

## Manual Laser Beam Welder LHSG-1

Portable equipment for mechanized laser beam welding of short seams



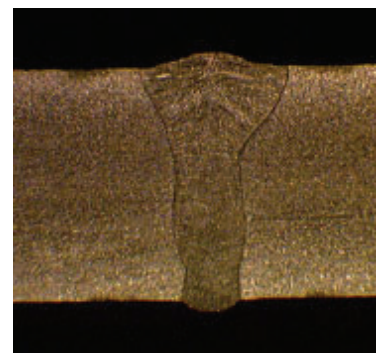
Welding of large sized thin metal sheets

LHSG-1 - flexible, safe, precise and inexpensive

Overlap joints are an important element for stiffening of large sized metal sheets. The laser beam welding by robots with solid state laser radiation transmitted via fibre optics guarantee high quality seams with a good outlook of the external surface. The expenditure and the difficulties for application of industrial robots in manufacturing of large sized components are known. Now the laser beam welding positioned by hand and using several semiautomatical functions is possible.

### Function

- manual device's positioning on the overlap joint, precise distance between seam and overlap outline due to adjustable distance elements
- starting the welding process after device positioning, welding motion of the focussing head inside of the device with a pre-programmed welding speed and seam length
- read back of programmed parameter (speed, seam length, laser power) on the control unit or adjusting of the moving parameter on the device
- safety locking during positioning, prevention of beam exit also by misoperating and other breakdowns
- gas shielding of the weld

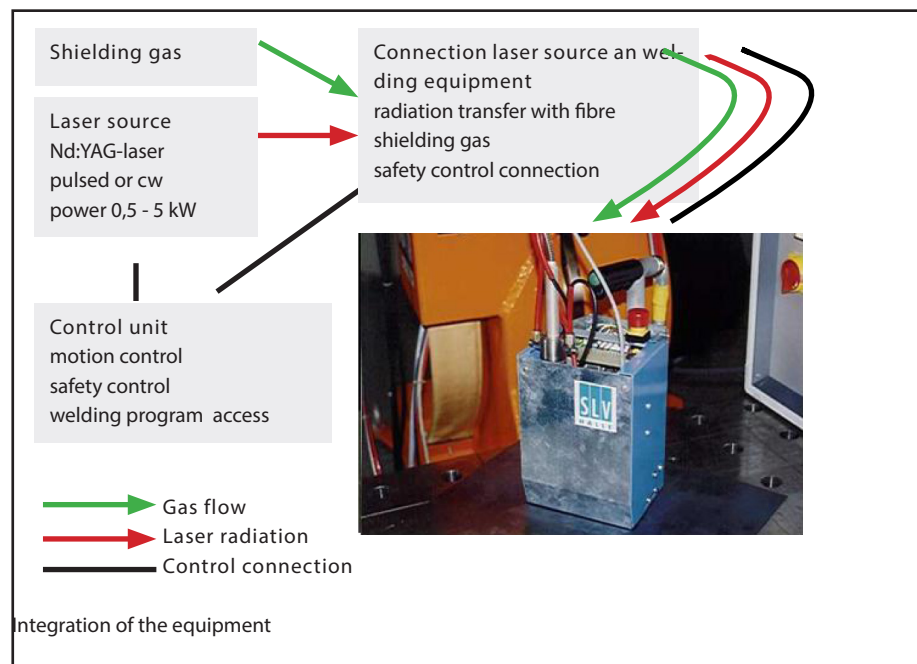


Metallographic samples of typical laser beam welded seams  
left: overlapped weld, right: square butt weld



Advantages

- typical quality of the laser welded joint
- reaction on component tolerances are immediately possible
- uncomplicated positioning / handling without problems
- programming is not required
- high flexibility by nearly unlimited working space, except the length of the fibre determines the working space
- possible visual control of the weld after each welding process
- no complex clamping devices (only local clamping devices if necessary)
- low investment costs (total)
- profitable even for small series, both for repair and specimen production
- minimum additional requirements to the working place



Technical data and application

The modular design allows to react without problems on the several requirements of the production. The size and weight of the device depend on the installed focussing head and the maximum weld length. The adaptation to different focussing heads is possible. The control system can be extended for special functions, e. g. stitch welding. It is possible to adapt the equipment to different welding tasks, overlap, fillet and butt welds are applicable, cutting is possible.

**One variant:** (standard device for overlap welds)

|                                      |                        |
|--------------------------------------|------------------------|
| maximum seam length:                 | 60 mm                  |
| possible adjustment for seam length: | 1 mm                   |
| welding speed:                       | 0,4 - 2,5 m/min        |
| size of focussing head:              | max. 2,0 kW            |
| dimensions of the device             | ca. 150 x 230 x 150 mm |
| weight of the device (total)         | ca. 5,5 kg             |

Contact

**Schweißtechnische Lehr- und Versuchsanstalt Halle GmbH**  
 Prof. Dr.-Ing. S. Keitel  
 Phone: +49 345 5246-415  
 Fax: + 49 345 5246-412  
 Email: gf@slv-halle.de