

Hylewicz CNC-Technik

Laser-engraving-unit Settings in WinPC-NC

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Laser-engraving-unit

Settings in WinPC-NC



Short description

The case contains the complete electronics to place the laser module in service, as well as the complete laser-engraving-unit, including appropriate high-quality safety glasses, which are necessary to use our laser-engraving-unit. A High-Z portal machine with computer and appropriate CAM/CNC-control-software (WinPCNC, ConstruCam-3D, etc.) is necessary to put the machine into service. This manual describes the installation, startup and service of our laser-engraving-unit.

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1 General

The engraving-unit was designed on the basis of the strict observance of standard regulations and guidelines and has been tested insensitively and carefully. However, we provide no guarantee of fault-free operation. The manufacturer ensures that the engraving-unit in connection with the most suitable mechanical components, used within the meaning of the description and user manual are suitable for their designated use. The possibility is excluded of any liability, whatsoever being assumed for damages, claims or costs, indirect and direct consequential damage or other damage, from lost profit, operational disruptions and stoppages, loss of business information and so on. The engraving-unit is an application, which only works in conjunction with a portal unit and appropriate software. It is no self-contained machine or handheld device. In view of the fact that, despite intensive endeavors, errors can never be completely avoided, we are thankful at all times for tips and suggestions for improvement.

Description of symbols



HINT: Special instructions relating to the effective use of the equipment



ATTENTION!: General and additional information or instructions and prohibitions for avoiding damage.



Instructions or restrictions designed for the protection of personnel and safety of the device



Not to be used by persons with pacemakers

This sign stands for activities involving a high risk for persons with pacemakers.



Warning of hazardous electrical voltage

This sign stands for activities involving system components carrying live voltage.



Warning of hot surface

This sign stands for activities where hot items need to be handled.



Laser Radiation Warning - Avoid irradiation of eyes and skin by beam- or scattered radiation.

This sign stands for activities where special protection measures are required.

2 System requirements for operating the laser-engraving-unit with WinPC-NC-control-software

Suitable WinPC-NC versions for operating the laser-engraving-unit are:

- **WinPC-NC Economy from software version 2.10/30 in connection with a two-LPT-port computer and control-system Zero3 (see chapter 3.1).**
- **WinPC-NC USB from software version 2.10/46 in connection with a computer with USB interface, a ncUSB-Box Rev.2.1 and control-system Zero3 (see chapter 3.2).**
- **WinPC-NC Professional from Software version 2.10/43 with firmware-version 16075R.RTB in connection with computers via serial interface (RS232), axis controller and control-system Zero3 (see chapter 3.3).**



HINT: Please refer to manufacturer's data or user manual for computer-requirements and additional interfaces.

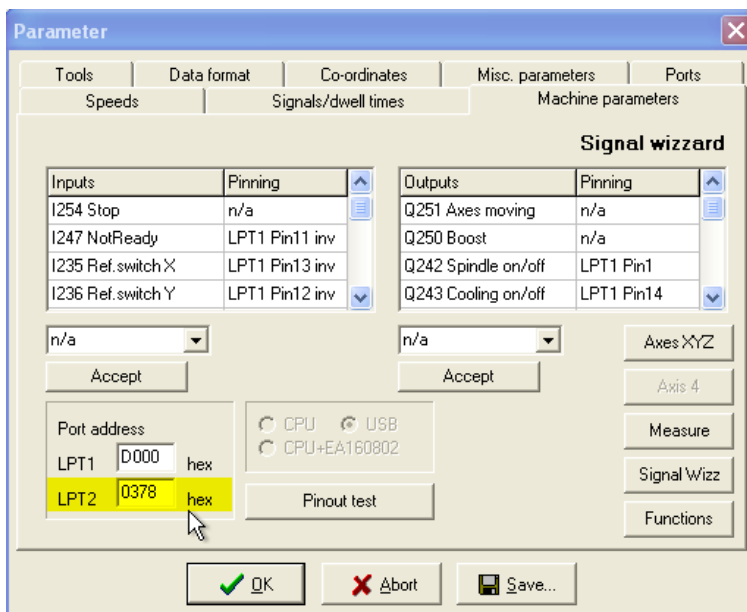
3 Version dependent settings in WinPC-NC

3.1 WinPC-NC Economy

Sign-on port address LPT2

In WinPC-NC

1. Open window „Parameter“.
2. Choose file card „Machine“.
3. Click on button „Signals“.
4. Enter second port address for LPT2.
5. Check values and then save.



By registering the second LPT-interface port-address, it is now activated and the PIN-configuration can start.



HINT: Please note the manufacturer's documentation of our component suppliers.



HINT: Please pay attention to the safety notes in the individual chapters!

WinPC-NC Economy

Pin-configuration for operating the laser-engraving-unit

In WinPC-NC

1. Open the window „Parameter“.
2. Choose the card file „Machine“.
3. Press button „Signals“.
4. On the left hand side are shown all input signals with their PIN-allocation.

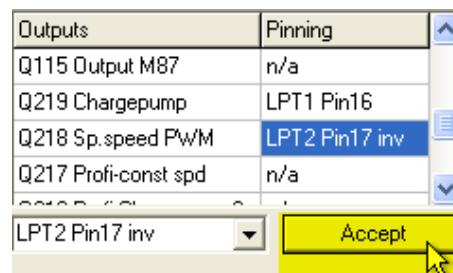
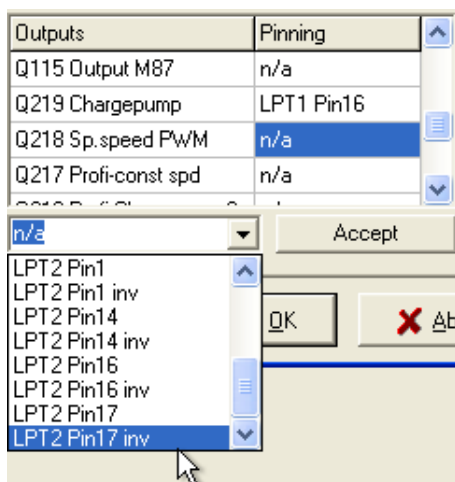
On the right hand side the output signals with the corresponding PIN-allocations.

For the laser-engraving-unit, please log onto line „LPT2 Pin17inv“ among the output „Q218 spindle speed PWM“.

For this purpose, please select the top right field next to „Q218 spindle speed PWM“ with your mouse.

Choose the line „LPT2 Pin17inv“ in the selection box.

5. Please confirm by pressing „Accept“-Button.
6. Check values and save.



The power supply of the laser can now be regulated via WinPC-NC software.

3.2 WinPC-NC USB

Pin-configuration for operating the laser-engraving-unit

In WinPC-NC

1. Open the window „Parameter“.
2. Choose the card file „Machine“.
3. Press button „Signals“.
4. On the left hand side are shown all input signals with their PIN-allocation.

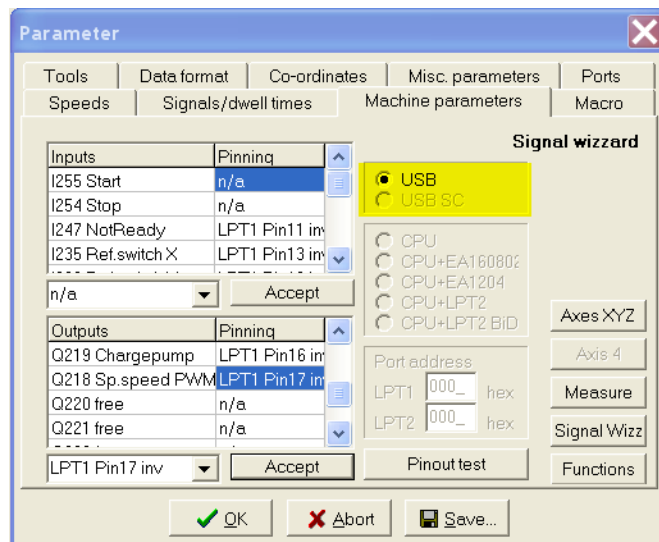
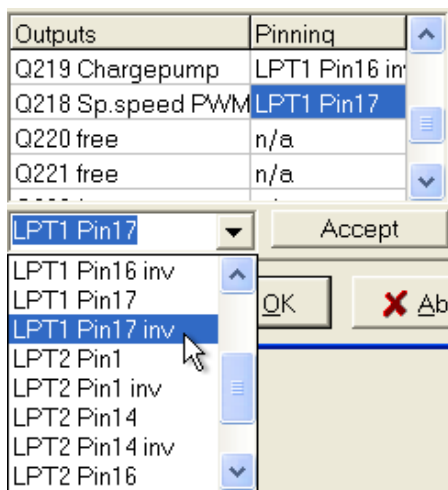
On the right hand side the output signals with the corresponding PIN-allocations.

For the laser-engraving-unit, please log onto line „LPT2 Pin17inv“ among the output „Q218 spindle speed PWM“.

For this purpose, please select the top right field next to „Q218 spindle speed PWM“ with your mouse.

Choose the line „LPT2 Pin17inv“ in the selection box.

5. Please confirm by pressing „Accept“-Button.
6. Check values and save.



The power supply of the laser can now be regulated via WinPC-NC software.



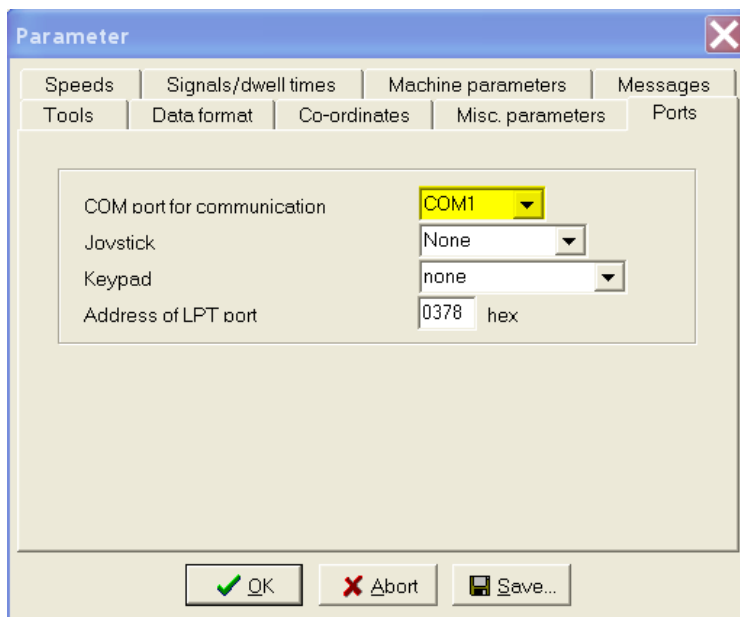
HINT: Only using WinPC-NC USB the PIN-allocation Q218 spindle speed PWM is set from von Pin 17 inv to LPT1. This results of the technical construction of the ncUSB-Box Rev.2.1

3.3 WinPC-NC Professional

Select COM interface

In WinPC-NC

1. Open the window „Parameter“.
2. Select „Interface“.
3. Select the attached interface (COM X).
4. Check values and then save.



By signing-on the COM interface the connection to the axis-controller is active.



HINT: Please note the manufacturer's documentation of our component suppliers.



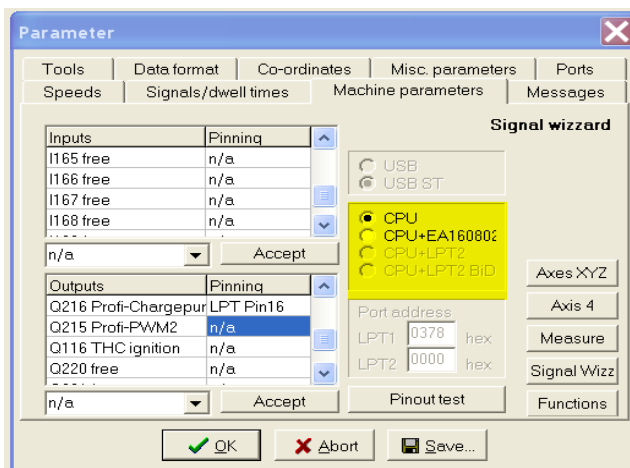
HINT: Please pay attention to the safety notes in the individual chapters!

WinPC-NC Professional

Pin-assignment for the operation of the laser engraving unit

In WinPC-NC

7. Open the window „Parameters“.
8. Select the card file „Machine“.
9. Press „Signals“-Button.
10. Activate selection CPU+LPT2.



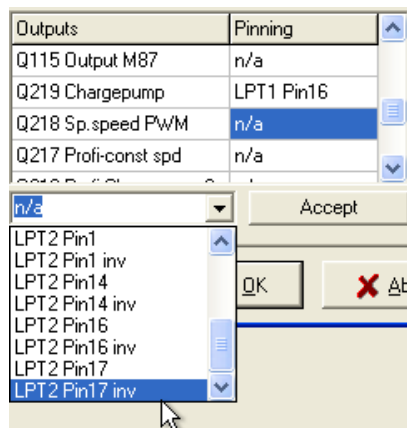
11. On the top left side you will find the input with its pin-assignments.

Beneath you will find the output with its pin-assignments.

For the laser engraving unit please log in the line „LPT2 Pin17inv“ under the output „Q218 spindle speed PWM“.

Therefore select the field to the right of „Q218 spindle speed PWM“. Choose the line „LPT2 Pin17inv“ from the selection box.

12. Then confirm with the „Select“-button.
13. Check figures and save.



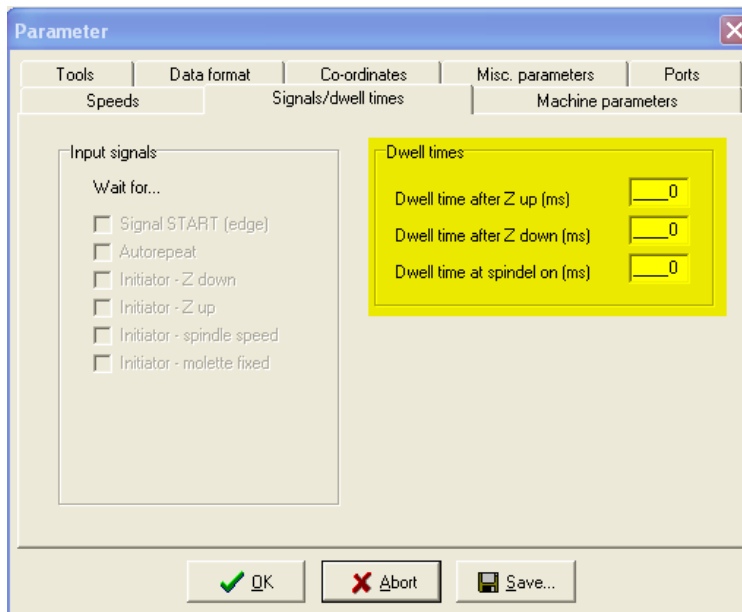
The power supply of the laser can now be regulated by WinPC-NC.

4 General settings for the laser engraving unit in WinPC-NC

4.1 Set the waiting periods to „0“

In WinPC-NC

1. Open the window “Parameters”.
2. Select card file signals/times.
3. Set all waiting periods as well as the spindle ramp time to „0“.
4. Check figures and save.



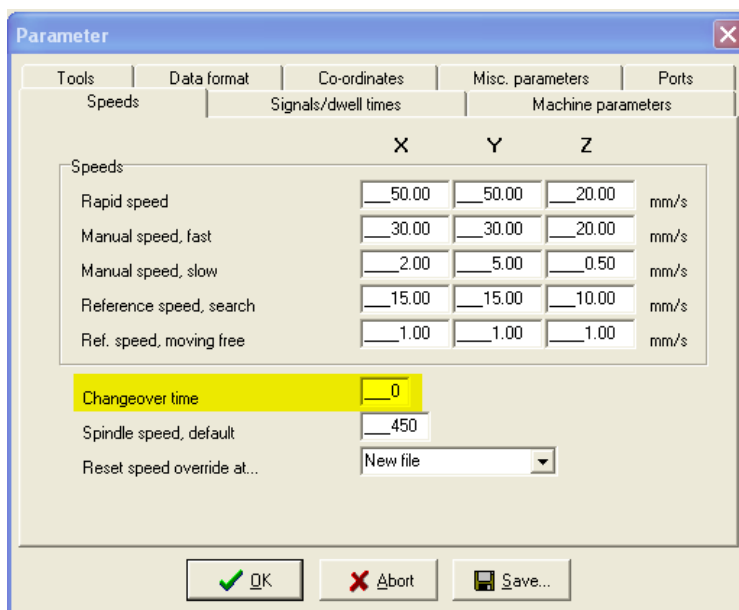
For normal operation of the laser unit no waiting periods are intended/needed.

Waiting periods affect the result negatively! By setting the value „0“ unnecessary sources of error, that can affect the result, are avoided.

4.2 Set switch time to „0“

In WinPC-NC

1. Open the window parameters.
2. Select card file speed.
3. Set switch time to „0“
4. Check figures and save.



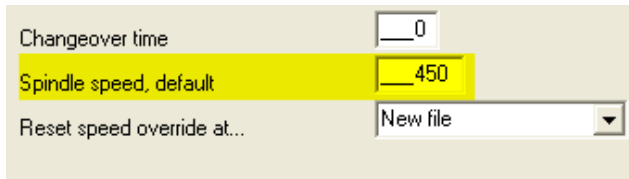
For normal operation of the laser unit no waiting periods are intended/needed.

Waiting periods affect the result negatively! By setting the value „0“unnecessary sources of error, that can affect the result, are avoided.

4.3 Spindle speed Standard

In WinPC-NC

1. Open the window “Parameters”.
2. Select card file “Speed”.
3. Set spindle speed Standard to „450“.
4. Check figures and save.

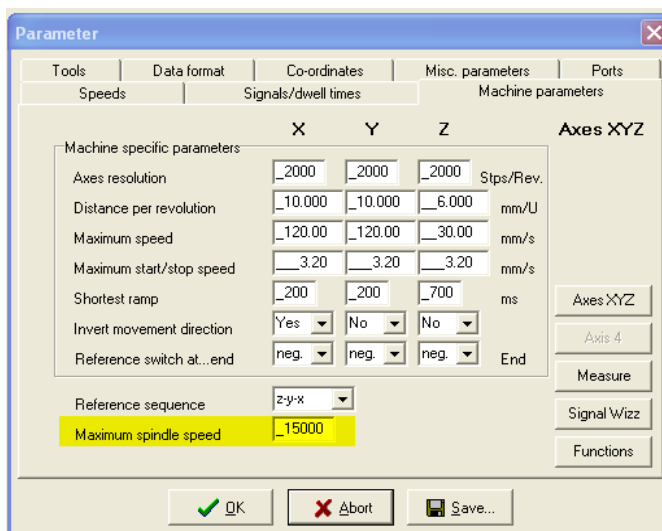


The spindle speed Standard should be 3% of the maximum spindle speed.

4.4 Maximum spindle speed

In WinPC-NC

1. Open the window “Parameters”.
2. Select card file “machine”.
3. Press button axis XYZ or window XYZ is already activated.
4. Set maximum spindle speed to „15000“.
5. Check figures and save.

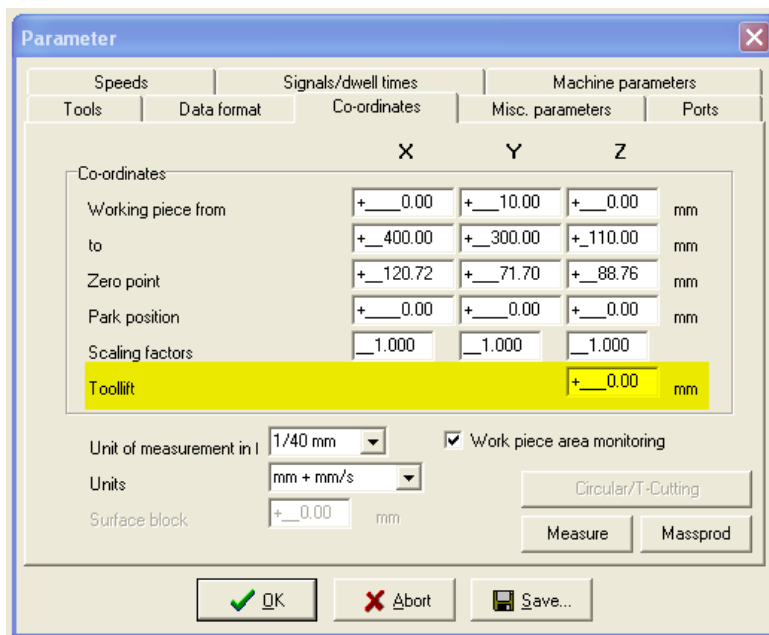


The maximum spindle speed is equivalent to 100% of the power that the laser head can be supplied with during a programme sequence.

4.5 Set safe distance to „0“

In WinPC-NC

1. Open the window “Parameters”.
2. Select card file “coordinates”.
3. Set the value for safe distance to „0“
4. Check figures and save.

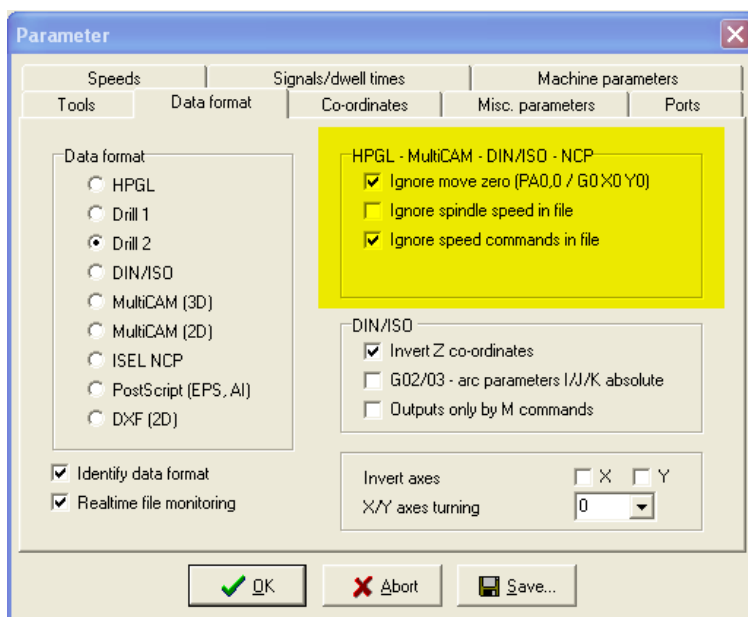


The laser head works far above the work piece, therefore no additional safe distance is needed in WinPC-NC. By setting the value „0“ unnecessary sources of error, that can affect the result, are avoided.

4.6 Ignore data in data file YES/NO

In WinPC-NC

1. Open the window "Parameters".
2. Select card file "File format".
3. Activate „ignore movement to zero" (checkbox ticked).
4. „Ignore speed of rotation in data" not activated (checkbox NOT ticked).
5. Activate „Ignore speed in data (tick checkbox).
6. Check figures and save.

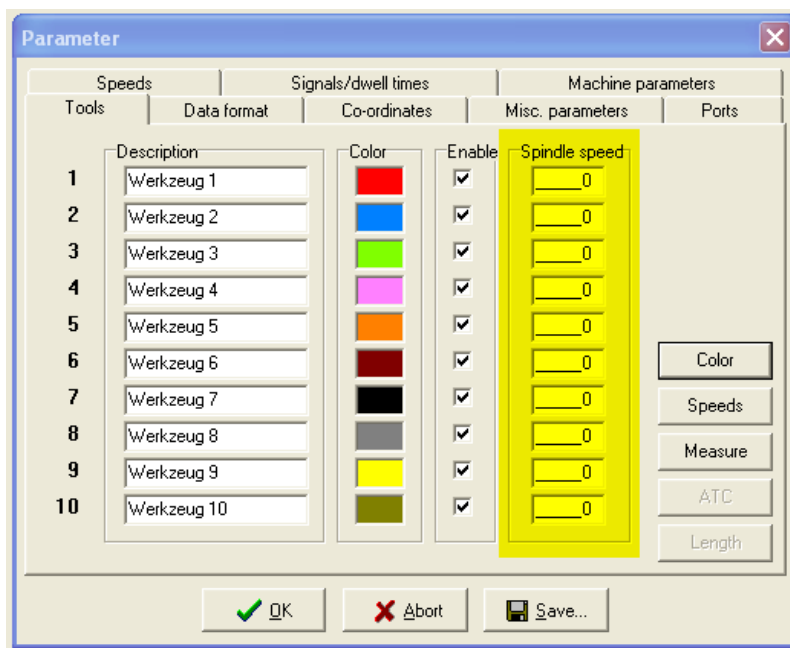


The speed values that have been generated in ConstruCAM-3D are used in the program sequence (Job).

4.7 Tool-speed settings

In WinPC-NC

1. Open the window "Parameters".
2. Select card file "tools".
3. Confirm button "colours".
4. Set all speeds to „0“.
5. Check figures and save.



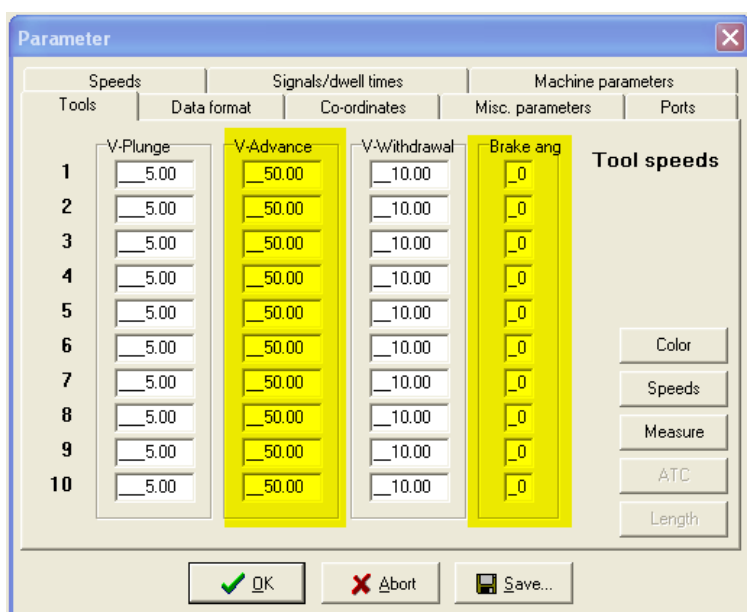
The speeds are taken from the program files.

By setting the value „0“ unnecessary sources of error, that can affect the result, are avoided.

4.8 Settings tool-feed-rate

In WinPC-NC

1. Open the window "Parameters".
2. Select card file "tools".
3. Confirm speed-button.
4. Only the feed rate is relevant for the operation of the laser engraving unit.
Please quote the speed values from the supplementary sheet „Material laser engraving“.
5. Set the value „Breakdiff“ to „0“ for all tools.
6. Check figures and save.



Tools	Speeds		Signals/dwell times		Machine parameters	
			Data format	Co-ordinates	Misc. parameters	Ports
	V-Plunge	V-Advance	V-Withdrawal	Brake ang	Tool speeds Color Speeds Measure ATC Length	
1	5.00	50.00	10.00	0		
2	5.00	50.00	10.00	0		
3	5.00	50.00	10.00	0		
4	5.00	50.00	10.00	0		
5	5.00	50.00	10.00	0		
6	5.00	50.00	10.00	0		
7	5.00	50.00	10.00	0		
8	5.00	50.00	10.00	0		
9	5.00	50.00	10.00	0		
10	5.00	50.00	10.00	0		

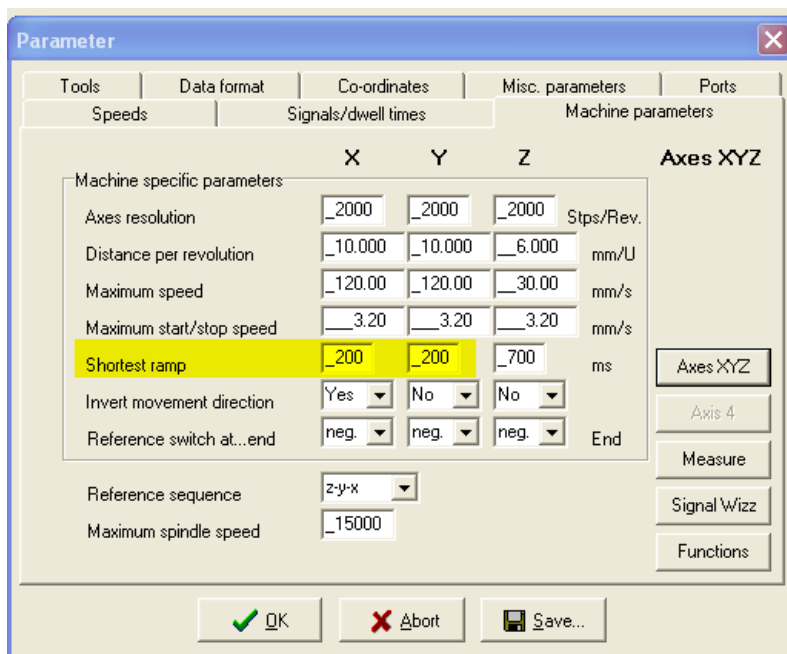


Please also see manual WinPC-NC point: Break difference (P.49-50) for qualitative interventions..

4.9 Ramp settings

In WinPC-NC

1. Open the window "Parameters".
2. Select card file "machine".
3. Press button axis XYZ or window XYZ is already activated.
4. Set shortest ramp for X and Y to „200“ (see formula below).
5. Reputation set all to „0“
6. Z-infeed set all to auf „0“ .
7. Check figures and save.



Please also see manual WinPC-NC point: shortest ramp (P.83-84) for qualitative interventions



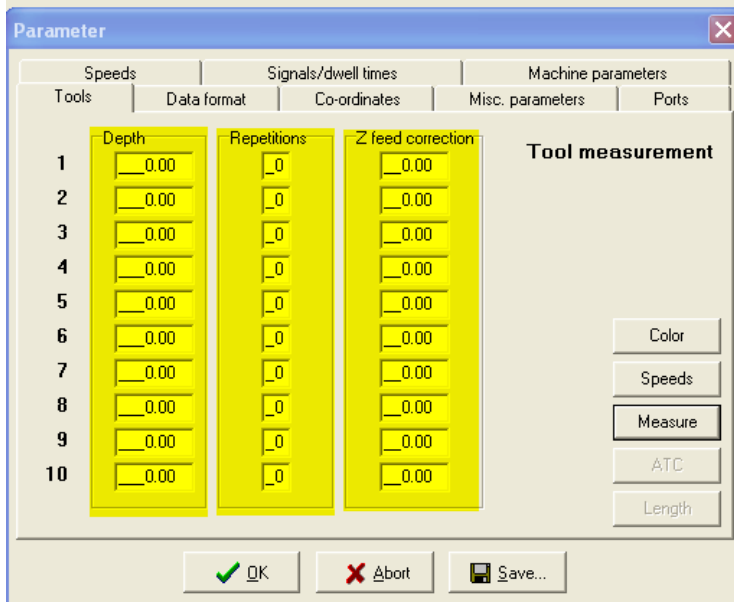
Tip: valuation for the shortest ramp: See formula:

Max. speed * factor 1,7 = shortest ramp (experience value WinPC-NC).

4.10 Tool settings measures

In WinPC-NC

1. Open the window "Parameters".
2. Select card file "Tools".
3. Press button "measures".
4. Set Plunge depth to „0“.
5. Repetition all set to „0“.
6. Z-Zustellung all set to „0“.
7. Check figures and save.

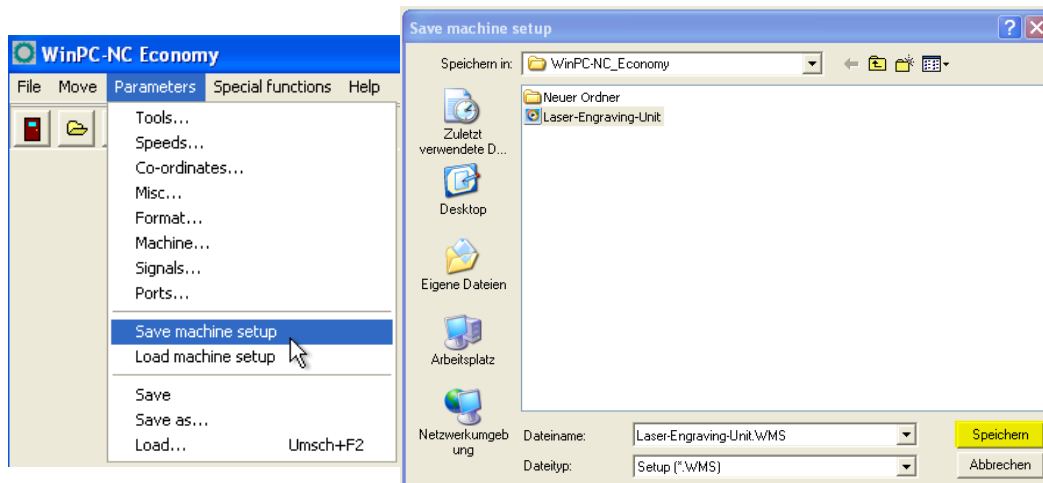


By setting the value „0“ unnecessary sources of error, that can affect the result, are avoided.

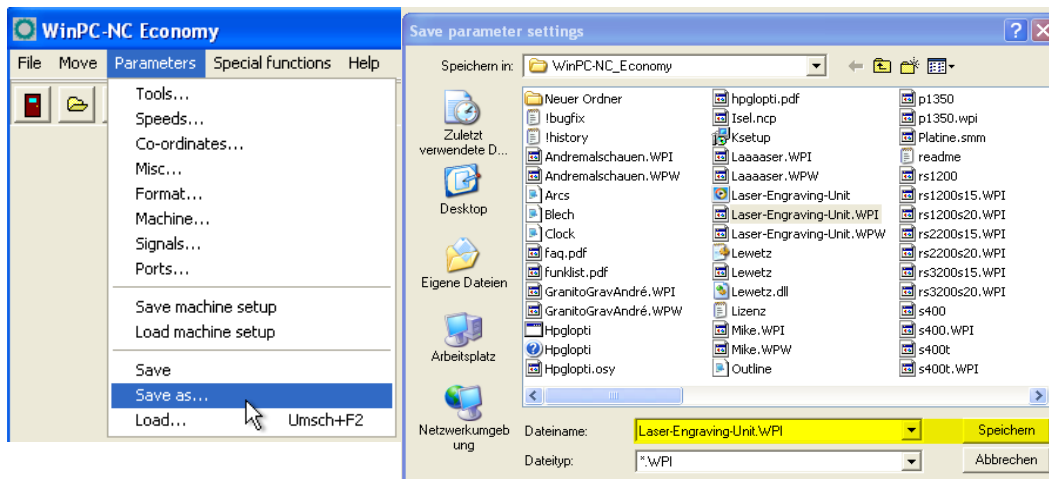
5 Save settings in WinPC-NC sustainably

In WinPC-NC

1. Activate the tab “Parameters” (by mouse-click).
2. Select „save machine setup“.
3. In following window enter a name for example. laser-engraving-unit.
4. Check and save.



5. Activate the tab „Parameters“ (via mouse-click).
6. Select „save as...“.
7. Enter a name in the following window for example „Laser-engraving-unit.WPI“.
8. Check and save.



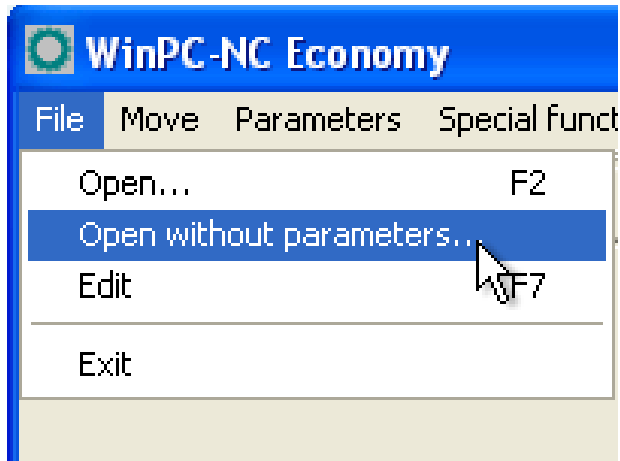
All settings and values are sustainably saved and can be loaded when required.

**After saving all settings, exit WinPC-NC and restart.
By loading the setups all saved settings are recalled.
After restarting WinPC-NC you can begin with the focusing.**

6 Loading laser-processing-data in WinPC-NC

In WinPC-NC

1. Press tab „Data“and underneath „open without parameters“and load the laser-processing-data.



2. Select desired NC-data and open.
3. The loading time can possibly take a few minutes

The laser-processing-data is now loaded and can be used in WinPC-NC.



Please don't perform other actions during the waiting period!



Please, also see the user manual WinPC-NC point: Open data without parameters (p.27).