The Camera Club

Black and White

Developing a film
&
Making a print

By Dave Champion

The following notes are not a definitive “how to do it” tutorial. They are intended as an aide memoir and to help you avoid unnecessary frustrations.

PROCESSING A FILM.

What you need.

Enough time to complete the process without rushing.
Totally dark room or changing bag.
Film - opener for 135 cassette - scissors.
Tank - Spiral.
Developer - measure for developer.
Stop - measure for stop.
Fix - measure for fix.
Wetting agent to help drying.
Clock.
Thermometer.
Flowing water. A filter is good to include in a rubber tube on the tap.
Squeegee.
Clips to hold film up to dry - somewhere to hang the film.
Somewhere to keep the processed film. Negative storage file.

What will you do with the chemicals after use? If you are keeping them you need suitable storage bottles.

Development time for your film & developer combination.

Layout the above items.
Check instructions for film and chemicals.
Turn film dryer on now so that any dust has blown away before you put your film in.
Mix chemicals at the correct temperature.
Set clock.
Load film into tank.
Developer in - start clock - agitate then bang to dislodge bubbles - wait - agitate etc.
Developer out during last 15 seconds of time.
Stop - 30 seconds, gentle agitation.
Fix - agitate for 30 seconds then every 30 seconds. Total should be twice the time it takes for the film to clear.
Wash. Gentle flow of water.
Wetting agent. 1 or 2 drops in tank, gentle agitate. Do not create foam.
Gentle squeegee
Hang to dry.
Cut and store film. Label the storage page.
Clean and dry all equipment as soon as possible.

Cleaning up after you have finished is VERY important.

PRODUCING A PRINT.

What you need.
Enough time to complete the process without rushing.
Darkroom with red or orange safe light.
Negatives. Magnifier to view negatives.
Enlarger – negative carrier – lens – masking frame – focus scope – dodgers.
Three dishes – one size larger than your print.
Print washing – dish with running water or a print washer.
Print tongs – at least two pairs.
Printing paper – what size?
Developer to suit the paper.
Stop
Fix
Measuring cylinder.
Thermometer.

What will you do with the chemicals after use? If you are keeping them you need storage bottles.

Set up enlarger and masking frame.
Layout dishes and darkroom equipment.
Mix chemicals.
Make a contact sheet – use gloss, resin paper. 9.5 x 12 is easiest for a whole 135 / 36
Select first negative, compose and focus.
Make a test strip.
Lens stopped down 2 stops.
Start with grade 2
Each exposure step is twice the last (+ 1 stop). Example: 10 / 20 / 40 / 80.
Magnification affects exposure.
Negative density affects exposure.
Visual judgement can be difficult. A negative with large shadow areas will seem as if it needs less exposure than one with large highlight areas but the important detail may be the same. Refer to contact sheet for evaluation.
For next negative tear up a sheet and make a small test strip, it should be close to correct.
Make any small correction and expose the finished print.

Cleaning up after you have finished is VERY important.

Lenses.
50mm for 24x36mm (135 film).
80mm for 6x6cm, 6x7cm (120 film).
150mm for 5x4 sheet film.

Film.
Modern films are "panchromatic" sensitive to the whole of the visible spectrum.
Slower film gives finer grain and probably wider tonal range.

Paper.
Paper is "orthochromatic" not sensitive to red / orange light.
It does not need to be panchromatic. Allows us to work in red safelight.

Fibre paper.
Develops slowly.
Very long wash time. At least 45 minutes for good archival storage.
Curls.
Probably better / richer tonal range.
Not glossy unless glazed.

Resin coated.
Develops quickly
Washes quickly
Stays flat
Glossy without glazing.

Graded paper.
Grade 0 is "soft" low contrast.
Grade 6 is "hard" high contrast.

Multigrade.
Enlarger light varies from mauve to green, the paper responds to the colours differently giving different tonal ranges.
One box of paper can provide all the grades.

Multigrade enlarger head has two bulbs. One green and one mauve. Amount of light from the bulbs vary to give pre set grades.
As one bulbs gets brighter the other grows dimmer so exposure times are fairly constant.

Paper surface.
Gloss – nice bright prints but reflections can be a problem.
Satin – textured.
Semi matte – a smooth surface like gloss but without the shine.
Matte – may look a bit flat and dull for some images.
Semi Matte or Matte are best for exhibition.

Film, chemicals and paper are available locally from Silverprint. An excellent and well stocked supplier of just about every b&w film and all things for the darkroom.
Silverprint is in Valentine Place just round the corner from the Old Vic.
They are not always open on Saturday so check before you go.
They have a good collection of prints made on different types of paper so you can see the result before you buy.
There web site has lots of useful technical info pages to down load.
12 Valentine Place. SE1 8QH. 0207 620 0844. www.silverprint.co.uk

Stick to one type of film and one developer while you improve your technique.
If you keep changing you will not really know how you are getting on.
Use a well known brand.
Traditional silver halide emulsions:
Kodak Plus X and Ilford FP4 are 125 iso films.
Kodak Tri X and Ilford HP5 are 400 iso films.
Modern high tech emulsions:
Kodak Tmax 100, 400 and 3200 iso
Ilford XP2 400 iso
Dye type (chromogenic) emulsion designed to be developed in C-41 colour process.
Kodak BW400cn

Do what the leaflet recommends. They probably know what they are talking bout.

Chemicals.
Liquid concentrates are easier to mix than powders.
Ilford Ilfotech is a good choice especially if you will not develop a lot of film.
One shot at 1+29. 250ml is less than £7.
Rodinal is another great one shot liquid that is good for most films. Cheap and easy to use and available in small quantities.
Powders are cheap; you normally mix up 1 litre of stock solution (you need a storage bottle) and then dilute to use.
Ilford ID11 is a good choice for powder.
Read instructions and don't breathe the power in!

Mixing.
Always start with the developer to reduce risk of contamination.
Dilutions are shown as amount of chemical plus the amount of water. E.g. 1+9.
If you need to mix 500ml then 1 part (50ml) is chemical and 9 parts (450ml) are water.
Use a 500 or 600ml measuring cylinder.
Add 50ml of chemical.
Top up to 500ml with water.
Remember that 1+9 is ten so the chemical is $1/10^{th}$ of the total amount.
1+7 would be $1/8^{th}$ of the total or 62.5ml.

To get consistent results when processing film it is very important that your technique does not vary.
Often developers will quote different dilutions and different times to suit.
More diluted will require longer developing.
More dilution and longer development will give lower contrast negatives in most developers.

Getting the temperature right.
The correct way is to have a jug of hot and cold water and do maths to get the correct amount of each to give the desired temperature for the final amount needed.
The easy way is to start with a jug of cold and add hot a bit at a time till you get the right temperature. Then add the amount you need to you chemical which should already be very near to your temperature. If you stop short you can top up with hot or cold to fine tune the temperature. Crude but quick and easy.
Most common temperature is 20C (68F) but always check sometimes film developer is 24C.
20C is normal summer time tap water (more or less).
If it is very hot weather the tap water may be way to high so put a jug of water in the fridge first thing to cool down while you get other things ready. The bigger the jug the more slowly it will cool so don't put in more than you will need.

Chemical Storage.
All chemicals have a defined life.
Developers degrade most rapidly.
Label bottles when they are opened.
Label storage bottles with what is in them and when it was added.
If you are reusing chemicals record on the bottle what has already been used.
Example: a mix of film developer may be sufficient to develop four rolls of film so write a label saying when it was mixed and include four lines marked "film 1" etc.
Write in the date when each of the four films is developed.
Developer should be kept in full bottles, dark coloured or away from the light.
Fix should be stored in full bottles.
Keep all chemicals cool and away from direct sun light.

Dodging and Burning a print.
Your print may look as if an area would be better if it were exposed for more or less time than the rest of the print.
You could set your main exposure so that you needed to burn in (give more exposure) to the area, or you could give that area the correct exposure and dodge (give less exposure) to the rest of the print. Decide which is most easily achieved.
Calculate the amount of dodging or burning needed relative to the main exposure.
Don't say "I will give it a few less seconds". Decide on a definite amount, and think of it in terms of "f" stops. Remember that one f stop equals half as much light (or twice as much).
For example, you make a print with a total exposure of 30 seconds and then decide that you need to dodge an area for about half a stop. Half of one stop relative to 30 seconds is about 7 – 8 seconds (one whole stop is 15 seconds).
Dodge by using a piece of thin cardboard stuck on a bit of wire.
Burn by making the shape with your hands or cut cardboard to suit.
Holding closer to the print gives smaller area with sharper edges.
Holding nearer the lens give larger area with softer edges.