

Microfilm™

Membrane Dispenser



Operation and Maintenance Instructions

Membrane Solutions, LLC

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1 .INTRODUCTION

Congratulations for your choice of **Microfilm™** membranes and dispenser for microbiological analysis of liquid samples.

The **Microfilm™** system consists of sterile membranes packed in a special pleated band within a cartridge and specially designed equipment to allow individual membrane dispensing.

Microfilm™ is designed to be used under standard «clean conditions» and with traditional membrane filtration methods.

With **Microfilm™**, three delicate manipulations are eliminated: opening individual sterile envelopes, separating the membrane from its protective papers and removing the fragile membranes from their packaging.

Microfilm™ is also an ideal complement to traditional filtration equipment.

2. COMPONENT PARTS

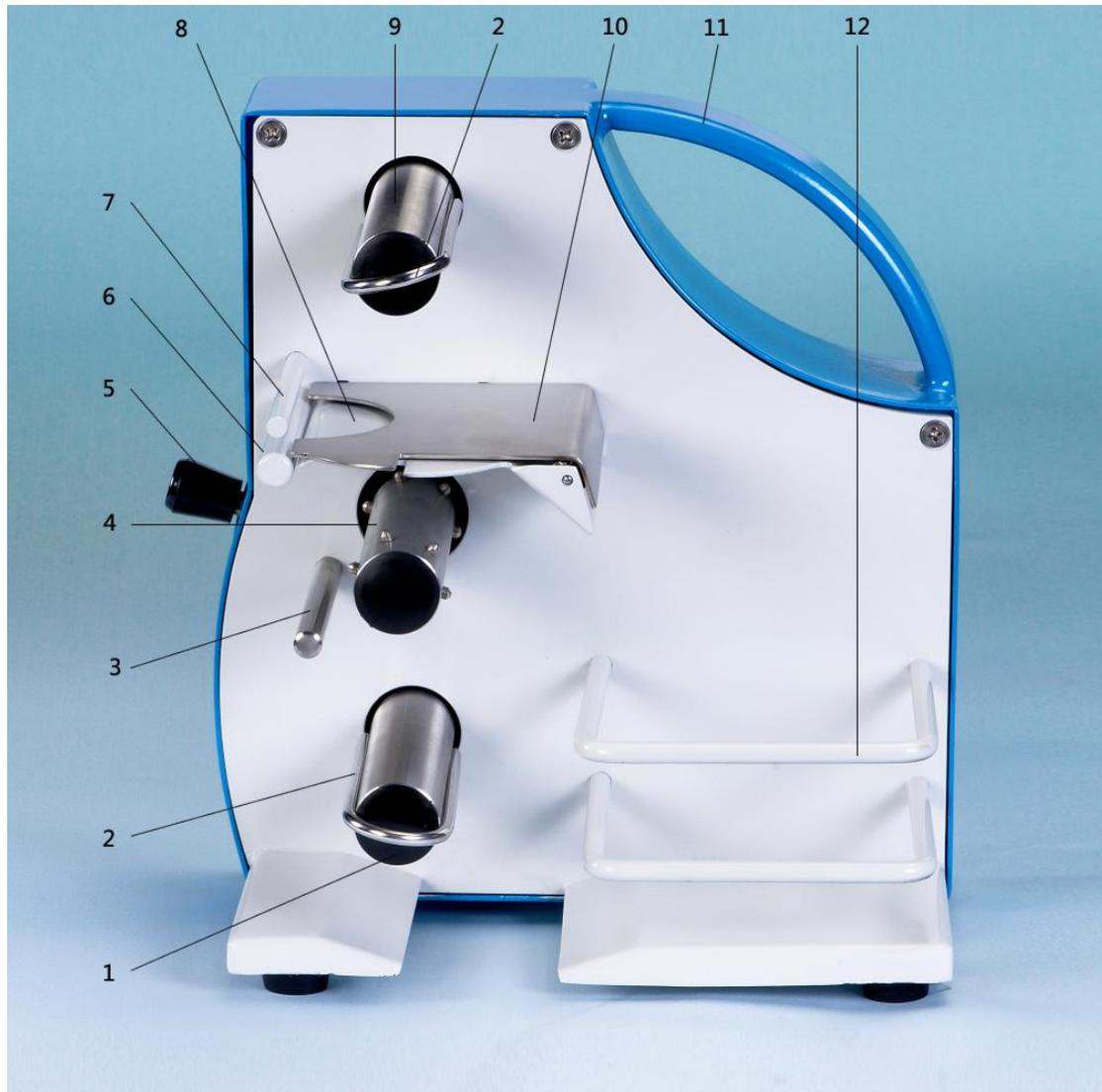


FIGURE 1-Assembly and component parts

- | | |
|-----------------------------------|--|
| 1 - Paper spool | 8 - Tensioning spring
(located under the back cover) |
| 2 - Film/paper spool clips | 9 - Film spool |
| 3 - Paper guide | 10 - Metal cover |
| 4 - Drive roller | 11 - Carrying handle
(moulded in the external case) |
| 5 - Actuator | 12 - Membrane cartridge holder |
| 6 - Plate | |
| 7 - Separating bar | |

3. START UP

1. Remove the dispenser from its packaging and place it on the work surface with the dispensing mechanism facing you.

2. Check that all the component parts are undamaged and in place as shown in Figure 1.

3. Open an **Microfilm™** membranes cartridge by detaching the pre-cut top cover and folding it over backwards (see Fig. 2).

4. Insert the cartridge in the holder so that the label is visible (see Fig. 3).

5. **Important operation:**
Fully depress the *actuator* before proceeding to ensure correct indexing of the *drive roller*. The arrow on the *drive roller* must point vertically upwards

Caution: Avoid letting the actuator spring back into place. Slow the movement with the finger.

6. Remove the metal cover by separating the cover tab from the plate tab (see Fig. 4).

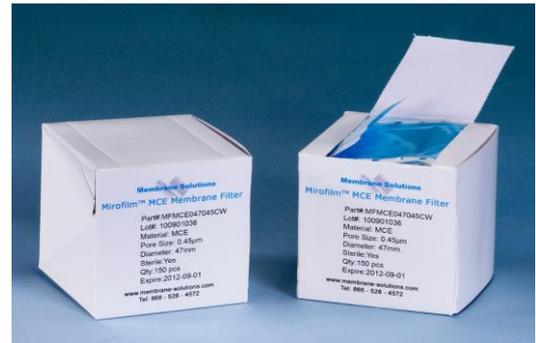


Fig.2



Fig.3



Fig. 4

7. Pull out the band until the first cell containing a membrane is visible (see Fig. 5).

Note: The first cells on the band do not contain membranes. This avoids wasting membranes when installing the band.

8. Introduce the **Microfilm™** band under the separating bar. Pull gently on the band to pass empty cells under the separating bar.

9. Reinstall the metal cover by inserting the pins in the housings, then aligning the cover tab with the plate tab (see Fig. 6). The locking ball should audibly «snap» into place.

10. Peel away the transparent plastic film from the paper backing of the first cells up to the separating bar.

11. Pull the backing paper through the mechanism as shown in Figure 1.

12. Rotate the paper spool until the clip is horizontal. Remove the paper spool clip. Place the backing paper on the spool and secure it with the clip. If necessary, manually rotate the paper spool clockwise to take up any slack.



Fig.5



Fig.6



Fig.7

- 13.** If necessary, slightly pull the backing paper back from the cover toward the holder until there is no slack left in the paper between the separating bar and the drive roller.
- 14.** Remove the film spool clip, place the end of the film on the film spool and secure it with the clip, being careful not to twist the film. The film should be firmly held between the clip and spool.
Manually rotate the film spool clockwise to take up the slack (see Fig. 7).
- 15.** Fully depress the actuator once then release it, slowing the upward movement with the finger.
- 16.** Verify that the membrane band is correctly installed by checking that the cell dispensed is approximately one-third open (the bluish seal should be peeled off around one-third of the edge) and that there is no slack in either the film or the backing paper.
The **Microfilm™** membrane dispenser is now ready for use.

4. USING THE DISPENSER

- 1.** Position the dispenser on the left-hand side* of your workstation as shown in Figure 8.
- 2.** To aseptically dispense a membrane, fully depress the actuator with your Left hand. Repeat this step if the cell released does not contain a membrane. During these operations, avoid letting the actuator spring back into place. Slow the movement with the finger.
- 3.** The membrane will be dispensed horizontally and held in place in the semiopened cell (see Fig. 8). Use a flamed and cooled forceps (see Fig.8) to remove the membrane with the right hand* by pulling it straight out from the cell.
- 4.** Proceed with filtration in the normal manner.
- 5.** After dispensing the last membrane, pull off the clips and remove the rolls of used packaging.

** invert if the operator is left handed*



Fig. 8

5. MAINTENANCE

The case surfaces may be cleaned using a mild detergent or decontaminated with alcohol. No other maintenance is required.

Precautions

- Avoid spraying liquids into the mechanism.
- Do not autoclave.
- Never use the *film spool* to lift or carry the dispenser. Use only the *carrying handle* for this purpose.
- If it proves necessary to lubricate certain mechanical parts, use only thick silicone grease, never oil, and be careful not to allow the grease to come in contact with the spools and drive belts.

6. SPECIFICATIONS

Materials of construction

External case: Stainless steel

Internal case: Stainless steel.

Paint: Baking finish.

Dimensions and Weight

Height: 240 mm. Width: 140 mm. Depth: 225 mm.

Weight empty: 4.7kg.

7. TROUBLE SHOOTING

Symptom	Probable cause	Corrective action
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Refer to Figures 9 and 10 for the list of component parts

Membranes not dispensed correctly

<p>1. The film is not separated from the paper backing on the plate edge (the film is pulled by the backing).</p>	<p>Separate the film from the paper backing up to the separating bar. If the fault persists, the film spool driving belt is worn</p>	<p>Replace the driving belts and the tensioning spring.</p>
<p>2. The paper backing catches on the sprockets (slack in the backing between drive roller and paper spool).</p>	<p>The film spool driving belt is worn.</p>	<p>Replace the driving belts and the tensioning spring.</p>
<p>3. There is slack in the paper backing between the plate and the drive roller:</p> <ul style="list-style-type: none"> ● The film is no longer separated from the backing at the plate edge. ● The film is separated from the backing at the plate edge. 	<p>The film spool driving belt is worn.</p> <p>The tensioning spring is not taut enough.</p>	<p>Replace the driving belts and the tensioning spring.</p> <p>Replace the tensioning spring and the driving belts.</p>
<p>4. The actuator does not drive the drive roller:</p> <ul style="list-style-type: none"> ● The symptom persists, but disappears when the actuator is raised all the way against the stop. ● The symptom persists when the actuator is depressed then raised fully against the stop. 	<p>The lever spring is no longer taut enough</p> <p>The latch springs are damaged.</p>	<p>Check whether the symptom persists after fully depressing the pushbutton all the way down against the stop.</p> <p>Replace the lever spring.</p> <p>Replace the latch springs. It is recommended that the driving belts and tensioning spring be replaced at the same time.</p>

Symptom	Probable cause	Corrective action
<i>The metal cover is difficult to install or is not securely held in the housing.</i>		
	The locking ball is out of adjustment.	Adjust the position of the locking ball with a screwdriver
<i>Removing a partially used band from the spools and reinstalling it after repair:</i>		
1. Rotate the <i>paper spool</i> counterclockwise by two turns to slacken the paper backing.		
2. Remove the <i>paper spool</i> clip		
3. Remove the paper backing by pulling it straight out of the <i>paper spool</i>		
4. Take the paper backing off the sprockets on the drive roller and the paper guide.		
5. To remove the film, repeat steps 1 to 3 above on the film spool.		
6. Lay the film on the paper backing.		
7. Cut the film and paper off at the fourth empty cell (the fourth cell ahead of the first membrane).		
8. Repeat steps 11 to 16 to reinstall the band. To position the backing paper (step 11), the vertical arrow must be located two sprocket holes ahead of a fold (the closest fold is located to the left of the arrowhead).		

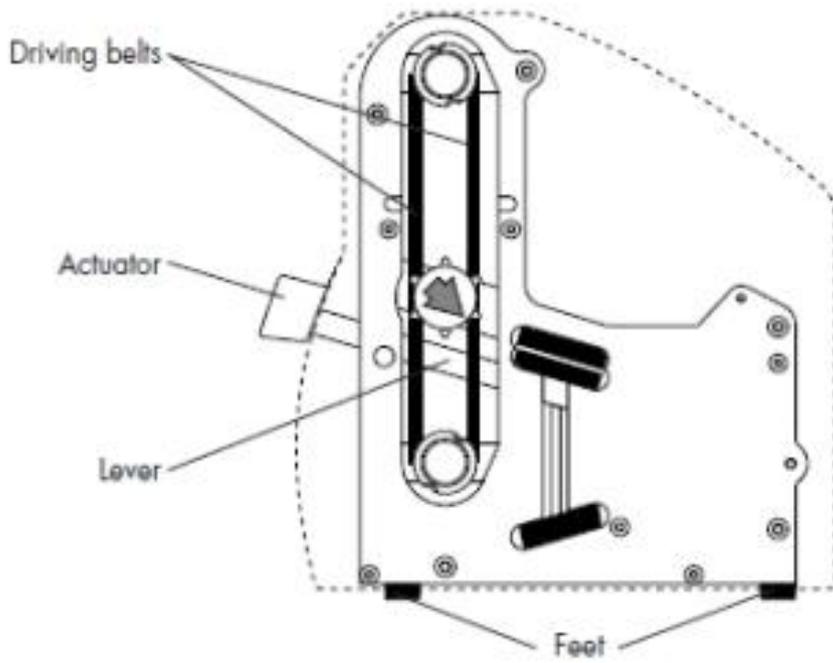


Fig.9

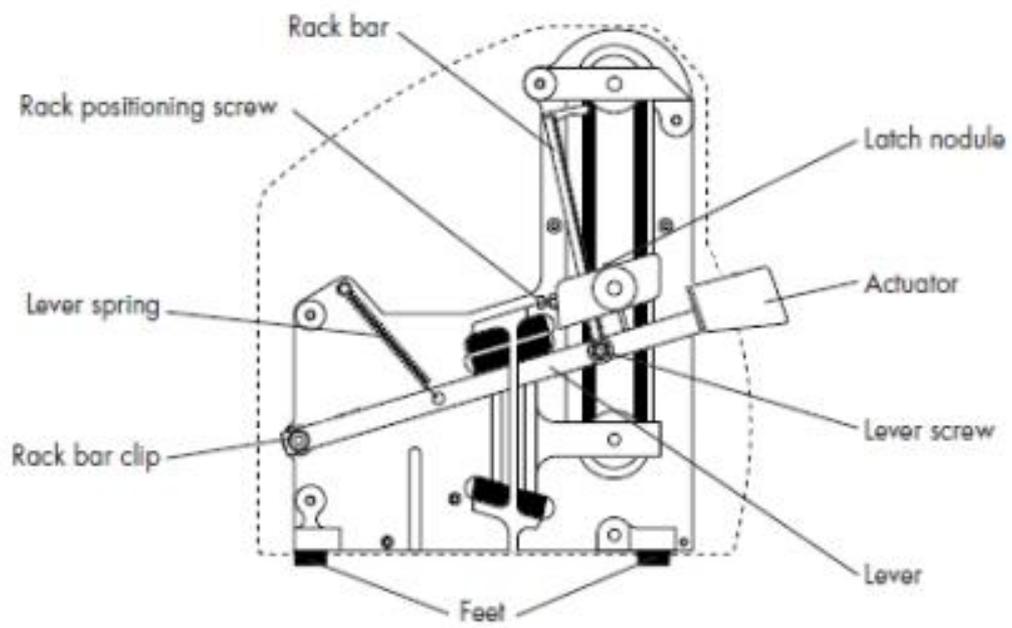


Fig.10

8. REPLACING WEAR PARTS

Driving Belts and Latch Springs

These parts should be replaced together.

Tools

- 2.5 mm and 3 mm Allen keys
- Latch spring installation tool
- Set of latch belts and springs
- Scissors or cutter
- Cloth and cleaning agent

Procedure

1. Unscrew the 6 socket head screws with the 2.5 mm Allen key and remove the inside cover (located on the side of the spools).
2. Remove the outside cover as follows:
 - Break the retaining tab located under the actuator with a screwdriver or other strong pointed object and remove the actuator.
 - Remove the two feet by pushing the internal shaft and pulling on the feet.
 - Unscrew the five socket head screws from the cover with the 3 mm Allen key.
 - Push the lever down against the stop and hold it there.
 - Remove the cover.
3. Cut the two drive belts.

Replacing the Latch Springs

4. Lift the latch and cut the two retaining springs.
5. Remove the latch.
6. Engage the spring installation tool on the drive roller.
7. Fit two new springs on the tool to place them in their grooves.
8. Remove the installation tool.
9. Lift the two springs and fit the latch in its housing.

Replacing the Driving Belts

- 10.** Clean the spool grooves with a clean cloth slightly moistened with a cleaning agent (e.g. acetone).
- 11.** Set the two belts on a flat surface, one inside the other.
- 12.** Engage the larger belt (the outside one) on the film spool and drive roller.
- 13.** Move the belt along the spools, fitting it over the sprockets, until it is in the grooves.
- 14.** Engage the second, smaller belt on the paper spool and drive roller.
- 15.** Move the belt along the spools, fitting it over the sprockets, until it is in the grooves.
- 16.** Install the inside and outside covers by carrying out steps 1 and 2 in reverse order.
- 17.** Check that the belts are correctly positioned by operating the actuator several times.

Tensioning Spring

The tensioning spring should always be replaced at the same time as the latch belts and springs.

Tools

- Adjustable wrench
- Tensioning spring

Procedure

- 1.** Unscrew the spring-nut and lock-nut located under the plate. Remove the two washers and the old spring.
- 2.** Install a new spring, the flat washer then the self-locking washer, the nut and the lock-nut.
- 3.** Check that the spring does not rub against the sides of the oblong hole.

Lever Spring

Tools

- 2.5 mm Allen key
- 3 mm Allen key
- Lever spring

Procedure

- 1.** Unscrew the 6 socket head screws with a 2.5 mm Allen key and remove the inside cover (located on the side of the spools).
- 2.** Remove the outside cover as follows:
 - Break the retaining tab located under the actuator with a screwdriver or other strong pointed object and remove the actuator.
 - Remove the two feet by pushing the internal shaft and pulling on the feet.
 - Unscrew the five socket head screws from the cover with the 3 mm Allen key.
 - Push the lever down against the stop and hold it there.
 - Remove the cover.
- 3.** The spring is then accessible and can be replaced without using any tools.
- 4.** Install the inside and outside covers by carrying out steps 1 and 2 on in reverse order.

9. ORDER INFORMATION

Description	Catalogue No.
Microfilm membrane dispenser (Qty 1)	MFDI SP0 01
Microfilm Membranes (4 cartridges, each containing 150 membranes)	
Microfilm membranes, 0.22 µm, white, gridded, 47 mm diameter, Q 600	MFMCE047022CW
Microfilm membranes, 0.45 µm, white, gridded, 47 mm diameter, Q 600	MFMCE047045CW
Microfilm membranes, 0.80 µm, white, gridded, 47 mm diameter, Q 600	MFMCE047080CW
Microfilm membranes, 0.22 µm, white, gridded, 50 mm diameter, Q 600	MFMCE050022CW
Microfilm membranes, 0.45 µm, white, gridded, 50 mm diameter, Q 600	MFMCE050045CW
Microfilm membranes, 0.80 µm, white, gridded, 50 mm diameter, Q 600	MFMCE050080CW
Microfilm membranes, 0.45 µm, black, gridded, 47 mm diameter, Q 600	MFMCE047045CB
Microfilm membranes, 0.80 µm, black, gridded, 47 mm diameter, Q 600	MFMCE047080CB
Microfilm membranes, 0.45 µm, black, gridded, 50 mm diameter, Q 600	MFMCE050045CB
Microfilm membranes, 0.80 µm, black, gridded, 50 mm diameter, Q 600	MFMCE050080CB

10. WARRANTY

Membrane Solutions,LLC warrants its products against defects in manufacturing and workmanship for a period of one year from the date of delivery, provided that they have been used under the conditions described in this manual.

Membrane Solutions,LLC offers no other warranty neither explicit nor implicit, in particular no warranty of merchantability or fitness for a particular purpose.

The terms of this warranty, as well as information, characteristics and descriptions of Membrane Solutions.LLC products shown on brochures and catalogues published by the Company may not be modified without express authorization signed by a duly qualified Membrane Solutions,LLC representative. Any written or oral interpretation not in accordance with this warranty or to the said publications shall be considered null and void.

In case of non-respect of the terms of the above-mentioned warranty, Membrane Solutions,LLC 's sole obligation shall be to repair or replace, at its discretion, all or part of a product found to be defective during the period of warranty, due to defects in workmanship or manufacturing, on condition that the customer notifies the fault immediately.

The present service obligation cannot be considered as not having been fulfilled if Membrane Solutions, LLC has demonstrated its good faith in repairing or replacing any defective our product or part.

Membrane Solutions,LLC cannot be held responsible for prejudice due to non-operation or damage to property where its products could have been the cause, nor consequently be required to award indirect damages.

The terms of this warranty do not affect the buyer's statutory rights.



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