# MGIEasy Nucleic Acid Extraction Kit Instructions for Use

Manual Version: A11 Model: T-96, T-1728

## 【Product Name】

MGIEasy Nucleic Acid Extraction Kit

## 【Package】

| Cat. No. | Model | Specification |
|---|---|---|
| 1000020471 | T-96 | 96 preps |
| 1000020261 | T-1728 | 1728 preps |

## 【Intended Use】

Nucleic Acid Extraction kit is intended to be used with Automated Nucleic Acid Extractor or High-throughput Automated Sample Preparation System or Automated Sample Preparation System, or manually to efficiently isolate and purify the viral DNA and RNA from nasopharyngeal swab, oropharyngeal swab, saliva, cervical swabs, FTA card washing solution and bronchoalveolar lavage fluid (BALF) and is suitable for the downstream molecular detection. nucleic acid can be released and specifically absorbed to the surface of magnetic beads.

The device is especially used by the personnel who has been trained professionally.

## 【Principle】

Under high concentration of salt ions (Guanidine hydrochloride, Guanidine thiocyanate, etc.) While at the same time, proteins or other impurities remain in the solution. As a result, nucleic acid can be isolated and purified after magnetic beads being collected by external magnetic field. The absorbed nucleic acid can be further purified with the use of washer buffer, and finally eluted by the elution buffer.

## 【Kit Components】

Table 1 Main Components and specification

| | Reagent | Main ingredients (W/V) | Specification | |
|---|---|---|---|---|
| | | | 96 Preps | 1728 Preps |
| Box1 | Buffer MLB | Guanidine Hydrochloride (25-40%) | 20 mL×1 bottle | 400 mL×1 bottle |
| | Buffer MW1 | Guanidine | 12 mL×2 bottles | 420 mL×1 |

| | | | | |
|---|---|---|---|---|
| | | Hydrochloride (20-30%) | | bottle |
| | Buffer MW2 | Water (95-100%) | 12 mL×1 bottle | 220 mL×1 bottle |
| | RNase Free Water | / | 10 mL×1 bottle | 180 mL×1 bottle |
| | Proteinase K | Proteinase (0.005%-0.02%) | 1.5 mL×1 tube | 28 mL×1 bottle |
| | Magnetic Beads M | Magnetic beads (0.5%-5%) | 1.5 mL×1 tube | 28 mL×1 bottle |
| **Box2** | Enhancer Buffer | Carrier RNA (0.0005-0.009%) | 100 μL×1 tube | 2 mL×1 tube |

*Note: Do not mix components in different batches of kits.*

## 【Storage Conditions】

Storage conditions vary among the reagents in this kit. Please store them separately according to the following conditions:

Table 2 Reagents storage conditions and validity period

| Box ID | Reagent | Storage Conditions | Validity Period |
|---|---|---|---|
| Box 1 | Buffer MLB | 2°C to 30°C | 18 months |
| | Buffer MW1 | | |
| | Buffer MW2 | | |
| | RNase Free Water | | |
| | Proteinase K | | |
| | Magnetic Beads M | | |
| Box 2 | Enhancer Buffer | -25°C to -15°C | |

**Note:**

1. *The Buffer MLB may undergo precipitation, which will not affect its function. If precipitation occurs, please heat the reagent bottle in a 37°C water bath properly for around 10 min until the precipitation disappear, then mix thoroughly before use.*
2. *The transport temperature is consistent with the storage temperature. Box1 can be transported for 15 days at the 2~30℃ and Box2 can be transported for 15 days at -25~-15℃.*
3. *The reagent should be used up as soon as possible after opening the bottle. This kit is guaranteed to be effective up to 20 times.*

4. *Enhancer Buffer should avoid repeated freezing and thawing, and this kit is guaranteed to be effective up to 20 times.*

## 【Applicable Automation Instrument】

Applicable automation instrument:

Automated Nucleic Acid Extractor, Model: MGISP-NE384, Manufacturer: Wuhan MGI Tech Co., Ltd.

High-throughput Automated Sample Preparation System, Model: MGISP-960, Manufacturer: Wuhan MGI Tech Co., Ltd.

Automated Sample Preparation System, Model: MGISP-100B, Manufacturer: Wuhan MGI Tech Co., Ltd.

## 【Sample Conditions】

1. T96/T1728 is suitable to extract virus DNA and RNA from nasopharyngeal swabs, oropharyngeal swabs, saliva, cervical swabs, FTA card washing solution and BALF. Please ensure that the sample volume is greater than 200 μL.

   **Nasopharyngeal swabs or oropharyngeal swabs samples don't need to add Proteinase K.**

2. There are no special requirements for Sample Conditions. Please refer to the requirements of the downstream Molecular Detection Kit for clinical application for Sample storage.

## 【Experimental Workflow】

Please follow the workflow as below:

### A. Required Materials Not Supplied

Table A-1 Required Materials for Manual Extraction

| Type | Item Name | Note |
|---|---|---|
| Instrument | Table top centrifuge | Rotation speed not lower than 10,000 rpm/min |
| | Vortexer | / |
| | Metal heater | Or instead by water bath |
| | 1.5 mL tube magnets | / |
| | Pipette | 1 mL, 200 μL, 20 μL |
| Reagent | Absolute ethanol | AR |

| | | |
|---|---|---|
| **Consumable** | 1.5 mL centrifuge tube | Nonstick, DNase-free, RNase-free |
| | Tips | 1 mL, 200 μL, 20 μL |
| | 50 mL tube | DNase-free, RNase-free |

Table A-2 Required Materials for MGISP-960 Automatic Extraction

| Type | Item Name | Note |
|---|---|---|
| **Instrument** | Plate centrifuge | / |
| | Vortexer | / |
| | Pipette | 1 mL, 200 μL, 20 μL |
| **Reagent** | Absolute ethanol | AR |
| **Consumable** | Tips | 1 mL, 200 μL, 20 μL |
| | 250 μL automated filter tips | Cat. No. 1000000723, MGI |
| | 1.3 mL U-bottom deep-well plate | Cat. No. 1000004644, MGI |
| | Hard-shell thin-wall 96-well skirted PCR plates, white shell/clear well | Cat. No. 1000012059, MGI |
| | 50 mL tube | DNase-free, RNase-free |

Table A-3 Required Materials for MGISP-100B Automatic Extraction

| Type | Item Name | Note |
|---|---|---|
| **Instrument** | Plate centrifuge | / |
| | Vortexer | / |
| | Pipette | 1 mL, 200 μL, 20 μL |
| **Reagent** | Absolute ethanol | AR |
| **Consumable** | Tips | 1 mL, 200 μL, 20 μL |
| | 250 μL automated filter tips | Cat. No. 1000000723, MGI |
| | 1.3 mL U-bottom deep-well plate | Cat. No. 1000004644, MGI |
| | 15 mL tube | DNase-free, RNase-free |
| | Break-away 8 Strips PCR Tubes and Caps | Cat. No. 100-000016-00, MGI |

Table A-4 Required Materials for MGISP-NE384 Automatic Extraction

| Type | Item Name | Note |
|---|---|---|
| **Instrument** | Plate centrifuge | / |
| | Vortexer | / |
| | Pipette | 1 mL, 200 μL, 20 μL |
| **Reagent** | Absolute ethanol | AR |

| | | |
|---|---|---|
| Consumable | Tips | 1 mL, 200 μL, 20 μL |
| | 96-well magnetic bar protection case | Cat. No. 1000025661, MGI |
| | 2.2 mL V-bottom deep-well plate | Cat. No. 1000008088, MGI |
| | 50 mL tube | DNase-free, RNase-free |
| | 96-well PCR plate | DNase-free, RNase-free |

## B. Read before use

- Avoid repeatedly freezing and thawing samples, which may result in low DNA or RNA quality.
- If Buffer MLB and Buffer MW1 has precipitate, it can be re-dissolved in a 37 °C water bath. Shake and mix thoroughly before use.
- All reagents and samples need to be equilibrated to room temperature (10°C ~30°C) before use.
- Before use, please make sure to add absolute (100%) ethanol into Buffer MW1 and Buffer MW2 according to the amount indicated on the reagent bottle label.
- Please use the recommended consumables for automated or manual operations.
- Please read the manual carefully before the experiment.
- If you have other questions, please contact MGI technical support:

  MGI-service@mgi-tech.com

## C. Manual Extraction Standard Workflow

1. Please prepare the mixture as following according to different sample types:

Table C-1 Lysis and Binding Buffer Mixture

| Sample type | Nasopharyngeal swabs or Oropharyngeal swabs | Others. |
|---|---|---|
| Buffer MLB | 200 μL | 200 μL |
| absolute ethanol | 250 μL | 250 μL |
| Proteinase K | 0 μL | 15 μL |
| Magnetic Beads M | 15 μL | 15 μL |
| Enhancer Buffer | 1 μL | 1 μL |
| RNase Free Water | 15 μL | 0 μL |

Please prepare the buffer mixture in advance and dispense 460 μL Buffer Mixture for each sample in 1.5 mL tube.

*Note：Mix Magnetic Beads M thoroughly before use.*

*Note：The prepared Buffer Mixture needs to dispense to the sample tube in 30 min. If need to prepare in advance, please add Proteinase K in the Buffer Mixture before dispensing, avoiding the proteinase inactivation*

2. Add 200 μL sample to the prepared buffer mixture, mix ***thoroughly*** by vortex, and incubate at room temperature for 10 min, vortex two or three times during this period.
3. Centrifuge instantaneously and place it on the magnetic stand for 1 min. After the liquid clears, carefully discard the supernatant liquid.
4. Remove the tube from the magnetic stand. Add 500 μL Buffer MW1 (ensure that absolute ethanol has been added), and mix ***thoroughly*** for 5-10 s, incubate at room temperature for 1 min.
5. Centrifuge instantaneously and place the tube on the magnetic stand for 1 min. After the liquid is completely clear, carefully discard the supernatant.
6. Remove the tube from the magnetic stand. Add 500 μL Buffer MW2 (ensure that absolute ethanol has been added), and mix ***thoroughly*** for 5-10 s, incubate at room temperature for 1 min.
7. Place the tube on the magnetic stand for 1 min. After the liquid is completely clear, carefully discard the supernatant.
8. Remove the tube from the magnetic stand. Add 600 μL absolute ethanol, and mix ***thoroughly*** for 5-10 s, incubate at room temperature for 1 min.
9. Centrifuge instantaneously and place the tube on the magnetic stand for 1 min, after the liquid is completely clear, carefully discard the supernatant. Open the tube, and dry at room temperature for 5~10 min to ensure that the ethanol is completely evaporated.
10. Remove the tube from the magnetic stand. Add 50 μL RNase free Water, mix by vortex and place it on a metal heater. Incubate at 56°C, 1000 rpm for 5 min.
11. Centrifuge instantaneously and place the centrifuge tube on the magnetic stand. After the liquid is completely clear, carefully transfer 45 μL nucleic acid solution to a new 1.5 mL tube. Label and store at -80°C.

✔ Stopping point: The extracted samples can be stored in the -80°C refrigerator for a long time.

## D. MGISP-960 Automated Extraction Standard Workflow

### D.1. MGISP-960 Automated Extraction Preparation

#### 1. Instrument Setup

1) Before first use, install application scripts according to *MGISP-100 & MGISP-960 Application Script Installation Instructions*.

2) Perform a pre-clean after powering on the device and before experiment according to *MGISP-100 & MGISP-960 Cleaning Instructions*.

#### 2. Preparing Consumables

Take out the consumables required for one workflow at room temperature for further use, as listed in the table D-1:

Table D-1 Customer-prepared Materials for MGISP-960 Automated Extraction

| Consumables | Brand | Cat. No. | Quantity |
|---|---|---|---|
| 250 μL automated filter tips | MGI | 1000000723 | 4 Boxes |
| 1.3 mL U-bottom deep-well plate | MGI | 1000004644 | 5 Plates |
| Hard-shell thin-wall 96-well skirted PCR plates, white shell/clear well | MGI | 1000012059 | 1 Plate |

#### 3. Preparing Samples

Ensure that the script of MGISP-960 automation system is suitable for 96 sample.

According to the type of sample, the samples need to be prepared before running on MGISP-960. Take enough sample to a deep-well plate (MGI, 1000004644) so that there has 160 μL sample can be transferred (180μL is recommend). And make sure that there are no air bubbles at the bottom and no hanging liquid on the side walls. Keep on ice for later use.

#### 4. Preparing Reagents

1) Preparation of Buffer MW1: Absolute ethanol needs to be added according to the label.

2) Preparation of Buffer MW2: Absolute ethanol needs to be added according to the label.

3) Preparation of Buffer Mixture according to different sample types:

Table D-2 Lysis and Binding Buffer Mixture

| Sample type | Nasopharyngeal swabs or Oropharyngeal swabs | Others. |
|---|---|---|
| Buffer MLB | 160 μL | 160 μL |
| absolute ethanol | 200 μL | 200 μL |
| Proteinase K | 0 μL | 15 μL |
| Magnetic Beads M | 15 μL | 15 μL |
| Enhancer Buffer | 1 μL | 1 μL |
| RNase Free Water | 15 μL | 0 μL |

*Note: Mix Magnetic Beads M thoroughly before use.*

*Note: The prepared Buffer Mixture needs to dispense to the sample tube in 30 min. If need to prepare in advance, please add Proteinase K in the Buffer Mixture before dispensing, avoiding the proteinase inactivation*

4) Take out 5 U-bottom deep-well plate (MGI, 1000004644), label the plate and add the reagents according to the table D-3.

Table D-3 Reagent Volume of Sample, Buffer Mixture, RNase Free Water, Buffer MW1, Buffer MW2

| Reagent | Consumables | Brand | Cat. No. | Volume to add for each well |
|---|---|---|---|---|
| Sample | U-bottom deep-well plate | MGI | 1000004644 | > 180 μL |
| Prepared Buffer Mixture | U-bottom deep-well plate | MGI | 1000004644 | 360 μL |
| RNase Free Water | U-bottom deep-well plate | MGI | 1000004644 | 50 μL |
| Buffer MW1 | U-bottom deep-well plate | MGI | 1000004644 | 170 μL |
| Buffer MW2 | U-bottom deep-well plate | MGI | 1000004644 | 340 μL |

## D.2. MGISP-960 Operation

1) Double-click the icon of MGISP-960 on the desktop. The mode selection interface is displayed, as shown in following figure D-1. Select "**Real**" and click "**Create**".

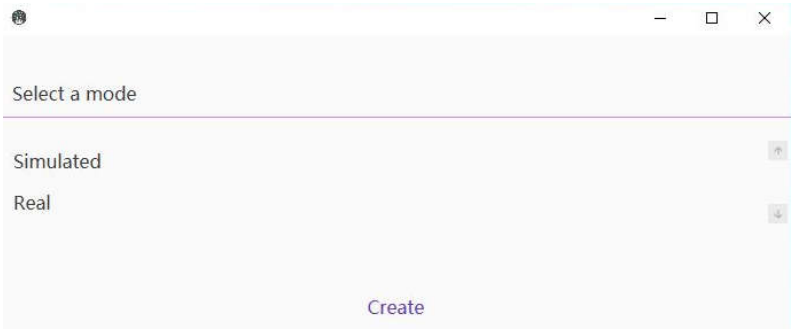


Figure D-1 Mode Selection Interface

2) In the Authentication interface, click "**User Entry"** to enter the initialization interface.

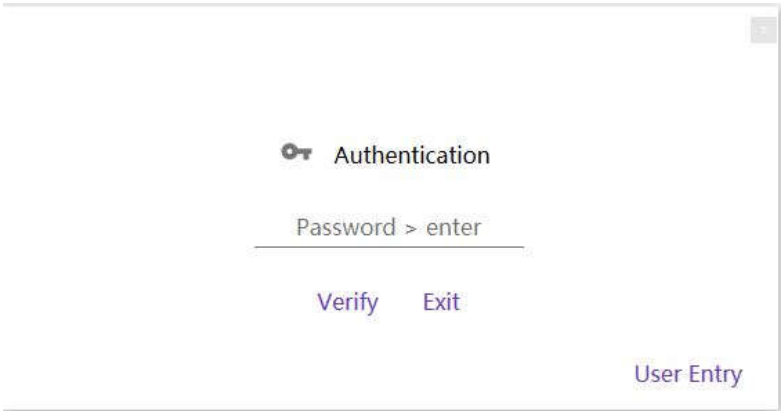


Figure D-2 Authentication Interface

3) The initialization interface is displayed, as shown in following figure D-3.

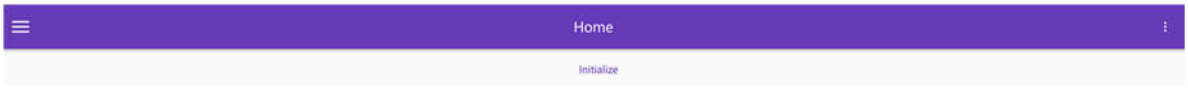


Figure D-3 Initialization Interface

4) Click **"Initialize"**. The initialization takes about 2 min. If Initialize successfully is displayed (as shown in following figure D-4, the device is connected successfully, and you can go to the next step

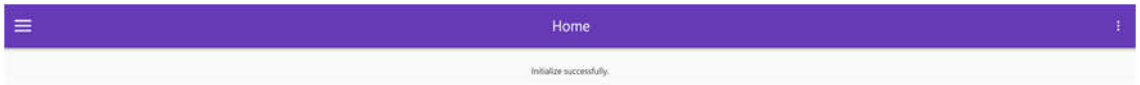


Figure D-4 Initialization Successful Interface

*Note: If the initialization fails, check whether the power switch is turned on, and whether more than one software program is running. Try to restart the software. If the problem persists, contact MGI technical support.*

5) Click the menu button and select "**Run Wizard"** in the menu. In the Run Wizard interface, click

"**Solution**", and select 【**JB-A09-039 MGISP-960 Nucleic Acid Extraction Kit**】, click "**Script**", to select 【**JB-A09-039 MGISP-960 Nucleic Acid Extraction Kit**】, operation deck arrangement of the first phase is displayed, as shown in following figure D-6 and table D-4. Follow the on-screen instructions to place the consumables, samples, and reagents, as shown in the figure D-6. Confirm the placement and close the door.


Figure D-5 Run Wizard Interface

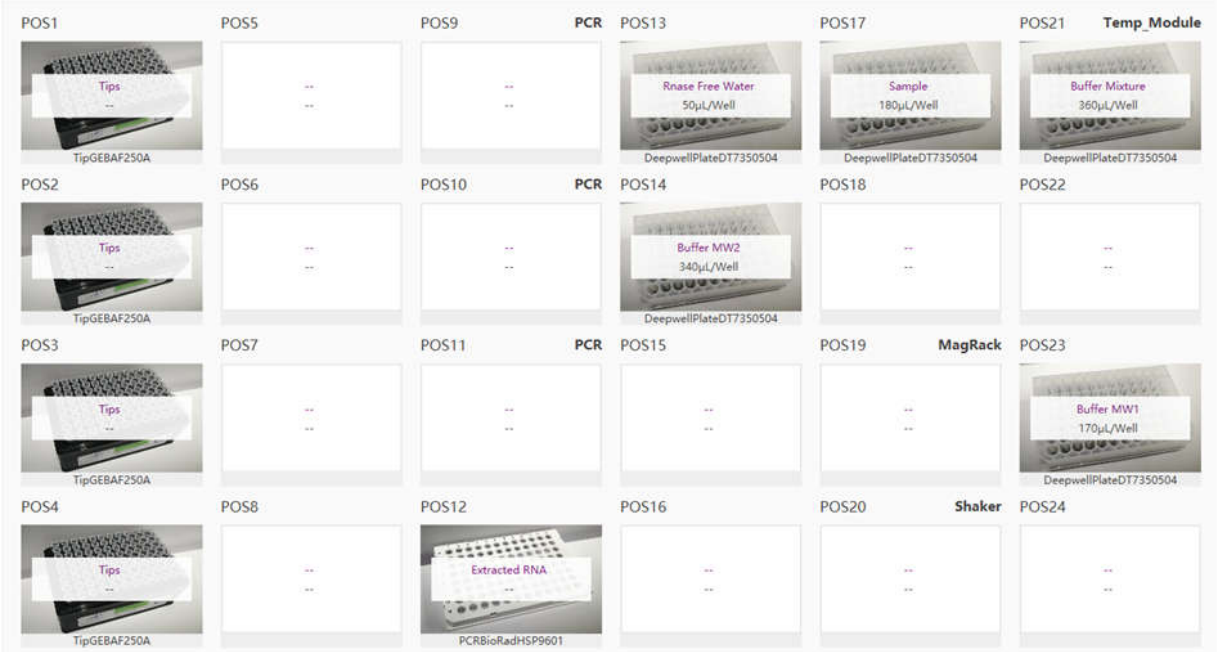


Figure D-6 First Phase Operation Deck Arrangement

Table D-4 First Phase Operation Deck Arrangement

| Name | Position |
|---|---|
| 250 μL automated filter tips | Pos1-Pos4 |
| Hard-shell thin-wall 96-well skirted PCR plates, white shell/clear well | Pos12 |
| Buffer Mixture | Pos21 |
| Sample | Pos17 |
| RNase Free Water | Pos13 |
| Buffer MW1 | Pos23 |
| Buffer MW2 | Pos14 |

6) Click "**Run**" to start extraction workflow.

7) It is expected to run 1 h. After the process is finished, the product at Pos12 is taken out.

8) Perform the next testing operation.

9) Dispose of the used deep-well plates, PCR plates, and waste bag to the designated waste area. Perform a post-clean before powering off the device according to ***MGISP-100 & MGISP-960 Cleaning Instructions***.

✔**Stopping point：The extracted samples can be stored in the -80 °C refrigerator for a long time.**

## E. MGISP-100B Automated Extraction Standard Workflow

### E.1. MGISP-100B Automated Extraction Preparation

#### 1. Instrument Setup

1) Before first use, install application scripts according to ***MGISP-100 & MGISP-960 Application Script Installation Instructions***.

2) Perform a pre-clean after powering on the device and before experiment according to ***MGISP-100 & MGISP-960 Cleaning Instructions***.

#### 2. Preparing Consumables

Take out the consumables according to different throughput at room temperature for further use, as listed in the table E-1 to E-4:

Table E-1 Consumables for 8 rxn

| Item | Brand | Cat. No. | Quantity |
|---|---|---|---|
| 250 μL automated filter tips | MGI | 1000000723 | 1 box |
| 1.3 mL U-bottom deep-well plate | MGI | 1000004644 | 1 plate |
| Break-away 8 Strips PCR Tubes and Caps | MGI | 100-000016-00 | 2 strips * 8 |

Table E-2 Consumables for 16 rxn

| Item | Brand | Cat. No. | Quantity |
|---|---|---|---|
| 250 μL automated filter tips | MGI | 1000000723 | 1 box |
| 1.3 mL U-bottom deep-well plate | MGI | 1000004644 | 1 plate |
| Break-away 8 Strips PCR Tubes and Caps | MGI | 100-000016-00 | 4 strips * 8 |

Table E-3 Consumables for 24 rxn

| Item | Brand | Cat. No. | Quantity |
|---|---|---|---|
| 250 μL automated filter tips | MGI | 1000000723 | 2 boxes |
| 1.3 mL U-bottom deep-well plate | MGI | 1000004644 | 1 plate |
| Break-away 8 Strips PCR Tubes and Caps | MGI | 100-000016-00 | 6 strips * 8 |

Table E-4 Consumables for 32 rxn

| Item | Brand | Cat. No. | Quantity |
|---|---|---|---|
| 250 μL automated filter tips | MGI | 1000000723 | 2 boxes |
| 1.3 mL U-bottom deep-well plate | MGI | 1000004644 | 1 plate |
| Break-away 8 Strips PCR Tubes and Caps | MGI | 100-000016-00 | 8 strips * 8 |

## 3. Preparing Samples

The MGISP-100B automation system can process 8, 16, 24 or 32 samples at one time.

According to the type of sample, the samples need to be prepared before running on MGISP-100B. Take enough sample to the prepared Break-away 8 Strips PCR Tubes and Caps (MGI, 100-000016-00) so that there has 160 μL sample can be transferred (180 μL is recommend). Ensure that no bubbles exist at the bottom of the tube and no liquid remains on the tube wall. Place it on ice for further use.

## 4. Preparing Reagents

1) Preparation of Buffer MW1: Absolute ethanol needs to be added according to the label.

2) Preparation of Buffer MW2: Absolute ethanol needs to be added according to the label.

3) Preparation of Buffer Mixture according to different sample types:

Table E-5 Lysis and Binding Buffer Mixture

| Sample type | Nasopharyngeal swabs or Oropharyngeal swabs | Others. |
|---|---|---|
| Buffer MLB | 160 μL | 160 μL |
| absolute ethanol | 200 μL | 200 μL |
| Proteinase K | 0 μL | 15 μL |
| Magnetic Beads M | 15 μL | 15 μL |

| | | |
|---|---|---|
| Enhancer Buffer | 1 μL | 1 μL |
| RNase Free Water | 15 μL | 0 μL |

*Note：Mix Magnetic Beads M thoroughly before use.*

*Note：The prepared Buffer Mixture needs to dispense to the sample tube in 30 min. If need to prepare in advance, please add Proteinase K in the Buffer Mixture before dispensing, avoiding the proteinase inactivation*

4) Take out one 96 deep-well plates (MGI, Cat. No. 1000004644) and mark it. Add reagents according to Figure E-1 to E-4 and place at POS6.

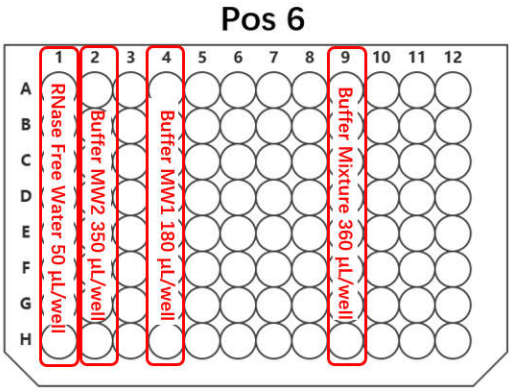


Figure E-1 Reagents layout for 8 rxn

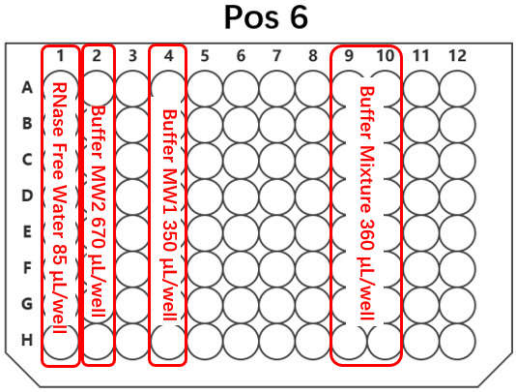


Figure E-2 Reagents layout for 16 rxn

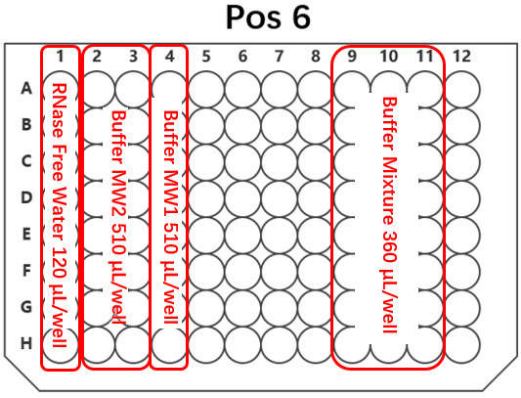


Figure E-3 Reagents layout for 24 rxn

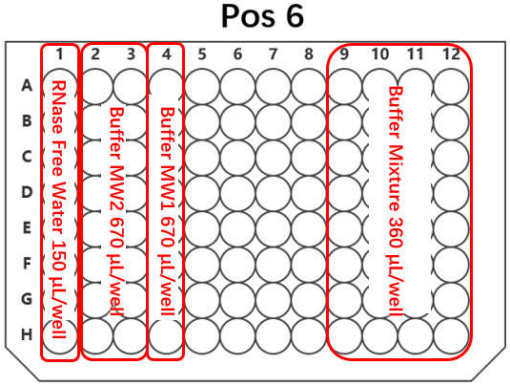


Figure E-4 Reagents layout for 32 rxn

## E.2. MGISP-100B Operation

1) Double-click the icon of MGISP-960 on the desktop. The mode selection interface is displayed, as shown in following figure E-5. Select "**Real**" and click "**Create**".


Figure E-5 Mode Selection Interface

2) In the Authentication interface, click "**User Entry**" to enter the initialization interface.

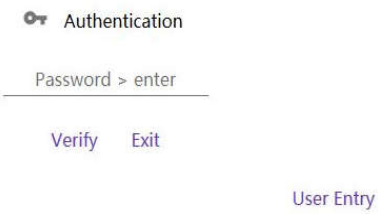


Figure E-6 Authentication Interface

3) The initialization interface is displayed, as shown in following figure E-7.

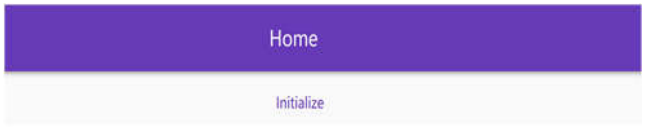


Figure E-7 Initialization Interface

4) Click**"Initialize"**. The initialization takes about 2 min. If Initialize successfully is displayed (as shown in following figure E-8, the device is connected successfully, and you can go to the next step

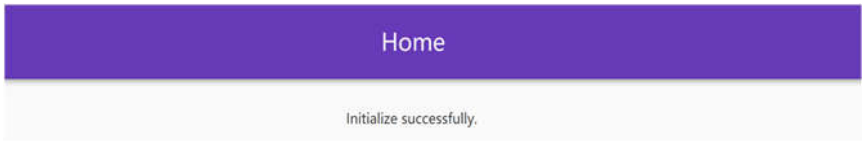


Figure E-8 Initialization Successful Interface

5) Click the menu button and select "**Run Wizard**" in the menu. In the Wizard interface(Figure E-9), click Application, and select **【JB-A06-039 MGISP-100B Nucleic Acid Extraction】**. Click Script, and select script such as **【JB-A06-039 MGISP-100B Nucleic Acid Extraction 8rxn】**.Operation deck layout for different throughput script are displayed, as shown in Figure E-10 to E-13 and Table E-6 to E-9. Follow the on-screen instructions to place the consumables, samples, and reagents, as shown in the figures below. Confirm the placement and close the door.


Figure E-9 Run Wizard Interface

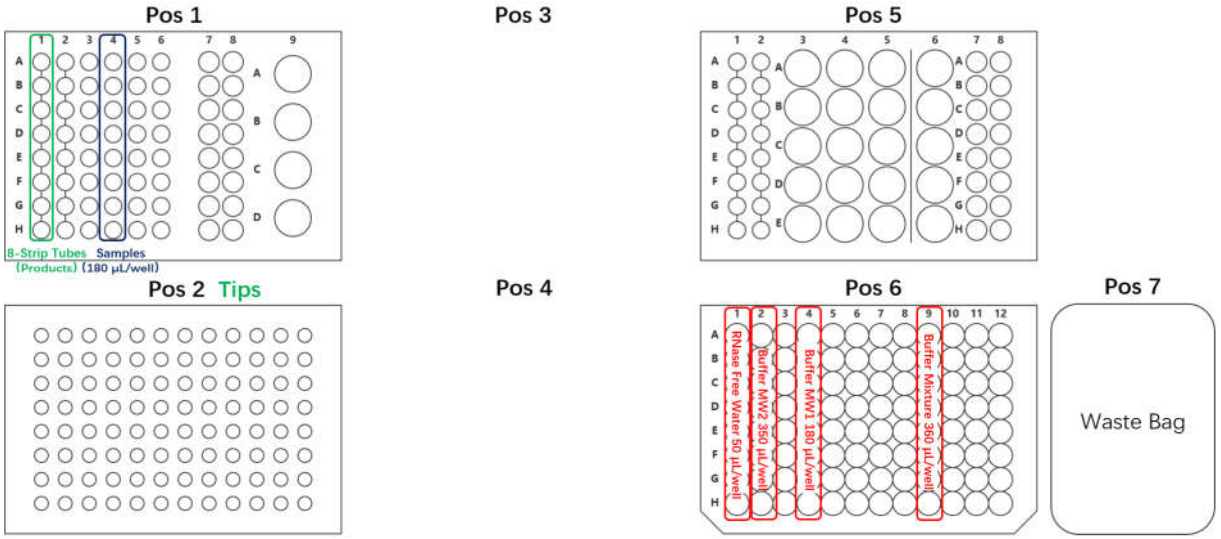


Figure E-10 Operation deck layout for 8 rxn

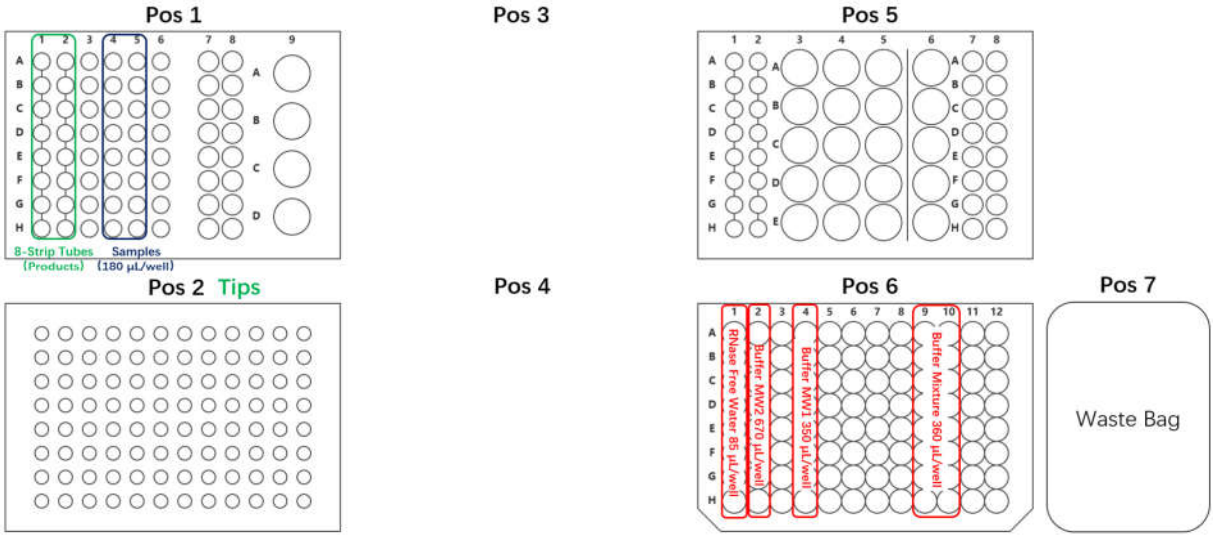


Figure E-11 Operation deck layout for 16 rxn

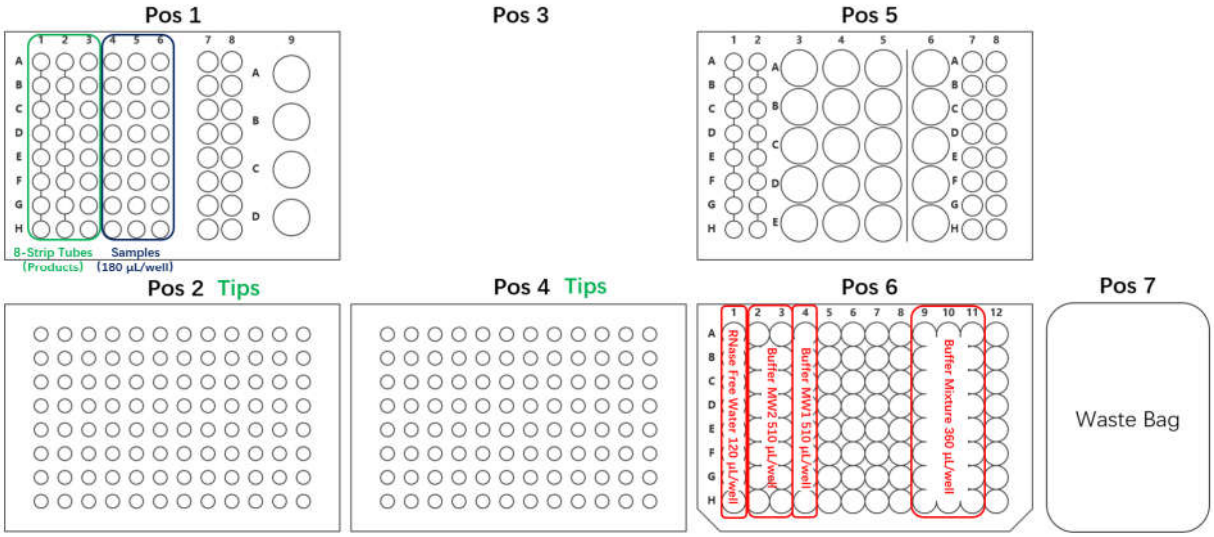


Figure E-12 Operation deck layout for 24 rxn

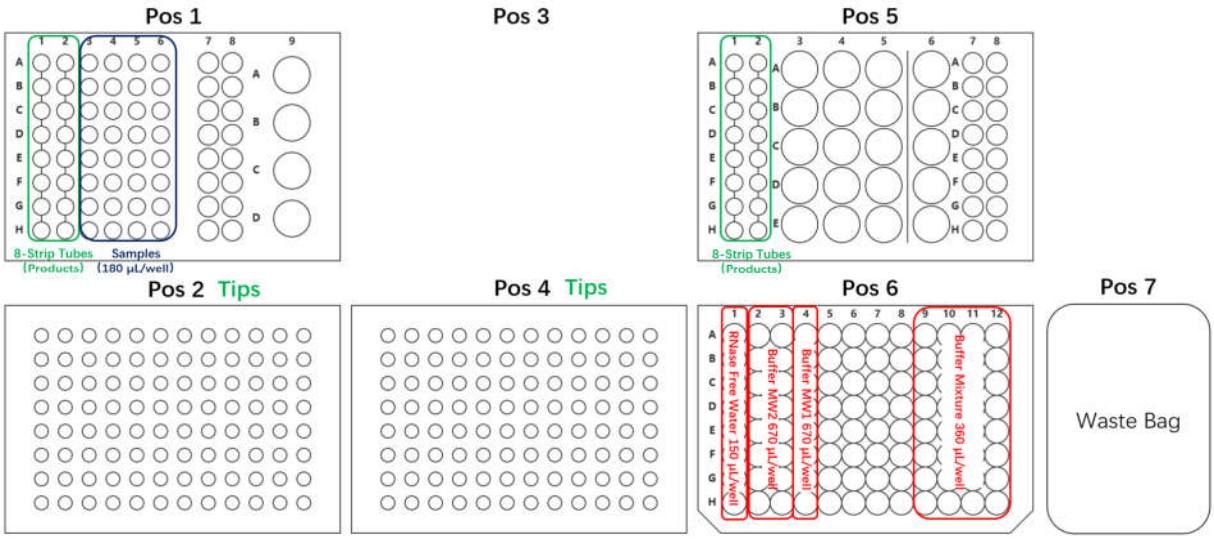


Figure E-13 Operation deck layout for 32 rxn

Table E-6 Operation deck layout for 8 rxn

| Position | Consumable or Reagents |
|---|---|
| Pos1-1: Col 1 | Break-away 8 Strips PCR Tubes, 1 strip for extracted RNA |
| Pos1-1: Col 4 | Sample (input) |
| Pos2 | 250 µL automated filter tips |
| Pos6: Col 1 | RNase Free Water |
| Pos6: Col 2 | Buffer MW2 |
| Pos6: Col 4 | Buffer MW1 |
| Pos6: Col 9 | Buffer Mixture |

Table E-7 Operation deck layout for 16 rxn

| Position | Consumable or Reagents |
|---|---|
| Pos1-1: Col 1,2 | Break-away 8 Strips PCR Tubes, 2 strips for extracted RNA |
| Pos1-1: Col 4,5 | Sample (input) |
| Pos2 | 250 µL automated filter tips |
| Pos6: Col 1 | RNase Free Water |
| Pos6: Col 2 | Buffer MW2 |
| Pos6: Col 4 | Buffer MW1 |
| Pos6: Col 9,10 | Buffer Mixture |

Table E-8 Operation deck layout for 24rxn

| Position | Consumable or Reagents |
|---|---|

| | |
|---|---|
| Pos1-1: Col 1,2,3 | Break-away 8 Strips PCR Tubes, 3 strips for extracted RNA |
| Pos1-1: Col 4,5,6 | Sample (input) |
| Pos2&Pos4 | 250 μL automated filter tips |
| Pos6: Col 1 | RNase Free Water |
| Pos6: Col 2,3 | Buffer MW2 |
| Pos6: Col 4 | Buffer MW1 |
| Pos6: Col 9,10,11 | Buffer Mixture |

Table E-9 Operation deck layout for 32rxn

| Position | Consumable or Reagents |
|---|---|
| Pos1-1: Col 1,2&Pos5-1: Col 1,2 | Break-away 8 Strips PCR Tubes, 4 strips for extracted RNA |
| Pos1-1: Col 3,4,5,6 | Sample (input) |
| Pos2&Pos4 | 250 μL automated filter tips |
| Pos6: Col 1 | RNase Free Water |
| Pos6: Col 2,3 | Buffer MW2 |
| Pos6: Col 4 | Buffer MW1 |
| Pos6: Col 9,10,11,12 | Buffer Mixture |

6) Click "**Run**" to start extraction workflow.

7) The whole workflow takes about 40min for 8 rxn, 55min for 16 rxn, 70min for 24 rxn, and 80min for 32 rxn. After the process is finished, Take out the nucleic acid product from Pos1-1&Pos5-1

8) Perform the next testing operation.

9) Dispose of the used deep-well plates, 8-Strips Tubes, and waste bag to the designated waste area. Perform a post-clean before powering off the device according to *MGISP-100 & MGISP-960 Cleaning Instructions*.

✔ **Stopping point：The extracted samples can be stored in the -80 °C refrigerator for a long time.**

## F. MGISP-NE384 Automated Extraction Standard Workflow

### F.1. MGISP- NE384 Automated Extraction Preparation

#### 1. Preparing Device

1) Before first use, please confirm that the application script has been imported into the location of MGISP-NE384.

2) Before starting each round of experiment, please make sure that the machine has finished

[clean].

## 2. Preparing Consumable

Take out the consumables required for one workflow for 384 samples, as listed in the table below:

Table F-1 Materials required but not provided

| Consumables | Brand | Cat. No. | Quantity |
|---|---|---|---|
| 96-well magnetic bar protection case | MGI | 1000025661 | 4 pieces |
| 96-well PCR plate | / | / | 4 pieces |
| 2.2 mL V-bottom deep-well plate | MGI | 1000008088 | 16 plates |

## 3. Preparing Samples

1) The Automated Nucleic Acid Extractor can process 96-384 samples at one time.

2) Pretreat the sample to be extracted and place the samples on ice for later use.

## 4. Preparing Reagents

1) Preparing Buffer MW1: Add absolute ethanol into the solution according to the label on the cartridge (only before the first use).
2) Preparing Buffer MW2: Add absolute ethanol into the solution according to the label on the cartridge (only before the first use).
3) Preparation of Buffer Mixture according to different sample types:

Table F-2 Buffer MLB Mixture preparing info

| Sample type | Nasopharyngeal swabs or Oropharyngeal swabs | Others. |
|---|---|---|
| Buffer MLB | 200 μL | 200 μL |
| Absolute ethanol | 250 μL | 250 μL |
| Proteinase K | 0 μL | 15 μL |
| Magnetic Beads M | 15 μL | 15 μL |
| Enhancer Buffer | 1 μL | 1 μL |
| RNase Free Water | 15 μL | 0 μL |

**Note: The Magnetic Beads M should be shaken and mixed well to ensure that the magnetic beads are completely resuspended.**

**Note: We recommend using the prepared Lysate & Binding Buffer within 30 minutes after preparation. If you need to prepare in advance, add Proteinase K solution before use to**

**avoid inactivation of Proteinase K caused by too long preparation time.**

4) According to the number of samples, transfer the extraction reagents into new 2.2 mL V-bottom deep-well plate according to the Table F-3.

Table F-3 Input volume of each set of reagents

| Item | Consumables | Volume/well |
|---|---|---|
| Buffer MLB Mixture | 2.2 mL V-bottom deep-well plate | 460 μL |
| RNase Free Water | 2.2 mL V-bottom deep-well plate | 50 μL |
| Buffer MW1 | 2.2 mL V-bottom deep-well plate | 500 μL |
| Buffer MW2 | 2.2 mL V-bottom deep-well plate | 500 μL |

5) Add 200 μL of sample into each well of the Buffer MLB Mixture plate, be careful to avoid cross-contamination.

## F.2. MGISP-NE384 Operation

### Instrument Operation

1) Double-click the icon of MGISP-NE384 on the desktop. The authentication interface will be displayed. Select "**User**", enter password: "**123456**", click "**login**".

2) The initialization interface will be displayed.

3) Click "**Initialize**". The initialization will take approximate 1 minutes. If Initialize successfully displayed, means the device connected successfully, and you can go to the next step.

**Note: If the initialization fails, check whether the power switch is turned on, and whether more than one software program is running. If yes, please restart the software. If the problem unsettled, please contact MGI technical support**

4) Select the "**Clean**" option, emptying the console, wiping the console and tray with a dust-free paper soaked with 75% alcohol and closing the window. click "**Start**", and the instrument will open the fan filter unit and UV lamp to clean the internal environment of the instrument. The default cleaning time is 20 minutes. You can also modify the cleaning time accordingly.

5) After "**Clean**", return to the main interface select "**Workflow**".

6) In the Workflow interface, click **"Script"**, select "**MGI Nucleic Acid Extraction**". Follow the on-screen instructions to place the consumables and reagents (Table F-4). Install the Magnetic bar protection case.

Table F-4 Operation Deck Arrangement

| Reagents | Position |
|---|---|
| Buffer MLB Mixture+Sample | LaneA、LaneB、LaneC、LaneD：Pos1 |
| Buffer MW1 | LaneA、LaneB、LaneC、LaneD：Pos2 |
| Buffer MW2 | LaneA、LaneB、LaneC、LaneD：Pos3 |
| Rnase Free Water | LaneA、LaneB、LaneC、LaneD：Pos6 |

7) Confirming the consumables and reagents are placed correctly, close the instrument window. Click "**Run**". Check the corresponding test channel according to the number of samples and check the Magnetic bar protection case are placed correctly. Click the "**Confirm**".

8) The whole run will take approximate 20 minutes, please arrange the following work properly.

9) After the run ended, please take out the extraction product of pos6 immediately. It can be used directly for subsequent experiments or stored at -80°C.

10) Dispose the used deep-well plates and magnetic bar protection case. Select the "**Clean**" option, emptying the console, wiping the console and tray with a dust-free paper soaked with 75% alcohol and closing the window. click "**Start**", and the instrument will open the fan filter unit and UV lamp to clean the internal environment of the instrument. The default cleaning time is 20 minutes. You can also modify the cleaning time as needed.

**Note: After the experiment, please take out the extracted product immediately. It is forbidden to leave the product at pos6 for a long time, otherwise it will affect the quality of the product.**

## 【Precautions】

1. This product is for research use only. Please read this manual carefully before use.
2. Please familiarize yourself with the operation and precautions of various instruments to be used before testing.
3. When all the reagents are taken out from the specified storage environment, please use them according to the requirements. The reagents should be shaken and mixed before use; Failure to store and use kits under specified conditions may affect performance.
4. Please transfer sample using precise and qualified pipette.
5. Keep your skin and eyes from direct contact with any sample or reagent. Do not swallow any sample or reagent. If it happens, immediately rinse with plenty of water and go to the hospital for treatment in time. Contact with the manufacturer for the safety data sheet (SDS).

6. All samples and various wastes should be treated in accordance with relevant regulations.
7. Any serious incident that has occurred in relation to the device shall be reported to the manufacturer and the competent authority of the Member State in which the user and/or the patient is established.
8. Please confirm the following issues before starting the experiment, otherwise it will influence the extracting result:
    - Make sure all reagents are stored in the recommended conditions.
    - Make sure the board position is correct during program operation.
    - Make sure there is no ethanol residue after ethanol washing by manual operation.
9. Other wrong operations may also lead to unqualified results, for example when reagents are expired, when samples or reagents are added inaccurately, when the room temperature is too high, and when the test is not performed strictly according to the extraction procedure of the manual.
10. This product is only suitable for the extraction of nasopharyngeal swabs, oropharyngeal swabs, cervical swabs, FTA card washing solution and BALF samples, but not for any other sample type.
11. All samples are regarded as potentially infectious items and shall be handled in accordance with relevant national standards.

## 【Production Company Information】

Company: Wuhan MGI Tech Co., Ltd.

Address:

Building 24, Stage 3.1, BioLake Accelerator, No.388, 2nd Gaoxin Road, East Lake High-Tech Development Zone, 430075, Wuhan, P.R. China

Building B13, No.818, Gaoxin Avenue, East Lake High-Tech Development Zone, 430075, Wuhan, P.R.China

Website: https://en.mgi-tech.com

Email: MGI-service@mgi-tech.com

Service Hotline: (+86) 4000-966-988