

Multihatch MkII

User Instructions

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Resist the temptation to leave the cleaning of your incubator until you next want to use it! Always put it away dry!

B Modules

The setting up procedure is generally as for the Multihatch "A". The additional components for B modules are supplied in a separate package.

The Multihatch "A" frame (which holds the rods) should be removed and put aside. The frames of troughs can now be located above the egg tray but the tray must first be adjusted for the correct amount of movement. This is done by removing the turning arm and relocating it in one of the three positions available as follows:-

Trough Size

2. (quail)
4. (pheasant)
6. (hen)
8. (duck)
10. (geese)

Shaft Mounting Hole

- near wheel
- middle (as supplied)
- middle (as supplied)
- away from wheel

Note: Damage may be done to the turning motor or gearbox if the wrong settings are used.

Eggs are set in the troughs end to end with the long axis horizontal. Normally eggs will be set in batches of one or two trays at a time. Always set eggs at the bottom of the incubator and move them up as more eggs are set.

Frames may be lifted out singly or several at a time. When they are filled with eggs they may be quite heavy and it is safer to handle them individually. Be sure to have a level surface handy on which to place frames during manipulation.

Make sure each frame is correctly located in the one below so that the troughs turn properly. Identify the frames so that you can record the date of setting of the eggs in each frame.

In the case of quail, the eggs can be set vertically with the small end down. This allows more eggs to be accommodated. Adhesive foam strips stuck along the inside edges of the troughs hold the eggs securely when this method is adopted. The same technique can also be adopted for other small eggs to be set in larger troughs, thus allowing a mixture of eggs to be accommodated in the same machine.

In cold weather pre-warming eggs before setting reduces the shock to the newly set eggs and reduces the cooling effect on other eggs in the incubator. Place eggs in the frames outside the incubator and don't open the lid until you are ready to set them. Don't set frames with an incomplete complement of troughs. An empty trough will still transmit the turning action to the row above. If a trough is omitted, all those above will fail to turn.

Eggs must not be hatched in the troughs. They must be transferred to a separate hatcher or to hatching cages.

Hatching Cages:

Hatching cages are available to enable hatching to be carried out in "B" modules. The cages locate above the top frame of eggs. Fibre mats are provided to lay across the floor of each cage to prevent fluff from falling upon the eggs below. It is most important that these mats are always used. They should be washed or replaced between hatches.

It is only permissible to hatch in one tier in the incubator. Cages hold comfortably the capacity of one frame of eggs. It is not normally practical to use hatching cages in conjunction with two "B" modules because the hatching capacity is insufficient.

Servicing:

First unplugging from the mains!

All parts of your Multihatch incubator are easily accessible. To carry out any cleaning or servicing, remove screws and unplug the control unit. The cabinet modules can be lifted off to reveal the nuts which retain the chassis to the base moulding. With these nuts removed access is obtained to all parts.

Periodically a drop of oil or grease should also be applied to the moving parts of the egg turning mechanism. The fan motor bearings are ball races and should not be lubricated.

If a motor or heater should require replacement, the connecting pins are to be removed from the plug from the back after first flattening the retaining barbs on the pins from the front with a small screwdriver. The replacement will be supplied with new pins.

Introduction:

These instructions are intended to give the incubator user an understanding of the procedures - rather than just plain step-by-step instructions. Incubating eggs at this level is something of an art and while simple instructions may be easy to follow, they can also be misleading.

It is hoped that these instructions will enable users to achieve high levels of success and to understand and resolve most incubation problems for themselves. We are always very willing to discuss difficulties and to advise to the best of our ability. However, before consulting us, do please read these instructions through once more - carefully.

Positioning:

A good location for your incubator is important. A room within the house is best but an outbuilding may be satisfactory, provided that:-

- It has masonry construction or a high level of insulation to prevent the day/night temperature swing being excessive.
- Windows are small and the incubator does not receive direct sunlight.
- Some background level of room heating is used at night if the incubator is to be used in the winter. The room temperature should not fall below 10°C.

The incubator should stand on a smooth level table or worktop with enough space alongside for standing down the incubator lid or frames of eggs. The worktop should be at a suitable level to enable you to look easily through the window of eggs in and out without strain. The worktop should be about 400 to 500mm high where modules are used.

Remove the transit straps holding down the notched upper frame and lift the frame out. Lift

out the egg tray and packing material and loose components. These are the control unit, rods, filters and expanded metal filter supports. Place the filters on the supports in the recesses under the egg tray. Replace the egg tray and notched frame.

Electrical Supply:

Standard machines are equipped for 220 - 240v. mains supply. The supply voltage is marked on the back of the control unit. The flex has three cores and the earth wire must be connected. If no plug is fitted, fit a 13 amp plug with a 3 amp fuse. The colour coding is as follows:

- Blue to pin marked N or Neutral
- Brown to fused pin marked L or Live
- Green/Yellow (where fitted) to pin marked \perp or earth

If you are in any doubt about fitting plugs or the electrical supply, consult a competent person or contact our office.

The second flex from the control unit terminates with a special connector which plugs into the socket on the lid of the incubator. Pass this flex under the centre of the incubator base and push the connector firmly into the socket.

NOTE: If this plug is not connected, the heating system will not work and the indicator light will not show.

Temperature Adjustment:

The most vital thing to get right is the temperature. Multihatch incubators have electronic temperature control which will hold temperature to within $\pm 0.1^\circ\text{C}$ near the detector. Adjustments are made by turning the control screw towards + to increase temperature and towards - to reduce temperature. The red indicator shows exactly what condition the control is in as follows:-

Brinsea Products Ltd.

Station Road, Sandford, Avon BS19 5RA. England. Tel: Banwell (0934) 823039

On continuously - incubator below setting and heater fully on.

Off continuously - incubator above setting and heater off (or mains supply disconnected).

Flashing steadily - incubator at set temperature and power supplied intermittently to heater.

The temperature within the incubator is uniform and should be set to read 37.5°C to 37.8°C for most species. To set the temperature correctly proceed as follows:-

Fit the thermometer carefully into the clips and position it so that it can be read easily through the window. Check that the mercury column (or spirit) in the thermometer is continuous and that no fluid has become detached. Do not continue to use an instrument with a separated column as the accuracy will be impaired.

The incubator should now be connected and left to warm up and stabilise for several hours with occasional adjustment of the temperature until a steady 37.5°C is achieved.

The proof of the correct temperature setting is that the majority of the eggs hatch simultaneously and after the correct incubation period. If the eggs hatch too soon the temperature has been too high and vice versa. A "spread" hatch usually indicates low temperature or that some of the eggs were old when set.

Ventilation & Humidity

Ventilation and humidity are closely linked in incubators. The eggs must have sufficient fresh air to meet the oxygen requirement of the developing embryos. At the same time care must be taken to prevent the fluids within the eggs from drying out too quickly. Eggs generally lose about 12 or 13% of their weight over the incubation period. Too much loss results in small sticky chicks. Too little causes the chicks to be large and wet and often results in difficulty emerging from the egg.

Water loss is dependent upon humidity and upon the shell porosity of the particular eggs. The Multihatch has a fan circulating the air between the eggs and the usual recommendations for forced draught incubators apply.

Generally, relative humidity should be maintained in the region of 50% during incubation and increased to 70% or more during hatching. Higher levels have sometimes been suggested for eggs of waterfowl but we do not believe this to be beneficial. The eggs of ducks and geese can easily be spoiled if the air space is not allowed to increase to the proper extent by

hatching time. Humidity is adjusted by moving the lever under the control unit. The left hand position is "Low" and the right hand side is "High". Water should be poured carefully into the pans in the base of the machine through the two slots on the front. The level can be taken up near to the lips (any spillage of water will happen from the front before the pans overflow inside). The level of water in the pans makes little difference to humidity. It is the area of water and the lever setting which are important.

Suggested settings are as follows:-

Set the lever ½ up from the left and fill one water pan. When eggs start to pip, raise the humidity control to maximum (to the right) and fill both pans with water. Note that in warm summer conditions or damp mild weather the ambient humidity will be higher and it may be necessary to operate at a lower setting. However, humidity should still be raised at hatching stage. Conversely, in very cold weather the ambient humidity may be very low, even in a heated room and higher humidity settings will be required to maintain the correct level in the incubator. One other factor which will affect humidity is the condition of the filters. If they become contaminated so that air flow through the filters is reduced, the fan will draw in more fresh air resulting in a fall in R.H. Conversely, leaving the filters out will raise the humidity.

Measurement of humidity may be performed with a "wet bulb thermometer" or with a direct reading hygrometer. Instructions for fitting and using these items is provided with the instrument. However, wet bulb readings corresponding to % relative humidity at 37.5°C are given here for reference.

40% Relative humidity = 26.4°C wet bulb
50% " " " = 28.7°C " "
60% " " " = 30.7°C " "
70% " " " = 32.6°C " "
80% " " " = 34.3°C " "

Avoid moving the incubator with water in the trays. Always disconnect the power before moving the machine.

Storage of Eggs:

Storage of eggs prior to setting is important. If eggs are to be stored more than 7 days, they should either be turned daily or stored small end upwards. They should be kept in a cool and preferably damp place to reduce water loss. The hatchability of most eggs falls off rapidly after about 21 days.

Wherever possible, set clean eggs and discard badly soiled eggs. It is difficult to clean eggs without damaging the protective mechanisms of the shell. Eggs may be washed in special proprietary solutions with careful attention to the instructions. It is vital to prevent bacteria being drawn in through the shell as the egg cools.

Candling:

Candling involves illuminating the contents of the egg by holding it against a light source in a darkened room. (The Brinsea Egg-Lume is designed specifically for the purpose.) This allows an assessment to be made of the development of the embryo and the size of the air space. After 7 days eggs which show no development can be rejected.

Egg Turning - Multihatch "A"

The movement of eggs on a regular basis is essential if high hatching rates are to be achieved. This is particularly the case in the first half of the incubation period. Research indicates that egg turning increases the oxygen intake of the egg and encourages the embryo to develop.

In later stages of incubation the embryo is capable of a degree of movement within the egg and further turning has little effect.

Automatic egg turning is achieved by the side-to-side movement of the egg tray causing the eggs to roll gently one way, then the other. Ensure that the egg tray rides freely on the wheels and engages with the drive underneath. The tray must be the correct way round with the curved lugs above the turning drive arm. The extent of egg tray movement is adjusted by changing the position at which the turning arm is fixed to the drive motor. To do this, lift off the egg tray and cabinet sides. The turning arm is made of black plastic and has a wheel at its end. The arm may be eased off the drive shaft with the aid of a screwdriver. There are three available holes in the arm; as supplied the hole is fitted with the drive shaft in the central hole. This is appropriate for hens and larger eggs. For smaller eggs fit the arm with the shaft in the hole nearer the wheel. (The furthest hole is primarily for use with B module added). Push the arm firmly onto the drive shaft, observing the position of the "flat" on the shaft.

Note: The plastic turning arm is designed to break in the event of excessive loading, e.g. if the tray became jammed. This is to protect the motor and gearbox. Care must be taken in

handling the arm during re-positioning.

With the tray replaced and the notched frame located by the two upstanding pins, place the dividing rods across the incubator in the locating notches spacing them so that the eggs lie freely in between (for hen's eggs this will normally be every fifth notch). With large eggs it is possible to raise the rods by spacing the frame from the chassis with small pieces of wood (say 6mm). This raises the level at which the eggs are separated and improves control during turning. Try moving the tray by hand to check that all eggs turn freely.

For quail eggs or other very small eggs up to 30mm dia. (not length), it is recommended that troughs are used to ensure proper turning. (Order one frame with troughs size 2). The eggs should be turned out and the troughs removed before hatching.

Turn off the egg turning before hatching commences to prevent any possibility of injury to emerging chicks.

Hatching - Multihatch "A":

Turning of eggs should be discontinued two or three days before hatching starts. If all the eggs are hatching together, the rods can be removed. If only part of the incubator load is due to hatch, remove the rods from around these eggs and continue turning the rest by hand during the hatch.

When it becomes apparent that a number of eggs have "pipped", ensure that both pans are filled with water and raise the humidity level to maximum. It may be a matter of hours or more than a day (depending on species) before the first chick emerges.

Open the incubator as infrequently as possible and as briefly as possible. Remove those chicks which are sufficiently dry to a suitable brooder such as the Brinsea "Ali-Brooder".

Cleaning Up:

As soon as the hatch is complete discard the shells and any remaining eggs and scrub the egg tray with bleach. Lift out the filters and wash them under a tap. Wipe fluff and soiling from other surfaces with a cloth moistened with bleach. The complete chassis can be removed from the machine without difficulty. First remove the control unit. The upper part of the cabinet (four sides) is then lifted off the base moulding. Four nuts (one at each corner) are now accessible and the chassis can be lifted out.