

## MagCore<sup>®</sup> Super MagCore<sup>®</sup> HF16 Plus Operation Manual

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RBC Bioscience Corp. 3F., No.132, Ln. 235, Baoqiao Rd., Xindian Dist., New Taipei City 23145, TAIWAN. TEL : +886-2-8912-1200 FAX : +886-2-8912-1300

REP Wellkang Ltd (www.CE-marking.eu) 29 Harley St. London W1G 9QR, UK





# **Safety Precautions**

## **Before use**

WARNINGS and CAUTIONS stated below are intended to protect the individual from injuries and avoid damage to machines.



## **CAUTION:**

To reduce the risk of electric shock, do not remove the cover. Refer to qualified service technician for inner part servicing.



Warning: Electricity



General Warning



Warning: Biological Hazard



Warning: High Temperature

#### CAUTION:

- 1. Handle the power supply cord carefully
- Do not damage or twist the power supply cord. Damaged or twisted cord may cause electric shock or error when used. When you remove it from the outlet, be sure to remove by holding the plug 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 inside the MagCore® System and wipe away all spilled liquid to minimize the risk of system error and electric shock.

#### Note On Use:



## SAFETY INSTRUCTIONS

- 1. **Read Instructions** All the safety and operating instructions should be read before operating the instrument.
- Keep the Instructions Please keep the safety and operating instruction manual for future reference.
- **3.** Cautions and Warnings All warning signs should be attached on the product and shown in the user's manual.
- 4. Follow Instructions All operating and use instructions should be followed.
- 5. Cleaning Unplug the product before cleaning. Use only 75% of EtOH to clean the surface of instrument.
- 6. Attachments Do not attach anything on the instrument.
- Liquid and Moisture Do not use this product near water and avoid moist areas - bath tub, wash bowl, kitchen sink, laundry, swimming pool or in a moist basement.
- 8. Proper Installation Do not place this product on an unstable cart, stand, tripod, bracket, or table. The product may fall and caues 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 tool recommended by the manufacturer.
- 9. Ventilation Slots and openings in the cabinet are designed for ventilation, which is required for safe operation and minimizing the chance of overheating. The product should be placed on a hard surface to ensure proper ventilation. This product should not be placed in a built-in installation such as a bookcase or rack unless proper ventilation is ensured or instructed by the manufacturer.
- 10. Power Sources This product should be operated only from the type of power source indicated on the label. If you are not sure of the type of power supply at your lab, consult the seller or local power company. For products intended to operate from battery or other sources, refer to the operating instructions.
- 11. Grounding or Polarization This product may be equipped with a polarized alternating-current plug. This plug will fit into the power outlet in one way only. 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.
- 12. Power-Cord Protection Power-supply cords should be routed so that they are not likely to be walked on or pinched by items placed near or against them. Pay extra attention to the plugs, convenience receptacles, and the connecting point where the cord extends out of the product.
- **13. Lightning** Unplug the product if it will not be used again for a long period or in the case of a heavy storm. This will prevent damage to the product due to lightning and power surges.
- **14. Overloading** Do not overload wall outlets, extension cords, or integral convenience receptacles as this can result in a risk of fire or electric shock.
- **15. Object and Liquid Entry** Never push objects of any kind into this product 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.
- **16. Servicing** Do not attempt to repair this product by yourself. Refer all servicing to qualified service technician.
- **17. Damage Requiring Service** Unplug this product from the wall outlet and refer servicing to qualified service technician under the following conditions:

a) When the power-supply cord or plug is damaged,

**b)** If liquid has been spilled, or objects have fallen into the product,

c) If the product has been exposed to rain or water,

**d)** If the product does not operate normally following the operating instructions. Adjust only controls 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,

e) If the product has been dropped or damaged in any way, and

f) When the product exhibits a distinct change in performance

- this indicates a need for service.

- 18. Replacement Parts When replacement is required, be sure the service technician uses replacement parts specified by the manufacturer or those with similar features as the original part. Unauthorized substitutes may result in fire, electric shock, or other hazards.
- 19. Safety Check Upon completion of any service or repairs to this product, ask the service technician to perform safety checks to confirm that the product is in proper operating condition.
- **20. Heat** The product should be situated away from heat sources such as radiators, heat registers, stoves, or other products that produce heat.

# **Specification**

Model	Super/HF16 Plus
Processing Capacity	Max.16 samples per batch
System Components	<ol> <li>Pipetting Unit: X and Y-axis movement for sample transfer and dispense.</li> <li>Electric Control: PLC module and ARM-based main board embedded in.</li> <li>UV Light: Power 8W, life duration 10,000 Hrs.</li> <li>D2 Lamp life: 800 hours. (MagCore Super Only)</li> <li>Heating Block: RT-90°C.</li> <li>OD detection range: ABS &lt; 6. (MagCore Super Only)</li> <li>Detection source: D2 lamp. (MagCore Super Only)</li> <li>Detection wavelength: 260nm, 280nm, 320nm.</li> <li>Display Screen: 7 inch colored touch panel.</li> <li>Accessories: T-Rack, Cartridge Rack.</li> <li>Barcode Scanner(MagCore HF16Plus optional), embedded thermal printer. (MagCore Super only)</li> </ol>
Power Supply	Voltage: AC 100V-240V; Frequency: 50/60Hz
Dimension	W760 x D710 x H770 (mm) / W27.95 x D29.92 x H30.31 (inches)
Net Weight	76.5kg/168.68LB (MagCore Super)/68.5kg/151LB (MagCore HF16 Plus)

## - Operating Parameters

Processing Capacity	1-16 samples per batch	
Processing Time	30-90 minutes (depends on sample type and method)	
Sample Volume	200/400/1200/4000 μl	
Elution Volume	60/100/150/200μl	
Duvity	DNA: $O.DA_{260/280}$ ratio 1.8 ± 0.1	
Puny	RNA: $O.DA_{260/280}$ ratio $2.0 \pm 0.2$	

## - Operating Environment

Temperatures allowed during transportation storage packaging	15℃-35℃
Temperatures allowed during operation	18℃-30℃
Pollution Degree	Level 2

## - Applications

Whole Blood DNA (200µl/400µl/1,200µl), Viral Nucleic Acid (DNA/RNA 200µl/400µl/1200µl), FFPE Genomic DNA, Forensic DNA, Plasma and Circulating Cell-Free DNA (1200µl/4000µl), Tissue Genomic DNA, Plant Genomic DNA, Bacterial DNA, Total RNA from Whole Blood and Total RNA from Cultured Cells.



You can purchase Cat. No.: MSC100 MagCore Cuvette Set (X100) from your local distributor.

# Installation

## - Before Installation



Please refer to the machine size shown in the above figure to prepare an appropriate position for the machine and reserve space for thermal dissipation.

## - System Overview





- 1. Please put MagCore<sup>®</sup> Cuvette into the corresponding sample's well. Cuvette can only be placed in one direaction. It is impossible to put it into the well if the direction is not correct.
- 2. Put the 200  $\mu l$  SP tip into the W4 of the T-Rack.

## - Install reagent cartridge



Please insert the front end of the cartridge into the space below the fixing plate of the Cartridge Rack.

7

Please insert the Cartridge Rack before the T-Rack.

## – Install Tube, Tip



- Put the tip into the corresponding well according to the left figure.
   Put the T-Rack on the machine.
- 2. Put the T-Rack on the machine.





Please install Tips and Tubes according to the instructions of extraction kit user manual.



## Warning:

Please do not use the Tips and Tubes that are not provided by the original manufacturer. The test result may be not correct and the machine may be damaged.

## - Installation settings and test

## Step 1.

Please set up the local time.



Please refer to System Status chapter for the information about the operation.

## Step 2. Test piston

Please refer to Piston Test chapter for the information about the operation.

Step 3. Test heater

Please refer to Heater Test chapter for the information about the operation.

.....

## Step 4 Test optic module (MagCore® Super Only)

Please refer to Optic Test chapter for the information about the operation.

When the optic module test is finished, please compare the result with the MagCore<sup>®</sup> Super System Teaching Data Sheet to make sure that the optic module is functioning properly.

# **Touch Panel and User Interface**



MagCore® Super / HF16 Plus provides 7-inch full-color touch panel and easy-to-use user interface. Operator only needs to pay attention to the panel to know the current status, ending time and test report of the machine. The above figure shows the function of the operation icons.



## Emergency Stop



Please read the security information to correctly stop the machine when an accident takes place.



When an emergency situation occurs and the machine is running, please press the stop button or open the door of the machine to stop the machine immediately.

#### MagCore® Super / MagCore® HF16 Plus

## - Start Programs

Please pretreat the sample according to the instructions of the MagCore® Extraction Kit User Manual and put tips and tubes into the machine.



Press Start to go to the next step.

Start B	arcode Scanning?
Yes	No

System will ask you whether or not to scan the barcode.



If there is a barcode record from previous test processes, the system will ask you whether or not to delete previous barcode record. If there is no barcode record, you will not be asked. (MagCore Super only; HF16 Plus optional)



Sel	ect	the	code	of the	cartridge.

Program Code: 610	D
No	Yes
Back	
Treatment	DNase Tr





#### Select Sample Volume.





# - If the optic test result is over detection limit

(MagCore Super Only)

Q	Program Comp 10X Dilution ?	Neted
Print Data	Yes	No
Program Completed		

If the test result of the optic test shows the concentration is over detection ( DNA >  $300ng/\mu l / RNA > 240 ng/\mu l$ ), the system will ask you to dilute.





- 5	Stop
-----	------



During the test process, please press the Stop button if you want to pause.

2-----

D			Program Code:
		Pause	
	Abort	Con	tiune
	Progr	am Processing	

Please press the Abort button if you want to end the test.





During the abortion process, modules will return to their original positions. Please do not operate the machine during the process.



The machine has been stopped and reset, please press the OK button to go back to the main menu.

## - Enable the barcode function

(MagCore HF16 Plus Only)



The barcode function of MagCore HF16 Plus is not enabled by default. If you already purchase the barcode scanner, you have to enable the scanner function.



#### Select maintenance.



## Select Scanner Setup.

Disable Scanner	Enable Scanner
Prev Prev	Back
Mainte	enance

#### Select Enable Scanner.



The Barcode function is enabled.

#### MagCore® Super / MagCore® HF16 Plus



Please select the Barcode button in the main menu.





Press the X button to delete saved barcodes.

You can press the Start button to execute the test after scanning.

Please refer to the System Overview chapter for information about the well numbers and their corresponding positions.

## -Optic test data

(MagCore Super Only)



## Please select the Optics Data button in the main menu.

#### [ Optics Data main menu ] The machine will automatically save two batches of data in the memory.

2 -----



#### Save file

Insert the USB Flash Drive and then press the Save button to store the current measured values after the USB icon shows in the status bar. Please take out the USB Flash Drive and you can perform other operations after the icon of USB Flash Drive disappears. Please refer to the System Overview chapter for the information about the slot number.

-----



Please save the data in the USB Flash Drive and transfer to computer, or the data in the USB Flash Drive may be overwritten later.

File name: OpticsSampleData.cvs Previous file name: Pre\_OpticsSampleData.cvs

# **Easy maintenance**



Easy maintenance includes the maintenance items which need to be done by users. These items include sterilization, clearing, simple test and error message report, etc. Users must perform these checkups periodically to ensure the system status is always good.

## - Replace O-Ring



Please select the Replace O-Ring button.

2 -----



- 1. Please disassemble the damaged O-Ring.
- 2. Replace a new O-Ring.
- 3. Greasing the O-Ring, and perform the Piston Test.

## - Piston Test

The Piston test includes the tests for three Tip types, which mainly test the tightness of Piston O-Ring and Tip, and the smooth of taking the Piston from the T-Rack.

UV	Motor Test
Reject Tip	Heater Test
Piston Test	Replace O-Ring
<b>Next</b>	Back
Maintenance	

Please select the Piston Test button.

#### Maintenance:

Please perform the Piston Test and grease the O-rings once a month.

#### A. Test the Tip of the W2.

- 1. Please put the Tip Holder Set (not provided in accessary) into the W2 of T-Rack.
- 2. Please add 1 ml water to the Sample Tube and put it in the W1 of the T-Rack.
- 3. Please select the Test W2 Tip.



4. The test can be divided into two stages. The first stage is to observe the smooth of taking the tip out of the Tip Holder. Please check whether the tip holder is taken out together with the tip. If the Tip Holder is taken out together with the tip, please reset the Tip Holder and try it again.



5. Please check whether the liquid levels of all tips are consistent with each other. If the liquid levels of all tips are not consistent with each other, please check the O-Ring (Please refer to the Replace O-Ring chapter for more information).



#### B. Test the Tip of the W3.

- 1. Please put the Pipette Tip into Well 3 of T-Rack.
- 2. Please add 1 ml water to the Sample Tube and put it in the Well1 of the T-Rack.
- 3. Please select the Test W3 Tip.



4. Please check whether the liquid levels in all tips are consistent with each other. If the liquid levels are not consistent, please check the O-Ring (Please refer to the Replace O-Ring chapter for more information).



#### C. Test the Tip of the W4. (MagCore Super Only)

- 1. Please put the 200µl SP Tip into Well 4 of T-Rack.
- 2. Please add 1 ml water to the Sample Tube and put it in Well1 of the T-Rack.
- 3. Please select the Test W4 Tip.



4. Please check whether the liquid levels in all tips are consistent with each other. If the liquid levels are not consistent, please check the O-Ring (Please refer to the Replace O-Ring chapter for more information).



## - Clean Piercing Needles



Please select the Piercing Needles button.

Stop

- 2
  - 1. Please prepare a soft cloth sprayed with 70% alcohol.

Piercing Needles

Next Step

2. Please clean the Piercing needles by the cloth.



## - Reject Tip

If the system is stopped from power shortage or other abnormal conditions, and the tips are still on the pistons, you have to press Reject Tip to remove the tips from the pistons.

UV	Motor Test
Reject Tip	Heater Test
Piston Test	Replace O-Ring
<b>V</b> Next	Back
Mainte	enance

Please select the Reject Tip button.

## – Heater Test

Before testing the heater, please add 500µl water into the heat block well 1 (as shown by the arrow) of the cartridge, then put the cartridge into the cartridge rack and put the thermometer in the water.



Please select the Heater Test button.



#### Please select the Yes button to start the test.



Now the heater will heat up to 60° C, please check whether the temperature shown on the thermometer is consistent with what's shown on the screen.

The acceptable temperature range is  $60 \pm 5^{\circ}$  C.

## - Optic Test

#### (MagCore Super Only)

Please put the cuvette in the attachment pack into the cartridge rack before the optic test without any liquid or 200µl SP tip.



Please refer to the Install MagCore® Cuvette chapter.

Piercing Needles	Alarm History
Update Program	System Status
Vender	Optic Test
Prev Prev	Back
Maintenance	

Please select the Optic Test button.

Empty Cu	vette	Reference
A Prev		Back
Maintenance		

Please select the Empty Cuvette and then wait for 15 minutes to perform the test.



It may take some time to warm up the D2 lamp. The screen will show the measured values after the test is finished. You can insert the USB Flash Drive and then press the Save button to store the current data after the USB icon shows in the status bar. Please take out the USB Flash Drive and you can perform other operations after the icon of USB Flash Drive disappears. The acceptable value should be over 7000.



Please save the data in the USB Flash Drive in a personal computer, or the data in the USB Flash Drive may be overwritten later.

File name: OpticalCuvetteCount.cvs



Please select the UV button.



Please select the sterilization time.



## - Alarm History

If the machine malfunctions or the following messages appear, the engineers may ask you to download the error records for them to diagnose the machine in advance.

Error Please refer to user manual or contact your local engineer.	
	Back
Alarm Message	
Piercing Needles	Alarm History
Update Program	System Status
Vender	Optic Test
Prev	Back
Maintenance	

#### Please select Alarm History.



#### Save files

Insert the USB Flash Drive and then press the Save button to store the current data after the USB icon shows in the status bar. Please take out the USB Flash Drive and you can perform other operations after the icon of USB Flash Drive disappears.



Please save the data in the USB Flash Drive and transfer to computer, or the data in the USB Flash Drive may be overwritten later.

File name: AlarmHistory.cvs

## - System Status

You can check the system status and set up the system time in the menu.



Please select System Status.



#### Information

Modle :	System model
HMI Ver. :	Human-machine interface version
UI Ver. :	Program version
PLC Ver. :	PLC version
Optics Ver. :	Optic module version (MagCore Super Only)
Optics Serial :	Optical module serial number (MagCore Super Only)
Power on Time :	The total time that the machine has been turned on
UV Lamp Used Time :	The used time of the UV lamp
D2 Lamp Used Time :	The used time of the D2 lamp (MagCore Super Only)



Select System Time Setup to set up the system time of the machine.

## Set up the system time



Please input the local date and time and then press the Update button to save the system time. You can see the time that you changed in "Current Time" after the change is finished.

## - Update Program



You can use the USB to update the system.

Please copy the downloaded program to the root directory of the USB Flash Drive. Then insert the USB Flash Drive into the USB Port of the machine. Please press "Update Program" after the USB icon appears in the status list.



Please select YES.



The update is finished, please press OK to check whether the UI version is correct.



- Clean the Waste Box



Please dump the waste when the program is completed, and wash the waste box every time.

## - Replace thermal paper



Open the cover of the printer and take out the thermal paper tube running out of thermal paper. Put the new thermal paper into machine according to the direction shown as the following figure and then close the cover of the printer.



If the position of the thermal paper roll is not correct, the red/yellow lamp will blink. Please press the Feed button to confirm the installation is finished.



You can purchase the Cat. No.: MSP005 Thermal Paper from your local distributor.

## - Replace fuse



Please use the specified type of fuse to minimize the risk of burning.

MagCore® Super / MagCore® HF16 Plus







#### **RBC Bioscience Corp.**

TEL: +886-2-8912-1200 FAX: +886-2-8912-1300 3F, No.132, Ln. 235, Baoqiao Rd., Xindian Dist., New Taipei City 23145, TAIWAN.

http://www.rbcbioscience.com