OPERATION MANUAL

TROTEC Advanced Driver Logic
Version 9 - *Basic, Advanced, Expert*

Software

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Operation Manual Trotec Engravers - Software

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TROTEC cannot be held responsible for any direct or indirect damages, which result from using or working with the products electric circuits or software described herein. The apparatus must be used only by trained and skilled personnel. Before use the manual should be read and followed carefully.

Furthermore TROTEC reserves the right to change or alter any product described herein without prior notice.

In case of a failure please first check the device according to section 6.1 of Part A (Hardware) - Troubleshooting. If you should not arrive at a result, please write down all data of device (serial number, software version, etc.) and call us from a telephone next to the switched on device.

For queries or technical problems please contact your dealer or TROTEC directly at the above address.

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1 GENERAL

1.1 PC – Requirements

The following recommendation represents the **minimum requirements**. When using a more powerful computer the graphics are generated and displayed faster and the computing times and the data transfer to the laser are reduced.

- Windows Vista® 32-bit (with Service Pack 1 or later) or Windows® XP 32-bit (with Service Pack 2 or later) or Windows® 2000 (with Service Pack 4 or later)
- 256 MB of RAM, 400 MB of hard disk space
- Pentium® 1 GHz processor or AMD Athlon™ XP
- 1024 x 768 or better monitor resolution
- 24-bit color depth graphics card
- 1 free USB interface
- CD drive
- Mouse

1.2 Installation of the Engraver driver

The installation of the printer driver enables communication of the graphics software with the TROTEC JobControl 9 version (***Basic***, ***Advanced***, ***Expert***) This driver is installed automatically during the installation of the JobControl 9.

1.3 Installation of the TROTEC-JobControl Version 9

The JobControl software serves for easy operation of your engraver. All functions of the engraver can be controlled and all settings can be performed from the computer. The permanent communication between JobControl software and engraver provides for a smooth flow of the operation process.

The following installation instructions give you a short overview over the installation of the JobControl software. For detailed instructions on the operation of Windows® please refer to the Windows® user guide.

1. Start Windows®.
2. Insert the AD-Logic Software CD into the first CD-ROM drive.
3. Press "Start" and then on "Run". Press "Browse" and double-click on setup.exe. The program now starts the installation routine and copies all necessary data to the hard disk.
4. This completes the installation. Keep the JobControl CD-ROM in a safe place.

1.4 Compatibility

For smooth interaction of different Trotec software it is very important to use identical versions. Just the last version number is unimportant (X.X.X).
Example: MCI-Check 9.3.x needs JobControl 9.3.x;
JobControl 9.2.x needs Trotec Driver 9.2.x

Affected software is JobControl, Trotec Driver, MCI-Check, PS-Konverter and JobCreator.

2 SOFTWARE and OPERATION

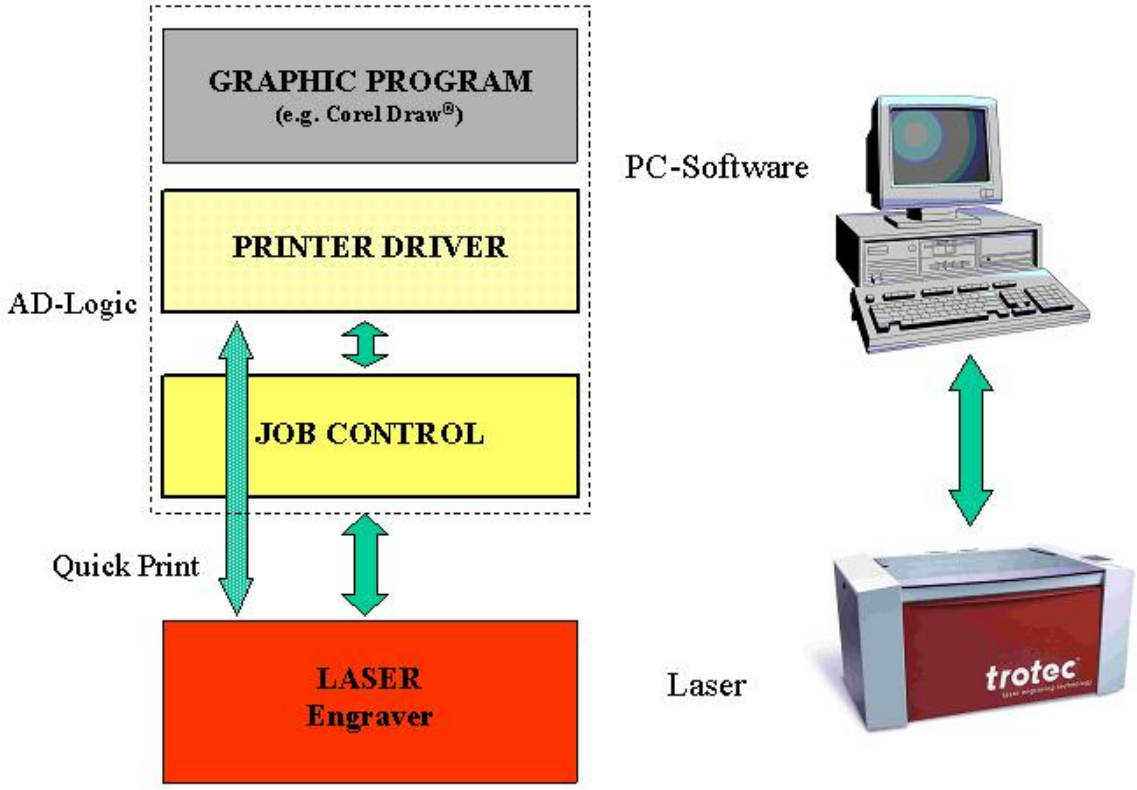
2.1 The Software Concept

The TROTEC software package consists of two parts, the

- **AD-Logic® Driver (Engraver driver)** and the
- **AD-Logic® JobControl**

The AD-Logic® SYSTEM creates a printing job from any graphics program for the AD-Logic®-JobControl. This printing job contains the graphic data with the selected resolution and also information, whether it is a rubber die or an engraving job.
In case of a rubber die the graphic data is automatically inverted and mirrored and an optimized cutting line is defined. In the engraver driver you can also select from a number of pre-defined printing templates (plates) (e.g. Stamp 4911), which essentially simplifies operation. The printer driver places the printing job (file) into a pre-defined directory, which is automatically accessed by the AD-Logic® JobControl.

In the AD-Logic® JobControl the printing job is positioned on a plate and engraved with predefined material parameters. The AD-Logic® JobControl is responsible for the control of the engraving system. With the new A.D.-Logic® System you can continuously control the engraving progress and important status messages on the screen of your computer.



2.2 Settings in the Engraver Driver - Overview

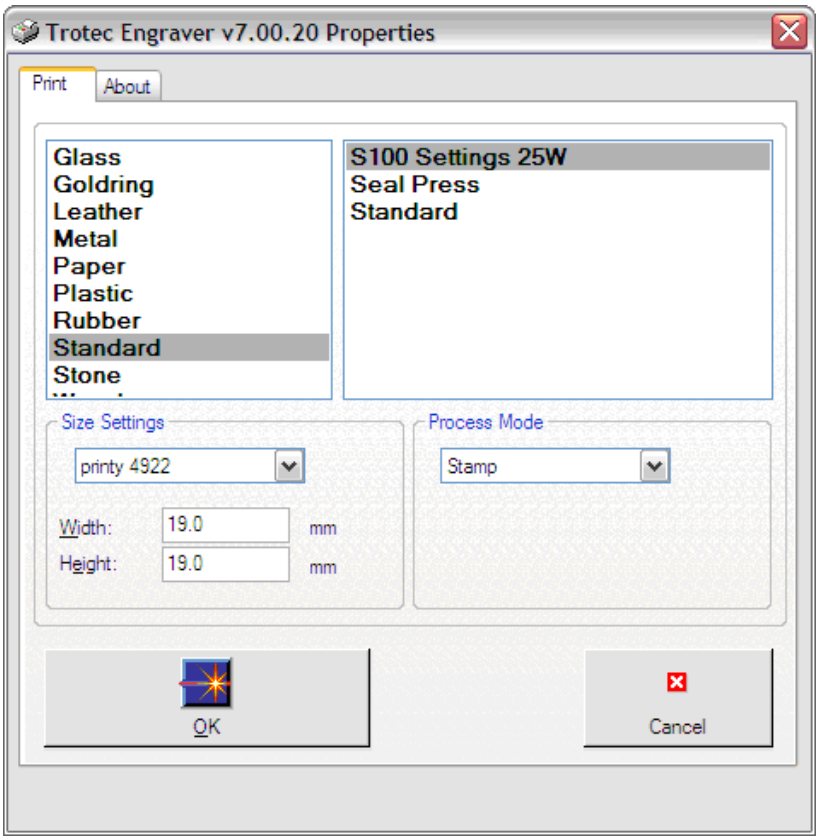
The driver “translates“ the graphic into a legible file for the engraver.

File format engraver: jobname.**TSF** **T**rotec **S**pool **F**ile

In addition, all driver settings are saved in this file. Using this information the engraver knows how to process the job.

2.2.1 Overview *Basic* Driver

This is the basic version

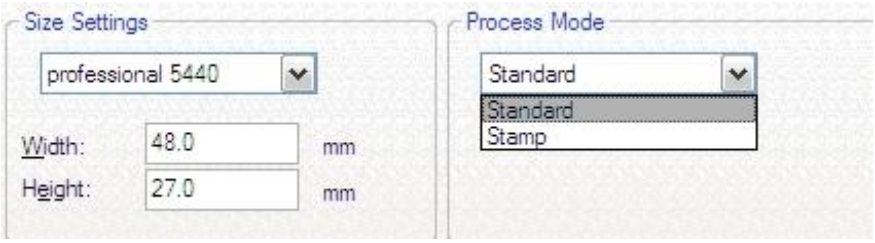


The driver allows you to conveniently carry out the required process, process options, size and material settings all on one page.

NOTE: after printing the job the driver prints this automatically in (Quick Print) only, other sophisticated options is not included in this Version like e.g Rotary attachment , Auto position and so on…

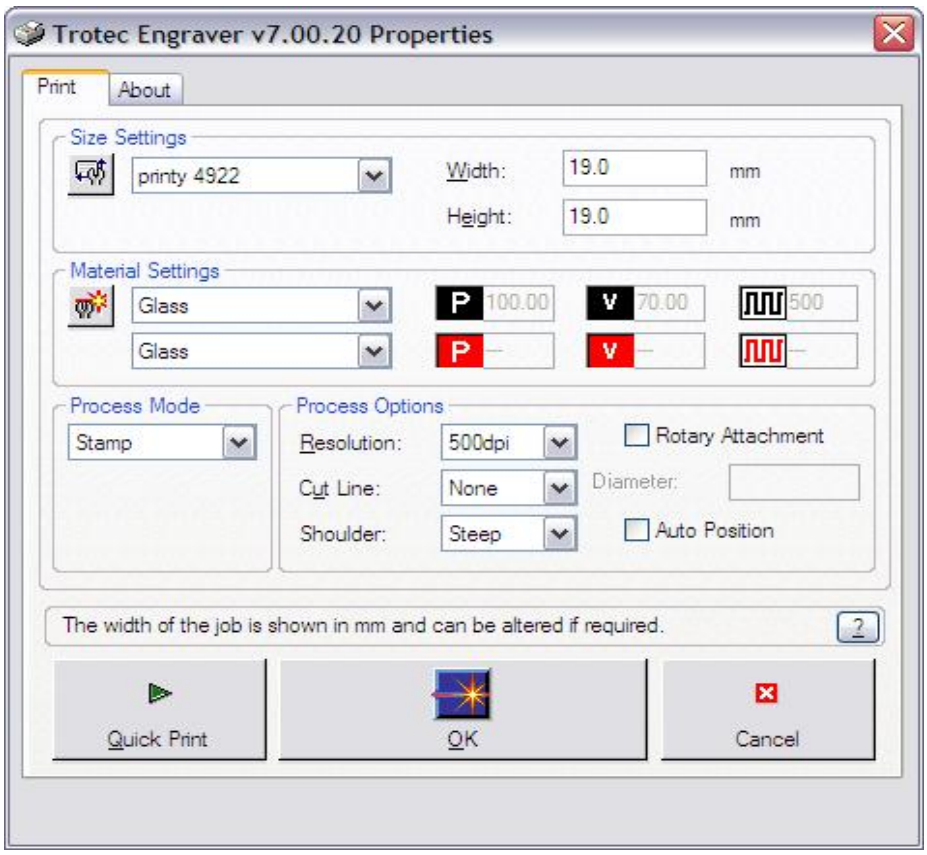
Process Mode and Size Settings for *Basic Driver*

Process = the type of processing. The process selected is displayed in the form of a symbol in the driver‘s properties window.



2.2.2 Overview *Advanced Driver*

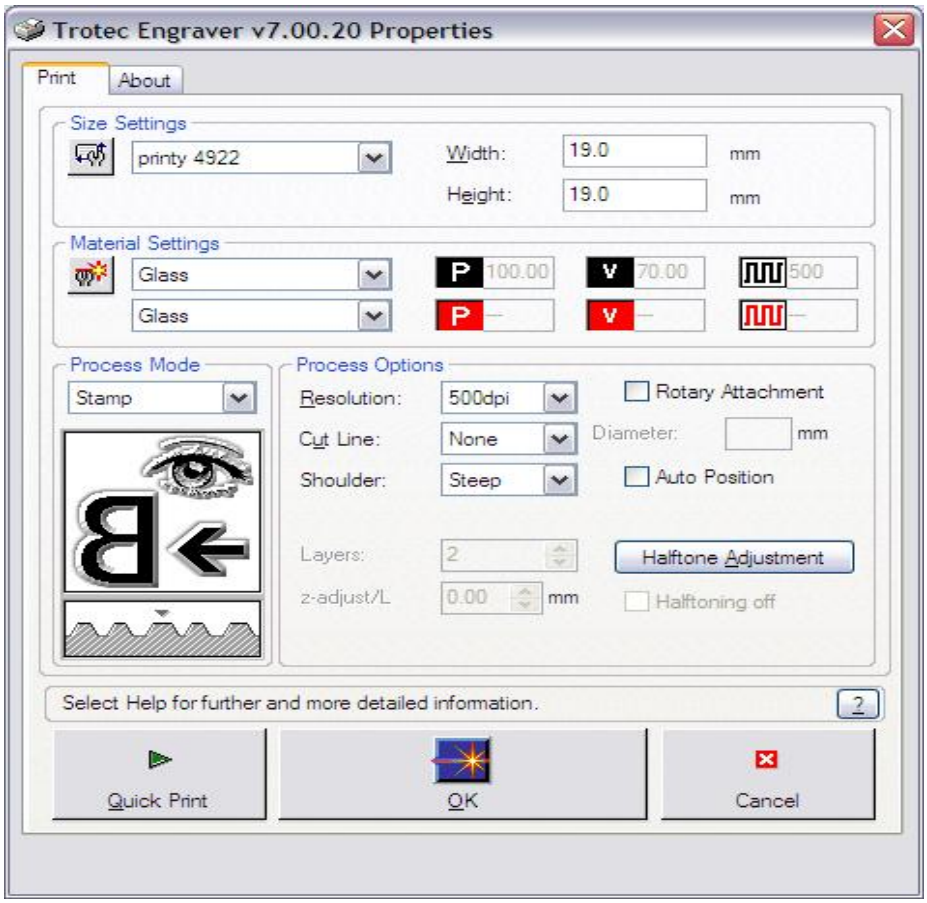
This is the advanced version



Process Mode and Process Option *Advanced Driver*

Above is the Process Mode where a certain mode Stamp & Standard
And by Process Option as it shown a Rotary attachment or Auto position
Or the other options as indicated.
And by this Driver the job can be directly printed (the job will be not
Transferred to job Queue).

2.2.3 Overview Expert Driver



as above in this version we can see many sophisticated options they are not available in the past Drivers .

Size Settings and Material Settings for *Expert Driver*

2.3 Settings in the Engraver Driver - Details

2.3.1 Prozess

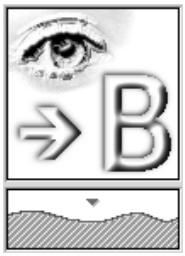
Standard

Is used for a large number of engraving and cutting jobs.
Depending on the material settings (see 2.2.4 Material) and process options used, one or several design colors may be used for engraving or cutting.

Stamp

Is used for creating stamp text plates mainly made of laser engravable rubber materials.
The data is automatically mirrored and inverted as it is required for the production of stamps.
In general, black is the recommended design color for this processing. When using color or gray-scale graphics, an automatic raster (conversion into black-and-white graphics) is performed.
The engraving color in the stamp process is always black!
Depending on the material settings (see 2.2.4 Material) used, any color is allowed for the cutting lines.

Relief



This type of processing controls the laser power depending on the gray-scale value of the graphic. This means, white is processed without power, light areas with low power, dark areas with increased power and black with fully set power.
This requires an 8-bit gray-scale graphic (256 gray scale). Color images are automatically converted to gray-scale images during printing.
This process is used for the creation of three-dimensional effects and requires preferably softer materials allowing high material removal in one pass.

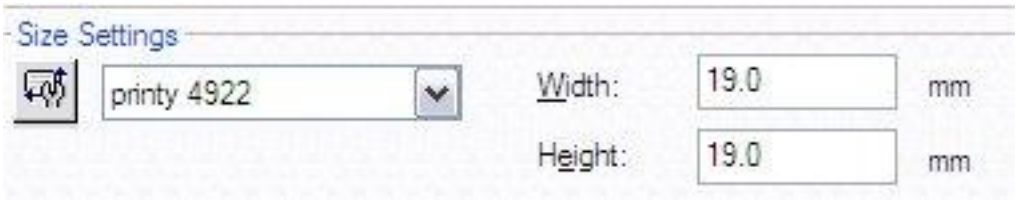
Layer

With the Layer processing type, gray-scale graphics are engraved in several passes. The number of passes can be set in the range from 2 to 255 in the process options. When carrying out this process, the existing gray-scale is divided into the number of passes set. The gray-scale values are then engraved in the appropriate passes. The gray-scale value and the passes determine how often a certain point is engraved.
In addition a z advance (table height adjustment) may be entered in the process options. This z advance of 0.00 to 5.00 mm (0.000 – 0.196 inch) moves the

processing table upwards between the engraving passes in order to maintain the correct focus.
This processing method allows three-dimensional engravings with particularly large height variation to be obtained.

2.3.2 Size Settings

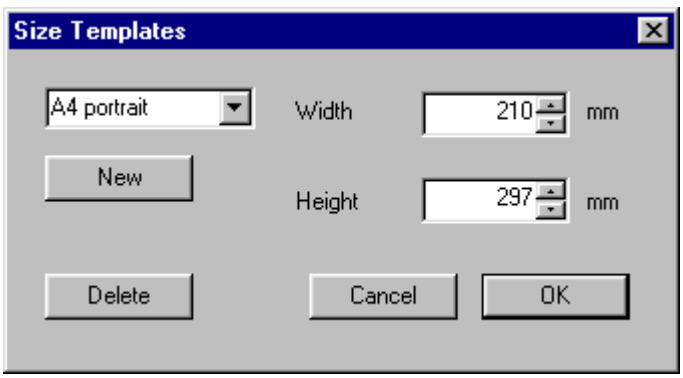
The selection window allows you to open predefined size templates. This will quickly make frequently used job sizes available.



Width, Height

Dimensions of the size template currently opened are displayed either in millimeters or inches (settable in the JobControl options).
If the entries in these fields are manually changed, the selection window displays “Custom size“.

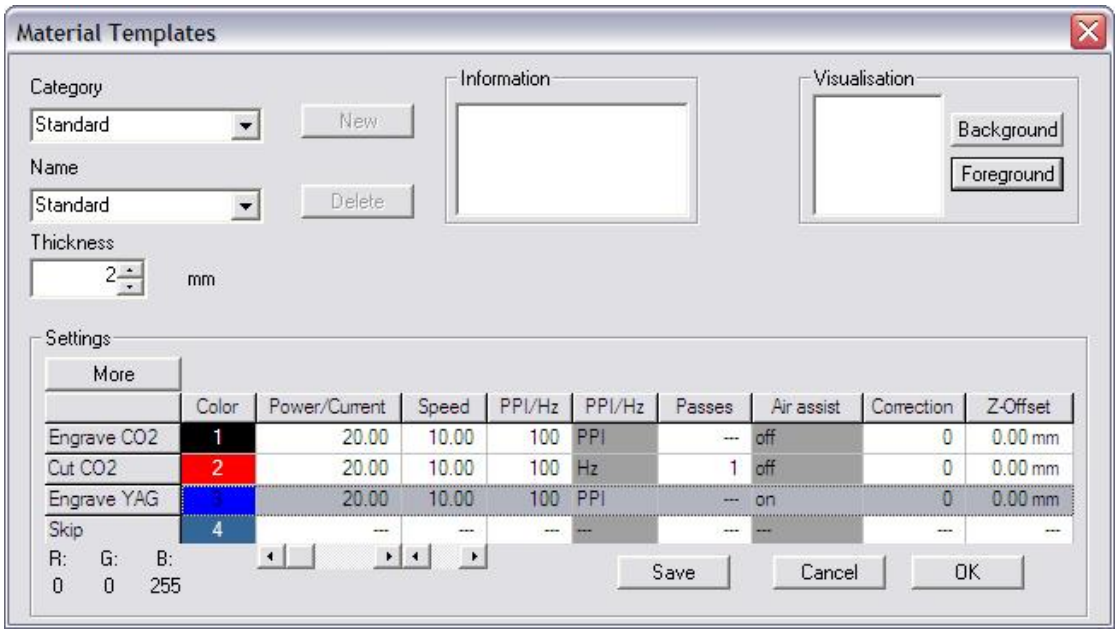
The butten left to the Size Templates opens the dialog where new templates can be created or existing templates can be changed.



2.3.3 Material Settings

The selection window allows you to open predefined material templates.
For your information, speed and power of the most common colors black and red are displayed graphically and as a numerical value.

In the Material Templates dialog new templates can be created or existing templates can be changed.



Category
Here is the Material Defined in categories .

Name
Displays the name of the currently selected material or a list of all materials available.

New, Delete
New material is inserted or existing material deleted.

Information
If required, text containing up to five lines may be entered for each material here, such as supplier, order number, or processing information. (Line feed using Ctrl + Enter key)

Visualization
If desired, materials may be displayed in color here. The Background and Foreground buttons open the Color selection menu.

Thickness
Displays the thickness of material either in millimeters or inches.
This value is used optionally to focus on the material surface.

Engrave, Cut, Skip
Color purpose. Defines, for which application the color is intended.

Engrave	Areas (bitmaps) containing this color are engraved using the parameters set.
Cut	Vectors (line width of 0.001 mm or 0.00005 inch) drawn in this color are cut
Skip	Skip color – all objects created in this color are ignored
Engrave YAG	New process type for HYBRID and FINEMARKER.

Color / More - only expert version
Display of color tone and color number.
16 colors can be selected. By setting the appropriate parameters, an area of application can be assigned to each color, for example black for engraving bitmaps, red for cutting vectors and blue for comments.
Click on one of the color boxes to display the RGB color components (red/green/blue) at the bottom of the color column.
In addition, a CorelDraw® color palette specifically matched for TROTEC lasers can be found on the installation CD.

Power
Percentage of the maximum laser power.
The engraving depth depends Basically on the laser power and speed set. Increased power as well as decreased speed result in deeper engraving.
Adjustment range: 0-100% (100% is equivalent to the maximum power of the laser)

Speed
Percentage of the maximum speed.

PPI

Pulses per inch (laser pulses per inch).
This setting determines the number of laser pulses per inch emitted by the laser. This occurs depending on the position, e.g. the pulses are always emitted at the same interval irrespective the speed.
Adjustment range: 100 - 1000 PPI

The higher the selected PPI value is, the better is the quality of the engraving. To obtain a good result, the PPI value should be usually larger than or at least the same as the dpi setting of the printer driver (Process options – Resolution), e.g. a minimum value of 500 PPI should be selected for a resolution of 500 dpi. A low PPI value is only useful when processing some types of rubber or in cases where the contour is only to be perforated but not cut through. Unlike the resolution in dpi, increase in PPI does not have an effect on the engraving time.

Hz

Frequency of laser pulses during cutting. This setting determines the number of laser pulses per second emitted by the laser. Unlike engraving, with cutting it is not necessary to create fine contours by means of resolution. In this case, the position sensitive control used with the PPI can therefore be replaced by a set frequency.
Adjustment range: 1000 - 10000 Hz for CO2 systems,
10000 – 150000 Hz for YAG systems
Additionally YAG systems can use frequency mode for engraving.

Passes

Only activated if color is selected for cutting. This value defines how often a vector will be cut using this color setting. (1 - 100)

Air Assist

Allows activation and deactivation of the (optional) air injection for each color separately.

Correction

Only activated if a color is selected for cutting.
Determines the minimum percentage of laser power set during slow movement; for example around curves. This parameter is required for materials, which have no linear behavior during laser processing (e.g. coated metals).
If the setting of this value is too small, the lines will thin at the ends and in the radius or disappear completely. If the selected correction is too high, the width will strongly increase at the line ends and radius.

Z-Offset

Controls the Z-axis (table) during processing. This allows e.g. to engrave in focus or re focus workpieces with different hight Levels. At the end of processing the table is brought in the same position it was before starting. Values are possible from -5 mm / -0,197” (up) to 25 mm / 0,984” (down).

2.3.4 Process Options

The options available depend on the selected process.

Resolution

Selection of the required resolution in dpi (dots per inch). Equivalent to the lines to be engraved per inch (25.4 mm).
A higher value improves the engraving quality, but results in increased engraving depth and longer engraving time using otherwise identical parameters as the laser has to process accordingly more lines.
Setting range: *125*, *250*, *333*, *500*, *600,* or *1000 dpi*

The setting for standard engraving should be 500 dpi. The resolution to be selected largely depends on the material used as well as on the focal length of the lens.

Halftone

Setting of the raster method used.
Halftone = Conversion of gray-scale or color images into black-and-white images creating the impression of a gray-scale image through different dot sizes and dot pitches.

Normal	Standard halftone setting, soft contrasts between the brightness gradients
Bright	Brightening of the halftone image to improve dark images or images with little contrast, for example
Line Art	Intensifies highlighting of details, good for engraving of clipart

Halftone is not available in Relief and Layer processing types as these processes require gray-scale graphics and therefore halftoning is not desirable.

Halftoning off

Deactivates halftoning by the driver.
Is used when several engraving colors are to be employed or halftoning has already been performed in the application program.
“Halftoning off“ is not available in the Stamp Mode as black-and-white graphics are always required for creating stamps.

Shoulder

Only activated in the Stamp process.
The available options of shoulder types are steep, medium, and flat.
Shoulders are used to give letters and characters of a stamp text plate more stability at the base.

Layers

Only activated in the Layer process.
The number of engraving layers required (engraving passes) can be set between 2 and 255 in this field.

z-adjust/L

Only activated in the Layer process.
Entry of the up movement of the table carried out once a layer is finished. Setting range: 0.00 to 5.00 mm (0.000 to 0.196 inch).

Cut Line

Selection of automatically created cutting lines.
The type of the selected automatic cutting line is displayed as a symbol in the preview.

None – no automatic cutting line will be created

Rectangular – a cutting line will be created which follows exactly the job margin (size)

Circular – a circular cutting line will be created whose size is determined by the job size

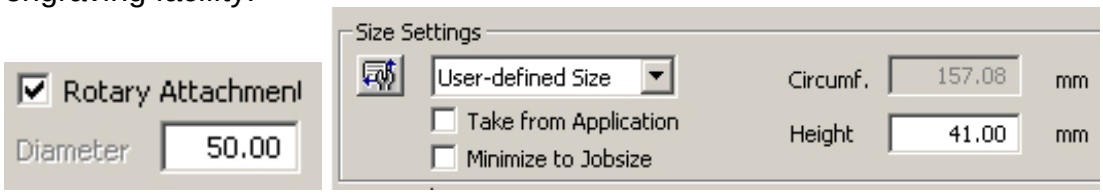
Optimized – a cutting line will be created which adjusts to the contour of engraving contents

Note: Automatically created cutting lines are always generated in red (second color in the Material menu; R=255, G=0, B=0). When using automatic cutting lines, please ensure that the activated cutting color is red and has the appropriate parameters.

Automatically created cutting lines have no effect on manual cutting lines (vectors) which may exist in the file.
E.g. automatic and manual cutting lines may be used together or separately.
If automatic and manual cutting lines are used together in the same job, the user should consider this when creating the graphics. Undesired overlapping of both cutting line types may occur.
The **Cut Line: None** driver setting does not suppress manually created cutting lines.

Rotary Attachment

Is used to engrave cylindrical work pieces (e.g. glasses) using the rotary engraving facility.



The display of size/width is changed to circumference. The driver automatically calculates the work piece's circumference using the diameter entered and uses this circumference as new job width. This behavior is very well illustrated in the print preview of the graphics program.

2.3.5 Control Functions

Load, Save

Is used for saving and opening all driver settings to be able to re-use settings made in future. The file created during saving must have the file extension DVS. The path is freely selectable.

Help

Opening the driver‘s help file.

Auto Position

Jobs, which were printed with Auto Position, are automatically positioned on the plate in the JobControl. Any further Auto Position job will be added onto the plate. This function is used to load the plate for later processing.

Quick Print

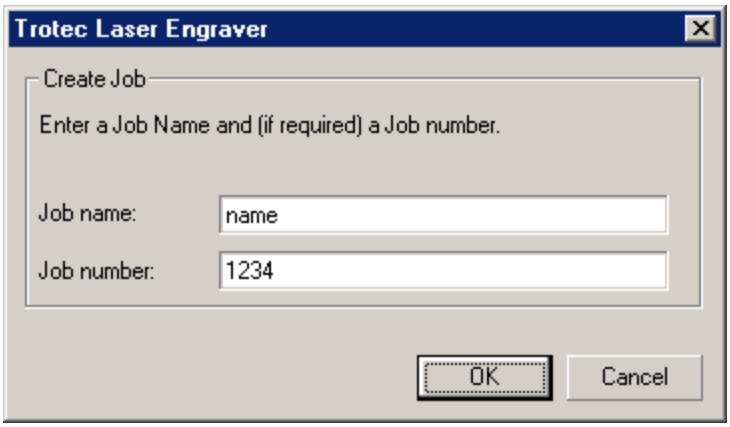
If you select the **Quick Print** check box, jobs will be printed without job name and job number query, automatically positioned on the plate in the JobControl and the engraver will start. The job will be deleted once the engraving is completed.
This allows a largely automated manufacturing process and reduces the required user actions to a minimum.

Note: If the laser is not turned on, it is not possible to automatically process a Quick Print job. The job will be put into the queue.

OK, Cancel

OK confirms and saves the changes made
Cancel discards all changes made.

A job name and an optional job number must be entered at the end of the print settings. < > " / ? | ; \ : must not be used in the job name. The job created will be saved with this name and number and copied to the JobControl where it will be displayed in the queue.



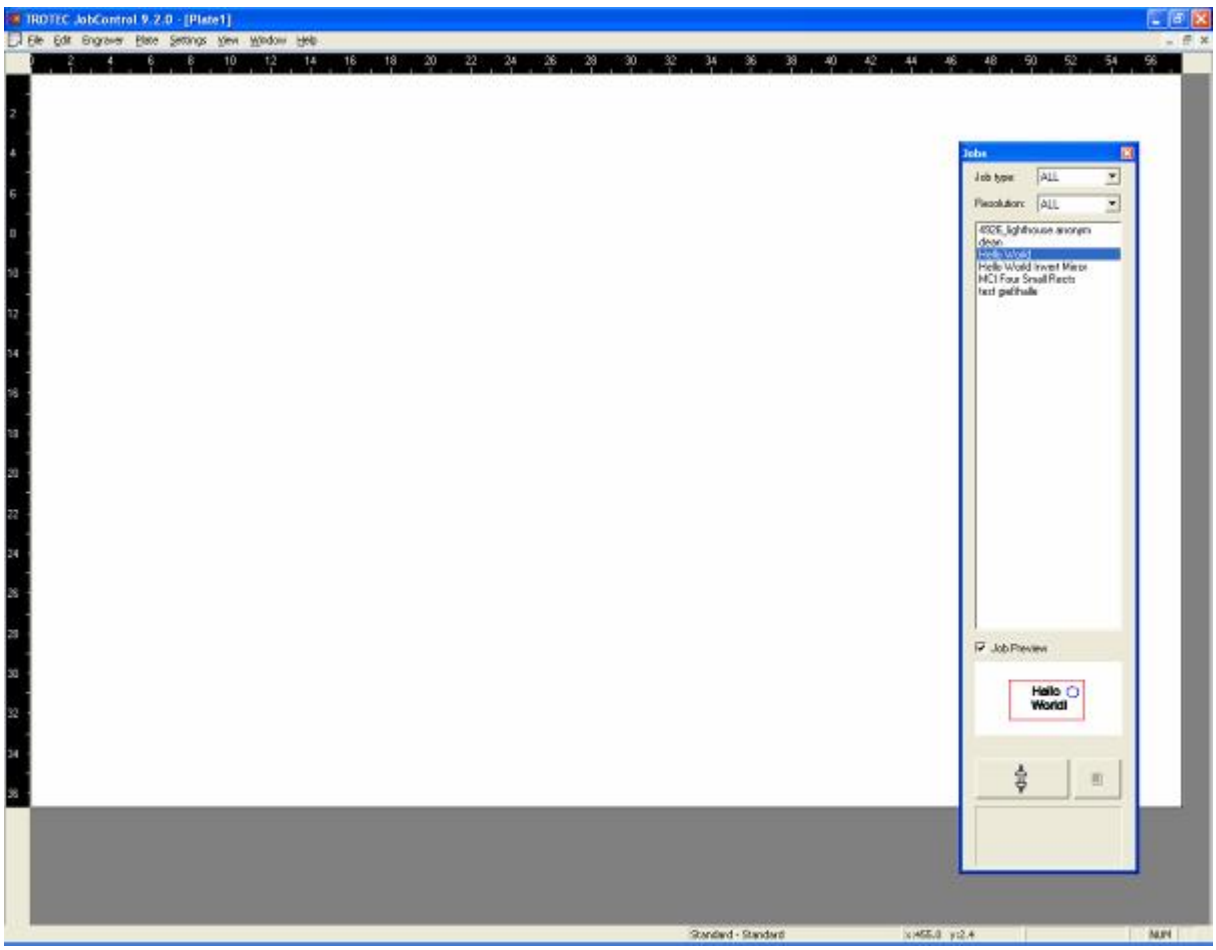
2.4 Using the TROTEC JobControl

2.4.1 Overview JobControl

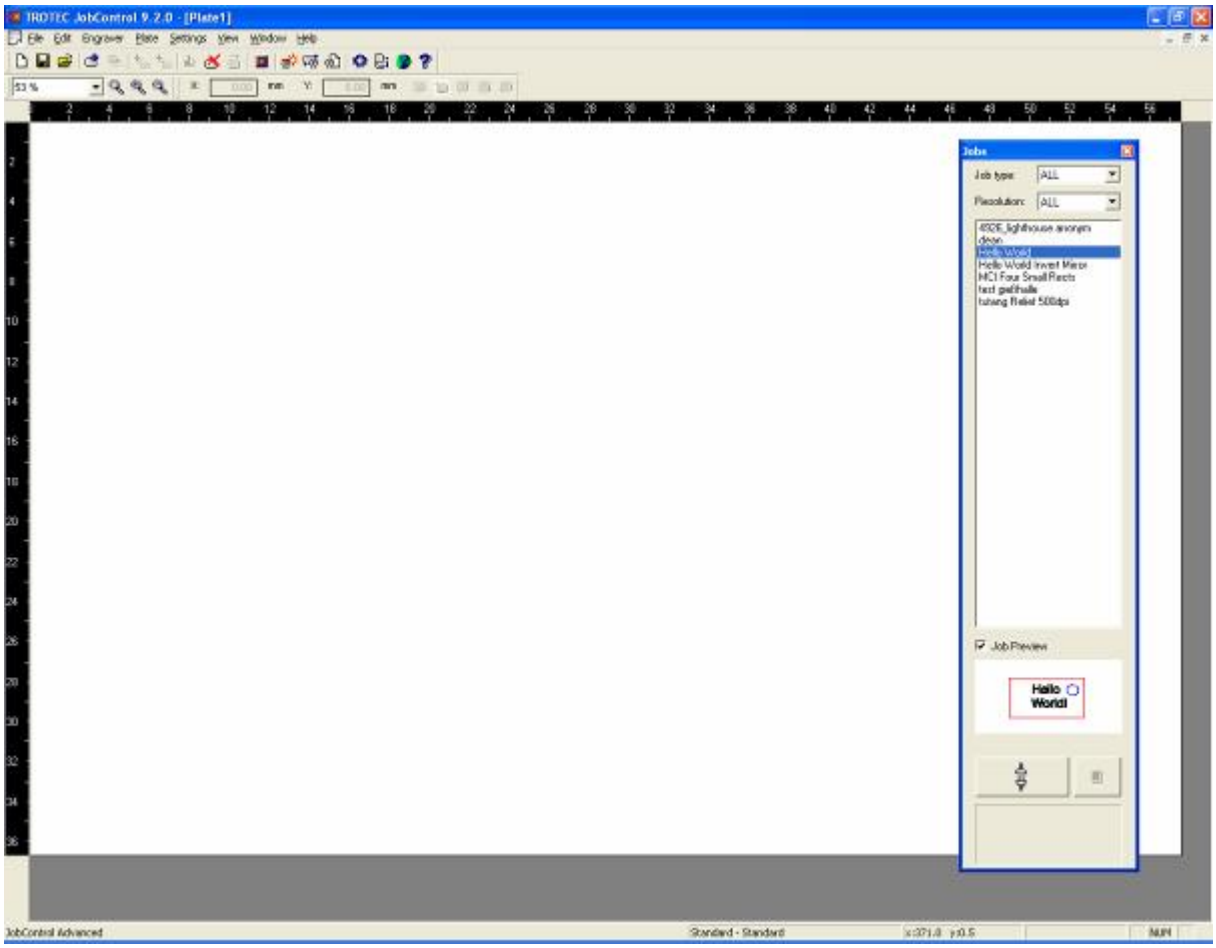
Trotec JobControl **version9** has three different versions (***Basic, Advanced, Expert*)**.
The TROTEC JobControl carries out the following main tasks:

- Managing the jobs created by the driver
- Precise positioning of the jobs
- Transferring the jobs to the engraver
- Visualizing responses from the engraver
- Acquiring job and engraver data
- Controlling the engraver parameters
- Managing the material templates
- Archiving engraving jobs

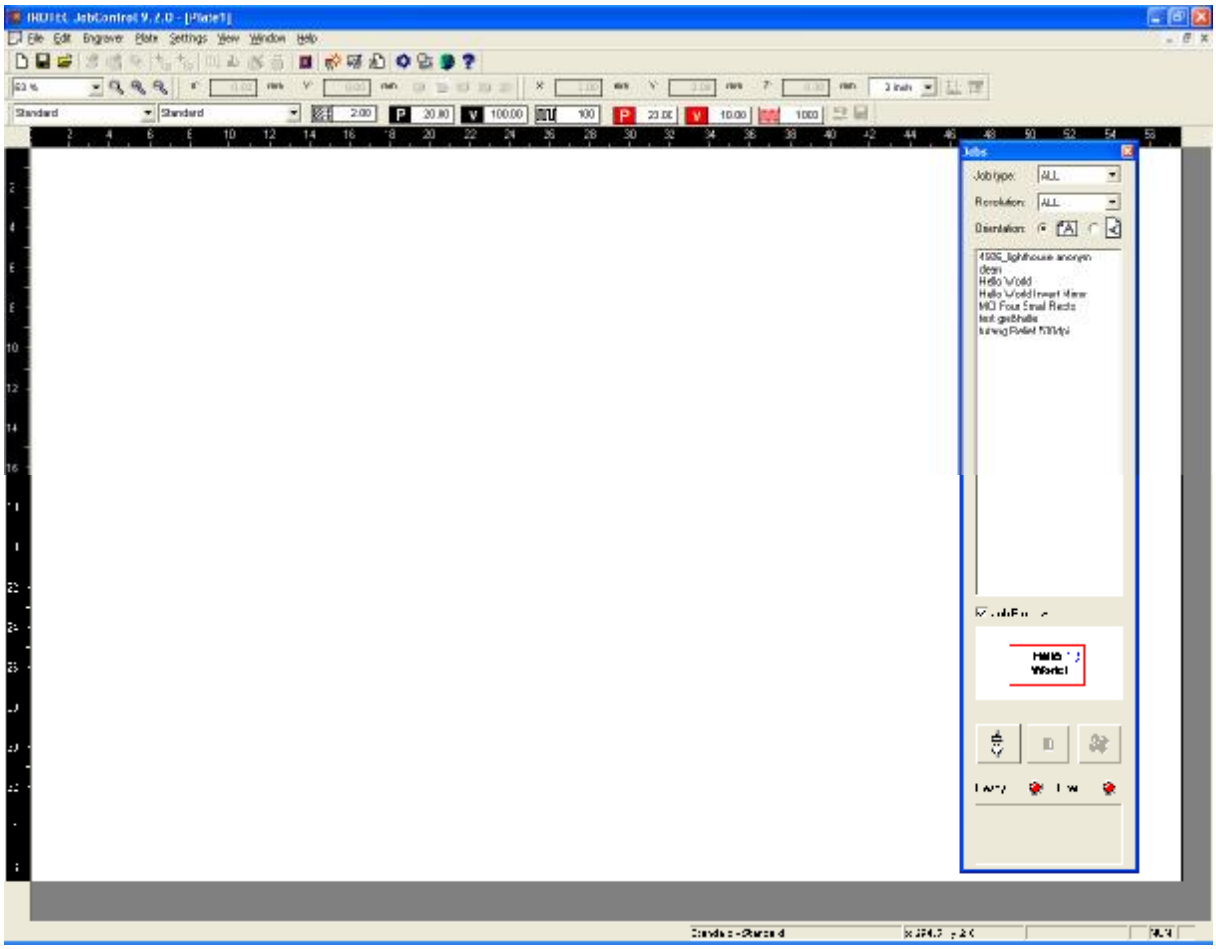
This is Trotec JobControl version 9 in *Basic* view Version:



This is Trotec JobControl version 9 in the *Advanced view* Version:



This is Trotec JobControl version 9 in *Expert* view Version:



A detailed description of all JobControl functions is given below.

2.4.2 File

New Ctrl+N for (***Basic***, ***Advanced***, ***Expert***)
Creating a new material plate.

Open Ctrl+O for (***Advanced***, ***Expert***)
Opening saved material plate.

Close for (***Basic***, ***Advanced***, ***Expert***)
Close the current plate.

Save Ctrl+S for (***Advanced***, ***Expert***).
Save the current plate with all jobs.

Save as for (***Advanced***, ***Expert***)
Save the plate with a new name.

Print Ctrl+P  for (***Expert***)
Printing plate Proof reading.

Print Preview for (***Expert***)
Print Preview for printing.

Print Setup for (***Expert***)
Setting up the printer.

Last File for (***Advanced***, ***Expert***)
Opens the most recently used plate.

Exit for (***Basic***, ***Advanced***, ***Expert***)
Exits the TROTEC JobControl.

2.4.3 Edit

Select All Ctrl+A for (***Basic***, ***Advanced***, ***Expert***)
Selecting all jobs on the plate.

Repeat Cut Line for (***Advanced***, ***Expert***)
Re-cutting of the selected job if the cutting line is not completely sufficient.

Move Outline endless for (***Advanced***, ***Expert***)
Repeat outline of job without power until user stops.

2.4.4 Engraver

Connect Ctrl+L  for (***Basic***, ***Advanced***, ***Expert***)
Establishes a connection with the engraver attached.

Disconnect for (***Basic***, ***Advanced***, ***Expert***)
Cuts established connection with engraver.

Start Ctrl+G  for (***Basic***, ***Advanced***, ***Expert***)
Starts the engraving process .

Pause Ctrl+F  for (***Basic***, ***Advanced***, ***Expert***)
Pauses the engraving process .

Resume for (***Basic***, ***Advanced***, ***Expert***)
Continues the interrupted engraving process .

Stop Ctrl+E  for (***Basic***, ***Advanced***, ***Expert***)
Stops the engraving process .

Normal Performance & High Performance for (***Basic***, ***Advanced***, ***Expert***)

This two Options are to adjust the engraving velocity Performance
For example,in speedy 100 Normal Performance is 180 cm/s
High Performance is 280 cm/s
(Normally the JobControl 9 sold in Normal Performance unless it is ordered in High Performance) and this valid for three Versions.

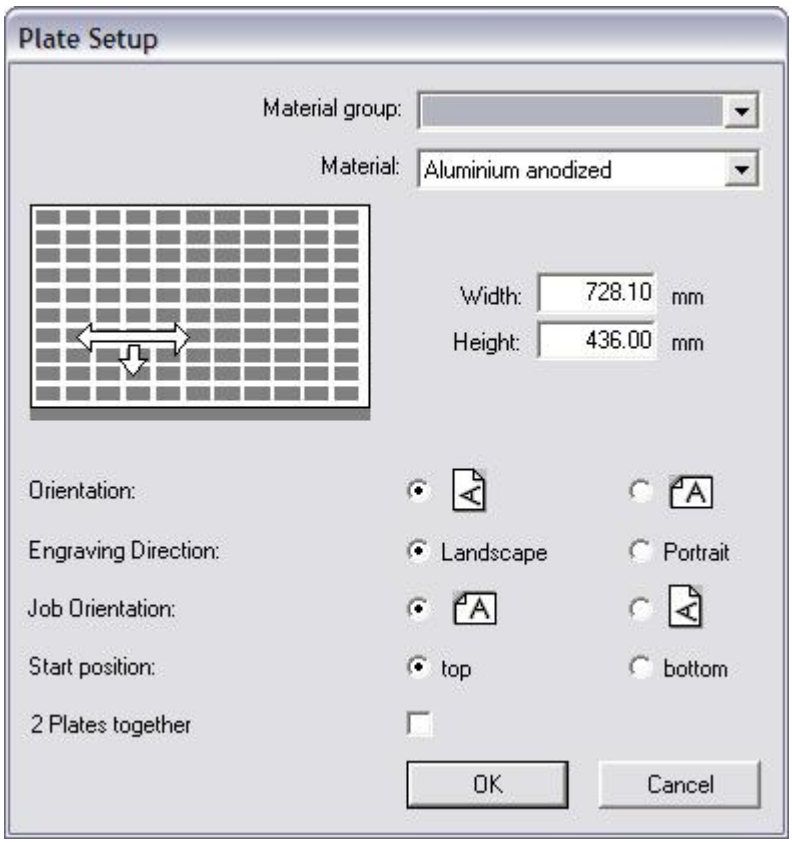
Move Laser for (***Expert***)
Adjusts the marking head to the position specified

Move to Marker for (***Expert***)
Adjusts the marking head to the position of the selected marker.
(Set Marker sees Section 2.3.4 - Plate).

Focus Laser  for (***Basic***, ***Advanced***, ***Expert***)
Table moves in focus position to the saved thickness of the currently selected material.

2.4.5 Plate

Plate Setup Ctrl+H for (***Basic***, ***Advanced***, ***Expert*** versions)



Defines size and orientation of a material plate.

The Plate Setup dialog is used to customize the plate size, orientation, and material definition for the job being processed.

Parameters

In the material group list are different kinds of materials defined in groups e.g. Wood, Plastic, Metal ….etc. and they are already saved in.
In the material list you will find all materials already saved (see “Define Material Template“). The plate obtains its material data from the first job positioned on this plate. In addition, you can quickly open a new plate using the Ctrl+N shortcut key.
The material selected for the plate always has priority. This means, if you select “Plastic” as plate material for example and position a job with the material data “Aluminum”, this job will be processed with the “Plastic” data. In this case, it will, however, be pointed out to you that the material data is not matching.

Orientation
Determines the orientation of the plate (Portrait or landscape)

Start Position
This means you can start engraveing the job from the TOP to the bottom
Or from BOTTOM to the top. This process is helpfull during rubber engraving.

Engraving Direction
Defines whether the lines are engraved in horizontal or vertical direction during engraving.

Job Orientation
You can select whether the jobs are positioned in portrait or landscape mode. It is advantageous to engrave jobs in the direction of their longest side as the engraving time will be reduced if the engraver has a minimum of interruptions.

2 Plates together
If this option is selected, two plates are positioned side by side and displayed in the JobControl using a separator.

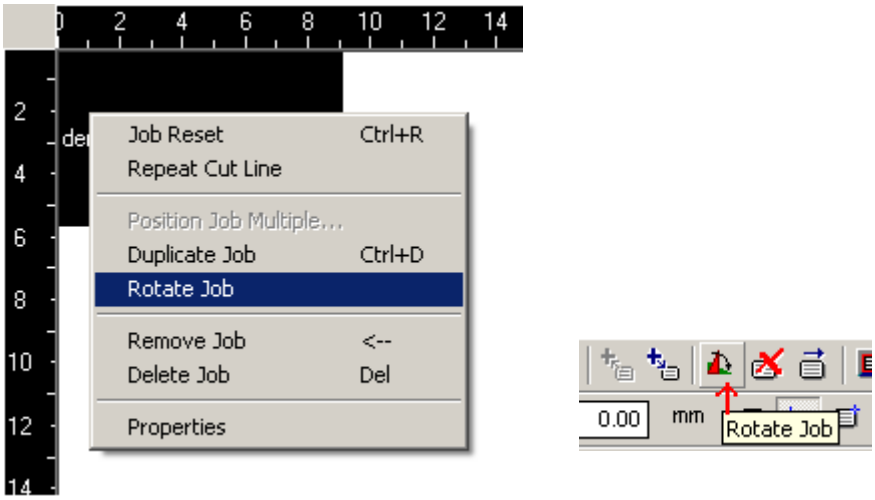
Position Job for (***Basic***, ***Advanced***, ***Expert***)
Positions the job(s) marked in the queue on the plate.
Select the job you want by clicking once on the job name in the queue. The job is highlighted in color and can now be positioned. It is also possible to position multiple jobs at one time this way.

As an alternative solution to position jobs on the plate, you can double click on the appropriate job name or drag the job onto the plate using the mouse.

Position Job Multiple for (***Expert***)
Multiple positioning of the selected job.
This function allows multiple positioning of selected jobs in the queue on the plate up to 100 times.

Rotate Job (Expert)

Rotate positioned jobs via the context menu or use the toolbar button.
Rotation is always 90° (-90° if applied to already rotated jobs).



Duplicate Job Ctrl+ D for (***Advanced***, ***Expert***)

Duplicates a marked job in the queue or on the plate.

Remove Job ß for (***Basic***, ***Advanced***, ***Expert***)

Puts the job back in the queue.
Click on the job you want to select and remove it from the plate

Job Reset Ctrl+ R for (***Advanced***, ***Expert***)

Resets the job properties
Is required to engrave jobs being already completely processed again, Select the job processed on the plate and then execute “Job Reset.

Properties for (***Basic***, ***Advanced***, ***Expert***)

The properties of a marked job will be displayed. The properties include order name, order number, file name, and processing parameters.

Delete Job Del for (***Basic***, ***Advanced***, ***Expert***)

Deletes the selected job(s) in all files. Allow you to delete jobs regardless of whether they have already been processed or not. Click on the job on the plate or in the queue and then on “Delete Job.

Add Marker to Plate for (***Expert***)
Sets a marker on the specified position.
Markers are displayed as blue crosses on the plate (selected markers are green). Markers are used as positioning aids for jobs. They have magnetic properties in that they are attracted to the corners or the center of the job.

Delete Marker Ctrl+Del for (***Expert***)
Deletes the selected marker.

Job to Marker ***(Expert)***
Moves selected job to the selected marker

Marker to Job for (***Expert***)
Sets a marker on the position of the selected job or moves a selected marker to the position of the selected job

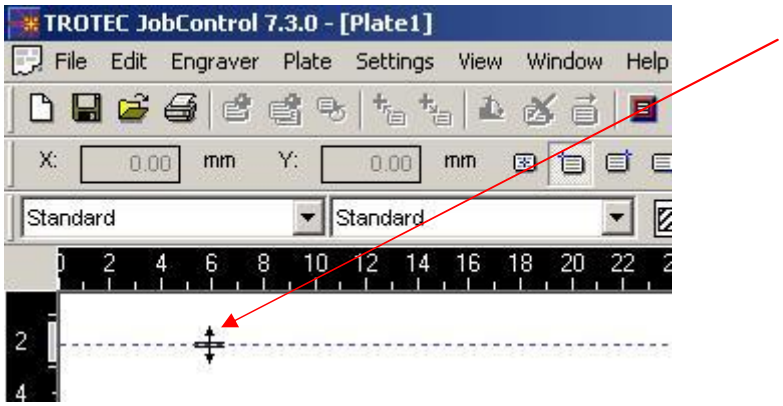
Marker to Laser F8 for (***Expert***)
Sets a marker on the current laser position

Engrave Intermediate for (***Expert***)
Is used to fit in urgent jobs while a process is in progress. The urgent job must be manually positioned and marked before the “Engrave Intermediate“ function can be selected. The laser then completes processing the data already in the memory, which may take some seconds. The new job will then be engraved and cut if required.
This allows stamps and sign engravings during processing a whole plate

Export Jobs
Export jobs from within the job queue or plate, by using the context menu.
Exported jobs are stored in compressed format (ZIP).

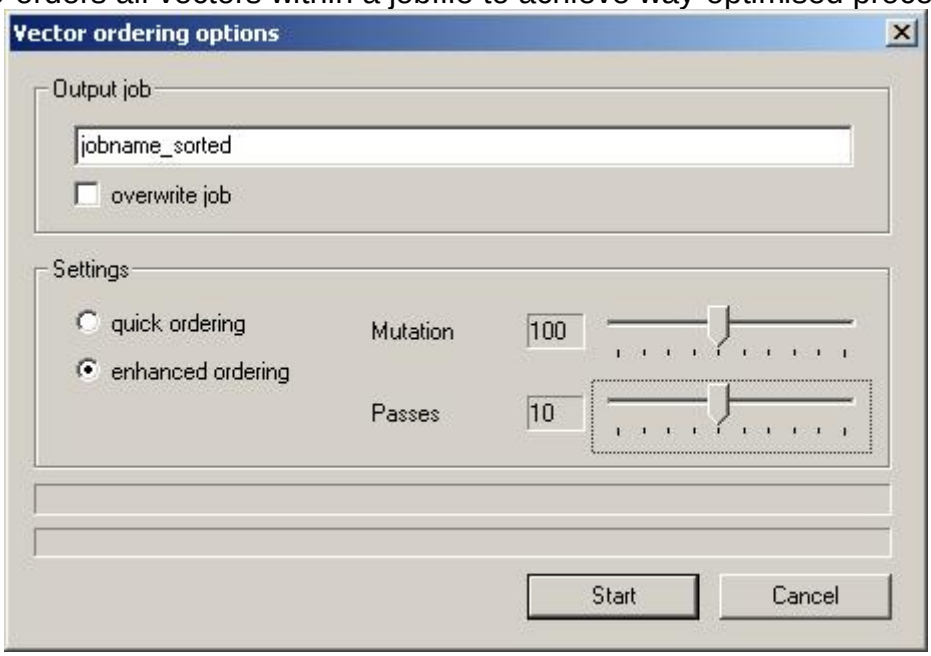
DRAG SNAPLINES (Expert)

Drag once positioned snaplines by moving the mouse pointer across the snapline



Vector ordering (Expert)

Re-orders all vectors within a jobfile to achieve way-optimised processing.



Quick ordering is a very fast and easy to use method.
Of course more complex jobs, with a higher number of vectors may require the enhanced ordering method. But bear in mind that the enhanced method is more time consuming.

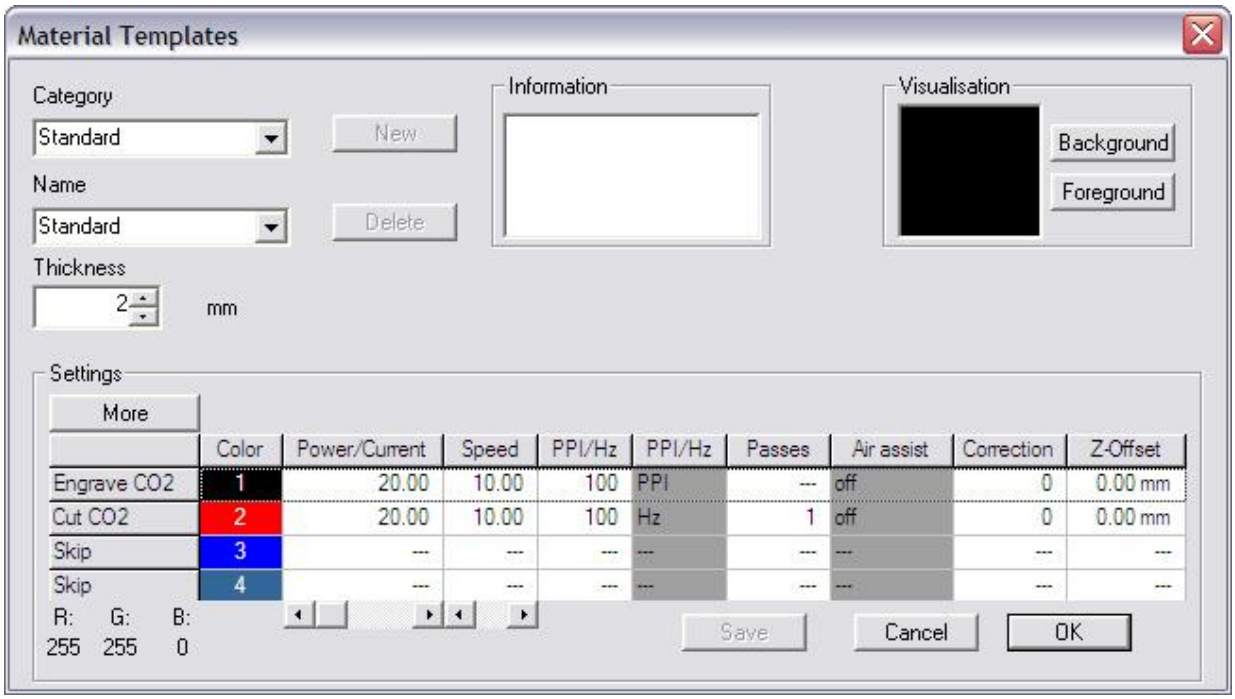
Enhanced ordering takes two parameters.
MUTATION is the number of randomly different copies of the job - each job with another vector order. After creation of n mutations, mutation 1 is compared with mutation 2 ... n, mutation 2 is compared with mutation 3 ... n, and so on.
The most optimised mutations are used to create n new mutations. This is repeated for the number of **PASSES**.

Vector ordering is only functional when the number of vectors is in the range from 3 to 5000.

The cancel button takes only effect between the mutations, before starting a new pass! That's why it does not always react immediately.

2.4.6 Settings

Material Template Setup Ctrl+M



Creating, changing and deleting of material templates.

Click on a material in the material list to select. All settings may then be changed and saved by clicking on the "OK" button.
To create a new material, click on the "New" button, specify a name for the material, make the settings, and then save them.
Click on the "OK" button to have the new settings take effect. Click on "Cancel" to undo unwanted changes.

Category (***Basic***, ***Advanced***, ***Expert***)
Displays the category of the material e.g. Standard, Plastic ……..etc

Name (***Basic***, ***Advanced*** , ***Expert***)
Displays the name of the material. This name also appears on the status bar.

Thickness (***Basic***, ***Advanced***, ***Expert***)
The thickness entered here is required for focusing via the software. This entry tells the laser engraver to which z position (height) it must move.

Information (***Basic***, ***Advanced***, ***Expert***)
Allows up to five lines of text to be entered; for example for supplier or processing related information.

Visualization (***Basic, Advanced, Expert***)
All materials can be displayed in color here. Click on the Foreground or Background buttons to open the Color selection menu.

Settings (***Basic***, ***Advanced***, ***Expert***)
Displays a table containing the parameters set. For a simpler overview, this table only shows the first four most common colors. Click on the "More" button to display all 16 colors.

Engrave, Cut, Skip (***Basic***, ***Advanced***, ***Expert***)
The button to the left of the color allows selection of the process.

Engrave	The color displayed in this line will be engraved; e.g., fills with this color are processed line-by-line using the parameters set. Vector objects in this color will be ignored.
Cut	The color of this line is only for vectors - for cutting. Vectors included in the job are executed using the laser parameters set. Fills of the same color will not be processed.
Skip	Any occurrence of this color in the job will not be considered with either fills or vectors. Such a color could be used for comments in the design, for example
ENGRAVE YAG	This process type is for HYBRID and FINEMARKER.

Color (***Basic***, ***Advanced***, ***Expert***)
Click on the color boxes to display the RGB color model beneath the table as a guideline. This information allows setting of the precise red-green-blue mixture in the draft.

Power (***Basic***, ***Advanced***, ***Expert***)
Percentage of the laser power used.
The engraving/cutting depth depends basically on the laser power and speed set. Increased power as well as decreased speed result in increased depth.
Adjustment range: 0-100% (100% is equivalent to the maximum power of the laser)

Speed (***Basic, Advanced, Expert***)
Percentage of the maximum speed that can be reached.

PPI/Hz ***(Basic, Advanced, Expert)***
PPI = pulses per inch (laser pulses per inch). Only for the Engraving process.
This setting determines the number of laser pulses per inch emitted by the laser. This occurs depending on the position, e.g. the pulses are always emitted at the same interval irrespective the speed.
Adjustment range: 100 - 1000 PPI

The higher the selected PPI value is, the better the quality of the engraving. To obtain a good result, the PPI value should be usually larger than or at least the same as the dpi setting of the printer driver (in the Define Workpiece dialog), e.g. a minimum value of 500 PPI should be selected for a resolution of 500 dpi. A low PPI value is only useful when processing some types of rubber or in cases where the contour is only to be perforated but not cut through. Unlike the resolution in dpi, increase in PPI does not have an effect on the engraving time.

Hz = Frequency of laser pulses during cutting. This setting determines the number of laser pulses per second emitted by the laser. Unlike engraving, with cutting it is not necessary to create fine contours by means of resolution. In this case, the position sensitive control used with the PPI can therefore be replaced by a set frequency.
Adjustment range: 1000 - 10000 Hz for CO2 systems,
10000 – 150000 Hz for YAG systems
Additionally YAG systems can use frequency mode for engraving.

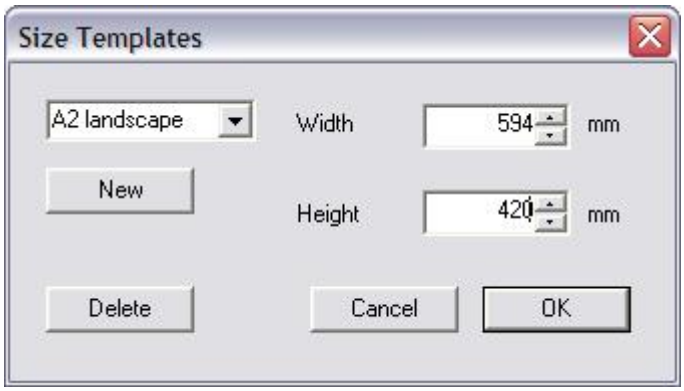
Passes ***(Basic, Advanced, Expert)***
Is only available for the Cutting process and defines how often a cutting line with the appropriate color will be processed.

Air Assist (optional) ***(Basic, Advanced, Expert)***
Activates or deactivates the air injection.

Correction ***(Basic, Advanced, Expert)***
Only activated if the color is selected for cutting.
Determines the minimum percentage of laser power set during slow movement, for example around curves. This parameter is required for materials, which have no linear behavior during laser processing (like anodized aluminum).
If the setting of this value is too small, the lines will thin at the ends and in the radius or disappear completely. If the selected correction is too high, the width will strongly increase at the line ends and radius.

Z-Offset
Controls the Z-axis (table) during processing. This allows e.g. to engrave in focus or re focus workpieces with different hight Levels. At the end of processing the table is brought in the same position it was before starting.

Size Template Setup Ctrl+W **for *(Basic, Advanced, Expert)***



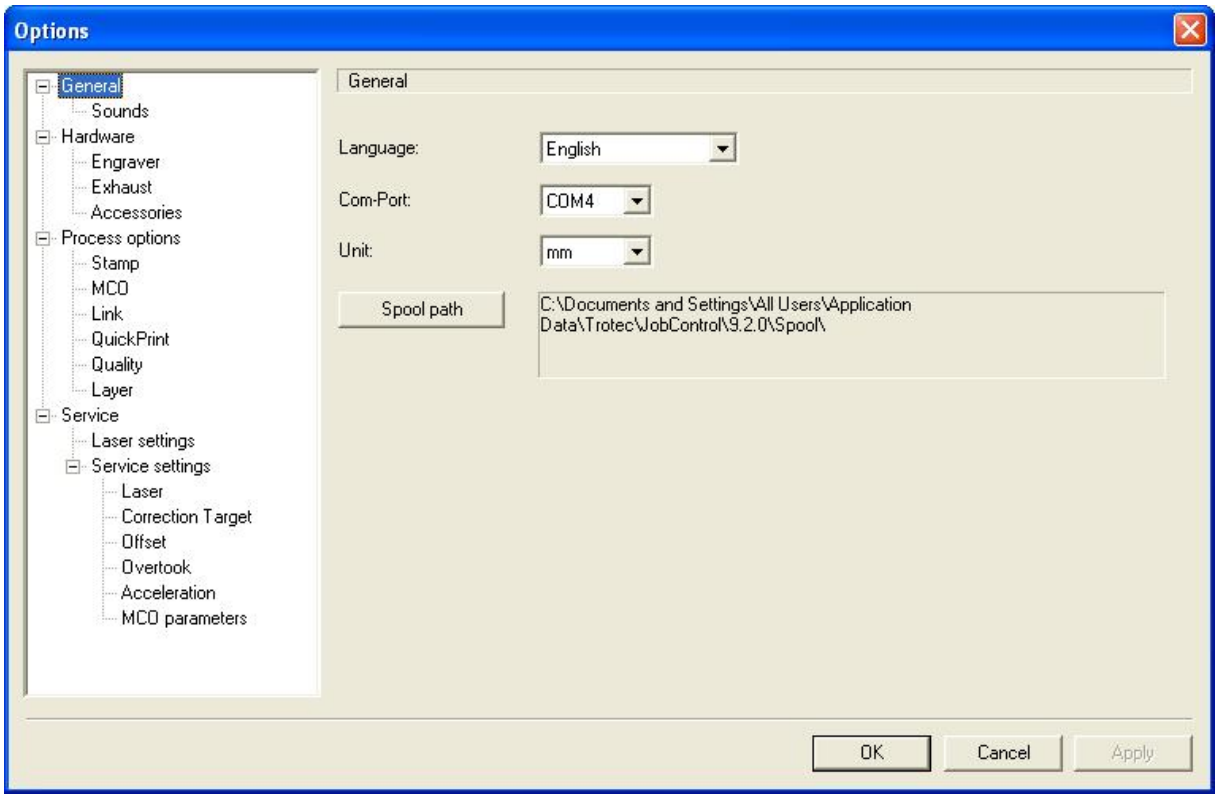
Creating, changing and deleting of size templates.
Click on a template in the list to select. Settings such as Name and Dimensions may then be changed and saved by clicking on the "OK" button.
To create a new size, click on the "New" button, make the settings, and then save them.
Click on the "OK" button to have the new settings take effect. Click on "Cancel" to undo unwanted changes.

The Define Size Template dialog allows saving of frequently recurring sizes in order to retrieve these from the printer driver.

Options for *(Basic, Advanced, Expert)*

Set the defaults for the engraver.

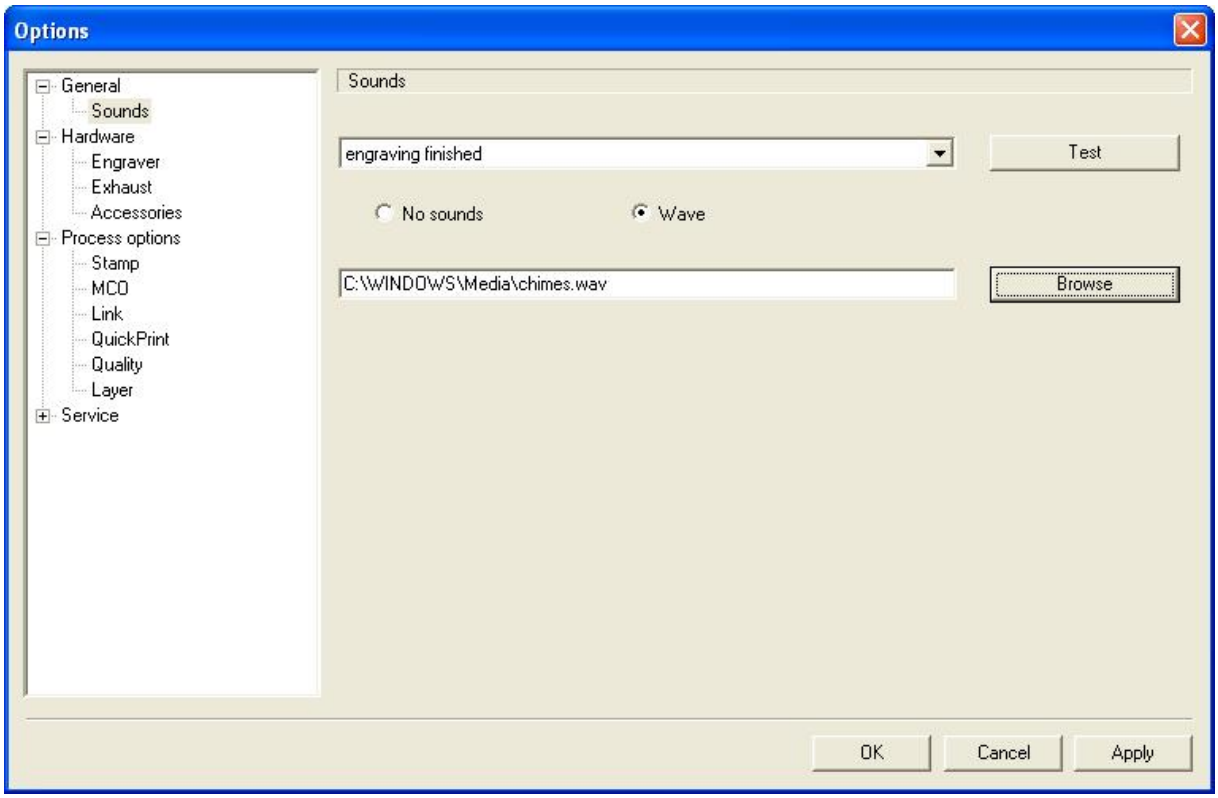
General



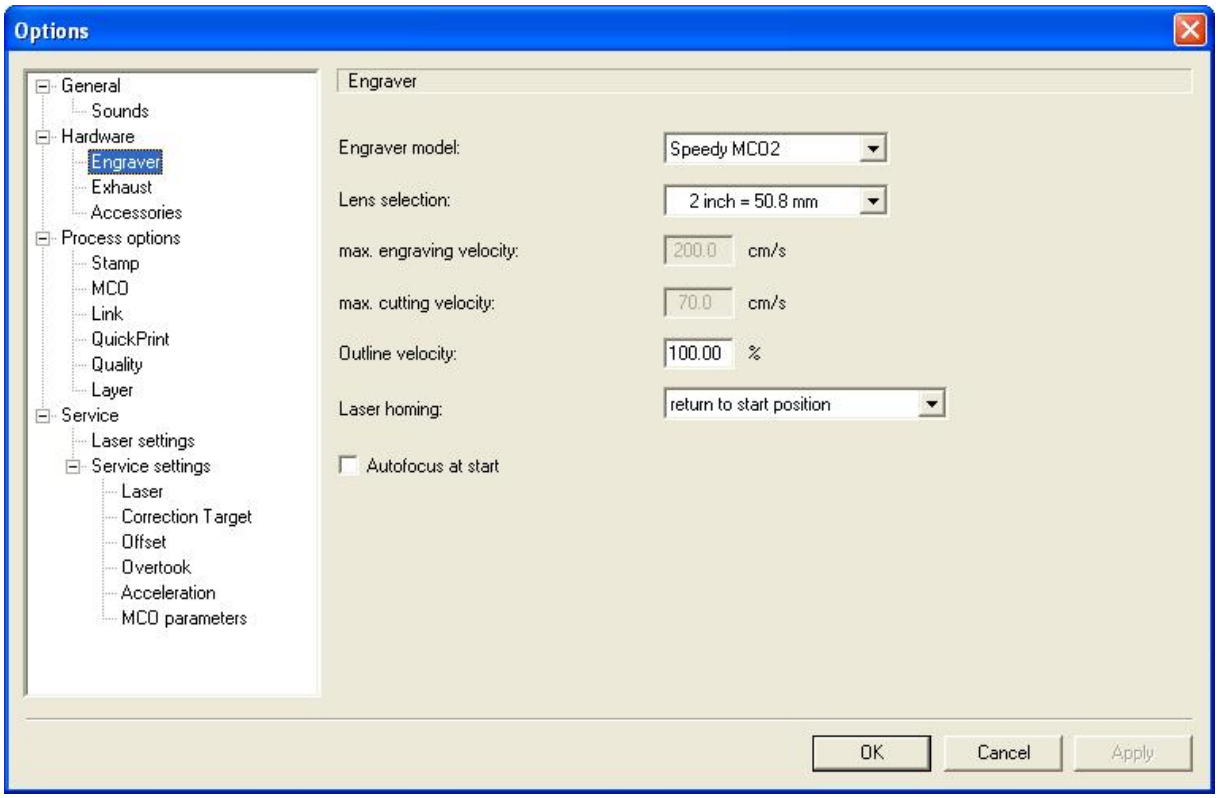
Language:	Language selection
Com-Port:	Selection of the serial port (COM1, COM2...)
Unit:	Specifying mm or inch with the size
Spool path:	Path where jobs are placed from printer driver and loaded from JobControl

Sounds

User defined sounds inform whenever either „engraving finished“ or „machine error“ occurs. This is an additional user information in case the PC is located in another room as the engraver.
A sound card is required to use this feature.

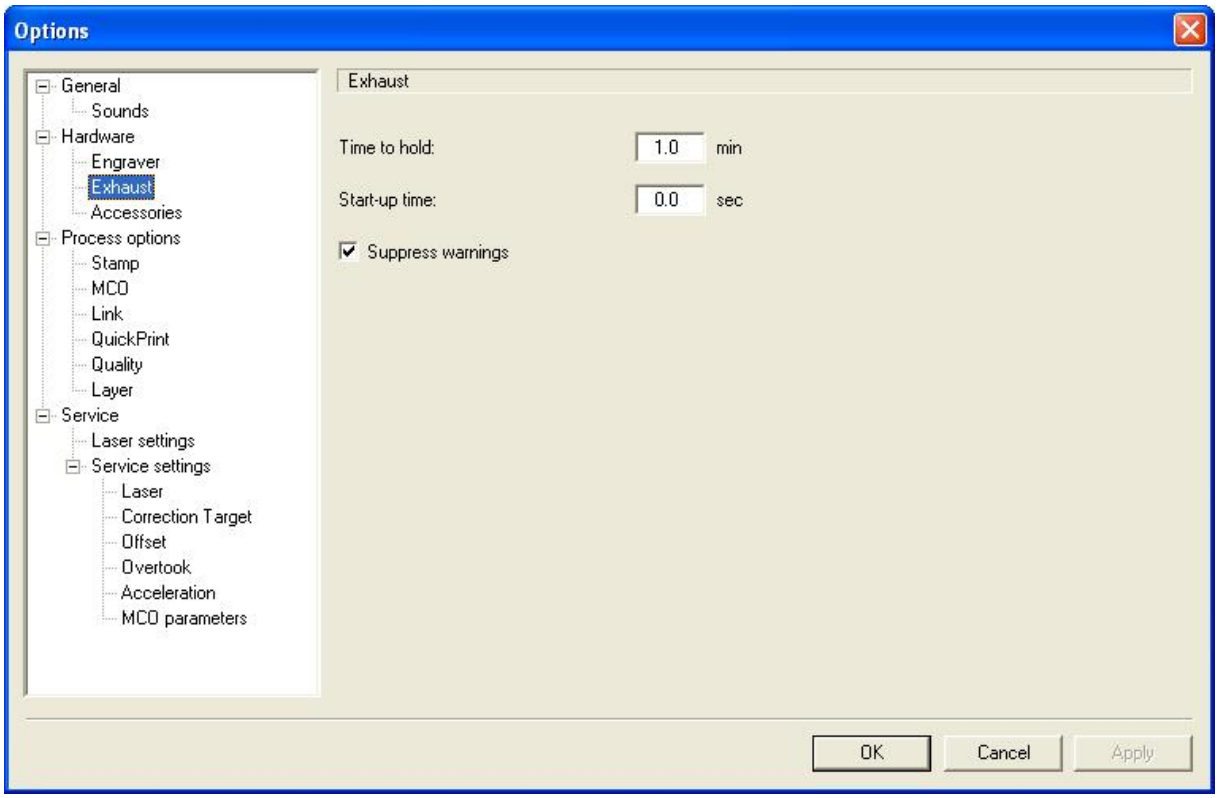


Engraver



Engraver Model:	Type of laser engraver
Lens Selection:	type of lens for focusing
Max. Velocity:	Engraving and cutting
Autofocus:	Automatic focusing on the material thickness at the start of each engraving process
Laser Homing:	Homing options.

Exhaust

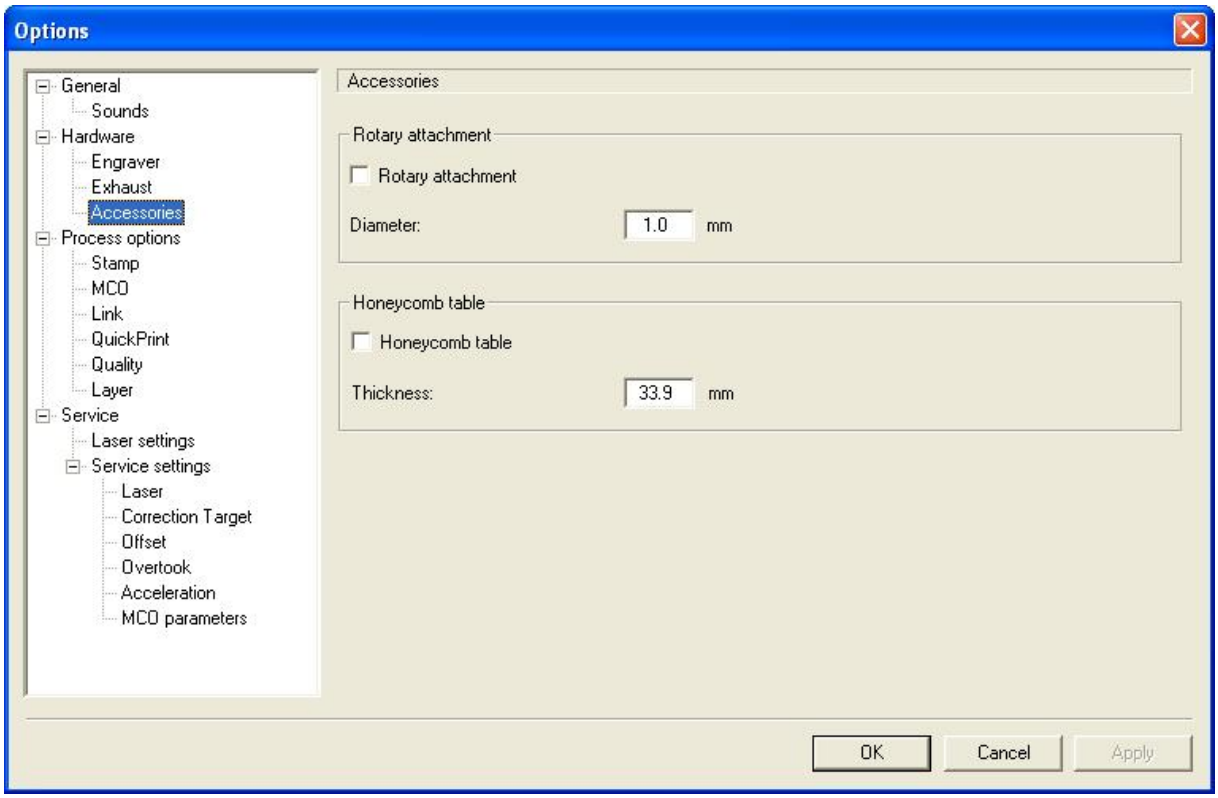


Time to hold: Time period the extraction operates after the engraving has been completed

Start-up time : Allows the exhaust to start in advance to processing jobs

Suppress Warnings: Extraction responses will not be displayed (used for extractions not originating from TROTEC).

Accessories

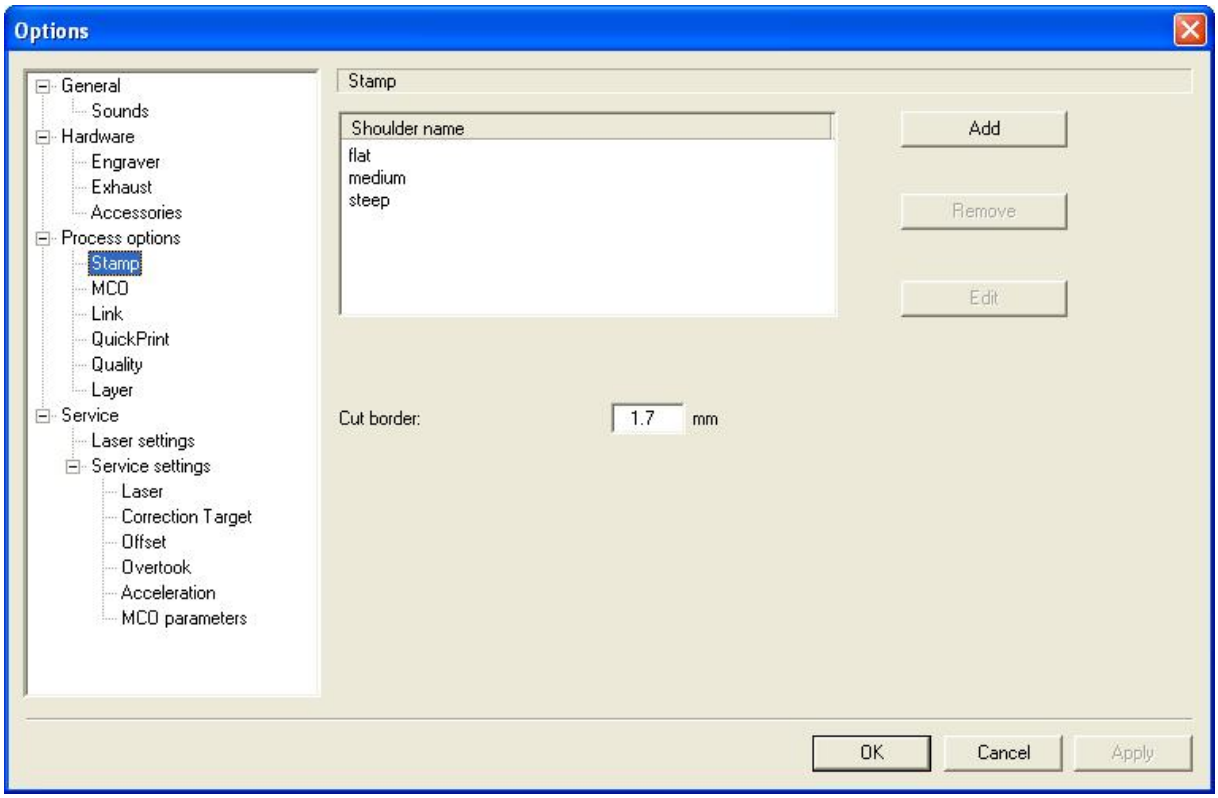


Rotary Attachment: Activate or deactivate the option
Diameter: Specifies the diameter of the workpiece

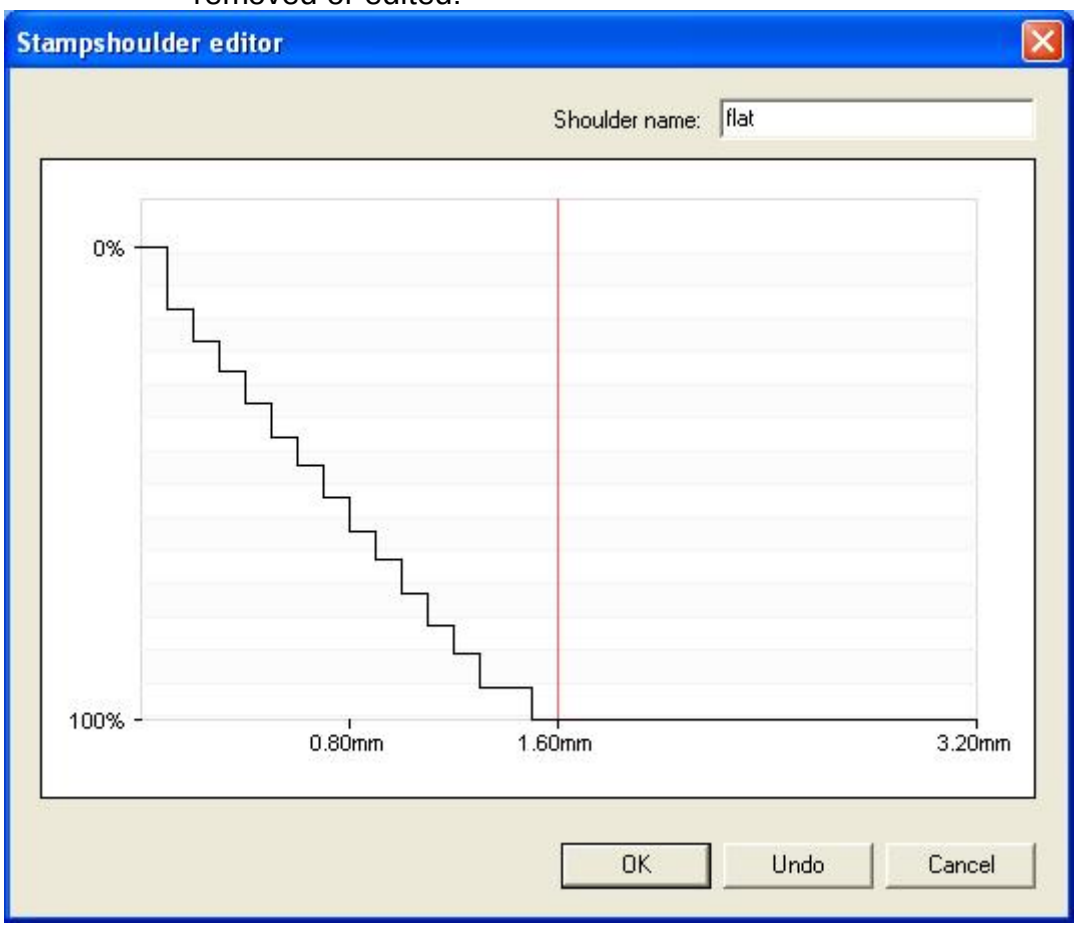
This page will be automatically completed when positioning a job that has been printed using the "Rotary Attachment" option.

Honeycomb table: Activate or deactivate the option
Thickness: Specifies the thickness of the honeycomb table to Compensate focal point

Stamp


Options
General
Sounds
Hardware
Engraver
Exhaust
Accessories
Process options
Stamp
MCO
Link
QuickPrint
Quality
Layer
Service
Laser settings
Service settings
Laser
Correction Target
Offset
Overtook
Acceleration
MCO parameters
Stamp
Shoulder name
flat
medium
steep
Add
Remove
Edit
Cut border:
1.7
mm
OK
Cancel
Apply

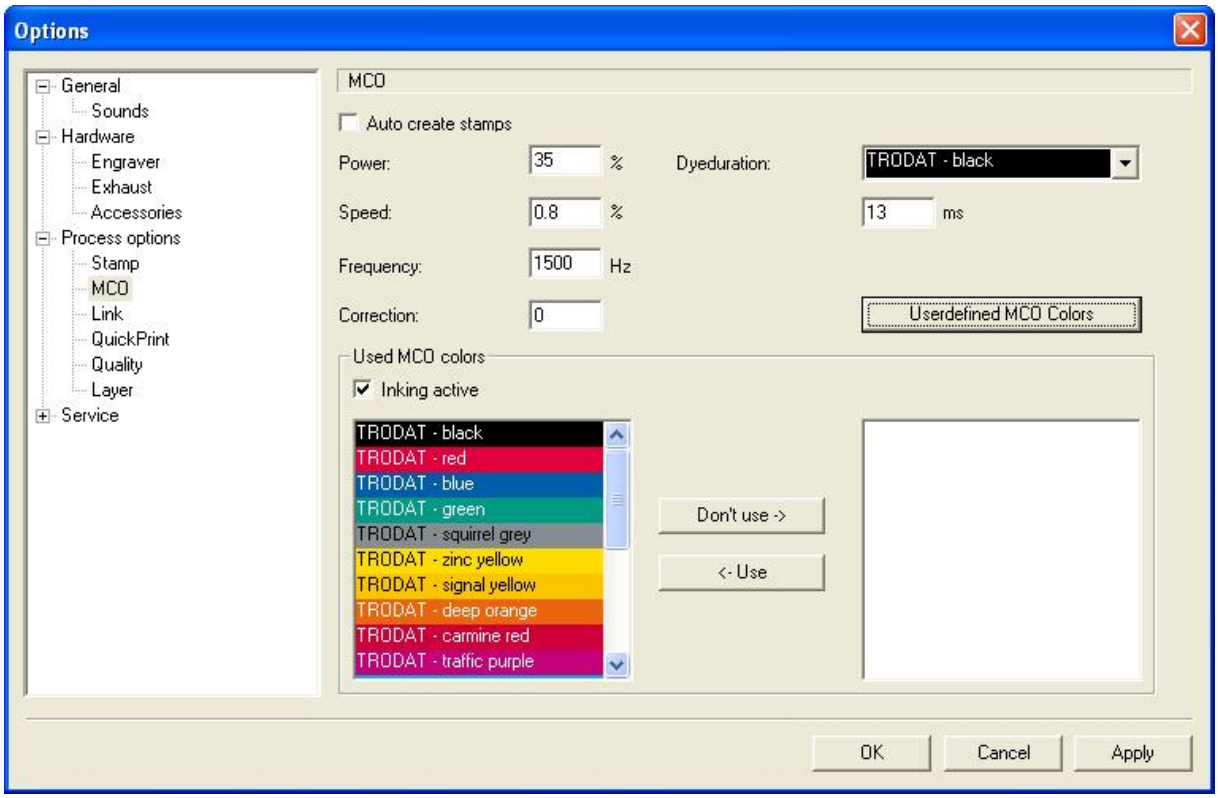
Shoulders: All shoulders are listed by their name and can be added, removed or edited:



Cut Border: Distance between cutting line and neighboring job

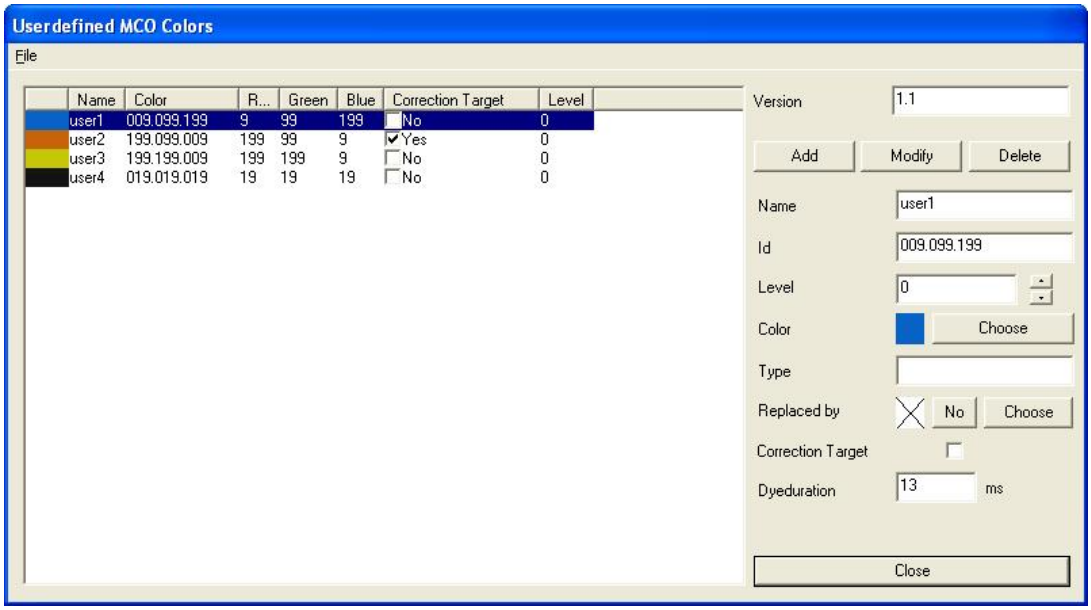
These settings are required for stamps and should only be changed after consulting TROTEC Technical Support.

MCO



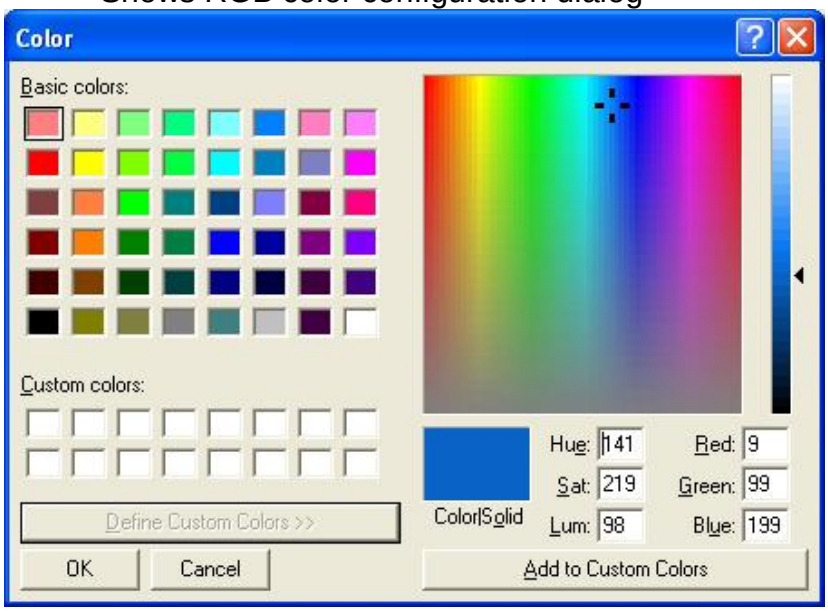
Auto create stamps:	Automatically create stamps when MCO jobs are Processed
Power, Speed, Frequency, Correction:	Laser settings for cutting pads of MCO jobs
Dyeduration:	The time each MCO color is inked
Used MCO colors:	Configuration whether inking is active and which MCO colors are used

Userdefined MCO colors:



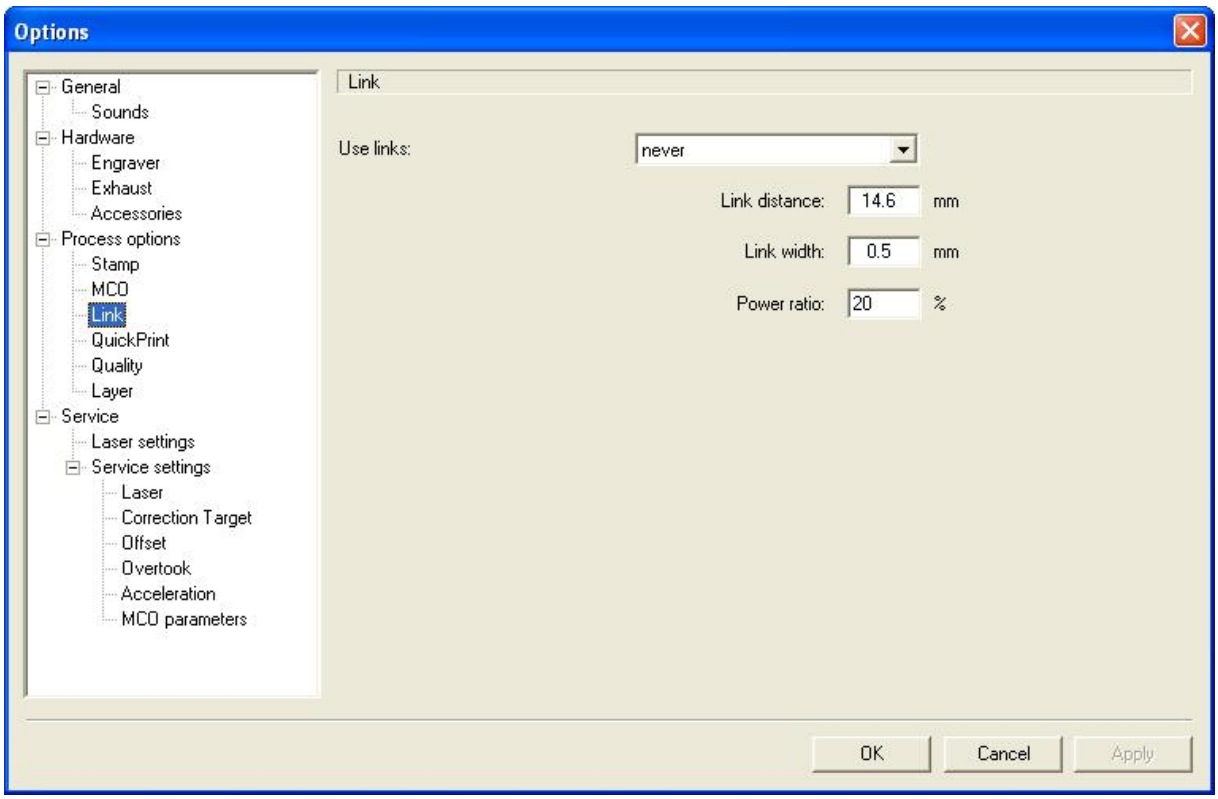
User can add, modify and delete his own MCO colors.

Version: Version of all MCO user colors / MCO user colors file
Name: Name of MCO color
Id: Id of MCO colors (usually “Red.Green.Blue” value)
Level: Field for future use
Color: Shows assigned RGB color
Choose: Shows RGB color configuration dialog



Type: Field for future use
Replaced by: Shows MCO color which replaced this one
Correction Target: Whether this MCO color can be corrected to at time of MCO processing
Dyeduration: Time how long one dye point is inked

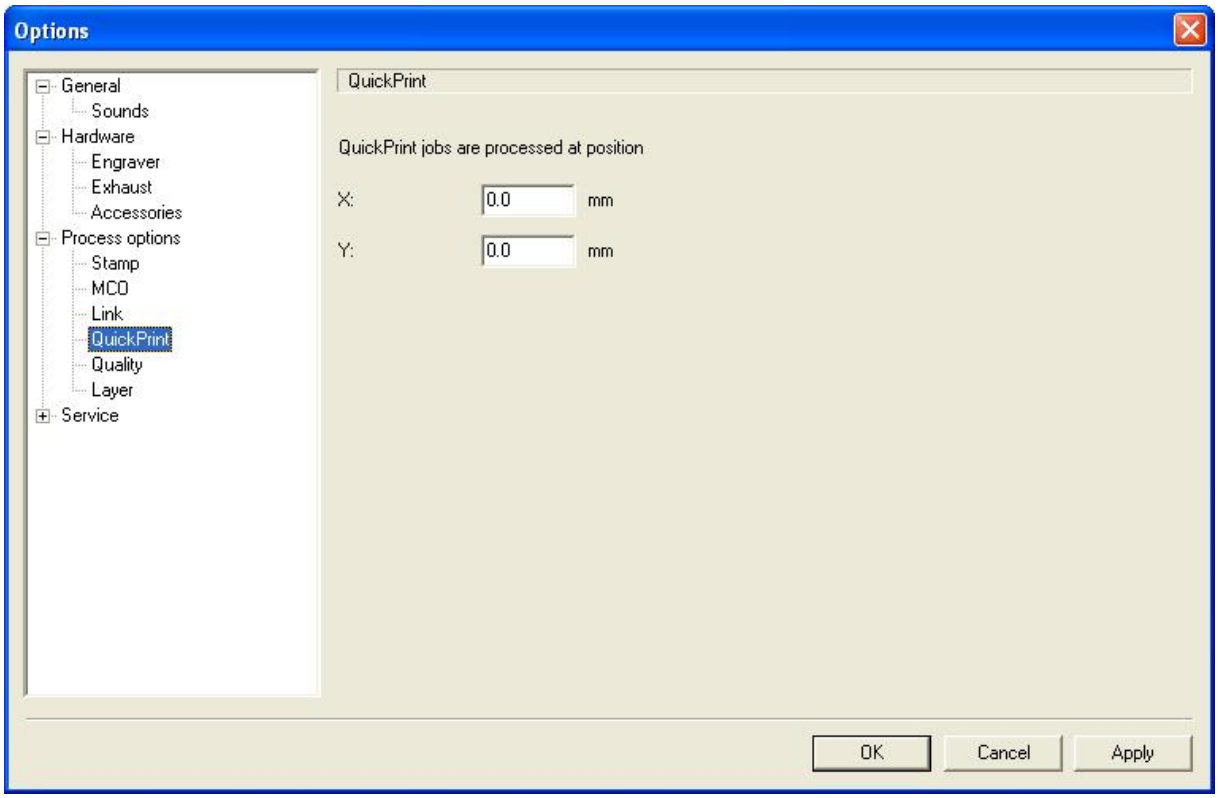
Link



Cut-line disruptions. Links are used to hold e.g. stamp dies in the sheet material. That way the entire rubber sheet can be removed convenient after processing. The distance from one link to another, the link width and the percentage of currently adjusted laser power can be modified.

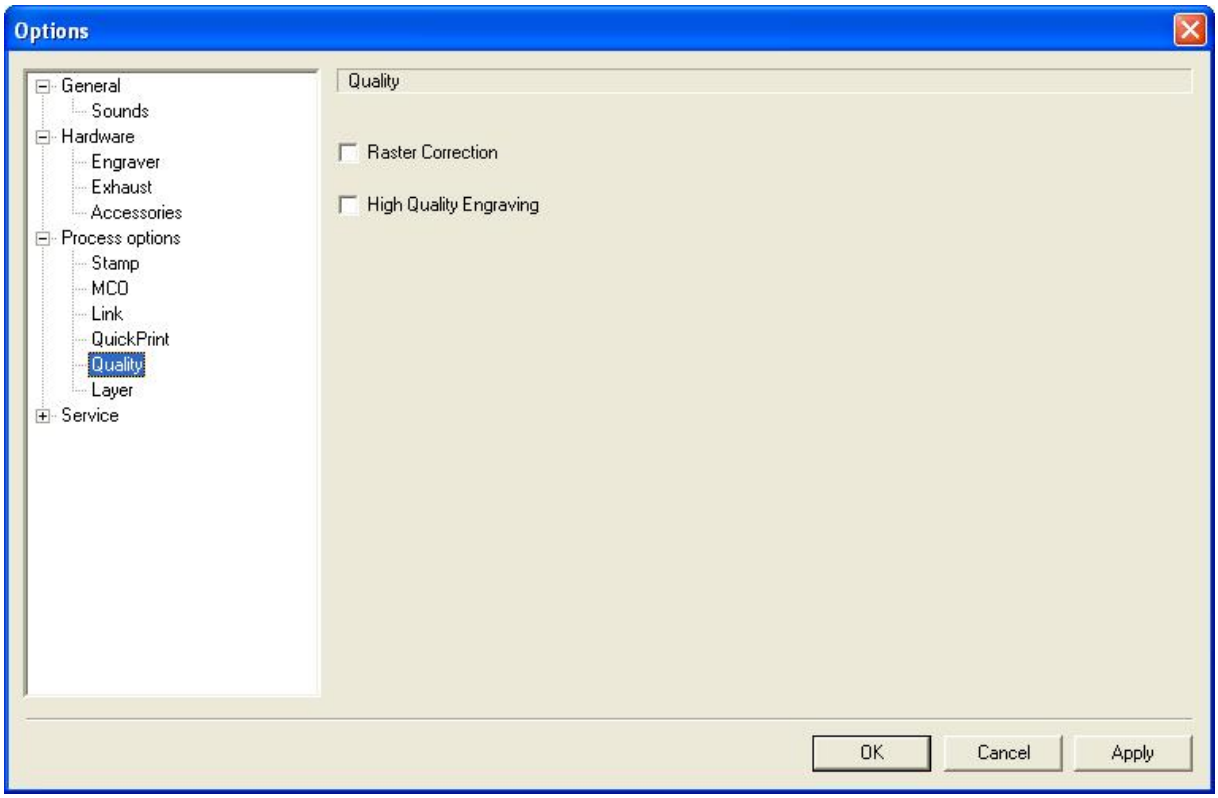
Use links: never, with stamps only, always, once only

QuickPrint



X, Y: Point where QuickPrint-Jobs are placed and graved

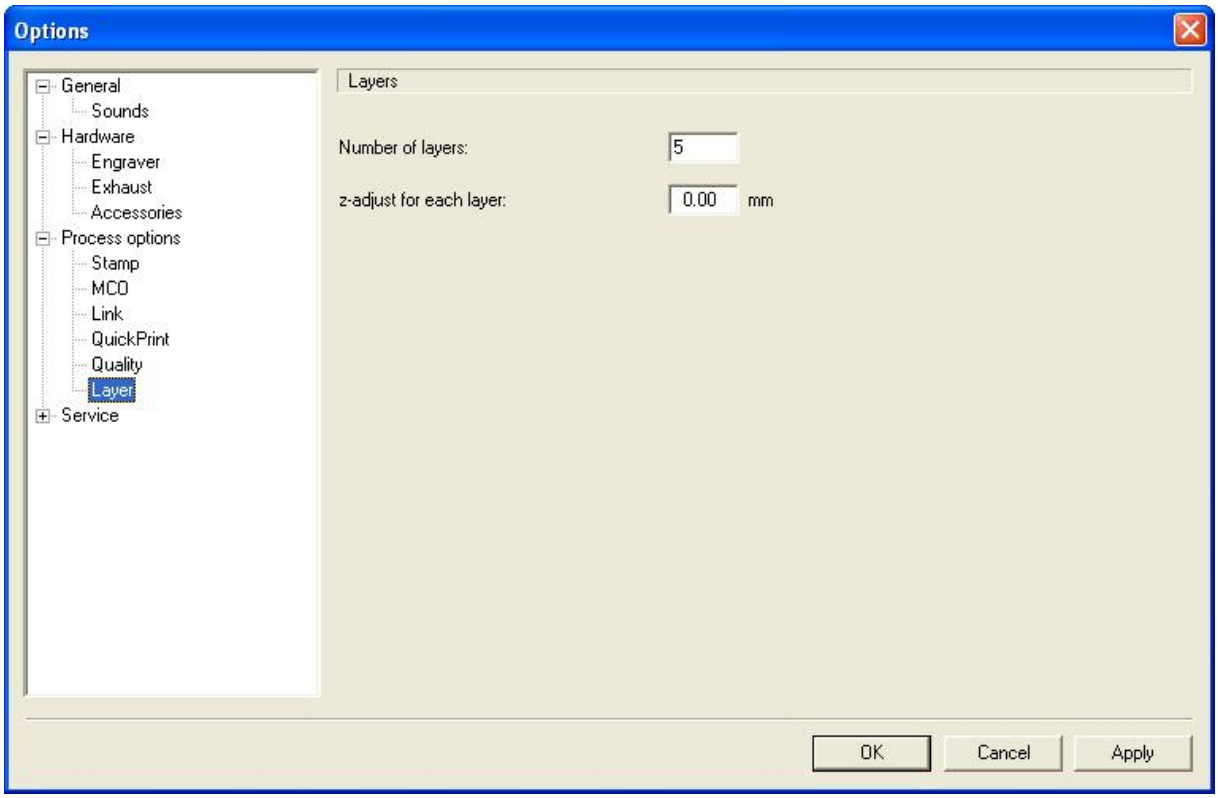
Quality



Raster Correction: Improves the quality of images rastered during engraving.

High Quality Engraving: All positioned jobs are done with constant stroke length.
This kind of engraving might be more time-consuming.

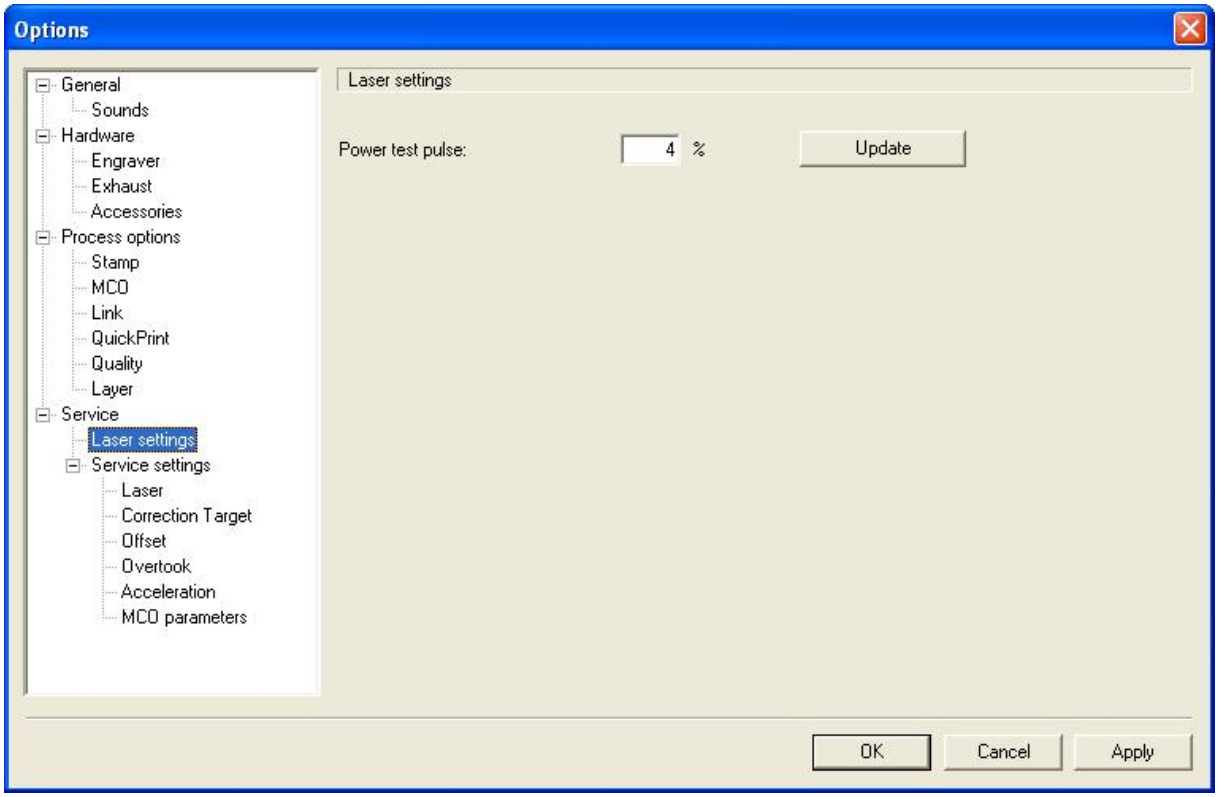
Layers



Number of Layers:	Specifies the number of layers the engraving should be carried out in. The layers are engraved alternating once in X and once in Y direction.
z-adjust for each layer:	z-adjust between the layers for re-focusing.

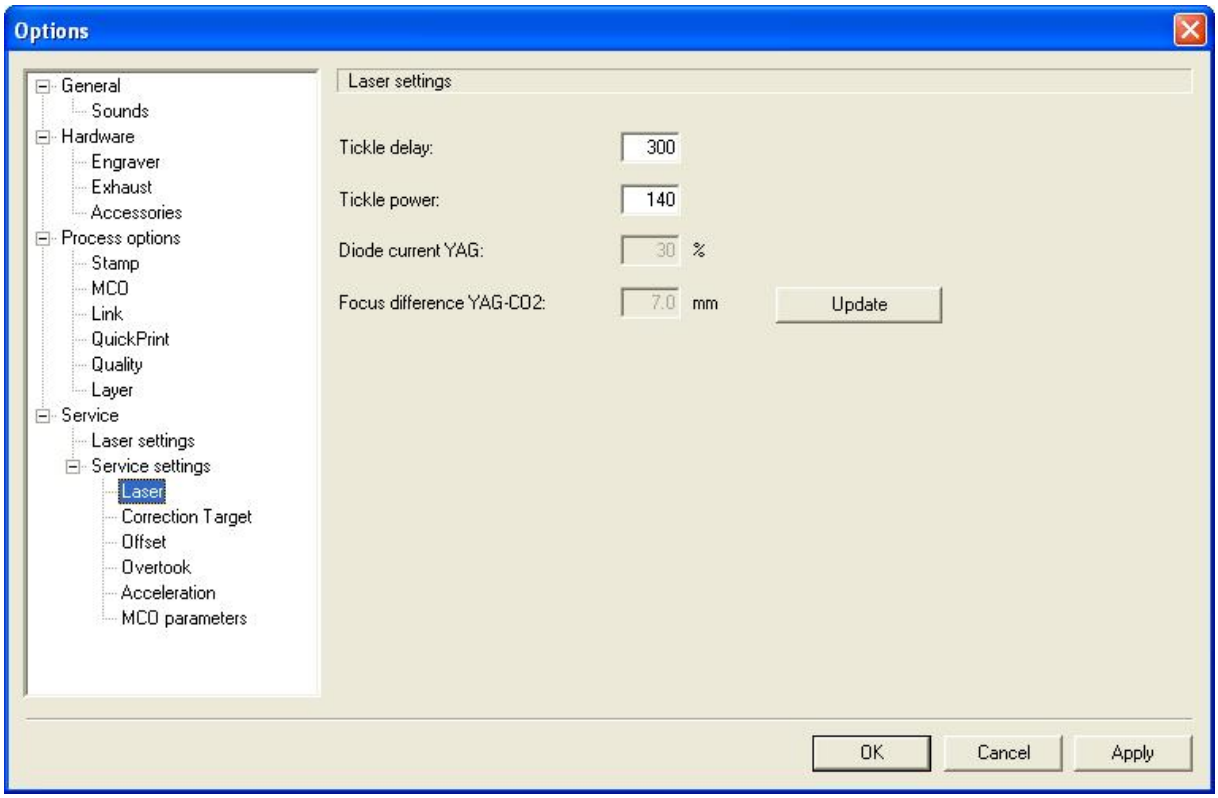
Service Options (Settings for *service personnel* only!)

Laser Settings



Power Test Pulse: (only CO2 systems) Sets the test pulse power, **only required during service!!** If this value is set to 100%, it is the instantaneous power, otherwise the laser power increases continuously.

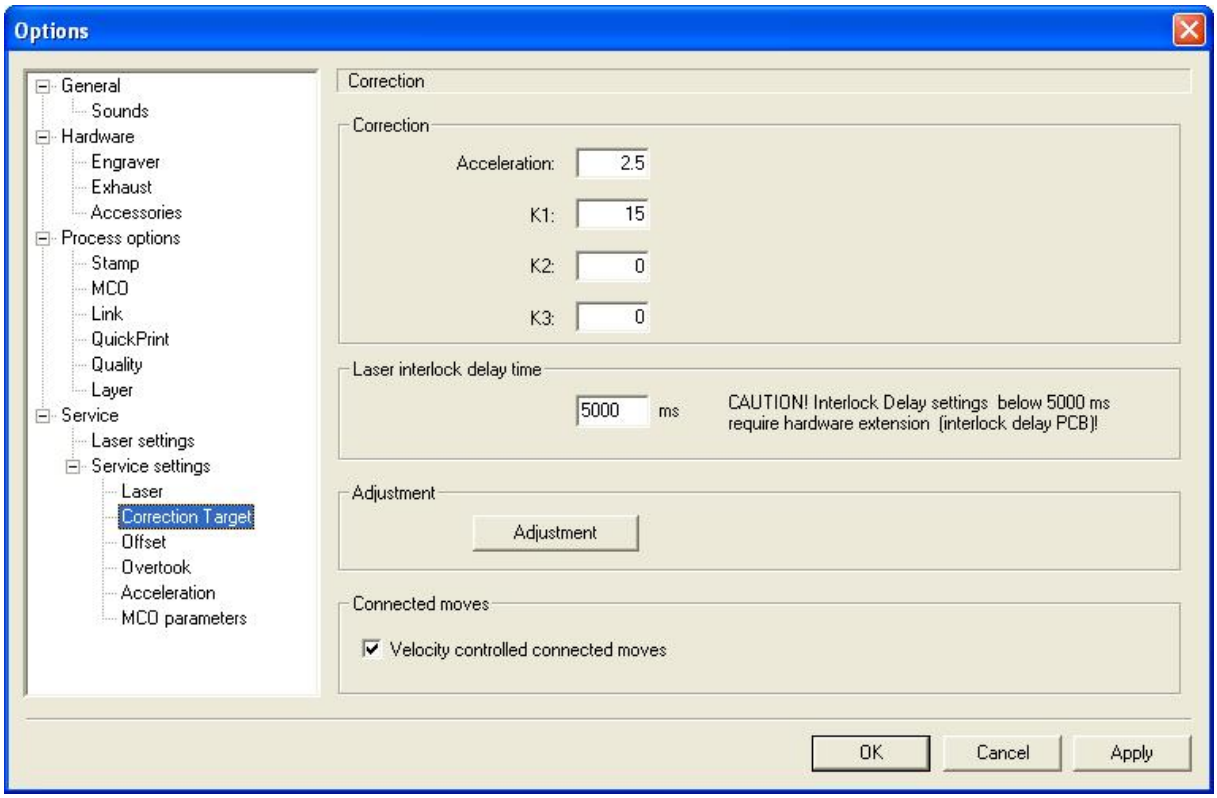
Laser



Tickle Delay:	(only CO2 systems) should be increased if the stamp appears blurred.
Tickle Power:	(only CO2 systems) Power required to excite the laser tube and put it into standby mode
Update:	Writes the changed values to the engraver‘s memory
Diode Current YAG:	(only YAG systems) Threshold current of the laser.
Focus difference YAG-CO2:	only for hybrid systems

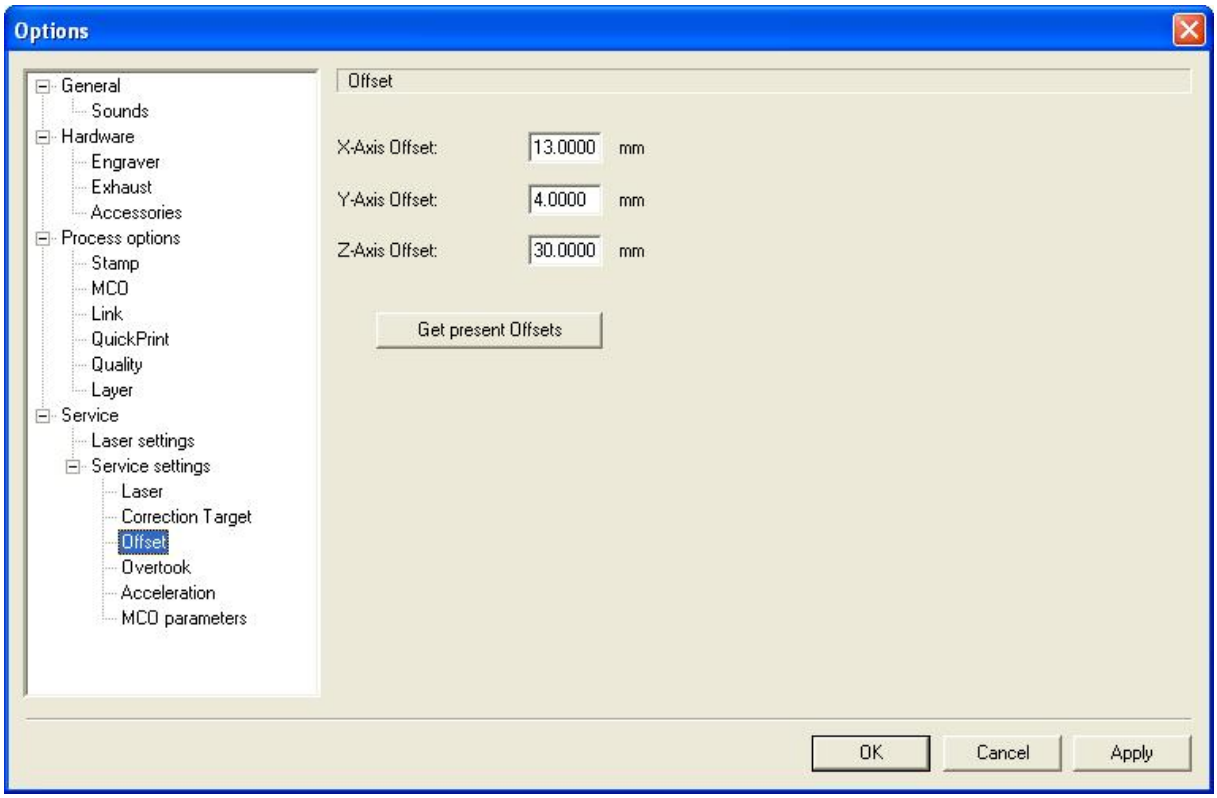
All laser parameters should only be changed after consulting TROTEC Technical Support staff!

Correction



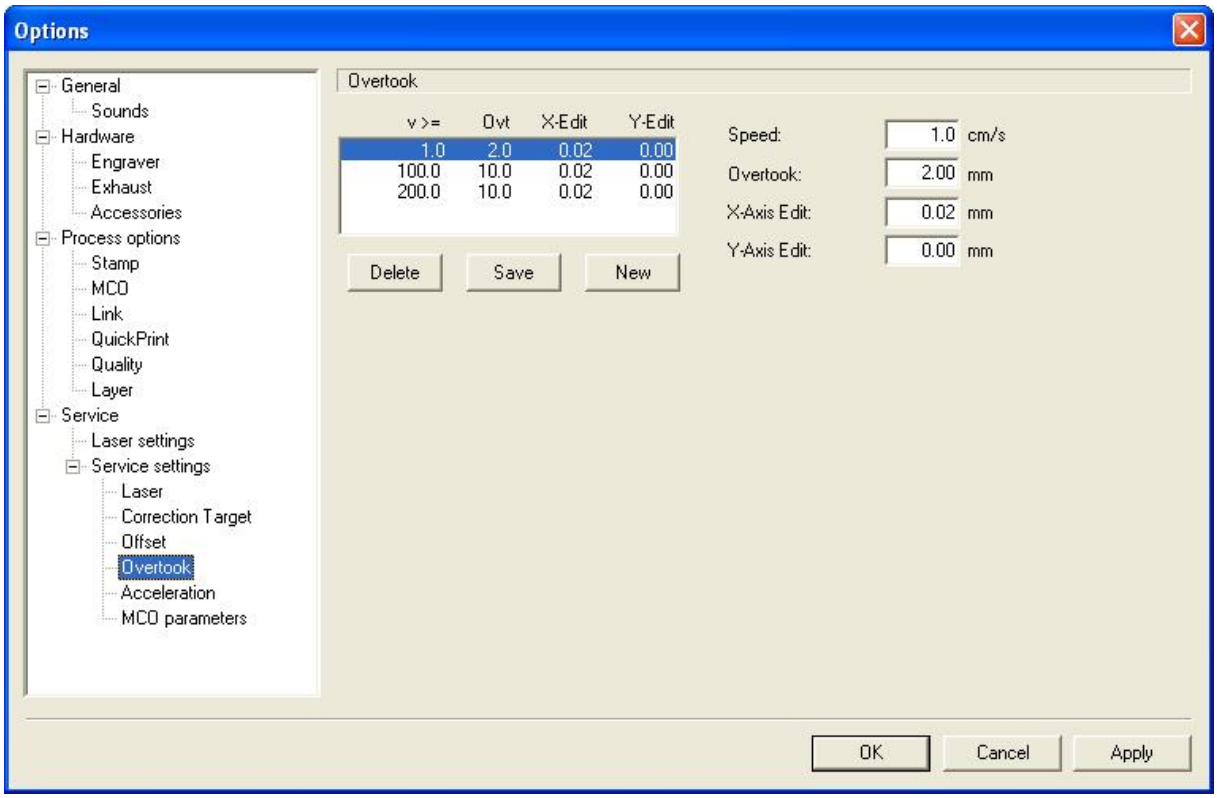
Acceleration, K1, K2, K3:	Values which influence graving quality
Laser interlock delay time:	Time the laser becomes active after the lid was closed. Settings below 5000ms require a special hardware extension.
Adjustment:	Unused currently
Velocity controlled connected moves:	Enable/disable velocity control in firmware.

Offset



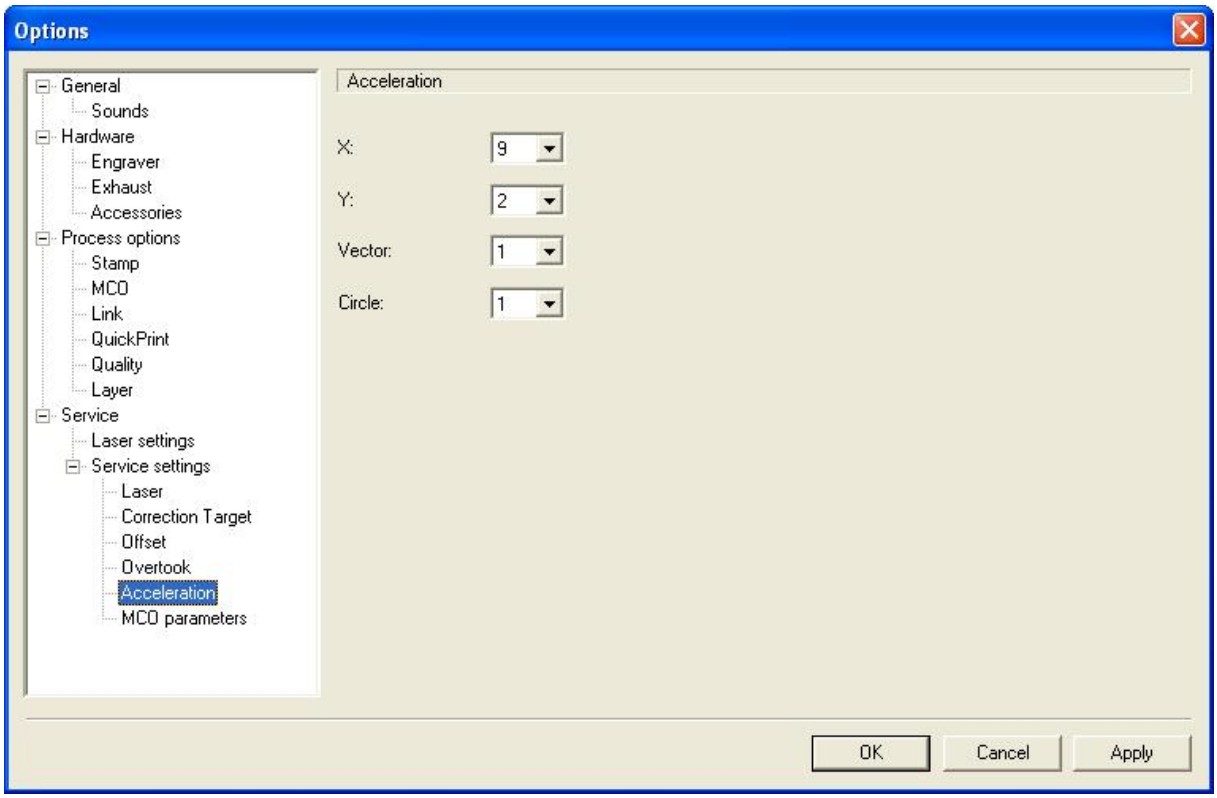
Offset values which modify shown X, Y and Z values
Get present Offsets: Use current position of laser as offsets

Overtook



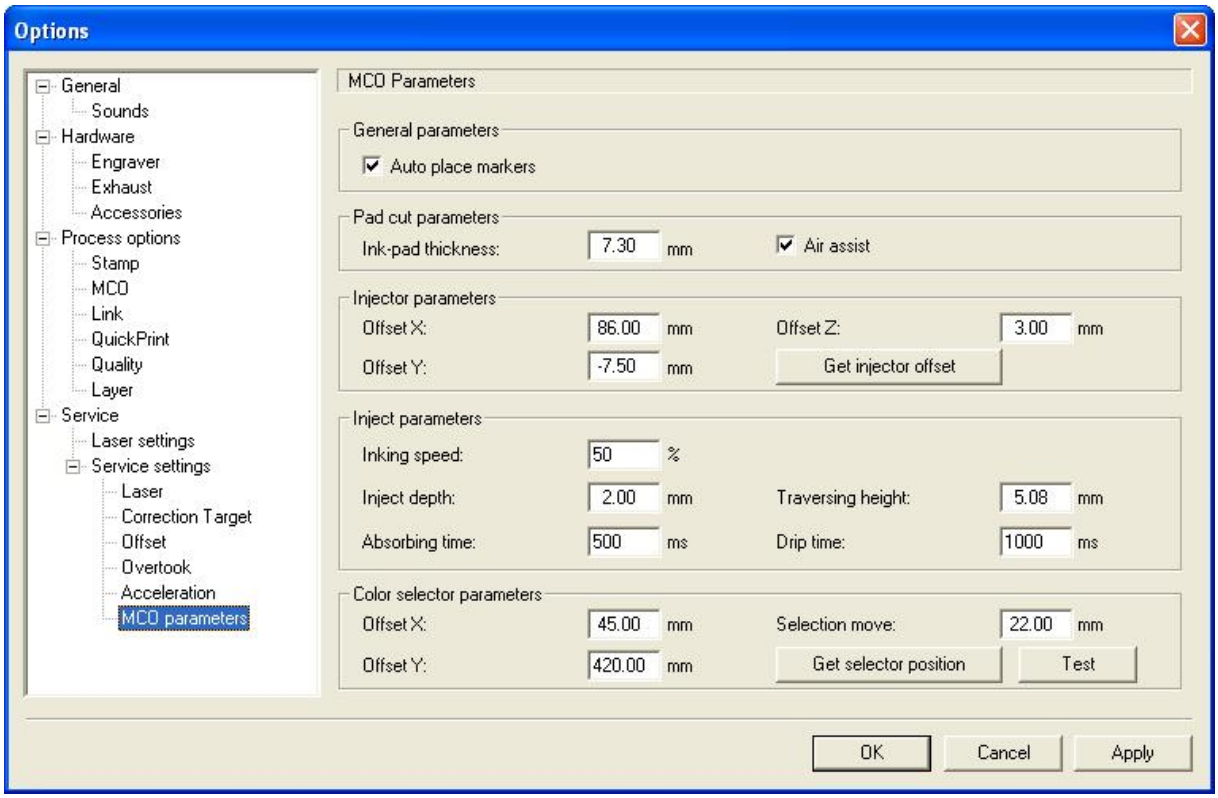
List of correction values for overtook

Acceleration



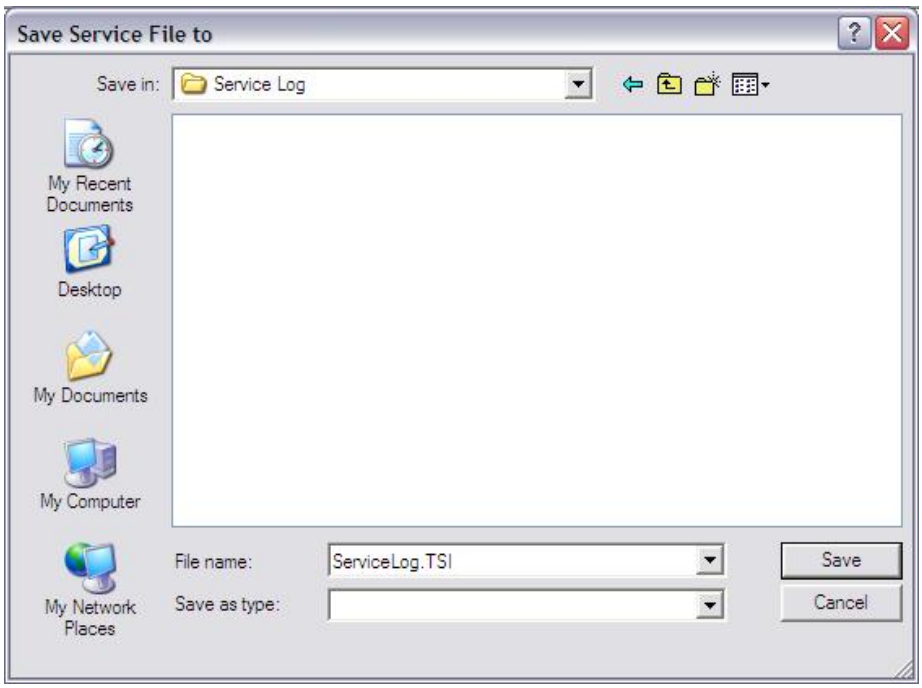
X, Y, Vector and Circle values for acceleration

MCO parameters



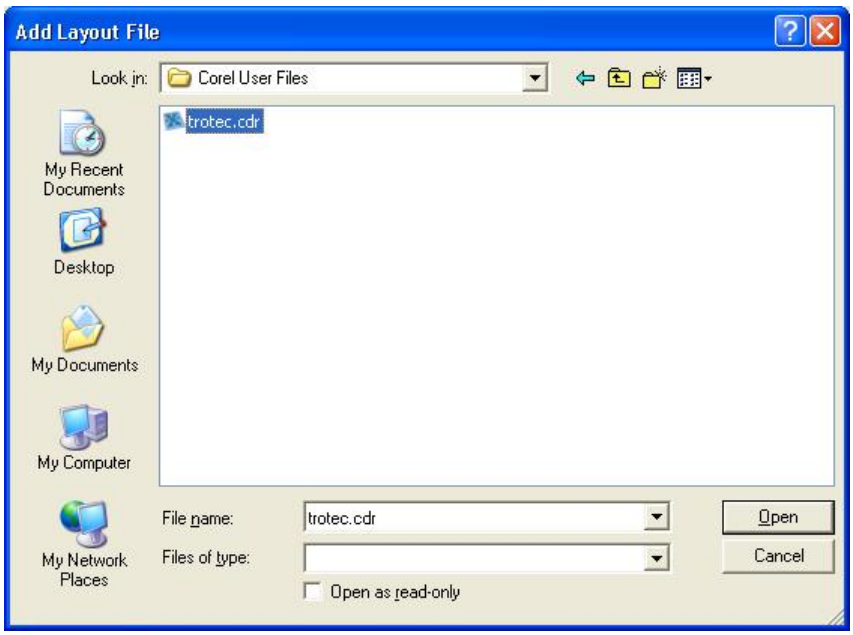
Create Service File for ***(Basic**, **Advanced**, **Expert**)*

Creates information file (.TSI) of the laser software
In the case of unexpected software problems, this function is used to create a file which allows analyses performed by TROTEC Technical Support. This file contains: Material and size templates, laser settings, positioned engraving jobs, and the TROTEC software as well as operating system version number. Graphics data may also be included.
Functionality:
Position the job(s) causing problems on the plate.
Open Create Service File dialog.



Select path for the service file and click on Save.

If required, you may then attach a graphics file.



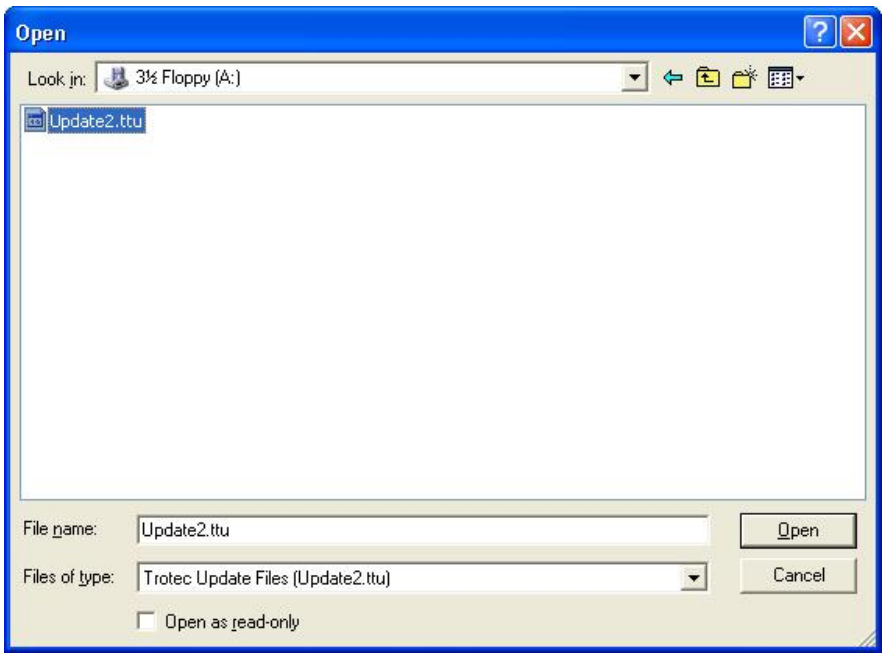
Select the graphics file used for creating the job and click on Open. Click on Cancel if you do not want to attach a graphics file.
The service file will then be automatically saved in the previously selected path. This file (ServiceLog.TSI) should be sent by email or on a disk to Technical Support together with a description of the problem.

Information ***(Basic, Advanced, Expert versions)***

Shows travel and operating time of the laser as well as engraver model and engraver software version.
In order to retrieve this information, the connection to the engraver must be established.

Update Firmware

You are prompted to specify the storage location of the TROTEC update file (.TTU). Then the settings are changed on the laser engraver itself.
Updating of the engraver software is not permitted unless you are instructed to do so by the TROTEC Technical Support.

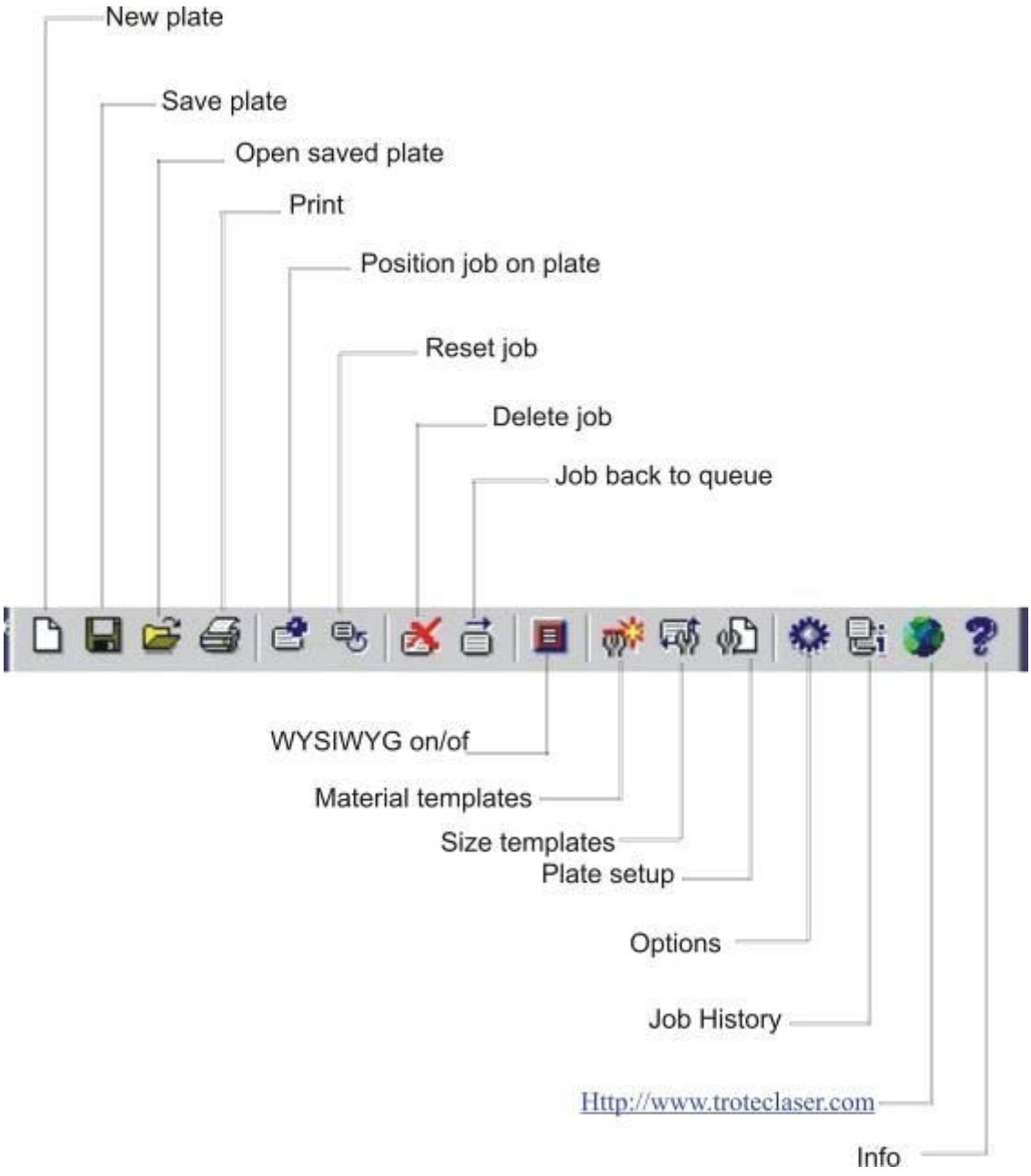


Note: The laser must be turned on.
Speedy I: The connection must not be established !
Speedy II: The connection should be established !

2.4.7 View

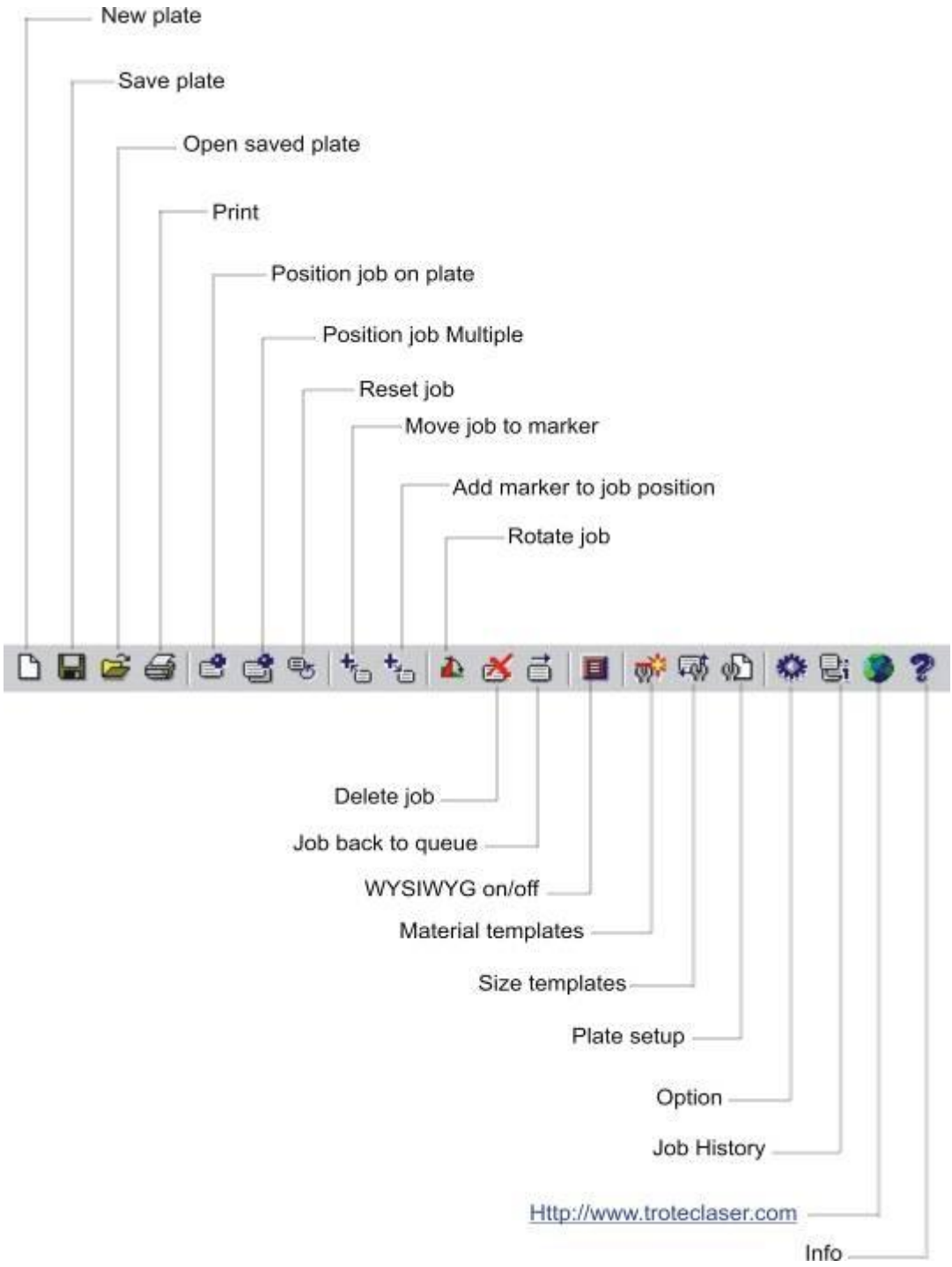
Toolbar JobControl 9 *(Advanced)*

The toolbar provides quick access to commonly used functions.



Toolbar JobControl 9*(Expert)*

The toolbar provides quick access to commonly used functions.



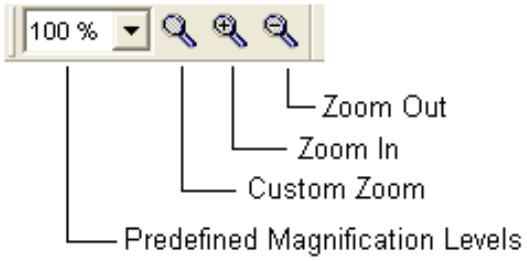
Status Bar

General information such as the preset material of the active plate is displayed in the status bar.

Zoom *(Advanced, Expert)*

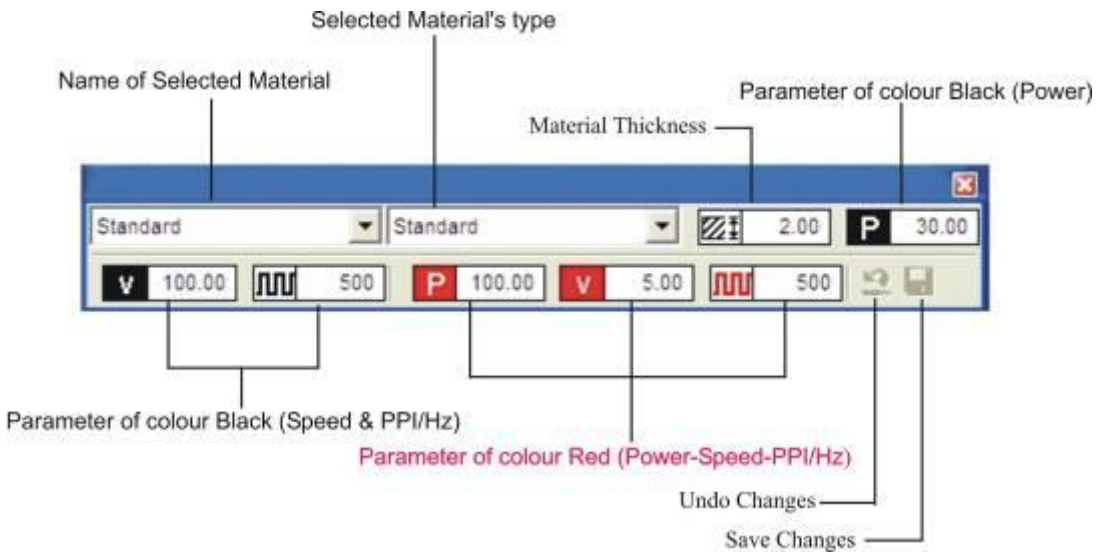
The zoom bar enables you to display the plate at the magnification you want. You can use the scroll bars to the right of and beneath the plate to navigate within a magnified plate.

The function keys F3 and F4 provide quick access to Zoom Out and Zoom In.



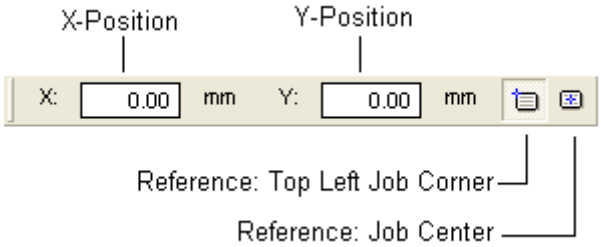
Material Parameter *(Expert)*

The material parameter bar displays the main properties of the currently active material. All parameters may be changed. You can undo or save changes using the two buttons on the right.
Changes to power, speed, and PPI/Hz will have an effect on processes being currently in progress with a slight time delay. It is necessary to confirm the change to the value by using the Tab or Return key.



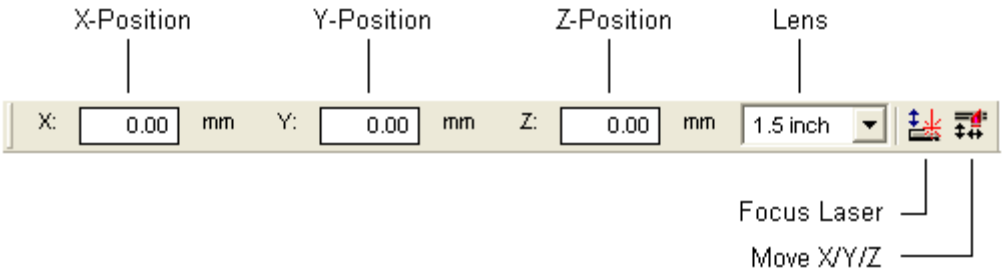
Job Position *(Advanced, Expert)*

The job position bar provides information on the X and Y position of a marked job on the plate. Precise job positioning is possible by manual entry of the required coordinates.
Depending on reference selected, the coordinates are either displayed in the top left corner or center of a job.



Laser Position *(Expert version)*

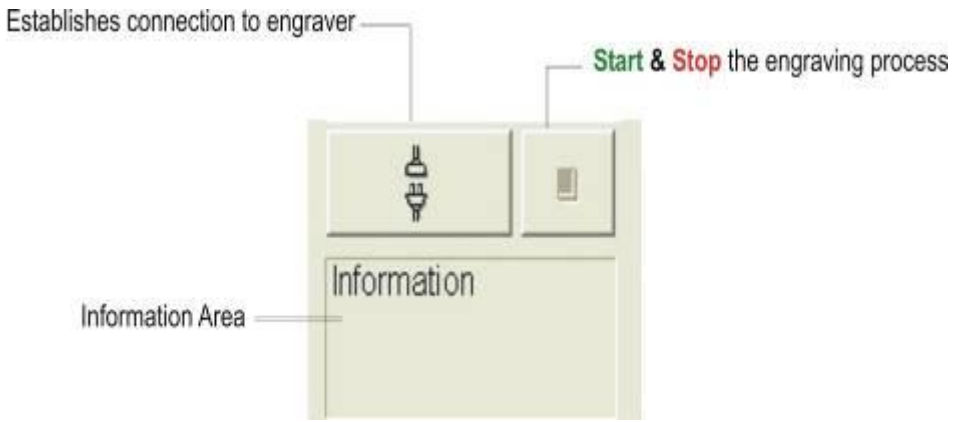
Display of the X, Y and Z axis position.
The Move X/Y/Z button allows moving to any entered absolute position.
Focus Laser moves the table to the focal point, with consideration to material thickness, lens and honeycomb table.



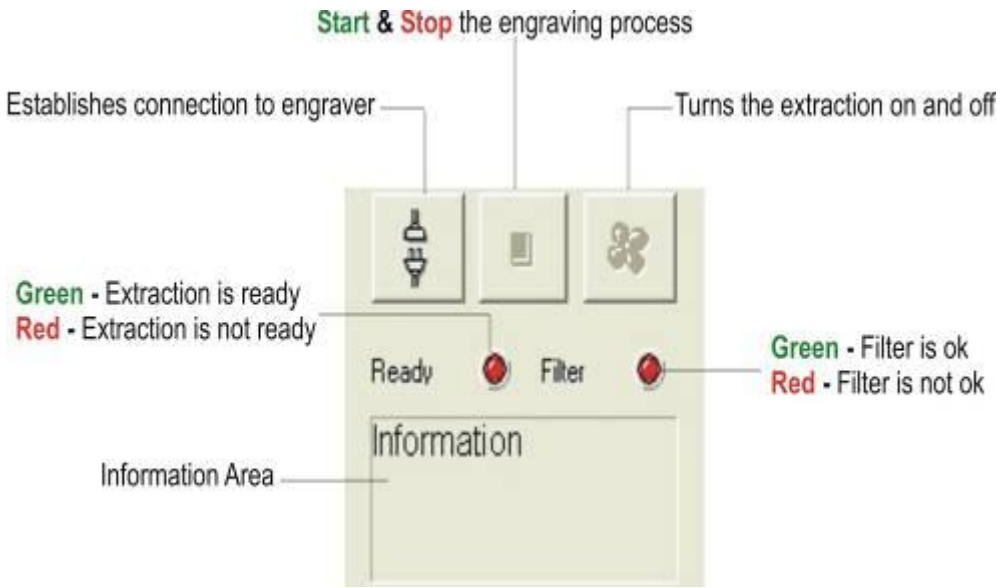
Caution: Never press any move-button while someone's bodily parts are inside the engraver !

Caution: Never put any bodily parts inside the engraver while the table is moving !

Engraver Control for JobControl 9 in *Basic* and *Advanced*

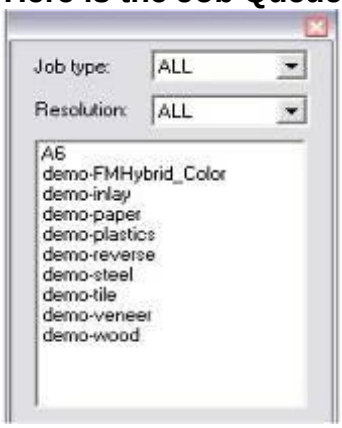


Engraver Control for JobControl 9 in *Expert*



Job Queue

Here is the Job Queue window for JobControl 9 *Advanced*



Displays all jobs which are not positioned on the plate. They are listed in alphabetical order optionally by job name or order number. You can make the setting under View in the menu bar.

There are two sort options which make it easier for you to find a job.

Type	ALL	Displays all jobs.
	Stamp	Displays only jobs saved as stamp job.
	Standard	Displays only jobs saved as standard job.
	Relief	Displays only jobs saved as relief job.
	Layer	Displays only jobs saved as layer job.
Resolution	ALL	Displays all jobs.
	1000 dpi	Displays only jobs saved with 1000 dpi.
	600 dpi	Displays only jobs saved with 600 dpi.
	500 dpi	Displays only jobs saved with 500 dpi.
	333 dpi	Displays only jobs saved with 333 dpi.
	250 dpi	Displays only jobs saved with 250 dpi.
	125 dpi	Displays only jobs saved with 125 dpi.

Both sort functions can be combined in any way. This allows display of, for example only stamp jobs with a resolution of 500 dpi. It is also not possible to process jobs of different processes or resolution on the same plate.

And here is the Job Queue window for JobControl 9 *Expert* version

In this version there is only other option
Which is **Orientation** this means you can control the job orientation in portrait or landscape.

Other settings it is like in Job Queue in ***Advanced***

Both sort functions (Job type & Resolution) can be combined in any way. This allows display of, for example only stamp jobs with a resolution of 500 dpi. It is also not possible to process jobs of different processes or resolution on the same plate.

Job Name

Jobs in the queue are displayed using the job name.

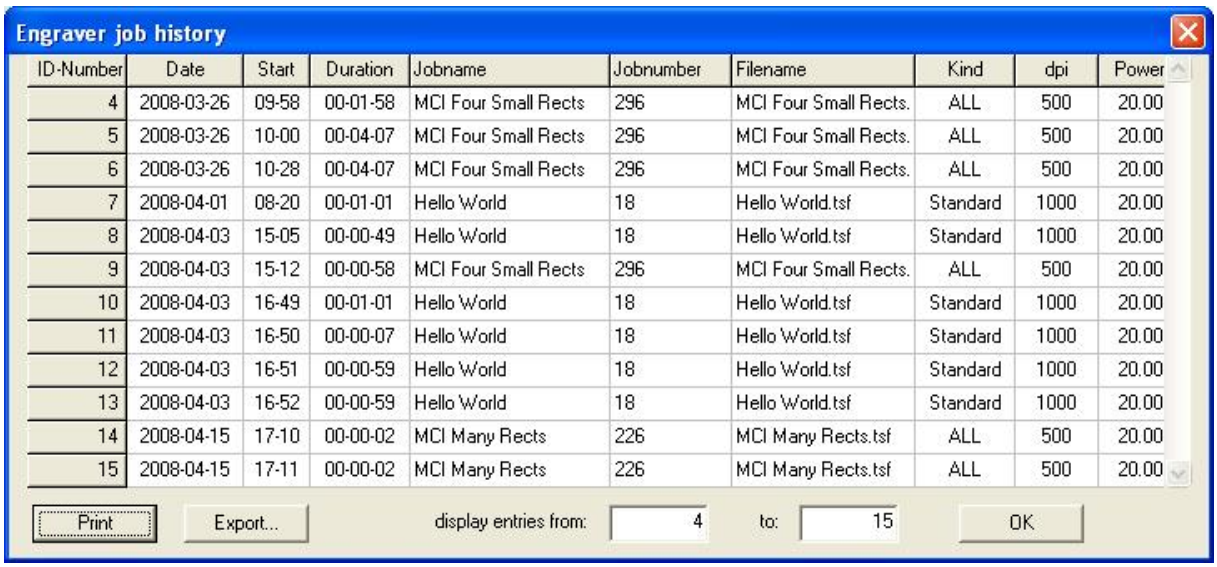
Job Number

Jobs in the queue are displayed using the job number.

Job Preview

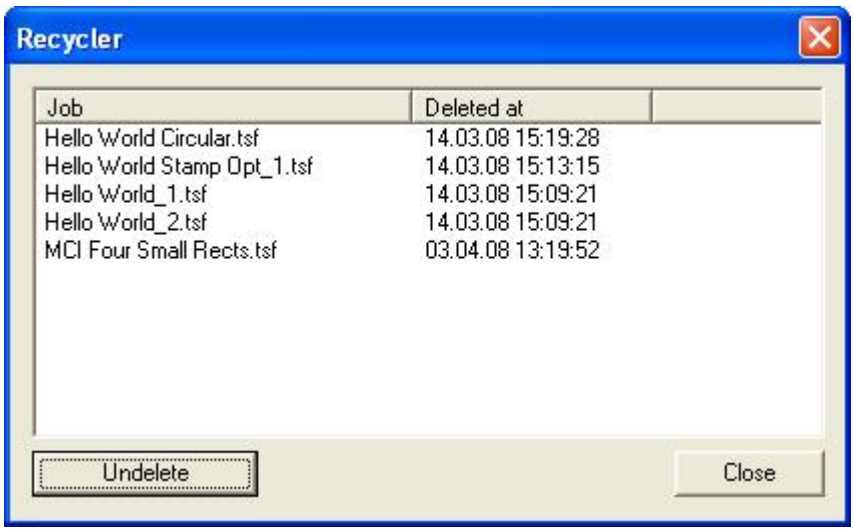
Checkbox and frame for showing a small picture of the above selected job or on plate.

Job History this option only provided in ***Basic*** and ***Expert***



List of all jobs processed with date, processing time, jobname, jobnumber, filename, kind, dpi and power. The user may use the list to create statistics or for calculations.
An inbuilt export function creates a file, if required, which can be opened and edited with Microsoft Excel® for example.

Recycler



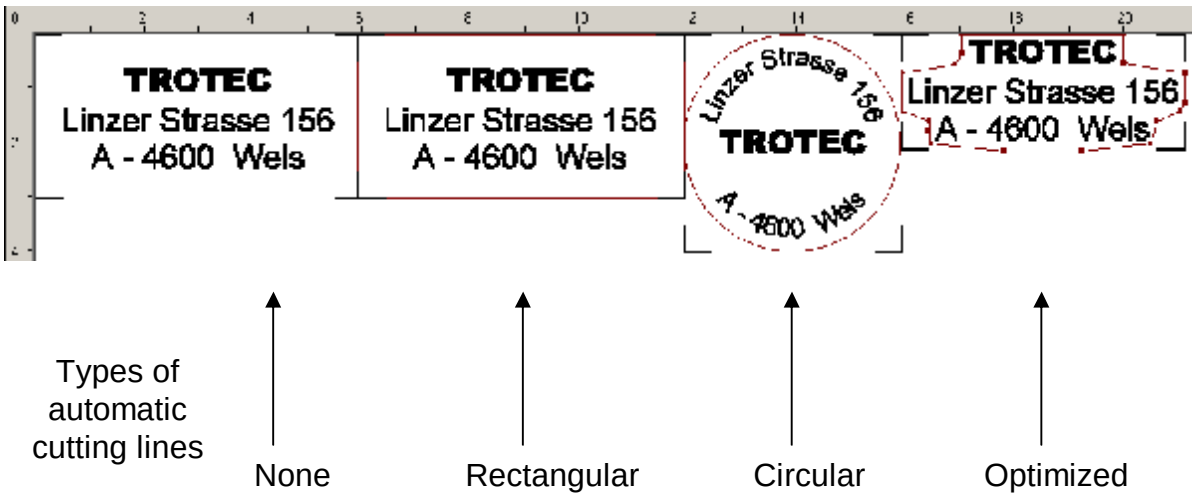
Dialog for showing and undeleting already deleted jobs

WYSIWYG on/off this option only provided in ***Advanced*** and ***Expert***

If WYSIWYG is activated all jobs on the plate will be displayed with their graphic contents. This makes positioning easier and helps searching for jobs.

Cutting lines are only displayed if the appropriate color is activated for cutting. This is also used to check if unwanted cutting lines may exist.

Note: With less powerful computers or the display of large complex graphics, image formation may take some seconds. In these cases, it may be useful to deactivate the WYSIWYG function to ensure fast processing.



Here the different types of automatically created cutting lines are very clearly illustrated (see 2.3.4 *Process Options, Cut Line*).

Stamp Optimization
All four jobs illustrated were created as stamp. The smaller dimensions of the job with the optimized cutting line were obtained by so-called stamp optimization. This reduces the dimensions of a stamp job to the required minimum measure without loosing contents. This allows reducing the material required. The stamp optimization automatically affects all stamp jobs which were printed with optimized cutting line.

2.4.8 Window *(Basic , Advanced , Expert)*

New Window
Opens a new window for the current document.

Cascade
Arranges the windows so they overlap.

Tile
Displays the windows side by side.

X Plate X
Allows changing the active plate if multiple plates are used.

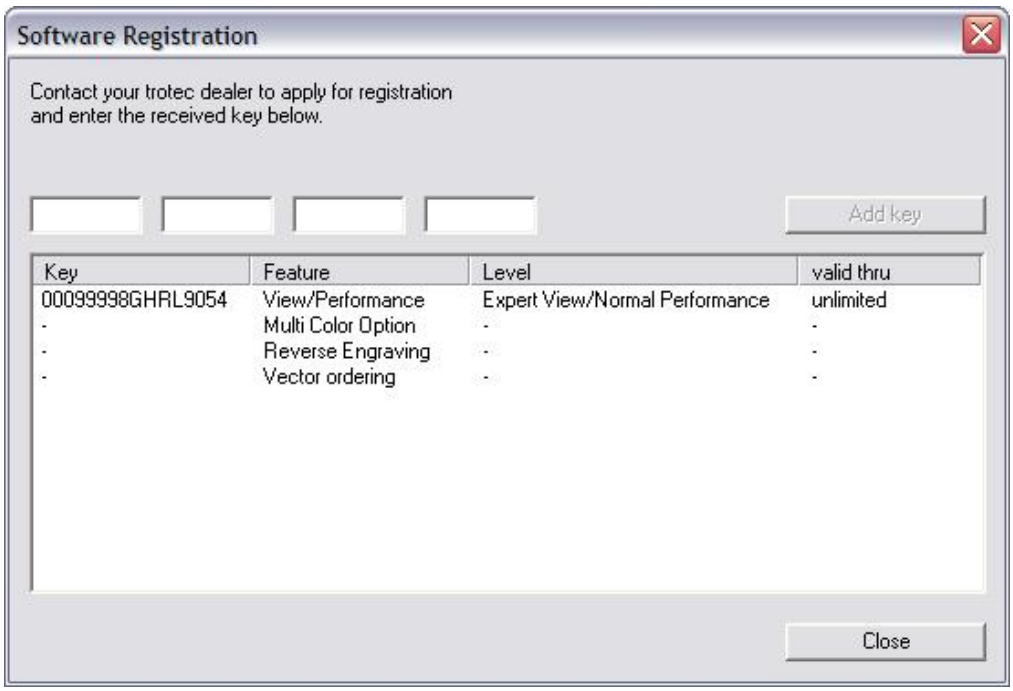
2.4.9 Help

Help F1
Opens the help file.

About JobControl
Displays program information, version number, and copyright.

Laser Manual
This option open the Operation Manual for 8010 Trotec Speedy 100 C12/C25/C30/C45.

Software registration
This option allows to update the software to a different levels and options.



Trotec on the web
Displays the link to Trotec web (www.trotec.net) .

About JobControl
Displays program information, Version number and copyright.

2.5 Information about the use of Graphics Software

2.5.1 Contours and Fills

The TROTEC printer driver differentiates between raster mode (engraving) and vector mode (cutting) by the type of the graphics used. All black objects are ***Basic***ally interpreted as engraving and the raster mode is performed.
For laser cutting, set the line generated in the graphics program to the smallest line width possible. Assign the color you want to this line – Red is very common. The printer driver interprets these objects as vectors and cuts them. If objects are to be cut, always be aware that the driver may interpret a contour which is too thick as fill.
If engraved and cut objects are combined, different colors are used for the fills and contours as engraving requires power values different to cutting. Objects to be engraved are therefore usually drawn with a black fill and cutting lines as red contours.

2.5.2 Image Processing Order

When cutting and engraving graphics, the laser carries out all engravings first and then all cuttings. All black filled objects for example are engraved first and then all red contours are cut. Unlike engraving, the cutting is done in the order the contours were drawn. There are two different ways to define the cutting order. You can either drawn them exactly in the order they should be cut or you select “Arrange” in the graphics program and place them “behind” the other objects with this function in order to cut the contour you want first. As a third option you can assign different colors from the TROTEC material templates to the cutting lines. They will then be cut exactly in the order listed in the templates.

2.5.3 Overlapping Fills

If graphics contain overlapping black filled areas, the driver will automatically filter these so that these overlapping areas will not be engraved twice. The whole filled area of the object lying on top and only the visible part of the object located underneath are engraved. The end result is like a print view. White can be used as a very helpful drawing tool. As the laser does not engrave white areas (this is the background color), these can be used to block unwanted engraving areas from filled areas or bitmaps.

2.5.4 Overlapping Outlines

The TROTEC printer driver does not filter overlapping outlines. If one red outline is placed on top of another, both contours are cut by the laser. This is a helpful function, when thick materials are to be cut. To use this function, double an outline. Another possibility is to set the "Cut ... passes" option in the "Job" tab of the engraver driver to "2". This function can also be set with the "Job Setup" menu command in the TROTEC JobControl.

2.5.5 Hidden Vectors in Graphics

The TROTEC printer driver does not automatically filter outlines, which are, for example, overlapped by objects such as fills. If hidden red outlines are located under a black filled area, the laser will first engrave the fill and then cut along the hidden outline.

2.5.6 Power Control through Color Selection

The TROTEC JobControl allows the selection of 16 different colors in the material templates to specify 16 different power levels during cutting or engraving. When using this function, the colors in the graphics program must match exactly the colors listed in the TROTEC JobControl (on using Corel draw make sure that color management is „OFF“). In some graphics programs these ***Basic*** colors are already predefined, with other programs, you must define each color separately with its RGB components first. If the 16 driver colors are not automatically available in the software, use the values in the following list:

		RGB Color Model			CMYK Color Model			
No	Color	R Red	G Green	B Blue	C Cyan	M Magenta	Y Yellow	K Black
1	Black	0	0	0	0	0	0	100
2	Red	255	0	0	0	100	100	0
3	Blue	0	0	255	100	100	0	0
4	Desert Blue	51	102	153	40	20	0	40
5	Cyan	0	255	255	100	0	0	0
6	Green	0	255	0	100	0	100	0
7	Grass green	0	153	51	60	0	40	40
8	Forest green	0	102	51	40	0	20	60
9	Olive	153	153	51	0	0	40	40
10	Brown	153	102	51	0	20	40	40
11	Walnut	102	51	0	0	20	40	60
12	Plum	102	0	102	0	40	0	60
13	Purple	153	0	204	20	80	0	20
14	Magenta	255	0	255	0	100	0	0
15	Orange	255	102	0	0	60	100	0
16	Yellow	255	255	0	0	0	100	0

2.5.7 **Bitmap and Vector Images**

A bitmap is a pattern of points that form a picture similar to the ones in newspapers. Bitmaps can be generated by scanning of pictures or by drawing in a bitmap processing program. In the bitmap format thicker lines and surfaces are also represented as individual points.
There are two major kinds of bitmaps: monochrome and gray-scale bitmaps. Monochrome bitmaps are 1-bit black-and-white pictures (scanned line drawings), gray-scale bitmaps are 8-bit pictures (scanned photographs).

2.5.8 Scanning of Pictures

When scanning black-and-white pictures, select a high dpi resolution as the pictures turn out sharper. 300 dpi is the recommended minimum resolution to scan line drawings (monochrome bitmaps), but usually 600 dpi provides a much higher image quality. Gray-scale bitmaps should always be scanned at 300 dpi. Scanning with more dpi does not provide better image quality and needs more memory. As a rule-of-thumb photographs should be scanned with 300 dpi and line drawings with 600 dpi. Don't hesitate to experiment with different scan resolutions and note the results.

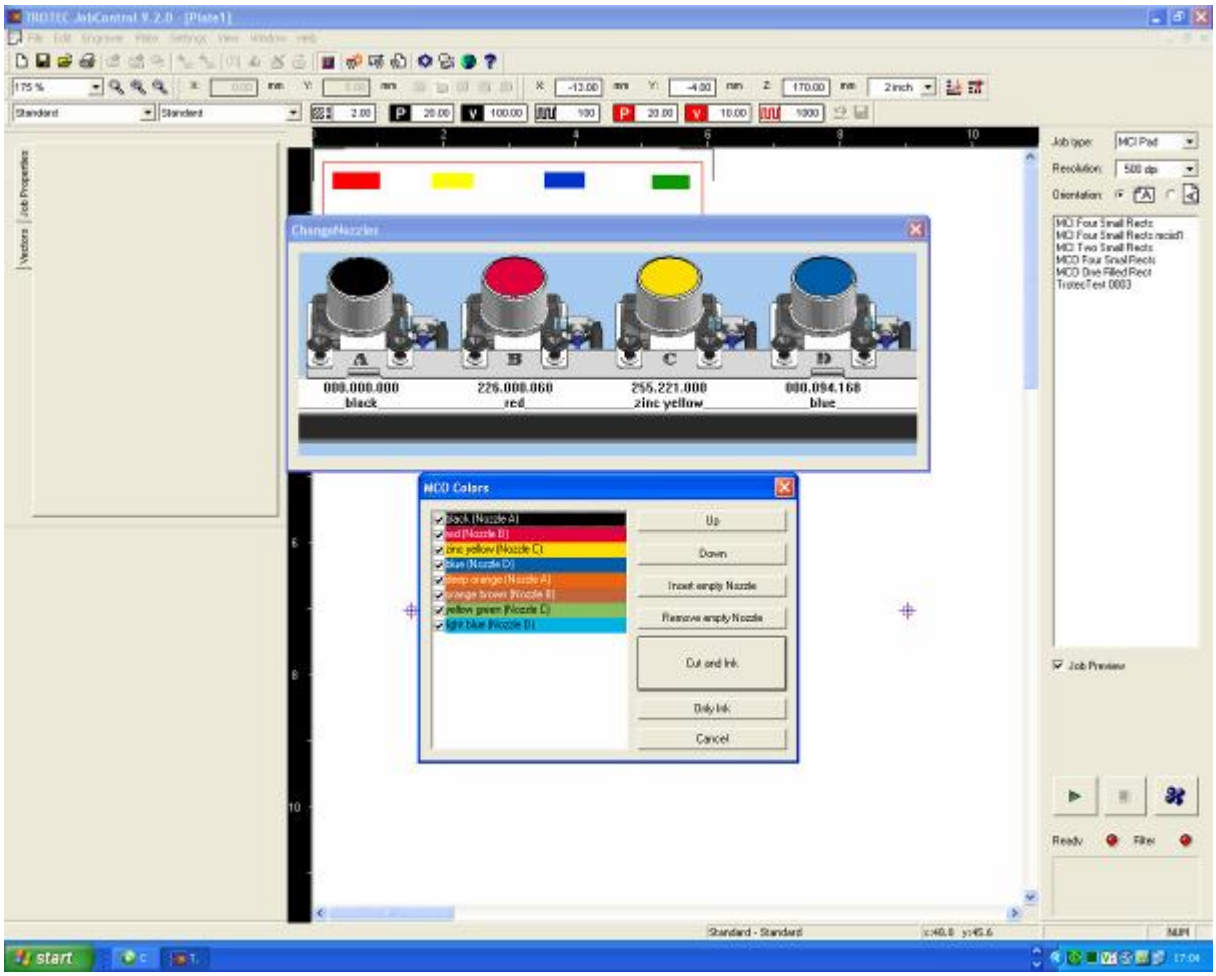
There are different bitmap data formats as e.g. TIF, BMP or PCX. The format makes no difference to the printer driver. The difference lies in the way bitmaps are stored on the hard disk of your computer.

2.5.9 Vectorizing

Most graphics programs cannot edit bitmaps directly. Some ***Basic*** functions as zooming in and out or mirroring may be possible, but individual image pixels cannot be altered. For this purpose a special image processing program is required as e.g. Photo Shop®.

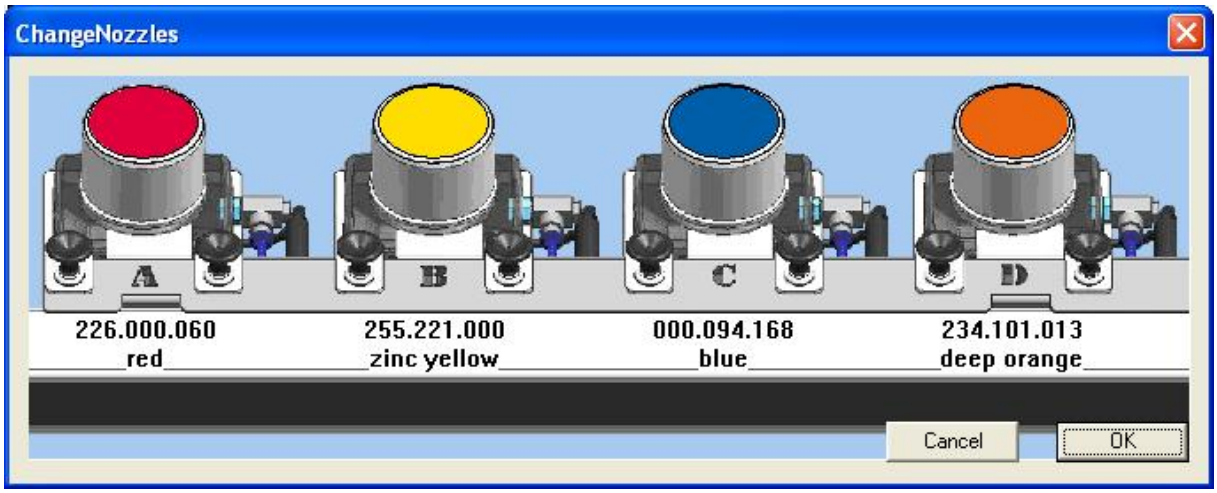
2.6 MCO2

MCO2 processing now supports more than 4 MCO colors with defining user MCO colors. At the beginning of a MCO graving the nozzle configuration dialog for customizing MCO colors to nozzles is shown:



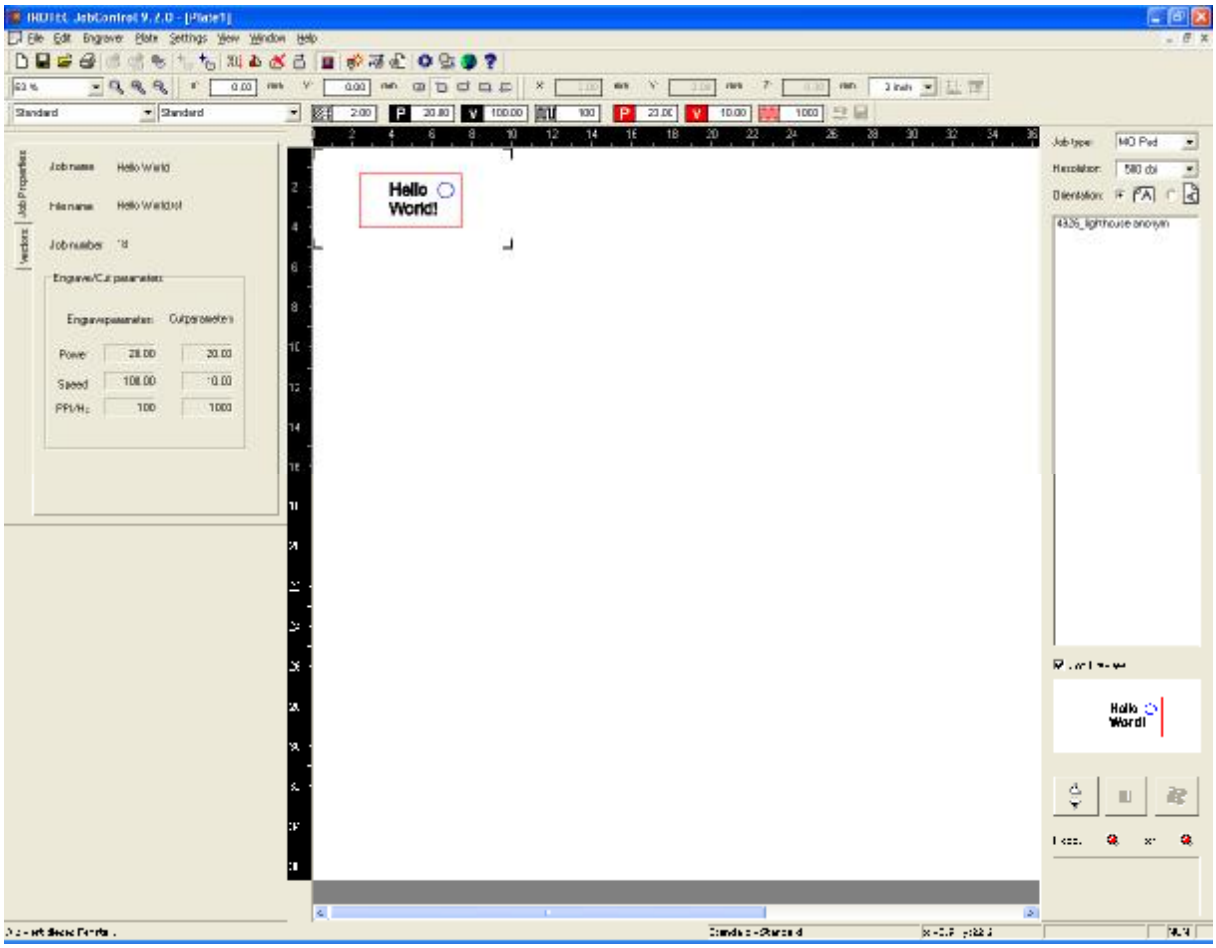
The checklistbox shows all MCO colors for the selected jobs and can be configured via the checkboxes, Up/Down, Insert empty Nozzle/Remove empty Nozzle (for leaving a nozzle without MCO color eg nozzle is broken).
“Cut and Ink” cuts all pads firstly and then inks every MCO color. “Only Ink” omits the cutting step.

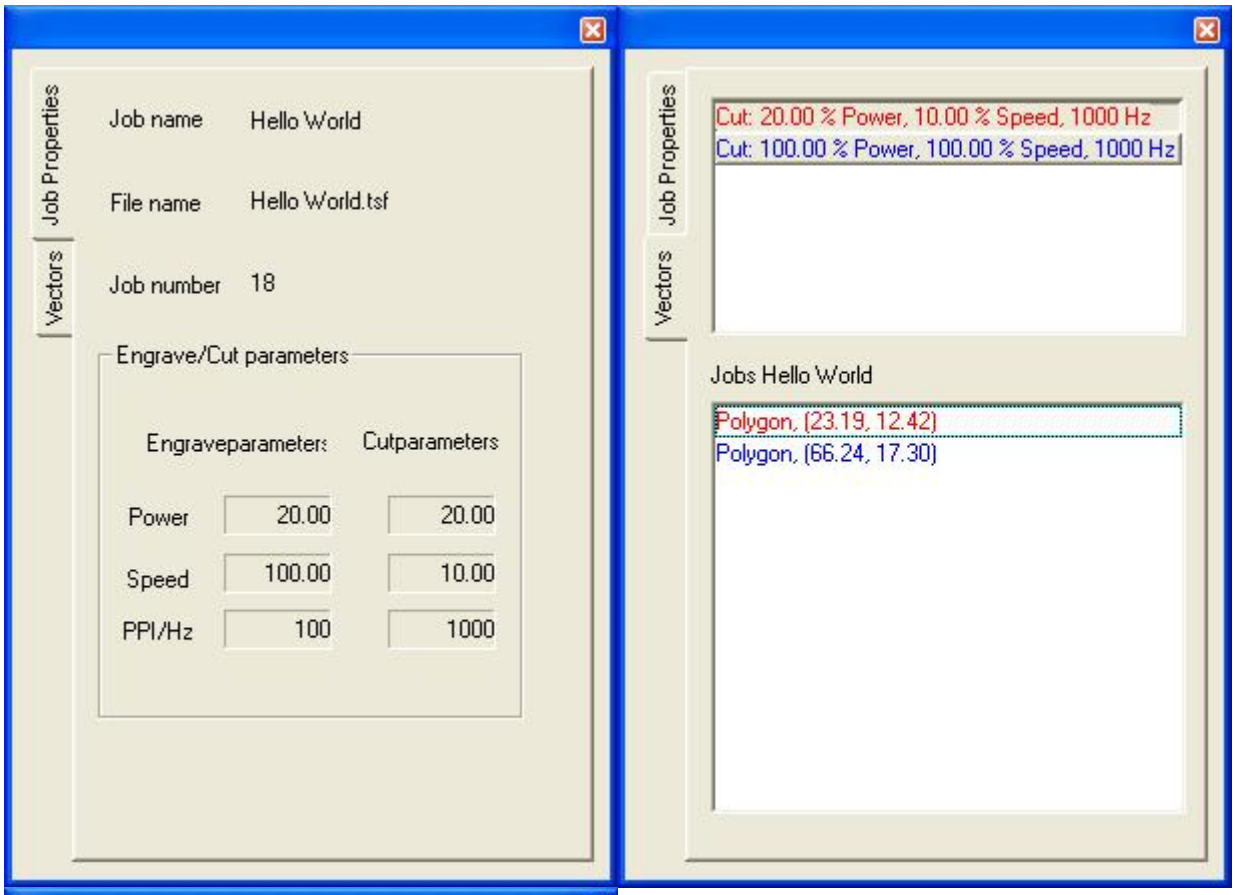
After every 4 MCO colors a dialog informs you to change the nozzles.

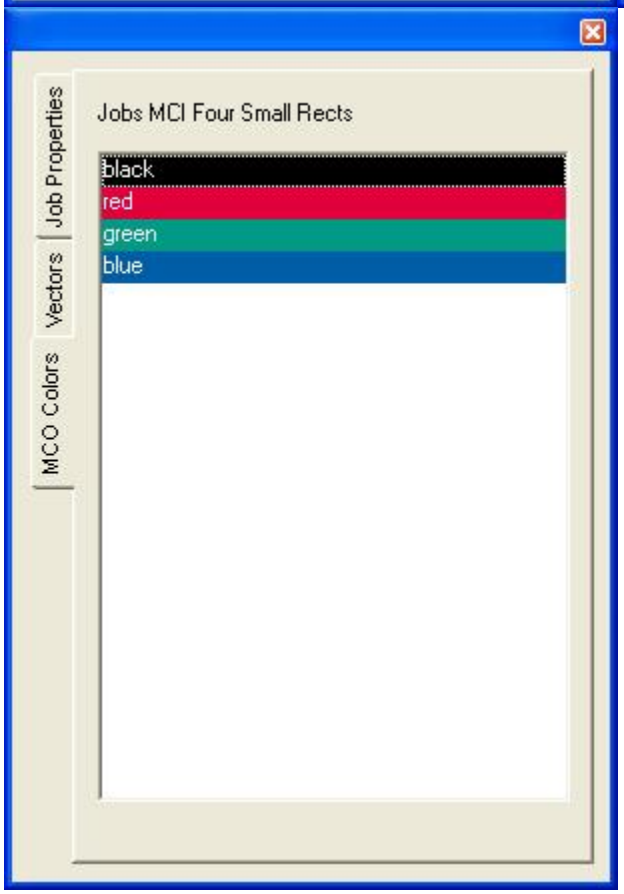


Side Bar

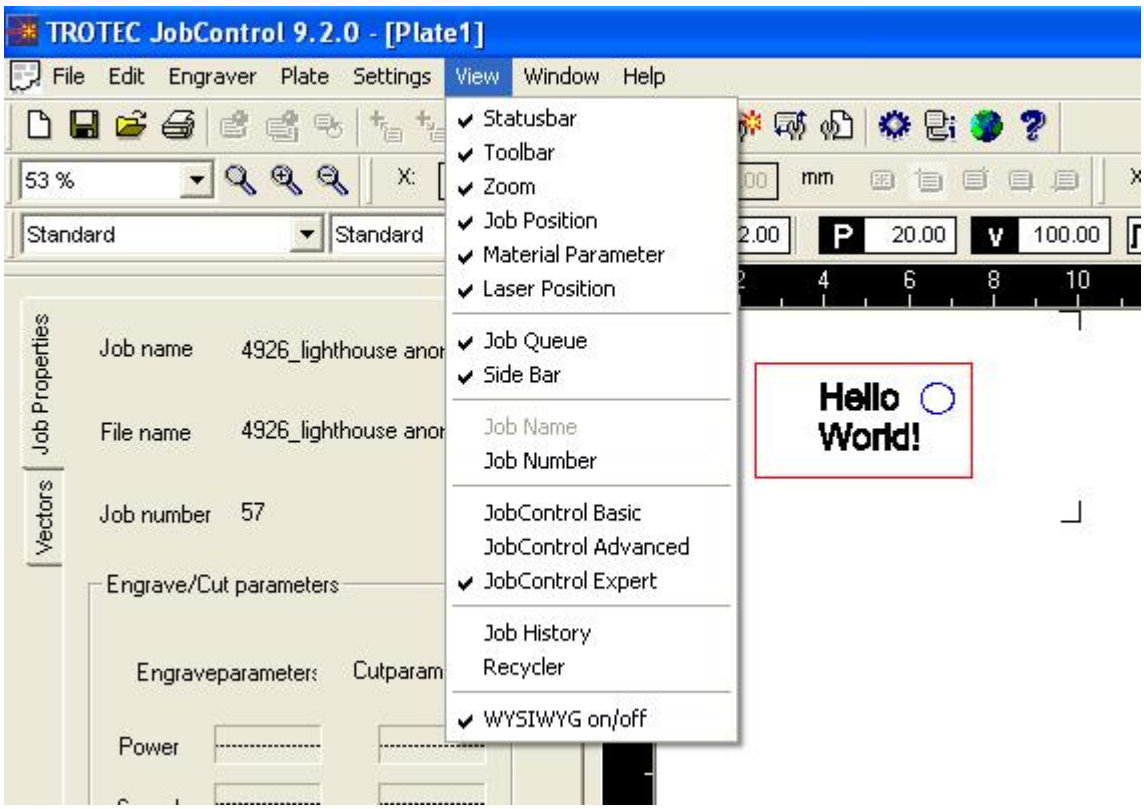
On the left side you can dock the side bar which shows tabs for various job informations like properties, vectors or MCO colors:




Job Properties
Vectors
Job name
Hello World
File name
Hello World.tsf
Job number
18
Engrave/Cut parameters
Engraveparameters
Cutparameters
Power
20.00
20.00
Speed
100.00
10.00
PPI/Hz
100
1000
Cut: 20.00 % Power, 10.00 % Speed, 1000 Hz
Cut: 100.00 % Power, 100.00 % Speed, 1000 Hz
Jobs Hello World
Polygon, (23.19, 12.42)
Polygon, (66.24, 17.30)


Job Properties
Vectors
MCO Colors
Jobs MCI Four Small Rects
black
red
green
blue

Like all other panels it can be shown or hidden via View menu:



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