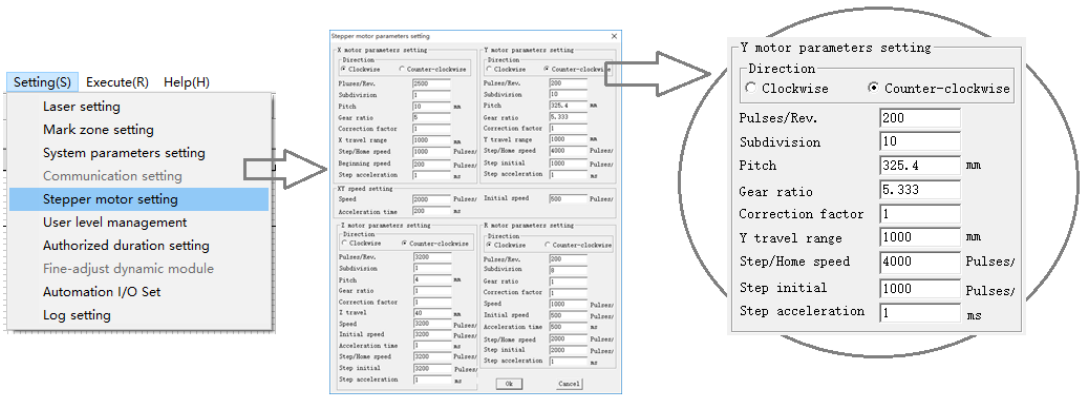
FEELTEK 菲镭泰克	Document Name	Version
APPROVED	LenMark Software---Moving Line Marking	2017.2.0

Chapter 1. Inspection before use

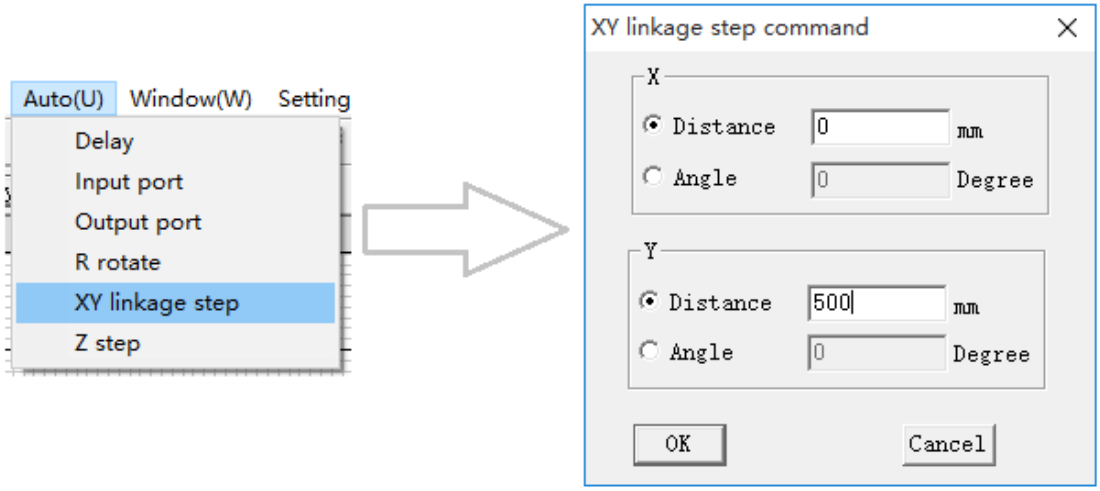
Motor running direction inspection

1.Open software, click ‘setting’ menu, select ‘step motor setting’, view motor running direction in the ‘step motor parameters setting’ dialog box, below will take Y axis motor for example. The interface is as shown in pic1-1



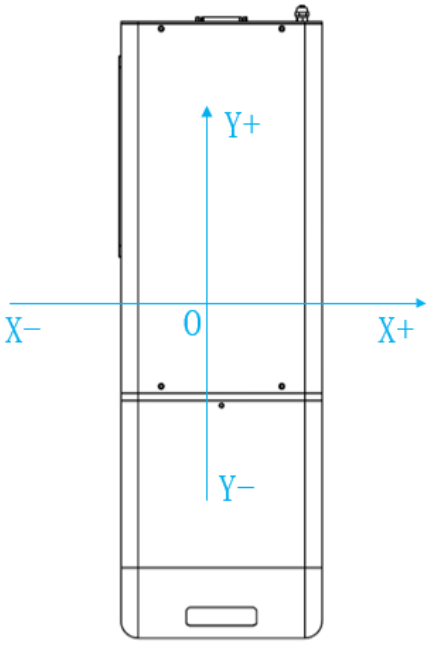
Pic 1-1

2.Click ‘auto’ menu, select ‘XY linkage step’, input 500mm in Y direction moving distance in the pop up dialog box.



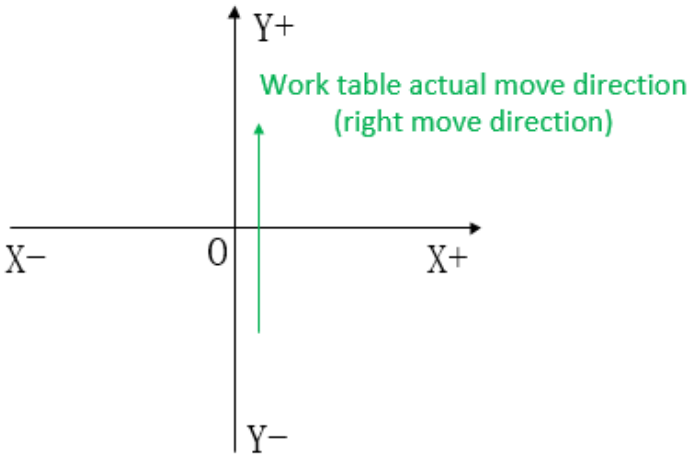
Pic 1-2

3.Assume the scanner coordinate system is shown in pic1-3, when XY linkage step command is marked, the direction of motor is used as the judgment.



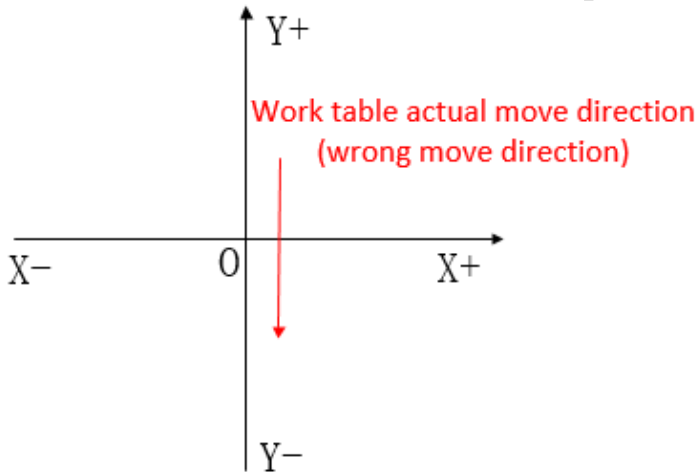
Pic 1-3

If the actual direction of motor is shown in pic1-4, it indicates Y axis motor is in the right direction of movement.



Pic 1-4

If the actual direction of motor is show in in pic1-5, it indicates Y axis motor is in the wrong direction movement and it needs to change Y axis move direction to ‘opposite direction’.



Pic 1-5

Software setting inspection

1.Before starting the laser power supply, please check whether the laser type is in correct setting in ‘laser device setting’.

Note: If use CO2 laser whilst the laser type setting is Fiber, the light will always on after starting the laser power supply.

If use fiber laser whist the laser type setting is CO2, it will not have light when marking.

2.When the first time to use online marking function, it needs to double check whether the setting of motor pitch, drive subdivision, number of pulse per cycle meet request. It can be judge through the consistency of actual moving distance and settings, as well as the size consistency of marking drawing and graphics drawn in software.

Measurement of moving distance is as below:

1)Select ‘XY linkage step command’, set Y direction moving distance as 100mm

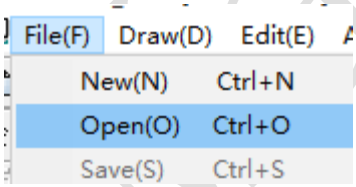
2)Mark a feature points on the moving line work table, and put a ruler close to worktable for observation.
3)Click ‘mark’ button, observe whether the moving distance of feature point is 100mm.

Measurement of marking image is as below:
1)Draw a 200mm*200mm rectangle box in software.
2)Start ‘online mark’ function, mark after parameters adjustment.
3)Measure the size of marking image by measuring tools and check whether it is meet standard.
If use online mark function, it is necessary to confirm that the order of the object is contrary to the direction of the table, and that the initial position of the marking object is to be in the marked area.

Chapter 2. Open/Create mark file

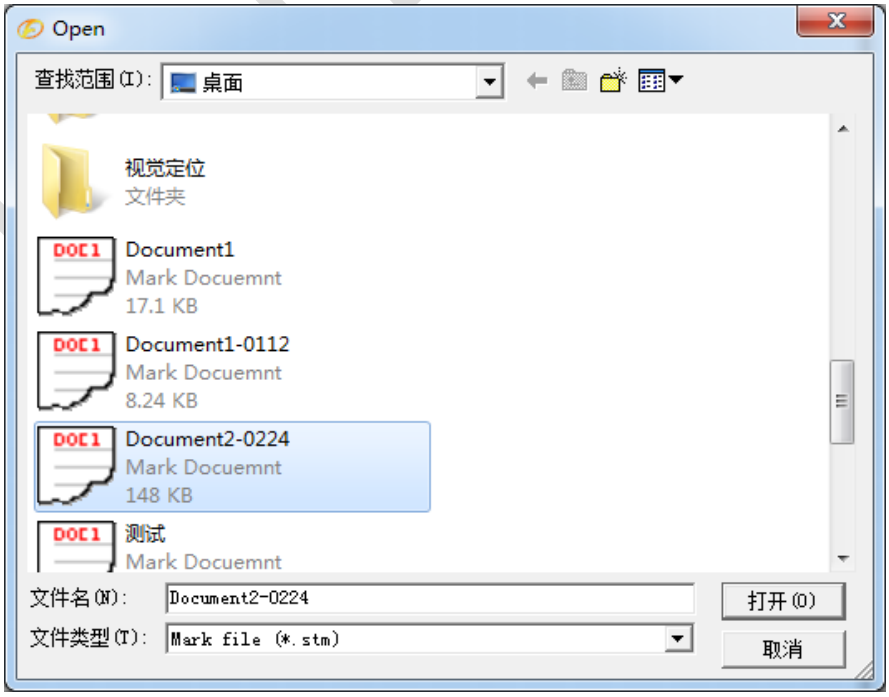
Open/Create mark file

1)Click ‘open’ button in the ‘file’ toolbar, as shown in pic 2-1



Pic 2-1

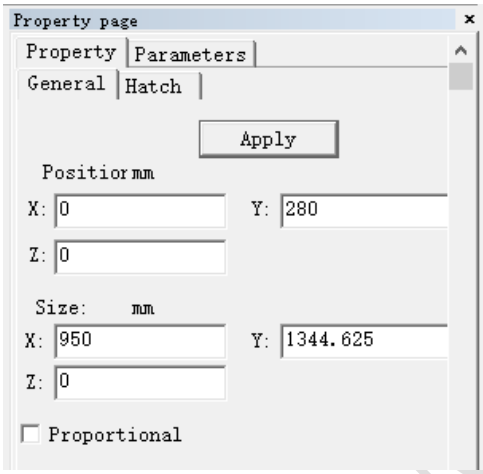
2)Select the target file in the ‘open’ dialog box, as show in pic 2-2



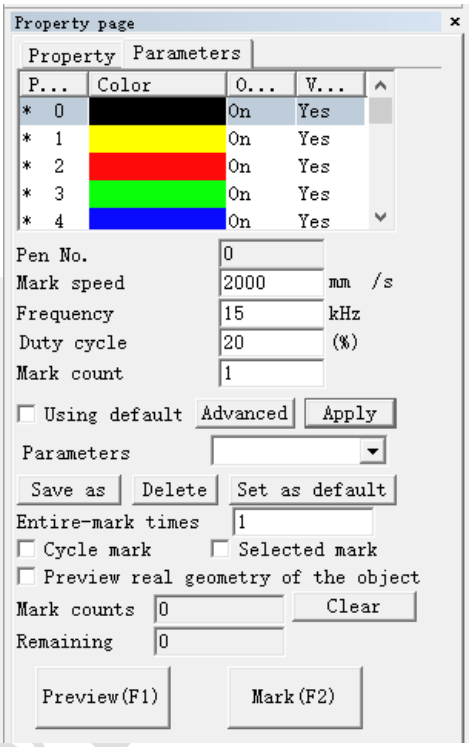
Pic 2-2

Chapter 3. Parameters modification

Modify the target properties and mark parameters in the property page. As shown in pic3-1, 3-2



Pic 3-1

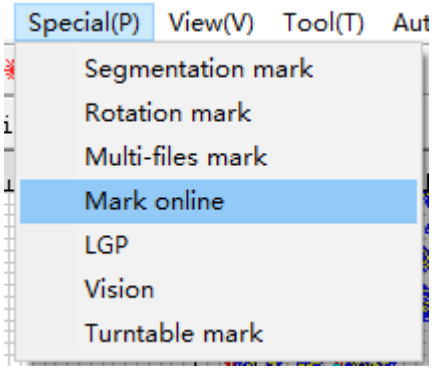


Pic3-2

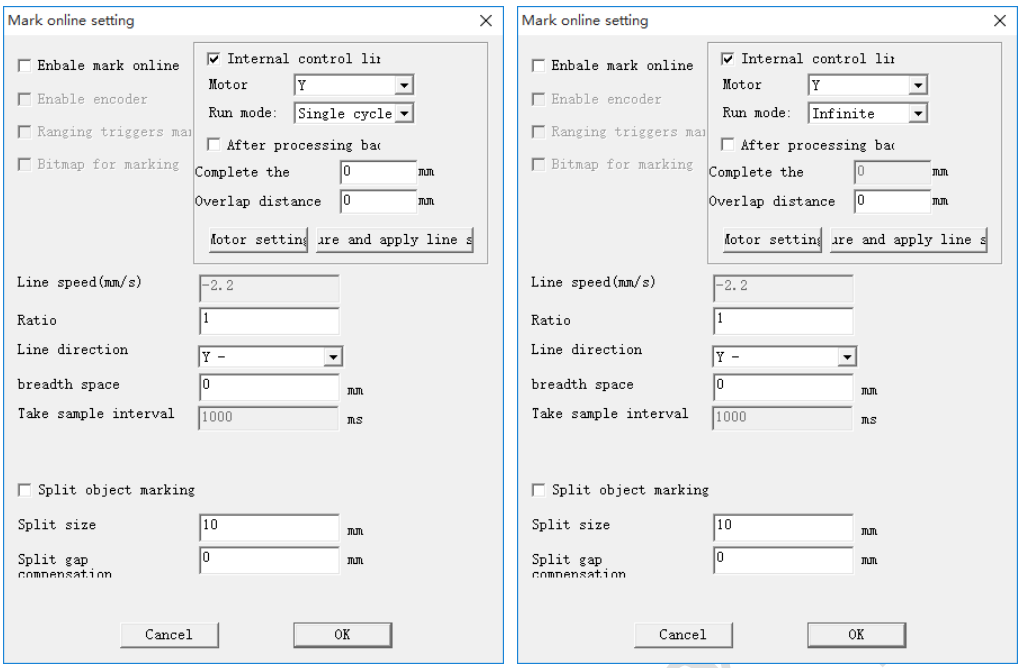
Chapter 4. Settings and Mark

Following the procedure and do online mark:

Click ‘special’ in the toolbar, and select ‘mark’, as shown in pic3-1, it enters online mark setting interface.



Pic 4-1



(1) single (2) infinite

Pic 4-2

Through the pic4-2, the internal control mode of online mark is divided into two parts: single calibration and infinitely long.

Parameters Instruction:

Enable online machining: click the selection and enable tracking function.

Error coefficient: internal requirement, used to adjust the tracking effect.

Line direction: production line running direction's corresponding direction in the scanner coordinate system.

Filed spacing: used to adjust field spacing during repeat mark.

Segmentation size: due to the signal direction, Because of the single production line, the ultra long and large objects need to be segmented and labeled, otherwise they will appear beyond the track and can not achieve the actual requirements;

Segmentation gap compensation: due to computer delay after image segmentation, it needs to adjust again to alignment.

External control effective parameters:

Enable encoder: click the selection, the data in the encoder is automatically read, and the line speed and displacement are calculated;

Line speed: Check "enable encoder" and it will calculate automatically, otherwise you will follow the set value tracking position.

Initial adjustment zone: When the acquisition card works over a distance, the correct line speed value is obtained. This value is related to the actual line speed. It should be greater than the moving distance of the production line within the sampling interval of the speed measurement.

Speed sampling interval: The data for the time interval calculation of line speed. In a relatively short period of time, the instability of the moving line makes the data acquired by the acquisition card have some error, and the error of line instability can be reduced by a long time interval;

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Internal control effective parameters:

Internal control moving line speed: activate internal control mode

Motor selection: the motor numbers for connecting device.

Operation mode:

Single reset: advantage is more precision control, disadvantage is it needs to stop moving line and restart again for each time.

Infinitely long: advantage is no need to stop and reset, disadvantage is there will be cumulative error if mark time too long.

Advancing distance after completion: under signal operation mode, the distance that continues after a mark is completed.

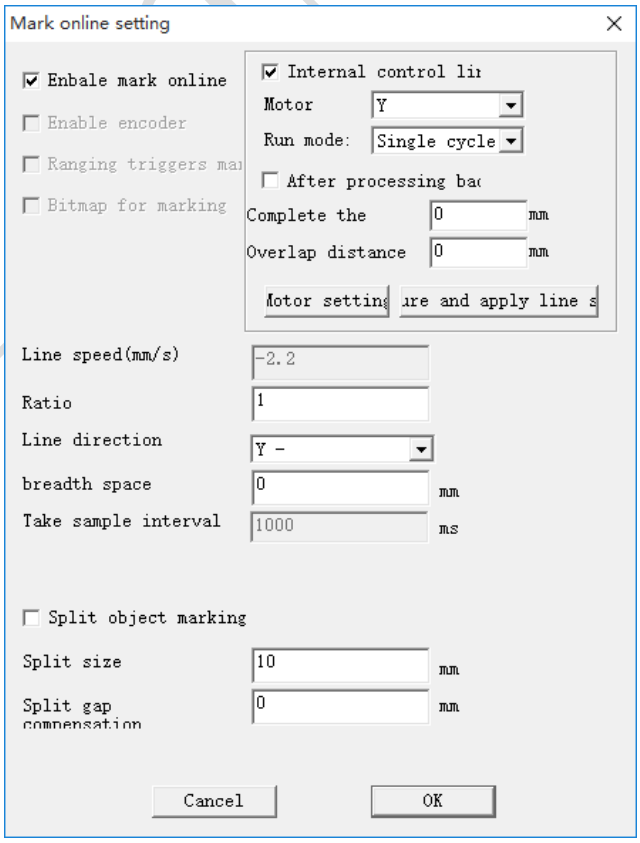
Overlap distance: use to adjust the interface distance between two objects in the same area

Motor setting: open stepper motor setting page.

Measure line speed: Automatic matching calculates the required moving line speed.

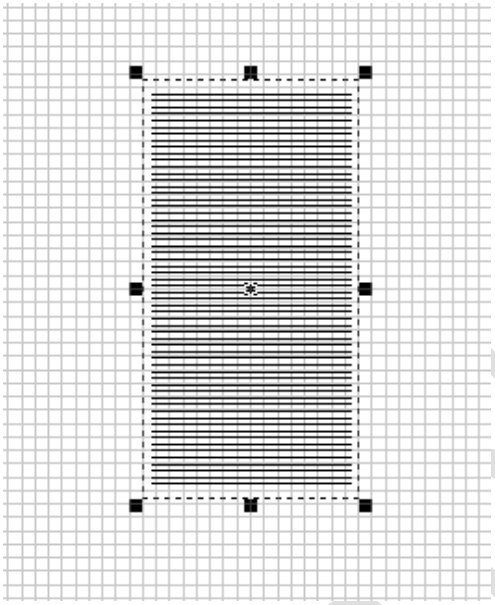
1. Single calibration mode (internal control)

Select ‘enable online machining’, start the online mark function. Select ‘internal control moving line speed’, enable the moving line control through internal control. Select the motor selection and line direction in accord with the actual situation. Select opening mode: single calibration, advancing distance after completion: 0mm. The interface is shown as pic4-3:



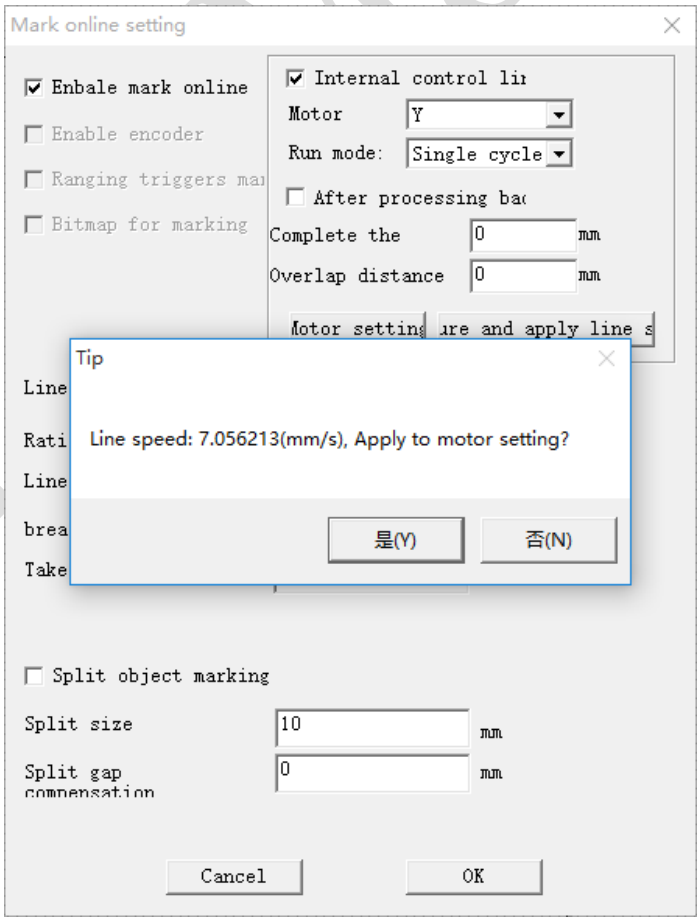
Pic 4-3

If it is the selected operation, please select the target object in the main interface, as shown in pic4-4.



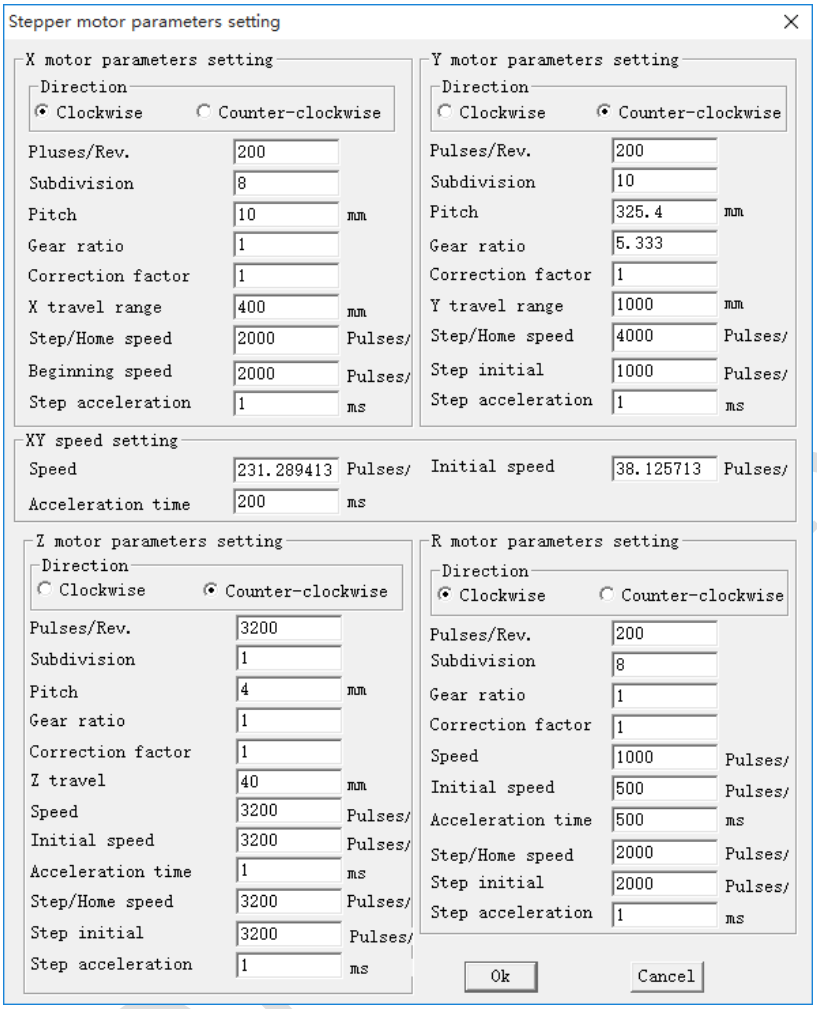
Pic 4-4

Open the ‘online mark parameters setting’, click ‘measure line speed’ button, the software will autonomic calculate work piece moving speed during marking.



Pic 4-5

Click ‘YES’ button, it can apply ‘calculate line speed’ into ‘XY axis speed’ in ‘stepper motor parameters settings’, click ‘motor settings’ and view it, as shown in pic4-6.

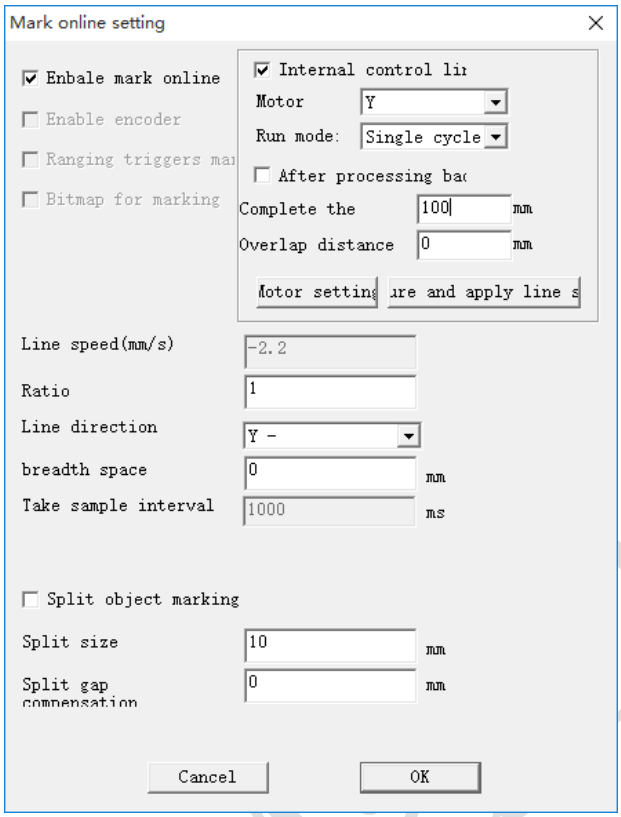


Pic 4-6

After settings, click ‘OK’ button, then start mark, the software do a mark, it exits the marking prompt dialog box, and the moving line work piece stops moving along with it.

2. Advancing after setting (internal control)

Based on the (1) setting, add setting ‘advancing distance after completion’ 100mm, the interface is as shown in pic 4-7

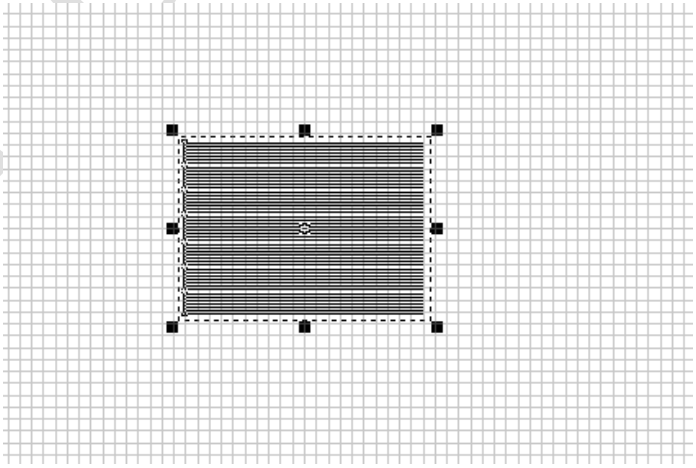


Pic 4-7

After settings, click ‘OK’ button, then start mark, the software do a mark, the moving line will move forward 100mm after the marking, then stop move.

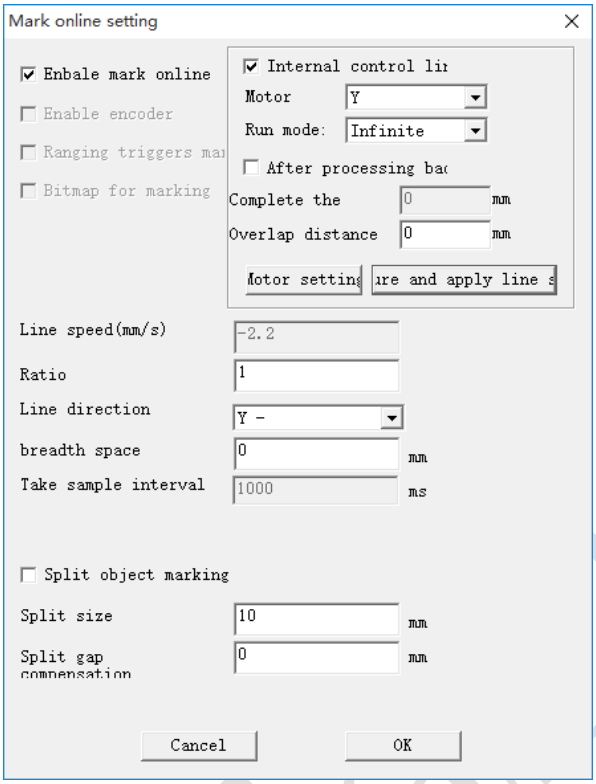
3. Infinitely long mode (internal control)

1) Select the target mark image in the drawing are, as shown in pic 4-8



Pic 4-8

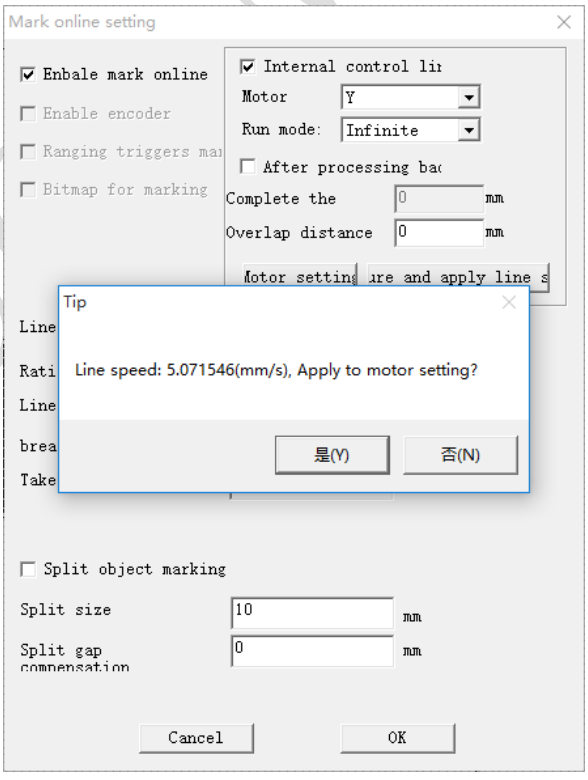
2)Select the ‘operation mode’ in the ‘online mark parameter settings’ as ‘infinitely long’, as shown in pic 4-9



Pic 4-9

Under ‘infinitely long’ mode, ‘advancing distance after completion’ function is invalid.

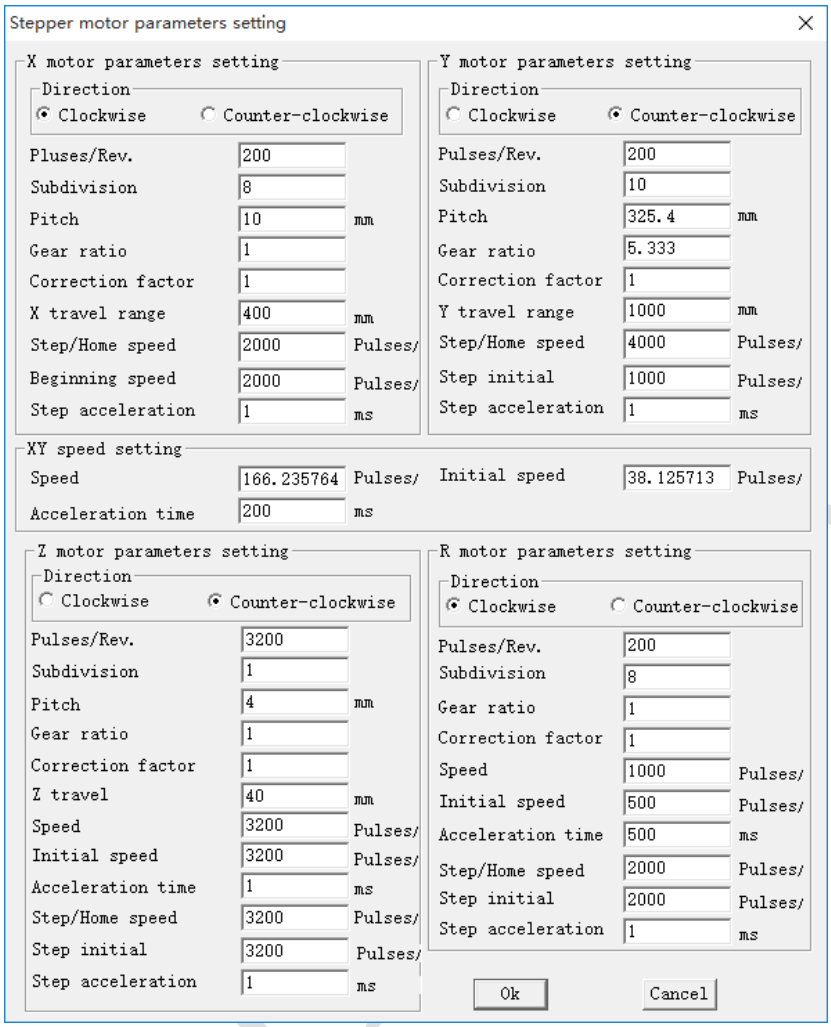
3) After settings, click ‘measure line speed’ button, software will automatic measure the required line speed of mark, as shown in pic4-10



Pic 4-10

4)Click ‘YES’ button, apply the calculated line speed into ‘XY axis speed’ in ‘stepper motor

parameters setting' dialog box. The interface is shown as pic 4-11



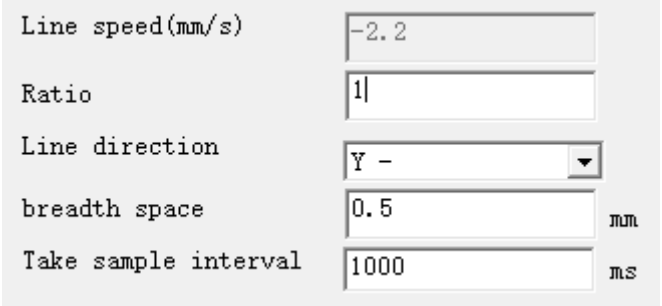
Pic 4-11

After setting, click the 'OK' button, select 'cycle mark' in 'mark parameters settings', then click 'mark' do mark, the software will continuous mark until click the 'stop mark'.

4. External control adjustment

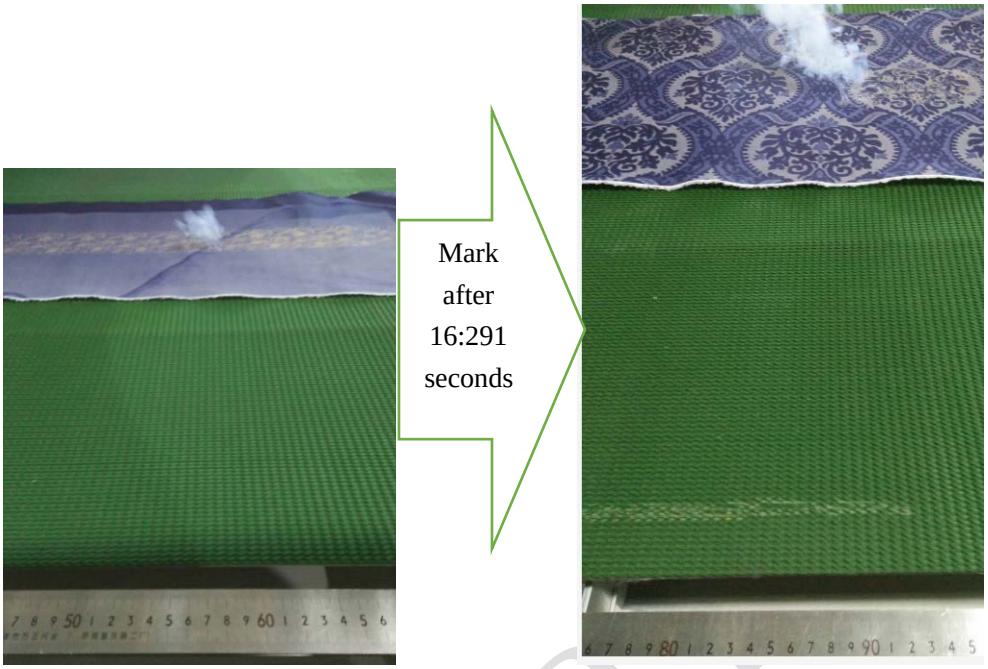
Click 'mark' or press F2, start mark.

1)In the marking process, if there is coincidence or gap in the process of marking the object, it can be adjusted through 'error coefficient', the interface is shown pic4-12



Pic 4-12

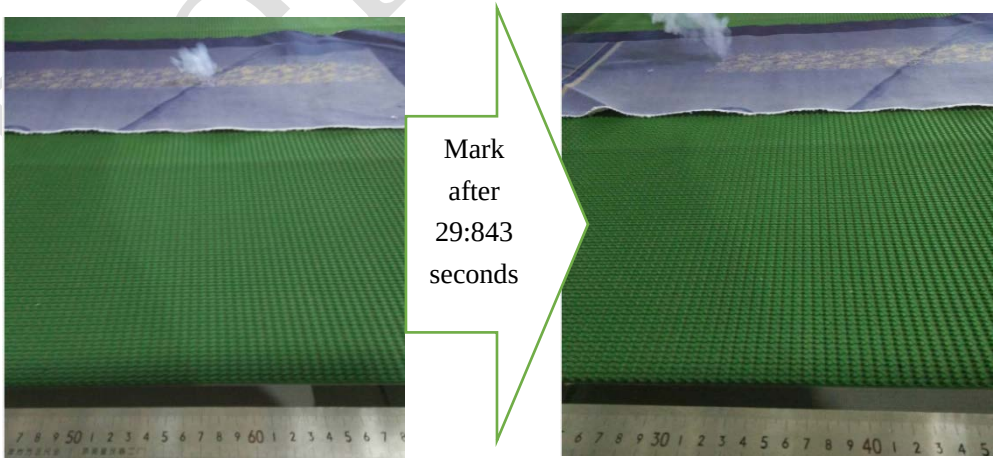
2)If the laser light move forward during the marking process, the effect is shown in pic 4-13, pic4-14



Pic 4-13 Pic 4-14

From pic4-13, the position of light is located in 560mm, from pic4-14, the position of light is located in 900mm. The reason for this is the work piece moving too fast, the speed of scanner can not keep pace with the movement of work piece. At this point, it is necessary to change the 'XY axis speed' slower in the 'stepping motor settings', so that the moving speed of work piece can match the speed of the scanner.

3)If the laser light move forward during the marking process, the effect is shown in pic 4-15, pic4-16



Pic 4-15 Pic 4-16

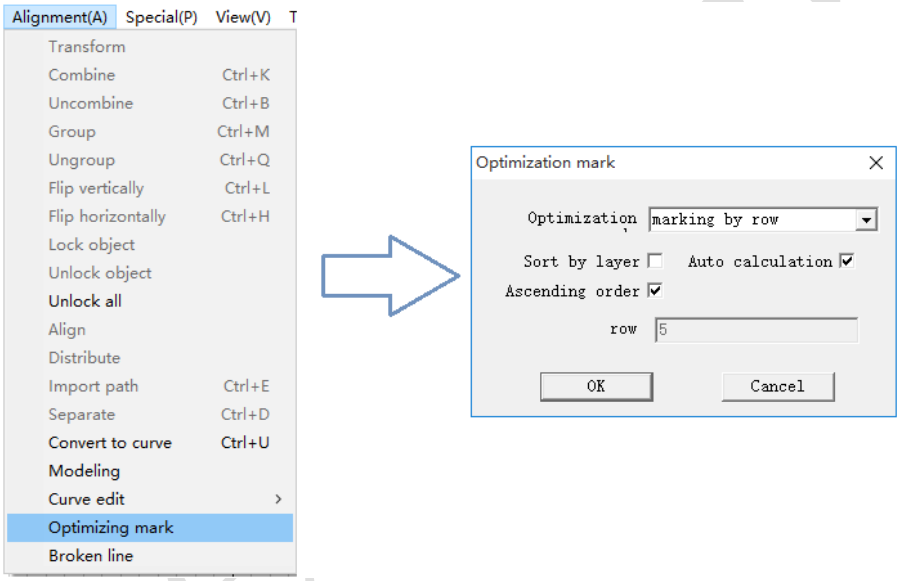
From pic4-15, the position of light is located in 560mm, from pic4-16, the position of light is located in 300mm. This phenomenon is due to the slow moving speed of the work piece and the rapid movement of the scanner.

At this point, it is necessary to change the 'XY axis speed' faster in the 'stepping motor settings', make the speed can match the speed of the scanner.

Chapter 5. FQA

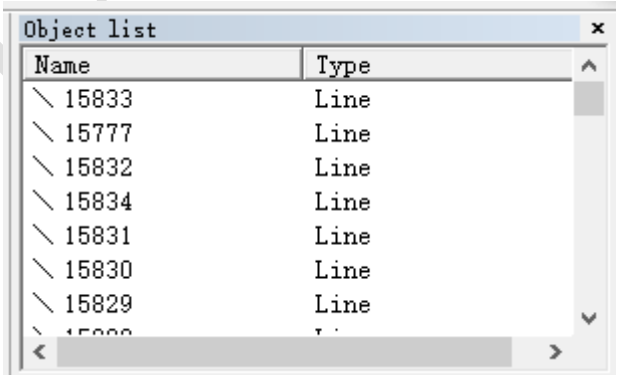
1.No light output when marking

After completion of image import and parameters adjustment, click mark, and no light output from laser. It can determine whether the laser is normal through the following methods:
Close online mark function, draw a rectangle box in the center of software drawing interface, click ‘mark’ button and mark.
If laser can output and marking, check whether the first marking object is within marking scope, it not, it can be adjust through the following methods:
1)select ‘optimizing mark’ function under ‘alignment’ menu bar, click ‘marking by row’, plus select ‘Auto calculation’. The interface is shown in pic5-1



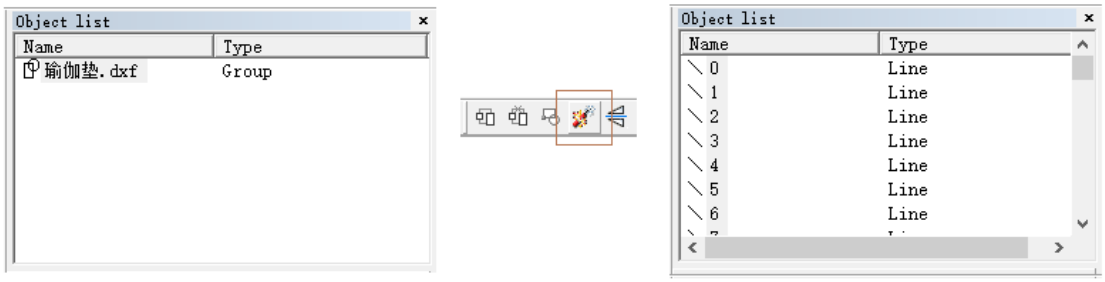
Pic 5-1

2)Click ‘OK’ button and finish optimization, reorder the object, sequence is shown in pic5-2



Pic 5-2

3)Click the first marking object and check whether it is within marking scope. If it is, then it can do mark.
4)If the marking object is group object, it can release group first, the interface is shown in pic5-3

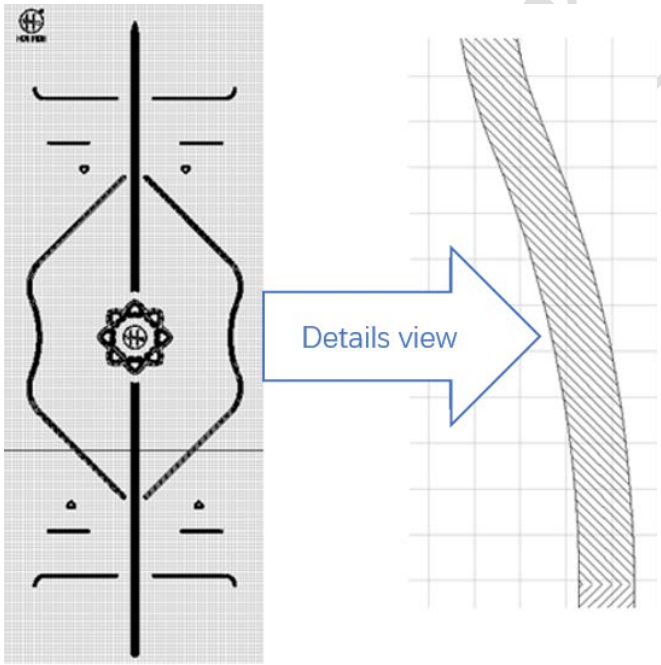


Pic 5-3

Then check the first marking object location, if it not meet request, then follow the above (1) - (3) procedure and modify the first marking object location, make it within marking scope.

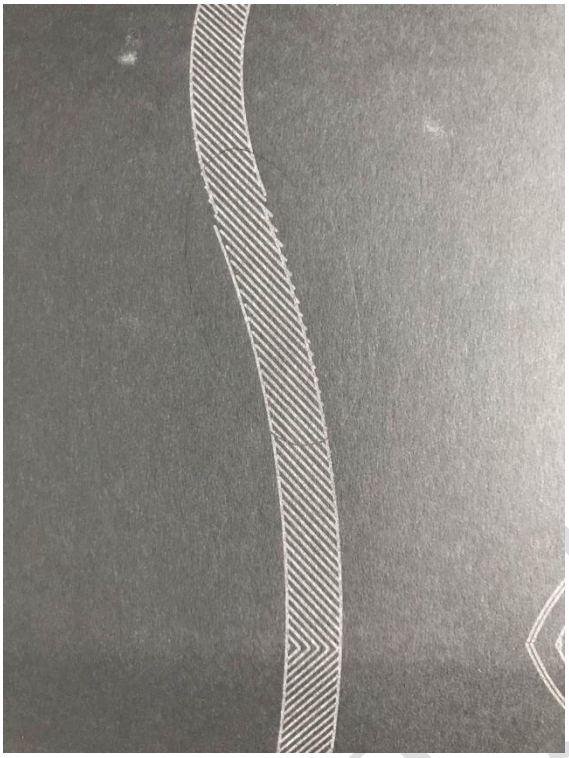
2.Misalignment of marking line

If there is long longitudinal line exist in the marking image, it is easy to appear the phenomenon of over travel and line dislocation in the marking process, please see pic5-4



Pic5-4

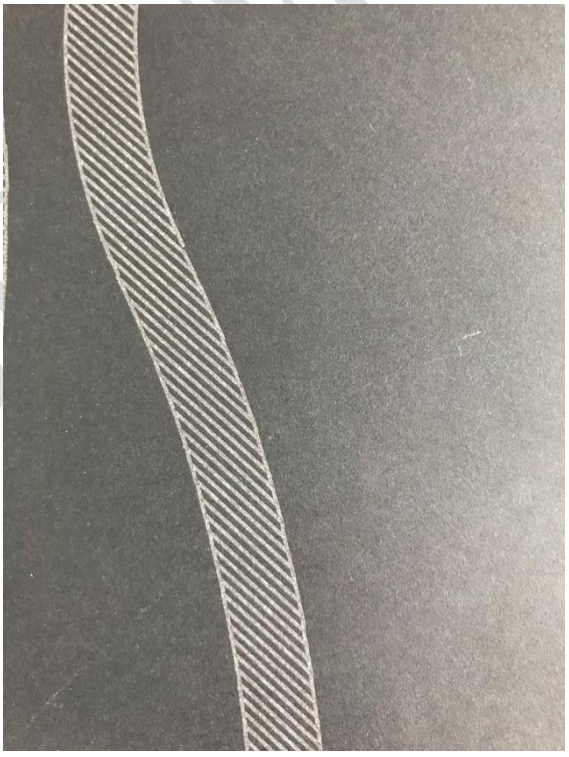
When the line is marked, it can see the obvious dislocation. Please see pic 5-5



Pic 5-5

The cause of line dislocation has 3 kinds

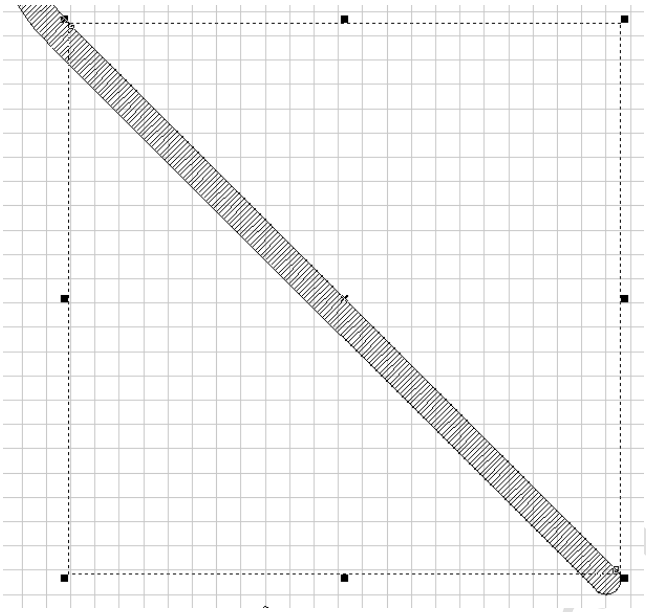
1)Break the long line into small sections through graphics software, reorder the sequence through 'optimizing mark' function and solve line dislocation phenomenon. The effect see pic 5-6



Pic 5-6

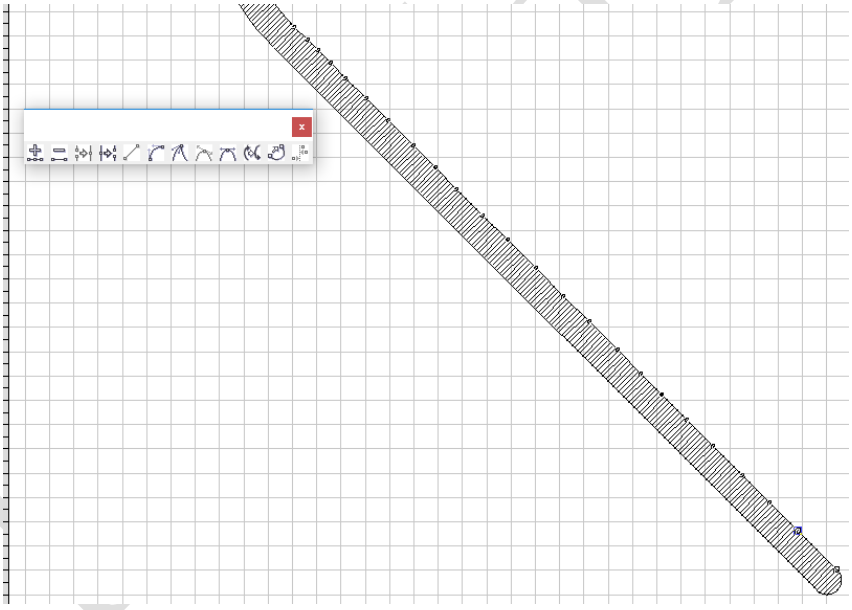
It can also use node editing function in LenMark to do node partition, the procedure is:

A. Select the long line that need to be edited, the interface is shown in pic5-7



Pic5-7

B. Click ‘node edition’ icon in the left hand side of software, double click line and select node. See 5-8



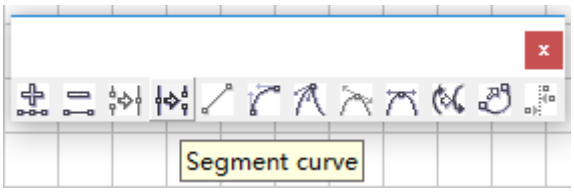
Pic5-8

It can also use ‘add node’ button to add node in the selected line. The interface is shown in pic5-9



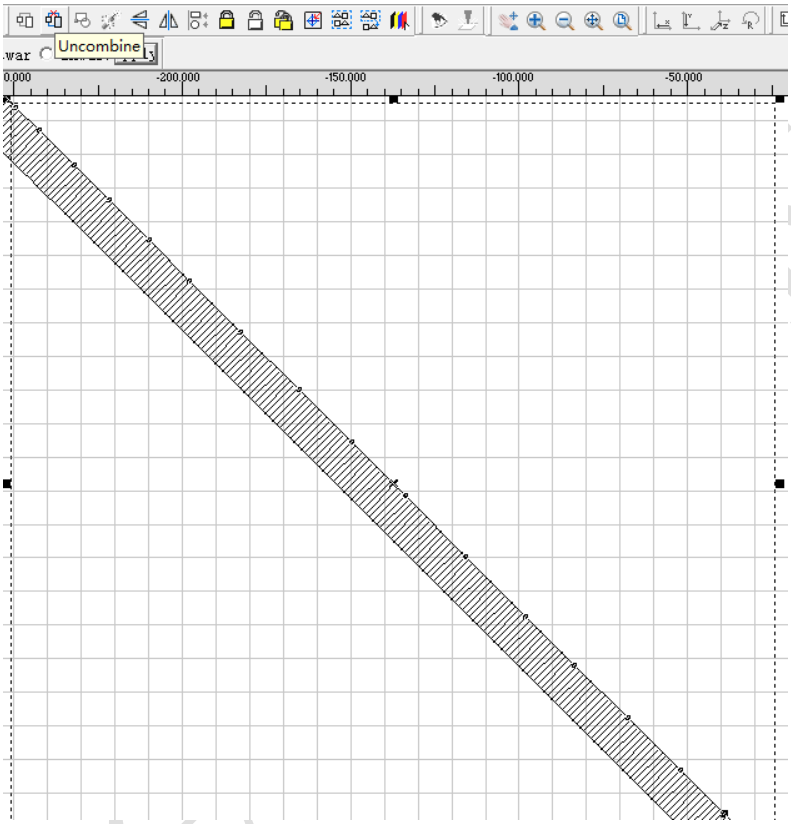
Pic 5-9

C. After selection, click ‘segment curve’ button and do segment. See pic 5-10



Pic5-10

Then click the ‘uncombine’ button in the above toolbar, then the long line can be divided into short lines. The interface is shown in pic5-11



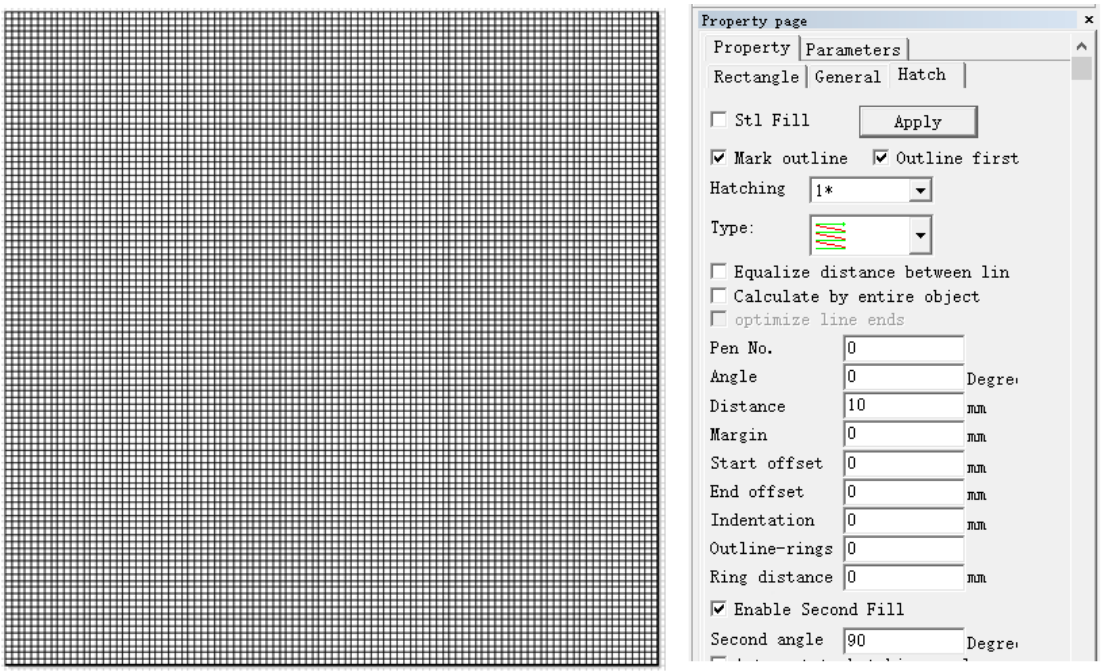
Pic 5-11

D. After all the long lines are divided into short lines by the above steps, Rerun the ‘optimizing mark’ then do mark.

2)Inaccurate library file

It can use the following method to determine whether is library file is standard.

A. Draw a full rectangle box in the software drawing interface, set filling space 10mm, checkbox ‘enable second fill’, remove ‘equalize distance between line’ selection, the interface is shown in pic5-12.



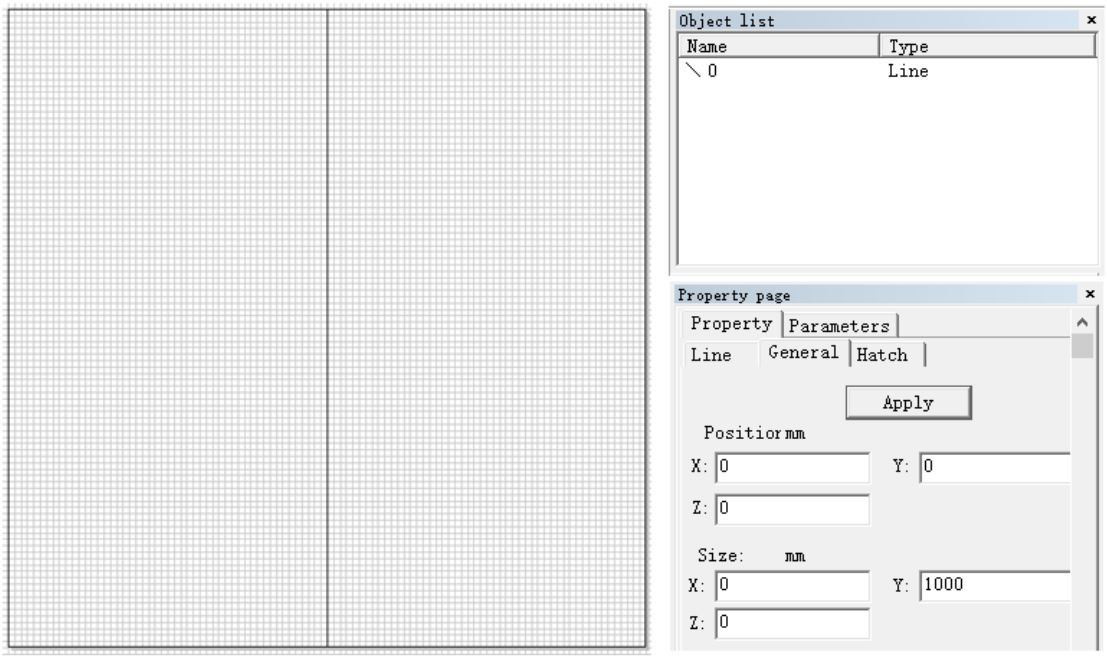
Pic 5-12

B. After parameters setting, click ‘mark’, and measure the length of marking rectangle box and gap, check whether it is standard.

3)The scanner and work table are not parallel

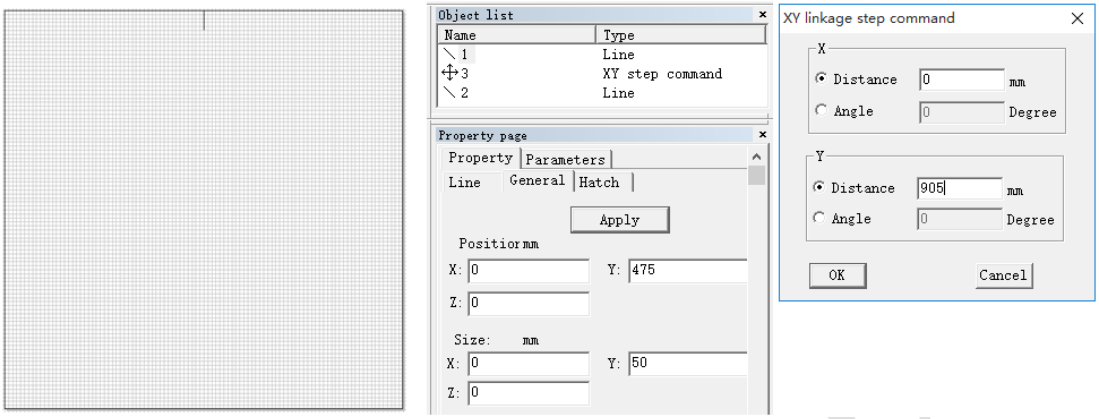
It can be measured by the following method. (The following sample marking field is 1000)

A. Draw a 1000mm vertical line in the drawing interface, static marking, the interface is shown in pic5-13



Pic 5-13

B. Draw two 50 mm vertical line, place them in top of the drawing interface, and insert XY linkage step command between the two lines. The interface is shown in pic5-14.



Pic 5-14

3.Bitmap DPI adjustment

When do bitmap marking, it need to do marking parameters under static mode, then use on line marking function.

When using unidirectional bitmap marking, only need to adjust proper DPI value. If parameter of DPI is too small, the marked line will appear as dots. The interface is shown in pic5-15



Pic5-15

If parameter of DPI is too large, the marked image will appear as color block. The interface is shown in pic5-16



Pic5-16

4.Bitmap bidirectional mark dislocation

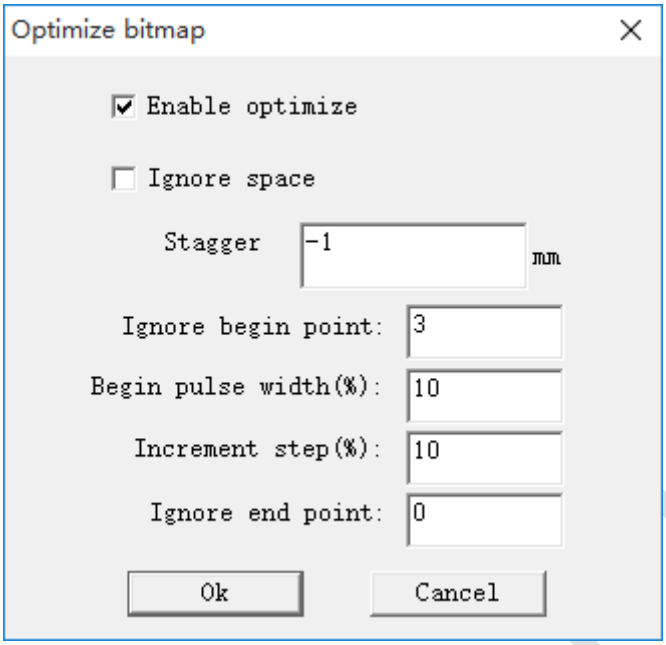
It is easy to dislocation when choosing the marking method for bidirectional snake carving, see pic5-17



Pic 5-17

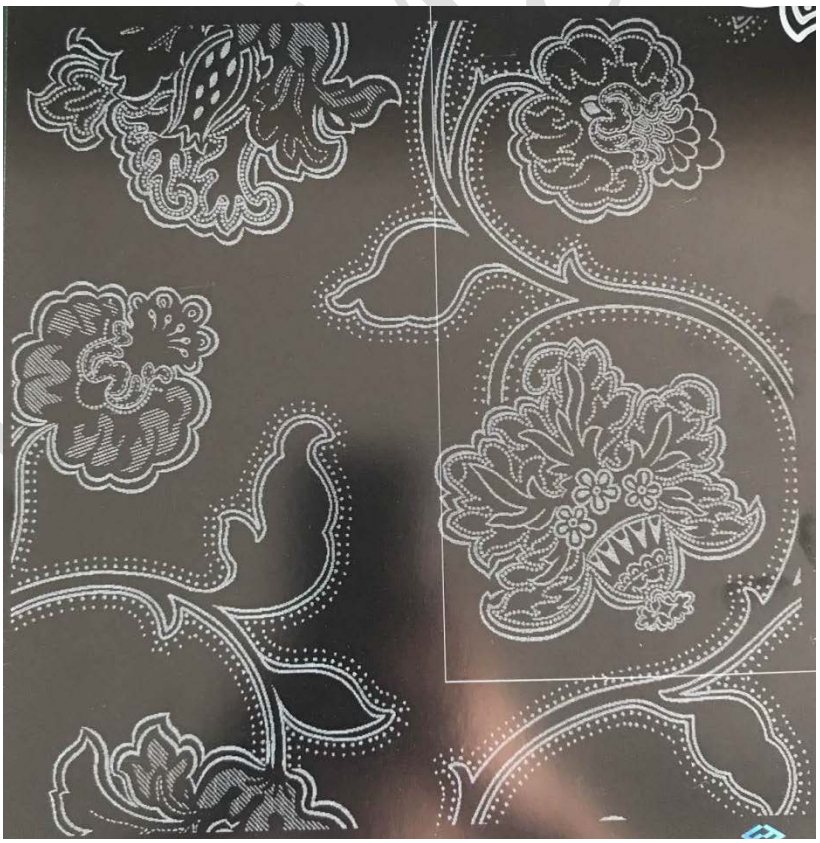
It can optimize the parameters through adjustment of ‘enable optimize’, the interface is shown in

pic5-18



Pic 5-18

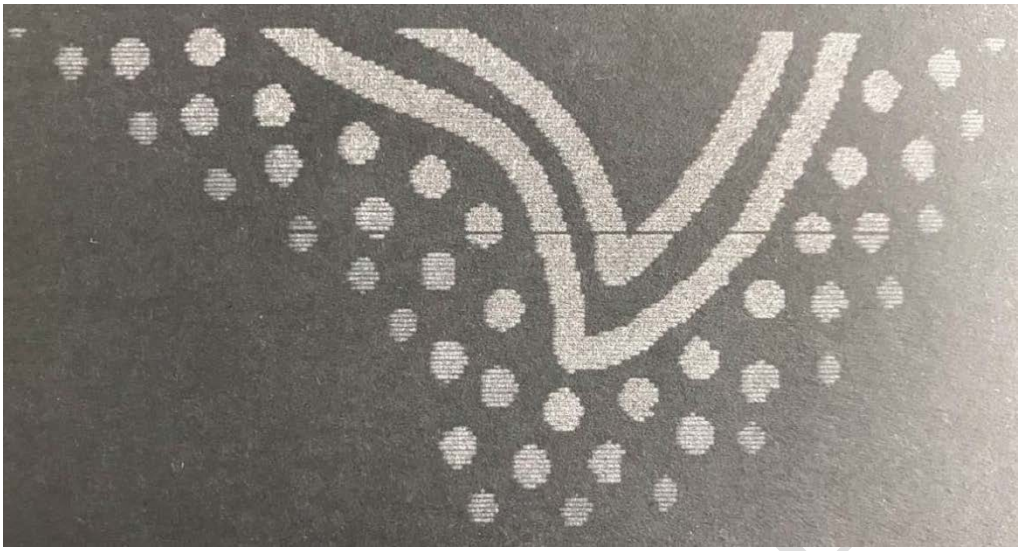
Optimize the dislocation through modification of ‘ignore begin point’ and ‘ignore end point’, it modified effect is shown in pic5-19



Pic 5-19

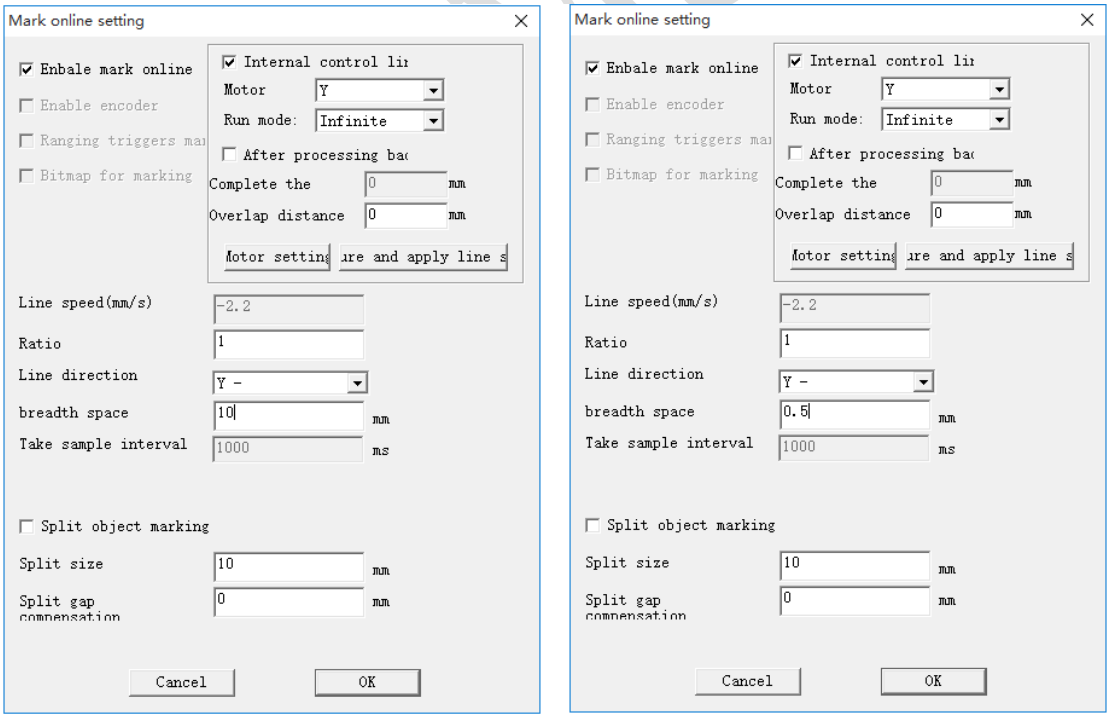
5.Bitmap stitching

During the bitmap stitching, there will be a gap at the stitching, see pic5-20



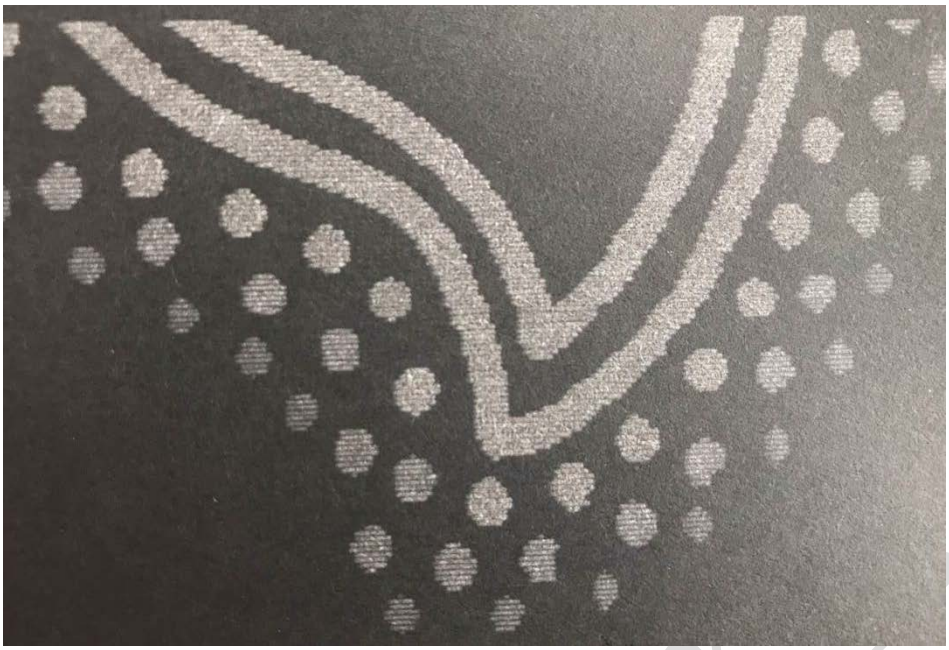
Pic 5-20

There is an obvious gap at the stitching, it can optimize ‘breadth space’ under ‘marking online setting’, the interface is shown in pic5-21



Pic 5-21

The adjust effect is in pic5-22



Pic 5-22

The clearance between the stitching is improved obviously

LenMar