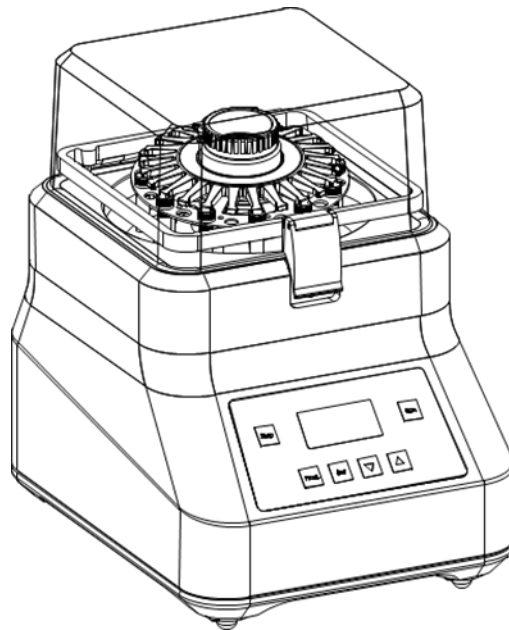


# Instruction Manual

## **HT 24<sup>TM</sup>** **BM-D2400** **Homogenizer**



## **Foreword**

**Thank you for purchasing a HT 24™ Homogenizer. This manual contains instructions for the proper operation and care of this instrument. Please read it carefully before operation and keep it available for future use.**

**Prior to initial operation:**

**Please check the instrument and the accessories against the packing list when you first open the shipping carton. Report any damage, discrepancy, or missing items to the supplier immediately.**

# Safety Warnings and Guidelines

## 1. Important operation information:

Read this manual carefully before attempting to operate the instrument.



Read this manual prior to powering up the instrument. Pay special attention to the guidelines and directions below and be familiar with all safety warnings and guidelines.

## 2. Safety:

3. The operation, maintenance and repair of the instrument should comply with the basic guidelines and safety warnings below. Noncompliance may interfere with the useable life of the instrument and safety protection and may void the warranty.



Use this product indoors. Do not operate in a damp or wet environment.



Before using the instrument, read the manual carefully. This instrument is designed for use in laboratory environments and must be operated by skilled personnel with the appropriate training.



Do not attempt to open the casing or repair the instrument. Disassembly will void the warranty. If there is a service issue with the instrument, please contact the supplier.



Before operation, check to see that the voltage rating on the instrument matches your local voltage. The rated electrical load of the outlet should not be lower than that of the instrument's demand. If the power cord is damaged, it should be replaced. Do not place the power cord where it will have objects placed on it or where it will be walked on. When unplugging the instrument, do not pull the plug out of the socket by the cord.



Install the instrument in a cool, dry location free from dust, direct sunlight or strong lights. The instrument should be placed away from corrosive gasses, strong magnetic fields, and heat sources. Allow at least 4 inches on all sides of the instrument for proper air circulation. Be sure that the air vent at the back of the instrument is not blocked. If using two instruments, they should be placed at least 3 feet apart.



The power switch is located on the rear of the instrument. After use, the power to the instrument should be turned off. If the instrument will not be used for a long period of time, it should also be unplugged and covered with a cloth or plastic to keep it free of dust.



If samples are processed for an extended time period, many cycles or without a pause between cycles, thermal breakdown of the sample tube may occur. Be sure to follow manufacturers guidelines for lysing kits and tubes.



The instrument should be unplugged immediately and the supplier contacted in the event of:

- Liquid leaking into the instrument
- Smoke or fire
- Abnormal operation - ie sound or smell
- The instrument has been dropped or outer housing damaged
- Instrument function changes

## 4. Maintenance

The tube holder should be cleaned with a cloth dampened with a small amount of alcohol. The outside of the unit can be cleaned with a damp cloth or mild detergent if required.



Always disconnect power to the unit before any cleaning procedure. Do not apply cleaning solutions directly to the tube holder or chamber. Do not use corrosive agents while cleaning. Do not submerge the instrument.

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## Chapter 1 Introduction

The HT 24™ is a homogenizer for biological samples. It features high speed, three-dimensional vibration and has a capacity for 24 samples.

### Features:

- Can break and crack most biological samples (animal and plant tissue, soils, yeast, spores, microorganisms, etc.)
- Processes 24 samples in a minimal amount of time.
- On board memory for 50 programmed runs.
- Run stops automatically if the cover is opened.

## Chapter 2 Specifications

### 1. Normal operating conditions:

Ambient temperature: 5°C ~ 35°C

The relative humidity: ≤70%

Power: AC100-240V~ 50-60Hz

### 2. The basic parameters and characteristics

Parameter \ Type	BM-D2400
Display	OLED
Speed	4.00m/s~7.00m/s, in 0.05m/s increments
Cycle duration	1s~ 1min 30s, in 1s increments
Pause	1s~ 2min, in 1s increments
Number of Cycles	10
Programs	50
Sample Size	24 X 2.0ml tubes
Acceleration time	<2s
Deceleration time	<2s
Noise	<68db
Power	600W
Dimension(WXDXH)	280mm × 360mm × 385mm
Weight (kg)	25.0kg

### Speed Conversion:

**4.0 m/s = 2500 rpm**

**5.0 m/s = 3000 rpm**

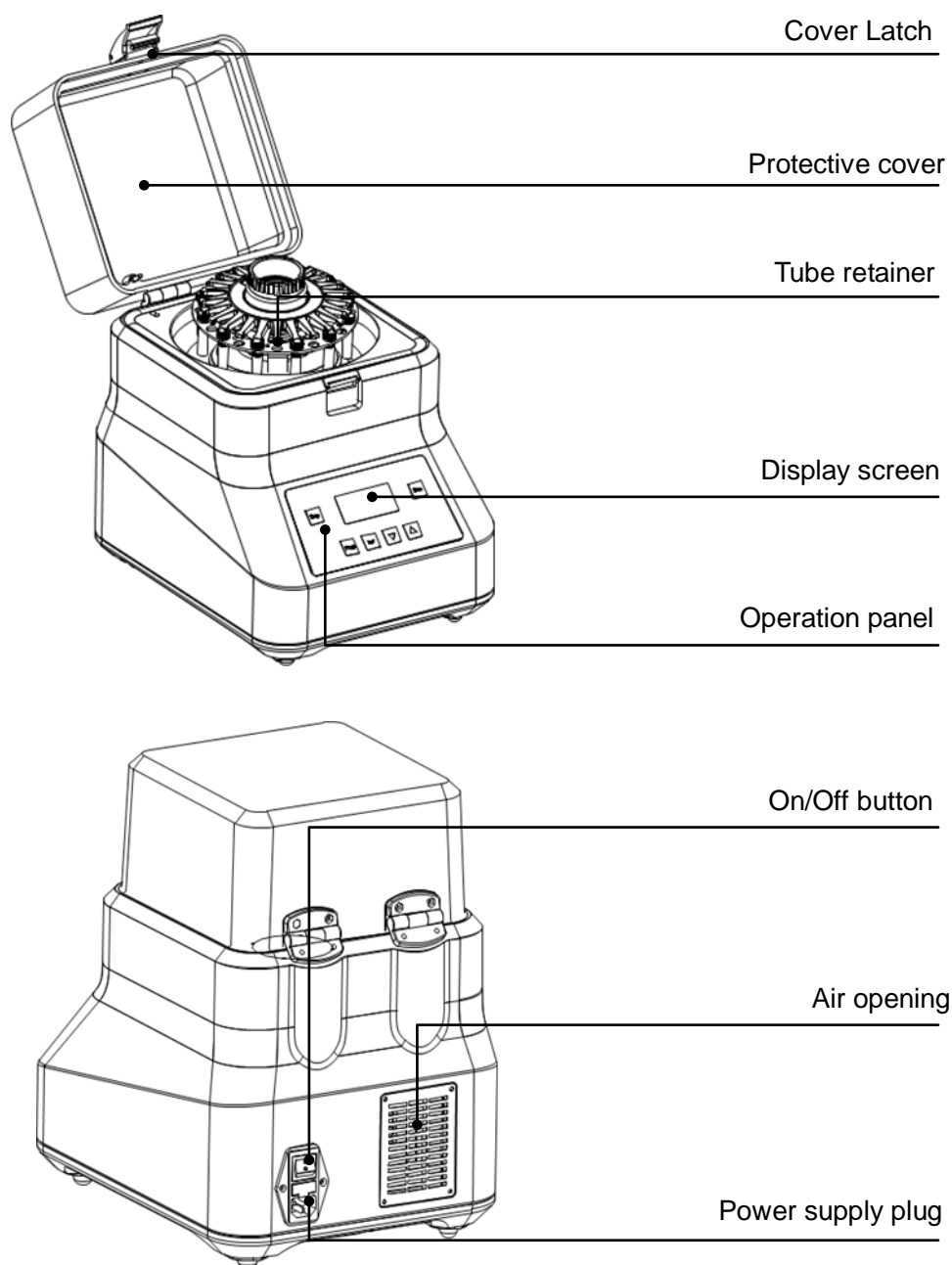
**6.0 m/s = 3600 rpm**

**7.0 m/s= 4250 rpm**

## Chapter 3 Basic instructions

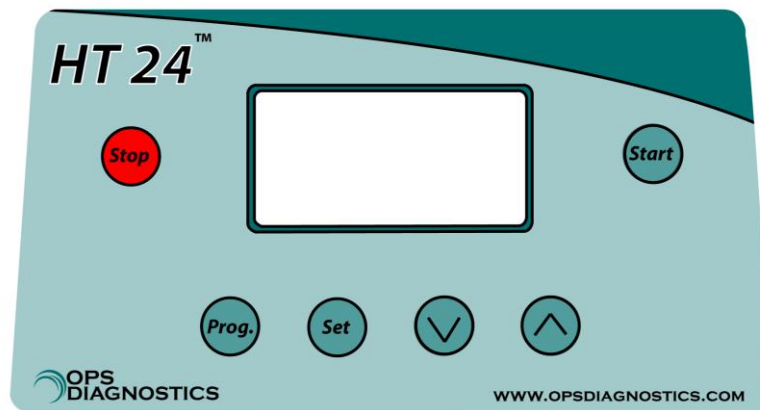
This chapter focuses on the structure, operation keys and display of the instrument, as well as preparatory work before starting. Please read this chapter before initial operation.

### 1. Structure overview





## 2. Operation panel



**Prog.** Use in conjunction with ▲▼ to select the desired program.

**Set** Set speed, run time, cycle and pause time for the current program.

▲▼ Modify parameters

**Start** Run program

**Stop** Stop program

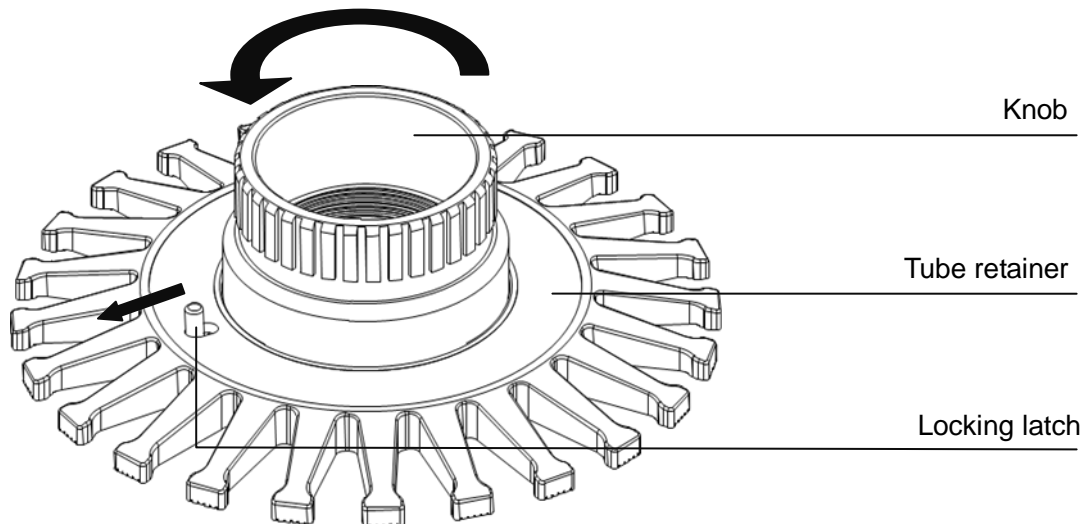
## 3. Display

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

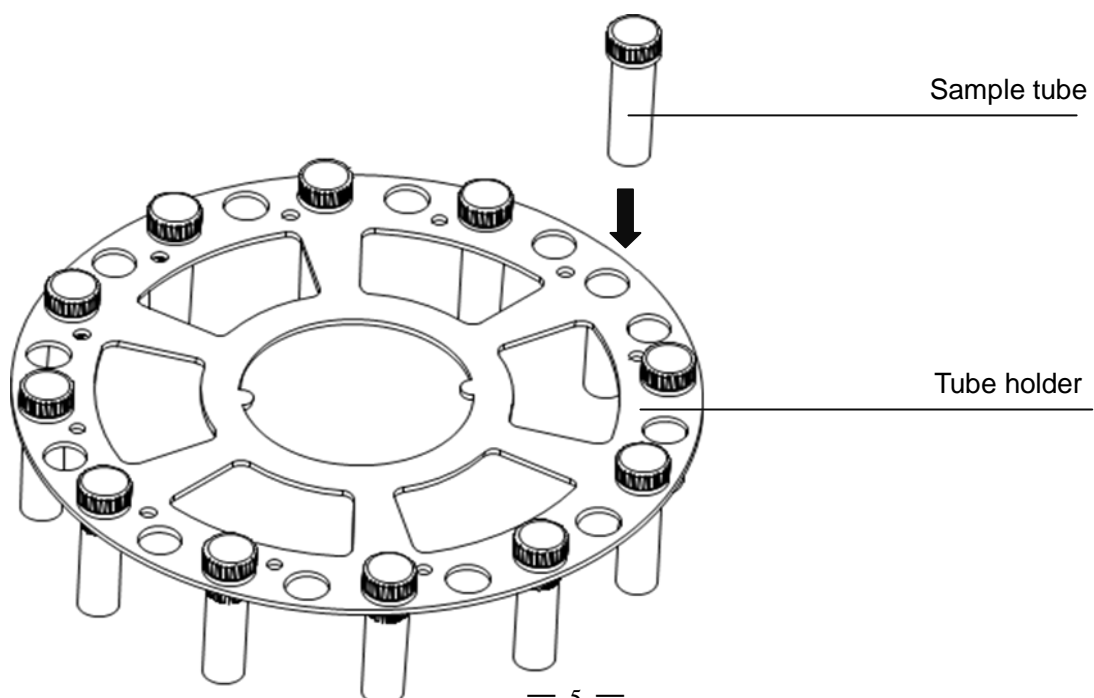
## Chapter 4 Operation Guide

### 1. Loading Tubes

- 1.1 Disengage the locking latch (as shown below), turn the knob counter-clockwise and remove the tube retainer.

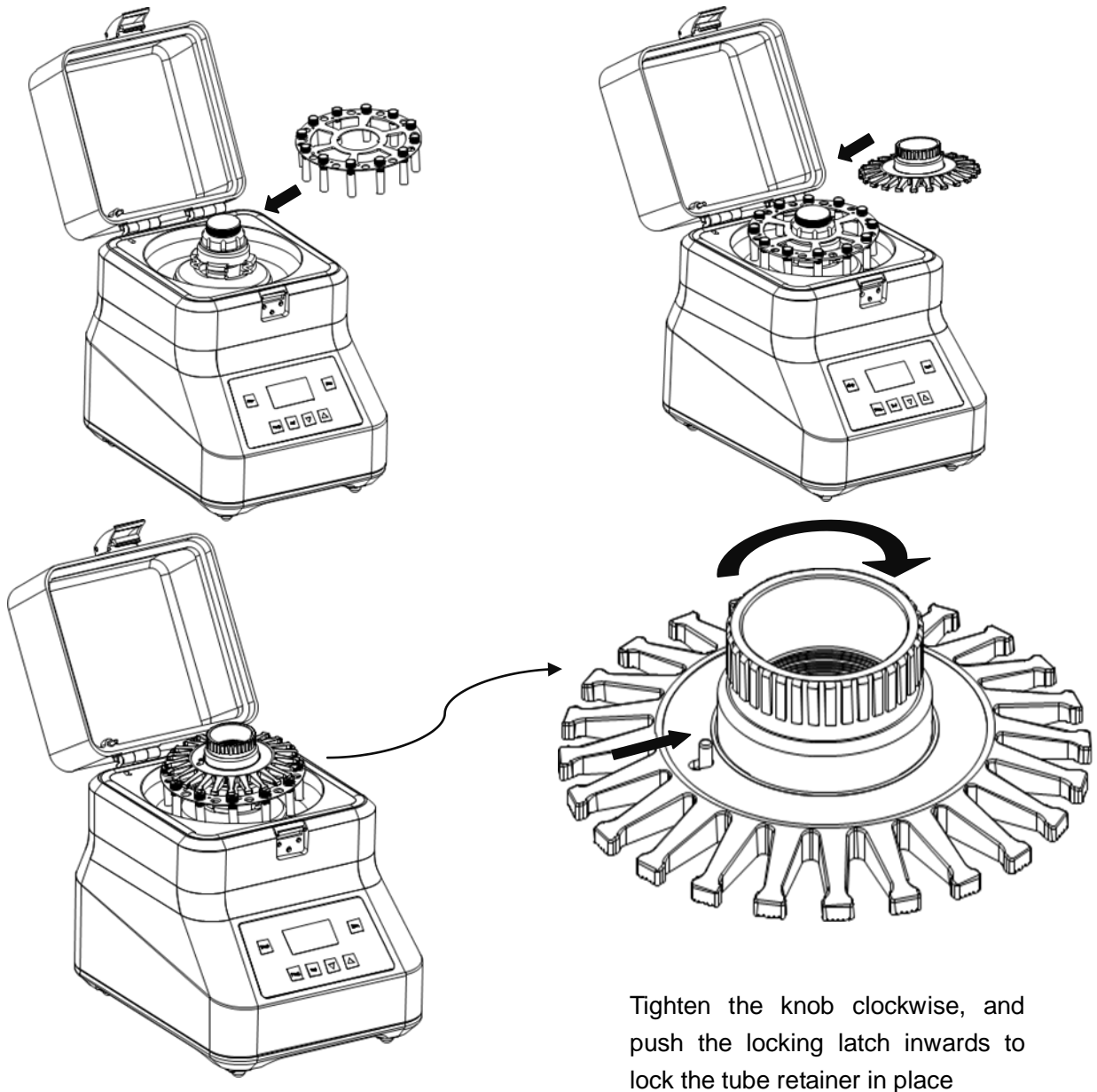


- 1.2 The tube holder may be filled in or out of the instrument. To remove, simply lift off the shaft. Place sample tubes into the tube holder and press down until seated. If less than 24 samples are used, they should be evenly distributed in the tube holder. If removed, the tube holder can then be replaced, making sure the two bumps on the holder line up with the indentations on the shaft.



1.3 Place tube retainer on top of the tube holder. Tighten the knob clockwise and push the locking latch inwards. A click will indicate that the latch is in place. If the latch cannot be pushed inwards, turn the knob 5 degrees and try again.

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



1.4 Close the cover and engage the cover latch. Operation can then begin.

**DO NOT ATTEMPT TO OPERATE THE UNIT WITHOUT THE TUBE RETAINER IN PLACE!**

## 2. Program selection

PROG: 01	28°C	O I
6.50	SPEED M/S 03	CYCLE
0:30	TIME M:S 0:30	INTER.. M:S

50 onboard programs are available. To access the programs, press and hold the “Prog.” key, and then use “▲” or “▼” keys to scroll through the programs. To change m/s to rpm, press “▲” and “▼” key simultaneously.

## 3. Program setting

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

Step 2: press “Set” key again, CYCLE in display flashes, then press “▲” or “▼” to set the number of cycles.

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

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

Values will be automatically be saved after 3 seconds.

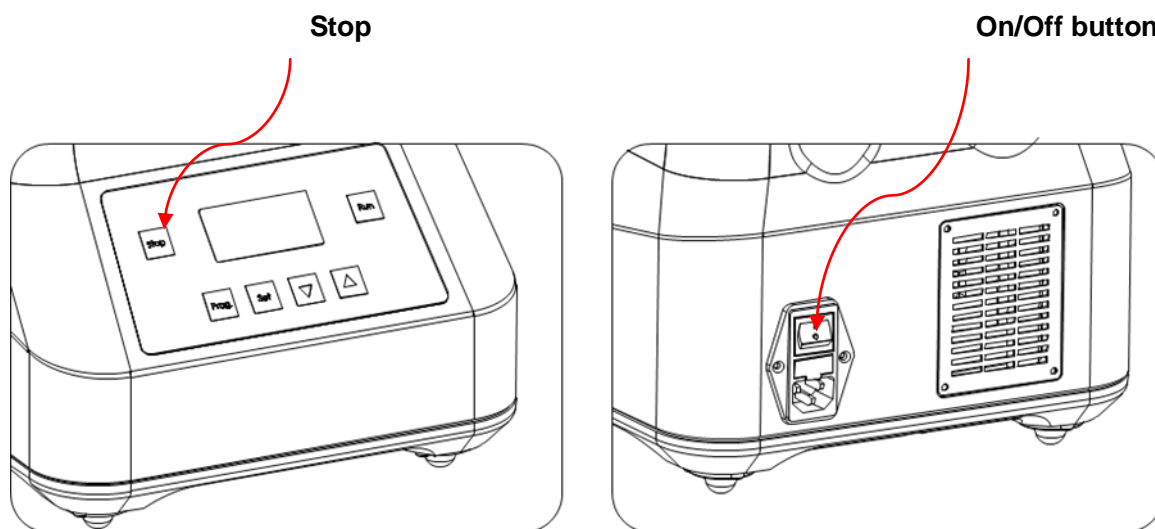
#### 4. Running and stopping programmed operation

Press "Start" to begin operation.

Press "Stop" to end operation.

**Note:** Before beginning operation, be sure that the tube retainer is in the proper position and locked in place.

If there is abnormal noise during operation, press "Stop" at once to stop running, or turn off using the On/Off switch on the back of the instrument directly.



#### 5. Motor over-temperature protection

An over temperature sensor protects the motor against damage. The display shows the temperature of the motor. If the temperature goes above 65°, the unit will shut down until the temperature has dropped below 60°C. The display of the motor temperature can be turned on or off. Press the "Prog" and "Set" keys simultaneously to display the following screen:

Sensor: on  
Press run to return

Press "▲" or "▼", to toggle between ON and OFF. Press start to confirm the selection. If set to "ON" the temperature of the motor will appear in the screen.

## 6. Bead selection

### Bead Ordering Information

Item Number	Description	Suggested Use
PFAW 100-100-01	100 µm Silica Beads	Bacteria.
PFAW 100-100-02	100 µm Zirconium Beads	Bacterial disruption (Zirconium beads are of higher density)
PFAW 200-100-03	200 µm Zirconium Beads	Bacteria & small yeasts, such as <i>Pichia</i> .
PFAW 400-100-04	400 µm Silica Beads	Yeast such as <i>Saccharomyces</i>
PFAW 400-100-30	400 µm Zirconium Beads	Yeast, single cell algae, biofilm
PFAW 800-100-05	800 µm Silica Beads	Molds and pollen
PFAW 800-100-29	800 µm Zirconium Beads	Molds, pollen, algae
PFAW 1000-100-21	1.0 mm Zirconium Beads	Disruption of finer soils
PFAW 1400-100-19	1.4 mm Zirconium Beads	Small tissue samples & biomass
PFAW 1700-50-16	1.7 mm Zirconium Beads	Large tissue samples and fine plant materials
PFAW 3000-50-17	3.0 mm Zirconium Beads	Larger tissue samples. Excellent chemical resistance to organics
PFMM 500-100-25	500 µm Garnet & 6 mm Zirconium Satellite Mixed Mode	Resilient tissue shredding: skin, sclera, hair
PFMM 800-100-27	800 µm & 1.4 mm Zirconium Beads Mixed Mode	Mycelium & Soft Leaves
PFMM 100-100-31	100 µm & 400 µm Silica Beads Mixed Mode	Mixed samples (yeast + bacteria)
PFMM 400-100-28	100 µm & 4 mm Silica, 1.4 Zirconium Mixed Mode	Biofilms & Plant Tissues
PFSS 2800-50-20	2.8 mm Stainless Steel Grinding Balls	Most dense of all the grinding media, great for tissues

## Chapter 5 Troubleshooting Guide

### Problems and actions

No.	Common problem	Possible cause	Action(s)
1	No display on the screen	No power	Check power supply and that unit is plugged in properly
		On/Off switch broken	Change switch
		Faulty fuse	Change fuse (5X20 250V 10A)
		Others	Contact supplier
2	"Error: lid" displayed, audible alert	Faulty button - protection cover	Contact supplier
3	"open" displayed, audible alert	Motor over temp protection- open circuit	Contact supplier
4	Instrument does not run	Motor temp above 65°	Wait for temp to drop below 60°
		Faulty Controller	Contact supplier
		Faulty Motor	
5	Abnormal running noise	Tube retainer not locked in place	Place tube retainer in place and lock down properly
		Faulty bearing	Contact supplier
6	Keys don't work	Plug connector loose	Contact supplier
		Faulty key	Contact supplier



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**Memo**