

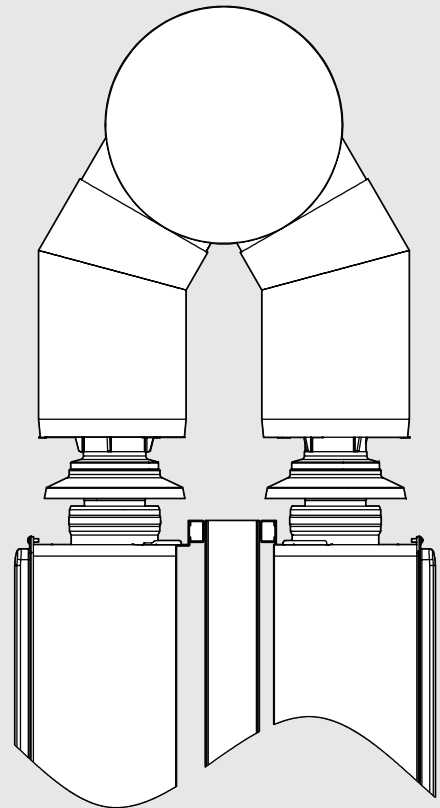
This Rinnai Commercial Common Flue System is certified and suitable **ONLY** for use with Rinnai Internal Commercial Gas Continuous Flow Water Heater models:

REU-N3237FFC

REU-VRM2632FFUC

REU-VCM2837FFC

It is **NOT SUITABLE** for use with other models.



Commercial Common Flue System

Operation & Installation Manual

Rinnai



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

Refer to the Operation & Installation Manual supplied with the Rinnai Internal Commercial Gas Continuous Flow Water Heater for additional Operation and Installation requirements.

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.



**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

The information contained in other Operating / Installation instructions supplied with Rinnai Continuous Flow water heaters, applies in full, unless otherwise dictated in this manual. These other manuals contain important information relating to:

- General Safety
- Warnings about hot water
- Inspection and maintenance

The Rinnai Commercial Common Flue System is certified and suitable only for use with Rinnai internal commercial continuous flow water heaters. The model code is found on the dataplate on the side panel of the water heater. Not certified or suitable for use with any other appliances.

Installations using Rinnai commercial flue systems components must comply with:

- Manufacturer's Installation Instructions
- Current AS/NZS 5601.1 'Gas Installations'
- Plumbing Code of Australia (PCA)
- Local regulations and municipal building codes, including local OH&S requirements.
- Installation, commissioning and servicing must be performed by authorised persons.

Improper installation, adjustment, alteration, service or maintenance can cause injury and/or property damage.



GAS WARNINGS

If you smell gas:

DO NOT operate or try to light any gas appliances

DO NOT touch any electrical switches

DO NOT light matches, cigarette lighters or smoke cigarettes

TURN OFF the gas supply at the gas meter

Immediately call your gas supplier or a licensed gas fitter (Use a neighbour's telephone).



OTHER IMPORTANT INFORMATION / CERTIFICATION

This manual **MUST** be read and understood in full before installation and commissioning of water heaters and flue system are attempted.

The information contained in other Operating / Installation instructions supplied with Rinnai Continuous Flow water heaters applies in full, unless otherwise dictated in this manual.

Please keep this instruction booklet in a safe place for future reference.

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

This manual is not to be regarded as a set of design specifications or instructions for persons unfamiliar with the installation, commissioning and servicing of gas appliances in commercial and industrial installations.

The Rinnai commercial common flue system is designed for use in commercial or industrial *plant room* type installations. Not suitable for single water heater installations in domestic premises.

Rinnai commercial common flue system components must not be used to replace flue systems associated with 'instantaneous' or other types of *open flued* water heaters in domestic installations.

It **MUST** be ensured that any permanent ventilation openings to the *plant room* remain unobstructed.

The flue system **MUST** be designed, installed and tested to ensure that *flue gases* are exhausted to the outside atmosphere and that there is no spillage of *combustion products* into the *plant room*. Spillage of *combustion products* into the *plant room* may be hazardous and may cause asphyxiation.

The Rinnai Commercial Common Flue System is certified and suitable only for use with Rinnai Internal commercial continuous flow water heaters. Refer to model listings on the front page.

GENERAL INFORMATION

In this manual, words in *italics* are defined in the 'Definitions' chapter for additional clarity.

These instructions apply only to Rinnai Commercial Common Flueing components. They do not apply to the Rinnai INFINITY Flueing system or Rinnai 'Co-Axial' flue systems.

Before commencing installation, ensure you are familiar with the content of the Operating / Installation manuals supplied with the Rinnai continuous flow water heaters. All information in these manuals applies except for any references made to:

1. Rinnai INFINITY Flueing system
2. Flueing for Internal Models
3. Co-Axial flue system
4. External Models and External Water Heaters

DEFINITIONS



The definitions in this chapter are reprinted from AS/NZS 5601.1 'Gas Installations' with the kind permission of Standards Australia. AS/NZS 5601.1 was current at the time of printing these instructions but may have been superseded by a later version of this Standard. It is the installers responsibility that the requirements of the current AS/NZS 5601.1 are met.

Table 1. Definitions

1.8.84	Plant Room A room designed to accommodate one or more gas appliances, or other equipment, in which the gas appliances can be fully maintained, and which is not normally occupied or frequented for extended periods.	1.8.26	Draught Diverter A device, without moving parts, which can be part of the appliance or fitted in the flue of an appliance, at the junction of the primary and secondary flues, for isolating the combustion system from the effects of pressure changes in the flue.
1.8.2.12	Room-sealed / Room-sealed appliance An appliance designed such that air for combustion does not enter from, or combustion products enter into, the room in which the appliance is located.	1.8.14	Combustion Products The constituents resulting from the combustion of a fuel with air, oxygen or a mixture of the two, including the inert gases associated with the fuel and the air but excluding any other diluent or contaminant.
1.8.8.1	Atmospheric Burner A system where all the air for combustion is introduced by the inspirating effect of the gas or the natural draught in the combustion chamber or a combination of the two without mechanical assistance.	1.8.42	Flue Gases Combustion products plus all diluents and contaminants, including where applicable, excess air, dilution air, process air and waste products from the process.
1.8.8.2	Forced Draught Burner A system where all or part of the air for combustion is introduced by providing positive pressure in the combustion chamber by mechanical means.	1.8.40.5	Open Flue A flue system containing a draught diverter or canopy.
1.8.40.3	Common Flue A flue system designed to carry combustion products from two or more appliances.	1.8.40.6	Power Flue A flue system in which combustion products are removed from the gas appliance by a fan in the flue.
1.8.40.4	Natural draft Flue A flue in which the draught is provided by the buoyancy effect of the hot gases in it.		

Rinnai Internal Commercial applications for continuous flow water heaters can be fitted with two types of flue systems as follows:

RINNAI CO-AXIAL FLUE SYSTEM

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

Use of the Co-Axial flue system with a Rinnai internal continuous flow water heater results in a room sealed and power flued appliance as defined in AS/NZS 5601.1. The Co-Axial flue system is intended for domestic installations involving a single appliance or commercial and industrial installations involving multiple appliances, each fitted with individual Co-Axial flue systems and terminals.



This manual does not apply to Rinnai Co-Axial flue systems. The Operation / Installation Manual supplied with the Rinnai continuous flow water heater and the Co-Axial flue installation manual supplied with Co-Axial flue terminals contains technical information and installation instructions for this type of flue system. The installation must also comply with the instructions supplied by Rinnai.

Please keep this instruction booklet in a safe place for future reference.

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

RINNAI COMMERCIAL COMMON FLUE SYSTEM

This Rinnai Commercial Common Flue System is certified and suitable **ONLY** for use with Rinnai Internal Commercial Gas Continuous Flow Water Heater models, referred to in the model compatibility listing on the front cover of this manual.

Many applications for multiple Rinnai internal continuous flow water heaters and commercial flue system components are for the replacement of existing gas water heaters or boilers with *atmospheric burners* already installed in *plant rooms* which are already *common flued* as defined in AS/NZS 5601.

Generally, most of the existing flue system infrastructure and provisions for appliance ventilation can remain when existing water heaters or boilers are replaced by Rinnai internal continuous flow water heaters, provided the requirements of this manual and AS/NZS 5601.1 are met.

PRINCIPLES OF OPERATION

GENERAL

The *combustion products* are expelled from the Rinnai Internal continuous flow water heater at '*forced draught*' and higher than atmospheric pressure through the inner Co-Axial flue pipe at the top of the Rinnai water heater as a result of the combustion system design which includes an integral combustion fan.

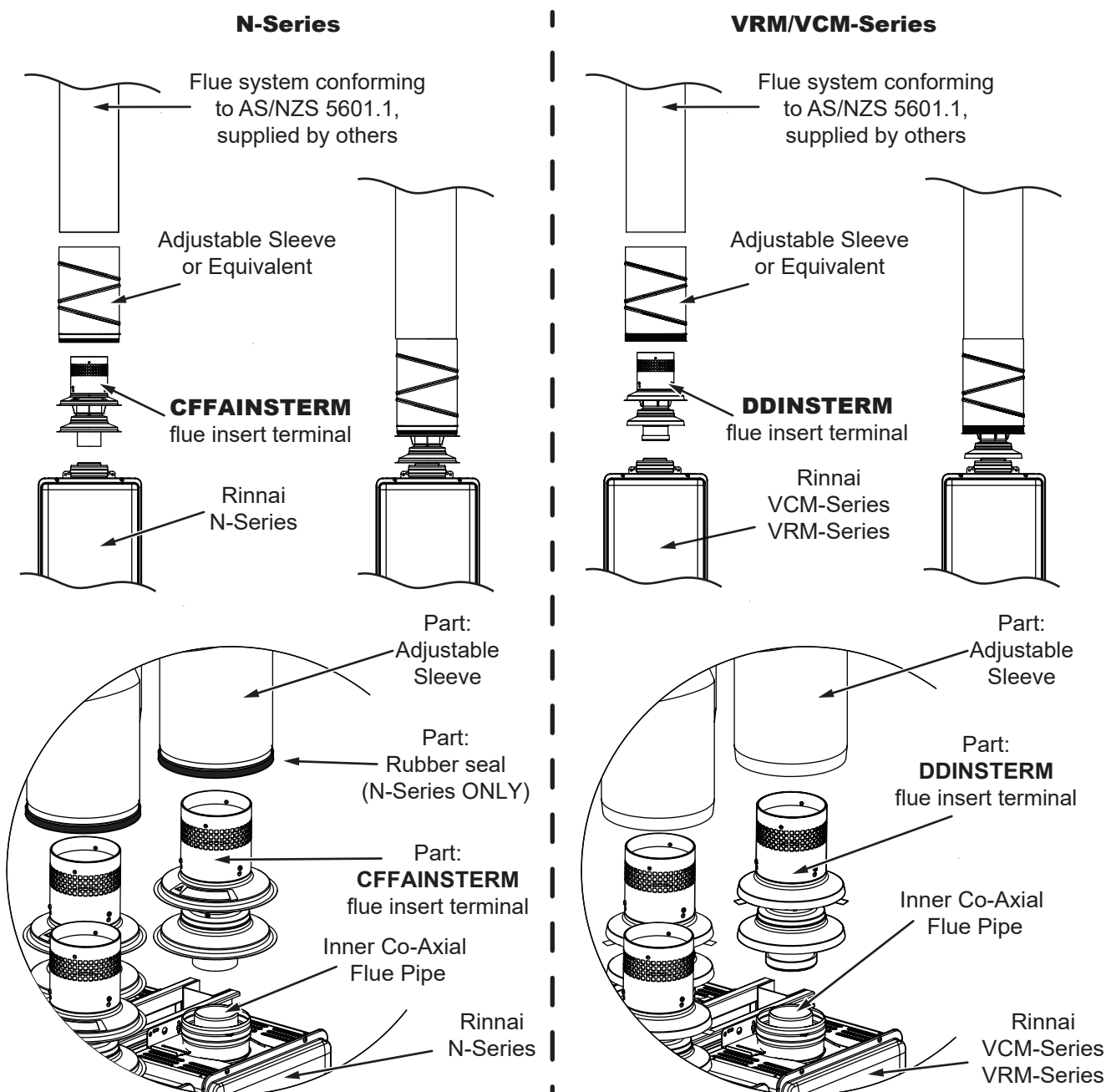
The Common Flue Starter Kit contains the Common Flue Insert Terminal and adjustable sleeve/bend and connects to the inner Co-Axial flue pipe at the top of the Rinnai internal continuous flow water heater.

The design is such that flow of *combustion products* from the water heater through it results in the continuous induction of air from the *plant room* which mixes with the *combustion products*. The resulting *flue gases* are at negative pressure (below atmospheric).

The flue insert terminal also contains an integral *draught diverter* and combustion air diverter. The function of the combustion air diverter is to ensure the supply of air to the water heater for the purposes of combustion is not affected by operation of the flue system.

Refer to "Figure 1. Rinnai Commercial Common Flue System - Components" on page 8 and "Figure 2. Principle of Operation" on page 9:

Figure 1. Rinnai Commercial Common Flue System - Components



NATURAL DRAFT

For non-condensing models **REU-VRM/VCM-Series** water heaters **ONLY**.

The combination of the Rinnai Internal continuous flow water heater and the flue starter kit results in an *appliance* with a *natural draft flue* and *open flue* and *draft diverter* with *flue gases* discharge characteristics the same as an *appliance* with an *atmospheric burner* and similar gas rate.

As a result a Rinnai internal continuous flow water heater fitted with the Rinnai certified flue kit can be connected to any flue system designed for use with *atmospheric burner* in accordance with AS/NZS 5601, provided that the resulting installation complies with all relevant requirements of AS/NZS 5601.

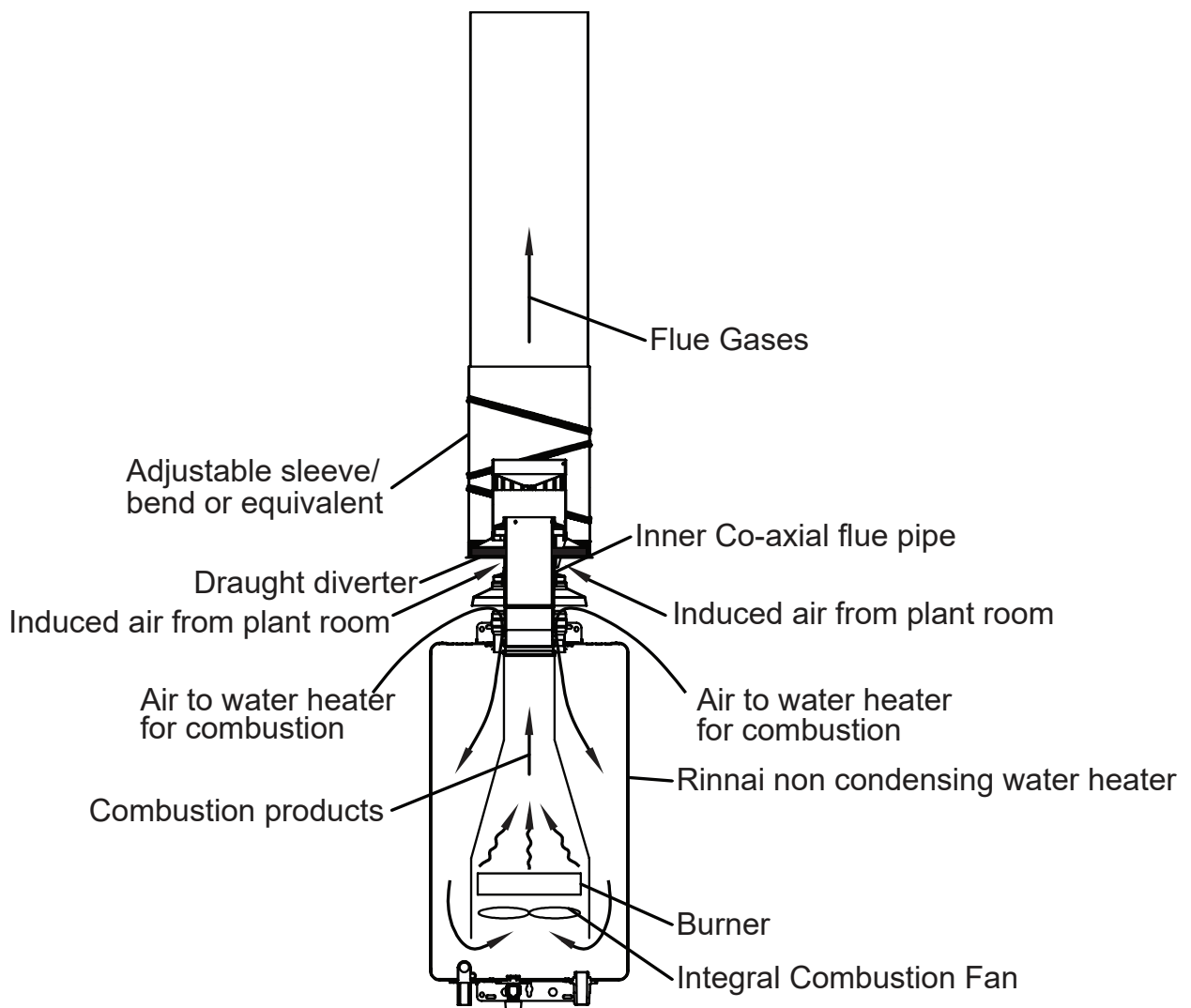


Adjustable sleeve/bend can be substituted with any non Rinnai component provided it is equivalent in terms of materials and dimensions.



These Rinnai flue components cannot be substituted with any other Rinnai or non Rinnai components. Common flue insert terminal must always be used for Rinnai internal continuous flow water heaters installed with commercial common flue systems.

Figure 2. Principle of Operation



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'. Figures 3 & 4 below, illustrate typical application principles.

Figure 3. Typical Natural Draft Flue Installation - VRM/VCM-Series ONLY

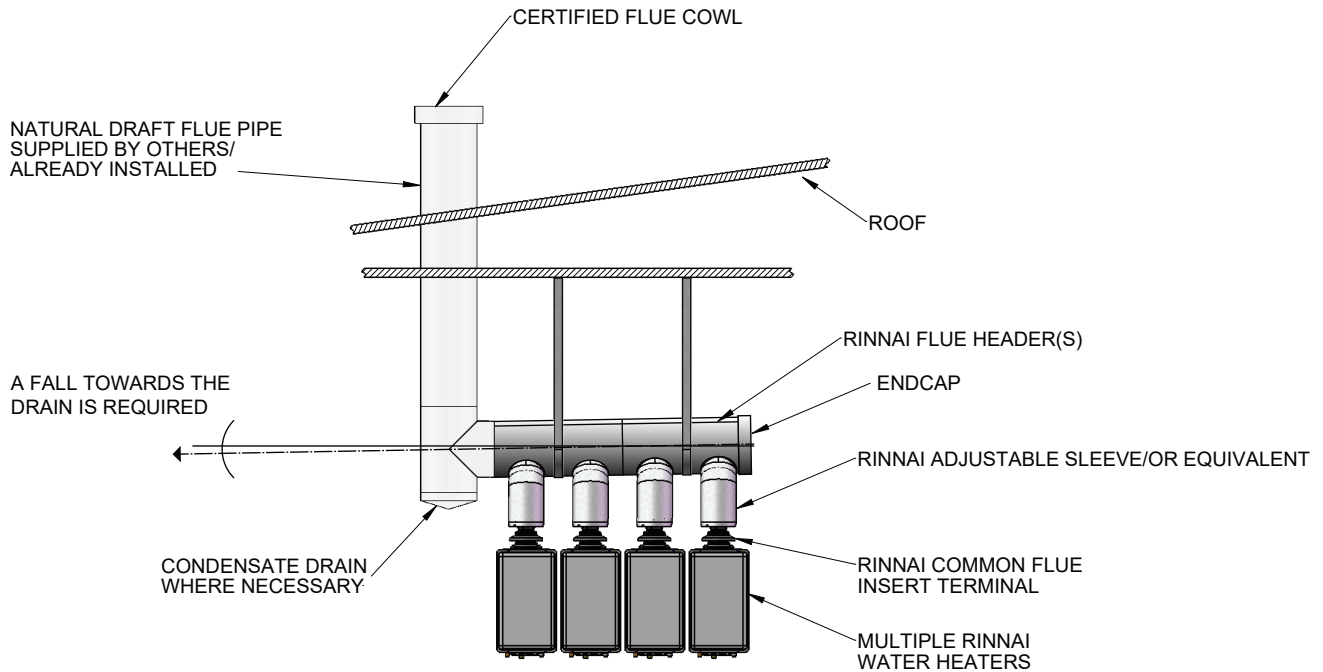
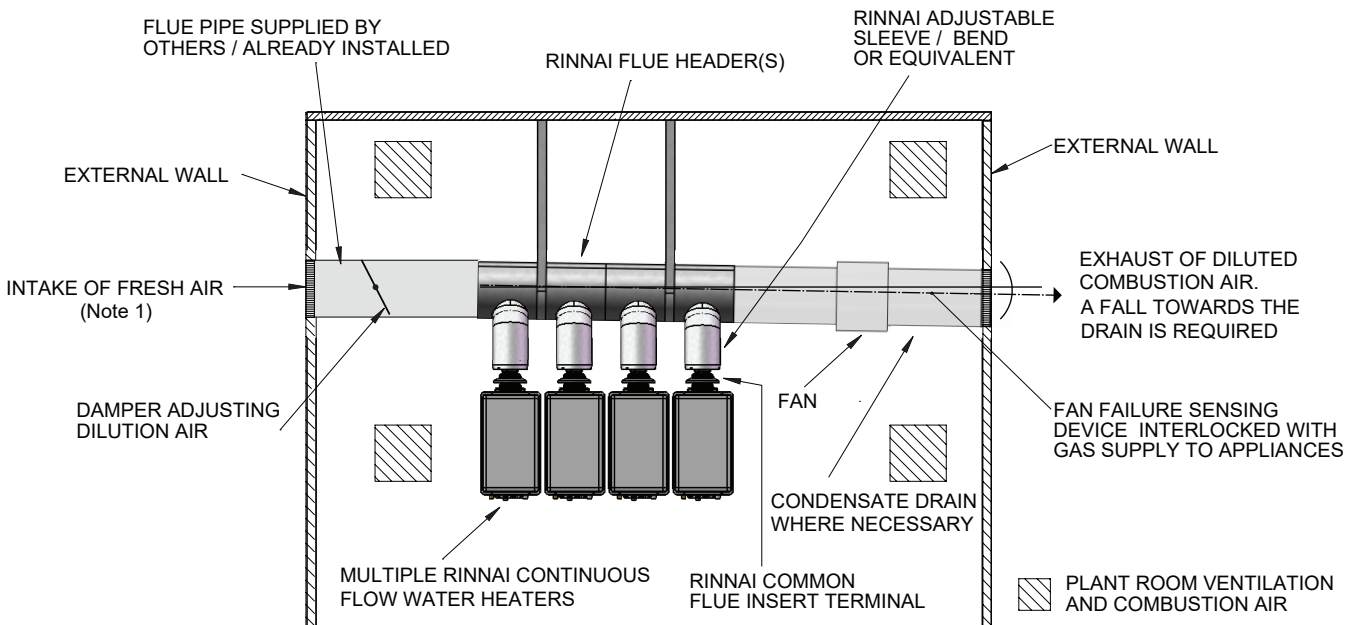


Figure 4. Typical Power Flue Installation - Both N-Series & VRM/VCM-Series





Intake of fresh dilution air from outside the plant room is optional. The intake of fresh air into the flue pipe can be drawn directly from the *plant room*.

1

Plant room ventilation must take into consideration combustion and dilution air requirements.

Flue headers are supplied in Rinnai internal continuous flow water heaters.

Headers for **VRM/VCM-Series** water heaters have **375 mm** centres between individual appliance flue spigot connections.

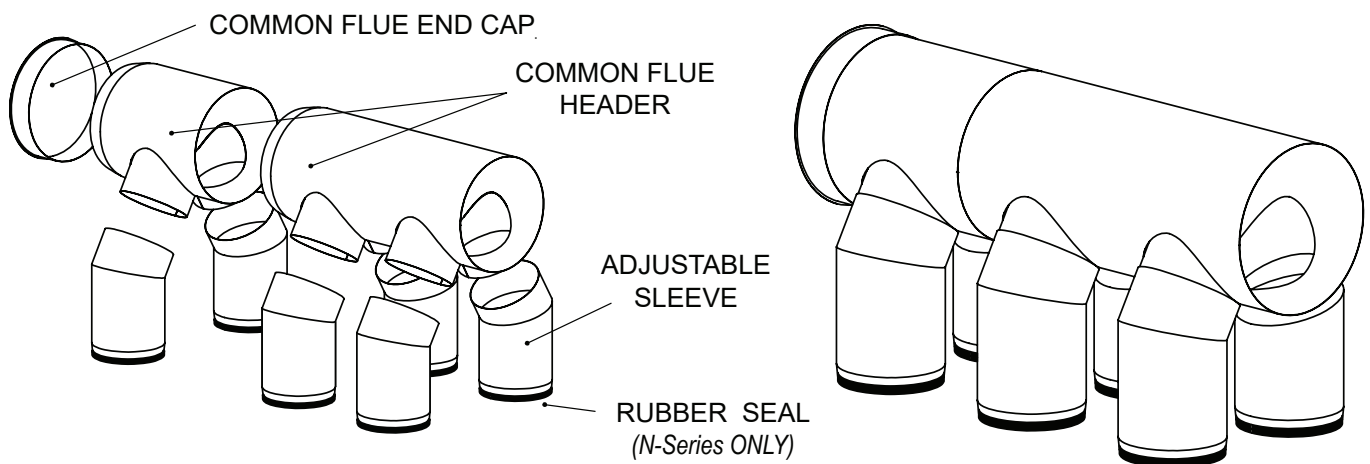
Headers for **N-Series** water heaters have **500 mm** centres between individual appliance flue spigot connections.

Flue headers are available in 'single row' or 'back to back' configurations and available in 200, 250, 300, 350, 400, 450 and 500 mm diameters and ordered separately. Larger diameter flue headers available on request.

Rinnai commercial common flue system components are designed for compatibility with flue components from other manufacturers. Additional components not supplied by Rinnai that are required to complete the flue installation are available from other flue component manufacturers.

Components are joined by self tapping, galvanised or stainless steel screws.

Figure 5. Typical Header Components



Rinnai components cannot be substituted with any other Rinnai or non Rinnai components.

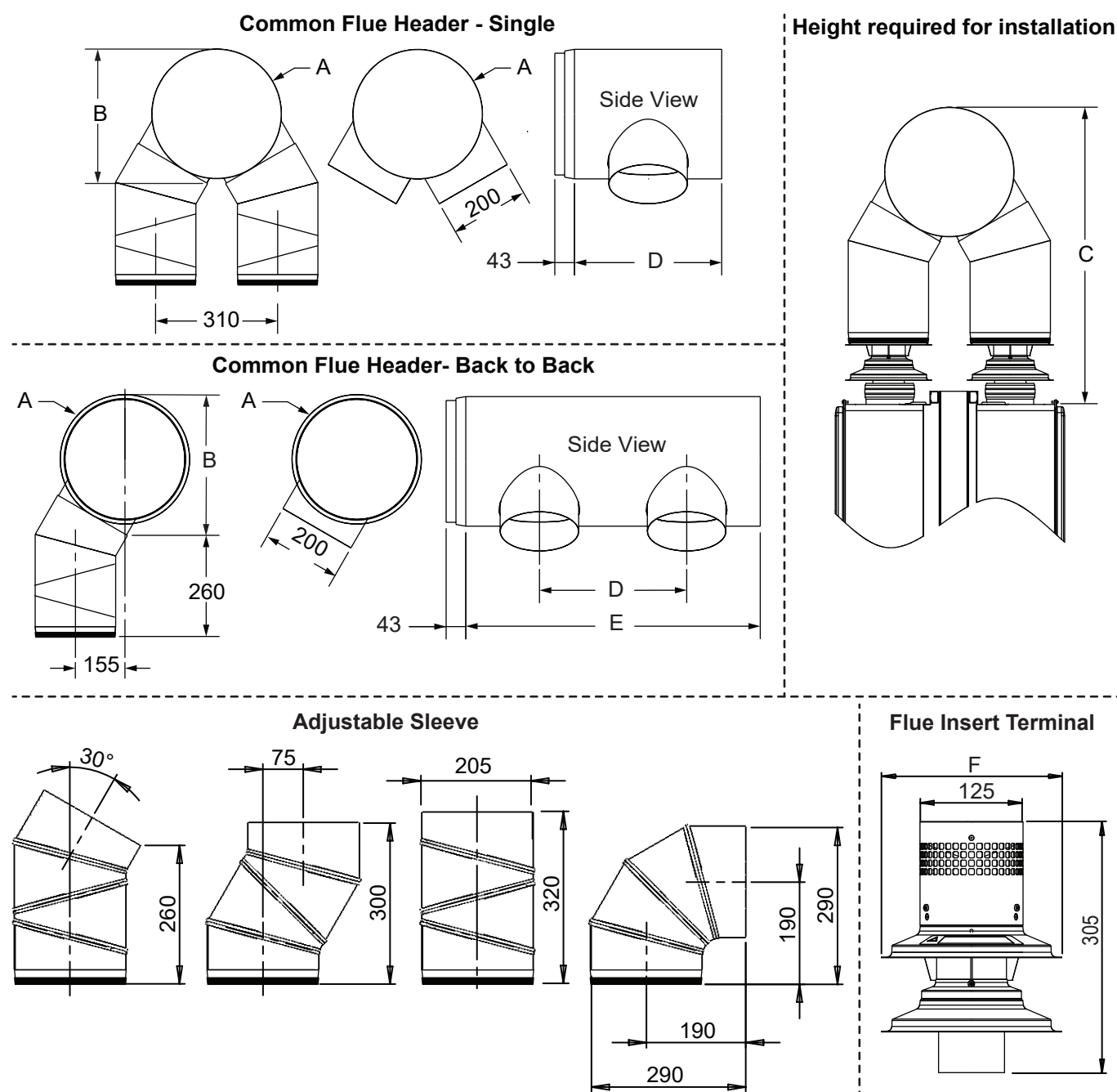
Common flue insert terminal must always be used for Rinnai internal continuous flow water heaters installed with commercial common flue systems.

2



Flue components cannot be cut to length.

In certain applications a fan will be required to exhaust diluted combustion air. These can be ordered separately along with an adaptor to suit. Refer to "Flue Fan Interlock Wiring" on page 17 of this manual.

Table 2. Flue Header Dimensions


Flue Header Inner Diameter (mm)			200	250	300	350	400	450	500
A			220	275	325	375	425	475	525
B			230	285	340	390	445	500	555
C			640	695	750	800	855	910	965
D	VRM/VCM-Series		375						
	N-Series		500						
E	VRM/VCM-Series		750						
	N-Series		1000						
F	VRM/VCM-Series	DDINSTERN	195						
	N-Series	CCFAINSTERN	219						

INSTALLATION & COMMISSIONING

IMPORTANT INSTALLATION CONSIDERATIONS

Ensure you have read 'Part 1' of this manual for your safety. AS/NZS 5601.1 contains important and specific requirements relating to air supply to appliances and flue system design. Below is a summary of these requirements which are a guide only. It is the installers responsibility to ensure the requirements of AS/NZS 5601.1 are met in full.

AIR SUPPLY / VENTILATION

The *plant room* in which the Rinnai Internal continuous flow water heaters, associated commercial flue system and any other fuel burning appliances are installed requires ventilation.



Air supply to the *plant room* must not be affected by any mechanical ventilation located in other parts of the building not associated with the gas appliance installation in the *plant room*. Such mechanical ventilation may create a negative pressure in the *plant room* which is hazardous and may cause asphyxiation, explosion or fire. AS/NZS 5601.1 allows for the air supply to appliances installed in the plant room to be direct from outside, via an adjacent room or via mechanical ventilation.

VENTILATION DIRECT FROM OUTSIDE

If ventilation is provided direct from outside, two permanent openings shall be provided direct to outside (see "Figure 6. Ventilation Direct To Outside - Plant Room" on page 14). Openings shall be located to ensure the distance between the top of the upper opening and the ceiling of the plant room, and the distance between the bottom of the lower opening and the floor of the *plant room* does not exceed 5% of the height of the *plant room*. It is preferred that more than one wall be used to provide ventilation. Alternatively, the two openings may be combined provided that the top and bottom of the opening reaches the limits set by this clause. The minimum vertical dimension of any free ventilation opening shall be 6 mm. Minimum free ventilation areas provided by the opening(s) shall be calculated using the following formulas:

Two openings direct to outside

$A = N \times 300 \text{ cm}^2$ where A is the free ventilation area per opening and N is the number of Rinnai Internal continuous flow water heaters.

One opening direct to outside

$A = N \times 600 \text{ cm}^2$ where A is the free ventilation area for the one opening and N is the number of Rinnai Internal continuous flow water heaters.

VENTILATION OF PLANT ROOM VIA AN ADJACENT ROOM

If ventilation of the plant room is provided via an adjacent room, this room shall be a non habitable room. The adjacent room shall be ventilated direct to outside in accordance with the requirements in the previous clause. Two permanent openings shall be provided in the *plant room* to the adjacent room. Openings shall be located to ensure the distance between the top of the upper opening and the ceiling of the *plant room*, and the distance between the bottom of the lower opening and the floor of the *plant room* does not exceed 5% of the height of the *plant room*. It is preferred that more than one wall be used to provide the ventilation. Alternatively, the two openings may be combined provided that the top and bottom of the opening reaches the limits set by this clause. The minimum vertical dimension of any free ventilation opening shall be 6 mm. Minimum free ventilation areas provided by the opening(s) in the *plant room* shall be calculated using the following formulas:

Two openings to an adjacent room

$A = N \times 600 \text{ cm}^2$ where A is the free ventilation area per opening and N is the number of Rinnai Internal continuous flow water heaters.

One opening to an adjacent room

$A = N \times 1200 \text{ cm}^2$ where A is the free ventilation area for the one opening and N is the number of Rinnai HD200i appliances



The above formulas assume no appliances other than Rinnai Internal continuous flow water heaters are installed in the plant room

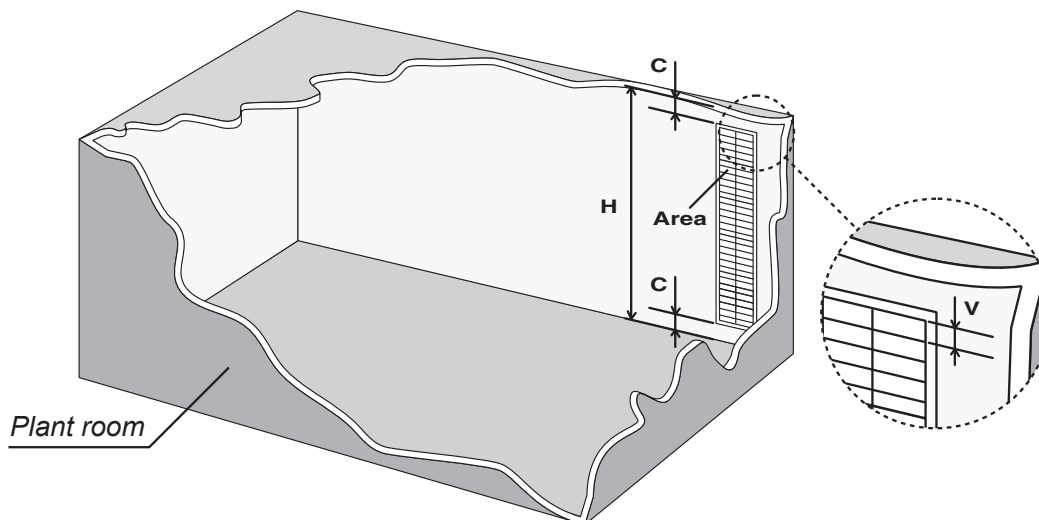
The minimum vertical dimension of any free ventilation opening shall be 6 mm.

MECHANICAL VENTILATION

Where the combustion air supply to the appliances in the *plant room* is to be provided by mechanical means this shall be directly from outside and the system shall comply with the requirements of AS/NZS 5601.

Figure 6. Ventilation Direct To Outside - Plant Room

Option 1. A Single Permanent Opening Direct To Outside



H = Height of *Plant room*

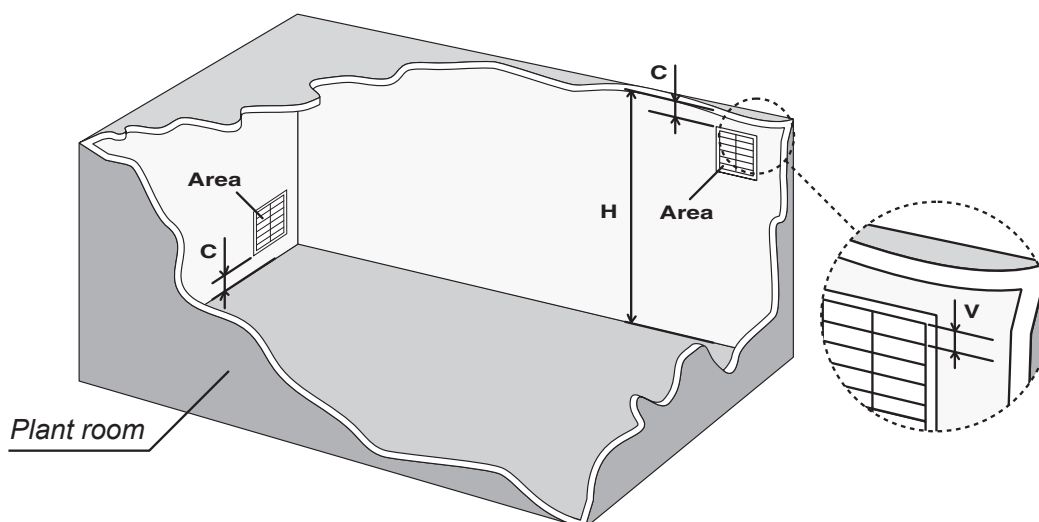
C = Distance from floor to ceiling - NOT to exceed 5% of H (it can be less)

V = Minimum vertical dimension of any free ventilation opening shall be 6 mm

Area (The Minimum free ventilation area) = $N \times 600 \text{ cm}^2$ direct to outside, of the single permanent ventilation opening, where

N = Number of Rinnai Internal Continuous Flow water heaters

Option 2. Two Permanent Openings Direct To Outside



H = Height of *Plant room*

C = Distance from floor to ceiling - NOT to exceed 5% of H (it can be less)

V = Minimum vertical dimension of any free ventilation opening shall be 6 mm

Area (The Minimum free ventilation area) = $N \times 300 \text{ cm}^2$ direct to outside, of each permanent ventilation openings, where

N = Number of Rinnai Internal Continuous Flow water heaters

IMPORTANT INFORMATION - FLUE SYSTEM

- The flue system must be designed, installed and tested to ensure that *flue gases* are exhausted to the outside atmosphere and that there is no spillage of *combustion products* into the plant room. Spillage of *combustion product* into the *plant room* may be hazardous and may cause asphyxiation. To confirm correct operation, the Flue System must be checked in accordance with the commissioning instructions in this manual.
- The flue system shall be supported independent of the appliance flue connection.
- The flue system shall be securely fixed and adequately supported by bracket(s) fastened to the building structure at suitable points to ensure the stability of the flue system.
- The flue system must vent to the outside and use only appropriately certified fittings.
- The design strength or fire resistance of a building shall not be reduced by the installation of a flue.
- The flue system must be designed and installed in accordance with the requirements of AS/NZS 5601.
- The installation and commissioning steps below must be followed in their numerical order.
- All installations must be installed with a slight fall towards a suitable condensate drain to avoid the risk of condensate building up within the flue ducting or fan. A minimum 1° fall is recommended, refer to figures 3 and 4 on page 10.

INSTALLATION AND COMMISSIONING

1. Before commencing installation, ensure you are familiar with the content of all other Operation / Installation manuals supplied with the Continuous Flow Water Heaters. All information in these manuals applies except for any references made to: Co-Axial flue system for External Model Water Heaters
2. Locate and install the water heaters in accordance with the Operation / Installation manuals supplied with the continuous flow water heaters.
3. Design, locate, install and connect the flue system in accordance with these instructions and the requirements of AS/NZS 5601.
4. If the water heaters have been located and installed in accordance with the 'Operation / Installation Manual for continuous flow water heaters', carry out commissioning in accordance with that manual.
5. If the water heaters have been located and installed in accordance with the 'Rinnai Demand Duo Installation Manual' carry out the 'filling instructions' and 'starting instructions' in accordance with that manual.
6. **IMPORTANT:** It must now be confirmed that all *flue gases* are exhausted to the outside atmosphere and that there is no continual spillage of *combustion products* into the room under the normal operating conditions of the water heaters. To achieve this, perform the following procedure:
 - a) Turn 'ON' the 240V power supply to the water heaters and any associated pumps and thermostat controls.
 - b) Open all available hot water taps fully (**CAUTION: Ensure building occupants do not have access to hot water outlets during this procedure. Hot water is a scalding hazard).**



The combination of steps a) and b) above is intended to result in the water heaters firing on full gas rate continuously.

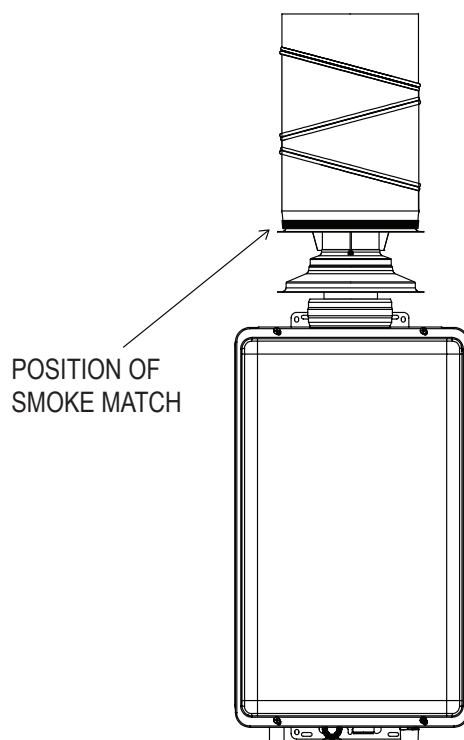
- c) After 10 minutes of operation, place a smoke match or suitable smoke generating device under the *draught diverter* of the common flue insert terminal as shown in Figure 7 below.

The smoke should get drawn into the common flue insert terminal at this point confirming there is no spillage of *combustion products* into the room from the flue system.

If the smoke is blown away from the common flue insert terminal at this point after 10 minutes of operation there is continual spillage of *combustion products* into the *plant room*. The cause must be found and rectified.

Perform this procedure for all internal continuous flow water heaters and common flue insert terminals installed.

Figure 7. Position of smoke match



Continual spillage of combustion product into the *plant room* is hazardous and may cause asphyxiation. The cause(s) of continual spillage must be found and rectified during the commissioning process.

- d) Close the hot water taps previously opened.
7. After commissioning is completed, explain to the customer the functions and operation of the water heaters and ensure he or she is supplied with all Operation / Installation manuals including this manual. Highlight the importance for the customer to familiarise themselves with the safety messages in this manual.

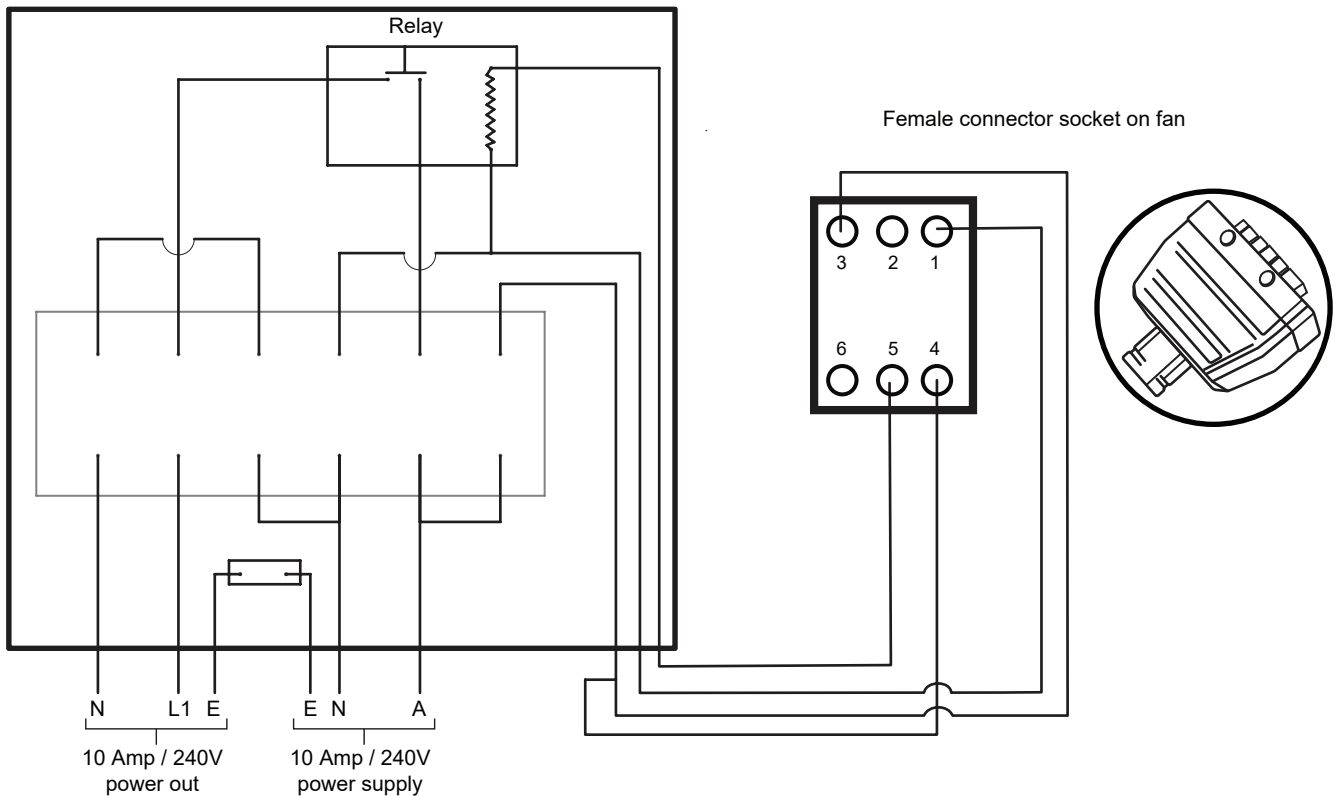
SERVICING

Rinnai has a service and spare part 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 recommend servicing of appliances installed in plant rooms at least once per year. Depending on operating conditions, servicing may be required more frequently. Service work must be performed by authorised persons.

FLUE FAN INTERLOCK WIRING

Figure 8. Fan Connection



For flue with single phase fan-assisted installations

Fan size	Weight (kg)	Electrical supply V/Ph/Hz	Start current Amps	Full load running current Amps	Motor power Watts
GBDF 2	9.1	230/1/50	1.2	0.64	75
SSDF 2	8.8	230/1/50			
GBDF 3	12.1	230/1/50	2.5	1.45	120
SSDF 3	12.0	230/1/50			
GBDF 4	22.5	230/1/50	8.4	2.8	335
SSDF 4	23.4	230/1/50			

Figure 9. Fan and Air Flow Switch

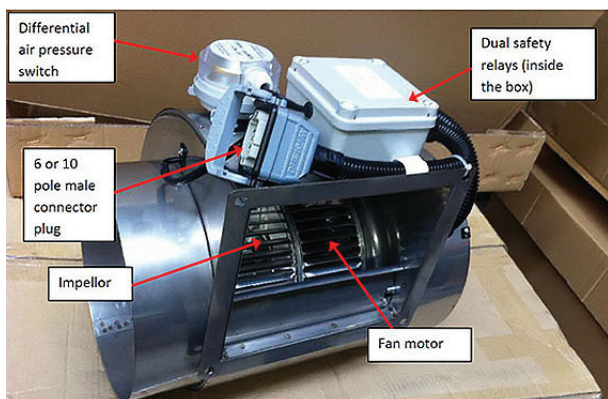
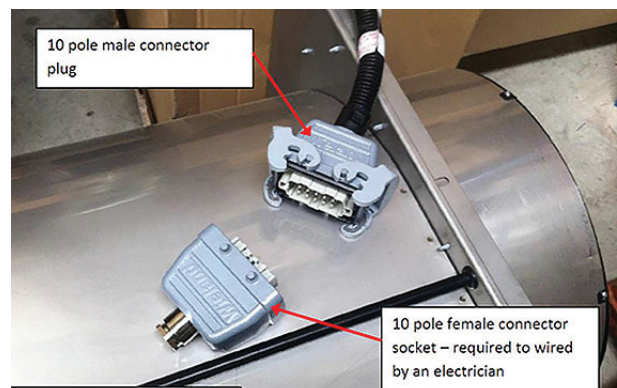


Figure 10. Male / Female Plug for Connection



FLUE FAN INTERLOCK WIRING

Rinnai provides a relay module that can be easily installed to avoid extensive on-site wiring required. It allows the fan and heat source to be plugged in using 10amp 240V supply. Refer to figures 11 and 12

Figure 11. Common Flue Relay Wiring Box

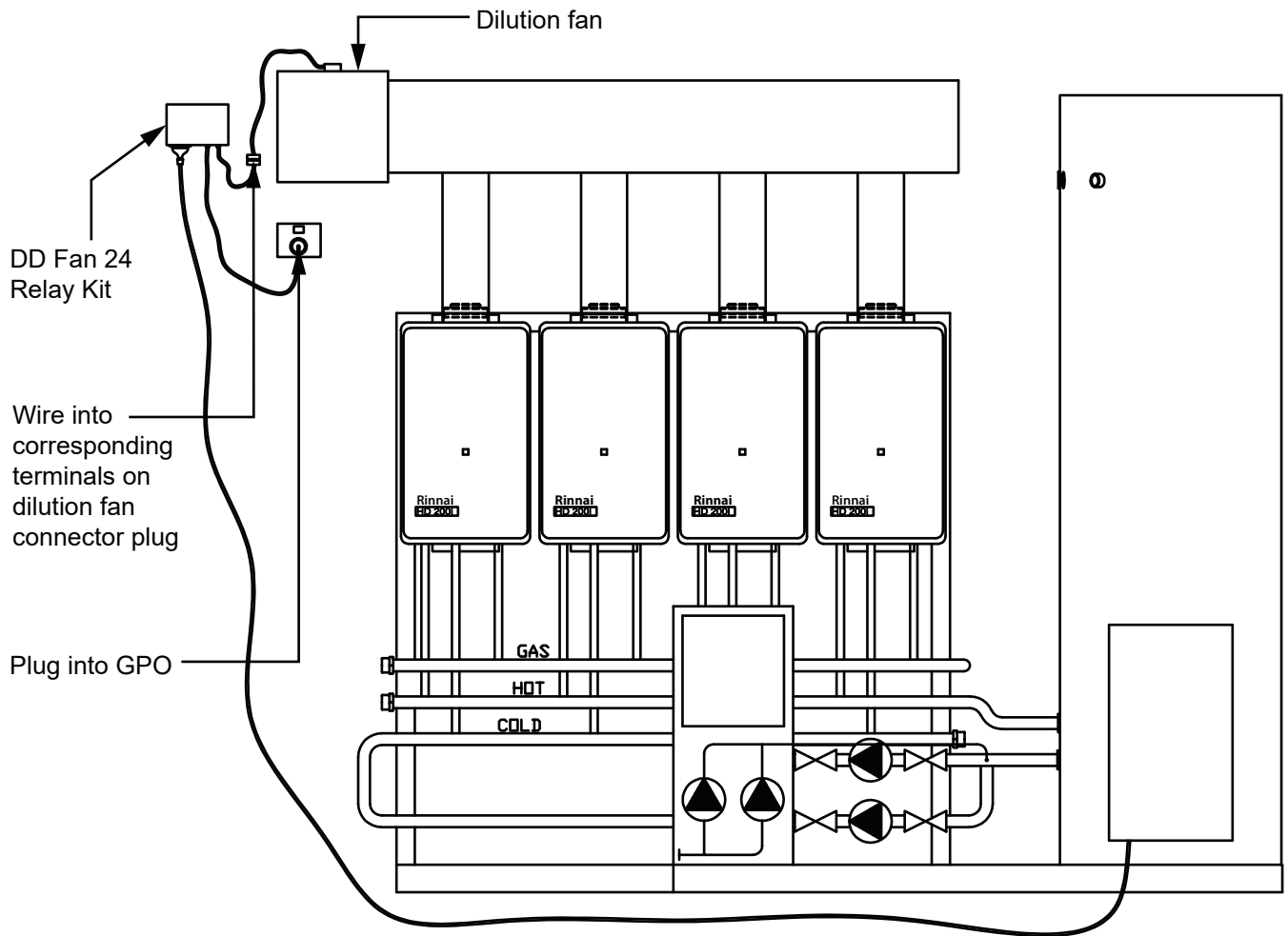


Figure 12. Power supply



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 annually.

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