

Laser After-sales Training Courseware

1. **Software Upgrade Guide:** Elaborate on the steps for software upgrade upon expiration. It includes copying the upgrade file to the desktop, clicking the left bottom corner of the computer to start, then all programs, and GrandDogClient successively to enter the client remote upgrade page. Select the upgrade file according to the prompts to complete the upgrade operation, ensuring that users can update the software smoothly to maintain the normal operation of the equipment.

2. **Equipment Maintenance Highlights**

- **Shaft and Lens Cleaning:** The maintenance of the platform shaft follows a five-step process of power off, pull the cover, wipe, apply oil, and power on. The wiping of the optical path lenses and field lenses should be done in the order of finding the lenses, wiping clockwise, in the same direction, checking, and closing the side door to ensure the performance of the optical and mechanical parts of the equipment.
- **Filter Core Cleaning Process:** To clean the water tank filter core, power off first, take out the filter core, clean it thoroughly, then

install it back and check the equipment operation to maintain the normal filtration of the cooling system.

- **Filter Screen Maintenance Method:** Clean the platform adsorption filter screen by unscrewing the filter screen under the air suction pipe to remove the residues and prevent the waste materials from affecting the air flow.

3. Operation Specifications and Precautions

- **Software Operation Steps:** Introduce the opening and parameter setting processes of picosecond laser software, camera software, and laser cutting software (for roll materials and single-piece materials) respectively. Such as the connection of laser software, the selection and format setting of camera equipment, and the setting of processing parameters and the addition of drawings for roll materials and single-piece materials, etc., helping users to use the equipment efficiently.
- **Safety Operation Guidelines:** List a number of precautions for FPC ultraviolet laser cutting machines, covering aspects such as grounding, water pump inspection, water temperature and quality, lens wiping, fire and explosion prevention, personnel on duty, equipment disassembly, environmental requirements,

voltage stability, personnel training, and operation observation, ensuring the safety of user operations.

4. **Equipment Calibration Tutorial**

- **Platform and Galvanometer Calibration:** To set the platform working range, it is necessary to move the platform to determine the coordinates of each position and then save them. The setting of the galvanometer focus requires steps such as searching, calculating, and filling in the coordinate values to ensure the accurate positioning and processing of the equipment.
- **Camera Debugging Steps:** Debugging the camera focus includes operations such as path setting, height and angle adjustment, and exposure adjustment. Measuring the galvanometer calibration factor needs to be operated and calculated according to a specific process and then saved. To set the galvanometer-camera offset value, it is necessary to move the axis to make the crosses coincide. At the same time, introduce the setting method of the camera calibration factor to ensure the calibration accuracy of the equipment optical system.