Scientific
Instruments

Membrane Cover for MEA Dish with Perfusion Ports

MEA-MEM-P and PL

Instructions

*This product is manufactured under license from the California Institute of Technology.

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MEA-MEM-PL5 checklist

- ☐ Teflon tubing x 10
- ☐ MEA-MEM-PL covers x 5
- ☐ MEA-MEM Loading Tool (ring) x 5
- ☐ Allen Wrench for 2-56 set screw
- ☐ MEM-Sheets x 5
- ☐ O-rings #15 x 5
- ☐ Instruction manual

Note: MEA-MEM-PL single unit includes:

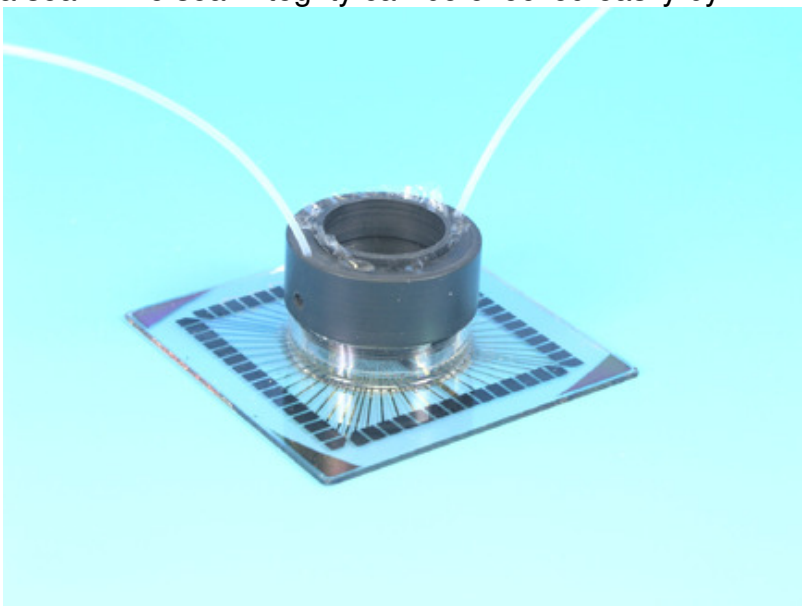
- Single MEM-Sheet
- Teflon-Tubing x 2
- Allen wrench

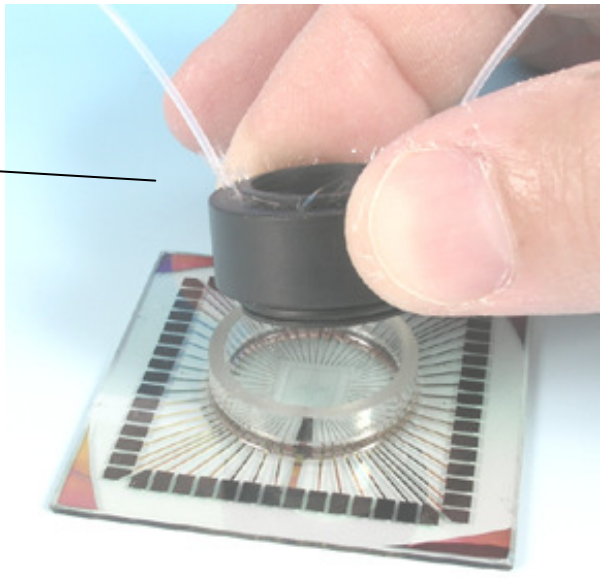
Instructions

ALA Scientific membrane MEA covers allow gas exchange for living tissue on MEA dishes while preventing evaporation of water from the chamber. A unique Teflon film is used for this application. The MEA cover is primarily a device for holding the film. In this case, the cover has been modified to allow two small tubes to come down into the dish for liquid perfusion. The cover allows the dish to remain sealed and contaminant free. An o-ring forms a seal with the internal wall of the chamber. This holds the dish cover in place on the chamber as well. Membrane covers are made of Delrin.

Installation

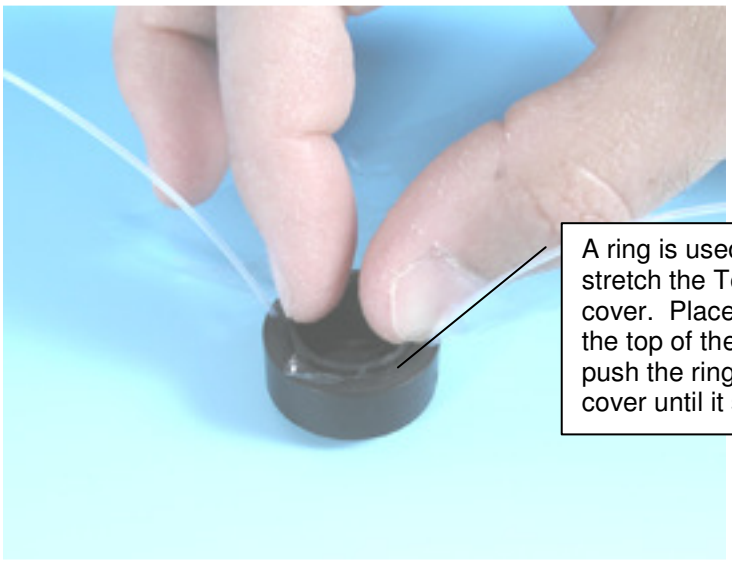
The chamber is “inserted” into the MEA dish. An o-ring at the base of the chamber fits inside the MEA ring and forms a seal. The seal integrity can be checked easily by observing that the o-ring forms a black line all around the inside of the glass ring. Wherever the black line is seen, the o-ring is in good compression, and thus sealing the chamber. Push the chamber down all the way until it can’t go in any more. If you need to rotate the cover or remove it, do so gently so as not to break the MEA or pull off the glass ring. Always be sure that the MEA is on a flat surface before you push the cover on.



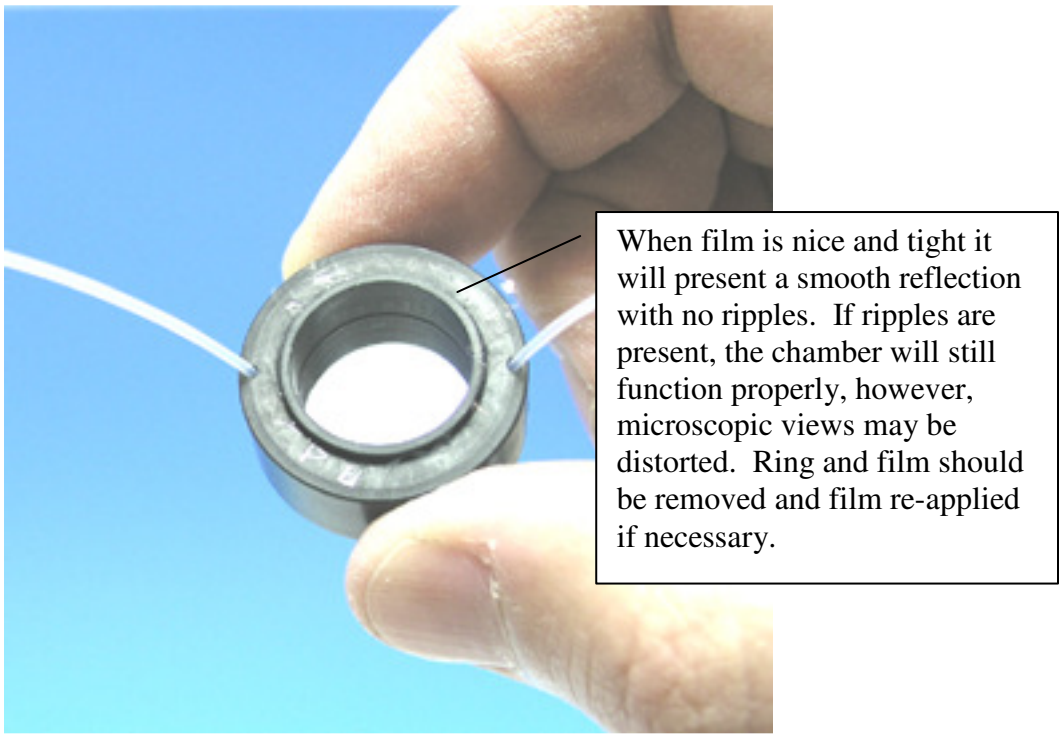


Always insert the cover ring very carefully.

Replacing Teflon Film

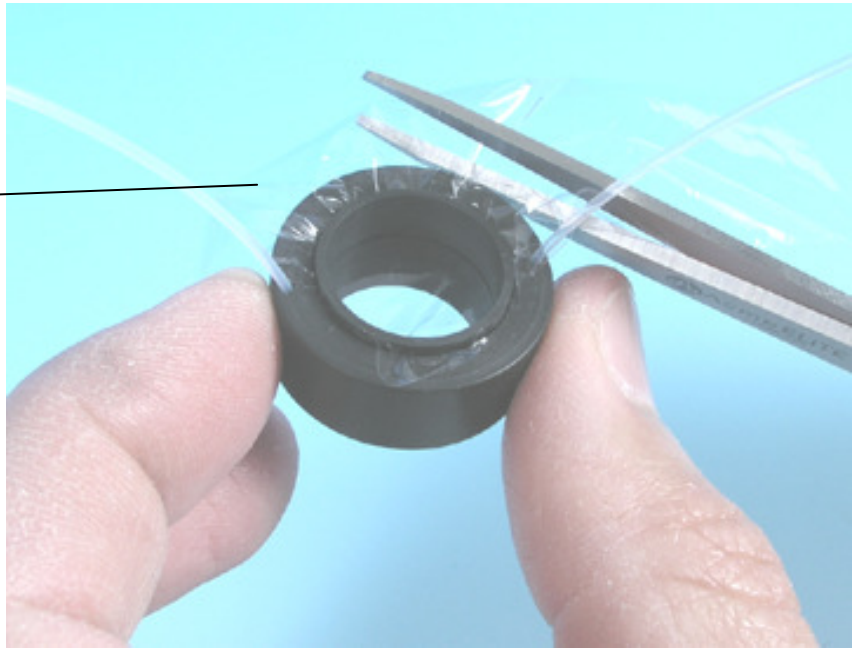


1) Lay a fresh square of Teflon film over the top of the cover. Position the piece so as to conserve as much of the square as you can for later use, but be sure that there is enough over-hang so that when the securing ring is inserted, some film will stick up all around the cover.
2) When the film is in position, push the ring down into the cover until it stops.
3) The film should be tight, with no ripples, as in the picture below.



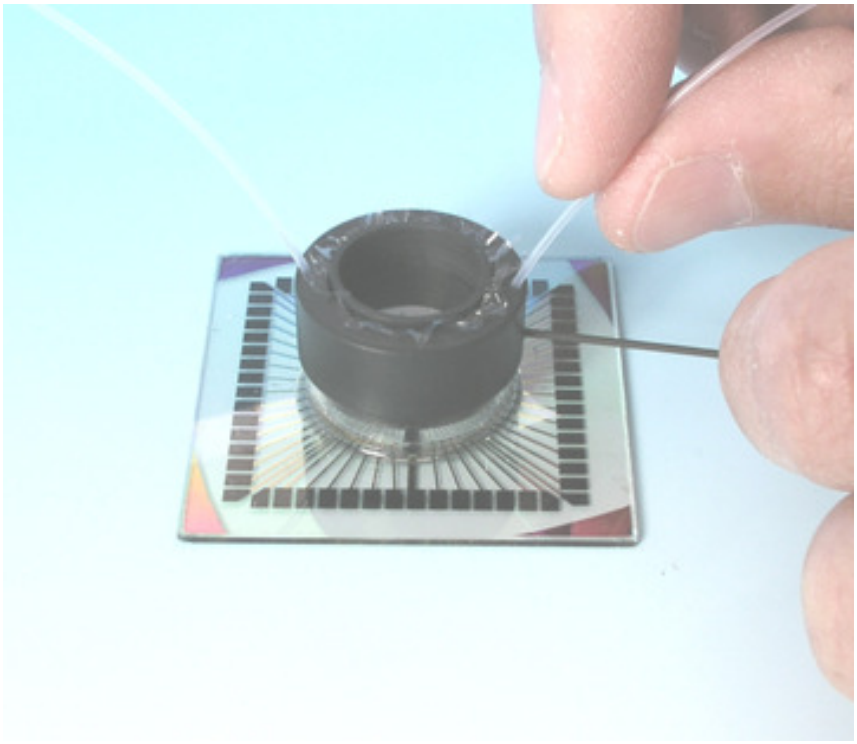
4) Excess film is trimmed away with scissors; again try to preserve the excess film for another time.

Cut away excess carefully. Do not damage tubes, do not pull on film while cutting.



Perfusion Adjustment

1) Set the MEA and cover together on a flat surface or in the MEA amplifier.
2) Adjacent to the input of each tube there is a small set-screw (English 2-56x1/16 in.). These set-screws are used to lock the tubes into place.
3) Loosen the set-screws and slide the tube up or down to the desired position.
4) Tighten the set-screw to lock the tube in at the desired level. Do not over-tighten or the tube will be damaged. (Set-screw wrench is 1/32 hex (English))



Levelock Sensor-PL Models

Some chambers are equipped with a third port to be used for a Levelock sensor to facilitate fluid level management. The sensor is a fiber optic with a sharp bend at the tip that forms the sensor. The tip must contact the surface of the liquid in the chamber to read its level. The position of the tip of the sensor will determine the fluid level in the chamber. Adjust the fiber optic sensor as you would adjust the tubes, using the set-screw provided. Again, use a small dab of petroleum jelly to seal the top of the chamber where the fiber-optic threads enter. Use only soap to clean the fiber optic.

DO NOT AUTOCLAVE THE FIBER-OPTIC.

Sterility

MEA and cover can be sterilized separately or together. PD-02P cover should be sterilized completely assembled. Be aware that perfusion can introduce contaminants. Use filtration and proper procedures. The input conduits that the tubing passes through can bring in contaminants, we recommend using a dab of petroleum grease at the top where the tubes enter to keep them sealed.

Cleaning

MEA Cover should be disassembled for complete washing. Remove O-rings and membrane sheet.
Clean MEA cover using only soap and water. Rinse in distilled water.
Up to 70% alcohols are acceptable for cleaning the MEA covers.
If necessary the MEA covers may be gassed sterilized.

DO Not Autoclave MEA MEM Ring as damage may occur.
Do Not use cleaning solvents other than those described above.

*Autoclaving MEA cover will void warranty.

NOTE:

Tubing supplied is Teflon, Polyamide tubing which can be heat formed is available upon request.

Touhy adapters can be supplied to link Teflon tubes to Luer fittings such as syringes.

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