

METAL CUTTING MACHINE, DO YOU UNDERSTAND?

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Metal cutting is an important production process in the fields of industrial construction and other fields. At present, more raw materials are used in the cutting process, such as acetylene and propane, in order to improve production efficiency and save energy and protect the environment. The so-called [metal cutting machine](#) is also called metal laser cutting machine. It is the energy released when the laser beam is irradiated on the surface of the metal workpiece to melt and evaporate the metal workpiece to achieve the purpose of cutting or engraving. It has high precision and fast cutting. It is not limited to Cutting patterns are limited, automatic typesetting saves materials, smooth cuts, and low processing costs.

As a new type of tool, metal cutting machine is more and more maturely used in various industries. So how is laser cutting used, and how to distinguish between good and bad laser cutting?

First, the energy of the laser is concentrated into a high-density beam in the form of light. The beam is transmitted to the working surface to generate enough heat to melt the material. In addition, the high-pressure gas coaxial with the beam directly removes the molten metal to achieve the purpose of cutting. , which shows that there is an essential difference between laser cutting and machine tool machining.

It uses the laser beam emitted from the laser generator to focus into a high-power-density laser beam irradiation condition through an external circuit system. The laser heat is absorbed by the workpiece material, and the temperature of the workpiece rises sharply. After reaching the boiling point, the material begins to vaporize and form The hole, as the beam moves relative to the workpiece, eventually creates a kerf in the material. The process parameters (cutting speed, laser power, gas pressure, etc.) and movement trajectory during slitting are controlled by the numerical control system, and the slag at the slit is blown off by auxiliary gas with a certain pressure.

In the process of laser metal cutting, auxiliary gas suitable for the material to be cut is also added. When cutting steel, oxygen is used as an auxiliary gas to produce an exothermic chemical reaction with the molten metal to oxidize the material, and at the same time help to blow away the slag in the grid gap. For metal parts that require high machining accuracy, nitrogen can be used as an auxiliary gas in the industry.

Most organic and inorganic materials can be cut with a laser. In the metal processing industry where industrial manufacturing plays a very important role, many metal materials, no matter what hardness they have, can be cut without deformation (currently, the most advanced metal laser cutting machine can cut the thickness of industrial steel. close to 20mm). Of course, for high-reflectivity materials, such as gold, silver, copper and aluminum alloys, they are also good heat conductors, so

laser cutting is difficult or even impossible to cut (some difficult-to-cut materials can be cut with pulsed laser beams, Due to the extremely high peak power of the pulse wave, the absorption coefficient of the material to the beam will increase sharply in an instant).