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Find the *SciGene / Robbins Scientific 400* at our website: *Click HERE*

Model 400
Hybridization Incubator
USER MANUAL

Cat. #1040-60-1, 1040-60-2



FOR RESEARCH USE ONLY

Not for Use in Diagnostic Procedures

SciGene • 306 Potrero Ave, Sunnyvale, CA 94085 USA • 408-733-7337 • Fax 408-733-7336 • techserv@scigene.com

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Serial Number

The following serial number identifies the specific instrument you have purchased and must be referenced when requesting service. A copy is affixed to the instrument.

Technical Service: (408) 733-7337, techserv@scigene.com

Warranty

SciGene warrants that the rotating oven described in this manual shall be free of defects in materials and workmanship for a period of 12 months from date of delivery. This warranty does not cover removable rotators or accessories including hybridization tubes. In the event of a defect during the warranty period, SciGene's limit of liability will be to provide replacement parts at no charge or, at its sole discretion, replace the product. The foregoing warranty is void in the event the unit was abused or modified or used in a manner inconsistent with its intended purpose. SciGene makes no other warranty, expressed or implied including warranties of merchantability and fitness for a particular purpose. In no event shall SciGene be liable for any direct, indirect, special, incidental or consequential damages or for any damages resulting from loss arising out of or in connection with the sale, use or performance of the product.

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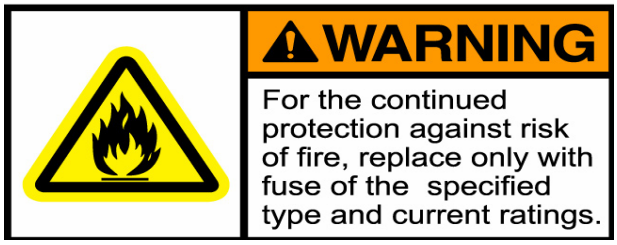
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I. SAFETY NOTICES

A. Warnings

Failure to comply with the following warnings that are affixed to the product can lead to possible personal injury or death.







B. Cautions

Failure to comply with the following cautionary statement affixed to the product may lead to possible personal injury. Items heated in the oven should be handled with heat protective gloves.



Open all closed vessels heated in the oven with the opening pointed away from you to avoid contact with heated aerosols.

C. Lifting and Moving the Unit

The rotating oven you have purchased weighs approximately 70 lbs (32 kg). Use caution when lifting the unit to protect you and others from personal injury. It is strongly recommended that two people lift the unit simultaneously to keep it balanced and to share the load.

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II. UNPACKING AND SETTING UP YOUR OVEN

A. Removing the Unit from the Carton

Open the shipping carton and remove the foam inserts from the top of the unit. Position the shipping carton on the floor close to the location of intended installation. Remove the foam inserts from the top of the unit. Position a person in front and a person in back of the oven. Grip the recessed edges along the top of the unit and lift it straight up and out of the shipping carton taking care to keep it balanced. Place it on the bench or table where it will be installed.

Carefully inspect the unit for damage. If there is evidence of damage, keep the shipping materials as they may be needed to return the unit.

B. Parts Provided

Items are generally shipped in two boxes as follows:

- Large Box (23" x 25" x 26")
  - Rotating Oven
  - Power Cord
  - User Manual
  - Tube Gripper
  - Tube Rotator, standard 10/20 (Cat. #1040-21-1)
- Small Box (15" x 15" x 6")
  - Stainless Steel Drip Pan (Cat. #1040-20-5)
  - Hybridization Tube, 35x300mm, qty 1 (Cat. #1040-01-0)

Please verify that all items are received and are in good condition.

C. Installation

1. Placement

Place the unit on a stable, level surface within a few feet of the power source. *Avoid locating it below a shelf where solutions are stored.* A spill may enter the electrical compartment through the vent holes on the top of the unit and cause damage. Ensure there is adequate clearance along the front and right side of the oven to open the door completely. There should be a minimum clearance of 3 inches along the top and back panels for air circulation.

2. Connecting the Power

Plug the power cord provided into the back of the unit and then to a properly grounded outlet. Use only the power cord provided.

3. Powering On

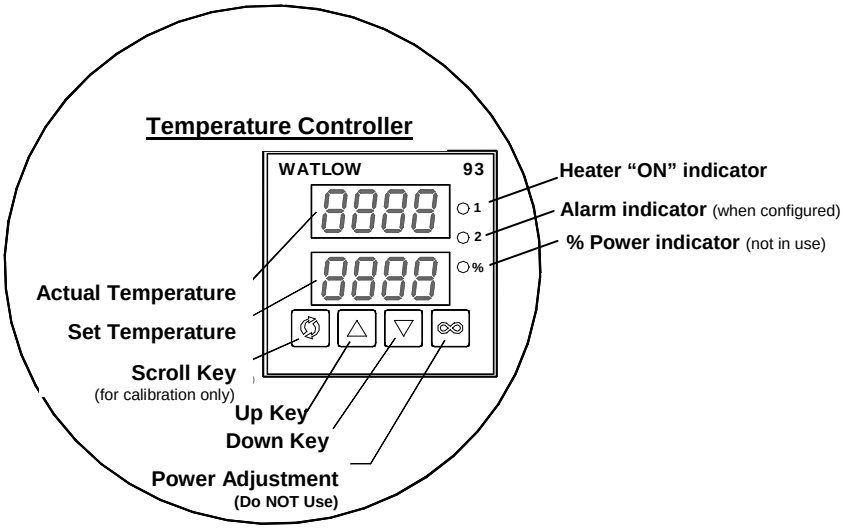
Turn heater power ON using the switch on the front of the unit.

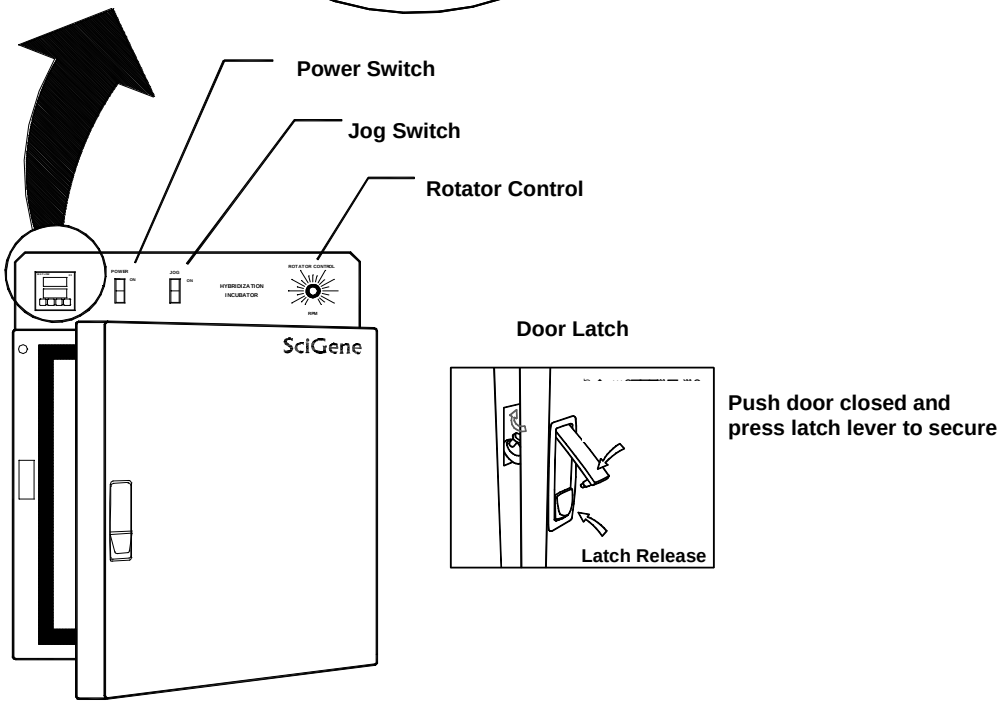
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III. USING YOUR OVEN

A. Oven Components and Controls

- **Power Switch** -Turns ON power to the heater in the unit.
- **Temperature Controller** - Used to set and observe chamber temperature
- **Rotator Control** - Turns on and controls the speed of the rotator
- **Jog Switch** – Activates the rotator with the door open at the speed selected
- **Door Latch –** Secures the door closed with button release to open





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B. Closing and Opening the Door

To secure the door closed, press the door against the cabinet and push down the top lever. To open, press the lower latch release button.

C. Using the Temperature Controller

The features of the Watlow 93 temperature controller on your oven are shown in the illustration (Section III A). It has two LED readouts and four membrane buttons. The upper readout displays the ACTUAL temperature. The lower readout displays the SET chamber temperature. The button with the circle icon at the lower left is used to scroll through the controller parameters when performing calibration of the controller. It is *not* used during normal operation. The up and down arrow buttons are used to adjust the desired set temperature. They are also used when calibrating the oven.

The infinity symbol (∞) button on the lower right of the panel is for adjusting the power that is delivered to the chamber heaters. It is set at 100% at the factory and *should not* be adjusted during normal operation.

To set oven temperature, simply push the up and down arrows until the desired temperature is shown. The unit will now adjust the heat of the chamber until the SET temperature is attained.

The controller is calibrated at the factory to provide an accurate chamber temperature when operated from ambient + 5 to 99˚C. It is recommended that the temperature controller be recalibrated monthly to ensure accurate oven temperatures.

D. Setting the Rotator Speed

The rotator is turned on and off and its speed of rotation controlled through the rotary switch. Turn the dial clockwise from its stopping point to turn on the rotator drive system and set the speed of rotation. Rotation speed is adjustable from 2 to 20 RPM.

E. Using the Jog Switch

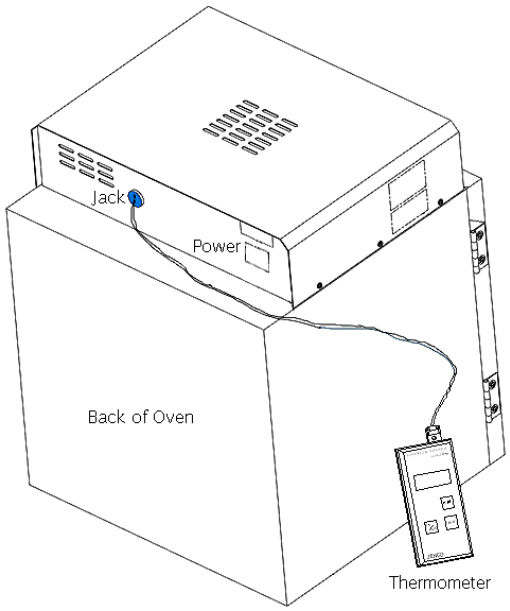
The jog switch is used to momentarily advance the rotator when the door is open. When the jog switch is depressed, the rotator will turn at the speed selected on the speed controller. It will not move if the speed controller is turned off or is set below 2 RPM.

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F. Calibrating the Oven Temperature

The Watlow 93 temperature controller comes calibrated by SciGene to provide accurate chamber temperatures from ambient +5 to 99°C. Calibration of the controller is required *only* if, when verifying with a NIST-certified digital thermometer (SciGene Cat. #1051-52-0), the chamber temperature differs by *more than one degree* from the actual temperature shown on the display.
Do not use a glass thermometer.

To adjust the controller to achieve accurate oven temperatures:



1. With the oven powered on, enter a temperature of 65˚C on the controller and allow the temperature on the display to stabilize (about 20 minutes).
2. Using the cable provided with the digital thermometer, plug one end into the blue jack found on the back panel and the other into the digital thermometer. Turn ON the thermometer.
3. On the temperature controller, press the up and down arrows simultaneously for 3 seconds. The upper display will now read "**3**" and the lower display "**Loc**".
4. Using the down arrow, set the upper display to "**0**" The controller is now unlocked and available for calibration.
5. Sequentially press the circle icon button until the display shows the **Actual** and **Set** temperatures of the oven.
6. Calculate the difference in temperature shown on the **Actual** display of the controller and the digital thermometer. For example, if the controller displays 52.5°C and the digital thermometer displays 51.0°C, the difference is 1.5°C.
7. Sequentially press the circle icon button until the lower display reads "**Cal**". The upper display shows the offset value between the controller and digital thermometer when the unit was last calibrated.
8. Using the up and down arrows, adjust the offset value to the difference in temperatures calculated in Step 6. For example, if the

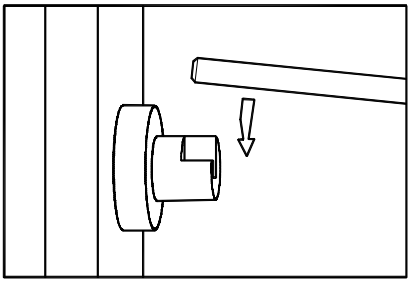
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controller displays a temperature that is 1.5˚C higher than the digital thermometer, adjust the offset value to *minus* 1.5.

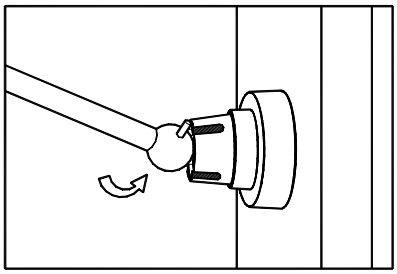
9. Sequentially press the circle icon button until the display shows the **Actual** and **Set** temperatures. The **Actual** temperature on the display should now match the digital thermometer.
10. Press the circle icon button until "**Loc**" is shown on the lower display. Press the up arrow until 3 is shown in the upper display.
11. Sequentially press the circle icon button until the **Actual** and **Set** temperatures are again shown on the display.

Your oven is now calibrated to provide accurate temperatures between ambient +5 to 99°C.

G. Loading and Removing Rotators



Place end of shaft on left bearing



Insert shaft ball with alignment pin into right bearing

All rotators are loaded and removed using the same two-step process. When loading, first insert the end of the shaft that ends in a ball joint with alignment pin into the slotted bearing on the ***right*** wall of the chamber. The left end of the shaft is then placed into the bearing on the left side of the chamber. Reverse this procedure when removing the rotator.

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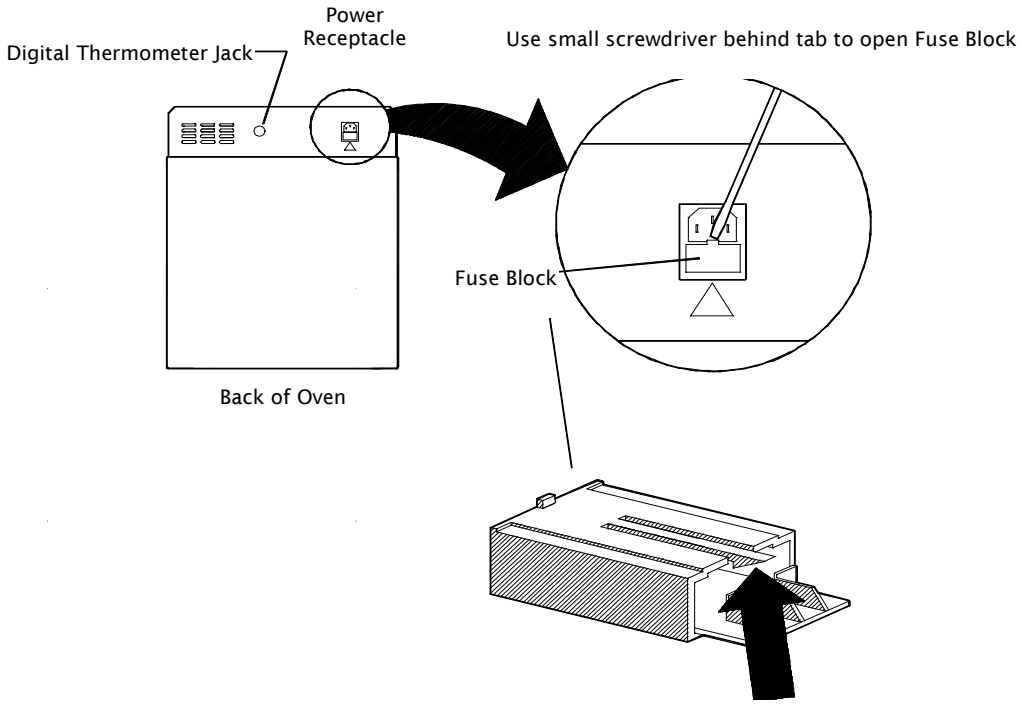
IV. MAINTAINING YOUR OVEN

A. Servicing

Turn the power switch to the OFF position and unplug the power cord before performing any service procedure.

1. Checking and Replacing Fuses

Fuses are located in a removable fuse block below the power cord receptacle on the back of the unit. Unplug the cord and using a flat blade screwdriver, remove the fuse block as shown in the illustration. Remove the fuse holder from the block and gently remove the two fuses. A blown fuse will appear dark. Always replace a blown fuse with fuses matching the amperage and voltage as shown on the label below the fuse block.



2. Replacing the Temperature Controller

If the actual temperature reported on the controller is erratic after calibration, the temperature controller may need to be replaced. Please contact the SciGene Technical Service Department (techserv@scigene.com) for assistance in troubleshooting.

If needed, replacement controllers are available (SciGene Cat. #RP600-0146-03).

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3. Rotator Drive System

The rotator drive system is designed to provide trouble-free operation for many years and does not require routine maintenance. However, components of the drive system that fail due to normal wear and tear over long-term usage can be easily replaced. Contact SciGene's Technical Service Department (techserv@scigene.com) to obtain replacement parts and perform these repairs.

B. Cleaning

Clean the exterior and interior surfaces using a mild, detergent-based spray cleaner and wipe with a soft cloth.

Under no circumstances should solutions be allowed to enter the electronics package through the ventilation slots on the top of the unit.

Do not use abrasive cleansers or scouring pads that can scratch the stainless steel.

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V. TROUBLESHOOTING

Symptom	Cause	Solution
Rotator does not turn after closing door	Rotator control is in the off position	Turn on rotator.
Door does not shut or is difficult to open	Latch is improperly adjusted	Adjust threaded rod on inside of latch
Temperature is erratic	Thermal controller is defective	Replace controller

VI. SPECIFICATIONS

Electrical (Oven Unit)	
Cat. 1040-60-1	115/120V AC; 50/60 Hz; 350 W
Cat. 1040-60-2	220/240V AC; 50/60 Hz; 350 W
Weight	
Net	70 lbs (32 kg)
Gross	75 lbs (34 kg) Includes shipping carton
Dimensions (WxDxH)	
Interior	14x14x14 inches (36x36x36 cm)
Exterior	18x17x22 inches (45x40x56 cm)
Performance and Controls	
Temperature Range	Ambient +5°C to 99°C
Temperature Control	± 0.1°C
Heat up Time	3°C per minute
Temperature Controller	Digital PID, single loop
Temperature Display	Actual/Set dual line LED
Rotation Speed	2 to 20 RPM
Chamber	Stainless Steel
Digital Thermometer Output	Thermocouple

VII. ROTATORS AND ACCESSORIES

Cat. #	Description	UoM
1040-01-0	Hybridization tube, 35x300mm with screw cap	Each
1040-02-0	Hybridization tube, 35x150mm with screw cap	Each
1040-09-0	Hybridization tube, 75x300mm with vented screw cap	Each
1040-20-5	Replacement Drip Pan for Model 400	Each
1040-21-0	Removable Rocking Platform	Each
1040-21-1	Rotator for 10 large/20 small hybridization tubes	Each
1040-21-2	Maxi-80 Rotator for 80x50ml conical tubes	Each
1040-21-3	Maxi-200 Rotator for 200x15ml tubes	Each
1040-21-4	Maxi-400 Rotator for 400x1.5ml centrifuge tubes	Each
1040-21-5	Maxi-140 Rotator for 40x50mL & 100x15mL plastic tubes.	Each
1040-21-6	Maxi-240 Rotator for 200x1.5mL and 40x50mL tubes.	Each
1040-21-7	Maxi-300 Rotator for 100x15ml tubes & 200x1.5 ml tubes.	Each
1040-21-8	Rotator for six 75x300mm glass tubes	Each
1052-23-0	General Purpose Rotator with Loading Stand	Each
1051-52-0	Handheld electronic digital thermometer—includes NIST traceable certificate of calibration	Each

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