



TYLER
Research Corporation
Biomedical Engineering



Product: MPMR-10PSF

Material: Polysulfone with silicone seals and stainless steel screws

The MPMR-10PSF is manufactured from polysulfone, an advanced engineered thermoplastic polymer capable of withstanding a temperature range of -100°C to 150°C. The MPMR-PSF biofilm devices may be safely sterilized using an autoclave.

IMPORTANT:

Polysulfone is **NOT COMPATIBLE** with the following:

- Acetone
- Acetonitrile
- Benzene
- Chloroform
- Dimethylformamide (DMF)
- Dimethylsulfoxide (DMSO)
- Ethyl acetate
- Methyl ethyl ketone
- Methylene chloride
- Perchloroethylene
- Phenol
- Pyridine
- Sulfuric acid
- Toluene
- Trichloroethylene
- Xylene

Polysulfone has **LIMITED RESISTANCE** to the following:

- Acetate
- Ammonia
- Butyl acetate
- Carbontetrachloride
- Isopropanol

**Please note that the chemical lists are not exhaustive, but refer to the most commonly encountered laboratory chemicals*

Even a single brief exposure to any of the proscribed solvents listed can have deleterious effects resulting in irreversible damage to the biofilm device and premature failure.

Sterilizing MPMR-series devices:

1. There is a natural tendency to overtighten the manifold screws when assembling the device, and the added stress of autoclaving can lead to spalling and cracking of the threads. We recommend that the manifold screws be tightened **only** until contact is first made with the primary O-ring prior to autoclaving. After autoclaving, the screws should be tightened **only** until surface to surface contact is made between the manifold halves (see assembly instructions).
2. The fully assembled MPMR-10PSF may be autoclaved with biostud holders and biostuds in place (for biostuds that can withstand autoclaving) or separately from the holders and/or biostuds for those (such as acrylic or PVC) that cannot be autoclaved.
3. Attach silicone or vinyl tubing (3/8" or 10mm ID) to the inlet/outlet ports, fold and tape the ends of the tubing closed. Place the entire device in an autoclave bag or wrap in surgical towels and tape the package closed with an indicating tape. Refer to the manual of the autoclave in use for proper loading techniques and correct positioning of the items to be sterilized. Sterilize at 121°C for 15 minutes.

MPMR-10PSF Assembly/Disassembly Instructions:

It is important to follow these directions carefully. Above all, do not overtighten the manifold or inlet/outlet screws. Only mild pressure is required to maintain proper seals throughout the device. **Excessive pressure, particularly with the added stress of autoclaving, will result in permanent damage to the device.**

The MPMR-10PSF series biofilm systems are precision devices consisting of two polysulfone manifold halves, two polysulfone inlet/outlet nipples, stainless steel socket head cap screws connecting the manifold halves, silicone O-rings, and ten polysulfone biostud holders with silicone seals and stainless steel ejection screws.

Assembly or disassembly of the MPMR-10PSF device for cleaning requires a 5/32" hex drive wrench and a #2 Phillips screwdriver.

Disassembly of the MPMR-10PSF

1. Turn the biostud holders counterclockwise to remove them from their ports. If the holders are populated with biostuds, remove the biostuds from the holders by turning the panhead screws clockwise to partially eject the biostuds. Grasp the stems of the partially ejected biostuds with sterile forceps to remove them for analysis.
2. If desired, remove the inlet/outlet nipples from the lower manifold by turning counterclockwise with a wrench (for routine cleaning and sterilization this step is not required).
3. Place the MPMR-device face down and use a 5/32" hex-drive wrench to remove the socket head cap screws connecting the two manifold halves.
4. Carefully separate the two polysulfone halves and remove the silicone O-ring.
5. Wash all components using only mild detergent and water, and thoroughly rinse with deionized water. Allow to dry before reassembly. Lubricate all O-rings with silicone O-ring lube to promote sealing and prolong O-ring life.

Assembly of the MPMR-10PSF

1. Lubricate all O-rings occasionally with silicone O-ring lube to promote sealing and prolong O-ring life. With the MPMR base upright on a bench, place the large silicone O-ring in the groove surrounding the central channel. Align the top manifold and place it gently onto the base, being careful not to dislodge the O-ring. While holding the halves firmly together, turn the manifold over on the bench to expose the holes for the socket head cap screws. Using a 5/32" hex drive wrench, install and partially tighten the cap screws, leaving a 1mm gap between the top and base of the manifold. Then tighten the screws uniformly, still leaving a tiny gap (approximately 0.1mm) between the manifold halves. Finally, tighten them sequentially just to bring about surface-to-surface contact between the manifold halves. **DO NOT OVERTIGHTEN!** The O-ring is fully compressed and any tightening beyond surface-to-surface contact will simply stress the threads in the upper manifold, leading to cracking and structural failure.
2. If the inlet/outlet nipples were removed during cleaning, replace the O-rings in the grooves surrounding the thread and carefully screw them into the endport sockets only until surface-to-surface contact has been made to gently compress the retained O-ring. Again, **DO NOT OVERTIGHTEN** as this will simply lead to structural failure of the insert or manifold.
3. Back the panhead screws off of the surface of the holder approximately 1/4". Populate the holders with biostuds of the appropriate material by pushing the stem into the holder until the shoulder of the biostud seats fully against the end of the holder.
4. **NOTE:** The flat recessed ring in the bottom of each manifold port is a precision sealing surface against which the O-ring in the face of the biostud holder seats. This must be kept free of foreign matter and scratches. Return the populated biostud holders to their respective ports, tightening firmly *by hand only* to affect a seal.