

Focus test chart

Copyright Tim Jackson 2004

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The latest version is always available at <http://FocusTestChart.com>

Release notes

This is a major release, hence the change to version2.x.

The test chart has been completely redesigned. It is now much easier to use and it produces more detailed information. The cut-out-and-fold-into-a-box part has been done away with.

After much research into the focusing system of the D70, I realised that it's totally unnecessary to have the perpendicular focus panel that was part of the design of earlier versions of this test. (This applies to most modern auto-focus systems).

This makes the whole thing so much easier to use and a lot less prone to the errors that I've seen with incorrectly set up tests and poorly folded charts, boxes etc.

There has been some robust discussion on the Net about how, in the D70 manual, Nikon warns that the D70's auto-focus system doesn't do well when trying to focus on geometric shapes.

In the D70 manual, Nikon says: *"Autofocus does not perform well [if] the subject is dominated by regular geometric patterns [such as] a row of windows in a skyscraper. If the camera is unable to focus using autofocus, use manual focus."*

This lone statement on the subject has been somewhat misunderstood.

It does NOT mean that the D70 will focus in front of or behind the subject if the subject is "dominated by regular geometric patterns". What it means is that, under certain extreme conditions, the D70 might not be able to lock focus at all and will hunt back and forth, requiring that you focus manually or use another subject as a focus target.

If your camera finds focus and locks easily on a particular subject, then Nikon's warning/disclaimer doesn't apply because the camera is, in those circumstances, able to lock focus easily and there's no problem.

Try it out yourself. Try focusing on a blank piece of white paper and notice how the system hunts.

Now, draw a single bold line across the page and try focusing on that. Notice how the camera is easily able to lock focus without any problem at all.

I have done lots of tests on this with a wide variety of subjects and was unable to confuse the camera at all, even with so-called "regular geometric patterns."

Right! So it's out with the old and in with the new! ☺

What is back focus?

Back focus is when you shoot a pic like the one below, expecting to get the result shown on the left but, instead, you get the result on the right.



That's back focus. Your focus is set to a distance further back than your subject. You're focused behind, or to the back of, your subject. (Front focus is simply where everything's the other way around.)

It's VERY annoying to shoot your pic of the day of your wife/husband/child/friend and then find out that their face is out of focus but their ears are tack sharp. Not nice.

There are many things that can cause this problem and almost all of them can be chalked up to operator error. Occasionally though, the camera and/or lens is to blame and that's what this test is for.

The D70

Although this test was originally devised in response to the back focus issue that manifest in some Nikon D70 cameras, it can be used to check any camera.

Human nature is such that when we're happy with a new toy we tend to simply enjoy it quietly but, if our new toy gives us grief, we want to tell everyone who'll listen. And some who won't.

So, in evaluating Internet discussions on the back focus issue, one has to be careful not to be misled into believing that every D70 suffers from back focus just because it's a hot topic.

The truth is that only a minority of D70s have been faulty in this regard. The majority work just fine.

Why this test then?

Well, if you're a new D70 owner and have read all about the trials and tribulations of other D70 owners who have the dreaded back focus then you probably want to know if YOUR new baby suffers from it or not.

Most people who think their D70 has back focus are mistaken. (Please note that I said "*most*", not "*all*".)

In other words, they're in a tizz for no reason. If they're having problems then, usually, it's operator error.

This test is intended to help any curious D70 owners check their cameras in order to either heave a sigh of relief that their D70 is fine or to arm themselves with the info needed to return their D70 for exchange or recalibration.

Instructions

Important!

There are many factors that can lead to erroneous and misleading results when doing this test. Make sure you **read the instructions carefully** and follow them in detail.

1. Print out this document.

2. Place the test chart absolutely flat on a level surface. There must be no visible lumps or bumps in the chart. It needs to be flat.

3. Aim your camera at 45 degrees to the chart.

4. Focus on the centre of the focus line in the focus box at the centre of the chart.

5. When shooting your test pics, you need to be close enough that the test chart somewhat more than fills the frame. Get nice and close.

6. *Ensure that you are not so close that the auto focus system is unable to focus due to you being at the limit of the range of focus of your lens.*

You can check this by moving your camera

closer and closer to the image and testing when it is no longer able to focus and then making sure that you are set up at least a few inches back from this point.

7. Set your camera to aperture priority mode (“A” on the rotary dial) and adjust the aperture setting as wide as it will go (lowest f-stop number) for the lens you have on the camera. This gives you the shallowest depth of field, which is crucial to this test.

8. Set the Autofocus system to “AF-S” mode (CSM Menu item 2).



9. Set the AF-area mode to "Single area" (CSM Menu item 3).
10. Ensure that you have the centre focus area selected. If not then adjust this using the multi selector button (up/down/left/right). The focus selector lock switch (just below the multi selector button) must be unlocked in order to change/select the appropriate focus area.
11. If you have extra lighting available, use it to light up the test chart. The chart must be lit more or less from the front. I like to use a bright constant light source, like a halogen flood or similar, but the flash seems to work just fine too. If you're going to depend on the flash then make sure there's enough ambient light for the auto focus system to work reliably.
12. Metering mode and centre weighting is not critical. As long as you're getting a well lit, bright image out of the camera then it's fine.
13. First shoot an initial pic and have a good look at it before you go further. Make sure the test chart is bright and white. Adjust your white balance and shutter speed to get this right. Use more light and/or the flash if necessary.
14. Use either the remote control (if you have one) or the camera's self timer to trigger the shutter release in order to avoid any camera shake.
15. Now go ahead and shoot your test pics.

Interpreting your results

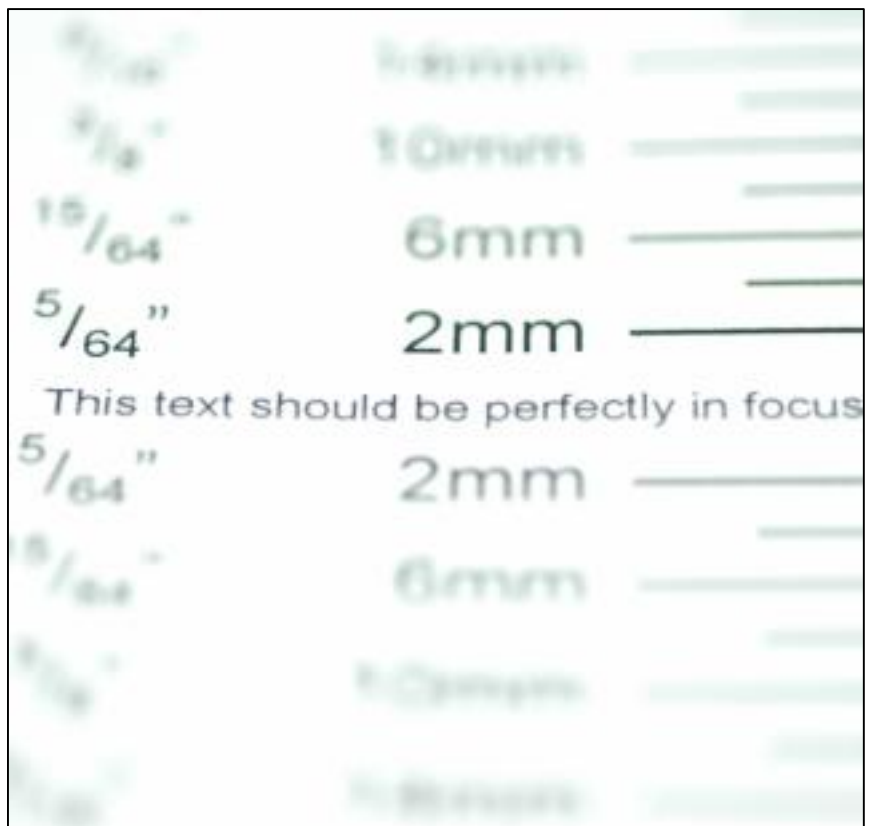
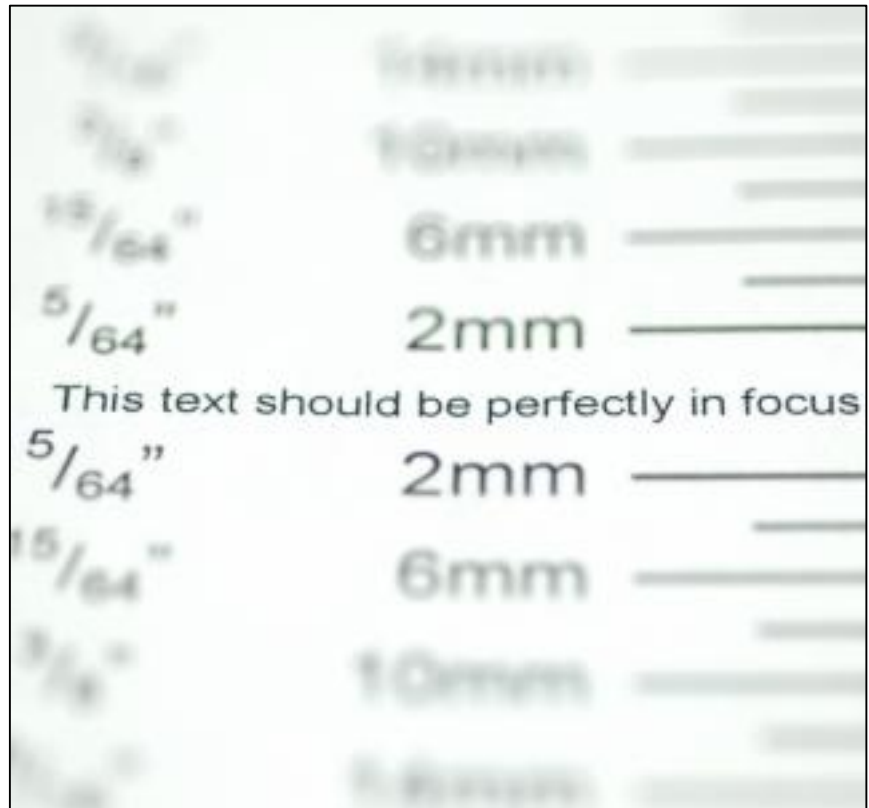
Once you've taken a bunch of test pics you'll want to know what they mean.

When you view your test pic/s, you should be able to *clearly* see, as in the example on the right, that part of the chart is in focus, and that it gets obviously and progressively more out of focus as you move up or down, away from the in-focus part.

Notice how the sharpest part of the image is in the centre, between the two 2mm marks and how it gets blurry as you move away from the centre line, either up or down.

This is as good as it gets. Spot on focus, bang on the centre line, right where the camera was aimed. This represents the ideal.

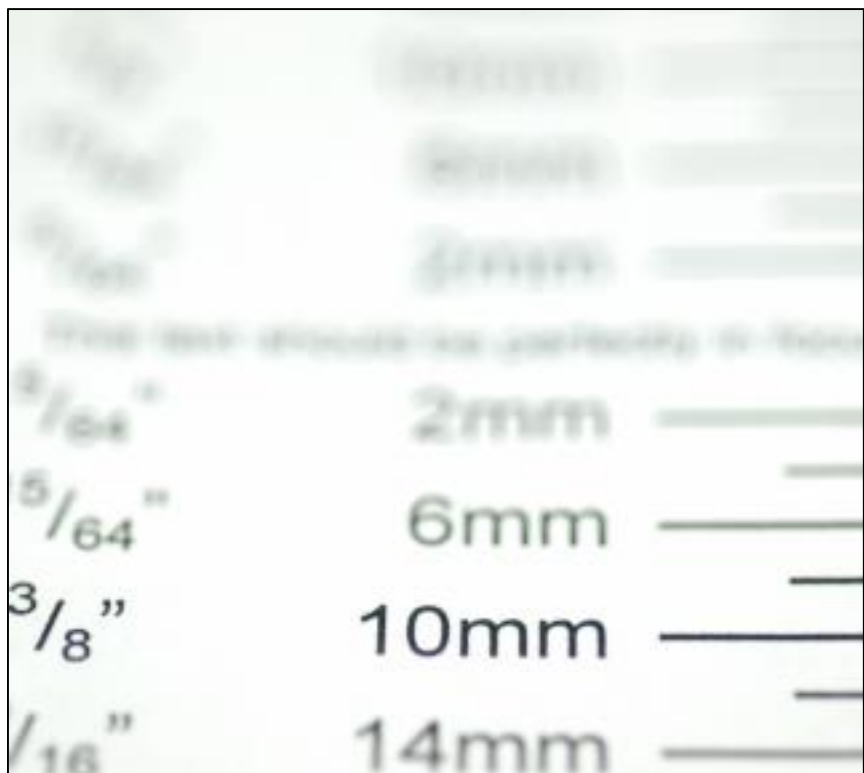
It's normal, particularly with longer focal lengths, to see the focused area, or depth of field, shifted *slightly* rearward, as in the pic on the right. This is not a problem as long as the focus line is still within the area that's in focus.



If the part of your pic that's in focus is so far back that the focus line is way out of focus then you have a problem with back focus, as in this example.



If the point that's in focus is too far forward, as in this example, then you have a problem with front focus.



You're welcome to email me at: tim@FocusTestChart.com.
I'm happy to look at your test pics and to offer an opinion.

By the way: If you happen to measure the spacing of the lines on the chart you'll notice that they are further apart than the markings suggest. This is deliberate. When the chart is at 45 degrees to your camera, the spacing becomes correct. This is done so that when you see those markings in the resultant image you can read them as-is without having to make extra calculations. They're pre-compensated.

Tim

