Force for Precision
Laser Processing Head RSK
During the welding process with the RSK the pressure roller follows the contour of the workpiece. In doing so it pneumatically presses down with a constant force. As roller and optics are mechanically connected by the linear motion unit an exact Z position of the focus is thereby guaranteed.

With a constant linear robot movement the linear motion unit compensates for larger tolerances of the workpiece and inaccuracies of the robot.
of sheet metal packages one hundred percent reliability in focus guidance is an absolute must. This is ensured by the HIGHYAG RSK laser processing head. An integrated pressure roller or pressure finger clamps the workpiece and thereby simultaneously takes over the guidance of the focus position on the workpiece.

With an infinitely variable pneumatically controlled force (max. 100 daN), the roller or finger runs over the sheet metal package, thereby precisely following the shapes of the workpiece. Direct coupling of the pressure finger with the focus achieves an “auto-focus control”, which significantly simplifies the process set-up.

On the other hand, exerting counter pressure can also generate forces below the weight of the head, thus making a “weightless” welding process possible.

For clamping the sheet metal package on both sides, a clamping module with double rollers or double fingers is mounted on the pneumatic linear unit. This enables a clamping force of up to 100 daN to be achieved.

The proven focus heads BIO and BIMO, offering the advantages of a quick cover slide change and opto-electronic cover slide monitoring, are used for focusing the laser beam.

The modular design of HIGHYAG RSK with head-mounted EPS allows customer-specific system integration and robot adaptation (with or without a crash sensor), a wide application spectrum and versatile, long-term guaranteed possibilities for retrofitting. A high level of investment security is therefore guaranteed.

Applications

Laser welding multiple sheets (overlap joint)
A wide range of product-specific joint and component geometries

System Features

Optimized optical system in modular design with straight or angled beam delivery system
Integrated clamping system with linear pressure unit and clamping modules pressure wheel, contact finger, double pressure wheel or double pressure finger
Simple replacement of the cover slide via a cover slide drawer with plug-in monitoring
Cross jet for a long cover slide service life
Interface to PLC
Modular Design
Laser Processing Head RSK with Integrated Clamping Technology

Robot

Electric pneumatic installation system (EPS), head mount

Crash sensor

Tool exchange system

Base plate

Fume extraction adaptor

Pressure finger

Pressure wheel Ø100 front mount

Double pressure finger

Double pressure wheel

Double pressure wheel

Swivel double pressure wheel

Pressure wheels backside mount

Base plate

Wire feeder system

Electric pneumatic installation system (EPS)

Gas distribution with shielding gas

BIMO G

BIMO W

Electric pneumatic installation system (EPS), head mount

Fume extraction adaptor

Pressure finger

Pressure wheel Ø100 front mount

Double pressure finger

Double pressure wheel

Swivel double pressure wheel

Pressure wheels backside mount

Base plate

Wire feeder system

Electric pneumatic installation system (EPS)
Cable management system

Electric pneumatic installation system (EPS)

Wire feeder system

Wire feeder

Base module

BIMO W

BIO G

BIMO G

Cover slide module

Cross jet module

Gas distribution with shielding gas

Electric pneumatic installation system (EPS), head mount

Base plate

Tool exchange system

Crash sensor

Robot

Wire feeder system

BIMO W

BIMO G

Electric pneumatic installation system (EPS)
## Technical Data

### Optical System

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Values</th>
</tr>
</thead>
<tbody>
<tr>
<td>Focusing system (magnification @ focal length)</td>
<td>0.75 @ 150 mm, 1.0 @ 200 mm*</td>
</tr>
<tr>
<td>Collimation system (magnification @ focal length)</td>
<td>1.5 @ 200 mm, 1.8 @ 160 mm, 2.0 @ 130 mm*</td>
</tr>
<tr>
<td>Max. average laser power</td>
<td>6 kW</td>
</tr>
<tr>
<td>Max. beam parameter acceptance (half angle) of laser light exiting fiber</td>
<td>97% power content within 125 or 210 mrad</td>
</tr>
<tr>
<td>Wave length</td>
<td>800 - 950 nm, 1020 - 1080 nm</td>
</tr>
<tr>
<td>Transmission</td>
<td>&gt; 95%</td>
</tr>
<tr>
<td>Core diameter laser light cable</td>
<td>300 - 1000 µm (typical)</td>
</tr>
<tr>
<td>Laser light cable receiver</td>
<td>HIGHYAG LLK, LLK-Auto, Trumpf LLK-B, Optoskand QBH*</td>
</tr>
</tbody>
</table>

### Linear Motion Unit

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Values</th>
</tr>
</thead>
<tbody>
<tr>
<td>Max. clamping force</td>
<td>1000 N</td>
</tr>
<tr>
<td>Max. stroke</td>
<td>30 mm</td>
</tr>
</tbody>
</table>

### Dimensions

<table>
<thead>
<tr>
<th>WxDxH, examples:</th>
</tr>
</thead>
<tbody>
<tr>
<td>- RSK 0° DR (double pressure wheel)</td>
</tr>
<tr>
<td>- RSK 0° DF (double pressure finger)</td>
</tr>
<tr>
<td>- RSK 0° R (pressure wheel)</td>
</tr>
<tr>
<td>- RSK 90° F left (pressure finger)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Weight:</th>
</tr>
</thead>
<tbody>
<tr>
<td>- RSK DR</td>
</tr>
<tr>
<td>- RSK DF</td>
</tr>
<tr>
<td>- RSK R</td>
</tr>
<tr>
<td>- RSK F</td>
</tr>
</tbody>
</table>

### Supply

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Values</th>
</tr>
</thead>
<tbody>
<tr>
<td>Electrical</td>
<td>DC 24 V, 2.5 A*</td>
</tr>
<tr>
<td>Pneumatics</td>
<td>≤ 1.0 MPa</td>
</tr>
<tr>
<td>Cross jet</td>
<td>≤ 1.0 MPa, approx. 500 l/min @ 0.6 MPa</td>
</tr>
<tr>
<td>Cooling</td>
<td>Flow rate 2 l/min, temperature 15 – 35 °C (avoiding condensation)</td>
</tr>
<tr>
<td>PLC / field bus system</td>
<td>Hard wired *</td>
</tr>
</tbody>
</table>

*Subject to change without prior notice*  
*Others on request*