Aesculap Care Guide

REFERENCE **PAGE 2**

REPAIR PROCEDURE

Please take the time to fill the forms listed prior to sending in power equipment for repair.

The steps below will ensure that the power equipment you are sending will be serviced appropriately.
All power repairs require an RMA#

Step 1:
Please obtain an RMA# by filling out the form on our website www.vetimplants.com/repairs**.**
You will receive a response email with an RMA#.

Step 2:
Power Repair and Sterilization Form
Please print and fill in the above forms.
Please include these forms with the shipment of your power equipment to us.

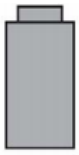
For all power equipment repairs in the U.S., please ship to the following address:
Veterinary Orthopedic Implants
Repair Department RMA#_____
310 Commerce Lake Dr Unit 107
Saint Augustine, FL 32095

For power equipment repair in Canada, please ship to the following address:
Veterinary Orthopedic Implants
290 Traders Blvd E #4
Mississauga, ON L4Z1W7

For all power repair related inquiries, please email: repairs@vetimplants.com.

Light Indicators

The “Charging Process” symbol is the first indicator light. The symbol is divided into four sections and indicates the process of charging. Minimal illumination is the start of automatic charging. The charger automatically checks the condition of the battery after each charging cycle.



The “Charging Completed” symbol is illuminated in green. Complete illumination signifies a complete charge. The charging time depends on the charge state and capacity of the batteries.

The triangle warning is the "Action Request" indicator. If you get this warning light, charging cannot be performed normally; the "charging progress" indicator will usually then go dark. Possible causes for receiving this light is from bad contacts or excessive battery temperature during charging.

- Each charging bay is equipped with a fan, which works independently of the battery temperature. The charging of the battery is aborted as soon as a battery temperature of > 47*C is detected. The battery must be removed from the respective charging bay, allowed time to cool down, and plugged in again to restart charging. When the battery temperature drops below 45*C, the "Action Request" symbol in indicator field 2 remains illuminated. The battery must be removed from the charging bay and plugged in again to restart charging. If a battery receives the "Action Request" indicator and is taken off the charger and immediately placed back in the charging bay without cooling, the battery will count this as an error. When a battery receives three errors, it will lock itself from charging and needs to be serviced by Aesculap.

The "Battery Change Recommended" symbol is the third light indicator. This light signifies the battery is approaching the end of life or needs repair and is alerting the user it is time for a battery change. This symbol is usually illuminated in addition to the "Charging Completed" indicator. The battery receives this light when it fails the automatic battery check.

- Charging time is stopped as soon as the maximum charging time is reached. The permanent monitoring of the battery also allows detecting faults in the battery block. When a battery fault or a charging fault is detected, this is indicated by the "Action request" symbol and charging is aborted. To determine if it is the battery or the charging bay, take the battery and allow it to cool. After cooling, place it in another charging bay. If the same symbol appears, there is a fault in the battery block. If the battery charges, it could have been overheated and charging was interrupted. If the same "Action request" indicator is consistently appearing over the same charging bay, it is possible the charging bay needs to be replaced.

The bottom of the charger reflects the current software installed. If the charger does not have the SW-S3.0 software sticker, it needs to be updated by Aesculap to prevent malfunction.

The base of the battery displays the next recommended service date but has no impact on the battery or its use. Regular servicing is essential to ensure the reliability of motor systems over a long service life.

Maintenance Suggestions

- Charge batteries prior to use
- Allow batteries to cool after use
- Never place hot batteries in the charger
- Do not place batteries in the charger directly after surgery
- Monitor batteries temperature if left on the charger for long periods of time. If a battery is hot to the touch, remove and allow to cool
- Do not leave batteries in a handpiece for long periods of time
- Cycle batteries to “exercise” them. Full charge, release, recharge
- Batteries can be wiped with rubbing alcohol
- Dust and animal hair clog the charging bays which leads to incomplete charging cycles, overheated bays, and malfunction. Store the charger in an area where less traffic occurs and cover charging bays when not in use to prevent debris entering.
- Allow proper ventilation to occur when the charger is in use. Designate at least 6 inches from the wall to the charger.

Cleaning

Attachments and Instruments

BATTERIES MUST BE REMOVED PRIOR TO CLEANING AND STERILIZATION.

• Disassemble and clean instruments immediately after use to prevent blood and other debris from drying onto the surface. Blood causes a stain which is difficult to remove and if left on the instrument for an extended period, will mark and stain which leads to corrosion.

• Aluminum surfaces will be attacked by alkaline solutions or tap water with higher concentrations of chloride. Therefore, use only distilled water for cleaning the instruments.

• Rinse all cleaning residue thoroughly off the instrument with distilled water. Be aware, normal tap water will leave deposits on the instruments due to the high mineral content.

• Wash instruments with a neutral pH soap (between 7pH - 8pH) for optimal results. The cleaners and cleaning agents you use can also be a cause of corrosion. Strong substances, as well as those containing a chemical make-up of acid or alkaline base solutions, can lead to pitting and staining.

• Do not use Betadine Solution, dish soap, laundry soap, or surgeons hand scrub. These products can cause spotting and corrosion.

- Use only distilled water for washing and rinsing as well as for sterilizing, along with a nylon brush, nylon post scrubber, and a low-suddsing, near-neutral detergent.
- Use a nylon cleaning brush for jaw serrations and teeth areas.
- Do not use steel wool, wire brushes, highly abrasive cleaners or detergents as this will damage the protective layer or skin of the instrument.
- Thoroughly dry instruments before wrapping them. Any remaining moisture can result in corrosion.

AESCULAP Maintenance Oil: Sterilit Hi, Sterilit M, Sterilit I, Sterilit mini

Application

- All Sterilit maintenance oils are validated for steam sterilization up to 356° F/180°C.
- Sterilit oil should be applied to all joints/moving parts prior to autoclaving their instruments.
- Use ONLY prior to autoclaving instruments.

Properties

- Steam-permeable oil film
- Heat-resistant germs are killed even in critical areas during sterilization
- Lubricating effect
- Corrosion protection

Warnings

- Extremely flammable
- As content of aerosol Sterilit Oil spray is pressurized storage above 122°F/50°C can increase pressure and container may burst

Sterilization

- Only sterilize a clean instrument. The most damaging procedure is to allow dried-on debris to become baked-on stains in the autoclave. Remember, an autoclave does not clean; it will only sterilize.
- If using reusable instrument wrappers make sure they are rinsed thoroughly to remove all residues of detergents, otherwise staining or corrosion might occur during steam sterilization.
- Sterilization of dissimilar material instruments should be avoided. Chipped or imperfectly plated instruments of dissimilar material will cause rust deposits on each other. These particles promptly oxidize and the instrument will appear to have rusted.

Autoclave

- Maximum temp of 273°F/134°C and maximum holding time 18 minutes or max temp

250°F/121°C and max holding time of 20minutes.

• Minimum holding time is 5 minutes at the temperatures above.

• These are the maximum temperatures and holding times. Longer holding times may adversely affect the service life of the drill.

Storage

• Instruments may corrode because of adverse storage conditions. To prevent corrosion, instruments should be stored in dry and dust-free conditions (closed stacking/storage systems are preferable).

• Major temperature fluctuations should be avoided to prevent accumulation of moisture on instrument surfaces.

• If using reusable instrument wrappers or cloth, make sure they are properly dry before wrapping instruments for storage. Wet or damp instrument wrappers/cloth will result in corrosion or instruments.

Prevention

Instrument/Implant Corrosion/Staining

A variety of stains or spots might appear on instruments after the cleaning and sterilization processes are completed. Most likely, these are not rust, but rather an indication of improper cleaning or sterilizing procedures. The following chart can help identify and prevent or remove many of stains that typically show up on instruments.

Brown/Orange
• Bio-burden (tissue, blood, etc.) left on the instrument. Use an eraser to rub off stain
• Detergent pH is too high (>8). Choose a cleaning solution with a neutral pH.
• Soap/detergent residue on drapes/towels used in wrapping. Review laundry protocol to improve soap-free rinse.

Rust
• Mixing instruments made of different metals in the same cleaning or sterilizing cycle. Separate instruments by metal type for cleaning and sterilization.
• Tap water has high mineral content. Use distilled water and thoroughly dry instruments after rinsing.
• It is unlikely that surgical grade metal will rust. What appears as rust is usually residual organic matter or mineral deposits which have been baked onto the surface.
• Never mix instruments of dissimilar material (stainless steel, carbon steel, copper, brass, aluminum). If a plated instrument is chipped or peeled, an electrolytic action will carry particles from the exposed metal onto the surface of the other instruments.
• A rust-colored film on instruments can be caused by the high mineral content of tap water or by the use of water softeners.

Black/Brown, with pitting
• Pitting is depressions in the surface of the metal generally attributed to localized chemical attack by a corrosive media
• Cold soaking of instruments. Eliminate cold soaking and potential exposure to chemicals during that process.
• Detergent pH is too low (<6). Choose a cleaning solution with a neutral pH.
• When instruments are exposed to saline solutions, blood, iodine, potassium chloride and other compounds

pitting might occur. Instruments should be rinsed thoroughly with distilled water immediately after exposure.
• Pitting can also be traced to detergents with a high pH level used for instrument cleaning. Some hydrogen peroxide cleaning solutions have a very high pH level while others are fairly close to the suggested 5pH-8pH range. It is important to know the pH of your cleaning solution.

Blue/Black
• Mixing instruments made of different metals in the same cleaning or sterilizing cycle. Separate instruments by metal type for cleaning and sterilization

Blue/Gray
• Improper cold sterilization. Check solution instructions and follow recommended temperature and soak times
• Chemical or mineral residue. Use distilled water and thoroughly dry instruments after rinsing

Spotting
• Slow or improper drying of instruments. Review autoclave manufacturer's instructions
• Mineral residue. Use distilled water and thoroughly dry instruments after rinsing
• Slow evaporation of water condensation on the instrument will cause light or dark spots. Mineral deposits left behind after the water has evaporated are the result of using tap water. The use of distilled or de-mineralized water will eliminate the problem.
• Spots can also be the result of opening the autoclave door before steam has been completely exhausted, which causes a slow drying process.
• During laundering procedures, it is important that the detergents are thoroughly rinsed out. Reusable instrument wrappers can have residual chemicals carried onto the instrument surface during steam sterilization.

Multi-Color
• Excessive heat during sterilizing cycle* Review autoclave instructions

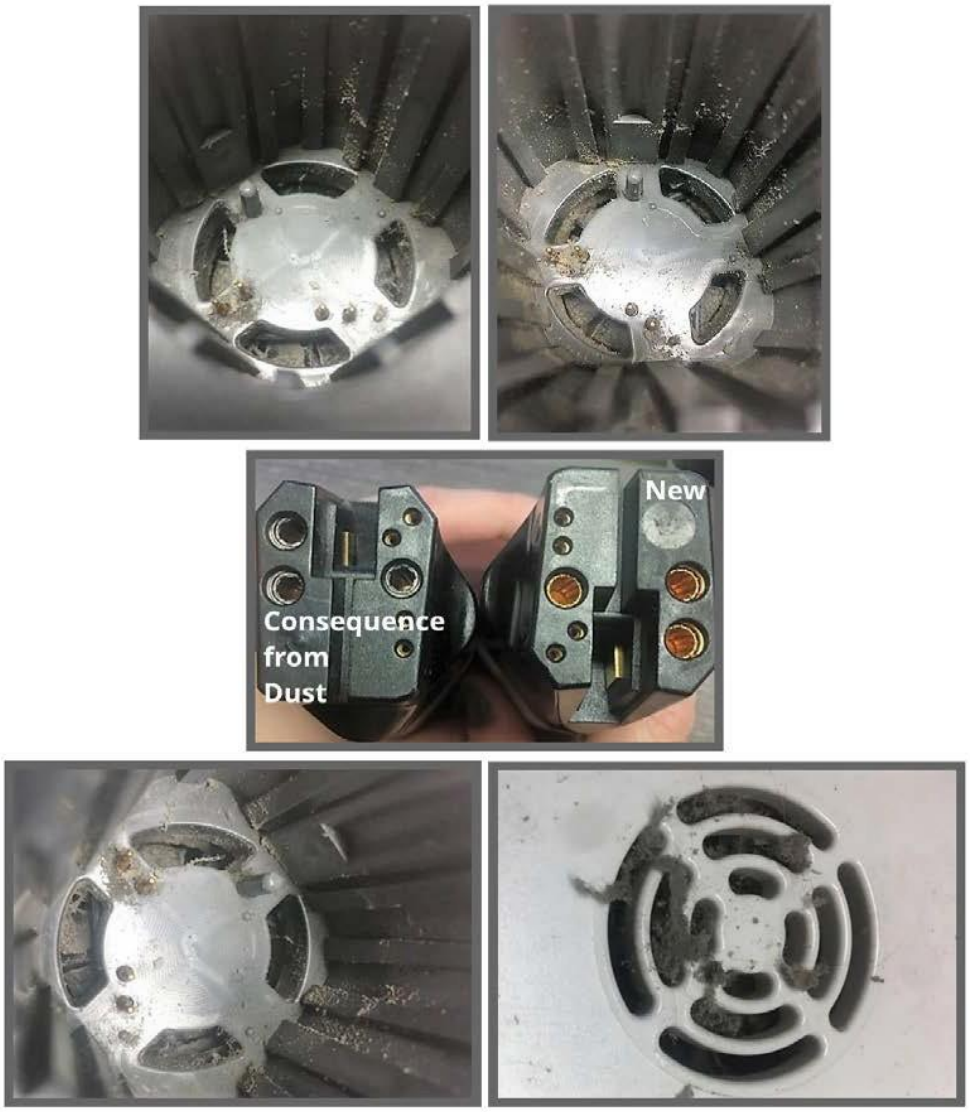
Corrosion
• The chemical or electrochemical reaction between a metal and its environment that produces a deterioration of the material and its properties.
• Blood, pus, and other secretions contain chloride ions which lead to corrosion. If left on the instruments for any extended period (1-4 hours), the instruments will mark and stain, especially if these residues are allowed to dry. Therefore, more care should be taken in cleaning every instrument thoroughly after each use. Excessive moisture left on the surface of the instrument can lead to corrosion.
• Preheat the autoclave; do not rush the drying time. Foreign matters deposited in the autoclave can result in spotting and corrosion of instruments. Inner surfaces of the autoclave should be given a routine maintenance. Wipe down with acetic acid (equal parts of vinegar and distilled water) to remove any impurities.

Worst Case Scenario's:
Examples of Poor Maintenance Routines

Charging Bays from GA677

- Dust and animal hair clog the charging bays which leads to incomplete charging cycles, overheated bays, and malfunction. Store the charger in an area where less traffic occurs and cover charging bays when not in use to prevent debris entering.

- Allow proper ventilation to occur when the charger is in use. Designate at least 6 inches from the wall to the charger.

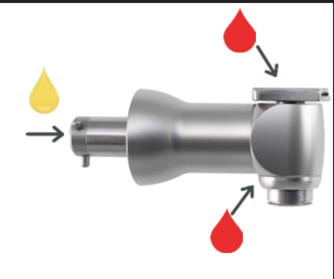
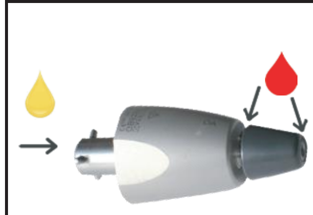


Drill

Stainless steel or aluminum parts corrode easily with blood

Veterinary Orthopedic Implants

Aesculap Care and Maintenance

	1. Manual Cleaning	2. Rinse	3. Drying	4. Lubricating	5. Function Check	6. Steam Sterilization
		(USE DISTILLED WATER) 		 (Once a month 1 drop)  (1 second spray every sterilization)		An autoclave does not clean; it only sterilizes. Do Not Use: Flash Sterilization Chemical Sterilization
	DO NOT: Immerse in water Use nylon brush Remove all traces of blood/debris Remove battery prior to cleaning and sterilization	Rinse thoroughly with distilled water to remove excess debris and harmful mineral deposits from tap water	• DO NOT AUTOCLAVE wet instruments and attachments		• Check the triggers for smooth movement • Check the rotor for smooth movement • Check the coupling for proper functioning • Operate drill in clockwise/counter clockwise direction • Operate drill in low, medium, max speed	• Temp: 270° F/275° F @ 4 minutes. • Minimum drying time: 20 minutes • Do not use tap water in steam sterilization: tap water contains minerals and other substances which can cause oxidation, pitting, and staining of the instruments • Use distilled water for steam sterilization • Wrapped instruments should be placed in materials which will allow steam penetration and promote drying, such as autoclave bag, autoclavable paper, or muslin towels • Allow a distance of at least 1” between instruments to permit steam circulation • Do not overload sterilizer: Overloading will cause inadequate sterilization and drying • If wraps or instruments are still wet after autoclaving, increase the drying time • Position the instruments and attachments in the standing position during autoclaving if possible. This will allow built-up fluid to drain out of the tool. Example: 
	DO NOT: Immerse in water Use nylon brush Remove all traces of blood/debris Remove battery prior to cleaning and sterilization	Rinse thoroughly with distilled water to remove excess debris and harmful mineral deposits from tap water			• Install battery • Install tool • Verify tool is seated properly by pulling on the saw blade • Briefly run the TPLO saw at maximum speed (low whistling sound heard at the startup of TPLO is normal • Remove battery before autoclaving	
	DO NOT: Immerse in water Use nylon brush Remove all traces of blood/debris	Rinse thoroughly with distilled water to remove excess debris and harmful mineral deposits from tap water	• Dry instruments with clean towel	(Internal hinge pins) 	• Verify cap fully seats on the drill or TPLO saw • Verify cap is able to be removed without much effort • Check levers on cap to confirm they spring back when depressed then released	
	DO NOT: Immerse in water Use nylon brush Remove all traces of blood/debris	Rinse thoroughly with distilled water to remove excess debris and harmful mineral deposits from tap water			• Check the function of the attachment coupling by attaching to drill • Install tool (drill bit, saw blade, etc…) • Verify tool is seated properly by pulling on the tool • Briefly run the drill at maximum speed in clockwise and counter clockwise mode. The gears should move smoothly without resistance	
	DO NOT: Immerse in water Use nylon brush Remove all traces of blood/debris	Rinse thoroughly with distilled water to remove excess debris and harmful mineral deposits from tap water	• Allow sufficient time for internal compartments to dry (use canned air or compressed air if necessary to remove excess moisture from internal gears)			
	DO NOT: Immerse in water Use nylon brush Remove all traces of blood/debris	Rinse thoroughly with distilled water to remove excess debris and harmful mineral deposits from tap water				
	DO NOT: Immerse in water Use nylon brush Remove all traces of blood/debris	Rinse thoroughly with distilled water to remove excess debris and harmful mineral deposits from tap water				
					• Batteries should be left in charger if used daily • Batteries should be removed from charger if not being used for an extended period of time (one week or more)