Welding Example: Box Fabrication (Tank Fabrication, Vehicle Body Building, etc.) - FL-LCW

RSD-SUNMAX Series

SUNMAX LASER

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Welding Example: Box Fabrication (Tanks, Enclosures, Vehicle Bodies)

- 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.

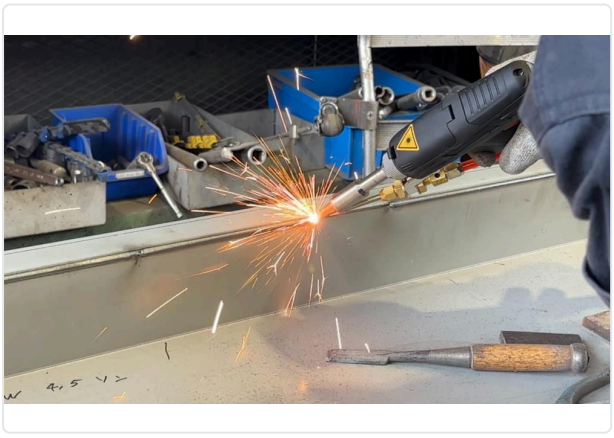
Outside Corner Welding

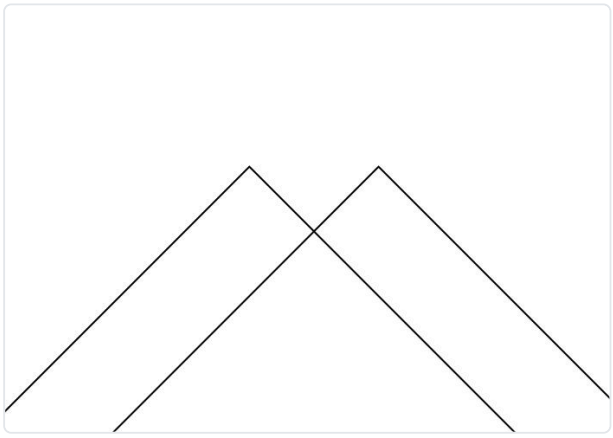
In laser outside corner welding, how the corners are fitted together and the selection of the welding wire are important.

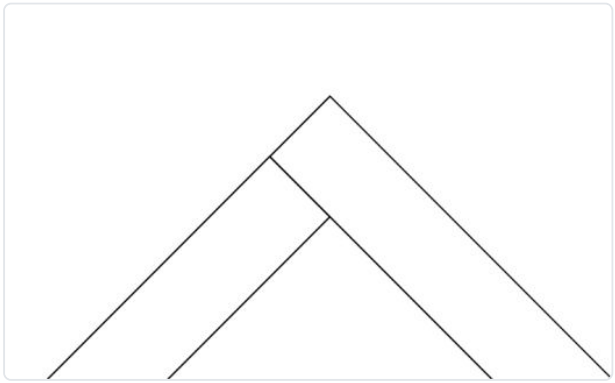
With Welding Wire

When you weld with the inside corners of the materials fitted against each other, the groove formed at the inside corner acts as a guide for the wire, allowing smooth welding. On the other hand, when laser welding a joint where one side is overlapped over the other (when using wire), the wire has little to guide it, and a good weld often cannot be achieved.

Inside-corner fit / single-side overlap — use the inside-corner fit for laser welding with wire.





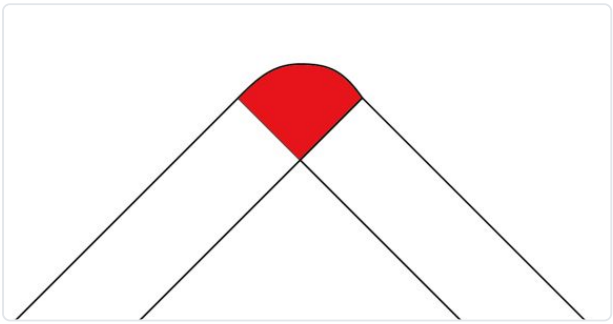


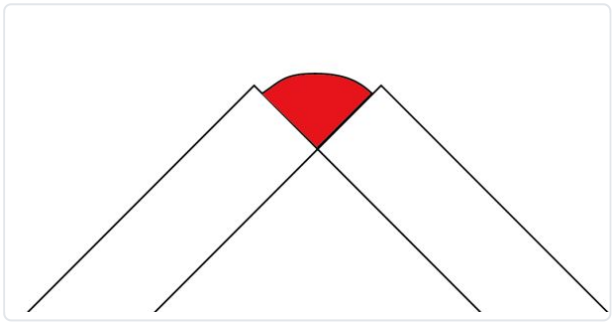
We also recommend welding with a slightly thicker wire. With the inside-corner fit, the section along the V-groove is open, so a thicker wire is needed to fully fill that gap. As an example, use 1.2 mm wire for outside corner welding of 1.6 mm material, and 1.6 mm wire for outside corner welding of 2.3 mm material.

If undercut occurs, increase the swing width value. Note, however, that increasing the swing width tends to make the penetration shallower. Therefore, raise the laser power or adjust the wire feed speed as needed to balance the overall conditions.

Correct wire diameter / incorrect wire diameter.

Swing width: this is the laser irradiation width (bead width). If undercut occurs at the edges, increase the swing width value to correct it.





Without Welding Wire

Welding without wire is basically used for applications where weld strength is not critical, and is performed with one side of the base material overlapping the other. With this method, it is an absolute requirement that there be no gap between the base materials.

> If a gap is open, it cannot be filled because no wire is used, and there is a danger that the laser will

> pass through to the far side.

In welding methods that use wire, the wire fits into the gap and acts as a guide for the weld. Without wire there is no such guide, so use a rule or similar straightedge as a straight-line reference so that you can weld in a straight line.

Inside-corner fit / single-side overlap — use the single-side overlap for laser welding without wire.