



Laboratory Equipment Manufacturer  
www.mrclab.com



# Operation Manual

## HOG-24

# Homogenizer



**PLEASE READ THIS MANUAL CAREFULLY BEFORE  
OPERATION**

3, Hagavish st. Israel 58817 Tel: 972 3 5595252, Fax: 972 3 5594529 mrc@mrclab.com

**MRC.VER.01-9.12**

## **Foreword**

**Thank you for purchasing our products: Homogenizer. This manual for users contains function and operation of the instrument. In order to use the instrument properly, please read this manual carefully before using the instrument.**

### **Opening Check**

**Please check the instrument and Appendix with the packing list when you first open the instrument packing case. If you find there is something wrong with the instrument and the Appendix, do contact the vendor or the producer.**

# Safety Warnings and Guidelines

## 1. Important operation information of the security:

Before the users' operation, they should have a perfect conception of how to use the instrument. Therefore, read this manual carefully before using it.



Operation before reading the manual is forbidden. Read the guidelines and directions below and carry out the countermeasure according to them.

## 2. Security:

The operation, maintenance and repair of the instrument should comply with the basic guidelines and the remarked warning below. If you don't comply with them, it will have effect on the scheduled using life of the instrument and the protection provided.



This product is a normal and an indoor instrument which conforms to Standard B style- I type- GB9706.1.



Before using the device, read the manual carefully. These units are designed for use in laboratory environments. The device must be used by skilled personnel with the appropriate training.



The operator should not open or repair the instrument by himself, which will result in losing the qualification of repair guarantee or occur accident. If there is some wrong with the instrument, the company will repair it.



Before power on, guarantee the voltage used should be accordant to the voltage needed, and the rated load of electrical outlet should not lower than the demand.

If the electric line is damaged, you should replace it with the same type. You should assure there's nothing on the electric line and you should not put the electric line in the ambulatory place.

Hold the jack when you pull out the electric line, and don't pull the electric line.



The instrument should be put in the place of low temperature, little dust, no water and no sun or strong lamp. What's more, the place should be good aeration, no corrosively gas or strong disturbing magnetic field, far away from central heating, camp stove and other hot resource. Don't put the instrument in wet and dusty place. The vent on the instrument is designed for aeration. Don't wall up or cover the vent in order to keep from high temperature. If you use the more than one instrument the same time, the distance between them should be more than 100cm.



Power off when you finish your work. Pull off the connector plug when there's long time no use of the Instrument and cover it with a cloth or plastic paper to prevent from dust.



Pull the connector plug from the jack at once in the following cases, and contact the vendor:

- There is some liquid flowing into the instrument;
- Drenched or fire burned.
- Abnormal operation: such as abnormal sound or smell.
- Instrument dropping or outer shell damaged.
- The function has obviously changed.

### **3. The maintenance of instrument**

The rotor should be cleaned by the cloth stained with a little alcohol. If there are smutches on the instrument, clean them by soft cloth stained with cleaning cream.

# **CONTENTS**

<b>CHAPTER 1 INTRODUCTION -----</b>	<b>1</b>
<b>CHAPTER 2 SPECIFICATIONS -----</b>	<b>2</b>
1. NORMAL OPERATION CONDITIONS: -----	2
2. THE BASIC PARAMETERS AND CHARACTERISTICS -----	2
<b>CHAPTER 3 BASIC INSTRUCTIONS -----</b>	<b>3</b>
1. STRUCTURE OVERVIEW -----	3
2. OPERATION PANEL -----	4
3. DISPLAY -----	4
<b>CHAPTER 4 OPERATION GUIDE -----</b>	<b>5</b>
1. LYSING KITS -----	5
2. PROGRAM SELECTION -----	7
3. PROGRAM SETTING -----	7
4. RUNNING AND ENDING PROGRAM -----	8
5. MOTOR OVER TEMP PROTECTION -----	8
6. GRINDING BEADS SELECTION -----	9
7. SAMPLE PREPARATIONS -----	10
<b>CHAPTER 5 TROUBLESHOOTING GUIDE -----</b>	<b>11</b>
<b>ANNEX: WIRING DIAGRAM FOR HOG-24 HOMOGENIZER -----</b>	<b>12</b>

## Chapter 1 Introduction

HOG-24 is a homogenizer for biological samples, three-dimensional vibration with high speed, can handle 24 samples at the same time.

### Features:

- Can brake and crack most of biological samples (animals, plants, human tissue, Soils, yeast, spore, microorganism and etc) .
- Handle 24 sample within several dozens seconds.
- 50 adjustable programs, choose different programs for different samples.
- Running will be stopped automatically when the high strength PC cover open, making operation safe.

## Chapter 2 Specifications

### 1. Normal operation conditions:

Ambient temperature: 5°C ~ 35°C

The relative humidity: ≤70%

Power: AC100-240V ~ 50-60Hz

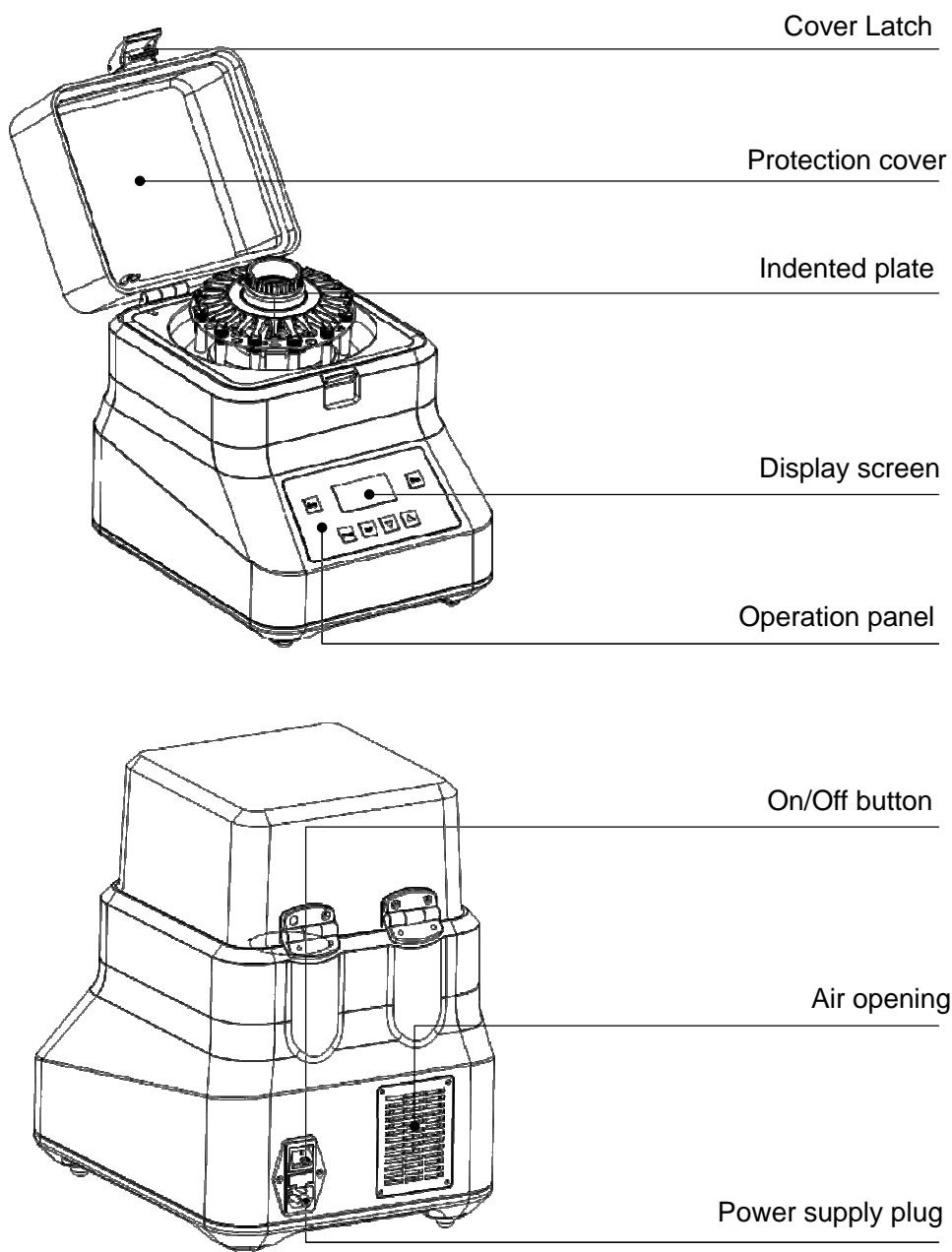
### 2. The basic parameters and characteristics

Parameter \ Type	HOG-24
Display	OLED
Speed	4.00m/s~7.00m/s, Increased by step 0.05m/s
Cycle duration	1s~ 9min59s, Increased by step 1s
Pause	1s~ 9min59s, Increased by step 1s
Number of Cycles	99
Programs	50
Sample Size	24 X 2ml tubes
Acceleration time	<4s
Deceleration time	<4s
Noise	<70 db
Power	500W
Dimension(WXDXH)	280mm×360mm×385mm
Weight (kg)	25.0kg

## Chapter 3 Basic Instructions

This chapter focuses on the introductions of the structure, operation keys, and displays of the instrument, as well as preparatory work before starting. Please read this chapter before starting when uses this instrument for the first time.

### 1. Structure overview





## 2. Operation panel



**Prog.** Works with ▲▼ to select the desired program.

**Set** Set Speed, Run time, Cycle and Pause time for current program.

▲▼ Modify parameters

Run Run program

Stop Stop program

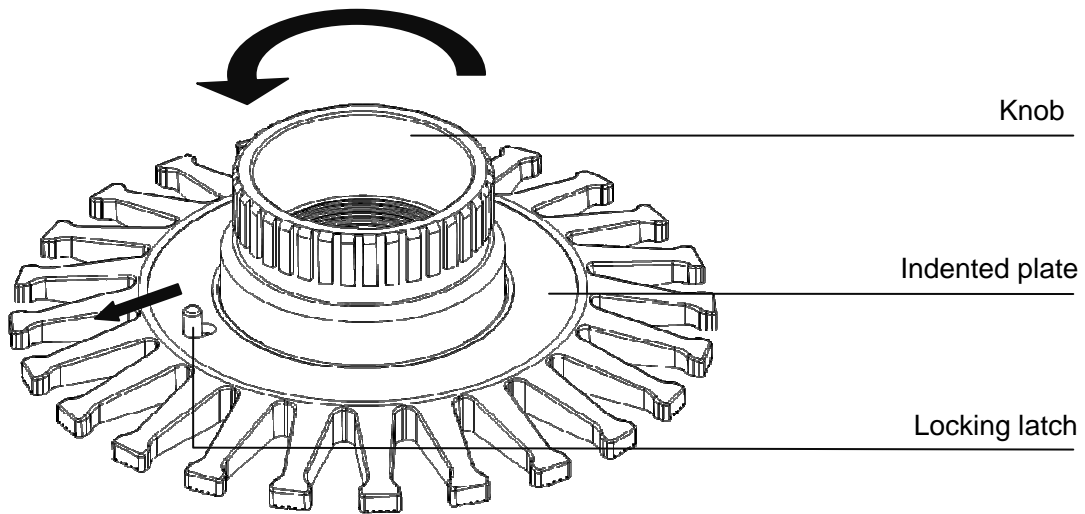
## 3. Display

PROG: 01	28□	○	
6.50	SPEED M/S	03	CYCLE
0:30	TIME M/S	0:30	INTER.. M/S

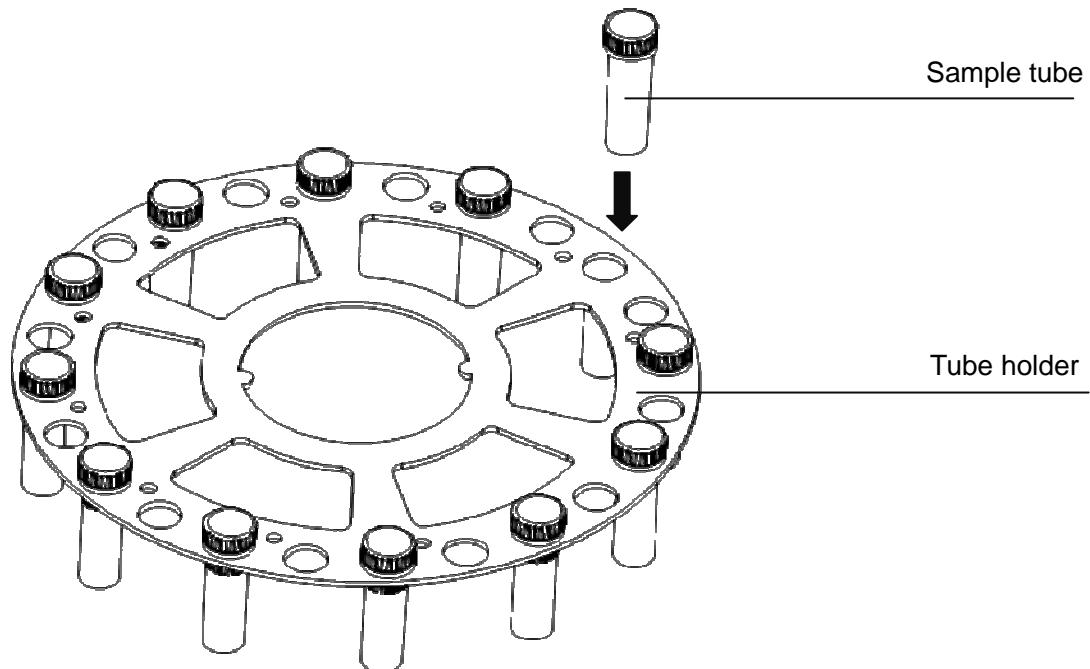
## Chapter 4 Operation Guide

### 1. Lysing kits

1.1 Pull out the locking latch, turn the knob anticlockwise and take out the indented plate.

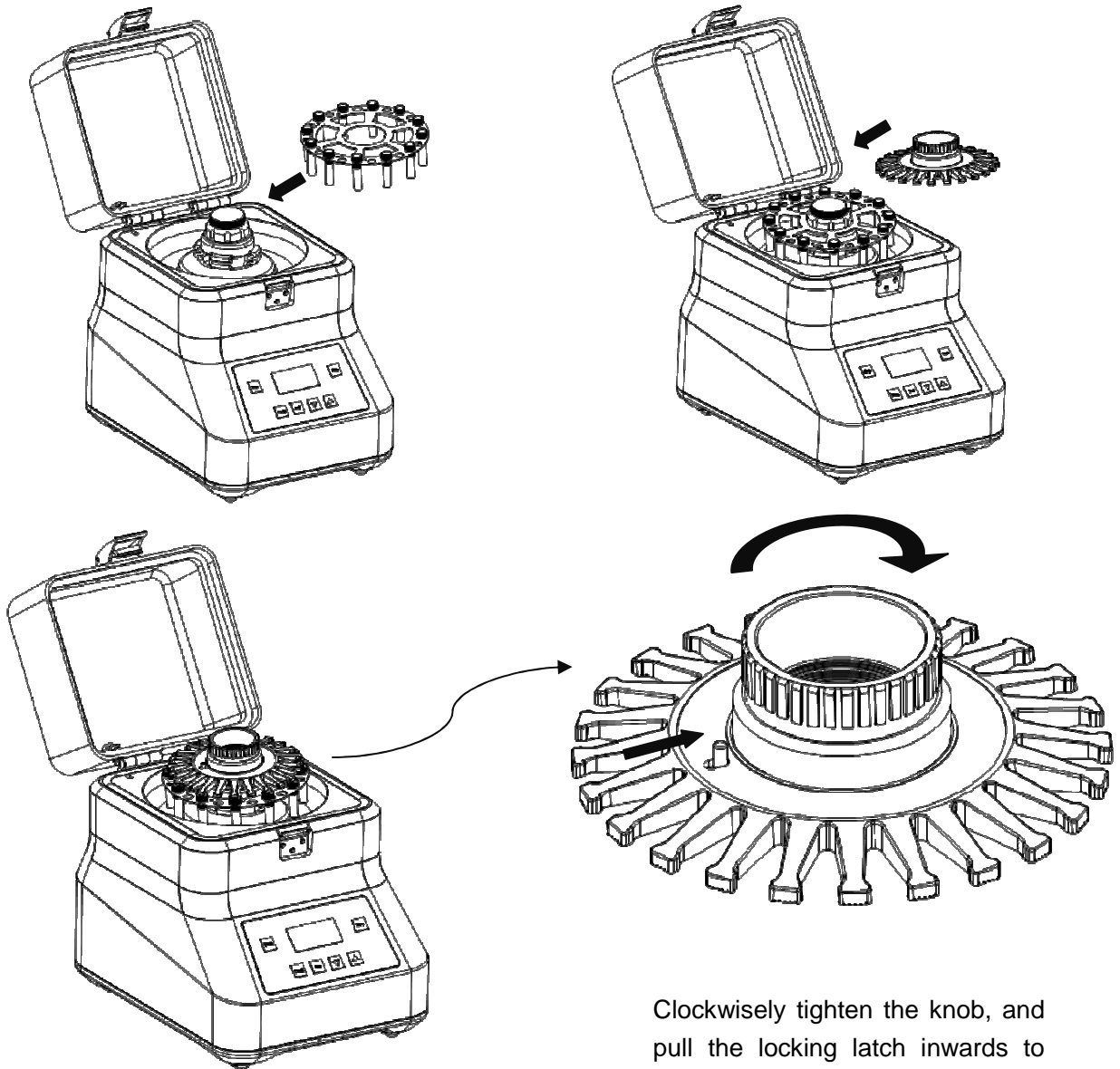


1.2 Take out the tubes holder, completely pressed the sample tube into tubes holder, and the sample tube should be evenly distributed in each experiment.



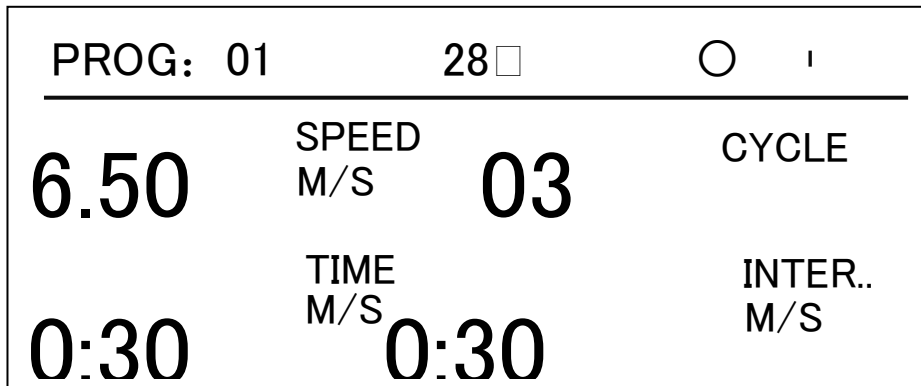
1.3 Take turns in putting tubes holder & indented plate, clockwise tighten the knob, and push the locking latch inwards, “Da...” sound indicating that the locking latch is in place. If the locking latch cannot be pushed inwards, please turn the knob for 5 degrees and push again.

**Note:** The locking latch must be pushed in “LOCK” place.



1.4 After the sample tube installed well, close the protection cover, and switch the cover latch, then run program.

**2. Program selection**



Users can use 50 programs, press “Prog.” key, work with “▲” or “▼” to select predefined program numbered 1-50.

**3. Program setting**

Step 1: Press “Set” key once, SPEED in display flashes, then press “▲” or “▼” to set the speed.

Step 2: Press “Set” key once, CYCLE in display flashes, then press “▲” or “▼” to set the cycle.

Step 3: Press “Set” key once, TIME in display flashes, then press “▲” or “▼” to set the run time.

Step 4: Press “Set” key once, INTER in display flashes, then press “▲” or “▼” to set the pause time.

3s later, the setup values will be automatically confirmed.

**Operating Ranges for Parameter Adjustments**

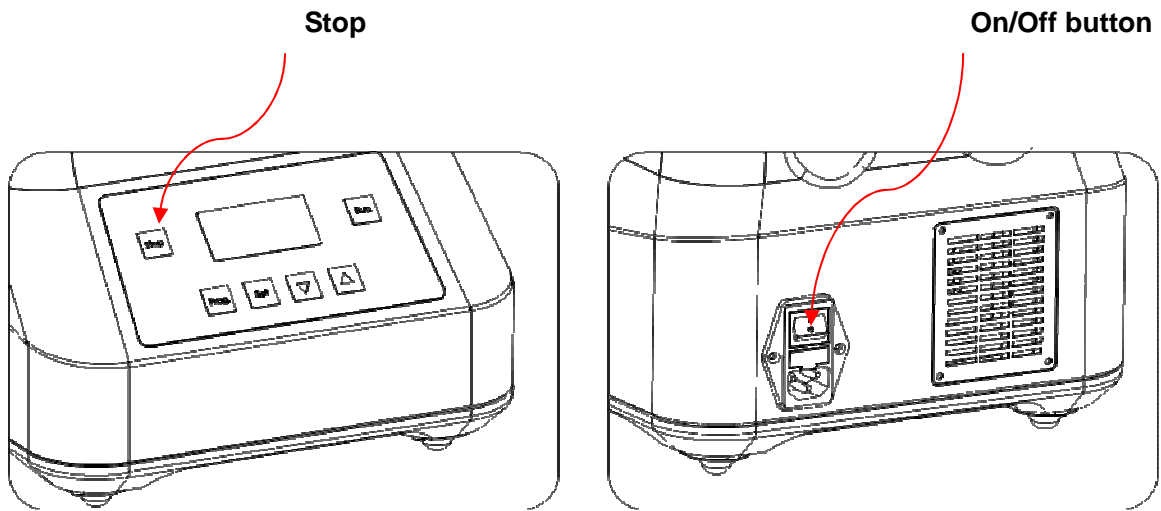
Speed	Run number	Run Time(S)	Pause(S)	Rest time between 2 consecutive runs
4.0m/s-4.5m/s	1 to 10	5 to 90	5 to 120	2 to 5min
4.6m/s-4.9m/s	1 to 3	5 to 90	5 to 120	2 to 5min
5.0m/s-5.9m/s	1 to 3	5 to 60	5 to 120	5min
6.0m/s-7.0m/s	1 to 3	5 to 30	30 to 120	5min

**4. Running and ending program**

Press “Run” to run the program.

Press “Stop” to end the program.

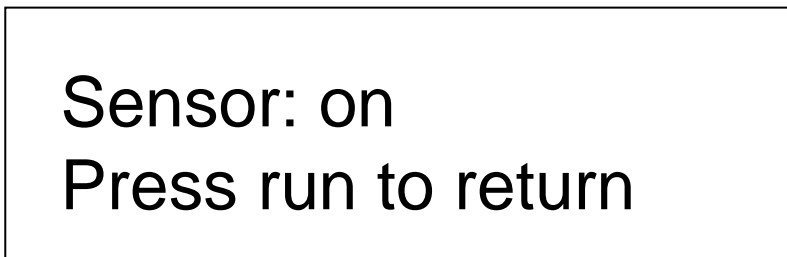
**Tips:** If there is *abnormal noise* during the operation, please press “*Stop*” at once to stop running, or turn off the *On/Off button* on the back of the instrument directly.



**5. Motor over-temp protection**

The instrument has motor over-temp. protection. The temperature displayed is the temperature of motor. When the motor temperature exceeds 61℃, the build-in cooling fan starts automatically to reduce the temperature of motor. When the motor temperature had been higher than 65℃, the instrument cannot run till the temp. dropped to below 60℃.

Motor over-temp. protection can be closed, simultaneously press “Prog” and “Set”, message displayed as follows:



Press “▲” or “▼”, Sensor can be set as ON or OFF. If set “OFF”, cooling fan has been started, and the display will not show the temp of motor.

## 6. Grinding beads selection

Application		Lysis		RNA	Homogenize			Grinding
Bead materials		Glass beads	Glass beads	Carbonized beads	Ceramic beads	Ceramic beads	Garnet beads	Metal beads
Beads diameter		0.1mm	0.5mm	0.25mm	1.4mm	2.8mm	0.70mm	2.38mm
Sample volume		2mL	2mL	2mL	2mL	2mL	2mL	2mL
<b>Microorganism</b>	Bacteria	√	√	√				
	Yeast		√	√	√			
	Fungus	√	√	√				
	Spore	√	√	√				
<b>Animal</b>	Skin				√	√	√	√
	Nerve				√	√		
	Artery					√	√	
	Intestinal					√	√	
	Tumour					√	√	
	Muscular				√	√	√	√
	Brain				√	√	√	
	Liver				√	√	√	
	Kidney				√	√	√	
	Lung				√	√	√	
	Heart				√	√		√
	Bone					√		√
	Hair					√	√	√
	Cartilage					√		√
	Cornea				√	√		
<b>Fish, Insect</b>	Insect				√	√		√
	Zebra fish		√		√		√	
<b>Plant</b>	Leaf					√	√	√
	Seed					√		√
	Paddy					√		√
	Wheat					√		√
	Stem					√		√
	Root					√		√
	Mousses				√	√		√
<b>Soil</b>	Soil			√	√	√	√	√
	Sediment			√	√		√	√

- General rules for Grinding beads selection: The higher of the sample's hardness and toughness, the greater density and diameter of the beads should be selected.
- No absolute selection for beads, a sample can also apply to a variety of beads.
- Glass beads are usually selected most as grinding beads for its reasonable price and can

meet the general experimental needs.

- Researchers tend to choose beads closed to sample particle size, and those with greater density will be the first choice.
- Beads of same material but with different diameter can be matched to use by volume.
- Beads can be used repeatedly in a limited range. When cleaning, don't use acid, only need to soak overnight, then washed repeatedly with tap water, and finally rinsed by pure water.

## 7. Sample preparations

As heat generated by grinding process will make part of sample tissue damaged, we recommend: After putting the sample into the sample tube, please preserve the sample for 12 hours at low temperature (below  $-60^{\circ}\text{C}$ ), then take out for grinding to make the effects achieve the best.

## Chapter 5 Troubleshooting Guide

### Problems and actions

No.	Common problem	Possible cause	Action(s)
1	No display on the screen	No power on the main power plug	Check power supply and plugged properly
		On/Off button broken	Change button
		Faulty fuse	Change fuse (5X20 250V 10A)
		Others	Contact the supplier
2	"Error: lid" displayed, alarming "Du..."	Faulty button - protection cover	Contact the supplier
3	"open" displayed, alarming "Du..."	Motor over temp protection- open circuit	Contact the supplier
4	Instrument cannot run	Motor temp above 65°C	Running recovered till temp drops to below 60UÔ
		Faulty Controller	Contact the supplier
		Faulty Motor	
5	Abnormal running noise	Faulty Bearing	Contact the supplier
6	Keys don't work	Plug connector loose	Contact the supplier
		Faulty key	Contact the supplier



**Annex: Wiring Diagram for HOG-24 Homogenizer**

(for reference only)

