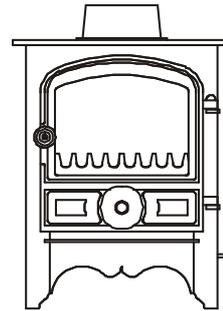
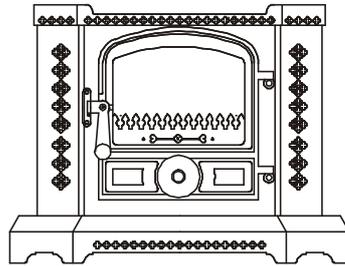


BASIC INFORMATION ABOUT MARINE DIESEL STOVES

07-01-08

(Read in conjunction with marine spares & relevant stove price lists)



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

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1. FITTING OPTIONS.

There are normally three different situations, which may be encountered:-

1-1 A NEW BUILD INSTALLATION.

1-2 AN ESTABLISHED BOAT INSTALLATION.

(Without a stove.)

1-3 A REPLACEMENT INSTALLATION.

(With a previously fitted solid fuel stove.)

Each of the situations will present differing problems.

- Where to locate the stove.
- How to deal with fireplace design.
- Where to locate the oil tank.
- How to get an oil supply to the stove.
- How to fit the chimney.
- How to connect water to the stove.
- How to disconnect and remove the stove, easily.

The new build situation should be the easiest.

The established boat situation will require careful attention to the sighting of the stove in relation to flue positions and existing fittings positions.

In replacement situations it may well be necessary to blank off the existing through roof flue position and re-locate it.

1-4 STOVE SIZING.

Bubble stoves come in a variety of different configurations and it is important to make sure that you choose the correct configuration to allow you to have the correct balance of heat between water heating and space heating.

For example the Bubble 1 and Franco Belge Stoves are supplied in three versions

Dry Stoves (For Space heating only)

Small Boiler Stoves (For Hot water and a towel rail)

Large Boiler Stoves (For up to three radiators and hot water)

If you use a small boiler stove and fit more radiators than it is designed to handle, you will have to have the stove going flat out to heat the water and consequently become too hot where the stove is.

If you use a large boiler stove on one radiator only you will never be able to turn it up as it will constantly shut down on the overheat control thermostat.

2. CHIMNEY SEE FIG 1

(See sec 02 in Marine Price List for components).

This is the one of the most interesting problems to deal with as the chimney affects most aspects of running the stove.

Here we list the following information for your consideration.

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

- THE HEIGHT.
- THE DIAMETER.
- THE TEMPERATURE OF THE GASSES IN IT.
- THE RESISTANCE OF THE INNER SURFACE OF THE FLUE PIPE OR PIPES.
- THE PREVAILING ATMOSPHERIC CONDITIONS.

It is obvious that on a boat all the above elements are in short supply.

Normally, we have low flues that are small in diameter and generally not very well insulated. Coupled with all these problems we have another one; the boat moves across constantly changing surroundings, through locks, into headwinds and crosswinds, all creating major opportunity for down draughting to occur.

Any bend in any part of the chimney or roughness on the internal chimney wall will slow down the velocity of rising gases 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 start to burn sooty. This problem is highlighted even more during very cold weather when the chimney can cool down even faster.

2-1 THE CHIMNEY RULES.

1. Always use a top outlet for flue pipe take off.
2. Never put any bends in the flue.

(To maintain a concentric fit, we will allow a slight kick off the stove and a similar kick into the deck flange see fig1).

3. Always try to get the stove as low as possible in the boat, this will allow installation of maximum length flue pipe.
4. Always have two double walled, above deck extensions, short for cruising and long (28inch minimum) for mooring. Insulated extensions are a thing of the future but it is possible to fill the space using a vermiculite and cement mix sealed off with flexible fire putty.
5. Fit a rotary swinging cowl to each extension or make one interchangeable.
6. Clean or have the chimney cleaned regularly. (Frequency depends upon type of fuel and length of time used).
7. Don't phone in and ask for dispensations on the rules.

3. FUEL SUPPLY SEE FIG 2

(See sec 04 in Marine Price List for components).

There are several problems relating to diesel fuel supply, which need be adequately addressed.

3-1 WAXING.

Cold weather waxing or thickening alters the flow characteristics of diesel.

An adequate fuel feed supply can turn into an inadequate one when the temperature starts to fall.

The worst scenario is fuel feed pipe 50-60 feet long in 8mm dia pipe.

The best-case scenario is a fuel pipe 4 feet long in 10mm dia with insulated lagging.

3-2 TRIM.

A minimum pressure head of about 8" is required.

This head is measured from the base of the oil tank to the top of the oil control valve. In some cases this head can be affected by the ballast or trim of the boat.

Take great care to try out all the different ballast and trim possibilities to make sure that adequate oil feed is always available at the outlet end of the fuel pipe before it enters the oil control valve at the stove.

3-3 FUEL TANKS.

If the stove is fitted at the bow of the boat, a bow tank is recommended.

The tank should comply with the requirements of the boat safety scheme and have:-

- A conveniently sized filler
- A means of venting.
- A conveniently located, easily visible, contents gauge.
- An isolation valve
- An easily replaceable cartridge filter.
- A drain down plug situated below the fuel outlet to the stove to allow for adequate draining of any contaminants.
- The vent should be located at the same level as the filling point.
- The outlet from the tank should be a minimum of $\frac{1}{2}$ " B.S.P. and fully welded into the tank.

Glass filter bowls are not acceptable under the boat *safety scheme*.

Always add a suitable proprietary antifreeze additive to the stove fuel for wintertime running.

3-4 OIL LINE.

The oil feed line starts after the fuel filter and proceeds to the point of entry, which is where the oil line goes into the cab or saloon of the boat.

The diameter of the oil line is dependant upon the length of run. See 3-2 on waxing and make sure that you have suitably sized compression fittings available from our spares list.

At this point it is necessary to fit a remote sensing fire valve, designed to shut off the oil supply, should a fire occur near to the stove.

If the bubble stove is fitted up to the first bulkhead it will be necessary to fit the isolation valve outside the cabin or saloon of the boat.

3-5 WATER CONTAMINATION.

Because of the high risk of fuel contamination with water, we strongly recommend the fitting of a high volume water trap in the oil supply line.

3-6 REMOTE SENSING FIRE-VALVE.

The fire valve has a capillary tube on the end of which is a temperature sensitive phial, run the capillary tube with the oil line up to the stove and carefully fit the sensing phial on 15mm pipe clips.

When fitting the fire valve make sure that where the capillary and oil line go through the bulkhead in separate sleeved tubes, so that the capillary can be withdrawn separately should it ever need replacing.

For fitting of long oil feed lines which pass through bulkheads and various other parts of the boat it may well be necessary to fit more than one fire valve, especially where the oil line passes through an area where a fire could occur i.e. kitchen area etc.

3-7 ISOLATION VALVES.

Two isolation valves are required, one fitted directly into the oil control valve to allow you or the service man to turn the oil off should the need arise, and one on the oil tank fitted before the filter to allow you to isolate the filter to either clean or change the filter element.

3-8 SLEEVING.

Where the oil line goes through the boat bulkheads, a suitable fitting must be used.

Where oil pipe work passes through panelling, a sleeve must be fitted and sealed with a suitable sealant.

4. FIREPLACE SEE FIG 1

(See sec 01 in Marine Price List for components).

4.1 MATERIALS

Use materials, which are easy to keep clean and fireproof such as asbestolux or vermiculite boarding which we have in stock.

4.2 FIXING DETAILS

The hearth must be:-

FLAT - SECURE - FIREPROOF AND LEVEL IN BOTH DIRECTIONS.

The vertical walls of the fireplace must be fireproofed; suitable materials would be asbestolux sheet, compressed vermiculite board.

4.2 OIL LEAKS OR DRIPS.

The installation of any oil stove should take into account that there is always a possibility of fuel oil drips or leaks.

To allow for this possibility a drip tray should always be fitted, regular inspections on a weekly basis should be made to ensure that any leaks or drips are spotted early and rectified.

Normally this work will be carried out as part of routine maintenance.

If required, we can provide a purpose made fireplace and fireguard for this job.

5. PLUMBING AND HEATING SEE FIG 3

(See sec 05 in Marine Price List for components).

(See sec 1-4 in this publication to make sure that you fit the right stove for the job).

To facilitate removal of the stove, make sure that there is

- Easy access to the boiler unions.
- Easy access to the drain down valve.
- Easy access to the oil connection.
- Easy access to the isolation valve.

If you are not suitably qualified, arrange for a heating engineer to do the design and fitting work for you.

5-1 CALORIFIERS.

Suitable indirect calorifiers must be used on gravity or pumped systems.

If you are going to install a gravity system you must make sure that you purchase a calorifier with a the largest possible diameter internal coil, and you should specify this from your supplier.

On gravity systems the calorifiers must be located higher than the stove and as close as possible to it, obviously keeping horizontal runs as short as possible.

5-2 VENTING OF AIR AND LOSS OF WATER.

Gravity or Pumped systems can be fitted with suitably designed, open vented or pressurised systems.

If open vented systems are used the feed and expansion tank must be as close as possible to the boiler and be fitted at the highest part of the circuit.

The expansion tank should have an automatic means of replacing water which could be lost by:- evaporation, expansion overflow, leaks or safety valve emissions.

(Consult an experienced boat-heating engineer for advice on feed and expansion tanks.)

To vent the system of air use automatic air vents on all possible air lock locations.

5-3 PIPE WORK.

All gravity pipe work must rise on flow and fall on return and be a minimum of 28mm dia. (35mm dia preferred)

To reduce resistance to flow:-

- Use swept bends, do not use elbows.
- Use copper pipe work.
- Use high water content radiators.
- Use appliances with high water content boilers such as BB1 and Corner Bubble stoves.

Primary circuit pipe work must not have valves or other devices that can be used to interfere with the free flow of water.

5-4 PUMPED SYSTEMS

On pumped systems, always come off the stove with 28mm copper for a minimum run of 400 mm before dropping on to 22mm hep 20

To ensure suitable flow of water through the primaries a suitable injector tee or twin pump system should be used, we can advise on twin pump systems, phone our technical help line for info if required.

Great care should be taken with the positioning of the circulating pump (or pumps) and the feed and expansion tank to make sure that the water flows where it should and that over pumping does not occur.

The heating circuit must be piped in 22mm copper or Hep 20 with 15mm stabs to radiators.

Where additional radiators are fitted as heat leaks, the pipe work must be kept as short as possible, rise on feed and fall on return.

5-6 SAFETY VALVE. (PT NO 77-01-696)

A 1" safety valve must be fitted as close to the boiler as possible (within 300mm) and the outlet from it must be directed to a safe location so as not to present any danger should the valve blow-off and exit steam or boiling water.

Note

Safe location could be through the side of the boat, with a deflector to stop any horizontal emission.

5-7 DRAIN DOWN.

A drain down valve should be fitted at the lowest point of the circuit.

5-8 CIRCULATING PUMP. (PT NO 77-01-560 & 561)

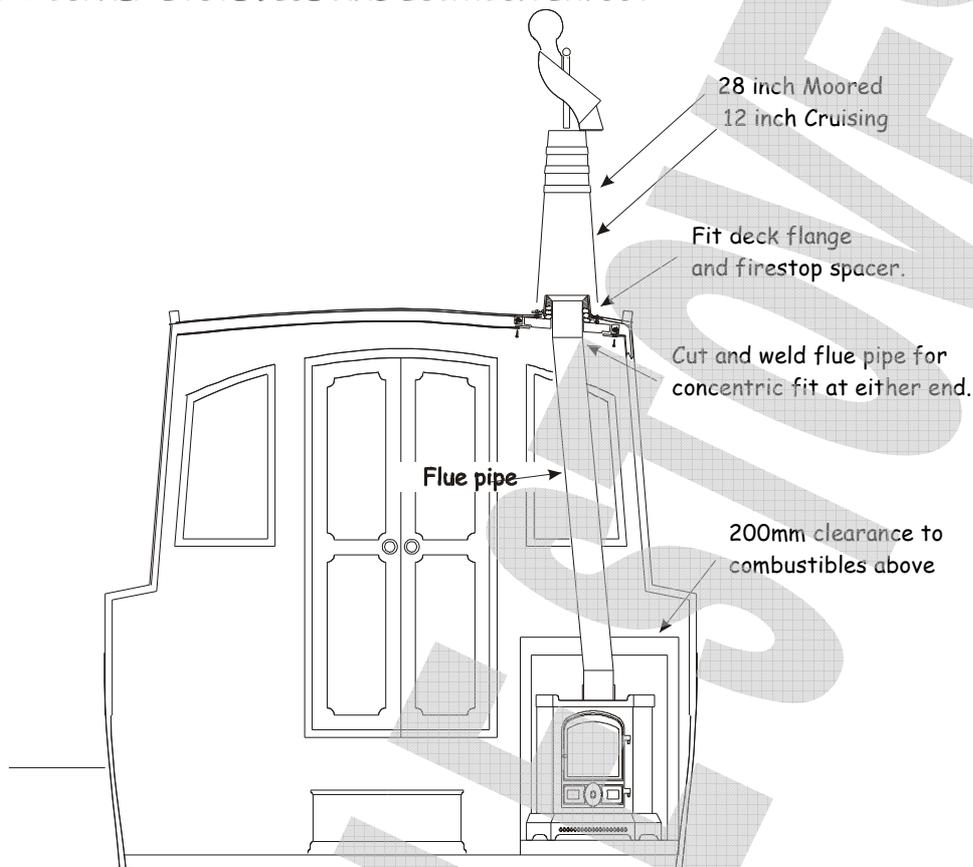
On pumped systems make sure that the circulating pump is fitted in such a way as to make it easily replaceable, this means -:

1. Lock shielded valves at either side or easy access.
2. Plug in electrical supply

Always carry a spare circulating pump on board

6. ILLUSTRATIONS

FIG 1 CORNER STOVE FLUE AND LOCATION LAYOUT



EXAMPLE OF CORNER BUBBLE SPACE SAVING

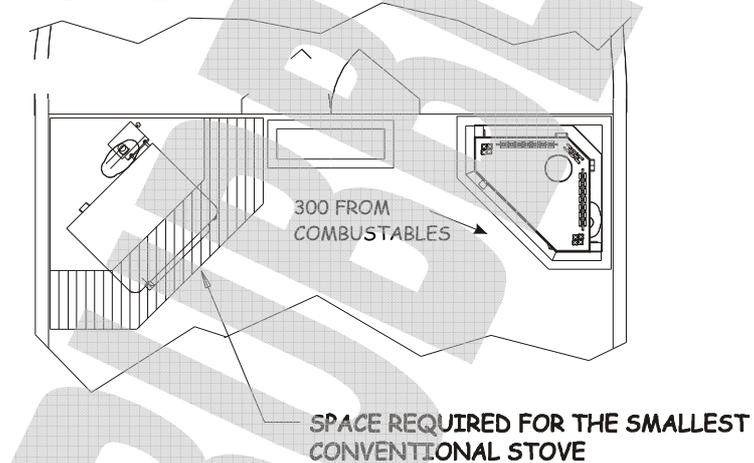
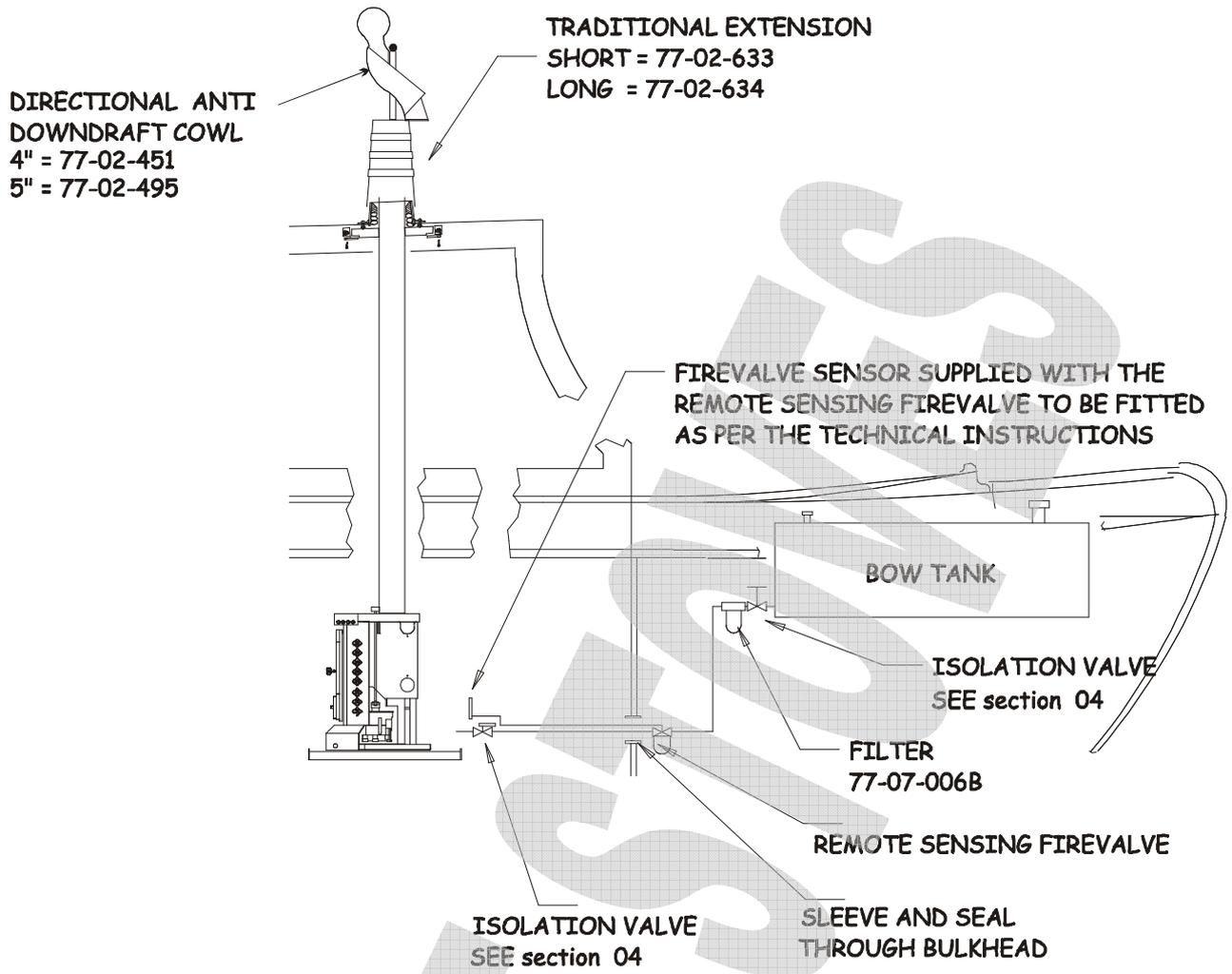


FIG 2 SCHEMATIC OIL LAYOUT
CORNER STOVE OIL LAYOUT ISS 3 15-05-03



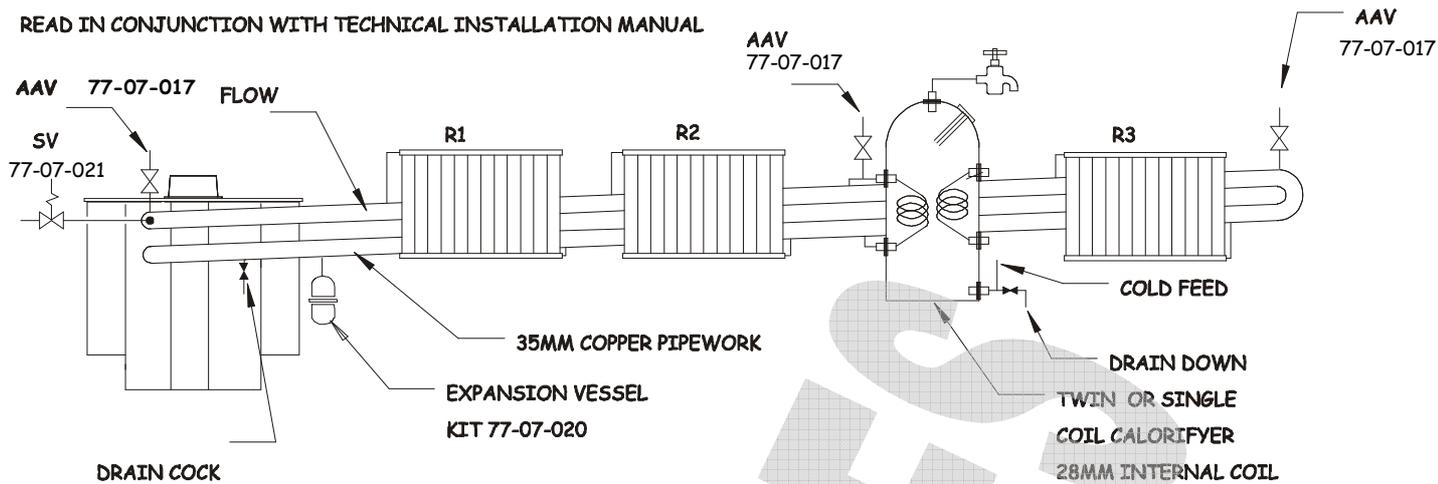
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BUBBLE

FIG 3 SCHEMATIC HEATING LAYOUTS

DRG 1 SCHEMATIC GRAVITY SYSTEM ISS1 OF 08-07-01

READ IN CONJUNCTION WITH TECHNICAL INSTALLATION MANUAL



DRG 2 SCHEMATIC PUMPED SYSTEM ISS1 OF 08-07-01

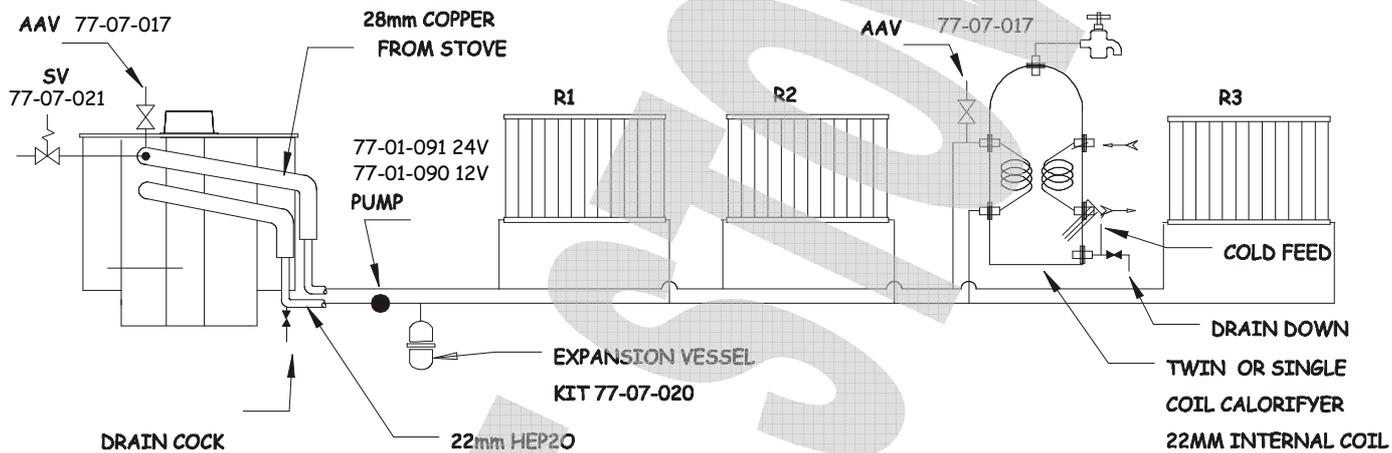
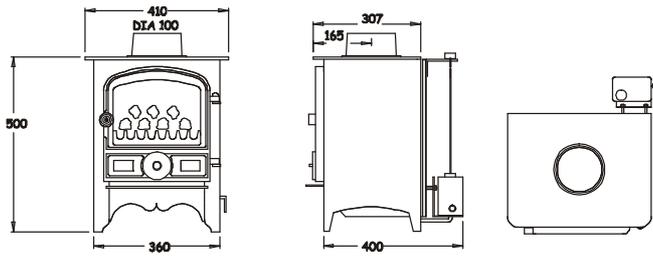
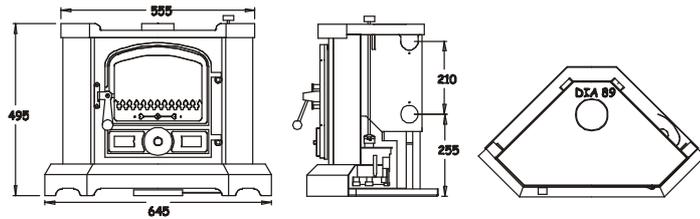


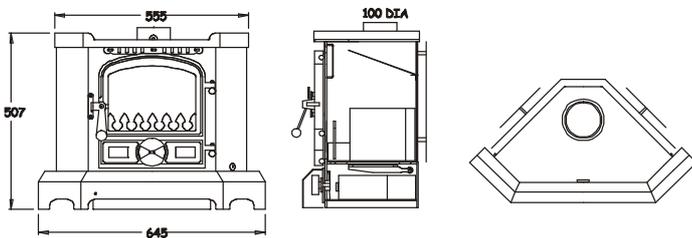
FIG 4 BASIC DIMENSIONS OF BUBBLE PRODUCTS.



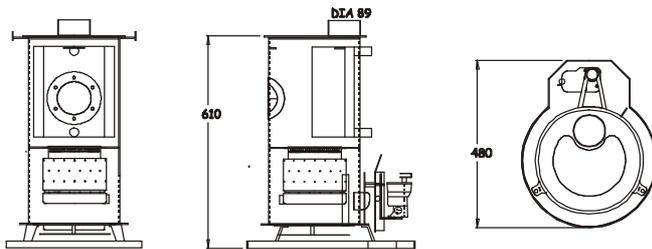
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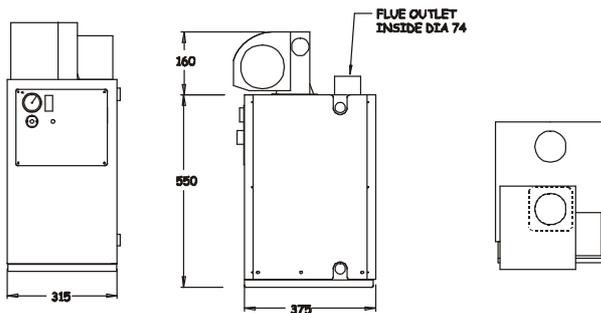
CORNER OIL



CORNER SOLID FUEL



ROUND BUBBLE



PJ AUTO BOILER

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