

I. Introduction

A. *Until recently, color separations were produced by photographic means*

B. *Equipment that can be used to make photographic separations*

1. Professional camera on tripod
2. Process camera
 - a) *reflective copy*
 - b) *transmission copy*
3. Enlarger
 - a) *transmission copy*

II. Separating still-lives using a professional camera

A. *Set up scene, including lighting*

1. Place black and white panchromatic film in the camera
2. Put camera on a tripod

B. *Make one well-exposed black and white exposure*

C. *Make separation negatives*

1. Make one overexposed (by 4 times) black and white (this will be the black printer)
2. Put a red filter in front of the lens. Change exposure time to compensate for filter factor (this will be the cyan printer)
3. Put a green filter factor (this will be the magenta printer)
4. Put a blue filter in front of the lens. Change exposure time to compensate for filter factor (this will be the yellow printer)

- D. Develop the film**
- E. Calculate print exposure time based on the first (normal) shot**
- F. Print all negatives at the same exposure as the first shot.**
- G. Make halftones of each print using orthochromatic film.**
 - 1. All prints should be exposed the same as the normal shot should be exposed.
 - 2. Screen angle must be changed for each shot
 - a) cyan printer = 105 or 15°
 - b) magenta printer = 75°
 - c) yellow printer = 90°
 - d) black printer = 45°

III. Process camera or enlarger separations

- A. Uncorrected direct screen separations (no masks)**
 - 1. Measure highlight and shadow densities of original copy.
 - 2. Make halftone main and flash tests using Panchromatic film. Calculate proper exposure to make an acceptable black and white halftone.
 - 3. Know the filter factor for each red, green and blue filter.
 - 4. Calculate exposures for each printer negative
 - a) Main exposure = unfiltered exposure for a black & white halftone times the filter factor.
 - b) Flash exposure will be the same for all negatives.
 - c) The black printer will be exposed with all three filters.
 - 5. Make each exposure at the proper time with the proper screen angle:
 - a) cyan printer—red filter = 105 or 15°
 - b) magenta printer—green filter = 75°

- c) *yellow printer—blue filter = 90°*
 - d) *black printer—all three filters (one at a time) = 45°*
6. Process all films together.

B. Corrected direct screen separations with masks

1. The uncorrected process does not compensate for deficiencies in the process colored inks.
2. Masks are made to hold back the red and green but accentuate the blue (cyan printer especially)
3. Process is essentially the same as the uncorrected direct-screen process, except the mask is placed in register with the film when the separation is made
 - a) *assumes mask and separations made without copy or any camera element being moved*
 - b) *exposure must be adjusted to compensate for the density of the mask.*
4. See diagram

C. Corrected indirect screen separations with masks

1. Separate colors separately from making of halftones
2. Advantages
 - a) *separations are continuous-tone negatives*
 - b) *continuous-tone films can be used on an enlarger to create different size halftone reproductions.*
 - c) *To reach the final halftone, several steps are necessary (see diagram):*
 - (1) making of masks*
 - (2) placing mask over separation film
 - (3) separating colored image onto continuous-tone film*
 - (4) placing continuous-tone film in an enlarger

(5) exposing halftone positive using continuous-tone image and properly angled halftone screen*

(6) contact halftone positive to halftone negative*

d) *In each step identified with an asterisk, tonal range and color balance can be corrected*

(1) changing of exposures

(2) local correction through farmer's reducer

e) *Due to correction capabilities, this was the most common separation technique before the advent of the color scanner (you can see why the scanner has taken over this process!)*

3. Disadvantages

a) *time*

b) *cost*

c) *material consumption*