



Labo-Stirrer

Model LR500A/500B

Instruction Manual

First Edition

- Thank you for choosing LR series Stirrers by Yamato Scientific Co., Ltd.
- For proper equipment operation, please read and become thoroughly familiar with this instruction manual before use. Always keep equipment documentation safe and close at hand for convenient future reference.

Warning: Read instruction manual warnings and cautions carefully and completely before proceeding.

Yamato Scientific America Inc.
Santa Clara, CA

Depending on their extent and nature of danger, the warnings the given in this operating instruction is classified into the following two categories by symbol.



To protect operators from accident
Negligence of the warning may result in a serious accident of operators



To protect the LABO-STIRRER from damage
Negligence of this warning may result in a damage of the LABO-STIRRER. This warning gives you also a tip on performance which is useful in operation and maintenance of the LABO-STIRRER or indicates the common mistakes that operators often make.

Contents

FEATURES.....	1
ABSOLUTE REQUIREMENTS FOR INSTALLATION.....	2
NAME AND FUNCTION OF EACH PART	4
INSTALLATION AND PREPARATION BEFORE OPERATION	6
OPERATION	7
MAINTENANCE.....	8
AFTER SALE SERVICE AND WARRANTY	9
TROUBLESHOOTING.....	10
SPECIFICATIONS.....	11
WIRING DIAGRAM	12
REPLACING PART TABLE	13
OPTIONAL ACCESSORIES.....	14
REFERENCE DATA.....	15

LABO-STIRRER Models LR500A and LR500B have the following features.

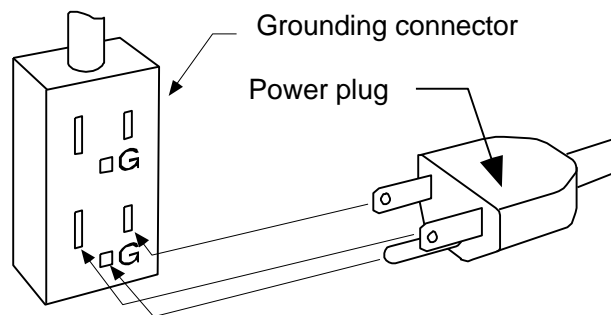
1. Maintenance Free Brushless Motor
 - Maintenance free DC brushless motor is equipped in our LABO-STIRRER. It is superior in safety without having spark occurrence, and you need not to replace brush.
2. Stirring Propeller Direct Drive System
 - No noise is produced and gear replacement due to wearing is not necessary.
3. Digital Tachometer
 - You can easily set and confirm the revolving speed.
4. Torque Monitor
 - Load applied on the stirring shaft can be monitored. Load condition is indicated in LED two steps. Overload LED (Red) blinks when allowable load is exceeded, and it is lit up and the motor is automatically stopped when the load is further increased.
5. Revolving Speed Feed Back Control System
 - LABO-STIRRER can always keep the revolving speed of shaft to set value although load is changed by the stirring of high viscosity solution.
6. Through Shaft
 - Through shaft has no run-out and can move the position of blades freely.

ABSOLUTE REQUIREMENTS FOR INSTALLATION



① Ground the LABO-STIRRER

- Don't forget to ground the LABO-STIRRER, which protects you from electric shock in case of power leakage. Choose a receptacle with grounding connectors as much as you can.



Connect the LABO-STIRRER's power plug to a receptacle with grounding connectors.

If no grounding terminal is available, the oven needs Type III Grounding Work for power supply. Contact our sales representative in your vicinity or our service center for the work.

② Choose a proper place for installation.

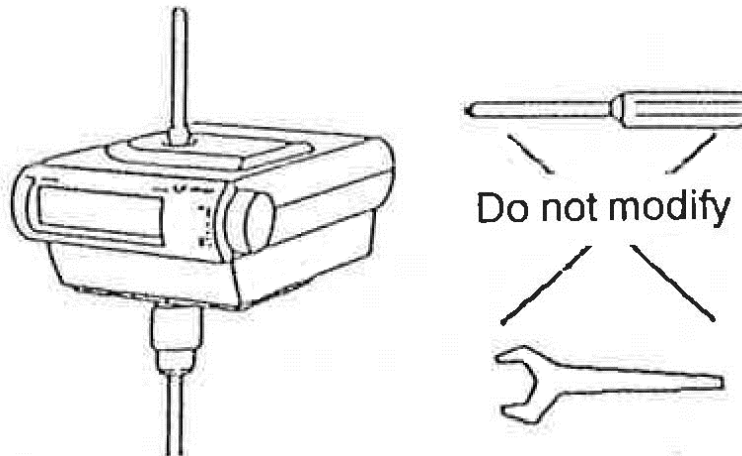
- Don't install the oven in the place where:
 - Inflammable gas or corrosive gas is generated
 - Ambient temperature exceeds 35°C
 - Ambient temperature fluctuates violently
 - There is direct sunshine.

ABSOLUTE REQUIREMENTS FOR INSTALLATION

Caution

① Don't modify the LABO-STIRRER

- Unauthorized modification will cause hazard to operators and trouble of the LABO-STIRRER.

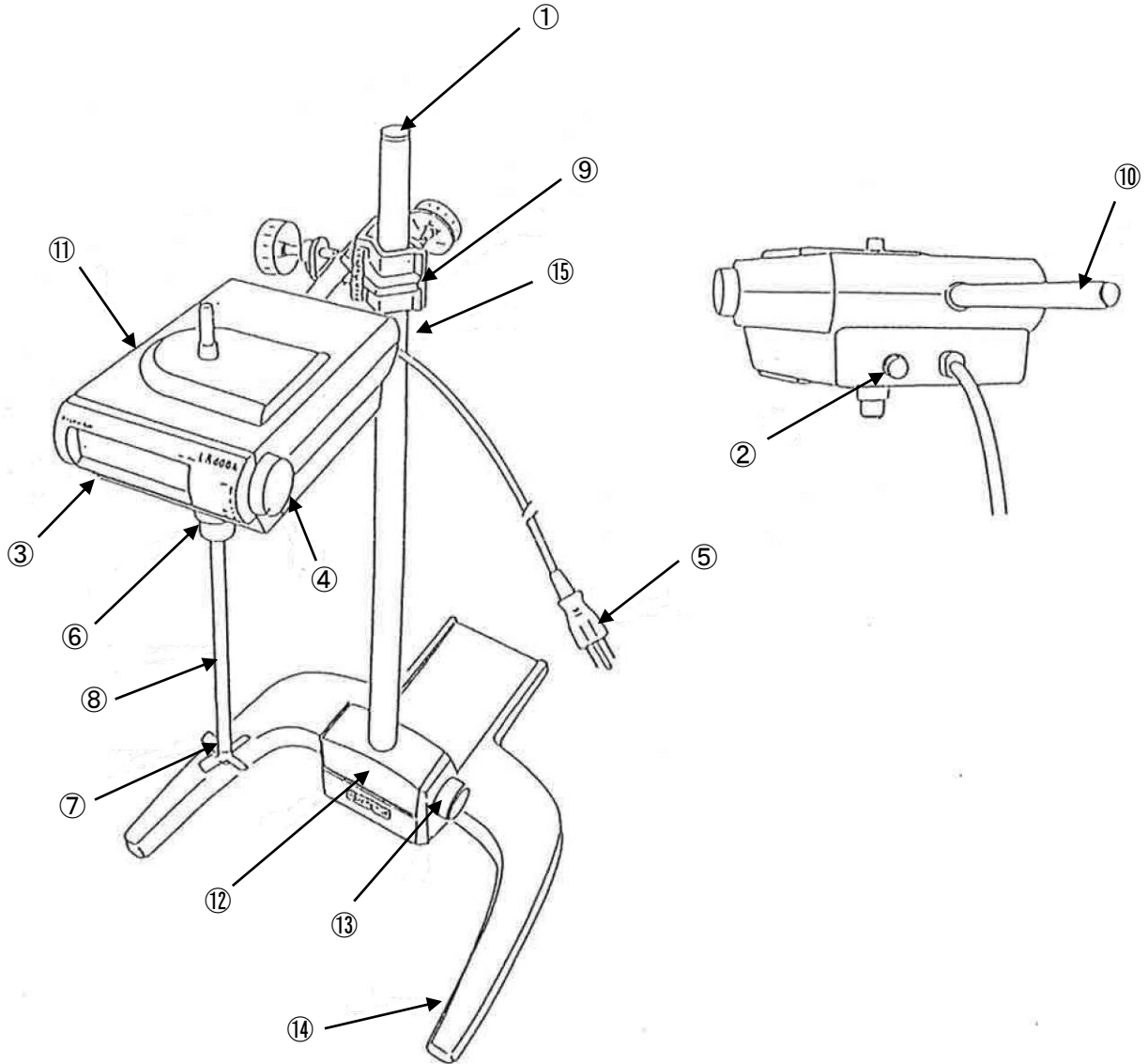


② Install the LABO-STIRRER at leveled place.

- Installation at undulating or inclined place will cause hazard to operators and trouble of the LABO-STIRRER during stirring.

NAME AND FUNCTION OF EACH PART

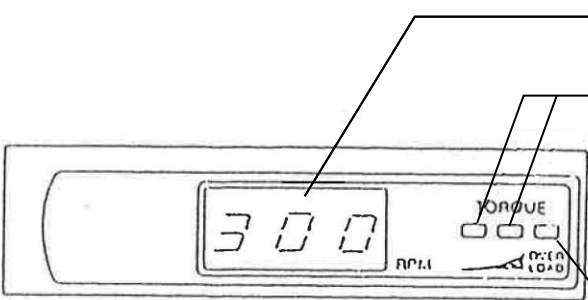
[External View]



① Support	⑨ Stirring shaft
② Frame	⑩ Stirring propeller
③ Fixing knob	⑪ Chunk
④ Support fixing boss	⑫ Plug
⑤ Support cap	⑬ Speed control knob
⑥ Main body	⑭ Display panel
⑦ Arm	⑮ Fuse
⑧ Clamp	

NAME AND FUNCTION OF EACH PART

[LR4500A]

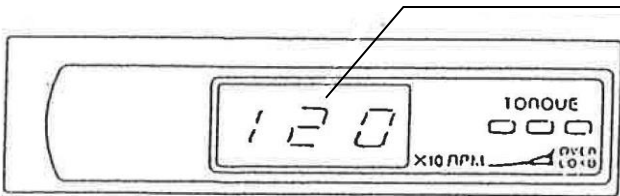


Revolving Speed Display (Ex: 300rpm)

Torque Monitor (Green)
 First step: Approx.33% and more load
 Second step: Approx. 66% and more load

Torque Monitor (Red)
 Blinking: Overload operation condition
 Lighting: Overload stopping condition

[LR500B]



Revolving Speed Display (Ex: 1200 rpm)

INSTALLATION AND PREPARATION BEFORE OPERATION

1. Confirm the packing contents.

- Main body: 1 unit
- Shaft: 1 pc.
- Stirring propeller
 φ75mm (LR500 series) 1 pc.
- Chunk handle: 1 pc.
- Clamp: 1 pc.
- Fuse: 1 pc.
- Delivery date plate: 1 pc.
- Guarantee certificate: 1 copy
- Instruction manual: 1 copy

2. Assemble according to the external view.

2.1. (Optional accessory, frame)

Put the support ① in the support fixing boss ④, then fix it firmly with the tightening knob③.

2.2. Attach the clamp ⑧ to the frame support ①, then fix the main body ⑥

2.3. Screw the stirring propeller ⑩ into the stirring shaft ⑨, and insert the stirring shaft ⑨ into the chuck ⑪, then fix it so as fastening at three chuck holes to be equal by the chuck handle.



- Choose a receptacle with grounding connectors not to get electric shock. If there are only bipolar receptacle available in your workshop, connect an optional grounding adapter to the oven's power plug, and connect the adapter's grounding wire to a receptacle's grounding terminal.
- Don't connect the grounding wire to gas or water piping.
- Don't use branching plug socket, which causes heat generation of the power line.
- Don't install the LABO-STIRRER in the place where inflammable gas or corrosive gas is generated.

1. Connect the power supply cord to the power supply of AC 115V.
2. Length of the stirring shaft shall be adjusted according to the vessel in which stirring liquid is contained. However, you use it with the shaft being put out as short as possible. Because there will be fewer run-out of shaft and life of the bearing will be lengthened.
3. Turning the speed control knob ⑬ clockwise, power supply switch will be on and the further you turn it clockwise, the faster its revolving speed will be. Confirm the revolving speed by the display panel when you set it.
4. The torque monitor is not lit up when load is small. However it is lit up from the left side (green) as load is increased. When it becomes over the load the red lamp (right end) blinks and revolving speed is decreased. If the load is further increased, the red lamp is lit up and the operation is stopped.

Caution

- If the speed control knob is turned clockwise rapidly, set revolving speed may be exceeded, however it is not trouble since it may become to the set value soon.
- Do not operate continuously in the overload condition. Thermal switch of the motor is activated and the operation is stopped. In this case, leave it for some and start the operation again after cooling.

Danger

- This unit has the structure which is hard to catch fire, however, it does not have an explosion-proof condition, you cannot use it especially at place where there is a danger of inflammability.

Daily Inspection and Maintenance



- Before starting inspection or maintenance, disconnect the power plug from the receptacle or turn OFF the breaker on the distribution board.
- Don't disassemble the unit.
- When you remove dirt or stain from the unit's resin parts and the control panel, use soft wet cloths. Don't use benzene, thinner, cleanser and hard brush, which will cause deformation, qualitative deterioration or discoloring of those components.

AFTER SALE SERVICE AND WARRANTY

When you call us for repair

If a trouble happens on the LABO-STIRRER, stop the operation immediately, turn off the power switch, and disconnect the power plug from the receptacle. Thereafter, contact our sales representative in your vicinity or our service office.

Check the warranty card or the name plate of your LABO-STIRRER and give information below.

- Model of your unit;
- Serial product number of your unit;
- Date of your purchase; and
- Trouble of your unit (as detail as a possible)

Warranty Card (attached to your LABO-STIRRER)

- Together with the LABO-STIRRER, our sales representative or service office issues a warranty card. Check the name of the shop from which you purchased to the unit, and the date of your purchase. Keep the warranty card in a safe place after reading its contents carefully.
- Warranty period is 1 (one) year after the date of your purchase. During this warranty period, we will offer free repair service on the basis of the conditions provided on the warranty card.
- If you need repair service after expiration of the warranty period, contact our sales representative in your vicinity or service office for advice. We will offer charged repair service when such service can maintain the performance of your unit.

Minimum Inventory Period of Repair Parts

Repair parts will be available for at least 7 years after termination of our production of LABO-STIRRER. Repair parts means the parts which are necessary to maintain the performance of the unit.

TROUBLESHOOTING

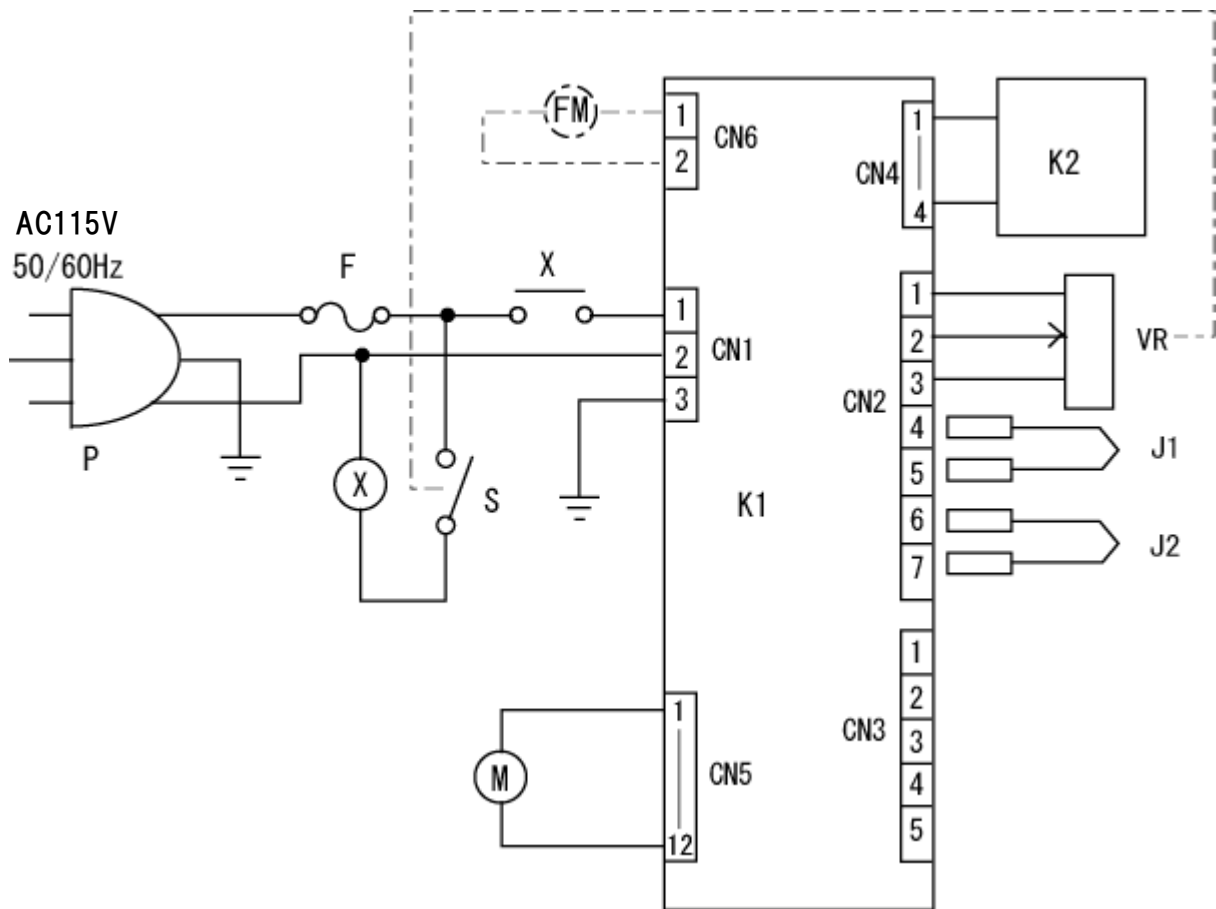
Trouble	Counteraction
The shaft does not revolve although the power switch is turned ON. The display panel is not lit up.	<ul style="list-style-type: none">● Check if the power cable is connected to a receptacle or a distribution board.● Check if it is power failure.● Check if the fuse is proper.
The display panel is lit up, however, the shaft does not revolve.	<ul style="list-style-type: none">● Check if it operated in the overload condition. In this case, leave it for some time start it again.
Vibration is severe.	<ul style="list-style-type: none">● Check if the stirring shaft is set correctly.
Revolving speed does not increase. The shaft stops soon.	<ul style="list-style-type: none">● Check if the viscosity of the solution is proper.

SPECIFICATIONS

[LR500 Series]

Model	LR500A	LR500B
Revolving Speed Range	34 ~ 340 rpm	100 ~ 1,000 rpm
Max. Torque	1.94 N · m (20 kg-cm)/ 340 rpm	0.98 N · m (10 kg-cm)/ 1,000 rpm
Revolving Display	Digital 3 columns	Digital 3 columns(x10)
Torque Display	LED two step display + Overload display	
Motor	DC brushless motor	
	70W	100W
Revolving Control	Speed feed back control	
Working Shaft	~φ10 mm	
Safety Mechanism	Overload stopping	
Revolving Mechanism	Direct drive system	
External Dimensions	164 (W) × 252 (D) × 174 (H) (excluding arm)	
Weight	4.2 kg	4.0 kg
Rated Power	AC115V 2.1A	AC115V 2.6A

WIRING DIAGRAM



Jumper Connecting Method by Model

Model	Jumper	
	J1	J2
LR500A	○	○
LR500B	○	×

○ : CLOSE
 × : OPEN

Symbol	Part Name	Remarks
K1	Control board	
K2	Display board	
P	Power plug	
F	Fuse	
VR	Volume	Volume with switch
S	Switch	
M	Motor	
J1	Jumper	
J2	Jumper	
FM	Cooling fan	LR500A
X	Relay	

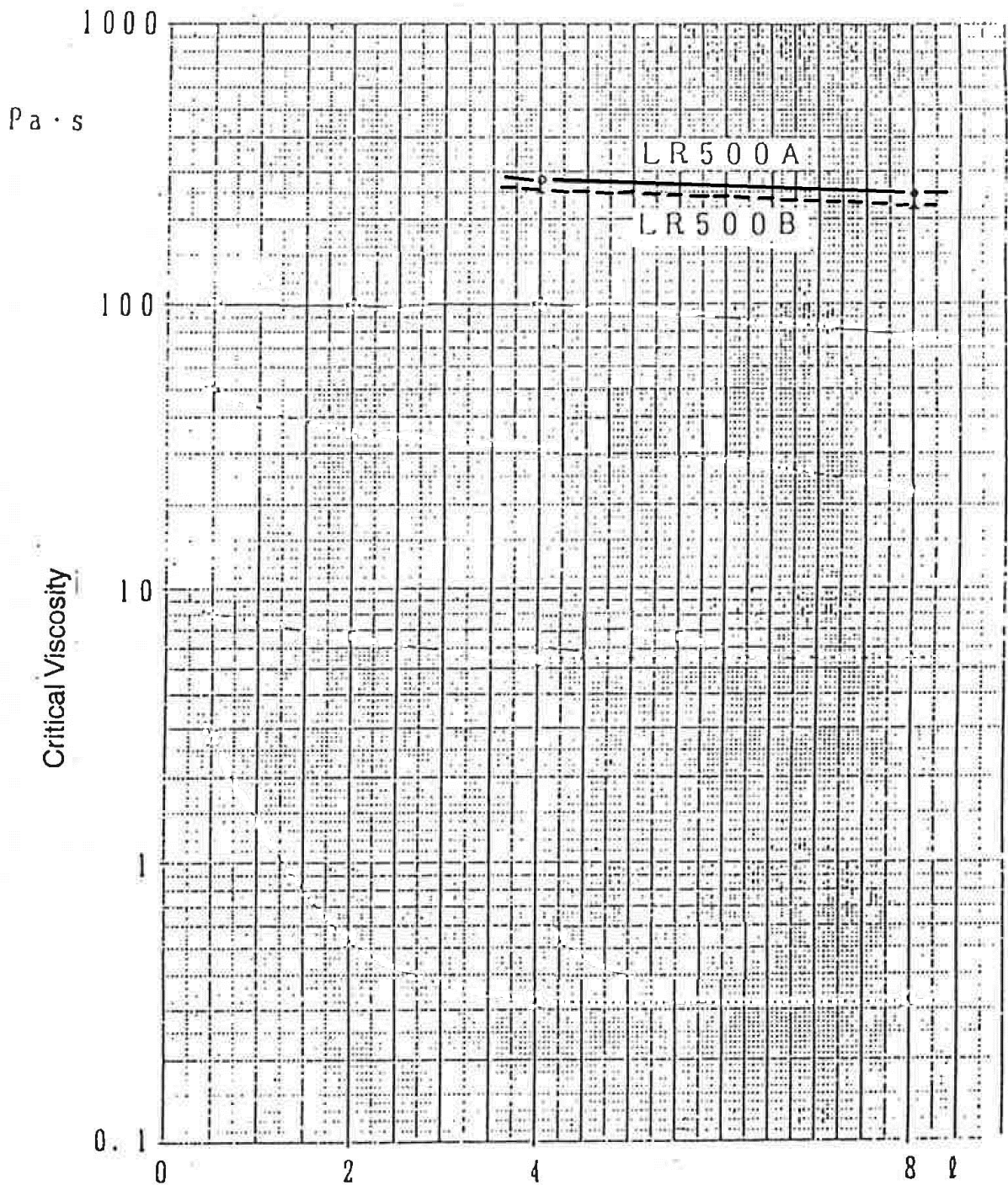
REPLACING PART TABLE

Symbol	Part Name		Code No.	Specifications	Manufacturer
K1	Control Board	LR500A	LR5000102		Yamato Scientific
		LR500B	LR5000104		Yamato Scientific
K2	Display Board		LR4000112		Yamato Scientific
P	Power Plug		LR4000113	T1-3a	Yamato Scientific
VR	Volume with Switch		LR4000117	RV24YN20F-MF	Teikoku Communication Industry
M	Motor	LR500A	LR5000101		Yamato Scientific
		LR500B	LR5000103		Yamato Scientific
F	Fuse		LR4000116	φ5.2 × 20 mm 3 A	
FM	Cooling Fan		LR4000123	109 - 180	

OPTIONAL ACCESSORIES

Part Name		Dimensions and Type	Goods Code No.
Y-shaped frame		Support: 725 (L) × 25 (O.D.) mm Foot: 400 (W) × 420 (D) mm Weight: Approx. 7 kg	231086
Stirring Propeller	Four blades	(Blade diameter) 75, 60, 40 mm	000141
	Two blades	(Blade diameter) 100, 28 mm	000141
	Blade for narrow port	(Revolving diameter) 45 mm	000141
	Glass blade	(Blade diameter) 60 mm	000141
	Turbine with disc	(Blade diameter) 100, 60 mm	000141
	Turbine with disc for two steps	(Blade diameter) 60 mm	000141
Stirring shaft		800 (L) × 10 (O.D.) mm	000141
Water tank mounting fitting			231032
Auxiliary stirrer			231096
Low pressure stirrer	Grinding type	\$24/40	231097
	Grinding type	\$29/40	231098
Grounding adaptor			000141

REFERENCE DATA



* Standard accessory is used for the stirring propeller.
LR500 Series: O.D. 75 mm (four blades)

* Following beakers are used.
10 liter beaker for 8 liter stirring volume.
5 liter beaker for 4 liter stirring volume.
3 liter beaker for 2 liter stirring volume.
1 liter beaker for 0.5 liter stirring volume.

* Unit of viscosity: $1\text{Pa} \cdot \text{s} = 10^3 \text{cP}$

* Judge the stirring condition by visual inspection.

Limited Liability

Always operate equipment in strict compliance to the handling and operation procedures set forth by this instruction manual.

Yamato Scientific Co., Ltd. assumes no responsibility for malfunction, damage, injury or death, resulting from negligent equipment use.

Never attempt to disassemble, repair or perform any procedure on LT500 series units which are not expressly mandated by this manual. Doing so may result in equipment malfunction, serious personal injury or death.

Notice

- **Instruction manual descriptions and specifications are subject to change without notice.**
- **Yamato Scientific Co., Ltd. will replace flawed instruction manuals (pages missing, pages out of order, etc.) upon request.**

Instruction Manual

Stirrer

LR500A/500B

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