

MyCNC Setup Examples

How to setup Tangential Knife Cutting

MyCNC control has built-in tangential knife control

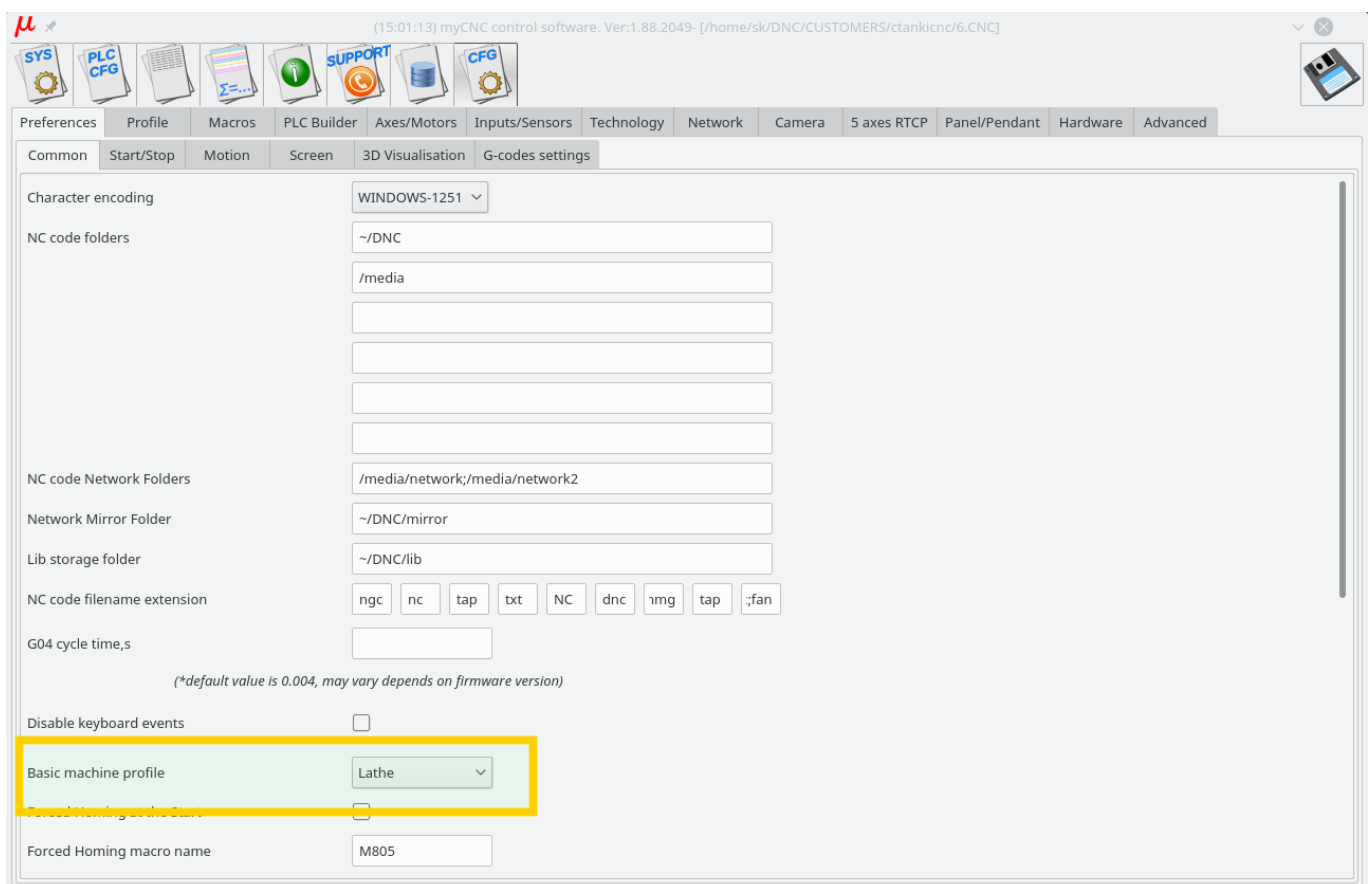
Tangential knife control is activated by writing “1” to Global Variable #7005 (GVAR_TANGENTKNIFE_ENABLE)

If Tangential control is activated 2D toolpath programming is enough to make tangential knife cutting. myCNC control software automatically -

- Calculates the angle of next motion;
- Lifts up the knife to safe height;
- Rotate knife accordingly next XY motion direction;
- Moves down knife on working height.

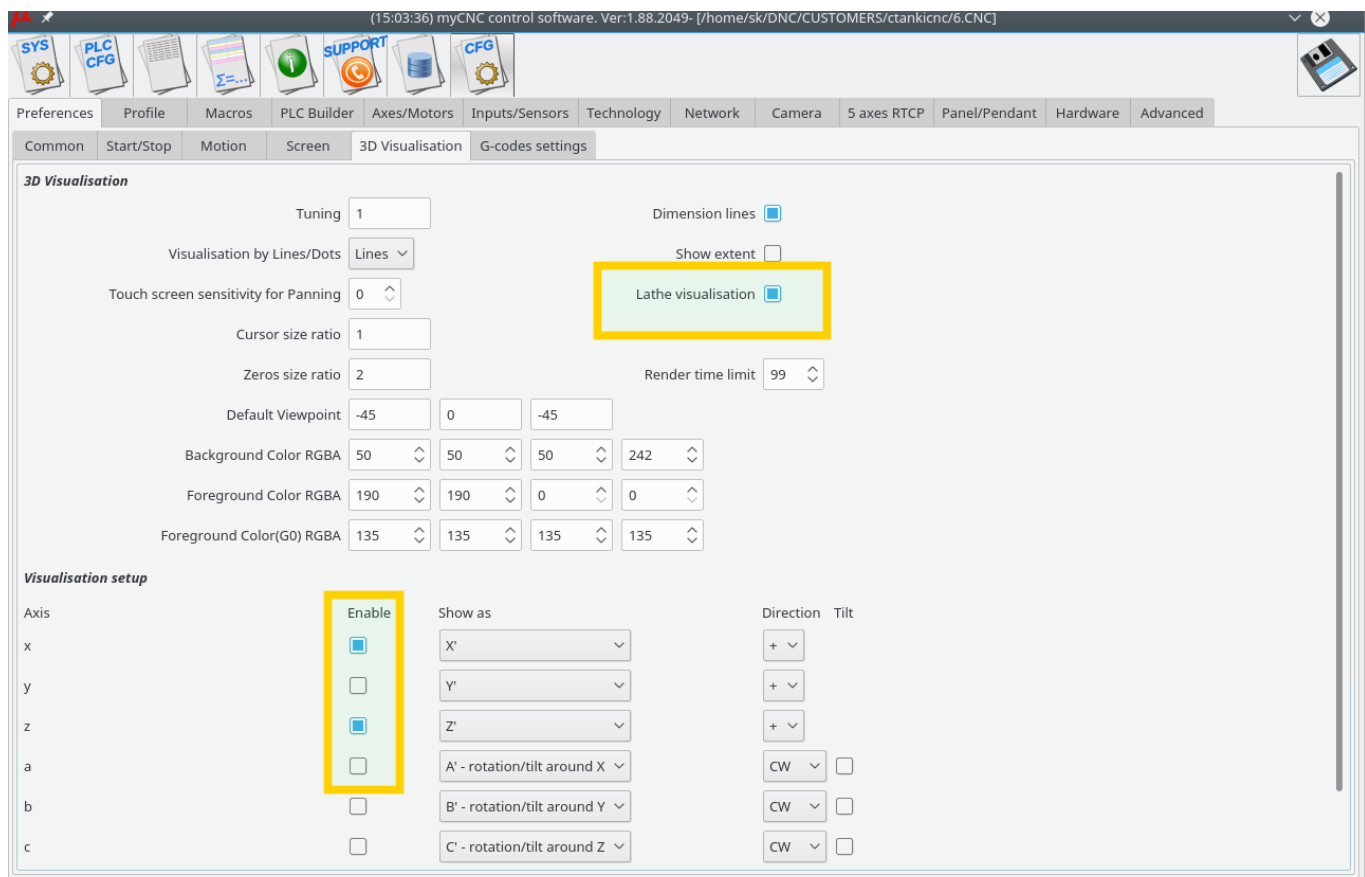
How to setup Lathe/Turning machine

1. Select Basic profile as “Lathe” in **Cfg - Preferences - Common** dialog

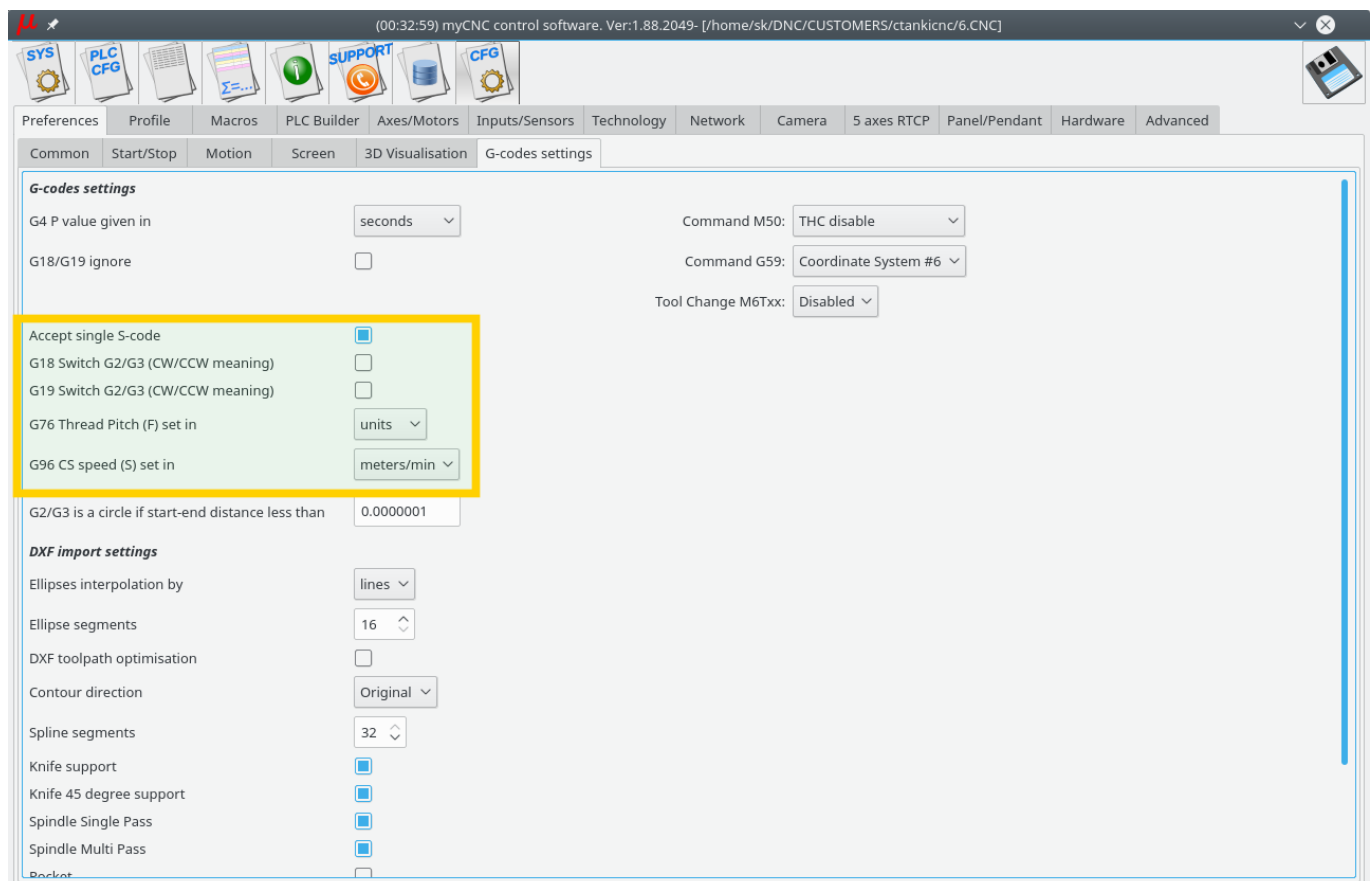


2. Select “Lathe Visualisation” in **Cfg - Preferences - 3D visualisation** configuration dialog

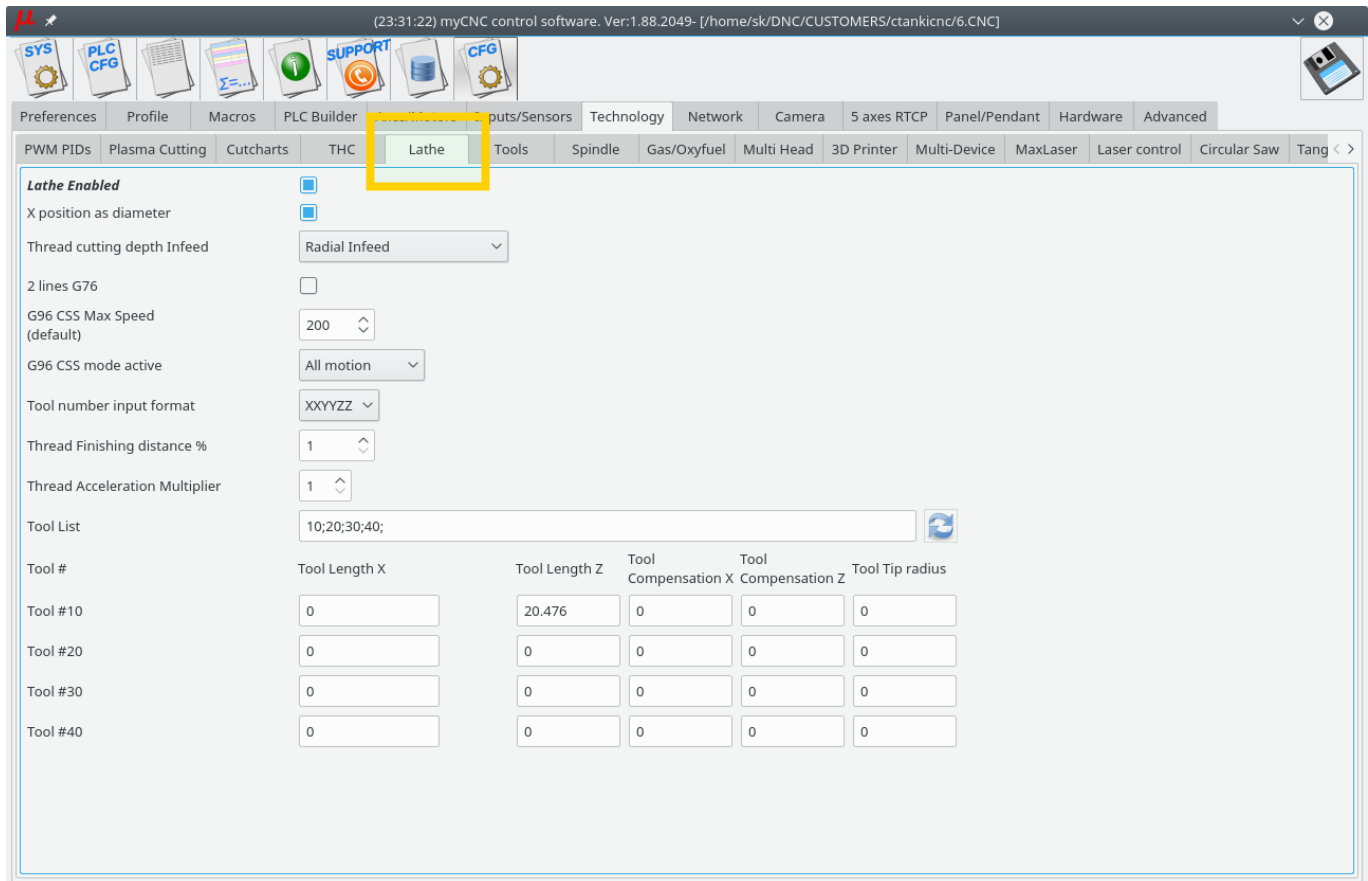
3. Select axes **X, Z** for visualisation and deselect the rest axes.



4. Check G-code settings related to Lathe operations in **Cfg - Preferences - G-codes settings** configuration dialog



5. Goto **Cfg - Technology - Lathe** configuration dialog and setup appropriate settings



How to setup Multi-Tool router

We will put here some process of setup multi tool router. The router has -

- 2x motors on X axes.
- 2x separate spindles installed on separate Z heads.
- Tangential knife head.

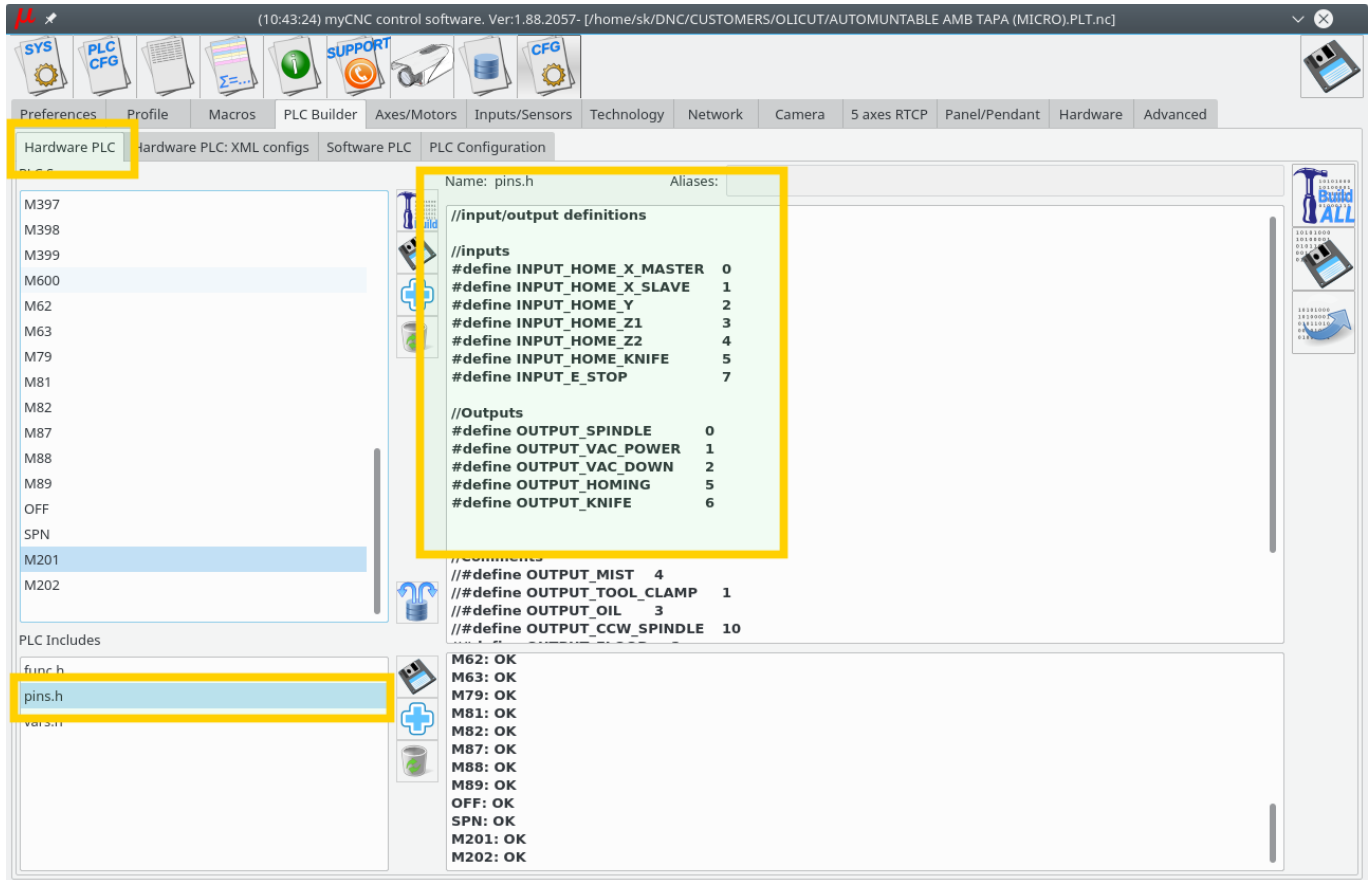
1. Inputs/Outputs assignment described on "pins.h" include file in **Hardware PLC Builder** area -

[pins.h](#)

```
//input/output definitions
//inputs
#define INPUT_HOME_X_MASTER 0
#define INPUT_HOME_X_SLAVE 1
#define INPUT_HOME_Y 2
#define INPUT_HOME_Z1 3
#define INPUT_HOME_Z2 4
#define INPUT_HOME_KNIFE 5
#define INPUT_E_STOP 7

//Outputs
#define OUTPUT_SPINDLE 0
#define OUTPUT_VAC_POWER 1
#define OUTPUT_VAC_DOWN 2
```

```
#define OUTPUT_HOMING      5
#define OUTPUT_KNIFE      6
```



2. How to switch between spindles (Z1/Z2) heads.

Axis pulse-dir signal can be connected/disconnected from **Motor output** by writing to CNC registers 0x70...0x75 (112...117)

- 0x70 (112) - Motor output #0
- 0x71 (113) - Motor output #1
- 0x72 (114) - Motor output #2
- 0x73 (115) - Motor output #3
- 0x74 (116) - Motor output #4
- 0x75 (117) - Motor output #5

Low 4 bits (0..3) of the writing value represent Axis to connect -

- 0 - X
- 1 - Y
- 2 - Z
- 3 - A
- 4 - B
- 5 - C
- 15 - disconnected

pulse-dir Direction will be changed (**DIR** signal inverted) if Bit #4 is set.

This way we add PLC procedures M201 and M202 to switch Z axis between Motor outputs #3 and #4

M201.plc

```
#include vars.h
main()
{
    parameter=15;    //OFF
    command=112+3;    //channel 3
    message=PLCCMD_SET_CNC_VAR;
    timer=2;do{timer--;}while(timer>0);

    parameter=2+16;    //Attach to Z
    command=112+4;    //channel 4 turning off
    message=PLCCMD_SET_CNC_VAR;
    timer=2;do{timer--;}while(timer>0);

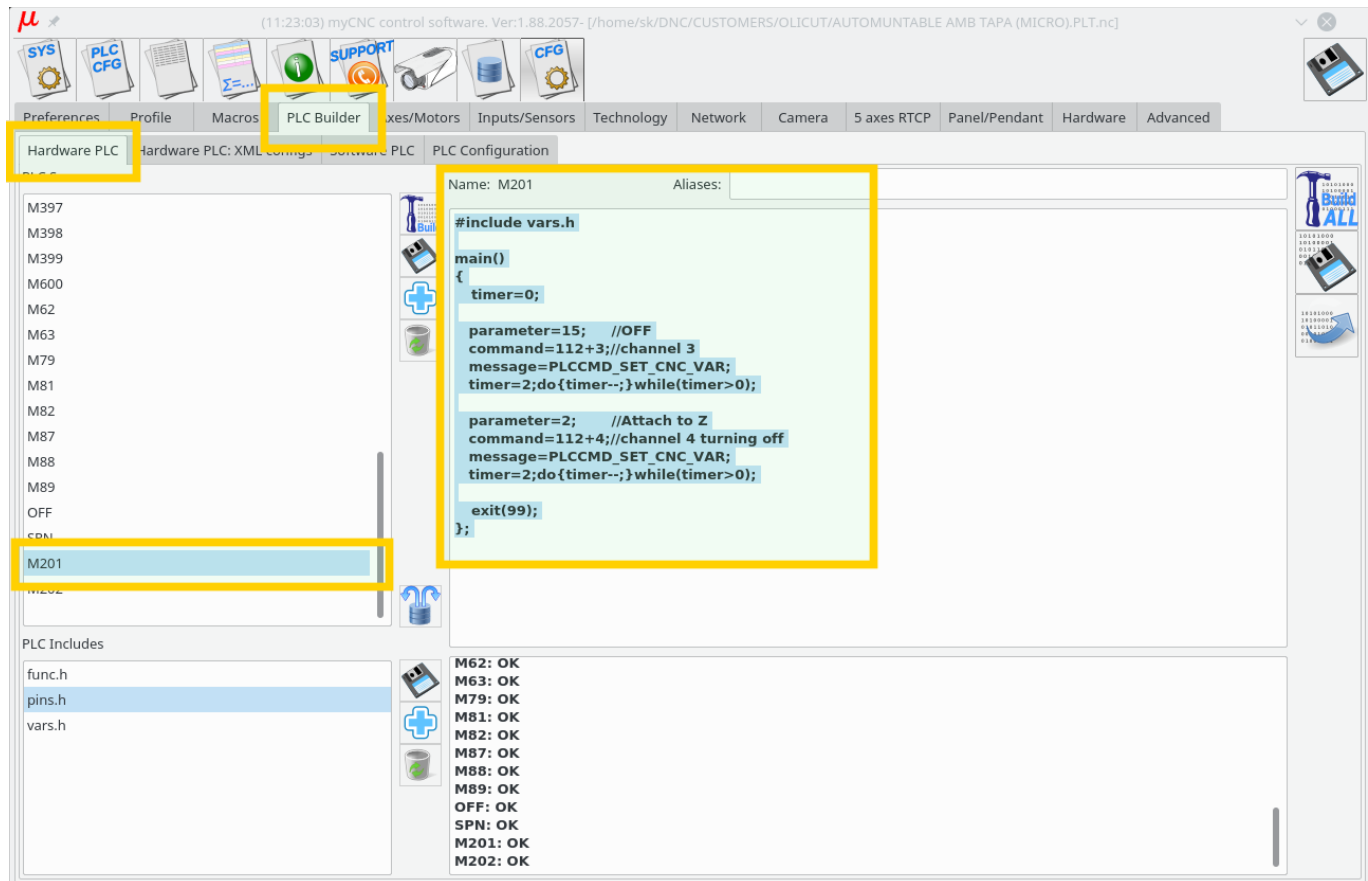
    exit(99);
};
```

M202.plc

```
#include vars.h
main()
{
    parameter=15;    //OFF
    command=112+4;    //channel 4
    message=PLCCMD_SET_CNC_VAR;
    timer=2;do{timer--;}while(timer>0);

    parameter=2+16; //Attach to Z
    command=112+3;    //channel 3
    message=PLCCMD_SET_CNC_VAR;
    timer=2;do{timer--;}while(timer>0);

    exit(99);
};
```



3. Homing for Z1, Z2 axes can be configured in Macro Wizard. **M133** macro is usually used for **Homing Z** procedure. We will use macro names M1331 and M1332 for 2 homing procedures for every Z axis.

M1331

```
M201 (Turn ON Z1 axis, OFF Z2 axis)
G10 L80 P5521 Q1
G10 L80 P5525 Q1
M88 L0 P3(Soft stop when sensor triggered)
G91 G0 Z 200.0000 F 600.00
G04 P0.1
M89 L1 P3(Quick stop when sensor triggered)
G91 G0 Z -200.0000 F 30.00
G04 P0.1
G91 G0 Z 1.0000 F 500.00
G90 G10L70 P0 Z #5453
G10 L80 P5521 Q0
G10 L80 P5525 Q0
G10 L80 P7393 Q0 (Homing Flag)
```

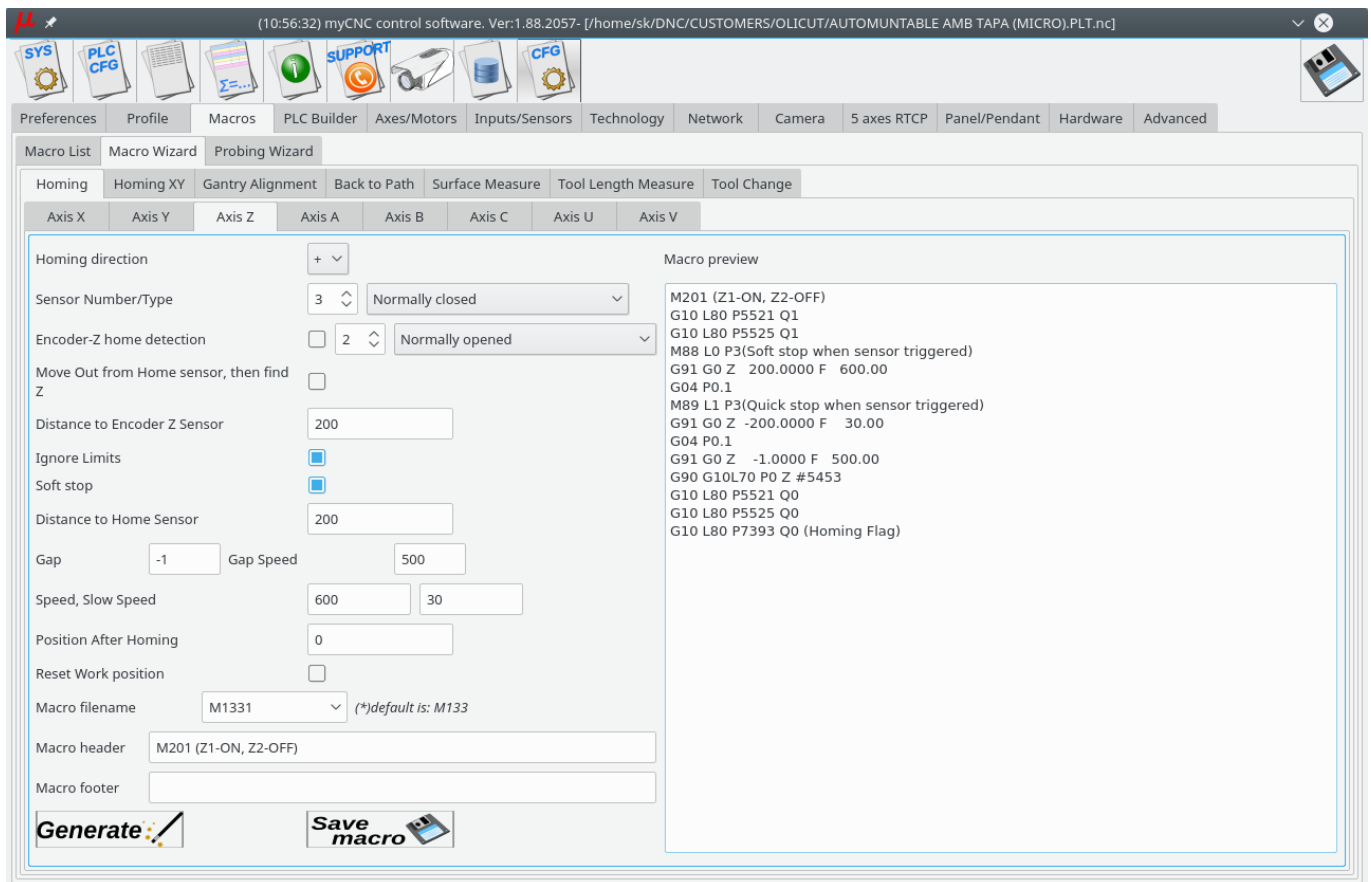
M1332

```
M202 (Turn OFF Z1 axis, ON Z2 axis)
G10 L80 P5521 Q1
G10 L80 P5525 Q1
```

```

M88 L0 P4(Soft stop when sensor triggered)
G91 G0 Z 200.0000 F 600.00
G04 P0.1
M89 L1 P4(Quick stop when sensor triggered)
G91 G0 Z -200.0000 F 30.00
G04 P0.1
G91 G0 Z 1.0000 F 500.00
G90 G10L70 P0 Z #5453
G10 L80 P5521 Q0
G10 L80 P5525 Q0
G10 L80 P7393 Q0 (Homing Flag)

```



4. **M138** macro is used for **Home-All** procedure. It should be fixed to support Z1, Z2, tangential knife homing and **OUTPUT_HOMING** output described in "pins.h"

M138

```

M62P5 (OUTPUT HOMING ON)

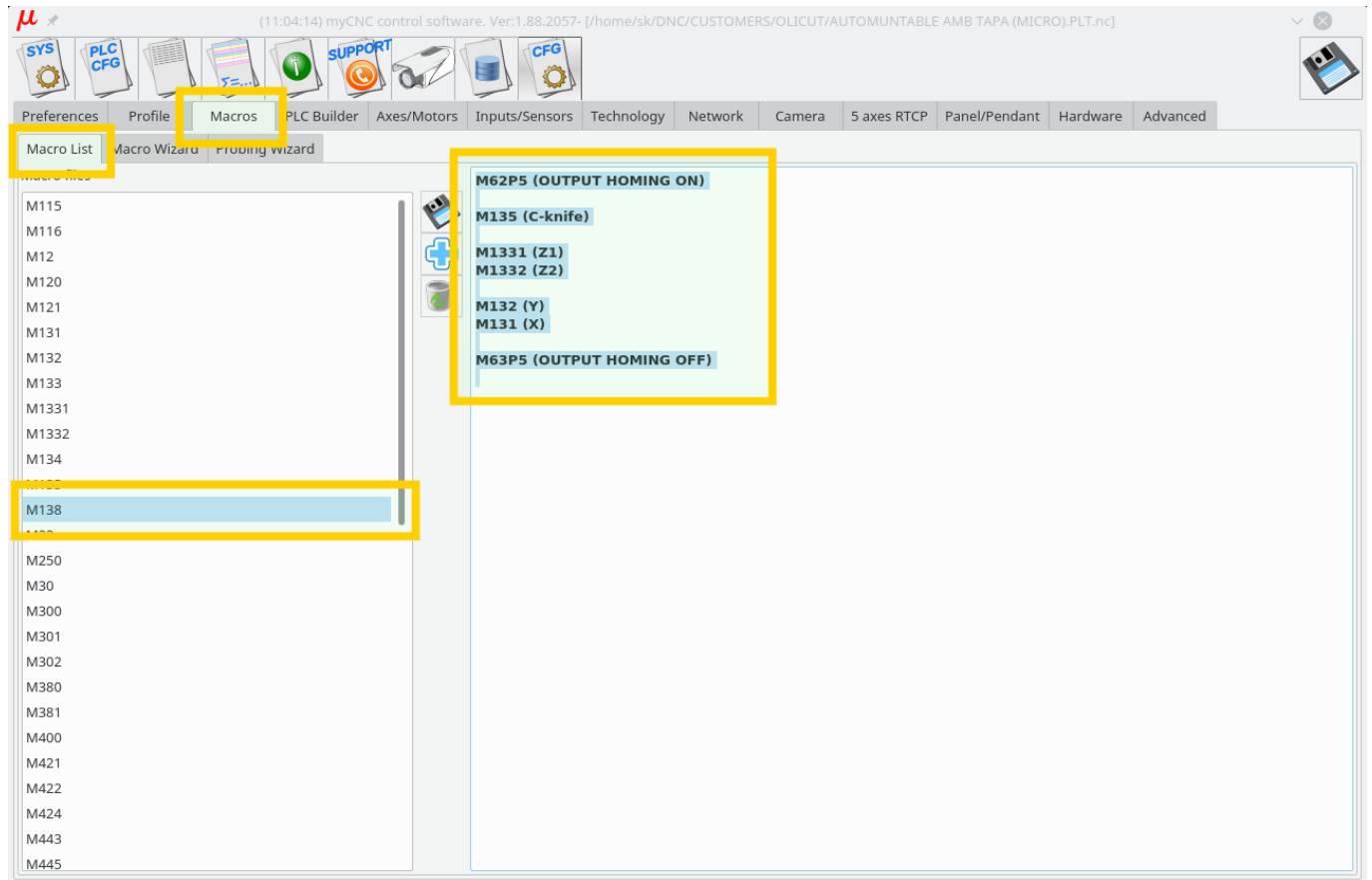
M135 (C-knife)

M1331 (Z1)
M1332 (Z2)

M132 (Y)
M131 (X)

```

M63P5 (OUTPUT HOMING OFF)



5. M6 - Tool Change macro for multitool configuration.

M6

```

M600 P#5409

if [ #5409 NE 1 ] 100
M150
GOTO 1000

N100
if [ #5409 NE 2 ] 200
M151
JUMP 1000

N200
if [ #5409 EQ 3 ] 300
G10 L80 P7005 Q0
JUMP 1000

N50
G10 L80 P7005 Q1
  
```

N300

N1000

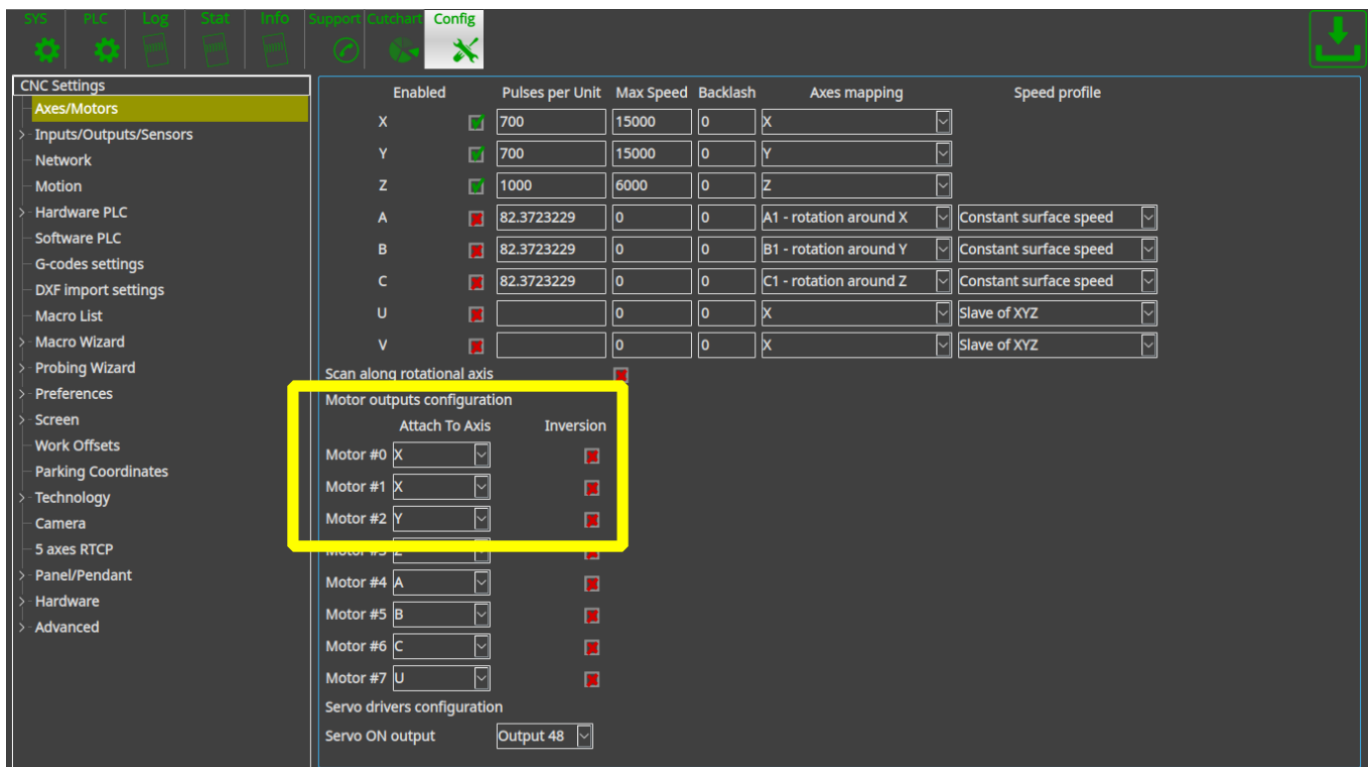
G10 L81 P5400 Q5409 (set current tool number)

How to setup Dual Axis (Slave X, Slave Y)

Dual axis setup is really simple.

Goto "Axes/Motors" configuration dialog and set the same axis for two motor outputs. They will work together

For example motor outputs #0 and #1 are used for the same X axis on the picture below.



Next picture shows how to attach Y axis to motor outputs #1, #2.

Enabled	Pulses per Unit	Max Speed	Backlash	Axis mapping	Speed profile
X	700	15000	0	X	
Y	700	15000	0	Y	
Z	1000	6000	0	Z	
A	82.3723229	0	0	A1 - rotation around X	Constant surface speed
B	82.3723229	0	0	B1 - rotation around Y	Constant surface speed
C	82.3723229	0	0	C1 - rotation around Z	Constant surface speed
U		0	0	X	Slave of XYZ
V		0	0	X	Slave of XYZ

Motor outputs configuration		
	Attach To Axis	Inversion
Motor #0	X	☐
Motor #1	Y	☒
Motor #2	Y	☒
Motor #3	Z	☐
Motor #4	A	☐
Motor #5	B	☐
Motor #6	C	☐
Motor #7	U	☐

Servo drivers configuration	
Servo ON output	Output 48

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