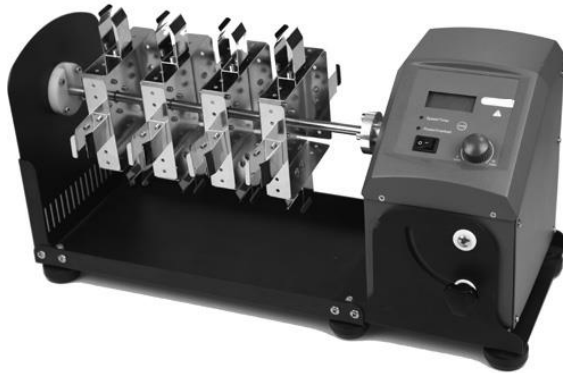


LCD Digital Disk/Axial Rotator

User Manual



LCD Digital Disk Rotator

LCD Digital Axial Rotator

Please read the User Manual carefully before use, and follow all operating and safety instructions!

Technical specifications and outline are subject to change without prior notice.

Ver.20180830

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Preface

Welcome to the “Rotator User Manual”. Users should read this manual carefully, follow the instructions and procedures, and beware of all the cautions when using this instrument.

Service

When help needed, you can always contact the service department of manufacturer for technical support in the following ways:

Please provide the customer care representative with the following information:

- Serial number (on the rear panel)
- Certification
- Description of problem (i.e., hardware or software)
- Methods and procedures adopted to resolve the problems
- Your contact information

Warranty

This instrument is warranted to be free from defects in materials and workmanship under normal use and service, for a period of 24 months from the date of invoice. The warranty is extended only to the original purchaser. It shall not apply to any product or parts which have been damaged on account of improper installation, improper connections, misuse, accident or abnormal conditions of operation.

For claims under the warranty please contact your local supplier. You may also send the instrument directly to manufacturer, enclosing the invoice copy and by giving reasons for the claim.

1. Safety Instructions



Warning!

- Read the operating instructions carefully before use.
- Ensure that only trained staff works with the instrument.



Protective ground contact!

- Ensure the socket must be grounded (protective ground contact) before use.

- When working wear personal safety guards to avoid the risk of:
 - Splashing liquids
 - Broken glass containers
- Follow the safety instructions, guidelines and accident prevention regulations.
- Do not touch the running parts, moving instrument care not rolling your fingers.
- Set up the instrument in a spacious area on a stable, clean, non-slip, dry and fireproof surface. Do not operate the instrument in explosive atmospheres, with hazardous substances or under water.
- If the instrument does not run smoothly, please decrease the motor speed.
- Firmly secure the accessories and vessels in place to avoid damage or risk.
- Preparation of samples may lead to dangerous flammable. Only process samples that will not react dangerous.
- Use the standard accessories listed in the “accessories” section, and follow the instructions to use accessories to ensure safety. Please switch off the power before assembly of accessories, confirm the instrument and accessories are intact before switch on each time.
- The instrument only be opened by expert, please switch off before use.
- The voltage stated on the nameplate must correspond to the mains voltage.
- Do not cover the instrument during running. Prevent the collision and extrusion to instrument and accessories.
- Keep away from high magnetic field.

2. Proper Use

The instrument is designed for mixing sticky substance in schools, laboratories or factories. It can be installed on a variety of impeller, for different viscosity of the medium. This instrument is not suitable for using in residential areas or other constraints mentioned in Chapter 1.

Do not use the accessories recommended by the manufacturer, or failure to use the instructions, may be caused unsafe situation.

3. Inspection

3.1 Receiving Inspection

Unpack the instrument carefully and check for any damages which may have arisen during transport. If it happens, please contact manufacturer/supplier for technical support.

**Note:**

If there is any apparent damage to the system, please do not connect to the power line.

3.2 Listing of Items

Items	Qty
Main unit	1
Power cable	1
User manual	1

Table 1

4. Function

4.1 Control

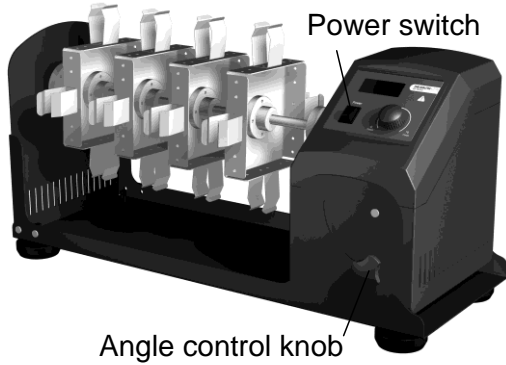


Figure 1

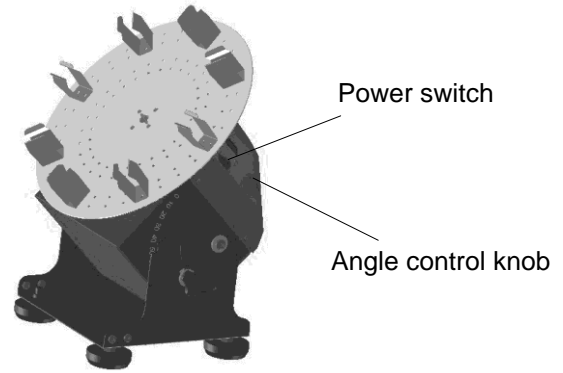


Figure 2

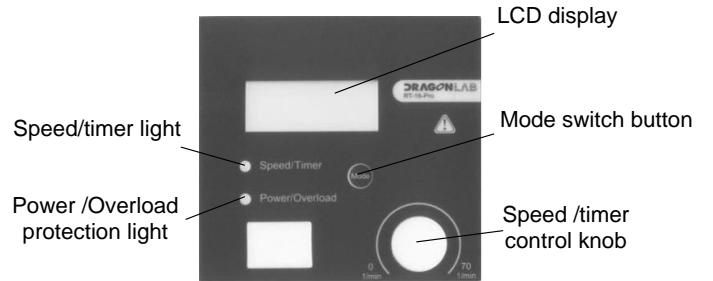


Figure 3

Items	Default settings
Mode switch button Mode	Shift speed and time display.
Speed /timer control knob	Set speed and time by rotating speed/timer control knob. Push on/off to start/stop rotating function.
Speed/timer light Speed/Timer	Green/Red LED display light. Different colors of LED light show the value for speed or time that LCD screen currently displays. Green LED light shows that LCD screen currently displays speed. Red LED light shows that LCD screen currently displays time.
Power/Overload protection light Power/Overload	Green/Red LED display light. LED light shows green when switch on, LED light shows red when starts overload protection. When the torque reaches limited value, overload protection function will be started. At the same time overload

	protection light flashes, while the system stops running.
LCD display	LCD displays the real working state and all setting values.
Power switch I/O	Switch ON or OFF the instrument.

Table 2

4.2 Display



Figure 4

Display	Descriptions
Set	Display when set target value.
Err	Display in case of error happening.
Display area	When Set displays, this area shows setting value; When Set disappears, this area shows running value.

Table 3

5. Installation

- Installing connecting plate

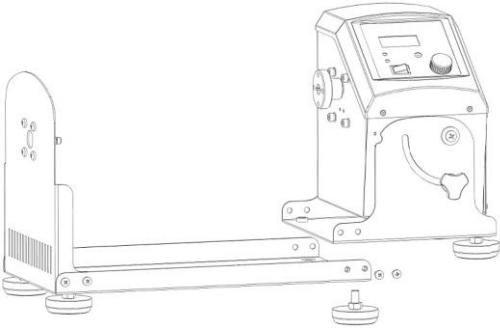


Figure 5

- Rotating the knurled screw counter clockwise and setting the unit at an angle of approx. 45° .

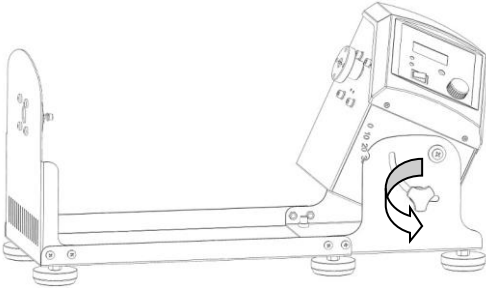


Figure 6

- Installing rotisserie accessory

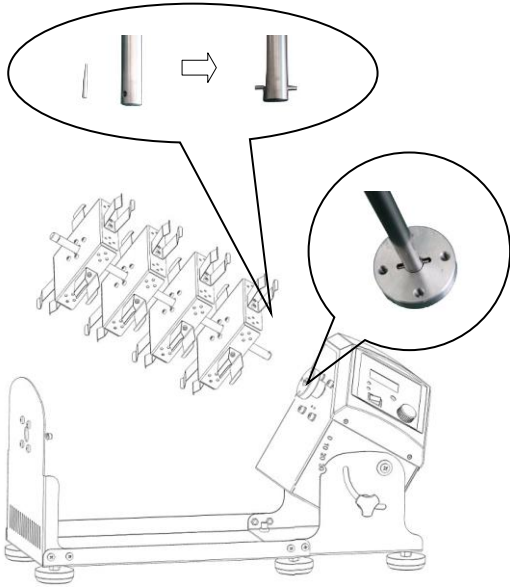


Figure 7

- Rotating the knurled screw counter clockwise and setting the unit at an angle of 0° .

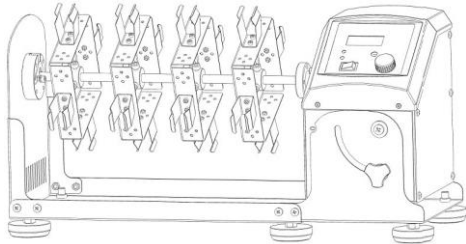


Figure 8

- Changing disk accessory

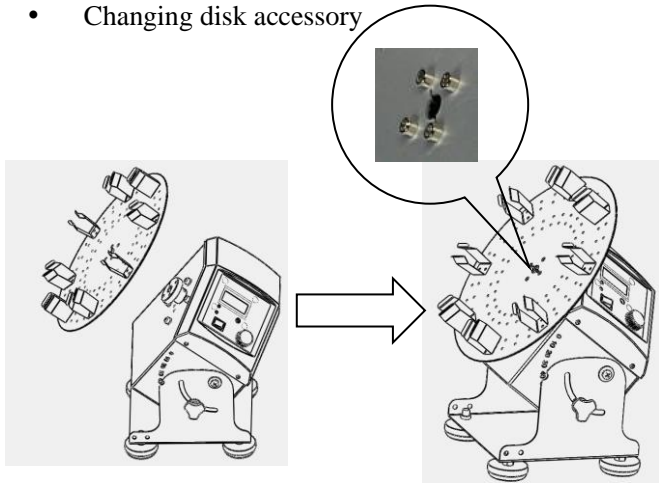


Figure 9

6. Operation

- Place the Rotator in safe and stable surface, ensure the required operating voltage and power supply voltage matched, and the socket must be earthed reliably.
- Connect the power cable.
- Switch ON instrument.
- The instrument begins self-checking.
- When initialization is over, LCD displays the last running values of speed.
- Rotate the speed/timer control knob to set target speed.
 - a. Press the speed/timer control knob to start rotating function. Press the knob again to stop rotating function.
 - b. Press the mode switch button, LCD displays time, and then rotating the speed/timer control knob to set target time. Press the speed/timer control knob to start rotating function at the set time. During operation, motion can be stopped at any time by pressing the speed/timer control knob. If the knob is pressed again, motion will start again and the timer will restart countdown. When the timer reaches zero, the unit will

be automatically halted and an alert will sound.

If these operations above are normal, the instrument is ready to operate. If not, the instrument may be damaged during transportation, please contact technical support of manufacturer/supplier.



Note:

The set values can be altered at any time.

7. Faults

- Instrument cannot be powered ON when start rotating function.
 - Check whether the power cable is connected.
- Rotating function suddenly stop
 - Power/overload protection light changed to red, LCD displays “Er 03”, indicate the current failure is “overload protection”.
 - Pressing the speed/timer control knob first to close rotating function, and then restart rotating function after lowered load. If rotating function cannot start, then repeat the process and gradually reduce load.

8. Maintenance and Cleaning

- Proper maintenance can keep instrument working properly and lengthen its lifetime.
- Do not spray cleanser into the instrument when cleaning.
- Do not remove the power line when cleaning. Only use recommended cleansers:

Dyes	Isopropyl alcohol
Construction materials	Water containing tenside / Isopropyl alcohol
Cosmetics	Water containing tenside / Isopropyl alcohol
Foodstuffs	Water containing tenside
Fuels	Water containing tenside

- Before using other method for cleaning or decontamination, the user must ascertain with the manufacturer that this method will not damage the instrument. Wear the proper protective gloves during cleaning of the instrument.



Note:

- Electronic device cannot clean with cleanser.
- If you require maintenance service, must be cleaned the instrument in advance to avoid pollution of hazardous substances, and to send back into original packing.
- If the instrument will not use for a long time, please switch off and place in a dry, clean, room temperature and stable location.

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

NOTE: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

9. Associated standards and regulations

Construction in accordance with the following safety standards:

EN 61010-1

UL 3101-1

CAN/CSA C22.2(1010-1)

EN 61010-2-10

Construction in accordance with the following EMC standards:

EN 61326-1

10. Specifications

Items	Specifications
Voltage [VAC]	100~240
Frequency [Hz]	50/60
Power [W]	40
Angle range(MX-RD-Pro)	0° ~ 90°
Motor type	DC motor
Speed range [rpm]	10~70
Speed display	LCD
Timer range [min]	1~1199
Timer display	LCD
Run type	Timer/Continuous operation
Overall Dimensions [mm]	280×210×300(MX-RD-Pro) 220×510×260(MX-RL-Pro)
Weight [kg]	6.5
Permissible ambient temperature [°C]	5—40
Permissible relative humidity	80%

Items	Specifications
Protection class acc. to DIN EN60529	IP21

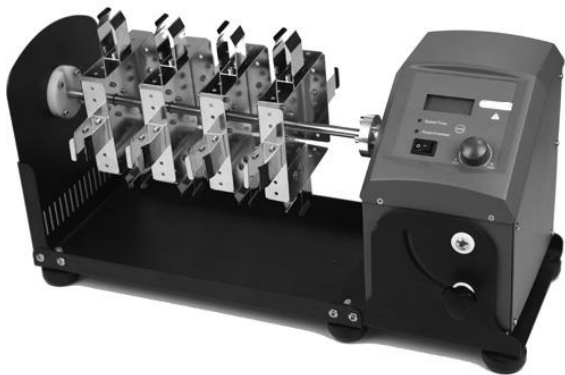
Table 4

旋转混匀仪

使用说明书

LCD 数控长轴混匀仪

LCD 数控圆盘混匀仪



请仔细阅读说明书并在说明书的操作指导下安全使用本仪器。

外形和性能指标如有变动，概不另行通知。

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前言

欢迎使用《旋转混匀仪使用说明书》。用户在使用本仪器前请应仔细阅读此说明书，了解相关注意事项，并按照说明书中的指导和规范进行操作。

如何获取帮助

如果您在安装和使用的过程中遇到任何问题或需要帮助，请及时与制造商/供货商的售后服务部门取得联系，制造商的联系方法如下：

请您准备以下资料：

- 产品序号（在仪器背板上）
- 质保卡
- 问题现象的描述
- 您为了解决问题所采用的方法和操作步骤
- 您的电话、传真和 E-mail 地址等联络方式

质量保证书

根据制造商的质量保证条款，在本说明书规定的正常使用条件和操作方法下使用该仪器时，该仪器的保修期为 24 个月（自购买之日起）。由于错误安装与操作、私自拆卸与维修以及其他违反说明书中规定的操作条款造成的仪器性能下降和损坏，不能按照本质量保证进行保修。如出现质保条款中的相关问题，请联系制造商/供货商。

1. 安全事项



警告!

- 在使用仪器之前请仔细阅读本说明书，并根据以下安全说明进行操作。
- 只有经过专业培训的人员才可以操作本仪器。



安全接地保护!

- 为保证安全，使用本仪器前请确认电源插座接地良好。

- 工作时，请穿戴个人防护工作服装，以避免可能由以下事项引发危险：
 - 振荡液体飞溅
 - 机械振荡力导致玻璃容器破碎
 - 身体、头发、衣服及首饰等被卷入
- 根据安全事项说明和职业安全准则操作仪器，避免意外伤害。
- 不要触碰仪器的运动部件，避免头发、衣服等卷入仪器。搬动仪器时注意不要碾压到手指。
- 请把仪器置于宽敞通风的区域内使用，并确保工作台平稳、洁净、干燥、阻燃且具有一定的摩擦力。请勿在室外、危险物质环境、水中运行本仪器。

- 如果仪器运行不平稳，请调低电机转速。
- 配件必须可靠连接，容器必须稳固放置，避免发生危险。
- 制备易燃样品可能会导致危险。只能制备在振荡过程中不会产生危险反应的样品。
- 请使用“配件”章节中列出的标准配件，并按照本说明书使用配件以确保安全。在装配附件之前请先切断电源，每次开启仪器之前请确认仪器及其附件未被损坏。
- 只有专业人员才能打开仪器，打开仪器之前请拔出电源插头。
- 铭牌上指定的工作电压必须与电网供电电压相匹配。
- 仪器在使用过程中不要遮盖仪器。防止撞击和挤压仪器及配件。
- 请勿在强磁场区域使用本仪器。

2. 使用范围

本仪器是为学校、实验室和工厂等应用环境设计的，用于对液体进行振荡混匀。本仪器可以安装多种配件，适用多种规格的试管。本仪器不适合在住宅区以及第 1 章中规定的一些限制条件下应用。

未使用制造商推荐的配件，或者未按使用说明进行操作，可能会出现不安全的情况。

3. 检查

3.1 开箱检查

用户如发现任何包装损伤，请在收据上注明。在打开包装后如果发现任何内部损伤，请联系制造商/供货商。



注意：

如发现仪器上有任何明显的损伤，请不要将其连接到电源。

3.2 装箱清单

名称	数量
主机	1 台
电源线	1 根
使用说明书	1 本

表 1

4. 控制和设置

4.1 控制

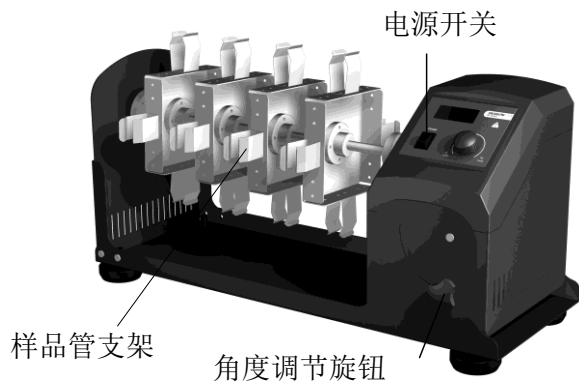


图 1

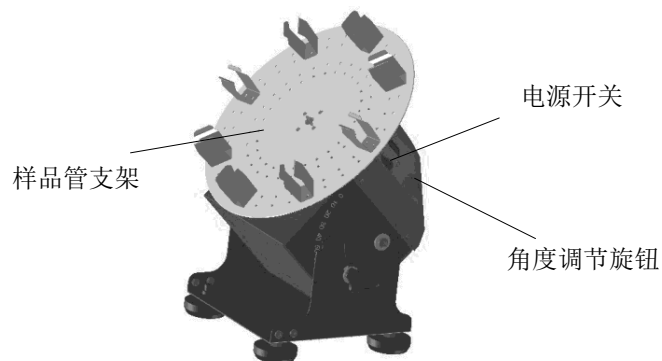


图 2

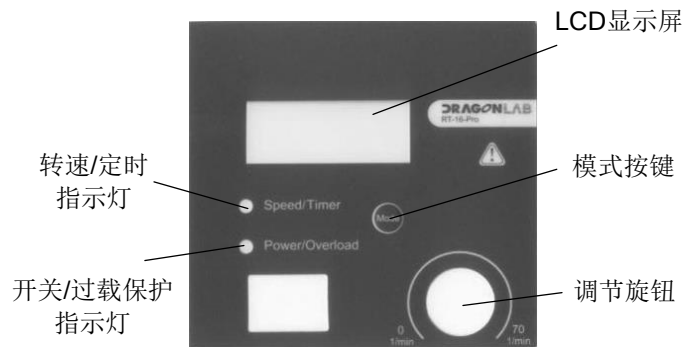


图 3

名称	说明
模式按键 Mode	按下按键切换模式，本机提供转速和定时两种模式。
调节按钮	旋转设定仪器转速（转速模式）或定时时间（定时模式），按动开启混匀功能。
转速/定时指示灯 Speed/Timer	LED 指示灯为绿色表示当前 LCD 显示屏显示为转速；LED 指示灯为黄色表示当前 LCD 显示屏显示为定时时间。
开关/过载保护指示灯 Power/Overload	仪器开启时 LED 指示灯显示为绿色；仪器处于过载保护状态下 LED 指示灯显示为红色。
LCD	液晶显示屏显示仪器当前工作状态及各项设置。
电源开关	打开/关闭仪器主电源。

表 2

4.2 显示



图 4

显示	说明
Set	“Set”字符显示，表示当前 LCD 显示的为设置数值；“Set”字符消失，表示当前 LCD 显示的为实际数值。
Err	仪器发生故障时显示
显示区	显示区数值闪烁时，表示当时显示数值为设置数值；显示区数值停止闪烁时，表示当时显示数值为实际数值。

表 3

5. 安装

- 安装连接板

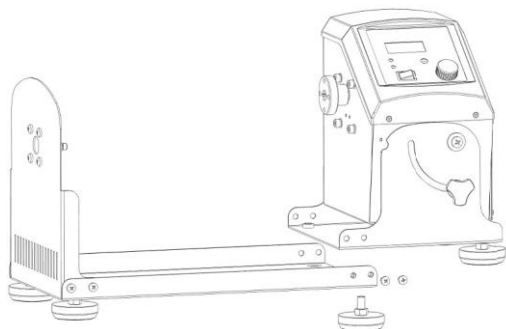


图 5

- 旋松主机固定旋钮，调整主机角度为倾斜 45°

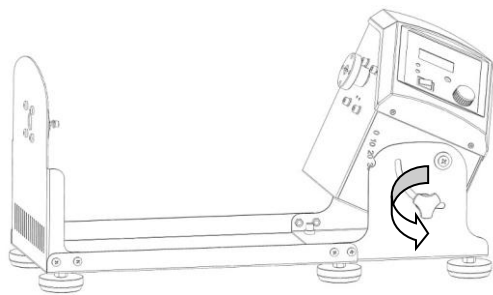


图 6

- 安装长轴附件

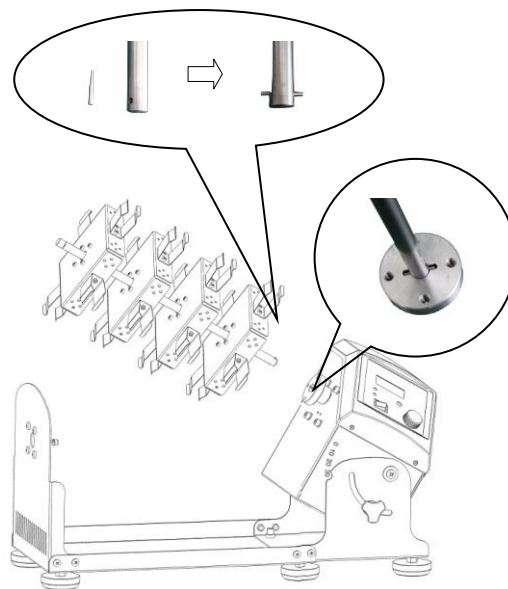


图 7

- 旋松主机固定旋钮，将主机角度调整为 0°

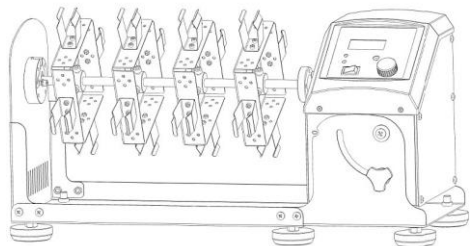


图 8

- 更换圆盘附件

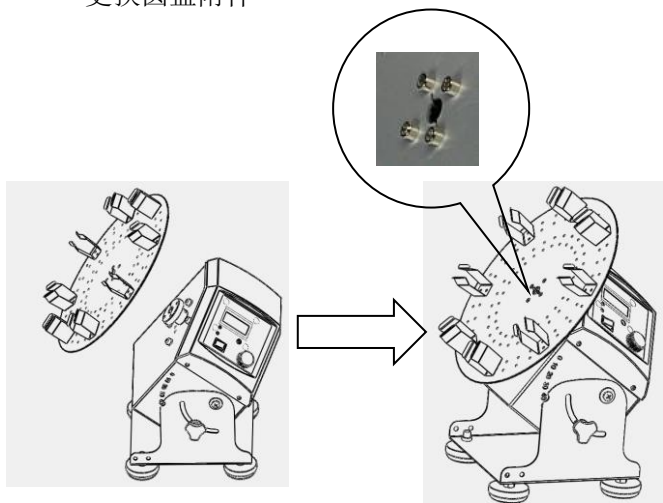


图 9

6. 操作

- 将旋转混匀仪置于安全平稳处，检查铭牌上指定的工作电压与电网供电电压是否匹配，插座是否接地良好；
- 接入电源；
- 打开仪器面板上的电源开关；
- 开机自检；
- 等待仪器初始化结束，LCD 闪烁显示上次关机转速；
- 转速模式下旋转调节按钮，设置混匀转速；
 - a, 按动调节旋钮，启动无定时时间的混匀操作，再次按动调节旋钮，仪器停止混匀。
 - b, 按动模式按键，LCD 闪烁显示时间，旋转调节旋钮，设置定时时间，按动调节旋钮，启动定时的混匀操作，再次按动调节旋钮，仪器停止混匀，或定时时间到，仪器自动关闭混匀操作，同时蜂鸣声响起，提示定时结束。

如果上述操作运行正常，说明仪器可以开始正式使用。如果无法正常运行，仪器可能存在安全设置或者已损坏。请联系制造商/供货商。

**注意：**

仪器在运转过程中，转速（Speed）和定时时间（Timer）设置值可以随时更改，更改时 **Set** 出现，表征当前 LCD 显示为设置值，几秒钟过后 **Set** 消失，表征当前 LCD 显示为运行实际值。

7. 故障诊断

- 打开电源仪器不启动
 - 请检查电源线是否连接紧密
- 混匀操作突然停止
 - 过载保护（Overload）LED 灯显示为红色，LCD 显示区显示“Er 03”，表征当前故障为“过载保护”。
 - 当出现此状况时，按动调节旋钮重新启动混匀操作，如混匀操作仍不能启动、并且过载保护（Overload）指示灯仍为红色，请减少旋转混匀仪上的负载，再次按动调节旋钮重新启动混匀操作。上述步骤可重复操作。

8. 维护和清理

- 正确地使用和维护仪器，使其处于良好的工作状态，

有利于延长使用寿命。保持仪器整洁，切勿将溶液流入机内。

- 维护和清理之前必须切断电源，只能使用我们推荐的方法清理仪器。祛除方法：

染料	异丙醇
建筑材料	水溶表面活性剂/异丙醇
化妆品	水溶表面活性剂/异丙醇
食物	水溶表面活性剂
燃料	水溶表面活性剂

- 没有列出的材料，请先咨询制造商售后服务部门。
- 在采用其他清理方法之前，用户必须与制造商/供货商确认该方法不会损坏仪器。
- 清理时，请戴上防护手套。

**注意：**

- 电子设备不能用清洁剂清理。
- 送修仪器必须清理，同时避免危险物质的污染，并把仪器放回原始包装箱发送。
- 当产品长期不用时，请将仪器断电存放，并置于干燥，洁净，常温，平稳处。

9. 相关标准

仪器结构符合以下安全标准：

EN 61010-1

UL 3101-1

CAN/CSA C22.2(1010-1)

EN 61010-2-10

仪器结构符合以下电磁兼容标准：

EN 61326-1

10. 技术参数

项目	参数
电压 [VAC]	100~240
频率 [Hz]	50/60
功率 [W]	40
角度范围(MX-RD-Pro)	0° ~ 90°
电机类型	直流电机
速度范围 [rpm]	10~70
转速/定时显示	LCD
时间设置范围 [min]	1~1199
运行方式	定时 / 连续运转
外形尺寸 [mm]	280×210×300(MX-RD-Pro) 220×510×260(MX-RL-Pro)
重量 [kg]	6.5
允许环境温度 [°C]	5—40
允许相对湿度	80%
DIN EN60529 保护方式	IP21

表 4

