Stainless Surgical Instrument Care and Handling Guide

Extending the Life of Your Valuable Instrumentation

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Stainless Surgical Instrument Care and Handling Guide

Students who successfully complete this course are eligible for 1 contact hour through IAHCSMM, CBSPD and California Board of Registered Nursing.

Learning Objectives:

1. Describe the steps in the precleaning and transport and proper decontamination of surgical instruments.
2. Discuss methods of inspection, different types of stains and troubleshooting of surgical instruments that ensure a well-rounded surgical instrument maintenance program for patient safety.
3. Discuss the use of proper assembly techniques to protect instrumentation.

This Guide is designed to…

Help prolong the life expectancy and maintain the value of these instruments and should be used in conjunction with the manufacturer's instructions for use (IFU) and your healthcare organization's policies and procedures for cleaning, decontaminating and sterilization. These polices are written in compliance with many standards, guidelines, and statues. AAMI, AORN, CDC, APIC, AST, SGNA, and other regulation organizational guidelines are considered when policies and procedures are developed.

Many healthcare organizations are finding that proper care and a well-developed preventive maintenance program is better than replacement of these costly investments.

Cost to replace stainless surgical instruments:

Description	Price List
Biopsy Punches	$98.34
Bone Holding Clamps & Forceps	$71.87
Cast Spreader	$51.68
Chisels, Osteotomes	$17.95
Comedone Extractors	$17.95
Curettes	$17.95
CyroSolutions – O Ring Replacement	$20.22
– Tip Replacement – Body Replacement	$249.23 $408.65

A well-rounded preventive maintenance program minimizes the financial burden of a healthcare organization.

Stainless Intro:

Approximately 75% of all surgical instruments used in a healthcare organization are stainless steel.

- Surgical grade stainless steel has its vulnerabilities such as blood, saline, water quality, corrosion, and staining just to name a few.

Passivation actually affords the instrument with its corrosion resistant properties and is the final stage of the manufacturing of the instrument.

- Passivation is the removal of iron compounds from the surface of the steel and produces an oxidized layer on the surface of the instrument.
- Routine utilization and reprocessing provide exposure to the air, thus progresses the oxidation process. This process continues to build up a barrier to stains and corrosive elements through time. **This is why older instrumentation does not seem to stain like the newer ones do.**

400 Series Stainless Surgical Steel:

The 400-series alloy stainless steel is used when sharp cutting edges are required and is the most commonly used.

- Instruments such as scissors, osteotomes, chisels, rongeurs, forceps, hemostatic forceps, and needle holders are manufactured with the 400-series stainless steel.
- is known as martensitic and possesses magnetic properties.
- Most susceptible to corrosion and staining due to the high carbon content.

300 Series Stainless Surgical Steel:

300-series stainless steel is malleable and is used when hardness is less important.

- Used in the manufacture of instrumentation such as tongue depressors, retractors, sims speculums, cannulas, rib spreaders, and suction devices.
- known as Austenitic (Non-magnetic) stainless steel.
- Less susceptible to corrosion as it contains a lower carbon content.

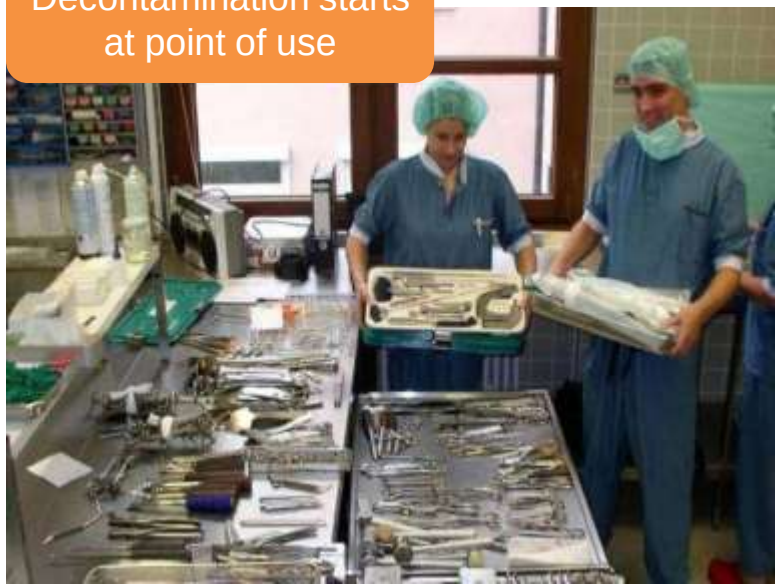
Laser Surgery Instrumentation:

For instrumentation used in laser surgery such as gyn and eye surgery, a blackening of the instrument called the Ebanol Process is used to obtain a non-reflective finish.

- offers mild corrosion resistance
- minimizes light reflection
  - ensures a safer surgical environment for patients and surgical staff when performing laser surgery.

Point of Use Cleaning:

Decontamination starts at point of use



The Association of periOperative Registered Nurses (AORN) guideline for *Cleaning and Care of Surgical Instruments*, and the Association for the Advancement of Medical Instrumentation (AAMI) in *Comprehensive guide to steam sterilization and sterility assurance in health care facilities* ST79:2010 & A1:2010 & A2:2011 & A3:2012 & A4:2013, The AST Guidelines for Best Practices in Surgical Technology all recommend keeping instruments moist and wiped down at the point of use.

Point of Use Cleaning Recommendations:

- Decontamination begins in the user areas such as the Operating Room and procedure areas.
- Per AST standard II: “The cleaning of instruments should continue at the point of use post-procedure, including sorting and disassembly of instruments, containment and transportation to the decontamination room.”
- Scrub professionals should wipe down instrumentation with sterile water to remove gross soil and irrigate the inside of lumens with sterile water on the field to prevent the drying of biofilm.
- Waste, linen and disposables should be separated from instrumentation, sharps should be segregated, and multipart instruments should be taken apart and placed together.

Transport of Dirty Instrumentation:

- Transportation of soiled instrumentation should be placed in OSHA approved transport bins by operating room personnel.
- Delicate instruments should be separated from heavier instrumentation.
- Instrumentation should be placed neatly in the open position inside bins, reducing damage to the instruments.
- Spray the instrumentation with enzymatic or place a moist towel on top the instruments to keep them moist before transport.
- Do not stack trays on instruments.
- When soiled sets from a procedure arrive in the decontamination area of Sterile Processing; the preferred method recommended by AAMI, The Joint Commission, OSHA, and AORN is for soiled instrumentation to be neatly contained in a closed case cart system and clearly labeled with OSHA approved biohazard labels.

Decontamination Guidelines:

- The recommendation is decontamination procedure starts as soon as possible per AAMI, AORN, and AST.
- Follow the manufacture’s instruction for use (IFU) for each instrument thoroughly.
- Use the proper sized brushes, correct low-foaming detergent with the correct dilution, disassemble multi-part instrumentation if not already done so, and follow proper decontamination protocol concerning personal protective equipment.

Decontamination Tools: Friction

Friction: scrubbing the soiled area with a brush or sponge, is a dependable method.

- Ensure you are using the correct brush for the job per the manufacturer's Instructions for use (IFU). There will be specific information such as brush size and type in these documents.
- When using brushes, make sure they touch the surface of the cannulated instrument, and you use a twisting motion as you pull and push the brush through the instrument.
- When a more aggressive approach is needed, such as dried organic matter on the serrations of a hemostat, the need for a stainless-steel brush is ideal for these situations.
  - Ensure when purchasing your stainless-steel brushes that you use a reputable manufacturer that provides these studies and IFU's.

Decontamination Tools: Fluidics

Fluidics (removal of soil under pressure-typically a high-pressure water gun), is used to remove bioburden and debris from internal channels after brushing. Fluidics are also helpful when the design does not allow passage of a brush through a channel.

Decontamination Tools: Ultrasonic

Ultrasonics are wonderful machines and help aid the removal of soil in box locks and other hard to get to places on instrumentation by the cavitation process.

- Make sure instrumentation is designed for the ultrasonic cleaner you are using and for the recommended time indicated by the IFU.
  - Ultrasonics use an ultrasonic wave that passes liquid and causes the liquid vibrate.
  - This creates bubbles in the liquid that implode inward and dislodge the soil from hard to reach places on the instrument.
  - An ultrasonic unit in a hospital produces 20,000-40,000 vibrations per second: therefore, it is important to ensure the instrumentation is designed for the ultrasonic machine with the manufacture's IFU.

Decontamination Tools: Washers

Mechanical washers work by means of impingement.

- Impingement is the mechanical process that usually occurs in a spray process with cleaning solution striking a surface of the instrument.
  - For this reason, check your sprayer arms and make sure they are intact so the water and detergent come in complete contact of the instrumentation's surface.

Improper loading is the number one cleaning failure!

- Load the washers in a way that the all the items inside the washer make contact with the water and detergent.
- Along with the appropriate chemistry (detergents), during the final rinse cycle, it is imparative you use purified water systems such as reverse osmosis, deionized water, or distilled water to remove the impurities and mineral deposits in the water.
- Ideally, the detergent should have a neutral pH of 7-8 to avoid damage to the instrumentation.

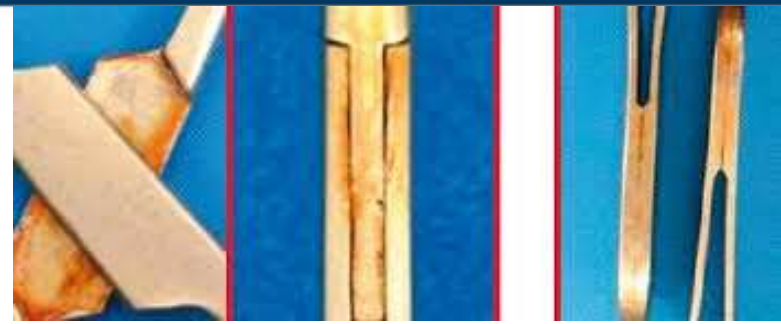
Cleaning Quality Assurance

Quality Assurance testing must also be performed with manual cleaning and mechanical machines to ensure they are properly functioning and removing gross soil.

- For cart washers, ultrasonics, and mechanical washer decontaminators, there are commercially prepared tests available. These tests ensure the processes you are utilizing is functioning appropriately and removing soil from the instrumentation.
  - Sonocheck and Tosi's are a few different available tests on the market.
- For manual cleaning, there are ATP and swab testing. ATP (adenosine triphosphate) is a substance present in all life forms and will show protein present on surgical instrumentation.

Stain Guide to Instrumentation

Brown/orange stains



Possible Causes: (usually is not rust) High pH surface caused by improper soaps, chlorhexidine usage, detergents containing polyphosphates, baked-on blood, soaking in saline or using laundry soap.

Possible treatment:

- Use neutral detergent
- Check the dilution of the detergent
- Ensure instrumentation is not being soaked in saline.
- Use deionized or distilled water in your final rinse cycle if you already have not done so.
- *If problem persists:* check water quality iron or other minerals.

Helpful Hint: To not confuse staining with rust: Perform eraser test. Use a pencil eraser to try to rub off the discoloration. If the exposed metal is clean and smooth, the discoloration is a stain. If the exposed metal has pit marks, this is corrosion and will continue to corrode.

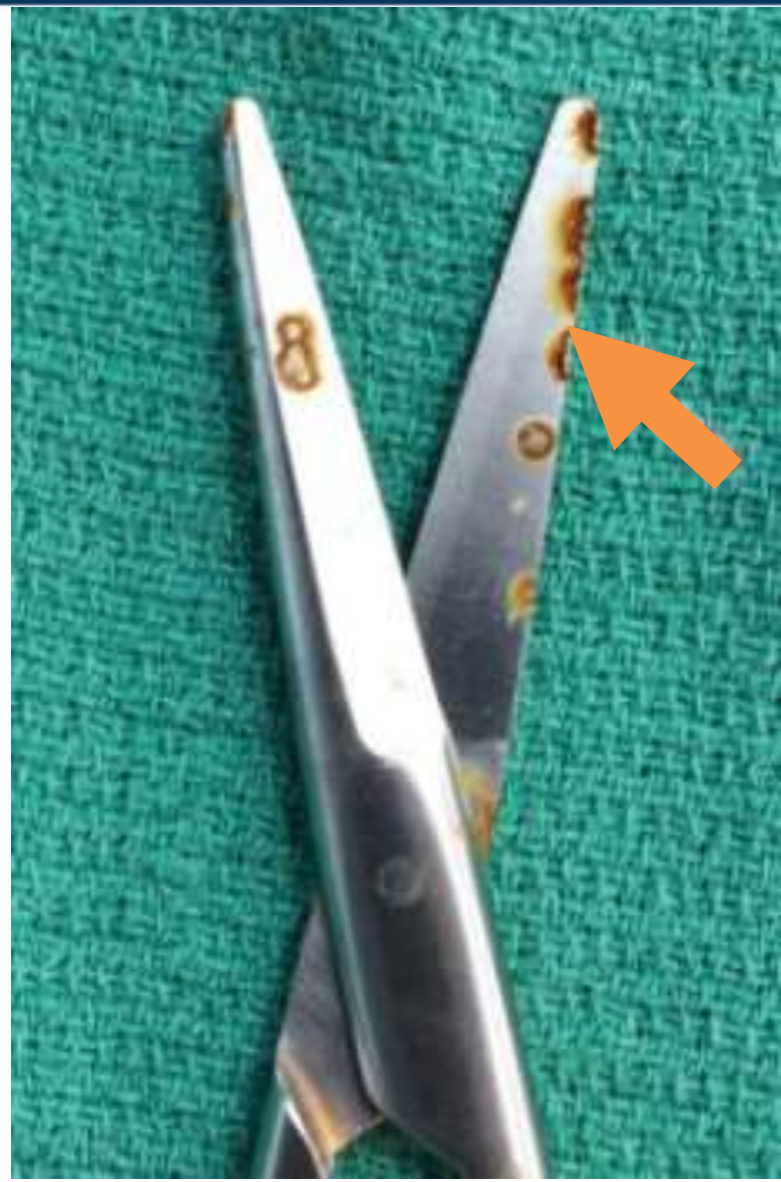
Rust

Rust causes pitting and corrosion and this destroys the instrument completely because corrosion will continue to worsen.

Possible Causes: Blood and organic debris left on the instrument to dry. Saline soaking, excessive moisture on instrument when sterilizing, excessive alkali and or iron in the water system, and sterilizing instruments with different metals can also cause rusting.

Possible Treatment: Review the way your instrumentation is being prepared at the point of use. Ensure the instruments are kept moist with an enzymatic or a damp towel with water- not saline. In decontamination, process the instruments as soon as you can. If problem persists, check water supply for high levels of iron and alkaline.

Helpful Hint: Perform eraser test. Use a pencil eraser to try to rub off the discoloration. If the exposed metal is clean and smooth, the discoloration is a stain. If the exposed metal has pit marks, this is corrosion and rust.



Dark brown/black stains and pitting:

Possible Causes:

- Low pH (less than 6) acid stain.
- May be caused by improper detergents and soaps and/or dried blood.
- Exposure to bleach or ammonia.

Possible treatment:

- Adjust the detergent to a neutral detergent.
- Eliminate exposure to, or any use of, chemicals, bleach or ammonia.

Bluish-Black Stains

Possible Causes:

- Reverse plating caused by two different types of metals that are ultrasonically processed together. For example, stainless steel instruments processed with chrome instruments may cause a color change of the instrument; presenting itself as a stain.
- Exposure to saline, blood or potassium chloride will cause this bluish-black stain to occur as well.

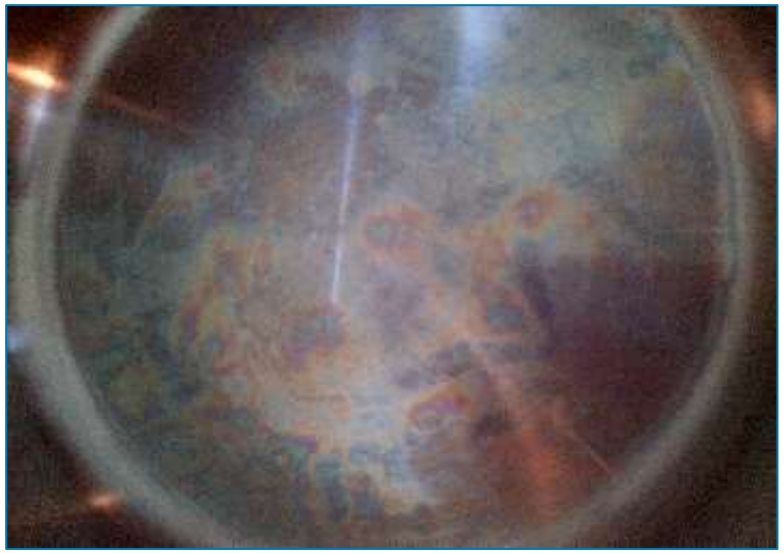
Possible treatment: Sterilize or ultrasonic only the similar metal instruments together.

Multicolor Stains

Possible Causes:

- Most often due to excessive heat (chromium oxide stains) and actually show rainbow colors with a blue or brown overtone. When the instrument shows these heat stains, it may have lost part of its original hardness and may not perform well. Testing for hardness and polishing of the instrument can be done by your instrument repair company.

Possible Treatment: Correct the autoclave temperature to the manufacturer's specifications.



Light and Dark Spots

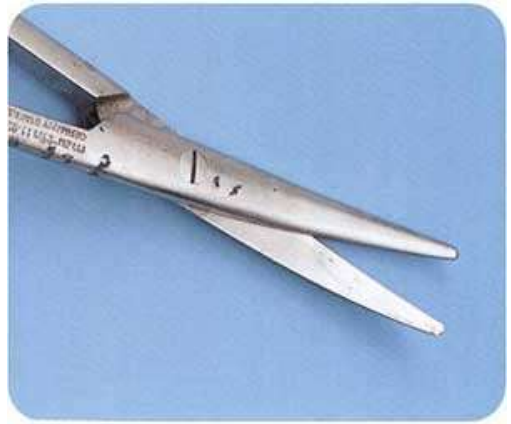
Possible Causes: Water spots from allowing instruments to air dry. With slow evaporation, minerals from water are left on the instrument's surface.

Possible treatment: Use distilled or de-mineralized water to ensure detergents are thoroughly rinsed out.

Bluish-Grey Stains (can cause pitting)

Possible Causes: Cold sterilization solution being used outside manufacturer guidelines.

Possible Treatment: Correct the use of cold sterilization methods by following the manufacturer's guidelines accurately.



Black Stains

Possible Causes: Exposure to ammonia

Possible treatment: Use Neutral Detergent. Follow steam line cleaning procedures with a cycle of distilled water to remove all traces of ammonia.

Other troubleshooting guidelines

Whitish residue on instrumentation after wash cycle and or sterilization: Check to see if a low-foaming detergent is being used in the wash cycle. Make sure the instrumentation is being rinsed with a reverse osmosis (RO), deionized water (DI), or distilled water on the final rinse of the wash cycle. Ensure there is a long enough dry cycle as stated per manufacturer's instructions of the washer.

Moisture remaining on the instruments within the sterile wrapped packs; excessive moisture in the autoclaves during sterilization: Preheat the autoclave, follow appropriate dry time per manufacturer's instructions, open autoclave door slightly. Routinely inspect valves. Malfunctioning valves can precipitate corrosion.

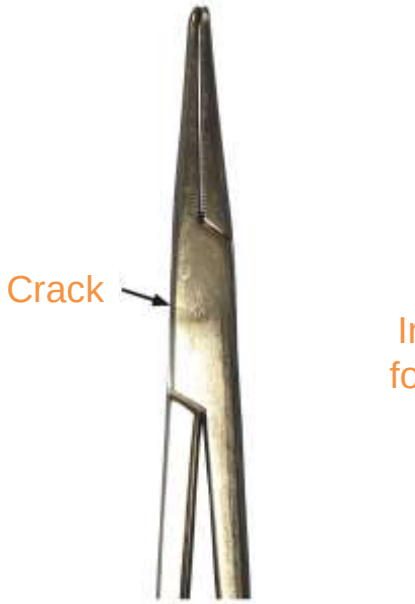
Corrosive matter on instruments post sterilization: Some local water supplies contain excessive quantities of alkali (salt). It's generally accepted that cold distilled or demineralized water be used during sterilization. A fix for this is to institute a preventive maintenance program and have your chemistry evaluated by the detergent manufacturer.

Proper Surgical Stainless-Steel Instrumentation Inspection and Testing

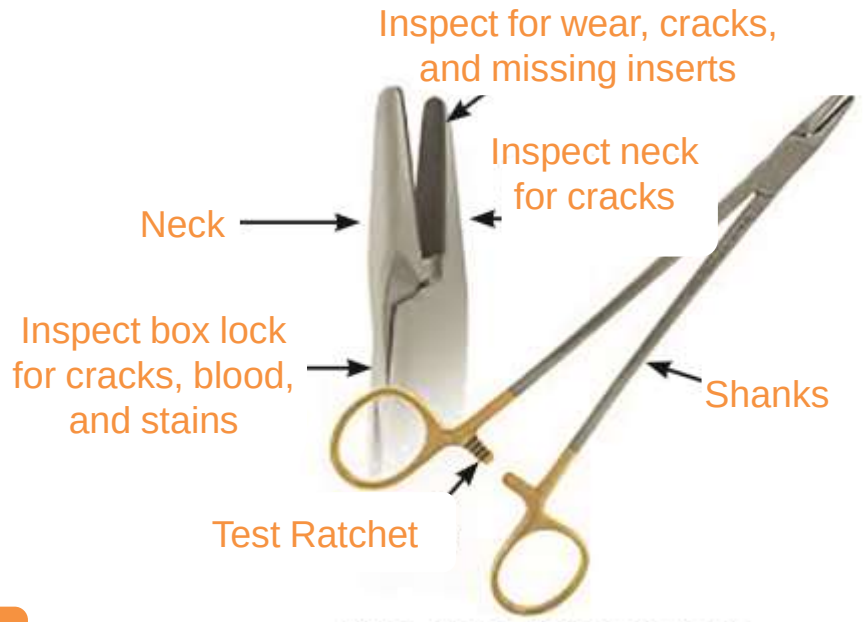
Proper care and handling along with a well-rounded instrument preventive maintenance program will help prevent more costly repairs, prolong the life of your instrumentation, and keep them in good working order.

Testing of your instruments is crucial to ensure they remain in good working order for the surgical team and more importantly, the patient.

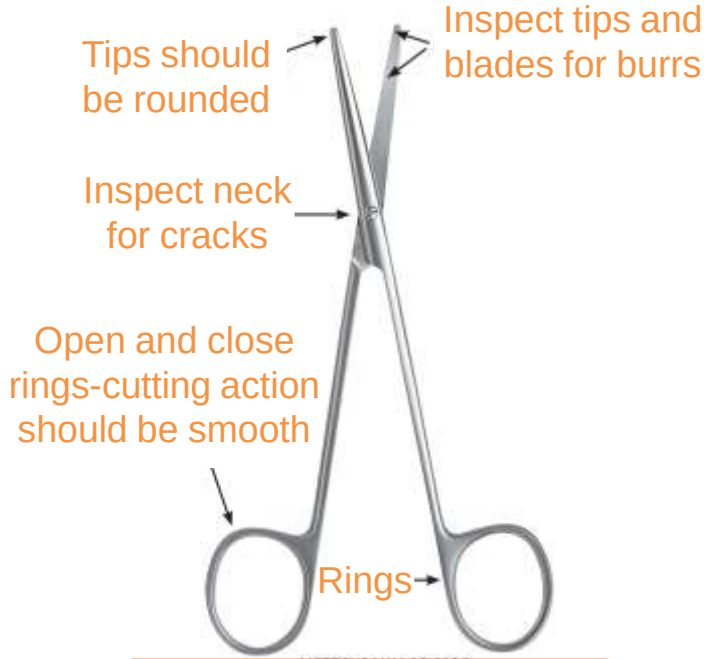
Broken instrumentation is unsafe for the patient in many ways. It may cause procedural delays which may extend the time the patient is under anesthesia unnecessarily, foreign objects can break off into the surgical site, and cracks in instrumentation can harbor bioburden causing infection or worse, death.



CRACKED BOX LOCK



MAYO-HEGAR NEEDLE HOLDER



METZENBAUM SCISSOR

Scissors

Testing Material: Red and Yellow Thera-Band®

Scissors 4.5” and larger: should be tested on Red Thera-Band®. 1/2 of the blade should cut cleanly through to the distal tip without snagging.

Scissors 4.0” and smaller: should be tested with yellow Thera-band®. 1/2 of the blade should cut cleanly through to the distal tip without snagging.

Inspection Points:

- **The tips:** Inspect tips for corrosion, chips, cracks, pitting, burrs, or bending.
- **Hinged Area:** Check for cracks, loose screws, and bioburden.
- **Rings:** Check for cracks and corrosion.

Supercut Scissors

Have a razor-sharp edge and are indicated by the black ring handles.

Testing Material: Red and Yellow Thera-Band®

Scissors 4.5” and larger: should be tested on red Thera-Band®. 1/2 of the blade should cut cleanly through to the distal tip without snagging.

Scissors 4.0” and smaller: should be tested with yellow Thera-band®. 1/2 of the blade should cut cleanly through to the distal tip without snagging.

Inspection Points:

- **The tips:** Inspect tips for corrosion, chips, cracks, pitting, burrs, or bending.
- **Hinged Area:** Check for cracks, loose screws, and bioburden.
- **Rings:** Check for cracks and corrosion.

Lister Bandage Scissors

Testing Material: Surgical Towel

Bandage Scissors: should cut through a surgical towel cleanly ½ the way to the tip without snagging.

Inspection Points:

- **The tips:** Inspect tips for corrosion, chips, cracks, pitting, burrs, or bending.
- **Hinged Area:** Check for cracks, loose screws, and bioburden.
- **Rings:** Check for cracks and corrosion.

Surgical Knives, Gouges, Osteotomes and Curettes

Testing Material: Plastic Dowel Rod

Knife: The sharp edge will stick in the side of the dowel when scrapped.

Gouges and Osteotomes: The gouge's sharpened edges should stick on the dowel when holding the gouge at a 45° angle.

Curettes: sharp edges should stick to the dowel rod when pulling the osteotome toward you.

Inspection Points:

- **The body:** Inspect corrosion, pitting, cracks, or staining.
- **Edges:** Check for cracks, burrs, chips, and sharpness with the above method

Arthroscopy Punch

Testing Material: 5ml Plastic or Leather

Refer to your manufacturer's instructions for use on the type of test material. Make sure the punch goes cleanly through with minimal effort. If it does not, it needs repaired.

Inspection Points:

- **The tips:** Inspect tips for corrosion, chips, cracks, pitting, burrs, or bending.
- **Hinged Area:** Check for cracks, loose screws, and bioburden.
- **Body:** Check for bioburden, cracks, and bent shafts.
- **Rings:** Check for cracks, loose screws and corrosion.

Rongeurs, Pin, and Bone Cutters

Testing Material: Index Card

Single, double action, and Kerrison Rongeurs: the Front third of the jaw should cut smoothly through the index card clean without tearing.

Pituitary Rongeurs: Should leave an imprint on the index card. Jaws should be free of burrs and nicks.

Pin and Bone Cutters: Should cut clean and smooth through the index card down to 3/4 of the jaw length.

Inspection Points:

- **The tips:** Inspect tips for corrosion, chips, cracks, pitting, burr, or bending.
- **Hinged Area:** Check for cracks, loose screws, and bioburden.
- **Body:** Check for bioburden, cracks, and bent shafts

Biopsy Punches

Testing Material: Two layers of Kleenex (Facial Tissue)

Biopsy Punches: should be cut through two layers Kleenex (facial tissue) with ease.

Inspection Points:

- **The tips:** Inspect tips for corrosion, chips, cracks, pitting, burrs, or bending.
- **Hinged Area:** Check for cracks, loose pieces, and bioburden.
- **Shaft:** Check for cracks and bioburden.
- **Rings:** Check for cracks and corrosion.

Clamps and Clips

Testing Method: Close the first ratchet on the clamp, tap the rings softly on the table. If the ratchet pops open, it needs repaired.

Inspection Points:

- **The tips:** Inspect tips for corrosion, chips, cracks, pitting, burrs, or bending.
- **Alignment:** test the alignment to ensure the ratchet closes evenly.
- **Box Lock Area:** Check for cracks, loose pieces, and bioburden. This is the weakest part of the instrument.
- **Shaft:** Check for cracks and bioburden.
- **Rings:** Check for cracks and corrosion.

Needleholders

Testing Method for Box Lock: Close the first ratchet on the clamp, tap the rings softly on the table. If the ratchet pops open, it needs repaired.

Inspection Points:

- **The tips:** Inspect tips for corrosion, chips, cracks, pitting, burrs, or bending.
- **The jaws:** Inspect needleholders inside jaws for wear. If there is wear on the jaw, it needs repaired. Close needleholder and hold up to the light. If you see light coming through, it also is in need of repair.
- **Alignment:** Test the alignment to ensure the ratchet closes evenly. Look down over the jaws as they are closing. If they are not lined up correctly, they will make a chewing motion.
- **Box lock area:** Check for cracks, loose pieces, and bioburden. This is the weakest part of the instrument.
- **Shaft:** Check for cracks and bioburden.
- **Rings:** Check for cracks and bioburden.

Forceps

Testing Method: Close the forcep to ensure the tips meet properly. If they are misaligned, they need to be sent for repair. If the instrument has teeth, ensure they are straight and not bent, missing or broken.

Inspection Points:

- **The tips:** Inspect tips for corrosion, chips, cracks, pitting, burrs, or bending.
- **Alignment:** Test the alignment to ensure tissue forcep closes evenly with no overlap.
- **Shaft:** Check for cracks and bioburden.

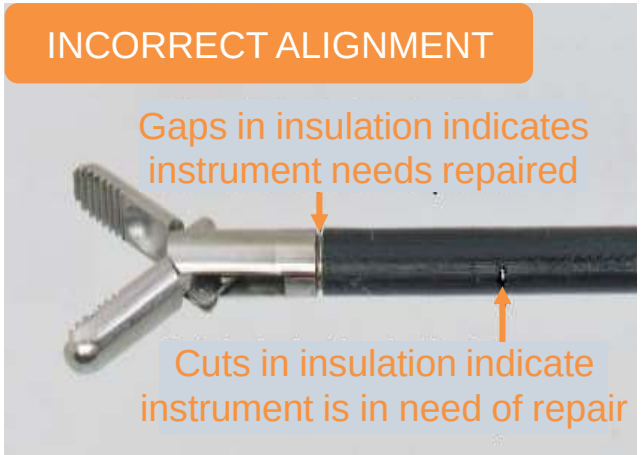
Laparoscopic Retractor Graspers

Testing Material: Surgical Towel or Red Theraband®

Laparoscopic Retractor Graspers: Can be tested by closing the grasper on a surgical towel or red Theraband® and lightly tugging to ensure the grasper maintains grip.

Inspection Points:

- **The tips:** Inspect tips for corrosion, chips, cracks, burrs, pitting, misalignment, or bending.
- **Distal Tip:** Inspect the distal tip for gaps.
- **Hinged Area:** Check for cracks, loose pieces, and bioburden.
- **Shaft:** Test the insulation shaft for cracks and abrasions with an approved leak tester. Pull the shaft up and down to ensure the insulation is intact. If it moves, you must send out for repair.
- **Rings:** Check for crack, loose screws, and corrosion.



Laparoscopic Metz & Mayo Scissors

Testing Material: Kleenex (facial tissues)

Laparoscopic Metz and Mayo Scissors: should cut cleanly through a single layer of Kleenex (facial tissue).

Inspection Points:

- **The tips:** Inspect tips for corrosion, chips, cracks, burrs, pitting, misalignment, or bending.
- **Distal Tip:** Inspect the distal tip for gaps.
- **Hinged Area:** Check for cracks, loose pieces, and bioburden.
- **Shaft:** Test the insulation shaft for cracks and abrasions with an approved leak tester. Pull the shaft up and down to ensure the insulation is intact. If it moves, you must send out for repair.
- **Rings:** Check for crack, loose screws, and

Using Proper Instrumentation Inspection Equipment

Using Proper Instrumentation Inspection Equipment

Along with a well-rounded instrument preventive maintenance program and careful handling and inspection; using the proper inspection and cleaning equipment is of the utmost importance.

It is immensely important that you have all the right inspection and processing equipment noted by the manufacturer's instructions for use. This has been well documented in AAMI, IAHCSMM, CBSPD, AORN, AST, SGNA and other organizations.

It is critical that not only follow the manufacturer's instructions for use or (IFU) to its entirety, but you have the equipment to visually ensure you have properly removed bioburden on today's complex surgical instruments.

Common types of inspection equipment

Surgical Inspection Cameras

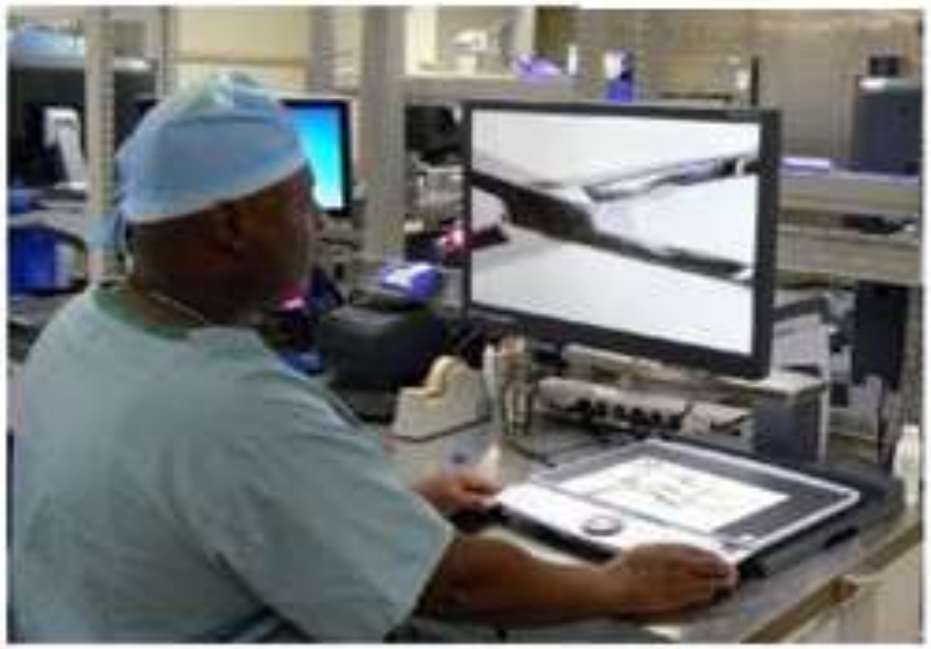
Used to inspect instruments with lumens: Shavers, suction tubes, scopes, and other instruments with lumens

Common types of inspection equipment

Magnification Cameras

Allows for magnification and image capturing of broken instrumentation. In the example below, we see a cracked box lock on a towel clamp that may have not been caught with the naked eye.

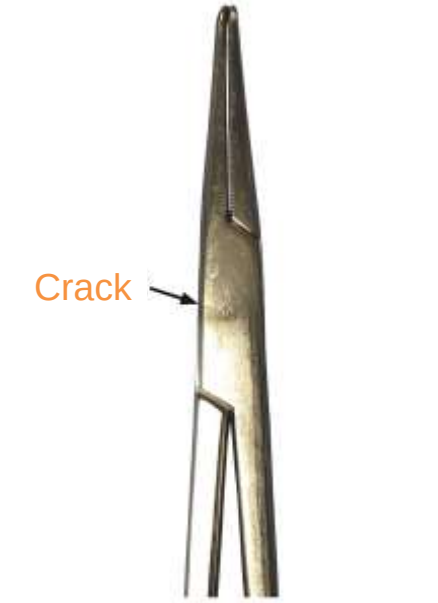
CRACKED BOX LOCK



Common types of inspection equipment

Magnification Light

Allows for magnification to see parts of an instrument that would not be seen as well with the naked eye.



CRACKED BOX LOCK

Preventive Maintenance Program

Even with the best care and handling, without a good preventive maintenance program, your instrumentation will have a shorter life span. Proactive instrument maintenance program results in fewer repairs, more satisfied surgical staff and reduced instrument replacement costs. This also extends the life and quality of your equipment, improves clinical satisfaction, provides better patient outcomes, and maximizes operating room and central sterile efficiency.

A good vendor will inventory sets used, calculate frequency of the trays used, identify items that need a preventive maintenance program and set up a preventive maintenance plan that is right for your facility.

The type of information that will help your repair vendor expedite your repair are the following:

1. Where is the instrument broken?
2. What is the specific issue?
3. How did it occur?
4. Is there a specific surgeon having difficulty with the instrument?
   The rule of thumb: the more information you have on the broken instrument, the better!

Proper Assembly Techniques to Protect your Instrumentation

Proper Assembly Techniques to Protect your Instrumentation

Using proper inspection and assembly techniques will also aid in the protection and longevity of your instrumentation.

The most important piece of information is the manufacturer's instructions for use (IFU).

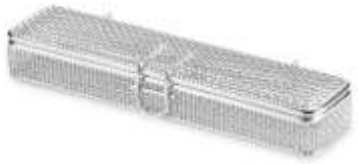
Inspection of instruments should be performed using a lighted magnifying lamp or inspection camera to identify quality issues. You should thoroughly examine instrumentation for: cleanliness, functionality, and completeness.

Always use a tray pick list or count sheet to assemble your tray.

Mulit-part instruments usually have special instructions and if the IFU states the instrument must be sterilized unassembled; then you need to keep the pieces together in the tray. There are many products on the market today to facilitate this request. Ensure whatever you are using to keep items together, can be utilized in the method of sterilization recommended by the manufacturer.

Proper Assembly Techniques to Protect your Instrumentation

When assembling instrumentation, you should always put the heavier instruments on the bottom of the set. This will prevent damage when handling the tray and reduce trauma to the delicate and sharp instrumentation.

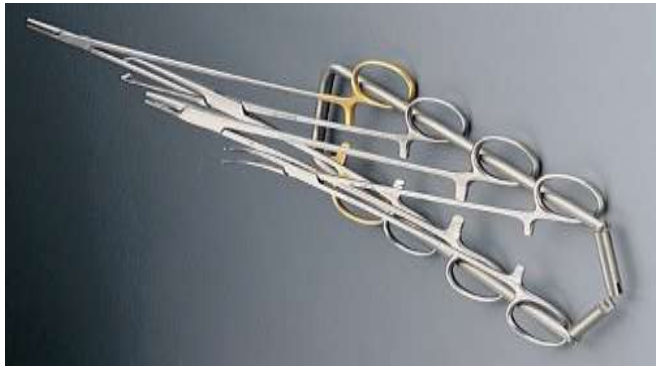


Use approved tip protectors to protect delicate tips. Make sure you use the protectors that will allow the instrument to be sterilized as per the IFU (Usually in the open position).

Proper Assembly Techniques to Protect your Instrumentation

Ensure the weight is appropriate for the tray or container you are using for your sets. The tray's Instructions for use (IFU) will indicate the maximum weight of the tray. If the tray is too heavy; it may impede sterilization.

Use instrument stringers to keep your handheld instruments in the open position in the tray/set.



Proper Assembly Techniques to Protect your Instrumentation

Always handle the set/tray with care. Do not tip tray or carry on its side. Proper carrying mechanics are important to keep the set from becoming damaged. When lifting instrument sets, use the larger muscles in legs and arms. Hold the item close to the body as possible without actually touching your body parallel to the ground above waist height.
The **maximum** recommended **tray weight** is 25 **pounds, per AAMI** and NIOSH guidelines.

Conclusion

With meticulous instrumentation inspection and testing paired with a solid, well-coordinated preventive maintenance plan; your instrumentation will remain in good working order for years to come. Keeping up to date with manufacturer Instructions for Use (IFU's) will ensure you are testing and processing your instrumentation appropriately.

Questions?

Quiz

1. Approximately _____% of all surgical instruments used in a healthcare organization are stainless steel.

A. 70
B. 75
C. 80
D. 85

B

2. True or False: Martensitic (Non-magnetic) 300-series stainless steel, is used in the manufacturing of instrumentation such as tongue depressors, retractors, sims speculums, cannulas, rib spreaders, and suction devices.

A. True
B. False

B

3. Ideally, the best pH levels for stainless surgical steel is _____ to _____. This is considered a _____ pH and is the least corrosive to your stainless instruments.

A. 5 to 6; neutral
B. 7 to 8; neutral
C. 8 to 9; alkaline
D. 9 to 10; acid

B

4. Dark Brown/ Black Stains on instrumentation is likely caused by?

A. Low pH (less than 6) acid stain. May be caused by improper detergents and soaps and/or dried blood.
B. Neutral pH
C. High pH (more than 9) alkaline stain.
D. Extremely high pH 12+

A

5. Whitish residue on instrumentation after wash cycle and or sterilization can be caused by what?

A. High pH detergent.
B. Soft water spots.
C. Residual instrument lubrication.
D. Foaming detergent is being used in the wash cycle.

D

6. Scissors 4.5” and larger should be tested on:

A. Surgical Towel
B. Yellow Thera-Band
C. Red Thera-Band
D. Latex Material

C

7. True or False: The testing method for Needleholders box lock are: Close the ratchet all the way on the last clamp. Tap the both rings softly on the table. If the ratchet pops open; it needs repaired.

A. True
B. False

B

8. On the shaft of a Laparoscopic Grasper, what must you test?

A. Test the insulation shaft for cracks and abrasions with an approved leak tester. Pull the shaft up and down to ensure the insulation is intact. If it moves, you must send out for repair.
B. Test the insulation shaft for cracks with an approved leak tester. Pull the shaft left to right to make sure the insulation is intact. If it moves, you must send it out for repair.
C. Check for crack, loose screws, and corrosion.
D. Check the tip for alignment.

A

9. True or False. AORN, IAHCSMM, AAMI and AST all state it is critical to comply with the manufacture's inspection, assembly, and sterilization instructions in the user department.

A. True
B. False

A

10. Preventive maintenance is a proactive approach to prevent instrumentation from failing. What types of information would be helpful to supply your repair technician when submitting a repair request?

A. Where is the instrument broken, the serial number of the instrument?
B. Where is the instrument broken, what operating room it was used in?
C. Where is the instrument broken, how did it occur, what time did it occur?
D. Where is the instrument broken, how did it occur, is a specific surgeon having difficulty with the instrument, is there a specific malfunction or trait of the instrument not working?

D

Thank you

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