



HMSC / MANTLE Manual

Models: 500MLMANTLE, 1LMANTLE, 2LMANTLE, 5LMANTLE



Safety Precautions and Explanations

At USA Lab, safety is our number one priority. The following information provides guidelines for safety when using USA Lab equipment. Any piece of machinery can become dangerous to personnel when improperly operated or poorly maintained.

ALL employees operating and maintaining USA Lab equipment should be familiar with its operation, thoroughly trained, and Instructed on the best safety practices.

Most industry accidents are preventable through safety awareness.

Training

It is the responsibility of the customer to ensure that all personnel who will be expected to operate or maintain the equipment. Participate in training and instruction sessions to become trained operators. All personnel operating, inspecting, servicing, or cleaning this equipment must be properly trained in the operation and machine safety. **BEFORE** operating this equipment, read the operating instructions in this equipment manual. Become thoroughly familiar with the machinery and its controls.

Safety

- Never leave the equipment running unattended and use this equipment only for its intended purpose.
- Ensure that all power sources are turned off when the machine is not in use. This encompasses electrical and pneumatic power.
- Read the manual for any special operational instructions for each piece of equipment. All USA Lab authored manuals are typically included with each device as well as posted online.
- Know how the equipment functions and understand the operating and halting processes.
- Wear the appropriate personal protective equipment for the task.
- When working on or around all equipment, avoid wearing loose clothing, jewelry, unrestrained long hair, loose ties, belts, scarves, or articles that may be caught in moving parts. Keep all extremities away from moving parts. Entanglement can cause death or severe injury.
- For new equipment, check input voltage and compare with the equipment voltage rating. DO NOT supply the incorrect power to any equipment for any reason whatsoever. Electrical specifications for your machine are printed on the machine tag. A properly grounded receptacle is required for safe operation regardless of voltage requirements.
- Keep the equipment operating zone free of obstacles that could cause a person to trip or fall toward an operating machine. Keep fingers, hands, or any part of the body out of the machine and away from moving parts when the machine is operating.
- Any machine with moving parts and/or electrical components can be potentially dangerous no matter how many safety features it contains. Stay alert and think clearly while operating or servicing the equipment. Be aware of operations and personnel in your surroundings. Be attentive to indicator lights, warning lights, and/or operator interface screens displayed on the machine and know how to respond.
- Do not operate machinery if you are fatigued, emotionally distressed, or under the influence of drugs or alcohol.
- Know where the FIRST AID SAFETY STATION is located.
- Know where the FIRE EXTINGUISHING EQUIPMENT is located.
- Never sit or stand on the machine or on anything that might cause you to fall against the machine.
- Rotating and moving parts are dangerous. Keep clear of the operating area. Never put any foreign object into the operating area.
- Use proper lifting and transporting devices for heavy equipment. Some types of equipment can be extremely heavy. An appropriate lifting device should be used.
- Use caution when moving portable equipment. In some cases, the machinery can be heavy and/or may be top heavy. Portable equipment can gain momentum during transporting and must always be controlled.

Symbols and Warnings

Below are examples of commonly used symbols and what they mean.

Understand them and their potential consequences.



High Voltage or Electrical Hazard



Explosive Hazard



Not User Serviceable



Flammable Hazard



Hot Surface or Steam Hazard

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Section 1 | Important Information

1.1 Safety Notices

The use of Personal Protection Equipment (PPE) is REQUIRED.

Follow all federal, state, and municipal laws, codes, and ordinances.

Please make sure the power connection is correct and well-grounded. (see technical parameters for details)

Apply a rag to wipe the parts clean after washing away stains; do not use hard objects / abrasives.

Do not use flammable, corrosive, or explosive substances on, in or near the equipment.

If there is a problem, do not continue to use the heater. Call us immediately.

1.2 Technical Parameters

Model	500MLMANTLE	1LMANTLE	2LMANTLE	5LMANTLE
Power	110-120V 60Hz			220-240V 60Hz
Phase	Single Phase			
Wattage	250W	450W	450W	800W
Temperature Range	Room to 300°C	Room to 450°C	Room to 300°C	
Maximum RPM	1,400 RPM			
Stir Bar Size	1" x 0.3"			
Weight	4 lbs.	9 lbs.	14 lbs.	14 lbs.

Section 2 | Control Panel Operation

2.1 LED Display Operation

On the front panel, there are 3 buttons.

The three buttons are as follows:

S = Set / Enter

▲ = Increase

▼ = Decrease

Do not HOLD the S button, simply press it quickly.

How to set a temperature:

Press the set button

Increase the value on the display to the desired set point

Press the set button to confirm the change

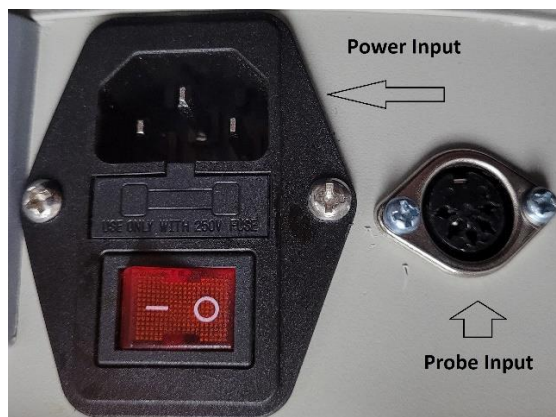
The mantle will not begin heating to the set point.

Holding the S button will take you to the parameters menu.

Disclaimer – Parameters are not allowed to be modified by end users. This is to protect the equipment from accidental damage. Modifying parameters for any reason, without our knowledge and permission will constitute a void of the warranty.

Section 3 | Installation

3.1 Electrical Connection



3.2 Operating Area

Ensure the work area is clean and free from debris. Always keep adequate space around the mantle to prevent combustible objects from touching the hot mantle.

The mantle produces a lot of heat over time. Make sure the mantle is used under a fume hood or other non-combustible enclosure.

Harmful chemicals and vapors can be produced from this equipment. Make sure the installation location is well ventilated.

Keep a fire extinguisher nearby if anything other than glass comes in contact with the basket while hot.

3.3 Operating Instructions and Notes

Fill with solution. (no higher than the rim)

Add the stirrer magnet to the reaction flask / boiling flask.

Attach the probe to the input port. (on rear)

Connect all glass pieces.

Connect the power cord to a 110V 15A outlet.

Turn the mantle ON using the power switch.

Press "Heat" to enable the heater.

Adjust heat setting using the "+" and "-" below "Heat" button.

Press "Stir" to enable the stirrer.

Adjust stirring setting using the "+" and "-" below "Stir" button.

When finished turn the heat off but leave the stirrer on to cool.

NOTES:

5LMANTLE is 220-240V ONLY. A NEMA 6-20 cord will be supplied.

The probe must be plugged in and submerged in the solution to operate the mantle.

Ensure that the mantle has a reliable ground connection.

Do NOT use only heating, always use the stirrer when heating. This helps keep the motor cool as well as keep the temperature accurate.

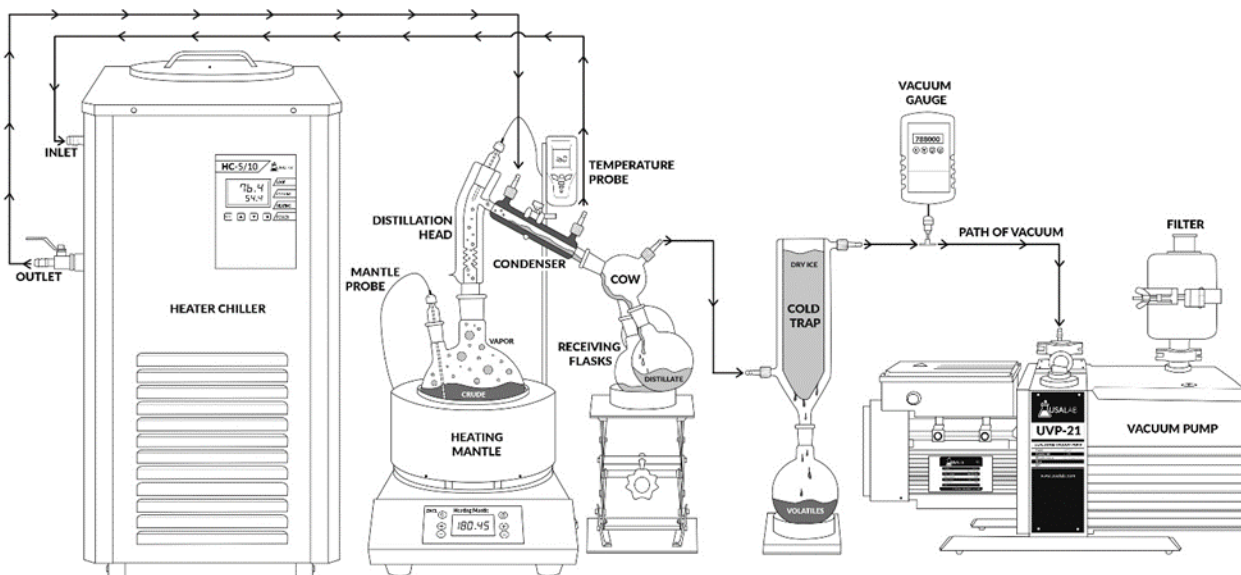
After running the mantle at high temperatures turn heating off first and leave the stirrer on until the mantle has cooled down.

The mantle gets very hot, do not touch the glass fiber while hot.

Wet hands, spills, and high humidity environments may allow electrical induction to travel through the insulating cover. Do not use if bowl is soaked with any liquid.

If the mantle does not power on and the outlet is functioning properly, contact us immediately.

Example of mantle use



Section 4 | Warranty Information and Coverages

4.1 Warranty

Continental United States

USA Lab products are warrantied to be free of workmanship, mechanical, and material defects for **one to two years** from date of purchase depending on product. Within this warranty period USA Lab will replace or repair components that fail due to manufacturer defect. For such repairs or parts, shipping charges will be covered in full or in part by USA Lab.

This warranty **does not cover any failures** due to alteration, repairs, misuse, accident, or abuse. This warranty also **does not cover wear items** such as glassware, heating elements, thermocouples, oil seal sets, switches, and sensors. The warranty does also not cover wrongful input voltage. The customer needs to be responsible in monitoring power rating and routine checking. If using water in a heater or chiller, the customer must only use **distilled water**. Other forms of water will **void the warranty**.

Non-continental United States

USA Lab products are warrantied to be free of workmanship, mechanical, and material defects for **one to two years** from date of purchase depending on product. Within this warranty period USA Lab will replace or repair components that fail during normal daily use. Such repairs or parts will be covered in full by USA Lab and **the customer will be responsible for shipping, labor, and custom duties**.

This warranty **does not cover any failures** due to alteration, repairs, misuse, accident, or abuse. This warranty also **does not cover wear items** such as glassware, heating elements, thermocouples, oil seal sets, switches, and sensors. The warranty does also not cover wrongful input voltage. The customer needs to be responsible in monitoring power rating and routine checking. If using water in a heater or chiller, the customer must only use **distilled water**. Other forms of water will **void the warranty**.

4.2 Return Policy

We offer a 30-day return policy from when your package is delivered to your shipping address. By placing an order with USA Lab, you express that you have read and agreed to the following return policies.

- **We do not accept returns for customized items.** When purchasing a customized item, you agree that there are no returns due to the nature of the item(s) being specific to your needs. **We do not accept returns on any solvents or consumables.**
 - **Pre-orders:** There will be a **10% non-refundable fee** associated with pre-orders that are canceled. This covers the banking fees and the hold fee.
 - By default, a **15% restocking fee** is applied on all items that are in original packaging and unused with no damage. This applies to all items returned within 30 days. **No exceptions.** You will be responsible for the return shipment unless deemed defective by USA Lab. In that case, we will pay for return shipment and replacement shipment costs.
 - The item(s) must be returned in original packaging and in undamaged condition. The item(s) must have no signs of usage or wear including stickers, scratches, dents, resins, non-standard fluids, plant matter, or any other wear not representing a new, unused item.
 - Unused and undamaged products not in original packaging will be subject to a restocking fee equal to 25% of the purchase price.
 - Products deemed defective with any signs of usage or wear whatsoever of damage or usage (including but not limited to the presence of botanical material, resins, cleaning agents, stickers or decals, or any damage, wear, or tear) will not be accepted for return.
 - Once the returned item is received, tested, inspected, and processed, a refund will be issued. If your item(s) are in original packaging and unused, **you will be refunded the initial purchase price with the 15% restocking fee deducted.**
- If your item(s) are deemed damaged or used, **you will not be refunded.**

4.3 Notes

Keep all original packaging in the event you need to return the unit or to send it in for to us for repair.

We are not responsible for providing packaging material.

This manual and its contents are subject to change without notice.

USA Lab reserves the right of ultimate interpretation of the instruction manual. Additionally, USA Lab is not responsible for damages or injuries caused by improper use; knowingly or unknowingly.

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