

WHAT ARE THE CRITERIA FOR JUDGING THE CUTTING QUALITY OF LASER CUTTING MACHINES?

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With the development of science and technology, laser technology has been used in various industries. As a precision processing method, laser cutting can cut almost all materials, including two-dimensional cutting or three-dimensional cutting of thin metal plates. [Laser cutting machine](#) is a technological revolution in sheet metal processing, and it is also a "processing center" for sheet metal processing.

Lasers generate light by exciting matter. This light has a strong temperature. When it touches the material, it can melt quickly on the surface of the material and form a hole, and form a cut according to the movement of the point to point. Therefore, this cutting method has smaller gaps and faster cutting speeds than conventional cutting methods.

The cutting quality and effect of the laser cutting machine are very good, but there are many factors that affect the cutting quality of the laser cutting machine. So, what are the factors that affect the cutting quality of laser cutting machine?

The factors affecting the cutting quality of laser cutting machines are analyzed:

1. The cutting width and verticality affect the cutting quality of the laser cutting machine.

The width of the kerf usually does not affect the quality of the cut. The cutting width only plays an important role when particularly precise contours are formed inside the part. This is because the cut width, which determines the profile, also increases with sheet thickness. If the thickness of the sheet metal exceeds 10mm, the perpendicularity of the cutting edge is very important. When moving away from the focal point, the laser beam becomes divergent. Depending on the focus position, the cut widens towards the top or bottom, and the more vertical the edges, the better the cut.

2. The roughness and texture that affect the cutting quality of the laser cutting machine

The laser cut part will form a vertical texture, and the depth of the grain determines the roughness of the cut surface; the shallower the grain, the smoother the cut part. In most cases, roughness must be kept as low as possible, so the lighter the grain, the better the quality of the cut. When the slab is cut at high speed, the molten metal does not appear in the narrow gap under the vertical laser

beam, but is jetted after the laser beam is deflected. Thus, a curve is formed on the cut edge, and the line closely follows the moving laser beam. To solve this problem, the feed rate is reduced at the end of the cutting process.

3. Material deposition, burrs, and deformation that affect the cutting quality of laser cutting machines

During the cutting process, the surface can be deposited on the narrow seam surface, and the quality of the laser cutting equipment can also be seen in the amount of material deposited. The formation of burrs determines a very important factor of laser cutting quality, because removing burrs requires extra work, so the severity and quantity of burrs can directly determine the cutting quality. If the cutting causes the part to heat up rapidly, it will deform, so the less the deformation, the better the cut quality.