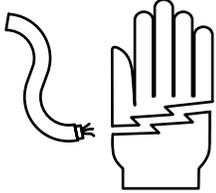


INSTRUCTIONS AND REPAIR PARTS LIST

EI20 AND EI20WF INCUBATORS EIAT AUTOMATIC TURNER

⚠ CAUTION ⚠



On all equipment used in incubation and brooding, be sure power cord assemblies are not connected when installing, cleaning or making repairs. Be sure any outlet used for power cord connection is actually grounded. Brower cord assemblies and heaters or heat sources should only be repaired by a qualified electrician. Frayed or worn power cords should be replaced immediately

****Brower incubators must be used with a surge protector which is then plugged into a 110 Volt Ground Fault Circuit Interrupter(GFCI) protected outlet.

****Brower incubators must not be connected to an outlet with extension cords.

****Brower incubator electrical parts must not be subjected to water.

****Use of repair parts other than those supplied by Brower is prohibited

Failure to follow these safety precautions could result in electrical shock causing serious injury or death.

Do NOT surround your incubator—underneath, on the sides, on the top—with materials such as blankets, towels, rags, newspapers or the like. Do NOT place any materials inside the incubator such as newspapers, paper towels and so forth(anywhere--above the floor or below the floor).

Following hatching, your incubator should be cleaned and dried as soon as possible. Do not allow a high concentration of moisture to remain in the incubator. Do not allow a buildup of down, feathers, or dust.

Brower assumes no liability for failed hatches or problems which develop after hatching. When it comes to species other than birds—snakes, turtles and the like—please consult an expert about these species. We do not represent that our incubators can be used with species other than birds.

READ ALL DIRECTIONS CAREFULLY

AFTER READING THE ABOVE CAUTION STATEMENT, TURN TO PAGE 2 FIRST AND FOLLOW THE DIRECTIONS. ASSEMBLY IS EASY AND SHOULD TAKE JUST A FEW MINUTES. ONCE YOUR INCUBATOR IS ASSEMBLED AND OPERATING, YOU CAN READ THE GUIDE THAT STARTS ON PAGE 3 IN AS MUCH DETAIL AS YOU LIKE.

In addition to our Guide which starts on page 3, there are several resources about incubating eggs. Go to your local USDA Extension Service, your local library, the world wide web or try this website: www.poultry.msstate.edu. Click on the extension information bar and you will find several topics about small scale incubation.

Part No.	Description	Part No.	Description
EI201	Heating Element	EI20FK	Fan Kit
EI202	Electronic Control	EIAT301	Egg Rail, Universal
EI203	Cover, Internal, Plastic, for Electronic Control	EIAT302	Turner Base
EI204	Cordset, 54"	EIAT304	Connecting Rod
EI205	Viewing Window 4" 1/4" x 8 1/4"	EIAT305	Turner Motor (Includes white lever arm)
EI206	Vent Plug, Red	EIAT306	Cordset, 59"
EI207	Wire Screen Floor, 15" x 15"	EIAT307	Cover for One Egg Cup (next to motor)
THI79	Thermometer	EIAT308	Small Bird Rail
EILIN	Liner		

Brower's incubating products and accessories available in this series include the following:

EI20 Economy Incubator, Still Air, two(2) 4" x 8" picture windows, solid state thermostat, plastic liner, wire screen floor and moisture rings molded into the base.

EI20WF Economy Incubator with Circulated Air, two(2) 4" x 8" picture windows, solid state thermostat, plastic liner, wire screen floor and moisture rings molded into the base.

The egg capacities without an automatic turner for either model EIF20 or EIF20WF are approximately as follows: chicken—46; pheasant—90; turkey or duck—40; quail—118.

EIAT Six large egg racks hold 7 eggs each (less one egg space next to the motor— total spaces: 41). The turner is motorized so that you are not spending your time turning eggs by hand every day. Our turner is not suitable for very large eggs such as turkey and goose. Our turner makes one complete cycle every 4 hours. A cycle means that the eggs turn 30 degrees from side to 30 degrees on the other side.

EISBR Small bird racks. Set of six racks which snap into place in Model EIAT turner. Used for small bird eggs such as quail.

EI20FK Fan Kit which comes standard with model EI20WF and which can be fitted into model EI20. The fan kit helps to keep the temperature uniform throughout the incubator. The fan kit does not regulate the temperature.

EILIN Plastic liner which helps keep your incubator cleaner and which should extend the life of the foam base. The liner comes standard with both EI20 and EI20WF incubators but it can be purchased separately.

INITIAL INSTALLATION: Unpack your incubator. The top half will have two windows, a heating element, a thermostat, an indicator light and a power cord. If you purchased our EI20WF circulated air model, the top half includes the fan kit. Place the wire screen in the base. There is a notch in both the top and in the base. The notch is for the power cord if you are using our automatic turner. Align the two slots.

If you purchased an automatic turner, place the turner in the base aligning the power cord within the notches. Position the turner so that it fits flat on the four corners of the wire screen.

Plug in the incubator cord set. The cord set needs to be plugged into a surge protector which is then plugged into a 110 volt ground fault circuit interrupter(GFCI) protected outlet.

SELECT A LOCATION: An ideal temperature is from 70 to 80 degrees F. Try to find a room with a stable temperature. Avoid direct sunlight. See Location of Your Incubator on page 4.

TEMPERATURE REGULATION: Establish a temperature of 99.5 degrees F. First, turn the control knob fully clockwise. You will see the red indicator light come on. The element in the top half will start to heat. Watch the temperature as the heat comes up. When the temperature has reached about 99 degrees, begin to gradually turn the control knob slowly counterclockwise. You may need to move the control back and forth until you achieve the recommended temperature. **CLOCKWISE—INCREASE HEAT. COUNTER-CLOCKWISE—DECREASE HEAT.** The red indicator light will probably flicker which it should. The flickering indicates that the incubator is adjusting to changes in both internal and external temperatures.

Run the incubator about 8 hours. Observe the temperature and at the end of this adjustment period, make sure the temperature is where you want it to be. See the section entitled Temperature on page 5 for more information.

EGG SELECTION, TESTING AND SANITATION: There are many factors that determine whether your eggs are going to hatch. See page 4 which has a lot of detail about selecting eggs, sanitation and testing for fertility(which can best be done after you have started to incubate).

HUMIDITY CONTROL AND VENTILATION: Fill the moisture rings in the base of the incubator using room temperature water. It is preferable to use distilled water. Check the moisture rings daily, adding water as needed. You will need to add less water if the room is humid. You will need to add more water with a circulated air unit as opposed to a still air unit.

There are two red vent plugs. If you see water droplets on the picture windows, remove one vent plug and monitor. As your chicks start to hatch, remove both vent plugs.

For more detail, go to the section entitled Humidity on page 5.

EGG PLACEMENT(If you do not have an automatic turner): Warm your eggs to room temperature. Use a lead pencil and lightly place a small 'x' on one side of each egg and then an 'o' on the other side. Do not use a pen or marker. This mark will help you identify when the eggs have been turned. Place the eggs sideways on the screen with the small end of the egg pointed slightly down. Do not crowd them. Place the thermometer flat on top of the eggs. Set the top half of the incubator on the base so that you can see the thermometer through one of the windows. Allow 3 hours or so before adjust-

ing the control knob, if at all. Do not open the incubator during the first 24 hours.

EGG TURNING(If you do not have an automatic turner): Every day at the same time, turn the eggs two or three times. Rotate your eggs by removing some eggs from the center and then rolling the rest toward the center. With clean hands, use the palm of your hand to as gently as possible roll the eggs. Three days before hatching, stop turning the eggs.

EGG PLACEMENT AND TURNING(If you DO have an automatic turner): Make sure you have identified the notches of the top and the base so that they line up for the turner power cord exit. Warm your eggs to room temperature. Set the eggs in the turner cups with the small end down. The cup nearest the turner motor should be blocked off with a cap. Do not use this cup. The turner cups are not sized to handle really large eggs such as goose or turkey. However, you may be able to place goose or turkey eggs if they are small enough. If the eggs come in contact with the heating element or if they fall out of the cups, they are too large for the automatic turner. Once the eggs are placed, lay the thermometer flat on top of the eggs so that the thermometer can be read through one of the picture windows. Plug the turner cord set into a surge protector which is then plugged into a 110 volt ground fault circuit interrupter(GFCI) protected outlet. After you have placed the eggs, allow 3 hours before adjusting the control knob if at all. Do not open the incubator during the first 24 hours.

Three days before hatching begins, stop turning the eggs. Unplug the turner and remove the turner from the incubator. Gently place the eggs on the wire screen.

CHICK EMERGENCE: During the last 3 days or so, be sure your incubator has adequate moisture. Remove both red vent plugs. As chicks emerge, do not be in a hurry to remove them. Remove chicks when they have dried off. There is more information about emergence on page 6.

BROODING, FEEDING AND WATERING: After your chicks have hatched, see page 6.

POST HATCH CLEANING: It is important to clean your incubator after hatching. Clean the incubator with soap and water only. The plastic liner can be cleaned using detergents or disinfectants.

If you used an automatic turner, it also should be cleaned. You can disassemble the egg rails and the base of the turner from the motor. Loosen two screws connecting the motor and remove. Slide the motor upward, releasing the white plastic lever from the T-bracket of the connecting rod. Slide the power cord out of the notch in the foot of the turner base. Turn the connecting rod so that it rests in a horizontal position and so that egg trays are vertical. Lift offset arm to release connecting rod from notches. Disassemble the connecting rod and the egg rails. The 6 rails, the base and the connecting rod can be cleaned in a dishwasher or you can soak them.

When clean, snap the cord set into the notch in the foot of the turner base but do not re-attach the motor yet. The largest notch in the cord set snaps into the notch in the base. Place the 6 egg rails in the base. Remember to place the rail with the cover snapped over one egg cup next to the motor. Keep all 6 rails vertical and attach the connecting rod. The T shaped end of the connecting rod should be next to the motor mount. Rotate the egg rails so that they are horizontal. Place an object such as a note book on top of the rails to help keep them horizontal. Slide the white plastic lever into the T of the connecting rod. Now attach motor with two screws.

Here are some summary suggestions for an improved hatch:

1. After each temperature adjustment, allow time for the temperature to stabilize. Once your incubator temperature is set, avoid adjusting the thermostat unless absolutely necessary.
2. Do not overcrowd the eggs.
3. Keep the eggs clean. When handling eggs, do so with clean hands. Perspiration or any other substances can stop up the pores of the shells.
4. Avoid opening the lid during the hatch.

Here a few quick pointers about the use of your incubator:

1. If the indicator light is not coming on, make sure there is power to the outlet and make sure the unit is plugged in. Make sure you are using a surge protector to a GFCI protected outlet.
2. If the indicator light is flickering, this is normal.
3. If your incubator is not heating to 99.5 degrees F, is the room too cold and drafty? Is the room colder than say 65 degrees F?
4. If your incubator is drying out, is the room excessively dry? Did you add water to the rings? If need be, add a wet sponge for more humidity.
5. If the temperature and humidity are too low especially during hatch, replace one or both vent plugs.

From Egg to Chick

A Guide for Successful Incubation and Brooding

This Guide has been written to provide knowledge about the incubation and brooding of chicks. We hope to increase the pleasure, satisfaction and fun derived from incubating and raising birds. We hope to provide information for the successful incubation and brooding of poultry for small flock producers.

There are a large number of reasons for failed hatches. Eggs may not be fertile to begin with. Fertile eggs may be improperly stored or handled, improperly turned or exposed to deficient sanitary practices. There may be improper temperature and humidity control. All these and other factors contribute to failed or reduced hatches. Even with proper handling, not all fertile eggs hatch. Following incubation, many factors contribute to successful brooding including proper nutrition, proper sanitation and disease control among others.

Because of the multitude of reasons for successful incubation and hatching, Brower assumes no liability for failed hatches or problems which develop after hatching. Also, with thousands of units in service starting in 1924, we know our incubators and controls have been used to hatch and/or brood every conceivable creature that starts life in a shell--as well as some that have never seen a shell. Chicks are highly complex living organisms and this Guide summarizes our thoughts and thoughts of others about how they develop and are born.

While the information in this Guide can be used with any equipment, Brower makes no representation that the information herein applies to equipment other than that manufactured by Brower.

EGG SELECTION AND CARE

Fertile eggs can be obtained from hatcheries, poultry breeding farms and specialty fertile egg suppliers. Look in your yellow pages, contact your Agricultural Extension service or contact Brower for good suppliers. Eggs sold in grocery stores are largely not fertile and cannot be used for incubation. Breeder selection management and nutrition play an important part in hatchability. However, storage conditions after you receive the eggs, play a very important role. Here are some guidelines.

1. Eggs stored for one day will hatch better than fresh laid eggs placed immediately in an incubator. The storage of hatching eggs from one to five days generally result in maximum hatchability. A lot of commercial farms set eggs once a week.
2. Long term storage of eggs prior to incubation causes a significant loss of hatchability. The hatching percentage declines dramatically if eggs have been stored about 13 days or more. The only exception seems to be Chukar eggs which can be stored up to 28 days or so.

If you hold hatching eggs before they are set, keep them at about 55°F (12°C) and 75% relative humidity. The vegetable section of your refrigerator--if at the proper temperature--can be used to hold your eggs. Temperatures below 40°F (about 5°C) reduce hatchability. Storage at room temperature will reduce hatch. Most literature recommends storage with the small end of the egg down.

REMEMBER: STRONG FERTILE EGGS ARE MOST IMPORTANT.

FERTILITY TESTING

Although it is not necessary to test eggs for fertility, you can eliminate the eggs which are not going to hatch by doing so. It is also interesting to test since it is possible to see clearly the developing embryo. Testing is also referred to as candling.

Darken the room and hold the large end of the egg to a candling light. Look through the side of the egg and slowly turn it in your hand. What you will see depends mostly on the age of the embryo. It is difficult to see much development until the 4th or 5th day of incubation.

The first parts of the embryo which you will see by candling will be the head and eye. They will appear as a dark object. If the embryo

is alive and circulation is established, the contents of the egg will have a pinkish color or cast. If the embryo is dead, the contents will appear muddy or brownish. The live and growing embryo will eventually occupy all of the interior of the egg and will not transmit light. Thus, it will be impossible to see anything but the air cell at the end of the incubation period. Infertile eggs and early dead embryos can be detected readily because they appear clear.

Removing the eggs from the incubator for candling does little harm if you handle them gently. It may slow up development of the chick, though, depending upon how much the egg is cooled. Generally, if the eggs are removed from the incubator two or three times for a period of no more than 15 minutes each, such cooling will make little difference in the total incubation time required for hatching. On the other hand, if the eggs are cooled for several hours because of power failure or some other reason, hatching times may be delayed. Candle for proper humidity at the same time you test for fertility. See Humidity, page 5.

Before you handle eggs, wash your hands or wear gloves. Oil from your skin can clog egg pores and retard embryo development.

SANITIZING EGGS

Most commercial hatcheries sanitize their eggs. There are differences of opinions about how to sanitize eggs, if you feel they need to be. Some experts advocate washing and even lightly scrubbing eggs with soft brushes. Others feel that the most that should be done is dipping for a few seconds. Because of the varying opinions on sanitizing eggs, the following is an opinion of Brower and not necessarily a hard and fast recommendation. Accomplish sanitizing by dipping eggs in solution containing disinfectant that is just strong enough to kill bacteria and viruses. However, the disinfectant should not be so strong as to damage the embryos.

Mix the sanitizing solution according to the manufacturers' instruction. A recommended cleaning solution is Tex-Trol. Tex-Trol may be available at a local retail outlet. For the name of a retailer, contact ABC Compounding, PO Box 16247, Atlanta, GA 30321 (800-795-9222) or contact Agrilabs, P.O. Box 3103, St. Joseph, MO 64503 (800-542-8916). If using Tex-Trol, mix one half ounce of concentrated disinfectant to one gallon of warm water. You can also use 1 ounce of Clorox to 2 gallons of water. The water should be 100 to 110 degrees Fahrenheit (37° to 44°C). If the egg is warmer than the solution, contamination can be pulled through the pores of the egg before the agent has a chance to neutralize any pathogens.. Submerge the eggs for one to three minutes with dirtier eggs left in solution longer than ones that essentially look clean. Allow the eggs to air dry at room temperature and store as described above--or set in your incubator. A soft paper tissue can be used to dry the eggs but don't rub the egg with a tissue or any material. Eggs have a natural protective cuticle that helps retard contamination. Rubbing removes the cuticle and can actually drive pathogens through the shell.

LOCATION OF YOUR INCUBATOR

Your incubator is designed to bring room temperature to the desired temperature for incubation. A room temperature of 60 degrees F or below will reduce the temperature in the incubator. A room temperature fluctuation of 10 degrees F or more will change the temperature in the incubator. The location of the incubator is one of the factors important for a successful hatch. A room temperature from 70 to 80 degrees F is ideal. The room should be free of drafts and excessive variations in temperature. Do not locate near a source of carbon dioxide such as from a gas heater. The room needs adequate oxygen intake and carbon dioxide exhaust. Do not place the incubator near windows where it can be exposed to direct sunlight. Your incubator should not be exposed to a great deal of vibration from vehicles or machines. Basements tend to be a good place to incubate because of an acceptable temperature without a lot of variation and no exposure to sunlight. Normal light and color of the environment have minimal affect on hatchability.

TEMPERATURE

Your electronic control should be set at 99.5°F (37.5°C). Leave it there for the entire incubation period for all species listed below. Before placing eggs in your incubator, turn it on for at least 24 hours to verify a temperature of 99.5°F (37°C). It's better to under-heat (you'll get a somewhat delayed hatch) than to over-heat.

EXPECTED INCUBATION AND HATCHING TIME - DAYS

Chicken and Bantam	21	Pigeon	17
Bobwhite Quail	23-24	Goose	28-34
Button Quail	16	Duck	28
Cortunix Quail	17-18	Muscovy Duck	35-37
Valley Quail	21-22	Guinea	28
Ring Neck Pheasant	23-24	Parakeet	18
Mongolian Pheasant	24-25	Parrots	28
Chukar Partridge	23-24	Dove	14
Turkey	28	Mynah	14
Peafowl	28-30	Finch	14
Grouse	25		

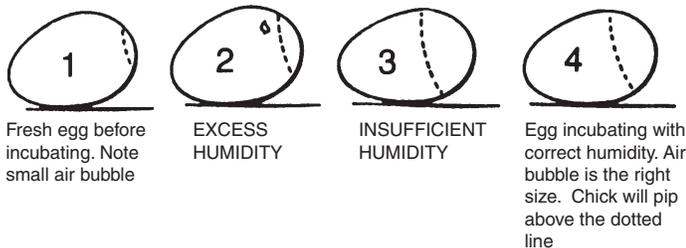
Many factors account for reduced, early or late hatches. Temperature can be a starting point for making adjustments. An adjustment of one or more degrees may correct problems you suspect are temperature related. If eggs hatch a day or more early, the temperature may be too high. On the next setting, operate one degree cooler. If eggs hatch a day or more late, the temperature may be too low. On the next setting, increase the temperature one degree.

There can be a fair amount of variance from one thermometer to the next. Don't use a human fever thermometer, as they usually read too high in an incubator environment. For any particular thermometer, several egg settings may be required to determine the best temperature.

HUMIDITY

Incubating eggs do have a surprising tolerance for variations in humidity. However, you should observe the following. Nature has provided that eggs should dry out to some extent during incubation. See Exhibit A. This loss under good conditions will be about 11% of the original weight. Nature provides for an air bubble to form in the large end. This is necessary for the chick to be able to pip through the shell above the area containing fluid and may well drown. The chick will not be able to pip through the shell above the area containing fluid and may well drown. The chick may also be over sized from excess fluids, if the humidity is too high. On the other hand, insufficient humidity during incubation can cause the other to stick to the shell and also contribute to a delayed hatch. It will not be able to turn as it attempts to peck off the cap.

EXHIBIT A



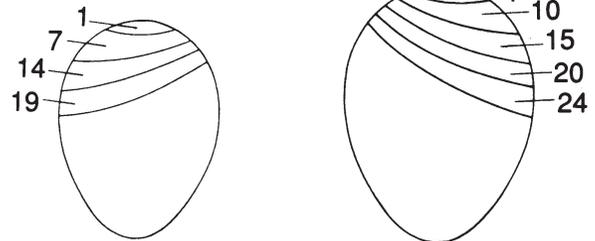
Weather conditions affect relative humidity in the incubator. The amount of opening in the incubator also influences the level of humidity. The ideal moisture level is about 50 to 55% relative humidity (83°-87°F on a wet bulb thermometer) for the first 18 days and about 75% (90°-94° wet bulb) for the last 3 days. Some variations above or below the ideal level usually will not affect hatchability drastically. Some experienced producers spray goose and duck eggs twice weekly and at least three times during the last ten days. Use 110°F (43.3°C) water when spraying. Don't spray water into the electronic control. Humidity is controlled by adding water to the rings in the incubator base. Check and fill water rings

twice a week. Be sure there is sufficient water during the last 3 days of incubation.

Please also note that you should use only distilled water. This will reduce the amount of mineral buildup in your incubator. When you fill, use warm water. Finally, do not let the eggs come in direct contact to the water. Eggs under incubation will give off a certain amount of moisture. The environment of your incubator does have an effect on how you manage humidity. An incubator operated in a very damp cellar or room with a lot of natural moisture, may require the addition of only a small amount of water. Remember to watch the air space in your egg. Candle just as you do when you test for fertility. If the air space is too large, provide more moisture. If the air space is too small, increase the ventilation (remove a plug in the cover) and do not add additional moisture.

At the end of the seventh day, the space should be no larger than a twenty-five cent piece. On the fourteenth day, there should be an air space no larger than a fifty cent piece. See Exhibit B.

EXHIBIT B



Chicken

Turkey

Size of the air cell on the 7th, 14th, and 19th days of incubation for chicken and on days as specified for turkey.

HYGIENE

ALWAYS START WITH A CLEAN INCUBATOR. Poor hygienic practices are a major reason for failed hatches. You may have done everything correctly but bacteria in your incubator can contribute to disease entering through the shells.

Birds can acquire disease through the shell and if they successfully hatch, those diseases can be spread to an entire flock. You increase your chances for contamination if you keep adding eggs to the incubator. Operate your incubator "all-in/all-out". Even after cleaning, we recommend the use of a disinfectant cleaner. One recommended product is Tek-Trol. Ammonia or Chlorox and water can also be used.

SETTING THE EGGS

Warm eggs to room temperature. Eggs should be placed on their sides with the small end pointed slightly down. Do not over-crowd the eggs. The temperature inside your incubator will vary as the eggs become warm. However, you do not necessarily need to change the temperature of your control.

TURNING OF EGGS

Egg turning is done for three reasons. First of all, turning reduces temperature gradients within the egg. Secondly, turning prevents embryos from sticking to the egg shell membranes during early incubation. Thirdly, and most importantly, egg turning is required to allow the proper utilization of growth nutrients in the inner white. If eggs are not turned, such nutrients cannot easily move to accessibility by the embryo. The embryo does emit wastes and those wastes are moved away from the embryo by turning--allowing the embryo to access the nutrients it needs for development. Brower has Australian research which proves conclusively -- at least in small hatches -- that the manner in which eggs are turned (orientation) has no impact on hatchability. The most popular small incubators in Europe all roll the eggs and European research confirms that hatch percentages between rolling and tilting eggs are statistically identical. When eggs are turned is the most important decision. The critical period is three to seven days. Eggs not turned in this period but at all other times have lower hatchability than when

turned in the critical period of three to seven days.

EMERGENCE

If you so desire, you can candle your eggs at intervals as discussed above. Stop turning eggs at least three days before hatching, and don't open the incubator top until the chicks start to emerge. Chicks, for example, will start to pip the shell around the nineteenth day. All chicks which are going to hatch should be out of their shells by the twenty-first to twenty-second day (with chicken). The head of the chick develops at the large end of the egg. Between the fifteen and sixteenth days, the chick orients itself so that its head is near the air cell at the large end of the egg. Just before the chick is ready to attempt to make its way out of the shell, its neck acquires a double bend so that its beak is under its right wing and pointing at the air cell. About the nineteenth day, the chick thrusts its head forward and its beak quickly breaks the inner shell membrane. When exposed to the air in the cell, the chick's lungs begin to function. Complete breathing by the lungs usually does not occur until the twentieth day of incubation (in the case of chickens). A chick will peck at a shell thousands of times. Finally, the young bird pips its way through the shell and begins to breathe air from the outside. When the shell has been pipped, the chick will rest for several hours. After this resting stage is completed, the chick begins to turn slowly inside the egg. As it turns, the cutting edge of the chick's beak, the chick's "tooth", continues to chip away. It may take another three to five hours before the chick breaks free from the shell when it is still wet and panting. Chicks are exhausted from this emergence. After a few days, the tooth (a sharp projection from the end of the beak) disappears. Chicks can be removed from the incubator when they are completely dry. They may be left in the incubator for up to 24 hours or so. Remove chicks from the incubator just once a day as to avoid escape of warm and moist air. Often eggs hatch late so you may want to wait beyond the normal incubation period for species as specified on page 5. During the last 3 days of hatch, remove one vent plug. As chicks emerge, remove both plugs. Be sure to replace plugs for the next setting of eggs.

Do not be in a hurry to take your chicks out of the incubator. The yolk of the egg is drawn through the navel into the stomach of the baby bird before it hatches. This provides nourishment for the period of time during which the bird hatches, fluffs out, gains strength and becomes active enough to go out and seek feed. It is generally best to take the chicks out of the incubator as soon as they are dry. Avoid chilling wet chicks.

BROODING

Brooding is the period of time during which the environment around the chicks is controlled to allow the chicks to be conditioned to their new natural environment. Heat and the control of the heat and the manner in which the birds are integrated with the source of heat can often be a main factor determining the percentage of mortality in baby chicks.

During incubation, the chick has been in a closely controlled temperature. After hatching and going into brooding, birds are exposed to a lot greater variation in temperature. Chicks need to gradually increase their tolerance for temperature variation and lower temperature. Start with a brooding temperature of 95°F (about 35°C). Use Brower's Model CQB20 Brooder. Reduce the temperature by approximately 5°F (2.8°C) each week to a temperature of about 70°F (21°C) until they are nearly grown. In warm weather, heat is usually not necessary after the fourth week.

Some species of birds develop a faster tolerance to temperature fluctuations and require less brooding. A strong indication of this adjustment to heat variation can be judged by observing how the birds vary their range of distance from the heat source. Make sure that there is not a supplemental source of heat which may cause the brooder to over-heat during the day (such as from direct sunlight). Over-heated birds are poorly feathered. During the first few days, chicks may sleep in groups, directly next to the heater. As their tolerance increases, they will tend to rest further away from the heat source and in separate groups. Some species need a temperature

of about 70°F (21°C) until they are grown.

Chicks of different ages generally should not be brooded together. The younger smaller birds may suffer.

FEED AND WATER

Feed and water chicks as soon as they are removed from the incubator. Check with a feed dealer for proper feed for the species you have hatched.

Chicks readily locate feed and water by themselves. If birds are not feeding and drinking, they may be ailing from one of several causes. There may be improper regulation of the brooder heat, the birds may be sick, the birds may have been blinded by bright lights. Also, some birds are albinos who have very poor eye sight or are totally blind. That's why colored lights are preferred during brooding. It is true that chicks with a mother hen learn to eat by example. However, chicks naturally find their way to the feeder and drinker. The more aggressive and inquisitive ones will eat and drink first and the balance of the flock will imitate them.

Baby chicks have a tendency to drown themselves if they are afforded the opportunity. Since chicks are newly emerged from a fluid environment inside the egg, there is an instinct to go to water. After 3 or 4 days, this urge to become emerged in the water is reduced and after a week it disappears. You can place marbles to keep the birds from getting into the water, but place them so they can still drink. Brower has several models of founts including drown proof bases.

We have provided you with the basics of incubation, hatching and brooding. Several books are available which go into more detail. These books can be obtained from your extension service or from numerous mail order poultry firms or general equipment catalogs. Above all, experience is the top factor in successful hatching. Please let us know how we can help you.



THI200 Hygrometer is a great way to measure humidity. The THI200 has a grommet which will snap into one of the 1/2 inch holes on your incubator cover.

THI200



INCUBATION TROUBLE-SHOOTING CHART

Symptoms	Probable Causes	Suggestions
Many clear eggs showing no development. Infertiles.	<ol style="list-style-type: none"> 1. Too many or too few males. 2. Seasonal decline in fertility in late summer and fall. 3. Males undernourished as evidenced by poor fleshing and shrinking of comb and wattles. 4. Interference of males during mating. 5. Frozen comb and wattles during cold weather. 6. Males too old. 7. Preferential mating - in pen matings. 8. Sterility of males - usually in pen mating. 9. Eggs held too long. Eggs chilled by holding at too low a temperature. 	<ol style="list-style-type: none"> 1. Use 1 male to 15-25 females with Leghorns and 1 male to 12-20 females with heavy breeds. Use 1 male to 10-12 females for turkeys. 2. Use early hatched cockerels 6-9 months of age depending on rate of sexual maturity. 3. Replace underweight males with vigorous males in good condition. Provide feeders on roosts. Dub Leghorn males. 4. Do not use too many males. Raise males together. Provide temporary partitioning or blinds in large pens when breeders are confined. 5. Provide comfortable housing and use proper kind of drinking fountains. Dub males in cold climates. 6. Use cockerels instead of old males unless the latter are proven valuable breeders. 7. Artificially inseminate infertile hens or put with another male in different pen. 8. Replace with another male. 9. Set eggs within 7 to 10 days after laying. Hold eggs where the temperature is about 55°F and about 75% relative humidity.
Blood rings.	<ol style="list-style-type: none"> 10. Improper temperatures. 11. Improper disinfecting. 12. Holding eggs at temperatures above 80°F before incubation. 	<ol style="list-style-type: none"> 10. Check accuracy of thermometer. Check control, heat source, current supply. Check operating temperature against manufacturer's instructions. 11. Use Textrol or other disinfectant according to recommendations. 12. Hatching eggs should be held at about 55°F.
Many dead germs.	<ol style="list-style-type: none"> 13. Temperature too high or low. 14. Improper turning of eggs. 15. Breeding (low hatchability inherited). 16. Improper ventilation, insufficient oxygen. 17. Pullorum disease or other salmonellosis. 	<ol style="list-style-type: none"> 13. See suggestions (10) above. 14. Turn at least 3 times, preferably 5 or more in 24 hours. 15. Avoid close inbreeding. 16. Increase ventilation of incubator and incubator rooms; avoid drafts. Add oxygen at high altitudes. 17. Use eggs from disease-free sources only.
Pipped eggs not hatching.	<ol style="list-style-type: none"> 18. Insufficient moisture. 	<ol style="list-style-type: none"> 18. Increase evaporating surface for moisture or increase sprays. Chickens: first 18 days, wetbulb 83°F - 87°F; 3 day hatching period, 90°F - 94°F.
Hatching too early, too late. Sickly hatch.	<ol style="list-style-type: none"> 19. Too high temperature. 20. Too low temperature. 21. Probably too high temperature. 	<ol style="list-style-type: none"> 19-21. See (10) above. For all three: check temperature at maximum or when current actually goes off. During hatching period check temperature after current goes off to see if it increases further.

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INCUBATION TROUBLE-SHOOTING CHART (cont'd.)

Symptoms	Probable Causes	Suggestions
Malformed chicks. Spraddlers.	22. Temperature too high. 23. Moisture too low 24. Improper turning or setting. 25. Hatching trays too smooth	22. See (10) above. 23. See (18) above. 24. See (14) above. Set eggs large end up. 25. Use trays with wire or crinoline on bottom.
Abnormal chicks. Weak or small chicks. Labored breathing. Large, soft bodied, mushy chicks. Dead on trays. bad odor.	26. Overheating in hatching unit. 27. Small eggs 28. Insufficient moisture 29. Too much fumigant. Respiratory disease (bronchitis or Newcastle). 30. Low average temperature. 31. Poor ventilation. 32. Navel infection (omphalitis) in incubator.	26. See (10) above. 27. Set only standard or larger size eggs. 28. See (18) above. 29. Check with nearest disease laboratory. 30. See (10) above. 31. See (16) above. 32. Carefully clean and fumigate incubator between hatches.
Rough Navels.	33. High temperature or wide temperature variations.	33. See (10) above.
Hatching too late or not uniformly.	34. Old eggs and eggs of different ages.	34. Set eggs at least once each week.

BROODING TROUBLE-SHOOTING CHART

Symptoms	Probable Causes	Suggestions
Watery eyes Running nostrils	1. Overheating of birds. 2. Unventilated building which has been heated by mid-day sun.	1. Medication.
Legs stretched out behind the bird.	1. Piled on by other birds.. (Inadequate heat can cause piling) Extreme heat and prolonged stress.	1. Medication.
Spraddled legs.	1. Putting birds on smooth, hard floors before they've had a chance to develop.	1. There is no cure for spraddled legs. Prevent by using rough fabric or litter.
Bad feathering and pecking of feathers.	1. Over crowding and heating.	1. Use a red pilot bulb in brooder. 2. Use high protein feed. 3. Segregate injured birds until healed. 4. Commercially available red ointments can be used to deter pecking, promote healing.
Cementations of Toes.	1. Manure accumulation on toes.	1. Use Browers Brooder -- Model CQB20. 2. If using a bulb brooder, use litter (saw dust, shavings).

LIMITED WARRANTY

From the date of purchase, all components of our Models EI20 and EI20WF incubators and our EIAT automatic egg turner are covered by a one year limited warranty for defects in material and workmanship under normal use and service. Warranty is limited to the replacement of components. This limited warranty is void if the product is sold to the end user more than 2 years after Brower sold the product to the first owner, distributor and/or retailer. This warranty is expressly in lieu of all other warranties express or implied including the warranties of merchantability and fitness and all other obligations or liabilities on the part of Brower. Brower does not assume nor authorize any other person or entity to assume for Brower any other liability in connection with the sale of our products. Brower does not assume any liability for any component which has been subject to accident, negligence, alteration, abuse or misuse. The CAUTION statements on Page 1 of this instruction manual, concerning electrical repairs and the like, are an integral part of this limited warranty statement. Due to the numerous factors affecting the hatching of eggs, many which factors are discussed in this instruction manual, Brower makes no representations about the number of eggs that will be hatched using our incubators. Brower assumes no liability for the failure of eggs to hatch. Brower incubators are recommended for general poultry hobbyists. Brower incubators are not intended for professional or commercial use or for the incubation of exotic and/or expensive eggs. Brower is not responsible if our products do not comply with local product codes or codes outside of the USA.