

CNC CAD CAM Package 4.0
NORTHLAND MULTISOFT LLC

I invite you to try it out and see for yourself if this is a product you would like to use. If you decide keep using it then you must purchase this software license. To receive a discount, click on the graphic at start up and print by pressing the space bar.

Web Site:

<http://www.northlandmultisoft.com>

DISCLAIMER - AGREEMENT

Users of the CNC-CAD-CAM Package must accept this disclaimer of warranty: The CNC-CAD-CAM Package is supplied as is. The author disclaims all warranties, expressed or implied, including, without limitation, the warranties of merchantability and of fitness for any purpose. The author assumes no liability for damages, direct or consequential, which may result from the use of the CNC-CAD-CAM Package.

All users of the CNC-CAD-CAM Package must register and pay for their copies of the CNC CAD CAM Package within 60 days of first use or their license is withdrawn. Site-License arrangements may be made by contacting Northland Multisoft.

INSTALL:

=====

From a ZIP file:

=====

Copy the CADCAMCAM.ZIP to C:/CNC and unzip the file.

Needed to run software:

=====

Windows 98 - 10

Needed items:

=====

Printer

RS-232 serial communications port or USB to serial Adapter.

CNC able to Input/Output ASCII or ISO code.

Seven or more wire shielded cable. (24 gauge wires min.)

(2) twenty five pin plugs, one female (computer) and one male (CNC).

Or (1) nine pin female (computer) and (1) twenty five pin male (CNC).

Cable wire listed form computer to CNC.

=====

DTE is the most common.

DATA Terminal Equipment

DTE 1-1, 2-3, 3-2, 4-5, 5-4, 6-6+8+20, 7-7

DATA Communication Equipment

DCE 1-1, 2-2, 3-3, 4-4, 5-5, 6-6, 7-7

Wire the cable as shown above. Cable and plugs can be found at an electronics store. If you need help, contact me and arrangements can be made.

More than one CNC:

=====

Programs should be stored for each machine, the code and communications

may be different, so use a different directory to store files for each machine or project. Make a sub directory from the CNC directory by using / Machine then NEW, and name it. Use / Machine to select the machine or project before starting your work.

CNC communication data and file search:

```
=====
(RS-232 PORT) (BAUD RATE) (PARITY) (DATA) (STOP) (FILESPEC)
The default settings are COM1 2400 E 7 1 *.CNC
```

```
EXAMPLE > COM1 9600 E 7 2 *.CNC
EXAMPLE > COM7 115200 E 7 2 *.CNC
EXAMPLE > COM2 300 N 8 1 *.CNC
```

You must find out how your machine is setup to communicate and match CNC-Transedit accordingly. To find your computer com settings: in Windows - Control Panel - System - Device Manager - ports, They can be changed for best use.

CNC-Transedit functions

Enter:

```
=====
Identify the current file.
Print/Part # and Part Name
```

F1 Help listing:

F2 Receive file:

```
=====
Plug in cable.
Start CNC-Transedit.
Select file and press receive.
Activate I/O on machine (send).
Note: this overwrite the current file.
```

F3 Print:

```
=====
PRINT the current G-code file.
```

F4 Send file from computer to machine:

```
=====
Plug in cable.
Start CNC-Transedit.
Activate I/O on CNC (receive).
Select file and press send.
Press the space bar to start sending.
```

Tab Key:

```
=====
Press the Tab key to search for a file. For an example enter the file
name or the beginning characters of the file name to move to the
closest file name matching what was entered.
```

F6 Edit program:

```
=====
Press F6 to edit a program. You can create a program, or edit an
existing program by selecting the file to edit.
```

F7 Print program list:

```
=====
Press F7 to print a list of programs on a printer. This will also
```

test for lost program files.

ESC Key:

=====

Close program.

F8 Receive unlisted file:

=====

Plug in cable.

Start CNC-Transedit.

Press F8 to receive a file from the CNC that is not currently listed.

ENTER file name.

Activate I/O on machine (send).

F9 CNC-Trailblazer and load file:

=====

Press F9 to start CNC-Trailblazer and load the file currently listed. There must be a source file *.SRC that was created using CNC-Trailblazer.

F5 CNC-Trailblazer:

=====

Press F5 to execute CNC-Trailblazer to make code.

\ Machine:

=====

Press \ (backslash key) to change the directory and load another machine's files and communication parameters. Select NEW to add a new machine and enter a new machine name.

S Setup COM:

=====

Change communication parameters and filespec search. The filespec *.CNC will list all CNC program files (machine code). The filespec *.SRC will list all CAD CAM source files that have been created.

Edit Function Keys

ESC Exit Exit to Identify.
 F1 Help Display help.
 F2 Save Saves file from memory to disk.
 F3 Load Loads file from disk to memory.
 F4 New Starts a new file and clears memory.
 F5 Delete Delete file from disk.
 F6 Search Search for selected text.
 F7 Cut and Paste Cut and paste text to and from buffer.
 F8 Options Print, Shift, Repeat, Number.

Editor key status

END Send cursor to end of line.
 CTRL END Send cursor to end of file.
 HOME Send cursor to beginning of line.
 CTRL HOME Send cursor to beginning of file.
 DELETE Delete character to the right.
 BACKSPACE Delete character to the left.
 ARROW UP Move up one line.
 ARROW DOWN Move down one line.
 ARROW LEFT Move cursor one character to the left.
 ARROW RIGHT Move cursor one character to the right.
 ENTER Go to beginning of next line.
 INSERT On or off marker for Cut and Paste.

CNC-Trailblazer start-up:

=====

Select the resolution that will fit on your computer. On the initial start-up the code identification input is needed in each machine directory that has been set-up. Select XY and then setUp code. Two examples are on screen, one for a lathe type and one for mill type.

X horizontal - X is used for both.
 Y vertical - Z for lathe type and Y for mill type.
 I Hor Radius - I is used for both.
 J Ver Radius - K for lathe type and J for mill type.
 0 X-Y X-DIA - 1 for lathe type and 0 for mill type.
 Start line 1 - (optional)
 Start line 2 - (optional)
 End line 1 - (optional)
 End line 2 - (optional)
 3-8 Decimals - G-code decimal places to output.

X, Y, I, J are the standard code identifiers, but some machines are different. A lathe for example, the identifiers are in the order of X, Z, I, K. When plotting, the standard code identifiers (X and Y) are used and will be converted when the file is saved. Do not use diameters when plotting for a lathe. To convert the code for a lathe enter "1" for the (X-Y X-DIA) entry. For a lathe program use Y for X and X for Z when making the program. You may enter a typical start and end code for your machine. The typical start code for a wire EDM could be: G20 G90 G92. The codes are not the same for all machines, so refer to your machines documentation. CNC-Trailblazer uses absolute positioning (G90).

General procedure for making CNC code:

Window Area

Input the window area coordinates. The window area is determined by the size of the part and the start point of the program. The Area can be changed at any time by selecting XY and Area, also the screen resolution can be changed.

Example 1: Start of program is X 0, Y 0

Part size = X 1, Y 2
 Start point = X 0, Y 0

Min X -1.1
 Max X 1.1

Min Y -1.1
 Max Y 1.1

Example 2: Start of program is X .5, Y .5

Part size = X .5, Y .5
 Start point = X .5, Y .5

Min X -.1
 Max X .6

Min Y -.1
 Max Y .6

Geometry

Place the geometry of the part on the screen by using the geometry

ICON's. The geometry section gives details of each geometry ICON.

Y is vertical (up and down) top positive.
 X is horizontal (right and left) right positive.
 Angles are as follows:

Right = 0 or 360 degrees
 Top = 90 or -270 degrees
 Left = 180 or -180 degrees
 Bottom = 270 or -90 degrees

Keep in mind that angles on blue prints have arbitrary angle call outs. If the print calls out a 30 degree angle off a vertical line to the top right then the angle would be $(90 - 30 =) 60$ degrees.

Plot Tool Path

Select the plot ICON (the pencil) and press the left mouse button on the item, and near the start intersection that will be included in the next plot move. Continue until your path is complete. The line-circle indicator will show blue if on a line or a circle.

Note:

A full circle can not be plotted in one move, it must be plotted in two or more moves.

If the intersection has other close geometry nearby then you may need to separate the intersection to select the correct geometry. Use the ZOOM function.

If the wrong path is found then select the Delete Plot ICON (the crossed out pencil) to delete the last path move. The "D" key on the keyboard will also delete the last current plot move.

If another geometry item is too close so that you cannot make the correct path move then use the Delete Geometry ICON (the crossed out circle and line) to temporarily delete that geometry. The one geometry will be put in memory. Press the "R" key on the keyboard to replace the one geometry.

Save File

Always remember to save the program before exiting CNC Trailblazer.

Other Options

Print out the geometry and plot code. Also you may printout a setup page. Additional code can be added by selecting the save Icon and Add Code. To go to intersection enter N(line) or left-right arrow keys or the arrows on screen or click near intersection. The Add Code only prints from the CNC-Transedit print out.

After saving the program you may leave CNC Trailblazer by exiting to CNC Transedit. Now you may send the program to your CNC machine or to another device. Identify your programs and printout your program code. You may also edit your program by using the editor.

Window size Area:

Enter the window size area dimensions. For example if a two inch square area is needed and zero is the center then enter:

Min X -1

Max X 1

Min Y -1

Max Y 1

The window size area can be changed at any time by selecting the XY icon and selecting Area. Also the resolution can be changed.

Geometry coordinates:

To display the coordinates of a geometry click the right mouse button with the mouse cursor near the desired geometry. The information will be displayed on the lower left corner of the screen. Press I to insert the Origin geometry into a geometry input.

Option Select:

Numbers can be entered at the O prompt as follows:

1 VERTICAL LINE

After this selection has been made then enter the X coordinate point.

2 HORIZONTAL LINE

After this selection has been made then enter the Y coordinate point.

3 CIRCLE

After this selection has been made then enter the X coordinate point, Y coordinate point, and the radius of the circle.

4 ANGLE

After this selection has been made then enter the X coordinate point, Y coordinate point, and the angle of the line.

5 PARALLEL LINE

After this selection has been made then move the mouse cursor near a line and click the left mouse button to select that line. Now enter the distance desired either positive or negative. The result will be measured at 90 degrees of the selected line's angle.

6 LINE circle to circle

After this selection has been made then move the mouse cursor near a circle and click the left mouse button to select that circle. Now move the mouse cursor near the second circle and click the left mouse button to select the second circle. When selecting circles click the left mouse button near the area that the line will be tangent to that circle.

7 LINE circle angle at angle

After this selection has been made then move the mouse cursor near a circle and click the left mouse button to select that circle. Now enter the angle of the tangent point and then enter the angle of the line.

8 CIRCLE angle radius

After this selection has been made then move the mouse cursor near a circle and click the left mouse button to select that circle. Now enter

the angle of intersection and the radius of the new circle. If a negative value is entered for the radius then an inverted circle will be the result.

9 CIRCLE between two lines

After this selection has been made then move the mouse cursor near a line and click the left mouse button to select that line. Now move the mouse cursor near the second line and click the left mouse button to select the second line. Now enter the radius desired. When selecting lines click the left mouse button near the side that the circle will be tangent to that line.

10 Erase item - DELETE Geometry

click the left mouse button with the mouse cursor over the delete geometry ICON to enter delete. Now move the mouse cursor near the geometry that is to be deleted and click the left mouse button. The geometry selected will turn red. Pressing the left mouse button will delete the geometry and pressing the right mouse button will deselect deleting that geometry. Pressing R will replace the one deleted geometry.

11 Radius line and circle

After this selection has been made then move the mouse cursor near a line and click the left mouse button to select that line. Now move the mouse cursor near a circle and click the left mouse button to select the circle. Now enter the radius desired. When selecting items click the mouse button near the side that the circle will be tangent to that line or circle. Enter a negative radius to place the circle inside the selected circle.

12 CIRCLE between two circles

After this selection has been made then move the mouse cursor near a circle and click the left mouse button to select that circle. Now move the mouse cursor near the second circle and click the left mouse button to select the second circle. Now enter the radius desired. When selecting circles click the left mouse button near the area that the circle will be tangent to that circle.

13 PLOT Path

click the left mouse button with the mouse cursor over the plot path ICON to plot your tool path. Plot path may be activated at any time. When activated, click the left mouse button with the mouse cursor on a geometry and near an intersection that the path will start from. Always select the specific geometry that will be included in the next path. Select another ICON to exit the plot path mode.

14 DELETE Plot

Click the left mouse button with the mouse cursor over the delete plot ICON to delete the last current plot move from the screen and memory. If your last plot move found the wrong location then use the delete plot function and try again. Use the zoom function if you are having difficulty plotting the location desired. Pressing the "D" key on the keyboard will also delete the last current plot move.

15 Circular Direction

This is a circular plotting function. To change the direction, either clockwise or counter clockwise, move the mouse cursor over the

circular direction ICON and click the left mouse button. The current direction will be displayed in blue.

LINE-CIRCLE Indicator

This indicator shows you that your last plotting move ended on either a line or a circle. This is important because if your next plot move will be plotted a radius and if your last plot location was on a line then your next plot move will be plotted a straight line. You must click the left mouse button on the geometry that your next move will start from.

17 XY

Options are X or Y mirror. if X is selected then X dimensions will be mirrored and if you select X mirror again then the X dimensions will mirror again and will be as it was. X mirror is a horizontal mirror and Y mirror is a vertical mirror. XY change will swap X dimensions with Y dimensions. Area allows you to change the dimensions of the window work area and also change the screen resolution. Run let's you see the plot path run on screen. You may change the accuracy of the incremental move. You may change the run output to the screen, printer, com port, or save to disk. Select setup to configure that device. SetUp code let's you change the finished program code output. Shift lets you shift X and/or Y dimensions, positive or negative.

18 PRINT

Click the left mouse button with the mouse cursor on the print ICON to display the print menu. Now select your option by clicking the mouse button on the desired box. The source box selection prints the geometry and plotting code. The setup form selection prints a setup sheet to organize and setup a part run.

19 FILE

Select the file ICON to display the file menu. Now type the File Name and select either load, save, or new. Use CNC-Transedit to select a program file to load if the file name is unknown. New clears the memory to make a new program. Always remember to save a file before you exit. Select the Add Code box to add code to your program. Just point and press your mouse button near a plot intersection and enter the code needed. Also to go to intersection enter N(line) or left and right arrow keys or the arrows on screen or click near intersection. Add code also gives you the X and Y coordinates of the intersection.

20 ZOOM

Click the zoom ICON and enter the a multiplier from -250 to 250 and enter the X and Y coordinates or click the left mouse button with the mouse cursor at the location in the work window desired. To return to normal enter 1 or 0 for the multiplier.

21 REPLOT

Click the left mouse button with the mouse cursor over the replot ICON. This will replot any geometry and plot path that you have in memory. This may be needed if extensive editing is done.

22 CALCULATOR

Select the calculator ICON to enter the calculator mode. It works as any calculator would. You may input the Origin geometry coordinates if you had previously right clicked on a geometry with your mouse and

selecting X, Y, R, or A or click on the numbers to enter the values into the calculator.

Note:

Origin geometry is selected outside of the calculator mode by clicking the right mouse button near a geometry.

23 EXIT

Select the exit ICON to display the exit menu. Now select your option by clicking the mouse button over the box desired. You may exit to CNC-Transedit, Yes to exit program, or resume by selecting the No box.

F1

Select F1 to view help on program feature groups and quick key functions. Select Example to view a simple program example. Select Other for screen orientation and General Information.

NORTHLAND MULTISOFT LLC

Web Site: www.northlandmultisoft.com

E-mail: support@northlandmultisoft.com