

## NOTES ON PRINTING

08/06

**1-Photographic materials are sensitive to most light sources. Never open your box of paper unless you are working under an appropriate yellow or red safelight.** (Color photographic paper can only be used in complete darkness, without a safelight.) Do not leave your enlarger light on to view your workstation. Do not flash light into the darkroom by opening the enlarger head when the enlarging lamp is on.

A **PENLIGHT**--converted into a "pinlight" with black tape--will allow you to inventory your surroundings. Lights out is the policy. Soon you will become acquainted with your work area and the absence of light will become less frustrating.

**2-METHODICAL WORK is the key to steady success. Write down the Negative Number, F stop, exposure time, color balance settings (i.e. magenta, yellow).** Begin with the balance set at ZERO unless your contact sheet indicates that you need to increase contrast ( set at 60 MAGENTA) or decrease contrast (set at 30 YELLOW) for printing with black and white multigrade papers.

### 3-INITIAL SET-UP:

You will need time, patience, and a notebook to record exposure, filtration, and aperture settings, TOWEL, dusting tool (brush or air), burning and dodging tools, grain focuser, paper, GOOD NEGATIVES (check for sharpness, even density, dust, scratches, quality of image).

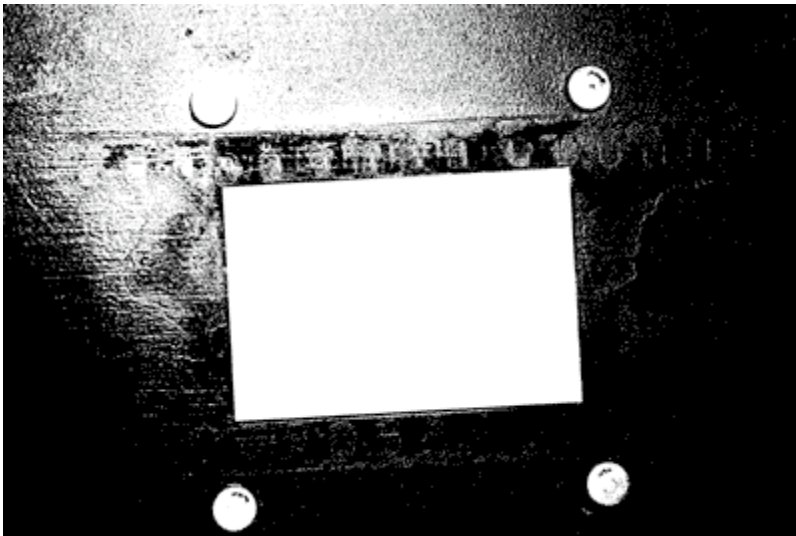
### 4-EASEL SET-UP :

**Select print size** and consider variables: easel size, border size, contact print or enlarged print, proportions that are more square or rectangular.

**Border variations:** 1/4" border, 1" border, larger border for smaller image on 8x10 sheet, borderless, etc. (1" border for archivally processed prints)

### 5-DUST NEGATIVE:

Dust negative and place in negative holder. Spotting flaws on prints or negatives is a difficult task for the beginner. Keeping dust off your negatives is recommended. You may choose canned air or a dusting brush to carefully remove dust from the negative. As you work with a negative, opportunities arise for the image to become scratched or flawed.



Carefully slide film strip under pins of negative carrier.

### **6-FOCUS:**

Unlock enlarger head, raise enlarger head to appropriate height and lock into position. Use the grain focuser to view image projection **while the aperture is at the widest setting (ie. F2.8 or F4). Set timer to FOCUS to turn on enlarging light.** Try focusing on the back of a sheet of photographic paper to maintain accuracy. Position the focusing device directly under the lens. Select an area of fine detail, text, or a sharp line or edge.

### **7-STOP DOWN APERTURE!!**

Stop down the aperture to the proper setting. This F stop is usually 3 stops from the widest position or is in the center of the aperture scale. For the standard 50 mm lens this aperture is F8 or F11.

**8-CHEMISTRY SET-UP:** Remember to rinse all trays before you set up the chemistry. You will need 32 ounces of chemistry for an average 11" x 14" tray.

### **9-SELECT FILTRATION OR PAPER GRADE:**

Check the filtration settings on your enlarger before you begin working. Review your contact sheets to determine contrast problems.

**Multigrade or variable contrast paper USED AT ZERO FILTRATION** approximates GRADE 2 or 2.5 photographic paper, and represents the standard beginning point for printing.

**Additions of yellow lower the contrast** (parallel to grades 1 or 0).

**Additions of magenta raise the contrast** (parallel to grades 3 or 4).

GRADED paper is no longer readily available but can still be purchased from a number of vendors; it does not respond to changes in Magenta or Yellow filtration.



**Set timer for TIME. Set time to 5 seconds.** Push large light **BLUE** button to expose paper.

**10-TEST STRIP!**

**For the initial exposure always do a sequential exposure test.**

Cut a test strip (1/4 of a sheet) for work with black and white papers.

Select an F stop and a standard exposure time, for example F8 at 5 sec. Use a card and move vertically or horizontally along the sheet in the following sequence:

**CUMULATIVE EXPOSURE TIME AFFECTS TONE**



**20 seconds (DARK)**

**5 seconds (LIGHT)**

**Expose the entire sheet for five seconds.**

Cover **one-quarter of the sheet** and expose for another **five seconds**.

Cover **one-half of the sheet** and expose for another **five seconds**.

Cover **three quarters of the sheet** and expose for the **final five seconds**.

The resulting sample will produce four possible printing times on one sheet of paper. If your entire paper is **white (underexposed)**, **open the aperture** to F5.6. (The exposed sheet can be underexposed if your paper is reversed on the easel.)

If your entire paper is **black or very dark (overexposed)**, **close the aperture** to F11.

(The exposed sheet can be overexposed if you left your aperture open all the way during focusing, and forgot to stop down back to F11).

Don't leave the enlarger light on because you may fog your paper accidentally. Remember that F 11 provides one-half the amount of light than using a setting at F8. By stopping down to F11 you will be able to prevent the print from becoming dark so quickly at the same exposure time.

### 11-HANDLING PAPER

Review the difference between the emulsion side and the paper base. **The print should always be emulsion up--if using glossy paper, then glossy side up.** The negative should always be emulsion down --dull side facing down. Print emulsion-to-emulsion.

12- **IMAGE CONTRAST:** Begin with the correct exposure!

#### **THIN OR FLAT NEGATIVES:**

**Add magenta if the print is too flat**

**Start with a 30-50Magenta increase, then use smaller increments of 10-40 Magenta.**

Thin or Flat negatives tend to produce a gray, muddy print at ZERO filtration (equivalent to GRADE 2 paper).

Increase the contrast by working with a higher contrast by adding magenta (equivalent to GRADE 3 or 4 paper).

#### **DENSE OR CONTRASTY NEGATIVES:**

**Add yellow if the print is too contrasty**

**Start with a 30 Yellow increase, then use smaller increments of 5-20 Magenta.**

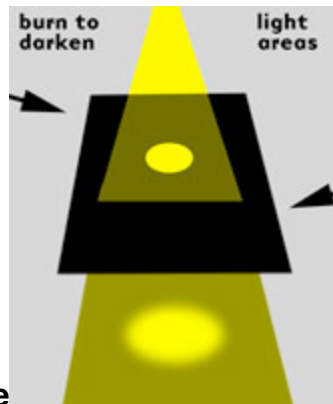
These negatives tend to produce a harsh black and white image at ZERO filtration (or on GRADE 2 paper ). Increase the range of gray tones by working with a lower contrast through the addition of yellow filtration (GRADE 1 paper).

Always refer to the posted chart to estimate filtration increases or decreases. You will need to alter the exposure time every time you alter the filtration setting. **Exposure time can change dramatically with an increase or decrease in filtration. Use test strips!!**

### 13- BURNING IN AND DODGING

**Burning in** is the expression used to describe the process of locally increasing the exposure of a particular area of a print, using the enlarger light while the negative is in the enlarger, or while contact printing.

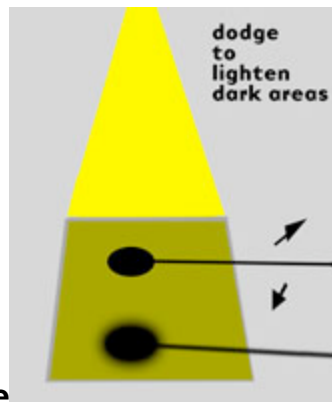
**Dodging**, or holding back is an expression describing the process of locally decreasing the exposure of an area of the print while in the process of enlarging, or contact printing.



**BURNING IN : ...after the initial exposure** [click for larger image](#)

Darken an area of the image selectively by shining light through the hole in one of the burning-in cards. **The usual time will be 1x to 3x the initial exposure time.**

Don't fog the print. Keep tools moving and level and watch out for stray light while burning-in. For an exposure time of 10 seconds: 3 x 10 sec = 30 seconds of burning in time.



**DODGING: ...during the initial exposure** [click for larger image](#)

Lighten an area of the image selectively by blocking light with the aid of a dodging wand or by using your hands. **The usual time is 25% to 50% of the initial exposure time.**

If you need to increase the amount of exposure time to facilitate dodging, then close the aperture one stop. (i.e. F8 goes to F11; if the exposure was 10 seconds, you will change it to 20 seconds.)

**Draw diagrams** to record the areas and times for burning and dodging. Keep the tool moving constantly during the dodging or burning in time. Also, keep the tool level, positioned at a constant height.

#### 14- PRINTING GUIDELINES:

**A print under safelight illumination looks darker than when it finally dries**, and cannot be judged accurately for proper exposure. View the print or test strip under normal lighting for examination. Under normal room illumination a **WET print looks LIGHTER and has more contrast than when it is dry.**

Let water drain off the print to allow the highlights to darken a bit; this will give you a better indication of the final tone resulting in the light areas of the dry print. **NOTE the difference between the shadows and highlights of the print.** If the difference is too great, decrease contrast. If the difference is minimal, increase contrast. The appropriate amount of contrast in a given print corresponds to the light or dark values inherent in the subject and the quality of light illuminating the subject.

**AGITATE for TWO MINUTES after the immersion of the ENTIRE SHEET** Pulling a print is the term used to indicate that the print was not left in the developer for the minimum amount of time and/or was not given constant agitation. A dull muddy print results from pulling the print early. Use the darkroom clock to time development of paper. A print should be in the developer with **CONSTANT AGITATION for 1 1/2 to 3 minutes, with an optimum of two minutes.**

After developing a print do not return to your enlarging station until you have CLEAN, DRY hands. By using tongs and your TOWEL, you will avoid damaging your photographic paper accidentally and will avoid contaminating the enlarger station with chemistry.

### 15- PRINTING checklist

-avoid exposure times of less than 5 seconds or greater than one minute.

**-too light?** increase time or open aperture and make another test strip

**-too dark?** decrease time or open aperture.....

**-too gray?** add Magenta filtration (or subtract Yellow if not at Zero)

**-too black and white?** add Yellow filtration (or subtract Magenta if not at Zero)

### PRINT QUALITY:

Are the blacks rich, yet still retain detail? Are whites clean, but slightly toned?

Do you see texture in the shadows and highlights?

### CONTACT PRINTING:

Reviewing negatives on a light table with a lupe provides the best opportunity to determine image sharpness and image flaws prior to printing. Also review contact sheets to evaluate negative quality.

Contact printing is a form of proofing. The aim is to preview the positive image and to determine printing problems related to contrast. Since you are shooting negative film, you will want to verify that the positive image is as promising as the negative image suggests.

A good contact sheet is properly exposed. The photographic paper is in CONTACT with the negative. Adequate pressure on the glass—or use of a contact print frame--will produce a good contact and a sharp proof.

When creating the contact print, raise the enlarger head to adequately illuminate the enlarger base. You will raise the head higher than required for the exposure of a regular 8x10 print. With the empty negative carrier in place, focus the enlarger light so that the

edges of the negative carrier projection are sharp.

Create a layered sandwich with a sheet of photographic paper on the bottom—emulsion facing up--, negatives filed in a preserver in the middle, and a heavy sheet of plate glass on top. Square up the negative preserver and paper sheet. Making a test strip first will limit the loss of entire sheets of photographic paper. Develop the image to attain a rich black border on the sheet. (Thin negatives will require a lighter exposure.) An exposure of 5 seconds at F8 is a good starting point. Remember that exposure time and aperture setting appropriate for contact sheets are not identical for enlargements. You will need to make another test strip to determine the proper exposure for a print enlargement.

When using a contact printer for a 4x5 negative, clean all glass and negatives surfaces to remove dust. Square up the individual negative and the photographic paper. Contact printing can be performed with the aid of sunlight when using alternative processes such as cyanotype or van dyke.