

Gradient Formers

Instruction Manual

Catalog No. MGM-15

MGM-25

MGM-50

MGM-100

MGM-500

Version 02A

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COSMO BIO Co., LTD.
Inspiration for Life Science

Packing List

	Main Unit	Retort Stand Handle	Instruction Manual
MGM15			
MGM25			
MGM50			
MGM100			
MGM500			

The packing lists should be referred to as soon as the units are received to ensure that all components have been included. The unit should be checked for damage when received. Please contact your supplier if there are any problems or missing items.



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Section 1 Safety Precaution



WHEN USED CORRECTLY, THESE UNITS POSE NO HEALTH RISK.

HOWEVER, THESE UNITS CAN DELIVER DANGEROUS LEVELS OF ELECTRICITY AND ARE TO BE OPERATED ONLY BY QUALIFIED PERSONNEL FOLLOWING THE GUIDELINES LAID OUT IN THIS INSTRUCTION MANUAL.

ANYONE INTENDING TO USE THIS EQUIPMENT SHOULD READ THE COMPLETE MANUAL THOROUGHLY.

THE UNIT MUST NEVER BE USED WITHOUT THE SAFETY LID CORRECTLY IN POSITION.
THE UNIT SHOULD NOT BE USED IF THERE IS ANY SIGN OF DAMAGE TO THE EXTERNAL TANK OR LID.

THESE UNITS COMPLY WITH THE STATUTORY CE SAFETY DIRECTIVES:

73/23/EEC: LOW VOLTAGE DIRECTIVE: IEC 1010-1:1990 plus AMENDMENT 1:1992

EN 61010-1:1993/BS EN 61010-1:1993



Section 2 Specification

Cat. No.	MGM-15	MGM-25	MGM-50	MGM-100	MGM-500
Total Volume (ml)	15	25	50	100	500
Inner Diameter (mm)	12.75	16	19	25	25
Material	Acrylic				



Section 3 Care and Maintenance

Cleaning Gradient Former Units

Units are best cleaned using warm water and a mild detergent.

Water at temperatures above 60⁰ C can cause damage to the unit and components.

The units should be thoroughly rinsed with warm water or distilled water to prevent build up of salts and residue.

Air drying is preferably before use.

The units should only be cleaned with the following:

Warm water with a mild concentration of soap or other mild detergent.

Compatible detergents include dishwashing liquid, Hexane and Aliphatic hydrocarbons

The units should not be left to in detergents for more than 30 minutes.

The units should never come into contact with the following cleaning agents, these will cause irreversible and accumulative damage:

Acetone, Phenol, Chloroform, Carbon tetrachloride, Methanol, Ethanol, Isopropyl alcohol
Alkalis.



Section 4 Setting up the Gradient Former – Standard Protocol

1. The Gradient Former works best when placed on a magnetic stirring plate and the surface is perfectly level. The retort stand bar can be used to secure the gradient Former in place. The unit should be completely cleaned **as soon as possible** after the previous use. Running through with distilled water will remove residual solutions but not any polymerized acrylamide, this will need to be removed with a suitable dimension wire. A suitable peristaltic pump is recommended to aid transfer of the gradient solution to the receptacle.
2. Insert an appropriately sized magnetic stir bar into the first chamber – the one furthest from the outlet. This is the chamber which will be used to mix the gradient. An identical stir bar should be placed in the second chamber.
3. Connect tubing to the outlet and the peristaltic pump. Insert the end of the tube into the receptacle.
4. Make sure the stopcock handles are in the up - closed position.
5. Add the required volume of the final solution to the second chamber.
6. Carefully open the connector stopcock and allow just enough solution to flow through the connector channel to fill it to the edge of the mixing chamber, then close the stopcock. Be sure no large bubbles remain to obstruct flow through the channel.
7. Add the required volume of the starting solution to the first chamber and start the magnetic stirrer.
8. Open the first stopcock.



9. Simultaneously open the connector stopcock and start the pump.
10. Watch the delivery carefully to ensure that there are no air bubbles and as soon as the last of the solution has entered the pump head, stop the pump and remove the tubing from the receiving container.
11. Flush and rinse all parts thoroughly with distilled water after use.



Section 5 Specific Application Notes

5.1 Pouring gradients from the top

This creates a dense solution first gradient.

1. Proceed as per the standard protocol above, putting light (final or top) solution in the reservoir chamber (step 5) and dense solution in the mixing chamber (step 7).
2. Place the outlet tube against the upper edge of the receptacle, most usually a multiple casting unit, but this can also be used with a single or dual casting system such as the MV-10DSYS.
3. It is very important to adjust the pump rate so that the solution flows evenly down the side in a smooth, continuous stream. If the speed is too fast then the gradients will mix or bubbles will develop.
4. Proceed until the receptacle has filled to the desired level. The combs once inserted will take place of some of the gel liquid so it is important to leave the appropriate space.

5.2 Pouring gradients from the bottom

1. Proceed as per the standard protocol above, putting dense (final or top) solution in the reservoir chamber (step 5) and light solution in the mixing chamber (step 7).
2. Place the outlet tube into the port in the receptacle, most usually a multiple casting unit.
3. It is very important to adjust the pump rate so that the solution flows evenly in a continuous slow stream. If the speed is too fast then the gradients will mix or bubbles will develop.
4. Proceed until the receptacle has filled to the desired level. The combs once inserted will take place of some of the gel liquid so it is important to leave the appropriate space.

5.3 Gradients requiring complete displacement of the gradient solution

Use of a displacement solution is required if all of the gradient solution must be delivered to the receptacle.

1. Follow the standard protocol above.
2. Add the displacement fluid to the mixing chamber and dispel until all of the gradient mix has been delivered to the receptacle. The displacement fluid used should be



denser than the gradient solution the mixing chamber. Using a coloured displacement liquid will help identify the end of the gradient solution.

