INTRODUCTION TO

CNC Plasma Arc Cutting
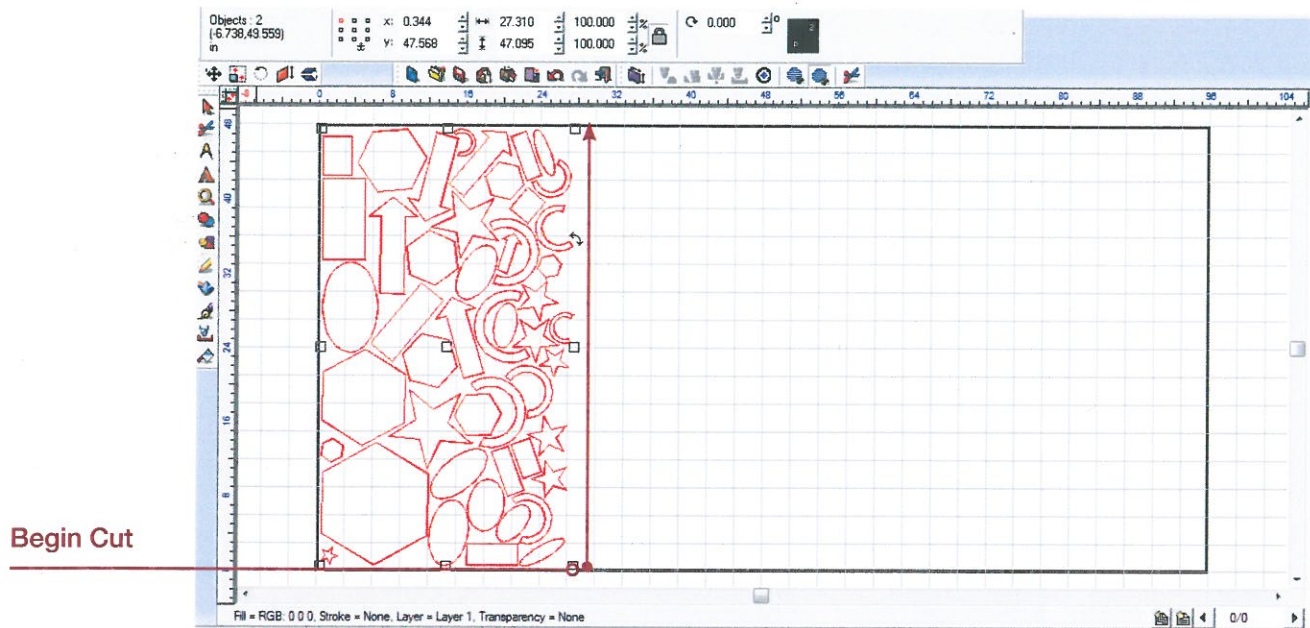
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Begin Cut

Figure 5-1. Note the large amount of metal left over.

Using G-Code

For the rest of this chapter, we'll use what you have just learned about G-Code to solve a problem that sometimes occurs in the shop: Figure 5-1 shows a 4 ft. x 8 ft. sheet that has had numerous parts cut out of it but still has a lot of remaining metal left in the sheet. Rather than return the sheet to the storage rack as-is, it would be better to trim off the scrap metal first. The red line shows the cut we would like to make to trim off the scrap metal

Certainly, one way might be to use either a hand-held plasma or oxyfuel torch, but the CNC torch is faster and usually results in a cleaner, straighter edge. You could also draw the line or lines in TM CAD, create the tool path, and import your DXF file into the driver software, but that is a bit cumbersome just to trim some scrap. Instead, you could simply write one line of G-Code, jog the torch to where you want to begin the cut (the red dot in figure 5-1), zero the program, and hit the start button.

There are two things to double-check before hitting the start button: check that the torch is in the correct starting position and that you have "zeroed" the program. We will discuss these in more detail in later lessons.

For the purposes of our lesson we will say that all of the parts that were cut out of the plate we want to trim were cut at a feedrate of 70 ipm (inches/minute), and we will use this same feedrate when writing the G-Code to trim the excess metal from the plate. Next, we need to tell the table how far we want to move and in which direction. For this exercise, we want the torch to move 48 in. in the positive Y direction. So to make the cut, we will write the following G-Code: G01 Y48 F70.

Chapter 9 Review

Name: _____   Score: _____

Matching

Use the figure below. Select the letter of the item that best fits the following statements. Each answer will be used once.

1. _____ Lets you know the actual size and location of shapes with respect to a sheet of material lying on the TM table.

2. _____ Contains icons for functions that are used frequently.

3. _____ Contains basic information about a selected object.

4. _____ Contains the pull out menus for basic drawing tools and the means to work with them.

5. _____ Allows you to select various program functions.

6. _____ A guide used to differentiate multiple sheets of multiple objects.

7. _____ Displays the entire document's currently used layers.

8. _____ Allows the color of an object to be changed.

9. _____ Used to toggle between multiple sheets.
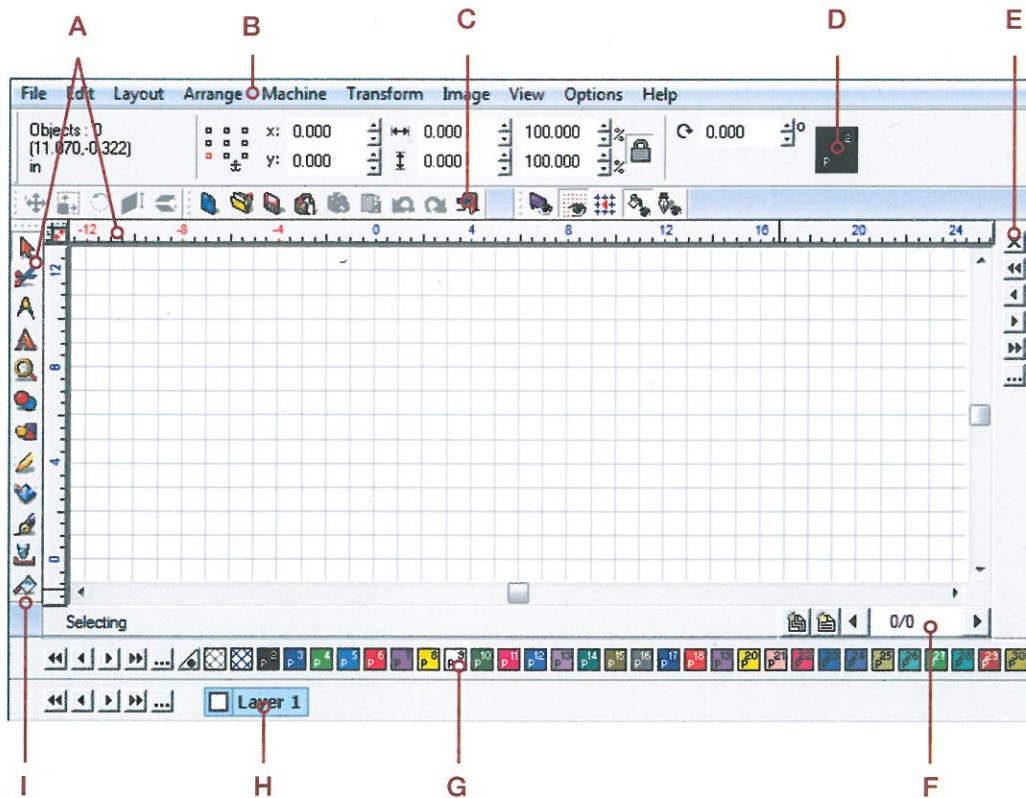
To see a representation of the material cut away by the torch (the kerf), select **View > Show Tool Diameter**. The kerf will appear as a heavy line centered on the tool path and just touching the original path (fig. 11-21). If you have trouble seeing both paths, use **Edit > Select All**.

For another view, Select only **Show Fill** and **Show tool paths** on the View menu. This is illustrated by figure 11-22. Note how the tool path is offset from the finished (filled) part.
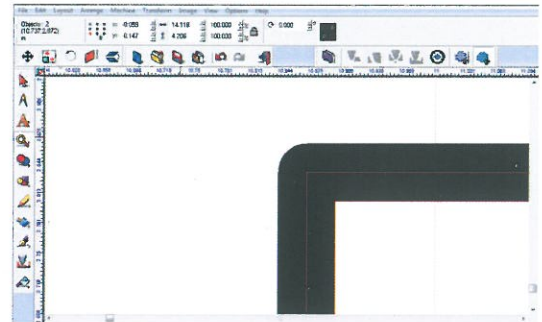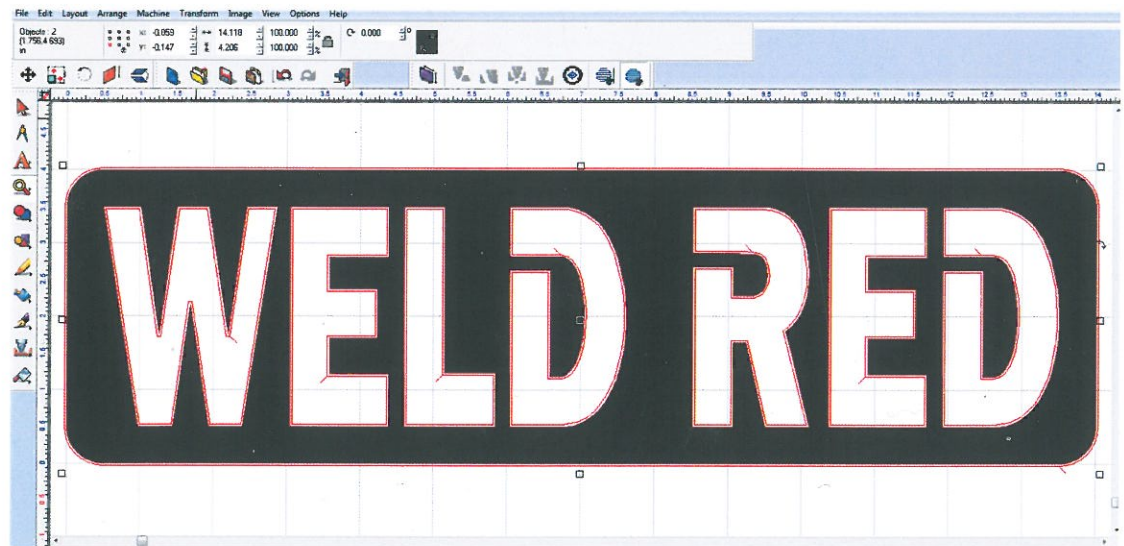

Figure 11-21. View . Show Tool Diameter

Figure 11-22. Your part should look like the above.

TM CAD–EDU recognizes the difference between original lines and tool path lines, so both sets of lines can be saved in the same EDU file without problem.

You instructor will provide you with your classroom's policy as to where to save your EDU files and what convention to use when naming your files (so that your files are not confused with those of your fellow students).

When your instructor receives your EDU file, the instructor's EDU-Master version of TM CAD can perform the "Tool Paths Only" export to the DXF. This feature is not available on the EDU-Student version.