



# NEW INSTRUMENTS

+ Instruments Handling Manual



**AFFORDABLE  
INNOVATIONS**



# CONTENTS

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## HOW TO PLACE AN ORDER

All the orders can be easily placed and paid online according to your shipping location directly via one of RUMEX online stores or through your local RUMEX representatives.



If your shipping country is USA you are welcome to order at [rumex.us](https://rumex.us).



If your shipping country is within the EU please visit [rumex.eu](https://rumex.eu) to make your order.



For other regions visit [rumex.com](https://rumex.com) and find your local RUMEX representative.

### Pricing

The pricing policy may vary from region to region. If you are an international customer, please ask your local distributor for the current prices.

### Shipping

We provide our retail customers with two delivery options: via local distributor or by direct shipment from our warehouses. Purchasing with our company is simple and convenient. Processing orders quickly and efficiently is a matter of primary importance to us!

### Warranty conditions

For all instruments, RUMEX provides a lifetime warranty against any manufacturing or material defects. After carrying out a due expert analysis, if the defect was not caused by the improper handling or misuse, we will provide you either a 100% compensation or a free of charge exchange of a defective instrument for a new one. In some cases when instruments are improperly used or mishandled this may lead to occurrence of non-manufacturing defects which are not covered by RUMEX lifetime warranty. To avoid such cases please read carefully and always follow our sterilization and care instructions or consult our customer service for proper handling instructions.

+ 1 727 535 9600 (for USA, Canada)

+ 371 6616 3182 (for Europe, Asia, Africa, Latin America)

# MOST POPULAR INSTRUMENTS IN TITANIUM AND STAINLESS STEEL!

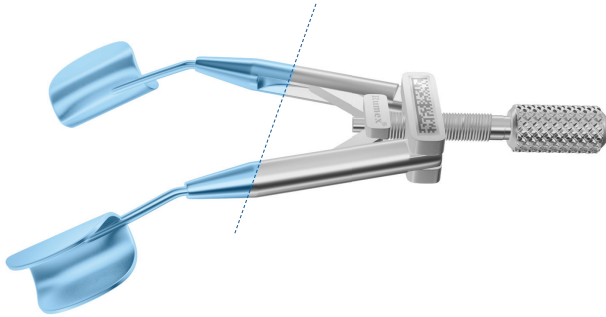
## TITANIUM

- Immune to rust
- Resistant to mechanical, chemical, temperature stress
- Anti-magnetic
- Lightweight

## STAINLESS STEEL

- High strength and resistance to brittle fracture
- Hardened by heat treatment – increased durability
- Best for blades and instrument tips – enhanced sharpness and accuracy

## TITANIUM or STAINLESS STEEL



- FORCEPS
- NEEDLE HOLDERS
  - SPECULUMS
  - MARKERS
  - GAUGES
- RUMEX UNIVERSAL HANDLE

**CHOOSE THE MATERIAL YOU PREFER!**

AND A VARIETY OF OTHER INSTRUMENTS CAN BE ORDERED IN STEEL!

14-045T

## Lancaster Eye Speculum, Adjustable Mechanism with Locking Nut

Solid-shaped slightly curved blades fit orbital margin, keep eyelashes from the surgical area, and provide optimal view.

Spring-control with locking mechanism and stabilizing disk

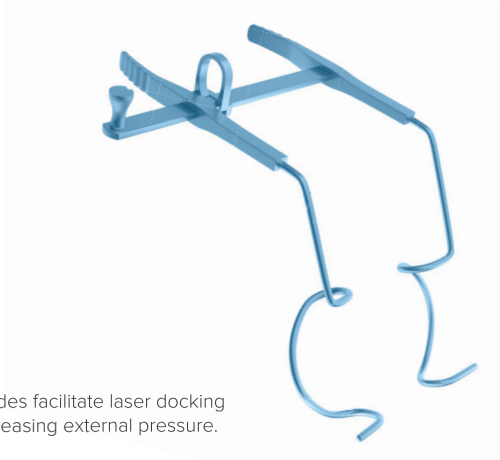


Non-reflective finish eliminates reflection from the microscope

14-052T

## Slade-Murdoch Speculum

Curved blades facilitate laser docking without increasing external pressure.



- Parallel retraction design
- Quick installation and removal due to self-locking mechanism

# CATARACT

**7-0821D 21 GA**  
**7-0823D 23 GA**

## Set of Disposable I/A Handpieces for Bimanual Technique\*

**STERILE**

**2**

**5 PER BOX**

Delicate tips allow easy access to all parts of the capsule and may be introduced through any side-port incision.

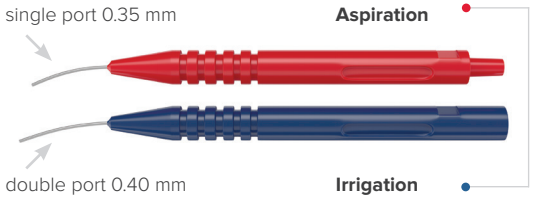
- Lightweight, color-coded handpieces
- Standard male/female luer connector
- Compatible with Phaco or I/A system

single port 0.35 mm

**Aspiration**

double port 0.40 mm

**Irrigation**



**R2-40405**

**PVA Spears\***

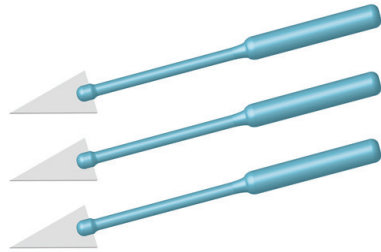
**STERILE**

**2**

**180 PER BOX**

Compressed PVA spears are designed for fluid absorption in and around the orbital area during cataract and refractive procedures.

- Lint-free, fiber-free
- Highly absorbent
- Extremely fast wicking and superior fluid retention
- Ultra-smooth micropore structure of PVA material is soft and gentle on the eyeball and cornea



# CATARACT

## CROSS-ACTION CAPSULORHEXIS FORCEPS

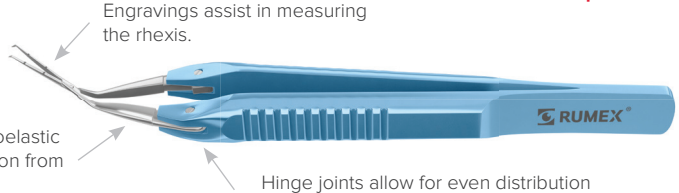
**Fits through a 1.50 mm incision  
8.50 and 11.00 mm tips**

Tungsten carbide coated cystotome tips allow to make the first pinch easily.

Engravings assist in measuring the rhexis.

Cross-action prevents the viscoelastic leakage and protects the incision from hyperextension.

Hinge joints allow for even distribution of pressure at three points.



**Design custom Cross-Action Capsulorhexis Forceps  
and we will manufacture them for you!**

### 1. Choose the Tip you prefer:

Shape

Curved

Straight

Long

Short



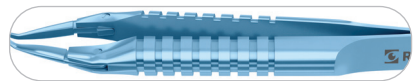
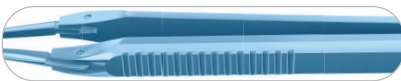
Lever

### 2. Complete with the Handle:

Shape

Flat

Round



Short



71 mm

Size

Medium



91 mm

Long



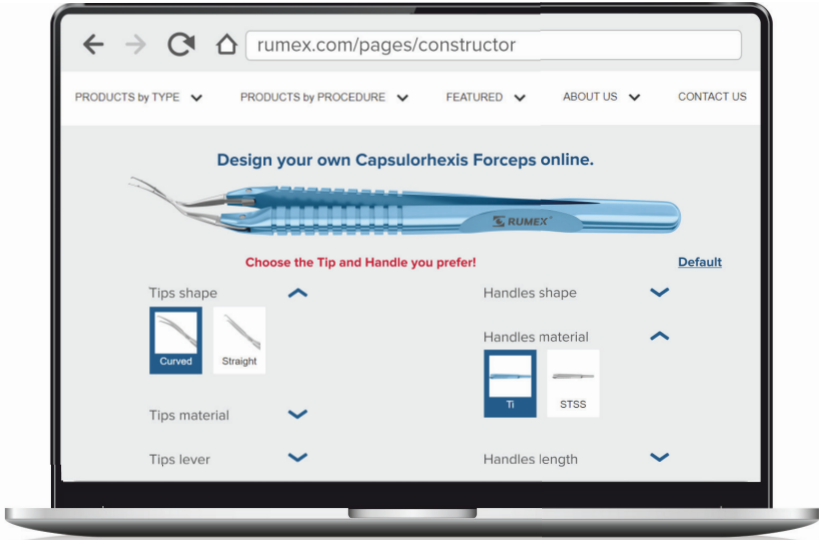
101 mm

### 3. Select the Material:

All Tips and Handles are available in Titanium and Stainless Steel!



## CROSS-ACTION CAPSULORHEXIS FORCEPS ONLINE CUSTOMIZER



### Create your own unique instrument!

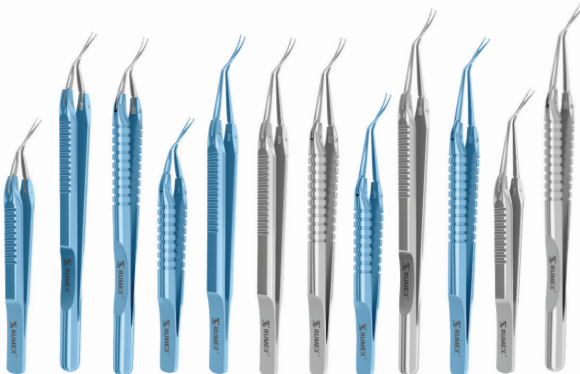
Choose sizes, shapes, and materials that you prefer.

Curved or Straight, Long or Short, Titanium or Stainless Steel up to your preferences.

You can modify the tool with a few clicks!



### You design, we create!

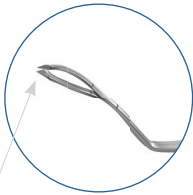


**4-033S**

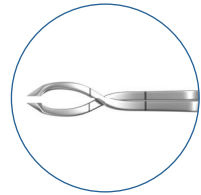
## Small-Incision Capsulorhexis Forceps with Double Cross-Action and Scale

1.50 mm  
incision

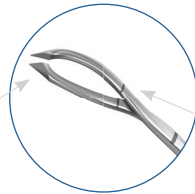
Double cross-action contributes to free movements in the anterior chamber, prevents the hyperextension of the incision.



Tungsten carbide coating at the tips for better gripping of the capsule



View-port for better visualization

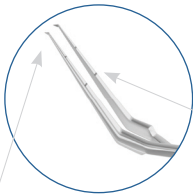


Cystotome tips allow to make the first pinch.

2 engravings at 2.50 and 5.00 mm for precise measurement of capsulorhexis

**4-0393S**

## Small-Incision Capsulorhexis Forceps with Cross-Action and Scale



- Tungsten carbide coating at the tips for improved gripping of the capsule
- Cystotome tips allow to make the first pinch

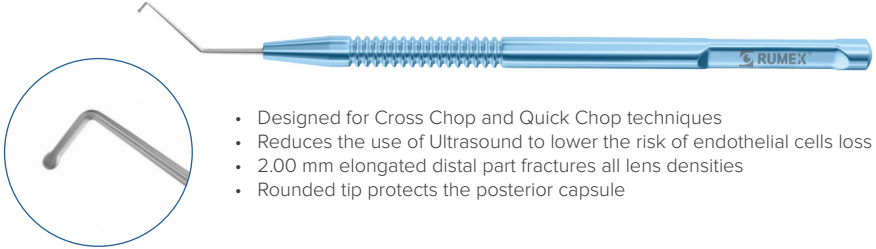
Cross-action mechanism prevents:

- the hyperextension of the incision
- the leakage of viscoelastic, allowing for enhanced anterior chamber maintenance

2 engravings at 2.50 and 5.00 mm for precise measurement of capsulorhexis

**7-0681**

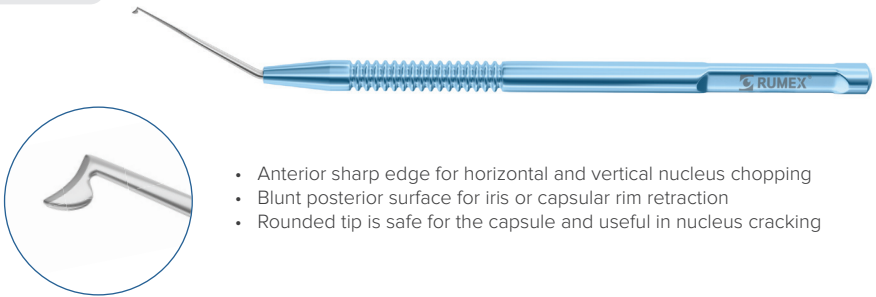
## Phaco Chopper for Cross-Chop Technique



- Designed for Cross Chop and Quick Chop techniques
- Reduces the use of Ultrasound to lower the risk of endothelial cells loss
- 2.00 mm elongated distal part fractures all lens densities
- Rounded tip protects the posterior capsule

**7-0751**

## Universal Multifunctional Phaco Chopper



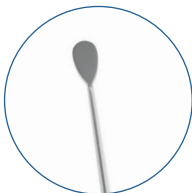
- Anterior sharp edge for horizontal and vertical nucleus chopping
- Blunt posterior surface for iris or capsular rim retraction
- Rounded tip is safe for the capsule and useful in nucleus cracking

## Escaf Nucleus Manipulator



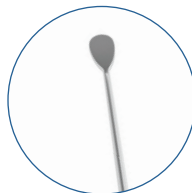
Designed in cooperation  
with Luis Escaf M.D., Colombia

**7-117**



30 Degrees bent tip

**7-1171**



45 Degrees bent tip

- Atraumatic flat olive-shaped tip
- Rotates the cataract fragments and introduces them to the phaco tip
- Disengages the cataract fragments after fracturing with a prechopper
- Useful in protecting the posterior capsule

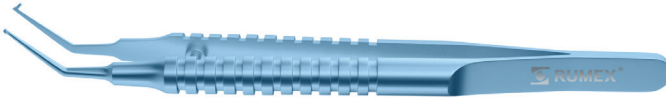
4-211T

## Amado Haptic Holder “Perfect Flanger”

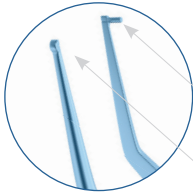
YAMANE  
TECHNIQUE



Designed in cooperation  
with Sebastian Amado,  
M.D., Argentina



Assists in attaining a standardized flange for  
intrasceral intraocular lens fixation.



A reference cylinder eliminates the need for  
rulers, simplifying intraoperative measurements.

Grooved tip gently holds the haptics  
or sutures with no kinking.\*

\*tested in polymethyl methacrylate haptics, polyvinyl fluoride haptics, and 6-0 polypropylene sutures.

# FEMTOCATARACT

7-1167S

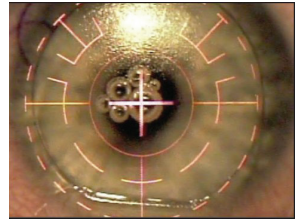
## Crozafon Prechopper



Provides easy releasing of entrapped gas bubbles for safer hydrodissection.



Reduced thickness of the blades to use on shallow anterior chambers

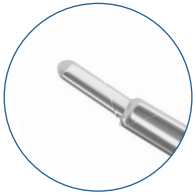


20-061

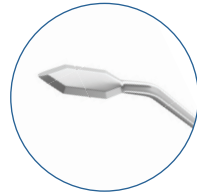
## Double-Ended Femto Spatula



Double-ended instrument for safe and quick Femtosecond incisions opening



Blunt flattened spear easily detects the entering point and opens up the incision.



Blunt keratome-shaped tip facilitates incision opening while gently sliding into the wound.

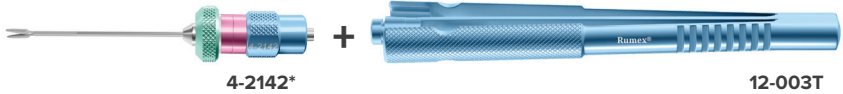
# IOL REMOVING INSTRUMENTS

4-2142\*

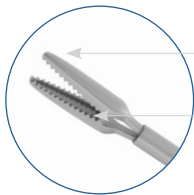
## Intraocular Lens Extraction Forceps for Cartridge Pull-Through Technique, 18 Ga

12-003T

## Vitreoretinal Instrument Handle, Squeeze Model



- Specially designed for Cartridge Pull-Through Technique
- Narrow and long tips grasp securely the IOL
- Two fingers linear actuation
- Specially designed gripping area for amplified control
- 360° rotation



Serrated design to prevent slipping

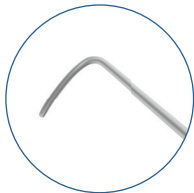
The inner surfaces are recessed to reduce intra-cartridge pressure.

13-061

## Holz Zonule Defender



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

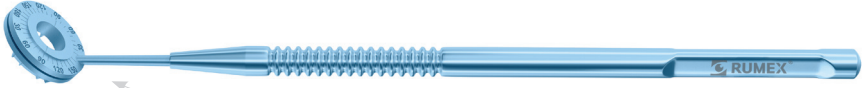


- The device is to be inserted into the equator of the capsule bag and used as counter traction when removing (pulling) the haptic from it during IOL exchange
- The surface area will distribute the countertraction forces and prevent the prying motion from breaking zonules

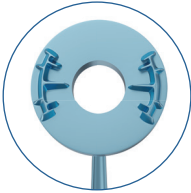
# REFRACTIVE

**3-183T**

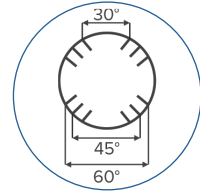
## LRI Marker, Intra-Op



- Low-profile for easy positioning of the marker
- Central opening for improved centration when marking



Thin beveled blades on the rotatable head precisely locate arcuate marks along the axis even without the use of ink.

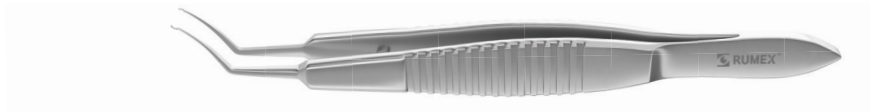


30, 45 and 60 degree marks

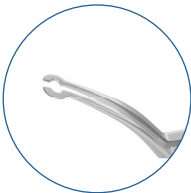
No smear and running of ink!

**4-266S**

## SMILE Lenticule Extraction Forceps with a View-Port



Designed to grasp the lenticule and remove it from the corneal pocket.



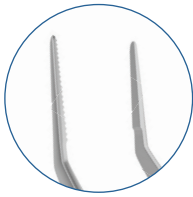
- Wide gripping area and atraumatic flattened tips for easy and safe manipulations
- View-port for enhanced visualization
- Curved shafts adhere to the curvature of the cornea
- Non-slip removal

4-268S

## SMILE Lenticule Extraction Forceps with SERRATIONS



Designed to grasp the lenticule and remove it from the corneal pocket.



- Composite surface of the tips (texturized and serrated) ensures the efficient grasping of the lenticule
- Ultrathin tips are safe for the pocket walls

20-2073

## SMILE Lenticule Removing Spatula



Double-ended instrument for SMILE lenticule removal



Delicate reversed hook for easy identification and capture of lenticule edge



Modified spatula allows for smooth and safe removal



# CORNEAL - DSEK, DSAEK, DMEK

3-0230

## Abdullayev Scleral Marker for Keratoplasty



Developed in cooperation with  
Eric Abdullayev, M.D., MBA, CEBT, USA



- For corneas with large scleral rim
- Improves scleral rim trimming

3-0231

## Abdullayev Corneal Marker for Keratoplasty



Developed in cooperation with  
Eric Abdullayev, M.D., MBA, CEBT, USA



Central marking point

- Improves centration of cornea during DSAEK microkeratome preparation
- Facilitates placement of donor corneas on to donor punch

# CORNEAL - DSEK, DSAEK, DMEK

3-024T

## Abdullayev I & II Marker (for DSAEK/DMEK Grafts)



Developed in cooperation with  
Eric Abdullayev, M.D., MBA, CEFT, USA

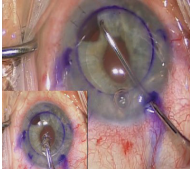
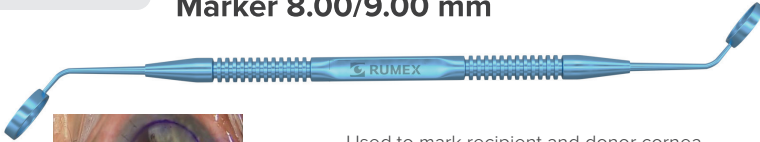


- Stable staining
- 1.50 mm straight I & II marks at the very edge of the graft
- No folding/unfolding step



3-204T

## John DSAEK Double-Ended Marker 8.00/9.00 mm



- Used to mark recipient and donor cornea
- Combines popular diameters of 8.00 and 9.00 mm
- A circular mark on recipient's cornea serves as a guiding mark for descemetorhexis

3-208T

## DMEK/DSAEK "S" Marker



- Thin "S" leaves a fine line with less ink transferred to the corneal stroma
- Optimal angle provides for better visualization of "S" while marking

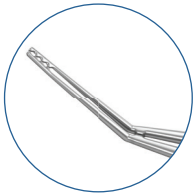
# CORNEAL - DSEK, DSAEK, DMEK

4-254S

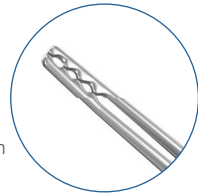
## Lambright-Abdullayev Ultrathin DSAEK Grasping/Inserting Forceps



Developed in cooperation with Eric Abdullayev, M.D., MBA, CEBT, USA



- For ultrathin grafts, 70  $\mu\text{m}$  and less
- 120  $\mu\text{m}$  space protects donor endothelial cells
- Wave-shaped serration for non-slip insertion



4-261S

## Abdullayev DMEK Grasping Forceps



Developed in cooperation with Eric Abdullayev, M.D., MBA, CEBT, USA



Horizontal grasping platforms provide for controlled membrane holding during separation.

## ONE-PIECE VITREORETINAL INSTRUMENTS WITH RUMEX FLUSHING SYSTEM

Color code system

Function	
Pink	Scissors
Green	Forceps
Gauge	
Green	23
Blue	25



- Exquisite gripping/cutting function
- Anti-glare matte finishing
- Two fingers linear actuation
- Specially designed gripping area for amplified control
- 360° rotation

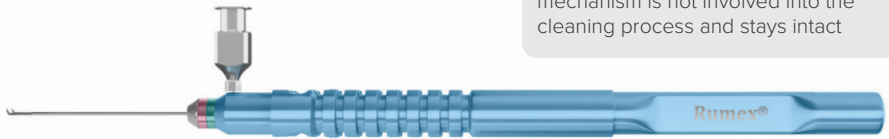
The tip can be easily cleaned without disassembling

**Special flushing cannula is provided for free!**

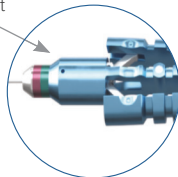
**Complete tool** – no need to adjust the tip to the handle

**Delicate cleaning** – flushing liquid streams towards the tips with zero stress for the jaws

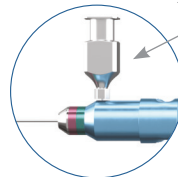
**Increased lifespan** – the inner mechanism is not involved into the cleaning process and stays intact



flushing port



flushing cannula

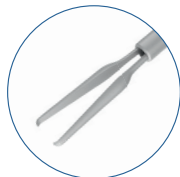


1. Insert the cannula into the flushing port as illustrated
2. Adjust a syringe to rinse with distilled water, alcohol, dry with air
3. Sterilize the instrument in the regular way

## ONE-PIECE INSTRUMENTS

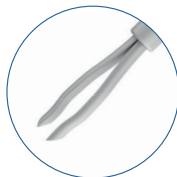


### ILM



Eckardt End-Gripping Forceps

**12-410-23H** 23 Ga  
**12-410-25H** 25 Ga



Asymmetrical End-Grasping Forceps

**12-420-23H** 23 Ga  
**12-420-25H** 25 Ga



Tano Asymmetrical End-Gripping Forceps

**12-411-23H** 23 Ga  
**12-411-25H** 25 Ga



End-Grasping Forceps

Expanded space between branches

**12-4013H** 23 Ga  
**12-4013-25H** 25 Ga

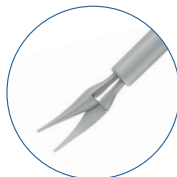
Enhanced visualization!

### ERM



Gripping Forceps with a "crocodile" platform

**12-304-23H** 23 Ga  
**12-304-25H** 25 Ga



Curved Subretinal Scissors

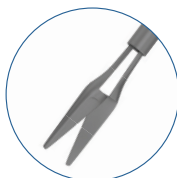
Curvature radius 12.00 mm

**12-209-23H** 23 Ga  
**12-209-25H** 25 Ga



Pick Forceps

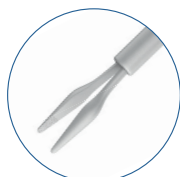
**12-325-23H** 23 Ga  
**12-325-25H** 25 Ga



Straight Scissors

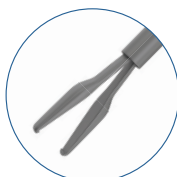
Blunt tips

**12-211-23H** 23 Ga  
**12-211-25H** 25 Ga



Gripping Forceps with a sandblasted platform

**12-301-23H** 23 Ga  
**12-301-25H** 25 Ga



End-Gripping Forceps with nail-shaped jaws

**12-402-23H** 23 Ga  
**12-402-25H** 25 Ga

# VITREORETINAL

## DISPOSABLE DIAMOND DUSTED ILM ELEVATORS\*

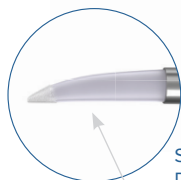
12-7523 23 GA  
12-7525 25 GA

STERILE

2

5  
PER  
BOX

RETRACTABLE VERSION enables easy insertion through the trocar cannula and helps to adjust the length of the tip



SOFT SILICONE TIP is safe for retinal surface.  
DIAMOND DUSTED finish provides an extreme grip.



The shape of the tip helps to create a precise edge to facilitate ILM removal.

## DISPOSABLE BACKFLUSH ONE-PIECE INSTRUMENTS\*

Used for intraocular fluids and debris aspiration during vitreoretinal surgery.

### Color code system

- 23 Ga
- 25 Ga
- 27 Ga

STERILE

2

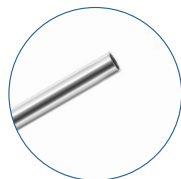
6  
PER  
BOX



Two connectors for either active or passive aspiration

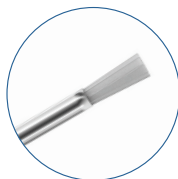


One-piece instrument combines an ergonomic handle and a soft, brush or blunt tip cannula.



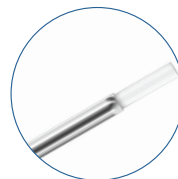
with **Blunt Tip**

- 12-5164H** 23 Ga x 34 mm
- 12-5156H** 25 Ga x 34 mm
- 12-5492H** 27 Ga x 34 mm



with **Silicone Brush Tip**

- 12-5162H** 23 Ga x 34 mm
- 12-5160H** 25 Ga x 34 mm
- 12-5167H** 27 Ga x 34 mm

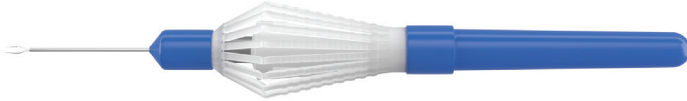
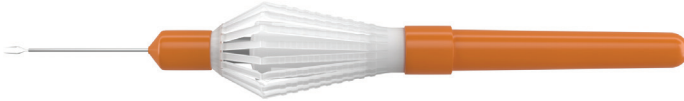


with **Silicone Soft Tip**

- 12-5161H** 23 Ga x 34 mm
- 12-5152H** 25 Ga x 34 mm
- 12-5491H** 27 Ga x 34 mm

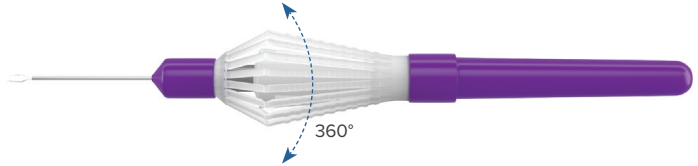
# VITREORETINAL

## DISPOSABLE INSTRUMENTS WITH PLASTIC HANDLE\*



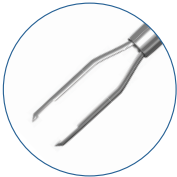
### Color code system

- 23 Ga
- 25 Ga
- 27 Ga



360° lightweight handle is ideal for precise hours-long surgeries.

### ILM



Eckardt End-Gripping  
Forceps

- 12-410-23DP** 23 Ga
- 12-410-25DP** 25 Ga
- 12-410-27DP** 27 Ga



Curved Scissors

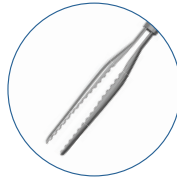
- 12-209-23DP** 23 Ga
- 12-209-25DP** 25 Ga
- 12-209-27DP** 27 Ga



Vertical Scissors

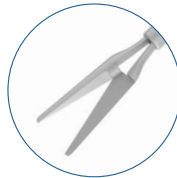
- 45°
- 12-202-23DP** 23 Ga
- 12-202-25DP** 25 Ga

### ERM



Gripping Forceps  
with a "crocodile" platform

- 12-304-23DP** 23 Ga
- 12-304-25DP** 25 Ga
- 12-304-27DP** 27 Ga



Straight Scissors

- 12-211-23DP** 23 Ga
- 12-211-25DP** 25 Ga
- 12-211-27DP** 27 Ga

\*Not available in Europe and in the US

## DISPOSABLE ONE STEP TROCAR SYSTEMS\*

Each set includes:

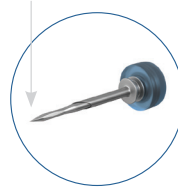
- Trocar knife with preloaded trocar cannula – 3 pcs
- Self-sealing trocar cannula (preloaded) – 3 pcs
- Universal infusion line – 1 pc

- 12-5229** 23 Ga ●
- 12-5244** 25 Ga ●
- 12-5227** 27 Ga ●



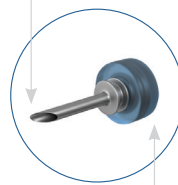
### Sharp MVR Blade

Helps to create a smooth incision and promotes low-pressure insertion and superior sealing.



### Trocar Cannula

Innovative beveled design of the cannula contributes to unstoppable smooth trocar insertion.



### Silicone Closure Valves

Removable self-sealing valves ensure maintenance of the desired intraocular pressure (IOP) throughout the case and eliminate the need for plugs.

### Trocar Cannula Inserter

The tip of the plastic handle serves as a caliper/scleral marker (2 dimensions: 3.00 and 4.00 mm).

### Universal Infusion Line for BSS





# CARE AND CLEANING INSTRUCTIONS

## INSTRUCTIONS FOR USE

### GENERAL INSTRUCTIONS FOR CARE, CLEANING AND STERILIZATION

We at RUMEX guarantee our instruments against manufacturing defects, but the lifespan of reusable instruments lies within proper handling and care. To help your instruments preserve their initial conditions, we strongly recommend you to read the instructions below carefully before use.

A common misconception that “stainless steel” or “titanium” have extreme durability and are indestructible is in need of correction: these metals still might be affected by chemical, mechanical, thermal attacks and etc. However, if you are aware of metal characteristics and understand how to handle them, the lifespan of the instruments may be enlarged.

A particular care should be taken after microsurgical instruments as they have very delicate working tips. These instructions are general recommendations, cleaning guidelines of the solutions, equipment manufacturer and your institution, especially those regarding temperature, time of exposure and concentration, should be observed.

### INSPECTION

It is essential that the instrument is inspected before use. Please conduct this inspection under a microscope or magnification lens. If a problem is detected, notify us immediately. Once the instrument is examined and accepted, IT SHOULD BE CLEANED BEFORE PLACING IT IN THE STERILIZATION TRAY.

### Stage 1: PRE-STERILIZATION CLEANING

Never skip this cleaning stage as residues on instruments such as care agents and the ones of package materials may form stains and depositions in course of sterilization.

It is imperative to follow the rules:

1. As much moisture as possible must be eliminated from all instrument's parts since moisture promotes corrosion.
2. Only detergents and cleaners specially designed for use on surgical stainless steel or titanium instruments are acceptable for use in all the cleaning process. Cleaning guidelines of the solution manufacturer and your institution should be observed.
3. Thorough cleaning immediately after use is essential for the longevity of the instrument. We recommend that the established surgical instrument cleaning procedures of your institution be followed using these instructions as a guideline.
4. The cleaning/disinfecting solutions should be exchanged daily.

### STEPS OF MANUAL CLEANING IN SOLUTION

1. For effective cleaning of instruments it is recommended to start pre-treatment as soon as possible, no later than 30 minutes after surgery is completed. The cleaning/disinfection should be carried out within the next two hours.
2. Use distilled/demineralized water to prepare the working solution. Use chemicals with non-protein-fixing process and with/without anti-microbial effects. Prepare the solution according to the manufacturer's instructions.

Water layer above the instruments should be no less than 1 cm (.39 inches). Water temperature should be as specified in the manufacturer's instructions.

3. Instruments with hinges and joints must be handled open. The detachable products should be disassembled prior to be immersed into the solution. Products with locks should be immersed open with preliminary several working movements done inside the solution for its better penetration into hard-to-reach areas of the instruments. Make sure that there are no air bubbles in the cavities and all the inner surfaces are affected.
4. Carry out disinfection according to the mode, indicated in the instructions of product manufacturer. **We recommend soaking instruments in a detergent with pH level between 6-9 for 10 min at 40 °C/104 °F.** Make sure the disinfectant is free of aldehydes, glutaraldehydes. The solution should not foam. Stainless steel

tools must not be exposed for a long time to media which can promote corrosion (for example, chloride or iodine ions). This also applies to the vapors of the substances mentioned.

**WARNING! Do not immerse stainless steel instruments in an isotonic solution (e.g. physiological saline solution) as stress corrosion cracking and pitting may occur.**

5. Wash each product with a brush or a cotton-gauze sponge. Use a syringe to wash the lumens of the instruments. Remove all macroscopically visible dirt.

**WARNING! Never use abrasive powders or steel wool to remove stubborn stains – these can damage the superfine finish of an instrument and can actually help cause corrosion of stainless instruments.**

6. Place the products in a container with **distilled/demineralized water** and wash off the remaining solution with thorough rinsing of all lumens for 5 minutes. Repeat the procedure if necessary.
7. Then rinse with distilled water to prevent spotting. Instruments with lumens should be flushed out at least five times at the beginning and at the end of the cleaning (10 ml/0.34 fl.oz distilled or deionized water to be used each time).
8. Dry instruments carefully before sterilization with a hot air blower or lint-free cloth. Compressed air is preferred. Sterile compressed air should be used to insufflate cavities of the instruments.
9. The cleaning results must be visually inspected. The instruments must be visibly clean.

## Stage 2: CLEANING

### MANUAL CLEANING PROCESS

#### ULTRASONIC CLEANING

As some instruments may become heavily soiled during the surgery, the additional cleaning in the ultrasonic bath will be required.

The following rules should be followed:

1. Place the instruments on a silicone mat inside the ultrasonic bath.
2. Fill the bath with room temperature water. **The temperature higher than 45 °C (113 °F) can lead to encrustation due to denaturation of the protein.**
3. Use detergent to soak the instruments. A distilled/demineralized water should be used to prepare the working solution. Make it according to the manufacturer's instructions. Newly prepared cleaning solutions require degassing prior to the first use.
4. Place instruments next to each other without stacking them.
5. When carrying out ultrasonic cleaning, all parameters specified by the manufacturer of the cleaning agent, such as exposure time and concentration, must be observed. Cleaning agents must be compatible with instruments.
6. The use of ultrasonic baths and strong cleaning fluids (alkaline pH> 9 or acid pH <5) can shorten the lifespan of the products. Make sure the appropriate agents are chosen for performing the procedure.
7. When using deionized water or cleaning solution fully submerge the instruments. Change the ultrasonic solution from ultrasound cleaner after each use.

**Instruments with hinges and joints must be handled open to minimize the obscured surface areas. The detachable products should be disassembled prior to be immersed into the solution.**

**Products with locks should be immersed open with preliminary several working movements done inside the solution for its better penetration into hard-to-reach areas of the instruments.**

**WARNING! Special care should be taken to make certain that the instrument does not come into contact with any metal surface of the ultrasonic container, as this could damage the instrument.**

8. Carry out the cleaning procedure. Turn on ultrasonic bath. 3 minutes exposure at frequencies of around 35 kHz would be sufficient. Use soft bristled nylon brush to clean all the parts of the instrument, inside and outside.
9. Place the products in a container with distilled/demineralized water and wash off the remaining solution with thorough rinsing of all lumens for 5 minutes. Repeat the procedure if necessary.

9. Then rinse with distilled water to avoid water spots.
10. Dry the instruments before sterilization. A lint free cloth may be used for manual drying. Sterile compressed air should be used to insufflate cavities of the instruments.

**WARNING! DO NOT apply ultrasonic cleaning to diamond knives or instruments with delicate tips (e.g. vitreoretinal and microincisional tips, choppers, hooks, manipulators and etc.)**

#### *MANUAL DISINFECTION:*

1. Submerge the instruments in the cleaning solution.
2. Make sure to follow the exposure times and concentration of disinfectants and not to combine non-compatible ones.
3. After use of cleaning agent, rinse the instruments with distilled/demineralized water at least 5 times and flush the lumens to remove the disinfectant.
4. Repeat if there are still visible impurities on the surface of the instruments.

Manual drying may be done by use of lint free towel or using sterile compressed air to insufflate lumens of the instruments.

#### *AUTOMATED CLEANING PROCESS*

1. Baskets in the form of nets with large holes are recommended to be used in special washing equipment. Be sure to use tool holders in the basket. Place instruments inside them without overloading.
2. Make sure that the large instruments don't obscure other ones and don't create spray shadows.
3. Sort tools by similar metals, avoiding contact between dissimilar ones. This type of contact can cause galvanic corrosion.
4. Use a solution suitable for washing equipment with low foaming property.
5. Use a neutralizer, which not only neutralizes alkali, but also reduces surface tension of the liquid during drying, accelerating it, and minimizing stains.
6. Set the program for the cleaning step. The chosen program must be suitable for the products and include the appropriate number of rinsing cycles.

For automated cleaning and disinfection thermal and chemo-thermal disinfection options are available. During **thermal processes** disinfection is carried out at temperatures above 65 °C (149°F). A reprocessing program may include the following steps:

1. Pre-wash with cold water to remove dirt and foaming substances.
2. Cleaning is performed with use of suitable pH-neutral or alkaline products added to hot or cold distilled water at temperatures of 40-60 °C (104-140 °F) for at least 5 minutes.
3. Intermediate rinse in hot or cold distilled water with acidic neutralizer added in order to facilitate the removal of remaining alkaline disinfectants.
4. Second intermediate rinse in hot or cold distilled water without additives should follow.
5. Thermal disinfection and final rinse is performed at temperatures of 80-95 °C (176-203 °F).
6. Drying might be carried out in washer/disinfector or in other possible ways. Sterile compressed air should be used to insufflate cavities of the instruments.

**Chemo-thermal disinfection** is suitable for heat-sensitive products. The temperature is limited in all rinsing stages and during the step of drying.

Cleaning is performed normally at < 65 °C (149 °F). A reprocessing program may include the following steps:

1. Pre-wash with cold water to remove dirt and foaming substances.
2. Cleaning is performed with use of suitable pH-neutral or alkaline products added to hot or cold distilled water at temperatures of 40-60 °C (104-140 °F) for at least 5 minutes.
3. Intermediate rinse in hot or cold distilled water followed by chemo-thermal disinfection. Special cleaning agent, compatible with machine-disinfection, is used.
4. Intermediate rinse in hot or cold distilled water without additives.
5. Final rinsing with distilled water at higher temperature.
6. Drying might be carried out in washer/disinfector or in other possible ways. Sterile compressed air should be used to insufflate cavities of the instruments.

The cleaning device must be regularly maintained, checked and validated in accordance with internal and manufacturer requirements.

When processing the ophthalmic instruments we recommend using the additional intermediate rinsing with water in the washing programs before the final rinse.

Additional rinsing outside the washing equipment is not required.

A combination of processing stages 1 and 2 is allowed.

**WARNING! Tools with blind holes, long narrow tips (e.g. tips, cannulas, handpieces and etc), hinges (3-joint instruments) need more attention during cleaning process. The temperature at all stages of the process should not exceed 170 °C (338 °F).**

**Distilled/deionized water is recommended for all the reprocessing cycles as tap water may cause an increase in ions concentrations on the surface of Stainless Steel instruments.**

Aspiration speculums and cannulas with tubes (e.g. Simcoe) require additional cleaning of silicone tubes prior to be sterilized.

First, soak the instrument in the soap solution at temperature of 50 °C (122 °F) and keep it there for 15 min. After that wash the instrument with brush and cotton/gauze pad. Take the instrument out of soap bath and wash it under streaming water for 3 min. Rinse the instrument with distilled or deionized water. Then attach a syringe filled with warm water into the luer lock and rinse the silicone tubes of the instrument. Finally, blow them with air by forcing one or two syringes full of air through the tubes.

## RECOMMENDED PRODUCTS FOR CARE AND CLEANING

Product name, Manufacturer	Description	Composition	Compatibility
<b>SEKUSEPT Activ</b> , Ecolab Deutschland GmbH	<b>Disinfectant</b> for automatic and manual processing of tools	≥ 30% oxygen-based bleaching agents; <5% non-ionic surfactants, phosphonates; 50% sodium perborate monohydrate; 25% tetraacetylenediamine; active antimicrobial components, nonionic surfactants, corrosion inhibitor; <b>pH of 2% solution: 7.4-8.4</b>	Compatible. Discoloration of metal, residual detergent or water film formation may occur.
<b>Neodisher MediClean Forte</b> , Dr. Weigert GmbH & Co.	<b>Detergent</b> for automatic and manual cleaning of surgical instruments. Prevents reprecipitation of protein residues.	< 5% non-ionic and anionic surfactants; enzymes; <b>pH: 10.4-10.8</b>	Compatible. Discoloration of metal, residual detergent or water film formation may occur.
<b>Neodisher MediKlar</b> , Dr. Weigert GmbH & Co.	<b>Rinser</b> for automatic and manual cleaning of surgical instruments. Recommended for use with MediClean forte. Prevents reprecipitation of protein residues.	< 5% anionic surfactants, polycarboxylates; 5 - 15% non-ionic surfactants also preservatives; 2-octyl-2H-isothiazol-3-one, a mixture of: 5-Chloro-2-methyl-2h-isothiazol-3-one [EC- no.247-500-7] and 2-Methyl-2H-isothiazol- 3-one; <b>pH: 5.9-6.9</b>	Compatible

Product name, Manufacturer	Description	Composition	Compatibility
<b>ERIZYME</b> , KiiltoClean FARMOS Oy	<b>Detergent</b> for hand treatment, washer disinfectors and ultrasonic treatment	non-ionic surfactants (< 5%); amphoteric surfactants (< 5%); complexing agent (5-15%); monopropylene glycol (15-30%); anti-foaming agent; enzymes; <b>pH: 7.5</b>	Compatible
<b>ERISAN OXY+</b> , KiiltoClean FARMOS Oy	<b>Disinfectant</b> in disposable sachets	sodium percarbonate 30 - <50%; citric acid 15 - <30%; tartaric acid 5 - <15%; <b>pH: 5.9-6.9</b>	Compatible. Discoloration of metal, residual detergent or water film formation may occur.

**Fully demineralized water for rinsing and correct loading must be used to prevent staining!**

**WARNING! Hydrogen peroxide H2O2 may discolor titanium instruments.**

The color of titanium instruments may change due to development of different properties of oxide layers. Such discoloration does not bring a safety risk, as well as water stains on the surface of the instruments. They don't affect the biocompatibility, functionality, and lifetime of the instruments. However, discoloration may affect the visual inspection of the tools (e.g. determining residual dirt). To prevent the color change of titanium instruments, use only neutral or mild alkaline cleaning agents. While using them, do not exceed a temperature of 70 °C (158 °F).

## LUBRICATION

Moving parts and working mechanisms of the 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 lubricant must be biocompatible, suitable for steam sterilization and vapor-permeable. No silicone oil should be applied. The paraffin/white oil based lubricants are allowed to be used.

The following products are recommended - Neodisher IP Spray, Miltex-Integra Spray Lube Instrument Lubricant, Sterilit® i lubricant.

After cleaning process let the instruments cool down to room temperature prior to their actuation, as otherwise metal abrasion may develop when the details of the tools rub against each other. This may destroy the instruments' functionality.

The recommended directions of the instrument lubricant manufacturer and your institution should be observed.

## Stage 3: STERILIZATION

Surgical instruments should be stored at room temperature in dry rooms in the sterilizing trays of proper size and lined with soft silicone mats. Instruments should not touch each other. We recommend using protective tips made of soft silicone tubing of the proper size and thickness. Do not use rubber or plastic protective tips, as they can melt during autoclaving and cause damage of instruments.

**WARNING! Never store the instruments close to the chemicals.**

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 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.

**WARNING! Only clean, disinfected, and dry products can be sterilized.**

**For lumen instruments (e.g. tips, cannulas, handpieces) the gravity procedure is not suitable!**

100% ETO cycles	
Concentration ETO	850±50mg/l
Temperature	37-47°C (99-117°F)
Exposure time	3–4 hours
Humidity	70% RH minimum
Drying Cycle	1 hour

RUMEX instruments can be sterilized using any of the following methods:

	Steam Autoclaving		"Flash" Autoclaving	
Sterilizer Type	Gravity Displacement	Prevacuum	Gravity Displacement	Prevacuum
Sample Config.	wrapped	wrapped	unwrapped	unwrapped
Temperature°C	+132°C	+132°C	+132°C	+132°C
Temperature°F	+270°F	+270°F*	+270°F	+270°F
Exposure Time	15 minutes	4 minutes	3 minutes	3 minutes
Drying Cycle	15-30 minutes	20-30 minutes	10 minutes	10 minutes

**WARNING! ETO method is not recommended for diamond knives sterilization.**

**WARNING! The sterilization steam must not contain any impurities.**

**Do not apply steam sterilization temperatures exceeding 137°C (280°F).**

**The autoclave drying cycle should be used to avoid oxidation.**

**Gas plasma sterilization is not recommended as delicate instruments might be physically damaged when exposed to low pressure.**

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.

**WARNING! Follow the guidelines of the processing times. The rapid sterilization process should be reserved for emergency processing only and should not be used for routine instrument sterilization. Longer sterilization period and higher temperatures can lead to premature aging of instruments.**

#### **AT THE END OF THE SURGICAL DAY**

Instruments should be washed clean of all residues, dried and inspected after each use. 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. Washing, drying and inspecting the instrument under magnification helps to ensure that the instrument is kept in proper condition for the next surgical procedure.

**CARE AND  
CLEANING**





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