

OPERATING MANUAL

Open Air Shakers

**Model : SKC6075, SKC6100, SKC6200
SKC7075, SKC7100, SKC7200**

Manual No. : 00HAA0001237 Version : 0.1



WARNING

Before using this product, read this entire Operator's Manual carefully. Users should follow all of the Operational Guidelines contained in this Manual and take all necessary safety precautions while using this product. Failure to follow these guidelines could result in potentially irreparable bodily harm and/or property damage.

Thank you for purchasing Jeio Tech's products.

Jeio Tech Co., Ltd. is committed to customer service both during and after the sale. If you have questions concerning the operation of your unit or the information in this manual, contact our Sales Department. If your unit fails to operate properly, or if you have questions concerning spare parts or Service Contracts, contact our Service Department.

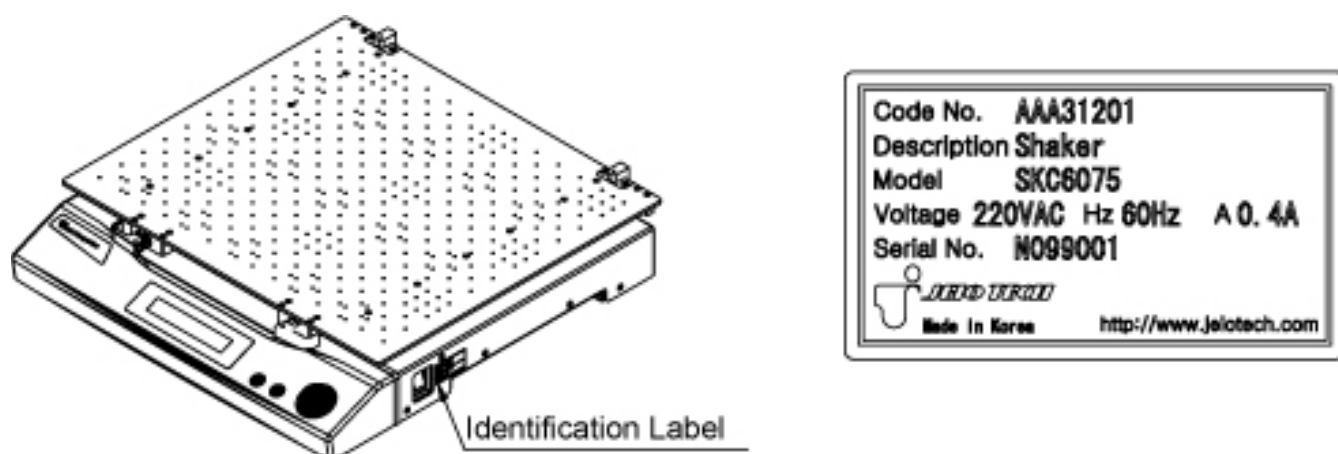


Figure A.

Please locate the identification label on the right side of the instrument. Fill in the information found on the identification label in the spaces provided above in Figure A. Refer to this identification label information when calling, if your unit fails to operate properly, or if you have questions concerning spare parts or service contracts. Additionally, use this information at **www.jeiotech.com** when you register your instruments when you fill out the enclosed registration card.

Quality Management System



Jeio Tech Co, Ltd. is dedicated to providing world-best product quality and customer satisfaction. To ensure we maintain this commitment we have developed and implemented a total quality program, which conforms to the requirements according to DIN EN ISO 9001:2000 for the design, development, production, sales and servicing of biotechnology, environmental chemical engineering related products, and reliable measuring equipment for electric and electronics (ovens, incubators, constant temperature humidity chambers, constant temperature baths, refrigerating bath circulators, heat exchangers and shakers).

Visit our Web site at <http://www.jeiotech.com/eng/support/certificates.html> to view a copy of our certificate.

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1.0 Safety

1.1 How to use the Manual

1.1.1 Introduction

This manual is intended for individuals requiring information about the use Shaker. Use this manual as a guide and reference for installing, operating, and maintaining your Jeio Tech shaker. The purpose is to assist you in applying efficient, proven techniques that enhance equipment productivity

This manual covers only light corrective maintenance. No installation, service procedure or other maintenance should be undertaken without first contacting a service technician, nor should be carried out by someone other than a service technician with specific experience with laboratory equipment and electricity.

1.1.2 Chapter summary

The Functional Description chapter outlines models covered, standard features, and safety features. Additional sections within the manual provide instructions for installation, pre-operational procedures, operation, preventive maintenance, and corrective maintenance.

The Installation chapter includes required data for receiving, unpacking, inspecting, and setup of the unit. We can also provide the assistance of a factory-trained technician to help train your operator(s) for a nominal charge. This section includes instructions, checks, and adjustments that should be followed before commencing with operation of the Shaker. These instructions are intended to supplement standard laboratory procedures performed at daily and weekly intervals.

The Operation chapter includes a description of controller features along with temperature and agitation parameter setting instructions, multi-segment program setting instructions and instructions for changing the type of agitation and agitation amplitude.

The Accessories and Option chapter is your source for information on available accessories and option with brief information.

The Appendix contains technical specifications, warranty and Jeio Tech technical support contact information.

1.1.3 Model number nomenclature.

This manual covers all 7 models of the SKC series. The following describes the model number nomenclature used in throughout the manual..

SKC6075/6100/6200 Open Air Shaker, Stroke- each 19mm, 25mm, 51mm

SKC7075/7100/7200 Open Air Shaker, Stroke-each 19mm, 25mm, 51mm

1.2 Safety Notice

Be sure that you are completely familiar with the safe operation of this Shaker. This unit may be connected to other machinery, such as a temperature control unit. Improper use can cause serious or fatal injury.

Installation and repair procedures require specialized skills with laboratory equipment and electricity. Any person that installs or repairs this unit must have these specialized skills to ensure that this unit is safe to operate. Contact Jeio Tech or their local authorized distributor for repairs or any questions you may have about the safe installation and operation of this unit.

The precaution statements are general guidelines for the safe use and operation of this instrument. It is not practical to list all unsafe conditions. Therefore, if you use a procedure that is not recommended in this manual you must determine if it is safe for the operator and all personnel in the proximity to the Shaker. If there is any question of the safety of a procedure please contact Jeio Tech before starting or stopping the Shaker.

This equipment contains high voltages. Electrical shock can cause serious or fatal injury. Only qualified personnel should attempt the startup procedure or troubleshoot this unit.

- Documentation must be available to anyone that operates this equipment at all times.
- Keep non-qualified personnel at a safe distance from this unit.
- Only qualified personnel familiar with the safe installation, operation and maintenance of this unit should attempt start-up or operating procedures.
- Always stop the Shaker before making or removing any connections.

1.3 Symbols used in this Manual

The following signal word panels, safety symbols and non safety symbols are used to alert you to potential personal injury hazards or information of importance. Obey all safety messages that follow these symbols to avoid possible personal injury or death.

1.3.1 Signal word panels

Signal word panels are a method for calling attention to a safety messages or property damage messages and designate a degree or level of hazard seriousness. It consists of three elements: a safety alert symbol, a signal word and a contrasting rectangular background. The following signal word panels are in accordance with ANSI Z535.4-2007 and ISO 3864 standards.



Indicates a hazardous situation which, if not avoided, will result in death or serious injury.



Indicates a hazardous situation which, if not avoided, could result in death or serious injury.



Indicates a hazardous situation which, if not avoided, may result in minor or moderate injury.



Indicates a property damage message.

1.3.2 Safety symbols

Safety symbols are graphic representations—of a hazard, a hazardous situation, a precaution to avoid a hazard, a result of not avoiding a hazard, or any combination of these messages—intended to convey a message without the use of words. The following safety symbols are used in this manual.

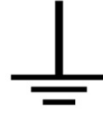
Mandatory		Prohibition	
	Read manual		No direct sunlight
	Wear a face mask		No high frequency noise
	Wear gloves		No corrosive fluid or cleaners
	Wear goggles		No water
WARNING			
	Safety Alert Symbol. General caution.		Hand crush or pinch
	Electrical shock		Foot crush
	Flammable or fire could be caused.		Lifting hazard
	Sharp points		

1.3.3 Miscellaneous none safety symbols used in manual

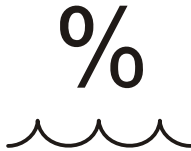
The following graphic representations are intended to convey a message without words or to bring your attention to important information about the use of the Shaker or a feature.



European Union electrical
directive compliance



Earth ground



Relative humidity



Note



Altitude



American Safety Standard
Certification Mark

1.4 Precautions for Your instrument.

Our Shaker is designed to provide safe and reliable operation when installed and operated within design specifications. Make sure you read and understand all instructions and safety precautions listed in this manual before installing or operating your unit. If you have any questions concerning the operation of your unit or the information in this manual, contact our Sales Department.

To avoid possible personal injury or equipment damage when installing, operating, or maintaining this Shaker, use good judgment and follow these safe practices.

1.4.1 Warning statements

Observe all warning labels.

DO NOT remove warning labels.

Check the voltage, phase and capacity of the power supply and connect properly.

DO NOT ground the Shaker to gas pipes or water pipes.

DO NOT insert multiple plugs into the outlet at the same time.

DO NOT operate equipment with damaged line cords.

DO NOT handle or touch electrical cord and electrical parts with wet hands.

DO NOT move the Shaker while it is plugged into the power source.

DO NOT use or keep flammable gases near the Shaker.

DO NOT install the Shaker near environments where flammable gas may leak.

DO NOT use the machine near environments where explosion can occur due to organic evaporating gases.

DO NOT put explosive and flammable chemicals (Alcohol, Benzene, and etc) into the chamber.

DO NOT let moisture, organic solvents, dust, and corrosive gas enter the control panel.

DO NOT expose the Shaker to direct sunlight.

DO NOT expose the Shaker to direct heat sources.

DO NOT use the Shaker in places where moisture is high and flooding can occur.

DO NOT install the Shaker near machinery generating high frequency noise.

DO NOT use Shaker in environments that contain industrial oil smoke and metallic dust.

DO NOT operate damaged or leaking unit.

DO NOT operate the Shaker when there is strange sound, smell and smoke coming from the unit.

DO NOT disassemble, fix or change the Shaker other than for those items described in this operating manual.

1.4.2 Caution statements

DO NOT use doors, handles or knobs to lift or stabilize the unit.

DO NOT place heavy objects on the power cord.

DO NOT put the Shaker on the power cord.

DO NOT make the machine wet while cleaning.

DO NOT pour water or put liquid on the Shaker when cleaning the unit.

DO NOT operate Shaker and immediately disconnect the main power supply and request service when water may be in the unit.

DO NOT sprinkle insecticide or flammable spray on the Shaker chamber.

DO NOT clean the Shaker with a strong cleanser (e.g., solvent type) and use a soft cloth.

In addition to the safety warnings listed above, safety messages are posted throughout the manual. These safety messages are designated by the use of a signal word panel followed by text and a safety symbol where applicable. Read and follow these important instructions. Failure to observe these instructions can result in permanent damage to the unit, significant property damage, personal injury or death.

1.5 Responsibility

Our Shaker is constructed for maximum operator safety when used under standard operating conditions and when recommended instructions are followed in the maintenance and operation of the machine.

All personnel engaged in the use of the Shaker should become familiar with its operation as described in this manual.

Proper operation of the unit promotes safety for the operator and all workers in its vicinity.

Each individual must take responsibility for observing the prescribed safety rules as outlined. All caution, warning and danger labels must be observed and obeyed. All actual or potential danger areas must be reported to your immediate supervisor.

1.5.1 General responsibility

No matter who you are safety is important. Owners, operators and maintenance personnel must realize that every day, safety is a vital part of their jobs.

If your main concern is loss of productivity, remember that production is always affected in a negative way following an accident. The following are some of the ways that accidents can affect your production.

- Loss of a skilled operator (temporarily or permanently)
- Breakdown of shop morale
- Costly damage to equipment and laboratory samples
- Downtime
- An effective safety program is responsible and economically sound

Organize a safety committee or group, and hold regular meetings. Promote this group from the management level. Through this group, the safety program can be continually reviewed, maintained, and improved. Keep minutes or a record of the meetings.

Hold daily equipment inspections in addition to regular maintenance checks. You will keep your equipment safe for production and exhibit your commitment to safety.

Please read and use this manual as a guide to equipment safety. This manual contains safety warnings throughout, specific to each function and point of operation..

1.5.2 Operator responsibility

The operator's responsibility does not end with efficient experimentation and production. The operator usually has the most daily contact with the equipment and intimately knows its capabilities and limitations.

Plant and personnel safety is sometimes forgotten in the desire to meet incentive rates, or through a casual attitude toward laboratory equipment formed over a period of months or years. Your employer probably has established a set of safety rules in your workplace. Those rules, this manual, or any other safety information will not keep you from being injured while operating your equipment.

Learn and always use safe operation. Cooperate with co-workers to promote safe practices. Immediately report any potentially dangerous situation to your supervisor or appropriate person.

REMEMBER

- **NEVER** place your hands or any part of your body in any dangerous location.
- **NEVER** operate, service, or adjust the equipment without appropriate training and first reading and understanding this manual.
- Before you start the portable drying/conveying system check the following:
 - ✓ Remove all tools from the Shaker chamber.
 - ✓ Be sure no objects, samples or chemicals are lying on the Shaker.
- If your Shaker has been inoperative or unattended, check all settings before starting the unit.
- At the beginning of your shift and after breaks, verify that the Shaker is functioning properly.
- Report the following occurrences **IMMEDIATELY**:
 - ✓ unsafe operation or condition
 - ✓ unusual Shaking action
 - ✓ leakage
 - ✓ improper maintenance
- **DO NOT** wear loose clothing or jewelry, which can be caught while working on the equipment. In addition, cover or tie back long hair.
- Clean the equipment and surrounding area **DAILY**, and inspect the machine for loose, missing or broken parts.
- Shut off power to the Shaker when it is not in use. Turn the power switch to the **OFF** position, or unplug it from the power source.

1.5.3 Maintenance responsibility

Proper maintenance is essential to safety. If you are a maintenance worker, you must make safety a priority to effectively repair and maintain equipment..

Before removing, adjusting, or replacing parts on this Shaker, remember to turn off all electric supplies and all accessory equipment at the machine, and disconnect and lockout electrical power. Attach warning tags where possible.

Be sure that the Shaker is correctly connected to earth grounded electrical outlet that complies with current codes.

When you have completed the repair or maintenance procedure, check your work and remove your tools.

DO NOT restore power to the Shaker until all persons are clear of the area, **BEFORE** you turn the Shaker over to the operator for production; verify the unit is functioning properly.

1.5.4 Reporting a safety defect

If you believe that your Shaker has a defect that could cause injury, you should immediately discontinue its use and inform Jeio Tech or local authorized distributor.

The principle factors that can result in injury are failure to follow proper operating procedures (i.e. lockout/tag out), or failure to maintain a clean and safe working environment.

2.0 Functional Description

2.1 Introduction

Jeio tech shaker is used for cultivation of variety of plant and animal cells and microbe.

The required elements for cultivation and proliferation are supplying oxygen, maintaining concentration of PH constantly and an adequate supply of nutrition. Jeio tech shaker oxygenates culture medium properly and provides the best environment for proliferation and cultivation.

Jeio tech Shaker is composed of a table to put a container containing culture medium and accessories for holding the container and installed an all-in-one system including a motor to agitate a cultivation container.

To culture successfully, it is necessary to provide proper environment for proliferation and cultivation. Jeio tech shaker is designed to control properly according to growth period by supplying adequate agitating energy.

2.2 Feature

2.2.1 Compliance



CE is an abbreviation for CONFORMITE EUROPEAN and it means that the products are qualified for European Standard related to safety, health, environment and protection of consumers. CE Mark doesn't mean that it guarantees the products quality but complied with basic safety requirements.

The products which do not acquire CE mark or do not follow the standards can not be sold or distributed in European market, and products test must be done by a manufacturer itself or a specified institute.

If you want to distribute the products in Europe manufactured by outside of Europe must attach CE mark. EU supply 76 ea guidelines and have 3 types (EN:EUROPEAN NORM, HD:HARMONIZED DOCUMENTS, ENV:EUROPEAN PRE-STANDARD) which including approx.3000 kinds of standards.

Jeio tech has supplied products met CE standards based on our strict quality policy.



UL is an independent product safety certification organization that has founded in 1894 for reducing possibility of body injury and property damage and has 5 ea laboratories.

At first, UL supplied specialized testing result to insurance companies used for making an insurance policy, risk assessment or reducing risk due to demand products improvement.

UL was established by the insurance company's support initially and now it is used as a means to satisfy the "Consumer Product Safety" adopted forcibly by some cities like New York, Chicago, San Francisco so on but technically, it is not a forced approval of Federal Government, a voluntary standard.

However, UL is put high valuation on its reliance in USA and required by most of manufacturers, dealers, agents because of consumer preference. Therefore, it is like an essential forced standard



GOOD DESIGN

The GD Selection, by recognizing and rewarding excellently designed products, promotes the advancement of design and encourages innovation and creativity through quality products that contribute to aesthetically and practically enhancing our daily lives.

2.2.2 Construction

2.2.2.1 General Information

Available mass production

It can be attached 7 ea(maximum) large capacity flask like 4,000ml or 6,000ml.

VFD(Vacuum Fluorescent Display)

VFD is an outstanding display for recognition, set points, alerts can be checked far away from this display.

Stop function

Universal Platform of the rotary movement stops in the middle of the unit. This function is available from automation system.

Emoticons

Sophisticated emoticons printed on buttons in manipulation part makes users more familiar.

Good design

Professional designer involved in the development and the unit is beautiful enough to be selected as "good design"

Chemical Resistance.

The basic surface finish with a powder coating and controls produced by the corrosion-resistant material made of PP materials, minimize damage of equipment if samples are spilled.

Waterproof Structure

Even there is spillage by users accidentally the liquid doesn't go into the equipment.

Combined approach

All platforms are put in their equipment by sliding way and can be fixed completely by front handle. Therefore, users can replace many kinds of platform easily.

Accessories

- There are two kinds of dimension of universal platform. You can select it according to the equipments model.
- You can install/replace many kinds of accessories on Universal Platform.
- Dual Universal Platform (2-column load) has increased productivity.
- Spring wire rack which is half dimension can be installed on Universal Platform (Half Spring Wire Rack)

2.2.2.2 Shaking system

Triple Cam system

We have been succeeding to development of rotation system which guarantees long life using precise technique. This system is our new technology and it's very top class technique in the world.

Available heavy weight

Triple Cam system is fairly solid structure to load heavy weight because this unit doesn't have vertical movement at all. It operates well with heavy weight if the set rpm is not too high.

Low height(122mm)

Generally shakers of lower height are stronger for vibration. This Jeio tech unit's height is the lowest (122mm) in domestic.

The exact rotation movement.

The micro process PID Controller developed by Jeio tech independently controls the motor and gives feedback so that the exact rotation movement available even though the load condition would be changed.

Outer rotor Direct Drive BLDC motor

Outer rotor DD motor (over 30cm diameter) delivers torque of max.1,300W .

Jeio tech has succeeded to control the motor accurately and it is the best motor for laboratory.

Shaking Range

We support wide range of 30~500rpm. When you use 350~500rpm with heavy weight, one of the accessories for heavy weight should be selected.

Ground Sticker

The way to hold this unit on the floor

Weight Increaser

It is a way that heavy steel sheet are fixed on underneath of this unit and 8 ea of rubber feet are attached to raise static friction force.

Forward/Reverse rotation switch

Switch the movement direction with simple manipulation available.

2.2.2.3 HMI (Human Machine Interface)

Mode system

It is a way to move the mode when you manipulate this unit instead of moving all setting values step by step. When it turns on, you can stop, operate and change the rpm value in quick mode. If you use the other function, you can change the mode, timer/program mode, and operate it,.

Timer

There are two functions that Delay On and Delay Off, they can be used at the same time.

Program

It is a function that users can set the rpm and direction of rotation with a certain time interval-based devices. You can set the operating time, rpm, stop, direction of rotation, and number of repeat movement in each step.

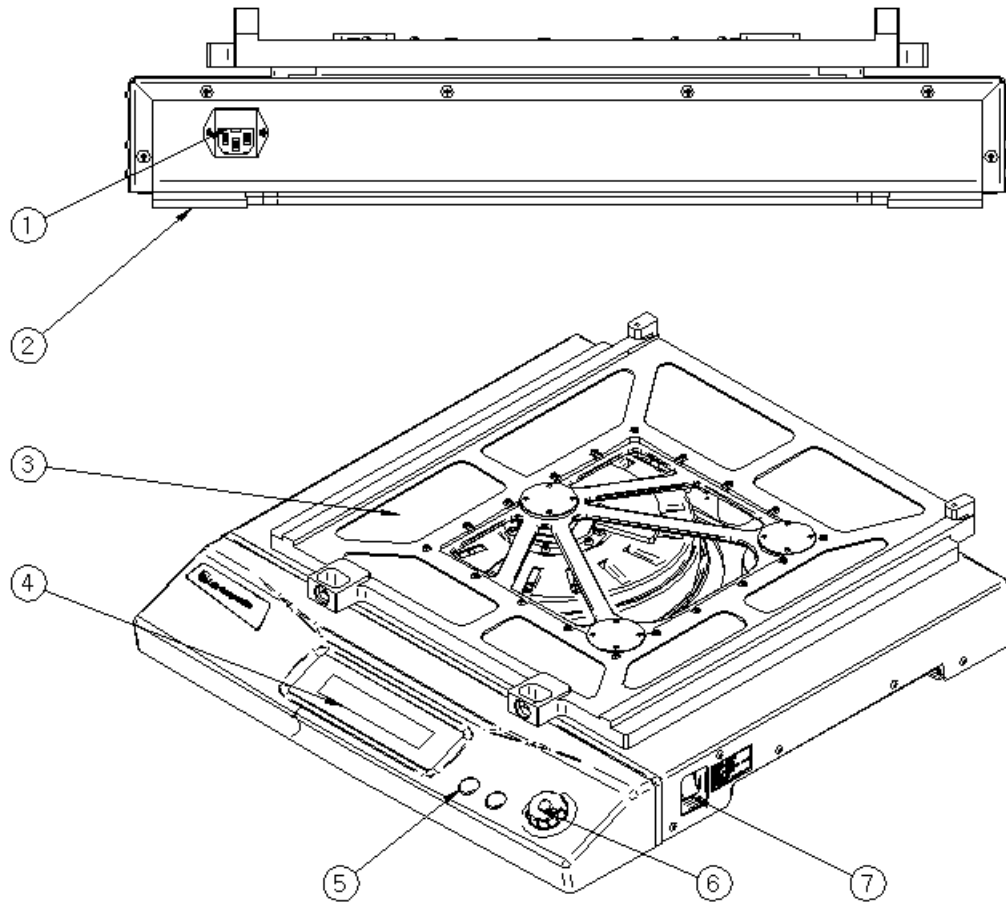
Program Storage

You can save the set value in each step to use it next time, maximum 20 ea patterns can be saved.

Vibration Sensor Module

A vibration sensor is attached in the unit. This sensor measures a movement of this unit during operating. Even it doesn't reach the set rpm this unit operates lower rpm in case the user would be in danger due to the vibration until you find proper vibration. In addition, if the unit is moved or got a sudden shock while it is operating it stops automatically and give a warning to the user by visual and sound.

2.3 Construction



(1) Receptable with Fuse

This part is for power from electric code, contains fuse.

(2) Foot

Support the body and possible to adjust the height.

(3) Driving Plate

Hold the shaking table including Universal Platform.

(4) VFD Display

It is a display which can determine the status of operation.

(5) Touch Button

A button for control this unit.

(6) Dial Knob

It is used to input and change the set value.

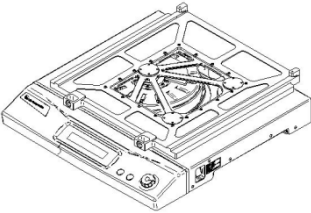
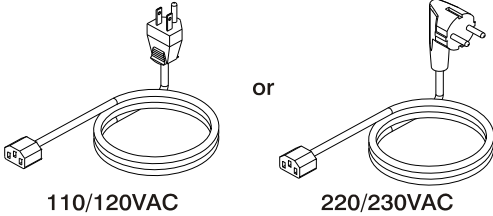

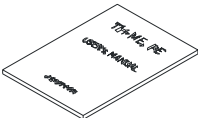
(7) Power Switch

3.0 Installation

3.1 Unit Components

Please check the unit components as following after unpacking. Also, it is necessary to check the model number on ID Label beside the power switch is same as you ordered.

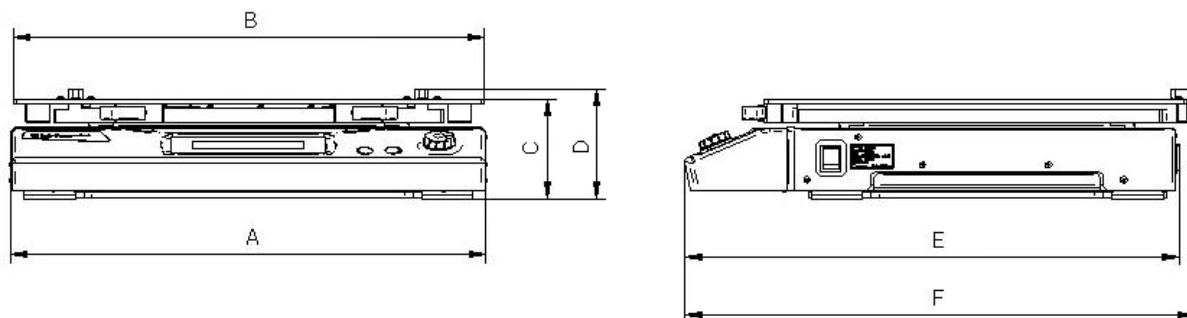
If the model number is not identified with what you ordered or an omission is found, please contact your local distributor of Jeio tech or where you purchased the unit immediately.
Please refer to 8.6.1 to find out local distributors of Jeio tech.

COMPONENT	QUANTITY	RECEIVED
Unit 	1	
Power Cord 	1	
Fuse (Spare) 	1	
Operating instruction 	1	

3.2 Installation

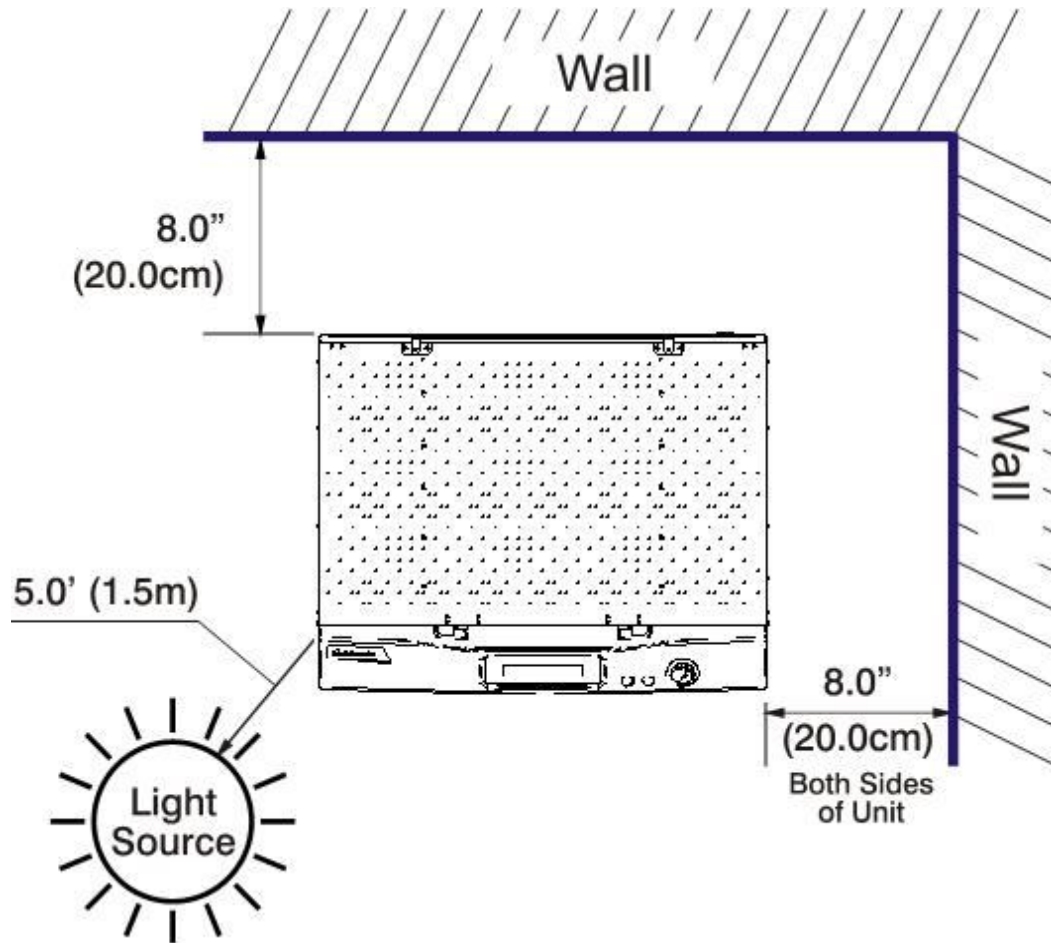
3.2.1 Space requirement

First of all, should check the accurate size of product dimension and radius of rotation to install Jeio tech equipments. Then, consider the space for this equipment, power switch located right-down part of the unit, and power code. A minimum space should be acquired to work and maintain this unit properly as below picture.



Model \ Dimension	A	B	C	D	E	F
SKC6000 + Platform Small	582.8 (22.9)	580 (22.8)	122.2 (4.8)	134.2 (5.3)	618 (24.3)	627 (24.7)
SKC6000 + Platform Large	"	660 (26.0)	"	"	"	"
SKC7000 + Platform Small	750 (29.5)	755 (29.7)	"	"	662 (26.1)	662 (26.1)
SKC7000 + Platform Large	"	885 (34.8)	"	"	"	"

mm(inch)



3.2.2 Environmental Setting

SKC 6000 series and SKC 7000 Series of Jeiotech works properly when the conditions and circumstances as blow are satisfied.



Avoid from direct radiation



Remain the temperature from 5℃ to 40℃ near the unit



Remain the relative humidity under 80%.



Remain an altitude of installation place under 2,000m above sea level



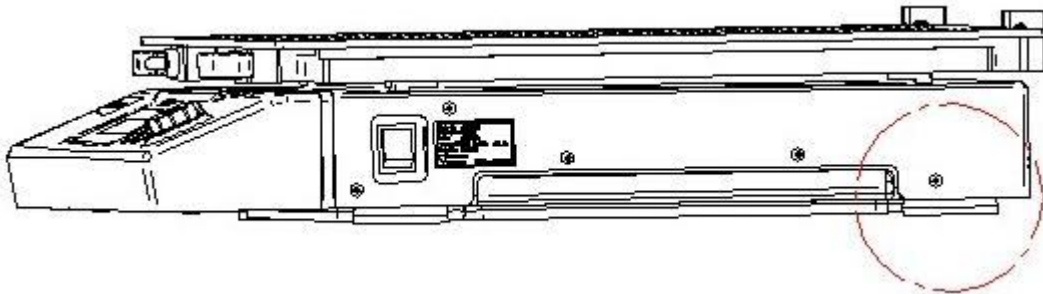
Check if there is any equipment which comes out strong noise around the unit. If so, remove the causes or move the unit where not to have noise problems.



Check a ground wire of the unit.

3.2.3 Leveling the unit

When you set up the unit, balancing is very important. If the balance of the unit is not in a good condition, it causes vibration and noise and the user could be in danger.
Make it balanced well as following.

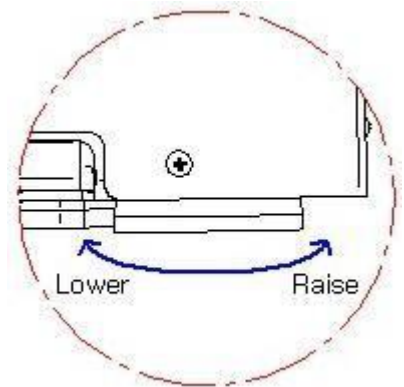


Step 1 : Set up the unit at a suitable place.

Step 2 : Lift the foot up lightly which is not horizontal with others.

Step 3 : Turn the foot to the right, then it rise up to the side of this unit, and turn it to the left, it goes down to the bottom.

Step 4 : Adjusting the parts which should go down is priority because the feet of this unit just out of factory are all up as possible to the side of this unit.



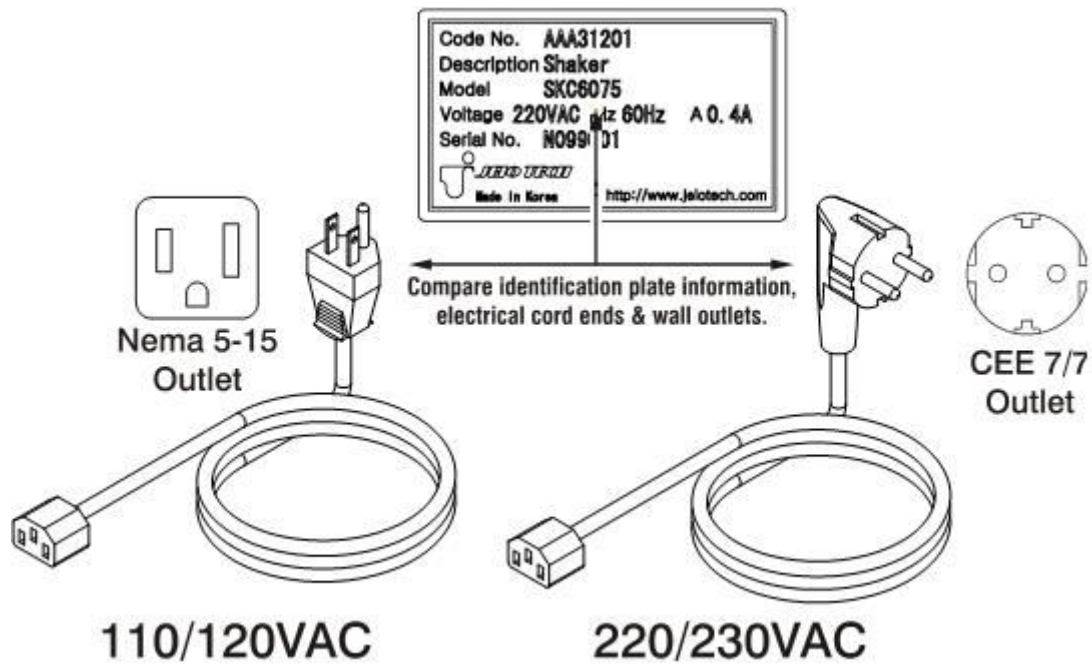
3.2.4 Power supply

SKC Series are designed to use a single phase power with a ground wire. Required voltage and power consumption are mentioned on the ID label beside of power switch right side of this unit. Connect the electricity power using right voltage after checking ID label. Less than $\pm 10\%$ of marked voltage on the label is available.

Check an outlet to insert a proper plug as following picture before connect the power.

If a power cord is not suitable, please contact a local distributor of Jeio tech.

We recommend an extension cord following IEC60320 standard in case the power cord is short.



⚠ DANGER



ELECTRICAL SHOCK HAZARD. Connecting Power improperly may causes damage to equipment and serious injury or death.

3.3 Initial Operating

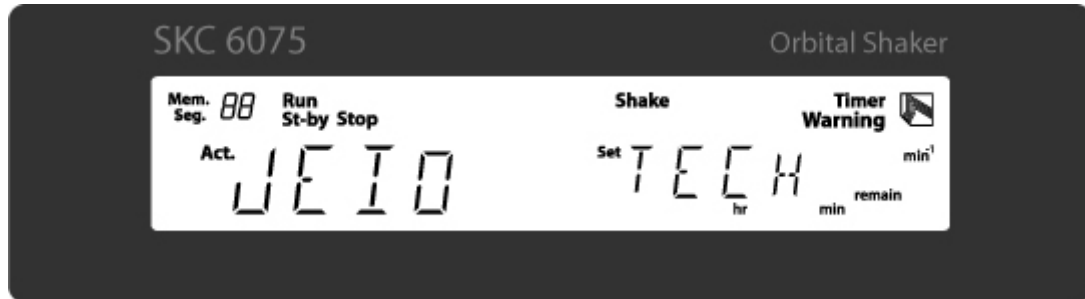
3.3.1 Pre start up check

- Check the connecting with unit and outlet is in a good condition.
- Check the unit is balanced well.
- Check all of platforms are fixed firmly.
- Check the accessories on platform are fixed exactly.
- Check the things on platform are fixed firmly.
- Check if there is any flammable or explosive liquid on the unit.

3.3.2 Start operating

Turn on power switch, it will show as below.

- The power switch light up
- All of LED right up a moment, JEIO TECH shows up as following picture.



- Then, standard screen shows up 1 sec later as below.
 - ✓ Act. Display : Display rpm of this unit at present.
 - ✓ Set. Display : Display standard rpm from factory or the last set rpm



3.3.3 Stop operating

Turn off when you don't use it as following steps.

Step 1 : Push Start/Stop key to stop operating.

Step 2 : Turn off the power switch and confirm it light off.

Step 3 : VFD Display goes out of power 3 seconds later after pushing power switch.

4.0 Operation

4.1 Controller Feature

Brake Function

Brake function is built in to stop in a right position after agitator actions complete in order to use an agitator can be used in an automation system.

Forward/backward rotation

Select forward/backward rotation function in parameter mode, the unit works selected direction of rotation.

Speed Compensation

RPM is stable from 30 to 500, especially the stability is very high in 30rpm.
It is ideal for samples at low speed stirring.

Prompt acceleration/deceleration

Rapid acceleration or deceleration is achieved using brake function and speed compensation without over/under shoot.

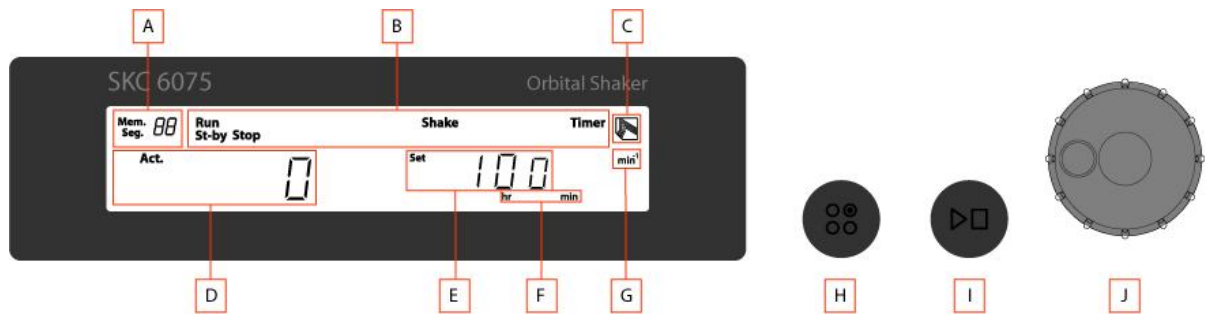
Vibration Prevention Device

A module measuring vibration itself is built-in. This is a function that finds an optimum vibration so that it warns abnormal movement to users by sound and vision.

A shock sensing function

When an abnormal shock occurs, this unit stops operating immediately and warns about it to users by sound and vision.

4.2 Keypad Over View and description



- VFD : A, B, C, D, E, F, G

A	Memory	Displays saved value during operating program mode. Input 20 patterns maximum possible.
	Segment	Displays subordinated segments to saved pattern. Input 20 segments maximum possible.
	Number	Displays saved pattern address (Indicating Mum.) displays subordinate level (Indicating Seg.)
B	Run	Displays the unit is operating
	St-by	Displays the unit is standby
	Stop	Displays the unit is stop
	Shake	Displays the unit is in program mode.
	Timer	Displays the unit is in timer mode..
C	Lab Companion	Jeiotech's brand logo.
D	Act. Display	Displays operating value at present.
E	Set. Display	Displays set value.
F	Hr Min	Displays minute and hours when you input program mode or timer mod and the balance of time when it is operating in program or timer mode.
G	Min⁻¹	Same as Rpm.

- **Touch Button : H, I**


H	Mode Button	To use move to timer, program, parameter mode.
I	Start/Stop Button	To use the unit to operate or stop. To move prior step as ESC function while input timer and program mode.

※ **Mode Button, Start/Stop Button is displayed red and green. No response the button is Red, it works when the button is Green. Only buttons which can be used during operating or before operating turns to be green.**

- **Dial Knob : J**

J	Dial Knob	Turn the knob to left, set value decrease and to right set value increase. Push it to set complete
----------	------------------	--

- **Power Switch : J**

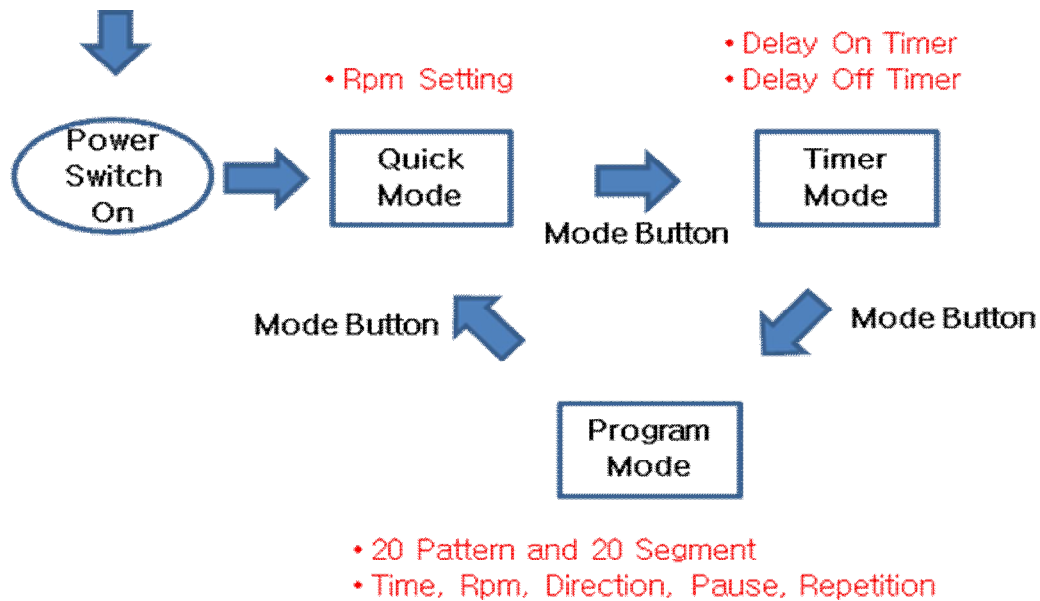
	Power Switch	Button for power supply
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4.3 Controller Diagram

This unit is applied a mode system for user's convenience. It starts automatic loading to quick mode as soon as you turn it on. To operate the unit, just push Start/Stop key after input RPM value in quick mode.

A mode button to use timer and program mode for more complicated performance allows you to control this unit easily.

The controller composes as follows.



4.4 Quick Mode

Turn on the power switch and it starts in quick mode automatically.
In quick mode, input rpm value and operate the unit possible.

4.4.1 Set rpm value (Standby mode)

Step 1 : Press a Dial Knob Button one time. Then, [Set] is blinking.



Step 2 : Turn the Dial Knob to left/right to change the value. Then, press the Dial Knob Button.
Stop [Set] blinking and setting value is entered.



Step 3 : Press Start/Stop Button.
[Run] is light on and operating set value.



Step 4 : Complete reset the value within 5 seconds. After that it will return to main screen.

4.4.2 RPM set (Operating mode)

Step 1 : When the unit is operating as below, press the Dial Knob Button one time.
Then, [Set.] is blinking.



Step 2 : Turn the Dial Knob to left/right to change the value. Then, press the Dial Knob Button.
Stop [Set] blinking and setting value is entered.



Step 3 : The unit is operating following set value.



4.4.3 How to stop



Step 1 : When the unit is operating as above, press Start/Stop Button. [Run] is light off and Stop is light on, the unit stops slowly.



Step 2 : [Act.] reaches "0", the unit goes back to standby mode(initial screen).



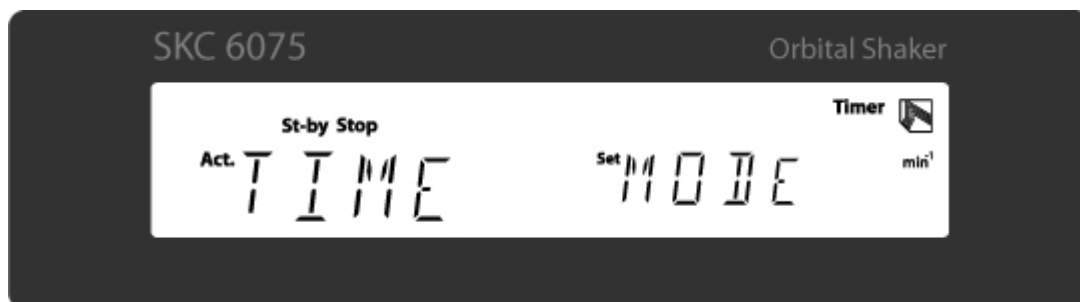
All buttons do not work while the unit stops.
They are activated after the unit stops completely.

4.5 Timer Mode

Timer mode consists of two types, one is Delay on: the unit will begin after a certain period of time passed, the other is Delay Off: the unit will be stopped after a certain period of time passed. If both functions are set at the same time. The unit will begin after a certain period of time passed, And also will be stopped after a certain period of time passed.

4.5.1 How to set timer for Delay On, or Delay Off

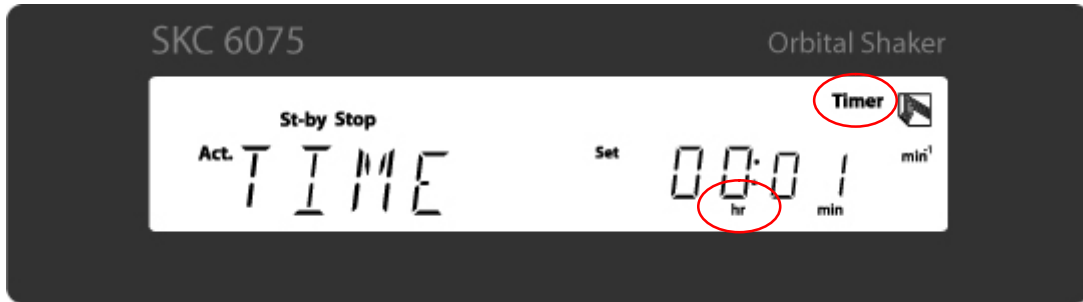
Step 1 : Press the Mode Button when the unit is on operation.
Select to Timer mode.



Step 2 : Press the Dial Knob Button once, then, the display will be shown as below;. The both displays will be shown in turn by turning the Dial Knob clockwise, or counter-clockwise.



Step 3 : Press the Dial Knob Button once when time desired is shown .
Then, Timer and hr will be blinking in a circle in red as below;



Step 4 : Select the hr desired by turning the Dial Knob clockwise, or counter-clockwise,
Press the Dial Knob Button, then, hr is on light and min is blinking.
Maximum 99hr can be set.



Step 5 : Select the min desired by turning the Dial Knob clockwise, or counter-clockwise,
Press the Dial Knob Button.
Maximum 59min can be set.

There will be " Act. START" on the left window, meanwhile, there will be " Set. YES " on the right window. You can see " YES " or " NO " in turn by turning the Dial Knob clockwise, or counter-clockwise.



Step 6 : Select “ YES “, and press the Dial Knob Button once, then there will be a type of Timer mode and time setting in turn on the display.

- In case, Delay On setting



- In case, Delay Off setting



Step 7 : Press the Dial Knob Button once.

The unit starts run in Timer mode as “ Run “ is on light and “ Timer “ is blinking.
Maximum input time for Timer Mode respectively is 99hr 59min.

- In case Delay On , the unit will be waiting for start until the time is set as below;



- In case Delay Off, the unit will begin to start and last until the time is set as below;



Step 8 : If selected “ NO “ in “**Step 6**”, Delay On and Delay Off can be set at the same time..
Select “ NO “, and press the Dial Knob Button once.

4.5.2 Refer to How to set-up for Delay On/Delay Off at the same time in the following page.



The change of rpm can be done during the Timer Mode is on operation by the way of 4.4.1 or 4.4.2.



If revision or confirmation on the setting value needed during the setting process of Timer Mode, press the Start/Stop Button when it is activated in gray. Then you can step back to the previous stage whenever pressing the same.

4.5.2 How to set-up for Delay On / Delay Off at the same time.

Step 1 : Press the Dial Knob Button when there is “ NO “ on the display in the “4.5.1 Step 6”.

If Delay On is set, there will be “ Delay Off “ on the display, and if Delay Off is set, there will be “ Delay Onn “ on the same.

- In case Delay On setting



- In case Delay Off setting



Step 2 : Press the Dial Knob Button once.

Set the time by the way of “4.5.1 Step 3 ~ Step 5”, and press the Dial Knob Button once.

There will be “ Act. START “ on the display as below’



Step 3 : Select “ YES “ , and press the Dial Knob Button.

There will be 4 windows of “4.5.1 Step 6” in turn on the display.

Step 4 : Check the setting value, and press the Dial Knob Button.
The unit will begin to start on Timer mode with blinking of Timer as below;



Even though any one of both between Delay On and Delay Off is selected, the order of operation cannot be changeable, ie first begin with Delay On, and next begin with Delay Off.

Step 5 : If NO in “**Step 3**” is selected, it will return to “**Step 1**”.

4.5.3 How to check the Timer types

You can check the Timer types and remaining time the user set during the unit is on operation of Timer mode as the same as “4.5.7 Step 7”..

Step 1 : Press Mode Button once when the Timer is blinking on Timer Mode.

- In case Delay On setting



- In case Delay Off setting



Above will be shown on the display in consecutive order whenever pressing the Dial Button when Delay On/Off is set at the same time.

Step 2 : if press the Mode Button one more time, it returns to Timer Mode ,
If the unit stays on Mode Button in 10 seconds with inputting a setting value,
it also returns to Time Mode.

4.5.4 Stop Timer Mode on operation

Timer Mode will end according to user's request on operation of Timer Mode as same as "4.5.7 Step 7"

Step 1 : Press the Start/Stop Button once on operation of Timer Mode when Timer mode is blinking on the right panel in a circle in red as below; There will be a message as below; Then, there will be " YES " and " NO " in turn on the display by turning the Dial Knob Clockwise or counter-clockwise.



Step 2 : In order to stop the unit, press the Dial Knob Button when YES is shown on the display. Then, Timer will end with the message of " Set END " as below;



Step 3 : Press the Dial Knob Button one more time when above message is still on the display, Otherwise, if it stays in 5 seconds without inputting a setting value, it returns to the initial display .



4.6 Program Mode

1 pattern can have maximum 20 segment. So, 20 of separate RPM, time, shaking direction, pause can be set and operated. Maximum 99 cycles can be programmed.

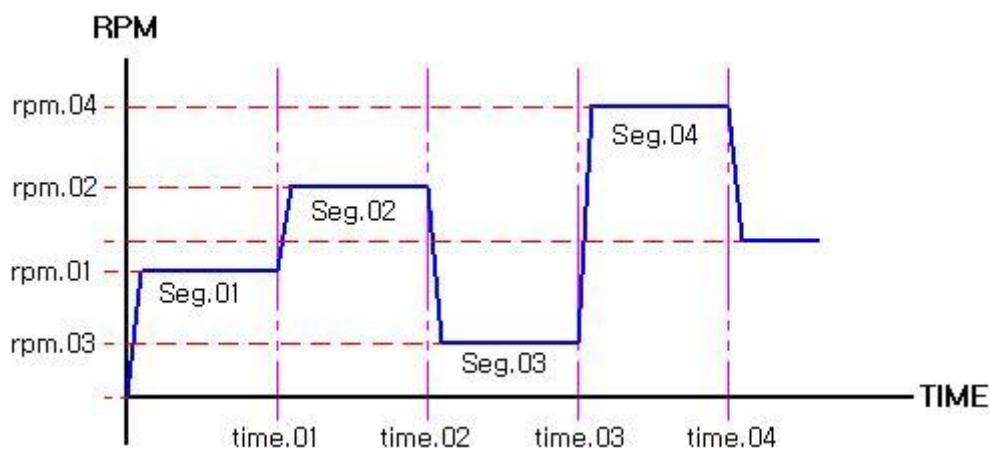
20 pattern can be stored.

Terms

Mem. : Address of stored Pattern. Ex) Mem. 04 : Stored pattern at 4th memory.

Seg. : a step from each end to end. Maximum 20 segment in pattern. Ex) Seg.05 : 5th step in pattern.

Operation



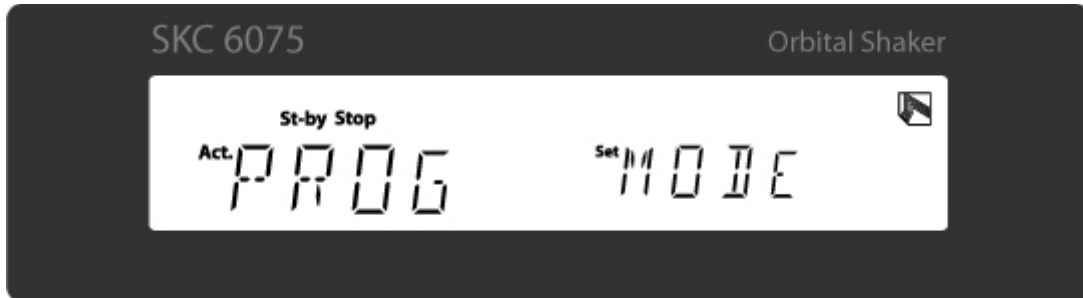
Maximum 20 segments can be programmed in 1 pattern.

Maximum 20 patterns can be stored in controller.

4.6.1 Program New/Open

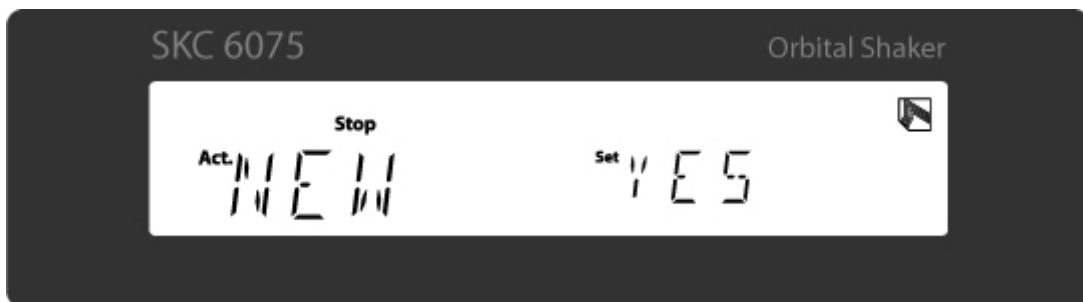
Step 1 ;

- Turn on the unit.
- Press Mode button twice to move to Timer mode.



Step 2 ;

- Press dial knob 1 time to see below display.
- If you rotate dial knob to clockwise or anti-clockwise, the below 2 display show alternatively.



NO : when you want to use previous stored pattern.

Yes : When you want to program new pattern or different stored pattern.

Step 3 ;

- If you want to move "Program Segment Input", select "YES".
- Press dial knob button.

Step 4 ;

- Select “NO” and press dials Knob Button.
- Stored pattern shows on display.

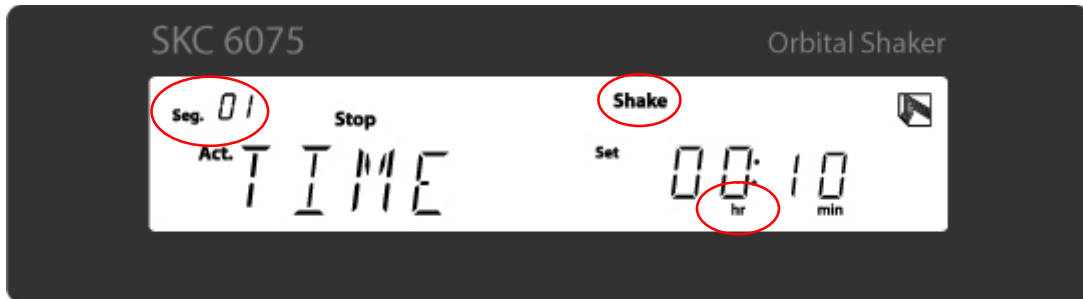
**Step 5 ;**

- Rotate Dial Knob to clockwise or anti-clockwise to select desired pattern.
- Press dial knob button to move to **“4.6.4 Program amendment”**.

4.6.2 Program Segment Input

Step 1 ;

- Select “YES” at “4.6.1 Step 2” and press dial knob button.
- Below display shows and “hr” blinks.
- Desired operating hour can be set.



- Seg. 01 : 1st Segment.
- Shake : Indication of Program input mode

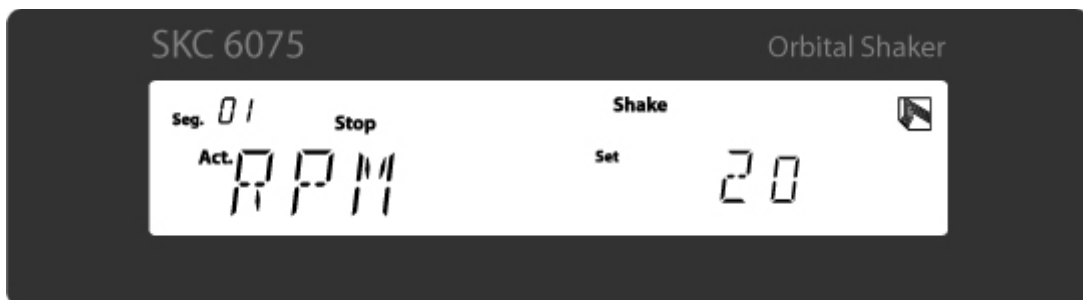
Step 2 ;

- Rotate dial knob to clockwise or anti-clockwise.
- Adjust hour of 1st segment and press dial knob button to set.
- Indication of “hr” is ON and “min” starts blinking.
- Maximum 99hours can be set.



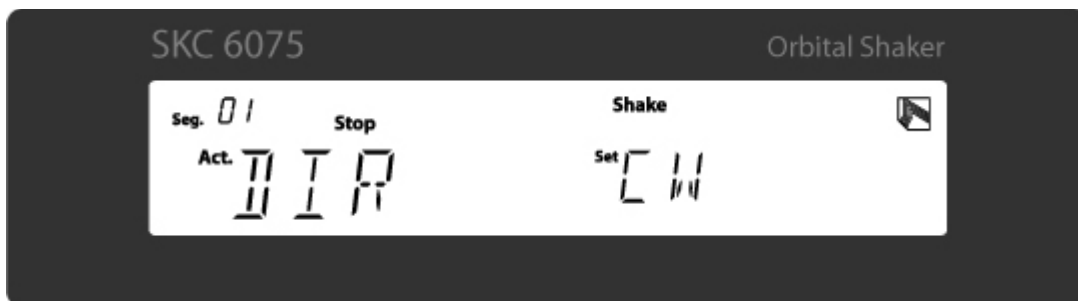
Step 3 :

- Rotate dial knob to clockwise or anti-clockwise.
- Adjust minute and press dial knob button.
- Maximum 59minutes can be set.
- ◆ RPM set display follows by when time is set.

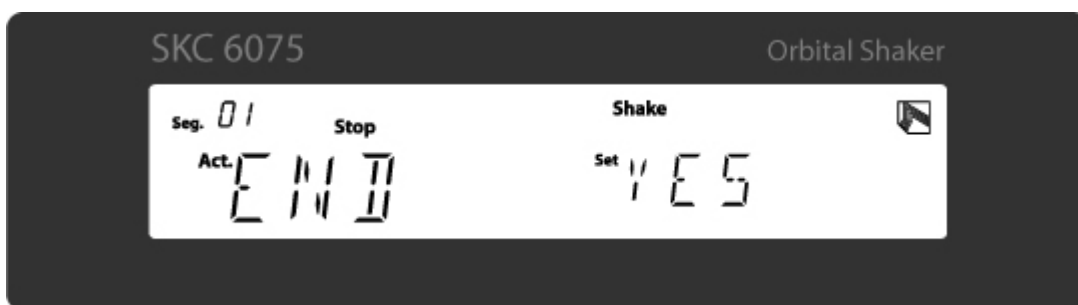


Step 4 ;

- Rotate dial knob to clockwise or anti-clockwise.
- Adjust RPM of 1st segment and press dial knob button.
- 0, 30~500 RPM can be set. (when value is 0, shaking stops during the segment)
- Shaking direction shows.

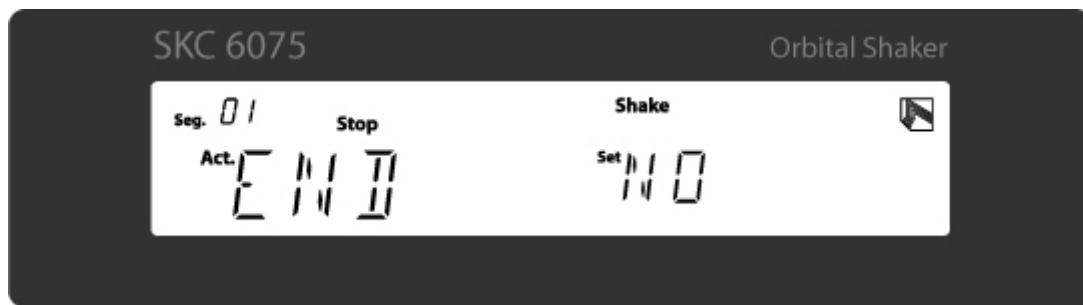

Step 5 ;

- Rotate dial knob to clockwise or anti-clockwise.
- CW(clockwise), CCW(Anti-clockwise) shows alternatively.
- Select the desired shaking direction and press dial knob button.
- The first segment is set completely.


Step 6 : Choose “YES” and press dial knob button to move to “4.6.3 Program save”


END means that a pattern is completely set by saving and inputting each value at segments. If you want to set additional segment, select “NO”. On the other hands, if you set and input segment completely, select “YES”.

If you want to set additional segment,



Step 7 ;

- Select "NO" like above display and press dial knob button.
- The following display is for inputting 2nd segment.
- **Seg.01 changes to Seg.02**



Step 8 : Repeat above Step 1~4 to input desired value as 2nd segment.

Step 9 : If you do not have additional segment, select "YES" at "Step 5" and press dial knob button. The following shows value of each segment.



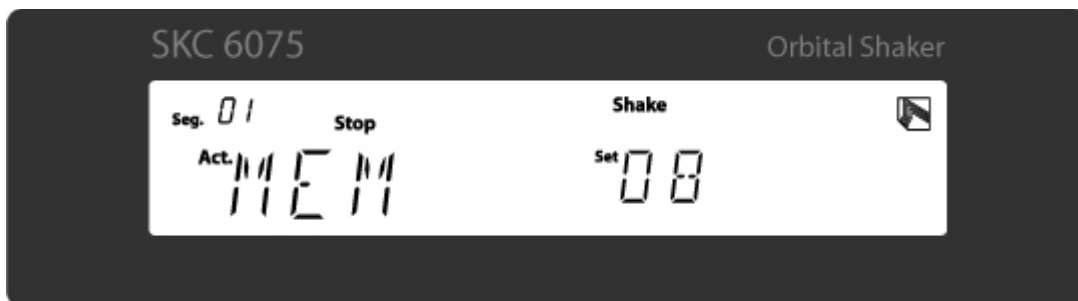
- Time, RPM, and shaking direction of 1st segment show step by step with blinking Seg.
- When you rotate dial knob to clockwise or anti-clockwise, the segment show 02, 03, 04

Step 10 : Press dial knob button to move to "4.6.3 Program save" step after verifying value of segment .

4.6.3 Program Save

Step 1 ;

- Press dial knob button after completion of “4.6.2”.
- MEM at Act. and Address at Set show in display.

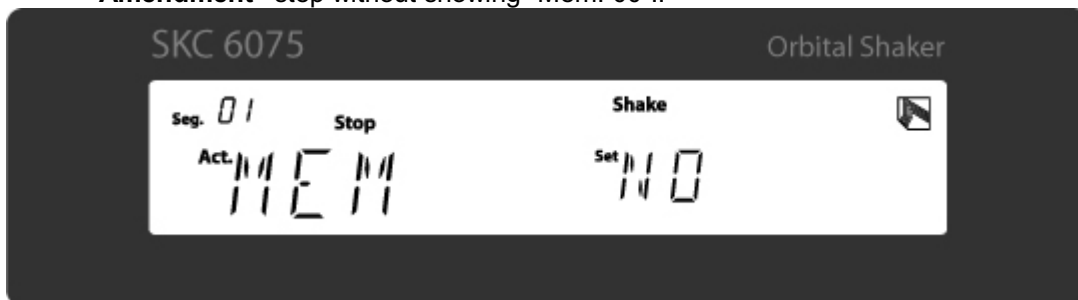


Step 2 ;

- Rotate dial knob to clockwise or anti-clockwise to choose the number of address and press dial knob button.
- The chosen number is stored as Pattern.
- Maximum : 01~20
- If save is done successfully, the below display shows for 2 seconds and it moves to “4.6.4 Program amendment” step



- If you do not want to save the pattern(you might use the pattern only 1 time), turn the dial knob to the last left.
- When “NO” shows, press dial knob button. The controller moves to “4.6.4 Program Amendment” step without showing “Mem. 00”..



- If the chosen number is already occupied, controller shows “overwriting”.

Step 3 ;

- Rotate dial knob to clockwise or anti-clockwise.
- YES and NO shows alternatively.
- The following steps are overwriting step



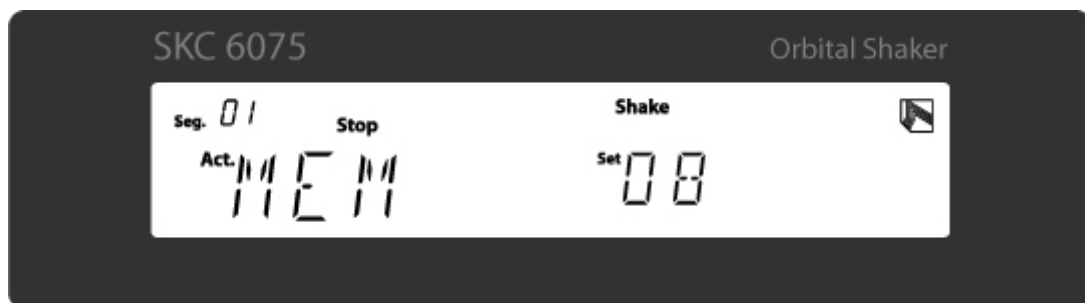
Step 4 ;

- Select "YES" and press dial knob button.
- It is saved such as "Step 2"

Step 5 : If you do not want to overwrite, choose "NO" and press dial knob button.



Step 6 : Come back to "Step 1"



- If you overwrite at different address or cannot remember an address number, repeat Step 5 to find out vacant address.

4.6.4 Program Amendment

When save of “4.6.3” is done properly, controller show next one. If you need any amendment or experimental condition has been changed, value at each segment can be modified.

Step 1 ;

- Rotate dial knob to clockwise or anti-clockwise.
- YES and NO shows alternatively.



Step 2 ;

- If you have any correction or amendment of values, choose “YES” and press dial knob button.
- Return to “4.6.2 Program Input” step and values can be adjusted.

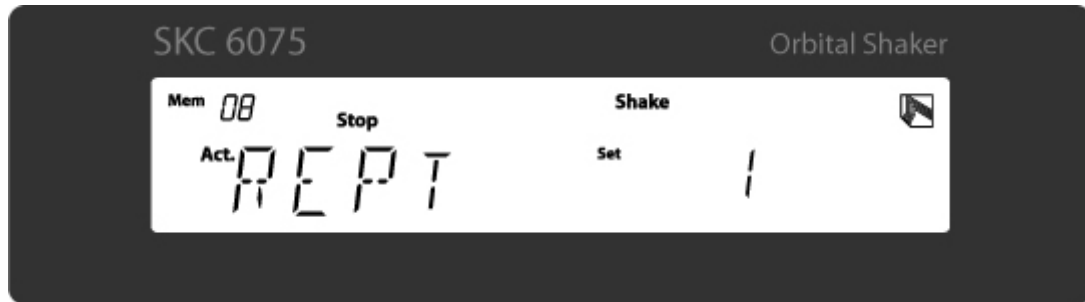


Step 3 ;

- If there is no amendment, choose “NO” and press dial knob button.
- Controller move to the next step(4.6.5 Program number of repetition)

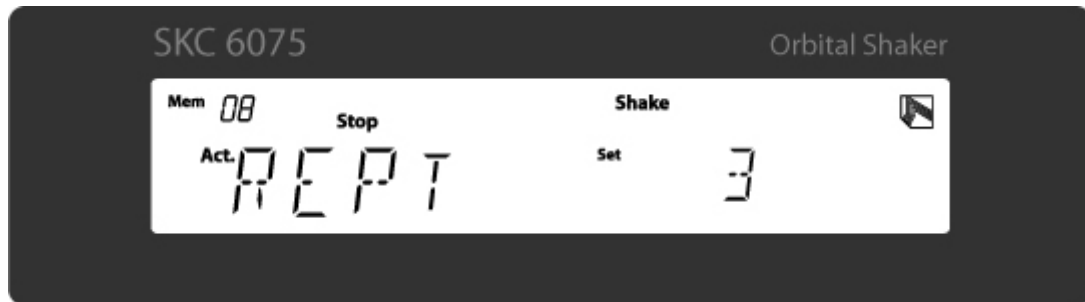
4.6.5 Number of repetition of Program

When amendment of “4.6.4” is done, display moves to next setting automatically. Number of repetition of a pattern can be programmed.



Step 1 ;

- Rotate dial knob to clockwise or anti-clockwise.
- Adjust number of repetition and press dial knob button.
- Maximum : 99 repetition.



4.6.6 Program operating

When number of repetition of a pattern is set, display moves to next step automatically. This step asks start of a programmed pattern.

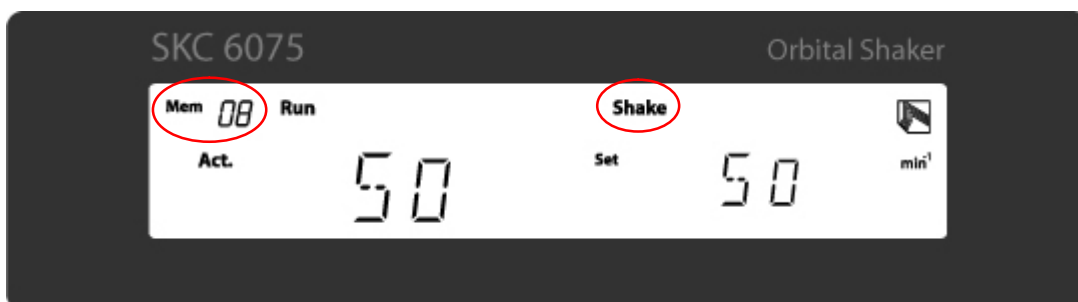
Step 1 ;

- Rotate dial knob to clockwise or anti-clockwise.
- YES and NO shows alternatively.



Step 2 ;

- Select “YES” to start Program mode and press dial knob button.
- Below display shows.



- Mem 08 : Stored Pattern address.
- Shake : It indicates Program mode.



Step 3 : If you select “NO”, display moves to “4.6.1 Program NEW/OPEN” mode.

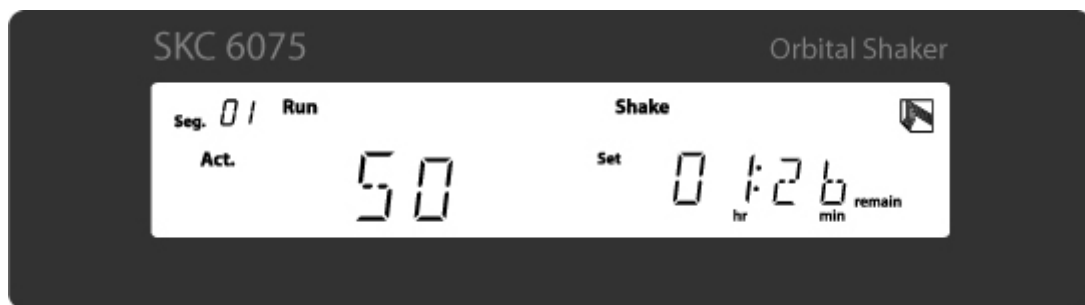
4.6.7 Indicating of Program operating in Display

When the unit operates under Programmable mode such as “4.6.6 Step 2”, remaining time of operating segment of the Program (Pattern) can be verified through display.



Step 1 ;

- Press Mode button when the unit operates by programmable mode with blinking of Shake.
- Remaining time of operating segment of the pattern displays.



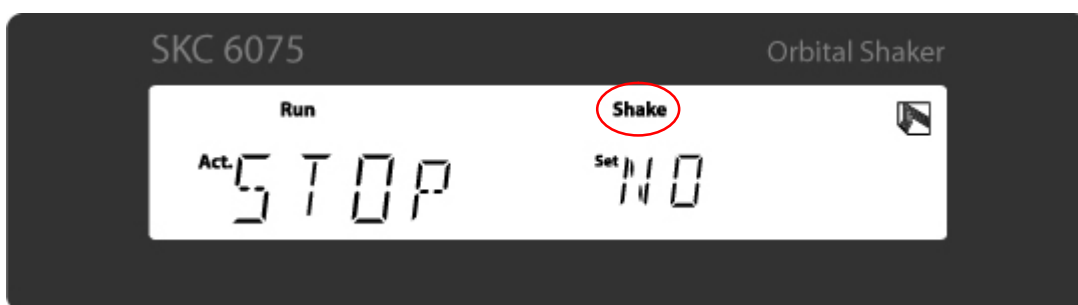
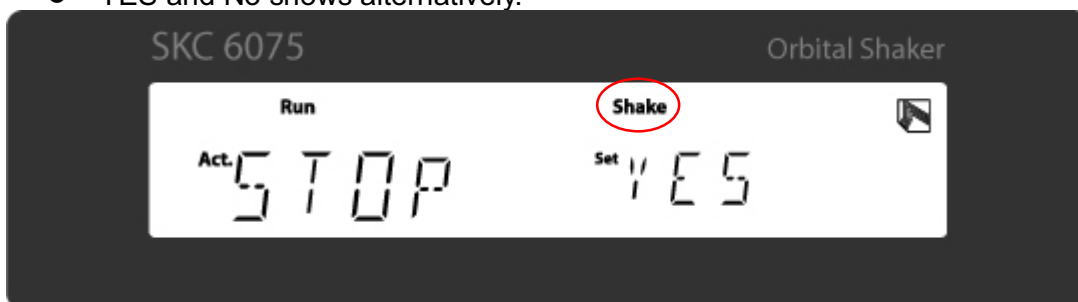
Only remaining time of operating segment of a pattern can be verified when the unit operates Program mode. Other value of programmed value can be verified after the unit stops.

4.6.8 Stop during program operating

When the unit operates under Programmable mode such as “4.6.6 Step 2”, program mode can stop

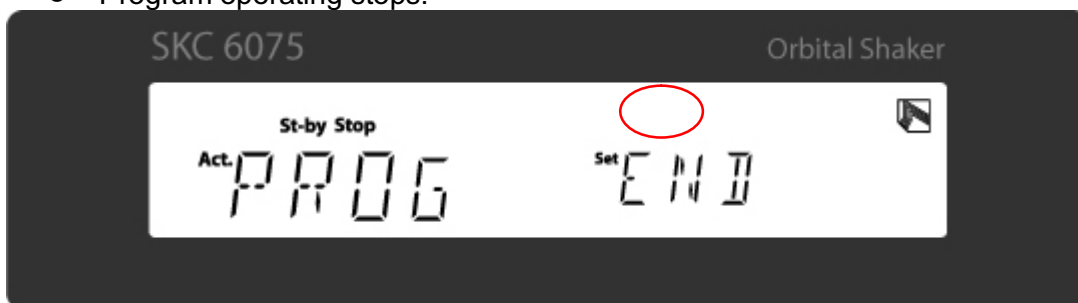
Step 1 ;

- Press Start/Stop button when the unit operates by programmable mode with blinking of Shake.
- Display shows as below.
- Rotate dial knob to clockwise or anti-clockwise.
- YES and No shows alternatively.



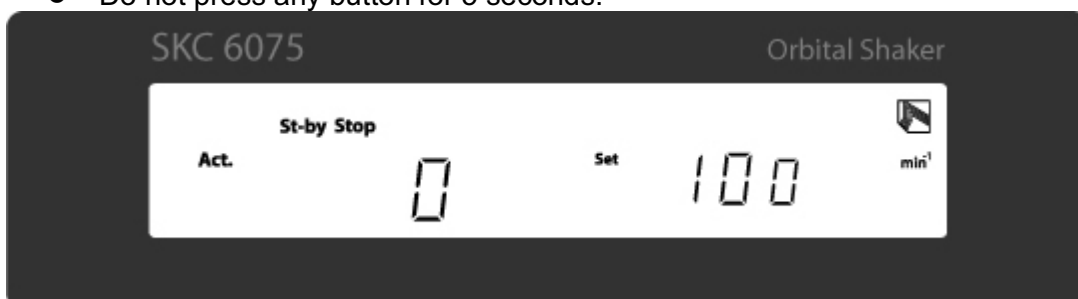
Step 2 ;

- Select “YES” and press dial knob button, if you want to stop the unit.
- Shake turn off and “END” shows.
- Program operating stops.



Step 3 ; To return to initial display,

- Press dial knob button when display shows as above. Or,
- Do not press any button for 5 seconds.



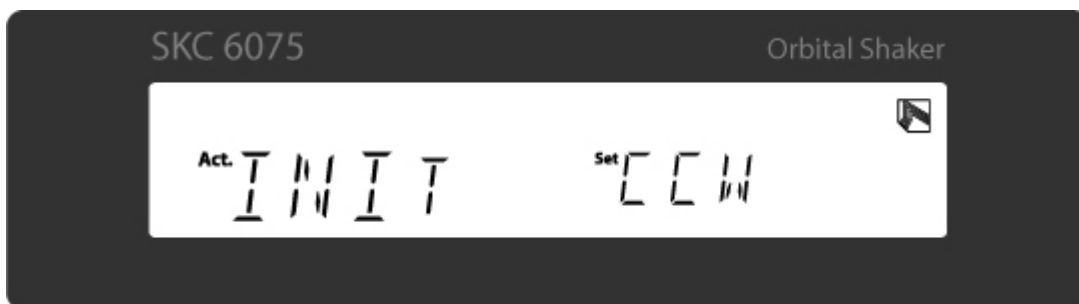
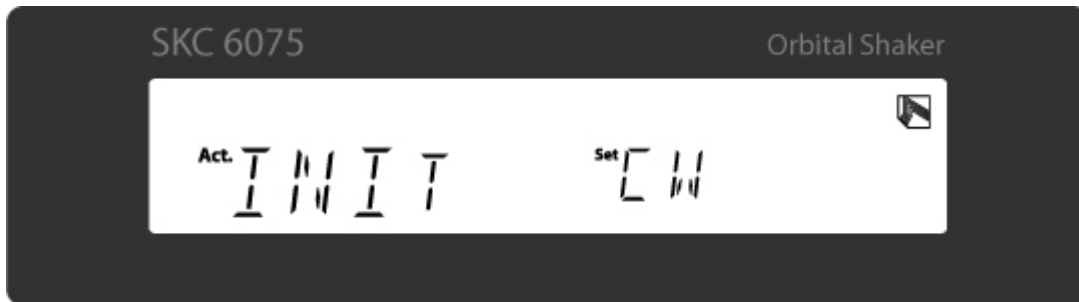
4.7 Setting of basic shaking direction

Basic shaking direction can be set. When shaking starts, shaking rotates according to setting of basic shaking direction.

- Press and hold dial knob button and turn on the unit at the same time.
- Display shows Parameter setting mode.

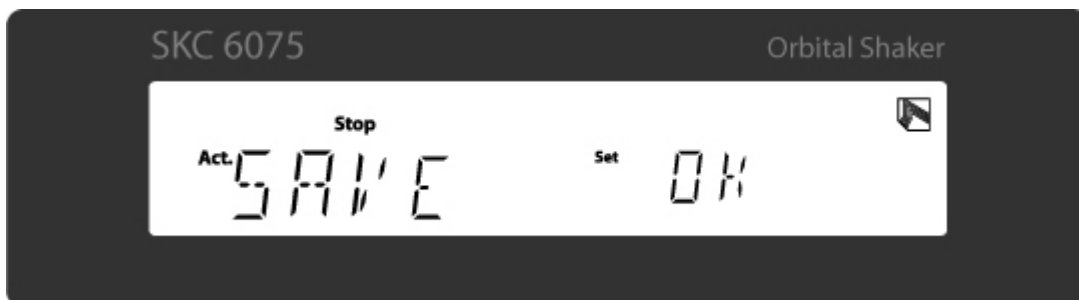


Step 1 : Act. : INTI, Set. : CW shows if you two press Mode button at the above display.



Step 2 ;

- If you rotates dial knob to clockwise and anti-clockwise, CW and CCW displays alternatively.
- Select desired shaking direction and press dial knob button to store the value.

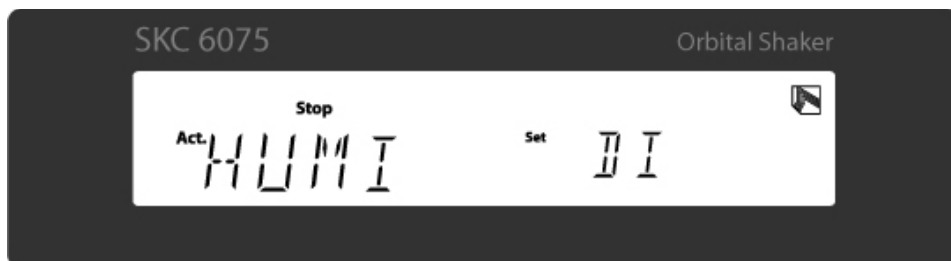


- The above display shows and controller moves to next parameter.
- Turn off the switch and turn it on again to use the unit.

4.8 Other parameters

When basic shaking direction (4.7) is set, the controller shows next parameter automatically. Movement of each parameter can be done with Mode button. The user does not change any setting value without rotating direction in Factory parameter. We are not allowing change of parameter values without Jeio tech dealer or branch's recommend. If user have mistake to change value, refer to follow pictures or connect with Jeio tech dealer or branch.

There is several Parameter setting. Refer to follow picture.



5.0 Preventive Maintenance

5.1 Inspection cycle

Classification	Inspection cycle frame				
	Daily	Weekly	Monthly	Quarterly	Yearly
General					
Power cord					
Inspect power cord connection between unit and power.	•				
Inspect power cord for wear, cracks or cuts.	•				
Appearance cleanness		•			
Shaker					
Check accessory(ies) attachment screws to platform are tight.	•				
Check shaking table to platform screws are tight.	•				
Check front Latch are tight.	•				
Check agitation RPM setting					•
Check shaking forward backward settings(direction)				•	
Check timer Mode(operation)				•	
Program Mode operation				•	
Shaking system malfunctioning			•		

5.2 Storage and cleaning

Regular cleaning of the unit is simply good practice. It preserves the surfaces, adds life to the unit and lets the unit run more efficiently. We recommend the unit be cleaned at least once a week. Please use the following instructions to clean your unit.

5.2.1 Exterior surfaces

5.2.1.1 Normal status

Step 1 : Wear chemical resistant gloves.

Clean the surface with neutral detergent and dry clothes.

Step 2 : Clean plastic part with neutral detergent and dry clothes.

5.2.1.2 Serious status

If the unit is contaminated with toxic chemicals or gas, please clean the unit the following instruction.

Step 1 : Wear chemical resistant gloves and mask.

Step 2 : Clean the surface with dry clothes slowly.

5.2.2 Interior surfaces

Step 1 : Takes off platform.

Step 2 : Clean the gap between platform and body with neutral detergent and dry clothes.

5.3 Replacing Fuses

The unit is supplied with one (1) spare fuse in case a fuse needs to be replaced. The spare fuse is in receptacle at the rear of the unit.

If you need additional fuses, the following table to find the correct fuse part number and contact your local Jeio Tech office, or distributor to purchase.

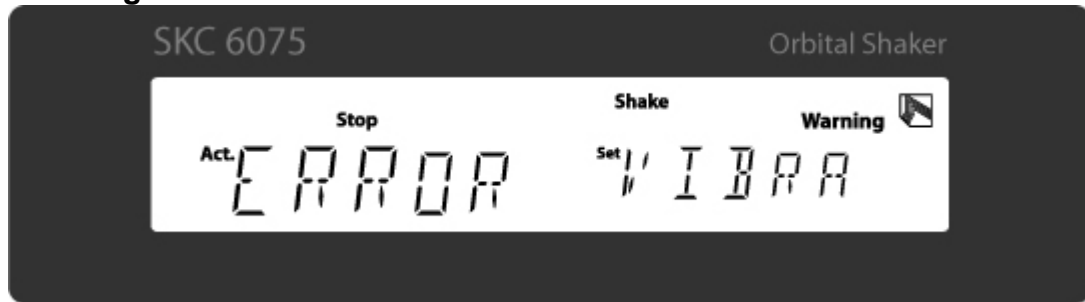
Model	Voltage	Current(A)	Fuse(A)	Noise Filter(A)	Fuse Part Number
SKC6075 SKC6100 SKC6200 SKC7075 SKC7100 SKC7200	100V~120V	0.8A	3.15A	6A	00CDE0005567
	200V~240V	0.4A	3.15A	6A	00CED0005574

6.0 Troubleshooting

6.1 Controller Fault Code

The controller's self-diagnostic function will identify any trouble. And the unit let user know audibly and visibly. If the following error code appears in display, please contact your local Jeio Tech office or the distributor from which the unit was purchased to request service.

6.1.1 Vibrating Error



It is error code for user's safety. When abnormal vibrating happens with the unit, the unit stops with the error code.

Main reasons are as follows;

- Balance of installed place.
- Unbalanced load on platform
- Placing on unstable structure
- Overload status
- Movement with shaking
- Sudden impact on the unit

Check above reasons and eliminate them. The unit works again when you press any button.

6.1.2 Position Sensor Error



The error code is related with position sensor of the unit. It appears when the position sensor is abnormal.

If the above error code appears in display, please contact your local Jeio Tech office or the distributor from which the unit was purchased to request service.

6.1.3 Over Current Error



The error code is for safety of circuit. It appears that controller detects over current with motor driver.

If the following error code appears in display, please contact your local Jeio Tech office or the distributor from which the unit was purchased to request service.



Above mentioned three (3) error code should be identified by user. Unit stops when the codes happen. After eliminating reasons of the codes, unit should be started again.

6.2 Electrical

TROUBLE	CAUSES	SOLUTION
The unit does not turn on	<ul style="list-style-type: none"> ■ Incorrect electric power. ■ Power failure or circuit breaker shuts down. ■ Main plug not seated properly. ■ Socket / plug / main power line might be cut ■ Blown fuse(s) 	<ol style="list-style-type: none"> 1. Compare power source and voltage on the ID plate and make sure they are the same. ID plate is found on the back of the unit. 2. Find out the causes of power failure and recovery. 3. Check the electrical cord connection at the unit to ensure it is fully seated. 4. If the socket / plug / main power line are cut, request service. 5. Check the fuses and replace 6. If the problems persists, request service.
Fuses burn out often	<ul style="list-style-type: none"> ■ Fuses maybe wrong size(ampereage). ■ Electrical cord maybe cut or frayed. ■ Humidity might inflow into the main power inserting part. 	<ol style="list-style-type: none"> 1. Check the voltage and ampere rating of the fuses. 2. Check electrical cord for cuts or fraying, if found to be defective, replace the cord. 3. If there is humidity on the inserting part, clear it and reconnect. 4. If the problems persists, request service.
Room circuit breaker trips often or continuously.	<ul style="list-style-type: none"> ■ Too many plugs connect at the same time. 	<ol style="list-style-type: none"> 1. Check the circuit breaker size along with the voltage and current supplied to it. 2. Check that several similar units are inserted together, if so you should not use overly. 3. If the problems persists, request service.
With the POWER switch ON, the switch does not illuminate.	<ul style="list-style-type: none"> ■ Power interruption ■ Main plug does not insert correctly ■ Blown fuse(s) ■ Faulty connection at the POWER switch ■ POWER switch malfunction 	<ol style="list-style-type: none"> 1. Check for power interruption. 2. Make sure electrical cord connections at the outlet and the unit are firmly in place. 3. Check the fuses and replace, if necessary. 4. If the problems persists, request service.
Unit control stops without cutting power or pressing any buttons.	<ul style="list-style-type: none"> ■ Might be influenced by high frequency electrical noise. 	<ol style="list-style-type: none"> 1. Move the unit away appliances that may produce high frequency electrical noise. 2. If the problems persists, request service.

6.3 Shaker

TROUBLE	CAUSES	SOLUTION
Unit trembles during acceleration, deceleration and /or uniform velocity	<ul style="list-style-type: none"> ■ The shaker is not level. ■ Driving System troubles 	<ol style="list-style-type: none"> 1. Follow unit levelling instruction in section 2. . 2. If the problems persists, request service.
Long time to reach set RPM	<ul style="list-style-type: none"> ■ Too much load on the platfrom 	<ol style="list-style-type: none"> 1. Reduce samples.
Mekes bumping noise when operating	<ul style="list-style-type: none"> ■ Interference, or loose position sensor or sensor mounting bracket ■ Interference of inner circuit lines ■ Driving System troubles. 	<ol style="list-style-type: none"> 1. Request service.
Discrepancy between set RPM and actual speed of the shaking table.	<ul style="list-style-type: none"> ■ Drive belt is loose. 	<ol style="list-style-type: none"> 1. Request service.

7.0 Accessories

7.1 Maximum quantity of mounting accessories

7.1.1 Universal Platform + Flask Clamp

Platform Flask Clamp	SKC60 Small (580×520×5t)	SKC60 Small (660×520×5t)	SKC60 Small (755×520×5t)	SKC60 Small (885×520×5t)
50ml	84	96	108	126
100ml	54	66	72	84
125ml	42	48	54	66
250/300ml	33	39	42	51
500ml	20	24	27	30
1,000ml	14	16	18	20
2,000ml	8	11	12	13
2,800ml	6	7	9	11
4,000ml	4	6	8	9
6,000ml	3	4	6	7

7.1.2 Universal Platform + Funnel Clamp

Platform Funnel Clamp	SKC60 Small (580×520×5t)	SKC60 Small (660×520×5t)	SKC60 Small (755×520×5t)	SKC60 Small (885×520×5t)
250ml	14	16	18	20
500ml	9	10	11	14
1,000ml	7	8	9	12
2,000ml	5	6	7	8

7.1.3 Universal Platform + Micro plate Holder

Platform Type	SKC60 Small (580×520×5t)	SKC60 Small (660×520×5t)	SKC60 Small (755×520×5t)	SKC60 Small (885×520×5t)
Single	20	23	25	28
Tower	16	19	22	25
Flat A(large)	3	4	5	6
Flat B(small)	4	5	6	7

7.1.4 Universal Platform + Test Tube Rack

Platform Rack Angle	SKC60 Small (580×520×5t)	SKC60 Small (660×520×5t)	SKC60 Small (755×520×5t)	SKC60 Small (885×520×5t)
0°	8	9	9	12
15°	8	8	9	12
30°	6	6	7	9
45°	6	6	7	9
60°	6	6	7	9

7.1.5 Test Tube Diameter and Mountable Test Tubes

Test tube diameter	Test tube quantity
8mm/10mm/11mm	86
12mm/14mm	58
15mm/16mm/17mm/18mm/19mm	32
20mm/22mm/25mm/28mm	19
30mm/35mm	10
50mm	4

7.1.6 Spring Wire Rack + Flask Clamp

Platform Flask	SKC60 Small (580×520×5t)	SKC60 Small (660×520×5t)	SKC60 Small (755×520×5t)	SKC60 Small (885×520×5t)
50ml	30	35	45	50
100/125ml	20	24	28	32
250/300ml	12	15	18	21
500ml	9	12	15	18
1,000ml	6	8	10	12
2,000ml	4	5	6	7
2,800ml	3	3	4	5

※ Please contact your local Jeio Tech office or the distributor from which the unit was purchased to mount maximum quantity of each accessories.

8.0 Appendix

8.1 Technical Specifications

Model	SKC6075	SKC6100	SKC6200	SKC7075	SKC7100	SKC7200
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Material						
Exterior dimensions (mm)	582.8 × 618 × 122.2			754.8 × 662 × 122.2		
Net Weight(Kg)	65			75		

Shaking system						
Motion Type	Orbital Only(Forward, Backward, pause)					
Frequency ¹⁾ (RPM)	30 to 500					
Rpm control at 100rpm(±rpm)	1					
Orbit size(mm)	19.1	25.4	50.8	19.1	25.4	50.8
Recip. Stroke length (mm)	None					
Platform size(mm) (Anodized aluminum)	Small 580×520×5t Large 660×520×5t			Small 755×520×5t Small 885×520×5t		
Motor Type	Pan cake direct drive(beltless) BLDC					
Motor Capacity(W)	1300					

Controller	
Control Type	Close loop control with PID algorithm
Timer	Delay on timer, Delay off timer(Max:99hr 59min, Min:1min)
Program	Memorizing 20 Patterns included in 20 segments (Time, Rpm, Rotation Direction)

Electrical data	
Electric Requirement	100V~120V, 50/60Hz, 0.8A 200V~240V, 50/60Hz, 0.4A
Energy Consumption	100V~120V, 180W 200V~240V, 90W

1) Due to higher speed range between 350rpm and 500rpm, we recommend that the shakers need extra attachment to be fixed on the floor of the working place.

8.2 Maximum rpm for each model

8.2.1 The condition of test

KS C IEC 61010-2-051 : it is satisfied with 2003 “**measurement, control ,electrical lab. Equipment stability /.mix & shaker for laboratory equipments each requirements**”

The standard is movement that it is movement less than 5mm after the equipments run for 10 min..

The floor where the unit is operated is ceramite plate as standard.

The condition of weight is that adds accessories (flask, clamp, sample in the flask)

To use the range 350~500rpm, you have to choose 2 options.

(Ground Sticker, Weight Increaser)

8.2.2 Result

Model Load	SKC6075	SKC7075	SKC6100	SKC7100	SKC6200	SKC7200
0kg	420	430	400	410	320	320
6.5kg	380	390	360	370	280	270
13.0kg	360	360	340	350	250	250
21.5kg	330	330	290	290	220	220
28.0kg	310	310	260	260	200	200

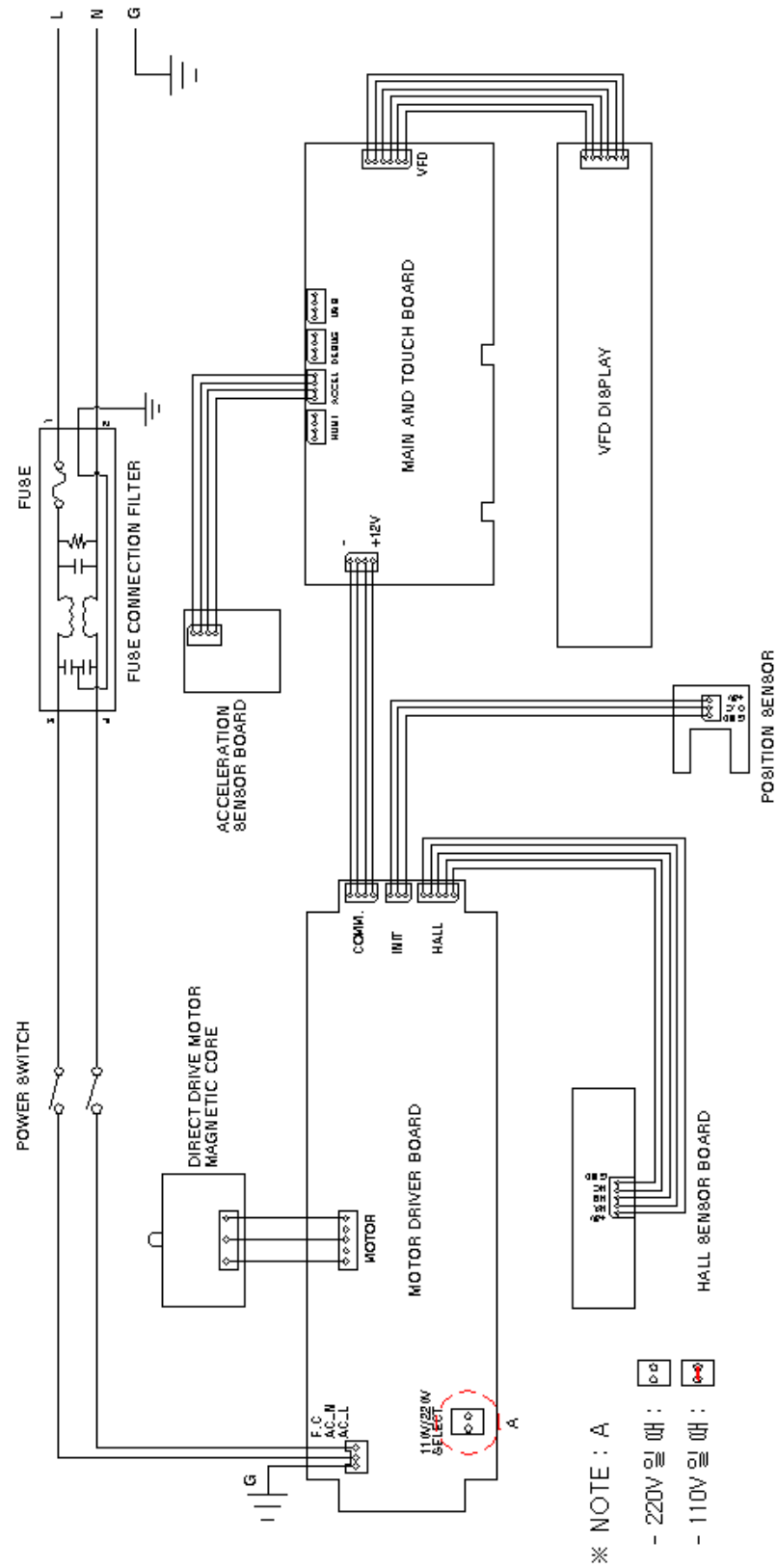
unit : rpm

8.2.3 Notice

It can cause damage on papered floor where the unit is placed, if the unit weight is over 21.5kg.

Higher result can be occurred than expectation, if the floor is more rough than Ceramite floor.

8.3 Circuit Diagrams



8.4 Disposing of the Shaker

Before disposing of the shaker or any of its components:

1. The equipment should be cleaned and decontaminated to protect workers servicing the equipment, the environment or the public purchasing surplus equipment because the shaker can potentially be contaminated with biological material, chemicals or radioisotopes. Check with your institution or laboratory for individual policies and procedures for disposal of laboratory equipment.

2. Please contact your local governing body for regulations regarding disposal of electrical, electronic, metal (brass, aluminum, steel and stainless steel), refrigeration and rubber components. Jeio Tech recommends the user find a local scavenger or laboratory equipment recycler to properly dispose of the unit and its components.



8.5 Warranty standard

8.5.1 Warranty standard

Customer can get free warranty service for 2 year limited warranty from the date of purchase when the machine is broken while operating.

8.5.2 Customer can't get free warranty service in case of as below.

- ① If the machine is broken due to the Act's of God.
- ② If the machine is broken due to overuse of voltage
- ③ If there is some shock to the machine.
- ④ If the outer part is damaged by solvent
- ⑤ If the machine is broken without taking care of the "Notice" alerted on the manual
- ⑥ If persons who are not under the authority of service of Jeio tech fixed or changed parts of the machine
- ⑦ If the broken machine is due to customer's fault

8.5.3 Contact your regional dealer for after service.

Jeio Tech needs to know for better and quick service when service needs.

Purchase date
Serial number
A trouble part and trouble state
Use name/ address / e-mail

8.6 Service & Technical assistance

Overseas

Korea (International Headquarters – Overseas Department)
#1005, Byucksan Digital Valley 6-cha, 481-4 Gasan-Dong, Geumcheon-Gu, Seoul
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