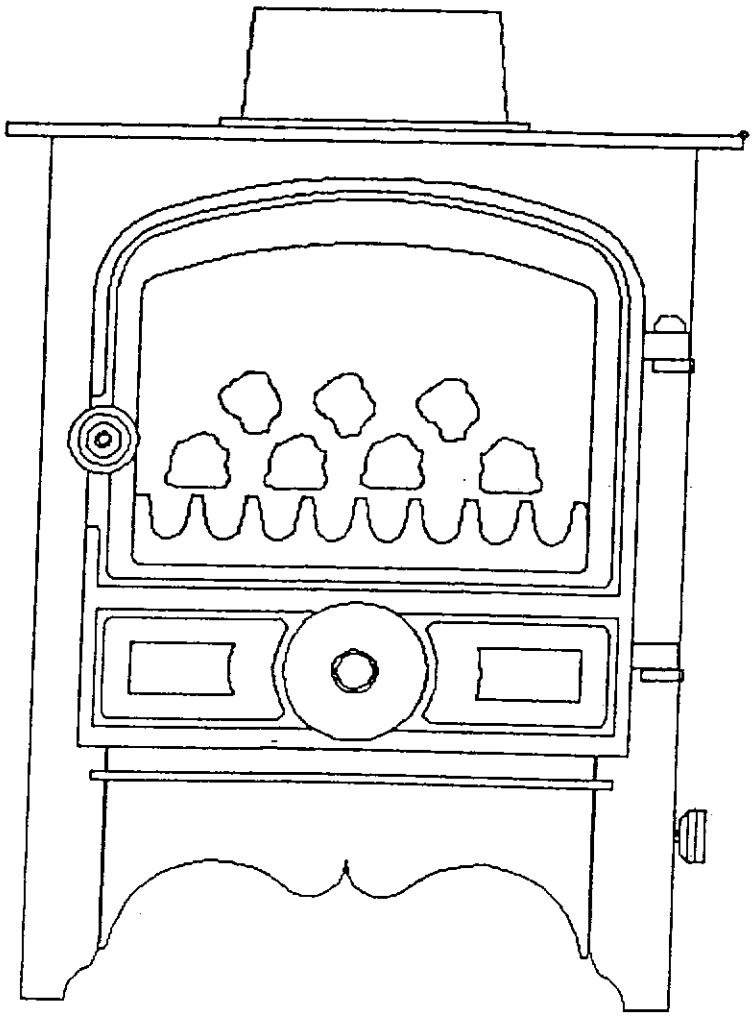
bubble STOVES



INSTALLATION DETAILS

Harworth Heating

ISSUE 2 23/9/97

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BUBBLE STOVES ©

OIL BUBBLE NO1

Patent Application No,s 8919163.9 - 9208473.0 - 9307898.8 - 9315756.8 -

INSTALLATION INSTRUCTIONS

FUEL	28 Sec Kerosene	MODE	COAL EFFECT
PUB REF	bub1-1.CHP	OIL VALVE	O.C.1.
DATE	230997 issue 2	O.V Serial No	855880

READ FIRST

These instructions have been laid out as follows.

(For electric ignition stoves read these instructions in con junction with electric ignition addendum sheet).

1-0 HEALTH AND SAFETY

Control of Substances.

Take great care when handling materials such as insulation boards, glass fibre ropes, ceramic wool , artificial fuel and kerosene oil, they are all irritants and suitable protective clothing such as disposable gloves dust masks and protective goggles should be worn.

Wash off thoroughly after handling any of these materials.

Carefully dispose of redundant or surplus materials and always vac up after service or installation work.

2-0 REGULATIONS

The installation of an oil fired BUBBLE © appliance must be carried out by a technically competant person, experienced in both solid fuel and oil fired installation and capable of installing, commissioning and servicing to the current requirements of the relevant local building regulations,

In England and Wales these are J 1-2-3 Provision for introduction of air supply and discharge of products of combustion,

Provision for protection against fire and heat.

In Scotland Part F sec 3.

In Northern Ireland Part L.

In Ireland Part J.

British IEEE wiring regulations, latest edition.

Codes of practice which apply in the UK are -:

BS5410, installation of oil fired space heating and hot water supply Part 1 , boilers of rated output not exceeding 44KW

BS4543, Specification for chimney for oil fired appliances. Part3.

BS5449 central heating for domestic premises Part 1 Forced circulation hot water systems.

BS 5601, BS8303 & BS6461 Pts 1 & 2 1984,

BS7566 Parts 1 to 4

and who has passed the OFTEC course OFT101. or attended specialist training available at this company.

Failure to comply with the relevant requirements can be hazardous and could lead to prosecution under the law.

If you have any difficulties please phone our sales department on

PHONE 01302 742520. (5 lines.)

FAX 01302 750573

3-0 INTRODUCTION

The stove is a room heater which burns kerosene in a controled manner utilising an open flue to discharge the products of combustion.

This stove is designed to run with or without a coal fired effect kit which when fitted will partially create the effect of a coal fired stove with all the pleasure that this can bring, but remove the need to constantly refuel and de ash.

It must be clearly understood that coal effect will only be available when the stove is running at maximum or near maximum performance.

REMEMBER

The heat output from coal or wood burning stoves is constantly flutuating because it is impractical to refuel at the same rate as consumption, with oil stoves it is not and becuase of this it is most important that carefull consideration be given to the size of the room in which the stove is to be fitted, bearing in mind that the potential continuous output is approximately capable of heating a room 120 Cubic metres. (30 feet x 18 feet x 8 feet)

For spacing from combustables and fireguarding this stove must be treated in the same way as a SOLID FUEL APPLIANCE and as such will become very hot and must not be touched.

To prevent the risk of injury through burning it is strongly recomended that a fireguard complying with BS6539 is fitted

The stove must not be operated with the glass front door opened or cracked.

The door glass may require light cleaning occasionaly depending upon the continuous running time of the stove.

Before starting this installation you must make absolutely sure that the chimney does not have a history of down-draughting either intermitant or permanent, see fig 12.

The vapourising pot used in this appliance is quite a simple device requiring two main elements,

OIL and AIR (plus heat for ignition)

Oil goes into the pot at a steady and controled rate via gravity, the oil flow is fairly constant.

Air is sucked into the pot by the action of the negative pressure in the chimney

The amount of oil which can be successfully burned is directly proportional to the amount of air that the chimney can draw into the pot and so to achieve adequate combustion a balanced and appropriate flow of both oil and air must be available.

The air side of the equation can vary wildy with the changing perfo;mance of the chimney and so to compensate for this the appliance has a built in swinging barrometric damper designed to spill air into the chimney should the vacuum suddenly increase.

Even so if the chimney generates a vacuum higher than .08" W.G. a further barrometric damper or flue outlet dia. reduction plate may be required.

The flow of oil into the pot can be very precisly and accuratly controled from minimum to maximum via the extension knob at the rear right of the appliance.

With the increased flow of oil extra heat is generated which in turn stimulates the chimney to work harder and consequently draw more air into the pot to maintain an adequate fuel air ratio.

WHEN YOU FIRST LIGHT THE STOVE, NO AJUSTMENTS MUST BE MADE UNTIL THE CHIMNEY HAS HAD AN ADEQUATE TIME TO THOROUGHLY WARM UP AND THE FLUE VACUUM STABILISED. CHECK THIS WITH YOUR FLUE VACUUM GAUGE.

4-0 CRITICAL ELEMENTS OF INSTALLATION

- ☐ 1 POSITIONING OF THE STOVE
- ☐ 2 CHIMNEY AND CHIMNEY VACUUM
- ☐ 3 OIL SUPPLY LINE AND TANK LOCATION
- ☐ 4 VENTILATION REQUIREMENTS
- ☐ 5 SETTING UP THE BURNER
- ☐ 6 COMMISSIONING

POSITIONING AND FITTING OF THE STOVE

The room or space into which the stove is to be fitted must be of a suitable volume if a continuous coal effect is required.

The potential maximum continuous output is approximately capable of heating a room 120 Cubic metres (30 feet x 18 feet x 8 feet) asuming it does not have any unusual characteristics.

The stove is designed as a free standing appliance and can be fitted on a suitable hearth or in a suitable recess, in each case the hearth must be stable and level.

WARNING

Take great care when using marble hearths or slips, although the may be classed as non combustable they are prone to cracking with the effects of either radiated or convected heat, always carefully consult the fireplace supplier for advice.

The appliance must not be fitted on to a marble hearth as the radiated heat may cause it to crack.

Marble slips must not be placed over the appliance in a location where they would be subject to continuous radiated or convected heat.

Provision must be made for -:

ADEQUATE CLEARANCES

1. From combustables for safety.

2. For service access to the oil control valve and swinging barrometric damper.

3, For adequate and safe user access to the control knobs at the rear upper right hand side of the stove.

INSTALLATION FREE STANDING ON A HEARTH

The hearth on which the appliance stands must be of solid non combustable material extending to a minimum of 225mm in front and 200mm at either side.

(SEE BUILDING REGS. SEC. 2)

The rear wall must be made of solid non combustable material.

If there is a wooden fire surround or wooden shelf fitted over or around the appliance, it must comply with the clearances stipulated in figs 3,5, &7 and the relvant section of your local building regs relating to solid fuel appliance installation.

INSTALLATION IN A RECESS

If the appliance is installed in a recess the gap behind the oil control valve must be increased to allow for the increased back radiation from enclosed hearth walls.

The hearth on which the appliance stands must be of solid non combustable material extending to a minimum of 225mm in front and 200mm at either side. (SEE BUILDING REGS. SEC. 2)

The rear wall must be made of solid non combustable material.

There must be clearance of at least 450mm over the top of the appliance see fig 3

If there is a wooden fire surround or wooden shelf fitted over or around the appliance, it must comply with the clearances stipulated in figs 3,5, &7 and the relvant section of your local building regs relating to solid fuel appliance installation.

5-0 CHIMNEY

To ensure satisfactory performance from the BUBBLE stove-Hot and cold condition chimneys must be capable of maintaining a constant steady vacuum of not less than .02" W.G. when COLD or more than .07" W.G. when HOT, to achieve this the chiney needs to be about 15 feet high minimum and must terminate as per our recomendation.

It is most important that any existing chimney faults such as :-

- **Occasional or permanent down draught see fig12**
- **Excessive up draughts**
- **Fume leaks**

* **Regular blockages**

are established and corrected before any installation work is carried out.

If you are unsure about the condition of the chimney, have it thoroughly cleaned and checked by a suitably qualified person.

Make sure that any remedial work (which may include re lining with a liner of 5" (125mm) dia minimum,) is carried out.

If the chimney is on a gable wall, backfill around the lining with vermiculite to keep it warm and prevent condensation.

The chimney should terminate 2 feet above the ridge of the main or highest roof, in compliance with relevant legislation.

For a guide to terminal positions see fig 11.

Provision must be made to allow adequate and easy access into the chimney for cleaning purpose.

The flue pipe from the stove must not be less than 5" diameter and must comply to one of the following -:

Acid resistant vitreous enamelled flue pipe to BS 1344 Part 2.

Stainless steel to BS1449 Part 2.

Cast iron to BS41.

Mild steel with a wall thickness of 3 mm minimum.

CHIMNEY TERMINATION

See fig11.

The chimney must be terminated with a suitable anti down-draught cowl such as a VEDETTE or EUROCOWL ETC.

BENDS IN FLUES AND CHIMNEYS

Flues and chimneys should always be vertical wherever possible.

On installations where using a bend is unavoidable the maximum allowable bend angle from the vertical is 45 degrees.

45 degree runs should be kept as short as possible (less than 1 metre) and there should never be more than two bends used.

6-0 OIL FEED AND STORAGE REQUIREMENTS

Refer to figs 7 & 8 for illustrations.

NOTE

Only 28 Second Commercial Kerosene to BS2869 Part 2 : 1988 Class C2 is suitable for use with this burner system.

Installation of all oil feed pipework and storage equipment should be in line with -:

BS5410 Part1

Steel oil storage tanks to BS799 Part 5, if there is any doubt consult the tank manufacturer.

OFTEC requirements book T3 july 1995 rev.7.95

Minimum size storage tank should be 300 gals.

The burner can be supplied with oil via a gravity or pumped oil feed system.

If a gravity system is used the base of the tank must not be less than half a metre or more than three metres above the burner.

See figs 7&8.

Where the tank will be fitted at a lower level than the stove a lift pump must be used with max head above the burner base of 3 metres, the max head of the lift pump over the oil supply tank must not exceed 5 metres. see figs 7&8.

A 100 micron filter must be fitted and the minimum fuel line diameter is 10 mm but this is dependant upon the length of run.

If other appliances are being supplied from the same oil supply allowance must be made when pipe sizing to ensure that an adequate supply of oil be maintained for each appliance.

The oil line must be sleeved and sealed in a plastic tube where it passes through any brickwork.

A remote acting fire valve such as a Teddington KBB C 150 deg F must be fitted with the phial bulb being mounted behind the appliance, clipped to the rear wall and the valve being fitted at the point where the fuel line enters the property.

(This is a statutory safety requirement of the building regs.)

There must also be an isolation valve fitted in the same room as the appliance in a conveniently accessible place.

SEE FIG 7&8

7-0 VENTILATION REQUIREMENTS

Air Supply To The Burner.

See Building Regulations J1/2/3 section 4.

It is most essential that a permanent free air supply is established as the burner cannot function correctly without it.

Provision for an adequate FREE air supply in to the room and house where the appliance is fitted is required.

This will take the form of a purpose designed, NON hit or miss, air vent of 50sq cm cross sectional area.

If an extractor fan is fitted in the same room as the appliance or if there is an open fire in an adjoining room then extra compensatory air must also be made available for both these extra requirements.

Minimum extra requirement for extractor fans is 55 sq cm and it is prefered if the extra air supply can be positioned in such a way as it can supply air to the extractor fan without the air stream passing the stove.

Minimum requirement for open fires is 212 sq cm

Test for adequacy of air supply is to-:

Set the oil fired appliance going,

Close all doors and windows in the room,

turn on the extractor fan to its maximum capacit,y,

light the open fire and let it get well established,

Test for adequate maintanance of chimney vacuum on the stove, both before and after the extractor fan is turned on, with the open fire going.

During the tests the flue vacuum of the oil fired stove should be measured to see if there is any noticable reduction beyond that called for in these instructions.

8-0 MAIN STEPS INSTALLATION

SERVICES

CHIMNEY

Clean chimney, check and adjust the chimney vacuum (0.02" - 0.07" w.g.) and provide a cleaning access (min diameter 5" for linings.) see section 5-0.

FUEL

Install fuel tank in line with our instructions in sec 6-0 and run a fuel line up to the rear right hand side of the appliance, fit the remote firevalve phial as low as possible behind the appliance, if it is located in a position where the temperature can exceed 150 deg F, it will trip and need to be reset on the firevalve body.

Fit the isolation valve see fig 7&8

Flexible Hoses are not allowed for connections to vapourising pot burners

VENTILATION

Fit suitable ventilation into the appliance site.

see sec 7-0

HEARTH

Provide adequate hearth and site as per our illustrations in figs 5&6.

APPLIANCE.

See Figs 1 & 2

Before attempting to fit the appliance make sure that it has not suffered any damage in transit particularly around the oil control valve area.

Undo the door, by unscrewing and removing the brass knob.

Remove the front apron, by lifting it up off its two lugs.

Check that the lighting port cover is in situ.,

Remove all the burner components, through the front door opening as follows -:

COAL KIT see fig 1,

UPPER CATALYSER AND RING fig1/15

LOWER CATALYSER fig1/20

Check that the lighting wick has not been dislodged, fig1/19

Check that the swinging barrometric damper is swinging freely and closing properly. fig1/28

Temporarily fit the appliance into the required position and temporarily make up the oil feed connection into the oil control valve, take care to make an accurate job of the pipework so as not to transfere any undue pressure on to the O.C.V. fig1/26

It is then possible to check that this level has not been disturbed in transit, if it has re adjust it before carrying out too much work. (108mm from ground level.)

The stove leaves the factory with the oil control valve correctly adjusted on the four O.C.V. bracket clamping bolts.

(108mm to oil level line from ground level.)

The depth of oil in the burner pot should be stable at a depth of between 6 - 8 mm.

Using a small spirit level both the STOVE and the Oil Control Valve must be made level in both directions before any adjustments are carried out to the oil depth, the appliance has levelling bolts in each leg for this purpose.

If adjustment to the oil depth is required is required, it can be made via the slots on the O.C.V. support bracket. fig2/25

When the oil depth is accurately established permanent installation can proceed.

Site the appliance on the hearth and check the levels in both directions.

Connect up the flue pipe to the chimney, spigot down 5" (125mm) minimum dia.

Connect the oil supply pipe up to the O.C.V.

Carefully refit the internals of the burner.

Do not fit the coal kit until the flame picture has been checked but make sure that the coals are positioned as per the illustration in fig1.

Refit the front apron.

THE COAL KIT

The key to the success of the coal effect is the patented and design copyrighted, coal support system specialy developed by HARWORTH HEATING LTD.

The coals are located on the coal support bars which are designed to glow bright red in the flame, passing on the incandescence into the coals.

The front fret is designed to allow incandescent glow and flicker through to add to the effect.

Care must be taken when positioning the coals on the spikes as follows -:

1. Place 4 small coals on the front spikes which are slightly bent so as to allow the coals to rest on the front fret. fig1/2

2. Place 3 large coal on the next pair of bars and then place a further 3 large coals on the next pair of bars fig1/3

3. Then top off the arrangement with 5 more small coals as follows -:

4. Place 2 of them in between the first and second row of coals and two in between the second and third row of coals making a square pattern finishing off with one in the centre.

Do not fit any extra coals as this will invalidate the product warranty.

The whole system is designed so that it can be removed in its entirity, by lifting out via the front fret, without the need to disturb the coals making routine cleaning and servicing very easy.

DO NOT FIT THE COAL KIT UNTILL THE FLAME HAS BEEN ADJUSTED AS PER THE FOLLOWING INSTRUCTIONS.

9-0 LIGHTING AND COMMISSIONING

NOTE-:

Before lighting and adjusting the flame make sure that the coal effect kit has been removed, this will allow you to see the flame and the effects of any adjustments much better.

Refit the coal effect kit after the flame is correctly adjusted.

1. CONTROLS

The appliance is controlled via a large control knob, mounted on a bracket at the rear upper right hand side of the appliance with possible adjustment from OFF (Fully clockwise) to Maximum (fully anticlockwise) through a progressive scale. (see fig2 /30 and fig 10 which shows the actual top of the oil control valve.)

2. There is also a safety cut off knob, which when lifted cuts off the oil supply to the burner, in its down position the oil is switched on. see fig 2/29

3. The Oil Controls International oil control valve has a second safety float chamber designed as a safety back up to the first one. It is possible during installation to accidentaly flood the second chamber, if this occurs it will not be possible to trip the safety cut off knob as the flooded safety float dissarms the trip mechanism. see fig2/26. To re establish the action of the safety cut off knob the second float has to be depressed a few times to remove some of the excess oil. This can be done using a small screw driver, access to the float is obtained by removing the 10mm dia platic cap pressed into the top of the O.C.V.

4. During the lighting stage do not rush with low or high flame adjustment, be patient and try the burner in both its high and low fire positions first allowing plenty of time for the chimney to heat up and generate its maximum pull.

Keep your vacuum gauge in the chimney and keep an eye on the vacuum.

If you have to make adjustments always set the low fire screw first and make sure you know which way to turn the screws,

LOW FIRE DECREASES ANTICLOCKWISE
HIGH FIRE DECREASES CLOCKWISE
see fig10.

LIGHTING

BEFORE LIGHTING REMOVE THE COAL EFFECT KIT

Make sure that the oil safety cut off knob is lifted (tripped off) via an audible click.

Turn on the oil at the isolation valve, see figs 7 & 8

Press the oil safety cut off knob down to trip the oil on via an audible click.

Turn the oil flow control knob to max and allow oil to flow into the pot untill it has reached its maximum depth of between 6 - 8 mm, If the oil is not at the correct depth adjust the O.C.V. level accordingly up or down.

Check for oil leaks.

Check that oil does not leak from the pot or pipework.

If no leaks proceed as follows -:

Turn the oil flow off.

Empty the pot of all oil.

Remove the front apron fig2/17

Open the glass door fig2/14

Remove the lighting port cover fig2/18

Turn the oil on to the first position via the flow control knob.

When oil can be seen to trickle into the pot turn it off so as not to allow an excessive build up.

Light the wick, fig2/19

When the wick is well alight after 15 to 20 seconds, replace the lighting port cover,

Close the front door,

Replace the front apron,

Turn the fuel flow on again at the lowest setting,

NOTE

If during the lighting stage, excess oil is allowed to build up in the pot, the burner will race and generate quite loud audible vibrations , if this occurs don't panic, lift the oil cut off knob and wait a few minutes untill the burner flame starts to reduce in size, at this stage depress the lever to restart the flow of oil so allowing the burner to run correctly at its low speed.

When the burner has been running for ten to fifteen minutes on position 1 LOW FIRE the lower catalizer (fig/20) will be glowing dull red, with very little blue flame, if this is not the case adjust the low fire screw accordingly, when you are happy with the low fire turn the burner slowly and progressively up to full flow, which after 10 to 15 minutes, should produce a conical whispy blue flame with just the odd touch of yellow. If there is excessive yellow reduce the high fire accordingly.

When you are happy with the flame picture extinguish the stove and after it has cooled down sufficiently refitt the coal kit.

Relight the stove and recheck the flame picture allowing adequate time for the coals to get going.

On full output, after approximately ten minutes, the coals should begin to glow red and there should be whispy blue flames just licking through them, to get the maximum effect the stove will need to be left for half an hour or so, if there are yellow flames reduce the high fire adjuster screw by quarter turn increments, allowing ten minutes for the burner to stabilise after each quarter turn adjustment.

When correctly adjusted, on maximum setting, the effect should be bright incandescence with slight touches of whispy blue flame just penetrating through odd spots in the coals.

Excess oil flow, poor flue vacuum, and bad coal positioning will cause rapid sooting of the glass and coals.

ON HIGH FLAME, (POSITION 6) there may be some yellow in the flame, excessive yellow or sooty orange flames indicate that the chimney is not generating .06" W.G. vacuum or the fuel flow rate is too high.

NEVER TRY TO RELIGHT A HOT BURNER, MAKE SURE THAT THE BURNER IS COMPLETELY COOLED DOWN BEFORE RE LIGHTING.

Extinguishing

Shuting the burner off is a very simple manouver.

Turn the oil flow control knob fully in a clockwise direction until you feel it stop in its off position.

After a few minutes, the flame will die down and eventualy extinguish itself.

INSTRUCT THE USER

1. LIGHTING PROCEDURE
2. POSITION OF ALL OIL CUT OFF SAFETY DEVICES
3. ON THE PRINCIPLES OF CONTROL.
4. THE IMPORTANCE OF REGULAR MAINTENANCE.

FILL IN THE WARRANTY FORM

The warranty covers PARTS ONLY for a period of ONE YEAR and is conditional upon all the requirements of our installation instructions being fully adhered to.

Labour, travelling or consequential loss or damage are not covered.

ARRANGE AN APPOINTMENT FOR SERVICING

6 monthly

10-0 FAULT FINDING

RACING

Audible vibrations generated by the flame caused by too much oil in the pot or lack of chimney draught.

Turn off the oil flow until the burner has settled down to a steady burn rate and then turn the fuel on again but don't let the flame go out otherwise the burner MUST be allowed to cool down fully before a reignition is attempted.

FLUE VACUUM

The pot type burner is extremely sensitive to flue vacuum variations.

Good combustion will not be possible unless our instructions on chimneys and flue vacuum are followed.

If the burner does not burn with a blue flame on settings 1 - 3 then recheck the vacuum as per

If the burner does not run well check that the seals in the stove are good and that there is no ingress of air into the appliance flue ways.

Check that the correct fuel oil is being used.

Check the fuel flow rates.

Check the levels.

In case of failure of the first float the second one catches the excess oil and trips the safety cut out lever, making it impossible to reset.

Simulated failure can occur if a full carburettor is disturbed causing the secondary float chamber to flood.

If it is not possible to reset the safety cut off lever phone us for advice.

OPERATING FLOW RATES

Vapourising pot burners must have adequate potential flue vacuum to allow for maximum specified performance to occur.

The fuel oil flow rates can be varied from

Minimum = .25 litres per hr at .03" W.G. Vacuum

to

Maximum = 1.0 litres per hr at .06" W.G. Vacuum.

To achieve optimum burner performance at these flow rates you will need to have matching flue vacuums as stated.

If the chimney does not generate enough vacuum the the flow rates will have to be adjusted so that the burner maintains equilibrium, i.e. blue flame combustion.

Where burners are run at high fuel flow rates on low chimney vacuums, long unsatisfactory yellow flame combustion will occur and the burner will not settle down into blue flame combustion.

To rectify this problem reduce the high fire flow rate screw on the Oil Control Valve untill blue flame combustion occurs.

Never switch from low settings to high settings, a longer burner life will be achieved if the regulator is moved only by one number at a time leaving approx five minutes between each setting change.

If the burner does not run well, check the flow rates of the carburettor in line with the requirements.

OIL SMELLS

Visual check on all joints for obvious leaks.

Check that the descaling lever packing gland nut is adjusted.

11-0 ILLUSTRATIONS

FIG1	Coal Kit
FIG2	Bubble No1 Parts
FIG3	Clearances From Combustables
FIG4	Free Standing Illustration
FIG5	Front View Showing Clearances and Chimney Details
FIG6	Side View Showing Clearances and Chimney Details
FIG7	Positive Head Oil Supply
FIG8	Negative Head Oil Supply
FIG10	Oil Control Valve Details
FIG11	Chimney Terminations
FIG12	Wind Effect Details.
APPENDIX	Bunded tank detials.

This product is subject to continuous development and improvement and it is consequently acknowledged that due to this process there may be some omissions and errors.

This publication is intended only to assist the reader in the use of this product and therefore Harworth Heating Ltd shall not be liable for any loss or damage whatsoever arising from the use of any information, error or omission found in this guide.

Maintainance on this product must be carried out only by approved personnel, WHO HAVE BEEN SUITABLY TRAINED.

FIG 1 COAL KIT PARTS AND PLAN VIEW OF COAL LAYOUT

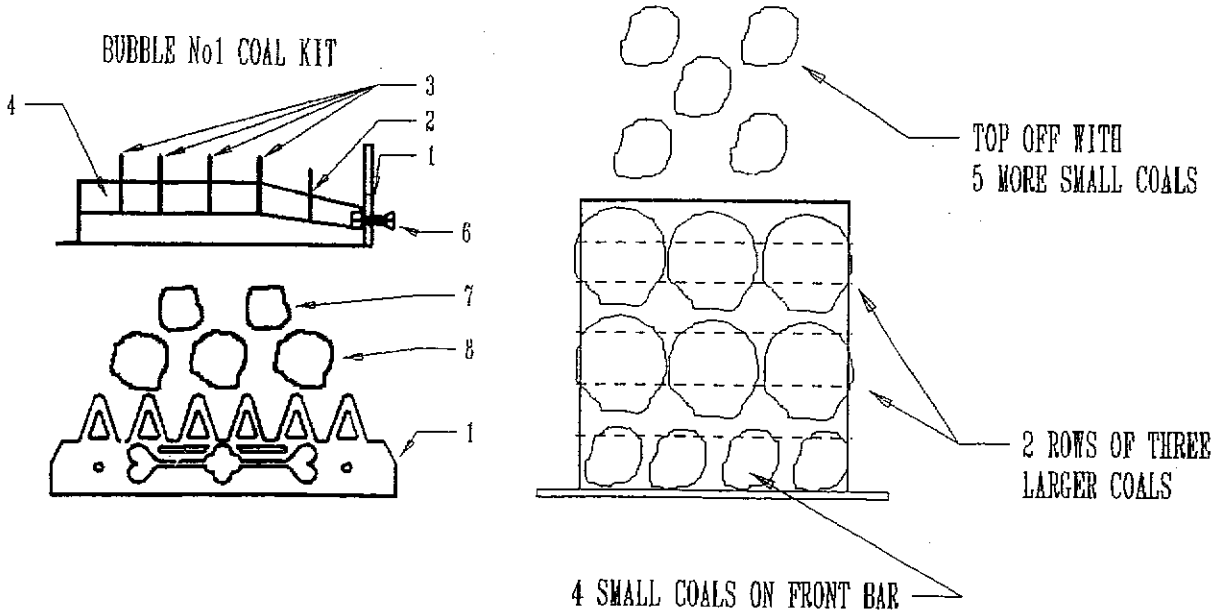


FIG2

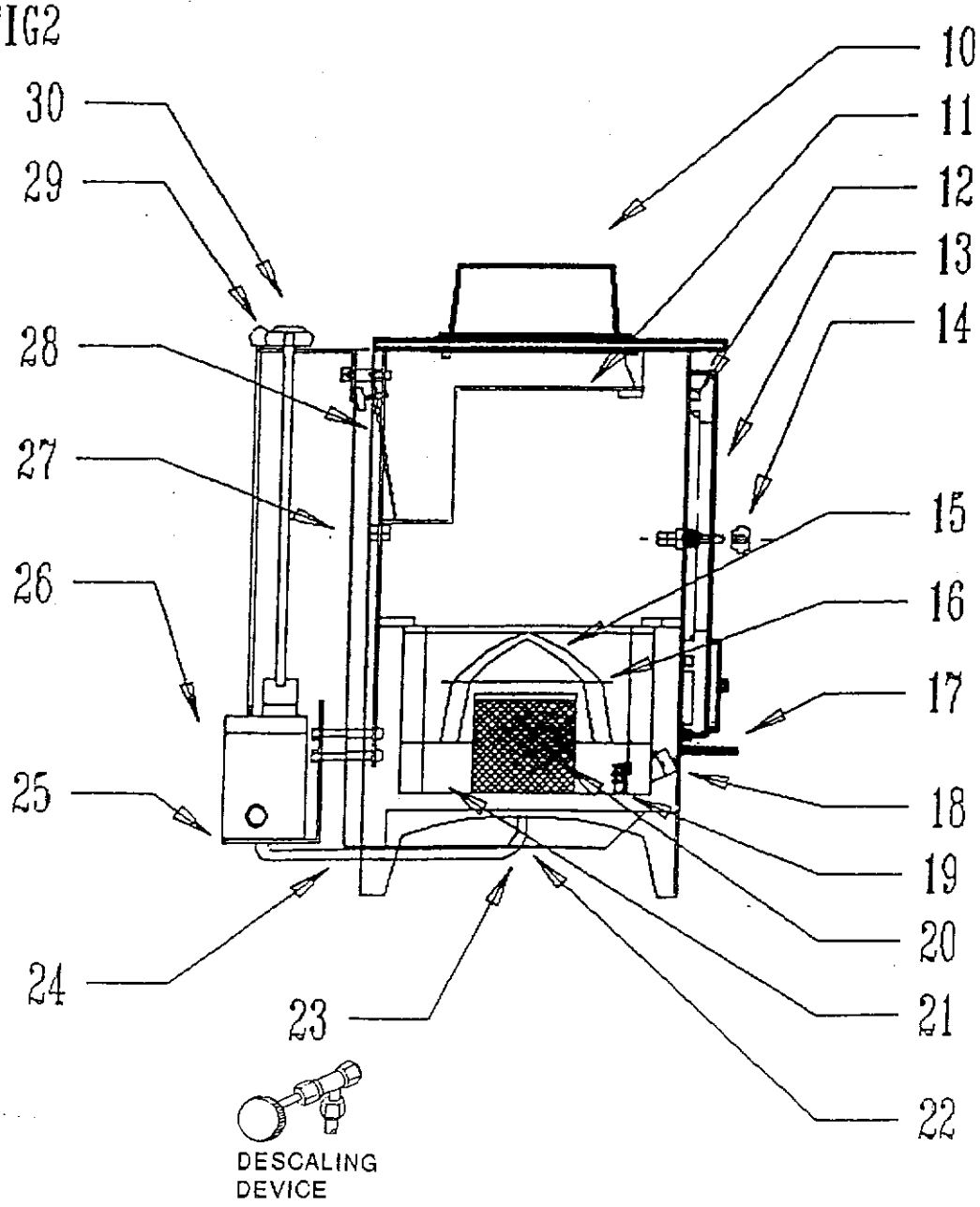


FIG 3

MINIMUM CLEARANCES FROM COMBUSTABLES

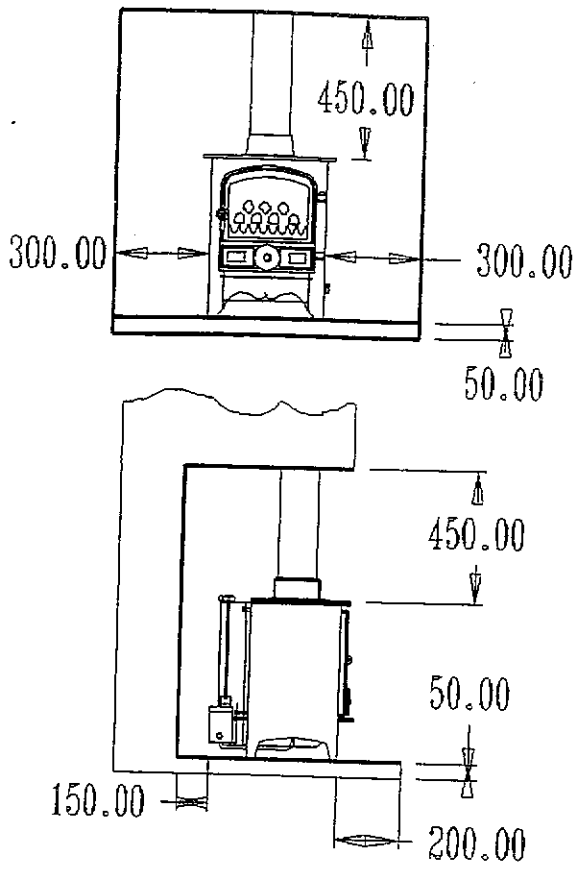


FIG 4

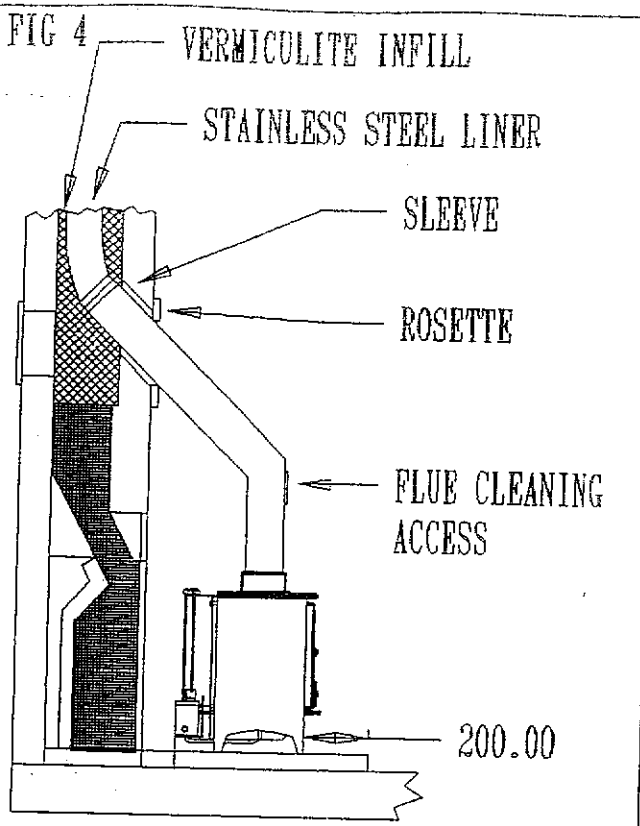


FIG 5

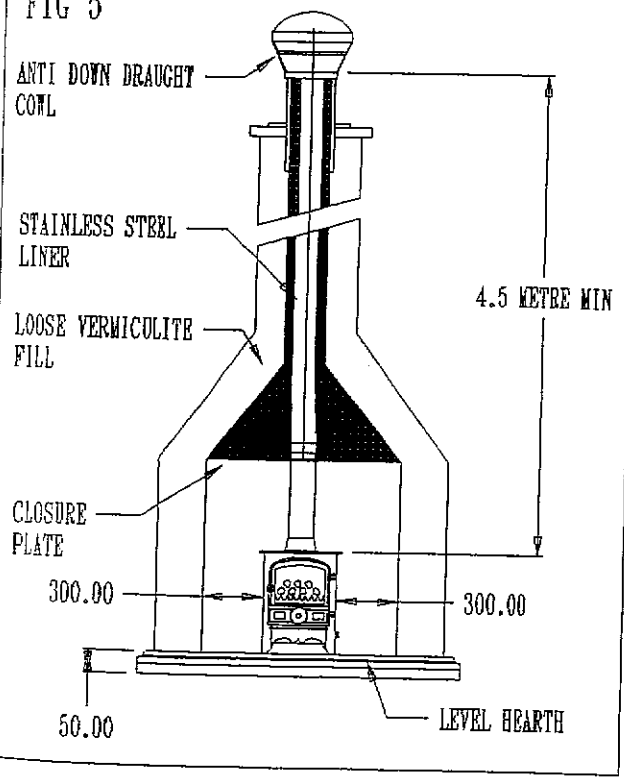
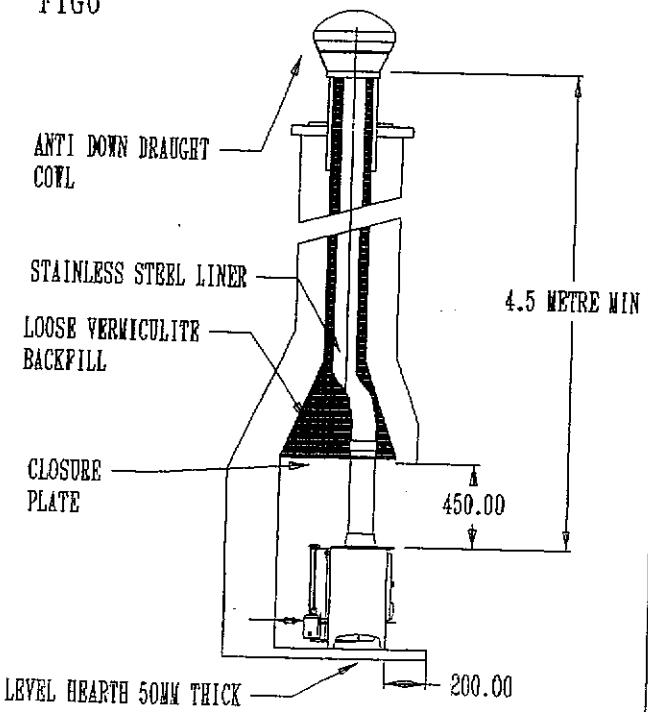


FIG6



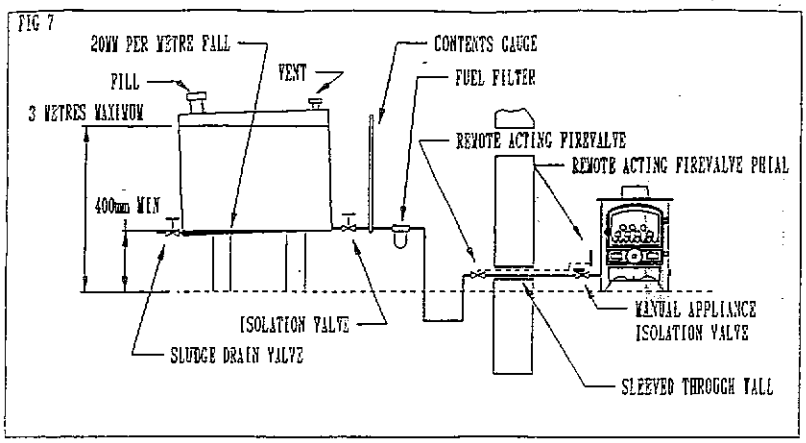


FIG 7
20MM PER METRE FALL
FILL
VENT
3 METRES MAXIMUM
400mm MIN
CONTENTS GAUGE
FUEL FILTER
REMOTE ACTING FIREVALVE
REMOTE ACTING FIREVALVE PHIAL
MANUAL APPLIANCE ISOLATION VALVE
ISOLATION VALVE
SLUDGE DRAIN VALVE
SLEEVED THROUGH WALL

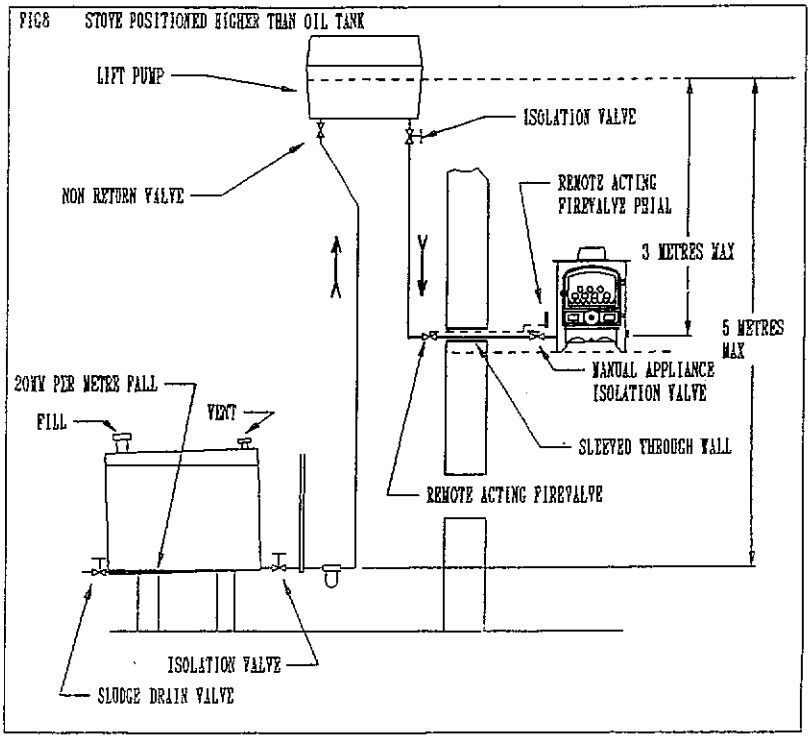


FIG8 STOVE POSITIONED HIGHER THAN OIL TANK
LIFT PUMP
ISOLATION VALVE
NON RETURN VALVE
REMOTE ACTING FIREVALVE PHIAL
3 METRES MAX
5 METRES MAX
MANUAL APPLIANCE ISOLATION VALVE
SLEEVED THROUGH WALL
REMOTE ACTING FIREVALVE
20MM PER METRE FALL
FILL
VENT
ISOLATION VALVE
SLUDGE DRAIN VALVE

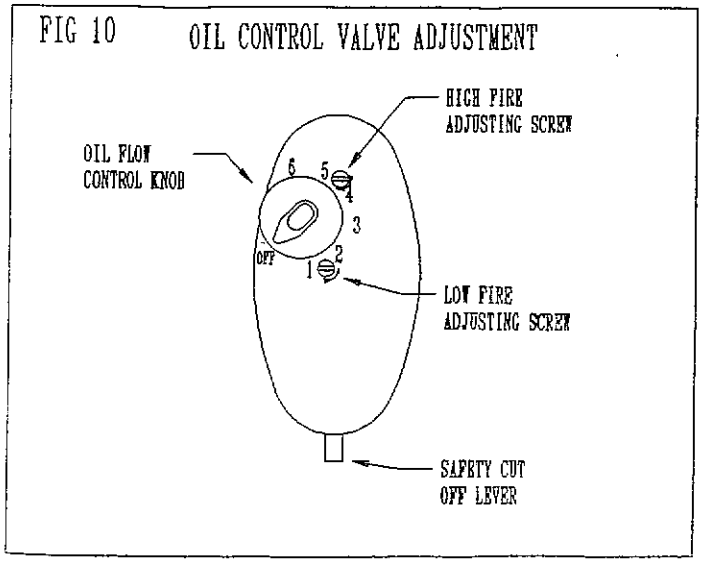


FIG 10 OIL CONTROL VALVE ADJUSTMENT
HIGH FIRE ADJUSTING SCREW
OIL FLOW CONTROL KNOB
6
5
4
3
2
1
OFF
LOW FIRE ADJUSTING SCREW
SAFETY CUT OFF LEVER

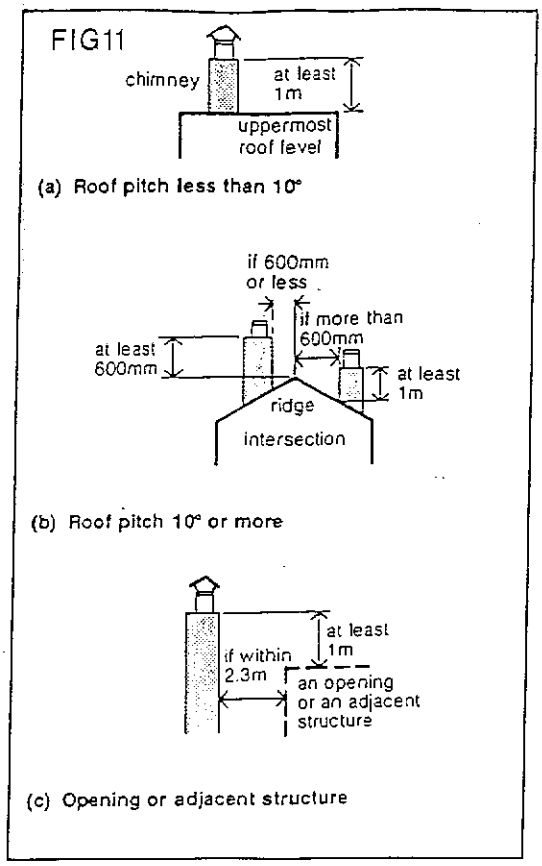


FIG11
chimney
at least 1m
uppermost roof level
(a) Roof pitch less than 10°
if 600mm or less
if more than 600mm
at least 600mm
at least 1m
ridge
intersection
(b) Roof pitch 10° or more
at least 1m
if within 2.3m
an opening or an adjacent structure
(c) Opening or adjacent structure

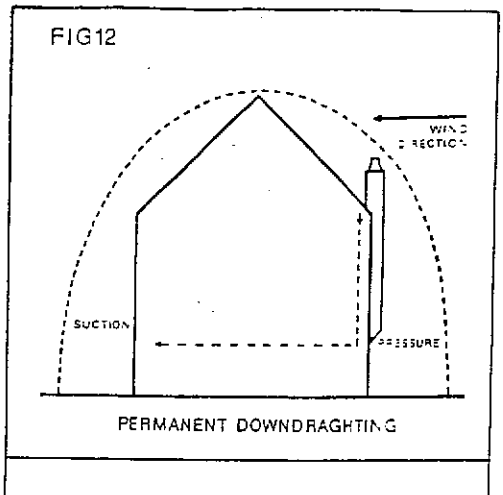
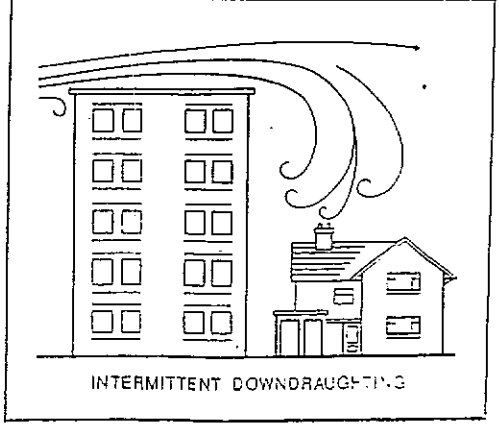


FIG12
WIND DIRECTION
SUCTION
PRESSURE
PERMANENT DOWNDRAGHTING


INTERMITTENT DOWNDRAUGHTING

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