

Specification

Egg Capacity:	X3	X8
Quail	76	230
Partridge	42	130
Pheasant	36	108
Hen	28	84
Duck	16	50
Turkey	16	50
Goose	8	24
Emu/Rhea	4	12
Ostrich	2	8

Dimensions:
X3:- 710mm x 510mm x 310mm high
X8:- 1110mm x 510mm x 310mm high

Weight:
X3 25Kg
X8 30Kg

Power Consumption:
X3 90 Watts
X8 100 Watts

Electrical Supply:
230v 50Hz
110v 60Hz

Back-up Input Supply:
12V DC
8.5A

Consumable Parts

PN	Description
14.35	Brinsea Disinfectant (100 ml)
14.36	Brinsea Disinfectant (600 ml)
Q1001	Contaq X3 Contact Skin (inc Frame)
Q1003	Contaq X3 Egg Turning Conveyor
14.73	Contaq X3 Floor Matting, nest material (pack of 5)
Q2001	Contaq X8 Contact Skin (inc Frame)
Q2003	Contaq X8 Egg Turning Conveyor
14.22	Contaq X8 Floor Matting, nest material (pack of 5)

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**CONTAQ
X3**

**CONTAQ
X8**

Contact Incubation Technology

User Instructions

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HUMIDITY CONTROL

IMPORTANT NOTICE

Brinsea Products Ltd and its agents or distributors will not be responsible for loss of eggs or chicks in the event of failure however caused and the user is advised to arrange his own insurance cover where loss of power or mechanical or electrical failure might result in unacceptable losses. It is not recommended that eggs of significant value are incubated or chicks of significant value brooded in this product unless it is used in conjunction with an independent temperature alarm system. Such systems are available from Brinsea Products Ltd.

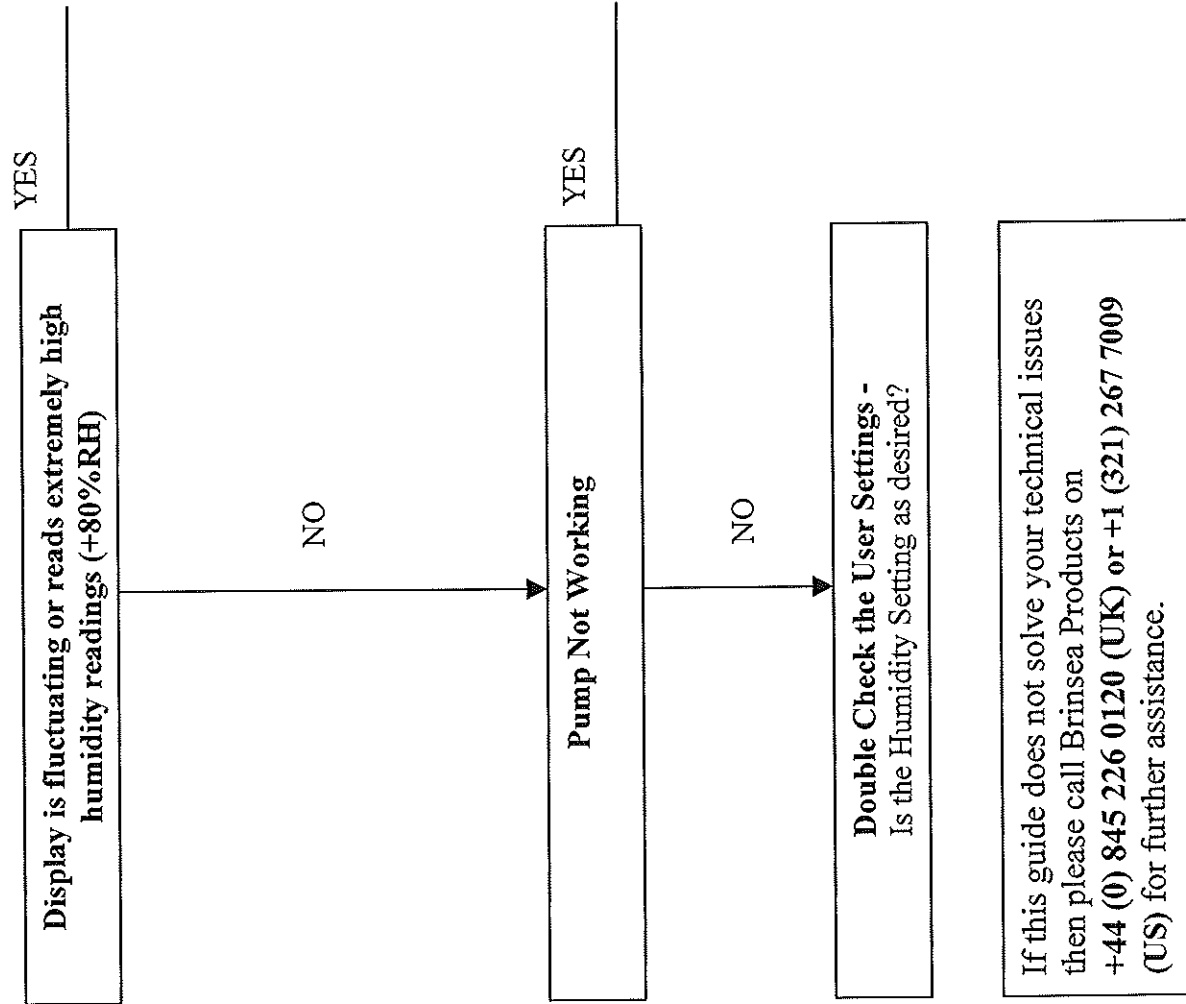
→ The Sensor may not be functioning correctly, check the following:-

- 1) Sensor is correct way up ('top' on moulding should face up)
- 2) Sensor is fully located in receiving Connector
- 3) Check Base To Lid Lead Connection
 - Visually Check Connections, plugs must be fully pushed into the receiving connectors
 - Check Lead is connected in correct connector on lid (it should be the one nearest the base)
 - Check Humidity Reading, if above 80% or fluctuating then lead is most probably faulty

→ Check the following:-

- 1) Check Base To Lid Lead Connection
 - Visually Check Connections, plugs must be fully pushed into the receiving connectors
 - Check Lead is connected in correct connector on lid (it should be the one nearest the base)
- 2) Check tubing is located in Yellow Pump Housing
- 3) Make sure there is no tangling in tubing and tube is not 'flat' anywhere (stuck together)

CONTAQ X3 / X8 TROUBLESHOOTING GUIDE



1 Introduction

Congratulations on your purchase of the most advanced egg incubator available. The Contaq X3 and Contaq X8 have been designed to allow the best possible environment for your eggs to incubate and hatch. These instructions detail the operation of your new Contaq incubator, incorporating Contact Incubation Technology (CIT). Please read them carefully before setting up the incubator in order to achieve best results.

A background into CIT

The method of contact incubation technology is actually as old as the birds themselves – but what is new is the unique way the method is applied to this Contaq machine.

The Theory Behind the Product

Contact incubation is based on the natural incubation process. The most striking difference between natural and artificial incubation is the fact that the natural parent provides warmth by contact rather than surrounding the egg with warm air. This may not at first sight seem significant but important research studies carried out by J. Scott Turner at New York State University and the University of Cape Town has revealed major unsuspected differences in thermal behaviour of eggs incubated by contact rather than convection. Crucially, eggs in a forced draft incubator have near uniform temperature throughout incubation; there will be some increase in embryonic temperature towards the end of incubation as a result of increased metabolism but otherwise the whole egg will remain near incubator air temperature. By contrast, eggs incubated naturally or by **contact**, have significant temperature differences. Heat is entering the egg over a relatively small brood patch, which is therefore warmer than other regions of the egg and is being lost from most of the remaining shell area, which is cooler.

In **contact incubation**, the embryo temperature tends to fall at later stages of incubation as a result of the embryo's own blood circulation which becomes significantly more important than embryonic metabolism in determining temperature distribution and heat flow within the egg, quite contrary to previous understanding which assumed metabolism to be dominant and cause egg temperature to rise. The inevitable fact that the embryo grows larger and must move from its original position on top of the yolk sack downwards in the egg to cooler regions also tends to reduce embryonic temperature as incubation progresses. These important findings emphasise surprising differences between natural and artificial incubation, but there are others.

Eggs in nature are certainly subjected to a cycle of warming and cooling coupled with ventilation as the parent bird leaves the nest to feed and defend territory, etc.

The Contaq incubator should be viewed as replacing the natural Bird and Nest combination. The lid with the attached 'skin' mimics the functions of an incubating parent; providing warmth by contact with the tops of eggs, but also the facility to lift from the eggs periodically and in doing so, causes a substantial influx of fresh air in the manner of a bird standing or leaving the nest.

The egg chamber substitutes for the 'nest' in providing a safe, protected environment for the eggs, with provision for air to be induced through the nest material which enables the operator to exercise control over the degree of ventilation of eggs. Nests of different species have very different characteristics, particularly with respect to gas permeability. This in turn affects water loss from eggs, so it is necessary to adjust the amount of nest material accordingly. Where required, additional humidity is introduced to the egg chamber automatically. The ideal combination of nest material and humidity setting is best determined by weighing eggs and monitoring water loss.

EGGS NOT TURNING IN DESIRED WAY

Replace with fresh conveyor and clean the metal conveyor Chassis

Check Base To Lid Lead Connection

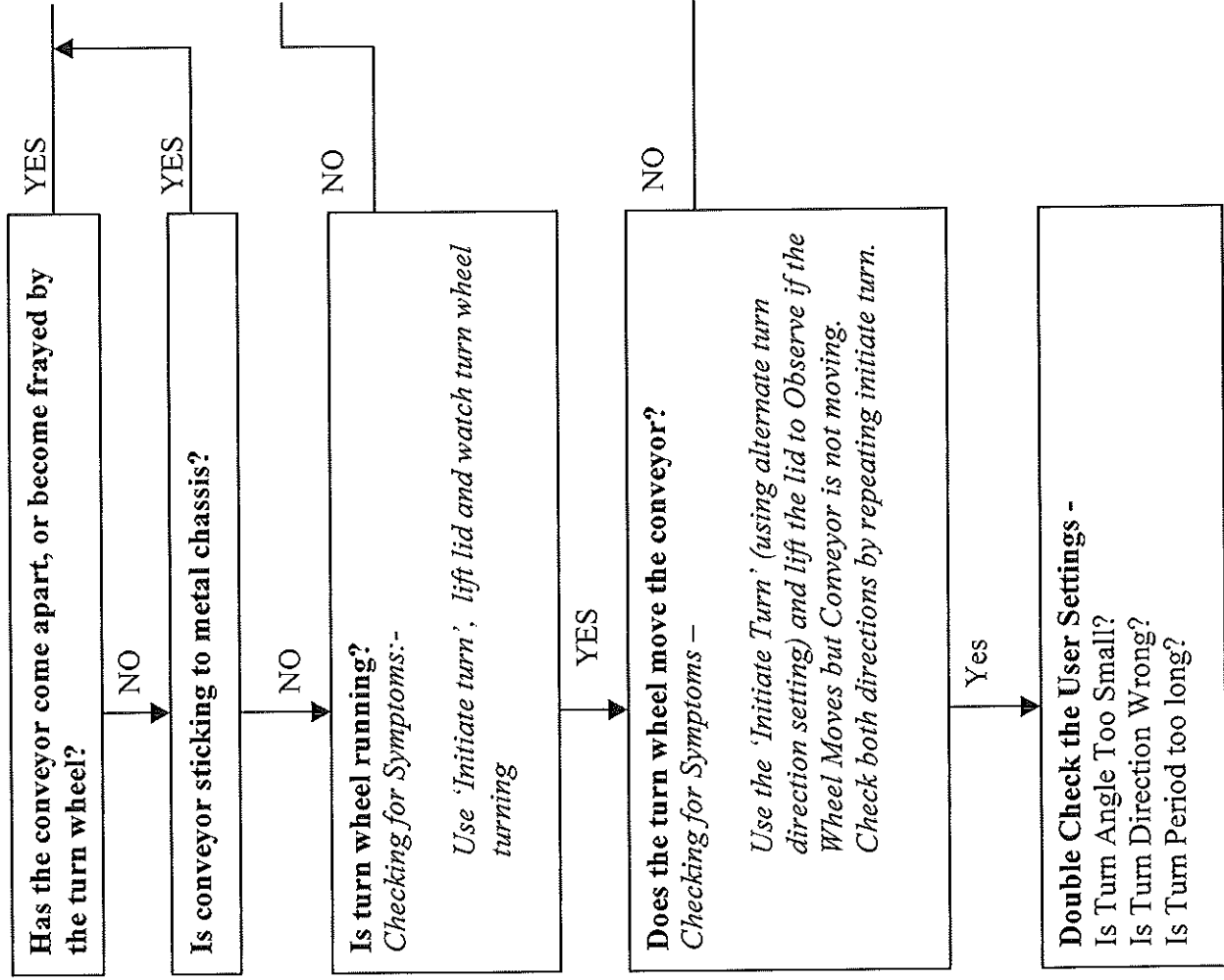
- 1) Visually Check Connections, plugs must be fully pushed into the receiving connectors
- 2) Check Lead is connected in correct connector on lid (it should be the one nearest the base)
- 3) Check Humidity Reading, if above 80% or fluctuating then lead is most probably faulty

Check the following:-

- 1) The conveyor assembly needs to be the correct way round – the sprung roller end should be on the left hand side of the machine
- 2) The conveyor assembly is correctly located on the four receiving lugs
- 3) The turn wheel tension knob (situated on right hand side next to humidity pump) should be fully undone

If this guide does not solve your technical issues then please call Brinsea Products on
+44 (0) 845 226 0120 (UK) or +1 (321) 267 7009 (US)
for further assistance.

CONTAQ X3 / X8 TROUBLESHOOTING GUIDE



The Contaq egg chamber also provides sophisticated provision for automatic turning of eggs of different sizes. Egg turning coincides with lifting of the skin and enables programmable fixed or random turns.

2 Unpacking

Your Contaq incubator had been supplied in protective packaging. Please remove all tape, strapping and packing material. Retain the cartoon and packing materials to enable the unit to be repacked if need be.

The Contaq X3 & X8 include:

Item	X3	X8
Contaq Incubator	1	1
Conveyor Chassis	1	1
Conveyor End Rollers	2	2
Conveyor Belts	3	3
Water bottle	1	1
Egg rollers	6	23
Egg dividers	4	10
Evaporation Material	2	2
Mains lead (Euro, UK, USA)	3	3
9 pin connecting lead	1	1
Guarantee Card	1	1

Bag of small 'O' Rings	1	1
Large 'O' Rings	12	46
Humidity Sensor	1	1

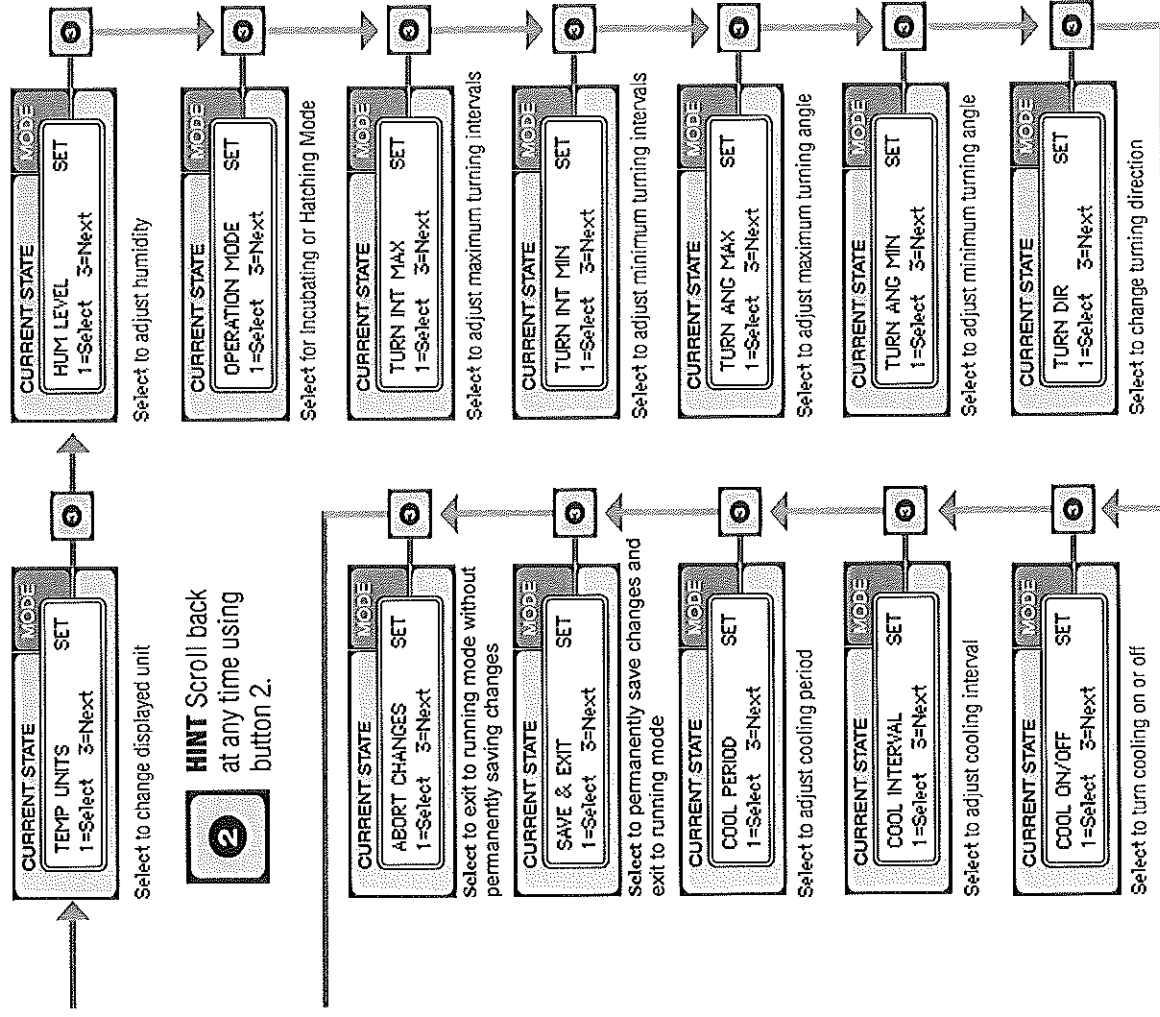
Please identify each part and check that they are all present and undamaged. If there are any parts damaged or missing please contact your retailer or Brinsea Products (at the address at the end of this document). Complete and return the guarantee card to entitle you to Brinsea's free 2 year guarantee.

3 Storage of Eggs

Always store eggs in cool, damp conditions. Most species may be safely stored for up to 14 days before serious reductions in hatch rates are likely. Daily turning of stored eggs also helps maintain hatchability.

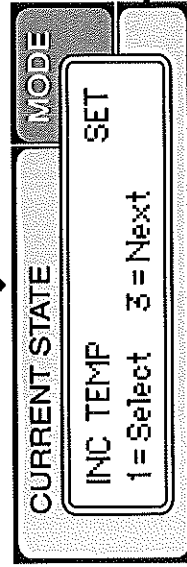
Discard cracked, mis-shaped and heavily soiled eggs (if possible). Wash eggs using a 100:1 solution of Brinsea Incubation Disinfectant. Follow the instructions supplied. It is essential to wash eggs in solution that is significantly warmer than the egg. Bear in mind that all solutions will remove the outer cuticle from the egg as well as the dirt and care must be taken to avoid re-contaminating the eggs during later inspection etc.

4 Setting Up Your Contaq X3 / X8

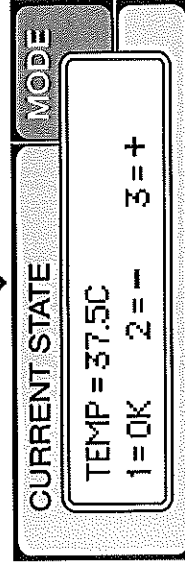
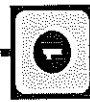


Operating your CONTAQ X3 / X8

Push all **THREE** buttons at the same time to enter the **SETTINGS** mode



1 = Select to adjust temperature



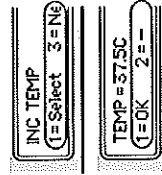
1 = OK move on to next setting

2 = - decrease temperature

3 = + increase temperature

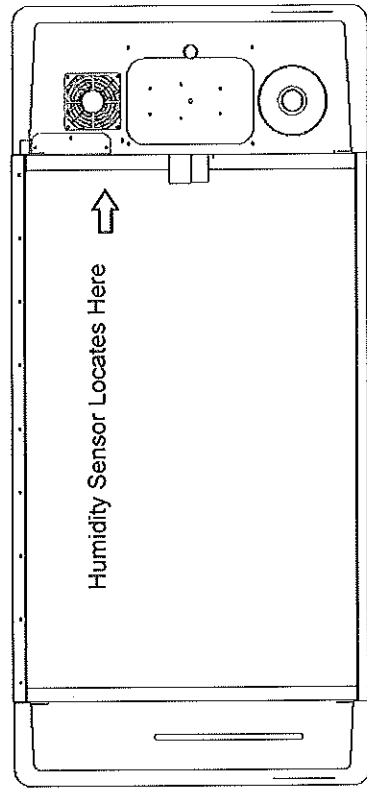
HINT

Follow the On-Screen Instructions



4.1 Location & Installation

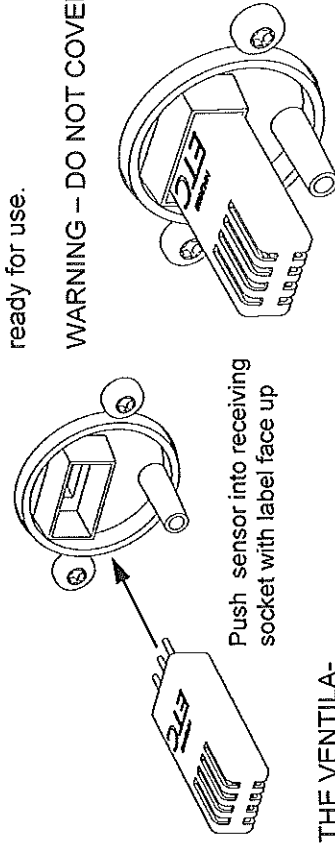
Your incubator will give best results in a room free from wide temperature variations and with generous ventilation – particularly if several incubators are running at the same time. Ensure that the room temperature cannot drop on a cold night. Ideally thermostatically control the room at between 20 and 25°C (68 and 77°F). Never allow the room temperature to drop below 15°C (59°F) and ensure that the incubator cannot be exposed to direct sunlight.



Place the incubator on a flat, level surface (workbench height is ideal).

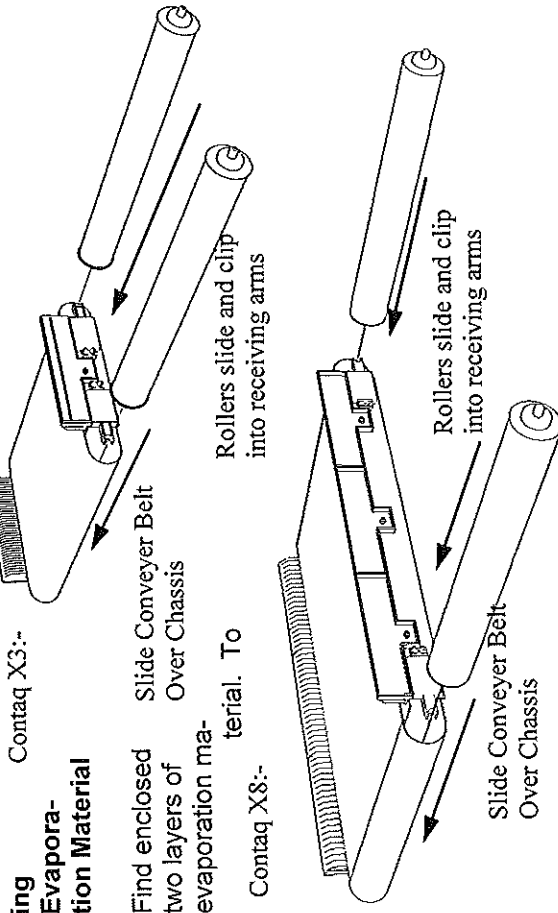
Lift the lid to find the humidity control water bottle on the right hand side of the assembly. Remove the bottle and fill with distilled water. Once full, reposition the bottle and cap ready for use.

WARNING – DO NOT COVER



THE VENTILATION GRILLS ON THE TOP OF THE INCUBATOR (ADJACENT TO THE CONTROL PANEL), AND AT THE RIGHT HAND END OF THE CABINET.

4.2 Installing Evaporation Material



achieve higher levels of humidity use two layers. Place the material flat on the base of the incubation chamber.

4.3 Installing the Humidity Sensor

Enclosed within the literature packaging find the humidity sensor.

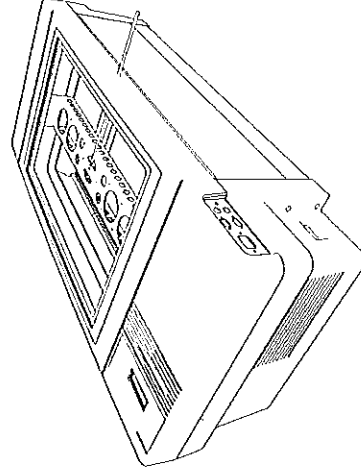
Remove all packaging and the Conveyor Chassis from the chamber. The Humidity Sensor receiving socket is situated on the right hand side of the chamber. Diagram of Contaq X8 Shown See Fig 4.3.1.

Fig 4.3.1

- b) Remove the stainless steel cover to access the Evaporating Sheet (fig 10.4)

Fig 10.4

- c) Before or after incubation, evaporation material can be removed and replaced and re-veyor.



Consumable the back of this quote the Part ordering.

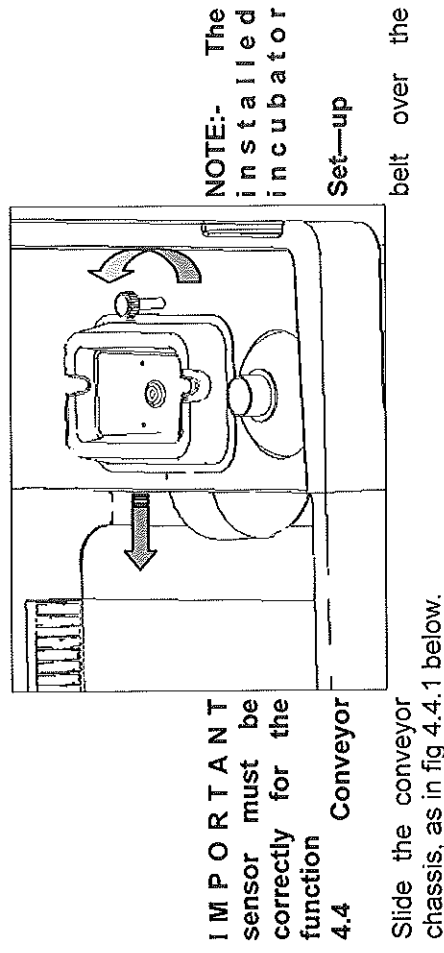
parts are listed at booklet. Please Number when

11 Troubleshooting

11.1 POOR HATCHING RESULTS

Poor hatching results are frustrating and can be caused by a large number of factors. The most common are given below. Brinsea Products will not be held

- D) Slide the conveyor belt over the chassis, as in fig 10.2.2 below.



- E) Reverse the process of A-D to fit the new conveyor.

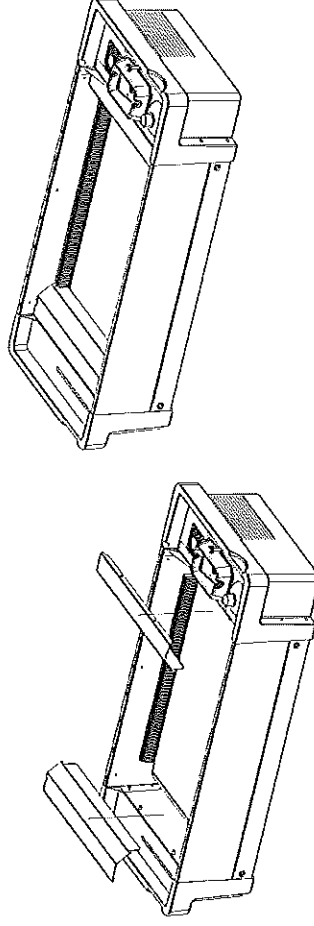
10.3 Replacing the Humidity Pump Tube

The peristaltic pump will need to have its tube replaced about every 3 months. Cut a length of tube to about 12cm. 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.

10.4 Replacing the Evaporating Sheet

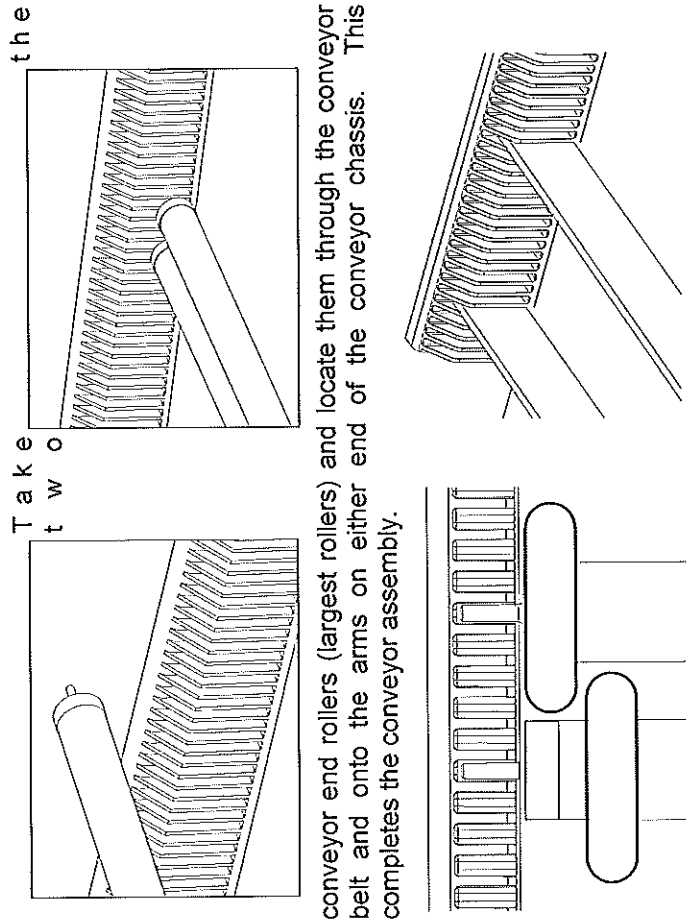
The Evaporating Sheet is situated in the base of the incubator unit. It can be accessed and changed by following these simple steps:-

- a) Different nest environments may require more or less layers of matting. There is a removable panel to enable access to matting without disturbing the eggs. This is situated on the lower front of the incubator, held in place by two black fasteners. Undo the fasteners by turning through a $\frac{1}{4}$ using a coin.



10.2 Removing or Replacing the Conveyor

Fig 10.2.1 Contaq X8 Shown:-

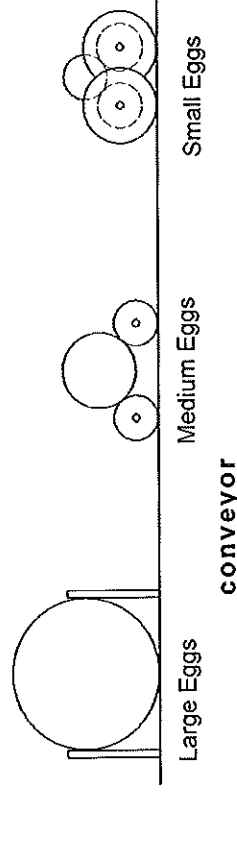


Take the conveyor end rollers (largest rollers) and locate them through the conveyor belt and onto the arms on either end of the conveyor chassis. This completes the conveyor assembly.

- Remove the end trims, rollers and any debris from the conveyor assembly (Fig 10.2.1).
- Screw down the bolt on right hand side (next to the humidity pump) to release the conveyor assembly from the turn wheel.
- Lift conveyor assembly and remove.

Fig 10.2.2 Contaq X8 Shown:-

Place the conveyor assembly into the chamber. The assembly should locate in the four lugs on the chamber walls. **Ensure that the 'sprung' end of the**



assembly is positioned on the left hand side of the chamber.

IMPORTANT:- It is recommended that the conveyor should be changed after each incubation period, or monthly, to prevent excessive wear of the belt surface.

- b) Remove the metal protector to reveal the skin and skin frame.
- c) The skin and frame can now be removed and replaced.
- d) Reverse the process of 'a' & 'b' to reassemble lid. Take care not to over-tighten screws.

Observation	Likely Cause(s)	Solution(s)
No chicks hatch	Infertility, infection, drastically incorrect incubation settings, parent ill health.	Check egg viability – are similar eggs hatching naturally. Disinfect the incubator. Check incubator settings and procedures – particularly temperature.
Chicks hatch earlier than expected, deformities.	Incubation temperature too high	Reduce incubation temperature slightly 0.5°C (1°F)
Chicks hatch later than expected	Incubation temperature too low	Raise incubation temperature slightly 0.5°C (1°F)
Hatch dates widely spread	Different rates of development due to different storage times, incubation temperature variation.	Limit egg storage times. Check for incubation temperature variation – sunlight, large room variation etc.
Late stage 'dead in shell'	Incorrect humidity, probably too high.	Try reducing average humidity levels (but see section 6 above)
Generally poor results	Incorrect incubation settings, poor parent bird health, inadequate egg turning.	Improve parent bird health, check all incubation settings, analyse egg weight loss to confirm humidity correct, check turning working correctly.

Once the conveyor assembly is in position, the turn wheel needs to have a firm contact on the conveyor. Loosen the turn wheel adjustment knob on the right hand side. Turn anti-clockwise to achieve a firm contact onto the conveyor. See fig 4.4.2

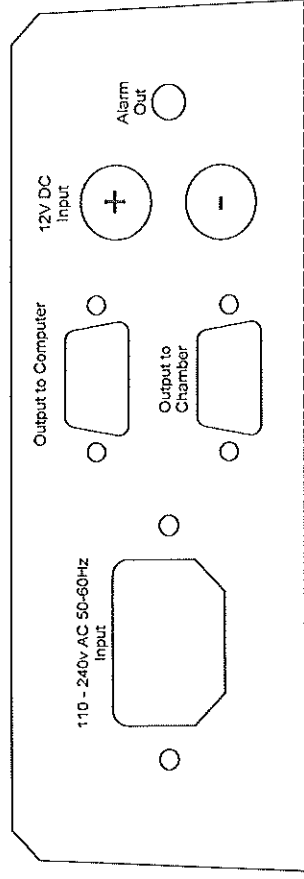


Fig 4.4.2

Finally, locate the end covers. The end covers will locate into the two lugs on either end of the chamber, and the final slots of the egg divider holders. See fig 4.4.3

Fig 4.4.3—Contaq X8 Shown:-

4.5 Setting Eggs

Within your Contaq X3 / X8 package please find rollers which may be fitted with large 'o-rings' to give different effective diameters. Different sizes of eggs may be accommodated as follows –

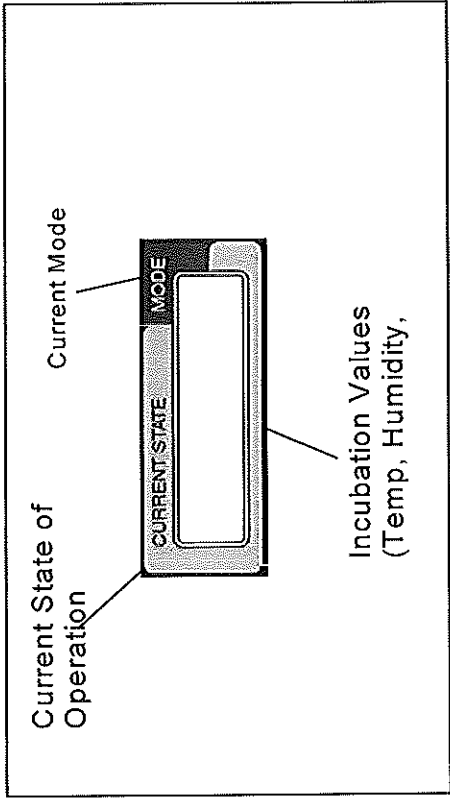
- Small (e.g. Parrots): Use rollers fitted with one large o-ring on each end to achieve fine turn control, or to allow option of simultaneous incubation with larger eggs.
- Medium (e.g. Poultry): Use rollers with small diameter ends (no large o-rings).
- Large (e.g. Goose): Rest eggs directly onto the conveyor floor and divide rows between plastic bars. See over page:

Fig 4.5.1 Rollers Slide into Slots

Fig 4.5.2 Positioning of Rollers for Medium Size Eggs

T	I	M	E	>	T	U	R	N	I	N	C
3	6	.	9	C	6	0	%	1	m	0	2

Fig 4.5.3 Positioning of Rollers for Small Eggs Fig 4.5.4 Dividers for Large Eggs
(Large o-rings should be staggered as below)



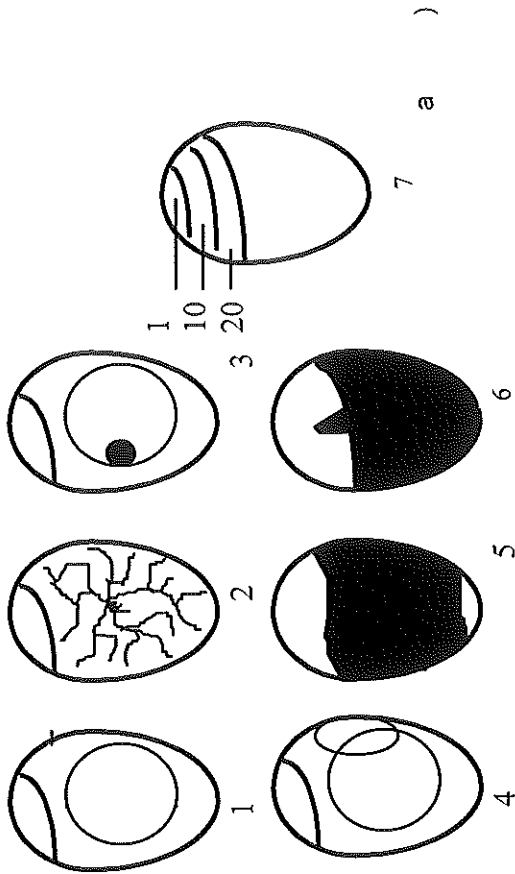
Incubation Disinfectant. Wipe all internal surfaces with a soft cloth soaked in 100:1 Brinsea Incubation Disinfectant solution.

Always clean the incubator before storage and ensure that the unit is totally dry inside and out.

Re-order Brinsea Incubation Disinfectant by phoning 0845 2260120 and quoting part ref. 14.35 (100ml) or 14.36 (600ml).

10.1 Removing or Replacing the Skin

Fig 10.1: Contaq X8 Shown:-



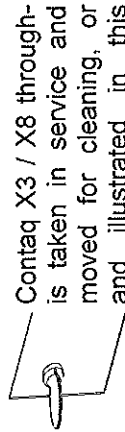
To remove the skin, firstly remove the screws around the metal protector, situated on the underside of the lid.

The X3 / X8 has two modes – 'incubation' and 'hatching'. The default is incubation mode and hatching mode can be selected by entering the settings mode. Scroll to 'operation mode', then select to change to hatching.

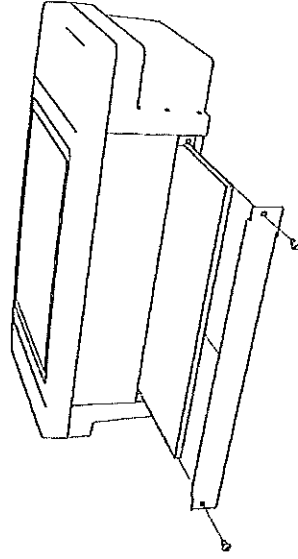
The hatching mode disables the egg turning procedure. When hatching in the X3 / X8, change to hatching mode two days before eggs are due to hatch.

10 Servicing & Cleaning

In order to get the most out of the Contaq X3 / X8 throughout its life, it is essential that care is taken in service and maintenance. Parts can be removed for cleaning, or replacement, which is outlined in this section.



IMPORTANT:



DISCONNECT THE INCUBATOR FROM THE MAINS POWER SUPPLY DURING CLEANING.

ENSURE THAT ALL ELECTRICAL PARTS ARE KEPT DRY.

NEVER WASH CONTAQ X3 / X8 PARTS IN LIQUIDS OVER 50°C (120°F). DO NOT USE A DISHWASHER TO CLEAN COMPONENTS.

Following each hatch in the Contaq X3 / X8 remove all debris from the roller dividers and replace the conveyor. Soak parts in a 100:1 solution of Brinsea

Fig 4.5.5 Placement of Eggs Between / On dividers

Use the small o-rings provided to divide eggs. By placing small o-rings on the tubing, this will stop eggs from gathering at one end of the tubing during turning. Rollers should be positioned as far apart as practicable for any particular sized egg, provided there is no danger of an egg falling through or getting jammed.

4.6 Setting Up for Incubation

Find on the rear right hand side of the incubator a set of input / output connections. See Fig 4.6.1

Fig 4.5.1:-

Connection Ports:-

Alarm Out

The Contaq X3 / X8 has an output alarm socket, which can be used to plug in an external alarm system. The socket receives a 3.5mm jack plug.

12V DC Input

The Contaq X3 / X8 can have a power 'back up' supply attached to eliminate the effect of a mains failure. By attaching a 12V 8.5A power source (such as a battery), if a mains failure occurs, the incubator will automatically use the battery back up as a power source, and continue to function as normal.

Output to Computer

The Contaq X3 / X8 is made 'future proof' with this computer output socket. As new 'CIT' computer software is developed in the future, the X3 / X8 will still be compatible.

Output to Chamber

Connect the 9 pin connecting lead from this socket to the receiving 9 pin socket vertically below in the base. Tighten the screws to ensure the plugs & sockets

have a good contact. It is essential that this lead be connected in order for your Contaq X3 / X8 to function.

110 – 240v AC 50-60Hz Input

This socket receives your mains supply lead. Plug in the mains lead, ensuring the metal clamp is tight around the collar of the connector. This will help prevent the lead coming detached.

WARNING – IF THE SUPPLY LEAD IS DAMAGED, IT MUST BE REPLACED BY A SPECIAL LEAD OR ASSEMBLY AVAILABLE FROM THE MANUFACTURER OR ITS SERVICE AGENT

Once plugged in, power-up the incubator by switching on the mains supply.

Notice the digital display reading 'warming...'. No operations can take place until the incubator has warmed up, which will take a few minutes.

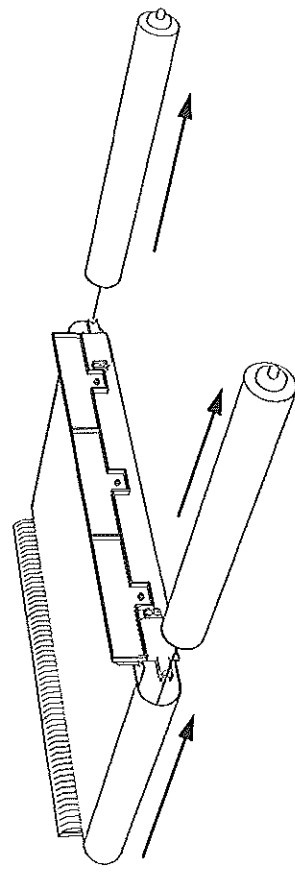
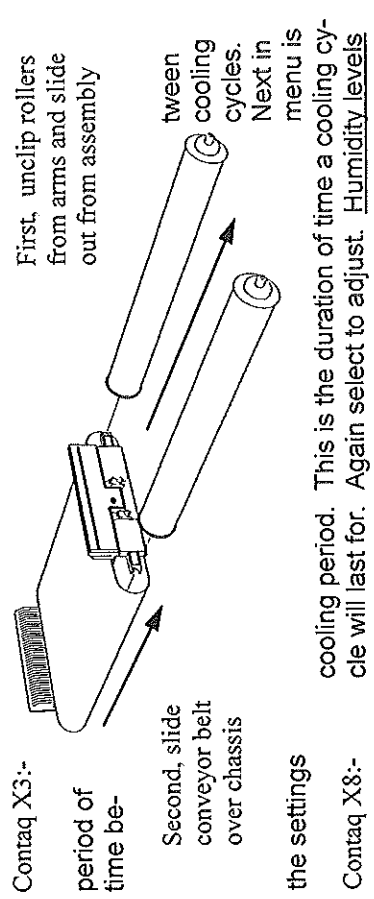
Once finished warming, the following screen appears:-

The Contaq X3 / X8 is now in a working incubation mode. To set-up your incubator, push all three buttons on the control panel to enter settings.

The Contaq X3 / X8 can now be set-up for your personal preferences and those most suited to your species of eggs.

Scroll through the settings using B2 (back) and B3 (next). Use B1 to select a setting. Once in a setting, follow the onscreen display (Fig 4.6) to adjust values.

Fig 4.6

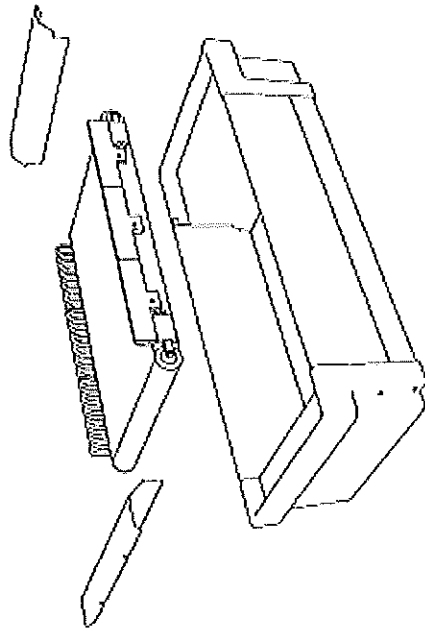


may fluctuate during and after cooling. This is an entirely natural effect and will not adversely affect the incubating eggs.

9 Hatching

The Contaq X3 / X8 can be used for hatching – in numerous trials no cases of suffocation by the skin have been reported. However running a separate hatcher (multi-stage incubation) has advantages. In multistage incubation the eggs are set in the main incubator ('setter') and removed around 2 days before they are due to hatch and placed in the 'Hatcher' (which is set up for the purpose with high humidity and no egg turning). The benefits of multistage incubation are that the mess of hatching is kept separate from the incubator – reducing the risk of bacterial contamination and allows eggs to hatch at different dates without compromising the conditions for eggs earlier in incubation.

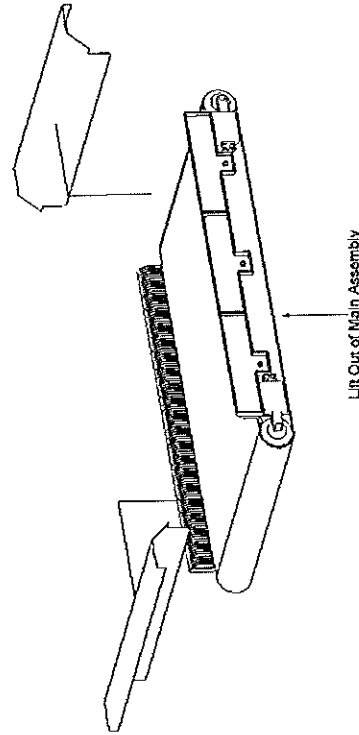
- 2) Eggs are set with pointed ends pointing towards the chamber front or back, whichever is nearest. Thus eggs in the front half of the incubator should have their pointed end towards the front and eggs in the back half pointed towards back:-



8 Cooling

Eggs are cooled briefly each time they are turned when the contact 'skin' is retracted, drawing in fresh air. Additional cooling can be achieved to simulate the bird leaving the nest. Typically this would be set for one or two

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cooling period the contact skin is retracted and a cooling fan creates gentle, even cooling. To program the cooling cycle push all three buttons at once

Settings are as follows –

Display Title	Description	More Info Page
INC TEMP	Adjust incubation temperature	13
TEMP UNITS	Change temperature units between °C and °F	Back of booklet
HUM LEVEL	Change humidity levels (RH%)	14
OPERATION MODE	Change between Incubation and Hatching mode	19
TURN INT MAX	Set maximum turning intervals	17
TURN INT MIN	Set minimum turning intervals	17
TURN ANG MAX	Set maximum turning angles	17
TURN ANG MIN	Set minimum turning angles	17
TURN DIR	Change between Random, Alternate, Reverse and Forward turning directions	17
COOL ON/OFF	Switch cooling intervals on or off	19
COOL INTERVALS	Change interval time	19
COOL PERIOD	Change cooling period time	19
SAVE & EXIT	Permanently saves changes and exits to running mode	Back of booklet
ABORT CHANGES*	Exit to running mode without permanently saving changes	Back of booklet

*To lose unwanted changes switch off incubator. Incubator will revert to the saved settings upon restart.

Having determined the preferred settings, incubation can now progress.

5 Temperature Control

Stable and correct temperature is essential for good results. Adjust with care.

Your Contaq X3 / X8 is fitted with a high quality, individually calibrated digital thermometer. Be cautious of the accuracy of other thermometers used and have them calibrated if necessary.

Note: Your incubator may not be set to the correct temperature for your eggs. The following procedure must be followed before setting eggs. These figures should be taken as a guide only. As in Nature, Contact

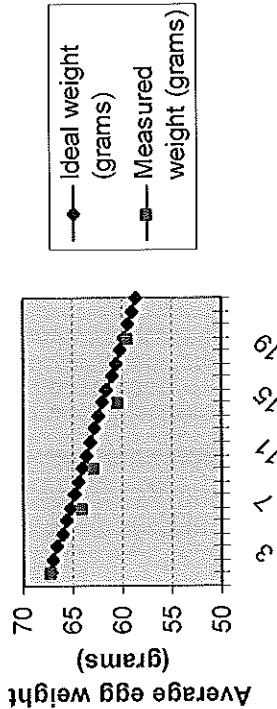
Incubation “skin” temperature is higher than that of the egg and the embryo inside it. These guide temperatures are therefore higher than those normally expected in Conventional Incubation, and the two very different techniques should not be directly compared.

Allow the incubator to stabilise for at least an hour before adjusting the temperature.

Adjust temperature with care – small differences have large effects on hatching performance.

period:	Rec'd temperatures:		Typical incubation
Hens	39.5°C	103.1°F	21 days
Pheasant	39.7°C	103.5°F	23-27 days

Egg weight loss chart



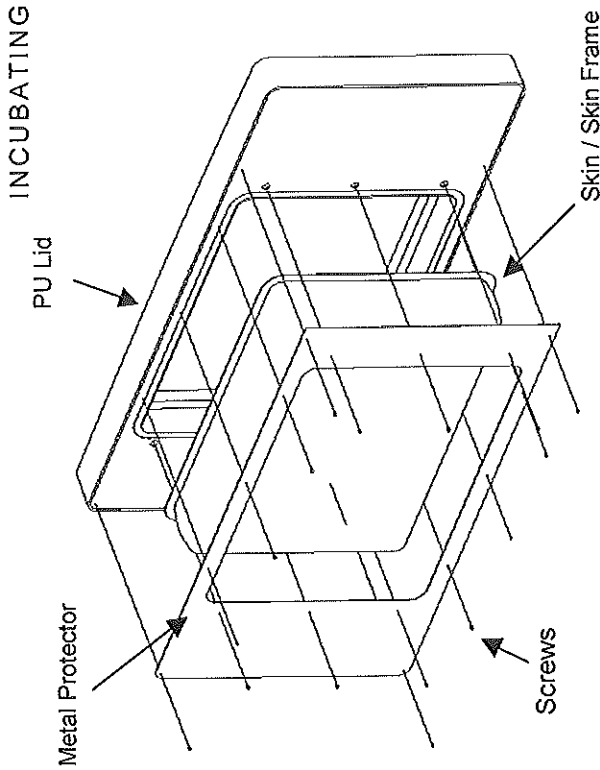
Incubation period (days)

Quail	39.7°C	103.5°F	16-23 days
Ducks	39.5°C	103.1°F	28 days
Geese	39.5°C	103.1°F	28-32 days
Falcons	39.0°C	102.2°F	31-33 days
Parrots:			
Amazonas	39.0°C	102.2°F	24-29 days
Macaws	39.0°C	102.2°F	28-30 days
Love birds	39.0°C	102.2°F	22-24 days
African Grey	39.0°C	102.2°F	26-28 days
Sulphur Cockatoo	39.0°C	102.2°F	29-31 days

IMPORTANT

During incubation all eggs should rest with their pointed end lower than the round end, the greater the angle the lower the risk of embryo mal-positioning. Check by regular observation that this is the case.

WHEN SMALL EGGS USING THE ROLLERS FOLLOWING APPLIES TO ENSURE THIS:



1) Rollers should be

positioned as far apart as practicable for any particular sized egg, provided there is no danger of an egg falling through or getting jammed. Eggs supported like this are more likely to settle with the point slightly downwards. The angle tends to increase as the air cell dries out, as it does in Nature.

- 3) The direction of egg turning can be set to any of the following four options.

Continuously right – turning will always be to the right

Continuously left – turning will always be to the left

Alternating – Eggs turned one way on first turn, back the other way on the second etc.

Random – Turning direction is randomised by the control system to give a more 'natural' turning regime.

It is recommended that the Random function is normally used.

Recommended Turning Durations / Setup:-

Standard Egg Rollers / Divider (Medium and Large Sized Eggs):-

Species	40°	60°	80°	100°	120°	140°	160°	180°
Partridge		2	2	3	4	5	6	7
Pheasant		2	3	4	5	6	7	8
Hen	2	3	4	4	5	6	7	8
Duck	2	4	5	6	7	8	10	11
Turkey	2	4	5	6	7	9	10	11
Goose	3	5	7	8	10	11	13	15
Emu/Rhea	4	6	9	11	13	15	17	19
Ostrich	5	7	10	12	15	17	19	22
Harris Hawk	2	3	4	5	6	8	9	10
Saker Falcon	2	3	5	6	7	8	9	10

Egg Rollers Fitted With Large O-rings (Smaller Sized Eggs):-

Species	40°	60°	80°	100°	120°	140°	160°	180°
Quail	2	4	5	6	7	8	9	10
Partridge	3	4	6	7	8	10	11	13
Pheasant	3	5	6	8	10	11	13	15
Hen	4	5	7	9	11	12	14	16
Duck	5	7	10	12	15	17	19	22
<u>Parrots:</u>								
Amazon	3	5	6	8	9	11	12	14
Hyacinth Macaw	4	6	9	11	13	15	17	19
African Grey	3	5	7	9	10	12	14	16
Sulphur Cock'too	4	6	8	10	12	14	16	18

Eclectus	39.0°C	102.2°F	28 days
Rhea	38.0°C	100.4°F	35-40 days
Emu	39.0°C	102.2°F	49-52 days

Developing embryos are fairly tolerant of short term temperature drops and the user need not be concerned about cooling that occurs when inspecting eggs. Temperatures above ideal can quickly have a serious detrimental effect on hatch rates and must be avoided.

The Contaq X3 / X8 is fitted with a temperature alarm system, which gives audible and visual warning of unexpected high or low temperature readings. The screen displays the alarming temperature reading, as well as the 'correct' target temperature set by the user. To adjust the high and low temperature alarm settings, see the troubleshooting section, on page 25.

6 Humidity Control

The X3 / X8 incorporates Brinsea's humidity control system which monitors the humidity level in the egg chamber, displays this level on the screen (in %RH) and pumps water onto evaporating material to control the humidity level to the level set by the user.

Ensure the humidity sensor is plugged in. The socket is situated in the base of the incubator on the right hand wall.

NOTE: The egg chamber in the X3 / X8 replicates the nest environment as far as possible and so there is little air movement most of the time, with large air movements when the contact skin is raised for turning or cooling. These factors mean that humidity levels will fluctuate during and after turning or cooling. This is an entirely natural effect and will not adversely affect the incubating eggs.

The current humidity level is shown continuously on the display (unless in 'settings' or 'engineering' mode). To alter the desired humidity level push buttons 1, 2 & 3 at once to enter the 'settings' mode, then scroll to 'humidity level' to adjust.

Suggested humidity levels are given below:

During incubation	Waterfowl	45-55% RH
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Hatching	Poultry	40-50% RH
	Parrots	35-45% RH
	Most Birds of Prey	40-45% RH
	(Thin shelled - Merlins, Kestrels, Owls)	50% RH
	All species	65% RH or more

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

Determining correct humidity setting – monitoring egg weight loss:-

Eggs lose moisture through their shells and the rate of evaporation depends on the humidity levels around the eggs. The range in recommended humidity level for any given species is because of individual differences in shell porosity between one egg and another – even if laid by the same bird.

There is a technique whereby water loss can be monitored during incubation, allowing the humidity level to be adjusted to keep water loss exactly right.

The need for eggs to lose a fixed amount of water during incubation corresponds to a loss in weight of around 13-18% 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 (13-18% 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:

Birds of Prey	17%
Poultry	13%

Parrots	16%
Waterfowl	14%

7 Turning

The X3 / X8 has a uniquely flexible turning system designed to allow any natural turning regime to be simulated. The X3 / X8 provides turning functions (see

Egg points to back

Egg points to front
turning regime of the breeding.

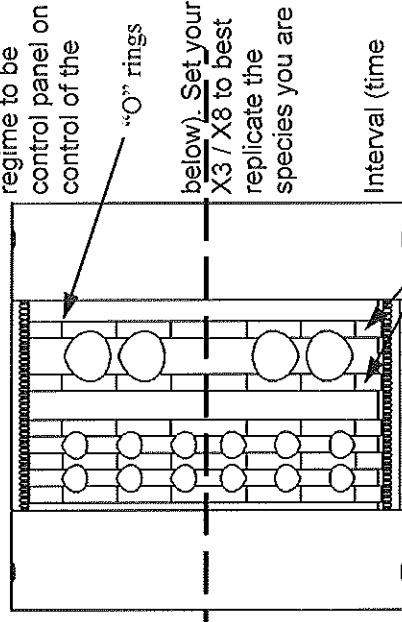
Maximum Turning
between turn
cycles)

Minimum Turning Interval

Maximum turning Angle (expressed in time
(seconds) of turn)

Minimum Turning Angle

Direction of turn



These can be adjusted by going into the settings menu and scrolling through to the turning functions.

- 1) The Minimum and Maximum turning intervals can be set to the same value to give consistent intervals. If the Minimum and Maximum Turning Intervals are different the X3 / X8 will randomly select times between these limits.
- 2) The turning Angle is controlled by selecting the time that the turning motor runs for. The angle of turn will also be a function of the diameter of the eggs. Larger eggs will need a longer duration of turn to achieve a given angle of turn than smaller eggs. Use the guide on the next page to help you determine the correct duration of turn for the desired turn angle. PLEASE NOTE these are approximate figures and it recommended you check the setting before incubation.