Mini Horizontal Electrophoresis System

Instruction Manual

Catalog No. MJ-105-S
MJ-105-R
MT-108

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Packing list

MJ-105-S or MJ-105-R:

- 1x Snow Shorter Mini Electrophoresis Tank for MJ-105-S or
  1x Red Shorter Mini Electrophoresis Tank for MJ-105-R
- 1x Shorter Mini Electrophoresis Cover
- 2x Gel Maker Stand
- 2x 107 x 60 mm Tray
- 4x 52 x 60 mm Tray
- 1x Double Side Comb: 6 teeth x 2 & 12 teeth
  Prep 1 + Marker 2 & Prep2 + Marker 2 & 23 teeth
- 1x Double Side Comb: 8 teeth x 2 & 17 teeth
  12 teeth x 2 & 25 teeth
- 1x Black & Red Power Cord
- 1x Mini Horizontal Electrophoresis System Instruction Manual

MT-108:

- 1x Wide Mini Electrophoresis Tank & Cover
- 1x Gel Maker Stand
- 1x 105 x 83 mm Tray
- 2x 50 x 83 mm Tray
- 1x Double Side Comb: 6 teeth x 2 & 12 teeth
  Prep 1 + Marker 2 & Prep2 + Marker 2 & 23 teeth
- 1x Double Side Comb: 8 teeth x 2 & 17 teeth
  12 teeth x 2 & 25 teeth
- 1x Black & Red Power Cord
- 1x Mini Horizontal Electrophoresis System Instruction Manual

Signed by:
Date:

Major Science is liable for all missing or damaged parts / accessories within 7 days after customer receives this instrument package. Please contact Major Science immediately regarding this issue. If no response is received within such a time period from consignee party, it will be the consignee party's whole responsibility.

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Warning

Major Science Mini Horizontal Gel Electrophoresis System series has been tested and found to comply with the limits for the CE regulation. Also, Mini Horizontal Gel Electrophoresis System series is RoHS compliant to deliver confident product which meets the environmental directive. These limits are designed to provide reasonable protection against harmful interference when the instrument series is operated in a commercial environment. This instrument series used together with power supply unit generates, uses, and can radiate radio frequency energy, and if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this instrument series in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at their expense. Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment. It is strongly recommended for the user to read the following points carefully before operating this equipment.

1. Read and follow the manual instructions carefully.
2. Do not alter the equipment. Failure to follow these directions could result in personal and/or laboratory hazards, as well as invalidate equipment warranty.
3. Use a properly grounded electrical outlet with correct voltage and current handling capacity.
4. Disconnect from power supply before maintenance and servicing. Refer servicing to qualified personnel.
5. Never use this instrument series without having the safety cover correctly in position.
6. Do not use the unit if there is any sign of damage to the external tank or cover. Replace damaged parts.
7. Do not use in the presence of flammable or combustible material; fire or explosion may result. This device contains components which may ignite such materials.
8. Refer maintenance and servicing to qualified personnel.
9. Ensure that the system is connected to electrical service according to local and national electrical codes. Failure to make a proper connection may create fire or shock hazard.
10. Use appropriate materials and operate correctly to avoid possible hazards

of explosion, implosion or release of toxic or flammable gases arising from overheated materials.

11. The unit shall be operated only by qualified personnel.

Safety Information

Use high level of precaution against any electrical device. Before connecting the electrical supply, check to see if the supply voltage is within the range stated at the rating label, and see to it that the device be seated firmly. Place the unit in a safe and dry location; it must NOT touch the surrounding. Follow the safety precautions for chemicals / dangerous materials. If needed, please contact qualified service representative or service@majorsci.com

Environmental Conditions

Ensure that the instrument is installed and operated strictly under the following conditions:

1. Indoor use only
2. ≤95% RH
3. 75 kPa – 106 kPa
4. Altitude must not exceed 2000 meters
5. Ambient to 40°C operating temperature
6. Pollution degree: 2
7. Mains supply voltage fluctuations up to ±10% of the normal voltage

Avoiding Electrical Shock

Follow the guidelines below to ensure safe operation of the unit.

To avoid electrical shock:

1. NEVER connect or disconnect wire leads from the power supply unit when the power supply unit is still on.
2. WAIT at least 5 seconds after stopping a run before handling output leads or connected apparatus.
3. ALWAYS make sure that hands, work area, and instruments are **clean** and **dry** before making any connections or operating the power supply.

Avoiding Damage to the Instrument

1. Do not attempt to operate the device if damage is suspected.
2. Protect this unit from physical damage, corrosive agents and extreme temperatures (direct sunlight, etc.).
3. For proper ventilation and safety concerns, keep at least 10 cm of space behind the instrument, and at least 5 cm of space on each side.
4. Use high level of precautions against the damages on the unit.
5. Do not operate the unit out of environmental conditions addressed above.
6. Prior to applying any cleaning or decontamination methods other than manufacturer's recommendation, users should check with the manufacturer's instruction to see if the proposed method will damage the equipment.

Equipment Operation

Follow the guidelines below to ensure safe operation of the unit:

1. NEVER access dangerous chemicals or other materials to prevent possible hazard of explosion and damage.
2. Do not operate the unit without lids or covers to prevent possible hazards.
3. A temporary conductivity caused by condensation might occur even though this series is rated Pollution Degree 2 in accordance with IEC 664.

Symbol

The symbol used on Mini Horizontal Electrophoresis System series is explained below.

Indicates an area where a potential shock hazard may exist. Consult the manual to avoid possible personal injury or instrument damage.

Section 1 Introduction

1.1 Overview

The Major Science Mini Horizontal Electrophoresis System series has a comprehensive design for several kinds of applications. Its excellent and consistent performance time after time delivers accurate and reliable experimental results. Furthermore, this series is also offered with the Major Science Minis Power Supply series as packages with even more competitive pricing offerings and great value as well as convenience to the user. More importantly, the Mini Horizontal Electrophoresis System series is RoHS-compliant and designed to comply with CE regulations.

1.2 Product Description

The MJ-105-S, MJ-105-R, and MT-108 Mini Horizontal Gel Electrophoresis System series is designed for very fast and clear separation of DNA or RNA restriction fragments. This series is offered as a complete system, including all the necessary accessories for the user to cast, run and perform electrophoresis. It is constructed of polycarbonate to withstand up to 130°C. It is a single molded unit designed to prevent cracks or leakages. This simple operated gel casting system and electrophoresis system maximizes the consistency of each procedure. The safety interlock cover is designed to prevent electrical hazards during electrophoresis.

Features:

- Less agarose consumption
- Less running buffer consumption
- Multichannel pipette compatible
- Single molded tank
- Two tray options available
- Safety & Ventilation Cover/Lid
- Contain 2 sets of gel maker stand for MJ-105-S and MJ-105-R
  Contain 1 set of gel maker stand for MT-108
- Cast 6 pcs of agarose gel in one time for MJ-105-S and MJ-105-R

Cast 3 pcs of agarose gel in one time for MT-108

- High temperature capability, 130˚C
- Easy sample loading
- Great indications for gel-making and running
- No tapes, clamps or springs needed

Section 2 Technical Specifications

MJ-105-S and **MJ-105-R**

MJ-105-S Appearance	1 x snow tank, 1 x transparent lid, 2 x gel maker stand, 6 x trays, 2 x combs, 1 x black & Red power cords
MJ-105-R Appearance	1 x transparent red tank, 1 x transparent lid, 2 x gel maker stand, 6 x trays, 2 x combs, 1 x black & Red power cords
Construction Material (Tank, Gel Maker Stand, Comb and Tray)	PC (Polycarbonate)
Construction Material (Transparent Lid)	AS (Acrylonitrile-Styrene Copolymer)
Temperature Capacity	130°C
Unit Dimension (Tank and Transparent Lid)	140 x 140 x 53 mm (W x L x H)
Gel Dimension (Tray)	52 x 60 mm 107 x 60 mm
Maximum Gel Thickness	10 mm
Maximum sample	25 samples
Buffer Volume	Approx. 200 ml
Transparent Lid	Safety and ventilation design
Tray	Black well-visualization strip Migration distance index line Agarose level, 5 mm
Rapid Casting Gel	Use gel maker stand
Operating Temperature	4 - 40°C
Weight	Approx. 0.5 kg

MT-108

Construction Material (Tank, Gel Maker Stand, Comb and Tray)	PC (Polycarbonate)
Construction Material (Transparent Lid)	AS (Acrylonitrile-Styrene Copolymer)
Temperature Capacity	130°C
Maximum Gel Thickness	10 mm
Maximum sample for MT-108	25 samples
Unit Dimension (Tank and Transparent Lid)	136 x 188 x 58 mm (W x L x H)
Gel Dimension for MT-108	50 x 83 mm 105 x 83 mm
Buffer Volume	Approx. 400 ml
Transparent Lid	Safety and ventilation design
Tray	Black well-visualization strip Migration distance index line
Rapid Casting Gel	Use gel maker stand
Operating Temperature	4 - 40°C
Weight	0.7 kg

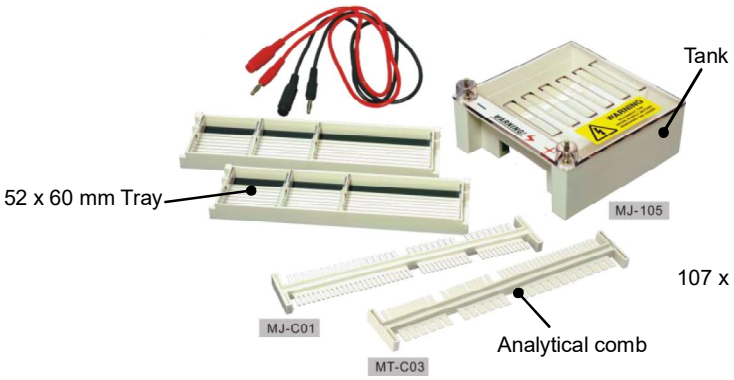
Section 3 Installation Instructions

1. Seat the tray in the unit and note the position of the comb grooves. The samples run black to red but the trays can be used in the forward and backward direction. So make sure that the comb grooves closest to the black electrode are marked.
2. Remove the tray.
3. Note the position of the cover on the unit. This indicates the correct polarity and the correct orientation of the power codes: black is negative and red is positive.

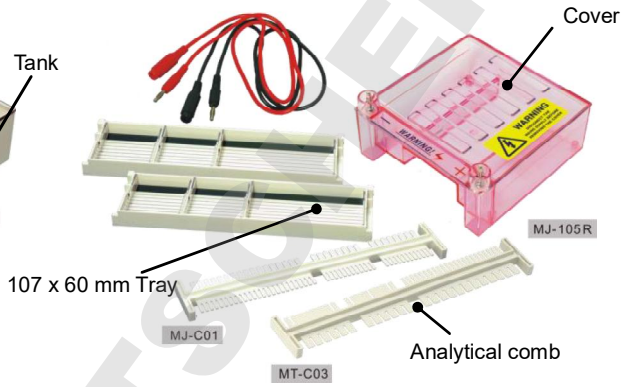
Section 4 Operation Instructions

4.1 Controls and Features

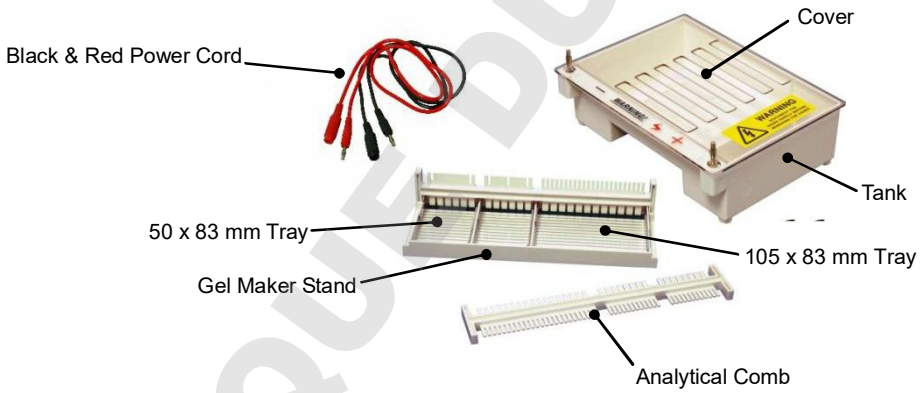
MJ-105-S



MJ-105-R



MT-108



4.2 Start the operation

Gel Preparation

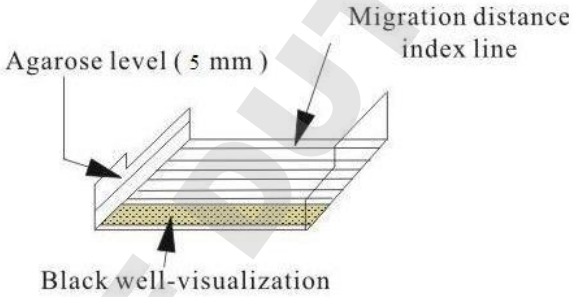
1. Add the appropriate amount of agarose powder and 1x TAE or 1x TBE solution into a glass flask or beaker based on desired ratio.
2. Dissolve the agarose powder by heating the agarose either on a magnetic hot plate with a stirring bar or in a microwave oven. If using the microwave method, the microwave should be set at around 400W or medium setting

with the flask swirling once every minute. The solution should be heated until all crystals are dissolved. This is best viewed against a light background. Crystals appear as translucent crystals. These will interfere with sample migration if not completely dissolved.

Note: The gel must be cooled to between 50°C and 60°C degrees before pouring.

3. Install the Gel Tray in the Gel Maker Stand.
4. Select the suitable Analytical Comb for the application.
5. Pour approx. 25 to 30 ml of agarose solution for a large tray; pour 12 to 15 ml for a small tray. The tray contains the agarose level for reference.

Note: Pour the agarose carefully so as not to generate bubbles. Any bubble that surfaces could be smoothed to the edge of the gel and dispersed using a pipette tip.



6. Place the comb(s) into the grooves.
7. As for the MJ-105 series, both Gel Maker Stands can be connected together for user convenience.

Gel Running

1. Carefully remove the comb and transfer the gel, including the tray, to the electrophoresis tank.
2. Refer to the molecular biology protocols for sample preparation.
3. Fill the electrophoresis tank with buffer until the gel is just filled to the top.

This will give the fastest resolution times. For enhanced quality of resolution of the sample, we suggest filling the electrophoresis tank to 5mm above the gel.

4. Load the samples into the wells, and then attach the safety ventilation cover. Finally connect the power cords to the power supply unit.
5. Turn on the power supply unit and adjust to the desired electrophoresis running conditions.
6. When the electrophoresis running is complete, turn the power supply unit off first and then disconnect the power cords and remove the safety cover.

Note: Ensure that the power supply unit is turned off before assembly or disassembly of any electrophoresis unit.

Section 5 Maintenance

The Major Science Horizontal Electrophoresis System series can be cleaned with warm water (below 40°C) with a mild detergent no more than 20 minutes. After that, rinse with distilled water. Air-dry before use. Some cleaning agents are not supposed to come in contact with the electrophoresis systems, such as Acetone, Phenol, Chloroform, Alcohol and Alkalis. Contact Major Science for details and suggestions.

* Trays are particularly vulnerable to scratch. Make sure cleaning with care.

Section 6 Ordering Information

Cat. No.	Description
MJ-105-S	Snow Mini Horizontal Electrophoresis System
MJ-105-R	Red Mini Horizontal Electrophoresis System
MT-108	Wide Mini Horizontal Electrophoresis System

Single Electrophoresis Packages

MJS-100P	Package of MJ-105-S and MP-100
MJR-100P	Package of MJ-105-R and MP-100
MT-100P	Package of MT-108 and MP-100
MJS-Mini300	Package of MJ-105-S and Mini-300
MJR-Mini300	Package of MJ-105-R and Mini-300
MT-Mini300	Package of MT-108 and Mini-300

Dual Electrophoresis Packages

MJSS-Mini300	Package of 2 x MJ-105-S and Mini-300
MJRR-Mini300	Package of 2 x MJ-105-R and Mini-300
MTT-Mini300	Package of 2 x MT-108 and Mini-300
MJSR-Mini300	Package of MJ-105-S & MJ-105-R and Mini-300
MJST-Mini300	Package of MJ-105-S & MT-108 and Mini-300
MJRT-Mini300	Package of MJ-105-R & MT-108 and Mini-300

ACCESSORIES

MJ-G01	Gel Maker Stand
MJ-T01	52 x 60 mm Tray
MJ-T02	107 x 60 mm Tray
MJ-C01	Analytical Comb 8 teeth x 2 for mini gel & 17 teeth for midi gel 12 teeth x 2 for mini gel & 25 teeth for midi gel
MT-C03	Analytical Comb 6 teeth x 2 for mini gel & 12 teeth for midi gel Prep 1 + Marker 2 & Prep 2 + Marker 2 for mini gel & 23 teeth for midi gel

MT-P01	Power Cord (Black & Red)
MJ-CASTER-C	contains: 2 x MJ-G01; 4 x MJ-T01; 2 x MJ-02 and 2 x MJ-C01
MT-CASTER-C	contains: 1 x MT-G01; 1 x MT-T01; 2 x MT-02; 1 x MT-C03 and 1 x MJ-C01

Single Electrophoresis Packages

MJS-100P

MJR-100P

MJS-Mini300

MJR-Mini300

MT-Mini300

Dual Electrophoresis Packages

MJSS-Mini300

MJRR-Mini300

MJSR-Mini300

MJST-Mini300

MJRT-Mini300

MTT-Mini300

Section 7 Warranty

Major Science warrants apparatus of its manufacture against defects in materials and workmanship, under normal service, for ***one year from the shipping date to purchaser***. This warranty excludes damages resulting from shipping, misuse, carelessness, or neglect. Consumable parts (platinum wire) are not covered by our warranty. Major Science's liability under the warranty is limited to the receipt of reasonable proof by the customer that the defect is embraced within the terms of the warranty. All claims made under this warranty must be presented to Major Science within one year following the date of delivery of the product to the customer.

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