a 12x150mm galvanised coach screw at each end of bracing element

Product	System	Minimum length
HomeRAB™ Pre-Cladding	HP	400 or 600mm
HomeRAB™ Pre-Cladding with 10mm GIB® Standard plasterboard	HPg	400 or 600mm
RAB™ Board	JHD	400 or 600mm

Figure 29: 1200mm HomeRAB™ Pre-Cladding or RAB™ Board to concrete or timber floor



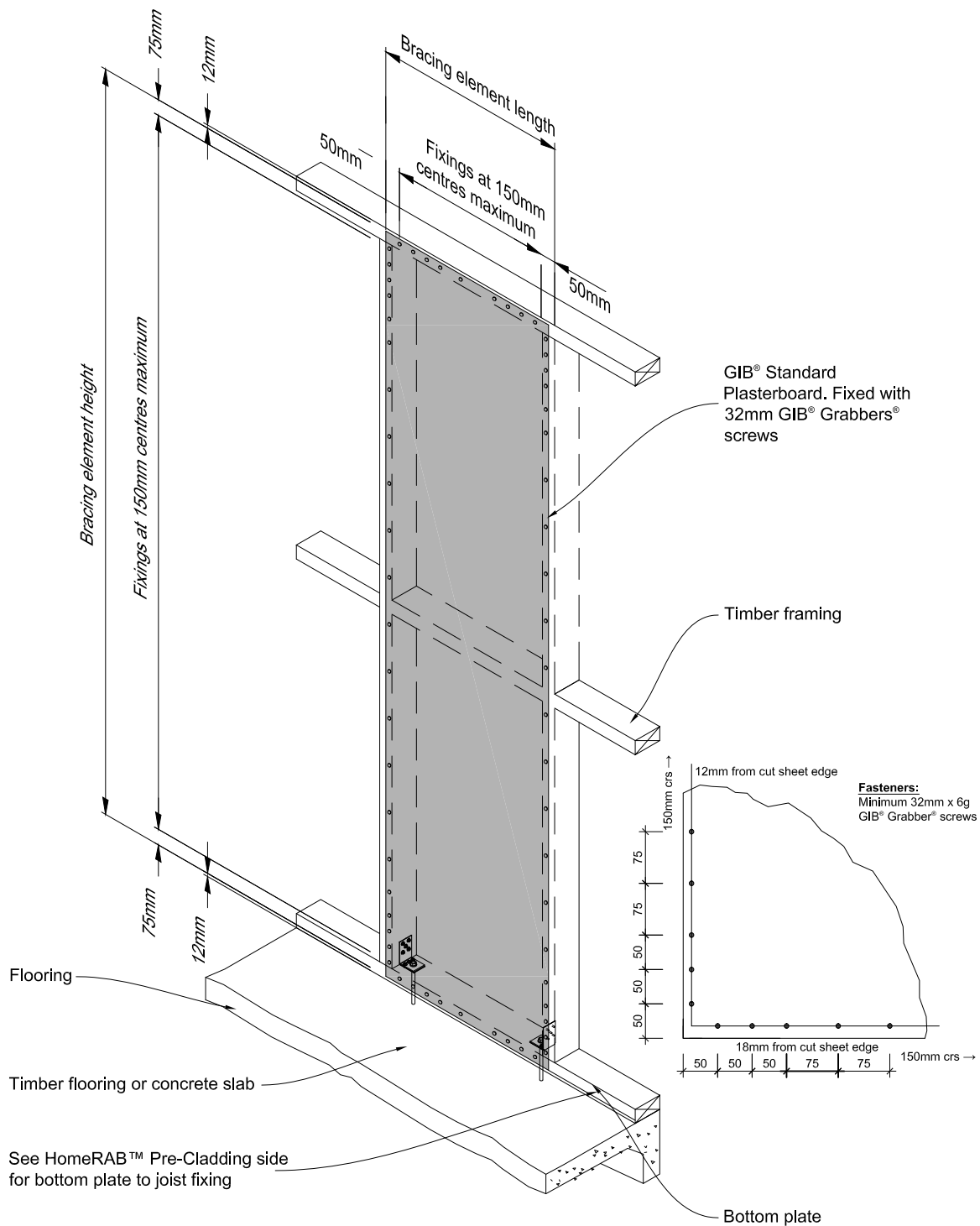
FIBRE CEMENT FIXING DETAILS

Notes for Figure 29:

- **Concrete floor** bottom plate fixing:- Ramset bracing anchor kit Concrete or GIB Handibrac® with 15kN anchor at each end of bracing element
- **Timber floor** bottom plate fixing:- Ramset bracing anchor kit Wood or GIB Handibrac® with a 12x150mm galvanised coach screw at each end of bracing element

Product	System	Minimum length
HomeRAB™ Pre-Cladding	HP	1200mm
HomeRAB™ Pre-Cladding with 10mm GIB® Standard plasterboard	HPg	1200mm
RAB™ Board	JHD	1200mm

Figure 30: 400mm/600mm HomeRAB™ Pre-Cladding with 10mm GIB® Standard Plasterboard



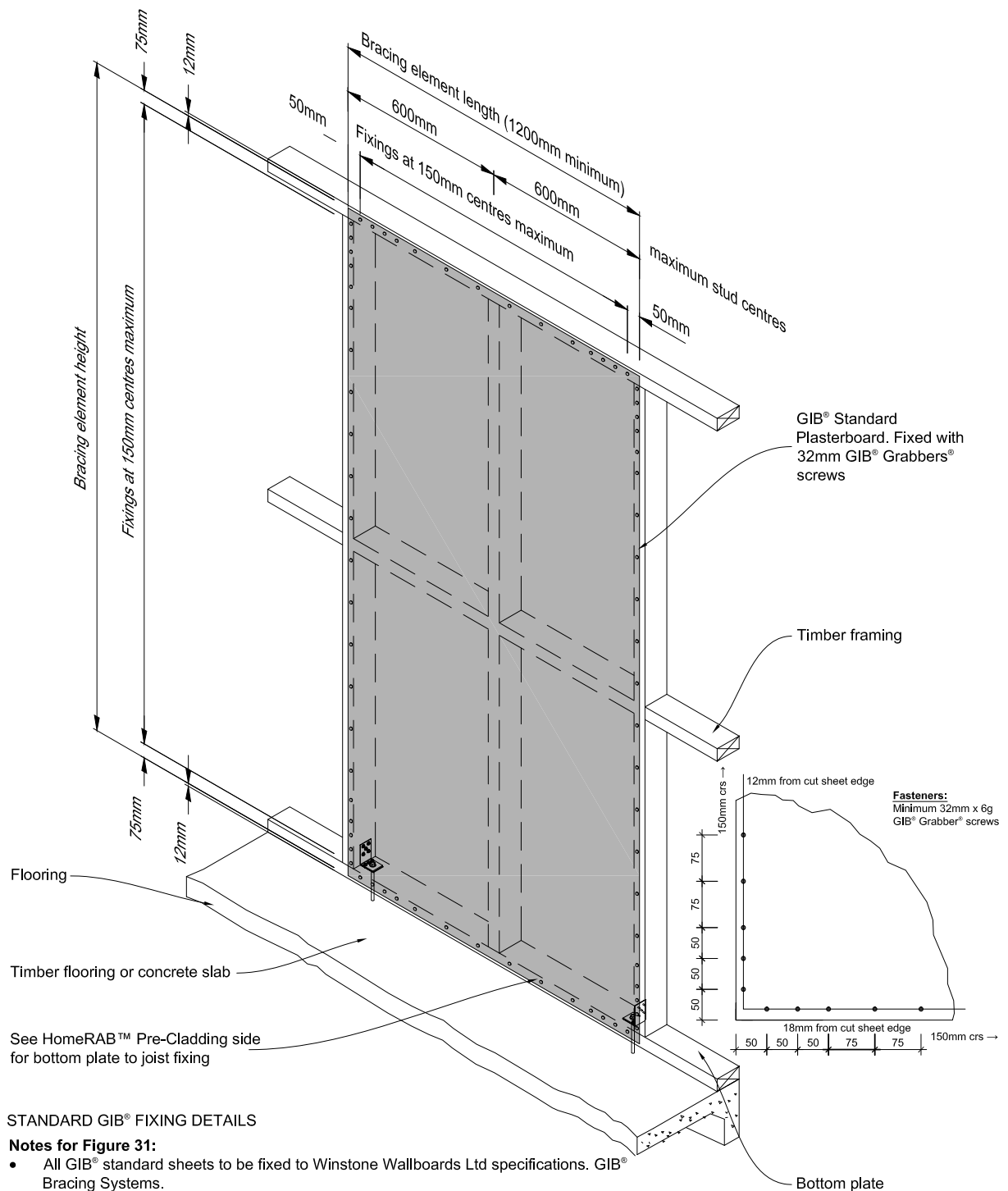
STANDARD GIB® FIXING DETAILS

Notes for Figure 30:

- All GIB® standard sheets to be fixed to Winstone Wallboards Ltd specifications. GIB® Bracing Systems.
- All GIB® bracing sheets to be stopped to Winstone Wallboards Ltd specifications. GIB® Site Guide.
- Refer Winstone Wallboards Ltd specifications for edge distance.

Product	System	Minimum length
HomeRAB™ Pre-Cladding	HPg	400 or 600mm

Figure 31: 1200mm HomeRAB™ Pre-Cladding with 10mm GIB® Standard Plasterboard



STANDARD GIB® FIXING DETAILS

Notes for Figure 31:

- All GIB® standard sheets to be fixed to Winstone Wallboards Ltd specifications. GIB® Bracing Systems.
- All GIB® bracing sheets to be stopped to Winstone Wallboards Ltd specifications. GIB® Site Guide.
- Refer Winstone Wallboards Ltd specifications for edge distance.

Product	System	Minimum length
HomeRAB™ Pre-Cladding/GIB® Standard Plasterboard	HPg	1200mm

Bracing Construction Figures

Figure 32: End bracket to concrete slab

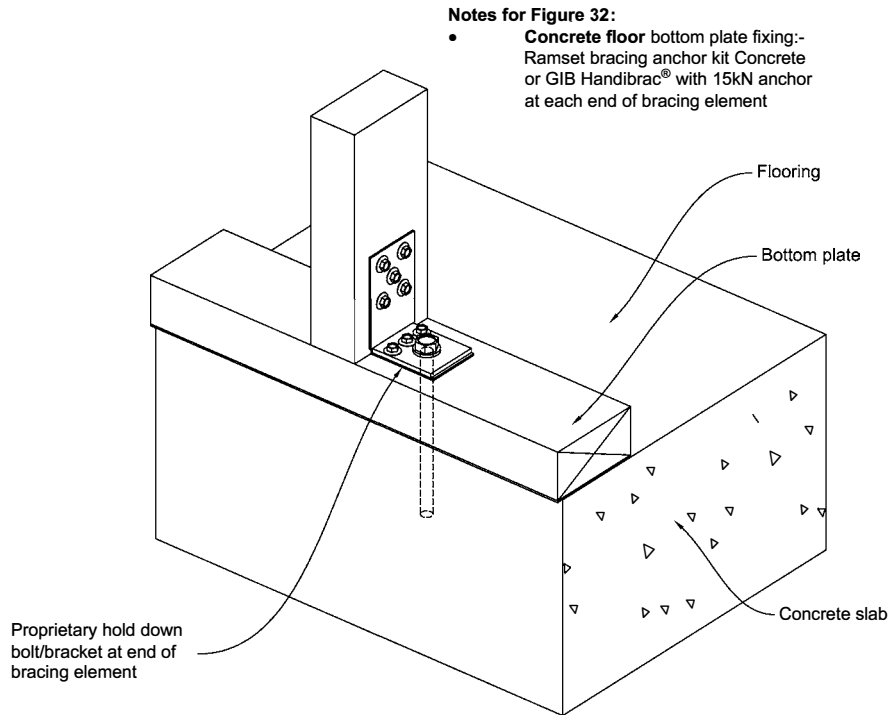


Figure 33: End bracket to timber joist

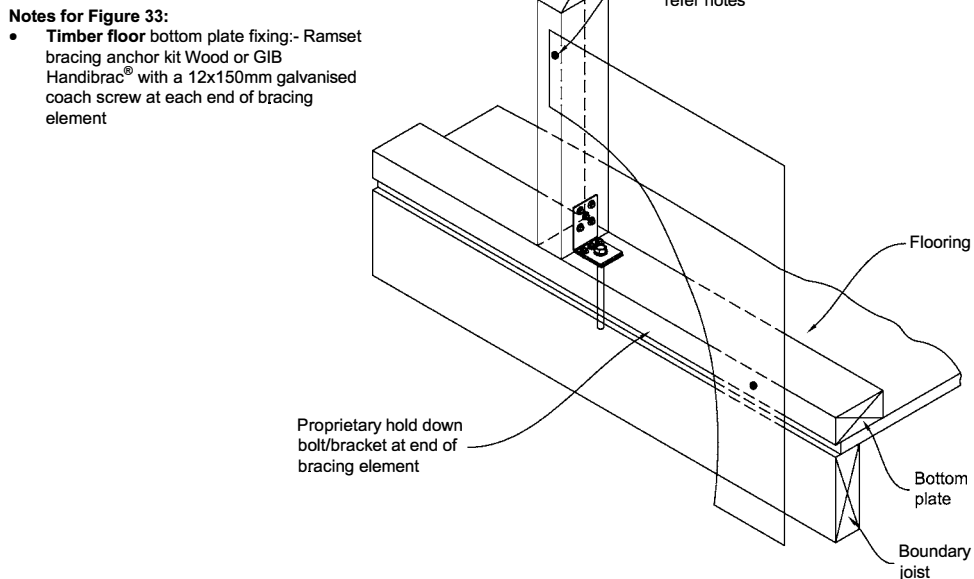
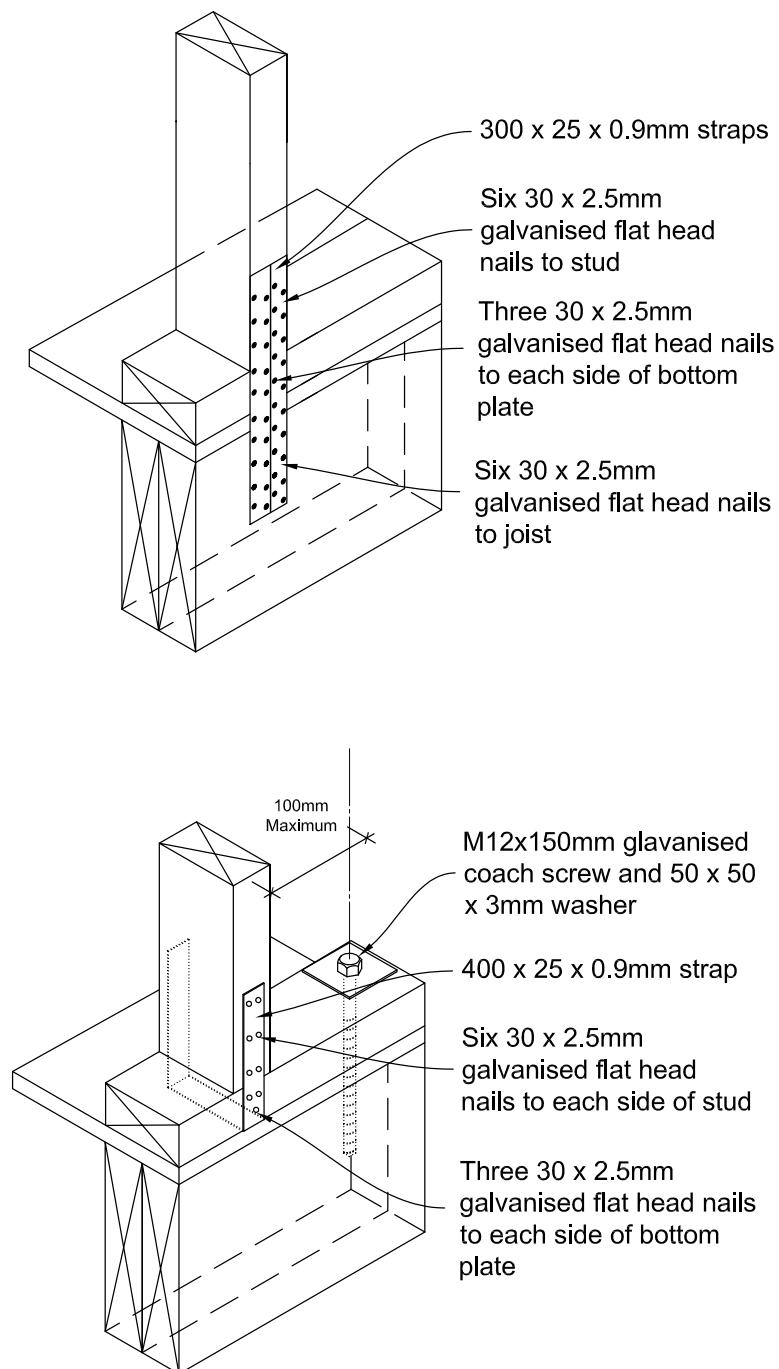


Figure 34: Hold down straps to timber joists



7 Product information

7.1 GENERAL

HomeRAB Pre-Cladding and RAB Board are cellulose fibre reinforced cement building products. The basic composition is Portland cement, ground sand, cellulose fibre and water.

RAB Board is easily identified by the name RAB Board printed on the back face. It has a green colour water repellent sealer applied on its front face.

HomeRAB Pre-Cladding is easily identified by the name 'HomeRAB Pre-Cladding' on the front face. It has a green colour water repellent sealer applied on its front face. The name is also printed on the back face of the lining.

HomeRAB Pre-Cladding and RAB Board are manufactured to conform to the requirements of AS/NZS 2908.2 'Cellulose-Cement Products Part 2: Flat Sheet (ISO 8336).

HomeRAB Pre-Cladding and RAB Board are classified Type B, Category 3 in accordance with AS/NZS 2908.2.

For Safety Data Sheets (SDS) visit www.jameshardie.co.nz or Ask James Hardie on 0800 808 868.

7.2 DURABILITY

Resistance to moisture/rotting

James Hardie rigid air barriers have been assessed for permanent moisture induced deterioration (rotting) and have met the performance requirements of AS/NZS 2908.2.

Resistance to fire

James Hardie rigid air barriers have been tested/assessed and are classified as Non-Combustible Material.

7.3 ALPINE REGIONS

In regions subject to freeze/thaw conditions, James Hardie rigid air barriers must not be in direct contact with snow or ice build up e.g. external walls in alpine regions subject to snow drifts over winter. James Hardie rigid air barriers have been tested to resist freeze thaw in accordance with AS/NZS 2908.2 clause 8.2.3 requirements and is suitable for use in alpine regions.

8 Finishes and maintenance

The selected cladding must be installed and finished within 180 days after the installation of James Hardie rigid air barriers, and the cladding must comply with the requirements of the NZBC. Regular cleaning and maintenance of claddings paints, joints, junctions, penetrations, flashings etc must be carried out at regular intervals and as per the requirements of the material manufacturers. Regular maintenance of cladding is also a requirement under the NZBC.

The ground clearances required for the James Hardie rigid air barriers and the cladding must always be maintained.

Notes

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Notes

SDC - Approved Building Consent Document - BC192253 - Pg 180 of 184 - 8/01/2020 - parkea

Product Warranty

HomeRAB™
PRE-CLADDING



RAB™
BOARD



James Hardie New Zealand Limited ("James Hardie") warrants for a period of 15 years from the date of purchase that the HomeRAB™ Pre-Cladding/RAB™ Board (the "Product"), will be free from defects due to defective factory workmanship or materials and, subject to compliance with the conditions below, will be resistant to cracking, rotting, fire and damage from termite attacks to the extent set out in James Hardie's relevant published literature current at the time of installation. James Hardie warrants for a period of 15 years from the date of purchase that the accessories supplied by James Hardie will be free from defects due to defective factory workmanship or materials. Nothing in this document shall exclude or modify any legal rights a customer may have under the Consumer Guarantees Act or otherwise which cannot be excluded or modified at law.

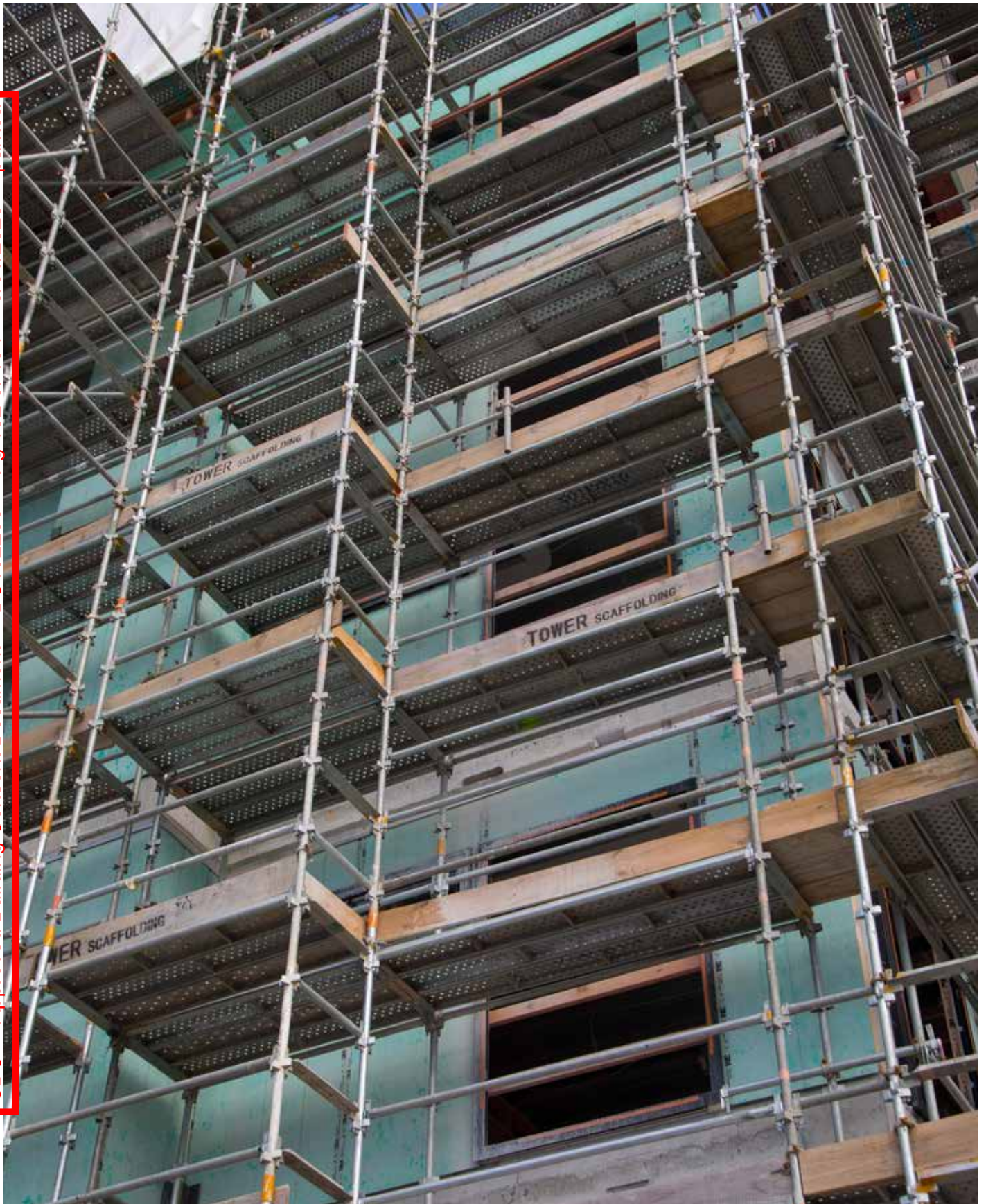
CONDITIONS OF WARRANTY:

The warranty is strictly subject to the following conditions:

- a) James Hardie will not be liable for breach of warranty unless the claimant provides proof of purchase and makes a written claim either within 30 days after the defect would have become reasonably apparent or, if the defect was reasonably apparent prior to installation, then the claim must be made prior to installation;
- b) this warranty is not transferable;
- c) the Product must be installed and maintained strictly in accordance with the relevant James Hardie literature current at the time of installation and must be installed in conjunction with the components or products specified in the literature. Further, all other products, including coating and jointing systems, applied to or used in conjunction with the Product must be applied or installed and maintained strictly in accordance with the relevant manufacturer's instructions and good trade practice;
- d) the project must be designed and constructed in strict compliance with all relevant provisions of the current New Zealand Building Code ("NZBC"), regulations and standards;
- e) the claimant's sole remedy for breach of warranty is (at James Hardie's option) that James Hardie will either supply replacement product, rectify the affected product or pay for the cost of the replacement or rectification of the affected product;
- f) James Hardie will not be liable for any losses or damages (whether direct or indirect) including property damage or personal injury, consequential loss, economic loss or loss of profits, arising in contract or negligence or howsoever arising. Without limiting the foregoing James Hardie will not be liable for any claims, damages or defects arising from or in any way attributable to poor workmanship, poor design or detailing, settlement or structural movement and/or movement of materials to which the Product is attached, incorrect design of the structure, acts of God including but not limited to earthquakes, cyclones, floods or other severe weather conditions or unusual climatic conditions, efflorescence or performance of paint/coatings applied to the Product, normal wear and tear, growth of mould, mildew, fungi, bacteria, or any organism on any Product surface or Product (whether on the exposed or unexposed surfaces);
- g) all warranties, conditions, liabilities and obligations other than those specified in this warranty are excluded to the fullest extent allowed by law;
- h) if meeting a claim under this warranty involves re-coating of Products, there may be slight colour differences between the original and replacement Products due to the effects of weathering and variations in materials over time.

Disclaimer: The recommendations in James Hardie's literature are based on good building practice, but are not an exhaustive statement of all relevant information and are subject to conditions (c), (d), (f) and (g) above. James Hardie has tested the performance of the HomeRAB™ Pre-Cladding/RAB™ Board when installed in accordance with the HomeRAB™ Pre-Cladding/RAB™ Board installation manual in accordance with the standards and verification methods required by the NZBC and those test results demonstrate the product complies with the performance criteria established by the NZBC. However, as the successful performance of the relevant system depends on numerous factors outside the control of James Hardie (e.g. quality of workmanship and design) James Hardie shall not be liable for the recommendations made in its literature and the performance of the relevant system, including its suitability for any purpose or ability to satisfy the relevant provisions of the NZBC, regulations and standards, as it is the responsibility of the building designer to ensure that the details and recommendations provided in the relevant James Hardie installation manual are suitable for the intended project and that specific design is conducted where appropriate.

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FORM PLG 1

National Environmental Standard (NES) for Assessing and Managing Contaminants in Soil to Protect Human Health

For assistance in answering these questions please refer to (PLG 1A)

Please note that any inaccuracies may result in the applicant being in breach of the Resource Management Act 1991 and/or exposed to liability if the site is subsequently found to be contaminated, including being liable for remedial works.

Is the building work and all associated activities:

Changing the use of the land?

YES

(Please note that "changing the use of the land" includes erecting a dwelling on an area of land which previously had no dwelling erected upon it.)

Disturbing soil?

NO

*(more than 25m³ per 500m² of land) or removing soil? (more than 5m³ per 500m² of land)
(e.g.: foundations, on-site effluent treatment and disposal systems, wells or bores)*

Is the land currently being used, has been used in the past, or is likely to have been used for an activity described on the HAIL?

NO

For more information on this process please contact the Duty Planner on 03 347 2839 or go the Ministry for the Environment website: <http://www.mfe.govt.nz/laws/standards/contaminants-in-soil/>

Signature

The name below as AGENT has the authority for the application to proceed to processing and accept the associated charges.

Signed By:

Rhys James

21 Nov 2019

The Agent will be the first point of contact for communications with the Council/Building Consent authority regarding this application / building work and will receive all correspondence including all invoices.