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REFERENCE BOOKLET*

When you look for leadership ON SURGICAL INSTRUMENTS

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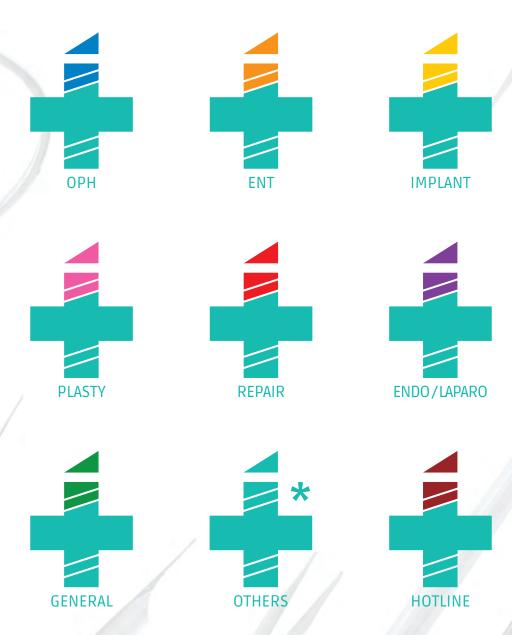


LA DIFFÉRENCE... THAT MAKES THE DIFFERENCE









AVERTISSEMENT

Certain devices advertised in the catalogue may not have been licensed in accordance with Canadian law.

Certains instruments qui sont annoncés dans ce catalogue peuvent ne pas avoir été homologués conformément à la législation canadienne.

LA DIFFÉRENCE... THAT MAKES THE DIFFERENCE

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AN INCOMPARABLE INNOVATION

It is with great pride that we present to you this DVD on surgical instruments. To our knowledge, this teaching material is the only one that exists in our milieu.

Many hours have been devoted to this DVD, yet we never had the pretension to make it into an exhaustive and complete document. An accompanying guide permits the addition of extra information and needless to say, our website continues to be a reliable source of information.

Since these documents and DVD have been created for you, we solicit your collaboration. If you believe any omissions have been made, please let us know and, if possible, they will be included in our next accompanying guides.

Thanking you in advance, pleasant viewing and enjoyable reading.

Michelle Laferrière Nurse Instrumentarium president



INSTRUMENTARIUM

REFERENCE BOOKLET on SURGICAL INSTRUMENTATION



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CHAPTER 1

Introduction

Since 1977, Instrumentarium has carried the surgical instruments most widely recognized and used by professionals.

Our reputation is built on consulting services unique in the field. This video and accompanying reference booklet are designed to help you to better understand surgical instrumentation.



To receive copies or additional information, please contact us.

A Brief History of Surgical Instruments

The history of surgical instruments has an important place in the medicine history.

Archaeologists have discovered primitive knives from as early as 10000 B.C., and there is evidence of attempts to suture from as far back as 2500 B.C.

The father of modern medicine, Hippocrates (460-ca. 377 B.C.), founded classical surgery.

Surgery came into its own as a discipline in the 1700's. The invention of stainless steel in the twentieth century brought perhaps the greatest change to the manufacturing process, until the most recent event of minimally invasive instrumentation.

Instrument making is a highly developed craft, and the craftspeople who make surgical instruments are the modern heirs to this ancient art. So, while new techniques have kept pace with advances in surgical practices, the essence of the craft has changed very little.

The skills of gifted instrument makers turn raw steel into the finely honed tools...ready for the surgeon's hand.

New surgical techniques create a continual need for improvements, as well as for the introduction of entirely new instruments. Instruments makers respond to these needs by forming partnerships with leading surgeons.





CHAPTER 2

Raw material

New surgical techniques create a need for increasingly sophisticated instruments, and require skill and creativity on the part of instrument makers. They work in close partnership with leading surgeons to meet their needs.

There are many different types of stainless steel, and it is vitally important to choose the right one. Only German instrument makers modify the type of stainless and forging they use according to the instruments required. Manufacturers from other countries, such as Indonesia, Pakistan and China, make all their instruments with no concern for such details.

However, those details improve greatly the quality, durability and corrosion resistance of our instruments. We are proud to say that the majority of Instrumentarium instruments are made in Germany.





Stainless Steel

Most surgical instruments are made of stainless steel. The metal is extremely strong and durable and, more importantly, it has the characteristic ability to form protective or "passivation" layers. "Stainless steel" really means "stain-less", or more resistant to stains and corrosion.

The choice of stainless steel is determined according to the desired flexibility, hardness, and malleability.

More carbon equals less stain resistance; Less carbon equals more stain resistance.



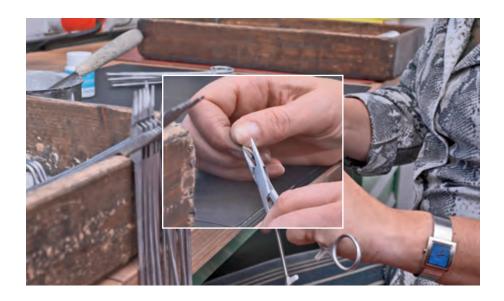
- + carbone résistant
- carbone + résistant

However, while every effort is made to ensure that instruments are corrosion and stain resistant, the key to durability is proper maintenance. When not properly treated, stainless steel may rust and stain, reducing the life of the instrument.

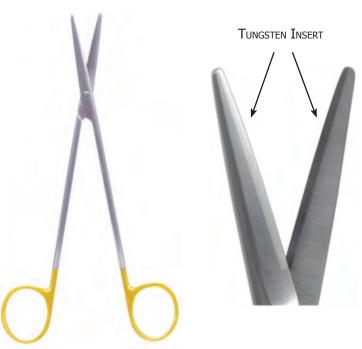


Tungsten Carbide

Tungsten carbide with a gold finish is used to manufacture needle holders, scissors, pin cutters, wire twisters and tighteners. Since tungsten carbide is harder than steel, it produces instruments of exceptional durability.



Soldered tungsten carbide inserts can be separated from the instrument and replaced when they become worn. Laser-welded inserts are not replaceable.





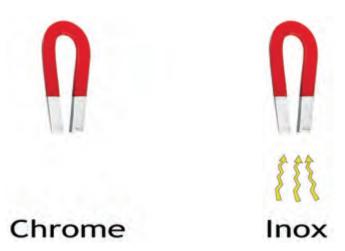
Titanium

Titanium's biocompatibility makes it an ideal material for implants, such as plates and screws. Being non-corrosive, non-magnetic and very light, it is used primarily to make microsurgical instruments. Its light weight is an important factor in reducing surgeon fatigue.



Chrome Plating

Chrome plating closely resembles stainless steel. You can tell them apart by using a magnet. If it sticks to the magnet, it's stainless. Stainless steel and chrome should never be sterilized together.





CHAPTER 3

Production Process

There are many steps involved in the production process. Material selection and forging quality are critical, as these factors cannot be corrected later in the process.





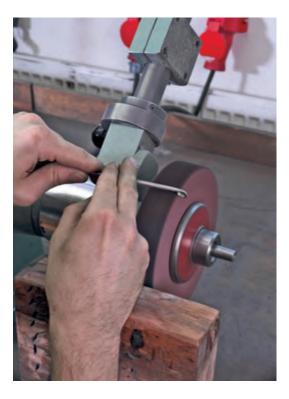




Mechanical robot

The production process of instruments requires several stages.





Polishing

Polishing creates a homogeneous surface, making the instruments more corrosion resistant. They receive a silk matte or satin finish to reduce glare in the operating room.

Electropolishing removes foreign substances and makes the surface more resistant by creating a thin protective film known as "passivation layers." If properly cared for, these passivation layers improve over time, ensuring the longevity of the instruments.





CHAPTER 4

Surgical Instruments

Every surgical instrument is designed to perform a specific function:

A) Scalpels, Chisels and Osteotomes

Often called "Sharps," these instruments are designed for cutting or incising.







Osteotomes



Chisels



B) Hand-held and Self-retaining Retractors

These are used to retract tissue and bone.



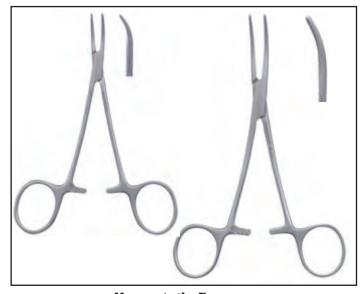
Self-retaining Retractors



Hand-held Retractors

C) Hemostat, Dressing and Tissue Forceps

These instruments are used to grasp, hold and occlude.



Hemostatic Forceps



Dressing Forceps

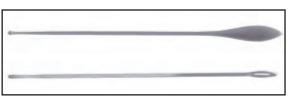


Tissue Forceps



D) Probes and Dilators

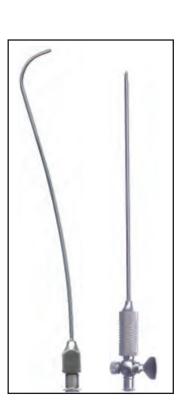
These are designed to dilate or enlarge.



Probes

E) Suction Cannulas, Needles and Trocars

These are used to remove or inject fluids.







Trocars



Suction Cannulas



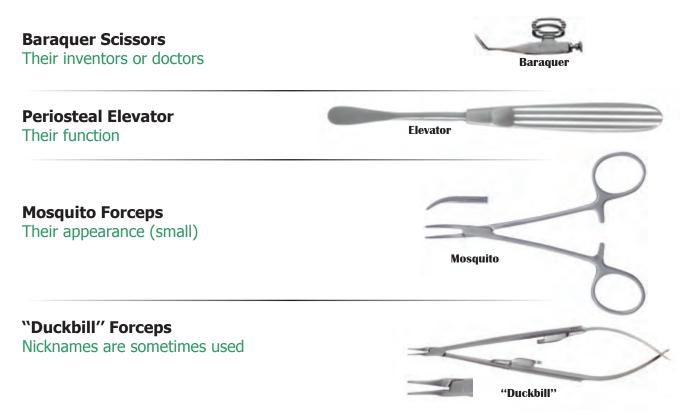
F) Needles Holders

These are designed to hold suturing needles.



Needles Holders

All these instruments are named after:





Instruments are divided into four major groups:

- A) Knives for cutting skin
- B) Scissors and forceps for dissecting
- C) Retractors for retracting tissue, organs and bone
- D) Needles holders for suturing

The shape and length of instruments vary according to the body parts and surgical specialties involved:

A) Scalpel Handles

Designed to hold blades, these are available in different shapes and sizes. Always be very careful when handling this type of instrument.



B) Scissors

Scissors are used to cut tissue, sutures, bandages and clothing. They are available in straight, curved, and angled models. When fully opened, well-made scissors have a lot of play at the hinge to allow for better cutting.

Surgeons often prefer curved models for dissection because they provide a better field of view.

Straight scissors are used for the shear cutting of sutures, nerves and blood vessels.

All these scissors are also used to enlarge incisions. The smaller scissors are used at the surface, and the larges sizes deeper in the cavities.

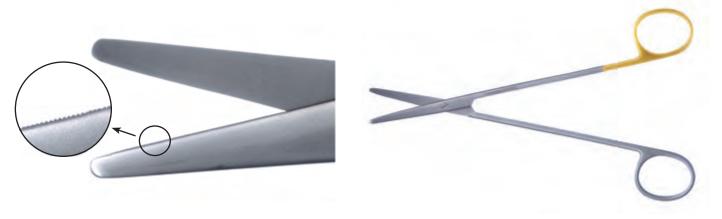
Scissors should always be used for their intended purpose, or they may be ruined. Don't forget to sharpen them on a regular basis.





Now let's look at the different types of scissors :

Super-cut Scissors



Super-cut scissors have one razor-sharp and one serrated blade. Their improved geometry and cutting action ensure superior cutting ability. Serrations can also be added to most models by special order.

The serrated blades help to prevent slippage, provide better control and precision, and hold their sharpness longer.

Scissors with tungsten carbide blades



Recognizable by their golden finger rings, these scissors have more durable blades.



The most commonly used scissors include:

Metzenbaum Scissors

These delicate scissors are the best for dissecting.



Mayo Scissors

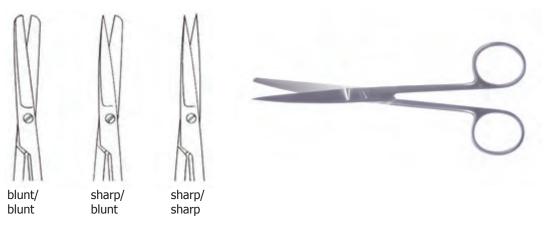
The curved models of these strong scissors are used to cut and dissect tough tissue. The straight models used to cut sutures are often called **"catgut scissors."** .



Operating Scissors

Used to cut gauze and sutures, they are available in three different models :

- blunt / blunt
- sharp / blunt
- sharp / sharp





Iris Scissors

These short delicate scissors are used for cosmetic and ophthalmic surgery.



Baraquer Scissors

Designed for ophthalmic surgery, these are also called "colibri" because of their bird shape.



Troutman Scissors

Also used in ophthalmology, they are easily recognizable, as they have spatulas instead of finger rings.



Stevens Tenotomy Scissors

With their duckbill tips, they are commonly used for hand surgeries.





Shea or Kilner Scissors

Their tips have flat ends for better dissection.



Knight Scissors

These scissors are designed for rhinoplastic surgery.





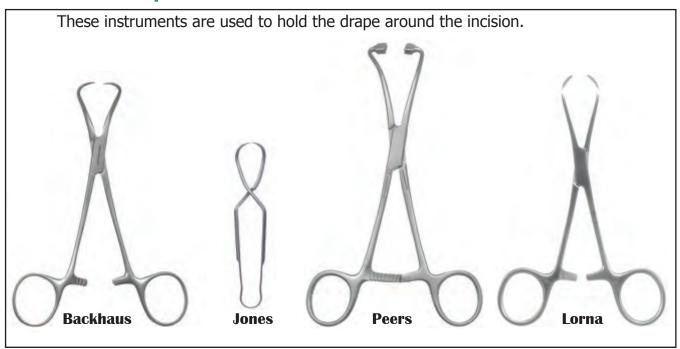


B) Forceps

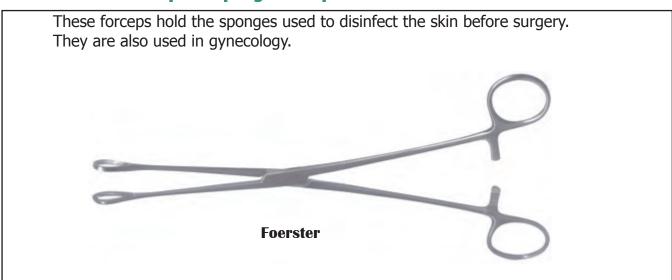
Surgeons use forceps to hold skin, organs, muscles, tissue and bone.

The main ones include:

Towel Forceps

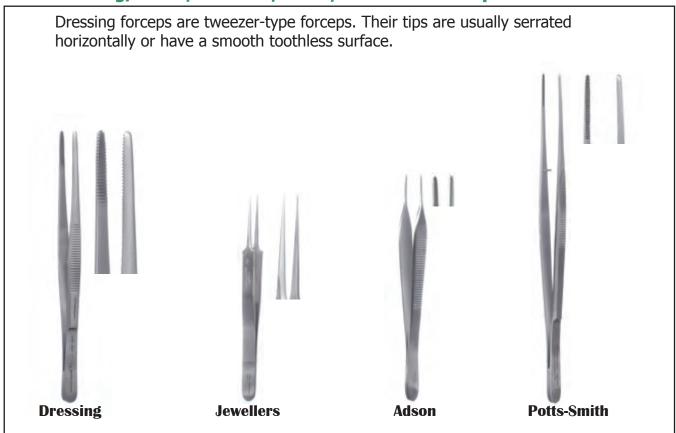


Foerster Forceps or Sponge Forceps

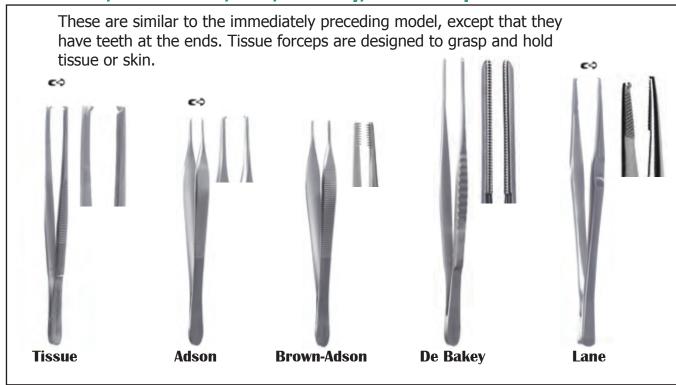




Dressing/thumb, Jewellers, Adson, Potts-Smith forceps



Adson, Brown-Adson, Lane, De-Bakey, tissue forceps





Hemostatic Forceps

They are used to hold, grasp and dissect tissue, muscle, organs and bone. They can be straight, curved or angled.

Let's take a look at the main ones:

Halsted Mosquito Forceps

These are called "mosquito" because they are small and delicate.

Crile and Kelly Forceps

The jaws of Crile forceps are fully serrated, while those of Kelly forceps are only half serrated.

Pean or Rochester Forceps

Long forceps with horizontal serrations.







Ochsner or Kocher Forceps

Identical to the preceding ones, except with teeth at the end of the jaws.



Rochester-Carmalt Forceps

The longitudinal serrations of the jaws are less traumatic than horizontal ones.



Mixter, Lahey Forceps (angled forceps)

These have angled jaws.





Allis Forceps

With small teeth at the ends, these forceps are used primarily for intestinal surgery.



Babcock Forceps

Used primarily for intestinal surgery, the oval shape of these forceps makes them less traumatic.



Duval Forceps

These have a triangular shape and are used to hold the lungs in thoracic surgery.



Satinsky Forceps

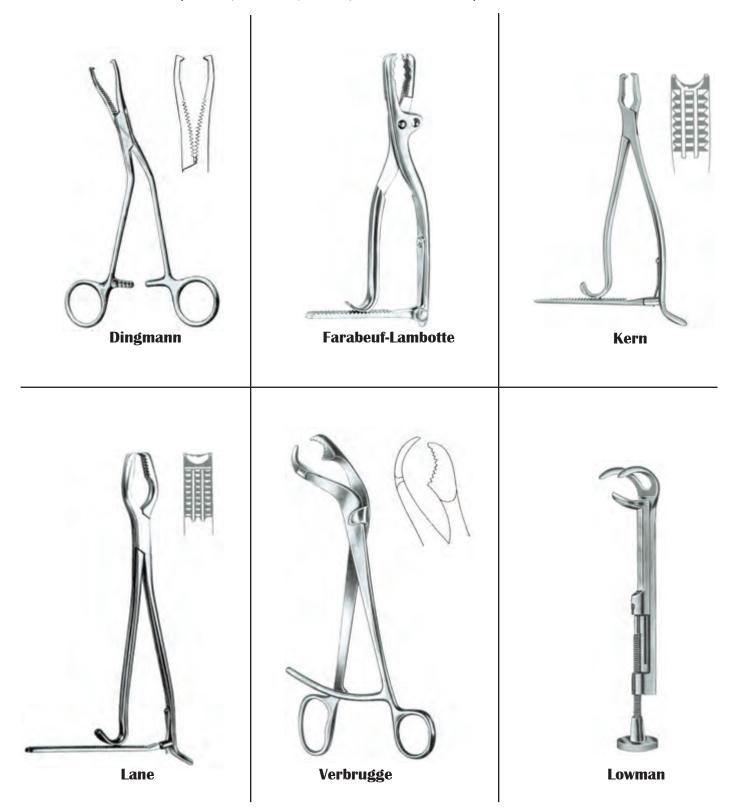
Used for vascular surgery, their jaws' numerous teeth protect blood vessels during surgery. These forceps are designed to control blood flow.





Dingmann, Farabeuf-Lambotte, Kern, Lane, Verbrugge, Lowman bone holding forceps

These forceps hold, stabilize, rotate, reduce and compress bone.





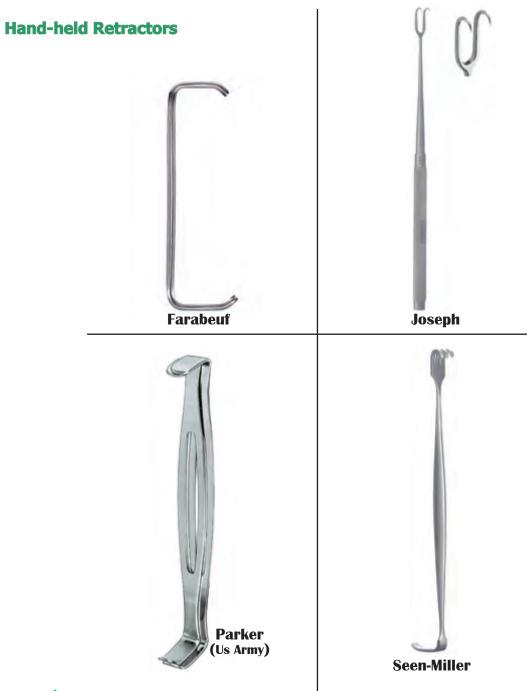
C) Retractors

These are used to retract, expose or push tissue, muscles, organs or bones during surgery.

Hand-held retractors must be held during surgery. Self-retaining models stay in place by themselves.

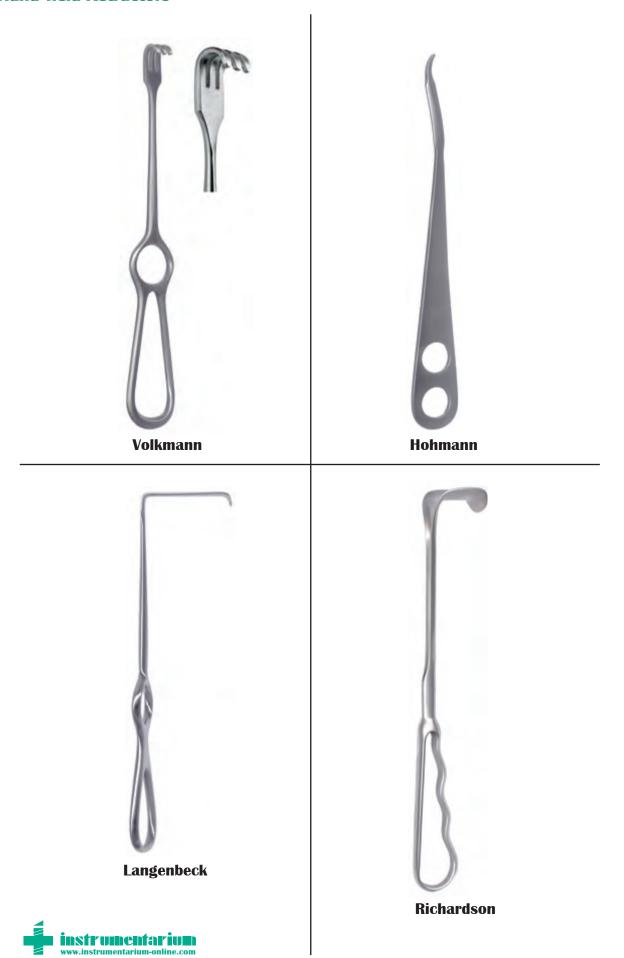
The depth of the incision determines the size and model of the retractor. The smaller models are used on the surface to hold back skin and tissue, while the larger ones are designed to retract muscles, organs and bones in deeper cavities. To minimize trauma, the position of the retractors must be changed frequently.

The main ones include:





Hand-held Retractors



Hand-held Retractors



Malleable

Self-retaining Retractors











Self-retaining Retractors













Rongeurs

These instruments are designed to cut or remove small pieces of tissue or bone.

The most popular names, according to specialty, are:

ENT Rongeurs:







ENT Rongeurs:



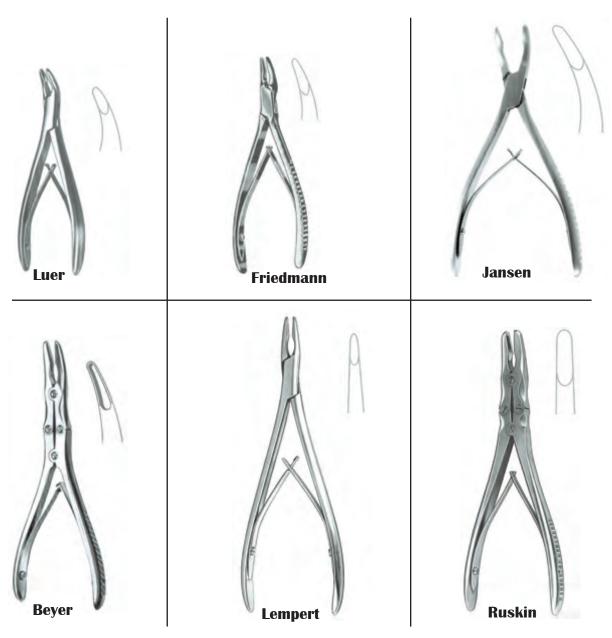








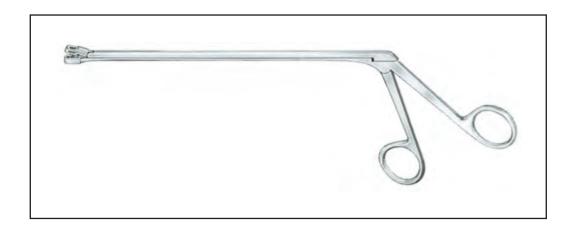
Ortho, Plasty et General Surgery Rongeurs

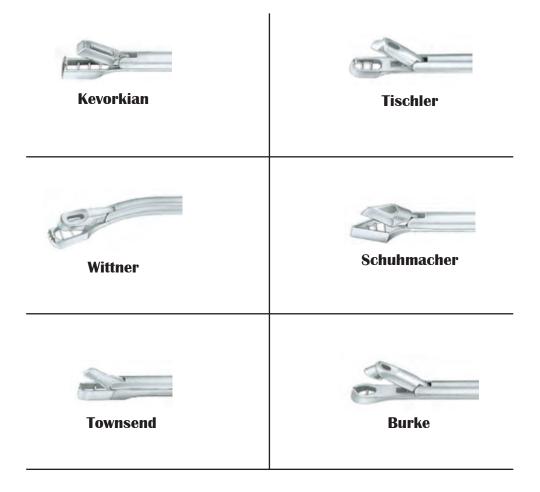




Ortho, Plasty et General Surgery Rongeurs Stille **Semb** Sauerbruch **Echlin** Leksell Smitheurs Peterson



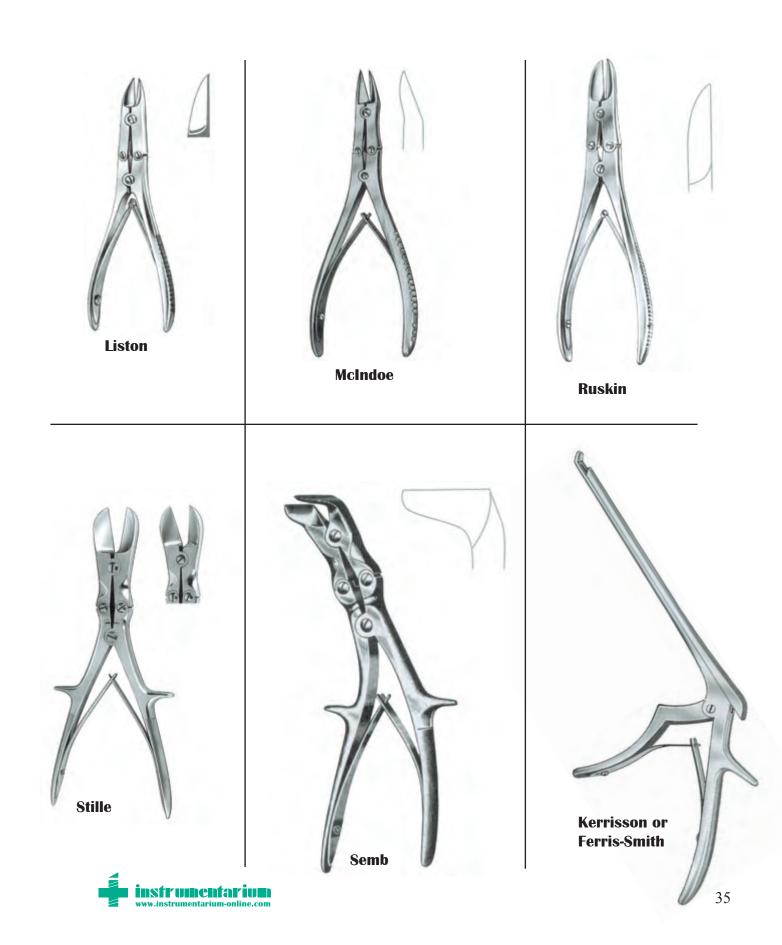




Bone Cutters



These are designed to cut bone and to remove bone splinters.



D) Needle-Holders

Needles-holders are used for suturing. They are similar to hemostats, but with thicker and shorter jaws.

The smaller the needle, the smaller the jaws of the needle-holder need to be. If the needle is too big to be held securely, it is better to use a larger needle holder. Otherwise, the needle may slip or the needle holder may break. Always use the right size of needle-holder.

Only jaws with tungsten carbide inserts can be replaced, making them more economical in the long run. They are recognizable by their golden rings.

The most commonly used are:





Needle-Holders





CHAPTER 5

Instrument care instructions

All instruments are carefully manufactured, and may represent significant costs. It is therefore essential to properly maintain them as follows.

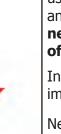
New instruments and those returned from repair must be removed from their packaging before storing. Any protective caps must be also removed. These instruments should be cleaned in the same manner as instruments used in surgery, as they may have been contaminated by packaging materials or other residues.

Also, the passive layer of new instruments is still thin, making them weaker than used instruments.





Stainless steel and water



Never use tap water. It contains minerals that can cause stains and discolouration. Always use **distilled water** to clean, disinfect, sterilize and rinse instruments. To avoid staining, use a **neutral cleaning solution with a pH level of 7**.

Instruments should be placed in distilled water immediately after use.

Never immerse stainless steel in a salt solution.

Dirty instruments should be cleaned as soon as possible. The greater the delay, the greater the risk of corrosion and other problems.

If you cannot rinse and disinfect them immediately, soak them in a neutral enzymatic solution.

Lubrification



If lubricating bath is used, it is absolutely essential that the instruments be totally free of stains and corrosion. Covering corrosion on the instruments with a lubricating dip especially in joints and box lock, seals in the corrosion and allows it to aggressively attack the steel during autoclaving, ultimately resulting in frozen or even cracked joints and box locks.

Always use the proper lubricant, never use industrial oils they instruments will become gummy when exposed to high temperature.

Microsurgical instrument tips can be damaged easily. Always keep a protective cover on delicate tips. Soft silicone tubing with adequate wall thickness and inside diameter will provide good protection. Now you can find transparent vented, moisture free silicone (no latex) tip protectors.

Sterilization



It is important to note that sterilization does not replace cleaning.

- . Always sterilize instrument in the open position.
- . Moving parts should be lubricated.
- . Follow the manufacturer's instructions.
- Make sure that autoclave filters and chambers are clean.
- . You can use our Stain Rmover (cat # 3.740) to remove stains and clean the autoclave chamber.

The Sterad and Steris sterilization methods are new; follow the manufacturer's instructions.



POINTS TO REMEMBER

Stainless steel "Stain less" is not stain proof.

Rinse and soak instruments immediately after use.

Thoroughly clean before autoclaving.

Do not allow blood, tissue or saline (BSS) to dry on the instruments.

Never rinse instruments in saline.

Always use distilled or demineralized water.

Never use abrasives or metal brushes, use nylon brushes such as (cat. # 3.1000)

An ultrasonic cleaning a day will keep stains away.

Dry instruments with a lint-free cloth or hot-air dryer before storing.

Lubricate box locks and joints (cat. # 3.700.A)

Use perforated protective covers.

Clean and sterilize instrument in the open position.

Do not stack instruments.

Inspect instruments regularly; brown stains are not rust they can be removed with our stain remover

(cat. # 3.740)

Sterilizing is not cleaning.

Follow the manufacturer's instructions.









Endoscopic Instruments

RECOMMENDED CLEANING AND STERILIZATION PROCEDURES FOR REUSABLE ENDOSCOPIC INSTRUMENTATION

OBSERVE UNIVERSAL PRECAUTIONS DURING CLEANING

- 1) During the clinical procedure, place instruments that are not being used under a damp, sterile drape or submerged in tub of sterile water to prevent debris form hardening.
- 2) Immediately upon completion of clinical use, immerse instrumentation in a tub of Enzymatic Presoak solution for 15 minutes or until final cleaning is performed. This procedure will facilitate a fast and effective bio-load / bio-burden reduction (Note: disassemble instrumentation and / or open jaws where applicable)

WARNING: Do not bleach or salt solution on endoscopic instrumentation.

- 3) With the instrument tips held downward and within the tub solution, flush the shafts internally. Infuse Enzymatic Solution into the Flush / Luer Port with a 10 cc male syringe. Repeat infusion until solution is clear and free of visible bio-burden.
- 4) Clean the jaws, linkages and hinges of the instruments with a small nylon brush. Do not use scouring (metallic) materials. Clean the rest of the instruments with a damp sponge.
- 5) Reflush and immerse the instruments in clean, preferably deionized (DI), water.
- 6) Visually inspect the instruments to confirm cleanliness.
- 7) Infuse air through the internal shaft to flush out remaining water.
- 8) Apply medical grade lubricant between all moving parts to ensure functionality of instruments prior to sterilization, i.e. hinge assembly, rotation knobs, etc.
- 9) Check instrument functionality, i.e. actuation (lever action), knob rotation, ratchet mechanism, stopcocks, pistons, etc.
- 10) Proceed with sterilization.

NOTE: Always clean instruments as soon as possible after clinical use. Check for possible damage to instruments during the process. If damage is apparent, call your distributor for repair service.

FOR RECOMMENDED STERILIZATION PARAMETERS

Sterilization Method	Conditions	Recommended Duration
GRAVITY:	134°C (270°F)	20 minutes
GRAVITY FLASH STEAM:	134°C (270°F)	3-5 minutes
ETO (Ethylene Oxide):	54°C (130°F)	2 hours



CHAPTER 6

Care check list

Make sure that your instruments are in good condition. If necessary, it's always worthwhile to have them repaired by specialists.



Scissors

The blades should cut cleanly and close completely. Check the notches of the cutting edges.

Test cutting performance on a surgical glove, starting with the scissors 3/4 of the way open. Scissors should cut all the way to the tips.

Make sure that proper play still exists at the hinge when the scissors are opened.

Forceps

Make sure that no light shows through when the jaws are closed.

The teeth should meet properly, without catching.

Jaws must be correctly aligned.

Check to ensure that the jaw tips close in the first ratchet position, and that the entire jaw closes in the third ratchet position.

Check for loose hinges and make sure that they lock and unlock easily.

Check for wear on the jaws' surfaces.



Needle holders

If light shows through in the first ratchet position, tungsten carbide jaws should be replaced, while those made of other materials should be adjusted.

The hinges and ratchets should also be checked.

Retractors

Make sure that the ratchets work properly.

Check the edges of the blades.

Make sure that the mechanisms work smoothly.

Check the instrument's holding power with the ratchet engaged.

Make sure that the ratchet teeth engage properly.

Cutting forceps

Make sure that the tips close properly from the top to the middle of the jaws.

Make sure that the cutting edges don't spread at the very tip when the jaws are closed.





Now let's see what could happen if your instruments are not properly maintained.

These are some of the problems that we hear about on a regular basis.

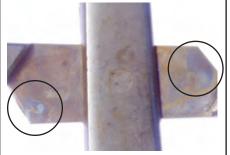
If your instruments have blue, black or brown stains, or if they are discoloured, the instruments or materials are rarely at fault.

The colour of the stains indicates their cause. In all cases, there are not only causes but solutions.

A) Staining

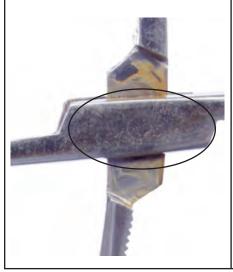
Staining involves a surface deposit; it is not rust. The origin of a stain is revealed by its colour

Blue stains



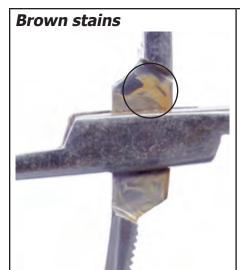
This discolouration is caused by cold disinfecting or by sterilizing solutions.

Black stains



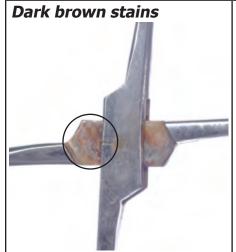
Black stains are a reaction to overly acidic detergents with a pH level of 6, or to chemical residues following the cleaning of steam pipes.





These stains are usually the result of oxidation, and should not be confused with rust. Alkaline detergents with a pH level of 8 leave behind sulfate deposits that cause brown stains. Such deposits affect an instrument's operating performance.

Brown stains are easily removed by using a special **stain remover** and drying the instrument with a clean cloth or hot air dryer. Most brown stains are not rust.



These are usually the result of dried blood left on an instrument.

B) Spotting

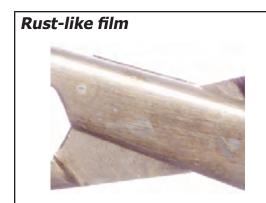
Spotting is usually the result of inadequate cleaning. It may also be caused by the use of improper water or detergents.



Tap water or detergent residues may leave deposits.

To avoid this problem, always use distilled water and dry the instruments in an autoclave.



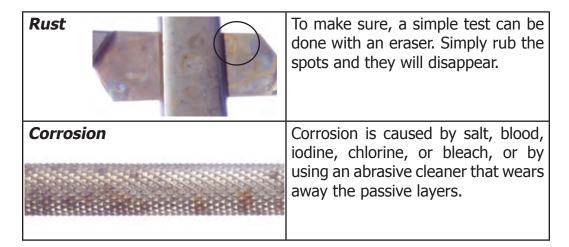


This film may be the result of residues in the steam pipes of the autoclave, or of chemical residues in the water. It is caused by iron deposits on the instruments.

Stains and spotting are usually caused by improper detergents. Be careful.

C) Rust and corrosion

Stainless steel does not rust.



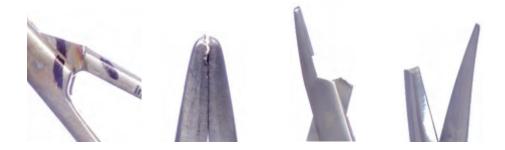
D) Pitting



Pitting may be caused by using improper cleaning agents, or by mixing instruments of different metals in the same cleaning cycle.



E) Breakage



Breakage is often the result of rough handling. It may also occur during cleaning.

Sterilizing instruments in the locked position can make them overheat and expand, cracking the box lock.

Remember

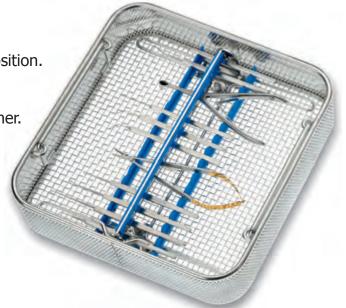
Sterilize instruments in the open position.

Do not overload the ultrasonic cleaner.

Always store instruments carefully.

Delicate and sharp instruments should be separated, especially microsurgical instruments.

© Clean and store delicate or sharp instruments in special trays.





Repairs

Having damaged or broken instruments repaired is less costly than replacing them. However, only quality instruments are worth repairing.



Even if your instruments are properly maintained, you should have them checked by a competent repair technician who can restore or repair them. Make sure that the work is done by experts.

Quality comes at a price, and time will prove that you have made a wise choice



Chapter 7

Corporative profile

Founded in 1977, Instrumentarium carries over 100,000 surgical instruments of the best brands.



But what sets us apart is the fact that we are the only ones who carry the Instrumentarium brand, the product of 30 years of experience and a close partnership with leading surgeons.

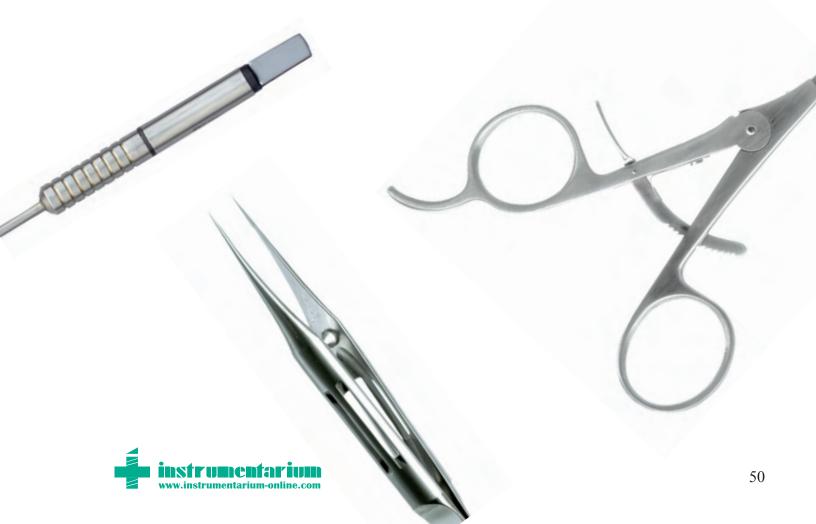




Instrumentarium's reputation is built on consulting services unique in the field. We employ a highly qualified and experienced team who will meet your needs with competence and integrity. Your requests are important to us, and we will always handle them with the greatest care.

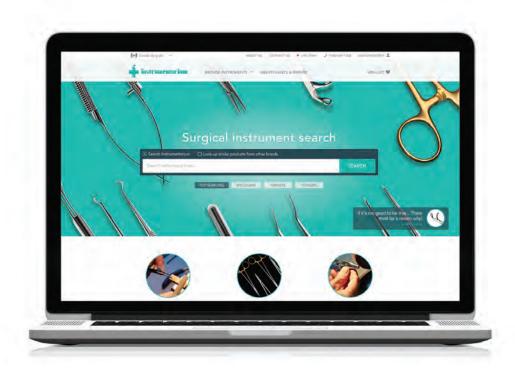
We offer fast delivery times and highly competitive prices, and our personalized service is always appreciated.

We also provide an instrument repair and modification service. And if the instrument you want doesn't exist, we'll even make it according to your specifications. We're never satisfied unless our customers are satisfied.



Instrumentarium-online.com

Our comprehensive transactional website is both user-friendly and efficient.



It offers advice, innumerable instruments, alternative choices, suggestions and exclusive discounts.

By becoming a member, you get fast, secure access to your purchase history, and you can always order on line.

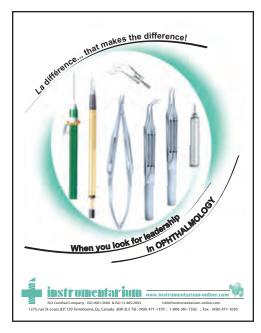
One visit to our website will make you want to add it to your list of favourites.

At Instrumentarium, we listen attentively, understand quickly, and act promptly.

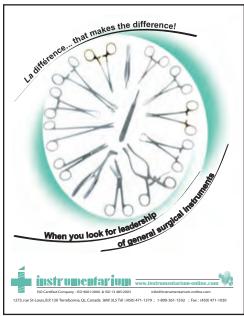
La différence...that makes the difference.

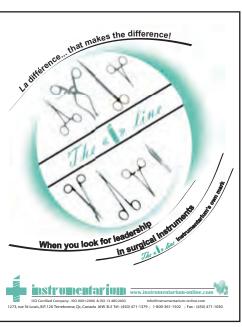


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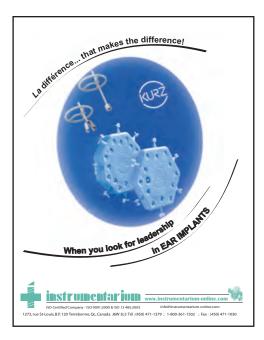


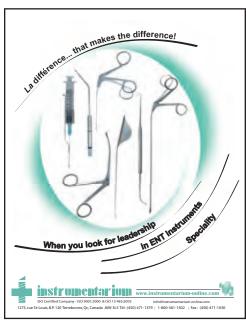


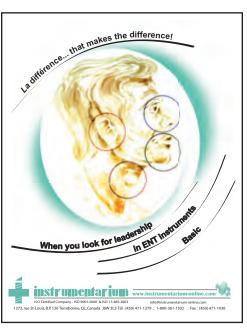


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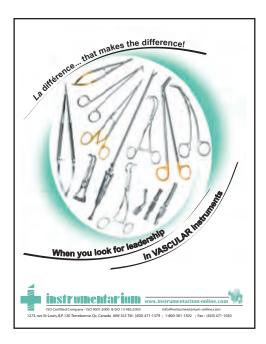




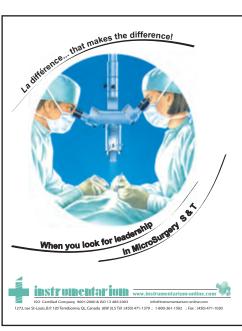


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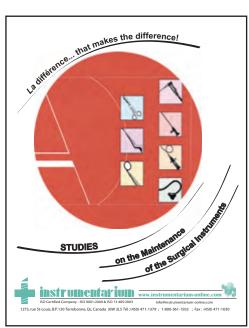






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