

Work Example: Spot Welding (Single-Sided) - FL-LCW

RSD-SUNMAX Series
SUNMAX LASER

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Work Example: Spot Welding (Single-Sided)

- Read this document only after you understand the basic operation of the machine.
- Always read the instruction manual.
- For basic operating procedures, refer to the instruction manual.

Spot Welding

This is single-sided spot welding performed by laser welding. By emitting the laser from one side, two sheets (or more) can be melted together and welded. There are two main methods of spot welding: with welding wire and without welding wire. Because laser welding produces deep penetration, laser craters tend to occur in welds that require a specific spot diameter or deep penetration, so we recommend using welding wire.

With Welding Wire

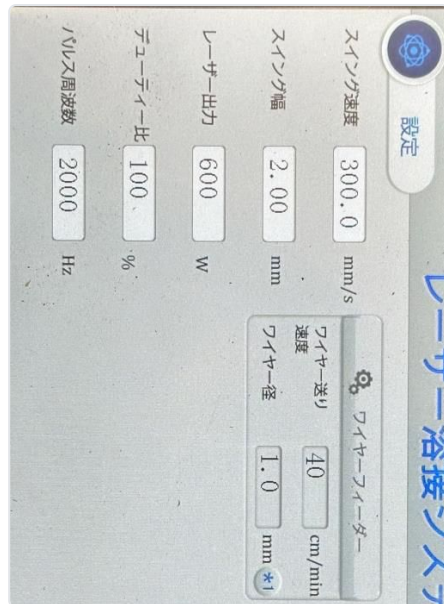
Select an appropriate wire diameter according to the material and thickness of the base material to be welded. Spot welding requires sufficient penetration, so using wire that is thicker than necessary may result in insufficient penetration. Use a wire diameter of no more than 1.2 mm (recommended: 0.8–1.0 mm).

Procedure

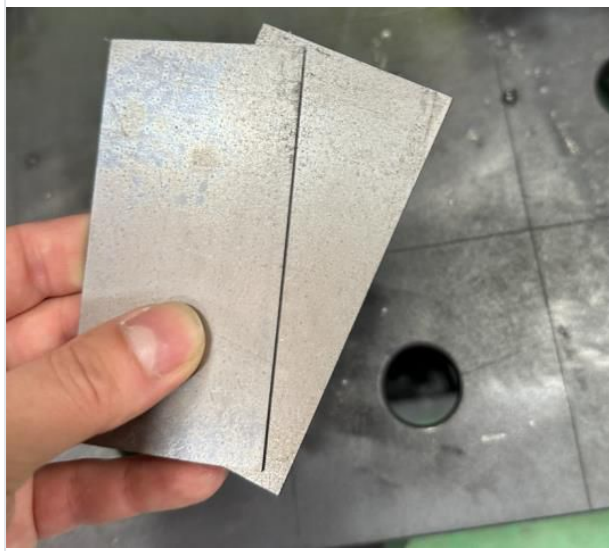
For the welding settings, set the wire feed speed to low (20–40 cm/min) and the swing width to 2–3 mm. Then perform a spot welding test and fine-tune each setting according to the required finish quality. Check the penetration, the bead appearance, and whether craters are present while adjusting toward the optimal conditions.

Example: sheet thickness 1.6 mm

Setting	Value
Swing speed	300 mm/s
Swing width	2–3 mm
Laser power	Use the existing setting. If deeper penetration is required, increase the value.
Wire feed speed	20–40 cm/min
Wire diameter	0.8 mm



Start welding with the base materials to be spot welded held in close contact with each other. When welding wire is used, the recoil of the wire feed normally causes the laser gun (welding torch) to move automatically; for spot welding, however, hold the gun so that it does not move while welding. Although it depends on the sheet thickness and welding settings, keep the laser on the spot for several seconds to complete the weld.



Without Welding Wire

Spot welding without wire is an effective method for base materials with a thickness of 2 mm or less where high strength is not required. When the laser power is increased, a depression (laser crater) is more likely to form on the weld surface compared with welding using wire. In addition, because the spot diameter is very small, this method is basically suited to welding thin sheets.

Note: For automotive sheet metal applications, welding with wire is recommended.