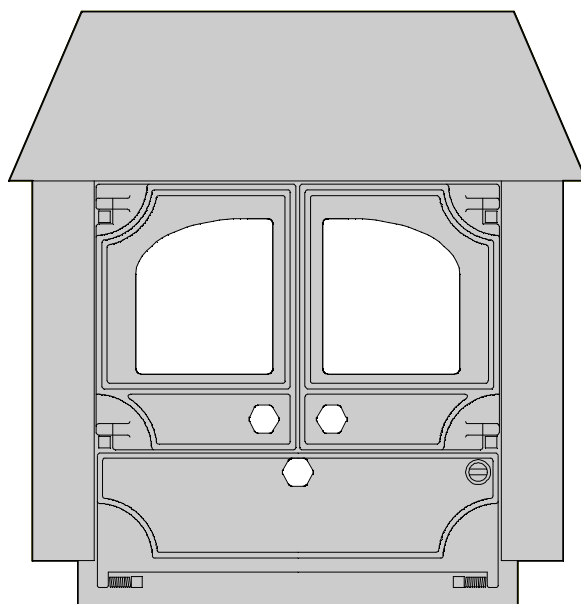


**Charnwood  
CW40B  
Multifuel Roomheater  
With Boiler**



**Operating  
and  
Installation Instructions**



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# **CHARNWOOD CW40B**

## **Operating and Installation Instructions**

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# OPERATING INSTRUCTIONS FOR THE CHARNWOOD CW40B

## GENERAL POINTS

Before lighting the fire check with the installer that the work and checks described in the installation instructions have been carried out correctly and that the chimney has been swept, is sound, and free from any obstructions.

**WARNING** There must not be an extractor fan fitted in the same room as this appliance as this can cause the appliance to emit smoke and fumes into the room.

If the appliance is fitted in place of an open fire then the chimney should be swept one month after installation to clear any soot falls which may have occurred due to the difference in combustion between the appliance and the open fire.

When using the fire in situations where children or infirm people are present please use a fire guard to prevent accidents. The fire guard should be manufactured in accordance with BS 6539.

This appliance has been designed to conform with BS.3378. It has obtained the approval of HETAS Ltd. (formerly DSFAAS Ltd.) for burning the fuels listed under the heading "Smokeless Fuels".

## FUELS

The following fuels may be burnt on this appliance. Please pay careful attention to the special points made with each type of fuel as they will help you to get the best from your fire. It must be remembered that only smokeless fuels may be burnt in smoke control areas on this fire. If you are not sure whether you are in a smoke control area, then please check with your Local Authority.

## Smokeless Fuels

HETAS Ltd. approval only covers the use of the following smokeless fuels on this appliance:

Ancit,  
Anthracite Large Nuts,  
Centurion,  
Extracite,  
Homefire,  
Maxibrite,  
Phurnacite,  
Sunbrite Doubles,  
Welsh Dry Steam Coal (Large Nuts).

Approval does not cover the use of other fuels either alone or mixed with the above fuels, nor does it cover instructions for the use of other fuels.

The above smokeless fuels are all suitable for use in smoke control areas.

## Coal

Housecoal doubles, trebles or cobbles may all be burnt. Do not use singles, small nuts, or coal dust

It is important that large size coal is used (ie. larger than 2" or 50 mm in size). The coal should be dry.

When burning bituminous coal a little extra care is needed. Please take note of the section "Special Points When Burning Coal", on page 5.

## Wood

Only dry well seasoned wood should be burnt on this appliance as burning wet unseasoned wood will give rise to heavy tar deposits. For the same reason hard wood is better than soft wood. Burning wet unseasoned wood will also result in considerably reduced outputs. The wood should be cut and split and then left to season in a well ventilated dry place for at

least one year but preferably two years before use.

## Peat

Ensure that the peat is well dried before use. Burning wet peat will give rise to heavy tar deposits and reduced outputs.

**PETROLEUM COKE IS NOT  
SUITABLE FOR USE ON THIS  
APPLIANCE, ITS USE WILL  
INVALIDATE THE GUARANTEE**

At first you may find it helpful to try several fuels to find the most suitable. If you are unable to obtain the fuel you want ask your supplier, or an approved fuel to suggest an alternative.

## DOOR OPERATION

Use the spanner type tool to open and close the doors. Turn the knob on the right hand door anti-clockwise to open and clockwise to close. When closing the doors do not push on the enamel with the tool as this can chip the enamel, instead push the doors on the door knobs.

## MULTIFUEL GRATE

Your Charnwood is fitted with a multifuel grate which enables solid fuel, wood and peat to be burned equally effectively.

The grate has two positions. One for solid fuel, the other for wood and peat. When in the solid fuel position ash can fall through the grate and into the ashpan. When in the wood position ash is able to build up on the grate as is necessary for effective wood or peat burning.

Movement of the grate from one position to the other is effected using

the tool supplied. The grate is put into the wood position by moving the tool in the direction of the arrow 'W' (marked on the handle of the tool) until the tool is vertical. The grate is put into the solid fuel position by moving the tool in the direction of the arrow 'C' until the tool is horizontal.

If a mixture of wood and solid fuel, or peat and solid fuel, is to be burnt then keep the grate in the solid fuel position.

## LIGHTING

Set the grate into either the wood position or the solid fuel position as required. Place some paper and dry kindling wood or fire lighters on the grate and cover with a small amount of fuel. Turn the thermostat control knob to the maximum setting and light the paper or fire lighters. Close the doors and allow the fire to burn until the fuel is well ignited then load with more fuel and adjust the thermostat to the required level.

On initial lighting, the fire may smoke and give off an odour as the silicon paint with which the firebox is painted reacts to the heat. This is normal and will cease after a short time. In the meantime the room should be kept well ventilated.

Before relighting the fire, riddle, remove any clinker from the firebed and empty the ashpan.

## CONTROLLING THE FIRE

The rate of burning and hence the output is controlled by the control knob on the left hand side of the appliance. This is linked to a thermostat which controls the boiler temperature. The number at the top of the knob is the number at which it is set. Some experimentation may be necessary to obtain the desired heat output.

There is also a manual secondary air

control which is located below the right hand side panel. When the arm is pointing forwards it is closed, when pointing to the right it is open. This control should be in the closed position when burning most smokeless fuels and in the open position when burning coal, wood, peat, anthracite, or homefire.

## RUNNING THE FIRE WITH THE DOORS OPEN

The fire may be run with the doors open. This will result in a reduction in efficiency and hence heat output, particularly to the boiler. The more reactive fuels, like coal, homefire, wood, and peat, will burn better when the doors are open than fuels like phurnacite, sunbrite and ancit.

For safety reasons use a spark guard and do not leave the fire unattended with the doors open.

## SYSTEM CONTROLS

The heating system controls may consist of time switches, room thermostats, outdoor temperature thermostats and thermostatic radiator valves in virtually any combination. These will work in conjunction with the thermostat control on the appliance. The thermostat on the appliance will simply control the temperature of the water coming from the boiler and hence the temperature of the radiators and domestic hot water. The automatic controls (other than thermostatic radiator valves) will switch the pump (and hence the radiators) on and off. Your installer will be able to explain the controls fitted to your system and how to operate them.

## ASH CLEARANCE

The ashpan should be emptied regularly before it becomes too full. The most convenient time to remove the ash is just before riddling the fire

since the ash will then be at its coolest. Use the tool provided to remove the ashpan.

Never allow the ash to accumulate in the ashpan so that it comes in contact with the underside of the grate as this will seriously damage the grate bars. Ensure that the air inlet damper is not prevented from closing by spilled fuel or ash.

Care should be taken to ensure that ash is cool before emptying it into plastic liners or bins.

To make ash removal easier there is a special **Charnwood ash carrier** available. This may be purchased from your supplier or, in case of difficulty, from ourselves.

## RIDDLING

When burning solid fuels riddling twice a day is usually sufficient. When burning wood or peat, ash should be allowed to build up and generally riddling every other day will be sufficient.

The fire should be riddled with all doors shut. Place the tool on the knob and rotate between the horizontal and the 45 degree position several times.

When burning wood or peat do not riddle all the ash into the ashpan, keep a layer about 12 mm (1/2 inch) thick on the grate.

Caution: when riddling the grate using solid fuel do not go beyond the 45 degree position as this can cause the grate to jam.

If jamming does occur then the fire should be allowed to burn for approximately half an hour before riddling the grate again as described above.

Too much riddling can result in emptying unburnt fuel into the ashpan and should therefore be avoided. Clinker should regularly be removed from the firebed.

After riddling, the grate should be put back into the solid fuel or wood

position as required (the tool should be horizontal for solid fuel or vertical for wood or peat).

## REFUELLING

Keep the firebox well filled (the fuel may be sloped up from the front firebars), but do not allow fuel to spill over the top of the front fire bars. Take care, especially when burning wood, that fuel does not project over the front fire bars or damage to the glass may be caused when the doors are closed.

## OVERNIGHT BURNING

Empty the ashpan, if necessary, and then riddle the fire if you are burning solid fuel. If the fire is very low then it may be necessary to add a little fuel and turn the thermostat control up to maximum for a brief period until the fire is burning brightly before filling with fuel. When burning wood use large logs overnight as they will burn more slowly than small ones.

If the central heating pump is off overnight then the thermostat may be left at the same setting for both day and night operation. If the central heating pump is on overnight then set the thermostat control to give the required level of heating.

Some experimentation may be necessary to find the setting most suitable for the particular fuel used and the draw on the chimney.

For overnight burning the fire doors must be closed.

To revive the fire, empty the ashpan if necessary, riddle, (when burning solid fuel), and turn the thermostat control knob to maximum. When the fire is burning well load on more fuel as necessary and turn the control knob to the desired setting.

When burning wood do not riddle but simply turn the air control to maximum until the fire picks up and then set the air control at the desired

setting and refuel as necessary.

## THROAT PLATE AND FLUEWAY CLEANING

It is important that every month the throat plate and all the appliance flueways are thoroughly cleaned. It is not necessary to let the fire out completely to do this.

The throat plate should be lowered using the tool. The method of doing this is shown in Fig. 1. Any sooty deposits should then be swept from the plate and into the fire. Using the tool provided the two boiler tubes should be cleaned as shown in Fig. 2.

More soot will be deposited on the throat plate and in the flueways if the appliance is run at low levels for long periods. If this is the case then more frequent cleaning will be necessary.

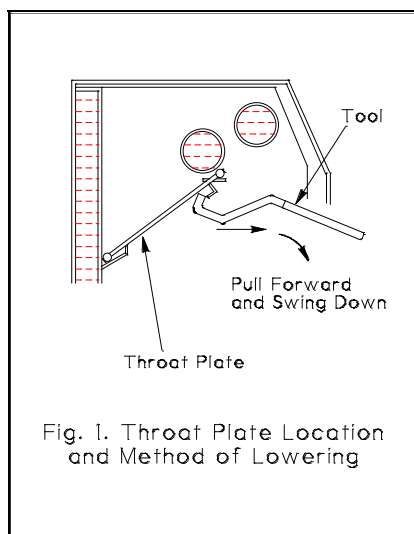


Fig. 1. Throat Plate Location and Method of Lowering

## SPECIAL POINTS WHEN BURNING COAL

When burning housecoal keep the secondary air control open all the time.

When loading the fire take care not to smother the fire, instead fill the firebox in two stages waiting between each stage for the flames to appear above the fire.

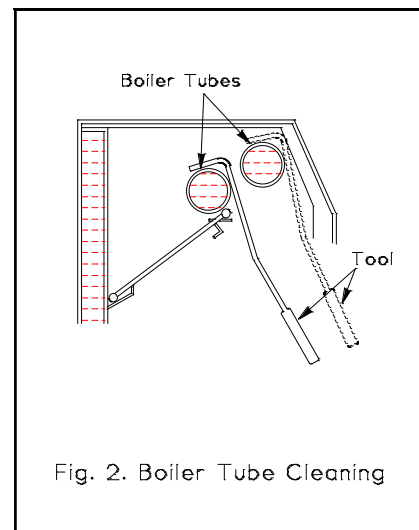


Fig. 2. Boiler Tube Cleaning

After a period of slumbering always turn the air control up to maximum and wait until flames appear above the fuel bed before opening the doors.

Burning coal will produce more soot deposits than other fuels, especially if the fire is run at low levels for long periods. It is therefore vital to clean the throat plate regularly.

## CLEANING AND MAINTENANCE

The appliance is finished in vitreous enamel. To clean the surfaces simply wipe over with a dry cloth. Abrasive pads and scouring cleaners must not be used as these will damage the finish. Care should be taken not to knock the enamel with hard objects as it will chip.

The glass in the doors is a zero expansion ceramic glass which will not crack due to the heat of the fire. Before cleaning the glass open the doors and allow them to cool. Clean the glass using a damp cloth and then wiping over with a dry cloth. Any stubborn deposits on the glass may be removed with a proprietary stove glass cleaner or ceramic hob cleaner. Some deposits on the glass may be burnt off simply by running the fire at a fast rate for a few minutes. Do not use abrasive cleaners or pads as these can scratch the surface which will weaken the glass and cause

premature failure.

Aerosol spray cleaners should not be used near the appliance whilst it is under fire.

If the fire is going to be out of use for a long period (for instance in the summer) then to prevent condensation, and hence corrosion, the thermostat should be left at the maximum setting and the main doors left ajar. It is also advisable to sweep the chimney and clean out the fire.

After long periods where the fire has been out of use, the chimney and appliance flueways should be cleaned before lighting.

For the fire to operate correctly it is important that the door seals are in good condition. Check that they do not become worn or frayed and replace them when necessary.

## CHIMNEY SWEEPING

The chimney should be swept at least twice a year. In some installations it will be possible to sweep the chimney through the appliance.

First remove the front firebars and the throat plate. Then sweep the chimney ensuring that soot is removed from all horizontal surfaces after sweeping.

In situations where it is not possible to sweep through the appliance the installer will have provided alternative means, such as a soot door. After sweeping the chimney the appliance flue outlet and the flue pipe connecting the appliance to the chimney must be cleaned with a flue brush.

Whilst the fire is out it is a good opportunity to clean any soot deposits from the boiler face, and also to scrape out any soot which may have collected in the rear throat plate brackets. A build up of soot in these brackets will prevent the throat plate from fitting correctly and can cause it to fall into the fire.

After clearing any soot from within the fire, replace the throat plate and the front firebars.

Different types of sweep's brushes are available to suit different flueways. For standard brick chimneys a wire centre sweep's brush fitted with a guide wheel is recommended. For prefabricated insulated chimneys the manufacturers instructions with regard to sweeping should be consulted.

## TROUBLE SHOOTING

### Fire Will Not Burn.

Check that:

- a) the air inlet is not obstructed in any way,
- b) chimneys and flueways are clear,
- c) a suitable fuel is being used,
- d) there is an adequate air supply into the room,
- e) an extractor fan is not fitted in the same room as the fire.

### Fire Blazing Out Of Control.

Check that:

- a) the doors are tightly closed,
- b) the thermostat knob is turned down to the minimum setting,
- c) the air inlet damper is closed (at the bottom left of the appliance), and that it is not prevented from closing completely by a piece of ash,
- d) a suitable fuel is being used,
- e) the door seals are in good condition.

### Fume Emission.

**Warning Note: Properly installed and operated this appliance will not emit fumes. Occasional fume from de-ashing and re-fuelling may occur. Persistent fume emission is potentially dangerous and must not be tolerated. If fume emission does persist then the following immediate actions should be taken:**

**A) Open doors and windows to**

**ventilate the room.**

**B) Let the fire out and safely dispose of fuel from the appliance.**

**C) Check for flue or chimney blockage, and clean if required.**

**D) Do not attempt to relight fire until cause of fume has been identified, if necessary seek professional advice.**

The most common cause of fume emission is flueway or chimney blockage. For your own safety these must be kept clean.

### Freezing

Do not light the fire if there is any possibility that any parts of the system may be frozen.

### Chimney Fires.

If the chimney is thoroughly and regularly swept, chimney fires should not occur. However, if a chimney fire does occur turn the control knob to the minimum setting, and tightly close the doors of the appliance. This should cause the chimney fire to go out in which case the control should be kept at the minimum setting until the fire in the appliance has gone out. The chimney and flueways should then be cleaned. If the chimney fire does not go out when the above action is taken then the fire brigade should be called immediately.

After a chimney fire the chimney should be carefully examined for any damage. Expert advice should be sought if necessary.

# INSTALLATION INSTRUCTIONS FOR THE CHARNWOOD CW40B

## HEALTH AND SAFETY PRECAUTIONS

Please take care when installing the appliance that the requirements of the Health and Safety at Work Act 1974 are met.

Some types of fire cement are caustic and should not be allowed to come into contact with the skin. In case of contact wash with plenty of water.

If there is a possibility of disturbing any asbestos in the course of installation then please use appropriate protective equipment.

There must not be an extractor fan fitted in the same room as the appliance as this can cause the appliance to emit fumes into the room.

There must be an adequate air supply into the room in which the appliance is installed totalling at least 100 square cm. (16 square inches) to provide combustion air. This is particularly necessary if the room is double glazed.

In addition to these instructions the requirements of BS:8303 and BS:6461 Pt 1&2; 1984 must be fulfilled. Local Authority Bylaws and Building Regulations regarding the installation of Solid Fuel burning appliances, flues and chimneys must also be observed.

## PERFORMANCE

The rated output for the CW40B is 3.2kW (11 000 Btu/hr) to the room and 7.5kW (25 500 Btu/hr) to water. These are the outputs obtained during testing in accordance with B.S.3378 burning the standard test fuel with the doors closed over a 4 hourly re-fuelling interval.

The heat output to the room is directly proportional to the heat output to water as shown in Fig. 3. This means that if the water heating load is less than the rated output then the room heating will be reduced by the same proportion. This must be borne in mind when calculating the heating requirements.

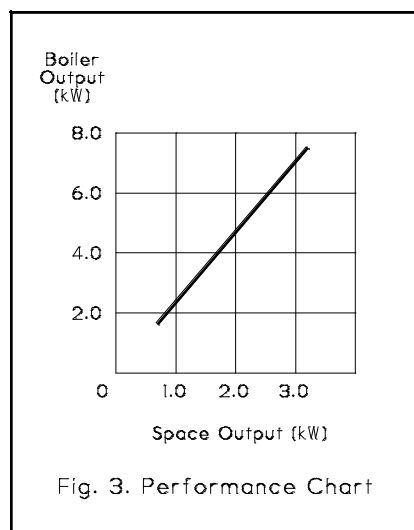


Fig. 3. Performance Chart

## CHIMNEY

In order for the appliance to perform satisfactorily the chimney height must not be less than 4 metres measured vertically from the outlet of the fire to the top of the chimney. The chimney should preferably be 175 mm (7 inches) or 200mm (8 inches) internal diameter or square with sides of 175mm or 200mm internally and **MUST NOT BE LESS THAN 150mm (6 INCHES) INTERNAL DIAMETER OR 150 x 150mm INTERNAL SQUARE.**

If an existing chimney is to be used it must be swept and checked, it must be in good condition, free from cracks and blockages, and should not have an excessive cross sectional area (e.g. greater than 250mm x 250mm).

If you find that the chimney is in poor condition then expert advice should be sought regarding the necessity of having the chimney lined. If it is found necessary to line the chimney then a lining suitable for Solid Fuel must be used.

If there is no existing chimney then a prefabricated block chimney or a twin walled insulated stainless steel flue to BS:4543 can be used either internally or externally. These chimneys must be fitted in accordance with the manufacturers instructions and Building Regulations.

Single wall flue pipe in vitreous enamelled steel, stainless steel, or cast iron is suitable for connecting the appliance to the chimney but is not suitable for using for the complete chimney.

If it is found that there is excessive draw in the chimney then a draught stabilizer should be fitted.

## HEARTH

The appliance must be installed on a fireproof hearth and must be situated at least 300 mm (12 inches) from any combustible material. The positioning of the appliance and the size of the hearth are governed by building regulations for Class 1 appliances. These building regulations state that the hearth must extend in front of the appliance by at least 300 mm (12 inches) and to the sides by at least 150 mm (6 inches). If in doubt as to the positioning of the appliance expert advice should be sought either from the supplier or the local building inspector.

## CONNECTIONS TO FLUES

There are several ways of connecting the appliance to the flue. These are illustrated in Figs. 4 to 6. Horizontal lengths of flue must be kept to a minimum and should not be more than 150 mm (6 inches) long. The sealing face of the flue collar should be coated with fire cement before fixing to the body of the stove using the two screws provided. The blanking plate should be removed, sealed with fire cement and refitted, care being taken to ensure that the screws are well tightened. All flue connections must be well sealed.

## SOOT DOORS

It is possible to pass a 16" diameter sweeps brush through the appliance, but in most installations it will be necessary to have a soot door to enable the chimney to be swept. This may be either in the brickwork of the chimney or in the register plate. Various types and positions of soot doors are shown in Figs. 4 to 6.

## CENTRAL HEATING SYSTEM

The central heating system must comply with BS:5449 part 1.

If the system is to be a combined heating and domestic hot water system then a double feed indirect hot water storage cylinder to BS:1556 part 1 should be used. In order to prevent the build up of scale and corrosion a suitable inhibitor should be used. The system must be correctly vented as shown in Figs. 7 and 8. The height differential between the header tank and the appliance must not exceed 15.2 metres (50 feet).

If all four boiler tappings are used then, if possible, diagonal pairs should be connected for domestic hot water and central heating. Where a common return is used an injector tee must be incorporated into the system

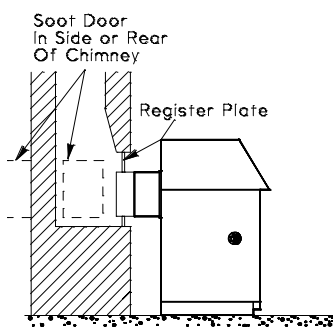


Fig 4. Vertical Register Plate With Bricked Up Fireplace

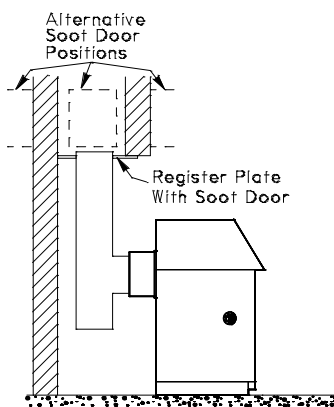


Fig 5. Horizontal Register Plate With Rear Flue Connection

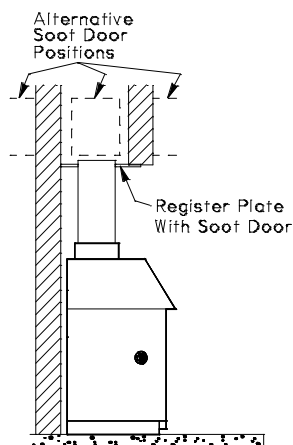


Fig 6. Horizontal Register Plate With Top Flue Connection

as shown in Fig. 9. This will ensure that a good domestic hot water supply is maintained when the central heating pump is operating.

The system must incorporate a gravity circuit which will normally heat the domestic hot water and at least one unvalved radiator. When the appliance is not connected to a domestic hot water system the unvalved radiator(s) on the gravity circuit must have an output of at least 1.0 kW. This is to prevent boiling in case of pump failure. All pipework in the primary circuit must be 28 mm diameter and the gravity flow pipe must rise continuously from the boiler to the open vent. Two typical systems are shown in Figures 7. and 8.

If the appliance is used to heat a small central heating system then the heat output to the room from the fire will be reduced. Fig. 3. shows the ratio of space heating to water heating which can be expected.

Fitting a radiator in the same room as the fire is recommended as it will allow greater flexibility in the way that the system is operated as well as ensuring that there is sufficient heat.

## SYSTEM CONTROLS

The circulating pump may be controlled by means of time switches, room thermostats or outdoor thermostats. Radiators may be either manually or thermostatically controlled. These controls will all work in conjunction with the thermostat on the appliance and the minimum return thermostat.

We recommend fitting a minimum return thermostat to the gravity return and wiring it into the mains supply to the pump so that if the gravity return temperature drops below 45° C then the pump will cut out. This will help to prevent condensation forming on the boiler faces and will thereby increase the life of the boiler. Use of a minimum



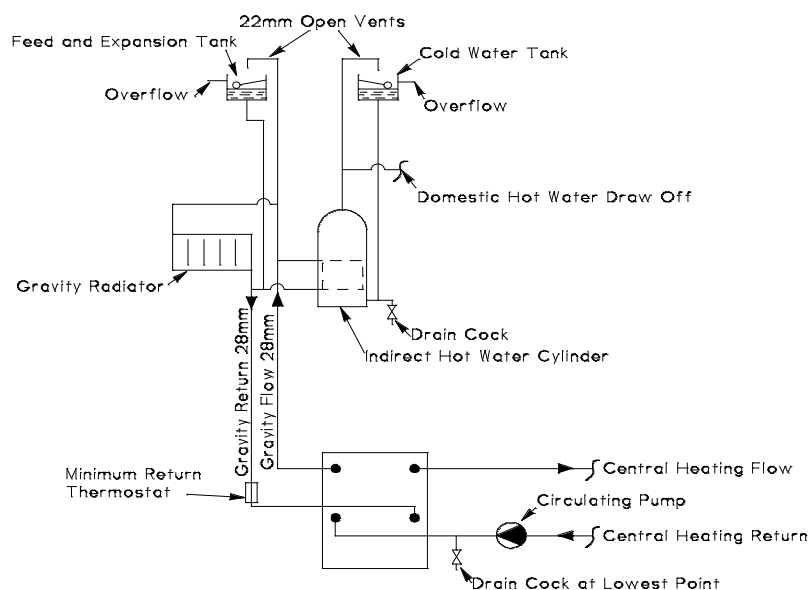


Fig. 7. Typical Central Heating & Hot Water System  
Using 4 Boiler Tappings

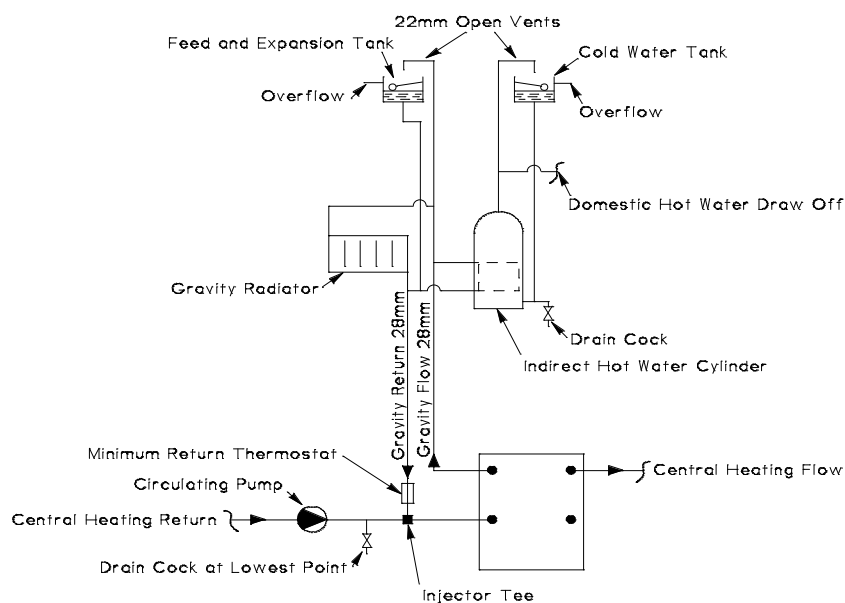


Fig. 8. Typical Central Heating & Hot Water System  
Using 3 Tappings

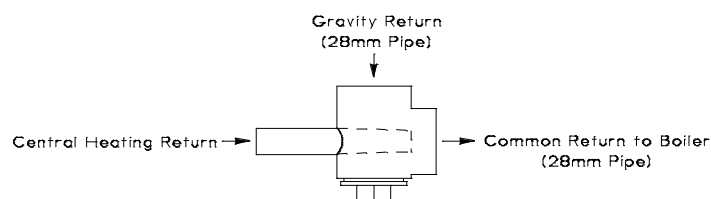


Fig. 9. Injector Tee.

return thermostat also ensures that priority is given to the domestic hot water. These thermostats are available from ourselves if you are unable to obtain them locally.

## THERMOSTAT

Before lighting the fire check the cold setting distance of the thermostat.

With the control knob at the minimum setting the flap should be 5 mm from the air inlet as shown in Fig. 10.

To adjust the distance slacken the locking nut and adjust as necessary. When set correctly re-tighten the locking nut. Ensure that the flap opens and closes freely as the knob is turned.

## PRE LIGHTING CHECK

Before initial lighting check the following points:

1. The bottom grate bars must all be fitted and should move freely and easily when the riddling mechanism is operated.
2. The plates round the sides and back of the grate must be in position and sitting correctly. The location of the side fire plates, the back fire plate and the ash shedding plates are shown in Fig. 11.
3. The throat plate must be fitted in the roof of the appliance - see Fig. 1.
4. Ensure that the overrun catch swings freely and easily on its spindle preventing the firedoors from closing until the ashpit door has been shut.

## COMMISSIONING

On completion of the installation and after allowing a suitable period of time for the fire cement and mortar to dry out, the fire should be lit and checked to ensure that smoke and fumes are taken from the appliance up the chimney and emitted safely. Also check all joints and seals.

The central heating pump should be adjusted to give the correct water flow against the circuit resistance and the system should be correctly balanced.

On completion of the installation and commissioning please leave the operating instructions with the customer and advise on the use of the appliance and any controls on the system.

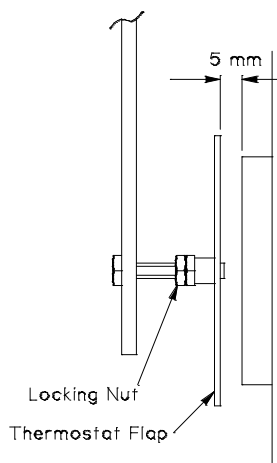


Fig. 10. Thermostat Setting

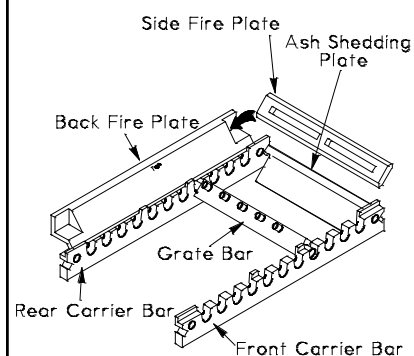
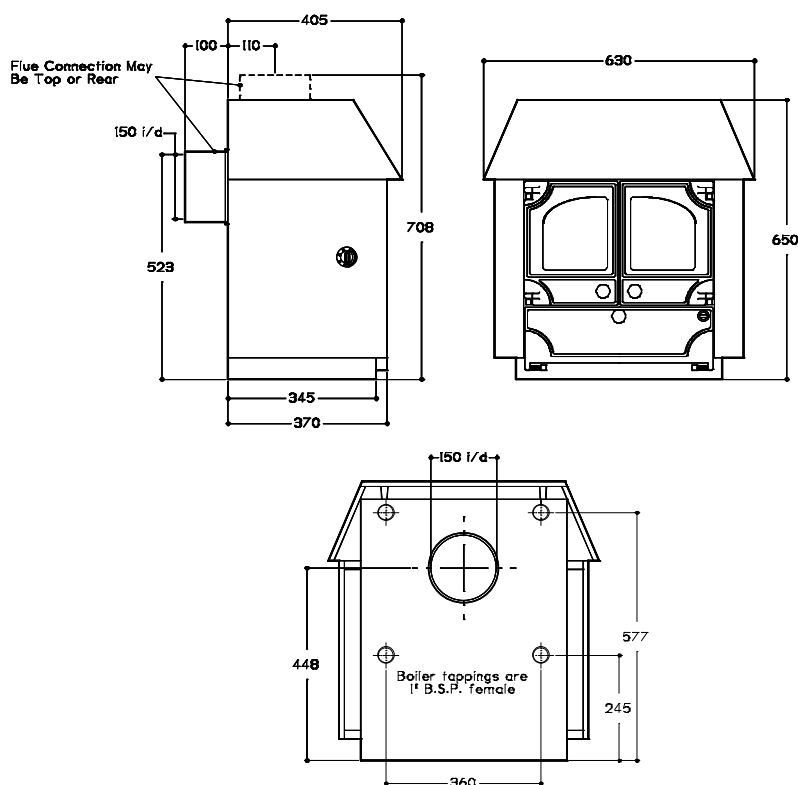


Fig. 11. Location Of Internal Firebox Components



Charnwood CW40B Overall Dimensions

(All dimensions are in mm)