



AVM warranty all products under following cleaning and sterilization procedures

As with any cleaning procedure, personal should follow accepted guidelines for hand washing, attire, masking, etc. as those recommended by A.A.M.I. Standards and Recommended Practices, “Good Hospital Practice: handling and Biological Decontamination for Reusable Medical Devices (American National Standard)”

INSTRUMENTS:

CLEANING

Step 1. *Maintain moisture:* Immediately after instrument use, place the instruments in an instrument tray/container and cover with a towel moistened with sterile distilled water.

Step 2. *Enzymatic Soak:* Disassemble instruments as appropriate. Immerse instruments in an approved enzymatic solution per enzyme manufacturer’s recommendations with instrument jaws in the open position.

Step 3. *Rinse:* Remove from enzymatic soak after the time period recommended by the enzymatic manufacturer and rinse with tap water.

Step 4. *Clean Instruments:* Using a small, clean, hand-held brush, clean the handle and ratchet mechanism while immersed in the cleaning solution. Clean the shank or shaft of the instrument by wiping with a soft cloth such as a disposable lap sponge. For those instruments with an accessible channel, clean the inside of the channel with a soft bristled, clean brush. Remove the soil from the jaws, tips, box locks, and/or hinge mechanism with a small soft bristled, clean brush.
validated steam sterilization as an effective sterilization unwrapped

cycle. As recommended by the AAMI Standards and sterilizer

Step 5. *Rinse:* Rinse instruments by immersing in tap water and wiping with clean, soft cloth.

Step 6. *Ultrasonic Cleaning:* Place instruments in a mesh bottom stainless steel instrument basket. Place basket in sonic cleaner. Follow the recommendation of the sonic cleaner manufacturer as to cycle times, cleaning solution, suspension of the basket (e.g., basket should not sit on bottom of sonic cleaner), conditioning of the water, etc.

Step 7. *Visual Inspection:* Visually inspect the instrument for cleanliness.

Step 8. *Dry:* Before instruments are wrapped for storage they must be thoroughly dry. Remaining moisture may result in corrosion that will weaken the instrument and lead to breakage during use.

Step 9. *Lubricate:* Before instrumenta are prepared for sterilization, the use of water-solution instrument lubricant is recommended. This will help keep clean joints moving freely and will aid in protecting the entire surface from mineral deposits. Note that ultrasonic cleaners remove all lubrication, therefore this maintenance procedure should be done routinely after ultrasonic cleaning and before sterilization.

STERILIZATION

After following the above cleaning method AVM reusable instruments are ready for sterilization. Independent laboratory testing., conducted under F.D.A. G.L.P.,has process for AVM reusable instruments. The instruments were validated to be sterile at a 3 minute 270° F gravity cycle and a 4 minute, 270°F pre-vacuum Recommended Practices, Volume 1, 1992, the

manufacturers written instructions for cycle parameter should be followed.

AVM MAINTENANCE PROCEDURES

Designed and crafted to exacting specifications, instruments will perform for a reasonable number of years when the following steps are observed:

Proper Use: Instruments should be used during surgery exclusively for their intended purpose. Misusing instrument will lead to damage that is usually not repairable; for example, a hemostat that is used to clamp tubing can become misaligned and quickly break.

Protect Instruments:

- The use neutral pH detergents is vital to the maintenance of surgical instruments. Contact with acidic or alkaline solution will remove the instruments' protective barrier of chromium oxide, often leading to corrosion, pitting and breakage.
- Certain compounds are highly corrosive to stainless steel and will cause serious damage despite the passivated protective surface. If instruments are inadvertently exposed to any of the following substances, they should be rinsed immediately.

Instruments should never be exposed to:

Aqua regia	Iodine
Ferric chloride	Sulfuric acid
Hydrochloric acid	

The following substances should be avoided whenever possible:

Aluminum chloride	Mercury chloride
Barium chloride	Potassium permanganate
Bichloride of mercury	Potassium thiocyanate
Calcium chloride	Saline
Carbolic acid	Sodium hypochlorite
Chlorinated lime	Stannous chloride
Dakin's solution	

- The use of a water soluble instrument lubricant is an integral step in maintaining the long-life of the surgical instrument. Lubrication will prevent the friction of metal on metal and preserve the smooth function of the instrument thus avoiding corrosion by friction. Furthermore, constant use of lubricating agents prevents the "sticking" of hinged parts and will aid in protecting the entire instrument surface from mineral deposits. Non-water-soluble lubricants cannot be sterilized and, therefore, should never be used.
- During manual cleaning, never use steel wool, wire brushes or highly abrasive detergent cleansers. These will damage the instrument's protective surface and lead to corrosion.

- Any kind of corrosion will lead to rust on steel. Because rust particles can be transferred from one instrument to another during disinfection, cleaning or sterilizing, corroding instruments must be separated to prevent the formation of rust on other instrument.
- Due to the heating up and cooling down cycles of the sterilization process, a surgical instrument with a closed ratchet may suffer from tension stress which causes stress cracks in the joints or a deterioration of the clamping force. Therefore, such instruments must be sterilized either in an open position or closed only to the first tooth of the ratchet.
- Every effort should be made to protect sharp cutting edges and fine working tips during all maintenance procedures. Avoiding loading retractors and other heavy items on top of delicate and hollow instruments.

Cleaning:

- Before first use, all instruments must be thoroughly cleaned prior to sterilization.
- It is important to rinse instruments that have been exposed to blood and saline solution before these substances dry. Blood and saline solution are highly corrosive. In addition, blood will also cause a stain that is difficult to remove. Instruments should, therefore, be kept moist immediately following use, either by placing in an appropriate basin of sterile distilled water or covered with a moist towel.
- When cleaning, sterilizing and rinsing instruments, it is important to use solution with a pH as near 7.0 (neutral) as possible. Distilled water is recommended because it is free of the many compounds which exist in ordinary water. These substances, alone, cause stains and when tap water is combined with some detergents it will form insoluble deposits on the instruments. Manual cleaning will be most effective with a solution of luke-warm, distilled water and a neutral pH detergent. This should be followed by a two stage rinse, first warm then cool.
- **The box lock, Cavity of any Forceps and hinge portion of the instrument must be kept clean and free of debris. A build-up of substance in**

this area will cause instruments to become stiff and eventually break. manual cleaning should remove all visible residue. It is essential to keep the box lock and hinged open during any automated cleaning procedure.

- Follow the manufacturer's specifications when using automatic washer-sterilizers. Use a free-rinsing, low sudsing detergent with a neutral pH (7.0) and do not alter prescribed cycle times. A high-sudsing detergent may clean effectively but will often leave residual deposits on the instruments.

Drying:

- Before instruments are wrapped for storage, they must be thoroughly dry. Remaining moisture, particularly in box locks and hinged may result in corrosion that will weaken the instrument and lead to breakage during use.
- If instruments are to be stored after sterilization, they have to be stored dry until used again. Excessive condensation maximum weight for loaded perforated trays. Drying is facilitated by wrapping the perforated trays with cloth within the container or external paper packing.

Inspection: Inspection is a vital part of proper care and maintenance. Instruments in need of repair will not perform accurately in surgery and breakage is likely to occur. worn ratchets, loose box locks and misaligned jaws can be repaired at a fraction of the cost of new instruments. Contact your local AVM representative for information regarding a cost-effective instrument repair program.

Diagnosing Spots and Stains: It is common for instruments to become stained or spotted despite the best efforts of the manufacturers and the hospital staff. In nearly all cases these problems are the result of minerals deposited upon the surfaces of the instruments. Adhering to proper technique during cleaning and sterilizing procedures will prevent most staining occurrences. However, they will sometimes arise very suddenly and will not disappear on their own. The following identifies the various instrument-related problems hospitals may encounter.

Brown Stains: Detergents containing polyphosphates may dissolve copper elements in the sterilizer. This result in copper being deposited on the instruments by

NOTE: The AVM guarantee will not be applicable if the instruments are continually exposed to acidic solutions with a pH of 6 or lower, alkaline solutions with a pH of 9 or higher.

an electrolytic reaction. The hospital may try a different detergent or check the quantities used. Usually a dull blue or brown stain is simply a build-up of oxidation on the surface. This film is harmless and will actually protect the instrument from serious corrosion.

Blue Stain: Blue Stain are usually the result of cold sterilization techniques. It is important to prepare the solution according to exact proportions and to change the solution when recommended. Serious corrosion may occur if the solution is used beyond the manufacturer's specified time limit. The use of distilled water and a rust inhibitor in the solution will help retard discoloration.

Black Stain: Black stain may be the result of contact with ammonia. Many cleaning compounds contain ammonia and it will remain on the instruments unless they are well rinsed. A black stain may also be the result of amine deposits traced to the steam in the steam sterilized. Solution containing amines are often used to clean the steam lines. It is necessary to follow steam line cleaning procedures with a cycle of distilled water to remove all traces of amines from the autoclave system.

Light or Dark Spots: Spots are often the result of slow evaporation of water condensation on the instruments. Often, the mineral deposit, which is related to the mineral content of the water, remains on the instrument. Using distilled water for sterilizing procedures will help to eliminate the formation of these residual spots. It is also important to follow manufacturer's specific autoclave operating instructions. Spots may result, for example, if the autoclave doors are opened before the steam is completely vented. An additional cause of spotting can be traced to the instrument wraps. During laundering procedures it is vital that detergents are thoroughly rinse is prepared so that the wraps have a pH between 6.8 and 7.0. This will inhibit spotting during steam sterilization.

Rust Deposits: It is very unlikely for surgical grade steel to rust. What appears to be rust is often residual organic matter in box locks or mineral deposits which have been baked onto the surface of the instrument. In localities where the water has a high iron content, for example, an iron deposit will result in a metallic film on the instrument. This is not the fault of the instrument and can be prevented with the use of distilled or demineralized water during cleaning procedures

The most effective method of dealing with instrument problems is to prevent them from occurring. The use of distilled water, careful preliminary cleaning, using neutralized pH solution, following manufacturers' instructions, and visual inspection, will help to keep instruments performing accurately and cosmetically free of troublesome stains. It is important to act quickly should a problem arise. Delay will compound the problem and irreparable harm may result. For additional information and in servicing assistance regarding instrument care and handling, contact your local AVM representative or call



AVM HEALTHCARE PRODUCTS (P) LTD.

Warranty the quality of all its products.

Any Item which is found to be Defective, Because of material or poor Craftsmanship, Will be Repaired or Replaced free of charges.

This warranty will not covered products which become defectives through misuse, neglect, or which have been repaired by other companies.