— INSTRUCTIONS —

CIRCULATED AIR MODEL

HOVA-BATOR™ INCUBATOR

NOTE: It is recommended that you operate the incubator with a small quantity of inexpensive eggs to be assured of your operating procedure and the performance of the incubator, before attempting to hatch large quantities of eggs or expensive eggs. Keep Reptile eggs protected from moving air. (See Warranty on Page 4).

LOCATION

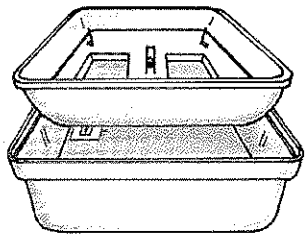
The location of the machine is important to successful operation. A room temperature from 70° to 80°F. is ideal, and fresh air without drafts is necessary. Be sure no direct sunlight strikes the incubator and that it sets level. A consistant room temperature within a few degrees is best.

CAUTION: Do not place on fine furniture, due to possible water spillage or leakage.

NOTE: An Incubator or Brooder is designed to bring normal room temperature to the desired temperature. Room temperture of 60°F. or below will reduce the temperature in the incubator. Room temperature change of 10°F. or more will change temperature in incubator and is more pronounced below a temperature of 70°F.

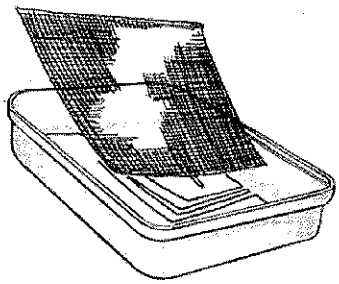
SET UP

STEP 1



Unpack the incubator from box. Use thermostat bracket as handle to remove the incubator top from inside the bottom, where it is packed for shipping.

STEP 2

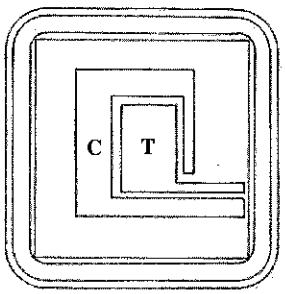


Place plastic liner then wire floor in bottom half of the Hova-Bator.

— OPERATION —

STEP 3

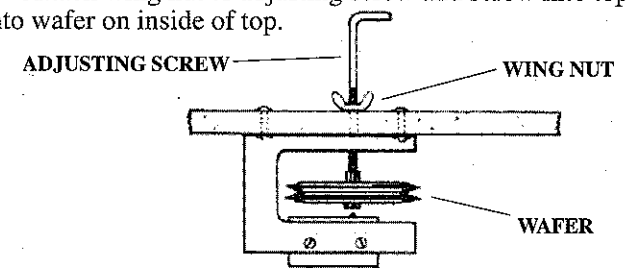
Fill trough marked 'C' (shown in diagram at right) with warm water while the eggs are being turned. If there is a question about humidity, it is usually better to have too little, than too much, except for the last two days.



TROUGH DIAGRAM

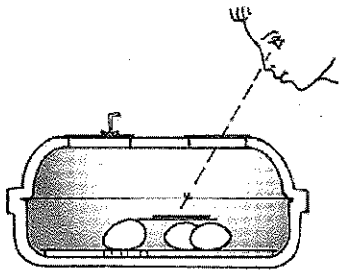
STEP 4

Attach wing nut to adjusting screw and screw into top and onto wafer on inside of top.



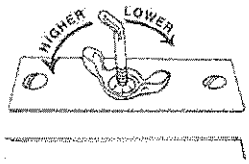
STEP 5

Place top over bottom and plug in incubator. Watch thermometer through window for temperature level.



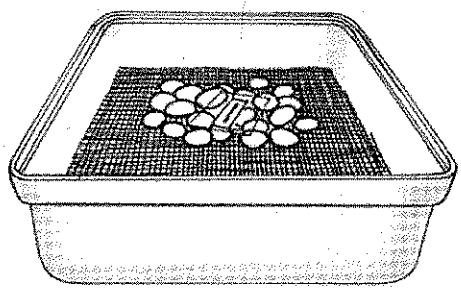
STEP 6

Turn adjusting screw counter-clockwise to increase temperature or clockwise to decrease.



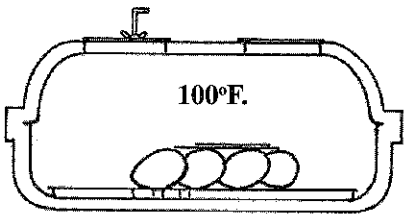
Tighten wing nut to secure the setting. The light will come on when the heat is on. Adjust the temperature for 100°F. for most eggs. Allow the incubator to operate for at least ½ day to stabilize the setting before putting in eggs. (see note above).

STEP 7



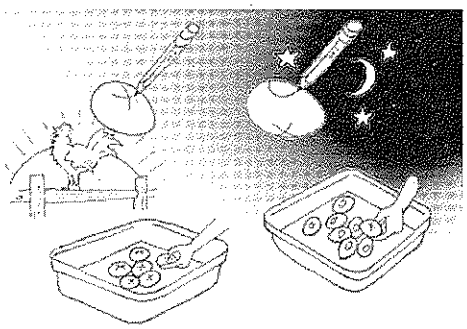
Warm eggs to room temperature (70°F. to 75°F.) and place them on wire floor. Let them lay in a natural manner, which is on their sides with the small end slightly down. About two-thirds of the way through the hatch, watch for increasing temperature due to chick development. Adjust thermostat accordingly. For operation with automatic egg turner, see page two.

STEP-8 TEMPERATURE - HAND TURNED EGGS



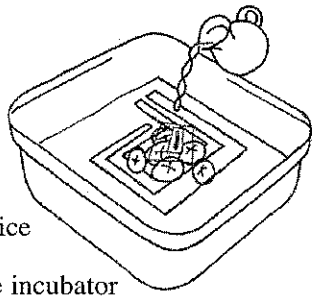
Read temperature of 100°F. with the thermometer resting on top of the eggs.

STEP 9



Turn eggs 2 to 3 times a day. With a pencil mark an on one side and an "0" on the opposite side of the egg. Turn all eggs so that "X's" appear face up. Next turning period turn all "0's" face up. Alternate this routine each turning until 3 days before eggs are due to hatch.

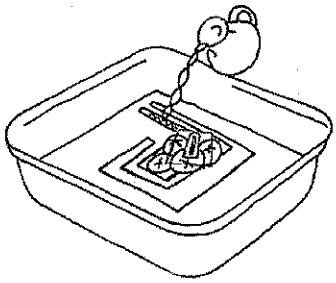
STEP 10



Add water every few days to the 'C' trough only. Usually twice a week is sufficient.

The amount of moisture in the incubator is determined by the surface area of water exposed to the air. Under high humidity conditions and for some species of birds, less humidity is required. **(The humidity in the incubator can be reduced by covering part of the water trough with aluminum foil and securing it with tape)** Whenever there are doubts about the level of humidity in the incubator, less is usually better than more, except for the last two days.

STEP 11



2 to 3 days before the hatch, stop turning the eggs, and fill both the **'T'** and the **'C'** (see TROUGH DIAGRAM on page 1) troughs with water.

STEP 12

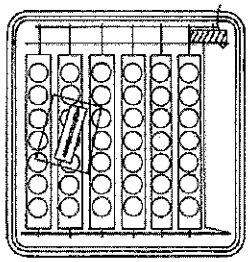
Place top on the incubator and **do not remove until hatch is complete*.** Remove dry chicks as soon as possible to a brooder that has food and water and temperatures of about 95°F to 100°F.

Chicks can survive up to 48 hours after hatch without food or water, but feed and water them as soon as possible to avoid stress. Some cases may require moving chicks to brooder to dry.

*** After hatch pull red vent plugs to help dry chicks.**

STEP-14

AUTOMATIC EGG TURNER SET UP



Place eggs in turner with small ends down and adjust temperature as instructed. Place thermometer on top of eggs

Set up incubator as shown on page 1. If you are using the automatic egg turner, place it on the wire floor in the bottom of the incubator. The turner should sit so the motor is opposite the bottom's edge marked "FRONT". The motor cord will exit the bot. torn in a groove near the motor. The thermometer should be placed directly on top of the eggs operating at 100°F.

OPERATING TEMPERATURE FOR EGGS IN AUTOMATIC TURNER

With thermometer resting on top of the eggs, operate the incubator at 100°F. After first setting adjust temperature up or down, for early or late hatch.

Three days before eggs are to hatch remove eggs from turner, lay them on their side on wire floor in their natural unsupported position. Add water according to instructions.

When turner is removed for hatching, maintain temperature according to step number eight (8).

CAUTION - About half way through incubation process, you will note that the temperature will be increasing and you will have to adjust thermostat down nearly one full turn. This is normal and is caused by the embryo forming into a chick and generating heat.

NOTICE

Following Automatic Egg Turner is available for **SQUARE MODEL HOVA-BATOR INCUBATOR** to relieve you from the tedious job of turning eggs several times a day. This turner has provento produce better hatches.

No. 1611 AUTOMATIC EGG TURNER - Complete with 6 Universal Egg Racks. Each holds 7 eggs (Total 42) any size from small Quail Egg through Large Chicken Egg - Weight- 4 lbs.

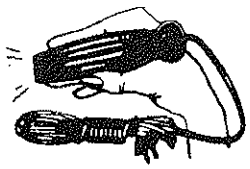
Additional **QUAIL EGGS** maybe set in the above turner by ordering the following QUAIL EGG RACKS. Just lift out the Universal Egg Rack and replace with Quail Egg Racks.

No 1686 Carton of 6 QUAIL EGG RACKS - Each rack holds 20 Quail Eggs (Total 120).Weight-2 lbs.

No. 1613 Expansion Ring. Adds 1½" headroom for setting larger eggs, such as goose eggs in circulated air incubators only. (Do not use in Thermal Air Flow incubator).

No. 1614 Automatic Egg Turner with 4 goose egg racks; each rack holds 3-4 goose eggs. Requires No. 2364 & No. 1613 shown below. Weight - 4 lbs.

COOL-LITE TESTER FOR CANDLING EGGS



EFFICIENT - Best in low cost candlers. Very effective beam, but only uses a 6 watt bulb

CONVENIENT - Weighs only 5 ounces - easy to move over eggs for long periods - eggs need not be handled. Has 5 foot electric cord. Use to check progress of development. After 10th day remove infertile eggs to give more room in incubator.

No. 9046 COOL-LITE TESTER - 110 Volt...Wt. 1 lb.

POOR HATCH OR NO HATCH

There are many factors involved with the hatching process and any one can hamper or stop incubation. Old eggs, infertile eggs, damaged eggs and poor flock health are some of the factors. Sometimes the thermometer supplied can be a bit off. If the eggs were of good quality, then adjustments in temperature may be needed.

The temperatures listed are a starting point. An adjustment of one or more degrees may correct any problems. IF EGGS HATCH A DAY OR MORE EARLY, THE TEMPERATURE MAY BE TOO WARM, SO OPERATE 1 DEGREE COOLER ON THE NEXT SETTING. IF EGGS HATCH A DAY OR MORE LATE THEN INCREASE THE TEMPERATURE 1 DEGREE FOR THE NEXT SETTING. IF THE EGGS HATCH ON TIME, BUT THE HATCH IS POOR, CONSIDER ADJUSTING THE HUMIDITY (SEE STEP 11). If no eggs hatched, but some eggs developed in the shell, then it would be a guess as to which way to change the setting. Adjust the temperature in this case 2 degrees. If checking the thermometer for accuracy, use two general purpose thermometers to see if the reading is within a few degrees of the other thermometers. Never use a fever thermometer in the incubator as it will probably read too high in this condition. Sometimes several settings may be needed to determine the best temperature setting for a particular thermometer.

Moisture levels (see below) and turning are some other factors. Review the trouble shooting chart in the instructions.

MOISTURE

The purpose of supplying moisture in and incubator is to prevent excessive drying of the natural moisture from within the eggs. The correct amount of humidity can be determined by the size of the air sack when candled, or by weighing the egg to gauge percent of weight loss. Both methods require knowledge and experience that first time operators usually do not have. The Hova-Bator is designed for simplicity in this matter, and usually works for most species.

If the Hova-Bator has a fan, fill the 'C' trough with water and keep it filled during incubation. If the Hova-Bator is the thermal air flow or still air type (no fan) and is operated in dry climates, keep water in the trough marked 'T' at all times. If the thermal air flow unit is operated in moist climates, as found near sea shores or lakes and river valleys, little or no water may be needed for most species until the last 2 or 3 days of incubation. In most cases, more chicks are lost from too high humidity, than from too low humidity.

During the last 2 or 3 days, fill both troughs with water, as high humidity is needed for the hatch.

TOTAL INCUBATION AND HATCHING TIME

Chicken—21 days.	Parakeet— 18 days.
Quail—23 days.	Parrots—28 days.
Cortunix—17 to 18	Dove—14 days.
Pheasant—23 days.	Mynah—14 days.
Chukar—23 days.	Finch—14 days.
Turkey—28 days.	Button Quail—16 days.
Duck—28 to 33 days.	Valley Quail—21 to 22 days.
Goose—28 to 30 days.	Swan—30 to 37 days.

DIGITAL THERMOMETER AVAILABLE

Has accuracy of (+/-) 0.18 Degree Fahrenheit. Has operating range 89.6 to 109.4 Degrees F. No reading is shown above or below this range. Probe has 18" wire lead and fits a 1/8" to 5/32" hole. Quick switchable operation from Fahrenheit to Celsius.

Operates on Alkaline Battery, 1.5 VOLT (No. A76), with average life of 300 hours. (unit should be switched off after temperature reading to conserve battery life).

No. 3510 - DIGITAL INCUBATOR THERMOMETER

VENT PLUGS

Remove only when moisture appears on windows, or when the incubator is used above 6000 feet MSL.

HATCHING

Three days before hatching time, discontinue turning eggs.

If you are using Automatic Turner, it must be removed from the incubator or eggs moved to a separate incubator for hatching. Do riot attempt to hatch eggs while the turner is in the incubator, as the slow turning egg racks could crush the chicks. Lay eggs on wire floor with small end pointed slightly down.

At this time, water will be placed in both the 'T' and the 'C' troughs to increase humidity for hatching. If large water droplets appear on the window after the hatch begins, remove the red plugs on the top of the incubator. If removing the plugs does not reduce the humidity enough, it may be necessary to prop up the top slightly, to facilitate drying. If so, be sure to maintain proper temperature. Alternately, the top may be removed quickly, and moisture wiped from the windows to aid drying.

Chicks may be removed 24 hours after they start to hatch. Extremely wet chicks should be left in incubator to dry. If they don't dry in eight or more hours, remove them to a brooder or heat lamp, with temperatures of 95'F. to 100F.

Plan to remove chicks once a day, as every time incubator is opened, warm moist air escapes. Avoid chilling of wet chicks.

Some chicks may be late in hatching, so you can leave remain ing unhatched eggs up to 2 days longer.

BROODING

When chicks are removed from the incubator they must have a place that is warm and dry. A brooder should have one section that is heated, with a temperature of 100 degrees (for the first week) and an unheated section for exercise. Food and water should be partially in heated area. Temperature should be reduced 5 degrees each week until it is down to 70 degrees. Some types of chicks need a temperature around 70 degrees until they are nearly grown.

Incubator top is not satisfactory as a brooder, as there is not sufficient heat and the chicks may peck it to pieces.

Feed and water chicks at once. Check with your feed dealer for proper feed for type of chicks you have hatched.

SPECIAL POINTS TO REMEMBER

1. Do not bother the thermostat unless it is absolutely necessary. The working of the machine may be affected if the thermostat is tampered with excessively.

2. If the machine does not heat, carefully investigate and see if you have all connections properly made.

3. Do not over crowd eggs.

4. Keep the eggs clean. Perspiration from the hands or any sort of grease is in-jurious, because it stops up the pores of the shells.

5. Clean your incubator after each hatch with soap and water only. The plastic liner for the Hova-Bator bottom can be cleaned using detergents or disinfectants.

6. After each temperature adjustment, allow ample time for temperature to stabilize.

7. Do not open the lid during hatch.

INCUBATION TROUBLE SHOOTING CHART

PROBLEM	PROBABLE CAUSE	NOTES
Many clear eggs. No blood rings. (determined by candling or opening eggs)	1. Infertility 2. Eggs too old or too dirty to set. 3. Embryo died early. Either before incubation or 1 to 2 days after.	1. No males or too few. 2. Eggs should be no older than 14 days. 3. Rough handling and/or temperature extremes before or just after setting.
Slight blood rings in most eggs.	1. Improper temperature before or just after setting. 2. Improper handling.	1. Eggs to be stored small end down with room temperature 60 to 80 F. 2. Check for temperature spikes in incubator.
Many dead immature chicks.	1. Improper temperature in the incubator. 2. Improper or lack of turning of eggs. 3. Insufficient oxygen. 4. Improper feeding of flock or breeding.	1. Check temperature settings and adjust for next hatch. 2. Eggs to be turned at least once a day (multiple times better). 3. Full ventilation may be required at higher altitudes. Never cut out fresh air flow.
Many chicks fully formed in shells with only some hatching or piping 1 or more days early	1. Incubator setting is too warm (1/2 to 1-1/2 F).	1. Reduce setting slightly for next hatch on the same thermometer in the same location.
Many chicks fully formed in shells with only some hatching or piping 1 or more days late.	1. Incubator setting is too cool (1/2 to 1-1/2 F).	1. Increase setting slightly for next hatch on the same thermometer in the same location.
Many chicks fully formed in shells with only some hatching or piping on the expected hatch date.	1. Humidity incorrect in the incubator. 2. Incubator door opened too frequently during hatch 3. Insufficient oxygen.	1. Check air sack of eggs. If too large, increase humidity. If too small, decrease humidity. 2. For precise humidity use gram scale to determine proper weight loss. Many eggs require 13% loss.
Chicks fully formed but none hatched or piped.	1. Temperature setting too extreme. 2. Sudden and prolonged temperature change at time of hatch. 3. Insufficient oxygen	1. Check accuracy of thermostat and thermometer. 2. Check operator procedure for type of eggs. 3. Check to see vents are not completely closed.

REPLACEMENT PARTS

Part No.	Description
1640N	Top only for- 162 .Without Windows
1641	Pkg. of 2 Windows for .1602N
1778	Top;/-1582 .Window Incub./No Hardware
1642N	Bottom for Hova.Bator Incubator
1643	Set 4 Heat Element Clips
1644	15" x *15*" Wire Floor for Hova-Bator.
1715	Thermostat Switch Complete. 15 Amp
1850	Red Easy Read Incubator Thermometer
3007	Thermostat Wafer
1645	110 Volt 25 Watt Square Heat Element
1717	110 Volt 5' Cord Set for Incub. & Turner
3017	110 Volt Pilot Light for Hova-Bator

Part No.	Description
1646	220V 25 Watt Square Heat Element
1727	220V 5' Cord Set for Incub. & Turner
3027	220V Pilot Light for Hova.Bator
1765	Clear Plastic Liner for Hova-Bator Bottom

Part No.	AUTOMATIC EGG TURNER
1655	11OV Turn Motor w/ Electric Cord Attached
1682	Pkg. 2 Egg Rack Retainer for Turner
1686	Pkg. 6 Plastic Quail Egg Rack for Turner
1688	Pkt. 03 Hitch Pin for Egg Rack on Turner
1689	Plastic Connecting Bar/Egg Racks to Motor
1696	Pkg. Plastic Universal Egg Rack for Turner

LIMITED WARRANTY

One year warranty on equipment manufactured by G.Q.F. Notify G.Q.F. Mfg. Co. of any defective items, giving catalogue number and name of item and just what is wrong with them. Send copy of invoice showing date of purchase. GQF Mfg. Co. will send replacement or notify regarding return. Returning of items without written permission will be at owner's expense.

Whereas GQF Mfg. Co. has no control over usage of equipment supplied, it assumes no responsibility for losses or damage from this equipment other than the replacement of defective parts. No Guarantee on hatchability of eggs. Do not expose electrical parts to water. Installation of electrical parts should be done by a qualified electrician.

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