Versatile Holmium laser for Urology, Spine, Arthroscopy and ENT
Sphinx - why Holmium?

The versatile Two Micron laser

Strong absorption - efficient ablation

The pulsed Two Micron laser radiation of the Sphinx Holmium laser is highly absorbed in water and in biological tissue. The laser energy is converted into heat within a depth of the tissue of less than 0.5 mm and thus used for ablation purposes by vaporisation of tissue.

Strong absorption - shallow penetration

In soft tissue surgery efficient vaporisation is achieved without deep penetration or uncontrolled tissue necrosis.

Strong absorption - safe operation

In a hydrous solution, the range of the Holmium laser radiation is restricted to the volume immediately in front of the fibre tip thus allowing the safe application also on sensitive surfaces. Tissue more than 5 mm apart from the fibre is screened off by the hydrous solution and will not be affected by the laser radiation.

Short pulses - efficient stone fragmentation

Laser pulses as short as 150 µs make the Sphinx highly effective in the fragmentation of calculi and ablation of hard tissue. The Sphinx Holmium laser is characterised by an extraordinary intense pulse peak power of up to 15 kW.

Long pulses - excellent hemostasis

Long laser pulses of up to 800 µs provide an excellent hemostasis in soft tissue surgery.

Operation of the Laser

The Sphinx Holmium laser is easy and safe to use. The user is guided by easy-to-understand menus. All settings of the laser are displayed by coloured bar graphs which can be recognised at a glance. Due to the bright display, the screen can clearly be read even from a distance. In addition, the user is supported by acoustic signals. Unique features are the vertical fibre port and the extendible fibre support which ensures that the laser fibre is guided to the operating area from above. This arrangement assures the freedom of action in the OR. Uneven floors and thresholds are easily passed because of the system’s large running wheels and an independent wheel suspension. Considering its mobility and sturdiness, the laser system is best suited for service in multiple operating theatres and mobile services.

Advantages

Adjustable laser pulse duration

In order to optimise the effect on various types of tissue the duration of the laser pulse can be adjusted within the range of 150 µs to 800 µs while the pulse energy is kept constant. As a result, the laser is not only used for the ablation of hard tissue but also for almost bloodless cutting of soft tissue. This makes the Sphinx Holmium laser system a versatile instrument in surgery. While short laser pulses with a high pulse peak power are more suitable for the fragmentation of calculi and ablation of hard tissue, long laser pulses are better suited for cutting of soft tissue with efficient hemostasis. This feature is an unparalleled advantage compared with any other Holmium lasers on the market. The adjustable laser pulse duration is particularly advantageous for a multi-disciplinary use of the laser system.

Programme memory

The Sphinx Holmium laser is equipped with a specific programme memory allowing to save up to 50 settings for individual multi-disciplinary applications.

Reusable and disposable applicators and laser fibres

Special laser applicators and laser fibres are available for the various medical applications. To keep the running costs of the Sphinx laser low, most of the applicators and fibres are reusable and can be steam sterilized. Please refer to the Medical Laser Accessories brochure and to the Medical Laser Fibres brochure for details.

Integrated active cooling

The integrated active cooling allows long time operation even at elevated ambient temperatures and produces less noise than the competing products with radiators and fans only.
Urology

Laser Lithotripsy

Calculi in the bladder, ureter or kidney are fragmented by sudden evaporation of residual water inside the stone upon absorption of the laser radiation. Contrary to mechanical and electro-hydraulic systems the Sphinx Holmium laser does not apply external kinetic force, thus preventing the calculi from being pushed further inside the ureter. For the treatment of stones in the most demanding locations Sphinx 30 lasers are delivered by the 200 µm LithoFib laser fibre. This laser fibre preserves the full mobility of your flexible ureterorenoscope at no force. This fibre is agreed to be the thinnest and most flexible product on the market for laser lithotripsy.

The high power Sphinx 60, Sphinx 80 and Sphinx 100 accept the highly flexible 273 micron core diameter FlexiFib laser fibres as standard.

Together with the LISA FlexGuard™ insertion sheath Sphinx lasers enable efficient fragmentation of calculi and protection of the flexible scope at the same time. Please refer to our FlexGuard™ laser sheath for the protection of the working channel against damage by the laser fibre.

Treatment of BPH

Sphinx Holmium lasers offer different treatment modalities for BPH. Depending on the surgical situation and the delivery system used the adenoma may be resected, enucleated (HoLEP) or vaporized (HoLAP). All treatment modalities benefit from the excellent haemostatic properties of the Sphinx Holmium laser which is provided by the long pulse duration in the tissue mode. The patient benefits from the bloodless laser treatment, early catheter removal, immediate symptomatic improvement, better urinary flow and a shorter hospital stay. Resected tissue is available for subsequent biopsy.

Opening of Strictures

Strictures in the ureter and the urethra are easily opened - virtually without any bleeding.

Treatment of Bladder Tumours

The low penetration of the Sphinx Holmium laser makes it the ideal instrument for the treatment of bladder tumours. A special aiming beam setting allows the usage together with photo-dynamic-diagnosis under blue light illumination.

Bladder Neck Incisions

Turner Warwick incisions are quick and easy. Excellent vision is provided during the entirely bloodless procedure.

Ablation of Condylomata

Condylomata are precisely ablated by the Sphinx Holmium laser. The superficial tissue effect excises the tissue to the desired depth providing excellent haemostasis. Shallow necrosis enables immediate healing.
**Spinal Surgery**

The **Sphinx** Holmium laser offers a variety of treatment options for cervical and lower back pain patients. The **Sphinx** Holmium laser ablates soft tissue such as disk material and hard tissue such as bone and osteophytes in Laser Foraminoplasty. In Laser Discectomy it removes residual nucleus pulposus material in preparation for stabilisations and fusions. The thermal load to the surrounding area is controlled by the shallow penetration of the Holmium laser radiation and the adjustable pulse duration. A range of specialised applicators is available for X-Ray controlled and minimally invasive endoscopic procedures. For endoscopic procedures the SpineLas and AutoFlex offer all required treatment options.

**ENT**

Stenosis of the nose is treated by trimming the turbinates and the nasal septum. Nasal and laryngeal polyps can easily be removed. All of these procedures can be performed as outpatient treatments. Due to the narrow zone of necrosis, postoperative pain is significantly reduced compared to other laser techniques like Nd:YAG and Diode lasers and conventional procedures.

**Arthroscopy**

The **Sphinx** Holmium laser allows a less invasive mobilisation of the joint than mechanical instruments. The risk of a hemarthrosis is minimised and postoperative pain as well as swelling is reduced.

In meniscectomy the use of the **Sphinx** Holmium laser in combination with the small-sized VarioLas NT instrument (US patent 08/755,324) allows to access areas that are difficult to reach, like the posterior horn. In case of patella dislocation the **Sphinx** Holmium laser is used for splitting of the retinaculum with a minimum of bleeding. The simultaneous shrinkage of the tissue facilitates the new centering of the patella. In synovectomy the ablation of infected synovial tissue and hemostasis is achieved simultaneously.

Degenerative cartilage is smoothened by the **Sphinx** Holmium laser with minimum strain on the remaining articulation. By using the small-sized laser instrument VarioLas NT, iatrogenic lesions on intact cartilage surfaces can be avoided.

The shrinkage of the capsule as a therapy in case of unidirectional and multidirectional instabilities is a major application in shoulder arthroscopy.
Optimized tissue effect due to adjustable pulse duration
Reusable and disposable applicators and fibres
High mobility
Uneven floors and thresholds are easily passed because of large wheels and independent wheel suspension.
User friendly
The laser parameters are displayed as coloured bar graphs which are easily readable. The control console swivels by 270°.
The vertical fibre port and the extendible fibre holder ensure that the laser fibre is guided

**Highlights**

- **Substantial** re-engineering for more user value
- **Output** increased laser pulse energy for better stone fragmentation
- **Trigger** instant pulse emission at preset energy
- **Pilot** optional red or green aiming beam
- **Display** increased contrast for better readability
- **Chiller** less noise emission and better performance
### Technical Specifications

<table>
<thead>
<tr>
<th>Laser system</th>
<th>Wavelength</th>
<th>Power</th>
<th>Pulse energy</th>
<th>Repetition rate</th>
<th>Pulse duration</th>
<th>Pulse peak power</th>
</tr>
</thead>
<tbody>
<tr>
<td>30 W Laser</td>
<td>2120 nm</td>
<td>30 W</td>
<td>0.5 - 4.0 J</td>
<td>single, 4 - 20 Hz</td>
<td>150 - 800 µs</td>
<td>15 kW</td>
</tr>
<tr>
<td>45 W Laser*</td>
<td>2120 nm</td>
<td>45 W</td>
<td>0.5 - 4.0 J</td>
<td>single, 4 - 30 Hz</td>
<td>150 - 800 µs</td>
<td>15 kW</td>
</tr>
<tr>
<td>60 W Laser*</td>
<td>2120 nm</td>
<td>60 W</td>
<td>0.5 - 4.5 J</td>
<td>single, 4 - 30 Hz</td>
<td>150 - 800 µs</td>
<td>15 kW</td>
</tr>
<tr>
<td>80 W Laser*</td>
<td>2120 nm</td>
<td>80 W</td>
<td>0.5 - 4.5 J</td>
<td>single, 4 - 30 Hz</td>
<td>150 - 800 µs</td>
<td>15 kW</td>
</tr>
<tr>
<td>100 W Laser</td>
<td>2120 nm</td>
<td>100 W</td>
<td>0.5 - 4.5 J</td>
<td>single, 4 - 30 Hz</td>
<td>150 - 800 µs</td>
<td>15 kW</td>
</tr>
</tbody>
</table>

* power upgrading possible

- **Aiming beam**: 635 nm (optional 532 nm), 635 nm (optional 532 nm), 635 nm (optional 532 nm), 635 nm (optional 532 nm), 635 nm (optional 532 nm)
- **Mains supply (~, N, PE)**: 220 - 230 VAC, 50/60 Hz, 3A 222 - 230 VAC, 50/60 Hz, 3A 222 - 230 VAC, 50/60 Hz, 3A 222 - 230 VAC, 50/60 Hz, 3A 222 - 230 VAC, 50/60 Hz, 3A
- **Mains supply (3~, N, PE)**: 400 VAC, 50/60 Hz, 16 A 400 VAC, 50/60 Hz, 16 A 400 VAC, 50/60 Hz, 16 A 400 VAC, 50/60 Hz, 16 A 400 VAC, 50/60 Hz, 16 A
- **Cooling**: internal refrigeration, closed circuit internal refrigeration, closed circuit internal refrigeration, closed circuit internal refrigeration, closed circuit internal refrigeration, closed circuit
- **Dimension**: 1040 x 450 x 1070 mm 1040 x 450 x 1070 mm 1040 x 450 x 1070 mm 1040 x 450 x 1070 mm 1040 x 450 x 1070 mm
- **Weight**: ca. 160 kg ca. 180 kg ca. 180 kg ca. 180 kg ca. 180 kg

* Specifications are subject to change without notice.

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**Safety Standards:** IEC 60601


U.S. federal law restricts these devices to sale by or on the order of a physician

**IMPORTANT NOTICE:**

The information provided is a general overview of potential clinical applications of the described products.

National health care regulations vary between countries and may exclude certain clinical applications at your location.

The user assumes responsibility to be updated about national deviations from the applications listed above.

In the USA the products are not intended for use in clinical applications in neurosurgery.

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