



MagCore[®]HF48

Operation Manual

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Safety Precautions

Before use

These WARNINGS and CAUTIONS are intended to protect you and other persons from injuries and damages. To ensure safe operation, please follow them carefully.



CAUTIONS

**Risk Of Electric Shock
Do Not Open**



CAUTION:

To Reduce The Risk Of Electric Shock, Do Not Remove Cover (Or Back).
No User-serviceable Parts Inside. Refer Servicing To Qualified Service Personnel.



The lightning flash with arrowhead symbol, within an equilateral triangle, is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.



The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.



Be aware of contamination by contagious specimens.



High temperature warning!!

DO NOT touch the heating block with this sticker attached, it may cause serious burning injuries.

CAUTION:

1. Handle the power supply cord carefully

Do not damage or deform the power supply cord. If it is damaged or deformed, it may cause electric shock or malfunction when used. When removing from wall outlet, be sure to remove by holding the plug attachment and not by pulling the cord.

2. Do not open the top cover

In order to prevent electric shock, do not open the top cover.

3. Do not place anything inside

Do not place metal objects or spill liquid inside the MagCore® System. Electric shock or malfunction may result.

Note On Use:



Avoid high temperatures.

Allow for sufficient heat dispersion when installed on a rack.

Handle the power cord carefully.

Hold the plug when unplugging the cord.



Keep the set free from moisture, water, and dust.

Unplug the power cord when not using the set for long periods of time.



Do not obstruct the ventilation space.

Do not let insecticides, benzene, and thinner come in contact with the set.



Never disassemble or modify the set in any way.

Do not let foreign objects in the set.



SAFETY INSTRUCTIONS

- Read Instructions** – All the safety and operating instructions should be read before the product is operated.
- Retain Instructions** – The safety and operating instructions should be retained for future reference.
- Heed Warnings** – All warnings on the product and in the operating instructions should be adhered to.
- Follow Instructions** – All operating and use instructions should be followed.
- Cleaning** – Unplug this product from the wall outlet before cleaning. Only allow to use 75% of EtOH to clean the surface of instrument.
- Attachments** – Do not use attachments not recommended by the product manufacturer as they may cause hazards.
- Water and Moisture** – Do not use this product near water – for example, near a bath tub, wash bowl, kitchen sink, or laundry tub; in a wet basement; or near a swimming pool; and the like.
- Accessories** – Do not place this product on an unstable cart, stand, tripod, bracket, or table. The product may fall, causing serious injury to a child or adult, and serious damage to the product. Use only with a cart, stand, tripod, bracket, or table recommended by the manufacturer, or sold with the product. Any mounting of the product should follow the manufacturer's instructions, and should use a mounting accessory recommended by the manufacturer.
- Ventilation** – Slots and openings in the cabinet are provided for ventilation and to ensure reliable operation of the product and to protect it from overheating, and these openings must not be blocked or covered. The openings should never be blocked by placing the product on a bed, sofa, rug, or other similar surface. This product should not be placed in a built-in installation such as a bookcase or rack unless proper ventilation is provided or the manufacturer's instructions have been adhered to.
- Power Sources** – This product should be operated only from the type of power source indicated on the marking label. If you are not sure of the type of power supply to your home, consult your product dealer or local power company. For products intended to operate from battery power, or other sources, refer to the operating instructions.
- Grounding or Polarization** – This product may be equipped with a polarized alternating-current line plug (a plug having one blade wider than the other). This plug will fit into the power outlet only one way. This is a safety feature. If you are unable to insert the plug fully into the outlet, try reversing the plug. If the plug should still fail to fit, contact your electrician to replace your obsolete outlet. Do not defeat the safety purpose of the polarized plug.
- Power-Cord Protection** – Power-supply cords should be routed so that they are not likely to be walked on or pinched by items placed upon or against them, paying particular attention to cords at plugs, convenience receptacles, and the point where they exit from the product.
- Lightning** – For added protection for this product during a lightning storm, or when it is left unattended and unused for long periods of time, unplug it from the wall outlet and disconnect the antenna or cable system. This will prevent damage to the product due to lightning and power-line surges.
- Overloading** – Do not overload wall outlets, extension cords, or integral convenience receptacles as this can result in a risk of fire or electric shock.
- Object and Liquid Entry** – Never push objects of any kind into this product through openings as they may touch dangerous voltage points or short-out parts that could result in a fire or electric shock. Never spill liquid of any kind on the product.
- Servicing** – Do not attempt to service this product yourself as opening or removing covers may expose you to dangerous voltage or other hazards. Refer all servicing to qualified service personnel.
- Damage Requiring Service** – Unplug this product from the wall outlet and refer servicing to qualified service personnel under the following conditions:
 - When the power-supply cord or plug is damaged,
 - If liquid has been spilled, or objects have fallen into the product,
 - If the product has been exposed to rain or water,
 - If the product does not operate normally by following the operating instructions. Adjust only those controls that are covered by the operating instructions as an improper adjustment of other controls may result in damage and will often require extensive work by a qualified technician to restore the product to its normal operation,
 - If the product has been dropped or damaged in any way, and
 - When the product exhibits a distinct change in performance – this indicates a need for service.
- Replacement Parts** – When replacement parts are required, be sure the service technician has used replacement parts specified by the manufacturer or have the same characteristics as the original part. Unauthorized substitutions may result in fire, electric shock, or other hazards.
- Safety Check** – Upon completion of any service or repairs to this product, ask the service technician to perform safety checks to determine that the product is in proper operating condition.
- Heat** – The product should be situated away from heat sources such as radiators, heat registers, stoves, or other products that produce heat.

Spec

Model	HF48 (under development)
Processing Capacity	Max .48 samples per batch
System Feature	1. Special Cartridge rack, T-Rack, Tube Rack design for easy installation 2. Auto-cartridges locking
Power Supply	Voltage: AC 200V ~ 220V; Frequency: 50/60Hz;
Dimension	W1000 x D800 x H1600 (mm) W39.37 X D31.49X H62.99(inches)
Net Weight	250kg / 551.25Lb

— Operation Parameters

Processing Capacity	1~48 samples per batch
Sample Volume	200/400/1200 μ l
Elution Volume	60/100/150/200/300 μ l
Purity	O.D. 1.8 ~2.0 $A_{260}/_{280}$ ratio

— Operation Environment

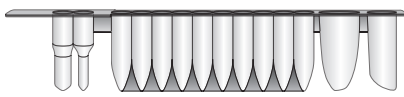
Temperatures allowed during transportation storage packaging	15° C~35° C
Temperatures allowed during operation	+18° C to +30°C
Pollution Degree	Indoor

— Applications

Whole Blood (200/400ul), Viral Nucleic Acid (DNA/RNA), Tissue Genomic DNA, Plant Genomic DNA
Bacteria Kit, Total RNA Kit

Attachments

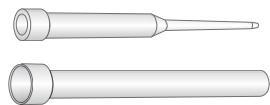
System Test Tools



Cartridge X 20

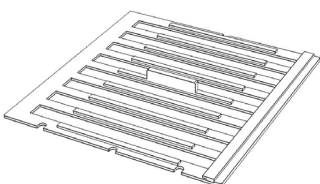


Sample Tube X 50

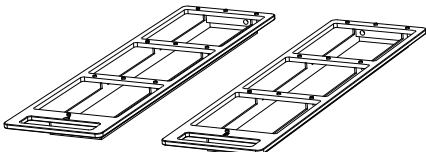


Tip / Tip Holder Set X 50

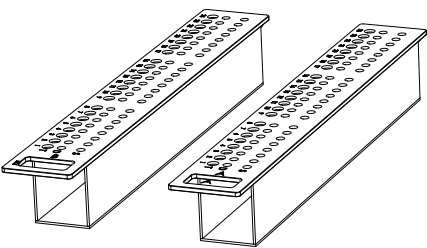
System test tools should be kept in clean places and the loss should be avoided.



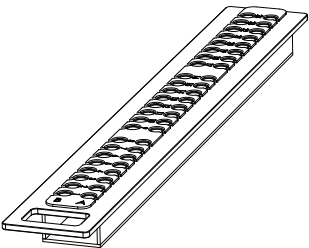
Cartridge Rack X 6



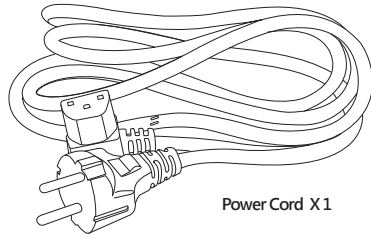
Cartridge Carrier B X 1 / Cartridge Carrier A X 1



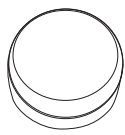
Tip Carrier B X 1 / Tip Carrier A X 1



Elution Carrier X 1



Power Cord X 1



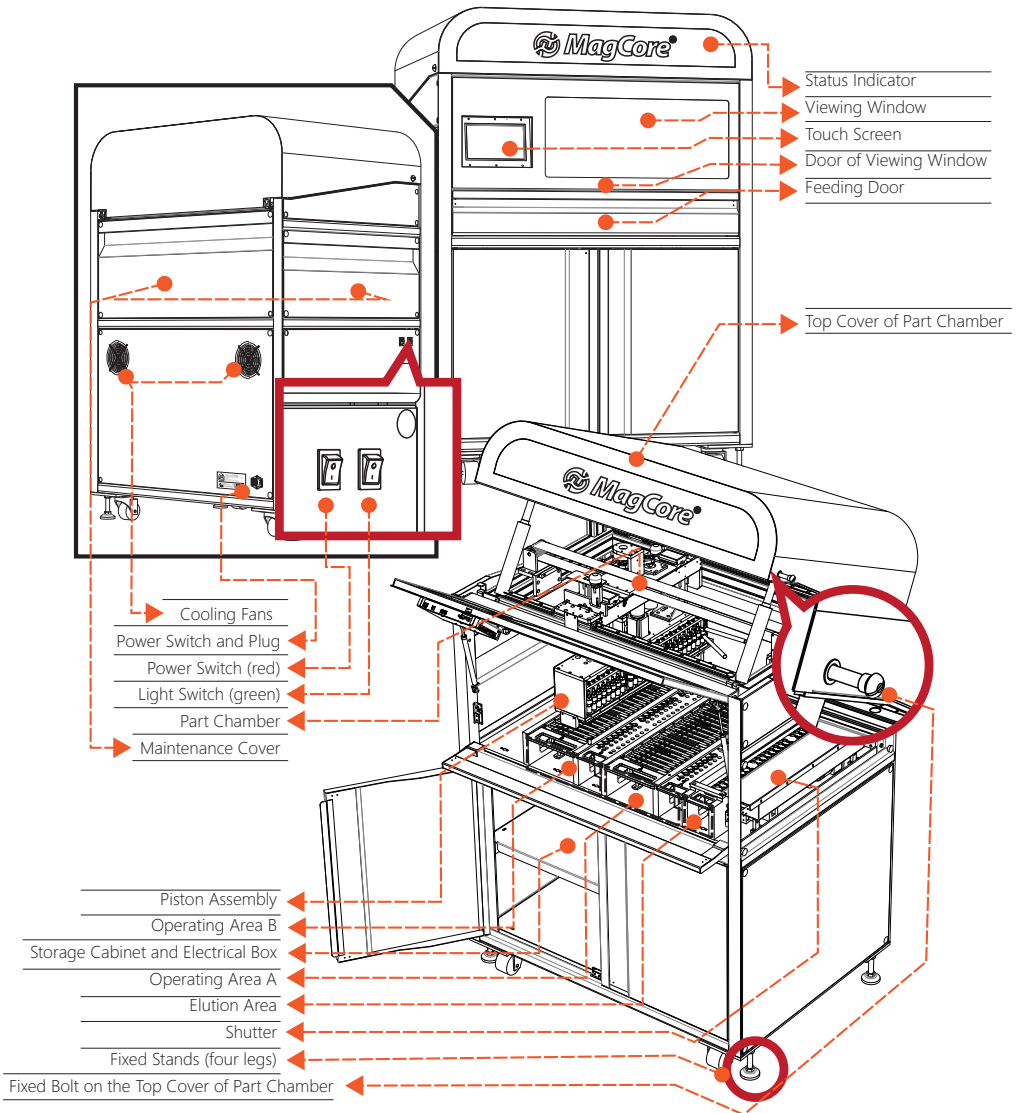
Lubricant X 1



O-Ring X 24

MagCore HF48 Tottle Weight	250kg / 551.25Lb
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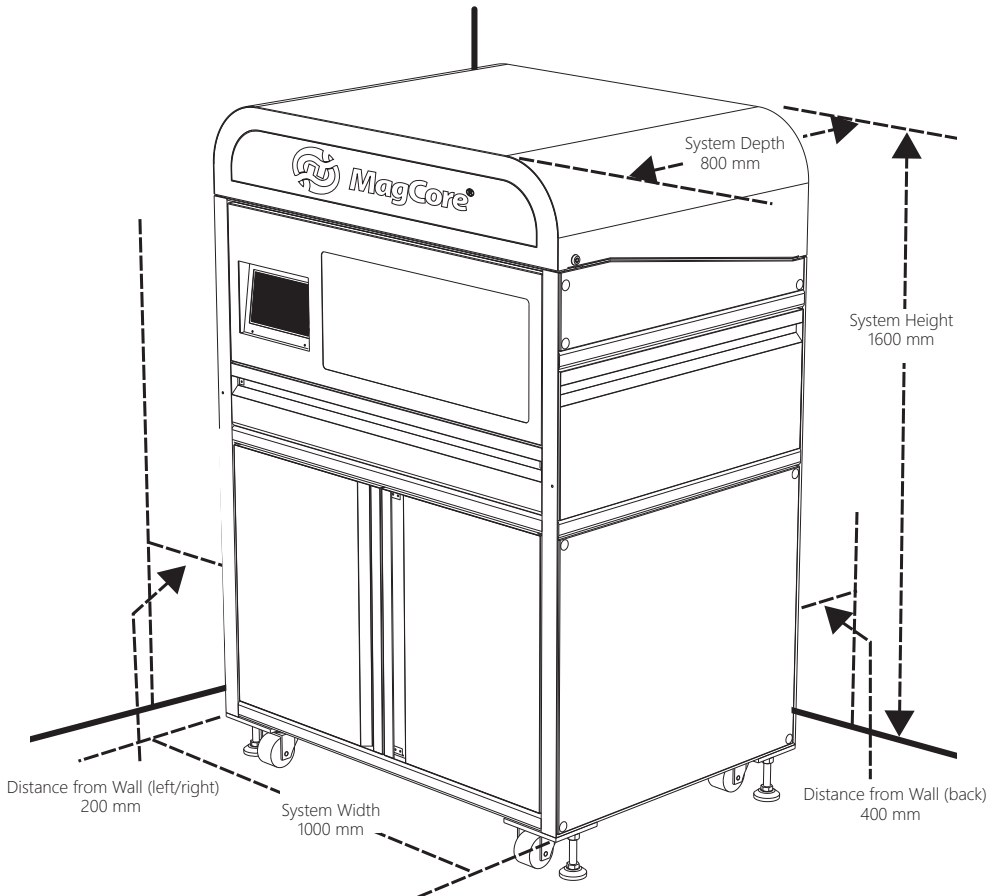
System Overview



Installation

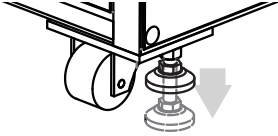
— Before Installation

Please find out a flat position close to outlet and keep sufficient space for system installation and ventilation before installation.



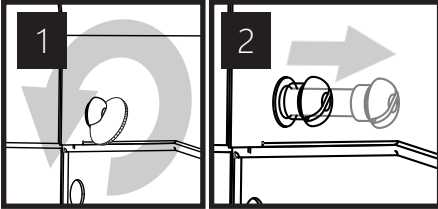
When installation the system, please make sure the elevation difference by using level rail for measurement and fixed stands for fine-tuning.

— Install MagCore



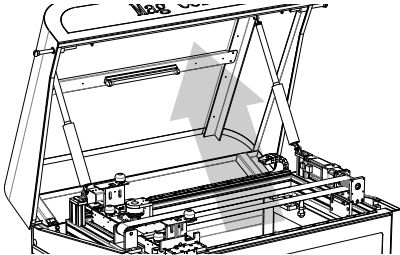
Please refer to the position reference shown on page 5, locate the system in an appropriate place, put down the four fixed stands for fine-tuning according to the ground level, and tighten fixed screws.

▼ Next Step



Rotate and pull out the fixed bolts on both sides of the top cover of part chamber by coins.

▼ Next Step

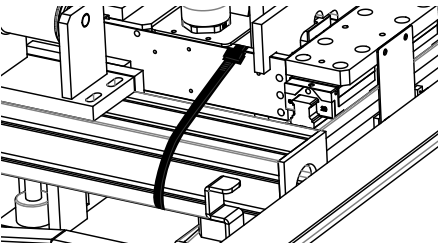


Open the top cover of part chamber by using the fixed bolts on the top cover of part chamber as holders.



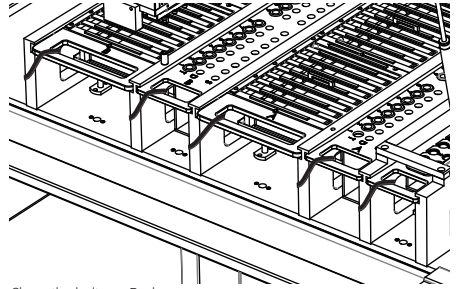
Please note the weight of the top cover of part chamber. The step may need two people to accomplish.

▼ Next Step



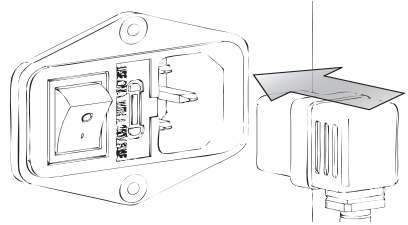
Shear the transportation belt and return the top cover of part chamber.

▼ Next Step



Shear the belts on Racks.

▼ Next Step

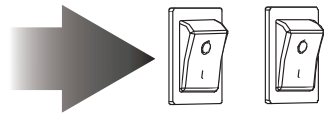


Plug the power cord and turn on the main power.



Make sure that the voltage of the outlet is 220V ~ 240V. Keep hands dry. Also, make sure that the machine remains off, and insert the plug and then turn on the power switch.

▼ Next Step



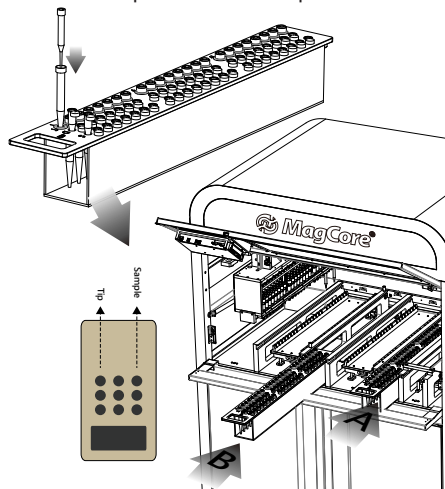
Turn on the power (red) and the system will be initialized automatically.



Please set the local time (refer to page 19) for the first installation, and perform test according to "Piston Test" (page 15)..

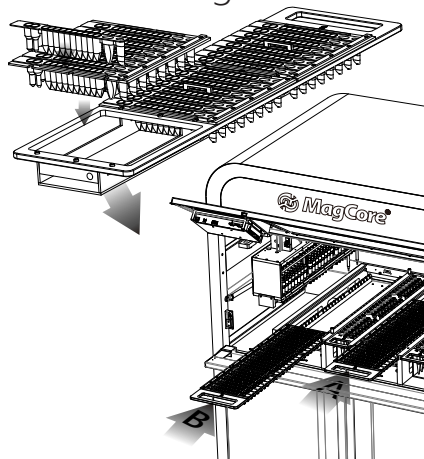
Please finish reading the operation manual before any operation!

— Install Tip and Sample Tube



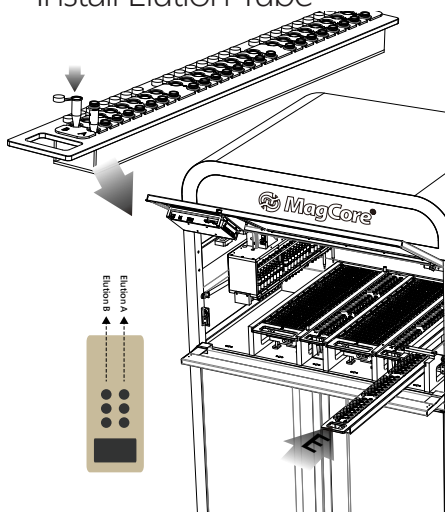
Insert Tip and Sample Tube into the slots of Tip Carrier. After that, place the entire set of Tip Carrier in the slots of A area and B area according to marks, respectively.

— Install Cartridge



Insert Cartridge into Cartridge Rack, and then place Cartridge Rack in Cartridge Carrier. After that, place the entire set of Cartridge Carrier in the slots of A area and B area according to marks, respectively.

— Install Elution Tube

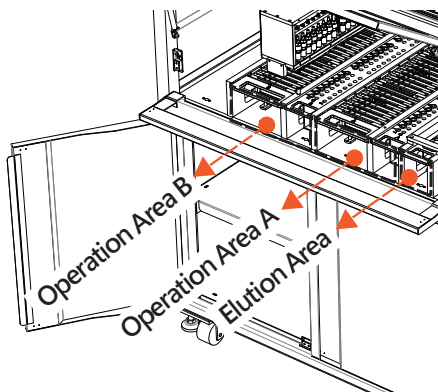


Place Elution Tube in corresponding positions according to A area and B area, and then place Elution Carrier in Elution slot.



Warning :

Carrier of area A may be used only in area A, whereas Carrier of area B may be used only in area B. Incorrect use may cause the system inoperable because Carrier is not detected.



Warning :

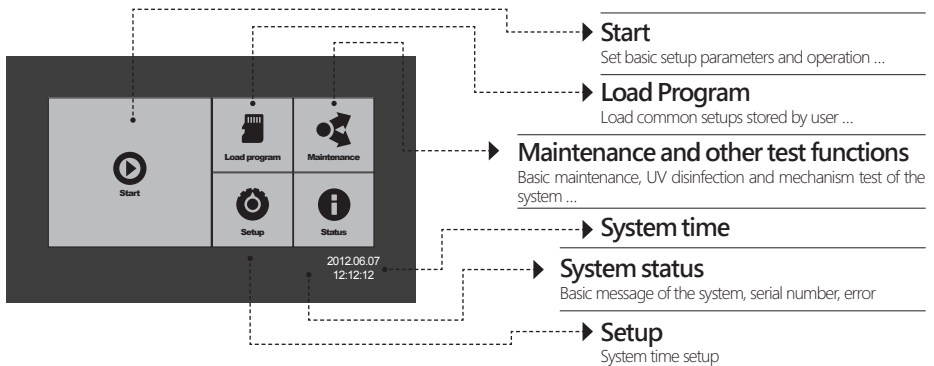
Do NOT use any other types of centrifuge tubes to replace the Sample Tube provided by the reagent set. The height of the Sample Tube prepared by customers themselves may be different from that provide by the reagent set and thus results in poor extraction result.

Touch Panel and User Interface

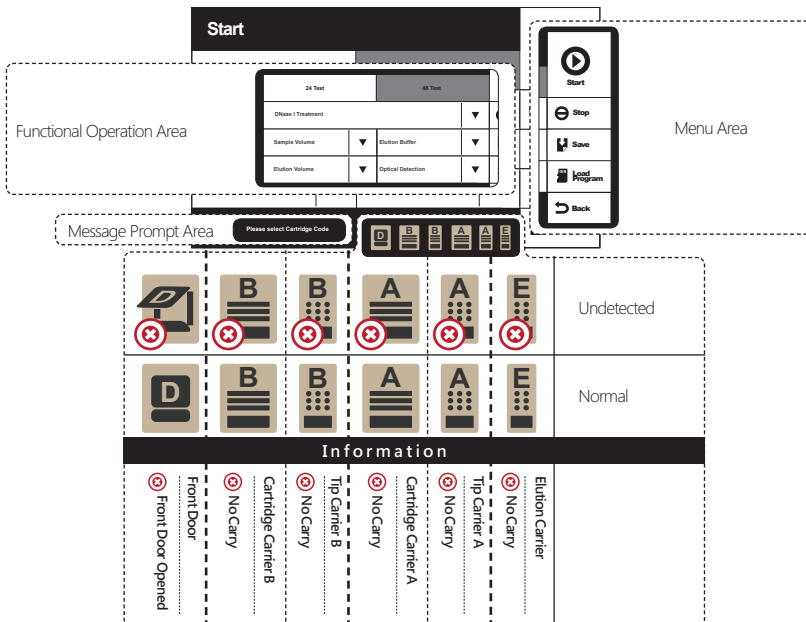


MagCore® HF48 provides 8.9-inch full-color touch screen and easily understood user operation interface. The operator may see the current execution status and end time of the system by only watching the screen.

— Main Menu



— Panel Functional Area

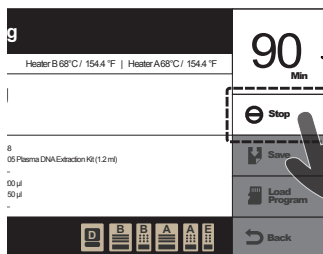


Emergency Stop and Warning



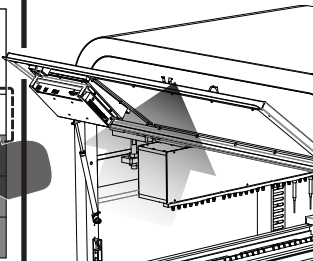
Please read this safety information such that the system can be immediately stopped when emergency occurs.

Method 1



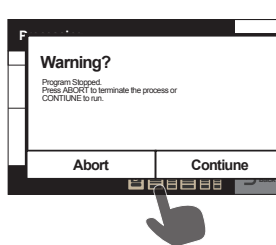
Press Stop key to stop all system operations immediately if there is emergency status or the system is desired to be interrupted when the system is under operation.

Method 2



The system will stop all system operations immediately if the front door is opened when the program is under execution because of the safety consideration.

Removal



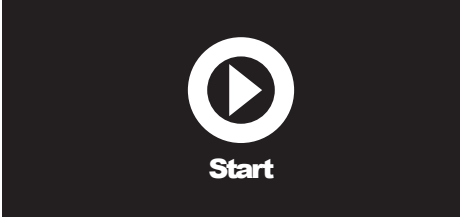
For the removal of emergency stop, select Continue on the screen to keep on unfinished procedures or select Abort to end all operations.



Warning :

It is strictly prohibited from putting hands in the operation area to prevent from injury when the system is under operation.

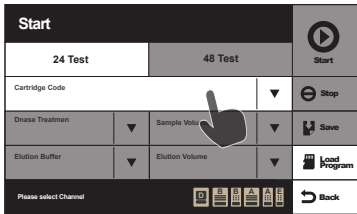
Start



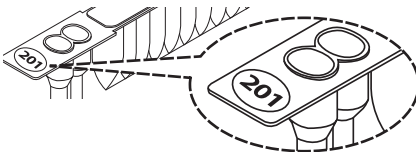
Press Start key in the main functional window.

Next Step

Select 24 or 48 test channels.



Select Cartridge number.
Cartridge number is marked on the Cartridge you use.



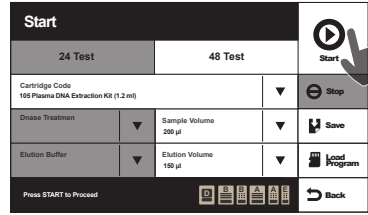
Please reconfirm the number you selected and select all parameters.

Next Step

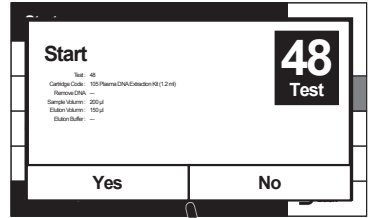


Confirm that the icon in the status bar is in normal status. If the icon shows , the Start key will be at "inactive" status and the operation is disabled. Please follow the display portion to remove error to solve. (Refer to page 8 for warning marks)

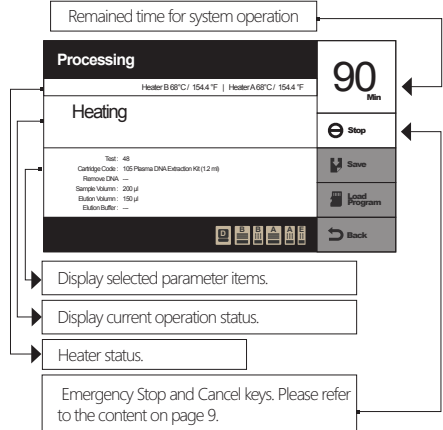
Next Step



When you finish input and press Start key, the system will show a confirmation window, on which there are the parameters you input. Please press Yes to operate the system if the parameters are not incorrect. Please press No to modify incorrect parameters if you want to modify.



Next Step



You may watch the procedure status and remained time of the current operation on the control panel. The system will display Complete page after completion.



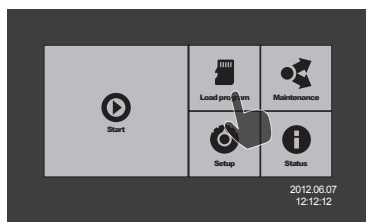
It is recommended not to open the viewing window or feeding door to prevent from poor extraction result in system operation if there is no emergency.



Load program

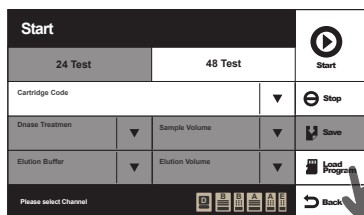
Load Program

You may memorize your commonly used programs in the system by self-defined names to simplify the convenience of system operation.



Press Load Program key to enter in the main menu to enter Stored Programs page

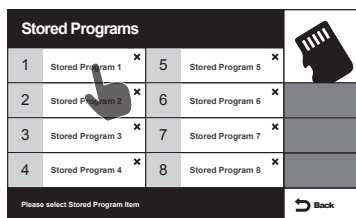
Or



Press Load Program key directly to enter Stored Programs page after entering Start page.

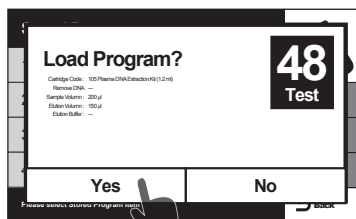
Next Step

Please select one of your programs.



Next Step

Check whether the parameters to be executed are correct and press Yes to load parameters



Press Load Program key directly to enter Stored Programs page after entering Start page Programs.

— Save Programs

You may memorize your 8 most commonly used programs in memory and create names for you to remember easily.

Please press Save key to enter Stored Programs page after all parameters have been selected on Start page.

▼ Next Step

Please select an item for creation or replacement.

▼ Next Step

Confirm the correctness of the parameters to be stored.

▼ Next Step

Enter the name you want to save and press Enter to save.

— Delete Programs

You may delete your commonly used parameters from memory.

Please press Load Program key to enter Stored Programs page after entering Start page.

▼ Next Step

Please select an item you want to delete by pressing X.

▼ Next Step

Confirm the correctness for the deletion of parameters and press Yes to complete the deletion.



Maintenance

Easy Maintenance

Easy Maintenance is for user's maintenance items, including systems such as sterilization, cleaning, easy test and error message report. User has to arrange maintenance items regularly to make sure that the system is in good status.

Maintenance	
UV Sterilization	Moving Test
Piston Test	Heater Test
O-Ring & Piercing Needles	Rejection Tip
DC Motor Operate	Update Program Files
Please select item	

UV Sterilization

UV Sterilization

Piston Test

Piston draining and leakage test

Moving Test

Continuously moving test for each component

Heater Test

Temperature test for heater

Update Program Files

Update programs

Rejection Tip

Make Tip rejection back to origin and system rejection

O-Ring and Piercing Needles

Procedures for Replacing O-Ring and cleaning piercing needles

DC Motor Operate

Raise or lower the protective cover of Elution and motor in AB area

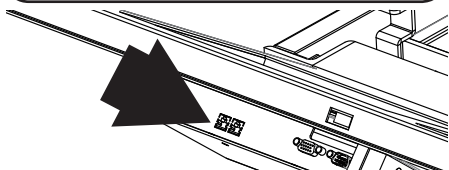
Update Program Files

Copy new programs in USB Flash Driver.

* Confirm the existence of "48ExtractorUpdateProgram" directory in USB Flash Driver



Please scan virus before insert USB Flash Driver.
Please do NOT change any file content in the directory 48ExtractorUpdateProgram.



Open the door of viewing window, insert USB Flash Driver (prepared by customer) into the USB slot on the back of the control panel.

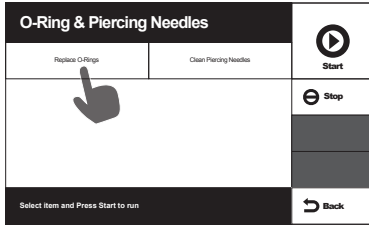
Piston Test	Heater Test
O-Ring & Piercing Needles	Rejection Tip
DC Motor Operate	Update Program Files
Please select item	

Select Update Program Files.

Maintenance	
Update Program Files?	
Yes	No

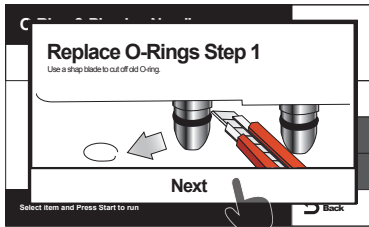
Press Yes to start update and the window will be closed automatically after the update is completed.

— Replace O-Rings



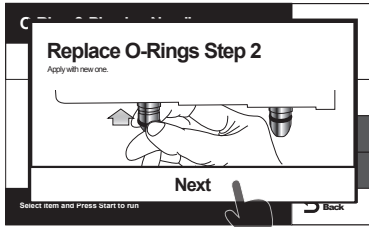
Select Replace O-Rings item and press START key to start.

▼ Next Step



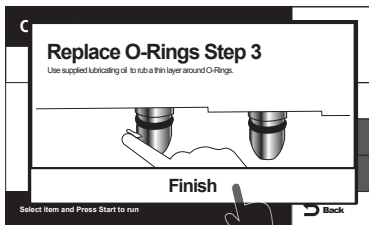
Follow the prompted step Use a sharp blade to cut off old O-ring. Press NEXT after completion.

▼ Next Step



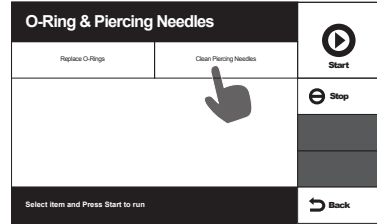
Apply new O-ring.

▼ Next Step



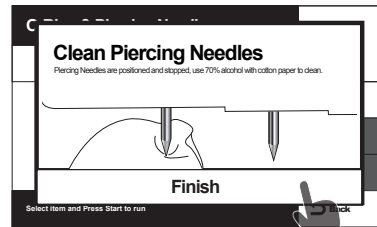
Press Finish to complete after lubricant is coated.

— Clean Piercing Needles



Select Clear Piercing Needles, and press START to start.

▼ Next Step



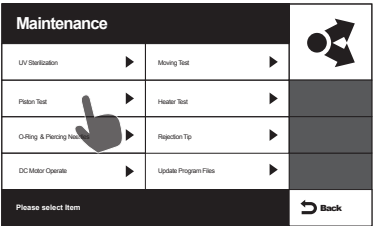
Please prepare a cotton paper with 70% alcohol added to clean.



Please do NOT use detergent other than 70% alcohol to clean.

Piercing needles are very sharp, please do not hurt your hands!

— Piston Test



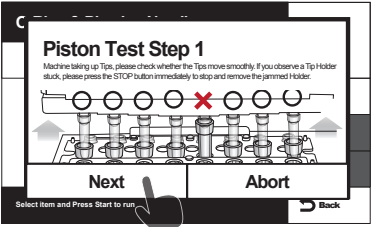
Select Piston test in Maintenance menu.

▼ Next Step



Please place the “system test tool” prepared in advance in A area (please refer to page 7), wherein put water of 1ml in empty Sample Tube, after that, select Start to start test.

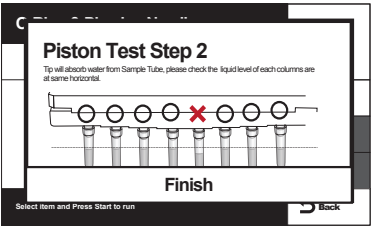
▼ Next Step



The purpose of this step is mainly to test the smoothness when the system takes up TIP.

The display shows Piston Test Step 1. The system will move to take up TIP. Please check whether TIP is taken up smoothly. If you find any sticking phenomena, please press Abort to stop test and move the stuck TIP back to Tip Holder and execute the program again. If the problem happens continuously, please contact your local dealer to handle. Press Next to go to the next step for test if the taking up is smooth.

▼ Next Step

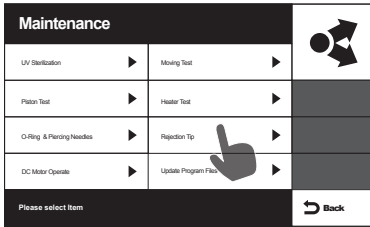


The purpose of this step is mainly to test TIP leakage of the sytem.

The system will absorb water from Sample Tube. Please check whether the liquid levels of each TIP are at the same horizontal or there is a gradually lowering situation. If the liquid levels are not at the same horizontal or there is a lowering situation, please press Finish to test again. If the problem happens continuously, please refer to page 14 to replace new O-Ring for problematic Piston and test this item again after replacement. If the problem is still not solved, please contact local dealer to handle.

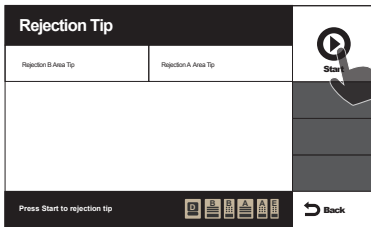
— Rejection Tip

This function is mainly for the system to perform rejection after emergency stop or operation interrupt due to outage etc.



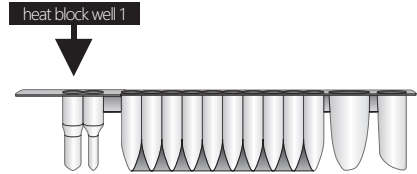
Select Rejection Tip in Maintenance menu

▼ Next Step



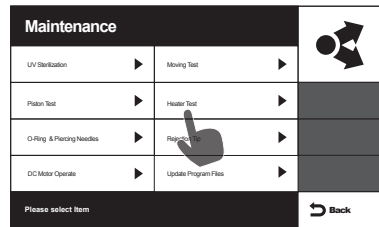
Please select Start to start the process of Rejection Tip. After the process is completed, the system will be rejected to position automatically.

— Heater Test



Please place the Cartridge for test prepared in advance on the Cartridge Rack for it to be located in the system and insert thermometer into it after the water of 500μl is put in heat block well 1 (indicated by the arrow)

▼ Next Step

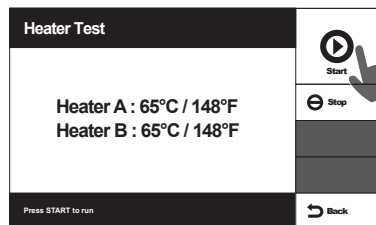


Select Heater Test in Maintenance menu.

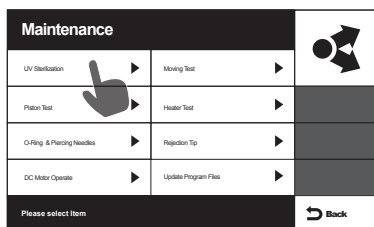
Press Start to start test. Concurrently, the touch screen shows the heater temperature tested currently by the system. Please compare to see if the temperature of your thermometer is the same. Please press Stop key if you want to stop test.



There difference between the temperature of the thermometer and that of the heater in the machine.



— UV Sterilization



Select UV Sterilization in Maintenance menu.

▼ Next Step

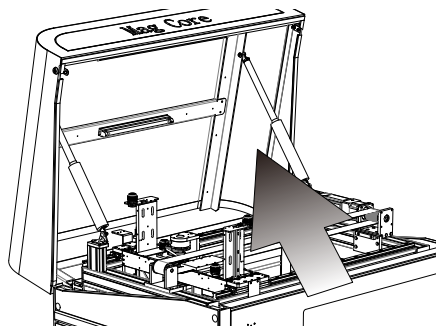


You may select 30min or 60min process in UV Sterilization menu. Press START key to start sterilization after selection. The touch screen will show the remaining time of sterilization at the same time and will show Complete picture after the sterilization is completed.

Please press Stop to stop if you want to stop sterilization.



— Replace UV Lamp

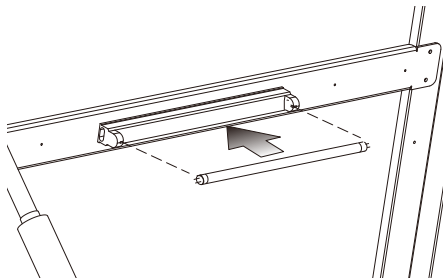


Open the top cover of the part chamber.



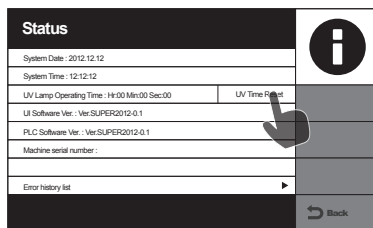
Please note the weight of the top cover of the part chamber. This step may need two people to complete.

▼ Next Step



Apply new UV lamp.

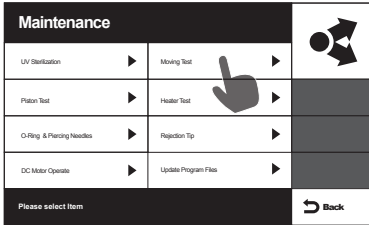
▼ Next Step



Select Status key in the main menu and press UV Time Reset key to reset the hours of UV lamp.

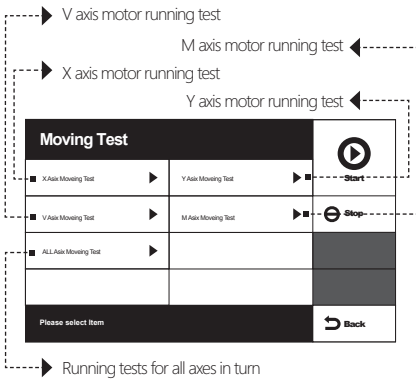
Please test to see if UV lamp is normal after replacement.

— Moving Test



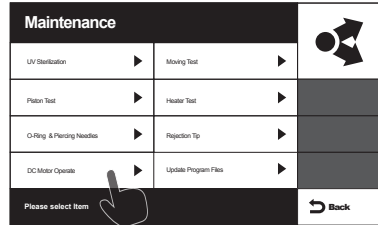
Select Moving Test in Maintenance menu.

▼ Next Step



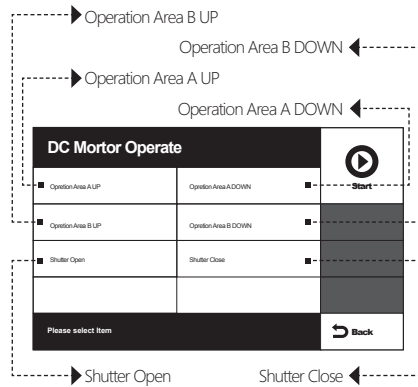
Select the items needed to test. Press Start to start test. The motor will run continuously until user press Stop.

— DC Motor Operate



Select DC Motor Operate in Maintenance menu.

▼ Next Step



All consumables are fixed in the system when test is stopped. As it is necessary, this control interface may be used to move up and down the operating area manually to take out consumables conveniently.

Refer to the area arrangement shown in page 7 for up/down area.

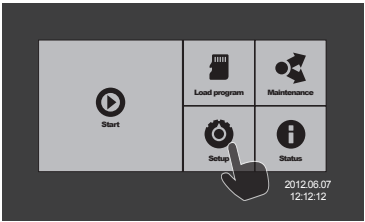
Select the area you want to move up or down and press Start to start up/down. It will stop automatically as the motor moves to the peak point.



Setup

You may set timing here.

— System Timing Setting



▼ Next Step

12 or 24 hour form may be set

► Year Setting

Time Setting		
Year: 2012	24h	
Month: 12	Hour: 12	
Day: 03	Minute: 12	
		Back

► Day Setting

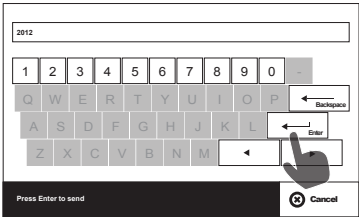
Hour Setting

► Month Setting

Minute Setting

▼ Next Step

Select the items you want to change.



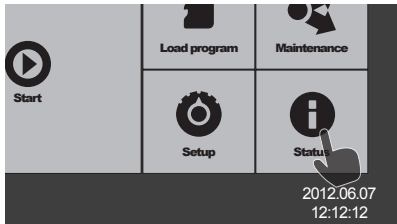
Enter setting value and press Enter to confirm.



Status

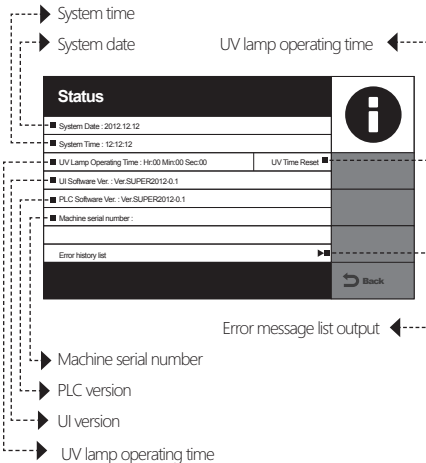
System Information

The system information records UI version, PLC version, system serial number, UV lamp operating time and reset and machine error list and output..



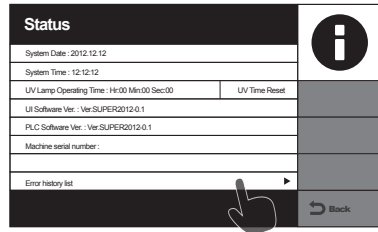
Select Status function in the main menu.

Next Step

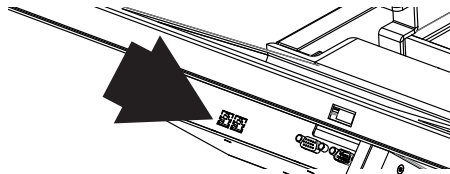


Export Error Record File

You may export error messages the system ever occurred from the touch panel to provide for engineers to determine the error or failure message generated by the system.

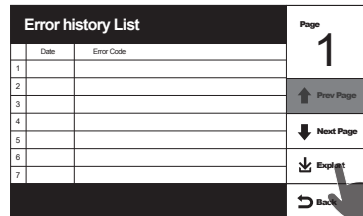


Next Step



Open the door of the viewing window, insert USB Flash Driver (prepared by customer) into the slot on the back of the control panel, and press Export key to export data to USB Flash Driver.

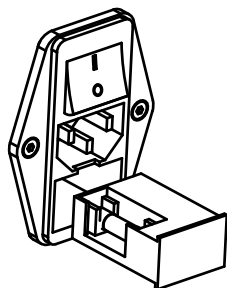
Next Step



After file is saved, the system will generate a .csv file in USB Flash Driver for you to open by Excel software. If engineer requests to export this file, please provide the file for the engineer to determine error or failure message of the system to remove failure quickly.

Others

— Replace Fuses



250V 5A



**Only Fuses of specified spec
could be used for replacement.
The danger of machine burning
may occur if higher ampere
fuses are used**

Turn off the power and unplug the power plug. Use a straight screwdriver to remove the fuse holder and apply the new fuse for exchange.

Please plug the power plug again and turn on the power after the fuse is replaced. Please unplug the power plug immediately and contact local dealer for assistance if burning continues.

Troubleshoots

Trouble	Possible Causes	Recommendations
Liquid dropped on tube cartridge holder or T-holder	Suction leakage, due to damage or wear of O-Ring of piston	Recommendations Please refer to system test and check liquid levels of each column are at the same horizontal.
Wrong liquid quantity moved	1. Suction head might be bent. 2. O-Ring of Piston is worn. 3. Reagent is reserved too long.	1. Check suction head. 2. Please refer to system test and check liquid levels of each column are at the same horizontal.
Liquid level over suction filter	1. Wrong sample materials. 2. Wrong sample tubes.	1. Please refer to MagCore® kit manual. 2. Please use the provided sample tubes.
No hole	V motor or connector works abnormally.	estart system. Please contact technical support if the problem still exists.
Axis not running	Motor or connector works abnormally.	estart system. Please contact technical support if the problem still exists.
Suction stuck	1. Base might be bent. 2. Spray suction head is at incorrect position.	1. Press the stop button immediately and apply new suction and base. 2. Contact technical support.



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