HS 5-1000

Minimal effort, maximum outcome

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 the quality of life.

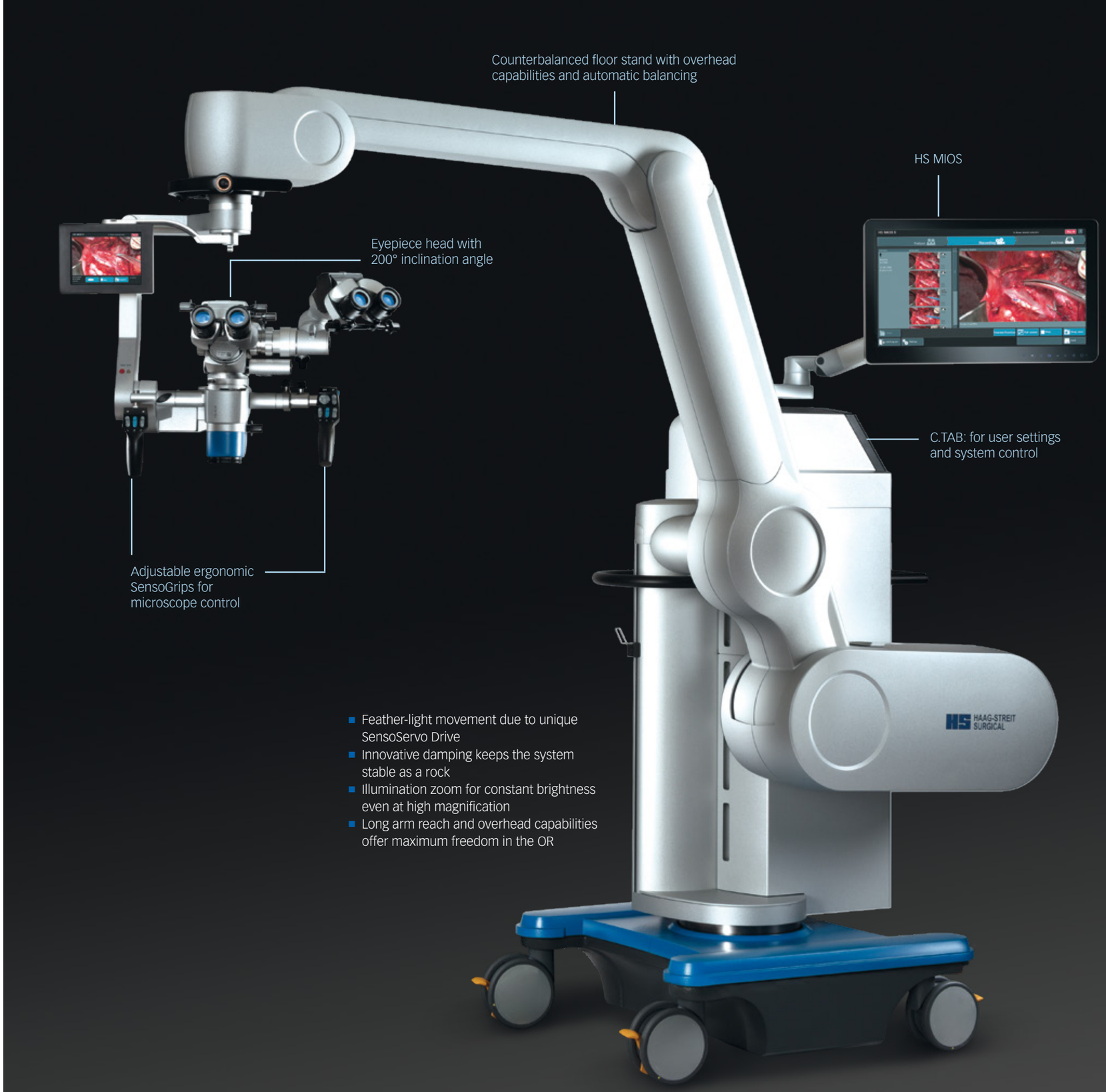
HAAG-STREIT SURGICAL

HS 5-1000
Minimal effort, maximum outcome

The surgical microscope system HS 5-1000 by HAAG-STREIT SURGICAL consists of the SensoServo-driven surgical microscope HS Hi-R 1000 and the extremely steady floor stand FS 5-33. The high quality optics allow viewing of fine structures. Their apochromatic properties provide strong contrast, high resolution and prevent color deviations. Superior depth perception is achieved by an industry leading stereo base of 25 mm.

To fulfill user's wishes, a modular accessory structure is available, offering multiple observers, documentation, fluorescence, autofocus, and hands-free control. As a standard the system is equipped with a powerful 300 W xenon illumination.

The carrying system FS 5-33 combines utmost stability with extraordinary reach, supporting an easy positioning and providing overhead capabilities. Individual user settings can be defined via the touch panel C.TAB and allow customized usage.



- 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

HS Hi-R 1000
Our high-end solution for neurosurgery

Precise optical systems have been developed and manufactured in our German production facility since 1864. We work according to an elaborate and certified quality process, and the assurance of our optics fulfills the requirements of the relevant ISO standards. Enjoy natural viewing with the operating microscope HS 5-1000, which is "Made in Germany".

» The optics on the HS Hi-R 1000 are the best I have ever used. This is combined with superior magnification and phenomenal light. When performing cerebral bypass surgery this is the only microscope I will use.

Additionally, the HAAG-STREIT SURGICAL microscope is extremely innovative as is apparent with the unique SensoServo Drive system which enables the user to move the scope with minimal effort, locks it in place immediately after moving, and avoids the need for balancing the scope. «

ANDREW W. GRANDE, MD
MINNEAPOLIS, MINNESOTA, USA

MOTORIZED MOVEMENT

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 force and control the motor movement in the microscope's joints accordingly.

Individual movement characteristics can be chosen ranging from enhanced friction to feather-light. 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

Control of main functions in one place

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 surgical microscope can be positioned without opening the brakes. Two programmable buttons can be individually set to control various functions.

FOCUSING

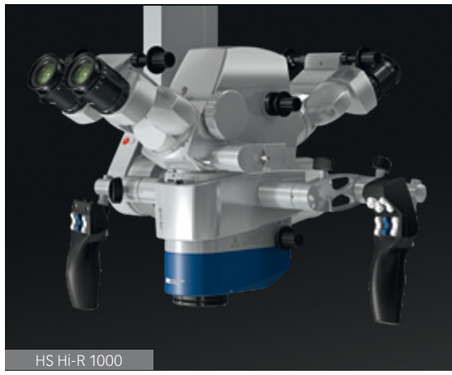
High flexibility

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.

LIGHT

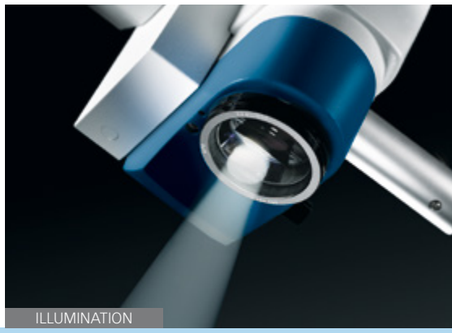
Illumination zoom

To overcome the effect of darker images when increasing the magnification, HS Hi-R 1000 features the functionality of the illumination zoom. This automatically adjusts the light to the size of the visible field and ensures optimal brightness.



HS Hi-R 1000

SENSO GRIP



ILLUMINATION

Accessories
Possibilities on demand

Depending on the demands, HS 5-1000 can be configured in a modular manner. Various optional accesssories are available, such as:

- Fluorescence: ICG and ALA/PPIX
- Observation modules
- Video camera systems
- Camera adaptations
- Increased magnification with MAGNIFEYE
- Laser and navigation adaptation

Image injection

In addition to the C.DUO functions, our C.INJECT 1000 features image injection as a full image or overlay. HD resolution is displayed into both eyes and provides additional information at a glance.

Ergonomic positioning

To suit differences in height among surgeons HAAG-STREIT SURGICAL offers various eyepiece heads. Inclining the eyepiece head results in improved ergonomics for all users.

SECONDARY OBSERVATION

Flexibility

When working together – whether it be for side-by-side or face-to-face positioning – the right accessory is available for HS 5-1000:

- Lateral observer scope with inclinable eyepiece head with 3 axes and image rotation for the assistant's optimal comfort.
- Conventional Beam splitter: Used in combination with a short, straight eyepiece head – ideal for working in a 45° position – or with 160° inclinable eyepiece head for posterior fossa operations.
- C.DUO offers face-to-face observation for two surgeons, lateral ports, and a separate camera connection for c-mount cameras. Eyepieces are fully rotatable for ergonomic positioning when tilting of the microscope.

MOUTH AND FOOT SWITCHES

Hands-free operation

The positioning of the surgical microscope is normally operated using the handles. In addition, mouth and foot switches are also available.

The mouth switch (→ picture page 06) allows the microscope to be moved during positioning. With the EF 5000 and EF 5001 14 partly programmable functions can be controlled. While EF 5000 is connected to the floor stand via cable, EF 5001 connects wirelessly.

M.FOCUS

Autofocus

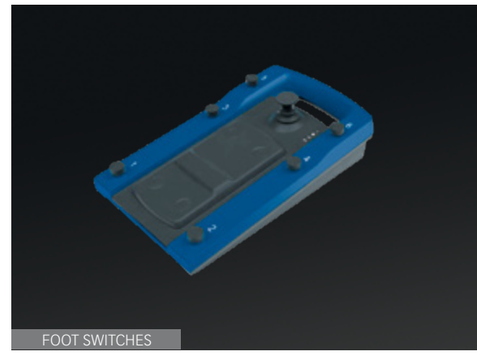
Automatic focusing is available with the HS MIOS 5 software module M.FOCUS. Benefit from an active focus area that is adjustable in size and position to allow individual focusing results.

NAVIGATION

Advanced possibilities

Navigation systems can be connected to the HS 5-1000 system without much effort. It supports pointer functions, image superimposition via C.INJECT 1000 as well as control of focus and positioning by the navigation system.

C.DUO WITH LATERAL STEREOSCOPIC OBSERVER SCOPE



FOOT SWITCHES

M.FOCUS

Imaging possibilities
Observe and document

M.DIS
Microscope mounted display

The M.DIS (Microscope Display) turns the surgical microscope into a microsurgical image control center. The screen, mounted close to the eyepiece, provides images or data for the surgeon which they may see by momentarily looking up from the eyepiece. The touch screen also allows numerous functions to be controlled.

HS MIOS 5
Your simple way of imaging

MIOS stands for Microscope Imaging and Operation System. Its prime function is the recording of operation scenes as well as the capturing and recording of snapshots, together with proper identification of patient and hospital data. Pictures and video streams can be stored onto DVD-R/-RW, HDD, USB flash drive, external USB hard disk or transmitted onto the hospital PACS via DICOM.

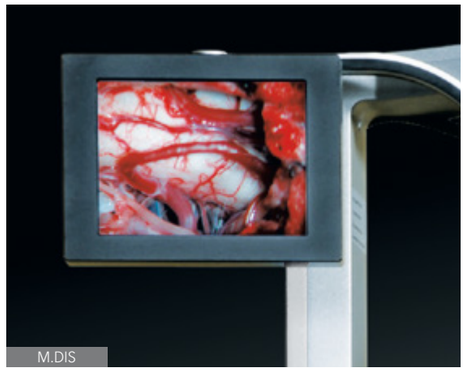
M.AED is an optional module that allows the surgeon to compose a video highlighting special or unique segments of the surgery. During the procedure snapshots are taken during points of interest. These snapshots mark a sequence of the video being recorded. At the end of the procedure all of the video clips are merged into a single video.

C.MOR HD³
Compact HD camera

C.MOR HD³ is a 3-chip full HD color video camera designed for the HAAG-STREIT SURGICAL microscope. Its ultra-compact camera head houses a 1/3" 3 CMOS sensor that meets very high standards. With an HD resolution of 1920 x 1080 pixels and an S/N ratio of 50 dB, images are crisp and sharp. Different user settings allow individual adjustments.

C.MON HD
Display in HD

With its flat design and 21.5" size, 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.


M.DIS


HS MIOS 5

C.MOR HD


C.MON HD

Fluorescence
Enhanced visibility

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.

ICG FLUORESCENCE
Intraoperative fluorescence angiography

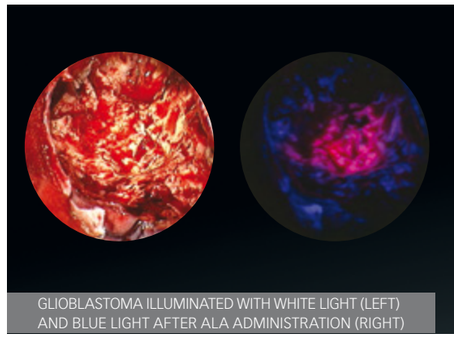
Indocyanine green, abbreviated ICG, is a medical dye that emits infrared light, when illuminated with light of the appropriate wavelengths.

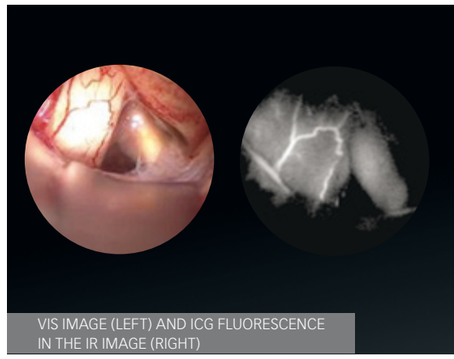
The dye is used for intraoperative angiographies, particularly in neurosurgery for detecting stenoses, leakages, and aneurysms.

The microsurgical operating system equipped for ICG application includes a special infrared camera (in addition to the C.MOR HD³ 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, irregularities of the vessels can be seen on the unique M.DIS and the HS MIOS displays.


HS HI-R 1000 WITH C.INJECT 1000
C.MOR HD³ CAMERA AND NIR CAMERA


GLIOBLASTOMA ILLUMINATED WITH WHITE LIGHT (LEFT)
AND BLUE LIGHT AFTER ALA ADMINISTRATION (RIGHT)


VIS IMAGE (LEFT) AND ICG FLUORESCENCE
IN THE IR IMAGE (RIGHT)

C.TAB AND CENTRAL TOWER

PARKING POSITION

CONNECTION PANEL

FS 5-33
Solid as a rock!

The floor stand FS 5-33 integrates advanced technology with innovative damping for the lowest vibration. Even when fully equipped surgical microscopes are mounted and the arm is stretched to its full length of 1870 mm, it still stays solid as a rock!

Easy handling is achieved by the automatic balancing of the system and its self-explanatory positioning for parking.

For optimum cleaning and disinfection, all cables and accessories are integrated throughout the floor stand. This also houses the touch screen C.TAB that supports easy handling and control of the whole system.

The two independent, powerful 300 W xenon light sources allow the best visibility, even in deep cavities. The quick exchange mechanism ensures the system is available quickly at all times.

Parking position

The C.TAB guides the user to reach a safe and compact transport and parking position.

Easy accessibility

All needed connections for external monitors, network, or navigation system communication are easily accessible from one central panel.

Control

The central tower of the floor stand neatly houses the light sources as well as accessories such as the HS MIOS 5 recording system and camera control units. The spaces are filled with drawers to provide additional storage space.

Floor stand FS 5-33

Ceiling units on request. Subject to alterations.

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

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