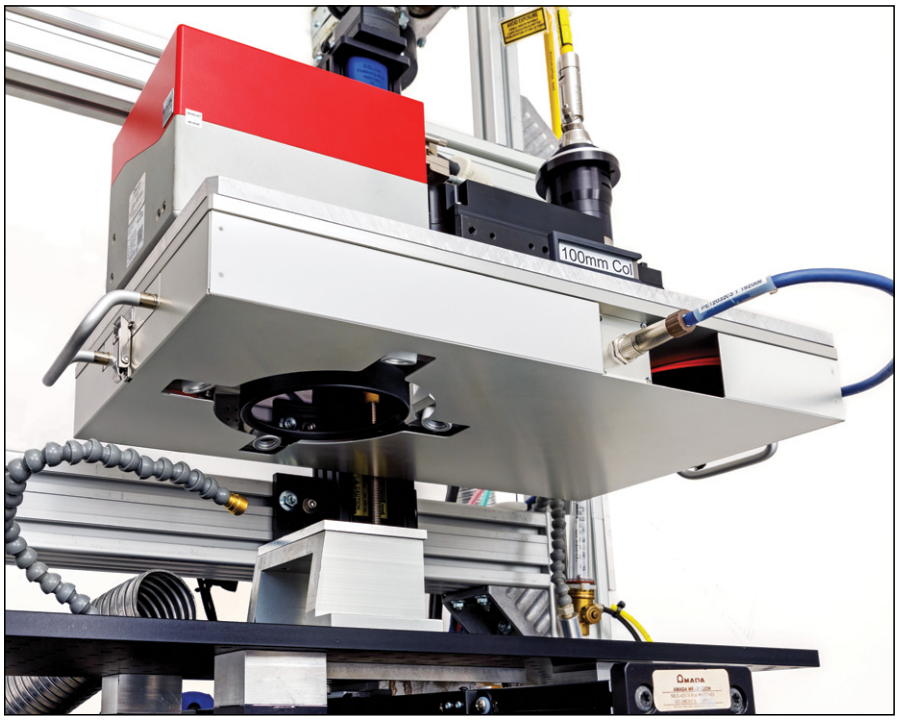
Galvo Scanning Solutions for Laser Welding



Galvo scan heads are used in a variety of laser welding applications to facilitate quick and accurate point-to-point positioning. They are an ideal solution for extending the traditional motion of XY tables or robotics.

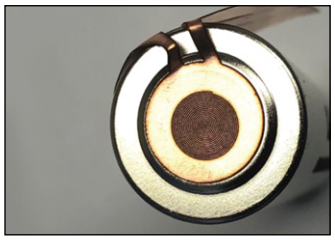
Scan heads are especially suited to high volume manufacturing, where they can shave seconds off cycle times on parts with multiple weld locations by minimizing point-to-point positioning times; a typical 1-inch move will take just a few milliseconds to advance, settle and be ready for welding.

AMADA WELD TECH has extensive experience integrating galvo scan heads into laser welding systems.

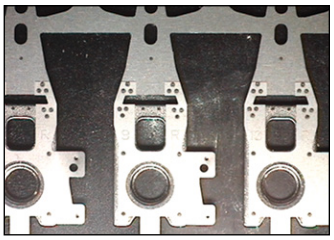
FEATURES

- Advanced, intuitive software dedicated to welding
- Configurable pattern to adjust for part geometry and enhance weld performance
- Integrated safety shutter to ensure safe work environment for operators
- Robust solutions designed to work with lasers up to 3 kW (higher power available upon request)
- Field sizes up to 100 mm x 100 mm
- Integrate with motion for:
  - Welding at different heights (2.5D welding), the Z-axis can be programmed to handle the part height difference
  - Add wobble on top of linear motion for accomodation of tolerances in fit up for seam welds
  - Step and repeat welds

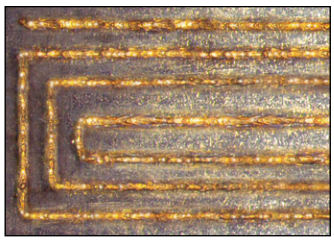
TYPICAL APPLICATION PATTERNS



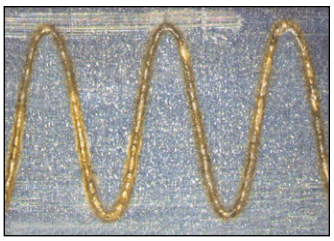
Spiral welding



Multi-point welding

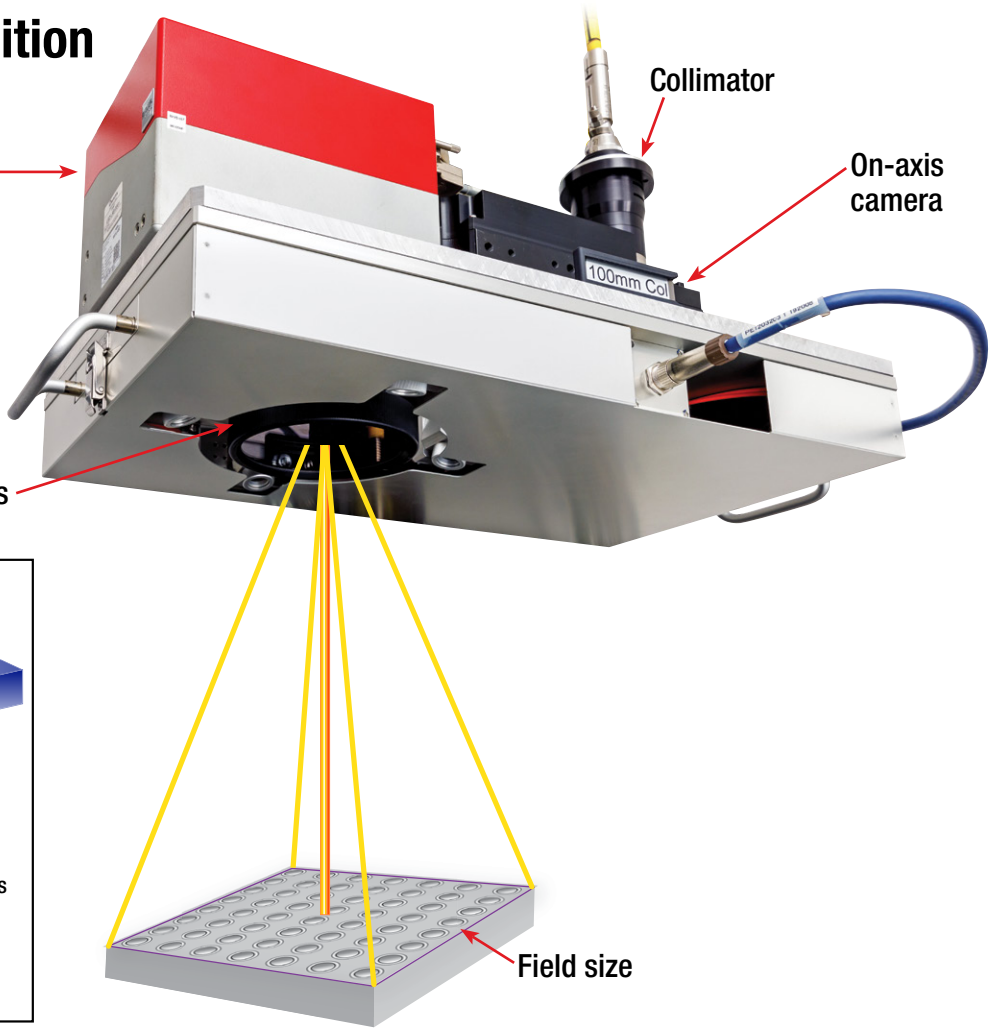


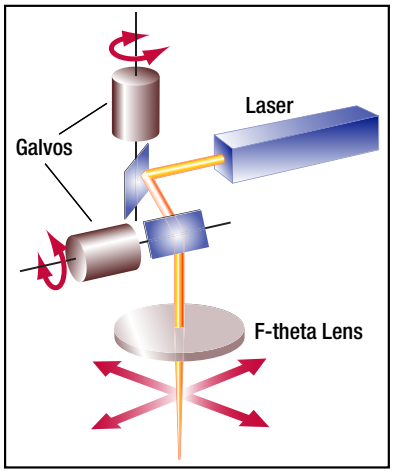
Square spiral



Sinusoidal curves

Design / Composition





OPTIONS	
F-theta Lens	• Select for appropriate field size and spot size • Typically telecentric and composed of fused silica • Field sizes – 60 mm x 60 mm, 100 mm x 100 mm
Air Knife	High pressure air nozzle keeps debris and soot off the lens cover.
Vision / Lighting	CMOS camera system looking on-axis through the lens. Lighting added to help see the parts. Optional machine vision features can be added.
Process Monitoring	Monitor the laser welding process in real time, with sampling rate down to 1 microsecond. Data can be stored in a database and further analyzed into SPC, OEE, equipment health, or AI/ML programs.
Autofocus	For parts that have height variation, a displacement sensor can measure the distance and move the head to the appropriate working distance.
Mounting	Gantry, robot

Note: Galvo scanning head is used with class 4 laser. Integration of the head (and laser) needs to follow safety protocols. Guide beams or pilot lasers are class 2 or 3 lasers and must also be addressed when following safety protocols.





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