

TN_0007_v2

HETAS Technical Note – TN_0007 v2 - Chimneys in Thatched Properties HETAS Installation Guidelines and Advice

ACHIEVING COMPLIANCE WITH THE BUILDING REGULATIONS WHEN INSTALLING OR REPAIRING A CHIMNEY IN THATCHED PROPERTIES

The UK solid fuel industry continues to receive reports relating to a number of chimney fires in properties with thatched roofing. The National Society of Master Thatcher's (NSMT) have on record an average of between 50 to 80 thatch fires a year, the majority of which occur in older style properties constructed before 1960, and those fitted with either a solid mineral fuel or woodburning appliance.

This is not to say that solid fuel and woodburning appliances are unsuitable for installation in properties with a thatched roof, however it emphasises the importance of ensuring installers are meeting their regulatory responsibilities of compliance against the UK building regulations by carrying out necessary pre-assessment checks following practical installation guidelines, commissioning procedures and by making sure the appliance is left in a continued state of safety from risk to both the occupants and the building.

A compliant installation, recognised service and maintenance regimes and ensuring the consumer is appropriately educated during the handover phase, all play key parts in the continued safe operation of solid fuel burning appliances in thatch properties.

1.0 AWARENESS OF THE ISSUES

An extensive amount of research has been undertaken over previous years, including recent research by the Fire Protection Agency (FPA), to better understand the initial causes of fires in thatch properties, and how these issues can be rectified and awareness raised as to ensure they do not occur in future.

The findings of this research seem initially to point to a number of main areas of potential focus when designing, installing and operating solid fuel burning appliances in thatch properties, that both installers and consumers should be aware of. In particular:

- **Heat Penetration** through a brick chimney stack, in most cases where there are known defects in the brickwork and/or mortar joints, or from older chimney designs experiencing higher flue gas temperatures during closed appliance operation compared to a previously installed open fire.
- **Ember Ignition** from any embers exiting the termination of the chimney which sits below the prescribed minimum height requirements within approved documents and standards. This can include risks from bird nest ignition, blockage of the chimney or from over firing of the appliance

It is important to note that when examining the issues in relation to installations in thatch properties, that all areas of risk are considered, as to ensure the occupants and the building structure remain protected from heat and/or ignition in compliance with J4 of the Building Regulations. Installers should assess potential risk in both areas of heat penetration and ember ignition when working within thatch properties, further guidance of which can be found within this document.

As well as installation requirements, there are also some considerations that can mitigate the risks of fires in thatch properties, including educating the consumer during the installation handover phase on the appliance's correct operation protocols, including appropriate fuels, refuel procedures, suitable maintenance requirements and avoiding over firing of the appliance.

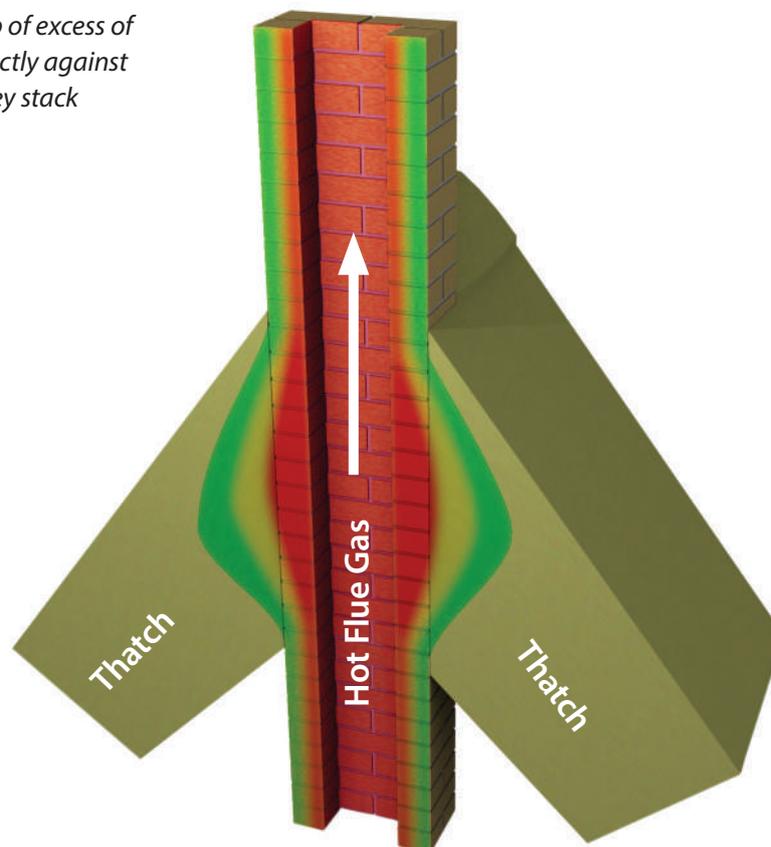
Further information on appropriate commissioning and handover procedures can be found in Section 5.0 of this document.

1.1 Heat Penetration

Traditionally chimneys constructed in older thatched properties were used with open fires, which when in operation had large amounts of cool air from the room the fire was situated in flowing through them, which allowed for a mixture of this air with the combustion products, and in essence having a cooling effect and reducing the overall temperature of the flue gas. With the recent drive for efficiency, the use of closed room heaters has become a more common installation approach, which although provides far more heat into the room, doesn't have the benefit of cool room air mixing with the exhaust gases to reduce the flue gas temperature. The resulting effect from this is that chimneys that worked reliably for many years with an open fire are experiencing problems such as elevated temperatures when closed stoves are fitted.

Evidence also points towards the presence of thick beds of thatch built up over the years when re-thatching is completed without trimming back an initial layer of material to apply new thatch. This often can be in excess of one metre built up directly against the stack, and with the high flue gas temperatures can accelerate conditions which over time allow the thatch to be heated to a point where it will char or burn. The thatch is effectively insulating the brick chimney stack preventing the release of heat from the brickwork and creating a localised hot spot in the centre of the thatch as detailed in Fig.1.

Fig.1 Heating up of excess of thatch directly against the chimney stack



The risks associated with these elevated temperatures are all the more important in situations where the brick chimney is not in a structurally sound condition, or defects are present within the brickwork, mid-feathers and/or mortar joints. This allows for these elevated temperatures to come into direct contact with the ignitable materials of the thatch roof, without the appropriate brickwork materials providing subsequent insulation protection from the heat source.

1.2 Ember Ignition

The other source of risk in relation to thatched installation is regarding ignition of the combustible materials from contact with hot embers that have the potential to be drawn up the flue and emitted from the terminal.

There are a number of potential causes for ember ignition, including:

- **Low Chimney Termination Height** – older chimney designs with a termination height of below the 1.8m prescribed within current Building Regulation guidance or in situations where over-thatching of the roof surface has occurred during remedial work without trimming back the previous layer.
- **Chimney blockage** – materials from bird nests and other materials blocking the flue, leading to ignition of materials and emitting of secondary embers out the termination and onto the thatch roof surface
- **Appliance Overfiring** – disturbing of ashes/embers within the appliance fire bed, either through overloading of fuel, excessive rush of air during refuel or running the appliance with components open (door, air controls, ash pan etc.)
- **High flue draught conditions** – excessive flue draught can in some cases mean high temperature embers being emitted from the flue at a velocity that does not allow sufficient cooling time before coming into contact with ignitable roof materials

In most cases where the height of the stack/terminal is below the prescribed minimum height, and where hot embers are carried up the flue/chimney, the resulting embers are not in a position to be effectively cooled by the outside atmosphere in time before reaching any ignitable materials, and are therefore still in a state of high temperature that can cause continual heating and ignition of the dry thatch materials below.

It is important to always ensure chimney stack heights and terminal positioning are at least equal to the prescribed minimum heights stated within current Building Regulation requirements and recognised standards to ensure that these situations do not increase the risk of ember ignition occurring.

The appliance should always be operated in accordance with the appliance manufacturer operating instructions, using appropriate fuels. Newspaper or other loose lightweight materials should not be used during the initial light-up process due to the increased risk of stray embers being emitted up the chimney.

It is important that these points are covered as part of the commissioning and handover process, information of which can be found in Section 5.0 of this document.

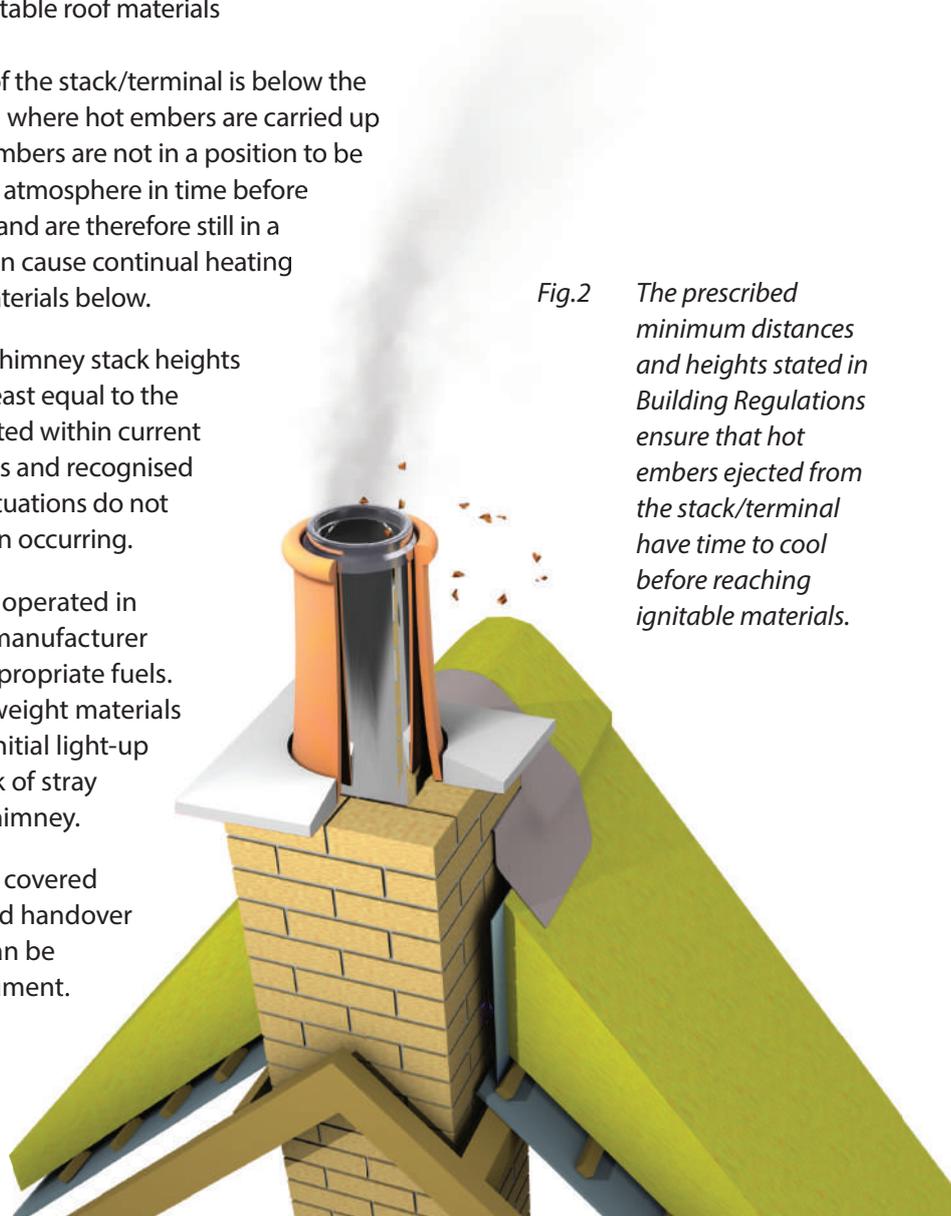


Fig.2 The prescribed minimum distances and heights stated in Building Regulations ensure that hot embers ejected from the stack/terminal have time to cool before reaching ignitable materials.

2.0 CONSIDERATIONS BEFORE COMMENCING WORKS

Before commencing works on solid fuel appliance installations in thatch properties, it is important to ensure an initial assessment check has been undertaken, and that any relevant external parties have been contacted to discuss any potential implications with the works meeting approval.

These parties include:

- Conservation Officer (if the building is grade listed)
- Consumer's Insurance Company
- Reputable Thatching Organisation
- Further expert advice (HETAS Technical Helpline)

Some initial topics of discussion may include:

- Is the property a "listed property" and can authorisation be obtained from the conservation office for the proposed works?
- Will the installation have any effect on the consumer's current home insurance agreement?
- Has the installation the facility to appropriately ventilate the outer annulus within the stack/duct?
- Can any potential lining system be appropriately insulated to keep penetrated heat to a minimum?
- Is the current height of the terminal at least 1.8m in height from the highest point of the roof ridge?
- Is the thatch roof appropriately protected with a fire barrier to prevent the spread of fire in extreme circumstances?
- Is the consumer aware of the required maintenance schedules and appropriate fuels for future operation of the appliance?

It is advised before commencing works that a full assessment of the current property is undertaken to check the criteria above can be met.

2.1 Insurance

Insurance companies are becoming increasingly cautious about insuring thatch properties with mineral or woodburning appliances installed within them, with HETAS registered installers being asked to carry out routine inspections and sign insurance forms stating that installations are safe; the possibility of litigation is becoming an increasing concern.

Owners of properties with combustible roof coverings should be aware of their obligations in respect of conditions outlined by insurance companies. We are not specialists in insuring thatched properties though believe they often have fire conditions set out within the policies. Thatch property owners' attention should be drawn to restrictions laid down by their insuring company. Before any new or replacement work concerning heat producing appliances commences, consumers should contact their insurance company. This is because insurance companies impose special conditions that apply to properties with combustible roof coverings and in particular, thatched properties. Your wording says 'check your policy and follow the conditions' which we would recommend for all clients - not just those with combustible roof coverings.

If the consumer is aware of any special policy condition imposed by their insurance company then this information must be passed onto the responsible person contracted to work on the property.

The contractor must provide to the homeowner a written specification, detailing all works relating to the installation of a heat producing appliance and any special conditions imposed by the insurance company are consistent with the conditions as set out by the insurer. Any such work being undertaken should also comply with the guidance set out in this document and must comply with the requirements laid out in The Building Regulations Approved Document J.

As a HETAS registered installer the question is "What should you do if asked to work on a thatched property?" No doubt the first thought to come into some of your minds is, 'this is too risky.' or 'I will not consider taking on this job.' It does not have to be that way though, as there are already adequate and robust solutions if you follow the guidance in Approved Document J of the Building Regulations and consult with a registered thatcher to advise on the condition of the thatch and any remedial work that may be required to the thatch especially in close proximity to the chimney stack.

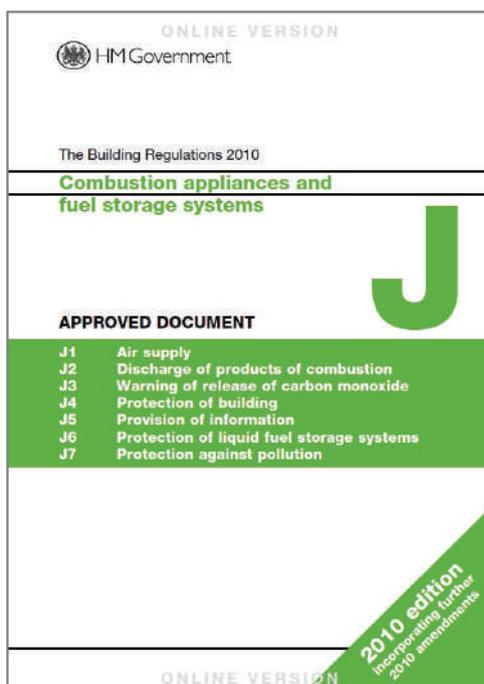


Fig.3 *The Building Regulations Approved Document J*

2.2 Appliance Design

With the varying number of solid fuel appliance designs available on the market, it is important to consider during the design stage those appliances that pose less of a risk to the issues highlighted when installing into thatch properties.

These can include both standalone wood burners, which burn wood on a flat bed of ash with combustion air being provided from the top of the appliance chamber, as well as multi-fuel appliances that burn on a cast iron grate and have the facility to provide combustion air from both the top and bottom of the combustion chamber.

Appliances that solely burn mineral fuels or both wood and mineral based fuels will have the facility to remove ash (via the ash pan) as part of their design. This in turn, when opened, can allow more combustion air to be introduced into the combustion chamber from underneath the fuel source.

The appliance in all cases should be operated in accordance with the appliance manufacturers installation instructions. Opening the ashpan during operation of the appliance will result in an abuse operating conditions, increasing the risk of over-firing the appliance and disturbing embers within the fire bed. **It is therefore required to advise the consumer during the commissioning stage never to operate the appliance with the ashpan door open in conjunction with the appliance manufacturers instructions.**

During the appliance selection phase, it is advised to consider those appliances where the ashpan door doesn't have the facility to be opened when the appliance door is closed and the appliance is in use, either via an interlocking door or mechanism that seals the ash-pan door at the same time as the appliance chamber door, meaning the risk of the consumer operating the appliance with the ashpan door open are significantly reduced. When operating the appliance, advice should also be given that the door when opened during refuel is increased gradually, to avoid an instant rush of combustion air which may disturb embers within the fire bed.

2.3 The Decision to Proceed or to Walk Away...

If after surveying the chimney you feel you can complete the installation AND comply with Building Regulations, write a specification and sketch a design of your proposed solution, then submit this to the homeowner's insurance company for their endorsement and agreement. Failure to get the insurance company's agreement to the work may invalidate the homeowner's insurance. Remember that a written quote for a job is a legally-binding document.

Finally, ensure the homeowner fully understands the requirements of, and how to operate the appliance safely, including the need to only use dry quality fuel and have regular maintenance carried out on the appliance and flue by registered competent engineers as detailed within the "Commissioning" section of this document, *page 16*.

If in any situation where, due to customer, insurance or conservation constraints you:

- are not permitted to obtain the permitted chimney height
- cannot add 40mm gap between the thatch and the brickwork
- are prohibited from breaking into the existing stack to add a back ventilated system chimney, **or**
- are unable to obtain the required 200mm from the flue lining to the external brickwork of the stack
- Are not allowed to extend the chimney termination at least 1800mm above the roof covering

We can only suggest you walk away from the project, advising the homeowner that a tested and safe solution cannot be constructed due to the constraints imposed.

3.0 COMPLIANCE WITH THE BUILDING REGULATIONS

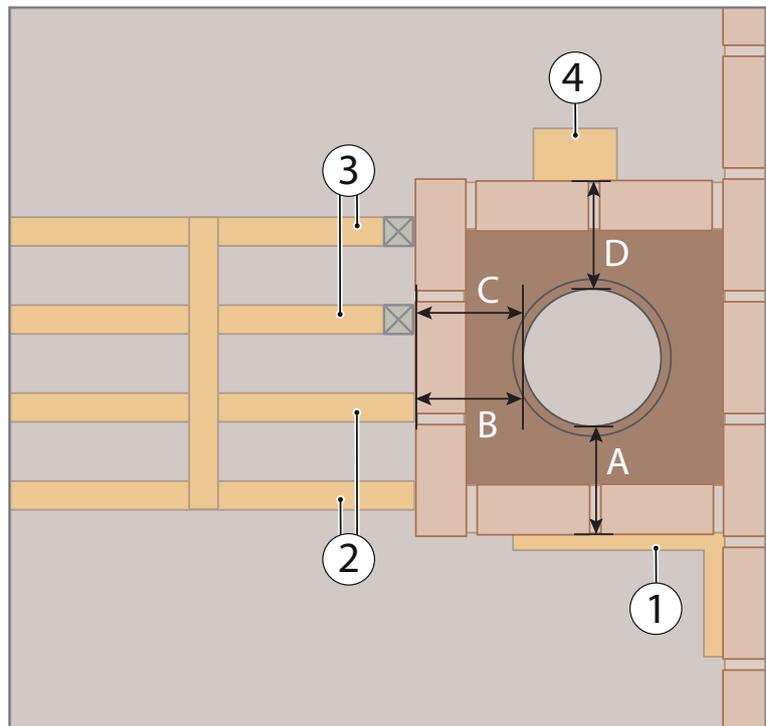
3.1 Distance to Ignitable Materials

Firstly, it should be noted that any work carried out on an appliance or chimney is notifiable to the local authority (usually via the HETAS compliance certificate). A material change to any part of the combustion system (appliance or chimney) will require the complete combustion system to be brought into compliance with current Building Regulations. As that is a flammable material and there is usually a lot of it up against the chimney, a good place to start in Approved Document J is the requirements for distance to combustible material from the chimney.

Paragraph '2.18 Separation of Combustible Materials from fireplaces and flues,' states: "Combustible material should not be located where it could be ignited by the heat dissipated through the walls of fireplaces or flues. A way of meeting the requirement would be to follow the guidance in Diagram 21 so that combustible material is at least:

- **200mm** from the inside surface of a flue or fireplace recess, or
- **40mm** from the outer surface of a masonry chimney or fireplace recess unless it is a floorboard, skirting board, dado or picture rail, mantel-shelf or architrave. Metal fixings in contact with combustible materials should be at least 50mm from the inside of the flue."

Fig.4 Minimum Separation Distances from Combustible Materials in or near a Chimney (see Approved Document J - Diagram 21)



DIMENSION	CLEARANCE TO	DISTANCE (mm)
A	① Skirting, Dado Rail or Picture Rail	< 200 mm
B	② Combustible Materials or Rafters without Metal Fastening or Support	≥ 200 mm
C	③ Combustible Materials or Rafters with Metal Fastening or Support	≥ 50 mm
D	④ Other Combustible Materials Please Note: if distance is less than 200mm, then 40mm air gap to other non combustibles is required	≥ 200 mm

3.2 Height of Chimney

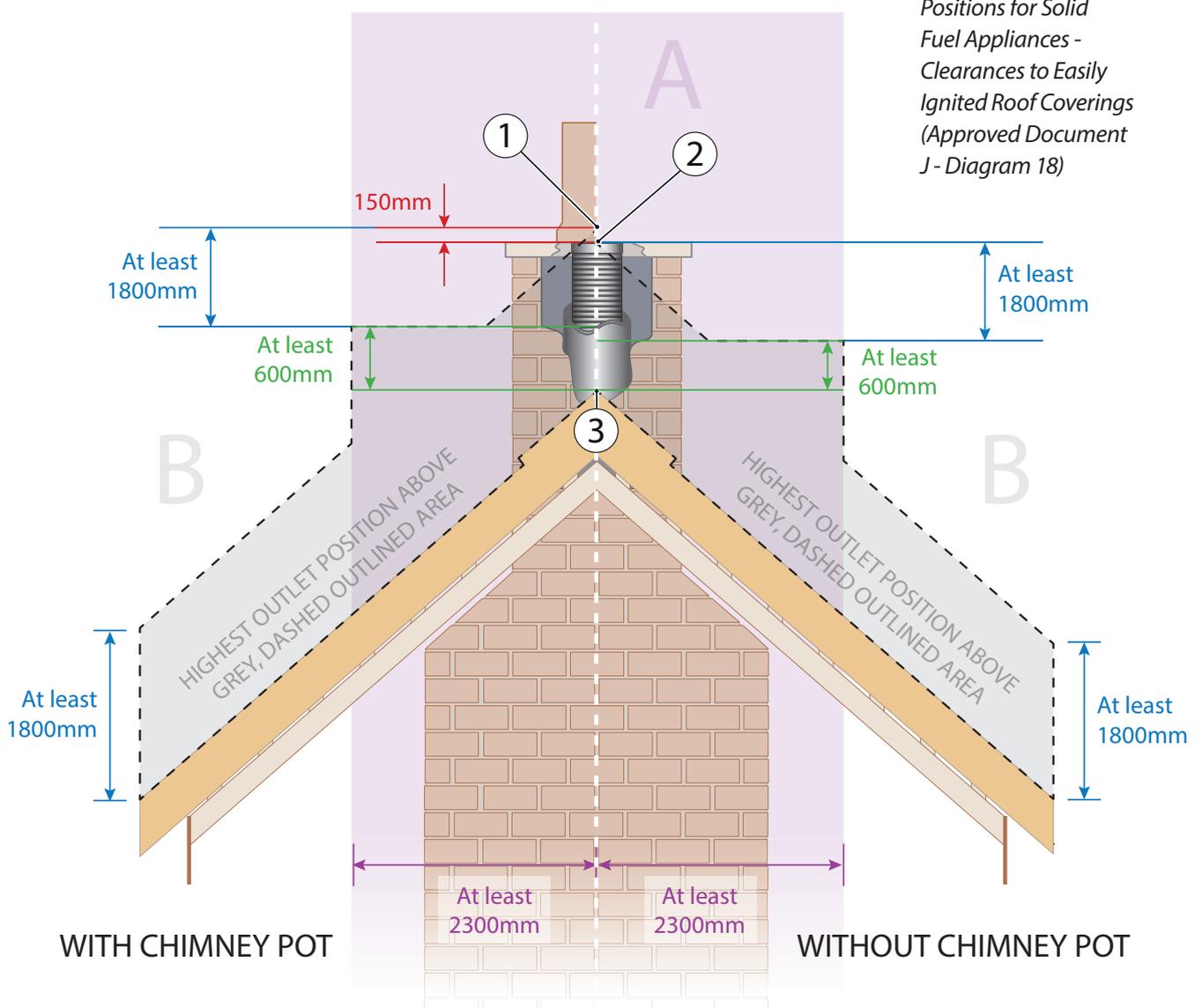
The finished height of the chimney or point of discharge above the roof slope is an important consideration when dealing with combustible roofs. The height of the flue should be sufficient to ensure products of combustion discharge freely to atmosphere and do not present an increased risk of burning embers falling down on to the thatch roof surface below.

If the property is located within a conservation area or is listed and requires the flue termination point to be raised to achieve the minimum required 1.8m above the thatch, then permission must always be granted.

Conservation agents may be unwilling to accept modifications to the chimney stack but rational explanation and reference to regulations and historical issues should provide justified reasoning.

Seeking permission is the responsibility of the homeowner - not the installer - but the installer should make the owner aware of such an obligation. The point of discharge is the datum point, the vertical measurement from either the point of discharge of the insulated flue or 150mm above the base of any chimney pot: whichever is greater. The requirement within Approved Document J suggest a minimum stack height of 1800mm vertically and at least 2300mm horizontally from the weather surface (thatch or shingle) should be sufficient however some situations may require the height to be increased. If a chimney that penetrates the roof slope within an area 2300mm horizontally of the ridge the stack height may need to be increased a further 600mm.

Fig.5 Flue Outlet Positions for Solid Fuel Appliances - Clearances to Easily Ignited Roof Coverings (Approved Document J - Diagram 18)



4.0 INSTALLATION GUIDELINES

There are typically a wide variety of installation scenarios that occur when specifying an installation into a property with a thatched roof. In most cases a masonry chimney stack of varying size and area will be present, either lined with a suitable clay or concrete lining system (post 1965 properties), or a simple chimney void of specified dimension which the ability to pass a flue liner through (pre-1965 properties).

Alternatively, there are some newer style properties constructed without a masonry stack as part of the structures support system, where a designated twin wall insulated metal chimney system and methodology can be used to achieve compliance. These areas can be classified into the following areas:

- **Small Single Brick Chimneys** – typical internal dimension of 9' x 9'
- **Larger Multi Brick Chimneys** – varying internal dimension, typically where the distance from the inside of the flue liner to the outside of the brickwork is greater than 200mm
- **No internal chimney structure** – requiring new installation of a designated metal twin wall insulated chimney systems tested and CE marked against the requirements of BS EN 1856-1

4.1 Small Single Brick Chimneys

On small traditionally constructed single brick chimneys (internal dimensions 9' x 9') it is unlikely there will be sufficient room to add a flue liner and maintain the minimum required 200mm distance from the inside of the flue liner to the thatch of a tightly thatched roof. These traditional lining systems include pre-manufactured clay, refractory concrete and pumice flue liners, cast in-situ concrete linings and twin-wall flexible metal liners.

In these situations, the only option is to request that the thatch be cut back away from the chimney to obtain access and install the relevant protection, inclusive of an air gap to maintain the minimum distances, ensuring any works on the thatch itself is carried out or overseen by a registered thatcher or qualified persons.

At this point it is important to check the overall condition of the stack, including the mid-feathers, and brickwork, to ensure heat penetration through the stack is minimised. This can be done by carrying out an appropriate Smoke Pressure Test ensuring the chimney system is capped off top and bottom and any smoke leakage visually inspected. In instances of significant levels of smoke leakage, repairs to the condition of the stack should be undertaken before relining and/or commissioning the installation. It is also prudent to check for any initial signs of charring, smouldering or heat damage to the thatch materials and repair accordingly.

Note: To obtain the required 200mm distance to combustible material on a 150mm diameter lining, the external brickwork of the stack would need to be at least 550mm square, with the flue liner carefully centred. *On a traditional 440mm square brick stack it is not possible to add a traditional liner and maintain the required distance to combustibles without adding shielding protection to maintain a 40mm air gap to the outside of the brick stack. (See Fig.6).*

Other options for lining the smaller chimney stack in cases where a 200mm clearance distance cannot be achieved, is with the use of a twin wall metal system chimney as discussed later in this document.

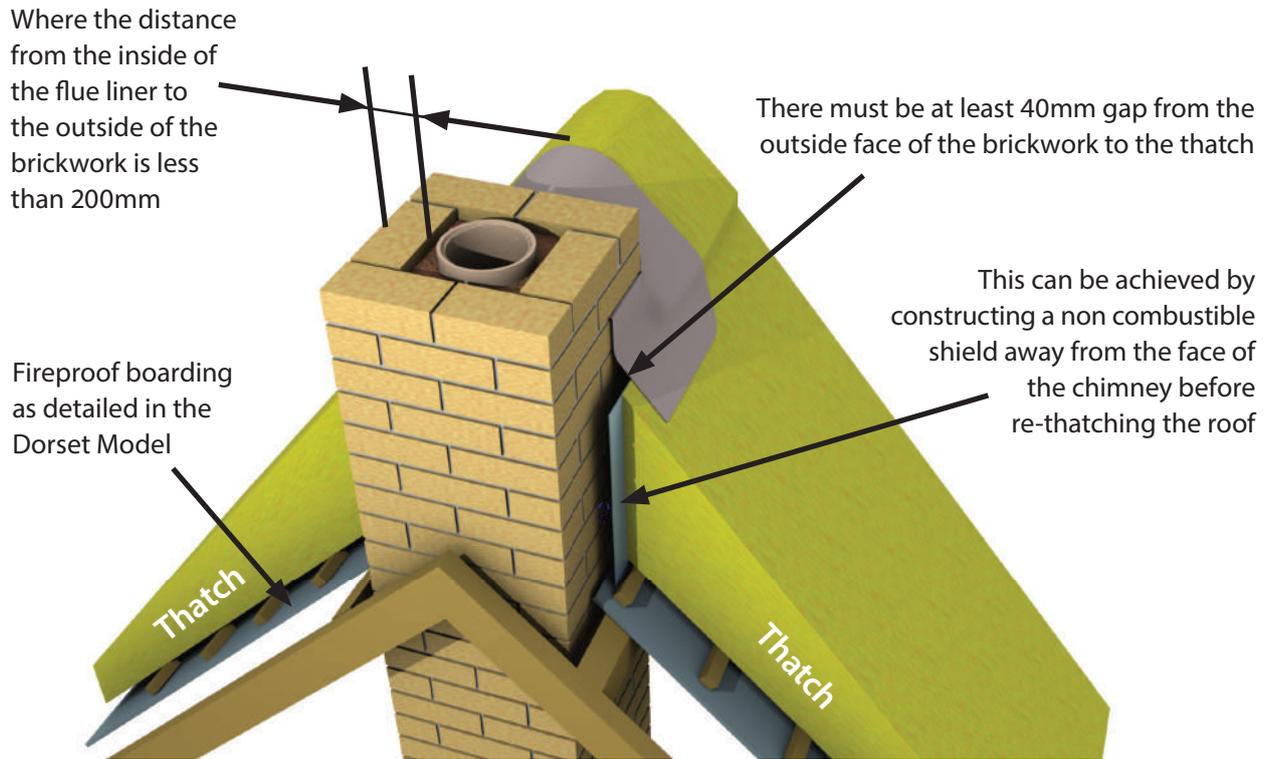


Fig.6 Maintaining a 40mm air gap on small chimneys

4.2 Larger Multi Brick Chimneys

On larger chimneys where a distance between the inner surface of the flue liner and outer surface of the chimneystack of 200mm or larger can be achieved, ADJ permits combustible materials to touch the outside of the brickwork.

Again, it is important to undertake an assessment and check the overall condition of the stack to ensure ignitable materials from the thatch are easily exposed to heat from the chimney. If the condition of the chimney has been assessed to pose a potential risk, then an option is to re-line the chimney with an appropriate system.

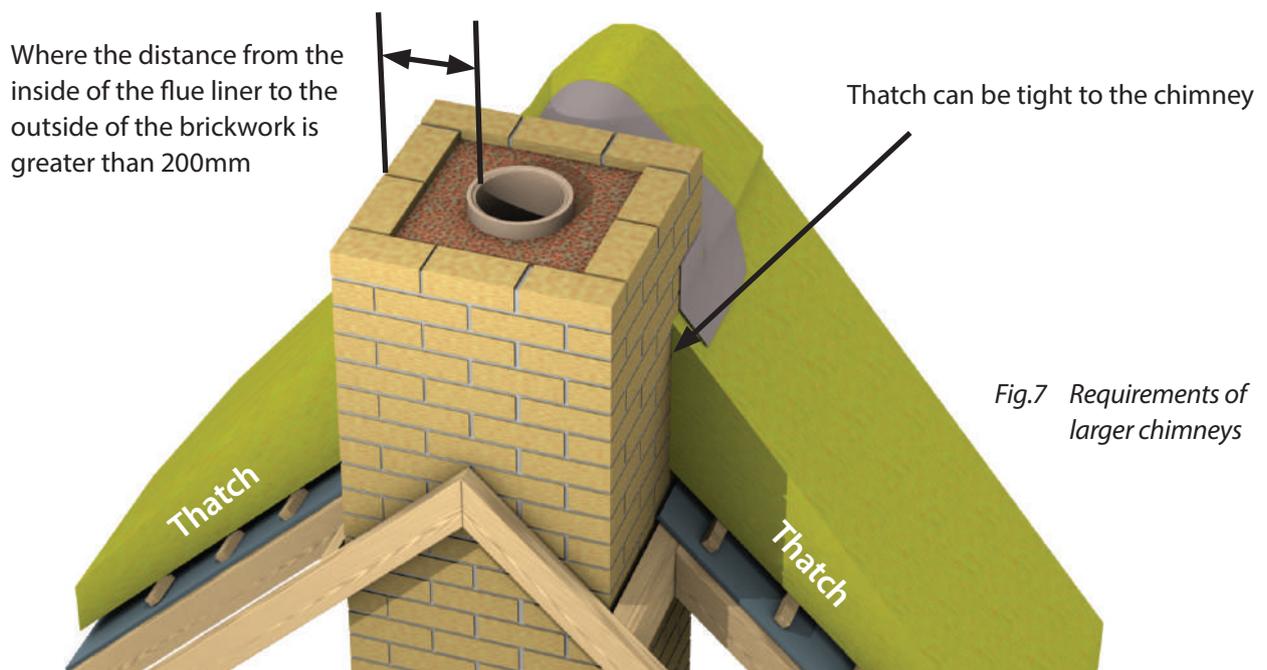


Fig.7 Requirements of larger chimneys

4.3 Re-Lining Chimneys

Great care must be taken when relining a chimney to make sure that the 200mm dimension is maintained on all sides of the chimney that are in contact with combustibles. This is especially true of flexible lining systems such as twin wall flexible stainless steel liners or the flexible former of cast in-situ concrete lining systems, which can snake within the chimney if care isn't taken to make sure they are correctly centred over their full length during the lining process.

An assessment should always be undertaken before commencing works on the relining of a masonry chimney, as to ensure that the stack is in good condition and of sound structure, and if any defects in the brickwork, mid-feathers and/or mortar joints are found, undertaking the necessary remedial works to bring the chimney back up to a sound.

Confirmation on the soundness of the structure should be verified by undertaking a Smoke Test I, making sure no significant leaks in the chimney are seen.

If the liner snakes to a position closer than the allowed 200mm to combustibles, the chimney will not comply with ADJ and may cause a localised hot spot that can cause a fire. It should also be noted that, to provide optimal performance using twin-wall flexible stainless-steel liners, different manufacturers have different instructions regarding insulation of the gap between the liner and brickwork of the stack. Chimney Liner manufacturer instructions should be followed when selecting an appropriate insulation material for the stack.

Chimneys on thatched properties relined with twin-wall flexible stainless-steel liners shall ensure the surrounding gap is suitably insulated, according to chimney manufacturer instructions, and at no point should the liner be in direct contact with the inner leaf of the chimney stack brickwork.

Before any relining work is undertaken the existing chimney should be swept thoroughly, inspected and any remedial measures such as repairs to brickwork carried out. Relining should only be carried out when the chimney structure is repaired and returned to a good condition.

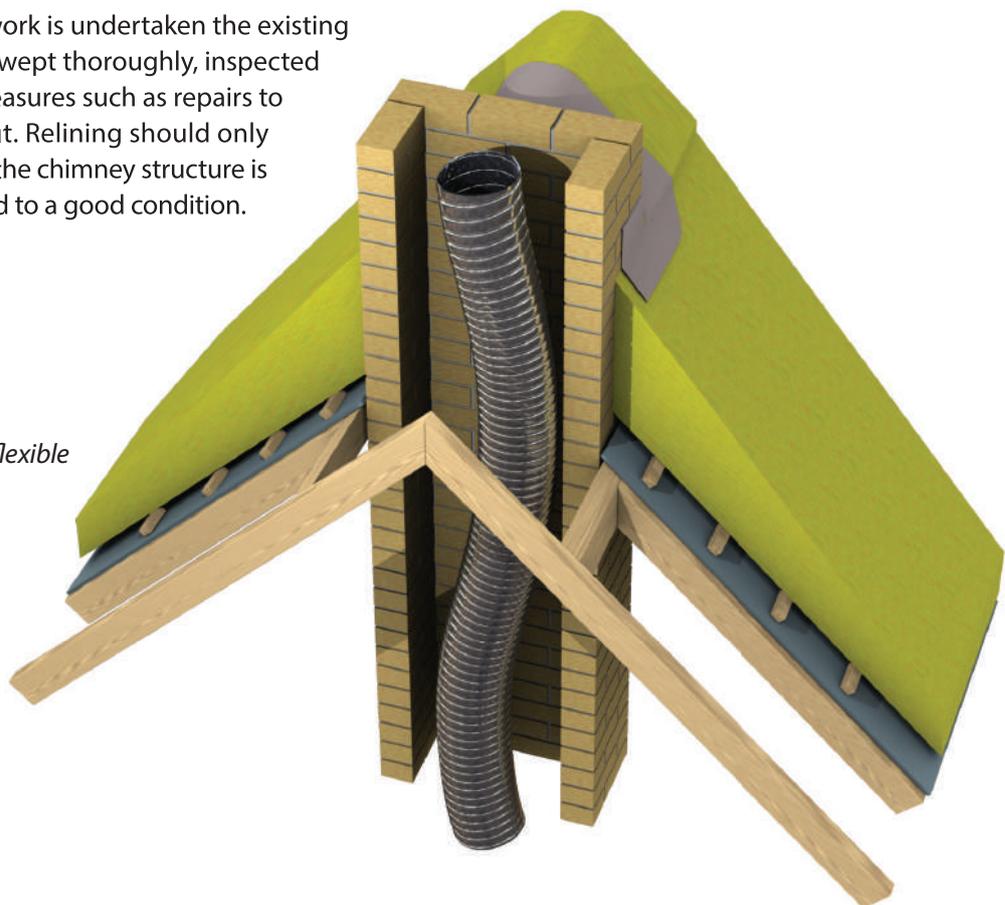


Fig.8 Problems with flexible lining systems

4.4 Designated System Chimneys

Quite often the option to strip back the thatch is not allowed because the local authorities' conservation requirements prohibit removal or alteration of the thatch or the homeowner won't permit changes to a sound roof. In this situation compliance with Building Regulations becomes substantially more difficult, though it is still possible in some circumstances.

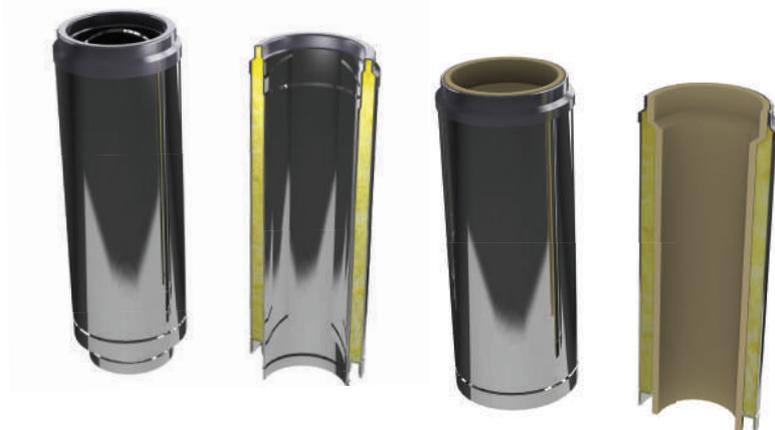


Fig.9 Factory-made system chimneys tested to EU standards with a declared distance to combustible materials

Fortunately, a range of factory-made system chimneys are available that have been tested to recognised European Standards and have a declared clearance distance to combustible materials. System chimneys come in a range of sizes, some of which are capable of fitting within a two brick stack (450mm square). System chimneys are available with stainless steel or ceramic liners surrounded by a high performance insulation and a stainless steel outer casing. Though the test method for determining the distance to combustibles specifies a fully enclosed assembly, the standard allows products to be tested with ventilated firestops which significantly reduces the declared distance to combustibles. **It is important to seek advice from the manufacturer as to whether the system was tested with ventilated fire-stops as this is not often apparent from the designation alone.**

The system chimney will be provided with a designation that gives details of the system's capability. A designation such as *T400 N1 D V3 L40040 GXX* signifies a chimney that is capable of operating:

- T400 - at 400°C
- N1 - under natural draught
- D - non-condensing
- V3 L40040 - with a corrosion resistance or material specification
- G - being soot fire resistant
- XX - a distance measurement in mm signifying how close the nearest combustible materials can be to the outside of the system chimney casing.

Typical distances to combustibles are usually in the range from around 50mm to 100mm and if tested in a fully enclosed test assembly, will allow a small two brick chimney stack (450mm square) to be lined with a 150mm system chimney and still be compliant with the requirements of Approved Document J when the thatch is tight up against the brickwork. If the system chimney was tested with the test assembly ventilated then back ventilation shall be provided into the stack in accordance with the liner manufacturers instructions. **Because of the confusion between the test methods used by different manufacturers it would make sense to provide back ventilation every time system chimneys were used in this manner for reassurance, as seen in Fig.10 and Fig.11.**

4.5 Back Ventilation to Cool the Chimney

If the chimney is straight it is simply a matter of assembling the system chimney and feeding it into the brick stack (special winching equipment may be necessary if the components are heavy). Care is needed to ensure each joint of the system chimney is tightly locked together and does not loosen during the installation. The system chimney will need to be supported as detailed in the chimney manufacturer's instructions. This may necessitate breaking into the stack to fit support brackets and to centralise the system chimney.

With the system chimney in place it is possible to back-ventilate the void between the system chimney and brickwork either via directly from outside ((Fig.10, point (a)) or from a ventilated arrangement from the building ((Fig.11, point (b)), but not both. Ideally the ventilation air should be ducted in from outside the building (Fig.10 point (a)). Alternatively, if air is taken from the room the appliance is situated in, through a ventilated register plate (Fig.11 point (b)), this air has already been heated and therefore reduces the overall efficiency of the building and adds to the heating costs. A high level weatherproof vent should be provided in the chimney stack above the thatch, this will allow heated air to escape and stop the build-up of heat within the brickwork of the chimney stack (Fig.13 point (c)). A camera access point should be provided to allow inspection of the system chimney and any joints.

Adding a system chimney within a straight brick stack is a reasonably straightforward project, however if the existing chimney has offset a whole new set of problems are created. In order to comply on a single brick stack with thatch tight up to the brickwork of the stack, a system chimney with a known Gxx distance to combustibles is required. The system chimney is unlikely to follow offsets or bends within the existing chimney stack. The chimney within the living area of the dwelling up to the bedroom ceiling can be relined using one of the traditional lining techniques such as a suitable twin wall flexible lining, cast in-situ concrete lining or breaking into the stack and adding a clay, refractory concrete or pumice lining, making sure it is of the same diameter as the system chimney flue. At the bedroom ceiling level you will need to break into the brick stack.

The system chimney should then be sealed to the traditional lining system. Depending on the type of systems used a closure plate and support brackets will be required. An air vent between the loft space and the void between the system chimney and brickwork should be provided together with a high level vent in the chimney stack above the thatch to provide back ventilation. It would also be good practice to provide an inspection hatch in the stack within the loft space so the integrity of the system chimney can be inspected during maintenance checks on the combustion system. (Fig.12).

Fig 10.

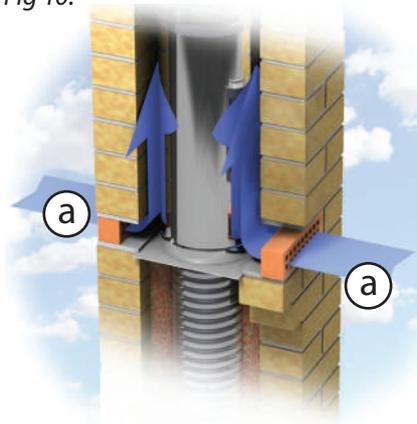


Fig.10 (Above) **Air taken from directly outside** - Air vent located on the outside of external chimney

Fig.11 (Below) **Air taken from the same room as the appliance** - Ventilating arrangement from the building - through ventilated register plate

Fig 11.

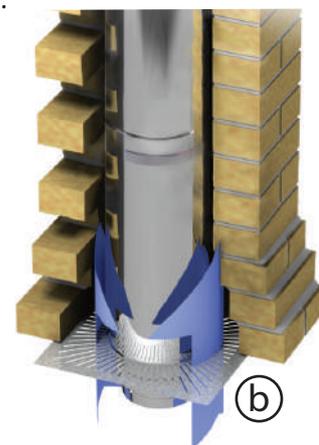


Fig.12 (Near right) Air vent and inspection hatch within the loft space -
 For ventilation and access during maintenance - used in both scenario (a) & (b)

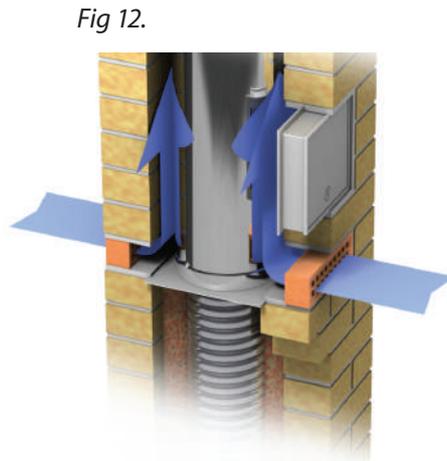
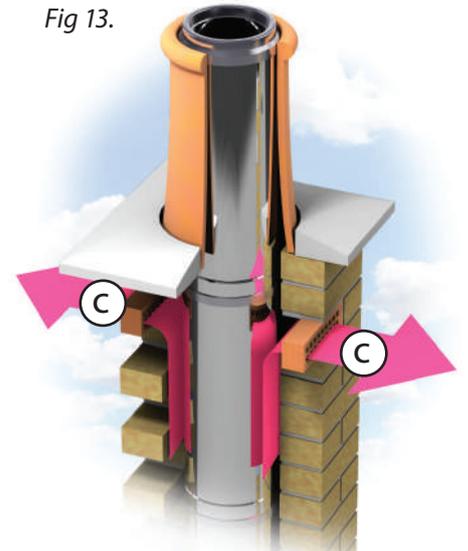


Fig.13 (Far right) High level vent -
 stops build-up of heat in both scenario (a) & (b)



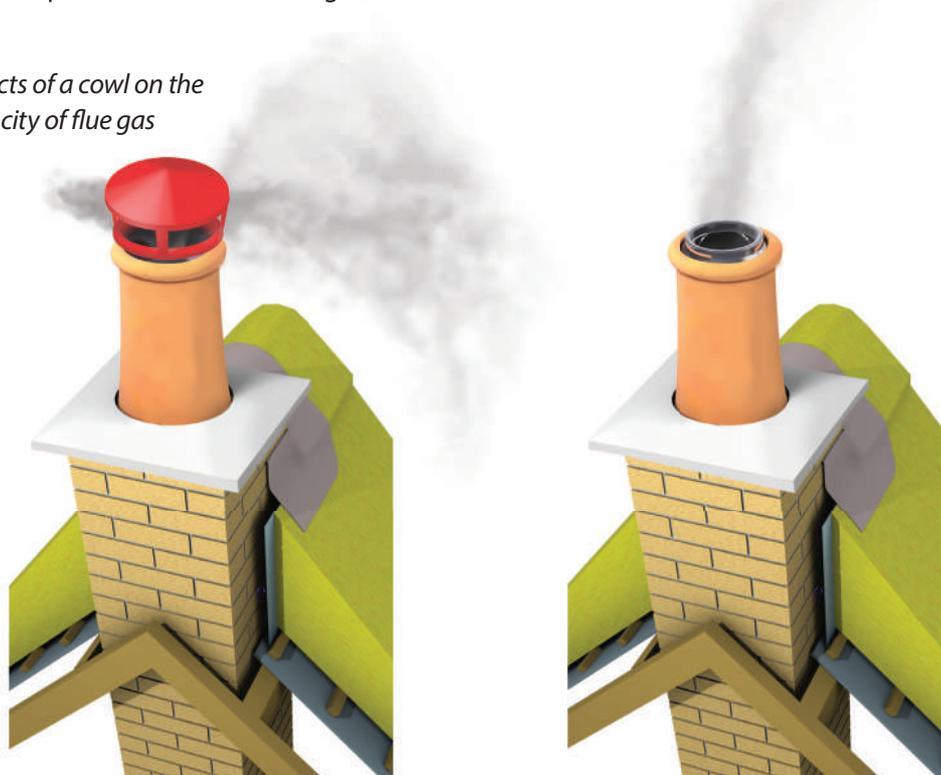
4.6 Termination

As part of any solid fuel installation, it is important to ensure the requirements of J2 of ADJ are adhered to in terms of adequate provision for the discharge of products of combustion to the outside air. The use of terminal fittings is becoming an ever more popular option for use with chimney systems, with their ability to protect the chimney from rain ingress, bird nesting and anti-downdraught performance conditions.

HETAS does not generally recommend the use of covered terminals in a system chimney up to 200mm in diameter, due to the issues with significantly reducing the exit velocity of flue gases. This is particularly important in thatch property installations; where ejected embers have the ability to be ejected from the terminal at a horizontal or downward angle, increasing the risk of ignitable embers coming into direct contact with the ignitable thatch materials below.

In thatch properties, the effects of obstructing the exit velocity of the flue gas from the cowl can be clearly seen, where the flue gas exit velocity hits the underside of the terminal, losing its vertical momentum and the flue gases being influenced by slight wind pressure. Ignited embers within the flue gases have a much easier route to the ignitable roof surface below, and thus increase potential risk of ember ignition.

Fig.14 The effects of a cowl on the exit velocity of flue gas



4.7 Chimney Cowls

There are some situations however where weather or other conditions dictate the performance of the installation, and it is the installers responsibility to ensure an appropriate risk assessment is undertaken to determine whether a chimney cowl being present will override the risks of ignitable embers coming into contact with the thatch, i.e. where a low stack height is present.

This is particularly the case where known continued nesting from birds inside the chimney is being experienced. Bird nests that are not appropriately dealt with during appropriate sweeping/servicing schedules can lead to an increased risk of becoming ignited from the hot flue gases produced, which in turn can release high energy embers that can be emitted from the terminal and onto the ignitable roof surface below.

When selecting a suitable chimney cowl, those that do not impede the efficient and safe discharge of the flue gases should always be considered. It is recommended that only those terminals that do not inhibit the movement of flue gases are used. There are particular bird guards available on the market that remain open on all sides, and therefore do not prohibit the exit of flue gas from the terminal.

It should be noted that some chimney manufacturers insist on having a cowl over their liner to help protect the liner from the effects of corrosion. In these instances, the liner manufacturer should be consulted to ensure the installation is within the requirements of any warranties offered.

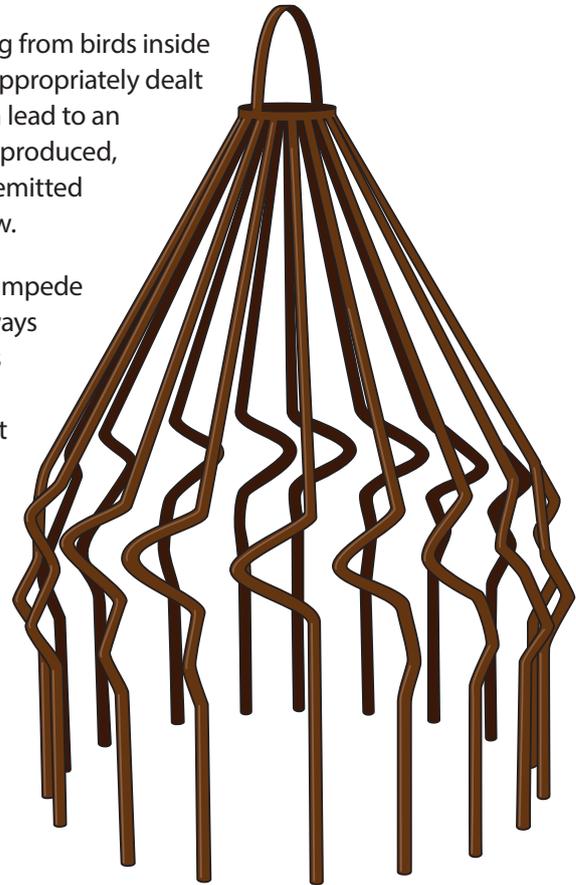


Fig.15 An example of a bird guard which is open on all sides to allow flue gas to freely pass through it

5.0 COMMISSIONING, HANDOVER, MAINTENANCE & APPROPRIATE FUELS

As with all solid fuel burning appliance installations, it is important to ensure that the installation is appropriately commissioned to confirm the integrity of the flue and to check that the chimney has sufficient draught for the products of combustion to be drawn up the flue and emitted safely into outside atmosphere.

A flue draught reading should be undertaken at the time of commissioning of all solid fuel thatch roofed installations, to confirm the required flue draught is in line with the specified range provided by the appliance manufacturer. Too high a draught may result in overfiring of the appliances, and is especially important in thatch installations where larger ignited embers from the fire bed can be drawn up the higher than normal flue streams and be emitted from the terminal.

In circumstances whereby the flue draught recorded is outside of the tolerances stated by the appliance manufacturer, a flue draught stabiliser may be required to better regulate the flue draught and keep a constant flow of flue gases with the least possible variation as required for safe and efficient combustion.

5.1 Appliance Operation

The appliance should at all times be operated in conjunction with manufacturer operating instructions, ensuring the consumer is made aware of the following:

- The initial lighting of the appliance, ensuring that the firebox does not become overloaded with fuel during lighting. It is advised that appropriate kindling/firelighter be used during the ignition stages to reduce stray embers being evacuated up the chimney and onto the ignitable roof above. Newspaper/paper and cardboard should be avoided where possible.
- Appropriate setting of the relevant air controls to avoid over-firing and correct operation of the appliance in line with manufacturer stated operating instructions. The user should be shown how to use the appliance correctly as part of any servicing scheduling.
- Relevant refuel procedures, including refuel times to maintain heat output and ensuring during refuel that any appliance doors are opened gradually as to not allow instant high levels of air to disturb combustion products contained within the fire bed
- For closed appliances, the consumer should be informed to never operate the appliance with either the appliance door or ashpan door open as this may cause overfiring

Common cases occur due to the overfilling of the appliance chamber during initial lighting of the appliance, and as the fuel slowly combusts and deteriorates, logs have the potential to fall/roll which may disturb hot embers within the fire bed, getting swept into the flue gas stream and ejected from the chimney terminal. Consumers should always be advised never to overfill the appliance chamber with fuel, and to gradually open the appliance door during the refuel process as to not disturb the hot bed of embers from high quantities of incoming air.

It is important to note that some appliance manufacturers instructions provide guidance to users that to reduce smoke emission during the refuel process, the fire can be boosted by leaving the door ajar or opening the air controls fully. It is important that this process should be undertaken carefully, in full attendance during operation, with the door/air controls opened in small increments, as to not allow an instant high level of air to disturb embers within the fire-bed.

The fuel should never be disturbed using a poker, as again this can lead to increased risk of disturbed ignitable embers being drawn up the flue to outside atmosphere, and potentially the ignitable roof surface.

5.2 Service & Maintenance

As with all solid fuel appliance installations, it is vitally important for any commissioning or handover procedures from the installer to ensure that the consumer is reminded of the importance of routine maintenance and servicing protocols in keeping the chimney/flue way clear of soot deposits which may over time cause blockage and increase the risk of spillage or a chimney fire.

It is important that the relevant maintenance schedules are in place, ensuring the chimney is swept at least twice a year when burning wood, importantly before any periods of prolonged shutdown of the appliance, and at least once a year if burning approved smokeless mineral fuels.

5.3 Appropriate Fuels

The consumer shall be reminded to ensure only appropriate fuels are burned for the particular appliance, and that only well-seasoned wood logs are burned in line with the appliance manufacturer's recommendations, with a moisture content below 20%. The Woodsure Ready to Burn quality mark is an assurance that the fuel purchased is adequately seasoned, prolonging the life of both the chimney and appliance and ensuring the risk of soot build up and flue blockage is minimised.



Look out for the Woodsure Ready to Burn certification mark on the front of fuel packaging, or visit www.woodsurre.co.uk for more information.

6.0 FURTHER INFORMATION

Approved Document J & regional equivalents

Downloadable from:

UK: www.gov.uk > search for "Approved Document J"

Wales: www.gov.wales/building-regulations-approved-documents

ROI: www.housing.gov.ie > search for "Technical Guidance Document J - Heat Producing Appliances"

Northern Ireland: www.finance-ni.gov.uk/publications/technical-booklet-1

BS EN 15287-1

Purchasable from: shop.bsigroup.com

Dorset Model for Thatched Buildings

The Dorset Model was revised for 2009 after ten years as the main guidance for extensions and new buildings with thatched roofs that are within 12m of a boundary. The Dorset Model is prescribed in Approved Document B of the Building Regulations when dealing with issues of external fire spread.

Please go to www.dorsetcouncil.gov.uk and search for "The Dorset Model".

This guide is provided to help explain the complexities of England and Wales Building Regulations Approved Document J with regards to the different requirements when dealing with combustible roofs. The installation of both chimneys and heating appliances is governed by Building Regulations and British Standards. It is therefore the responsibility of the specifier, installer and user to ensure the products used and installation as a whole meets these requirements. This guide is provided to help explain only some of the requirements of the Building Regulations, and is not a substitute for them.

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