



Sphinx^X

Holmium-YAG Laser System



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Versatile Holmium laser

**for Minimally invasive surgery
in Urology, Spine, Arthroscopy and ENT**



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Holmium

Sphinx - why Holmium?

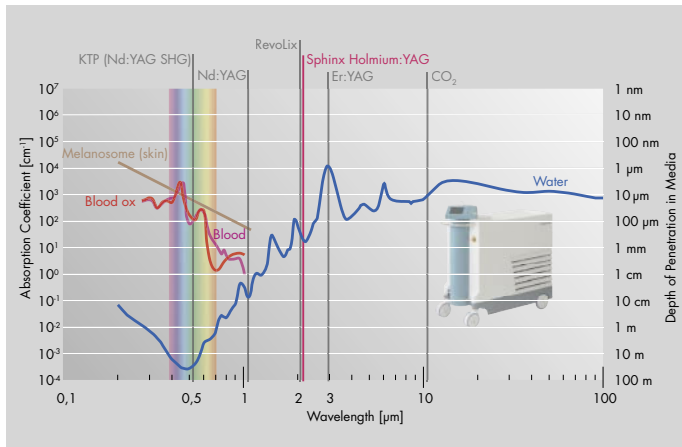
Sphinx - The versatile Two Micron laser

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 with a high pulse peak 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. This makes the Sphinx Holmium laser highly efficient in fragmentation of calculi and ablation of hard tissue.

Long pulses - excellent hemostasis

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

Operation

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 surgeon is supported by acoustic signals. Unique features are the vertical fibre port and the extendible fibre support which ensure that the laser fibre is guided to the operating area from above. Of this arrangement, the freedom of action of the operating surgeon is not affected. Uneven floors and thresholds are easily passed because of the system's large running wheels and an independent wheel suspension. Considering its mobility, 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 interaction with 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 laser on the market. The adjustable laser pulse duration is particularly advantageous for a multi-disciplinary use of the laser system.

Program Memory

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

Reusable 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 applicator and fibres are reusable and can be steam sterilized. Please refer to the Accessories Borchure for details.

Integrated active cooling

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



Applications Applications

Urology

Laser Lithotripsy

Calculi in the bladder, ureter or kidney are fragmented due to the rapid 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. Sphinx 30 and Sphinx 45 lasers offer the user access to ultra flexible true 200 micron core diameter LithoFib fibres to treat stones in the most demanding locations of the ureter and kidney without affecting the bending characteristics of the flexible instrument. This fibre is agreed to be the thinnest and most flexible product on the market for laser lithotripsy. The high power Sphinx 60 and Sphinx 80 accept the highly flexible 273 micron core diameter FlexiFib laser fibres as standard. Together with the new Flexguard™ insertion sheet it offers the urologist a unique combination for flexible laser ureteroscopy.

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. The patient benefits from the bloodless laser treatment, by 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 Tumors

The low penetration of the Holmium laser makes it the ideal instrument for the treatment of bladder tumors. 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 Condylomas

Condylomas 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.

Spine

Percutaneous laser disk decompression

Laser-based foraminoplasty

Minimally invasive spine endoscopy

Foramioplasty

Diskecomy



Urology

Laser lithotripsy

Enucleation of prostate

Opening of strictures

Excision of bladder tumors

Condylomas

Vaporization

Spine

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 necessary 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 and swelling is reduced.

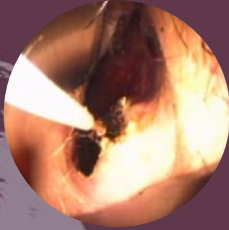
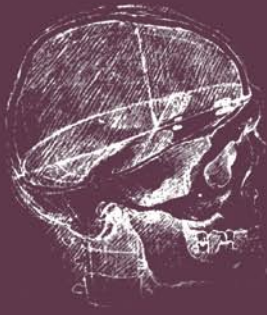
In meniscectomy the use of the Sphinx Holmium laser in combination with the small-sized VarioLas NT instrument (US patent 08/755,324) allows to access areas that are difficult to reach, like the posterior horn. In case of patella dislocation the Sphinx Holmium laser is used for splitting of the retinaculum 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 smoothed 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.

ENT

- Nasal treatments
- Ablation of Polyps



Arthroscopy

- Synovectomy
- Capsular shrinkage
- Cartilage smoothing
- Meniscectomy



Details

Optimized tissue effect due to adjustable pulse duration.

Reusable laser applicators and fibres

High mobility

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

The laser parameters are displayed as coloured bar graphs which are easily readable. The control console can be swivelled by 270°



The vertical fibre port and the extendible fibre holder ensure that the laser fibre is guided to the operating area from above.

Low noise emission

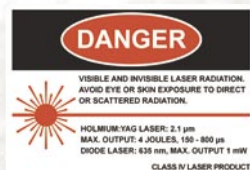
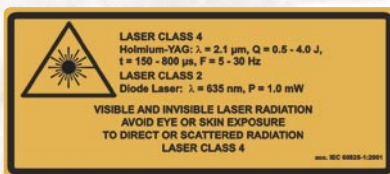
Different power ranges available to select the optimal solution for your application



30 45 60 80

Technical Specifications *SphinxX*

	30 Watt Laser*	45 Watt Laser*	60 Watt Laser*	80 Watt Laser
Laser system	Holmium-YAG Laser	Holmium-YAG Laser	Holmium-YAG Laser	Holmium-YAG Laser
	litho technology	litho technology		
Wavelength	2.1 µm	2.1 µm	2.1 µm	2.1 µm
Power at tissue				
Pulse energy	0.5 - 2.7 J	0.5 - 2.8 J	0.5 - 3.8 J	0.5 - 4.0 J
Repetition rate	5 - 20 Hz	8 - 25 Hz	8 - 25 Hz	8 - 30 Hz
Average power	30 W	45 W	60 W	80 W
Pulse duration	150 - 800 µs	150 - 800 µs	150 - 800 µs	150 - 800 µs
Pulse peak power	15 kW	15 kW	15 kW	15 kW
Aiming beam	635 nm, 1mW, bright red	635 nm, 1mW, bright red	635 nm, 1mW, bright red	635 nm, 1mW, bright red
	adjustable	adjustable		-
Utilities	single phase			
	230 VAC, 50/60 Hz	230 VAC, 50/60 Hz	230 VAC, 50/60 Hz	
	18 A, (~, N, PE)	25 A, (~, N, PE)	30 A, (~, N, PE)	400 VAC, 50/60 Hz
	three phase			
	400 VAC, 50/60 Hz	400 VAC, 50/60 Hz	400 VAC, 50/60 Hz	16 A, (3~, N, PE)
	16 A, (3~, N, PE)	16 A, (3~, N, PE)	16 A, (3~, N, PE)	integrated refrigerant **
Cooling	integrated refrigerant **	integrated refrigerant **	integrated refrigerant **	85 x 45 x 105 cm
Dimensions	85 x 45 x 105 cm	85 x 45 x 105 cm	85 x 45 x 105 cm	ca. 165 kg
Weight	ca. 160 kg	ca. 165 kg	ca. 165 kg	



* power upgrading possible

** optional integrated heat sink for external cooling water (max. 8 bar, max. 30°C)

Safety Standards: IEC 60601
CE acc. Council Directive 93/42/EEC

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

Specifications are subject to change without notice.

Made in Germany 2006-10 E07V00



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