

## KLS 246 ... a unique tool for micromachining

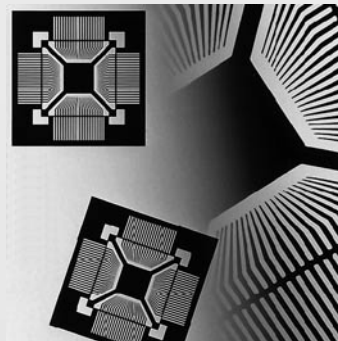
Modern applications in the medical device industry, electronics, the auto industry and precision engineering demand increasingly flexible tools for highest precision processing with minimum thermal side effects. The KLS 246 lasers have proven themselves under the most punishing industrial conditions.

- Outstanding beam quality at high peak powers up to 6 kW clearly distinguishes the KLS 246 series of pulsed Nd:YAG lasers from the competition.
- Provides precision processing with extremely small spot diameters starting at  $<20\ \mu\text{m}$ , especially for conventional beam delivery. High pulse frequencies of up to 5 kHz guarantee optimum cutting quality and superior productivity.
- Reproducible mechanical/optical interface between the optical system and the processing head provides quick changeover and superior flexibility for optimum processing and systems integration.
- Flexible, cost-efficient production solutions thanks to optional fiber beam delivery to as many as four workstations in time-sharing and/or energy-sharing with a single laser source.
- Compact industrial design guarantees simple and foolproof integration in your production environment. The LASAG interface is compatible with every current CNC, PLC or PC control system.
- Superior serviceability is a matter of course thanks to modular design and remote diagnosis via modem.

## KLS 246 ... examples of versatile industrial applications

### Fine cutting of medical implants (stents)

- Fulfills highest requirements for cutting quality, dimensional stability and heat input.
- Tube diameter  $\geq 0.4\ \text{mm}$
- Minimum kerf width  $< 20\ \mu\text{m}$
- Smooth cutting kerfs

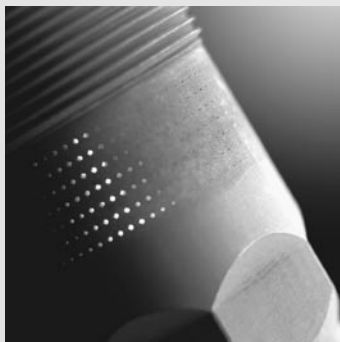


### Cutting of solder-screen stencils, etched parts and molded parts

- High cutting speeds up to 4 m/min
- Aspect ratios up to 1:20
- Material thicknesses up to 2 mm
- Oxide-free and burr-free cutting

### Drilling of filters

- Hole diameters down to  $< 30\ \mu\text{m}$
- High-speed drilling of up to 600 holes per second with single-shot drilling
- Aspect ratios up to 1:30 for percussion drilling



### Scribing of connecting rods and bearings

- Creation of predetermined breaking lines with reproducible kerf geometry
- High aspect ratio
- Kerf depths up to 2 mm
- Minimum kerf width of approx.  $60\ \mu\text{m}$

### Materials suitable for machining with Nd:YAG lasers

- Steel and stainless steel
- Light metal
- Nonferrous metals, precious metals
- Sintered carbide, diamond
- Nickel and cobalt alloys
- Ceramics and semiconducting material
- Composites

## KLS 246 ... for more flexible beam delivery

The type of processing, workpiece, handling and production environment determine the beam delivery to be used. The KLS 246 series of lasers provides you with solutions for any industrial situation.



### LLEK

- Optional module for additional optical components e.g. beam-expander
- Coupling module handles up to four fibers
- Industrial mounting plate for resonator and processing head

### Compact optical system

- Resonator and processing head are attached directly to the machine
- Conventional beam delivery and short beam path assure outstanding beam quality and precise processing results

### BAK 4

- Industrial standard processing head with mounting plate
- Focal lengths from 50 to 300 mm
- Can be swiveled  $\pm 90^\circ$
- Wide variety of cutting, drilling and welding nozzles
- Optional collision protection and height sensing
- Observation with monocular, binocular and/or CCD TV cameras
- Illumination or ring light



## KLS 246 ... for convenient integration

All LASAG lasers have a variety of interface options.

Built-in terminal



Hand-terminal



PC-terminal



Remote diagnostic modem



Universal power input

Flexible connection to the optical system

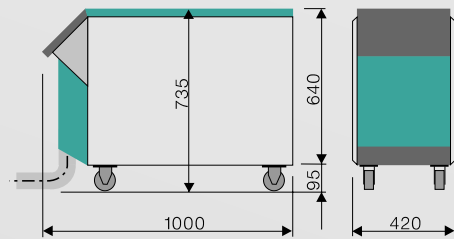
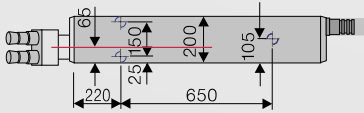
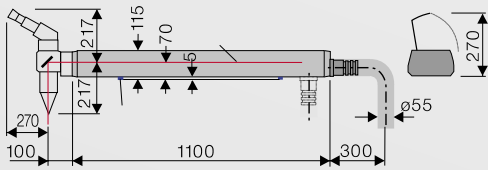
External cooling water

USER

SYSTEM



# KLS 246



## Specifications (see also detailed data sheet)

Laser source with cavity	-040 FC	-046	-102	-302	-306
Laser type	pulsed Nd:YAG solid-state laser				
Wavelength	1064 nm				
Beam diameter	mm	2.5	4.0	6.0	6.0
Pulse length	ms	0.012-0.3	0.02-20	0.02-20	0.1-20
Pulse repetition rate	Hz	0.1-5000	0.1-1000	0.1-1000	0.1-1000
Pulse energy max. *)	J	0.002-0.18	15	30	50
Peak power at 3 ms max. *)	kW	0.6**)	4.0	6.0	5.5
Average power max. *)	W	15	100	150	220

\*) measured without beam delivery with new flashlamp \*\*) at 0.3 ms

### Line power

Configuration	3-phase + ground, $\pm 10\%$
multitap transformer for	3x200 V 208 V 230 V 380 V 400 V 480 V
Power consumption max.	9 kVA
Line frequency	50 Hz or 60 Hz

### Cooling water connection

Water inlet max.	20°C/8 bar
Pressure drop to outlet min.	4 bar
Cooling power max.	8.5 kW, depending on laser output

### Weight

Laser unit	200 kg
Optical system	35 kg

### Ambient conditions

Ambient temperature	10 – 35°C
Relative humidity max.	80%

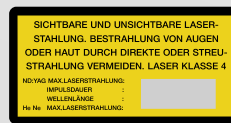
### Emissions

Noise at 1m, idle	60 dBA
EMC	complies with EN 50081-2 and EN 6100-6-2

### Compliance with standards

CE compliant, EN 60825-1, EN 60204-1, EN 207, EN 12626
IEC 825-1, FDA-CDRH: U.S. 21 CFR 1040.10, ISO 11553

Subject to change



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# LASAG

INDUSTRIAL-LASERS

A COMPANY OF THE SWATCH GROUP

ISO 9001:2000 certified



# KLS 246

Pulsed Nd:YAG lasers  
15 to 220 W output



- Unique in the field of fine cutting, precision drilling and scribing
- Outstanding beam quality at high peak powers
- For conventional beam and/or fiber beam delivery
- Optimum flexibility for a full line of processing and production demands
- Multiple interfaces and user-friendly controls

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