

EICKEMEYER® LABORATORY CENTRIFUGE

USER MANUAL



Item no. 718200

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veterinary technology for life
Eickemeyer®

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Safety information

Your EICKEMEYER® Table Top Centrifuge has been designed with functions, reliability, and safety in mind. This manual contains important operation and safety information. The users must carefully read and understand the contents of this manual prior to installing your centrifuge in conformance with your local electrical codes.

Classification: This Centrifuge is classified as “Class I” equipment. **Thermal cutout operation temperature: 105°C**

CE marking: The manufacturer also declares the conformity with the safety requirements in accordance with IEC/EN 61010-1

Standard:

- This equipment complies with EC Electromagnetic Compatibility requirement of IEC/EN 61326-1:2013. EMI filter is designed in conformity with 2004/108/EC -EMC Directive.
- ISO9001+13485,
- GMP (Good Manufacturing Practice), USFDA registered (USA)

Products briefing:

This equipment is a Class 1 tabletop centrifuge with timers of 60 minutes maximum and a speed control knob. The motor has a max speed of 4000 – 4500 rpm and fitted with a thermal cut-off to cut the power in abnormal temperature condition. There is no heating element. The power cord is non-detachable. Two PC boards are installed, one is for power filtering and another one is for the speed control.

Motor: AC, carbon brush, your choice of 67W or 90W

Power: 115V/60Hz/1.6A or 230V/50Hz/0.7A

rotor : 45° fixed angle rotor

Lifespan of carbon brush:

1. 67W motor: 505 hours
2. 90W motor: 1086 hours

(Subject to the using frequency and local power supply stability)



WARNING: All spare parts replaced must be from the origin EICKEMEYER®, other supplying sources may damage this centrifuge absolutely.

Intended use:

This centrifuge is Class 1 medical device. It provides a desired testing within 1000 – 5000 rpm in clinical laboratory to separate the components of suspensions through low-or medium-speed centrifugal force. It is also used for all levels of health care with laboratory. Applied to clinical laboratory, histology, haematology, immunology, microbiology, pathology, serology and toxicology.

Installation:

1. Strip the packing materials
2. Open the cover of the carton box and remove the artificial form
3. Carry the centrifuge carefully from the carton box;
4. Remove the plastic bag from the centrifuge;
5. Place centrifuge onto a sturdy and flat table.
6. Do not drop the equipment nor place the equipment upside down.

Safety Related Labels:



Protective earth ground terminal



Biohazard symbol

Power Cord: 3-wire (CSA type, SVT 105°C, 18AWG x 2C)

Content: Rotor, Carbon Brush, Fuse, Adaptor, Power Cord.

Definition:

- **g Force**

The measurement for samples undergoing the stress of acceleration in a centrifuge.

- **RCF (Relative Centrifugal Force)**

RCF is the centrifugal force that the samples undergoes which relies on the speed of rotation (**N**) in rpm and the rotating **radius** (cm) (**R**) . The rotating radius is measured from the center axis of rotor to the extreme end of the centrifuge tubes.

Formula: $RCF = 11.18 \times R \times (N / 1000)^2$

A-0815: Ø 21.1cm; $RCF = 11.18 \times 10.55 (R) \times (4500/1000)^2 = 2388 \times g$

A-1215: Ø 22.7cm; $RCF = 11.18 \times 11.35 (R) \times (4000/1000)^2 = 2030 \times g$

Introduction to Centrifugal Tubes and Tube Adaptors

- **Round bottom :**

Have a uniform wall thickness and provides a better fit in a rotor than conical bottom tubes. Round tubes withstand higher g-forces.

- **Conical bottom :**



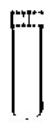


Ideal for cell culturing and ammonium sulfate precipitations.

1. All centrifuges have come with the tube holders, in which a rubber cushion is installed inside the tubes.
2. The tube adaptor is applied to the volume either 10ml or 15ml.
3. Do not place the cushion upside down or in a slant position.
4. Replace the cushion once the glass tube is broken.

Multipurpose of tube adaptor



Tube number applied to centrifuge:

Volume		10~15ml 17x120		10~12ml 17x100		8.5~10 16x100		4~8ml 13 x 66		4~8ml 13x100
Size										
PLC-01		4 tubes		4		4		4		4
PLC-02		2 tubes		6		6		6		6
PLC-03		4 tubes		8		8		8		8
PLC-04		4 tubes		10		10		10		10
PLC-05		6 tubes		12		12		12		12
Adaptor		17 x 88mm		17 x 88mm		17 x 88mm		14 x 66mm		14 x 66mm

Remarks: Any tubes within the size of adaptors are useful to this centrifuge.



Grounding

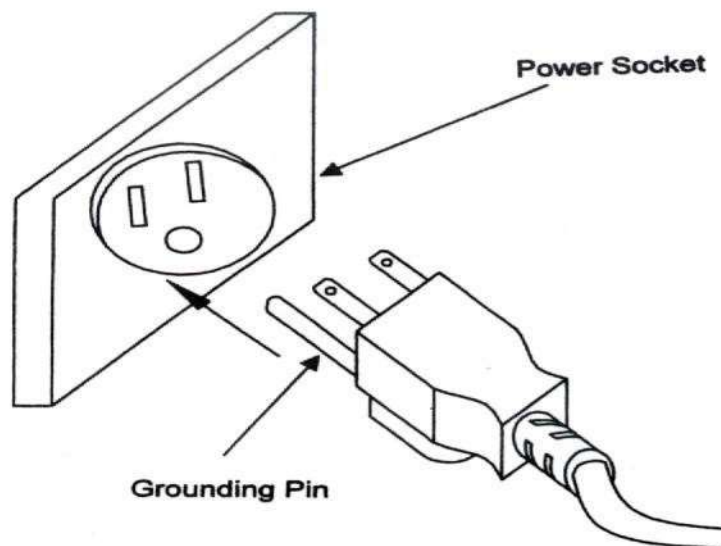
This centrifuge is installed with a 3-pin electric cable. Be sure to well connect the grounding wire to the terminal.



WARNING:

Do not connect the grounding pin to the following areas:

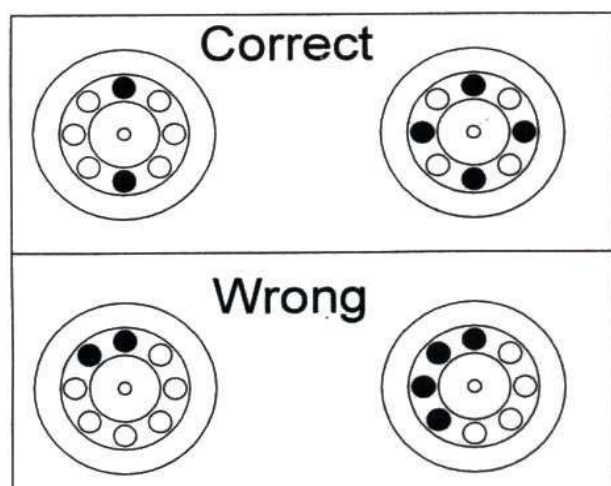
1. Gas piping or faucet
Explosion or fire may occur
2. Other wires of lighting
Electric shock or fire may occur
3. Other electrical applicants.
4. The AC power plug is served to disconnect power, thus not to position the Centrifuge to make it difficult to operate the disconnection of device.



HOW TO PLACE TESTING TUBES

The balance of rotor has been well calibrated in house thoroughly before delivery, the user is again requested to install the testing tubes in the correct way carefully prior to spinning this centrifuge as depicted below:

1. Place the testing tubes into the tube adaptors diagonally and symmetrically to balance the rotor. Please refer to the figure.
2. Place the testing tubes gathering on one single side will create imbalance of rotor, which may possibly break the glass tubes..
3. **Reminder:** If odd number (1 or 3) of testing tube is/are used, supplement another dummy tube to balance the rotor.



Specification:

Dimension	26 x 26 x 26.5cm approx.
Weight	8.0 / 9,5 kg approx.
Rotor	Fixed angle rotor
Timer (Mechanical)	60 minutes + HOLD
Speed	1000 ~ 4500rpm (or 4000rpm)
Standard accessory	Tube adaptors
Drive motor	AC, brush, choice of 67W or 90W
Quality standards	ISO9001, 13485, CE, GMP, USFDA
Safety Lid locking latch	Yes, shut out power

OPERATION:



Warning: Read and understand the operation procedure carefully before operating this centrifuge.

- Check the specification label located on back of this equipment.
- Plug cord in a properly grounded outlet.
- Place the test tubes into the tube adaptors. Be sure to place the tubes diagonally and symmetrically to keep the rotor balanced.
- Close the cover completely. NOTE. Locking latch is optional.
- Dial preset your desired time by turning the control knob for any spin interval from 0 – 60 minutes. This equipment is working by timer-activated operation.
- When turn clockwise the timer, the LED pilot lamp lights up at the same time, which indicates the power is connected.
- Adjust the control knob of speed regulator to bring speed to your desired operation speed and centrifugal force.
- This centrifuge does not include the speed indicator, the reference of speed and RCF is depicted below. Nevertheless, the user is recommended to measure the speed by electrical LCD tachometer in order to achieve a correct speed and RCF.
- User is recommended to fix and mark the speed and RCF setting for the next operation to save time.
- Speed and RCF varies slightly centrifuge to centrifuge.
- The bell rings and power shuts off automatically when the set time has elapsed and the pilot lamp will distinguish simultaneously.
- No braking facilities are functioning.



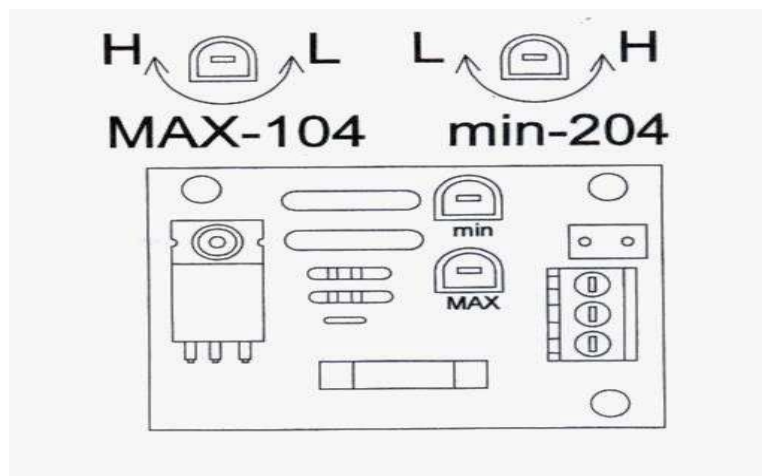
WARNING

- Do not open the lid only until the rotor has stopped completely.
- Do not stop the rotor by hand. There is possibility of personal injury.
- EICKEMEYER® will not ensure the responsibility if user violate the above regulation.
- If the equipment is used in a manner not specified by the manufacturer, the protection provided by the equipment may be impaired.

Recalibration Procedure for Speed:

This centrifuge was initially set by its speed from 1000 – 4500 rpm (or 4000 rpm for PLC-05) in house. Supposed that the min/max speed is varied, the Recalibration is then required as depicted below:

- 1 、 Remove the bottom plate, switch power on by turning timer clockwise.
CAUTION: Electrical Shock
- 2 、 Turn speed regulator to the extreme **LOW** position. Adjust part of SVR P2/204 (for the low 1000 rpm control) right/left to get the desired speed of 1000rpm.
- 3 、 To recalibrate the speed for 4000 or 4500rpm, turn speed regulator to the extreme **HIGH** position, then adjust SVR (P1/104) right/left slightly until it reaches 4000 or 4500 rpm.
- 4 、 The calibration of LOW or HIGH speed is mutually influent; thus the user is requested to use the digital speed indicator and measure the result of the recalibration. Repeat the above procedure until the final speed indication meets your requirement.
- 5 、 Switch off the power and assemble the bottom plate.
- 6 、 Glue the parts of SVR (P1/104 and P2/204) after the speed recalibration is finished. The transportation and vibration may probably loosen the electronic parts and fasteners.



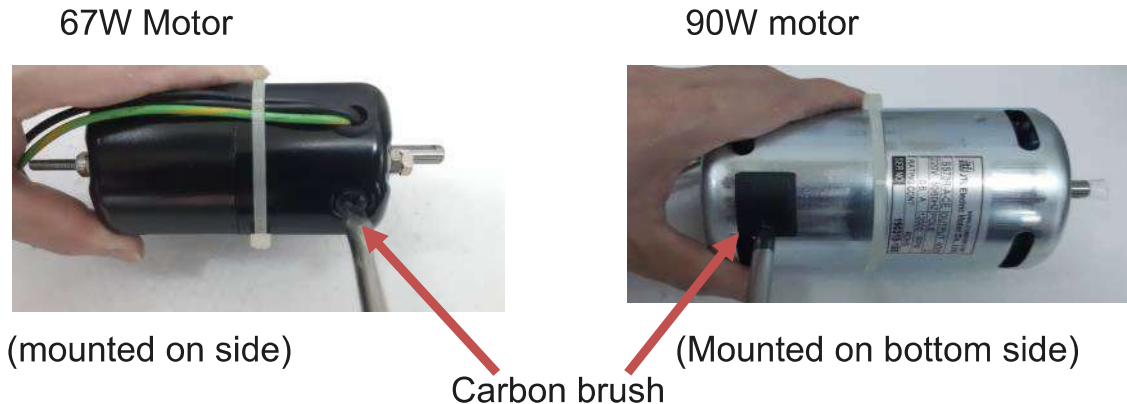
WARNING:

Electric shock and Personal injury. Always proceed with caution.

How to replace carbon Brush

This centrifuge is driven by AC brush motor. The carbon brush may be worn out after some period of time. The lifespan of the carbon brush depends on the operation frequency and the stability of local power supply.

Once the centrifuge speed has become erratic and unstable, one of the possible causes is the exhausted carbon brush. Replace the carbon brush as depicted below:



1. Remove the bottom mount, you will find 2 caps on top of the motor. Remove the PVC cap counterclockwise,
2. Take the spring set and cap out of the hole and clean the residue of carbon brush.
3. Install the new carbon brush and insert the brush set into the sleeve
4. Fasten the cap clockwise by the screwdriver.



WARNING:

- Avoid the electrical shock, unplug the centrifuge before replacing carbon brush. Remember it.
- All spare parts including carbon brush must be supplied by the origin of EICKEMEYER® to ensure the quality. EICKEMEYER® will not ensure any responsibility for anyone who violates this warning.

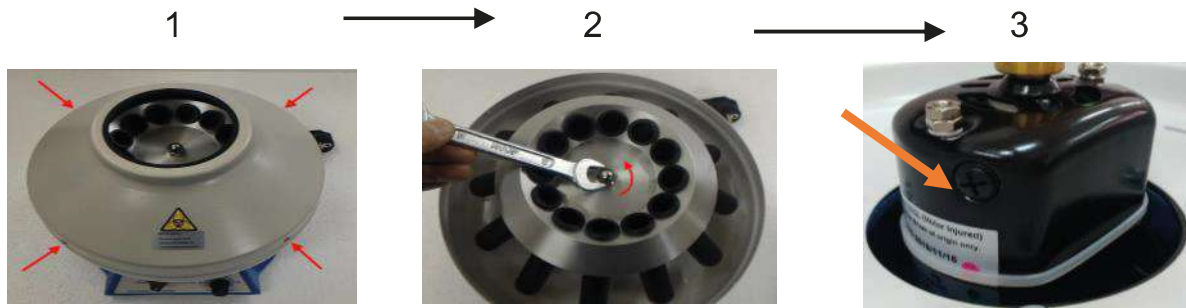


Note: The carbon brush used for this centrifuge is strictly associated with motor specification, including size and hardness etc. Any carbon brush out of the origin may damage motor definitely.

Disassembling procedure when replacing carbon brush

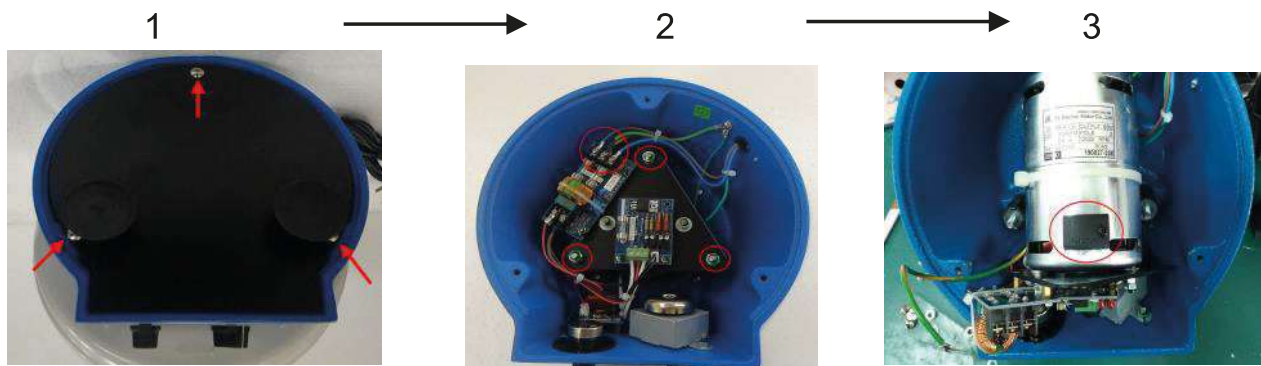
A. For motor 67W (Black color, 1.6A)

Carbon brush are installed on ***upper side***, thus disassembly needs to start from the chamber. Please follow as per the following figures.



B. For motor 90W (Silver color, 0.7A)

Carbon brush is mounted on ***bottom side***. Disassemble starts from the bottom plate, then remove the fastener set as shown red circle to find the motor on it. Carbon brush is located in the bottom side of motor, see the red circle. Remove the cap of brush, place the new brush into the sleeve of motor.



Speed and RCF Indication

The speed and RCF may be varied centrifuge to centrifuge caused by its surrounding power consumption, which will result in a fluctuation of speed.

1. Motor 66W (Average values from 10 random samplings)

TIMER Scale		
	Speed	RCF
LOW	1037	128 x g
1	1120	149
2	1267	190
3	1458	252
4	1653	324
5	1980	465
6	2345	652
7	2809	936
8	3369	1345
9	3849	1756
HIGH	4462	2360

2. Motor 90W (Average values from 10 random samplings)

TIMER		
	Speed	RCF
LOW	1045	130 x g
1	1168	162
2	1345	215
3	1540	281
4	1828	396
5	2170	558
6	2516	750
7	2997	1067
8	3331	1315
9	3837	1705
HIGH	4450	2347

NOTE: The above figures have been obtained from 10 random samples. It does not mean that your using centrifuge has the same performance, which is just for your reference only. User is recommended to measure speed by digital speed indicator to achieve the practical variables.

DISASSEMBLY:

WARNING :

For sake of safety, the disassembly must be done the qualified personnel or licensed engineers only. EICKEMEYER® will not ensure the responsibility if user violates this regulation.

- Remove the bottom plate by loosening the set-screw.
- Loosen the nuts from rubber supports attached to the base to remove the rack of motor
- Unscrew the motor from the rack
- Disconnect wires from assembly prior to disassemble the electronic parts.
- Loosen the bolt to remove the rotor.
- Remove the control knobs of timer and speed regulator by loosening the screws on it.
- The front control panel is glued.
- Unscrew the set bolts to remove timer and speed regulator.
- Loosen screws for chamber removal.
- Always disconnect from power supply prior to disassembly.

WARNING :

- Disconnect from power supply prior to disassembly of this equipment.
- People other than the qualified personnel or licensed engineers are strictly prohibited for disassembly.

MAINTENANCE & SERVICING :

- To avoid electrical shock, always disconnect from power supply prior to maintenance & Servicing.
- People other than the qualified personnel or licensed engineers are strictly prohibited from maintenance and servicing.
- Always use a properly grounded electrical outlet of correct voltage and current handling capacity.
- Always inspect the rubber supports, replace the new one when required in order to keep the balanced rotor.
- Clean the chamber and rotor after use of this equipment.
- Do not drop this equipment. Do not place this equipment upside down.
- The drive motor and linkage assembly do not require lubrication.
- Always inspect the balance and speed at least once a month.
- Inspect and replace the carbon brushes yearly or according to the operation frequency or whenever it needs.
- Use compressor to clean the dust inside the chamber that is generated by the carbon brushes. Wearing the mask while cleaning the dust to protect your respiratory system.
- Carbon brushes are required from the origin of supplier. The nature of carbon brushes, such as hardness and dimension, is connection with the motor design. Use EICKEMEYER® carbon brushes only.
- The life of carbon brushes depends on the using frequency. Always inspect the carbon brushes status and replace new ones when required.
- Inspect micro-switch and see if the function of automatic shutout safety device is working.
- A 110V/5A or 230V/3.15A.fuse is equipped inside the circuit board to encounter the abuse of voltage, so as to protect the electronic parts and motor from burnout.
- Inspect the speed indicator and see if its variable is accurate or not. Calibrate the speed indicator if it can't match the practical value. (see Page 7: Recalibration Procedure for Speed)

Life span of carbon brush:

1. 67W motor: 505 hours
2. 90W motor: 1086 hours

WARNING: Use EICKEMEYER® Carbon brush only. Other sources can damage the motor absolutely.

Troubleshooting:

Problem	Possible cause	Corrective action
Vibration	- Rotor imbalance - Defective rubber support	- Place tubes symmetrically - Replace new one
Erratic speed	- Worn out carbon brushes - Defective triac or VR	- Replace new ones - Replace parts
Failure of operation	- Worn out brushes - Defective motor or PCB - Blowout fuse - Disengaged linkage	- Replace carbon brushes - Replace parts - Replace fuse - Connect linkage
Burnout motor & PCB	- Wrong power supply - Overload current	Use the right power source
Incorrect speed	- Loose SVR of PCB,(MAX and MIN)	- Calibrate speed. See Page 7 for correction
Timer can't work	- Counting failure	- Turn timer to 60min, then turn to 0 before set time.
Tilted rotor	- Loose fastener attached to motor - Broken rubber support	- Fix and glue the fastener - Replace new one
Failure of motor spinning	- Worn out carbon brushes - Malfunction of PCB - Burnout motor - Disengaged wiring	- Replace carbon brushes - Replace PCB - Replace motor - Connect wirings
Spin only when speed adjust to " HIGH " position.	- Abnormal speed regulator - Defected VR, part #24.	- Speed recalibration is required, see Page 7 - Replace new one VR.

【Other problems may occur too beyond the above causes】

NOTE:

- Troubleshooting must be done by the qualified engineer only.
- The drive motor and linkage assembly do not require lubrication
- Immerse the centrifuge in water is strictly prohibited
- Disassembly must be performed under the supervision of licensed engineers
- Tip the equipment up or place upside down or vibrate the equipment may damage the equipment
- Take care of the electrical shock for troubleshooting.
- Unstable voltage and current can shorten the lifespan of this centrifuge. We recommend you use the voltage stabilizer.

Transportation

- Fragile, Handle with Care
- Use no hook
- Do not drop this equipment
- Do not place this equipment upside down.
- Pack this equipment in carton box for transportation.
- Prevent this equipment from vibrating.

Storage:

- Do not place this equipment in the draft, sunlight or near a piece of equipment that emits heat and electromagnetic conduction emission.
- Disconnect power supply while store this equipment.
- This equipment shall be stored under the condition of room temperature
- Do not place any heavy load on this equipment.

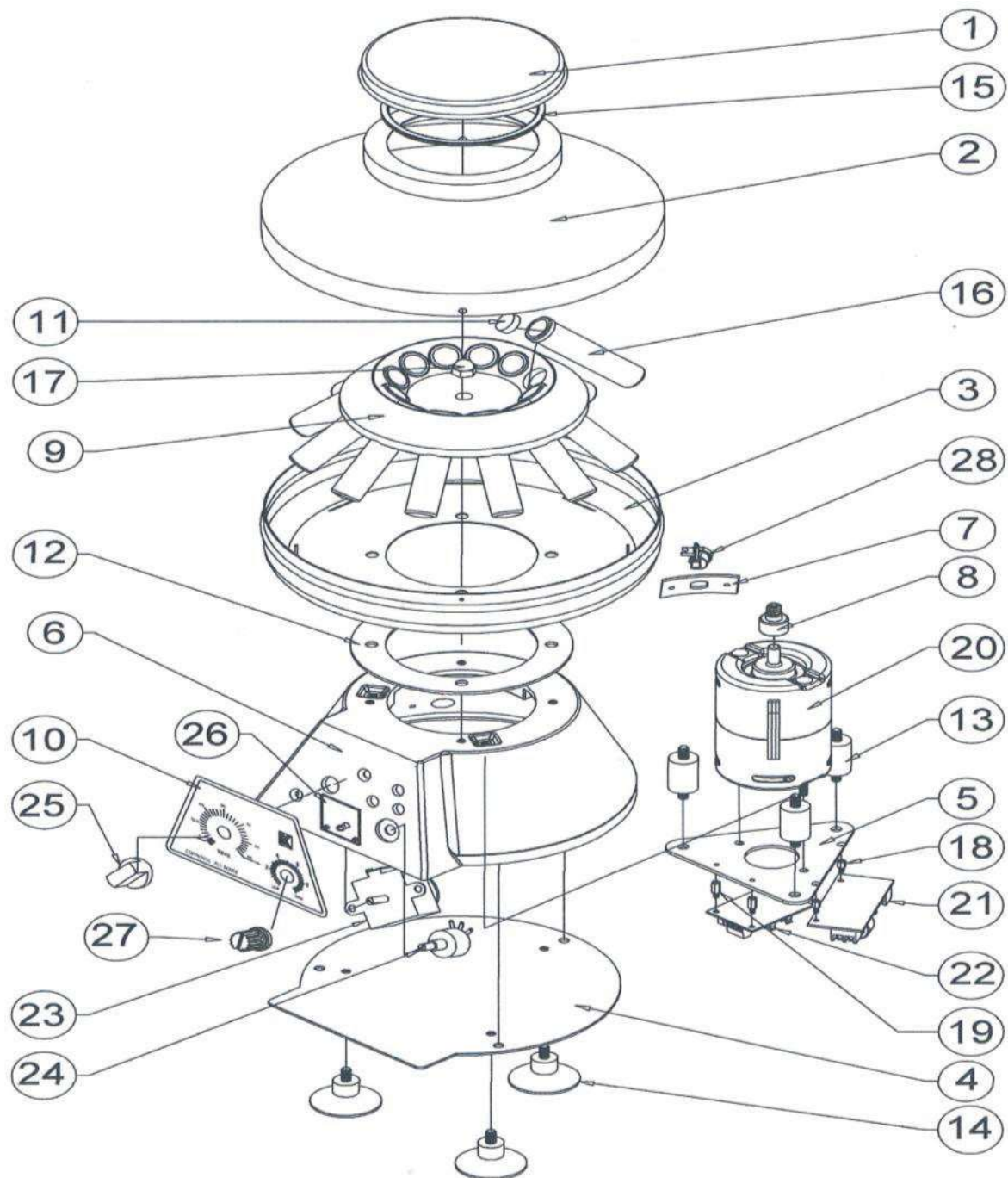
Environmental Conditions for Operation:

- Temperature: 2.0°C ~ 40°C (The best condition)
- Humidity: *Temperature below 31°C: <80%
 *Temperature below 40°C: <50%
- Sea level altitude: ≤ 4000 meters
- Atmospheric pressure range of 700hPa to 1060hPa

CAUTION:

Rubber and plastic material and parts are possible to create quality or nature change when temperature is less than 0°C.

Diagram of Components



Part List

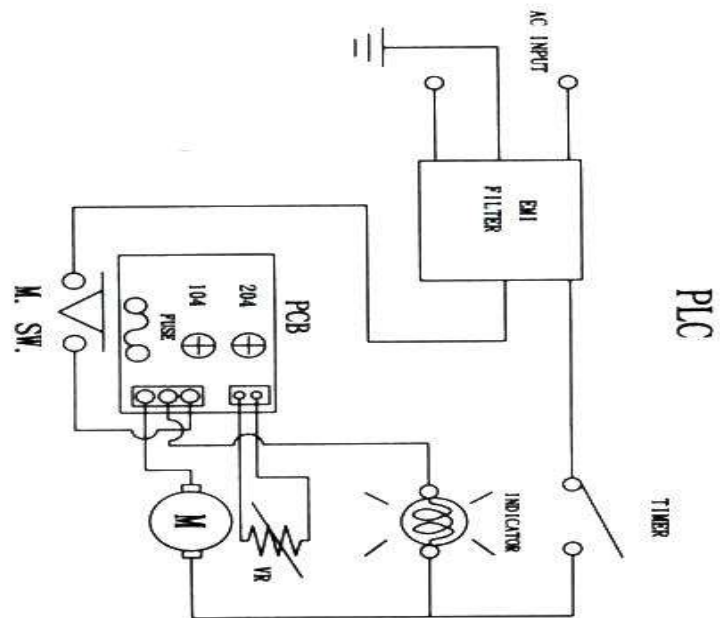
No.	Description	No.	Description
1	Lid	14	Rubber feet
2	Chamber, upper	15	Rubber packing, Lid
3	Chamber, down	16	Tube holder, Nylon
4	Bottom	17	Brass fastener
5	Rack, motor	18	Brass Spacer
6	Base	19	Brass spacer
8	Brass connector	20	AC Motor, 220V, 90W
9	Rotor, aluminum	21	EMC
10	Front panel, PVC	22	Circuit board + Fuse
11	Pad, tube holder	23	Timer, 60 min.
12	Rubber packing	24	VR, 250K Ω
13	Rubber bushing	26	Pilot lamp, LED

NOTE :

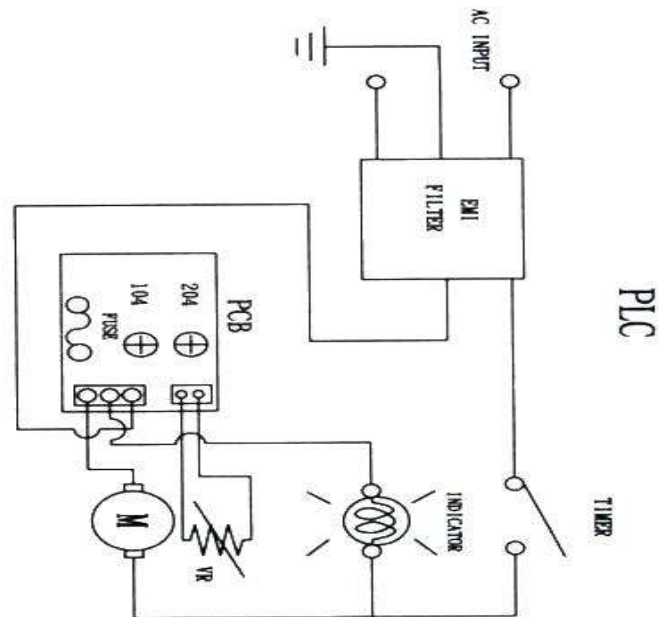
When ordering for replacement, be sure to order by its part number and description.

Wiring diagram

A: With Safety Shutout Locking Lid



B: Natural Braking Device



Cleaning & Maintenance Instruction:

CAUTION:

- To avoid electrical shock, always disconnect from power supply prior to cleaning and maintenance.
 - People other than the qualified personnel or licensed engineers are strictly prohibited from cleaning and maintenance.
-
1. Clean the outer case, chamber, tube holder grooves and rotor after each use with a damp and clean cloth.
 2. Apply cleaning solutions with a towel or cloth. DO NOT immerse the centrifuge or saturate it with water.
 3. If hazardous material is spilt on or inside the centrifuge, the centrifuge must be decontaminated.
 4. Dry the centrifuge thoroughly after cleaning by hand or in a warm-air cabinet (Max temperature less than 40°C). Dry by fire or heater is prohibited.
 5. DO NOT use benzine or paint thinner for cleaning.
 6. Use either isopropyl alcohol, soap and water for cleaning. Must be Lysol or "Cidex". Not all Lysol will be sufficient (must be a Lysol Amphyl disinfective cleaner or Virkon)
 7. The use of fully/partially Halogenated Hydrocarbons, Ketones, Esters and all other chemicals not prescribed by the manufacturer may cause damage to the centrifuge.
 8. In order to avoid the damage of anodized parts such as Rotors etc., only neutral cleaning agents with a pH-value 6-8 should be used.
 9. Never use an alkaline cleaning agents (pH > 8)
 10. It is recommended that all anodized aluminum parts are regularly treated with anti-corrosion oil.
 11. The environmental aspect, such as humidity, may form the condensate (mist) inside the electrical room. It may influence the electric current or create electrical shortcut. Remove the mist regularly with a cloth or warm air (Less than 40°C)
 12. In case of the breakage of glass tubes or bottles, disconnect from power supply and clean centrifuge, rotor, buckets, tube holders, chamber thoroughly, and remove the broken particles immediately.
 13. Wearing latex gloves to clean the breakage, debris and fluid (blood, reagent, urine etc.) to avoid the possible injury or infection by specimen.

14. If the infectious materials is spilled into the centrifuge, all parts inside the centrifuge must be disinfected thoroughly. Rotor, buckets and tube holders must be autoclaved from 121°C - 134°C for 20 minutes, or treated with a neutral disinfection agent such as formalin related. A disinfectant spray should be used to thoroughly clean the related parts.
15. If it is necessary to remove the rotor or the inside parts for additional cleaning, it is required that a qualified technician remove the rotor assembly. Disassemble the centrifuge according to the instruction in this Manual.

CAUTION:

Circuit board, motor and the related electronic parts can't be submerged in the water.

16. In the event that a substance known to be potentially toxic, radioactive or contaminated with a pathogenic microorganism is spilt in or on the centrifuge, properly clean up and dispose of the related materials and substances. If cleaning these materials is critically hazardous, for safety sake, we recommend you ask the professionals to depose of the contaminated materials and substances. Otherwise, replace the new centrifuge.

WARNING:

Before using any cleaning or decontamination methods except those recommended by the manufacturer, users should check with the manufacturer that the proposed method will not damage the equipment and its parts. EICKEMEYER® will not ensure any responsibilities if user violate the above regulations.

One Year Limited Warranty

Your EICKEMEYER® product is guaranteed to be free from defects in materials and workmanship for one (1) year under normal use from the date of purchase.

This **WARRANTY** does not apply to any product damaged by accident, misuse, abuse, neglect, improper line voltage, drop, fire, flood or if the products were altered or repaired by anyone other than the qualified service personnel.

The liability of EICKEMEYER® is limited to repair or replacement and under no circumstances shall EICKEMEYER® be liable for any collateral consequential damages or losses. This guarantee specifically excludes the expendables and consumables.

All warranty claims must be directed to the distributors or agents authorized by EICKEMEYER® responsible for the sale of this equipment. The users are responsible for shipping expenses.

Purchase Record

Company name: _____
Address : _____

Phone No. : _____
Fax No. : _____
Email address : _____
Date of purchase : _____
Product Model : _____
Serial No. : _____
Distributor : _____

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