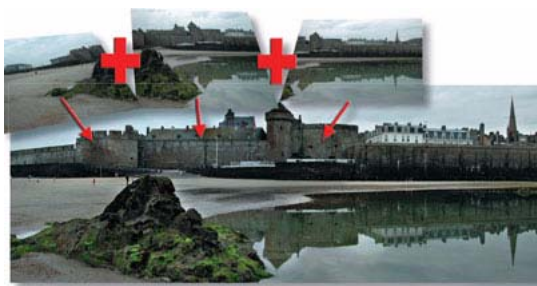


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Create a perfect panorama

In recent years, shooting multiple pictures of a scene and then stitching them to form a panoramic picture has become a popular project with digital photographers. This is the first time that Adobe® Photoshop® has shipped with Photomerge®. The stitching program that first found its feet in Photoshop Elements has been included as a standard feature in Photoshop CS2. This tool combines a series of photographs into a single picture by ensuring that the edge details of each successive image are matched and blended so that the join is not detectable. Once all the individual photographs have been combined the result is a picture that shows a scene of any angle up to a full 360°.



The Photomerge command combines several photographs into one continuous image.

Photomerge can be started from the File menu (File > Automate > Photomerge) or via the Tools > Photoshop > Photomerge option in the Bridge file browser. The latter approach allows the user to select suitable source pictures from within the browser before activating the feature. At this point Photoshop attempts to automatically arrange and match the edge details of successive pictures.

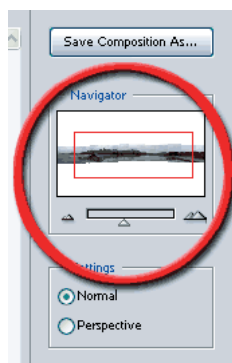
In most circumstances Photomerge will easily position and stitch your pictures, but there will be occasions where one or more images will not be stitched. These pictures are stored in the Light box area (top) of the Photomerge dialog box, where you can click + drag them to the correct position in the composition.

Individual pieces of the panorama can be moved or rotated at any time using the tools from the toolbar on the left-hand side of the dialog box. Advanced Blending and Perspective options are set using the controls on the right. Photoshop constructs the panorama when the OK button is clicked.

Ensure accurate stitching

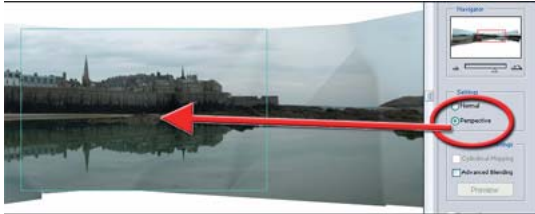
To ensure accurate stitching, successive images need to be shot with a consistent overlap of between 15 and 30%. The camera should be kept level throughout the shooting sequence and should be rotated around the nodal point of the lens wherever possible. The focal length, white balance, exposure and aperture need to remain constant whilst shooting all the source pictures.

- 1 Select Photomerge from the File menu (File > Automate > Photomerge) to start a new panorama. Click the Browse button in the dialog box. Search through the thumbnails of your files to locate the pictures for your panorama. Click the Open button to add files to the Source files section of the dialog.
- 2 Select OK to open the Photomerge dialog box and start to edit the layout of your source images. To change the view of the images use the Move View tool or change the scale and the position of the whole composition with the Navigator. Images can be dragged to and from the light box to the work area with the Select Image tool.



Drag the view box or the scroll bar in the Navigator thumbnail. The view box represents the boundaries of the work area.

3 With the Snap to Image function turned on, Photomerge will match like details of different images when they are dragged over each other. Selecting the Use Perspective box will instruct Photoshop to use the first image placed into the layout area as the base for the composition of the whole panorama. Images placed into the composition later will be adjusted to fit the perspective of the base picture.



The Perspective option uses the first image you place into the layout as the base to which the perspective of subsequent pictures you add are adjusted to match.

4 The Cylindrical Mapping option adjusts a perspective-corrected image so that it is more rectangular in shape. The Advanced Blending option will try to smooth out uneven exposure or tonal differences between stitched pictures. The effects of Cylindrical Mapping as well as Advanced Blending can be viewed by clicking the Preview button. The final panorama file is produced by clicking the OK button.

Solutions to common stitching problems

Moving Subjects

One of the banes of the panoramic photographer's life is the subject that moves during a shooting sequence. The source of the problem may be people, cars, or even clouds, but no matter how carefully you capture and stitch your source photos, the final panorama often features half a person, or object, as a result of Photomerge trying to match the edges of dissimilar pictures.

These problems can be fixed in one of two ways: Either remove or repair the problem area.

Remove

To remove the problem, you can use the Healing Brush, Patch, or Clone Stamp tools to sample background parts of the scene and paint over stitching errors. The success of this type of work is largely based on how well you can select suitable areas to sample. Color, texture, and tone need to be matched carefully if the changes are to be disguised in the final panorama.

Be careful, though, as repeated application of these tools can cause noticeable patterns or smoothing in the final picture.



Using the Clone Stamp tool to remove a problem area.

Repair

In some instances, it is easier to select, copy, and paste a complete version of the damaged subject from the original source image and paste it into the flattened panorama picture. This approach covers the half blended subject with one that is still complete. If you have used the Perspective option in Photomerge or have resized the panorama then you will need to adjust the pasted subject to fit the background. Use the transformation tools such as Rotate, Perspective, and Scale to help with this task.

Adjusting the opacity of the pasted subject while you are transforming will help you match its details with those beneath. When complete, the opacity is changed back to 100%. Finishing touches can be applied to the edges of the pasted images to ensure precise blending with the background with the Eraser tool.

Misaligned picture parts

Shooting your source sequence by hand may be your only option when you have forgotten your tripod or you are purposely traveling light, but the inaccuracies of this method can produce panoramas with serious problems. One such problem is ghosting or misalignment. It is a phenomenon that occurs when edge elements of consecutive source pictures don't quite match. When Photomerge tries to merge the unmatched areas of one frame into another the mismatched sections are left as semi-transparent, ghosted or misaligned.

You may be able to alleviate the problem by carefully rotating difficult source images using the Rotate Image tool and then selecting the Perspective option from the settings on the right of the dialog box. If all else fails, then the only option may be to repair the affected areas using the Clone Stamp or Healing Brush tools, but by far the best solution—and certainly the most time efficient one—is to ensure that the camera and lens nodal point are situated over the pivot of the tripod at the time of capture. A little extra time spent in setting up will save many minutes editing later.

Extreme brightness range

Digital cameras have a limit of the range of brightness that they can capture before details in shadow and highlight areas are lost. For most shooting scenarios, the abilities of the average sensor is up to the job, but in certain extreme circumstances, such as when a panorama encompasses both a view of a sunlight outdoors scene as well as a dimly lit interior, the range of tones is beyond the abilities of these devices.

Rather than accept blown highlights or clogged shadows, the clever panorama photographer can combine several exposures of the same scene to extend the range of brightnesses depicted in the image. The process involves shooting three images of the one scene using different exposures.

The difference in exposure should be great enough to encompass the contrast in the scene. The different images are then combined using the new Merge to HDR feature (File > Automate > Merge to HDR) and saved as a single picture to be used as part of a stitched sequence.



Use the Merge To HDR feature to combine three images shot with different exposures into a single picture.

Changes in color and density

Changes in color and density from one source image to the next can occur for a variety of reasons—the sun went behind a cloud during your capture sequence or the camera was left on auto exposure or auto white balance and changed settings during the shooting of the source sequence. When these images are blended, the differences are noticeable at the stitch point in large areas of similar color and detail such as sky.

Automatic fix

The Advanced Blending feature in Photomerge will account for slight changes from one frame to the next by extending the graduation between one source image and the next. This automatic technique will disguise small variations in exposure or color and generally produce a balanced panorama, but for situations with large density discrepancies, the source images may need to be edited individually.

Manual fix

The simple approach to balancing the density of your source images is to open two or more of the pictures and visually adjust the contrast and brightness using tools like the Levels feature. For a more precise approach, use the Info palette (Window > Info) to display the RGB values of specific common areas in pictures while adjusting their color and density using the Levels feature.



Adjust the RGB values in the Info palette.

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