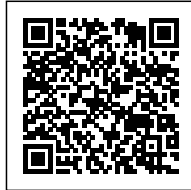


# TEACH YOU TWO METHODS OF LASER HOLE CUTTING

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There are two basic methods of perforation for laser cutting machines without stamping device:

- 1) Pulse perforation: use the pulse laser with peak power to melt or vaporize a small amount of materials. Air or nitrogen is often used as auxiliary gas to reduce the hole expansion due to exothermic oxidation. The gas pressure is lower than the oxygen pressure during cutting. Each pulse laser only produces small particle jets and gradually deepens, so the perforation time of thick plate needs several seconds. Once the perforation is completed, replace the auxiliary gas with oxygen immediately for cutting. In this way, the hole diameter is smaller and the hole quality is better than that of blasting. The laser used for this purpose should not only have high output power; More important is the temporal and spatial characteristics of the light beam, so the general transverse flow CO<sub>2</sub> laser cannot meet the requirements of laser cutting. In addition, it is necessary to have a more reliable gas path control system for pulse perforation to realize the switch of gas type, gas pressure of laser cutting machine and the control of perforation time. In the case of pulse piercing, in order to obtain high-quality cuts, the transition technology from pulse piercing when the workpiece is stationary to constant speed continuous cutting of the workpiece should be paid attention to.
  - 2) Blasting perforation: the material is irradiated by a continuous laser to form a pit in the center, and then the molten material is quickly removed by the oxygen flow coaxial with the laser beam to form a hole. Generally, the size of the hole is related to the thickness of the plate, and the average diameter of the blasting hole is half of the thickness of the plate. Therefore, the hole diameter of the thicker plate blasting hole is large and not round. It is not suitable for use on parts with higher requirements (such as petroleum screen pipe), but only for waste materials. In addition, because the oxygen pressure used for perforation is the same as that used for cutting, the spatter is large.
- Cutting and perforating technology: For any thermal cutting technology, except for a few cases, which can start from the edge of the plate, a small hole must be drilled on the plate. In the laser stamping compound machine, a punch was used to punch a hole first, and then the laser was used to cut from the small hole.

Theoretically, the cutting conditions of the acceleration section can be changed, such as focal length, nozzle position, gas pressure, etc., but in fact, it is unlikely to change the above conditions due to the short time. In industrial production, it is more practical to change the average laser power.

There are three specific methods:

- (1) Change pulse frequency;
- (2) Change the pulse width and frequency at the same time.
- (3) Change the pulse width;

Through the above explanation, you must also have some understanding of laser perforation technology. Good laser cutting machine perforation technology is very different, so it is very important to choose a good laser cutting machine.