Laser Marking Machine Common Fault Repair

Introducción detallada :

A laser marking machine is a piece of relatively precise equipment, mainly used to engrave product information on the stainless steel shell of the product. The working process is as follows: the workpie placed on the workpiece trolley at the right position, while the barcode scanner sweeps in the workpi information, then the computer prompts the operator to close the safety gate, while the workpiece is and reaches the predetermined position, then the computer controls the laser to fire the laser and e the workpiece information on the workpiece. When the marking is finished, the laser output is stoppe workpiece and the safety gate return to the original position, and the scanner sweeps the barcode to the marking is completed. Laser marking machine is mainly composed of an Nd: YAG laser and contr equipment, the main component of the laser is the laser head, the laser head is an internal cross-sec oval cavity, the internal cavity surface is a gold reflective coating used to reflect the krypton flashlight driving light.

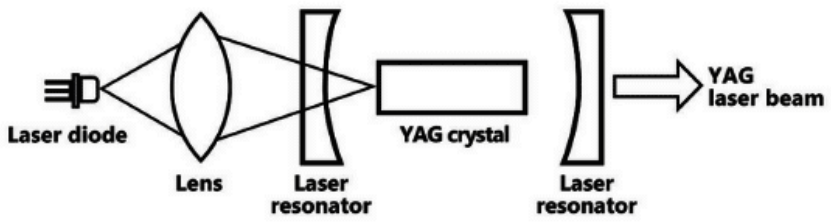
Laser marking machine equipment common causes of failure analysis and processing are as follows.

I. Computer System Failure

After the computer starts, can not enter the operating system, the computer prompts the system dis
The equipment computer motherboard is 286. The hard disk capacity is only 8MB. The failure sugges
the DOS operating system did not scan the hard disk. Reboot into CMOS, find that the hard disk statu
installed, re-scan the hard disk automatically, select the appropriate hard disk type according to the h
parameters, save the settings, and exit CMOS. Reboot the computer to enter the program.
This failure indicates that the hard disk has aged, and there is a possibility of damage. Therefore, a ne
drive is required. The way to replace a new hard disk is to prepare a floppy disk and a hard disk. The
is preferably new. The old hard disk needs to be formatted into a FAT format. Hard drive capacity is n
too large. Usually, about 1GB is better, the capacity of too large hard drive and small hard drive comp
problems, hanging on the same data line, the system can not scan the hard drive. Then, download a g
program to the floppy disk. Please turn off the power, set the new hard drive jumper as a slave, and c
to the computer data cable. Boot the computer, press DEL to enter the CMOS interface, automatically
the hard disk and save the settings, and exit CMOS. Insert the floppy disk into the floppy drive, run th
ghost.exe program, and follow the prompts for disk-to-disk copying of the local disk. After the hard d
copied, power off the computer, remove the old hard disk, set the new hard disk jumper as the prima
boot the computer into CMOS to scan the hard disk, save the settings, and exit. The new hard drive w
ready for use (the old hard drive can be used as a backup).

II. The Computer Software Error

After the computer can not enter the marking program, the computer prompts the program loading
The above phenomenon indicates that the computer system data are reading errors, marking progra
LASE.EXE accidentally lost. Copy the program from the BACKUP folder and paste it into the loaded fol
restarting the computer, the program loads normally. This failure appears to be a software failure, bu
also possible that the hard disk is in error, and it is recommended that the hard disk be replaced, or t
program be backed up.



III. The Nd: YAG Laser Failure

Equipment in the normal course of work suddenly appears part of the font becomes lighter, or all the becomes lighter. But stop waiting for ten minutes, marking began to normal, after playing a few work and the same phenomenon.

Check the equipment focal length and optical path, cooling water system, and water temperature. No abnormalities were found. Check the maintenance records, and the krypton flash life has not been re Replace the krypton flash. The fault remains. By analyzing the initial Nd: YAG rod aging, Nd coating th its activity is reduced to absorb the number of krypton flash photons to reduce the number of laser e instability. After replacing the Nd: YAG bar, the fault was eliminated.

After the equipment is started, the marking font becomes lighter. First, open the lamp room, check th krypton flash. If you find that the ends of the krypton flash become black, it should be replaced. If the flash is normal, check the reflective surface of the lamp chamber, found that the upper reflective surf coating has many pockmarks, which is because of deionized water (DI water) at rest has a small ozon production, ozone floating in the upper layer of the chamber, ozone has strong oxidizing properties, of the reflective surface, the number of photons to reach the Nd: YAG rod is reduced, so that the lase power is reduced. Replace the upper part of the lamp chamber with the normal marking font.

IV. The Focal Length Adjustment Failure

Equipment in marking varying text depth of the phenomenon manifested as the middle shallow two- the middle deep two shallow.

Because the workpiece's processing surface is circular, the laser to the workpiece surface of the dista between the points is not equal. Due to various reasons (vibration, tooling wear or fixed bolt loosenin the distance from the lens to the workpiece changes. You need to adjust the laser's position accordin equipment on the focal length adjustment direction fine-tuning to find the best effect. Note that each adjustment should not be too large, make a good record of the effect after each adjustment to find o changing trend to be fast and accurate. Otherwise, it is easy to adjust to the chaos and waste time.

V. Tooling Position and Safety Device Failure

The laser marking machine launched laser is invisible light. To ensure the operator's safety, the PLC p
set many conditions, such as the safety door must be closed, the tooling must reach a fixed position.
when these conditions are met can the laser be emitted.

After the safety door is closed and opened automatically, the laser does not emit laser light.

The safety door of the equipment is equipped with a magnetic proximity switch. When the safety doc
closed, the magnetic proximity switch is ON, and the safety door switch solenoid valve is self-locking.
other conditions are also met, the laser emits laser light. After inspection, it was found that the magn
proximity switch wire was worn and disconnected, so the safety door switch solenoid valve could not
locking.

After rewiring, the fault returned to normal.

Laser marking machine marking the phenomenon of ghosting. The equipment workpiece in and out
trolley cylinder is a BIMBA cylinder. When replaced by SMC cylinder, marking position is normal, but
occasionally appear font ghosting phenomenon.

After repeated attempts to find two-cylinder shape is different, the installation size has changed, the
cylinder installation will be its end position as the workpiece trolley limit position. A cylinder piston is
object. Compressed air pressure will also fluctuate, making the trolley position vibration, so the font

phenomenon occurs—the equipment operated normally after adjusting the cylinder installation posi
adding a limit block.