

Pump Disinfection Process

(Section 6 - Service: Maintenance of pump manual)

According to clinical standards, the water in the water chamber has to meet the acceptable levels of potable water. The proven method* to keep bacterial levels down is to store the pump tubing system dry when not in use. The daily drying protocol alone can maintain the daily sterilized irrigation water within acceptable potable water levels.

6.1 Daily Blow-dry Shut-down Protocol (Approx. 5-10 mins.)

- First, empty the water chamber.
- Reconnect the empty water chamber and pressurize.
- Turn the master on-off valve ON. Flush the whole system with air for 5 mins. until no more water is dripping out of the capillary tips (or transducers).
- Turn master on-off valve to OFF. Turn power off. Release all pressure by squeezing toggle valve at top of water chamber. Open all valves and stopcocks.
- Remove empty water chamber. Store dry with lid off.

Daily Start-up Procedure

- At next time of operation, fill water chamber with sterilized irrigation water and reconnect to pump system.
- Pressurize pump and turn master on-off valve to ON. Flush water through system for 5-10 mins., ensuring that no air bubbles are trapped in the system.
- Connect motility catheter and perform **pinch test** (section 4.7) to assure the recording fidelity is within the recommended rise rate. This confirms that no major bubbles are trapped in the system.

* Alfa, M.J., Ilnycky, A., MacFarlane, N., Preece, V., Ailford, S. Fachnie, B. Microbial overgrowth in water perfusion equipment for esophageal/rectal motility. Gastrointestinal Endoscopy 2002:55:209-13.

6.2 High-level Disinfection

*High-level disinfection of the pump should be done at regular intervals – **monthly is recommended** – or prior to Billiary motility.*

CAUTION: Do not use alcohol to clean the water chamber.
Alcohol may cause cracks in the water chamber material.

CAUTION: Do not autoclave any of the components.

Chemical Disinfectants:

For pumps containing BRASS components:

(pumps shipped BEFORE March 1, 2001) (S/N MS4-1945 or lower)

CAUTION: Do not use acid-based disinfectants as it will corrode the brass fittings.

The master on-off valve, toggle valve, male and female quick connects, and inserts contain brass.

CAUTION: Do not use any disinfectant or solution in the fluid path of the pump which is incompatible with the following materials: acetal, acrylic, Buna-N, epoxy adhesive, polycarbonate, high-density polypropylene, polyurethane, TFE, **brass, chrome-plated brass** and stainless steel. Confirm compatibility of the disinfectant with the disinfectant manufacturer before use. Mui Scientific is not liable for any damage to the pump, or harm to patients or personnel, caused by improper use of a disinfectant or procedure.

For pumps containing STAINLESS STEEL components:

(pumps shipped AFTER March 1, 2001) (S/N MS4-1946 or higher)

CAUTION: Do not use any disinfectant or solution in the fluid path of the pump which is incompatible with the following materials: acetal, acrylic, Buna-N, epoxy adhesive, polycarbonate, high-density polypropylene, polyurethane, TFE, and **stainless steel**. Confirm compatibility of the disinfectant with the disinfectant manufacturer before use.

Mui Scientific is not liable for any damage to the pump, or harm to patients or personnel, caused by improper use of a disinfectant or procedure.

Clinical evaluations have verified the following disinfectants for use:

- Cidex OPA (manufactured by Johnson & Johnson; Irvine, CA, U.S.A.)
- Sporox (Sultan Chemists Inc.; Englewood, NJ, U.S.A.)
- Korsolex (Bode Chemie Hamburg; Hamburg, Germany)

A disinfectant which is compatible with flexible endoscopes will be compatible with the Stainless Steel pumps. For the Brass pumps, one must be assured that the disinfectant is compatible with brass.

High-level Disinfecting Procedure: (Total time: Approx. 1 hour, 30 mins.)

Step 1: Purge System with Air (Approx. 5-10 mins.) (Skip Step 1 when starting with a dry pump)

- First, empty the water chamber. Reconnect the empty water chamber and pressurize. Turn the master on-off valve ON. Flush the whole system with air for 5-10 mins., or until no more water is dripping out of the capillary tips (and/or transducers).
- Turn master on-off valve to OFF. Remove empty water chamber.

Step 2: Fill System with Disinfectant (Approx. 50 mins.; includes 30 mins. disinfectant soaking time)

- Fill water chamber 1/3 full with disinfectant and swirl within water chamber to rinse all surface area (including underside of lid).
- Reconnect water chamber to top and bottom quick connects.
- Pressurize the water chamber and turn the master on-off valve to ON.
- Perfuse at 15psi through pump tubing system for 20 mins., allowing the disinfectant to drip out through capillary tips (and/or transducers) into a container.
- During perfusion, disconnect and reconnect the plastic quick connect at the base of the water chamber several times. Rotate master on/off valve and all stopcocks several times repeatedly to expose all inside surface areas to the disinfectant.
- Turn master on-off valve to OFF. Allow the disinfectant to sit within the system for the additional length of time recommended by the disinfectant manufacturer (30 mins. or longer is common for high-level disinfection).

Step 3: Purge System with Air Again (Approx. 5 mins.)

- Disconnect the quick connects at the top and base of the water chamber (wrap towel around top quick connect, as contaminated pressurized air will shoot out). Empty water chamber.
- Reconnect empty water chamber to top and bottom quick connects. Turn master on-off valve ON. Purge tubing system with 15 psi air for 20 mins., or until no more disinfectant is dripping out of the capillary tips (and/or transducers).

Step 4: Rinse system with Sterilized Irrigation Water (Approx. 25 mins.)

- Disconnect the quick connects at the top and base of the water chamber (wrap towel around top quick connect, as contaminated pressurized air will shoot out). Remove water chamber.

- Fill water chamber 1/3 with sterilized irrigation water. Swirl water within water chamber to rinse all surface area (including underside of lid), then discard. Repeat 2 more times.
- Fill water chamber 1/3 with sterilized irrigation water. Reconnect water chamber to top and bottom quick connects.
- Perfuse at 15psi for 20 mins. to rinse disinfectant.
- During perfusion, disconnect and reconnect the plastic quick connect at the base of the water chamber several times. Rotate master on/off valve and all stopcocks several times repeatedly to expose all inside surface areas to the water rinse.

Step 5: Purge System with Air Again (For storage or immediate use)

- Disconnect the quick connects at the top and base of the water chamber. Empty water chamber.
- Reconnect empty water chamber to top and bottom quick connects. Purge tubing system with 15 psi air for 20 mins., or until no more water is dripping out of the capillary tips (and/or transducers).
- For Storage: Turn power off pump. Squeeze the toggle valve on the water chamber lid to release all pressure. Remove empty water chamber and store dry with lid off.
- For Immediate Use: Fill water chamber with fresh sterilized irrigation water and continue with start-up procedure.