

# OPERATING MANUAL

## GENERAL INCUBATOR SHAKER

**MODEL: NB-205Q**



**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.



**Warning**

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



**Caution**

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

- Other marks



**Warning**



**Caution**



**Compliance**



**Prohibition**



**No  
disassemble**



**Remove  
plug**



**Ground**

### 1. Precaution to connect the power cable



**Warning**



**Compliance**

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.)



**Compliance**

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.)



**Compliance**

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℃ ~ 30℃.)



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.)





Compliance

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.)



Compliance

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



No disassemble

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)



Prohibition

Do not use the product for different purpose.

(It can cause malfunction or poor function. Consequently, it can cause a wrong result.)



Prohibition

Do not use an inflammable spray near the product.

(The switch and other electric connection parts can cause a fire.)



Prohibition

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



Compliance

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.)



Compliance

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.  
(It is to prevent an eclectic leakage.)



Open and close the door softly and please use a door knob.  
(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.  
(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  
electrically shocked when malfunction or an electric leakage occurs.



At the place where you can't ground,

- \* 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.

- \* 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.

- \* 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.
  - A. NB-205Q: General incubator + Shaker  
In case of 250ml flask, up to 13ea of holders can be equipped on the plate.  
(100ml ~ 2,000ml flask holder, spring wire rack, micro-plate rack)
  - B. NB-205QR: General incubator + Roller  
Up to 4 bottles ( $\varnothing 80$ , 150ml ~ 300ml) can be equipped.
- Artificial intelligence system (NB-TAC SYS)  
Temperature uniformity is maintained precisely in case of natural convection by artificial adjustment equipment (NB-TAC SYS).
- 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.
- Watch dog function  
Unexpected stop occurred by power failure or somebody is shown to the users.

# The Feature & Specification of SHAKER & INCUBATOR

## 2. Specification

| ITEMS              | NB-205Q                           |
|--------------------|-----------------------------------|
| TEMPERATURE        |                                   |
| RANGE              | Ambient +5°C to 60°C              |
| ACCURACY           | ±0.25°C at 37°C                   |
| INCREMENT          | 0.1°C                             |
| CONTROL            | Microprocessor Digital PID        |
| SPEED              |                                   |
| RANGE              | 30rpm to 300rpm                   |
| ACCURACY           | ±1rpm                             |
| INCREMENT          | 1rpm                              |
| CONTROL            | Microprocessor Digital PID        |
| TIME               |                                   |
| RANGE              | Continuous or up to 99hrs 59min   |
| ACCURACY           | 0.1%                              |
| INCREMENT          | 1 minute                          |
| DOOR               | Silicon Packing Magnet Door       |
| OPERATING PANEL    | Individual 2 Channel Touch Button |
| DISPLAY            | LED display                       |
| JACKET TYPE        | Dry Wall (Direct Heating)         |
| CHAMBER MATERIAL   | Stainless Steel (430)             |
| CHAMBER VOLUME     | 134 Liter                         |
| NUMBER OF SHELVES  | 1 Shaker + 2 Shelves              |
| CHAMBER DIMENSIONS | 480(W) X 435(D) X 690(H)mm        |
| OVERALL DIMENSIONS | 545(W) X 545(D) X 870(H)mm        |
| POWER              | 110/220V, 50/60Hz, 400W           |
| WEIGHT             | 76Kg                              |

\* In case of taking the shake off from instrument for cleaning or etc., please turn off the product at first.

\* If the power connector is removed with power on condition, serious problem could occur.



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## 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.



Warning

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

## 4. Operation

- 1) Place the Power switch "ON" position which locate in 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 (▲) and DOWN (▼) key as desired set-point temperature.



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(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



## 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), then LED displayed as "t SAVE" as below.



\* Time setpoint range is maximum 99hr59min.

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 then push the "SET" button to increase RPM you want.

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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.



3) This message may be displayed as to

- Finish operation after "TIME" Setting Mode.



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.



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.



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## 6. Service and Check Point



Warning

Service should only be performed by qualified service personnel.

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)

If you have any question and request about the product please try to contact our regional distributor or international marketing team.