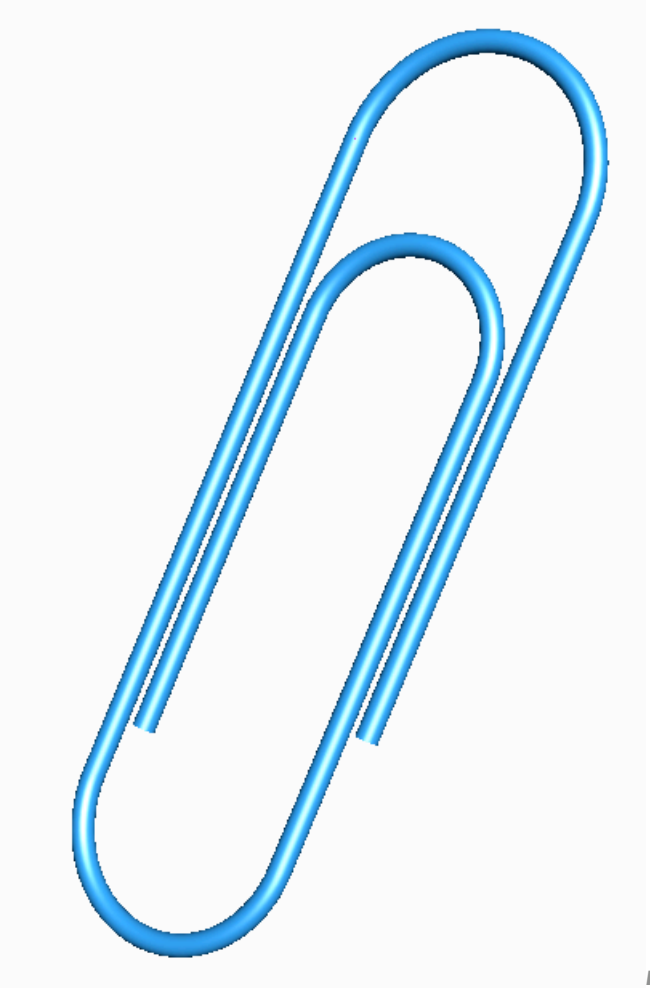
Concepts Tutorials: 3

Paper Clip



Figs 1 & 2 Paper Clip

About this tutorial

Application: Concepts 3D / Concepts Unlimited

Description: In this tutorial we learn to make connected lines with the multi line tool, how to use the select chain and how to apply the pipe tool.

Level: Beginner. Requires reading the 'Getting Started' section of the User Manual

Tools:

Fig 2. Connected Line, Fillet Three Curves, Solid Pipe Tools

Further Information: Please refer to the product User Manual. Additionally, the Concepts User Forum provides discussion and assistance:
www.csi-concepts/conceptsunlimited

Overview

Making the **Paper Clip** can be broken down into the following process:

1. Drawing the 2D **Profiles** from which to create the 3D.

2. Using the **Solid Pipe** tool to generate the Paper Clip from it's profile

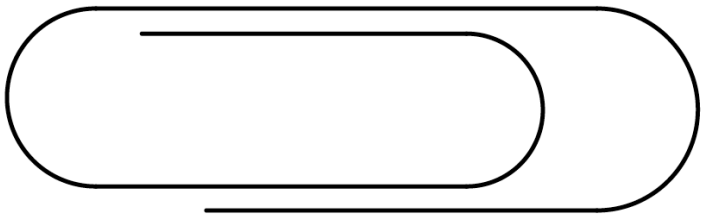


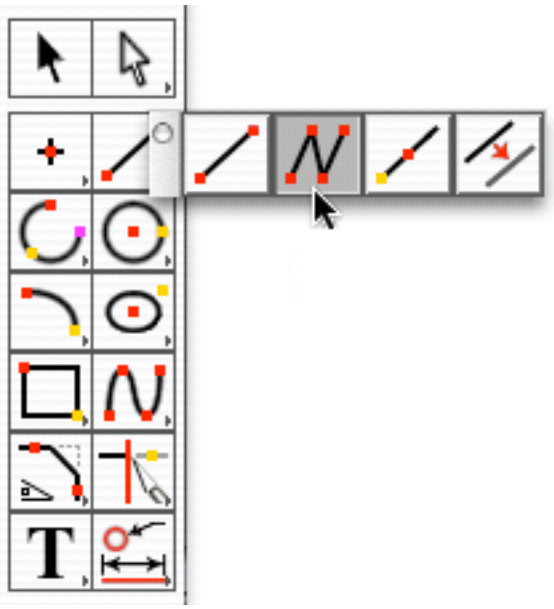
Fig 3. Profile A shown is 'lathed' around axis B

1. Setting Up

- Open Concepts
- Change view to **Top View** (View>top). [Alternately, right-click on the drawing window and use the contextual menu]
- Set the **zoom extents** of your screen by drawing a horizontal line from the origin a little longer than the length of your Paper Clip. Press the **'e' key** on the keyboard to comfortably fit that line (and thus your model) to your screen.
- You are now ready to draw the **profiles** necessary to create your Paper Clip

2. Draw Profiles

- Start by choosing the **multi line** tool.
- The connected line tool is in the line **palette** of the **tool bar.**
- **Note:** To reveal the line palette, left-click on the line tool and drag to the right



- Once selected, the **tool name** in the **top bar** changes to read **multi line**
- The **multi line** tool allows **multiple segments** of straight (and arced) line to be drawn consecutively. The **endpoint** of one segment being the **startpoint** of the next.
- Beneath the **tool name** are **prompts** relative to that tool.
- **Note:** Always keep an eye on the prompt: it will assist you through any given operation.

Select line start point.

- Click on the origin to place the **1st point** of your **multi line**
- Move your cursor to the right an arbitrary distance from the **origin** .. to near the right side of the screen.
- **Note:** To assist you in drawing a horizontal line, you will see the dotted **helper line** of the **intelligent snaps** and a point at the **origin** marked **align x.**
- Click to place the **2nd point**
- From here, move your cursor up the screen, about a third as far as the first part of the line.
- Again, watch for the **helper line** of the intelligent snaps to ensure that you are **perpendicular** to the first part of the line.

- Click to place the **3rd point**.
- Next, move your cursor to the left again. Keep horizontal by ensuring you can see a horizontal **helper-line** and the segment start point marked **perpendicular.**
- Pass the origin point by a short distance and place the **4th point**
- Continue this process until you have a multi line that looks like **Fig 4** below

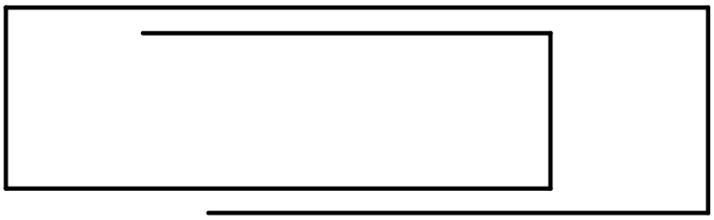
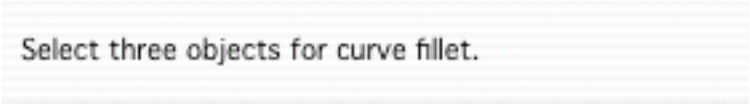


Fig 4. Seven Segment Multi Line

- When you have placed the **8th point** (ie: seven segments) as shown, press the **ESC** key on the keyboard to exit the tool

3. Now use the Fillet Three Lines tool to round the ends of the Clip

- You are now ready to round the ends of the Paper Clip
- Choose the Fillet Three Lines tool from the fillet palette



- Click the 3 lines approximately as marked in fig 5 below

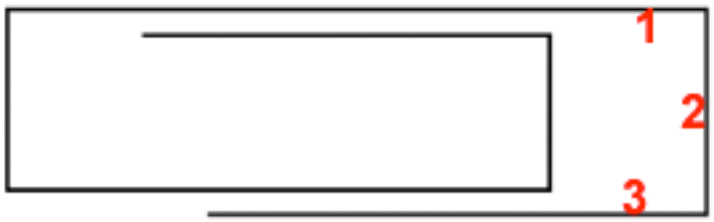


Fig 5. Click these points to create a 3 Line Fillet

- You should now have a rounded ended paper clip (Fig 6)

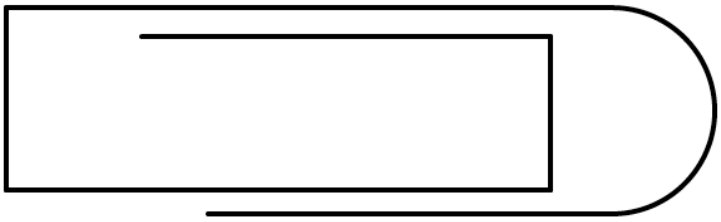


Fig 6. First end rounded

- Repeat this process on the left-hand end of the clip (Fig 7)

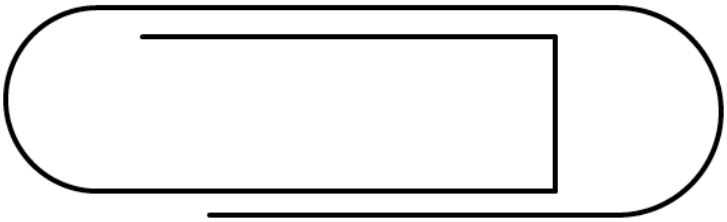


Fig 7. Two ends rounded

- And one more time for the last curve. You should now have a drawing of a Paper Clip as shown below in Fig 8.

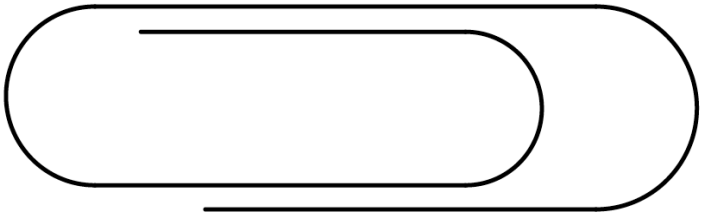
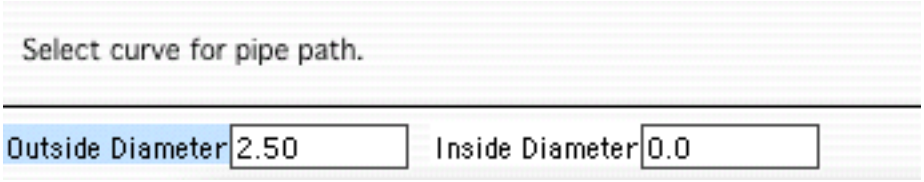


Fig 8. Paper Clip profile complete

4. Creating a Pipe Solid from the Clip profile

- In order to give material thickness to the Paper Clip, you will now use the **Solid Pipe** tool
- Choose the Solid Pipe tool from the **solids from profiles** palette



- Enter an appropriate value for the outside diameter of the **solid pipe** that the clip will be respresented by.
- In this case, it is 0.1 inch (or 2.5 mm). Leave the inside diameter as zero.

- Now draw a **fence** (a box) around the entirety of your Paper Clip
- Provided the pipe diameter is not too large, the Paper Clip should now be seen with material thickness stated. See Fig 9 below.

Fig 9. Finished Paper Clip

6. Additional Notes and Comments

- If you are not seeing the clip as it appears in Fig 7, it may be that you are viewing in **wireframe** mode as opposed to **shaded** mode. Try clicking the **shade mode** buttons at the bottom of the **toolbar.** See **Fig 10**

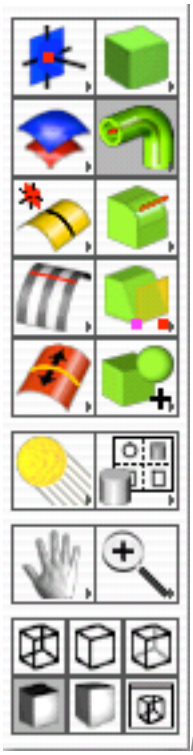


Fig 10. The Shade Mode buttons are at the bottom of the Tool Bar

- Try experimenting using the right-click contextual menu on your paper clip to change the color, resolution or transparency of the object**.** See **Fig 11**

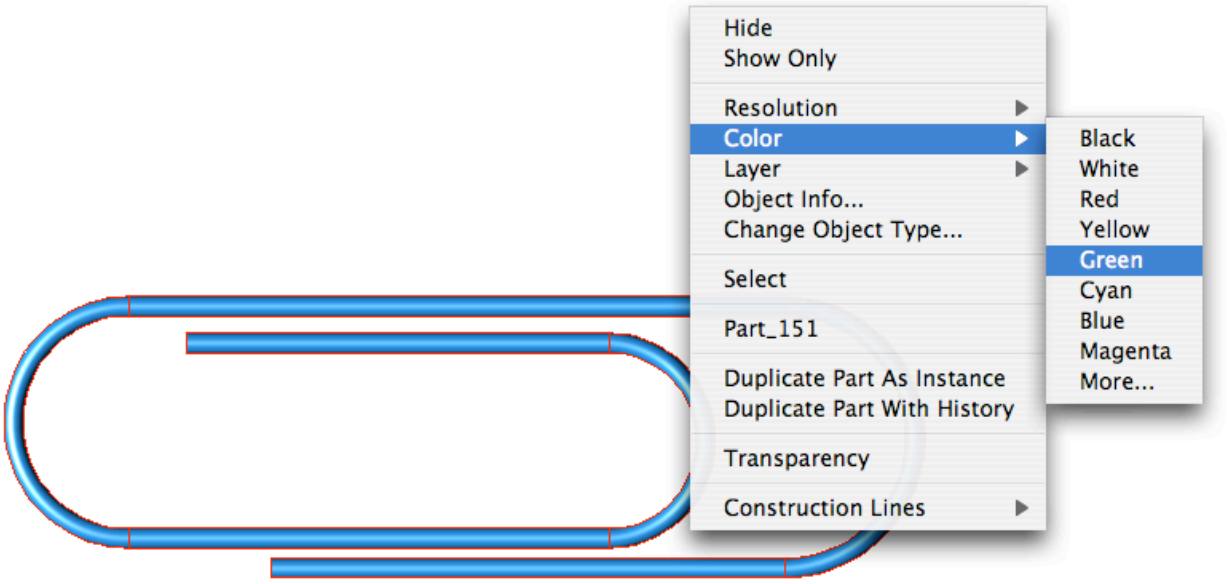


Fig 11. Right Click on any object to see a contextual menu of object related settings

License Notes

Revision 1.0 8 May 05, Original Creation, Jol Yates

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