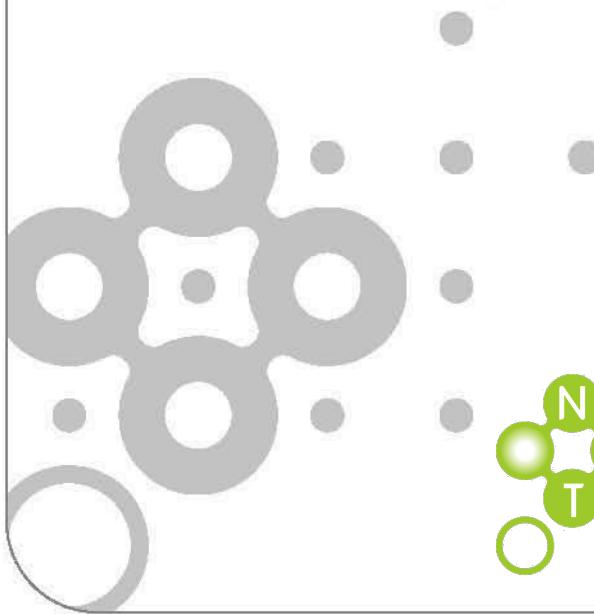


OPERATING MANUAL

COOLING SHAKER & INCUBATOR

MODEL : NB-205QF & NB-205VQ



N-BIOTEK
Leading Life science

General Information on Precaution

- Precaution is to prevent the possible accident or danger during operation.
So, you must keep it.
- Precaution is separated into caution and warning. And, each of them means like this.



If you don't keep this warning,
you can get an accident or
a fire.

Warning



If you don't keep this caution,
you can get injured as well as
a property loss

Caution

- Other marks



Warning



Caution



Compliance



Prohibition



No
disassembly



Remove
plug



Ground

1. Precaution to connect the power cable

Warning



You have to use the product under specified electrical conditions.

(If you use the product at the place in different power pressure, it causes a fire and malfunction of the product.)



Do not make the power plug be pressed by back of the product.

(A space between the product and the plug must be 20cm at least.)



The power outlet must be only for this product.

(Using various products simultaneously can cause a fire)

Clean the power plug with a dry towel and connect it properly.

(Foreign substances or unsafe connection can cause a fire.)

-  **Prohibition** Do not bend the power cable hardly and do not make it to be pressed by heavy products.(When it is damaged, it can cause a fire.)
-  **Prohibition** Do not touch the power code with wet hands.(It can cause an electric shock.)
-  **Prohibition** Do not use the damaged power code and outlet.
(It can cause an electric shock and a fire.)
-  **Remove plug** When you see smoke comes out from the product or smell something is burning or see any other strange symptoms, you have to pull out the power code and stop using it. (It can cause an electric shock and a fire.)

2. Precaution for installation

Warning

-  **Compliance** Use it with the proper voltage.
Please check the voltage & Hertz written on serial label.
(Over-voltage, low-voltage can damage the product and poor performance.)
-  **Prohibition** Do not install at a humid place.
(It causes an electric leakage accident and a corrosive of the product.)
-  **Prohibition** Keep this product out of the direct ray of sun and do not install at a hot place or a place that is near an electric heat.
(The proper indoor temperature is 20°C ~ 30°C.)
-  **Prohibition** Do not put inflammable substances near the product. (It can cause a fire)
-  **Compliance** When you install the product, you have to put the distance of more than 20cm from the wall.
-  **Compliance** Install at a flat and solid ground.
(If the ground is not flat, it can cause a vibration of the product.)
-  **Prohibition** When you move the product, do not lay down to its side or reverse the head to bottom. (It can cause the malfunction.)



When you move the product, hold the door and other movable parts of the product with a tape.
(When the product is moved, the movable door can cause injury of you and damage of the product.)



When you move the product, you must hold up the product.
(Pushing or pulling the product can damage the bottom part of the product.)

3. Precaution for use

Warning



You must not disassemble, fix and remodel the product by yourself.
(You can damage the product throughout a fire and malfunction or get a loss from a different study result than the original purpose)



Do not use the product for different purpose.
(It can cause malfunction or poor function. Consequently, it can cause a wrong result.)



Do not use an inflammable spray near the product.
(The switch and other electric connection parts can cause a fire.)



When you use inflammable substances such as benzene, thinner, alcohol and LP gas, please be careful .(It can cause a fire and an explosion.)



To prevent water and experiment material from going into the control panel during the experiment, make sure to clean the control panel with a dry cloth. (It can cause an electric leakage and a fire.)



Do not wash the product with excessive quantity of water, thinner, benzene and Petroleum. (It can cause an electric leakage, and malfunction or damage of the surface.)

-  When you don't use the product or clean it, please pull out the power plug.
Compliance (It is to prevent an electric leakage.)
-  Open and close the door softly and please use a door knob.
Compliance (A heavy shock can damage the product and breakdown the operating part.
Also your hands can be stuck between the door and body.)
-  Do not detach the built-in lamp and electrical devices.
Compliance (It can cause an electric shock and a fire.)
-  Please be sure to prevent foreign substances from getting into the sealing silicon of the door. (The inflow of open air can cause the change of temperature in chamber and discoloration of the packing part by a foreign substance.)

4. Precaution for ground connection

Warning

-  Please ground before use the product, if you don't ground, you can be
Compliance electrically shocked when malfunction or an electric leakage occurs.
-  At the place where you can't ground,
Compliance
 - * Please buy the equipment to prevent elect leakage.
 - * An electric shock, an electric leakage and a fire can be occurred without an electric leakage breaker.
-  Do not ground to these places; Gas Pipe, water pipe, pipe, lighting rod, telephone wire etc.
Prohibition
 - * Wrong ground connection can occur an electric shock, an electric leakage and a fire.
-  If you don't have the outlet for AC 220V, then bury it under the ground after connecting the ground line to copper plate.
Compliance
 - * No ground connection can occur an electric shock, an electric leakage and a Fire.

The Feature & Specification of SHAKER & INCUBATOR

1. Features

- Dual Function

Shaking culture can be performed with general culture simultaneously.

- Artificial intelligence system

Temperature uniformity is maintained precisely in case of natural convection by artificial adjustment equipment

- Microprocessor controller

Microprocessor controller set for temperature accuracy and reproducibility.

- Plate type B/L DC Motor

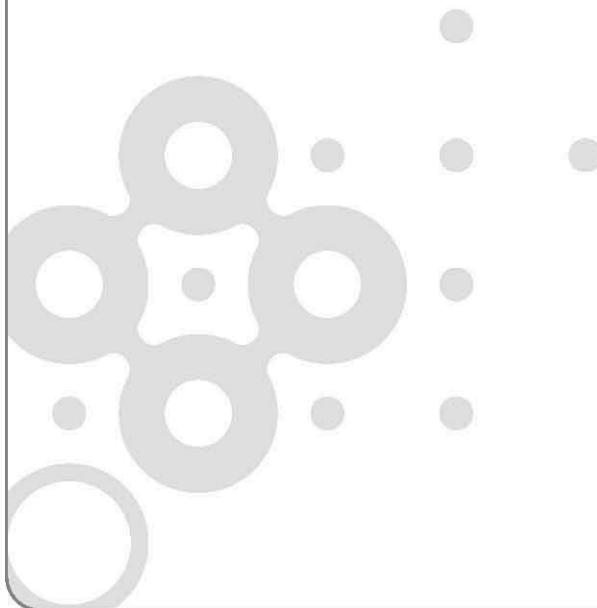
It prevents vibration and noise.

- Outer glass door

Outer glass door allows the view of culture without opening the door.

- Setting temperature, RPM and time

User can adjust temperature, RPM and time at his demand.



The Feature & Specification of SHAKER & INCUBATOR

2. Specification

Items	Unit	NB-205QF	NB-205VQ
Temperature			
range		5°C to 60°C	5°C to 60°C
accuracy		±0.25°C at 37°C	±0.25°C at 37°C
increment		0.1°C	0.1°C
control		Microprocessor digital PID	Microprocessor digital PID
Speed			
range		30rpm to 300rpm	30rpm to 300rpm
accuracy		±1rpm	±1rpm
increment		1 rpm	1 rpm
control		Microprocessor digital PID	Microprocessor digital PID
Time For Shaker			
accuracy		0.1%	0.1%
increment		1 minute	1 minute
Door			
out door		Silicon Packing Magnet Door	Silicon Packing Magnet Door
inner door		Tempered Safety Glass Door	Tempered Safety Glass Door
Operating panel		Individual 2 Channel Touch Button	Individual 2 Channel Touch Button
Display		LED Display	LED Display
Jacket type		Dry Wall Type	Dry Wall Type
Chamber material		Stainless Steel (304)	Stainless Steel (304)
Cooling		Compressor 1/8 HP	Compressor 1/4 HP
Chamber volume		134 liter	230 liter
Number of shelves		1 Platform+2 Shelves	1 Platform+2 Shelves
Chamber dimension		473(W)x400(D)x710(H)mm	520(W)x520(D)x850(H)mm
Overall dimension		560(W)x660(D)x1250(H)mm	585(W)x740(D)x1335(H)mm
Power		110/220V, 50/60Hz, 1.1kW	110/220V, 50/60Hz, 1.5kW
Weight		115kg	153kg

SHAKER & INCUBATOR OPERATING MANUAL

3. Installation

- 1) Move to this Shaker & Incubator at installation place and un-packing carefully.
- 2) The unit should be leveled in all directions (side by side, front to back and ground) and vibration free place.
- 3) Connect electric power plug.
 - * Check to electric condition before connect power plug.
 - 230V~, 50/60Hz,



Before connect the power cable to the plug, turn off the power switch.

Warning

Ensure the instrument should be power off prior to connecting or disconnecting power cable of built-in shaker in chamber.

The outlet for built-in shaker is located behind of shaker and on back of chamber.

4. Operation

- 1) Place the Power switch "ON" position (right side)

The digital readout will display as below.



(a) temperature display



(b) RPM and time display

* Present temperature in the chamber type.

* Above message is Controller displayed

2) Temperature Set-up

- (1) Place the Power switch "ON" position which locate in right side.

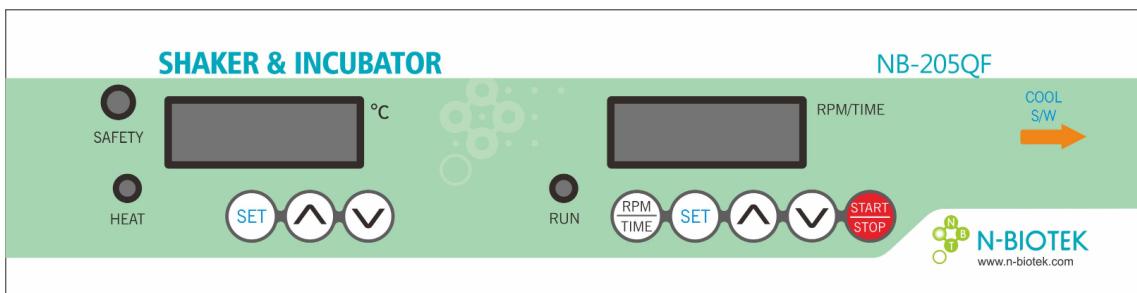
Then, LED screen will display present temperature in the chamber.

- (2) Press the "SET" key, then LED screen displays set temperature and flicker continually.

- (3) Then, you can set-up the new temperature using UP (\blacktriangle) and DOWN (\blacktriangledown) key as desired set-point temperature.

SHAKER & INCUBATOR OPERATING MANUAL

- (4) Press "SET" key again after set up the new temperature as desired set-point temperature, then LED screen will be stop to flicker and saved as new temperature.
- * If you don't press "SET" key after set up the new temperature, new set-up temperature will not save at all.
 - * Set-up Temperature range are Ambient +5°C to 60°C



Note for low temperature using.

In case of lower temperature set up (below ambient), turn on cool s/w to activate compressor.



Minimum temperature is up to 5°C .

If compressor works for long time, regularly check the dust protection filter located in the right and down side at front view and clean it to protect compressor from dust outside.

Perform dry and air circulation in chamber with opening door if it is required to set higher temperature after Lower temperature using. Immediate change from low temperature to higher temperature, will make liquid condensing on glass door. In case of higher temperature set-up than last temperature set-up, turn off cool s/w to speed heat-up. If desired higher temperature is lower than ambient, turn on cool s/w when the temperature is reached almost to set-point.

Caution  In case of high temperature using, turn off cool s/w and do not leave compressor working. From Ambient +5°C, ensure the Cool s/w to be off. If the compressor is being turned on while incubator is set at high temperature, the life time of compressor may be decreased and the compressor may be faulty due to excessive working.

SHAKER & INCUBATOR OPERATING MANUAL

3) TIME Set-Up

- 1) Press the "RPM/TIME" key during the approximately 1 or 2 seconds until LED displayed "t 00.00" as below.



- 2) Press the "SET" key. Then LED displayed setting time and can be set the time using ▲, ▼ key as desired setpoint time. At first, you can set the hour using ▲, ▼ key and press "SET" key. You can set the minute using ▲, ▼ key after set the hour. Press "SET" key again after set time (hour and minute), than LED displayed as "t SAVE" as below.



* Time setpoint range is maximum 47hr59min.

If you want to using this incubator continually, you must time setpoint as 00:00.

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3) Speed (RPM) Set-up

- (1) Press the "RPM/TIME" key during the approximately 1 or 2 seconds until LED displayed "r 000" as below.



- 2) Press the "SET" key than RPM will be flicker.

You can set the RPM using ▲, ▼ key.

Press "SET" key again after set RPM, than LED displayed as "r SAVE" as below.



* RPM setpoint range is from 30 to 300.

5. Warning Messages



- 1) This message may be displayed as to
 - RPM is setting 0 or less than minimum RPM.
 - Something forced not to move when the platform is moving.
 - Solution : Use your hand to move platform and push "STOP" button simultaneously and than push the "SET" button to increase RPM you want.

SHAKER & INCUBATOR OPERATING MANUAL



8.8.8.8.

2) This message may be displayed as to

- Momentary noise symptom.
- When the platform is moving faster than the RPM which you set.
(This message may occur from 200RPM.)
- Solution : These symptom will be recovered automatically within 3min or restart it.



8.8.8.8.

3) This message may be displayed as to

- Finish operation after "TIME" Setting Mode.



8.8.8.8.

4) This message may be displayed as to

- The electricity is on from power failure during "TIME" Setting Mode.
- Solution : Push the "START" button again.



8.8.8.50.

5) This message may be displayed as to

- The electricity is off during operation.
- Solution : N(new record) will be changed to R(RPM) if you push the "START" button.

SHAKER & INCUBATOR OPERATING MANUAL

6. Service and Check Point



Service should only be performed by qualified service personnel.

Warning

Before replacing any electrical or mechanical components, disconnect unit from its electrical power source. If electrical power is required for service, exercise extreme caution as LINE VOLTAGE is present.

1) Unit will not function

(1) Electrical connection

Please dis-connect main power cable and connect again.

(2) Voltage supply

Please check to voltage.

(3) Fuse check

(4) Verify voltage on unit

(5) Defective power switch (check voltage at switch)

