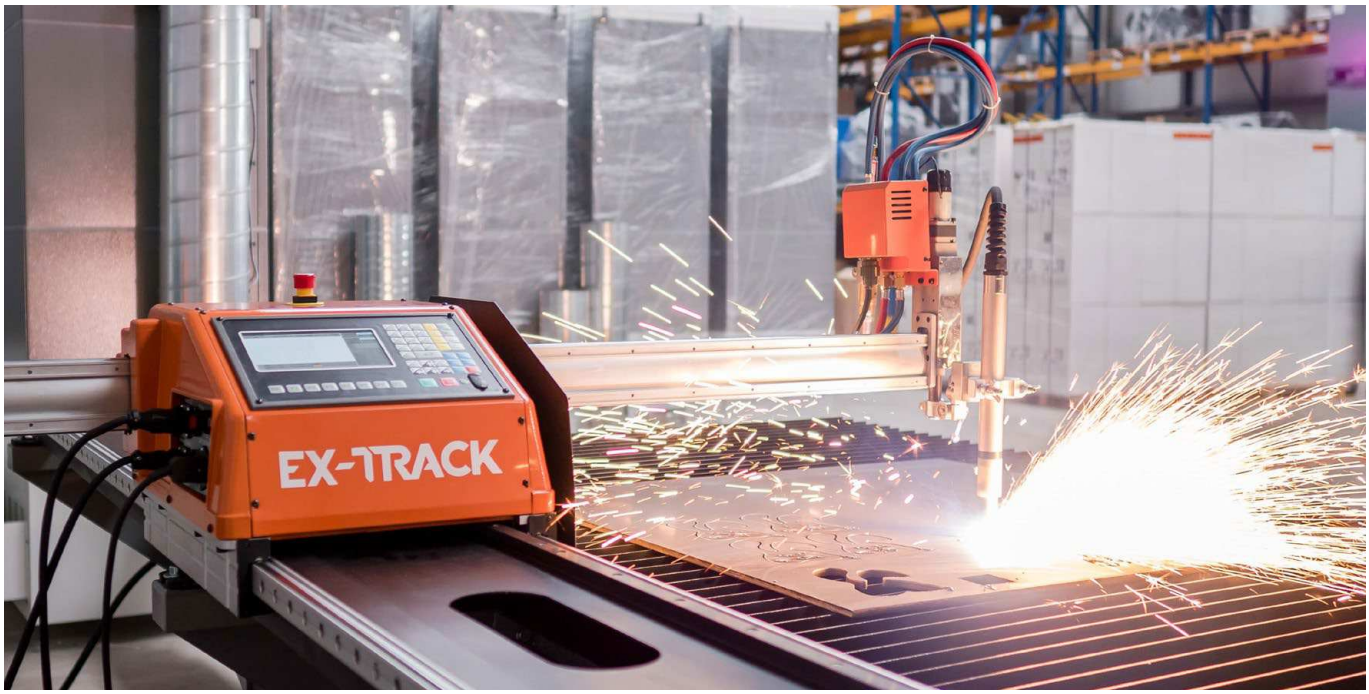
EX-TRACK®
QUICK-GUIDE

EXAMPLE HOW TO CUT A CREATED CUTTING PROGRAM IN FASTCAM® ON THE EX-TRACK®



FOR SOFTWARE VERSION 1.3.0.

THERMACUT®
THE CUTTING COMPANY®

Revision 2

IBG GROUP

INDEX

SECTION 1.

SELECTION OF THE CUTTING DATA:

- The cutting data can be taken from the manual of the machine torch or plasma system.

- Cutting data must be adjusted when changing material thickness and current.

- Cutting data that are stored in the manual are standard values. These must be adapted to your own specifications and the machine.

This means, for example, that with the EX-TRACK® all speeds above 3000mm/min must be reduced to 3000mm/min, because the machine can only cut a maximum speed of 3000mm/min. Otherwise a different cutting data set must be selected (e.g. a lower cutting current).

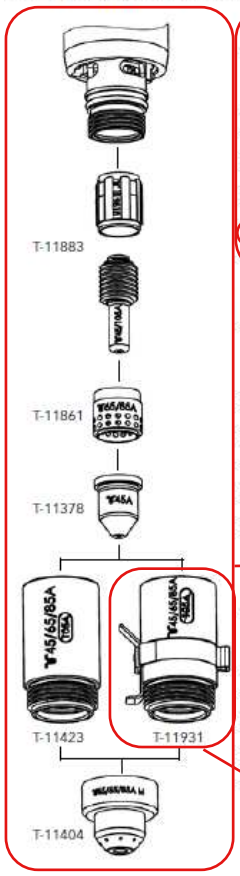
- If the correct current is selected, the rule of thumb material thickness x 10 can be applied (used as a guide value) e.g. 4mm = 45A / 6mm = 55A / 8mm = 65 or 75A / 10mm = 75A / 85A or 100A. Always depending on the power (A) of the power supply and the quality standard you want to achieve.

- When the cutting data of the material thickness to be cut is selected, the cutting data set is selected so that the material thickness to be cut is in the middle area of the cutting data table.

SECTION 2.

EXPLANATION OF THE CUTTING DATA AND INSTALLATION OF THE CONSUMABLES:

Mechanized Cutting Charts
45A Cutting, Shielded Configuration



Mild Steel

Material Thickness	Torch (Shield) to Workpiece Distance	Initial Pierce Height (Shield)	Pierce Delay Time	Recommended Speed* Best Quality Settings Cut Speed	Recommended Speed* Best Quality Settings Voltage	Maximum Speed** Standard Quality Settings Cut Speed	Maximum Speed** Standard Quality Settings Voltage	Kerf Width
[mm]	[mm]	[mm]	[seconds]	[mm/min]	[Volts]	[mm/min]	[Volts]	[mm]
0,5			0	9000	128	12500	126	1,1
1			0	9000	128	10800	128	1,1
1,5			0,1	9000	130	10200	129	
2	1,5	3,8	0,3	6600	130	7800	129	1,4
3			0,4	3850	133	4900	131	1,5
4			0,4	2200	134	3560	131	
6			0,5	1350	137	2050	132	1,7

Stainless Steel

Material Thickness	Torch (Shield) to Workpiece Distance	Initial Pierce Height (Shield)	Pierce Delay Time	Recommended Speed* Best Quality Settings Cut Speed	Recommended Speed* Best Quality Settings Voltage	Maximum Speed** Standard Quality Settings Cut Speed	Maximum Speed** Standard Quality Settings Voltage	Kerf Width
[mm]	[mm]	[mm]	[seconds]	[mm/min]	[Volts]	[mm/min]	[Volts]	[mm]
0,5			0	9000	130	12500	129	0,9
1			0	9000	130	10800	130	1,1
1,5			0,1	9000	130	10200	130	
2	1,5	3,8	0,3	6000	132	8660	131	1,5
3			0,4	3100	132	4400	132	1,6
4			0,4	2000	134	2600	134	
6			0,5	900	140	1020	139	1,8

Aluminium

Material Thickness	Torch (Shield) to Workpiece Distance	Initial Pierce Height (Shield)	Pierce Delay Time	Recommended Speed* Best Quality Settings Cut Speed	Recommended Speed* Best Quality Settings Voltage	Maximum Speed** Standard Quality Settings Cut Speed	Maximum Speed** Standard Quality Settings Voltage	Kerf Width
[mm]	[mm]	[mm]	[seconds]	[mm/min]	[Volts]	[mm/min]	[Volts]	[mm]
1			0	8250	136	11000	130	1,5
2			0,1	6600	136	9200	131	1,5
3	1,5	3,8	0,2	3100	139	6250	132	1,6
4			0,4	2200	141	4850	134	
6			0,5	1500	142	2800	139	1,5

Description of the cutting data, see next page.

In this quick guide the parameters are used as an example for 45A in 4mm mild steel.

The selected cutting data, the shown consumables must be installed in the plasma torch.

(Electrode, Swirl ring, Nozzle, Retaining cap, Shield)

The consumables change as soon as a different amperage is selected.

This torch cap is not necessary for the EX-TRACK® system, as there is no ohmic connection for the initial finding of the ignition high.

The initial finding takes place via a switch on the lifter.

ATTENTION
Consumables should only be change when the plasma system is switched off.

Material Thickness	Torch (Shield) to Workpiece Distance	Initial Pierce Height (Shield)	Pierce Delay Time	Recommended Speed*		Maximum Speed**		Kerf Width
				Best Quality Settings		Standard Quality Settings		
				Cut Speed	Voltage	Cut Speed	Voltage	
[mm]	[mm]	[mm]	[seconds]	[mm/min]	[Volts]	[mm/min]	[Volts]	[mm]
0.5	1,5	3,8	0	9000	128	12500	126	1.1
1			0	9000	128	10800	128	1.1
1.5			0.1	9000	130	10200	129	
2			0.3	6600	130	7800	129	1.4
3			0.4	3850	133	4900	131	1.5
4			0.4	2200	134	3560	131	
6			0.5	1350	137	2050	132	1.7

4mm mild steel was selected for an example.

These values change as soon as a different current and material thickness is selected, and must be set on the EX-TRACK®.

The values Ignition height, Piercing time, cutting speed, arc voltage, kerf must be set on the EX-TRACK®.

SECTION 3.

SETTINGS ON POWER SUPPLY EX-TRAFIRE®:

More details about the power supply can be taken from the user manual.

Set the selected current at the potentiometer.

Set switch to „CUT“. Activate the gas test:

When changing the mode from “Cut to Gouge” and back, the system makes a gas test, where ideally the working pressure can be adjusted. During the gas test, set the cutting pressure (according to the FHT-EX® 105 RTX manual 5,2 Bar). Input pressure at the power supply is between 6- max. 10 bar.

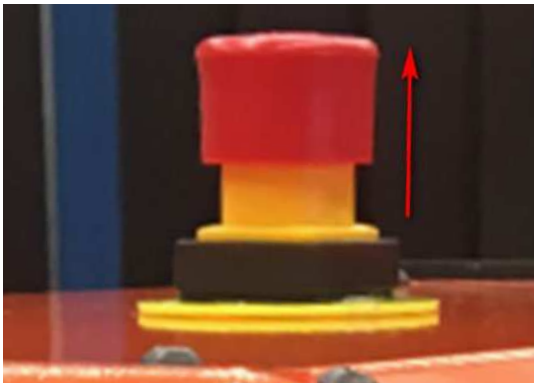
⚠	**When using a different plasma system, the cutting data charts and the settings for the plasma system must be taken from the respective manual!**

SECTION 4.

OPERATION EX-TRACK®:

Switching on the CNC control of the EX-TRACK®

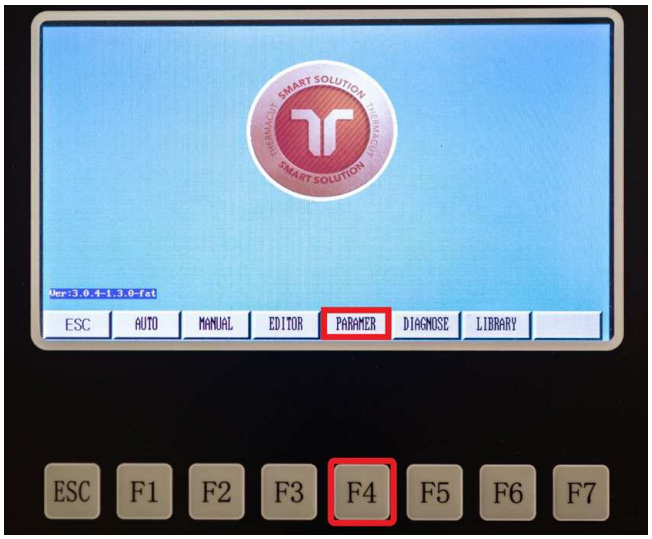
Switch on the CNC control at the on/off button.



If the CNC control does not start after the EX-TRACK® has been installed, the emergency stop button has probably been pressed.

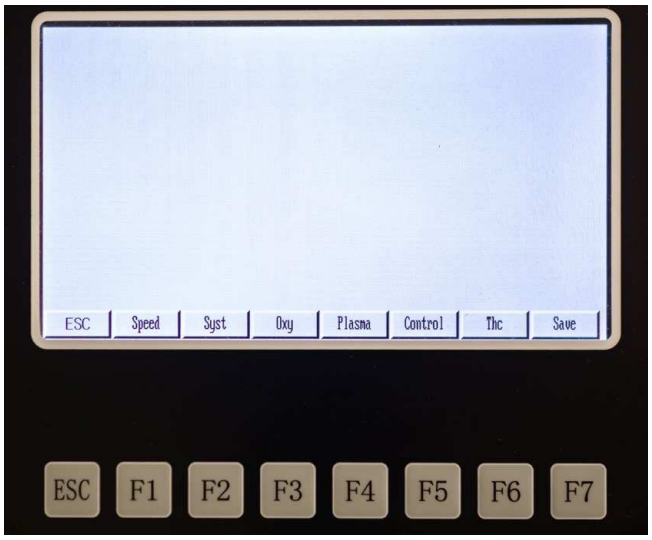
Then pull the emergency stop switch upwards until a loud "click" is heard.

Parameter settings according to cutting data



To set the cutting parameters, the menu „PARAMER“ must be selected.

Select this with „F4“.

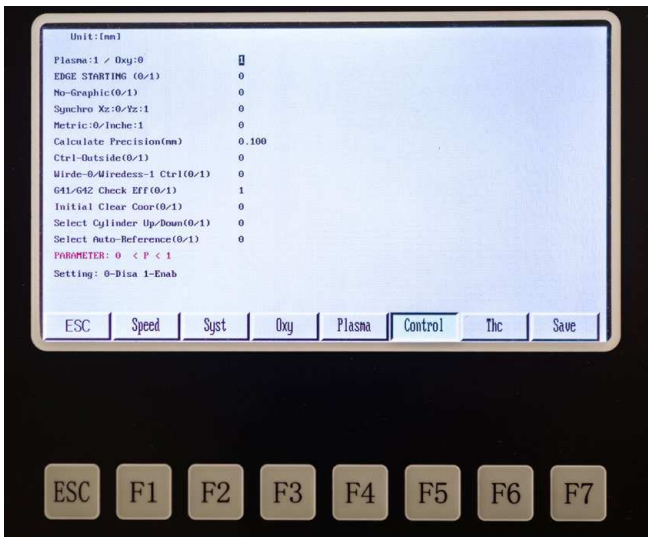


The Setup menu is appears

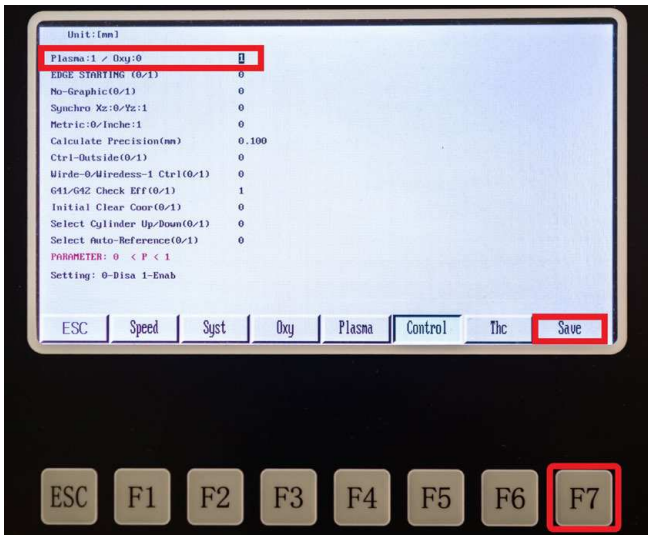
In this menu, the cutting process, the ignition high and the hole piercing parameters are set

These settings must be regularly changed as the current or material thickness changes.

The next steps show the settings for the plasma cutting.



Select these with “F5 = Control.



Select the necessary cutting process in the menu „Control". In these case select the process plasma:

Enter „1" for the plasma selection.

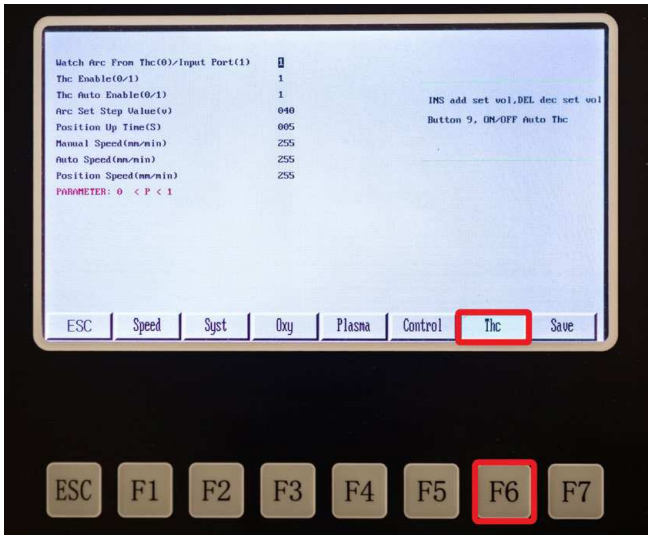
Enter „0" for the Oxy selection.

This value is entered with the numeric keypad on the CNC control.

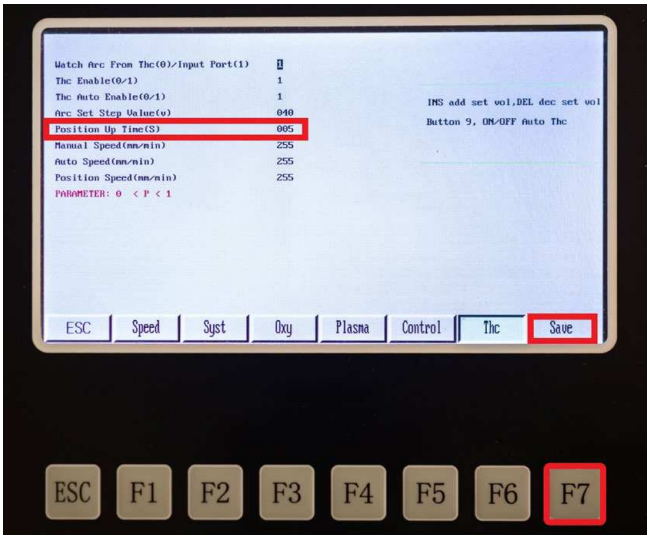
The setting must be made, so that the CNC controller uses the corresponding process parameter

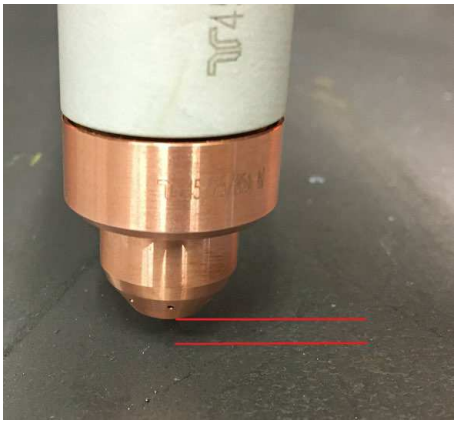
After selecting the cutting process, this must be saved with "F7 = Save"!

Important!
As soon as a parameter has been changed in a menu, it must always be saved. Otherwise the set value is not taken over.



Select these with „F6 = Thc".





The ignition height is the distance between the shield cap and the material.

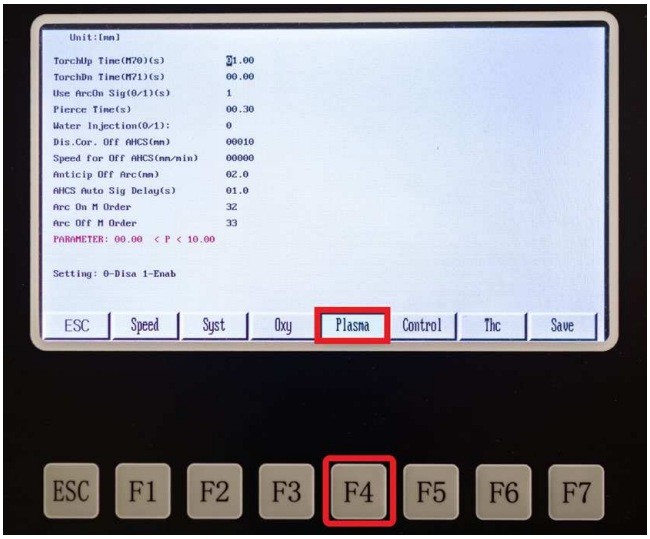
In the menu „Thc" the „Position Up Time (S)" are set.The value to be set must be taken of the cutting data (Inital Pierce Height), and is entered on the CNC control with the numeric keypad.

In the cutting data the value is given in mm. At the CNC control this value is entered in **time.**For example, at 4mm is 005 entered.

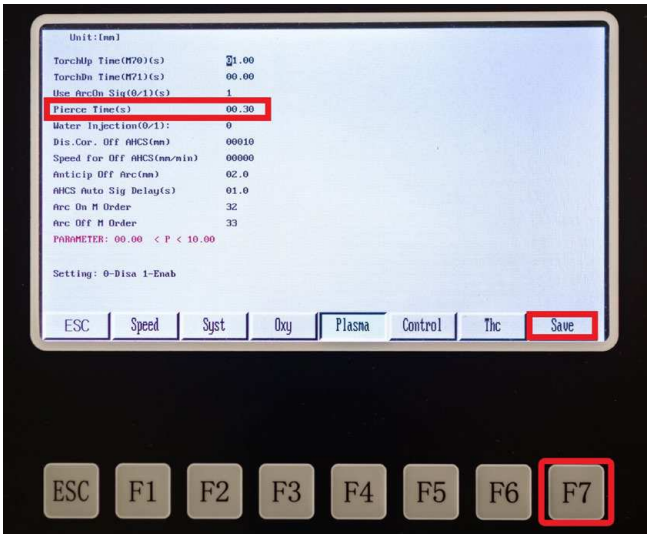
004 = approx. 2,0mm
005 = approx. 3,5mm
006 = approx. 5,0mm
007 = approx. 6,8mm
.....

Material Thickness	Torch (Shield) to Workpiece Distance	Initial Pierce Height (Shield)	Pierce Delay Time
[mm]	[mm]	[mm]	[seconds]
0,5	1,5	3,8	0
1			0
1,5			0,1
2			0,3
3			0,4
4			0,4
6			0,5

After setting the Position Up Time, this must be saved with "F7 = Save".



Select these with „F4 = Plasma".



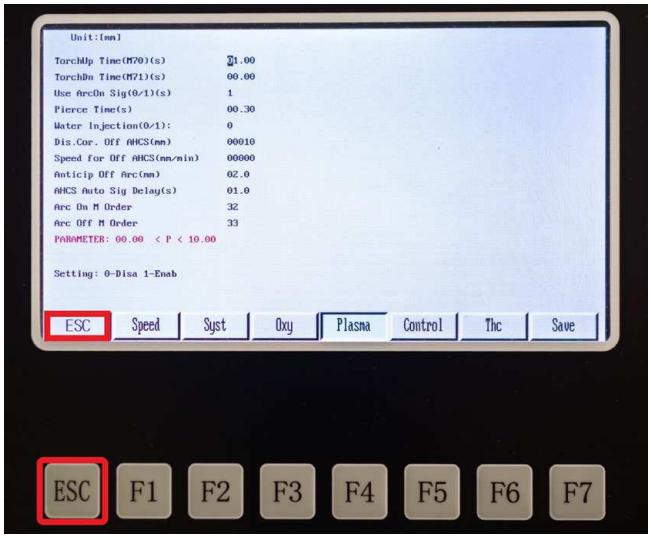
In the menu "Plasma" the "Pierce Time (s)" and "TorchUp/Dn Time (s)" are set. The same values should always be entered for both parameters (TorchUp Time and TorchDn Time)! The value to be set must be taken of the cutting data (Pierce Delay Time), and is entered on the CNC control with the numeric keypad.

For example, at 4mm is 00.40 entered:

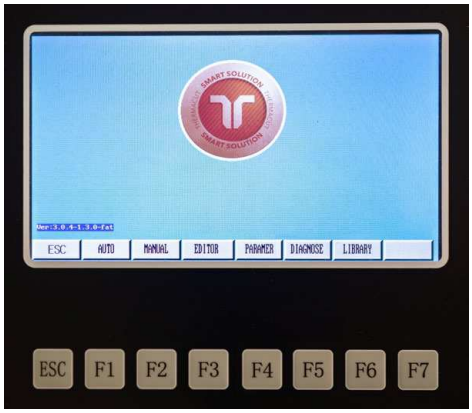
Material Thickness	Torch (Shield) to Workpiece Distance	Initial Pierce Height (Shield)	Pierce Delay Time
[mm]	[mm]	[mm]	[seconds]
0,5			0
1			0
1,5			0,1
2	1,5	3,8	0,3
3			0,4
4			0,4
6			0,5

After setting the Pierce time and the First Pierce Time, this must be saved with "F7 = Save".

Important! The Setup (cutting parameters) settings, Thc = Position Up Time (s) and Plasma = Pierce Time (s) must be reset and saved according to the cutting table when changing the material thickness and current.



After setting the cutting parameters, return to the home screen by pressing “ESC”.

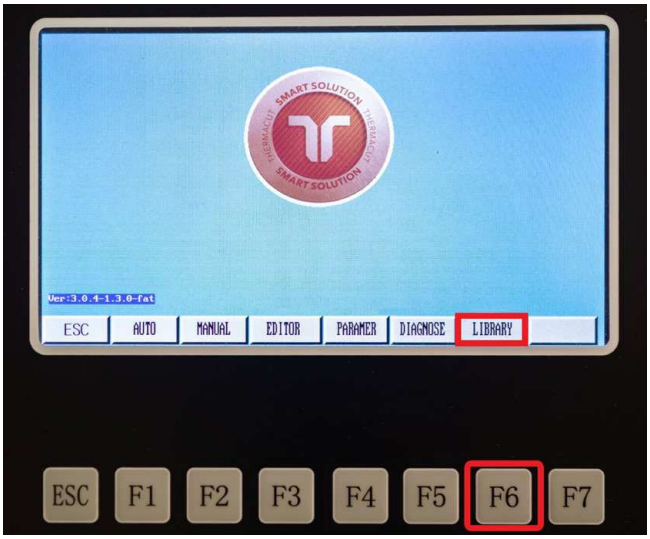


Select a cutting program

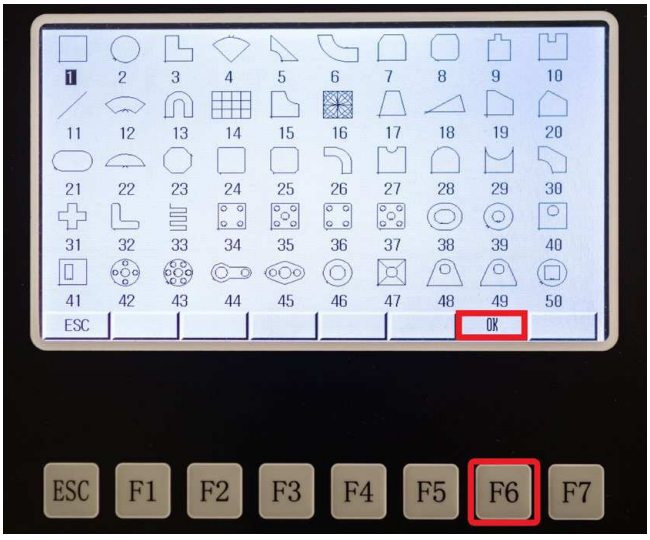
There are two options for selecting the cutting program:

1. Program creation using the preset macros on the CNC control.
2. Program creation with a program created in FastCAM®.

1. Possibility with the preset macros on the CNC control

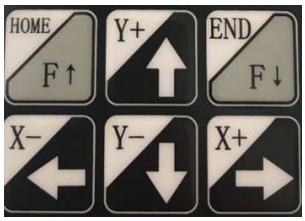


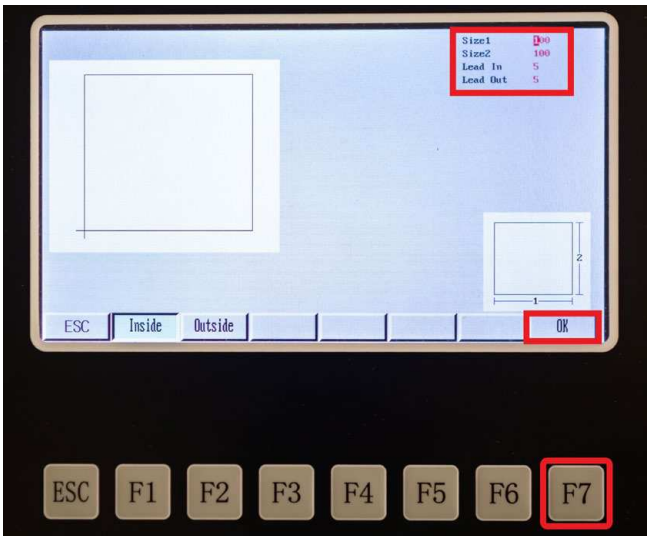
Select these with „F6 = LIBARY".



Select a macro with the cursor keyboard and confirm with „F6 = OK".

Cursor keys





Set the size of the desired contour and confirm with “F7 = OK”.

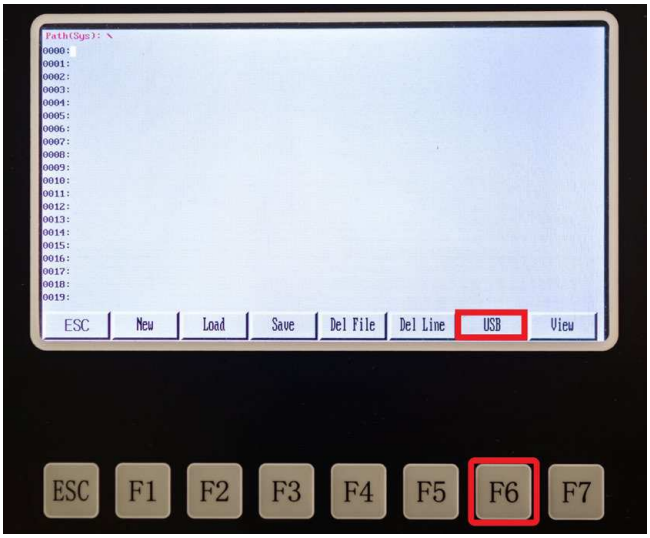
More details about the macros can be read in the user manual.

2. Possibility with a program created in FastCAM®

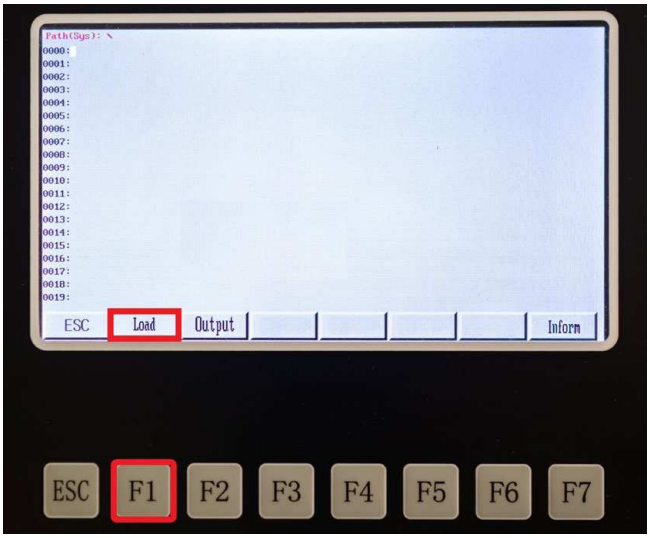
Copy the cutting program created in FastCAM® to a USB flash drive and insert the USB flash drive into the USB slot.

Important: USB flash drive must have a formatiting of FAT-32.Only the cutting programs to be cut should be saved on the USB.

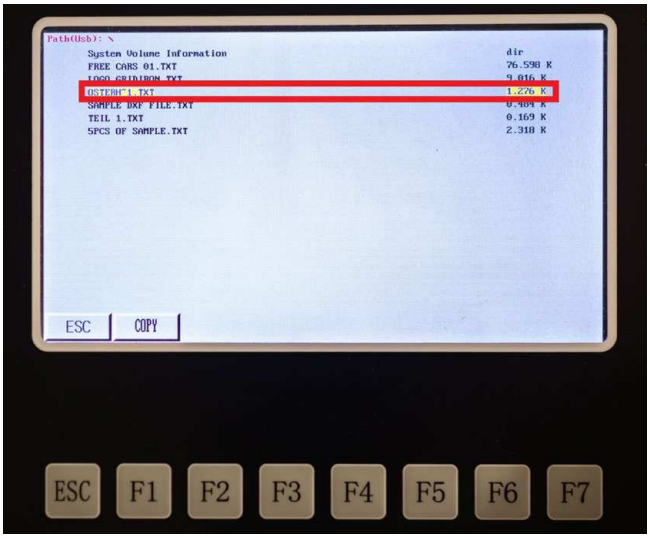
Select these with „F3 = EDITOR“.



Select these with „F6 = USB“.

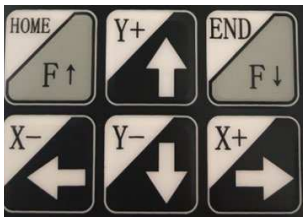


Select these with „F1 = Load“.

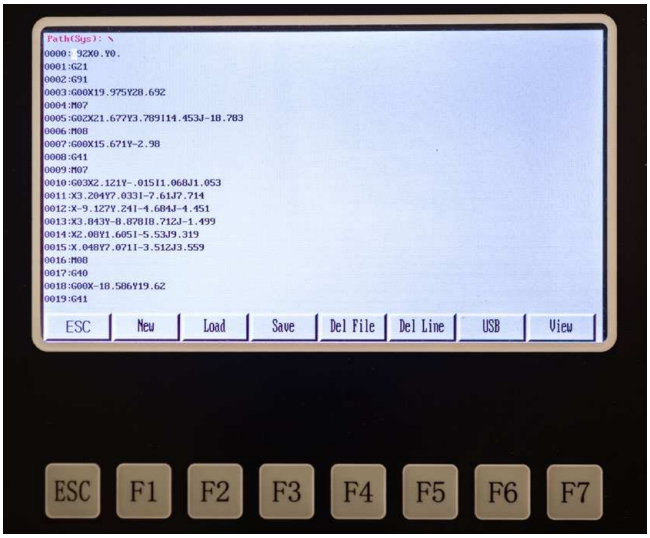


Select the cutting program with the cursor keys and confirm with „Enter“.

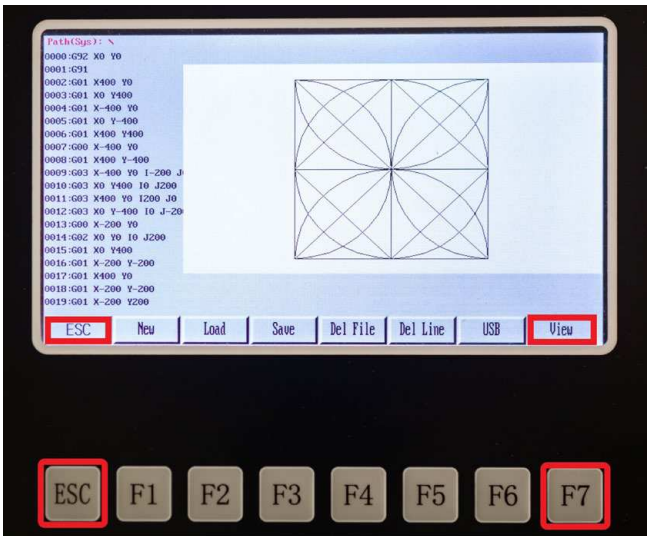
Cursor keys



Enter

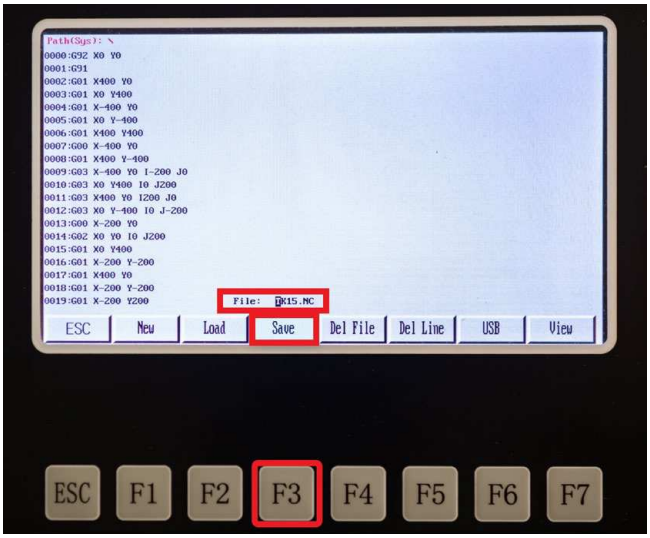


After selecting the cutting program, the NC-code is shown.



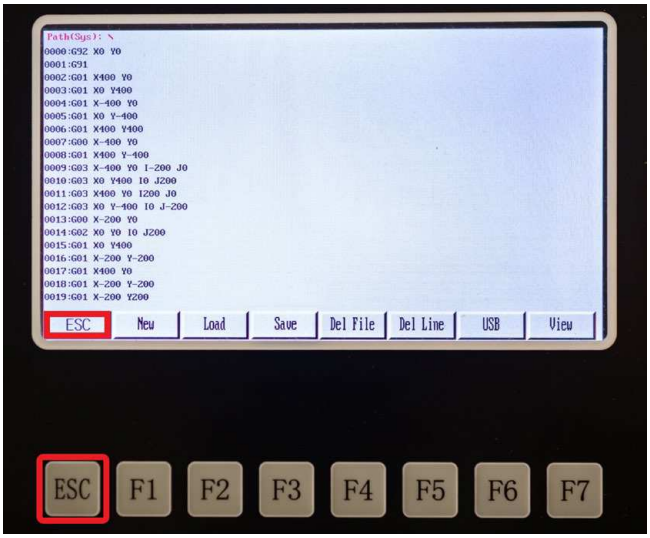
To check if this is the correct cutting program, the graphic of the cutting program can be displayed with „F7 = View“.

After checking, close the graphic view with „ESC“.

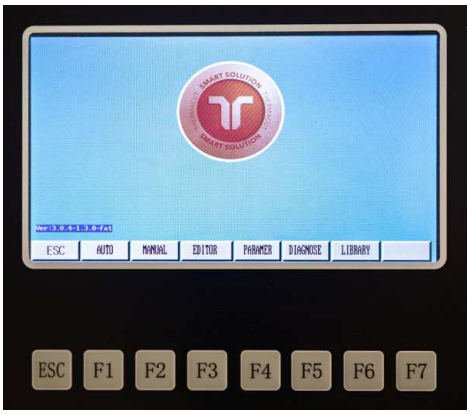


If necessary, the cutting program can be saved into the internal memory by „F3 = Save“ and then with „Enter“.

Enter 



Return to the Home screen with „ESC“.



Positioning the machine torch

There are two options to positioning the machine torch:

1. Positioning the machine torch with the cursor keys.
2. Positioning the machine torch by hand.

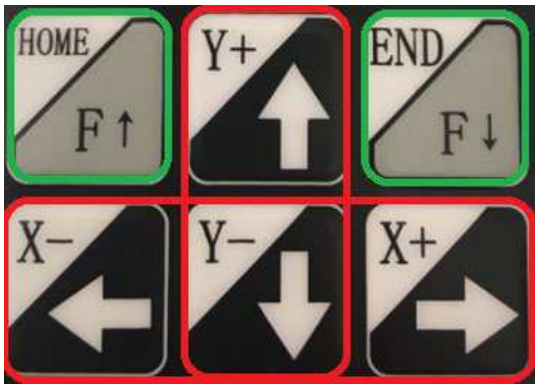
1. Positioning the machine torch with the cursor keys.

Select these with „F2 = MANUAL".

Press the „Off Line" button on the side panel.

The light on the button must be OFF.

When the light is off, it means that the drive system (motors) are on.



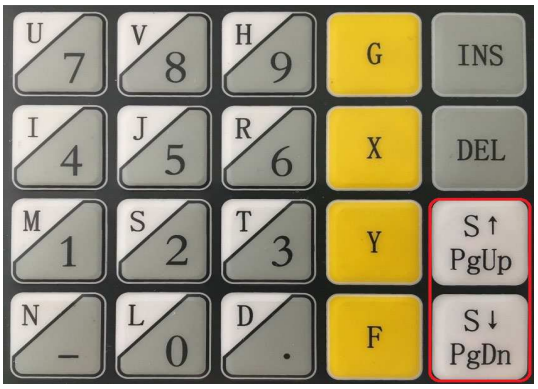
With the **„F" buttons** can be increased or reduced the speed.

Increase of the speed 

Reduce of the speed 

Use the **cursor keys** to positioning the machine torch.

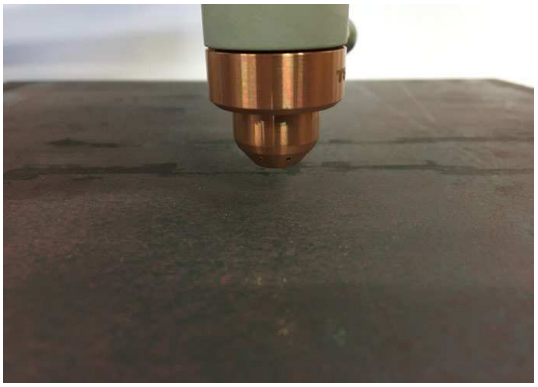
Tip: If the cutting program start point has been positioned „bottom left" in FastCAM®, then the torch will also be positioned on the material to be cut on the bottom left.



To make it easier to position the machine torch, the „S PgDn" button can be used to move the torch down.

Torch up 

Torch down 



2. Possibility positioning the machine torch by hand

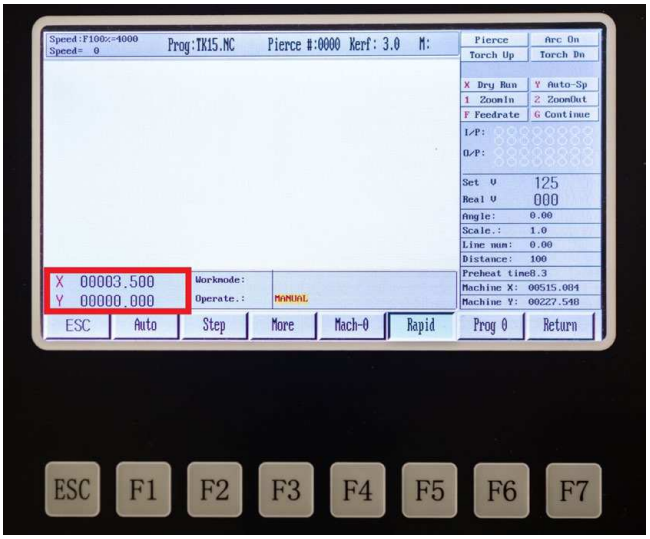
Press the „Off Line“ button on the side panel.

The light on the button must be ON.

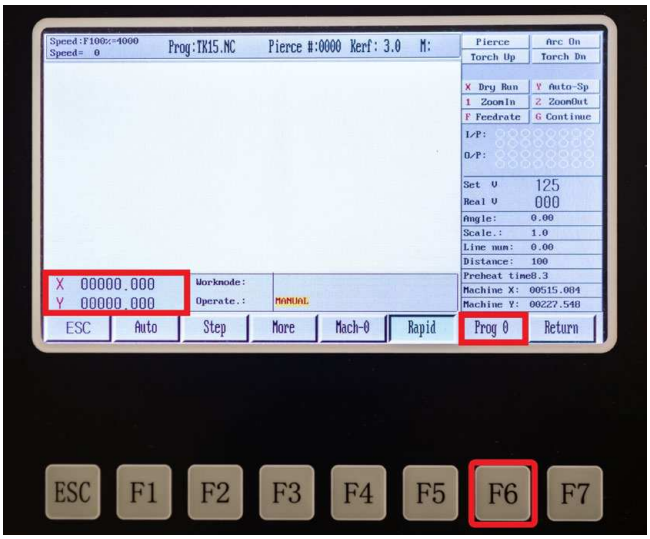
When the light is on, it means that the drive system (motors) are off.

Now the CNC control and the transverse guide rail can be moved by hand.

After the torch has been positioned, the „OFF line“ button must be pressed again, so that the light on the button does **NOT** on and the drives are switched on.

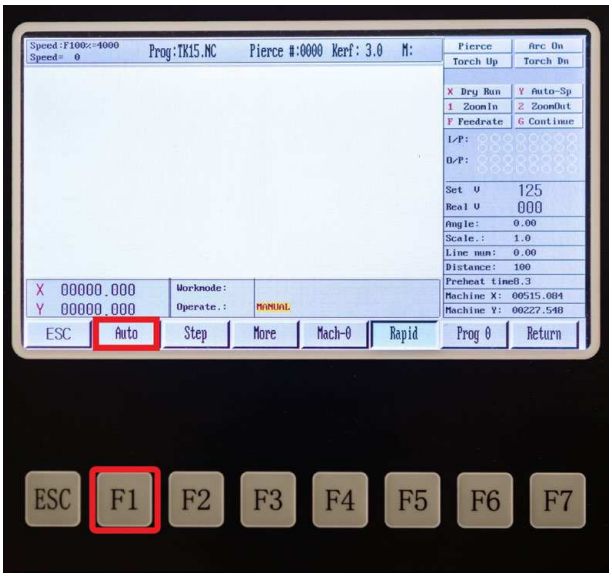


By switching to the „Manual“ menu, the display shows the machine coordinates.



Set the X and Y machine coordinates to zero (0,00) by „F6 = Prog 0".

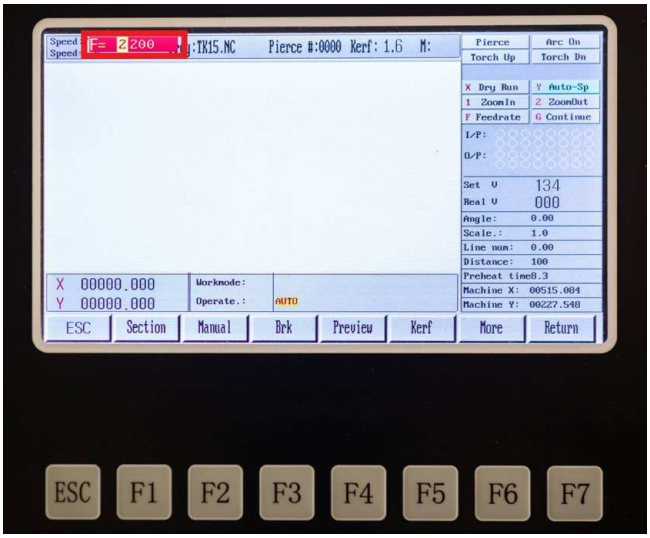
Automatic mode



Then switch to automatic mode by „F1 = AUTO".

In the automatic menu the cutting speed, kerf and arc voltage must be set.

The cutting speed can be set by „F" button.

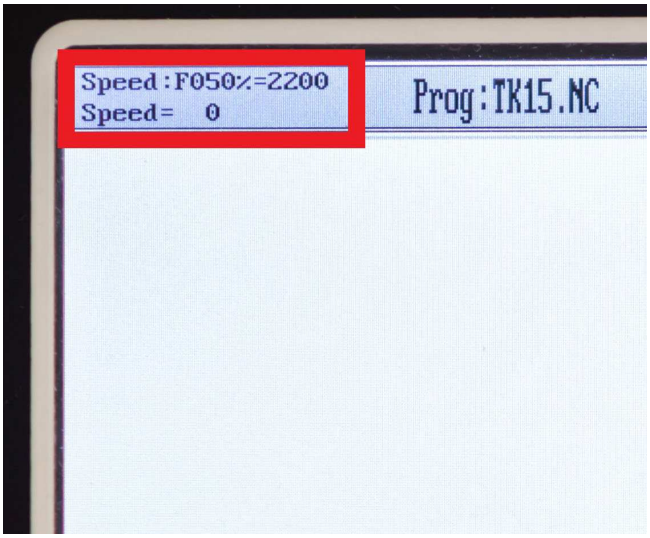


In the upper edge of the screen a field is displayed where the cutting speed is set with the numeric keypad. Then confirm with „Enter“.

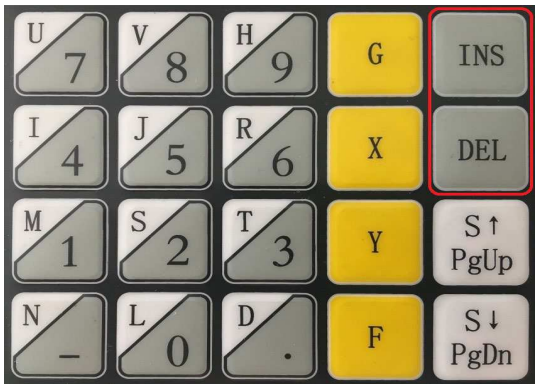
The cutting speed must take from the cutting data.

For example,to set at 4mm with 45 A is 2200 mm/min.

Material Thickness	Torch (Shield) to Workpiece Distance	Initial Pierce Height (Shield)	Pierce Delay Time	Recommended Speed* Best Quality Settings	
				Cut Speed	Voltage
(mm)	(mm)	(mm)	(seconds)	(mm/min)	(Volts)
0,5	1,5	3,8	0	9000	128
1			0	9000	128
1,5			0,1	9000	130
2			0,3	6600	130
3			0,4	3850	133
4			0,4	2200	134
6			0,5	1350	137



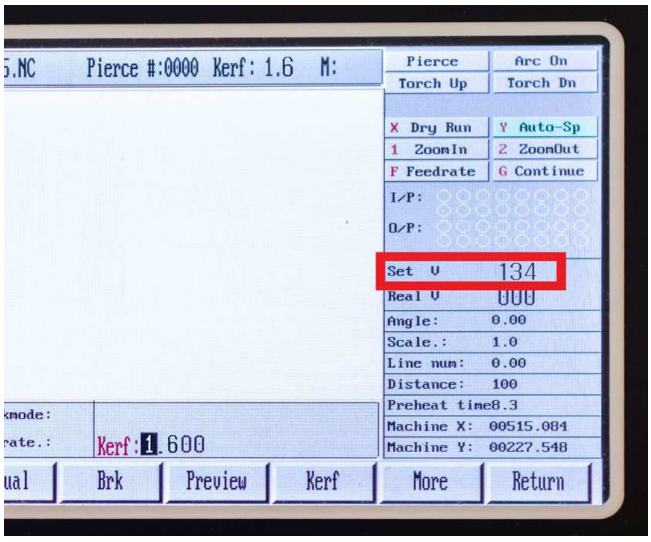
The set cutting speed is displayed.



By pressing the „INS" and „DEL" button several times, the Arc voltage can be adjusted.

Arc voltage up 

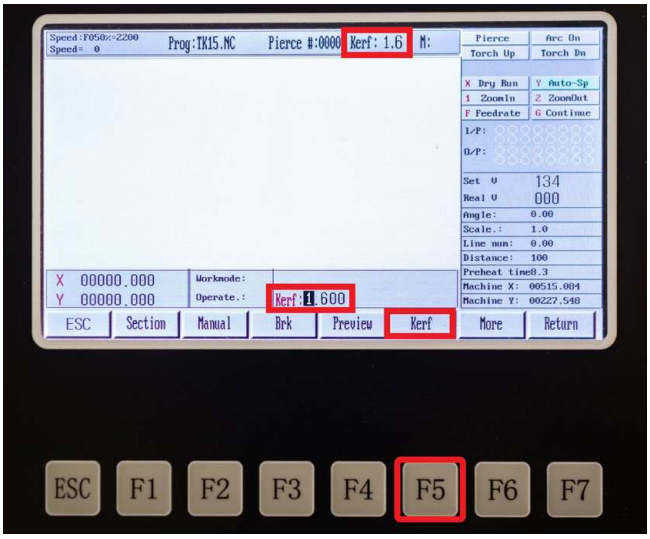
Arc voltage down 



The set Arc voltage is shown in the „Set V" box. The Arc voltage must taken from the cutting data. For example, to set at 4mm is 134 V.

Material Thickness	Torch (Shield) to Workpiece Distance	Initial Pierce Height (Shield)	Pierce Delay Time	Recommended Speed* Best Quality Settings	
				Cut Speed	Voltage
[mm]	[mm]	[mm]	[seconds]	[mm/min]	[Volts]
0,5	1,5	3,8	0	9000	128
1			0	9000	128
1,5			0,1	9000	130
2			0,3	6600	130
3			0,4	3850	133
4			0,4	2200	134
6			0,5	1350	137

The „Real V" value shown the real Arc voltage during cutting.



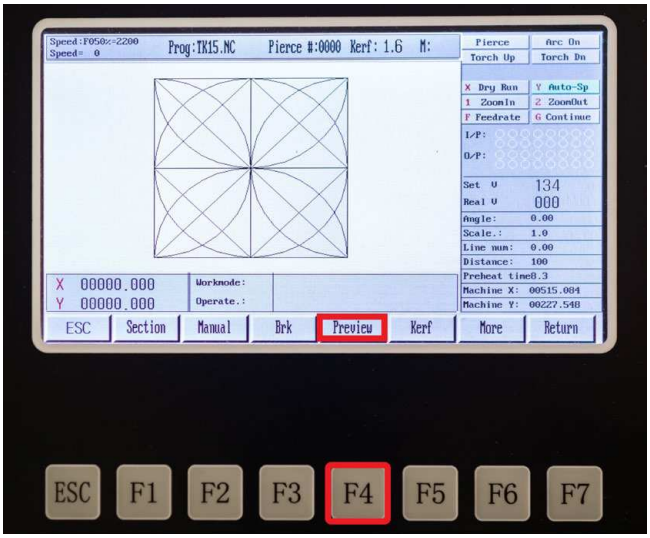
By pressing „F5 = Kerf" the kerf compensation can be set. Then confirm with „Enter". 

The set kerf compensation is displayed in the upper screen. The kerf must taken from the cutting data. For example, to set at 4mm is 3,0mm.

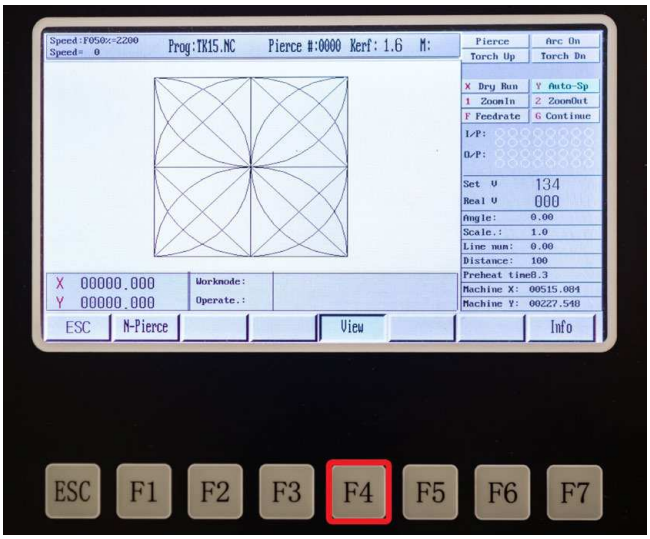
Material Thickness	Torch (Shield) to Workpiece Distance	Initial Pierce Height (Shield)	Pierce Delay Time	Recommended Speed* Best Quality Settings		Maximum Speed** Standard Quality Settings		Kerf Width
				Cut Speed	Voltage	Cut Speed	Voltage	
[mm]	[mm]	[mm]	[seconds]	[mm/min]	[Volts]	[mm/min]	[Volts]	[mm]
0,5	1,5	3,8	0	9000	128	12500	126	1,1
1			0	9000	128	10800	128	1,1
1,5			0,1	9000	130	10200	129	
2			0,3	6600	130	7800	129	1,4
3			0,4	3850	133	4900	131	1,5
4			0,4	2200	134	3560	131	
6			0,5	1350	137	2050	132	1,7

The set kerf must not be smaller than the smallest radius in the cutting program.

The Cutting speed, Arc voltage and Kerf compensation, must set according to the cutting data changing the material thickness and current.



The cutting program can be shown by „F4 = Preview“.



Press the „F4 = Preview“ again to return to the automatic menu.

Checklist before start to cut

1. Correct selection of the cutting data (Does the amperage match the material thickness = which quality requirement).
2. The consumables are installed in the torch according to the cutting table (consumables also ok).
3. Plasma power source was set (air pressure, current).
4. Plasma SETUP set according to the cutting data. (THC = Position Up Time /Plasma = hole piercing).
5. Selecting the correct cutting program (creation via macros or FastCAM®).
6. In the manual menu, the torch position correctly (manually using the cursor or by hand. Make sure that the drives are switched on).
7. In the automatic menu the speed, arc voltage and kerf compensation are set according to the cutting data).
8. Is the material placed straight on the cutting table (material in the level).
9. Is the torch in the level.

Start cutting program

Once all previous settings have been made, the program can be started by pressing the „green“ button.

Cutting program starts 

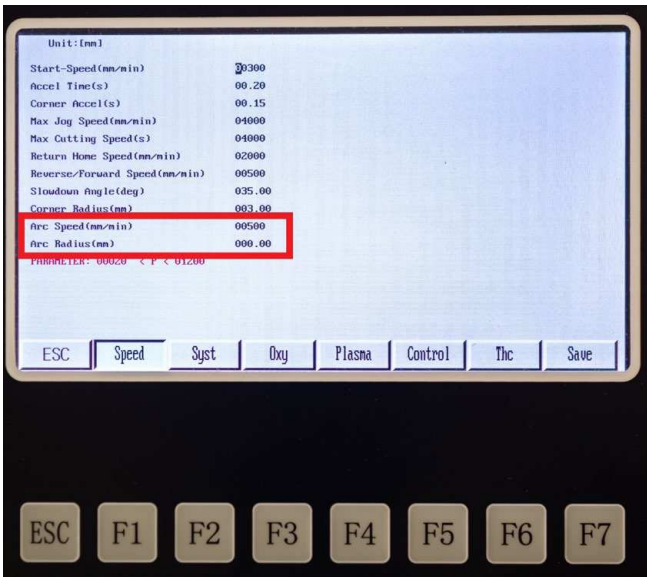
Cutting program stops 

Other operating options, as repeating parts etc., are described in the user manual.

Tip's

If small holes need to be cut in a part, than it is possible that the cutting speed in the cutting table is too fast for this.

This can be set in the SETUP settings.



„F4 = Setup" menu and select the „F1 = Speed"

Parameter:

„Arc Speed" = Enter the required cutting speed

„Arc Radius" = Enter the radius in which the EX-TRACK® the cutting speed should down.

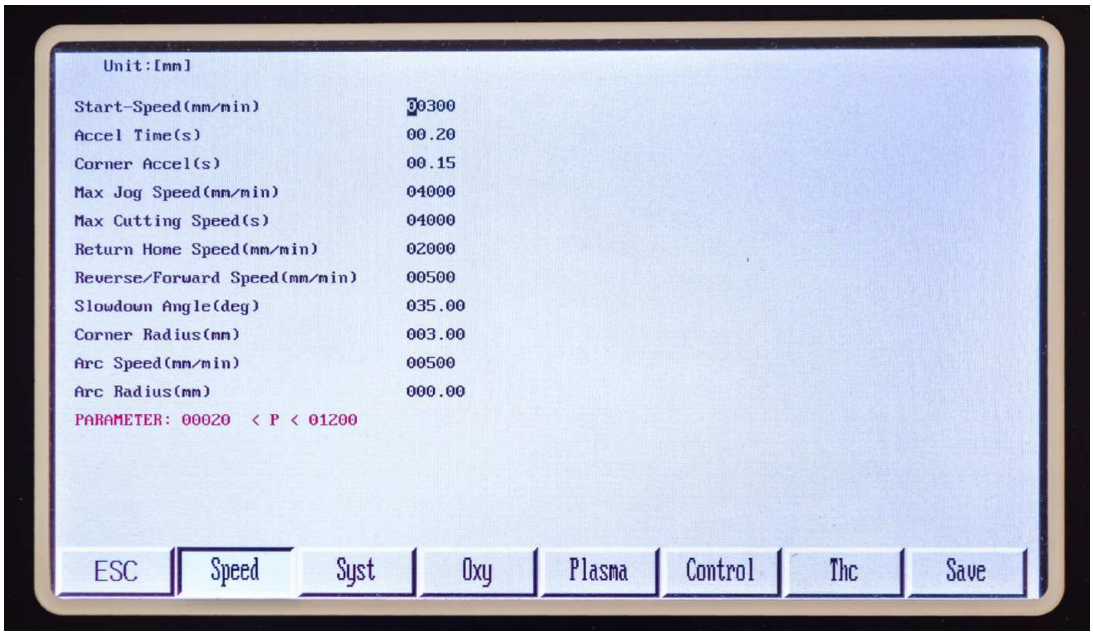
Anything above this value will cause EX-TRACK® to run at the cutting speed set in the automatic menu according to the cutting data

Save these settings with „F7 = Save"

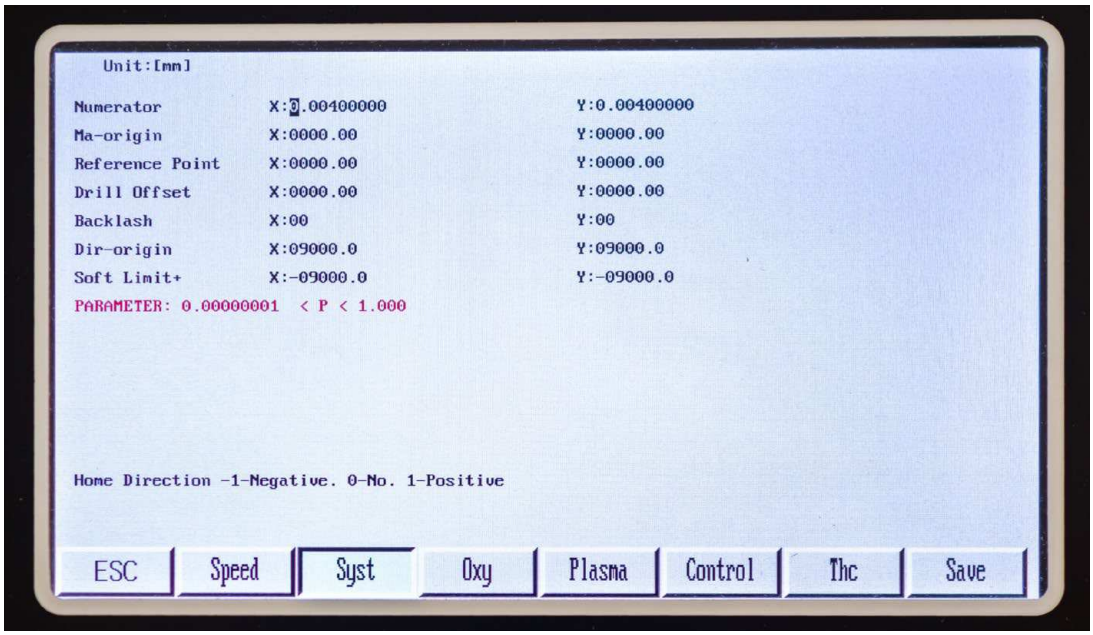
These parameters must be change for different material thicknesses, power and the contour (holes) to be cut.

Basic parameter setting in the SETUP Menu

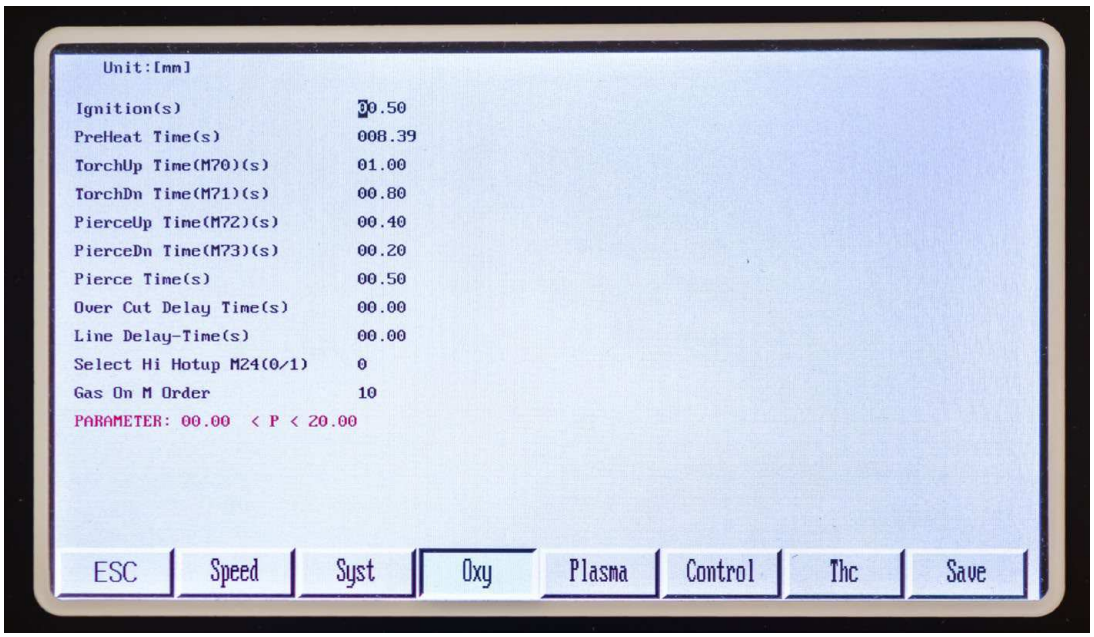
Speed



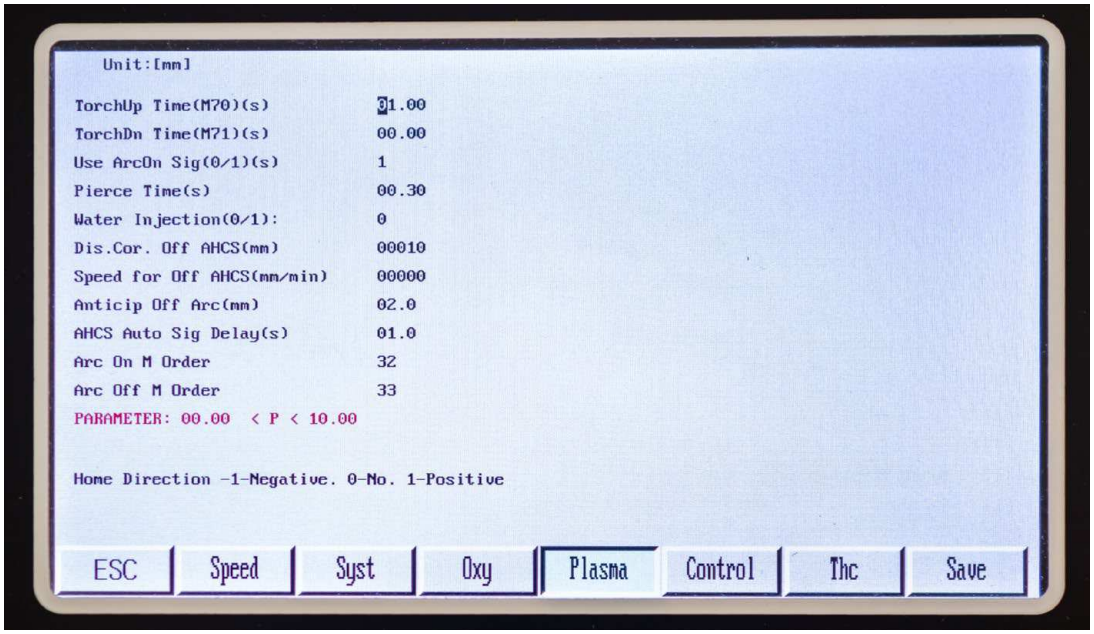
System



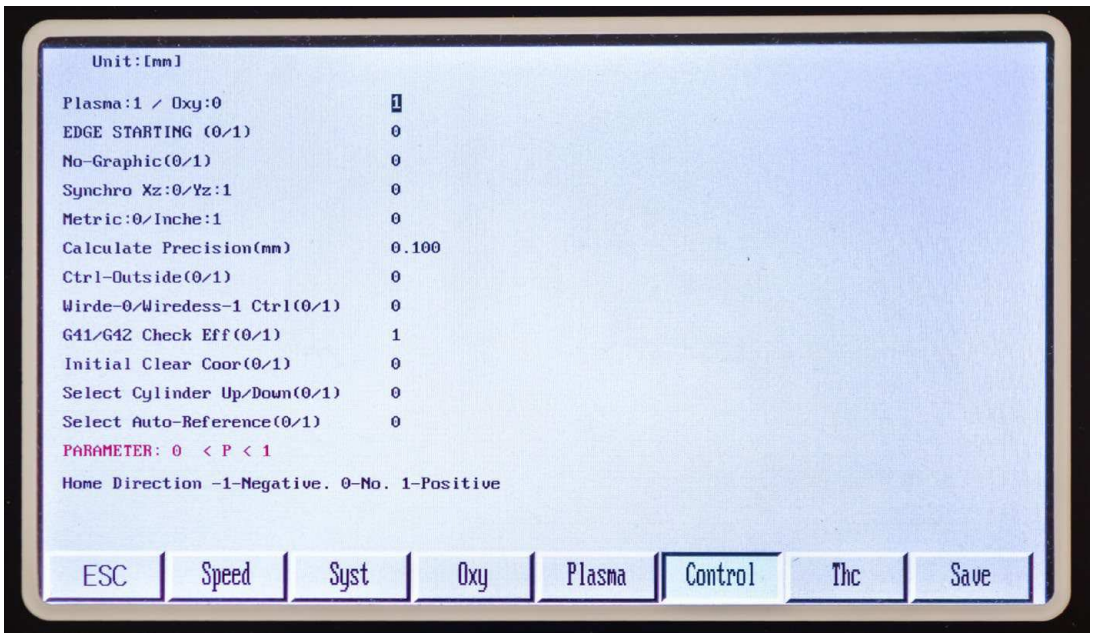
Oxy

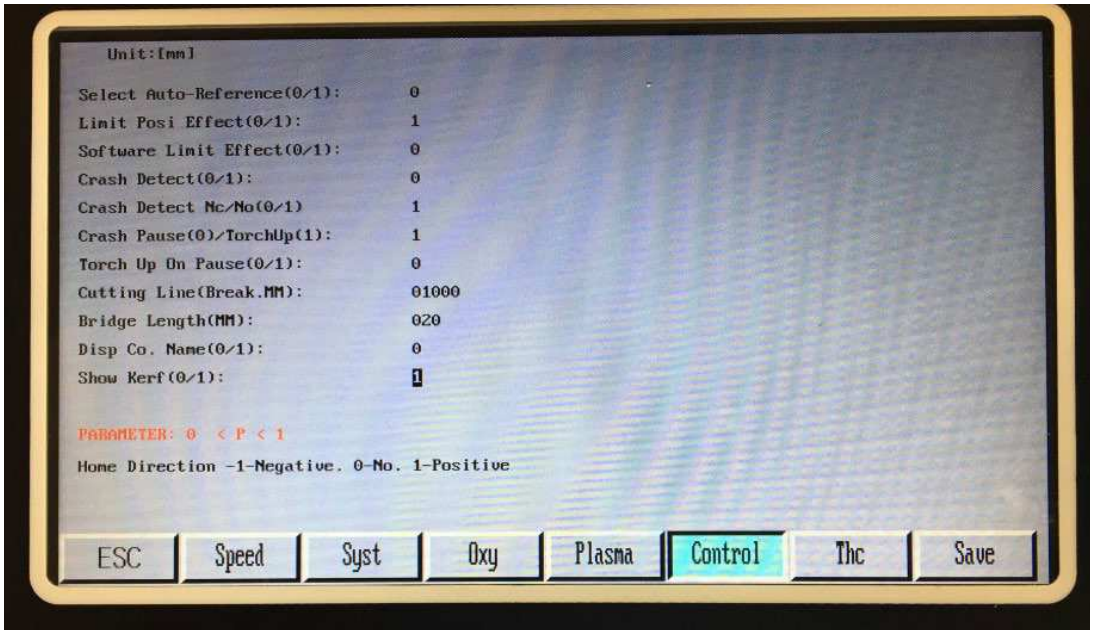

Unit:[mm]
Ignition(s) 00.50
PreHeat Time(s) 008.39
TorchUp Time(M70)(s) 01.00
TorchDn Time(M71)(s) 00.80
PierceUp Time(M72)(s) 00.40
PierceDn Time(M73)(s) 00.20
Pierce Time(s) 00.50
Over Cut Delay Time(s) 00.00
Line Delay-Time(s) 00.00
Select Hi Hotup M24(0/1) 0
Gas On M Order 10
PARAMETER: 00.00 < P < 20.00
ESC
Speed
Syst
Oxy
Plasma
Control
Thc
Save

Plasma

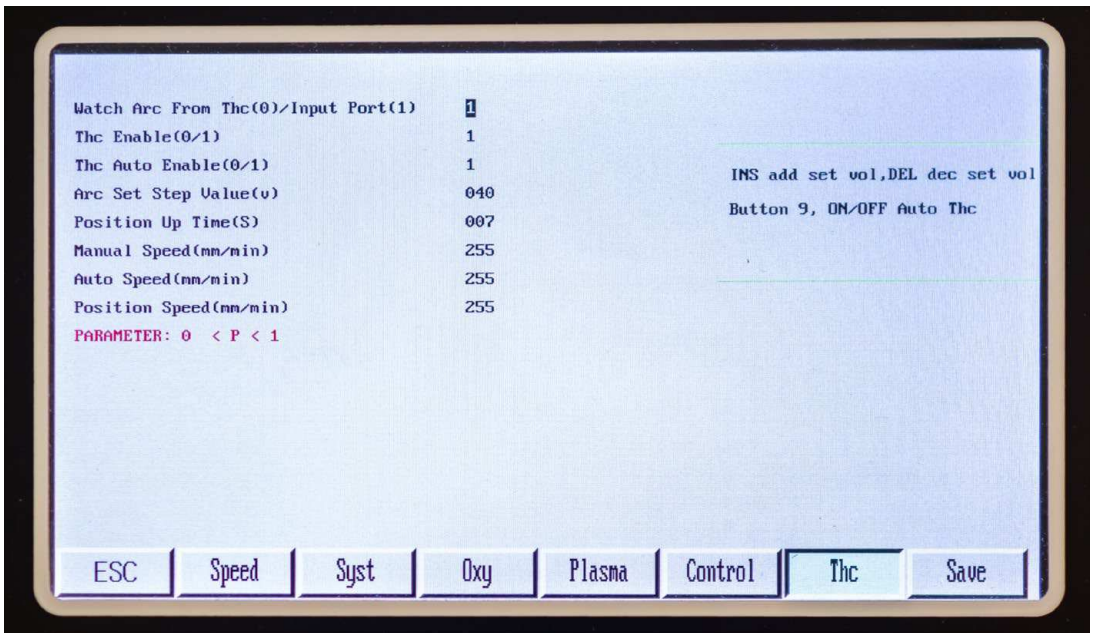

Unit:[mm]
TorchUp Time(M70)(s) 01.00
TorchDn Time(M71)(s) 00.00
Use ArcOn Sig(0/1)(s) 1
Pierce Time(s) 00.30
Water Injection(0/1): 0
Dis.Cor. Off AHCS(mm) 00010
Speed for Off AHCS(mm/min) 00000
Anticip Off Arc(mm) 02.0
AHCS Auto Sig Delay(s) 01.0
Arc On M Order 32
Arc Off M Order 33
PARAMETER: 00.00 < P < 10.00
Home Direction -1-Negative. 0-No. 1-Positive
ESC
Speed
Syst
Oxy
Plasma
Control
Thc
Save

Control


Unit:[mm]
Plasma:1 / Oxy:0 1
EDGE STARTING (0/1) 0
No-Graphic(0/1) 0
Synchro Xz:0/Yz:1 0
Metric:0/Inche:1 0
Calculate Precision(mm) 0.100
Ctrl-Outside(0/1) 0
Wirde-0/Wiredess-1 Ctrl(0/1) 0
G41/G42 Check Eff(0/1) 1
Initial Clear Coor(0/1) 0
Select Cylinder Up/Down(0/1) 0
Select Auto-Reference(0/1) 0
PARAMETER: 0 < P < 1
Home Direction -1-Negative. 0-No. 1-Positive
ESC
Speed
Syst
Oxy
Plasma
Control
Thc
Save


Unit:[mm]
Select Auto-Reference(0/1): 0
Limit Posi Effect(0/1): 1
Software Limit Effect(0/1): 0
Crash Detect(0/1): 0
Crash Detect Nc/No(0/1) 1
Crash Pause(0)/TorchUp(1): 1
Torch Up On Pause(0/1): 0
Cutting Line(Break.MM): 01000
Bridge Length(MM): 020
Disp Co. Name(0/1): 0
Show Kerf(0/1): 1
PARAMETER: 0 < P < 1
Home Direction -1-Negative. 0-No. 1-Positive
ESC
Speed
Syst
Oxy
Plasma
Control
Thc
Save

THC (Torch High Control)



Revision:

Rev.1 10.2.2021 Software 3.0.4-1.2.9

Parameter - THC - „Arc Set Step Value" changed from 002 to 040.
Parameter pictures have changed because various parameters have been hidden
Page 12 new picture THC parameter
Page 13 new picture and text „Position UP Time(s)" changed
Page 14 new picture Plasma parameter
Page 15 new picture and text „Piercing Time(s)" changed
Page 16 text THC and change Plasma
Page 17 new picture Plasma parameter
Page 42 at point 4 „Plasma=Piercing time" changed
Page 44 new picture with right values of parameter
Page 45-50 all pictures with right values changed

Rev.2 15.2.2021 Software 3.0.4-1.3.0

By updating the white THC card in the CNC, the scaling of the parameter „THC - Position up time(s)" has changed.
Before it was e.g. 040, now it is 004.
Page 13 new picture and table with new values for piercing high
Page 50 new picture

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