



Instruction Manual

Incubating Mini Shakers
Incubating Microplate Shakers



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PACKAGE CONTENTS

Incubating Mini Shaker or Incubating Microplate Shaker
92" (234cm) detachable power cord
Instruction manual

WARRANTY

Manufacturer warrants this product to be free from defects in material and workmanship when used under normal conditions for five (5) years. Register your equipment or instrument online at: www.vwrsp.com/warranty for US residents or www.vwrcanlab.com/warranty for Canadian residents. For your reference, make a note of the serial number, date of purchase and supplier here.

Serial Number: _____

Date of Purchase: _____

Supplier: _____

INSTALLATION

Upon receiving the VWR Incubating Mini/Microplate Shaker, check to ensure that no damage has occurred during shipment. It is important that any damage that occurred in transport is detected at the time of unpacking. If you do find such damage the carrier must be notified immediately.

After unpacking, place the Incubating Mini/Microplate Shaker on a level bench or table, away from explosive vapors. Secure to an immovable work surface by pressing down on the four (4) corners of the unit, creating a strong suction to the work surface (**DO NOT** place on a bench mat). Ensure that the surface on which the unit is placed will withstand typical heat produced by the unit. Always place the unit on a sturdy work surface.

The Incubating Mini/Microplate Shaker is supplied with a power cord that is inserted into the IEC connector on the back of the unit first, then it can be plugged into a properly grounded outlet. The 120V unit plugs into a 120 volt, 50/60 Hz source. The 230V unit plugs into a 230 volt, 50/60 Hz source.

MAINTENANCE & SERVICING

The Incubating Mini/Microplate Shaker is built for long, trouble-free, dependable service. No lubrication or other technical user maintenance is required. However at least every three (3) months you should:

- Unplug the unit.
- Remove any accumulated dirt from the base and tray.
- Check all accessible items to make sure they are properly tightened.

MAINTENANCE & SERVICING (CONT'D)

The unit should be given the care normally required for any electrical appliance. Avoid wetting or unnecessary exposure to fumes. Spills should be removed promptly. **DO NOT** use a cleaning agent or solvent on the front panel or lid which is abrasive or harmful to plastics, nor one which is flammable. Always ensure the power is disconnected from the unit prior to any cleaning. If the unit ever requires service, contact your VWR representative.

ENVIRONMENTAL CONDITIONS

Operating Conditions: Indoor use only.

Temperature:	5 to 40°C (41 to 104°F)
Humidity:	maximum 80% relative humidity, non-condensing
Altitude:	0 to 6,562 ft (2000 M) above sea level

Non-Operating Storage:

Temperature:	-20 to 65°C (-4 to 149°F)
Humidity:	maximum 80% relative humidity, non-condensing

Installation Category II and Pollution Degree 2 in accordance with IEC 664.

SAFETY INSTRUCTIONS

Please read the entire instruction manual before operating the Incubating Mini/Microplate Shaker.



WARNING! DO NOT use the Incubating Mini/Microplate Shaker in a hazardous atmosphere or with hazardous materials for which the unit was not designed. Also, the user should be aware that the protection provided by the equipment may be impaired if used with accessories not provided or recommended by the manufacturer, or used in a manner not specified by the manufacturer.

Always operate unit on a level surface for best performance and maximum safety.

DO NOT lift unit by the tray or lid.



CAUTION! To avoid electrical shock, completely cut off power to the unit by disconnecting the power cord from the unit or unplugging from the wall outlet. Disconnect unit from the power supply prior to maintenance and servicing.

Spills should be removed promptly. **DO NOT** immerse the unit for cleaning.

DO NOT operate the unit if it shows signs of electrical or mechanical damage.



Earth Ground - Protective Conductor Terminal



Alternating Current

STANDARDS & REGULATIONS

Troemner, LLC hereby declares under its sole responsibility that the construction of this product conforms in accordance with the following standards:

Safety standards:

IEC 61010-1 Safety requirements for electrical equipment for measurement, control and laboratory use. Part I: General Requirements.
IEC 61010-2-010 Part II: Particular requirements for laboratory equipment for the heating of materials.
IEC 61010-2-051 Part II: Particular requirements for laboratory equipment for mixing and stirring.

UL Std. No. 61010-1

CSA/CAN C22.2 No. 0-M91

CSA/CAN C22.2 No. 61010-1-04

EMC standards:

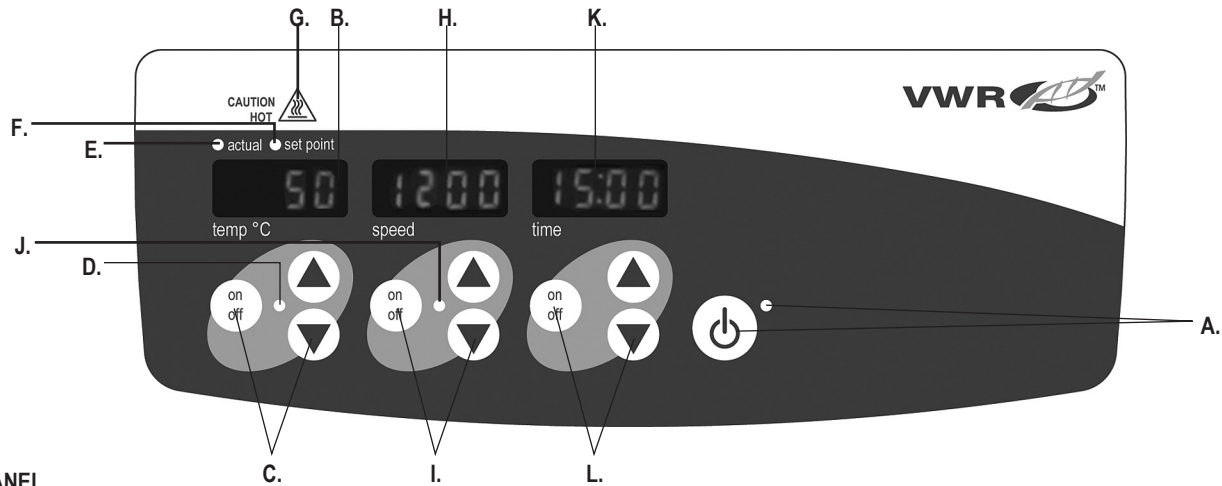
FCC-B	EN55022-B
EN6100-3-3	EN6100-4-5
EN61000-4-2	EN61000-4-3
EN61000-4-4	EN61000-4-6
EN61000-4-11	EN61326-1 Class A

Associated EU guidelines:

EMC directive 2004/108/EC

LVD directive 2006/95/EC

RoHS directive 2011/65/EU



CONTROL PANEL

The front panel of the Incubating Mini/Microplate Shaker contains all the controls and displays needed to operate the unit.

- A. Standby button/standby indicator light:** The standby indicator light will illuminate when the unit is plugged in. The unit will be in standby mode. Press the standby button to activate the temperature, speed and time functions. The standby indicator light will shut off and the temperature, speed and time displays will illuminate. Press the standby button again and the unit will once again be in standby mode.
- B. Temperature display:** Displays the actual/set-point temperatures in conjunction with the actual/set-point indicator lights. **C.** Up/down arrows for set-point control. **On/off** button starts/stops the heating function. **D.** The heat indicator light will be illuminated when the unit is heating.
- E. Actual indicator light:** Illuminates when the temperature displayed is the actual temperature of the air in the chamber.

- F. Set-point indicator light:** Illuminates when the set-point temperature is displayed.
- G. Caution hot indicator light:** Illuminates when the air temperature of the chamber is above 40°C (104°F).
- H. Speed display:** Displays the speed of the shaker. **I.** Up/down arrows for set-point control. **On/off** button starts/stops shaking function. **J.** The speed indicator light will be illuminated when the unit is shaking.
- K. Time display:** Displays accumulated time (continuous mode) or how much time is remaining (timed mode). The display range is from 0 to 9,999 minutes in one (1) second increments. The display will indicate minutes and seconds until the timer reaches 99 minutes and 59 seconds (99:59), then the display will automatically display minutes up to 9,999. **L.** Up/down arrows for set-point control. **On/off** button starts/stops the time function.

INCUBATING MINI SHAKER SPECIFICATIONS



Overall dimensions (L x W x H):	17 x 11 x 10.5" (43.2 x 27.9 x 26.7cm)
Interior dimensions (L x W x H):	11.3 x 8.3 x 5.4" (28.7 x 21.1 x 13.7cm)
Tray dimensions (L x W):	11 x 7.75" (27.9 x 19.7cm)
Electrical (50/60 Hz):	120 volts, 5 amps, 450 watts 230 volts, 5 amps, 450 watts
Fuses:	5mm x 20mm, 5 amp quick acting
Temperature range:	ambient +5°C to 65°C
Temperature uniformity:	±0.5°C at 37°C
Speed range:	100 to 1200rpm
Speed accuracy:	±2% of set speed up to 999rpm ±5% 1000 to 1200rpm
Timer:	1 second to 9999 minutes (increased in 1 second increments)
Orbit:	0.125" (3mm)
Maximum weight capacity:	~ 8lbs (3.6kg), up to 1000rpm ~ 5lbs (2.3kg), over 1000rpm
Controls:	see page 4
Tray material:	aluminum
Ship weight:	30lbs (13.6kg)

INCUBATING MINI SHAKER SET-UP

The Incubating Mini Shaker is supplied with a tray designed to hold a variety of accessories.

1. Flat containers can be shaken by placing them on the tray.
2. The tray also has mounting holes ready for use with the flask clamps or test tube racks.

See page 14, for optional accessories and unit capacities.

INCUBATING MICROPLATE SHAKER SPECIFICATIONS

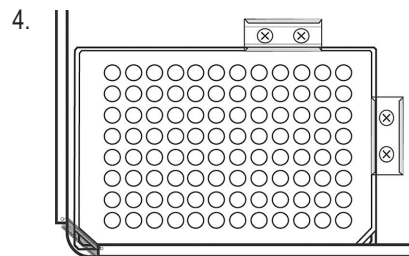
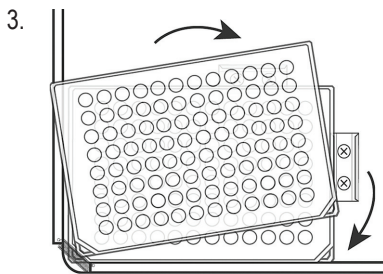
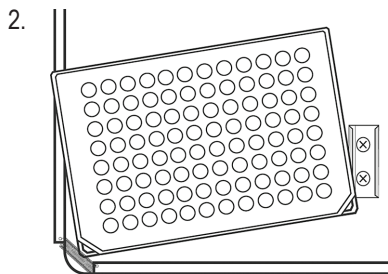


Overall dimensions (L x W x H):	17 x 11 x 7.75" (43.2 x 27.9 x 19.7cm)
Tray dimensions (L x W):	11 x 7.75" (27.9 x 19.7cm)
Electrical (50/60 Hz):	120 volts, 5 amps, 450 watts 230 volts, 5 amps, 450 watts
Fuses:	5mm x 20mm, 5 amp quick acting
Temperature range:	ambient +5°C to 65°C
Temperature uniformity:	±0.5°C at 37°C
Speed range:	100 to 1200rpm
Speed accuracy:	±2% of set speed up to 999rpm ±5% 1000 to 1200rpm
Timer:	1 second to 9999 minutes (increased in 1 second increments)
Orbit:	0.125" (3mm)
Capacity:	4 microplates or 2 Micro-Tube Racks
Controls:	see page 4
Tray material:	aluminum
Ship weight:	30lbs (13.6kg)

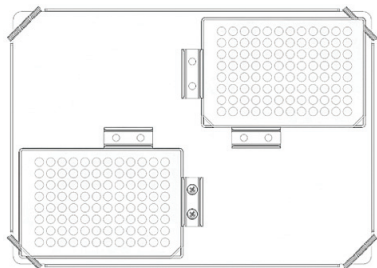
INCUBATING MICROPLATE SHAKER SET-UP

The Incubating Microplate Shaker is designed to hold two (2) or four (4) microplates, or two (2) Micro-Tube Racks.

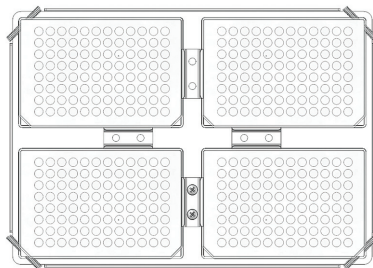
1. Place two (2) microplates or deep well blocks diagonally on the tray, or place four (4) microplates or deep well blocks on the tray. The plates/blocks do not have to be filled.
2. Place the corner of the plate/block under the spring located at each corner of the tray.
3. Slide plate/block into place. You are ready to use.



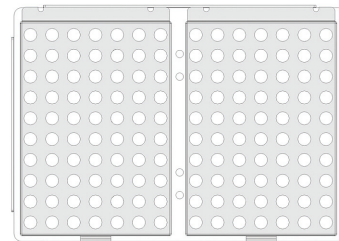
INCUBATING MICROPLATE SHAKER TRAY CONFIGURATIONS



(2) microplates



(4) microplates



(2) Micro-Tube Racks

NOTE: The tray on the Incubating Microplate Shaker is not designed to hold flask clamps.

INCUBATING MINI AND MICROPLATE SHAKER OPERATING INSTRUCTIONS

The Incubating Mini/Microplate Shakers have been designed for the temperature, speed and time functions to work independently of one another. The temperature and speed can be reset without resetting the timer and the timer can be stopped and started without interrupting the heating and shaking functions.

1. Getting ready:

- a. Plug the power cord into a properly ground outlet. The standby indicator light will illuminate, verifying power to the unit.
- b. Press the standby button to move the unit from standby mode. The standby indicator light will turn off and the temperature, speed and time displays will illuminate, displaying the previously used settings.



2. Setting temperature:

- a. Press the up/down arrows below the temperature display until you reach the desired temperature. When you release the button, the display will blink off and then on indicating the new set temperature has been accepted.
- b. Press the on/off button to start the heating function. The indicator light below the temperature display will illuminate to indicate the heating function is in use and remain lit until heating has ceased.
- c. Temperature adjustments can be made without interrupting heating by using the up/down arrows below the temperature display. After the change has been made and you release the button, the display will blink off and then on indicating the new set temperature has been accepted.
- d. To stop the heating function, press the on/off button below the temperature display. The heat indicator light will turn off.

CAUTION HOT indicator:

The caution hot indicator light warns that the temperature of the air in the chamber is above 40°C (104°F). The light will illuminate and remain lit when the temperature of the air in the chamber reaches approximately 40°C (104°F). When the heat is turned off, the caution hot indicator light will stay lit until the temperature of the air in the chamber is less than 40°C (104°F).



3. Setting speed:

- a. Press the up/down arrows below the speed display until you reach the desired speed. When you release the button, the display will blink off and then on indicating the new set speed has been accepted.
- b. Press the on/off button to start the shaking function. The indicator light below the speed display will illuminate to indicate the shaking function is in use and remain lit until shaking has ceased. The microprocessor controlled ramping feature slowly increases speed until the set-point is reached which helps to avoid splashing, and provides excellent low end control.
- c. Speed adjustments can be made without interrupting shaking by using the up/down arrows below the speed display. After the change has been made and you release the button, the display will blink off and then on indicating the new set speed has been accepted.
- d. To stop the shaking function, press the on/off button below the speed display. The speed indicator light will turn off.

4. Setting time to zero (0:00) and continuous mode: Accumulated time.

- a. Press and hold the on/off button below the time display. After three (3) seconds the display will indicate the previous set time.

INCUBATING MINI AND MICROPLATE SHAKER OPERATING INSTRUCTIONS

- b. Simultaneously press both the up and down arrows, the display will indicate zero (0:00). The unit time is now set to zero (0:00) minutes. Alternately, you can use the up/down arrows to get to zero (0:00).
 - c. Press the on/off button below the time display. The display will indicate the accumulated time. The up/down arrows will become inactive. To stop timer, press the on/off button again. **IMPORTANT:** This will **NOT** interrupt the shaking function. Press the on/off button below the speed display to interrupt the shaking function.
 - d. To reset, press and hold the on/off button below the time display. After three (3) seconds the display will indicate the previous set time, which was zero (0:00).
5. **Setting timed mode:** Programmed time.
- a. Press the up/down arrows below the time display until you reach the desired time.
 - b. Start this function by pressing the on/off button below the time display. The unit will run for the selected time, the up/down arrows will become inactive while the timer is running. The unit will stop shaking when the time display reaches zero (0:00). Four (4) audible beeps will indicate the count down function is complete. The time display will default back to the set time. To repeat for the same time, simply press the on/off button again.
 - c. To interrupt an automatic timing cycle before it is completed, press the on/off button below the time display. The display will flash off and on to indicate the time function is on "hold". **IMPORTANT:** This will **NOT** interrupt the shaking function. Press the on/off button below the speed display to interrupt the shaking function. Restart the timer by pressing the on/off button below the time display. Unit will continue counting down to zero (0:00). When the display reaches zero (0:00), you will hear the four (4) audible beeps that indicate the count down function is complete and the shaking function will cease.

6. **Turning unit off:**

- a. To turn the unit off, press the standby button. The temperature, speed and time displays will be blank, the standby indicator light will illuminate. The Incubating Mini/Microplate Shaker should be kept in standby mode when not in use. To completely cut off power to the unit, disconnect the power cord from the unit or unplug from the wall outlet.

OPERATING TIPS

As a safety feature, a built-in program will shut power off to the motor if the tray is prevented from rotating, or the unit is overloaded beyond its recommended weight capacity.

Built-in memory maintains the last used temperature, speed and time settings during a power interruption.

SINGLE POINT CALIBRATION PROCEDURE

This procedure is used to fine tune and calibrate the Incubating Mini-Microplate Shaker at a specific temperature setting. This process may be repeated for up to three (3) separate set-points. If a fourth calibration set-point is entered, the first set-point entered will be overwritten.

1. Turn unit on.
2. Set desired temperature.
3. Stabilize one (1) hour or more, measuring the temperature with a temperature probe/thermometer.
4. Press and hold standby button, then press the temperature up arrow once. The unit will beep two (2) times, confirming calibration mode. The display will now be flashing.
5. Press the temperature up/down arrows until the display matches the temperature probe/thermometer.

6. Press standby button to exit calibration mode and return to normal heating.

This process may be repeated at the same set-point, multiple times for fine tuning if desired.

The unit will now use the biased offset for that specific temperature setting and increase or decrease temperature accordingly to bring the temperature to set temperature. The decimal point of the display will flash to indicate a biased offset is being used. All other temperature settings will use the standard internal calibration. This offset will be stored in memory and retained until reset.

To restore unit to factory setting:

Press and hold the standby button while pressing the temperature down arrow once. The reset will be confirmed with two (2) audible beeps. Press the standby button to exit calibration mode and return to normal heating.

TROUBLESHOOTING

During operation, any rattling or ticking sounds may indicate a loose screw on the tray, a tray attachment or an accessory. All accessories should be sufficiently tightened in place before starting the unit.

Error Code	Software Test	Cause
E04	unit overloaded	maximum load exceeded loose foot (suction cup) *

Press the standby button to clear this error. Be sure the load is within the maximum load capacity before restarting the unit. If the E04 error persists, switch the unit off and contact your VWR representative for repairs.

Error Code	Software Test	Cause
E03	drive system failure	ceased bearing drive belt broken mechanical obstruction loose foot (suction cup) *

Press the standby button to clear this error and remove the mechanical obstruction. If the E03 error persists the reason may be a ceased bearing or broken drive belt and should **NOT** be addressed by the end user. Switch the unit off and contact your VWR representative for repairs.

* In the event a foot (suction cup) has come loose from the bench top, the unit will register an errant E04 or E03 error message due to the instability of the unit. Press the standby button to clear this error. Firmly press down on the four (4) corners of the unit, creating a strong suction to the work surface (**DO NOT** place on bench mat). Press the standby button to resume operation.

Error Code	Cause
E02	RTD shorted or temperature below 0°C (32°F)
E01	RTD open or temperature over 100°C (212°F)

The E02 and E01 errors should **NOT** be addressed by the end user. Switch the unit off and contact your VWR representative for repairs.

Error Code	Cause
E05	Unit temperature is above 80°C (176°F)

Press the standby button to turn the unit off and allow it to cool. If the E05 error persists, switch the unit off and contact your VWR representative for repair.

INCUBATING MINI SHAKER REPLACEMENT PARTS

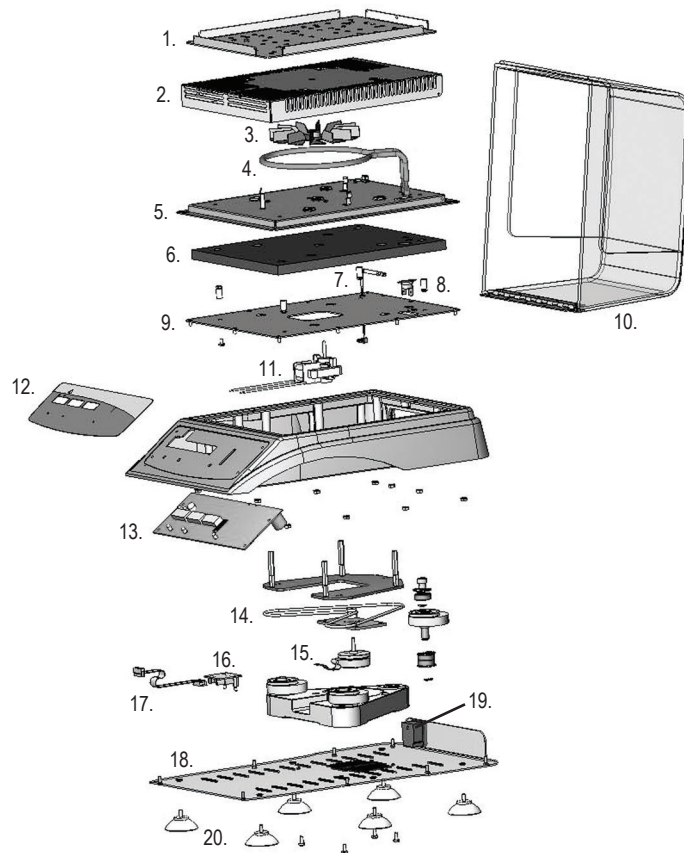
DESCRIPTION

1. Tray
2. Incubator housing
3. Heater fan
4. Heater, 120V
- 230V
5. Base plate, incubator
6. Insulation
7. Temperature sensor, RTD
8. Thermostat
9. Top plate, incubator
10. Lid,
11. Motor fan, 120V
- 230V
12. Front panel membrane switch
13. Display board
14. Belt
15. Motor
16. Motor transition board
17. Connection cable
18. Base plate
19. IEC power entry module
20. Feet (suction cup)

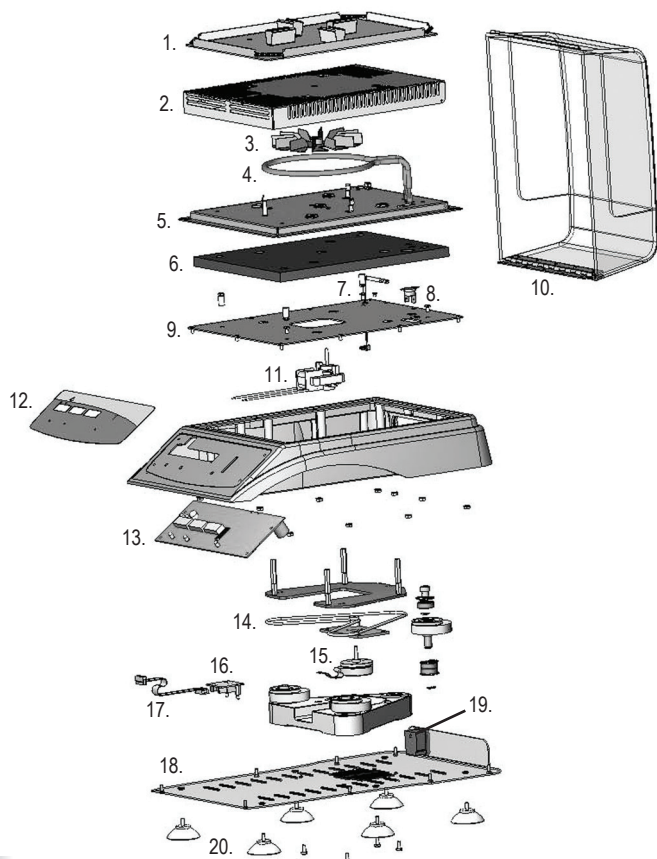
120V
EURO

PART NUMBER

- 580056-00
- 280319-00
- 280357-00
- 380710-00
- 380711-00
- 280320-00
- 280322-00
- 380721-00
- 380723-00
- 280321-00
- 280309-00
- 380731-00
- 380732-00
- 380706-00
- 380824-00
- 580019-00
- 380712-00
- 380715-00
- 380720-00
- 280304-00
- 386122-00
- 545014-00
- 330100-00
- 330101-00



INCUBATING MICROPLATE SHAKER REPLACEMENT PARTS



DESCRIPTION	PART NUMBER
1. Tray assembly	880761-00
2. Incubator housing	280319-00
3. Heater fan	280357-00
4. Heater, 120V	380710-00
230V	380711-00
5. Base plate, incubator	280320-00
6. Insulation	280322-00
7. Temperature sensor, RTD	380721-00
8. Thermostat	380723-00
9. Top plate, incubator	280321-00
10. Lid, clear	280308-00
opaque	280349-00
11. Motor fan, 120V	380731-00
230V	380732-00
12. Front panel membrane switch	380705-00
13. Display board	380824-00
14. Belt	580019-00
15. Motor	380712-00
16. Motor transition board	380715-00
17. Connection cable	380720-00
18. Base plate	280304-00
19. IEC power entry module	386122-00
20. Feet (suction cup), clear lid	545014-00
Feet (sorbothane), opaque lid	280959-00
Detachable 92" (234cm) power cord:	
120V	330100-00
EURO	330101-00

ACCESSORIES

TEST TUBE RACKS

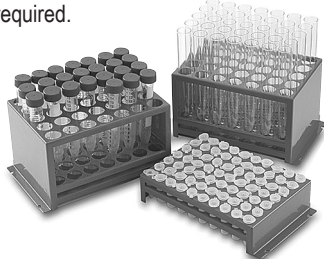
DESCRIPTION	TUBE CAPACITY	PLATFORM CAPACITY	CAT. No.
10 to 13mm Test Tube Rack	63	1	12620-956
14 to 16mm Test Tube Rack	48	1	12620-958
18 to 20mm Test Tube Rack	35	1	12620-960
22 to 25mm Test Tube Rack	24	1	12620-962
15mL Centrifuge Tube Rack	42	1	11301-134
50mL Centrifuge Tube Rack	12	1	11301-136
1.5 to 2mL Micro-Tube Rack	70	2	12620-952

Installation of Test Tube Racks - Incubating Mini Shaker

1. Unit should be in standby mode.
2. Align the clip on the rack to the right side of the tray.
3. Press the test tube rack in place, you will hear the test tube rack clip into position. No mounting screws are required.

Installation of 1.5 to 2mL Micro-Tube Rack - Incubating Microplate Shaker

1. Unit should be in standby mode.
2. Align the Micro-Tube Rack side-to-side on the tray.
3. Press the Micro-Tube Rack in place, you will hear the Micro-Tube Rack clip into position. No mounting screws are required.



FLASK CLAMPS

DESCRIPTION	MATERIAL	PLATFORM CAPACITY	CAT. No.
10mL Erlenmeyer Flask Clamp	stainless steel	35	57018-775
25mL Erlenmeyer Flask Clamp	stainless steel	20	57018-786
50mL Erlenmeyer Flask Clamp	stainless steel	12	57018-797
125mL Erlenmeyer Flask Clamp	stainless steel	8	57018-800
250mL Erlenmeyer Flask Clamp	stainless steel	5	57018-811
125mL Erlenmeyer Flask Clamp	PVC	8	97003-576
250mL Erlenmeyer Flask Clamp	PVC	4	97003-578

Installation of Flask Clamps - Incubating Mini Shaker

1. Unit should be in standby mode.
2. Line up the hole(s) in the flask clamp to the hole(s) in the tray. Using the screw(s) provided, hand tighten into place using a flathead screwdriver. **DO NOT** over tighten.
3. Insert flask into clamp and wrap the spring around the neck of the clamp to hold secure.

Not for use with the Incubating Microplate Shaker.



MANUFACTURED BY:

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