AusDiagnostics
Multiplexed Diagnostics | Affordable Healthcare

Instruction Manual

Automated Nucleic Acid Purification System

MP-Prep 24

Catalog No.: OP01019
Rev. Date: 20/February, 2020
Manual No. QW-IH01-06
Version: 1.0

EC REP

AusDiagnostics UK Ltd.
Unit 3, Anglo Business Park, Asheridge Road,Chesham, Bucks,HP5 2QA
United Kingdom

CE IVD

Contents

Introduction

Thank you for purchasing the MT-Prep 24 system which is a fully automated, standalone robot that can purify nucleic acids within 30-45 minutes. With advanced magnetic bead separation technology, it enables you to obtain high-quality extraction results. Moreover, the most user-friendly interface makes users free from troublesome parameter settings and maintenance.

This guide contains important information regarding the safe use of the MT-Prep 24 system. Please read this manual carefully before you start to run the system for the first time, especially for Safety Information.

If there is any question about how to install or operate the system, please contact our certified distributors/agents or email our technical support center (support@ausdiagnostics.com).

Manufacturer Info:

Manufacturer: AusDiagnostics Pty. Ltd.

Address: 290-292 Coward Street, Mascot NSW 2020, Australia

ABN 84 612 059 686

Tel: +61 2 9698 8030

E-mail: support@ausdiagnostics.com

Magnetic Bead Purification Process

Safety Information

The meaning of safety precaution marks are as follows:

WARNING:

"WARNING" indicates a dangerous condition that may lead to death or serious injury.

BIOHAZARD:

This symbol indicates that certain precautions must be taken when working with potentially infectious material.

CAUTION:

This symbol indicates that non-compliance with instructions or procedures may lead to physical injury or even death or could cause damage to the instrument.

Important:

"Important" points an important note for appropriate usage, as well as prohibited actions.

Note:

"Note" indicates the procedures that should be obeyed and supplementary information for use.

HOT SURFACE:

This symbol labels potentially hot surfaces on the instrument.

IVD

This symbol shows this instruments is an "In vitro diagnostic"-certified medical device.

For your safety and that of others, follow the guidelines provided in the following pages concerning the use of the MT-Prep 24 system.

About Instrument

WARNING:

- Ignoring the following notations may lead to fire or electric shock.
  - In countries other than Taiwan, US and Canada, use a power cable that meets your country's standard or contact your local distributor.
  - Do not use the MT-Prep 24 system with the voltage other than the voltage specified on the device.
  - Do not use the MT-Prep 24 system with a damaged power plug or a loose socket.
  - If there is dust on the prongs of the power plug or on the plug socket, remove it with a dry cloth.
  - When you disconnect the plug from the outlet, be sure to hold the power plug itself. Do not pull the power cable.
  - For maintenance, disconnect the power plug from the outlet.
  - Do not touch the power plug when you hear the crash of thunder.
- Do not pour any liquid on the MT-Prep 24 system.
- Do not place any objects containing liquid on the MT-Prep 24 system. Doing so may cause device failure, fire, or electric shock.
- If the device starts to smoke or smells strange, immediately unplug the power cable.

⚠ CAUTION:

- Never attempt to remodel the MT-Prep 24 system without the manufacturer's permission. Doing so may cause fire or electric shock.
- Do not place or drop objects on the MT-Prep 24 system. Also refrain from bumping or knocking it, as doing so may cause a failure or malfunction of the MT-Prep 24 system.
- If any liquid materials are left inside the device, wipe it up with a soft paper tissue, etc. Otherwise, the MT-Prep 24 system may be damaged.

- Repairs to the MT-Prep 24 system should only be performed by such agencies as are specifically authorized by the AUSDIAGNOSTICS LIFE SCIENCE CORPORATION.
- Only original the AUSDIAGNOSTICS LIFE SCIENCE CORPORATION replacement parts should be used.

  If the equipment is used in a manner not specified by the manufacturer, the protection provided by the equipment may be impaired.

About Reagent Kits

CAUTION:

- When handling any of the kits, refer to the respective handbook.
- Reagents in each kit should be handled by observing the safety information and precautions regarding the kit.
- Extraction should be performed in an appropriate laboratory or workplace.

Note:

- The kits are not supplied with the MT-Prep 24 system. Select the desired kit(s) and order it (them) separately.

About Samples

BIOHAZARD:

- Always wear appropriate gloves, a mask, and safety goggles, etc. when handling any infectious samples.

About Infectious Wastes

- When handling or disposing of infectious materials, follow the laboratory guideline or the law regarding infectious waste to perform proper incineration, fusion, sterilization, and/or disinfection.
- When you use a third party company to dispose of wates, outsource this work to an operator licensed to handle medical waste subject to special control, and give them the medical waste manifest at the same time.

AusDiagnostics Service Center

- For technical problem and instrument maintenance please contact our service center:

AusDiagnostics Pty. Ltd.

290-292 Coward Street
Mascot NSW 2020
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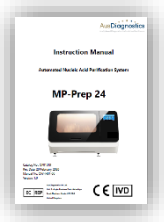
ABN 84 612 059 686

TEL. +61 2 9698 8030
E-mail: support@ausdiagnostics.com

1.0 Installation

1.1 Composition of the MT-Prep 24 system

Check that the following items are included in the package. Contact your local representative if you notice any missing part(s).

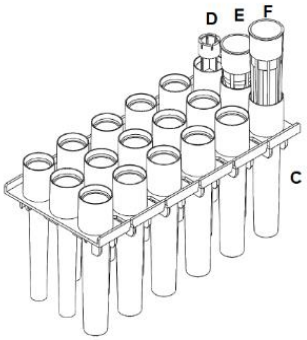
A. MT-Prep 24 X 1 	B. Power Cord X 1 	C. Sample Rack X 2 
D. Barcode Reader X 1 	D. SD card (16GB X 1+32GB X 1) 	E. User Manual X 1 

Please make sure all the components are free from damages as soon as you get the system. If any damage is found, please contact your local representative for instant support.

Note:

- AusDiagnostics ' global warranty does not cover damages from transportation or improper operation.

1.2 Contents of Reagent Kits

A	B	C/D/E/F
		
F	G	A. Reagent Cartridge(s) B. Reaction Chamber(s) C. Tip Holder D. Piercing pin E. Small tip F. Filter tip G. Sample tube H. Screw tube
		

Note:

- Reagent kits are to be purchased separately. Please contact your local agents or representatives to get further info.
- The contents of reagent kits will vary. Refer to the handbook of kits enclosed in reagent box for details.

1.3 Operating Environment / Condition

Use the MT-Prep 24 system in a location that meets the following conditions:

- The MT-Prep 24 system must be place at a minimum distance of 5-10 cm from all sidewalls to allow good air circulation. The space for the allocation of the MT-Prep 24 system must remain 5-10 cm from instrument to sidewalls.
- A location where power supply is provided with safety.
- A location where the temperature ranges from 15 to 30°C and humidity ranges from 30% to 80% RH. (non condensing)
- A location that is flat and stable, with no vibration.
- A location away from direct sunlight. (Block the sunlight by closing curtains or blinds as necessary)

- A location which is well-ventilated and not dusty.
- A location where the temperature does not go up and down suddenly. (Warming a cold room suddenly or moving the MT-Prep 24 system from a room with low temperature to a warm room may cause condensation inside the device, resulting in abnormal extraction)
- A location where the temperature and humidity are kept within the specified range (far from water taps, water heaters, humidifiers, air-conditioners, and heaters)
- A location far from objects that generate strong magnetic fields. (motors, transformers, TV, audio speakers, magnets, etc.) (Bringing the MT-Prep 24 system close to any type of magnetic field may cause a malfunction)

Warning:

Do not use the MT-Prep 24 system in a location where it is wet or can be splashed with water. It may cause device failure, fire, or electric shock.

When relocating the MT-Prep 24 system, disconnect the plug from the outlet first. If the power cable is damaged, this may cause device failure, fire, injury, or electric shock.

⚠ Caution:

Do not use the MT-Prep 24 system in an unstable place such as a slanted surface or a place subject to vibrations. It may cause injury or device failure.

Do not use the MT-Prep 24 system under direct sunlight or close to a heating device. It may shorten the life of the MT-Prep 24 system, or cause troubles.

Do not open the maintenance door while performing the experiment.

Do not open the front door while performing the experiment.

Operating Conditions

Items		**Conditions**
Temperature (°C)	During operation	15 – 30
	During downtime	0 – 55
Humidity % (RH)	During operation	30 – 80
	During downtime	10 – 80
Altitude, operating (m)		Less than 2000 m (1008 hPa)

1.4 Unpack the MT-Prep 24 system

Open the packing box and take out the instrument and related accessories.

Important:

The MT-Prep 24 system weights more than 99 kg. It should be lifted and moved by two persons.

Hold the moving handler of the instrument from two sides to move it out from the

box. Handlers are located under the device, on the chassis' bottom.

- Do not hold the outer covering.
- Do not hold the front panel.
- Do not hold the door.

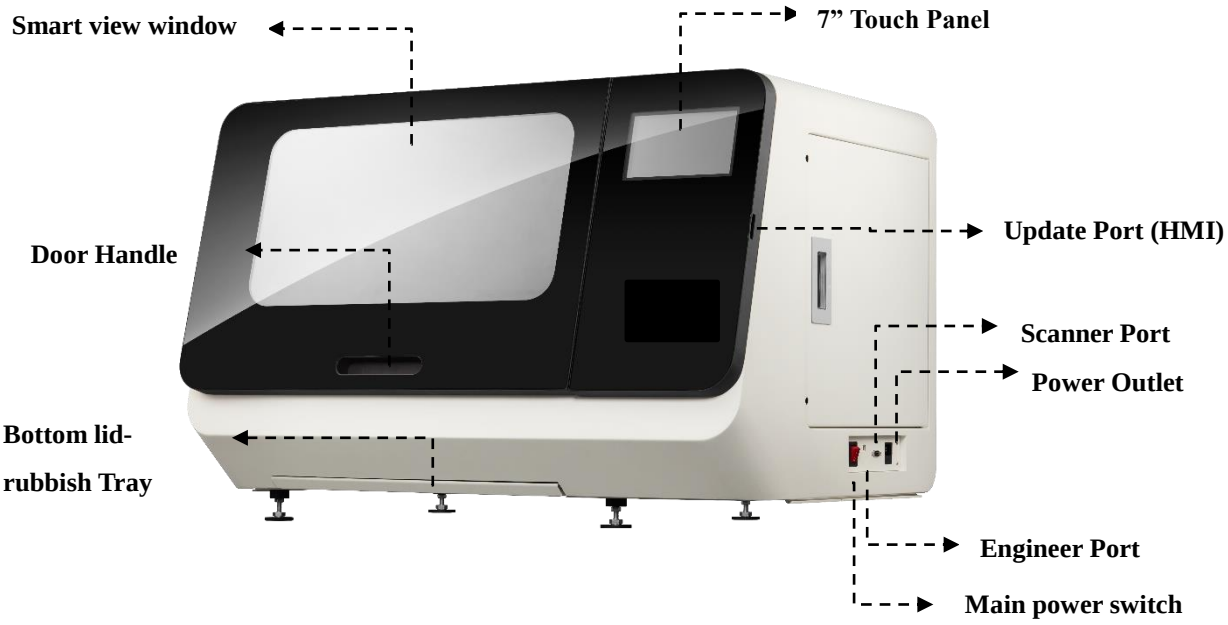
Caution:

Improper MT-Prep 24 system movement handling will lead to instrument damages.

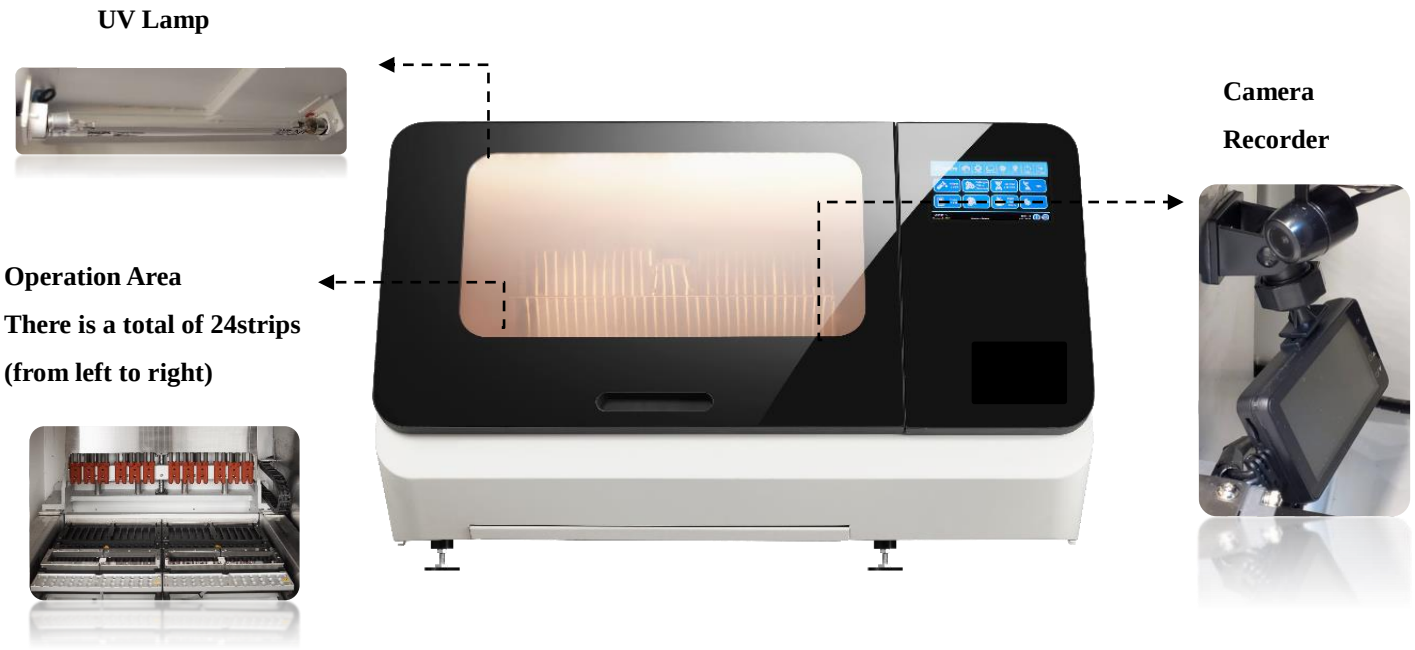
For correct and safe use of the MT-Prep 24, install the device in a location close to the electrical outlet and that has enough space for installation and main switch operation.

1.5 Overall View

- Front view with Door closed



■ Front view with Door opened



2.0 Getting Started

Biohazard:

Always wear appropriate gloves, a mask, and safety goggles during any biohazardous operation during the extraction process. Even when touching the device after any operation with a biohazard risk, wear appropriate gloves and a mask since the device may be contaminated.

Important:

Before starting extraction, put on appropriate gloves, a mask, and safety goggles if required by the operation. During the operation, from sample preparation to extraction completion, be careful not to expose the samples to foreign contaminants such as sweat, saliva, etc.

2.1 Turning ON the power

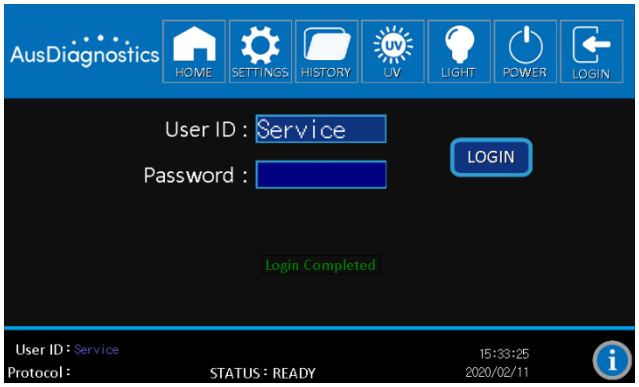
Follow the steps below to release the fixed part inside the instrument

i. Plugin the power cord to the instrument and connect to the electric outlet.
ii. Connect the barcode reader to instrument.
Turn the power ON and log in with User ID "Service" (as distributor) without

password. You can set your Distributor “Service” password to lock access to end user to certain “service” options)

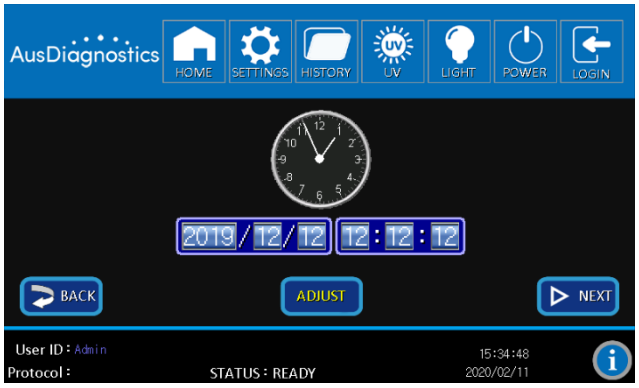
iii.

(Please refer to System Status for the operate information)

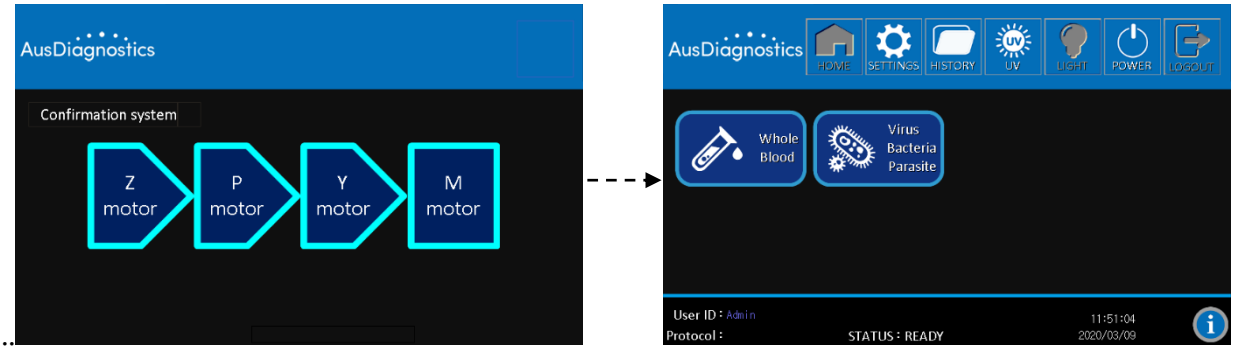


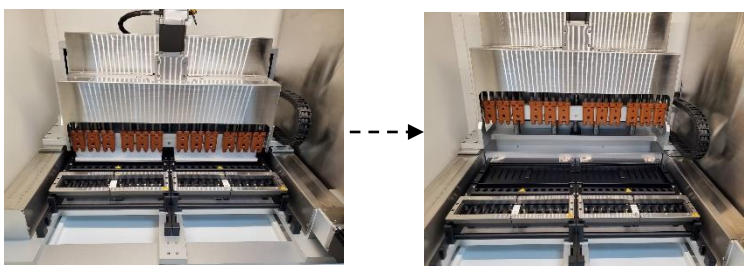
iv. Set up the local time.

(Please refer to System Status for operating information)



v. System will start to do the initialization and device will release transportation fixing parts automatically.

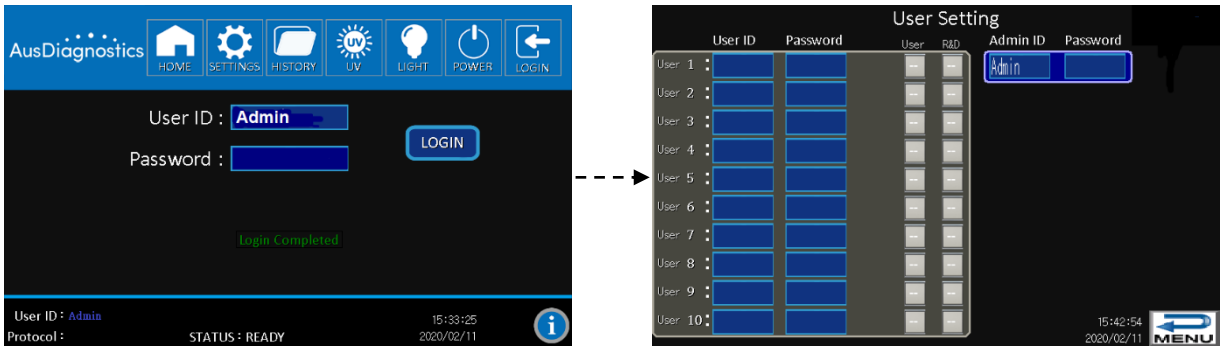




As an end user, please log in with User ID “Admin” (as end user/top authority

in the laboratory) without password. You can set your Top authority "Admin" password to lock access to user to certain "Admin" options

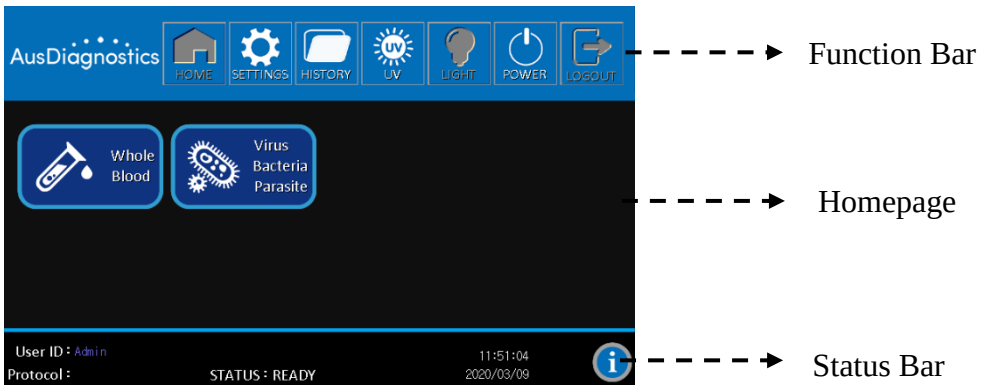
vi. Once logged in, you will able to set up at least 10 other users with their own password.



Important:

Keep the shipping box and fixing block materials. They will be needed again when transporting the MT-Prep 24 system.

2.2 Touch Panel and User Interface



2.3 Preparation

The following preparations are required for extraction operation.

- Gloves
- Mask
- Safety Goggles
- Kit

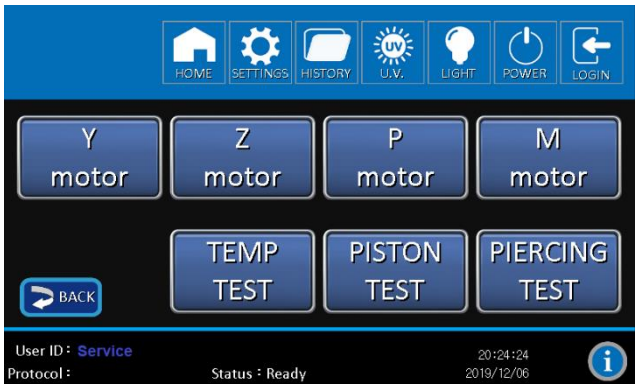
- For Sample preparation, please refer to the handbook of each kit.

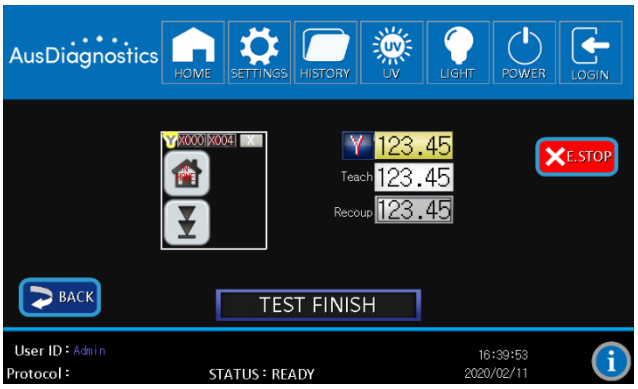
Function Test

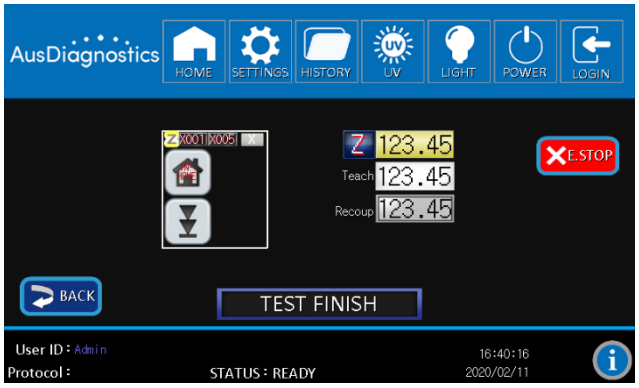
Enter to the settings menu and check position of each axis (Y/Z/P/M)

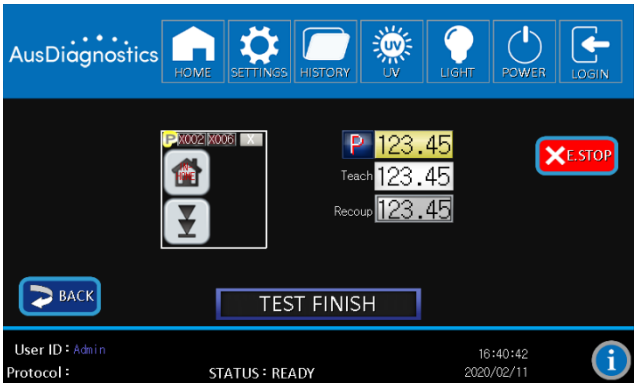
Select  then system will check the position automatically.

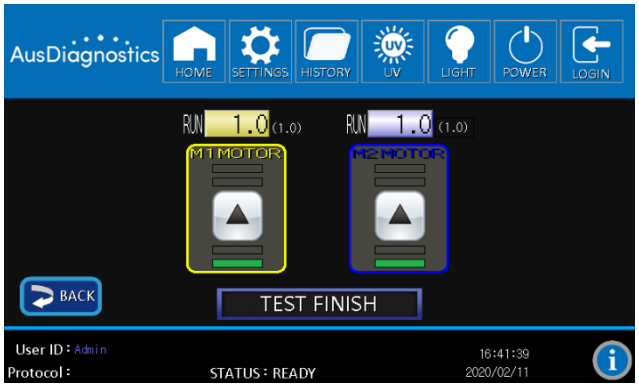
(Please refer to System Status for operating information)





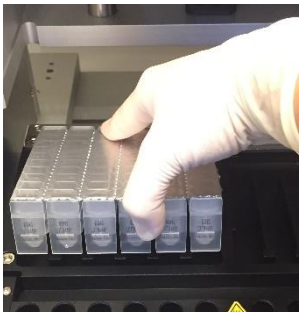
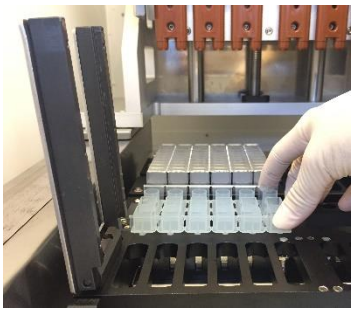


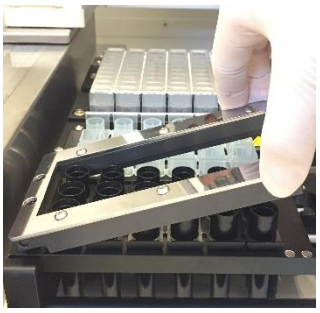




2.5 Extraction

(1) Plastic consumable set up:



Insert the cartridges	Insert Reaction Chambers (Open the tip holder lids)	Insert Tip Holder	Close the tip holder lids



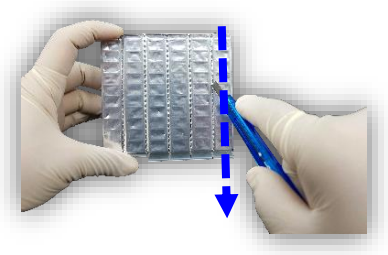
Insert Piercing Pins	Insert Small tips & Filter tips	Stick the barcode label



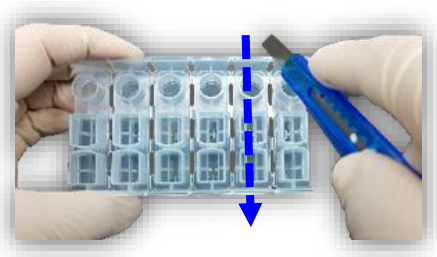
Insert Sample Tube (On Sample Rack)	Insert Screw Tube (On Sample Rack)	Load the sample(s) (To Sample Tube)

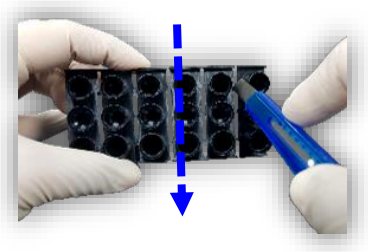
Note:

How to pull apart reagent cartridges strips: Slash open the dotted line with a cutter.



Use cutter or scissors ONLY, if you are intending to separate the **Tip Holder / Reaction Chamber strips.**



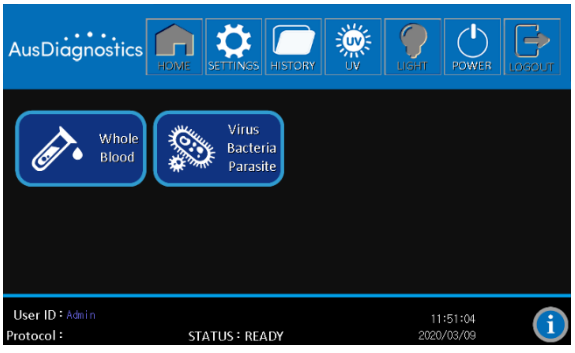


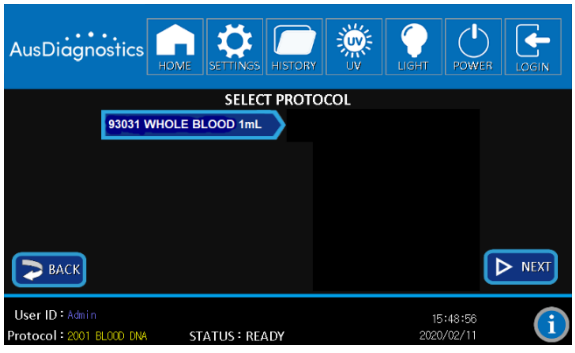
Important:

- Set Cartridges respecting the numbers order from left to right.
- Make sure that Cartridges are inserted into the Cartridge Tray tightly.
- You can load 1-24 strips on the tray depending on the number of samples you intend to process.

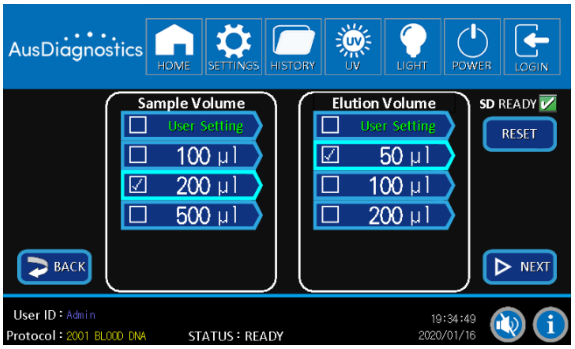
(2) Start Program:

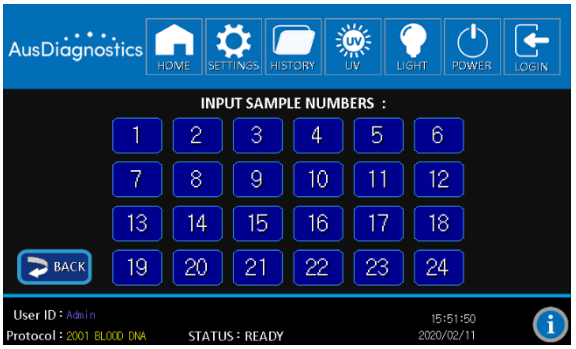
(Please refer to System Status for operating information)



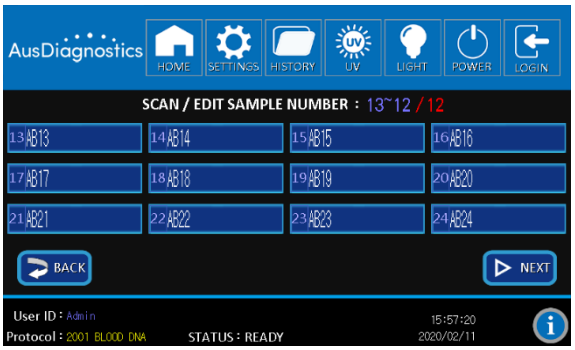


Select the desired targets from homepage	Select the Protocol then Press “NEXT”

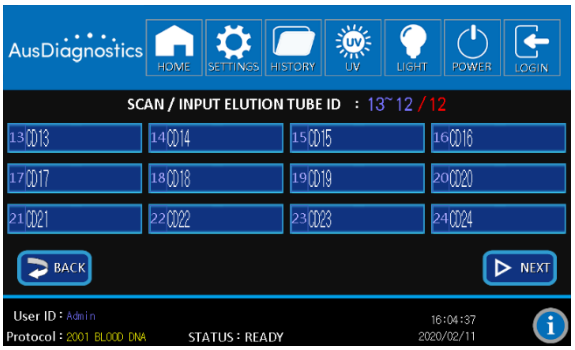




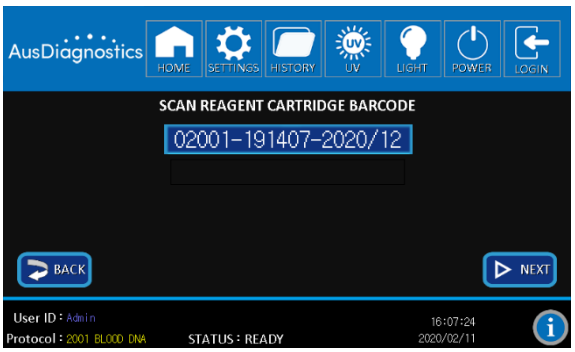
Select Sample and Elution Volume then Press “NEXT”	Select the Sample number then Press “NEXT”



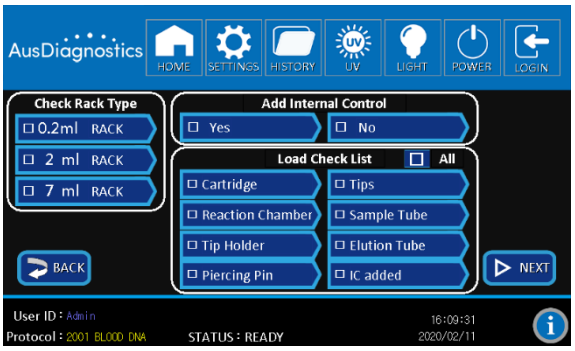
Edit the Sample ID then Press “NEXT”

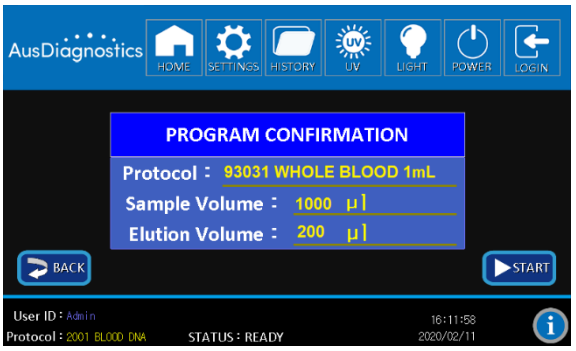


Edit the Elution ID then Press “NEXT”



Scan Reagent Cartridge Barcode then Press “NEXT”





System display a consumable Checklist, Tick corresponding boxes then Press “NEXT”. Note: The system will not allow user to go forward if not all consumable boxes are ticked. Add an Internal Control is optional.

Note:

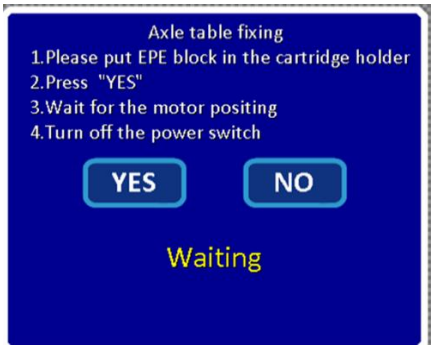
- Pretreatments are essential for some sample types before loading to Sample Tube. Please refer to the handbook of reagent kits for details.
- Make sure the Sample Tray is placed correctly in the instrument
- Store the purified nucleic acids at 4℃ for short-term storage or store at -70℃ for long-term storage.

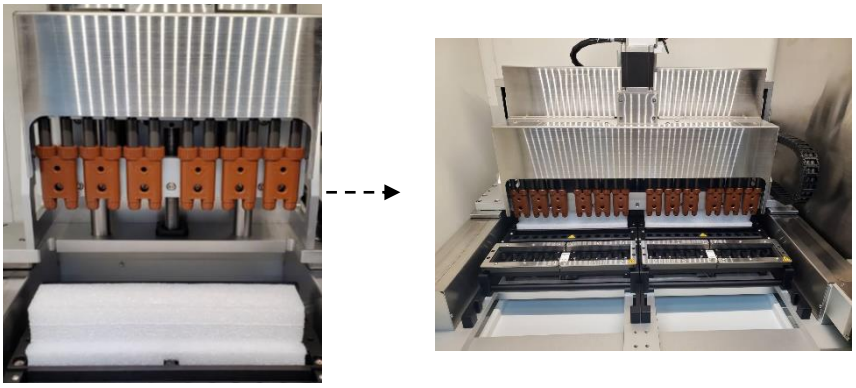
2.6 System fixing before transportation

(1) Enter to settings and select “Fixing”.

(Please refer to System Status for operating information)

(2) Put back the Fixing block at the Position of cartridge holder.





3.0 Cleaning & Maintaining the MT-Prep 24

Two types of maintenance are to be performed on the MT-Prep 24 system instrument as listed in the table. For details on each type of maintenance, see below:

Maintenance Type	**Performed by**	**Schedule**
Routine Cleaning Sample Tray Cleaning of instrument body (outside) Cleaning of instrument body (inside)	 User User User	 After each use Bi-weekly Bi-weekly
Preventive	Service Engineer	Annually

- Clean the Sample Tray with mild detergent and rinse with deionized water. Allow the parts to dry before use. Clean and disinfect the platform surface by wiping with deionized water followed by 75% ethanol.

- Clean the instrument body by removing dust gently with a dry, soft cloth. If the outside of the MT-Prep 24 system is heavily soiled, or if any sample that may cause infection are adhering to the outside of the MT-Prep 24 system, wipe with a soft paper tissue, soaked with 0.5% sodium hypochlorite solution or ethanol.

4.0 Troubleshooting

Problem	Cause	Solution
Instrument Problems		
No power (the LCM Screen remains blank when the power is turned on)	AC power cord is not connected	Check AC power cord connections at both ends. Or Use the correct cords.
LCM Screen turns ON when the power is ON but the self-testing program does not run	Forget to remove the packing elements from the instrument	Turn off the instrument and remove the packing elements .
	Technical problem	Contact your local representative or agent
Protocol stops after an initial start	Cartridge(s), Plastic wares (Reaction Chamber, Tip Holder, Filter tip, Sample Tube, Elute Tube) incorrectly loaded on the MT-PREP 24 system	Turn off the power and then turn it on again to stop the program. The system will move back to the initial state. Re-load them according to the instructions shown in this manual. Note: you cannot resume the protocol after stopping it, you may lose your samples.
	Problem with motion sensors	Turn off the power and remove all samples and plastic wares. Contact your local representatives
Bubbles form during extraction	Miss adding sample or sample volume is lower than the recommended volume	Be sure to add the sample to tubes prior starting the protocol. To ensure proper mixing of reagents in the tip and prevent bubble formation during mixing, make sure the sample volume is at least the recommended volume listed in the handbook supplied with the Reagent Kits.
Presence of buffer in the Cartridge Tray	Motor movements may not be smooth, incorrect placement of plasticware or leakage from tips	Perform preventive maintenance annually to ensure proper motor movements.
Leakage from Filter tipFilter tips or uneven liquid handling between Filter tips	Air leakage on the Filter tip	Swap the air-leaked Tip with a new one
Blockage of tips and	Too much starting	1. Decrease the amount of starting material. Use the

pipetting failure	material or excess DNA in sample causing clumps or aggregates	recommended amount of starting material as listed in the Reagent Kit manual (Handbook).
		2. Suggest using whole blood 1mL (if testing sample is blood)

DNA Quality Problems		
Problem	Cause	Solution
Low DNA yield	Incomplete lysis	Decrease the amount of starting material used.
		Be sure to add Proteinase K during lysis, if included in the protocol.
		Make sure that the sample is completely immersed in the Lysis Buffer.
	Poor quality of starting material	Be sure to process the sample immediately after collection or store the sample at the appropriate temperature. The yield and the quality of DNA isolated depend on the starting material.
	Insufficient amount of magnetic beads added	During shipping, some magnetic bead solution may adhere to the sealing foil of the cartridge. To collect any bead solution from the foil, tap the cartridge to deposit the bead solution at the bottom of the well.
	Clogged Tips resulting in DNA loss	Ensure that the lysate does not contain any particulate material that can clog the tip sprout. If needed, centrifuge the sample prior to the purification.
No DNA recovered	Magnetic beads stored or handled improperly	Store cartridge containing the beads at room temperature.
		Do not freeze the cartridge as the beads may be irreversibly damaged.
		Make sure that the beads are in solution at all times and do not dry. Dried beads are non-functional.
Eluate containing DNA is discolored	Magnetic beads present in the eluate	Remove any magnetic beads using a magnetic separator or centrifuge the sample in a microcentrifuge for 1 minute at maximum speed.
	DNA contaminated with heme	Minimize the amount of blood or blood-stained sample used (≤ 20µl blood spot for forensics sample).
DNA is sheared or degraded	Bubbles form during mixing steps	To prevent bubble formation during mixing, make sure the sample volume is at least the recommended volume listed

		in the manual supplied with Reagent Kits.
	Purified DNA was repeatedly frozen and thawed	Aliquot purified DNA and store at 4°C (short-term) or -20°C (long-term). Avoid repeated freezing and thawing.
	DNA contaminated with DNases	Maintain a sterile environment while working (i.e. wear gloves and use Dnase-free reagents).

5.0 Specifications

Model	MT-Prep 24
Instrument Type:	Benchtop automated nucleic acid extractor
Sample Processing:	1 to 24 samples per batch
Sample Volume Handling:	100 – 2000 µL
Processing Time:	See purification kit manual for details
Heat Block Temperature:	60 °C to 70 °C (assuming the room temperature of ~25 °C)
Protocol Input:	Touch Panel
UV Light	30 minutes @ 250 nm
Built-in Features:	7" Touch Panel
Instrument Dimensions:	91.5 cm W x 66.5 cm D x 61 cm H
Weight:	99 kg
Input Power:	AC 100-240 V, 50/60 Hz, 350 VA
Operating Temperature:	15-30 °C
Operating Humidity:	30-80 %
Fuse:	F 5A 250 V

EMC

EN 61326-1:2013 (IEC 61326-1:2012), EN 61326-2-6:2013

Safety

IEC/EN61010-1, IEC/EN 61010-2-101

6.0 Warranty

Limited Warranty

AusDiagnostics warrants that each product described herein will be free from defects in materials and workman-ship for a period of 2 years from the date of delivery. AusDiagnostics agrees, as its sole responsibility under this limited warranty, and upon prompt notice of a defect, to repair or replace any product discovered to be defective within the warranty period. Expendable items are not covered by this warranty. Warranty service may be obtained by contacting AusDiagnostics at the address stated in this book.

This limited warranty is not applicable to: (1) normal wear and tear; (2) abuse, unreasonable use, improper installation, mistreatment, or neglect; (3) damage caused by the equipment or system with which the product is used; (4) damage caused by modification or repair not made or authorized by AusDiagnostics ; (5) Mishandling by logistics company; or (6) theft, vandalism, fire, water or other peril. Product may not be returned without proper authorization by AusDiagnostics .

Cost of transportation, removal, or reinstallation of the equipment will be paid by the purchaser. This warranty and the remedies set forth herein are exclusive and in lieu of all other express or implied (including any implied warranties of merchantability or fitness for a particular purpose), and no other representations or claims shall be binding on or obligate AusDiagnostics in any way. In no event will AusDiagnostics be liable for any special, incidental, or consequential damages resulting from use or malfunction of this product or the equipment or system with which it is used, loss of revenue, or cost of replacement goods. Some States do not allow limitations on the period of time an implied warranty lasts and/or the exclusion of limitation of special, incidental, or consequential damages, so the above limitations and/or exclusions or limitation of liability may not apply to you. This warranty gives you specific legal rights, and you may have rights which vary from state to state.

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