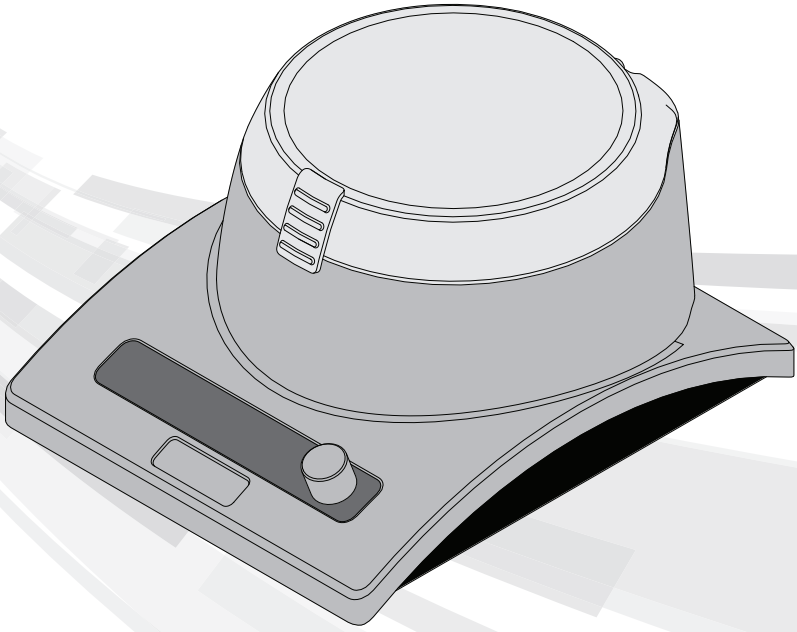
Heathrow Scientific®

# MagFuge®
Centrifuge/Stirrer

## Instruction Manual



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# Safety Precautions

The MagFuge® combines the attributes of a compact centrifuge with that of a magnetic stirrer. It is designed for laboratories in the bioscience, medical, and chemistry fields. It may be involved with biohazardous and/or hazardous materials. This instruction manual cannot address all safety hazards. It is the responsibility of the user to consult and observe all health and safety precautions and to assess the instrument's suitability to the task.

## Caution!

Before starting the device for the first time, please read this instruction manual carefully. This manual contains important information, safeguards, and operating instructions.

1. Always inspect the device for damage (broken or cracked housing and base, loose fasteners, damage from solvents, etc.) before connecting the power cord and before each use. Do not use this device if any damage is found.
2. Never use this product in any manner inconsistent with these instructions.
3. This product is intended to be used indoors only.
4. Use only the power adapter delivered with the product, use of other power adapters will void the warranty.
5. When used as a centrifuge, this device is intended for separating aqueous solutions in approved test tubes compatible to the RCF of this unit.
6. When used as a stirrer, this device is intended for blending aqueous solutions in suitable approved containers.
7. When used as a centrifuge, this device is not intended to centrifuge very dense materials. Do not use materials with a density greater than 1.2 g/cm$^3$ (1.2 g/mL).
8. When used as a stirrer, this product is not suitable for use with high viscosity materials. Do not use materials with a density greater than 1.2 g/cm$^3$ (1.2 g/mL).
9. Only use rotors supplied by Heathrow. These rotors can withstand 12,500 rpm which is also the maximum speed of the device.
10. Observe general laboratory safety precautions and regulations when using this product.
11. Do not attempt to operate with the cover removed or open.
12. The rotor and lid must always be securely fastened when in operation.
13. Always seat the rotor completely onto the shaft, then tighten the rotor nut.
14. Do not use damaged rotors.

15. Do not put hands onto the rotor unless the rotor is completely stopped.
16. Do not move unit while it is operating.
17. Do not immerse the product in water. Injury due to shock or fire may result.
18. The centrifuge rotors must be loaded symmetrically. Operating this unit with an unbalanced rotor will cause severe vibration and damage, which is not covered by warranty.
19. Do not attempt to use centrifuging tubes with the magnetic stirrer rotor.
20. Do not fill tubes while inserted in centrifuging rotors. Spilled liquid may harm unit.
21. Close tube lids before starting centrifuge. Open lids can be torn off during centrifugation and damage the unit. Open lids can cause fluid to be dispersed inside the centrifuge.
22. Do not insert non-standard centrifuge tubes or other foreign articles into the rotor.
23. Follow all precautions from the Material Safety Data Sheet (MSDS) for any reagent you use with this instrument.
24. Do not use solvent or flammable liquids near this or other electrical equipment.
25. Do not centrifuge or stir flammable, explosive, or corrosive materials.
26. Do not operate in a hazardous or flammable environment.
27. Do not use any solvent on the unit that may attack plastic or cause cracks in the rotors or corrode metal parts in the rotors.
28. Ensure rotors are protected from corrosion and mechanical damage at all times. Rotors must be cleaned with a pH-neutral cleaning liquid and immediately dried.
29. Always work in a manner which endangers neither the user nor any other person.
30. Should the instrument fail to work to specification, immediately stop using it. Clean and troubleshoot the instrument according to the instructions under “Trouble Shooting” before any further use of the instrument. Contact an authorized dealer or the manufacturer if trouble persists.
31. Do not attempt to stop a rotor while unit is running. Doing so may cause the unit to fail and will void the warranty.
32. Only use original manufacturer’s rotors, AC adapters, tube adapters and any other spare parts.
33. Repairs are to be performed by trained and authorized service personnel only. Contact Heathrow Scientific® LLC.
34. Opening the instrument housing or improper use of the instrument voids the warranty. If there is a failure during the warranty period, contact Heathrow Scientific® LLC for warranty service.
35. Do not attempt to use units that have not been correctly installed or repaired.

36. Do not attempt to disassemble or modify this product.
37. Store at room temperature in a dry area. Do not expose to sunlight, moisture, or extreme temperatures for prolonged periods of time.
38. Caution: Exposure to certain chemicals can damage unit causing corrosion, crazing, and cracking of housing.
39. When the device is used as a stirrer; carefully note the position of the container placed on the lid of the device and make sure one of the flexible disks is placed between the container and the lid to minimize movement/slippage of the container. Stirring efficiency is maximized when the container and lid are concentric. Refer to concentric groove on the lid to help locate the container.

## Warning!

If the unit is not used as recommended by the manufacturer, the overall safety will be impaired.

## Warning!

Check MSDS, wear required Personal Protective Equipment, and observe all applicable local and national regulations before dispensing and disposing of hazardous sample.

## Warning!

This product does not contain bio-seals as per IEC/EN/CSA 61010-2-020 and cannot provide any level of containment in case of a spill or release of toxic, radioactive, or pathogenic micro-organisms. These materials should not be used with this product.

## Warning!

The laboratory procedure should ensure that no person or hazardous substances are present within a 12" (30cm) zone around the device when operating.

# Technical Data

### Supplied Equipment (Spare part item numbers):

— MagFuge combination centrifuge and stirrer
— Universal AC power adapter (120527)
— Set of 4 Universal mains cables for AC adapter (100502)
— Standard 12-Tube rotor for 1.5 - 2.0 mL tubes, 12,500 rpm max (120622)
— 6-Tube rotor for 5 mL tubes, 12,500 rpm max (120623)
— Stirrer rotor with installed magnets, 2500 rpm max (120624)
— 2 bags, each containing 6 ea. Tube adapters 0.2 mL & 0.5 mL, only for standard 12-Tube rotor, 12,500 rpm max. (120350)
— 2 ea. Stir bar 40x12mm (120675)
— 2 ea. Silicone lid mat (120682)

## Environmental Ratings:

**Note: For Indoor use**

**Altitude:** Up to 2,000 m

**Operating Temperature:** 2°C to 40°C

**Maximum Relative Humidity:**

80%RH up to 31°C decreasing linearly to 50% RH at 40°C

**Storage Conditions:** Storage temperature: 20°C – 55°C

**Relative humidity:** ≤ 80%RH noncondensing

**Dimensions:**

235mm x 185mm x 120mm (LxWxH)

**Weight:**

1.85 kg (4.08 lb) (product with Magnet rotor)

**Capacities:**

12-tube rotor: 24 mL total maximum liquid volume

6-Tube rotor: 30 mL total maximum liquid volume

Stirrer rotor: 3 L total maximum vessel liquid volume.

Diameter of vessel not to exceed 130 mm (6.70")

**Speed Range:**

**Centrifuge mode:** 500 rpm – 12,500 rpm, max. RCF: 9,800 xg

**Stirrer and Oscillating modes:** 50 rpm – 2500 rpm

**Run Time ranges:**

**Centrifuge mode:** 0:30” – 60’:00” minutes (0’:05” increments)

**Stirrer mode:** 0:30” to 60’:00” or continuous (0’:05” increments)

**Oscillating Stirrer mode:** 1’:00” – 60’:00” or continuous

**Oscillating Period:** 0:30” – 15’:00” (0:15” increments)

**Electrical:**

**Power Adapter rating:**

**Input:** 100 – 240VAC, 50/60Hz

**Output:** 12VDC, 8.33A

**MagFuge:**

**Input:** 12VDC

Current (under load): Approx. 5.6A

Power: Approx. 67W


# Warning!

ONLY use power cords and power adapter supplied with unit!

## Compliance Guidelines:

This mark is the confirmation that the unit conforms to the EU guidelines and has been tested according to the following EU Declaration of Conformity.

710213

Conforms to:
ANSI/UL Std. 61010-1
ANSI/UL Std. 61010-2-020
ANSI/UL Std. 61010-2-051
IEC/EN 61010-1
IEC/EN 61010-2-020
IEC/EN 61010-2-051
CAN/CSA C22.2 No. 61010-1
CAN/CSA C22.2 No. 61010-2-020
CAN/CSA C22.2 No. 61010-2-051

This product has been tested to the requirements of CAN/CSA C22.2 No. 61010-1 3rd edition, including Amendment 1, or a later version of the same standard incorporating the same level of testing requirements.

## EC Declaration of Conformity

Manufacturer: Heathrow Scientific® LLC
Address: 620 Lakeview Parkway • Vernon Hills, IL 60061 USA
European Contact: Emergo, Europe
Prinsessegracht 20 • 2514 AP The Hague • The Netherlands

Model: MagFuge®, Catalog # HS120581, HS120582, HS120583
This unit has been constructed and conforms to the following:
Safety Standards:
- EN/IEC 61010-1 ed. 3.1, 2017
- EN/IEC 61010-2-020 ed. 3, 2016
- EN/IEC 61010-2-051 ed. 3, 2016
- UL Std. 61010-1 ed. 3, 2012
- UL Std. 61010-2-020 ed. 3, 2016
- UL Std. 61010-2-051 ed. 3, (R2016)
- CAN/CSA C22.2 No. 61010-1-12 (R2017)
- CAN/CSA C22.2 No. 61010-2-020 (R2017)
- CAN/CSA C22.2 No. 61010-2-051 (R2016)
- 2014/35/EU (Low Voltage Directive)

EMC Standards:
- IEC 61326-1:2013 (IEC 61326-1:2012)
- FCC Part 15, Subpart B: 2015
- ICES-003, Issue 6

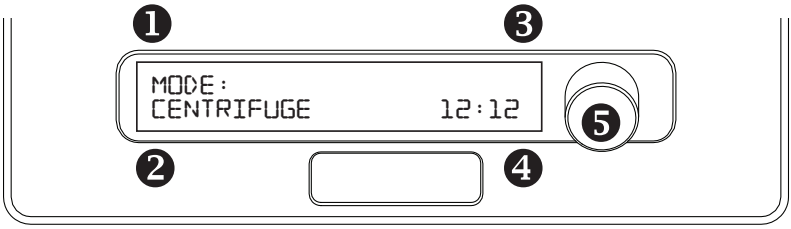
2012/19/EU (WEEE)
2011/65/EU (RoHS)

Signed:

Gary Kamees,
Vice President of Product Development/Manufacturing
Vernon Hills, Illinois, USA
April 2018

**Note:** Changes or modifications to the product not expressly approved by the manufacturer could void the user's authority to operate the equipment.

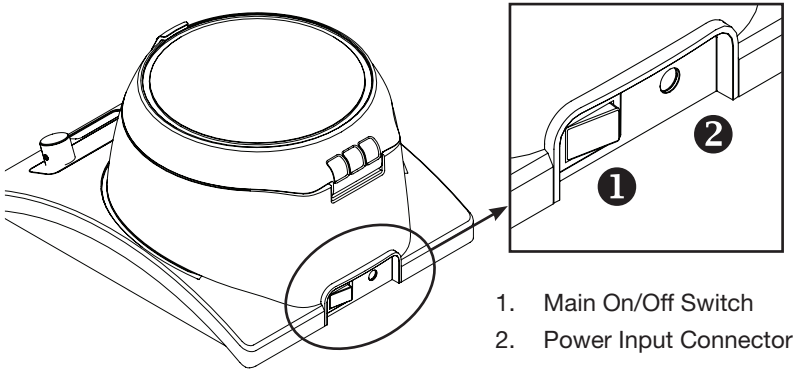
# Display




1. Command and/or Mode
2. RPM/RCF
3. Status of Unit
4. Time Min:Sec
5. **Control Knob**
   Press to step through program, rotate to select options.

| **Display Status** | **Possible Cause** |
|---|---|
| COVER OPEN | — Cover is not latched shut. |
| PRESS TO START | — Unit is ready to centrifuge or stir. |
| SPINNING | — Cycle has started. |
| SPIN DOWN | — Cycle is slowing down. |
| ERROR | — An error has occurred. Examine unit for cause. Turn unit OFF then ON to reset program. |
| ERR: ROTOR TYPE | — Wrong rotor type is installed, replace with correct type or choose correct mode. Turn unit OFF then ON to reset program. |

# Rear Panel Switch & Connector




1. Main On/Off Switch
2. Power Input Connector

# Operation

1. Remove the contents from the package examining them carefully for breakage, defects or missing parts.
2. Place the product on a clean sturdy, level surface at least 12" (30 cm) away from the edge of the counter and other moving equipment. Make sure the AC power adapter and cords are clear of hot surfaces and other hazards. Ensure no person or hazardous substances are within a 12" (30 cm) zone around the product.
3. Make sure the product has ventilation and is not encased in any material that will limit airflow. An overheating situation could occur.
4. Position product so that it is easy to disconnect from mains outlet.
5. Verify that the power switch in the back of the unit is in the OFF position. Plug the DC cord into the rear of the unit and the AC cord an approved outlet.
6. **ONLY** use Heathrow supplied power cord and adapter.

**Prior to every use:**

— Inspect unit for cracks, missing pieces, and or any damage that would result in an impaired performance and notify manufacturer BEFORE use.

— Make sure the power switch on the rear of the unit is set to “O” which stands for “OFF”.

## Warning!

This device can be used as either a Centrifuge or Stirrer. User must follow the proper directions depending on whether the centrifuge mode or the stirrer mode is selected:

# Rotor Installation & Changing

## Warning!

Do not use damaged or cracked rotors!

**To remove rotor:**

— With one hand, grasp the rotor. Rotors are retained by a central threaded knob. With your other hand, grasp the knob between your fingers and turn the knob counter clockwise ↺ to unscrew the knob until it disengages from the motor shaft.

— Pull up on the center knob firmly. The rotor should easily lift off the motor drive.

**To install the rotor:**

— Check to make sure the two round bands on the motor are seated in the two grooves of the motor housing.

— Set the desired rotor onto the motor housing and push down until seated.

— With one hand, grasp the rotor. Rotors are retained by a central threaded knob. With the other hand, screw the center knob clockwise ↻ until it engages the motor shaft.

— Keep turning the knob until an increase in resistance is felt and it tightens.

— **Do not over tighten the knob.**

— **Do not use tools to grasp the knob, damage may result.**

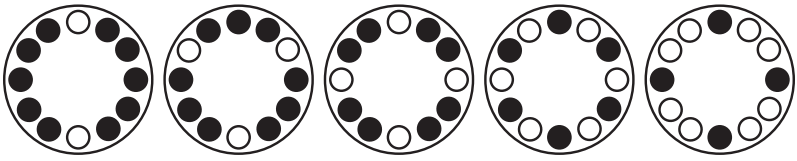
# Centrifuge Rotor Balancing

## Warning!

Spin balanced loads only!
Do not place the tubes asymmetrically nor load unequal volume tubes. Improper placement of tubes will lead to insufficient centrifugation and may cause serious injury or an accident.

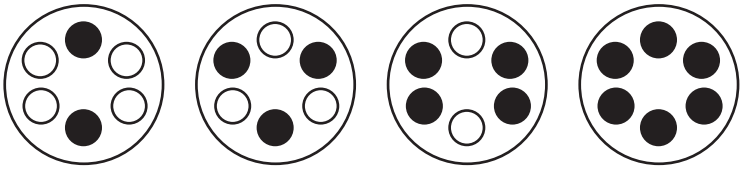
Tubes of equal weight and size should be placed opposite each other. Use additional sample or water in other tubes to provide a balanced rotor. Examples of proper sample balancing are illustrated next.

**1.5 mL / 2.0 mL,**
**12-Tube Circular Rotor**



**2 Tubes** **3 Tubes** **4 Tubes** **6 Tubes** **8 Tubes**

**5 mL, 6-Tube Circular Rotor**



**2 Tubes** **3 Tubes** **4 Tubes** **6 Tubes**

## Warning!

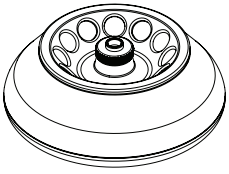
Do not attempt to open lid until rotor has completely stopped! Avoid severe personal injury or property damage from moving parts. Only use rotor compatible with the centrifuge.

# Centrifuge Mode Instructions

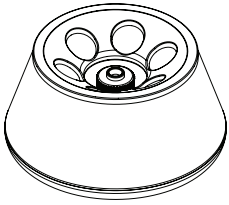
1. Used when you wish to centrifuge tubes containing liquid with a maximum density of 1.2 g/cm$^3$ (1.2 g/mL).

   **Note:** The software will only let you move forward through the program. You can't go back once a selection has been made. To reset the unit, press and hold the control knob for about 2 seconds or turn it OFF and then back ON. If you wish to make a change to a previous step in the program, turn the unit OFF then back ON to clear the settings.

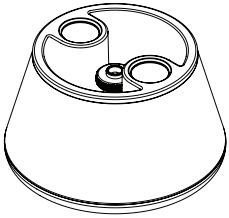
2. Use **ONLY** Heathrow Scientific® centrifuge rotors when centrifuging. One of these rotors must be installed in the unit for this function to work. Attempted use of any other rotors will void the warranty and may cause damage to the device or the surroundings. **Use of any other rotors may cause INJURY**. The Heathrow Scientific centrifuge rotors look like this:



Standard 12-Tube Rotor



6-Tube Rotor for 5 mL Tubes



Stirrer Rotor with Magnets

3. Make sure power is off on the main power switch on the rear of the housing.
4. Plug the power adapter plug into the connector on the rear of the MagFuge and make sure the green light on the power adapter is illuminated.
5. Turn on the main power switch
6. The display will immediately light up to display the MagFuge name and the Software/firmware version.
7. Press the knob for 1-3 seconds to actuate the lid release (you will hear a click or clicking sound), open the lid and install a centrifuging rotor. Tighten the retaining knob in the center of the rotor. Close the lid and make sure it's latched. Display will show "MagFuge Press to start". The unit will detect whether you have the rotor with the silver magnets on top for stirring/oscillation or a centrifuging rotor.
8. If the magnetic stirring rotor is installed, the device will detect the magnetic field of the magnets in this rotor and will display the error message "ERR: ROTOR TYPE" the rotor will stop within 3 seconds and before reaching 1000 rpm. The unit must be turned OFF then ON to reset the program.

9. Press the control knob to display the operating Mode.
10. Rotate the control knob to view Centrifuge, Stir, and Oscillate (stirring with oscillation) modes. Press the knob once, display states: “Mode: Centrifuge”.
11. The display should now show “Speed Display”.
12. Rotate the control knob to select either RPM or RCF. Press and release the control knob to continue.
13. Rotate the control knob to select the speed. Press and release the control knob when the desired speed is displayed to set that value.
14. The display will now read Time. Rotate the knob to select the desired time. Press and release the control knob to start the cycle. The time display will count down to 0:00

    **Note:** To stop rotor rotation before the timer gets to 0:00 press and hold the control knob for 1 to 2 seconds. The display will indicate “Spin Down” and the rotor will slow to a stop.

15. When the time display reaches 0:00 and the rotor has stopped, the lid latch will automatically release. A click or clicking sound will be audible and the display will read “MagFuge Cover Open”.
16. Tilt the lid upwards and to the rear of the device. Remove the tubes from the rotor.
17. If additional centrifuging is desired, return to *step 10*. If no more centrifuging is desired, close the lid and turn the main switch OFF.

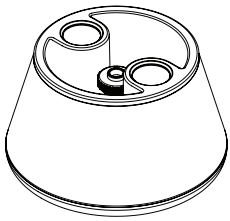
# Stirring Mode Instructions

1. Used when you wish to stir or mix a larger volume of liquid at a fixed speed up to 2500 rpm. The vessel containing the liquid is placed on top of the closed lid of the device. Use of an included silicone lid mat between the vessel and the lid is recommended to minimize movement/slippage of the vessel on the unit.

   **Note:** The software will only let you move forward through the program. You can’t go back once a selection has been made. To reset the unit, turn it OFF and then back ON. If you wish to make a change to a previous step in the program, turn the unit OFF then back ON to clear the settings.

   **Note:** Depending on the viscosity of the liquid, the rotating speed of the liquid may be less than the rotor speed.

2. Use **ONLY** a Heathrow Scientific® magnet stirrer rotor when stirring. This rotor must be installed in the unit for this function to work. Attempted use of any other rotors will void the warranty and may cause damage to the device or the surroundings. **Use of any other rotors may cause INJURY**. This rotor has two silver metal magnets visible on the top surface:



3. **If the wrong rotor is installed:**
    a. If you wish to use the stirring function and the magnetic stirrer rotor is not installed. The unit will detect that the incorrect rotor is installed within 2 seconds after the rotor starts spinning. A tone will sound and the rotor will stop rotating. The display will show "ERR: Rotor Type".
    b. After removing any vessel or other object resting on the unit; the lid can be opened by pressing and holding the control knob for 2 seconds to actuate the lid release (you will hear a click or clicking sound indicating the latch has been released) and the lid will open slightly.
    c. Tilt the lid upwards and to the rear of the device.
    d. Loosen the retaining knob in the middle of the rotor and remove the incorrect rotor.
    e. Install the magnetic stirrer rotor. Make sure to tighten the knob in the center of the rotor.
    f. Close the lid. Make sure it latches.
4. Make sure power is off on the main power switch on the rear of the housing.
5. Plug the power adapter plug into the connector on the rear of the MagFuge and make sure the green light on the power adapter is illuminated.
6. Turn on the main power switch
7. The display will immediately light up to display the MagFuge name and the Software/firmware version followed by the message "Press to start". If the magnet stirring rotor is not installed in the unit, go to *step 3*.
8. Press the control knob and release. The message will change to "Mode" followed by "Centrifuge."
9. Rotate the control knob to select "Stirrer".
10. Press the control knob and release. The message will change to "Mix Direction:" followed by "Clockwise"↻.
11. If you wish to select clockwise rotation ↻, go to *step 12*. To change the rotation direction to counter clockwise ↺, rotate the control knob to change the message to "C. Clockwise" (counter clockwise ↺).
12. Press and release the knob to change the display to "Speed".

    **Note:** Speed can be adjusted while the unit is running.

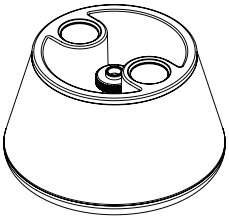
13. Rotate the control knob to adjust the speed of rotation in rpm (revolutions per minute).
14. Press and release the knob to change the display to “Time:”
15. Rotate the control knob to select the desired time.
16. Press and release the knob to start the rotor. The display will change to “Spinning” with the selected rpm below followed by a timer showing the remaining time.

    **Note:** To cancel rotation. Press the control knob for 2 seconds and release. A tone will sound and the rotor will immediately slow to a stop.

17. When the time has counted down to 00’:00” a tone will sound and the rotor will slow to a stop. To prevent spillage of the stirring vessel on the lid, the lid will remain latched.

# Oscillation Stirring Mode Instructions

1. Used when you wish to stir or mix a larger volume of liquid at a speed up to 2500 rpm and you wish to have the stirring direction change (oscillate) at a regular interval. The time interval (period) before changing direction can be selected. The vessel containing the liquid is placed on top of the closed lid of the device. Use of an included silicone lid mat between the vessel and the lid is recommended to minimize movement/slippage of the vessel on the unit.
2. **Note:** the software will only let you move forward through the program. You can’t go back once a selection has been made. To reset the unit, turn it OFF and then back ON. If you wish to make a change to a previous step in the program, turn the unit OFF then back ON to clear the settings.
3. **Note:** depending on the viscosity of the liquid, the rotating speed of the liquid may be less than the rotor speed.
4. Use **ONLY** a Heathrow Scientific® magnet stirrer rotor when stirring. This rotor must be installed in the unit for this function to work. Attempted use of any other rotors will void the warranty and may cause damage to the device or the surroundings. **Use of any other rotors may cause INJURY**. This rotor has two silver metal magnets visible on the top surface:



5. **If the wrong rotor is installed:**
    a. If you wish to use the stirring function and the magnetic stirrer rotor is not installed. The unit will detect that the incorrect rotor is installed within 2 seconds after the rotor starts spinning. A tone will sound and the rotor will stop rotating. The display will show “ERR: ROTOR TYPE”.
    b. After removing any vessel or other object resting on the unit; the lid can be opened by pressing and holding the control knob for 2 seconds to actuate the lid release (you will hear a click or clicking sound indicating the latch has been released) and the lid will open slightly.
    c. Tilt the lid upwards and to the rear of the device.
    d. Loosen the retaining knob in the middle of the rotor and remove the incorrect rotor.
    e. Install the magnetic stirrer rotor. Make sure to tighten the knob in the center of the rotor.
    f. Close the lid. Make sure it latches.
6. Make sure power is off on the main power switch on the rear of the housing.
7. Plug the power adapter plug into the connector on the rear of the MagFuge and make sure the green light on the power adapter is illuminated.
8. Turn on the main power switch
9. The display will immediately light up to display the MagFuge name and the Software/firmware version followed by the message “Press to start”. If the magnet stirring rotor is not installed in the unit, go to *step 5*.
10. Press and release the control knob. The message will change to “Mode” followed by “Centrifuge.”
11. Rotate the control knob to select “Oscillate”.
12. Press and release the control knob. The message will change to “Osc. Period:” (Oscillating period) and the default time period 01’:00”.
13. Rotate the control knob to adjust the oscillating period.
14. Press and release the control knob. The message will change to “Speed:” followed by the default speed of 500 rpm.
15. Rotate the control knob to adjust the speed.

    **Note:** Speed can be adjusted while the unit is running.

16. Press and release the control knob. The message will change to “Time:” followed by the default time of 30’:00”.
17. Rotate the control knob to adjust the time.
18. Press and release the control knob to start the cycle. In the upper right part of the display the elapsed time will be displayed with the remaining time will be displayed below it

19. To cancel rotation. Press the control knob for 2 seconds and release. A tone will sound and the rotor will immediately slow to a stop.
20. When the time has counted down to 00':00" a tone will sound and the rotor will slow to a stop. To prevent spillage of the stirring vessel on the lid, the lid will remain latched.

# Error Messages:

If an error happens, the unit sound a tone beep and the display will indicate the error.

| **Error Status** | **Resolution** |
|---|---|
| Motor Overload | — Something is interfering with the rotor. Clear the rotor and reset. |
| Balance (when centrifuging) | — Inspect the tubes for equal tube fill or improper placement. Once corrected, rerun.<br>— If the balance error continues to happen, remove the tubes and determine if the balance error still persists with an empty rotor.<br>— Inspect the rotor for improper installation. |
| Temperature | — The unit has exceeded the normal operating temperature.<br>— Turn off the unit and allow to cool. |
| Excessive Tilt | — The unit has experienced a non-normal tilt event.<br>— Make sure the unit is placed on a level surface. Once corrected, rerun |
| Cover Open | — The lid has opened during the cycle. Check for proper operation of the lid latch mechanism. The lid should stay locked during the entire cycle. |
| Rotor Type | — The wrong rotor is installed for the selected mode (ex. Centrifuge rotor installed when stirring or oscillating modes are selected).<br>— Press and hold the control knob for 3 seconds to release the lid latch (a click or clicks will be heard). Open the cover and install the correct rotor.<br><br>Rotors are retained by a central threaded knob. Grasp the knob between your fingers and turn the knob counter clockwise ↺ to unscrew the knob.<br><br>Tighten the knob by turning it clockwise ↻ until an increase in resistance is felt. |

# Troubleshooting

| Trouble | Resolution |
|---|---|
| No power present | — Verify that the proper AC input power cord is securely plugged into the power adapter.<br>— Verify that the proper AC input power cord is fully plugged into a powered wall outlet<br>— Verify that the round low voltage output cable of the AC adapter is plugged into the device.<br>— Verify that the power switch on the rear of the device is turned on |
| Unit or display is not operating normally | — Turn off the unit, wait 1 minute to allow the internal components to discharge and reset, and then turn power on |
| Excessive vibration or excessive noise | — Inspect the tubes for equal fill or improper placement<br>— Inspect the rotor for improper installation<br>— Remove the tubes and determine if the noise persists with an empty rotor<br>— Inspect the housing to lid interface to make sure all lid cushions are present. |
| Lid will not close and/ or latch | — Verify that nothing is blocking the lid from fully closing<br>— Verify that nothing has fallen into the lock mechanism opening |
| Lid will not open | — If for any reason you need to manually open the lid due to an error or power loss, please perform:<br>  — Remove anything placed on top of the device.<br>  — Turn off the unit, remove power cord.<br>  — Make sure the rotor has stopped completely.<br>  — Use a thin rod as a tool (a #1 cross-head type screwdriver works well) and insert it into the opening on the bottom (approx. 0.5" or 13 mm) until you feel resistance.<br>  — Press gently but firmly. You will feel a mechanical movement within the unit and the lid latch will release.<br>  — Remove the rod, set the unit on the feet<br>  — Remove your tubes and reclose the lid |

| | |
|---|---|
| Stir bar is not rotating | — Confirm that unit is powered and in stirring or oscillation mode.<br>— Rotation speed may be too low, turn control knob to adjust speed.<br>— Confirm that magnet rotor is installed.<br>— Confirm that lid is latched.<br>— Confirm that a Heathrow Scientific stir bar is being used. Heathrow Scientific stir bars provide the best performance with this device. |
| Stir bar jumping around erratically | — Magnet has not correctly coupled with stir bar:<br>— Cycle device “Off” and “On” to reset.<br>— Turn speed down by turning control knob counter clockwise ↺<br>— Center container with liquid on device lid.<br>— Allow stir bar to couple with magnets on rotor in device.<br>— Confirm that a Heathrow Scientific stir bar is being used. Heathrow Scientific stir bars provide the best performance with this device. |
| Opaque or cloudy liquid does not mix | — Confirm stir bar is in liquid container, add a Heathrow Scientific stir bar to the liquid container if missing.<br>— Liquid viscosity too high. Lower liquid viscosity as needed. |

# Maintenance

Your MagFuge is normally maintenance-free. Clean unit only when it is not plugged into an electrical outlet. When necessary, the housing and rotor can be wiped using a damp cloth and a mild, non-corrosive detergent.

## Warning!

Do not use any solvent on the unit that may attack plastic or cause cracks in the rotor. Ensure the rotor is protected from corrosion and mechanical damage. The rotor must be cleaned with a neutral cleaning liquid.

If **hazardous** material is spilled on the unit and or leaked into the unit, do not run the device unless it is safe to do so.

### Dissassembly of Rotors for Cleaning:

1. Remove rotor from unit
2. Remove screws from the bottom of the rotor
3. Clean as needed
4. Reassemble rotor, making sure that the alignment tab is engaged into the slot.
5. Test run reassembled EMPTY rotor to ensure it is still balanced.
6. **Note:** Ensure all parts are thoroughly dry prior to operation.

### Hazardous Chemicals:

1. Cleaning and decontamination may be necessary as a safeguard before laboratory centrifuges, rotors, and any accessories are maintained, repaired, or transferred. Therefore, follow **ALL** instructions provided in the manual pertaining to this process.
2. In the event hazardous material is spilt, the user is responsible for carrying out the appropriate decontamination procedure.
3. Before using any cleaning or decontamination methods except those recommended by the manufacturer, users should check with the manufacturer that the proposed methods will not damage the equipment.

# Warranty

**IN NO EVENT WILL HEATHROW SCIENTIFIC® LLC'S OBLIGATION UNDER THIS WARRANTY EXCEED THE PRICE OF THE PRODUCT.**

**Limited Warranty**
Heathrow Scientific® LLC warrants that your MagFuge will be free from defects in workmanship and material for five years from the date of purchase.

If you believe that there is a defect in the product, you must, during the warranty period, notify Heathrow Scientific® LLC, provide proof of purchase, and return the product to Heathrow Scientific® LLC with a Return Authorization form. To obtain a Return Authorization form, please call 1-847-816-5070. If Heathrow Scientific® LLC is properly notified and, after inspection, confirms that there is a defect and the warranty period has not expired, Heathrow Scientific® LLC will repair, modify, or replace the product, at its sole option, at no charge.

**OTHER THAN THIS LIMITED WARRANTY, HEATHROW SCIENTIFIC® LLC MAKES NO WARRANTIES, EXPRESS OR IMPLIED, WITH RESPECT TO THE QUALITY OR PERFORMANCE OF THE PRODUCT, INCLUDING BUT NOT LIMITED TO THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR PARTICULAR PURPOSE WHICH ARE HEREBY DISCLAIMED AND EXCLUDED. HEATHROW SCIENTIFIC® LLC WILL IN NO EVENT BE LIABLE FOR ANY LOSS OF USE, LOSS OF PROFITS, CONSEQUENTIAL, SPECIAL, EXEMPLARY OR PUNITIVE DAMAGES.**

## THIS WARRANTY DOES NOT COVER:

- ANY DEFECT OR DAMAGE CAUSED BY IMPROPER OR UNREASONABLE USE OF THE PRODUCT. (THE MINI- CENTRIFUGE IS DESIGNED FOR USE ONLY BY TRAINED LABORATORY TECHNICIANS. USE BY ANYONE ELSE WILL VOID THIS WARRANTY.)
- ANY PRODUCT THAT HAS BEEN, IN HEATHROW SCIENTIFIC® LLC'S SOLE JUDGEMENT, TAMPERED WITH, ALTERED, OR REPAIRED BY ANYONE OTHER THAN HEATHROW SCIENTIFIC® LLC.
- ANY PRODUCT THAT IS INOPERATIVE BECAUSE OF: (a) WEAR OCCASIONED BY USE, (b) NEGLIGENCE, (c) ACCIDENT, (d) INCORRECT MAINTENANCE, OR (e) USE UNDER ABNORMAL CONDITIONS OF TEMPERATURE, DIRT OR CORROSION, OR USE WITH ABRASIVE OR CORROSIVE MATERIALS.
- ACCESSORY PARTS, SUCH AS RUBBER AND PLASTIC PARTS THAT ARE DAMAGED BY LIQUIDS OR MISUSE.

# Return for Repair

**Important:**

Transporting hazardous materials without a permit is a violation of federal law.

Heathrow Scientific® LLC will not accept any product return that is not appropriately cleaned and decontaminated. In the unlikely event of repair, or when damage to the unit necessitates return, contact Heathrow Scientific® LLC, obtain return authorization, and complete a Heathrow decontamination form BEFORE sending your product for service.

# Disposal Responsibilities

The equipment you purchased may contain hazardous substances that could impact the environment. Per regulations on electronic devices in the European Community, you must use the appropriate disposal systems to avoid exposure of these substances to the environment. The disposal systems will reuse or recycle hazardous materials from your equipment responsibly.

The crossed-out wheeled bin symbol invites you to use those systems.

If you need more information on the collection, reuse and recycling systems, please contact your local or regional waste administration. You can also contact us for more information on the environmental performance of our products.