AutoXT PGS DNA/RNA Kit

QUICK GUIDE

Individual Type: 17168-48
Well-plate Type: 17168-96

1. KIT DESCRIPTION

The AutoXT PGS DNA/RNA Kit is used with the Miracle-AutoXT Nucleic Acid Extraction System to purify DNA and RNA of pathogens such as bacteria and viruses. Compatible sample matrices include fresh or frozen blood, serum, other cell-free body fluids, virus cultures, cultivated cells, tissue homogenates, and stool swab homogenates. DNA and RNA easily bind to the surface of the magnetic beads and release using a proprietary buffer system. The automated procedure requires minimal handling before purification, maximizing simplicity and convenience through prefilled cartridges or well plates.

2. CHARACTERISTICS

- **Automated & High-Throughput:** Integrates seamlessly with the Miracle-AutoXT instrument to process from 1 to 32 samples in under an hour.
- **Ready-to-Use Reagents:** Uses prefilled cartridges or 96-well plates containing all necessary extraction reagents (Lysis, Washing 1-3, Bead Solution, and Elution Buffer), eliminating manual buffer preparation.
- **High Sensitivity & Purity:** The optimized magnetic bead system efficiently isolates nucleic acids, yielding high-quality DNA/RNA suitable for stringent downstream applications such as PCR, RT-PCR, real-time PCR, and real-time RT-PCR.

3. INTENDED USE & APPLICATIONS

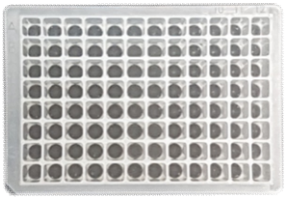
- **Intended Use :** This product is intended to be used by professional users, such as technicians and physicians who are trained in molecular biological techniques. The product is developed, designed, and tested for Research purposes (RUO).
- **Applications :** It is applicable for pathogen nucleic acid extraction and detection research from tissues, cell cultures, blood, and serum. The eluted fraction generates high-quality viral DNA/RNA suitable for use in downstream applications such as PCR/RT-PCR, real-time PCR/RT-PCR, etc.

4. KIT CONTENTS & STORAGE

Contents	17168-48 (Cartridge Type)	17168-96 (Plate Type)
Prefilled Cartridges / Plates	48 Prefilled Cartridges (48 T)	6 Prefilled Well Plates (96 T)
Plunger Tips	12 ea	12 ea

- Cartridge (Individual) Type

- Plate Type



- **Reagent Composition**

1 : Lysis Buffer
2 : Washing Buffer 1
3 : Washing Buffer 3
4 : Washing Buffer 3
5 : Bead Solution
6 : Elution Buffer (65 – 80 µL)

- **Storage & Stability**

Store dry at Room temperature (15–25℃) upon receipt. Stable for up to 24 months without showing any reduction in performance and quality.

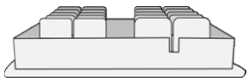
5. SAFETY INFORMATION & HAZARD WARNINGS

- **Flammability Hazard:** The reagent cartridges or plates contain ethanol, which is flammable.
- **Chemical Hazard:** Guanidine thiocyanate and Guanidine hydrochloride (components of the Lysis Buffer and Washing Buffer 1) are harmful and act as irritants.
- **Personal Protective** Equipment (PPE): Always wear protective gear (such as disposable gloves) when handling chemical materials and test samples.
- **Contamination Prevention:** Be careful and prevent contamination and direct contact from the test samples. Contamination should be considered very seriously, and the workstation should be kept with extreme cleanness to avoid false-positives.
- **Decontamination:** Surface of workspace and pipettes should be regularly sterilized. Use RNase WiPER (Cat. 21131) to clean the desk, or a 1/20 diluted household bleach solution. All waste should be sterilized before discarding.

6. MATERIALS REQUIRED BUT NOT PROVIDED

- **Miracle-AutoXT Nucleic Acid Extraction System**

- **Cartridge Rack (Individual type only)**



- **Pipette and air barrier tips**
- **Disposable gloves**
- **1.5 ml micro tubes**
- **General lab equipment)**

7. BEFORE YOU BEGIN

- Power on the Miracle-AutoXT Nucleic Acid Extraction System Instrument.

> **Note :** It is recommended that the equipment is maintained through ultraviolet rays prior to use.

- Firmware & Hardware: Ensure firmware v1.3+ (with VIRUS protocol) is installed and high-strength magnetic rods are used.
- Plunger Tips: Insert the required number of tips into the sockets.
- Cartridges/Plates: Mount Cartridges (on a rack) or Well Plates onto the block in the correct orientation.

8. PROTOCOLS

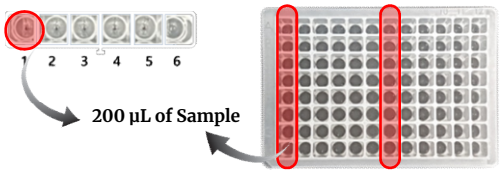
8.1. Sample Preparation

- **Cultured Cell:** 0.1 - 2.0 × 10^6 cells per 200 µL suspension.
- **Bacteria Culture:** Centrifuge the 1 - 3 OD bacteria culture, then resuspend the pellet with 200 µL of media or buffer.
- **Tissue:** Grind 10 - 50 mg of tissue with 200 µL of PBS Buffer.
- **Swab:** Air-dry for at least 2 hours after collection, then resuspend with 500 µL of PBS buffer.
- **Stool:** Resuspend 20 - 200 mg of stool samples with 1 mL of PBS buffer.
- **Blood, Serum, Body fluids:** 200 µL of specimen.

8.2. DNA/RNA Extraction (Automated Workflow)

1) **Reagent Preparation: Peel off the cover seal from the AutoXT PGS DNA/RNA Kit.**

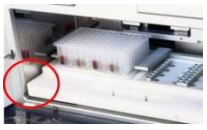
2) **Sample Loading: Add 200 µL of the Specimen to the first well (Well 1) of each cartridge or plate..**



[The adding well-position of the specimen]

3) **Insert to Device: Insert the Prefilled Well-Plate or Cartridge Rack combined with Prefilled Cartridges on the Heating Tray. Make sure the position of the diagonally cut edge of the plate is forward on the Heating Tray.**

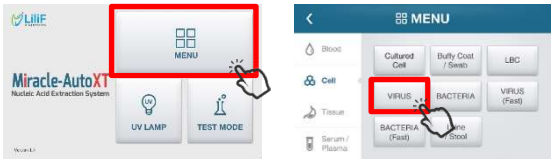
> **Caution :** If it is inserted incorrectly or upside down, it may cause an operating error and extraction may not work.



[Correct way of inserting Heating Tray in the device]

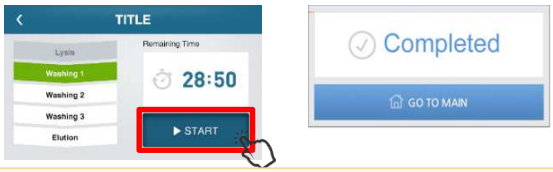
4) **Program Selection: Close the front door. The instrument is now ready to start. Press the 'MENU' button on the touch display, then select the 'Cell' tab button on the touch display of the Miracle-AutoXT Nucleic Acid Extraction System to select the extraction type.**

5) **Select the VIRUS icon for viral DNA/RNA extraction.**



Note : If you select the 'VIRUS (Fast)' program, you can shorten the total running time. However, we recommend that you check whether the 'VIRUS (Fast)' program is suitable for your testing conditions.

6) **Run Extraction: Press the 'START' button to perform the extraction.**



Device Operation Notes :
- **Progress:** Auto-starts with remaining time (Blue: current, White: remaining).
- **Timer:** Pauses during magnetic rod positioning (~3-4 mins).
- **Pause/Resume:** Press 'Pause', or open/close the door.
- **Reset:** Press 'Home' (top-right) to cancel and reset.

7) **Elution & Storage: After completion, the device emits a beep. Transfer the 40-50 µL of Elution fraction (well position 6) to a new 1.5 ml Microtube. Store the DNA/RNA at the appropriate temperature (4℃ : 1-2 days, -20 ℃ : 1-4 weeks, -70 ℃ : 1-6 months).**

9. TROUBLESHOOTING GUIDE

Problem	Possible cause	Recommendation
Lower viral nucleic acid recovery than expected	Sample homogenization was incomplete	Incomplete homogenization results in loss of DNA/RNA yield within particulates and clumps of debris.
	The starting samples were compromised	Ensure that samples were collected, shipped, and stored according to recommended guidelines.
	Wrong method selected	Ensure that the correct method is chosen in Virus Mode.
	Hardware setup issue	Check that Plunger Tips were added to the cartridge. Ensure that all cartridges are snapped into the rack properly before processing. Check amount and storage conditions of starting materials. Check and ensure the block set temperature is at 65°C.
Poor amplification	Paramagnetic particle carryover	May cause interference in the amplification reaction. Remove particles in the Elution Tube by centrifugation.
Cross-contamination	Splashing	Avoid splashing when adding lysates to cartridges. Cartridges may be removed from the rack for sample addition to minimize contamination of adjacent cartridges. Use fresh plastic wares for each sample.
Virus method not an option on the instrument	Firmware issue	Verify that the instrument is in Engineer mode and has firmware version 1.3 or higher, which includes the Viral method.

10. PRODUCT WARRANTY / SATISFACTION GUARANTEE

- All products are undergone extensive quality control test and are warranted to perform as described when used correctly.
- Immediately any problems should be reported.
- Satisfaction guarantee is conditional upon the customer providing full details of the problem to iNtRON within 60 days, and returning the product to iNtRON for examination.

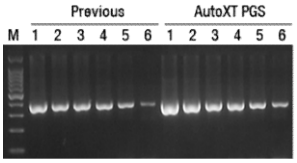
11. EXPERIMENTAL INFORMATION

RT-PCR detection results tested by RNA extraction from 10-fold serial diluted (10^0 - 10^{-5}) specimens (Newcastle Disease Virus, Bovine corona virus, Transmissible gastroenteritis coronavirus) demonstrate that the AutoXT PGS DNA/RNA Kit provides highly consistent yield and sensitivity across triplicated testing sets compared to previous spin-column methods.

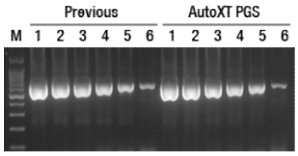
※ Experimental Data 1 : Comparative Test with Previous Kit (Spin Column type)

Fig 1. Comparative Analysis of Viral RNA Extraction Efficiency

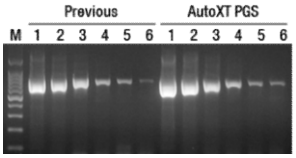
- **Newcastle Disease Virus (Top conc. : 4×10^7 EID50)**



- **Bovine corona virus (Top conc. : 4×10^4 TCID50)**



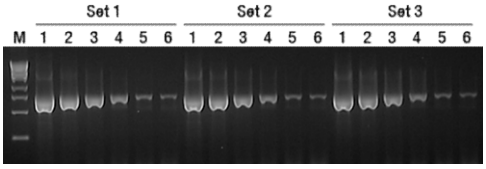
- **Transmissible gastroenteritis coronavirus (Top conc. : 2×10^3 TCID50)**



- **Lane Information:** Lane M represents the DNA Marker. Lanes 1 - 6 show the RT-PCR detection results tested by RNA extraction from 10-fold serial diluted (10^0 - 10^{-5}) specimens.

※ Experimental Data 2 : Reproducibility Test Data

Fig 2. Reproducibility Test of Viral RNA Extraction



- **Lane Information:** Lane M represents the DNA Marker. Lanes 1 - 6 show the RT-PCR detection results tested by RNA extraction from 10-fold serial diluted (10^0 - 10^{-5}) specimens.

12. ORDERING INFORMATION

Product Name	Cat. No.
Miracle-AutoXT Nucleic Acid Extraction System	IMC-NC15PLUS
Patho Gene-spin™ HS DNA/RNA Extraction Kit	17156
G-spin™ Total DNA Extraction Kit	17045 (50 col.) 17046 (200 col.)
Maxime™ RT-PCR PreMix	25131
RealMOD™ Probe R^2 2X qRT-PCR mix (with UDG)	25362.100 (100 rxns) 25362.500 (500 rxns) 25362.1000 (1000 rxns)
RealMOD™ Probe R^2 2X qPCR mix (with UDG)	25363.200 (200 rxns) 25363.500 (500 rxns) 25363.1000 (1000 rxns)
RealMOD™ Green T^2 2X qRT-PCR mix (with UDG)	25365.100 (100 rxns) 25365.300 (300 rxns)
RealMOD™ Green T^2 2X qPCR mix (with UDG)	25364.200 (200 rxns) 25364.500 (500 rxns)