

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 appliances.

This manual applies to Manifold Pack Systems utilising HD model continuous flow water heaters.



BEFORE USING THIS APPLIANCE SYSTEM

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.



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.

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WARNINGS & IMPORTANT INFORMATION



READ ALL INSTRUCTIONS BEFORE USING THE APPLIANCE.

Always comply with the following precautions to avoid dangerous situations and to ensure optimum performance.

Failure to carefully read and follow all instructions in this manual can result in equipment malfunction, property damage, personal injury and/or death.

DANGER: Indicates an imminently hazardous situation which, if not avoided, will result in personal injury or death.

WARNINGS: Indicates a potentially hazardous situation which, if not avoided, could result in personal injury or death.

CAUTIONS: Indicates a potentially hazardous situation which, if not avoided, could result in minor or moderate injury or damage to the appliance. It may also be used to alert against unsafe practices.



REGULATORY INFORMATION

This appliance shall be installed in accordance with these instructions and all regulatory requirements which exist in your area including those in relation to manual lifting, working at heights and on roofs. Applicable publications and regulations may include:

- AS/NZS 3500 National Plumbing and Drainage, AS/NZS 3000 Wiring rules, AS/NZ 5601 Gas Installations & Building Codes of Australia (BCA)
- Local Occupational Health and Safety (OH&S) regulations
- Local Regulations and Municipal Building Codes

DO NOT operate this system before reading the manufacturers instructions.

This appliance must be installed, commissioned and serviced by an authorised person in accordance with all applicable local rules and regulations.

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

This appliance is heavy, use 2 people or mechanical lifting device. Improper lifting may result in serious injury.

DO NOT modify the electrical wiring of this appliance. If the control power wiring is damaged or deteriorated then it must be replaced only by an authorised person. Failure to do so may result in electric shock, fire, serious injury or product failure.

Care should be taken not to touch the pipe work as it may be HOT!

DO NOT place articles on or against this appliance.

DO NOT store chemicals or flammable materials near this appliance.

DO NOT operate with panels, covers or guards removed from this appliance.

DO NOT remove covers while power is on.

DO NOT enclose this appliance.

DO NOT activate pump unless cylinder is full of water.

Not suitable as a pool or spa heater.

All Rinnai Manifold Pack (MP) systems and components are Watermark Certified by SAI Global as applicable.

All dimensions referred to in these instructions are in millimetres, unless otherwise specified.



A NOTE ON ILLUSTRATIONS

The illustrations used in this manual are for explanatory purposes only and the shape of your unit may vary slightly from that which is shown in this manual.



MANDATORY INSPECTION PRIOR TO INSTALLATION

Immediately report any damage or discrepancies to the Supplier of the appliance. This appliance was inspected and tested at the time of manufacture and packaging, and released for transportation without known damage. Upon receipt, inspect the exterior for evidence of rough handling in shipment. Ensure that the appliance is labelled correctly for the gas and electrical supply, and/or other services it is intended to be connected to.

For safety and warranty purposes, appliances that may be damaged or incorrect must not be installed or operated under any circumstances. Installation of damaged or incorrect appliances may contravene local government regulations. Rinnai disclaims any liability or responsibility whatsoever in relation to the installation or operation of damaged or incorrect appliances.

NOTICE TO VICTORIAN CONSUMERS



This appliance **MUST** be installed by a person licensed with the Victorian Building Authority. **ONLY** a licensed person will have insurance protecting their workmanship.

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

SAFETY



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.

Children should be supervised to ensure that they **DO NOT** play with the appliance.

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.

If the supply cord is damaged, it must be replaced by the manufacturer, its service agent or similarly qualified persons in order to avoid a hazard.

DO NOT touch the unit cover or the flue outlet.

DO NOT insert objects into the flue outlet.

DO NOT spray water directly into the flue outlet.

Keep, trees, shrubs, etc. well clear of the flue outlet.

On colder days steam may discharged from the flue outlet. This condition is normal for high efficiency appliances and does not indicate a fault.

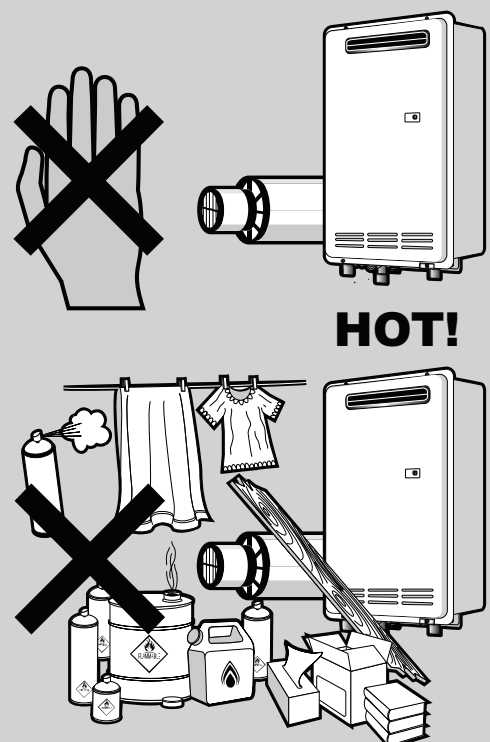
DO NOT Spray aerosols in the vicinity of this appliance while it is in operation.

DO NOT use or store flammable materials in or near this appliance.

DO NOT place articles on or against this appliance.

DO NOT modify this appliance.

DO NOT store pool chemicals near this appliance.



Hydrogen Gas

If the hot water heater is not used for two weeks or more, a quantity of hydrogen gas, which is highly flammable, may accumulate in the water heater. To dissipate this safely, it is recommended that a non electrically operated hot tap be turned on for several minutes at a sink, or bath, but not a dishwasher or other appliance. During this procedure there must be no smoking, open flame or any electrical appliance operating nearby. If hydrogen gas is discharged through the tap, it will probably make a sound like air escaping.

Water Temperature

The outlet temperature setting of the gas continuous flow heater is factory pre-set to 75°C.

WARNING ABOUT HOT WATER

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.

SCALD HAZARDS

Hot Water can cause scalds.

Children, disabled, and the elderly are at the highest risk of being scalded.

Feel water temperature before bathing or showering.

Scalds from hot water taps can result in severe injuries to young children.

Scalds can occur when children are exposed directly to hot water when they are placed into a bath which is too hot.

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).

Installing tempering valves or thermostatic mixing valves which reduce the hot water temperature delivered to the taps. Your local plumbing authority may already require that these be fitted. Contact your installer or local plumbing authority if in doubt.

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.

CARE & MAINTENANCE

SAVE A SERVICE CALL

Check the items below before requesting a service. Service and parts charges may be incurred where it is found that there is no fault with the water heater and the issue is related to the plumbing installation or is due to the failure of water or electric supplies.

Insufficient or no hot water	
Is the electricity supply connected?	Check that the isolating switch marked "HOT WATER" or "WATER HEATER" at the meter box is switched on. Check also that any isolating switches installed near the water heater are switched on.
	Check the fuse or circuit breaker marked "HOT WATER" or "WATER HEATER" at the meter box. Repeated failure of fuse or tripping of circuit breaker indicates a fault which must be investigated by an authorised trades person.
Is there insufficient gas supply for gas heater(s)?	Check gas is available and turned 'ON'.
	Check the isolation valve in the gas line is opened.
	Refer to your plumber to ensure the gas line has been purged of air after installation.
Are you using more hot water than you think?	Often end users are surprised at the amount of hot water used, especially when showering. If the amount of hot water used during the day exceeds the capacity of the hot water system, it is likely that there will be insufficient hot water. Have your plumber install water saving fixtures and/or flow control or pressure limiting valves to reduce consumption.
Thermostat settings?	Check the temperature of hot water delivered with a thermometer placed under the closest outlet (usually the kitchen sink) on a non-tempered hot water line. The temperature of the water delivered should be at least 55°C (allowing for heat losses in pipe work). If this is not the case, the temperature may need to be increased. Contact your installer or Rinnai to discuss adjusting the temperature.
No water from the hot tap?	Restriction in the hot tap or failure of the cold water supply to the heater. Check for water flow at the other hot taps and that the cold water isolation valve is fully open.
Are any of the heaters displaying an error code?	Refer to fault finding section of this manual.
Are the cold water filters clean on the gas water heater(s)?	Isolate and remove the water filter at the cold water connection point. Refer to separate manual for the gas continuous flow water heater operation.

INSTALLATION



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

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

These instructions apply to the Manifold Pack range of Rinnai hot water systems using multiple Heavy Duty continuous flow water heaters to provide large flow rates of hot water.

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.

HD28E, HD250E, HD210E (EXTERNAL MODELS)

These appliances are designed for 'Outdoor' Installation only. As such, each 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.

The 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.



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

HD28I, HD210I (INTERNAL MODELS)

These appliances are designed for 'Indoor' installation only. They 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.

If installed in an enclosure either Internally or Externally, the location should be ventilated to allow gas to dissipate and provision must be made for the safe disposal of any leaking water to a visible location.

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

Two types of flue systems are available:

- The Rinnai Commercial Common Flue System.
- The Rinnai Co-Axial FFU flue system.

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

The appliance(s) must be located so that the flue terminal exits the building at a suitable point.

For detailed information refer to "Co-Axial Flueing for Internal Models" on page 11.

If a horizontal (wall) terminal is used, the location must be in accordance with Section 6 and Figure 6.2 of AS/NZS 5601. Figure 6.2 is reproduced under 'HORIZONTAL FLUE TERMINAL CLEARANCES' on page 10 of this manual.

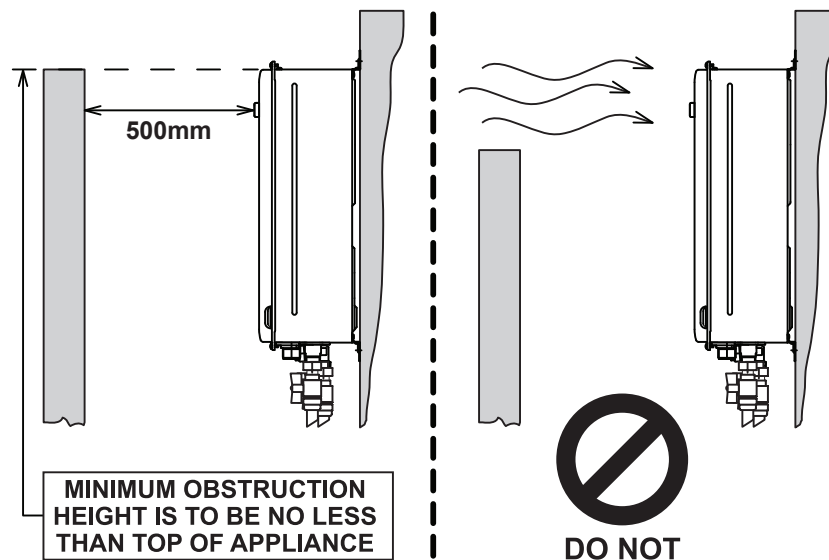
If a vertical (roof) terminal is used, the location must be in accordance with Section 6 of AS/NZS 5601 and the 'FLUEING FOR INTERNAL MODELS' on page 11.

HORIZONTAL OBSTRUCTIONS

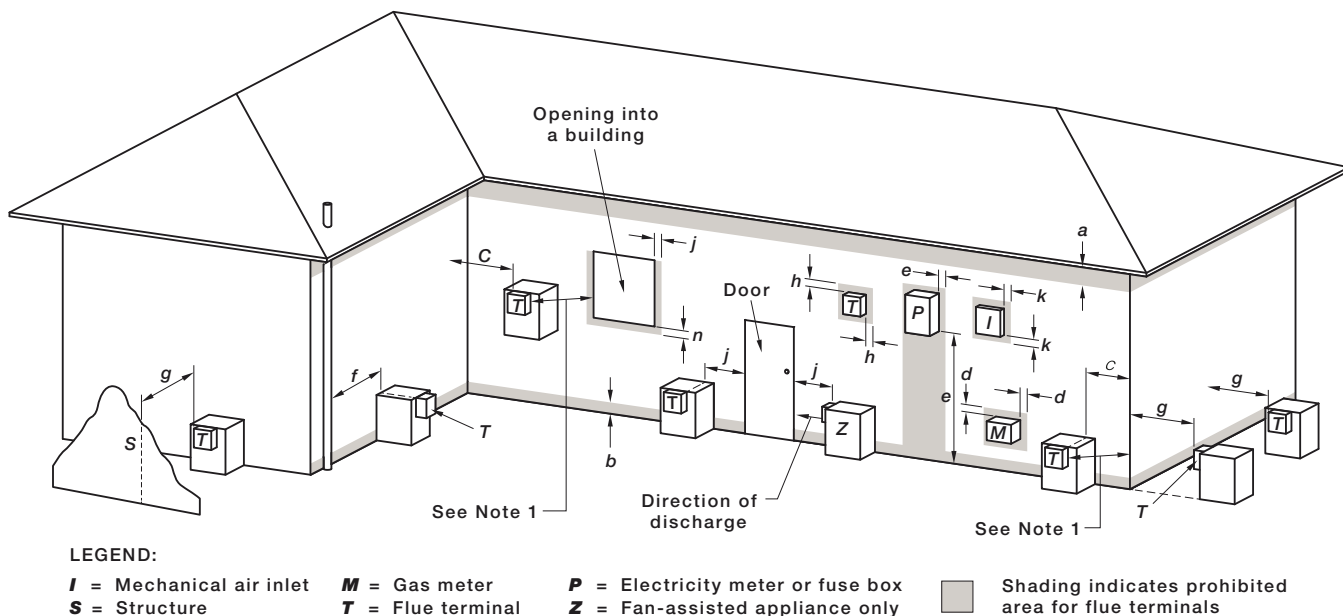
AS/NZS 5601-2010 'Gas Installations' stipulates a minimum horizontal clearance of 500mm between a building structure and obstruction facing the terminal.

For Rinnai External continuous flow water heaters such a building structure must 'obstruct' the full front cover height of the appliance, or extend vertically above and below the front cover.

There must be no partial obstructions to the front cover of the appliance or any other parts of the appliance casing. This will avoid the appliance failing to operate under windy conditions.



HORIZONTAL FLUE TERMINAL CLEARANCES (EXTRACT FROM AS/NZS 5601)



Ref.	Item	Min. Clearances (mm)	
		Natural draft	Fan assisted
a	Below eaves, balconies and other projections:		
	For appliances up to 50 MJ/h input	300	200
	For appliances over 50 MJ/h input	500	300
b	From the ground, above a balcony or other surface *	300	300
c	Front a return wall or external corner *	500	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	1000
e	From an electricity meter or fuse box (P) † (see Note 5)	500	500
f	From a drain pipe or soil pipe	150	75
g	Horizontally from any building structure* = or obstruction facing a terminal	500	500
h	From any other flue terminal, cowl, or combustion air intake *	500	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 *	500	300
	Appliances over 150 MJ/h input up to 200 MJ/h input *	1500	300
	Appliances over 200 MJ/h input up to 250 MJ/h input *	1500	500
	Appliances over 250 MJ/h input *	1500	1500
	All fan-assisted flue appliances, in the direction of discharge	-	1500
k	From a mechanical air inlet, including a spa blower	1500	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	150
	Other appliances up to 50 MJ/hr input	500	500
	Appliances over 50 MJ/h input and up to 150 MJ/h input	1000	1000
	Appliances over 150 MJ/h input	1500	1500

* Unless appliance is certified for closer installation.

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

NOTES:

- 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.
- See Clause 6.9.4 for restrictions on a flue terminal under a covered area.
- 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.
- For minimum clearances not addressed above acceptance should be obtained from the Technical Regulator.
- 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

CO-AXIAL FLUEING FOR INTERNAL MODELS

This system is certified and suitable for use with Rinnai internal commercial continuous flow water heaters.

The Rinnai flueing system must be installed in accordance with the instructions supplied with the flue terminal. Non Rinnai flueing systems **MUST NOT** be used.

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 consists of an aluminium or polypropylene inner flue pipe to discharge products of combustion and a plastic outer pipe for air supply to the appliance. The water heater is a **room sealed** appliance.

NOTE: Each Rinnai water heater is flued individually.

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

MP6 Direct Wall Flue



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

A condensate trap may be required for extended flue runs depending on the type of water heater and flue system used. Details are provided in the separate flue installation instructions and **MUST** be adhered to.

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

All these internal and external model heaters are AGA certified to be installed side by side. The default flue terminal clearances in AS/NZS 5601 do not apply for the HD28e, HD250e and HD210e external model heaters when installed in this configuration.

Manifold Pack 5 internal



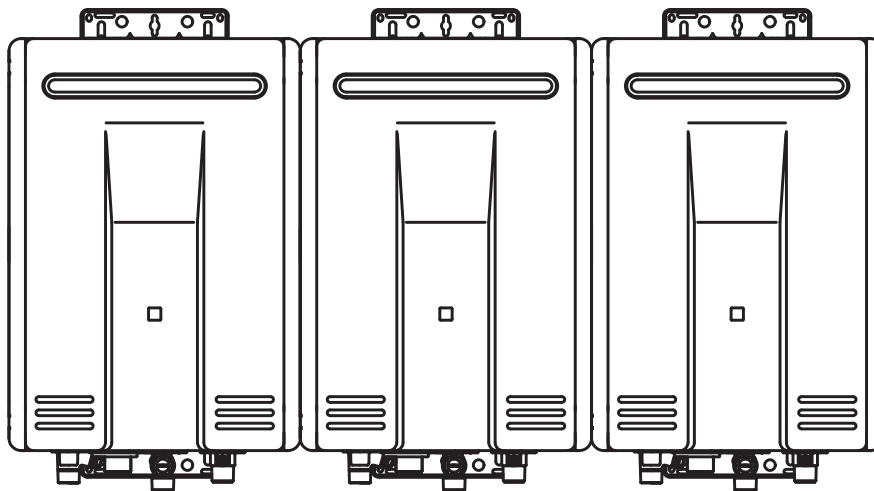


Only Rinnai Flueing systems can be used with Internal Water Heaters. Non-Rinnai Flueing systems are not certified and will not be covered under warranty.

For all further information on internal flueing, please refer to separate Flueing Manual supplied with flueing components.

MULTIPLE FLUE TERMINALS

Dimension 'H' in AS/NZS 5601 Figure 6.2 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 (i.e. side by side). Under these conditions appliances can abut each other as shown below:



Before commencing installation, ensure you refer to the content of all other Operation / Installation manuals supplied with the appropriate model Rinnai Continuous Flow Water Heater or Rinnai Flueing Systems.

INSTALLATION OPTIONS

The Rinnai Commercial Common Flue System is suitable for the Rinnai Internal Commercial Gas Continuous Flow Water Heaters (listed on the cover of this manual) in accordance with the flue design options outlined in the AS/NZS 5601.1 Appendix titled 'Flue Design'. Figure 1 & Figure 2 below, illustrate typical application principles.

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

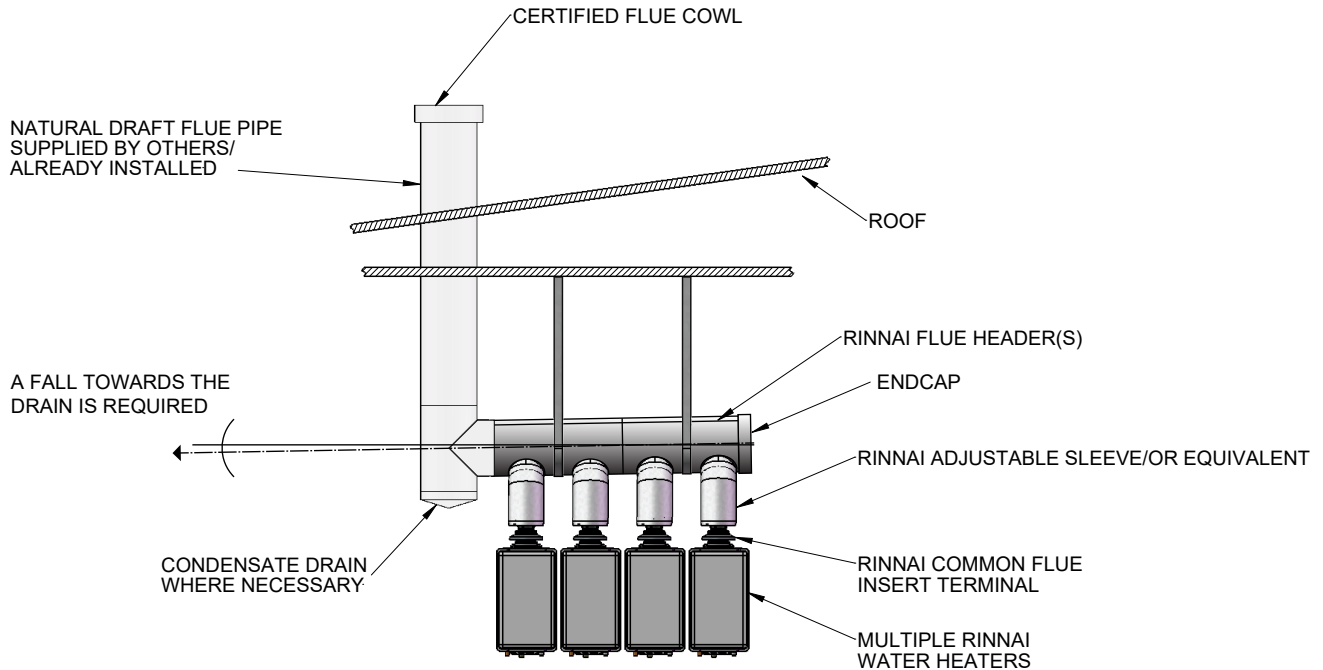
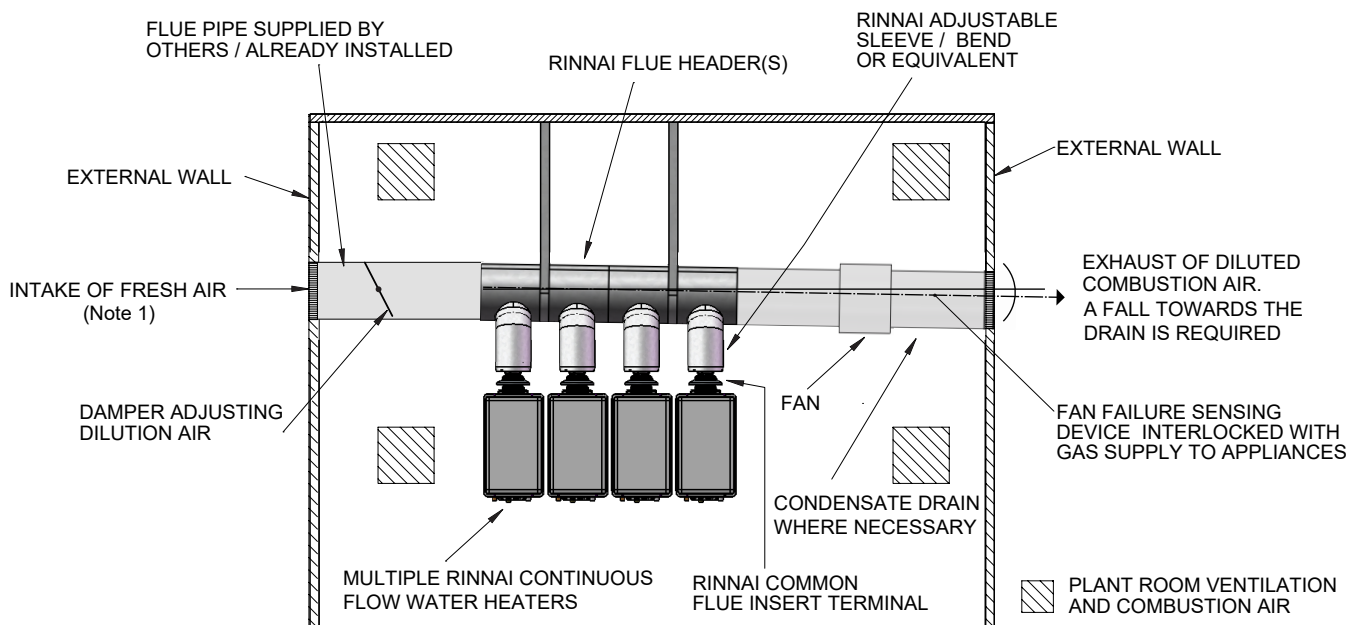


Figure 2. Typical Power Flue Installation - Both N-Series & VRM/VCM-Series



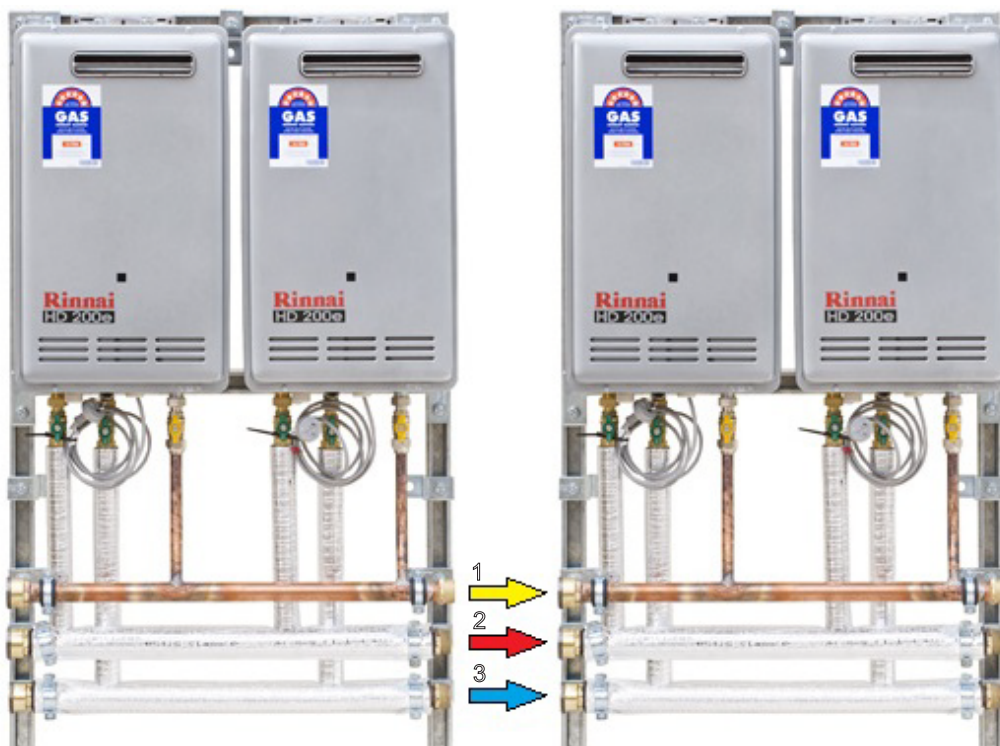
For more information on the flue system, please refer to the Rinnai Commercial Common Flue System Operation & Installation Manual.

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 copper header pipes. Specifically engineered systems (generally for larger projects or restrictive plant areas) will be marked up accordingly to aid the on site assembly process.



- 1 — Gas
- 2 — Hot Water
- 3 — Cold Water

Wall mounting or floor mounting of the heat source is possible.

Wall mounting - drill holes in the wall in the desired location and mount the frame to the wall using suitable fixings. A useful nominal height is 1500mm (height of the frame) from floor level. This is subject to site requirements, the desired location of the flue terminal in reference to AS/NZS5601 (refer to page 10) and service accessibility. If you are installing an internal plant, flue design and the associated wall or roof penetrations need to be considered as the centre distance between the heaters varies depending on which heater is being installed. Refer to the drawings and specifications section on page 17 for dimensional information.

Floor mounting - you will require the appropriate number of DDBASE supports to enable suitable floor mounting. DDBASE requires some minor assembly using the brackets and fixings provided. Every module of either 2 or 3 heaters requires one DDBASE and it is recommended to assemble the DDBASE to the heat source module(s) prior to joining the pipework. The heat source can also be installed in a back to back configuration using DDFJOINKIT.

Again if you are installing an internal plant, flue design and the associated wall or roof penetrations need to be considered as the centre distance between the heaters varies depending on which heater is being installed. Refer to the drawings and specifications section on page 17 for dimensional information.



When passing the flues through the mounting wall, it may be necessary to attach them to the water heater before securing the water heater to the wall.

Specifically engineered systems mounted on a skid base do not require any assembly of the heat source unless it has been split purely for transport purposes. If this is the case the pipe connections will be marked up accordingly to aid the assembly process.

Manifold Packs have a staging system consisting of either a Manifold Electronic Control System (MECS) or Cascade System. MECS and Cascade are sophisticated electronic control systems that are supplied pre-wired except for the module connections. Refer to the separate installation booklet supplied for full details on how to connect each heater control.

Starting instructions

These are specific to the Manifold Pack and installation configuration:

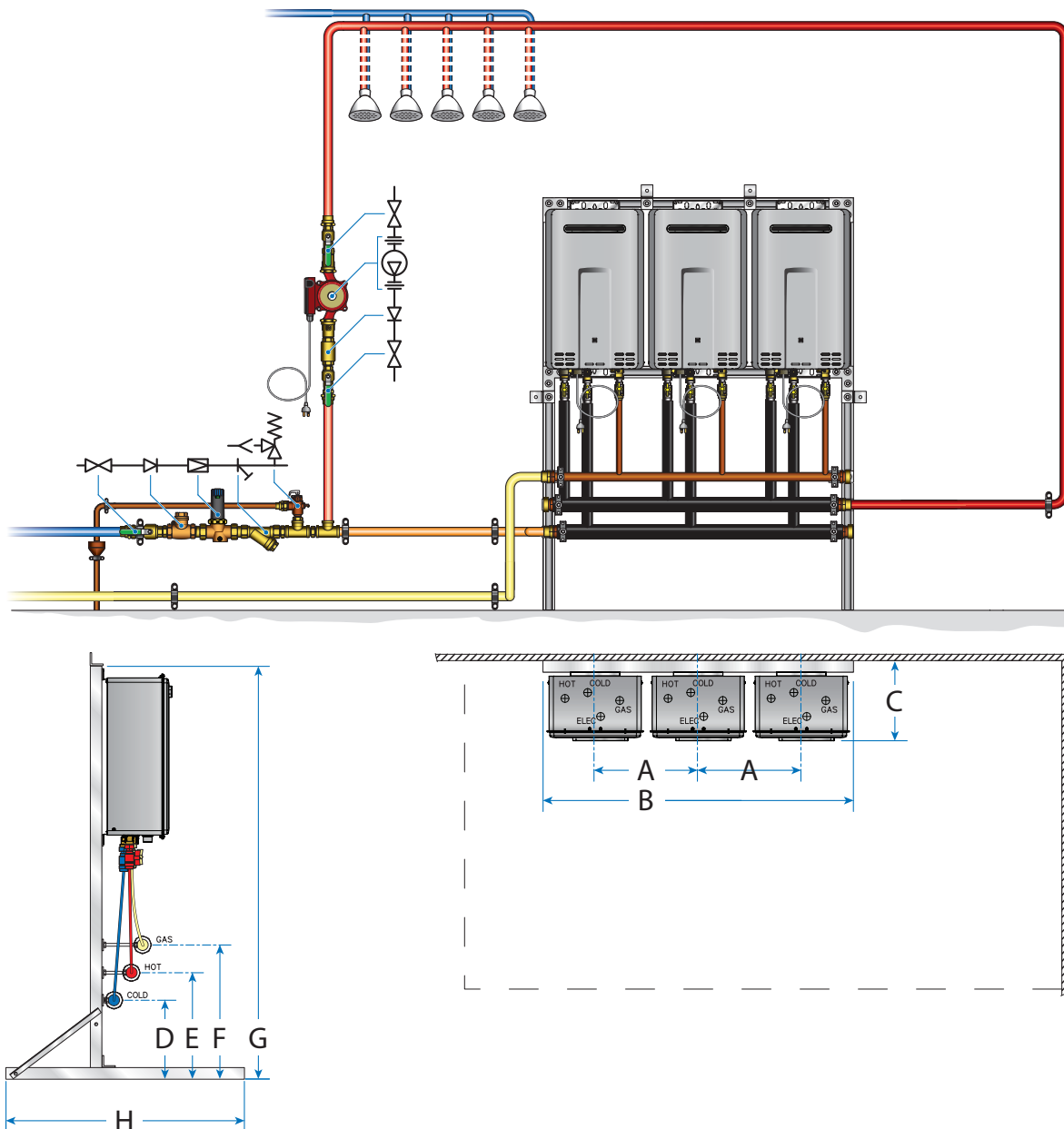
MANIFOLD PACK WITH NO RETICULATION SYSTEM

- Turn on power to each heater via the Socket Outlets
- 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°C but can be adjusted if required, refer to relevant temperature settings for heaters. This indicates the units are operational.
- Not all heaters may will fire up as this is 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 WITH RETICULATION SYSTEM

- Turn on power to each heater via the Socket Outlets
- 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°C 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

TYPICAL RINNAI MANIFOLD PACK INSTALLATION



Appliance Dimensions

Model	A	B	C	D	E	F	G	H	Dry Weight
HD200 Manifold Packs									
MP2 28	375	750	280	340	440	540	1500	850	60 Kg
MP3 28		1125							90 Kg
MP4 28		1500							120 Kg
MP5 28		1875							150 Kg
MP6 28		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

INSTALLATION HANDOVER MANUAL

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 dead-leg installations.
- Maximum cold water inlet pressure to Manifold Pack is 1000kPa. Fit pressure limiting valve if required.
- Minimum water pressure requirement is 300kPa.
- 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

- Connect hot water outlet pipe on the other side of the manifold pack that the cold supply is connected. For example, if the cold water supply is connected to the left hand side, then connect the hot water building supply to the right hand side.
- 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. Pump should be sized for minimal temperature loss around the ringmain. 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

- Each water heater consumes approximately 100 Watts when in operation. It is recommended not to exceed 24 heaters on one electric supply circuit. Refer to the manual supplied with the specific water heater for exact requirements..

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 (as illustrated).



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 either 1.5 l/min or 2.4l/min (depending on which water heater is used) 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 Manifold Packs come as standard with either MECS (Manifold Electronic Control System) or Cascade staging systems. Staging will control the flow through each water heater, increasing the chance of minimum flow rate being achieved. It does this by measuring 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. The staging control system also rotates the sequence of operation to share the load across all heaters to maximise life expectancy.

RINNAI MANIFOLD ELECTRONIC CONTROL SYSTEM - MECS AND CASCADE

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 and Cascade are integrated control systems unique to Rinnai linking each water heater. Their primary function is to monitor demand and activate water heaters accordingly.

The key advantages to using a staging control system 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.


Refer to the separate installation instructions provided with the control system.

FAULT FINDING

MANIFOLD PACK PREVENTATIVE MAINTENANCE

Your Rinnai Continuous Flow water heaters have self diagnostic capability. If a fault occurs, an Error Code will flash on the status monitor or inbuilt controller. 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.

HD Fault Codes

Code	Description	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
05	By-Pass Flow Control Failure	Service Call
10	Air Supply or Exhaust Blockage or Condensate Pipe Blockage	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 and gas meter or cylinder. Check there are no obstructions to the flue outlet
14	Heat Exchanger Overheat Failure	Service Call
15	Venturi Control Failure	Service Call
16	Over Temperature Warning	Service Call
17	Venturi Blockage	Service Call
19	Electrical Earthing Failure	Service Call
21	Data Transfer Error	Service Call
32	Outgoing Water Temperature Sensor Failure	Service Call
33	Heat Exchanger Thermistor Failure	Service Call
34	Combustion Air Temperature Sensor Failure	Service Call
38	Exhaust Thermistor Failure	Service Call
41	Freeze Protection Thermistor Failure	Service Call
51	Inlet Thermistor Failure	Service Call
52	Gas Valve Failure	Service Call
54	High Exhaust Gas Temperature Failure	Service Call
55	Scheduled Service Reminder	Service Call
5E	Cascade Connection Failure	Service Call
61	Combustion Fan Failure	Service Call
65	Water Flow Control Failure (Does not stop flow properly)	Service Call
70	PCB Failure	Service Call
71	Solenoid Valve Circuit Failure	Service Call
72	Flame Rod Failure	Service Call
	Wireless water controller (when fitted) is 'Out of Range' due to the distance from transceiver or an obstruction.	Move wireless water controller or transceiver or remove the obstruction.



Some fault codes are model specific and so not all codes will display on all models. If the fault code being displayed is not listed above, contact Rinnai for advice.

In the majority of 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.

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. Check Socket Outlets.
- 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.

RING MAIN PUMP

- These are used for circulating water around the building. They are normally left on or may have a time clock to switch it off at night when the building is not in use.
- These pumps do not pressurise the system.
- They must have a non return valve
 - Swing non return valves must be horizontal or upward as they rely on gravity to close the valve.
 - 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. Refer to the back cover of this manual for contact information.

COMMISSIONING

Company	
Phone No,	
Email	
Date	
Project	

COMMERCIAL HOT WATER SYSTEM COMMISSIONING CHECK-LIST

System Details		
Product Code		
Installation Type	External / Internal	
Number of Water Heaters		
Water Heater Model		
Gas Type	Natural / LPG	
Number of Storage Tanks		
Storage Tan/s Model		
Number of Primary Pump/s & Control System/s		
Pump/s Model		
Number of Return Pump/s		
Pump/s Model		
Installation		
Overall Installation – Satisfactory?	Yes / No	
Cold Water Strainer, Check Valve, PLV Isolation Valve/s Installed?	Yes / No	
Return Strainer Installed?	Yes / No / NA	
Storage Tanks' hydraulically balanced?	Yes / No / NA	
Ventilation Requirements – Satisfactory?	Yes / No	
Individual Co-Axial Flue Installation – Satisfactory?	Yes / No / NA	
Dip Switch Setting	Short / Long	
Common Flue Installation – Satisfactory?	Yes / No / NA	
Primary Pump/s Vented?	Yes / No / NA	
Return Pump/s Vented?	Yes / No / NA	
Air removed from flow and return hydraulic circuit?	Yes / No	
All drains to tundish completed?	Yes / No	
Socket Outlet Installation – Satisfactory?	Yes / No / NA	
MECs/Cascade staging system wiring completed?	YES / No / NA	
Parameters		
Gas Pressure (@1.13-2.75kPa–NG) / @2.75kPa-LPG)		
• Static		
• Running		
Inlet Water Pressure (kPa)		
Permanent Power Supply (V/Phase/Hz/A)	240/1/50	

Commercial Manifold Pack OIM

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.