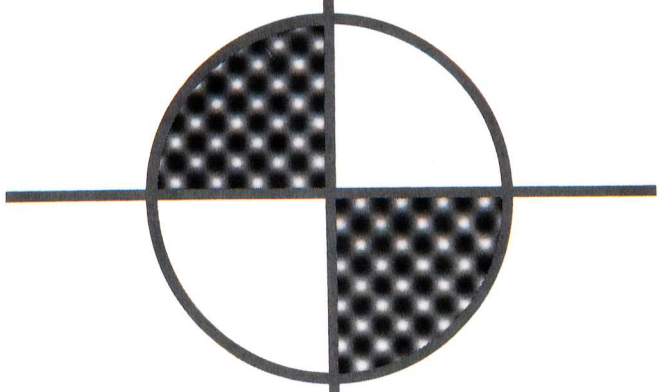
KODAK CONTACT SCREENS

Types and Applications



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KODAK Contact Screens—Types and Applications

Kodak contact screens are designed for making halftone negatives and positives for photomechanical reproduction. They are composed of vignetted dots on a flexible *ESTAR* Base support and are used in direct contact with the high-contrast film or paper on which the halftone is to be made. The *ESTAR* Base support gives the contact screen maximum durability and extended life.

The dots composing the contact screen may be the conventional square-dot shape or may be elliptical in shape. The elliptical-dot screen produces an elliptical dot in the middletones. This feature of the screen eliminates the sudden jump in density that is usually encountered in vignetted areas of the reproduction, because all four corners of the dots join at the same place in the tonal scale. With the elliptical dot, only two diagonal corners join at any one place in the tonal scale. Consequently, a smoother reproduction is obtained and graininess is minimized. This screen is used in the same way as a square-dot contact screen.

The Kodak materials described in this publication are available only from those dealers normally supplying Kodak materials for the graphic arts.

Five Basic Types of KODAK Contact Screens

1. *KODAK* Magenta Contact Screen (Negative) for making halftone negatives for photomechanical reproduction.

2. *KODAK* Magenta Contact Screen (Positive) for making halftone positives from continuous-tone negatives.

3. *KODAK* Magenta Contact Screen (for Photogravure) for making high-quality gravure reproductions. It incorporates the special tone requirements for this purpose.

4. *KODAK* Gray Contact Screen (Negative) for making black-and-white halftone negatives and for making direct color-separation negatives from color copy.

5. *KODAK PMT* Gray Contact Screen for making screened paper prints with Kodak photomechanical transfer papers.

When any positive or negative type of screen is used for its intended purpose, it will give superb results without complicated exposure techniques. *Note this, however:* If a positive screen is used in a normal manner for making negatives, or a negative screen for making positives, the resulting reproduction will usually lack sufficient highlight contrast. Excellent halftone negatives can be made with a positive screen if a no-screen, or highlighting, exposure is added. However, there is no way to overcome the loss in highlight contrast if positives are made with a negative screen.

Using the Contact Screen in a Process Camera

The contact screen must be used in the closest possible contact with the sensitive material. This requires the use of a vacuum film holder for the screen and the sensitized material on the camera back.

Place a sheet of *KODALITH* Ortho Film, Type 3, emulsion side up, in the center of the vacuum holder. The screen must be large enough to cover the film and extend far enough (at least 1/2 inch) beyond it on all four sides to provide good contact. Now wipe the Kodak contact screen *lightly* with a clean, dry *KODAK* Photo Chamois; place the screen emulsion (or dull) side down over the film, and turn on the vacuum pump. If the screen shows a tendency to wrinkle, use a rubber roller, such as the *KODAK* Master Print Roller, to work the unevenness to the edges. When good contact is established, close the camera back and make the exposure.

The lens opening does not affect contrast or dot formation. Therefore, use an aperture of *f*/16 or *f*/22, because most process lenses give the sharpest results at these settings.

For making enlargements or reductions, either the aperture or the exposure time must be changed. Of course, if the lens aperture is not changed, enlargement of the image size necessitates longer exposure; reduction, shorter exposure.

Using the Contact Screen in a Vacuum Printing Frame

For many purposes, halftones can be made by contact from continuous-tone negatives or positives of the desired size. Since the closest possible contact with the sensitive material is again necessary, a vacuum holder or vacuum printing frame is needed. For example, to make a halftone positive from a continuous-tone negative, place a sheet of *KODALITH* Ortho Film, Type 3, so that its emulsion side faces the exposing light. Wipe the contact screen *gently* with a clean, dry *KODAK* Photo Chamois and place it, dull side down, over the *KODALITH* Film. Next, place the carefully cleaned negative, dull (or image) side down, over the contact screen. Now lower the glass of the frame over the assembly and turn on the vacuum. The exposing light may be the modified *KODAK* Adjustable Safelight Lamp described in various Kodak Graphic Arts Data Books and in *Contact-Printing Lamp for Photomechanical Work,* Kodak Pamphlet No. Q-80.* Be sure this lamp is far enough from the frame so that illumination will be even across the entire image area.

KODAK Magenta Contact Screen (Negative)

The *KODAK* Magenta Contact Screen (Negative) is available in sizes from 9 x 11 inches (for 8 x 10-inch film) to 31 x 31 inches (for 29 x 29-inch film) and in rulings of 110, 120, 133, 150, and 175 lines per inch. All screens have elliptical dots.

These screens have various highlight-contrast improvements built into them to meet the needs of the processes for which they are normally used.

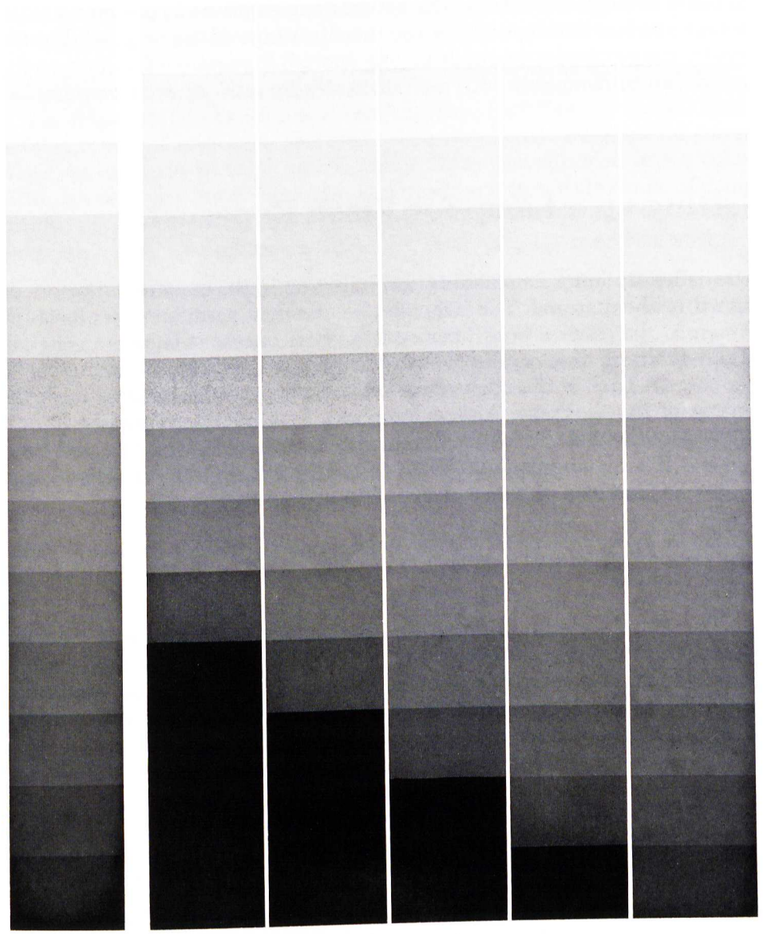
Magenta Contact Screens (Negative) can be used with white-flame arc or pulsed-xenon lamps on the camera, with only small differences on tone reproduction. Tungsten lamps give somewhat less contrast.† The magenta dye in the screen permits tone-reproduction changes to be made with filters.

The controlled-flash method is the simplest method of controlling halftone contrast. It requires two exposures: *The main exposure, made through the screen, depends primarily on the highlight density of the original copy, on magnification, and on lens aperture. It can* be computed readily with a *KODAK Halftone Negative Computer,*‡ Kodak Publication No. Q-15, sold by graphic arts dealers. The second exposure is a *flash*

*Single copies of Pamphlet No. Q-80 are available on request from Department 412-L, Eastman Kodak Company, 343 State Street, Rochester, New York 14650.

†With tungsten lamps, slightly higher highlight contrast can be obtained by using two layers of *KODAK* Color Compensating Filter No. CC50M over the lens. About twice the exposure is required as when no filter is used. An alternate method is to use a single *KODAK WRATTEN* Filter No. 80B with a 25 percent increase in exposure.

‡The *KODAK Graphic Arts Exposure Computer,* Kodak Publication No. Q-12, may also be used for these calculations.



Reproduction of Scale

EXTENSION OF TONE SCALE BY USE OF CONTROLLED FLASH

The five scales reproduced above were all made with a magenta contact screen from an original gray scale represented, at somewhat reduced contrast, on the left. All five reproductions were given the same main exposure, but the flash exposure was varied as shown. Note how increasing the flash exposure lengthens the tonal range. The main exposure in each case was a single white-light camera exposure of 1 minute at *f*/16 with two 35-ampere arc lamps. The flash exposures were made with a lamp described in *Contact-Printing Lamp for Photomechanical Work* (Kodak Pamphlet No. Q-80, available on request).