Make Your Own Test Strip Printer

A useful tool for localized and continuous test strips

fig.1 The important tonal values of the highlights are limited to one area of the print. This is a typical image to demonstrate the need for a localized test strip.

The creation of a high quality print is far easier with the help of an informative test strip. A few minutes of time can give the darkroom practitioner test results, revealing the right exposure and paper grade for a particular image. Additional test strips, made at potential problem areas of the image, can give us useful information to improve the print with dodging and burning techniques. An organized approach to test strips can replace an inefficient trial and error method, ultimately saving time and paper and yielding more information than any electronic analyzer.

There are two schools of thought when it comes to test strips. First, there is the localized test strip, concentrating on only one particular area of the print. This is typically a delicate highlight area, concerned with the lighter tonal values of the image. Second, there is the continuous test strip, concentrating on the entire area of the print. The choice of which type of test strip to use depends entirely on the image.

It is simple enough to create a continuous test strip. A small piece of photographic paper is placed under the enlarger and a base exposure is applied. Then, the paper is partially covered by an opaque card and an additional exposure is made. This process is repeated until five to seven different exposures are made. Creating a localized test strip is a bit more involved. In this case, the paper has to be moved precisely each time, since the exposure must be made from the same area of the image. This cannot be done accurately unless some kind of paper guide is used. Several versions of such a guide are available commercially, but to my knowledge none of them can be used to create both localized and continuous test strips.

Therefore, I decided to design and make my own test strip printer. It has since become a standard tool in my darkroom, and is used to determine exposure and contrast for every new print. This test strip printer

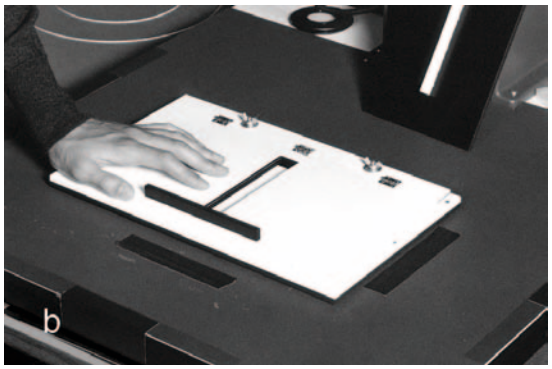

fig.2a-e A localized test strip is the best choice if the governing highlights are concentrated in a relatively small area of the image.

makes use of regular 5x7-inch pieces of paper. I have a box of this size for every paper type I use on a regular basis. For rarely used and special papers, it is often easier and more economical to cut a few pieces from the existing stock. I'd like to explain first how to use the test strip printer with the help of two example images. The instructions on how to build your own test strip printer will follow at the end of this chapter.

Localized Test Strips

The first image is shown in fig.1 and was taken in an abandoned farmhouse in Howell, Michigan USA. The model and I climbed to the attic of the farmhouse using a wooden ladder of rather questionable structural integrity. This ruled out the use of any professional lighting equipment, but I was pleasantly surprised by the amount of natural light coming through several cracks in the roof. The Hasselblad 501C, fitted with the Carl Zeiss Planar 2.8/80, was supported by a tripod to allow for an exposure time of 1 second at f/8 on TMax-400 film. The model was placed in one of the corners of the attic. In this position, all lines generated by the surrounding beams and panels lead the eye towards the model. The white dress and the blond hair are the focus point of the image.

A continuous test strip across the entire image would not be much help in this example, where the highlights are primarily located in one area of the print. Therefore, we'll make a localized test strip to establish a basic print exposure, which holds these sensitive tonal values close to paper white, without losing their delicate highlight detail.

First, the negative is placed into the enlarger and the desired magnification determined. Then, the narrow window of the test strip printer is placed into

position, catching the area of interest. A 5x7-inch piece of white scrap paper can be used to help with this task. Initially, your best guess at exposure time, f/stop and contrast will do. Try to err on the low side of the contrast. It is better to slowly increase the contrast, rather than having to reduce it. It will put you in control to give up shadow detail, after you have seen it.

At this point, it is time to turn on the safelights and to make the first exposure. Push a piece of 5x7-inch paper into the bottom right-hand corner of the test strip printer (see fig.2a), close it (see fig.2b), and expose the first test strip. Open the test printer and move the paper to the left by one notch (see fig.2c). The large triangle cutouts make this a simple task even when in the dark. I place a finger in the notch and move the paper until it touches the finger from the left. The second exposure time should differ from the first by 1/3 stop for rough estimates, 1/6 stop for normal test strips and a 1/12 stop for fine-tuning the image. Use increments of 25, 10 or 5%, respectively, if you would rather work in percentages. Continue with these increments until all seven exposures have been made (see fig.2d). The final test strip is shown in fig.2e after processing was completed. It shows how the test strip printer produced increasingly darker exposures for the same area of the image. It is not difficult to determine a final exposure time for the highlights from this test strip. Proper shadow detail is the next priority and is controlled with the appropriate paper contrast. This can be tested in a similar way, but see 'Fine-Tuning Print Exposure and Contrast' for an alternative approach. You can also prepare localized test strips for problem areas to determine corrective dodging and burning times, while achieving final tonal control and slowly creating a printing map for your image.

fig.3 The tonal values of the significant highlights are spread across the bottom of the print. This is a typical image to demonstrate the need for a continuous test strip.

Continuous Test Strips

The second image is shown in fig.3 and it was taken in a rape field close to my home in Essex, England. I drive by this field twice a day, on my way to and from work, and I had watched the progress of the vegetation. When the field finally had the distinctive yellow color, all I needed was a stormy cloud pattern to give the image the right atmosphere and bright sunshine to light up the field in the foreground. I had to wait for a weekend in May of 1999 for the conditions to be just right. The Toyo 4x5 metal field camera and the Nikkor-W 5.6/210, fitted with the Orange filter, were supported by my heaviest tripod to give solid support for an exposure time of 1/15 second at f/32 on TMax-400 film. The session still required more than two hours of patience for just the right light and cloud pattern. This type of picture is usually taken in color, but I visualized the field to be almost white, with a prominent white cloud contrasting the otherwise dark sky.

Again, we are best off to begin by establishing a basic print exposure, which holds these sensitive tonal values close to paper white, without losing their delicate highlight detail. The proper shadow detail will be established later with the proper paper grade. The prominent highlights are spread evenly across the entire image foreground with almost identical tonal value from left to right. A localized test strip would work well, but would take more time to prepare. Therefore, we'll make a continuous test strip this time.

As done before, push a piece of 5x7-inch paper into the bottom right-hand corner of the test printer (see fig.4a), but this time leave the cover open. Expose the entire test paper for your anticipated minimum exposure time. Then, use the black pedal and cover the left strip, again with the aid of the large notches (fig.4b).

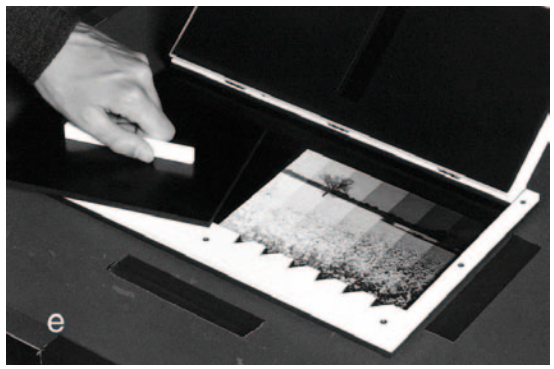

fig.4a-e A continuous test strip is the best choice, if the governing highlights are spread over a relatively large area of the image.

Expose for an incremental 1/3, 1/6 or 1/12 stop, depending on how fine you want the increments to be, or use additional increments of 25, 10 or 5%, respectively, if you prefer. Continue with these increments (fig.4c) until all seven exposures have been made (fig.4d). The final test strip is shown in fig.4e after processing was completed. It shows how the test strip printer produced continuously darker exposures across the image. It is easy enough to determine a final exposure time for the highlight from this test strip. I also use this method to test for appropriate edge-burning.

How to Make Your Own

To my knowledge, such a versatile test strip printer is not commercially available. Therefore, I decided to make my own. Fig.5 shows an exploded view of all parts, the bill of materials and the basic dimensions. I used 1/4-inch opaque plastic sheets in black and white as the base material. The colors were chosen so that the photographic paper is only in contact with black material. However, all other visible surfaces are kept white to provide the highest possible contrast, which will aid handling in the darkroom.

The tools required for this project include a table-saw, a handsaw, a drill, a screwdriver, some adhesive, a file and some clamps. If you don't feel confident operating these tools, I suggest you make the test strip printer from thick cardboard. The tools required are then reduced to a sharp trimming knife and some glue. You could also replace the hinges with durable tape.

Cut the pieces to the dimensions shown in fig.5 and smooth the edges with sand paper. The saw-tooth pattern of the white scale (2) takes a little patience, but its accuracy is important. Glue or screw the white scale to the black base plate (1), while aligning the front

No	Part Name	Dimensions [in]
1	base plate	1/4 x 8 1/2 x 14
2	scale	1/4 x 8 1/2 x 14
3	lower cover	1/4 x 6 x 13 1/2
4	hinge plate	3/8 x 15/16 x 13 1/2
5	upper cover	1/8 x 7 x 14
6	cover handle	1/4 x 1/2 x 5 1/2
7	foot (5)	ø 1/2
8	screw (2)	ø 3/8 x 1
9	wing nut (2)	ø 3/8
10	washer (4)	ø 3/8 (large)
11	hinge (3)	5/8 x 3/4
12	pedal	1/4 x 5 1/2 x 7 1/2
13	pedal handle	1/4 x 1/2 x 4 1/2

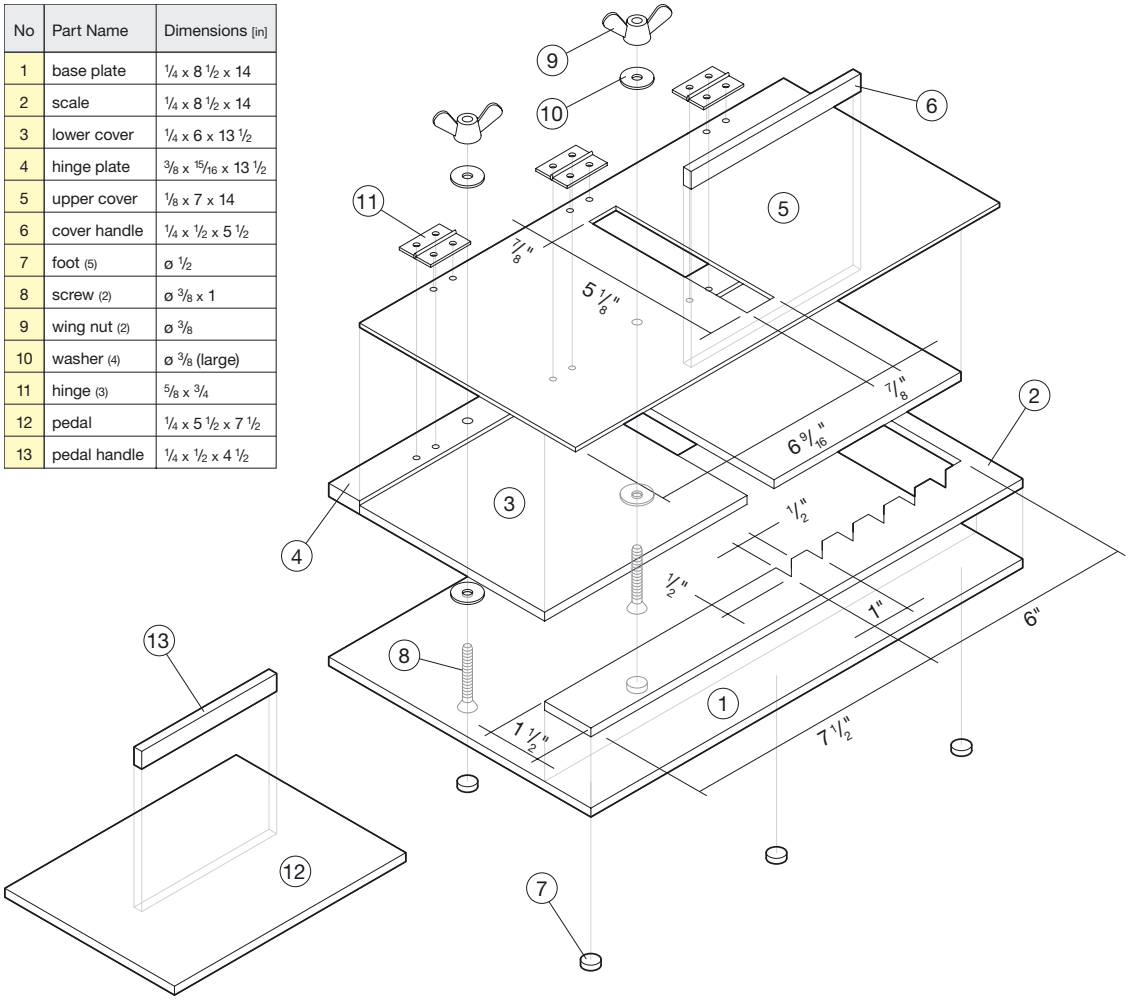

fig.5 The exploded view and the basic dimensions of the test strip printer

and right edge. Using screws rather than glue has the benefit that a flush fit between the two pieces is realized. This will keep the paper from potentially being caught in a glue gap. Now, glue the white upper cover (5) to the black lower cover (3) while aligning the back edge and both sides. Next, glue the black cover handle (6) to a convenient center location on top of the upper cover. Similarly, glue the white pedal handle (13) to the black pedal (12) centered in both directions.

Clamp the white hinge plate (4) to the base plate while aligning the back edge, and drill two 6.5-mm holes. You can distribute the hole pattern as you wish, or as I did, 1/3 from the sides. These holes will be used to hold the hinge plate in place with screws (8), washers (10) and the wing nuts (9). Place the cover assembly on the base plate and push it against the scale at the front and right hand edge. Attach the hinges (11) with small screws or glue. As a final touch, place a few self-adhesive feet (7) to the bottom of the base plate.

Your test strip printer is now ready for your first print (fig.6), and I hope that you find yours as useful as I find mine. It is put to good use for all my printing now.

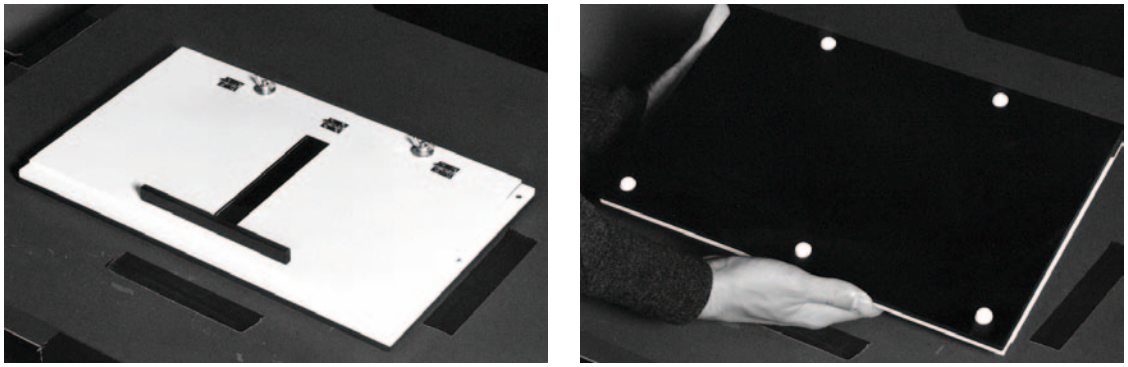

fig.6a-b The final test strip printer assembly. Five rubber feet ensure that it stays in place during operation and test exposures.