How to rotoscope in Adobe After Effects

Rotoscoping is an animation technique in which you draw, paint, or add other visual effects in a layer over live-action film or video, one frame at a time. The technique was invented by Max Fleischer in 1914, when he projected motion film images onto a frosted glass panel. He traced the images on the glass, one frame at a time, creating realistic animation. His original equipment was called the *rotoscope*. Modern rotoscoping has been replaced by special computers and software such as Adobe After Effects CS6, but the name “rotoscoping” remains.

If you’ve been to the movies or watch television, you’ve probably seen the results of rotoscoping. For example, an object or character appears in color when everything else is black and white (**Figure 1**). Anytime it looks like someone has drawn or painted over the movie, frame-by-frame, you are probably looking at the result of rotoscoping.

Figure 1 Rotoscoping before and after

These days, rotoscoping refers to the technique of creating a matte for a moving element on one layer so that it can be composited over another background layer. As you can imagine, creating this matte in every frame of a movie is a laborious process, but necessary if you don’t have a good key or haven’t shot footage in which the foreground is easily separated from the background.

The Roto Brush tool in After Effects makes this process a lot more efficient by helping you select and mask each frame in less time and with greater accuracy.

We recommend that you complete the guide titled “How to apply and adjust keying effects” before doing the tasks in this guide. Keying and rotoscoping are not the same process, but understanding keying will help you understand what you hope to accomplish by rotoscoping.

It’s easy to confuse rotoscoping with keying effects. With keying, you have shot your footage with a foreground and background that you can easily separate and replace. For example, you may have shot your subjects in front of a blue or green screen. Rotoscoping allows you to work with your existing footage that was shot in its natural environment.

To complete the tasks in this guide, you will need to import one short video clip (just a few seconds) with some motion. The best sort of video clip has at least one moving object in the foreground that you would like to isolate from the rest of the scene.

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Adding the background and foreground layers

In this task, you will place the same movie clip in the foreground and background layers so you can isolate and apply special effects to a portion of the image while preserving the overall image in the background.

To add the foreground and background layers:

1. Start After Effects.
2. In the main menu, select Composition > New Composition.

   The Composition Settings dialog box appears (**Figure 2**).
3. Name the composition Rotoscoping, select an appropriate video preset, and click OK.
4. In the main menu, select Window > Workspace > Motion Tracking.
5. Choose File > Import > File. Browse to locate your motion video clip, select it, and click Open.

   The video file appears in the Project panel.
6. Drag the video clip to the Rotoscoping composition in the Timeline panel.

   This copy of the clip will be the foreground.
7. Drag a second copy of the video clip to the Rotoscoping composition in the Timeline panel.

   This copy of the clip will be the background. There are now two copies of the same video in the Rotoscoping composition Timeline (**Figure 3**).

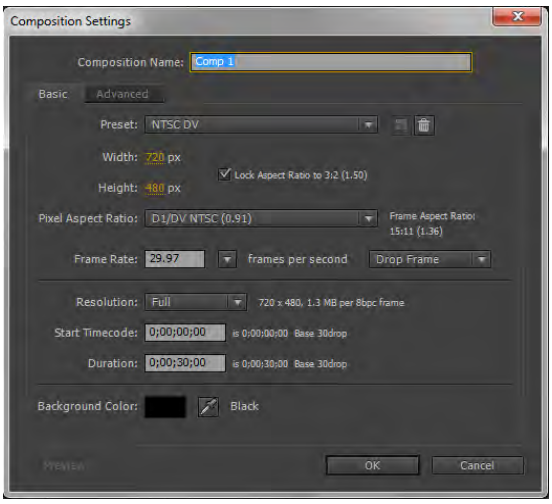

Figure 2 Composition Settings dialog box

Figure 3 Rotoscoping composition

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Creating a matte by rotoscoping

You need to create a matte (or more specifically, a series of mattes in each frame) so you can isolate and apply special effects to a portion of the image without affecting its surroundings. You can do this by using the Pen tool to carefully select objects in every frame. But it's a lot faster to use the Roto Brush tool.

To create a matte by rotoscoping:

1. Double-click the video clip in the top layer of the Rotoscoping composition Timeline.

   The video opens in the Layer panel (**Figure 4**).

2. Click the First Frame button in the Preview panel (**Figure 5**) to move the current time indicator (CTI) to the first frame of the selected video clip.

   You need to rotoscope every frame in the video, so you'll start on frame 1.

3. Choose View > Resolution > Full.

   Work with the Roto Brush in full resolution for more accurate selection.

4. Select the Roto Brush tool in the Tools panel (**Figure 6**).

   With the Roto Brush tool selected, the pointer changes to a green circle with a plus sign.

Figure 4 Layer panel

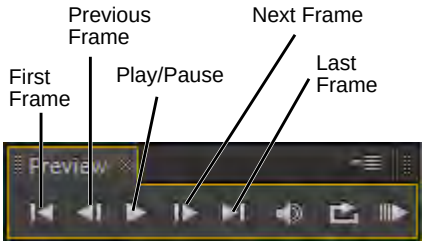

Figure 5 Preview panel

Figure 6 Tools panel

5. In the Layer panel, drag over an object you want to isolate in the foreground (**Figure 7**).

   The Roto Brush paints in green, and After Effects selects an area. It's trying to guess which part of the frame you want selected (**Figure 8**). The alpha boundary for the matte is defined by a bright colored line (pink by default).

6. Drag over another part of the object to add to the selection.

   More of the object is selected. Sooner or later, you'll end up selecting parts of the image that belong in the background (**Figure 9**).

   You can remove from the selection by holding down Alt (Windows) or Option (Mac OS) as you draw with the Roto Brush. When you remove from the selection, the Roto Brush changes to a red circle with a minus sign and paints in red (**Figure 10**).

   Note: To paint small regions, you can click the Roto Brush instead of dragging it.

Figure 7 Add to a selection with the Roto Brush

Figure 8 Roto Brush selection

Figure 9 Add to the Roto Brush selection

Figure 10 Remove from Roto Brush selection

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7. Continue to draw with the Roto Brush, adding and subtracting from the selection, until you've isolated the objects you want to separate from the rest of the image (**Figure 11**).

Figure 11 Roto Brush selection in Alpha Boundary view mode

Refining a Roto Brush selection

Before you move to the next frame and continue rotoscoping, you can refine your selection by using the options in the Effect Controls panel.

To refine a Roto Brush selection:

1. In the Layer panel, click the Toggle Alpha Boundary button (**Figure 12**).

   Turning off Alpha Boundary view mode helps you see the boundary of the matte (**Figure 13**). Based on what you see, you may need to add to or remove from the selection.

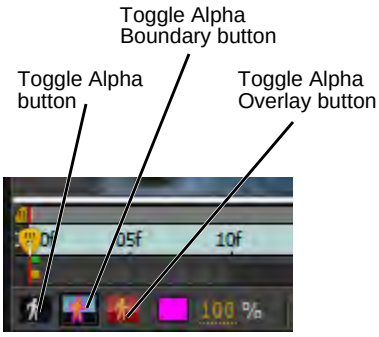

Figure 12 Layer panel

Figure 13 Alpha Boundary view turned off

2. In the Layer panel, click the Toggle Alpha button (**Figure 12**).

   This view shows a cutout of the selection area. By removing the video, you can see the edges of the selection better (**Figure 14**).

3. In the Layer panel, click the Toggle Alpha Overlay button (**Figure 12**).

   Now you see an overlay of everything inside and outside the selection area, but the area outside the selection is tinted. This is the Alpha Overlay view mode (**Figure 15**).

   Toggling between views help you see the result of your choices as you refine the selection.

4. In the Effect Controls panel, expand the Roto Brush effect properties and expand the Matte options (**Figure 16**).

   Note: The Propagation settings control how After Effects applies the matte forward in other frames of the video. You can use the Matte settings to refine the matte you've created with the Roto Brush tool.

5. Adjust the Smooth, Feather, and Choke values to see how they affect the edges of the matte.

   You can go back to the default settings at any time by clicking Reset.

6. Select Refine Matte (**Figure 16**) to enable additional matte adjustment options.

   Note: Depending on which alpha view you have selected, a warning message may tell you to turn off Alpha Overlay or Alpha Boundary views.

7. Click Reset in the Effect Controls panel to return to the default Roto Brush settings.

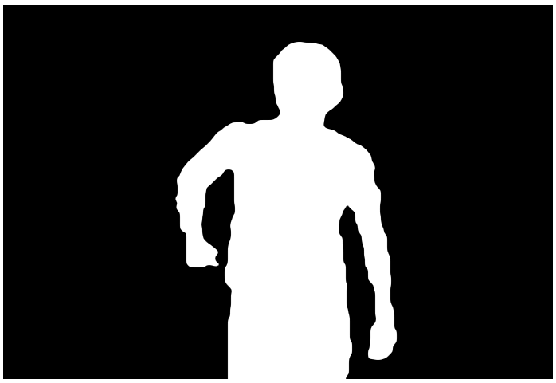

Figure 14 Viewing the matte

Figure 15 Alpha Overlay view mode

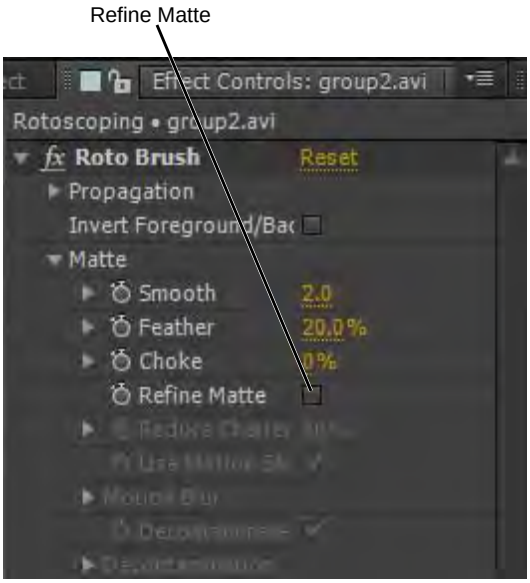

Figure 16 Roto Brush selection

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Modifying the matte in other frames

You just defined a selection for a matte in the first frame of your video. You'll need to create a similar matte in every frame in the video clip, but the Roto Brush tool is going to save you a lot of time doing this.

To modify the matte in other frames:

1. In the Preview panel, click the Next Frame button (**Figure 5**).

   As you move forward in the clip, the objects move beyond the outline of the matte you created for frame 1. After Affects attempts to adjust the selection automatically (**Figure 17**). You'll still need to use the Roto Brush to add to or remove from the selection in each frame.

2. Select the Roto Brush tool and refine the selection to compensate for the movement in the video.

   Note: The amount of change to the selection depends on the movement of the objects you are attempting to matte.

3. Using the Preview panel, advance to the next frame and modify the selection. Continue modifying the matte for each frame until you have reached the end of the video clip. Save your work often.

   Note: Rotoscoping is a time-consuming process, but the Roto Brush tool is a huge time saver compared to drawing selections in each frame by using the Pen tool.

Figure 17 Toggle Alpha Boundary in frame 2

Applying effects after rotoscoping

When you're finished rotoscoping the entire clip, you can apply video effects to it. Your effects will apply only to the selected objects. Everything outside the selection is transparent. Since you've placed a copy of the original clip behind it, you create the illusion of an effect that moves with the selected objects.

You can also place the rotoscoped clip over other background videos to transport the selected objects into the new scene.

Another option is to reverse the matte in the rotoscoped clip. Then, when you add effects, they apply to the transparent portion of the clip, thereby changing the appearance of the background clip.

To apply effects after rotoscoping:

1. Choose Window > Workspace > Effects.
2. In the Effects & Presets panel, expand the Color Correction bin.
3. Drag the Back & White effect and drop it onto the video in the Composition panel.

   The effect applies only to the objects you selected by rotoscoping. The reset of the clip is transparent and the background image shows through (**Figure 18**).

   Note: You can adjust the Black & White effect properties in the Effect Controls panel to increase or decrease the effect.
4. In the Effect Controls panel, select Invert Foreground/ Background in the Roto Brush effect options (**Figure 19**).

   The effect applies to the transparent (background) portion of the rotoscoped clip, so whatever is directly behind the clip appears to have the effect applied to it. In this example the background appears black and white, but the foreground character is in color (**Figure 20**).
5. Move the CTI to the beginning of the clip and click the Play button in the Preview window to preview the effect in motion.
6. In the Effect Controls panel, select and delete the Black & White effect. Then add other effects from the Effects panel to see how they look.

Figure 18 Effect applied to the rotoscoped video

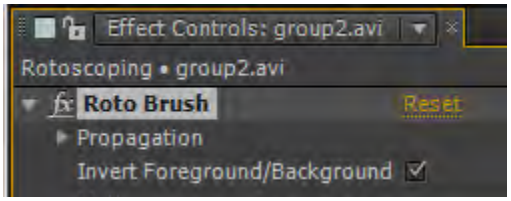

Figure 19 Roto Brush effect options

Figure 20 Inverting the rotoscope

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