

Clone Stamp Tool

The clone stamp tool is probably the most tedious tool in Photoshop, but at the same time may be one of the most important tools. When restoring old photos it is indispensable. It is used for copying (or “cloning”) one part of a picture to another. The clone tool is useful for the following purposes:

- Fixing defects in photographs (dust, scratches, tears, stains, vignetting, etc.)
- Removing unwanted items from a picture (phone wires, trash, mother-in-law)
- Artistic effects

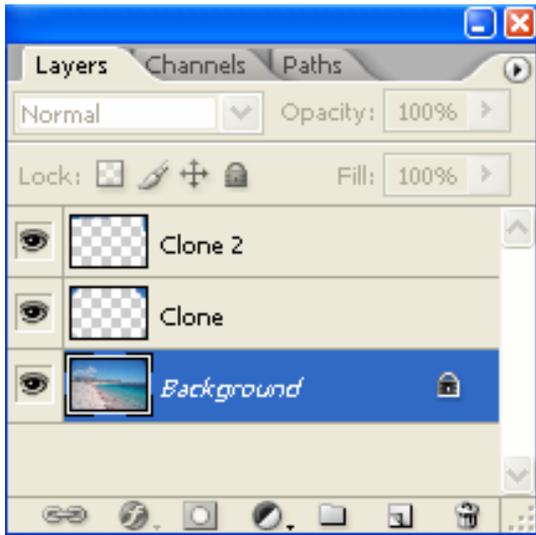
The clone tool is selected from the tool bar with the symbol shown below. To use the clone tool a source and destination point are selected. The source is defined by typing ALT and clicking with the mouse. Once the source has been defined, the image is copied by clicking with the mouse.



Three Methods For Cloning

There are at least three methods used for cloning:

- Cloning directly on the background layer
- Making a duplicate layer and cloning on that layer
- Cloning on a separate empty layer



The first method is most often used by beginners because it is the most obvious. It is also the most dangerous because any changes are permanent and can't be undone once saved. Therefore, this method should NEVER be used. The second method is better because no changes are made to the background layer. However, it is more difficult to undo mistakes. It also makes the image take up more storage space since there are now two copies of the image. Therefore, this isn't the best method either.

In practice, the third method offers many advantages and in most cases is the only one that should ever be used. If a mistake is made it can simply be erased from the image using the erase tool. It takes up less space on the disk, and it is easy to toggle the changes by simply clicking the visibility icon. Note that there can be multiple clone layers which can be useful for keeping organized. The figure to left shows a background layer with two clone layers.

Clone Tool Options

On the options bar there six setup options available:

- Brush
- Mode
- Opacity
- Flow
- Aligned
- Sample All Layers

Of these, mode, aligned and “sample all layers” and sometimes brush are most important for photography. The opacity and flow should be set to 100%.

Brush Size and Hardness

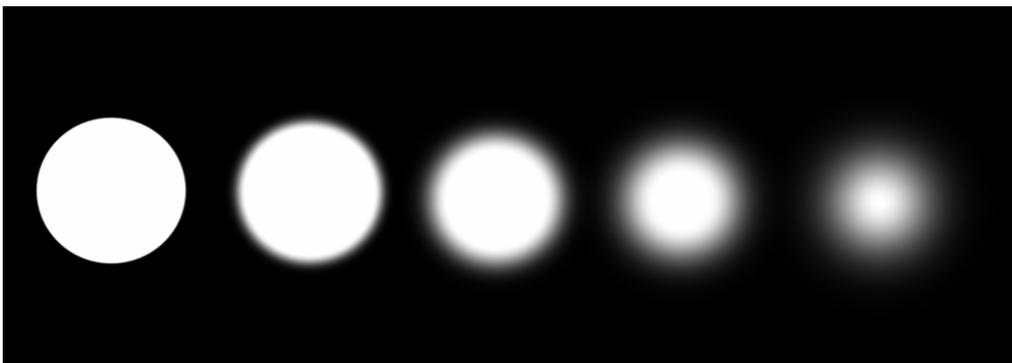
The brush option allows the user to define the brush size and the hardness (or amount of feathering) of the brush. However, rather than select a brush it is much easier just to use the shortcut keys:

- Left bracket ([) Decreases the size of the brush
- Right bracket (]) Increases the size of the brush
- Shift left bracket (shift [) Decrease the amount of feathering
- Shift right bracket (shift]) Increases the amount of feathering

The left and right brackets decrease and increase the size of the brush with each key press. The increment size depends on the size of the brush:

Brush Size	Increment/Decrement Size
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The hardness of the brush can be controlled by using the shift left bracket to make the brush softer, or shift right bracket to increase the hardness. There are five degrees of hardness and each click changes it by 20%, which gives you 100%, 80%, 60%, 40% and 20% as shown in the figure below.

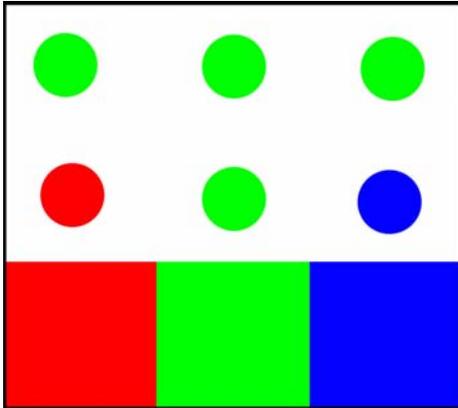


There is a trade-off when cloning between harshness and softness of the clone. A harder brush gives a more pure clone but can be very harsh and abrupt. On the other side, a soft brush is less harsh but by definition is less sharp. Ideally you want to use the hardest brush you can with without making the clone obvious. For most cases, unless you are cloning something very uniform like sky, the two hardest brushes will produce too sharp a transition in the image. Usually 40% or 60% will be ideal.

If for some reason none of these default brushes are suitable, a user defined brush can be defined under the brush option with any hardness from 1-100%. Note that these work the same for any of the brush tools (clone tool, paint brush or erase tool).

Aligned

The aligned option determines how the source and destination of the clone tool align with each other. If aligned is on, then the source follows along as the tool is moved so they are always the same relative distance from each other. This will probably be the option you want 99% of the time.



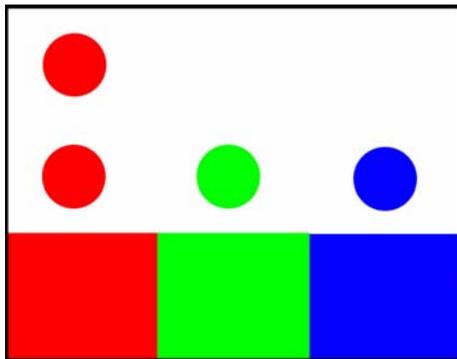
If the aligned option is turned off, then the source returns to the same point each time the mouse is clicked. Note that as long as the mouse is down the source follows along just as if it was turned on. So why would you want to do this? Maybe you have something like a bird or a graphic that you want to replicate several times. Or you want to clone any area where there is only a small source to choose from (perhaps a patch of blue sky on a gray day).

On the picture at the left the bottom squares represent the source and the two rows of circles were cloned. In both cases the green square was the original source, and both were cloned identically except that the bottom row had alignment turned on, and the top row had it turned off.

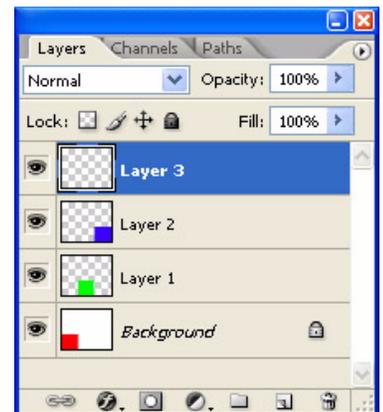
In the case where alignment was turned on the source followed the destination and there are three different circles. When the alignment

was turned off, the same green circle was repeated three times.

Sample All Layers



The Sample All Layers option determines how Photoshop determines the source image when it is empty or turned off. If "Sample All Layers" is turned off, then Photoshop will only sample from the original layer defined as the source. If that layer is empty then nothing is cloned. If "Sample All Layers" is turned on, then Photoshop will sample from the first layer where an image is defined and is also ACTIVE. The majority of the time this options should be left on.



In the example on the left the three squares again represent the source, but in this case each square was in a different layer as shown in the layers view. The bottom row of circles is with sample option turned on and the top row is with it turned off. In both cases the bottom layers with the red square was the source. Note that in the first case with "Sample All" turned on, all three circles are displayed because Photoshop sampled from the first layer it found that was defined. In the second case since "Sample All" was turned off, it only cloned from the one layer.

Cloning from Multiple Images

There is nothing saying that the source and destination have to be from the same image. For example, if you have a bird in one picture that you want to copy into a second picture, simply bring both pictures into Photoshop and set one as the source and one as the destination.

Cloning With Adjustment Layers

There are two important considerations when using adjustment layers. The first is that adjustment layers should always be on top of your clone layers. If you put the clone layer on top of the adjustment layer, and then later modify the adjustment layer, the changes won't be updated in the clone layer.

At the same time, if you have both a clone layer and adjustment layer and need to make further changes to the clone layer, always turn off ALL adjustment layers first. Otherwise the adjustment layers will affect the clone twice - once when you select the source (since the adjustment layer has modified the source) and a second time when you do the cloning (since the adjustment layer will affect the destination). Since adjustments were made twice to the image you won't get the expected results.

Cloning with Blending Mode

You may have noticed when scanning either slides or prints that dust spots are always black. On the other hand, when scanning negatives dust spots are always white since it is the inverse. However, when cloning out dust you are always modifying more than you really need to because the brush is always larger than the dirt, and because the dirt is usually irregular in size. Therefore, it would be nice if there was a way to ONLY change the dirt spot and modify as little of the image as necessary. Well, fortunately, there is - at least to an extent.

As mentioned above, when scanning slides and prints the dust spots are always black. This implies that when cloning you will always want the change to lighten the image and not darken it. When working with negatives, since the dust is white you always want to darken the image and not lighten it. Therefore, if you set your blending mode to "Lighten" or "Darken", respectively you help insure that as little of the image will be modified as possible. For example, in the case of a slide if your source is slightly darker than the destination then only the dust spot will be modified and nothing else, leaving the area around the spot intact. Of course if the source is lighter it will still modify it as before, but at least now there is a better chance of modifying only the dust. And in the case of a negative, if you set the blending mode to "Darken", if your source is slightly lighter than the destination, again only the dust will be cloned.

Note that this must be done on the layers palette and not in the options menu. The options menu will do the same thing, but only works if you are cloning into the same layer. If you are using a separate clone layer this option will not work.