

OCULAR INSTRUMENTS "IVS"

INVERTER VITRECTOMY SYSTEM

PRODUCT MANUAL

Table of Contents

Page 2	Foreword
Page 3	Safety Information
Page 4	Standard Equipment List
Page 5	Description of the IVS and its Functions Proper Use
Page 6	Figure 1 - IVS and its Components
Page 7	Using the IVS for the First Time Attachment to an Operating Microscope
Page 8-11	Illustrations of IVS on Various Microscopes
Page 12	Transport of the IVS Using the IVS Before each use Practical Tips on using the IVS
Page 13	Maintenance Removable Accessories Care, Cleaning and Disinfection of the IVS Sterilization of the Adjustment Knob
Page 14	Troubleshooting
Page 15	Guarantee Limitations of Liability for Malfunction or Damage Service Address
Page 16	Declaration of Compliance Technical Data
Page 17-20	Autoclavable Wide Angle Inverted Image Contact Lenses Description Technique Product Care
Page 21-24	Non-Autoclavable Wide Angle Inverted Image Contact Lenses Description Technique Product Care
Page 25-26	Landers Four Post Vitrectomy Lens Ring Description Technique Product Care

Foreword

Ocular Instruments would like to thank you for your purchase of another fine product from our company. In choosing the **IVS**, you have acquired a modern product using the latest technology in its field. You can be assured it has been manufactured and tested to the most stringent quality requirements.

Ocular Instruments has been manufacturing fine optical products for over thirty years. We offer only products of the highest quality for use in diagnosis and treatment of diseases and disorders of the eye.

The **Inverter Vitrectomy System** re-inverts the inverted image of our line of **Wide Angle Vitrectomy Lenses**.

Proper installation and care of the device is indispensable for accurate and safe use. For this reason, please familiarize yourself thoroughly with the contents of this instruction manual before putting the instrument into use for the first time.

If you have questions or would like additional information, please either contact us directly or our distributor from whom you have purchased our product. Our service team will be most happy to assist you.

Sincerely yours,

The Management and Staff
Ocular Instruments, Inc.

Safety Information

Please keep these operating instructions in a secure place. Always observe these operating instructions when working with the surgical operating microscope and related equipment. The IVS may be used only for purposes named in the instruction manual and only by persons who have been properly trained.

Use this instrument only with original manufacturer's parts and accessories and in technically flawless working condition. Do not use the IVS if it is defective. Please contact Ocular Instruments or its distributor if you believe the unit to be defective.

Do not use the IVS in the presence of volatile solvents such as alcohol, benzene or the like.

This unit is an excellent quality and highly technical product. Should a malfunction occur whose cause you cannot locate or eliminate with the Troubleshooting Table in this manual, please mark the unit clearly as non-operational and contact our customer service department at 800-888-6616 (toll free USA), or 425-455-5200, or email to: ocular@ocular-instruments.com.

Standard Equipment List

- 1 IVS with 2 protective dust covers (OIVSL or OIVSZ)
- 1 Rubber Adjustment Knob (OIVS-K) *steam sterilizable*
- 1 Carrying Case with foam liner (OIVS-C)
- 1 Screw Driver
- 1 Instruction Manual (Part 5673)

IVS Set also includes a combination of the following *steam sterilizable lenses*:

- 1 Landers Wide Field Vitrectomy Lens (OLIV-WF)
- 1 Landers Equatorial II Vitrectomy Lens (OLIV-EQ-2)
- 1 Woldoff High Magnification Vitrectomy Lens (OWIV-HM)

OR a combination of the following *non-autoclavable lenses*:

- 1 Landers Non-Autoclavable Wide Field Vitrectomy Lens (OLIV-WFNA)
- 1 Landers Non-Autoclavable Equatorial Vitrectomy Lens (OLIV-EQNA)
- 1 Woldoff Non-Autoclavable High Mag. Vitrectomy Lens (OWIV-HMNA)

plus:

- 1 Landers Four Post Vitrectomy Lens Ring (OLV-1/4P)
- 2 Lens Holding Handles (OLIV-H)
- 1 Autoclavable Lens Cleaning Cloth (OLCCA)

We reserve the right to make technological improvements in the IVS without prior notice.

Description of the IVS and its Functions

Vitreous surgery is often carried out with plano-concave lenses, biconcave lenses and wide field lenses. Combination contact lens systems and indirect ophthalmology lenses provide an even greater field of view of the fundus. However, the image they provide is inverted which is extremely difficult to use during vitreous surgery.

The IVS re-inverts the image of the contact lens systems such as those made by Ocular Instruments. It frees the surgeon's hands and allows him to work in the vitreous with an upright, non-reversed image under panoramic conditions.

During surgery, operative work is performed both outside and inside the globe. Since the fundus is observed through a contact lens, it is necessary to be able to move back and forth smoothly and quickly between the upright and the inverted image. This function is performed by the **IVS**.

The **IVS** consists of an optical system which can be rotated into the optical path of the microscope to produce a complete image re-inversion. (This system bears U.S. Patent No. 5,009,487.) The image inversion can be turned on and off by turning the adjustment knob (Figure 1, No. 3) capped with the rubber adjustment knob (Figure 1, No. 4) clockwise until it clicks into position. The position of the optical system is noted by the indicator in the glass window (Figure 1, No. 7). It is centrally located on the front of the IVS just to the left of the adjustment knob. If the image in the window is yellow, the optical system has been swung to the side and image inversion is not occurring. The "O" indicates the image inversion is inactive.

Proper Use

The **IVS** is part of a microsurgical operating system which is intended only for use as described in this instruction manual. It is intended for surgery in the posterior segment of the human eye and should be used only by physicians who have been trained, have the knowledge and experience to ensure proper handling.

The **IVS** is intended for use with operating microscopes in hospitals, clinics, outpatient facilities etc. where ophthalmic surgery is performed. Such operating microscopes must be specifically designated by Ocular Instruments as being compatible with the **IVS**.

Use this instrument only with original parts and accessories delivered by our authorized distributor or us and only when it is in perfect condition.

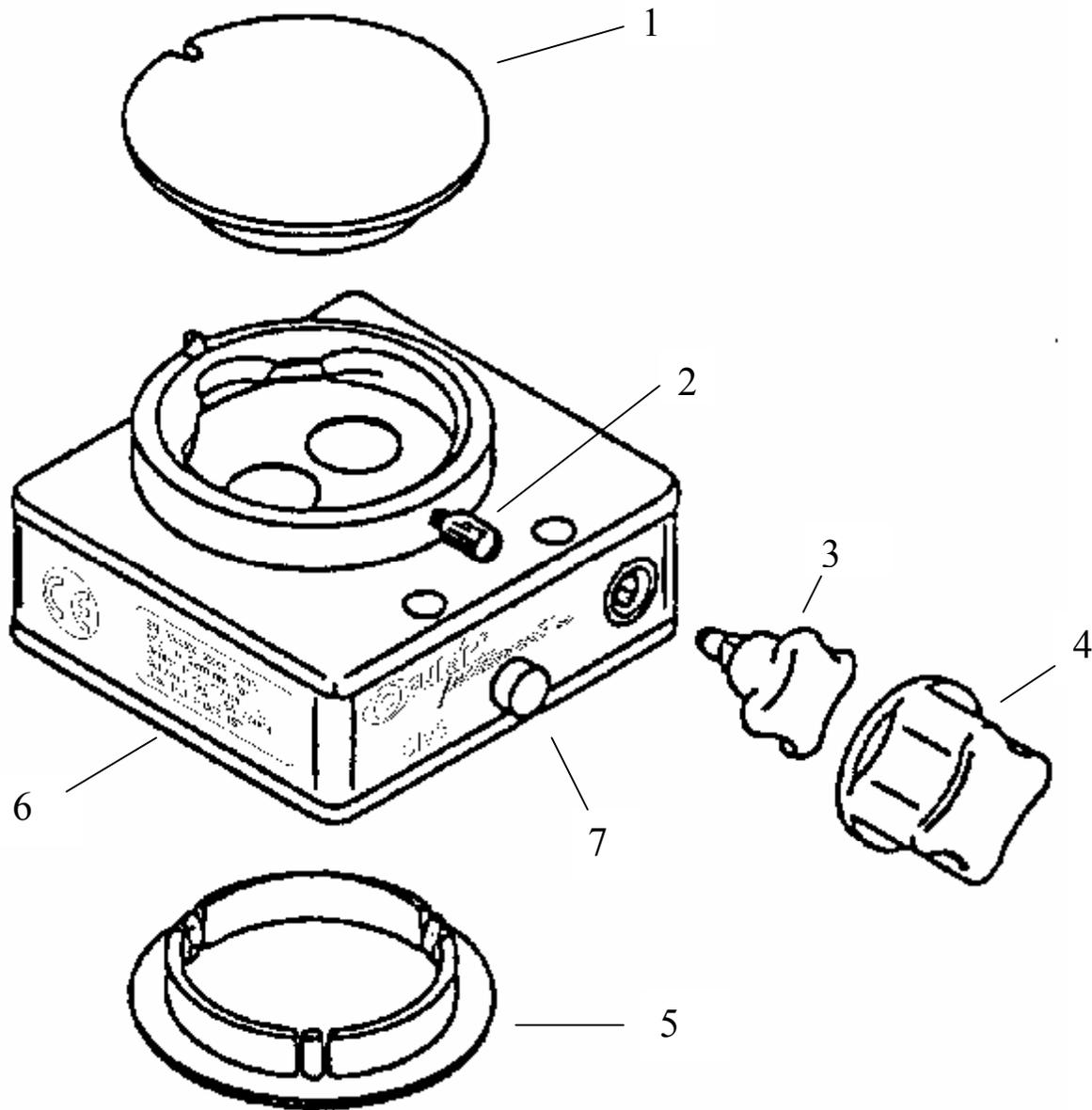


Figure 1 - The IVS and its Components

- | | | | |
|-------|--|-------|--|
| No. 1 | Protective dust cover | No. 4 | Rubber Adjustment Knob
(sterilizable) |
| No. 2 | Knurled thumb screw
<i>Fastens upper part of
microscope to the IVS.</i> | No. 5 | Protective dust cover |
| No. 3 | Adjustment knob
<i>Manually operated</i> | No. 6 | Rating plate |
| | | No. 7 | Indicator Window (transparent glass) |

Using the IVS for the First Time

Remove the IVS from its carrying case. Please keep the carrying case available for storage, if necessary and for possible shipment during servicing.

As part of a very expensive optical system, the IVS, like the operating microscope, should be handled with care and should not be subjected to shocks, high temperature, moisture or fluids or high temperatures (above 40° C).

Before assembling the IVS and microscope, remove both protective dust covers and store them in the carrying case. The upper one (Figure 1, No. 1) may be removed by unscrewing the knurled thumbscrew (Figure 1, No. 2), and the lower one (Figure 1, No. 5) can be simply pulled off.

Attachment to an Operating Microscope

Always take care when mounting or removing the IVS that none of the optics in the beam path become soiled. In order to mount the IVS on your operating microscope, unscrew the locking screw on the main body of the microscope (Figure 2, No. 1) with the screwdriver provided. Remove the binocular eyepiece assembly and the beam splitter from the main body of the microscope.

On many microscopes, the beam splitter is permanently built into the microscope; in this case, the IVS must be mounted above the beam splitter.

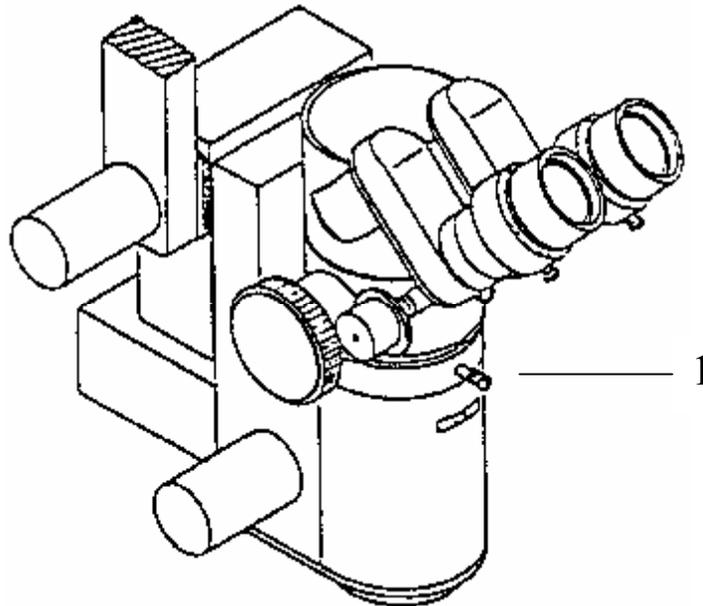


Figure 2 – Microscope Before Installation of IVS

No. 1 Microscope Locking Screw

Now place the flange of the IVS into the dovetail receptacle of the main body of the microscope. Check that the IVS is properly seated before carefully tightening the locking screw on the main body of the microscope (Fig 3, No. 1). When properly mounted, the IVS should not wobble. Make sure of this before attaching the other microscope components.

Proceed in the same manner when mounting the beam splitter, the binocular eyepiece and other components of the microscope; that is, carefully tighten the knurled thumb screw of the IVS (Fig 1, No. 2) in the same manner and then confirm that each component is correctly seated.

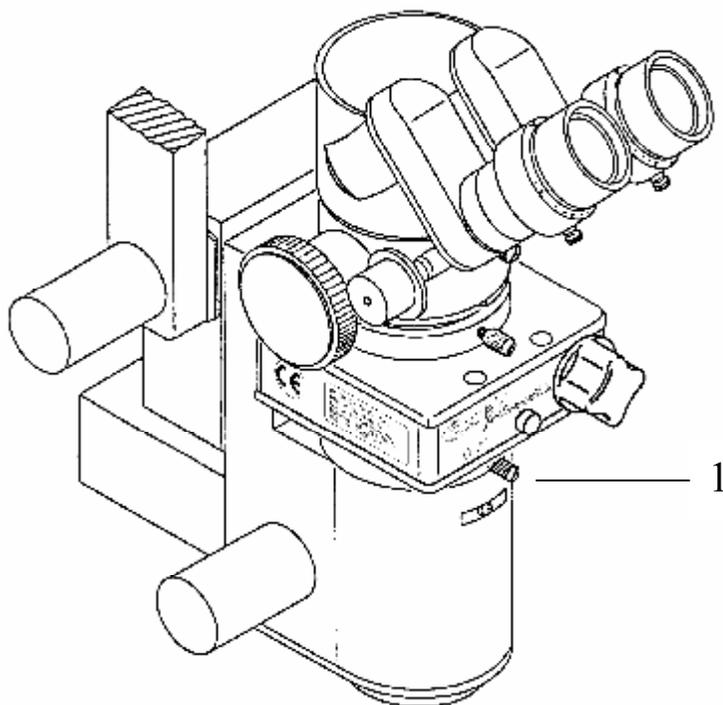


Figure 3 - Microscope After Installation of IVS

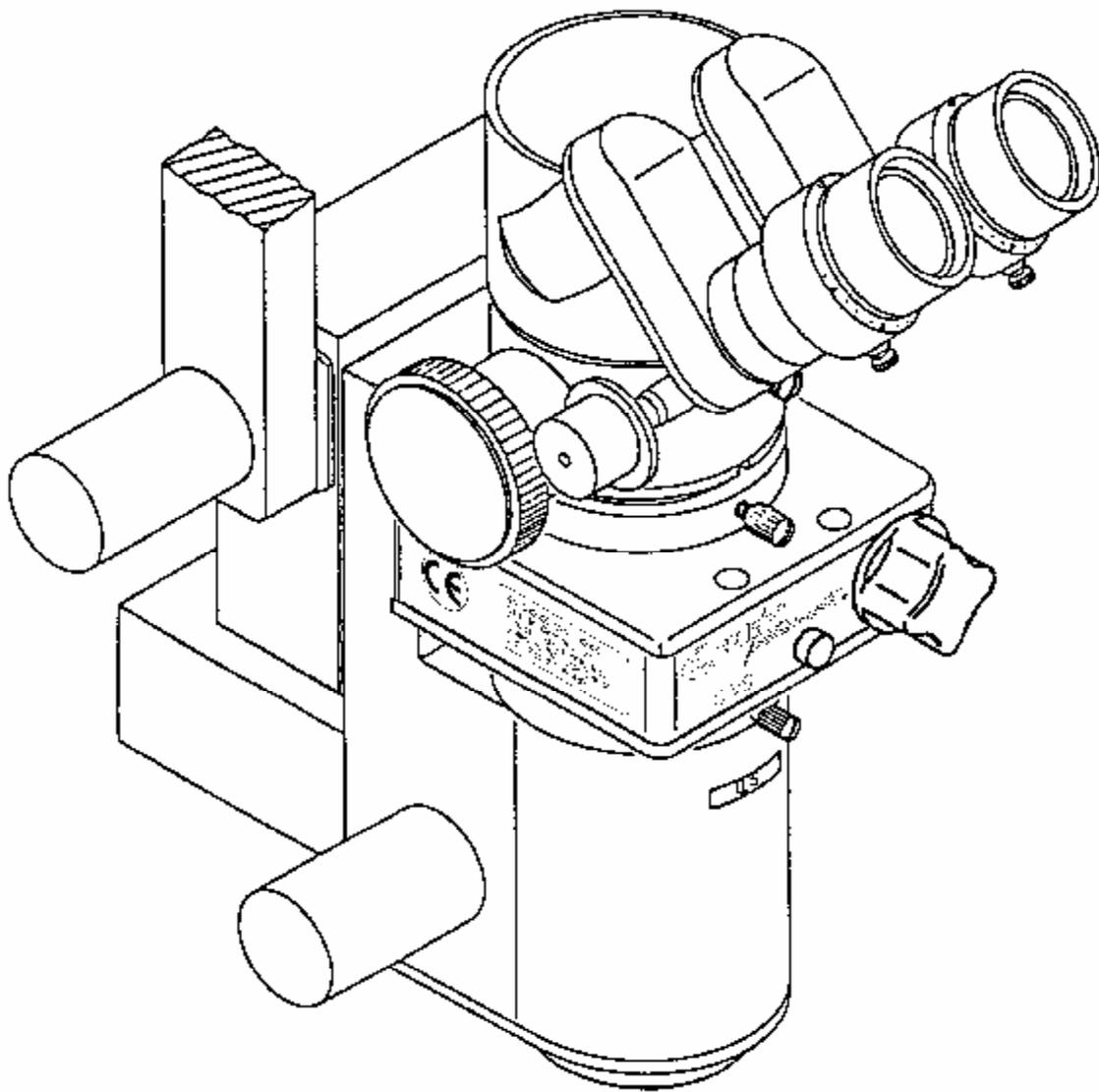
No. 1 Microscope Locking Screw

If an endolaser is used, the laser shutter can be positioned either between the main body of the microscope and the IVS or between the IVS and the beam splitter.

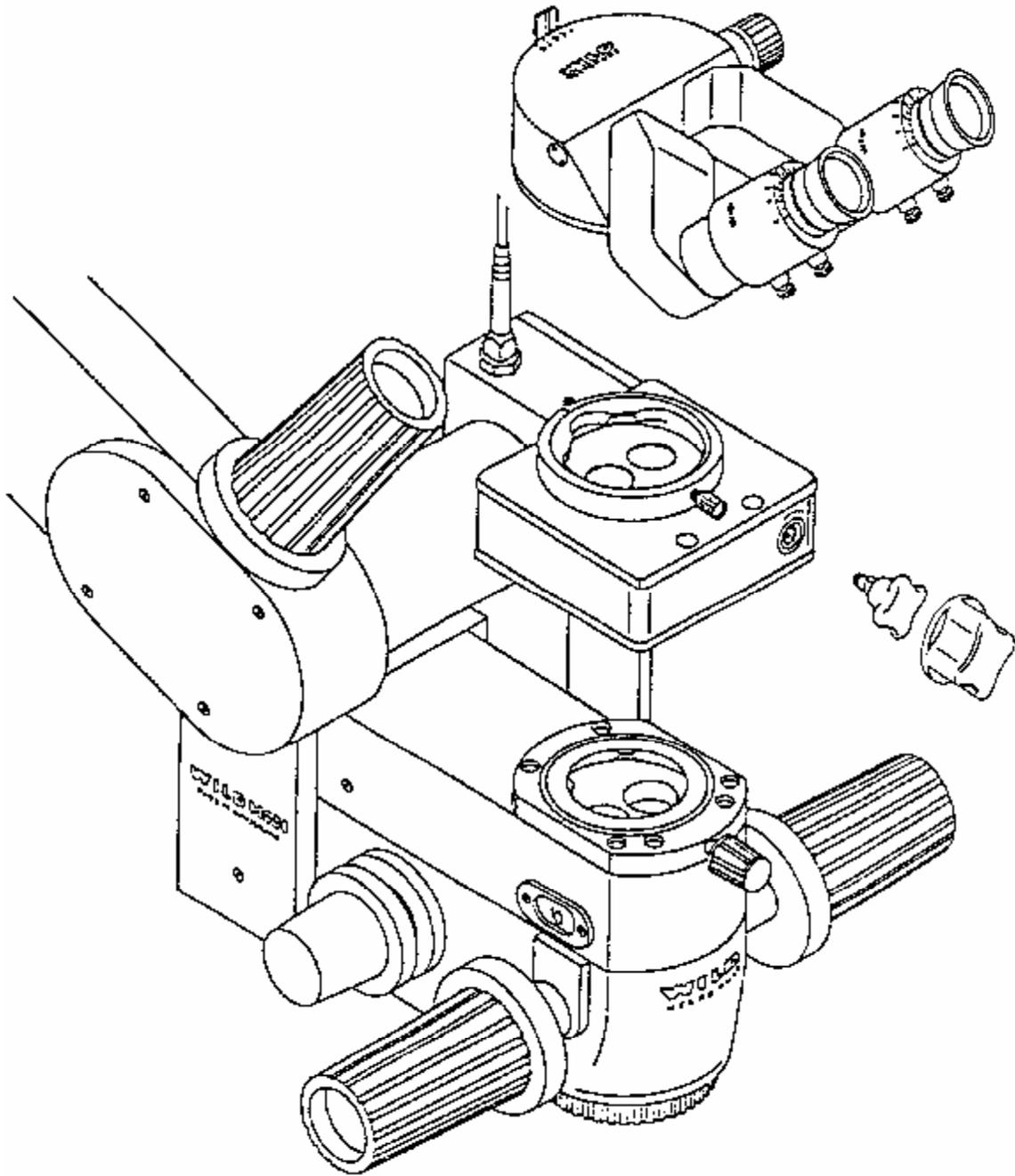
A separate eye protector for the assistant must be provided if the laser shutter can only be positioned above the beam splitter.

When using a laser, always follow the instructions of the laser manufacturer.

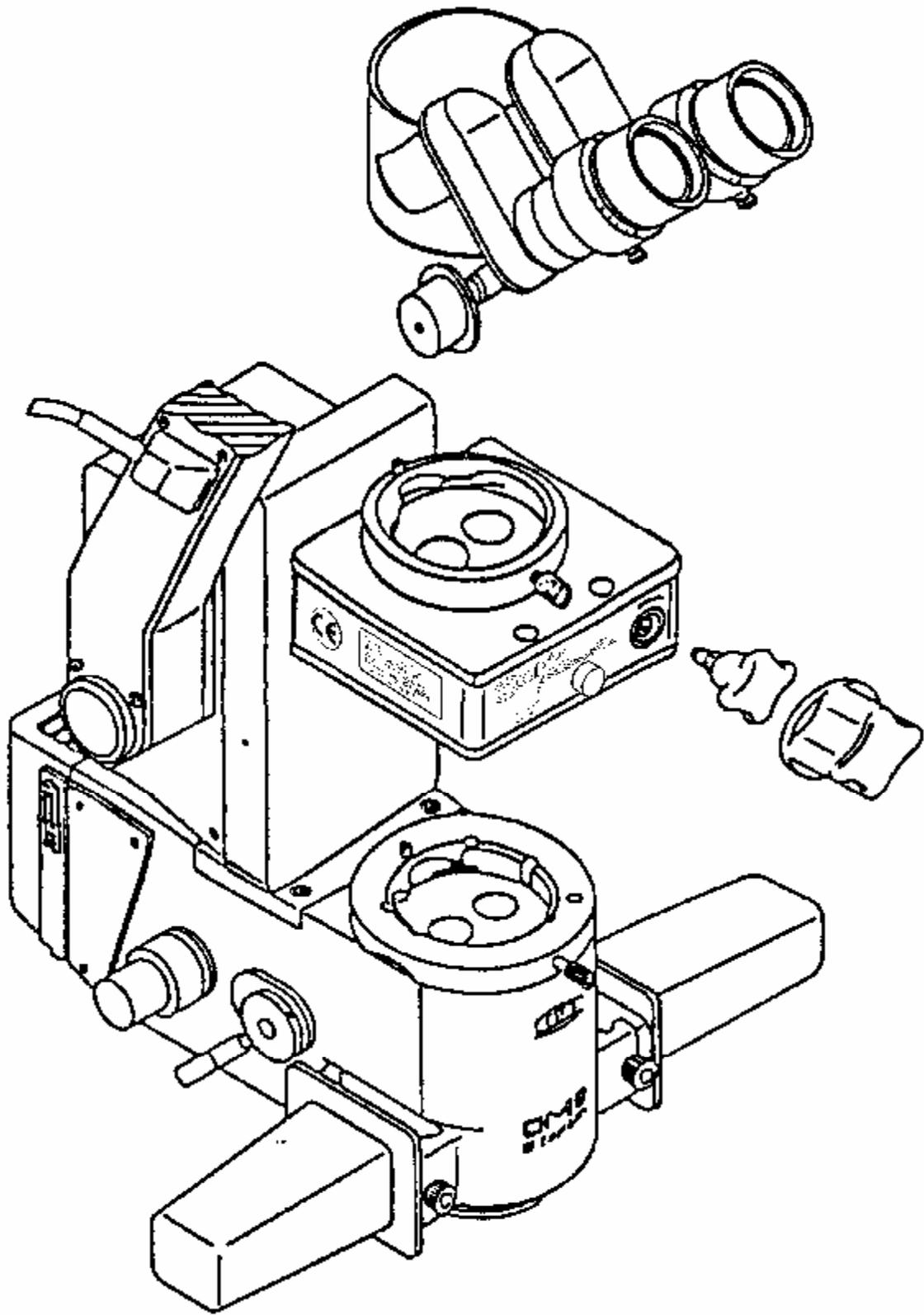
Illustrations of IVS on Various Microscopes



Zeiss Microscope



Leica (Wild) Microscope



Topcon Microscope

Using the IVS

Before Each Use

Before every use, be sure that:

- The unit is in good working order.
- All connections are secure.
- If a binocular eyepiece is use with swivel-mounted tubes, we recommend adjusting the angle to between 30° and 45°. Experience has shown this permits the user to sit more comfortably.

Practical Tips on Using the IVS

Adjustment of the IVS optical system is accomplished by rotating the sterilizable Rubber Adjustment Knob (OLIV-K) either clockwise or counterclockwise to its other position. Always activate the IVS if you are using optical inversion; e.g., with Ocular Instruments *steam sterilizable* or *non-autoclavable* wide angle inversion vitrectomy lenses.

If you are using non-inverting lenses, e.g., Landers High Refractive Index Vitrectomy Lenses, the IVS inverting system must be in the off mode. Simply rotate the Rubber Adjustment Knob until a yellow “O” appears in the window (Figure 1, No. 7).

Installation of the IVS lengthens the microscope body only slightly. Therefore, it can remain on the microscope during anterior eye segment and cataract procedures.

Maintenance

Removable Accessories

The adjustment knob (Figure 1, No. 3) is held in place by a notch lock in the IVS. When removing the rubber sterilizable cap (Figure 1, No. 4), simply pull it off gradually with care.

Care, Cleaning and Disinfection

Do not clean the IVS with agents which are aggressive, abrasive, contain chlorine or attack the finish of the unit. Do not allow any liquids to come in contact with the optical elements inside the IVS. The outer surfaces of the IVS may be cleaned by wiping with a damp cloth. Remove any residues with a mixture of equal parts of alcohol and distilled water.

Sterilization of the Adjustment Knob

Only the rubber cap needs to be sterilized, if it is used. The rubber cap is steam autoclavable at 250°F (121°C) or 270°F (132°C) for the appropriate time period per your sterilizer's instructions.

Transport of the IVS

Always position the optical system of the IVS in one of the two rest positions. Only then is the optical system properly immobilized. Avoid impacts when moving the IVS to another location, since this can have an adverse affect on the calibration of the device. Inspect the system after moving the microscope to make sure it is in good working order. When transporting separately, avoid unnecessary damage and costs, by transporting the IVS unit in its carrying case.

Do not keep the IVS in a cold storage area or leave it in a vehicle during the cold months of the year. The optics can become fogged following wide ranging changes in temperature from cold to warm. Should this occur, give the IVS time to adapt to the conditions of its new location before putting it into operation.

Troubleshooting

Should a problem arise which you cannot correct by using the trouble shooting table below, please label the IVS clearly as non-operational and call our service department or that of your local distributor from whom you purchased the IVS.

Problem	Possible Cause	Corrective Measures
Poor Image Quality	The glass surfaces of the IVS, the contact lenses are soiled.	Clean the glass surfaces with the appropriate cleaning solution.
Image is distorted	The IVS is mounted at an angle.	Mount the IVS correctly.
IVS wobbles	The locking screws are loose.	Tighten the knurled screws on the IVS and microscope.
Pronounced reflections on the contact lens	The microscope illumination is turned on.	Turn off the illumination and/or tilt the contact lens slightly.
Seeing surgeon's hand movements outside the image of the eye, causes nausea.	The IVS inverts all of the images that come into the microscope. Since the wide angle lenses invert the image of the fundus and vitreous, the IVS turns the image upright to its correct orientation. On the other hand, the lens housing and the doctors hands and everything outside the eye will appear inverted and will move in the opposite direction that you would expect.	<p>Increase the magnification of the microscope so that the only image seen is the inside of the eye that is produced by the lens. It may still be a little problem that they can see the lens housing moving in the opposite direction but after a little experience, the feeling of nausea should go away.</p> <p>The most important thing is that the microscope field of view is small enough that the surgeons cannot see their hands or the instruments where they are outside the eye. Then everything will look and feel correct.</p>

Guarantee

The IVS was carefully manufactured from the highest quality materials available and with modern production techniques. To keep the IVS in perfect working condition, it is important these operating instructions be followed.

The IVS is unconditionally guaranteed against defects in materials and workmanship within one year of invoice date. Problems or malfunctions caused by improper handling or external causes are not covered by the warranty. The IVS should only be serviced by a factory trained technician. Should you encounter a problem, please return it to Ocular Instruments in it's carrying case with both protection caps covering the optics.

Proof of purchase and a copy of the original packing slip are required before services can be provided under the guarantee. Please call Ocular Instruments to obtain a Return Goods Authorization number prior to returning the IVS. It is recommended that all shipments to Ocular Instruments be made via UPS, prepaid and insured for full value.

All guarantee claims are cancelled if the IVS is altered by an unauthorized person.

Please report any shipping damage immediately to your shipping company if the unit is received in a damaged condition. Many times the shipping company will not approve a claim if the damage is not reported immediately upon receipt.

Limitations of Liability for Malfunction or Damage

Ocular Instruments accepts responsibility for the safety, reliability and serviceability of the IVS only if the IVS is used in accordance with these operating instructions. All liability of Ocular Instruments ceases to exist if assembly work, additions, adjustments, overhauls, changes or repairs are made by unauthorized persons or if the unit is improperly serviced or handled.

Service Address

Supplementary information is available from our service department or from our authorized representatives. See the rating plate label on the left side of the IVS for the serial number. This should always be listed in all correspondence.

Ocular Instruments, Inc.
2255 116th Avenue NE
Bellevue WA 98004-3039
USA

Phone: 425-455-5200
Toll Free: 800-888-6616
Fax: 425-462-6669
E-mail: ocular@ocular-instruments.com
Internet: www.ocular-instruments.com

Declaration of Compliance

We declare that this product complies with the following norm:

EN 60 601-1 : 1990 i.e.
DIN VDE 0750 Teil 1

and with the provisions of Guideline No. 93/42EWG for medical products.



Technical Data

Operating conditions:

Temperature +10°C to +40°C
Humidity 30% to 75%
Air Pressure 700hPA to 1060hPa

Degree of waterproofing: IP 64

The IVS is adaptable to the following microscopes:

Zeiss OPMI 1/6
Retrolux 1/3/CS
Retroskop 1/2/CS
MDI/MDO/MDU

Leica M 650
M 690
M 840

Moeller Ophtamic 900

Topcon OMS 600

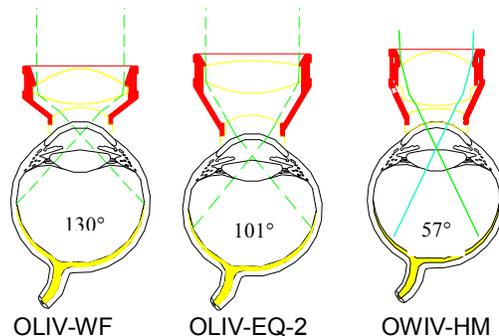
Kaps SOM 12

Information on other adaptations available on request. We reserve the right to make technological improvements without prior notice.

Autoclavable Wide Angle Inverted Image Contact Lenses

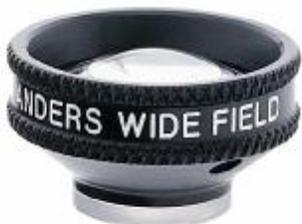
Description

Product Code	Image Mag	Diopter	Static FOV	Dynamic FOV	Lens Height
OLIV-WF	.38x	155	130°	146°	11.8mm
OLIV-EQ-2	.65x	91	101°	131°	13.7mm
OWIV-HM	.90x	66	57°	100°	15.1mm



Landers Wide Field Vitrectomy Lens

Designed with Maurice B. Landers, III, M.D., Chapel Hill, NC



Product Code: OLIV-WF

The Landers Wide Field Vitrectomy Lens was designed for panoramic viewing of the far peripheral retina and laser photocoagulation when managing a peripheral retinal tear or giant retinal tear.

Its wide field of view and low magnification make it particularly useful during fluid-gas exchanges. It is an excellent lens for use with media opacities such as cataracts and cloudy corneas, and works well through a small pupil. It also is the lens of choice for videotaping important procedures.

Landers Equatorial II Vitrectomy Lens

Designed with Maurice B. Landers, III, M.D., Chapel Hill, NC



Product Code: OLIV-EQ-2

The Landers Equatorial Vitrectomy Lens is excellent for delicate membrane peeling around the optic nerve and off of the major vascular arcades. It also provides an excellent image for delicate work around the macula such as macular hole surgery or peeling of epiretinal membranes from the macula.

Woldoff High Magnification Vitrectomy Lens

Designed with Herbert S. Woldoff, M.D., Phoenix, AZ



Product Code: OWIV-HM

The *Woldoff High Magnification Vitrectomy Lens* is ideal for wide angle viewing of the posterior pole. Its wide field provides stereopsis well beyond the area seen by a conventional flat lens.

The high magnification and resolution create very precise depth perception. It provides an excellent image for delicate work around the macula such as macular hole surgery or peeling of epiretinal membranes from the macula. It also is the lens of choice for videotaping macular procedures.

Technique – OLIV-WF, OLIV-EQ-2

After sterilization, the lens should be assembled, by screwing the two components together on a sterile field. The lens may be held on the eye by an assistant using the Landers Lens Handle (OLIV-H) or by suturing one of the Landers Lens Rings to the sclera.



When using contact lenses, methylcellulose or a visco-elastic solution should be used to keep the cornea moist and clear and to keep blood from beneath the lens. After a suitable wetting agent is placed on the cornea, the lens is placed on the cornea.

Many surgeons do not use an inverted image contact lens until the anterior third of the vitreous has been removed and a deeper image of the vitreous cannot be obtained with normal microscope observation.

Turn off the coaxial and oblique illumination of the microscope, since this may lead to reflections from the contact lens surfaces. Check the positions of instruments repeatedly before and during the operation, as it is very difficult to recognize the patient's crystalline lens through a contact lens.

In order to focus the microscope, set it to its lowest magnification and then raise the microscope head away from the patient's eye. It is suggested that one work at the lowest magnification. Most surgeons reduce magnification after they become familiar with the IVS so they may achieve more field of view.

Be sure the lens is seated well on the cornea. If the assistant has a poor image and you find the image good (or vice versa), it is possible only one observation beam path of the microscope is receiving and transmitting a good image. Slightly shifting the lens will correct the problem.

You can bring the pars plana into view by tilting the contact lens a little or by shifting it horizontally. Some lenses possess large depth of field. The concavity of the fundus then appears slightly flattened, especially toward the periphery. It is also possible that the anterior parts of intraocular instruments will at first appear somewhat thicker and slight bent or curved.

Keep endo-illumination as far as possible from the retina and increase illumination at its tip. This utilizes the wide-angle effect of the Wide Field Lens to its fullest. Light intensity at the retina will be somewhat reduced due to the distance from the retina.

Fluid/gas exchanges, fluid/silicone exchanges and gas/silicone exchanges can be easily be optically monitored even in phakic eye with the Wide Field Lens.

Technique – OWIV-HM

After sterilization, assemble the lens by screwing the two components together on a sterile field.

The lens is held on the eye by suturing one of the Landers Lens Rings to the sclera.



After a suitable wetting agent is placed on the cornea, the lens is placed on the cornea.

Many surgeons do not use an inverted image contact lens until the anterior third of the vitreous has been removed and a deeper image of the vitreous cannot be obtained with normal microscope observation.

Turn off the coaxial and oblique illumination of the microscope, since this may lead to reflections from the contact lens surfaces. Check the positions of instruments repeatedly before and during the operation, as it is very difficult to recognize the patient's crystalline lens through a contact lens.

With the microscope set at the lowest magnification and the microscope head travel at the lowest position, move the microscope to obtain a focus on the cornea. Once the lens has been placed on the eye, focus the microscope using the focusing adjustment mechanism away from the patient to focus on the image.

It is recommended to work at the magnification where the fundus image just fills the microscope field of view.

Be sure the lens is seated well on the cornea. If the assistant has a poor image and you find the image good (or vice versa), it is possible only one observation beam path of the microscope is receiving and transmitting a good image. Slightly shifting the lens will correct the problem.

Keep endo-illumination as far as possible from the retina and increase illumination at its tip. This utilizes the wide-angle effect of the lens to its fullest. Light intensity at the retina will be somewhat reduced due to the distance from the retina.

Product Care – OLIV-WF, OLIV-EQ-2, OWIV-HM

Cleaning Method 3

WARNING	Please adhere to the following instructions for the cleaning and sterilization of Ocular Landers Wide Field and Equatorial II Vitrectomy Lenses. Ocular Instruments Inc. will not be responsible for damage caused by use of alternative cleaning and sterilization methods.
----------------	--

Cleaning

Rinse: Immediately upon removal from patient's eye, thoroughly rinse in cool or tepid water.

Wash: Disassemble the lens by unscrewing the two halves of the lens in a counterclockwise motion (Figure 1). Wash each half of the lens with mild soap and water so that each element is free of mucous, sebaceous deposits, or other debris.

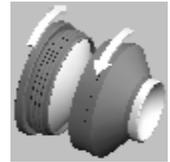


Figure 1

Caution	If fluid/gas exchange has occurred, wipe lens with alcohol to remove any trace of oil present. <i>If lens is not promptly and properly cleaned, permanent damage may result.</i>
----------------	--

Rinse: Rinse the elements thoroughly, then dry. When placing the elements on a surface to dry, always lay the elements as shown in (Figure 2) to avoid scratching.



Figure 2

Then: Proceed with sterilization instructions.

Sterilization - Autoclave

Prep: Place the two halves of the disassembled lens on their sides in sterilization case as shown in (Figure 3).

Process:	Flash autoclave (unwrapped)	
	Temperature	Time
	270°F (134°C)	10 minutes minimum

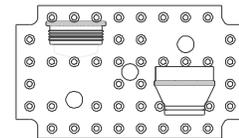


Figure 3

Caution	<i>Use only distilled water in the steam sterilizer.</i> If not distilled, mineral deposits from hard water (steam) will leave a cloudy film on the lens. The deposit can only be removed by regrinding and re-polishing the lens and repair costs approximate that of a new lens.
Important Note!	Moisture inside the lens may cause fogging of the lens during use. To avoid such fogging dry the internal surfaces of both halves of the lens after autoclaving and allow them to cool to room temperature prior to assembling.

Store: Place in a biological barrier peel pouch to ensure sterility after the process.

Sterilization - ETO

Minimum Time	Temperature	Aeration Time
1 hour	130°F (54°C)	12 hours

Sterilization - Steris System 1

Follow manufacturer's instructions.

Sterilization - Sterrad

Follow manufacturer's instructions.

NOTE	Discoloration of the lens cone may occur using Sterrad. Optical Function will not be changed.
-------------	---

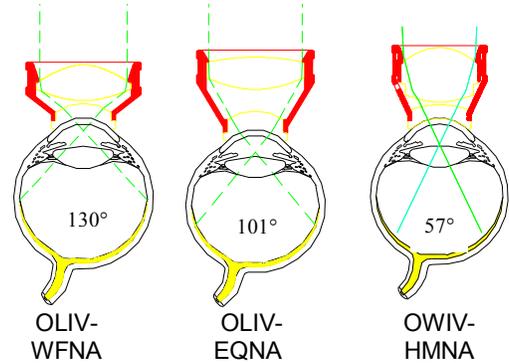
Sterilization for Autoclavable Lens Cleaning Cloth (OLCCA)

Flash autoclave (unwrapped) at a minimum of 270°F (134°C) for a minimum of 10 minutes.

Non-Autoclavable Wide Angle Inverted Image Contact Lenses

Description

Product Code	Image Mag	Diopter	Static FOV	Dynamic FOV	Lens Height
OLIV-WFNA	.38x	155	130°	146°	11.8mm
OLIV-EQNA	.65x	91	101°	131°	14.4mm
OWIV-HMNA	.90x	66	57°	100°	15.1mm



Landers NA Wide Field Vitrectomy Lens

Designed with Maurice B. Landers, III, M.D., Chapel Hill, NC

Product Code: OLIV-WFNA

The *Landers NA (non-autoclavable) Wide Field Vitrectomy Lens* is a single-piece lens designed for clinical situations where autoclaving is either not available or not required for quick turnaround.

Excellent for panoramic viewing of the far peripheral retina and laser photocoagulation when managing a peripheral retinal tear or giant retinal tear. Its wide field of view and low magnification make it particularly useful during fluid-gas exchanges. Excellent lens for use with media opacities such as cataracts and cloudy corneas, and works well through a small pupil. It is the lens of choice for videotaping important procedures.



Landers NA Equatorial Vitrectomy Lens

Designed with Maurice B. Landers, III, M.D., Chapel Hill, NC

Product Code: OLIV-EQNA

The *Landers NA (non-autoclavable) Equatorial Vitrectomy Lens* is a single-piece lens designed for clinical situations where autoclaving is either not available or not required for quick turnaround. It is excellent for delicate membrane peeling around the optic nerve and off of the major vascular

arcades. It also provides an excellent image for delicate work around the macula such as macular hole surgery or peeling of epiretinal membranes from the macula.



Woldoff NA High Magnification Vitrectomy Lens

Designed with Herbert S. Woldoff, M.D., Phoenix, AZ

Product Code: OWIV-HMNA

The *Woldoff NA (non-autoclavable) High Magnification Vitrectomy Lens* is a single-piece lens designed for clinical situations where autoclaving is either not available or not required for quick turnaround.

It is ideal for wide angle viewing of the posterior pole. Its wide field provides stereopsis well beyond the area seen by a conventional flat lens. The high magnification and resolution create very precise depth perception. It provides an excellent image for delicate work around the macula such as macular hole surgery or peeling of epiretinal membranes from the macula. It also is the lens of choice for videotaping macular procedures.

Technique – OLIV-WFNA, OLIV-EQNA

The lens may be held on the eye by an assistant using the Landers Lens Handle (OLIV-H) or by suturing one of the Landers Lens Rings to the sclera.



After a suitable wetting agent is placed on the cornea, the lens is placed on the cornea.

Many surgeons do not use an inverted image contact lens until the anterior third of the vitreous has been removed and a deeper image of the vitreous cannot be obtained with normal microscope observation.

Turn off the coaxial and oblique illumination of the microscope, since this may lead to reflections from the contact lens surfaces. Check the positions of instruments repeatedly before and during the operation, as it is very difficult to recognize the patient's crystalline lens through a contact lens.

In order to focus the microscope, set it to its lowest magnification and then raise the microscope head away from the patient's eye. It is suggested that one work at the lowest magnification. Most surgeons reduce magnification after they become familiar with the IVS so they may achieve more field of view.

Be sure the lens is seated well on the cornea. If the assistant has a poor image and you find the image good (or vice versa), it is possible only one observation beam path of the microscope is receiving and transmitting a good image. Slightly shifting the lens will correct the problem.

You can bring the pars plana into view by tilting the contact lens a little or by shifting it horizontally. Some lenses possess large depth of field. The concavity of the fundus then appears slightly flattened, especially toward the periphery. It is also possible that the anterior parts of intraocular instruments will at first appear somewhat thicker and slight bent or curved.

Keep endo-illumination as far as possible from the retina and increase illumination at its tip. This utilizes the wide-angle effect of the Wide Field Lens to its fullest. Light intensity at the retina will be somewhat reduced due to the distance from the retina.

Fluid/gas exchanges, fluid/silicone exchanges and gas/silicone exchanges can be easily be optically monitored even in phakic eye with the Wide Field Lens.

Technique – OWIV-HMNA

The lens is held on the eye by suturing one of the Landers Lens Rings to the sclera.

After a suitable wetting agent is placed on the cornea, the lens is placed on the cornea.



Many surgeons do not use an inverted image contact lens until the anterior third of the vitreous has been removed and a deeper image of the vitreous cannot be obtained with normal microscope observation.

Turn off the coaxial and oblique illumination of the microscope, since this may lead to reflections from the contact lens surfaces. Check the positions of instruments repeatedly before and during the operation, as it is very difficult to recognize the patient's crystalline lens through a contact lens.

With the microscope set at the lowest magnification and the microscope head travel at the lowest position, move the microscope to obtain a focus on the cornea. Once the lens has been placed on the eye, focus the microscope using the focusing adjustment mechanism away from the patient to focus on the image.

It is recommended to work at the magnification where the fundus image just fills the microscope field of view.

Be sure the lens is seated well on the cornea. If the assistant has a poor image and you find the image good (or vice versa), it is possible only one observation beam path of the microscope is receiving and transmitting a good image. Slightly shifting the lens will correct the problem.

Keep endo-illumination as far as possible from the retina and increase illumination at its tip. This utilizes the wide-angle effect of the lens to its fullest. Light intensity at the retina will be somewhat reduced due to the distance from the retina.

Product Care – OLIV-WFNA, OLIV-EQNA, OWIV-HMNA

Cleaning Method 1

Cleaning
Rinse: Immediately upon removal from patient's eye, thoroughly rinse in cool or tepid water.
Wash: Place a few drops of mild soap on a moistened cotton ball. Gently clean with a circular motion.
Rinse: Thoroughly rinse in cool or tepid water, then dry carefully with a <i>non-linting</i> tissue.
Then: Proceed with either disinfection or sterilization instructions.

Disinfection																
Soak In:	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 45%; background-color: #cccccc;">GLUTARALDEHYDE</th> <th style="width: 10%; text-align: center;">OR</th> <th style="width: 45%; background-color: #cccccc;">BLEACH</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">2% or 3.4% aqueous solution</td> <td></td> <td style="text-align: center;">10% solution mixed at: 1 part bleach to 9 parts cool tepid water</td> </tr> <tr> <td style="text-align: center;">Temperature per manufacturer instructions</td> <td></td> <td></td> </tr> <tr> <td style="text-align: center;">Minimum exposure time = 20 minutes</td> <td></td> <td style="text-align: center;">Recommended exposure time = 10 minutes</td> </tr> <tr> <td style="background-color: #cccccc; text-align: center;">CAUTION</td> <td colspan="2" style="text-align: center;"><i>To avoid damage to the lens, do not exceed recommended exposure time.</i></td> </tr> </tbody> </table>	GLUTARALDEHYDE	OR	BLEACH	2% or 3.4% aqueous solution		10% solution mixed at: 1 part bleach to 9 parts cool tepid water	Temperature per manufacturer instructions			Minimum exposure time = 20 minutes		Recommended exposure time = 10 minutes	CAUTION	<i>To avoid damage to the lens, do not exceed recommended exposure time.</i>	
GLUTARALDEHYDE	OR	BLEACH														
2% or 3.4% aqueous solution		10% solution mixed at: 1 part bleach to 9 parts cool tepid water														
Temperature per manufacturer instructions																
Minimum exposure time = 20 minutes		Recommended exposure time = 10 minutes														
CAUTION	<i>To avoid damage to the lens, do not exceed recommended exposure time.</i>															
Then:	<p>Rinse lens <i>thoroughly</i> to remove disinfection solution. 3 cycles of 1 minute, with cool or tepid water is recommended.</p> <p>Dry carefully and place in a dry storage case.</p>															
NOTE	This lens is known to be compatible with: Asepti-Wipe, Cavi-cide, Cidex, Cidex OPA, DisCide Wipe, Enviro-cide, H ₂ O ₂ -3%, and Opti-Cide.															

Sterilization						
AUTOCLAVE	STERRAD	STERIS SYSTEM 1	ETO	ETO Parameters		
NO	NO	YES	YES	Minimum Time	Temperature	Aeration Time
		Per manufacturer instructions	See Right	1 hour	130°F (54°C)	12 hours
WARNING	<i>Never Steam Autoclave or Boil this lens. Never soak in Alcohol, Acetone or other solvents.</i>					

Sterilization for Autoclavable Lens Cleaning Cloth (OLCCA)
Flash autoclave (unwrapped) at a minimum of 270°F (134°C) for a minimum of 10 minutes.

For information on compatibility with alternative sterilization methods, contact Customer Service.



Landers Four Post Vitrectomy Lens Ring

Designed with Maurice B. Landers, III, M.D., Chapel Hill, NC

Product Code: OLV-1/4P

The Landers Four Post Vitrectomy Ring consists of a stainless steel ring with an inside diameter of 11.5mm and four posts set at a 30° angle. The posts are 2mm tall and the ring is 3.2mm tall.

The new design permits easier scleral depression in the 9:00 and 3:00 regions. Two posts, with space in between, allow compensation for slightly misplaced sutures to easily maintain ring centration on the cornea.

Technique – OLV-1/4P Ring

The Landers Ring is positioned with the cornea geometrically centered within the ring.

Using a 5.0 Mersilene suture, the suture needle is inserted immediately next to the limbus at the 3:00 and 9:00 position using a single armed suture.

The suture is then cut midway between the 3:00 and 9:00 posts.

The suture is then tied around both posts on each side. If the sutures are not placed precisely at the 3:00 and 9:00 positions, the ring may become decentered, compromising the view of the retina.

The first suture is tied loosely holding the ring in place. *If tied too tightly, the ring will tilt upward and may even flip over.*

The second suture is tied tightly in place.

Finally, the first suture is re-tied tightly in place.

If the ring is slightly off center, the knot can be tied over one of the posts rather than both, thus maintaining the centration.

Product Care – OLV-1/4P Ring – *Cleaning Method 3*

Cleaning

Rinse: Immediately upon removal from patient's eye, thoroughly rinse in cool or tepid water.
 Wash: Place a few drops of mild soap on a moistened cotton ball. Gently clean with a circular motion.
 Rinse: Thoroughly rinse in cool or tepid water, then dry carefully with a *non-linting* tissue.
 Then: Proceed with either disinfection or sterilization instructions.

Disinfection

Soak In:	GLUTARALDEHYDE		OR	BLEACH	
	2% or 3.4% aqueous solution			10% solution mixed at: 1 part bleach to 9 parts water	
	Temperature per manufacturer instructions				
	Minimum exposure time = 20 minutes			Recommended exposure time = 10 minutes	
	CAUTION	<i>To avoid damage to the lens, do not exceed recommended exposure time.</i>			
Then:	Rinse lens <i>thoroughly</i> to remove disinfection solution. 3 cycles of 1 minute, with cool or tepid water is recommended.				
	Dry carefully and place in a dry storage case.				
NOTE	This lens is known to be compatible with: Asepti-Wipe, Cavi-cide, Cidex, Cidex OPA, DisCide Wipe, Enviro-cide, H ₂ O ₂ -3%, and Opti-Cide.				

Sterilization - Autoclave

Prep:	Place lenses, ocluder and forceps in sterilization case.				
Process:	Standard Cycle (wrapped)				
	Temperature	Time	OR	Temperature	Time
	270°F (134°C)	15 minutes minimum		250°F (121°C)	30 minutes minimum
	Caution	<i>Use only distilled water in the steam sterilizer.</i> If not distilled, mineral deposits from hard water (steam) will leave a cloudy film on the lens. The deposit can only be removed by regrinding and re-polishing the lens and repair costs approximate that of a new lens.			
Store:	Place in a biological barrier peel pouch to ensure sterility after the process.				
For Immediate Use Only	Flash autoclave (unwrapped) at a minimum of 270°F (134°C) for a minimum of 10 minutes.				

Sterilization - ETO

Minimum Time	Temperature	Aeration Time
1 hour	130°F (54°C)	12 hours

Sterilization - Steris System 1

Follow manufacturer's instructions.

Sterilization - Sterrad

Follow manufacturer's instructions.

For information on compatibility with alternative sterilization methods, contact Customer Service.