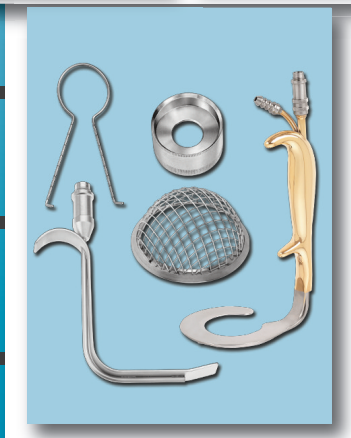


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ACCURATE SURGICAL & SCIENTIFIC INSTRUMENTS®

Instrument Care Manual



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INTRODUCTION

It is a common belief that stainless steel surgical instruments can become stained or rusted due to the effects of sterilization. However, this is simply not true. The alloy used to produce surgical quality steel includes specific passive layers that form a protective film, that prevents corrosion and staining.

With proper care and handling, your instruments will have a long life. However, improper care and handling can reduce that useful life significantly. It is very important to follow a consistent pattern of proper instrument cleaning and preparation. (See Easy Guide.)

Staining and corrosion can be caused by many factors. Chief among them is exposure to chloride ions and other aggressive solutions. Also, the use of acidic (pH 0-6) and alkaline (pH 9-14) solutions can cause pitting.

The procedures outlined in the handbook will help you avoid the situations that cause various staining and corrosion problems.



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HANDLING NEW INSTRUMENTS

Following the procedures outlined previously, clean and rinse new instruments before their first sterilization. Note that there is no difference in the handling of matte (dull) or mirror (bright) finish instruments. If our new instruments arrive in a plastic bag that shows condensation, remove and dry them in an open position before storage. Of course, no instrument should be stored in a cabinet with any chemical that produces a corrosive vapor.

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INSTRUMENT CARE PROCEDURE

1. Before cleaning, inspect instruments for chips and cracks. Don't autoclave chrome plated and stainless steel instruments together.

2. After each use, clean instruments thoroughly.

a. Use only neutral pH-balance solutions for the pre-soak.

b. When cleaning by hand or with ultrasonic cleaner, clean instruments in open position.

c. To remove stubborn stains, use a non-metallic brush (toothbrush). Abrasive cleaning solutions or scouring pads should NOT BE USED.

d. DO NOT USE bleach for cleaning.

e. Follow the mixture ratios precisely for ALL solutions that will touch your instruments. Failure to monitor the acidic (pH 0-6) or alkaline (pH 9-14) balance will lead to instrument failure.

Even though instruments are passivated, serious damage can result if there is exposure to any of the following:

Hydrochloric Acid
Ferric Chloride
Dilute Sulphuric Acid

Iodine
Bleach

Whenever possible, the following substances should be kept away from instruments:

Aluminum Chloride
Barium Chloride
Biochloride of Mercury
Calcium Chloride
Potassium Permanganate
Potassium Thiocynate
Chlorinated Lime
Dalkin's Solution
Ferrous Chloride

Lysol
Mercury Chloride
Phenol
Carbolic Acid
Sodium Hypochlorite
Stannous Chloride
Tartaric Acid



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WATER

Drinking water should not be used for cleaning surgical instruments, as it frequently contains significant quantities of foreign ions that can cause damage.

High concentrations of chlorides, for example, can lead to pitting and stress-related fractures. Less serious, but also undesirable, the presence of minerals in the cleaning water can discolor the instrument. (These discolorations can be removed by using the appropriate cleaning products according to the manufacturer's instructions.)

To prevent these problems, it is recommended that only completely salt-free, demineralized water can be used for instrument cleaning.

PREPARATION FOR CLEANING

Ideally, instruments should be cleaned immediately after use. If that is not possible, they should be placed in a basin of distilled water or a solution of neutral pH detergent until such time as cleaning is possible. The objective is to prevent impurities from drying on the instruments. However, it should be remembered that instruments should not be stored in aqueous solutions for prolonged periods, and if they are placed in a basin prior to cleaning, the basin should be drained and cleaned everyday.



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STEAM STERILIZATION

Complete an “empty” cycle every day prior to sterilizing the instruments.

To prevent corrosion damage to the instruments, it is important that the steam be completely free of foreign substances. Therefore, the steam supply system must be constructed of chrome nickel steel.

To avoid excessive condensation, stay with the manufacturer’s recommended load for the sterilizing unit. If heavy sets are unavoidable, instruments should be spread out to reduce the condensation buildup.

Once sterilized, instruments must be dried completely before being stored away. Without proper drying times, “water spotting” can result.

LUBRICANTS AND DETERGENTS

Besides lubricating moving parts, lubricants inhibit rust, corrosion, and discoloration. For this reason, they are an excellent investment for long-term protection of your surgical instruments. As part of a regular instrument care program, proper lubrication helps reduce instrument wear. A 30 to 60 second soaking prior to autoclaving is adequate to insure protection.

Advantage:

Prevents frozen box locks by dissolving organic debris.

Does not interfere with steam autoclaving

Provides a protective coating to your instruments, reducing repair costs.

Non-toxic

Inhibits rust and discoloration

Detergents designed for surgical instruments remove protein, organic debris and blood.

The neutral pH balance will not damage stainless steel or tungsten carbide inserts. The solution is gentle enough for manual (hand) as well as ultrasonic cleaning.

ULTRASONIC CLEANERS (CONTINUED)

Breaks resulting from corrosion are called “stress corrosion cracking.” This usually shows up around the box lock joints of needle holders and hemostats or on the screws of scissors. It appears as a buildup of what looks like rust. If this is seen, and a broken instrument is to be avoided, it should be cleaned away immediately with a soft toothbrush.

As in manual cleaning, thorough rinsing after cleaning is very important. If the cleaning solution is not thoroughly rinsed away, the instruments will become discolored when they are autoclaved or heat sterilized. Demineralized, salt-free water is recommended for rinsing. In addition, if instruments have been soaked in a disinfectant or cleaning solution BEFORE ultrasonic cleaning, it is necessary to rinse them thoroughly BEFORE placing them into the ultrasonic cleaner.

Instruments should be in the open position when they are placed in the ultrasonic cleaner and should not be piled on top of each other. For maximum cleaning effectiveness, the cleaning solution should be changed regularly in accordance with the manufacturer’s recommendations.



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MANUAL CLEANING PROCEDURE

Carefully follow all the manufacturer's instructions regarding solution temperatures, soaking times and mixture concentration. If powdered cleaning solutions are used, be sure that the mixture has had adequate time to dissolve.

Make certain to change the cleaning solution everyday. Evaporation can increase the concentration and cause corrosion; also, dirty solutions do not clean effectively.

For manual cleaning, use lint-free, soft textile cloth, paper cloth, soft plastic brushes (toothbrush) or water spray guns.

After manual cleaning, instruments should be rinsed twice, first in tap water and then in distilled water (it is critical that distilled water be used for the second rinse.) This two-step rinsing will remove any remnants of surgical debris as well as remove any contaminants that may have been in the drinking water.

After rinsing, instruments should be thoroughly dried. If it is possible, a pneumatic air gun should be used for drying. If that is not possible, gently shake the excess water from the instruments and place them on clean, dry, lint-free towels to dry.

ULTRASONIC CLEANERS

Many experts consider ultrasonic cleaning the best method for cleaning surgical instruments. In addition to cleaning more efficiently than other methods, ultrasonic cleaning is also safer. Since it requires less instrument handling, there are fewer chances for accidental cutting. Reduced handling also cuts down on breakage.

As in all cleaning methods, the solutions used in ultrasonic cleaning must be prepared according the manufacturer's instructions. Failure to do so will result in either an acidic or alkaline pH balance, both of which can cause corrosion and breakage.

(continued on page 7)

EASY GUIDE MANUAL CLEANING PROC

1. Check instrument for cracks and chipped areas.
2. Clean instruments immediately after use with a neutral pH-balanced solution. Be sure to follow manufacturer's instructions for soak time and mixture ratio.
3. When cleaning, use a soft brush, NOT a steel brush or scouring pad. Clean in open position and pay special attention to removing debris from box locks.

EASY GUIDE ULTRASONIC CLEANING P

1. Check instrument for cracks and chipped areas.
2. Rinse off large debris in tap water, followed by soaking in a neutral pH-balanced cleaning solution (be sure to follow manufacturer's recommended mixture ratio).
3. When loading ultrasonic cleaner, do not stack instruments on top of each other and be sure instruments are in the open position.

CLEANING AND STERILIZATION TROUBLE

PROBLEM	CAUSE	PREVENTION
Spotting	Mineral deposits left by slow or improper drying	<ol style="list-style-type: none">1. Check operating instruments and operation of autoclave.2. Use chloride-free solutions for sterilizing, disinfecting, rinsing and cleaning. Distilled or mineral free water preferred (pH approx. 7.0)
Rust (corrosion)	Film left by steam	<ol style="list-style-type: none">1. Check purity of water supply.2. If water softeners are used, check for composition.3. Purge steam pipes, especially new installations.
Rust (corrosion)	Deposit	<ol style="list-style-type: none">1. Do not mix stainless steel with other metals especially where there is evidence of defective plating.2. Rinse with distilled water (important where tap water may have high metallic content).3. Remove debris from lock.4. Dry all instruments thoroughly. Use full-time cycle (important when instruments are wrapped).



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PROCEDURE

4. Rinse instruments thoroughly after cleaning. Use distilled water, not drinking water.
5. Dry instruments with clean, dry, lint-free towels.
6. Just before sterilizing, soak the instruments in milk for 30-60 seconds. Do not use dry heat sterilizers.
7. Autoclave.

WASHING PROCEDURE

4. Follow manufacturer's instructions for cleaning cycle time. Remove instruments promptly when cycle is complete and rinse thoroughly in distilled water.
5. Dry instruments with clean, dry, lint-free towels.
6. Just before sterilizing, soak the instruments in milk for 30-60 seconds. Do not use dry heat sterilizers.
7. Autoclave.

PROBLEM-SHOOTING GUIDE

PROBLEM	CAUSE	PREVENTION
Pitting	Chemical and Electronic attack of surfaces	<ol style="list-style-type: none">1. Rinse instruments thoroughly immediately after use.2. Avoid long exposure to chlorides and acids.3. Do not use detergents having high pH levels.4. Do not mix metals in ultrasonic cleaners.
Black to purple stains	Ammonia	<ol style="list-style-type: none">1. Avoid exposure to ammonia in solutions and cleaning compounds.2. Rinse instruments thoroughly (distilled water preferred).
Brown Stains	Minerals	<ol style="list-style-type: none">1. Check water supply in sterilizer.2. Check cleaning compounds and detergents. Avoid excessive use.
Gray-Blue stains	Improper Temperature	<ol style="list-style-type: none">1. Use fresh, cold sterilizing solutions and follow manufacturer's suggestions for use.

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