



Vanishing Point

# Vanishing Point

In this lesson, we're going to continue learning about perspective, which is something that we started to cover in a previous lesson, titled "Matching Perspective." Here, we will learn about the Vanishing Point filter. This will give us a lot more options when working with perspective, but it is an older filter (with less technology) so it will not allow us to work with more modern features like smart objects.

## Define a Plane with the Vanishing Point Filter (Timestamp 2:30)

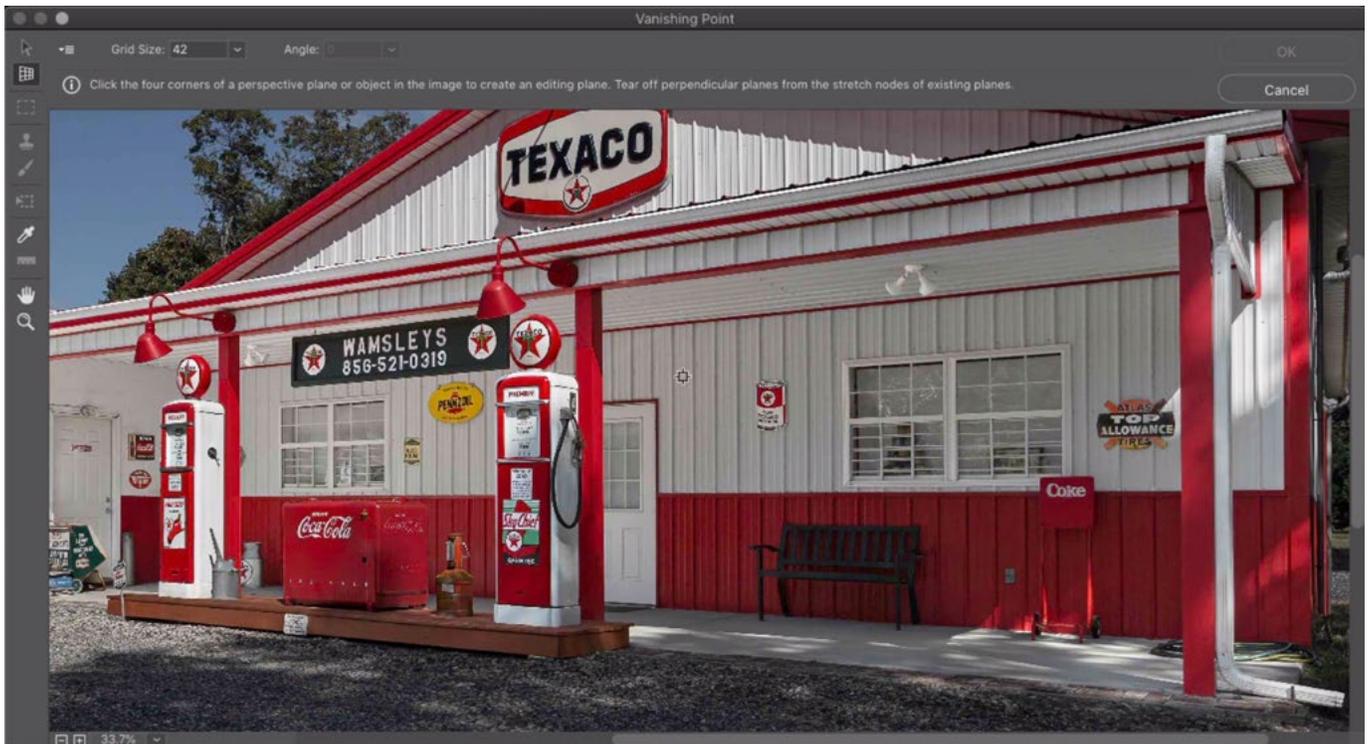
The first thing I suggest doing before using the Vanishing Point filter is to create a brand new, empty layer. You can do this by clicking on the New Layer icon [+] at the bottom of the Layers Panel. Therefore, whatever you do with the filter will be deposited in this empty layer, leaving the original image layer untouched.

You can access the filter by clicking on the Filter menu at the top of the screen and choosing Vanishing Point.

Note: This filter will not be available if you are working in 16-bit mode or in a color space that is not RGB. If this is the case, you will see that the name of the filter is grayed out.

After choosing the Vanishing Point filter, it opens a whole new window, which contains the Vanishing Point settings. A Toolbar runs along the left side of the window and the Create Plane Tool will be active by default. This is the tool that is second to the top in the Toolbar and it allows you to define a surface within three-dimensional space. With the tool active, click on the four corners of the largest rectangle that is parallel with that surface. Lines will appear to show the rectangular area that is being defined.

In the video example, we have an image of a service station and we are going to use the Create Plane Tool to define the surface on the front wall of the building. We clicked on four corners of the rectangular front service of the building.



This image is open in the Vanishing Point window. The special tools related to the filter appear on the left side of the interface. In the video example, we are going to define the front, rectangular surface of this building as a plane.



The Create Plane Tool (shown at left) is being used to click on the four corners of the rectangular surface of the building.

After you've clicked on the fourth corner, a grid will appear over the area that has been defined. This grid will be one of three colors. If it's red, it means that it's unusable and the corners are probably really far off. It's telling you that it doesn't understand how the defined area could possibly be a flat surface in three-dimensional space. If the grid is yellow, it means that you're getting close to a very usable surface, but you should ideally adjust the corners. If the grid is blue, it's telling you that the area you defined is good and quite usable.

After you have defined the space and there is a grid over the area, you can click and drag on the four corners of the grid in order to fine-tune the rectangle. When doing this, try to make the grid edges as close to parallel with the lines in the image as possible. I like to zoom in on the image to make sure that things precisely line up.



**When defining a plane, the grid will be one of three colors. If it's yellow, as shown above, it means that you're close to defining a usable plane, but not there yet.**



**If the grid is blue, it means you have a usable plane.**



**We're clicking and dragging on the edge of the grid to extend the plane.**

Once you have defined the rectangular surface, that is the only area you will be able to work with. You can extend the space by clicking and dragging on the handles that appear on the edges (not the corners) of the grid. When you do this, the perspective angles will remain the same. Knowing this, it can often times be easier to start off by defining a smaller space that has more easily recognizable corners (such as the window in the service station image) and then using the handles to expand the space.

This grid causes Photoshop to be educated about the perspective in the image. It knows what areas are closer to the camera and therefore appear larger. It knows what areas are farther from the camera and therefore appear smaller.

## The Clone Stamp Tool in Vanishing Point (8:15)

One of the tools available on the left side of the Vanishing Point interface is the Clone Stamp Tool. You will use this tool AFTER you've defined a rectangular space. Let's say that you want to copy an element within the rectangle that is close to the camera and then paste it somewhere that is farther from the camera. Because Photoshop knows the perspective of the image, it will scale the sampled element down in the perfect amount so that it looks to appear farther from the camera. 

In the example image, there is a sign on the building that is somewhat close to the camera. We activated the Clone Stamp Tool and sampled the area where the sign is. As we move the cursor over the area that is farther from the camera, we can see the preview of the sampled content becoming smaller and smaller. This preview appears within the circular brush tip. Photoshop is automatically scaling the content based on the perspective of the image.

Note: To use the Clone Stamp Tool, hold down the Option key (Alt on Win) and click on the area you want to sample. Then release the Option key and move your mouse to the area where you want to paste. The preview of what you sampled will appear inside the brush tip. Click to paste the content.

When the Clone Stamp Tool is active, some settings appear in the bar above the image window. There are basic settings including brush size and opacity. There is also a Heal setting, which is set to Off by default. When the Heal menu is set to Off, that means that the tool is in Clone mode. When cloning, it creates an exact copy from the area where you sampled. If you set this menu to the Heal setting, then the tool will attempt to match the color and brightness of the area surrounding the place you are copying to.



**LEFT: The Clone Stamp Tool is being used to sample a sign on the building. CENTER: The Clone Stamp Tool is being used to paint in the sampled sign on another part of the building. RIGHT: The Heal setting (for the Clone Stamp Tool) is turned on and you can see that the tool attempted to match the brightness and color of the surroundings.**

We mentioned earlier that you should create a new, empty layer before using the Vanishing Point filter. If you did that, then any retouch work that you do with the Clone Stamp Tool will be applied to this empty layer and not the original image layer. Because it's a separate layer, you can use a layer mask to hide and reveal parts of the layer. This allows the results to be more versatile.

## Create Multiple Planes (11:55)

Photoshop will remember the Vanishing Point plane if you leave the filter and then return to it.

In the Vanishing Point window, you can also define additional planes. To do this, activate the Create Plane Tool and use it to click on the four corners of the next plane you want to define. In the video example, we defined another rectangular surface on the front of the service station image. After you create a rectangular plane, it automatically switches you to the Edit Plane Tool, which is the top tool in the Toolbar. This is the tool that you use to grab the corners or sides of the plane to adjust the position. If you want to create additional planes, you will need to return to the Create Plane Tool for each one.



**A second plane is being created for another surface of the building.**



**This is an example of an instance where it was easier to start with a smaller plane (a group of bricks, shown at left) and then expand the sides to create the larger plane we truly need.**

## The Marquee Tool within the Vanishing Point Filter (18:36)

After you have created planes that educate Photoshop as to what the correct perspective is, the tools within the Vanishing Point filter will take that perspective into consideration when doing their job. You already saw this with the Clone Stamp Tool. When cloning from one area (within a plane) to another, it will automatically scale the content based on the perspective.

The Marquee Tool works in a similar way. The Marquee Tool is the third tool in the Toolbar and it can be used to make rectangular selections within a plane. When you use the tool to click and drag out a selection, it will make that selection based on the perspective of the image. I like to make the selection slightly larger than the area I need because I would rather use a layer mask to truly get that edge to be precise.



The Marquee Tool (Shown at left) is being used to make a selection of the orange sign.

After creating the selection, you will notice that the Move Tool is not available. In order to move a copy of the selected area, hold down the Option key (Alt on Win) and then click and drag on the object. You can move it to a location within the same plane or you can drag it to a different plane.



After the sign was selected, we moved it to another plane by holding down the Option key (Alt on Win) and then clicking and dragging it to the other wall.

When you drag a selected object to another plane, you may find that the object becomes flipped horizontally or vertically. This could happen if the two planes were defined differently. An example of this would be if you defined plane one by clicking on the corners in a clockwise manner and then defined plane two by clicking on the corners in a counter-clockwise manner.



**When we moved the contents of a selection between planes, it became flipped. To fix it, we activated the Transform Tool and turned on the “Flip” setting.**

If you copied the contents of a selection from plane one to plane two, the contents would be flipped horizontally. You can correct for this using the Transform Tool, which is located within the Toolbar. When the Transform Tool is active, there will be two checkboxes in the settings bar above the image window. The “Flip” check box will flip the contents of the selection horizontally. The “Flop” check box will flip the contents of the selection vertically.

When using the Transform Tool, handles will appear outside of the selected area and you can click and drag on these handles to resize the area. Click and drag on the top and bottom handles to make the selected content taller or shorter. Click and drag on the left and right handles to make the selected content wider or narrower. Click and drag on the corner handles to scale both the height and width of the content. When you’re done, click OK to exit the Vanishing Point window.



**The Transform Tool handles are being used to adjust the height of the sign.**



The copy of the sign was placed on its own layer. Here, we added a layer mask and we're painting on the mask in order to fine-tune the edge of the sign layer.

If you had created a brand new layer to work on, the copied area will appear on this layer, leaving the original image untouched. It's useful to have this content on its own layer because you can use a layer mask to determine how much of it should be visible.

## Using Vanishing Point to Retouch Out a Sign (24:15)

In the next example image, we are going to remove a sign from a brick wall. The wall starts very close to the camera and then trails off into the distance, so we're going to need to match the perspective of the sample area in order to paste it over the sign. The first thing we'll do is create a new, empty layer on which to place our retouch work.



We're going to use the Vanishing Point filter to remove the sign on the wall.

We'll set the perspective in the image using the Create Plane Tool within the Vanishing Point Filter. There are no large, rectangular planes to use, but that's ok. We can find vertical and horizontal surfaces by using the grout lines of the wall bricks.



**The Create Plane Tool was used to define the wall. We used the vertical grout lines in the wall as guides.**

After defining the rectangular plane, it will automatically switch to the Edit Plane Tool so we can drag the handles to fine-tune the position of the edges. We'll click and drag down on the handle that's on the bottom edge of the plane (not a corner handle). We want to make sure that the entire sign is contained within the plane. We'll also drag the left and right edges out to include any bricks we might want to sample from.



**The Edit Plane Tool is being used to extend the plane to include the entire sign and more of the bricks.**

Next, we'll activate the Clone Stamp Tool and we'll use it to sample from an area of brick on the left part of the wall. When we sample, we'll click at a cross-section of the grout lines in the bricks so that we have something to align with when pasting the content. Then, we'll align that sample area (you can see a preview within the brush tip) with a cross-section of brick next to the sign and we'll start to paint. As we paint over the sign, Photoshop will use the perspective of the image to scale the content proportionally.

After using the Clone Stamp Tool with the Heal setting turned off, I like to turn it on and go over some areas again. With the Heal setting on, it will attempt to match the brightness of the surrounding area.



**The Clone Stamp Tool is being used to remove the sign. You can see the crosshair for the sample area (on the left) and the crosshair for the tool tip that is removing the sign.**

**The Brush Tool** I wanted to note that there is also a Brush Tool within the Vanishing Point filter and it can be used to apply paint to the defined plane. When the tool is active, the color can be chosen in the settings bar above the image. When you paint, the brush tip will scale up and down in order to match the perspective of the image. If you were to click in an area that is close to the camera and then paint a line in the direction that moves away from the camera, you will see that the paint stroke becomes smaller and smaller.

## Using Vanishing Point to Match Angles Between Images (32:42)

In the next image, we want to take the circular logo from the top of a gas pump in one image and apply that logo to a gas pump in another image. The gas pumps are at different angles, so we're going to use Vanishing Point to help match things up.



**In this example, we're going to take the logos from the pumps on the right and apply them to the pumps on the left.**

We'll start with the image that has the logo we want to copy. We'll create a new, empty layer and then open the Vanishing Point filter.

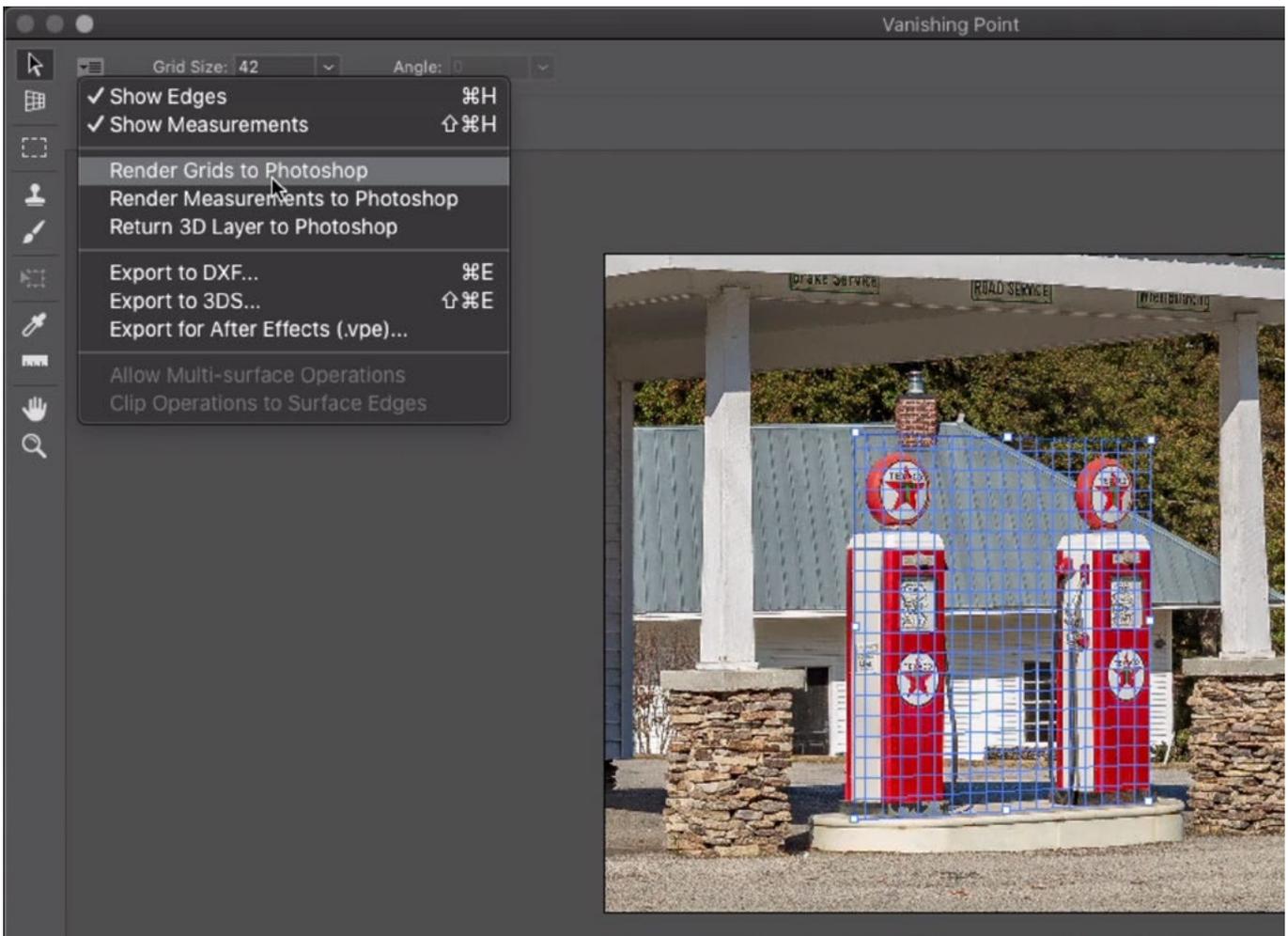
The logo is at an angle and it's circular, so it's going to be difficult to establish the perspective by using that area. Instead, we'll look for a rectangular area that will be easier to define. It will have the same perspective as the logo. We'll use the two rectangular gas pumps combined. We'll activate the Create Plane Tool and click on the four corners.



**The Create Plane Tool is being used to define a rectangular area.**

If the grid is not blue, we'll use the Edit Plane Tool to click and drag on the corner and/or edge handles to adjust the plane so that the grid becomes blue. We'll drag on the edge handles to ensure that the plane encompasses the top pump logos because these are what we want to copy.

All we needed to do in this image was create the perspective grid. Now, we will click the little hamburger menu in the top left part of the settings bar and choose "Render Grids to Photoshop." We'll click OK to exit the Vanishing Point filter.



After defining the plane, we are choosing the "Render Grids to Photoshop" option before closing the Vanishing Point window.

Back in the main area of Photoshop, the empty layer we created will now contain the Vanishing Point Grid. We're going to use this grid, in conjunction with the Perspective Crop Tool, to isolate and straighten the pump. We'll activate the Perspective Crop Tool and click around the four corners of the circular logo. The circular logo obviously doesn't have corners, but we can use that perspective grid as a guide in order to click in the correct places.

After defining the crop, handles will appear around the corners of the rectangle and we can use these to fine-tune the crop. We'll make sure that the crop edges are aligned vertically and horizontally with the perspective grid. Then, we can drag the sides of the crop to make sure that they encompass the logo.

When we tap the Return/Enter key, it will crop the image AND straighten the result. We can now discard the grid layer because we no longer need it. This isolated, straightened logo is now what we need for pasting into the other image.

We'll select all (Command+A, Ctrl+A on Win) and then copy (Command+C, Ctrl+C on Win). Then we'll open the image in which we want to place the logo. We'll make a small selection where we'd like the logo to go. Then, we'll click on the Edit menu and choose Paste. The logo will be pasted into the document on a new layer and centered on the selection.



**The Perspective Crop Tool is being used to define a rectangle around the logo. The Vanishing Point grid is being used as a guide.**

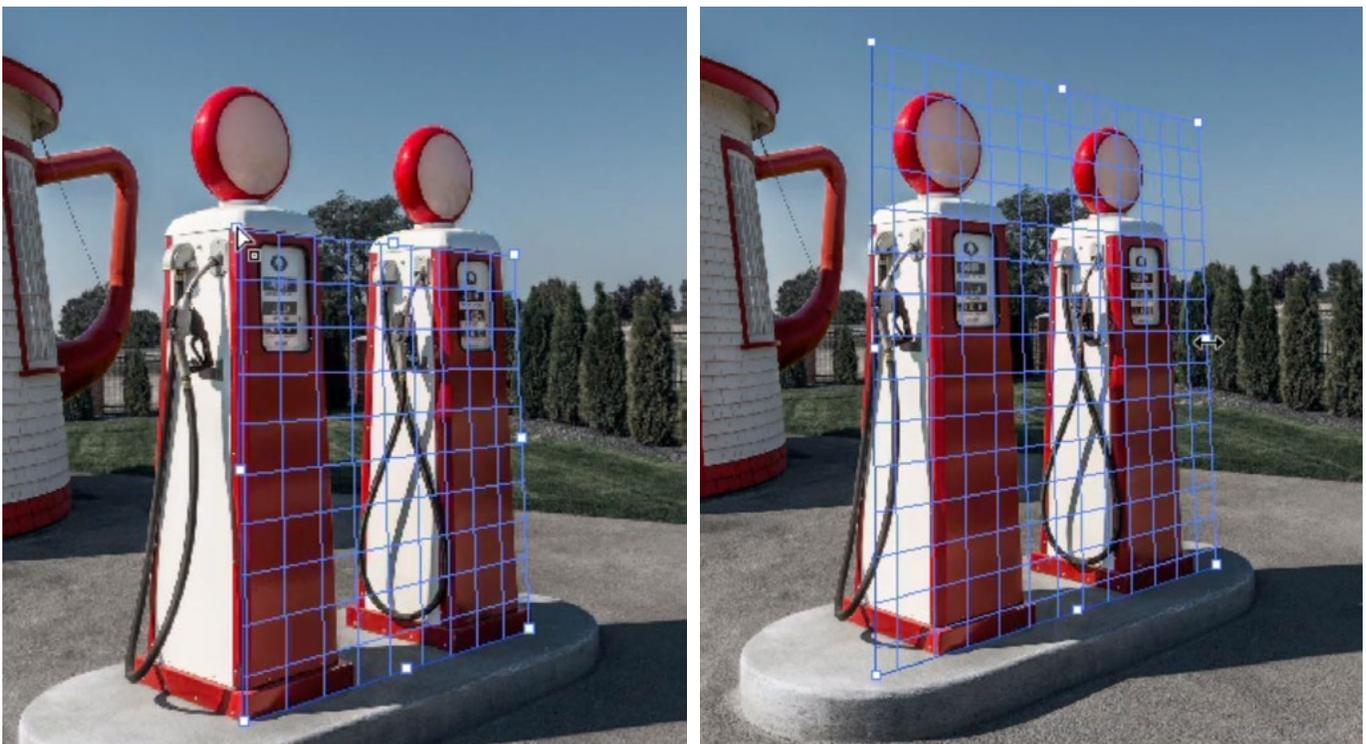


**The isolated, straightened logo was pasted into the other document.**

Before making any transformations to the layer we'll convert it into a Smart Object by clicking on the Layer menu and choosing Smart Objects > Convert to Smart Object.

It's difficult to tell exactly what angle the logo should be at because we're placing it on a round surface. To help with that, we'll follow the same process to put a grid on this image. We'll temporarily hide the visibility of the logo layer and we'll create a new, empty layer on which to place the grid.

We'll open the Vanishing Point filter and make sure the Create Plane Tool is active. We need to find a rectangular area that we can use to define the perspective plane. We'll use the combined rectangular gas pumps. We'll use the Create Plane Tool to click on the four corners of the rectangle, making sure that the resulting grid is blue. After we've fine-tuned the grid, we can click on the side handles to extend the grid up so that it encompasses the round pump toppers. This is where we want to place the logo.

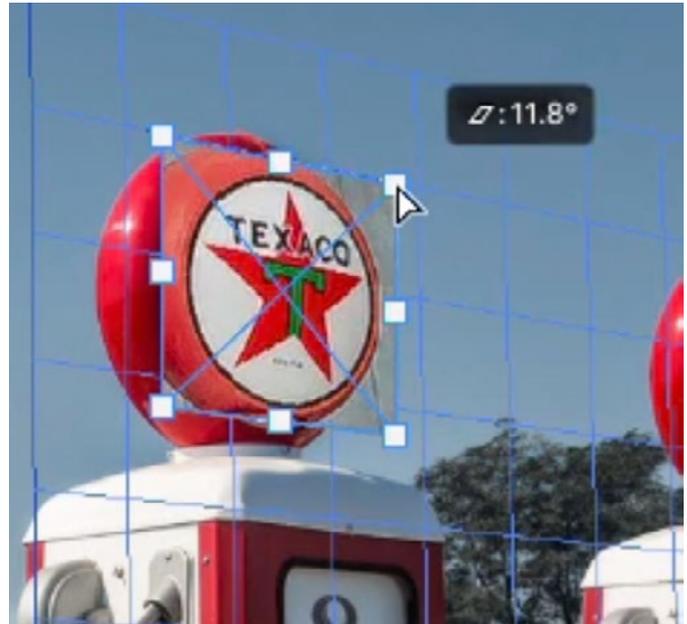


**LEFT:** In the Vanishing Point filter, the Create Plane Tool was used to create a rectangle around the gas pumps. **RIGHT:** The Edit Plane Tool is being use to extend the plane so that it includes the round pump toppers.

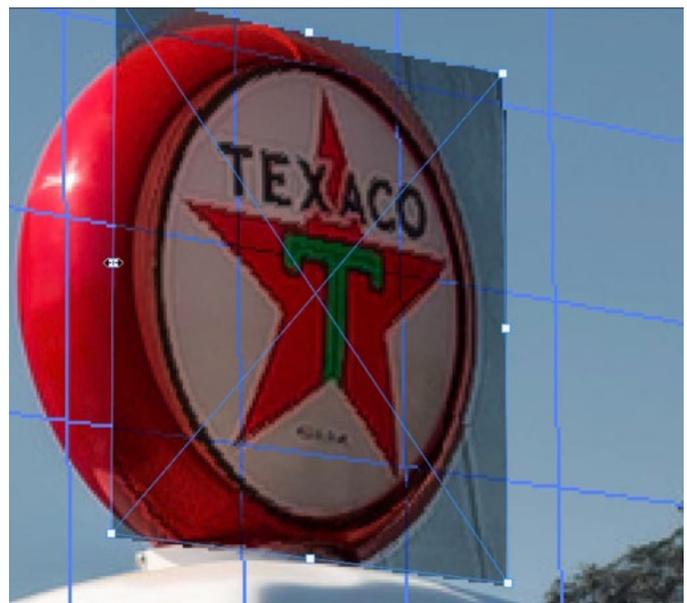
Once we have this grid, we'll click on the little hamburger menu in the settings bar and we'll choose Render Grid to Photoshop. Then we'll click the OK button to exit the filter and return to Photoshop's main interface. The grid we just created will be contained on the empty layer we added before entering Vanishing Point.

We'll turn the visibility back on for the logo layer (which we had turned into a smart object) and we'll move it to the top of the layer stack. We want to distort the logo to match the perspective of the grid so we'll click on the Edit menu and choose Transform > Distort. Distort handles will appear around the layer. We want to click and drag on these handles so that the edges of the layer become parallel with the horizontal and vertical lines on the grid. Then, we'll again click on the Edit menu and choose Transform > Scale. The transform handles will still appear on the layer and we can now use them to scale the logo so that it fits inside the gas pump topper.

It may be difficult to see how the layer we're scaling relates to the underlying image. If that's the case, you could either lower the opacity of the layer or change its blending mode. In the video example, we changed the blending mode to Multiply so that we could see the underlying image as well. Now, we can use the transform handles to scale the logo so that it fits.



**We are transforming the logo layer to match the angle of the perspective grid.**



**The blending mode of the logo layer was changed to Multiply. This allows us to see the underlying layer as we scale the logo.**

By default, the Transform command will scale the logo proportionately. If we need to scale the width but not the height (or vice versa), we can hold down the Shift key while dragging the side handles of the layer. Once the logo has been scaled, we'll tap the Return/Enter key to lock in the transformation and remove the transform handles. We can now discard the grid layer because we no longer need it. We'll set the blending mode of the logo layer back to normal.

In retouching the logo, we want to copy from the logo layer and apply it to the image. We'll create a brand new, empty layer at the top of the layer stack on which to apply our retouching.

Now we want to start pasting the logo onto that new, empty layer, but we do not want to see the logo layer while we're painting in the content (it would obstruct the area we're painting). In order to do this, we can trick Photoshop by hiding the logo layer at the bottom of the layer stack. If the bottom layer is a locked background layer, we can double-click on it to unlock it. Then, we can place the logo layer beneath it.

Photoshop is not going to like that the sampled layer is a smart object, so we'll click on the Layer menu and choose Smart Objects > Rasterize. This will make it so the layer is no longer a smart object. (We had only converted it into a smart object so that we could scale and distort without losing quality.)

In order to apply the logo, we're going to use the Healing Brush, which is going to attempt to match the brightness and color of the image that's underneath. With the Healing Brush active, we need to specify some settings in the Options Bar above the image window. We'll set the Sample menu to Current & Below. This will make it so that we can copy from all the underlying layers even though we are working on an empty layer at the top of the layer stack. We'll also turn on the "Aligned" check box.

We'll make sure that the logo layer is active and that the visibility of all other layers are turned off. We'll sample the logo by holding down the Option key (Alt on Win) and clicking within the center of the logo. Then, without moving the mouse, we'll release the Option key and click in the exact same spot. We'll immediately choose the Undo command. This might sound like an odd step, but what we're doing is defining the position that the tool will use in pasting the sampled content.

Then, we'll turn the visibility of the image layer and the top layer back on and we'll make sure that the top, empty layer is active. This is where we're going to apply the retouching. As we move the round cursor over the gas pump topper, we can see a preview of what we're about to paste within the brush tip. We'll start to paint in the logo, making sure that we're being precise and not extending outside the white circle. We'll need to do this as a single paint stroke because we're using the Healing Brush.

If the end result is a little too bright or too dark, we could adjust it using a Curves adjustment.



**With the Healing Brush active, we are sampling the center of the logo layer.**



**The Healing Brush is being used to paint in the sampled logo. We're being careful to not extend into the black outline.**