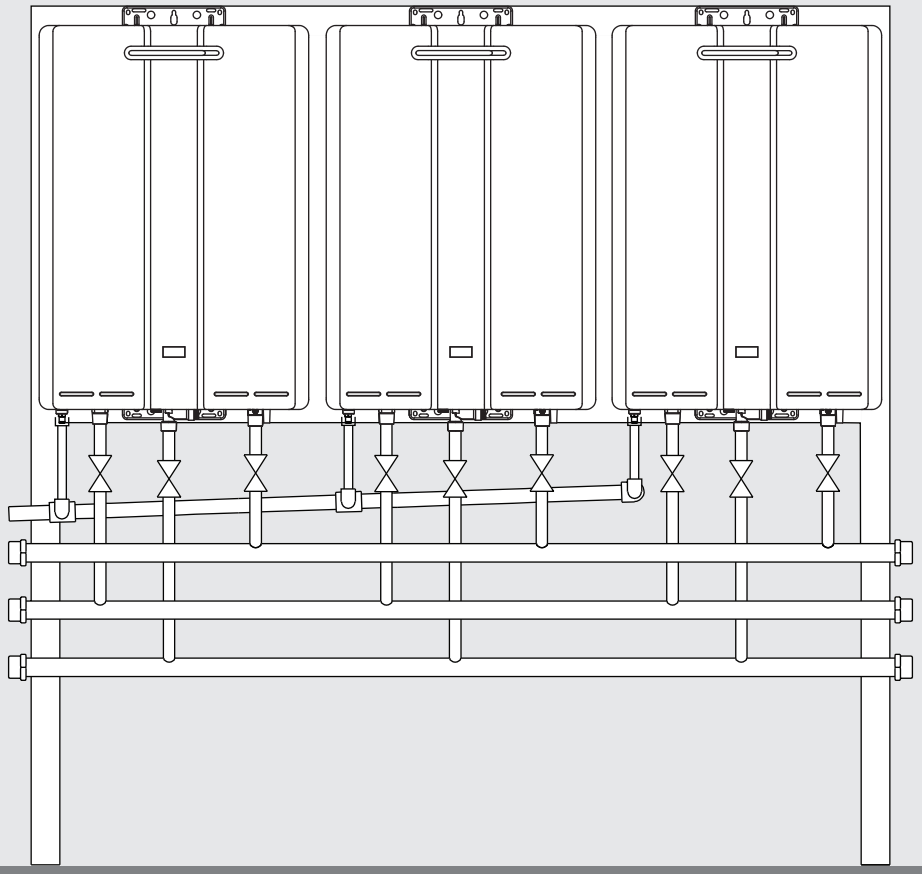


Commercial Manifold Pack

Operation & Installation Manual

Rinnai

Congratulations on the purchase of your Rinnai Manifold Pack System. We trust you will have many years of comfort and enjoyment from your appliance.

IMPORTANT

BEFORE USING THIS APPLIANCE

Before proceeding with the operation or installation, read this manual thoroughly and gain a full understanding of the appliance, to ensure safe and correct use.

IMPORTANT NOTICE FOR INSTALLERS

Please leave these instructions with the end user after commissioning of the system and alert the end user of the content sections "Warnings" and "Periodic Inspection" and 'Maintenance".

Not suitable as a pool or spa heater.

This manual must be read and understood before installation, commissioning and operation of water heaters and flue systems are attempted. The information contained in other Operating / Installation instructions supplied with water heaters applies in full, unless otherwise dictated in this manual.
This appliance must be installed in accordance with:

- Manufacturer's Installation Instructions
- Current AS/NZS 3000, AS/NZS 3500 & AS/NZS 5601
- Plumbing Code of Australia (PCA)
- Local Regulations and Municipal Building Codes including local OH&S requirements

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

For continued safety of this appliance it must be installed and maintained in accordance with the manufacturer's instructions.

WaterMark

This Appliance complies with AS 3498
SAI GLOBAL LIC.W169

The Australian Gas Association

All Rinnai gas products sold in Australia are A.G.A. certified.

TABLE OF CONTENTS

NOTE

INSTALLATION, SERVICE AND REMOVAL MUST BE BY AN AUTHORISED PERSON ONLY.

AS/NZS 5601 was current at the time of printing but may have been superseded. It is the Installer's responsibility to ensure current requirements are met.

Remove transit protection film. Check for damage, if any is found DO NOT install and contact supplier.

WARNINGS & IMPORTANT INFORMATION

REGULATORY INFORMATION

Your Rinnai Continuous Flow water heater has been certified by the Australian Gas Association. The A.G.A. Certification Number is shown on the data plate.

This Appliance must be installed correctly by an authorised person. The installation of gas, water, and electricity must conform to local regulations. The installation must also comply with the instructions supplied by Rinnai. All dimensions referred to in these instructions are in millimetres, unless otherwise specified. Please keep this instruction booklet in a safe place for future reference.

This appliance is not intended for use by persons (including children) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction concerning use of the appliance by a person responsible for their safety. Any power leads from the water heater system components MUST BE plugged into an external weatherproof electrical outlet. If the power supply cord of the system is damaged, it MUST BE replaced by an authorised person in order to avoid a hazard, using genuine replacement parts available from Rinnai. Take care of not to touch the power plugs with wet hands.

Notice to Victorian Consumers

This appliance must be installed by a person licensed with the Victorian Building Authority a licensed person will have insurance protecting their workmanship. So make sure you use a licensed person to install this appliance and ask for your Compliance Certificate. For further information contact the Victorian Building Authority on 1300 815 127.

WARNING ABOUT HOT WATER

WARNING

This appliance may deliver water at high temperature. Refer to the Plumbing Code of Australia (PCA), local requirements and installation instructions to determine if additional delivery temperature control is required.

HEATED WATER CAN BE DANGEROUS, ESPECIALLY FOR YOUNG CHILDREN AND THE INFIRM.

WATER TEMPERATURES ABOVE 50°C CAN CAUSE SEVERE BURNS INSTANTLY AND MAY EVEN RESULT IN DEATH.

THOSE MOST AT RISK ARE CHILDREN, DISABLED, ELDERLY AND THE INFIRM.

HOT WATER AT 65°C (A VERY COMMON HOT WATER TEMPERATURE IN AUSTRALIA) CAN SEVERELY BURN A CHILD IN LESS THAN HALF A SECOND.

AT 50°C IT TAKES FIVE MINUTES.

ALWAYS.....

Test the temperature of the water with your elbow before placing your child in the bath, also carefully feel water before bathing or showering yourself.

Supervise children whenever they are in the bathroom.

Make sure that the hot water tap is turned off tightly.

CONSIDER.....

Installing child proof tap covers or child resistant taps (both approaches will prevent a small hand being able to turn on the tap).

Setting your appliance at a maximum temperature of 50°C (Contact Rinnai Australia).

NEVER…..

Leave a toddler in the care of another child. They may not understand the need to have the water temperature set at a safe level.

INSTALLATION, SERVICE AND REMOVAL MUST BE BY AN AUTHORISED PERSON ONLY.

AS/NZS 5601 was current at the time of printing but may have been superseded. It is the Installer's responsibility to ensure current requirements are met.

Remove transit protection film. Check for damage, if any is found DO NOT install and contact supplier.

MODEL RANGE OVERVIEW

MP2200, MP2250, MP2210, ACMP2 200 either external or internal in NG or LPG

MP3200, MP3250, MP3210, ACMP3 200 either external or internal in NG or LPG

MP4200, MP4250, MP4210, ACMP4 200 either external or internal in NG or LPG

MP5200, MP5250, MP5210, ACMP5 200 either external or internal in NG or LPG

MP6200, MP6250, MP6210, ACMP6 200 either external or internal in NG or LPG

Rinnai Commercial Manifold Pack hot water systems must only be installed, commissioned, service and removed by an authorised person in accordance with these instructions, AS/NZS 5601, AS/NZS 3000, AS/NZS 3500 and local regulations and municipal building codes including local OH&S requirements.

Rinnai Manifold Pack hot water systems are not suitable or approved as a pool heater.

Read these instructions carefully before proceeding with the installation.

LOCATION

Ensure reasonable access for installation, servicing and removal. All valves, controls and pumps etc must be easily accessible.

When using free standing frames the system must be mounted on a solid level base, capable of supporting the weight of the appliance when full of water. Ensure components are not allowed to stand in water.

Manifold Pack can be plumbed “left handed”, “right handed” or “equal flow” as staging determines operating sequence of heaters, not the plumbing. Stage-less or larger systems may need to be “equal flow”, contact Rinnai Commercial for assistance.

Gas booster flue terminals must be located in accordance with AS/NZS 5601 Fig 6.2 “Location of balanced flue terminals”.

Rinnai HD units are fan assisted appliances and thus have lower clearances than a natural draft appliance of the same MJ rating.

HD200e, HD250e, HD210e (External Models)

This appliance is designed for 'Outdoor' Installation only. As such,it must be located in an above ground open air situation with natural ventilation, without stagnant areas, where gas leakage and products of combustion are rapidly dispersed by wind and natural convection.

This appliance must be mounted on a vertical structure with the water and gas connections on the underside pointing downwards. For appliances installed on elevated structures or under floors specific requirements apply. Refer to AS/NZS 5601 Section 6 for details.

This appliance must not be used as a domestic spa or swimming pool heater.

Location of the appliance flue terminal must be in accordance with Section 6 and Figure 6.2 of AS/NZS 5601. Figure 6.2 is reproduced in the 'Horizontal Flue Terminal Clearances' section of these instructions.

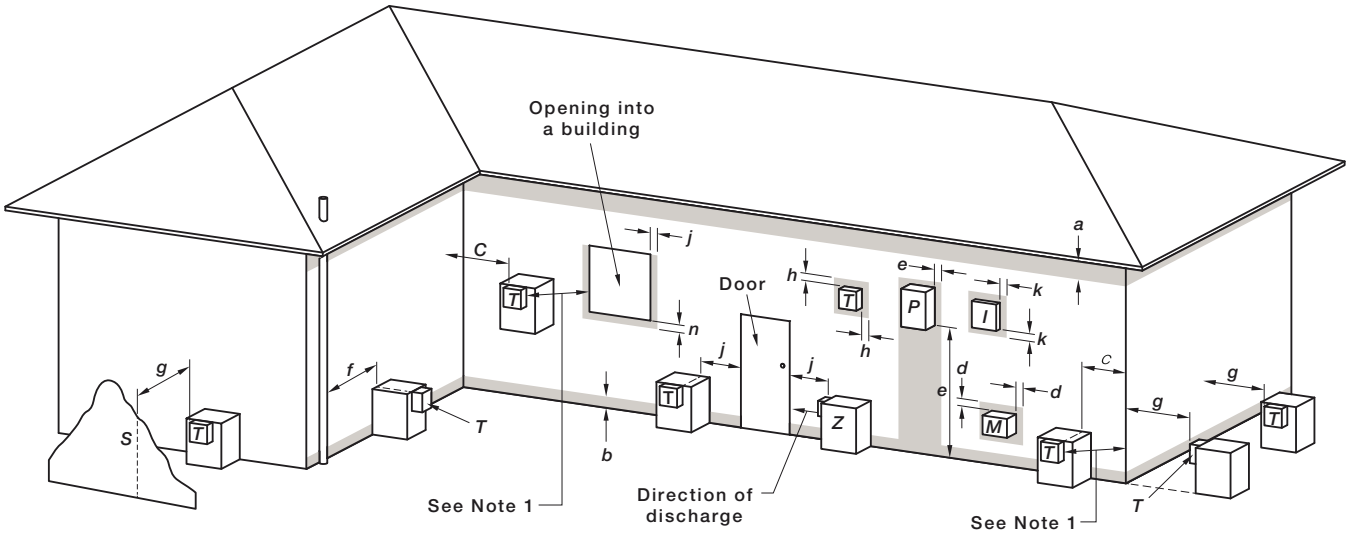
Note: that AS/NZS 5601 is current at the time of printing. It is the Installers' responsibility to ensure current requirements are met.

HD200i, HD210i (Internal Models)

This appliance is designed for 'Indoor' installation only. It may be installed 'Outdoors' in an enclosure if the requirements of AS/NZS 5601 Section 6 are satisfied. An enclosure is defined as a compartment, enclosed area of partitioned off space primarily used for the installing of the appliance.

APPLIANCE FLUE TERMINAL

Horizontal Terminal Clearances (Extract from AS/NZS 5601)



Ref.	Item	Min. Clearances (mm) Fan assisted
a	Below eaves, balconies and other projections:	
	For *appliances* up to 50 MJ/h input	200
	For *appliances* over 50 MJ/h input	300
b	From the ground, above a balcony or other surface *	300
c	Front a return wall or external corner *	300
d	From a *gas meter* (M) (see Note 5) (see Clause 5.11.5.9 for vent terminal location of regulator) (see Table 6.7 for New Zealand requirements)	1000
e	From an electricity *meter* or fuse box (P) † (see Note 5)	500
f	From a drain pipe or soil pipe	75
g	Horizontally from any building structure* = or obstruction facing a terminal	500
h	From any other *flue terminal* , cowl, or combustion air intake *	300
j	Horizontally from an openable window, door, non-mechanical air inlet, or any other opening into a building with the exception of sub-floor ventilation:	
	Appliances up to 150 MJ/h input *	300
	Appliances over 150 MJ/h input up to 200 MJ/h input *	300
	Appliances over 200 MJ/h input up to 250 MJ/h input *	500
	Appliances over 250 MJ/h input *	1500
	All fan-assisted *flue appliances*, in the direction of discharge	1500
k	From a mechanical air inlet, including a spa blower	1000
n	Vertically below an openable window, non-mechanical air inlet, or any other opening into a building with the exception of sub-floor ventilation:	
	Space heaters up to 50 MJ/hr input	150
	Other *appliances* up to 50 MJ/hr input	500
	Appliances over 50 MJ/h input and up to 150 MJ/h input	1000
	Appliances over 150 MJ/h input	1500

* Unless *appliance* is *certified* for closer installation.

† Prohibited area below electricity meter or fuse box extends to ground level.

NOTES:

1 Where dimensions *c, j* or *k* cannot be achieved an equivalent horizontal distance measured diagonally from the nearest discharge point of the terminal to the opening may be deemed by the *Technical Regulator* to comply.

2 See Clause 6.9.4 for restrictions on a *flue terminal* under a covered area.

3 See Figure J3 for clearances required from a *flue terminal* to an *LP Gas cylinder*. A *flue terminal* is considered to be a source of ignition.

4 For *minimum clearances* not addressed above acceptance should be obtained from the *Technical Regulator*.

5 Minimum clearances *d* and *e* also apply to any combustion air intake openings of appliances.

FIGURE 6.2 (in-part) LOCATION OF FLUE TERMINALS OF BALANCED FLUE, ROOM-SEALED, FAN-ASSISTED OR OUTDOOR APPLIANCES

INTERNAL FLUEING

CO-AXIAL FLUEING FOR INTERNAL MODELS

The Rinnai Continuous Flow Flueing system must be installed in accordance with the instructions supplied with the flue terminal. Non Rinnai flueing systems MUST NOT be used. For all further information on Internal Flueing, please refer to separate Flueing manual supplied with Flueing components.

Installations can consist of both horizontal and vertical runs to a maximum of 9 metres with a maximum of three 90° bends.

The Rinnai Internal Flueing system is highly versatile and makes installation of an internal water heater simple and convenient. The flueing for internal water heaters is a Co-axial design. It is manufactured from an aluminium alloy inner flue pipe to discharge product of combustion and a thermoplastic outer pipe for air supply to the appliance. The water heater is a room sealed appliance.

Note: Each Rinnai water heater is flued individually.

Manifold Pack 5

As it is fan assisted, the heater can be flued vertically, horizontally or any combination of both, to a maximum of 9 metres and 3 x 90 degree bends.

Horizontal flueing can be used as a direct wall flue or extended from another internal wall.

Vertical flueing is used when the water heater needs to be flued vertically through the roof.

A condensate trap is required when vertical flue exceeds 1.5 metres.

Rinnai HD internal water heaters are classified as 'room sealed' appliances. Flue systems must be installed in accordance with Rinnai Installation Instructions (supplied with the flue terminals), local gas fitting regulations, municipal building codes, AS/NZS 5601 and all other relevant statutory regulations.

The flue terminal clearances AS/NZS 5601 DO NOT apply to the HD200e and HD250e heaters installed side by side.

These appliance are AGA certified to be located side by side, for both internal and external models.

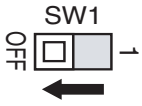
Manifold Pack 3

NOTE **Only Rinnai Flueing Systems can be used with Internal Water Heaters. Non-Rinnai Flueing systems are not certified and will not be covered under warranty.**

For Internal (FFU) models only

☑ Have you used only RINNAI FFU flueing components?

☑ If flue length exceeds 2m, dip-switch 1 of SW1 is to be switched to the '**OFF**' position as shown.



For all further information on Internal Flueing, please refer to separate Flueing manual supplied with Flueing components.

COMMON FLUE SYSTEM FOR INTERNAL MODELS

The Rinnai Commercial Common Flue System is suitable for the Rinnai Internal Commercial Gas Continuous Flow Water Heaters in accordance with the flue design options outlined in the AS/NZS 5601.1 Appendix titled "Flue Design". Figure 1 and Figure 2 below, illustrate typical application principles.

Figure 1. Typical Natural Draft Flue Installation - VRM/VCM-Series ONLY

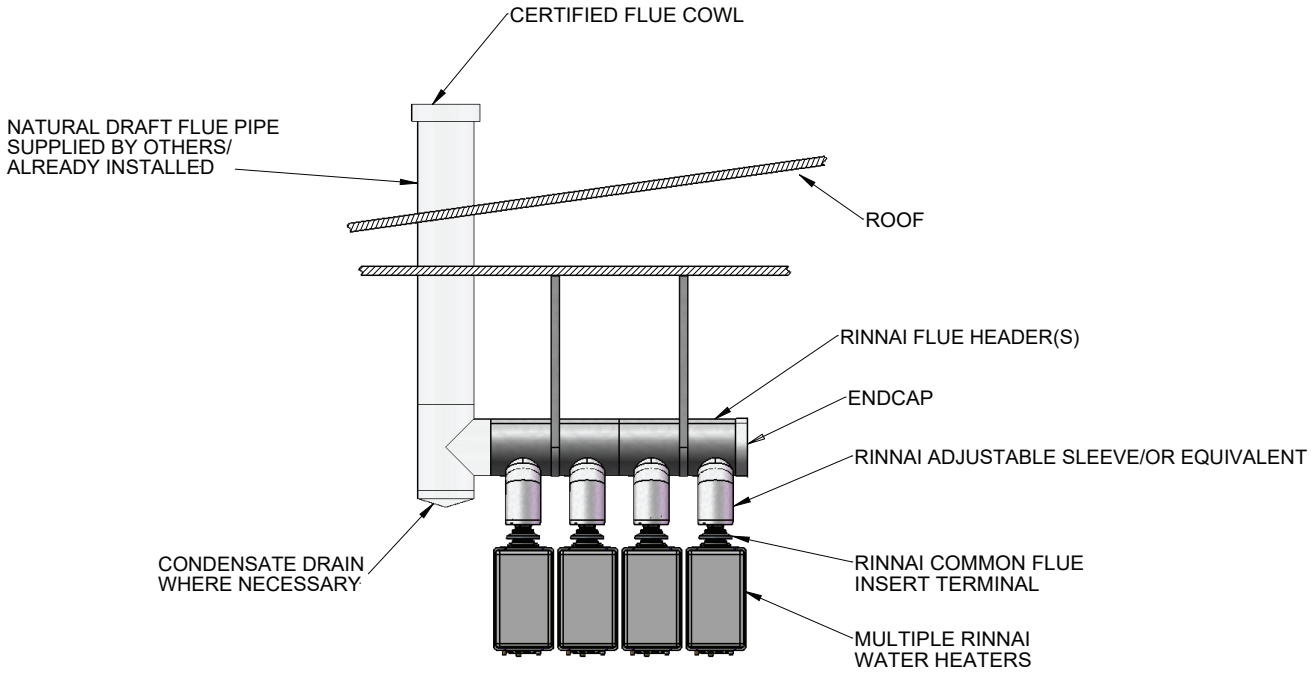
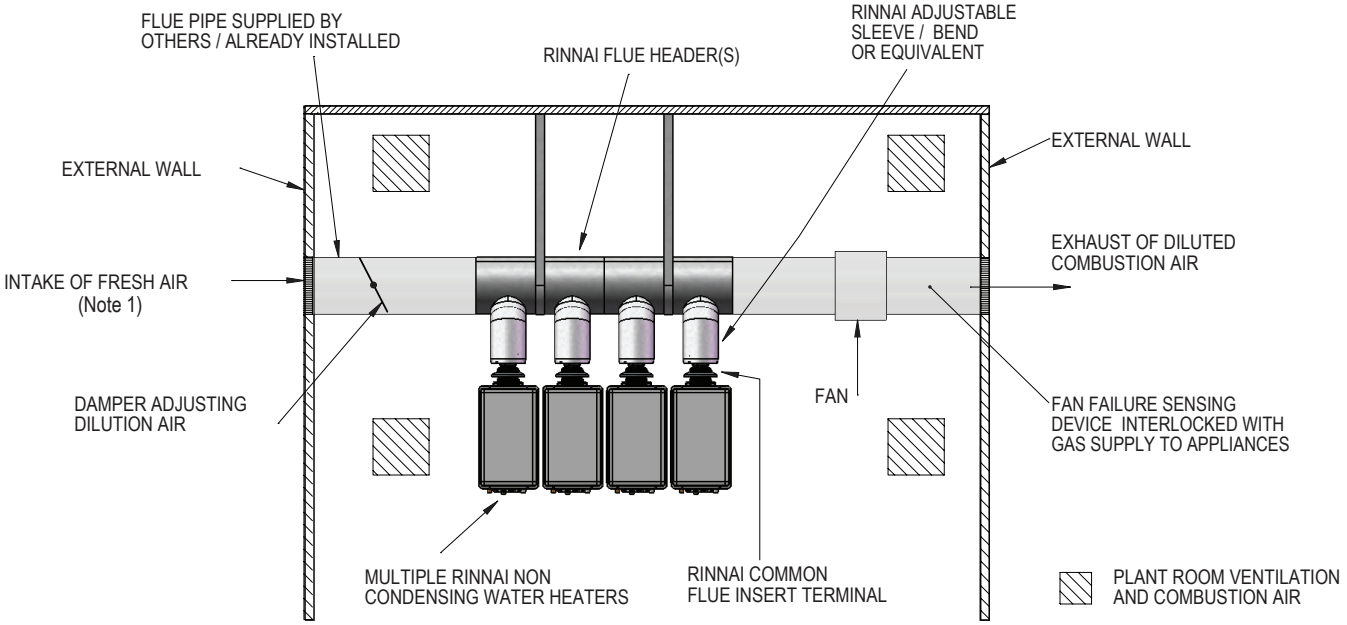


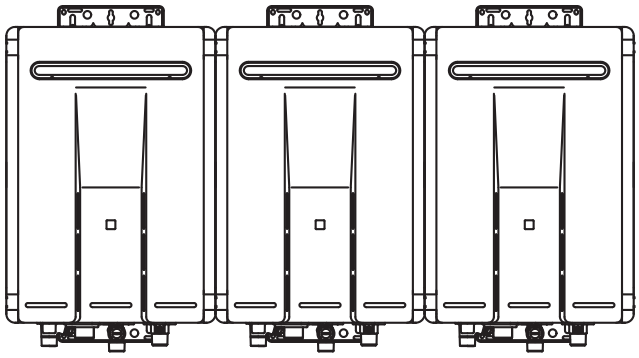
Figure 2. Typical Power Flue Installation - Both N-Series & VRM/VCM-Series



Multiple Appliance Installations

Dimension 'h' in reference to Horizontal Terminal Clearances (Extract from AS/NZS 5601) on page 6 does not apply when multiple Rinnai external water heaters of the same model are installed on the same vertical face with flue terminals at the same height. Under these conditions appliances can abut each other as shown. The total gas consumption of all appliances applies when determining other clearances.

For all other appliance dimensions, refer to "Appliance Dimensions" on page 13.



IMPORTANT

Rinnai internal models described in this manual must use the Co-Axial Rinnai FFU flue components.

The use of non Rinnai FFU flue components may result in a dangerous situation and violates regulations.

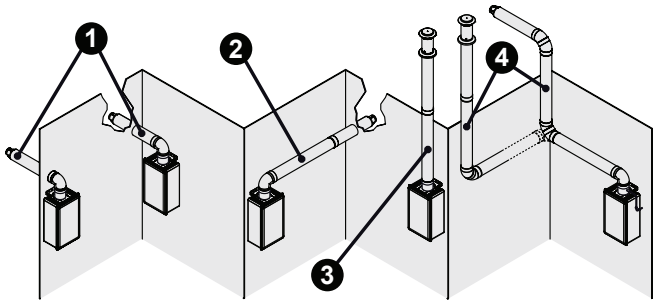
The FFU flue system must be installed in accordance with the 'FFU Flue Installation Manual' which is provided with the FFU flue terminal components FFWALLTERM or FFROOFCOWL.

Installations can consist of both horizontal and vertical runs to a maximum length of 9 metres and with a maximum of three 90° bends.

Basic methods of installation

There are four basic flue installation methods available, these are:

1. **Direct Horizontal**
2. **Extended Horizontal**
3. **Vertical**
4. **Combination Vertical / Horizontal**



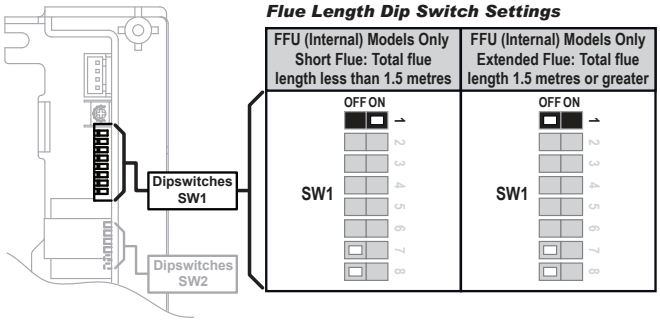
Short and Long Flue Length Settings

Short Flue

When the flue length does not exceed 1.5m then: Dip switch 1 of SW1 is to be switched to the 'ON' position.

Long Flue

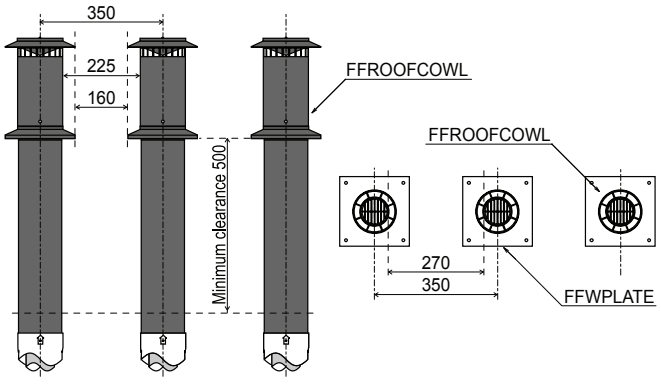
When the flue length exceeds 1.5m the: Dip switch 1 of SW1 is to be switched to the 'OFF' position (This increases the combustion speed to overcome the additional friction loses).



Multiple Terminal Installations

The terminal clearances stated in AS/NZS 5601 do not apply to the Rinnai internal continuous flow water heaters when they are installed side by side.

AGA certification allows for a horizontal separation of 160 mm for roof terminals and 270 mm for wall terminals.

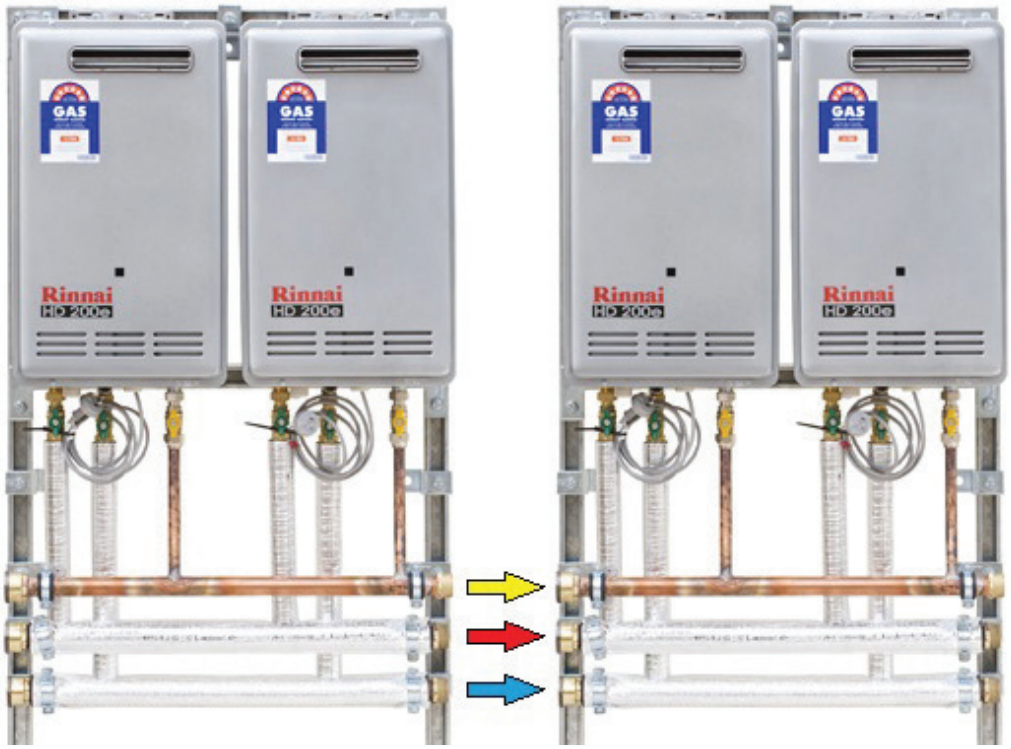


Unpacking

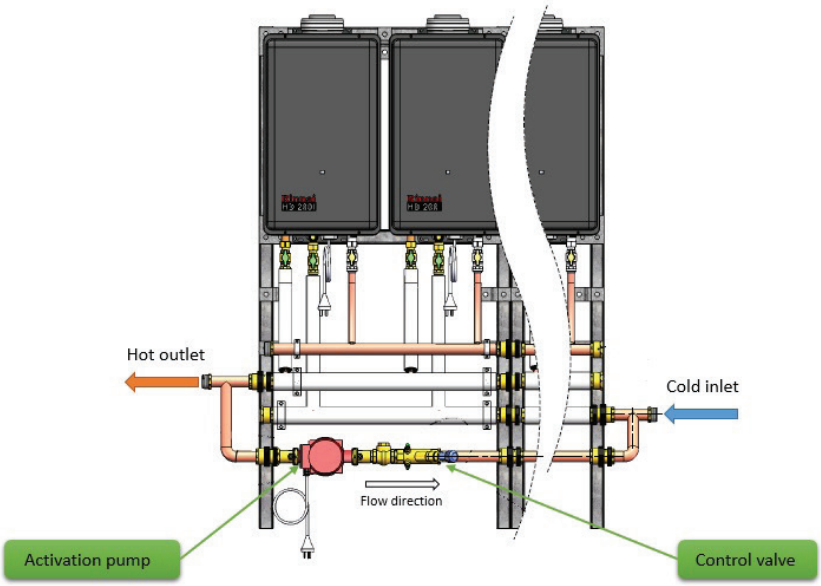
Manifold Packs are supplied in cardboard packaging in separate modules of MP2 and MP3. Systems are packed upside down. When turning over to correctly orient heaters beware that system is top heavy.

Assembly:

A Rinnai Manifold Pack is supplied in modules of either 2 or 3 HD continuous flow units plumbed in parallel and mounted on a dedicated and lightweight frame. Standard systems can be installed together in any order by coupling the barrel unions supplied with the 32mm copper header pipes. Specifically designed systems (generally for larger projects or restrictive plant areas) will be marked up accordingly from our factory to aid the on site assembly process.



You may have an activation system included on your Manifold Pack, if this is the case then there will be a pump (or dual pumps) assembly provided and additional lengths of insulated copper pipe to connect together. This is located below the cold header pipe. Below is a typical image of how an activated circulating Manifold Pack should be assembled and installed (only required on Manifold Packs including a reticulation system) with the cold inlet on the right. This can also be provided in the opposite orientation with the cold inlet on the right and therefore the hot outlet must be on the left.

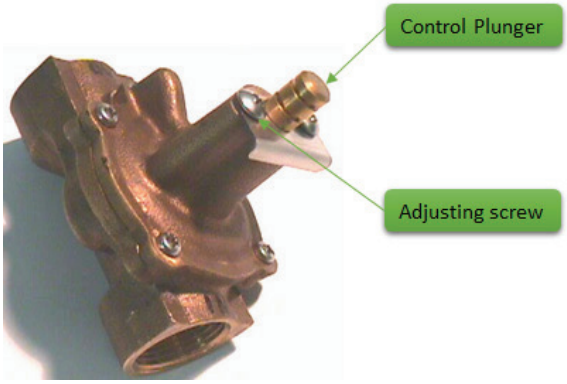


Wall mounting or floor mounting is possible. If you are wall mounting the Manifold Pack then drill holes in the wall in the desired location and mount the frame to the wall using suitable fixings. If you wish to floor mount the Manifold Pack then you will require an appropriate DDBASE if the unit has been pre-supplied on a factory made skid base you are not required to do anything. A DDBASE requires some minor assembly using the brackets and fixings provided.

Manifold Packs used in buildings without a reticulation system will have a staging system either a Manifold Electronic Control System (MECs) or Pressure Activated Manifold System (PAMs). MECs is a sophisticated electronic control system that is supplied pre-wired except for joining the modules together. Refer to the separate MECs installation booklet supplied for full details on how to connect each heater control. PAMs is a mechanical staging system using a pressure sensitive valve installed on the cold supply riser to each heater except the first one. PAMs has a maximum capacity of 6 heaters and needs to be setup on installation to operate correctly. Each valve needs to have the pressure sensitive plunger set dependant on how many heaters are present.

SETTING SEQUENCE

- First HD = no PAM valve present
- Second HD = Plunger in furthest out position
- Third HD = Plunger in furthest out position
- Fourth HD = Plunger in middle position
- Fifth HD = Plunger in lowest position
- Sixth HD = Plunger in lowest position



Starting instructions

These differ depending on the Manifold Pack and installation configuration

MANIFOLD PACK WITH MECS OR PAMS STAGING (NO RETICULATION SYSTEM)

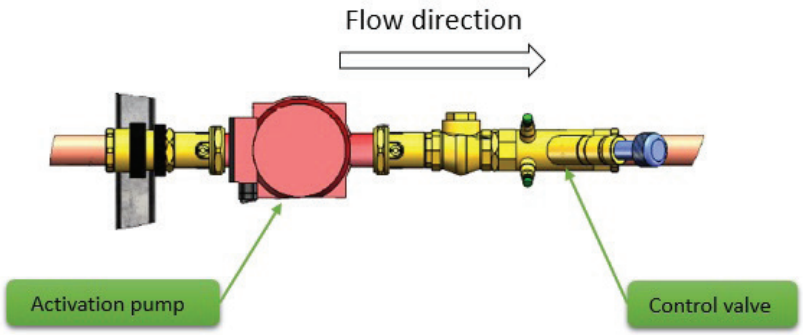
- Turn on power to each heater via the GPO's
- Open one or more outlets to generate water flow through the heaters. The outlet temperature should appear in the maintenance monitor window on each heater. This is factory preset at 75° but can be adjusted if required, refer to relevant temperature settings for heaters. This indicates the units are operational.
- Not all Rinnai heaters will fire up as its flow rate dependent. To verify all heaters are operational either open more outlets or, if this is not practical, close the cold water valve underneath the currently operating heaters to restrict the flow. Other heaters should then fire up.
- Clean all filters on completion

MANIFOLD PACK WITHOUT MECS OR PAMS STAGING (RETICULATION SYSTEM)

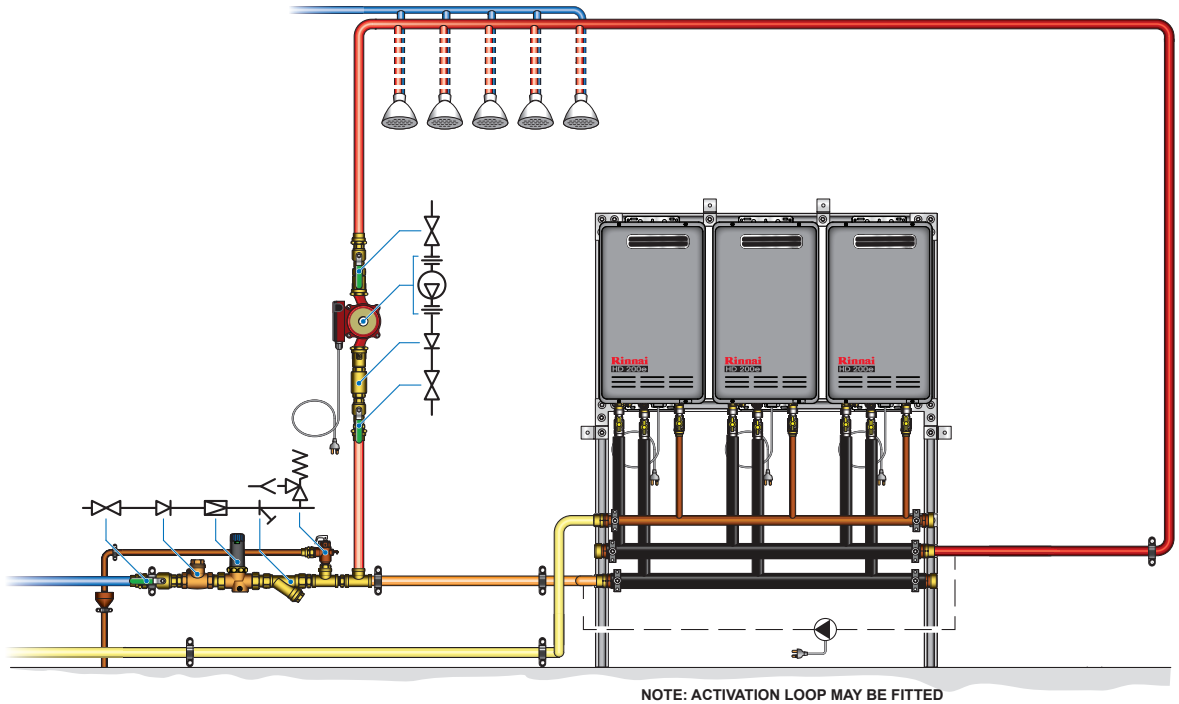
- Turn on power to each heater via the GPO's
- Turn on the Ring Main pump to generate water flow through the heaters. The outlet temperature should appear in the maintenance monitor window on each heater. This is factory preset at 75° but can be adjusted if required, refer to relevant temperature settings for heaters. This indicates the units are operational.
- Not all heaters may fire up as its flow rate dependent. To verify all heaters are operational either open some outlets or, if this is not practical, close the cold water valve underneath the currently operating heaters to restrict the flow. Other heaters should then fire up.
- Clean all filters on completion

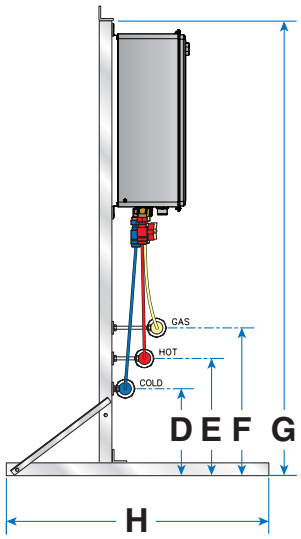
ACTIVATED MANIFOLD PACK WITHOUT MECS OR PAMS STAGING (RETICULATION SYSTEM)

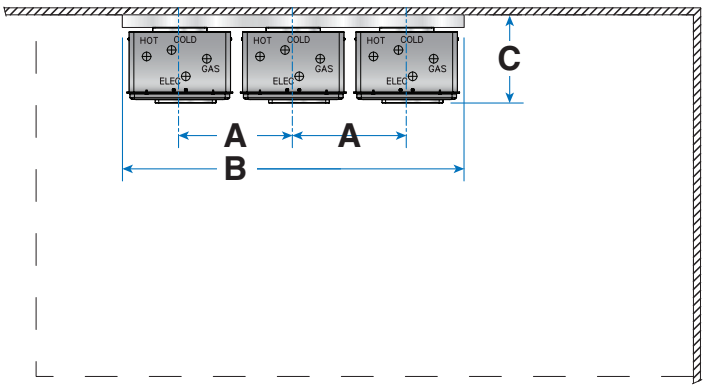
- Turn on power to each heater via the GPO's
- Turn on power to the activation pump via the GPO to generate water flow through the heaters
- Turn on the Ring Main pump to generate water flow around the building. The outlet temperature should appear in the maintenance monitor window on each heater. This is factory preset at 75° but can be adjusted if required, refer to relevant temperature settings for heaters. This indicates the units are operational.
- Not all heaters may fire up as its flow rate dependent. An activated Manifold Pack is designed to deliver an accurate temperature to the building without relying on the flow of the ringmain pump. Therefore the flow rate through the heaters is controlled by the valve on the outlet of the activation pump. This should be as low as can be achieved without affecting the acceptable delivery temperature and there is no typical valve setting as every hot water reticulation system is different. To activate more heaters wind open the valve until satisfied that the delivery temperature is sufficient to maintain the temperature in the loop. Refer drawing below.
- Clean all filters on completion.



TYPICAL RINNAI MANIFOLD PACK INSTALLATION







Appliance Dimensions

Model	A	B	C	D	E	F	G	H	Dry Weight
HD200 Manifold Packs									
MP2 200	375	750	280	340	440	540	1500	850	60 Kg
MP3 200		1125							90 Kg
MP4 200		1500							120 Kg
MP5 200		1875							150 Kg
MP6 200		2250							180 Kg
HD210 Manifold Packs									
MP2 210	500	1000	310	340	440	540	1500	850	75 Kg
MP3 210		1500							110 Kg
MP4 210		2000							150 Kg
MP5 210		2500							185 Kg
MP6 210		3000							225 Kg

Cold Water Supply:

- Cold water pipe work to inlet of MP, including required valves as shown above to comply with AS/NZS 3500 and local regulations. Non return valve not required for deadleg installations.
- Maximum cold water inlet pressure to Manifold Pack is 1000kPa. Fit pressure limiting valve if required.
- When a Ring Main pump is included ensure cold water inlet pressure does not exceed maximum pump rating. This is usually mains pressure plus pump head pressure (eg: 750 kPa mains +250 kPa pump head pressure =1000kPa).

Hot Water Outlet

- Ensure adequate insulation / lagging is fitted to hot water pipe to minimise heat loss.

Ring Main Pump

- A secondary or building return pump may be installed in conjunction with the Rinnai Manifold Pack hot water system. Contact Rinnai Commercial to select this pump as duty is critical to temperature stability when there is no building flow. Pump must have a check valve on the discharge.
- Return line from building loop is connected to the cold water supply pipe after the check valve. From that point onwards the cold pipe should be insulated.

Gas Supply

- Check gas type of Rinnai HD water heater matches gas supply available (LPG or Natural) on job site.
- Gas inlet connection is the top pipe on a MP manifold.
- Manifold Packs have gas isolation valves per water heater.
- Ensure gas pipe sizing is adequate to deliver the required volume / pressure. Pipe size used on inlet fitting is no indication of pipe size required.
- Refer to appropriate pipe sizing chart in Appendix “F” AS/NZS 5601 for appropriate sized gas pipe that should be used to ensure adequate gas supply.
- Gas meter / LPG cylinder and regulator should also be of suitable size to ensure sufficient gas supply to the gas installation.
- Purge gas pipe to ensure removal of debris etc prior to final connection.
- Check for gas escapes using suitable methods as listed in Appendix “E” AS/NZS 5601.

Electrical Supply

- 100 amps per HD do not exceed 24 units to one GPO.

Filling Instructions

- Flush pipe work to remove any debris before final connection.
- Turn on hot water tap to allow air to be expelled from system.
- Check all connections for water leakage. Tighten as required.
- Purge gas lines until gas is available at water heaters.
- Prime circulating pump(s) before start up by removing chrome screw and allowing water to drip out the end of the pump shaft.

RINNAI MANIFOLD PACK INSTALLATION HAND OVER MANUAL

Manifold Pack Principle Of Operation

Cold water enters system through cold inlet pipe is heated by water heater(s) and exits through hot pipe. Dead-leg systems will deliver preset temperature as per dipswitch or controller settings.

Rinnai Heavy Duty Units require a minimum of 2.4 litres per minute per heater before they can operate. If this is not achieved they will not fire. When there is an expected scenario that results in a lower flow per heater a staging system is required. Rinnai offer MECS (Manifold Electronic Control System) or PAM (Pressure Activated Manifold) valves. Staging will control the flow through each water heater, increasing the chance of minimum flow rate being achieved. MECS measures the flow rate passing through the turbine of each heater. It will drive the geared motor inside the HD unit shut in heaters that are not required to operate, therefore increasing the flow rate through the remaining heaters. Extra heaters are fired as the flow rate increases. MECS also rotates the sequence of operation to share the load across all heaters to maximise life expectancy.

PAM valves block the cold water supply to heaters that are not required. Therefore they do not start. Extra flow causes extra pressure differential between the hot and cold pipes opening more PAM valves and firing more HD heaters.

RINNAI MANIFOLD ELECTRONIC CONTROL SYSTEM - MECS

Rinnai Heavy Duty Gas Fired Continuous Flow Water Heaters can be manifolded together, (up to 25 individual water heaters), by connecting them in parallel to enable a far greater hot water flow rate than is possible with a single unit.

MECS is a totally integrated system unique to Rinnai that links each HD unit in the system and will turn on each unit in the system as demand requires.

The key advantages to using MECS are as follows:

- Very high flow rates/volumes made possible by linking individual heaters in parallel.
- Load shared across linked heaters ensuring even wear rates.
- Inherent redundancy in the event of a failed water heater(s).
- Reduced gas consumption resulting in increased economy.
- Unsurpassed water temperature consistency.

How it works

A master communication PCB and sub-communication PCB is installed in the first water heater, all other subsequent water heaters have only the sub-communication PCB and slave cable installed.

The master communication PCB receives information about flow rates from the PCB of each unit and through the use of electronics balances the load on each unit. Intelligent programming enables random selection of the units required to supply the flow demand means that all units share the workload evenly.

All information is transmitted between the master water heater and the slave water heaters via the communication cables to the slave units.

The master control also has a inbuilt fault detection system and will allocate a replacement unit should one of the water heaters fail.

MECS Pro System has the capability of joining up to 25 Rinnai units and will replace the previous Rinnai REU-SA2M/2S and REU-SA3M/3S MECS systems.

INVENTORY CODE	MARKETING CODE	DESCRIPTION
REUMSBM	MECA04	MEC Pro Pack 1 MEC Pro Pack 1 (1 x master PCB and 2 x communication cables and accessories to create master unit and 1 x slave unit).
REUMSBC1	MECB04	MEC Pro Pack 2 MEC Pro Pack 2 (Communication cable and accessories to connect each extra HD Unit to Master unit. One required per extra water heater).
REUMSBC2	MECC04	MEC Pro Pack 3 (Communication cable and accessories to connect multiple master PCB's. One required per extra master PCB).
REUMSBMB	MECA05	MEC Pro Pack 4 (Same as MECA04 with master PCB externally mounted in waterproof case).

CONDENSATE DRAIN

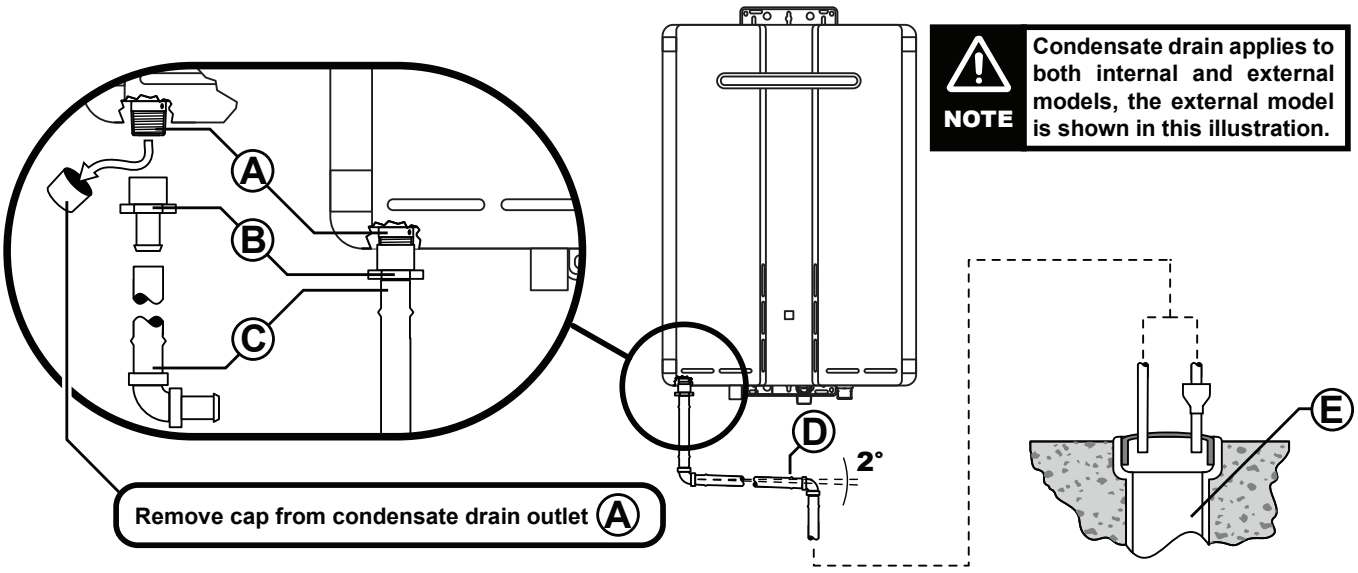
REU-KM & REU-N MODELS ONLY

The HD, HDC, REU-KM & REU-N range of water heaters generate condensate continuously at a rate of up to 5 litres per hour as a by-product of highly efficient gas burner system. This condensate must be drained via a pipe to a suitable point of discharge. Because the condensate is a by-product of gas combustion it is mildly acidic.

For this reason copper tube and fittings **MUST NOT** be used as it will corrode. Instead, Rinnai recommend plastic pipes and fittings such as Unplasticised Polyvinyl Chloride (UPVC) or Polyethylene (PE) which is commonly used for irrigation piping.

Important Considerations For Condensate Drain Pipe

NOTE **The content of AS/NZS 3500 'Temperature / Pressure Relief and Expansion Control Valve Drain Lines' has been used as a guide in preparing these considerations.**



NOTE **Condensate drain applies to both internal and external models, the external model is shown in this illustration.**

Ⓐ Water heater drain outlet connection, R½" (15 mm) BSP male. Condensate drain outlet connection, 1/2" (15mm) BSP male nylon (Note: the black plastic shipping cap **MUST BE** removed from the condensate drain outlet prior to water heater operation).

Ⓑ PE R½" BSP (15 mm) female to barbed irrigation system connector (13 – 19mm) or equivalent plastic fitting.

Ⓒ Drain pipe and fittings to match item Ⓑ.

Ⓓ Continuous fall (of at least 2°) from water heater to discharge point. Lengths and bends in accordance with 'Length & Changes Of Direction' table below.

Ⓔ Suitable points of discharge are deemed to be drains, sewers or pits. **DO NOT** discharge onto electrical connections, earth stakes, copper pipes, concrete paths or into a pond.

Length & Changes Of Direction

Maximum length and changes of direction greater than 45° should be as follows:

Lengths and changes of direction				
Max length (Metres)	9	8	7	6
Max changes of direction >45°	3	4	5	6

INSTALLATION METHOD

(a) The drain line MUST NOT discharge onto electrical connections, earth stakes, copper pipes, concrete paths or into a pond.

(b) The point of discharge from each drain line shall be located so that the release of condensate does not cause a nuisance, is readily discernible and incurs no risk of damage to the building.

In view of (a) and (b), suitable points of discharge are deemed to be drains, sewers or pits.

(c) There shall be no tap, valve or other restrictions in any line.

(d) Each line shall fall continuously from the valve to the approved point of discharge.

(e) Drain lines shall not discharge into a storage water heater safe tray.

(f) The end of the condensate drain line shall be:

  (i) not lower than 200 mm or higher than 300 mm above an unpaved surface; or

  (ii) not lower than 75 mm or higher than 300 mm above a gravel pit not less than 100 mm in diameter in a paved surface.

(g) Where discharging over a tundish or gully trap, drain lines shall have an air gap of a size at least twice the diameter of the drain line.

Interconnection Of Condensate Drain Lines

Condensate drain lines from multiple water heaters may be joined together provided they conform with the requirements of the "Installation Method" on page 16.

Common Stack Discharge

Where individual water heaters are installed in a multi-storey building, the condensate drain lines may discharge into a common stack, subject to the following:

(a) The discharge from the common stack is to a tundish, having a discharge line, that is not less than the size of the common stack, directly connected to a fixture trap, and installed in connection with any adjacent soil or waste stack.

(b) The discharge point of the common stack is such that any discharge is readily visible and not cause any nuisance.

(c) The common stack is vented by extending the pipe upwards, above the roof level.

Tundish Drain Lines

The drain line from any tundish shall be not less than DN 20 or less than one size larger than that of the largest drain line discharging into the tundish. Tundish drain lines shall comply with the requirements of the "Installation Method" on page 16.

Areas Subject To Freezing

In areas where water pipes are prone to freezing, the drain pipe from any valve shall be insulated and not exceed 300 mm in length. It shall discharge into a tundish through an air gap of not less than 75 mm and not more than 150 mm measured from the outlet of the drain pipe to the rim of the tundish.

FAULT FINDING

MANIFOLD PACK PREVENTATIVE MAINTENANCE

All Items

Heat Source

- Ensure that the filter at water inlet is clean. Note that this is an 'O' ring seal and does not need to be excessively tightened. Just make sure O ring is engaged inside machined surface in brass housing. Isolate heater before removing filter for cleaning and inspection.
- Ensure all Rinnai Water Heaters are operating. Ensure power is available to units if not operating. Can check GPO.
- Many new jobs or ones where the gas supply has been modified need to purge the gas supply lines as they are full of air. Purge should be carried in accordance with AS/NZS 5601, Appendix 'D'.
- In jobs that operate for long hours and/or in dusty or smoky environments the combustion air fan may become dirty. This may be indicated by Fault 10. Contact Rinnai Service.
- Internal heaters may operate for a short period of time and then stop. This can be caused by Rinnai Co-axial flueing not being pushed together properly and exhaust gases are re-entering the inlet air. Check flue connections. Also inspect flue terminal for any cause to divert exhaust air back into the inlet air. Ensure flue is terminated correctly in accordance with AS/NZS 5601.

Your Rinnai Continuous Flow water heaters has a self diagnostic capability. If a fault occurs, an Error Code will flash on the Digital Monitor. If you have Water Controllers. This assists with diagnosing the fault, and may enable you to overcome a problem without a service call. Please quote the code displayed when enquiring about service.

ERROR	FAULT	REMEDY
-	Noticeable reduction in water flow.	Inlet water filter needs to be cleaned. Service call.
03	Power interruption during Bath fill. (Water will not flow on power reinstatement)	Turn off all hot water taps. Press On/ Off twice.
10	Air intake or flue blocked.	Service Call.
11	No ignition / No gas supply.	Check gas is turned on at water heater and gas meter or cylinder.
12	Flame Failure / Low gas flow.	Check gas is turned on at water heater
14	Remaining Flame Safety Device.	Check there are no obstructions to the flue outlet.
16	Over Temperature Warning.	Service Call.
25	Condensate Pipe Blockage	Service Call
32	Outgoing Water Temperature Sensor Faulty.	Service Call.
33	Heat Exchanger Outlet Sensor Faulty.	Service Call.
34	Combustion Air Temperature Sensor Faulty.	Service Call.
52	Gas Modulating Valve Faulty.	Service Call.
61	Combustion Fan Failure.	Service Call.
65	Water Flow Control Faulty - (Does not stop flow properly)	Service Call
71 & 72	Micro-processor Failure.	Service Call.
LC	Scale build-up inside the heat exchanger.	Service Call.
In all cases, you may be able to clear the Error Code simply by turning the hot water tap OFF, then ON again. If this does not clear the Error Code, try pushing the On/Off button OFF, then ON again. If the Error Code still remains, contact Rinnai for advice.		

RING MAIN PUMP

- Pump can be continuously operating on or may have a time clock to switch it off at night when the building is not in use.
- These pumps do not necessarily pressurise the system.
- They must have a non return valve

(a) Swing non return valves must be horizontal or upward as they rely on gravity to close the valve.

(b) Spring check valves can be located on any plane but may contribute excessive back pressure and restrict the pump flow rate.

- Return water should only be slightly cooler than water leaving the system. If the temperature drop around the circuit is too high it may indicate that the ring main flow rate is not high enough and indicates a design fault or a blockage in the pipework (or poor pipework insulation). Investigate valves and operation of pump.

SERVICE

Rinnai has a service and spare parts network with personnel who are fully trained and equipped to provide the best service on Rinnai appliances. If your appliance requires servicing, please call our National Help Line.

Rinnai recommends that all commercial water heater installations have a service arrangement.

Annual services are recommended at a minimum.

Rinnai Australia Pty Ltd

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100 Atlantic Drive, Keysborough, Victoria 3173
P.O. Box 460, Braeside, Victoria 3195
Tel: (03) 9271 6625
Fax: (03) 9271 6622

National Help Line
Tel: 1300 555 545* Fax: 1300 555 655
Monday to Friday, 8.00 am to 5.00 pm EST.

After Hours Hot Water Service Line
Tel: 1800 000 340*

**Cost of a local call higher from mobile or public phones.*

For further information visit **www.rinnai.com.au** or email **enquiry@rinnai.com.au**

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

With our policy of continuous improvement, we reserve the right to change, or discontinue at any time, specifications or designs without notice.