

Maintenance and safety precautions for fiber laser cutting machines

Safety precautions

1. Before operating the equipment, please read the precautions carefully and operate in strict accordance with the operating procedures. Untrained personnel are prohibited from using the machine.
2. Start-up sequence: power distribution main switch - emergency stop switch - computer switch - drive switch - chiller switch - laser switch (every time you turn on the computer, the system must be reset before opening the software).
3. Shutdown sequence: laser off - chiller switch - drive switch - emergency stop switch - power distribution main switch. (Please strictly follow the power-on and power-off process to avoid damage to the electrical components of the machine).
4. When the machine is not running, it is forbidden to turn on the laser switch and emit light. The company does not provide warranty for machine damage caused by human operation.
5. During the water supply process of the machine, the operator shall not leave without authorization. After work, the power of the machine shall be turned off according to the shutdown process.
6. If an abnormal situation occurs during the use of the machine, the abnormal location and the machine alarm information should be determined first, and the abnormal situation or alarm information should be resolved in time. If the situation cannot be resolved, please contact our after-sales technicians in time to assist in solving it.
7. The environment where the machine is located should be kept dry and free from interference such as radio and electromagnetic interference.
8. The machine must be effectively grounded to avoid abnormal conditions that affect production.
9. The chiller equipped with the machine is an automatic constant temperature type. Just pay attention to changing the water frequently. In winter, you must use antifreeze for laser machines. Dilute it with pure water according to the proportion and add it. (The customer shall bear the repair cost for the laser machine that is damaged by freezing due to the failure to add antifreeze). In summer, pure water can be used. The water change cycle is one month. Customers with a large workload are advised to shorten the water change cycle.
10. During the operation of the machine, it is forbidden to put your body into the working range of the machine. It is forbidden to place items unrelated to work in the working range of the machine to avoid damage to the machine. Man-made damage to the machine is not covered by the free warranty.
11. The working voltage of the machine is 50HZ/380V 50HZ 220V 58KW-30KW (depending on the equipment model, the working voltage and total power used are also different (depending on the machine model configuration). If the working environment voltage is unstable, a voltage stabilizer must be configured. The power of the voltage stabilizer needs to be twice the power of the whole machine . In order to avoid abnormal operation of the machine.
12. Check the oil supply equipment of the machine frequently. The oil pump is on the rear or left side of the machine (different models). The oil pump is the oil supply system for the machine guide rail, gear rack, and ensures the lubrication and normal operation of the machine transmission system.

Daily maintenance requirements:

1. Lasers and laser cutting machines should be kept clean and tidy.
2. Check whether the X, Y, and Z axes of the machine tool can return to the origin. If there is a problem, check whether the origin switch collision block position is offset.
3. The smoke exhaust of the laser cutting machine can be cleaned by using a smoke extractor filter.
4. Clean the debris on the smoke vent filter in time to ensure that the ventilation duct is unobstructed.
5. After replacing the protective lens, re-center the laser to ensure that the laser light is at the coaxial center position (coaxial).
6. The principle of focal length adjustment is positive focal length for carbon steel and negative focal length for stainless steel, copper and aluminum .
7. Clean the guide rails in the forward direction and check them for damage.
8. Check the water in the cooling water tank, the laser cold water inlet temperature is $22^{\circ}\text{C} \leq 25^{\circ}\text{C}$. (11-13, for customers who choose to match the air compressor to pay attention to)
9. When the oil-free air compressor is connected to the fiber laser cutting machine, when the air pressure in the gas tank is 1Mpa-1.2Mpa, open the drain switch at the bottom of the gas tank to drain the sewage in the tank. The pressure pointer should move smoothly. When the pressure gauge pointer is zero, its pointer should also point to "0". Press the air compressor to work. When the gas storage pressure is close to 1; the pressure switch should be able to automatically cut off the control circuit of the magnetic starter at the rated working pressure, so that the air compressor can exhaust at least twice; when checking the working pressure of the air compressor, gently pull up the safety valve top rod, and the safety valve should produce exhaust action. After each use, check the air compressor belt, because the air compressor is empty in the middle, there is no abnormal sound or vibration. When shutting down the air compressor, pay attention to stop the car for a while before use to eliminate moisture, wipe the air compressor, and close the air valve when sending the air compressor.
10. Check the ion dryer, press the manual button to see if the indicator light is on. Check if the automatic drainer drains regularly. When the dryer is stopped and there is no compressed air, check if the pointer of the thermometer is lower than the ambient temperature. It is normal if it is about $5-15^{\circ}\text{C}$ lower than the ambient temperature. When the dryer is running and compressed air is used, check if the pointer of the thermometer is in the green area.
11. Pay attention to the surrounding environment and personal safety before use.

Monthly maintenance requirements

1. Clean the screw and add oil, and verify whether the optical axis is offset and make necessary adjustments.
2. Check the travel switch, limit bracket and bumper bracket to prevent the screws from loosening.
3. There should be no foreign objects on the front and rear covers of the bed to avoid scratching the workbench.
4. There should be no debris inside the guide rail guard plate of the bed to avoid damaging the guide rail seat.
5. Clean the silencer filter of the oil-free air compressor. If the working environment is dusty, it should be cleaned once a week.