Customizing the HiddenScript(ver).m1s File.

The HiddenScript_(ver).m1s file has changed significantly in its internal design. Its operation is more reliable and completes the tasks faster than the older script files.

The user may find it necessary to change some of the parameters in order to achieve the results needed. The parameters allow for the use of both the Vancura Innovations Edge Finder, as well as most any other edge finder, including home-made devices. Because there are two different unit systems (English & Metric), two parameter setup tables were created to allow you to more easily understand the setup.

The program uses a two reading verification system to guarantee that each measurement is accurate and repeatable. The program will try a number of times to get two consecutive readings that agree. The *RetryLimit* Parameter prevents the program from getting stuck in an infinite loop. It is initially set to three and that should be plenty.

The program looks at an internal variable that is used to determine if the machine is operating in Metric or English mode, and the program is set to the correct mode automatically.

Only the parameter table that matches your system setup need be changed for your specific needs. The tables are as follows:

```
RetryLimit = 3                          ' === Loop Retry limit ===
'
If UnitsMode = 0 Then                   ' === Set Metric Parameters ===
        ' ================================================
        ' ===== CHANGE HERE to set METRIC Mode parameters ========
        ' ================================================
        Code "(Operating in mm mode.)"
        tool_1          = 2.380         ' 3/32"     =  2.380mm      Favorite tool #1 size
        tool_2          = 3.175         ' 1/8"      =  3.175mm      Favorite tool #2 size
        tool_3          = 6.35          ' 1/4"      =  6.350mm      Favorite tool #3 size
        SIDE_X          = 7.720         ' 0.300"    =  7.720mm      finder side width both X
        SIDE_Y          = 7.720         ' 0.300"    =  7.720mm      finder side width both Y
        CENTER_X        = 00.000        ' mm                        Center of hole offset X
        CENTER_Y        = 00.000        ' mm                        Center of hole offset Y
        Z_TOP1          = 3.111         ' mm                        Top of edgefinder to workpiece surface
        Z_TOP2          = 6.35          ' mm                        Top of edgefinder to workpiece surface
        BigMove         = 25.4          ' 1.000"    = 25.400mm      move probe this distance looking for edge
        SmallMove       = 2.54          ' 0.100"    =  2.540mm      clearance over material
        FeedSlow        = 100           ' 4in/min or 100mm/min      Faster sacrifices accuracy, slower
        max_error       = 0.025          ' 0.001"    =  0.025mm
'
ElseIf UnitsMode = 1 Then     ' === set INCH mode parameters ===
        ' ================================================
        ' ===== CHANGE HERE to set INCH mode parameters ==========
        ' ================================================
        Code "(Operating in INCH mode.)"
        tool_1          = 3/32          ' 3/32"     =  2.380mm      Favorite tool #1 size
        tool_2          = 1/8           ' 1/8"      =  3.175mm      Favorite tool #2 size
        tool_3          = 1/4           ' 1/4"      =  6.350mm      Favorite tool #3 size
        SIDE_X          = 0.300         ' 0.300"    =  7.720mm      finder side width both X
        SIDE_Y          = 0.300         ' 0.300"    =  7.720mm      finder side width both Y
        CENTER_X        = 0.000         ' inches                    Center hole offset X
        CENTER_Y        = 0.000         ' inches                    Center hole offset Y
        Z_TOP1          = 0.122         ' inches                    Top of edgefinder to workpiece surface
        Z_TOP2          = 0.250         ' inches                    Top of edgefinder to workpiece surface
        BigMove         = 1.000         ' 1.000"    = 25.400mm      move probe this distance looking for edge
        SmallMove       = 0.100         ' 0.100"    =  2.540mm      clearance over material
        FeedSlow        = 4.000         ' 4in/min or 100mm/min      Faster sacrifices accuracy
        max_error       = 0.001          ' 0.001"  =  0.025mm
        '
```

Variable Descriptions:

1) tool_1, tool_2, & tool_3 are used to select your favorite tool/probe diameters for side (X & Y) measurement.

2) SIDE_X & SIDE_Y parameters are the thickness of your Edge Finder side walls. The X and Y thicknesses may be different from each other.

3) Z_TOP1 & Z_TOP2 are selectable thicknesses for the top of the Edge Finder. You can also choose "none" if touching to a metallic surface.

4) CENTER_X_& CENTER_Y offsets are used to locate the X & Y corner based on finding the center of a hole in the Edge Finder. The Vancura Innovations Edge Finder has the center of the hole directly over the corner X0, Y0. The large hole is X0.5 & Y0.5 (X12.7mm & Y12.7mm) from the corner.

5) BigMove defines the maximum distance the probe will move to find a TOUCH-OFF condition before giving up.

6) SmallMove establishes a safe clearance for moving the probe just above the touch surface.

7) Feed Slow is the feed rate during the touch off process. This should be fast enough to not put you to sleep and slow enough to get a decent reading while not breaking the tool.

8) max_error: The program will try several times to get two consecutive measurements within this error setting.

9) RetryLimit: The value will limit the number of times it will try to get two consecutive readings that agree within the max_error limit.

10) SpeedSetup17_tool is the default application parameters that you will use most often for probing directly to the work-piece.

a) Command17_X is the default X axis offset that you use most often for edge finding without using the edge finder (usually zero).

b) SpeedSetup17_Y is the default Y axis offset that you use most often for edge finding without using the edge finder (usually zero).

c) SpeedSetup 17_top is the default z-axis offset you use most often for edge finding without using the edge finder (usually zero)

11) SpeedSetup27_tool is the default application parameters that you will use most often for probing using the edge-finder.

a) SpeedSetup27_finderX is the default X axis offset that you use most often for edge finding when using the edge finder (usually SIDE_X).

b) SpeedSetup27_finderY is the default Y axis offset that you use most often for edge finding when using the edge finder (usually SIDE_Y).

c) SpeedSetup27_top is the default Z-axis offset you use most often for edge finding when using the edge finder (usually Z_TOP1).

The parameter changes will be reflected in the input dialog window when using the Auto Tool Zero functions.

To customize the file, open the script using Mach3/Operator/Edit Script Button, select the 'Auto Tool Zero' button. Make the changes. The editor operates like a typical text editor. Don't forget to save the changes and verify that the changes work. You should also make a backup of the changed file.

When you touch the **AUTO TOOL ZERO** button a text box will appear offering the following Selectable Functions:

You will be asked to enter a command number. The options are:

1) Zero to quit without doing anything.
2) A valid command number.
3) 999 for Help

The way it works.

Each function moves the probe toward the selected surface and when it detects the edge, it compares the value with the desired value (usually zero) after compensating for any edge finder thickness. If the values match, it is done. Otherwise it will back off a slight distance and try again. It will check for a match between this reading and the last reading. When it gets a matched set of readings, it is done. This usually takes two touches.

Finding the center of a circle requires 6 tests, searching for: X-, X+, Y-, Y+, X-, & X+. The X axis is tested twice to take advantage of better precision when measuring through the center of the circle as opposed to near one edge.

Function 7 finds all three axis in the order of Z, X, and finally Y. The starting position should be within 1/2 inch (2.5cm) from the desired corner. Functions 17, 27, and 37 perform function 7 with preset default offsets and tools.

17 = No edgefinder, direct to metal work-piece;
27 = edgefinder using the sides;
37 = using edgefinder using hole to find X & Y. (note, tool diameter is not needed).
Functions 2 through 5, 7, and 11 through 15 ask the user for the diameter of the probe and the thickness of the edge finder.

Function 6 asks for the offset to the surface. Tool diameter is not used.

There are now three digit commands that select the function, the surface to touch, and the tool diameter. This permits faster and easier selection of an operation.

Installation:

The proper way to install **the HiddenScript** file:

1) Open the Mach3 program and select the tab **Operator/Edit Button Script** , then
2) Select the **Auto Tool Zero** button,
3) Delete the entire contents of the original hiddenScript file.
4) Open the latest hiddenScript_(ver).m1s file,
5) Select all of the text (use Ctrl-A, then Ctrl-C),
6) Paste (Ctrl-V) the text into the script editor, then
7) Save and close the editor. and finally,
8) Close and reopen Mach3 (this saves the hiddenScript file into the 1024D.scr file).

Note: Mach3 runs the HiddenScript file that is stored in the 1024D.scr file. If the computer is shut down without first closing Mach3, the HiddenScript file changes will be lost.

The file is about 1000 lines long and includes a significant amount of documentation.

Installing the **Edge-Finder_Options.htm** file:
This is a help file for selecting the desired operation.

1) Right click on the **Edge-Finder_Options** file and select “Save Link as”
2) Save the file to the mach3 root directory. The default name of the file should be **Edge-Finder_Options.htm**
3) When selecting a foreign language version, you need to either
    a. Rename the file to **Edge-Finder_Options.htm**, or
    b. Edit the Help button macro to match the name of the desired file.

Thanks,
Bill