

HIGH SPEED CENTRIFUGES



Instruction Manual



Model : LMHS-40

Please read this manual carefully before using the instrument

Labnics Equipment

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CHAPTER 1. INTRODUCTION :

1.1 Specifications:-

| | |
|---------------------------|--|
| Model No. | LMHS-40 |
| Max. Speed | 13,000 rpm |
| Max. RCF | 13,982 x g |
| Max. Capacity | 20X1.5/2.0ml |
| Timer | 99 minutes 59seconds |
| Acceleration/Deceleration | 3 steps (Positive Action Break System) |
| Display | Digital type Speed, Time, Program, Breaking Steps |
| Power requirement | Single Phase, 220V/50, 60Hz |
| Dimension(W x D x H) | 270W x 355D x 280H mm |
| Weight | 14 kg |

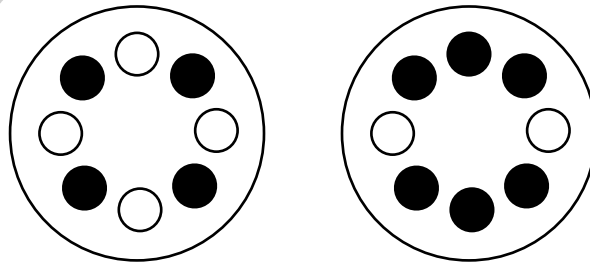
1.2 Caution:-

OVERSPEED

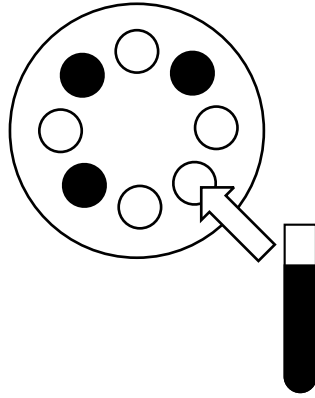
- Be sure that Rotor speed is not more than maximum rotation speed. Don't cross the maximum speed of rotor.
- When the rotor is subjected to relative centrifugal force over the allowed seal intensity, the destruction of rotor occurs because the shape of rotor is designed to be able to stand an external force in accordance with the allowed seal intensity of the rotor.

IMBALANCE OF CYTO-UNIT

Put the exact samples to be measured in each tube and load tubes symmetrically into the rotor, So that the tubes with equal volume are placed opposite to each other, otherwise serious turbulence will occur during rotation and the motor, rotor and the shaft gets damaged.



Tubes should be symmetrically loaded on the rotor.



If the numbers of tubes are not symmetrical, load another tube having same weight as other's have.

1.3 Safety Note:-

Power On/Off

An automatic circuit breaker protects the instrument circulation when it is overpowered in emergency situations, such as power surges, which could damage the unit.

DOOR

When door opens, the door limit switch by sensor makes the rotor be still.

IMBALANCE & VIBRATION

During rotation, if rotor is operated with imbalance over standard, motor also moves. In this case, the danger is detected by measuring the vibration of motor. With an alarm imbalance "LED" lit up and the rotation stops by preset deceleration level. Safety device as above keeps the instrument from an accident during operator's absence in Lab.

CHAPTER 2. NOTE FOR INSTALLATION:-

2.1 Location:-



Best Location

The rotating instrument should be set on the flat and solid surface. In the case of setting the instrument at the incline surface, it is possible the shaft become bent by the heavy weight rotor because of a long time of rotation in inclining of the shaft and ground.



AIR CIRCULATION

For the circulation of air, the distance of at least 30 must be observed around the centrifuge during operation. Avoid to set it on the dusty place.



TEMPERATURE & HUMIDITY

The centrifuge which is controlled by a high-tech microprocessor is affected by the external conditions such as temperature or humidity. If a room temperature is extremely high by the direct ray of light or heater, or very low, the accuracy and reliance of instrument are reduced by errors of electronic parts. Even the high humidity makes the corrosion of rotor or parts. A proper temperature and humidity should be maintained accordingly.



AVOID CORROSIVE GAS

Place the centrifuge at the place which the corrosive gas can't occur. If there is sulfur dioxide or chlorine gas in atmosphere, it causes a corrosion of rotor and shaft, and cause great damage of metals.

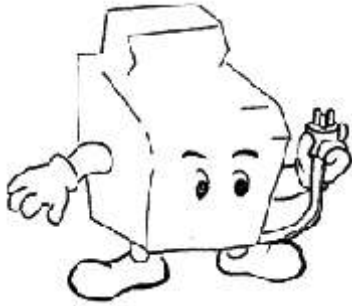
2.2 Balance:-



BALANCING

The shaft has to be perpendicular to the ground. The shaft has to be perpendicular to the ground. At this time, a balancing gauge should be placed on the head part, mounting rotor on the instrument. If you measure a balancing gauge not on the shaft but on the main body of the instrument. It can't support the shaft to be rotated normally.

2.3 ELECTRICAL REQUIREMENTS:-

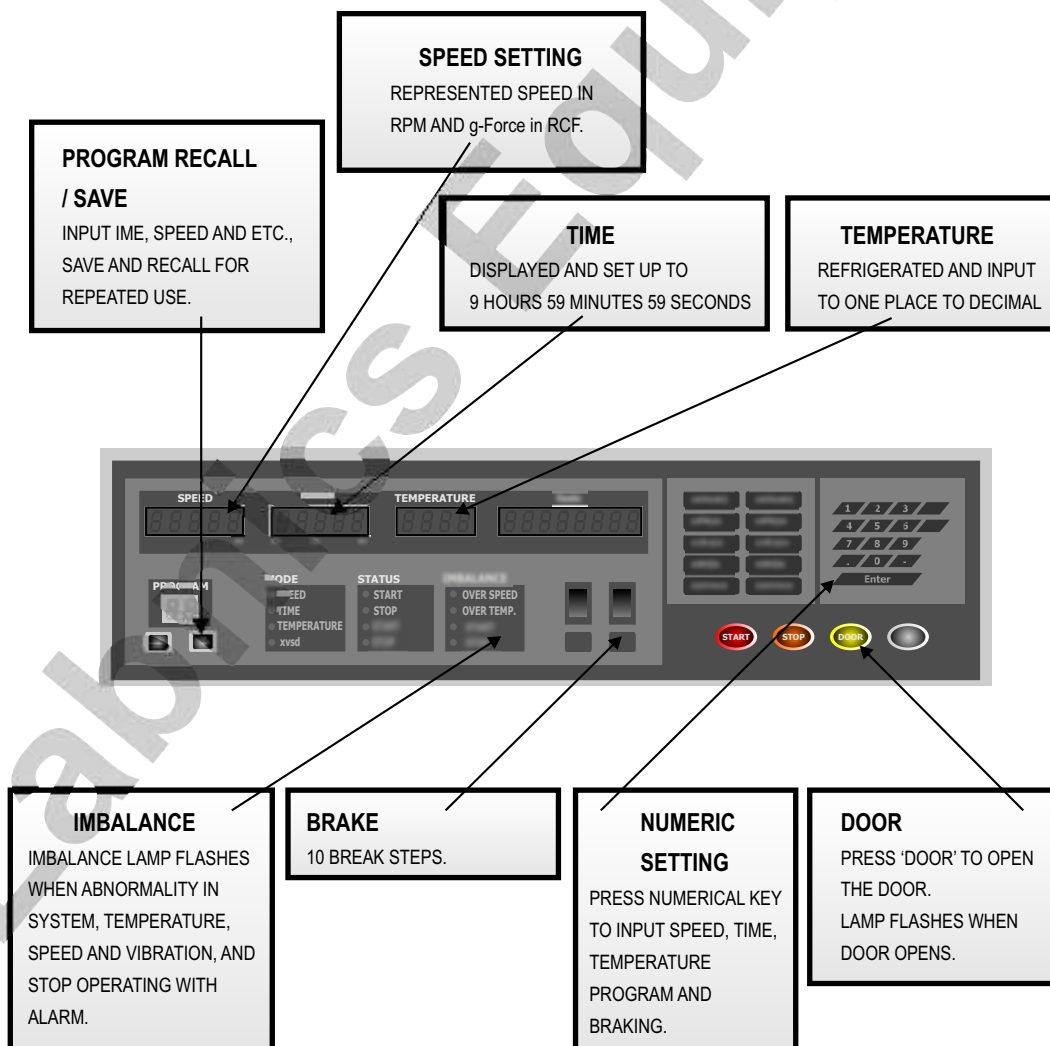


POWER REQUIREMENT

The standard power requirements are a single phase and 220V but those are changeable depending on User's request. Therefore, plug in after checking the name plate located on the rear panel. Be sure not to be three phases.

CHAPTER 3. PARTS DESCRIPTION:-

3.1 Control Panel:-



CHAPTER 4. OPERATION PROCEDURE:-

4.1 Standard Operation-

1. Power Supply

- Turn on the main power switch at the back of the instrument.
- Turn "on" the keys switch located in front of the instrument.

2. Input desired setting parameters.

- Set the desired data for RPM, Time, Temp. Brake system
- Press the control button to change the data for speed, time, temperature and so on.
- Input desired parameters.
- Press "Enter" button after inputting the data.

3. Press "start" button to run the instrument

- Press "start" button to run the unit without changing any parameters such as rpm, time and temperature. The refrigeration system will run to calibrate temperature and the rotor will not run when the actual temperature is not in the temperature limit range.
- The centrifuge will start to decelerate when it reaches the time limit. Door will open when it stops and setting parameters will be displayed. Press the "stop" button to stop operation.

4.2 Programmed Function:-

1. Speed (RPM) :-

- When you set the desired speed, press the "RPM" key and set it by the up-down direction key.
- After that, press the "Enter" key. It is not possible to input higher speed than max.speed. This is to prevent the accident by overspeed.

2. RCF (x g) :-

- To calculate the Relative Centrifugal Force, it is made to calculate automatically RCF to Speed by using the Maximum Radius.
- RPM and RCF are calculated mutually so if RPM is input, RCF is calculated automatically and if reversely is same like above. It is like either during operation.

SETTING-

- Press the RCF key and input the data by using up-down direction key. After that, press the Enter key.

3. Time :-

- The display range of time is 99mins and shows the 2 digits.
- The change of time counts down from setting time after running.
- Timer is proceeding by a unit of 1 minute and under 1 minute is used with a unit of second.

SETTING-

- Press the "TIME" key.
- When Alarm sounds, it is possible to set.
- Input the desired time by using the up-down direction key.
- If you input the wrong data, Press "T" key and re-input the correct data.
- Press the "Enter" key and if the "Start" key is pressed, it starts to count down, and decelerate after over setting time. In one minute, it is showed as a second unit.

Free run: You can use the "Free run" function for long time operation. For that, input the "0" in display of time and start to run.

4. Declaration :

- 3 Steps: High, Middle, Low

-SETTING-

- Press the "Brake" key. Whenever the brake key is pressed, the lamp of H, M, L light on and the level of brake is changed.

5. Program Save :

- 10 Programs all can be saved and the range is 0 to 9.
- The data of RPM/Time, etc are saved in Program function.

-SETTING-

- The desired data should be input by up-down key.
- If press the program, the lamp of "P" key lights on with sound and press "Enter".

6. Calling :

- The program saved between 0 to 9 can be called.

-SETTING-

- Press the "Program" key to call the program saved before.
- When the lamp lights on "P" key with alarm, press the "P" again and turn off the lamp and alarm. After that, input the number to be called by up-down direction key and press the "Enter" key.
- At that time, the data of the pertinent program is showed.

7. Imbalance :

- When the rotor loses the balance of normal standard and vibrates seriously, Imbalance LED turns "ON" with the alarm and stops according to Decel Time as a pre-input.

8. DOOR:-

- To open the door, turn the dial on the right side of the instrument.
- When the door closes, "Door" lights off and when the door opens, the "Door" lights on.
- Close the door and press the "Start" key.

Caution! : Don't open the door during the spinning.

CHAPTER 5. MAINTENANCE:-

This chapter explains how to keep your unit in good operating order.

It includes instructions for cleaning, decontaminating and storing. This chapter also covers the cover interlock by pass.

Care and cleaning:

Keep your centrifuge clean, to ensure good operation, and to extend its life.

Clean the sample chamber, rotor and lid at the end of each work day and immediately after any spill. To clean the chamber, use a damp sponge, warm water, and a mild liquid detergent, suitable for washing dishes by hand. Don't use caustic detergents or detergents that contain chlorine ions. These attack metals.

Remove stubborn stains with a plastic scrub pad. Don't use steel wool, wire brushes, abrasives, or sandpaper. They create corrosion sites. Never pour water directly into the rotor chamber. Scrub the rotor's tube cavities with a stiff test tube brush that has end bristles and a non-metallic tip. Dry each part, after cleaning, with a clean, absorbent towel.

If glass breakage occurs, remove all broken glass embedded in the plastic or rubber accessories.

Glass particles can come in contact with new glass tubes, creating pressure points that may result in breakage recurring. Glass particles, in the chamber, grind to a fine gray dust, during centrifugation.

This dust can coat the inside of the centrifuge.

Storage

Store parts on a soft surface, to avoid damage.

Rotors and other parts should be clean and dry. Store them opened to the air, not in a plastic bag, so that any residual moisture evaporates. Face the parts upward to avoid moisture retention in the cavities.

SERVICE REPORT

Customer's Address : _____

Tel.No.: _____

Fax No.: _____

Weekly Off.: _____

Contact Person / Designation : _____

Dept.: _____

| Date | Time | | System Configuration | Model | Serial No. | Date : | SR. No. |
|------|------|----|----------------------|-------|------------|--|-----------------------------------|
| | From | To | | | | Status : OK <input type="checkbox"/> | Not OK <input type="checkbox"/> |
| | | | | | | Installation <input type="checkbox"/> | Warranty <input type="checkbox"/> |
| | | | | | | Demonstration <input type="checkbox"/> | |
| | | | | | | Maintenance <input type="checkbox"/> | Contract <input type="checkbox"/> |
| | | | | | | Repairs <input type="checkbox"/> | |
| | | | | | | Application <input type="checkbox"/> | Billable <input type="checkbox"/> |
| | | | | | | Calibration <input type="checkbox"/> | |
| | | | | | | Validation <input type="checkbox"/> | Courtesy <input type="checkbox"/> |

Nature of Problem : _____

Observation & Action Taken : _____

Customer's Remarks : _____

Parts Replaced : _____

Parts Recommended / Action Required : Yes No Requisition Number : _____

| | |
|-------------------------------------|--|
| Service Engineer's Name & Signature | Customer's Name, Signature, Date & Stamp |
| | |
| | |



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