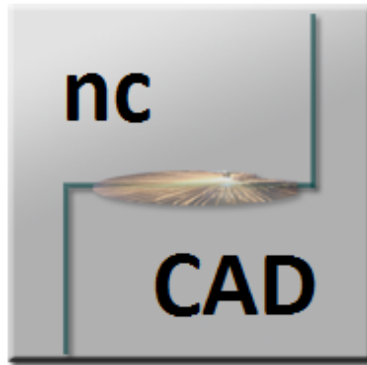




ncStanz



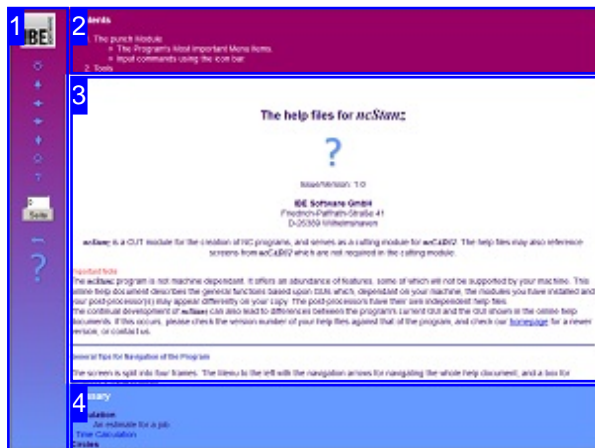
Online help SHEET METAL CENTER Plus

Punch Modul for ncCAD32



Welcome to the help files for ncStanz

General Tips for Navigation of the Program



The screen is split into four frames: The Menu to the left [1] with the navigation arrows for navigating the whole help document, and a box for entering a page number.

The top shows the Contents List [2] divided into chapters. The Glossary [4] of the most important technical terms is shown at the bottom. You can switch between the Glossary and an Index in this frame. Whichever you choose, click the keywords to link directly to the most relevant part of the corresponding help page.

Choosing the Control Method:

The middle frame shows you the current help page [3].

There are two ways to navigate the help pages for *ncStanz*.

Choose your preferred method of controlling the document;

1. Interactive Navigation

This allows you to decide for yourself which texts you need to read. Place the mouse cursor over the rectangles drawn onto the screen shots to get a more detailed description.

interactive

or

2. Sequential (Contiguous) Navigation

This mode leads through the document sequentially. All details will be shown one after the other, simply press the 'Next' button (right arrow in the Navigation Panel [1]) to move through the document one step at a time.

sequential

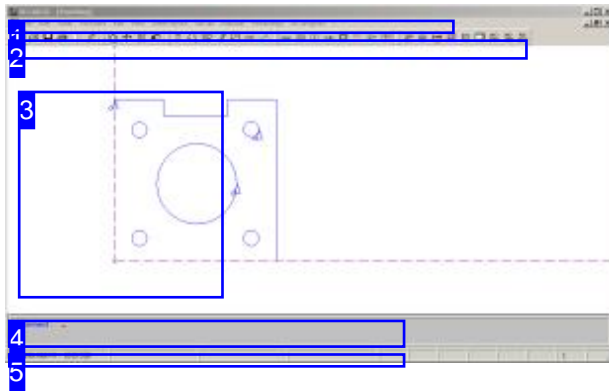
Important Note

The *ncStanz* program is not machine dependant. It offers an abundance of features, some of which will not be supported by your machine. This online help document describes the general functions based upon GUIs which, dependant on your machine, the modules you have installed and your post-processor(s) may appear differently on your copy. The post-processors have their own independent help files.

The continual development of *ncStanz* can also lead to differences between the program's current GUI and the GUI shown in the online help documents. If this occurs, please check the version number of your help files against that of the program, and check our [homepage](#) for a newer version, or contact us.

The punch Module

Prepare and Stamp Workpieces.



This is the main screen of *ncStanz*. In the middle section you have a work area, in the header and footer panels are menus, the command line, and status panel.

ncStanz is a module which is called from *ncCAD32*. After closing the program you will return to *ncCAD32*.

If *ncStanz* is used from the job management module then many relevant data will be shared through the attached database.

The program is protected using a dongle, and must be enabled for use. More on this topic in the online help for *ncCAD32*.

Important:

ncStanz is machine-independent and therefore requires a post-processor for each machine. Don't forget to select the correct post-processor for the punch module in *ncCAD32*.

ncStanz allows you to prepare your workpieces for your machine before punch and ultimately create the NC code.

While preparing you will create the punch paths, sort contours, etc. - you will undertake tasks necessary such that your post-processor can turn drawings into cut parts.

These final punch paths can then be saved as a .STW file, ready for later use.

Multiple workpieces can be grouped together in a nesting plan for one or more sheets. Nesting plans are saved as .SPL files. Optional nesting modules allow your parts to be automatically sorted onto sheets.

Requirements for correct outputs are workpieces with sorted, closed contours. This means internal and external contours must be sorted in opposite directions, and contour elements must be broken down into lines, arcs and circles.

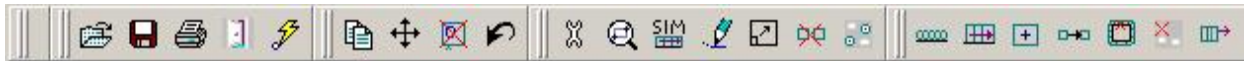
Tips:

- o If in the following pages 'click' is referred to, it means left-click unless otherwise stated.
- o The cursor can be moved with the mouse, via the command line and also with the arrow keys on the keyboard.
- o Labels in triangle brackets (<Esc> <Enter> <A>) refer to keyboard keys.



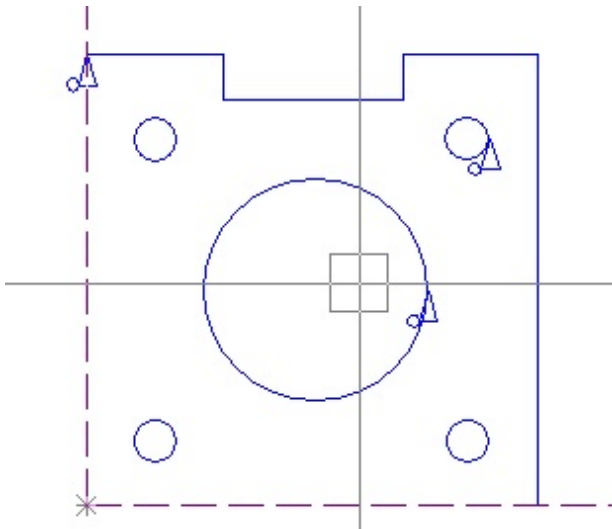
The 'Menu panel' allows you to create, open, and edit your punch paths, and make general settings. The menu items are described in the chapter 'The program's most important menu points'.

2



The 'Icon bar' gives a selection of commands made available through a quick-click. The bar is configurable; you will find a description of the basic settings in the chapter 'Input commands through the icon bar'.

3

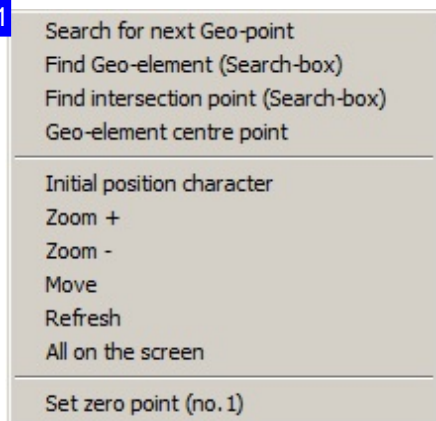


This is the 'drawing board', with its cross-hair cursor. Right-click this area for a pop-up menu with commands for searching and displaying elements.

Use the mouse wheel to zoom the drawing about the cursor position.

In the preview you see a reference point in the bottom-left corner. This is defined as 'datum 0' and is the machine's reference point. You can reassign the reference point at any time, the new reference point is defined as 'datum 1'. The reference point is assigned in the 'configuration'.

31



In the upper area are commands for searching elements about the cursor position. The menu items in the middle allow you to control the display, and the last menu item allows you to redefine the reference point.

You can also zoom by holding the <Ctrl> key and left or right clicking.

32

- Search for next Geo-point
- Find Geo-element (Search-box)
- Find intersection point (Search-box)
- Geo-element centre point

The pop-up menu's search items mean, from top to bottom:

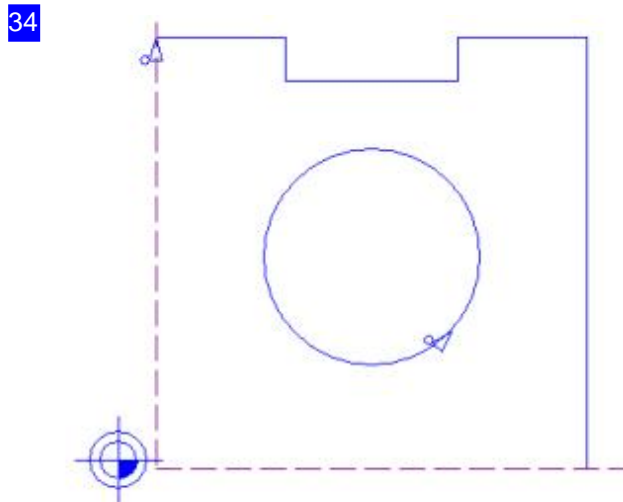
1. Find the nearest geometric point to the cursor.
2. Find the nearest element which is touched by the cursor rectangle.
3. Find the nearest intersection point within the cursor rectangle.
4. Find the center of the element within the cursor rectangle.

33

- Initial position character
- Zoom +
- Zoom -
- Move
- Refresh
- All on the screen

The pop-up menu's display items mean, from top to bottom:

1. Go back to the original layout.
2. Zoom in.
3. Zoom out.
4. Zoom out to the original size in both directions.
5. Pan about the drawing.
6. Redraw; fragments are removed.
7. Show all of the drawing.



In the bottom left corner you find the (automatic) machine datum as a fixed reference point. This is defined as 'datum 0'. You can redefine the datum at any time, the new one is defined as 'datum 1' (in this example down and left from datum 0. To move the reference point, select the corresponding menu item.

4

Command: -

The is the program's 'command line'. You can give commands in text form here, using a sequence of numbers and actions.

The text mode shows you the next step of the work sequence. To leave a work sequence press the <Esc> key.

The command line can also be shown as an input mask, where the line's content is changed according to your settings.

The input mask can be activated by pressing <F2>.

The punch module only shows commands relevant to punch.



The input mask allows you to enter the cursor position in X/Y coordinates or in polar coordinates (angle, distance). Click the relevant button on the left, and enter the new position. Click the arrow button next to the position to place a mark at the new position. Click the 'apply' button to confirm the move.

The bottom buttons on the left side allow you to enter the new cursor position using triangulation. To keep the input mask open for further steps, mark the selection box at the top-right corner. The second selection box defines whether entries refer to the reference point in absolute terms.



To enter the cursor position through triangulation, select either side length or angle and enter a value under X or Y. The cursor will move directly to the newly calculated position.



Status panel with data regarding the cursor position and drawing.

The second field shows the current tool selection from the tool manager. The third field gives direct access to the tool selector for cutting manually. The fourth field leads to the notching tools selection.

The fields are divided in to 2 sections which react differently. The left half allows you to select a tool and the right half to assign a punch path with the selected tool to a given contour.

More on this topic in the chapter 'creating punch paths manually'.

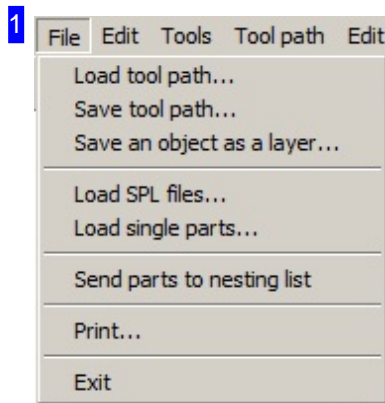
The Program's Most Important Menu Items.



The menu panel in *ncStanz*. The inclusion of individual menu items aligns itself to the source (punch path, nesting plan or single part) and the selected post-processor (post-processor).

The menu items are in part selectable directly from the icon bar.

The 'menu panel' allows you to open, edit and create new punch paths, allocate tools, define punch paths and make general settings.



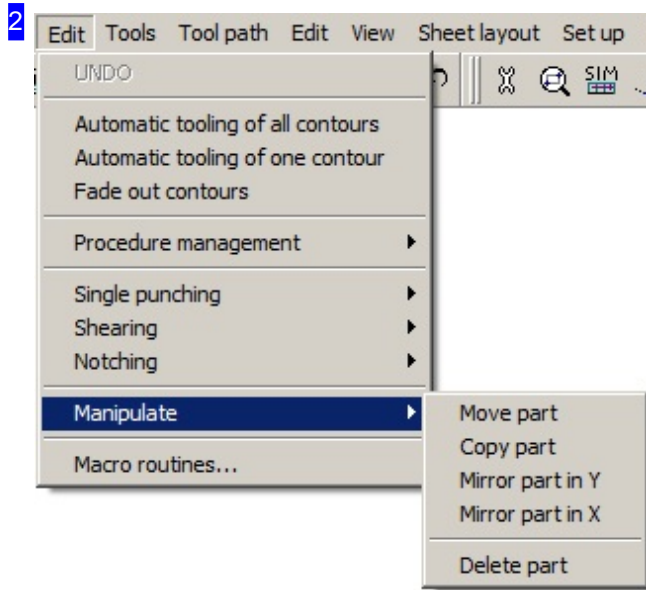
'File' allows you to open punch paths, single parts and nesting plans; save punch paths and leave the punch module.

Information on 'printing' can be found in the online help for *ncCAD32*, where you will also find a more detailed description of the 'file manager'.

To open punch paths, switch to the file manager where you can select files from your stock of punch paths (.STW files).

punch paths can also be saved as geometric drawings through the menu item 'save geometry as layer'.

To collate individual punch paths to a nesting list, select 'load punch parts into nesting list'. You'll switch to a work area, for collating and managing individual punch paths into a nesting list.



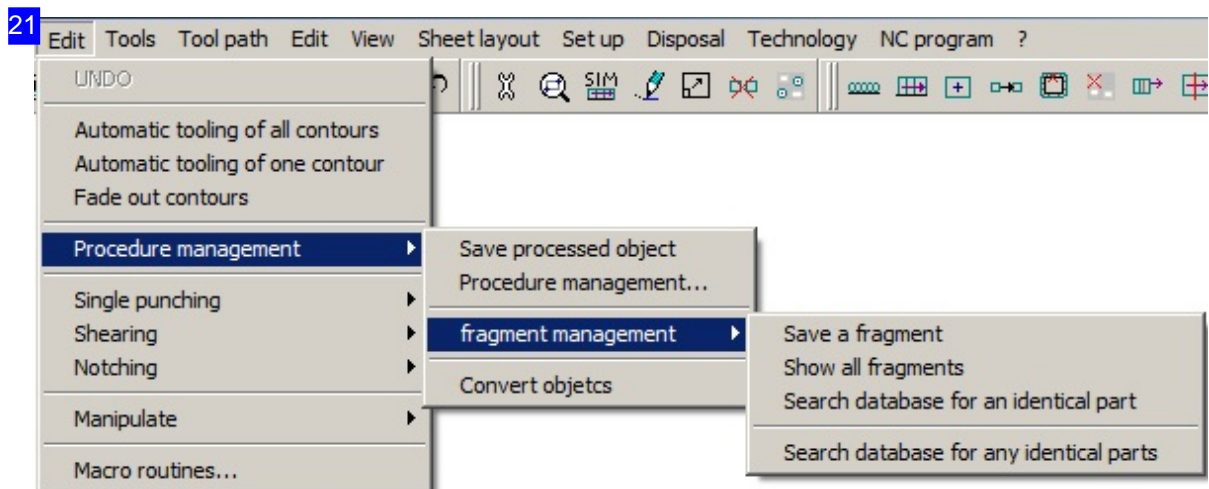
'Edit' gives the option to convert contours to punch paths, and manipulate the punch paths. punch paths are the building blocks for *ncStanz*; a description of the editing possibilities can be found in the chapter 'punch paths'.

In the procedure management module you manage special tools and contour.

Under 'single processing' you can place individual paths and positions on your contours. Contours and contour elements can also be separated completely manually and 'notches' can be stamped by identifying limits.

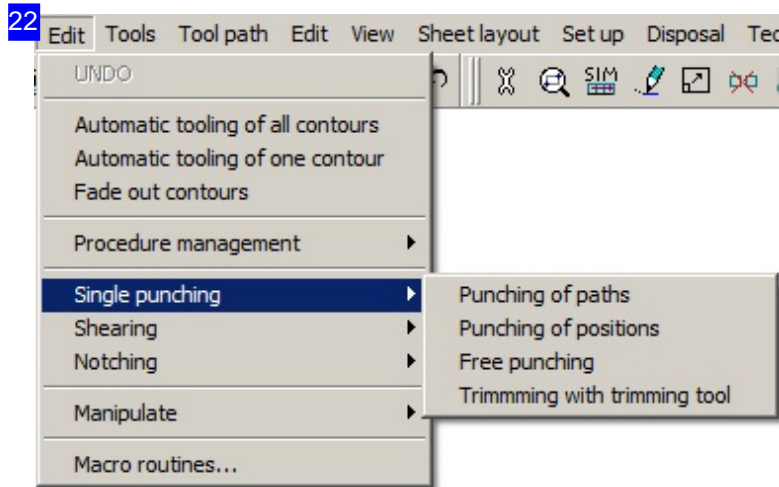
Parts which are transferred from *ncCAD32* can be manipulated here. Note that this is for parts only, not contours.

Single commands can be grouped as macros and saved under a macro name. Macro processing is described in the chapter 'Macros'.



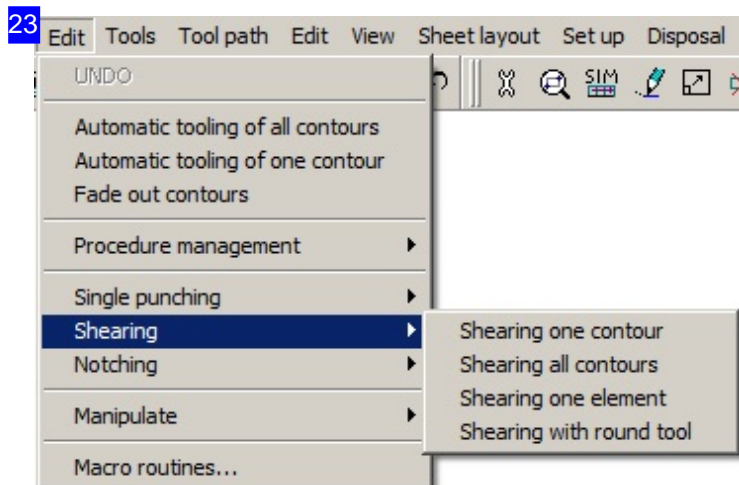
Procedure management - the procedure management module allows you to mark contours or contour

elements as 'special contours' and automatically handle separately for conversion.

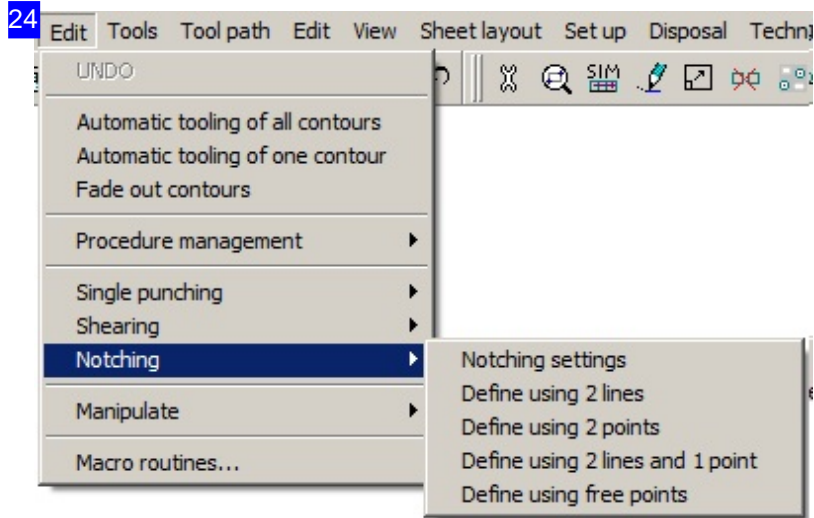


Single processing - to set a punch path on a contour element, first define the tool from the tool manager. The current (active) tool is then shown in the second field of the status panel; you can click to select.

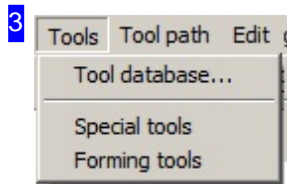
With the 'free punch paths' and 'free travel paths' items, you can complete as many punches and movements on your sheet as you need. Thus you can stamp and crunch your sheets and internal contours as required.



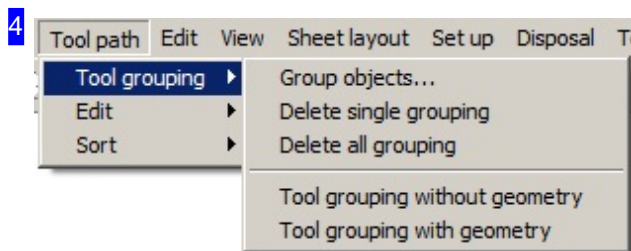
Separating - here contours and contour elements can be stamped completely using the selected tool. The individual contours are selected manually.



Notch - for notches there are special procedures for defining the limiting contours. The notches will be stamped with the selected tool in the identified limits.
When using shared separating cuts, not-included external contours should first be crunched using notches.

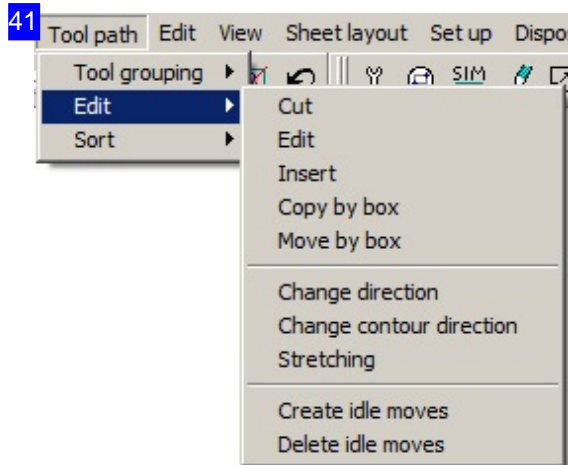


Using 'tools' you can access the tool manager and directly select special tools or forming tools for creation of tools from a contour.



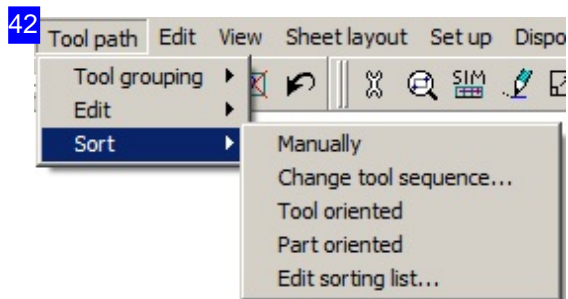
Punch paths - offers more functions for manipulation of contour elements and punch paths.

- o Punch groups - group contours together to be considered by rows, columns and polar (see chapter 'Make space using groups').
- o 'Edit'
- o 'Sort'

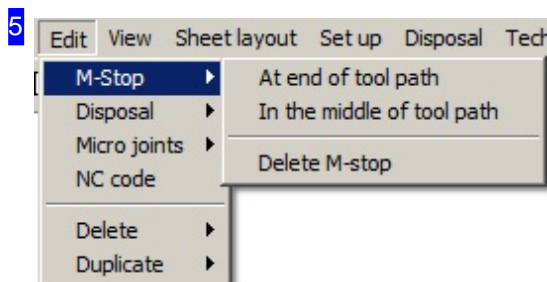


Edit - here you can manipulate your punch paths.

- o 'Separation'
- o 'Edit'
- o 'Insert'
- o 'Copy'
- o 'Move'
- o 'Change processing direction'
- o 'Stretch/squeeze'
- o 'Create and delete travel paths'

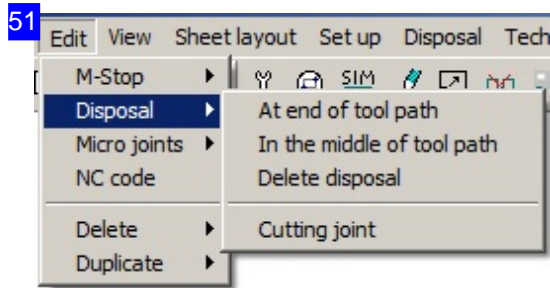


Sort - parts and tools can be sorted for processing. The processing sequence can be modified as required. The options are described in the chapter 'Sorting and combining'.

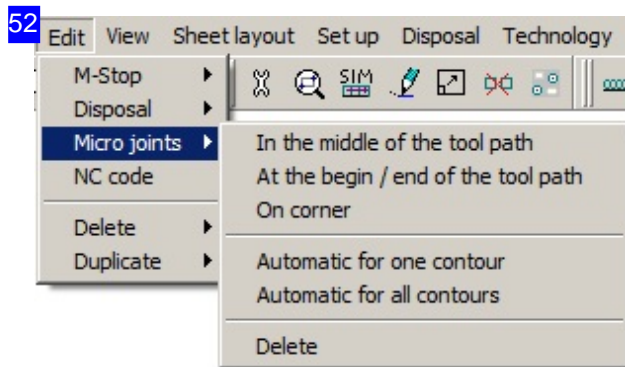


Edit - offers more functions for manipulation of contour elements and punch paths.

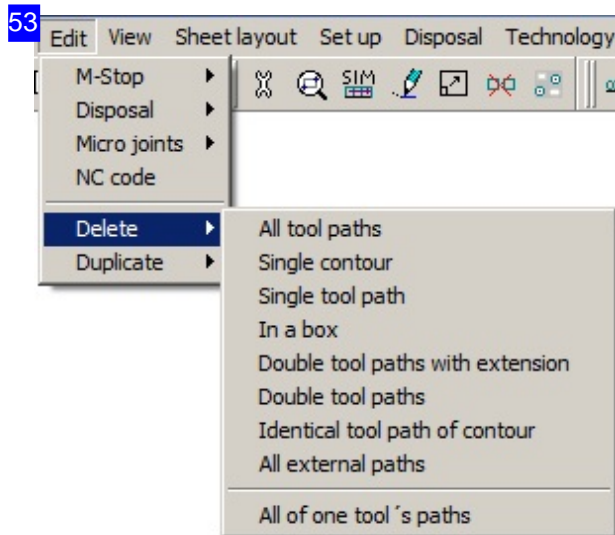
- o M-Stops - this function allows you to add machine stops on a punch as required. More on this in the chapter 'Change the punch direction and add machine stops'.
- o 'Disposal'
- o 'Micro joints'
- o 'Insert NC code' - define an NC line for a punch path. Take note of the prompts in the command line.
- o 'Delete'
- o 'Duplicate'



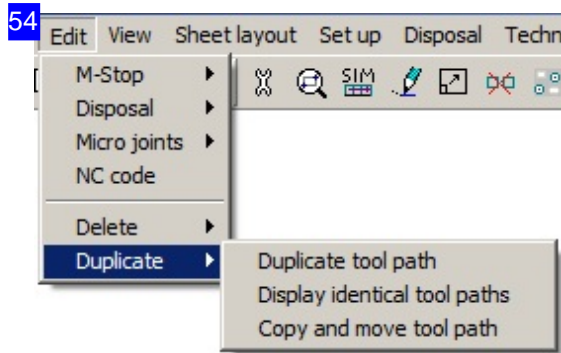
Disposal - part disposal using rigid slides; the disposal possibilities are machine-dependent and covered in more detail under the menu item 'Disposal'. See the chapter 'disposing small parts using slides'.



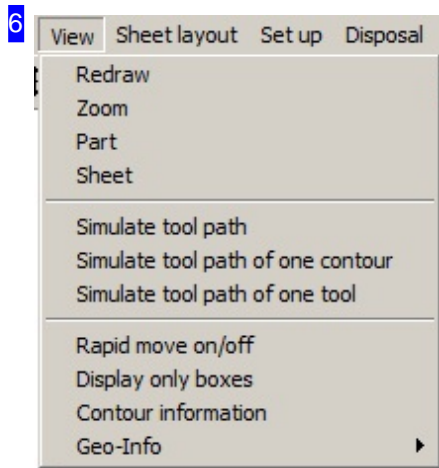
Micro joints - to hold punch parts in a sheet and not completely free them, you can add cutting 'bridges' to a punch path. Information on placing micro joints can be found in the chapter 'punch parts with micro joints'.



Delete - remove single identified elements or all elements or punch paths, or remove all punch paths with one tool.

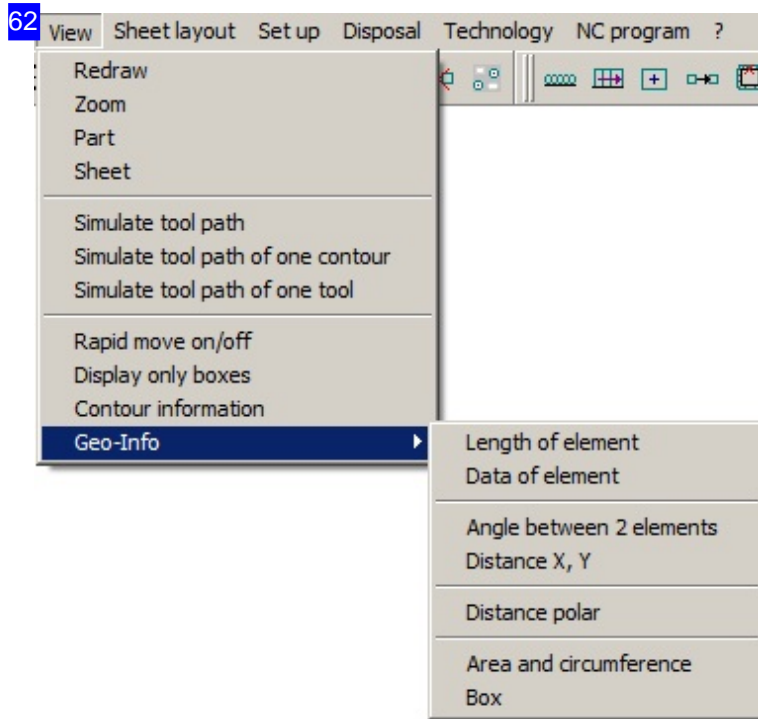


Duplicate - under this menu item you can manually convert contours into punch paths, and thereby also duplicate and move multiple identical or individual contours. When moving, the move axes are defined using the <X> or <Y> keys. After selecting a menu item the required contour must be selected. The corresponding processing sequence is prompted in the command line.



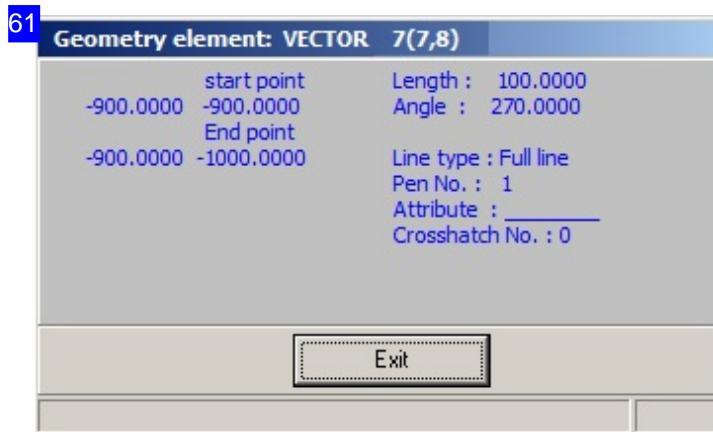
Display - offers more functions for targeted selection and display and display of extra information.

- o 'Redraw' - refresh the drawing in the preview.
- o 'Zoom' - Stretch a selection box to zoom in on a desired area of your drawing.
- o 'punch part' - the punch parts are centered in the drawing area.
- o 'Sheet' - the whole sheet is centered in the drawing area.
- o 'Simulate punch paths'
- o 'Simulate punch paths of one contour'
- o 'Simulate punch paths of one tool'
- o 'Show/hide travel paths'
- o 'Show only boxes'
- o 'Contour - Info'
- o Submenu 'Geo-Info'



The 'display', 'geo-info' submenu
Take note of the command order in the command line. Take the steps in order to achieve the desired result!

- o Element length - after selecting a contour, its values are shown in the command line. Exit with <ESC>.
- o Element data - a Dialog with these values will be shown.
- o Angle between two elements
- o Distance x,y
- o Polar distance
- o Area
- o Enclosing box

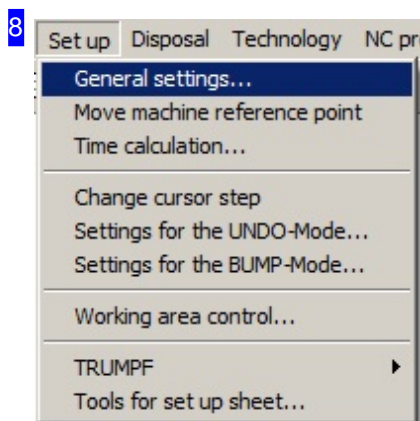


The information on the selected geo-element is shown here.



Sheet division - under this menu you can define the sizes of virtual sheet and call functions for ordering your parts on the sheet.

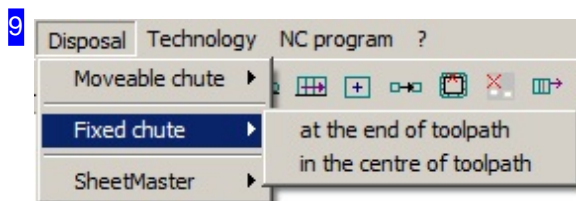
- o 'Define sheet'
- o 'Grid processing..'
- o 'Delete grid processing'
- o 'Move all lead-ins'
- o 'Set clamps'
- o 'Position restrainer'
- o 'Discover sheet'
- o 'Cancel sheet discovery'
- o 'Set manually'
- o 'Cancel manual setting'
- o 'Delete subroutines'
- o 'Undo delete subroutines'
- o 'True-type nesting'



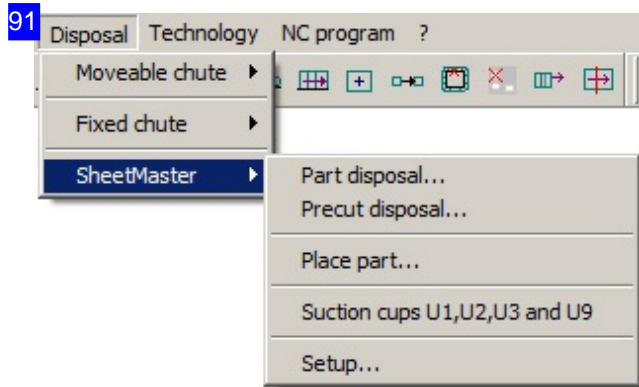
Settings - under this menu you find the direct path to several dialogs for entering settings for the processing steps.

- o 'General settings'
- o 'Time calculation'
- o 'Cursor step width'
- o 'Settings for undo'
- o 'Settings for bump-mode'
- o 'Area/error checking'
- o 'Tool setup plan..'

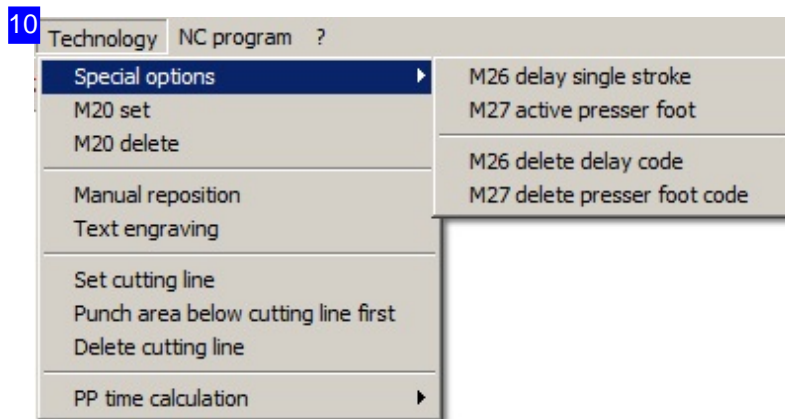
To move the machine reference point, simply use the mouse to move the cursor on the sheet.



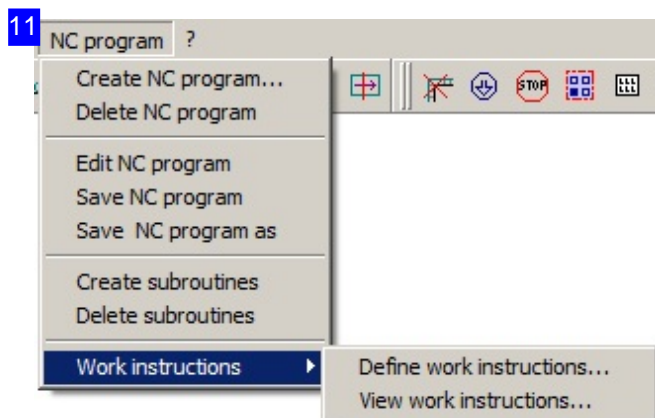
'Small part slides' offers the same functions as the menu item 'rigid slides'; a description can be found in the chapter 'disposing small parts using slides'. Machine dependent you can also find various disposal procedures such as rigid slides, small part slides, SheetMaster, etc.



SheetMaster is a loading and unloading station for TRUMPF machines; setting values for the stations must correspond to your setup.



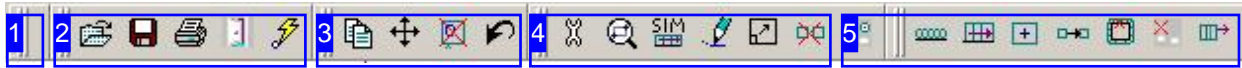
Define technologies for your machine. Add or delete M-commands, sign texts, set manually and time calculations using the post-processor. The menu is adapted to the post-processor, and its content varies accordingly.



NC-processing - here all menu items which will be required for generation of your NC code are listed. The generation is described in the chapter 'Convert punch paths to NC-programs'.

The menu item 'setup plan' allows you to manage an interface to an optional form editor. Here you can enter customer and part specific information in a setup plan for the punch parts.

Input commands using the icon bar.



The 'icon bar' allows you to call commands with a single click on the corresponding icon (quick-keys).

The 'icon bar' is dynamic and can be modified by the user as required. The procedure is as in *ncCAD32* .

The functions of the icon bar can be moved and are grouped in the following packets:

- o Empty element and end program [1].
- o Open save, print a file [2].
- o Manipulate contours [3].
- o Tools and punch paths [4].
- o Create punch paths [5].

- o Micro joints and stops, NC-program.

For simplified use the icon's meaning is saved as a 'Tool tip' for every symbol.

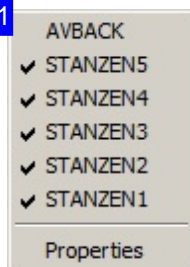
1



The empty block on the left is the icon bar's anchor and cannot be deleted. It allows you access to a context menu to show or hide the individual menu blocks.

The context menu can be modified as required, select the item 'properties', exactly as in *ncCAD32* .

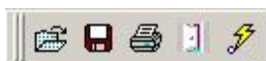
11



In this menu you can show or hide individual menu blocks.

The context menu can be modified as required; select the item 'properties', exactly as in *ncCAD32* . You will switch to a dialog for editing the menu items.

2



In this block you can see icons for file processing. The functions are exactly as described in the menu item 'File':

- o Load existing punch path.
- o Save punch path.
- o Print punch path.
- o Exit module, return to *ncCAD32* .
- o punch processing for all contours. Hold the <Ctrl> key to process only internal contours.

3



The rightmost button means undo the last action.

The previous three button allow you to manipulate contours. The commands are identical with those in the menu panel under the menu item 'Edit'-'manipulate'.

- o Copy
- o Move
- o Delete

4



The meaning of the buttons from left to right:

- o Tool manager
- o Simulate punch path
- o Redraw
- o Stretch punch paths
- o Delete identical punch paths
- o Duplicate punch paths

5



The buttons mean:

- o Separate with round tool
- o Separate elements
- o Stamp position
- o Stamp path
- o Delete individual punch paths
- o Delete individual contours
- o Edit punch paths
- o Separate punch paths

6



Complementary technologies:

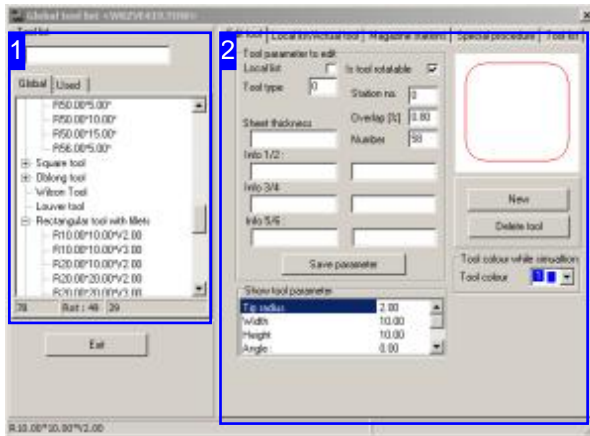
- o Delete all punch paths
- o Small part slides
- o Machine stop
- o Show only boxes
- o Grid processing
- o Define sheet

The three icons to the right process NC programs:

- o Create
- o Edit
- o Save

Tools

Manage And Populate Tools.



Punching involves using punch tools to create workpieces (parts) from sheet metal. Punch tools generally consist of a punch, and a corresponding matrix as its counterpart. Long punch paths are created by overlapping multiple punches in corresponding lines. To achieve this, your machine will rotate the tool, if it is able. If this is not possible then non-axial contours will be cut in small steps using round tools (nibbled). Irregular internal contours will be punched through roughly, then nibbled to a finer finish. This process is known as 'transforming'. 'Forming tools' can be defined for this job in the same way as 'special tools'.

Manually created punch paths which have been saved as 'special contours' can also be seen as tools. These can be used to process closed groups via the procedure manager, or for automatic conversion of identical part contours.

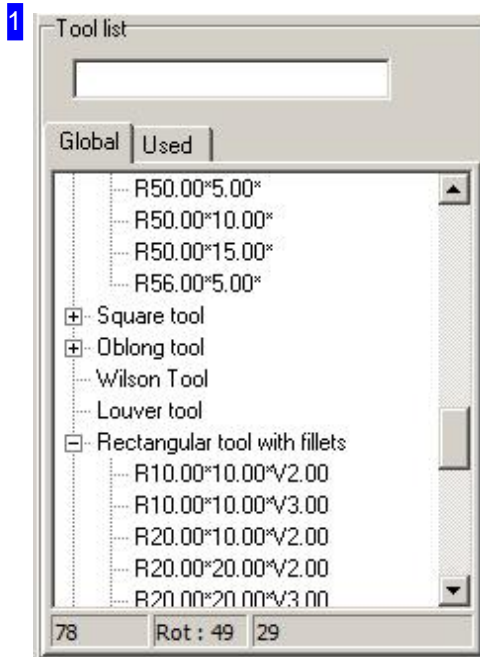
The tool manager is a dialog which can be accessed through menu item 'tools' - 'tool manager'. The dialog shows zeigt all available tools [1] and gives the option to select the tools which will be used. If your punch machine has a tool magazine, you can also manage its occupancy here.

Use the top tabs to:

- o manage, create or delete tools.
- o manage a current selection list.
- o manage a magazine occupancy.
- o allocate particular punches as special tools.
- o save the punch list.

To create special tools, the corresponding shape must be present as an internal contour. This can then be 'captured' as a special or transformation tool and added to your tool list.

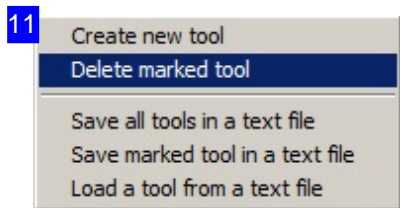
To create special contours, first add manual punch paths, which can then be saved as 'special contour' in the 'procedure management' area.



The 'global' tab contains a selection list of all the available tools in your system. The tools are linked in groups; open the required group by clicking the (+) symbol. Select a list entry to view the tool in the preview [2]. Right-click an entry to access a context menu to create, delete or save a tool.

Tools which are used for automatic conversion are shown in the 'used' tab.

The list also contains special tools such as roller tools (wilson tool), louver tools and multicut tools. These require special treatment and are not covered further in this online help. If you use such tools, please contact IBE Software GmbH for further information.

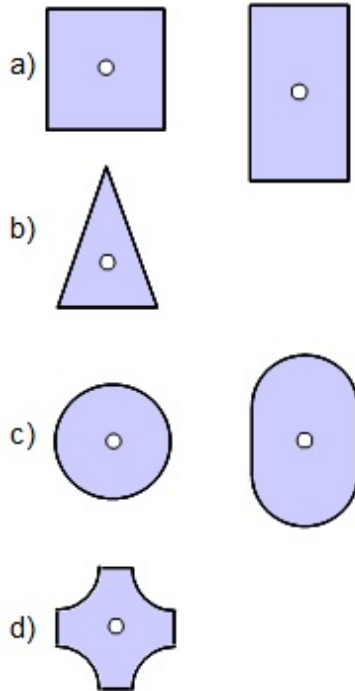


This menu allows you to manage and save your tools. Select the topmost menu item, to create a tool. A dialog will open where you can enter the settings for a new tool.



This tab lists all tools which were used when creating the displayed punch paths. Note that the punch paths were already created automatically to detect the correct tools. Check the list with the tool magazine's contents.

13



The schematic shows standard tool shapes:

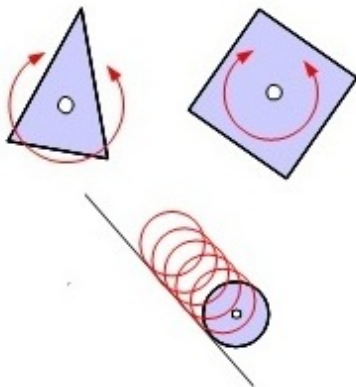
- o a) Square and rectangular punches - these can also have rounded corners.
- o b) Triangular punches - for parts with sharp angles.
- o c) Round and elongated round punches - for round holes, arcs and where required non-axial contours. Elongated round punches for elongated round holes.
- o d) Rounding punches - for filleted corners with defined radii.

As well as the standard shapes you can also use any special punches you require. These can be made to your requirement and added as 'special tools' in the tool manager. More on the creation of special tools can be found in the chapter 'capture contours as special tools'.

Some machines can also rotate punches, increasing your tools' capabilities.

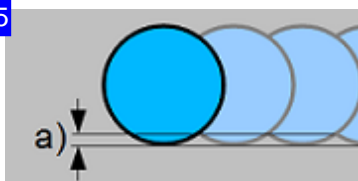
Special tools can be useful for special manufacturing processes such as ventilation openings or folds.

14

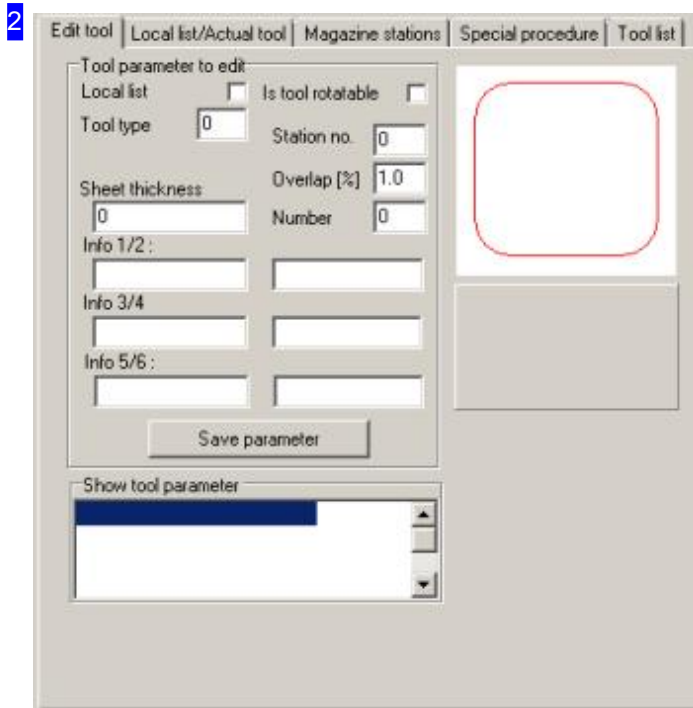


Some machines allow tools to be rotated, shown here with the example of a triangular and rectangular punch. <D> rotates by 90° or use <+> and <-> to set any angle. You can also use keyboard commands to move the tool. This function allows you to cut non-axial contours with smooth edges. If your machine does not support this function, then it must use round punches as shown in the diagram.

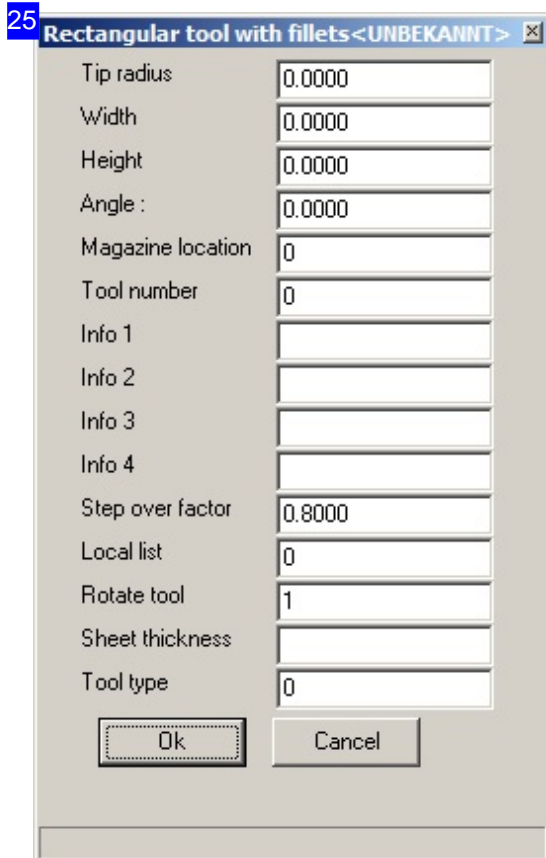
15



When nibbling there will be an amount of material left behind dependent on the tool and overlap. The height of the 'teeth' is called surface roughness, and can be set in the punch settings menu.



Edit tools - to create a new tool, select the tool groups in the overview [1] and click on 'new tool'.
A dialog will open to define the new punch.



This dialog allows you to define a punch:

- o Enter the punch's dimensions in width and height.
- o Enter the angle the angle the tool is clamped at.
- o Tool and tool changer number.
- o Specific information (1-4) for the user.
- o Punch overlap from stroke to stroke (factor 0.5-1).
- o Enter in the selection list (1=yes).
- o Can the tool be rotated (1=yes).
- o maximum sheet thickness for this tool.
- o Punch type for the post-processor.

Enter the settings and click 'apply'.



Current tool list - this list is collated manually and contains only those tools which are permissible for the current tasks, e.g. Those which can be used on this thickness of material.

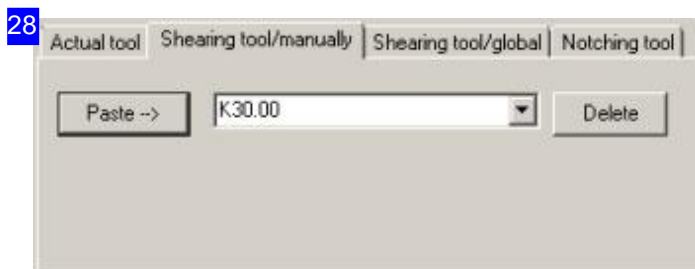
The list is empty when you start the program and is filled to meet your specification. If a selection list is present then only the tools in it will be permitted when creating punch paths. Create this list carefully to protect your tools!

The selection list can be saved as a file (Extension .AWL) and used again later.

Define the tools to be used for a particular punch process in the bottom tab row.

- o The current tool - select the tool which should currently be in use. The selection list can be filled with tools from the tool list [1]. Right-click to open a context menu where you can remove entries from the list.
The current selection list can be opened from the second status field of the status panel.
- o Separating tools for manual conversion.
- o Separating tools for global use.
- o Notching tools

The procedure for selecting separating and notching tools is as with the current tool.



Separating tools/manual - manage your tool selection for manual separation here. The selection list can be filled with tools from the tool list [1]. Right-click to open a context menu where you can remove entries from the list. The current selection list can be opened from the third status field of the status panel.

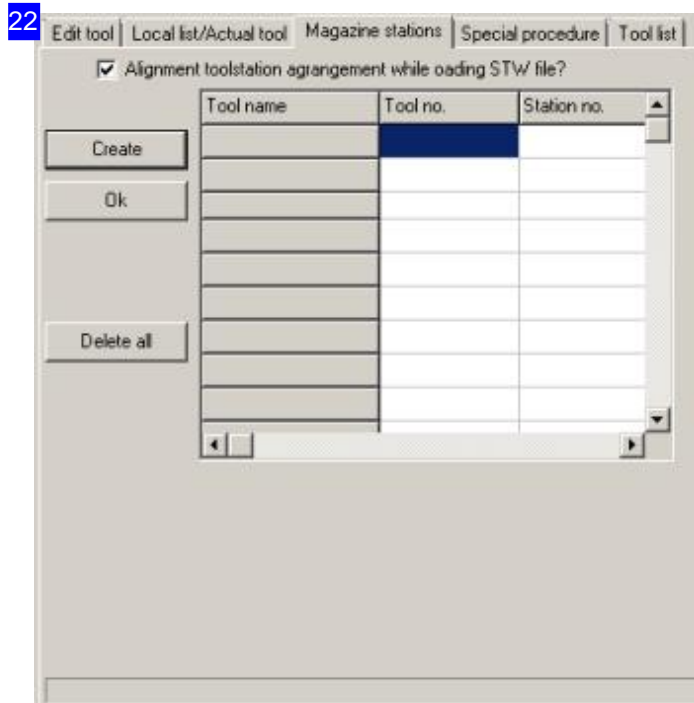


Separating tools/global - select the tools for automatic global conversion.the same as selecting manual separating tools.

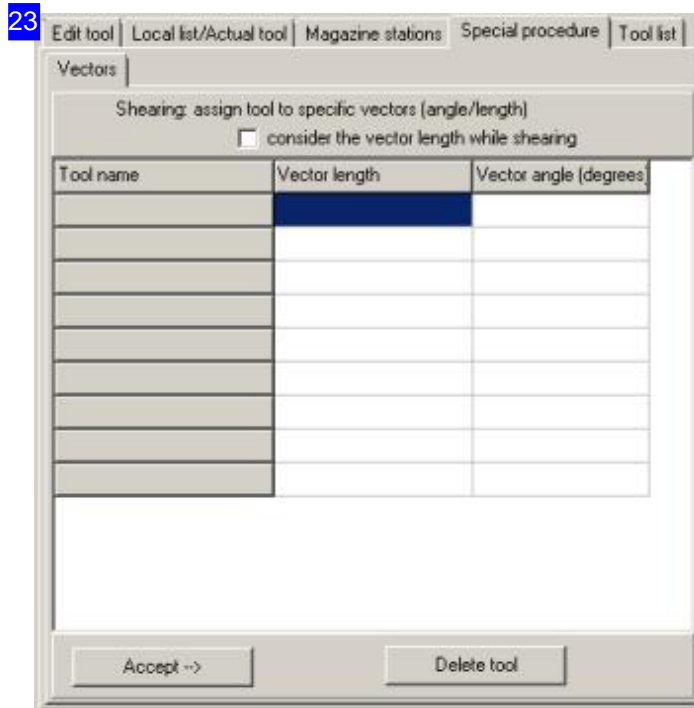


Notching tools - manage the tools for notches in this tab. The selection list can be filled with tools from the tool list [1]. Right-click to open a context menu where you can remove entries from the list.

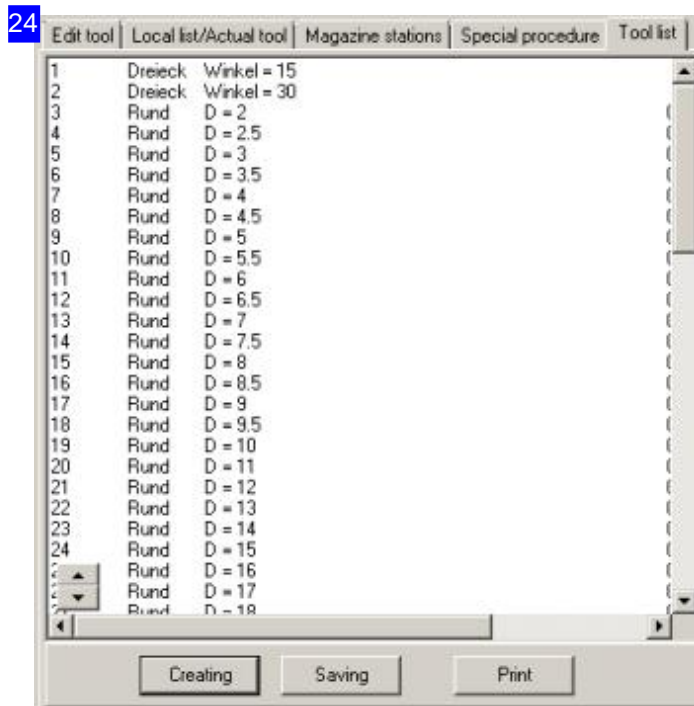
The current selection list can be opened from the fourth status field of the status panel.



Magazine space occupation - depending on your machine, you can locate tools in the magazine positions and assign reference numbers. This allows your post-processor to control the tools accurately. Take note not to double-book magazine spaces, this is important when the magazine place is entered directly in the 'edit tool' function. Check the list when you're done, and correct any errors.



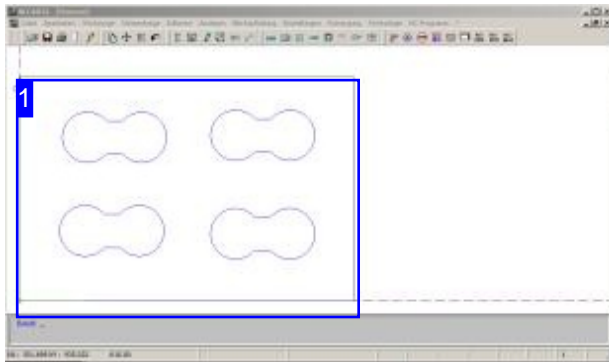
Special processing - vectors of fixed length and angle are allocated to particular punches.



Punch list - this list must be generated by clicking 'create'; a dialog opens displaying the machine settings. For this process the post-processor runs through to detect the list values.

The list shows all punches with their dimensions. You can add information to the entries and save or print the list as a work list.

Capture Contours As Special Tools.



ncStanz allows you to define special tools which can then be used to create punch paths just like a regular tool.

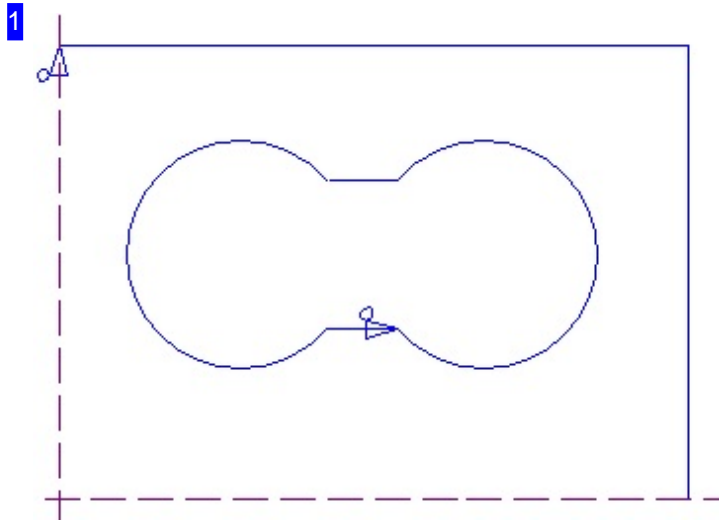
Special tools can be created from closed internal contours, although this may not be a regular geometric contour (circle, rectangle, long hole) such as you could choose as a standard tool.

Special tools are subject to the normal usage conditions for tools, so they too can be turned. For this reason it is important to define the tool's center (focus point) when creating it. Take note that your machine must also allow turning of the tool for this to be possible. If not, this should be noted for creation of the punch path in the tool selection area.

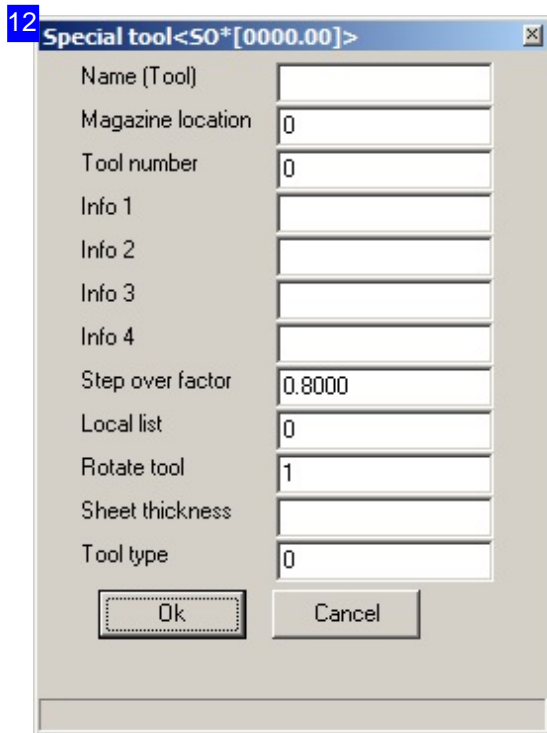
To create special tools, first manually create the required internal contour in *ncCAD32*. This must be an internal contour, so the program can define the necessary focus point. The external contour's form is irrelevant, but there must be one so the internal contour can be recognized!

The contour must now be transferred to the list as a special tool. Select 'tools', 'special tools' in the menu panel. Next identify the defined internal contour.

After transferring the position, a dialog opens, in which you can edit the settings for the special tool as for the standard tools. Click 'apply' to transfer the tool to the tool list as a 'tool for special punches'. It can now be selected for use the same as a normal tool.



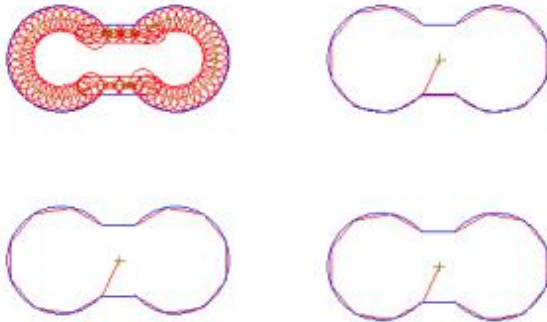
An internal contour can be captured as a 'special tool' and saved to the tool list for future use both manually and automatically. The contour is given a tool name, by which you can call it as you would a normal tool.
In the menu panel, select 'tools', 'special tools'. Identify the relevant contour; a dialog, will appear in which you can allocate your special tool a name and tool settings.



To transfer the tool to the tool list, select 'tools', 'special tools' in the menu panel. Identify the defined internal contour; the cursor 'skips' to the contour's center point (focus point). You must not move the mouse position while using this command! The position can also be entered manually by entering the coordinates, in case the focus point is not at the contour's center.

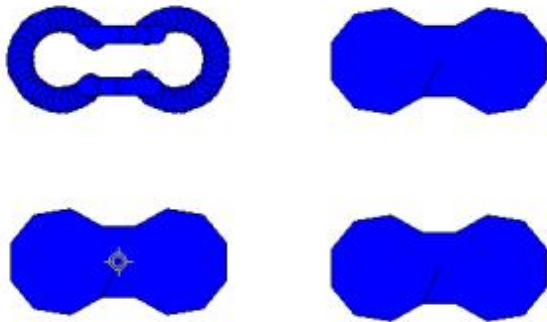
After applying the position, this dialog will open, where you should enter settings for the tool. The same conditions apply as for standard tools.

13



The new tool can be found in the tool list under 'tools for special punches'. The tool can now be used as a standard punch when creating your punch paths. Transfer the tool to the current selection list and assign the punches to the relevant contours. The tool's approximate outline will be shown as the cursor. Here in the top-left of our diagram we see the same hole cut with standard tools, as using one special tool in the other three parts. Start the simulation to confirm the usage of the special punch.

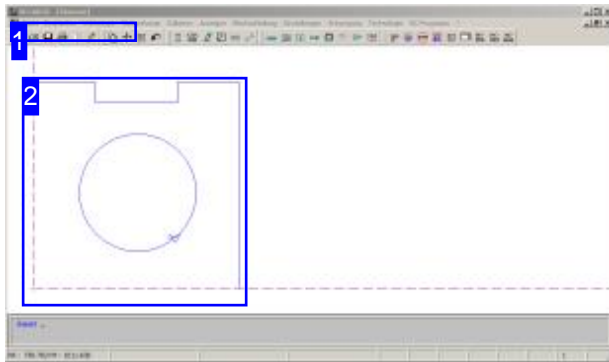
14



Here the contours are shown after simulation as rough outlines using standard punches (top-left) and a special tool (other three).

punch paths

Create punch paths.



punch paths are individual contours grouped together which as a whole describe a punch part. Through definition of punch directions you can define the individual punch paths. The direction of a punch paths defines the contour as an internal or external contour.

The current tool will always be used for punch. After selecting the tool it will be shown at the cursor position, adjusted in shape and orientation by the tool's settings. The tool can thus be moved around the workpiece with the mouse as required to select the individual contours.

An imaginary box will be placed around a part for editing and validity area checking. This can also be shown in the preview.

For some jobs it can be useful to only show the boxes, as this reduces processing time.

A tool which is passed from *ncCAD32* to the punch module must be converted to punch paths. Under 'Edit' select the menu item 'automatic stamp processing for all contours' to give your part the correct form. Take note that the contours were correctly sorted in *ncCAD32* first, else automatic conversion may not function correctly. Conversion can also be executed from the icon bar.

When converting, the tools from the tool manager which are defined in the tool list will be used. The automatic conversion will always try to use a suitable separating stamp. If contours are thus injured then another suitable tool will be selected (rectangle, round, radius, circle, long hole, triangle). Individual contours or part contours can be executed with special tools or as 'special contours', if the corresponding tool is present and the contour/part contour is saved in the database.

punch paths can also be added manually in a targeted manner, by allocating existing tools to individual contours or contour elements.

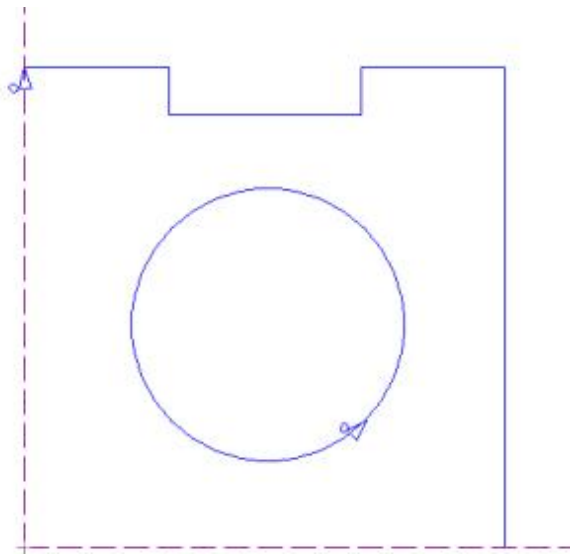
If contours are removed by the automatic conversion, you can use the command 'hide contour' to exclude them. This function is used as a toggle to show/hide; include/exclude the contour.



Under the menu item 'Edit' you can create new punch paths and edit existing ones. You can also create a punch path using the icon bar or command '240'.

Information about the individual workpieces is shown in a dialog.

2

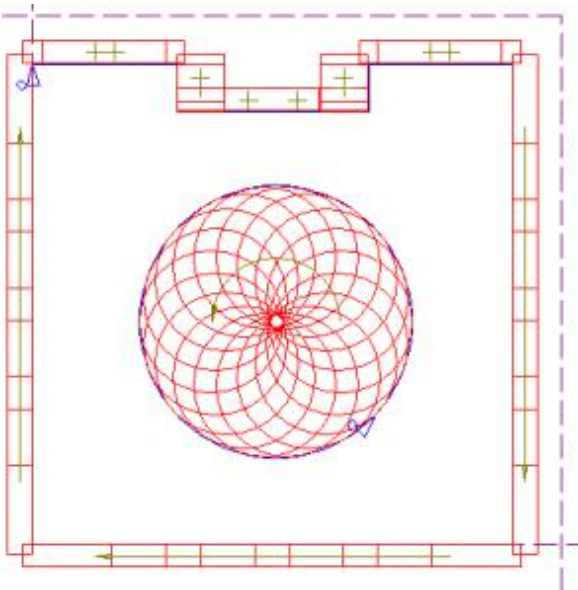


A workpiece transferred from *ncCAD32* to the punch module shows the contours with the punch directions, sorted by internal and external contours. To edit the part in *ncStanz* you must convert to punch paths. Select the corresponding menu item or icon to begin automatic conversion.

If converting manually you can use the menu item 'automatic stamp processing of a contour' to identify individual contours with a click or mark individually and hide from the complete automatic conversion.

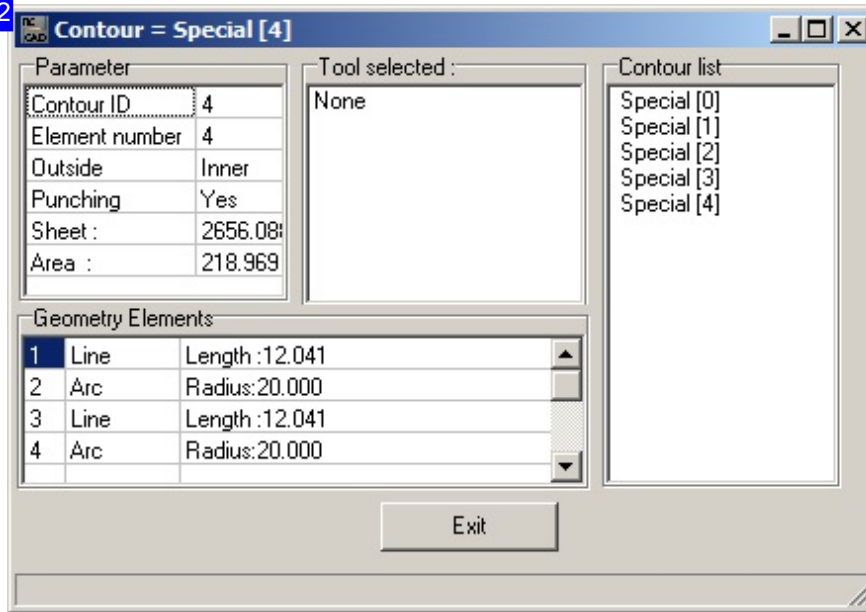
If the processing direction of a contour is not as you require, you can also change this individually using the menu item 'Punch paths'.

21



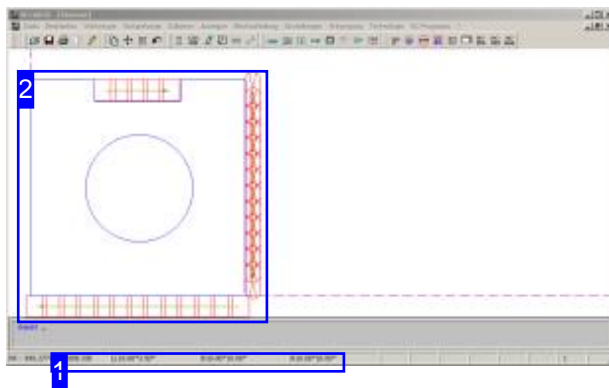
After conversion you see the part as punch paths with the stamps.

12



This dialog is reached through the context menu under the menu item 'display', 'contour info'. In the frame to the right the contours are listed. Highlight an entry here and information to the corresponding geometric element, the allocated stamp and the settings are shown in the corresponding frame.

Add punch paths Manually



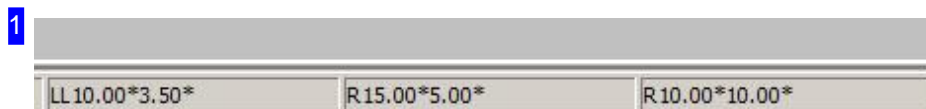
If you wish to manually allocate punch paths to imported contours, *ncStanz* offers all possibilities to select and use the existing tools for punch individual contour elements. punch paths can be allocated to separate the contour by allocating start and end points on an identified contour. The program calculates the punching strokes and path from the global settings.

Individual punches can be executed at a given point, and you can define freehand paths to separate offcuts. For trimming edges you can use defined trimming tools to execute your free punch paths.

To add a punch path, select a stamp from the tool list to be your current tool. This will now be used for the coming punches. Tools can also be selected from the status line. Click on the left side of the second field to open a context menu. Click on the right side of the field to open a context menu for starting editing processes.

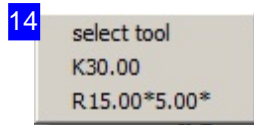
To separate contours or contour elements completely manually, use the third field in the status line. As before, click the left side for a context menu for tool selection and the right side for a menu with the process selection. The settings for separating manually are made in the tool editing menu.

ncStanz offers a further possibility for processing notches, whereby the limits are set by contour elements. and the notches are completely crunched. In the fourth field of the status line, click left to set the tool and right to define the notch. Here too, the tools are predefined in the tool manager.

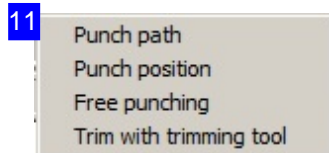


In the status line you can directly select the punch paths in fields 2,3 and 4. The fields are each separated in two halves and when each half is clicked a different menu will open. The left side opens the tool selection menu in each case, and the right side has the following functions:

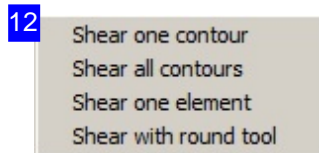
- o Field 2 - Functions to stamp positions or add freehand punch.
- o Field 3 - Functions for separating contours or contour elements.
- o Field 4 - Functions to crunch notches within defined limits.



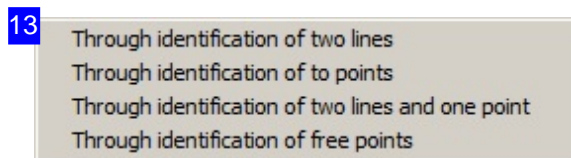
In this menu all current tools from the tool list are displayed. The top menu item gives access to the selection dialog. You can select available tools to use as the current tool directly from the menu. The current tool remains until changed, including after restarting the program.



In this menu you can start the direct editing processes to create individual punch paths using start and end points, or one position. Take note of the 'command line' which shows the next step.
The menu is reached using the menu panel under 'Edit', 'single processing'.

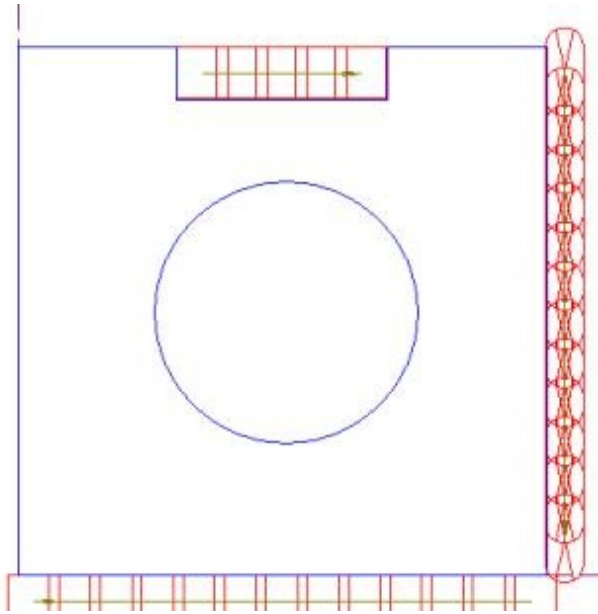


Separating contours or contour elements. If you want to create punch paths direct on contours, start the editing process in this menu, then identify the relevant contour or contour element. Take note of the 'command line' which shows the next step.
The menu is reached using the menu panel under 'Edit', 'separating'.



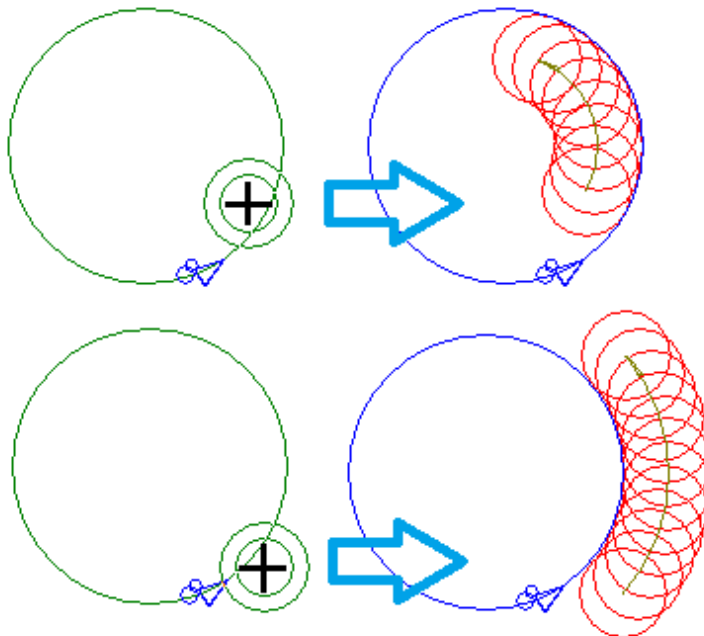
Crunch defined areas as notches. Identify 2 lines and/or points to define a notch. Take note of the 'command line' which shows the next step.
The menu is reached using the menu panel under 'Edit', 'notch'.

2



After selecting the tool, identify first the workpiece's contour, then set the start point for the punch paths on the relevant side of the contour which should be cut. Next define the end point, whereby you can recognize the sequence of the punch path by the sequence line with the indicated punch in the selected punch size and therefore define the path length precisely. Individual contours or contour elements can be punched quickly using the pre-selection for separating manually. Hereby identify the relevant contour to completely create the punch path. For notches there are special processes which limit the punch path for crunching the notch through identification of 2 elements/points. Contours which have been identified once can have stamps allocated as required. Each mouse click sets a punch, then right-click to open a menu with the selection of multiple functions for process control.

22



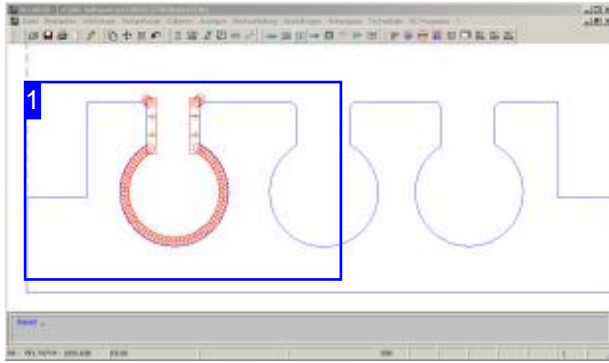
The cursor position when selecting a contour elements is responsible for the position of the punch path. Place the cursor's center carefully on the required side of the contour. Then set the start point; the tool snaps to the contour until you've set the punch path's end point. You can exit by using <ESC>, <Q> or via the command selection by right-clicking.

21

<Q> : Finish this command
 <L> : Delete tool position
 <+> : Free turn of tool CCW
 <-> : Free turn of tool CW
 <W> : reject rotation of tool
 <E> : No search of contour when tools are moved
 <S> : Complete contour with this tool
 <X> : Move tool in X direction only
 <Y> : Move tool in Y direction only
 <I> : Enter incremental tool rotation angle
 <C> : Enter position manually
 <U> : Contour will be cleared or not
 <INS> : Insert position direct

In this menu you will find the functions for editing selected contours using the keyboard, or to move the tool. The menu is contextual based on the currently selected tool.

Capture Punch Paths As Special Contours.



Special contours are external contours, unlike special tools which are used for internal contours. They are defined through a beginning and end to allow automatic conversion on any of a workpiece's matching contours. The sections contain multiple contiguous punch paths of contour elements, which are captured and managed from the part contour manager.

Entire internal contours can also be captured as special contours, although these can then only be used via processes available through the process manager.

When adding punch paths, available special contours can be compared to the workpiece's contours, and when a match is found, the special contour's punch paths will automatically be added. It is important that the part contours are exactly the same as the special contours! When creating a workpiece, e.g. In *ncCAD32*, just copy the first example to be sure they are identical.

To create a special contour, first add the punch paths to the relevant part of that contour manually.

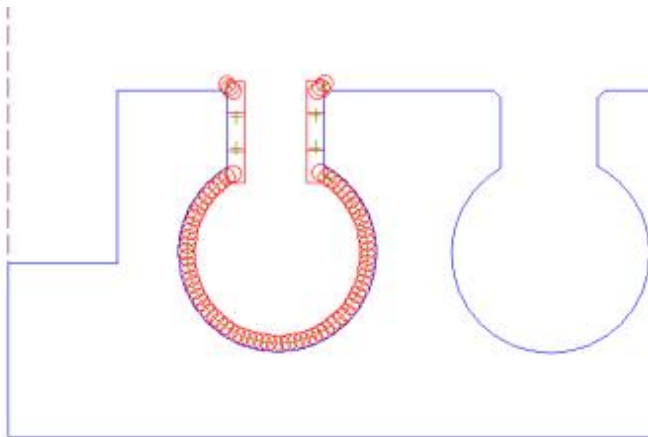
start the 'process manager' module from the menu panel; select 'part contour manager', 'capture the part contour' and select the part contour. In the process manager for part contours you can then give the part contour a name and apply as a special contour in the part contour manager.

The special contour will then be used when generating punch paths for identical part contours, or can be used for manual punch path generation.

to execute a punch path as a special contour, select 'process manager', 'part contour manager', 'convert all part contours in the database'. Identify the workpiece's part contour and the special contour will be applied to any of the workpiece's part contours which match the special contour. this can also be used automatically, just make the relevant setting.

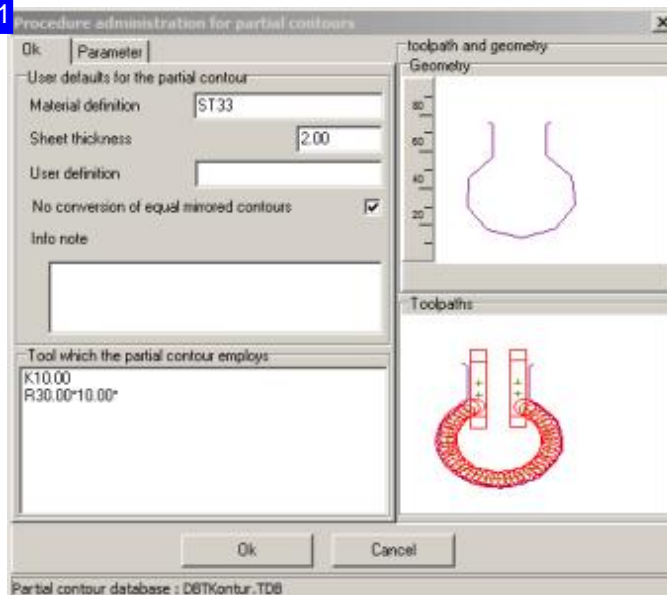
To apply the special contour to individual part contours, select 'process manager', 'part contour manager', 'find identical part contours in the database'. Next use the mouse to highlight the area with a selection box, or draw a polygonal search area. If no matches with a special contour are found, a message will appear.

1

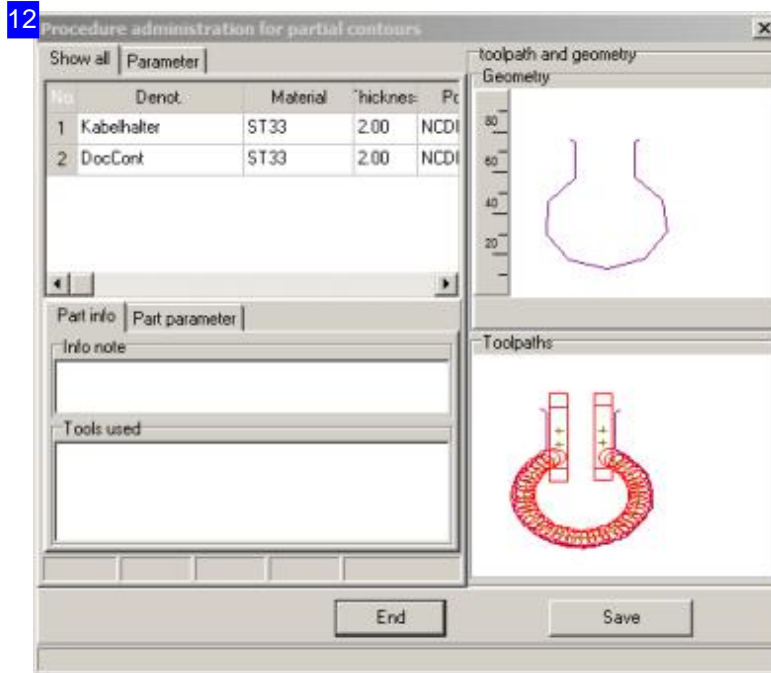


Manually added punch paths on an external contour can be captured for future use as 'special contours'. Give the punch path a name under which it will be saved for future use in the part contour manager. in the menu panel select 'process manager', 'part contour manager', 'capture a part contour' and mark the part area with the relevant punch path. Follow the prompts in the command line; you can select with a box or polygon line. next the 'process manager for part contours' will open, here you can give the contour a name and save it.

11

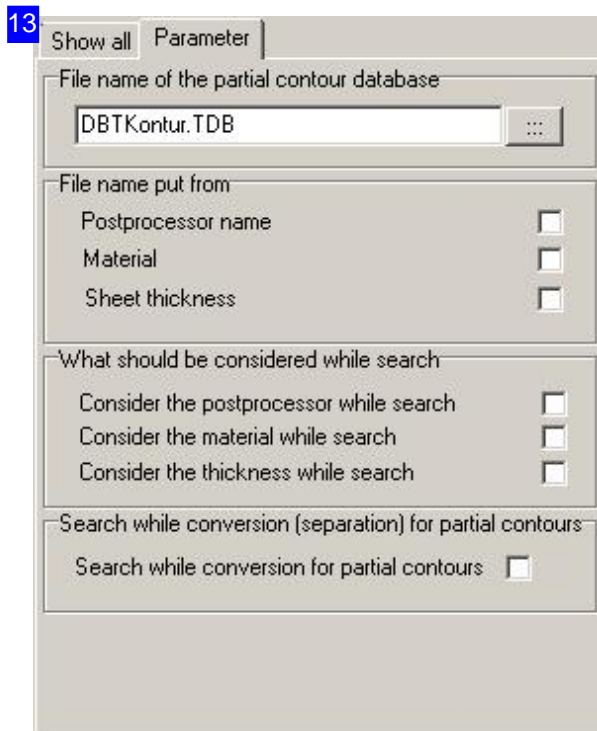


This dialog contains the settings for a part contour which should be used as a special contour. Enter a searchable name in the field 'User identifier'. The part contour manager can be accessed through the menu items 'process manager', 'part contour manager', 'show all part contours'. The part contour manager dialog will open.



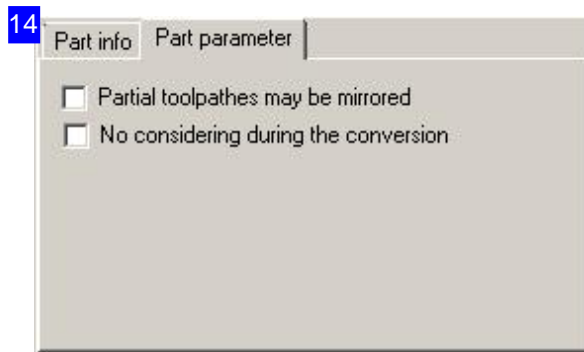
All saved special contours are shown in this List. select a list entry to view the punches in the 'punch paths' frame to the right. in the preview above you can see an approximation of the punch paths, which will also be used at the cursor.

The second tab allows the settings for using special contours to be changed. The switch for using part contours can be found in the tab 'part settings'. Right-click in the selection list to open an edit menu.

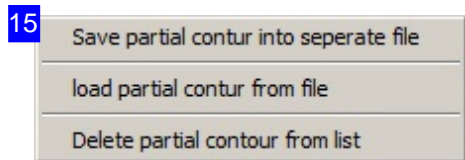


In the top frame you can see the save path for your special contours.

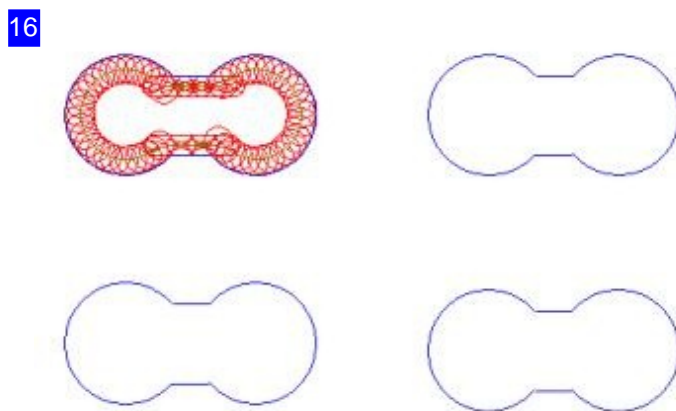
The two following frames help you to protect your special contour's punches from damage. If your tool name is made up of the elements suggested in the second frame, you can use it to search for suitable tools only.



Mark the check boxes about how to use special contours.

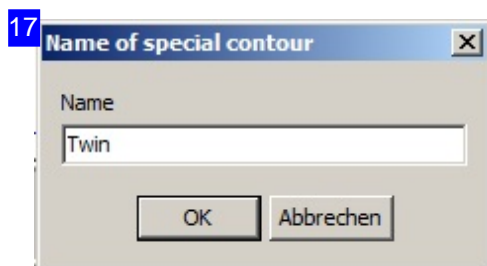


To also use special contours elsewhere, you can save them in a special file type. The file extension is '.TDT'.



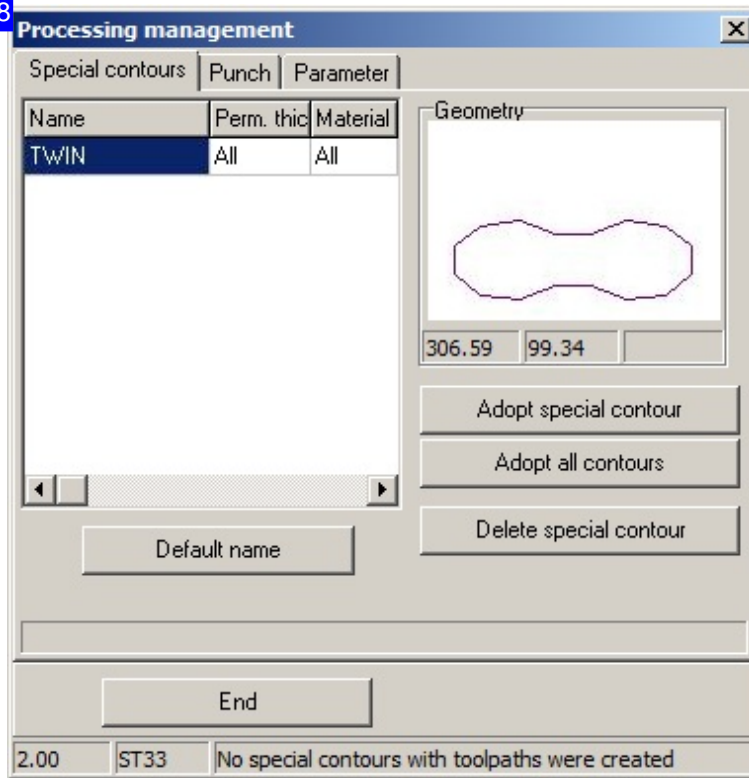
Punch paths manually placed on an internal contour can be captured as 'special contours' for further manual or automatic use. The punch path is given a name and saved as a special contour.

Select 'process manager', 'capture edited contour' in the menu panel. Next identify the contour; a dialog will open for naming the special contour.



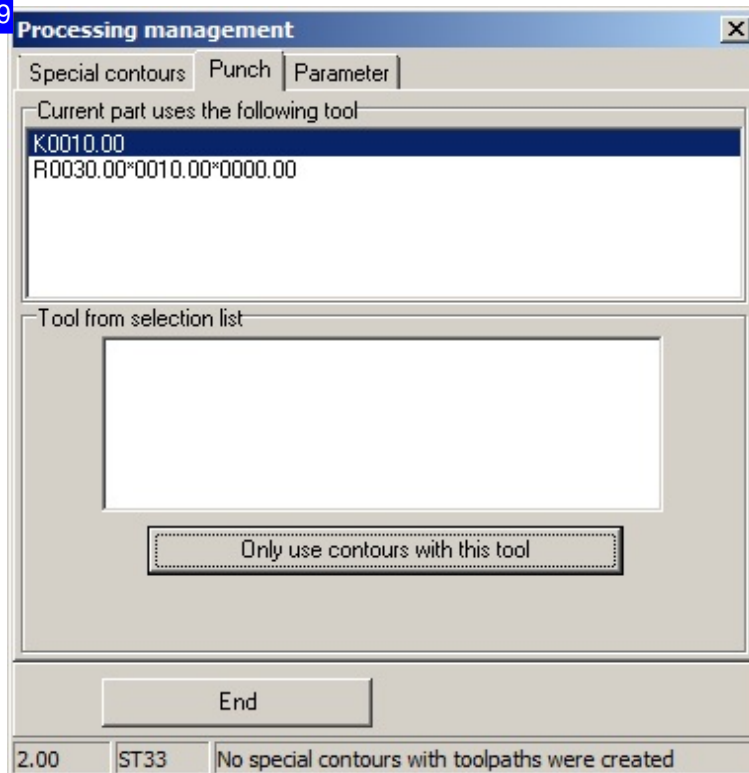
This dialog allows you to enter the punch path's name. It will be saved as a special contour in the process manager.

18

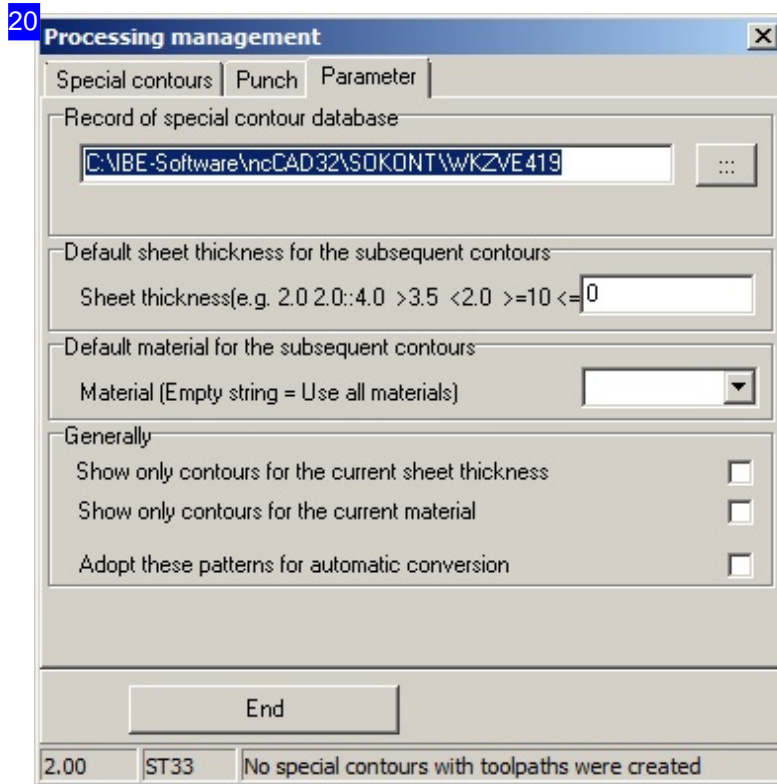


Special contours are organized in the process manager. The available special contours are listed and can also be deleted. You can also create new contours or capture all contours as special contours. To enter a name, select a list entry and click 'enter name'; a dialog will open. The frame 'the geometry' shows a rough preview of the special contour as it will be used for the punching cursor. The other tabs contain information about the special contour.

19

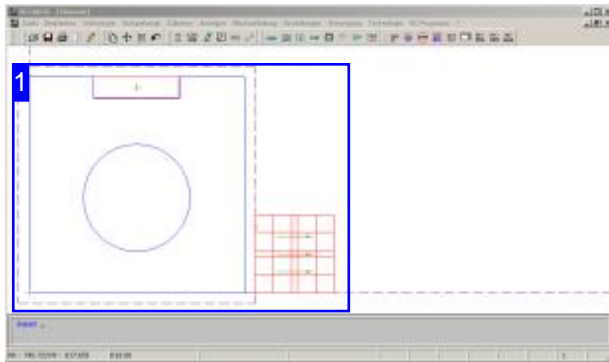


The tab 'punches' shows all standard punches which are used to make up the special contour. In the bottom frame you can add a filter for tool selection. The third tab contains the options for using special contours.



In the top frame you can see the save path for special contours. The next two frames offer filters for using special contours, which will help you avoid damage to your punches. Enter the permissible sheet thickness for which the tool can be used. Pay attention to the syntax in the description in the frame, to define the areas. If you do not wish to restrict by material thickness, enter 0. A list will be offered for selection of applicable materials; to allow all materials leave this blank. Mark the checkboxes in the bottom frame as required.

Crunch Areas Through Notches.



A notch allows you to crunch an area on your contour or sheet as required. You can use points or contour elements as limits for these areas, thus allowing a notch to become part of your contour. When using common separating cuts it is important to crunch notches so that the common cuts can be executed as continuous punch paths.

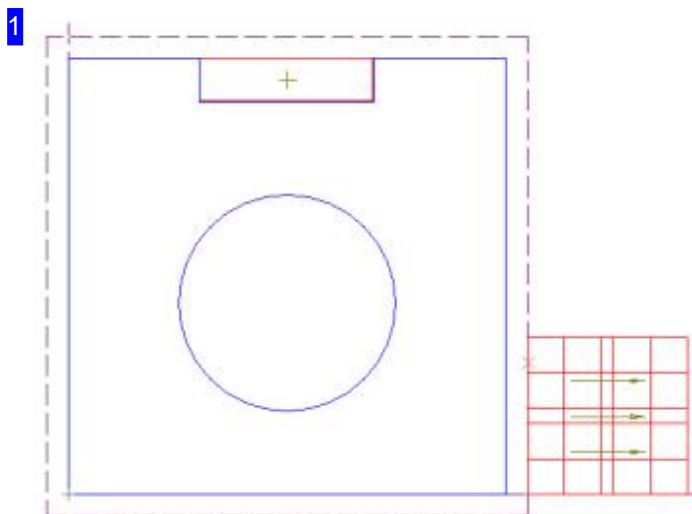
Using the menu 'Edit', 'notch' you can access the functions to punch a notch.

First enter the notch settings; then select 'notch settings', to place the notches.

Then select the input mask for notches via the menu or by clicking the fourth field of the status line.

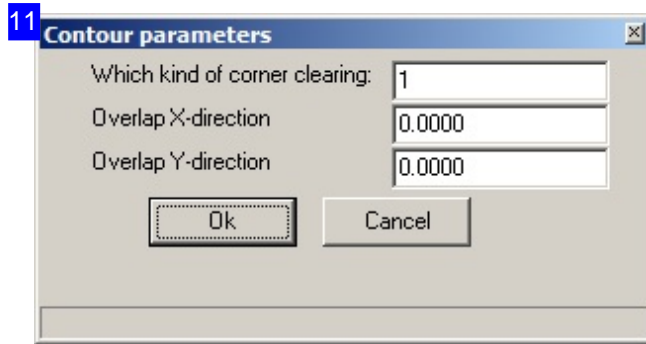
Define the notch area using:

- o Two lines - the limiting lines between which to punch are defined using the mouse.
- o Two points - define the intersection of two lines by identifying them, then stretch the notch area.
- o Two lines and a point - stretch the area out from an identified contour as required.
- o Freehand points - define any area on the sheet. First mark the contour and then any start point, then stretch the notch area.

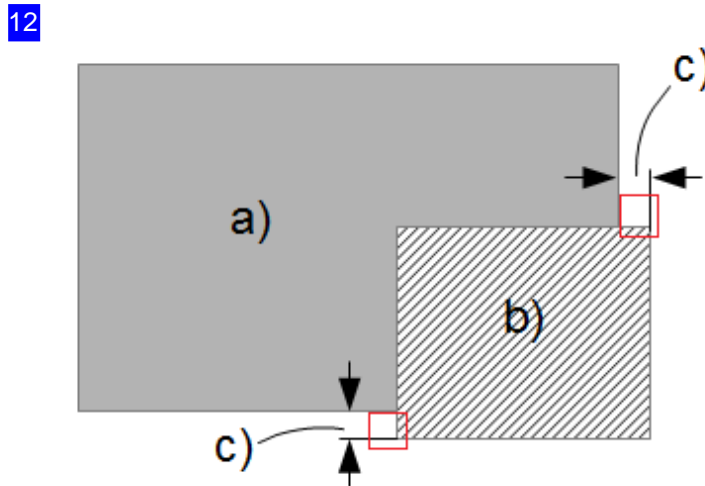


In this example the top notch is defined by the two limiting lines left and right.

The area at the bottom-right was defined using two freehand points.

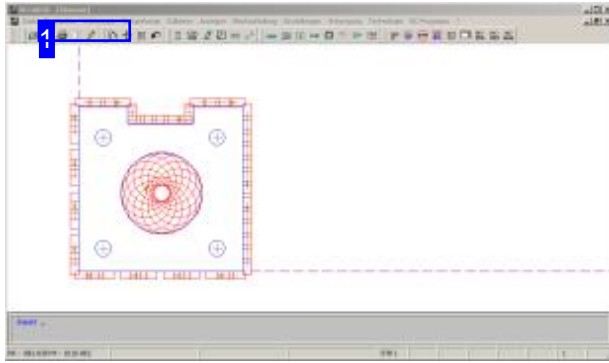


In this dialog you set the punch direction for the notch: 0 - meandering, or 1 - in towards the contour.
At overhangs, enter by how many mm the tool should continue over the contour.



If parts (a) are given notches (b) there can be problems punching the remaining punch paths on the corners if there is an exact fitting allocation. To achieve an overlap as with normal punch paths, you can allow for overhangs (c) in X and y axes on your notches.

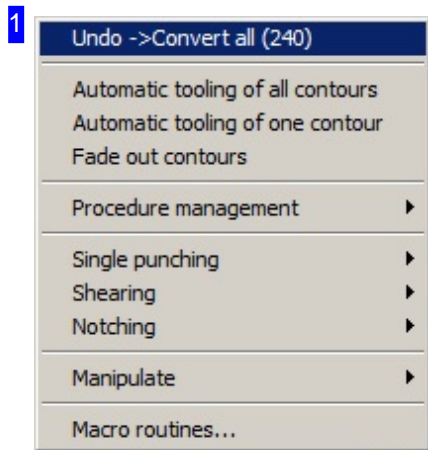
Undo Your Last Command.



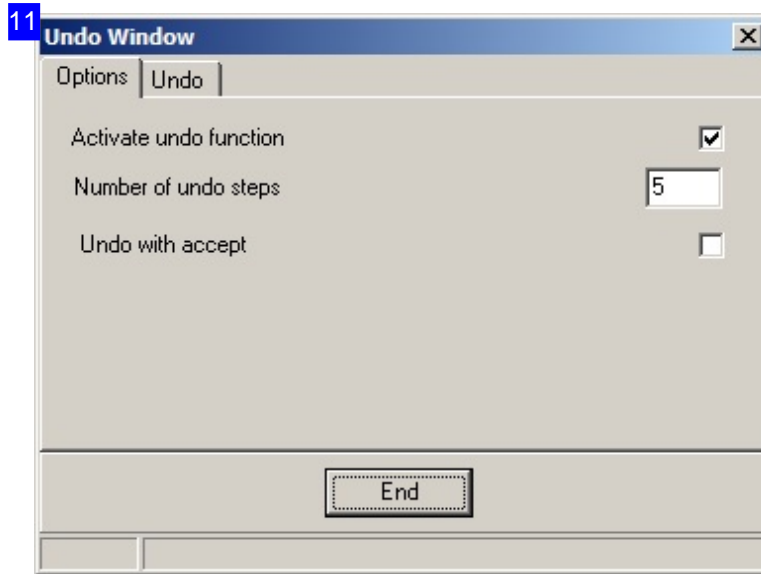
This function is accessed via the menu panel or the icon bar. Settings for the undo function can be made in the menu under 'settings'. When you select the menu item, a dialog will open, where you can give settings for the undo function.

Undo - an important program function which can be used intelligently when creating your punch paths.

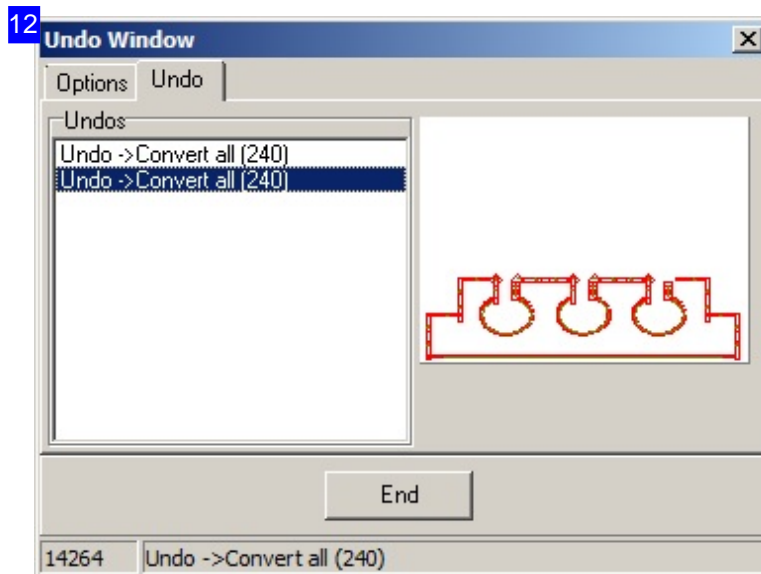
All executed functions are stacked, that is, a history is built up. This history can be reversed in steps using undo. Use the <U> key to move steps in the stack, and keep them as 'safe restore points'.



In the 'Edit' menu, the top item is 'Undo', and the previous command is detailed. Click 'undo' to revert one step back in the processing history, undoing the command shown.

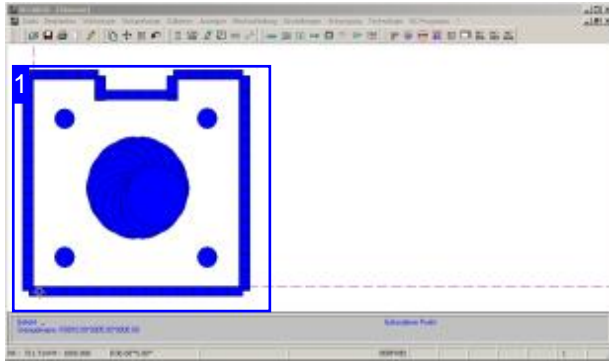


This dialog is accessed through the menu panel under 'settings'. Enter the number of commands to store in the history. Mark the checkboxes corresponding to your preferences. The undo history can be reviewed in the 'undo' tab.



the List to the left shows the undo history, and the preview to the right shows the changes that command caused. Select a list entry to see how your drawing was after that command was executed.

Checking Punches In The Simulation.



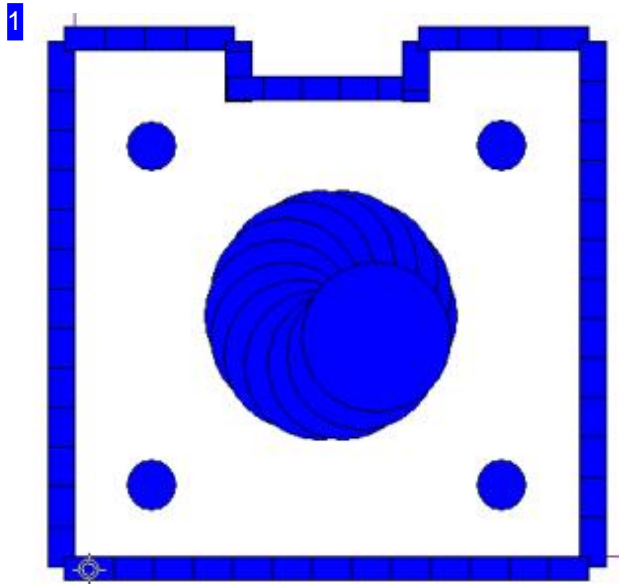
You can review the conversion of contours to punch paths and single punches, and the sorting of punch paths in the processing sequence at any time using a simulation. This is important because automatic conversion sorts first by punches, then by contours.

To start the simulation, select one of the three following commands in the 'display' menu:

- o Simulate punch path
- o Simulate punch path of one contour
- o Simulate punch path of one punch

The simulation can also be launched through the icon bar.

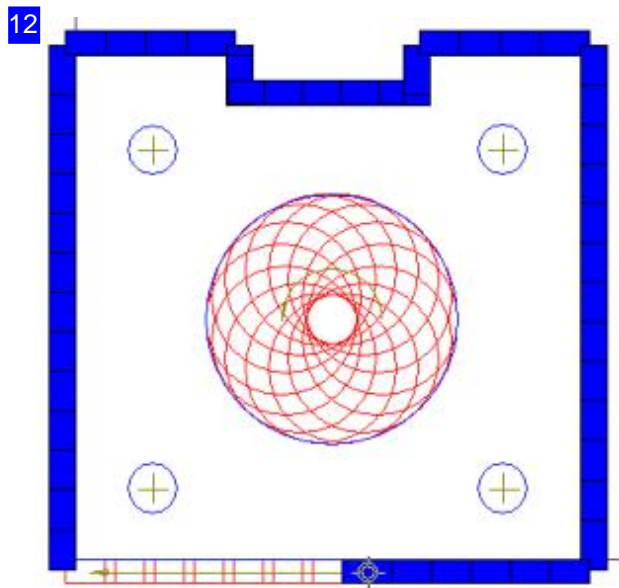
Control the simulation using the dialog which opens.



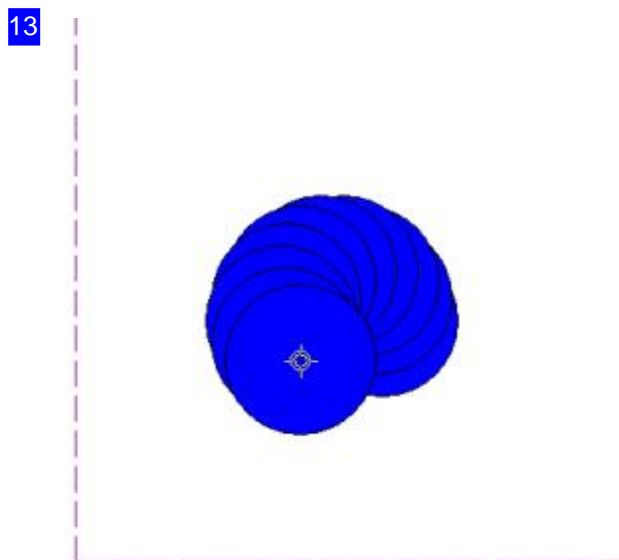
The simulation shows the punch paths in the same sorted sequence as will be used to create the NC program. Each punch is highlighted in color.



This dialog allows you to control the simulation speed. Move the cursor relative to the simulation speed, and mark the checkbox if you would like to show a tool-cursor. Click the button to the right to exit.



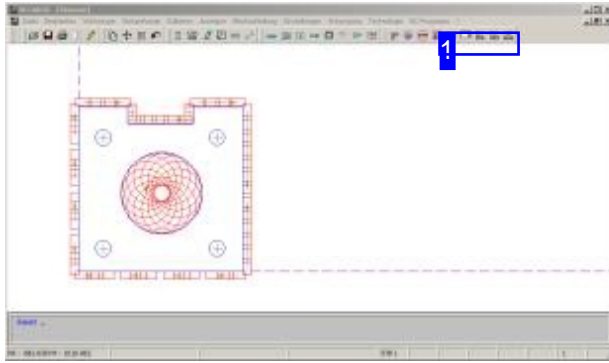
the individual punching strokes of your punch paths will be simulated and displayed, in the order in which they will be worked.



You can review the sorting sequence of individual punches. This can be important if the same punch will be used for multiple or different parts. You can check the processing sequence after resorting.

Technologies

Define The Technologies For Your Machine.



Technologies are always dependent on the technical capabilities of your particular punching machine. Therefore in order to be able to create NC programs, you need a post-processor. post-processors are translation programs necessary to use a given punch machine, much like a printer driver is necessary for any printer. In order to work with *ncStanz*, you'll need the relevant post-processor for your machine!

Post-processor or machine dependent, technologies are enabled as required. The corresponding data may then need to be matched to your particular machine's requirements. The selection of a post-processor takes place in *ncCAD32*.

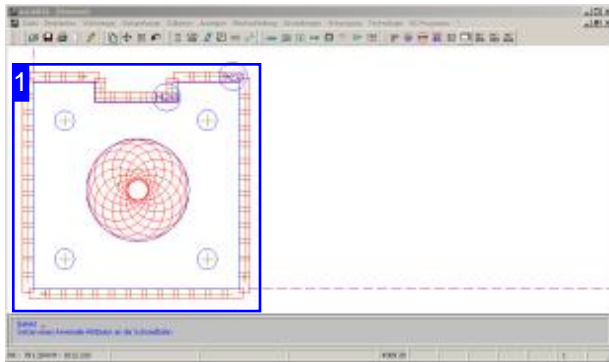
Information about the individual technology settings can be found in the following pages:

- o Edit punch paths, place M-commands
- o Marking



In order to correctly use the technology settings for your punch machine, you need the corresponding post-processor so that the software can generate NC code it can read. Make sure that you've installed and selected the relevant post-processor in *ncCAD32*.

Allocate M-Commands To punch paths.

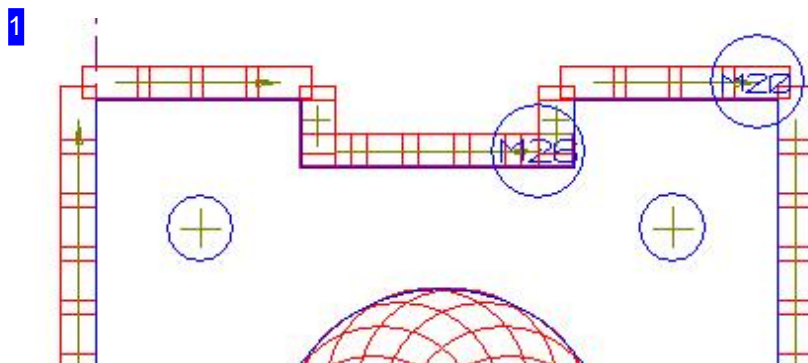


Under the menu item 'technologies' you can edit M-commands by selecting the relevant punch paths.

- o M20 - Stamp deselection, reposition without lifting.
- o M26 - Stamp with delay (calming the machine)
- o M27 - Stamp with restrainer

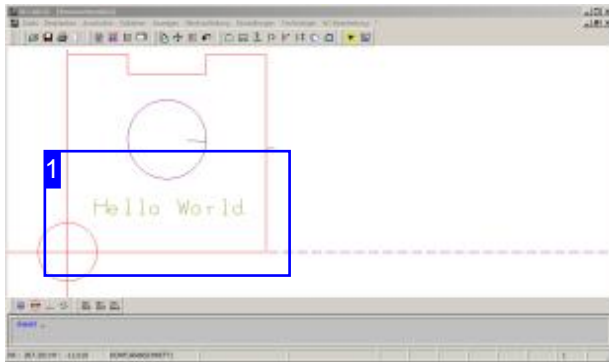
Some punch machines have particular M-commands which must be used in a targeted fashion along the punch paths. You can use such commands under the technologies processing menu.

Take note that machine-dependent functions must be supported by your post-processor.



Select the function and then the punch path. The marking on the punch path shows the command number using a corresponding symbol. The commands can be placed and deleted; refresh the display after processing.

Marking Parts..

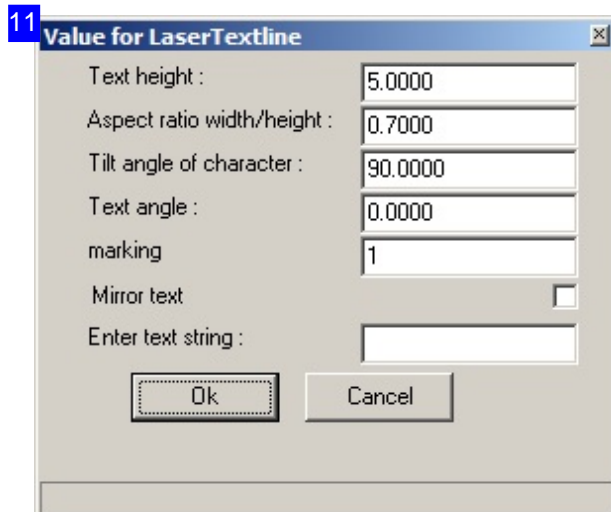


Marking texts are added as elements, and can be edited later.

- o Create text
- o Move text

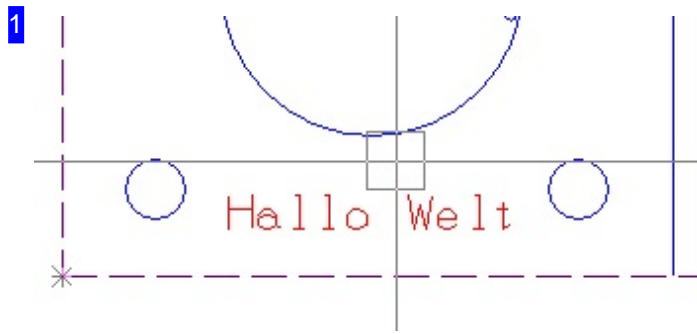
Select the menu item 'technologies', 'sign text'.

Parts or contours can be marked with a corresponding tool. The function is machine and post-processor dependent. If your machine offers this capability, it will be supported here for any texts.



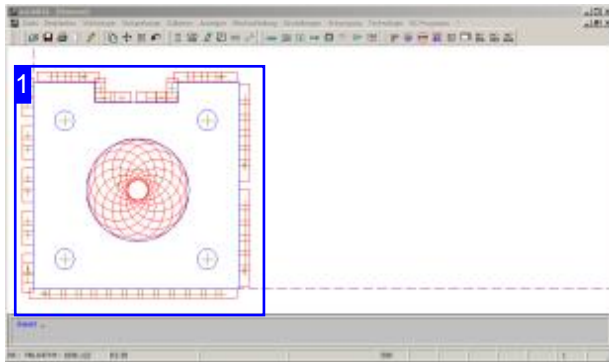
To input a marking text, select the menu item 'technologies', 'sign text'.

A dialog for text input will open, where you can enter both the text and the text settings. The texts' heights, width ratios and text angle can all be adjusted. The processing type is not important, marking texts will be worked with a suitable tool. The text itself should be entered in the field 'text line'.



A marking text can be moved around your part. Select the menu item 'punch paths', 'edit', 'edit', and identify the bottom-left corner of the text. The text will be 'grabbed' and can be moved as required. To move in only one axis, press <X> or <Y>.

Punch Parts With Micro Joints.



To be able to add micro joints, you must first define the width of the joint. For manually added micro joints [1], you can set the width in the global defaults.

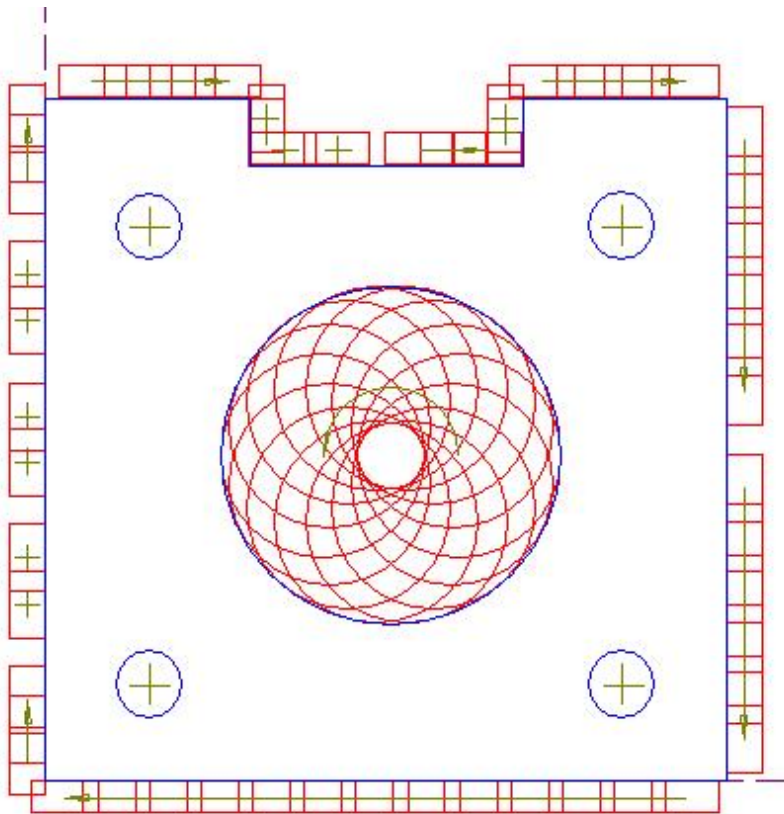
To add micro joints, select the function in the menu panel or use the quick key in the icon bar.

If punch parts should be held in the sheet and not completely released, you can add micro joints (cutting bridges) in the punch paths. Micro joints can be added in the center and at the ends of punch paths, or automatically at preset offsets, or at contours' corners.

If micro joints are set automatically, the width of the joints must be defined in the general settings.

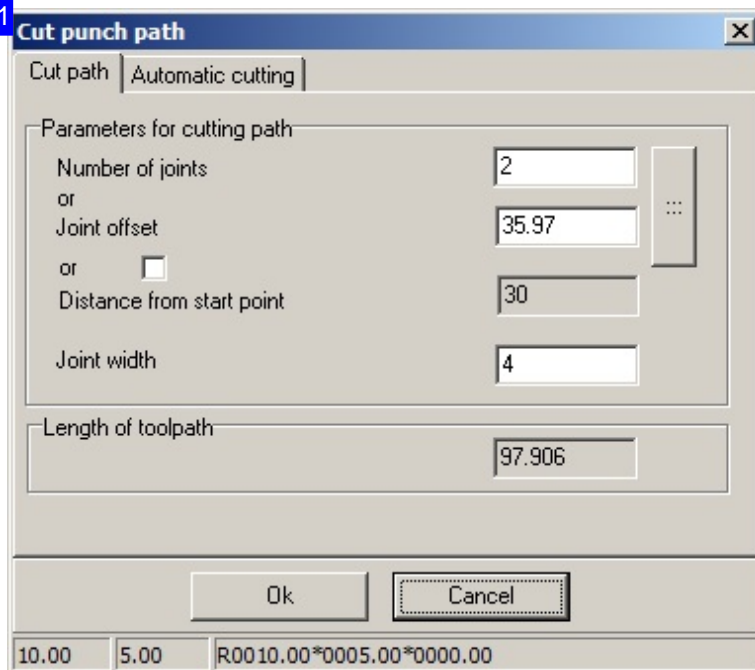
when adding micro joints, punch paths are stretched to meet and limit them. Check that incorrect tool selection cannot lead to the punch paths damaging your contours. It may be necessary to change the punch if you wish to retain the micro joints.

1

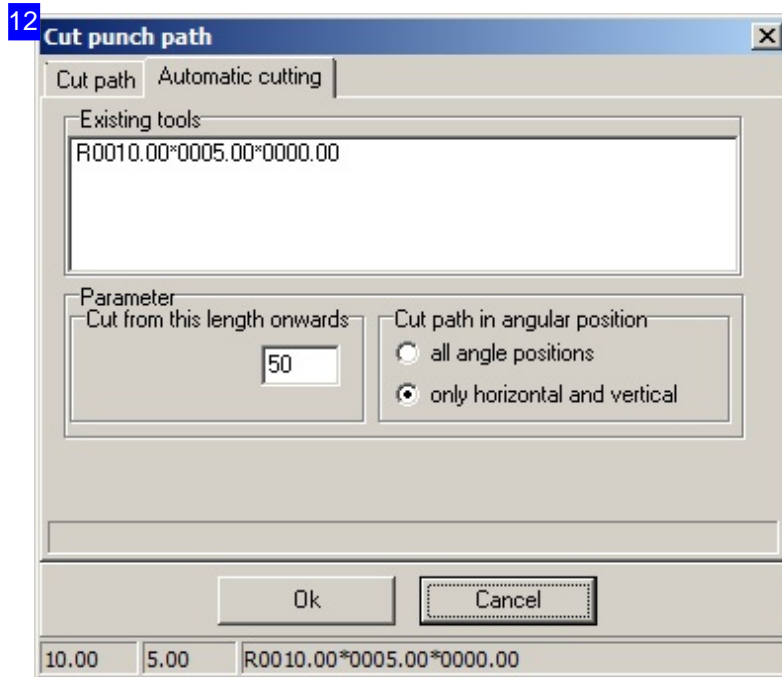


To add micro joints, select the function and identify the required contour element. The micro joints can be automatically added in the middle of a contour (here to the right and top), at its corners (right top and bottom) and on punch paths at preset patterns (left). To do this, a dialog will open to define the pattern and select the punch. To delete micro joints, use the 'undo' function, i.e., only the last created micro joint can be deleted.

11



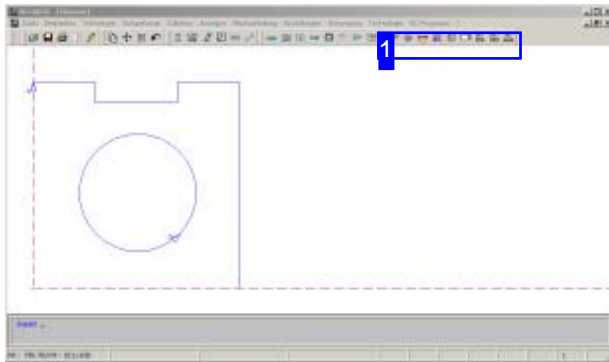
Cutting bridges can be added to a punch path in many different ways. Set the method by separating the punch path and entering the required values. Finally click the top-right button to calculate the offsets. If the calculated values meet your requirements, click 'apply'. Don't forget to define the width of the joints! The bottom frame allows you to set the minimum length of a path to split. The defaults are valid for setting micro joints for a single punch path which must be identified. If you wish to add bridges to all punch paths, open the tab automatic separating to select the punch which should be used for separating.



to add micro joints to all punch paths, you must define a tool to identify the relevant punch paths. select the tool, enter the minimum length of a punch path and click 'apply'.

Nesting Plans

Place Parts On A Sheet.



Nesting Plans contain multiple parts which as a rule each represent one workpiece for production. These parts are laid onto the sheet in rows and columns which approximate a grid created of the individual parts' min-max boxes. Through *ncStanz* 's settings, the parts will be sorted to use the shortest processing path. There can be many reasons why this path is not the best solution! For this reason you can process rows and columns as you require.

Multiple different parts can be grouped in a nesting list and then manually placed on the sheet. More on that in the chapter 'collating parts to a nesting list'.

Nesting Plans can also be created automatically by nesting software. More on that in the chapter 'automatic nesting'.

Completed parts consisting of punch paths with internal and external contours can be duplicated as required and formed to a processing sequence.

Part manipulation options:

- o Copy
- o Delete
- o Move
- o Mirror
- o Stretch/shrink
- o Check for contour damage
- o Sort

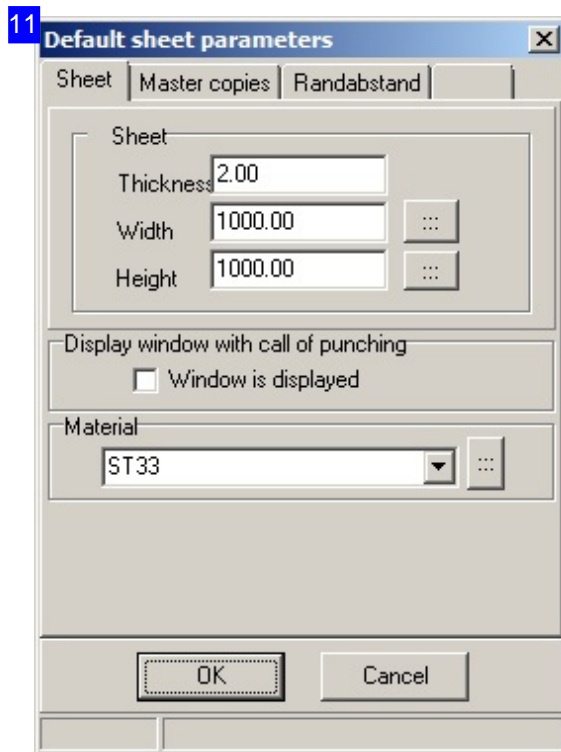
Production options:

- o Set punch direction
- o Define offsets
- o Sort

A sheet will always be required for production. If the sheet is not defined in your system you can begin by defining a virtual sheet. The sheet settings can be accessed through the menu 'sheet division', 'sheet size', a dialog opens to enter the sheet settings.



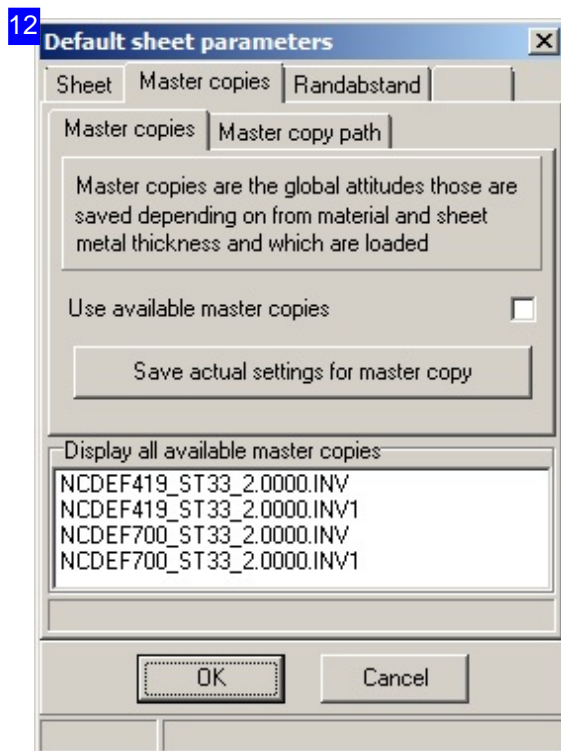
Sheet size and grid processing can be accessed directly from the icon bar . To collate punch paths in a nesting list, select the corresponding menu item. Auto nesting can be accessed through the menu 'sheet management'.



In this dialog you have the option to create a sheet as the basis for your work.

Click the button to the right in the 'materials' frame to switch to a dialog for materials management.

Under the tab 'templates' you can save the (post-processor dependent) global settings for material and sheet thickness to a preset folder.



Settings for material and sheet thickness can be saved (post-processor dependent) as templates. Set the file name (.INV) under the tab 'template path'.

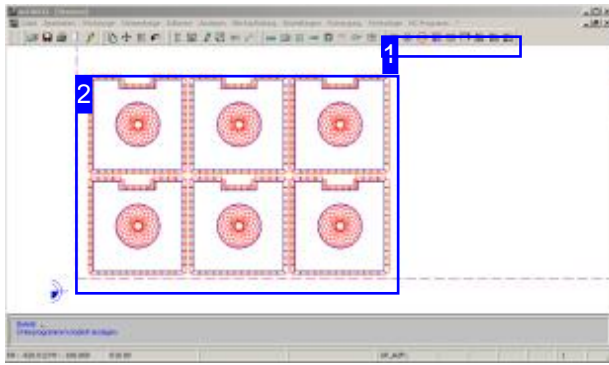
13 Material management

Material reference	Material no	specific g	tensile strength	Info text
SF-CU F20	2.0090.10	7.90	200.00.:250.00	
SF-CU F22	2.0090.20	7.90	220.00.:260.00	
SF-CU F24	2.0090.26	7.90	240.00.:300.00	
ST33	1.0035	7.90	290.00.:540.00	
ST37-2	1.0037	7.90	340.00.:510.00	
ST37-3	1.0116	7.90	340.00.:510.00	
ST44-2	1.0044	7.90	410.00.:580.00	
ST44-3	1.0035	7.90	410.00.:540.00	
ST50-2	1.0050	7.90	470.00.:660.00	

End New material Delete material Cancel

Information about the materials are important for some punch machines, and must be considered in the post-processor. You can enter any amount of materials in the materials manager, and give all necessary data for the post-processor.

Produce Grid Layouts.



When grid processing, you enter the rows, columns and the required offsets. The current sheet layout is then expanded using those settings.

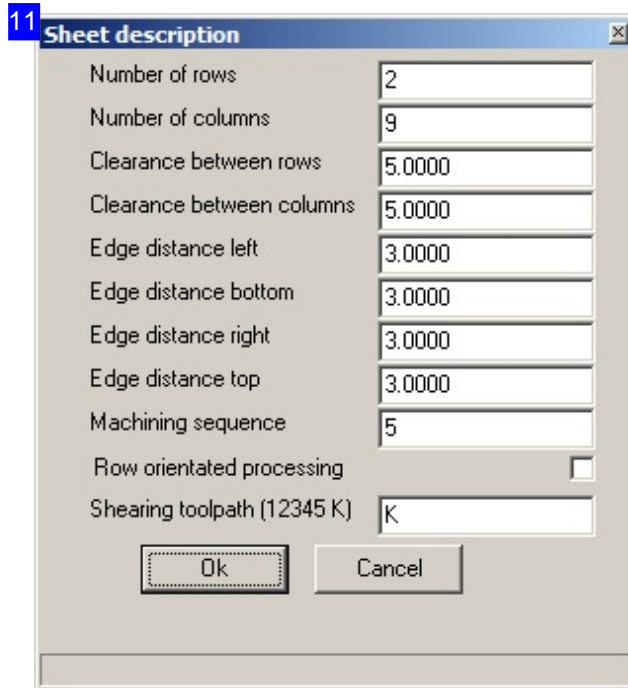
The command 'delete grid processing' undoes this command.

The rows and columns can also be sorted as required. Take note of the chapter 'sorting the processing sequence'.

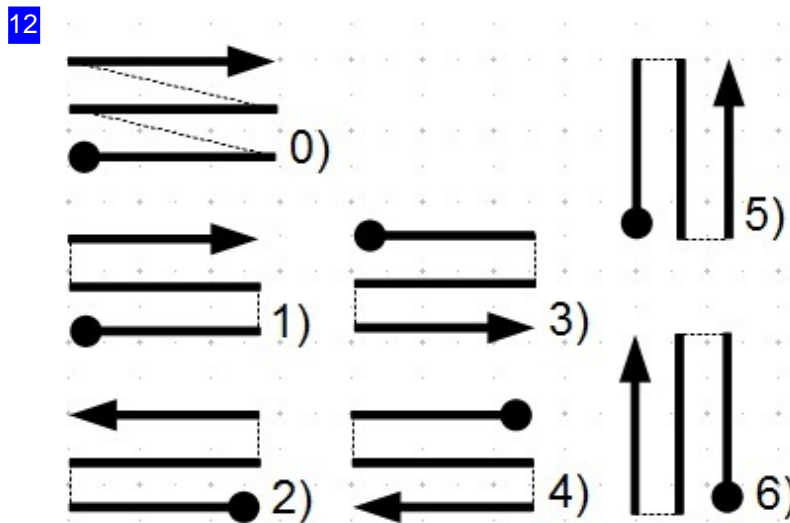
A cutting path or manual layout on a sheet can be quickly and precisely expanded using the grid processing settings.



Grid processing is accessed via the menu panel under 'sheet division', or via the icon bar. A dialog will open, where you can make all grid layout settings.

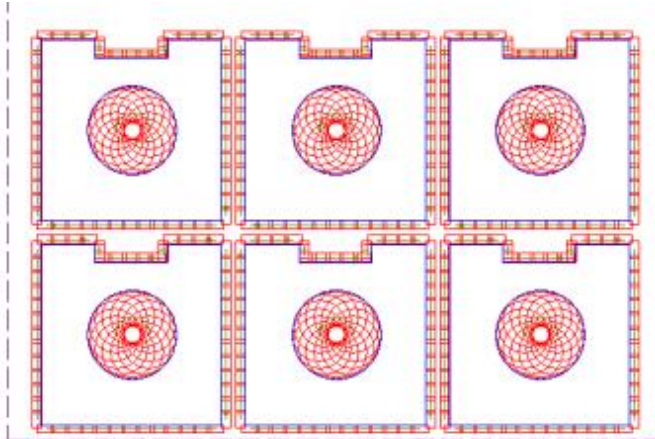


Set the sheet division for grid processing in this dialog. Set the rows and columns in the top input fields, entering 0 (zero) for automatic calculation of the maximum quantity which fits on your sheet. The field 'sheet part positioning' sets the processing sequence. The selection box 'process by row' sets that all tools should be worked in a row towards the clamps. 'Trimming' allows you to enter tool numbers <1..5> for suppression or enter 'K' for none.



The processing sequence can be entered using a code. Processing begins at the point and continues in the direction of the arrow. Dashed lines show travel paths. Enter the corresponding code number in the sheet division dialog under 'sheet part positioning'.

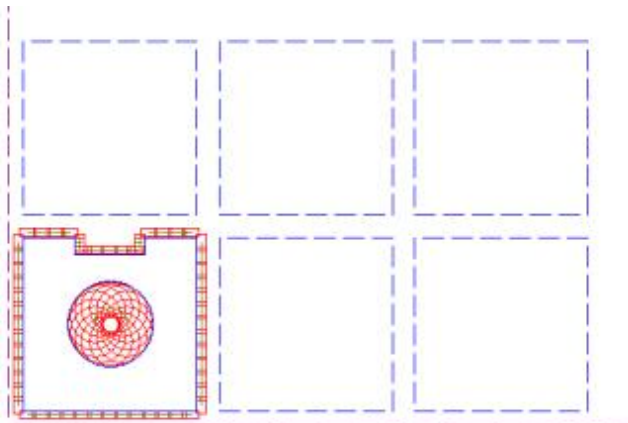
2



The layout of the example in rows and columns. To check the processing sequence, start a simulation.

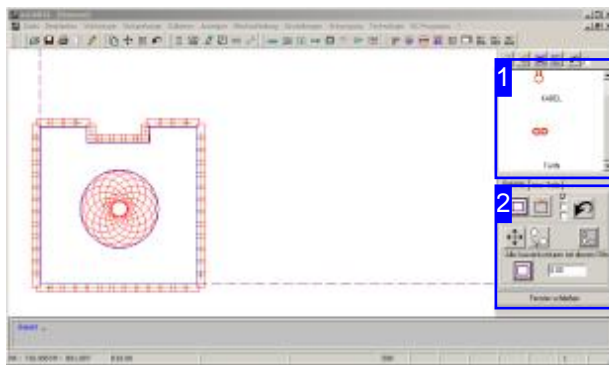
For layouts with multiple parts made up of multiple contour elements, the display can be simplified and sped up by showing only the parts' min-max boxes.

21



Use the menu item 'show only boxes' or the quick selection in the icon bar to simplify the display, using only outline boxes for your parts. Drawing time can be greatly reduced.

Collate Parts In A Nesting List.

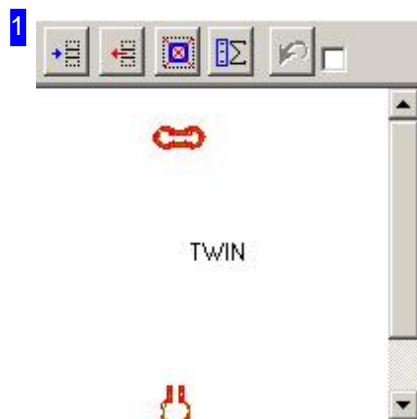


In the frame to the right you have the collation list [1] and in the bottom area [2] the manipulation functions.

All actions in this screen begin a sequence which continues until you end it. Take note of the tips in the command window at the bottom left to maintain an overview of the current process.

In this screen you can combine various punch paths from your stock to make a list, and nest manually to your sheet. All manipulation functions required to create a complete nesting plan are available such as rotating, moving and mirroring.

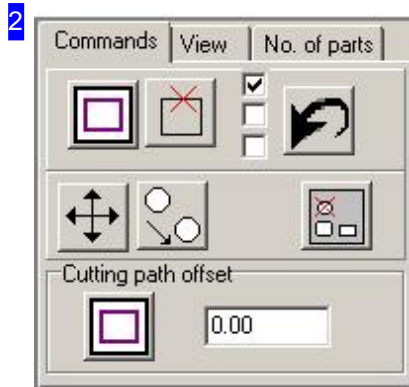
This screen is reached through the menu item 'file', 'load punch parts in nesting list'.



In this list you find all loaded punch paths, and click to mark for further processing. The list can be navigated and the parts on the sheet checked using the buttons above the list.

The functions of these button from left to right:

- o Load a punch path in the list. The 'file manager' will open for selecting a punch path.
- o Delete a part from the list.
- o Delete a part from the sheet. Identify one or more parts to remove. Take note of the command line.
- o Check number of parts on the sheet.
- o Undo last step.

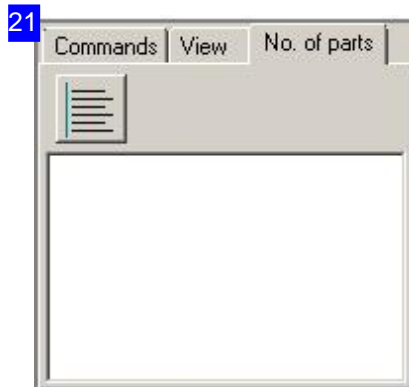


In this frame you can use the buttons in the top row to add an offset to a part, or delete a lead-in (in this case not relevant).

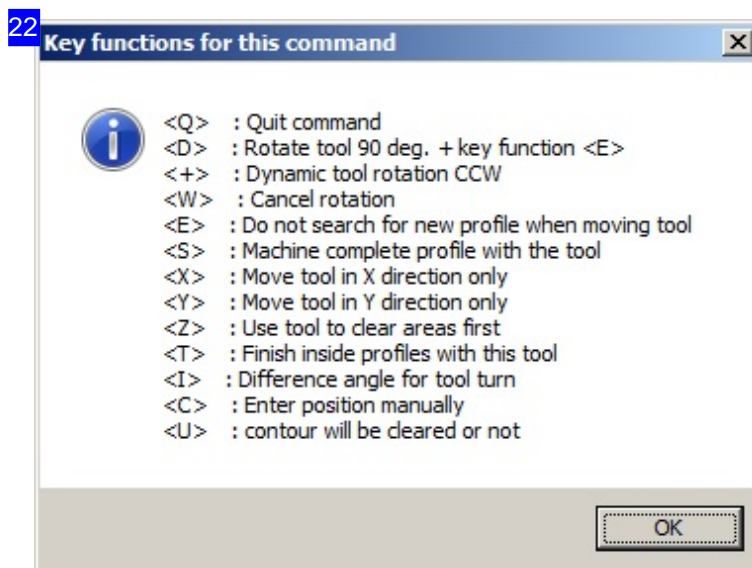
In the central area you can move, copy and delete parts on your sheet. Click the function then the part on the sheet.

In the bottom frame you can add an offset to all external contours (in this case not relevant).

In the tab 'Qty. parts' you can see an exact listing of parts on the sheet.



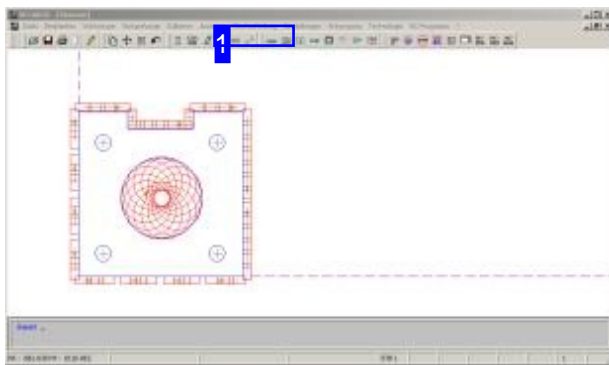
This display shows a list of parts on the sheet. Click the top-left button to refresh the list for a direct comparison when making changes.



When using command sequences the keys are allocated different functions for quick, targeted use. This overview gives the functions and access keys. The dialog is accessed by pressing <Ctrl><F1>.

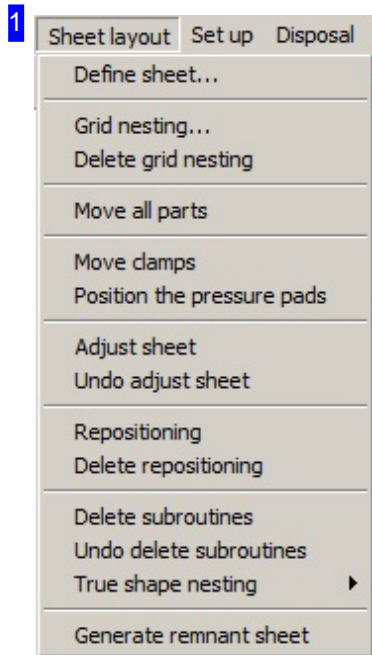
The content of this dialog is also shown when manipulating punch paths, placing parts on a sheet.

Automatic Nesting.



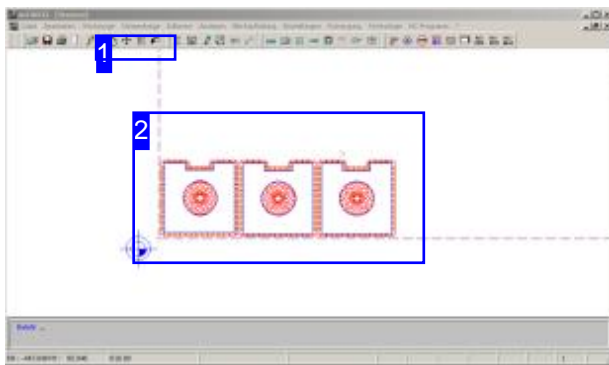
The menu item 'sheet division', 'true-shape nesting' gives access to the optional nesting module. This optional module must be enabled through your license dongle.

Automatic nesting uses the optional nesting software's various strategies to place your parts as efficiently as possible on your sheets, saving your materials. The nesting programs are available as individual modules, which can be added to your software to meet your needs.



The nesting module is accessed through the menu panel under 'sheet division', 'true-shape nesting'.

Manually Place Parts On The Sheet.



A part, also with punch paths, can be moved, turned, mirrored, copied as a whole and placed on the sheet as required. Thus you can nest a part to the sheet manually, creating your nesting plan to your own design.

For positioning a part it will be 'locked' to the cursor. The locking point can be set by you; to do this open the dialog 'cutting settings'.

When copying parts you can also set common separating cuts. Check the corresponding checkbox and take note of the conditions required for this function.

Finished parts can be duplicated and positioned as required. Access the functions for copying, deleting, moving and mirroring parts through the submenu accessed by clicking the menu item 'Edit', 'manipulate'.

First mark the contours of the part you wish to edit. If the contour is an external contour, the complete part is 'transferred'. If the program finds an internal contour at the cursor position it will give a corresponding warning; an internal contour alone can also be selected for further processing.

An important function is placing parts in bump mode (<A>), whereby parts are placed in a grid with a predefined offset to existing parts or the sheet margin. Use the mouse to drag a nest area for quick easy nesting of a single part.

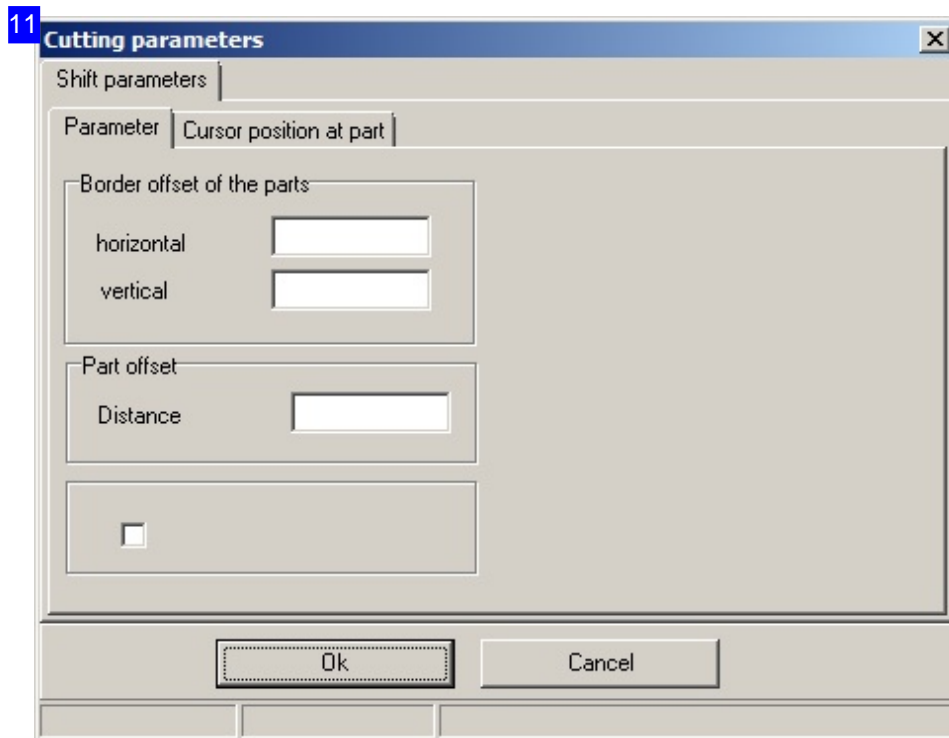
Placing parts in a grid is accessed by right-clicking to open a menu.

When deleting, copying or moving contours, double-click to repeat the function, and press <Esc> to exit.

After placing a part, you should check for overlaps. In this way you can check for any punch path damage caused by collisions and fix by relocating the part.



Some of the functions for manipulation of punch paths can be accessed using the icon bar.

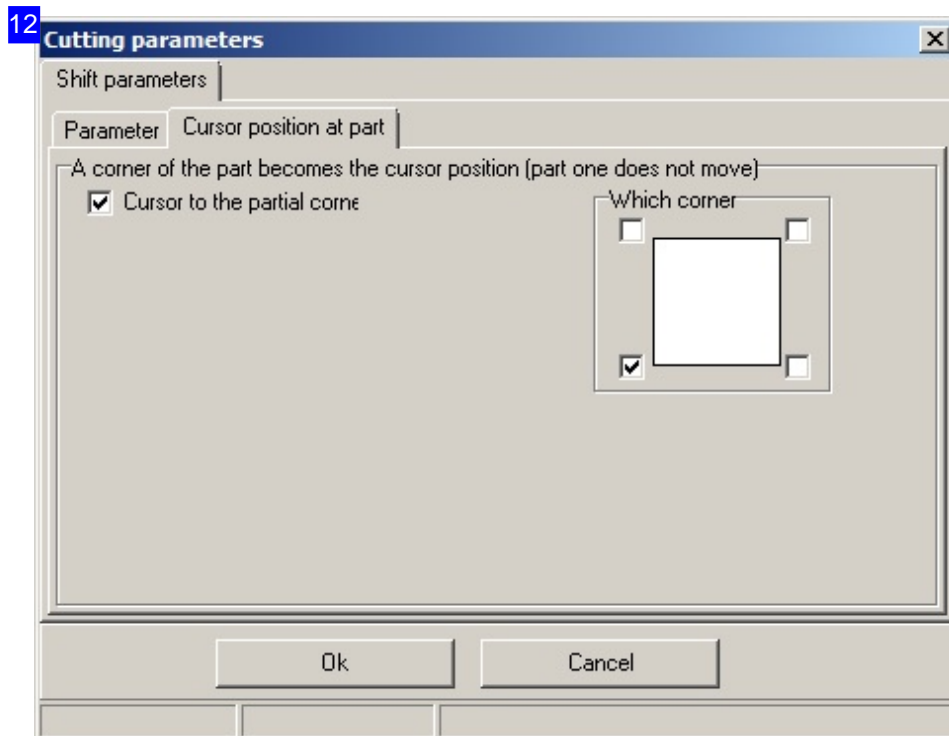


The dialog for the bump mode's offset settings can be accessed through the menu panel.

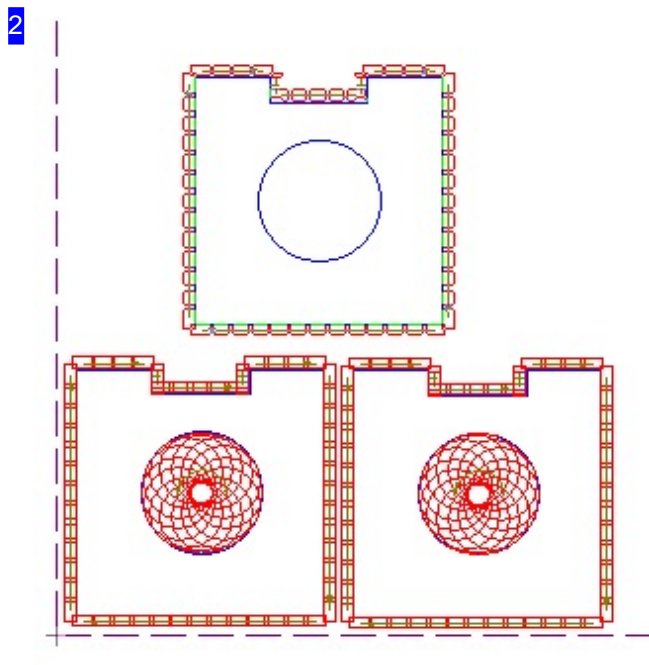
Set the offset for automatic placement of parts on the sheet here. Set the offset of parts to each other and to the sheet margin.

Mark the bottom-left checkbox to use the new values, else the default settings in the database (if present) will be used.

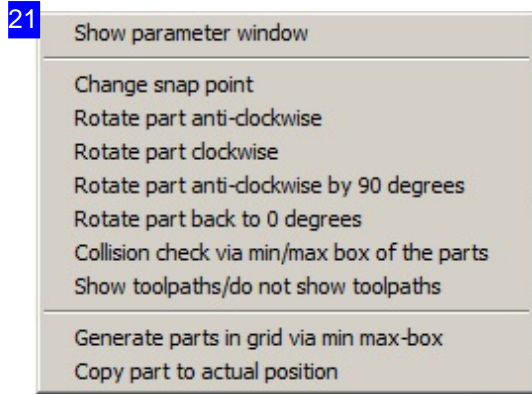
For positioning a part it will be 'locked' to the cursor. In the second tab you can set the point by which to lock the part.



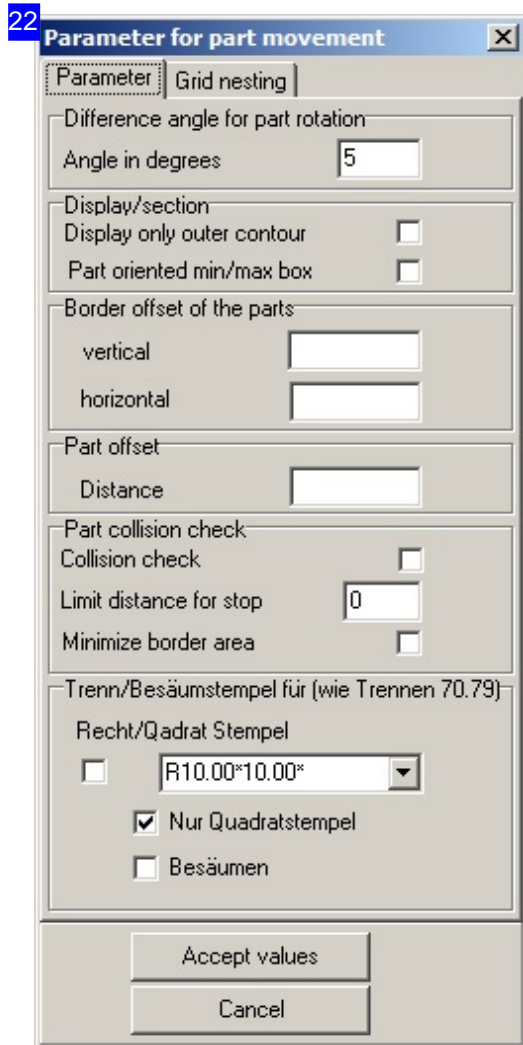
In this dialog you can set the point by which to lock the part to the cursor when placing manually. When positioning, the cursor position is important in order to calculate the part and margin offset.



When copying a part it will be 'locked' to the cursor as a template, and can be clicked to place as shown as many times as required. In our example the new part is shown in blue. Right-click to open a context menu to change the template. Exit the function with <Esc> or <Q>. The cursor locking position can be defined by the user.



The template for placing parts can be manipulated here. To create parts in a grid, switch to a dialog to enter settings for grid processing. The menu item 'settings window' gives access to a dialog to change the settings.



You can make various settings for the placement of parts and placement navigation. Enter the required values here and mark the corresponding checkbox. The values' meanings are described in the chapter 'sorting the processing sequence'.

23 **Parameter for part movement** [X]

Parameter: **Grid nesting**

Offset for parts in grid

Row offset:

Column offset:

Common cuts:

Delete original:

Process

ZIG ZAG:

Coloumns first:

Common cut parameters

Machining sequence:

Which STOP?:

Shearing methode:

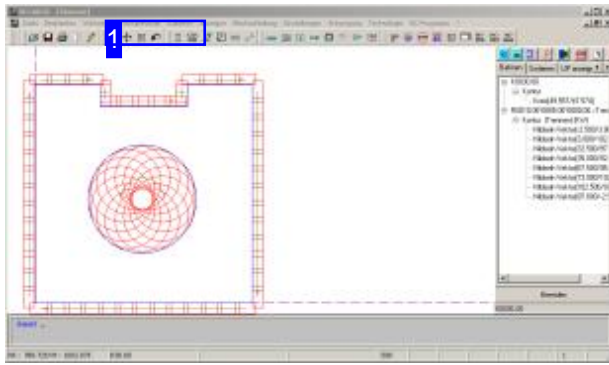
Limit distance for stop:

Type of removAL

Make the settings for grid processing here. Mark the checkboxes for layout type and enter the separating cut settings. select the disposal type In the bottom frame; the separating cut settings will be automatically adapted to suit. Information about 'common separating cuts' can be found in the chapter 'optimal material use through common separating cuts'.

Sorting And Combining

Setting The Punch Sequence.



The processing sequence is decided by the tool. As default, tools are used as follows:

1. Round tools
2. Rectangular tools
3. Special tools
4. Forming tools
5. Separating tools

Sorting the punch paths takes place according to a defined schedule:

1. First all internal contours are processed, then all external contours.
2. Crunch paths are processed before contour paths.
3. Round tools are processed from smallest to largest.
4. Separating tools are processed from smallest to largest.

Depending on a workpiece's shape and the material it will be punched from, it may be necessary to change a punch's position in the processing sequence. The program offers several options to modify the sequence as required. Sorting of internal and external contours is preserved.

The functions for sorting are reached via the menu item 'sort punch paths'.

The processing sequence can be set manually. After calling the function, set the individual components using the mouse. Take note of the prompts in the command line, as these tell you the next step. The individual identified punch paths are highlighted in colors and the cursor has a binding line to the last punch, so you can check the processing route.

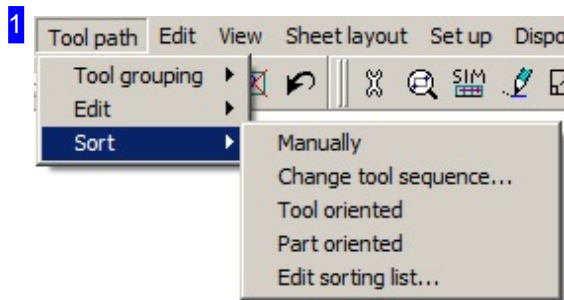
To sort a punch sequence, select 'change punch sequence..'; a dialog opens for sorting.

The punch paths can be sorted either part or tool oriented. For tool oriented sorting, switch to a dialog in which the tool sequence can be changed manually.

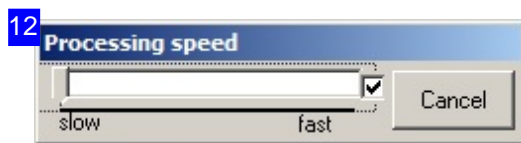
For part oriented sorting to take place, there must be multiple different parts on your sheet, not just copies!

Sorting the parts takes place in a dialog, analogous to tool-oriented sorting. More on this in the chapter 'tool-oriented sorting'.

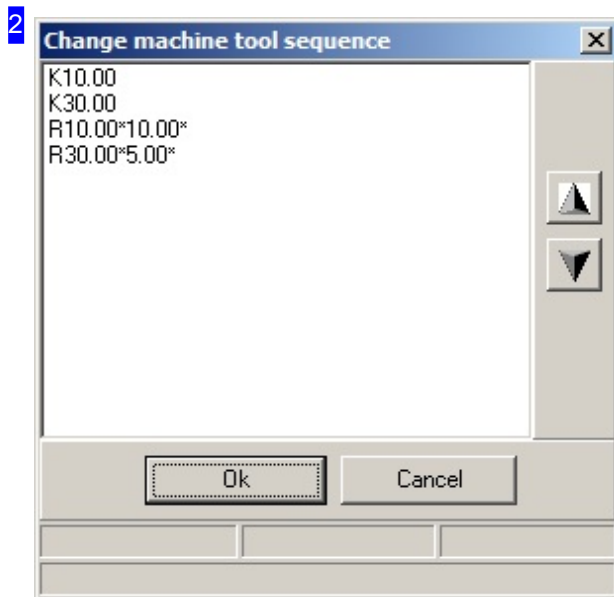
When changing the punch allocation or after sorting the punch paths or parts, check that everything is as you want it by running a simulation. You can check the effects of your changes here.



Sorting functions for your punch paths can be accessed using this menu.

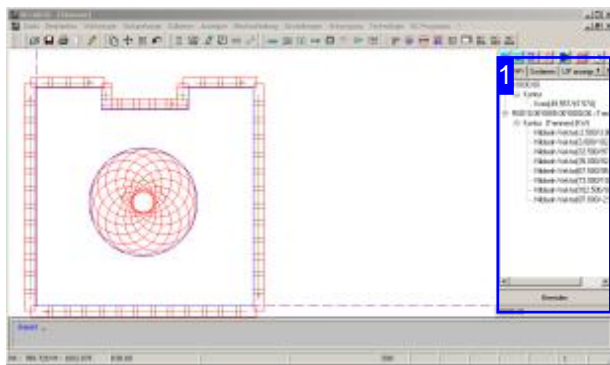


When you start the simulation this dialog will appear; set the simulation speed before it begins. Mark the checkbox if you want to display a cursor as the simulated machine head. The button to the right exits the simulation.



This list shows all tools used in your punch paths. Use the arrow buttons to the right to move tools in the list, setting their position in the processing sequence. Confirm the change by clicking 'apply'. The included tools can be viewed and edited in the tool manager.

Sorting The Processing Sequence.

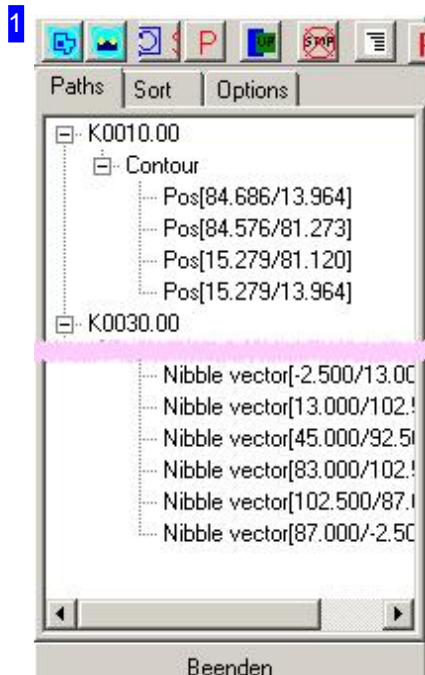


Under the menu item 'punch paths', 'sort', 'edit sorting list' you will find all options for redefining the processing sequence of the elements on your sheet. You can sort rows and columns as required, targeting the requirements of machine and material.

Right-click a punch path in the list to open a menu with commands for sorting manually. Click a contour element for a context sensitive menu.

When punching multiple parts on a sheet it can be necessary to change the processing sequence, for example due to warping the material. Identical contours can be grouped in subroutines to reduce the program code size.

Check the processing sequence sorting by running a simulation.

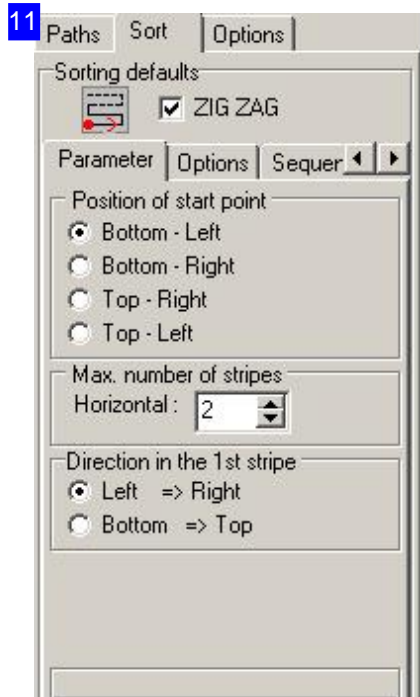


In this frame you can see the sorting list with the individual punch contours. the buttons in the top row have the following functions, from left to right:

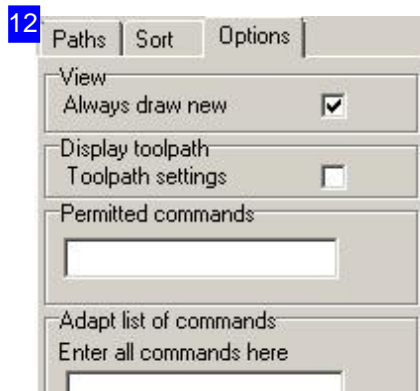
- o Show only geometry.
- o Show all.
- o Sort all cutting paths.
- o Min-max boxes.
- o Show all subroutine-main program-lines.
- o Delete all M-stops
- o Show only the top selection layer in the list.
- o Enter the surface roughness here.

Use the tabs in the header panel to switch to the 'sorting' window and define the punch sequence, or to the 'options' window to make general settings.

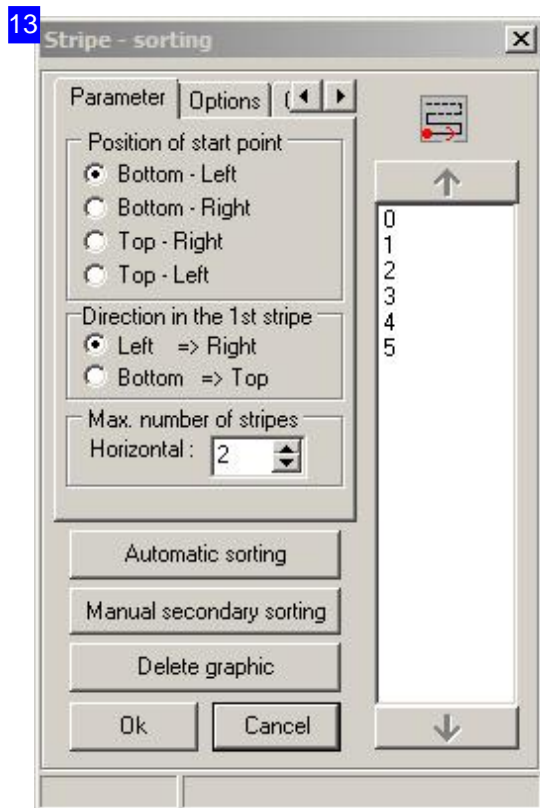
To move a contour element, mark the element in the list and 'drag' it to the required new position.



Set the conditions for sorting rows and columns in the sorting defaults frame. According to the selections, an icon will be shown in the top area which approximates the current sequence, showing start point and punching procedure. For reciprocating punch directions, mark the 'meander' checkbox. This saves long travel paths to the next punch path.
The settings are the same as those under the menu item 'tool-oriented sorting'.



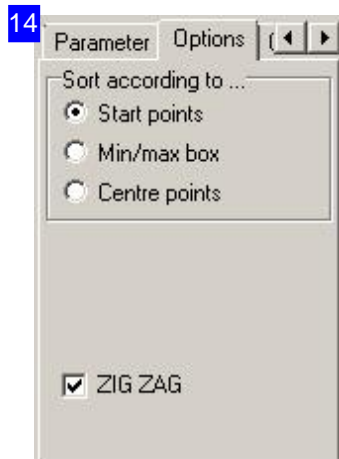
The 'options' tab allows you to make general settings for sorting and display.
You can find a description of the 'show subroutines' tab in the chapter 'reduce the program size using subroutines'.



The dialog 'sorting stripes' shows the sorting for external and internal contours, according to the menu selection. Enter the start point location and the direction for the first row. Enter the row count and click 'sort automatically'. The icon to the right above the list shows an approximation of the selected pattern. The red dot marks the start point, and the arrow shows the cutting direction. To cut the rows reciprocally, mark the 'meander' checkbox in the 'options' tab.

The tabs in the header panel allow you to set the sorting 'options', select the 'sequence' for parts and stripes, and make settings for the sorting of 'markings'.

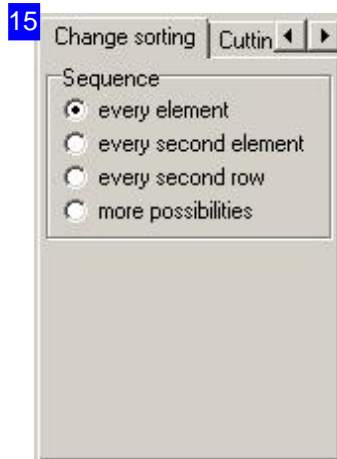
The sorting sequence can also be changed in the list to the right by dragging and dropping'.



In the 'Options' frame you can set the start point for sorting.

- o If you select 'start point', the program will take the start points of all parts and order the workpieces on the sheet such that the start points are optimally laid out in relation to one another.
- o If you select 'center point', the program will sort optimally relative to the parts' centers.
- o Enter 'min-max box', the program will sort optimally using imaginary boxes enclosing each part.

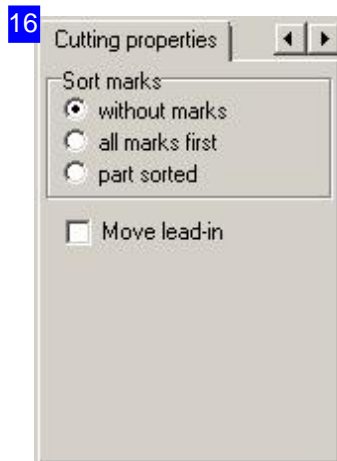
Mark 'meander' to cut each path reciprocally.



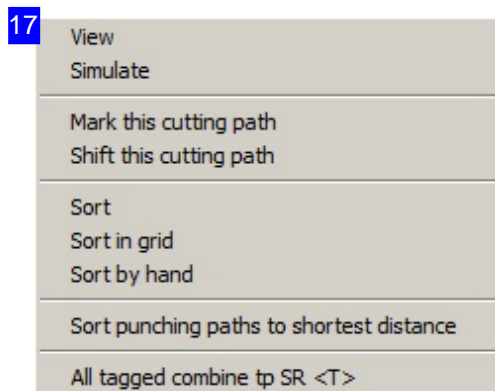
The 'sequence' frame allows you to set the sorting sequence.

- o The option 'every element' punches every workpiece in order, as they lie on the sheet.
- o The option 'every second element' punches every other workpiece. This option is useful where the material can be deformed by punching.
- o The option 'every second stripe' has the same advantage as every second part, but with more safety margin. Take note that this can require long travel paths.

Select 'further options' for selection fields with more options for sorting stripes and elements.



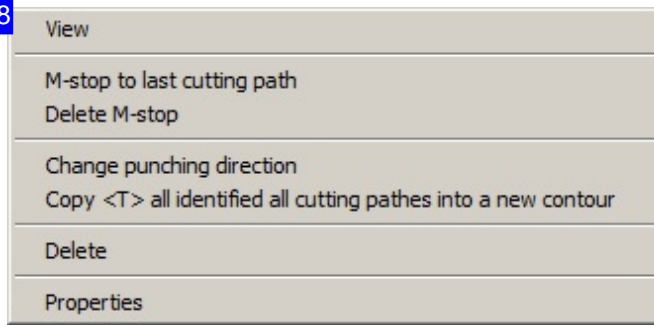
Set how to sort markings here. The option 'part oriented' sets whether sorting begins with an individual part, or is oriented by the whole sheet.



These menu items help you sort your cutting paths manually or adjust the properties.

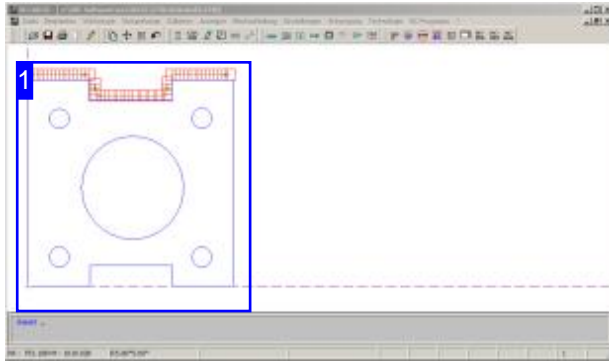
You can add markings (tags) to individual punch paths or contours, and then handle these as groups. The tags can be added or removed using <T> or by double clicking an entry. When calling a function through the selection menu, all tagged elements are treated as a group, if you selected a tagged element.

18



With contour elements you will see a context sensitive menu to manipulate the punch paths. The menu item 'properties' opens a dialog 'global tool list' for adapting the tools.

Manually Manipulate, Sort And Avoid Parts.



As well as automatic sorting of punch paths you can also manually sort the processing sequence of individual parts, and the punch sequence of individual punch paths according to internal and external contours. With part-oriented sorting you must consider that it's not about copies such as with grid processing, but individual parts (see 'sorting the processing sequence')!

Individual punch paths or groups can be manipulated using many functions.

When punching, you can avoid problem areas by entering travel paths. Sort the punch paths such that the travel paths have their correct place in the sequence!

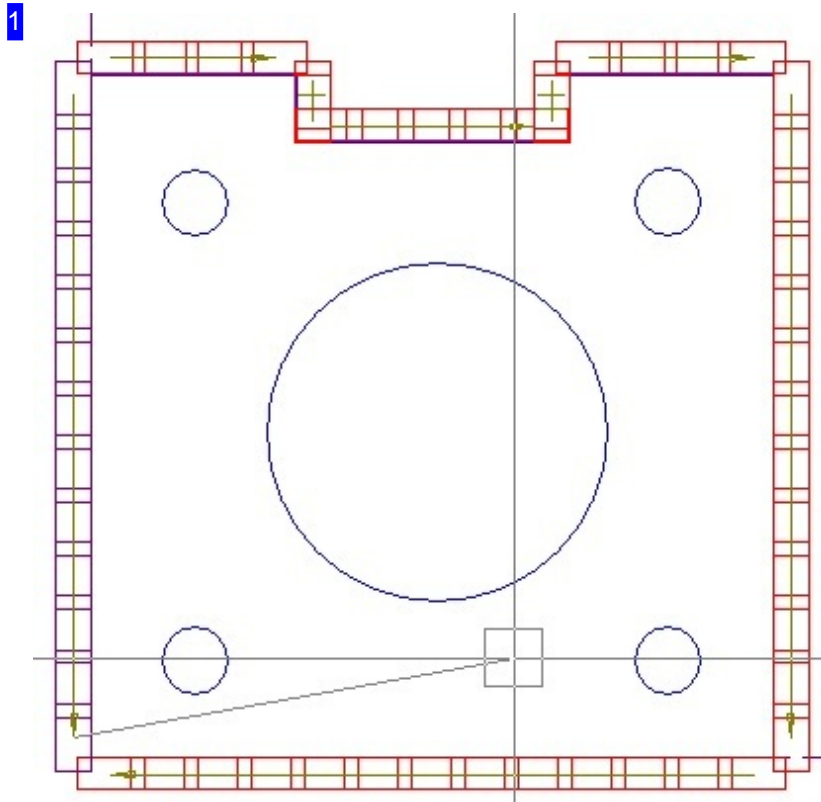
When sorting manually a distinction is made between punch path sorting, part sorting and tool sorting. Under the menu item 'punch paths', 'sort', you can choose between the various functions.

To avoid a part and therefore a potential collision, add a travel path and mark the process the processing path with a polygonal line.

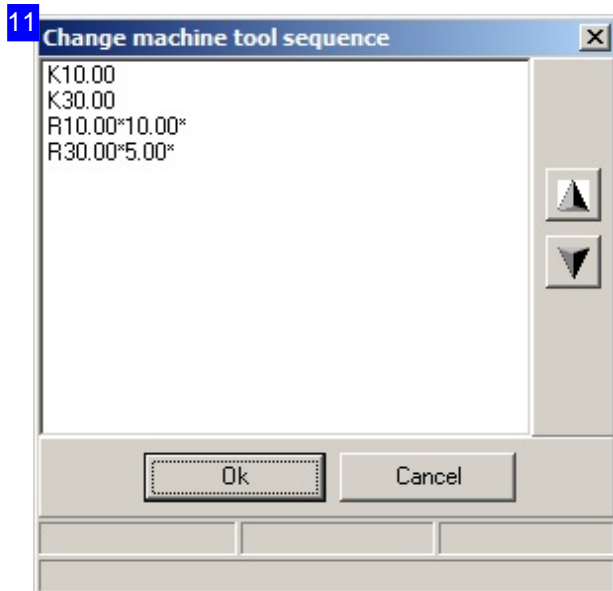
Individual punch paths can be edited manually:

- o Separating - identify the relevant punch path. The punch path will be separated at the marked position, the directional arrows show the sections.
- o Edit - if the automatically generated punch paths do not meet your requirements, identify the path and move it in the correct direction with the mouse.
- o Insert - you can add extra punch paths to a converted contour. After selecting the function, pick up an existing punch with the mouse; the punch will be appended to the cursor. Select the start and end points for the extra punch path.
- o Copy in a box
- o Move in a box
- o Stretch/squeeze

Select the functions using the menu item 'punch paths', 'edit'.

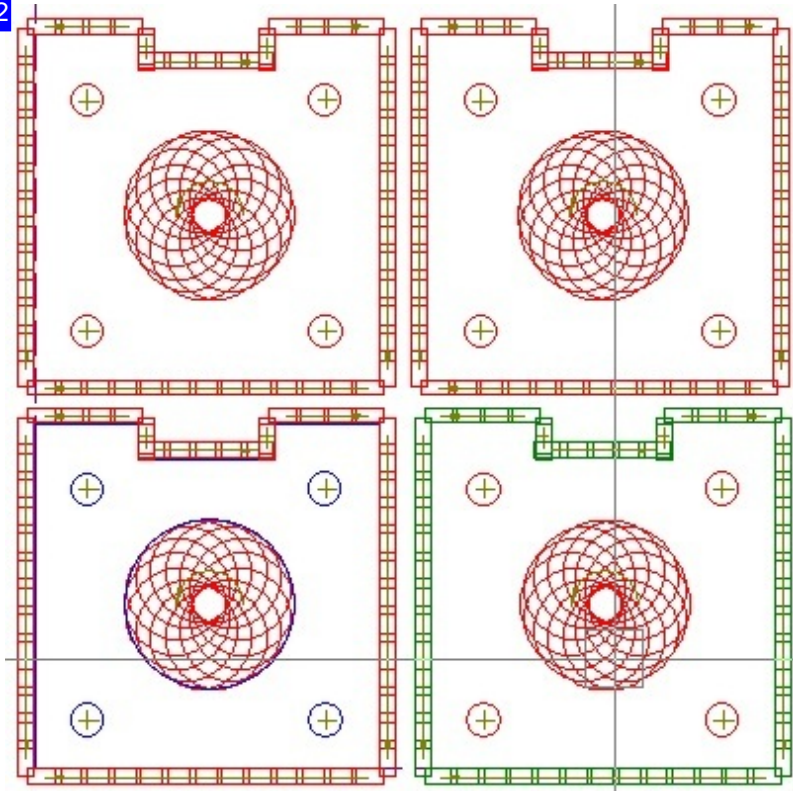


When you start manual sorting, all parts are handled only as external contours. When sorting the individual punch paths a joining line is drawn from the current path to the cursor. Click the punch paths sequentially as they should be processed.



In this dialog you can set the tool sequence as it should be used for sorting. Mark a list entry and use the buttons to the right to change the order. Don't forget to apply your changes!

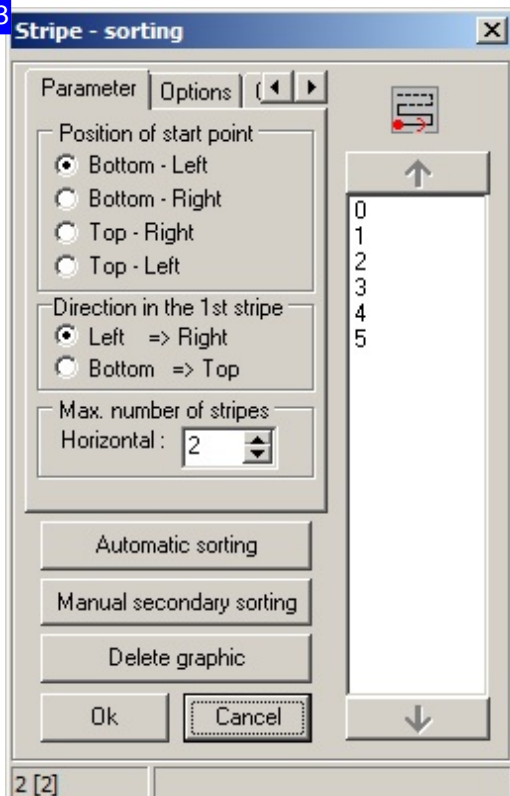
12



With part oriented sorting, all parts are handled only as external contours. Select a part to view the sorting list in a dialog. The selected part will be highlighted (here in green). The activated parts are then shown in their entirety, allowing you to check the processing status.

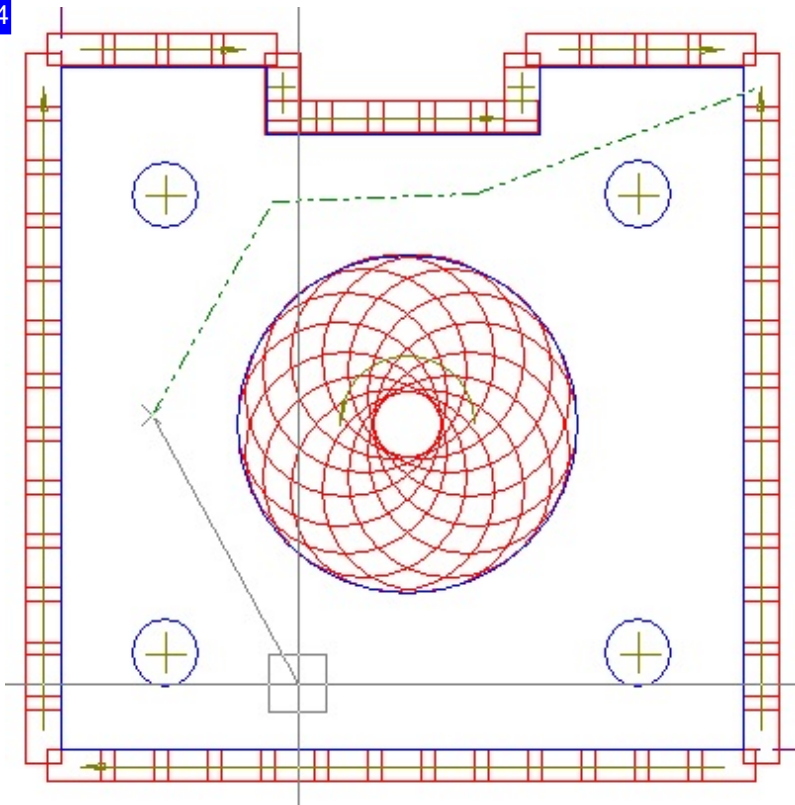
You can also edit the parts via the sorting list.

13



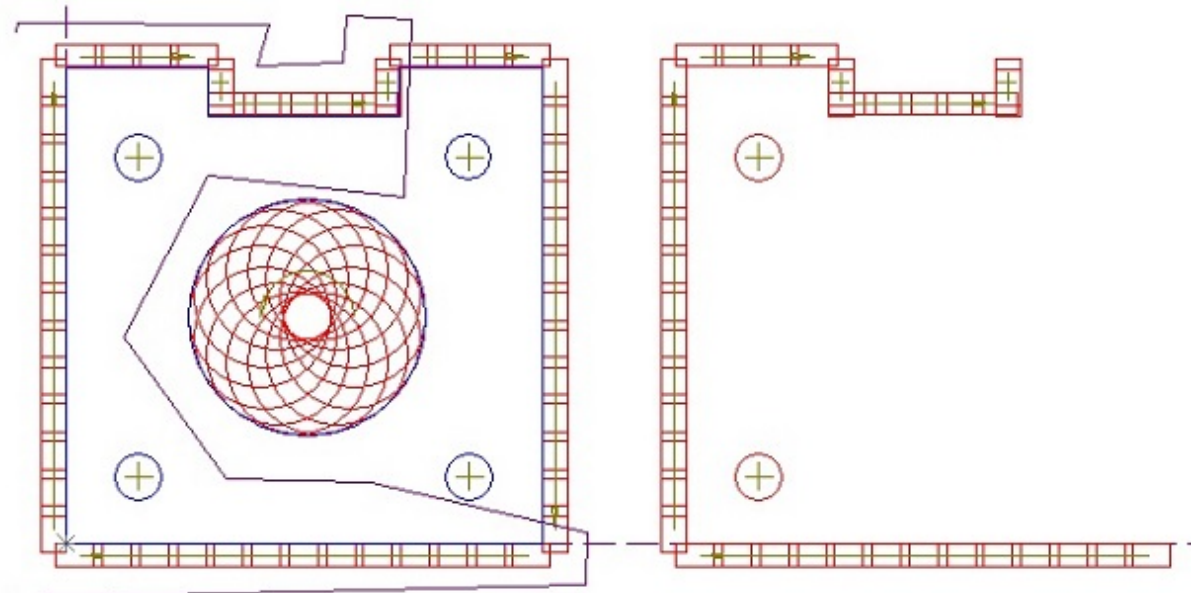
This dialog will be shown when you select a part in the function 'punch paths', 'sort', 'part-oriented sorting'. This list shows the parts as they are currently sorted. First set the sorting options and click 'automatic sorting'. The sorting list can be refined manually, or parts can be dragged into a required position using the mouse. A description of the tab can be found in the chapter 'sorting the processing sequence'.

14



You can use the mouse to add waypoints on travel paths to avoid problem areas. The function is started using the menu item 'punch paths', 'edit'. Add waypoints by clicking and end the function with <E>. Existing travel paths can be deleted using the function 'delete travel paths'; identify the previous punch path.

15

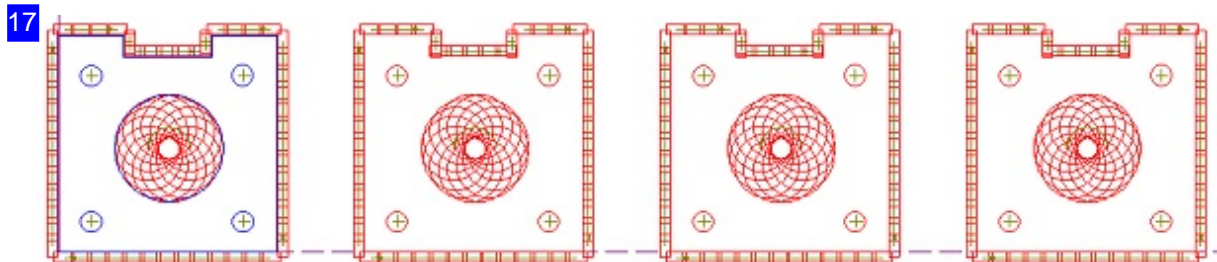


Punch paths can be copied in part or as a complete workpiece. First mark the relevant punch paths with a box or an enclosing polygon, then set the reference point for the group. After starting the function, take note of the prompts in the command line. To find a reference point, move the cursor towards the point you prefer and <ALT>-click; the cursor will go to the nearest suitable point.

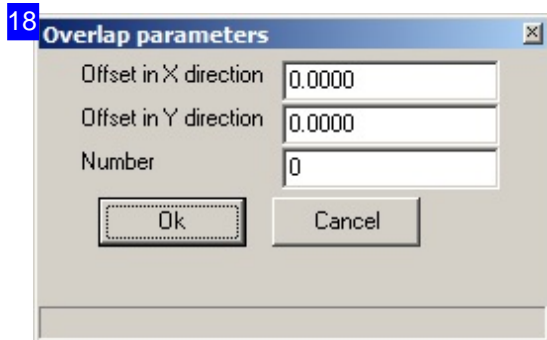
The copy is appended to the cursor by its reference point, and can be used and manipulated as a template. Right-click to open a dialog for selecting the edit functions. Place the template on your sheet as required and click as many times as needed to add copies. End the function with <E>.

- 16
- <Q> or <ESC> Stops shifting
 - <CR> Insert part at current position
 - <0> Part original position
 - <1> Rotate part by 90 degrees
 - <2> Rotate part by 180 degrees
 - <3> Rotate part by 270 degrees
 - <+>/<-> Rotate part by difference angle
 - <D> Define difference angle <5 degrees standard>
 - <Shift> + <move cursor > = Define new point of reference

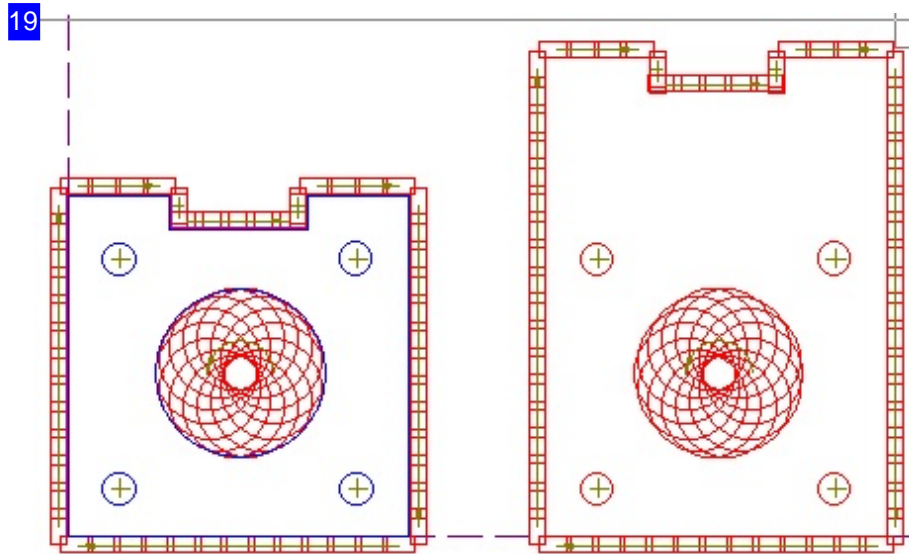
When copying you can edit the copies in various ways. The parts at the cursor can be manipulated using menu items or with the corresponding keys. The reference point serves as the center when rotating. The copy menu will open if you right-click, or as a dialog if you press <Ctrl><F1>, when shown in the command line.



With 'move punch paths' the identification of parts or workpieces is as with copying. A Dialog opens for entry of the offset values in X and Y axes, and the number of copies to create. Click 'apply' to make your copies and place them precisely.

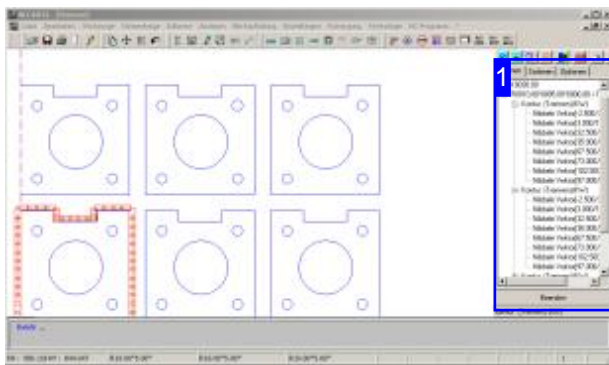


In this dialog you can set concrete values in X and Y axes for the offsets of the copies to be created. Enter the number of copies and click 'apply'.



Stretching and squeezing is worth a special mention when adapting punch paths. An identified part area can be moved in one direction, whereby the unaffected punch paths remain in their positions, and the gap is filled automatically by stretching or squeezing affected punch paths. This function can also be used to move complete areas; to do so, mark the complete workpiece. The identification of parts or workpieces is as when copying.

Using Subroutines To Reduces Program Size.

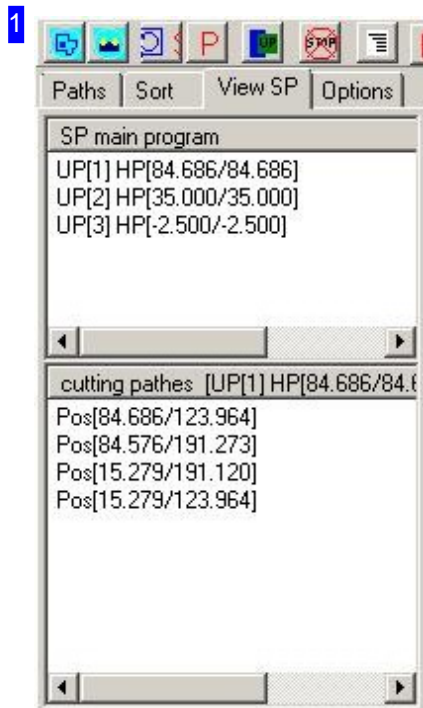


A workpiece generally consists of multiple punch paths or individual punches. If such a workpiece is copied, those punch paths are duplicated but remain identical. Identical contours can be grouped into subroutines which can be called from any cursor/tool position. This procedure greatly reduces the size of your programs.

in order to create subroutines, your sheet must have multiple identical parts. identical contours can then be grouped into packets.

- o First mark the contours which you would like to group with a 'Tag' <T>. Selected contours will be highlighted in a different color in the preview.
- o Right-click a tagged entry to open a menu, and select the function 'Group all marked <T> to a subroutine'. The list [1] will be refreshed accordingly.

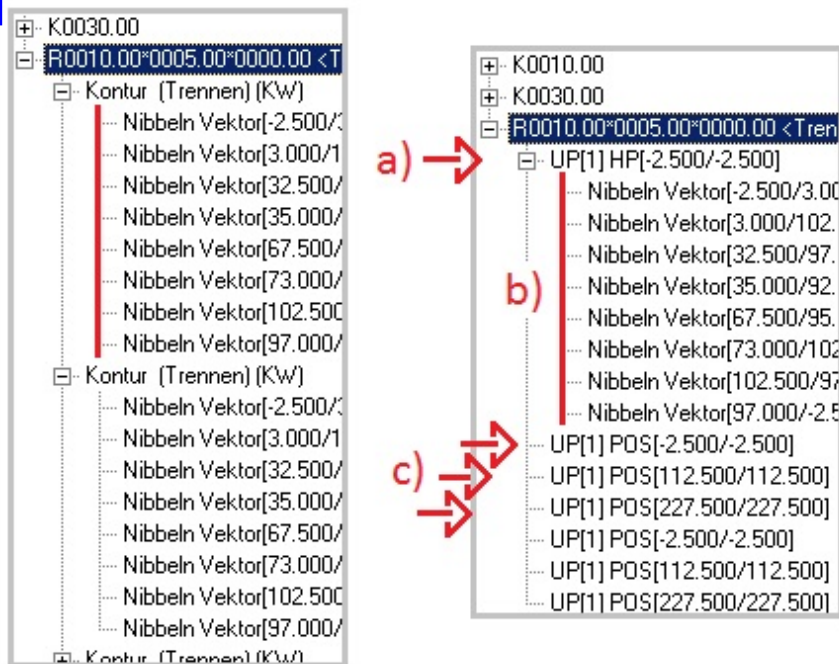
Select the functions using the menu item 'punch paths', 'sorting', 'edit sorting list'.



If one of a workpiece's contours is called as a subroutine, you will see an overview of all subroutines in the top frame. Select a subroutine to see its punch paths in the frame below.

Subroutines can also be dissolved, and the original code replaced as it was. Select this function under 'sheet division or 'NC program'.

11

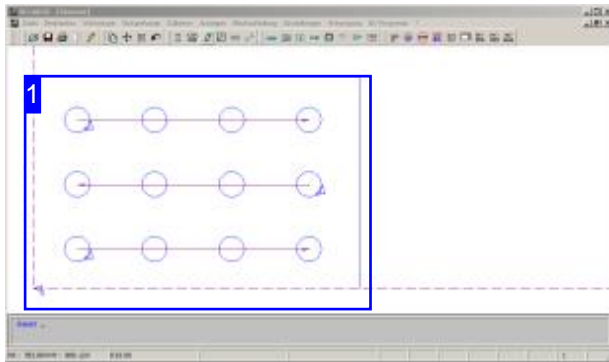


A subroutine (SR) consists of 'main program (MP) lines' SR/HR (a), which contains the collection of punch paths (b), and the calls with position detail SR/POS (c) for the copies.

The contours are listed in the left frame, as they were created as a copy of a part. There is a list of punch paths for each contour sorted by punch.

In the rightmost frame you can see the list of contours after conversion to subroutines. A contour is hereby grouped to a subroutine (a), in which the punch paths (b) are listed. The individual parts' contours are created by calling those subroutines at positions (c). The NC programs can be greatly shortened with this method.

Make Space By Group-Building.



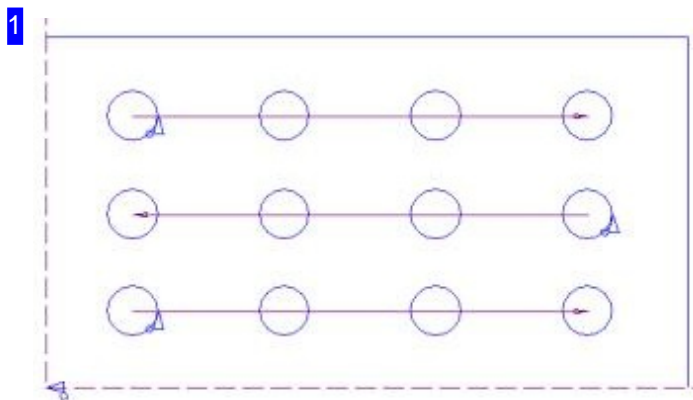
Individual punches made with a single tool, for example a perforated sheet, can cause large NC codes, since every hole requires a line of code. This volume of code can be reduced by grouping the individual punches. A matrix of rows and columns which can be worked in 'punch cycles' represents such a group. The requirement would be that your machine allows such cyclic-processing.

Grouping of contours is only possible when no punch paths are present and the groups are a component part of a part from *ncCAD32*. Grouping must be done before automatic conversion into punch paths!

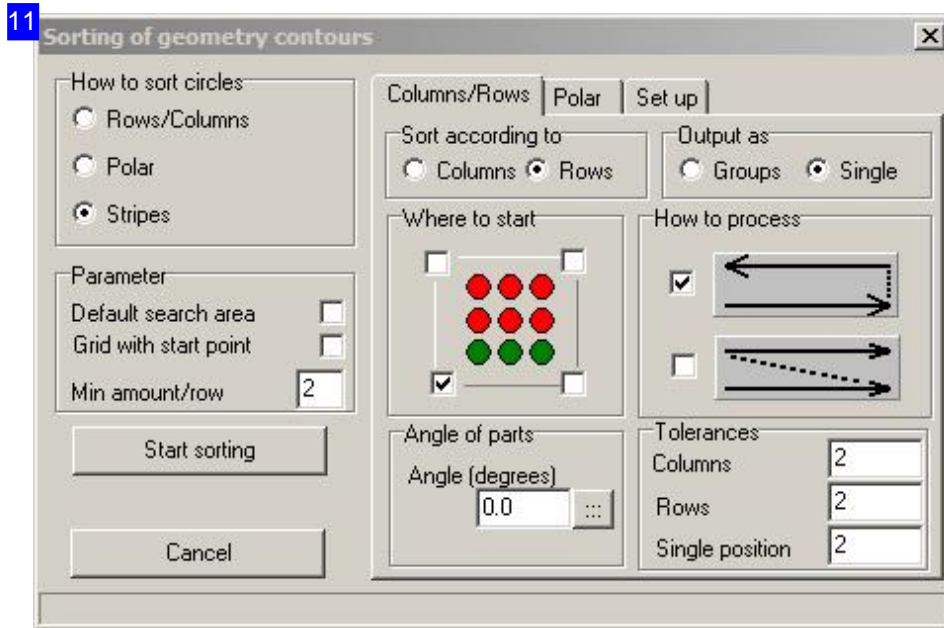
The requirement for group-building is identical contours of a part, arranged in a matrix. The functions for group-building can be accessed through the menu item 'punch paths', 'punch groups'.

- o Group contours.. - This opens a dialog to set the conditions for joining. First choose the starting contour; a dialog will be shown with the result of this group-building, which you should then confirm.
- o Punch groups without geometrics - this function allows you to punch a matrix on a sheet with a selected punch without having to create a corresponding part. A Dialog will open for the matrix data.

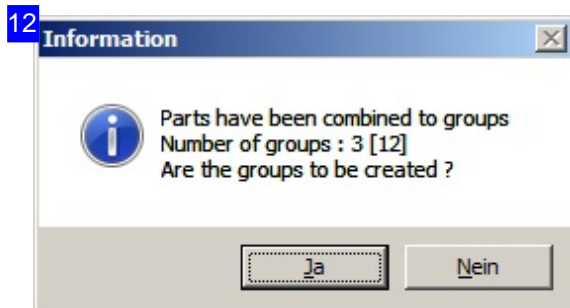
Built groups can be dissolved individually or all together.



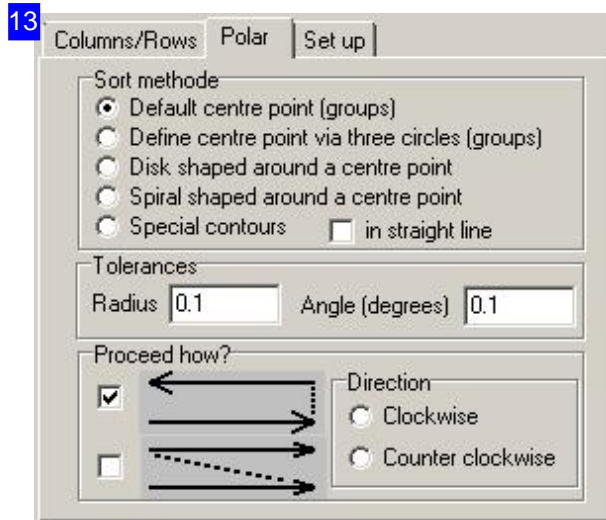
After successfully group-building, you will see the group in the preview with arrows in the direction of processing.



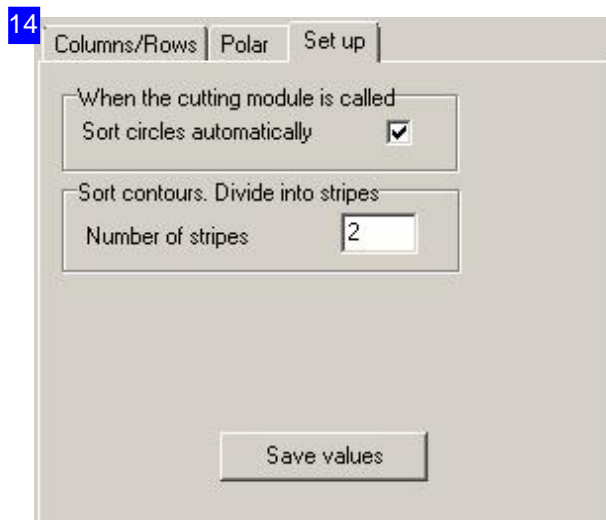
This dialog allows you to set group-building conditions for single punches. The program finds parts according to the conditions, and groups them. The 'settings' frame allows you to activate a search area. Mark the checkbox, and you will be prompted for the search area location in the command line. Enter the maximum permissible variance of identical contours which should be recognized as a group in mm in the frame 'tolerances'. Select the start contour with a click and click to 'begin sorting'. Suitable contours will be shown in a dialog. Processing can also be circular; switch to the 'polar' tab for the relevant options. You can mark a checkbox in the 'settings' tab for automatic sorting when you call the punch module,



If sorting by groups was successful, the result will be shown in this dialog, awaiting your confirmation. After confirming, the groups will be created and displayed in the preview [1] with start points and directional arrows.

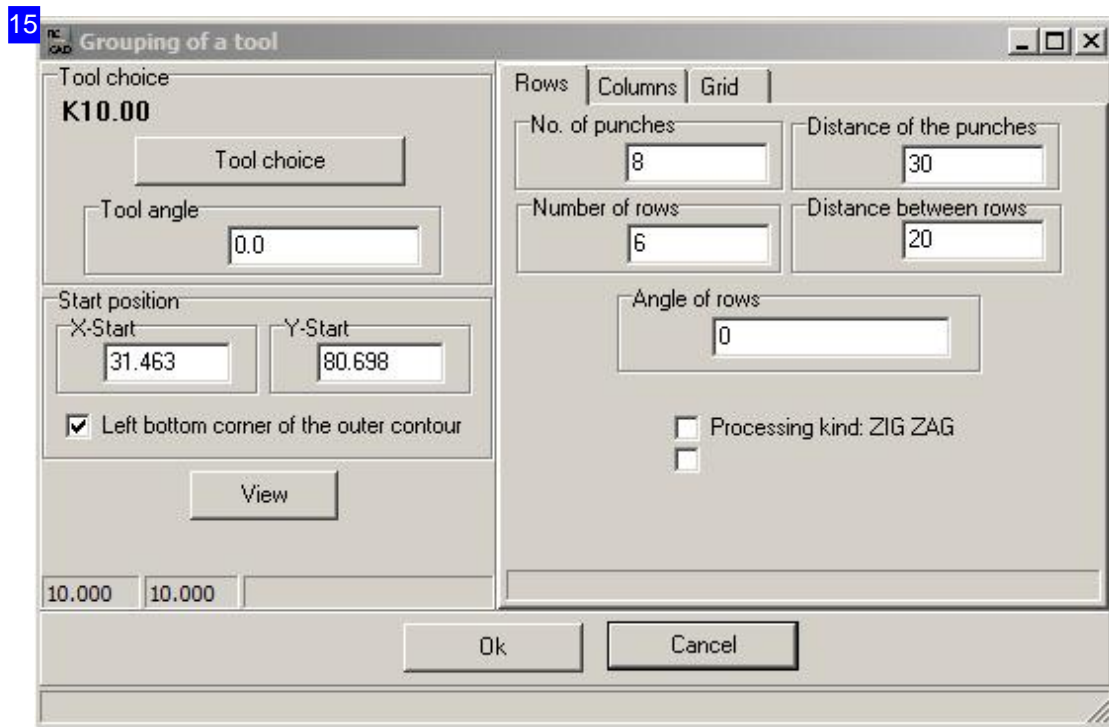


You can select from various search patterns for circular sorting. The center should be selected, if not by other means, with the mouse. In this case there is no directional arrow.

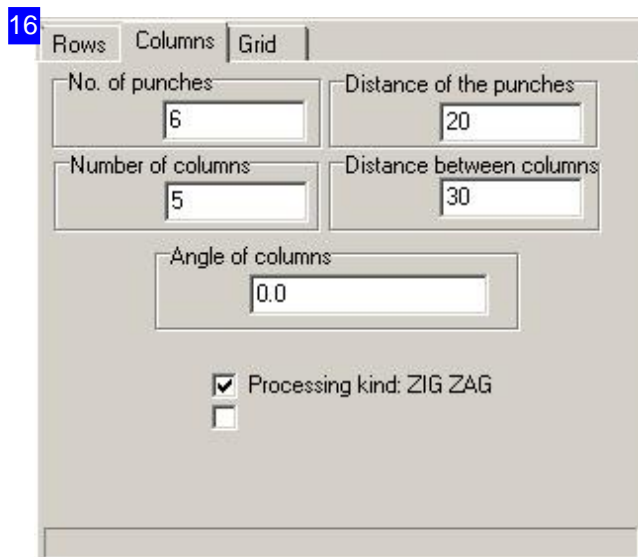


For automatic conversion of circles when calling the program, mark this checkbox.

When sorting by the smallest offsets, you can get unordered paths in the punch sequence. To minimize this, you can divide the whole sheet into (imaginary) stripes. The sorting process will run from one stripe to the next, giving a better-ordered route.

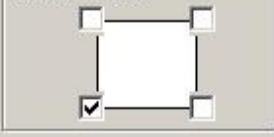


In this dialog you can enter the tool and the contour group's arrangement. Click on 'tool selection' to open the global tool manager and select a punch for the group. Enter the matrix's start point and define the processing sequence by rows, columns or in a grid. Click 'display' to see and check the result in the preview window. When you have adjusted to your needs, click 'apply' to create the group.



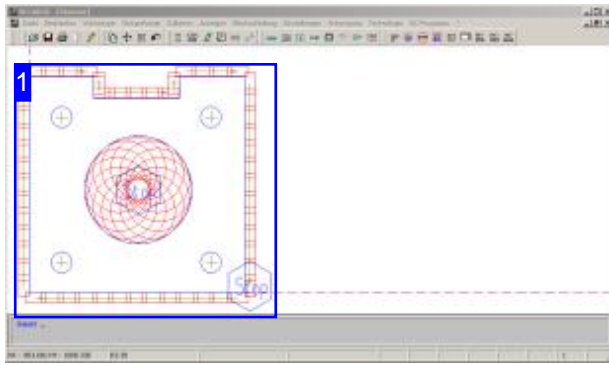
The inputs in this tab correspond to those in the tab 'rows', but build columns.

17

Rows	Columns	Grid
Number of rows <input type="text" value="5"/>	Distance between rows <input type="text" value="20"/>	Where to start 
Number of columns <input type="text" value="5"/>	Distance between columns <input type="text" value="30"/>	
Angle of grid <input type="text" value="0.0"/>		
<input type="checkbox"/> Processing kind: ZIG ZAG		

This tab allows a complete grid matrix to be defined, by entering the start point and processing type. Meander means a reciprocating processing order.

Change The Punch Direction And Add Machine Stops.



ncStanz offers the function to change a part's punch direction, and add machine stops to the punch paths as required. The machine stops at a machine stop until it is restarted. This allows machines without small part disposal to be cleared.

For machines with small part slides, you can add the corresponding disposal points to your punch paths.

changing the processing direction does not change the contour type - external contours remain parts and internal contours remain holes!

If however you change a contour's direction before conversion to punch paths, its type will be changed too - external contours become holes and are crunched!

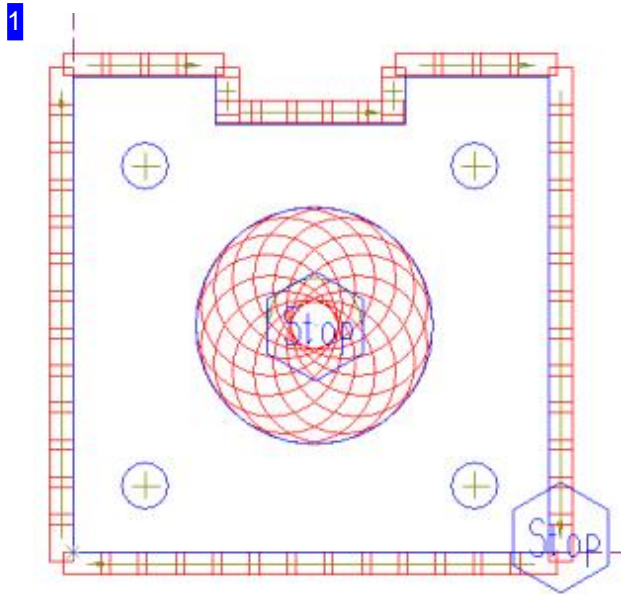
To add a machine stop to a punch path, select the menu item 'M-stops' or the quick key in the icon bar.

To change the rotation angle of a punch path, identify it after the menu selection. Machine stops can be added in the middle of a punch path or at the end. Double-click to repeat the command and end the function with <Esc>.

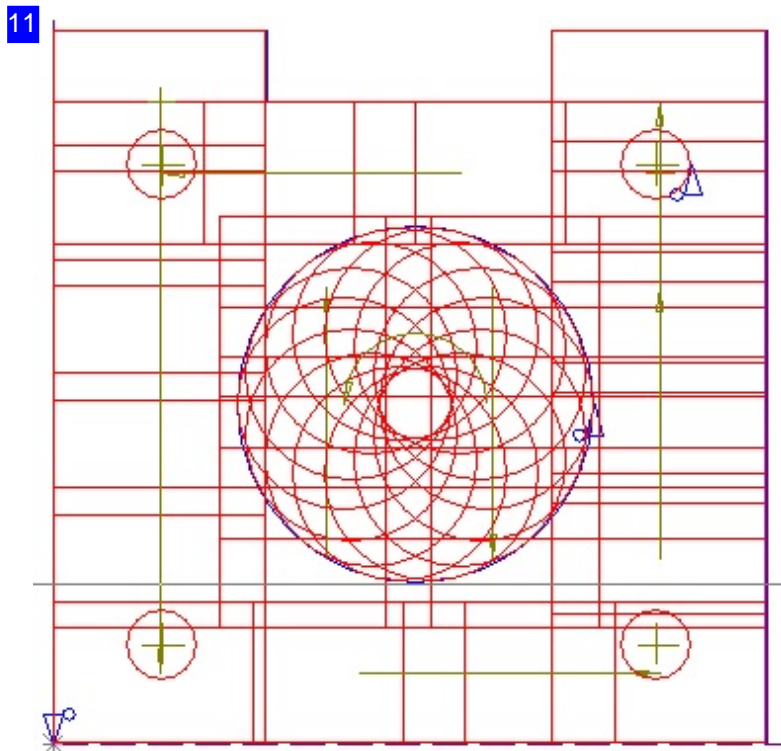
to remove a machine stop select 'delete' and select the unwanted m-stop.

To change the processing direction select the menu item 'punch paths', 'edit', 'change processing direction'. After selecting the function, identify the affected punch path. The change of direction can be recognized by the direction arrow, which now points in the other direction.

If however you change the part's contour direction before converting to punch paths, the part will be completely crunched.

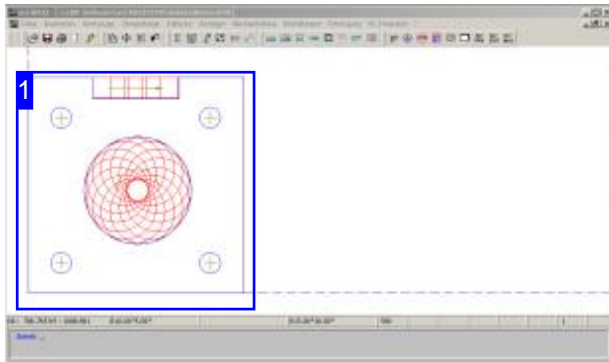


At the end of an NC program you will usually find a machine stop. The m-stop function allows multiple stops on a part for example to handle necessary processing steps. After selecting the function, identify the punch path where you wish to add a stop. Double-click to repeat the command and end the function with <Esc>. The same process is used for deleting machine stops.



When you change the contour direction, you change the contour type! Internal contours become external contours and vice versa. When converting automatically to punch paths the whole part will then be crunched. Be careful - if you make this mistake on a large part while using a small tool, your computer may be kept busy for some time.

Optimal Material Usage Through Common Separating Cuts.

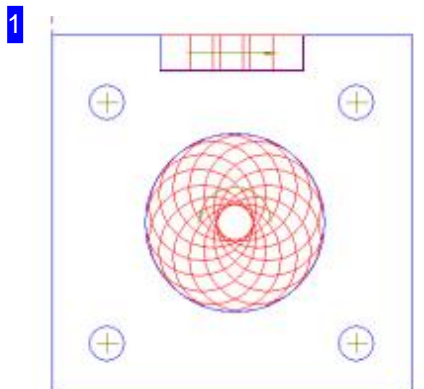


If multiple identical parts with mainly straight edges are to be punched, using common separating cuts can lead to optimal material usage. By using correct settings and part offsets, shared separating cuts can give you the best material usage.

When creating shared separating cuts, external contours are created automatically using the standard punch; the punch paths may not be created by automatic conversion. Only create the punch paths for internal contours and notches!

Parts must meet particular conditions in order for common separating cuts to be able optimally arrange them.

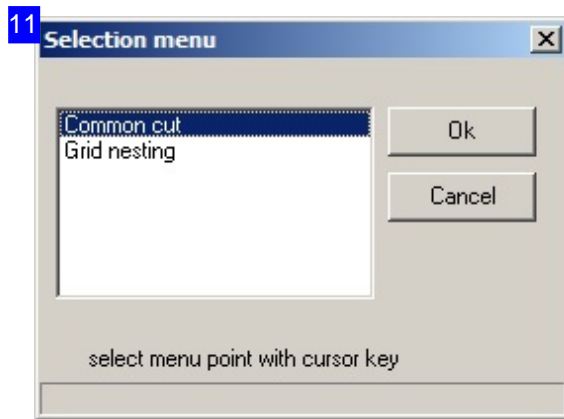
- o The parts must have joinable contour elements.
- o Parts may not have punch paths on external contours.
- o Internal contours and notches must be created.
- o For optimal material usage the part offset must equal the cutting tool width.



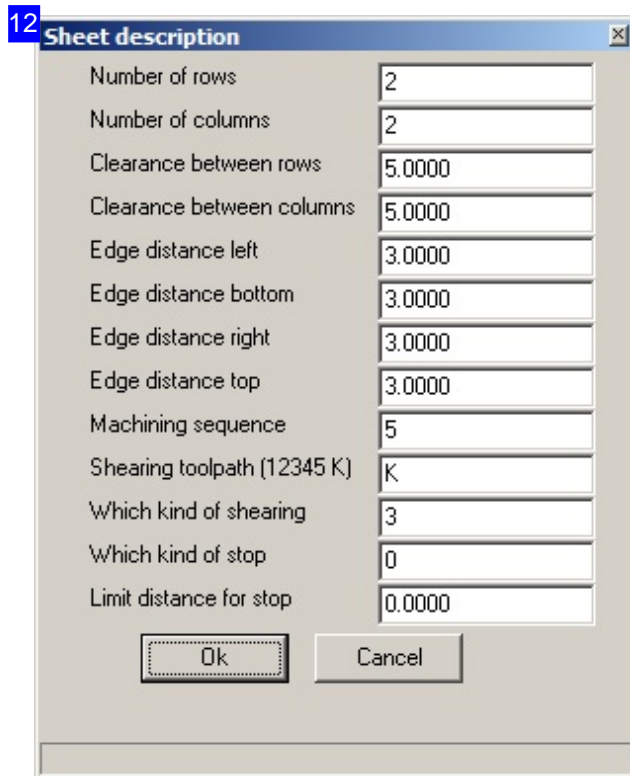
To punch a part with shared separating cuts, first create the punch paths for internal contours and notches.

Select the function through the menu item 'sheet division', 'grid processing'; a dialog opens with continued options.

You can also layout the part in a grid with shared separating cuts using the function 'edit', 'manipulate'.



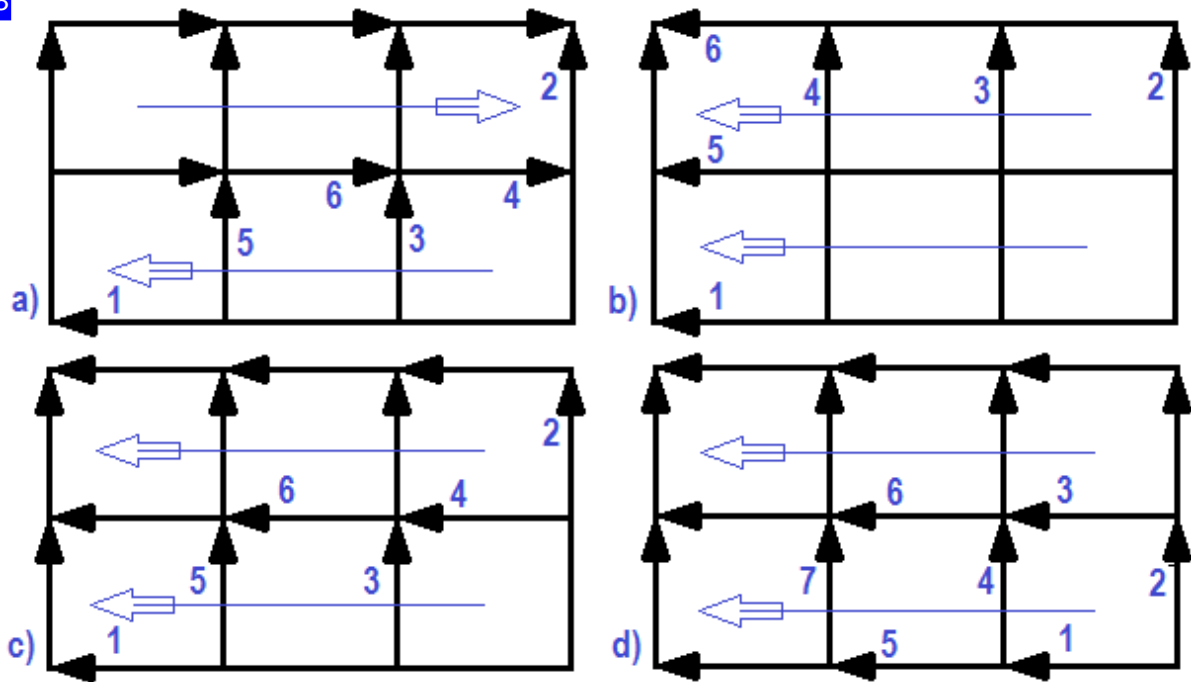
Select the 'grid processing' or 'common separating cuts' function in this dialog. Grid processing will be executed using common separating cuts. After calling the function a dialog will open for the settings.



You must make the settings for laying out parts with common separating cuts here. For optimal material usage set the row and column offset to the tool width of the standard tool. In the field 'separate how', enter the punch sequence and in the field 'which stop', enter the disposal type. You can choose between:

- o 0 - none
- o 1 - machine stop
- o 2 - small part slides
- o 3 - SMH-Stop (SheetMaster Stop)
- o 4 - Behrens double bridge
- o 5 - Set spoil
- o 6 - Behrens single bridge

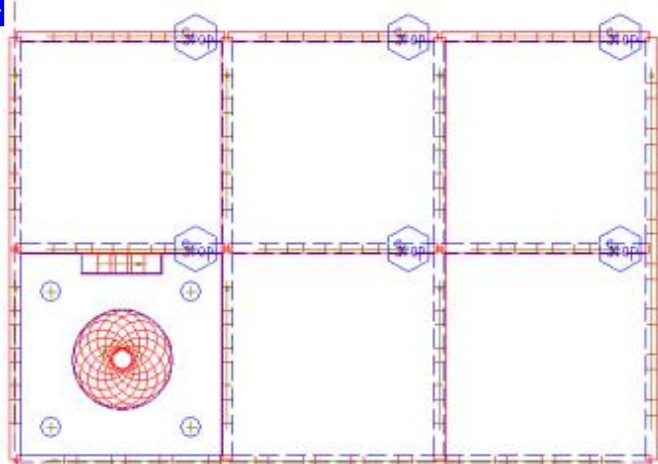
13



The punch sequence is defined in the field 'separate how' in the settings window.
The diagrams show the punching sequence:

- o a)=0 - from bottom right to top left, reciprocating in the rows (meander).
- o b)=1 - from bottom right to top left, in the same direction, first the columns then the rows.
- o c)=2 - from bottom right to top left, in the same direction, first the bottom right edges, then part oriented, columns before rows.
- o d)=3 - from bottom right to top left, in the same direction, part oriented, rows before columns.

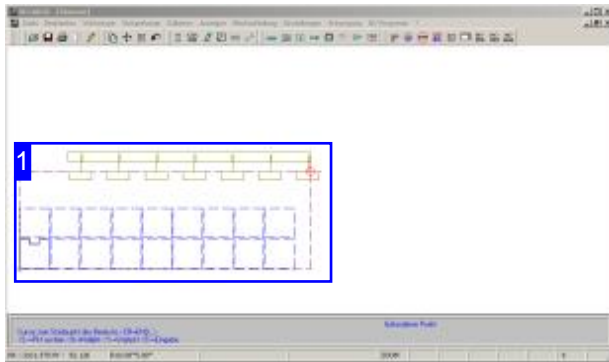
14



after calling the function the layout will be shown in the preview with machine stops. use the simulation to check the punch sequence. check for overlaps and collisions; in case of errors you can adjust the settings.

Clamps And Restrainers

Setting Clamps And Positioning Restrainers.



Clamps on punch machines are holders, in which the material sheets are gripped and held in place while punching.

Individual punch machines have, according to their type, many different kinds of clamps. There are fixed, retractable, and movable clamps.

Clamps are managed by the post-processor.

The counterpart to the clamps are the restrainers, which hold the sheet still while the clamps are (re)positioned.

If a sheet is larger than the machine's work area, the sheet will need to be repositioned to use it all. When repositioning, the existing punch paths will be separated at a point of your choosing, and resorted in a new 'displaced' list.

The available clamps will be spread across the sheet equally if using automatic setup. The clamp setup can be viewed in the preview. To check the clamps, use the 'sheet division' menu; you'll find all menu items for this function here.

The clamps can be moved manually, where the machine allows this. The function is launched through menu item 'setup clamps'; use the mouse to identify the clamp which should be moved.

The clamp bar can be aligned to the sheet. Use the menu item 'discover sheet' to start this function, then position the clamp bar on the sheet.

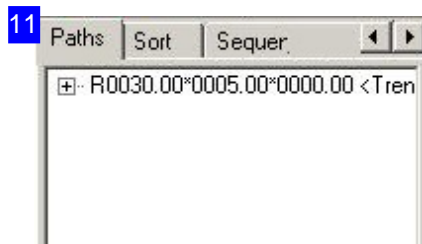
To position the restrainer, select the menu item with the same name.

Repositioning the clamp bar is initiated using the 'Repositioning' function. Place all parts on the complete sheet. The result is a sorted list. By repositioning the clamp bar the layout will be divided and remade as a new 'displaced' sorting list.

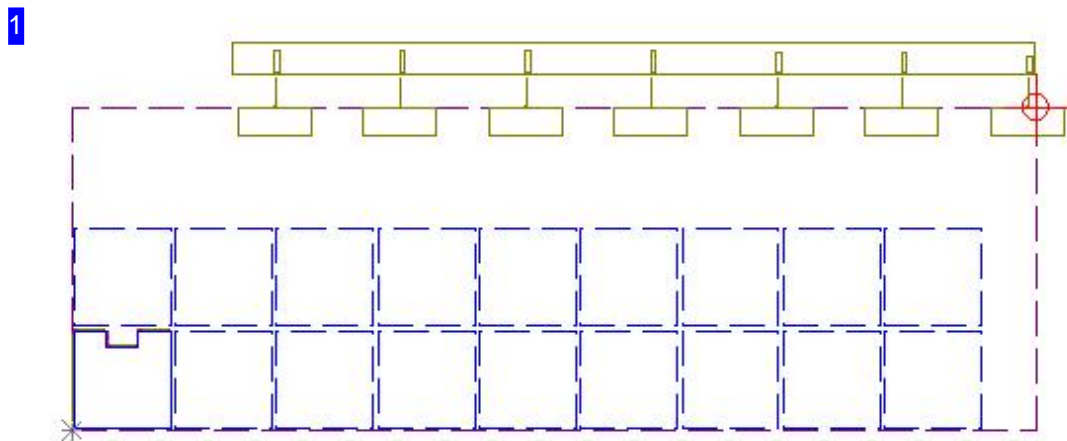
The functions can also be executed using concrete values in the command line. You can adapt the punching area and the clamp-settings with command '959 260'. Entering the command, opens a frame for enter the settings for punching area and clamp-positions.

Important note:

You cannot use this function in conjunction with subroutines.

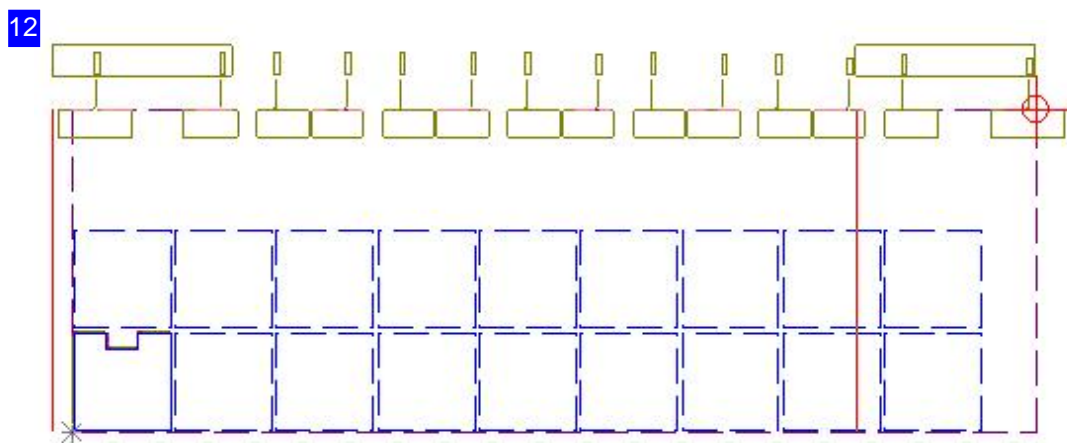


After converting contours into punch paths, the created sorting lists are displayed; here is a sorting list for a rectangular punch 30x5 to punch all parts. After repositioning, this list will be separated into two halves.



The clamps are shown in the preview based on current values relative to the sheet. This allows you to check the clamps positions in relation to your parts. If there are collisions, the clamps must be moved accordingly (discover sheet).

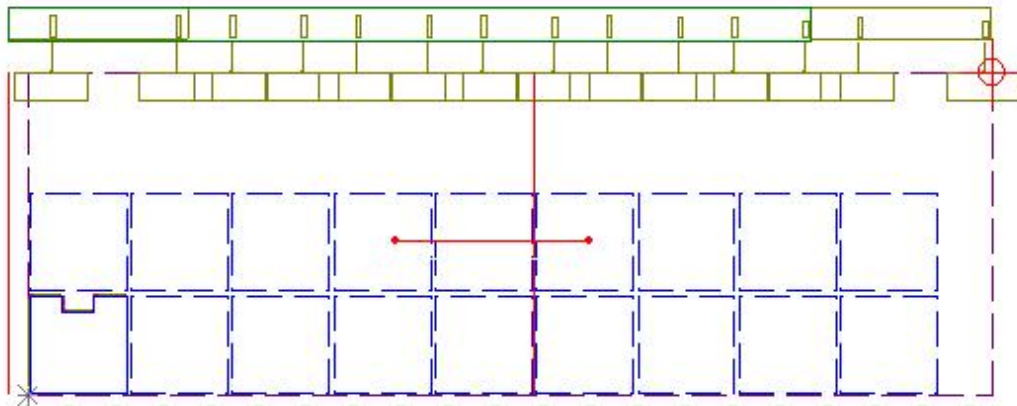
If a sheet is larger than the machine's work area, as in this case, the sheet must be repositioned during processing.



with the 'set manually' function, the clamp bar is appended to the cursor and can be moved to the new position using the mouse. The stamping area is shown between two red lines. Click at the required

position to place the clamp bar. In the preview you will see the sheet displayed with all clamps.

13



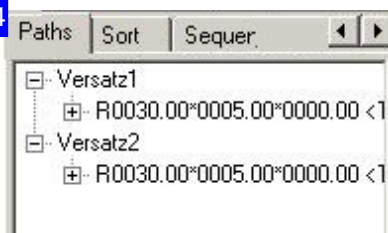
after repositioning the clamps the separating line for program separation must be drawn. the separating line is shown as a red line from the cursor position, and can be positioned by clicking, here it is in the middle of the sheet.

To avoid the sheet slipping while repositioning, it is fixed by 'restrainers' during this process. Use the mouse to place the restrainer anywhere within the crossover area, in the next step. The same applies for the separating line.

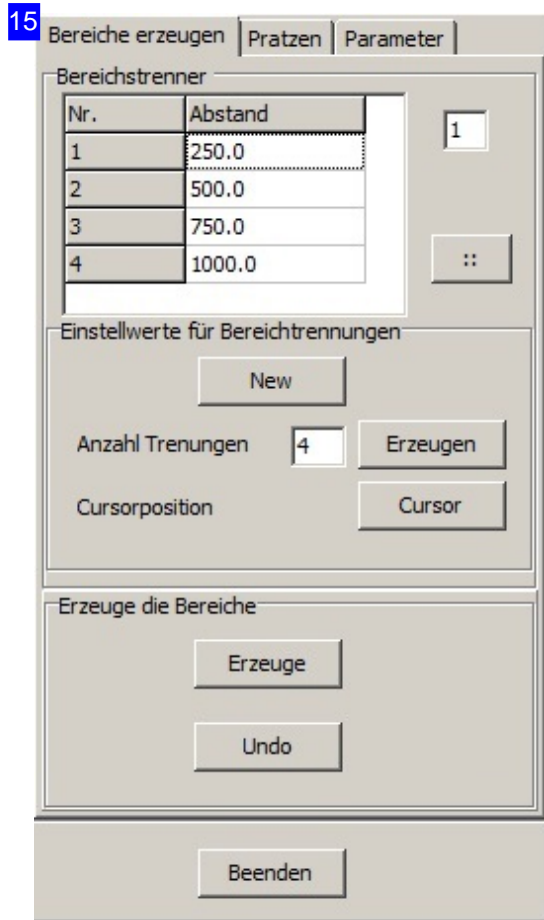
In the example the restrainer is marked with two red points joined by a horizontal line in the middle of the sheet.

You can check the result of the repositioning in the sorting list.

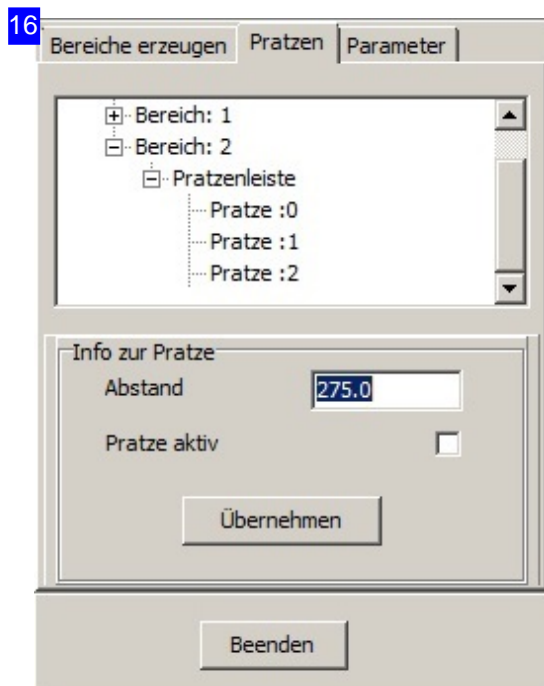
14



After repositioning the clamps the previously created sorting list, which was for the whole sheet in its entirety, is divided into two 'displaced halves'. There is now an entry of a 30x5 punch to punch the parts for each half.

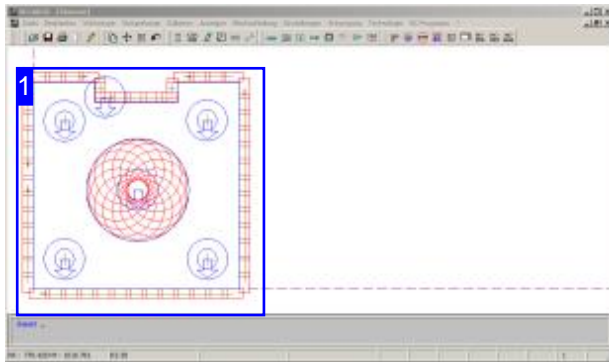


You can adapt the punching area and the clamp-settings with command '959 260'. Entering the command, opens this frame for entering the punching area settings. Use the 'Clamps'-tab to set the clamp-positions.



You can adapt the clamp positions with command '959 260' to the punching area.

Dispose Small Parts Using Slides.



machines which are fitted with small part slides can be operated by adding corresponding disposal points. when a disposal point is reached, a machine-specific subroutine will be called to raise the slide, while the size of the parts is monitored by the program. You can add m-stops to your punch paths for parts disposal on machines without disposal slides

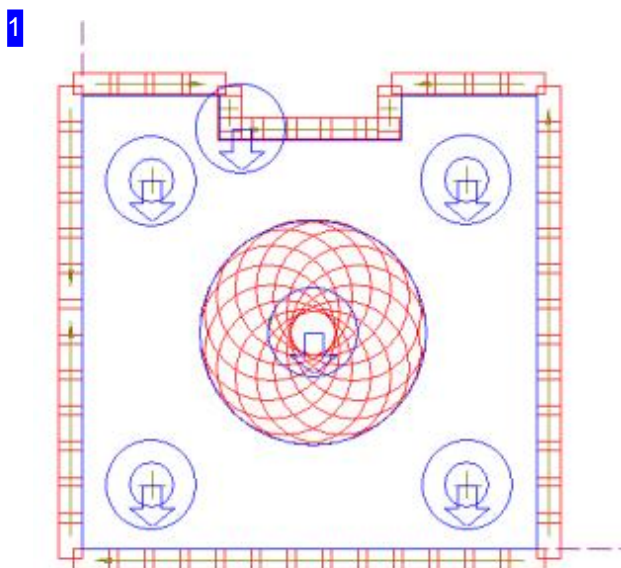
To place a small parts disposal point on a punch path, select the item 'disposal', or 'edit', 'disposal', or use the quick key in the icon bar.

Small part slides can be placed in the middle or at the end of a punch path. Double-click to repeat the command, and exit by pressing <Esc>.

To delete a disposal point, select 'delete' and mark the corresponding symbol.

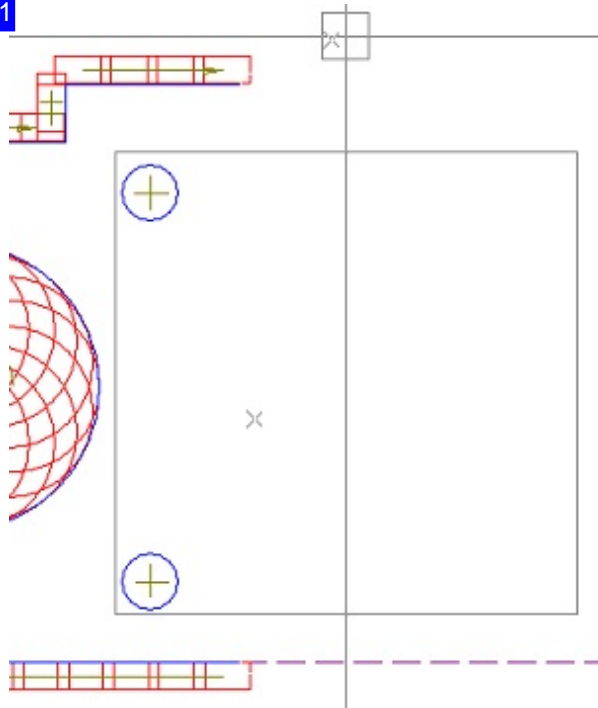
As well as small part slides, other disposal functions include rigid slides using SheetMaster, among others.

For machines with small part slides, see the chapter changing the punch direction and adding machine stops.



Punched parts can be removed from the punching area using small part slides, if your machine has this capability. The small parts slides function allows you to add multiple disposal points to your parts to allow completion of processing tasks. Select the function, then identify the punch path where you will add the disposal point. Double-click to repeat the command, and exit by pressing <Esc>. The same procedure applies for deleting disposal points.

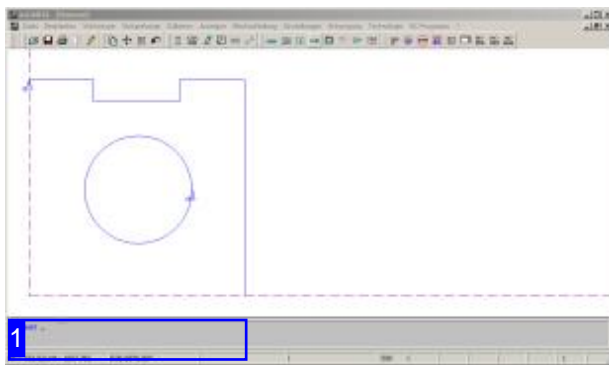
11



Rigid slides are positioned in the same way as small part slides. When adding a disposal point, the slide's size is shown at the cursor to allow targeted placement. The slide symbol is placed at the required position, and a joining line shows the disposal point on the punch line.

Macros

Execute Command Sequences As Macros.



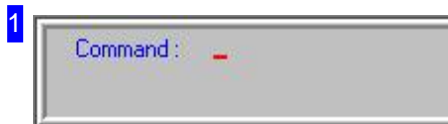
select the menu item macro routines to open the Dialog for macro editing. you can then generate a Start macro and other punch macros.

When creating a macros, you must enter a name to save it under. All punch macros are saved with the extension '.SAK' in the folder 'MAK'.

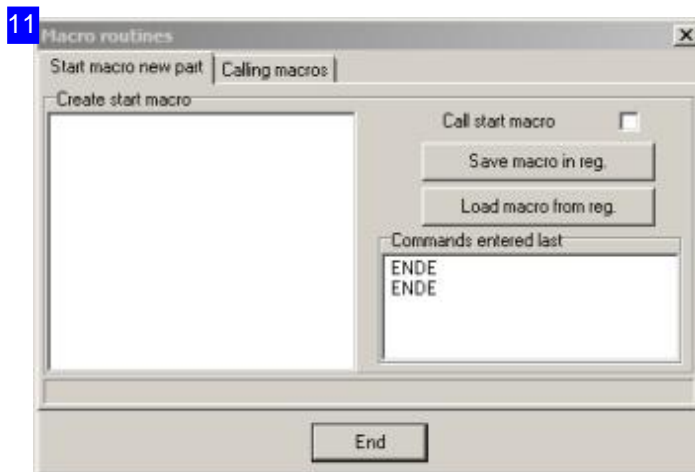
Important note:

All command numbers must be introduced with a pound sign (#)!

Frequently recurring tasks which can be entered in the command line [1] can be collated and saved as macros. Macros can subsequently be called with just one command, simplifying work and removing opportunities for human error.



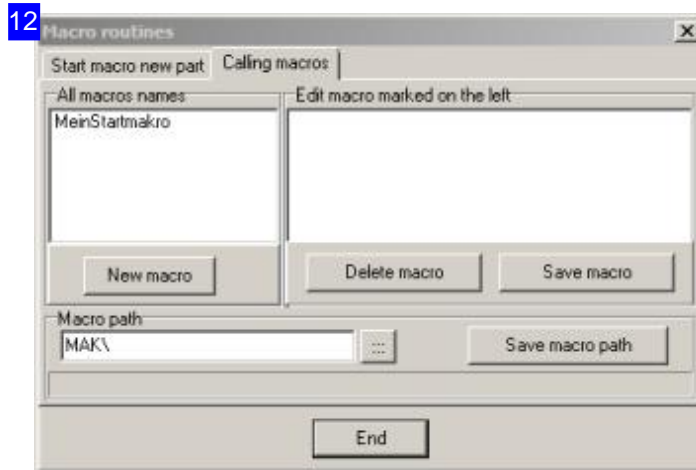
Functions can be called from the command line using the corresponding command number or name. the names of macros containing multiple commands can be used in the same way. Custom macros can be created by the user to meet his needs.



Creating a start macro:

Collate your start macro's commands in the text field to the left. The field to the right allows you to save the start macro to your registry. To view the current start macro's content, load the macro to the text field. If your start macro should be called automatically, highlight the top-right checkbox.

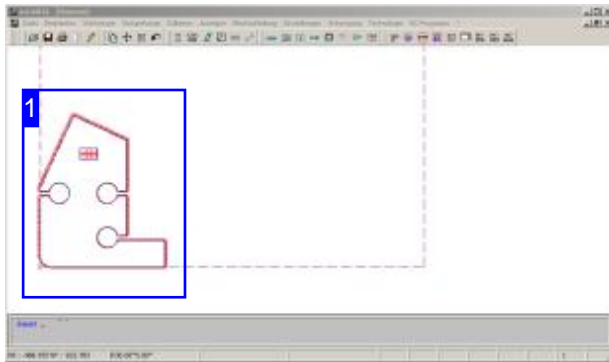
The frame 'previously entered commands' lists all functions you have called up to this point. These commands can be used to form your start macro.



This tab allows you to create as many workload-reducing macros as you require. First click 'new macro' to begin, then enter the new macro's name. When giving a name, you should make it memorable and short! Collate the commands in the text field to the right, then save your macro. By default the file will be saved in the regular macro folder, although you can specify another.

Offcuts

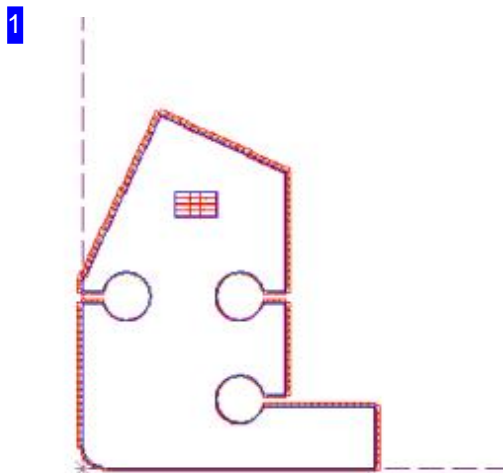
Clean Up The Layout With Free Punching.



To create free punching or clean-up paths, select the corresponding menu item under 'edit', 'single processing'. The functions can also be accessed directly from the second field of the status line.

To cut an offcut which is laid out with irregular shaped parts, free punch paths or a trimming cut can be used to trim the offcut. Trimming cuts are made with a defined trimming tool.

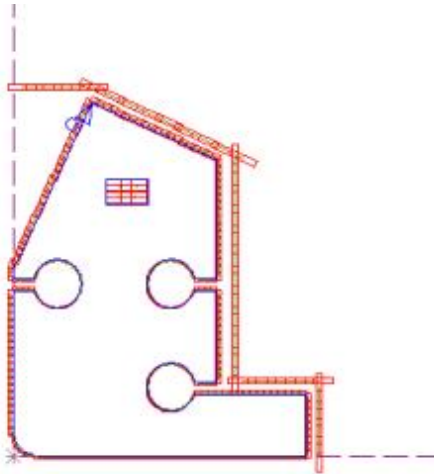
Free punch paths can also be advantageous to split strange internal contours such that they fall from the sheet better.



In the preview [1] you can see the punch paths on the given sheet. After starting the function, set the punch as required by adding freehand lines. The separating line will then be shown as punch paths in the preview.

If you are creating a separation with a trimming cut, you need only mark the start and end points of the line. The punch paths will then be executed in the correct position using the predefined trimming tool.

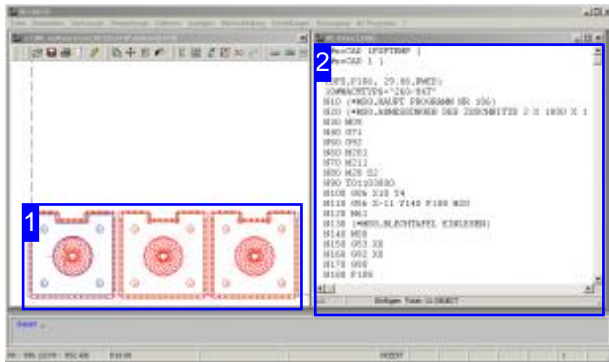
11



Here you can see the free punch paths around one part, to trim the remaining sheet to an offcut.

NC Programs

Convert Punch Paths To NC Programs.



your NC program is generated with a simple menu click. Click 'create NC code..' to open a dialog where you can enter the required program number and post-processor settings.

The NC program will be created automatically according to the post-processor settings.

If your machine is able to process subroutines, first create your subroutines using the corresponding menu selection.

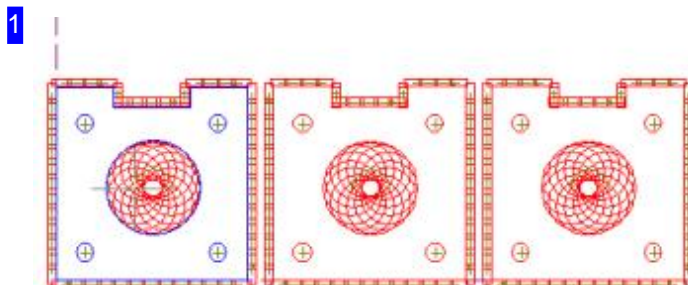
NC editing contains all functions required to create an NC program. The code generated depends on, and may be limited by, the selected post-processor. Subroutines and punch cycles are only possible on machines which support these functions.

You can post-edit your NC programs, for example to change a setting for a specific machine. Usually though, the programs will not need modification. Access the editor by clicking 'Edit NC code'; a text editor window containing the code will open in a dialog next to the preview [1].

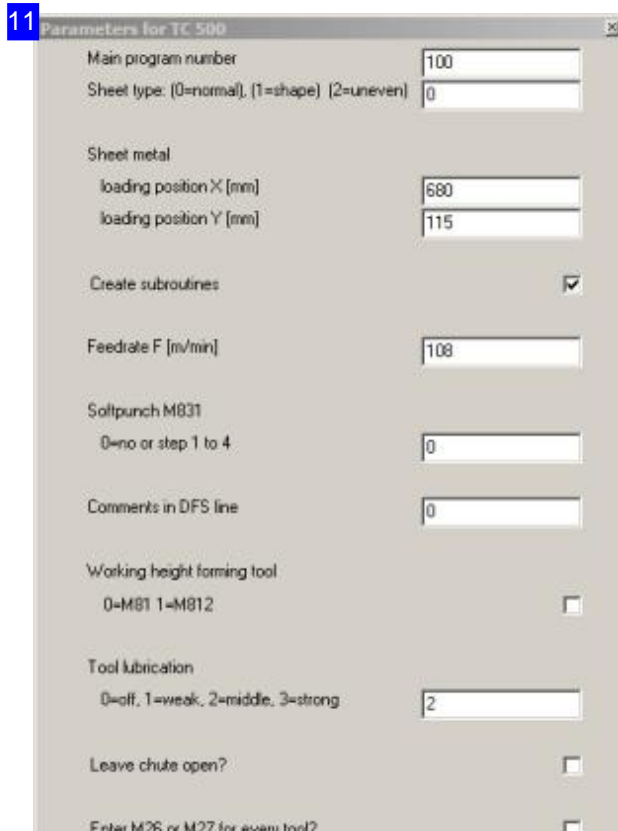
NC programs are the streams of commands sent from the computer, worked one by one by your cutting machine to create your parts. If there are many parts on your sheet, the code can become very long. Subroutines can be used to greatly reduce the amount of code. When generating subroutines, punch paths of identical contours are grouped as packets according to the tool used. These packets of code have a reference name and can be called using a single command without duplicated code. See the chapter 'Using subroutines to reduce program size' for more detail.

Don't forget to save your NC code. The default location is 'NCCAD32/CNC'.

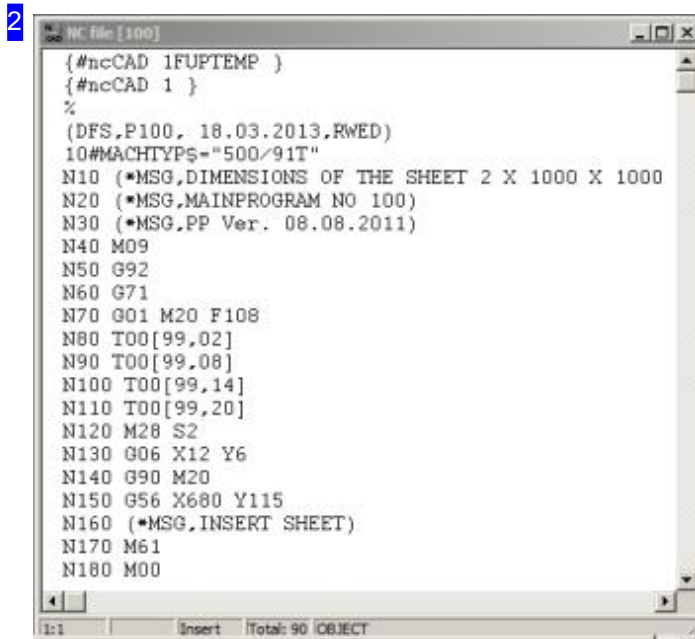
You can open a file manager to save your programs to different files by clicking the menu item 'Save NC code as..'



The punch paths will be shown on the given sheet in the preview [1]. Select a command in the program list, and the corresponding punch path will be highlighted by placing the cursor over it.



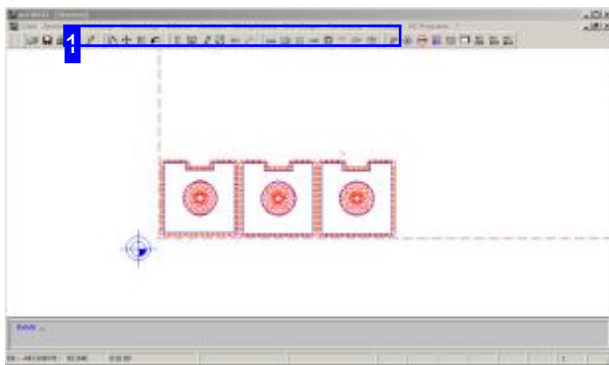
In this dialog you can enter the number/name for the NC program. Depending on your post-processor, there may be further input fields available. You can find more information on these fields in the manual for your machine or control panel.



This dialog shows the generated NC program in a text editor. You can modify the program as required.

Configuration

Basic Settings For Programs And Machines.



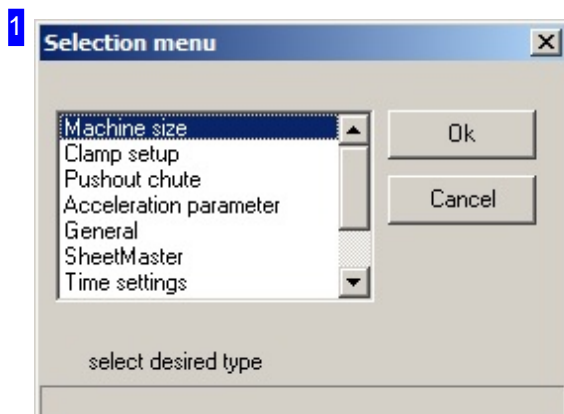
This screen allows you to make basic settings for configuring the program to your punch machine and post-processor. This is important in order to obtain correctly generated NC code. Some of the dialogs in this section are post-processor dependent (marked post-processorD), and may therefore be missing from your copy of the software.

The configuration settings can be accessed through the corresponding 'menu':

- o General settings
- o Machine reference point - note the prompts in the command line.
- o Time calculation
- o Cursor step width - note the prompts in the command line.
- o Undo settings
- o Bump settings
- o Zone / error checking
- o TRUMPF
- o Tools in the setup plan

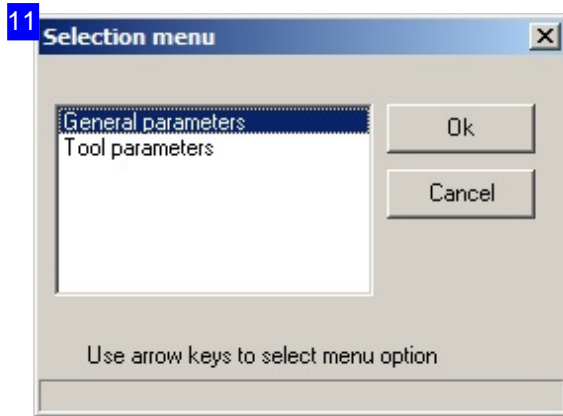
Some menu items open a dialog for the selection of the configuration dialog.

More information about the technical values (machine settings) which should be entered in the configuration dialogs can be found in the instructions for your machine or control panel.



This dialog (post-processorD) offers a selection of configuration fields, each of which opens a theme-oriented dialog.

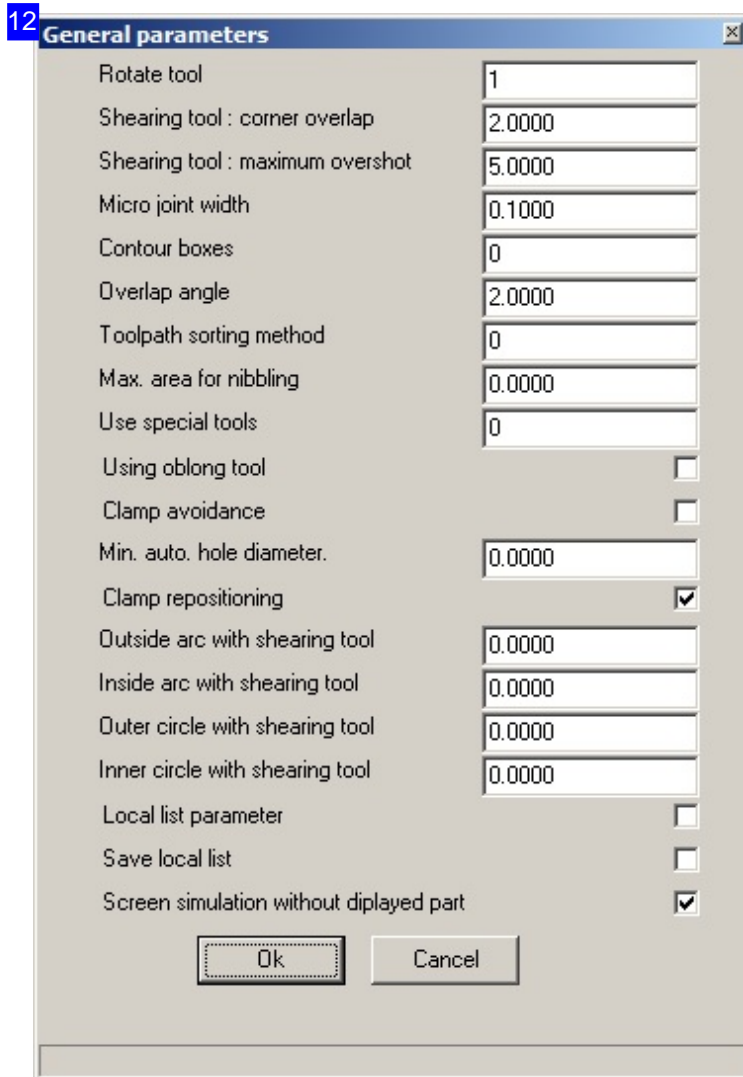
- o Machine size - enter the dimensions in this Dialog.
- o Clamp settings
- o Small part slides
- o Acceleration settings - suppresses the programmed maximums.
- o General
- o Setup plan
- o NC code options



This dialog allows you to make settings for:

- o General settings and
- o Punch settings

Click 'apply' to open the corresponding input dialog.

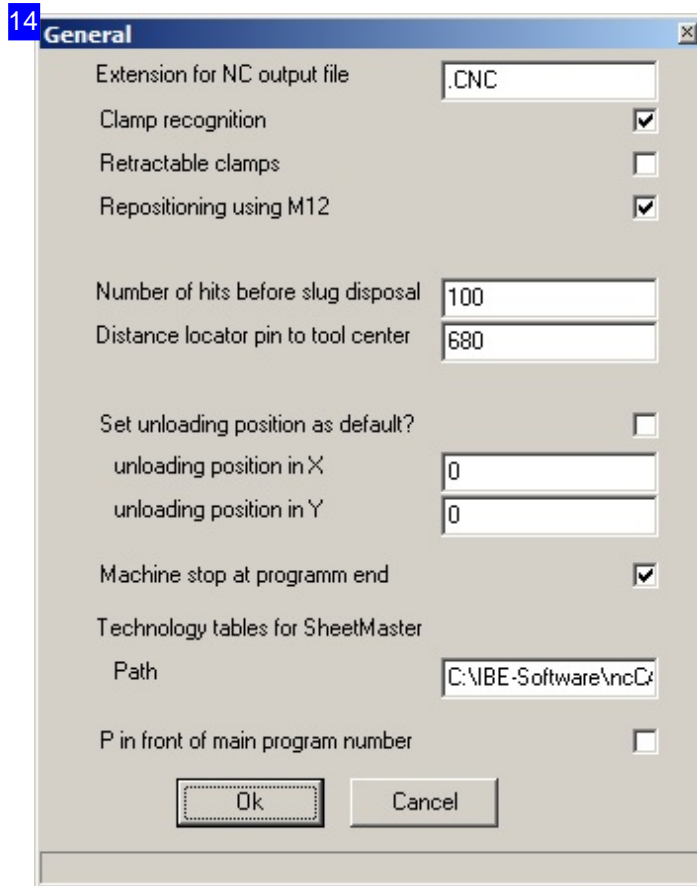


General - this dialog allows you to make settings for the creation of NC programs, and general program settings. Lengths are to be specified in mm and areas in mm² (millimeters squared). For yes/no questions, give 0 for no and 1 for yes.

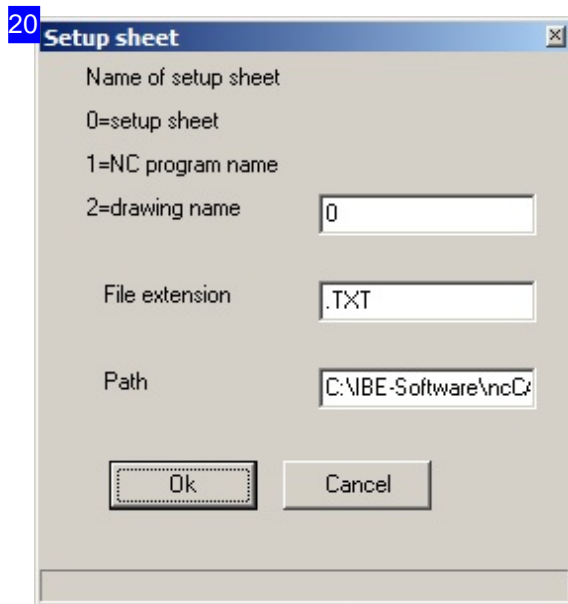
13 **Tool parameters** x

Diameter of tool for outside arcs	5.0000
Scallop height for round tools	0.2000
Scallop height for rectangular tools	0.2000
Rectangular tool width	10.0000
Rectangular tool height	10.0000
Rectangular tool ratio (>1)	8.0000
Overlap rectangular tool	0.5000
Max. tool feed	0.5000
Shearing tool : Width	30.0000
Shearing tool : Height	5.0000
Diameter of tool for outside circles	10.0000
Trimming tool : width	10.0000
Trimming tool : height	10.0000

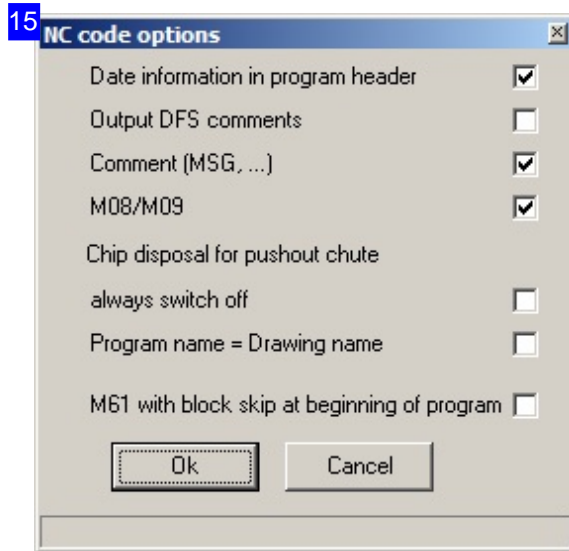
Punch settings - enter the settings for your punches; dimensions are to be specified in mm.



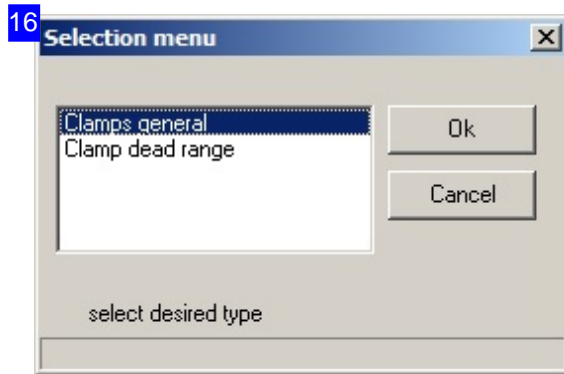
General settings for the creation of NC programs (post-processorD).



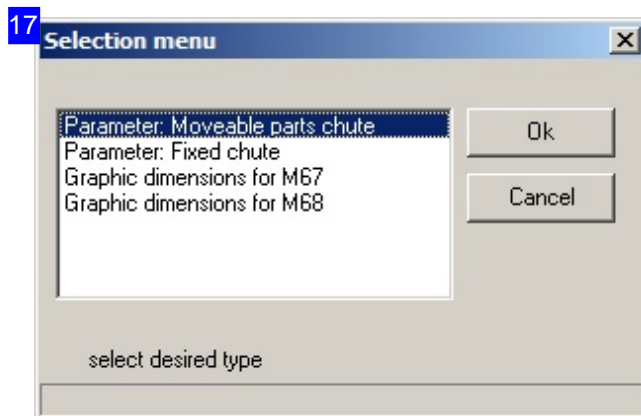
Settings for the setup plan (post-processorD).



NC options for the creation of NC programs (post-processorD). Mark the corresponding checkboxes.

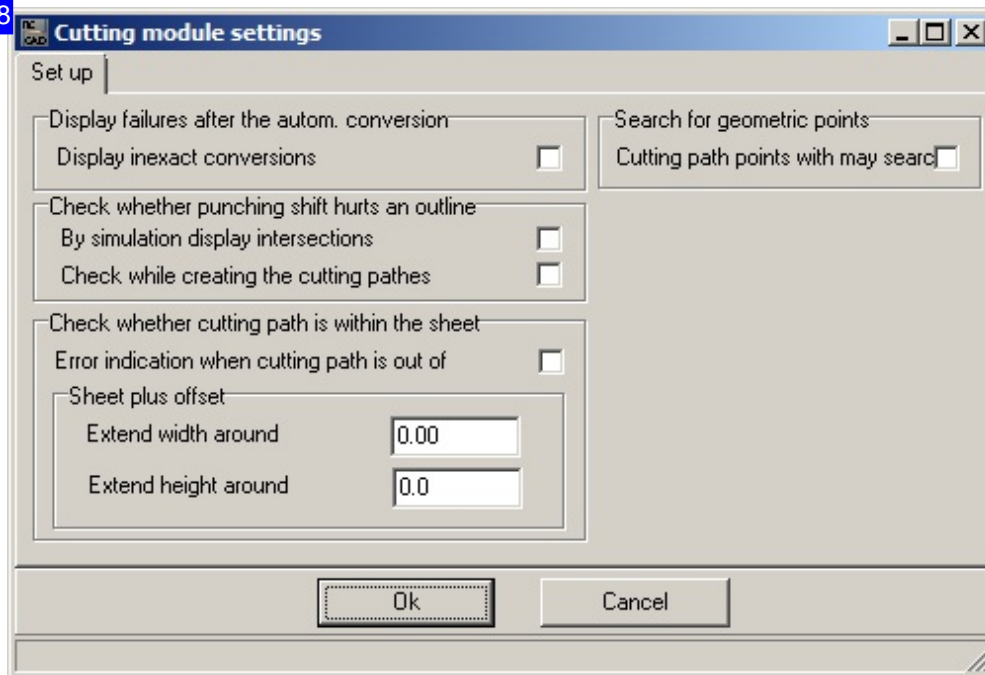


Clamp settings - use the dialog (post-processorD) to make settings on your machine's clamps.



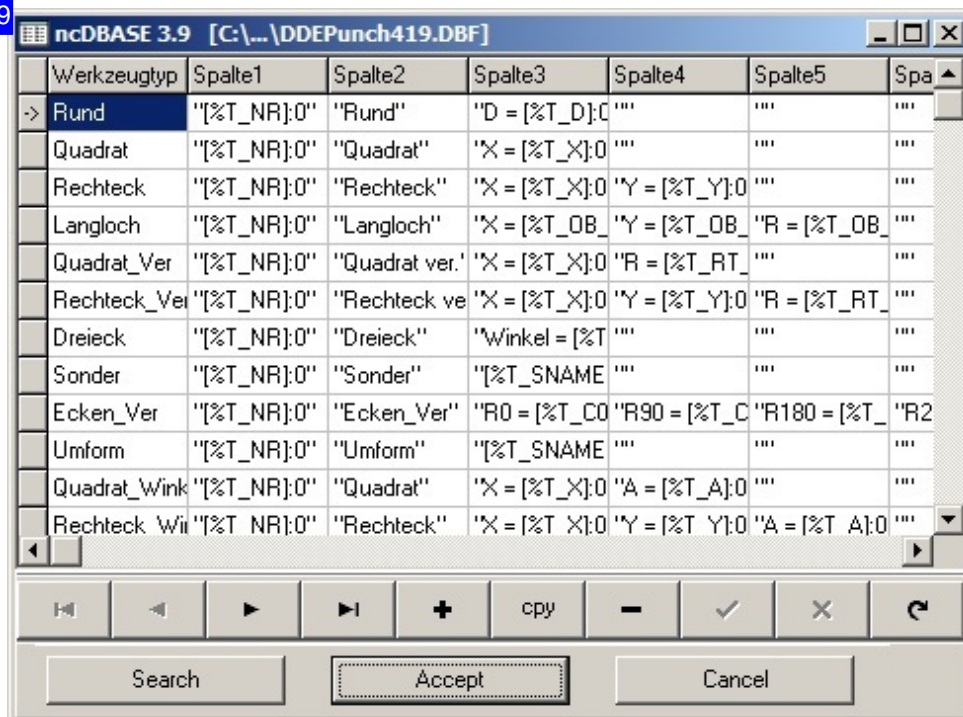
Small part slides - use this dialog (post-processorD) to make settings on your machine's small part slides.

18



Use this dialog to mark corresponding checkboxes for contour collision, and margin checking.

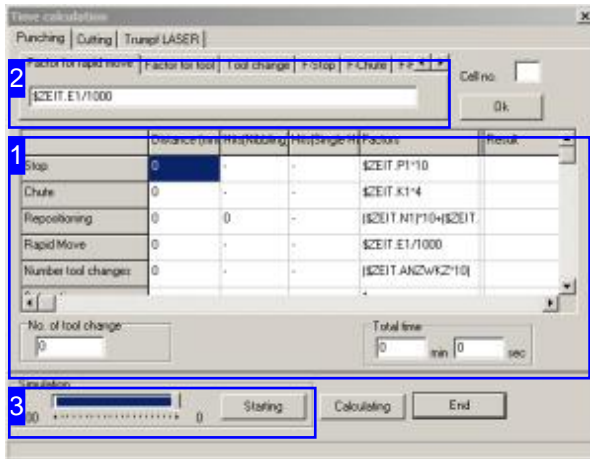
19



All tools listed in the tool manager can be reviewed in this dialog (post-processorD). You can use the second column to give your tools names for the tool setup plan. These names will be shown in the setup plan.

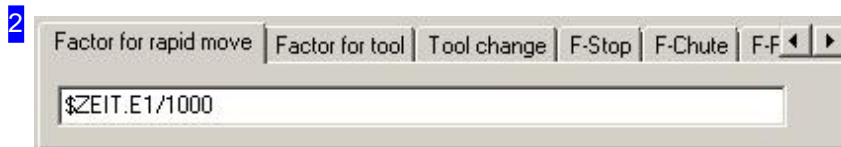
Time Calculation

Calculate The Punching Time Using Simulations.



Select 'settings', 'time calculation' to open a dialog in which you can give settings for the various processing methods and the times for the processing tasks, allowing an accurate calculation of the overall time required.

The time calculation's accuracy is dependent on many factors, and can only be as precise as the entered data. It also relies on a full and complete set of punch paths, containing all required steps. The time calculation result is derived from a simulation of the cutting procedure.



These tabs allow you to edit the individual formulae used for time calculations. Select the corresponding tab and change the formulae as required. Click 'apply' to save the changes to the list.

1

	Distance (mm)	Hits(Nibbling)	Hits(Single Hi	Factors	Result
Stop	0	-	-	\$ZEIT.P1*10	
Chute	0	-	-	\$ZEIT.K1*4	
Repositioning	0	0	-	(\$ZEIT.N1)*10+(\$ZEIT.	
Rapid Move	0	-	-	\$ZEIT.E1/1000	
Number tool changes	0	-	-	(\$ZEIT.ANZWKZ*10)	

No. of tool change:

Total time: min sec

Check and correct the machine settings as required in the tab 'punching'. The formulae in the column 'factors' are relevant for the time calculation. You can modify these formulae in the upper section [2]. The times in the left column are calculated using the simulation. Start the simulation in the 'simulation' frame. After calculation, the total time will be shown in the bottom-left frame.



Start the simulation here. The values calculated here are required for the time calculation. Next click on 'calculate' and the results will be entered in the rightmost column of the dialog.

Glossary

Calculation

An estimate for a job.

Time Calculation 111

Circles

A round punch path.

Grouping 83
 Perforated plate 83
 Punch cycles 83
 Punch tool 68
 Punching 68
 Round punch 107

Clamp

Grips to hold your sheet steady.

Check 107
 Dead area 107
 Discover 95
 General 93
 M12 109
 Recognition 109
 Reposition 95
 Reposition 107
 Retractable 109

Contours

Elements (geometrics) which define a part.

External~
 Internal~
 Punch~
 Contour boxes 107
 Convert 29
 Hide 29
 Info 31

External contour

The external form of a workpiece.

Automatic 30
 Avoid 75
 Check 107
 Convert 30

Crunching	90
Direction	1
Machine stop	88
Manual sorting	77
Processing direction	30
Shared	90
Simulation	47
Sorting	75
Sorting	73
Flaps	
Equipment for disposing punched parts.	
Slides~	
Geometric Points	
Identifiable points on contour elements.	
Search	4
Holdings	
Equipment to lock your sheet.	
General	93
Repositioning	96
Internal contour	
The holes in your workpiece.	
Crunching	107
Cutting up	7
Machine stop	88
Punch direction	88
Separating cuts	101
Simulation	47
Sorting	73
M-Commands	
Machine commands, instructions for the machine through the post-processor.	
Create	49
Display	49
General	48
M12	109
M20	48
M26	48
M27	48
M61	110
M8	110

M9	110
----	-----

Macro

Macros are command sequences which can themselves be run with one commands.

Automatic	100
Commands	101
Create	99
Execute	100
Names	99
Save	101
Start macro	100

NC-Program

Comment	110
Delete	14
Display date	110
Edit	105
Extension	109
General	103
Generate	103
Important	1
Machine stop	109
Menu	14
Modify	105
Names	105
P-Number	109
Program end	109
Program name	110
Quick-keys	18
Removal position	109
Save	103
Stops	90
Stroke count	109
Subroutines	103
Suction	110
Technology settings	47
Tool center	109

Nesting

Your workpieces laid out on the sheet according complex algorithms.

Auto nesting	17
Automatic nesting	62
Defaults	15
Grid production	17
Manual	63
Menu	13

Nesting list	60
True-shape nesting	62
Notches	
Part areas as component parts of an external contour.	
Crunching	33
Definition	42
General	41
Identification	33
Overlaps	43
Punch direction	43
Offcut sheets	
Trimmed remnants, saved for re-use in your sheet database.	
General	101
Separating cuts	102
Parts	
See also workpieces.	
Arrange	54
Avoid	75
Bump	63
Convert	7
Crunching	90
Cursor position	66
Customer Number	15
Delete	61
Display	107
Disposal	11
Disposal	15
General	1
Grid production	14
Grid production	68
Import	6
Information	13
Layout	60
Manipulate	62
Manual sorting	77
Marking	49
Micro Bridges	51
Mirror	15
Move	67
Move	62
Nesting list	61
Nesting	62
Notches	9

Offset	62
Offsets	65
Only boxes	17
Part Number	31
Place manually	63
Positioning	63
Punching Bridges	51
Redraw	4
Sequence	70
Sequence	59
Shared separating cuts	90
Show all	4
Simulation	45
Sorting	75

Post-Processor

Post-processors are drivers for your cutting machines.

Attributes	31
Functions	5
Important	1
NC-Program	103
Selection	48
Settings	105
Technology settings	47

Program

ncStanz as an application, or your NC-Program?

- Application
- NC-Program

Punch Contour

The shapes which together form a workpiece.

Info	31
Punch direction	10
Selection	30
Sorting	71
Times	111
Turn direction	10

Punch direction

Columns and rows as punching defaults.

General	54
Modify	88
Settings	73
Sorting	72

Punch paths

The path along which your parts will be cut from the sheet.

Bridges	53
Contour collision	55
Contour collision	111
Contours	33
Conversion	30
Create	31
Divide	53
Elements	33
External arcs	107
External circles	107
Freehand	33
General	28
Group	81
Internal arcs	107
Internal circles	107
M-Commands	88
Manual	31
Notches	33
Paths	33
Positions	33
Processing direction	88
punch tool selection	32
Round tool	33
Separating punch	107
Shrink	81
Stretch	81
Subroutines	81
Trim	33
Turn direction	88

Punching Bridges

Areas which will be left out when punching.

Automatic	54
General	51
Insert	11
Micro bridges	51
Offset	53
Placement	53
Settings	53
Width	107
Width	53

Punching Paths

Route for the tool when punching.

Create	18
Define	28
Delete all	17
End point	34
Freehand	7
Functions	35
General	1
Identification	34
Length	34
Load	16
Location	34
Print	16
Route	34
Save	16
Simulation	18
Sorting method	107
Start point	34
Time calculation	111
Punching Settings	
Settings for individual contours.	
Internal punchings	107
Selection	14
Punching Technology Settings	
The options for editing a workpiece.	
General	5
Punching Tools	
Punching tools with various shapes and functions	
Angle	22
Change	22
Corner overlap	107
Current list	23
Definition	22
Edit	22
Functions	35
General	18
Global	23
Global	20
Group	83
Grouping	83
Grouping	85
Height	22
List	20
Magazine place occupation	24

Matrices	83
Move	35
Notch tools	23
Number	22
Overlap	107
Overlap	22
Overlap	108
Perforated sheets	83
Print	25
Proportion	108
Punch feed	108
Rectangular punch	108
Rotatable	22
Rotate	107
Rotate	35
Rotate	21
Round punch	108
Selection list	23
Separating punch	108
Separating tools	23
Separating tools	23
Sequence	77
Settings list	25
Settings	108
Sheet thickness	20
Sorting list	71
Sorting	68
Stroke	22
Surface roughness	108
Trim punch	108
Types	21
Width	22

Reference point

Starting point for your cutting machine.

Identification	3
Menu	3
Move	14
Reference point 0	4
Reference point 1	3
Reference	5
Reset	4

Separating Cuts

Cuts for offcut sheets using freehand punches.

Dimensions	108
Freehand	101

Offcut sheets	103
Overlaps	107
Shared	90
Settings	
Configuration settings.	
Checks	107
Clamp control	109
Extension NC Programs	109
General settings	107
Machine size	106
NC program defaults	110
Punch stroke	108
Removal position	109
Separating punch	108
Setup plan	109
Slides	110
Surface roughness	108
Tool settings	108
Trim punch	108
Shared separating cuts	
parqueting components in a cluster with shared contours / contour parts.	
General	90
Grid	92
Layout	93
Offset	92
Punch width	92
Requirements	90
Sheets	
Sheets; the metal sheets from which your workpieces are cut.	
By rows	59
Columns	59
Crunching	7
Definition	54
Margin	65
Material	56
Materials	56
Offcut sheets	101
Offsets	59
Offsets	65
Part information	57
Perforated sheets	83
Remnants	13
Repositioning	107

Rows	59
Separating cuts	101
Setup plan	14
Sheet thickness	56
Size	56
Trimming	59

Simulation

Review the punching paths as the cutting machine will work them.

Check	47
Cutting time	111
External contours	47
General	45
Internal contours	47
Speed	47
Start	18
Time calculation	112

Slides

Equipment for disposing punched parts.

Display	98
Disposal	97
General	97
Placement	98
Positioning	99
Small part Slides	97

Sorting

Set the processing sequence for punching.

Automatic	30
Manual	71
Markings	74
Methods	107
Parts	10
Punch tool	70
Rows	68
Sequence	74
Start point	73

Special punch

Use closed contours as punches.

Apply	107
General	18
Selection	20
Shapes	21

Special Tools

Use contours as punches.

Capture	27
Conditions	25
Cursor	28
General	25
Overlap	27
Punch	28
Rotate	27
Settings	27
Sheet thickness	27
Simulation	28
Simulation	28

Texts

Text markings on parts and offcut sheets

Entry	50
General	49
Move	51
Settings	50

Time calculation

Program function for discovering the punching time.

Factors	112
Formulae	112
General	111
Repositioning	113
Settings	113
Slides	113
Tools	113
Travel paths	112

Tools

Punches, special punches and part contours as special tools

Punch~	
Special punch~	
Special punch tool~	
Louwer Tool	20
Magazine	18
Management	18
Multicut	20
Roller tool	20
Selection list	18
Surface roughness	21

Tool center	109
Transform	18
Wilson Tool	20
True-shape nesting	
Collate various workpieces in a nesting plan and nest.	
Automatic	62
Introduction	13
Usage	
Using ncStanz and its interface elements.	
Command line	4
Cursor position	66
Cursor	3
Display	4
Display	60
Geometric points	4
Icon bar	3
Input mask	5
Menu panel	2
Only boxes	60
Reference points	4
Status line	5
Undo Function	45
Undo	43
Zoom	3
Workpiece	
Workpieces are punch parts as individual components of a nesting plans.	
Convert	28
Identifier	15
Prepare	1
Punch part	28

Index

A	Angle (Punching Tools)	22
	Apply (Special punch)	107
	Arrange (Parts)	54
	Attributes (Post-Processor)	31
	Auto nesting (Nesting)	17
	Automatic (Punching Bridges)	54
	Automatic (External contour)	30
	Automatic (Sorting)	30
	Automatic (Macro)	100
	Automatic (True-shape nesting)	62
	Automatic nesting (Nesting)	62
	Avoid (Parts)	75
	Avoid (External contour)	75
B	Bridges (Punch paths)	53
	Bump (Parts)	63
	By rows (Sheets)	59
C	Capture (Special Tools)	27
	Change (Punching Tools)	22
	Check (Clamp)	107
	Check (Simulation)	47
	Check (External contour)	107
	Checks (Settings)	107
	Clamp control (Settings)	109
	Columns (Sheets)	59
	Command line (Usage)	4
	Commands (Macro)	101
	Comment (NC-Program)	110
	Conditions (Special Tools)	25
	Contour boxes (Contours)	107
	Contour collision (Punch paths)	55
	Contour collision (Punch paths)	111
	Contours (Punch paths)	33
	Conversion (Punch paths)	30
	Convert (Contours)	29
	Convert (External contour)	30
	Convert (Parts)	7
	Convert (Workpiece)	28
	Corner overlap (Punching Tools)	107
	Create (Punching Paths)	18
	Create (Macro)	99
	Create (Punch paths)	31
	Create (M-Commands)	49
	Crunching (External contour)	90
	Crunching (Sheets)	7
	Crunching (Notches)	33

Crunching (Internal contour)	107
Crunching (Parts)	90
Current list (Punching Tools)	23
Cursor (Usage)	3
Cursor (Special Tools)	28
Cursor position (Parts)	66
Cursor position (Usage)	66
Customer Number (Parts)	15
Cutting time (Simulation)	111
Cutting up (Internal contour)	7
D Dead area (Clamp)	107
Defaults (Nesting)	15
Define (Punching Paths)	28
Definition (Punching Tools)	22
Definition (Notches)	42
Definition (Sheets)	54
Delete (NC-Program)	14
Delete (Parts)	61
Delete all (Punching Paths)	17
Dimensions (Separating Cuts)	108
Direction (External contour)	1
Discover (Clamp)	95
Display (Parts)	107
Display (Slides)	98
Display (Usage)	4
Display (Usage)	60
Display (M-Commands)	49
Display date (NC-Program)	110
Disposal (Parts)	15
Disposal (Parts)	11
Disposal (Slides)	97
Divide (Punch paths)	53
E Edit (Punching Tools)	22
Edit (NC-Program)	105
Elements (Punch paths)	33
End point (Punching Paths)	34
Entry (Texts)	50
Execute (Macro)	100
Extension (NC-Program)	109
Extension NC Programs (Settings)	109
External arcs (Punch paths)	107
External circles (Punch paths)	107
External contours (Simulation)	47
F Factors (Time calculation)	112
Formulae (Time calculation)	112
Freehand (Punching Paths)	7
Freehand (Punch paths)	33

Freehand (Separating Cuts)	101
Functions (Punching Tools)	35
Functions (Post-Processor)	5
Functions (Punching Paths)	35
G General (Slides)	97
General (NC-Program)	103
General (Clamp)	93
General (Special punch)	18
General (Punching Paths)	1
General (Punching Technology Settings)	5
General (Shared separating cuts)	90
General (Special Tools)	25
General (Notches)	41
General (Texts)	49
General (Punch paths)	28
General (Parts)	1
General (Time calculation)	111
General (Punching Bridges)	51
General (Offcut sheets)	101
General (Holders)	93
General (M-Commands)	48
General (Simulation)	45
General (Punching Tools)	18
General (Punch direction)	54
General settings (Settings)	107
Generate (NC-Program)	103
Geometric points (Usage)	4
Global (Punching Tools)	23
Global (Punching Tools)	20
Grid (Shared separating cuts)	92
Grid production (Nesting)	17
Grid production (Parts)	14
Grid production (Parts)	68
Group (Punching Tools)	83
Group (Punch paths)	81
Grouping (Circles)	83
Grouping (Punching Tools)	83
Grouping (Punching Tools)	85
H Height (Punching Tools)	22
Hide (Contours)	29
I Icon bar (Usage)	3
Identification (Notches)	33
Identification (Reference point)	3
Identification (Punching Paths)	34
Identifier (Workpiece)	15
Import (Parts)	6
Important (NC-Program)	1

Important (Post-Processor)	1
Info (Punch Contour)	31
Info (Contours)	31
Information (Parts)	13
Input mask (Usage)	5
Insert (Punching Bridges)	11
Internal arcs (Punch paths)	107
Internal circles (Punch paths)	107
Internal contours (Simulation)	47
Internal punchings (Punching Settings)	107
Introduction (True-shape nesting)	13
L Layout (Parts)	60
Layout (Shared separating cuts)	93
Length (Punching Paths)	34
List (Punching Tools)	20
Load (Punching Paths)	16
Location (Punching Paths)	34
Louver Tool (Tools)	20
M M-Commands (Punch paths)	88
M12 (Clamp)	109
M12 (M-Commands)	109
M20 (M-Commands)	48
M26 (M-Commands)	48
M27 (M-Commands)	48
M61 (M-Commands)	110
M8 (M-Commands)	110
M9 (M-Commands)	110
Machine size (Settings)	106
Machine stop (External contour)	88
Machine stop (NC-Program)	109
Machine stop (Internal contour)	88
Magazine (Tools)	18
Magazine place occupation (Punching Tools)	24
Management (Tools)	18
Manipulate (Parts)	62
Manual (Sorting)	71
Manual (Nesting)	63
Manual (Punch paths)	31
Manual sorting (External contour)	77
Manual sorting (Parts)	77
Margin (Sheets)	65
Marking (Parts)	49
Markings (Sorting)	74
Material (Sheets)	56
Materials (Sheets)	56
Matrices (Punching Tools)	83
Menu (NC-Program)	14
Menu (Nesting)	13

Menu (Reference point)	3
Menu panel (Usage)	2
Methods (Sorting)	107
Micro Bridges (Parts)	51
Micro bridges (Punching Bridges)	51
Mirror (Parts)	15
Modify (Punch direction)	88
Modify (NC-Program)	105
Move (Texts)	51
Move (Parts)	67
Move (Parts)	62
Move (Reference point)	14
Move (Punching Tools)	35
Multicut (Tools)	20
N Names (NC-Program)	105
Names (Macro)	99
NC program defaults (Settings)	110
NC-Program (Post-Processor)	103
Nesting (Parts)	62
Nesting list (Nesting)	60
Nesting list (Parts)	61
Notch tools (Punching Tools)	23
Notches (Punch paths)	33
Notches (Parts)	9
Number (Punching Tools)	22
O Offcut sheets (Sheets)	101
Offcut sheets (Separating Cuts)	103
Offset (Punching Bridges)	53
Offset (Shared separating cuts)	92
Offset (Parts)	62
Offsets (Sheets)	65
Offsets (Parts)	65
Offsets (Sheets)	59
Only boxes (Parts)	17
Only boxes (Usage)	60
Overlap (Punching Tools)	108
Overlap (Punching Tools)	107
Overlap (Punching Tools)	22
Overlap (Special Tools)	27
Overlaps (Separating Cuts)	107
Overlaps (Notches)	43
P P-Number (NC-Program)	109
Part information (Sheets)	57
Part Number (Parts)	31
Parts (Sorting)	10
Paths (Punch paths)	33
Perforated plate (Circles)	83

Perforated sheets (Punching Tools)	83
Perforated sheets (Sheets)	83
Place manually (Parts)	63
Placement (Punching Bridges)	53
Placement (Slides)	98
Positioning (Parts)	63
Positioning (Slides)	99
Positions (Punch paths)	33
Prepare (Workpiece)	1
Print (Punching Paths)	16
Print (Punching Tools)	25
Processing direction (Punch paths)	88
Processing direction (External contour)	30
Program end (NC-Program)	109
Program name (NC-Program)	110
Proportion (Punching Tools)	108
Punch (Special Tools)	28
Punch cycles (Circles)	83
Punch direction (Punch Contour)	10
Punch direction (Internal contour)	88
Punch direction (Notches)	43
Punch feed (Punching Tools)	108
Punch part (Workpiece)	28
Punch stroke (Settings)	108
Punch tool (Circles)	68
Punch tool (Sorting)	70
punch tool selection (Punch paths)	32
Punch width (Shared separating cuts)	92
Punching (Circles)	68
Punching Bridges (Parts)	51
Q Quick-keys (NC-Program)	18
R Recognition (Clamp)	109
Rectangular punch (Punching Tools)	108
Redraw (Parts)	4
Reference (Reference point)	5
Reference point 0 (Reference point)	4
Reference point 1 (Reference point)	3
Reference points (Usage)	4
Remnants (Sheets)	13
Removal position (NC-Program)	109
Removal position (Settings)	109
Reposition (Clamp)	95
Reposition (Clamp)	107
Repositioning (Sheets)	107
Repositioning (Time calculation)	113
Repositioning (Holders)	96
Requirements (Shared separating cuts)	90
Reset (Reference point)	4

Retractable (Clamp)	109
Roller tool (Tools)	20
Rotatable (Punching Tools)	22
Rotate (Punching Tools)	107
Rotate (Special Tools)	27
Rotate (Punching Tools)	35
Rotate (Punching Tools)	21
Round punch (Punching Tools)	108
Round punch (Circles)	107
Round tool (Punch paths)	33
Route (Punching Paths)	34
Rows (Sorting)	68
Rows (Sheets)	59
S Save (Macro)	101
Save (NC-Program)	103
Save (Punching Paths)	16
Search (Geometric Points)	4
Selection (Post-Processor)	48
Selection (Punching Settings)	14
Selection (Special punch)	20
Selection (Punch Contour)	30
Selection list (Tools)	18
Selection list (Punching Tools)	23
Separating cuts (Sheets)	101
Separating cuts (Internal contour)	101
Separating cuts (Offcut sheets)	102
Separating punch (Settings)	108
Separating punch (Punching Tools)	108
Separating punch (Punch paths)	107
Separating tools (Punching Tools)	23
Separating tools (Punching Tools)	23
Sequence (Punching Tools)	77
Sequence (Parts)	70
Sequence (Sorting)	74
Sequence (Parts)	59
Settings (Post-Processor)	105
Settings (Punch direction)	73
Settings (Texts)	50
Settings (Punching Tools)	108
Settings (Punching Bridges)	53
Settings (Special Tools)	27
Settings (Time calculation)	113
Settings list (Punching Tools)	25
Setup plan (Settings)	109
Setup plan (Sheets)	14
Shapes (Special punch)	21
Shared (Separating Cuts)	90
Shared (External contour)	90
Shared separating cuts (Parts)	90

Sheet thickness (Punching Tools)	20
Sheet thickness (Sheets)	56
Sheet thickness (Special Tools)	27
Show all (Parts)	4
Shrink (Punch paths)	81
Simulation (Special Tools)	28
Simulation (Special Tools)	28
Simulation (Punching Paths)	18
Simulation (External contour)	47
Simulation (Parts)	45
Simulation (Internal contour)	47
Size (Sheets)	56
Slides (Settings)	110
Slides (Time calculation)	113
Small part Slides (Slides)	97
Sorting (Punch direction)	72
Sorting (Punch Contour)	71
Sorting (Punching Tools)	68
Sorting (Internal contour)	73
Sorting (Parts)	75
Sorting (External contour)	75
Sorting (External contour)	73
Sorting list (Punching Tools)	71
Sorting method (Punching Paths)	107
Speed (Simulation)	47
Start (Simulation)	18
Start macro (Macro)	100
Start point (Sorting)	73
Start point (Punching Paths)	34
Status line (Usage)	5
Stops (NC-Program)	90
Stretch (Punch paths)	81
Stroke (Punching Tools)	22
Stroke count (NC-Program)	109
Subroutines (NC-Program)	103
Subroutines (Punch paths)	81
Suction (NC-Program)	110
Surface roughness (Punching Tools)	108
Surface roughness (Settings)	108
Surface roughness (Tools)	21
T Technology settings (NC-Program)	47
Technology settings (Post-Processor)	47
Time calculation (Simulation)	112
Time calculation (Punching Paths)	111
Time Calculation (Calculation)	111
Times (Punch Contour)	111
Tool center (NC-Program)	109
Tool center (Tools)	109
Tool settings (Settings)	108

	Tools (Time calculation)	113
	Transform (Tools)	18
	Travel paths (Time calculation)	112
	Trim (Punch paths)	33
	Trim punch (Settings)	108
	Trim punch (Punching Tools)	108
	Trimming (Sheets)	59
	True-shape nesting (Nesting)	62
	Turn direction (Punch paths)	88
	Turn direction (Punch Contour)	10
	Types (Punching Tools)	21
U	Undo (Usage)	43
	Undo Function (Usage)	45
W	Width (Punching Tools)	22
	Width (Punching Bridges)	107
	Width (Punching Bridges)	53
	Wilson Tool (Tools)	20
Z	Zoom (Usage)	3

Table of Contents

Welcome to the help files for ncStanz	1
General Tips for Navigation of the Program	1
The punch Module	2
Prepare and Stamp Workpieces.	2
The Program's Most Important Menu Items.	6
Input commands using the icon bar.	16
Tools	19
Manage And Populate Tools.	19
Capture Contours As Special Tools.	26
punch paths	29
Create punch paths.	29
Add punch paths Manually	32
Capture Punch Paths As Special Contours.	36
Crunch Areas Through Notches.	42
Undo Your Last Command.	44
Checking Punches In The Simulation.	46
Technologies	48
Define The Technologies For Your Machine.	48
Allocate M-Commands To punch paths.	49
Marking Parts..	50
Punch Parts With Micro Joints.	52
Nesting Plans	55
Place Parts On A Sheet.	55
Produce Grid Layouts.	58
Collate Parts In A Nesting List.	61
Automatic Nesting.	63
Manually Place Parts On The Sheet.	64
Sorting And Combining	69
Setting The Punch Sequence.	69
Sorting The Processing Sequence.	71
Manually Manipulate, Sort And Avoid Parts.	76
Using Subroutines To Reduces Program Size.	82
Make Space By Group-Building.	84
Change The Punch Direction And Add Machine Stops.	89
Optimal Material Usage Through Common Separating Cuts.	91
Clamps And Restrainers	94
Setting Clamps And Positioning Restrainers.	94
Dispose Small Parts Using Slides.	98

Macros	100
Execute Command Sequences As Macros.	100
Offcuts	102
Clean Up The Layout With Free Punching.	102
NC Programs	104
Convert Punch Paths To NC Programs.	104
Configuration	106
Basic Settings For Programs And Machines.	106
Time Calculation	112
Calculate The Punching Time Using Simulations.	112
Glossary	114
Index	126