## Technical Data

| | | |
|---|---|---|
| **External Dimensions** | Work bench (L x W x H)<br>Required space (LxWxH) | 130 cm x 75 cm x 92 cm<br>130 cm x 150 cm x 150 cm |
| | Weight | approx. 610 kg |
| **Electrical Connections** | Three-phase | 3 x 400 V, 50 - 60 Hz, 3 x 16 A N/PE |
| **Laser** | Laser crystal | Nd:YAG, flash lamp-pumped |
| | Wavelength | 1064 nm (invisible, near infrared) |
| | Laser protection class | 4 (1 in case of insert with working chamber) |
| | Average power | 50 W – 300 W |
| | Pulse energy | 50 – 90 joules |
| | Peak pulse power | 5 – 9 kW |
| | Pulse duration | 0.5 ms – 20 ms |
| | Pulse frequency | Single pulse – 50 Hz or – 100 Hz |
| **Welding/Cutting** | Focal spot ∅ | 0.2 - 2.0 mm<br>With *Micro Welding*: 50 µm - 2.0 mm |
| | Observation objective | Stereo microscope insert<br>Eyepiece 10x,16x,25x<br>Visual field ∅ 3-16 mm |
| | Focal distance | 90 mm, 120 mm or 150 mm |
| | Shielding gas input | Included |
| **Movement system** | Machine axes | 4 (2x software-controlled, 2x manual) |
| | Range of movement | Y: approx. 40 mm, Z: approx. 120 mm |

## Components of the laser system

- Work bench with lighting, shielding gas input, exhaustion tube
- One or more variable inserts
- Integrated AL laser device (50 - 300 W)
- Laser power supply with laser control unit and integrated water-to-air cooling
- Laser resonator with a welding or cutting head (depending on the insert)
- Leica observation objective
- NC controlling via touch screen
- Footswitch, laser safety system
- USB connection for data backup
- Process data handling

## Options

- Smoke exhaustion
- Ergo wedge for setting the individual viewing height for an ergonomic working position
- Camera system for displaying the working process on an external monitor
- Cross hair-synchro adapter for synchronizing the cross-hair during work outside of the welding spot
- Cross-hair generator for superimposing a cross-hair on an external monitor



# Sensor Workstation AL-SWS

## One laser system – Five applications

### The multifunctional laser workstation with changeable inserts

With the AL-SWS multifunctional laser system, you can effortlessly weld and cut work pieces with a diameter of up to 12 mm; for example, sensors, sheathed or unsheathed cables, sheathed or unsheathed thermocouples or resistance thermometers.

The variable inserts for the special tasks of sensor manufacturing can be replaced very easily. This allows you to quickly switch between the different welding and cutting applications.

## Insert A – Contact Welding

During the welding process, the two parts to be welded are held manually under the laser beam; for example, for welding (sheathed) cables or thermocouples.

The insert consists of:

- Recess for feeding through longer work pieces from below, e.g. cables with insulated sheath
- Exhaustion tube
- Two grips for quickly changing the insert


## Insert B – Circular Welding

The integrated rotating axis rotates the work piece during welding; for example, for welding the sheath of resistance thermometers, sensors or thermocouples.

The insert consists of:

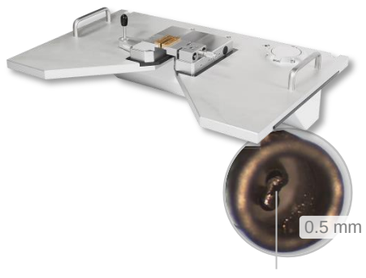
- Rotary axis, pivotable and slidable
- Quick positioning / fine adjustment
- Pneumatic collet chuck
- Buttons for starting/stopping the welding process
- Exhaustion tube
- Recess for feeding through longer work pieces from below, e.g. cables with insulated sheath
- Niches for stowing smaller tools
- Two grips for quickly changing the insert


## Insert C – Micro Welding

With this insert you can weld even inside the finest thermocouples.

The insert consists of:

- A micromanipulator for precise positioning
- Exhaustion tube
- Two grips for quickly changing the insert

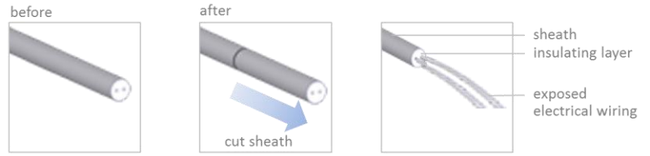



## Insert D – Cutting

This insert is used to cut rotationally symmetrical work pieces. The work piece is rotated and cut down to a specified depth around its entire circumference.

For example, you can use this insert to cut the covers of resistance thermometers.

This insert is also ideal for removing the sheath of sheathed cables:





The insert consists of:

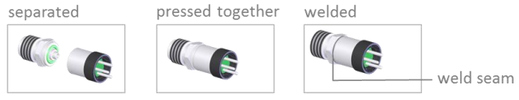
- Enclosed working chamber with collet chuck, rotating axis and exhaustion tube
- Buttons for opening and closing the collet chuck and reference mark
- Two grips for quickly changing the insert

Furthermore:

- Laser cutting head
- Reference mark (optional) for processing multiple work pieces of the same length (up to 2 m length)

## Insert E – Sheath Welding Under Mechanical Pressure

With this insert, you can weld two parts of a sensor housing together. During the process, both parts are mechanically pressed against each other, to press the internal sealing rings:




The insert consists of:

- Collet chuck, tailstock
- Exhaustion tube


## Insert F – Your Personal Insert

Please consult us. We will find a solution for you.