

## Marking Method for Marking Different Color

Normally, all of the fiber laser marking machine can only marking color on metal materials, especially on stainless steel.

Before marking color marking, the clients need very proficient in operating our fiber laser marking machine at least the he/she will have 1 month operation experience.

### 1. Understanding of 'mark loop', 'mark power', 'mark speed', 'frequency'.

After open the software, in the right side of the software screen, there are parameters for marking loop, power, speed, frequency. Firstly, cancel the 'Use default parameter', then you can change the loop, power, speed and frequency as you like.

Cancel 'Use Default Parameter' and then can modify the marking parameters:

- a. **Mark Loop**: means the time of marking, 1 means mark one time only; 2 means mark twice; ... 10 means mark 10 times. The higher the mark loop value, the deeper it will mark.
- b. **Speed(mm/s)**: means speed for marking. The higher the speed value, the faster for marking, the lower for scorching on certain point on workpiece, the more shallow of marking. If the speed value is too high, maybe cannot mark very clear. The proper range for speed is 50-1500(mm/s).
- c. **Power(%)**: marking power decides the marking depth and efficiency. The higher the power, the deeper of marking and better of marking efficiency. The power should not more than 95%, otherwise it will damage the laser source or shorten the lifetime of laser source.
- d. **Frequency(KHz)**: decide the fineness of the marking. The higher the frequency, the finer it will mark and the more dispersed of laser beam ; the lower the frequency, the rougher it will mark.

Normally, the frequency value should be set below 10 for nonmetal materials, and set around 20KHz for metal materials. **For your machine, 20KHZ is ok, no need to change.**

### 2. Find the focus correctly.

This step is very important. If you know how to find the focus, you can neglect this point. Make one text or logo, mark it, during marking, you can move up and then move down the laser head, when the marking is coming out onto the workpiece, it means the focus is ready. Please check the exactly focal point and then you can do the following procedures. After you find the exactly focal point, you can remember the value on the 'ruler scale' which is marked on the vertical support. Please remember the value correctly, it will helps you to find the focal point next time.

### 3. Marking white color without depth.

After you find the focal point, then make on text like 'ABCD1234', then 'Hatch' it. Set the 'power' as

30% (more or less is ok), and then set the 'speed' as 1000(more or less is ok), then mark it, you will see the marking is white, light, and very beautiful.

#### **4. Marking grey color.**

Based on the step 3, you can increase the 'power', to 50%, 60%, 70%, 80%, 85%, you will see the marking is quite different colors, light grey. Caution: for all the time, the 'power' should not more than 85%, or the laser power will easy overload and get burnt.

#### **5. Marking black color with depth.**

Based on the step 4, keep the marking head on focal point. Then using high 'power', low 'speed', such as power 80% with speed 200, then you will mark black color with depth, clean the marking then you will see the marking have depth and looks very beautiful.

#### **6. Light grey or white with depth.**

Based on the step 5, firstly, you mark black with depth and then don't move the workpiece, set the parameter and mark the same place one more time. for second time marking, you using high speed and low power (30-40% power with 1000 speed), to scan the previous black-deep marking, then you will get the marks with depth and the color is grey or white.

#### **7. Black color or different color without depth.**

Firstly, make sure the marking head is on right focus. Then set the parameters as high power low speed, such as 80% power with 400speed. Then move up the marking head up to 3mm, and then mark; then move up the head 4mm then mark; then move up the head again up to 5mm, you will find that the marking color is black, purple, yellow, brown etc.

Anyhow, in this procedure, it will take time to adjust the most perfect color as you requested, you need to practice it patiently, using high power low speed, and the move up the head 3-6mm, marking 1-3 times, you will see the different marking performance.

For this step is the most difficult for new operators, you need practice more and then you will mark lots of colors as you like.