



RED BANK[®] clay class 1 flue liners for multi-fuel applications

Every chimney is unique...

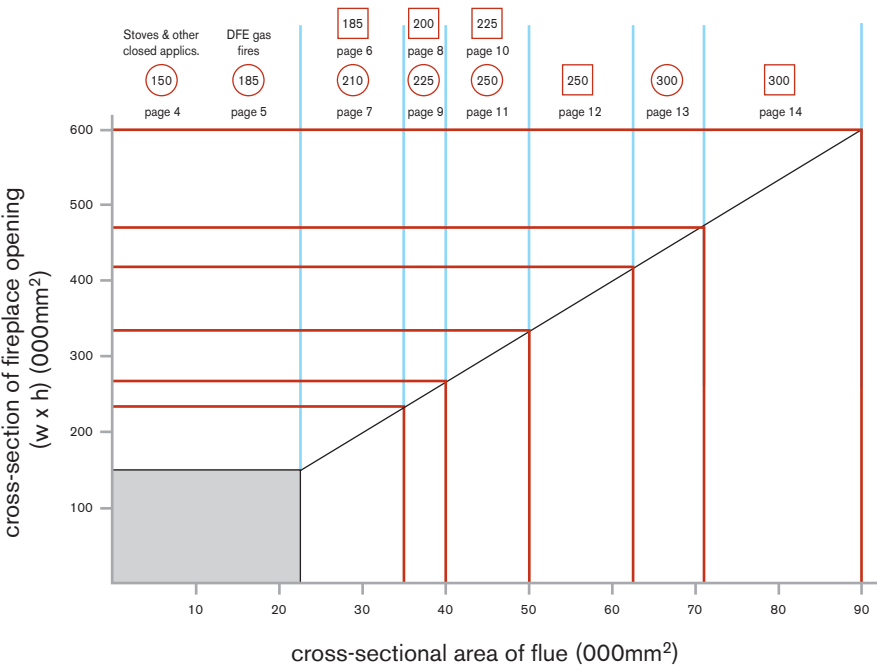
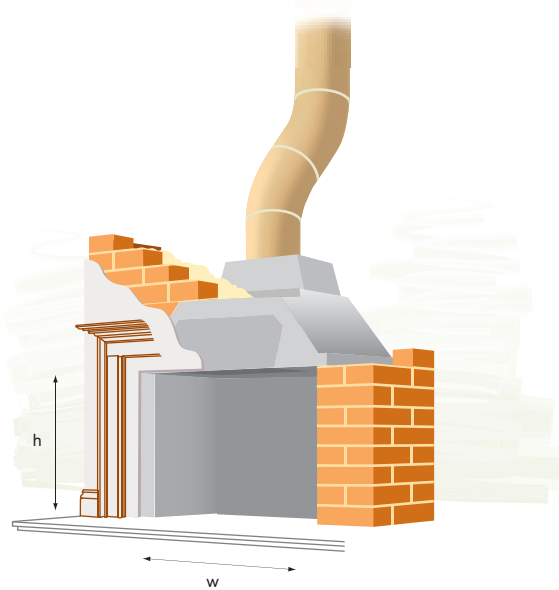
and it's the size that matters...

When considering the construction of a chimney for use with solid fuels, it is important to firstly establish the size of fireplace opening you require. From this the flue liner size can be specified.

fireplace opening w (mm)	flue size h (mm)		cross-sectional area mm² of flue
450	550	185 x 185mm int. square liners	34,225
		210mm int. dia. circular liners	34,640
500	550	200 x 200mm int. square liners	40,000
		225mm int. dia. circular liners	39,761
600	550	225 x 225mm int. square liners	50,625
		250mm int. dia. circular liners	49,095
700	600	250 x 250mm int. square liners	62,500
800	600	300mm int. dia. circular liners	70,686
1000	600	300 x 300mm int. square liners	90,000

The table and chart below give an indication as to the size of flue liner required, relative to the size of fireplace opening desired.

Specifically, the internal cross-sectional area of the flue lining should be 15% of the cross-sectional area of the finished fireplace opening. The fireplace and flue system can then be constructed in accordance with Building Regulations.



Flue size calculator

Cross-sectional area of flue should be 15% of cross-sectional area of finished fireplace opening.

Approved Document 'J' (ADJ)

2002 Edition to the Building Regulations 2000

Hanson Red Bank's range of clay flue liners are manufactured in accordance with BS EN 1457 : 1999 'Chimneys - Clay/ Ceramic flue liners..' as required under ADJ 'Combustion Appliances and Fuel Storage Systems'. A chimney flue system correctly constructed using such components whether type A1 (see pages 4 to 14) or B2 (see page 16) will attain Building Regulations approval for appropriate usage.

Note that the industry recognised term **Class 1 Flue Liner** which refers to clay or concrete flue liners suitable for use in a masonry stack, should not be confused with the term **Clay Type A1 Flue Liner** which refers to those clay flue liners made to classification A1 of BS EN 1457 : 1999.

For each chimney flue system it is an important requirement that the installer completes a 'Checklist' and 'Notice Plate'.

The Checklist is then offered to interested parties as an indication that the construction of the flue has been completed in accordance with regulatory requirements. The Notice Plate, which should be robust and indelibly marked, must be securely fixed in a permanent position within the building. This Notice Plate contains information essential to the correct application and use of the flue.

A 'Checklist and Notice Plate Pack' list no. NP1, is available. This contains a checklist, notice plate and self-sealing laminate cover together with guidance notes on completion and detailed recommendation with regards to installation, inspection and testing procedures.



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14	300 x 300mm int. Square
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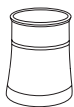
All dimensions are in mm, drawings not to scale and all sizes nominal. The colours in this brochure are as true as can be obtained by the normal printing process. Hanson Red Bank is committed to a program of continuous product development and reserve the right to alter specifications without prior notification. For further product information or assistance please telephone our freephone sales line: (0800) 3285243.

Typical construction of
150mm int. dia. Circular Flues

The 150mm internal diameter clay class A1 flue liner is suitable to serve any closed appliance with a flue outlet not exceeding 150mm internal diameter. **It is NOT suitable for use with any solid fuel open fire and NOT for use with any Decorative Fuel Effect (DFE) gas fire.** If used with any other gas appliance then an appropriate Gas Council approved terminal or insert must be used. Such a terminal must have a minimum internal diameter of at least that of the appliance outlet, but not exceeding 150mm.


114

Cannon Head Pot - Contemporary 300mm high



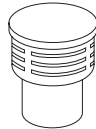
613

GC3 Insert 150mm int. dia.




625

GC5 Insert 125mm int. dia.




178

Type 6F Terminal 150mm int. dia. 300mm, 450mm & 600mm high




176

Type 5E Terminal 150mm int. dia. top 185mm Int. dia. base 300mm, 450mm & 600mm high



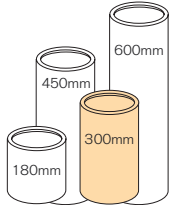
489

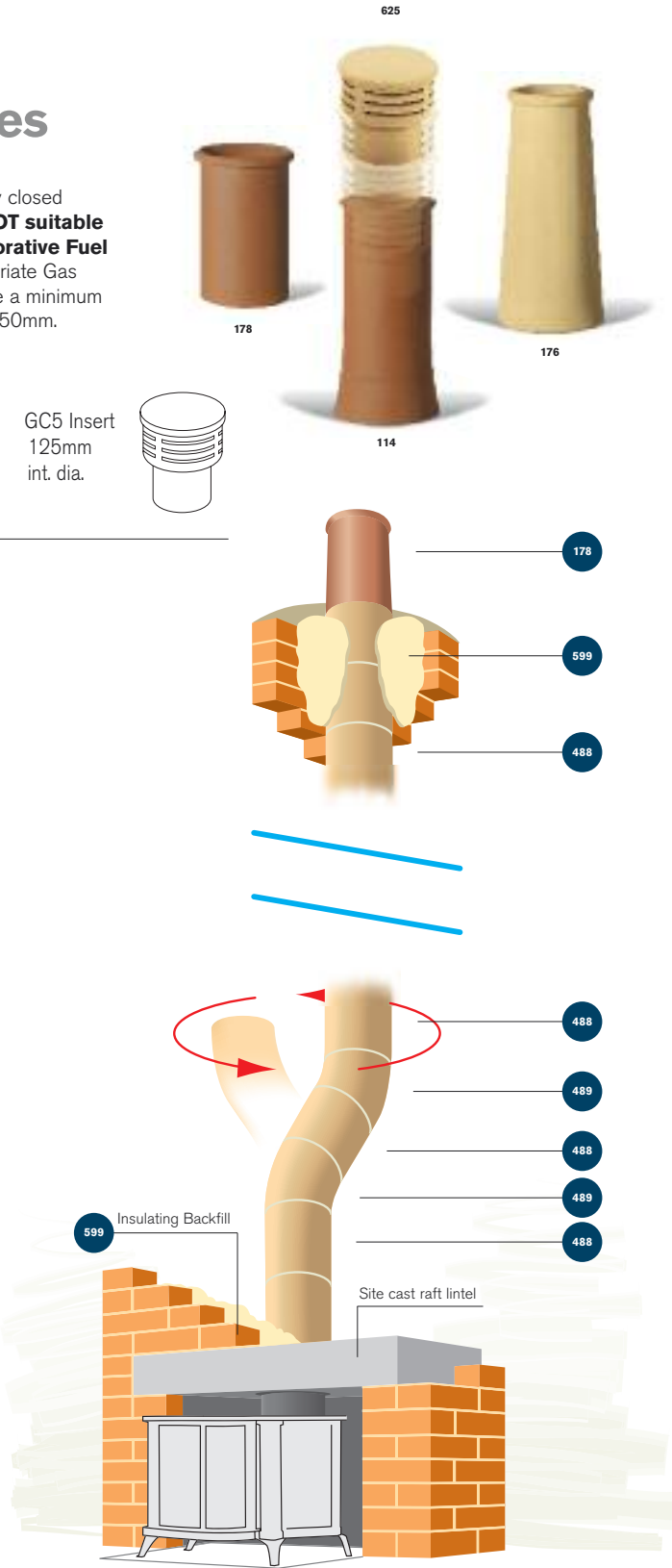
Clay Type A1 Flue Bend 150mm nom. int. dia. 22½°, 30° & 37½°



488

Clay Type A1 Flue Liner 150mm nom. int. dia. 300mm standard height. Other heights available





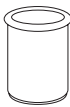
Typical construction of
185mm int. dia. Circular Flues

The 185mm internal diameter clay class A1 flue liner is suitable to serve any closed appliance with a flue outlet not exceeding 185mm. It is also suitable for use with a Decorative Fuel Effect (DFE) gas fire, and as such is suitable to serve such a fire sited in a fireplace opening not exceeding 500 x 550mm. **It is NOT suitable for use with a solid fuel open fire.**

Note that if a DFE fire is to be sited in a fireplace opening in excess of 500 x 550mm then flue sizing calculations should be as for solid fuel open fires as described on pages 6 to 14. The installer is referred to BS 5871 part 3 : 2001 for full details of requirements.


121

300mm & 450mm high Beaded Rebated terminal 185mm int. dia.




145

560mm high DFE Pot



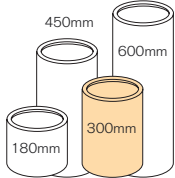
491

Clay Type A1 Flue Bend 185mm nom. int. dia. 22½°, 30° & 37½°



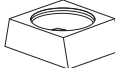
490

Clay Type A1 Flue Liner 185mm nom. int. dia. 300mm standard height. Other heights available



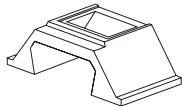
742

185mm int. dia. Circular Flue Starter 140mm high




740

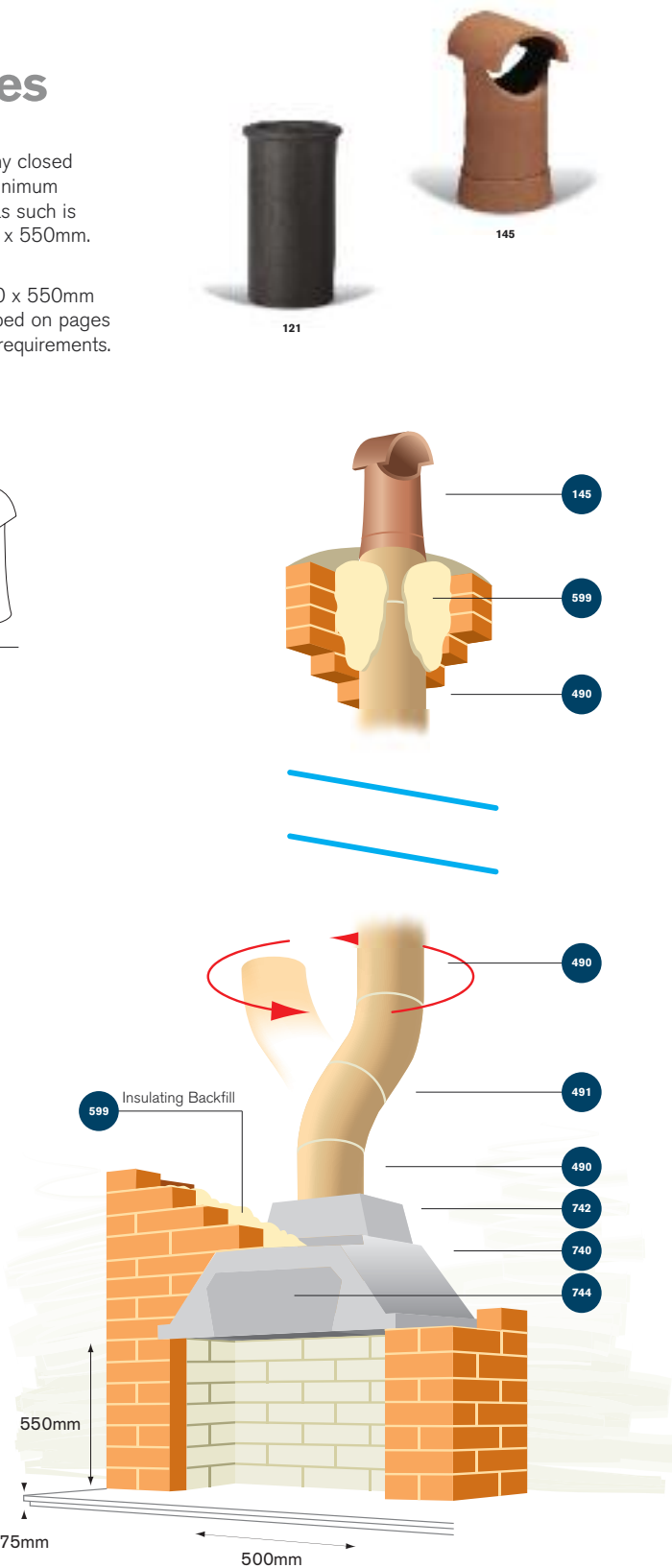
Fyterite Throat Unit 720mm(w) x 280mm(h) x 375mm(d)



744

Front Brick

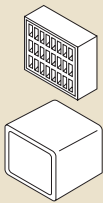




For appliances up to 5kW no additional permanent ventilation is required. However for appliances with a rated output above 5kW additional permanent ventilation of 550mm² per kW above 5kW is required. For appliances situated in a compartment within the room refer to the appropriate sections within ADJ 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 (Hanson Red Bank product code **599**, or similar). The minimum required thickness is 25mm, but 35-40mm is preferred, particularly if the flue is to serve a wood burning stove, the operation of which generates tar condensates.

For details of the free air space provided by the various sizes and patterns of Hanson Red Bank Air Bricks, and details of products **RF28**, **597**, and **599**, refer to ancillary products on page 15. Refer to page 17 for offset calculation chart.





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. **374** and 1 No. 215 x 215mm Cavity Wall Bridging Duct, list no. **402**. For a DFE gas fire in a fireplace with no throat, such as a fire under a canopy, or in excess of a 500 x 550mm fireplace opening, the ventilation requirements are those applicable to a solid fuel open fire (see pages 6 to 14).

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 (Hanson Red Bank product code **599**, or similar).


Refer to page 15 for ancillary items, list nos. **RF28**, **597**, **599**, **374** and **402**. Refer to page 17 for offset calculation chart.



Typical construction of **185 x 185mm int. Square Flues**

- | | | | |
|---|---|--|---|
| <p>129 300mm & 450mm
high 185 x 185mm
int. Square Beaded
Flue Terminal</p> |  | <p>6 Square Based
Bishop 200mm
int. dia. barrel
600mm, 780mm
& 900mm high</p> |  |
|---|---|--|---|

- 479** Clay Type A1 Flue Bend
185 x 185mm nom. int.
22½°, 30° & 37½°

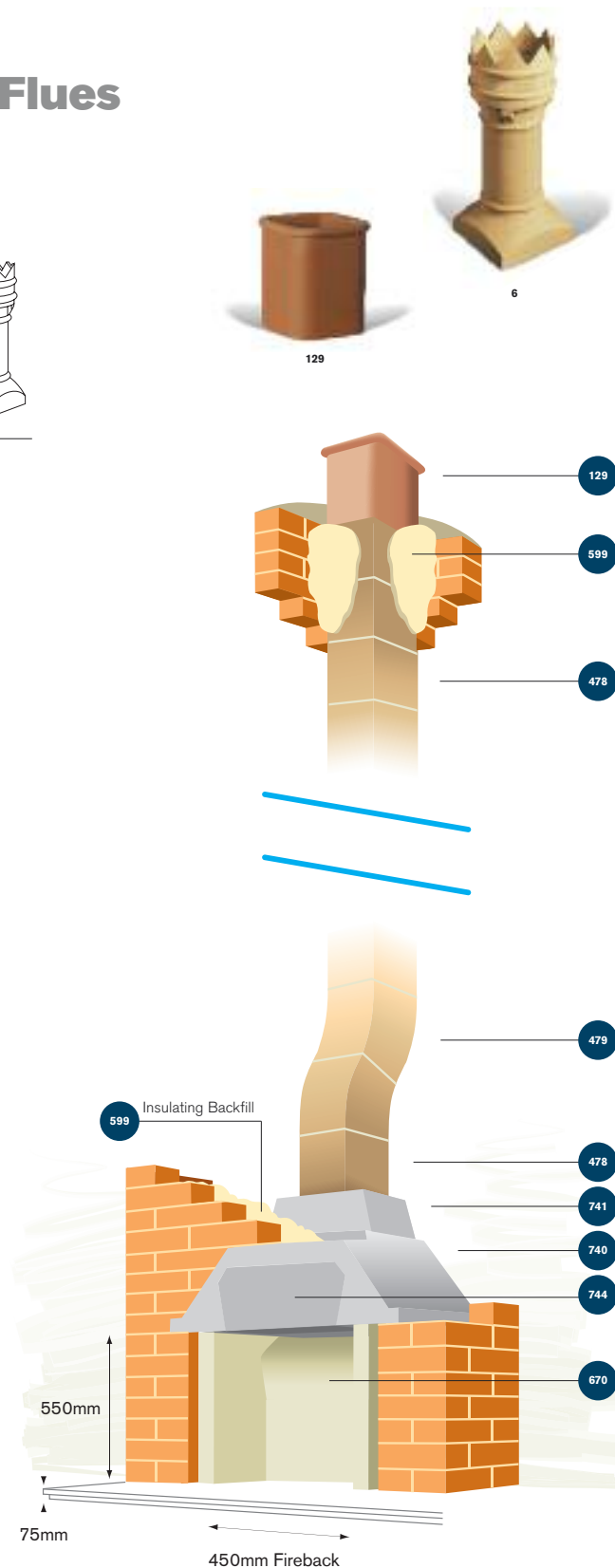
- 478** Clay Type A1 Flue Liner
185 x 185mm nom. int.
- 300mm standard height.
Other heights available
- 

- 741** 185 x 185mm Square Flue Starter
140mm high
- 

- 740** Fyrite Throat Unit
720mm(w) x 280mm(h) x 375mm(d)

- 744** Front Brick

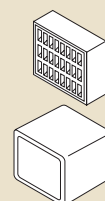
- 670** 400mm & 450mm Milner Scored Fireback
- | | |
|-----------|-------------------|
| Height | 550mm |
| Width (w) | 375mm (for 400mm) |
| Width (w) | 425mm (for 450mm) |
- 



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

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 (Hanson Red Bank product code **599**, or similar).


Refer to page 15 for ancillary items, list nos. **RF28, 597, 599, 374** and **402**. If a diagonal offset is required then use 210mm int. dia. circular flue rather than 185 x 185mm int. square, as with a square flue offsets can only be to the front or rear, or 90° to the side. Refer to page 17 for offset calculation chart.




Typical construction of 210mm int. dia. Circular Flues

- 43** 375mm & 500mm high Rook Pot
- 1** 300mm, 450mm & 600mm high Roll Top 250mm int. dia. base 200mm int. dia. top

- 493** Clay Type A1 Flue Bend
210mm nom. int. dia.
22½°, 30° & 37½°

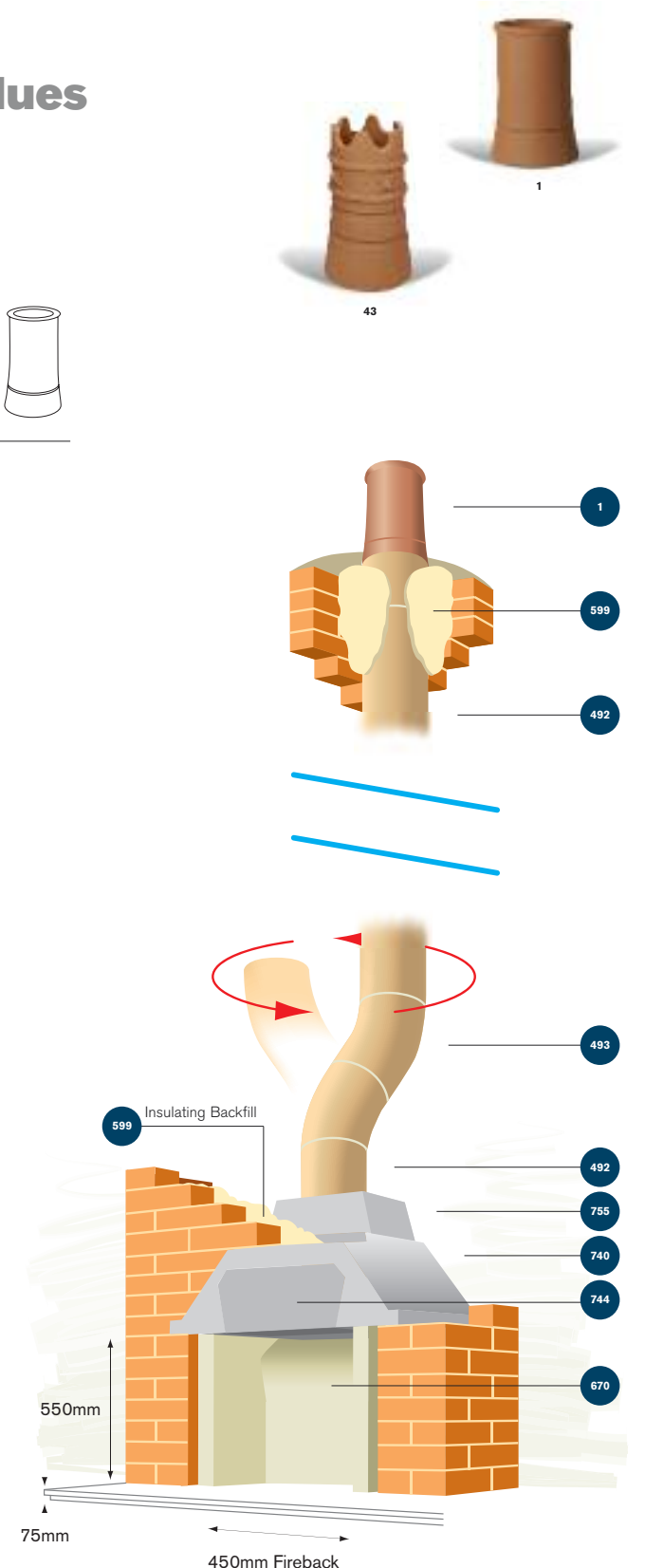
- 492** Clay Type A1 Flue Liner
210mm nom. int. dia.
- 300mm standard height.
Other heights available
- 
- The diagram illustrates three cylindrical flue liners of varying heights. The shortest cylinder is labeled '180mm'. The middle cylinder is labeled '300mm'. The tallest cylinder is labeled '600mm'. The cylinders are arranged in a row, with the 180mm and 300mm cylinders in the foreground and the 600mm cylinder slightly behind them.

- 755** 210mm int. dia. Circular Flue Starter
140mm high
- 

- 740** Fyterite Throat Unit
720mm(w) x 280mm(h) x 375mm(d)

- 744** Front Brick

- 670** 400mm & 450mm Milner Scored Fireback
- | | |
|-----------|-------------------|
| Height | 550mm |
| Width (w) | 375mm (for 400mm) |
| Width (w) | 425mm (for 450mm) |
- 



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

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 (Hanson Red Bank product code **599**, or similar).

Refer to page 15 for ancillary items, list nos. **RF28, 597, 599, 374** and **402**. Refer to page 17 for offset calculation chart.



Typical construction of
200 x 200mm int. Square Flues

129 300mm & 450mm high 200 x 200mm int. Square Beaded Flue Terminal

16 450mm, 600mm & 750mm high Square Plain Pot 265 x 265mm int. sqr. base 200 x 200mm int. sqr. top

481 Clay Type A1 Flue Bend 200 x 200mm nom. int. 22½°, 30° & 37½°

480 Clay Type A1 Flue Liner 200 x 200mm nom. int. 300mm standard height. Other heights available

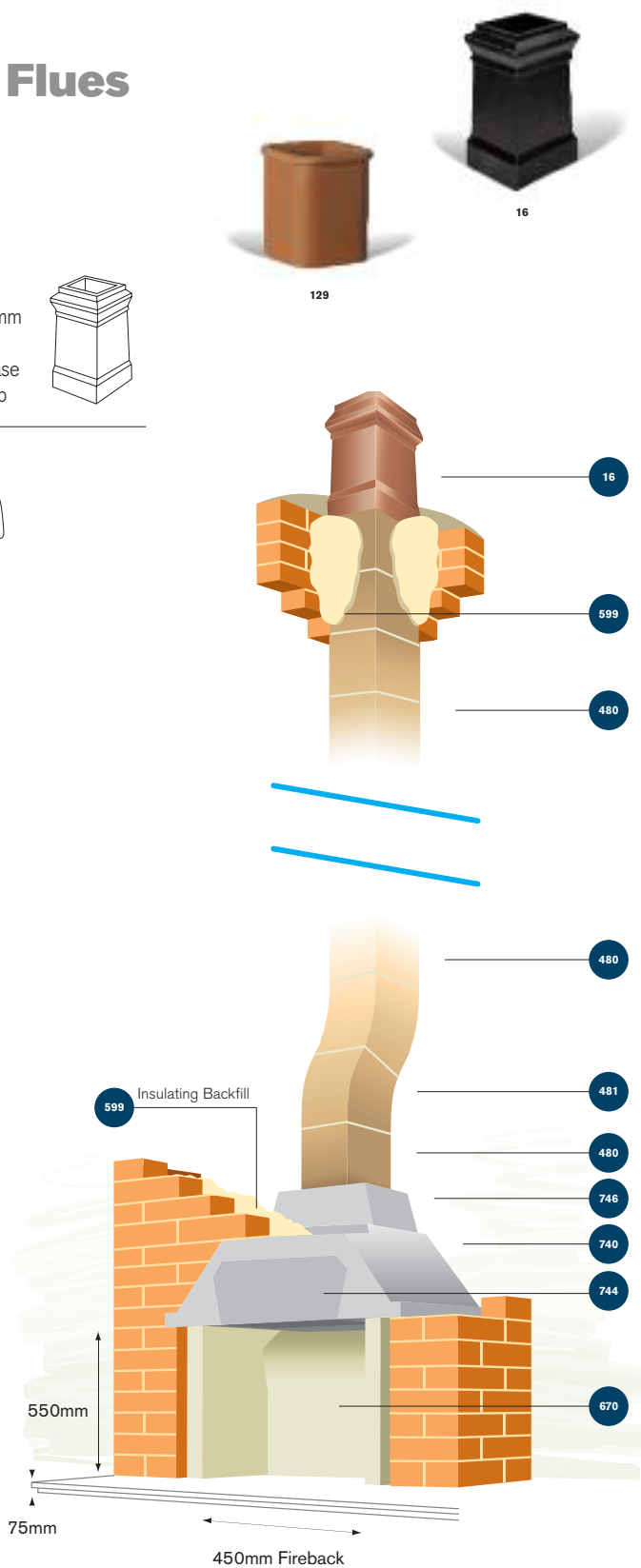
746 200 x 200mm Square Flue Starter 140mm high

740 Fyrite Throat Unit 720mm(w) x 280mm(h) x 375mm(d)

744 Front Brick

670 400mm & 450mm Milner Scored Fireback

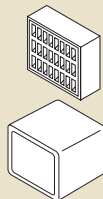
Height	550mm
Width (w)	375mm (for 400mm)
Width (w)	425mm (for 450mm)



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

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 (Hanson Red Bank product code **599**, or similar).

Refer to page 15 for ancillary items, list nos. **RF28**, **597**, **599**, **374** and **402**. If a diagonal offset is required then use 225mm int. dia. circular flue rather than 200 x 200mm int. square, as with a square flue offsets can only be to the front or rear, or 90° to the side. Refer to page 17 for offset calculation chart.



Typical construction of
225mm int. dia. Circular Flues

4 300mm, 450mm & 600mm high Traditional Cannon Head Pot 250mm int. dia. base 200mm int. dia. top

495 Clay Type A1 Flue Bend 225mm nom. int. dia. 22½°, 30° & 37½°

494 Clay Type A1 Flue Liner 225mm nom. int. dia. 300mm standard height. Other heights available

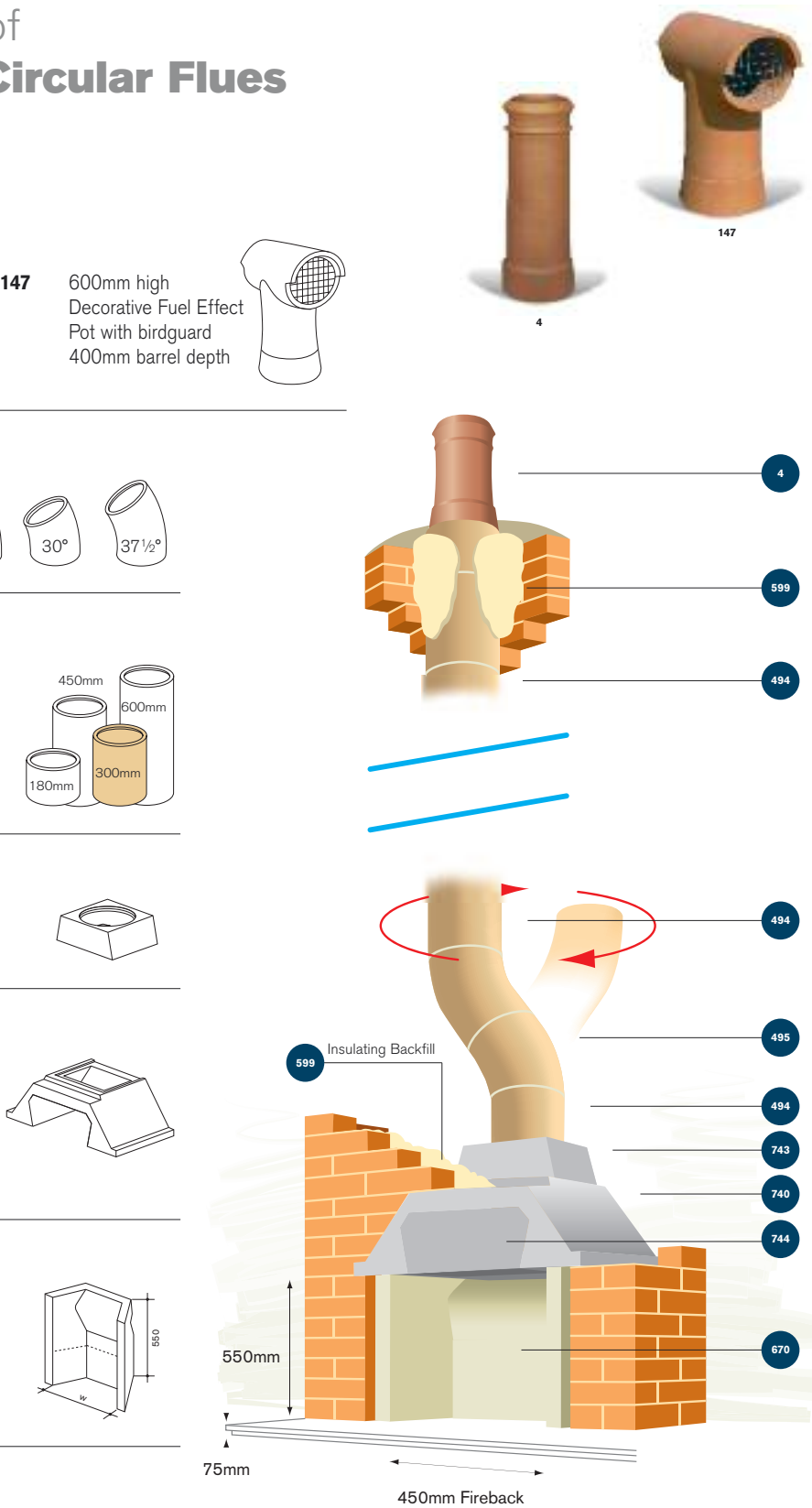
743 225mm int. dia. Circular Flue Starter 140mm high

740 Fyrite Throat Unit 720mm(w) x 280mm(h) x 375mm(d)

744 Front Brick

670 400mm & 450mm Milner Scored Fireback

Height	550mm
Width (w)	375mm (for 400mm)
Width (w)	425mm (for 450mm)



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

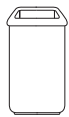
Note that fireproof mortar (list nos. **RF28** and **597**) must be used for jointing flue liners. It is also necessary to fill the void between the outside of the flue lining and the surrounding masonry with insulating backfill (Hanson Red Bank product code **599**, or similar).

Refer to page 15 for ancillary items, list nos. **RF28**, **597**, **599**, **374** and **402**. Refer to page 17 for offset calculation chart.

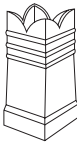


Typical construction of
225 x 225mm int. Square Flues

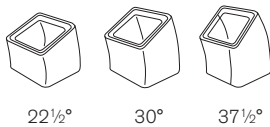
129 300mm & 450mm high 225 x 225mm int. Square Beaded Flue Terminal



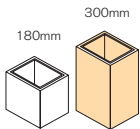
27 650mm & 750mm high Square Spiked Pot 250 x 250mm int. sqr. base 200 x 200mm int. sqr. top



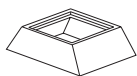
483 Clay Type A1 Flue Bend 225 x 225mm nom. int. 22½°, 30° & 37½°



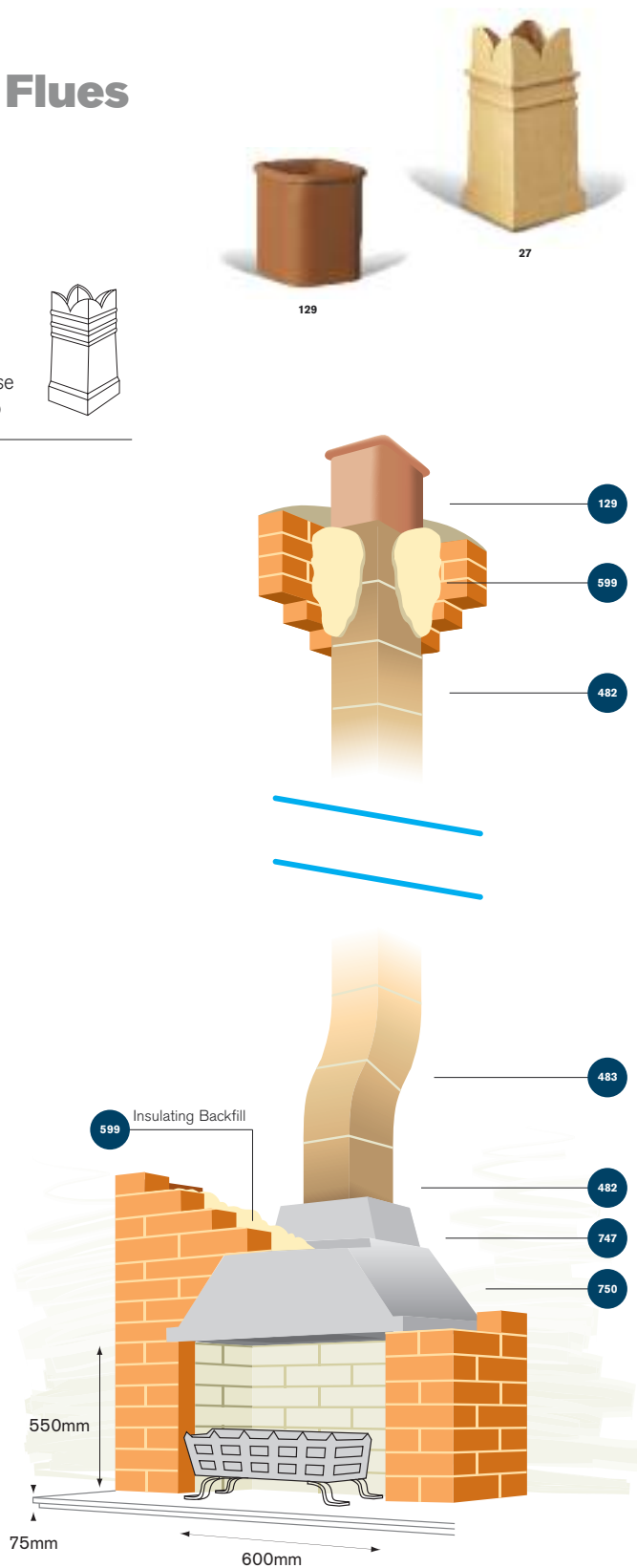
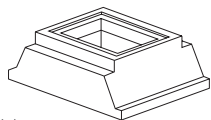
482 Clay Type A1 Flue Liner 225 x 225mm nom. int. 180mm & 300mm high



747 225 x 225mm Square Flue Starter 140mm high



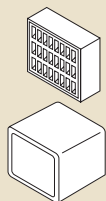
750 Duplex Fyrerite Throat Unit 720mm(w) x 280mm(h) x 550mm(d) to suit opening 600mm wide



Ventilation required for 225 x 225mm int. square flue linings 25,315mm² permanently open free air space provided by 3 No. 215 x 215mm Rectangular Hole Air Bricks, list no. **374**, each providing 10,250mm² free air space and 3 No. 215 x 215mm Cavity Wall Bridging Ducts, list no. **402**.

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 (Hanson Red Bank product code **599**, or similar).

Refer to page 15 for ancillary items, list nos. **RF28**, **597**, **599**, **374** and **402**. If a diagonal offset is required then use 250mm int. dia. circular flue rather than 225 x 225mm int. square, as with a square flue offsets can only be to the front or rear, or 90° to the side. Refer to page 17 for offset calculation chart.

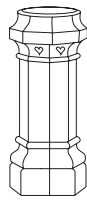


Typical construction of
250mm int. dia. Circular Flues

181 300mm & 450mm high Beaded Rebated Flue terminal 250mm int. dia.



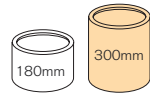
80 600mm, 750mm & 900mm high Octagon Pot 290mm int. dia. base 240mm int. dia. top



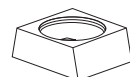
497 Clay Type A1 Flue Bend 250mm nom. int. dia. 22½°, 30° & 37½°



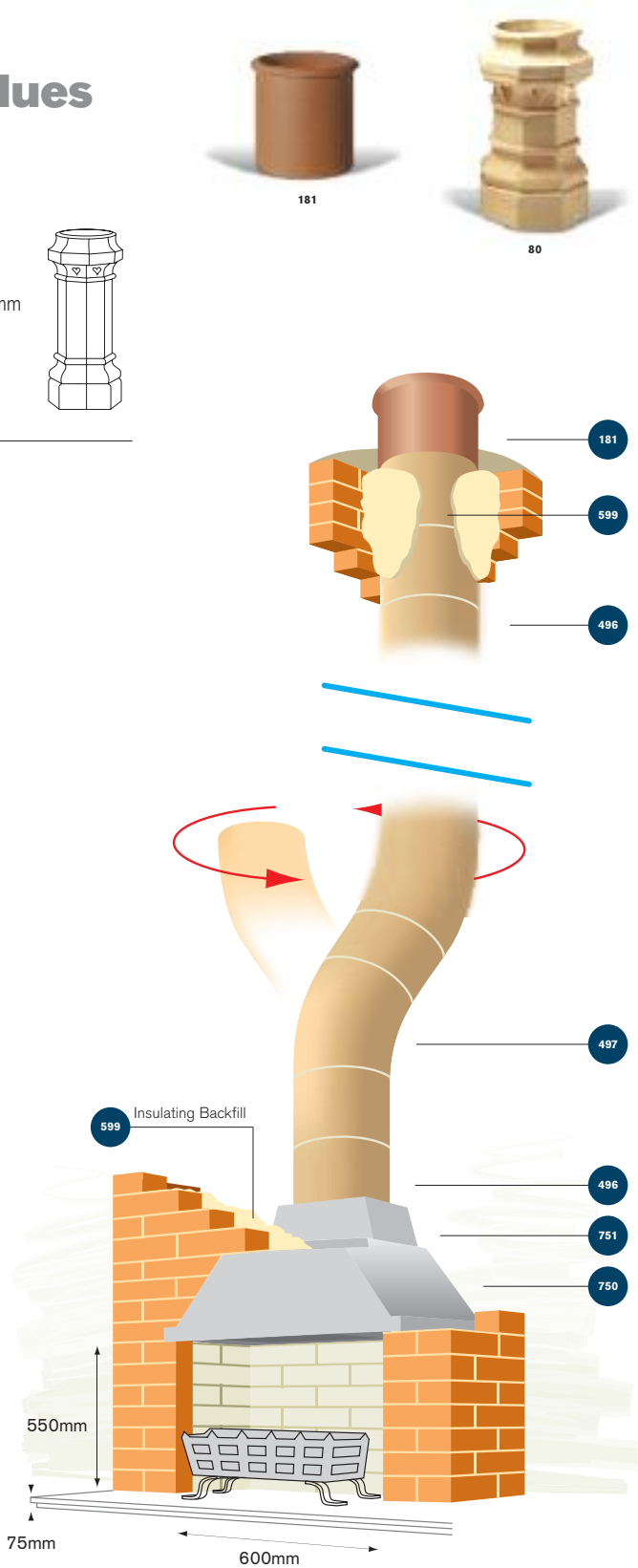
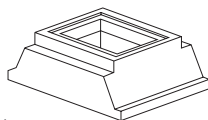
496 Clay Type A1 Flue Liner 250mm nom. int. dia. 180mm & 300mm high



751 250mm int. dia. Circular Flue Starter 140mm high



750 Duplex Fyrrite Throat Unit 720mm(w) x 280mm(h) x 550mm(d) to suit opening 600mm wide



Ventilation required for 250mm int. dia. circular flue linings 24,545mm² permanently open free air space provided by 3 No. 215 x 215mm Rectangular Hole Air Bricks, list no. **374**, each providing 10,250mm² free air space and 3 No. 215 x 215mm Cavity Wall Bridging Ducts, list no. **402**.

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 (Hanson Red Bank product code **599**, or similar).

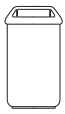
Refer to page 15 for ancillary items, list nos. **RF28**, **597**, **599**, **374** and **402**. Refer to page 17 for offset calculation chart.




Typical construction of
250 x 250mm int. Square Flues

- 129

300mm & 450mm high
250 x 250mm int. Square
Beaded Flue Terminal



- 175

300mm & 450mm high
Square to Round
Terminal 250 x 250mm
int. square base 250mm
int. dia. circular top




88

850mm high
Hooded Square
Chimney Pot
250 x 250mm
int. square base



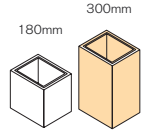
485

Clay Type A1 Flue Bend
250 x 250mm nom. int.




484

Clay Type A1 Flue Liner
250 x 250mm nom. int.
180mm & 300mm high



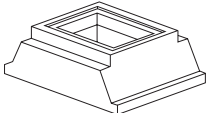
748

250 x 250mm Square Flue Starter
140mm high



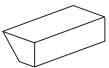
750

Duplex Fyterite Throat Unit
720mm(w) x 280mm(h) x 550mm(d)



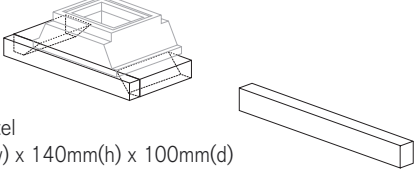
754

Corbel Block
200mm(w) x 140mm(h) x 440mm(d)

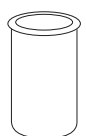


753

Duplex Lintel
1050mm(w) x 140mm(h) x 100mm(d)



-
- Typical construction of
300mm int. dia. Circular Flues
- 33

300mm, 450mm &
600mm high Circular
Beaded Flue Terminal



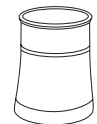
146

DFE Insert
275mm ext.
dia. spigot




134

300mm, 450mm & 600mm high
Contemporary Cannon Head Pot 375mm
int. dia. base 300mm int. dia. top




499

Clay Type A1 Flue Bend
300mm nom. int. dia.



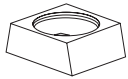
498

Clay Type A1 Flue Liner
300mm nom. int. dia.
180mm & 300mm high



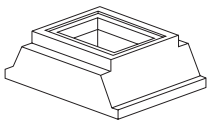
752

300mm int. dia. Circular Flue Starter
140mm high




750

Duplex Fyterite Throat Unit
720mm(w) x 280mm(h) x 550mm(d)



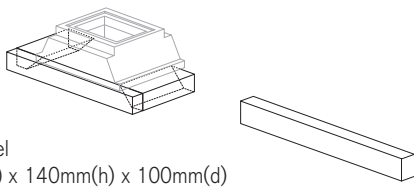
754

Corbel Block
200mm(w) x 140mm(h) x 440mm(d)



753

Duplex Lintel
1050mm(w) x 140mm(h) x 100mm(d)



Ventilation required for 250 x 250mm int. square flue linings 31,250mm² permanently open free air space provided by 3 No. 215 x 215mm Rectangular Hole Air Bricks, list no. **374**, each providing 10,250mm² free air space and 3 No. 215 x 215mm Horizontal Cavity Wall Bridging Ducts list no. **402**.

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 (Hanson Red Bank product code **599**, or similar).

Refer to page 15 for ancillary items, list nos. **RF28**, **597**, **599**, **374** and **402**. Refer to page 17 for offset calculation chart.

Ventilation required for 300mm int. dia. circular flue linings 35,357mm² permanently open free air space provided by 4 No. 215 x 215mm Rectangular Hole Air Bricks, list no. **374**, each providing 10,250mm² free air space and 4 No. 215 x 215mm Horizontal Cavity Wall Bridging Ducts list no. **402**.

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 (Hanson Red Bank product code **599**, or similar).

Refer to page 15 for ancillary items, list nos. **RF28**, **597**, **599**, **374** and **402**. Refer to page 17 for offset calculation chart.


12

13

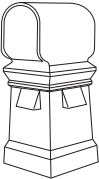
Typical construction of
300 x 300mm int. Square Flues

- 175

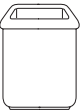
300mm & 450mm high Square to Round Terminal, 300 x 300mm int. square base to 300mm int. dia. circular top


- 88


875mm high Hooded Square Chimney Pot 300 x 300mm int. square base


- 129

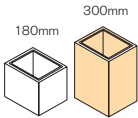
300mm & 450mm high 300 x 300mm int. Square Beaded Flue terminal


- 487

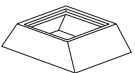
22½° Clay Type A1 Flue Bend 300 x 300mm nom. int.


- 486

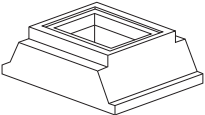
Clay Type A1 Flue Liner 300 x 300mm nom. int. 180mm & 300mm high


- 749

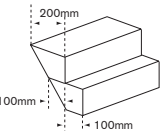
300 x 300mm Square Flue Starter 140mm high


- 750

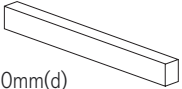
Duplex Fyrite Throat Unit 720mm(w) x 280mm(h) x 550mm(d)

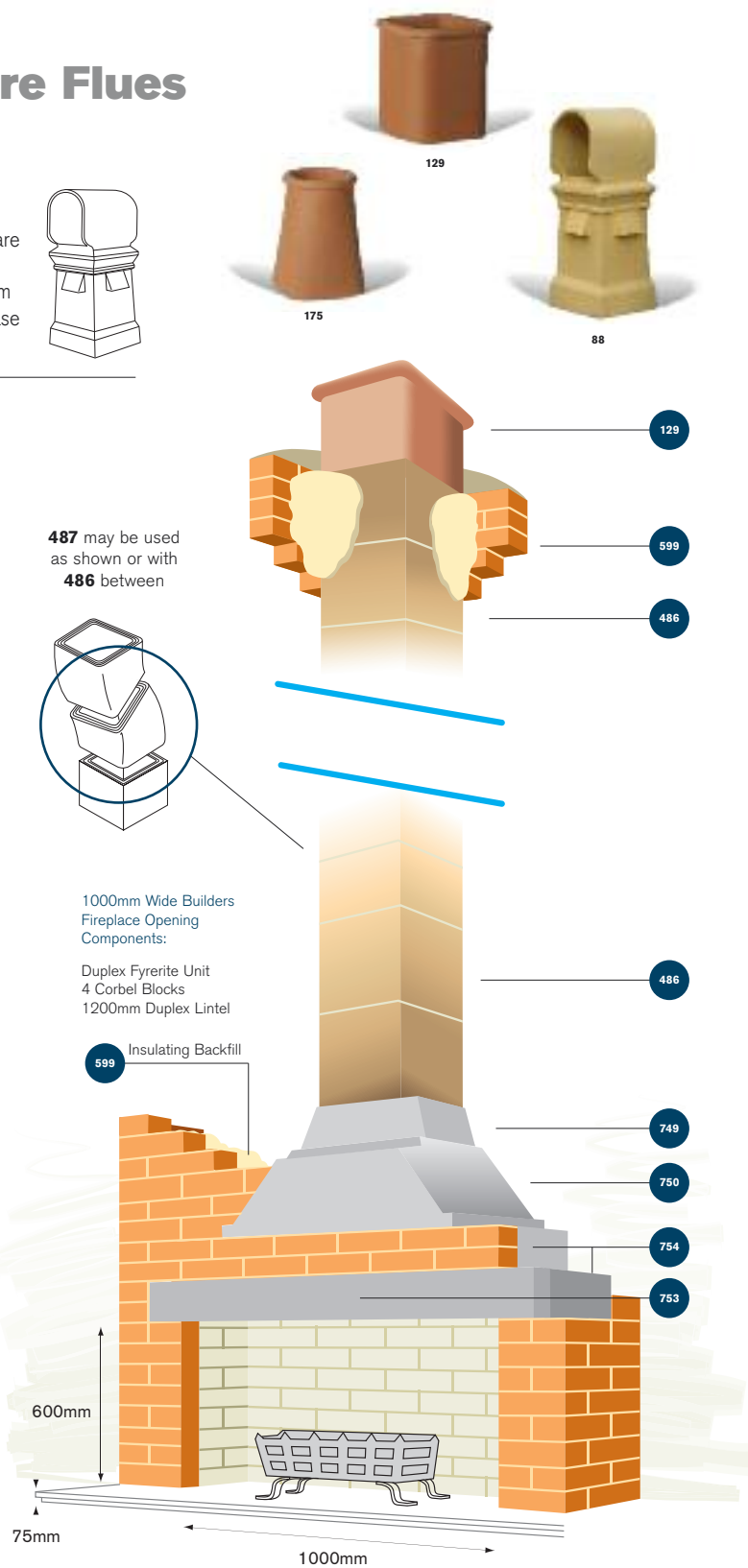

- 754

Corbel Block 140mm(h), 440mm(d) width as shown


- 753

Duplex Lintel 1200mm(w) x 140mm(h) x 100mm(d)







Flue Linings
Ancillary Items

- RF28


Tube Rediflow Fireproof Mortar


- 597


6kg Tub Rediflow Fireproof Mortar


- 599


Approx 20kg Rediflow Insulating Backfill


- RF32

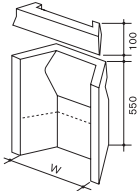
Rediflow Smoke Pellets (6 per tube)


- NP1

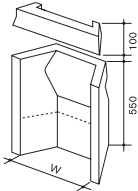
Notice Plate and Checklist Pack


- 673

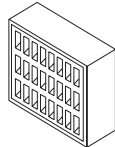
400mm & 450mm Throat Restrictor Height 100mm


- 670

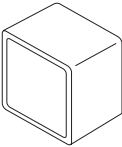
400mm & 450mm Milner Scored Fireback Height 550mm Width (W) 375mm (for 400mm) Width (W) 425mm (for 450mm)


- 374

Rectangular Hole Slotted Air Brick Size 215(h) x 215(w)mm Free Air Space(mm²) 10250


- 402

Horizontal Cavity Wall Bridging Duct 200mm long 215(h) x 215(w)mm



Simple to specify
Easy to install

Note that flue liners should be jointed using fireproof mortar. This mortar is available in tubes, for gun application, and tubs for trowel application. The number of joints that can be made per unit will vary with the size of flue liner but for guidance only, a 6kg tub (list no. 597) should joint approximately eleven linear metres.

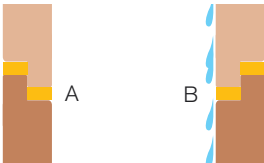
For example, a 250 x 250mm square liner has a perimeter of one metre so a tub should make eleven joints, whereas a 200 x 200mm square liner has a perimeter of 800mm so a tub should be sufficient for 13 or 14 joints.

Guidance for number of joints made from a tube are as follows:

Flue Size	Approximate no. of joints
200 x 200mm square, or 225mm int. dia. Circular	3½
250 x 250mm square, or 300mm int. dia. circular	3
300 x 300mm square	2½

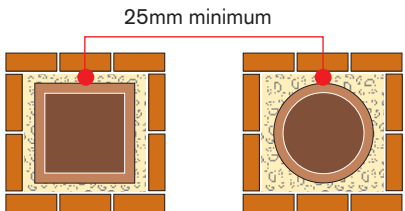
Clay Flue Liners should be fitted with the rebates uppermost (A) to prevent condensate running out.

If correctly fitted condensate cannot find a way through a weak joint (B).



A chimney flue constructed from clay flue liners needs to be supported by surrounding masonry. The void between the outer side of the flue liner and the inner side of the supporting masonry must be filled with a weak, insulating concrete or similar.

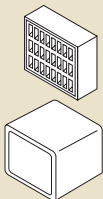
Hanson Red Bank recommend and supply an Insulating Backfill which consists of expanded clay granules which should be mixed at 20 parts granules to 1 part ordinary portland cement, lightly wetted, with the cement acting purely as a binding agent. The thickness of the Insulating Backfill should be a minimum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



Ventilation required for 300 x 300mm int. square flue linings 45,000mm² permanently open free air space provided by 5 No. 215 x 215mm Rectangular Hole Air Bricks, list no. 374, each providing 10,250mm² free air space and 5 No. 215 x 215mm Horizontal Cavity Wall Bridging Ducts list no. 402.

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 (Hanson Red Bank product code 599, or similar).

Refer to page 15 for ancillary items, list nos. RF28, 597, 599, 374 and 402. Refer to page 17 for offset calculation chart.



How much ventilation?

Permanent ventilation into the room should be equal to 50% of the throat opening area. In the absence of a fireback the calculation should be 50% of the cross-sectional area of the flue. See above for the amount of free air space available with each size and type of Air Brick.

Classification B2 N2

All clay liners shown on pages 4 to 14 conform to classification A1 N2 as described in BS EN 1457 : 1999.

Such liners, which withstand a nominal working temperature of 600°c and a temperature surge of up to 1000°c in ten minutes, are suitable for use with all fuel types including solid fuel.

Prior to the introduction of BS EN 1457 clay flue liners were made in accordance with the requirements of BS 1181 : 1989, which was withdrawn on 31st December 1999. The requirements in this standard were not so demanding as in BS EN 1457 class A1 N2 in respect of the ability to withstand such severe temperature surges which may occur in a chimney fire; now classified as soot fire resistance.

Clay liners made to the old standard conform to classification B2 N2 in BS EN 1457. Such liners are suitable for operating in a nominal working temperature of 400°c and can withstand a temperature surge of up to 500°c in ten minutes. The Hanson Red Bank B2 N2 liner has been proved to withstand a nominal working temperature of 450°c which makes it suitable to be used within a masonry chimney stack.

Therefore the use of the B2 N2 liner is restricted to serving gas and oil fired appliances only.



B2 N2 liners are made from natural red clays and are distinguishable from liners conforming to class A1 N2 which are made from a lighter density, buff, fireclay. This enables the A1 N2 liner to withstand the severe temperature fluctuations in the soot fire resistance test.

When deciding whether to use an A1 or B2 liner (Note that both classifications are shortened by dropping N2 which relates to a pressure test in BS EN 1457) the installer should consider not only the current use but also the future use of the flue system. The installation of a B2 liner to serve a gas or oil fired appliance will prevent any change to a solid fuel appliance in the future. (Such a restriction will be indicated on the Notice Plate, see page 3).

To ensure that the flue system will accommodate any type of fuel or appliance, under current regulations the installation should consist of liners conforming to A1 classification. However if the restrictions on usage imposed by a B2 liner are acceptable then see the table opposite for details of those sizes of straight liners together with bends that are available.

Glazed or Unglazed?

Glazed liners were originally introduced to offer extra protection against the corrosive effect of town gas condensates. Now that the UK uses only natural gas this protection is no longer required.

Circular section

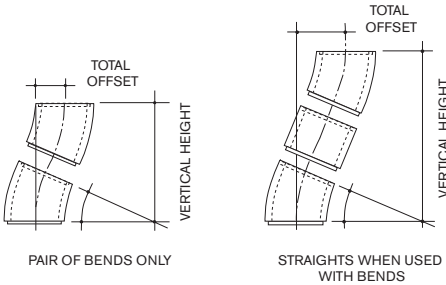
List numbers		Unit	Cross Section	Height (mm)
Unglazed	Glazed			
196	217	Straight	125 Dia	300, 450, 600
197	218	37½° Bend	125 Dia	
197	218	30° Bend	125 Dia	
198	218	22½° Bend	125 Dia	
190	215	Straight	150 Dia	300, 450, 600
191	216	37½° Bend	150 Dia	
191	216	30° Bend	150 Dia	
192	216	22½° Bend	150 Dia	
187	213	Straight	185 Dia	300, 450, 600
188	214	37½° Bend	185 Dia	
188	214	30° Bend	185 Dia	
189	214	22½° Bend	185 Dia	
227	246	Straight	210 Dia	180, 300, 450, 600
228	247	37½° Bend	210 Dia	
228	247	30° Bend	210 Dia	
228	247	22½° Bend	210 Dia	
203	221	Straight	225 Dia	180, 300, 450
204	222	37½° Bend	225 Dia	
204	222	30° Bend	225 Dia	
204	222	22½° Bend	225 Dia	
205	223	Straight	250 Dia	180, 300
206	224	37½° Bend	250 Dia	
206	224	30° Bend	250 Dia	
206	224	22½° Bend	250 Dia	
199	225	Straight	300 Dia	180, 300
200	226	37½° Bend	300 Dia	
200	226	30° Bend	300 Dia	
200	226	22½° Bend	300 Dia	

Square section

List numbers		Unit	Cross Section	Height (mm)
Unglazed	Glazed			
184	211	Straight	185 Sq	180, 300, 450, 600
185	212	37½° Bend	185 Sq	
185	212	30° Bend	185 Sq	
186	212	22½° Bend	185 Sq	
201	219	Straight	200 Sq	180, 300, 450, 600
202	220	37½° Bend	200 Sq	
202	220	30° Bend	200 Sq	
202	220	22½° Bend	200 Sq	
207	240	Straight	225 Sq	180, 300
208	241	37½° Bend	225 Sq	
208	241	30° Bend	225 Sq	
208	241	22½° Bend	225 Sq	
193	242	Straight	250 Sq	180, 300
194	243	22½° Bend	250 Sq	
209	244	Straight	300 Sq	180, 300
210	225	22½° Bend	300 Sq	

Offset table

Total Offset (mm)	No. of bends			No. of straight lengths (mm)				Combined Height (mm)
	22½°	30°	37½°	180	300	450	600	
84	2							421
147		2						550
153	2			1				587
199	2				1			698
221	2			2				754
227			2					670
237		2		1				706
256	2					1		837
267	2			1	1			864
290	2			3				920
297		2			1			810
313	2						1	975
325	2			1		1		1003
327		2		2				862
337			2	1				812
359	2			4				1086
371	2				1	1		1114
372		2				1		940
382	2			1			1	1142
387		2		1	1			966
394	2			2		1		1169
405	2			3	1			1197
410			2		1			908
417		2		3				1018
428	2					2		1252
440	2			1	1	1		1280
446			2	2				955
447		2					1	1070
451	2			2			1	1308
451	2			2	2			1308
462		2		1		1		1096
463	2			3		1		1336
474	2			4	1			1363
501			2			1		1027
507		2		4				1174
520			2	1	1			1050
520	2			3	2			1474
522		2			1	1		1200
531	2			4		1		1502
537		2		1			1	1225
543	2						2	1530
556			2	3				1098
567		2		3	1			1277
589	2			4	2			1640
593			2				1	1146
597		2				2		1329
611			2	1		1		1169
642		2		3		1		1407
657		2		4	1			1433
666			2	4				1241
684			2		1	1		1265
702			2	1			1	1288
717		2		3	2			1537
732		2		4		1		1563
739			2	3	1			1336
747		2					2	1589
775			2			2		1384
807		2		4	2			1693
830			2	3		1		1455
848			2	4	1			1479
921			2	3	2			1574
940			2	4		1		1598
958			2				2	1622
1031			2	4	2			1717



The offset table includes details of the components required to form offsets up to one metre. For offsets greater than this additional straight lengths should be added between the two bends. These additional units increase the offset dimension (O) and the total height (H) as follows:

	180mm	300mm	450mm
22½°	O: 69mm	O: 115mm	O: 172mm
	H: 166mm	H: 277mm	H: 416mm
30°	O: 90mm	O: 150mm	O: 225mm
	H: 156mm	H: 260mm	H: 390mm
37½°	O: 110mm	O: 183mm	O: 274mm
	H: 143mm	H: 238mm	H: 357mm

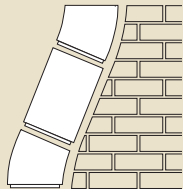
Note that 600mm straight flue lengths are not available in the larger sizes. See pages 4 to 14 for details. Substitute 2 x 300mm lengths instead. When using the offset table to determine the number and type of components required please note that the dimensions shown are nominal only.

It is recommended that, where possible offsets are not used and flues are kept straight. When the updraught of a flue encounters an offset there is a resistance to the flow of flue gases as the natural tendency of the flow is vertically upwards. Offsets are however included by designers where it is necessary to circumvent another element of the structure higher up the building, or to bring the flue in line with a ridge line or any other point at which it is desirable that the flue terminate which is not directly above the fireplace opening. Should an offset be necessary then it should make an angle no greater than 45° with the vertical. Offsets should be limited to a maximum of two (or four bends) per flue and shallow offsets less than 45° are strongly recommended for a solid fuel application. If offsets are not shallow such that a sweeps brush cannot travel the full length of the flue and are formed using four 45° bends then an access point for inspection and cleaning a flue should be made between offsets. The impracticality of breaking into a flue surrounded by insulation and a masonry structure should lead the flue designer to avoid 45° offsets wherever possible. The better approach is the construction of a straight flue without offsets. It may also be appropriate when constructing a straight flue to consider using a suitable hooded chimney pot to reduce the level of rain water entering the flue and/or reaching the appliance.

For open fires there should be a minimum vertical section of flue of 600mm from the highest point at which air can enter the flue system before any offset should begin, i.e. 600mm beginning immediately below the throat unit.

Supporting an Offset

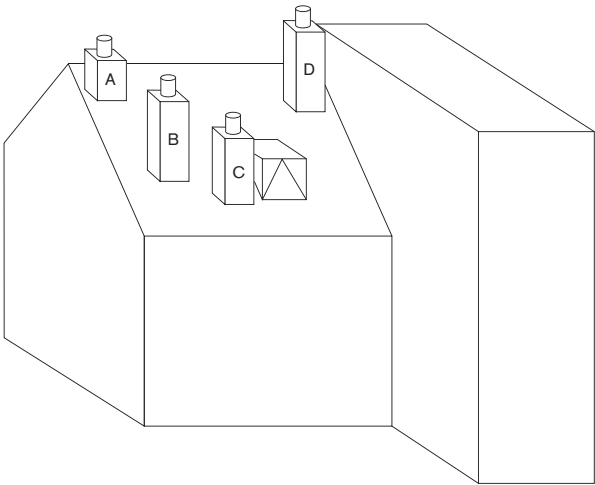
The flue bends and straight liners that make up an offset must be supported adequately. Brickwork underneath the structure should be corbelled to within practical limits.



Flue Linings

Technical Specification

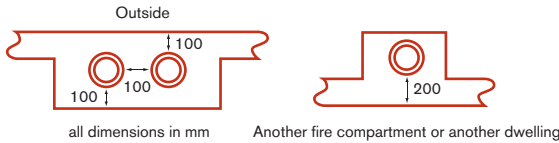
Flue outlet positions for solid fuel appliances



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

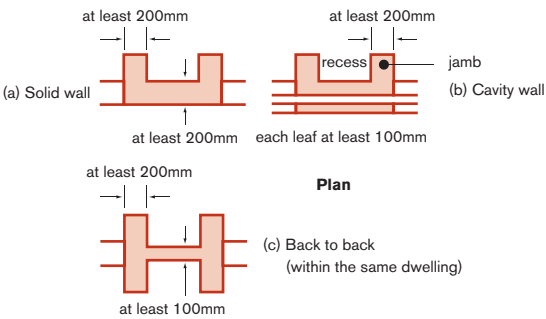
Point where flue passes through weather surface (Notes 1,2)		Clearances to flue outlets
A	at or within 600mm of the ridge	at least 600mm above the ridge.
B	elsewhere on a roof (whether pitched or flat)	at least 2300mm horizontally from the nearest point on the weather surface and: a - at least 1000mm 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.		

Note: For chimneys constructed with B2 liners see ADJ for terminal positions.



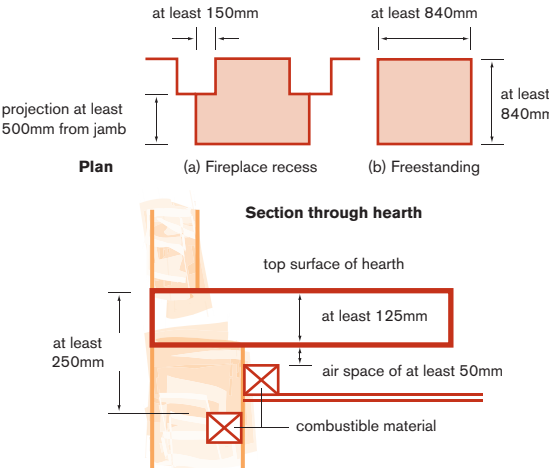
Wall thicknesses for masonry and flueblock chimneys

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.



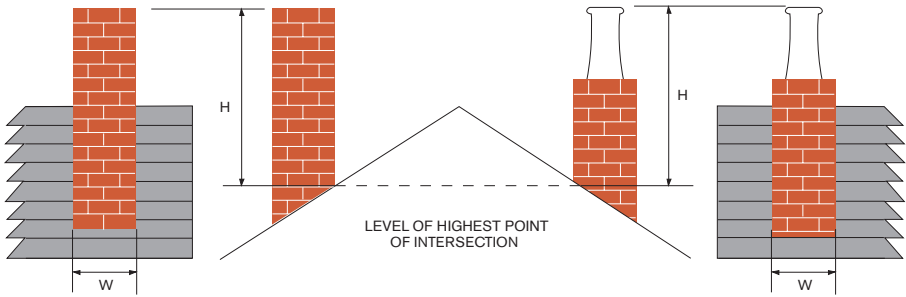
Hearths

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

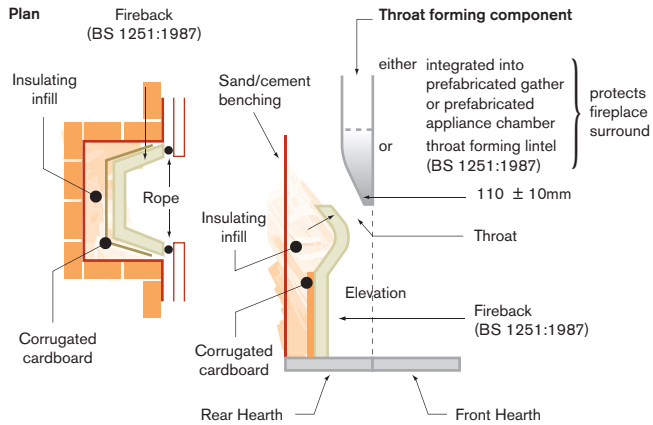
Height (H) not to exceed 4.5 x width (W)



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. If the fire is under a canopy then the lower point is taken from the bottom of the canopy.



Open fireplaces: throat, fireplace component and construction

The use of a fireback (list no. 670) is recommended where a solid fuel open fire is to be used in a smaller fireplace opening. The fireback is shaped to guide the flue gases into the throat opening and the heat from the fire into the room.

When fitting a fireback corrugated cardboard should be positioned immediately behind the lower back section of the fireback to serve as an expansion joint. The void behind this should be filled with a suitable insulating/weak mortar support infill. Some form of fire resistant (ceramic) rope which will allow for forward expansion should be used to seal the fireback with the front fireplace surround.

It is essential that the base of the fireback is fitted to be level with the top of the front hearth as illustrated.

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.

How much ventilation?

When a fireback is fitted and a throat opening formed as above the total free area of permanently open air vents required is as follows:

Nominal Fireplace width (mm)	500	450	400
Free Air Space (mm²)	20,500	18,500	16,500

Hanson UK

Hanson is one of the UK's largest suppliers of construction materials. Our products include aggregates, asphalt, ready-mixed concrete, bricks, blocks and cement. We are part of the HeidelbergCement Group, which employs 53,000 people across five continents and is the global leader in aggregates and has leading positions in cement, concrete and heavy building products.

Quality Assured



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All dimensions are in mm, drawings not to scale and all sizes nominal.
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