

Back/front focus test chart

by Tim Jackson

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Version 1.0

(This version was previously known as "Version: Sunday 6 June 2004")
There is NO change to this version other than the version numbering scheme.

The latest version is always available at <http://md.co.za/d70/focus.pdf>

What is back focus?

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

The D70

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?

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".)

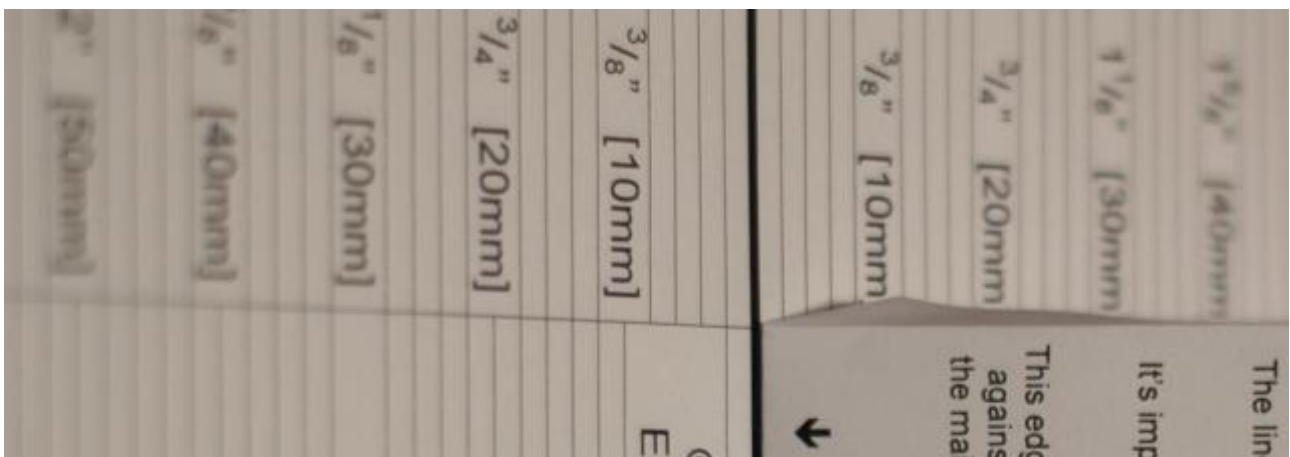
In other words, they're in a tizz for no reason. If they're having problems then, usually, it's operator error.

This test is intended to help any curious D70 owners to check their own 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.

Interpreting your results

Once you've read this all through, assembled your test chart, and have taken a bunch of pics you'll want to know what they mean.

When you view your test pic/s, you should be able to *clearly* see that the centre part, or a part close to the centre, is in focus, while the chart gets obviously and progressively more out of focus as you move away from the centre, to the left and right, as in this example:

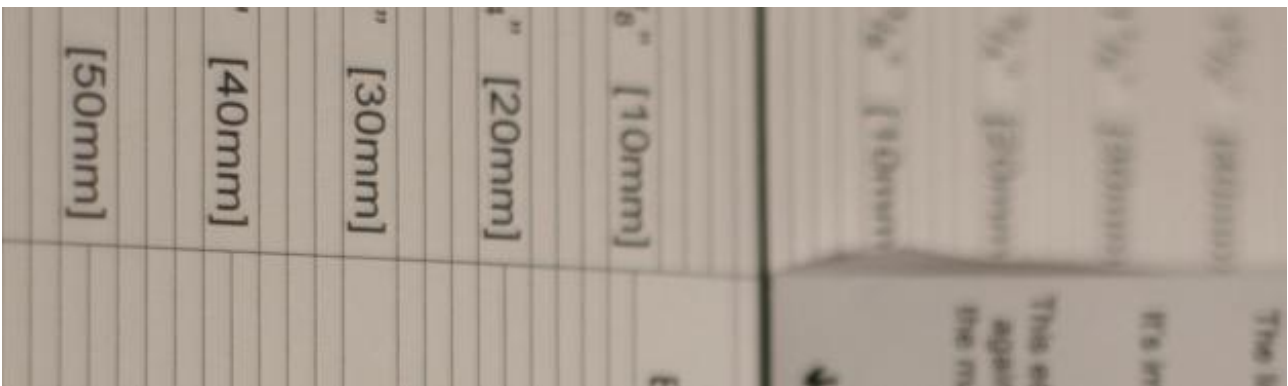


If the area that's in focus is more or less centred around the focal plane of the chart then all is well.

If you get something like this next pic, then you have back focus:



If you get what you see in this next pic, you have front focus.



Ok, now you need to get on with the assembly of the test chart and take some test pics. Read on.

Instructions

WARNING!

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

Please follow these instructions *carefully*, paying particular attention to the points dealing with the setup and positioning of the chart and camera. Failure to do this will render the test useless.

1. Print out this document.
2. You should then have:
 - a. These instructions.
 - b. The test chart.
 - c. The cut-out focus box.
3. Additionally, you will need:
 - a. A pair of scissors.
 - b. Glue / paste.
 - c. An old magazine or other source from which to cut out a picture.
4. Cut out the focus box (the last page of this document), and snip off the corners of the fold-down flaps, as in the following picture:



5. Crease all the fold lines. First fold over the side flaps:



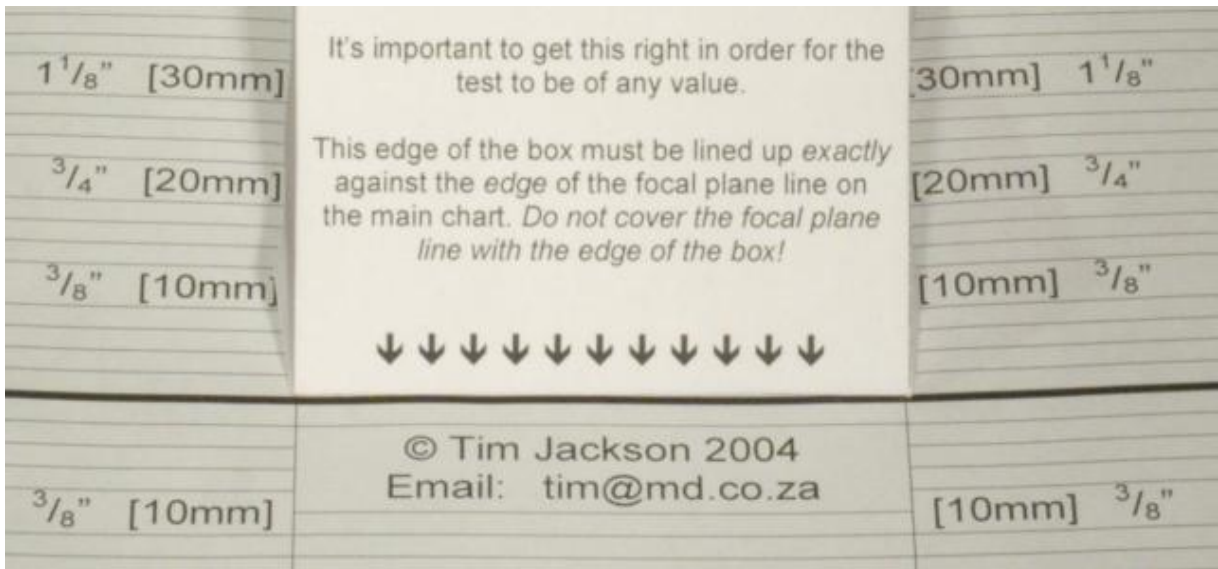
6. Then fold over the back panel and the base panel.



7. Now you can open it all up, apply glue to the end flap and finish off your focus box:



8. Now you need to apply glue to the area on the chart where the focus box will be attached and then fit the focus box in position. Pay special attention to lining up the front edge of the focus box against the edge of the focal plane line. The edge of the box just touches the edge of the line. Do not cover the line. It should look like this:



9. Your test chart is ready to go! Attach it to a vertical surface. A door is good and provides an easy way to adjust the angle by simply opening or closing the door a small amount.



10. Position your camera on a tripod so that the lens is at exactly the same height as the focus box. I suggest moving the camera as close as you can get it to the focus box and adjusting the height of the tripod until your lens is at the same height as the focus box. Now move your tripod back a bit, to where you expect to shoot from.

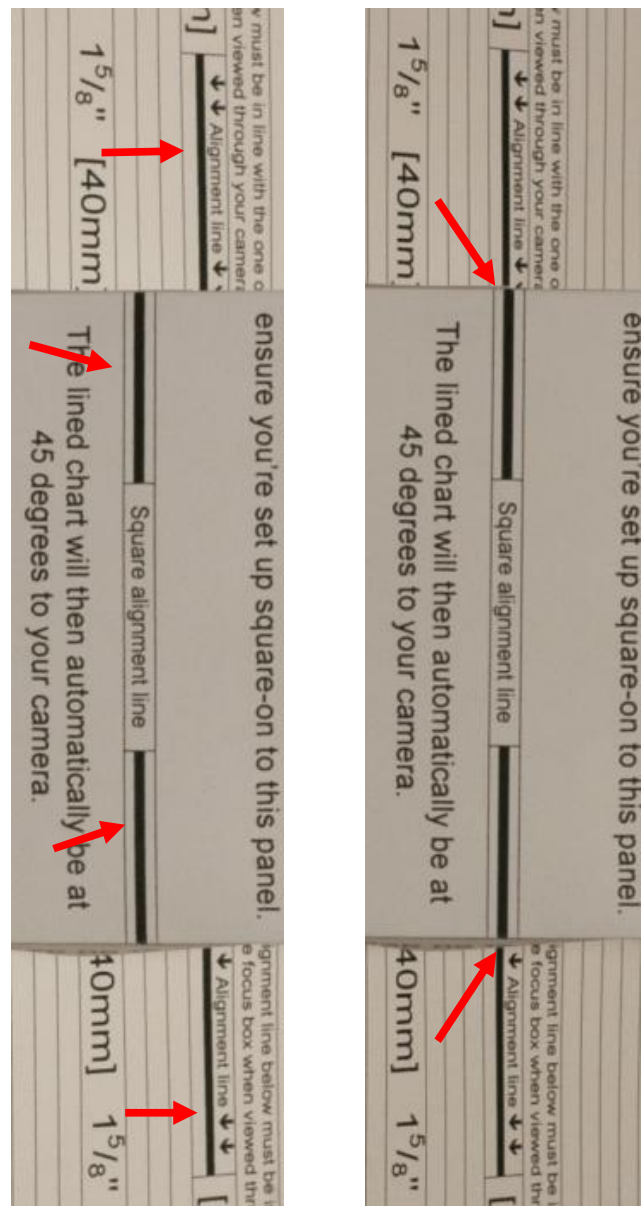
11. In order to ensure that your camera is positioned square on to the focus panel of the focus box, the focus panel and the test chart behind it are equipped with alignment lines. The picture on the right shows where they are and what they look like when not aligned.

You need to shift your camera to the left or right or swing the door a little until these lines are all in a row, as in the picture on the far right.

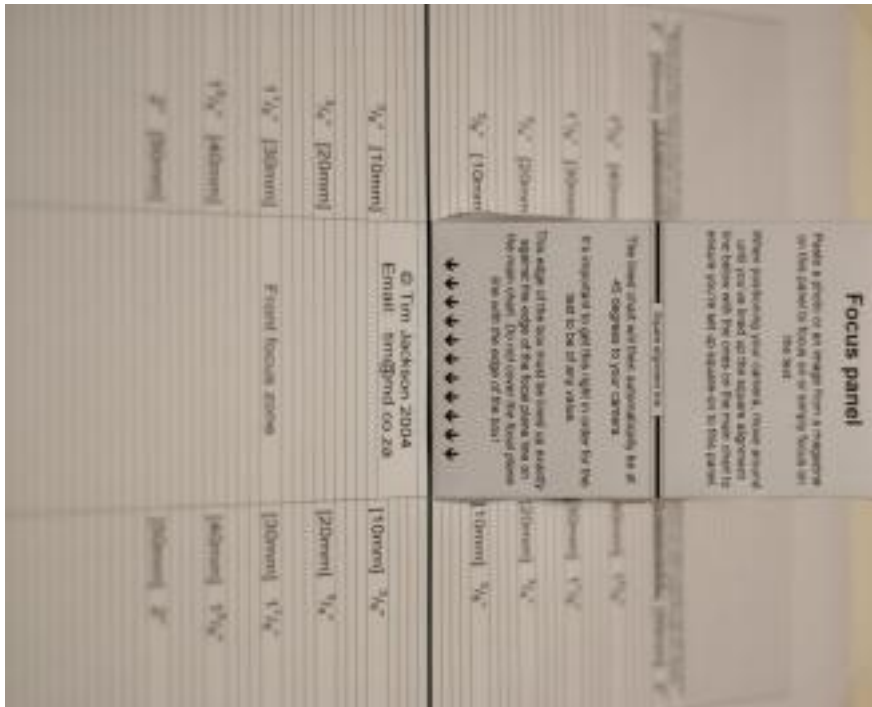
This will ensure that you are square on to the focus panel and that the chart is at 45 degrees to your camera.

Left pic: Out of alignment.

Right pic: Alignment set correctly.



- When shooting your test pics, you need to be close enough that the test chart slightly more than fills the frame, if your lens will allow that. Something like this or even a bit closer if you can:



N.B. 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.

- 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.
- Set the Autofocus system to “AF-S” mode (CSM Menu item 2).
- Set the AF-area mode to “Single area” (CSM Menu item 3).
- 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.

17. If you have extra lighting available, use it to light up the test chart. Do NOT use the flash. The chart must be lit from the front. Avoid backlighting.
18. 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.
19. Test away! If you need more info on the whole subject and how to interpret the results then trawl the D70 forum at DP Review, searching for "back focus" or "backfocus" and you'll be deluged with info.

You're also 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

Cut out around the outside, following the dotted lines.

The flaps down the sides should be folded at ninety degrees to the panels to give the box extra rigidity. Alternatively you can paste the whole thing onto a piece of card before cutting it out and folding it.

A little snipping of the corners at each end of each flap will be required to prevent them snagging on each other when you fold the box.

Take special care when making the folds. They need to be straight and sharp. The final box should have perfectly straight edges and flat surfaces. A sloppily made, wonky box is not good.

When you attach the focus box to the chart, make sure you have glue all around the edges to ensure that the box doesn't pull away from the chart.

The fit and finish is all important. Remember that we're measuring millimetres here and the details matter!

When you attach the completed chart to a vertical surface, such as a door, you need to "stretch" the chart and put adhesive tape around all sides to make sure it sits flat against the door with no bumps or bulges.

Everything must be smooth, sharp, even, flat, square etc.

