Commercial Flue | Specification Guide

Rinnai

Commercial Flue System

All internally sited gas fuelled water heating plants must include a mechanism to manage flue gases and must comply to AS/NZS 5601. Rinnai products are no different and as such Rinnai has numerous flueing options to suit your application and selected product.

All Rinnai flueing components are certified to AS/NZS 5601 and exclusively for use with Rinnai Continuous Flow gas water heaters.

HDC32I
32 l/min
97% thermally efficient

HD28I
28 l/min
83% thermally efficient

Which heaters require a flue?

Our Internal Heavy Duty Continuous Flow range of water heaters are specifically designed for commercial use with in-built intelligence and durability to stand the test of time in the harshest of commercial environments. With 2 efficiency and flow rate options available Rinnai can provide the perfect solution based on your application. Generally, projects with very high energy costs would benefit from the use of our HDC32 higher efficiency condensing technology as the increased capital expenditure is absorbed by the annual energy cost savings.

Flueing Options

1. Common flue

2. Individual flueing per water heater known as co-axial flue

What Flue Options Are Available?

There are two key decisions to be made when selecting flueing:

1. Common flue
2. Individual flueing per water heater known as co-axial flue

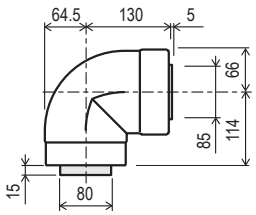
Both options are suitable and offer design flexibility whether you're looking for a cost effective solution or a complete engineered design.

Individual Flueing (HD28i)

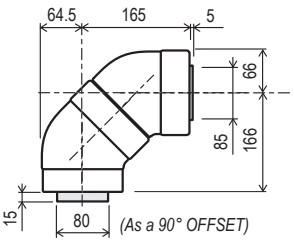
The unique Rinnai co-axial flue used with the HD28i has a corrosion resistant aluminium inner with a durable PVC outer skin. The water heater is a room-sealed appliance and the available flue components allow the water heater(s) to be installed virtually anywhere.

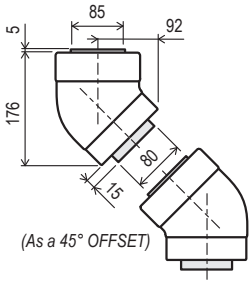
All flue installations must be designed within the capacities of the water heaters for optimum operation. Note: The flue components below MUST only be used on the Rinnai non-condensing HD28i

FFSBEND

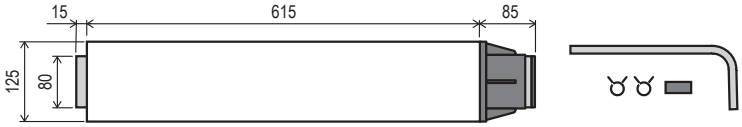


FFBEND
(2x 45° Bends)

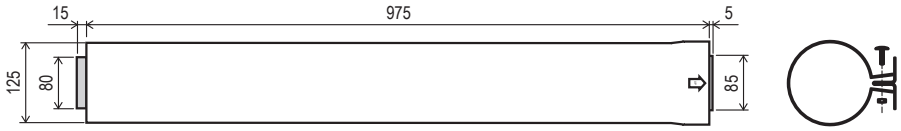




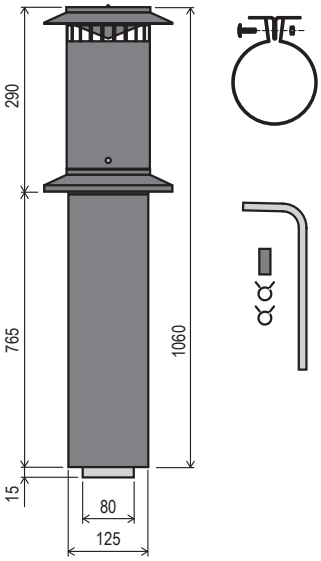
FFWALLTERM
Includes:
Drain tube
Silicone lubricant



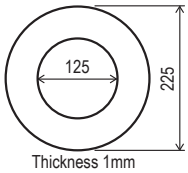
FFPIPE1000
Includes:
Wall bracket



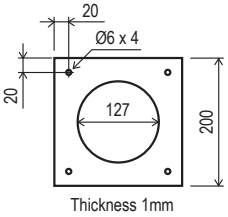
FFROOFCOWL
Includes:
Drain tube
Silcone lubricant
Wall bracket



FFWSEAL



FFWPLATE



Allowable flue pipe lengths and changes of direction										
Length Metres*	6	7	8	9	10	11	12	13	14	15
90° Bends	4	4	3	3	2	2	2	1	0	0

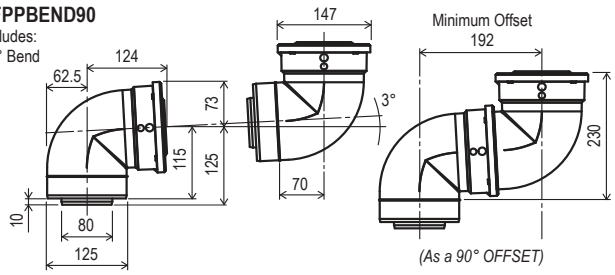
* For flue runs of up to 5 metres in length a maximum of four 90° bends is allowed

Individual Flueing (HDC32i)

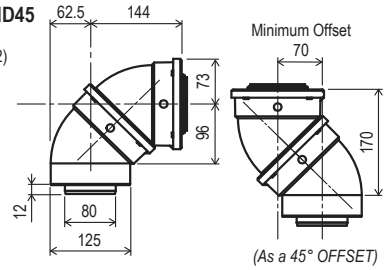
The unique Rinnai co-axial flue used with the HDC32i is wholly manufactured in corrosion resistant polypropylene. The water heater is a room-sealed appliance and the available flue components allow the water heater(s) to be installed virtually anywhere.

All flue installations must be designed within the capacities of the water heaters for optimum operation. Note: The flue components below MUST only be used on the Rinnai condensing HDC32i

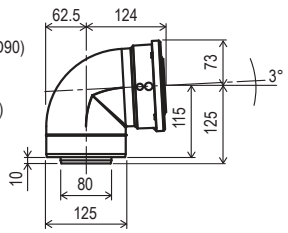
FFPPBEND90
Includes:
90° Bend

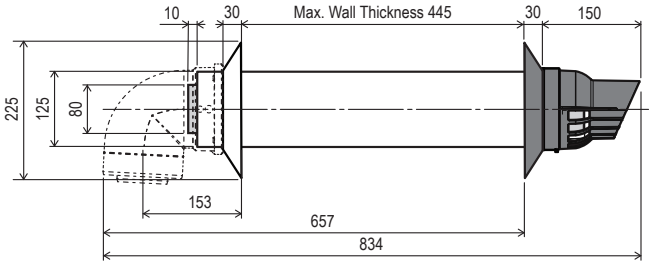


FFPPBEND45
Includes:
45° Bend (x2)

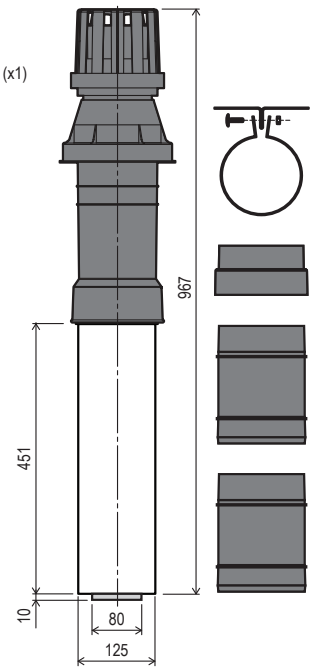


FFPPWALLKIT
Includes:
Starter Bend (FFPPBEND90)
Horizontal Terminal Pipe
Internal Wall Seal (White)
External Wall Seal (Black)
Installation Instruction

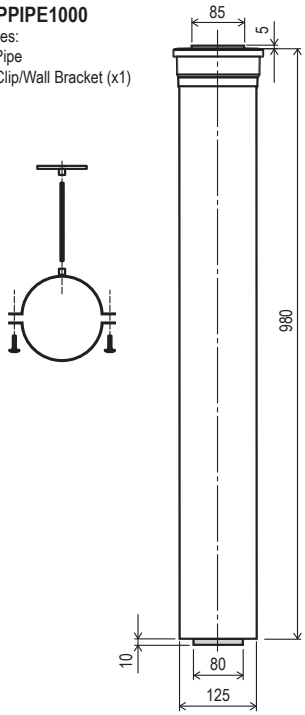




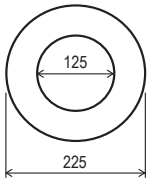
FFPPROOFCOWL
Includes:
Vertical Terminal Pipe
UV Adaptor (x1)
UV Protector (x2)
Pipe Clip/Wall Bracket (x1)
Installation Instruction



FFPPPIPE1000
Includes:
Flue Pipe
Pipe Clip/Wall Bracket (x1)



FFWSEAL
Includes:
Ceiling Ring



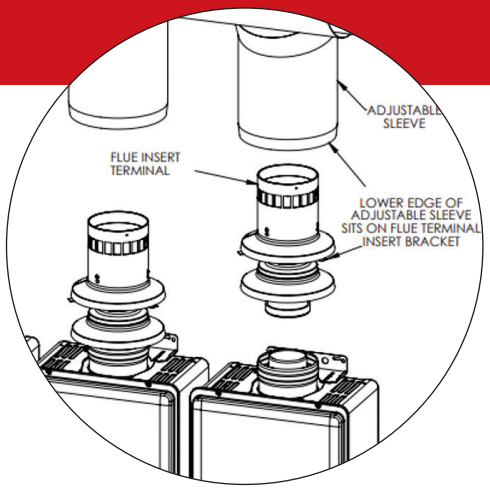
Thickness 1mm

Allowable flue pipe lengths and changes of direction								
Length Metres*	12	14	16	18	20	22	24	26
90° Bends	15	14	13	12	11	10	9	8
Length Metres*	28	30	32	34	36	38	40	42
90° Bends	7	6	5	4	3	2	1	0

*For flue runs of up to 12 metres in length a maximum of fifteen 90° bends is allowed

Common Flueing

The Rinnai Common Flue System has been designed with flexibility in mind for both new and existing installations. Plant rooms are often cluttered with equipment, so space is at a premium, creating difficulty in installing an internal system and manage flue gases. One common header is used to manage the flue gases resulting in only one penetration of the roof or wall. This reduces cost and installation time while maintaining the aesthetics of the building.

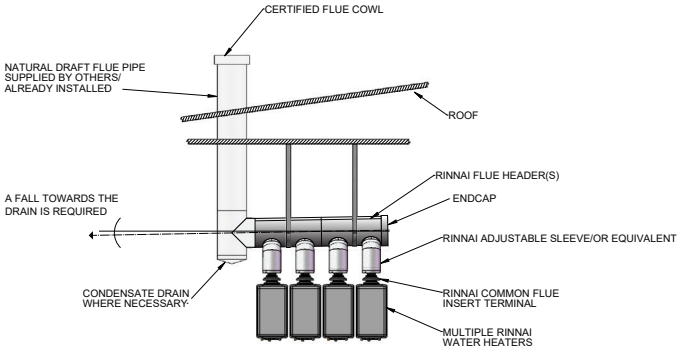


Principle of operation

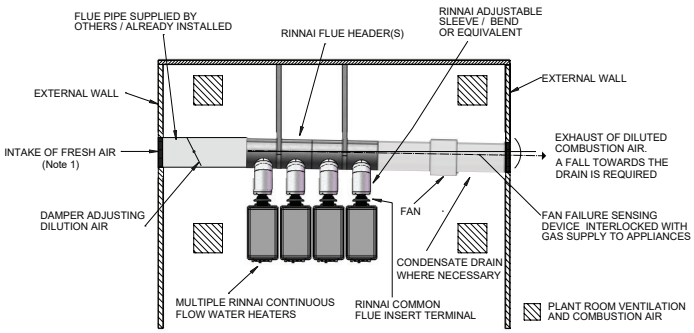
When using the Rinnai patented insert terminal (one per water heater) it converts the water heater from a fan assisted forced draft to natural draft appliance. The resulting flue gases are at negative pressure (below atmospheric) and need to be managed by expelling them externally in accordance with AS/NZS 5601.

Flue gases

There are 2 ways to manage the flue gases in common flue installations.
Both options are suitable and offer design flexibility, however the type of installation method is dependent on the type on the installation constraints. A natural draft flue system relies on the principle that hot air from the products of combustion are less dense, and so lighter, than the surrounding air. This heated air will rise up through the flue and discharge at an approved gas flue cowl.
Whereas a dilution fan assisted flue system forces the products of combustion through the flue to an approved gas flue cowl.
The selection of the correct flue type is critical so it is recommended to contact your Rinnai representative for guidance.



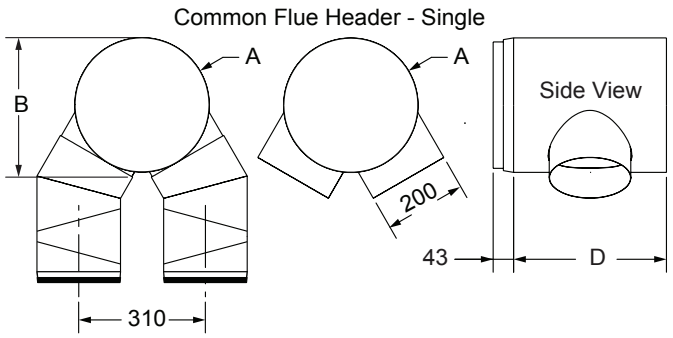
Natural draft

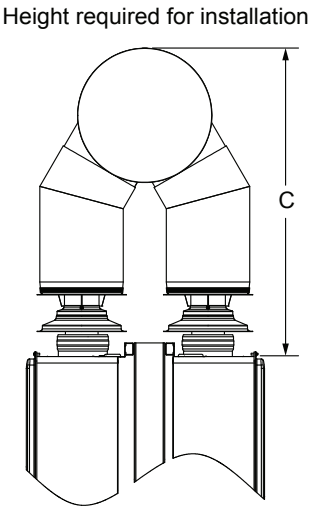


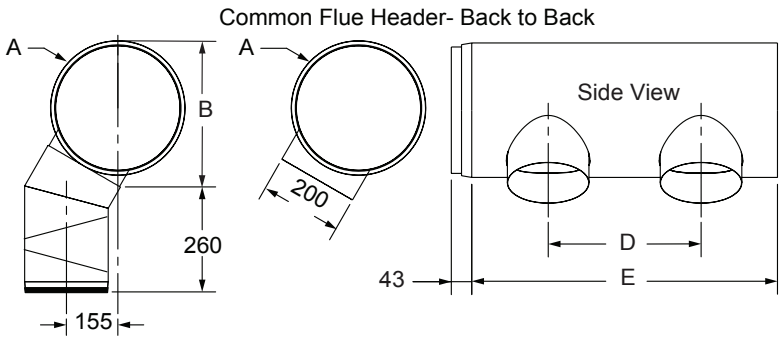
Dilution fan assisted

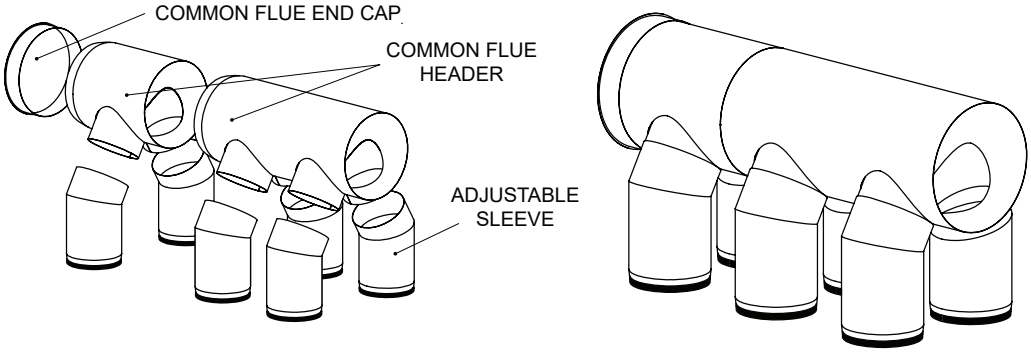
Components

Rinnai common flue headers are manufactured using stainless steel in a modular form for ease of installation and transport. The headers are available in a range of standard sizes from 200mm to 500mm diameter and configurations. Either single in-line applications, usually mounted on a wall, or back to back arrangements on freestanding frames can be easily accommodated.









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 HD28i				375			
E HD28i				750			

Note: for natural draft application the headers will be manufactured in a twin skin design to aid the natural draft process

Sizing

There are many variables when it comes to the correct sizing of a Rinnai Common Flue System. The most critical is the total MJ input of all the gas water heaters and the total height of the flue. These variations are all covered in AS/NZS 5601 along with other variables. The table below relates to 'typical installations'. It assumes a single lateral header at one level and a vertical riser with up to 2 offsets (bends). It also assumes a low heat loss natural draft installation and relates to the available Rinnai Common Flue Header sizes and HD28i (non-condensing) water heaters only. The full table for flue sizing is listed in AS/NZS 5601. Refer to the lateral (L) references which relate to Rinnai common flues.

When selecting a flue for a single HD28i or DD1, it is quite feasible that the flue diameter selected is smaller than 200mm. In these cases, then it is allowable to fit a reducer and use a smaller diameter flue after the first 300mm starter section.

Single HD28i:
Measure the total height of flue from bottom of the Adjustable Sleeve to the base of the flue cowl/terminal. Simply look up the MJ's capacity based on the height within the table.

Multiple HD28i's:
Assumes a Rinnai Common Flue and Header, and is measured the same as a single unit (above). Add the total MJ's of all the water heaters together.

E.g: Demand Duo 2 with a flue height of 3 metres.
2 x 210MJ = 420 MJ.

Flue Sizing Table (MJ/h)

Least Total Height	200mm	250mm	300mm	350mm	400mm	450mm	500mm
1.5m	206	327	480	665	876	1118	1403
1.8m	222	343	494	747	976	1234	1524
2.4m	243	385	549	837	1092	1382	1709
3m	264	417	599	913	1192	1509	1862
4.5m	306	485	692	1063	1387	1757	2173
6m	343	538	768	1188	1551	1962	2427
9m	396	622	890	1400	1830	2310	2859
12m	443	696	997	1574	2057	2606	3218
18m	485	760	1161	1846	2405	3049	3766
24m	515	807	1300	2057	2690	3408	4199
30m	528	823	1408	2258	2943	3724	4600

Need Assistance?

For applications outside the standard sizing of natural draft flues, that is only suitable for HD28i (non-condensing) applications a solution must be engineered using fans. Rinnai offers a service whereby we can assist with the design of your Commercial Hot Water system. This includes advice on the full range of Rinnai Commercial products including Heavy Duty Continuous Flow, Manifold Packs, Demand Duo, Quick Recovery Electric, Solar Pre-heating, Warm Water and Common Flues. Please contact Rinnai Commercial on **1300 555 545**.

Rinnai Australia Pty Ltd

ABN 74 005 138 769

100 Atlantic Drive,
Keysborough, Victoria 3173

For further information
call 1300 555 545 or visit
rinnai.com.au

TOTAL HOME COMFORT

HOT WATER HEATING COOLING

Rinnai

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