Droitwich Waterways (Pamela May) Trust Ltd

Registered Charity Number: 1149844 Company Number: 7662700 www.droitwichcanals.co.uk

- Pamela May - Maintenance Schedule

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PAMELA MAY MAINTENANCE SCHEDULE

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1.0: Introduction

This document supplements the Pamela May Operation Procedures Manual giving additional information and technical details for those crew members involved in maintenance

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ISSUES:

Issue 1.0: Extracted from the Pamela May Operation Procedures Manual, reassembled and brought up to date. February 2018

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2.0: Maintenance checks prior to trip.

Maintenance checks prior to a trip given here are defined in the opening up check list in Paragraph 4.1.1 of the Pamela May operation Procedures Manual.

2.1: The Skipper and Crew will jointly carry out the following checks before each trip.
When approaching the boat, familiarise oneself with the entrance and exit and look to see how it is sitting in the water – the rubbing strake should be just above the water level. Also the gas locker vent holes should be well above water level.
When boarding, look in galley above sink for defects books. Study the outstanding defects/problems. If they have not been rectified consult the Service Manager before proceeding with the trip.

2.2: Bilge Water

Lift the floor board and check bilges for water. There are four sections:
a) housing the stern gland. This contains the automatic pump out but can also be controlled manually from the control panel (when the power is on).
b) engine housing.
c) two “swims” on each side of the engine housing section.
If there is water in the latter three sections, consult the Service manager, and pump out manually.

2.3: Gas

Smell for gas in bow gas locker before proceeding. If gas is smelt **DO NOT** let anyone aboard and contact Service Manager for advice.
Check that the WHITE bottle selector switch wheel is selected to ‘in-use’ bottle.
Turn on gas at bottle by turning YELLOW isolating switch in line with gas piping and replace gas locker bin lid.
In galley, again smell for gas. Check that all the Gas cooker taps are in the off position. Switch on gas in cupboard beneath gas hob by turning lever in line to pipe. Test light one burner by pushing knob down lightly for about three seconds, release and confirm flame burns BLUE. This colour may vary slightly with weather conditions.
The tap in the cupboard below the cooker is for maintenance purpose only so it should be left on all the time, the yellow tap in the gas locker shuts every thing down so there is no need to close it.
The tap on the heater is the same should be on all the time.
See section 6.0 for details of operating and maintaining the heater.

2.4: Engine

Remove steps into galley and remove access hatch panel by moving brass bolts. This panel is heavy so take care!
Cooling water. Look for leaks around the engine. Remove cap (at 12 o’clock looking from galley) and feel with finger for presence of water. If no water is present, contact the Service manager for advice before proceeding. Replace cap.
Oil. Remove dipstick and check level is between bottom and top mark. Wipe with cloth and replace. If level is below bottom mark, contact the Service Manager for advice.
Fan belt tension. Using fingers check movement of belt is less than ½ inch. Also check for diesel fuel leakage on bolts. If belt is slack or risk of slippage, contact the Service Manager for advice. Replace access hatch panel and secure brass bolts. Replace steps.

2.5: Electricity.

Lift rear access hatch and Switch on electrics by turning the red key 90 degrees clockwise and listen for relay “click. This enables power to be charged to both batteries when the engine starts. *Keep the key in the socket to avoid loosing the brass engagement pin*.
Any malfunctions or defects are to be reported to Tom Pedlow and recorded by the crew discovering them in the DEFECT LOG, which is kept with the TRIP LOG held on the boat.

3.0: Maintenance Checks after a Trip.

The items below are included in the ‘Closing Down Check List, para 4.7.3 of the Pamela May Operation Procedures Manual.

Secure bow, centre and stern ropes leaving enough slack to allow for rise and fall in water level.
Ensure that all fenders are down.
Turn off all lights and electrical appliances.
With throttle in neutral, switch off engine by pressing the black rubber button on engine panel.
Only turn off ignition key when engine has stopped.
Keep ignition key in your pocked to avoid someone accidentally turning the engine on during the next step.
Take up rear deck board.
Screw down on stern gland greaser until tight and water seepage has stopped. If seepage continues then gently turn the prop shaft using your foot while screwing down the gland greaser again.
Check weed hatch cover is closed and sealed but do not tighten screw further.
Turn off water pump switches adjacent to galley sink.
Operate bilge pump to clear excess water from engine bilge, **then** switch off pump.
Isolate battery by turning isolator key anti-clockwise.
Replace red blanking cap over battery isolator key-way.
Dip fuel using graduated dipstick and record level (cm) in Trip Log.
Complete Trip Log.
Put ignition key and water key back on their hooks.

Any matter which, in the opinion of the skipper, is likely to adversely affect further use of the boat is to be reported to the Crew Control Manager at the earliest opportunity.

4.0: Regular Maintenance.

Monthly or as required.

4.1. Cleaning Toilet and removing waste.

Remove toilet waste at pump out stations (at either Dunhampstead or Droitwich Marina). The key to remove cap on outer starboard side deck is kept in the cutlery drawer. The staff at the pump out facility will empty tank. Ensure that 1 litre of Elson blue, or equivalent, is added to tank after emptying.

4.2. Adding Water.

Open the forward hatch and connect hose to tap forward of (and behind) gas bottles at a water station in Netherwich Basin (or at either Dunhampstead or Droitwich Marina). The amount of water added should be limited and considered as a boat "trim" – enough prevent a) the bow being too low in the water ensuring that the gas bottle compartment drain holes are above the water level and b) to weigh the bow sufficiently to enable good steering control. As a rough guide a filling time of five minutes should be allowed. If too much water is added switch on the sink taps to drain. *Make sure that the drain holes in the gas compartment are more than 3cm above the waterline to allow for the added potential weight of 12 passengers and 3 crew.*

4.3: Cleaning weed hatch.

Owing to the health hazard of getting cuts from rough edges on the propeller blades, fishing lines and hooks, this should only be carried out if there is evidence of fouling of the propeller.

If fouling is suspected during a trip the procedure is to select neutral then reverse (after a pause) for three to five seconds before returning to forward. Repeat cycle if necessary. Only if this fails should the Weed Hatch cover be opened to remove any fouling. There is sharp cutting knife (Stanley type) in the cutlery drawer.
N. B. ***Tom says "do not*** open weed hatch unless necessary".

4.4: Changing gas bottles.

This is to be done under the supervision of the Service Manager. See "Gas Heater Operation Instructions" Section 5.0

4.5: Checking and changing battery.

Only the Service Manager is allowed to change the battery.

4.6: Topping up oil.

Only the Service Manager is allowed to fill oil to between the lower and upper marks.

4.7: Topping up coolant.

Only the Service Manager is allowed to top up the water and only when the engine is cold.

4.8 Hydraulic Lift Motor.

This is secured to the side wall beneath the rear cabin seat. This should not be touched and does not require regular maintenance. In the event of a problem contact the Boat Engineer. Spares may be obtained from Hydraquip Hydraulics 01543 544543.

5.0: Annual Maintenance.

5.1: Lift service.

Raise the lift and chock with jack and wood blocks to access greasing points.
There are three grease points requiring a grease gun at the central scissor bearing and at the rear upper bearings. Also there are four locations pins requiring oiling.

5.2: Winter actions

At the end of the season (November) fill diesel tank to prevent condensation.

The water tank must be drained off at the end of the season (November) to prevent frost damage.
Open the access panel on the floor at the front of the galley to check it is in the open position – lever in line with pipe.
Open the rear access floor panel and open valve using screw driver to rotate isolating valve and allow water to drain. Ensure electrical power is left on until operation is complete.

5.3: Engine Service.

This is carried out by "Berry Hill Motors, St Oswalds, Hadzor Lane, Hadzor.
WR9 77DW. Telephone: 01905 798142.
Part numbers for replacement parts are:

Air filter	AF25530
Fuel filter	WIX33390
Oil Filter	WIX33390
Alternator belt	Gates 6275MC8A
Engine Oil	10/40 semi synthetic

5.4 Repainting the hull bottom.

Andy Edwards of Dunhampstead marina repaints the boat as required.

The hull was last painted in 2016 with bitumen paint at the Droitwich Marina. This has a 3 year warranty – until 2019.

5.6: Cleaning Brass: ventilation cowls, steering gear,locks etc.

Polish with Brasso or equivalent as often as possible.

5.7: Coating stern wood railing

Smooth any defects and Varnish locally with Yacht Quality varnish.

5.8: Repairing scratches.

Clean damaged area with with white spirit. Abrade with fine emery and coat with a corrosion resistant paint such as Hammerite metal primer. After touch dry add a thin coating of yacht quality paint of the appropriate colour.

PAMELA MAY: A TYPICAL END OF SEASON MAINTENANCE AND REPAIR SCHEDULE (Done Dec 2017)

1. Stern fender requires cleaning
2. The swim and weed hatch and drains need to be cleaned and painted with locker paint
3. Check for wear and tear in the morse controls
4. Movement within the top hand rail on the starboard side
5. Engine service to be arranged with Berryhill Motors
6. Battery Maintenance/full service,(with supervision)
7. Wiring check for corrosion, test RCD
8. Fire extinguishers Ok to Feb 2018!
9. Water tank, slight damage on top rear boss, slow leak, but no water damage occurring, all other pipe work and blow off valve sound.
10. Hydraulic lift, this requires under plate inspection and greasing (With supervision)
    Control box lift pump and pipe work are sound
11. The steps are getting shaky, require a stiffening bar to be fitted
12. Gas test on hob and all flexible pipe work (with supervision)
13. Toilet, very slight movement in the pan, OK at this time
    Air vent broken requires replacement
14. Gas heater, requires checking for dust build up in the box and for loose or trapped wiring, exhaust pipe is sound
15. Forward cabin, all 4 tables are in poor condition, need major repair or removing, carpet and wall panels are all ok.
16. Both hatches, these require to be removed and higher quality wood to be fitted, and all runners to be reset
17. Front doors, there is damage to the top of the port side door on the lock, this needs to be remounted into the door recess
18. Gas locker, requires large rust scale removing, and treated with an anti-rust compound. Gas test required to auto change over and its pipe work (with supervision)
19. Front fender, this requires a replacement or a repair and general boat paint work requires cleaning and touching up, plus all fenders are to be checked for rope damage
20. Centre rope replacement, to make it more useful.

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Some of these jobs requires supervision and can be used as a training module

6.0: HEATER OPERATION

Gas Heater operation instructions

Start up procedures

Gas locker.
Comprises of two gas bottles connected to a valve regulator , this regulator is designed to continue running when the leading bottle runs out the secondary bottle will take over..fig/1

COMAP

TYPE COMPACT

CHANGEOVER VALVE
OPERATING INSTRUCTIONS
FOR USE WITH PROPANE

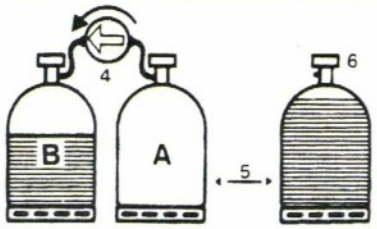


- Having connected up the cylinders, make sure the connections are tight and that there are no gas leaks by testing with soapy water, check that the indicator is pointing either to the left or to the right and then.

- OPEN both cylinder valves and on doing this you will find that the indicator will turn white. The arrow is now pointing to the cylinder that is in service.
In this case cylinder " A "

3 – When the service cylinder " A " is empty, the indicator will turn red and gas will be drawn from the reserve cylinder " B ". Do not change the indicator arrow at this stage as any residual gas in cylinder " A " will continue to be used.
Order a replacement cylinder.





4 – Before the replacement cylinder is fitted turn off cylinder " A ", and turn the indicator arrow to reserve cylinder " B ". The indicator will now turn white, this shows that the cylinder to which the indicator is pointing is now the service cylinder.

5 – The empty cylinder " A " can now be removed and a new reserve cylinder installed.

6 – Having installed the new reserve cylinder don't forget to turn on the cylinder valve, checking at the same time that there are no gas leaks by means of soapy water.

(A) Leave this card fixed to the changeover valve.
(B) In case of difficulty, turn off both cylinders and contact your supplier.

fig/2 shows the regulator in its operating position with the yellow valve in it open position,but the indicator is showing that there is no gas in the line and has opened up bottle B



HEATER
OPERATION

Before use: Pay particular attention to the exhaust outlet and combustion air inlets to check that neither have been blocked or damaged.

a) Check the gas supply is turned on and that the battery voltage is correct. Minimum operating voltage is 10v and max. operating voltage is 15v (for 12v heaters) when measured at the heater.

b) Rotate the thermostat temperature dial fully anti-clockwise and put the 3 position knob to the flame position.

c) Rotate the temperature dial until the fan starts. There will be a pre-purge pause of approx 20 seconds to allow any un-burnt gas to leave the flue. A green LED will illuminate after successful flame ignition.

d) If there is air in the line it may take a few attempts for the gas to ignite. See page 7 for gas lockout resetting. If ignition is not satisfactory the red LED will flash, refer to the trouble shooting guide page 7

e) Find the desired temperature setting by adjusting the dial on the thermostat. The heater will then cycle on and off to maintain that temperature.

f) When the set temperature is reached the green light will go out and the heater will start its post purge cycle.

g) If the 3 position knob is in the fan position the green LED will illuminate and the fan will blow cold air continuously.

Sequence of operation:

Switch on
↓
Heater motor starts
↓
20 second pre-purge to clear gases from heat exchanger
↓
Gas valve opens
↓
Spark generator operates
↓
Motor speeds up to normal operating speed
↓
Heater switches off when thermostat temperature reached
↓
Post Purge – fan runs on its own for 3 minutes
↓
Temperature drops
↓
Cycle repeated

MAINTENANCE

The installation must be inspected and tested annually by a registered person (see item a) on page 2) and any servicing and cleaning identified carried out. Servicing and removal of the main cover must only be performed by an approved fitter or the manufacturer.

The heater should not be left for long periods without use. It is advisable to run the unit for short periods throughout the summer.

The exhaust and inlet pipes should be inspected periodically for damage and any build-up of dirt around the ends. Clean or replace as necessary.

HEATER OPERATION

FAULT FINDING

The Heatsource HS2000 is equipped with an electronic diagnostic system which will detect fault conditions ranging from poor gas or electricity supply to internal heater malfunctions. In the event of a failure the yellow light on the thermostat or timer control will flash a certain amount of times, pause, and repeat until switched off. Count the amount of flashes and refer to the table below.

Manual Overheat Cut-Out. The HS2000 incorporates an overheat cut-out which has to be re-set manually. If the heater reaches an unusually high temperature during operation the cut-out will disengage the gas solenoid valve, cutting off the gas supply to the burner. The operation of this cut-out could be caused by either a restricted hot air outlet or air inlet, or the heater being switched off by a battery isolating switch depriving it of its purge cycle. To find the cut-out, remove the electronics cover on the heater and look for it positioned above the PCB with 2 yellow wires attached to it. Press the small red button between the terminals, the fault code is 7 flashes.

FAULT FINDING TABLE

Number of flashes	Fault	Remedy
2	Flame failure	Check gas supply making sure there is gas in the bottle and no blockage in the gas line. Ensure propane is used at temperatures below +5°C. Clear lockout as described below.
3	Low/ high voltage	Minimum operating voltage is 10v and max operating voltage is 15v (for 12v heaters) when measured at the heater. Check battery voltage. If above 10v, check connections between heater and battery. Check alternator or external battery charging. Clear lockout as described below.
5	Combustion air fault	Check combustion air flue and exhaust flue for blockages. Possible blockage in combustion air inlet/outlet duct. Inspect duct for blockage/damage. Inspect inlet pipe on the heater (closest to the back) for signs of damage.
7	Overheat fault	Hot air temperature is too high. Check the air ducts and vents are not blocked or restricted. We recommend you wait at least 5 to 10 minutes to allow the heater to cool before clearing lockout as described below. Check ducting for blockages.
6,9,10	Other faults	Attempt to clear lockout as shown below. If this fails, contact Propex
No flashing	PCB not powered up	Check the supply to the heater as above. Otherwise contact Propex

Gas Lockouts

Gas lockouts must be cleared by moving the left-hand knob from gas on (flame) position to off position then back to the on position. The complete sequence of switch movements must be completed within 2.5 seconds for a lockout to be successfully cleared. If there is air in the gas line, e.g. after a gas bottle change, the space heater may require several attempts before it lights.