

Instructions for Use

Foot Switches

EF 5000 / EF 5001

Look closer. See further.

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1 Manufacturer's Details and Contact Information

Manufacturer of the surgical microscope system is

Haag-Streit AG
 Gartenstadtstrasse 10
 3098 Koeniz
 Switzerland

European Community Authorised Representative (EC-REP):

Haag-Streit Deutschland GmbH
 Rosengarten 10
 22880 Wedel
 Germany

If you have any questions, please provide your local sales representative the reference and serial numbers for the relevant components. You can obtain these from the respective components' type plates.

You will find the contact details for your local sales representative in the notes pages of these instructions. A current list of local sales representatives worldwide can be found on the Haag-Streit website (<https://www.haag-streit.com/haag-streit-group/contact/haag-streit-distributors/distributors>).

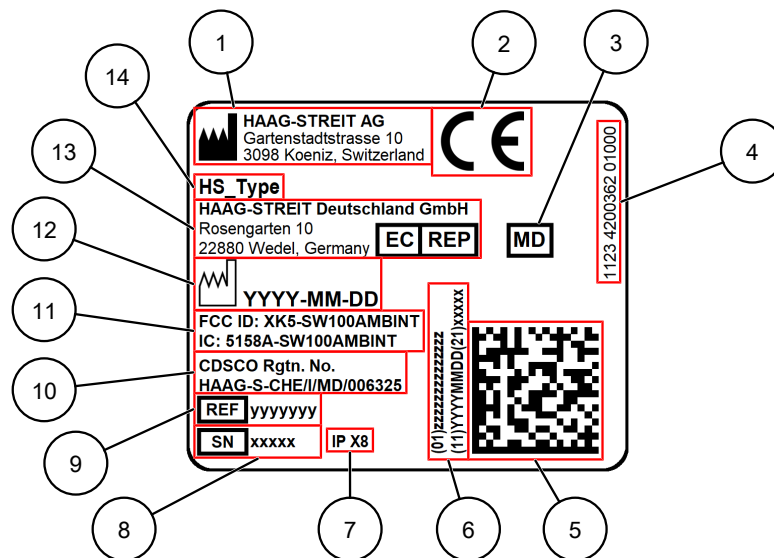


Illustration 1: Type Plate

Item	Name
1	Manufacturer
2	CE-Conformity Label
3	Medical Device
4	Item Number
5	QR-Code (UDI information)
6	UDI Code: <ul style="list-style-type: none"> – (01): Global Trade Item Number (GTIN) – (11): Date of Manufacture – (21): Serial Number (SN)
7	Degree of Protection by Enclosure (IP-Code)
8	Serial Number (SN)
9	Reference Number

Item	Name
10	Registered Number at Central Drugs Standard Control Organisation (<i>CDSCO</i>)
11	EF 5001: Bluetooth Encoding of Wireless Connection
12	Date of Manufacture according to ISO 8601
13	European Community Authorized Representative (<i>EC-REP</i>)
14	Product Name

2 Information for Safety

Residual Risks

The equipment from Haag-Streit has been designed and produced according to state of the art standards and best practices at the time of manufacture. However, some residual risks remain and are indicated on the equipment and in the form of safety messages (WARNING, CAUTION, NOTICE) in this document.

Explanation of Warnings



DANGER

Will lead to serious injury or death.

Follow the instructions to avoid a hazard.



WARNING

May lead to serious injury or death.

Follow the instructions to avoid a hazard.



CAUTION

May lead to light or moderately serious injuries.

Follow the instructions to avoid a hazard.



NOTICE

May lead to material damage and / or operating error.

Follow the instructions to avoid a hazard.

3 Legal Information

The part of the surgical microscope system described in these instructions for use supports the intended use of the surgical microscope system.

3.1 Intended Use

The foot switch is part of a surgical microscope system. Selected functions of the surgical microscope system can be controlled with it.

The foot switch EF 5001 additionally offers a wireless connection to the surgical microscope system.

3.2 Important Notes

Obligatory Reporting of Serious Incidents

Any serious incident occurring in relation to the product must be reported to Haag-Streit and the competent authority of the member state in which the user and/or the patient is established.

First Installation and Commissioning

The first installation and commissioning of the medical device must be done in accordance with the instructions in the service manual for the medical device. The first installation and commissioning of the medical device must be performed by the authorized local representative or by Haag-Streit directly.

An installation report, stating the full and error free functionality of the medical device, must be signed by both parties after the medical device has been installed and is commissioned.

Liability for Function and Damage

If the device is modified, repaired or serviced improperly, the warranty of Haag-Streit is void. Only personnel authorized by Haag-Streit may modify, repair or service the device.

Liability for Precaution

The user shall always take precaution appropriate to the application to be able to end the surgical procedure without the surgical microscope system.

Accessories

External accessories from 3rd party manufacturers must only be connected to the system after authorization by Haag-Streit. The interfaces and the combination of systems have to be validated.

Maintenance

The device must only be serviced or repaired following the service manual.

Modifications and maintenance must only be performed by persons explicitly authorized by Haag-Streit. For maintenance only original parts from Haag-Streit as well as approved parts from third-party suppliers have to be installed. After maintenance or technical modifications, the device must be readjusted following the service manual.

In case of technical inquiries, the device name, the reference number (*REF*), and the serial number (*SN*) need to be indicated.

For installation, dismantling and replacement of components, the actual national laws and directions regarding medical products (e.g. traceability, approval of added components, electrical safety) have to be followed. In case of doubt, please contact Haag-Streit.

4 Overview of the Product

4.1 Foot Switches

EF 5000 / EF 5001

The keys and pedals of the foot switch can be configured individually in dependence on the carrier unit (see instructions for use of the carrier unit). Any individual configurations are stored in the respective carrier unit. The default settings are as follows:

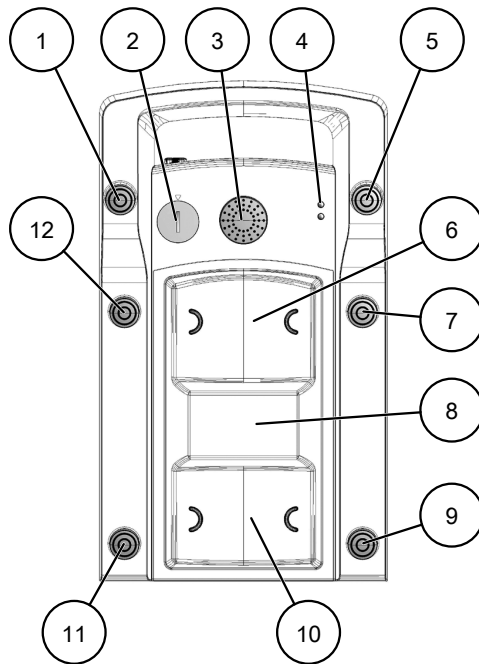


Illustration 2: EF 5000 / EF 5001

Item	Name	Note
1	Push Button 5	Ext. device on/off
2	Indicator for Assignment to Radio Receiver	EF 5001: Number matches number on corresponding radio receiver.
3	XY Joystick	Micro-adjust position of microscope
4	Status Display	Communication and energy status of foot switch
5	Push Button 6	No function
6	Rocker Switch 1	Focus +/-
7	Push Button 4	No function
8	Resting Platform	
9	Push Button 2	Illumination +
10	Rocker Switch 2	Zoom +/-
11	Push Button 1	Illumination -
12	Push Button 3	No function

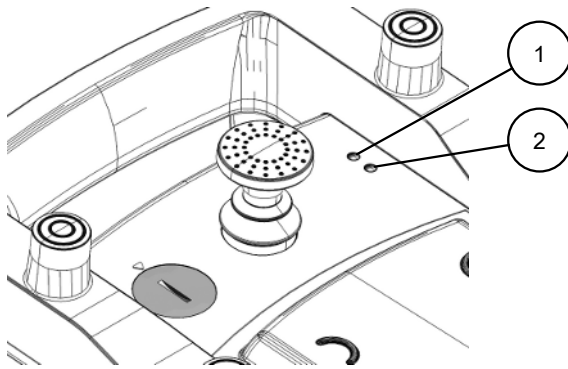


Illustration 3: Status Display

Item	Name	Note
1	Status Display 1	Communication between foot switch and carrier unit
2	Status Display 2	Energy supply for foot switch

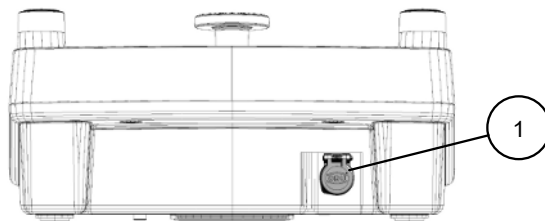


Illustration 4: EF 5000 / EF 5001 - Front View

Item	Name	Note
1	Socket	EF 5001: Connection of power supply cord (backup cable)

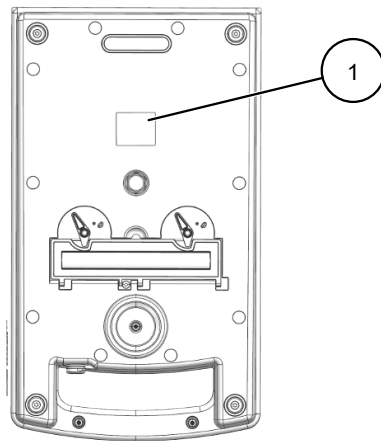


Illustration 5: EF 5000 / EF 5001 - Bottom View

Item	Name	Note
1	Type Plate	Information regarding the product (see Manufacturer's Details and Contact Information [▶ 3])

4.2 Combinations

	EF 5000 with Holder (REF 4000029)	EF 5001 with Holder (REF 4000030)
FS 2-25	X	X

Due to the number of possible combinations there may be deviations from the stated data. For information regarding the compatibility of your surgical microscope system, please contact your local sales representative.

5 Before each Operation

5.1 Initial Preparation

1. Disconnect the foot switch from the carrier unit (see instructions for use of the carrier unit).
2. Check that all electrical and mechanical connections are firmly seated and free of defects.

5.2 Cleaning and Disinfection

Perform the cleaning and/or disinfection before each use.

The operator must ensure that the preparation is performed within a suitable validated procedure in accordance with the respective national regulations.

The treatment process must at least meet the following requirements:

- Cleaning agent and disinfectant must be approved for the treatment of medical products.
- Cleaning and disinfecting devices and agents must be in accordance with ISO 15883 standard.

Refer to the instructions from the manufacturer of the disinfectant regarding recommended concentration and contact time.

1. Make sure that no cleaning agent can ingress into the housing of the surgical microscope system.
2. Use slightly soaked wipes with sufficient amount of cleaning agent.
3. Perform disinfection afterwards with disinfectant.

As items are cleaned or disinfected, they should be inspected:

4. Check all items before and after each treatment for mechanical damage.
5. Replace damaged items.
6. Ensure that no visible impurities or contaminations remain on the items.

Manual Cleaning	
External Surfaces and Operating Elements	<p>Materials required</p> <ul style="list-style-type: none"> – Disposable gloves – Cloth (Damp cloth/single-use tissues or wipes, cotton or microfiber cloth) – Cleaning agent (glutaraldehyde-based or alcohol-based) – Cleaning agent (pH 6 – 10) <p>Process</p> <ul style="list-style-type: none"> – Use disposable gloves. – Soak cloth or wipes with a sufficient amount of cleaning agent. – Wipe off the contamination with a cloth soaked in cleaning agent. – Perform disinfection afterwards with disinfectant. – Let disinfectant dry out in air.

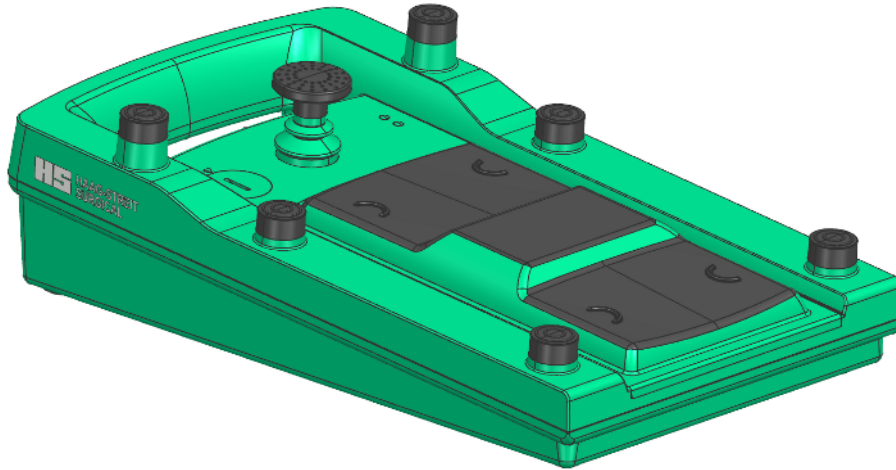


Illustration 6: EF 5000 / EF 5001, green color-coded surfaces intended for cleaning and disinfection

Color	Note
Green	Parts that are intended for cleaning and disinfection.
Black	Parts that are intended to be touched by the user. They must be cleaned and disinfected before and after each surgical intervention.
Gray	Parts that are not intended for cleaning and disinfection.

6 Operation of the Product

Activation of the Foot Switch (EF 5001 only)

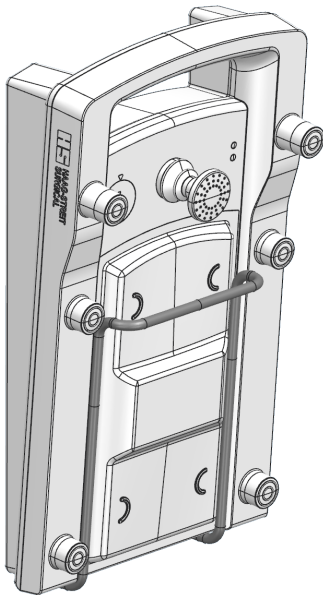
The foot switch can be used immediately after the surgical microscope system has been turned on. Activate it by pressing any key.

Configuration of the Foot Switch

The keys and pedals of the foot switch can be configured individually in dependence on the carrier unit. To do this, you first have to create a user via the software of the surgical microscope system (see instructions for use of the surgical microscope system). For the default setting see Overview of the Product [▶ 7].

Storage of the Foot Switch

If not in use, the foot switch can be stored in a holder. The initial installation of the holder is done by a service technician.



7 Troubleshooting








CAUTION

Risk of limited treatment options!

Changing the software settings without appropriate knowledge may result in certain functions of the surgical microscope system not being available during surgery.

- a) Read the instructions for use before changing settings.
- b) If changes in settings have been made, the functionality must be ensured before surgery.

7.1 Status Display

Status Display	EF 5000	EF 5001
	The foot switch is active.	The foot switch is active.
		There is no wireless connection to the carrier unit. <ul style="list-style-type: none"> – Connect foot switch and carrier unit to power supply cord.
		The batteries will last for a maximum of 20 days. <ul style="list-style-type: none"> – Replace the batteries.
		The batteries will last for a maximum of 5 days. <ul style="list-style-type: none"> – Replace the batteries as soon as possible.
	There is no cable connection to the carrier unit. <ul style="list-style-type: none"> – Check the connection between foot switch and carrier unit. 	
The foot switch does not respond to key commands.	<ul style="list-style-type: none"> – Check the connection between foot switch and carrier unit. 	<ul style="list-style-type: none"> – Connect foot switch and carrier unit via backup cable. – Replace the batteries.

8 Service



WARNING

Risk of uncontrolled system behavior!

Foot switch malfunctions may cause uncontrolled or unexpected system behavior, such as unintended microscope movements or changes in brightness during surgery.

- ✓ In case the foot switch shows unusual functional behavior:
 - a) Disconnect the foot switch. Depending on whether you are using a wired or wireless foot switch, disconnect either the foot switch cable or the foot switch receiver from the foot switch connector.
 - b) If battery status of the wireless foot switch is low, replace the batteries. Only use fully charged, new batteries (no accumulators).
 - c) Reconnect the foot switch and check functional behavior. The wireless foot switch can alternatively be checked with the backup cable.
 - d) In case of persistent unusual functional behavior, the foot switch must not be used. Call the Haag-Streit Service.

8.1 Replace the Batteries (EF 5001 only)



NOTICE

Loss of function or malfunction due to improper battery replacement

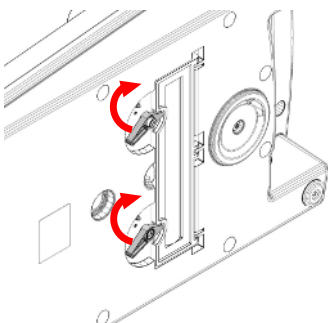
Improper battery replacement may result in loss of function or malfunction of the foot switch. On principle, always use new, fully charged batteries. When discharged batteries are used as a replacement, a wrong status may be displayed.

- a) Use new, fully charged batteries.
- b) Do not use rechargeable batteries.
- c) Do not mix new and (partially) discharged batteries.
- d) Make sure to put the batteries in with correct polarity.

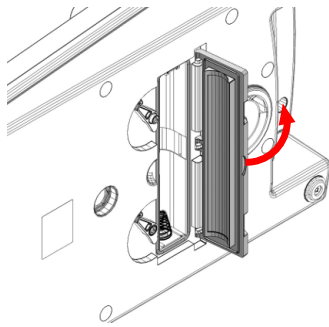
The following batteries are recommended to achieve the longest possible operating time:

- Energizer Ultra Plus
- Panasonic LR14 Powerline

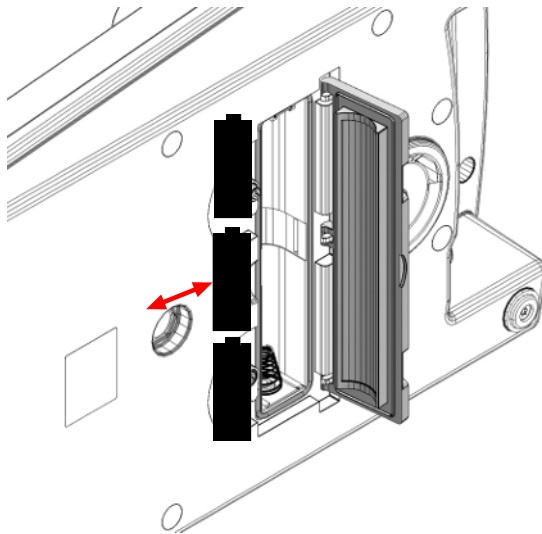
1. Lift the battery box levers.



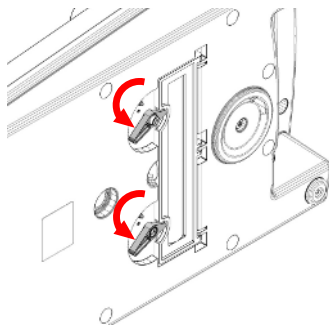
2. Open the battery box.



3. Replace the batteries. Make sure that the used battery type is LR14 (type C) with 1.5 V.

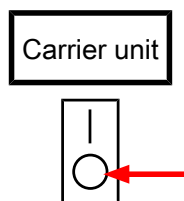


4. Press the battery box levers completely back down.

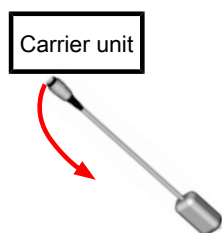


8.2 Connect to Carrier Unit via Backup Cable (EF 5001 only)

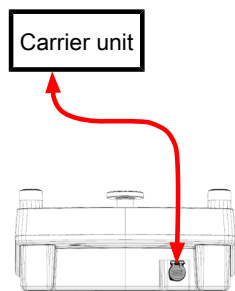
1. Turn off the surgical microscope system.



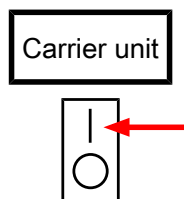
2. Disconnect the radio receiver from the corresponding connector of the carrier unit (see instructions for use of the carrier unit).



3. Connect the foot switch and carrier unit via the backup cable.



4. Turn on the surgical microscope system.



9 Maintenance

9.1 General

Perform maintenance on the surgical microscope system regularly in order to ensure safe operation and a long service life. The surgical microscope system is designed for an average service life of ten years. By adhering to the relevant maintenance intervals, a safe working life can be extended beyond this period.

Certain components will age or wear more quickly, depending on use. Components with a limited service life must be replaced according to the maintenance intervals (see the following table). Other components may be damaged by improper handling and should therefore be inspected regularly and replaced if necessary.



NOTICE

Do not conduct maintenance work during an ongoing operation!


9.2 Maintenance Intervals

Maintenance tasks which are not described in these instructions must be conducted by authorized service technicians.

Maintenance tasks which can be conducted by the user are described in the following table.

User	
Maintenance Interval	Task
Before each Use	Before each Operation [▶ 10]
After Configuring the Foot Switch	Check if configured functions work properly.
Every 6 Months and After Replacing Spare Parts	The foot switch must be serviced by the local sales representative of Haag-Streit.

10 Technical Data

	EF 5000	EF 5001
Identification		
Reference Number (REF)	4400613	4400614
Environmental Conditions, Operating		
Temperature [°C]	+ 10 ... + 40	+ 10 ... + 40
Relative Air Humidity [%]	30 ... 90	30 ... 90
Air Pressure [hPa]	700 ... 1060	700 ... 1060
Environmental Conditions, Storage and Transport		
Temperature [°C]	- 20 ... + 70	- 20 ... + 70
Relative Air Humidity [%]	10 ... 90	10 ... 90
Air Pressure [hPa]	500 ... 1120	500 ... 1120
Mechanical Specifications		
Dimensions (H x W x D) [mm]	120 x 242 x 420	120 x 242 x 420
Weight [kg]	2.3	2.5
Protection Type through Housing	IP X8	IP X8
Operating Elements		
Pedals	2	2
Joystick	1	1
Keys	6	6
Electrical Specifications		
Batteries	-	3 x 1,5 V, IEC LR14 (type C)
Frequency Range [MHz]	-	2400 ... 2483,5
Channel Spacing [kHz]	-	500
Modulation Type	-	2-FSK, MSK
Output [dBm]	-	- 6 e.i.r.p (0 at 50 Ohm)
Input Sensitivity [dBm]	-	< - 98
Antenna Model	-	Internal ceramics antenna
Range [m]	-	ca. 10 ... 30
Conformity		
Classification	 Regulation (EU) 2017/745 Class I	
Safety	IEC 60 601-1 Protection Class I	

11 Disposal



Dispose of the surgical microscope system and its components according to national and regional legislation.

Within the European Union, the surgical microscope system and its components are subject to EU-Directive on Waste of Electrical and Electronic Equipment and may not be disposed together with waste from private households.

The manufacturer shall take the surgical microscope system and its components back for proper recycling or disposal. Please contact your local Haag-Streit sales representative.

Glossary

CDSCO

CDSCO is the abbreviation for "Central Drugs Standard Control Organisation", India's national regulatory authority for drugs and medical devices.

CE

CE is the abbreviation for "Communauté Européen", the European Community. The abbreviation is used in a special graphic layout to state that the given product is designed and produced according to the European guidelines for product safety and user protection.

EC-REP

EC-REP is the abbreviation for "European Community Authorized Representative". Medical device manufacturers located outside the EU must designate an authorized representative located in the EU to fulfill the CE requirements for placing medical devices on the EU market.

GTIN

GTIN is the abbreviation for "Global Trade Item Number", a unique and internationally recognized identification for a product with 14 digits.

IP-Code

IP xx, indicates how well a cabinet protects the circuits and switches against ingress of fluids.

MD

MD is the abbreviation for "Medical Device", which states that the given device is intended for medical use.

QR-Code

Quick Response Code. Creates a link to online information when scanned with a scanning app on a smart-phone.

REF

REF is the abbreviation of the term "Reference Number". Each product and all spare parts have a unique reference number, by which they can be ordered.

SN

SN is the abbreviation of the term "Serial Number". Every product is given a unique serial number, by which the specific technical data can be retrieved.

UDI

UDI is the abbreviation for "Unique Device Identification". The UDI code enables medical device traceability and prevents product diversion and counterfeiting.

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Instructions for Use

Accessories for HS Surgical Microscope Systems

Eyepiece Heads, Tocular,
Beamsplitters, Vertiscopes,
Double Iris Diaphragm,
Stereoscopic Co-Observer,
Camera Attachments, Front Lens

Look closer. See further.

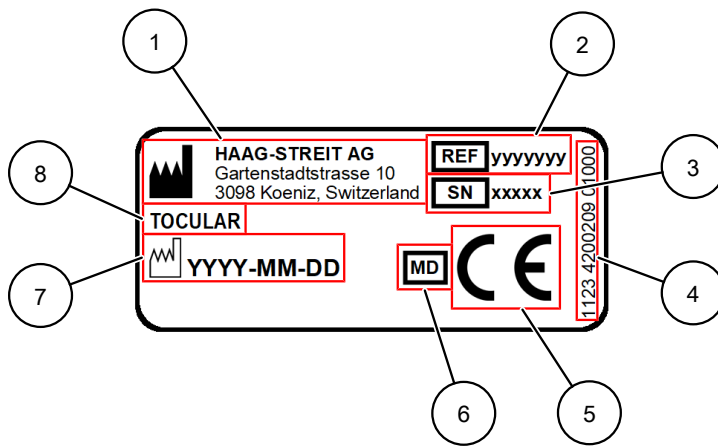
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Type Plate of TOCULAR



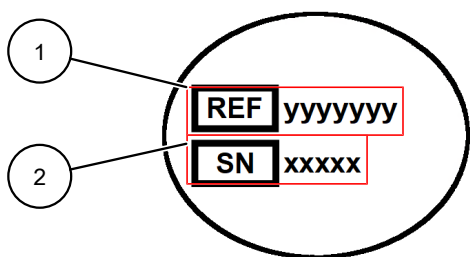
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3	Serial Number (SN)
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5	CE-conformity Label
6	Medical Device
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8	Product Name

Type Plate of Eyepiece Heads



Item	Name
1	Manufacturer
2	Reference Number
3	Serial Number (SN)

Type Plate of Camera Attachments and Double Iris Diaphragm



Item	Name
1	Reference Number
2	Serial Number (SN)

For non-powered devices (accessories) the electrical specifications are not given.

2 Information for Safety

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May lead to material damage and / or operating error.

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2.1 General warnings



CAUTION

Risk of limited treatment options!

If defects are not detected, the surgical microscope system may not offer all functions during surgery.

- a) Before each use, make sure that all electrical and mechanical connections are firmly seated and free of defects.
- b) Regularly check the functionality and quality of the magnified vision.

- c) Do not use the system in case of any obvious defects, error states or functional restrictions.
Call the Haag-Streit Service.



CAUTION

Risk of unexpected moving parts!

Parts that move unexpectedly can cause injuries.

- a) Perform the weight balance of the microscope axis after the attachment of additional accessories or if orientation was changed.
- b) Make sure that the carrier unit is still balanced.

2.2 Warnings and Symbols



Follow the instructions

Read the instructions for use before operating the surgical microscope system.

3 Legal Information

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3.1 Important Notes

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For installation, dismantling and replacement of components, the actual national laws and directions regarding medical products (e.g. traceability, approval of added components, electrical safety) have to be followed. In case of doubt, please contact Haag-Streit.

4 Accessories

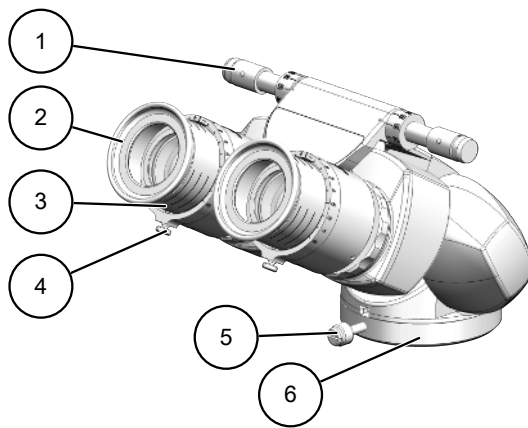
4.1 Eyepiece heads

4.1.1 Intended use

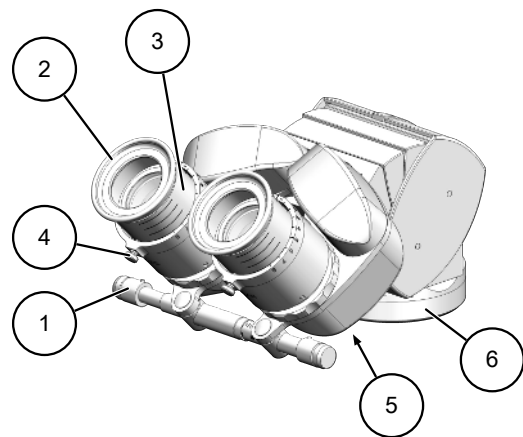
The eyepiece heads are part of a surgical microscope system. They enable stereoscopic vision in combination with a Haag-Streit surgical microscope. The eyepiece heads feature an option to set the individual pupillary distance and to correct possible visual impairment of the user. Due to the large pivoting range the 200° and 160° eyepiece head can be easily adapted to individual working conditions, thus making ergonomic work possible.

4.1.2 Overview Eyepiece head

Eyepiece 200°, 10 x



Eyepiece head 160°, 10 x



Item	Name	Note
1	PD Adjustment	Adjusts the ocular spacing to fit the pupillary distance.
2	Eye cups	Retract when using glasses (only with loosened knurled screw, see section Adjust the Diopters [▶ 14]).
3	Ocular	Adjust diopter compensation (only with loosened knurled screw, see section Adjust the Diopters [▶ 14]).
4	Knurled screw	For fixing the ocular tube.
5	Knurled screw	For fixing the protective cap.
6	Protective cap	For protecting the lower connection area during transport or storage.

4.1.3 Combination possibilities

Accessories	REF	Surgical microscope system	
		200°, 10x	160°, 10x
		4000026	4400820
HS Hi-R NEO 900	4000037	x	x
HS Hi-R NEO 900A	4000038	x	x
TOCULAR	4401034	x	x
Double Iris Diaphragm	4000013	x	x
Beamsplitter 50:50	4000006	x	x
Beamsplitter T	4000007	x	x
VERTISCOPE U	4000061	x	x
VERTISCOPE T-R	4000060	x	x

4.1.4 Installation

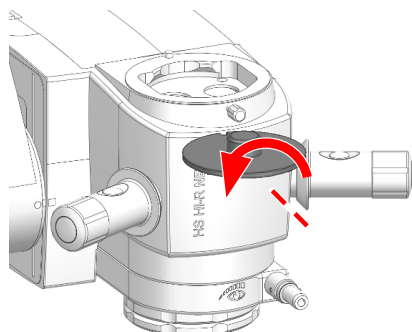


WARNING

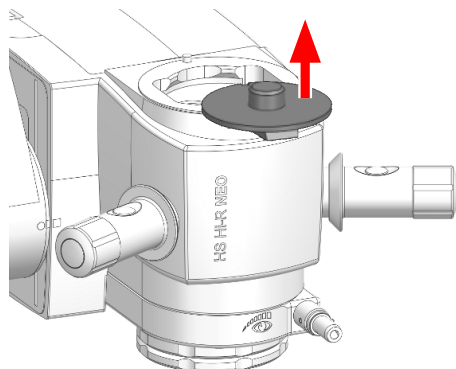
Danger to persons due to falling parts!

a) Ensure that all components are firmly fixed to each other.

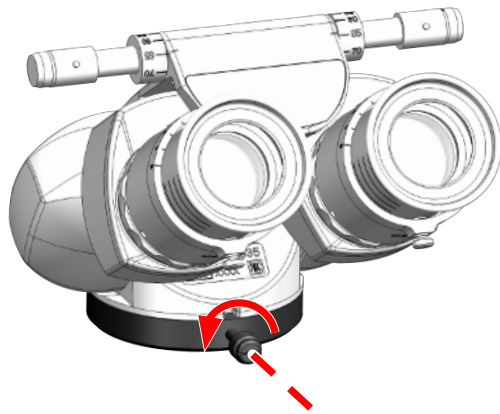
1. Loosen the knurled screw counterclockwise.



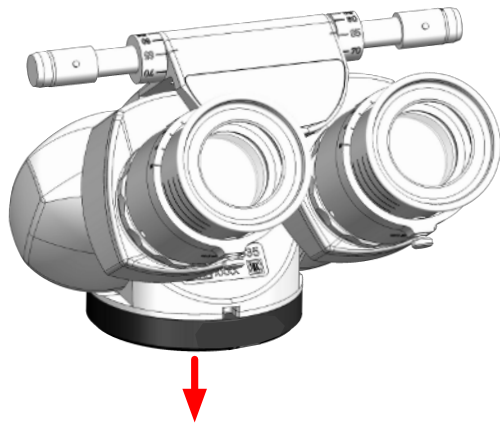
2. Take off the lid.



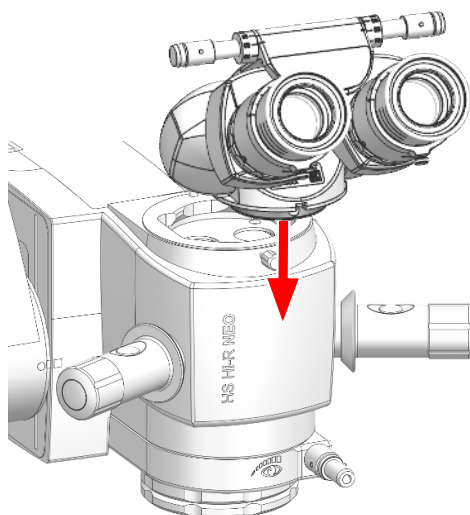
3. Loosen the screw.



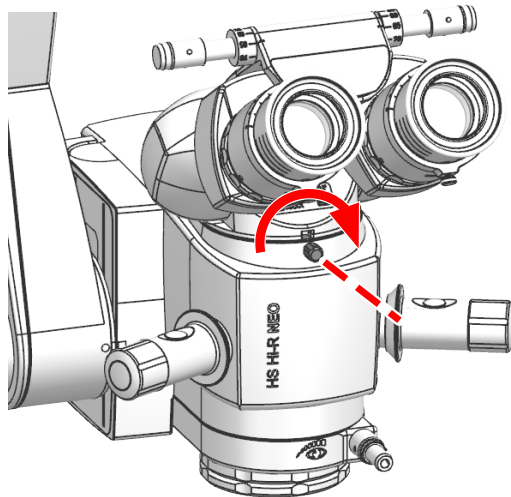
4. Remove the protective cap.



5. Place the eyepiece head onto the microscope. Make sure that the pin matches the backwards groove.



- Fasten the knurled screw clockwise.



4.1.5 Operation



CAUTION

Risk of infection!

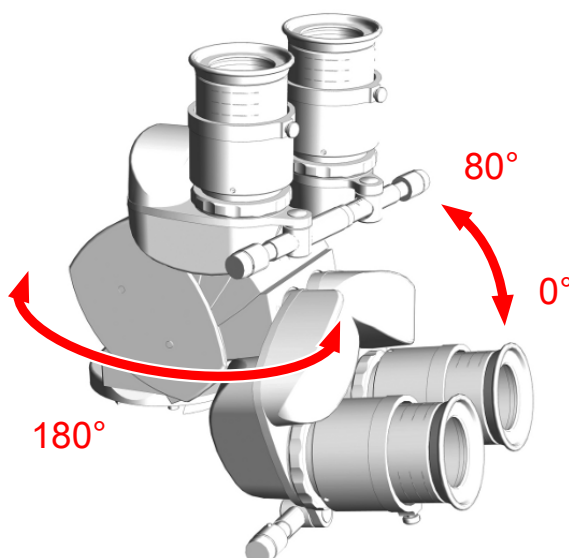
Non-sterile control elements of the surgical microscope system may be touched by the surgeon during surgery.

- Control elements that need to be touched by the surgeon must be protected by sterile covers.

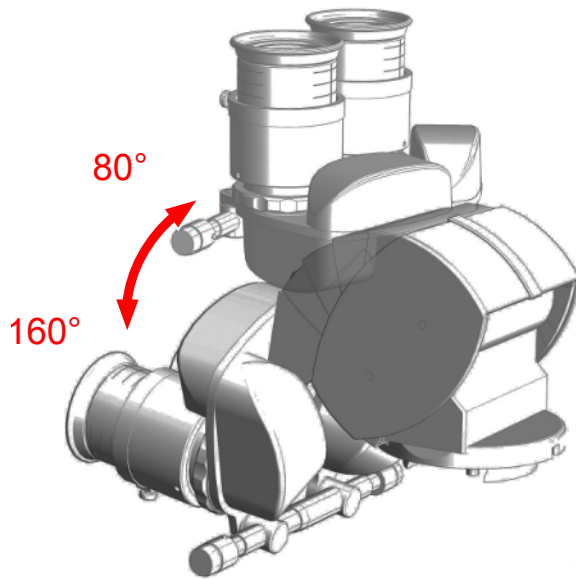
Adjusting vertical angle

Eyepiece head 160°, 10 x

- Lift the eyepiece head to its full vertical angle.
- Rotate the full eyepiece by 180°.



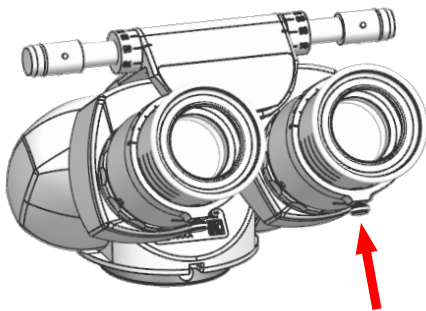
3. Lower the eyepiece head to desired position.



Adjust the Diopters

With Camera

1. Set the microscope to low magnification.
2. Focus the microscope so that the picture on the monitor is sharp.
3. Set the microscope to high magnification.
4. Focus the microscope so that the picture on the monitor is sharp.
5. Adjust the pupillary distance of the eyepieces.
6. Loosen the knurled screws counterclockwise.

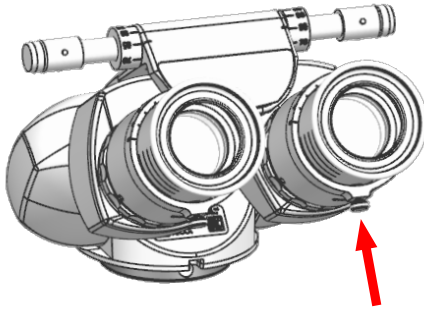


7. Adjust the eye cups, so your eyelashes do not touch the lenses. Users of glasses may set the eye cups at the lowest position.

8. Turn the ocular to the highest value position (e.g. +5 D).



9. By looking through the microscope with one eye only turn the ocular's diopter setting in the direction of the lowest value position (e.g. -5 D).
10. Stop when the image is clear for the first time.
11. Fasten the knurled screw.

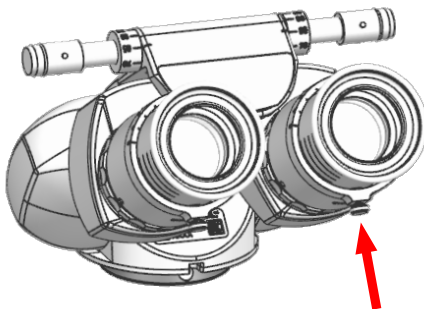


12. Repeat the eyepiece adjustment for the second eye.
 13. Remember the settings for each eye and adjust the microscope to these values every single time you look through the microscope.
- ⇒ If the diopters of the oculars are properly adjusted, the image through the microscope as well as the camera image on the screen are clear and sharp.

Without Camera

✓ The physician does not tend to *instrumental myopia*.

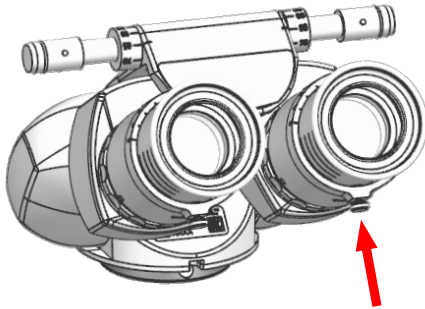
1. Loosen the knurled screw.



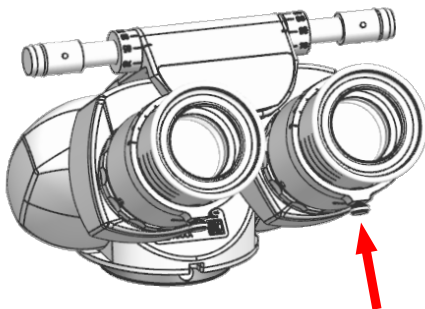
2. Adjust the eye cups, so your eyelashes do not touch the lenses. Users of glasses may set the eye cups at the lowest position.
3. Set the diopter settings to "0D" or to the physician's spectacle value if he or she is operating without glasses and the visual acuity is known.



4. Fasten the knurled screw.



5. Set the microscope to low magnification.
6. Focus the microscope until the image in the oculars is sharp.
7. Set the microscope to high magnification.
8. Focus the microscope until the image in the oculars is sharp.
- ✓ The physician tends to *instrumental myopia*.
9. Adjust the pupillary distance of the eyepieces.
10. Loosen the knurled screws counterclockwise.
11. Adjust the eye cups, so your eyelashes do not touch the lenses. Users of glasses may set the eye cups at the lowest position.

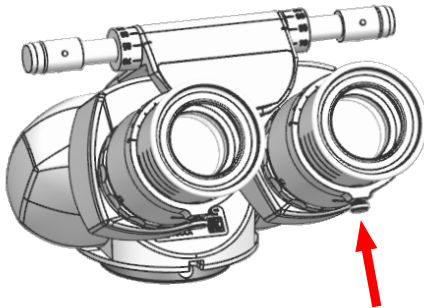


12. Turn the eyepiece's diopter setting to "0D".
13. Set the microscope to low magnification.

14. Focus the microscope until the image in the oculars is sharp.
15. Set the microscope to high magnification.
16. Turn the ocular to the highest value position (e.g. +5 D).



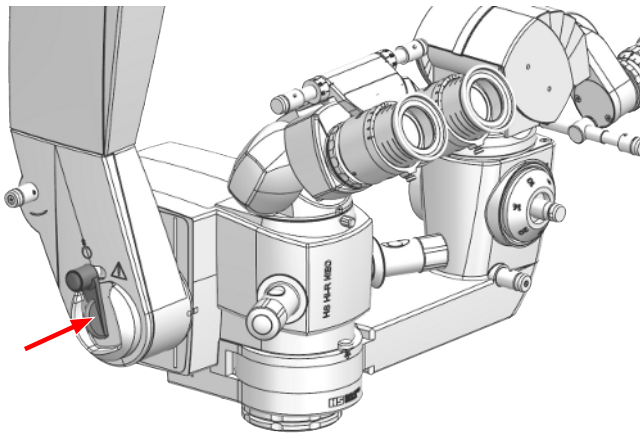
17. By looking through the microscope with one eye only turn the ocular's diopter setting in the direction of the lowest value position (e.g. -5 D).
18. Stop when the image is clear for the first time.
19. Fasten the knurled screw.



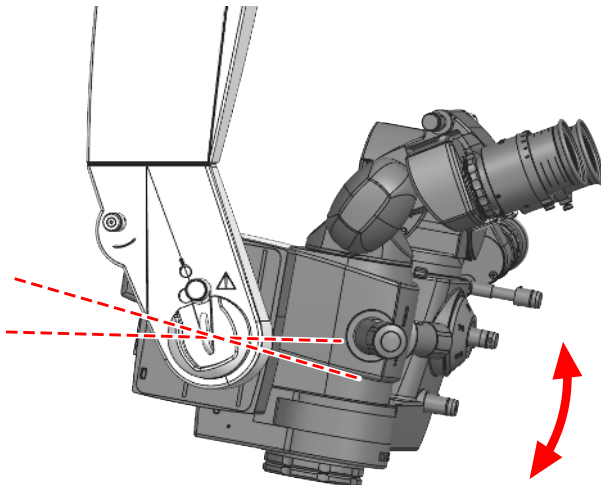
20. Repeat the eyepiece adjustment for the second eye.
 21. Remember the settings for each eye and adjust the microscope to these values every single time you look through the microscope.
- ⇒ The diopters of the *ocular tubes* are set correctly if the image through the microscope as well as the camera image on the screen is clear and sharp.

Adjust the Focus

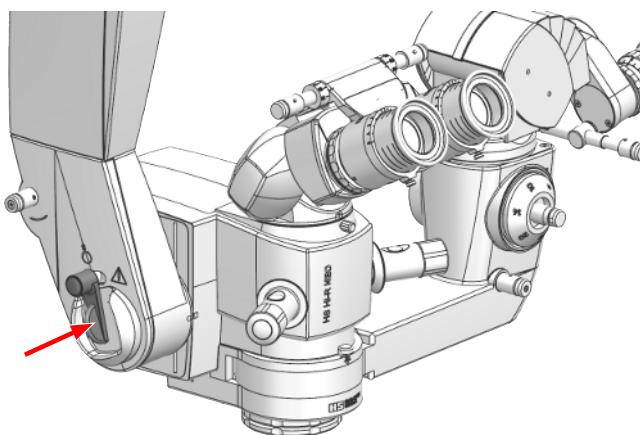
1. Set the minimum magnification.
2. For tilting the microscope use the "Pre-adjustment of the microscope tilt" lever.



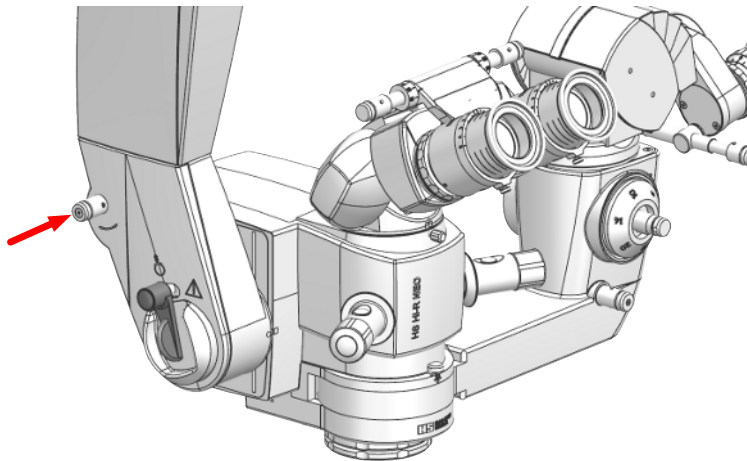
3. Tilt the microscope.



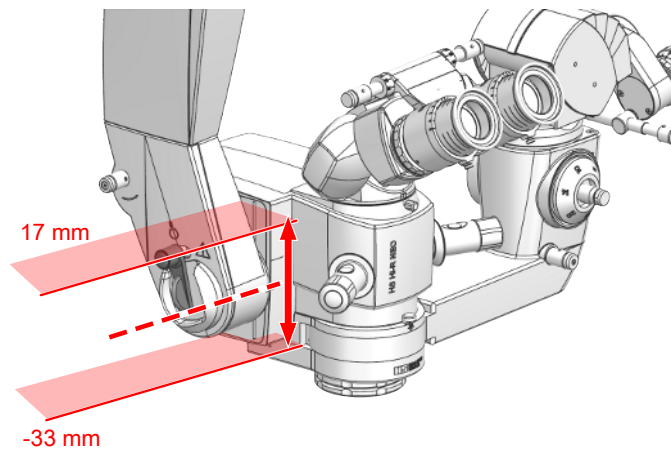
4. Release the "Pre-adjustment of the microscope tilt" lever.



5. Use the "Microscope presetting" rotary knob to fine-tune the microscope tilt within a range of $\pm 10^\circ$ from the pre-adjusted tilt.



6. Use the foot switch to focus the microscope in a range of -33 mm to 17 mm out of the homing position.



7. Set the maximum magnification.
8. Readjust the focus of the surgical microscope.
9. Set the desired magnification.

4.2 TOCULAR

4.2.1 Intended use

The TOCULAR supplements the intended use of the surgical microscope system and is intended to add an angle scale to the optical path, especially for the alignment of toric lenses.

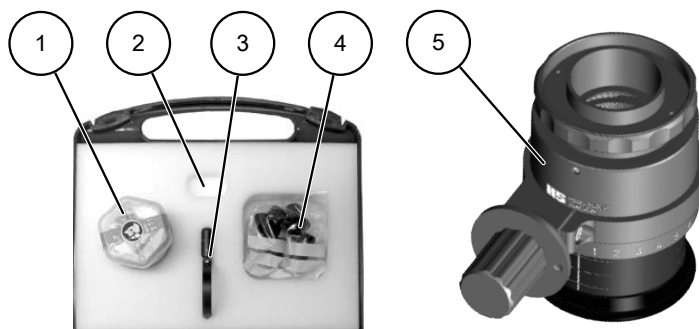
It can be mounted to eyepiece heads 200°, 10x (REF 4000026) and 160°, 10x (REF 4000025).

4.2.2 Operating Principle

Before surgery, the axis must be determined with a keratoscope or biometer. The vertical and/or horizontal coordinates are marked on the eye using a sterilizable pre-marker.

After implantation of the IOL, the microscope zoom is adjusted to show the dye mark in the field of view of the eyepieces. Using the knob on the TOCULAR, the crosshairs are rotated so that the large scaled markings are aligned with the dye markings on the eye. Now the IOL can be positioned using the medium and small crosshair markers.

4.2.3 Overview



Item	Name	Note
1	Ocular	with reticle plate
2	Allen wrench size 2	Tool
3	Eyepiece clamp	
4	Caps	sterilizable
5	TOCULAR	Fully assembled

4.2.4 Combination possibilities

Accessories	REF	Surgical microscope system
		TOCULAR 4401034
Eyepiece head 160°, 10x	4000025	x
Eyepiece head 200°, 10x	4000026	x

4.2.5 Installation

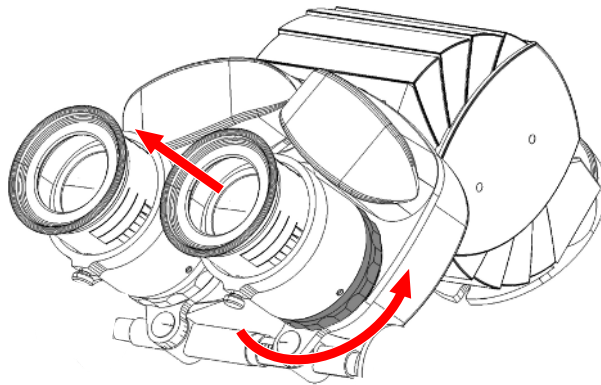


WARNING

Danger to persons due to falling parts!

- a) Ensure that all components are firmly fixed to each other.

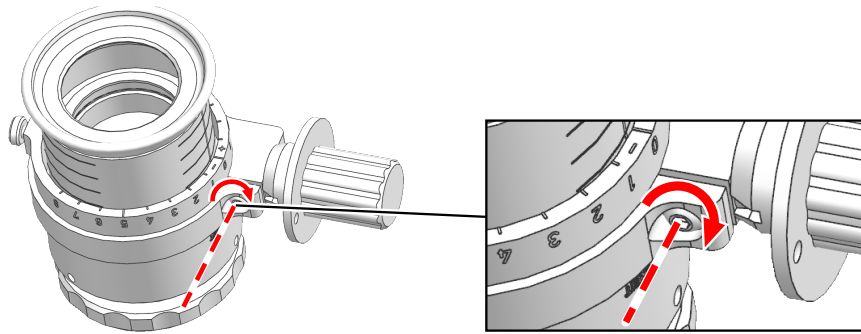
1. Loosen the illustrated ocular union nut counterclockwise.



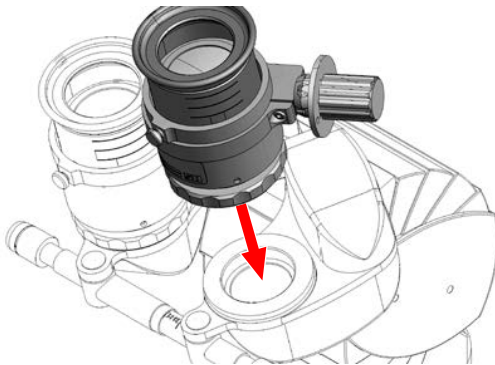
2. Unpack the ocular with reticle plate.
3. Mount the eyepiece clamp on the ocular with reticle plate. Loosen the screw with Allen wrench size 2 if the clamp is too tight to slide on.



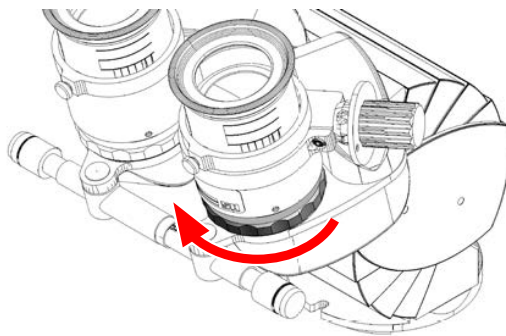
4. Fasten the screw with Allen wrench size 2.



5. Place the TOCULAR on the eyepiece.



6. Fasten the illustrated union nut clockwise.



4.2.6 Operation



CAUTION

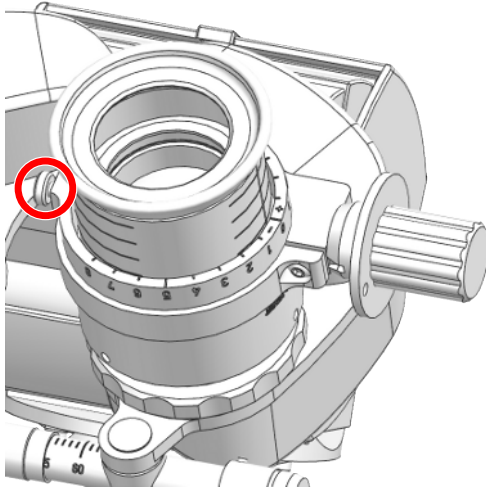
Risk of infection!

Non-sterile control elements of the surgical microscope system may be touched by the surgeon during surgery.

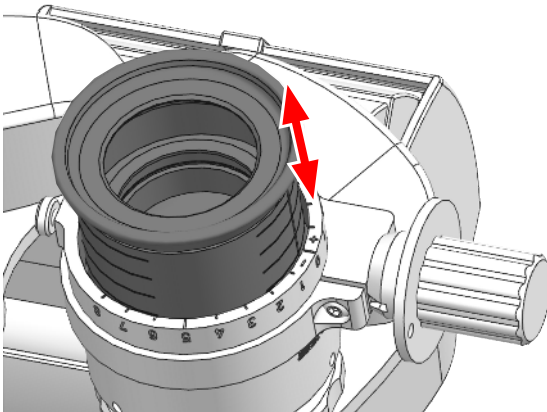
- a) Control elements that need to be touched by the surgeon must be protected by sterile covers.

Adjust the Diopter Compensation

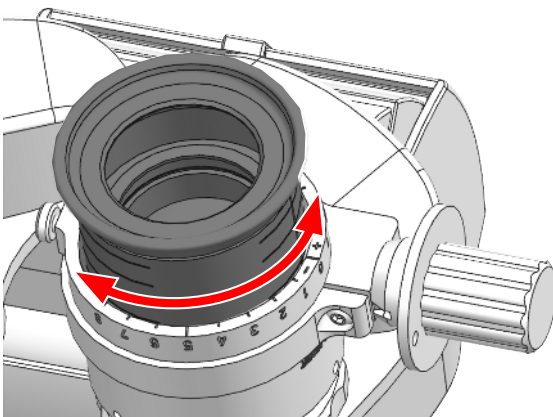
1. Loosen the knurled screw.



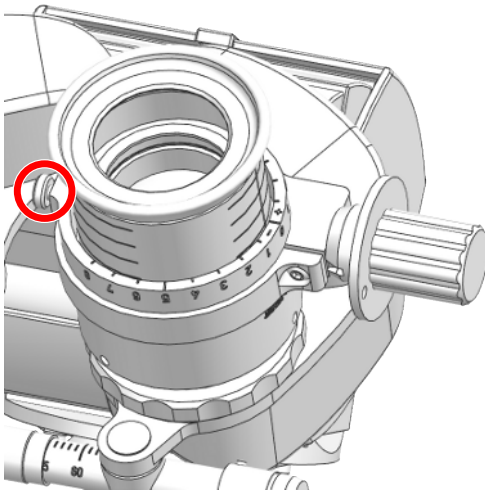
2. Retract for use with glasses.



3. Adjust the diopter compensation.

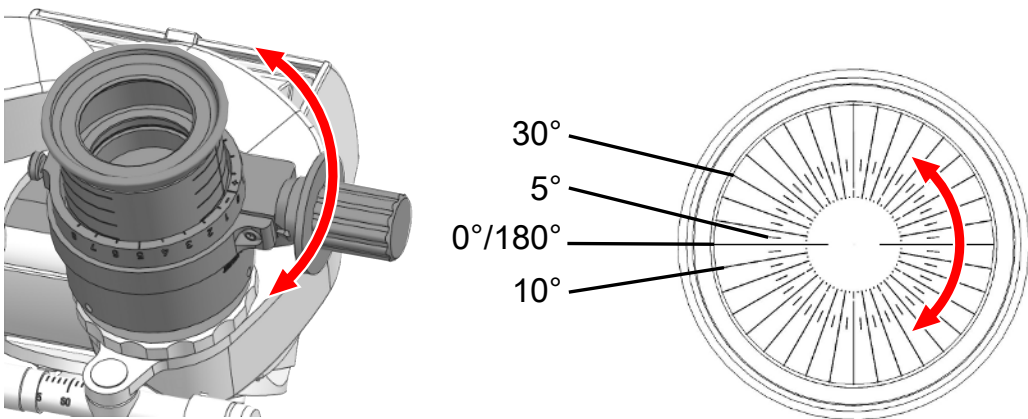


4. Fasten the knurled screw.



Adjust the Scale Rotation

1. Rotate the TOCULAR to adjust the scale.



4.3 Observation modules

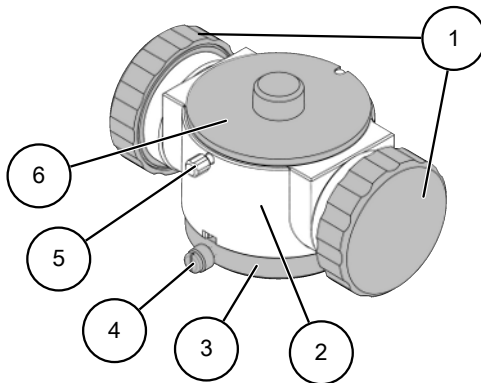
4.3.1 Intended use

Observation Modules

The observation modules are part of a surgical microscope system. They divide the observation light path, thus making observation possible. Using diverse connectors, a second eyepiece for a second person or a camera can be installed, for example.

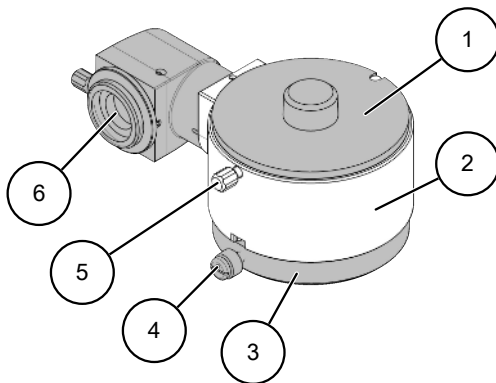
4.3.2 Overview

Beamsplitter 50:50



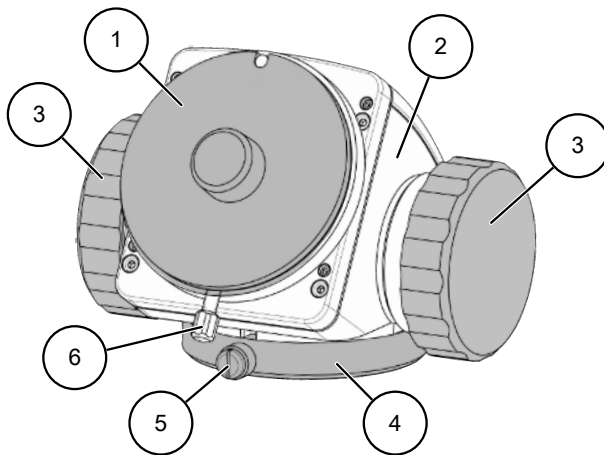
Item	Name	Note
1	Side covers (2 x)	Dust protection while storage.
2	Beamsplitter 50:50	For dividing the light beam.
3	Protective cap	Dust protection while storage.
4	Fixing screw	For protective cap (M4x14-PA)
5	Knurled screw	Fastener for lid and further accessories.
6	Lid	Dust protection while storage.

Beamsplitter T



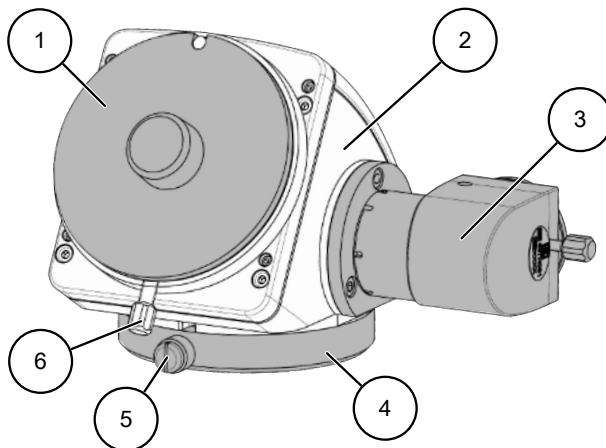
Item	Name	Note
1	Lid	Dust protection while storage.
2	Beamsplitter T	For dividing the light beam.
3	Protective cap	Dust protection while storage.
4	Fixing screw	For protective cap (M4x14-PA)
5	Knurled screw	Fastener for lid and further accessories.
6	C-mount 1/3" (micro)	(included)

VERTISCOPE U



Item	Name	Note
1	Lid	Dust protection while storage.
2	VERTISCOPE U	Vertiscope
3	Side cover (2x)	Dust protection while storage.
4	Protective cap	Dust protection while storage.
5	Fixing screw	For protective cap (M4x14-PA)
6	Knurled screw	Fastener for lid and further accessories.

VERTISCOPE T-R



Item	Name	Note
1	Lid	Dust protection while storage.
2	VERTISCOPE T-R	Vertiscope
3	C-mount 1/3" (micro)	(included)
4	Protective cap	Dust protection while storage.
5	Fixing screw	For protective cap (M4x14-PA)
6	Knurled screw	Fastener for lid and further accessories.

4.3.3 Combination possibilities

Accessories	REF	Surgical microscope system	
		Beamsplitter 50:50	Beamsplitter T
		4000006	4000007
HS Hi-R NEO 900A	4000038	x	x
HS Hi-R NEO 900	4000037	x	x
Eyepiece Head 160°, 10x	4000025	x	x
Eyepiece head 200°, 10 x	4000026	x	x
C-Mount 1/3" (micro)	4000059	x	incl.
C-Mount 1/3"	4000058	x	x
Stereoscopic co-observer 160°	4000054	x	x
Stereoscopic co-observer 0°	4200078	x	x
Double Iris Diaphragm	4000013	x	x

Accessories	REF	Surgical microscope system	
		VERTISCOPE U	VERTISCOPE T-R
		4000061	4000060
HS Hi-R NEO 900A	4000038	x	x
HS Hi-R NEO 900	4000037	x	x
Eyepiece Head 160°, 10x	4000025	x	x
Eyepiece head 200°, 10 x	4000026	x	x
C-Mount 1/3" (micro)	4000059	x	incl.
C-Mount 1/3"	4000058	x	x
Stereoscopic co-observer 160°	4000054	x	x
Stereoscopic co-observer 0°	4200078	x	x
Double Iris Diaphragm	4000013	x	x

4.3.4 Installation



NOTICE

Risk of exceeding maximum weight load or excessive torque!

The additional weight of multiple observation modules may exceed the maximum weight load of the carrier or the maximum torque of the microscope.

- a) Only use one observation module at the same time.



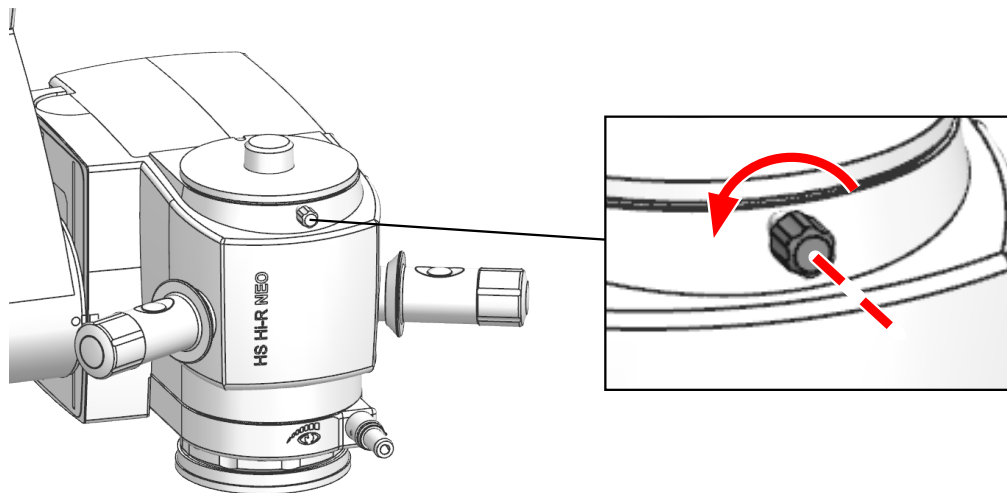
WARNING

Danger to persons due to falling parts!

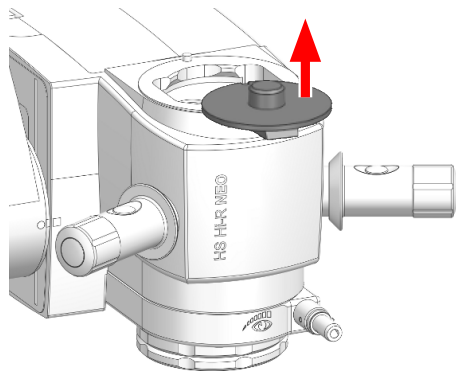
Ensure that all components are firmly connected to each other.

Always secure the observation module with the threaded pin. Do not use knurled screws

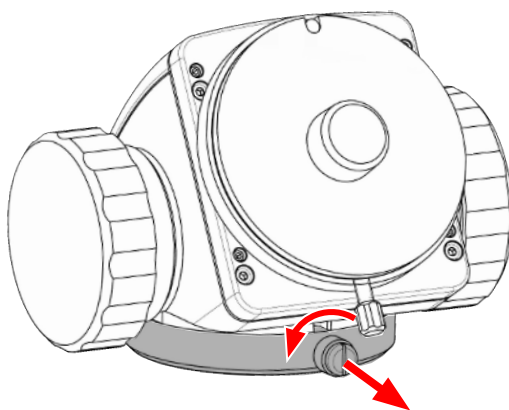
1. Loosen the knurled screw counterclockwise.



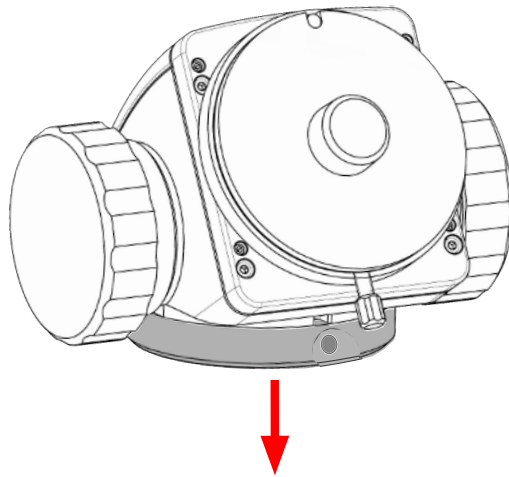
2. Take off the lid.



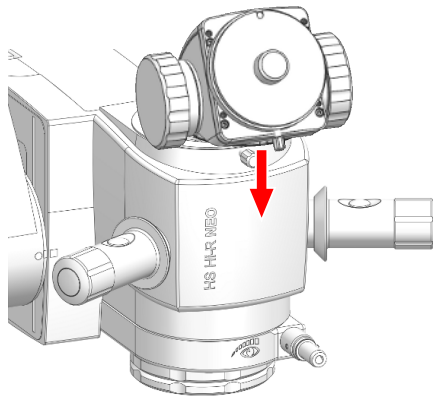
3. Loosen the knurled screw counterclockwise.



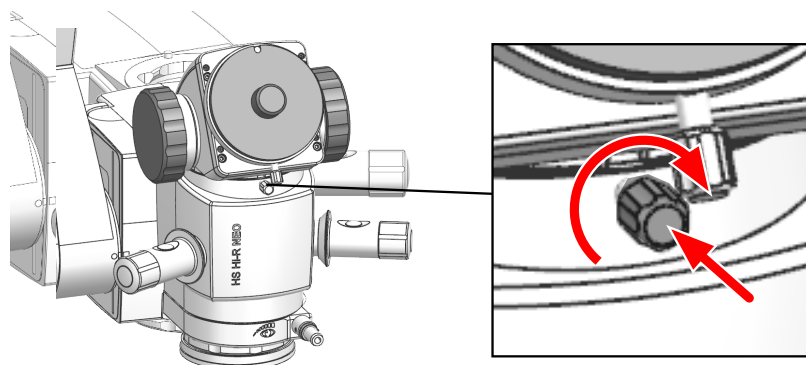
4. Remove the protective cap.



5. Place the accessory on the top of the microscope. Make sure that the pin matches the backwards groove.

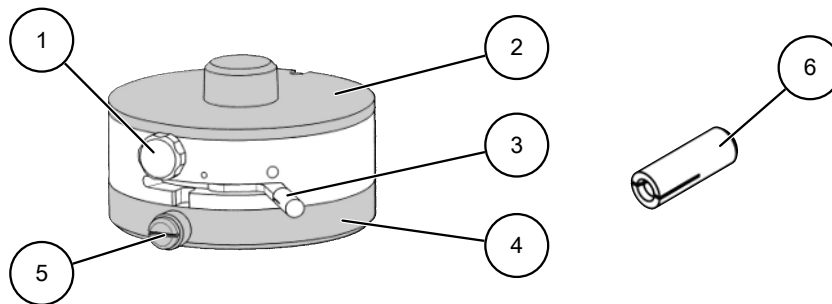


6. Fasten the knurled screw on the accessory clockwise.



4.4 Double Iris Diaphragm

4.4.1 Overview



Item	Name	Note
1	Knurled screw	For fixing accessory to the Double Iris Diaphragm.
2	Top cover	For protecting the upper connection area.
3	Lever	For opening or closing the Double Iris Diaphragm.
4	Cap	For protecting the lower connection area.
5	Fixing screw for the cap.	For fixing the cap.
6	Sterilizable Cap	Sterilizable protection caps for the lever.

4.4.2 Combination possibilities

Accessories	REF	Surgical microscope system
		Double Iris Diaphragm
		4000013
Eyepiece Head 160°, 10x	4000025	x
Eyepiece head 200°, 10 x	4000026	x
HS Hi-R NEO 900A	4000038	x
HS Hi-R NEO 900	4000037	x
Beamsplitter 50:50	4000006	x
Beamsplitter T	4000007	x
VERTISCOPE U	4000061	x
VERTISCOPE T-R	4000060	x

4.4.3 Installation



NOTICE

Risk of exceeding maximum weight load or excessive torque!

The additional weight of multiple observation modules may exceed the maximum weight load of the carrier or the maximum torque of the microscope.

- a) Only use one observation module at the same time.



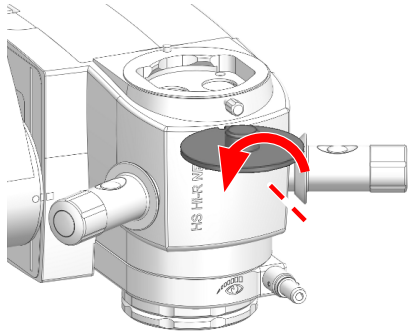
WARNING

Danger to persons due to falling parts!

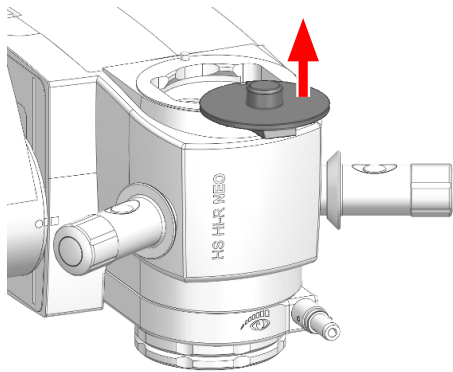
Ensure that all components are firmly connected to each other.

Always secure the observation module with the threaded pin. Do not use knurled screws

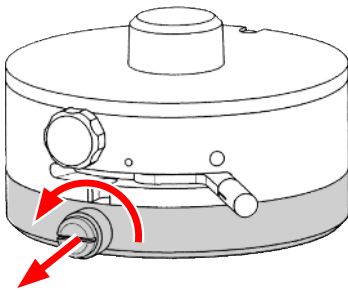
1. Loosen the knurled screw counterclockwise.



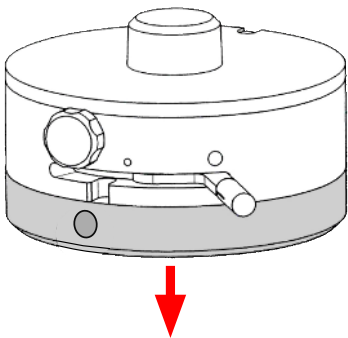
2. Take off the lid.



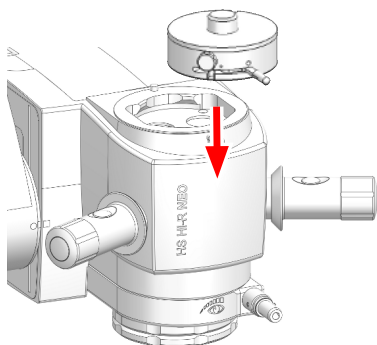
3. Loosen the knurled screw counterclockwise.



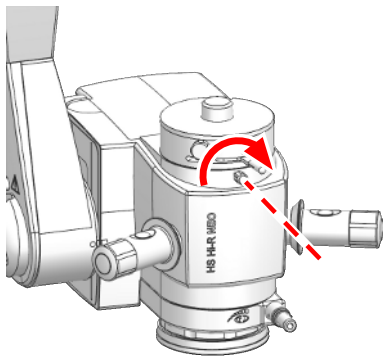
4. Remove the protective cap.



5. Place the Double Iris Diaphragm on the top of the microscope. Make sure that the pin matches the backwards groove.



6. Fasten the knurled screw on the microscope clockwise.



4.4.4 Operation

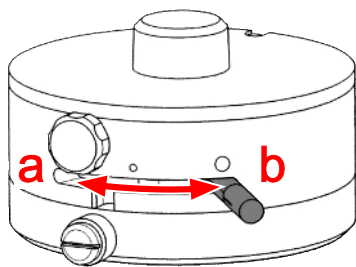


Illustration 1: Function of the Double Iris Diaphragm

1. Open the Double Iris Diaphragm (b) to reduce the depth of field and increase the brightness.
2. Close the Double Iris Diaphragm (a) to increase the depth of field and reduce the brightness. This may cause increased vignetting.

A closed iris diaphragm can reduce or negatively influence the red reflex. If the red reflex is not sufficient, the iris diaphragm should be opened

4.5 Stereoscopic Co-Oberserver

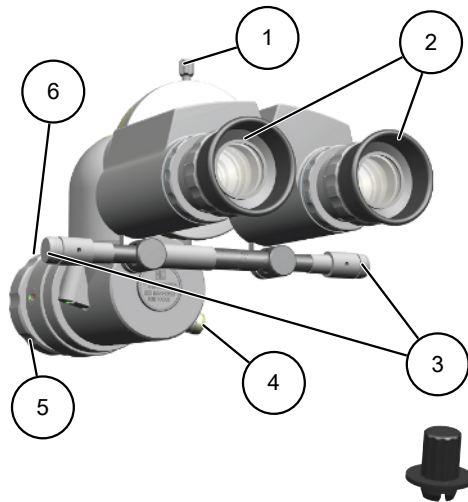
4.5.1 Intended use

The secondary stereoscopic observer is part of a microsurgical operating system. It can be installed on the auxiliary connector of the observation module to display a stereoscopic image. Due to the large pivoting range it can be easily adapted to individual working conditions, thus making ergonomic work possible.

4.5.2 Overview

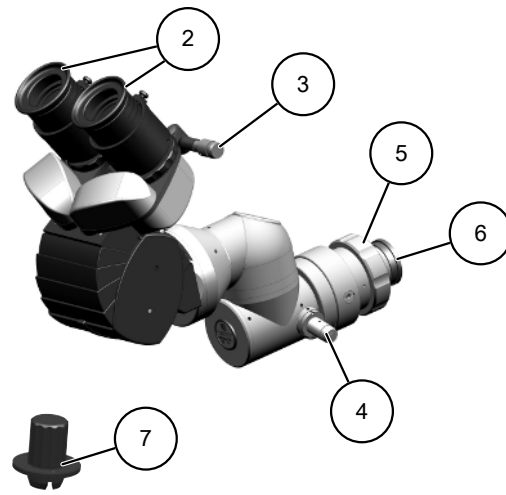
Stereoscopic Co-Observer 0°

REF 4200078



Stereoscopic Co-Observer 160°

REF 4000054



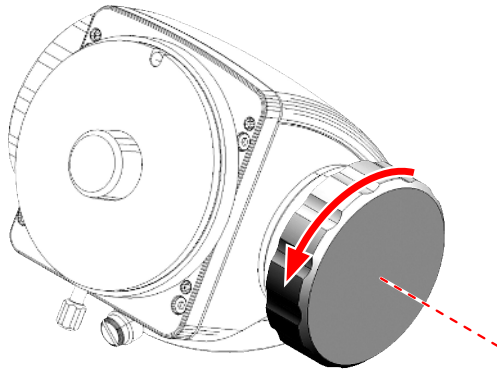
Item	Name	Note
1	Knurled screw	For fixing the eyepiece head rotation.
2	Oculars	To adjust the diopter settings see section "Adjust the diopters" [▶ 14].
3	PD Adjustment	Adjusts the ocular spacing to fit the pupillary distance.
4	Image alignment	Rotate the image for horizontal alignment.
5	Connector ring	To join the observer with accessories of the surgical microscope.
6	Dust protection Cap	For protecting the microscope connector during storage and transport.
7	Sterilizable Cap (3x)	Sterilizable protection caps for controls of the "pd adjustment" and "image alignment".

4.5.3 Combination possibilities

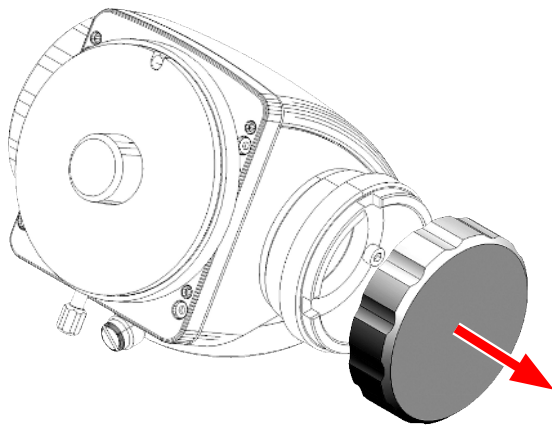
Accessories	REF	Surgical microscope system	
		Stereoscopic co-observer 0°	Stereoscopic co-observer 160°
		4200078	4000054
Beamsplitter 50:50	4000006	x	x
VERTISCOPE U	4000061	x	x

4.5.4 Installation

1. Turn the protective cap counterclockwise.



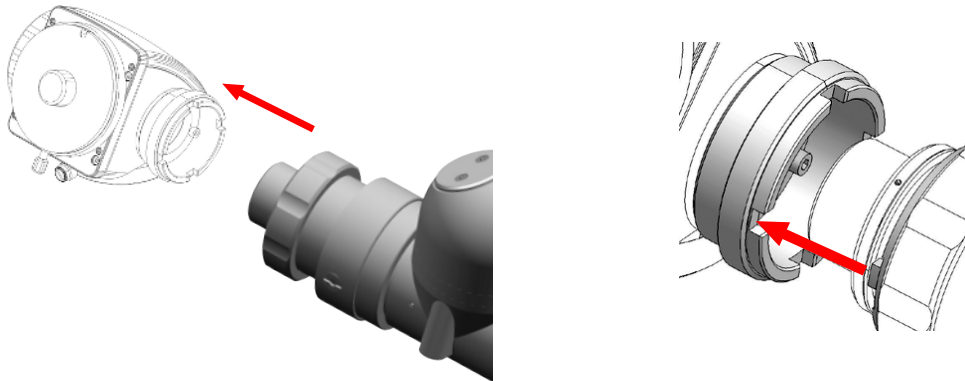
2. Remove the protective cap.



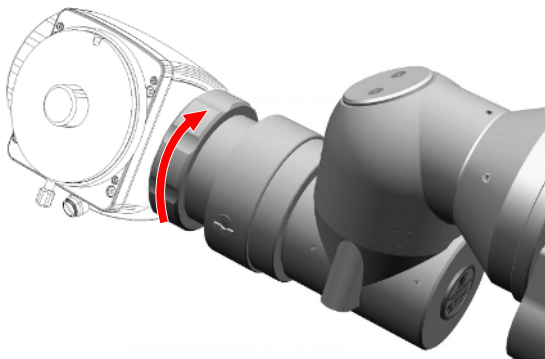
3. Remove the protective cap.



4. Place the accessory at the side of the observation module.



5. Hand-tighten the locking ring clockwise.



6. Check if the connection is firm.

4.5.5 Operation



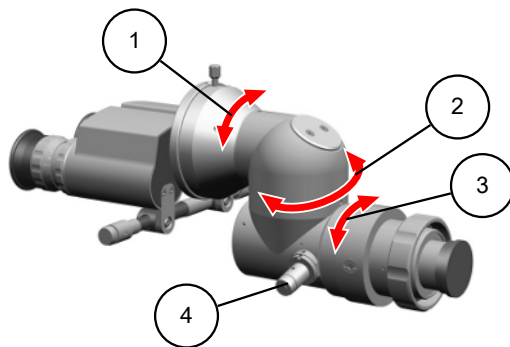
CAUTION

Risk of infection!

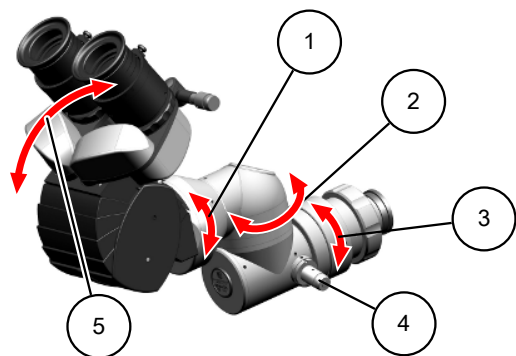
Non-sterile control elements of the surgical microscope system may be touched by the surgeon during surgery.

- a) Control elements that need to be touched by the surgeon must be protected by sterile covers.

Stereoscopic co-observer 0°
REF 4200078



Stereoscopic co-observer 160°
REF 4000054



Item	Note
1	Adjust Eyepiece Rotation only To adjust the diopter settings see section "Adjust the diopters" [14].
2	Adjust z-axis
3	Adjust x-axis
4	Rotate the image for horizontal alignment
5	Tilt the eyepiece head (only Stereoscopic Co-Observer 160°, REF 4200078)

4.6 Camera attachments

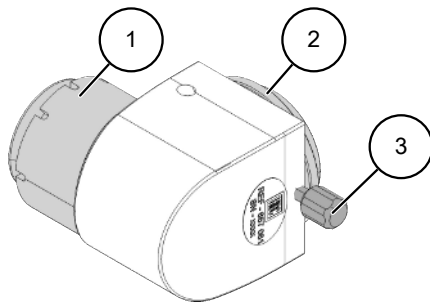
4.6.1 Intended use

Camera attachments supplement the intended use of the surgical microscope system. They are used to connect the surgical microscope system to a camera for documenting the surgery.

4.6.2 Overview

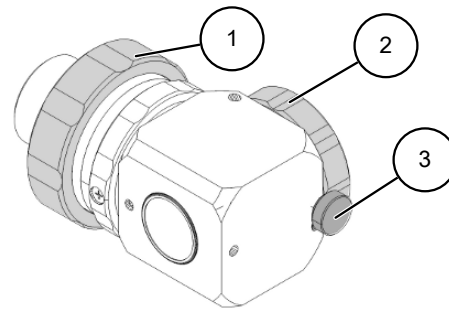
C-Mount 1/3" (micro)

REF 4000059



C-Mount 1/3"

REF 4000058



Item	Name
1	Camera connection
2	Connection to Beamsplitter or Vertiscope
3	Screw to fix the rotation of the camera.

4.6.3 Combination possibilities

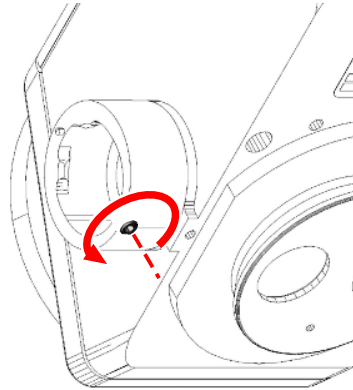
Accessories	REF	C-Mount	C-Mount
		1/3" (micro)	1/3"
		4000059	4000058
Beamsplitter 50:50	4000006	-	x
Beamsplitter T	4000007	incl.	-
VERTISCOPE U	4000061	-	x
VERTISCOPE T-R	4000060	incl.	-

4.6.4 Installation

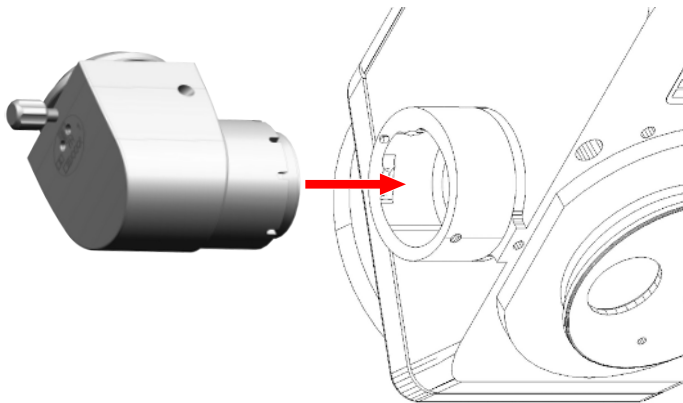
C-Mount 1/3" (micro)

REF 4000059

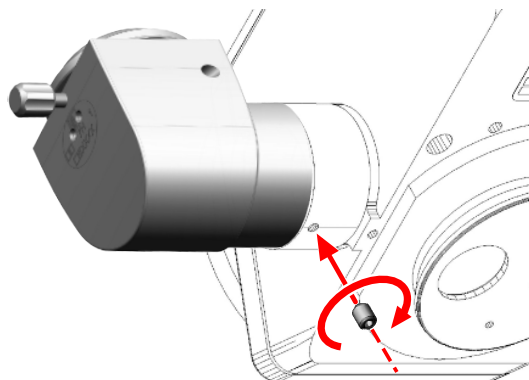
1. Loosen the grub screw with Allen wrench size 2 counterclockwise.



2. Insert the module into the holder. Make sure that the pin matches the groove of the desired position (angle).



3. Fasten the grub screw with allen key size 2 clockwise.



WARNING

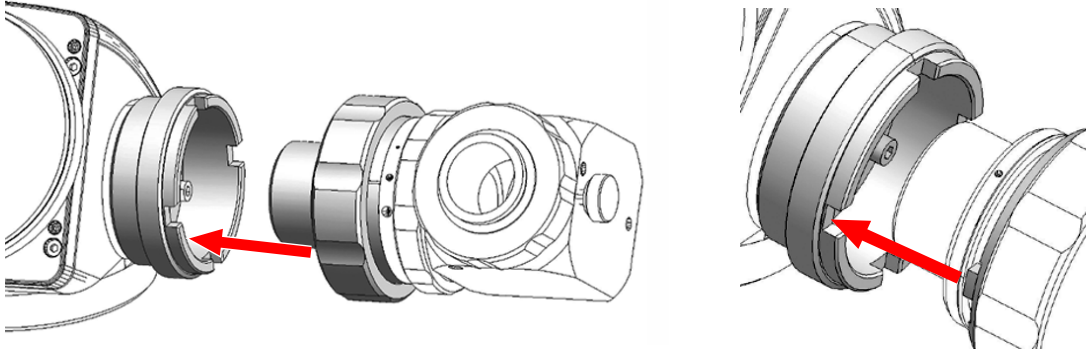
Danger to persons due to falling parts!

- a) Ensure that all components are firmly fixed to each other.

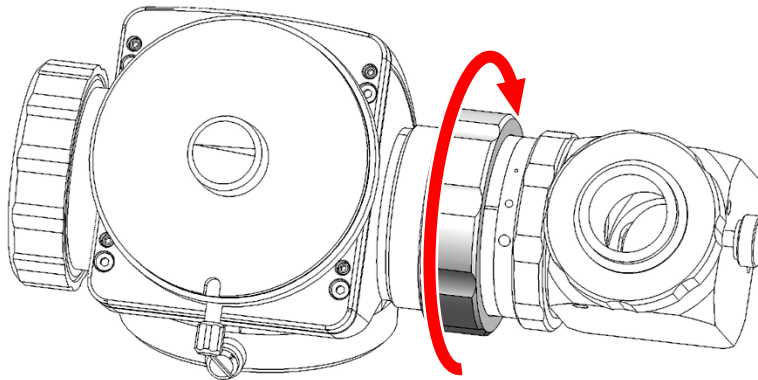
C-Mount 1/3"

REF 400058

1. Insert the module into the holder. Make sure that the pin matches the groove of the desired position (angle).

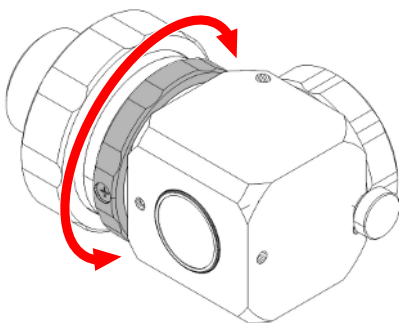


2. Fasten the locking ring clockwise.



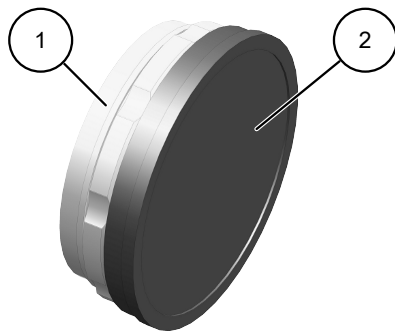
4.6.5 Operation

1. Use the knurled ring of the C-Mount 1/3" (micro) to adjust the depth of field



4.7 Front lens

4.7.1 Overview



Item	Name	Note
1	Front lens	For microscopes.
2	Protective Cap	To protect front lens from dust and shocks.

4.7.2 Intended use

The front lenses are part of a microsurgical operating system. Due to their diverse focal lengths, they can be used to adjust the microscope's working distance to individual working conditions, which makes ergonomic work possible.

4.7.3 Combination possibilities

Accessories	REF	Surgical microscope system	
		Front Lens	Front Lens
		focal length 175 mm	focal length 200 mm
		4000031	4000033
HS Hi-R NEO 900A	4000038	x	x
HS Hi-R NEO 900	4000037	x	x

4.7.4 Installation

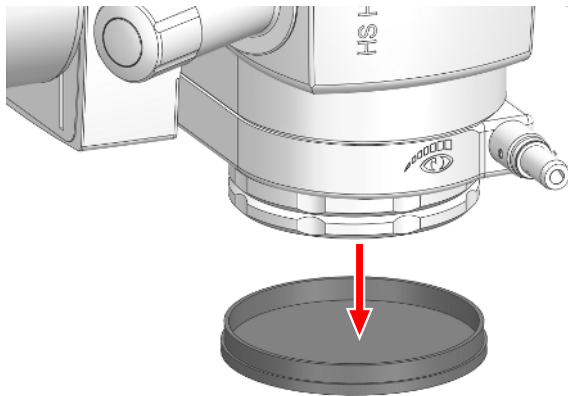


WARNING

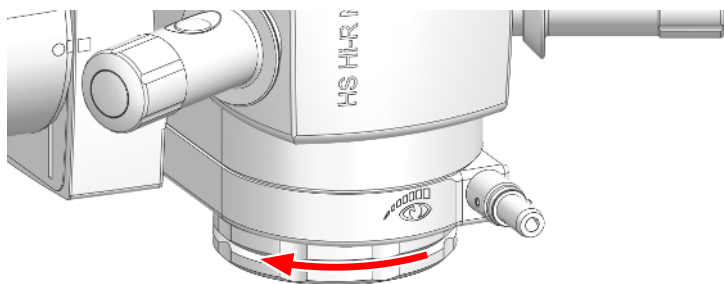
Danger to persons due to falling parts!

a) Ensure that all components are firmly fixed to each other.

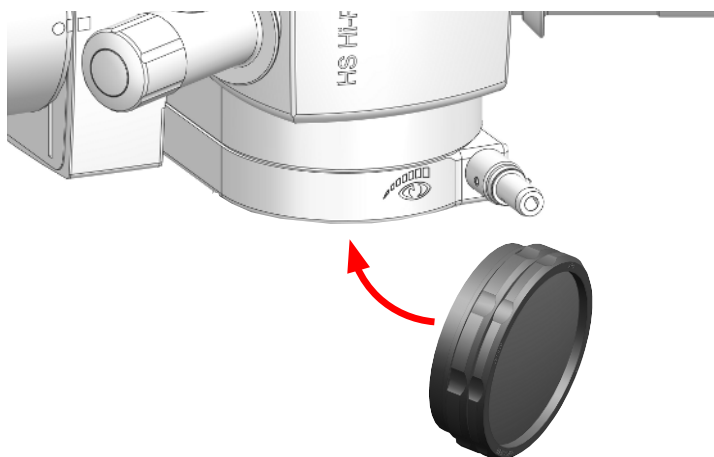
1. Remove the protective cap.



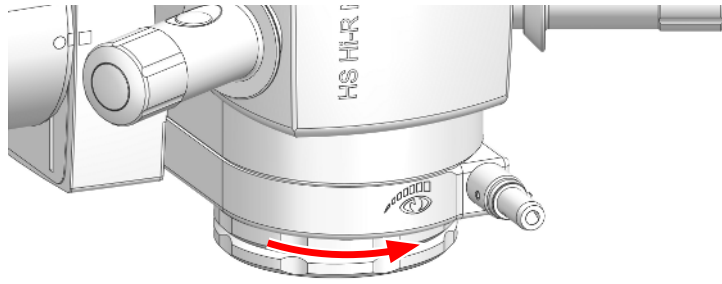
2. Remove the existing lens counterclockwise.



3. Carefully place the front lens on the bottom of the microscope.



4. Slightly tighten the front lens clockwise.



5 Before each Operation

5.1 Visual Guide for Cleaning and Disinfection

Color	Note
Green	Parts that are intended for cleaning and disinfection.
Black	Parts that are intended to be touched by the user. They must be cleaned and disinfected before and after each surgical intervention.
Gray	Parts that are not intended for cleaning and disinfection.

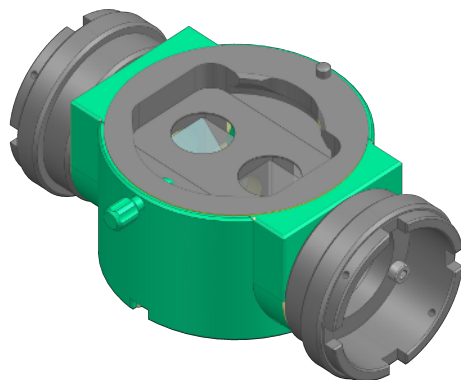
TOCULAR

REF 4401034



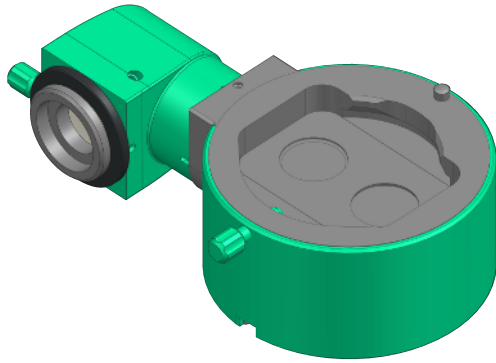
Beamsplitter 50:50

REF 4000006



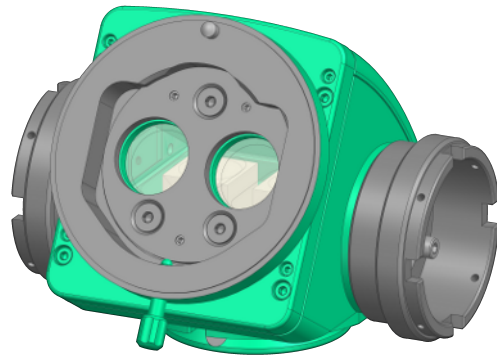
Beamsplitter T

REF 4000007



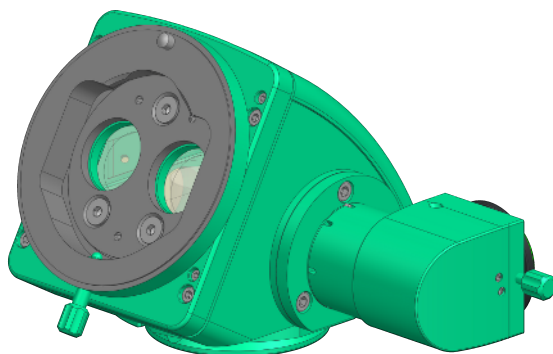
VERTISCOPE U

REF 4000061



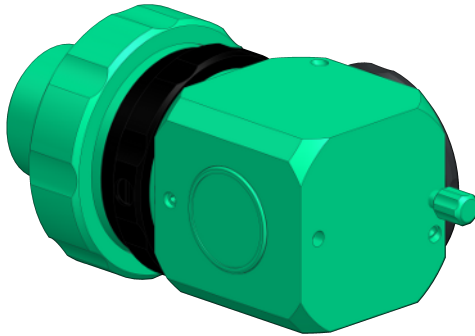
VERTISCOPE T-R

REF 4000060



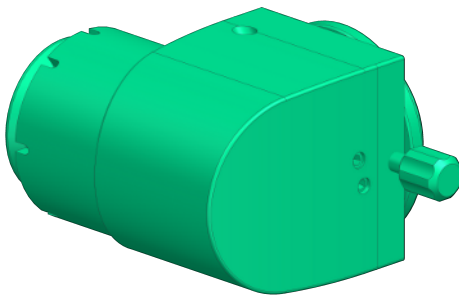
TV attachment 1/3" C-mount

REF 4000058



TV attachment 1/3" C-mount (micro)

REF 4000059



5.2 Cleaning

Perform the cleaning, disinfection, and/or sterilization before each use.

The operator must ensure that the preparation is performed within a suitable validated procedure in accordance with the respective national regulations.

The treatment process must at least meet the following requirements:

- Cleaning agent and disinfectant must be approved for the treatment of medical products.
- Cleaning and disinfecting devices and agents must accord to ISO 15883 standard.
- Steam sterilization must be in accordance with ISO 17665 and EN 285 standards if applicable.

Refer to the instructions provided by the manufacturer of the disinfectant regarding recommended concentration and contact time.

1. Make sure that no cleaning agent can ingress into the housing of the surgical microscope system.
2. Make sure that no cleaning agent can get onto the glass surfaces or lenses, unless cleaning agents are specifically intended for this purpose.
3. Use slightly soaked wipes with sufficient amount of cleaning agent.
4. Perform disinfection afterwards with disinfectant.

After all appropriate items are cleaned, disinfected or sterilized, they should be inspected:

5. Check all items before and after each treatment for mechanical damage.
6. Replace damaged items.
7. Ensure that no visible impurities or contaminations remain on the items.
8. Ensure that glass surfaces are clean and free of streaks.

Manual cleaning

Eyepiece head

Materials required

- Disposable gloves
- Damp cloths
- Dry cotton or microfiber cloth
- Cleaning agent (glutaraldehyde-based or alcohol-based)
- Cleaning agent (pH 6 – 10)

Process

- Use disposable gloves.
- Remove slight soiling such as fingerprints with the dry microfiber cloth.
- If the glass surfaces are soiled with e.g dried blood or saline solution residue, clean it with a damp cloth.
- Dry the surface with the dry cotton or microfiber cloth.
- Perform disinfection afterwards with disinfectant.
- Let disinfectant dry out in air.

Manual cleaning

External surfaces

Materials required

- Disposable gloves
- Cloth (Damp cloth/single-use tissues or wipes, cotton or microfiber cloth)
- Cleaning agent (glutaraldehyde-based or alcohol-based)
- Cleaning agent (pH 6 – 10)

Process

- Use disposable gloves.
- Soak cloth or wipes with a sufficient amount of cleaning agent.
- Wipe off the contamination with a cloth soaked in cleaning agent.
- Perform disinfection afterwards with disinfectant.
- Let disinfectant dry out in air.

5.3 Disinfection

Parts that are intended to be used/touched by the user are colored in black in the "Visual Guide for Cleaning and Disinfection", such as handles, push bars, knobs, oculars and framing of monitors and displays. These black parts in the "Visual Guide for Cleaning and Disinfection" should always be cleaned and disinfected before and after each surgical intervention since they are intended to be touched although they might be covered by a sterile drape.

Disinfect all surfaces with tissue or blood before or after each microsurgical intervention as described in the table.

1. Make sure that no disinfectant can ingress into the housing of the surgical microscope system.
2. Avoid spraying the disinfectant directly onto surfaces.
3. Use slightly soaked wipes with sufficient amount of disinfectant.
4. Let disinfected surfaces dry out in air.
5. Be aware of the exposure time with the disinfectant.
6. Be aware of the applied concentration of utilized disinfectant.

In case of microsurgical interventions on MRSA-, VRE-infected patients or in general patients infected by nosocomial infections:

1. Use sterile sleeves.
2. Use **always** sterile caps (soft and hard)
3. Use a drape (recommended).

Even though the surgical microscope is covered by sterile caps and/or drape:

4. Perform disinfection although on parts that are covered by sterile caps and/or drape.
5. To eliminate any possible contaminations perform the disinfection of the following parts with special diligence:
 - the outside housing of all *ocular tubes*.
 - the hard-to-reach areas of the surgical microscope.
 - all handles and bars.

Disinfection	
<ul style="list-style-type: none"> – Eyepiece head – Stereoscopic co-observer – Base of the <i>ocular tubes</i> of the observer. – Front lens 	<p>Materials required</p> <ul style="list-style-type: none"> – Disposable gloves – Cloth (Damp cloth/single-use tissues or wipes, cotton or microfiber cloth) – Disinfectant (glutaraldehyde-based or alcohol-based) – Cleaning agent (pH 6 – 10) <p>Process</p> <ul style="list-style-type: none"> – Use disposable gloves. – Soak the cloth with sufficient amount of the disinfectant. – Wipe gently with the cloth into one direction. – Let disinfectant dry out in air.



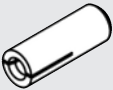
5.4 Sterilization

It is not possible to sterilize the entire surgical microscope system. Only detachable parts like sterilizable control elements can be sterilized.

A list of the sterilizable parts can be found in the microscope's instructions for use in the section "Disposable Materials and Spare Parts".

Sterilization	
Detachables and sterilizable control elements	<p>Process</p> <ul style="list-style-type: none"> – Package the items according to hospital standards for sterile medical devices. – Sterilize the items via steam sterilization with fractionated pre-vacuum at 134 °C for at least 5 minutes. Steam sterilization is possible at up to 139 °C for up to 18 minutes. – Store the items according to hospital standards for storing sterile medical devices.

5.4.1 Sterilizable Parts

Caps for Stereoscopic Co-Observer 0°/ Stereoscopic Co-Observer 160°	4200052	
Caps for Tocular	4400637	
Caps for Double Iris Diaphragm	4400638	

6 Troubleshooting



CAUTION

Risk of limited treatment options!

If defects are not detected, the surgical microscope system may not offer all functions during surgery.

- a) Before each use, make sure that all electrical and mechanical connections are firmly seated and free of defects.
- b) Regularly check the functionality and quality of the magnified vision.
- c) Do not use the system in case of any obvious defects, error states or functional restrictions. Call the Haag-Streit Service.



NOTICE

Resettable error reoccurs twice or more

The error may be due to a systematic fault in the medical device and must be attended by Haag-Streit.

Please contact your local representative or Haag-Streit, stating the product name, type and serial number together with a description of the error and the circumstances under which the error occurs.

Troubleshooting Table

Malfunction	Cause	Troubleshooting
The image of an Eyepiece, monitor or camera is missing, displaced, twisted or vignetted.	Incorrectly connected accessories.	Check connection of the accessories. <ul style="list-style-type: none"> – The connections must be firmly connected.


7 Maintenance

Perform maintenance in accordance with the instructions for use of the surgical microscope system.

We recommend to have the surgical microscope system regularly serviced by your Haag-Streit national representative.

8 Technical Data

Environment Data	
Operating temperature [°C]	+ 10 – + 40
Operating, relative air humidity [%]	10 – 90
Operating, air pressure [hPa]	795 – 1060
Storage and transport, temperature [°C]	- 20 – + 70
Storage and transport, relative air humidity [%]	10 – 90
Storage and transport, air pressure [hPa]	600 – 1060

Conformity	
Classification	 Regulation (EU) 2017/745 Class I
Safety	EN 60 601-1 Appliance class I equipment
EMC	IEC 60 601-1-2
UMDNS	12-539
GMDN	12539
Degree of protection by enclosure (IP-Code)	IP20

Technical Data	Eyepiece head 200°, 10 x	Eyepiece Head 160°, 10x
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Identification		
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REF	4000026	4000025
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Mechanical data		
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Height [mm]	119	167
Width [mm]	166	140
Depth [mm]	181	177
Weight [kg]	1.25	1
Vertical Angle Range	200°	160°

Optical data		
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Refraction adjustment [dpt]	+ 5 ... - 8	
Pupil Distance [mm]	55 ... 75	
Eyepiece magnification	10 x	
Total magnification	7.6 x	8.4 x
Focal length [mm]	190	210
Opening [mm]	16	
Aperture [mm]	21	

Technical Data	TOCULAR
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Identification	
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REF	4401034
-----	---------

Technical Data		TOCULAR			
Mechanical data					
Height [mm]		70			
Width [mm]		74			
Depth [mm]		80			
Weight [kg]		0.15			
Optical data					
Refraction adjustment [dpt]		+ 5 ... - 8			
Eyepiece magnification		10 x			
Focal length [mm]		25			
Aperture [mm]		21			
Technical Data		Beamsplitter 50:50		Beamsplitter T	
Identification					
REF		4000006		4000007	
Mechanical data					
Height [mm]		55		48	
Width [mm]		122		134	
Depth [mm]		75		84	
Weight [kg]		0.5		0.4	
Optical data					
Light distribution [%]		left	right	left	right
Input [%]		50	50	50	50
C-Mount 1/3" / 1/3" (micro) [%]		-	-	-	10
Accessories [%]		25	25	-	-
Main eyepiece [%]		25	25	50	40
Technical Data		VERTISCOPE U		VERTISCOPE T-R	
Identification					
REF		4000061		4000060	
Mechanical data					
Height [mm]		89.5 (no caps)		89.5 (no caps)	
Width [mm]		113 (no caps)		133 (no caps)	
Depth [mm]		109		109	
Weight [kg]		0.8		0.7	
Optical data					
Light distribution [%]		left	right	left	right
Input [%]		50	50	50	50
Accessoires [%]		25	25	-	10
Main eyepiece [%]		25	25	50	40

Technical Data		Double Iris Diaphragm
Identification		
REF		4000013
Mechanical data		
Height [mm]		19
Width [mm]		70
Weight [kg]		ca. 0.15

Technical Data	Secondary Stereoscopic co-observer 0°	Secondary Stereoscopic co-observer 160°
Identification		
REF	4200078	4000054
Mechanical data		
Height [mm]	145	203
Width [mm]	133	120
Depth [mm]	248	319
Weight [kg]	1.5	1.8
Optical data		
Refraction adjustment [dpt]	± 7	± 7
Eyepiece magnification	12.5 x	10 x

Technical Data	1/3" Camera Attachment (micro)	1/3" Camera Attachment
Identification		
REF	4000059	4000058
Mechanical data		
Height [mm]	30	28
Width [mm]	44	55
Depth [mm]	60	107
Weight [kg]	0.1	0.33

Technical Data	Front Lens focal length 175 mm	Front Lens focal length 200 mm
Identification		
REF	4000031	4000033
Mechanical data		
Height [mm]	20	
Diameter [mm]	65	
Weight [kg]	0,2	
Optical data		
Focal length [mm]	175	200
Working distance [mm]	165	190

9 Disposal



Dispose of the surgical microscope system and its components according to national and regional legislation.

Within the European Union, the surgical microscope system and its components are subject to EU-Directive on Waste of Electrical and Electronic Equipment and may not be disposed together with waste from private households.

The manufacturer shall take the surgical microscope system and its components back for proper recycling or disposal. Please contact your local Haag-Streit sales representative.

Glossary

CDSCO

CDSCO is the abbreviation for "Central Drugs Standard Control Organisation", India's national regulatory authority for drugs and medical devices.

CE

CE is the abbreviation for "Communauté Européen", the European Community. The abbreviation is used in a special graphic layout to state that the given product is designed and produced according to the European guidelines for product safety and user protection.

diopters

Positive values represent magnifying opticals. Negative values represent reducing opticals.

EC-REP

EC-REP is the abbreviation for "European Community Authorized Representative". Medical device manufacturers located outside the EU must designate an authorized representative located in the EU to fulfill the CE requirements for placing medical devices on the EU market.

GMDN

GMDN is the abbreviation for "Global Medical Device Nomenclature", which is the European system defining the nomenclature for medical devices.

GTIN

GTIN is the abbreviation for "Global Trade Item Number", a unique and internationally recognized identification for a product with 14 digits.

instrumental myopia

Typically instrumental myopia develops when a person is looking through an optical system. This occurs due to the fact, that the image of the microscope is focused to infinity, thus the observer needs to focus to infinity, too. But the human mind still knows that the object is located at close proximity and makes the eyes to start accommodating. This has the result that the person looking through the optical system gets myopic and sets the focus wrongly. Since the camera is also adjusted to infinity, the person having instrumental myopia and setting the focus wrongly will have a clear image through the oculars but a blurred camera image on the screen.

IP-Code

IP xx, indicates how well a cabinet protects the circuits and switches against ingress of fluids.

ocular tube



tube behind ocular

REF

REF is the abbreviation of the term "Reference Number". Each product and all spare parts have a unique reference number, by which they can be ordered.

SN

SN is the abbreviation of the term "Serial Number". Every product is given a unique serial number, by which the specific technical data can be retrieved.

UDI

UDI is the abbreviation for "Unique Device Identification". The UDI code enables medical device traceability and prevents product diversion and counterfeiting.

UMDNS

UMDNS is the abbreviation for "Universal Medical Device Nomenclature System", which is an international system defining the nomenclature for medical devices.

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