LBC20&40 软件使用说明文档版本更新记录

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2024-11-19	V1.0.0	LBC20&40 软件使用说明书英文版	

LBC20 & 40 software instruction manual Engl...

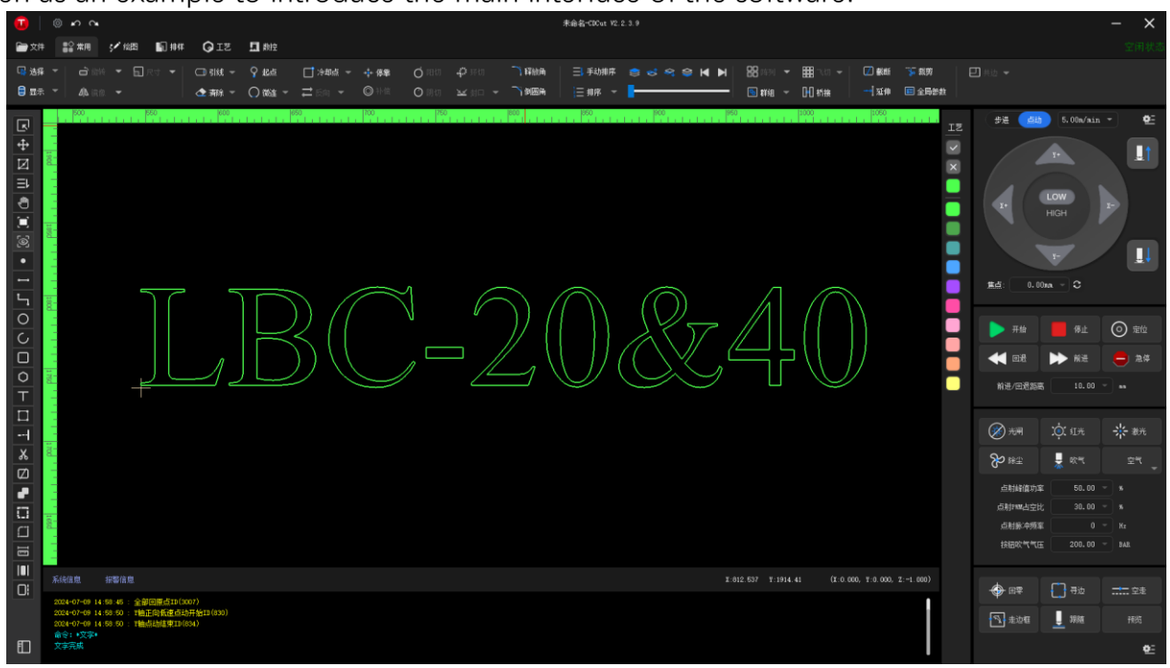
1 Introduction

Jinzhou CNC laser plane cutting control system, referred to as LBC20 & 40, is suitable for high-power cutting of XXW (power) and below lasers.

2 Software interface layout

Through this part of the content, you can quickly get familiar with the main interface of LBC20 & 40 software.

Lcb20-40 supports horizontal screen and vertical screen adaptive switching, this article takes horizontal screen as an example to introduce the main interface of the software.



Including the following parts, status bar, function page area, function menu bar, Dial Bar, console.

2.1 Status Bar

2.2 Function Page Area

2.3 Function Menu Bar

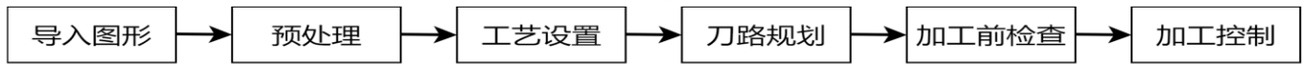
2.4 Dial Bar

2.5 Console

3 Quick Start

3.1 processing flow

Through this part of the content, you can quickly become familiar with the LBC20 & 40 control machine tool for laser cutting of plates. The plate processing flow chart is shown in the following figure.



4 Graphical operations

4.1 graphics rendering

In the drawing area, you can use the relevant drawing tools and operations to complete the drawing of the graph and then use it for processing.

See the following table for details of drawing tools.

Tools	Name	Tools	Name
	Single point		Runway Rectangle
	Line segment		Multi-line segment
	Circularity		Standard Polygon

Ellipse

Three-point arc

Scanning arc

Rectangle

Rounded Rectangle

STANDARD STAR

Mouse drawing

Dardized parts and components

Written words

Select the required drawing tool and complete the corresponding drawing in the drawing area. If you need to exit the current drawing during drawing, press ESC.

During the drawing process, you can use two methods to determine the position information of the relevant key points, click the mouse arrow in the drawing area, or enter the position coordinate information in the information bar below.

If you need to adjust the finished drawing later, select the object and modify it in the following ways.

(1) In the common menu bar, click Size, modify the size of the graph;

(2) In the shortcut bar on the left, click Edit Node, drag the key nodes of the graph to modify and edit.

4.1.1 Single Point

Draws a single object consisting of one point.

Operation steps:

1. Select the following methods to invoke a single-point plot:

(1) In the shortcut bar, click Single point.

(2) In the menu bar, click Drawing →Single point.

2. Use the mouse to select the specified location in the drawing area, click the left mouse button to draw a single point graph.

4.1.2 Line Segment

Draws a single object consisting of a line.

Operation steps:

1. Select the following methods to call a straight line drawing:

(1) In the shortcut bar, click.

(2) In the menu bar, click Drawing →Straight line.

2. Use the mouse to specify the location in the drawing area, move the mouse, select a specific location, click the left mouse button to determine the starting point of the straight line.

3. According to the auxiliary line,

4. Optional:

4.1.3 Circle

Draw a standard full circle by determining the center point and a point on the circle.

Operation steps:
1. Select the following method to call the circle:
    (1) In the shortcut bar, click
    (2) In the menu bar, click
2. Determine the center of the circle;
3. Identify a point on the circle.

4.1.4 Ellipse

Draw a standard ellipse through the ellipse geometry location Center, major axis, and minor axis.
Operation steps:
1. Select the following method to call the ellipse:
    (1) In the shortcut bar, click Whole Circle → New Ellipse.
    (2) In the menu bar, click Drawing → Whole Circle → New Ellipse.
2. Determine the center of the geometric position of the ellipse;
3. Determine the first axis;
4. Determine the second axis;
Optional: Draw a horizontal or vertical ellipse by holding down shift while determining the axis.

4.1.5 Three-point arc

Through the three points on the arc, determine an arc.
Operation steps:
1. Select the following method to call a three-point arc:
    (1) In the shortcut bar, click Arc → Three-point Arc.
    (2) In the menu bar, click Drawing → Arc → Three-point Arc.
2. Determine three points continuously to form an arc;
Note: The selected three points are not in the same line, and any two points do not overlap. Three points must form a triangle.

4.1.6 Scanning arc

Through the three points on the arc, determine an arc.
Operation steps:
1. Select the following method to call a three-point arc:
    (1) In the shortcut toolbar, click Arc → Scanning Arc.
    (2) In the menu bar, click Drawing → Arc → Scanning Arc.
2. Determine the center of the circle corresponding to the arc;
3. Determine the starting point of the arc;
4. Determine the end point of the arc, the starting point and the end point are on the same circle.

4.1.7 Rectangle

A rectangle is determined by determining two points of the diagonal of the rectangle.

Operation steps:

1. Select the following method to call the rectangle:
   (1) In the shortcut bar, click Rectangle → Rectangle.
   (2) In the menu bar, click Rectangle → Rectangle.
2. Determine the first diagonal point of the rectangle;
3. Determine another point of the diagonal of the rectangle and complete the drawing of the rectangle;

4.1.8 Rounded Rectangle

Draws a rounded rectangle by determining the radius of a rectangle and then rounded corners.

Operation steps:

1. Select the following method to call the rounded rectangle:
   (1) In the shortcut bar, click Rectangle → Rounded Rectangle.
   (2) In the menu bar, click Rectangle → Rounded Rectangle.
2. Determine the first diagonal point of the rectangle;
3. Determine another point of the diagonal of the rectangle, and determine the rectangle;
4. Determine the corner radius of the rounded rectangle and determine the rounded rectangle.

4.1.9 Runway Rectangle

Draw a runway rectangle by determining the two diagonals connecting the arc and the line in the runway rectangle.

Operation steps:

1. Select the following method to call the runway rectangle:
   (1) In the shortcut bar, click Rectangle → Runway Rectangle.
   (2) In the menu bar, click Rectangle → Runway Rectangle.
2. Determine the first diagonal point of the runway rectangle;
3. Determine another point of the diagonal of the runway rectangle, and determine the rectangle;
4. Determine the corner radius of the rounded rectangle and determine the rounded rectangle.

4.1.10 Multi-segment

Also known as polyline segments, that is, a series of straight lines and arcs constitute a single graph, closed or not closed two states, the system supports straight lines and arcs switch drawing.

Operation steps:

1. Select the following method to call the multi-line segment:
   (1) On the shortcut bar, click Polyline.
   (2) In the menu bar, click Drawing → Multi-Line Segment.
2. Click on the left side of the mouse to select two points to form a straight line segment;
3. Optional: Right-click to bring up the shortcut menu bar and click on straight line or arc to switch between the two modes. The arc you draw is tangent to the previous line or arc you draw.
4. Click the left mouse button to select the next point;
5. The right mouse button to bring up the shortcut menu bar.
   (1) Click OK, the current point is the end point of the polyline segment, and the drawn polyline

segment is a non-closed graph.

(2) Click Close to connect the current point and the starting point with a straight line segment, and the drawn multi-line segment is a closed figure.

(3) Click Cancel to cancel the operation of the previously selected point and exit drawing polyline segments.

In the process of drawing multi-line segments, the drawing of each line segment is irreversible. If not satisfied, you can only exit the current operation and redraw.

4.1.11 Standard Polygon

Draw a standard polygon by determining the geometric center of the standard polygon and any vertex of the polygon.

Operation steps:

1. Select the following method to call the standard polygon:
   (1) In the shortcut bar, click Polygon → Standard Polygon.
   (2) In the menu bar, click Polygon → Standard Polygon.
2. Enter the number of sides of the standard polygon in the information column, ranging from 3 to 100;
3. Determine the geometric center of the standard polygon.
4. Determine the position of any vertex of the standard polygon.

4.1.11 Standard star

Draw a standard star by determining the geometric center of the standard star, and any outer and inner vertices of the standard star.

Operation steps:

1. Select the following method to call the standard star:
   (1) In the shortcut bar, click Polygon → Standard Star.
   (2) In the menu bar, click Polygon → Standard Star.
2. Enter the number of vertices of the standard star in the information column, ranging from 3 to 100;
3. Determine the geometric center of the standard star.
4. Determine the position of any outer vertex of the standard star.
5. Determine the position of any vertex within the standard star.

4.1.12 Mouse Drawing

Draw arbitrary continuous and discontinuous trajectories by moving the mouse.

Operation steps:

1. Click Menu → Drawing → Mouse Drawing to enter the mouse drawing mode.
2. Press the left mouse button, move the mouse, draw the trajectory.
3. Release the left mouse button to end the current continuously drawn graph, press the left mouse button again to start drawing a new, discontinuous track with the previous one.
4. Right mouse button to bring up the shortcut menu bar.

(1) Click to finish, the current point is the end point of the mouse drawing graph, and the drawing graph is a non-closed graph.

(2) Click Close to connect the current point and the starting point with a straight line segment, and the drawn graph is a closed graph.

(3) Click Cancel to cancel all graphics drawn before and exit the mouse drawing.

4.1.13 Standard parts

The system provides templates for several commonly used standard parts, and a standard part can be drawn directly by modifying the parameters of these parts.

Operation steps:

1. Select the following methods to call standard parts:

(1) On the shortcut bar, click Standard.

(2) In the menu bar, click Drawing → Standard Parts..

2. Select the required part type in the following dialog box. Currently, the system provides 10 standard parts.

3. Enter the corresponding parameters in the part parameters, and the relevant preview will appear at the bottom right. If the current parameter combination cannot form a reasonable standard part, the prompt "Invalid parameters, please enter the correct parameters" will be prompted.

4. Under the premise that the parameters are valid, click the confirmation button, and the corresponding standard parts will appear near the mouse. Select the required position, click the left mouse button, place the drawn graph, and complete the drawing of the standard parts.

4.1.14 Text

Can draw text, more for advertising plate.

Operation steps:

1. Select the following ways to call text:

(1) In the shortcut toolbar, click Text to open the Add Text dialog box.

(2) In the menu bar, open the Drawing → Text, and open the Add Text dialog box.

2. Enter the relevant parameters of the font in the dialog box.

(1) Font: font text format;

(2) Text: text content;

(3) Height: font graphic height;

(4) Direct curve conversion: whether to convert the font graphic group directly into a regular curve.

3. Click to confirm, move the mouse to the specified location, click the left mouse button to complete the addition of fonts at the specified location.

4.2 Selection and view operations

The selection and view functions can only change the graphics display effect, and will not change the actual size and coordinate position of the graphics.

The system provides a wealth of graphics selection, mainly divided into automatic selection and manual selection of two ways.

4.2.1 Manually selecting objects

Manual selection is to select any object yourself.

Operation steps:

1. In the shortcut bar on the left, click the selection status switch to call the manual selection function. Under normal circumstances, the software is in this state. If it is in other operation modes, it will switch to the selected state after exiting.

2. Select objects in several ways:

(1) Click the left mouse button to select a single graphic object.

(2) Hold down and drag the left mouse button to select the object from the upper left to the lower right box and select all the graphics contained in the box.

(3) Hold down and drag the left mouse button to select objects from the bottom right to the top left box, and select all graphics that intersect with the box and are contained in the box.

(4) Hold down the shift key and select multiple objects in turn by any method from (1) to (3).

4.2.2 Automatic object selection

A class of graphic objects with the same properties is automatically selected by different properties of the graphic.

1. Select the following methods to automatically select relevant content:

(1) In the shortcut bar, click Type Selection to automatically select a policy.

(2) In the menu bar, open Common → Select, and the sub-menu bar on the right will pop up.

2. Basic selection:

(1) Select All: Select all graphics.

(2) Reverse Selection: The selected graphics are selected, and the currently selected graphics are not selected.

(3) Deselect: None is selected.

3. Fast dragging and copying are prohibited. After checking, the graphics cannot be dragged and copied with the mouse.

4. Select by main features:

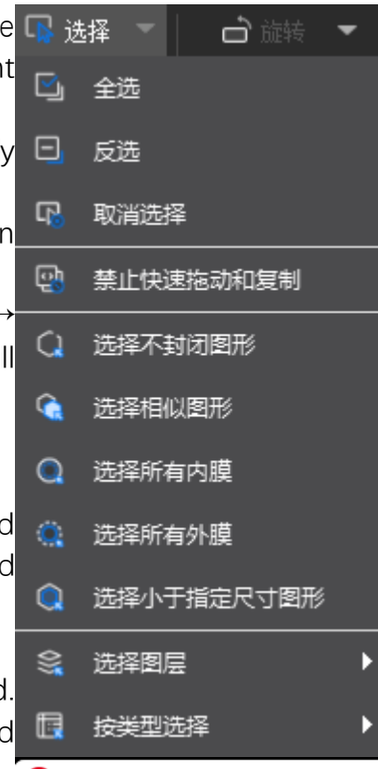
(1) Select unclosed graphics: Select unclosed graphics objects in all current tracks;

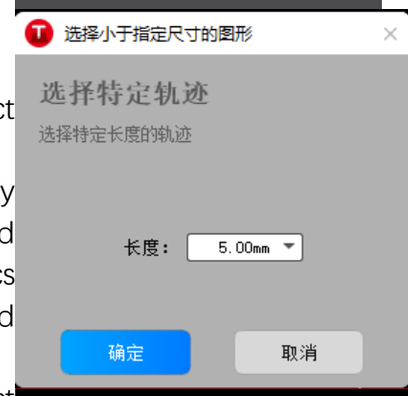
(2) Select similar graphics: After manually selecting a graphics, click the Select button, and the system will automatically select the graphics with the same type and size as the selected graphics.

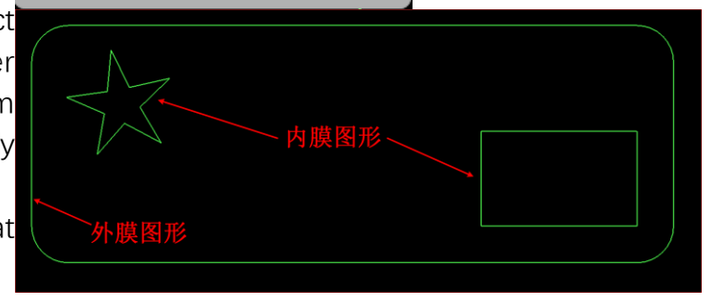
(3) Select all inner membranes: Select according to the nested relationship. The inner membranes are included graphics. The system will calculate in real time and automatically select all current inner membrane graphics.

(4) Select all outer models: graphics that include other graphics in nested relationships.

(5) Select a graphic smaller than the specified size: open the dialog box (right picture), set a length threshold, and the system will automatically select all tracks with a length smaller than the threshold.







5. Select the layer. Select the corresponding layer under the sub-menu, and the system will automatically select the graphics in this layer.

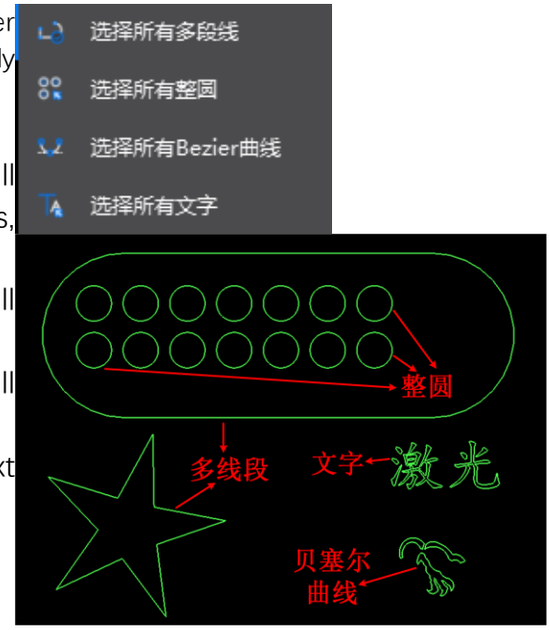
6. Select by type:

(1) Select all multi-line segments: Select all graphs composed of multiple line segments, including closed and non-closed cases.

(2) Select all whole circles: Select all graphics composed of a whole closed arc.

(3) Select All Bezier Curves: Select all graphs composed of Bezier curves.

(4) Select All Text: Select all the current text that is not transformed into a curve.



4.2.3 Basic operation

After selecting a graph, the common basic operations and corresponding shortcut keys include the following.

- Cut (Ctrl + X): Cut the currently selected graphic.
- Copy (Ctrl + C): Copy the currently selected graphic.
- Paste (Ctrl + V): Pastes the currently selected graphic
- Delete: deletes the currently selected track.
- Deselect: Can be selected inDeselectYou can also click on the blank space in the drawing area.
- Prohibit Fast Dragging and Copying: After checking, you are not allowed to use the mouse to quickly drag, copy, or rotate graphics to avoid misalignment due to misoperation.
- Undo (Ctrl + Z): undoes the current operation and returns to the previous state.
- Fallback (Ctrl + Y): Fallback to the previously undone action.

4.2.4 Pan View

Reposition the graphic in the window to view different parts of the current graphic.

Operation steps:

Select any of the following ways to pan the view:

1. Hold down the mouse wheel and drag to the target location.
2. Call The View translation function:

(1) In the shortcut menu bar, click the drag icon.

(2) Select a reference point, hold down the left mouse button, drag to the target position and release the mouse.

(3) Click the selection State switch in the shortcut menu bar, right-click to cancel the drag mode in the right-click menu bar, or press ESC to exit the View translation.

4.2.5 Real-time Zoom

Zoom in and out of the view in real time to change the size of real-world areas and graphics, and draw and view graphics more accurately and in detail.

Operation steps:

Hold down the mouse wheel, scroll up to zoom in, scroll down to zoom out.

4.2.6 View adaptation

Specify a specific area or a specific graphic to display all in the window in an adaptive size.

The system provides a variety of adaptive methods.

(1) View All (F3): Automatically adapt to a view centered on all current tracks.

(2) Machine Range (F4): Automatically adapts to a view centered on the current machine range.

(3) Adapt selection: Automatically adapt to the view centered on the currently selected track.

Operation steps:

View adaptation is performed by selecting either of the following two ways.

(1) Click the right mouse button, select the adaptive sub-menu bar in the menu bar, and click the required adaptive method.

(2) Click View Adaptive in the shortcut bar on the left.

4.2.7 Track display and setting

Use either of the following two methods to pop up the trace display sub-menu bar to set the relevant settings for the trace display.

(1) Click menu bar → Common → Display.

(2) Click Display Content in the shortcut bar on the left.

The display sub-menu and the specific related explanation are as follows.

(1) Display Serial Number: White Arabic numerals, indicating the cutting order.

(2) Display path Start point: light yellow dot display, indicating the cutting start point.

(3) Display path direction: White Arrow display, indicating the cutting direction.

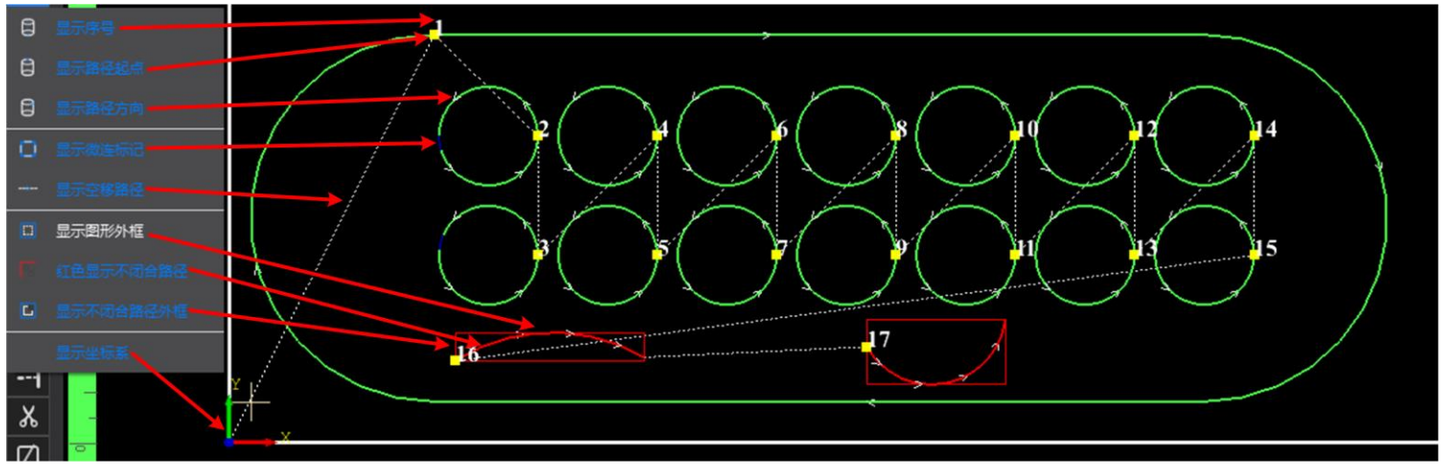
(4) Display micro-connected mark: Blue Line segment display, indicating micro-connected part.

(5) Display graphic frame: Display the outer envelope rectangular frame of all graphics.

(6) Red display of unclosed paths: use red to display unclosed paths to strengthen the distinction.

(7) display does not close the path border: does not close the path display border, strengthen the distinction.

(8) Display coordinate system: Display the coordinate system at the origin (0,0) of the screen in the lower left corner.



4.3 Editing Graphics

4.3.1 Graphics translation

Through two methods, the translation of graphics is completed.

1. Drag.

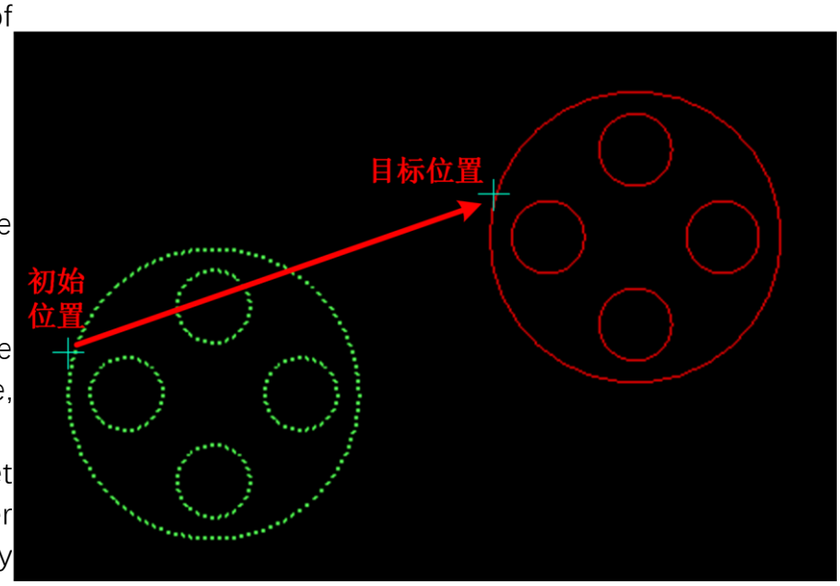
Operation steps:

(1) Select the trajectory;

(2) Press the left mouse button at the appropriate position near the trajectory;

(3) Complete dragging, optional:

- Drag the mouse, move to the appropriate position after release, complete the drag.
- Enter the coordinates of the target point position in the lower information bar, press the Enter key on the keyboard, and use the current position of the mouse arrow as the reference point to complete the graphic translation.



Left mouse button drag

2. Fine-tuning.

Operation steps:

(1) Select the trajectory;

(2) Make sure that the fine-tuning state button in the shortcut bar is selected, as shown in the right figure. If it is not selected, click the left button to select.

(3) Right-click the fine-tuning status

button to pop up the setting fine-tuning dialog box, set the fine-tuning distance, and click OK to complete the setting.

(4) Press the arrow keys on the keyboard to complete the fine adjustment of the corresponding direction.

Set Fine Tuning

4.3.2 Rotation

The system provides two rotation methods, specified angle rotation and interactive rotation.

4.3.2.1 Specify the angle rotation.

Operation steps:

1. Select the following method to invoke rotation:

(1) In the menu bar, click Common → Rotate to expand the sub-menu bar.

(2) In the menu bar, click Drawing → Rotate to expand the sub-menu bar.

2. Select the specified track.

3. Click the corresponding option to complete the rotation of the specified angle. The system provides 3 methods.

- Rotate 90 degrees clockwise.
- Rotate 90 degrees counterclockwise.
- Rotate 180 degrees.

4.3.2.2 Any angle rotation.

Operation steps:

1. Select the specified track.

2. Select the following method to invoke rotation:

(1) In the menu bar, click Common → Rotate → Interactive Rotate.

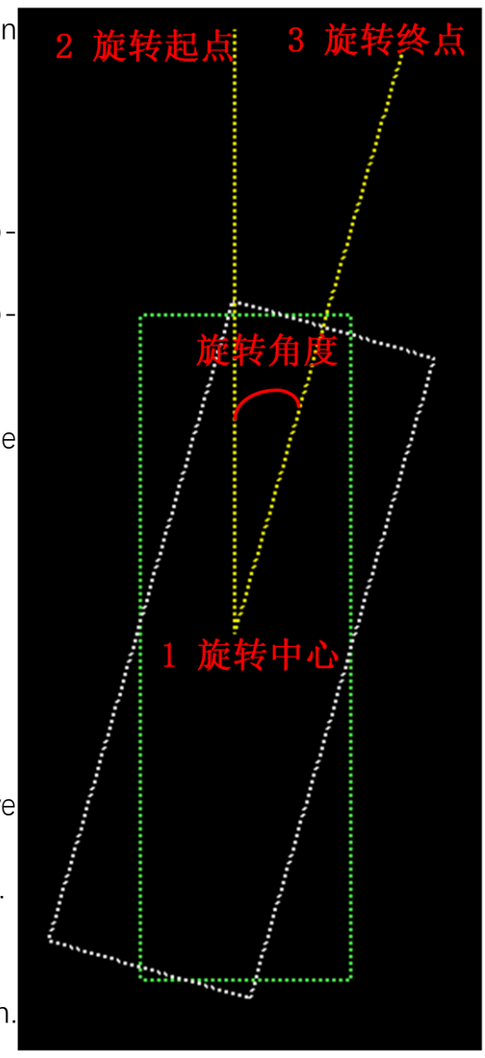
(2) In the menu bar, click Draw → Rotate → Interactive Rotate.

3. Specify the center of rotation.

4. Specify the rotation start point.

5. Specify the rotation end point to complete the interactive rotation.

See the right figure for the whole process.



4.3.3 Scaling

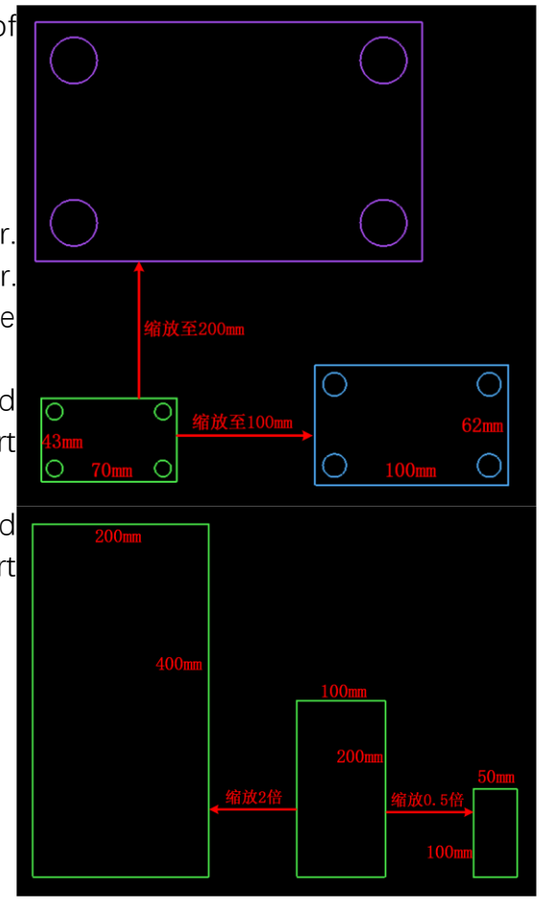
The system provides three scaling methods, fixed scale or size scaling, interactive scaling and custom.

4.3.3.1 Fixed Scale.

The zoom center of fixed-scale scaling is the lower left corner of the smallest outer envelope rectangle of the graph.

Operation steps:

1. Select the specified track.
2. Select the following method to invoke fixed scale scaling:
   (1) menu bar → common → size, expand the sub-menu bar.
   (2) Menu bar → Drawing → Size, expand the sub-menu bar.
3. Click the corresponding option to complete the scaling of the specified scale. The system provides the following methods.
   - Zoom 100mm: The longest direction in the length and width of the graph is zoomed to 100mm, and the short direction is scaled equally.
   - Scale 200mm: The longest direction in the length and width of the graph is scaled to 200mm, and the short direction is scaled equally.
   - Zoom 0.5: Shrinks the drawing to half its original size.
   - Zoom 2X: The graph is magnified 2x.
   - Zoom 4x: The graph is magnified 4x.
   - Zoom 8x: The graph is magnified 8x.
   - Zoom 10x: The graph is magnified 10x.

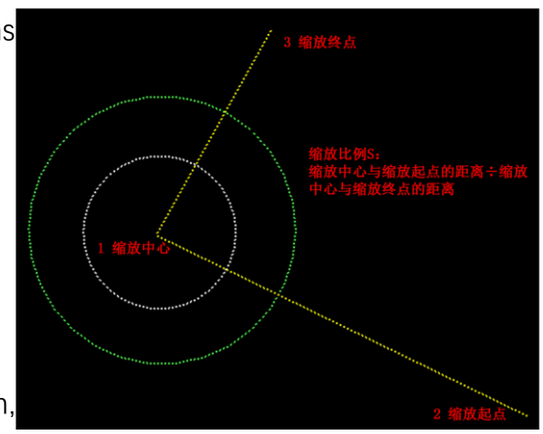


4.3.3.2 Interactive Zoom

Interactive zooming operates in much the same way as interactive rotation.

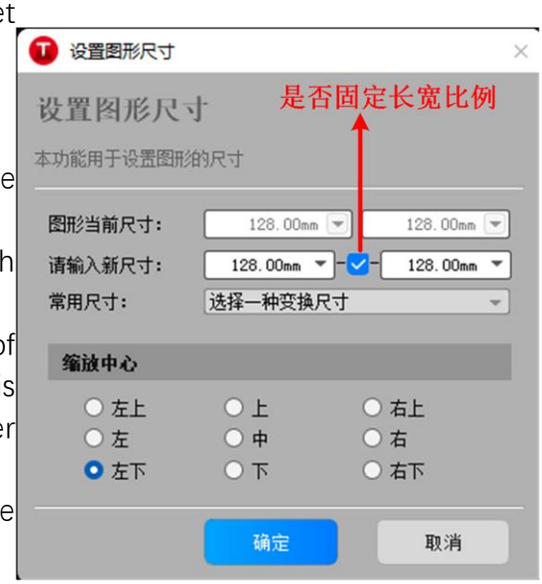
Operation steps:

1. Select the specified track.
2. Select the following method to invoke Interactive Zoom:
   (1) Menu bar → Common → Size → Interactive Zoom.
   (2) Menu bar → Drawing → Size → Interactive Zoom.
3. Specify the zoom center.
4. Specify the zoom start point.
5. Specify the zoom end point to complete the interactive zoom, the whole process is shown in the right figure.



4.3.3.3 Setting dimensions

Customize the zoom center, scale, and other parameters to reset the size of the trajectory.



Operation steps:

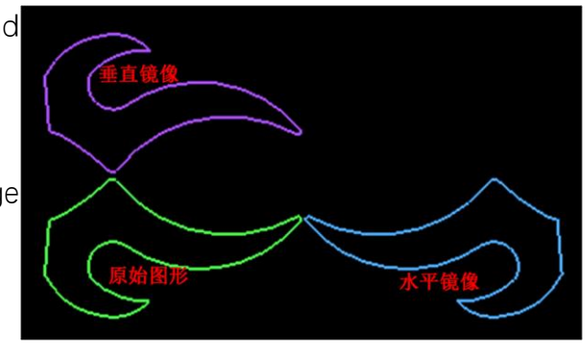
1. Select the specified track.
2. Select the following methods to call the Set Graphic Size dialog box and set parameters:
   - Graph Current Size: the current size of the graph, which cannot be modified.
   - Please enter a new size: Enter the length and width of the size to be scaled. The selection box in the middle is whether to fix the length and width ratio. After unchecking, you can set the length and width at will.
   - Common Size: Concentrates common size changes, the same as fixed scale.
   - Zoom Center: The zoom center of the nine orientations.
3. Click the OK button to complete the size setting.

4.3.4 Mirroring

The system provides two mirroring methods, fixed mode mirroring and interactive mirroring.

4.3.4.1 Fixed mode mirror

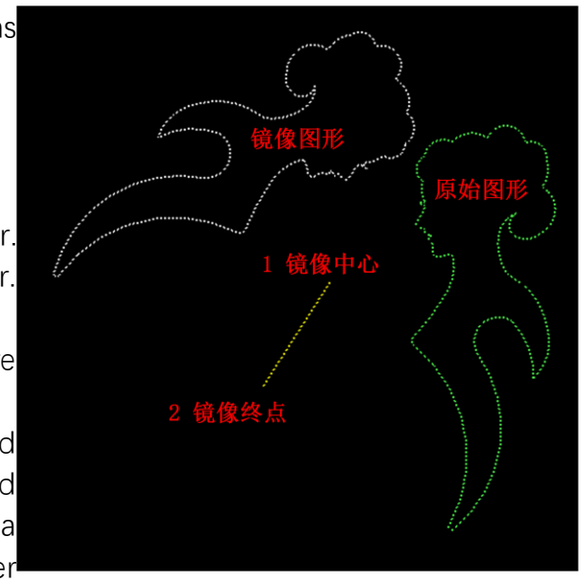
There are two kinds of fixed mirror, horizontal mirror and vertical mirror.



Operation steps:

1. Select the specified track.
2. Select the following methods to call the fixed image method:
   (1) menu bar → common → Mirror.
   (2) Menu bar → Drawing → Mirror.
3. Select the mirroring method to complete the fixed mirroring, as shown in the right figure.

4.3.4.2 Interactive Mirroring



Interactive mirroring operates in much the same way as interactive zooming.

Operation steps:

1. Select the specified track.
2. Select the following method to call the interactive image:
   (1) menu bar → common → Mirror → interactive mirror.
   (2) Menu bar → Drawing → Mirror → Interactive Mirror.
3. Specify The Mirror Center.
4. Specify the mirror end point to complete the interactive mirror. See the right figure for the whole process.

In the process of interactive mirroring, only two points need to be determined, but in this process, it can also be understood that synchronization rotates the track of the mirror image to a certain extent, and the center of the mirror image is also the center of rotation.

4.3.5 Alignment

Change the relative position between the figures to align them.

Operation steps:

(1) Select the trajectory;

(2) Click the automatic alignment in the shortcut bar on the left, select the alignment method under the sub-menu bar, and then the system will automatically perform the alignment.

The system provides the following alignment methods.

Left alignment, right redemption, top alignment, bottom alignment, horizontal center, vertical Center, center alignment.

4.3.6 Groups

Combine multiple graphs or even multiple groups together to form a group. The entire group will be treated as a whole. The order within the group, the positional relationship between the graphs, and the layers will be fixed. The internal will not be affected during sorting, dragging and other operations.

Operation steps:

1. Select multiple tracks.
2. Select the following method to set the selected track as a group:
   (1) Menu bar → Common → Group sub-menu bar → Group.
   (2) Menu Bar → Drawing → Group Sub-Menu Bar → Group.
   (3) Menu bar → Process → Group sub-menu bar → Group.

The system allows any graphics to be grouped and operated as a whole. However, in order to ensure the normal cutting work, it is recommended that users use the grouping function reasonably and try to group only the graphics that meet the logical conditions of "parts.

4.3.7 Breathe Group

4.3.7.1 Dispersion of Selected Groups

Break up the selected group.

Operation steps:

1. Select multiple tracks.
2. Select the following method to break up the selected group track:
   (1) menu bar → common → group sub-menu bar → break up the selected group.
   (2) menu bar → drawing → group sub-menu bar → break up the selected group.
   (3) menu bar → process → group sub-menu bar → break up the selected group.
3. Complete the break-up.

4.3.7.2 To break up all groups

All groups in the current track are scattered.

Operation steps:

1. Select the following method to break up the selected group track:
   (1) menu bar → common → group sub-menu bar → break up all groups.
   (2) menu bar → drawing → group sub-menu bar → break up all groups.
   (3) menu bar → process → group sub-menu bar → break up all groups.
2. Complete the break-up.

4.3.7 Merge phase connection

Combines multiple path objects into a single path object to connect disconnected drawings.

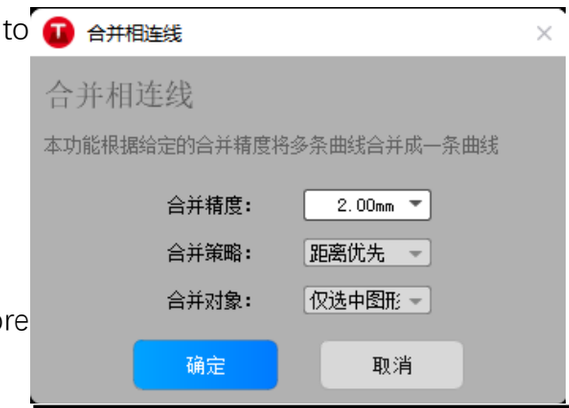
The merged object must meet the following conditions:

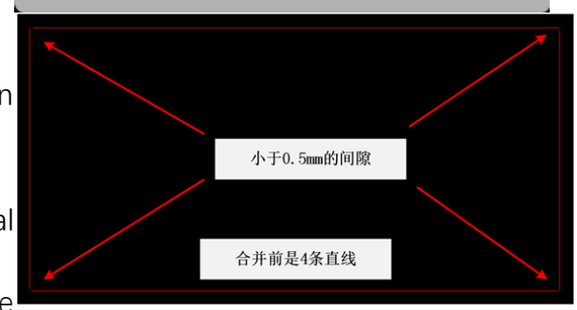
- Non-closed figure.
- Non-point.
- Non-literal.
- Non-group.

It is recommended to turn on feature point snapping before using merge.

Operation steps:

1. Select multiple objects that meet the merge.
2. Select menu bar → drawing → merge phase line to open the merge phase line dialog box.
3. Set the relevant parameters.
   - Consolidation Precision: The maximum interval between objects to be consolidated.
   - Merge strategy: When there are two or more endpoints meeting the merge precision in the same merge position, the objects with the closest distance,

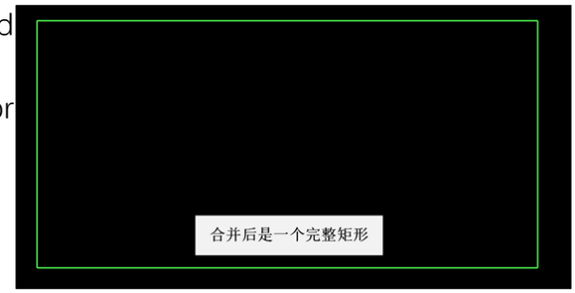




the longest length or the same direction are merged preferentially.

- Merge Objects: Only the currently selected drawing or all current drawings.

4. Click OK to complete the merge connection.



4.3.8 Exploding

Coordination**Merge phase line**The use of the function can correct the error of graphic drawing, achieve the purpose of repairing the scissors road and ensure the processing quality.

According to the explosion of different objects, can be divided:

- When the object is a drawing group, exploding is equivalent to dissolving the assembly.
- When the object is text, exploding is equivalent to text-to-graphics.

Operation steps:

1. Select the object to be operated.

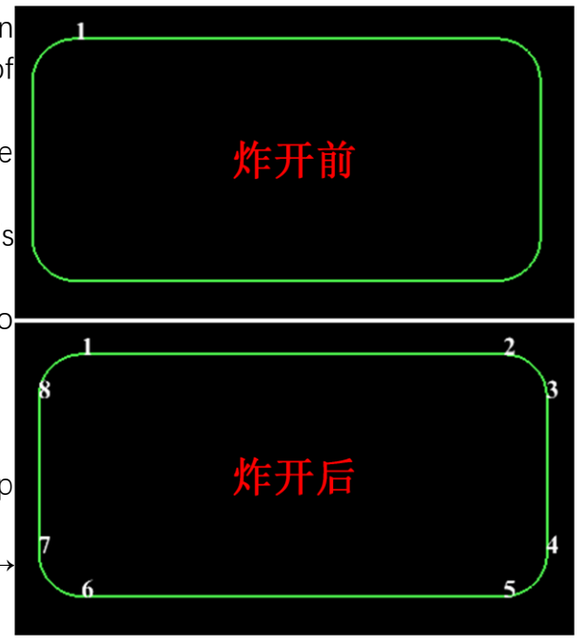
2. Select the following method to break up the selected group track:

(1) Menu bar → Common → Group sub-menu bar → Explode.

(2) Menu bar → Drawing → Group sub-menu bar → Explode.

(3) Menu bar → Process → Group sub-menu bar → Explode.

3. Complete the explosion. See the right figure for the effect.



4.3.9 Split curve

It is used to truncate the curve of the graph to multiple non-closed line segments.

Typical usage scenarios are as follows:

(1) By dividing the curve processing, the cut parts are connected with the surrounding materials, which is the same as the micro-connection.

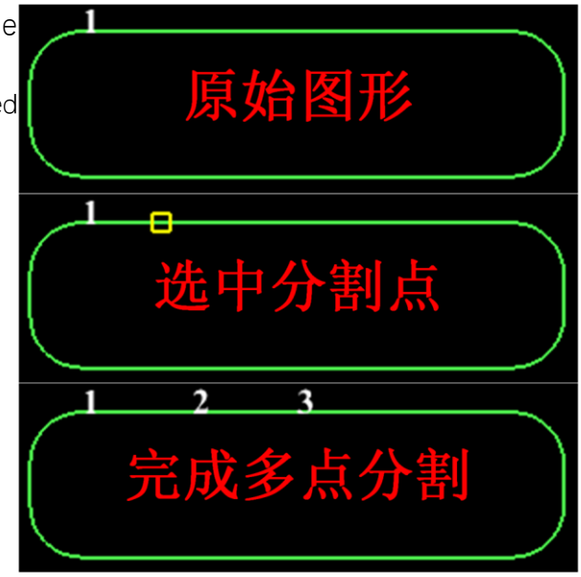
(2) in the drawing graphics cut off the redundant graphics, easy to cut out the ideal graphics.

The system supports manually dividing the curve by mouse click, preferably turning on feature point capture.

Operation steps:

1. Click the menu bar → drawing → split curve to enter the split curve mode.

2. Click the left mouse button on the part of the curve to be divided to complete the division curve.



4.3.10 Cropping

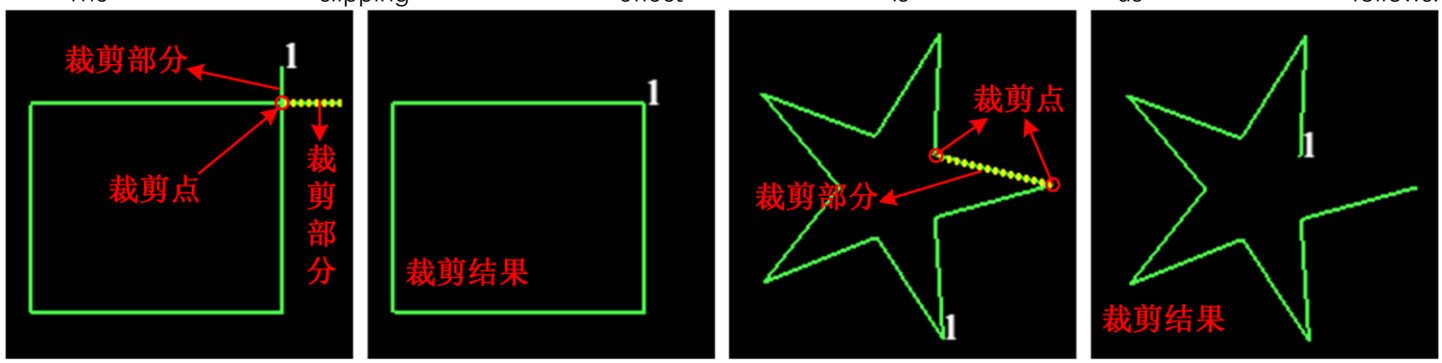
Clipping is to delete the selected part by using the intersection point as the trimming point.

Operation steps:

1. Click the menu bar → drawing → cropping to enter the cropping mode.

2. Click the left mouse button on the curve that needs to be cut to complete the cutting. The graph uses the intersection point as the trim point and deletes the selected segment.

The clipping effect is as follows.



4.3.11 Extension

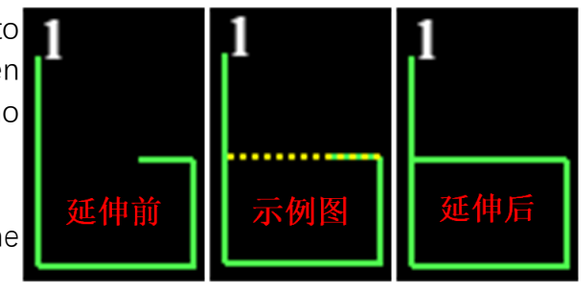
The extension function is to extend a line to another line to form an intersection, so that the line is closed. Extensions are often applied to open graphics and do not support segments with no intersection after extension.

Operation steps:

1. Click the menu bar → drawing → Extension to enter the extension mode.

2. Click the left mouse button on the curve to be extended to complete the extension.

The extension effect is shown on the right.



4.3.12 Consolidation

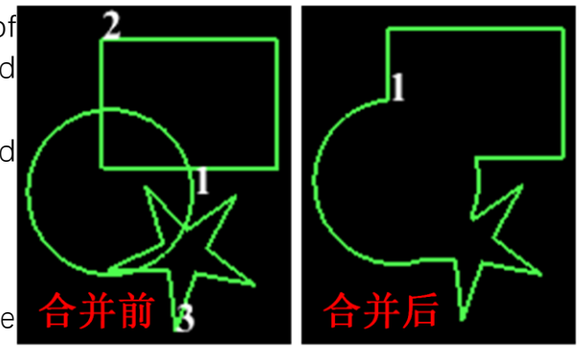
The merge function is to automatically remove the tracks of multiple staggered overlapping areas and merge them into closed graphics with only outer paths.

Merged objects must meet the criteria: more than two closed shapes, non-group, non-text.

Operation steps:

1. Select the track to be merged;

2. Click the menu bar → Drawing → Merge to complete the merging of the selected tracks.



4.3.13 Common edges

The coincident edges between the graphics are treated with common edges, and the common edge strategy is used to make them share a common boundary, thus avoiding the problem of repeatedly cutting the same boundary during processing.

The merged object must meet the following conditions:

- Close the figure.
- The common boundary is a straight line.
- Non-literal.
- Non-group.

Operation steps:

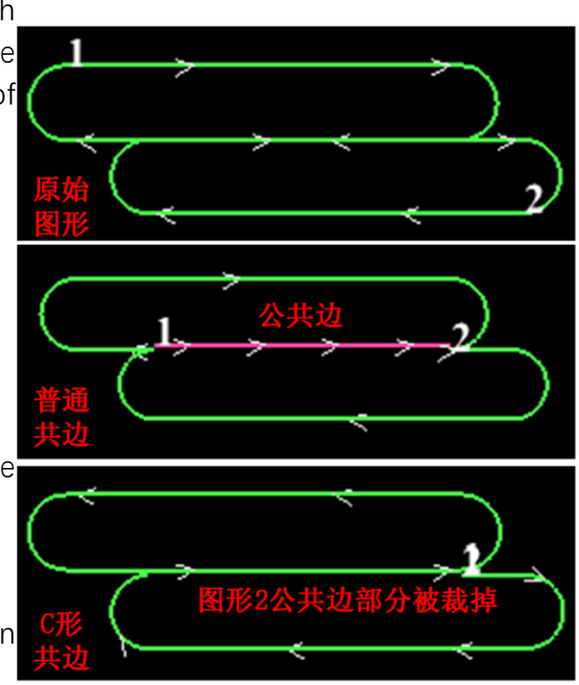
1. Select the trajectory with common edges;

2. Select the following methods, open the common edge sub-menu bar, and select the required common edge method:

(1) menu bar → layout → common edge.

(2) menu bar → process → common edge.

3. Click the required common edge method in the common edge sub-menu bar to complete the common edge.



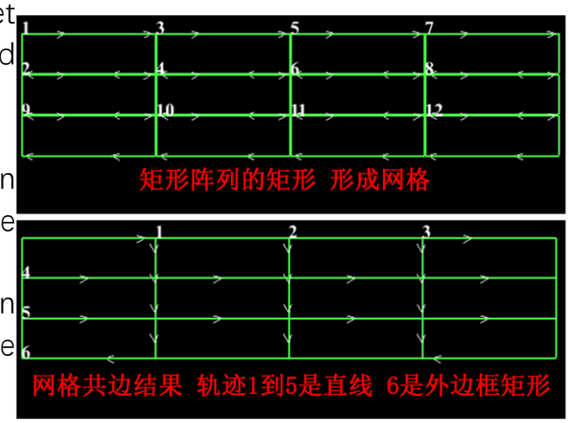
Co-edge effect example diagram

When this is done, the system attempts to automatically co-edge the selected drawing. If the selected graph does not meet the common edge condition, a prompt message will be displayed in the log print window at the bottom of the interface.

The system provides two common sides:

- Common common edges: Identify common boundaries between patterns and form these boundary curves into new cutting trajectories.
- C- type common edge: only a single common boundary is retained and other boundary curves are deleted.

There is also a special case for the rectangles of the array, which are not spaced apart from each other, forming a grid. The system can automatically identify and complete the mesh



Mesh co-edge effect example graph

common edge processing.

See the relevant specific effects on the right.

4.3.14 Arrays

Array is one of the simple nesting forms. When the workpiece is processed in batch, the processing graphics can be copied out and arranged in an orderly manner to improve the processing efficiency.

LBC20 & 40 provides a total of four array modes, with two opening modes, namely, common → array, and nesting → array.

Array methods are divided:

A rectangular array.

Full array.

Interactive array.

Polar array.

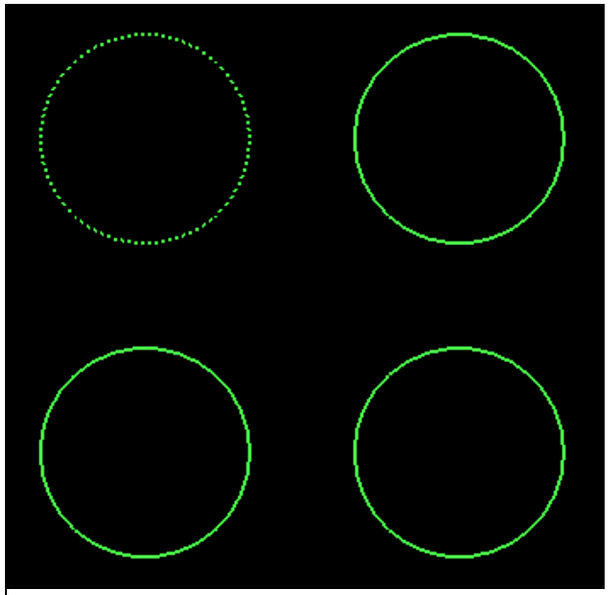
4.3.14.1 Rectangular Array

The selected track is copied according to the rectangular square matrix information.

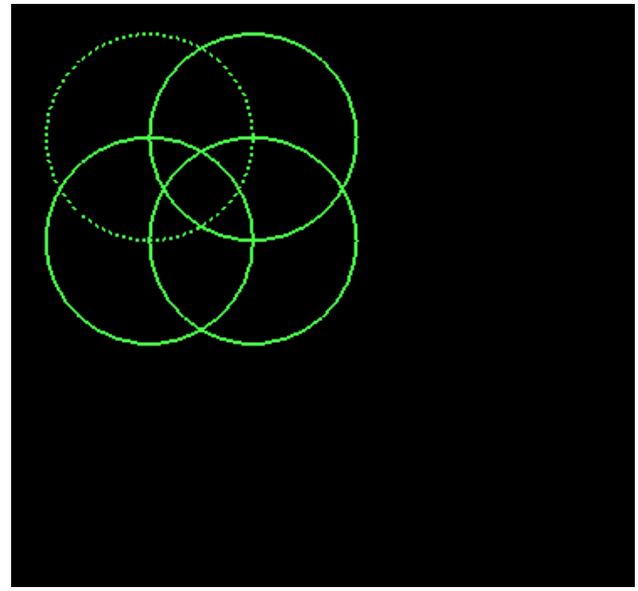
Operation steps:

1. Select the object.
2. Open the Array dialog box (right).
3. Set the Array Information, the number of rows and columns.
4. Set the row direction and column direction.
5. Set the array spacing offset value:
   - ■ Offset value: The center of the drawing is translated for the translation base.
   - ■ Spacing value: Pan based on the drawing border.
6. Click the OK button to complete the rectangular array.

Taking a circle with a diameter of 100 as an example, a 2 × 2 array is performed to the right and down, and the row and column offset values are both 50mm and the row and column spacing values are both 50mm. The result is shown in the following figure. The currently selected figure (dotted line) is the track of the array.



Spacing value



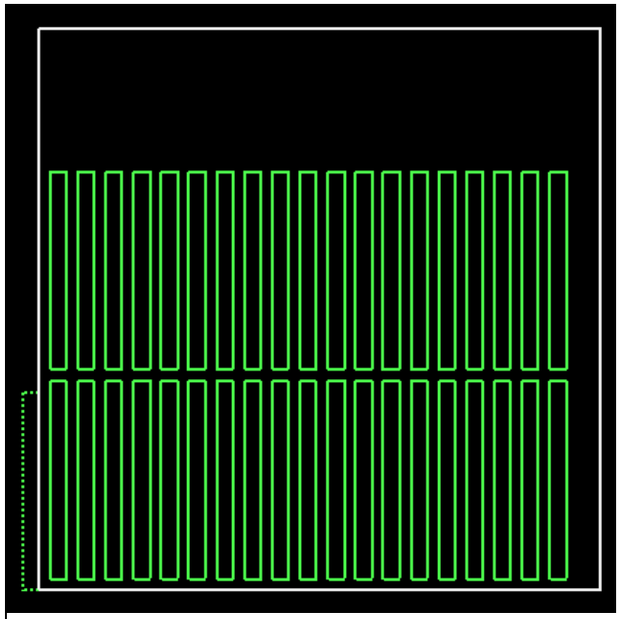
Offset value

4.3.14.2 Full Array

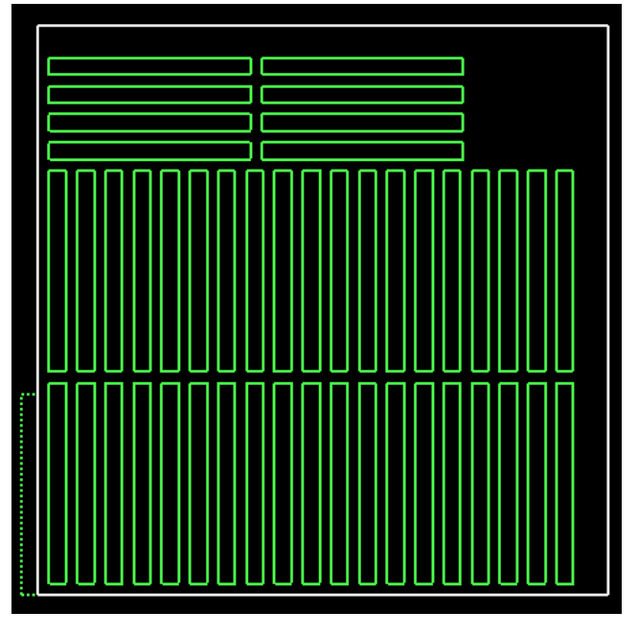
The selected track will be copied in full array according to relevant parameters.

Operation steps:

1. Select the object.
2. Open the Full Array dialog box (right).
3. Set the width and length of the full array area (sheet), as well as the part spacing and sheet margin distance.
   - Part Spacing: The distance between each part in the pattern result.
   - Sheet Edge Leave Distance: The distance of the array result from the sheet edge.
4. Set whether to prohibit rotation.
   - After the array of the initial track is completed, if there is enough space in the remaining edge area to continue to put the rotated track, continue to put it in, further improving the utilization rate of the plate.
5. Set whether to delete the selected initial graphic object after completion.
6. Click the OK button to complete the full array in the specified plate area.



No Rotation



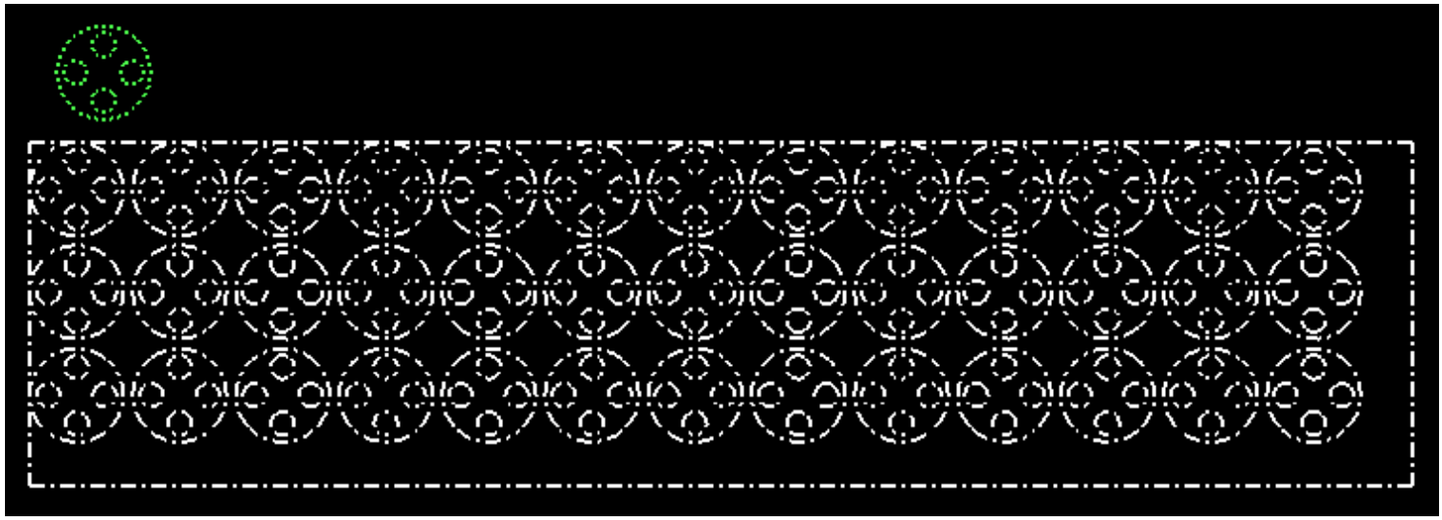
Do not prohibit rotation

4.3.14.3 Interactive Array

The selected track is copied in an interactive array according to the relevant parameters.

Operation steps:

1. Select the object.
2. Open the Interactive Array dialog box (right).
3. Set the row and column spacing, which is the translation value based on the drawing border.
4. Set whether to delete the original image after the array.
5. Click Confirm and the dialog box closes automatically.
6. Like drawing a rectangle, click the left mouse button to determine a diagonal point of the rectangular plate, and then drag the mouse to display the results of the plate and array in real time, as shown in the following figure.
7. After obtaining satisfactory results, click the left mouse button again to complete the interactive array.



Make an interactive array

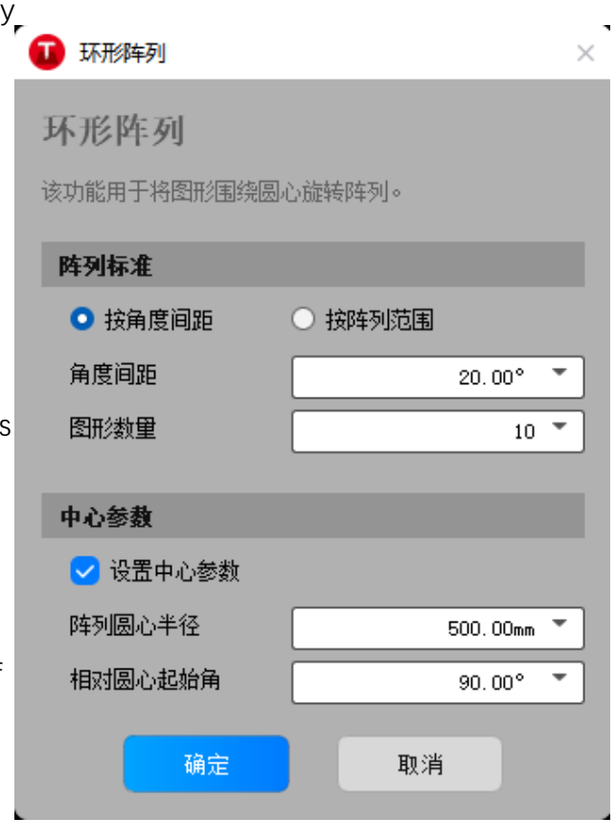
4.3.14.4 Circular Array

The selected track is copied in a circular array according to the relevant parameters.

Operation steps:

1. Select the object.
2. Open the Circular Array dialog box (right).
3. Set the array mode, array range and number of copied graphics.
   - Spacing by Angle: Sets the angular spacing between each drawing.
   - By Array Range: Sets the array range (1 to 360 degrees) from which all parts are copied out.
4. Optional: Set the center parameter.
5. Check the setting Center parameter to set the relevant parameters.
   - Array Center Radius: the radius of the circle enclosed by the center points of the outer envelope boxes of all graphics in the entire circular array result.
   - Start angle relative to center: the angle of the currently selected track relative to the start position of the array circle.

The right side of the array circle is the array circle starting position 0 angle, and the array direction is counterclockwise.

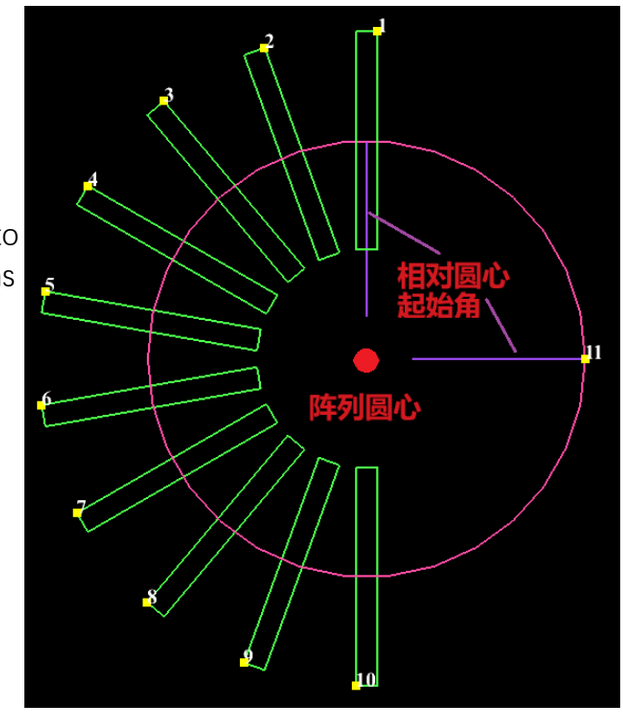


Click OK, the circular array dialog box hours, directly get the array results.

6. If the setting Center parameter is not checked, the array circle radius and relative circle center start angle data below will not take effect. Click OK and the dialog box will close. You need to use the mouse to select a point on the interface as the center of the array circle. The current starting angle relative to the center of the circle is 0 degrees.

After selecting the center position, click the left mouse button to complete the circular array.

The circular array results and associated example figures are shown on the right.



4.4 graphics pre-processing

The self-drawn trajectory is generally more regular and standard, which meets the ideal machining trajectory to a great extent. However, in the actual production process, it is more important to import external data, such as. dxf format files, etc. Due to various contingencies, these data cannot be guaranteed to be regular and standard, which brings some difficulties to processing, so some pre-processing is needed,Make graphics to achieve better processing effect.

The system provides a series of graphics pre-processing means, including two categories, a key automatic pre-processing and manual processing.

4.4.1 Import DXF One-click Preprocessing

Set one-click preprocessing for importing. dxf files.

Operation steps:

1. Select the following methods to open the automatic optimization setting interface:

(1) Settings on the right side of the icon → User parameter configuration → Automatic optimization Tab bar.

(2) menu bar → File → user parameter configuration → Automatic optimization Tab bar.

2. Set the appropriate parameters.

3. Click the OK button to complete the parameter settings.

The relevant settings are as follows.

- Remove very small graphics.
- Remove repeating lines.
- Merge phase connections.
- Automatic sorting.
- Import DXF file prompt clear existing graphics.
- Import DXF files to automatically distinguish between inner and outer membranes.
- Automatically break up groups by importing DXF files.
- Import DXF files and process information everywhere at the same time.

4.4.2 Curve smoothing

The trajectory is smoothed to make the processed graphics smoother, thus ensuring smooth processing.

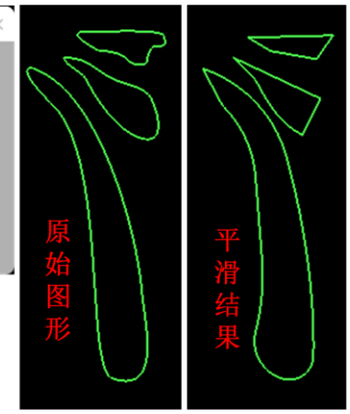
Operation steps:

1. Select the trajectory;

2. Select menu bar → drawing → smooth curve to open the smooth curve dialog box;

3. Complete the setting of precision in the dialog box;

4. Click OK to complete the curve smoothing of the selected track.



4.4.3 Deleting duplicate lines

Delete the overlapping parts between graphics to prevent duplicate graphics from affecting the actual processing.

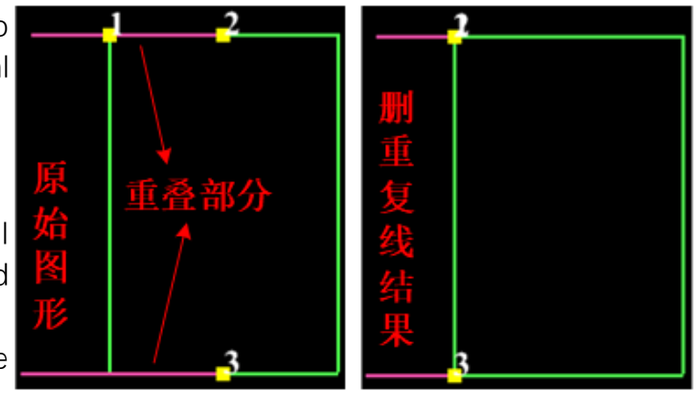
Operation steps:

1. Select the trajectory;

2. Select menu bar → Drawing → Delete small graphics, open the Delete Repeat Line dialog box, and set the de-duplication precision;

3. Click OK to complete the deletion of duplicate lines.

See the figure on the right for the actual operation results.



4.4.4 Delete small graphics

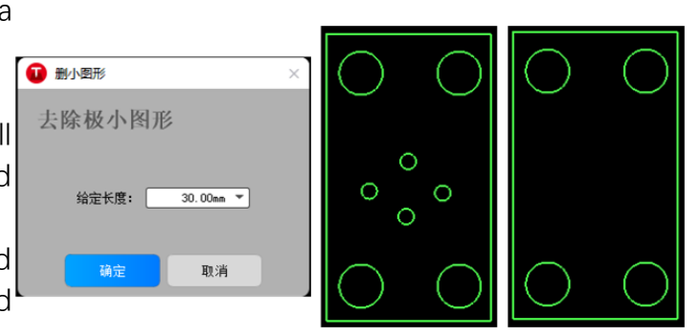
You can delete curves that are smaller than a specified length threshold.

Operation steps:

1. Select menu bar → drawing → Delete small graphics, open the delete small graphics dialog box, and set the given length;

3. Click OK to complete the deletion of repeated lines. Graphics less than the given length will be deleted automatically.

The actual operation effect results are shown in the right figure.



4.4.5 Replace with Circle

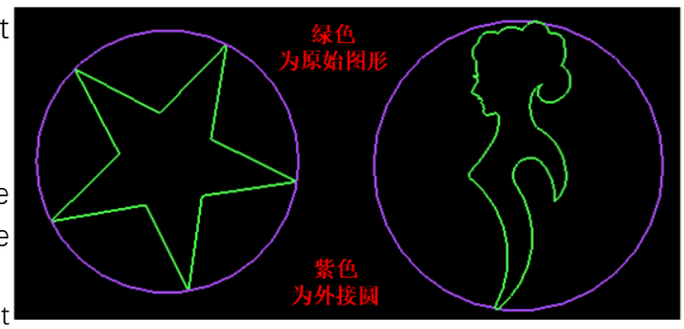
Transform an arbitrary figure into its smallest circumscribed circle.

Operation steps:

1. Select the object;

2. Click menu bar → drawing → circle → Replace with circle to directly convert the selected object into the minimum circumscribed circle.

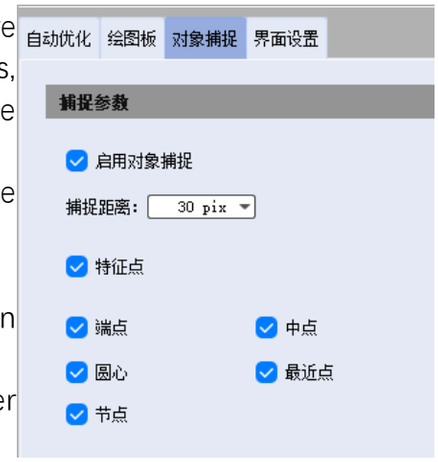
The actual operation effect results are shown in the right figure.



4.5 AIDS

4.5.1 Capture

4.5.1.1 Turn on/off the capture function



When drawing objects, the feature points of some graphics are more accurately positioned. When the mouse arrow is close to the feature points, the system can easily capture them, which is convenient for accurate connection between graphics.

Open or close the Snap Options dialog box by selecting one of the following methods.

Operation steps:

1. Select the following methods to open the automatic optimization setting interface, as shown in the right figure:

(1) Settings on the right side of the icon → User parameter configuration → Object capture;

(2) Menu bar → File → User Parameter Configuration → Object Capture.

2. Click OK to complete the configuration of the capture function.

4.5.1.2 Capture parameters

The capture-related parameters are as follows.

- Start object snap: Turn on/off object snap;
- Feature Points: Turns on/off snapping to feature points.
- Endpoints: Turns on/off the endpoints of the snap drawing.
- Midpoint: Turns on/off the middle point of the trajectory for the snap drawing.
- Circle Center: On/off snapping to the center of a standard arc.
- Closest Point: Turns on/off snapping to the closest point.
- Node: Turn on/off key nodes.

4.5.2 Measuring distance

The system provides two measurement methods, straight line measurement and curve measurement.

4.5.2.1 Straight line measurement

Select the following methods to enter the straight line measurement mode.

Operation steps:

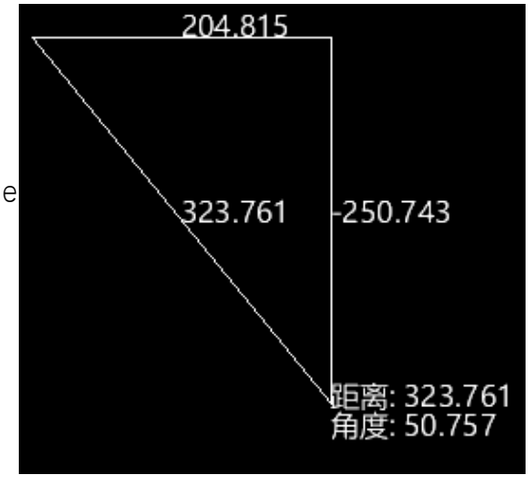
1. Click the shortcut bar on the left side → Measure → Linear Measurement to enter the linear measurement mode.

2. Selection of starting point;

3. Drag the mouse to display the measurement information in real time. See the right figure for details:

- Horizontal distance in millimeters.
- Vertical distance.
- The distance between two points.
- Angle.

4. Click the left mouse button at the end point to complete the current measurement and re-select the point.



4.5.2.2 Curve measurement

Open or close the Snap Options dialog box by selecting one of the following methods.

Operation steps:

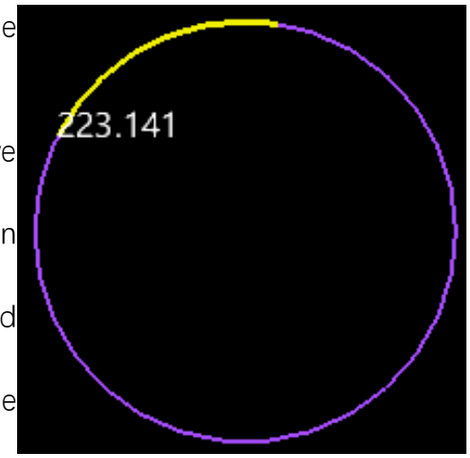
1. Click the left shortcut bar → Measurement → curve measurement to enter the curve measurement mode.

2. Specify the trajectory to be measured, click the left mouse button to determine the starting point;

3. Move the mouse, the measured part is displayed in yellow, and the measured distance is displayed near the mouse in millimeters;

4. Optional: Press the shift key to reverse the selected part and the unselected part.

5. Click the left mouse button at the end point to complete the current measurement, and then re-select the starting point for the next measurement.



4.5.3 Batch Modification

4.5.4 Group editing

Edit a single group. Sorting within a group is currently supported.

Operation steps:

1. Select a single group;

2. Right-click near the group to pop up the right-click menu bar, click Sort within the group, and select a sorting method in the sub-menu bar to complete the sorting within the group.

5 Machining process

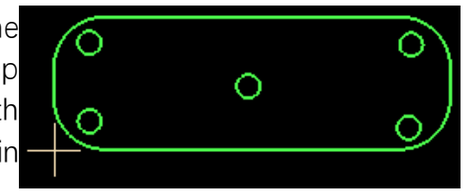
5.1 processing direction

Display and change the direction of the machining trajectory in the tool path, change the machining direction forward, and ensure that the graphic machining direction is displayed.

Operation steps:

1. Select the graphics of the operation;
2. Select the following methods to change the direction of the selected track:
   (1) menu bar → common → reverse;
   (2) menu bar → process → reverse;
3. The system provides three ways to change the direction of the machining path, reverse, clockwise and counterclockwise.

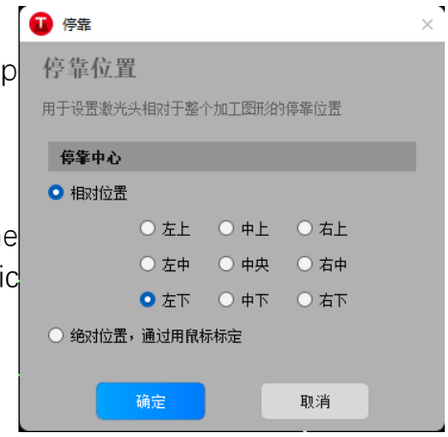
5.2 stop



According to the set docking position, the corresponding point of the drawing is coincident with the origin of the part. For example, set the stop point to the lower left, and the lower left corner of the graph coincides with the origin of the workpiece, as shown in the right figure, and the "ten" in the lower left corner is the stop point.

At present, there are two ways to set the stop point, automatic setting and manual setting.

5.2.1 Automatic setting of stop points



Operation steps:

1. Select the following methods to open the dialog box of setting stop points, as shown in the right figure.
   (1) Menu bar → Commonly used → Dock;
   (2) menu bar → craft → dock;
2. Select the relative position, then select one of the 9 positions in the upper left and middle left, and click OK to complete the automatic setting of stop points.

5.2.2 Manual setting of stops

Operation steps:

1. Select the following methods to open the dialog box of setting stop points, as shown in the right figure.

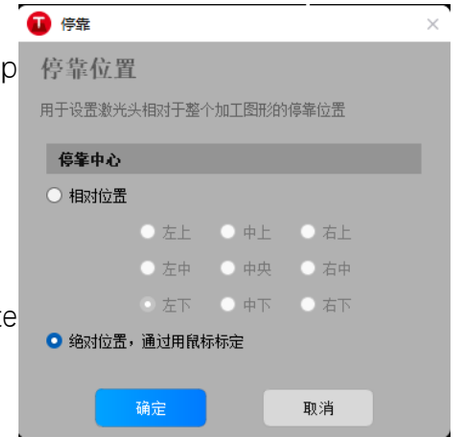
(1) Menu bar → Commonly used → Dock;

(2) menu bar → craft → dock;

2. Select the absolute position.

3. Click OK to enter the manual setting stop mode.

4. Click the left mouse button at the appropriate position to complete the setting of the stop point.



5.3 Cooling point

The cooling point is added at a specific position of the pattern to improve the cutting effect when cutting thick materials, generally used at the inflection point.

Before adding a cooling point, in the Layer Settings dialog box, in the Special Process area, select the cooling gas and set the parameter cooling delay.

You cannot add a cooling point at the starting point of the process.

The system provides two methods for setting the cooling point, manual addition and automatic addition of the cooling point.

5.3.1 Manually add cooling point

Operation steps:

1. Select the following methods to enter the manual add cooling point mode.

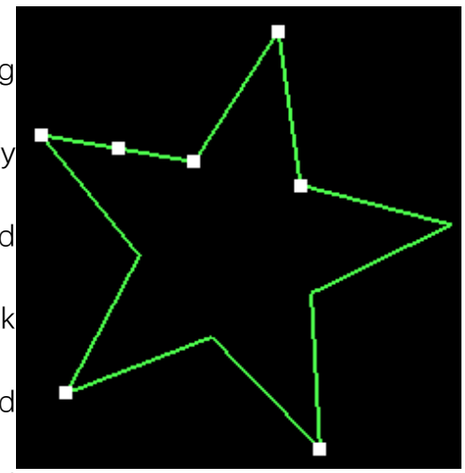
(1) menu bar → Common Use → cooling point, select manually add cooling point in the lower menu bar;

(2) Menu bar → process → cooling point, select manually add cooling point in the lower menu bar;

2. Click the left mouse button on the specified location of the track to complete the addition of cooling points.

3. After adding the cooling point, the next one can be added continuously.

The white dots in the figure on the right are the manually added cooling points.



5.3.2 Automatic addition of cooling points

Operation steps:

1. Select the specified track.

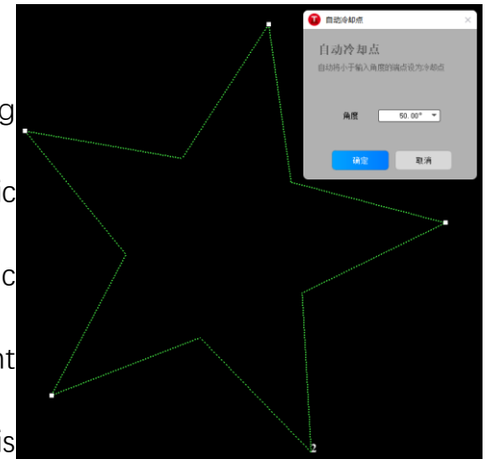
2. Select one of the following methods to open the Auto Add Cooling Point dialog box.

(1) menu bar → Common Use → cooling point, select automatic cooling point in the lower menu bar;

(2) Menu bar → process → cooling point, select the automatic cooling point in the lower menu bar;

2. Complete the relevant settings in the Auto Add Cooling Point dialog box, as shown in the right figure.

3. Click OK, and the endpoint less than the specified angle is automatically set as the cooling point, as shown in the right figure.



5.4 Micro-link

In the cutting process, in order to facilitate the processing, the following two conditions need to be met:

(1) The cut parts cannot fall from the gap of the support strip, eliminating the sorting work;

(2) The cut parts will be tilted when they cannot be supported by the support strip, otherwise the high-speed cutting head may collide with it.

The use of micro-connection can be part and the surrounding material together, and then meet the above two conditions.

The system provides two methods of setting micro-connection, manual setting micro-connection and automatic setting micro-connection, as well as exploding the micro-connection track.

5.4.1 Manually add micro-link

Operation steps:

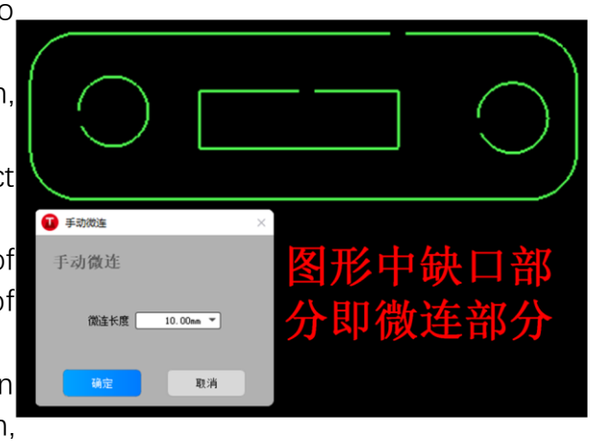
1. Select the following methods to open the manual micro connection setting dialog box.

(1) menu bar → Common Use → micro connection, select manual micro connection in the lower menu bar;

(2) menu bar → process → micro connection, select manual micro connection in the lower menu bar;

2. Set the micro-connection length in the dialog box of manual micro-connection, and click OK to enter the mode of manual micro-connection.

3. Click the left mouse button at the specified position on the track to complete the manual setting of micro-connection, which can be added continuously. The result is shown in the right figure.



5.4.2 Automatically add micro-link

Operation steps:

1. Select the trajectory to be operated;

2. Select the following methods to open the automatic micro connection setting dialog box.

(1) menu bar → Common Use → micro connection, select automatic micro connection in the lower menu bar;

(2) menu bar → process → micro connection, select automatic micro connection in the lower menu bar;

3. Complete the setting of relevant parameters in the automatic micro-connection dialog box.

- Micro-connected mode, micro-connected by quantity and by interval distance;
- Number of microlinks;
- Micro-connection size;
- Microconnection spacing;
- Whether to modify only the Microlink length;
- Effective for the selected track or all tracks;
- Whether the corner is slightly connected;
- Corner avoidance length;
- Maximum angle of corner;

4. Click OK to complete the automatic addition of micro-connections. The results are shown in the right figure.

5.4.3 Exploding the micro-link

1. Select the graphic for the operation.

2. Select the following methods to explode the selected track.

(1) menu bar → Common Use → micro connection, select to explode micro connection in the lower menu bar;

(2) menu bar → process → micro connection, select to explode micro connection in the lower menu bar;

5.5 guide line

The lead wire is also called the lead wire. The lead wire is set in the waste area to prevent the laser from staying at the starting point for a long time at the beginning of the processing, causing processing errors or damage to the workpiece, making the processing more accurate.

According to the type, the lead wire is divided:

- Lead-in: Includes straight lines and arcs.
- Leader: Includes straight lines and arcs.

The selection of the guide line type is determined by the cutting process. According to the actual situation, set the cutting speed, lead height and other relevant parameters on the lead process page of the layer.

There are two ways to set the lead line, manual addition and automatic addition.

5.5.1 Manually adding lead wire

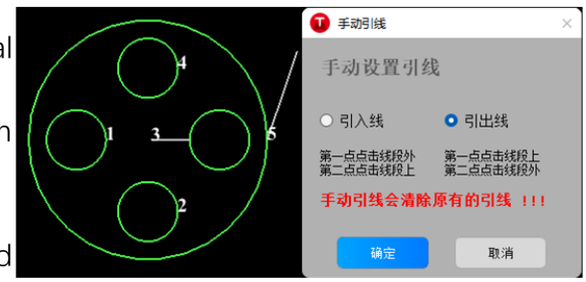
Operation steps:

1. Select the specified track;
2. Select the following methods to open the dialog box for manually adding lead lines.

(1) Menu bar → Commonly used → Lead, select manual lead in the lower menu bar;

(2) menu bar → process → lead, select manual lead in the lower menu bar;

3. Select whether to lead in or lead out, and then click OK;
4. Click the mouse to determine the starting point of the lead in the appropriate position;
5. Click the mouse to determine the end point of the lead in the appropriate position.



5.5.2 Automatic addition of lead wire

Operation steps:

1. Select the specified track;
2. Select the following methods to open the automatic add lead line settings dialog box.

(1) menu bar → common → lead, select set lead in the lower menu bar;

(2) menu bar → process → lead, select set lead in the lower menu bar;

3. Set the relevant parameters in the automatic leader dialog box as follows.

- Lead-in type;
- Lead-in length;
- Lead-in angle;
- Whether to add a small round hole at the starting point of the lead-in line;
- Radius of small round hole at the starting point of lead-in line;
- Lead type;
- Lead wire length;
- Lead wire angle;
- Turn off the outgoing line;
- Position setting of leader line: preferentially lead in from vertex and preferentially lead in from long

side. Set the uniform position according to the total length of the graph. Only change the type without changing the position of leader line;

- Whether it only acts on closed figures;
- Whether the inner and outer membranes are automatically distinguished;
- Whether it acts only on the inner or outer membrane graphics;
- Whether the inner and outer film and lead interference inspection are automatically distinguished;

4. Click OK to complete the automatic lead addition. The results are shown on the right.

5.6 Yin cut and Yang cut

Set the selected track to either negative or positive.

Operation steps:

1. Select the specified track;

2. Select one of the following methods to set the currently selected trajectory as negative cutting or positive cutting.

(1) menu bar → Common, click the negative cut or positive cut button;

(2) menu bar → Process, click the negative cut or positive cut button;

5.7 closure

This is optional. Some settings are made for the added lead seal area, including:

Seal
Notch
Overcut
Multi-circle

5.8 slotted compensation

Because of the high temperature of the laser, there is a slit in the actual cutting, that is, the cutting edge loss caused by laser cutting, which makes the actual cutting part size deviation from the theoretical size of the part.

The slot compensation operation can compensate the geometric size of the deviation, and the specific types are divided:

All Shrink: Shrinks the cutting area of all selected parts.

Extending All: enlarges the cutting area of all selected parts.

Intra-intimal shrinkage, adventitia expansion: In all the selected parts, the cutting area of the inner membrane part is reduced, and the cutting area of the adventitia part is expanded.

Outer Membrane Shrink, Inner Membrane Extra-Expansion: In all the selected parts, the cutting area of the inner membrane part is expanded, and the cutting area of the outer membrane part is reduced.

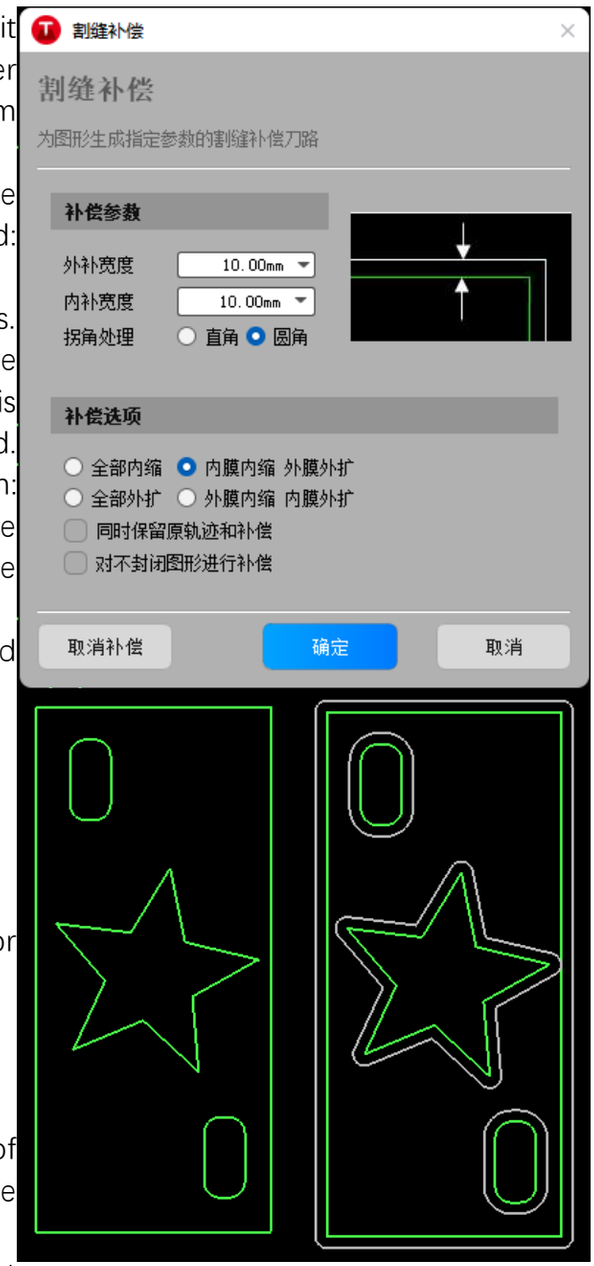
Before setting up slit compensation, ensure that the selected objects meet the following conditions:

- The text has been converted to a curve;
- Non-point, self-intersecting, common-edge graphics;

Operation steps:

1. Select the specified track;
2. Select the following methods to open the dialog box for setting compensation.
   (1) menu bar → common → compensation;
   (2) menu bar → process → compensation;
3. Set relevant parameters;
4. Click the OK button to complete the slit compensation of the selected track. The relevant results are shown on the right.

If you need to cancel the current compensation result, select the track that has been compensated, open the dialog box of the slotted compensation, and then click Cancel Compensation to cancel the slotted compensation part of the track.



5.9 circumcision

Set sharp corner ring cutting rotation to prevent excessive burning in the cutting process, so that the corner of the processing effect is better.

Before performing sharp corner ring cutting, the inner and outer membranes of the trajectory should be set according to the actual situation.

Operation steps:

1. Select the specified track;

2. Select the following methods to open the dialog box for manually adding lead lines.

(1) menu bar → common → ring cutting;

(2) menu bar → process → ring cutting;

3. Set relevant parameters

Maximum included angle: the maximum included angle of the ring-cut corner. The ring-cut trajectory can only be added for corners smaller than this angle value;

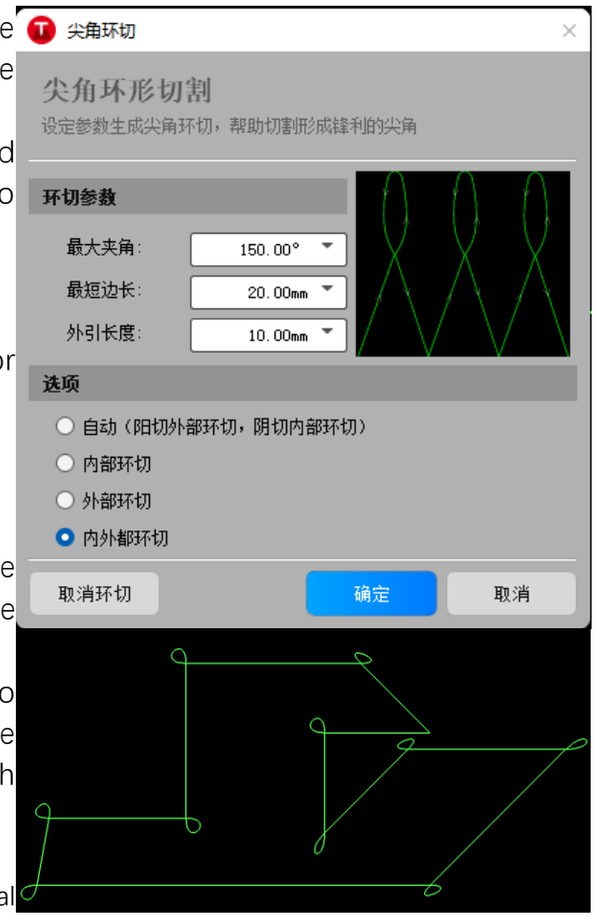
Shortest Side Length: the shortest length of the two straight lines that form the corner. Ring cutting can only be performed when both sides are greater than the side length at the same time;

Outbound Length: the length of the loop tangent.

Ring cutting settings: Automatic, internal ring cutting, external ring cutting and internal and external ring cutting;

4. Click the OK button to complete the circular cutting setting of the track.

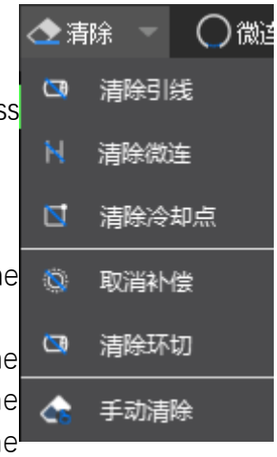
Circumcision results are shown on the right.



5.10 removal process

To clear the currently added process, the system supports two methods, according to the category, automatically clear the related similar process information, and manually clear the process.

5.10.1 Automatic cleaning process



Operation steps:

1. Select the specified track;

2. Select the following methods to open the sub-menu bar of Clear Process Information.

(1) Menu bar → Commonly used → Clear;

(2) Menu bar → Process → Clear;

3. Select a content from the sub-menu bar to complete the clearing of the corresponding process information.

In addition to these fixed clearing of a certain type of process information, some process information such as lead, compensation and ring cutting can be cleared in the dialog box for setting these process information to complete the clearing of the corresponding process information in the selected track.

5.10.2 Manual removal process

Manually clear the process is more flexible, each click, clear the current detected process information.

Operation steps:

2. Select the following methods to enter the state of manually clearing process information.

(1) Menu bar → Common → Clear → Clear manually;

(2) Menu bar → Process → Clear → Manual Clear;

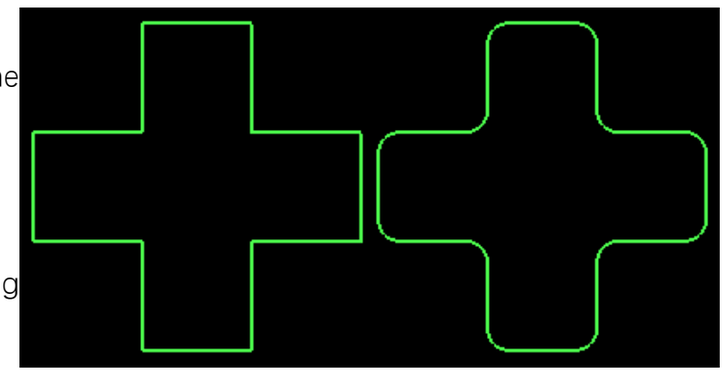
3. Select the process content to be cleared, click the left mouse button to complete the clearing of process information, and it is best to open the feature point capture synchronously.

5.11 round

All traces less than 180 ° in the graph are rounded to improve the cutting effect of the inflection point when cutting thick materials.

There are two ways to add a round to a track, automatically adding a round and manually adding a round.

5.11.1 Automatic round



Operation steps:

1. Select the specified track;

2. Select one of the following methods to open the Set Round dialog box.

(1) menu bar → common → round corner;

(2) menu bar → drawing → round corner;

3. Set the round radius.

4. Click the OK button to complete all matching round settings in the selected track.

5.11.2 Manual Rounding

Operation steps:

1. Do not select the track;

2. Select one of the following methods to open the Set Round dialog box.

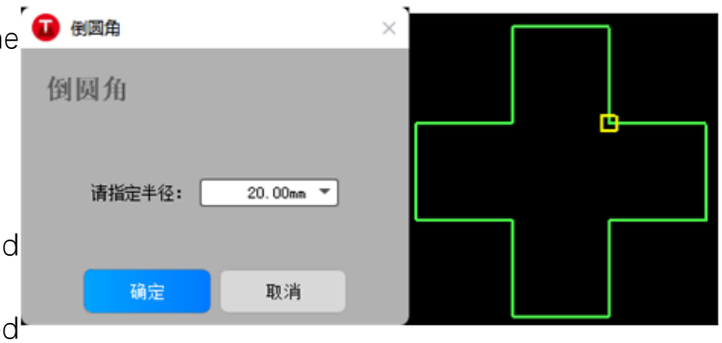
(1) menu bar → common → round corner;

(2) menu bar → drawing → round corner;

3. Set the round radius.

4. Click the OK button to enter the manual round adding mode;

5. Click the left mouse button at the specified position to add rounded corners at this position. Yellow rectangular boxes appear at the positions that can be added as a prompt.



5.12 Release angle

Arc release angle processing is performed on all traces less than 180 ° in the drawing.

The system supports manual addition of release angles.

Operation steps:

1. Select the following methods to open the Set Release Angle dialog box.

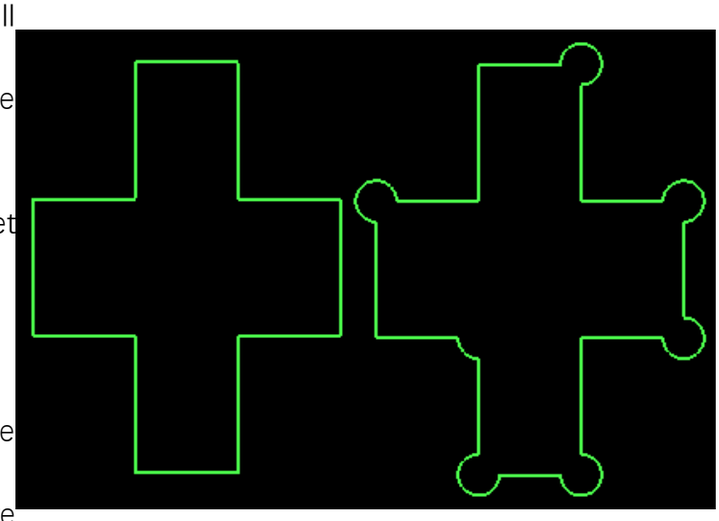
(1) menu bar → common → release angle;

(2) Menu bar → Drawing → Release Angle;

2. Set the release angle radius.

3. Click the OK button to enter the manual release angle mode;

4. Click the left mouse button at the position where the release angle can be added to add the release angle at this position.



5.13 Bridging

When a workpiece is composed of a plurality of parts, using this function to connect these parts can make it possible not to scatter after cutting and reduce the number of perforations. Multiple use of the bridge function, you can achieve the effect of a stroke on all graphics, and more for the connection of text strokes.

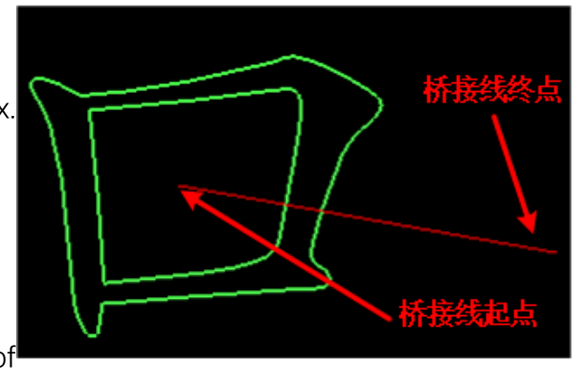
If you bridge text, make sure that the text has been turned

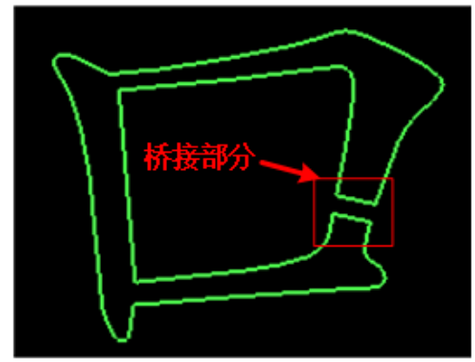
into a curve.

Operation steps:

1. Select the following method to open the bridge dialog box.
   (1) Menu bar → Commonly used → Bridging;
   (2) Menu bar → Process → Bridge;
   (3) Menu bar → layout → bridge;
2. Set the bridge radius.
3. Click the OK button to enter the bridge mode;
4. Click the left mouse button to select the starting point of the bridge line;
5. Click the left mouse button to select the end of the Bridge Line.
6. Can be continuous for several times Bridge, press the ESC key to exit the bridge mode.

It is suggested that there is no fixed order for the start and end points of the Bridge Line, as long as the position of the Bridge Line is correct.





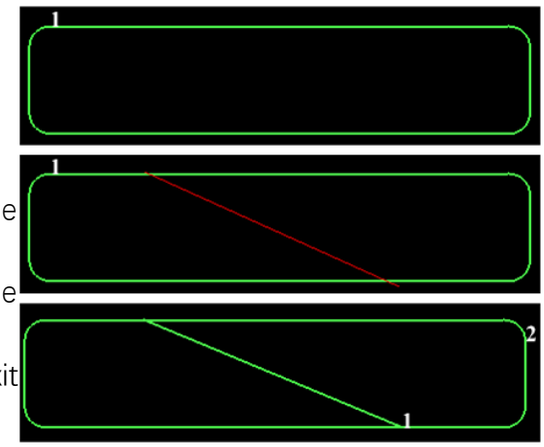
5.14 truncation

Truncation can cut a part into two or more parts to achieve the effect of "cutting the cake.

Operation steps:

1. Select the following methods to enter the stage mode.
   (1) menu bar → commonly used → cut off;
   (2) menu bar → process → cut off;
   (3) Menu bar → layout → Truncation;
2. Click the left mouse button to select the starting point of the truncation line;
3. Click the left mouse button to select the end point of the truncation line.
4. Can be cut off several times in a row, press the ESC key to exit the truncation mode.

It is suggested that there is no sequence between the starting point and the ending point of the cut line, as long as the position of the cut line is correct.



6 layer process

6.1 Overview

The layer function is mainly used to set the layer process, including cutting and perforation parameters,

so as to ensure the cutting effect.

6.2 setting different layers

The system provides 10 layers of different colors.

Operation steps:

1. Select the specified object;

2. Click the layer button on the right side of the workspace, select the required layer color button, and click the left mouse button to complete the layer setting;

6.3 Trajectory Set to No Machining

The created trajectory is set to not be processed. In actual processing, the trajectory is not processed, but other operations such as graphic editing can still be performed.

Operation steps:

1. Select the specified object;

2. Click the layer button on the right side of the workspace, select the "X" button that needs to be unprocessed, and set the track to unprocessed.

6.4 return to normal machining trajectory

The unmachined tracks are restored to machinable.

Operation steps:

1. Select the specified object;

2. Optional operation:

(1) Click the "√" button in the layer button on the right to restore the unprocessed track to the processed one, and its layer is the layer set to the one before unprocessed;

(2) Click any one between Layer 1 and layer 10 to directly set the unprocessed layer as the layer.

6.5 setting layer process

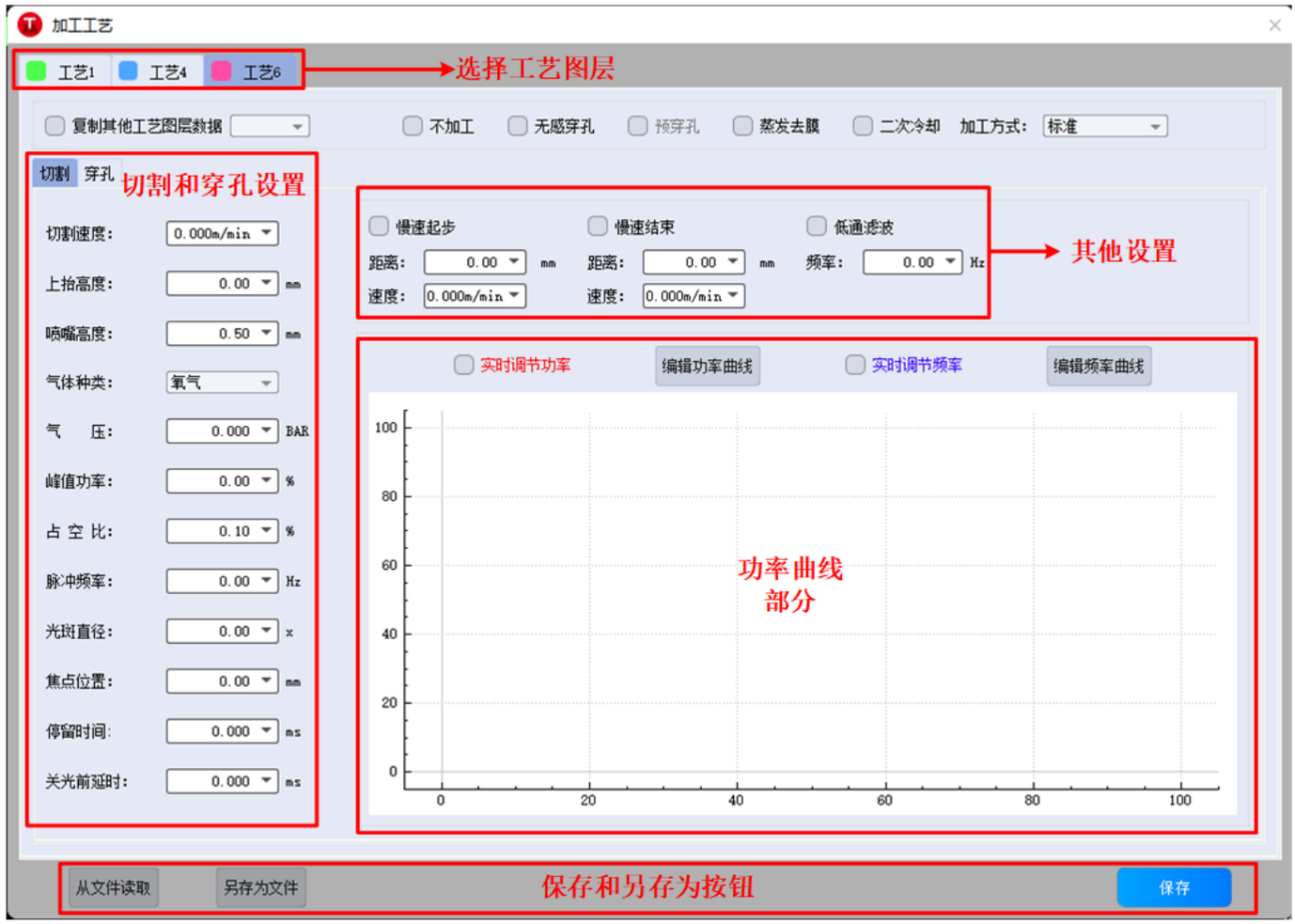
Open the layer process settings and operate the steps.

Operation steps:

Optional operation:

(1) Click the "Process" button at the top of the process layer button on the right.

(2) Click on the menu bar → CNC → processing technology.



7 Path planning

Sort 7.1

Used to specify the processing order of each graphic in the processing file, including automatic sorting and manual sorting.

7.1.1 Automatic sorting

Auto-sort policy description:

- Multiple Layers: If there are multiple layers of tracks in the current drawing, these drawings are not affected.
- Change direction when sorting is prohibited: in order to make the cutting track more consistent and reduce the idle path, it is allowed to automatically move the cutting direction of some graphics in the opposite direction.
- Distinguish between inner and outer membranes when sorting: Automatically distinguish between the inner and outer membranes of the drawing when sorting.
- Whether the outermost layer is undercut: whether the outermost layer of the graph is undercut

by default.

Operation steps:

1. Optional operation:

(1) Click menu bar → Common → Sort to open the Sort sub-menu bar.

(2) Click the menu bar → Process → Sort to open the Sort sub-menu bar.

(3) Click menu bar → pattern → sort to open the sort sub-menu bar.

2. After completing the relevant global sorting settings, click the required sorting method to complete the sorting of tracks.

7.1.2 Manual sorting

If you are not satisfied with the results of automatic sorting, you can use manual sorting.

Operation steps:

1. Optional operation:

(1) Click the manual sorting in the shortcut bar on the left to enter the manual sorting mode;

(2) Click Common → Manual Sort in the menu bar to enter the manual sort mode.

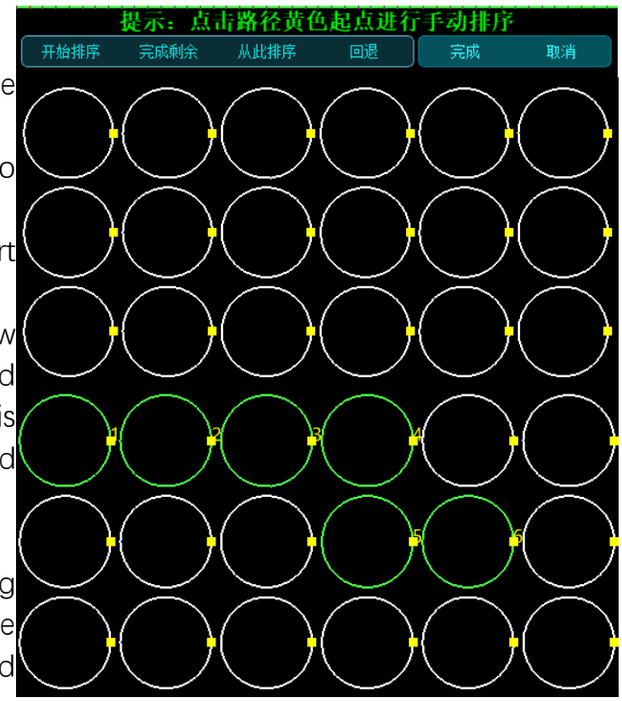
2. Click to start sorting, all will turn white, click the Start sorting button, and officially start sorting all tracks;

3. According to the required order, click on the yellow starting point of the track in turn. The sorted track is displayed as the color of the original layer and the serial number is displayed at the same time. If it is not sorted, it will be displayed in white and there is no serial number;

4. Click all the tracks in turn to complete the sorting;

5. If you do not want to sort some tracks after arranging them, click Finish. The tracks that have been sorted will be sorted manually, while the graphics that have not been sorted manually will remain in the previous relative order;

6. If there is an incorrect sequence caused by false touch in the middle, click Back.



7.1.3 Local sorting

The partial required trajectories are locally sorted separately without affecting the order of other trajectories, so as to achieve the effect of local adjustment.

The function of local sorting is as follows:

- Put it in front.
- To the end.
- Move one up.
- Move one down.

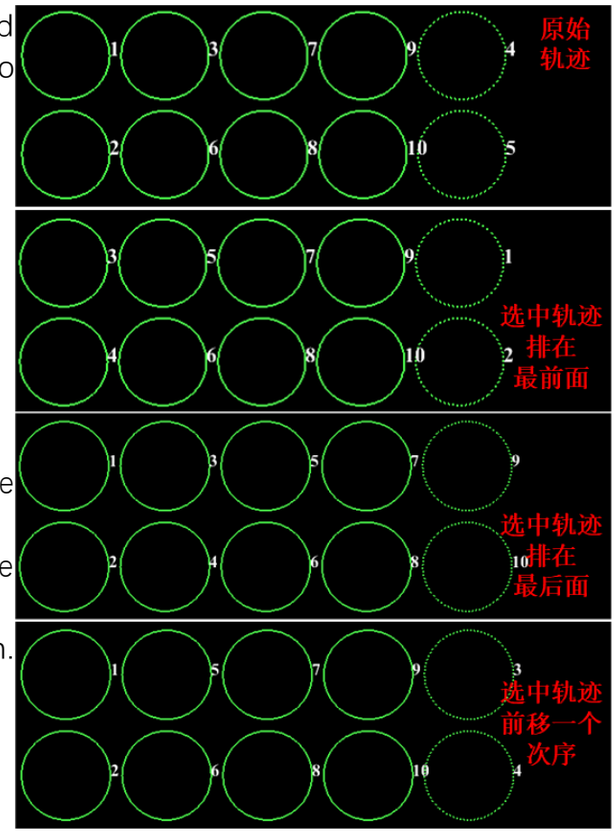
Operation steps:

1. Select the object to be operated;
2. Optional operation:

(1) Click the menu bar → Common, and select the required operation in the local sorting area.

(2) Click the menu bar → Process, and select the required operation in the local sorting area.

3. Complete the corresponding local sorting operation. See the right figure for the specific effect.



7.1.4 Tool Path Preview

Preview the current pass sequence. You can preview the previous or next pass one by one, or drag the progress bar to preview.

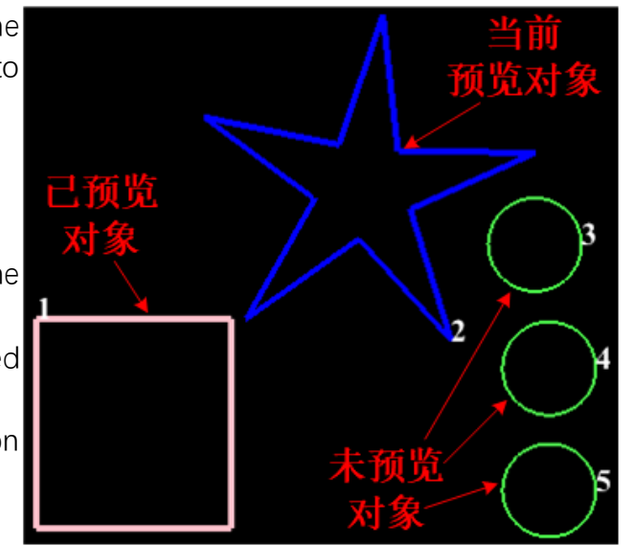
Operation steps:

1. Select the object to be operated;
2. Optional operation:

(1) Click the menu bar → Common, and click the required button in the preview-related button area;

(2) Click the menu bar → Process Click the required button in the preview related button area;

3. Press the ESC key or the left mouse button to click on the workspace to exit the preview state.



7.2 flight cutting

When the graph to be cut is a regular graph and presents a certain regular arrangement, the path path is re-planned by flight cutting to find the most efficient path for processing. At the same time, the steps of raising

the knife and cutting the knife between the ordinary laser cutting and processing graphic tracks are omitted, and only the switch light is controlled during the movement.

According to different cutting figures, flight cutting methods are divided:

- Straight flying cut: Identify objects as straight lines.
- Arc Flying Cutting: The other object is an arc.
- Runway Flight Cut: Identify objects as runway-like rectangles.

7.2.1 Straight flight cutting

Operation steps:

1. Select multiple objects.

2. Optional, select the following methods to open the straight flight cutting dialog box.

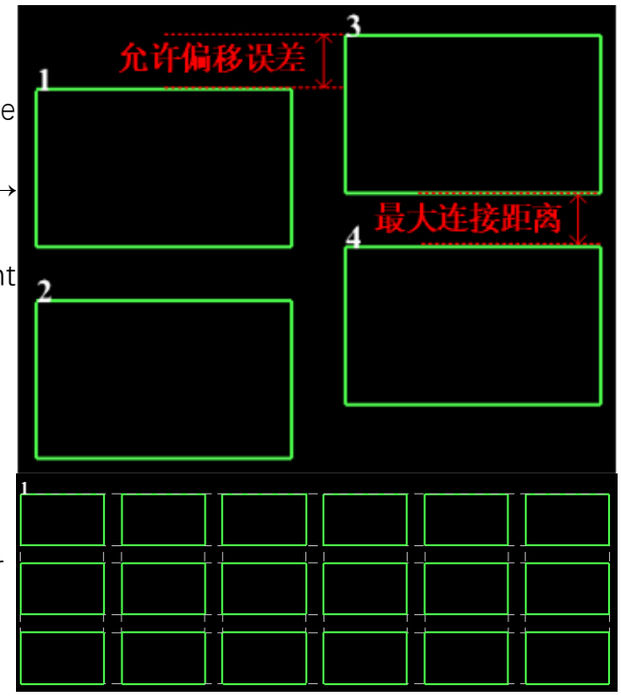
(1) Menu bar → Common → Flying Cutting → Straight-line Flying Cutting.

(2) Menu bar → Process → Flying Cutting → Straight Line Flying Cutting.

3. Set parameters related to flight cutting:

- Cutting position: the initial cutting position, with the upper left corner, the lower right corner, the lower left corner and the upper right corner four directions.
- Allowable Offset Error: The maximum offset error of the trajectory in the same direction.
- Smooth connection maximum distance: The maximum connection distance between tracks in the same direction.

4. After setting the parameters, click the OK button to complete the planning of the straight flight cutting trajectory.



7.2.2 Arc flying cutting

Operation steps:

1. Select multiple objects.

2. Optional, select the following methods to open the arc flying cutting dialog box.

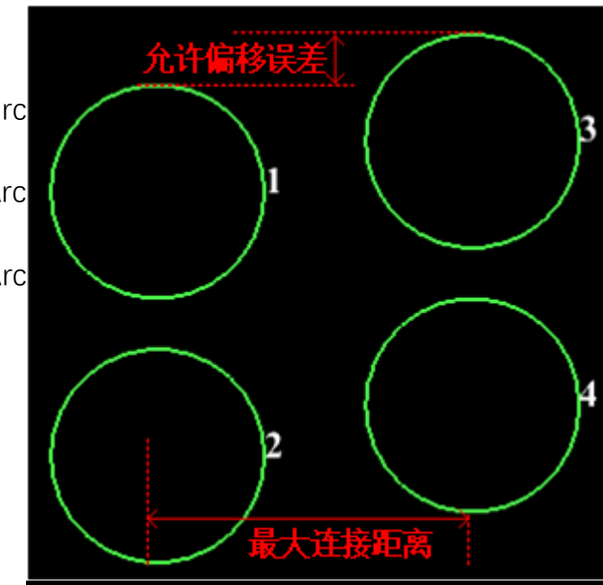
(1) Menu bar → Common → Flying Cutting → Arc Flying Cutting.

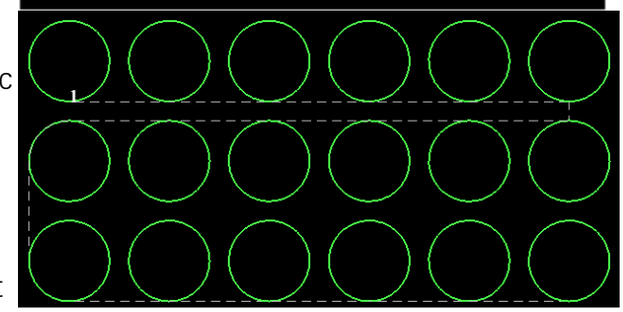
(2) Menu bar → Process → Flying Cutting → Arc Flying Cutting.

3. Set parameters related to flight cutting:

- Allowable deviation distance: the maximum deviation error of the trajectory in the same direction.
- Maximum connection distance: the maximum distance between the starting points of two adjacent arcs.
- Sorting method: the approximate order of the arc fly-cut trajectory.
- Direct fly cutting without sorting: After checking, the order before the flight cutting trajectory planning is maintained.
- Do not consider flight path Flight cutting: Do not consider flight path Flight cutting when checked.

4. After setting the parameters, click the OK button to complete the planning of the arc flight cutting trajectory. See





7.2.3 Runway flight cutting

Operation steps:

1. Select multiple objects.

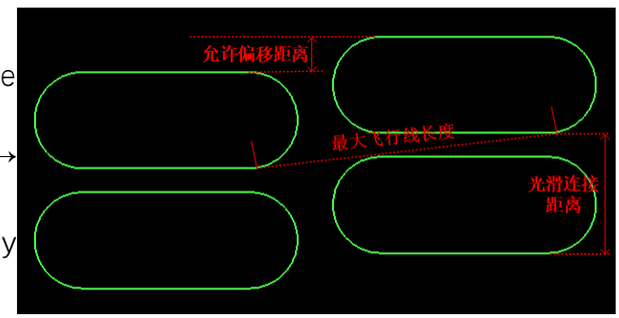
2. Optionally, select the following methods to open the runway flight cutting dialog box.

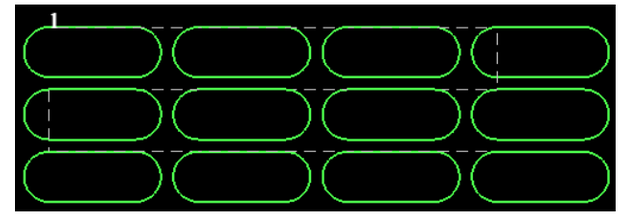
(1) Menu bar → Common → Flying Cutting → Runway Flying Cutting.

(2) Menu bar → Process → Flying Cutting → Runway Flying Cutting.

3. Set parameters related to flight cutting:

- Allowable deviation distance: the maximum deviation error of the trajectory in the same direction.
- Smooth connection maximum distance: in the same direction, the maximum distance between





the starting point of the light.

- Maximum flight line length: the maximum light-off distance.

4. After setting the parameters, click the OK button to complete the planning of the runway flight cutting trajectory.

8. Slot

The layout function is used to arrange the given parts on the plate reasonably. The system also provides a number of optimization parameters to adjust, such as part spacing, plate spacing, rotation strategy, utilization rate, etc.

9 Machining operation

10 Advanced Operations

11 System operation