

The Pen Tool

A Tutorial by Ray Grace ARPS DPAGB


When it comes to making selections one of the tools most feared and least used is the Pen Tool. Most people put off trying to learn the Pen Tool because, initially, it looks quite confusing and difficult to master. It is true that there is more to learn than the other selection tools but it's not difficult and perseverance will pay off. Ultimately work will suffer in many cases where the Pen Tool should have been used but the Lasso Tool has been used in its stead. This tutorial will, hopefully, put an end to the suffering and explain just how easy the Pen Tool is to use. The word 'easy' is relative. Reading this tutorial might not make you a pen master but it will give you a good grounding in how to use it. Becoming a pen master takes practice, like many things in life. Once you've read the theory, practice is the only way to learn. If you want to make accurate selections of objects with sharp outlines accurately the best way is with the Pen Tool.

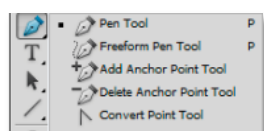
Having said that the Pen Tool is the best way to make accurate selections it's important to understand that it does not actually make a selection. The Pen Tool makes an outline, or a path. The path is then converted to a selection which then conforms to the parameters of any pixel-based selection.

Although called The Pen Tool it does not actually behave like a normal pen. You cannot write with it. Over the years it has been called many things. It has been called the Bezier Tool or Bezier Pen after Pierre Bezier, the man who invented it, and it is also known as the Path Tool. This name is actually more accurate than 'Pen' as it does actually draw a path.

Note: Greater graphic accuracy will be achieved by using a tablet rather than a mouse. This is true in making selections using any of the tools but is particularly pertinent to the Pen Tool. Where, in the following text I refer to the mouse it would obviously relate to the pen of a tablet.

Where is The Pen Tool?

 The Pen Tool is located in the Toolbox grouped with the Shape Tools, the Type Tool and Path Selection Tool (black arrow) and the Direct Selection Tool (white arrow). In answer to a question that may arise: Why is the Pen Tool not located with other selection tools? The answer is that it is not a selection tool, as such. As mentioned above it makes a path from which a selection can be made.

 Clicking and holding the mouse down will reveal the various options lodged underneath the Pen Tool icon. Make sure that the top icon (Pen Tool) is the one chosen.

With the Pen Tool selected, check the Options Bar at the top of the screen.



- Ensure that the Pen Tool is selected and not the Shape Tool (the left-hand icon).
- Check Auto Add/Delete.
- Hover over the 4 icons on the far right to see what options they offer.

What is a Path?

A path is something that is more usually seen in non pixel-based graphics applications, such as Illustrator. A path is a vector shape, is not pixel dependent and, until it is converted to a selection, it is not size dependent and entirely scalable. A path, quite simply, is a line that goes from one point to another. The line may be straight; it may be curved but it always goes from one point to another. It is completely separate from the image itself and, although you will see it on screen, it cannot be printed. Paths are for your eyes only. No one will ever see it unless you convert it to a selection or do something

else with it, like stroking or filling it. You can save a path and, if you do, it will always remain with the document.

Because a path is a line between two points we need a minimum of two points to create a path. We need to know where it starts and where it ends. The line between two points on a path is a 'segment' or 'line segment'. You can select a whole path using the Path Selection Tool (black arrow) or an individual path segment using the Direct Selection Tool (white arrow).

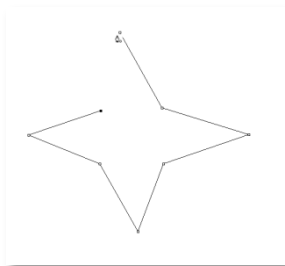
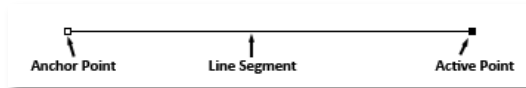
Path Basics

Open a new document in Photoshop; any size will do.

Select the Pen Tool and ensure the correct settings show in the Options Bar.

Click anywhere on the document. Just click and release the mouse, don't click and drag. A small black square will show. That is the initial anchor point of the path.

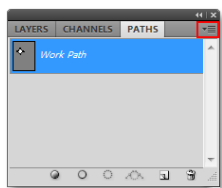
Click somewhere else to add another point. A new black square will appear with a line drawn between the anchor point and the new point. The initial anchor point is now white (with a black stroke). The most recent point made, the active anchor point, is always black; all other points are white.



To take things a little further, the shape on the left shows an almost completed path in a star shape. To complete the shape all that is required is to click on the initial anchor point. As the mouse reaches the anchor point the icon will change to a pen nib with a small circle at bottom right. This indicates that the path is about to be closed.

Note: Path editing should be done before the path is completed. In order to do that it is recommended that an active point is created just short of the anchor point. This will leave the path incomplete but editable. Once the edits are finalized all that is required is to click on the initial anchor point.

Turning a Path into a Selection

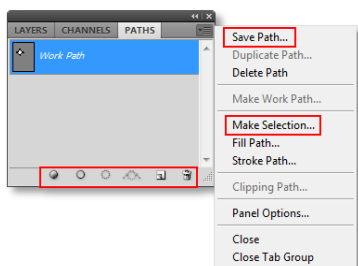


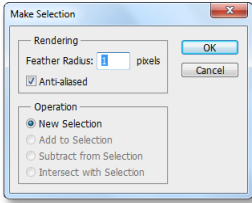
Once a path is completed we need to take any one of a number of options before we can do anything useful with it. Clicking the sub-menu box at the top right of the Paths panel (outlined in red) will list the options. Most usually you will end up making a selection. There are a couple of ways of doing this, as well as there being a shortcut.

The top sub-menu option is 'Save Path'. You don't have to save a path before turning it into a selection but it is always a good idea to do so as, once the path is saved, it will stay with the image and be available each time you open it. Give the path a meaningful name.

To make a selection you can, once again, click the sub-menu icon and select 'Make Selection...' from the menu choices. Or you can click the appropriate icon located at the bottom of the Paths panel. The first icon on the left is the **Fill path with Foreground color**. The second icon from the left is **Stroke path with brush**

which will stroke the path with whichever brush is currently selected. The third icon, the one wanted, is **Load path as a selection**.





There is one advantage to using the sub-menu to make a selection. When that option is used the dialog box shown left will open giving the opportunity to apply a Feather Radius. When clicking the icon at the bottom of the Paths panel the selection is automatically made using whatever feather radius is already in place.

The quickest way to turn a path into a selection is to hit Ctrl+Enter.

Drawing Curves

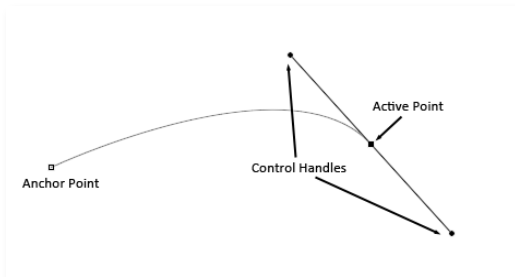
So far, the basics of the Pen Tool have been covered but nothing has been done that could not be done by the Lasso tool. The power of the Pen Tool is in drawing curves. Although not quite as simple as drawing straight lines the technique is by no means difficult; it just requires a little practice to get used to the way the tool works.

Let's draw some curves.

Open a new document in Photoshop. Any size will do.

Select the Pen Tool and check the Options Bar to ensure the correct settings are in place.

Click anywhere on your document.



A short distance away click again but this time drag the mouse or pen to one side. A curved line or 'segment' will be drawn between the initial anchor point and the new anchor point. You will now see two lines extending from the new active point, one at either end. The points at the end of the new lines are slightly smaller than the one in the middle. These are the control handles. They control the size and shape of the curve and are extremely flexible. Control

handles only appear when drawing curves. There is no need for them when drawing straight lines. The curve on the left of the anchor point controls the curve leading to that anchor point. The curve on the right of the anchor point controls the curve leading from the anchor point – towards the next one. Press and hold the Ctrl key (to activate the Direct Selection Tool), click and hold on one of the control handles, move it about and note how it affects the curve of the path segment. A longer handle makes a more rounded curve; a shorter handle makes a flatter curve. There are a few things that affect how the control handles can be adjusted.

- Rotating a control handle in one direction will automatically rotate the other one in the opposite direction.
- To rotate one control handle without affecting the other one just hold the Alt key instead of the Ctrl key. The cursor will change to a **Convert Point Tool** which looks like a simplified arrow pointing nearly, but not quite, vertically. With Alt key held down simply click and hold on the control handle and rotate as required.
- Once a control handle has been moved independently it can also be shortened or lengthened using the same (Alt) key press. So, if required, you can rotate and change the size of the control handle at the same time.
- Moving a control handle to make the line longer or shorter will not affect the other control handle or the length of that line.
- You cannot resize both control handles simultaneously; they must be resized independently.

Tip: Keep your control handles short to start with as you never really know how long they need to be.

Once you've had a bit of a play click somewhere else to add another segment. You will see that one of the control handles on the preceding point has gone. The point leading into the curve has gone and the

point leading from it (towards the new active point) remains. To adjust the control point, hold the Ctrl key, click on the control handle to move it for path adjustment. In fact the control handle that disappeared is still available for adjustment, if required. It is not deleted, Photoshop just hid it. To reactivate it, hold the Ctrl key and click on the previous anchor point. The hidden control point will reappear and can be adjusted.

Curves and Straight Lines in One Path

Once you have created a curve in a path by clicking and dragging to create control handles you will find the next anchor point you make with automatically have a curve leading to it, as determined by the leading control handle from the previous anchor point. But what if you wanted the new line to be straight, not curved?

When you have an anchor point that has control handles and you know that the next segment needs to be a straight line and not a curved one, press and hold the Alt key down and click on the anchor point. The control point leading away from that anchor point will disappear. That would have been the point controlling the curve leading into the next anchor point. With it removed the line will be straight. The next time a curve is wanted just click and drag away from the anchor point.

Remember, also, that anchor points can always be moved, if necessary. As with altering the control handles, press and hold the Ctrl key, click on the anchor point and move as required. Holding the Ctrl key with the Pen Tool selected temporarily turns it into a Direct Selection Tool.

If you want to move back along the path, deleting segment points hold Ctrl+Alt+Z and click. Each click will move you back one step.

New segments can be added to the path at any time. Just click on the line between two existing anchor points and a new one will be created. Then holding the Ctrl key and clicking on the anchor point the segment can be moved.

A Quick Summary

- **To add an anchor point** click with the Pen Tool.
- **To add an anchor point with control handles attached** click and drag away from the anchor point. The further you drag the longer the control handles will be.
- **To rotate the control handles together** hold down the Ctrl key which will temporarily switch the cursor to a Direct Selection Tool. Drag around the anchor point.
- **To resize the control handles without breaking the connection with the opposite control handle**, press and hold the Ctrl key, click on the relevant control handle and move it towards or away from the anchor point. Each control handle must be adjusted independently.
- **To rotate or move a control handle independently** press and hold the Alt key, click on the control handle and move as required.
- **To rotate the directions handles together after breaking the connection**, press and hold the Ctrl+Alt keys then the end of either handle and drag around the anchor point. The connection is remade temporarily.
- **To add an anchor point between two existing anchor points** just click the segment line with the Pen Tool.
- **To move an anchor point** just click on it to activate it then press and hold the Ctrl key to temporarily access the Direct Selection Tool, click on the anchor point and move as required. The path segments attached to it will move with the anchor point.
- **To create a straight segment from a curved one**, Ctrl+click on the active anchor point before creating the new active point.

Practice

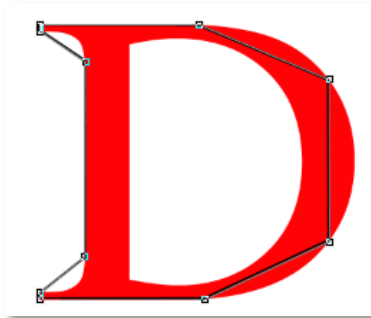
The best way to learn to use the Pen Tool efficiently is to practice. It is recommended that you start with a simple shape that contains both curves and straight lines. A letter is offered as a suggestion; a capital letter that has both curves and straight lines. B, D and Q in Times New Roman would be good candidates. Using the Text Tool pick a letter and make it as large as you can. Remember that text is vector until it gets rasterised so it can be dragged as large as necessary without detriment. Because paths are made of very thin black lines and sometimes difficult to see it is suggested that you make the text a nice bright colour so the path can be clearly seen.

Note that the letters suggested all have enclosed areas that would need to be removed. Additions to or deletions from paths are made just the same way as they are with selections. Hold the shift key to add to the path and the Alt key to delete from the path, or use the relevant icon in the Options Bar.

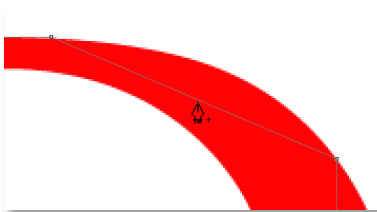
Tips:

- *Go in as close as you can for more accuracy. Try about a 400% magnification and use the spacebar shortcut to drag around the image. (Holding the spacebar temporarily activates the Hand Tool; click and drag to move the image around.)*
- *Leave the path open so that it can be fine tuned. Leave a very small gap between the last anchor point and the starting anchor point.*

A different approach



Now that the basics of the Pen Tool have been mastered let me introduce you to a different approach that you may actually find easier. Make the initial path with straight lines then add anchor points to the individual segments to create the curves. The illustration on the left shows the technique. The initial path has been made around the outside of the letter using straight lines. **The path has not been closed.** A heavy stroke has been overlaid so it can be seen easily.



With the Pen Tool click on the segment where you want the new anchor point to be. As the cursor approaches the line it will change to a pen nib with the + sign at the side.

Note: If there was already an anchor point there the sign would be – (minus) to remove the anchor point. That is, if the Auto Add/Delete option is checked in the Options Bar.

Once the anchor point is created, press and hold the Ctrl key and drag the anchor point to the edge of the letter to create a curve. Further anchor points can be added as required to fine tune the path. Work around the path creating additional anchor points as necessary. When you are satisfied with the path click on the initial anchor point to close it.

Press and hold the Alt key at a point on the inside of the letter to start removing the central area. You don't need to keep the Alt key pressed. Once the first anchor point is made the program knows that this is a path to be deleted.

That's all there is to the Pen Tool. Practice your technique and you will soon be a Penmaster.