

## What is the best way to use the Micro Focus Adjustment?

The question is simple enough, but the answer really depends on the lenses you're using and the way you use them. To begin with, it should be clarified that there are two types of in-camera AF microadjustment:

- ▶ the first adjusts the point of focus equally for all Canon EF lenses.
- ▶ the second adjusts the point of focus for up to 20 individual lens types, at one adjustment per lens.

In both cases, the point of focus can be adjusted up to +/- 20 steps in 1-step increments. Also in both cases:

- ▶ any adjustments you make apply only to the specific camera body in question.
- ▶ lenses themselves are never modified by the camera's AF microadjustment settings.
- ▶ the amount of focus adjustment per step is proportional to the maximum aperture of the lens, with the goal being to increase the precision of the adjustment with large aperture lenses since they have a smaller depth of focus.

With all that as a preamble, here is an unofficial procedure for selecting and using an AF microadjustment setting:

- ▶ Mount the camera to a sturdy tripod.
- ▶ Position a reference target for the camera to focus on. The reference target should have sufficient contrast for the AF system to read, should be flat and parallel to the camera's focal plane, and should be centered with respect to the picture area.
- ▶ Lighting should be bright and even.
- ▶ Camera-to-subject distance should be no less than 50 times the focal length of the lens. For a 50mm lens, that would be at least 2.5 meters, or approximately 8.2 feet.
- ▶ Set the lens for AF and the camera for One-Shot AF, and manually select the center focusing point.
- ▶ Shoot at the maximum aperture of the lens via manual mode or aperture-priority AE, and adjust the exposure level if necessary to achieve an accurate exposure of the reference target. Use a low ISO setting to reduce noise.
- ▶ If the lens has an image stabilizer, shut it off.
- ▶ Use a remote switch and/or the camera's self-timer to release the shutter. Use mirror lock as well.

- ▶ Take three sets of images at microadjustment settings of -5, 0 and +5, i.e, three consecutive images at -5, three consecutive images at 0, and three consecutive images at +5.
- ▶ Examine the resulting images on your computer monitor at 100% pixel magnification.
- ▶ Take additional sets of test images at different microadjustment settings if necessary until the sharpest image is achieved.
- ▶ Register the corresponding microadjustment settings in the camera.

Here are a few additional precautions to observe:

- ▶ Do not attempt to autofocus on an angled chart, because doing so will degrade the consistency of the camera's focusing measurement. Keep in mind that the camera's AF sensor is comprised of multiple pairs of linear pixel arrays. If you attempt to autofocus on a single line in an angled focusing chart, only a few pixels from each active pixel array will "see" the target. Ideally, the contrast in the reference target should cover the entire area of the camera's center focusing point, and the reference target should be perfectly parallel to the camera's focal plane.
- ▶ For best results, manually set the focus on the lens to infinity for every exposure before allowing the camera to autofocus the reference target.
- ▶ Expect some minor variations in focusing accuracy within each set of three test images, even though they were all taken at the same microadjustment setting. This is completely normal, and is due to the tolerances of the camera's AF system.
- ▶ Expect smaller microadjustment settings to have a greater effect with telephoto lenses, and vice versa for wide-angle lenses.
- ▶ If you are attempting to set microadjustments for a zoom lens, it is important to realize that the camera's setting may only be accurate for the focal length setting you test. The instruction book suggests testing at the longest focal length of the lens, but you may find it more efficient to choose the focal length you use most often.
- ▶ Some EOS cameras and some EF zoom lenses may require more sophisticated calibration than the in-camera AF microadjustment settings can provide. In such cases, it may be necessary to have calibrations performed at a Canon Factory Service Center.
- ▶ Last but not least, there is no "official" Canon method for setting AF microadjustments, so this procedure is unofficial. If you think you can do better, then by all means, go for it. Towards that end, be advised that some independently made tools are designed to help you set AF microadjustments accurately. One of these is the LensAlign kit, due out soon from RawWorkflow.com: