Gemini®
Twin Shaking Waterbath
USER MANUAL

Cat. #1051-20-1, 1051-20-2

FOR RESEARCH USE ONLY

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 waterbath 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 adaptors or accessories. 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 damagers or for any damages resulting from loss arising out of or in connection with the sale, use or performance of the product.

Copyright

Table of Contents

I. SAFETY NOTICES 3
A. Intended Use 3
B. Instrument Safety 3
C. Symbols and Conventions 3
II. UNPACKING AND SET UP 4
A. Unpacking the Waterbath 4
B. Parts Provided 4
C. Installation 4
III. USING YOUR WATERBATH 5
A. Components, Controls and Accessories 5
B. Filling the Baths 5
C. Using the Tray Adaptors 6
D. Using the Temperature Controller 6
E. Calibrating the Temperature Controller 7
F. Setting the Waterbath Platform Speed 8
IV. MAINTAINING YOUR WATERBATH 9
A. Powering Off 9
B. Checking and Replacing Fuses 9
C. Servicing 9
D. Replacing the Temperature Controller 9
E. Cleaning 10
V. TROUBLESHOOTING 11
VI. SPECIFICATIONS 11
VII. ADAPTORS AND ACCESSORIES 11

I. SAFETY NOTICES

A. Intended Use

This instrument is intended for the heating of laboratory samples. It should only be used according to the instructions provided in this manual. If the equipment is used in a manner not specified by the manufacturer, the protection provided by the equipment may be impaired.

B. Instrument Safety

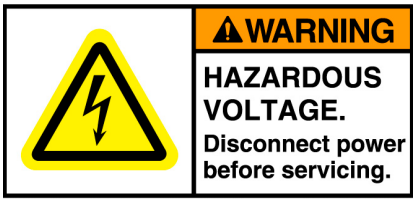
Before operating the instrument, read the information in this section concerning hazards and potential hazards. Ensure that anyone involved with the instrument's operation is instructed in both general safety practices for laboratories and specific safety practices for the instrument.

C. Symbols and Conventions

The following chart is an illustrated glossary of the electrical symbols that are used on the Gemini® Twin Shaking Waterbath. Whenever such symbols appear on instruments, please observe appropriate safety measures.

1. **Warnings**

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



2. **Cautions**

   Failure to comply with the following cautionary statement affixed to the product may lead to possible personal injury.

3. **Lifting and Moving the Unit**

   The Gemini waterbath weighs about 35 lbs (19 kg). Use caution when lifting the unit to protect yourself and others from personal injury.

II. UNPACKING AND SET UP

A. Unpacking the Waterbath

Lift out the inner box and remove the foam end pieces. Open the inner box and remove the unit by lifting at the middle of the bottom edges. Remove the bubble wrap that protects the acrylic covers.

Do <u>not</u> lift the unit by the baths.

Carefully inspect the unit for damage. If there is evidence of damage, do not discard the shipping materials since they may be needed to return the unit.

B. Parts Provided

The following items are provided with the waterbath and are packaged separately:

- Power Cord
- User Manual

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. There should be a minimum clearance of 3 inches along the back panel for air circulation.

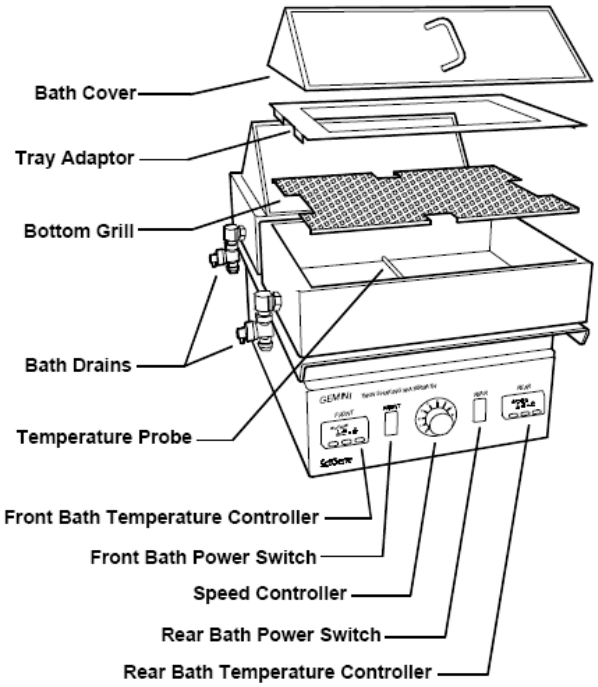
2. **Connecting the Power**

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

III. USING YOUR WATERBATH

A. Components, Controls and Accessories

- **Power Switches** -Turns ON power to each of the two baths
- **Temperature Controllers** - Used to set and observe waterbath temperatures
- **Speed Controller** - Controls the speed of agitation
- **Acrylic Bath Covers –** Helps to maintain bath temperature and directs condensation away from samples
- **Tray Adaptors -** (sold separately) A variety of removable accessories are available for holding specific trays and plates. See section VI. Adaptors and Accessories
- **Temperature Probe -** Senses and transmits water temperature to the controller
- **Bottom Grill -** Aluminum mesh grid that protects the temperature probe from damage
- **Bath Drains** - Plastic shut-off valve to control the drain of water from the baths



B. Filling the Baths

Ensure that the lever on the white drain valve on the left side of each bath is in the OFF position (90° from vertical). Add approximately 1.25 liters of distilled water to each bath so that water covers the tray adaptor.

Do not turn on power to the baths until filled with water!

C. Using the Tray Adaptors

Tray adaptors are used to hold trays and plates in place while heating and agitating samples. A variety of adaptors are available that hold specific brands and designs. A list of adaptors is shown in Section VII.

To use a tray adaptor, simply place it in the bath on top of the black grill plate that covers the bottom.

D. Using the Temperature Controller

Do not operate your Gemini Waterbath without water!
Add water to the baths before turning on power.

Turn on power to the waterbath(s) using the marked ON/OFF switches on the front of the unit. The Gemini Waterbath is equipped with two SD-31 temperature controllers. The left controller heats the front bath and the right controller heats the back bath.

Each temperature controller has a single LED read out and four push buttons. The LED displays the set temperature when the **SET** key is pressed and held. Otherwise the **ACTUAL** temperature is displayed. The push buttons are used to set the waterbath temperature and when required, to calibrate the temperature controller.

1. To set the waterbath temperature, hold in the **SET** button. The previous set temperature will be displayed.
2. While pressing the **SET** button, press the up or down arrow buttons until the desired set temperature is shown.
3. Release the buttons and the actual temperature will again be displayed. The unit will now adjust the heat of the waterbath until the new set temperature is attained.

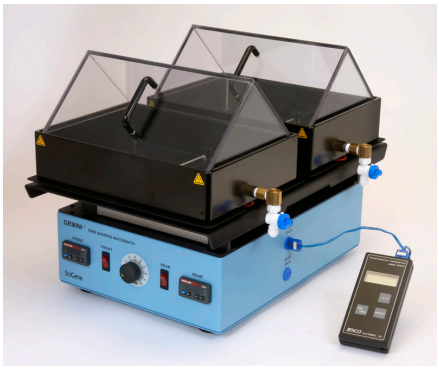
The controller is calibrated at the factory to provide an accurate temperature when operated between 35 to 80°C.

E. Calibrating the Temperature Controller

The SD-31 temperature controller comes calibrated from the factory to provide accurate waterbath temperatures from 35 to 80°C.

A temperature controller will require calibration only if:

- When checking the waterbath temperature with a calibrated NIST-certified digital thermometer, the waterbath temperature differs by more than one degree (1°C) from the actual temperature shown on the controller display.



An NIST calibrated digital thermometer (sold separately, SciGene Cat. #1051-52-0) is required to calibrate the unit.

To achieve accurate temperatures, follow these steps:

1. Turn ON the instrument and set the first controller to 65°C. Allow 15 minutes for temperature to stabilize.
2. Using the cable provided with the digital thermometer, plug one end into the blue receptacle found on the back panel of the Gemini Waterbath and the other end into the digital thermometer.
3. Turn on the thermometer. Allow 1 minute for thermometer to stabilize and display the actual temperature.
4. Take the temperature shown on the digital thermometer and subtract the temperature shown on the controller to determine the calibration offset. For example, if the digital thermometer displays 66.5°C and the controller displays 65.0°C, the calibration offset is +1.5°C.
5. On the temperature controller, press the Infinity Key (∞) for three seconds until “OPEN” appears.
6. Press the down arrow four times until “Cal” appears.
7. Press and hold the SET key. The existing offset value between the controller and digital thermometer is displayed.
8. Press and hold the SET key and use the up/down arrows to adjust the offset value to the temperature difference calculated in Step 4. For example, if the controller shows a temperature 1.5°C lower than the thermometer, adjust the offset by adding 1.5 to the value shown.
9. Press the Infinity Key (∞) to exit calibration and return to the operation display. Verify that the temperature on the thermometer matches the display. The incubator is now calibrated to provide accurate temperatures from 35 to 99°C.

F. Setting the Waterbath Platform Speed

The speed of front to back motion of the waterbath platform is set using the rotary speed controller in the center of the front panel. Turn the dial clockwise to set the degree of agitation desired. Please note that the speed controller does not have an on/off switch and is operational when power is provided to the unit. Waterbath agitation can be operated independently, without heating.

IV. MAINTAINING YOUR WATERBATH

A. Powering Off

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

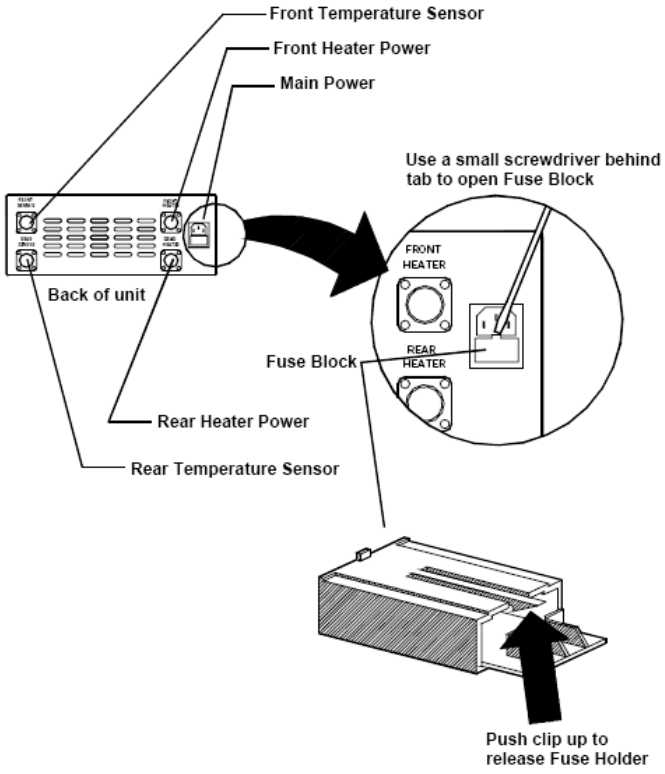
B. Checking and Replacing Fuses

There are two fuses located in a removable fuse block below the power cord receptacle on the back of the unit.

1. Unplug the cord and insert a small, flat blade screwdriver into the tab recess just below the plug receptacle.
2. Push down to release the fuse block. Slide out the fuse holder from the fuse block while holding the retaining tab out of the way.
3. Gently pry out the fuses. A blown fuse appears dark. Always replace fuses with those of the same amperage and voltage as shown on the label below the fuse block.

C. Servicing

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



D. 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. Replacement controllers are available.

E. Cleaning

1. Draining and Cleaning the Baths

Remove the grill from the bottom of the bath. Drain the water by first placing an open container that can hold at least 2 liters under the stop-cock that extends from the right side of each bath and then open the stop-cock. Remove any residual water in the bath using paper towels.

Clean the interior of the bath using a mild, detergent-based solution and a soft cloth. Do not use abrasive cleaners or scouring pads that can harm the finish.

2. Cleaning Exterior Surfaces and Acrylic Bath Covers

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

Acrylic covers can be immersed and cleaned in warm, soapy water using a soft cloth. Do not use organic solvent-based cleaners that can damage the acrylic.

V. TROUBLESHOOTING

Symptom	Cause	Solution
Power switch light does not turn on	Blown fuse(s)	Replace fuse(s) on back of unit, beneath power cord receptacle.

VI. SPECIFICATIONS

Electrical Unit	
Cat. #1051-20-1	115V AC, 50/60Hz, 4A
Cat. #1051-20-2	230V AC, 50/60 Hz, 8A
Dimensions	
Instrument (w/covers)	15 x 13 x 21 inches (38 x 33 x 53 cm)
Bath interior	2.35 (deep) x 11.5 x 8.25 inches (6.25 x 29 x 21 cm)
Weight	
Instrument	32 lbs (15kg) net
Performance and Controls	
Temperature Range	Ambient +5.0°C to 80.0°C
Temperature Regulation	± 0.2°C
Bath Volume	1.2 Liters per bath
Agitation	Reciprocating motion, ½ inch stroke

VII. ADAPTORS AND ACCESSORIES

Cat. #	Description	UoM
1051-30-0	Adaptor for Perkin-Elmer Amplitype™ DNA Typing Tray, 8 Well.	EA
1051-31-0	Adaptor for (2) Perkin-Elmer Quantiblot™ Hybridization Trays.	EA
1051-32-0	Adaptor for Roche AMPLICOR™ Typing Tray, 20 Well.	EA
1051-33-0	Adaptor for (2) Life Technologies Inc. Hybriboat™ Containers.	EA
1051-34-0	Adaptor for (3) Innogenetics INNO-Lipa™ 8 Trough/Trays.	EA
1051-35-0	Adaptor for (4) Innogenetics INNO-Lipa™ 12 Trough/Trays.	EA
1051-36-0	Adaptor for (2) Tupperware Containers with Covers.	EA
1051-37-0	Adaptor for (4) Standard Microplates.	EA
1051-38-0	Adaptor for Roche 24-Well Tray & Lid (Cystic Fibrosis).	EA
1051-50-0	Stainless Steel Bath Cover. Provides flat, non-skid surface.	EA
1051-51-0	Tupperware Containers with covers, 5.15x4.80x1.50 inches.	EA
1051-52-0	Digital Thermometer with NIST certificate and cable.	EA