Aesculap Technical Service (ATS)

Aesculap techninis servisas

Functional Controls & Maintenance Instructions

Funkcijų valdymas ir priežiūros/aptarnavimo instrukcijos

Aesculap – a B. Braun company

- Version 1.3 -

B|BRAUN
SHARING EXPERTISE

Cross-products error location – surface

The following error types can be seen at the following locations - surface and are represented in a cross-product manner based on the RKI "Processing instruments" brochure.

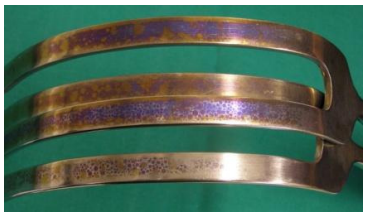
Discolorations / Residues

Black discoloration

Shiny gray-black chromium dioxide layers, particularly in chromium steels with high carbon content.

Residues

Colored layer consisting of blood, protein and drug residues.



Water stains

Milky white to gray layers / discolorations. Depending on the situation, this can occur over a wide area or in the form of irregular spots with sharply defined edges on the instrument surface.

Silicates

Yellow-brown to blue-violet stains or drops on the instrument, sometimes over a wide area. Pronounced discoloration. Often appears in the colours of the rainbow.

Corrosion

Pitting

Needle-like corrosion holes in stainless steel, often microscopically small, surrounded by reddish-brown or iridescent borders. Often appears in the form of circular corrosion deposits around the corrosion hole.

Stress cracking corrosion

The so-called electrolytes or anodic stress cracking corrosion. In short, SCC usually leads to visible cracks and fractures.

Frictional corrosion

Brown discoloration or rust occurs around a blank area in which instruments rub together. For example the circular area where scissors join.

Crevice corrosion

Crevice corrosion is a locally accelerated corrosion and as a result leads to corrosive deposits in the area of crevices. It is often mistaken with organic residues.

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Surface corrosion

Mostly a uniform, dull gray or brownish surface attack on stainless steel, often as a result of damage by corrosion deposits.
Mostly extreme rust formation below a dull black surface on instruments that have not been manufactured from stainless steel.

Contact corrosion

Small dot or ring-shaped, brownish-blue discolorations with slight corrosion in the area of the contact point can occur on instruments with a stainless steel/stainless steel material combination. This type of contact corrosion is often mistaken with pitting corrosion. On closer inspection, one can see that no hole has formed at the center of the corrosion point, but there is a slight smoothly rubbed surface structure.

Extraneous and flash rust / subsequent rust

Individual, irregularly distributed rust particles.
Brown, mostly localized corrosion deposits or rust formation. When there is a large amount of direct surface contact with very rusty products, "instrument impressions" may occur as a result of damage.

Labeling

Original labeling no longer available, no longer legible, is pale or was masked off at the last repair. Pairing numbers (bone-punches / rongeurs) do not match.

Layer / gold plating

Damaged or worn-out layer, for example gold plating on the rings, anti-reflection coating.

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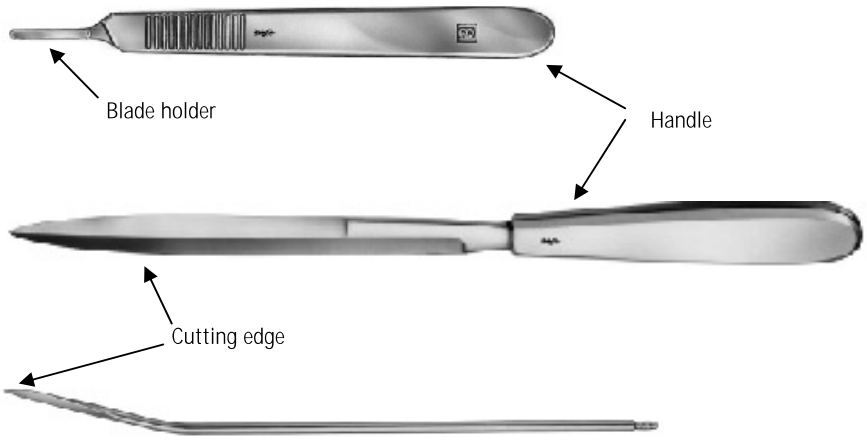
Test material for surgical instruments

You can order the test material for our product groups by telephone at +49 / 7461 95-1602.

Instruments	Test material	Article number
Scissors	ATS test material - tissue	ATS-BC01
Punches, Rongeurs	ATS test cardboard	ATS-FF01
Rongeurs	ATS test tube	ATS-FO01
Knives, Redon needles	ATS test sheet (foil)	ATS-BA01
Chisels	ATS test rod	ATS-FL01
Micro scissors	ATS test material – bandage	ATS-BC02
Biopsy forceps, Conchotomes	ATS test sheet (foil)	ATS-ER01
Atraumatic instruments	ATS test paper	ATS-FB01

Scalpels, Knives, Redon Needles

Product illustration



Error description

Type of error	Location of error	Defect	Testing
Shape	Blade holder	broken, bent, worn out	
	Cutting edge	broken, bent, too short, too thin, worn out	
Function	Cutting test / movement	see reverse	

Test material

Designation	Article number	Type of instrument	Number of layer
ATS test sheet (foil)	ATS-BA01	Knives, Redon needles	1

Test description

Cutting test – Knife

Test:

Stretch test sheet (foil) ATS-BA01 and penetrate it using the knife point. Cut foil with the knife.

Results:

- Knife point must penetrate the foil without excessive force
- Test cut must be smooth
- No catching on material during penetration

Cutting test – Redon needles

Test:

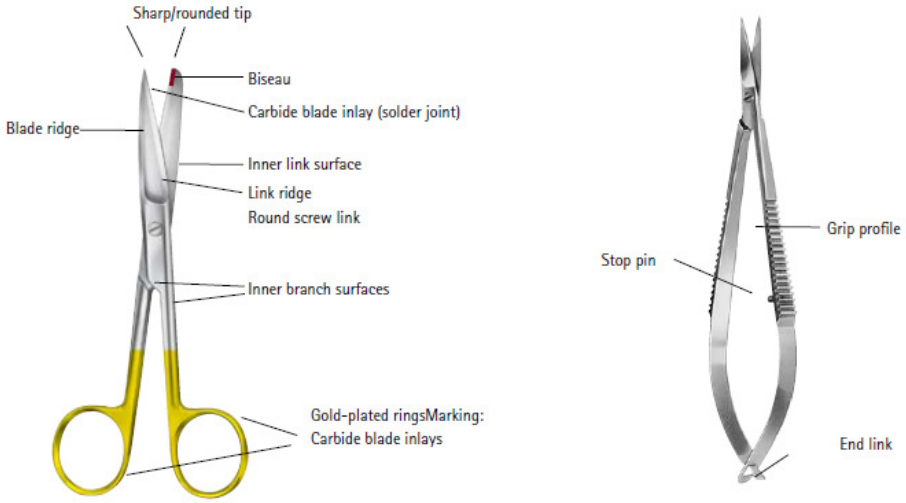
Stretch test sheet (foil) ATS-BA01 and penetrate it using the redon needle. Cut foil with the cutting edge of the redon needle.

Results:

- Tip of the redon needle must penetrate the foil without excessive force
- Test cut must be smooth
- No catching on material during penetration

Scissors

Product illustration



Error description

Type of error	Location of error	Defect	Testing
Shape	Tips	broken, bent	
	Blades	broken, bent, too short, too thin	
	Carbide inlay	worn, broken, broken off	
	Cutting edge	worn, broken off	
	W-cut (e.g.: BC295W)	worn, broken off	
	Serration (z.B.: DP552R)	worn, broken off	
	Biseau (abnormalities)	not available	
	Screw	protruding, loose, damaged	
	Plastic profile / handles	broken, broken off	
	End link of spring scissors	damaged, bent, broken off	
	Stop knob / pin	missing, loose, bent	
Function	Cutting test / movement	see reverse	

Test material

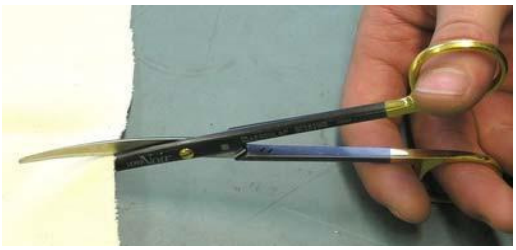
Designation	Article number	Type of instrument	Number of layer
ATS test material	ATS-BC02	Micro-spring scissors	1
	ATS-BC01	Strabismus scissors	1
		Tenotomy scissors according to Stevens	1
		Vascular scissors according to Potts-Smith	1
		Dissecting scissors, fine	1
		Dissecting scissors according to Mayo	2
		Mayo/Lexer carbide dissecting scissors	2
		Surgical scissors straight/curved	2
		Bandage, bowel and bone scissors	3

Test description

Cutting test – Scissors

Test:

Cut testing material ATS-BC01 with the scissors transverse to the web ribs without lateral pressure on the rings.



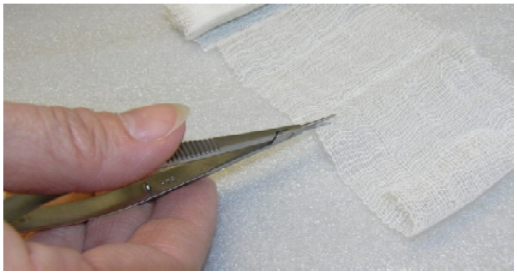
Results:

- Scissors must cut up to the tip
- Test cut must be smooth
- Closed scissors must not pull threads

Cutting test – Micro scissors

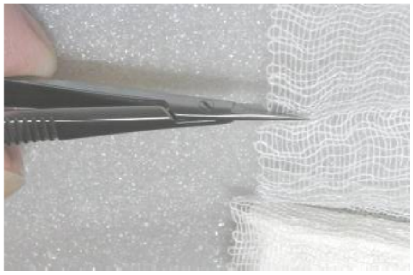
Test:

Lay out test material ATS-BC02 and cut without lateral pressure or pulling on the material.



Results:

- The threads of the test material must be cut through up to the tips of the scissors



Testing the closure – Scissors

Test:

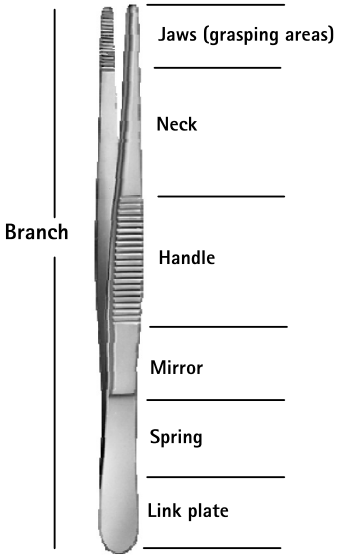
- Open the branches and then let go.

Results:

- Scissor blades touch and stop at one third of the blade length, with about two thirds of the length still opened

Forceps

Product illustration



Error description

Type of error	Location of error	Defect	Testing
Shape	Tips	broken, bent	
	Jaws – serrating	worn, broken off	
	Jaws – diamond coating	worn, broken off	
	Carbide inlay	worn, broken, broken off	
	Screw	protruding, loose, damaged	
	Plastic profile / handles	broken, broken off	
	Spring / Link plates	damaged, bent	
	Guide pin	missing, loose, bent	
Function	Movement	see reverse	

Test description

Testing the closure of the forceps

Forceps with longitudinal, transverse and cross-serration

- The jaws close springy, from the tip of the jaws over at least two thirds of the tooth profile. In forceps with longitudinal and transverse toothing, the teeth profiles engage one another.

Forceps with a tooth profile

- The jaws close springy, from the tip of the jaws over at least two thirds of the tooth profile. In forceps with longitudinal and transverse toothing, the teeth profiles engage one another. The mouse teeth must not hook in any position.

Forceps with/without a plateau with a smooth jaw

- Close without a gap and springy from the tip of the jaws over a jaw length of at least 5.0 mm. This applies also to forceps with a plateau whose jaw length is over 5.0 mm.
- Forceps with a plateau and a jaw length of 5.0 mm and less must close completely without the slightest gap
- When pressing the branches to the stop position, the jaw tips must neither open nor move sideways.

Forceps with carbide inlays

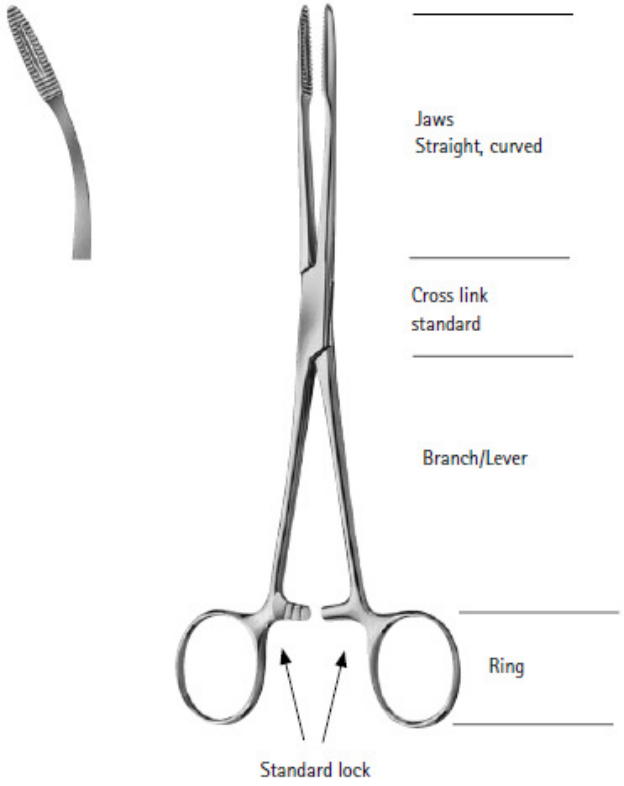
- The jaws close springy from the tip along the entire grasping area. When the tips of the jaws are touching, the diamond-shaped tips must engage in the diamond-shaped spacings in order to prevent sideways movement when closing the jaws.

Forceps with atraumatic serration

- The jaws close springy from the tip along the entire interlocking grasping profile.
- The examination of the rounding of the inner jaw tips takes place visually and tactilely with the finger tip. At the same time the serration must not hook the skin.

Sponge and Dressing Forceps, Washing Forceps, Towel Clamps

Product illustration



Error description

Type of error	Location of error	Defect	Testing
Shape	Tips	broken, bent	
	Grasping surface – serrating	worn, broken off	
	Jaws / Mouse tooth	worn, broken off	
	Push-through connection	Stud rotates, stud can be clearly seen	
	Screw	protruding, loose, damaged	
	Locks	do not engage or fly open	
	Spring / connecting plates	damaged, bent	
Function	Test / Movement	see reverse	

Test material

Designation	Article number	Type of instrument	Number of layer
ATS test paper	ATS-FB01	Atraumatic clamps	1

Test description

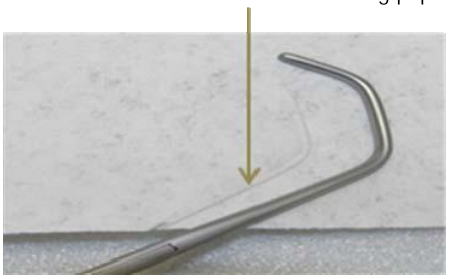
Testing of closing characteristic – Atraumatic instruments

Test:

Grip undamaged testing paper ATS-FB01 with the clamp and completely close the jaws for two seconds.

Results:

- Open the jaws and the longitudinal profile must be constantly visible on the ATS-FB01 testing paper.
- Examine the paper against the light.
- There must be no hole in the testing paper.



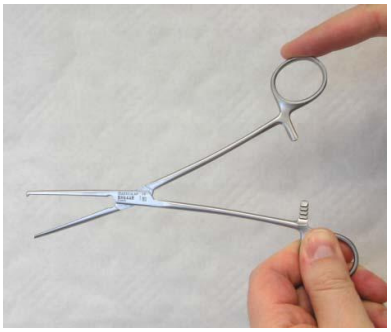
Testing of closing characteristic – Branches - clamps

Test:

- Open the branches and then move them downwards against each other.

Results:

- All clamps must show an easy, smooth movement from every position. The lock is wobble-free and must not fall closed from any position.



Testing of closing characteristic – Jaw - clamps

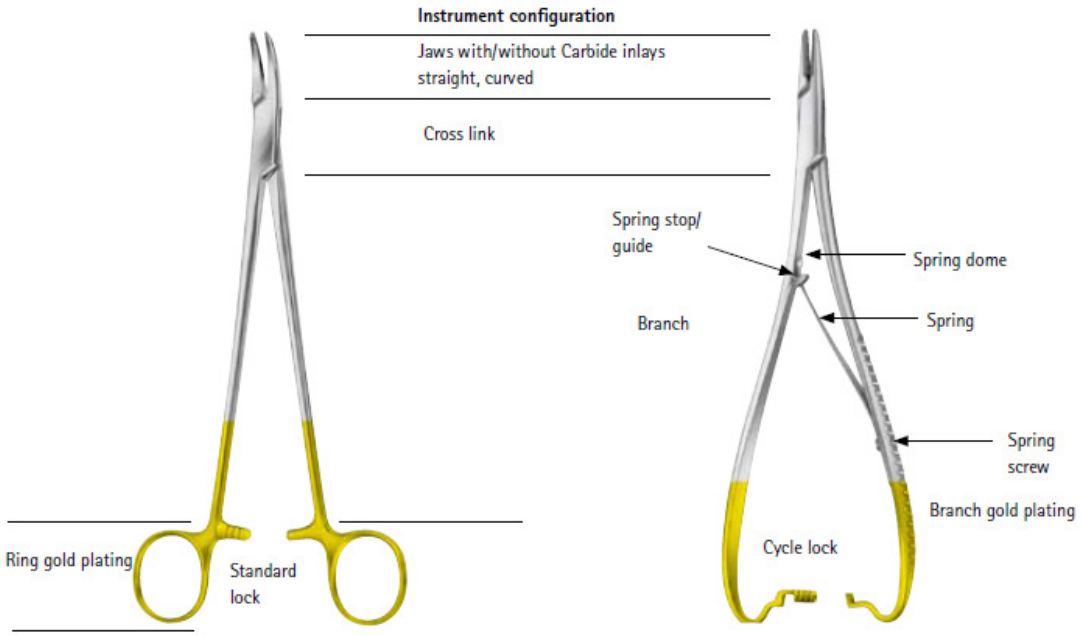
Test:

- For clamps with transverse serration, the jaws close springy when engaging up to the last lock for at least two thirds of the functional areas.

- Clamps with other jaw profiles (longitudinal serration, cross-serration) close over the entire jaw area. The toothing engages when closed.

Needle holder

Product illustration



Error description

Type of error	Location of error	Defect	Testing
Shape	Jaws	too short, too narrow	
	Grasping area – serrating	worn, broken, broken off	
	Carbide inlay	worn, broken, broken off	
	Jaws – diamond coating	worn, damaged	
	Cross link	Stud rotates, stud can be clearly seen	
	Screw	protruding, loose, damaged	
	Plastic profile / handle	broken, broken off	
	Locks	do not engage or fly open	
	Spring / Link plates	damaged, bent, missing	
Function	Movement	see reverse	

Test description

Testing of closing characteristic – Branches – Needle holder

Test:

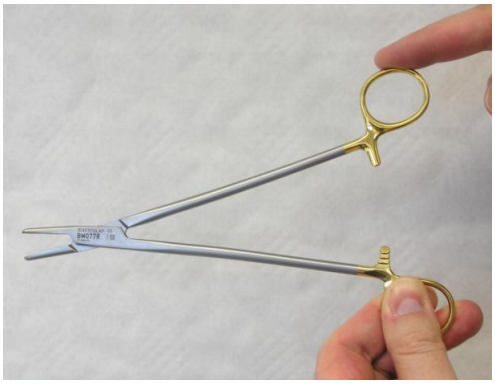
Open the branches and then move the rings towards each other.

Results:

- The needle holder must show an easy, even movement in every position (instrument does not close by itself, holds in every position).
- The lock is wobble-free and must not fall closed from any position.

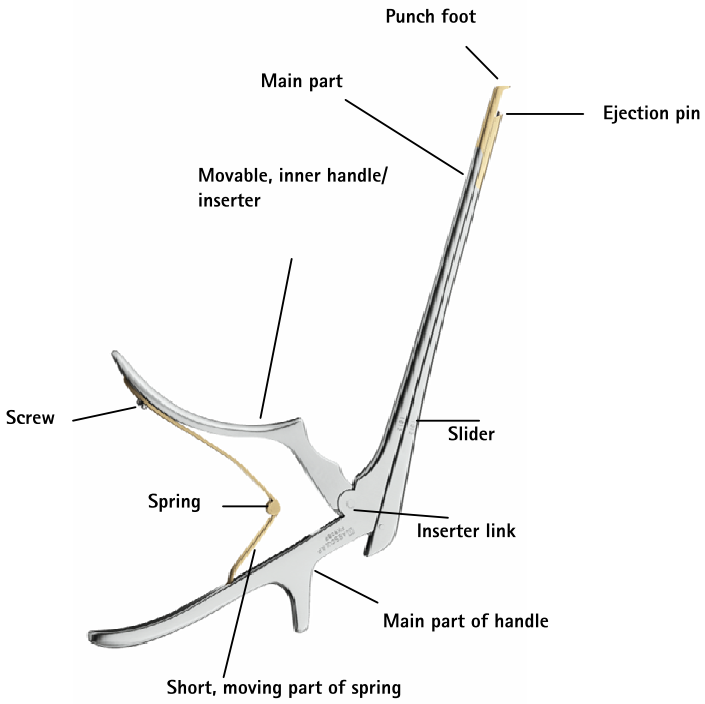
Note:

- All branch needle holders without locks or springs have a falling movement - the instrument closes by itself



Bone punches, Rongeurs

Product illustration



Error description

Type of error	Location of error	Defect	Testing
Shape	Punch foot	broken off, very bent	
	Blade	notches, deformed, broken off	
	Slider	deformed, kinked	
	Screw	protruding, loose, damaged	
	Ejection pin	too short, bent or jammed	
	Spring	broken, bent, missing	
	Blades / grasping area for rongeurs	worn, damaged, broken off	
Function	Test / Movement	see reverse	

Testing materials

Designation	Article number	Type of instrument	Number of layer
ATS test cardboard	ATS-FF01	Punches	1
ATS test tube	ATS-FO01	Rongeurs	1

Test description

Punching test – Bone punches

Test:

Place the ATS-FF01 test cardboard completely in the jaws of the punch and punch the test cardboard.

Results:

- The result must be a smooth cut image.
- When closing the punch, the test cardboard must not be jammed between the slider and the main handle part

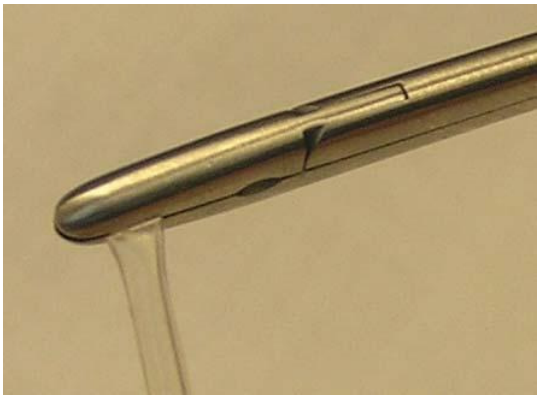
Cutting test for rongeurs

Test:

Grip the test tube ATS-FO01 with the jaws, close the rongeur tightly and pull lightly on the test tube.

Results:

- The test tube must be completely cut through.



Testing of closing characteristic – Bone punches / Grasping areas on rongeurs

Test:

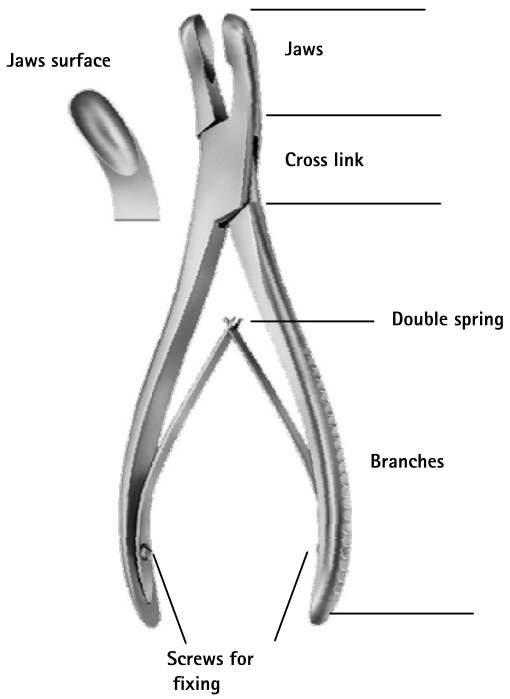
- Close the instrument

Results:

- When closing the instrument the cutting edges or the grasping areas must be go exactly together to line up or be aligned.
- No lateral displacement.

Bone holding forceps, reposition forceps and bone cutting forceps

Product illustration



Error description

Type of error	Location of error	Defect	Testing
Shape	Grasping area – serration	worn, damaged, broken off	
	Jaw – blades	notches, worn, blunt	
	Jaws – mouse tooth	worn, bent	
	Cross link	rivet rotate, rivet clearly visible	
	Screw	protruding, loose, damaged	
	Locks	Lock not engaging, lock springing open	
	Spring	broken, bent, missing	
Function	Test / Movement	see reverse	

Test material

Designation	Article number	Type of instrument	Number of layer
ATS test cardboard	ATS-FF01	Reposition forceps	1
	ATS-FF01	Bone cutting forceps	1

Test description

Cutting test – Reposition forceps

Test:

Locate the reposition forceps and cut the test cardboard.

Results:

- The result must be a smooth cut image.

Cutting test – Bone cutting forceps

Test:

Locate the ATS-FF01 test cardboard in the forceps' jaws and cut the test cardboard.

Results:

- The forceps must smoothly cut through the test cardboard over the entire cutting length.

Testing of closing characteristic – Reposition forceps

Test:

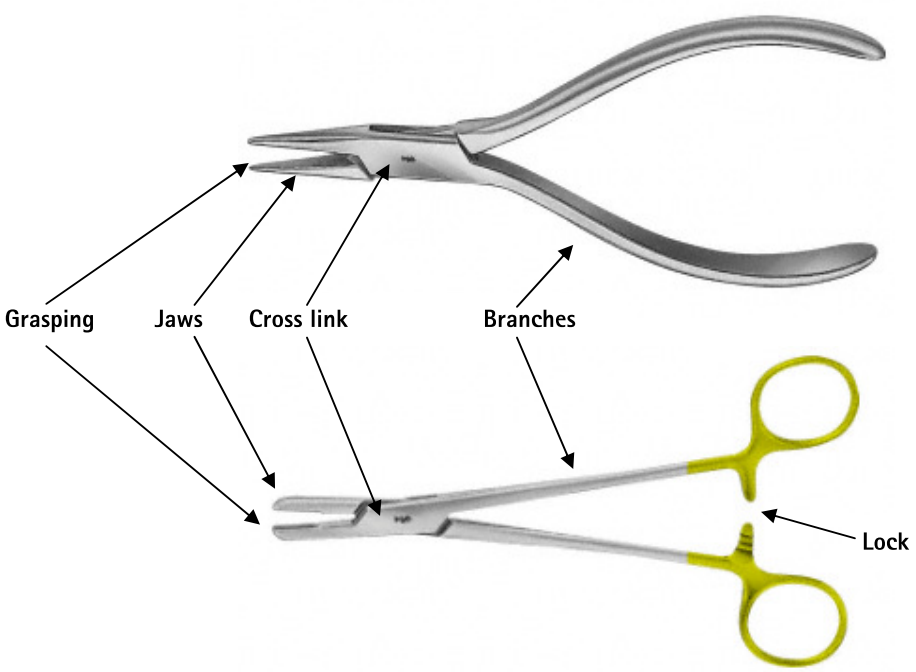
- Close the instrument

Results:

- When closing the instrument the blades must be go exactly together to line up or be aligned.
- No lateral displacement.

Wire-holding forceps, wire twisters and wire-cutters

Product illustration



Error description

Type of error	Location of error	Defect	Testing
Shape	Grasping area – serration	worn, damaged, broken off	
	Jaw – blades	notches, worn, blunt	
	Cross link	rivet rotates, rivet clearly visible	
	Screw	protruding, loose, damaged	
	Lock	Lock not engaging, lock springing open	
	Spring	broken, bent	
Function	Movement	see reverse	

Test description

Testing the closure of the pliers

Test:

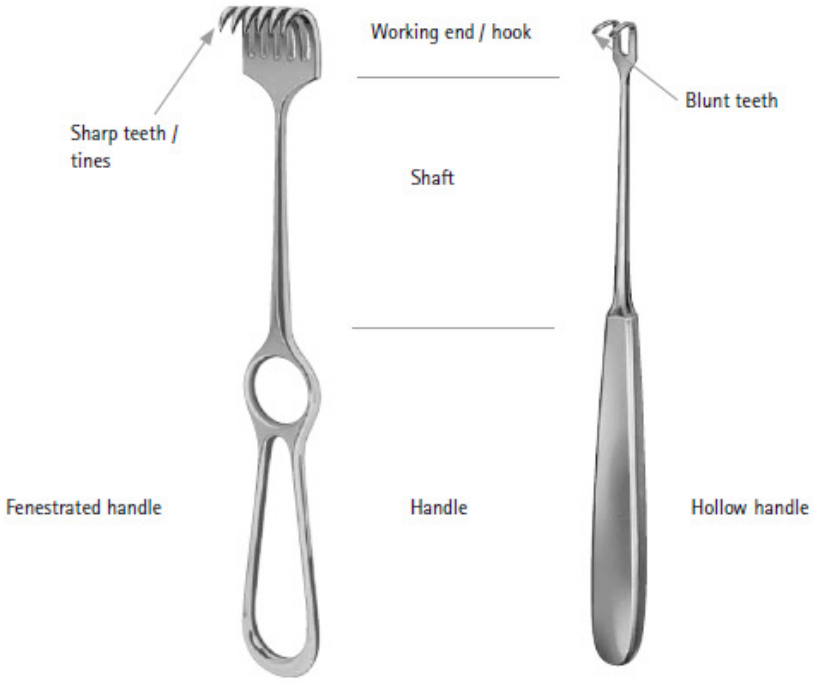
- Close the instrument

Results:

- When closing the instrument the cutting edges or the grasping areas must be go exactly together to line up or be aligned.
- No lateral displacement.

Retractors

Product illustration

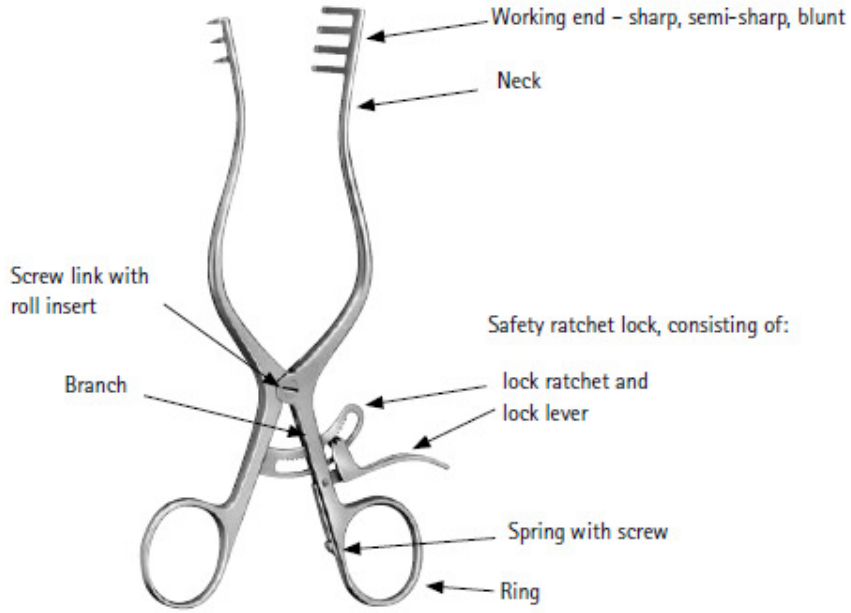


Error description

Type of error	Location of error	Defect	Testing
Shape	Working end / toothing	bent, damaged, broken off	👁

Self-retraining retractors and abdominal retractors

Product illustration



Error description

Type of error	Location of error	Defect	Testing
Shape	Working end / toothing	bent, damaged, broken off	
	Valve adapters	damaged, worn	
	Screw	protruding, loose, damaged	
	Locks	Lock not engaging, lock springing open	
	Spring	broken, bent	
Function	Movement	see reverse	

Test description

Test:

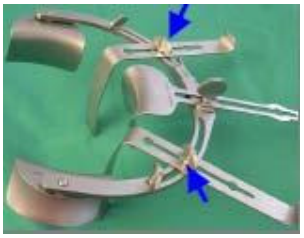
Functional test to examine the pinion, threaded rod and the threaded screw

- Are smooth and guarantee a secure hold in every position.

Test:

Functional test to examine the elongated lock.

- Can be loosened if necessary and provides a secure hold in every position.

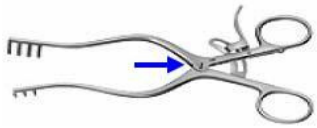


Functional test to examine the joints in the working end.

- Have a permanent, full and even movement and must not fall in any position.

Functional test to examine the screw connection with an inserted part.

- Is tight and not riveted. Is even, smooth and wobble-free.



Functional test to examine the screw connection with wing nut.

- Is even, smooth and wobble-free.

Functional test to check the eyelet locking device.

- The receiving part can be loosened and provides a firm, secure fit for the central blade.

Functional test to check the elongated locking device.

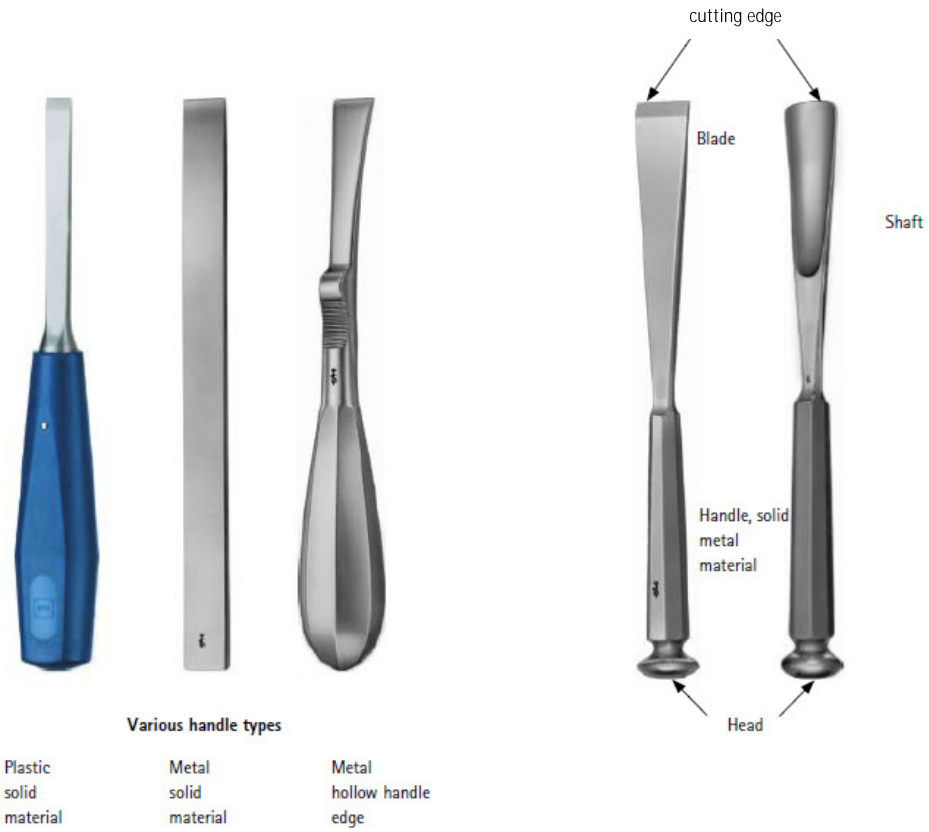
- The receiving part can be loosened if necessary and provides a secure fit in every position.

Functional test to check the fixing screws with knurled knob.

- Are smooth-running, provide a secure hold and are secured against unscrewing.

Chisels, spoons, curettes, osteotomes, raspatories

Product illustration



Error description

Type of error	Location of error	Defect	Testing
Shape	Working tip – blade	too short, broken off, worn	
	Working tip serration	worn, damaged, broken off	
	Handle	broken off	
Function	Movement	see reverse	

Testing materials

Designation	Article number	Type of instrument	Number
ATS test rod	ATS-FL01	Chisel	1

Test description

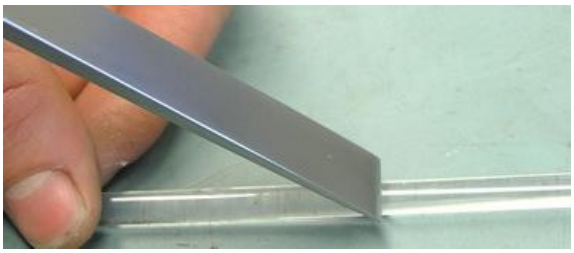
Cutting test for chisels

Test:

Press the chisel lightly with an angle of about 45 degrees against the ATS-FL01test rod.

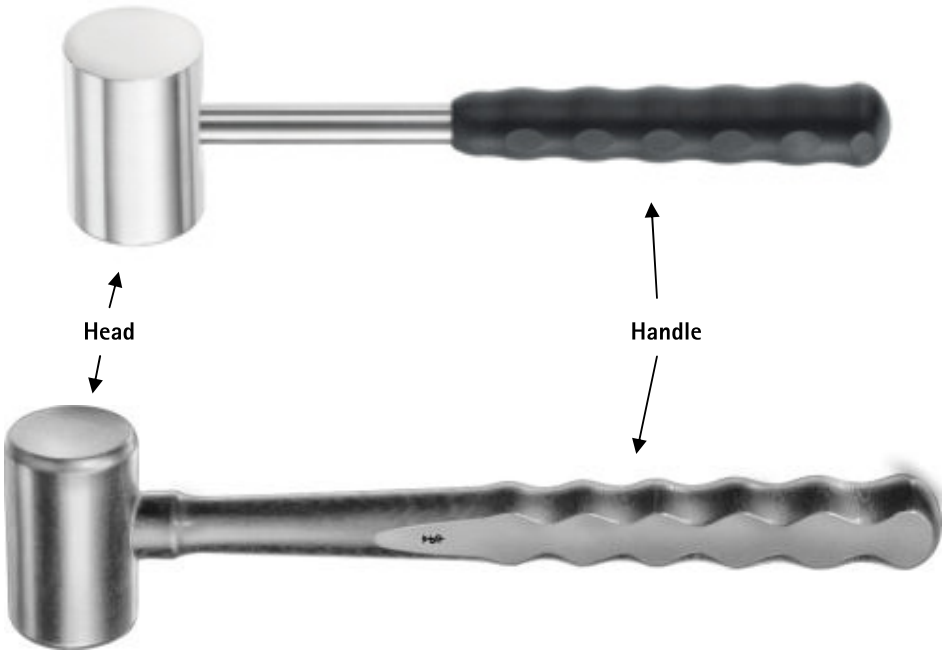
Results:

- The chisel must not slip off the test rod (light material removal)



Hammers

Product illustration



Error description

Type of error	Location of error	Defect	Testing
Shape	Working end – head	defective, worn	
	Handle	damaged, deformed, broken off	
Function	Movement	see reverse	

Test description	
Hammers testing	
Test:	**Results:**
• Shake the hammer	• There must be no loose parts to be heard in the hollow handle during the shake test.
• Check the impact head for burrs	• There must be no burr on the impact head edge.

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Instrument care

Cleaning – Disinfection – Sterilization of Surgical Instruments

Care and inspection

- Allow the instrument to cool down to room temperature.
- Lightly lubricate movable parts (e.g. joints and links) with sterilizable, vapor-permeable oil (e.g. STERILIT® oil spray JG600 or STERILIT® instruments oil JG598)
- Check the instrument for cleanliness, functionality and damages, e.g. bent, broken, cracked, worn and broken off parts after every cleaning and disinfection.
- Set aside and replace the instrument if it is damaged or defective.

Storage

- Instruments with fine working tips or microsurgical instruments are to be stored in an appropriate rack system to protect the instruments
- Secure the instrument with the safety catch in the first notch.

Sterilization

- Sterilize with steam, taking note of the following: Carry out sterilization through a validated steam sterilization process (e.g. in a sterilizer conforming to EN 285/ANSI/AAMI/ISO 11134-1993, ANSI/AAMI ST46-993, and validated according to EN 554/ISO 13683).
- Fractionated vacuum sterilization should be carried out for a minimum of 5 minutes at 134°C/2 bar pressure.

STERILIT® JG600

Aesculap oil spray in a spray bottle (CFC-free), for instrument care prior to sterilization. Physiologically harmless according to DAB and § 31 LMBG.

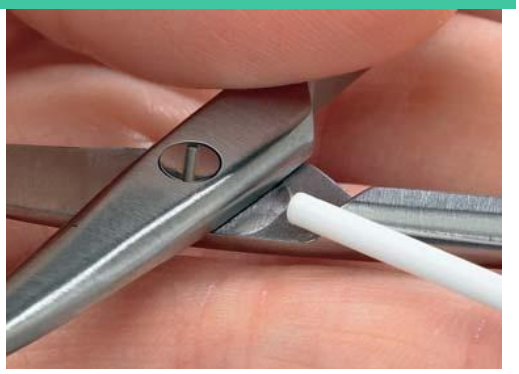
STERILIT® JG598

Aesculap instrument oil for lubricating connections, locks, etc. prior to sterilization. Physiologically harmless according to DAB and § 31 LMBG.

Aesculap Technical Service

Proper maintenance of instruments

Scissors

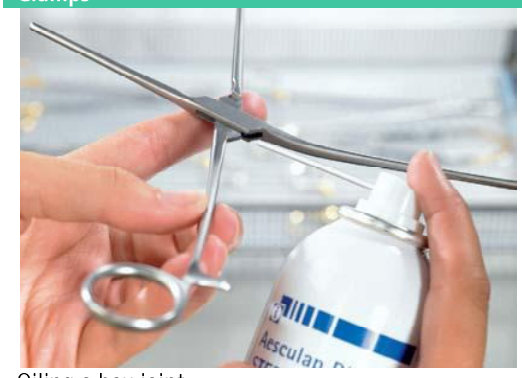


Oiling a scissor joint

Needle Holder

Oiling a box joint

Clamps



Oiling a box joint

Proper maintenance of instruments

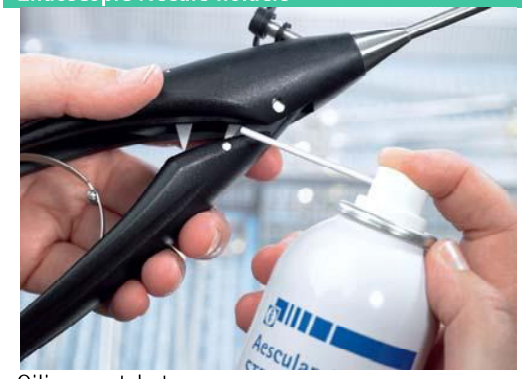
Forceps

Oiling screws on an articulated instrument

Micro-Instruments

Oiling a micro needle holder

Endoscopic Needle holders



Oiling a ratchet

Proper maintenance of instruments

Bone Rongeur

Oiling a bone rongeur

Oiling a bone rongeur

STERILIT® – Maintenance Oils

- Base: paraffin/white oil
- Reduces friction and protects against fretting corrosion
- Enables good spreading and lubricating characteristics
- Physiological harmlessness checked according to ISO 10993
- Environmentally friendly (CFC-free)
- Suitable for steam sterilization methods in conformance with ISO 17665-1 and hot air sterilization up to 180°C

Steam Penetration

The special formula supports that the steam penetrates the oil film during the sterilization process, even in areas difficult to access.

Properties

In accordance with the requirements of the Instrument Preparation Working Group (A.K.I.), Sterilit® possesses the following properties:

- Steam penetrable oil film
- Oil film does not interfere with the effectiveness of the sterilization
- Lubricates and protects against corrosion
- Silicone-free, no staining or crust formation on instrument surfaces

Safe handling

- Use before sterilization only
- Store in a cool, dry, dark place
- Do not use after the expiry date
- Medical devices must be prepared according to the instructions for use before Sterilit® is applied

Remarks

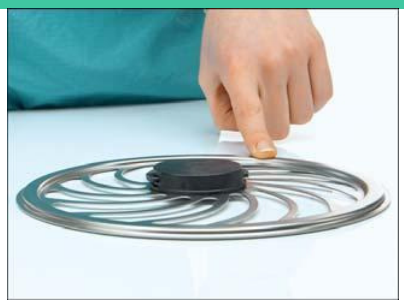
STERILIT® carries the CE label and fulfils the fundamental requirements in compliance with MDD93/42/EEC.

Check all components of the sterile container visually for damage and correct function before every use:

1. Metal parts not deformed

- Check container base for dents, especially rim of base
- Aluminium lid not warped

2. Check the filter retainer



- Filter retainers must be prestressed and have full surface contact at the edge.

- Locating pin for filter retention plate in lid must not be loose

3. Intactness of seals

- Filter retainer snaps audibly into position

- Seals are present and intact
- No cracks, fractures etc.

4. Undamaged plastic parts

- No cracks or visible damage to plastic parts, no loose parts

5. Filter inspection

- Filters undamaged (no kinks, holes, racks or crevices)

- Remove cover for inspection (remove anticlockwise, replace clockwise)

- Primeline filters undamaged (no kinks, holes, cracks or crevices)

6. Locking mechanism fully functional

- Ensure that the triangles are aligned (locked position)

- The locking mechanism must be fully functional and show no damage

- Lubricate the locking mechanism hinges with Sterilit® from time to time

7. Correct closure of lid

- Locking mechanism of lid snaps audibly into place on the base counterpart

8. Carrying handles undamaged

- Carrying handles are intact and show no visible damage

9. Flawless sterile containers

- Only use sterile containers in flawless condition
- If components are damaged, replace with original spare parts or repair immediately

10. Labeling and sealing

- Sterile container closed

- Either sealed with production label, or production label and plastic seal attached