FLS

N-Series
Pulsed Nd:YAG lasers
300 to 600 W output

- Engineered for deep penetration cutting and drilling
- Excellent beam quality for precision machining
- Modular design for high flexibility
- Fiber optic and/or conventional beam applications
- User-friendly control

LASAG
INDUSTRIAL-LASERS

A COMPANY OF THE SWATCH GROUP

FLS ... a tool makes sense

N-Series

- **The FLS family of pulsed Nd:YAG lasers comes along with average power outputs of 300 to 600 W, pulse power up to 50 kW, and superb beam quality. Its modular design and an adjustable laser resonator guarantee the best machining results in cutting, welding, drilling and ablation.**

FLS helps to reduce costs

- High manufacturing flexibility, short retooling times
- Time and/or energy sharing for multistation operation with a single laser source
- Energy and power control for high production repeatability
- Front access and modular design for easy servicing
- Remote diagnostic functions via modem

FLS is easy to integrate into manufacturing

- Fiber optic and/or conventional beam delivery
- Up to 80 m between laser source and machining location
- Laser control interfaces with any CNC, PLC or PC system
- Industrial design compliant with IP 54 / NEMA 12
- Modular field upgrades accommodate changing production requirements

FLS ... versatility for multiple or single-purpose applications

N-Series

Cutting

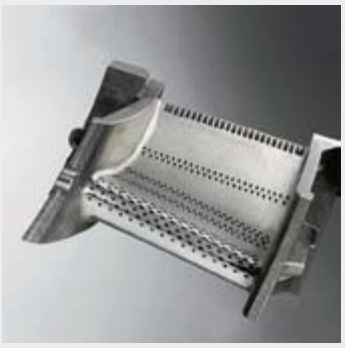
- Cuts up to 20 mm thickness
- Precision cuts with kerf width < 20 µm
- Oxide-free cut surface

Welding

- Seam welding of metals
  - penetration up to 3 mm
  - helium-tight welds
- Spot-welds ≥ 40 µm diameter
- Single shot contour welding

Drilling

- Percussion drilling at diameters of 0.02 - 1.5 mm and aspect ration up to 1 : 30
- Trepanning drilling for larger diameters up to 20 mm thickness
- Single-pulse drilling in steel up to 500 Hz repetition rate



Scribing

- Creation of fracture notches up to 2 mm depth and down to 0.05 mm width
- Used for cracking processes on brittle metals as C60

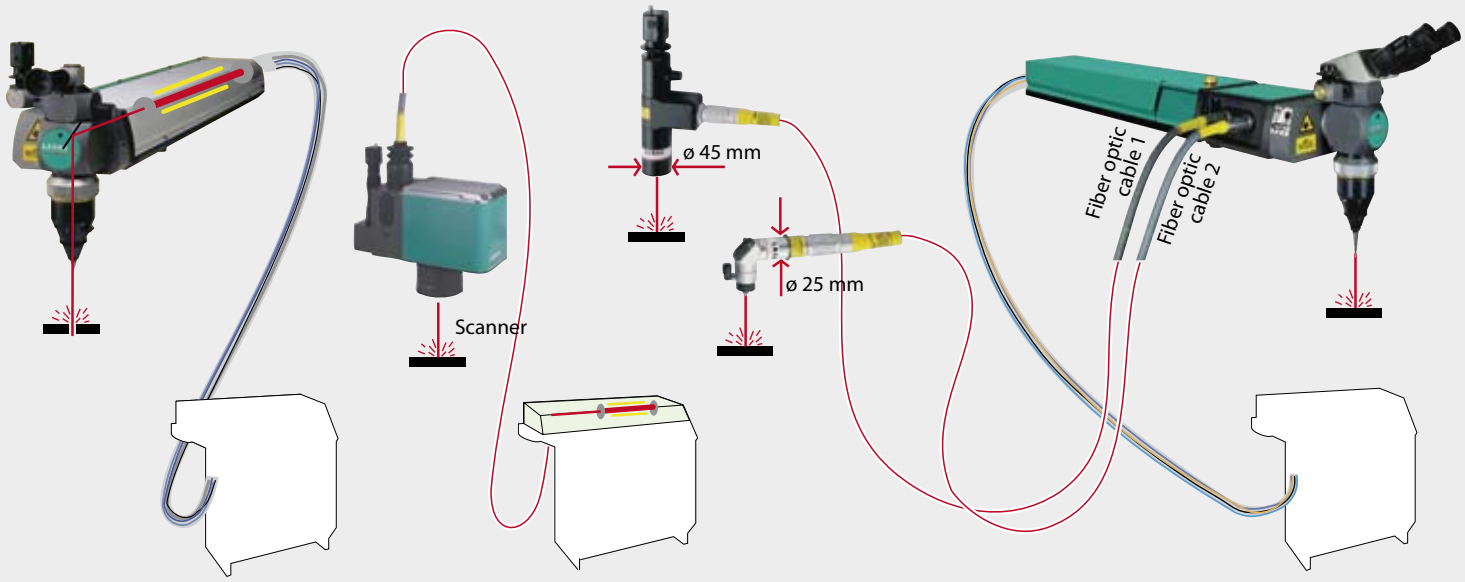
Materials suitable for machining with Nd:YAG lasers

- Steel and stainless steel
- Aluminium alloys
- Nonferrous metals, precious metals
- Sintered carbide, diamond
- Nickel, cobalt and titanium alloys
- Ceramics and semi-conducting material
- Composites

FLS ... flexibility in beam delivery

N-Series

The beam delivery is defined by the application, the handling and the production environment.
The FLS laser offers a solution for every situation.



Conventional beam delivery
The optics are mounted right onto the machine. The beam path is the shortest, so the beam quality is the highest.

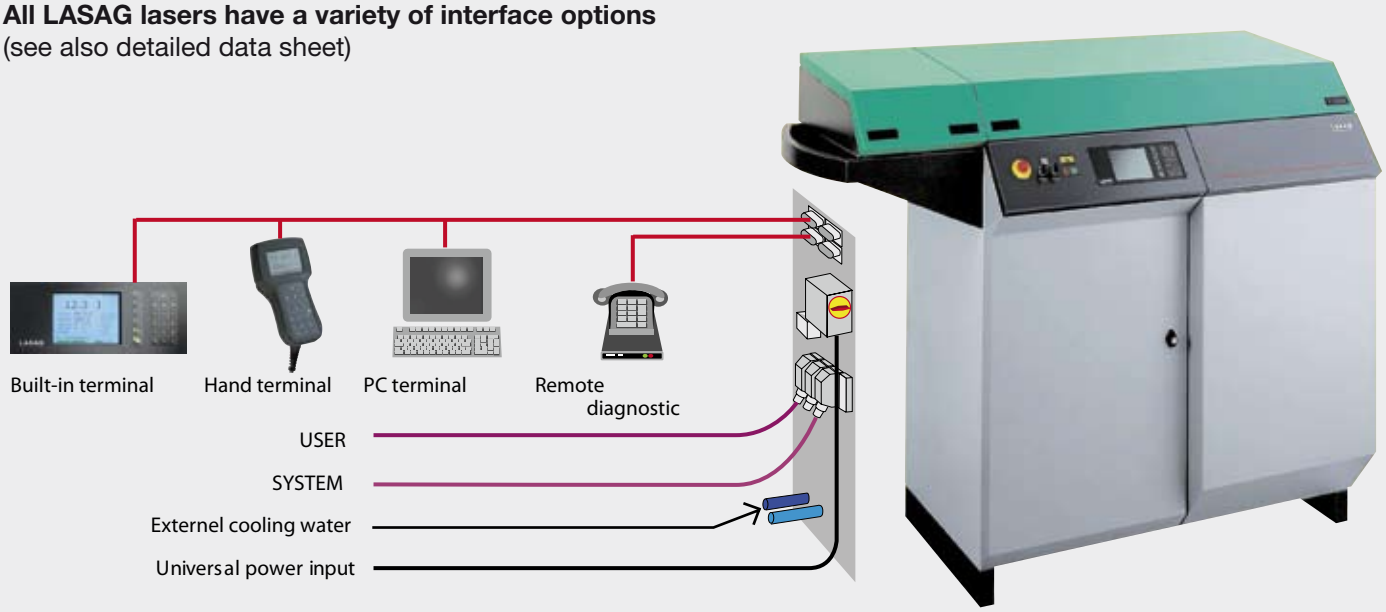
Fiber optic beam delivery
This setup is ideal for 3D applications with robots as well as automated production lines. Fibers with core diameters from 100 to 600 µm and lengths up to 80 m permit versatile beam delivery and facilitate integration. Additional beam connection modules make it possible to configure the production line with up to six stations simultaneously or in the time-sharing mode.

Combination fiber optic and conventional beam delivery
The modular design offers you the specific advantages for each method - ideal for installation with a wide application range, such as job shops or R&D.

FLS ... for convenient integration

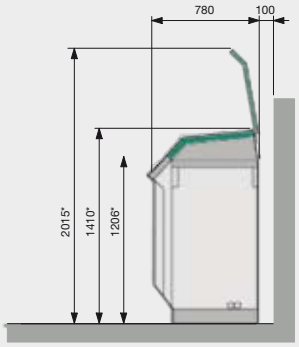
N-Series

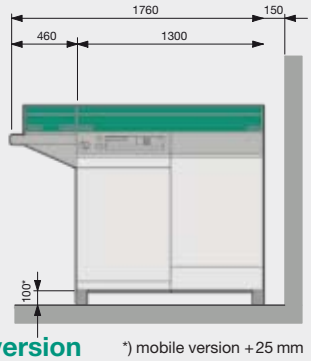
All LASAG lasers have a variety of interface options
(see also detailed data sheet)



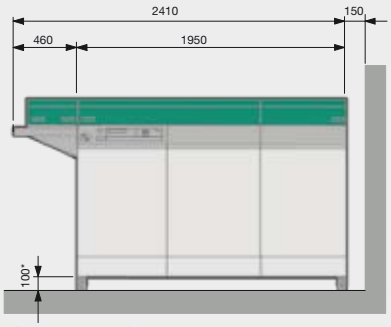
FLS

Cutting LightWare™
Drilling LightWare™

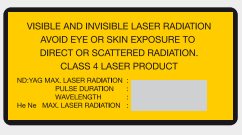




2-door version *) mobile version +25 mm



3-door version *) mobile version +25 mm



Specifications

Sources available in series	FLS 342N, 352N, 542N, 552N, 652N
Laser type	Pulsed Nd:YAG-solid-state laser
Wavelength	1064 nm
Pulse length	0.1 - 20 ms
Pulse repetition rate	0.1 - 1000 Hz
Pulse energy	60 - 150 J
Peak power at 1 ms max. [1]	5 - 50 kW
Average power max. [1]	300 - 600 W

[1] measured without beam delivery with new flash lamp

Fiber optic beam delivery	
Number of outputs	1 - 6 ports
Modes	Energy-sharing, time-sharing or combined
Fiber core diameter	400 / 600 µm (100 / 200 µm optional)
Fiber length	standard 3/5/10 m, max. 80 m

Line power	
Configuration	3-phase + ground, ± 10%
multitap transformer for	3x208 V,[2] 230 V,[2] 360 V, 400 V, 440 V,[2] 480 V[2]
Power consumption	14 - 28 kVA
Line frequency	50 Hz or 60 Hz

[2] only FLS 342N, 352N

Cooling water connection	
Water inlet max.	20° C / 8 bar
Pressure drop to outlet, min.	4 bar
Cooling power max.	10 - 19 kW, depending on laser output

Weight	
Laser unit, incl. optical system	600 - 850 kg, depending on type

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

Emissions	
Heat dissipation approx.	0.4 kW + laser beam power
Noise at 1 m, idle	65 dBA

Compliance with standards
CE compliant, EN 60825-1, EN 60204-1, EN 207, EN 61000-6-4, EN 61000-6-2
IEC 825-1, FDA-CDRH: U.S. 21 CFR 1040.10, ISO 11553

Subject to change

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