DAIHAN Scientific
YOUR PARTNER *in* LABORATORY

Natural Flow type Oven

Certifications by - - -

- ☑ **ISO 9001 Certified.**
- ☑ **ISO 13485 Certified for Medical Instruments**
- ☑ **UL/CUL Certified**
- ☑ **CE Certified**
- ☑ **PL Insurance. (Product Liability Insurance)**
- ☑ **Patented(No. 10-0554098) Jog Shuttle Control System.**
- ☑ **Validation(IQ&OQ) Service.**

✧ English Page : P. 1 ~ 24
✧ Korean Page : P. 25 ~ 48

User Manual

(Version : 2.2.1)

written for
ThermoStable™ ON-32/-50/-105/-155/-W105/-W155 models

"ThermoStable™ ON-105"
Natural Flow type Oven, 105Lit.

Sales & Basic A/S :
By the Nearest Official Distributors.

Man268 (20 May. 2016)

EUROPEAN DECLARATION OF CONFORMITY

DAIHAN Scientific
YOUR PARTNER in LABORATORY

We, DAIHAN Scientific Co., Ltd.,
326, Sinpyeongseokhwa-ro, jijeong-myeon, Wonju-si, Gangwon-do, Korea
Tel: 82-2-967-5235, Fax: 82-2-967-5258
declare under our sole responsibility that the product

Oven

ThermoStable ON-155, ON-105, ON-50, ON-32

to which this declaration relates is in conformity
with the following standard or other normative document

EN 61326: 1997/A1: 1998/A2: 2001/A3: 2003
EN 61000-3-2: 2000
EN 61000-3-3: 1995/A1: 2001
EN 61010-2-010: 2003 used in conjunction with EN 61010-1: 2001

following the provisions of the directives:

Low-Voltage Directive 2014/35/EU
EMC Directive 2014/30/EU

Signed: _____ (Chong ku Shu)

Date: 18, April 2016
Authority: President / CEO

For

DAIHAN Scientific Co., Ltd.,
326, Sinpyeongseokhwa-ro, jijeong-myeon, Wonju-si, Gangwon-do, Korea
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DH-DC140101-R02

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1. General

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1.1 Precautions Before Use

Thank you for purchasing the Natural Flow type Oven.

This manual describes the performance and usage instructions of the product, and the precautions in the handling. Please carefully read this manual, before using the product. The following warnings should be strictly adhered to: (The following warning sign is marked in the part that is required user attention, so please safely use the product after being well-acquainted with the meaning.)

	Warning Failure to follow the instructions may result in injury. **Caution** Failure to follow the instructions may result in product failure. **Proximity Caution** Keep clear of the product during use.
	Notification Do not disassemble or modify the product or use it for purpose other than its intended function.
	Caution: High Temperature High-temperature heating, pose a risk of burns.
	Danger of Explosion If volatile, explosive chemicals are used, there is a danger of explosion.
	This symbol indicates Protective earth (ground).
	This symbol indicates power "OFF" on the power on/off switch.
I	This symbol indicates power "ON" on the power on/off switch.
N	This symbol indicates the connection point of the neutral conductor on the installed unit.
	This symbol indicates alternating current Voltage.

1. General

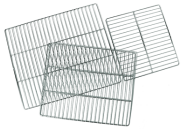
1.2 Product introduction

This product is equipped with the natural convection air circulation system, and adopts the system which allows to circulate by primary heating the air within the Pre-heating Zone which the heating elements wrap the three sides of the chamber.
This product was developed and manufactured considering the best possible ease for use and safety, and has the following features.

1. This product is equipped with the high performance Heating Mechanism - Pre Heating Zone which realizes the best temperature uniformity and accuracy.
2. This product realizes the lowest power consumption by the rigid insulation structure consisted of advanced insulation.
3. It minimizes the heating time and the temperature recovery time after open/close of door through the optimization of the high-precision Fuzzy-PID controller.
4. Because Jog Dial Knob and Push Button which are rigid and have excellent operability are mounted, this product has high operating sensitivity and excellent accuracy.
5. The insulating and thermal efficiency are maximized by putting the Air-Flow Layer between the advanced insulator and the enclosure.
6. The Chamber and inner shelf prevents corrosion by using Stainless Steel material.
7. This product minimizes the heat loss by being strongly adhered the door by up and down dual latch structure.
8. Because this product is equipped with a high-quality LCD Display with back-light function, it is easy to confirm its state.
9. The necessary matters during the experiment can be conveniently used by the support of SUB MENU.
10. The safety device for overheating prevention, and over current and short circuit prevention circuitry that preferentially consider the user's safety are mounted.
11. This product is remotely controlled by connecting to PC through RS232 communication port, and can be transmitted data.
12. The models that the observation of the inside is easy are supported through the Built Viewing Window. (Only in "ON-W105", "ON-W155")
13. The pollution prevention and the simple and convenient washing operation are possible because the seamless rubber packing is finished in the curved surface on the inside corners.
14. The Heating is stopped in the case of the Door Open during operating, the error in use is minimized because the alarm rings if the certain time elapses.
15. CE Certified Products.
16. PL(Product Liability) Insurance

1. General

1.3 Product Configuration

Component Photo	Component Name	No. of Configuration
	ThermoStable™ ON- 32, 50, 105, 155	1 unit
	ThermoStable™ ON- W105, W155	1 unit
	Stainless Steel Shelves	2 ea

- Including a copy of the Operation Manual

*** Model**

- ThermoStable OF-50 : General Forced-air Oven, without Window, 50Liter.
- ThermoStable OF-105 : General Forced-air Oven, without Window, 105Liter.
- ThermoStable OF-155 General Forced-air Oven, without Window, 155Liter.
- ThermoStable OF-W105 : General Forced-air Oven, Built-in Viewing Window, 105Liter.
- ThermoStable OF-W155 : General Forced-air Oven, Built-in Viewing Window, 155Liter.
- ThermoStable ON-32 : General Gravity-air Oven, without Window, 32Liter.
- ThermoStable ON-50 : General Gravity-air Oven, without Window, 50Liter.
- ThermoStable ON-105 : General Gravity -air Oven, without Window, 105Liter.
- ThermoStable ON-155 : General Gravity -air Oven, without Window, 155Liter.
- ThermoStable ON-W105 : General Gravity-air Oven, Built-in Viewing Window, 105Liter.
- ThermoStable ON-W155 : General Gravity -air Oven, Built-in Viewing Window, 155Liter.

2. Installation

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2.1 Product Installation

* Caution of Installation

1. Please be careful when transporting the product because it is heavy.
2. Please do not lay the product on the floor or subject it to shock. It can cause damage inside the product.
3. Please install the product in a hard, flat, and stable place.
4. Please do not install the product in a place where it is exposed to direct sunlight, or in the dangerous places.
5. To minimize the risk of short circuits, do not install the product (in the) places where it will be subjected to the inflow of moisture or organic solvents on the regulator part or inside of the body.
6. This product was manufactured for normal operation at a rated voltage, so please check the voltage status before installing the product.
7. When installing and using the product, please certainly use the power cord provided with the products.

* Installation Process

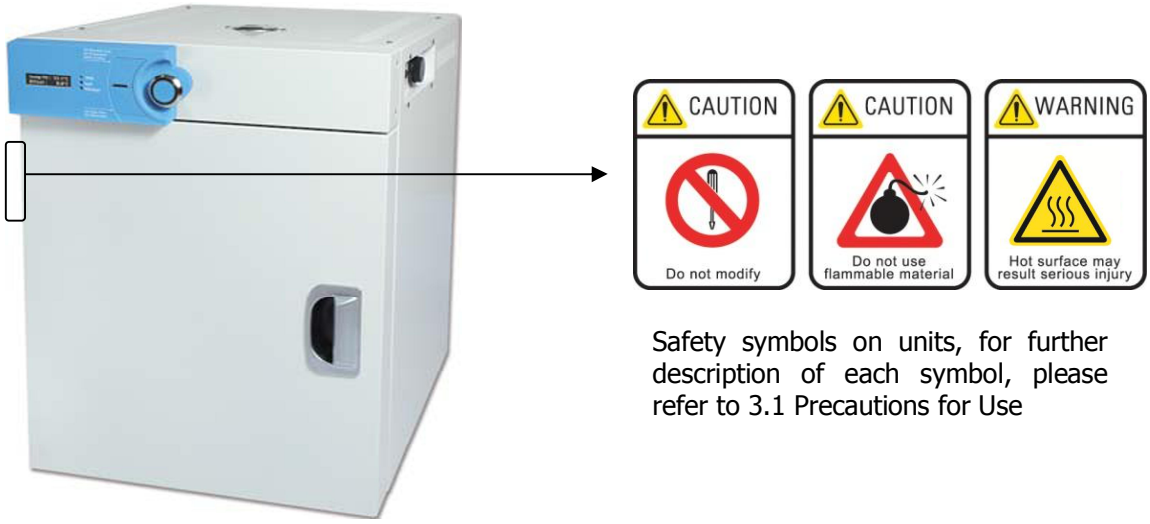
1. After receiving the unit and locating it in the specified location, remove the packaging.
2. Check the unit for any transport damages. If any such damages are found, please contact the deliverer of the product.
3. This Product is not equipped with casters. Units should be moved using a cart. Ensure that no damage is sustained by the units during transport. It is recommended that units are moved by at least 2 people and by lifting units up holding the indicated positions in the figure below.

4. The product should be positioned in a location where it has enough space for ventilation and prevention from fire. The recommended distance of each side is minimum 20cm from the back wall, 100cm from the side walls and ceiling respectively.

5. Place the device on a level, horizontal surface to support the capacity of the device without vibration.
6. Once the unit is placed in its installation location, let the unit stand for 15-30 minutes so that all the internal parts of the unit stabilize.
7. Connect the power cord to the wall socket.
8. When installing the device, insure the wall socket is easily accessible.
9. Do not earth to gas pipe, plastic tap water pipe or phone line. It may cause an electrical shock, a fire, breakdown or explosion of the unit.

* Safety Symbols on a product

- Safety symbols stickers Attached to side of product. For meaning of each symbol, please refer to Precautions Before Use, Safety Instructions.



Safety symbols on units, for further description of each symbol, please refer to 3.1 Precautions for Use

□ **Product Liability (PL) Insurance Admission**

DAIHAN Scientific (Co., Ltd.) is a member of Product Liability Insurance (PL Insurance), so that its customers can trust our products, (believe and use its products,) by preparing against the accident which can be occurred during using the products by self-production.

[Contents] .....

Insurance Type: Product Liability Insurance

Publishing Office: Machinery Insurance Cooperative

Limit of Indemnity: 100 million won for Persons and Objects

Secured Area: Worldwide (excluding North America)

Emergency Contact: **DAIHAN Scientific (Co., Ltd.) (TEL:** 080-008-3000, FAX: 033-737-7575)
(TEL: 02-369-8516, FAX: 02-369-8521)

2. Installation

2.2 Product Specifications

Model		Standard Model, without Window			
		ThermoStable™ ON-32	ThermoStable™ ON-50	ThermoStable™ ON-105	ThermoStable™ ON-155
				Built-in Viewing Window Model	
				ThermoStable™ ON-W105	ThermoStable™ ON-W155
Capacity		32Lit	50Lit	105Lit	155Lit
Dimension (w x d x h)	Interior(mm)	310X290X360	370X350X420	485X409X535	550X474X600
	Exterior(mm)	458X557X664	518X647X724	653X712X882	718X777X947
Heater Power		500W	650W	1.4kW	1.6kW
Temp.	Range	Ambient Temperature +5℃ to 230℃			
	Fluctuation	±0.5℃ at 100℃, ±0.6℃ at 150℃			±0.5℃ at 100℃ ±0.8℃ at 150℃
	Variation	±1.2℃ at 100℃, ±2.2℃ at 150℃			
	Sensor	PT 100			
Control Resolution		±0.1℃			
Heat-up Time		30min.to100℃ 43min.to150℃	30min. to100℃ 45min. to 150℃		35min. to 100℃ 50min. to 150℃
Recovery Time (Door open 30sec)		8min. to 100℃ 10min. to 150℃		12min. to 100℃ 10min. to 150℃	
Controller		Digital Fuzzy Control by Advanced Microprocessor Jog-Dial with Push Button			
RS232 Port		Available to connect with PC			
Display		Digital LCD with Back Light			
Timer		99hr 59min (delay/continuous function)			
Material	Internal	Stainless Steel(#304)			
	External	Powder Coated Steel			
	Insulation	Glass Wool			
Shelves		2ea of Stainless steel shelves included			
Ventilation		Ventilation hole with Stainless Steel Cap, Hole Diameter 40mm			
		1ea		2ea	
Circulation		Gravity Convection Type			
Safety device		Over Temp. and Over Current Protector, Sensor Error Detector			
Others		UL / CUL Certified Storage Function (Temp. and Time) Locking Mode (Jog-Dial Input Disabled) Alarm (Error Status and Timer-end)			
Net Weight (kg)		36	44	69	78
Packing Size (wxdxh)(mm)		562X664X747	622X754X807	743X819X1,068	808X884X1,133
Shipping Weight(kg)		43	59	79	92
Power Consumption		502 W	674 W	1390 W	1566 W
Energy Consumption, at 100℃		90 Wh	117 Wh	187 Wh	204 Wh
, at 150℃		181 Wh	230 Wh	337 Wh	398 Wh
Power Supply		120V, 60Hz or 230V, 50/60Hz			

3. Product Usage

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3.1 Precautions for Use

	Please be familiar with the user manual before using this product, and operation should be performed only by qualified personnel
	This product should be connected to a appropriate power source that it is generally used. Please use a lower power source than the regulation load permitted (AC 120, 60Hz or AC 230V, 50/60Hz, Single-phase).
	Place the product on a level, horizontal surface to support the weight of the product without vibration. Install the product in a place where the floor is hard and flat. Failure to do so can cause accidents. by negligence.

- **Warnings**

- **Please observe the following precautions**.

	This product should be operated in a room with temperature maintain between 5℃ and 40℃. Long-term use in an environment that exceeds the allowable range may cause a malfunction.
	Please do not damage or distress the power cord. (Please do not hurt on the power cord, or process it, or force bend it, or pull it, and tie it.) Also, if heavy objects are placed over the power cord, or the power cord is inserted in between objects, the power cord can be damaged and may cause fire or electric shock.
	Please do not directly spray water on the product or wash it with water, to avoid short circuits or electric shock.
	Please do not touch or manipulate the electrical parts such as the power plug with wet hands electric shock.
	Please do not operate the product by manipulation of the plug to avoid electric shock or short circuits
	Do not install the product where it can get damp or in a dusty environment. It may cause overheating or short circuit. – Pollution Degree 2
	Do not install the product in a location at an altitude of over 2,000 meters (6,562 feet).
	Please do not use any kind of plastic container or the goods for dry purpose. The temperature around the heater mounted on the floor of the chamber is higher than the operating temperature, and if the internal temperature is rapidly risen due to the malfunction of user, there may present a fire risk.

	The internal temperature rises up to 230℃, so please be careful when opening or closing Air Duct or Door.
	The inner chamber is hot during an operation, do not touch the inner chamber without proper hand protection during operation as burns may occur.
	Do not operate this product near a heater or an air-conditioner.
	Clean the bottom of inner chamber and install the shelves properly before use.
	Do not close your face, hands or body into a chamber. It may cause an injury or burn by high temperature.
	Only operate unit after checking the safety of the unit.
	The temperature of the regulator SAFETY should be set up 30 ~ 40°C higher than the operating temperature. If the regulator SAFETY is set to 0, the heater does not operate.
	If unexpected sound, smell or smog is generated, pull the main plug out from the wall socket and contact the technical assets of DAIHAN Scientific
	If irradiated or contaminated samples are placed in the chamber, the warranty is voided. Do not use this product to sterilize or disinfect objects or samples.
	Do not use outdoors avoid overheating or electrical faults. The use in the place where the sun continuously shines and can get rained on it is prohibited. It may cause overheating or electrical fault of the product.
	Please do not use flammable or volatile products in the vicinity of the product to minimize the risk of firer. Please do not use the flammable spray such as lacquers and paint, or volatile, flammable chemicals and its similar product, in the proximity of the product. They may cause the ignition due to the spark of switch.
	Please avoid the disassembly or modification of this product by a non-authorized person to avoid serious electrical problems and to retain the warranty service of DAIHAN Scientific Co., Ltd.
	This product must be connected to a properly grounded power supply.
	Please regularly check whether dust or dirt are on the power plug and completely connect the plug. If the plug is covered with dust, or the connection is not complete, it will cause an electrical shock or fire.
	Please separate the power plug from the outlet for safety when the product is unused for long periods of time to avoid overheating or ignition due to dust.
	When disconnecting the power plug, it must be grasped by the hands and then pulled. Grasping only the cord and then disconnecting it may cause overheating or ignition because of internal lines being disconnected.
	Insert the plug securely into an appropriate wall socket. Loose connections result in excessive heat generation to the device and may cause arcing to occur at the connection.

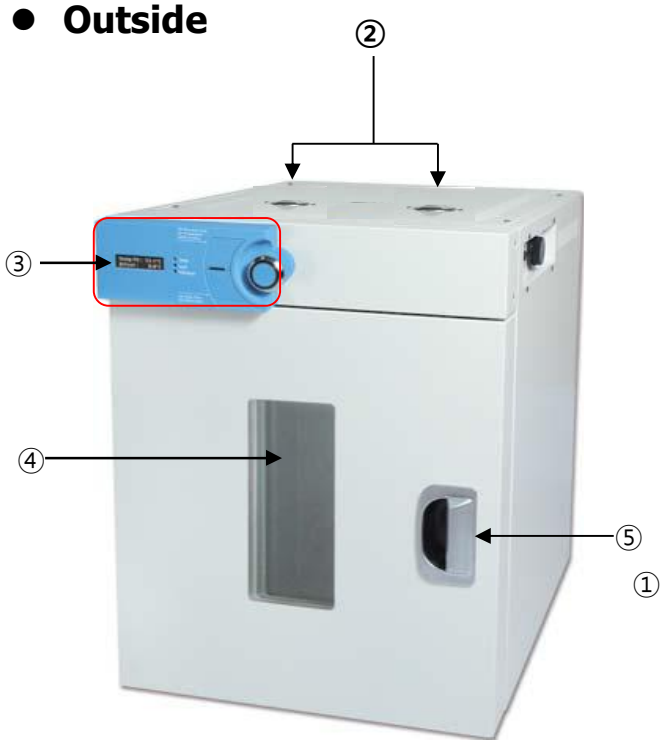
	If unusual noise or signs of abnormal behavior are found during use of this product, please immediately contact the supplier or DAIHAN Scientific (Co., Ltd.) after turning off the power supply and disconnecting the power line.
	When moving the product, please move it so that the power cord and the product are not damaged after disconnecting the power plug from the electrical outlet, in order to avoid the electrical shock or the ignition due to the damage to the cord.
	Please maintain the clean condition of this product by removing the foreign matter while gently wiping with the neutral detergent and a dry cloth after checking whether the foreign matter present or not, before and after using this product.
	The fluctuation of main power voltage should be lower than +/-10% of the nominal voltage..
	The maximum relative humidity is 80% at 31°C and 50% at 40°C .
	If a product was transported or stored in high humidity condition, please check packaging condition before use. If the carton or wooden box is waterlogged, please contact the deliverer or our technical service engineer. Do not operate the unit before checking with an engineer, otherwise it may cause an electrical shock or a fire.
	The Sound Level of the buzzer is maximum 60dB in 1 meter distance when an error is detected.
	The device should be set at a well ventilated place. Be sure the holes on the side or rear surface of the body are blocked by a wall or an object. And do not operate the device at a poor ventilated place or use closed. It may cause a fire or damage of the device as not to release heat or insufficient ventilation may result.
	This Symbol indicates that this product is to be collected separately. The following apply only to users in European countries: ● This product is designated for separate collection at an appropriate collection point. Do not dispose of as household waste. This product is required to comply with the European Union's Waste Electrical & Electronic Equipment(WEEE) Directive 2002/96/EC

※ All of the circuits, electrical or mechanical parts and configurations used in this product are the technical assets of DAIHAN Scientific (Co., Ltd.). Only technicians of the technical support team at DAIHAN Scientific (Co., Ltd.) or technicians approved through the education from DAIHAN Scientific should be allowed to repair this product.

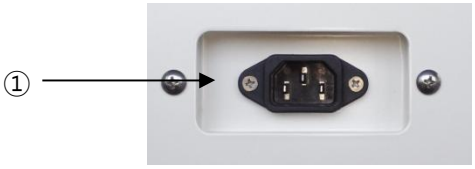
3. Product Usage

3.2 Names of Each Part

- **Outside**

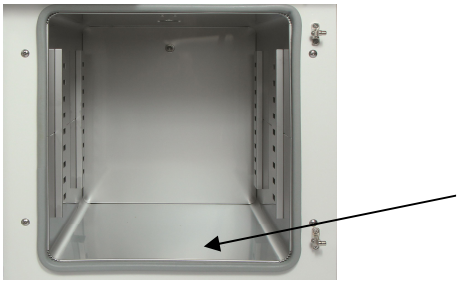


<Fig.3.2.1> Built Viewing Window Oven,
" ThermoStable™ ON-W105"



<Fig.3.2.2> Back of " ThermoStable™ ON-32,50"

<Fig.3.2.3> Back of
" ThermoStable™ ON-105, 155"
" ThermoStable™ ON-W105, W155"



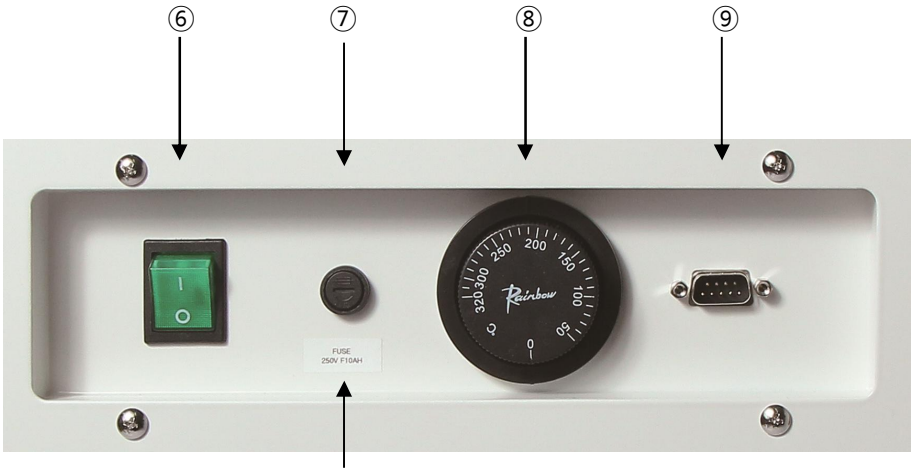
Heater is equipped in the bottom and two sides of the chamber.
Do not put any object on the bottom.

<Fig.3.2.4> Inner chamber of Oven

NO	Names	Description
①	Power Connection	Power Cord Apply
②	Air Duct	Ventilation of Chamber ThermoStable™ ON-32, 50 1ea ThermoStable™ ON-105/-155/-W105/-W155 2ea
③	Controller	Set and Check operation
④	Window	Safety Double
⑤	Door Handle	Door open and close

<Table.3.2.1> Names of each part and description

<Fig.3.2.5> Standard Model,
"ThermoStable™ ON-105"



ThermoStable ON-32, -50 (120V) : 250V F 10AH
ThermoStable ON-105, -155 (120V) : 250V F 20AH
ThermoStable ON-32, -50, -105, -155 (230V) : 250V F 10AH

<Fig.3.2.6> Side of " ThermoStable™ ON"

* RS232C Connector

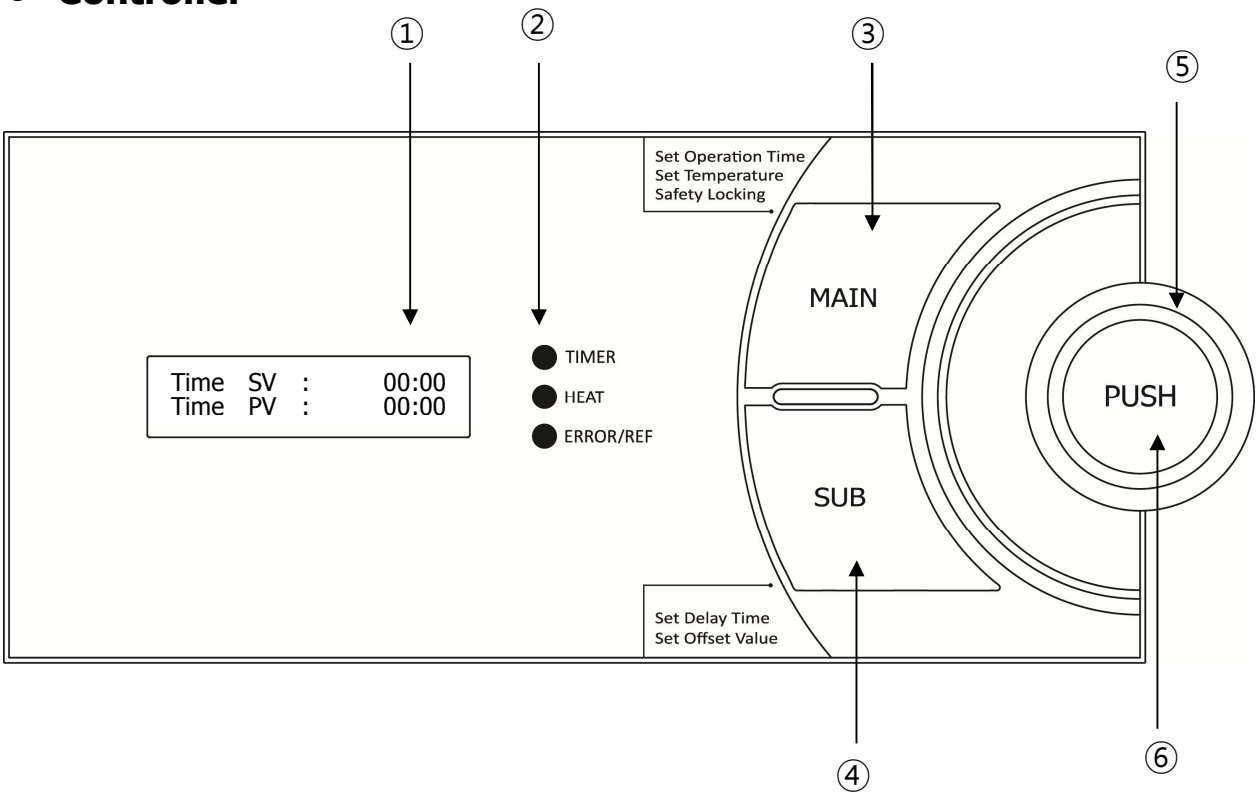
- Port for cable connection to PC. Monitoring and Controlling with PC by connecting RS232C cable.

<Fig.3.2.7> Natural Flow type Oven " ThermoStable™ ON " RS232C Connect

NO	Names	Description
⑥	Power Switch	Power ON/OFF
⑦	Fuse	Protect unit from High Current
⑧	Safety Switch	Prevent overheat
⑨	RS232 connection	Serial Interface for Remote control by PC

<Table.3.2.2> Names of each part and description

● Controller



<Figure 3.2.8> Controller for Natural Flow type Oven " ThermoStable™ ON"

NO	Names	Function and Features
①	LCD	Display Set-up Value and Current Status.
②	LED Lamp	Indicate operation of TIMER, HEAT, ERROR/REF.
③	MAIN Button	Convert into mode of Timer, Heating, Locking.
④	SUB Button	Convert into mode of delay timer and offset function.
⑤	Jog shuttle knob	Control that Reduces or Adds Values, and Does Start/Stop Operation.
⑥	PUSH Button	Operate Start/Stop.

<Table 3.2.3> Controller for " ThermoStable™ ON"

3. Product Usage

3.3 Usage Instructions

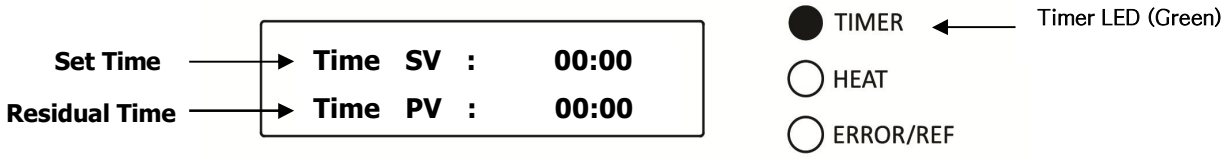
- Before operation, Set the SAFETY knob to 30~40°C higher than operation temperature.
- Connect the power cord to the proper power socket and Turn on the Main Switch.

*** Operation method for Jog-Dial**

- Jog-Dial can be manipulated for the setting in each mode by Turning and Push motion.
- If turning the Jog-Dial knob to clockwise or counter-clockwise, the setting values can be adjusted, and if briefly pressing once the PUSH button, the Start or the Stop operation is performed.
- The Turning of the Jog-Dial knob does not manipulated during operating, and if resetting the set value, it can be adjusted by the Jog-Dial knob after stopping the product by pressing briefly once the PUSH button.
- If pressing for 2 or 3 seconds the PUSH button, the set value is saved, and even if the power is turned on again, that value is maintained. (If "0" value is saved, the setting value is initialized.)

① MAIN - Set Operation Time

- When the power is turned ON, the initial screen is the setting mode of the Timer set mode.



< Fig 3.3.1. Set Operation Time Mode>

- TIMER LED is lighted during the operation of timer, and indicates that it is operating.
- The range of setting time is from 00:00 to 99hr and 59min(it is possible to adjust at 1min.) and 00:00 indicates continuous operation.
- If the timer operation is completed, the alarm will sound and heating will be stopped.
- The timer setting mode can be operated by referring to the jog-shuttle operation method.

* Set Delay Time (Delay Timer)

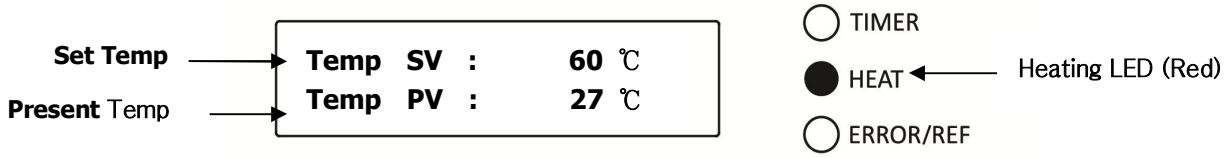
- If pressing the SUB button in the Set Operation Timer Mode, it is switched to the Set Delay Time mode.
- The Delay Timer sets the reservation time and has the function that sets so that the operation of Heating and Timer are performed after that time is elapsed.

< Fig 3.3.2. Set Delay Time Mode>

- The proper use of the delay timer is to manipulate so that the reservation time is set for the first time, and then the temperature and the operation timer is set and the set operation is automatically operated after the reservation time is elapsed.
- The reservation time value is displayed over blinking on the display, and if pressing the PUSH button by setting the reservation time value with the Jog-Dial knob, the value is fixed on the Display, and the reservation timer is activated.
- After setting the reservation timer value, you can set-up the operation timer value by pressing the MAIN button and then press Start button. And, you can set-up the temperature by pressing the MAIN button again, and then press Start button. The Start button in the condition that the reservation timer has been set-up, is the button for the operation of the setting value after the reservation timer, not to immediately operate.
- As described above, if continuously setting the operation, Heating and Timer are operated after the set reservation time as user intend.
- Since the delay timer is not set during the operation of Heating/Timer, the delay timer should be set after stopping the operation of Heating/Timer.
- You can change or save the setting by using the operation method of the Jog-Dial, and Start/Stop of operation can be performed.
- If pressing MAIN button, it is switched to the Set Operation Time Mode.

② MAIN - Set Temperature

- If pressing once the MAIN button in the Set Operation Time Mode, it is switched to the temperature setting mode.

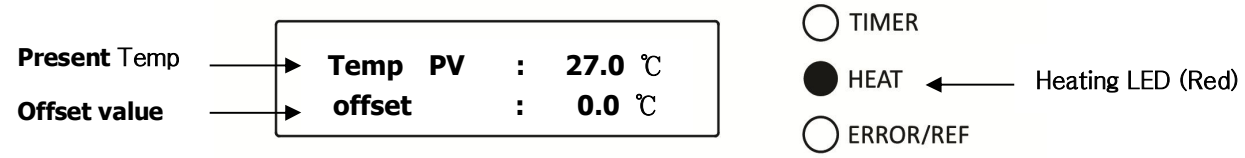


< Fig 3.3.3. Set Temperature Mode>

- The setting temperature is entered by turning the Jog-Dial Knob to clockwise or counter-clockwise. If the setting value is entered to above 0℃, the operation standby state is displayed while blinking the HEATING indication of LCD Display.
- The HEATING indication of LCD Display is always displayed during the operation of HEATING, and if the setting value is entered to above 0℃ in the condition that the heating is stopped, the HEATING indication indicates the standby status while blinking in long interval.
- The range of the setting temperature is adjustable in the unit of 1℃, and can be set up to 230℃.
- You can change or save the setting by using the operation method of the Jog-Dial, and Start/Stop of operation can be performed.

*Set offset value

- Temperature compensation is the function that can add or reduce the constant value by setting the compensation value in the case that user must experiment by matching the thermometer which he/she is using as the experimental standard and the thermometer indicated in this regulator.



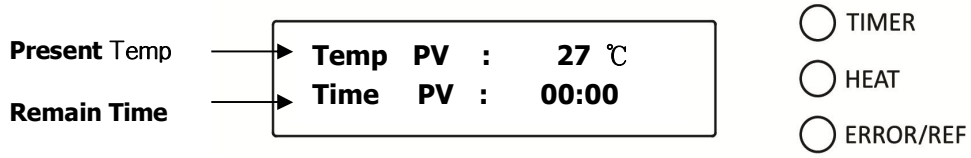
< Fig 3.3.4. Set offset value Mode>

- If pressing the SUB button in the Set Temperature mode, it is switched to the Set Temperature Offset mode.

- The scope of the compensative value is -20.0℃ ~ +20.0℃, and it is possible to adjust at 0.1℃ unit.
- After setting the compensation value, the indication of the current temperature is displayed as the temperature including the compensation value.
- When entering into the compensation value setting mode during the Heating operation, the Heating operation that is operating is stopped. After setting the compensation value, the Heating operation is re-conducted in the Set Heating Mode.
- If the PUSH button of Jog Dial Knob is pressed and held for 2-3 seconds, the setting value is saved and this saved value is maintained even when the power is turned on again.
- If pressing Mode button, it is switched to the Set Heating Mode.

③ MAIN - Safety Locking

- If pressing MAIN button in the Set Temperature Mode, it is switched to the Locking mode.



< Fig 3.3.5. Safety Locking Mode>

- In the Locking Mode, the Turning by the Jog-Dial Knob or Push button do not applied, and LCD Display and LED lamp indicate the status that is currently operating.
- If pressing once the MAIN button, it is entered into the Set Operation Time Mode

*** Automatic Operation Function**

In the use of the product, if the power supply has been interrupted and then is reapplied, it has the function that protects the experimental results and samples by automatically reactivating as the setting of final operation.
In Jog-Dial operation method, support this function by activating the setting temperature stored through the saving method of the set points.
When reapplying the power supply according to the problem on safety or user's intention, if you want to disable the automatic operation function, set up the temperature to zero (0) according to the instruction of Jog-Dial.

*** ERROR Message**

- If Error situations are occurred, the Error warning is displayed on the idle screen.

ERROR Message	Cause	Remedy
Error 1	Informs the time to be displayed the temperature of abnormal value due to the abnormality of Temperature Sensor.	Please check the temperature of the heated top plate.
Error 3	Informs the Door open condition when it over 10 Sec. error will happen.	Please check and close the door.

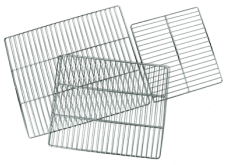
<Table 3.3.1 > ERROR Message Table

4. Products Management

4.1 Accessories

4

*** Ordering Information**

Image	Ordering Number	Information
	DH.WON11032	Wire Shelf, for 32 Lit., "ONS032", w280xd280mm
	DH.WON11050	Wire Shelf, for 50 Lit., "ONS050", w340xd310mm
	DH.WON11105	Wire Shelf, for 105 Lit., "ONS105", w455xd375mm
	DH.WON11155	Wire Shelf, for 155 Lit., "ONS155", w520xd440mm
Validation(IQ, OQ) Service	DH.WON31032	Validation Service(IQ, OQ), "ONV1032", for ThermoStable™ ON-32
	DH.WON31050	Validation Service(IQ, OQ), "ONV1050", for ThermoStable™ ON-50
	DH.WON31105	Validation Service(IQ, OQ), "ONV1105", for ThermoStable™ ON-105
	DH.WON31155	Validation Service(IQ, OQ), "ONV1155", for ThermoStable™ ON-155
	DH.WON32105	Validation Service(IQ, OQ), "ONV2105", for ThermoStable™ ON-W105
	DH.WON32155	Validation Service(IQ, OQ), "ONV2155", for ThermoStable™ ON-W155

4. Products Management Method

4.2 Maintenance and Management

Natural Flow type Oven was manufactured with the consideration of various situations that may occur during the operation. However, for long-term use with stable performance, please observe the following precautions:

1. If the unit is not to be used for an extended period of time, disconnect the power cord from the wall socket.
2. **DAIHAN** is not responsible for damage to the unit caused by abnormal use or by not heeding warnings and cautions in the manual or unauthorized modifications of the unit.
3. The Air Duct is controlled by user's needs, and if it is unused, it should be closed the entrance and then stored in order to prevent the external contaminants entering from the entrance.

CLEANING

1. Before cleaning the unit, disconnect the power cord from the wall socket. Otherwise, it may cause an electric shock or fire.
2. To clean the unit, a neutral detergent and soft cloth is recommended. Do not use coarse cloth, strong chemicals or organic solutions.
3. Do not use water, Benzene, Thinner or any alcohol for cleaning the product. It may cause discoloration, damage, an electric shock or fire.
4. If you expect damage by a chemical during cleaning, call technical support team.
5. Do not pour water directly into the unit. It may cause an electric shock or fire.
6. During cleaning of the chamber, be careful cleaning the corners to avoid injury.

- Cleaning Method of the Inner Chamber

- Remove the shelves equipped in the chamber. Clean the contaminated part using a neutral detergent and soft cloth.
- After cleaning, reassemble the shelves properly.
- Do not clean the unit aggressively. Otherwise, the coating or painting of the product could be damaged.

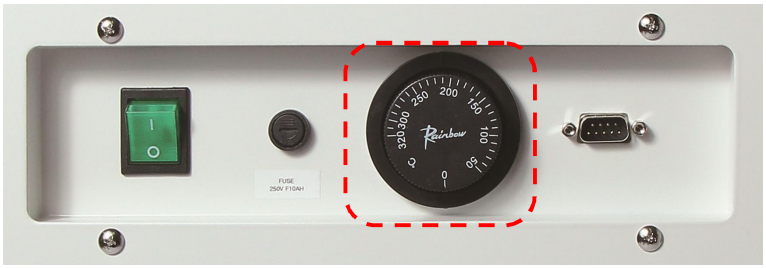
- Cleaning Method of the Exterior

- Clean the exterior using a neutral detergent and soft cloth.
- Do not clean the display or Jog-Dial Knob aggressively as they may be damaged.
- Do not clean the unit aggressively. Otherwise, the coating or painting could be damaged.

- Cleaning Method of the Parts

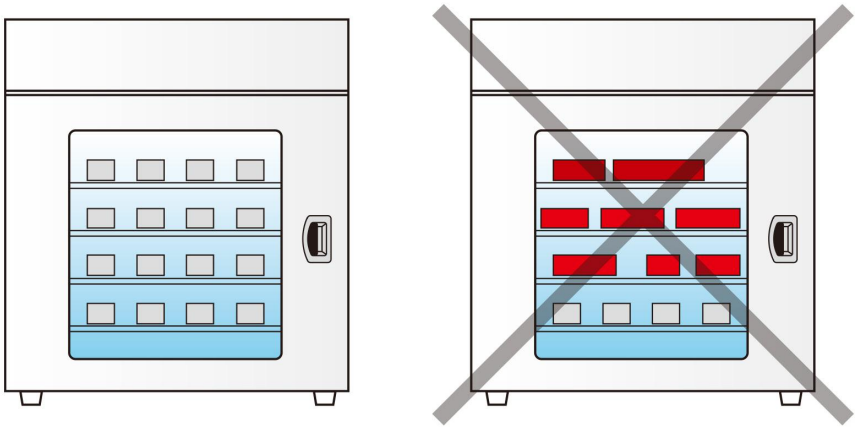
- Clean the parts using a neutral detergent and soft cloth.
- Do not clean the unit aggressively. Otherwise, the coating or painting could be damaged.

*** Check Safety Knob by Regulation.**



1. On the product Side, check the Safety Knob.
2. If the power of the product is OFF, check the 'Tak' sound in the vicinity of room temperature when slowly turning clockwise up to 320℃ after adjusting the Safety Knob to 0℃.
3. If the power of the product is ON, check the 'Tak' sound in the vicinity of current temperature of product when slowly turning clockwise up to 320℃ after adjusting the Safety Knob to 0℃.
4. 'Tak' sound is Normal, If 'Tak' sound is not occurred A/S is required.
5. Please check the progress on a regular basis. Proceed at least once to 6 months.

*** Sample loading method.**



1. Please don't place samples to the floor of inner chamber, it may cause overheating or fire.
2. For proper air circulation in the working chamber, please don't load samples too tightly and give enough and regular space between samples.
3. Please don't touch side or floor in the chamber, it may have high temperature still and may cause injury.

4. Products Management

4.3 If product Defect Occur

Situation	Confirmations and Solutions
If power does not turn ON.	Make sure that Power Cord is plugged well. Check that there are no problems in the power supplied. Make sure that the circuit breaker is in the ON position. Check the short circuit status of the fuse.
Power Failure	Check the power cord is plugged into wall socket. Check the supplied voltage is proper and regulated.
Heating, but temperature is fluctuated	Check the temperature that is currently set. Make sure that the power switch is in the ON position. Check that SAFETY Knob is not placed in the "0" position, and if SAFETY Knob is in the "0" position, sets up 30℃~40℃ higher than the service temperature.
Heating, but unit not reaching temperature	Check the Set Temperature is higher than ambient temperature (recommended min set temp: 10C higher than ambient temp). Problem in the sensor or main controller.
Fuse is blown OR circuit breaker is flickered.	Check power source of wall socket and see what other loads are on wall circuit.
※ If you have any problem other than the above, please call technical service of manufacturer or an official agent.	

5. Product Assurance

5

5.1 Quality Assurance

CERTIFICATE

of
Quality Tested by Manufacturer
and Free Warranty up to 2 years
for Laboratory Instrument

Limited Warranty

1. This instrument has gone through our testing process about all functions before shipment.
2. This instrument is warranted for 2 years from purchasing date.
3. A breakdown caused by customer's improper use or natural disaster is excepted from this warranty.
4. This certification is only for international customers.

Item	**Natural Flow type Oven**
Model No.	**ThermoStable™ ON-**
Serial No.	
Date	
Customer	

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