The **Z-Shift and Arc Voltage Shift** must be set before the Digital Height Control will work properly. The Z-Shift and Arc Voltage Shift are offsets in inches. The Z-Shift calibrates the Pierce Height, and the Arc Voltage Shift calibrates the Cutting Height. The purposes of calibrating the Z-shift and Arc Voltage Shift are to make the actual PlasmaCAM pierce and cut heights match the height settings you entered in MACHINE CONTROL.

Set Height for Pierce first

1. Open the Machine Settings and go to the MACHINE CONTROL section.
2. Set the "Height for Pierce" to **.100**
3. Under "Z Axis Motion" enter the Material Thickness.
4. **Initialize machine.** (NOTE: You must initialize the machine anytime the material thickness is changed).
5. Use the Control Panel to jog the torch over to the material. Jog the torch down until the tip just touches the surface of the material.
6. Go to the SYSTEM CONFIGURATION page and to the section titled "Torch Location Adjustment". You will see a line that says "Z Shift (inch)" with a button labeled "ZERO".
7. Set "Z-Shift" by clicking the "ZERO" button. A number will appear in the white box. This tells the machine where the SURFACE of the material is. Click **OK. Note: The Z-shift can be a negative number.**
8. Under MACHINE, uncheck the Auto Cut Control.
9. Open a cut path drawing and then click "CUT". The machine will do a "dry run" without cutting. The torch should move to the cut path, go down and follow the cut path at the pierce height of **.100** (plus or minus a few thousandths). **Note:** The torch stays at the **pierce height** during a "dry run", **not** the cutting height.
10. Pause the machine and measure the height of the tip above the metal.
11. If the torch height is not right, adjust the Z-SHIFT manually in small increments (.010 ~ .020). INCREASE the Z-shift to RAISE the torch and DECREASE it to LOWER the torch. DO NOT click the ZERO button. Click OK after making changes. Initialize and "dry run" again. Repeat this step until the pierce height is correct.

Set Cutting Height

12. Open the Machine Control page. Set Cutting Height to **.07** (or use your preferred cut height).
13. Go to the System Configuration page and to *Arc Voltage Shift*.
14. The *Arc Voltage Shift* should be **1.20** as a starting point. You will adjust the *Arc Voltage Shift* to calibrate the **cutting height**. DO NOT click the ZERO button. Click **OK**
15. Turn the "Auto Cut Control" on.
16. Click "CUT". The machine will move to the pierce height, fire and pierce, and then move to the cutting height.
17. Pause the machine while it is cutting and measure the distance between the torch tip and the material. If the torch is not at the right height, go to System Configuration and change the *Arc Voltage Shift*. Increasing the *Arc Voltage Shift* raises the torch and decreasing the *Arc Voltage Shift* lowers the torch. Make small adjustments (.010~.020) until the actual cutting height matches the Cutting Height you entered in Machine Control.

Hints and Tips

- Cut quality is affected by consumable condition, cutting speed, cutting height, air pressure, moisture in the air supply, and amperage. Beveled cuts and holes that are not round are caused by the torch, not the Plasmacam.
- Use a machine shield or extended tip on your hand torch, not a drag shield unless you have very warped material. If you are using warped material, then you may want to use the "Stall on Material to Set Height" feature. You may want to use a drag tip for this application. You should clamp the material in place to prevent it from moving.
- If the machine slows down in certain places while it is cutting and loses the cutting signal, go to Machine Control and set *"Slower on Circles"* to 0.