



# Ball Mill

## User Guide version 1.0

### Model

LM-BS605, LM-BS750

LM-BD4530, LM-BD6030



Thank you for purchasing this product  
from LK Lab Korea co., Ltd.

This user guide provides explanations of function of product,  
user manual and cautions.

Be sure to read this manual thoroughly before using this product.

Particular attention should be paid  
to the used of the following warnings.



Indicates the situation requires user's attention.  
Be careful when operating or controlling during usage.

[Caution]



Indicates a dangerous situation.  
Failure of this warning could result in serious injury of equipment  
damage.

[Warning]

# 〔Contents〕

|                                                                 |               |
|-----------------------------------------------------------------|---------------|
| <b>1. Preparation</b>                                           | <b>3</b>      |
| 1.1 Product Introduction .....                                  | 3             |
| 1.2 Product Features .....                                      | 3             |
| 1.3 Product Structure .....                                     | 4             |
| 1.4 Product Installation .....                                  | 6             |
| <br><b>2. Usage</b>                                             | <br><b>7</b>  |
| 2.1 Name of Controller and its function .....                   | 7             |
| 2.2 Function of controller .....                                | 7             |
| 2.3 Usage Method .....                                          | 9             |
| 2.4 Roller Control Method .....                                 | 11            |
| <br><b>3. Maintenance</b>                                       | <br><b>12</b> |
| 3.1 Management after use .....                                  | 12            |
| 3.2 Cause of abnormal problem and<br>matter of management ..... | 12            |
| 3.3 Product A/S (Warranty) .....                                | 14            |
| <br><b>4. Specification</b>                                     | <br><b>15</b> |

# 1. Preparation

## 1.1 Product Introduction

This product is a Ball Mill that can crush and mix solid samples of minerals, grains or pigments.

Various functions and safety are maximized for user's convenience and stability.

This product has the following features.

## 1.2 Product Features

### 1.2.1 Product Performance and Convenience

- Abrasion-resistant materials ball (e.g. Zirconia, alumina, and glass etc.) is rotated to crush the sample.
- Designed and manufactured with two-stage structure to activate two jars.  
(Basic Type Ball Mill)
- The Ball Mill has been minimized and can be operated in a small space.  
(Desktop Ball Mill)
- Excellent abrasion resistance and chemical resistance with NBR Rubber-Roller.
- Roller interval can be adjusted according to the size of jar.
- Timer available.

### 1.2.2 Safety

- In case of emergency, buzzer and message on the screen informs the user.
- The emergency stop switch can be used immediately in order to stop the machine when an emergency occurs.

## 1.3 Product Structure



[ Ball Mill ]

[1] Controller

[2] Emergency Switch

[3] Power Switch

[4] Roller

[5] Fuse

[6] Power Cord

## 1.4 Product Installation

### 1.4.1 Product Component

Main Body (1 EA), Wrench (1 EA), User Guide (1 EA)

### 1.4.2 Product Installation Environment

- Avoid direct sunlight
- Install at a flat place with low vibration
- Do not install in a place where flammable gas may leak
- Do not install in a place where strong and high frequency noise may occur
- Do not install the product where there is a risk of water leakage or short circuit
- Do not install the product where there is high corrosive gas or dust
- Do not install the product in an enclosed area



- Install this product at an ambient temperature of 10 to 30 degrees.
- Install in a place where the ambient humidity is 80% or less.

### 1.4.3 Power Connection

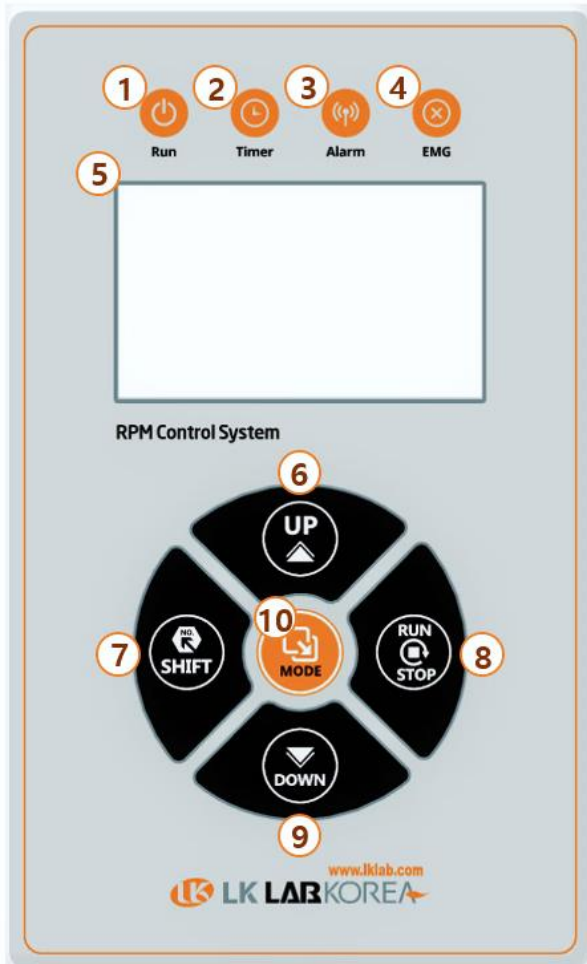
- Connect the power cord to the socket.



- Supply power according to product specification.
- Must use a grounded power source.

## 2. Usage

### 2.1 Name of Main Screen and its function



#### [1] Run Lamp

Light on when the machine is in operation.

#### [2] Timer Lamp

Light on when timer is set up during operation.

#### [3] Alarm Lamp

Light on when an error occurs during operation.

#### [4] EMG Lamp

Light on when emergency stop switch is on.

#### [5] Graphic LCD

Displays current status of the machine and various data.

#### [6] Up Key

Key to increase the set value.

#### [7] Shift Key

Key to move the cursor between digits of set value.

#### [8] RUN / STOP Key

Key to set RUN / STOP. (=Enter key)

#### [9] Down Key

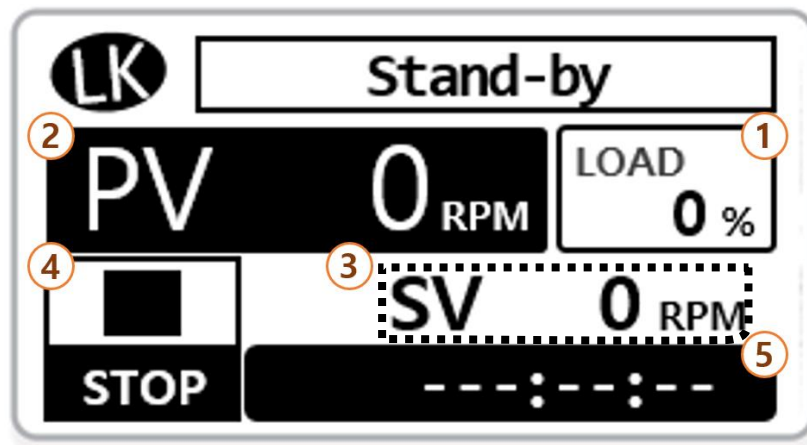
Key to decrease the set value.

#### [10] Mode Key

Key to change the function.



## 2.2 Name of controller and its function



### [1] LOAD

Output volume of motor. (Max 100%)

### [2] PV

The current value of RPM.

### [3] SV

Set value of RPM.

### [4] RUN/STOP

Displaying the current status.

RUN: Press Run/Stop Key for longer than 3 seconds to start the operation.

STOP: Press Run/Stop Key during operation to stop the operation.

### [5] TIMER

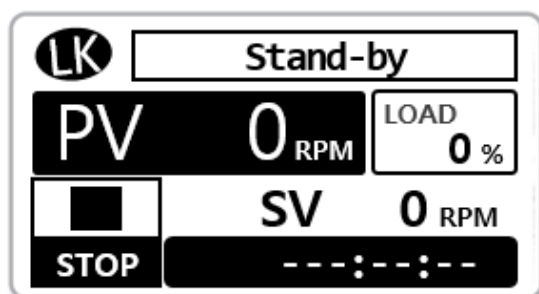
The value of timer. (Max 999 hours 59 minutes)

No Setting: (---:---:--) Continual Operation.

Setting: When the timer is completed, the operation stops with buzzer.

## 2.3 Usage Method

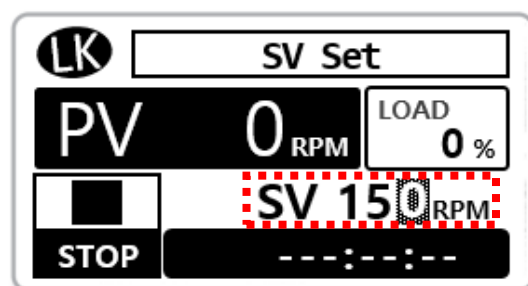
### 2.3.1 How to set



– Main Screen



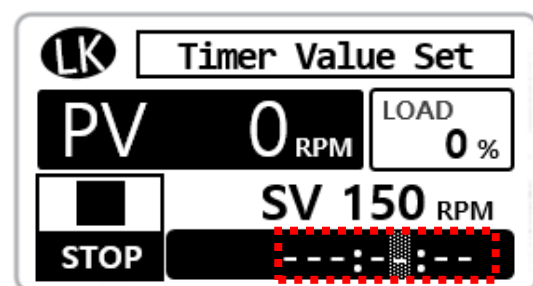
Mode Key



– Set RPM



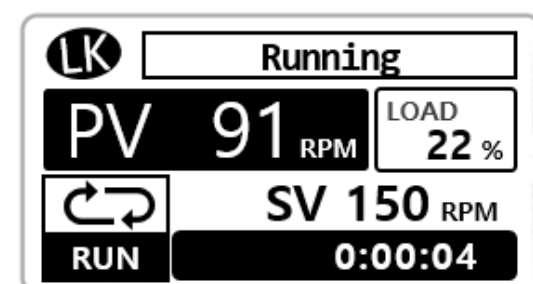
Run/Stop Key



– No Timer

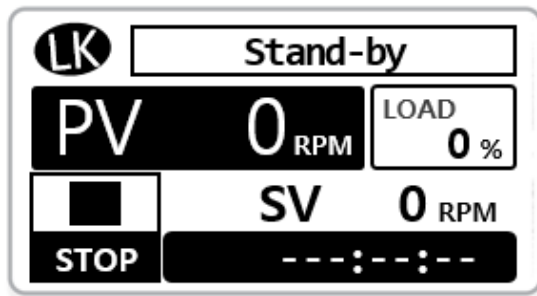


Press Run/Stop Key for 1 second ➡ Press Run/Stop Key for 3 second



– Start RUN  
(Light on RUN lamp)

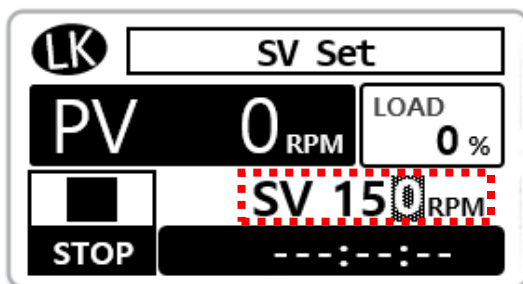
### 2.3.2 How to set timer



– Main Screen



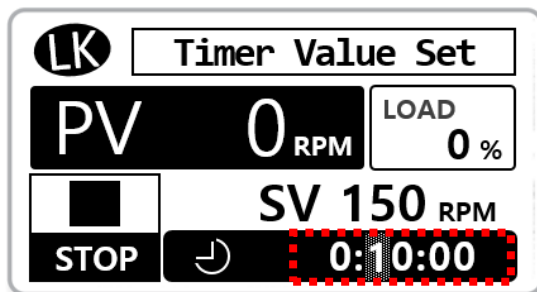
Mode Key



– Set RPM



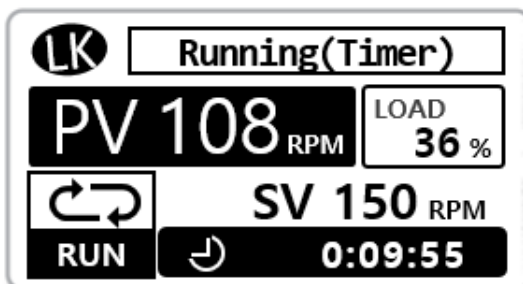
Run/Stop Key



– Set Timer



Press Run/Stop Key for 1 second ➡ Press Run/Stop Key for 3 second



– Start RUN

(Light on RUN Lamp and Timer Lamp)

### 2.3.3 How to set parameter

- Press Mode key for longer than 5 seconds.

Motor Direction : CCW

Speed Ramp : 20

Auto Run : OFF

Display Bright : 90

Factory Init

Exit Setup

- **Motor Direction** ; Setting the roller rotation direction.

CCW : Counter Clock Wise

CW : Clock wise

Motor Direction : CCW

Speed Ramp : 20

Auto Run : OFF

Display Bright : 90

Factory Init

Exit Setup

- **Speed Lamp** ; Setting speed the roller spinning speed.  
(Adjust the speed of motor per second)

Motor Direction : CCW

Speed Ramp : 20

Auto Run : OFF

Display Bright : 90

Factory Init

Exit Setup

- **Auto Run** ; Automatic operation.

Motor Direction : CCW

Speed Ramp : 20

Auto Run : OFF

Display Bright : 90

Factory Init

Exit Setup

- **Display Brightness** ; Controlling brightness of the screen.

Motor Direction : CCW

Speed Ramp : 20

Auto Run : OFF

Display Bright : 90

Factory Init

Exit Setup

- **Factory Int** ; Resetting (Initialization)

Motor Direction : CCW

Speed Ramp : 20

Auto Run : OFF

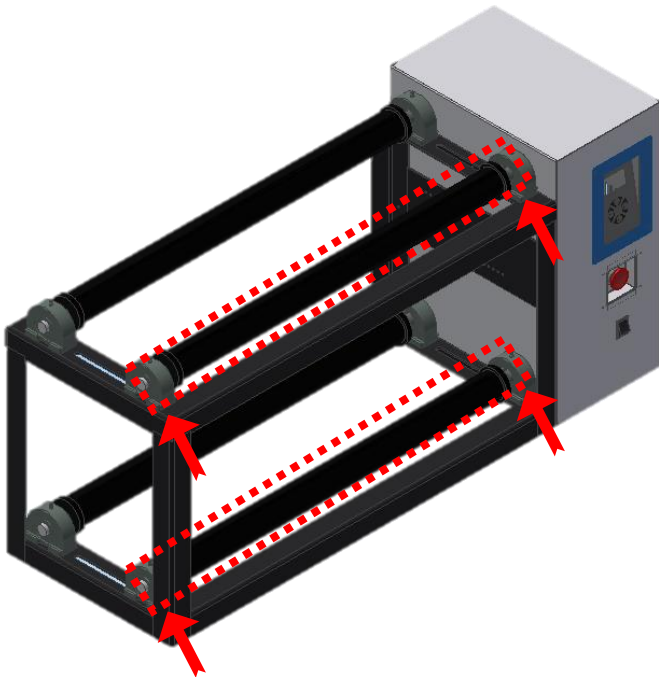
Display Bright : 90

Factory Init

Exit Setup

- **Exit Set up**

## 2.4 How to control the roller



–Only 2 rollers that are located at front can be adjusted.

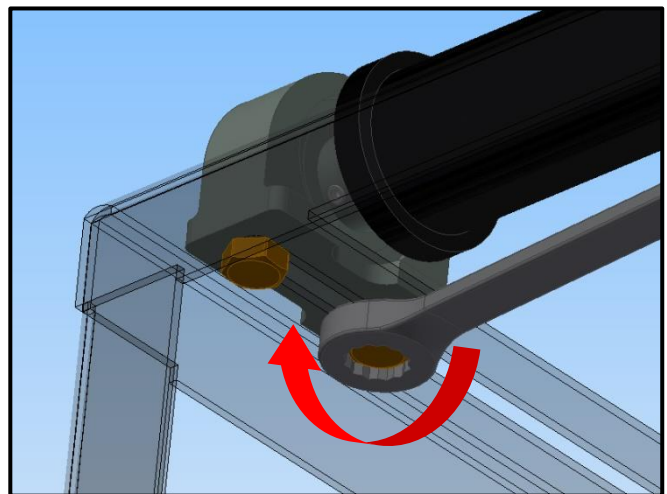
–Adjust by loosening a total of 8 bearing fixing bolts from 2 rollers.

–Adjust the space between rollers according to the size of jar.

–Adjust the bolts of the roller by using the spanner supplied with the product.

–(From below point of view) Turn the bolt counterclockwise when loosened.

–(From below point of view) Turn the bolt clockwise to make the bolt tight.



If the rollers are not parallel, the jar can be pushed to one side.

# 3. Maintenance

## 3.1 Management after use

- Turn off the Power Switch to OFF when experiment is done.
- If the main body becomes dirty, unplug the power cord then clean the contaminated area with alcohol.
- If the product is not in use for a long time, unplug the power cord and wipe it clean to store.



- Do not use strong acid or strong alkali or volatile solution to clean this product.
- Perfectly dry after cleaning.

## 3.2 Cause of abnormal problem and matter of management

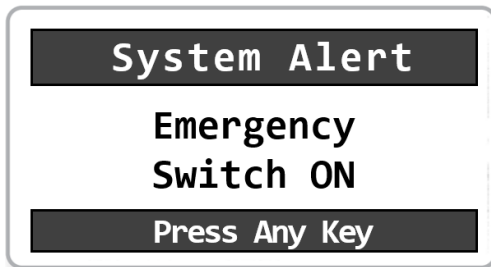
### 3.2.1 If the product does not turn on

- Make sure that Power Cord is securely connected.
- Make sure that there is no abnormality in the supplied power.
- Check if the fuse is protruding.

### 3.2.2 If the fuse of the machine is continuing short-circuited

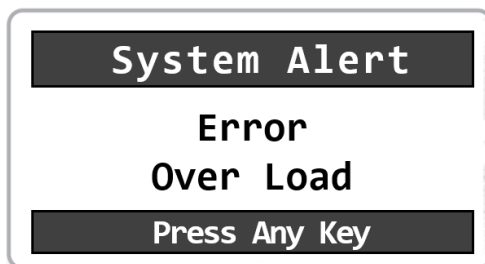
- Please contact our A/S department.

### 3.2.3 Error Message



#### 〈Emergency Switch On〉

- This shows up when emergency switch is turned on.
- Press the emergency stop button and press the mode button to stop the alarm.



#### 〈Error Over Load〉

- When the motor reaches maximum 100%, alarm lamp lights on and "Error over load" is shown.
- Press the mode button to stop the alarm.



- If product needs to be fixed, user must contact our A/S department or product purchased store to have it repaired. If disassemble the product or replace the parts on your own, it may not be possible to repair it.
- Damage beyond the normal fixing limit cannot be fixed.

## **3.3** Product A/S

### **3.3.1 Warranty Period**

The warranty period is 1 year from the date of purchase. After 1 year, warranty service without charges are done and user needs to pay for repair or replacement of parts. Within warranty period, user can receive A/S customer service from LK Lab Korea co., Ltd. or product purchased store.

### **3.3.2 Exception from Warranty Period**

Damage caused by fire or flooding, contamination due to unauthorized usage, not using liner power supply, usage during abnormal situation, misuse or malfunction will be the exceptions from receiving warranty service.

### **3.3.3 How to receive A/S**

First, contact our A/S department of product purchased store then enclose your contact information along with the detailed symptoms of the product that you are sending. You will receive a quotation of repair for you to make a decision for repairing. If we do not hear from you within 2 weeks of submitting your quotation, the product will be returned.

A/S Department of LK Lab Korea co., Ltd. +82-(0)31-572-4952



# 4. Specification

## Ball Mill

| Cat. No.   | Model    | Roller      | R.P.M    |
|------------|----------|-------------|----------|
| M03-02-105 | LM-BS605 | Φ50×L300 mm | 30 ~ 350 |
| M03-02-115 | LM-BS750 | Φ70×L700 mm |          |

## Desktop Ball Mill

| Cat. No.   | Model     | Roller            | R.P.M    |
|------------|-----------|-------------------|----------|
| M03-02-130 | LM-BD4530 | Φ50×L300 mm (2ea) | 30 ~ 350 |
| M03-02-135 | LM-BD6030 | Φ50×L300 mm (3ea) |          |

| Cat. No.                 |                 | M03-02-105              | M03-02-115   | M03-02-130   | M03-02-135   |
|--------------------------|-----------------|-------------------------|--------------|--------------|--------------|
| Model                    |                 | LM-BS605                | LM-BS750     | LM-BD4530    | LM-BD6030    |
| Controller               | Control         | PID Control             |              |              |              |
|                          | Display         | GLCD (Graphic LCD)      |              |              |              |
|                          | Resolution      | 1 rpm                   |              |              |              |
| RPM                      | Range           | 30 ~ 350 rpm            |              |              |              |
|                          | Accuracy        | 2 rpm                   |              |              |              |
| Dimension (w x d x h) mm |                 |                         |              |              |              |
| Electric supply          | Power           | 1 Phase, 220 VAC, 60 Hz |              |              |              |
|                          | Max Consumption | 150 W (0.7 A)           |              | 50 W (0.2 A) |              |
|                          | Power Line      | Standard Plug           |              |              |              |
| Roller (φ x L) mm        |                 | 50×300(2단2열)            | 70×700(2단2열) | 50×300 (2ea) | 50×300 (2ea) |
| Jar Size (φ ~ φ)mm       |                 | 50 ~ 300                | 50 ~ 350     | 50 ~ 200     | 70 ~ 150     |

## 생산물배상책임보험 증권

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## [계약일반사항]

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| 소급담보일   | 2014년 04월 10일 |       |                 |
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## [가입조건]

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 자기부담금: ₩ 1,000,000

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 화재위험부담보특별약관

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