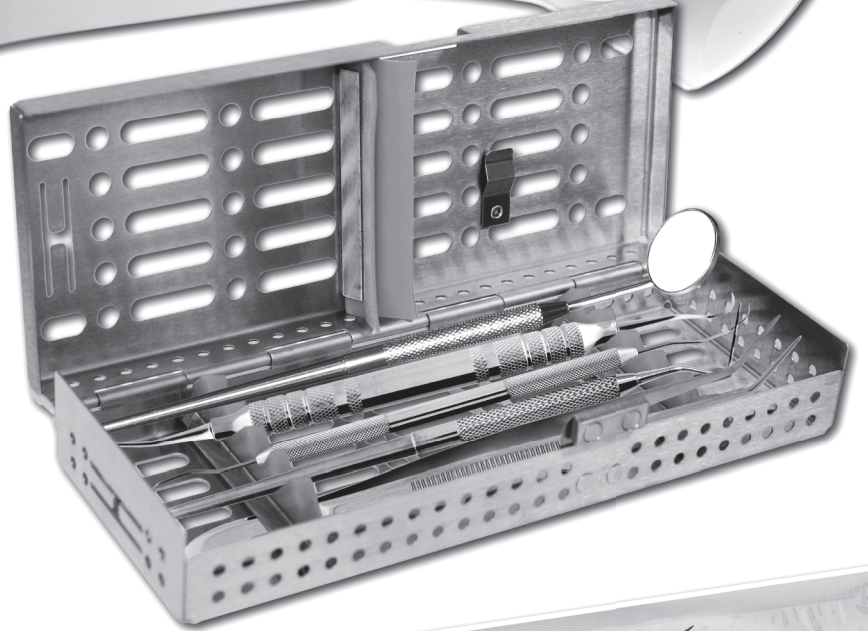


bmt

SURGICAL
PRECISION



Instructions and Methods of Use

Cleaning, Maintenance & Sterilization of Surgical Instruments

bmtsurgical.com



SURGICAL
PRECISION

Located in Tuttlingen, Germany, BMT designs and manufactures a full line of precision surgical instruments for medical, dental, and veterinary professionals. BMT offers a portfolio of more than 10,000 instruments through distributors worldwide. As an industry leader, BMT takes pride in its five-year warranty, easy-to-use product information and expert customer support.

BMT's instruments are manufactured from the highest quality surgical steel and represent the ultimate in precision design and manufacturing. Every product conforms to international specifications and registrations, including CE and ISO 13485.

For more information, please visit our website:
www.bmtsurgical.com

BMT, mit seinem Sitz in Tuttlingen, Deutschland, entwickelt und produziert eine komplette Linie von hochwertigen chirurgischen Instrumenten für die Fachgebiete allgemeine Chirurgie, dental, plastische und Veterinärmedizin. Das BMT Produkt-Portfolio umfasst mehr als 10000 Instrumente, die ihre Abnehmer Weltweit finden. Für unsere Instrumente gewähren wir 5 Jahre Garantie auf Herstellung - und Materialfehler.

Ein erfahrener Customer Support steht Ihnen zur Verfügung für alle Fragen rund um unsere Instrumente. BMT Instrumente werden aus hochwertigem Stahl produziert, wir sind Zertifiziert nach ISO 13485.

Für weitere Informationen besuchen Sie bitte unsere Web- Seite:
www.bmtsurgical.com

Dental Surgery
General Dentistry
Implantology
Orthodontics
Endodontics
Periodontics
Bone Regeneration
Oral & Maxillofacial Surgery



Zahnärztliche Chirurgie
Allgemeine Zahnmedizin
Implantologie
Kieferorthopädie
Endodontie
Parodontologie
Knochenregeneration
Mund-, Kiefer- und Gesichtschirurgie

General Surgery
Arthroscopy
Gynecology
Microsurgery
Ophthalmology
ENT - Otolaryngology
Traumatology - Orthopaedics
Podiatry - Pedicure - Esthetics



Allgemeine Chirurgie
Arthroskopie
Gynäkologie
Mikrochirurgie
Ophthalmologie
HNO - Heilkunde
Traumatologie - Orthopädie
Podologie - Pediküre - Ästhetik

Plastic Surgery
Reconstructive Surgery
Cosmetic Surgery
Blepharoplasty
Breast Surgery
Rhinoplasty
Facelift
Rhytidectomy
Oral & Maxillofacial Surgery



Plastische Chirurgie
Rekonstruierende Chirurgie
Kosmetische Chirurgie
Blepharoplastik
Brust-Chirurgie
Rhinoplastik
Facelifting
Gesichtsstraffung
Mund-, Kiefer- und Gesichtschirurgie

Veterinary Surgery
Dental Surgery
Dermatology
Ophthalmology
Traumatology
Orthopaedics
ENT - Otolaryngology
Birds - Canine - Feline
Bovine - Equine - Reptile
Exotics - Zoo & Wildlife



Veterinärchirurgie
Zahnärztliche Chirurgie
Dermatologie
Ophthalmologie
Traumatologie
Orthopädie
HNO - Heilkunde
Vögel - Hunde - Katzen
Rinder - Horntiere - Reptilien
Exoten - Zoo- und Wildtierforsch

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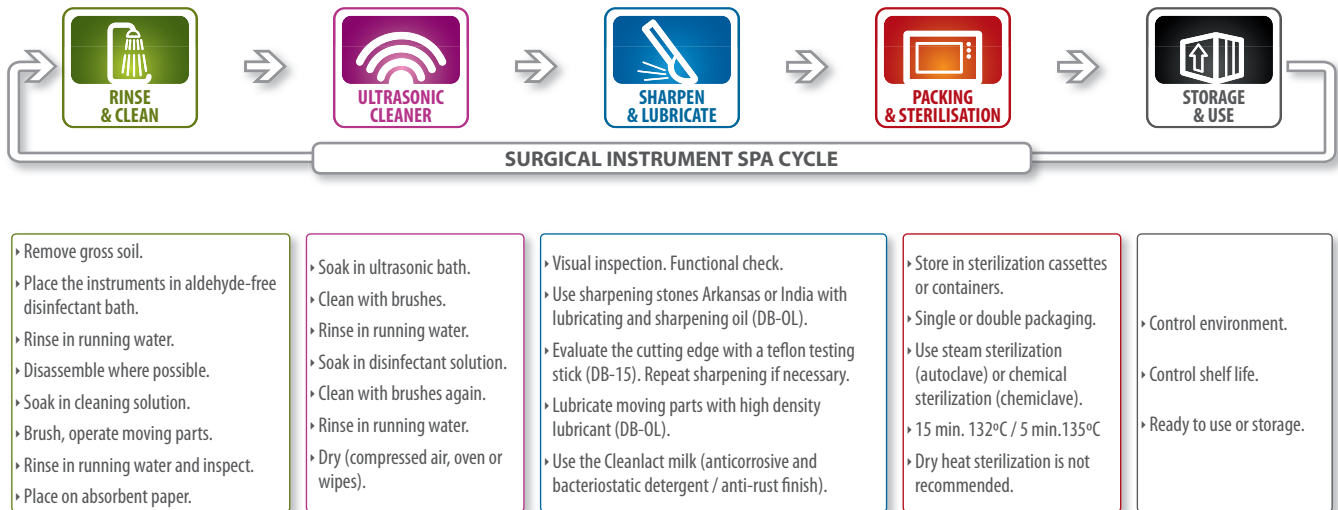
Instructions and Methods of Use

Cleaning, Maintenance and Sterilization of Surgical Instruments

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Maintenance Cycle



For further detailed advice on Instrument Reprocessing, see brochures at: www.a-k-i.org

AKI: The Instrument Reprocessing Working Group - Germany (Arbeitskreis Instrumenten-Aufbereitung - Deutschland).

About our instruments

All BMT instruments are hand crafted in Germany from grade 440 Rockwell surgical steel, in order to exceed surgeon specifications for ergonomics and duration. Stainless steel is mainly used for the production of all instruments that do not require sharpening, while carbon steel, a special alloy, retains characteristics that are more suitable for cut and less for corrosion. Due to the high quality of our surgical products, BMT is proud to offer a five-year guarantee covering all manufacturing defects.

Each BMT instrument is produced and controlled with the utmost care and destined exclusively for professionals and for the use which they have been devised and realized. In order to ensure proper use of our instruments, we suggest you read the following instructions to ensure their maximum efficiency and duration.



First use

Before being sent to destination, all our instruments are inspected, lubricated, and individually packed. The instruments are supplied in a “*non sterile*” and imbued with a special liquid oily in cycles, parts and pivoting in those screwed. Therefore, before use, you must good wash the instruments using neutral detergent and/or degreasers suitable for steel, so as not to cause unpleasant complications with the instrument (red spots, induration pivoting shares, etc.).

It is necessary to wash and cleanse each instrument carefully prior to each usage. After having used the instruments, brush off any excess particles using nylon bristles (never use steel bristles) and rinse them individually.

In the event of a potentially infected instrument, soak the instrument in a disinfectant detergent solution for at least 10 minutes. Cleaning in an ultrasound basin is not recommended for TC instruments (*with tungsten carbide insertions*) and instruments with cutting edges (*scissors, bistouries, bone forceps, scalpels, etc.*). They may chip, break or corrode. Cutting instruments of different materials (*stainless steel, chromate, copper, aluminium, titanium*) should always be cleaned and stored separately.

After the cleaning, make sure that all the instruments are perfectly dry. We recommend re-lubricating the instruments with surgically approved products only. Never use industrial oils or lubricants. After having cleaned, rinsed and lubricated the instruments the sterilizing phase can start.

Joint and hinge instruments

All joint and hinge instruments should always be kept well lubricated. Regular use of *Cleanlact (DB-1L)* concentrated anticorrosive-bacteriostatic detergent and high density lubricant (*DB-OL*), will prevent rust, corrosion and stiff joints and will ensure smooth operation. Joint and hinge instruments should always be sterilized in open position.

Martensitic steel instruments

All BMT instruments are made up of high quality martensitic stainless steel, also known as surgical steel.

Nevertheless, in case of exposure to the action of some particular chemical substances, or should these substances be used in wrong doses or exposures not be observed, instruments might be subject to loss of polish, corrosion or even to an alteration of their superficial physical properties. Surgical steel instruments shouldn't be exposed to the prolonged action of chloride solutions. Moreover, instruments should never be exposed to the action of or kept in prolonged contact with chlorine solutions, hypochlorites, ferric chloride, hydrochloric acid and iodine.

Instruments with tungsten carbide inserts (TC)

By using these special materials during tempering high HRC hardness degrees can be obtained, which allows achieving perfect grinding and extraordinary life of instruments.

When compared with steel instruments, tungsten carbide (TC) instruments are more sensitive to chemicals and therefore require special care. TC instruments should never be exposed to any of the above mentioned chemical substances, nor to any other corrosive chemical.

In order to ensure perfect maintenance of TC instruments, you are recommended to follow three simple but important rules:

- Use solutions containing corrosion inhibitor for cleaning and sterilization.
- Do not use ultrasound devices for cleaning, as they might take off or splinter the TC insert.
- After cleaning, dry the instruments thoroughly before submitting them to sterilization.

Rinsing Procedure

Rinsing

Immediately after surgery, rinse instruments under warm running water. Do not use hot water as this will coagulate proteinous substances.

Rinsing should remove all blood, body fluids and tissue. Dried soils may damage the instrument surface and make cleaning very difficult. After rinsing, you can start any of the three cleaning techniques (*).

(*). If cleaning procedure is not done immediately after rinsing, instruments should be submerged in a **solution of water and neutral detergent (pH=7)** -and not another.

For rinsing
do not use hot water!

If not rinsed off properly, low pH detergent (less than 7) will cause breakdown of stainless protective surface and black staining. High pH detergent will cause surface deposit of brown stain, which will also interfere with smooth operation of the instrument.

We strongly recommend using a detergent containing a rust inhibitor.

Cleaning Procedures

Ultrasonic Cleaning

Using ultrasound combined with a special cleaning solution, **it is the most effective cleaning method** available. Recommended for regular instruments such as hand instruments and forceps. Ultrasonic cleaning is **not recommended for instruments which are very delicate, which have sharp cutting edges** (scissors, needle holders, bone forceps) **and not 100% steel** (rubber, mouth mirrors, titanium, TC-tungsten carbide inserts or diamond dusted tips, etc.). The ultrasonic vibrations can chip, break or corrode any welded parts. For the delicate instruments, use manual cleaning.

Steps to follow:

- 1 | Sort instruments carefully so as to include only instruments compatible with ultrasonic.
- 2 | Place instruments in open position.
- 3 | Make certain sharp edges are not touching other instruments.
- 4 | Do not combine different metals (chrome plated, stainless, copper, titanium, etc.)
- 5 | Change the solution frequently to avoid accumulation of micro organisms.
- 6 | After rinsing and before sterilization, inspect and dry the instruments thoroughly.

► **Advantages:** Safer than hand scrubbing, cleans instruments very effectively, reduces the risk of contaminants spreading through splatter, allows for more efficient use of staff time.

► **Disadvantages:** Remember to sort the instruments carefully and to change the cleaning solution. If the cement is not removed while it is still soft, ultrasonic cleaning will not remove hardened permanent cement.

Manual Cleaning

We recommend ultrasonic cleaning as the best and most effective way to clean surgical instruments, but **sharp or delicate or not 100% steel instruments should be cleaned manually.**

Steps to follow:

- 1 | Use stiff plastic cleaning brushes (DB-11, DB-12, nylon, tooth brush, etc.) Do not use steel wool or wire brushes except specially recommended stainless steel wire brushes for instruments such as bone files, or on stained areas in knurled handles. In this case always treat instruments with the special "cleaning milk" *Cleanlact* so as to restore and protect the anti-rust coating.
- 2 | Brush delicate instruments carefully and, if possible, handle them separately from general instruments.
- 3 | Make sure all instrument surfaces are visibly clean and free from stains and tissue.
- 4 | After scrubbing, rinse instruments thoroughly under running water. While rinsing, open and close scissors, hemostats, needle holders and other hinged instruments to ensure the hinge areas are fully rinsed, inside and out.

► **Advantages:** Effective if performed properly.

► **Disadvantages:** Labor-intensive. Increases risk of operator injury and the risk of contaminants spreading through splatter. Requires proper care and periodical replacement of scrub brushes. Labor-intensive.

Automated Washer

This can also be a very effective cleaning method. Not all instruments are compatible with automated washers and restrictions vary according to the washer model.

Steps to follow:

It is necessary to see the manufacturer's instructions for detailed requirements.

► **Advantages and Disadvantages:** same as *Ultrasound Cleaning*.

Ultrasound Cleaning is the most effective cleaning method, but remember: it does not sterilize.

Sharp, delicate and TC instruments as scissors, needle holders or bone forceps should be cleaned manually by using cleaning brushes.

Sharpening Procedure

Why sharpen instruments?

Surgical Instruments should be kept identical to their original design. Dental and surgical procedures are most effective when using sharp instruments as they reduce hand and wrist fatigue, improve tactile sensitivity and cutting action, save time, and minimize patient discomfort. Instruments can be sharpened by using different types of stones: *Arkansas* (natural stones extracted from the mountains of Arkansas) and *India* (synthetic stones quarried from the finest Ozark novaculite deposits -silicon quartz).

- ▶ **Arkansas flat stone** (DB-96): To sharpen all cutting parts of surgical instruments. Whenever necessary to sharpen cutting parts (scissors, osteotomes, curettes).
- ▶ **Arkansas conical stone** (DB-299): Used to manually sharpen internal parts of curettes, scalers, gouges, rongeurs, etc. Whenever necessary to sharpen the internal parts of surgical instruments in areas that otherwise cannot be reached.
- ▶ **Arkansas rectangular stone** (DB-4): Used to sharpen all cutting parts of surgical instruments. Whenever necessary in routine sharpening and finishing of edge and toe of an instrument.
- ▶ **Arkansas wedge stone** (DB-6A): Used to manually sharpen internal parts of curettes and scalers. Routine sharpening and finishing.
- ▶ **India wedge stone** (DB-3): Used for sharpening of excessively dull instruments or those requiring re-contouring.

When to sharpen instruments?

Instruments should be sharpened lightly after each use; there are two ways to evaluate whether the cutting edge is dull and requires sharpening:

- ▶ **Visual:** *The cutting edge should be inspected regularly in a good light (and if possible, under magnification). If the cutting edge is blunt it will be rounded and reflect the light. A dull, non-reflective line indicates sharpness.*
- ▶ **Teflon Testing Stick** (DB-15): *If the blade of the instrument runs smoothly over the testing stick, then it is blunt. A sharp instrument will grab into the stick and removes small fragments of the plastic.*

Regular sharpening will enhance the life of your instrument and will improve the quality of your work.

Care of Sharpening Stones

After use, wipe the stone with a clean cloth to remove metal particles. Then, clean the stone by scrubbing or using ultrasound to remove lubricant before sterilization.

After sterilization, lubricate with the special oil (DB-OL) before each use. Be sure to use entire stone to prevent "grooving".

How to sharpen instruments?

Generally, the instruments should be sharpened following this procedure:

- 1 | Place one drop of **Sharpening Oil** (DB-OL) on the sharpening stone. Lubrication improves the movement of the instrument blade over the stone; also, it prevents the metal particles from clogging the stone.
- 2 | Hold the instrument in one hand, while applying the stone to the lateral surface angled with the face of the blade.
- 3 | Position the stone to contact the heel of the blade and work toward the tip, keeping the stone in contact with the blade throughout the sharpening procedure.
- 4 | Move the stone up and down with short strokes, placing more pressure on the down stroke. (Do not move the instrument, keep the instrument still).
- 5 | Finish sharpening the instrument with a down stroke; this will prevent a rough edge from forming.
- 6 | Evaluate the sharpness with the **Teflon Testing Stick** (DB-15). If the blade is still dull, re-evaluate the angle of the stone and repeat the sharpening procedure (steps 2-6)

Scalers and Curettes

- ▶ **Sickle Scaler Toe End:** *The sickle scaler has a pointed tip and, therefore, the stone is held straight as it nears the tip.*
- ▶ **Curette Toe End:** *The curette has a rounded toe, so the position of the stone is adapted around the rounded cross-section. With both types of instrument, always finish on a down stroke to remove any flash of metal.*

Lubricating Procedure

Lubrication

Immediately after surgery, rinse instruments under warm (not hot) running water. Rinsing should remove all blood, body fluids and tissue. Dried soils may damage the instrument surface and make cleaning very difficult. Do not use hot water as this will coagulate proteinous substances. **Always** lubricate instruments before sterilization, immediately after the last rinse cycle.

Lubricate all instruments which have any metal to metal action such as hemostats, scissors, retractors and needle holders using the high density lubricating and sharpening oil (DB-OL).

Proper lubrication will make your instruments more resistant to corrosion, rusting and staining. In addition to corrosion and stain prevention, lubrication cuts down friction at the joints, keeping the action of the instrument smooth, delicate and light and extending the life of your instruments.

We also recommend the *Cleanlact* (DB-1L) solution which is very effective in maintaining the anti-rust finish of your instruments and which also acts as a lubricant (see our further section stain treatment).

Regular use of DB-OL (lubricating and sharpening oil) and "Cleanlact" detergent, will prevent rust, corrosion and still joints.

Sterilization Procedures

Sterilization

It is a procedure which removes all pathogenic and non pathogenic micro-organisms; it should be performed with outmost care.

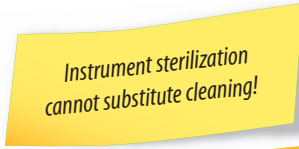
These are the most common and effective sterilization techniques:

- ▶ Autoclave (Steam Sterilization)
- ▶ Chemiclave (Chemical Sterilization)
- ▶ Dry Heat Sterilization (not recommended)



Inspection

Before preparing for sterilization, all instruments should be inspected. Generally un-magnified visual inspection under good light conditions is sufficient. All parts of the instruments should be checked for visible soil and/or corrosion.



Packaging

Where appropriate the cleaned, disinfected, and checked medical devices should be assembled into the dedicated trays provided.

BMT cassettes should be simple or double wrapped according to AAMI (Association for Advancement of Medical Instrumentation) and CSR (Central Sterilization Room).

The packaging for terminally sterilized medical devices should fulfill the following requirements:

- ▶ EN ISO 11607 (Packaging for terminally sterilized medical devices).
- ▶ Be suitable for autoclave sterilization (temperature resistance up to at least 141°C, sufficient steam permeability).
- ▶ Sufficient protection of the instruments as well as of the sterilization packagings to mechanical damage.

Autoclave (Steam Sterilization)

Steam autoclave sterilization (moist heat) using a pre-vacuum (forced air removal) cycle is recommended. Instruments are treated with high pressure water steam.

Autoclaving is the preferred method of sterilization.

Time & temperature (suggested standards*):

AUTOCLAVE	15' (min)	132°C	135°C	5' (min)
		270°F	275°F	

Sterilizing agent: distilled water.

- ▶ **Advantages:** Highly effective. Nontoxic. Inexpensive. Rapid heating. Rapid penetration of instruments.
- ▶ **Disadvantages:** Items must be heat and moisture resistant. Needs good maintenance. (The autoclave is not working correctly if steam comes out of the lid or around the door).

Chemiclave (Chemical Sterilization)

Instruments are treated with high pressure, with the help of chemical steams.

Instruments must be dried before sterilization.

Time & temperature (suggested standards*):

CHEMICLAVE	15' (min)	132°C	135°C	5' (min)
		270°F	275°F	

Sterilizing agent: special chemical solutions.

- ▶ **Advantages:** Minimal dulling, rusting and corroding of instruments. Unsaturated chemical vapor method is a low-humidity process. The heat-up time is shorter than for most steam sterilizers. Easy to operate, fill and purge / Minimal order.
- ▶ **Disadvantages:** Needs adequate ventilation. It is flammable. Vapo-Steril solution has formaldehyde in it, known to be a potential carcinogen. Needs to be mixed with water when disposed.

Dry Heat Sterilization

Instruments sterilization takes place by means of hot air. Instruments must be dried before sterilization. At present, **dry heat sterilization is not recommended**, as it does not guarantee reliable sterilization and gradually causes damages.

Time & temperature (suggested standards*):

DRY HEAT	60' (min)	160°C	170°C	90' (min)
		320°F	340°F	

- ▶ **Advantages:** Low cost. Reaches surfaces of instruments that cannot be disassembled. This is accomplished by conduction.
- ▶ **Disadvantages:** Long exposure time is necessary. High temperatures gradually cause damages such as surface blackening, loss of polish and dullness. Specialized packaging is needed.

(*) Recommended times and temperatures may vary according to the nature and loading capacity of your equipment and do not take heating times into consideration. Always comply with the manufacturer's instructions. The above mentioned recommendations concerning sterilization of instruments aim at the safeguard of both patient and operator. Remember that if these procedures are carried out correctly, this will enhance the quality of instruments, as well as prolong their effectiveness over time.

Instrument Care

Surgical instruments can be reused, unless indicated otherwise. The life time of instruments depends on the frequency of use, the care of the user and proper reprocessing methods. The most effective method of dealing with instrument problems is “to prevent” them from occurring. Careful preliminary cleaning, the use of treated water and neutralized pH solution, adherence to manufacture’s instructions, and visual inspection, will help to keep instruments performing accurately free of troublesome stains. It is important to act quickly should a problem arise.

New Instruments

New instruments must be processed before use. They must undergo the entire cleaning process. They are usually oiled in production and this must be removed prior to running them through a sterilizer (Do not take from packaging and go to the sterilizer).

Factors affecting instrument care

- ▶ **Water:** Regular tap water is not appropriate for instrument sterilization. High chloride and lime concentration and various other minerals can lead to staining or damage of the stainless steel. When water dries, chlorides will concentrate and cause pitting on the instrument. Fully Desalted Water avoids this problem.
- ▶ **Corrosion:** Certain compounds are highly corrosive to stainless steel and will cause serious damage despite the passivated protective surface. Instruments should never be exposed to: Aqua regia, Ferric chloride, Hydrochloric acid, Iodine and Sulfuric acid. (If instruments are inadvertently exposed to any of these substances, they should be rinsed immediately with copious amounts of water).

Stain and Rust Protection

It is common for instruments to become stained or spotted despite the best efforts. In nearly all cases these problems are the result of minerals deposited upon the surfaces of the instruments, as well as insufficient cleaning. Proper technique during cleaning and sterilizing procedures will prevent most staining occurrences.

Diagnosing and causes of spots and stains

The following identifies some of the various instrument-related may encounter:

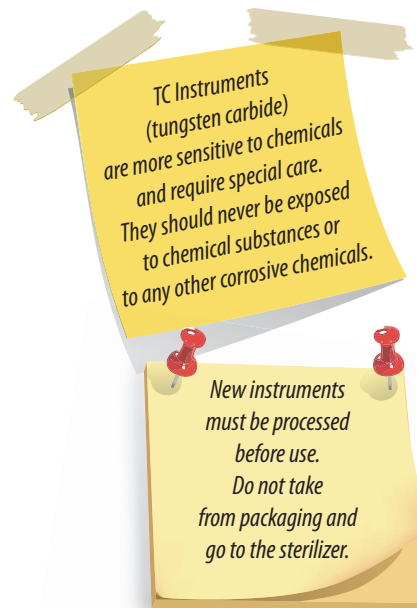
- ▶ **Brown/Orange Stains:** A result of high-pH detergents. Chlorhexidine usage or improper soaking of instruments. This color stain can also be caused by soaking in tap water.
- ▶ **Dark Brown Stains:** Low-pH instrument solutions. The brownish-colored film may also be caused by a malfunctioning sterilizer. Similar localized stain spots can also be a result of baked-on blood.
- ▶ **Bluish Black Stains:** Reverse plating, when instruments of different metal (e.g. chrome and stainless steel) are ultrasonically processed together. This can occur when high quality instruments are mixed with lower end ones. Additionally, exposure to saline, blood, or potassium chloride will cause this bluish black color. (similar to tarnish on silverware).
- ▶ **Black Stains:** Contact with ammonia or a solution containing ammonia.
- ▶ **Light or Dark Spots:** Water droplets drying on the instruments. With slow evaporation, the minerals sodium, calcium and magnesium left behind can cause this spotting.
- ▶ **Rust Deposits:** Dried blood that has become baked on the serrated or hinged areas of surgical instruments. This organic material, once baked on, may appear dark in color. Also can be caused by soaking in tap water.

Removing Stains

Stains can be removed, whereas rust will leave permanent damage. To determine if a brown or orange discoloration is a stain or rust, use the eraser test: Rub a pencil eraser over the discoloration. If the discoloration is removed with the eraser and the metal underneath is smooth and clean, this is a stain. If a pit mark appears under the discoloration, this is corrosion or rust.

Warnings

- ⚠ BMT’s product warranty against manufacturer defects automatically expires in the cases of improper care, maintenance and/or use.
- ⚠ BMT usually does not define the maximum number of uses appropriate for re-usable surgical instruments. The useful life of these devices depends on many factors including the method and duration of each use, and the handling between uses. Careful inspection and functional test of the device before use is the best method of determining the end of serviceable life for the medical device.
- ⚠ New instruments must undergo the entire cleaning process before use. Do not take from packaging and go to the sterilizer.
- ⚠ Avoid putting oxidized or rusty instruments in sterilizing or disinfectant solutions, as other instruments could be attacked.
- ⚠ Used, damaged and oxidized tools should not be used because they are no longer able to perform their function. Please note that some types of damages (corrosion, rust and spots) are transmitted to the instruments intact.
- ⚠ Sterilization does not replace the cleaning and maintaining of the instruments.
- ⚠ Ultrasonic Cleaning does not sterilize.
- ⚠ The tools provided by BMT are subject to Directive 93/42/EEC and therefore be discarded by the regional force.



Basics for Cleaning, Maintenance & Sterilization

Sharpen • Lubricate



Arkansas # 4
100 x 25 x 12 mm
4 x 1 x 0.5 in

DB-4

Rectangular Stone

A flat and rectangular stone used to sharpen all cutting parts of surgical instruments. Necessary in routine sharpening and finishing of edge and toe of an instrument.



Arkansas # 8
100 x 50 x 13 mm
4 x 2 x 0.5 in

DB-96

Flat Stone

A flat and rectangular stone used to sharpen all cutting parts of scissors, osteotomes, curettes, etc. (whenever necessary).



Arkansas # 299
Ø 8 x 90 mm
Ø 0.3 x 3.5 in

DB-299

Conical Stone

A cone-shaped and cylindrical stone used to manually sharpen internal parts of curettes, scalars, gouges, rongeurs, etc. (in areas that otherwise cannot be reached).

India # 6 100 x 45 mm
Medium grit 4 x 1.8 in



DB-3

DB-6A

Wedge Stones

They combine flat surfaces with rounded edges to manually sharpen internal parts (straight and curved edges) of curettes and scalars.

Arkansas: for routine sharpening and finishing.

India: for sharpening of excessively dull instruments or those requiring recontouring.

Arkansas: a natural stone extracted from the Arkansas mountains.
India: a synthetic stone quarried from the finest Ozark novaculite-silicon quartz-deposits.

Ceramic
76 x 25 x 6 mm
3 x 1 x 1/4 in



DB-71

Ceramic Stone

Ceramic stones are valued for their durability and the very keen edge they give in the finer grits. Will never pit or groove. Used for routine sharpening procedures. Autoclave safe.

Ceramic: use only dry.
(Do not use with oil, water or lubricants)



DB-OL

Lubricating and Sharpening Oil for surgical instruments

A non-coloured oil, which is an indispensable complement for lubricating and manual sharpening of surgical instruments. To activate the abrasive properties of Arkansas or India stones and to reduce the possibility of overheating the instruments during sharpening. It should be applied on all hinges or all other parts which are subject to movement or friction. Its use facilitates elimination of any residue present within the instrument hinges. Used to ensure perfect function and fluid movement of all surgical instruments. Must ALWAYS be used during all sharpening operations.

Rinse • clean

CLEANLACT | Detergent Milk

Concentrated milk. Bacteriostatic detergent, rust inhibitor and lubricating action on all surgical instruments. It guarantees perfect maintenance by eliminating eventual stains, halos and browning due to sterilization, disinfection and washing with tap water.

Must be applied periodically, diluted or concentrated to extends your instrument's lifetime (view special instructions on packaging).



- DB-1L** 1000 cc / 34 fl oz
- DB-50M** 500 cc / 17 fl oz
- DB-10M** 250 cc / 8.5 fl oz

Brushes | Autoclavable

Special brushes to clean surgical instruments.

Used to remove eventual residue, organic or not, from all surgical instruments, in particular in angled, hinged and knurled parts, without damaging instrument surface.

Must be applied every time, for regular cleaning of all instrumentation and in the event that an instrument is exposed for an extended period to air before being immersed in the cleaning solution.



- DB-12** 175 mm / 7 in
- DB-11** 155 mm / 6 in

Special Rubber for metal

50 x 40 x 20 mm / 2 x 1.6 x 0.8 in

An abrasive eraser specially designed for surgical instruments to remove stains, halos or persistent burnishing from all surgical instruments without damaging the instrument surface.

Necessary when routine cleaning does not remove all stains.



- DB-08** Coarse
- DB-07** Fine

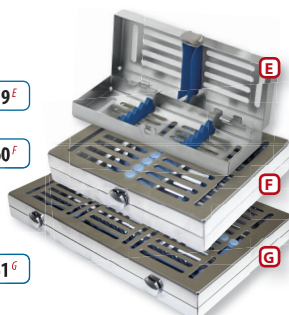
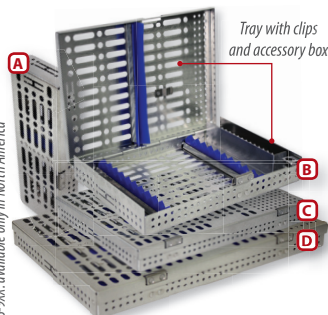
Sterilization

Stainless Steel Cassettes Silicone racks - Autoclavable

- BS-905^A** 5 instruments
- BS-910^B** 10 instruments
- BS-915^C** 15 instruments
- BS-920^D** 20 instruments
- BS-59^E**
- BS-60^F**
- BS-61^G**

1.2 x 8 x (3^A)(6^B)(11^C)(12^D) in
30 x 200 x (75^A)(150^B)(275^C)(300^D) mm

1.4 x 7 x (3^E)(5.7^F)(11.5^G) in
35 x 185 x (75^E)(145^F)(290^G) mm



Sharpening Test

Plastic Stick

Ø 7 x 75 mm / Ø 0.28 x 3 in

A hard plastic stick used to test the blade of an instrument to determine the sharpness of an instrument.

Must be used ALWAYS. If the blade of the instrument runs smoothly over the plastic stick, then it is blunt. A sharp instrument will grab into the stick and removes small fragments of the plastic.



DB-15

Coding

Silicone Code Rings

120 Items



DB-941

Cassettes BS-90x: available only in North America

Conversion of Units

Temperature / Celsius / Fahrenheit

°C	-18	-10	0	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	200	250	300	350
°F	0	14	32	50	68	86	104	122	140	158	176	194	212	230	248	266	284	302	392	482	572	662

Length / International System (SI) / English system (Imperial)

SI	SI	Imperial
1 mm	-	0.0394 in
1 cm	10 mm	0.3937 in
1 m	1000 mm	1.0936 yd
Imperial	Imperial	SI
1 in	-	2.540 cm
1 ft	12 in	30.48 cm
1 yd	3 ft	91.440 cm

in (frac.)	in (decimal)	mm
1/64	0.0156	0.3969
1/32	0.0313	0.7938
1/16	0.0625	1.5875
1/8	0.1250	3.1750
3/16	0.1875	4.7625
1/4	0.2500	6.3500
5/16	0.3125	7.9375
3/8	0.3750	9.5250
7/16	0.4375	11.1125
1/2	0.5000	12.7000
9/16	0.5625	14.2875
5/8	0.6250	15.8750
11/16	0.6875	17.4625
3/4	0.7500	19.0500
13/16	0.8125	20.6375
7/8	0.8750	22.2250
15/16	0.9375	23.8125
1	1.0000	25.4000

in	cm	mm	in
1	2.54	1	0.0394
2	5.08	2	0.0787
3	7.62	3	0.1181
4	10.16	4	0.1575
5	12.7	5	0.1969
6	15.24	6	0.2362
7	17.78	7	0.2756
8	20.32	8	0.3150
9	22.86	9	0.3543
10	25.40	10	0.3937
11	27.94	11	0.4331
12	30.48	12	0.4724
13	33.02	13	0.5118
14	35.56	14	0.5512
15	38.10	15	0.5906
16	40.64	16	0.6299
17	43.18	17	0.6693

French Gauge System

in	mm
0.001	0.0254
0.002	0.0508
0.003	0.0762
0.004	0.1016
0.005	0.1270
0.006	0.1524
0.007	0.1778
0.008	0.2032
0.009	0.2286
0.010	0.2540
0.011	0.2794
0.012	0.3048
0.013	0.3302
0.014	0.3556
0.015	0.3810
0.016	0.4064
0.017	0.4318
0.018	0.4572
0.019	0.4826
0.020	0.5080
0.021	0.5334
0.022	0.5588
0.023	0.5842
0.024	0.6096
0.025	0.6350
0.026	0.6604
0.027	0.6858
0.028	0.7112
0.029	0.7366
0.030	0.7620
0.031	0.7874
0.032	0.8128
0.033	0.8382
0.034	0.8636
0.035	0.8890
0.036	0.9144
0.037	0.9398
0.038	0.9652
0.039	0.9906
0.0394	1.0000

Charrière	Ø mm	Ø in
1	0.33	0.012
2	0.67	0.028
3	1.00	0.039
4	1.33	0.051
5	1.67	0.067
6	2.00	0.079
7	2.33	0.091
8	2.67	0.106
9	3.00	0.118
10	3.33	0.130
11	3.67	0.146
12	4.00	0.157
13	4.33	0.169
14	4.67	0.185
15	5.00	0.197
16	5.33	0.209
17	5.67	0.224
18	6.00	0.236
19	6.33	0.248
20	6.67	0.264
21	7.00	0.276
22	7.33	0.287
23	7.67	0.303
24	8.00	0.315
25	8.33	0.327
26	8.67	0.343
27	9.00	0.354
28	9.33	0.366
29	9.67	0.382
30	10.00	0.394
31	10.33	0.406
32	10.67	0.421
33	11.00	0.433
34	11.33	0.445
35	11.67	0.461
36	12.00	0.472
37	12.33	0.484
38	12.67	0.500
39	13.00	0.512
40	13.33	0.524

American Wire Gauge

AWG	Ø mm	Ø in
0000 (4/0)	11.684	0.4600
000 (3/0)	10.404	0.4096
00 (2/0)	9.266	0.3648
0 (1/0)	8.252	0.3249
1	7.348	0.2893
2	6.544	0.2576
3	5.827	0.2294
4	5.189	0.2043
5	4.621	0.1819
6	4.115	0.1620
7	3.665	0.1443
8	3.264	0.1285
9	2.906	0.1144
10	2.588	0.1019
11	2.305	0.0907
12	2.053	0.0808
13	1.828	0.0720
14	1.628	0.0641
15	1.45	0.0571
16	1.291	0.0508
17	1.15	0.0453
18	1.024	0.0403
19	0.912	0.0359
20	0.812	0.0320
21	0.723	0.0285
22	0.644	0.0253
23	0.573	0.0226
24	0.511	0.0201
25	0.455	0.0179
26	0.405	0.0159
27	0.361	0.0142
28	0.321	0.0126
29	0.286	0.0113
30	0.255	0.0100
31	0.227	0.0089
32	0.202	0.0080
33	0.18	0.0071
34	0.16	0.0063
35	0.143	0.0056
36	0.127	0.0050
37	0.113	0.0044
38	0.101	0.0039
39	0.089	0.0035
40	0.079	0.0031
41	0.071	0.0028
42	0.064	0.0025

Standard Wire Gauge

SWG	Ø mm	Ø in
7/0	0.500	12.700
6/0	0.464	11.786
5/0	0.432	10.973
4/0	0.400	10.160
3/0	0.372	9.449
2/0	0.348	8.839
0	0.324	8.230
1	0.300	7.620
2	0.276	7.010
3	0.252	6.401
4	0.232	5.893
5	0.212	5.385
6	0.192	4.877
7	0.176	4.470
8	0.160	4.064
9	0.144	3.658
10	0.128	3.251
11	0.116	2.946
12	0.104	2.642
13	0.092	2.337
14	0.080	2.032
15	0.072	1.829
16	0.064	1.626
17	0.056	1.422
18	0.048	1.219
19	0.040	1.016
20	0.036	0.914
21	0.032	0.813
22	0.028	0.711
23	0.024	0.610
24	0.022	0.559
25	0.020	0.508
26	0.018	0.457
27	0.016	0.417
28	0.015	0.376
29	0.014	0.345
30	0.012	0.315
31	0.012	0.295
32	0.011	0.274
33	0.010	0.254
34	0.009	0.234
35	0.008	0.213
36	0.008	0.193
37	0.007	0.173
38	0.006	0.152
39	0.005	0.132

Volume / Milliliters / Fluid Ounces / Cubic Centimeters

mL	US oz	US oz	UK oz	UK oz	cc (cm ³)
1.0	1/32	0.033814	0.035195	1/32	1.0
29.574	1	1.0	13/64	1.0409	29.574

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