

#### HOLDING/PRESOAK

IT IS IMPORTANT NEVER TO HOLD INSTRUMENTS IN A DRY CONTAINER, WHICH ALLOWS BLOOD AND DEBRIS TO DRY ONTO INSTRUMENT SURFACES AND MAKES CLEANING MORE DIFFICULT. IF RINSING AND DECONTAMINATION PROCESSES ARE NOT IMMEDIATELY AVAILABLE, PRE-TREAT INSTRUMENTS OR HOLD THEM IN A NEUTRAL pH HOLDING/PRESOAK ENZYMATIC SOLUTION AFTER PATIENT USE BUT BEFORE ACTUAL CLEANING. AS SOON AS POSSIBLE, RINSE, DISINFECT AND CLEAN AS FOLLOWS:

#### RINSING

IMMEDIATELY AFTER SURGERY, REMOVE ORGANIC MATERIALS BY RINSING INSTRUMENTS UNDER WARM (NOT HOT) RUNNING WATER. RINSE SHOULD REMOVE MOST BLOOD FLUIDS AND TISSUE. DO NOT PROCESS DISSIMILAR METALS (STAINLESS, COPPER, CHROME PLATED, ETC.) TOGETHER. ALWAYS WEAR SAFETY PROTECTION GEAR.

#### DISINFECTING

TO PROTECT MEDICAL PERSONNEL FROM CONTAMINATION DURING CLEANING, IMMERSE INSTRUMENTS COMPLETELY IN AN EPA APPROVED DISINFECTANT FOR APPROXIMATELY 10-20 MINUTES. ALWAYS CLOSELY FOLLOW MANUFACTURERS' RECOMMENDED DISINFECTING TIME AND SOLUTION PREPARATION INSTRUCTIONS. THEN RINSE AGAIN.

**CAUTION:** DISINFECTED INSTRUMENTS ARE NOT STERILE. NEVER EXPOSE STAINLESS STEEL INSTRUMENTS TO BLEACH OR OTHER CORROSIVE CHEMICALS TO DISINFECT. EXPOSURE TO BLEACH MAY RESULT IN INSTRUMENT PITTING AND WILL VOID ALL MANUFACTURER GUARANTEES.

#### CLEANING

ALL BLOOD, DRIED BODY FLUIDS AND TISSUE SHOULD BE COMPLETELY REMOVED FROM THE INSTRUMENTS PRIOR TO STERILIZATION. SEVERAL METHODS ARE AVAILABLE:

- **SOAK:** AN ENZYMATIC CLEANER BATH (SOAK) A SOLUTION OF WATER AND NEUTRAL pH (7) DETERGENT ARE EFFECTIVE IN REMOVING ORGANIC MATERIAL FROM INSTRUMENTS USE DISTILLED (DEMINERALIZED) WATER IF POSSIBLE. INSTRUMENTS SHOULD BE FULLY SUBMERGED FOR AT LEAST 10 MINUTES. DO NOT LET SHARPS" (SCISSORS, KNIVES, OSTEOTOMES, ETC.) TOUCH EACH OTHER AND ALSO BE SURE DISSIMILAR METAL INSTRUMENTS ARE SEPARATED. RINSE INSTRUMENTS UNDER RUNNING WATER TO REMOVE SOLUTIONS. CHANGE SOLUTIONS FREQUENTLY.
- **ULTRASONIC CLEANING:** MOST INSTRUMENT MANUFACTURERS RECOMMEND ULTRASONIC CLEANING AS THE MOST EFFECTIVE WAY TO CLEAN SURGICAL INSTRUMENTS, PARTICULARLY THOSE WITH HINGES, BOX LOCKS, AND OTHER MOVING PARTS.
  - ALL INSTRUMENTS MUST BE FULLY SUBMERGED IN OPEN POSITION. USE DISTILLED (DEMINERALIZED) WATER IF POSSIBLE. MAKE SURE THAT SHARPS BLADES DO NOT TOUCH OTHER INSTRUMENTS TO PREVENT POSSIBLE SURFACE SCRATCHING AND ALSO BE SURE DISSIMILAR METAL INSTRUMENTS ARE SEPARATED.
  - PROCESS INSTRUMENTS FOR FULL RECOMMENDED ULTRASONIC CLEANING CYCLE. CHANGE SOLUTION FREQUENTLY, OR AS OFTEN AS THE MANUFACTURER RECOMMENDS.
  - RINSE INSTRUMENTS WITH WATER TO REMOVE THE CLEANING SOLUTION.
- **AUTOMATIC WASHER STERILIZERS:** FOLLOW MANUFACTURERS' RECOMMENDATIONS BUT ENSURE INSTRUMENTS ARE LUBRICATED AFTER THE LAST RINSE CYCLE AND BEFORE THE STERILIZATION CYCLE.

**CAUTION:** NEEDLE HOLDERS AND FORCEPS MAY CRACK IF STERILIZED WITH RATCHET IN CLOSED POSITION.

- **MANUAL CLEANING:** IF ULTRASONIC CLEANING IS NOT AVAILABLE, OBSERVE THE FOLLOWING STEPS:
  - USE STIFF NYLON CLEANING BRUSHES. DO NOT USE STEEL WOOL OR WIRE BRUSHES EXCEPT SPECIALLY RECOMMENDED STAINLESS STEEL WIRE BRUSHES FOR INSTRUMENT SERRATED AREAS, BONE FILES, BURS OR ON STAINED AREAS OF KNURLED HANDLES.
  - USE ONLY NEUTRAL pH (7) DETERGENTS. IF NOT RINSED OFF PROPERLY, LOW pH (ACIDIC - LESS THAN 6 pH) DETERGENTS BREAK DOWN THE STAINLESS PROTECTIVE SURFACE RESULTING IN PITTING AND/OR BLACK STAINING. HIGH pH DETERGENTS (ALKALINE - MORE THAN 8 pH) CAN CAUSE BROWN STAINS (PHOSPHATE SURFACE DEPOSIT) WHICH CAN ALSO INTERFERE WITH THE SMOOTH OPERATION OF INSTRUMENTS. MOST BROWN STAINS ARE NOT RUST AND ARE EASILY REMOVED.
  - BRUSH DELICATE INSTRUMENTS CAREFULLY, AND IF POSSIBLE, SEPARATE THEM FROM GENERAL INSTRUMENTS.
  - MAKE SURE INSTRUMENT SURFACES ARE VISIBLY CLEAN AND FREE FROM STAINS AND TISSUE. THIS IS ALSO A GOOD TIME TO INSPECT EACH INSTRUMENT FOR PROPER FUNCTION AND CONDITION.

## AUTOCLAVING METHODS

### ETO STERILIZATION

WITH A PRESSURE READING NOT TO EXCEED 12 PSI, AND A TEMPERATURE NOT TO EXCEED 68.3°C (155°F), THE ELECTROSURGICAL ACCESSORIES CAN BE STERILIZED BY ETHYLENE OXIDE IN ANY STANDARD CYCLE.

CONCERNING HUMIDIFICATION, VACUUM, CYCLE TIME, GAS CONCENTRATION AND TEMPERATURE, WE RECOMMEND FOLLOWING THE MANUFACTURER'S INSTRUCTIONS FOR THE ETO STERILIZATION UNIT.

### STEAM AUTOCLAVING WITH PRE VACUUM AND GRAVITY STERILIZERS

IF A WRAPPING METHOD IS USED, MAKE CERTAIN THAT THE INSTRUMENTS ARE INDIVIDUALLY WRAPPED OR SEALED IN A STERILE PACK. OTHER METAL OBJECTS SHOULD NEVER COME IN CONTACT WITH THE INSULATING MATERIAL OF FORCEPS AND HANDLES, OR WITH RF-CONNECTION CABLES. SUCH POINTS OF CONTACT MAY CAUSE MELTING OF THE INSULATION.

WE RECOMMEND THE FOLLOWING VALUES/PARAMETERS, BUT WE ALSO SUGGEST FOLLOWING THE MANUFACTURER'S INSTRUCTIONS FOR STEAM STERILIZATION:

CYCLE	STERILIZING TEMP.	STERILIZING TIME	DRYING TIME* <sup>3</sup>
PRE VACUUM/WRAPPED	270° F (132° C)	4 MINUTES	30 MINUTES
GRAVITY/WRAPPED	250° F (121° C)	30 MINUTES	45 MINUTES
GRAVITY/WRAPPED	270° F (132° C)	30 MINUTES	45 MINUTES

*\*IT IS IMPORTANT THAT THE LONGEST DRYING CYCLE POSSIBLE IS EMPLOYED, TO PREVENT BUILD UP OF MOISTURE INSIDE THE INSTRUMENT. IF THE CYCLE OF YOUR AUTOCLAVE ALLOWS A 45 MIN DRY TIME, WE RECOMMEND IT. CORROSION, PITTING OR INTERMITTENT OPERATION ARE USUAL SIGNS OF A MOISTURE INDUCED CORROSION PROBLEM.*

### FLASH AUTOCLAVING (FAST HEATING/COOLING CYCLE)

FLASH STERILIZATION: MINIMUM EXPOSURE TIME 4 MINUTES AT 132°C. AVERAGE DRYING TIME 8 TO 15 MINUTES.

**IMPORTANT!** FLASH AUTOCLAVING WILL REDUCE THE USEFUL LIFE OF THE INSTRUMENT PARTICULARLY WHEN IT IS CONSTRUCTED OF VARIOUS MATERIALS, ENCOMPASSING DIFFERENT EXPANSION RATES.

### STERRAD STERILIZATION PROCESS INCLUDING STERRAD NX

THE STERILIZATION PROCESS IS A MULTIPLE STERILIZATION PROCESS THAT UTILIZES A COMBINATION OF EXPOSURE TO HYDROGEN PEROXIDE VAPOR AND PLASMA TO AFFECT STERILIZATION. THE STERRAD NX STERILIZER CAN STERILIZE INSTRUMENTS WHICH HAVE DIFFUSION RESTRICTED SPACES, SUCH AS HINGED PORTIONS OF FORCEPS AND SCISSORS.

ADHERE TO THE STERILIZATION INSTRUCTIONS PROVIDED BY THE MANUFACTURER. (ADVANCED STERILIZATION PRODUCTS A JOHNSON & JOHNSON COMPANY).

### CHEMICAL / COLD STERILIZATION

MOST CHEMICAL/COLD STERILIZATION SOLUTIONS RENDER INSTRUMENTS STERILE ONLY AFTER 10-HOUR IMMERSION. THIS PROLONGED CHEMICAL ACTION CAN BE MORE DETRIMENTAL THAN THE USUAL 20-MINUTE AUTOCLAVE CYCLE. IF THE INSTRUMENTS NEED TO BE "DISINFECTED" ONLY, A CHEMICAL/COLD STERILIZATION SOAK IS ACCEPTABLE, AS DISINFECTION WILL TAKE APPROXIMATELY 10 MINUTES OR MORE. CHECK MANUFACTURERS SPECIFICATIONS. ALSO SEE OUR WARNING IN USING BLEACH (PARAGRAPH 3).

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