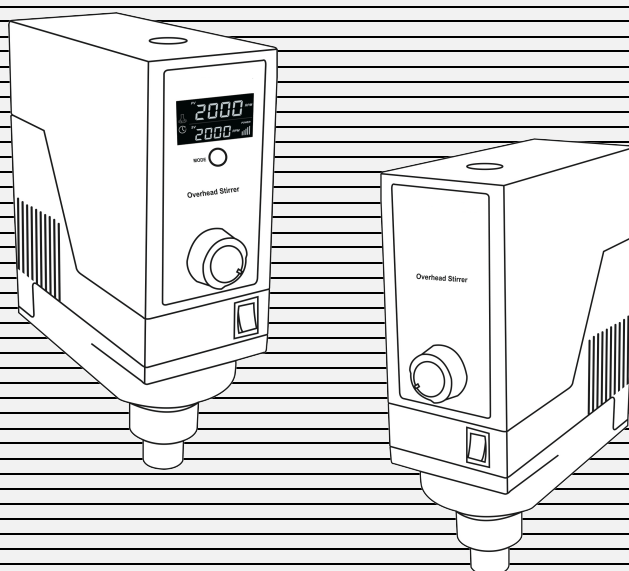


Laboratory Overhead Stirrer **OSD-10/20/30**

OPERATING MANUAL

* Also for Analog Overhead Stirrer, OSA-10/20/30



- We greatly appreciate your purchase of the OSD-10/20/30 Overhead Stirrer.
- To be sure you take maximum advantage of all the features the OSD has to offer, read these instructions carefully and use the set properly. Be sure to keep this manual for future reference, should any questions or problems arise.

SERIAL NO. _____

PLEASE RECORD UNIT SERIAL NUMBER ATTACHED TO THE
REAR OF THE UNIT FOR FUTURE REFERENCE.

English : 1 ~ 20 Page

Korean : 21 ~ 40 Page

■ SAFETY PRECAUTIONS

◆ Safety symbol used in the manual

Danger  The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance instructions in the literature accompanying the appliance.	Dangerous voltage  The lightning flash with arrowhead symbol, within an equilateral triangle, is intended to alert the user to the presence of uninsulated "dangerous voltage"
Explosion hazard  If volatile and explosive chemical materials are used, the explosion may occur.	High temperature  Be careful not to use at high temperature.
Notice  If the user arbitrarily dismantles or transforms the product, the fatal damage of the product may be induced.	Approach prohibition  Prohibit the user from approaching to this area.
warning  If the product is mishandled while ignoring this symbol, the danger by which human beings are dead or severely injured may occur.	Contact prohibition  Prohibit the contact at the moment that leads to the accident.
Caution  If the product is mishandled while ignoring this symbol, the possibility in which human beings are injured or property damage occurs exists.	 Observe the safety rules.
 Be careful to maintain the horizontality of the product and not to fall to the ground.	 Earth
 Keep the product out of the direct rays of the sun.	 OFF position of power switch  ON position of power switch  Connection point of the neutral wire of installation  AC voltage

WARNING :

TO PREVENT FIRE OR SHOCK HAZARD, DO NOT EXPOSE THIS APPLIANCE TO RAIN OR MOISTURE.



CAUTION
RISK OF ELECTRIC SHOCK
DO NOT OPEN



CAUTION : TO REDUCE THE RISK OF ELECTRIC SHOCK, DO NOT REMOVE COVER. NO USER SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.

- **Precautions at transportation and installation**



- Please never tilt or lay the product down during transportation.
- Be careful not to drop when transporting the product.
- This product was manufactured to move normally at the rated voltage. Confirm the voltage state before the installation of product.



- Install the product in a place where the floor is hard and flat.
- Keep the set free from moisture, water and dust. It may cause overheating or short circuit. (Pollution Degree 2)
- Do not install the product in a location at an altitude of over 2,000 meters. (6,562 feet).



- Avoid high temperatures : Install the product out of the direct rays of the sun.
- When the product is moved, separate the power plug from a wall outlet, and then move not to damage the product. The cord damage becomes the root cause for an electric shock or an ignition.



- If the product was moved or stored in high humidity state, identify the packaging state of the product before use.
In case that the carton box or wooden box is soaked in water, consult with an engineer about the matter. Do not operate the equipment before the safety is confirmed. This wetting state may be the cause of an electric shock or a fire.
- When installing and using the product, please certainly use the power cord provided with the products.

● Precaution in use



- Please be familiar with the user manual before using this product, and operation should be performed only by qualified personnel.
- This product must be used within the permitted standard load resistance.
- This product should be operated in a room with temperature maintain between 5°C and 40°C. Long-term use in an environment that exceeds the allowable range may cause a malfunction.



- Do not cut or process the power cord or do not bend it by force or pull or tie up it. In addition, if heavy things are placed on the power cord, it may cause damage and it may become the root cause of a fire or an electric shock.



- Please do not touch or manipulate the electrical parts such as the power plug with wet hands electric shock.
- Please do not operate the product by manipulation of the plug to avoid electric shock or short circuits.



- Do not operate the product in the outdoors. It is not allowed to use it at the place that is exposed to the sun or at the place that is gotten in the rain. This leads the product to overheating or electric malfunction.



- Do not use the product on a high place or at high temperature. Do not use the product near the heater or the wind of air conditioner.
The accident by the overheating of the equipment can occur.



- Do not operate the equipment at the place of an inflammable danger or a fire danger. This triggers the severe accident such as an explosion or a fire.



- Please do not use the flammable spray such as lacquers and paint, or volatile, flammable chemicals and its similar product, in the proximity of the product. They may cause the ignition due to the spark of switch.
- If you detect any noise, which is unlike any other time, or it exhibits wrong movement symptom, immediately turn off the power of the product and separate the power cable from the body.
- Please regularly check whether dust or dirt are on the power plug and completely connect the plug. If the plug is covered with dust, or the connection is not complete, it will cause an electrical shock or fire.
- Please separate the power plug from the outlet for safety when the product is unused for long periods of time to avoid overheating or ignition due to dust.
- Please handle the power cord carefully. Hold the plug when unplugging the cord
- The fluctuation of main power voltage should be lower than +/-10% of the nominal voltage.
- The maximum relative humidity is 80% at 31°C and 50% at 40°C.
- Please maintain the clean condition of this product by removing the foreign matter while gently wiping with the neutral detergent and a dry cloth after checking whether the foreign matter present or not, before and after using this product.

■ INTRODUCTION

Thank you for purchasing Overhead Stirrer of LK LAB KOREA Co., Ltd.
We, LK LAB KOREA Co., Ltd., started to manufacture and supply highly reproducible and reliable products

in the basic equipment for basic science research such as biotechnology, medicine, environment, and chemistry. Especially, in various experimental equipment for various purposes, the accumulated know-how of LK LAB KOREA Co., Ltd. has achieved high convenience and reliability by achieving commonization and systematization of the methods of use.

This product is manufactured as subminiature size for the effective use in customer's laboratory, and it guarantees low noise and low vibration to maintain the comfortable environment of laboratory. In addition, it was designed by adopting electrical and instrumental safety devices to realize the use safety. We, LK LAB KOREA Co., Ltd. pursues customer satisfaction as the best value, We will do our best to implement steadily. Thank you.

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① BEFORE USING

Pay attention to the following before using this unit:

- **Moving the set**

To prevent short circuits or damaged wires in the connection cords, always unplug the power cord safely.

- **Before turning the power switch on**

Check once again that all connections are proper and that there are not problems with the connection cords.

- **About operating manual**

Read and understand all the instructions in the user manual before using the products.

In any case, we don't bear responsibility for the damage of product which occurs by no observance for the requirements of user manual. The contents of user manual may be changed or improved. Use only for the intended purpose which is described in the user manual. After reading, store this manual along with the warranty in a safe place.

- **Note that illustrations in this manual may differ from the actual set for explanation purposes.**

② FEATURES

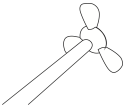
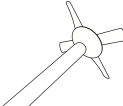
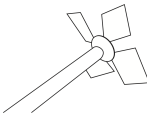
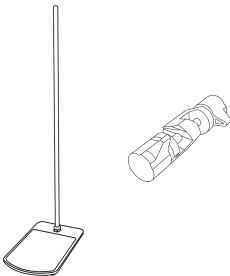
The Overhead Stirrer, which is produced by LK LAB KOREA Co., Ltd., is used for various kind of laboratory works such like Chemistry, Life Science, Medical Science, Pharmacology, etc.

This product was developed and manufactured considering the best possible ease for use and safety, and has the following features.

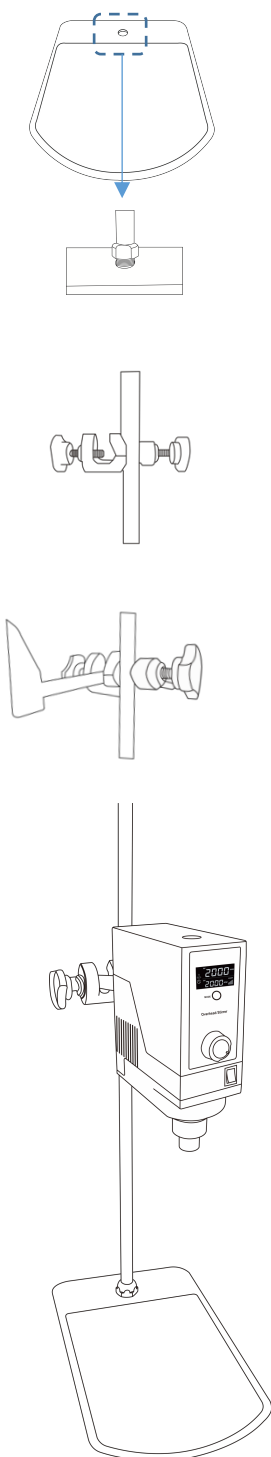
- Ideal for Stirring Material of Viscosities Ranging from Light to High-Viscosity Fluids.
- Digital Fuzzy Controller - The product can control the speed of operation precisely and Smooth Start and Change of the Stirring Speed. (for Digital models)
- Digital Feedback Control: Steady and constant Stirring Speed against Viscosity Change of a sample during Reaction.
- High Fidelity LCD Display - The wide display enable users a convenient checking on current range of set values for the operation of the product. (for Digital models)
- Jog Dial and touch button were made by an excellent design focused on the convenience of users and maintenance thereof. (for Digital models)
- The timer installed in the product up to 99 hours and 59 minutes. (for Digital models)
- Chrome-Plated Anti-Rust Chuck and Precise Impeller holding part with Stainless Ste.
- Over-Load Protection and Over-Heat Protection Functions for Motor.
- Anti-Trembling function realize High Stability of Stirring.

③ **PRODUCT INSTALLATION**

Composition identification

Basic Components		Qty
1	 "OSD-10/20/30" Digital Overhead Stirrer Unit (Support Rod is included)	1
2	 "OSA-10/20/30" Analog Overhead Stirrer Unit (Support Rod is included)	
3	 Impeller, Propeller, 3 x bladed, Ø8 rod, Ø50 mm blade In OSD-10 or OSA-10 Set package	
4	 Impeller, Propeller, 4 x bladed, Ø8 rod, Ø70 mm blade In OSD-20 or OSA-20 Set package	1
5	 Impeller, Diamond, 4 x bladed, Ø8 rod, Ø90 mm blade In OSD-30 or OSA-30 Set package	
6	 Stand & Clamp	1
6	 Operating Manual (Drill Chuck Key & Spanner are included)	1

How to install



1. Place stand in to the appropriate location.
2. Connect Rod into stand and then fasten it by spanner.
3. Connect Clamp into Rod by turning it to clockwise direction.
4. Insert support Rod at the back side of Overhead Stirrer and then screw it by hand.
5. After connect support Rod into Clamp and screw it by turning it to clockwise direction.
6. Insert Impeller into the bottom of Drill Chuck. Impeller Length: up to 3~4cm from top of unit, if not the Impeller will be shaking when the unit is stirring.
7. After that, fasten Drill Chuck Key.
8. Complete assembly.

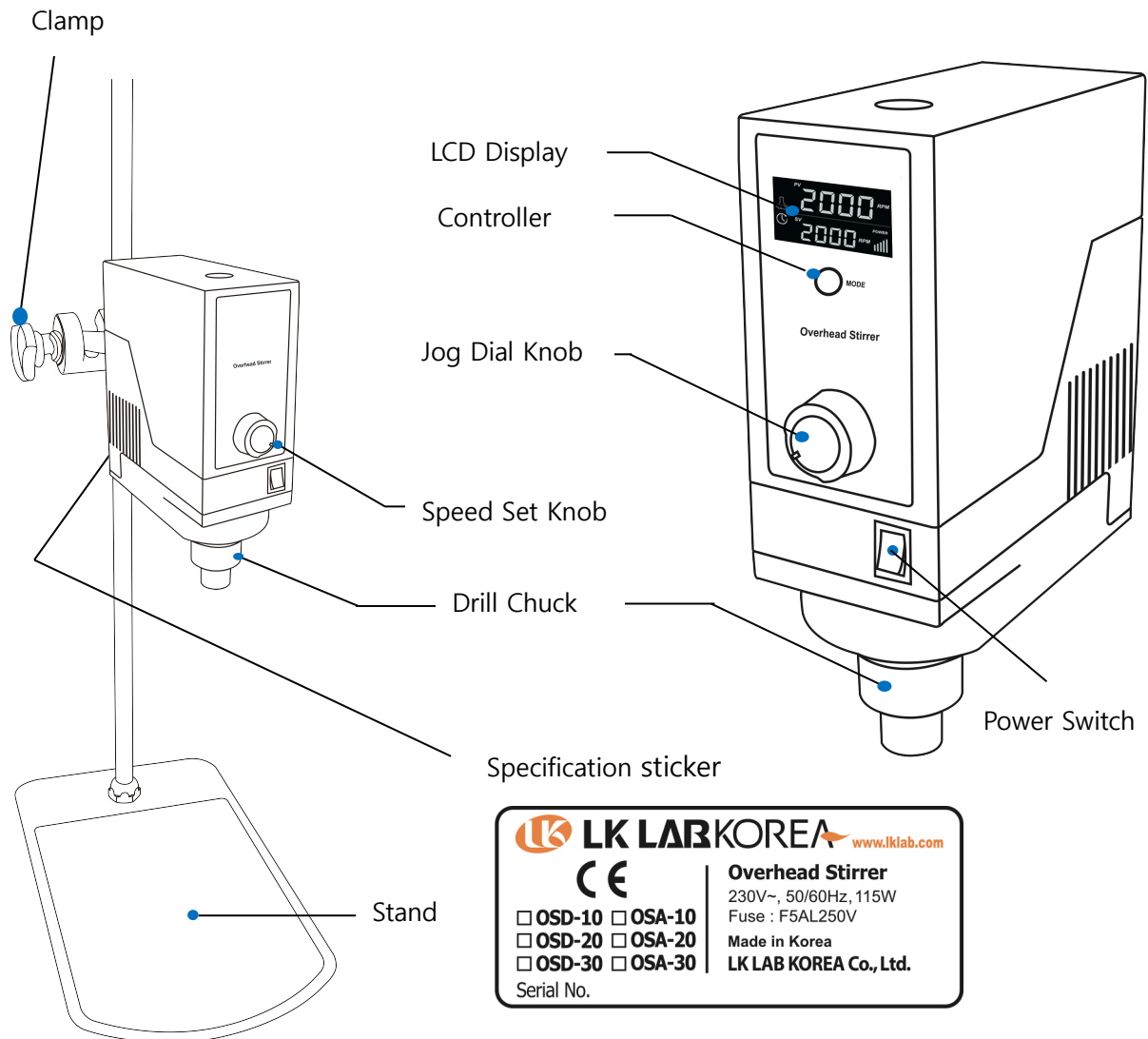
Product specification

Model	OSD-10	OSD-20	OSD-30
Stirring Capacity	Max. 25 Lit. (H ₂ O)	Max. 40 Lit. (H ₂ O)	Max. 60 Lit. (H ₂ O)
Maximum Viscosity	70,000 mPas	100,000 mPas	150,000 mPas
Maximum Torque	120 Ncm	180 Ncm	270 Ncm
Gear Rate	2.0:1	3.0:1	4.5:1
Speed Range	100 to 2,000rpm	80 to 1,200rpm	50 to 800rpm
Motor Rating (Input / Output)	110 / 85 W		
Timer	99hr 59min		
Display	Digital LCD Display with Back-Light Function		
Controller	Digital Fuzzy Controller with Touch Button & Rotary Switch		
Max. Impeller Shaft Diameter	10 mm		
Permissible Temp. & Humidity	0 ~ 40°C, 80%		
Safety Device	Overload & Heat Protector for Motor		
Material	ABS and Aluminum		
Dimension & Weight	80 X 190 X h245mm, 3.9kg	80 X 190 X h245mm, 3.9kg	80 X 190 X h245mm, 3.9kg
Packing Size & Gross Weight	310 X 380 X h140mm, 4.4kg	310 X 380 X h140mm, 4.4kg	310 X 380 X h140mm, 4.4kg
Power Consumption	75 W	100 W	120W
Power Supply & Cord Plug	1 Phase, AC 120V, 60Hz or AC 230V, 50/60Hz, with Cord/Plug		

Model	OSA-10	OSA-20	OSA-30
Stirring Capacity	Max. 25 Lit. (H ₂ O)	Max. 40 Lit. (H ₂ O)	Max. 60 Lit. (H ₂ O)
Maximum Viscosity	70,000 mPas	100,000 mPas	150,000 mPas
Maximum Torque	120 Ncm	180 Ncm	270 Ncm
Gear Rate	2.0:1	3.0:1	4.5:1
Speed Range	100 to 2,000rpm	80 to 1,200rpm	50 to 800rpm
Motor Rating (Input / Output)	110 / 85 W		
Speed Control	Stepless		
Max. Impeller Shaft Diameter	10 mm		
Permissible Temp. & Humidity	0 ~ 40°C, 80%		
Safety Device	Over Heat Protector for Motor		
Material	ABS and Aluminum		
Dimension & Weight	80 X 190 X h245mm, 3.9kg	80 X 190 X h245mm, 3.9kg	80 X 190 X h245mm, 3.9kg
Packing Size & Gross Weight	310 X 380 X h140mm, 4.4kg	310 X 380 X h140mm, 4.4kg	310 X 380 X h140mm, 4.4kg
Power Consumption	75 W	100 W	120W
Power Supply & Cord Plug	1 Phase, AC 120V, 60Hz or AC 230V, 50/60Hz, with Cord/Plug		

④ Check before operation

Product structure



<Analog Overhead Stirrer>

<Digital Overhead Stirrer>

- Jog Dial Knob : Adjust and Set of RPM and Timer value.
- Speed Set Knob : Regulating of speed.
- LCD Display : Show set and present value which are speed and timer (for Digital model only).
- Controller : Controlling and checking of the operation.
- Power Switch : Turn on / off the power.
- Specification sticker : Recording the specification and serial number of product.

Control panel

<Digital Overhead Stirrer>

<Analog Overhead Stirrer>



- LCD Display : Show set and present value which are speed and timer (for Digital model only).
- Speed Set in Jog Dial(Speed Set) Knob : Stepless speed set system.
Acceleration if it is regulated to clockwise.
Deceleration if it is regulated to anticlockwise.
- Timer Set in Jog Dial Knob. (Digital model only)
Increase if it is regulated to clockwise.
Decrease if it is regulated to anticlockwise

* Operation Status ICON

ICON	Stop Status	Running Status
	Blinking at Setting RPM Mode. Off at the other mode.	Always On
	Blinking at Setting Timer Mode. Off at the other mode.	Always On
	On in error status / Off in normal operation	

⑤ OPERATION

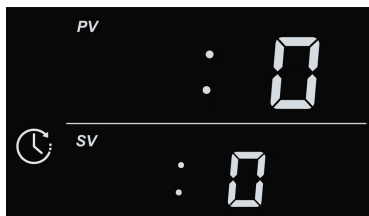
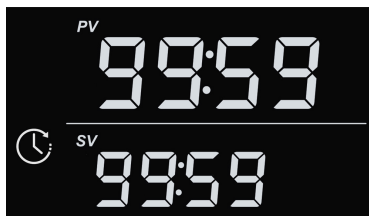
- Confirm whether the power cable is normally connected or not.
- Confirm whether or not the Impeller into Overhead Stirrer.
- Confirm whether or not the setting of sample.

Digital Overhead Stirrer Stirring Operation (OSD-10/20/30)

Controller	How to operate
 <OSD-10 model>	1. The display for the setting of RPM will appear initially. Users can see the unit of RPM on the display. 2. The figures displaying on PV are the values of the RPM of current operation whereas the figures displaying on SV are the values of set RPM 3. Stirring speed range : OSD-10 – 100 to 2,000rpm OSD-20 – 80 to 1,200rpm OSD-30 – 50 to 800rpm
 <OSD-10 model>	4. Turn the Jog Dial in the controller clockwise or counterclockwise to adjust the set values thereof then the agitation of the product will be initiated simultaneously. The range of set values spans depend on model and the set values will vary by the unit value of 5 rpm in OSD-10 models and 1 rpm in OSD-20/30 models. 5. If the set stirring speed is 0 RPM, Start operation is applied through the Turning of the Jog Dial, and if the setting value of the stirring speed is above 100 RPM(OSD-20 : 80, OSD-30 : 50), the value is changed by Turning of the Jog Dial and the START operation is performed by the Push button. 6. If turning the Jog Dial to counter-clockwise during the stirring operation, the operation can be stopped by reducing the speed value or by setting it to 0 RPM, or the Stop operation can be carried out by the Push button of the Jog Dial.

7. Push the Jog Dial for 2~3 seconds then the set value of RPM will be blinking and be stored thereby. The stored value of RPM that remaining unchanged will be reappearing by the next turn-on of power supply.
8. The POWER rod bar of the Display represents the stirring power, and it is displayed at all times during the stirring operation. The stirring power is automatically controlled to match the setting RPM according to the viscosity of the sample.

Digital Overhead Stirrer Setting Timer (OSD-10/20/30)

Controller	How to operate
 The image shows a digital display with two sections. The top section is labeled 'PV' and shows ': 0'. The bottom section is labeled 'SV' and also shows ': 0'. There is a clock icon to the left of the 'SV' label.	1. Click the MODE button in the display of setting values of operation stirring then the display will be changed into the display of setting values of the timer. 2. The figures to be displaying on PV represent the remaining time determined by the timer whereas the figures displaying on SV represent the time set by the timer.
 The image shows a digital display with two sections. The top section is labeled 'PV' and shows '99:59'. The bottom section is labeled 'SV' and also shows '99:59'. There is a clock icon to the left of the 'SV' label.	3. Rotate the Jog Dial on the controller clockwise or counterclockwise to adjust the set values of the timer. The range of values of the time set by the timer can be up to 99 time and 59 minutes and the set value will be varying by a unit of 1 minutes. 4. Push the Jog Dial once and shortly then the product will start the timer operation. 5. Push the Jog Dial once shortly in the display of setting of timer during an operation of the product then the product in its timer will stop thereby. 6. When the value of timer is set 0 then the product will operate with set value continuously. In the case the value of timer is entered into the product then the product will stop its operation of automatic agitation with an alarm on the expiry of the set value of timer. 7. Push the Jog Dial for 2~3 seconds then the set value of timer will be blinking and be stored thereby. The stored value of timer that remaining unchanged will be reappearing by the next turn-on of power supply.

Digital Overhead Stirrer Locking MODE (OSD-10/20/30)

Controller	How to operate
 <OSD-10 model>	1. In every mode, when push the MODE button 2~3 seconds then the display will be changed into the display of locking mode. 2. Accelerating and stop right after the locked display will prevent potential risks of malfunctioning of the product due to unintended turning of Jog Dial or disabled application of push button. Besides, the current temperature, current stirring speed and remained timer value of operation will be displayed thereon together for users' convenience. 3. Upper level LCD will show present RPM and lower level LCD will show TIMER. 4. When push the Mode button 2~3 seconds in Locking MODE, Locking MODE will be released and then will show last set mode.

■ Self-Protect Functions (Digital & Analog Model)

- Over-Heat Protection: When the stirrer is operated over its capacity for long time, the motor could be heated by the overload. If the temperature of the motor exceeds the permissible temperature, the unit stops stirring in order to protect itself. When the overhead stirrer is recovered to normal situation, it can work again. Stopped by abnormal situations, it works instantly by removal of specific causes. It is recommended to use other model for higher viscosity or to change the impeller, when the stirrer is stopped by high viscosity of applied liquid.

■ ERROR Message (Digital Only)

- If Error situations are occurred, the Error warning is displayed on the idle screen.

ERROR Message	Error Name	Cause	Remedy
ERR1	Power Error	Over the viscosity range or abnormal in speed sensor	Please get rid of Obstacle factor and then push the Jog dial to restart.
ERR2	Current Error	It may occur in current rising by high viscosity or obstruction which is going to prevent stirring	Please get rid of Obstacle factor and then push the Jog dial to restart.
ERR3	Driver Error	Damage in motor driver part by overload.	Exchange motor drive

Analog Overhead Stirrer Stirring Operation (OSA-10/20/30)

Controller	How to operate
	1. Check point: Before main power switch "on", please make sure to have Speed Set Knob at "MIN" location for sure. If power is supplied when Speed Set Knob is not at "MIN" position. During the power supply, there might be critical trouble to Impeller or split out the sample. 2. Stirring speed range : OSA-10 – 100 to 2,000rpm OSA-20 – 80 to 1,200rpm OSA-30 – 50 to 800rpm
 Point of movement speed	3. Adjust the knob to be placed at the appropriate position using the Speed Set Knob of the controller. 4. If you turn Speed Set Knob into clockwise direction, SPEED will be increased, turn Speed Set Knob into counter clockwise, RPM will be decreased.

■ Self-Protect Functions (Digital & Analog Model)

- Over-Heat Protection: When the stirrer is operated over its capacity for long time, the motor could be heated by the overload. If the temperature of the motor exceeds the permissible temperature, the unit stops stirring in order to protect itself. When the overhead stirrer is recovered to normal situation, it can work again. Stopped by abnormal situations, it works instantly by removal of specific causes. It is recommended to use other model for higher viscosity or to change the impeller, when the stirrer is stopped by high viscosity of applied liquid.

⑥ Product management

Regular inspection

Classifications	A period of checking time		
	Day	Week	Month
Connection state of the source of electric power	√		
Damage of power cable	√		
Cleaning state of power cable	√		
Assembly state of accessories	√		
Cleaning state of regulator	√		
Shape preservation of regulating foot		√	
Extent of noise		√	
Normal control of movement mode		√	
Normal control of regulating knob		√	
Separate and clean the Impeller		√	

Cleaning and storage

● Cleaning of the product

Maintain the cleaning state of the product by regular cleaning. The regular maintenance of the product extends the use period of the product and minimizes the contamination of specimen.

1. Confirm whether or not any foreign matters exist, and if yes, immediately wipe off them.
2. Do not use abrasive or detergent based on solvent.
3. If a chemical substance stains the product, wear gloves and a mask which are composed of chemical resistance material and wipe off them with a piece of dry cloth.
4. When cleaning the product, you must separate the power cord from the body.
5. For the part from which the contaminant is not easily erased, wipe off only the part with the towel wetting with the solvent that has low freezing point.

● Disposal of the product



- When the warranty period of the product is terminated, it should be disposed in accordance with the management regulation of wastes of the corresponding territory.

● Storage of the product

1. If the product is not used for long time, separate the power socket from the body, wrap and store it.
2. Store them in the same place not to lose the components.

⑦ Troubleshooting

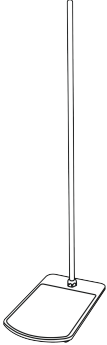
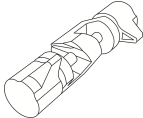
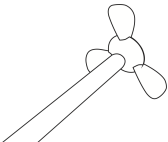
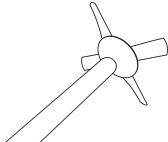
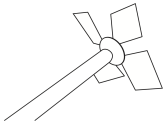
Error identification

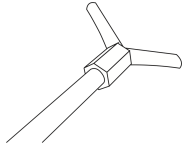
Situation	Corrective Action
If Jog Dial knob does not operate. (Digital model only)	- Check the current mode. - Jog Dial knob does not operate in the Lock Mode.
ERROR 1/2/3 (Digital model only)	Informs the abnormality of the stirring operation. Please refer to P. 16 Error Message.
Too big noise	- Check connection of Impeller. - If noise comes from body, please call technical service.
In case of failing to operate.	- Confirm whether the power switch is ON or not. - Confirm whether power failure occurs or not. - Connect the power plug to the wall socket accurately. - If the short-circuit of fuse occurs, replace it. - Check the Locking MODE. (Digital model only)

■ Standard Viscosity

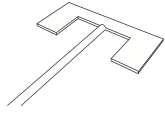
Material	Viscosity	Recommend model		
Water	1	OSD-10 OSA-10	OSD-20 OSA-20	OSD-30 OSA-30
Milk	3			
Soybean oil	160			
Varnish	500			
Lacquer	1,000			
Honey	3,000			
Standard Viscosity	10,000			
Standard Viscosity	15,000			
Ketchup	30,000			
Standard Viscosity	50,000			
Mustard	70,000			
Corn Syrup	100,000			
Standard Viscosity	150,000			
Peanut Butter	250,000			

⑧ Accessory

Component	Ordering Number	Information
		Standard Plate Stand, 25x37cm Plate with Rod and Silicon Pad
		Clamp, up to Ø23mm Rod
		Impeller, Propeller, 3 x bladed, Ø8 rod, Ø50 mm blade
		Impeller, Propeller, 3 x bladed, Ø8 rod, Ø60 mm blade
		Impeller, Propeller, 3 x bladed, Ø8 rod, Ø80 mm blade
		Impeller, Propeller, 3 x bladed, Ø8 rod, Ø100 mm blade
		Impeller, Propeller, 3 x bladed, Ø10 rod, Ø60 mm blade
		Impeller, Propeller, 3 x bladed, Ø10 rod, Ø80 mm blade
		Impeller, Propeller, 3 x bladed, Ø10 rod, Ø100 mm blade
		Impeller, Propeller, 4 x bladed, Ø8 rod, Ø70 mm blade
		Impeller, Propeller, 4 x bladed, Ø8 rod, Ø90 mm blade
		Impeller, Propeller, 4 x bladed, Ø8 rod, Ø100 mm blade
		Impeller, Propeller, 4 x bladed, Ø10 rod, Ø90 mm blade
		Impeller, Propeller, 4 x bladed, Ø10 rod, Ø100 mm blade
		Impeller, Diamond, 4 x bladed, Ø8 rod, Ø90 mm blade
		Impeller, Diamond, 4 x bladed, Ø8 rod, Ø100 mm blade
		Impeller, Diamond, 4 x bladed, Ø10 rod, Ø100 mm blade



Impeller, Centrifugal, 2 x bladed, Ø8 rod, Ø100 mm blade
Impeller, Centrifugal, 2 x bladed, Ø8 rod, Ø90 mm blade
Teflon-coated
Impeller, Centrifugal, 2 x bladed, Ø8 rod, Ø120 mm blade
Teflon-coated



Impeller, Anchor, 2 x bladed, Ø8 rod, Ø70 mm blade
Impeller, Anchor, 2 x bladed, Ø8 rod, Ø90 mm blade
Impeller, Anchor, 2 x bladed, Ø10 rod, Ø90 mm blade
Impeller, Anchor, 2 x bladed, Ø10 rod, Ø140 mm blade

■ Free warranty service

If any malfunction due to the flaw of the product occurs within 2 years from the purchasing date, the product is free repaired or replaced it with the same kind product after inquiring our head office

■ Onerous service

- In case after a lapse of warranty service period of 2 years. In case the product is arbitrarily remodeled or repaired.
- In case the malfunction by natural disaster. (fire, damage of sea water, gas disaster, flood damage and so on).
- In case the malfunction occurs by not observing the safety caution and warning described in the user manual.
- In case the malfunction occurs by the handling carelessness of the user.

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