

## SPECIFICATIONS

MODEL NO.	INPUT VOLTAGE	WATTS	HERTZ
RX2	120VAC	200	60
	230VAC		50/60

**INSPECTION:** Unpack the unit. Inspect the unit for external and/or internal damage. If the unit is received damaged, file a claim with the delivering carrier. We cannot file the claim for you.

## WARNING

INCUBATORS ARE ELECTRICAL DEVICES AND SHOULD BE TREATED AS SUCH. ELECTRICAL REPAIRS SHOULD BE MADE BY COMPETENT ELECTRICAL SERVICE PERSONNEL. DISCONNECT OR UNPLUG THE POWER BEFORE ATTEMPTING REPAIRS OR CLEANING THE INCUBATOR.

IF THE INCUBATOR HAS AN ELECTRICAL RECEPTACLE ON ITS TOP, IT IS FOR OPERATION OF AUTOMATIC TURNERS ONLY AND SHOULD NOT BE USED FOR ANY OTHER PURPOSE.

**GROUNDING:** Certain metal and electrical parts of the incubator are grounded. You can identify these parts as they have a GREEN or GREEN WITH YELLOW STRIPED wire connected to them. Grounds are for your protection and should never be removed or tampered with.

**POWER CORDS:** All incubators and turners have three prong plugs on the power cord. The bottom round prong is a ground connection. It is through this connection that ground is provided for the grounded incubator parts. You should be sure that the outlet the power cord is plugged into is actually grounded. Using an ungrounded outlet or defeating the purpose of the ground by cutting off or removing the ground prong on the plug could, under certain situations, cause serious electrical shock when the parts are touched. Frayed or worn power cords should be replaced immediately.

**ELECTRICITY AND MOISTURE:** Moisture and electricity do not mix well and because electric incubators must be operated in conditions of high humidity for part of the incubation cycle, certain precautions should be taken. 1. Do not add water to the incubator until it reaches operating temperature. 2. Use distilled water only. 3. As soon as incubation/hatching is complete, remove all water from the unit and dry the area that had water on it. If the top of the incubator is removable, remove it from the base. Allow the top to air dry. If the top is left on or water is not removed, a high concentration of moisture is left in the incubator. As the incubator cools, excessive moisture will accumulate on electrical and metal parts causing deterioration of these components. Failure of the electrical components can occur when the incubator is again used.

**INCUBATOR ENVIRONMENT:** The environment your incubator is used in can have a pronounced effect on your hatch. Improper environment can cause temperature and humidity control problems during the incubation cycle. For best results, incubators should be used in an area that has a controlled ambient temperature of 70°F. Operating incubators in less than 70°F ambient or in a room that has wide temperature variations can have a detrimental effect on the incubator's operation. It may be necessary to make additional and frequent temperature control adjustments during incubation. Incubators should not be located near heat or in direct sunlight. Avoid locations near windows or doorways or where drafts occur. Remember that the eggs must receive air, avoid locations where carbon dioxide concentration might be high, (i.e., near gas furnaces or hot water heaters).

THE INCUBATOR SHOULD BE BROUGHT TO OPERATING TEMPERATURE FOR 24 TO 48 HOURS BEFORE PUTTING EGGS IN IT. LET YOUR EGGS STAY AT ROOM TEMPERATURE FOR AT LEAST 12 HOURS BEFORE SETTING THEM IN THE INCUBATOR.

**HUMIDITY AND ITS CONTROL:** There are two very important things you should know about humidity and its control. 1. You control humidity - the incubator can't. As the incubator operator, you set the temperature desired and you determine by adjusting the amount of water surface exposed to the heated air what the humidity in the incubator will be. 2. The wet bulb thermometer reading is not the percent of humidity in the incubator. To give you an example of this: if the incubator dry bulb thermometer reads 100°F, and the wet bulb thermometer reads 84°F, the humidity in the incubator is 51%, not 84%. The hatching manual shipped with your incubator describes how to determine humidity in detail. You should read the section on humidity and calibration thoroughly. **ALWAYS USE A NEW WICK OR CAREFULLY CLEAN AN OLD WICK EACH TIME BEFORE THE INCUBATOR IS USED.**

**INCUBATOR CLEANING:** Clean the incubator as soon as you are done using it. DO NOT WAIT UNTIL YOU NEED TO USE IT AGAIN. Using a low velocity vacuum, remove as much dust and dirt as possible. You may use a mild soap with water to clean all the parts or a weak solution of ammonia and water. Wipe the incubator clean with a cloth coated with the cleaning solution. BE SURE THE ELECTRICAL POWER TO THE INCUBATOR IS DISCONNECTED OR UNPLUGGED BEFORE ATTEMPTING TO CLEAN THE UNIT. Avoid getting liquids on the temperature controller, heater coil and the coil insulators. When cleaning is complete, allow the incubator to dry completely, then cover it in storage until it is used again.

## PLEASE READ THESE INSTRUCTIONS CAREFULLY.

Position the Roll-X in front of you so that the water fountain is to the back and on your left side. This will aid you in adjusting the Roll-X.

### Materials needed to assemble the Roll-X:

Small flat head screwdriver

Crescent wrench

### UNPACKING THE RX-2

1. Carefully remove and identify the following as you unpack the Roll-X.

Clear plastic dome (packed upside down)

Grid assembly (for packaging purposes the grid assembly is shipped upside down)

Screen mesh

Blue Plastic base

Water fountain kit

The thermometer/hygrometer kit in plastic bag which includes:

One flat washer

One wing washer/nut

One long bolt

(3) hex nuts

One mercury thermometer with a wick attached to the end of the thermometer (wet bulb),

One regular thermometer (dry bulb),

The L-shaped turning pull rod with black screw on cap

2. **IF THE UNIT IS AUTOMATIC, THE FOLLOWING ITEMS ARE ENCLOSED:**

Automatic turner (available in 110VAC and 220VAC)

Two (2) screws and two (2) washers

L-shaped turning pull-rod with two (2) adjusting screws and collars.

3. **Assembling the Roll-X2:** (see ADJUSTING AUTOMATIC TURNER). SKIP THIS INSTRUCTION IF YOUR ROLL-X IS MANUALLY OPERATED. Remove the grid assembly and screen mesh from the inside of the blue base. Take the automatic turner and match the two holes in the blue base to the two threaded inserts on the side of the turner. Put the two screws with the washers on them through the wall from the inside of the incubator base. Place the turner against the base and tighten the screws. Do not overtighten the screws. From the inside of the blue base insert the L-shaped turning rod through the hole of the blue base wall. The short end should remain on the inside of the base. Place one set collar and adjusting screw on the L-shaped pull-rod located on the outside of the incubator. Run the rod through the clevis hole on the bottom of the swing arm of the turner and attach the second set collar and adjusting screw to the pull-rod. Do not tighten the adjusting screws onto the pull-rod at this time. Final adjustments will be made later.

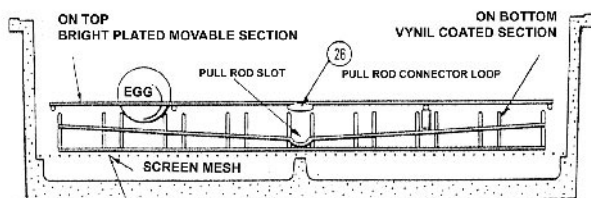
4. SKIP THIS INSTRUCTION IF YOUR ROLL-X IS AUTOMATICALLY TURNED. Insert the L-shaped turning pull-rod from the inside of the blue base with the short end remaining on the inside of the base.

5. Place the mesh screen directly on the bottom supports of the blue base, with the notched out corner where hole for water bottle is located (And the thermometer kit attaches). Place the grid assembly (plastic coated side down, bright plated side up) over the screen. Be sure the guide rollers are connected between the plastic coated and bright plated grids. The grid assemblies should be resting against each other firmly but move freely without friction against the walls of the blue base.

**NOTE:** If the grid assembly appears to "climb the walls" it is upside down.

Connect the turner pull rod inside the base with the small plastic loop on the end of the removable grid. (Make sure the notched corner of the grid assembly is on the opposite side of the blue base from the turner.)

### CORRECT POSITION OF EGG TURNING GRID IN THE INCUBATOR CASE



### INSTALLING YOUR THERMOMETER KIT

6. Locate the hole on the back side of the base next to the water fountain. From the inside of the base, insert the thermometer assembly and apply the washer and wing nut to the exterior of the blue base. Tighten the wing nut snugly, but do not over tighten. (The thermometer assembly should extend to the right with the wick hanging down to the front right corner).

The bulbs of the thermometers should slant downward but still clear the eggs to be set. Extend the wick of the wet-bulb or hygrometer through the grid notch so that the end will rest on the bottom of the base.

### INSTALLING EXTERNAL WATER FOUNTAIN

7. To install the external water fountain:

- A. Insert the threaded hose barb fitting into the threaded hole provided in the bottom blue base corner where the Thermometer/Hygrometer kit is mounted. Tighten enough to prevent leaking.
- B. Push the hose piece provided onto the white hose barb that is screwed into blue base.
- C. Push the hose barb on the water fountain base into the hose.
- D. When ready the water fountain bottle height (and thus the water height in the incubator) is adjusted by raising or lowering the nut on the neck of the water fountain bottle.

8. NOW PLACE ROLL-X DOME ON BLUE BASE

Plug the long cord from the dome into your electric power source. If you have an Automatic Turner, plug the Automatic Turner cord into the electrical receptacle on the dome (Remember: it is only for the automatic turner).

### ADJUSTING THE AUTOMATIC TURNER

Skip instruction if your RX is manually turned.

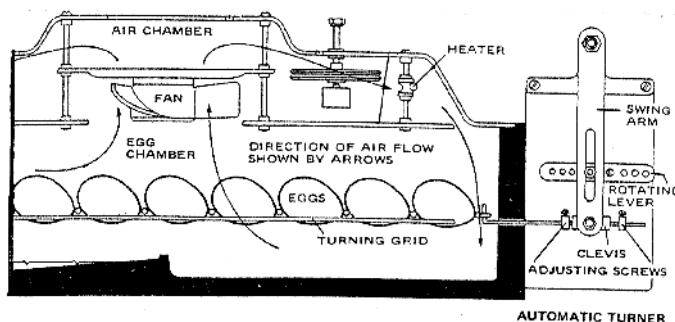
**CAUTION:** Do not tighten the adjusting screws on the L-shaped turning pull rod until they are in the proper position. The incorrect positioning may cause the turning grid to be forced against the walls of the incubator and break either the automatic turner or the connections to it.

Lift the Dome and move the grid to the left (away from the automatic turner) to within 1/4" of the incubator wall. Press the red button on the top of the automatic turner. This will activate the automatic turner and cause the lever to move either to the right or left. Observe the lever as it moves to the left.

At this point when the lever reaches the maximum position to the left remove your finger from the red button and tighten the adjusting screw against the clevis at the left and tighten the adjusting screw against the clevis at the right.

### SETTING TEMPERATURE CONTROLS

The incubator was tested and the temperature regulated to 100°F before it was shipped to you. Due to handling in shipment or the environment it is used in, it may require further adjustment. Temperature adjustment is made according to the type of control ordered with the incubator. They are described in the following paragraphs. Watch the thermometer as the temperature in the incubator rises. The indicator light should go off at 100°F. After the set temperature is reached the light will go on and off at short intervals. This on and off of the indicator light and a constant thermometer reading of 100°F indicates the thermostat is controlling the heat.



## SETTING THE TEMPERATURE CONTROL- Continued

**NOTE:** The desired temperature must be constant and stable within the unit **BEFORE** adjusting humidity. Run the incubator without any eggs for a period of 24 to 48 hours, regulating and checking the internal temperature. This period is required to guarantee that the temperature is constant and stable.

### VERY IMPORTANT

When adjusting the incubator temperature **SET THE BRASS OVER-TEMPERATURE CONTROL TO THE DESIRED TEMPERATURE FIRST, THEN THE PRIMARY SOLID STATE TEMPERATURE CONTROL.** For example: To set the over temperature control to 101°F. turn the primary solid state control **FULL ON** (Full clockwise rotation). Adjust wafer backup control so that the incubator temperature stabilizes at 101°F. Then, turn the primary solid state control **COUNTERCLOCKWISE** until the desired incubation temperature is obtained (In this case 100°F.) When this is set at 100°, you will not hear the clicking sound of the backup wafer thermostat any more.

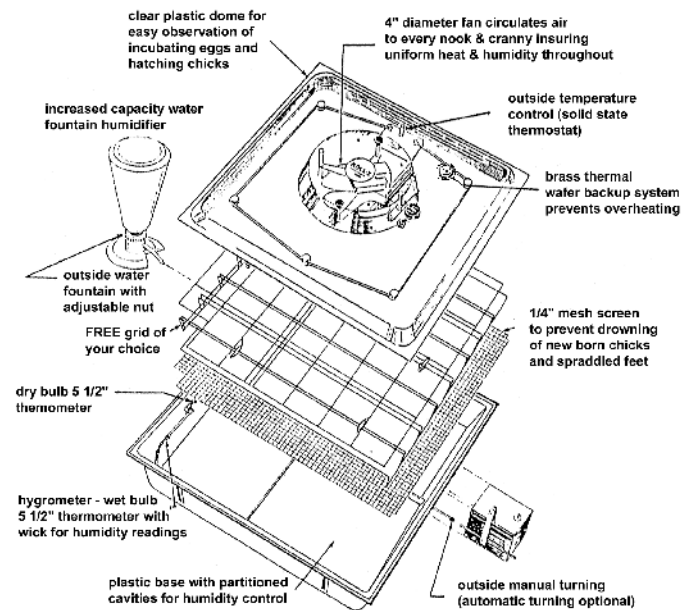
**A. BRASS THERMAL WAFER BACKUP TEMPERATURE CONTROL:** A 3 inch diameter brass double wafer that expands with temperature increase and contracts with a drop in temperature. This device should be set 1° F. higher than the incubation temperature setting of the solid state temperature control. It is factory pre-set at 101°F. It operates to help protect your eggs only in the event of failure of the solid state temperature control. When the thermostat is properly adjusted, the wafer expands until the desired temperature is reached. At this point the wafer pushes the plunger on the sensitive snap switch under it, opening the circuit and turning off the heat. As the wafer contracts with temperature drop, it releases the sensitive snap switch turning the heater back on.

To adjust the temperature, loosen the locking wing nut, make the adjustment and lock the setting by retightening the wing nut. You will hear a clicking noise when the wafer opens and closes the circuit.

**TURN THE KNOB COUNTER-CLOCKWISE** to increase the temperature. To decrease the temperature **TURN THE KNOB CLOCKWISE.** Turn the knob slowly and carefully making small incremental adjustments. **BE SURE TO LOCK THE SETTING BY TIGHTENING THE WING NUT AFTER EACH ADJUSTMENT.**

**B1. SOLID STATE TEMPERATURE CONTROL:** The solid state temperature control is mounted on the baffle of the Roll-X. The regulator (adjusting) shaft protrudes through the incubator dome above the control. Turning the shaft **CLOCKWISE** will increase the temperature in the incubator. Turning the shaft **COUNTER-CLOCKWISE** will decrease the temperature. Turn the shaft slowly and carefully when making adjustments.

**B2. OPTIONAL TEN TURN POTENTIOMETER SOLID STATE CONTROL:** This control performs the same as the solid state control described in paragraph B1 above except that the regulator (adjusting) shaft is a 10 turn potentiometer for precise adjustment. This feature allows approximately one full 360° turn of the control knob to increase or decrease the temperature approximately 2°F.



## SETTING THE HUMIDITY IN THE ROLL-X INCUBATOR

Thread the blue plastic nut onto the neck of the water fountain up against the button flare, as high as it will go.

Fill the water fountain with distilled water. Place one finger over the end hole, turn the bottle upside down and insert into the stand. The humidity is adjusted by raising the water fountain using the nut on the neck. Make small incremental adjustments.

**WATER WILL BEGIN TO GURGLE OUT OF THE FOUNTAIN. A READING FROM THE WET BULB THERMOMETER INDICATING HUMIDITY CAN BE TAKEN AFTER A FEW MINUTES.**

The humidity reading will gradually increase and become stable a few minutes after each adjustment. Increase the humidity in gradual steps until the desired level is achieved.

Remove the water fountain only when necessary. Each removal will increase the water level in the incubator. Practice withdrawing and replacing the water bottle holding a finger over the end of the water tube. This will help eliminate spilling water into the incubator.

**HUMIDITY AND ITS CONTROL:** THERE ARE TWO VERY IMPORTANT THINGS YOU SHOULD KNOW ABOUT HUMIDITY AND ITS CONTROL 1. YOU CONTROL HUMIDITY - THE INCUBATOR CAN'T. As the incubator operator, you set the temperature desired and you determine by adjusting the amount of water surface exposed to the heated air what the humidity in the incubator will be. 2. THE WET THERMOMETER READING IS NOT THE PERCENT OF HUMIDITY IN THE INCUBATOR. To give you an example of this; If the incubator DRY BULB THERMOMETER READS 100° F., and the WET BULB thermometer reads 85°, the Relative Humidity is 53% not 85%. (See chart below) Our Hatching Manual describes how to determine humidity in detail. You should read the section "Humidity and Calibration" thoroughly. **ALWAYS USE NEW OR CLEAN WICK EACH TIME THE INCUBATOR IS USED.**

### HUMIDITY CALIBRATION

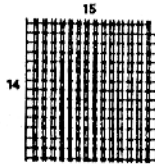
People often get confused by the apparent contradictions in instructions relating to humidity in hatching. This may be because there are two systems of calibrating humidity. Marsh incubators use the "wet bulb thermometer." The wet bulb thermometer consists of a wick that is attached to a thermometer that hangs in the water. The other system gives the true percentage of humidity reading. In order to make the subject matter understood, a chart is provided that shows the difference between the two types of readings when the temperature in the incubator is 100 degrees. For example, a wet bulb reading of 84 means the actual humidity is 50%.

### WET BULB = RELATIVE HUMIDITY

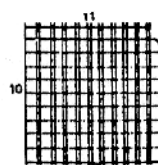
91	=	70%
90	=	68%
89	=	65%
88	=	62%
87	=	59%
86	=	56%
85	=	53%
84	=	50%
83	=	48%
82	=	46%

### EGG HATCHING TIME

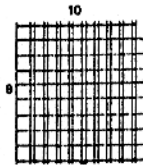
BREED	HATCH
Coturnix Quail	16 days
Bobwhite	23 days
Pheasant	23 days
Chukar	23 days
Bantam	21 days
Chicken	21 days
Duck	28 days
Turkey	28 days

**SIX STANDARD EGG TURNING GRIDS****CATALOG NUMBER 940-033**

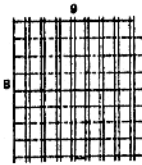
**No. Eggs:** 209 Quail  
**Diameter:** 3/4" to 1-1/4"  
 Coturnix, Bobwhite,  
 Valley and similar

**940-034**

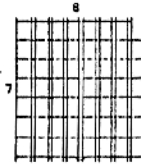
**109 Pheasant**  
 1-1/4" to 1-1/2"  
 Ringneck, Bantam,  
 Guinea fowl, etc.

**940-035**

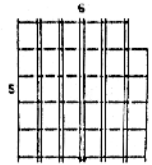
**89 Average Chicken**  
 1-1/2" to 1-5/8"

**940-036**

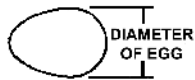
**71 Large Chicken**  
 1-3/8" to 1-7/8"  
 Mallard and similar

**940-037**

**55 Duck**  
 1-3/4" to 2-1/8"  
 Pekin and similar

**940-038**

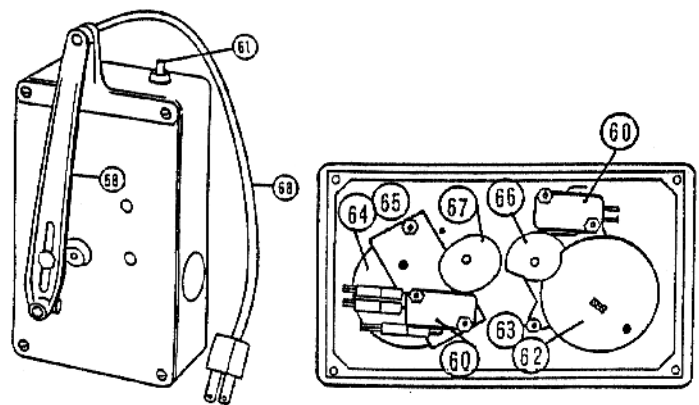
**29 Goose**  
 2-1/8" to 2-3/4"  
 Toulouse and similar



Automatic turning requires that the grid be proportional to the general size of the eggs to be turned and hatched. The six grids diagrammed above will accommodate most of the range of egg sizes of poultry and game birds. Select the grid, or grids, best suited for the eggs you wish to hatch. The range of dimensions of eggs that may be hatched on each grid is noted along with the names of popular birds that lay eggs in that size range.

**AUTOMATIC TURNER PARTS IDENTIFICATION**

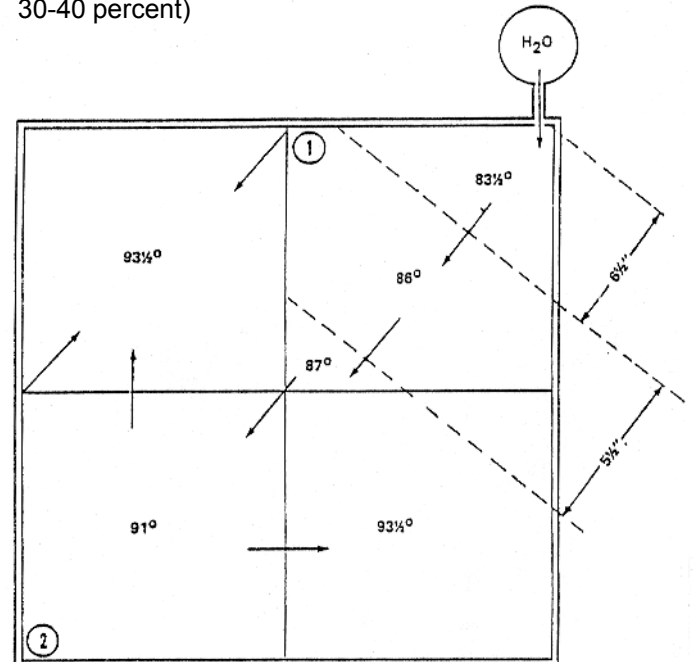
AUTOMATIC TURNER PARTS			
ITEM	120VAC	230VAC	PART DESCRIPTION
58	125-000	125-000	AT2 Turner Lever Assy.
60	460-020	460-020	Sensitive Snap Switch
61	460-034	460-034	Push Button Switch
62, 63	320-071	320-072	Power Motor
64, 65	320-076	320-077	Timer Motor
66	350-002	350-002	Power Motor Cam
67	350-000	350-000	Timer Motor Cam
68	200-045	200-045	Power Cord



INCUBATOR TEMPERATURE CONSTANT AND STABLE  
 AT 100° F. (Humidity in the environment approximately  
 30-40 percent)

**MODELS RX2 REPLACEMENT PARTS LIST**

CATALOG NUMBER		PART DESCRIPTION
120VAC	230VAC	
350-005	350-005	Water Fountain Bottle
500-011	500-011	Thermometer (2 Used)
350-072	350-072	Dome
350-029	350-029	Baffle Plate
320-066	320-116	Fan Motor (Muffin Style)
350-017	350-017	Fan Guard
270-010	270-011	Heating Coil
200-028	200-029	Power Cord
200-049	200-049	Square Receptacle
350-014	350-014	Base
130-000	130-000	Screen
220-010	220-011	Solid State Thermostat
220-012	220-013	10 Turn Thermostat
220-016	220-016	Thermal Wafer
460-018	460-018	Sensitive Snap Switch



Looking down on the incubator base.

The above diagram illustrates how various levels of flooding can be achieved in the bottom of the unit to produce various wet bulb readings. These wet bulb readings can be converted to humidity readings by the use of the chart on page 3.

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