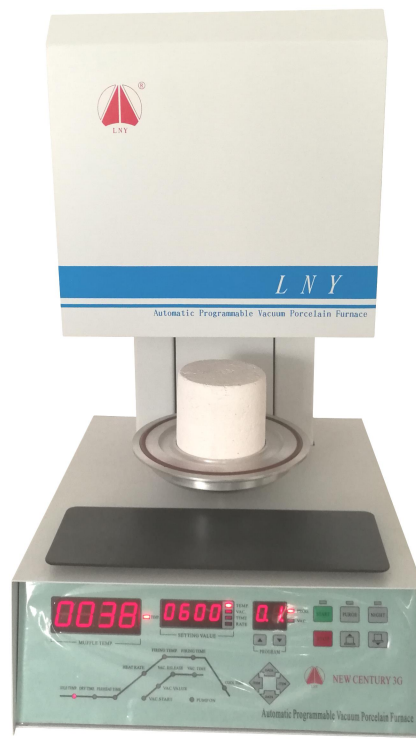# LNY New Century

Automatic Programmable
Vacuum Porcelain Furnace

MANUAL

sdsdd

SINOSTEEL LUOYANG

INSTITUTE OF REFRACTORIES RESEARCH CO., LTD.

TABLE OF CONTENTS

Thanks for using LNY NEW CENTURY Automatic Programmable Vacuum Porcelain Furnace.

This manual provides a help for the operation of the furnace. Please read this manual carefully before installation and use.

1. UNPACK

We take many packing measures to ensure the security of the furnace during transportation. If you have any questions when you use our furnace, please contact us immediately.

1.1 Unpacking
● Remove the packing belt and the two cartons.
● Remove the plastic bag outside the furnace.
● Remove the upper foam. Take out the firing platform and firing plate which are placed in the upper foam.
● Take out the furnace from foam base carefully. Place it on a flat table.
● Take the vacuum pump out of the carton. Place it on the ground nearby the furnace.
● Recommend keeping the original packaging for future transportation purposes.

Check whether the model and quantity of accessories accord with the list and whether the appearance of the furnace is in good condition.

1.2 Accessories
● Vacuum Pump (Including Vacuum Tube)
● One Firing Platform
● Two Firing Plate
● One Fuse   16A
● One Fuse   5A
● Support Rod

⚠ **Strong electric and mechanical parts can cause harm and should be repaired by qualified professionals.**

2. Technical Specifications

Depth: 360mm

Width: 320mm

Height: 600mm

Weight: ≤28kg (not including vacuum pump)

Maximum Operating Temperature: 1305℃

Maximum Setting Vacuum: −96kpa

Electrical Requirement: AC220V±10%　50Hz /60Hz, 15A

Wattage: (1.6±10%) KW

3. Structure

3.1 Front View

①Furnace Head

②Cooling Jacket

③Firing Platform

④Sealing ring (O-ring)

⑤Tray

⑥Work Table

⑦Panel (See 3.3 Panel)

3.2 Rear View

⑧ Data Plate
⑨ Vacuum Pump
　 Electrical Outlet
⑩ Vacuum Hose Connector
⑪ Power Switch
⑫ Power Line
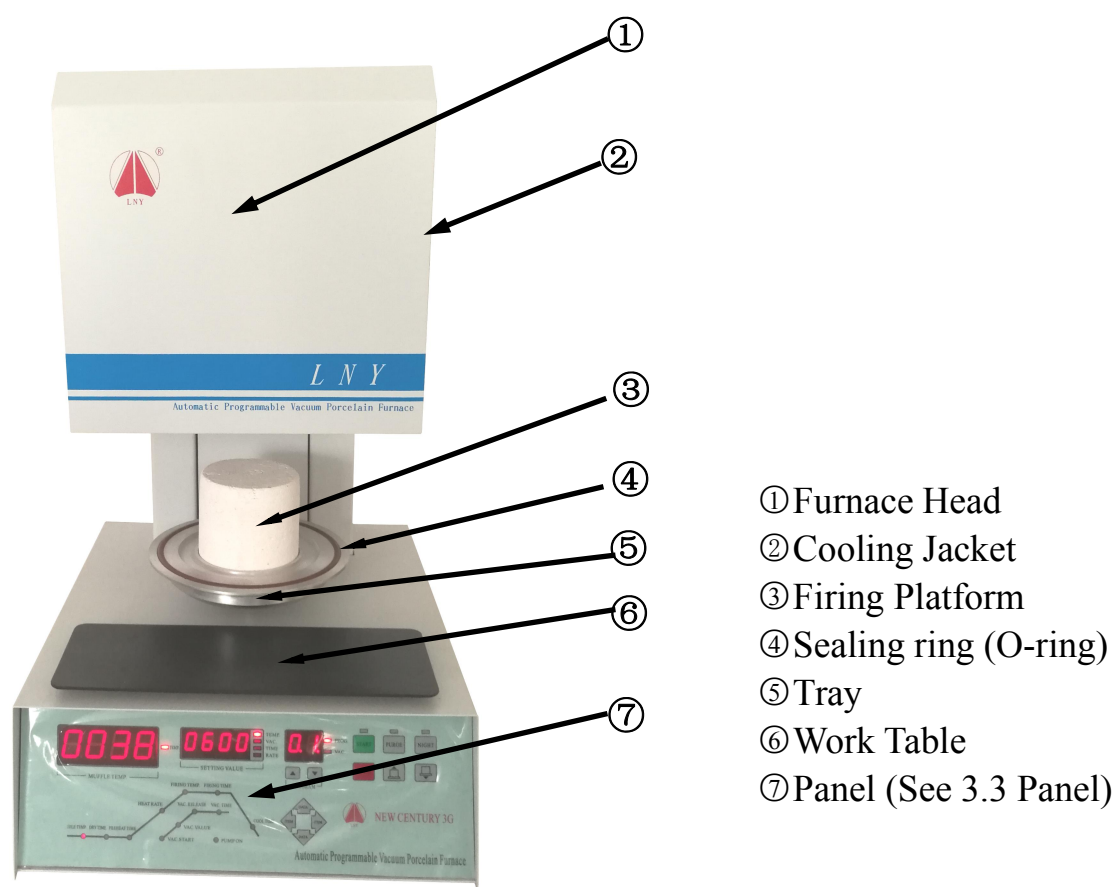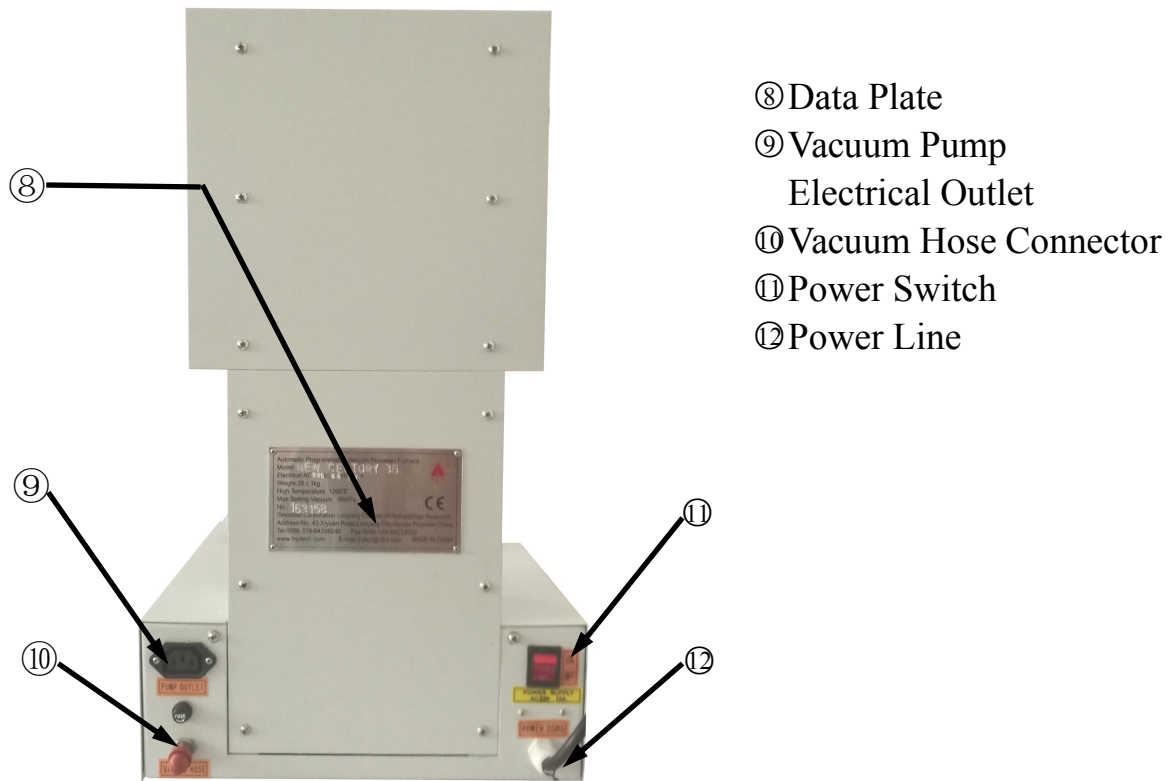
3.3 Panel

① Parameters Display Windows　② Parameters Indicator Lamps
③ Function Keys

4. INSTALLATION

4.1 Vacuum Pump Connection
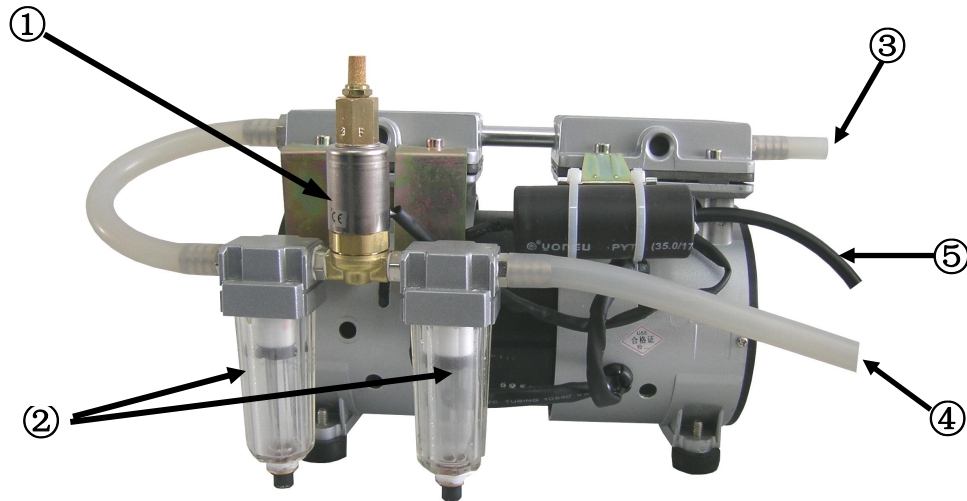
①Solenoid Valve　②Filter　③Exhaust　④Vacuum Pump Hose
⑤Vacuum Pump Power Line

● Connect the vacuum pump hose to the vacuum hose connector at the rear of the furnace.

● Plug the vacuum pump power line into vacuum pump electrical outlet at the rear of the furnace.

4.2 Furnace Connection

● Connect the furnace power line to the main outlet. Press power switch ON at the rear of the furnace. The Furnace enters the Standby mode.

● Press ▼ key. After the tray reaches to the bottom position, place the firing platform on the middle of the tray. Make sure that the firing platform is placed steadily.
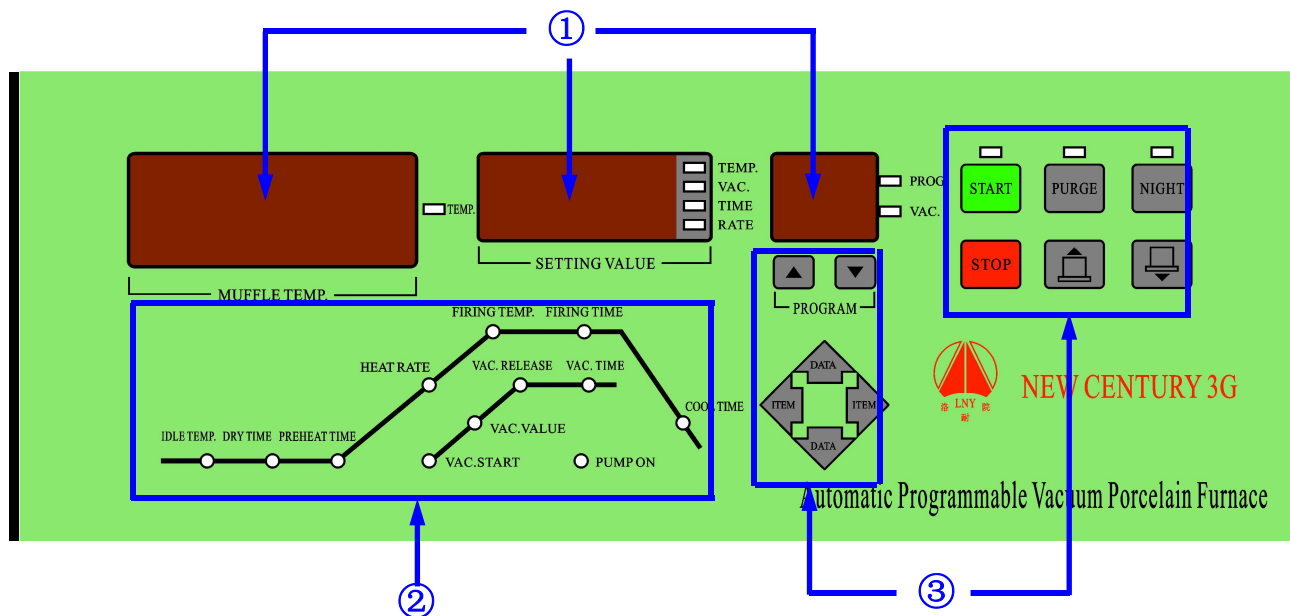
> ℹ️ The firing platform should be placed on the tray as quickly as possible after switch on the furnace (Otherwise, the sealing washer will be burn). Don't take firing platform out of the furnace unless long-distance transportation.

5. NOTES ON SAFETY AND OPERATION

5.1 Safety Advice

● The power supply in your laboratory should match the furnace requirement. The wiring system in your laboratory has an efficient ground connection.

● If the power supply is not stable, the furnace will be unable to work normally. Please use the voltage stabilizer.

● If power cuts suddenly when the furnace is working, please switch off the furnace or unplug the furnace power line from the electrical outlet.

● When the furnace is working, the surface of the furnace and the muffle should keep clean at all times. Don't place the sundry objects around the furnace. Distance to combustible objects.

● Clean furnace only with a dry or slightly damp cloth. Don't use any alcohol or other corrosive detergents. Turn off the furnace and disconnect power before cleaning, maintenance.

5.2 Notes on Operation

● Before switch off the furnace, if the tray is on the bottom position, please press ▲ key to make the tray raise to the upper position.

● The tray can't lower when the vacuum is held in the muffle. If press ▼key, the buzzer will sound. The tray can't lower until the vacuum in the muffle has been released.

● When the vacuum pump is working in Program 11–199, if vacuum in the muffle is not reached SETTING VACUUM, the buzzer will sound after five seconds. The furnace will stop working and the tray will lower to the bottom position. Please check the vacuum system and remove troubles before start working again.

● The moisture in the muffle should be removed correctly, otherwise the moisture may enter the vacuum system to damage the vacuum pump and solenoid valve etc. The service life of the furnace may be shortened and even the furnace may be damaged.

ⓘ In order to prevent the accumulation of moisture in the muffle, suggest that the new furnace should be operated strictly according to following steps before using.
　– Switch on the furnace.
　– Select firing program without vacuum.
　– Press START key to run the program.
　– After the program completes, repeat above steps at least ten times to dry the muffle completely so that remove moisture in the muffle.
　– If the furnace is not used for a long period of time, the user had better operate according to above steps strictly (according to the dry conditions in the muffle).

ⓘ When the water level in the filter of vacuum pump approaches 1/3 height, please unscrew the bolt at the bottom of the filter immediately to drain off water. Prevent water vapor from entering and damaging the vacuum pump.

Please contact your local agent or manufacture if you have any questions.

6. PANEL FUNCTIONS

6.1 Parameters Display Windows

There are three LED display windows on the panel.
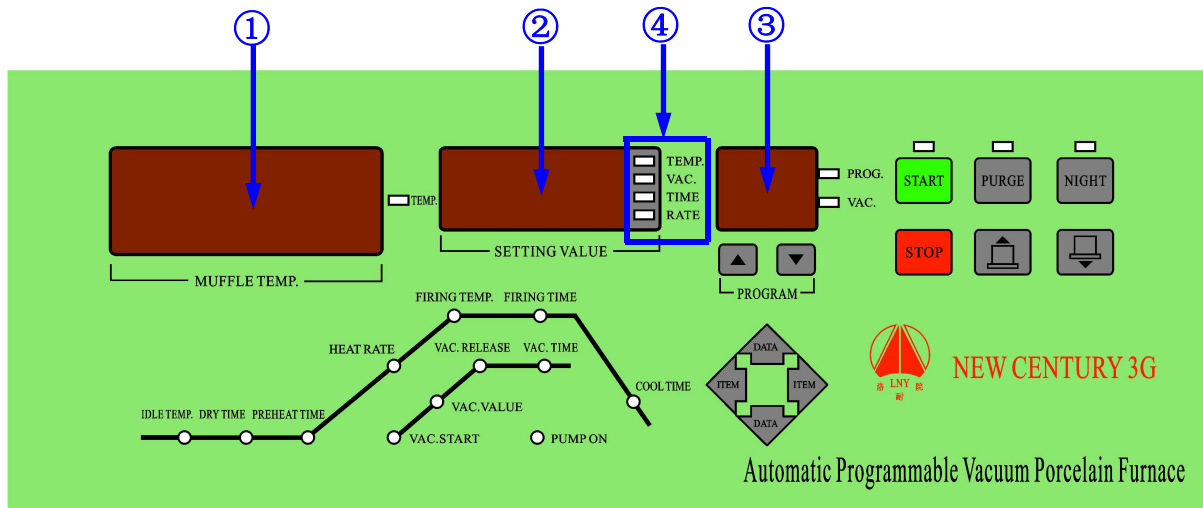
● The left display window ①　appears the actual temperature in the muffle.

● The middle display window ②　will appear each parameter including temperature, vacuum, time and heat rate.
  – There are four unit indicator lamps (see ④　in the figure) on the right of the middle display window ②.
    When the relevant indicator lamp lights, the relevant value (including temperature, vacuum, time and heat rate) will appear on the display window ②.

● The right display window ③　appears Program number and Vacuum Level.
  The display mode of program number as follows:
  – When the display window ③　appears double-digit Arabic numerals (**00－99**), this indicates program 00－99.
    For example: "**67**" appears on the display to indicate that Program **67**.
  – When the display window ③　appears double-digit Arabic numerals and "**.**" also appears on the right side of every Arabic numerals (**0.0.－9.9.**), this indicates program 100－199.
    For example: when "**6.7.**" appears on the display to indicate Program **167**.
  – When one-digit Arabic numerals appears on the display window and "**.**" also appears on the right side of this Arabic numerals (**0.－9.**), this indicates Program 200－209.
    For example: when "**7.**" appears on the display to indicate Program **207**.

● In the trouble mode, the right display window ③ will appear alarm code.

Note: Alarm code and cause are as follows:

Alarm Code	E1	E2	E3	E4
Cause	Vacuum pump trouble	Thermocouple trouble	Heater Coil trouble	Limit switch trouble

6.2 Parameters Indicator Lamps

There are 12 parameter indicator lamps on the panel.
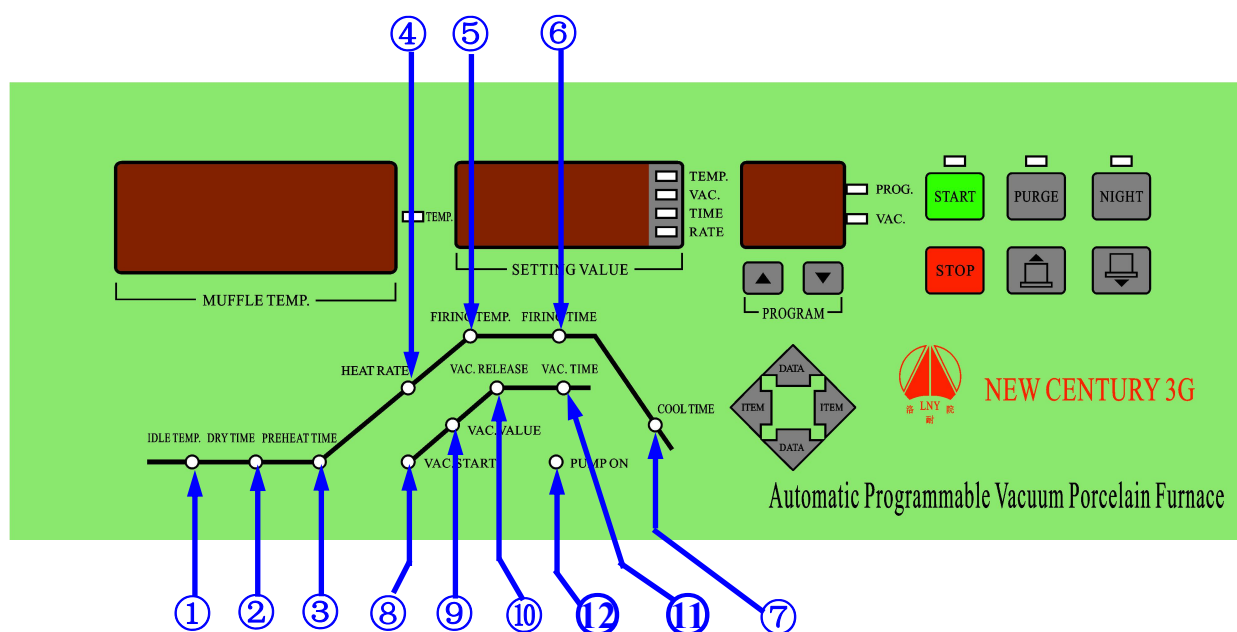
①**IDLE TEMP.**
● IDLE TEMP. is the temperature at which the tray will begin to raise to the upper position. Once the tray is reached to the upper position, the firing program will start running at this temperature.
● Idle Temperature may be set between 100℃ and 750℃.
● This indicator lamp lights to indicate that the value in the middle display window is the Idle Temperature settings.

②DRY TIME

● The length of time that the tray is raised from the bottom position after the muffle temperature is reached IDLE TEMPERATURE.

● Dry Time may be set: between 0 and 600 seconds for metal-porcelain programs; between 0 and 3600 seconds for all-ceramic programs.

● This indicator lamp lights to indicate that the values on the middle display is the Dry Time settings.

③PREHEAT TIME

● The length of time that the tray is moved to the upper position when DRY TIME elapses.

● Preheat Time may be set: between 0 and 600 seconds for metal-porcelain programs; between 0 and 3600 seconds for all-ceramic programs.

● This indicator lamp flashes to indicate that the values on the middle display is Preheat Time settings.

④HEAT RATE

● HEAT RATE is the rate at which muffle temperature increases with time.

● The Heat Rate may be set between 2℃/min and 120℃/min.

● This indicator lamp lights to indicate that the value on the middle display is the heat rate settings.

● When the temperature approaches the setting temperature, HEAT RATE will be slow automatically.

⑤FIRING TEMP.

● FIRING TEMP. is maximum temperature which will be obtained during the firing program.

● Firing temperature may be set between 10℃ and 1305℃.

● This indicator lamp lights to indicate that the value on the middle display is the setting firing temperature.

If Firing Temperature is lower than Idle Temperature, the furnace will correct automatically Firing Temperature to be 5℃ higher than Idle Temperature.

⑥FIRING TIME

● The length of time that the temperature will be maintained after the muffle temperature reaches FIRING TEMPERATURE.

● Firing Time of metal-porcelain programs may be set between 0 and 900 seconds.

● FIRING TIME of all-ceramic programs may be set between 0 and 9000 seconds.

In order to ensure that the tray can't lower until the vacuum has been released in the muffle, if FIRING TIME is less than VACUUM TIME, the furnace will correct FIRING TIME automatically to 30 seconds longer than VACUUM TIME.

⑦COOL TIME
● The length of time that the tray completes movement from the upper position to the bottom position.
● Cool Time may be set: between 0 and 600 seconds for metal-porcelain programs; between 0 and 3600 seconds for all-ceramic programs.
● This indicator lamp lights to indicate that the value on the middle display is the setting Cool Time.

⑧VAC. START
● VACUUM START is the temperature at which vacuum will turn on.
● Vacuum Start may be set between idle temp. and less firing temp-10℃.
● This indicator lamp lights to indicate that the value on the middle display is the setting temperature when vacuum starts.

⑨VAC. VALUE
● This indicator lamp lights to indicate that the value on the middle display is the Vacuum Level.
● Only Arabic numerals appears on the display and "−" don't appear.

⑩VAC. RELEASE
● VACUUM RELEASE is the temperature at which vacuum in the muffle begins to release.
● Vacuum Release may be set between idle temp+10℃. and firing temp.
● This indicator lamp lights to indicate that the value on the middle display is the setting temperature of Vacuum Release.

⑪VACUUM TIME
● The length of time that vacuum in the muffle will be maintained after the muffle temperature reaches FIRING TEMPERATURE.
● Vacuum Time may be set between 0 seconds and 600 seconds.
● The all-ceramic program needn't to set vacuum, so VACUUM TIME of all-ceramic program should be set to "0".
● This indicator lamp lights to indicate that the value appeared on the middle display is the setting Vacuum Time.

ⓘ LNY Furnace has two ways to set vacuum.
　　1）**Set VACUUM TIME.**
　　2）**Set VACUUM START and VACUUM RELEASE.**
Only one of above two ways is chosen to set vacuum.

– If VACUUM TIME is set to >0, VACUUM START and VACUUM RELEASE needn't to set. VACUUM START and VACUUM RELEASE indicator lamps will skip over automatically and don't flash.

– If VACUUM TIME is set to "0" and SETTING VACUUM is set to >0, VACUUM START and VACUUM RELEASE must be set. VACUUM START should be equal to IDLE TEMPERATURE; VACUUM RELEASE should be at most equal to FIRING TEMP.

– If firing programs have no requirement of vacuum, VACUUM TIME and SETTING VACUUM may be set to "0". VACUUM START and VACUUM RELEASE indicator lamps will skip over automatically and don't flash.
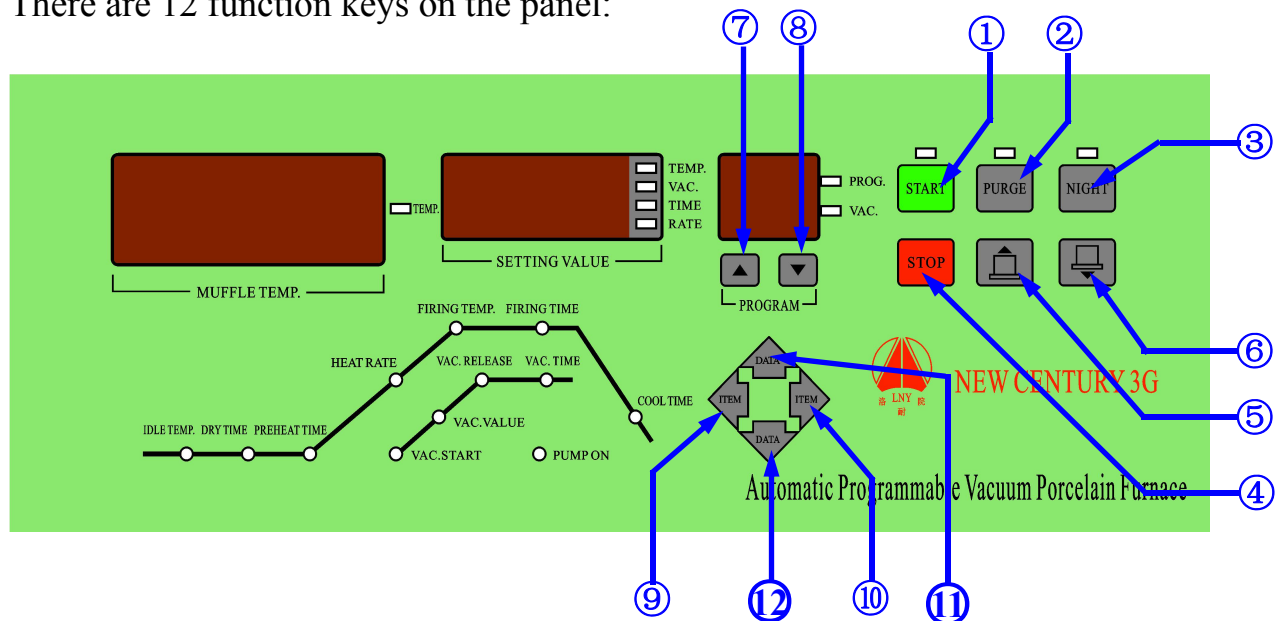
ⓘ If the setting parameter is more than the upper and lower limits, the furnace will correct the parameter automatically to the max or min value with warning tone.

⑫ PUMP ON:
● This indicator lamp lights to indicate that vacuum pump is working.

6.3 Function Keys

There are 12 function keys on the panel:

①**START key:**
Press this key. The selected program will start running. This indicator lamp lights to indicate that the program is running.

②**PURGE key:**
If the muffle is moistened, contaminated or not used for a long time, the PURGE program is recommended.

● Pressing PURGE key the PURGE program will be started with the indicator lamp flashing. The program number on the display will not appear. After the tray raises to the upper position, the vacuum pump will start working. The muffle temperature begins to increase.
● When the muffle temperature reaches 960 ℃ , after holding 300 seconds, the vacuum in the muffle will be released. Then the tray will lower to the bottom position with warning tone. The whole PURGE Program is completed automatically.
● Pressing STOP key the furnace will return to the Standby mode.

ⓘ Purge function can't be used in firing all-ceramic program

③**NIGHT key:**
When the furnace is to remain on overnight, NIGHT Program is recommended to use

to prevent the accumulation of moisture in the muffle.

● Pressing this key NIGHT Program will be started with its indicator lamp flashing. The tray will raise to the upper position.

● The actual temperature in the muffle will appear on the left display window. The setting temperature will appear on the middle display windows.

● The lamp will be out after 30 seconds.

● During NIGHT Program running, the power consumption of the furnace is very low.

● Press STOP key. The NIGHT Program will be terminated. The furnace is returned to the Standby mode.

    ⓘ If the power supply is not stable or power supply cuts frequently, please don't use NIGHT Program.

④**STOP key:**

Pressing **STOP** key all current programs will be stopped including the tray raising and lowering, Purge program, Night program and Firing programs.

● After pressing STOP key, the furnace will return to the Standby mode.

⑤ ⑥ **▼▲ key:**

Pressing the two keys the tray will raise to the upper position or lower to the bottom position.

⑦ ⑧ **PROGRAM ▲▼ key：**

Press the two keys to select the program numbers. The program numbers will appear on the right PROGRAM display window.

⑨ ⑩ **ITEM key:**

Press the two keys to select each parameter including IDLE TEMP., DRY TIME, PREHEAT TIME, HEAT RATE, FIRING TEMP., FIRING TIME, VAC. START, VAC. VALUE, VAC RELEASE and VACUUM TIME.
The relevant indicator lamps of the selected parameter will light.

⑪ ⑫ **DATA key:**

Press the two keys to set the value of the selected parameter. The relevant parameter values will appear on the middle display window.

7. INTRODUCTION OF PROGRAMS

7.1 Program 00 （Temperature Calibration Program）

Program 00 is set in the factory and used to calibrate the chamber temperature.
If the actual chamber temperature is too higher or too lower during operating furnace, after temperature deviation value is confirmed, the program 00 can be selected to calibrate the chamber temperature.

ℹ In the Program 00, the values of DRY TIME and PREHEAT TIME on the display window don't indicate the actual DRY TIME and PREHEAT TIME.
● DRY TIME value shows "plus ＋" sign or "minus －" sign:
  - when DRY TIME indicator light is on and value is 0, it shows "minus －" sign;
  - when DRY TIME indicator light is on and value is 1. it shows "plus ＋" sign;
● PREHEAT TIME value shows the increased or decreased temperature value adjusted by temperature calibration.
  - PREHEAT TIME value range: 0～80.
NOTE: Temperature Calibration in program 00 is for all programs of this furnace.

7.1.1 Increasing Chamber Temperature:
During operating furnace, if the actual chamber temperature is too lower and needs to increase temperature, please operate according to following steps:

- Press PROGRAM key to select Program 00;
- Check the current PREHEAT TIME value; confirm if DRY TIME value is with "minus －" or "plus ＋" sign; (0 shows "minus －" and 1 shows "plus ＋" sign);
- The current PREHEAT TIME value with " － " or " ＋ " **plus** the confirmed temperature deviation value is a new value;
- If new value is positive number, DRY TIME should be set to "1"; if new value is negative number, DRY TIME should be set to "0". PREHEAT TIME value should be the absolute value of this new value.

For Example:
If you think the actual chamber temperature is too lower and should increase 10℃,
- Select Program 00; and then check PREHEAT TIME value and DRY TIME value.
- If DRY TIME is **"0"** and PREHEAT TIME is **"12"**:
    you can get a new value "－2" by this formula: (－12＋10＝－2);
- Please set DRY TIME to "0" and PREHEAT TIME to "2".
Hereafter, the actual chamber temperature has increased 10℃ than before.

7.1.2 Decreasing Muffle Temperature:

During operating furnace, if the actual chamber temperature is too higher and needs to decrease temperature, please operate according to following steps:

- Press PROGRAM key to select Program 00;
- Check the current PREHEAT TIME value; confirm if DRY TIME value is with "minus －" or "plus ＋" sign; (0 shows "minus －" and 1 shows "plus ＋" sign);
- The current PREHEAT TIME value with "－" or "＋" **minus** the confirmed temperature deviation value is a new value;
- If new value is positive number, DRY TIME should be set to "1"; if new value is negative number, DRY TIME should be set to "0". PREHEAT TIME value should be the absolute value of this new value.

For Example:

If you think the actual chamber temperature is too higher and should decrease **10℃**,
- Select Program 00; and then check PREHEAT TIME value and DRY TIME value.
- If DRY TIME is **"1"** and PREHEAT TIME is **"8"**:
   you can get a new value "－**2**" by this formula: (＋**8**－**10**＝－**2**);
- Please set DRY TIME to "**0**" and PREHEAT TIME to "**2**".
Hereafter, the actual chamber temperature has decreased **10℃** than before.

7.2 Program 01–10 (Program Window appears 01– 10)

Program 01–10 are the programs without vacuum protection.
●When leaking in the vacuum system after vacuum starts, the vacuum pump will continue to work till the vacuum level in the muffle reaches setting vacuum; the furnace will also not stop working when the vacuum level in the muffle is less than SETTING VACUUM.
● In Program 01–10, the alarm massage of the vacuum trouble "**E1**" will not appear on the right display window.

7.3 Program 11–100 (Program Window appears 11– 0.0.)

Program 11–100 are the programs with partial vacuum protection.
● In Program 11–10, only when the setting vacuum level doesn't reach, the alarm massage of the vacuum trouble "**E1**" will appear on the right display window with warning tone. The furnace will stop working.
● When the vacuum level in the muffle reaches to SETTING VACUUM, if the vacuum level in the muffle decreases because of leaking, the vacuum pump will not start working again and the furnace will not stop working.

7.4 Program 101–199 (Program Window appears 0.1.– 9.9.)

Program 101–200 are the programs with full vacuum protection.

● In Program 101–199, only when the vacuum level in the muffle doesn't reach SETTING VACUUM, the alarm massage of vacuum trouble "**E1**" will appear on the right display window with warning tone. The furnace will stop working.

● After the vacuum level in the muffle reaches SETTING VACUUM, if the vacuum level decreases by 5 because of leaking, the vacuum pump will start working again to make the vacuum level reach to the SETTING VACUUM.

7.5 Program 200–209 (Program Window appears 0.– 9.)

Program 200–209 is for the special purpose of all-ceramic firing program.

● Because all-ceramic firing program don't need to set vacuum, VACUUM TIME of all-ceramic program should be set to "0".

7.6 Example of Operating Program

When user wants to select Program 101, the steps are as follows:

● Press PROGRAM key to select Program 101; (Program window appears **0.1.**);
● Select desired parameter by pressing PARAMETER key, and the indicator lamp will flash in turn;
  when the desired parameter indicator lamp flashes, its value may be set by pressing DATA key.
● After every parameter is set into furnace, press START key to run this program.
● When the program is completed, the tray will move to the bottom position with warning tone.

8. TROUBLESHOOTING AND ANALYSIS

	SYMPTOMS	PROBABLE CAUSES	CORRECTIVE MEASURES
1	Losing data. (Parameters can't be memorized)	①Microprocessor is faulty	②Replace microprocessor
2	Muffle temperature fluctuates	①Power line without ground connection. ②Connection-peg of thermocouple leads is bad contact ③Control module is faulty.	①Use power line with ground connection. ②Check thermocouple leads and screw connection-peg and nut tightly. ③Contact agent or manufacturer.
3	Alarm E1	①Vacuum pump trouble	①Check vacuum system and vacuum.
4	Alarm E2	①Thermocouple lead is broken. ②Thermocouple disconnects. ③Control module is faulty.	①Check and replace. ②Check and replace. ③Contact agent or manufacturer.
5	Alarm E3	①Heater coil burns out. ②Lead connected with heater coil is broken. ③Control module is faulty.	①Replace muffle. ②Replace lead. ③Contact agent or manufacturer.
6	Alarm E4	①Limit switch trouble	①Check limit switch.
7	The tray doesn't raise and lower. Warning tone sounds All keys are faulty.	①Limit switch is OFF. ②Control module is faulty.	①Check, repair and replace. ②Contact agent or manufacturer.
8	The display windows flash.	①Voltage is not stable. ②Power is lower.	①Use the voltage stabilizer. ②Replace power line.
9	Partial displays.	①Control module is faulty.	①Contact agent or manufacturer.
10	The tray doesn't raise and lower. Other keys are normal.	①Electric machinery is faulty. ②Relay is faulty. ③Control circuit disconnects.	Check, repair or replace.
11	The tray only raises or lowers. Other keys are normal.	①Relay is faulty. ②Control circuit disconnects.	Check, repair or replace.

	SYMPTOMS	PROBABLE CAUSES	CORRECTIVE MEASURES
12	Muffle temperature is out of control.	①Voltage is not stable. ②Control module is faulty.	①Change power supply or use precision regulated power supply. ②Contact agent or manufacturer.
13	Vacuum level in the muffle can't be held.	①Sealing ring is dirty or faulty. ②The muffle is affected with damp. ③Solenoid valve is faulty. ④Leak because of vacuum hose connector loosening. ⑤Bolts fixed the muffle loosen ⑥Terminal studs of muffle loosen. ⑦Muffle vessel leaks.	①Clean sealing ring or replace. ②Use after drying 4-8 hours. ③Replace solenoid valve. ④Replace gasket. ⑤Screw bolts evenly. ⑥Screw tightly. ⑦Replace muffle vessel.
14	The setting vacuum can't reach.	①Vacuum pump hose connector loosens. ②Vacuum pump wear and tear. ③The tray can't raise to the lower position. ④Solenoid valve or its control module is faulty. ⑤Other troubles refer to 11th item.	①Screw tightly. ②Check, repair or replace vacuum pump. ③Adjust limit switch. ④Check control circuit or replace solenoid valve. ⑤Refer to 11th item.
15	Vacuum pump is unable to start working	①Fuse has blown out. ②Power line of vacuum pump is disconnected. ③Electric machinery of vacuum pump is faulty. ④Rotor of vacuum pump is faulty.	①Replace fuse. ②Connect power line of vacuum pump. ③Replace electric machinery. ④Check and repair vacuum pump.
16	Pressing ▼ key, the tray can't raise with warning tone.	①Solenoid valve or its control module is faulty. ②Measure chip is faulty.	①Check control circuit or replace solenoid valve. ②Replace Measure chip.
17	After pressing power switch ON, power indicator lamp does not light. No warning tone.	①Fuse burns out.	①Change fuse.

9. APPENDIX

9.1 Muffle Replacement

● Disconnect power supply.
● Remove the cooling jacket of the furnace head.
● Remove the thermocouple lead. Note the position and color-coding of the thermocouple leads to avoid mistaken connection later. (Red lead connects "+").
● Remove the thermocouple.
● Remove six screws on the top plate of the chamber. Take off the top plate of the muffle. Please mark the position of two electrode studs.
● Take off chamber lid. Remove heater coil wires from on the electrode stud.
● Remove the old muffle from the chamber aluminium housing.
● Place the new muffle in the chamber aluminium housing.
● Reverse this procedure to install all parts correctly. Please be sure that all parts are installed on original position. If protective jacket of electrode stud is broken, please change new one. We recommend to replace new sealing ring on the top plate.
● The six bolts on the top plate should be screwed tightly and evenly.
● Please note that thermocouple, heater coil and chamber aluminium housing can't be short circuit.
● Check again. Please make sure that installation is completed, and then switch on the furnace to test.

Thermocouple

Top plate of the chamber

Chamber lid

Muffle

Electrode stud

Chamber aluminium housing

Electrode stud
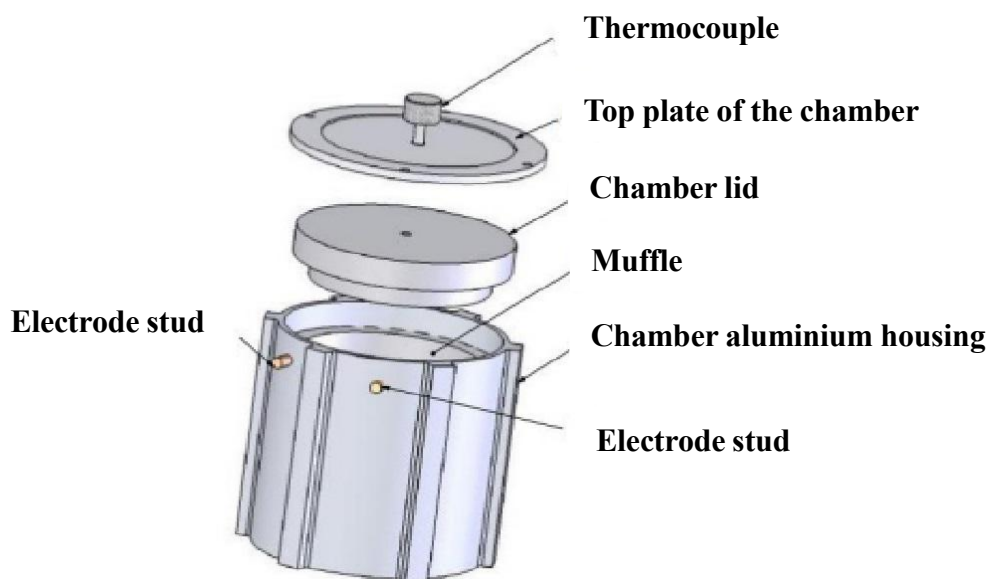
Appendix 2
Thermocouple Lead and Heater Coil Lead Replacement

● Lift the tray.
● Make certain that power supply is disconnected
● Remove the side plates on both sides of the bottom position of the furnace.
● Remove the plug of thermocouple leads. Disconnect the power leads of heater coil from power terminal stud and relay. Remove the top plate of cooling jacket. Two same color heater wires are on the left side; two different color thermocouple leads are on the right side.
● Disconnect the power leads of heater coil and thermocouple leads. Cut off the belts which fix the leads on two sides. Note that the nuts next to the muffle vessel should be screwed tightly. Don't make the terminal studs revolve to keep good sealing of the muffle.
● Remove the plug of thermocouple from the control board.
  Note: Positive pole is red on the right side;
          Negative pole is dark red on the left side.
● Take out thermocouple leads and power leads of heater coil.
● Thread the new thermocouple leads and power leads of heater coil through the hole beside of the lifter, and then guide from the middle of terminal studs. Fix the leads with belts. Connect the leads on the drive board and control board separately.
● Connect power leads of heater coil and thermocouple leads in the upper position with the two electrodes on the left and right side. Note that don't make the terminal studs revolve to keep good sealing of the muffle.
● Adjust the length and position of thermocouple leads. The leads can't be flexed. Never touch the limit switch when the lifter moves upwards and downwards.
● Adjust the length and position of heater wires. The wires can't be flexed and obstruct transmission.
● Check connection carefully. Make certain the connection is correct, and then switch on the furnace to test. If the furnace is working normally, disconnect power supply.
● Install the top plate of cooling jacket and the side plates on both sides of the bottom position of the furnace.
● Check again to make certain that the furnace is normally, and then switch on the furnace to test.

Appendix 6

Vacuum Conversion Table

INHg	KPa	mmHg	INHg	KPa	mmHg
1	4	20	16	53	400
2	7	50	17	57	430
3	10	70	18	60	450
4	13	100	19	64	480
5	17	120	20	68	510
6	21	150	21	71	530
7	24	170	22	74	560
8	27	200	23	78	580
9	30	220	24	81	610
10	34	250	25	85	630
11	37	270	26	88	660
12	40	300	27	91	680
13	43	320	28	94	710
14	47	350	29	98	740
15	50	370	30	101	760

1 INHg=3.38KPa=25.4mmHg   1 MPa=1000KPa=1000000Pa

ISO 9001:2000 Standard

ISO 14001:2004 Standard

GB/T 28001-2001 Standard

CE

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