



HS 5-1000

The ultimate surgical experience



Tradition and innovation – Since 1858 visionary thinking and a fascination with technology have guided us to develop innovative products of outstanding reliability: Anticipating trends to improve quality of life.

 **HAAG-STREIT**
SURGICAL

The Ultimate Surgical Experience



OUR HIGHLIGHTS:

The HAAG-STREIT SURGICAL operating system HS 5-1000 consists of the SensoServo-driven microscope HS Hi-R 1000 and the extremely steady floor stand FS 5-33. For perfect vision, the optical properties of this microscope comply with the highest standards. The apochromatic optics provides perfect color fidelity, strong contrast, and high resolution. Due to the stereo base of 25 mm, an excellent depth perception is achieved.

The floor stand FS 5-33 integrates latest technology with innovative damping for lowest vibration. Even when fully equipped microscopes are mounted and the arm is stretched to its full length of 1870 mm it stays stable as a rock! Servo locks and state-of-the-art castors allow effortless maneuverability. For best cleaning and disinfection all cables and accessories are covered and build into the tower. This houses also the touch screen C.TAB that supports intuitive operation and setting of the whole system.

The two independent powerful 300 W xenon light sources allow best visibility, even in deep cavities. To keep the brightness constant when changing the magnification, the illumination zoom bundles the light to the size of the visual field. Additionally, the light spot can be reduced via diaphragms.

HS MIOS

Counterbalanced floor stand with
overhead capabilities
and automatic balancing

Eyepiece head with
200° inclination angle

C.TAB: for user settings
and system control

Adjustable
ergonomic
Sensogrips
for microscope
control

- » Feather-light movement due to unique SensoServo Drive
- » Innovative damping keeps the system stable as a rock
- » Illumination zoom for constant brightness even at high magnification
- » Long arm reach and overhead capabilities offer maximum freedom in the OR

HS 5-1000:
HS Hi-R 1000 on floor stand FS 5-33



The Masterpiece

SensoServo DRIVE

The SensoServo system of the operating microscope HS Hi-R 1000 uses 'fly-by-wire' technology to move the microscope in all directions with utmost precision and requiring minimal force. This is achieved via the SensoGrips that are activated as soon as the brake release buttons are pressed. They detect the pressure and control the motor movement in the microscope's joints accordingly. Individual movement characteristics ranging from enhanced friction to feather-light can be chosen. The balancing remains permanently stable even when changing the positioning of the microscope or e.g. shifting the stereoscopic observer scope from left to right.

HANDLING

In addition to the incorporated sensors, the hand switches allow control of focus, zoom, and light. Via a multifunction pad on the right SensoGrip, the microscope can be positioned without opening the brakes. Two programmable buttons can be individually set to control various functions.

FOCUSING

The variable focus assembly permits working distances from 224 mm to 510 mm without lens exchange. Optionally an alternative focus assembly is available that allows focusing at working distances of 200 mm to 450 mm. The integrated double iris diaphragm can be used to maximize the depth of field.





Accessories

To meet individual requirements, we offer a wide range of accessories and equipment options to choose from.

C.DUO

The C.DUO offers face-to-face observation for two surgeons, lateral ports, and a separate camera connection for c-mount cameras. Tilted microscope positioning can be compensated for improved ergonomics through the rotation of the eyepiece heads.

C.INJECT 1000

In addition to the C.DUO functions, our C.INJECT 1000 features high resolution image injection as a full image or overlay.

LATERAL STEREOSCOPIC OBSERVER SCOPE

For lateral observation stereoscopic observer scopes are available. They are equipped with an inclinable or fixed eyepiece head and allow perfect positioning via a 3-axis movement. Image rotation is integrated for optimal viewing by the assistant.

MOUTH SWITCH

Attached to the 200° inclinable eyepiece head, the mouth switch allows hands-free movement of the microscope in three axes.

M.FOCUS

Benefit from best focusing results with an active focus area that is adjustable in size and position.

Various eyepiece heads
Beam splitter
C.DUO
C.INJECT
Stereoscopic observer scope
Video camera systems
HS MIOS
C.MOR HD
C.MON HD
M.DIS
ICG
ALA/PPIX
M.FOCUS
Foot switch
Mouth switch
Adapters for laser





Imaging

HS MIOS

MIOS stands for **M**icroscope **I**maging and **O**peration **S**ystem. Its prime functions are recording of operation scenes, capturing and recording of snapshots, together with proper identification of patients' and hospital data. Images and video streams can be stored on DVD-R/-RW, HDD, USB flash drive, and external USB hard disk drive or transmitted to the hospital PACS via DICOM.



M.DIS

The M.DIS (**M**icroscope **D**isplay) is a touch screen mounted close to the oculars in the surgeon's direct view. It can visualize up to 3 different video inputs that are connected to the screen via M.BOX S. To switch between the different video inputs a simple tap of your finger is all that is needed.

When connected to the HS MIOS the M.DIS acts as a remote control of the recording system. It can even be operated through the drape and makes visualization possible right in front of the surgeon. This is especially beneficial for viewing ICG fluorescence.



C.MOR HD

C.MOR HD is a full HD color video camera designed for the HAAG-STREIT SURGICAL microscope. Its ultra-compact camera head houses a 1/3" CMOS sensor that meets very high standards. With a resolution of 900 TV lines and an S/N ratio of 50 dB images are crisp and sharp. Different user settings allow individual adjustments.



C.MON HD

With its flat design and the size of 21.5" the brilliant HD monitor C.MON HD can easily be attached to the microscope's floor stand. Its touch function can be operated even with medical gloves. Due to the planar screen and glass surface it can be disinfected easily. For the safety of the system C.MON HD is fully approved for medical use.





ALA/PPIX Fluorescence

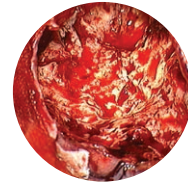
INTRAOPERATIVE TUMOR VISUALIZATION

ALA, or 5-aminolevulinic acid, is a natural amino acid that the body metabolizes to heme, the red blood pigment.

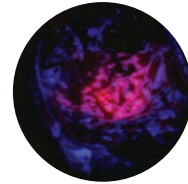
ALA is used in neurosurgery to visualize high-grade gliomas (grades III and IV) as well as the infiltrated areas adjacent to the tumor. This is possible because in such tumor cells, the last step of the heme synthesis is inhibited, which leads to an accumulation of protoporphyrin IX (PPIX) in the tumor cells.

When illuminated with blue light, the PPIX emits a rich red fluorescence and marks the solid tumor with intensive red and the infiltrated areas with salmon-colored light.

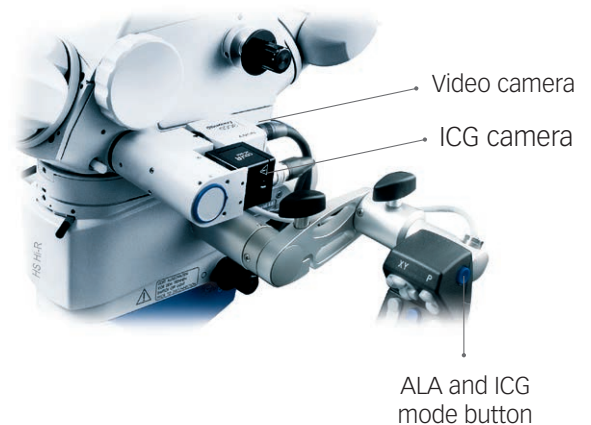
The filters for illumination (blue) and observation (yellow) are selected automatically when pressing the blue fluorescence mode button on the right hand grip. The surgeon can switch between the normal white light and the fluorescence mode at any time.



Glioblastoma illuminated with white light



Glioblastoma illuminated with blue light after ALA administration



ICG Fluorescence

INTRAOPERATIVE FLUORESCENCE ANGIOGRAPHY

Indocyanine green, abbreviated ICG, is a medical dye that emits infrared fluorescence when illuminated with light of the appropriate wavelengths.

The dye is used for intraoperative angiographies, particularly in neurosurgery for detecting stenoses, leakages, and aneurysms.

The microsurgical operating system equipped for ICG application includes a special infrared camera (in addition to the VIS camera) for detecting the ICG fluorescence.

Following the injection of the ICG solution in the patient's bloodstream, the vessels become visible to the camera when the ICG flows by. Now, all irregularities of the vessels can be seen on the unique M.DIS and the HS MIOS displays.



VIS image



IR image

HAAG-STREIT SURGICAL GmbH

Rosengarten 10
D-22880 Wedel, Germany
Telephone +49-4103-709 04
Fax +49-4103-709 355
info@haag-streit-surgical.com
www.haag-streit-surgical.com

Members of HAAG-STREIT Group

HAAG-STREIT Holding AG www.haag-streit-holding.com	HAAG-STREIT Deutschland GmbH www.haag-streit.de
HAAG-STREIT AG www.haag-streit.com	IPRO GmbH www.ipro.com
SPECTROS AG www.spectros.ch	CLEMENT CLARKE Ltd. www.clement-clarke.com
HAAG-STREIT Medtech AG www.haag-streit-medtech.com	HAAG-STREIT UK www.haag-streit-uk.com
HAAG-STREIT France EURL www.haag-streit.fr	John Weiss Ltd. www.johnweiss.com
HAAG-STREIT Far East www.haag-streit-fareast.com	HAAG-STREIT USA www.haag-streit-usa.com
HAAG-STREIT Surgical GmbH www.haag-streit-surgical.com	Reliance Medical Inc. www.haag-streit-usa.com
MÖLLER-WEDEL GmbH & Co KG www.moeller-wedel.com	Asetronics AG www.asetronics.ch
MÖLLER-WEDEL Optical GmbH www.moeller-wedel-optical.com	ComLab AG www.comlab.ch

HAAG-STREIT SURGICAL distributes products manufactured by MÖLLER-WEDEL through dedicated representatives as well as national sister companies globally.



HAAG-STREIT-SURGICAL as well as MÖLLER-WEDEL maintain a Quality Management System for Medical Products according to ISO 13485. MÖLLER-WEDEL is not only developing innovative products but also producing them conscious to the environment. Fulfilling an Environmental Management System according to ISO 14001 is the guide line. Both, the Quality as well as the Environmental Management System, are certified by TÜV.



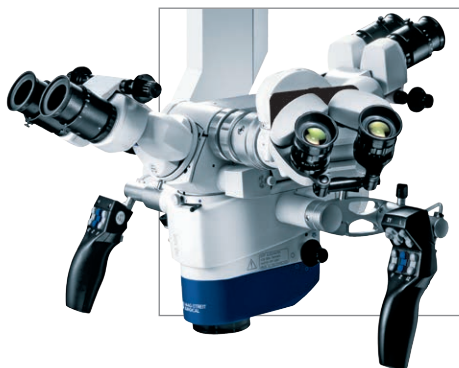
All products are conform to the EC guidelines and thus CE labeled.



HS 5-1000

Technical Data

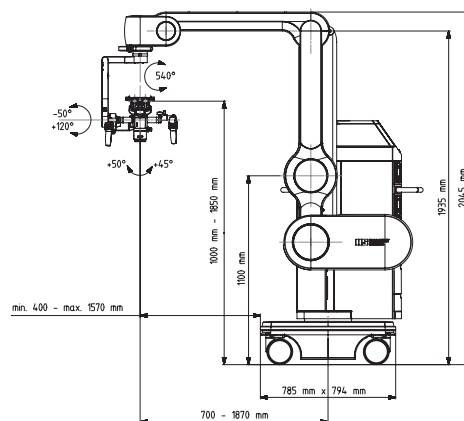




Technical Data HS 5-1000

Microscope	HS Hi-R 1000
Optics	apochromatic
Stereo base	25 mm
Working distance	standard: 224 mm to 510 mm (nom.), alternative: 200 mm to 450 mm (nom.), motorized
Magnification (Mot. zoom 1:6)	1.4x to 14.3x (1.5x to 15.2x for alternative focus assembly)
Diameter of visual field	14.7 mm to 156.0 mm (13.8 mm to 142.2 mm for alternative focus assembly)
Illuminated field	13 mm to 110 mm
Inclinable eyepiece head (10x wide angle oculars)	200°
Diopter setting	-8 D to +5 D
Inclination angles	-50° to +120°
Lateral tilt	-50° to +45°
Rotation	540°
X-Y movement	yes
Brakes	electromagnetic
Autofocus	optional
Video cameras	optional (mandatory VIS and IR camera for ICG)
Image injection	optional (C.INJECT 1000)
Equipment for ALA and ICG fluorescence	optional (special filters and optics)
M.DIS	optional (mandatory for ICG)
Weight (without accessories)	11.5 kg

Floor stand	FS 5-33
Arm reach (max.)	1870 mm
Swivel area	540°
Door height	1945 mm
Floor stand carriage	794 mm x 785 mm
Carrying capacity	15 kg to 22 kg
Brakes	electromagnetic
Balancing	automatic balancing
Vertical travel at suspension	1500 mm
Illumination	2 x 300 W Xenon
Protection filter	UV, IR
Operating voltage	100 VAC, 115 VAC, 230 VAC, 240 VAC; 50/60 Hz; selectable
Max. power consumption	1250 VA
Weight	450 kg
IGS connection	RS 232



Subject to alterations.