

# **Black and White**

**Notes on**

**Developing a Film  
and  
Making a Print**

**By Dave Champion**

The following notes are based on developing films in small tanks and processing paper in normal darkroom dishes; other techniques may be different.

These notes are not intended to be a detailed in depth “how to do it” guide but rather to be an aide memoir to help you work confidently and more efficiently.

If you have any criticisms or suggestions for improvements please let me know.

### **Why do we press the shutter release?**

Usually it is because we want to produce a photographic print, and to create a good print we must first perfect all the steps in the photographic chain. Do not think of them in isolation: they are all equally important and the end result links back to all the preceding steps.

The hardened professional makes it appear so simple, and does so because of previous experience. Do it in a particular known way, and you will get particular known results.

- o How do I want the print to look?
- o How should I compose the scene? The best darkroom technique in the world will not help a poorly composed picture.
- o Which film will suit it best?
- o Which developer works well with that film?
- o How long to develop?
- o What exposure?
- o Should I use a filter?
- o What type of paper should I print it on?

When you find a likely photographic subject you should probably first imagine how you want the print of it to “look”: soft and pale or harsh and dark, low contrast or high contrast? If you just take the picture and think, “Oh, I will see how it prints”, you are not maximising your chances of producing a *great* print.

A sunny summer’s afternoon, a young woman in a flowing dress is running across a wild flower meadow. The print may look charming if it is soft and light, but not so an angry crowd outside the gates to Downing Street: that print would need a dark and harsh look.

If both scenes were treated the same then we would end up with a negative that suited one or the other, or maybe neither.

The meadow may suit a fine grain film and slow development to give subtle tones; the street scene may suit a fast film to freeze movement and give a harsher, more gritty look, and then developed to give more contrast.

There is much written about how to achieve the best results, and often this advice seems contrary to that published by film and chemical manufacturers. Presumably the writer uses their technique because it gives the results *they* want; you may well find if you tried it you would be disappointed. Manufacturers do not publish information without first doing considerable testing so my advice must be “Do what it say on the packet”. In the future you may have a good reason for modifying this; perhaps you find your negatives are often slightly “thin” when using a certain developer so you increase the development time and find your negatives now give you exactly what you want.

If you do want to changes things, only change one thing at a time, and only if you have a really good reason. If you do not like the negatives you get, change the film and see if they are better. If not, change the developer. You now know that it is the developer you do not like but the film is OK. If you change both things at the same time you do not learn much and may disregard a very good film that when used with a different developer could give you your best results.

Finally try to standardise your materials, get to know them and trust them, only change material or technique if you are not happy with your results.

## PROCESSING A FILM.

### What you need.

- o The roll of film you want to develop! (Easily forgotten)
- o Enough time to complete the process without rushing.
- o Totally dark room or changing bag.
- o Opener for 135 cassette (bottle opener)
- o Scissors.
- o Tank & Spiral. Make sure you have all the parts for the tank.
- o Developer and a measure for developer.
- o Stop and a measure for stop.
- o Fix and a measure for fix.
- o Wetting agent to help drying (do not use washing up liquid).
- o Clock.
- o Thermometer.
- o Water to wash the film (see section "Washing Film").
- o Clips to hold film up to dry - somewhere to hang the film.
- o Somewhere to keep the processed film - Negative storage file.
- o What will you do with the chemicals after use? If you are keeping them you need suitable storage bottles. If you are re-using chemicals ALWAYS filter them as you pour them out.
- o Know the development time for your film & developer combination.
- o You may want to include some bottled water (soft) for the final tank full of the wash; this will help reduce drying marks caused by the hard water in the South East of England (see section "Drying and Hard Water").

Remember that the darkroom is divided into a wet side and a dry side.  
Do not put wet things on the dry side; you will regret it one day.

Layout the above items.

Check the cold tap water temperature, if it is too warm put some in fridge to cool.

Check instructions for film and chemicals.

Mix chemicals at the correct temperature.

Set clock.

Load film into tank. The spiral MUST be totally dry.

Developer in - start clock - agitate then tap to dislodge bubbles - wait - agitate etc.

Developer out during last 15 seconds of time.

Stop – 30-45 seconds, gentle agitation.

Fix - agitate for 30 seconds then every 30 seconds. Total time should be twice the time it takes for the film to "clear".

Turn film dryer on now so that any dust has blown away before you put your film in.

Wash. Gentle flow of water for 20 – 30 minutes, longer time if water is cold.

Wetting agent. 20 or 30 drops in tank, gentle agitate. Do not create foam.

I do not recommend using a squeegee of any type.

Hang to dry. Set drying cabinet to a very cool setting (30°C), it will still dry film in a few minutes. Check film carefully, it must be completely dry before storing.

Cut and store film. Label the storage page now before you forget.

Clean thoroughly and dry all equipment as soon as possible.

Cleaning up after you have finished is important. Do not put plastic tanks or spirals in the film drying cabinet, they melt!

## PRODUCING A PRINT.

### What you need.

- o Enough time to complete the process without rushing.
- o Darkroom with red or orange safe light.
- o Negatives. Magnifier to view negatives.
- o Enlarger – negative carrier – lens – masking frame – focus scope – dodgers.
- o Somewhere to dry the prints.
- o Three dishes – one size larger than your paper.
- o Print washing – dish with running water or a print washer.
- o Print tongs – at least two pairs.
- o Printing paper – what size?
- o Developer to suit the paper.
- o Stop
- o Fix
- o Measuring cylinder.
- o Thermometer.
- o What will you do with the chemicals after use? If you are keeping them you will need suitable storage bottles.

Remember that the darkroom is divided into a wet side and a dry side.  
Do not put wet things on the dry side; you will regret it one day.

Set up enlarger and masking frame.

Layout dishes and darkroom equipment.

Mix chemicals. Temperature is not critical but should be close to 20° C. Room temperature should be around 20 so the chemicals should remain at the right temperature.

Try to keep your hands dry while printing; use tongs.

Make a contact sheet – use gloss, resin paper. 9.5 x 12 is easiest for a whole 135 / 36  
10x8 is fine for a 120 roll film. Grade two is normally OK.

Select first negative you want to print, insert in enlarger emulsion (dull) side down.

Compose and focus.

Make an exposure test strip; tear a sheet into about 1½ inch wide strips.

Lens stopped down to middle of aperture range, 2 – 3 stops (4 – 6 clicks) to start with.

Start with grade 2

Each exposure step is twice the last (+ 1 stop). Example: 10 / 20 / 40 / 80 / 160 seconds.

Divide your test strip into three exposures using card to mask it, this gives reasonable size patches to evaluate. Lets start with 5 seconds, so our three steps are 5 / 10 / 20.

First section is exposed twice, i.e. 5 + 5

Second section is 5 and third section is 5.

When evaluating always ask two questions:

1. Is the exposure correct? What would it look like if it were lighter / darker? Consider the effect on highlights and shadows.
2. Is the contrast (grade) right? Consider the effect on highlight / shadow detail if the contrast was changed.

Apply any corrections and expose another test strip or a whole print. Always think in stops and then convert into seconds. i.e. 10 seconds is close but I think it needs half a stop more exposure; 10 seconds plus half a stop is about 15 seconds.

Always evaluate the print and ask the above questions again, even if you think the print is good, maybe it could be better.

Remember:

Magnification affects exposure, bigger print (higher magnification) = longer exposure.

Negative density affects exposure. Not always easy to evaluate by looking at the negative.

Visual judgement of negative can be difficult. A negative with large shadow (light) areas will seem as if it needs less exposure than one with large highlight (dark) areas but the important detail may be the same. Refer to your contact sheet for evaluation.

And ALWAYS look for the lid of the paper box before you turn on the white light!

If you do turn the light on with the box / bag open you will probably only fog the end of the sheets so you can still use them for test strips.

Cleaning up after you have finished is important. It is easy to rinse things now but it will be hard to soak off the dried chemicals tomorrow. Allow 15 minutes at the end.

### **Making Test Strips**

When starting to make a print we have no idea what the correct exposure or paper grade will need to be, we could just start making prints and refine the look as we go along but this is expensive and wasteful.

Let's assume we are intending to make a 10"x8" print on Multigrade RC paper.

We will make a test strip containing three sections at exposures that are each one stop different from the next.

- o Compose the image and focus, if your enlarger has control locks make sure they are locked.
- o Stop the lens down to a mid aperture, probably f8, count the clicks so you can set it again easily without needing to see the numbers on the lens.
- o Turn off the enlarger light.
- o Set the enlarger for a mid tone range of grade two or three.
- o Set the timer for six seconds.
- o Cut a sheet of 10x8 paper into four strips; cut, don't try to tear it.
- o Place one strip on the baseboard across the important detail area of your image.
- o Use a piece of card to mask two thirds of the strip.
- o Expose the paper for six seconds and then without moving the card expose again for another six seconds.
- o Move the card so that only one third of the strip is now covered.
- o Expose for six seconds.
- o Remove the card completely.
- o Expose for six seconds.
- o You now have a strip with exposed sections of 6, 12 and 24 seconds.

Develop the strip fully; that is until you are sure it is not getting any darker, do not try to hurry it and do not try to judge the result just keep going till it gets no darker.

Stop

Fix

Wash

Evaluate the image areas.

Which exposure is best?

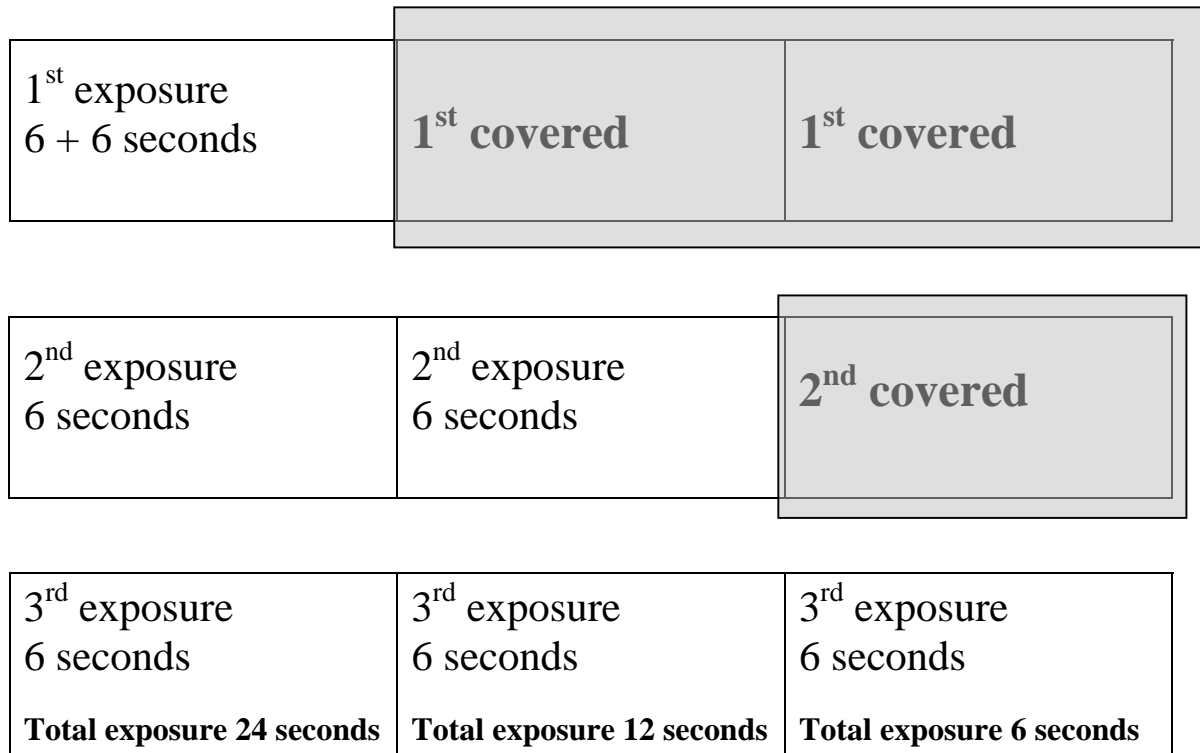
Is the grade right?

If you think the lightest is too light but the middle section is too dark then you may want to expose halfway between the two i.e. the lightest exposure plus half a stop; half way between 6 seconds and 12 seconds is 9 seconds.

If you think the middle section is too light but the darkest section is too dark then you may want to expose halfway between the two i.e. the middle exposure plus half a stop; half way between 12 seconds and 24 seconds is 18 seconds.

You can see that it is important to think of stops and then convert into seconds.

If you have a mathematical mind you will already have realised that half way between 12 and 24 is not technically 18 but for our purposes we will keep it simple and say it is close enough.




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## GENERAL NOTES

### Enlarging Lenses.

- 50mm for 24x36mm (135 film).
- 80mm for 6x4.5cm, 6x6cm, 6x7cm (120 film).
- 105mm for 6x7cm, 6x9cm (120 film)
- 150mm for 5x4 sheet film.
- 210 / 240mm for 10x8 sheet film.

### Film.

Modern films are “panchromatic” i.e. sensitive to the whole of the visible spectrum. Slower film gives finer grain and usually a wider tonal range but possibly are less tolerant of exposure calculation errors.

### Paper.

Printing paper is “orthochromatic” i.e. 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 in flowing water for good archival storage.

Curls while drying, slower drying is better.

Probably better / richer tonal range than Multigrade.

Not glossy unless glazed. Unglazed gloss paper gives a smooth surface and a semi matt finish.

Excellent for retouching and hand colouring.

**Resin coated paper.**

Develops quickly

Washes quickly

Stays flat

Gloss surface is glossy without the need for glazing.

**Paper Grades.**

Grade 0 is “soft” low contrast.

Grade 5 is “hard” high contrast.

**Multigrade.**

The paper can still be used in normal safe light but it responds to the colour of the enlarger light differently giving different tonal ranges.

One box of paper can provide all the grades.

Coloured Gelatine filters can be held under the lens to achieve the correct grade.

Iford Multigrade enlarger head has two bulbs. One green and one mauve. The amount of light from the bulbs can be varied to give pre set grades.

As one bulb gets brighter the other grows dimmer so exposure times are fairly constant.

**Paper surface.**

Gloss – nice bright prints but reflections can be a problem when viewing.

Pearl – very slightly textured surface to give a sparkle.

Satin – Close to Semi Matt.

Semi matt – a flat smooth surface like gloss but without any shine.

May look a bit dull for some subjects.

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 on the London Road, North of Elephant & Castle.

They have a good collection of prints made on different types of paper so you can see the result before you buy.

Their web site has lots of useful technical info pages to download.

120 London Road, SE1 6LF. Tel: 020 7620 0844. [www.silverprint.co.uk](http://www.silverprint.co.uk)

**Film and Chemicals.**

Stick to one type of film and one developer while you improve your technique.

If you keep changing you will never really know how you are getting on.

Use well-known brands which have plenty of information available.

Traditional silver halide emulsions:

Kodak Plus X and Ilford FP4 are 125 iso films. Fuji Acros is 100 iso.

Kodak Tri X, Ilford HP5 And Fuji Neopan are 400 iso films.

Modern high tech (T grain) emulsions:

Kodak Tmax 100, 400 and 3200 iso.

Ilford Delta 100, 400 and 3200 iso.

Dye type (chromogenic) emulsion designed to be developed in C-41 colour process.

Kodak BW400cn

Ilford XP2 400 iso.

Do what the instructions recommend. Manufactures do a lot of testing and probably know what they are talking about.

### **Chemicals.**

Film Developer.

There are three basic types of film developer:

Fine Grain. Gives the finest grain possibly at the expense of some film speed.

High Acutance. General purpose, a good compromise between speed and fine grain.

Speed Increasing. Ideal in low light or when you need to use high shutter speeds. The effective speed (ISO) of a film is increased at the expense of grain and subtle tones.

If you are intending to use fine grain or speed increasing you will be modifying the film iso, so you need to make the decision before you start shooting the film.

Liquid concentrate developers are easier to mix than powders and more convenient to use.

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 (RO9) is another great one shot liquid that is good for most films. Cheap and easy to use and available in small quantities. 120ml costs about £5 and will process up to 20 135 films.

Powders are cheap; you normally mix up 1 or 5 litre of stock solution (you need storage bottles) and then use and reuse or dilute to use.

Kodak Xtol is an excellent general purpose fine grain choice for powder.

Read instructions on mixing and don't breathe the power in!

### **Mixing.**

Always start by mixing 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<sup>th</sup> of the total amount.

1+7 would be 1/8<sup>th</sup> of the total or 62.5ml.

To get consistent results when processing film it is very important that your technique does not vary. Keep notes about how you developed so you can accurately repeat it.

Film developers may offer various dilutions and different times to suit.

More diluted will require longer developing.

More dilution and longer development will give lower contrast negatives with improved tonal range, also the grain may be finer.

Many film developers list different dilutions, e.g.; Rodinal shows 1+25 and 1+50 why?

Increased dilution and longer development times will often give a lower contrast negative with extended tonal range and also possibly slightly finer grain.



### **Getting the temperature right.**

The correct way is to have a jug of hot water and a jug of 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 your 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).

Tap water in winter may be 2C, be aware!

If it is very hot weather the tap water may be above 20C 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.

### **Developing Film.**

It is very important that development is accurate and consistent. You must be able to repeat it every time, or you cannot expect to achieve negatives of a consistent quality.

The amount and frequency of agitation will have an impact so must be standardised.

In between the periods of agitation, the time that the film stands undisturbed is also important.

If the film were agitated continuously the highlight and shadow areas would develop equally.

When the film is standing undisturbed the developer in contact with highlight (dark) areas has a lot of work to do turning the halides dark and soon becomes exhausted; conversely the developer in contact with highlight areas has little to do, so continues to try and pull up detail in the shadows.

Leaving the film to stand can extend the tonal range by retaining detail in the highlights while pulling detail out of the shadows.

### **Chemical Stop Bath or Just Water?**

At the end of the film development the developing process needs to be stopped and the developer removed from the film to help prolong the life of the fixer.

Using a chemical stop will arrest the development almost instantaneously. Water will stop the development by diluting the remaining developer so some will argue it does not give you good control of the development time. Ilford say that water is fine for use in small spiral tanks and I always use water with no problems. There are some films, which the manufacturer instructs: "Do not use chemical stop only use water".

### **Washing Film.**

It is not necessary to leave a film in running water for half an hour to ensure it is washed thoroughly.

The following is what Ilford have recommended for many years, they say this is perfectly adequate for long term film storage:

- o After fixing, fill the spiral tank with water at the same temperature, +/- 5°C (9°F), as the processing solutions and invert it five times.
- o Drain the water away and refill. Invert the tank ten times. Once more drain the water away and refill.
- o Finally, invert the tank twenty times and drain the water away.  
Personally I do one more twenty-inversion rinse just to be sure.

### **Film Drying and Hard Water.**

In the South East of England we have tap water that contains a lot of calcium, as our film dries the water is evaporating and it leaves the calcium behind and we get “drying marks”, white patches or lines on our negatives. Don’t worry - small marks can easily be removed, but if you have a lot then it is probably better to re-wash the film.

There are few things that will reduce the risk of drying marks.

- o Use soft water for the final tank of rinse water, either tap water that has been through a filter like the Brita jug type that Boots sell or use bottled water.
- o Add “wetting agent” (Photo flow) to this final rinse, this is a pure detergent and reduces the water surface tension to help it run off evenly. Do not use washing up liquid because it has all kinds of stuff in it to keep your hands soft etc.
- o Let the film dry slowly so water has more time to run off before evaporating, I leave film overnight when possible. If you are developing at home chose a dust free place to dry the film, the bathroom is normally the least dusty room in the house (assuming no-one in the house uses talcum powder!).

### **Chemical Storage.**

All chemicals have a defined life.

Developers normally degrade most rapidly and some degrade faster than others.

Label bottles when they are opened (write the date on the label)

Label all storage bottles with what is in them and when it was mixed.

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”, “film 2” etc.

Write the date when each of the four films is developed.

Developer should be kept in full bottles, dark coloured or away from heat and light.

Fix should be stored in full bottles.

Keep all chemicals cool and away from direct sun light.

### **Reusing Chemicals.**

If you are using, storing and reusing any chemicals make sure you clearly label the storage bottles.

When you pour out of the storage bottle always filter the chemical, you will be amazed how much rubbish there is.

Purpose made filters are available, 5 micron is about right, or you can use a funnel and a coffee filter paper. Write in ballpoint pen along the top of the filter which chemical it is used for and then after use wash and dry it. You can use each filter paper several times.

### **Reusing Fixer.**

You should plan to keep and reuse fixer to reduce pollution and your costs.

One Litre of working strength fix should able fix up to 20 135/36 films.

If you are keeping and reusing film fixer you must check the film clearing time each time it is used. If you normally find FP4 is clear after two minutes you know the fix is exhausted when it takes three minutes to clear. Remember to always fix for at least twice the time it takes the film to clear.

If you are reusing paper fix it is important to know it is still working. Keep the undeveloped leader ends you cut off your films when loading, occasionally put one of these ends in the dish of fixer and check that it becomes clear in a reasonable time, probably less than two minutes for most types of film.

### **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 to yourself "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 (depending on whether you are stopping down or opening up the lens).

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 a cardboard mask to suit.

Holding closer to the print gives a smaller area with sharper edges.

Holding nearer the lens gives a larger area with softer edges.

### **Retouching a Print.**

Use retouching dyes rather than pigment watercolour paints.

Darkroom suppliers sell sets of three dyes: Neutral Black, Warm Black and Cool Black.

Use a good quality sable watercolour brush size 0 or 00.

Use your test prints to practice on, mix tiny amounts of dye with water on the back of a scrap print, mix much lighter than your final desired density, never try to match the density.

Apply small spots and slowly build up the density. You cannot rush it; the longer you take the better it will look.

### **Suppliers & Manufacturers:**

<a href="http://www.silverprint.co.uk">www.silverprint.co.uk</a>	(Elephant & Castle) photographic supplies
<a href="http://www.processuk.net">www.processuk.net</a>	(Mount Pleasant) photographic supplies
<a href="http://www.mrcad.co.uk">www.mrcad.co.uk</a>	(Victoria) secondhand equipment and photographic supplies
<a href="http://www.ag-photographic.co.uk">www.ag-photographic.co.uk</a>	(Birmingham) photographic supplies
<a href="http://www.thedarkroom.co.uk">www.thedarkroom.co.uk</a>	(Potters Bar) photographic supplies
<a href="http://www.ilfordphoto.com">www.ilfordphoto.com</a>	
<a href="http://www.fujifilm.co.uk">www.fujifilm.co.uk</a>	
<a href="http://www.kodak.com">www.kodak.com</a>	
<a href="http://www.rolleifilm.com">www.rolleifilm.com</a>	
<a href="http://www.foma.cz">www.foma.cz</a>	
<a href="http://www.adox.de">www.adox.de</a>	

### **Film and alternative process forums.**

[www.f295.org](http://www.f295.org)  
[www.apug.org](http://www.apug.org)  
[www.film-and-darkroom-user.org.uk](http://www.film-and-darkroom-user.org.uk)

### **Camera Repairs**

Aperture.

[www.apertureuk.com](http://www.apertureuk.com)  
27 Rathbone Place W1T 1JE  
020 7436 1015

Sendean Cameras.

[www.sendeancameras.co.uk](http://www.sendeancameras.co.uk)  
22-23 St Cross Street. EC1N 8UH  
020 7242 7733

RODINAL (RO9) @ 20° C			
Film	Dilution	ISO	Time
Adox 100 mk.II	1+50	100	10
Adox Silvermax	1+25	100	8
Adox Silvermax	1+50	100	12
Agfa APX 100	1+25	100	8
Agfa APX 100	1+50	100	13
Delta 100 Pro	1+50	50	10
Delta 100 Pro	1+25	100	9
Delta 100 Pro	1+50	100	14
Delta 3200 Pro	1+25	3200	11
Delta 3200 Pro	1+25	6400	20
Delta 400 Pro	1+25	400	9
Delta 400 Pro	1+50	400	20
Fomapan 100	1+25	100	3.5
Fomapan 100	1+50	100	7
Fomapan 200	1+25	200	5
Fomapan 200	1+50	200	10
Fomapan 200	1+50	200	8
Fomapan 400	1+25	400	5.5
Fomapan 400	1+50	400	11
FP4+	1+25	125	9
FP4+	1+50	125	15
HP5+	1+25	400	6
HP5+	1+50	400	11
HP5+	1+25	800	8
HP5+	1+50	800	16
Acros 100	1+50	100	13.5
Neopan 1600	1+25	1600	5
Neopan 1600	1+50	1600	8
Neopan 1600	1+25	3200	7.5
Neopan 400	1+25	400	6
Neopan 400	1+50	400	11
Pan F+	1+25	50	6
Pan F+	1+50	50	11
Plus-X	1+25	125	6
Plus-X	1+50	125	13

Film	Dilute	ISO	Time
Rollei RPX 25	1+25	25	6
Rollei RPX 25	1+50	25	11
Rollei RPX 100	1+25	100	9
Rollei RPX 100	1+50	100	18
Rollei RPX 400	1+25	400	8
Rollei Retro 80s	1+50	80	14
Rollei Retro 100	1+50	100	13
Rollei Retro 100	1+50	400	29
Rollei Retro 400s	1+25	400	11
Rollei Retro 400s	1+50	400	22
Rollei Retro 100	1+25	200	11
Shanghai 100	1+25	100	10
Shanghai 100	1+50	100	15
TMax 100	1+25	64-100	5.5-6
TMax 100	1+50	80-100	12
TMax 400	1+25	400	5
TMax 400	1+50	400	10
TMax P3200	1+25	3200	8
TMax P3200	1+50	3200	16
TMax P3200	1+25	6400	10.5
Tri-X 400	1+25	400	7
Tri-X 400	1+50	400	13
Tri-X 400	1+50	800	16.5

**Agitation:**

Continuous for 30 seconds, then  
Two inversions at each 30 seconds.

Or, this is also suitable for longer  
development times:  
Continuous for first minute, then  
four inversions at the beginning of each  
minute.

More development information can be  
found at: [www.digitaltruth.com](http://www.digitaltruth.com)