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RUMEX ADVANTAGES

20 YEAR OF INSTRUMENTS DEVELOPMENT AND PRODUCTION

- More than 2,000 items in portfolio
- Product development together with top-of-the notch surgeons all over the world
- Full range of instruments for all ophthalmic surgeries
- Experienced engineering team and strong manufacturing facilities allow us to implement their vigorous ideas in customized products
- Innovative products are continually updated
- OEM possibilities

SUPERIOR QUALITY PRODUCTS

The quality management system of Rumex International Co. is certified in correspondance with the ISO 9001:2008 and ISO 13485:2003 for the design, manufacture and sale of surgical and microsurgical instruments as well as medical devices, including ophthalmic and cardiovascular instruments. Rumex production complies with the FDA worldwide quality standards. In 2014 the company successfully passed the quality management system audit held by an international certification network company specialized in the medical devices area. The quality of Rumex instruments meets the most demanding world-wide requirements such as Canadian, UK, US associations and the Notified Body.

OUR GUARANTEE

If any product arrives damaged or with a defect, please don't hesitate to contact us before usage, for a full refund, or exchange. Upon thorough inspection, if the damage is found to be a manufacturer defect, and not caused by improper handling or misuse, we will provide a full refund or will exchange the item. Please note we must be notified within 30 days of package receipt to avoid any restocking or handling fees.

AFFORDABLE INNOVATIONS!

- We keep an eye on market trends and regularly update.
- We provide a combination of premium quality and competitive prices.

- More than 80 distributors all over the world
- We provide instruments for professional wetlabs
  For ophthalmologists' surgical skills training. (During AAO, ASCRS & ESCRS)
- Online shopping at WWW.RUMEX.NET
WHY MORE THAN 17,000 DOCTORS IN 70 COUNTRIES CHOOSE RUMEX?

By offering multiple material options, we can meet the specific demands of all our customers. You can always be confident in terms of our instruments durability and our proactive approach to the surgery process. Our state of the art technological process allow us to provide high quality products at surprisingly low prices.

**UNIQUE STAINLESS STEEL**

*Hardened & Durable*
Managing stainless steel EP93 alloy is designed especially for space and missile industry. Theretore, Rumex steel instruments are so durable and last years.

*Extremely Sharp*
We use steel to make tools with perfect cutting properties. Unique steel alloy & special sharpening technology makes Rumex steel instruments’ dissecting elements stay sharp 50% longer than the tips of other materials.

*Mattted to Protect You!*
Rumex steel instruments are microscope gins protected by additional matting. It protects doctors’ eyes and prevents more than 20% errors during the surgery.

*Medical Steel*
Biocompatible, hypoallergenic, medically approved

---

**UNIQUE TITANIUM INSTRUMENTS**

**Ti** Enjoy 100% of the Advantage of Titanium - **NO IMPURITIES in Rumex Titanium**

Absence of impurities in Rumex titan is more than 99.5% that allows you to use all the advantages of titan. Even a small fraction of 0.2% impurities is enough to degrade twice the unique characteristics of titan.

**Excellent Chemical Resistance - NO CORROSION**

Rumex titanium alloys VT1, VT14, VT16 are produced for aerospace and defense industry. Titanium never rusts, withstands high temperature processing, and doesn’t require further drying. This titanium allows chemical sterilization with any acceptable reagents.

**45% Lighter Than Steel!**

Titanium is a light material, an instrument’s light weight is very important during prolonged operations under a microscope demanding the high precision of manipulations.

**The Most Durable Metal**

The strength of titanium reduces the risk of bending. A bullet may shatter a diamond with a medium amount of force applied but would not make a single imprint on Titanium.

**Medical Titanium**
Biocompatible, hypoallergenic, medically approved

---

**EASY CLEANING**

The detachment of tip from the handle makes cleaning and sterilization easy and convenient.

**EASY IDENTIFICATION**

Unique color code system enables easy identification of tips by function and size.

**70% MORE LIFESPAN**

of a tool due to modular system

**SAVE YOUR MONEY**

Rumex universal handles can be used with our interchangeable tips
RUMEX ADVANTAGES

HIGH QUALITY INSTRUMENTS

• Forceps
  Tungsten carbide coating on the tips prevents slipping and provides stable fixation. To provide stable fixation we prefer special coating of the tips – tungsten carbide. This coating is resistant during sterilization and has the best gripping and resistance results in comparison with surface ribbing or diamond dust.

• Needle holders
  Rumex needle holders are made of titanium (anti-magnetic and light-weight). Thus a stainless steel needle would not "stick" to a needle holder made of titanium. For secure gripping of the needle we’ve chosen the tungsten carbide coating for the tips. Unlike other techniques of tips strengthening (as surface ribbing or diamond dust) tungsten carbide prevents the needle yawing and is resistant during sterilization.

• Cross-action forceps, scissors and needle holders
  Our instruments are easily squeezed and spring due to special technology used for production of springs called cold-working. It allows to transform plastic properties of metal ribbon making it durable and hard.
RUMEX ADVANTAGES

• Scissors, prechoppers
Made of stainless steel only. The hardness of the material used for cutting blades should be 49-55 HRC* to allow for longer longevity in regards to remaining sharp and resistant to deformation. In comparison, titanium hardness is only 38 HRC, hence the reason titanium is not recommended for scissors, vitreo and micro incision instruments, choppers, or prechoppers.
With the years of experience, we changed the technique of delicate blade sharpening. We now use an abrasive stone, Arkanzas, unlike a diamond needle file in past.

• Choppers, spatulas, hooks
We combine the advantages of 2 materials for these instruments:
- hardened stainless steel tips are resistant to bending
- ergonomic and light weight titanium handles

• Calipers, gauges and markers
We use the best way of scale application – laser marking. We now use a special technique called “thermal influence” to increase the contrast and prevent the washing/rinsing away during the sterilization process. In contrast, other types of markings such as burning, engraving and pressing provide grooves that are wide enough for the scale, causing 3-5 degree mistakes when measuring.

* HRC (Rockwell C Hardness) - a measuring unit of material hardness (i.e. resistance to penetration).
RUMEX ADVANTAGES

The working parts and shafts are made of titanium and the background for the scale is not colored (remains grey) to improve the contrast of the digits. Patented gravity weight at the back of pre-op and single-step markers precisely stabilizes the scale while not interfering with your grip; comfortable gripping of the shaft.

• MICS and vitreoretinal instruments
  Consist of a tip and a universal handle.
  The branches of MICS, vitreoretinal forceps and scissors are manufactured from stainless steel, a material that ensures superior gripping/cutting function as well as the optimal stiffness and flexibility. Tip are available in 20/21/23/25 and 27 Ga.
  The intraocular part of the tip is finished with an anti-glare matte coating which eliminates the risk of light reflection in the course of a surgery.
  The universal handle is made of titanium. The property of this material contributes to durability of the entire instrument and minimizes its weight and consequently the surgeon’s hand fatigue.
  The universal handle can be used with any kind of Rumex tips* – this is the optimal solution for moneywise customers. Tips can be detached from the handles for better cleaning and sterilization to prevent inflammation after the surgery and expand the lifespan of a tool.

* HRC (Rockwell C Hardness) - a measuring unit of material hardness (i.e. resistance to penetration).
**Ultrata Capsulorrhexis Forceps**

- Curved jaws for excellent visibility
- Cystotome tips allow to make the first pinch
- Internal ruler for measuring the rhexis in the anterior chamber
- Ergonomic round handle
- 2 engravings (3, 6 mm)
- 4-03314T

**Rumex Capsulorrhexis Forceps with Cross Action**

- Titanium ergonomic and light weight handle
- Cross action prevents the viscoelastic leakage and protects the incision from hyperextension
- Cystotome tips for making the first pinch
- Curved shafts prevent corneal deformation during use
- 2 engravings (2.5 and 5 mm from the tip) for measuring the rhexis
- Micro incision pivot point fits comfortably through any incision down to 1.5 mm

**MICS Capsulorrhexis Forceps with Limiter**

- Maximum opening is 1.7 mm
- Features a limiter, that protects the incision from hyperextension, preventing the deformation of the cornea
- Cystotome tips allow to make the first pinch and to grip the capsule
- 2 engravings (2.5 and 5 mm) for measuring the rhexis
- A view-port for optimal visualization
- Ultra thin vaulted shanks allow to reach the anterior capsule within the limits of 1.5 mm incision
- < 1 mm wide in closed position!

- For small incisions
- For 1.5 mm incisions
CATARACT SURGERY

4-03742 LESIEUR CAPSULORRHEXIS FORCEPS 23Ga

Slightly curved and short 23 Ga shaft for efficient maneuverability

- Tip only
- Compatible with Universal Handle 12-003T
- Flushing adapter 12-000T is provided free of charge

7 engravings at 1, 2, 2.5, 3, 4, 5, 6 mm for perfect sizing of the rhexis

Micro jaws facilitate gripping of the capsule

- For sub 1 mm incisions

4-03771 KAWAI CAPSULORRHEXIS FORCEPS 23/25Ga

The distal part of the shaft is 25 Ga to protect the incision from hyperextension

The proximal part of the shaft is 23 Ga to reinforce the construction

Cystotome tips allow to make the first pinch

Special grooves for secure gripping

The construction of the forceps provides the least adverse effect on the wound

- Tip only
- Compatible with Universal Handle 12-003T
- Flushing adapter 12-000T is provided free of charge

- For sub 1 mm incisions

4-2145 IOL GRASPING FORCEPS 21Ga

- Designed to reach and hold the IOL optic and haptic
- Tip only
- Compatible with Universal Handle 12-003T
- Flushing adapter 12-000T is provided free of charge

Fenestrated jaws for better visualization and haptic manipulation

Sand-blasted surfaces for efficient and atraumatic gripping

- IOL manipulation
**7-0634/1 LESIEUR HYDROCHOPPER 20 Ga**
NEW MODEL WITH ENHANCED FLOW!

This unique design provides a tip that is efficient for chopping as well as manipulating the nucleus without endangering the posterior capsule. Lesieur Hydrochopper is developed especially for Bimanual Microphaco.

- Nagahara type chopper
- The end opening port provides maximum irrigation

Designed in cooperation with Gilles LESIEUR, M.D., France

The dual oval sideports 0.5 x 0.7 mm provide supplemental irrigation in case the front opening is overfilled.

- For sub 1 mm incisions

**7-0811 STODULKA ENHANCED IRRIGATION HANDBRIECE 21 Ga**
RECOMMENDED FOR BIMANUAL MICROPHACO AND FEMTOSECOND CATARACT SURGERY!

- Two ports on side 0.5x1.00 mm for optimal irrigation
- Bullet shaped tip facilitates the instrument insertion

Designed in cooperation with Pavel STODULKA M.D., Czech Republic

- For sub 1 mm incisions

**7-142 HOLZ CAPSULE CUSTODIAN**

Capsule polishing is an important step of phacoemulsification. Polishing the anterior capsule, removing posterior capsular plaque and other residual cortical debris help to achieve and maintain capsular clarity. At the same time, the polishing procedure must be performed with a safe and delicate instrument. This capsule polisher is designed to simultaneously clean the posterior capsule and anterior capsule after cortex removal.

- The leading edge and abrasive bottom surface remove posterior capsular debris
- The dorsal ridge scrapes cellular remnants from the under surface of the anterior capsule rim
- Capsule polishing

Designed in cooperation with Huck Holz, M.D., USA
CATARACT SURGERY

15-170 MICROINCISIONAL CAPSULE POLISHER 23 Ga

- Curved tube for better visualization
- Texturized tip for delicate and efficient capsule polishing
- Specially designed for scrubbing all parts of the capsular bag
- Obtains performing a procedure through a sub-2-mm incision

20-204 SPATULA FOR FEMTOSECOND LASER CATARACT

The newly designed spatula for Femtosecond laser cataract is developed to open and spread the incision and to reach the anterior chamber.

- Specially designed for Alcon LenSx® Laser.
- Also compatible with incisions made by VICTUS™ Femtosecond Laser Platform (Bausch & Lomb).

1.4 mm length flat tip is safe for the wound edges

4-0582S FORCEPS FOR FEMTOSECOND LASER CATARACT PROCEDURE

Cross action facilitates the incision opening

Ultra thin delicate tips are safe for the wound edges

The incisions made by Femtosecond laser must be opened with a special blunt-ended instrument. The new forceps with cross action design obtain quick and safe incision opening.
**LASIK FLAP FORCEPS**

- Curved shafts for better visualization of the corneal surface
- Blunt, circle-shaped tips are safe for the cornea
- Criss-cross serrated jaws for atraumatic corneal flap lifting and holding

---

**STODULKA RELEX SMILE DOUBLE SPATULA**

- Disk-shaped blade for efficient dissection
- Polished tip for the identification of the tip position
- Fine flat spatula to open the intrastromal pocket

*Pocketing spatula for creating the entrance and intrastromal pocket dissector.*

---

**STODULKA FORCEPS FOR SMALL-INCISION LENTICULE EXTRACTION**

- Special configuration of the branches for comfortable gripping
- Ultra thin tips are safe for the pocket walls
- Combination of the tips surface (texturized & crocodile) for efficient grasping of the lenticule

*Designed to grasp the lenticule and remove it from the corneal pocket.*
GAUGES & MARKERS

ADLER WOUND GAUGE
This instrument is used to measure incision width and depth (peripheral to central dimension) of a corneal / limbal wound.

2-064T
2.0-2.5 mm

2-065T
2.5-3.0 mm

VELASQUEZ GRAVITY TORIC MARKER
REFERENCE MARKER WITH 4 BLADES FOR BETTER CYCLOTORSION CONTROL
Ergonomic light weight titanium handle

Weight at the back for comfortable gripping of the marker and precise centration

Marks the horizontal and vertical meridians of the visual axis

The outer ring protects blades from damage

The central 5 mm ring serves as a guide for capsulorrhexis

3-195

RICHMAN TORIC MARKER
SINGLE-STEP MARKER FOR MARKING THE AXIS FOR IOL PLACEMENT
Ergonomic handle is angled to avoid the lower eyelid when marking while still being able to rest your hand on the patient’s cheek for stability

Gravity weight is at the back of the marker, precisely stabilizing the scale while not interfering with your grip

There is a wide central opening for better centration when marking

The outer barrel has indentations which make it easy to rotate

New design makes markings and degree scale more visible, allowing better accuracy

3-196

Designed in cooperation with Jaime Velasquez O’Byrne M.D., Colombia

Designed in cooperation with Jesse Richman, M.D., USA
**GROOVED FINE MENDEZ DEGREE GAUGE**

- Calibrated every 5 degrees from 0° to 180° for precise marking
- Better visualization with ULTRATHIN 2 mm ring

**RUMEX DEGREE GAUGE WITH BEVELED FACE**

- Calibrated every 5 degrees from 0° to 180° for precise marking
- Beveled face minimizes the microscope glare
- Markings are clearly visible providing high accuracy
- External diameter 16 mm

**BORES AXIS MARKER**

- This instrument is specially designed for 2-034T and 2-036T for precisely marking the axis.

---

The optimal placement of Toric IOL is essential, because a slight misalignment leads to error of correction, loss of image clarity and it is impossible to resolve the problem without re-operation. A pair of instruments (degree gauge + bores axis marker) helps to produce accurate marks of the desired axis for IOL placement.
24-043  DALK SET
Full set of instruments for “Big Bubble” procedure performance

15-450-27

13-172  DISSECTOR FOR DALK
Designed to find and maintain the interface plane during dissection
• Obtains delicate preparation for “Big Bubble” procedure

Blunt beveled tip for creating a track in deep stroma for the further DALK Cannula inserting

15-450-27  CANNULA FOR DALK PROCEDURE 27Gα
Bottom port cannula for air injection
13-170 TRISECTOR FOR DALK

- Blunt bottom surface is safe for Descemet’s membrane
- The anterior surface has an edge that facilitates the enlarging of stromal opening with a blade
- Facilitates separating the rest of stromal attachments from the Descemet’s membrane at the periphery.

13-171 SPATULA FOR DALK

- Blunt bottom surface is safe for Descemet’s membrane
- The center groove can be used as a guide for the blade facilitating the enlarging of stromal opening

11-038S Right
11-0381S Left
SCISSORS FOR DALK PROCEDURE

- Used to remove the 4 parts of separated stromal layers after the “Big Bubble” procedure
- Special blunt ledge protects Descemet’s membrane from the blades

13-160 MANIPULATOR FOR DLEK

- Special manipulator designed to tuck into place the donor lamella edge
DRY EYE SYNDROME

Physical expression of blocked glands has the goal of removing the obstruction and emptying the inflamed gland.

4-1913T  COMpressing Lid Forceps

• This instrument obtains quick and delicate meibum expression by equally compressing the eyelid from the internal and the external sides.

4-124S  COMpressing Lid Forceps with Atraumatic Rollers

• The forceps are designed for mechanical meibum removal from lids.

Texturized rollers are safe for the conjunctiva and obtain quick and delicate meibum expression by equally squeezing of the eyelid from its base to the margin.
12-420-23  END GRASPING FORCEPS

- Allows to perform great ILM peeling and safely holds all other types of membranes
- Available in 23/25/27Ga
- Tip only
- Compatible with Universal Handle 12-003T
- Flushing adapter 12-000T is provided free of charge

Asymmetrical shape for better visualization of the grasped tissue

12-4013  END GRASPING FORCEPS

- Strengthened jaws ensure enhanced gripping power
- Available in 23Ga
- Tip only
- Compatible with Universal Handle 12-003T
- Flushing adapter 12-000T is provided free of charge

Expanded space between branches contributes to greater visualization of the grasped membrane in macular area

12-304-23  GRIPPING FORCEPS WITH “CROCODILE” PLATFORM

- Designed for the removal of epiretinal membranes
- Improved grasping capacity
- Available in 20/23/25Ga
- Tip only
- Compatible with Universal Handle 12-003T
- Flushing adapter 12-000T is provided free of charge

Blunt, atraumatic serration prevents tissue shredding
NEW FOR HANDLING

We are pleased to introduce you new products for efficient handling.

TIP GUARDS
- Excellent protection
- Clear for visual control
- Perforated to enhance sterilization

<table>
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<tr>
<th>RUMEX ref number</th>
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<th>DIMENSIONS (W x H), in.</th>
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<td>21-3037</td>
<td>1.5 x 9.7</td>
<td>0.06 x 0.38</td>
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MARKING TAPES
- Comfortable instrument handling
- Precut for easy application
- Waterproof, detergent resistant and may be sterilized

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FACTS ABOUT STAINLESS STEEL

Stainless steel is the most popular raw material for manufacture of surgical instruments. It is an alloy that consists of different elements making it more resistant to staining and corrosion. Note, that the term "stainless steel" literally means that this steel is "stain-less", however it is not completely stain resistant.

Unlike rust, which is permanent, most stains can be removed from the instrument and it is important to define and understand the type of the stain and the reason it is caused by. Below is the description of most common stains:

a. brown/orange stains: could indicate rust, but may also be caused by another reason. To find out the true cause, rub the stain with an eraser. If under the stain a pit mark is revealed, it is rust. If the surface underneath is smooth, then the possible cause of stain could be baked-on blood, cold sterilization solution, saline solution or inappropriate detergents.

b. black stains: could be caused by acids, bleach or ammonia.

c. black/dark brown stains: could be caused by impact of dried blood, inappropriate detergents or acid.

d. blue-black stains: could be caused by processing together different types of metal in the ultrasonic cleaner or steam autoclave sterilizer.

e. light and dark spots: could be caused by mineral deposits from water spots if the instruments are air dried and demineralized water is not used.

FACTS ABOUT TITANIUM

Titanium is a lustrous transition metal having a metal-white color, low density and high strength. It is highly resistant to corrosion which makes it commonly used for variety of applications including medical instruments.

The popularity of titanium for surgical instruments is greatly increasing. There are several advantages to using titanium for surgical instruments. Titanium is lightweight compared to stainless steel yet strong. Also, it is non-magnetic. A needle holder, for example, will not stick to the titanium instrument as it can with stainless steel. The undeniable advantage of titanium is its high corrosion resistance. Rumex considers all advantages and disadvantages for each particular instrument and offers several of them in both versions; stainless steel and titanium. Item numbers ending in a "t" are made of titanium. Item numbers ending in a "s" are made of stainless steel.
EXAMINING NEW INSTRUMENTS AND PREPARING THEM FOR A FIRST USE

While we at Rumex do our best to guarantee the most proficient performance of the instruments you get, we recommend to carefully check each new instrument right when you receive it and before its first use. Complete the following actions:

1. Gently take out the item from the package.
2. Examine the instrument (paying special attention to most delicate parts and mechanisms) under magnification or microscope to make sure that the instrument is in an ideal condition.

In case any problem is detected, advise us immediately.

If inspection of new instruments proves that the instruments are in perfect condition, you can move on to cleaning and sterilization as further described herein.

*Note: even new instruments should be cleaned and sterilized before the first use.*

REPROCESSING THE INSTRUMENTS AFTER THE USE

Shortly after an instrument has been used in surgery a reprocessing of an instrument and its preparation for the next use should be held. The sooner preparation begins, the better are the chances to avoid debris and fluids drying up on the instrument. It is important because dried fluid or debris are much harder to be removed.

Thus wiping or rinsing an instrument during use, or soon after, is a must-do measure to avoid accumulation of dried matter on the instrument. Always keep instruments moist until they can be thoroughly cleaned. Thorough cleaning and decontamination helps to avoid dried debris stuck in less accessible areas and therefore is fundamental for following sterilization.

The reprocessing consists of the following points:
- manual cleaning
- ultrasonic cleaning
- final inspection after cleaning
- lubrication
- sterilization and storage

*Note: Cleaning is obligatory before sterilization of ophthalmic surgical instruments.*

Cleaning refers to removal of visible and invisible soil (blood, proteins, etc.) from the surfaces, crevices, lumens and joints of surgical instruments.

MANUAL CLEANING

Immediately after surgery:
1. Using a wet sterile wipe carefully remove soil from instruments.
2. Rinse all instruments (including the unused ones) in a tray with demineralized water.
3. Keep instruments sunk in a tray with demineralized water until further cleaning can be performed.
RUMEX HANDLING MANUAL

As soon as possible after surgery:
1. Disassemble the movable parts of the instrument, carefully setting apart the items, not to intermix them with the parts of similar instruments.
2. Make cleaning of all parts of the instrument using a soft brush for stubborn stains and less accessible areas such as crevices, serrations, joints etc. Keeping these areas clean from drying matter will protect instruments from corrosion development.

Note: It is better to use disposable brushes for cleaning, otherwise properly clean brushes after each use. Never use metal brushes, steel wool or abrasive powders as they can deeply damage the superfine finish of the instrument thus increasing the chances for further corrosion.

3. Flush the instruments with demineralized water injecting it from the syringe. Make sure not to contaminate the water other instruments are submerged into.
4. If manual cleaning will be followed by ultrasonic cleaning keep the instruments moist until it begins. Otherwise dry the instruments either by a lint-free cloth or by a hot air blower. Ensure to scrupulously dry all parts of the instruments including joints, serrations etc. since excessive moist left on can result in corrosion.

Note:
- do not allow any foreign matter (viscoelastic, protein residue, medicines etc.) to dry on instrument
- use only special detergents and cleaning solutions suitable for cleaning of stainless steel and titanium surgical instruments. Do not use corrosive cleaning agents, for instance, bleach. Use the agents with neutral pH as the higher pH (8-11pH) will harm the metal surface of the instrument which can lead to corrosion.

ULTRASONIC CLEANING

Ultrasonic cleaning is the best way to clean delicate instruments from solid debris by means of high-frequency sound waves, especially in the less accessible areas.

Note: Before proceed with ultrasonic cleaning all visible soil should be removed from the instrument by means of manual cleaning.

Due to vast variety of the ultrasonic cleaners on the market better follow instructions of each particular manufacturer. Nevertheless the following general rules can be outlined:

1. Use a dedicated ultrasonic cleaner for ophthalmic surgical instruments only.
2. Heat water for ultrasonic cleaning up to 65 C (150F) to optimize the effect of cleaning.
3. Use clean water for ultrasonic bath. If you notice trails of debris, dirt or other contamination – replace the demineralized water with new one.
4. Clean instruments of different metals separately so that they would not get in contact with one another.
5. Use a special cleaning solution approved for cleaning of surgical instruments.
6. To provide safe cleaning and protect delicate parts of the instruments, such as tips, make sure that the instruments do not touch one another.
7. Use silicon fingertip mats to safely position the instruments inside the ultrasonic cleaner's bath.
8. 5 min is enough for regular ultrasonic cleaning but for stubborn stains it can take more time.
9. After ultrasonic cleaning is over, rinse the instruments under the running water then give them a final bath of demineralized water.

10. Properly dry the instruments by a lint-free cloth or a hot air blower remembering that excessive moisture left on the instrument can lead to corrosion.

11. Make a regular daily maintenance of the ultrasonic cleaner according to recommendations of the manufacturer.

**FINAL INSPECTION AFTER CLEANING**

After ultrasonic cleaning inspect each instrument under magnification to make sure that instruments are perfectly clean and do not have any debris left and no damage occurred to them during cleaning.

In case there is debris still left on any instrument, proceed with additional cleaning and rinsing.

Damaged instruments should be put aside from the set for further repair or replacement.

*Note: Do not try to repair an instrument yourself. A repair should be carried out by a qualified technician. Follow Rumex instructions to return the instrument for repair.*

**LUBRICATION**

If on this stage some instruments require lubrication follow below guidelines:

- Use a lubricant approved and suitable for surgical instruments.
- Considering that further on a sterilization will be performed as a next step of the reprocessing routine, we recommend you to use a high temperature resistant lubricant, such as Teflon or silicon spray.
- Ordinary lubricant oils should never be used as they become gummy under the influence of high temperature during steam autoclaving.
- Apply a lubricant to the instrument's moving parts, locks, joints etc.
- If you use lubricating baths for micro-surgical instruments make sure that instruments are absolutely free of stains and corrosion. It is highly important because lubricant covers the corrosion thus helping it to eat deep into the steel during autoclaving and heavily damage the delicate parts of the instruments.

**STORAGE**

For safe storage and sterilization of instruments Rumex offers special plastic sterilization trays of different sizes. The trays include silicon fingertip mats which allow keeping the instruments in place at the same time preventing the contact of instruments with each other. All trays and mats are perforated thus providing circulation of steam and drainage during sterilization.
### RUMEX Handling Manual

All micro surgical instruments especially their most delicate parts such as tips, blades etc. should be handled most carefully during transportation, cleaning, use, sterilization and storage.

- Instruments should be stored at dry place at ambient temperature
- Better keep the instruments in a tray they were sterilized in. Do not move them from one tray to another after sterilization if this can be avoided.
- Instruments in a tray should not get in contact with each other.
- Use sterilizing trays with fingertip mats to solidly position instruments inside a tray thus avoiding its movement and damage during storage or handling.
- **Diamond knives should be sterilized and stored in the separate trays.**
- Put tip guards on tips of the instruments to protect them during storage. Take care not to damage delicate tips during this procedure. Tip guards are clear for visual control in order to preserve the tips integrity and they are perforated and thus suit for sterilization. They are designed to enhance sterilization and protection for instruments during the sterilization procedure. The flow-through vents allow full-impact sterilization yet they protect tips and edges from breaking and chipping. We recommend to change tip guards frequently to ensure best protection.

<table>
<thead>
<tr>
<th>RUMEX ref number</th>
<th>DESCRIPTION</th>
<th>DIMENSIONS (LxWxH)</th>
</tr>
</thead>
<tbody>
<tr>
<td>18-300</td>
<td>with 1 silicone plug-in insert, 1 level</td>
<td>190 x 101 x 38 \ 7.5 x 4 x 1.5'</td>
</tr>
<tr>
<td>18-301</td>
<td>with silicone finger tip mat, 1 level</td>
<td>152 x 63.5 x 19 \ 6 x 2.5 x 0.75'</td>
</tr>
<tr>
<td>18-301-1</td>
<td>with 2 silicone plug-in inserts, 1 level</td>
<td>152 x 63.5 x 19 \ 6 x 2.5 x 0.75'</td>
</tr>
<tr>
<td>18-302</td>
<td>with silicone finger tip mat, 1 level</td>
<td>165 x 101 x 19 \ 6.5 x 4 x 0.75'</td>
</tr>
<tr>
<td>18-303</td>
<td>with silicone finger tip mat, 1 level</td>
<td>190 x 101 x 19 \ 7.5 x 4 x 0.75'</td>
</tr>
<tr>
<td>18-303-1</td>
<td>with 4 silicone plug-in inserts, 1 level</td>
<td>190 x 101 x 19 \ 7.5 x 4 x 0.75</td>
</tr>
<tr>
<td>18-304</td>
<td>with silicone finger tip mat, 1 level</td>
<td>254 x 152 x 19 \ 10 x 6 x 0.75'</td>
</tr>
<tr>
<td>18-305</td>
<td>with silicone finger tip mats, 2 levels</td>
<td>254 x 152.4 x 38 \ 10 x 6 x 1.5'</td>
</tr>
<tr>
<td>18-305-1</td>
<td>with 3 silicone plug-in inserts, 1 level</td>
<td>254 x 152.4 x 38 \ 10 x 6 x 1.5'</td>
</tr>
<tr>
<td>18-307</td>
<td>with silicone finger tip mat, 1 level</td>
<td>68.6 x 25.4 x 38 \ 3 x 1.5 x 1'</td>
</tr>
<tr>
<td>18-308</td>
<td>with silicone finger tip mat, 1 level</td>
<td>190.5 x 63.5 x 19 \ 7.5 x 2.5 x 0.75'</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>RUMEX ref number</th>
<th>DIMENSIONS (W x H), mm</th>
<th>DIMENSIONS (W x H), In.</th>
</tr>
</thead>
<tbody>
<tr>
<td>21-2011.50, 21-2011.5</td>
<td>1.5 x 19.1</td>
<td>0.06 x 0.75</td>
</tr>
<tr>
<td>21-2012.50, 21-2012.5</td>
<td>2.0 x 19.1</td>
<td>0.08 x 0.75</td>
</tr>
<tr>
<td>21-2013.50, 21-2013.5</td>
<td>2.8 x 19.1</td>
<td>0.11 x 0.75</td>
</tr>
<tr>
<td>21-2014.50, 21-2014.5</td>
<td>3.3 x 25.4</td>
<td>0.13 x 1.00</td>
</tr>
<tr>
<td>21-2015.50, 21-2015.5</td>
<td>4.8 x 25.4</td>
<td>0.19 x 1.00</td>
</tr>
<tr>
<td>21-2017.50, 21-2017.5</td>
<td>1.5 x 9.7</td>
<td>0.06 x 0.38</td>
</tr>
<tr>
<td>21-2018.50, 21-2018.5</td>
<td>2.0 x 16</td>
<td>0.08 x 0.63</td>
</tr>
<tr>
<td>21-2019.50, 21-2019.5</td>
<td>3.3 x 25.4</td>
<td>0.13 x 1.00</td>
</tr>
<tr>
<td>21-2037.50, 21-2037.5</td>
<td>1.5 x 9.7</td>
<td>0.06 x 0.38</td>
</tr>
</tbody>
</table>
Rumex recommends using marking tapes for more comfortable instruments handling. We offer precut tapes to make the application easier. Various colors are available. This product is waterproof, detergent resistant and may be sterilized both by washing and by steam. It will help to make your instruments individual, to identify them easily during surgery/sterilization, and to avoid their misuse.

<table>
<thead>
<tr>
<th>RUMEX ref number</th>
<th>TYPE</th>
<th>COLOR</th>
</tr>
</thead>
<tbody>
<tr>
<td>21-4005.5, 21-4005.1</td>
<td>Purple</td>
<td></td>
</tr>
<tr>
<td>21-4008.5, 21-4008.1</td>
<td>Yellow</td>
<td></td>
</tr>
<tr>
<td>21-4009.5, 21-4009.1</td>
<td>Orange</td>
<td></td>
</tr>
<tr>
<td>21-4010.5, 21-4010.1</td>
<td>Red</td>
<td></td>
</tr>
<tr>
<td>21-4012.5, 21-4012.1</td>
<td>Green</td>
<td></td>
</tr>
<tr>
<td>21-4017.5, 21-4017.1</td>
<td>Zebra Yellow</td>
<td></td>
</tr>
<tr>
<td>21-4019.5, 21-4019.1</td>
<td>Zebra Red</td>
<td></td>
</tr>
<tr>
<td>21-4021.5, 21-4021.1</td>
<td>Zebra Green</td>
<td></td>
</tr>
<tr>
<td>21-4023.5, 21-4023.1</td>
<td>Zebra Brown</td>
<td></td>
</tr>
<tr>
<td>21-4025.5, 21-4025.1</td>
<td>Zebra Purple</td>
<td></td>
</tr>
</tbody>
</table>

**STERILIZATION**

Stainless steel and titanium instruments can be sterilized via steam autoclaving, chemical disinfectants, ethylene oxide gas, or even dry hot air. Gas and dry chemical sterilization are the best methods for stainless steel instruments, but it takes a lengthy time period to accomplish the desired result. The most practical method of sterilization is heat or steam, which require less time, however, these methods can be damaging to delicate stainless steel instruments. Please, be sure that you and the members of your staff have read and understood the instructions supplied by the manufacturer of your particular sterilizer.

**Sterilization Cycles**

Finally, the instrument should be sterilized prior to the next surgical procedure. Rumex instruments can be sterilized using any of the following methods:

<table>
<thead>
<tr>
<th>100% ETO cycles</th>
<th>Concentration ETO</th>
<th>850±50mg/l</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Temperature</strong></td>
<td>37°C - 47°C</td>
<td></td>
</tr>
<tr>
<td><strong>Exposure time</strong></td>
<td>3-4 hours</td>
<td></td>
</tr>
<tr>
<td><strong>Humidity</strong></td>
<td>70% RH minimum</td>
<td></td>
</tr>
</tbody>
</table>

**STEAM AUTOCLAVING**

<table>
<thead>
<tr>
<th>Sterilizer Type</th>
<th>Gravity</th>
<th>Displacement</th>
<th>Prevacuum</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Sample Configuration</strong></td>
<td>wrapped</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Temperature</strong></td>
<td>121°C to 123°C</td>
<td></td>
<td>132°C to 135°C</td>
</tr>
<tr>
<td><strong>Exposure time</strong></td>
<td>15 to 30 minutes</td>
<td></td>
<td>3 to 4 minutes</td>
</tr>
</tbody>
</table>
The above-mentioned sterilization cycles represent the industry standards and should be capable of producing a sterile device. Due to variations in sterilization equipment and device bioburden in clinical use, Rumex International Co. is not able to provide specific cycle parameters. It is the responsibility of each user to perform the validation and verification of the sterilization cycle to ensure an adequate sterility assurance level for our products.

Do not use sterilization as a sole method of instruments reprocessing. Make sure to complete all previous steps thoroughly described above.

Keep in mind that flash sterilization is meant for immediate-use of instrument and should not substitute the standard reprocessing routine.

Make weekly check of steam autoclave error-free performance and carry out regular maintenance of sterilizer according to manufacturer instructions.

**REPAIRS**

Since most Rumex instruments are delicate and precise and are handmade by a qualified and specially trained technician, never try to make repairs yourself. Repair of fine and delicate instruments used for eye surgery requires special skills and knowledge otherwise it can end up with damage to the instrument.

To be sure that repair of your instruments is in hands of professionals, follow Rumex Repair Program. Contact us for further details.
Rumex Instruments (ophthalmic scissors and forceps for vitreoretinal and microincisional surgery) are designed for various applications in ophthalmic surgery. It is essential that the instrument is cleaned and sterilized before initial use and after each surgery following as outlined in this instruction brochure.

**CARE AND HANDLING**

Intraocular tips have a delicate precision mechanism inside. Intraocular fluids will enter this mechanism during surgery. If these fluids are not promptly and properly cleaned out, it will lead to corrosion or clogs and the possibility of instrument malfunction. Proteins may also accumulate inside of the mechanism.

Make sure the cleaning procedure is implemented after each surgery - *warranty shall not extend to instruments that have not been handled in the proper way.*

If an instrument cannot be cleaned immediately after the surgery, it needs to be soaked in demineralized water to prevent residue from drying inside or on the surface of the tip.

**CLEANING**

1. Unscrew the tip from the handle, then attach flushing adapter 12-000T:

2. Flush the tip with distilled or deionized water by connecting syringe filled with water to adapter, push gently:

3. Flush the tip with isopropyl alcohol. This will remove the water and facilitate drying.
4. Dry the tip by forcing one or two syringes full of air through tip. Pressurized air is recommended, as it flushes out debris and fluid more efficiently than syringe forced air. Thoroughly dry handle and tip.
5. Force special *thermo resistant* instrument milk through the tip, as in No 2 above.
6. Dry with air as in No 4 above.
7. Handle should be soaked in distilled or deionized water for two minutes.
8. Dry with surgical sponge. Do not scrub.
9. Lubricate joints in handle with instrument milk and work the mechanism by pressing the key.

**INSTRUMENT DETERGENTS AND/OR CLEANERS**

Only detergents and cleaners specially designed for use on surgical stainless steel or titanium instruments are acceptable for use in the cleaning process. The cleaning guidelines of the solution manufacturer and your institution should be observed.
ULTRASONIC CLEANING EQUIPMENT

An ultrasonic cleaner could also be used in the instrument cleaning process, but not as the sole cleaning method. The instrument should, at the very least, be flushed with distilled water prior to being placed in the ultrasonic cleaner. A five to ten minutes cycle in the ultrasonic cleaner should be sufficient. The instrument must be secured on a silicone finger mat during the ultrasonic cleaning procedure. Special care should be taken to make certain that the tip of the instrument does not come into contact with the sides of the ultrasonic container, as this will damage the instrument.

Rumex International Co designed two models of safety protectors made of teflon (which is autoclavable). We suggest that each tip should be inserted into a safety protector and then placed to the cleaner. The diagrams below illustrate the way to secure a tip in a protector.

<table>
<thead>
<tr>
<th>VITREORETINAL INSTRUMENTS</th>
<th>MICROINCISIONAL INSTRUMENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Please insert the tips into teflon protectors as shown in the picture</td>
<td>Introduce the tube inside the protector and lift the tip until the nut is embedded in the hub</td>
</tr>
<tr>
<td>Juxtapose the nut indicating the gauge with the hub, press the tip gently</td>
<td>Make sure the branches do not touch the protector</td>
</tr>
<tr>
<td>The tips in their final position - safely fixed by the protector</td>
<td></td>
</tr>
</tbody>
</table>

Note: the tips should be sterilized in the protector to avoid any contact with other instruments

LUBRICATION

Moving parts and working mechanisms of Rumex instruments should be lubricated occasionally with a medical grade instrument lubricant (especially after an ultrasonic bath) to ensure the smooth operation of the working mechanism. The recommended directions of the instrument lubricant manufacturer should be observed.

STORAGE

General storage conditions: ambient air temperature from +5°C to +40°C (+40°F to +105°F) and relative air humidity should not exceed 80%. Surgical instruments should be stored in the sterilizing trays of proper size lined with soft silicone mats. Instruments should not touch each other.
STERILIZATION

Stainless steel and titanium instruments can be sterilized via steam autoclaving, chemical disinfectants, ethylene oxide gas, or even dry hot air. Gas and dry chemical sterilization are the best methods for stainless steel instruments, but they take a lengthy time period to accomplish the desired result. The most practical method of sterilization is heat or steam, which require less time, however, these methods can be damaging to delicate stainless steel instruments. Please be sure that you and the members of your staff have read and understood the instructions supplied by the manufacturer of your particular sterilizer.

STERILIZATION CYCLES

Finally, the instrument should be sterilized prior to the next surgical procedure. Rumex instruments can be sterilized using any of the following methods:

100% ETO cycles:
- Concentration ETO: 850±50mg/l
- Temperature: 37°C - 47°C
- Exposure time: 3-4 hours
- Humidity: 70% RH minimum

<table>
<thead>
<tr>
<th>STEAM AUTOCLAVING</th>
<th>'FLASH' AUTOCLAVING</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sterilizer Type</td>
<td>Gravity Displacement</td>
</tr>
<tr>
<td>Sample Configuration</td>
<td>wrapped</td>
</tr>
<tr>
<td>Temperature</td>
<td>121°C to 123°C / 250°F to 253°F</td>
</tr>
<tr>
<td>Exposure time</td>
<td>15 to 30 minutes</td>
</tr>
</tbody>
</table>

The above-mentioned sterilization cycles represent the industry standards and should be capable of producing a sterile device. Due to variations in sterilization equipment and device bioburden in clinical use, Rumex International is not able to provide specific cycle parameters. It is the responsibility of each user to perform the validation and verification of the sterilization cycle to ensure an adequate sterility assurance level for Rumex products.

INSPECTION

Be sure to inspect every microsurgical instrument at the end of your surgical day. Please conduct this inspection under a microscope or magnification lens. If a damaged instrument is detected, repair or replace it.
INSTRUCTION FOR USE
Diamond Knives

APPLICATION
Ophthalmic microsurgical knives with diamond blades are used for cutting and dissection of tissue during ophthalmic, microvascular, neurosurgical and plastic surgery.

Usage conditions: laboratory and residential facilities at ambient air temperature from +10° to +35°C (+50° to +95° F) and relative air humidity up to 80% at 25°C, protected from direct sunlight, dust, atmospheric or water condensation.

CHARACTERISTICS
Blades are made from natural diamonds. Handles are manufactured from titanium alloy. Blade size: The width of the diamond blade cutting edge must be at most 0.2 μm. Blade points must be edged. Blade blunting radius must be at most 0.2 μm. No chips (visible at 100x power magnification) on the blade cutting edge are permitted. The average life span of knives is at least 3 years (or 200 cyclic processes).

DEVICE
Diamond knife consists of a handle and a diamond blade. The handle is fitted with the mechanism providing blade installation and its safe fixation in operative and non-operative position.

The construction of a knife can be changed in order to improve its usability.

COMPLETE UNIT
Each complete set contain:
- diamond knife – 1 unit
- a label – 1 unit
- care and cleaning instructions – 1 unit

USAGE
1. Taking into consideration the fragility of the diamond blade, each knife is required to be handled, cleaned and stored delicately. No blows or vibrations are permitted. Any contact of the blade with other instruments or materials should be avoided.
2. Before using a knife make sure there are no chips on the cutting edge. A microscope with at least 100x power magnification should be used for the inspection.
3. When transporting knives, the blades should be retracted (non-operative position). We recommend the knives are transported in sterilizing cases or special containers to avoid self-movement.

When first purchased, the knives will be shipped with a clamp to keep the blade retracted.
4. Please rotate the movable part of the handle clockwise and fix the blade to set the knife in operative position. The blade is to be set in the operative position during surgical operation just before the usage.

5. After using, pull the movable part of the handle slightly downwards and rotate it counter clockwise to retract the blade. To avoid accidental movements of the spring, please make sure the handle is closed tightly. When completely closed, a slight click will be heard.

6. To install the knife with a micrometer, pull the protective cap down and rotate the bottom part of the handle (with a scale) downwards – the blade will appear. Customize the length of the blade by screwing the handle – the scale marks will indicate the chosen length. The scale increment is 0.5 mm. Rotate the handle upwards, then put on the protective cap to retract the blade.

The service life of instruments depends on delicate handling. Do not drop the instruments. The blade must never be in contact with foreign objects. The blade and moving-out spring mechanism should be treated with care. Never disassemble the parts of a knife.

**PRESTERILIZATION TREATMENT AND STERILIZATION**

Presterilization treatment includes a number of procedures. Please remember to clean the blade and the movable part of the handle, remove blood, tissue debris and viscoelastic directly after the operation (or within 2 hours).

For Manual Cleaning:
- soak instruments in a weak alkaline cleaning solution for 60 minutes at a temperature of +22°C (+72°F);
- clean the knife handle, including the movable part, with a soft brush;
- flush the instruments with running water for 30 seconds, then with distilled water for an additional 30 seconds.

We recommend using a diamond knife cleaning pack (21-602-1) for gentle cleaning of the blade. The pack contains three solutions that eliminate residual debris off the blade and prepare it for sterilization.

Diamond knives can be cleaned in an automatic washer designed for micro-surgical instruments. Please follow the operating instructions from the manufacturer.

Do not use ultrasonic baths to wash diamond knives as this can damage the blade.

Sterilization is best achieved by using a steam autoclave. Dry instruments in a drying cabinet at a temperature of +85°C (+185°F) until completely dry. Sterilization achieved under the pressure up to 0.2 MPa at a temperature of +132°C (+270°F) for 20 minutes. The maximum temperature for sterilization is +141°C (+286°F). Make sure the blade is in the non-operative position before sterilization; self-movement must be avoided. We recommend sterilizing the knives in trays specially designed for diamond knives – silicone holders will hold them securely.

Nowadays various models of sterilizing machines are produced – please always follow the manufacturers' instructions.
**INSTRUCTION FOR USE**

Diamond Knives

**STORAGE**

Diamond knives must be stored at a temperature from +10° to +35°C (+50° to +95°F) and relative air humidity not more than 80% at 25°C in well-heated and protected from dust facilities. Indoor air must not contain corrosive additive agents. The blade must be fully retracted (non-operative position); self-movement must be avoided.

**MANUFACTURER’S WARRANTY**

Manufacturer guarantees knives to be in accordance with the documentation when service and storage instructions are followed by the consumer.

We provide a 2 year guarantee for the moving-out spring mechanism and titanium parts. The diamond blade can be resharpened or exchanged according to the after-sale service program.

**INSPECTION**

Incoming inspection is obligatory. It includes:
- visual examination of the package obtained (no mechanical damages are permitted);
- visual inspection of the knife (no mechanical damages such as cracks, chips, oxide scales etc. are permitted; all parts of the knife must be joined smoothly);
- a blade must be set into the operating/non-operating position without jamming; it must be fixed easily.

*The knives you purchase are not sterile and should be sterilized before the first surgery. Please examine the blade before each operation and never use a knife if any defect is noticed – we can always provide you with resharpening or blade replacement.*