



RED BANK[®] high performance pumice based concrete flue linings

High performance pumice based concrete flue liners

Hanson Red Bank's range of 175mm High Performance Pumice Based Concrete Liners have been developed to meet the growing demand for flue products to suit modern efficient wood burning, multi fuel and gas fired appliances and more stringent environmental requirements. With natural high thermal properties, enhanced performance to meet these exacting standards is ensured.



Energy Efficiency Rating		
	Current	Potential
<i>Very energy efficient – lower running costs</i>		
(93-100) A	↑	↑
(81-92) B		
(66-80) C		
(51-65) D		
(36-50) E		
(21-35) F		
(1-20) G		
<i>Not energy efficient – higher running costs</i>		
UK 2008	55	78
	EU Directive 2002/91/EC	

Energy Efficiency Requirements for New Dwellings

The latest revisions to Building Regulations Approved Document L1A include strict rules on the calculation of carbon emissions from all new dwellings. These are designed to ensure that carbon emissions are reduced by 20% with further planned reductions to zero emissions by 2016.

As part of the Standard Assessment Procedures (SAP), secondary heating appliances have now to be included in the calculations. These extend an opportunity to specify modern high efficiency wood burning, multi fuel or gas fired appliances that will help gain carbon credits and satisfy purchasers requirements for a 'fireplace' and focal point with associated comfort and lifestyle benefits.

Environmental Impact (CO ₂) Rating		
	Current	Potential
<i>Very environmentally friendly – lower CO₂ emissions</i>		
(93-100) A	↑	↑
(81-92) B		
(66-80) C		
(51-65) D		
(36-50) E		
(21-35) F		
(1-20) G		
<i>Not environmentally friendly – higher CO₂ emissions</i>		
UK 2008	50	65
	EU Directive 2002/91/EC	

The Benefits of Installing a Chimney

If secondary heating is not specified, the SAP calculation used to determine carbon emissions defaults to 'carbon intensive' electric as the source of the secondary heating. Substantial carbon savings can be achieved by specifying alternative fuels such as wood, multi fuel, gas and high efficiency, open or closed secondary heating appliances. These carbon credits can then be used to offset other costly aspects of the construction such as insulation and glazing.

Choosing the Secondary Heating Appliance at Planning Stage is Vital

To maximise the potential carbon savings and associated benefits, the correct flue size and secondary heating appliance must be specified at the design stage. Although this decision has usually been left until after completion of the building it is essential that the most appropriate appliance is specified.

Chimney Specification

The carbon savings can be increased by specifying a 'flue' with an internal diameter of less than 200mm, as this halves the ventilation or 'standing' air loss through a 'chimney'. Most modern appliances can operate effectively with flues of less than 200mm and, if tested, the standing air loss through the appliance may be further reduced.

It should be noted that there is no benefit in using a flueless appliance as the air loss is assumed to be the same as a 'chimney' of 200mm diameter or greater.

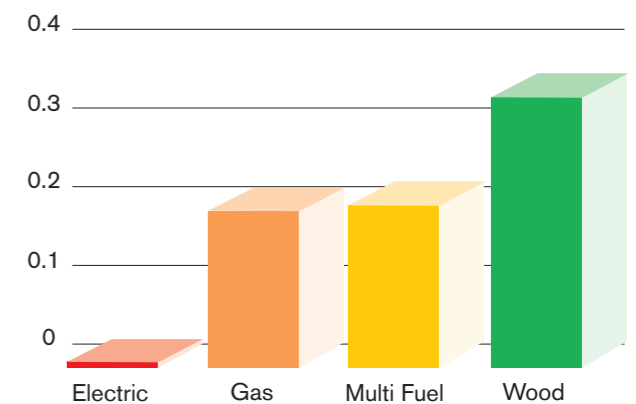
Appliance Choice and Application

The 175mm internal diameter High Performance Pumice Based Concrete Flue Liner is suitable for use with open or closed solid fuel appliances with a flue outlet not exceeding 175mm. This includes open solid fuel convector fires but not traditional open fires requiring a minimum 200mm int. dia. flue (see Hanson Red Bank's range of Clay and Concrete Class1 Flue Liners for Multi Fuel Applications).

It is suitable for use with approved gas fired appliances including Inset Live Fuel Effect and Decorative Fuel Effect gas fires requiring a 175mm int. dia flue. Note if used with a gas appliance with an outlet of up to 150mm dia. an approved gas terminal must be fitted with a minimum internal diameter equal to that of the appliance outlet (see Hanson Red Bank's range of Chimney Pots and Gas Terminals).

It also meets the requirements for a Decorative Fuel Effect gas fire when fitted in a fireplace opening not exceeding 500mm x 550mm. Note that if a Decorative Fuel Effect gas fire is to be fitted in a fireplace opening in excess of 500mm x 550mm, the flue sizing calculations should comply with those for solid fuel open fires as outlined in Approved Document J of The Building Regulations.

Carbon savings (Kg/Kw hour)



Carbon savings using other fuels compared to electricity

Contents







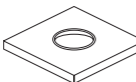
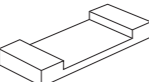
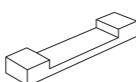
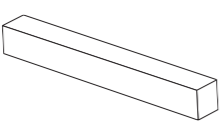


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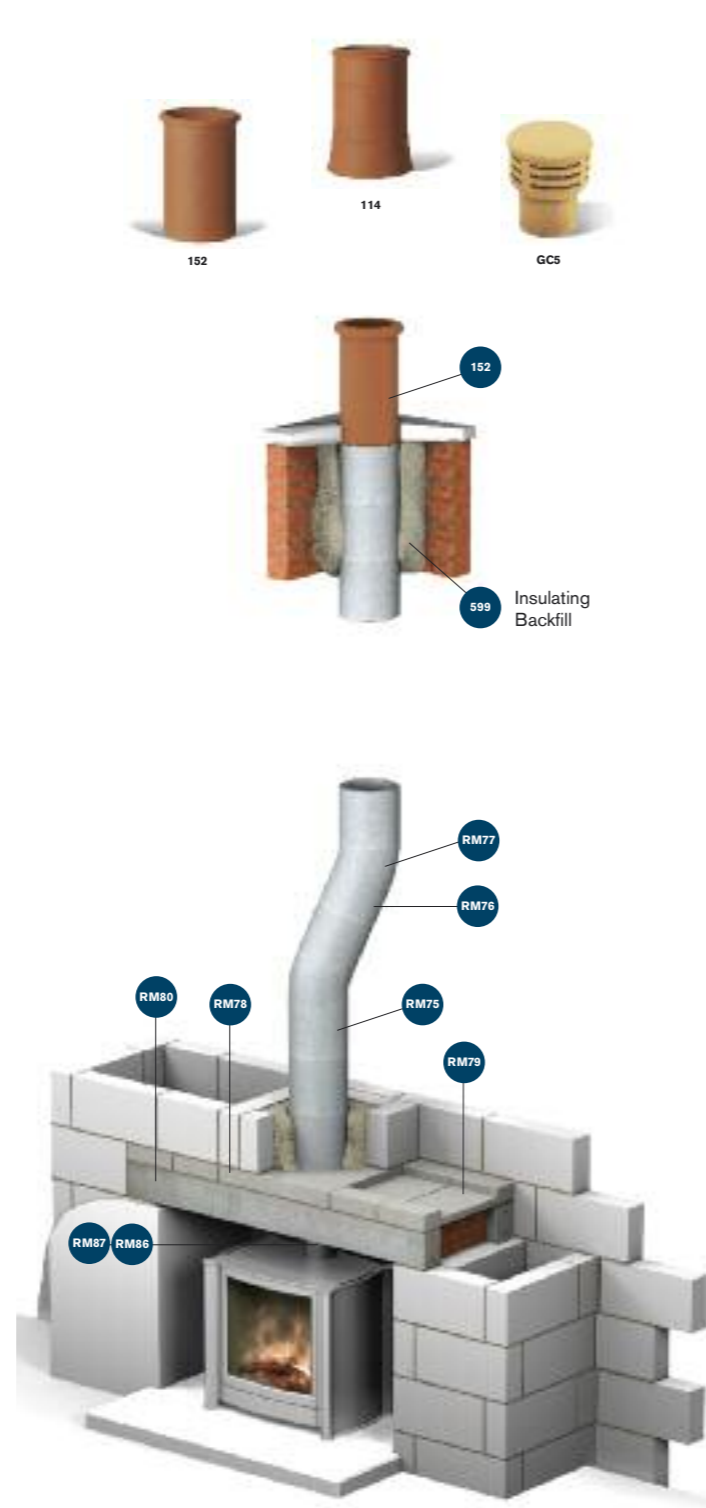
Front cover photo courtesy of: Aarrow & Hamlet - Sherbourne
 Photos above courtesy of:
 1 Arada - Stratford Eco Boiler SEB20
 2 Caminos - Cronos
 3 Gallery - Tiger Europa

Approved Document 'J' (ADJ)


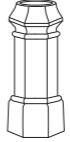




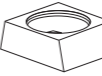


Our range of High Performance Pumice Based Concrete Flue Liners are manufactured in accordance with BS EN 1857 'Chimneys - Components - Concrete Flue Liners' as required under Approved Document J Combustion Appliances and Fuel Storage Systems'.

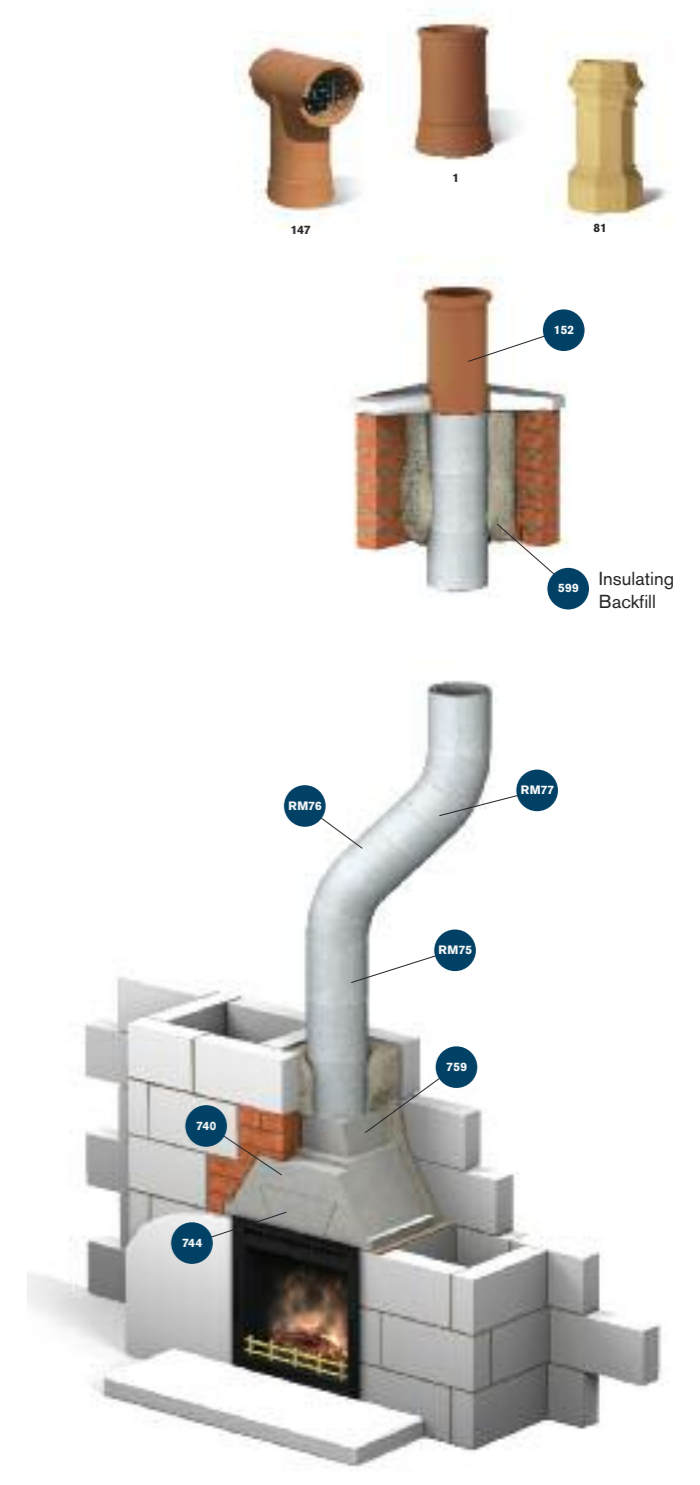
Typical construction of 175mm int. dia. Circular Flues

152	Beaded Flue Terminal 175 mm int. dia. 300 & 450 high.	
114	Contemporary Cannon Head Chimney Pot 200 int. dia. top 300, 450 & 600mm high.	
625	GC5 Insert Terminal to suit gas fired appliance with flue outlet up to 125mm 170, 190 & 205mm ext. dia. spigot	
RM77	Circular Rebated Flue Liner Bend 22.5° 175mm int. dia.	
RM76	Circular Rebated Flue Liner 175mm int. dia. 150mm high	
RM75	Circular Rebated Flue Liner 175mm int. dia. 225mm high	
RM78	Raft Lintel Starter Block to suit 175mm int. dia. flue liner 550mm(w) x 65mm(h) x 550mm(d)	
RM79	Raft Lintel Filler Block 230mm(w) x 65mm(h) x 550mm(d)	
RM89	Raft Lintel Filler Block 110mm(w) x 65mm(h) x 550mm(d)	
RM80	Raft Support Lintel 1500mm(w) x 140mm(h) x 100mm(d)	
RM86	Stainless Steel Adaptor to suit 175mm int. dia. flue pipe from appliance	
RM87	Stainless Steel Adaptor to suit 150mm int. dia. flue pipe from appliance	



Typical construction of 175mm int. dia. Circular Flues

1	Roll Top Chimney Pot 200mm int. dia. 300, 375, 450 & 600mm high	
81	Octagon Pot 180mm int. dia. top 600, 750, 900 & 1050mm high	
147	DFE Pot with Birdguard 600mm high	
RM77	Circular Rebated Flue Liner Bend 22.5° 175mm int. dia.	
RM76	Circular Rebated Flue Liner 175mm int. dia. 150mm high	
RM75	Circular Rebated Flue Liner 175mm int. dia. 225mm high	
759	Circular Flue Starter to suit 175mm int. dia. flue liner 315mm (w) x 140mm (h) x 250mm (d)	
740	Fyrite Throat Unit 720mm(w) x 280mm(h) x 375mm(d)	
744	Front Brick	



For solid fuel appliances with a rated output up to 5kW no additional ventilation is required, above 5kW rated output additional permanent ventilation of 550mm² per kW is required. For appliances with a flue draught stabiliser and/or situated within a compartment refer to the appropriate sections within ADJ for further guidance.

Note that fireproof mortar (list nos. **RF28** and **597**) must be used for jointing flue liners. It is also necessary to fill the void between the outside of the flue lining and the surrounding masonry with insulating backfill (list no **599**).

Note 22.5° offset shown in illustration incorporating 2 No 22.5° bends. Refer to page 9 for offset calculation charts.



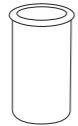
Ventilation required for nominal 450mm wide fire opening 18,500mm² permanently open free air space provided by 2 No 215 x 215mm Rectangular Hole Air Bricks list no **374C**, each providing 10,250mm² free air space and 2 No 215 x 215mm Cavity Wall Bridging Ducts list no **402C**.

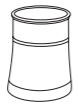
Permanent ventilation requirements for a DFE gas fire in a fireplace recess with a throat should be at least 10,000mm², provided by 1 No. 215 x 215mm Rectangular Hole Air Brick, list no. **374C** and 1 No. 215 x 215mm Cavity Wall Bridging Duct, list no. **402C**. For a DFE gas fire in a fireplace with no throat, such as a fire under a canopy the ventilation requirements are those applicable to a solid fuel open fire.


Note 45° offset shown in illustration incorporating 4 No 22.5° bends. Refer to page 9 for offset calculation charts.





Typical construction of 175mm int. dia. Circular Flues

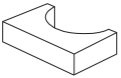
- 152** Beaded Flue Terminal
175 mm int. dia.
300 & 450mm (h) 

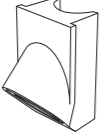
- 114** Contemporary Cannon Head Chimney Pot
200 int. dia. top
300, 450 & 600mm (h) 

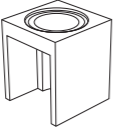
- 613** GC3 Insert Terminal to suit gas fired appliance with flue outlet up to 150mm dia
190 & 205mm ext. dia. spigot 


- RM76** Circular Rebated Flue Liner
175mm int. dia.
150mm (h) 


- RM75** Circular Rebated Flue Liner
175mm int. dia.
225mm (h) 


- RM84** Access Filler Blocks
235mm (w) x 55mm (h) x 150mm (d) 

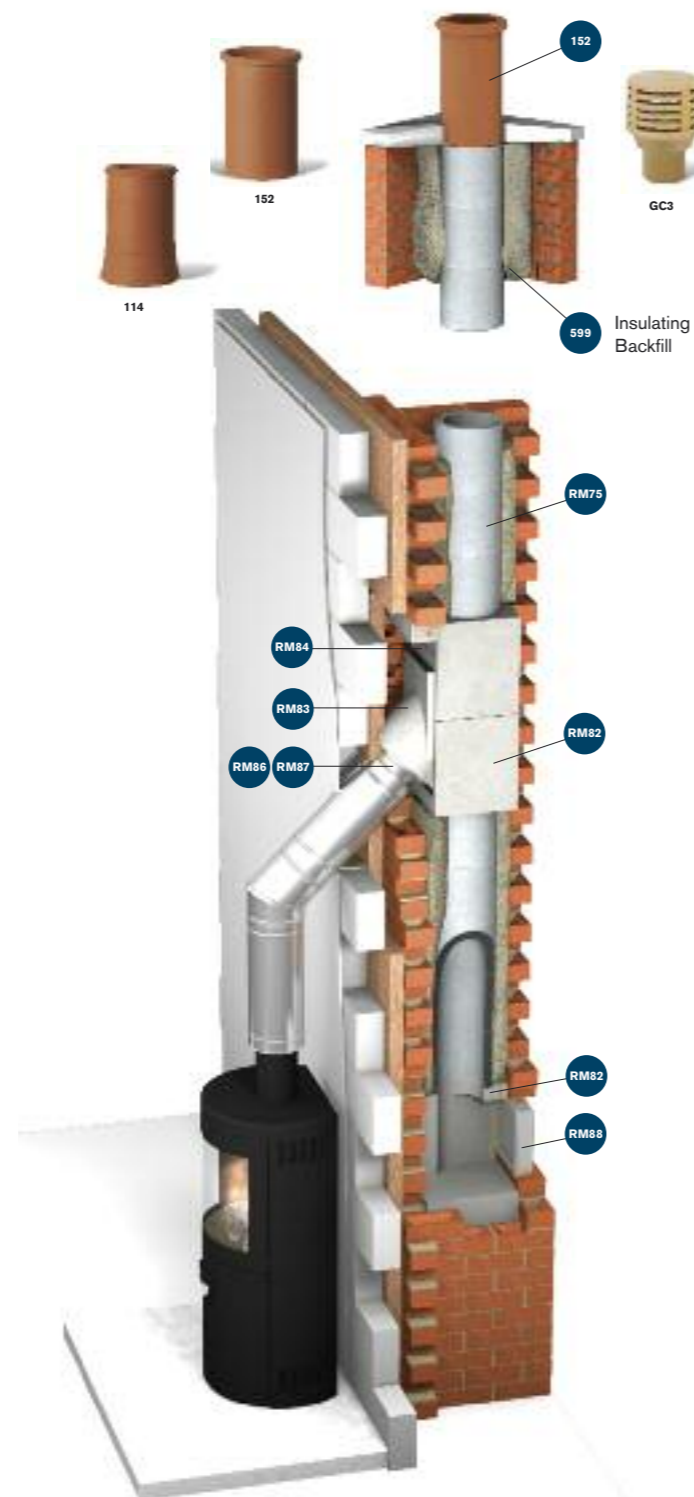
- RM83** Access Entry Unit
285mm (w) x 450mm (h) x 345mm (d) 

- RM82** Access Block
300mm (w) x 350mm (h) x 300mm (d) 


- RM88** Aluminium Soot Door
240mm (w) x 240mm (h) x 50mm (d) 

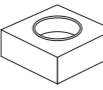
- RM86** Stainless Steel Adaptor to suit
175mm int. dia. flue pipe
from appliance 

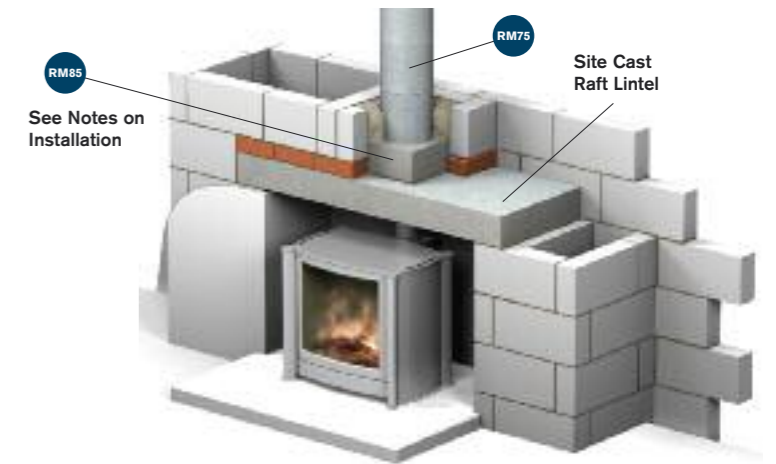
- RM87** Stainless Steel Adaptor to suit
150mm int. dia. flue pipe
from appliance 



Typical construction of Fireplace opening with site cast raft lintel

- RM75** Circular Rebated Flue Liner
175mm int. dia.
225mm (h) 

- RM85** Starter Unit to suit 175mm int. dia. flue liner
330mm (w) x 140mm (h) x 330mm (d) 





Air Bricks & Cavity Wall Bridging Ducts


- Rectangular Hole Slotted Air Brick
- | Size (mm) | Free Air Space (mm ²) |
|-------------------------------|-----------------------------------|
| 372C 215 (w) x 65 (h) | 2300 |
| 373C 215 (w) x 140 (h) | 6000 |
| 374C 215 (w) x 215 (h) | 10250 |
- Horizontal Cavity Wall Bridging Duct
200mm long, available in other lengths from 100 - 300mm.
- | |
|----------------------------------|
| 400C 215 (w) x 65 (h) mm |
| 401C 215 (w) x 140 (h) mm |
| 402C 215 (w) x 215 (h) mm |





Ancillary Items

- 599** Approx 20kg Rediflow Insulating Backfill 

- RF28** 580gm Tube Rediflow Fireproof Mortar 

- RF32** Tube Rediflow Smoke Pellets (6 13gm pellets) 

- 597** 6kg Tub Rediflow Fireproof Mortar 

- NP1** Notice Plate and Checklist Pack 

For solid fuel appliances with a rated output up to 5kW no additional ventilation is required, above 5kW rated output additional permanent ventilation of 550mm² per kW is required. For appliances with a flue draught stabiliser and/or situated within a compartment refer to the appropriate sections within ADJ for further guidance.

For open flued gas fired appliances with a rated input up to 7kW no additional permanent ventilation is required, above 7kW rated input additional permanent ventilation of 500mm² per kW is required. For appliances situated within a compartment refer to the appropriate sections within ADJ for further guidance.

Note that fireproof mortar (list nos. **RF28** and **597**) must be used for jointing flue liners. It is also necessary to fill the void between the outside of the flue lining and the surrounding masonry with insulating backfill (list no **599**).

Note 280mm diameter hole required in site cast raft lintel if **RM86/RM87** Stainless Steel Adaptor is used to connect the flue pipe from the appliance to **RM85** Starter Unit.

Hanson Red Bank Air Bricks are available in a range of different patterns, sizes, colours and textures. Please refer to separate product literature.

Notice Plates & Checklists

For each flue system it is a requirement under Approved Document J of the 2002 Edition of Building Regulations that the installer completes a 'Checklist and Notice Plate'.

The Checklist should ensure that the construction of the flue has been completed in accordance with regulatory requirements and copies should be offered to the Client, Building Control Body and/or Main Contractor. The Notice Plate contains information essential to the correct application of the flue and should be robust, indelibly marked and securely fixed in a permanent position within the building.

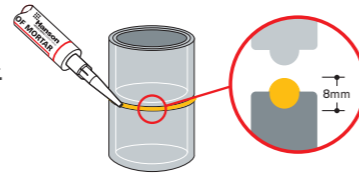
A 'Notice Plate and Checklist Pack' List No. NP1 is available. This contains a checklist, notice plate and self-sealing laminate cover together with guidance notes on completion. It also includes detailed recommendations on the installation of flue products, inspection and smoke testing procedures.



Simple to specify, Easy to install

Rediflow Fireproof Mortar

Note that flue liners should be jointed using Rediflow fireproof mortar. This is available in tubes for application using a skeleton gun or tubs for use with a pointing trowel. The tongue and groove type joint is particularly suited for application using a skeleton gun or similar. An 8mm bead of mortar is extruded into the groove and when the next liner is placed on top, this bead is compressed to form a joint throughout the full wall thickness of the flue liner. Each tube contains sufficient fireproof mortar to complete approximately 5 joints.

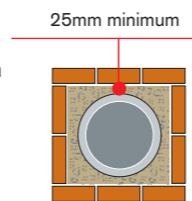


Note: Any surplus fireproof mortar protruding into the flue should be removed during construction.

Rediflow Insulating Backfill

A chimney flue constructed of High Performance Pumice Based Concrete Flue Liners needs to be supported by surrounding masonry.

Hanson Red Bank recommend and supply an Insulating Backfill which consists of expanded clay granules which should be mixed at 20 parts granules to 1 part ordinary Portland Cement, lightly wetted, with the cement acting purely as a binding agent. The thickness of the Insulating Backfill should be a minimum of 25mm and preferably 35 to 40mm between the flue liner and surrounding masonry.



The amount of insulating backfill required depends on the distance between the outside of the flue lining and the supporting masonry and the total height of the flue.

The distance between the lining and the masonry is rarely consistent throughout the full height of the flue. Often the gap is greater around an offset or immediately above the throat unit and additional insulating backfill may be required. **(Each 20kg bag of insulating backfill contains approximately 50 litres or 0.05 cubic metres).**

Approximate number of bags of Rediflow Insulating Backfill required per metre of lining

Flue Size (mm)	Distance between flue liner and surrounding masonry			
	25mm	40mm	50mm	75mm
175mm int. dia. (235mm ext. dia.)	0.76	1.12	1.38	2.10

Offsets Calculations when using flue bends

It is recommended that where possible offsets are not used and flues are kept straight. When offsets are included these may restrict the flow of the flue gases. Offsets should only be used where necessary to circumvent another element of the structure, or to bring the flue in line with the ridge or other point of termination.

If an offset is essential it should not make an angle of more than 45° with the vertical. Offsets should be limited to a maximum of two (or four 22.5° bends per flue).

If more than four 22.5° are required then an access point for sweeping and inspection should be made between offsets.

Offsets should only be formed using factory made components. It is recommended that there should be a minimum vertical section of flue extending 600mm from the underside of the throat unit or raft lintel before any offset.

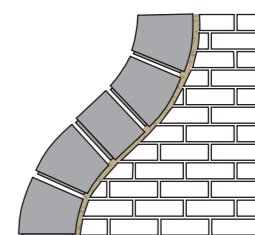
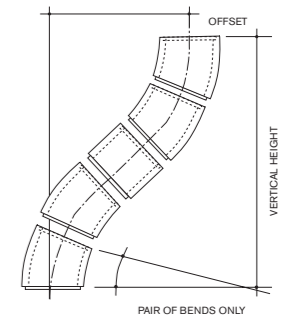
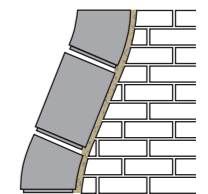
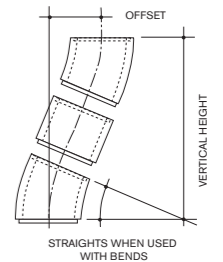
For additional information on flue design and scheduling of components please contact Hanson Red Bank's Technical Services Department.

Straights used with 2 No Bends to form 22.5° Offsets

Offset	Bend 22½°	Straight 150	Straight 225	Bend 22½°	Offset Height mm
56	1			1	280
114	1	1		1	418
142	1		1	1	488
172	1	2		1	556
200	1	1	1	1	626
230	1	3		1	694
258	1	2	1	1	764
286	1	1	2	1	834
288	1	4		1	832
316	1	3	1	1	902
344	1	2	2	1	972
346	1	5		1	970
372	1	1	3	1	1042
374	1	4	1	1	1040
402	1	3	2	1	1110
404	1	6		1	1108
430	1	2	3	1	1180
432	1	5	1	1	1178
458	1	1	4	1	1250
460	1	4	2	1	1248
462	1	7		1	1246
488	1	3	3	1	1318
490	1	6	1	1	1316
516	1	2	4	1	1388
518	1	5	2	1	1386
520	1	8		1	1384
544	1	1	5	1	1458
546	1	4	3	1	1456
548	1	7	1	1	1454
574	1	3	4	1	1526
576	1	6	2	1	1524
602	1	2	5	1	1596

Straights used with 4 No Bends to form 45° Offsets

Offset	Bend 22½°	Straight 150	Straight 225	Bend 22½°	Offset Height mm
216	2			2	516
322	2	1		2	622
375	2		1	2	675
428	2	2		2	728
481	2	1	1	2	781
534	2	3		2	834
587	2	2	1	2	877
640	2	1	2	2	940
640	2	4		2	940
693	2	3	1	2	993
746	2	2	2	2	1046
746	2	5		2	1046
799	2	1	3	2	1099
799	2	4	1	2	1099
852	2	3	2	2	1152
852	2	6		2	1152
905	2	2	3	2	1205
905	2	5	1	2	1205
958	2	1	4	2	1258
958	2	4	2	2	1258
958	2	7		2	1258
1011	2	3	3	2	1311
1011	2	6	1	2	1311
1064	2	2	4	2	1364
1064	2	5	2	2	1364
1064	2	8		2	1364
1117	2	1	5	2	1417
1117	2	4	3	2	1417
1117	2	7	1	2	1417
1170	2	3	4	2	1470
1170	2	6	2	2	1470
1223	2	2	5	2	1523



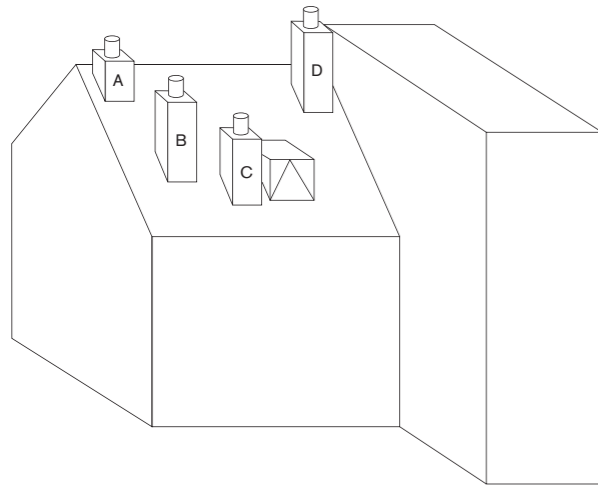
Note: The flue bends and straight liners that make up an offset must be surrounded with insulating backfill and supported by solid masonry, corbelled to within practical limits.

The flue bends/offset units and straight liners that make up an offset must be supported adequately. Brickwork underneath the structure should be corbelled to within practical limits.

Flue Linings

Technical Application Notes

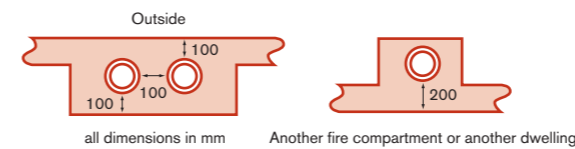
Flue outlet positions for solid fuel appliances



For clearances to easily ignitable roof coverings such as thatch refer to diagram 2.2 of Approved Document 'J' 2002 Edition.

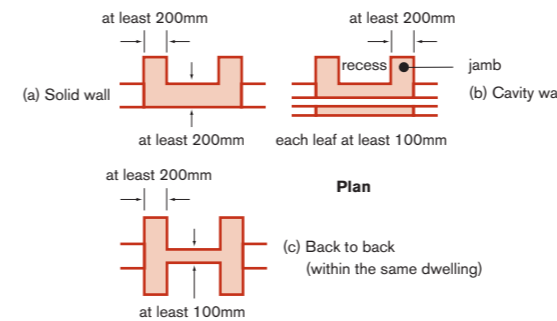
Point where flue passes through weather surface (Notes 1,2)	Clearances to flue outlets
A at or within 600mm of the ridge	at least 600mm above the ridge.
B elsewhere on a roof (whether pitched or flat)	at least 2300mm horizontally from the nearest point on the weather surface and: a - at least 1000mm above the highest point of intersection of the chimney and the weather surface; or b - at least as high as the ridge.
C below (on a pitched roof) or within 2300mm horizontally to an openable rooflight, dormer window or other opening. (Note 3)	at least 1000mm above the top of the opening.
D within 2300mm of an adjoining or adjacent building, whether or not beyond the boundary. (Note 3)	at least 600mm above the adjacent building.

Notes:
 1 The weather surface is the building external surface, such as its roof, tiles or external walls
 2 A flat roof has a pitch less than 10°
 3 The clearances given for A or B, as appropriate, will also apply.



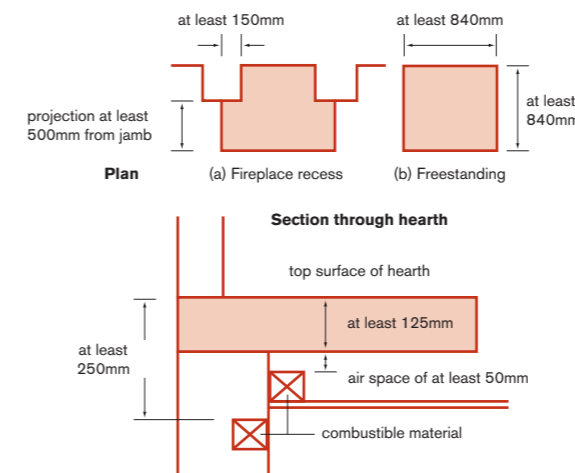
Wall thicknesses for masonry chimneys

Any flue in a chimney should be surrounded by, or separated from any other flue in the chimney by bricks, or other solid non-combustible material not less than 100mm thick.



Fireplace recesses

Fireplaces need to be constructed such that they adequately protect the building fabric from catching fire. Fireplace recesses should be constructed of masonry or concrete to the dimensions shown.



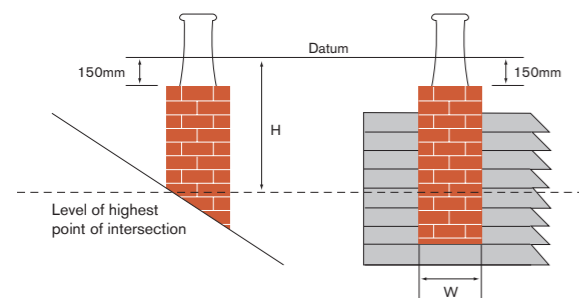
Hearths

Hearths should be constructed of suitably robust materials and to appropriate dimensions such that in normal use, they prevent combustion appliances setting fire to the building fabric. The hearth should be able to accommodate the weight of the appliance and its chimney if the chimney is not independently supported.

Constructional hearths should have the plan dimensions shown, and be made of solid, non-combustible material such as concrete or masonry, at least 125mm thick, including the thickness of any non-combustible floor and/or decorative surface. Combustible material should not be placed beneath constructional hearths unless there is an air space of at least 50mm between the underside of the hearth and the combustible material, or the combustible material is at least 250mm below the top of the hearth.

Maximum chimney height

Height (H) to datum not to exceed 4.5 x width (W)



Minimum flue height

Flues should be high enough to ensure sufficient draught to clear the products of combustion. It is likely that a flue height of less than 4.5 metres would not be sufficient.

The height of a flue serving an open fire is measured vertically from the highest point at which air can enter the fireplace to the exit point at the terminal.

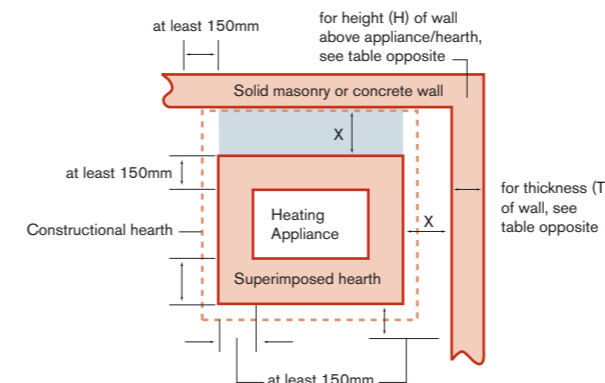
Walls adjacent to hearths

If a fireplace recess is not used to enclose a heating appliance other adjacent walls must be capable of protecting the building from catching fire.

Dimensional requirements for walls adjacent to hearths

Location of hearth or appliance	Solid non combustible material Thickness (T)	Height (H)
Where the hearth abuts a wall and the appliance is not more than 50mm from the wall.	200mm	at least 300mm above the appliance and 1.2m above the hearth
Where the hearth abuts a wall and the appliance is not more than 50mm but not more than 300mm from the wall.	75mm	at least 300mm above the appliance and 1.2m above the hearth
Where the hearth does not abut a wall and is no more than 150mm from the wall.	75mm	at least 1.2m above the hearth

Note: There is no requirement for protection of the wall where 'X' is more than 150mm.



Chimney maintenance

Regular maintenance of chimney flues is essential. If burning solid fuel, flues should be swept at least annually and depending on fuel type, repeatedly during prolonged use. Failure to carry out maintenance could lead to a chimney fire. If a chimney is suspected of suffering a fire it should be swept and inspected by a competent person before re-use.

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