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How to use a random dot screens (RDS)

When a film positive for an intaglio photopolymer plate is opaque in some areas too much of the photopolymer plate washes out. Increasing the exposure might never 'set' the plate, and increasing the exposure risks over-exposing the lighter tones in the image.

If you are working with a drawn image you can scratch back into the film in the opaque areas to open it up so that some light can get through to partially harden the polymer in the dark areas.

If you are working with a photographic image a double exposure using a RDS can expose your dark or shadow areas and not overexpose your highlight areas.

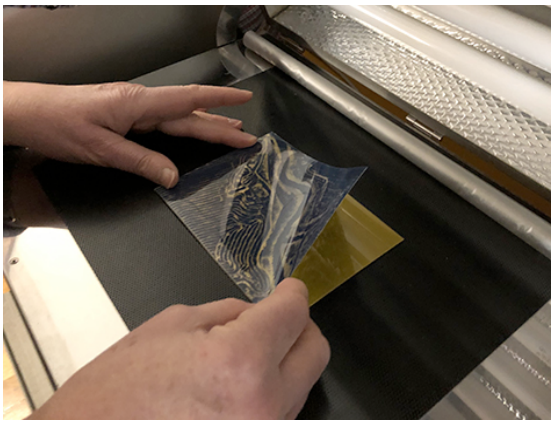
Exposing plates with a RDS

Photopolymer plates can be double exposed to solve the problem of deep grooves that occur when you have wash-out problems with a single exposure. The opaque areas of the film positive have prevented the light from penetrating to the photopolymer plate so what should be a dark area in the print washes out and prints like an open bite. The second exposure with a RDS allows minute dots of light through to the plate that partially set the polymer in the dark areas. When the exposure times for the first and second exposure are correct the image will have rich blacks.

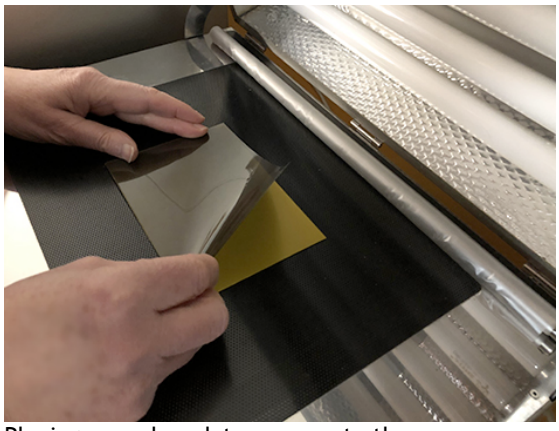
You can use the RDS as your first exposure or your second exposure. I have made a test and there is only a slight difference to the finished image. Using the screen second gives a slightly sharper image, using the screen first the image is slightly softer.

There is certainly more testing involved when making double exposures, but you can achieve a print that is a more accurate translation of your original drawing or digital image.

Agfa Cristal-Raster developed a stochastic halftone that incorporates a random distribution of equally sized halftone microdots. The resulting effect when using a RDS is that the dot structure of a conventional halftone is replaced with a mezzotint type screen structure.



Placing an inkjet printed film positive onto a Miraclon DS94 photopolymer plate in a UV unit with vacuum, diffusion film and florescent UV lamps.



Placing a random dot screen onto the same Miraclon DS94 photopolymer plate for a shorter time to expose the dark areas in the film positive.

1 Create a test strip for your test exposures of single, then double exposures. If you are using drawing materials, apply them to the same film in similar levels of density. If you are making a digital collage or a digital photograph select an area of the image that has the lightest and darkest areas, and a good tonal range. Cut an A6 plate into 3 to create 3 plates 5 x 10.5cm to use for tests or even 4 plates 3.5 x 10.5cm. Ensure your test film is slightly smaller than your test plate, this way you get good contact between the film and the plate. If you are using an inkjet film positive or imagesetter film, place the matte or emulsion side towards the plate surface.

2 I experiment with the exposure time until I have all areas giving a good washout, except the shadow/black areas which are washing away. Print up your test strip to check that the tonal areas are printing accurately, except where you will have washed out areas in the blacks.

3 Then do a double exposure. I usually do the single exposure using the test film positive, remove the test film then place a small RDS onto the plate surface and expose for perhaps 25-30% of your film exposure. Washout the test plate and post-expose. Print the test plate. If you have no washout in the black areas you are around your optimum exposure time. If the black areas don't print a velvety black you may need to reduce your dot screen exposure time, or both your dot screen and film positive exposure times. This you will learn by experimenting and experience. The longer the dot screen exposure time is in relation to the film positive exposure time will reduce the tonal contrast of the image.

4 When you are testing for the optimum exposure time/s keep your tests as consistent as possible. Washout water between 20-25°, your printing paper slightly but nicely dampened and placed between plastic, your inking and wiping consistent. You might have the perfect exposure time on your plate but print onto dry-ish paper and not get the result you should from your plate. And pressure on the etching press. All these variables count towards getting good test results. And remember when

testing to only change one variable at a time. Especially when you are starting out.

5 Once you have created the ‘perfect’ test plate, you then expose your full-size plate with the film positive and the RDS. If you are making plates from drawings on film that have media which does not dry properly, do your RDS first. You don’t want to get the screen dirty with drawing materials that contact onto the plate during the film exposure.

6 If you are using a UV exposure unit with a vacuum and a diffusion film (not glass) you will need to have your film positive and RDS cut just slightly smaller than your plate. You can leave the dot screen larger, but you may get a loss of contact on the plate edges and the dot screen bends along the edge of the plate.

7 Keep both your film positive and RDS well away from your washout area.

8 If you have difficulty ascertaining good double exposure times, you can book some one-to-one tuition time with me at Agave Print Studio or via a Zoom session.