

# SHEDSTOVES.CO.UK 01302 742520

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## 1. HOW TO KEEP YOUR SHED OR BOAT WARM

We offer three opportunities to keep your shed and or boat warm-:

**WOOD / MULTIFUEL STOVES.**

**WOOD PELLET STOVES.**

**OIL FIRED STOVES.**

EACH OF THE THREE OPTIONS HAS ITS PROS AND CONS.

### **SOLID FUEL / WOOD STOVES**

Heat up quickly, have a fantastic flame picture, can be used to heat food and water, offer a high degree of simplicity and reliability, with no electrical consumption.

#### **ON THE OTHER HAND**

They need regular attention, good wood / fuel logistics - storage, they are not automatic and there is also an extra degree of danger which needs to be carefully and correctly addressed.

### **WOOD PELLET STOVES**

Heat up quickly.

**Can be timed on and off automatically. (Maker dependant)**

**Can control temperature automatically. (Maker dependant)**

Can run for long unattended periods via integrated pellet hopper. (Maker dependant)

Have blown air combustion making flue's slightly easier.

#### **ON THE OTHER HAND**

They need an electrical supply.

They have a high degree of electronic and mechanical content. (Critical spares should be carried)

[http://www.oilstoves.co.uk/webdocs/articles/Introduction\\_To\\_Pellet\\_Stoves\\_&\\_Boilers.pdf](http://www.oilstoves.co.uk/webdocs/articles/Introduction_To_Pellet_Stoves_&_Boilers.pdf)

### **OIL FIRED STOVES**

Provide constant steady temperature.

Need very little maintenance.

#### **ON THE OTHER HAND**

The price of oil is constantly changing.

The flame picture is not as good as a wood stove.

### **FITTING SOLID FUEL / WOOD STOVES**

Fitting appliances into sheds needs careful consideration.

There are several problems mainly associated with the chimney, fireplace and hearth design and the clean air act.

If you live in a smoke control zone you would need to fit an appliance approved to burn wood in a smoke control zone, if you are unsure check with your local authority.

Oil Stoves and Wood Pellet Stoves in general do not produce flue gas temperatures in excess of 260 deg C and in theory they can be fitted with a class two flue which is designed to take flue gas temperatures not exceeding 260 deg C, if you want to fit a wood pellet appliance we would suggest that you do use a class 1 flue, if you want to fit an oil fired stove check with the manufacturer re the flue gas temperature and if allowable we can supply suitable class 2 flue systems.

Although it is a grey area, Pellet stoves are subject to the smoke control act where as oil stoves are not.

## **MANUFACTURERS INSTRUCTIONS**

Manufacturers installation information should be followed and if the appliance manufacturer does not give guidance on how to fit the appliance into a shed or mobile home then it should **not** be fitted, if you are unsure write to the appliance maker for guidance and make sure you get the guidance in written format.

## **2. CHIMNEYS BASICS**

Solid fuel appliances need class 1 chimney's which are designed to deal with flue gas temperatures above 260 deg C.

Class 1 chimneys can be of lined, masonry construction or of prefabricated insulated metal construction.

The job of the chimney is two fold-:

1. To safely remove the products of combustion (SMOKE) and protect surrounding materials from the effects of high temperatures.
2. To generate suck (VACUUM) to provide the fire with an adequate supply of air.

The power, (*suck or vacuum the chimney can develop*) depends upon the following-:

THE HEIGHT.

THE POSITION OF THE TERMINAL RELATIVE TO OTHER, LOCAL, OBJECTS

THE DIAMETER.

THE TEMPERATURE OF THE GASSES IN IT. (Lining and insulation may come in to this)

THE RESISTANCE OF THE INNER SURFACE OF THE CHIMNEY.

THE AVAILABILITY OF ADEQUATE VENTILATION.

THE HEIGHT ABOVE SEA LEVEL

THE INTEGRITY OR AIR TIGHTNESS OF THE CHIMNEY

Any bend in any part of the chimney or roughness on the internal chimney wall will slow down the velocity of rising gasses and reduce the effectiveness of the chimney.

Any slight reduction in the flue gas temperature will reduce the chimney vacuum or pull, hence when the stove is slowed down for all night burning, as the flue gas cools down the chimney vacuum reduces and as the chimney vacuum drops, the stove may well go out. This problem is highlighted even more during very cold weather when the chimney can cool down even faster. With a well-designed chimney system flue gas temperature can be maintained as high as possible ensuring a steadier and consistent draw or vacuum.

BEWARE, no one can guarantee that a chimney will work.

### **CHIMNEY HEIGHTS - TERMINAL POSITIONS**

It is not always possible to do this but always try to plan the installation so that the flue comes out of the roof at the highest point.

To keep the flue as warm as possible, try to keep the flue internal as far as possible.

Fig 1 shows a pitched roof with trusses.

Fig 2 shows a pitched roof with out trusses.

In Fig 1 the weight of the chimney is taken by Item 5.

In Fig 2 it may be necessary to use a special structural item 7 which will need to be fabricated on site.

When going through a wooden roof, remember that the outer skin of the twin wall must be 50mm away from any combustible material.

We have 25mm high-density compressed vermiculite boards, which can help add an extra layer of safety if required.

For corner installations we have pre fabricated corner fireplaces designed to provide safe

clearances and a quick job.

#### **TERMINAL TYPES**

Chimney terminals are designed to do a variety of jobs: -

To stop rain coming down the chimney.

To stop birds nesting in the chimney

To stop downdraft, these consist of two basic types static and dynamic.

Static cowls do not move there are a massive variety of them from H cowls to Vedette cowls, which comprise of a series of concentric tubes.

Dynamic consist of two types Rotary and Swinging, rotary spin in the wind via a series of aerofoil fins which generate a vacuum which sucks air up the chimney and swinging just swing into the direction of the wind and generate an updraft via the principle of swept venturi.

Vortexing is a phenomena, which creates a negative pressure on one side of the house causing air to be sucked down a chimney, there is no known easy cure for it.

The symptoms of vortexing are easily recognised, open a door or window and if air can be felt to be drawn out of the house, instead of coming into the house in the form of a draft, vortexing is occurring.

### **3. CHOOSING A STOVE**

In almost every case, it will only be possible to erect a relatively low flue in your shed, this means that the flue will not generate a high vacuum and consequently restrict the choice of stove which can be used.

Suitable stoves in the Bubble portfolio would be:-

Corner Bubble                      Oil or Solid Fuel versions.

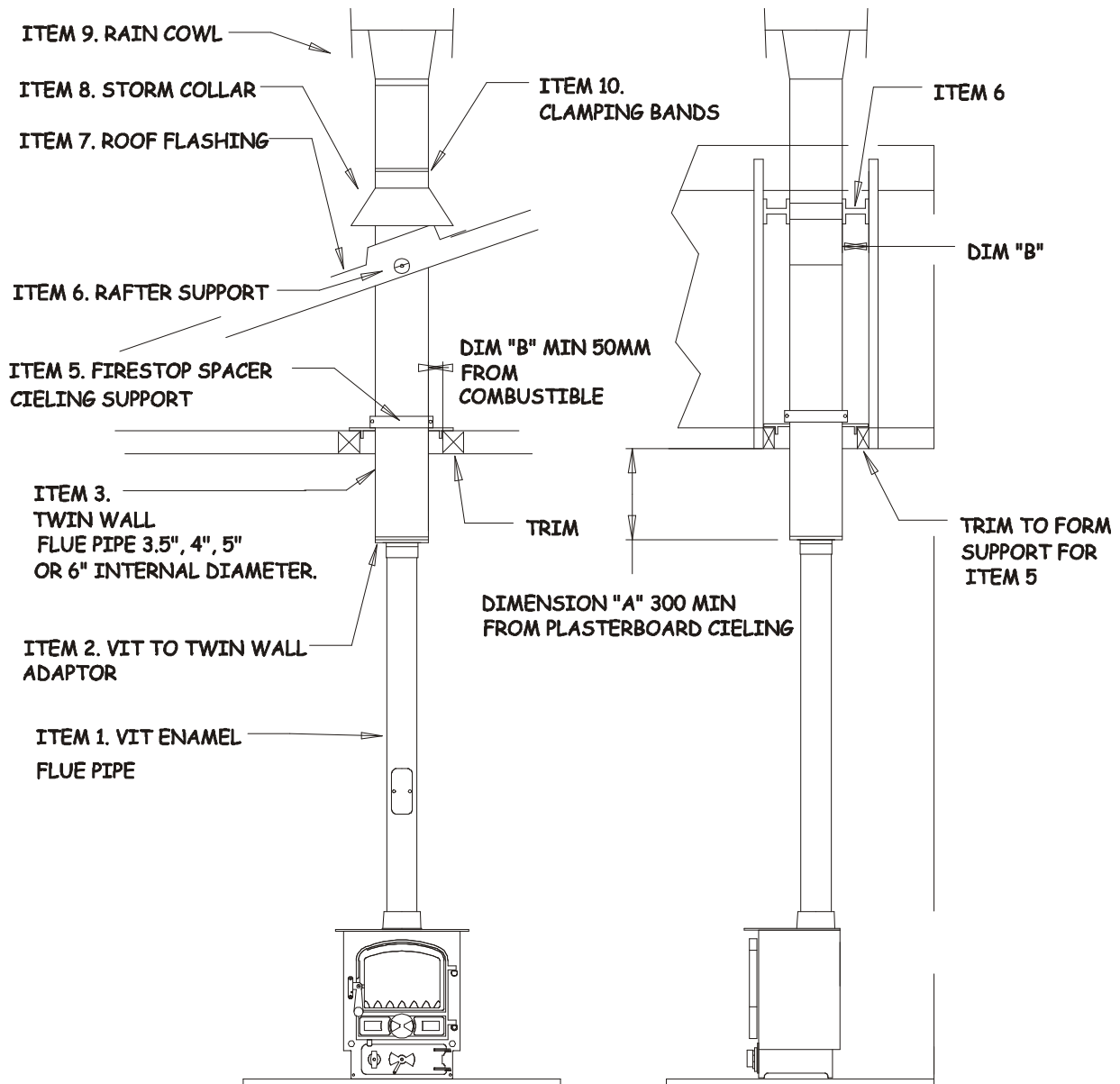
Bubble No 1                        Oil Fired

Bubble No 1                        Solid Fuel Fired

For those who want to heat radiators or hot water or both, we have a variety of boiler version stoves in both oil and solid fuel.

Stoves with large grate areas or long air inlet ducts tend to need a high chimney vacuum and generally are not suitable for use in sheds, if you are in any doubt always consult the manufacturer of the product.

## FIG1 SHED WITH RAFTER ROOF



### ABOUT FIG 1

Fig 1 shows all the components you will need when building a chimney through a rafter roof construction.

If you have thick insulation in the roof then you would need to fit an attic insulation shield, which is a steel tube, designed to keep the insulation at a safe distance from the twin wall flue pipe.

### ITEM 1 PRIMARY FLUE

The primary flue is the first pipe, which comes off the appliance, in some cases it can be made from vitreous enamel and in other cases can be fabricated steel tube or stainless steel tube. See fig 3 for examples

### ITEM 2 SINGLE TO TWIN WALL ADAPTOR

Is the adaptor, which takes the single wall flue pipe (primary flue) into twin wall flue pipe

### ITEM 3 TWIN WALL FLUE PIPE

Twin wall flue pipe is the secondary flue, which can be supplied in straight lengths, tee pieces,

elbows, adjustable lengths, inspection door lengths etc.

**ITEM 5. FIRESTOP / SPACER CHIMNEY SUPPORT**

This is a flat steel plate with bent spacer tabs, which are designed to keep combustibles at a specified distance from the outer edge of the flue pipe. The plate is fastened to the rafters and a clamp band is fitted to the chimney designed to take the weight of the chimney above.

**ITEM 6 RAFTER SUPPORT BRACKET**

Where the twin wall passes through the rafter's a rafter support bracket is fitted to stop the chimney moving in strong winds.

**ITEM 7 ROOF FLASHING (DECK FLANGE ASS FOR BOATS)**

There are several different types of flashings all designed to be used in different applications.

**ITEM 8 STORM COLLAR**

The storm collar is fitted above the roof flashing and is designed to shed excessive rain from the flue pipe before it gets to the flashing.

**ITEM 9 RAIN COWL OR TERMINAL**

Terminals can come in a variety of different types normally we would use a standard rain cowl.

**ITEM 10 CLAMPING BANDS**

Are fitted at each twin wall chimney joint. On some elbows additional self-tappers are used to stop the joints rotating away from their intended position.

**ITEM 11 WALL SUPPORT BRACKETS**

Where possible chimneys should be supported with appropriate brackets, there are a variety of these but generally they fall into three main types-:

BRACKETS FOR SINGLE SKIN FLUE PIPE

INTERNAL BRACKETS FOR TWIN WALL FLUE PIPE

EXTERNAL BRACKETS FOR TWIN WALL FLUE PIPES

**ITEM 12 EXTERNAL SUPPORT KITS**

Roof support kits for extended height twin wall flue pipes comprise of a split bracket which fits around the flue pipe and three tie bar tubes which fasten to the bracket and the roof offering a three point support against wind effect on long, above roof extensions.

Note that the external brackets are made from Stainless Steel

**ITEM 14 ADJUSTABLE WALL SUPPORT**

This is a substantial bracket used for supporting the 90 or 45 degree tee piece.

**ITEM 15 ADJUSTABLE TWIN WALL**

Twin wall flue pipe is available in adjustable lengths.

**ITEM 16 WALL SLEEVE**

Wall sleeves are required to provide a clean accurate conduit for the twin wall to go through. If the twin wall is used to go through wooden or combustible walls then a large dia sleeve is required to act as a fire stop spacer.

**ITEM 17 TRIM PLATE**

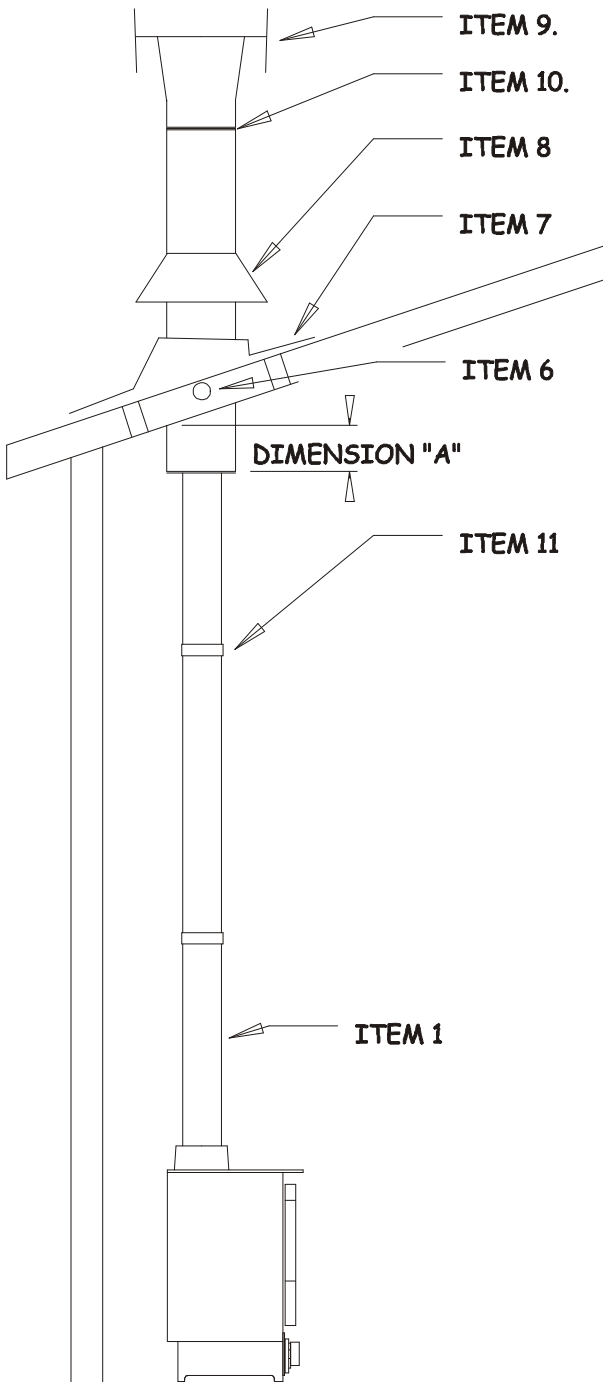
Trim plates are required to finish off the wall entry and exit points.

Where twin wall passes through wooden or combustible walls, special over size trim plates will be required.

**ITEM 18 DECORATIVE FILLER (MAINLY ON BOATS)**

Circular trim or fillet to improve the look of the transition from single skin to twin wall flue pipe.

**FIG 2 SHED WITH PITCHED OR FLAT ROOF**



**ABOUT FIG 2**

On roofs with no rafters a different approach is needed for chimney support and here we can use the system, which we have developed for boats, which requires the flashing to be a structural component fabricated to suit the particular application.

This means that the structural flashing / support can be adjusted to suit the roof angle; it can be used on different angles from horizontal to 60 deg.

If the shed roof is covered in a combustible material, the chimney terminal must always be a

minimum of 600mm above it and in some cases additional fire protection would be required to prevent sparks or burning debris, emitted from the chimney terminal, igniting, staining or melting the roof material.

Shed stove users should pay particular attention to this problem and make sure that the products of combustion from fuel burned on the appliance will not cause burning debris to be emitted from the chimney terminal.

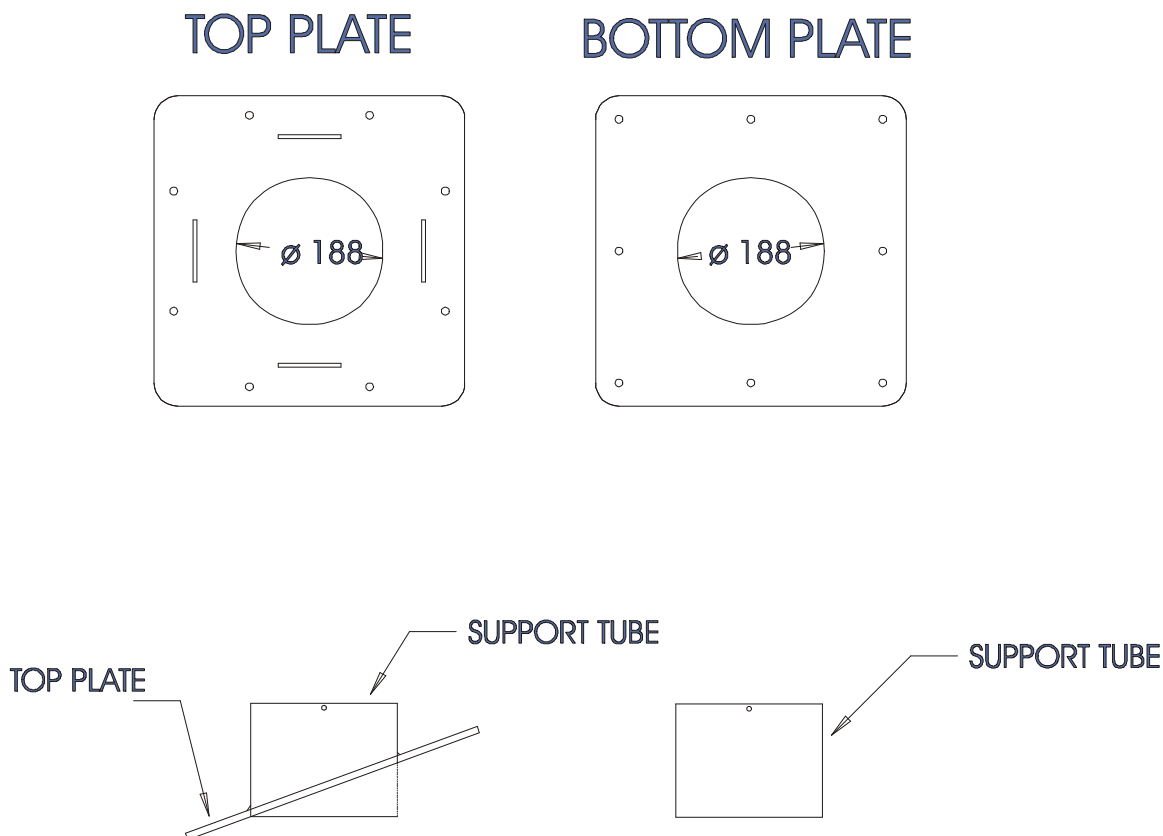
Dimension "A" must always be 300mm.

Care should be taken to ensure the single skin flue pipe is kept 600mm from combustible materials, where this is not possible, suitable heat shields must be used.

Heat shields can be made from 1mm steel plate placed in between the flue pipe and the combustible material.

After every installation make sure that the appliance is fired up to a high temperature and check all combustible material surface temperatures are safe.

### FIG 3 STRUCTURAL FLASHING / SUPPORT ASSEMBLY



#### ABOUT FIG 3

The chimney system has to be supported against the effects of wind on the exposed external section, coupled with this it also has to be supported vertically so as not to transmit the total vertical weight, in a downwards direction on to the stove or appliance.

In a normal installation the components Item 5 and Item 6 shown in Fig1 would be used to provide this function, there are however situations in shed stove installation where it is not possible to fit these components and in this case another approach is required.

Fig 3 shows a strong fabricated steel flashing which has to be fabricated on site and is made



from the top plate welded to the support tube. In certain cases, where it is possible, the bottom plate can also be fitted providing even further support.

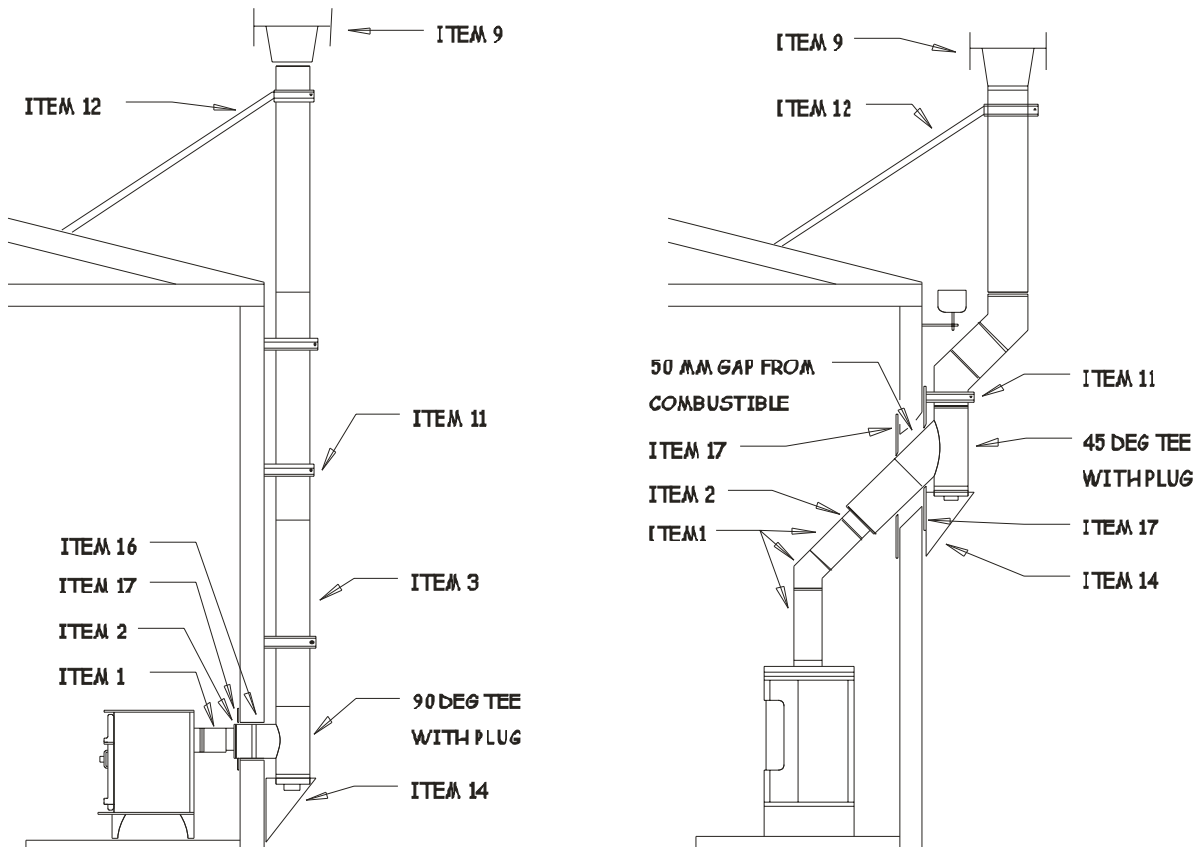
The top plate is laid on the shed roof and the tube is set up and marked out so as to stand vertical, the tube length is such as to accommodate a wide variety of roof angle.

The pair are welded together and any surplus cut off below the finished assembly.

The finished assembly is screwed to the roof and sealed with fireproof silicone, trimmers are positioned as per the distance slots at 50mm from the external surface of the twin wall flue pipe, use stainless screws and seal them with silicone. Paint the finished support flashing with a fireproof paint.

*The 188 dia illustrated in fig3 is suitable for 5" twin wall flue pipe.*

#### FIG 4 EXTERNAL FLUE ARRANGEMENT



#### ABOUT FIG 4

Fig 4 shows examples of external flue layouts using a 90 deg tee for a rear flue outlet or a 45 deg tee for a top flue outlet.

In each case if the wall is constructed from a combustible material the outer skin of the twin wall must always be 50 mm from the combustible.

This means that a metal wall sleeve (item 16) must be made to provide the 50mm fire stop distance, the gap can be packed with rockwool and a suitable trim plate used to seal internally and externally.

Tees can be ordered with a bottom plug to allow the chimney to be cleaned externally.

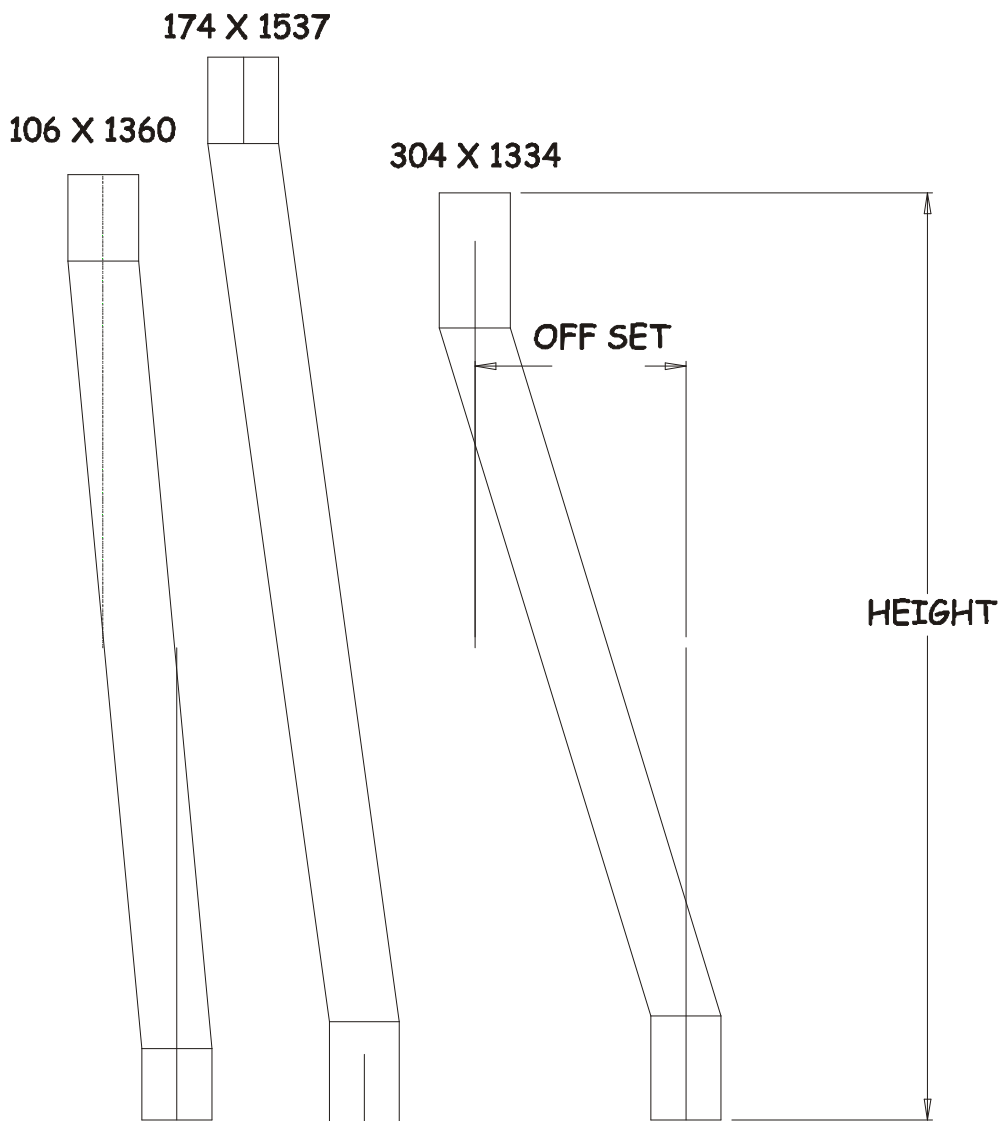
On the primary single skin flue pipe cleaning access pipes are advisable unless the appliance can be cleaned from the inside.

The tees are supported on an adjustable wall support item 14

We sell small flue brushes, which are ideal for this job.

## FIG 5 SPECIAL FABRICATED FLUE PIPES

Dia 88.9mm pipes illustrated.



### ABOUT FIG 5

If the flue has to be offset to clear an obstacle or meet a required position then the flue pipe can be offset as illustrated in fig3.

Note that it is important to keep the stove and chimney connections vertical, as illustrated. Class one flue pipes for solid fuel appliances must be made from 3mm wall thickness, steel tubes.

The pipes are classified by offset and height i.e. 106 offset x 1360 height.

As per fig 5, any bend should be as gentle as possible.

### HEARTH CONSTRUCTION AND TEMPERATURE RESISTANCE

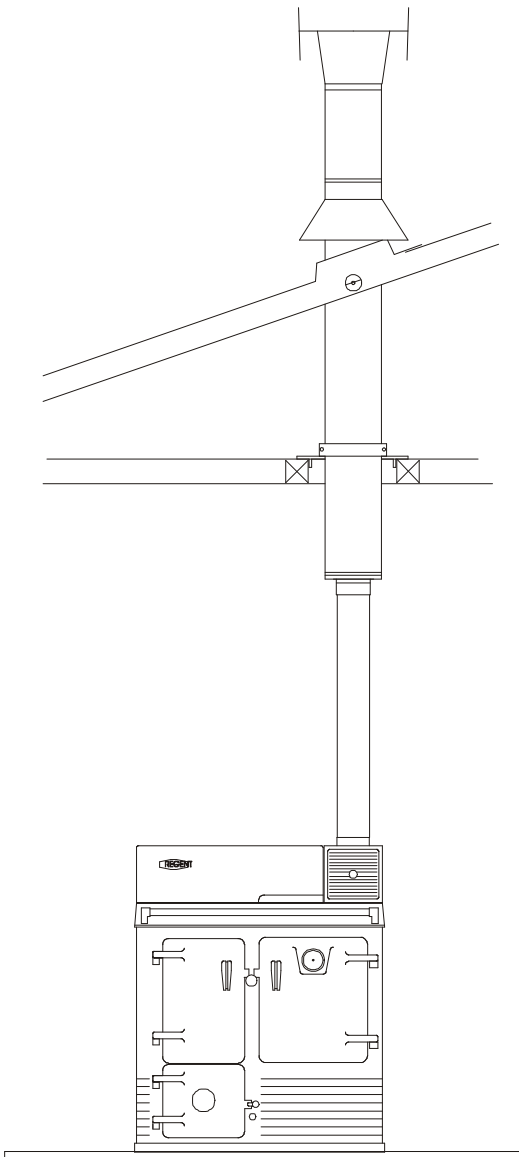
In sheds hearth design is of critical importance.

Manufacturers will specify their requirements for hearth construction, there is also adequate information provided in DOC J of the building regulations.

Some appliances need solid concrete hearths and others can be fitted on 18mm reinforced glass. There is a wide variety of suitable hearth material but generally it must be non-

combustible and extend in front and to the side of the appliance by 300mm minimum.

**FIG 6 RAYBURN REGENT COOKER**



**MORE INFO ABOUT RAYBURNS**

[http://www.oilstoves.co.uk/webdocs/articles/History\\_of\\_Rayburn\\_Solid\\_Fuel\\_Cookers.pdf](http://www.oilstoves.co.uk/webdocs/articles/History_of_Rayburn_Solid_Fuel_Cookers.pdf)

**4. BOAT INSTALLATIONS.**

Most installation of stoves in boats use the traditional deck flange, designed and conceived many years ago.

For reasons of safety, chimneys require a suitable firebreak from any combustible material; the traditional cast iron deck flange does not provide this.

The downward projecting socket can come into contact with the flue pipe and in extreme cases where solid fuel stoves have been left with ash pit doors open, the heat from the overheated flue pipe can conduct into the cast iron and cause a serious boat fire.

As can be seen in Fig 7 The Bubble chimney system -:  
Keeps the flue pipe away from the deck flange.

Creates a double fire stop from any foam or roof panel fixing battens or roof panels similar to that demanded by the current UK building regs.

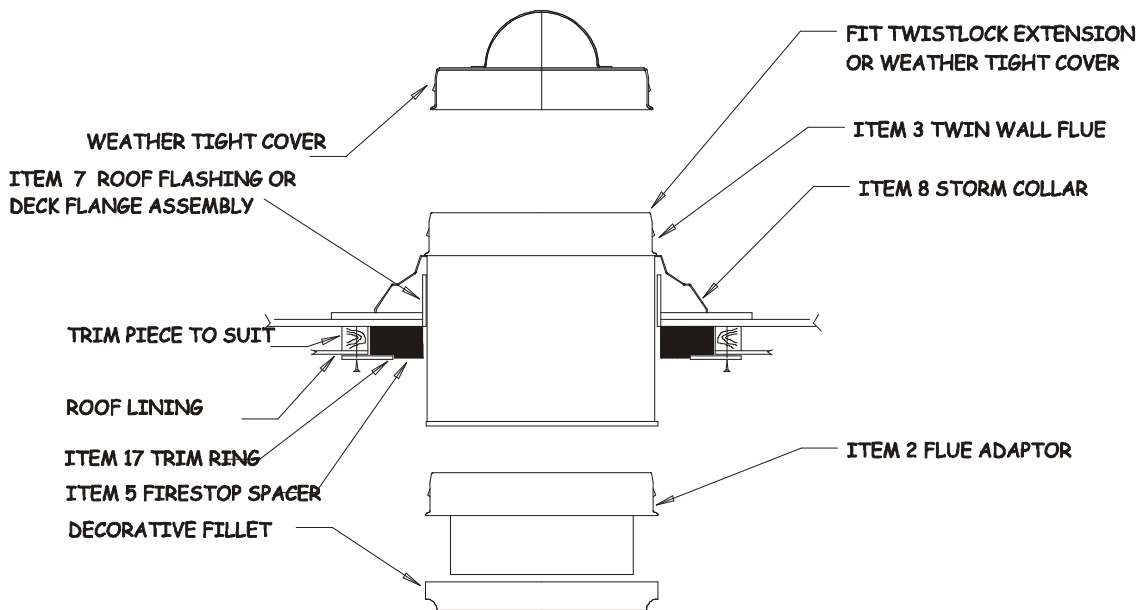
Bubble chimney systems comprise of all the components illustrated in figs 7 to 9.

Special primary flue pipes can be made to order as per the illustration in fig 5.

When fitting flue pipes in a boat never use a straight pipe at an angle.

This is bad practice, as the pipe expands and contracts it locks up in the deck flange and exerts massive pressure on the deck flange / roof structure of the boat and the flue outlet of the appliance, see fig 5 for details of how it should be done.

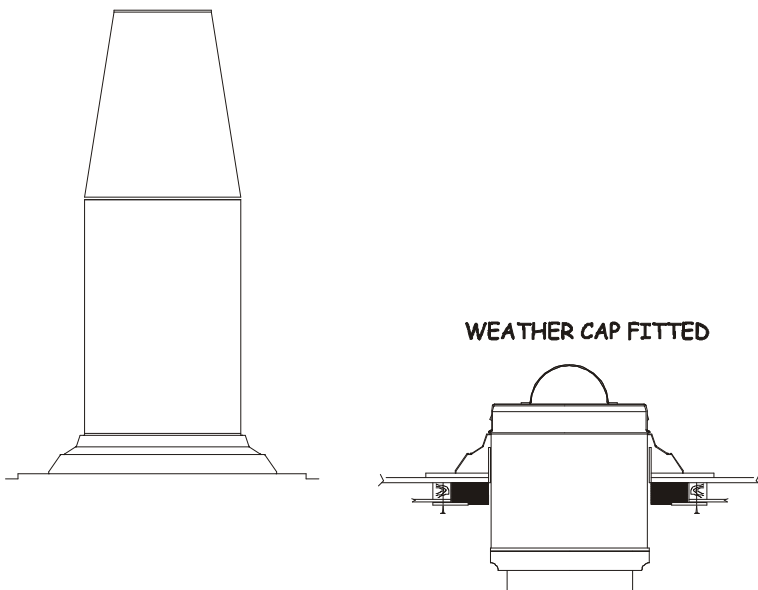
**FIG 7 COMPONENT DETAILS**



**FIG 7A FLUE FITTED TO A KATWIJKER WITH DYNAMIC TYPE SWEEP VENTURI COWL**



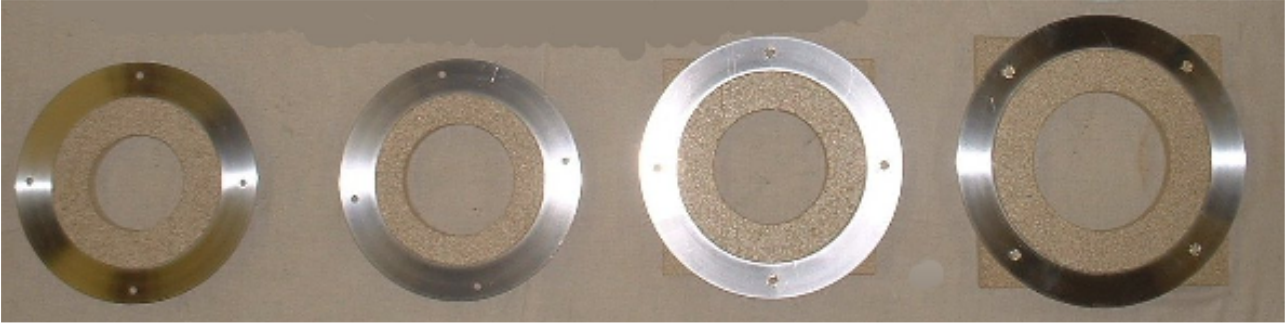
**FIG 8 EXTENTION AND TOP STUB  
300 EXTENSION AND TOP STUB FITTED**



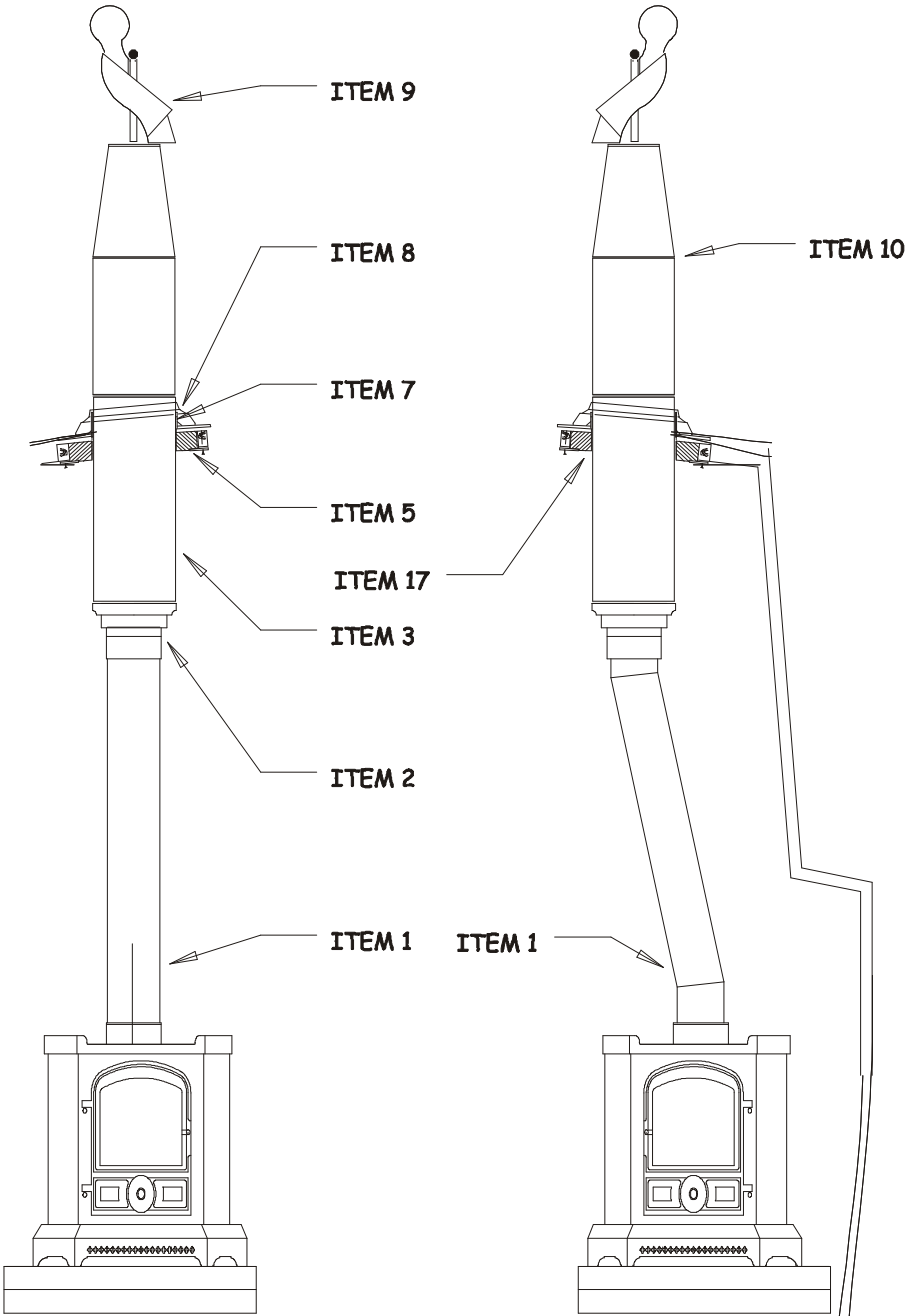
**FIG 8A BOAT STYLE DECK FLANGE COMPONENTS**



**FIG 8A BOAT STYLE INTERNAL TRIM RINGS AND FIRESTOP SPACERS**



**FIG 9 GENERAL ASSEMBLY**





## 5. EXAMPLES OF FIREPLACES AND STOVE INSTALLATIONS

Note that some of the following photographs illustrate chimneys, which are not correctly fitted.

### EARLY DELPH TILES



### DELPH TILED FIREPLACE UNDER CONSTRUCTION.



SHED STOVE IN FINISHED DELPH FIREPLACE



SHED STOVE IN TILED



Fireplace



**SHED STOVE ON GRANITE AND TILE FIREPLACE (INCORRECT FITTING)**



**CORNER SHED STOVE RUNNING IN MOBILE DISPLAY**



## CORNER SHED STOVE BOAT (INCORRECT FITTING)



Note that the inclusion of photographs of installations in this publication does not confirm technical suitability or correctness.

## FURTHER READING

### LINKS

[http://www.oilstoves.co.uk/webdocs/articles/Boat\\_Flue\\_Systems.pdf](http://www.oilstoves.co.uk/webdocs/articles/Boat_Flue_Systems.pdf)

[http://www.oilstoves.co.uk/webdocs/articles/Building\\_Regs\\_J\\_Combustion.pdf](http://www.oilstoves.co.uk/webdocs/articles/Building_Regs_J_Combustion.pdf)

[http://www.oilstoves.co.uk/webdocs/articles/Introduction\\_To\\_Pellet\\_Stoves\\_&\\_Boilers.pdf](http://www.oilstoves.co.uk/webdocs/articles/Introduction_To_Pellet_Stoves_&_Boilers.pdf)

[http://www.oilstoves.co.uk/webdocs/articles/Reduce\\_Your\\_Heating\\_Costs\\_27-06-08.pdf](http://www.oilstoves.co.uk/webdocs/articles/Reduce_Your_Heating_Costs_27-06-08.pdf)

[http://www.oilstoves.co.uk/webdocs/articles/Wood\\_Burning\\_Boilers\\_History\\_Eg\\_Grillon.pdf](http://www.oilstoves.co.uk/webdocs/articles/Wood_Burning_Boilers_History_Eg_Grillon.pdf)

[http://www.oilstoves.co.uk/webdocs/technical/Bubble/Bubble\\_Corner\\_Oil\\_Installation\\_Instructions.pdf](http://www.oilstoves.co.uk/webdocs/technical/Bubble/Bubble_Corner_Oil_Installation_Instructions.pdf)

### PRICE LISTS

<http://www.oilstoves.co.uk/prices.php>

### INSTALLATION AND USER MANUALS

<http://www.oilstoves.co.uk/techman.php?Bubble>

### SAFETY.

Safety issues are set out below.

### INSTALLATION / USE - CORRECT COMPLIANCE.

Any appliance must be installed and used in line with the installation and user instructions provided with it.

### FUMES - PROTECTION FROM.

There are 6 main causes of fume or smoke to leak from the appliance.

- The chimney is blocked or clock cold.
- There are too many bends in the chimney.

- The chimney is not airtight.
- Downdraughting or Vortexing is occurring.
- The Flue is not high enough to generate the required vacuum.
- A mixture of the above mentioned problems.

**Don't leave the appliance running overnight.**

**Make sure that a reliable and functioning carbon monoxide alarm is fitted in your shed.**

#### **FIRE - PROTECTION FROM.**

Fire can be caused by a variety of potential danger points and because of the space limitation in sheds this risk is ever present and must be assessed.

Assure yourself by carrying out radiation tests.

Run the stove and check out the temperature on all surrounding, adjacent or nearby combustible materials and make sure that they are adequately protected from the effects of heat radiation.

**Protection can be gained by the use of - :**

- Sheet metal heat shields and spacers.
- Heat resistant boards.
- Fireguards.
- Adequately designed hearths.

**Combustible materials can be- :**

- Wooden furniture.
- Curtains.
- Wooden panels or frames adjacent to the flue pipe.
- Carpet or flooring close to the appliance.
- Items near to the appliance, which could fall onto it and ignite.

#### **BURNS - PROTECTION FROM.**

During normal use, many parts of appliances and appliance chimney's can become too hot to touch.

**Always fit secure, suitable, fireguards and flue pipe heat shields.**

**When working on or near to stoves or chimneys ALWAYS USE heatproof gloves.**

**Most stove door glass panels conform to the requirements of BS 1945: 1971 and satisfies the heating appliance (Fireguards Safety) regulations 1991 but it does get very hot and must not be touched whilst the stove is running.**

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**ISSUE 2 27-10-14**