

LIMAX<sup>®</sup> 120



The diode-pumped Nd:YAG laser Limax<sup>®</sup>  
*satisfies the highest demands  
for treatment quality and operating convenience*

*“Metastatic resection with the Limax® laser enables the gentle removal of multiple metastases while preserving the healthy tissue to the greatest possible extent. Even patients that previously had to be classified as inoperable can be excellently treated with this new laser technique. What’s more, patients also benefit from a significant increase in their quality of life after the operation.*”

*With its very high output power of 120 W, the Limax® laser from KLS Martin saves me a lot of time as it speeds up the whole process significantly, compared with previous types of laser. Moreover, my surgical team loves to work with the Limax® as well, due to its intuitive handling and the full integration of peripheral devices such as a smoke evacuator and a gas irrigation unit.”*



*Prof. Dr. Bernward Passlick (MD)  
Medical Director,  
Department of Thoracic Surgery  
University of Freiburg im Breisgau, Germany*

*“The use of KLS Martin Limax® lasers represents an important step forward in the resection of pulmonary metastases. As healthy tissue can be preserved to a great extent, the patient’s post-operative quality of life is enhanced significantly. Moreover, the tissue-preserving resection of metastases with the Limax® laser ensures that patients can be reoperated in case of need.*”

*From an economic point of view, using the laser method makes a lot of sense, too, as the tissue-preserving resection of metastases with the Limax® laser allows the treatment of patients who previously had to be classified as inoperable. Besides, the laser simply eliminates high costs for consumables such as staplers.”*



*University lecturer Dr. Thomas Graeter, M.D.  
Chief Physician of the Clinic  
for Thoracic and Vascular Surgery,  
Loewenstein, Germany*

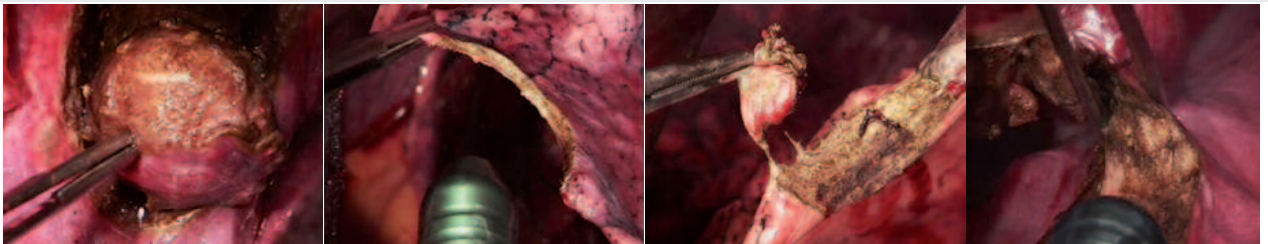
*The diode-pumped Nd:YAG laser Limax®*  
satisfies the highest demands for treatment  
quality and operating convenience

With the launch of the new diode-pumped Nd:YAG laser Limax®, surgeons have a laser system at their disposal which offers a triple advantage, combining the excellent beam quality of solid state lasers with an extremely high output power for faster interventions and a wavelength specially optimized for use on parenchymal tissue.

The use of lasers with a wavelength of 1,318 nm has gained more and more ground in recent years, especially for the resection of multiple metastases. The optimal coefficients of absorption in both water and hemoglobin – exclusively attainable with the 1,318-nm wavelength – are just perfectly suited for cutting, coagulating and sealing parenchymal tissue.

Apart from its clinical advantages, this new laser is a great economic solution as well. It not only saves you a lot of money on consumables, but also boosts the number of patients eligible for laser therapy.

*Reliable resecting, coagulating and sealing*  
while preserving healthy tissue  
to the greatest possible extent



The wavelength of 1,318 nm enables precise resection in parenchymal tissue. Thanks to its optimal ratio of absorption in water and hemoglobin, this wavelength lets you achieve excellent sealing results. In other words, precise lesion resection with maximum preservation of healthy tissue.



Bronchoscopy is another field where selecting the right wavelength is of primary importance. Due to their low absorption in hemoglobin, wavelengths above 1,318 nm cannot produce the intended coagulation effect, but primarily lead to tissue desiccation instead. The 1,318-nm wavelength is different because of its first-rate absorption in hemoglobin. It therefore prevents unwanted side effects such as dreaded edemas. Besides, the pulsed operating mode allows it to be used for gentle, tissue-preserving endobronchial applications as well.

## *The surgical advantages of the Limax® system*

- Greatest possible preservation of healthy tissue
- Maximum precision – even the most difficult localizations can be treated
- Flexible, yet mechanically strong coagulation zones allow for visceral pleura sutures for increased safety
- Dry (hemorrhage-free) and fistula-tight resection surfaces
- Intervention can be repeated in case of recidivation
- Significantly increased life expectancy with almost no loss in the quality of life



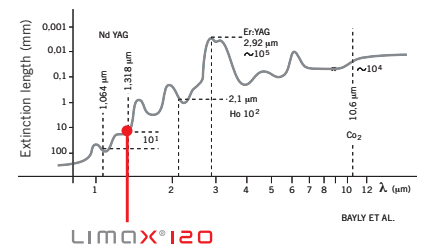
*Optimal wavelength –*  
 superior beam quality,  
 intuitive handling

*The diode-pumped Nd:YAG laser Limax® represents a significant step forward in parenchymal laser surgery.*



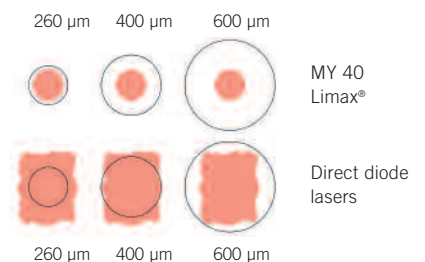
*Optimal wavelength*

Due to its specific wavelength of 1,318 nm and the high coefficients of absorption in water and hemoglobin associated with it, the Limax® is perfectly suited for combining resection, coagulation and tissue sealing effects for optimal control of the two greatest problems when working on lung parenchyma – hemorrhages and air loss.



*Best beam quality*

In contrast to direct-diode lasers, the diode-pumped Nd:YAG laser Limax® emits laser radiation of constant quality, irrespective of the set power. Whereas the beam diameter of direct-diode systems increases with increasing power and beam precision decreases strongly as a result, the Limax® system enables the surgeon to work at a constant beam quality with a power of up to 120 W. This allows for fast operations with maximum power densities of >100 kW/cm² and fibers with very small diameters of 260 μm.



*Intuitive operation*

In addition to the laser, the Limax® system integrates a dedicated smoke evacuator and gas irrigation unit into a single, compact platform.

Besides, all the parameters for these components can be easily controlled via the intuitive Limax® software and stored according to the user's preferences.



## The technical advantages at a glance

- Optimal wavelength
- Integrated smoke evacuator
- Intuitive handling
- User-customizable standard programs
- No heavy-current connections required
- Low-sound generation
- Best beam quality
- Integrated gas irrigation
- Highest power densities
- Very comprehensive set of accessories
- Service-friendly design
- Extremely low-maintenance

Ordering Data	Item Number
120 diode-pumped Nd:YAG laser Limax®	79-050-00-04

We'll be glad to inform you about our comprehensive range of accessories.

### Limax® 120 Technical Data

Laser type	Diode-pumped Nd:YAG laser	
Laser wavelength	1,318 nm	
Laser output power	2 – 120 W	
Pulse type	Continuous pulse	
	Single pulse:	pulse on-time: 0.1 s – 10 s
	Pulse train, adjustable:	pulse on-time: 0.1 s – 10 s pulse off-time: 0.1 s – 10 s
Pilot laser wavelength	635 nm	
Pilot laser power	5 mW, 2 – 100%, adjustable, pulsating	
Beam delivery	Laser fibers, focusing handpiece	
Laser beam quality	Numerical aperture < 0.22	
Light guide connector	SMA-plus socket, mechanically coded SMA socket	
Control and monitoring	2 microprocessors	
Operation	Rotary pushbutton and membrane keypad, 8.4" color display	
Cooling	Compressor air cooling	
Mains power supply, version E (U)	230 V ± 10%; 50/60 Hz (110–230 V ± 10%; 50/60 Hz)	
Mains current	Max. 16 A (max. 30 A)	
Mains fuses	2 x T 16 A and 2 x T 6.3 A (2 x T 30 A and 2 x T 16 A) [T = slow-blow]	
Power input	3,300 W	
Laser class	4	
Protection class	I	
Type of protection	IP X1	
Classification acc. to MPG/MDD	II b	
Pilot laser	3R	
Noise level	Neutral/no-load: 51 dB(A); full load: 60 dB(A)	
Smoke evacuator (VAC)	Integrated plug-in unit	
VAC control	CAN bus control via Limax®	
VAC mains power supply	110–230 V ± 10%; 50/60 Hz	
VAC mains current	Max. 16 A	
VAC mains fuses	2 x T 16 A (slow-blow)	
VAC power input	400 W	
Dimensions (W x H x D)	50 x 107 x 59 cm	
Weight (laser with integrated VAC)	120 kg	
Environmental conditions for transport and storage (without cooling water)	Ambient temperature:	-15°C to +50°C (+5°F – 122°F)
	Relative humidity (non-condensing!):	10% to 80%
	Atmospheric pressure:	700 hPa to 1060 hPa
Environmental conditions for operation	Ambient temperature:	+15°C to +30°C (59°F – 86°F)
	Relative humidity (non-condensing!):	30% to 75%
	Atmospheric pressure:	900 hPa to 1060 hPa
EMC Directive	89/336/EEC	
CE-marking	In conformity with 93/42/EEC	
Safety check	Annually	

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