

TreeSoft PeckPlus

PeckPlus was written by Paul Rowntree, based on information and sample source codes provided by Vectric and other ‘gadgeteers’. Any flaws in this package were introduced by me. I believe it works well, but no guarantees are given for its use in any application. **PeckPlus** works with Aspire 4.0 (or greater) and VCP 7.0 (or greater). **It will not work with previous versions of either program.** Although Rowntree retains copyright, you are free to use the components in any way you wish, including personal and commercial applications. You are not permitted to redistribute the files, nor remove the copyright information that they contain, without written permission.

The current cost of **PeckPlus** is \$50.00 CDN. Each copy of **PeckPlus** may be associated with a single licensed copy of Vectric’s Aspire or VCP.

Values in the provided database must be verified by the user before use.

Change Log

May 18 2013	<ul style="list-style-type: none">- Final retraction is now G00 for speed- Distinguished G00/G01 distances in dialog display- Fixed SafeZ bugs (value saved properly, value always respected)- Added “NoGoingHome” option (use with caution : See Step 8)
May 16 2013	<ul style="list-style-type: none">- Made moves between drill sites into G00 rapids- Now permits drilling to very far below material bottom surface
May 13 2013	<ul style="list-style-type: none">- First draft written and working

Disclaimer

By downloading, installing and using this program you are accepting full responsibility for any and all consequences. CNC machinery is potentially dangerous, and the user is 100% responsible for ensuring that the output of **PeckPlus** is safe to use, and that it will have the desired effects.

As always with CNC equipment, think many times before running code, and doing air cuts is often a good idea with new files. Verify the Z limits of the loaded files before cutting to ensure that you are not going to destroy your table top, spindle, or both.

Work and Play safely.

What is PeckPlus ?

PeckPlus is a ‘gadget’ for Vectric’s Aspire 4.0 (and higher) and V-Carve Pro 7.0 (and higher) CAD/CAM tools. It builds peck-drill toolpaths with programmable parameters; these parameters are stored in a simple editable database file (PeckPlus.txt) and they can be adjusted at run time. The positions on the design that will receive the drill toolpaths are set by the current list of selected vectors, or they can be read in from a CSV file. **PeckPlus** will put an identical drill at the centre of each one. The key differences from the built-in peck-drilling tools provided by Vectric programs are (1) more flexible control over the depths of the individual pecks, (2) more flexible control over the chip-clear/chip-break process that takes place between pecks, and (3) the ability to flexibly load and save the (x,y) positions for the peck-drill sites.

The gadget works with Aspire and VCP in exactly the same way.

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Unpacking PeckPlus

If using a Vectric installer, the files are already in their correct locations and are ready to run. Alternatively, the archive can be opened with Windows, WinZip, Z-zip, or any other standard unzipping program. Extract the files to any directory, then move the individual components in the directories shown below. Aspire or VCP will find the gadgets and show them in the Gadgets menu lists.

Windows Path	Contents
Aspire and VCP User Gadget directories, created during Aspire or VCP installation C:\Users\Public\Public Documents\Vectric Files\Gadgets\Aspire Vx.y\ or C:\Users\Public\Public Documents\Vectric Files\Gadgets\VCarve Pro x.y\	PeckPlus.lua PeckPlus.txt PeckPlus.html If you want, you can create a subdirectory and place these files inside it. This unclutters the Gadgets menu of Aspire and VCP.
Anywhere you want	PeckPlus.pdf (this file)

Using PeckPlus

The following values describe a PeckPlus's tool trajectory within Aspire/VCP:

Data Field	Meaning	Values
Safe Z	The height of the tool above the material surface as the tool moves between drill sites	>0
Total Drill Depth	Depth of the hole to drill. If POSITIVE : measured from the top of the material If NEGATIVE : measured from the bottom of the material	Any value
First Peck Depth	Depth of the first peck below the surface of the material	>0
Peck Stepdown	Depth between successive pecks. When a new tool is selected, the Pass-depth is used for this parameter	>0
ChipClear Mode	Controls if the tool retracts to a fixed Z value (which can be above or below the material surface), or if the tool retracts by a fixed distance between pecks.	Constant Z, Constant Retraction
Chip Clearing	The characteristic distance used in the two modes of Chip Clearance	Constant Z : any value Constant Retraction : >0

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1. After installing the files, restart Aspire or VCP, and verify that it has found the PeckPlus.lua file by checking the Menu>Gadgets listing.
2. Before running the gadget, create a project and create one or more circular vectors on the 2D presentation.
3. Select all of the circles, **but do not group them**.
4. Run the **PeckPlus** gadget, which will present a dialog box similar to the one shown below.
5. The text bar just below the explanatory text should identify the number of vectors that you selected. **Ignore the two buttons (Load ... , Save ...) below this message for now.**
6. Choose a tool from the standard Vectric Tool database. **PeckPlus** will accept end-mills, ball-nosed bits, and radiused end-mills, and drill bits.
7. Enter an appropriate name for the toolpath. If the associated checkbox is checked, all existing toolpaths with exactly the same name (case-sensitive) will be deleted before creating the replacement. This makes iterative designing of the toolpaths very rapid.
8. Checking “No Going Home Mode” will set the Home Position to be the first drill site. When not checked, the home position is the lower-left corner of the material. Vectric recommends that the lower-left position be used for the home position (i.e. unchecked) but this may cause excessive and time-wasting motion of the tool. **Use this option with caution, as it may have unexpected side effects in this or future versions of Vectric software.** You can also disable the move to home at the start of the toolpaths in the post-processor definition file.
9. Ignore the two DropDown selectors for the moment. Enter appropriate values to describe the pecking drillpath you want in the five numerical entry fields, and select the appropriate units (millimeters or inches). **Remember that negative values of the Total Drill Depth (e.g. -0.1) correspond to cutting all way through the material, and this much further into the spoilboard (in the case below, 0.1 below the material bottom, in whatever units you are using). PeckPlus does not limit the cutting depth to the material thickness, ever. You are in control.**
10. Choose the Chip Clearing strategy required. ‘Constant Z’ mode will return the tool to the Z position given by the Chip Clearing parameter, between each peck. ‘Constant Retraction’ will retract the tool by the Chip Clearing parameter. ‘Constant Retraction’ mode is typically twice as rapid as ‘Constant Z’ mode.
11. Verify the settings. Repeat step (11) as many times as necessary. If you press the ‘View Z Profile’ button it will present a dialog box summary of the Z profile that will be created using the current parameters.
12. Press “Ok” to accept or “Cancel” to reject the settings. If you accept them, the program will generate the toolpaths and add them to the toolpath list so you can preview the results.
13. If you pressed “Ok”, the last set of parameters will be saved for the next use of **PeckPlus**.

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This is a preview of the **PeckPlus** dialog interface.

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This gadget creates a programmable pecking drill toolpath at the centre of each selected vector on your project. [See the manual for details.](#)

Choose the appropriate drill tool, and use the entry fields to configure the peck sequence.

You can choose a preset from the database using the drop-down lists, and adjust the values if needed. Choosing a preset will overwrite any custom data entered thus far.

There are 4 selected objects; identical PeckPlus drillings will be made at each centre point

[Load \(x,y\) Points List from CSV file ...](#) [Save \(x,y\) Points List to CSV file ...](#)

Select Tool ... Imperial Tools | Drills | Drill (0.250")

Toolpath Name Delete toolpaths with same name

No Going Home Mode

PeckPlus Category ▼

PeckPlus Sequence ▼

PeckPlus Parameters

MM inches

Safe Z (for transits) *(above material surface)*

Total Drill Depth *(+ : below material surface, - : below material bottom)*

First Peck Depth *(below material surface)*

Peck Stepdown *(below previous peck)*

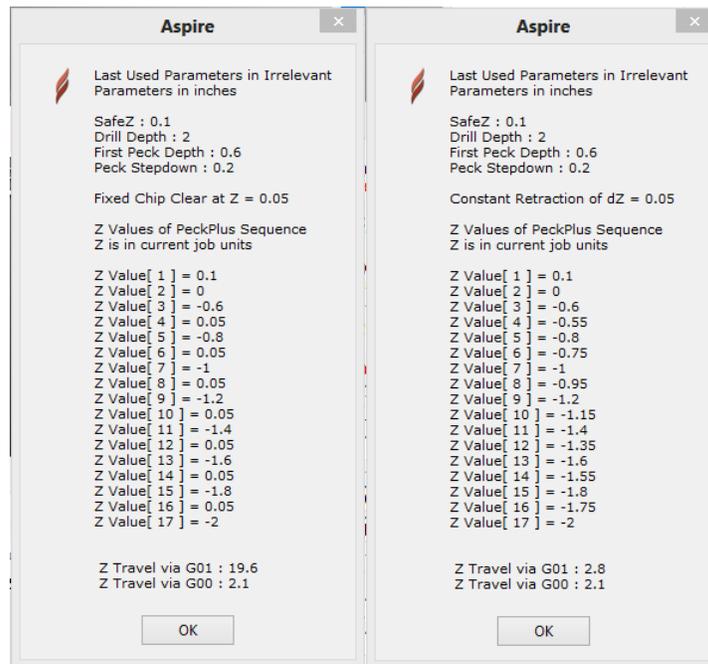
Chip Clearing Constant Z Constant Retraction

PaulRowntree.weebly.com Version- 2013-05-18

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Effect of Chip Clear Modes

PeckPlus's most important feature is the ability to control the Chip Clear Modes (Constant Z vs. Constant Retract). If it is important to pull the tool high from the cutting depth, use Constant Z mode. Positive values will lift the tool above the surface, while negative values leave it in the hole, which reduces the chance that debris will be blown or washed into the drill hole. However, if you just need to break the cutting chip from the material, Constant Retraction by a relatively small distance may be more appropriate. Constant Retraction typically requires less than 50% of the time as Constant Z mode, all other factors being equal. This can be an important factor for large numbers of holes. For example, here are the results for drilling through 1" of hard material (where the minimum Z travel possible would be 2.1" for both the G00 and G01 moves)



Using CSV Files to Position PeckPlus drilling sites

Possible scenarios:

- You want to coordinate the positions of holes between projects. You could export the circular vectors via dxf or eps files; unfortunately, in some cases Aspire/VCarve Pro will shift them on the project workspace during importation, losing the alignment between projects.
- A list of positions for holes is available as a list of (x,y) pairs (e.g., for a circuit board), and you don't really want to create all of these vectors by hand.

The two push-buttons below the text bar that identifies how many vectors were selected (the buttons you ignored at step 5) allow you to load up (x,y) coordinates from a CSV file, or to save the selected coordinates to a CSV file for later use. The file "ManyPoints.csv" that is included in the **PeckPlus** package gives the coordinates of the 169 locations on the grid image shown above. If you load this file from the **PeckPlus** gadget, the loaded coordinates will be used, and the selected vectors will be ignored. These coordinates are absolute and do not change when loaded; the holes will stay where you put

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them, even if the different projects have different origins or material sizes (but they must have the same unit base). Drill holes will be created in the order that the (x,y) pairs are found in the CSV file.

Here are the first few lines from ManyPoints.csv

```
; Selected object centres written to CSV file
;
-6, -6
-5, -6
-4, -6
```

No 2D vectors are made when you load these points, and so if you re-run the gadget to modify to PeckPlus parameters, you will have to reload the CSV file as well.

Using the Database

The text file PeckPlus.txt in the gadget directory holds the preset parameters for the countersinks. **The information in the provided database file must be verified/adapted prior to use.** You can edit this file with Notepad, keeping a backup copy in case the file becomes unusable. The structure of the file is described in the text header. It is also a good practice to record the dates that you have edited the file (line 3), and perhaps identify the changes made.

```
; This is the database file for PeckPlus.lua
;
; last edited on May 6 2013 by pr
;
; Should be named PeckPlus.txt, in the same directory as PeckPlus.lua
; Table of drilling information
;
; All values must be separated by commas, lines with semicolons are ignored
;
;       There should be no blank lines in this file.  Use ; to start a comment
;
; col 1 : Name of PeckPlus profile
; col 2 : millimeters = 1, inches=0
; col 3 : DrillDepth (if negative, drill will extend through material by this distance
;
; col 4 : ClearMode = 1 for Constant Z mode, = 0 for ChipClear=Constant Retraction mode
; col 5 : ChipClear the value that is interpreted according to value#4
;
; col 6 : FirstPeck depth of first drill down cycle
;
; ***** col 1-3 are required. Col 4,5 must be absent, or both present.  If absent, simple pecking
done
; ***** col 6 is optional
;
"Favourites"
"Simple Through", 0, -0.02
"Through with small retraction (0.5 in first peck)", 0, -0.02, 0, 0.1, 0.5
"Through with Z=0 ChipClear", 0, -0.02, 1, 0.0
"0.75 in deep with samll retractions", 0, 0.75, 1, 0.05
;
; add as many of your own categories and PeckPlus profiles as needed
;       pr
```

The lines with only one piece of information start "Categories" in the database (e.g., "Favourites"), and can be used to collect similar types or similar functions for your projects. You can use any Category names you wish, and you can have as many Categories as you need. Names and Categories are case-sensitive.

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Each of the other lines describes a **PeckPlus** profile, with a more-or-less useful name. You can have as many profiles in the file as you wish. You can repeat the same name if you want, but this would be confusing.

There are two selector controls on the **PeckPlus** front panel that you ignored at step 9 above. The top one lists all **PeckPlus** Categories that were found in the database. The lower control lists all **PeckPlus** parameter sets in the database. Selecting a Category moves the first entry of that group to become visible in the listing field. Selecting a new profile name in the lower box makes that entry active

The parameters used to create the toolpath are *always* those shown in the edit fields, regardless of the names and categories that may be visible in the DropDown lists.

Tips for Using PeckPlus

- 1) The units associated with the shapes, tools and jobs can be freely mixed; use millimeter or inch unit systems as you see fit.
- 2) **PeckPlus** toolpaths cannot be edited after construction; fortunately they can be easily recreated with new parameters.
- 3) **PeckPlus** will use G00 moves between drill sites, and the tool's PlungeRate going up and down in the drill hole.
- 4) Setting a small negative value as the Drill Depth (-0.02", -0.5mm) will make the hole pass through the entire thickness of the material. It is possible that the thickness of material exceeds your cutter length when making small-bore holes; use a small Drill Depth in **PeckPlus** (Total Drill Depth being positive now) to serve as a drill guide, then finish the job with a twist drill.

If you use **PeckPlus** to produce something interesting, please consider posting photos on the Vectric forums. If you have any questions, I am frequently on the Vectric and CNCZone forums as PaulRowntree, or you can reach me via the PaulRowntree.weebly.com website.

Specialized toolpath models can be prepared upon request.

Cheers!

PR