Versatile Holmium laser for Urology, Spine and ENT
Sphinx - why Holmium?
The versatile Two Micron Holmium 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.

Strong absorption - shallow penetration
In soft tissue surgery efficient ablation is achieved without deep penetration or uncontrolled tissue necrosis.

Moses effect - safe operation
An aqueous solution like saline is non-transparent for the Holmium laser wavelength. The laser beam reaches to the extent of the steam bubble which is created by each laser pulse at the tip of the laser fibre. Any tissue further away is not affected by the Holmium laser radiation directly. The steam bubble is the optical pathway for the laser radiation to a stone or tissue which is touched by the forefront of the steam bubble (Moses effect).

Steam bubble – tissue separation and hemostasis
In HoLEP the impact of the expanding steam bubble is used to release the prostatic adenome from the surgical capsule at the anatomic boundary. At the same time heat from the steam bubble coagulates the wound and stops superficial bleeding.

Note: The tissue separation in HoLEP is created by the expanding steam bubble and not by the laser beam itself.

Dusting, reduced stone retropulsion, excellent hemostasis
For stone dusting the pulse duration is set to 800 µs for minimum retropulsion. Also long laser pulses of up to 800 µs provide an excellent hemostasis in soft tissue surgery.

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.

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. The user is supported by acoustic signals. Unique features are the vertical fibre port for user-friendly fibre connection and the extendible fibre support which ensures that the laser fibre is guided to the operating area from above. Uneven floors and thresholds are easily passed because of 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 for 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. The adjustable laser pulse duration is particularly advantageous for a multi-disciplinary use of the Sphinx Holmium laser system.

Programme memory
The Sphinx Holmium laser is equipped with a specific programme memory allowing to save up to 50 laser 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 laser applicators and fibres are reusable and can be steam sterilized. Disposable laser fibres are available for those OR settings where reprocessing economically is not reasonable. Please refer to the Surgical Laser Accessories brochure and to the Surgical 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 rapid evaporation of residual water inside the stone upon absorption of the laser radiation. At the long pulse setting (800 µs) the Sphinx Holmium laser does not apply external kinetic force, thus preventing the calculi from being pushed further inside the ureter.

The LISA FlexGuard™ laser fibre insertion sheath provides protection of the flexible scope against damage during insertion of the laser fibre. Please refer to our FlexGuard™ brochure.

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 ablated (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.
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 tissue is controlled by the shallow penetration of the Holmium laser radiation and the adjustable pulse duration.

ENT

Stenosis of the nose is treated by trimming of 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.
Optimized tissue effect due to adjustable pulse duration

Reusable and disposable laser applicators and fibres

High mobility

Uneven floors and thresholds are easily passed because of large wheels and independent wheel suspension.

User friendly

Laser parameters are displayed as coloured bar graphs which are easily readable.

Control console swivels by 270°.

Vertical fibre port and the extendible fibre support for excellent useability

Low profile Kix footswitch

**Highlights**

- More user value
- Increased laser pulse energy for better stone fragmentation
- Instant laser pulse emission at preset energy
- Red or green aiming beam
- Enhanced display contrast for better readability
- Low noise emission and better performance

Kix footswitch
Order No. 101 600 215
Technical Specifications

<table>
<thead>
<tr>
<th>Laser system</th>
<th>Sphinx 45 Litho</th>
<th>Sphinx 60</th>
<th>Sphinx 80</th>
<th>Sphinx 100</th>
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<tbody>
<tr>
<td>Wavelength</td>
<td>2123 nm</td>
<td>2123 nm</td>
<td>2123 nm</td>
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<tr>
<td>Power at fibre tip</td>
<td>45 W (adjustable)</td>
<td>60 W (adjustable)</td>
<td>80 W (adjustable)</td>
<td>100 W (adjustable)</td>
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<td>Pulse energy</td>
<td>0.5 - 4.0 J</td>
<td>0.5 - 4.5 J</td>
<td>0.5 - 4.5 J</td>
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<tr>
<td>Pulse duration</td>
<td>150 - 800 µs</td>
<td>150 - 800 µs</td>
<td>150 - 800 µs</td>
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<td>Pulse peak power</td>
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<td>Aiming beam</td>
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<td>635 nm (red) or 532 nm (green), 1 mW (adjustable), 3R</td>
<td>635 nm (red) or 532 nm (green), 1 mW (adjustable), 3R</td>
<td>635 nm (red) or 532 nm (green), 1 mW (adjustable), 3R</td>
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<td>220 - 230 VAC, 400 VAC,</td>
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<td>(~, N, PE)</td>
<td>50/60 Hz 30 A, 50/60 Hz 16 A</td>
<td>50/60 Hz 30 A, 50/60 Hz 16 A</td>
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<td>Cooling</td>
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<td>integrated cooling</td>
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<td>Dimension</td>
<td>H 1040 x W 450 x L 1070 mm</td>
<td>15 - 28 °C / 10 - 90 % humidity (non-condensing)</td>
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</table>

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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Specifications are subject to change without notice.
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