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> GOYOJO Heating Mantle with Magnetic Stirrer, 1000ml, Model GLS-HM-1000 User Manual

## GOYOJO GLS-HM-1000

# GOYOJO Heating Mantle with Magnetic Stirrer

MODEL: GLS-HM-1000 | 1000ML CAPACITY

## 1. Important Safety Precautions

Read all instructions carefully before operating the GOYOJO Heating Mantle with Magnetic Stirrer. Failure to follow these safety guidelines may result in personal injury or damage to the equipment.

- **Electrical Safety:** Ensure the unit is connected to a properly grounded power outlet (110V). Do not operate with wet hands or in wet environments. Disconnect power before cleaning or servicing.
- **Thermal Safety:** The heating mantle can reach temperatures up to 380°C. Always use appropriate heat-resistant gloves and eye protection. Do not touch the heating mantle or flask during operation or immediately after shutdown. Allow sufficient time for cooling.
- **Chemical Safety:** Use appropriate personal protective equipment (PPE) such as safety goggles, lab coats, and gloves when handling chemicals. Ensure proper ventilation when heating or stirring volatile or hazardous substances.
- **Flammable Materials:** Do not heat or stir flammable liquids near open flames or other ignition sources. Ensure the work area is free from combustible materials.
- **Spillage:** Avoid spilling liquids onto the control unit or heating mantle. In case of spillage, immediately disconnect power and clean thoroughly after the unit has cooled.
- **Flask Compatibility:** Use only round-bottom flasks of appropriate size (1000ml) with the heating mantle. Ensure the flask is clean and free of cracks before use.
- **Supervision:** Never leave the unit unattended during operation, especially when heating or stirring hazardous materials.

## 2. Product Overview

The GOYOJO Heating Mantle with Magnetic Stirrer is a laboratory instrument designed for precise temperature control and efficient mixing of liquids in 1000ml round-bottom flasks. It features a detachable design, PID temperature control, and adjustable stirring speed.

### Key Features:

- **Combined Functionality:** Simultaneous heating and magnetic stirring.
- **PID Temperature Control:** Industrial-grade self-tuning PID for stable and accurate temperature regulation up to 380°C.

- **Powerful Performance:** 330W heating power and stirring speeds up to 2450 RPM.
- **Detachable Design:** Allows for flexible use of the heating mantle and stirring base independently.
- **Durable Construction:** Alkali-free glass fiber heating sleeve with embedded metal heating wire for uniform heating.

## Components:



**Figure 2.1:** Labeled components of the GOYOJO Heating Mantle with Magnetic Stirrer.

The unit consists of the following main parts:

- **Support Stand:** For mounting accessories like thermometer clamps.
- **Thermometer Clamp:** Secures the K-Type Temperature Sensor.
- **K-Type Temperature Sensor:** External probe for precise temperature measurement within the flask.
- **Magnetic Rotor (Stir Bar):** Placed inside the flask for magnetic stirring.
- **Heating Mantle:** The blue upper part designed to hold and heat a 1000ml round-bottom flask.
- **LED Temperature Controller:** Digital display for setting and monitoring temperature (PV: Process Value, SV: Set

Value).

- **LED Speed Display:** Digital display showing the current stirring RPM.
- **Power & Heat Switches:** Separate switches to control main power and heating function.
- **Speed Control Knob:** Rotary knob to adjust the magnetic stirring speed.



**Figure 2.2:** The hand-woven heating liner ensures uniform heat distribution.

The heating mantle features a hand-woven heating liner made of alkali-free glass fiber, which provides even heat distribution and is resistant to high temperatures.

### 3. Setup

Follow these steps to set up your GOYOJO Heating Mantle with Magnetic Stirrer:

1. **Unpacking:** Carefully remove all components from the packaging. Inspect for any signs of damage. Retain packaging for future transport or storage.
2. **Placement:** Place the main control unit on a stable, level, heat-resistant surface in a well-ventilated area. Ensure

there is adequate space around the unit for air circulation and safe operation.

3. **Assemble Heating Mantle:** If detached, carefully place the blue heating mantle onto the stirring base unit, aligning the connectors. Ensure it is seated securely.



**Figure 3.1:** The detachable design allows for flexible setup.

4. **Install Support Rod (Optional):** Screw the support rod into the designated port on the back of the control unit if you plan to use a thermometer clamp or other accessories.
5. **Connect Temperature Sensor:** Plug the K-Type Temperature Sensor into the corresponding port on the control unit. Secure the sensor using the thermometer clamp to the support rod, positioning the probe tip inside the flask (ensure it is submerged in the liquid without touching the bottom or sides of the flask).
6. **Power Connection:** Ensure all switches are in the 'OFF' position. Connect the power cord to the back of the unit and then plug it into a grounded 110V AC power outlet.

## 4. Operating Instructions

This section details how to operate the heating and stirring functions of your GOYOJO unit.

## 4.1 Power On/Off

- To power on the unit, flip the main power switch (usually labeled 'Power') to the 'ON' position. The digital displays will illuminate.
- To power off, flip the main power switch to the 'OFF' position.

## 4.2 Heating Function

1. Place the round-bottom flask containing your sample into the heating mantle. Ensure the flask is centered and stable.
2. Ensure the K-Type Temperature Sensor is properly inserted into the liquid within the flask.
3. Flip the 'Heat' switch to the 'ON' position.
4. Use the buttons on the LED Temperature Controller (usually 'SET', up/down arrows) to set your desired target temperature (SV). The upper display (PV) will show the actual temperature measured by the sensor, and the lower display (SV) will show your set temperature.



Figure 4.1: Precise PID temperature control for stable heating.

5. The unit will begin heating, and the actual temperature (PV) will gradually rise towards the set temperature (SV).

The PID controller will automatically adjust heating power to maintain the set temperature with minimal overshoot.

6. When heating is complete, flip the 'Heat' switch to 'OFF'. Allow the mantle and flask to cool completely before handling.

### 4.3 Stirring Function

1. Place a suitable magnetic stir bar into the round-bottom flask containing your sample.
2. Place the flask into the heating mantle.
3. Ensure the main power is 'ON'.
4. Slowly turn the 'Speed Control Knob' clockwise to increase the stirring speed. The LED Speed Display will show the current RPM.



Figure 4.2: Effortless control via dedicated knobs and switches.

5. Adjust the knob until the desired stirring speed is achieved. Avoid rapid changes in speed to prevent splashing.
6. To stop stirring, turn the 'Speed Control Knob' counter-clockwise until the display reads '0' or the stir bar stops rotating.

## 4.4 Combined Heating and Stirring

Both functions can be operated simultaneously. Follow the steps for setting the desired temperature and then adjust the stirring speed as needed. This allows for efficient reactions requiring both heat and agitation.

## 5. Maintenance

Proper maintenance ensures the longevity and reliable operation of your GOYOJO Heating Mantle with Magnetic Stirrer.

- **Cleaning:** Always disconnect the unit from power and allow it to cool completely before cleaning. Wipe the exterior surfaces with a soft, damp cloth. For stubborn stains, a mild detergent can be used. Do not use abrasive cleaners or solvents. Ensure no liquid enters the control unit or heating element.
- **Heating Mantle Interior:** Keep the interior of the heating mantle clean and free of debris. If spills occur, clean gently with a damp cloth after the unit has cooled. Avoid sharp objects that could damage the heating element.
- **Inspection:** Regularly inspect the power cord for any signs of damage (fraying, cuts). Check the heating mantle for any visible damage or wear. If any damage is found, discontinue use and contact support.
- **Storage:** When not in use, store the unit in a clean, dry, and dust-free environment.

## 6. Troubleshooting

If you encounter issues with your unit, refer to the following troubleshooting guide:

| Problem                         | Possible Cause                                                                | Solution                                                                                                             |
|---------------------------------|-------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------|
| Unit does not power on          | No power supply; Power cord loose; Main power switch off                      | Check power outlet; Ensure power cord is securely plugged in; Turn main power switch to 'ON'                         |
| No heating                      | Heat switch off; Temperature set too low; Faulty heating element              | Turn heat switch to 'ON'; Increase set temperature (SV); Contact support if problem persists                         |
| No stirring                     | Speed control knob at '0'; No stir bar in flask; Stir bar stuck; Faulty motor | Increase speed with knob; Place stir bar in flask; Ensure flask bottom is clear; Contact support if problem persists |
| Inaccurate temperature reading  | Temperature sensor not properly immersed; Sensor faulty                       | Ensure sensor tip is fully submerged in liquid and not touching flask walls; Contact support if problem persists     |
| Excessive noise during stirring | Flask not centered; Stir bar too large/small; Stirring speed too high         | Center flask; Use appropriate size stir bar; Reduce stirring speed                                                   |

## 7. Specifications

Detailed technical specifications for the GOYOJO Heating Mantle with Magnetic Stirrer.

**GOYOJO**

# 1000ml Magnetic Stirrer Heating Mantle



Max Temp  
**380°C/716°F**



Temp Accuracy  
**±0.1°C/±0.1°F**



Stirring Speed  
**2450 RPM**



**Corrosion &  
Rust Resistant**



Heating Power  
**330W**



Figure 7.1: Overview of key product specifications.

| Parameter            | Value                 |
|----------------------|-----------------------|
| Model Number         | GLS-HM-1000           |
| Flask Capacity       | 1000ml (Round Bottom) |
| Heating Power        | 330W                  |
| Max. Temperature     | 380°C (716°F)         |
| Temperature Accuracy | ±0.1°C                |
| Stirring Speed       | 0 - 2450 RPM          |
| Voltage              | 110V                  |

| Parameter          | Value                      |
|--------------------|----------------------------|
| Control Type       | Digital PID                |
| Product Dimensions | 9.65 x 10.04 x 3.82 inches |

## 8. Warranty and Support

GOYOJO products are manufactured to high-quality standards. For warranty information, technical support, or service inquiries, please refer to the contact information provided at the point of purchase or visit the official GOYOJO website. Please have your model number (GLS-HM-1000) and purchase date available when contacting support.

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