

THINKY

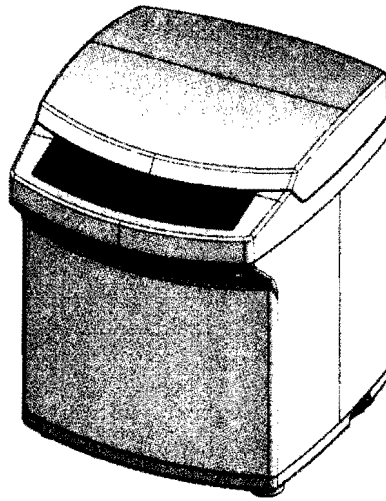
EX-4060B

Planetary Centrifugal Mixer

THINKY Mixer

ARE-310

Instruction Manual



- For your safety, read this manual carefully before operating the unit and be sure to understand the contents.
- Always keep this manual in a designated location for easy access when needed.

Introduction

THINKY Mixer "ARE-310" is a de-aerating mixer which we designed and developed for mixing various kind of liquid or powder materials and de-aerating them at the same time.

Please read carefully this manual and understand the contents before using this de-aerating mixer to ensure use.

There are high voltage electrical portion and high speed rotation portion inside of this unit. This machine is designed to prevent from the dangers but it may cause serious accident by damage of protection function if they do not keep way of use such as described warning or safety clause.

If you have any questions or require further information about this manual, please contact THINKY CORPORATION or your distributor. Never use the unit if any point is unclear.

● Contact

Your distributor, or

THINKY Corporation

Marketing Office Tokyo, Japan

3-7-16 Iwamoto-cho Chiyoda-ku Tokyo, #101-0032 Japan

TEL: +81-3-5821-7455 FAX: +81-3-3865-7833

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3-4 Kitashin-cho Chuo-ku, Osaka, #540-0023 Japan

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● **Indications used in this manual**

Safety precautions are classified into the following three levels only to prevent possible accidents based on mishandling or incorrect operation.

Please read carefully these safety precautions and understand the contents before using the unit.

Symbol	Definitions
 DANGER	If the warning is ignored, it will result in death or serious injury.
 WARNING	If the warning is ignored, it may result in death or serious injury.
 CAUTION	If the clause is ignored, it may result in minor or moderate injury.

In addition to the above symbols, this manual carries the following symbol throughout. Be sure to note the following explanations for correctly handling the unit.

Symbol	Explanation
	If the clause is ignored, the unit could be damaged.
	The information for reference to use.
	Indication for sections and items to be referred to.

- **THINKY Corporation shall not be responsible for the results of using this unit, if used in a manner not described in this manual.**
- **The contents in this manual are subject to change without notice following continual improvement of the unit.**
- **Copying this manual in whole or in part, without written authorization from THINKY, is strictly prohibited.**
- **Upon resale or leasing out of the unit to another party, make sure to include this manual and any other documents supplied when the unit was initially delivered.**
- **Installation of this unit, operation procedure and disposal of its components must obey the national and local laws and regulations where it is used.**

Limitation of the Warranty and Liability

Customers are kindly requested to agree to the following conditions and the extent of THINKY's warranty and liability as below for use of this unit:

THINKY warrants all THINKY products to be free from hardware defects in material and workmanship for 12 months from the date of purchase throughout the duration of the warranty period. The date of purchase will be determined by a valid proof of purchase or by the product purchase history database maintained by THINKY.

In the event that this product should fail during this period, THINKY reserves the right either to replace or to repair the product at its own discretion. If the product becomes defective during the warranty period, THINKY will repair or replace any defective component except for consumables at no charge to the original owner, subject to the limitations and requirements listed. Units purchased second-hand are NOT covered by this warranty and THINKY will service these products for a fee. All returns for service shall be subject to repair or replacement, at THINKY's discretion. There are no returns for credit or refunds.

THE FOLLOWING ARE REQUIRED BY THINKY when requesting warranty service:

Units or components for return must be sent to the location designated by THINKY or an authorized distributor, within return policy time period, with proof of purchase from THINKY or from an authorized distributor.

The product must be packed in its original shipping carton or in suitable packing offering a similar degree of protection.

DO NOT forget to place bubble wrap between the unit and the lid, and tape the lid onto the unit. To avoid scratches or other damage to the product during shipping, separate items such as power cables. Each item should be individually wrapped and placed in the same package.

The limited warranty provided by THINKY does not cover :

1. Damage during transportation for delivery. Any damages during shipment must be claimed within 5 days for insurance claims after the equipment is received.
2. The cost of returning the product to THINKY (i.e. this is the user's responsibility)
3. Any product with a removed serial number or identification altered in any way
4. Exterior cosmetic damage
5. Damage, defect or failure caused by or resulting from: improper installation or operation of the unit due to incorrect voltage or power supply, improper service by an unauthorized service facility, abuse, neglect, accident, misuse, fire, flood, or act of God, unauthorized modification by the end user, units serviced by unauthorized service personnel.
6. Damage resulting from loss of time or inconvenience, cost of temporary replacement unit or spare, property damage caused by this unit or its failure to work, or any other incidental or consequential damage.
7. Damage caused by user's misuse, ignorance of instruction, material spillage and/or dropping of objects into the mixer, or any other damage which may or may not be caused by the product is not covered by this Limited Warranty.
8. Any defects of units distributed by unauthorized distributors in the area.
9. Problems or accidents caused by scattering or spillage of mixing substances or solvent.

10. Damages resulting from flaws and dents in the system arising during operation.
11. Problems or damages caused by an improper operating procedure, mishandling and abusing the mixer, or careless handling.
12. The following expendables are beyond the scope of the warranty.
 - Containers
 - Drive belts
 - Fuse

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1. Safety Precautions

1-1 Safety Precautions

1-1-1 General

 WARNING	<ul style="list-style-type: none">• Never use this unit for an purpose other than mixing and de-aerating.• Never disassemble or modify this unit.• Do not use the unit under the following circumstances:<ul style="list-style-type: none">– In a volatile atmosphere or where gas or steam is remained– Around flammable substances• Do not handle the power plug with wet hands.
--	--

 CAUTION	<ul style="list-style-type: none">• Do not step onto the unit.• Do not place anything onto the unit.• Do not insert your fingers or any other thing into the opening.• Do not place anything inside or spill liquid over the unit.• Do not splash water over the unit or wet it.• Do not use the unit if the exterior has any damage such as a rupture or large dent.• Do not obstruct the radiation of heat.• Do not operate the unit continuously for a long time. Keep some cooling time.
--	---



CAUTION

- While not in use, remove the power plug from the power outlet.
- When removing the power plug, do not pull on the cable but pull by the power plug.
- Do not supply any voltage other than as rated.

1-1-2 Installation



CAUTION

- Do not install or use the unit in any of the following environments:
 - Unstable location
 - Vibration or impact is possible
 - Presence of moisture, oil or chemicals, or presence of excessive dust, metal powder or salt
 - Excessive humidity or dew condensation due to abrupt temperature change
 - Direct sunlight or rain
 - Working environmental conditions or ambient environment is not as designated
(See 2-2 Specifications "Working environmental conditions" and "Working ambient environment")
- Turn off the power switch and pull the power plug out in dismantling or mounting the transfer lock.
- Do not damage, modify or forcibly bend or pull the power cable. Do not place anything on the power cable.
- Do not use a damaged power cable.

1-1-3 Operation



- Do not open the lid during operation.
- Do not operate the unit with the lid open.



- Do not operate the unit with wet hands.
- Do not shake or relocate the unit during operation.
- If abnormal vibration, noise, smell or smoke is observed, push the START/STOP button immediately, stop the operation and pull the power plug out.
- Turn off the power switch in case of power failure.
- Don't insert your finger between rotating tray and machine frame.

1-1-4 Maintenance



- Before starting maintenance, turn off the power switch and pull the power plug out.
- Do not disassemble any part for your own inspection or repair.

1-1-5 Handling of Materials



- Always obtain a Material Safety Data Sheet (MSDS) for all the materials from the suppliers and handle them only after the characteristics and safety measures are fully understood.
- Always use adequate protective equipment or cloth as specified in the applicable MSDS to handle the material.
- Disposal of the material must comply with national and local laws and regulations where the device is used.

1-1-6 Disposal



- Disposal of this unit and consumables must comply with national and local laws and regulations where the device is used.

1-2 Labels

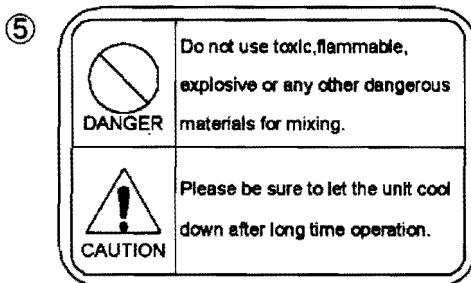
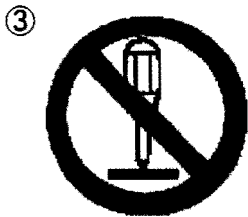
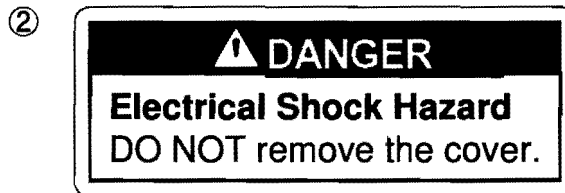
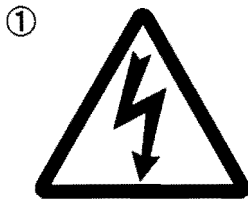
This unit has the following labels on it. Understand the contents of these labels fully before using the unit.

If any label is dirty, damaged or illegible, contact the dealer immediately whom you purchased the unit or THINKY and ask new labels (fee charged).



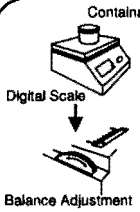
• Do not remove or stain any label.

1-2-1 Stickers and Warning Labels



⑥

CAUTION on Operations



Container

Digital Scale

Balance Adjustment

1. Please measure total gross weight of materials with container and adaptor on digital scale.
2. Please adjust balance according to the gross weight.
3. Please use only designated containers and adaptors.

Disregarding above CAUTION will cause severe damage to the machine.

⑦

AWATORI RENTARO
MODEL ARE-310
SERIAL NO.

THINKY Corporation MADE IN JAPAN

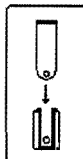
⑧

10A

⑨

120V AC
50/60Hz

⑩

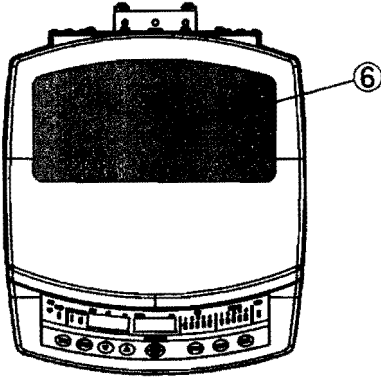


Door Unlock Tool

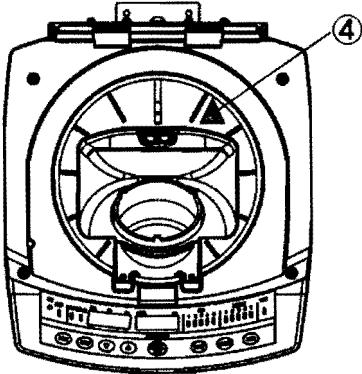
Insert the tool into the Door Unlock Slot on the front panel in case of no power supply.

1-2-2 Locations of Stickers and Labels

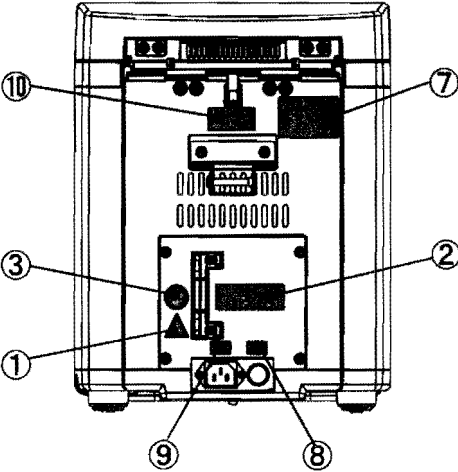
<Top>



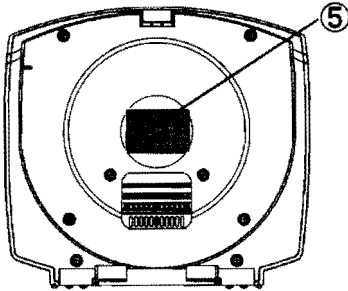
<Inner Upper Section>



<Rear>



<Lid Back>



2. Overview and Specifications

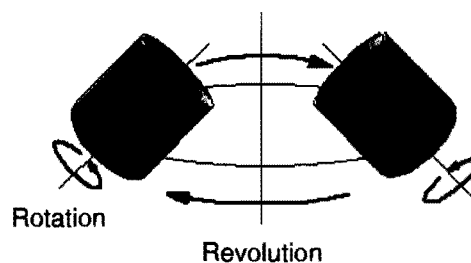
2-1 Overview

- Purpose of this unit

The THINKY Mixer ARE-310 is a mixer/de-aerator developed for mixing various materials (liquid, powder, etc.) and simultaneously de-aerating it.

- Principle of operation

The container loaded with materials rotates while orbiting (revolving alone) at a certain radius around an axis. This makes a big centrifugal force uninterruptedly, which compresses air bubbles, being created or already exists there, out of the materials and mixes them at the same time.



- Features

- Materials less than 250 ml/250 g (net weight) can be mixed at one time in a special container.
- The mixing mode for rotation (maximum 800 rpm)/revolution (maximum 2,000 rpm) and the de-foaming mode for rotation (maximum 60 rpm)/ revolution (maximum 2,200 rpm) can be set independently. Continuous operation is also possible.
- Non-contact method (with no mixing blade), prevents material deterioration.
- Highly constant reproducibility can be expected in mixing with no variation, regardless of the operator.

2-2 Specifications

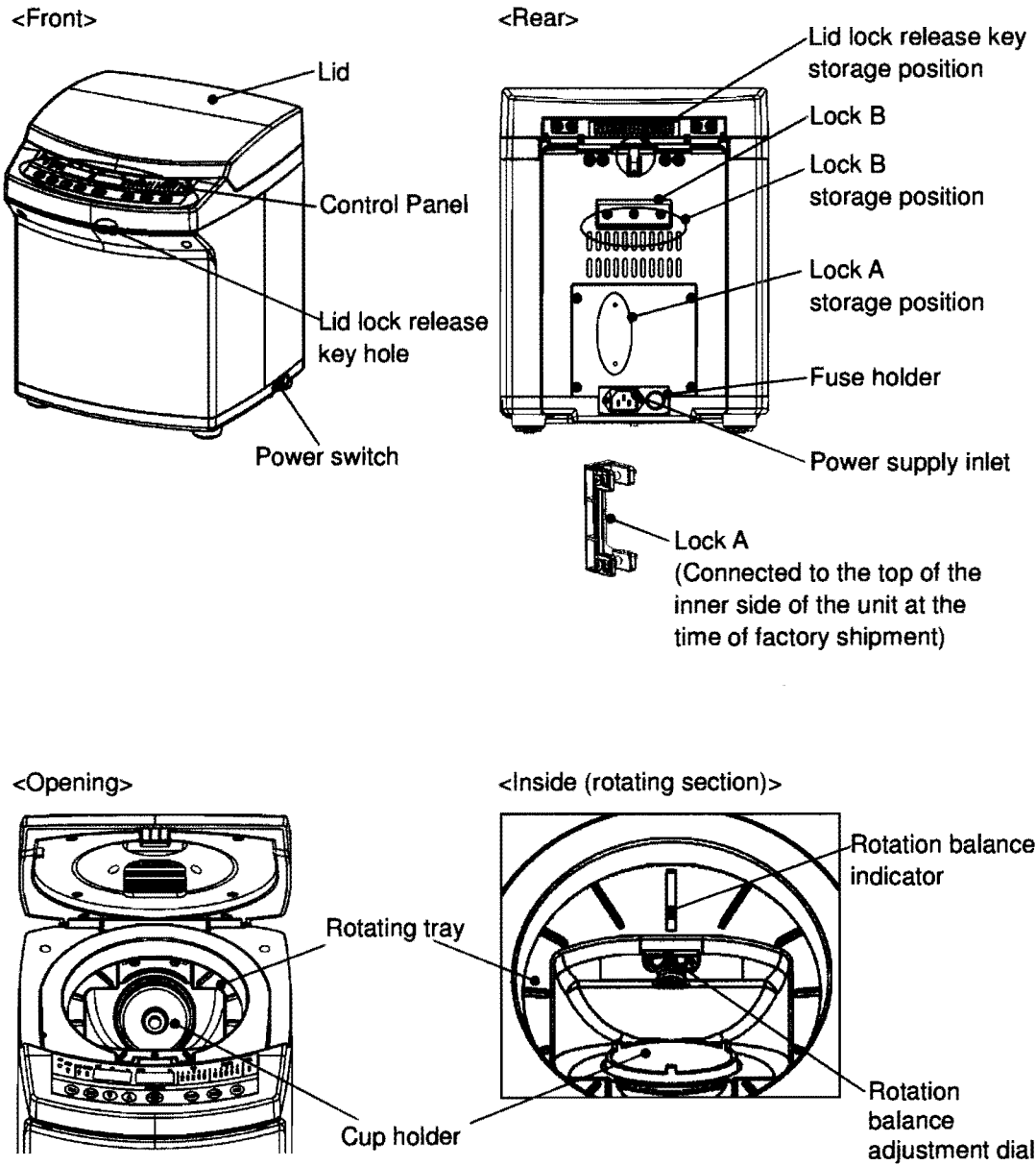
Product		Planetary centrifugal mixer "THINKY Mixer"
Model		ARE-310
Method		Planetary, propeller-less mixing method
Operating time setting range		0 second – 30 minutes (Maximum 30 minutes run/Setting in the unit of 1 second)
Mixing mode	Revolution speed	Maximum 2,000 rpm (STD Mode : fixed at 2,000rpm) (STEP Mode : 0 rpm and 200 rpm – 2,000 rpm, Setting in the unit of 10 rpm)
	Rotation speed	Maximum 800 rpm (1/2.5 of revolution speed)
De-foaming mode	Revolution speed	Maximum 2,200 rpm (STD Mode : fixed at 2,200 rpm) (STEP Mode : 0 rpm and 400 rpm – 2,200 rpm, Setting in the unit of 10 rpm)
	Rotation speed	Maximum 60 rpm (1/36.7 of revolution speed)
Standard container		Inner volume: 300 ml and 150 ml, Material: HDPE
Max. mixing volume		For 300 ml container: 250 ml, 250 g (net weight) 250 ml, 310 g (gross weight) For 150 ml container: 150 ml, 200 g (net weight) 150 ml, 240 g (gross weight, *excluding the adapter)
Supply power	Voltage	Single phase, AC120V ± 10%, 50/60 Hz
	Consumption power	At standby: 50 VA, During operation: Max. 900 VA
Working environmental conditions		Only for indoors, Altitude: Within 2,000 m, Pollution degree: 2(*)
Working ambient environment		10 – 35 °C, 35 – 85% RH (without condensation)
External dimensions		380 mm (H) × 300 mm (W) × 340 mm (D)
Main unit mass		About 18 kg



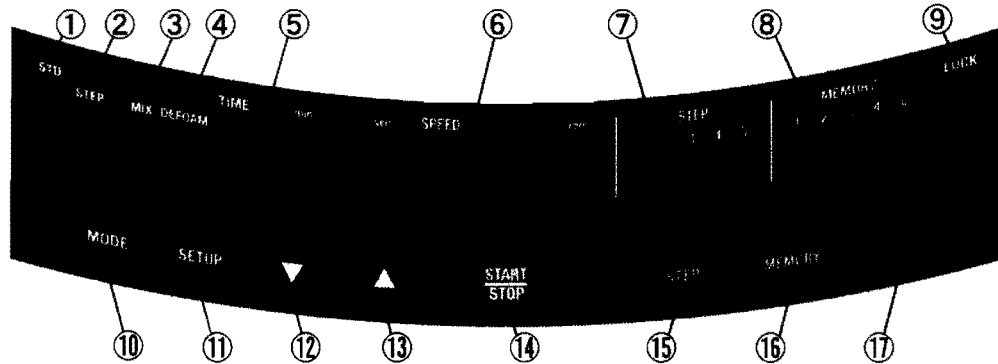
*: Pollution degree 2

In general, only nonconductive pollution occurs. In some cases, however, conductivity temporarily caused by dew condensation needs to be predicted.
(Example: Products used in ordinary office environments)

2-3 Components



<Control panel>



No.	Name	Function
①	STD lamp	Glow during the STD (Standard) mode operation.
②	STEP lamp	Glow during the STEP mode operation.
③	MIX lamp	Glow at the time of setting and during the mixing operation.
④	DEFOAM lamp	Glow at the time of setting and during the de-aerating operation.
⑤	TIME indicator	Displays the operating time within the range of 00 min. 00 sec. through 30 minutes 00 seconds
⑥	SPEED indicator	Indicates the revolution speed by 0 or within the range of 200 rpm through 2,200 rpm.
⑦	STEP number indication lamp (1 – 5)	Glow to indicate a selected STEP number.
⑧	Memory number indication lamp (1 – 5)	Glow to indicate a selected memory number.
⑨	LOCK lamp	Light when the lid is locked.
⑩	MODE button	Used for switching between STD mode and STEP mode.
⑪	SETUP button	Used for setting operating conditions. Press to change over the operation mode (between mixing and de-foaming) in each STEP.
⑫	DOWN button	Used for decreasing the value when setting the operating time or revolution speed.

No.	Name	Function
⑬	UP button	Used for increasing the value when setting operating time or revolution speed.
⑭	START/STOP button	Used for starting operation or stopping operation in an emergency.
⑮	STEP button	Used for selecting a STEP number. Press to change the STEP number in the order from STEP 1 through STEP 5.
⑯	MEMORY button	Used for registering operating conditions and selected an operating condition already registered. Push the memory number in the order from memory 1 through 5. Push it over one second registered operating conditions.
⑰	OPEN button	Used for releasing the lid lock.

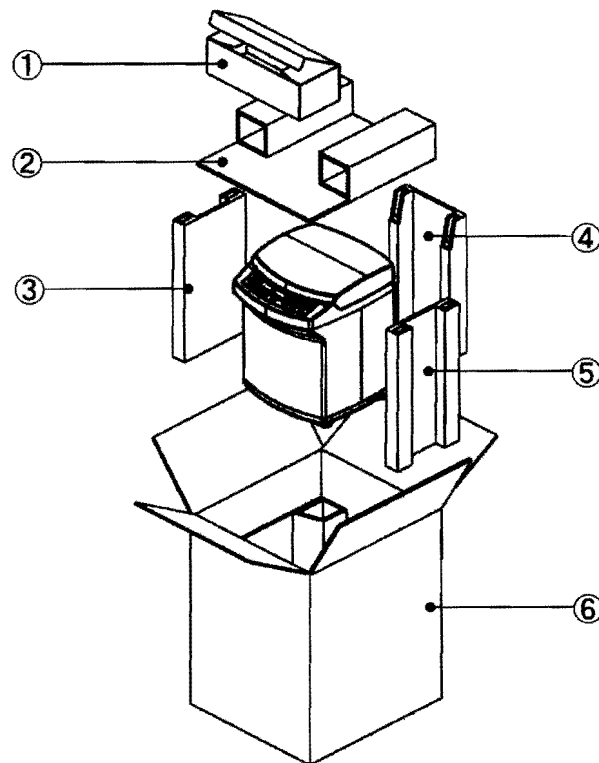
3. Installation

3-1 Unpacking

This THINKY ARE-310 is packed as shown below. Remove the packing bands to unpack the box, referring to this illustration. In case of re-shipping, pack the unit and fix with packing bands in the following procedure:



The outer cases and packing materials will be needed for re-shipping, so they must be carefully protected.



- | | |
|------------------|----------------|
| ① Accessory case | ④ Side board B |
| ② Top board | ⑤ Side board C |
| ③ Side board A | ⑥ Outer case |

3-2 Accessories

This THINKY ARE-310 is packed together with the following accessories in addition to the main unit. Check the contents immediately after unpacking the case.

Instruction manual (this manual)	1	
Power cable (including 3-pin conversion adapter *)	1	
300 ml container	3	
150 ml container	1	
Adapter for 150 ml container	1	
Rubber ring for 150 ml container	1	
Lid lock release key	1	
Shipping Lock A for top of inner side	1	Fixed to the bottom and rear side of the main unit when unpacking it.
Shipping Lock B for rear side	1	
M4×15 Phillips-head screw	2	
M4×35 Phillips-head screw	2	
M5×40 Phillips-head screw	1	

3-3 Required Hand Tools

For installation of this unit, suitable Philips screwdrivers fitting the above mentioned 3 types of screws are required.

3-4 Unlocking Shipping Locks

The THINKY ARE-310 is fitted with shipping locks for fixing the unit's rotating mechanism and preventing damage during shipment.

After installing the unit, remove these locks, as shown below:

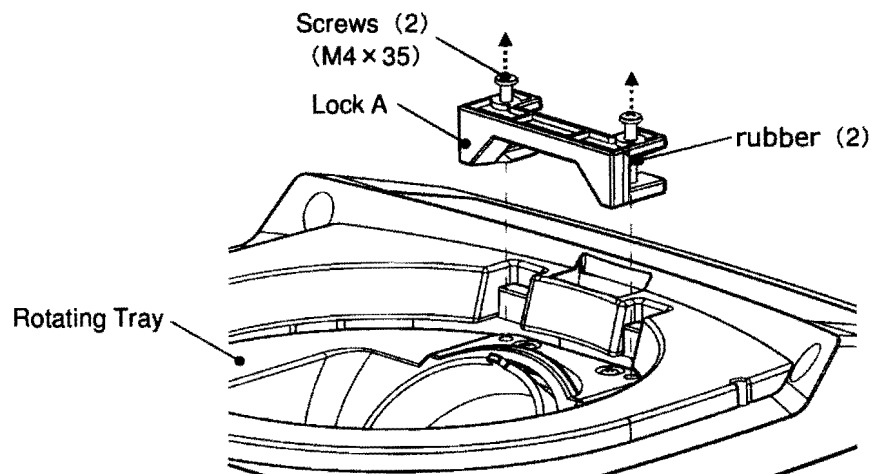


- Be sure to re-mount the removed shipping locks as they were set. Otherwise, the rotating mechanism will be exposed and may cause injury.

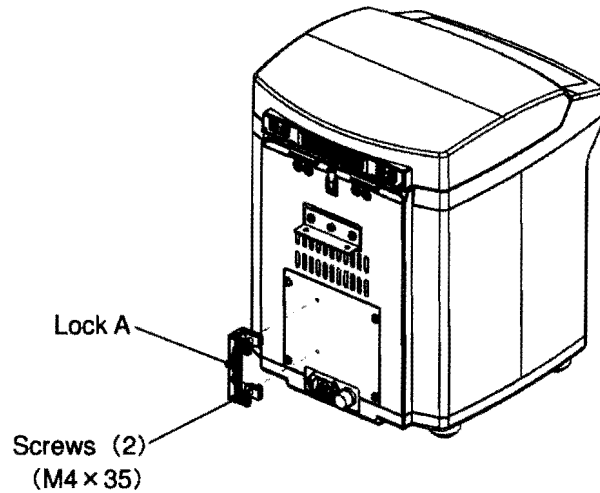


Do not fail to remove the shipping locks before using the unit. Otherwise the error "Err3" appears on the indicator and the unit can't start.

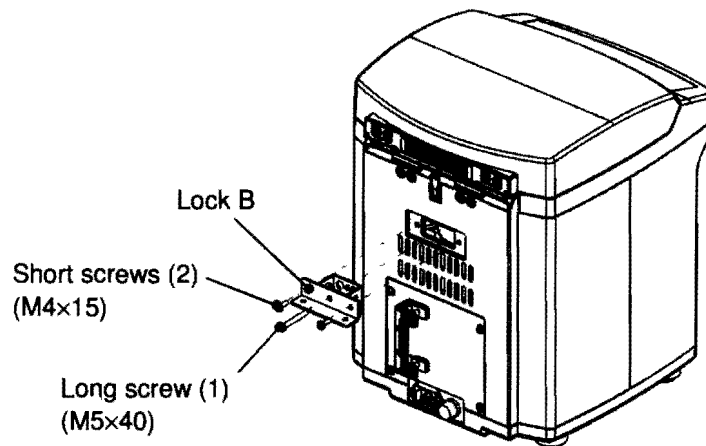
- 1) Remove Lock A which is in the top of the inner part.
 - ① Insert the attached lid lock release key into the key hole to release lid lock.
 - 👉 See "4-1-4 Opening Lid" for details.
 - ② Open lid of the unit.
 - ③ Remove Lock A with lifting up the two screws after loosening.



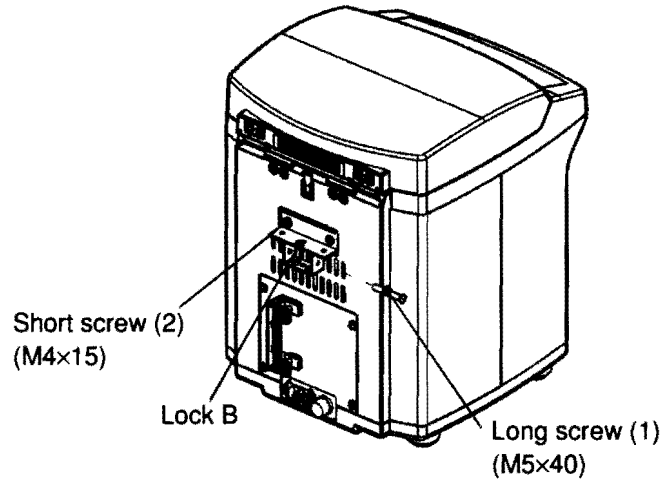
- 2) Place the removed Lock A and two (2) screws on the storage position on the rear side.



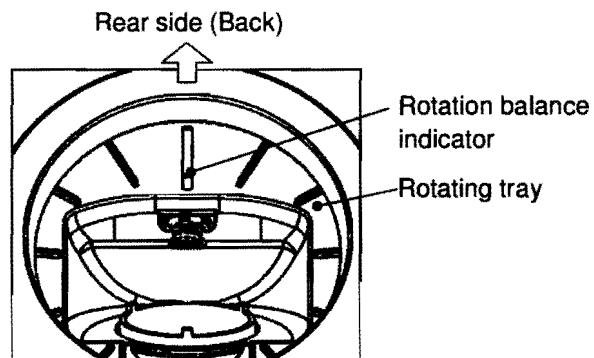
- 3) Remove all three screws (short: 2, long: 1) to remove the Lock B, which is on the rear.



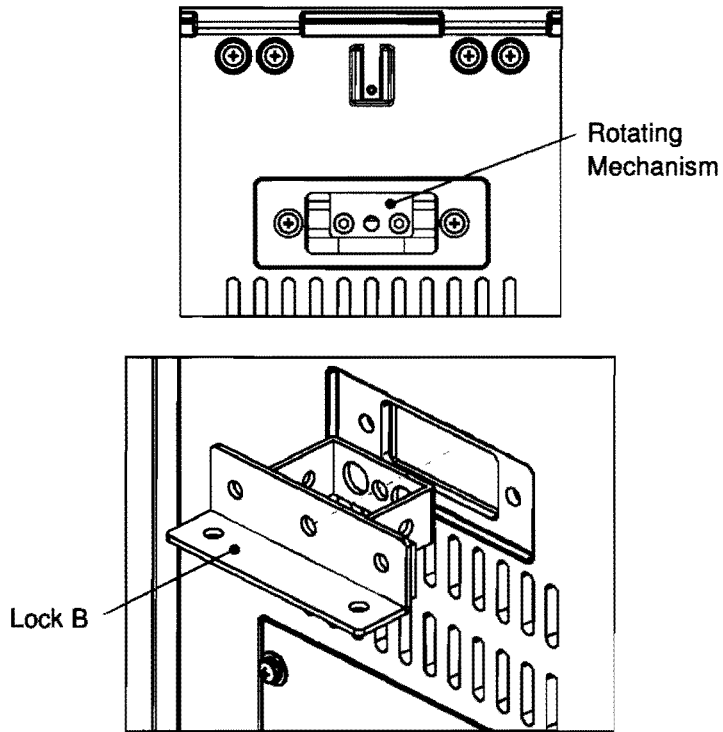
- 4) Place the removed Lock B and three screws on the storage position on the rear side.



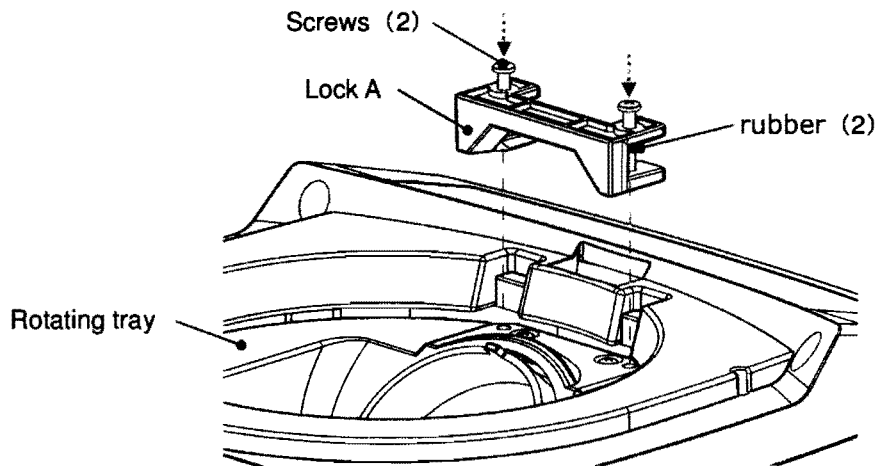
- Removed shipping locks and screws are necessary for transporting the unit again. Make sure to place and keep them at the storage position on the rear of the main unit not to lose them.
- When transporting the unit again, make sure to mount the shipping locks to fix the rotating mechanism.
- Mount Lock B, using the following procedure:
 - 1) Remove Lock B from the storage position.
 - 2) Manually turn the rotating tray until the rotation balance indicator comes to the rear (back) side of the unit.



- 3) Install Lock B adjusting a rotating mechanism screw hole seen inside of the rear opening and Lock B screw hole to fit.




- Mount Lock A, using the following procedure:
 - 1) Remove Lock A from the storage position.
 - 2) Align the rotating tray screw holes and the Lock A screw holes to fit, and install Lock A, adjusting its position on the top of the inner side.

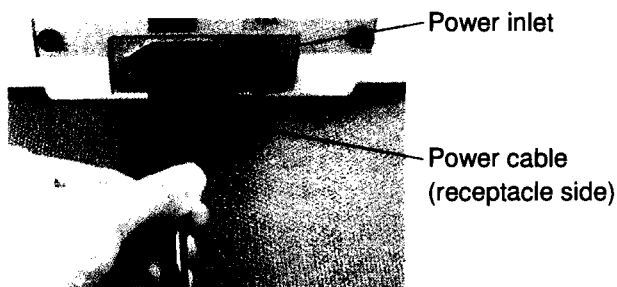


3-5 Power Connection

After removing the shipping lock, connect the power cable, using the following procedure:

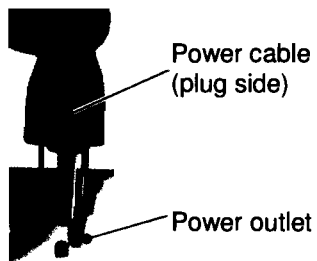
 WARNING	• Never plug in or unplug the power plug using wet hands. This may cause electric shock.
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- 1) Insert the receptacle of the attached power cable into the power inlet on the rear side of the unit.



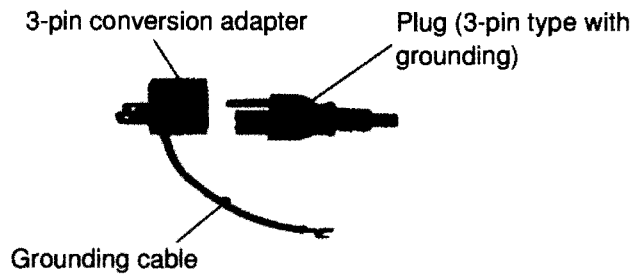
- 2) Insert the plug of the power cable into the power outlet.

<Example>





- The shape of the plug differs depending on the specifications.
- If the plug shape is a 3-pin type with grounding and the power outlet has no ground terminal hole, use the accompanying 3-pin conversion adapter.



Mount the 3-pin conversion adapter onto the plug before inserting the plug into the power outlet.

Connect the grounding cable to the ground terminal.

4. Operation

4-1 Preparation



- Read the Material Safety Data Sheet (MSDS) of the material for use and handle them only after the characteristics and safety measures are fully comprehended.
- Always wear adequate protective cloth as specified in the applicable MSDS when handling the material.
- Put regulated amount materials in the container.
- Putting container in and out, don't insert your finger between the rotating tray and machine frame.

4-1-1 Container and Rated Amount

The rated amounts of the materials to be put in the standard containers are as shown below:

Be sure never to load the amount exceeding this rated range.

The following volume or mass in container is shown below.

Container Type	Material Amount	
	Volume	Weight
300 ml container	150 to 250 ml	50 to 250 g
150 ml container	0 to 150 ml	0 to 200 g

4-1-2 Preparation of Materials and Container

Have the materials to mix and de-aerate and suitable container ready.



- Use only designated container.
Only standard containers (for 150 ml and 300 ml) and designated plastic containers are to be used.
- When the weight of materials is less than 50 g, use the 150 ml container.



Prior to using containers other than the standard ones, consult the dealer where you purchased the unit or THINKY.

4-1-3 Supplying Materials

Supply materials into the container, using the procedure below:

- 1) Open the outer lid of the container and remove the inside plug.
- 2) Put the materials into the container.



Keep the supply materials from adhering around the container's lip.

When adhered, dispose such material as specified in the MSDS of the material in use. Where a cloth, rag or paper towel is used, such a cloth, rag or paper towel after use must be disposed in accordance with national and local laws and regulations.



For higher mixing efficiency, place the materials as follows:

- Put liquid and paste materials first, followed by powder materials.
- Put the materials of a lighter specific gravity first, followed by materials of a heavier specific gravity.
- Put the materials of a lower viscosity first, followed by ones of a higher viscosity.

3) Close the inner plug and outer lid of the container tight.



- Be sure to tighten securely the inner plug and outer lid of the container so they will not loosen or become removed during revolution.
- Confirm that the thread section of the container is free from dirt, wear or damage.
- Do not use any container that is damaged or with a lid cannot be closed securely.

4-1-4 Opening Lid

Open lid of the unit in the procedure below:

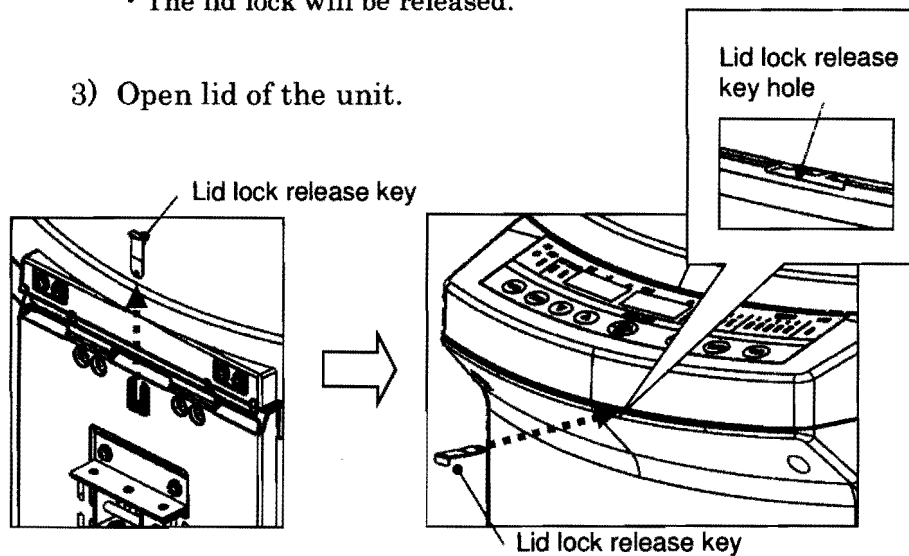


- The lid locks on closure. Unless the lock is released, the lid would not open.

● Power is not ON:

- 1) Take the lid lock release key from its storage position at the rear of the unit.
- 2) Insert the release key into the lid lock release key hole in the front side of the unit.
 - The lid lock will be released.

- 3) Open lid of the unit.



● Power is already on.



- 1) Push OPEN button.
 - The door lock will be released and LOCK lamp extinguishes.
- 2) Open lid of the unit.

4-1-5 Setting Container

Set the container loaded with materials into the unit, as follows:

- Setting a provided 150 ml container

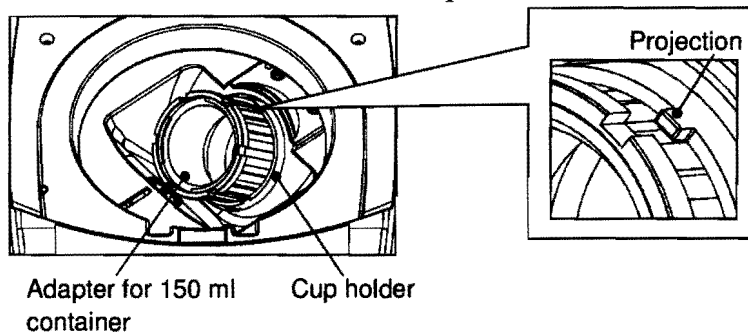
- 1) Weigh the 150 ml container with materials and the adapter for the 150 ml container.



The mass to weigh is:

150 ml container + material weight capacity + adapter for 150 ml container

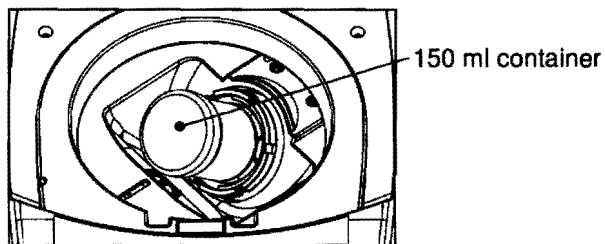
- 2) Adjust the keyways (at 3 positions) to the projections (at 3 positions) of the cup holder, and put the adapter for the 150 ml container in the cup holder.



- 3) Put the 150 ml container with materials in the adapter for 150 ml container.

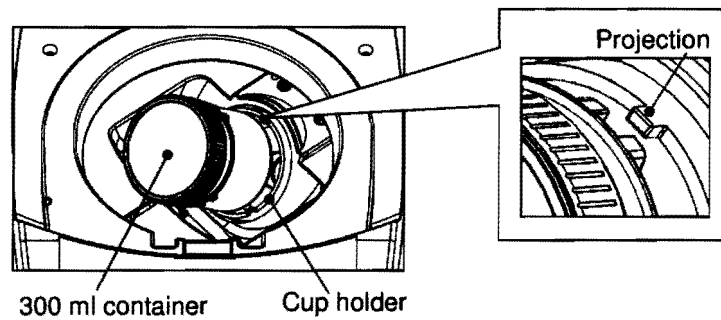


Push it until it comes into contact with the rear end.



● Setting 300 ml container

- 1) Weigh the 300 ml container with materials.
- 2) Adjust the keyways (at 3 positions) to the projections (at 3 positions) of the cup holder, and insert the adapter for the 300 ml container into the cup holder.



4-1-6 Adjustment of Revolution Balance

After setting the container, adjust the revolution balance.



Before starting the operation, make sure to adjust the revolution balance.

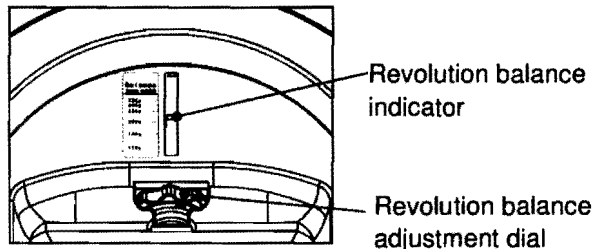
This unit is designed with the container to be set only on one side of the revolution section. Therefore, a variable-type dummy weight is added on the opposite side of the cup holder to maintain balance at high speed.

If this adjustment is incorrect, the revolution balance is disrupted and vibration or abnormal noise will rise, imposing excessive loads on the revolution mechanism, and this will damage the unit.



The revolution balance is sensitively reacted by material gravity and use of adapter and so on. If it rock violently after setting a correct balance, please find the best balance position with the least vibration by adjusting the revolution balance adjustment dial.

Turn the revolution balance adjustment dial for adjusting the indicator to a mass measured in the step 1 described in “4-1-5 Setting Container”.



4-1-7 Closing Lid

After adjusting the revolution balance, close the lid of the unit.

- The lid locks upon closing.



Check that no part of the cloth or foreign matter is pinched anywhere on the unit at this time.

4-2 Turning Power on/off

4-2-1 Turning Power on

Turn on the power to the unit, using the following procedure:

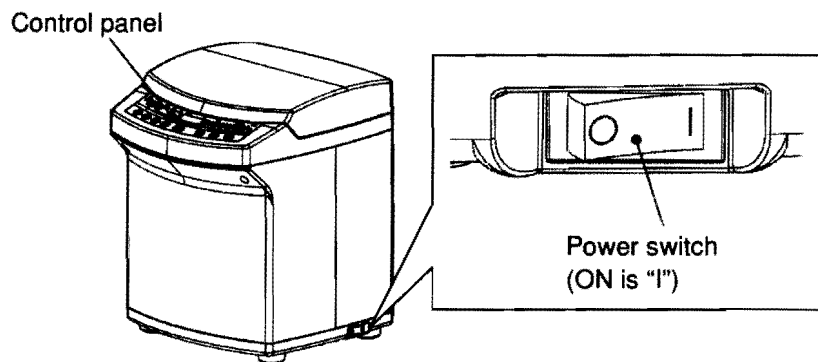
- 1) Connect one power cable to the power inlet and the of this unit power outlet of this unit.



For details, see "3-5 Power Connection".

- 2) Push power switch ON (I).

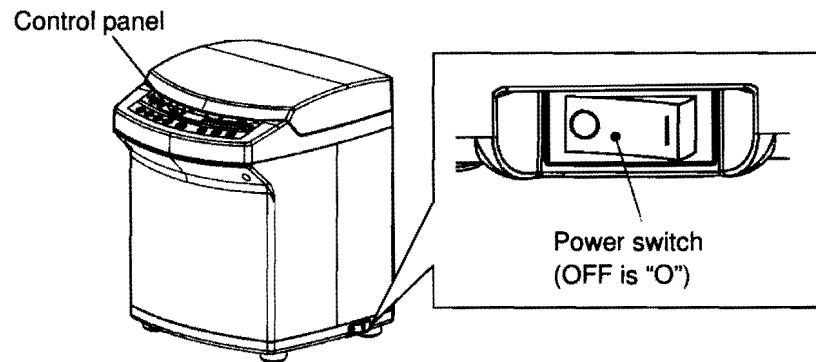
- When the power is supplied, the MIX lamp, the memory number indication lamp, which was displayed last time, one of the lamps to show operation mode (STD lamp or STEP lamp) and indicators on the control panel light.



4-2-2 Turning Power off

Turn off the power to the unit using the following procedure:

- 1) Push power switch OFF (O).
 - The lamps and the indicators on the control panel extinguish.



- 2) Remove the power plug from the power outlet.

4-3 Operation

4-3-1 Setting of Operating Conditions

After turning on the power, set the operating conditions.

This unit has two operating condition modes – STD (Standard) mode and STEP mode.

- STD mode: Only mixing and de-aerating time can be set; revolution speed is fixed. Only STEP 1 can be set.
- STEP mode: Mixing/de-aerating time and revolution speed can be set.

Up to 5 steps can be set.

This unit has two modes of operation modes – mixing mode and de-foaming mode.

Both modes can be operated individually or together.

When both modes are selected, the mixing mode is operated first and the de-foaming mode starts as soon as the mixing mode has finished.



- The mixing mode is good for de-aerating. The de-foaming mode, however, offers more effective de-aeration.
- Select only the mixing mode for preparing ointment.

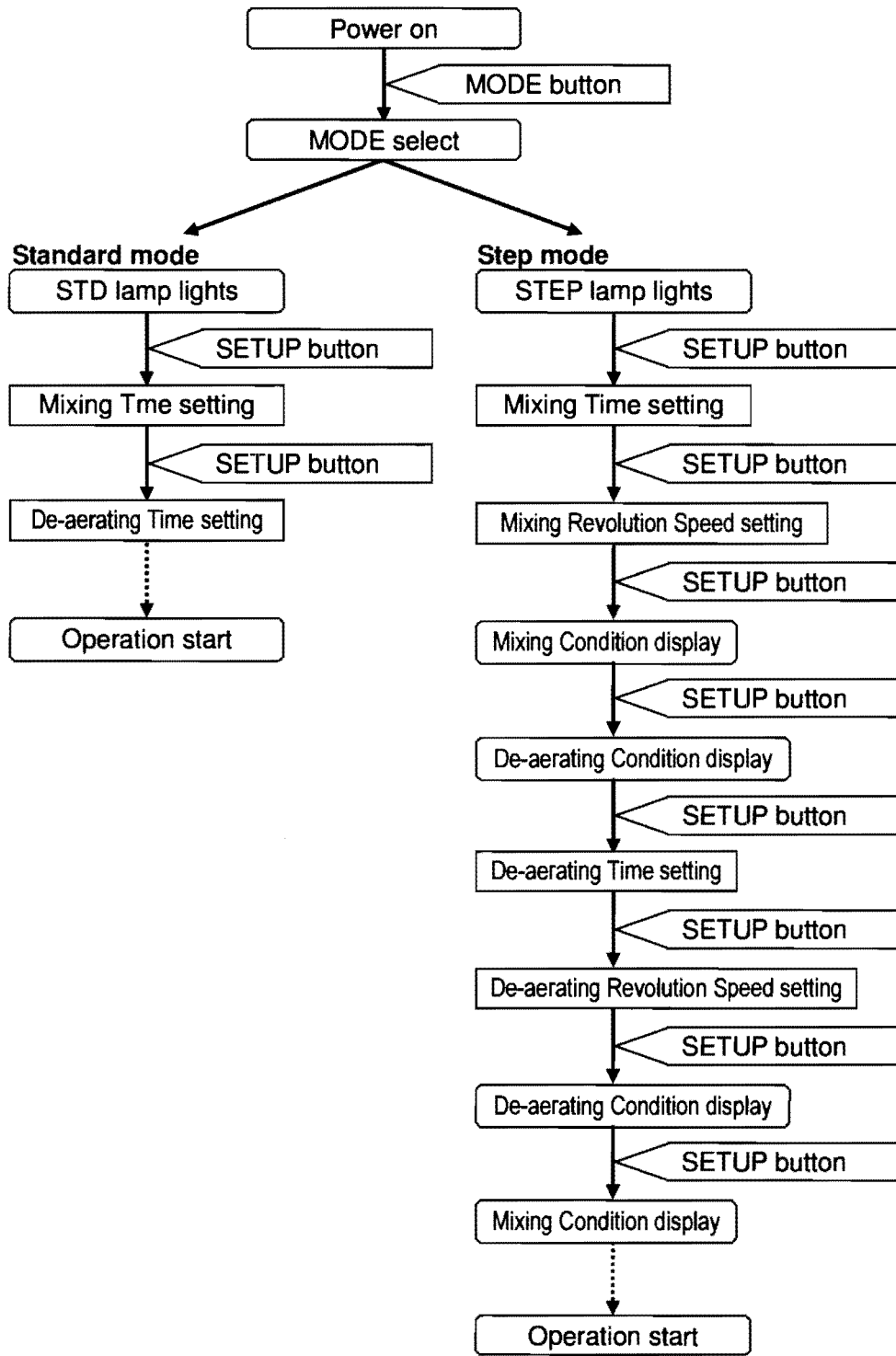
Operating conditions to set are as shown below:

- Mixing time: Set the time for mixing.
- Mixing revolution speed: Set the revolution speed for mixing.
- De-aerating time: Set the time for de-aerating.
- De-aerating revolution speed: Set the revolution speed for de-aerating.



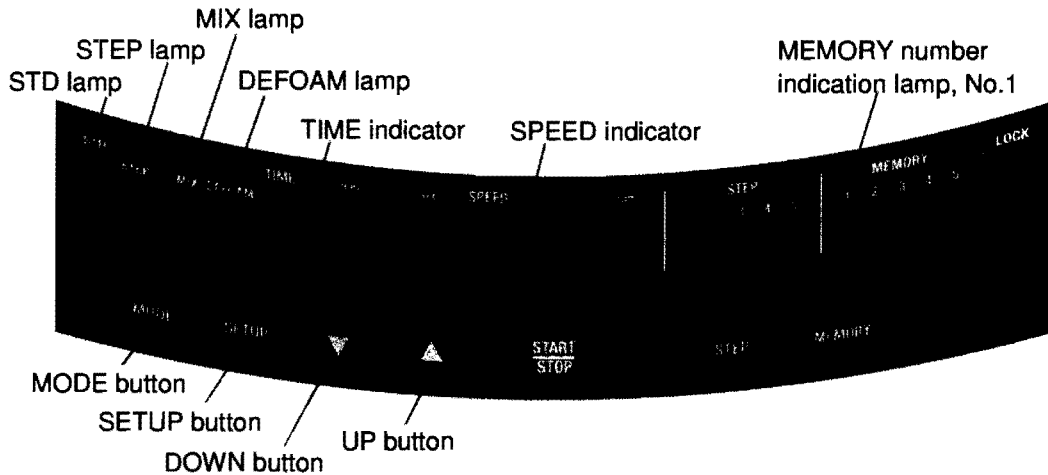
When not mixing or de-aerating any material, set the time and revolution speed of the mode to be used to "0".

● Flow of Setting Operating Conditions



● Procedure for setting operating conditions

Set all operating conditions, using the following procedure:



➤ STD (Standard) mode:

1) Turn the power ON.

- The MIX lamp and the memory number indication lamp, which was displayed last time, and one of the lamps to show operation mode (STD lamp or STEP lamp) light.
- The mixing condition values set previously are displayed on the TIME and SPEED indicators on the control panel.



- Default values are set at the factory as shown below when the unit is delivered to a customer:

		Memory No. 1		
STD mode	STEP1	Mixing	Revolution speed	2000 rpm
			Time	30 s
	De-aerating	Revolution speed	2200 rpm	
		Time	30 s	

* Other operating conditions in the memory have been set to "0".



For turning the power on, see "4-2-1 Turning Power on".



- 2) Push MODE button.
- STD mode and STEP mode can be switched.
 - Select STD mode.



- 3) Push SETUP button.
- The mixing time can be set.



- 4) Push UP or DOWN button to display the mixing time on the TIME indicator.



- Set "0", when not mixing anything.
- Pushing UP or DOWN button once increases/decreases the operating time by 1 second. Holding down either button increases/decreases the time by 30 seconds or 1 minute.
- The setting time is 30 minutes at maximum. Setting over 30 minutes displays "E E E E" to disable the setting. Push DOWN button to reset the indicator.



- 5) Push SETUP button.
- The MIX lamp turns off and the DEFOAM lamp gets lit.
 - The de-aerating time can be set.



6) Push UP or DOWN button to display the de-aerating time on the TIME indicator.



- Set "0", when not de-aerating anything.
- Pushing UP or DOWN button once increases/de-creases the operating time by 1 second. Holding down either button increases/decreases the time by 30 seconds or 1 minute.
- Setting time is Maximum 30 minutes. Setting over 30 minutes displays "E E E E" to disable the setting. Push DOWN button to reset the indicator.

➤ STEP (STEP) mode:

1) Turn the power on.

- The MIX lamp and the memory number indication lamp, which was displayed last time, and one of the lamps to show operation mode (STD lamp or STEP lamp) light.
- The mixing condition values set previously are displayed on the TIME and SPEED indicators on the control panel.



• Default values are set at the factory as shown below when the unit is delivered to a customer:

		Memory No. 1		
STEP mode	STEP1	Mixing	Revolution speed	2000 rpm
			Time	30 s
	De-aerating	Revolution speed	2200 rpm	
		Time	30 s	

* Other operating conditions in the memory have been set to "0".



For turning the power on, see "4-2-1 Turning Power on".



2) Push MODE button.

- STD mode and STEP mode can be switched.
- Select STEP mode.



- 3) Push **SETUP** button.
- The mixing time can be set.



- 4) Push **UP** or **DOWN** button to display the mixing time on the **TIME** indicator.



- Set "0", when not mixing anything.
- Pushing the **UP** or **DOWN** button once increases/decreases the operating time by 1 second. Holding down either button increases/decreases the time by 30 seconds or 1 minute.
- The setting time is 30 minutes at maximum. Setting over 30 minutes displays "t t t t" to disable the setting. Push **DOWN** button to reset the indicator.



- 5) Push **SETUP** button.
- The mixing time is fixed.
 - The mixing revolution speed can be set.



- 6) Push **UP** or **DOWN** button to display the mixing revolution speed on the **SPEED** indicator.



- Set "0", when not mixing anything.
- Pushing the **UP** or **DOWN** button once increases/decreases the revolution speed by 10 rpm.
- The setting revolution speed is 2000 rpm at maximum.



- 7) Push **SETUP** button.
- The mixing revolution speed is fixed.
 - Setting of the mixing operation condition is displayed on the **TIME** indicator and **SPEED** indicator.



8) Push SETUP button.

- The MIX lamp turns off and the DEFOAM lamp gets lit.
- The value for de-aerating operation condition which was displayed last time is displayed on the TIME indicator and SPEED indicator.



9) Push SETUP button.

- The de-aerating time can be set.



10) Push UP or DOWN button to display the de-aerating time on the TIME indicator.



- Set "0", when not de-aerating anything.
- Pushing the UP or DOWN button once increases/decreases the operating time by 1 second.
To keep pressing either button increases/decreases the time by 30 seconds or 1 minute.
- The setting time is 30 minutes at maximum. Setting over 30 minutes displays "t t t t" to disable the setting. Push DOWN button to reset it.



11) Push SETUP button.

- The de-aerating operation time is fixed.
- The de-aerating revolution time can be set.



12) Push UP or DOWN button to display the de-aerating revolution speed on the SPEED indicator.



- Set "0", when not de-aerating anything.
- Pushing the UP or DOWN button once increases/decreases the revolution speed by 10 rpm.
- The setting revolution speed is 2200 rpm at maximum.



13) Push SETUP button.

- The de-aerating revolution speed is fixed.
- Setting of the de-aerating operation condition is displayed on the TIME indicator and SPEED indicator.



14) Push SETUP button.

- The DEFORM lamp turns off and the MIX lamp gets lit.
- Setting of the mixing operation condition is displayed on the TIME indicator and SPEED indicator.

4-3-2 Operation



- When mixing heating materials, make sure to test-run the unit for a short time first and check how the temperature rises before starting operation.
- Be careful not to spill or splatter any materials inside the unit.



- The attached special container is made of HDPE, which may be softened or deformed at around 80°C. When using a large amount of high-viscosity materials and powders, make sure to test run the unit for a short time (15 to 30 seconds) first to check how the temperature rises. Set the operating time within a range where containers may not be deformed. When materials include low-boiling point substances, in particular, be especially attentive to temperature rise during mixing.
- When using the unit for the first time, test-run it for a short time (15 to 30 seconds) and check the material status. Determine the operating time afterwards.



- The lid locks when it closes, and as soon as the unit gets started, the OPEN button is disabled. The lid cannot be opened until the operation is finished. To open the lid during operation, stop the unit and push OPEN button to release the lock.
- If the power to this unit is stopped because of a power failure or power cable disconnection, the brake cannot be applied to the revolution and the lid remains locked for safety and the OPEN button is kept disabled. To open the lid in this status, turn on the power again and push OPEN button. Otherwise, insert the lid lock release key into the key hole to release the lock and enable the lid to be opened.

● Starting operation

Start the operation, using the following procedure:

1) Check that the lid of the unit is closed.



2) Push START/STOP button.

- The operating time displayed on the TIME indicator starts to count down.
- When only mixing or de-aerating is set, operation stops when the operating time display reaches "0".
- When both mixing and de-aerating are set, mixing is done first. When the operating time display reaches "0", revolution stops once and de-aerating starts automatically next. The operation finishes when the operating time display reaches "0".
- When the operation finishes and the revolution stops completely, the alarm beeps.

● Stopping operation



To stop the operation halfway, push START/STOP button once again.

- The brake applies to the revolution and stops the unit.

4-3-3 Removing the Container

After the operation has finished, remove the container.



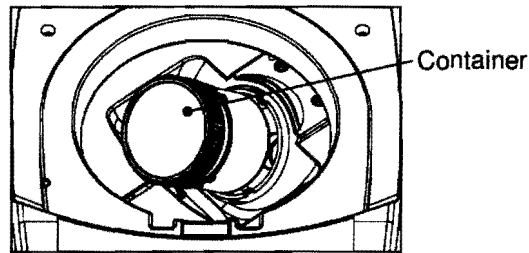
- 1) Push OPEN button.
 - The lid lock is released and the LOCK lamp extinguishes.

- 2) Open lid of the unit.

- 3) Remove the container.



For the 150 ml container, turn it little by little to remove it from the adapter.



- 4) Open the outer lid of the container and remove the inner plug.

- 5) Check the finished status.



- If the finished status is insufficient, adjust the mixing time and de-aerating time and repeat mixing or de-aerating operation.
- The finished status varies depending on the type, viscosity and specific gravity of materials as well as property and amount of additives, even when the setting time is constant.
It is advisable to change the conditions several times and set the standard time.

4-4 Memory Registration

Five types of operating conditions for each of STD mode and STEP mode (STD mode: mixing/de-aerating time, STEP mode: mixing/de-aerating time and revolution speed) can be registered in the memory in advance.

The memory registrations are summarized as follows:

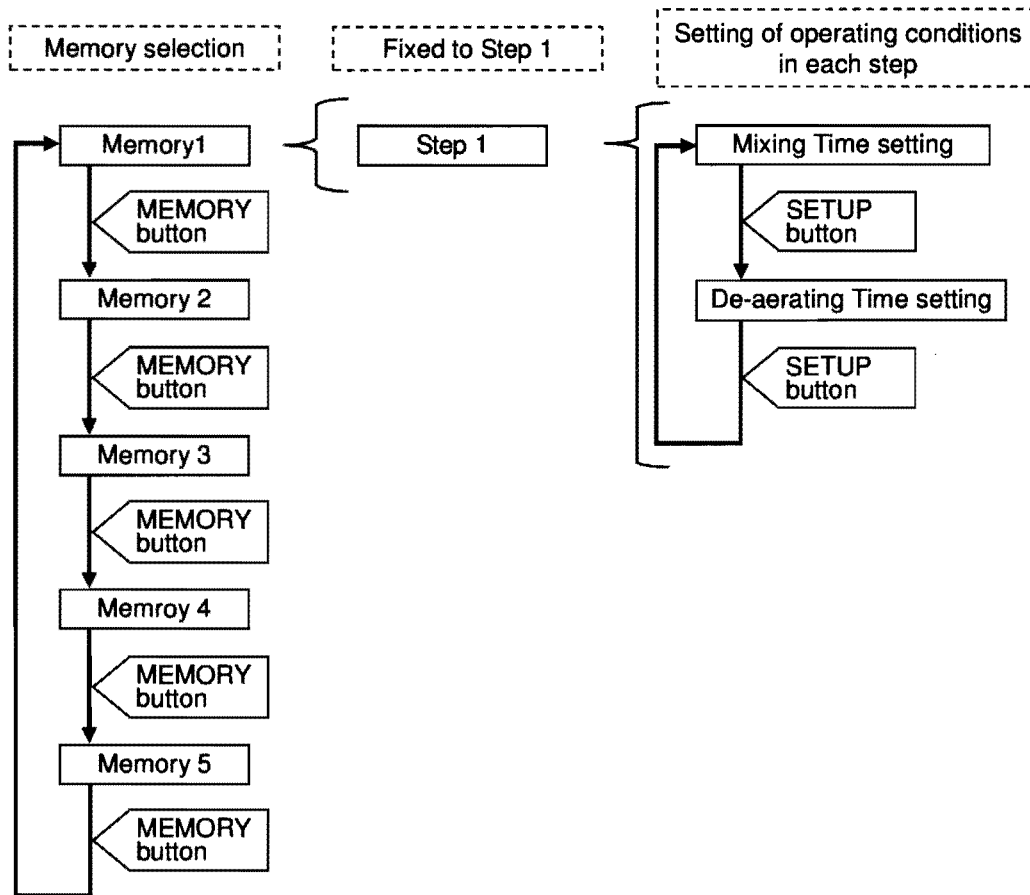
- Five types of operating conditions for STD mode and five types of operating conditions for STEP mode can be registered in the memory.
- STD mode: Only STEP 1 can be registered for one memory number.
STEP mode: A maximum five steps can be registered for one memory number.
- Operating conditions can be registered for each step.
- When one step has finished during step-wise operation, the next step is continuously executed.



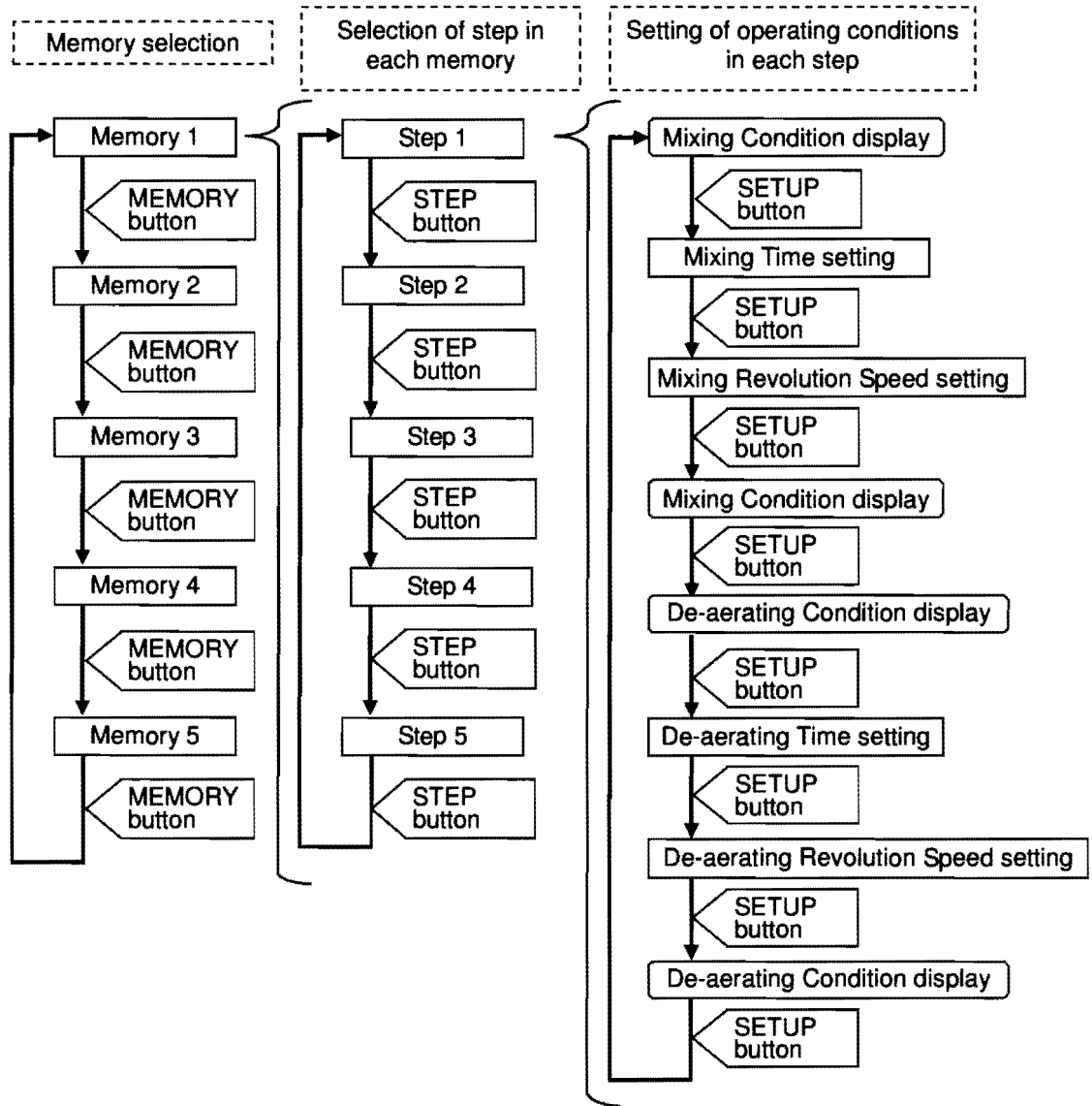
- The contents registered in the memory are not lost even when the power turns off.
- When contents are registered in each of the five memories for both the STD mode and STEP mode and further conditions are required for the operation, set another operating condition to execute operation irrespective of the selected memory number.
Such operating conditions, however, are lost once the power turns off or when another memory is called up.
To keep such operating conditions, register them in one of the five memories of either of the modes.

● Flow of Memory Registration

➤ STD (Standard) mode:

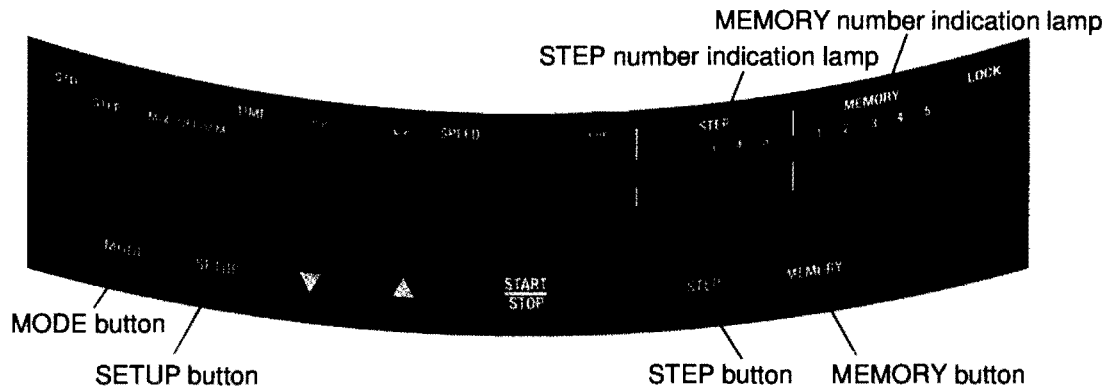


➤ STEP mode:



● Procedure for Memory Registration

Register memories, using the following procedure:



➤ STD (Standard) mode:



1) Push MODE button.

- STD mode and STEP mode can be switched.
- Select STD mode.



2) Push MEMORY button to light the lamp indicating the number of the memory to register.



The memory number indication lamp turns lit in order of the memory number 1→2→3→4→5 each time the MEMORY button is pressed.

3) Set the operating conditions.



For setting the operating conditions, see "4-3-1 Setting of Operating Conditions".



4) Push MEMORY button for over 1 second.

- The setting operating condition (step) is set in the memory with a selected number.
- The MEMORY number indication lamp blinks and the alarm beeps.



The operating condition to be registered in the memory is "STEP 1" only.

To register it in the memory, make sure to display the operating conditions with the last number of "STEP 1" to register. The operating conditions with the following numbers are all deleted at the time of the memory registration.

➤ STEP mode:



1) Push MODE button.

- STD mode and STEP mode can be switched.
- Select STEP mode.



2) Push MEMORY button to light the lamp indicating the number of the memory to register.



The memory number indication lamp turns lit in order of the memory number 1→2→3→4→5 each time the MEMORY button is pressed.



3) Push STEP button to display a STEP number to set operating conditions on the STEP number indication lamp.



Each time the STEP button is pressed, the STEP number indication lamp changes in order of 1→2→3→4→5. After the STEP number is displayed, the operating condition registered to that STEP number is displayed.

4) Set the operating conditions.



For setting the operating conditions, refer to "4-3-1 Setting of Operating Conditions".

5) Repeat the above steps 3) and 4) to set the operating conditions for all STEP numbers to set.



6) Push MEMORY button for over 1 second.

- The setting operating condition (step) is set in the memory with a selected number.
- The MEMORY number indication lamp blinks and the alarm beeps.



The operating conditions to be registered in the memory have numbers from [STEP 1] through [Currently displayed program number].

The operating conditions with the following STEP numbers are all deleted at the time of the memory registration.

To register them in the memory, make sure to display the operating conditions with the last number of the STEP to register.

● Change of Contents of Memory Registration

Registering them again can change the contents registered in the memory.

● Calling of Memory

When you operate the unit under the registered condition, start the unit after selecting the operation registered number.



1) Push MODE button.

- STD mode and STEP mode can be switched.
- Push button to light the lamp indicating the mode to execute (STD lamp or STEP lamp).



2) Push MEMORY button to light the lamp indicating the number of the memory to register.



The memory number indication lamp turns lit in order of the memory number 1→2→3→4→5 each time the MEMORY button is pressed.

● **Checking Contents of Memory Registration**

The contents registered in the memory (operating conditions registered in each STEP) can be checked.



- 1) Push MODE button.
 - STD mode and STEP mode can be switched.
 - Push button to light the lamp indicating the mode to check the content (STD lamp or STEP lamp).



- 2) Push MEMORY button and light the lamp indicating the number of the memory to check.



The memory number indication lamp turns lit in order of the memory number 1→2→3→4→5 each time the MEMORY button is pressed.



- 3) Push STEP button to light the STEP number to display the contents on the STEP number indication lamp.



Each time the STEP button is pressed, the STEP number indication lamp changes in order of 1→2→3→4→5. After the STEP number is displayed, the operating condition registered to that STEP number is displayed.



- 4) Push SETUP button to select a display and check the contents.



- When the SETUP button is pressed while the operating conditions are displayed, conditions in the mixing mode and de-foaming mode are displayed alternately.
- When the operating conditions in the mixing mode are displayed, the MIX lamp is lit. When the operating conditions in the de-foaming mode are displayed, the DEFOAM lamp is lit.

5. Maintenance



· When you take maintenance, don't insert your finger between rotating tray and machine frame.

5-1 Inspection

In order to use the THINKY ARE-310 safely, check the following first.

- Check whether the exterior of the unit is damaged, such as having a rupture or large dent.
- Check if any materials or foreign matters are adhering to the opening of the unit.

5-2 Cleaning

If this unit becomes dirty, clean using the procedure:

- 1) Push power switch OFF (O).
- 2) Pull the power plug out.
- 3) Wipe off dirt (materials, etc.) from inside and around the cup holder, rotating tray, control panel, etc., using a cloth, rag or paper towel.

If dirt or stain cannot be removed by a dry cloth, use a cloth, rag or paper towel moistened with water or neutral detergent and excess moisture wrung out. Wipe with a dry cloth again.



- For cleaning, do not use benzene, thinner, alcohol, alkaline detergent or bleach which may deteriorate or discolor the unit.
- Do not splash the unit directly with water or neutral detergent.
- Dispose such material as specified in the MSDS of the material in use.
- Where a cloth, rag or paper towel is used, such a cloth, waste close or paper towel after use shall be disposed in accordance with national and local laws and regulations.

5-3 Troubleshooting

If you have any troubles or problems with the THINKY ARE-310, check the followings first before asking for repair.

If the problem still cannot be cleared after checking, contact the dealer where you purchased the unit or THINKY.



For details of contact, see "Introduction" in this Manual.

Phenomenon	Check Item	Reference
The power cannot be turned on.	Check if the power cable is connected in outlet and inlet correctly.	3-5 Power Connection
	Check if the power switch is turned to on (I).	4-2-1 Turning Power on
	Check if a fuse is blown. If so, replace it with a proper ones.	5-5 Fuse Change
Operation does not start when the START/STOP button is pressed.	Check if the START/STOP button was pressed with the lid open. Close the lid first.	4-3-2 Operation
	Check if the shipping locks are removed correctly. Otherwise, the revolution section is locked and operation cannot restart.	3-4 Unlocking shipping Locks
	Check if the mixing and de-aerating operation time is set to "0".	4-3-1 Setting of Operating Conditions

Phenomenon	Check Item	Reference
Abnormal vibration or noise is observed.	The rotation balance must be adjusted properly. Otherwise, the rotation balance is disrupted, causing abnormal vibration or noise. (Undulation during operation is not abnormal.)	4-1-6 Adjustment of Revolution Balance
Mixing or de-aerating can't be properly done.	Check if the mixing time and de-aerating time are set correctly.	4. Operation
	Check if the memory contents have been changed.	
	Check if the amount of each material is incorrect.	
The OPEN button is pressed but the lid doesn't open.	Check if the lid opens when the OPEN button is pressed when power is on. If it doesn't, see the procedure for opening the lid while power is not on.	4-1-4 Opening Lid.

5-4 Error Display

This unit incorporates a lid sensor, vibration sensor and revolution sensor. If any abnormality occurs during revolution, a related message is displayed on the control panel and operation stops accordingly. Major possible causes and measures for correction are listed below:

If the cause is clear, remedy it and press any of the buttons on the control panel (except the START/STOP button). The unit function can be restored.

If the cause is not clear and restoration is not achievable, directly contact the dealer where you purchased the unit or THINKY.



For contact details, see "Introduction" in this Manual.

Error Display	Cause	Measures
Err1b	Operation started with the lid open.	Close the lid to operate.
	The lid opened during operation.	
Err1c	The lid lock is unlocked.	
Err2	Abnormal vibration occurs abruptly during operation.	Check if the container has been detached, flown away or any parts have been damaged.
	The vibration value exceeds the rated value.	Adjust the rotation balance.
Err3 to Err4 Err10 to Err11	Revolution speed won't increase after the operation has started.	Contact the dealer where you purchased the unit or THINKY.

Error Display	Cause	Measures
Err7 to Err9	All these are related to electronic circuit malfunction or the control software.	Contact the dealer where you purchased the unit or THINKY.

5-5 Fuse Change

If a fuse has blown, replace as follows:



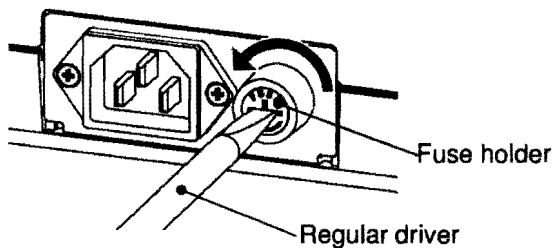
Use only a fuse with the following properties:

- Fuse rating: 250 V – 10 A
- Dimensions: $\phi 6.4 \times 30$ mm
- Breaking current: 300 A
- Breaking characteristic: Anti-rush current

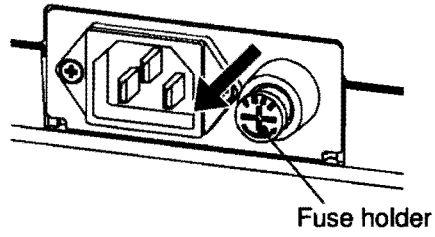


- When replacing a fuse, make sure to remove the power plug first.

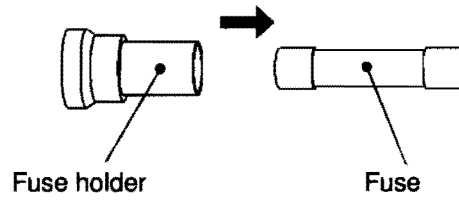
- 1) Push power switch OFF (O).
- 2) Pull the power plug out from the consent.
- 3) Turn the fuse holder on the rear of the unit counterclockwise, using a regular driver.
 - Turning the fuse holder a little, causes it to be pushed out by a spring.



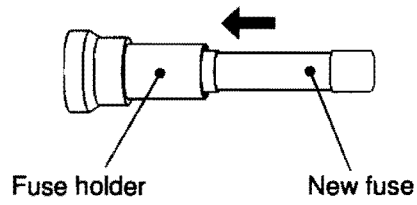
- 4) Manually pull out the pushed-out fuse holder.



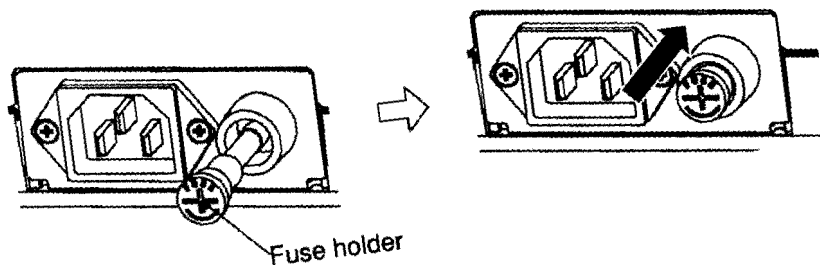
- 5) Remove the fuse from the fuse holder.



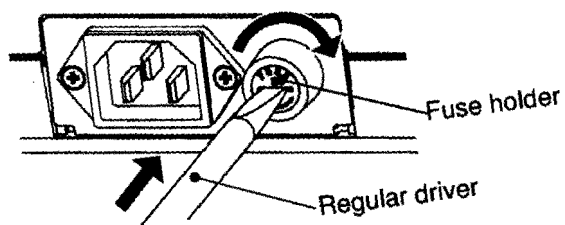
- 6) Insert a new fuse into the fuse holder.




- 7) Insert the fuse holder into the fuse mounting port.



- 8) Press in the fuse holder, using a regular driver, and turn it clockwise until it stops.



 Blown fuses must be discarded in accordance with national and local laws and regulations.

ARE-310 Instruction Manual

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