



Advance Humidity Pump

Ova-Easy Advance EX Upgrade Kit

User Instructions

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1 Introduction

These instructions detail the installation and operation of your new Brinsea Advance Humidity Pump. Please read them carefully before setting up your machine to achieve best results and keep these instructions safe for future reference. Used in conjunction with the Ova-Easy Advance, the Advance Humidity Pump offers convenient and refined control of incubation humidity.

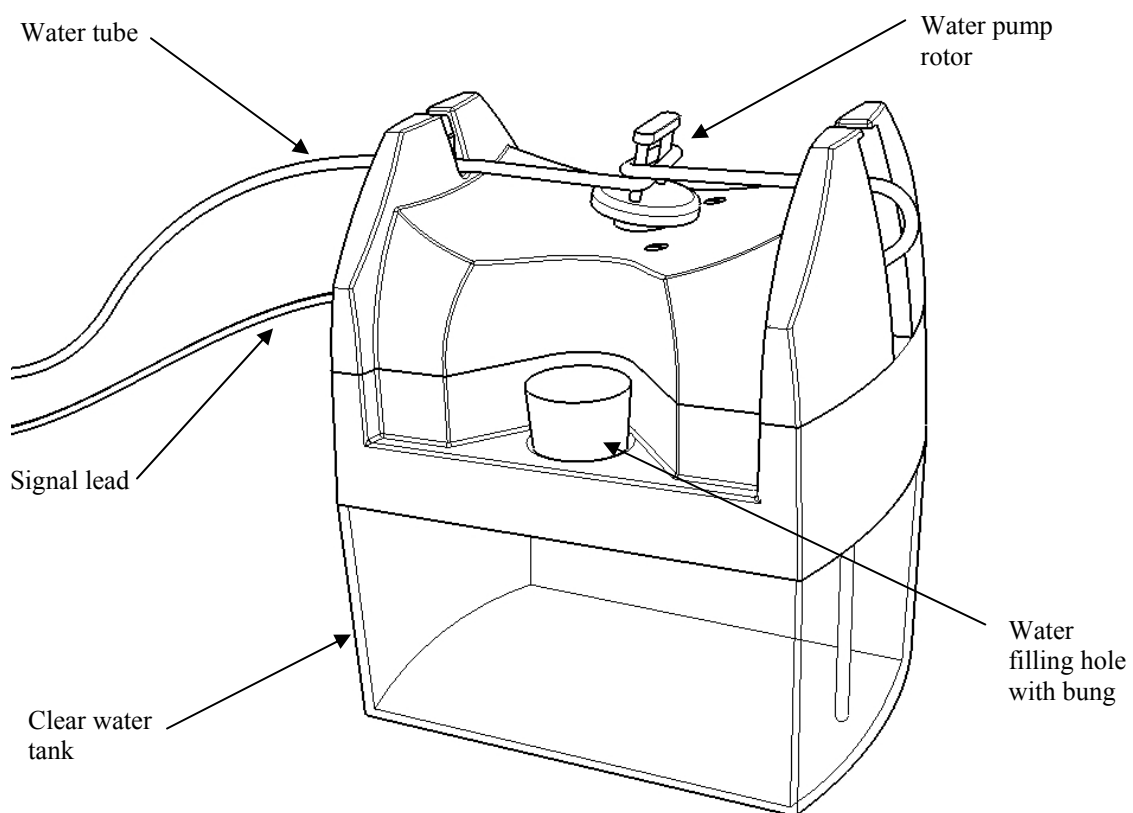
FEATURES:-

- Continuous, permanent metering of relative humidity (%RH)
- Proportional control easily set on incubator
- Sensor unit with high accuracy capacitive sensor
- Pumped water flow - not level dependent

PRINCIPLE OF OPERATION

The sophisticated capacitive sensor (fitted as standard to Brinsea Advance Incubators) provides a highly accurate measurement of the relative humidity level within the incubator. The Advance Digital Control System displays this % Relative Humidity (RH) level on the LCD display.

The incubator control system provides a signal to the Advance Humidity Pump to operate a tiny water pump which transfers exactly the amount of water required into the incubator to maintain the required relative humidity which is set by the user. The control system compensates for changes in ambient relative humidity level and, within working limits, will maintain a constant relative humidity level.



2 Unpacking

The Ova-Easy Advance EX Upgrade Kit comprises:

- 1 Advance Humidity Pump unit - free standing unit with water pump and signal lead to connect to Brinsea Advance incubator.
 - 1 Clear Water Tank - 1 litre capacity, larger containers may also be used where required.
 - 1 Rubber Bung – to cover water filler hole.
 - 1 Water tube (8 feet) - silicone rubber tube for interconnecting and for peristaltic pump replacement.
- 2.1 Remove all tape and packing from the module and parts. Retain the carton and packing materials to enable the unit to be repacked.
 - 2.2 Identify each part and check that they are all present and undamaged. If there are any parts damaged or missing please contact your dealer or Brinsea Products (at the address at the end of the document).
 - 2.3 **Please note that the pump capstan on top of the pump unit is deliberately mounted at an angle.**
 - 2.4 To register your new Brinsea product please visit www.brinsea.co.uk and follow the link on the right hand side of the home page to qualify for your free 2 year guarantee.
 - 2.5 Go to www.brinsea.co.uk and register as a free member of the Brinsea Email Group to receive the latest news and information such as advance notice about new products, special offers, exclusive competitions and much more.

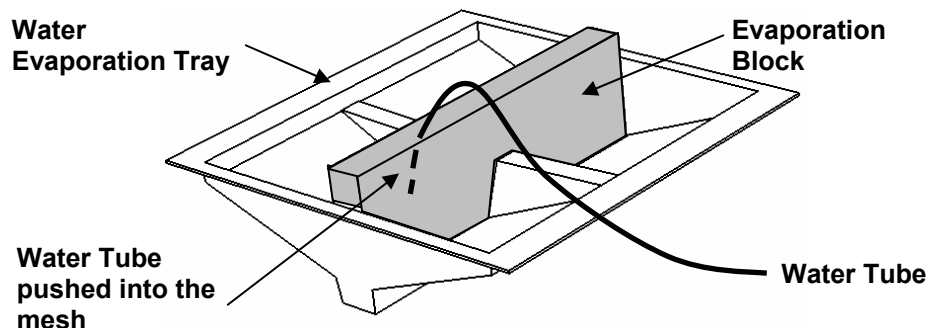
3 Humidity Pump Installation

- 3.1 Place the pump module on the top of the incubator or on a flat surface within 0.5m of the incubator.
- 3.2 Plug the connector on the pump signal lead into the control socket on the control panel on the Ova-Easy Advance incubator. Keep any excess lead tied in a neat coil with the wrap supplied.

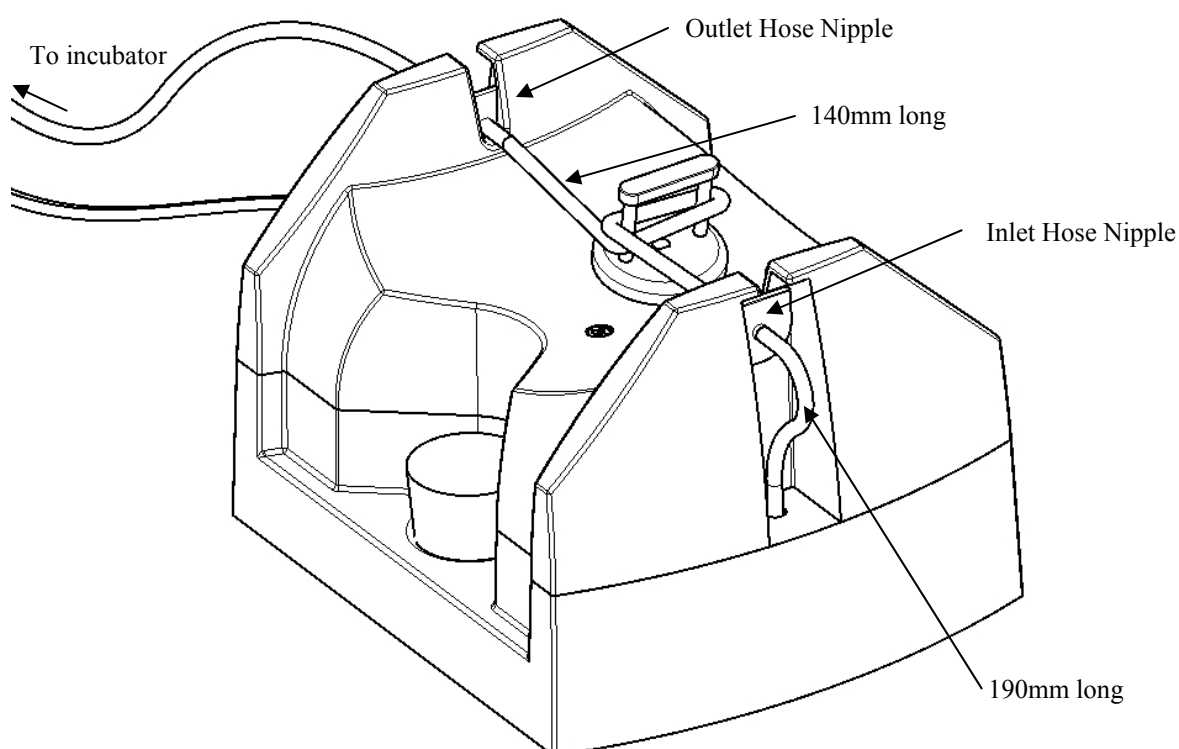


- 3.3 Cut a suitable length of silicone tube to go between the incubator and the Humidity Pump. The tube will extend into the incubator by approximately 300mm (12") so allow for this in the overall length.

- 3.4 Fit the evaporation block supplied with the incubator into the water evaporation tray as shown.
- 3.5 Insert one end of the silicone tube through the Water Tube Guide on the incubator fascia.
- 3.6 Open the door and pull enough tube through so that its end may be pushed into the mesh of the evaporating block. As water is pumped out of the tube it will soak into the block and be evaporated by warm air flowing over the block.



- 3.7 Slide the water tray into the incubator and pull the tube back through so that it neatly lies between the evaporation block and the water tube guide with no kinks. Close the door.
- 3.8 The Advance Humidity Pump is supplied with a length of silicone tube to be fitted around the pump rotor. This length will wear and need periodic replacement. It can also become flattened if left unused for some time because the inside walls of the tube will stick to each other around the rotor and prevent water passing through. Either replace this length of tube with a new 140mm (5 1/2") length or remove it and roll it between finger and thumb to 'un-stick' it.
- 3.9 Cut a 190mm (7 1/2") length of silicone tube and fit to the pump inlet hose nipple (at the right end of the pump). Pass this tube through the hole in the yellow moulding down into the water tank. Allow a loop as shown to prevent kinks.
- 3.10 Fit the silicone tube from the incubator to the outlet hose nipple.



4 Operation

The scope of these instructions is limited solely to the humidity control system of Brinsea Advance Incubators. Please read the user instructions supplied with the incubator itself for full details of all aspects of operating the incubator.

- 4.1 Fill the water tank to no higher than the bottom of the yellow moulding with clean water and fit the rubber bung in the filler hole.
- 4.2 Read the operating instructions supplied with the Incubator for full details of how to set up and operate the incubator. **Set the vent to its mid position. Refer to the “Main Menu Quick Reference” on page 3.**
- 4.3 Open the main menu by pressing the – and + buttons simultaneously.

```
TEMP
OK  ←  →
```

Press the + button once to move to the RH% option.

```
RH%
OK  ←  →
```

Press OK to select.

```
RH 20%
EX ONLY
```

The – and + buttons may now be used to select the desired Set Humidity Level.

```
RH 45%
EX ONLY
```

Once correct press OK. Scroll to the SAVE option using the + button and press OK to save the new humidity setting.

```
SAVE
OK  ←  →
```

- 4.4 If the humidity level in the incubator is lower than the Set Humidity Level the pump will start to turn and gradually draw water from the tank and pump it to the evaporation block in the incubator. This may take a few hours to stabilise after which the pump will run intermittently as the humidity level is controlled.
- 4.5 **The pump will not run if the incubator is significantly below the set temperature. This is to prevent the system adding too much water when the door has been opened for inspecting eggs etc.**
- 4.6 The humidity level may fluctuate slightly about the Set Humidity Level by 1 or 2 %. This is quite normal. Note that the humidity control system can only increase the humidity level, not reduce it.
- 4.7 Guidelines for incubation humidity levels:

During incubation:	Poultry	RH 40-50%
	Waterfowl	45-55%
Hatching	All species	60% RH or more

For more specific information on particular species' requirements check the relevant literature.

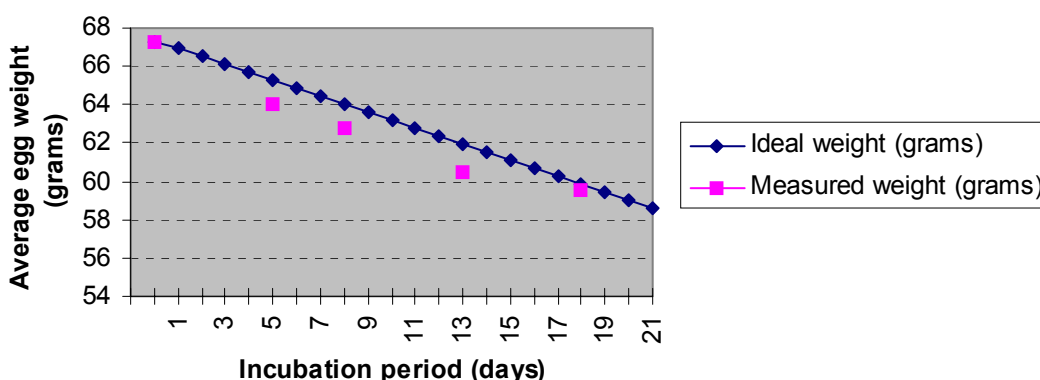
- 4.8 To determine the correct humidity level for any given species either consult available literature (a range of bird keeping and breeding books is available from Brinsea Products at the address below) or experiment with different humidity levels and record which proved most successful or weigh eggs during incubation. Eggs lose moisture through their shells and the rate of evaporation depends on the humidity levels around the eggs. During incubation eggs need to lose a fixed amount of water which corresponds to a loss in weight of around 13-16% depending on species. By weighing eggs periodically during incubation it is possible to monitor and, if necessary, correct humidity levels to achieve the correct weight loss.

Weigh the eggs on the day they are set in the incubator, take the average weight and plot this on a graph (see example below). The ideal weight loss line can be plotted by joining the point representing initial average weight with the ideal hatch weight (13-16% less depending on species) with the x-axis representing the incubation period (in days).

By measuring actual average weights every few days the actual weight loss can be plotted and compared to the ideal weight loss line and corrections can be made. For example if the actual weight loss was greater than ideal (see graph below) then the air has been too dry and humidity levels need to be increased to compensate.

Typical ideal weight losses for species groups:	Poultry	13%
	Waterfowl	14%

Egg weight loss chart



5 Routine Maintenance

- 5.1 Changing the pump tube:-

The peristaltic pump will need to have its tube replaced about every 3 months. Cut a length of tube to about 140mm. Remove the connectors and pull off the old tube. Replace with the new tube, avoiding twists. Use the diagram on the product label to thread the tube exactly as shown over the pump head. The tension must be sufficient to ensure complete occlusion of the tube without unnecessary flattening between the pump rollers. Adjust tube length as necessary. Ensure that the tube does not stick together if left for long periods by unhooking it during storage.

- 5.2 Changing the evaporation block:-

Change the block as necessary to maintain good evaporating efficiency. If chicks are to be hatched in the incubator, change the block regularly to avoid bacterial contamination.

- 5.3 No lubrication or further servicing is required beyond the instructions above.

6 Troubleshooting

The control system may be set to control between 20 and 80% RH. In practice the minimum and maximum levels of humidity achievable in an incubator depend upon several factors, particularly the fresh air ventilation rate. You may need to allow 24 hours for humidity to stabilise after making changes.

If you cannot get the level of RH you want, consider these notes:

6.1 Humidity will not go low enough:-

First increase the fresh air ventilation level. This will help to dilute the moisture given up by the eggs. There will still remain a lower limit determined by the moisture content of the ambient air, particularly in warm humid conditions. This can only be countered by dehumidification of the room air outside the incubator with proprietary dehumidifier but is rarely a problem in practice except with ratites.

6.2 Humidity will not go high enough:-

Restrict fresh air ventilation to the minimum safe level. Remember embryos need to breathe!

Check that water is reaching the incubator when the pump runs – if not check the whole length of the tubing for kinks and check that the tubing around the pump has not become permanently flattened. If it has, replace the pump tube. Silicone tubing is very flexible but can be damaged by sharp finger nails. A tiny perforation on the suction side of the pump will let in air and prevent the pump drawing water.

7 Servicing and Calibration

7.1 In case of failure first check the signal cable is securely connected to the incubator.

7.2 Note that the pump will not run if the temperature in the incubator is below the low temperature alarm point (typically 3 degrees C. below set temperature).

7.3 The pump motor will only operate when an asterisk “*” is shown next to the RH% display on the incubator. If this is not shown check the Set Humidity Level referring to section 5. The asterisk and pump output are only on when the measured humidity is lower than the Set Humidity Level. The pump output is switched on intermittently once the measured humidity is within 6% of the Set Humidity Level.

7.4 The pump motor is easily replaced if necessary using basic tools. Instructions are supplied.

7.5 The digital humidity sensor is individually calibrated during manufacture but may be re-calibrated if required. It is not recommended that this procedure is carried out by the user.

BE CAUTIOUS OF LOW COST ANALOGUE OR DIGITAL HYGROMETERS. BRINSEA PRODUCTS USES SOPHISTICATED EQUIPMENT TRACEABLE TO INTERNATIONAL REFERENCE STANDARDS.

Refer to the incubator instructions for details on calibration technique.

7.6 Spare evaporation blocks and silicone tube are available from Brinsea Products Ltd at the address below.

8 Specification

Sensor:	Sensor accuracy +/- 3%. Hysteresis 0% R.H Response time less than 4 seconds
Water Transfer:	In-built peristaltic pump Maximum water flow rate 30g/hour
Tank Capacity:	1L
Control setting and metering:	Indicated in % RH (linear)
Dimensions:	15cm x 12.5cm x 14cm (W x D x H)
Weight (dry):	0.6 Kg

Brinsea Products Ltd, Station Road, Sandford, N. Somerset, BS25 5RA
Tel: 0845 226 0120 Fax: (01934) 820250
e-mail: sales@brinsea.co.uk, website: www.Brinsea.co.uk