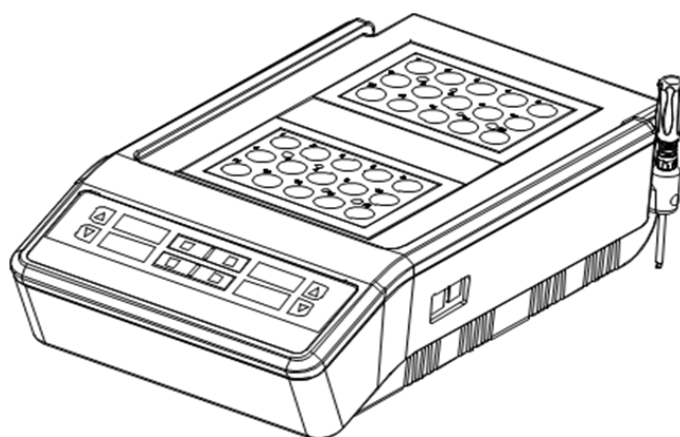




Operation Manual

Dual Temperature Digital Dry Block Incubator

Catalog No. INCUBATOR2



Rev C. April 2016

Thank you for your purchase. This manual contains operation information for the Dual Temperature Digital Dry Block Incubator (catalog no. INCUBATOR2).

Opening Check

Please check the instrument and packing list when you first open the instrument packing case. If you find there is something wrong or missing with the instrument, contact Hygiena at www.Hygiena.com.

Safety Warnings and Guidelines

1. Important operation information:

In order to use the instrument properly, please read the manual thoroughly before use.

2. Safety:

The operation, maintenance and repair of the instrument should comply with the basic guidelines below. Failure to comply may have an effect on the life of the instrument and the protection provided.



This product is an indoor Instrument which conforms to Standard B style- I type- GB9706.1.



Before using the device, read the manual carefully. These units are designed for use in laboratory environments. The device must be used by skilled personnel with the appropriate training.



The operator should not open or attempt to repair the Instrument by himself, which will result in loss of repair guarantee or may cause an accident. If there is something wrong with the Instrument, contact Hygiena.



A.C. power grounding should be reliable to safeguard against an electric shock. The 3-pin plug supplied with power cable is a safety device that should be matched with a suitable grounded socket.



Before turning the incubator on, verify the voltage matches the requirements. If the electric chord is damaged, the user should replace it with the same type. The user should assure there's nothing on the electric line and the user should not put the electric line in the ambulatory place. Hold the plug when removing from the socket, do not pull the electric chord.



The instrument should be operated in an environment with low temperature, little dust, no water and away from sunlight or strong lamp. The location should have good airflow, no corrosive gas or strong disturbing magnetic field. It should be far away from central heating, camp stove and other heat resources. The vent on the Instrument is designed for aeration. In order to prevent overheating, do not cover the vent. If you use the more than one Instrument the same time, the distance between them should be more than 100cm.



Power the instrument off when not in use. For extended non-use, unplug the electric chord and cover the incubator with a cloth to shield from dust.



In the case of the following scenarios, pull the connector plug from the jack at once and contact the vendor:

- There is some liquid flowing into the instrument.
- Fire damage.
- Abnormal operation: such as abnormal sound or smell.
- Dropped instrument or outer shell damaged.
- Any other major functionality change.

3. Maintenance & Cleaning

To ensure optimal functionality and thermal conductivity, the wells on the block should be cleaned regularly. Clean the wells with a soft, clean cloth, dampened with a little alcohol.



Turn the power off when cleaning the Instrument.
When cleaning the wells, do not drop cleaning liquid into the well.
Do not use corrosive cleaning liquid.

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Section 1 Introduction

The Dual Temperature Digital Dry Block Incubator Features:

- **Digital temperature and time displayed in LED**
- **Interchangeable metal dry blocks**
- **Easy replacement, cleaning and disinfection of blocks**
- **Built-in overheating protection**
- **Calibrating temperature discrepancy**
- **Buzzer alarm at the end of temperature control duration.**

Section 2 Specifications

1. Normal operating conditions:

Ambient temperature: 5°C ~ 35°C

Relative humidity: ≤70%

Power supply: AC100-120V~ 50-60Hz

2. Basic parameters and characteristics

Basic parameters:

Parameter \ Type	INCUBATOR2
Temperature range	RT+5°C ~ 105°C
Timing time	Max. 99h59min.
Temperature control accuracy	≤ ±0.5 °C
Display accuracy	±0.1 °C
Temperature uniformity	≤ ±0.5 °C
Heating time (20-105°C)	≤20min
Block	2pcs (sold separately)
Power	240W
Fuse	250V 4A Φ5×20
Meas.(mm)(L×W×H)	365x210x150
Weight (kg)	4.5

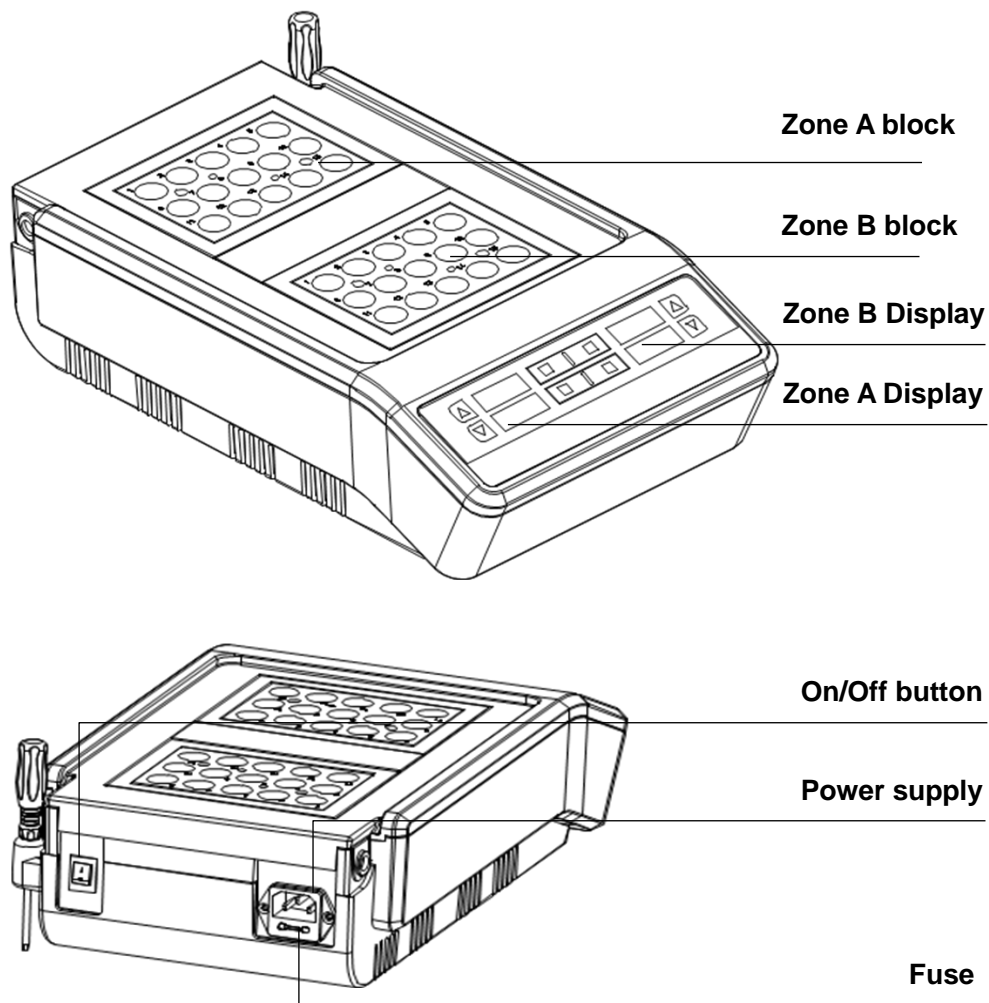
3. Optional products

Item No.	Type	Capacity + Diameter	Meas.(mm)
AS90925000050	IB001	35*9.1mm	108X72X49 mm
AS90925000060	IB002	15*17mm	108X72X49 mm
AS-01181-27	External sensor	PT1000	
AS-01181-28	Lifter	M4	

Section 3 Basic Instructions

This section focuses on the introductions of the structure, keypads and key-functions of the instrument, as well as preparatory work before starting.

1. Incubator structure overview



2. Keypads



3. Display

Set

Set key: Used in conjunction with the Down or Up keys to set the temperature and time.



Down key: decreases number.



Up key: increases number.

Start Stop

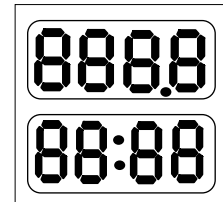
Start/Stop key. After temperature and time is set, press this key to start. Also, press this key to stop when running.

Tip: The keys in Zone A and Zone B will respectively control their own zones.

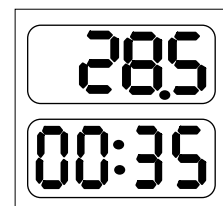
Section 4 Operation Guide

1. Temperature and Time Setting

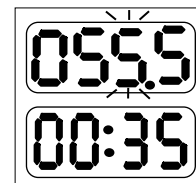
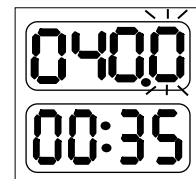
- a) Press the On/Off button on the back of the instrument; the display flashes 3 times, then goes into the initial state with the sound of “beep”.



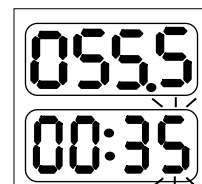
- b) After about 3 seconds, the temperature will automatically go up to the set temperature. For example, in the diagram to the right: The 28.5 on display is the temperature of the block (indicating that the temperature is now 28.5°C). The 00:35 on display, is the previously set running time. (It indicates that the running time is 35min).



- c) Press the “Set” key, then release immediately. The displayed temperature is the value set at last use. For example, (see the diagrams to the right), the flashing digit indicates that number can be modified. Press the ▲ or ▼ key to modify the temperature. Press the “Set” key again, then release immediately to set the temperature and select time.



- d) The displayed time is the value set at last use. For example, in the diagram to the right: 00:35 (35min) decimal digits in the rightmost position is flashing. The digit flashing indicates that it can be modified. Press ▲ or ▼ to modify the time.



Press “Set” again. Wait 6 seconds to confirm the input temperature and time. Now the temperature will automatically go up to the set temperature.



2. Running and Stopping a Program

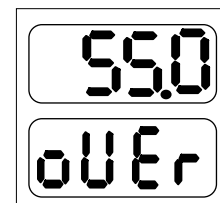
- a) After the temperature and time are set, the instrument temperature will begin to rise up to the set temperature automatically. Press the “Start” key and immediately release. The display time countdown will begin with the sound of "beep".



Tip: If the decimal point is regularly flashing, this indicates that the instrument still in the status of temperature control. The timing has not yet begun. A constant decimal point (no flashing), indicates the instrument is ready, timing begins.



When timing ends, running stops and the buzzer alarms. The temperature remains at the set temperature, and display reads “over”, indicating the time is over.



- b) After running ends, the instrument will wait for further instruction at the ending interface. The user can now reset the temperature and time. Press the “Start/Stop” key and the program will run according to the set temperature and time.
- c) Press the “Start/Stop” key to stop running. Press the “Start/Stop” key again to start.

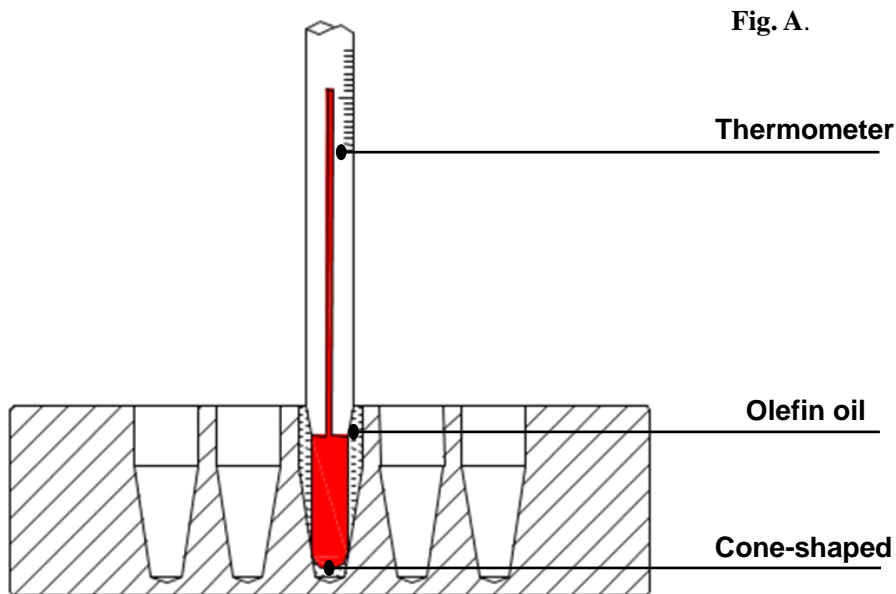
3. Temperature Calibration

The temperature of the instrument has been calibrated before it was sent to you. If for some reason, there is a deviation between the actual temperature and the displayed temperature, the user can recalibrate the temperature to correct the error. There are 2 methods of temperature calibration for this instrument: 1. by thermometer, 2. by external sensor. (*the external sensor is an optional part which needs to be ordered separately.*)

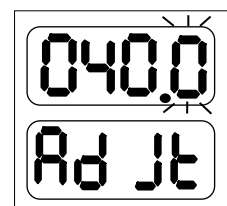
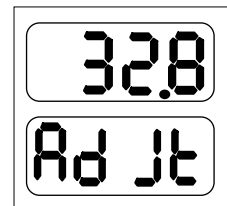
Caution: the instrument uses double temperature adjustment to ensure its accuracy. This means that it is linearly adjusted on two points. The temperature accuracy will be within ± 0.5 after the double temperatures adjustment. Both the ambient temperature (in the room) and the block temperature should be lower than 35 °C before calibration.

3.1. Thermometer Calibration Instructions:

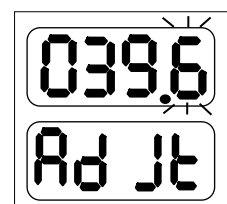
- a) After the startup of the instrument, make sure the temperature on the display screen and the ambient temperature in the room is below 35 °C. If the temperature is higher than 35 °C, wait until the temperature is below 35°C.
- b) Inject olefin oil (mineral oil) into one of the cone-shaped wells, and then put a thermometer into this well (the precision of the thermometer should be within 0.1 °C and the temperature ball should be completely submerged into the cone-shaped well). See Fig A.



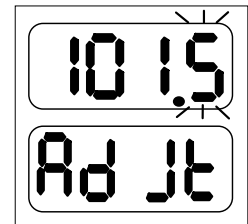
- c) Press the “Set” and “▼” key at the same time for 3 seconds to enter temperature calibration mode. At this point, “Ad Jt” is displayed. The temperature displayed is the current temperature. The temperature will begin to rise to 40.0°C automatically. When the temperature reaches 40.0°C constant temperature, the decimal digit begins to flicker, waiting for the calibrated value of 40.0°C. Let the incubator sit at this temperature for 20 minutes. After 20 min., read the actual value from the thermometer and modify the display temperature by pressing the ▼ or ▲ keys. Then press “Start/Stop” to confirm the input value.



TIP: Please wait the full 20 minutes to read the actual value of the thermometer to ensure the calibration accuracy. For example, if the actual temperature of the thermometer is 39.6°C, modify the temperature to 39.6 by pressing ▼ or ▲. Then press “Start/Stop” to confirm the input value.



- d) Next the instrument will heat to 100°C automatically. When the temperature reaches 100°C constant temperature, the decimal digit begins to flicker, waiting for the calibrated value of 100°C. Let sit for 20 minutes then read out the actual value from the thermometer and modify the display temperature by pressing the ▼ or ▲ keys. Then press the “Start/Stop” key to confirm the input value.



TIP: Please wait the full 20 minutes to read the actual value of the thermometer to ensure the calibration accuracy. For example: If the actual readout is 101.5°C, modify the temperature in display to 101.5°C by pressing ▼ or ▲. Then press the “Start/Stop” key to confirm the input value.

Use the same method to calibrate the temperature deviation for both zone A and B.

e) Canceling Calibration

Pressing the “Set” and “▼” keys simultaneously during the temperature calibration will exit the temperature calibration program. The system will keep the former calibration.

3.2. External Sensor Calibration Instructions:

Note: The external sensor is an optional piece that is ordered separately.

- a) After turning the instrument ON, make sure the temperature displayed is below 35°C. If the temperature is higher than 35°C, wait until the temperature is below 35°C.

b) Put the external sensor into a block well.

See Figure B.

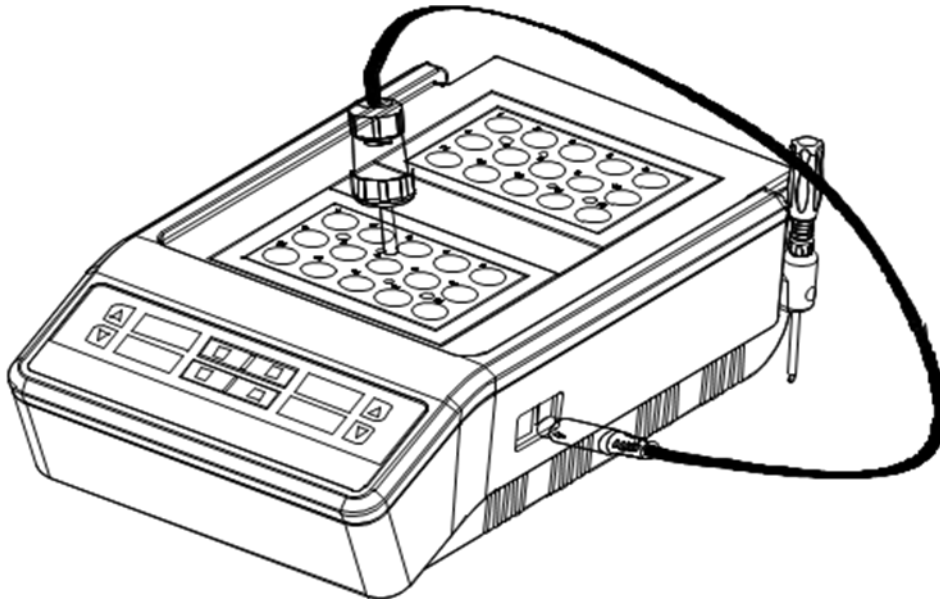
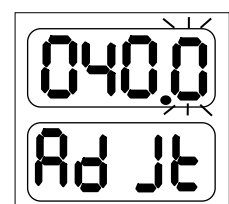


Fig. B.

- c) To enter the temperature calibration interface, Press the “Set” key without releasing, then press “Start/Stop” key at the same time for 3 seconds.
(see diagram to the right.)

At this point, “ E R d J ” is displayed, which indicates it is in external temperature calibration mode. The temperature displayed is the external sensor’s current temperature and it begins to rise to 40.0°C automatically. It will automatically display “ R d J t ” six seconds later. The upper display (32.0) is the current temperature of the external sensor.

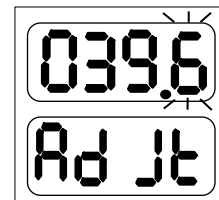
When the temperature reaches to 40°C constant temperature, the decimal digit will begin to flicker,



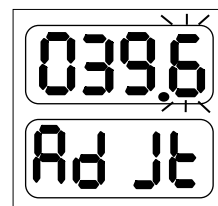
waiting for the calibrated value of 40°C. Incubate for 20 min., then match the display temperature with the temperature displayed on the thermometer.

Note: Please read the actual value after 20 minutes temperature to ensure calibration accuracy.

Press the “Set” key to view the temperature value of External sensor, for example: 39.6 °C. Press “Set” again, or wait for 6 seconds. When you see “ Ad Jt ”, modify the displayed temperature to 39.6 by pressing ▼ or ▲. Then press ▲ to confirm the input value.

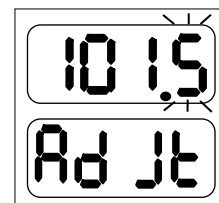


- d) Then the instrument will heat to 100 °C automatically. Wait until the instrument is at 100°C, and input temperature calibration value. After incubating 20 min., match the display temperature with the temperature displayed on the thermometer.



For example, If the actual readout of External sensor is 101.5°C, modify the temperature in display to 101.5 by pressing ▼ or ▲.

Then press “▲” to confirm the input value.



Use the same method to calibrate the temperature deviation in both zone A and B.

Cancelling Calibration: Pressing the “Set” key and the “▼” simultaneously during the temperature calibration will exit the temperature calibration program. The instrument will not be recalibrated.

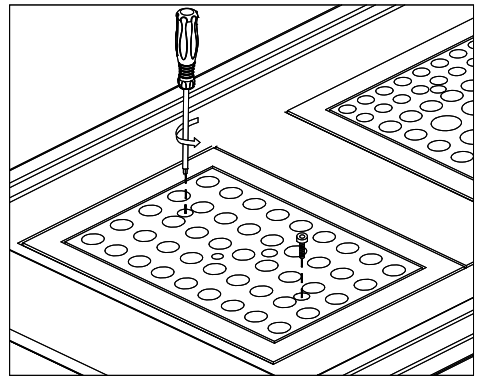
4. Temperature control by external sensor

- a) Insert the external sensor into a fixed well.
- b) Press the “Start/Stop” key then simultaneously press the “▲” key and hold for 3 seconds. The external indicator light will go on to indicate that it has entered into the temperature control mode of external Sensor.

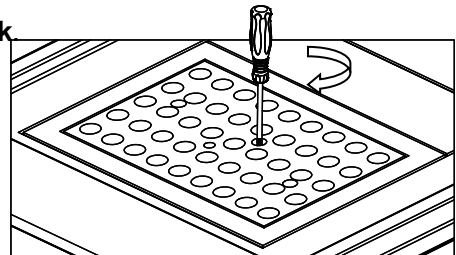
Tip: After entering into the external temperature control mode, the user can simultaneously press the “Start/Stop” key and the "▲" simultaneously to exit, while the external indicator light goes off.

5. How to exchange a metal block

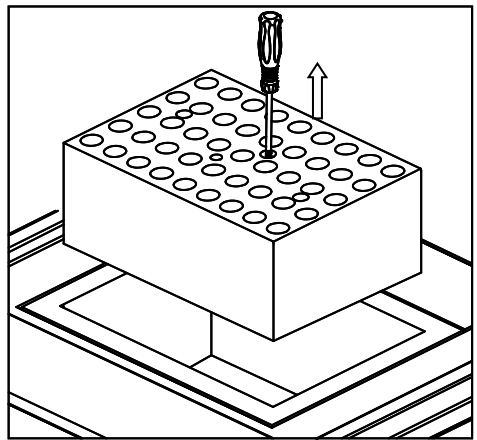
- a) Use the wrench (included) to remove the two screws which secure the metal blocks. To remove the screws, turn the wrench in a counterclockwise direction.



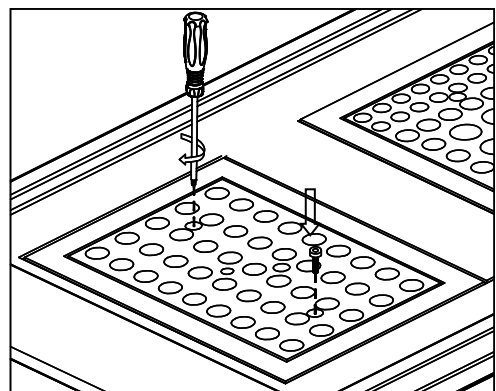
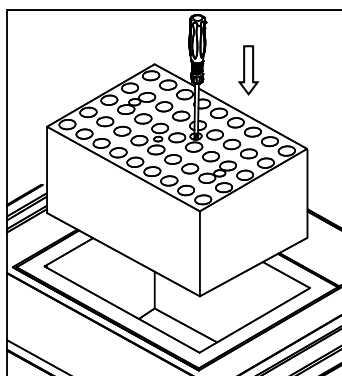
- b) Once the screws are removed, screw the Wrench clockwise in the center hole of the block.



- c) Pull the wrench up and out while connected to the block.



- d) Unscrew the wrench from the block, and affix it to another block. Then put it onto the instrument. Remove the wrench from the block, then secure the block to the instrument with the screws.



Section 5 Failure Analysis and Troubleshooting

Problems and actions

No.	Common problem	Possible cause	Action(s)
1	No display on the screen	No power on the main power plug	Check power supply and plug for damage, proper installation
		Faulty fuse	Change fuse
		On/Off button broken	Change button
		Others	Contact Hygiena
2	The actual and displayed temperatures are quite different	Broken sensor or loose contact of the block	Ensure block is secured with screws
			Contact Hygiena
3	“OPEn” displayed, alarming “beep”	Sensor disconnect	Contact Hygiena
	“SHOr” displayed, alarming “beep”	Sensor short-circuit	
	“HHHH” displayed, alarming “beep”	Sensor broken, or block temperature is too high	
4	No heating	Sensor broken	Contact Hygiena
		Heating tube broken	
5	Keys don’t work	Faulty key	Contact Hygiena

Questions?

Visit www.Hygiena.com for more information.

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Appendix: Wiring Diagram
(for reference only)

