

COMMISSIONING B1, HALF POD MARINE STOVES 11-03-24

INDEX

1. COMMISSIONING.	1
2. THE HIGH & LOW FIRE SETTINGS.	1
3. LIGHTING B1 HALF POD, B1 PIE POD	2
4. NORMATIVE REFERENCES	4
5. B1 HALF POD OIL STOVE COMMISSIONING FORM ISSUE 11-03-24	5

1. COMMISSIONING.

Read these guidance notes first, and then use the commissioning form from page 5 onwards.

(Generally speaking, this work must be carried out by competent persons who are trained or experienced in the installation of naturally aspirated, vaporizing pot, oil fired appliances.)

2. THE HIGH & LOW FIRE SETTINGS.

Remember that vaporising pot burners are designed to turn the oil from a liquid into a gas and blue flame combustion is gas burning, not oil, so in theory it's a gas stove.

To achieve this type of blue flame combustion the burner has to reach a high enough temperature, to turn the liquid oil into a gas and so the burner needs a low fire flow rate of 4cc's per minute.

For B1 appliances, oil control valves are pre-set at 4cc min and 12 cc max and in general the only adjustment required is generally a reduction in the 12cc per minute high fire rate.

INITIAL START UP OIL FLOW PROBLEMS.

On first start up it is not unusual to have low fire oil flow problems through the Toby Oil Control Valve.

The metering stem, inside the valve can be blocked by a collection of micro air bubbles causing a meniscus lock which can be cleared by the application of small taps via a plastic handled screwdriver on to the cast aluminium body of the oil control valve.

Before trying to light the burner in cold weather it is advisable to first, pre heat the flue pipe otherwise the flue pipe will have a plug of cold heavy air which is reluctant to move.

A relevant oil control valve catalogue is supplied with each appliance.

On the Toby valve the low fire screw is clearly visible as per TOBY MANUAL FIG 2

When the burner has established good blue flame combustion turn it up to half output. (Setting 3 on the fuel flow control knob) and let it stabilize.

After the first lighting of the appliance, allow at least half an hour for the chimney to thoroughly warm up before making any adjustments to the high or low fire screws.

Turn the stove down onto its minimum firing rate and let it stabilize.

After stabilization there should be a dull red glow in the lower catalyser with wispy blue flames flicking into and just over it.

If the flame falls into a dirty rolling yellow flame and the catalyser is not dull red then the burner is suffering from inadequate oil flow and the low fire will need to be increased until it can support the required blue flame combustion.

To increase the low fire oil flow, screw the adjusting screw out by quarter turn increments only.

When you are happy with the low fire, set the high fire.

Turn the oil flow knob up to setting 4, let the flame stabilize, if it is stable and blue, turn it up slowly using the control knob, letting it stabilize after each movement, if the flame starts to go yellow with long flame yellowish combustion, it is running fuel rich and the high fire screw needs adjusting to reduce the flow of oil. (Screw the adjuster screw in, to reduce the high fire oil flow.)

Before adjusting the high fire screw, turn the flame down and let it stabilize in blue flame combustion, adjust the high fire screw by half a turn in and try turning the fuel flow up, if it is still fuel rich repeat the process until the high fire flame is running blue with just flicks of yellow in the tips.

To see a bubble stove running correctly see the following link.

<https://www.youtube.com/watch?v=UqdQLFp3HkQ>

IF THE HIGH FIRE SETTING NEEDS TO BE ADJUSTED, THE FLUE PIPE SHOULD BE A MINIMUM OF 1.8 METERS HIGH FOR LOW FIRE ADJUSTMENT AND 2.1 METERS FOR HIGH FIRE ADJUSTMENT.

THE OIL FLOW RANGE IS 4CC'S PER MINUTE MINIMUM AND 12CC'S PER MINUTE MAXIMUM.

INSTALLING ENGINEERS SHOULD NOT LEAVE THE APPLIANCE UNDER THE CONTROL OF THE CUSTOMER UNLESS THE APPLIANCE HAS BEEN CORRECTLY COMMISSIONED.

TO SEE HOW THE BURNER SHOULD LOOK AFTER COMMISSIONING SEE THIS LINK :-

<https://www.youtube.com/watch?v=UqdQLFp3HkQ>

This video shows the burner running from low to high fire and back to low fire.

Note that this video is filmed on a normal house chimney and so it may not be possible to get exactly the same conditions on a typical boat flue as the fuel air ratio will not be exactly the same, hence the need for fine tuning the oil flow to the chimney air flow capability.

3. LIGHTING B1 HALF POD, B1 PIE POD

When attempting to light the stove these are the rules, which must be followed.

Always make sure that the pot is **not** flooded with oil by looking down into the base of the pot.

Never try to light the stove if it is flooded with oil.

Always check that oil has not leaked from the appliance if it has been left in a flooded condition, ie excess oil depth built up in the base of the appliance.

Do not light the stove and leave it unattended until it is settled down and stabilized into constant blue flame combustion on low fire. (This could take 10 to 20 minutes.)

On first light up it is advisable to warm the flue pipe up to try and create adequate chimney vacuum.

3-1 Two Ways to Light the Stove

Through the lighting port

or

Directly into the base of the pot by first removing the flame ring and upper and lower catalysers.

3-2 Lighting into the base of the Pot

On the first light up you may find this option better, as it is possible to see the oil trickle in to the pot more easily.

Use a heatproof glove when putting the catalysers back into the pot and it is important to replace them quickly whilst the flame is small.

Make sure that the oil is turned off.

Open the front door.

Remove the optional coal kit if fitted.

Remove the upper and lower catalysers together with the flame ring.

Turn the oil on and allow a small pool of oil to flow into the pot about the size of a digestive biscuit, **then turn the oil off.**

Note that on first light up it may take a few minutes for the oil to reach the pot as it has to first fill the pipework before reaching the pot, take care not to allow excess oil to flow into the pot, as soon as oil can be seen entering into the pot, turn the oil flow control off and make sure that the oil flow stops.

This will confirm that the on-off control on the oil control valve is working as required.

Light a small piece of firelighter and drop it into the oil, allow a few seconds for it to get going and then replace the lower and upper catalysers and close the door.

Wait for approx. 1 minute until the pool of oil is well a light and then **turn the oil on** to minimum setting no 1.

Watch the appliance until the flame becomes established and settles down into blue flame combustion.

(Depending upon atmospheric conditions this process can take 10 minutes or so.

If at any time during the ignition process large amounts of flame can be seen, turn the oil off immediately and wait until the flames die down before putting the oil on again at minimum setting.

Allow the burner to run for a further 10 minutes before turning the appliance up to the higher settings.

Note there may be the occasional growl or audible vibration whilst the burner settles down into blue flame combustion.

3-3 Manual Lighting through the Lighting Port B1 and B2 appliances.

Check that the isolation valve is turned on.

Open the front door.

Remove the front apron on B1 Half Pod and B1 pie Pod.

Remove the lighting port plug by pulling it out of its tubular socket.

Turn the oil on to the first position via the flow control knob and allow a small pool of oil to flow into the pot about the size of a small digestive biscuit.

Turn the oil off.

Cut a small piece of firelighter and stab it onto the spike.

Light it and push it into the lighting port tube, let the firelighter drop off the spike into the bottom of the pot.

Replace the lighting port plug back into the tube.

Close the front door.

Turn the fuel flow on again at the lowest setting

Watch the appliance for a few minutes until it settles down into blue flame combustion.

Allow the burner to run for a further 10 minutes before turning the appliance up to the higher settings.

If at any time during the ignition process large amounts of flame can be seen, turn the oil off immediately and wait until they die down before turning the oil on again.

Note there may be the occasional growl or audible vibration whilst the burner settles down into blue flame combustion. *(When the burner has stabilised, the growling will cease.)*

At this point check the chimney vacuum. On the left-hand side of the appliance is a Dwyer test point plug which can be removed to allow for the insertion of the vacuum gauge.

Because of the lack of chimney height, chimney vacuum is always difficult on boat chimneys, we are looking for between .015" on low fire and .03" on high fire but achieving this will depend upon chimney height, construction and atmospheric conditions.

A typical domestic flue will generate in excess of .05" WG where as a typical 2-meter boat flue vacuum may be half or less than half of that.

4. NORMATIVE REFERENCES

Boat installation work comes under the control of

The Boat Safety Scheme.

This scheme provides statutory requirements and associated EN / BS Standards for most aspects of installation work on boats. Further information and a copy of the requirements can be obtained from

www.boatsafetyscheme.com

Additional Information.

The latest version of Bubble Oil Stove installation instructions.

<https://www.harworthheating.co.uk/downloads/Technical/Bubble/Bubble%20Installation%20Info/>

Service information from the Harworth web site.

<https://www.harworthheating.co.uk/downloads/Technical/Bubble/Bubble%20Service%20Info/>

Call OFTEC to find local training courses for vaporizing pot burners. - www.oftec.org

OFTEC - OFT10-102 Servicing & Commissioning of vaporising burner fired domestic, fixed combustion appliances.

TO SEE A VIDEO OF HOW THE BURNER SHOULD OPERATE, VISIT: -

<https://www.youtube.com/watch?v=UqdQLFp3HkQ> This video shows a typical flame picture from low to high fire and back to low fire.

If you have any difficulties, please phone our technical help line on:-

01302 742520 fax 01302 750573

e-mail contact@harworthheating.co.uk

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

© HARWORTH HEATING LTD 30.6.98

This publication may not be copied by any means, without written permission from the authors.

These products are 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 publication.

The appliances mentioned in this publication can only be installed and serviced by approved personnel.

Approved personnel means that they HAVE BEEN SUITABLY TRAINED or have gained adequate empirical experience on our products.

5. B1 HALF POD OIL STOVE COMMISSIONING FORM ISSUE 11-03-24

If appliances are supplied with a coal kit it should be removed before starting.

Commissioning must be carried out after the vessel has been launched and ballasted.

BOAT NAME	
CUSTOMER	
LOCATION	
DATE	
APPLIANCE SERIAL NUMBER	
ENGINEER	

PURGE THE OIL SUPPLY PIPEWORK.

Disconnect the oil feed to the oil control valve and purge any air or debris from the line until a clear air free flow of oil is established, note that it is possible to have debris downstream from fuel filter which can get into the shut off needle valve which controls the level of oil in the oil control valve.

RE CONNECT THE OIL SUPPLY PIPE WORK.

CHECK FOR OIL LEAKS

Oil feed pipework.

Isolation valves.

Fire valve.

Fuel filtration equipment.

Fuel feed tank.

Oil flow control valve.

Vaporizing burner pot.

Burner descaling device.

FLUE SYSTEM (AIR LEAKS)

The flue system must be sound, of adequate height, and free from joint leaks.

(Flue height from appliance to terminal should be 1.8M for low fire and 2.1M for high fire.)

Check that the swinging barometric damper, in the appliance backplate, is free to swing and closes correctly.

COMBUSTION

If required, adjust the high and low fire setting on the oil control valve. (See additional notes.)

(Fuel air ratio is mainly to do with the volume of fuel flow as the air content is generally controlled by the natural automatic action of the flue system, the oil flow is factory

pre-set at min 4cc's per minute and max 12cc's per minute.)

SECURITY & SAFETY

Check that the appliance is correctly fastened down.

Check the distances from combustible materials.

USER AWARENESS

Provide customer with user instructions and brief on :-

Lighting and safe use of the appliance.

Isolation of the oil flow to the appliance.

Features and function of the KBB remote sensing fire-valve.

Operation of Carbon Monoxide alarm.

Operation of Electric fuel pump if fitted. (switches etc)

If items listed are not fitted, please note (NF) accordingly

Commissioning Technician Signature	
Client - Owner Acceptance & Date	
Additional Notes	

Please leave this form with the boat owner.