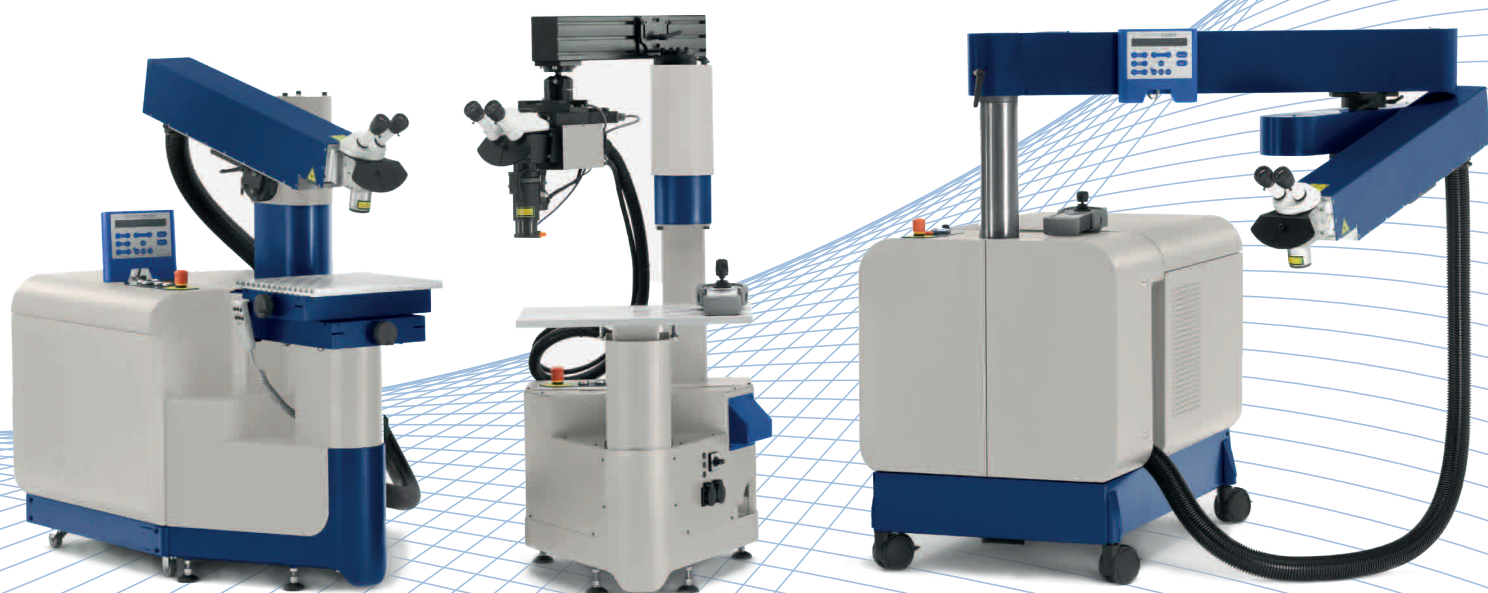


# Laser welding systems

## for industrial applications



**Innovation and precision for tool- and mould-making industry**

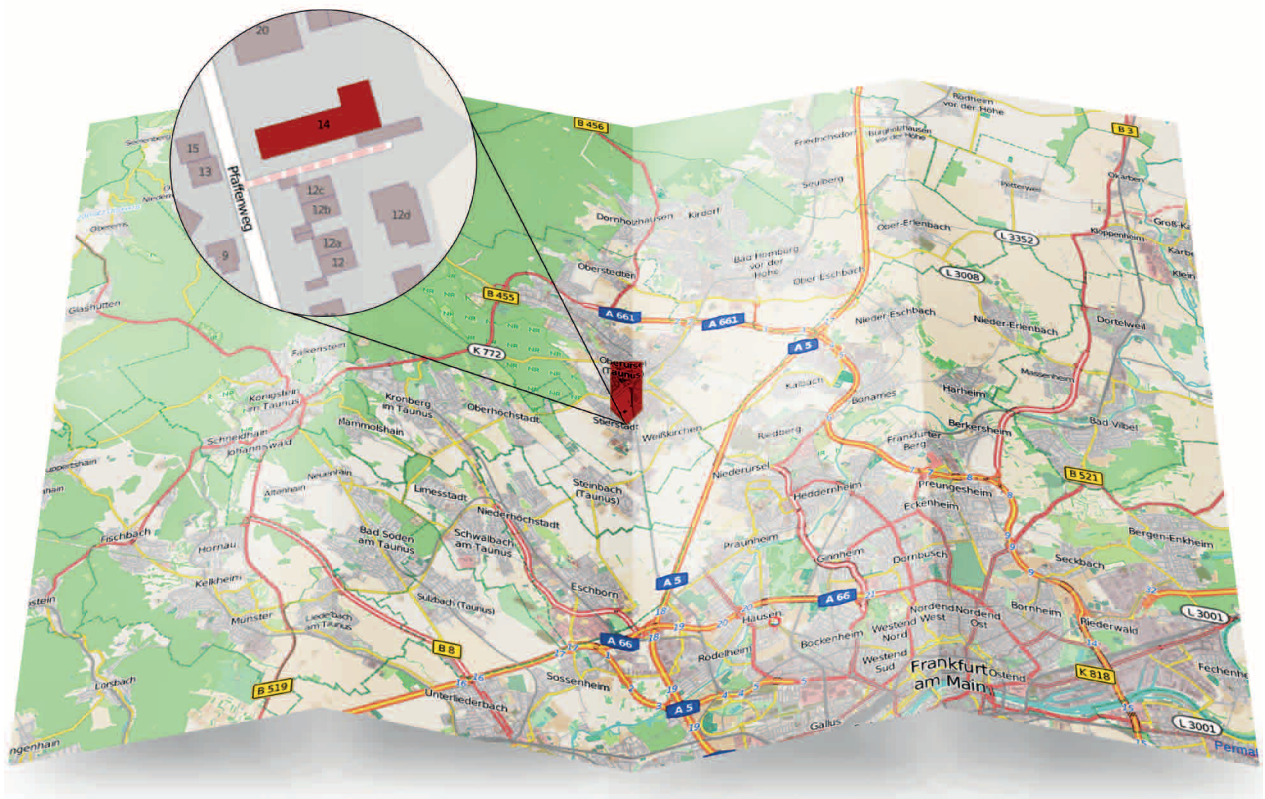
# About us

## Our company

SIGMA Laser GmbH was founded in 2006 for the design and development of modular laser systems.

Our focus has been on the design of welding systems for the tool- and mould-making industry, for repair welding and for medical technology.

Our core competence is the design of highly modular solutions, making one system able to be used in a broad range of applications.



## An excerpt of our references

**SIEMENS**

**DIEHL**  
Aerospace

**Continental**  
**TEVES**



Wir leben Autos.

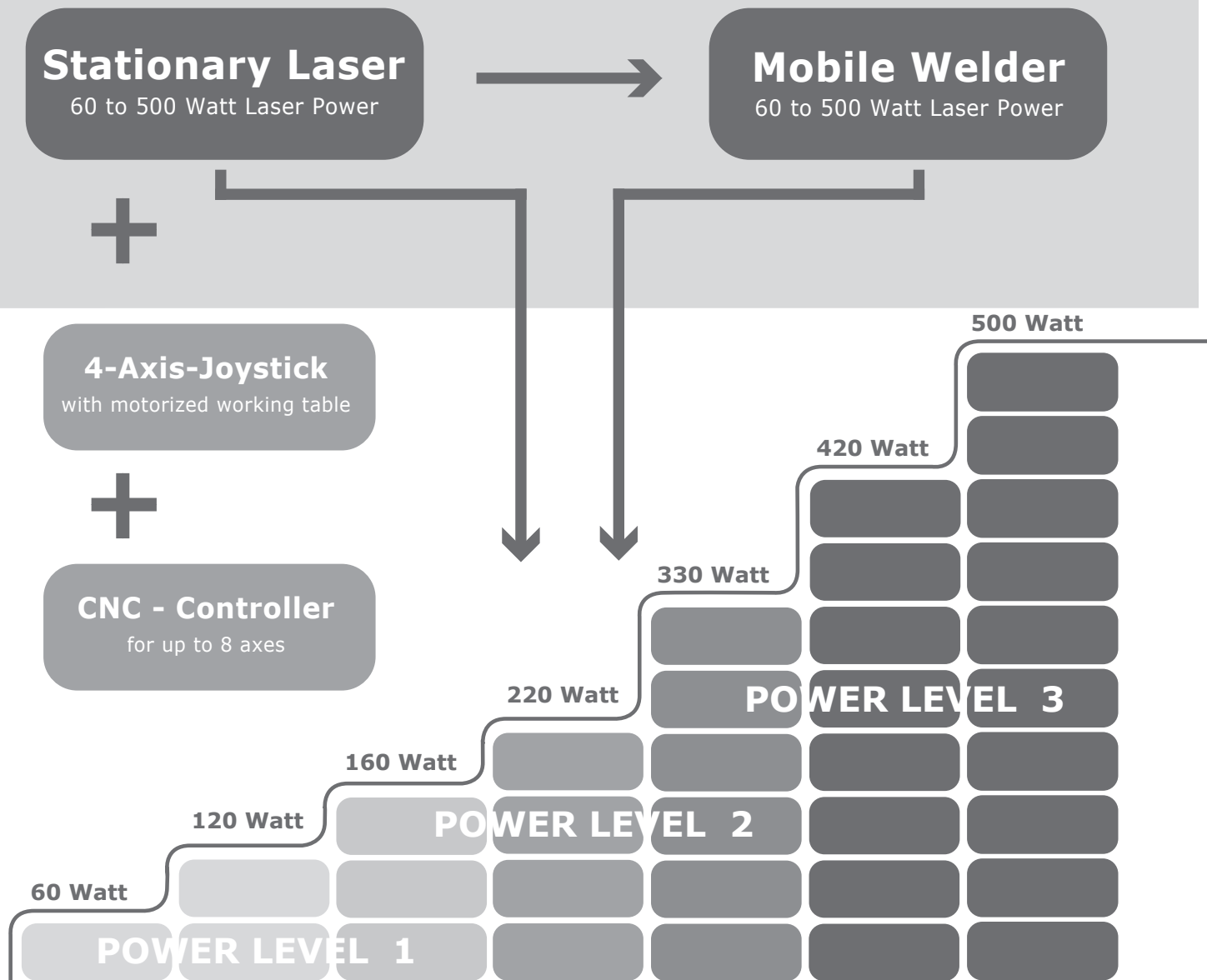
 **Nolato**

**gruner** 

**NOVAPAX**

# The modular concept

Upgradeable with increasing requirements



The key feature of our high-performance laser-welding systems is their modular design so that every device can be adapted to the specific requirements of the customer. The modular concept enables the systems to be used in a flexible manner for a broad range of applications. It also simplifies maintenance. We additionally offer you special solutions for enhanced accessibility, automation and increase of power. Overview of options:

- + Stationary laser: the stationary device for tools up to 250 kilograms
- + Multifunctional joystick: full control over the 4 axes of the motorized working table - analog and digital
- + Mobile Welder: The flexible system with long travel
- + CNC-controller: network-compatible for up to 8 axes, with Teach-in-function and 4 GB memory
- + Upgradeable: Laser power can be upgraded up to 500 Watts at any time

# Stationary Laser

Laser power  
up to 500 watts

## Compact Ergonomic Modular

Our laser systems are designed to satisfy the specific requirements of the tool- and mould-making industry.

The compact and reliable stationary laser system is designed for repairing of tools weighting up to 250 kg. The open construction is a design feature that ensures high ergonomic efficiency for the user during continuous operation, and ease of handling.

Our modular construction principle permits the unit to be converted to a closed system.

In this way, the SL can be operated as a class 1 or 4 laser, depending on production requirements.

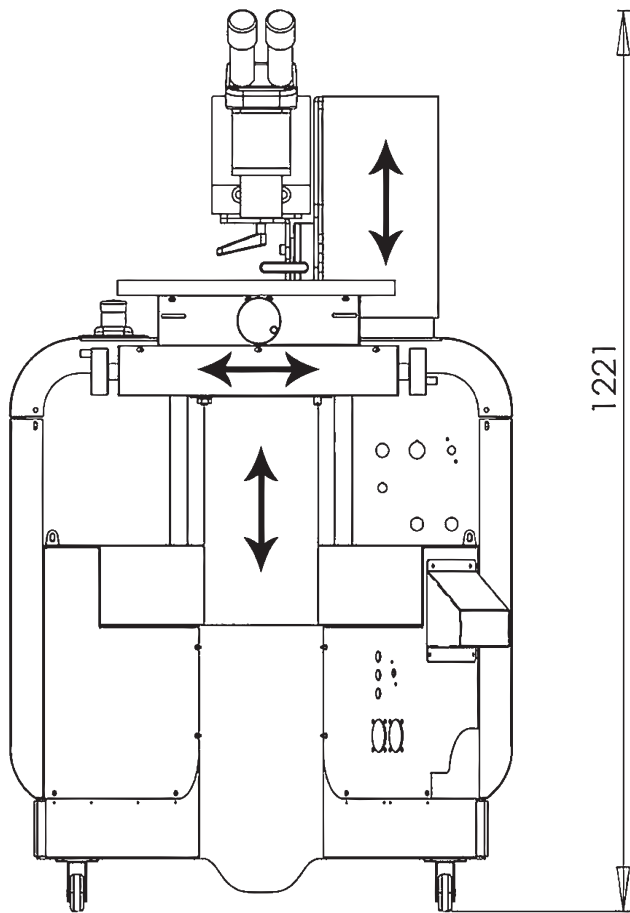


## Modular construction:

The operation of the working table is manually or motorized. Both manually and the motorized working table provide high precision during the process of welding. The pivoting arm maximizes the accessibility. Two motorized z-axes are integrated as standard in order to provide the required ergonomical operation.

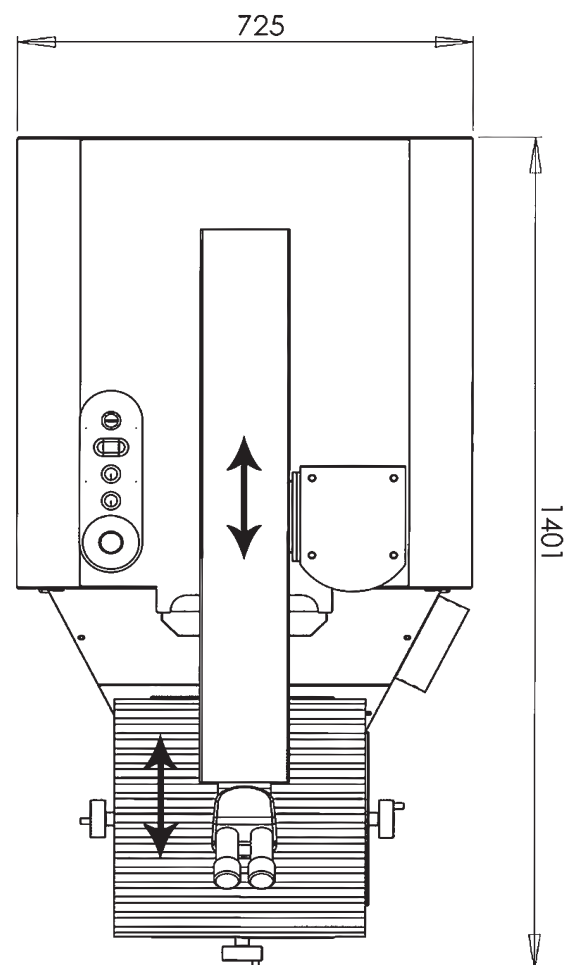
Beside that, "SL" can be upgraded to a Mobile Welder at any time.

Due to the innovative power level technology our laser power can be upgraded from 60 to 500 Watts at any time.



## Ergonomic:

Two motorized z-axes are integrated as standard.  
Motorized table with joystick is available as option.



## Compact:

The laser system provides all required options for repairing of tools within a compact area.



# Mobile Welder

Laser power  
up to 500 watts

## Wide range with extra performance-and with even more on request

The Mobile Welder modular laser system has been specially designed for repairing large tools and moulds. These may range in size up to 25 tons. Mobile Welder is so flexible that even hard-to-reach places can be processed extremely accurately and at astonishing speed.

The system is available with laser powers from 60 to 500 Watts. The innovative power level technology allows the laser to be upgraded to higher powers any time later. Therefore, Mobile Welder can be individually adapted to your applications.



## The core benefits of the Mobile Welder:

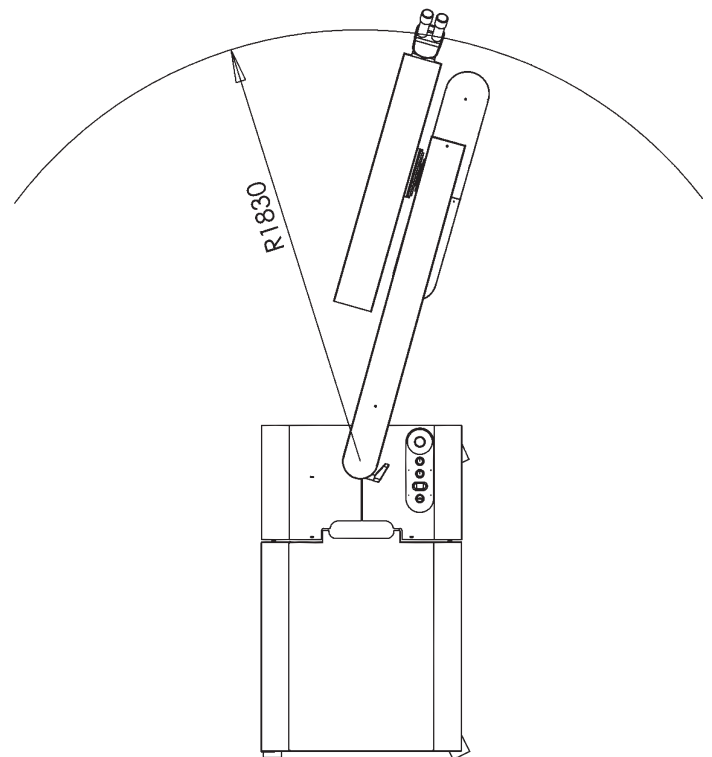
- + Designed specifically for the welding of large tools
- + Stable construction
- + Smooth axis
- + Mobile construction on steered rollers
- + Long travel
- + Modular upgrades available up to 500 watts

## Safe transport and safe working in any position

The folding rotary and swivel arm reduces the space required in the transport position, thus providing easy, safe transportation.



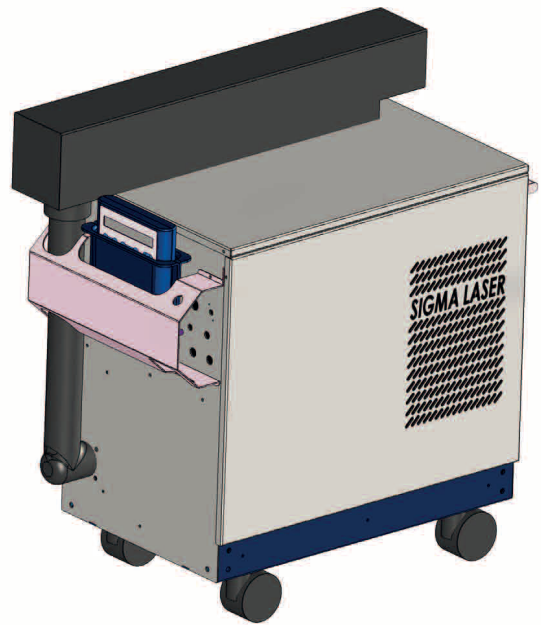
The swivel arm has an impressively high degree of flexibility and, above all, a wide range.



# QMax

## Precise Intelligent Reliable

The unique Q-Max system offers an enormous range of flexibility for complex repair welding tasks. All necessary axes are integrated within the welding head. The intelligent solution allows the handling of even the biggest moulds. Via fiber cable the laser power is transmitted to the welding head.



## Flexible Compact Ergonomic

The ball joint enables the quick and flexible positioning of QMax.

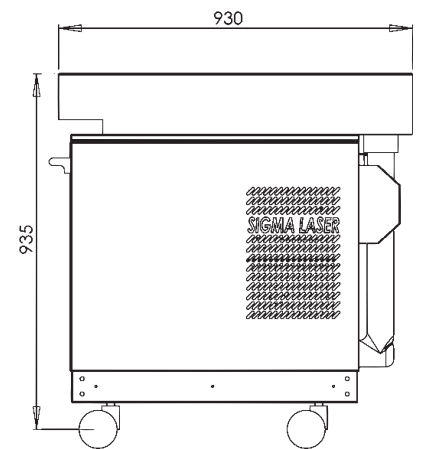
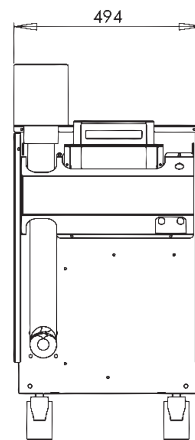
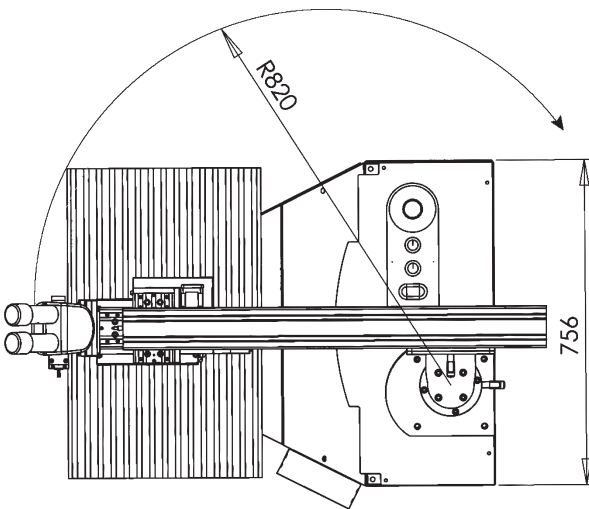
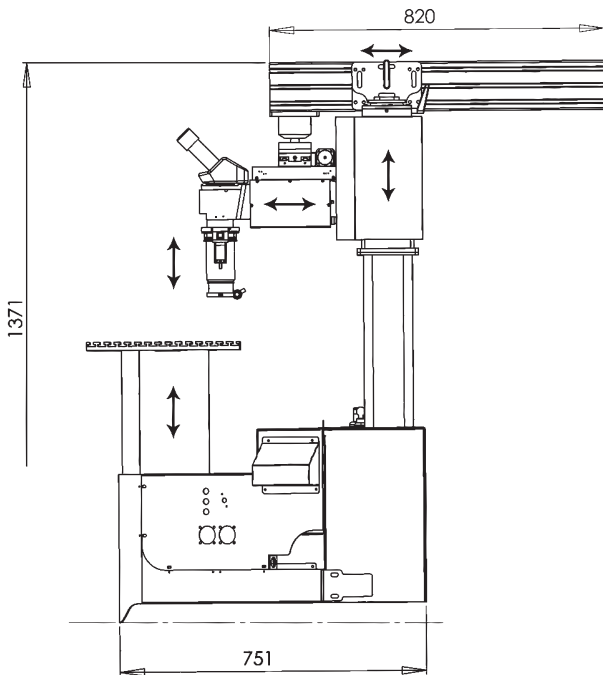
The welding head including the three axis is detachable. Therefore even welding inside of mould injection systems is possible.

Nd:YAG-Laser: with laser powers of 120, 160, 220 and 330 Watts and up to 20 meters of fibre cable



## Features:

- + 3 moving axes are integrated into the welding head: 150 x 100 x 100 mm (x-y-z)
- + 2 separate z-axes for ergonomic positioning of the working table and the welding head
- + all moving axes are controllable via the multi functional joystick
- + for tools up to 500 kg
- + 180° swivel arm with 820 mm working radius



## Features of the beam source

- + Industrial fiber cable with sheathing and plug
- + Twin lamp cavity for higher beam quality and longer lasting flash lamps
- + Advanced remote diagnostics system
- + Motorized beam expander
- + High pulse peak power
- + Memory function for welding parameters
- + Laser power upgradeable up to 330 Watts at any time
- + External cooling system
- + Laser class 4

# Additional equipment

## More possibilities for more movement:

### Multifunktional Joystick

- + Analogue and digital operation possible
- + Jog-Off-function
- + Vmax-Function for fast operation
- + Coordinate inversion function
- + 4.-axis control: control of a motorized rotation device is already integrated
- + freely programmable buttons for your own application
- + Pulse-automatic



### CNC-Controller

- + Later upgrade with CNC-Controller available
- + Interpolation of 4 axes
- + up to 8 axes upgradeable
- + Teach-In-Function and 4 GB Memory
- + Integrated G-Code-Interpreter
- + network compatible
- + driver for peripheral devices

Technical Data*	P 60	P 120	P 160	P 220	P 330	P 420	P 500
<b>Nd:YAG-Laser</b>	wavelength 1064 nm						
<b>Power level</b>	L1	L1	L1 / L 2	L2	L2 / L3	L3	L3
max. mean power	60 W	120 W	160 W	220 W	330 W	420 W	500 W
max. pulse energy	60 J	80 J	120 J	120 J	120 J	120 J	120 J
pulse peak power	6 kW	9 kW	13 kW	13 kW	13 kW	13 kW	13 kW
pulse duration	0,5-20ms	0,5-20ms	0,5-50 ms	0,5-50 ms	0,5-50 ms	0,5-100 ms	0,5-100 ms
repetition rate	0,5-20 Hz	0,5-20 Hz	0,5-100 Hz	0,5-100 Hz	0,5-100 Hz	0,5-100 Hz	0,5-100 Hz
focus diameter	0,2-2,0 mm						
beam expander	motorized						
pulse shaping	no	yes	yes	yes	yes	yes	yes
flash lamps	1	2	2	2	2	2	2
<b>Memory function</b>	50 storage places (upgradeable to 100)						
<b>Controlling optics</b>	Leica Binocular with large oculars						
<b>Power supply</b>	380 V / 3 Ph / 50 Hz						
<b>Cooling system</b>	<div> <div></div> <div>water / air</div> <div></div> </div> <div> <div></div> <div>water / air - external</div> <div></div> </div>						

## Options

- > selectable power level
- > prefabrication for higher power levels possible
- > motorized rotation device
- > remote diagnostics
- > CNC-controller
- > swivel optics with telescope lense
- > Leica camera sytem
- > Sig-CAD-Software, Teach-In or CAD data transfer
- > automatic wire feed system
- > optional high-power cooling system
- > suction sytem for laser welding applications

# Contact

## Laser innovations from Germany - represented around the world.

Sigma Laser GmbH stands for the highest quality and expertise in the field of laser technology. Through our innovations, we supply state-of-the-art solutions for industry.

Sigma Laser is represented in 21 further countries.



● Sigma Laser Frankfurt a. M.

● Hungary

● Slovenia

● Bulgaria

● India

● Singapore

● Canada

● Iran

● South Afrika

● Croatia

● Mexico

● South Korea

● Czech Republic

● Poland

● Turkey

● England

● Portugal

● UAE

● France

● Romania

● USA