

To Boldly Go:

a starters guide to hand made and d-i-y films



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What is most exciting about this type of filmmaking is not knowing exactly what will result. One then needs the lyrical, musical and cinematic taste to sculpt the result into a film which best demonstrates, exploits and celebrates the results of the experiments. If you stick with good ingredients you will inevitably have happy results. Then again, not all experiments work but what you learn there can often be employed in a new direction or experiment to actually work. It's also very important to have fun in and a love of the process. (Jeff Scher)

It's fun to handle film as a celluloid canvas rather than as a fragile carrier of images only to be handled by lab technicians.

You can experiment and create the most beautiful images ever.

Helen Hill (1970 - 2007)

Recipes for Disaster: a handcrafted film cookbooklet

http://www.angoleiro.com/cine_texts/recipes_for_disaster_hill.pdf

This is a booklet for both those eager to begin in hand made film and those who already started but are keen to know more. It signifies a hope and commitment to making sure these techniques, tricks and handy tips remain openly available to all who might need them. Let's not keep any secrets! These (chemical) receipts, printing processes, after dev. Effects, emulsion extras and celluloid experiments should be absolutely public. Let's make hand-made d-i-y films! Let's make a lot!

Images and texts have been gathered, harvested, illegally used, replenished and inspired by a plethora of found sources including those of David Leister, Greg Pope, Dirk De Bruyn, Maia Cybelle Carpenter, Frank Bruinsma, Steve Sanguedolce, Rebecca Moran, Jurgen Reble, Ben Russell, Jeff Scher and many many others. Thank you all.

All info and a smorgasbord of extra will shortly additionally become available via www.filmwerkplaats.wormweb.nl. And if you yourself have anything to share, contribute or want to complain about something please feel free to spam me on filmwerkplaatsfwormweb.nl.

Esther Urlus (Rotterdam, January 2008)



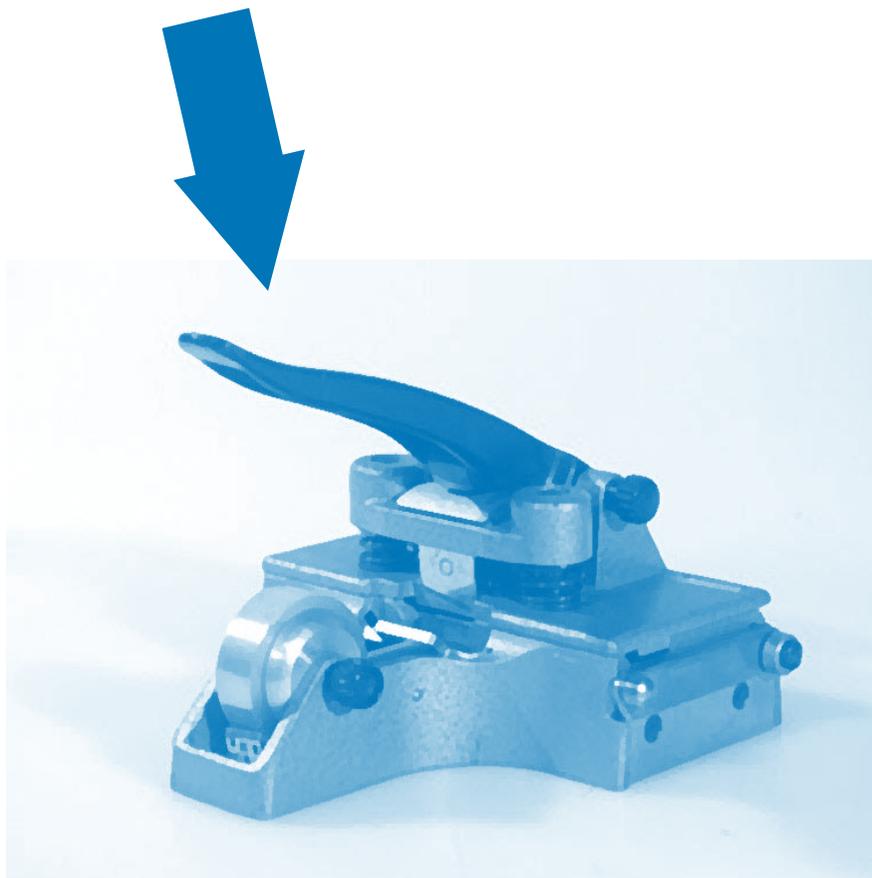
HOW TO START YOUR OWN D-I-Y 16MM LAB

STARTING LIST

- Space you can make completely dark preferable (but not essential) with a water tap
- Red safe light for printing and dev. BW printfilm (some red filter hose for a tube light may do as well)
- Buckets and photo developer trays
- Vinyl clothes line and clothes pegs to let your film dry
- Rubber or latex gloves
- Hand held torch
- Pieces of plate glass for funky contact printing (A4 or 5)
- 'Universal' or 'Polycon' developer for BW print and negative plus Fix

AND MOST IMPORTANT

- A 16mm splicer and tape



You can make film without a camera. In fact, the tape splicer is the number one item to set your sites on if you are serious about putting films together.

BUT NICE EXTRAS ARE

- A 16mm developing tank (Russian LOMO or the MORSE G3)
- Flatbed editing table (4 plates or more) such as Steenbeck or Cinemonta
- Neutral density filters for printing (cheap and handy is to buy a sheet of 0.3 ND lamp filter and cut it into small pieces)
- 16mm camera (a wind-up Bolex is the ideal and payable d-i-y camera)

DEVELOPING

THE 'HAND JOB'.

Small lengths of film (6' - 20') can be tray developed one at a time using a sees - saw 'U' motion in a 'universal' developer. Or film can be laid flat submerged in the tray of developer and 'rolled' back and forth in a spooling motion for the required times. Bigger amounts (till 50 ft) can be developed spaghetti wise in buckets but it will need much more working solution of your chemicals. Obviously negative 16mm is done in complete darkness! Use dilutions for negative film for neg. stock, and for print stock use the dilution for paper. Timing is a matter of trial, error and test strips, but the neg. times should follow the instructions on the bottle. Print stock will usually take 3 1/2 minutes. But as you are doing this under a red safe light... when it looks good it's done! Repeat the procedure with rinse and fix. And wear rubber gloves, as chemistry can be bad for your health.

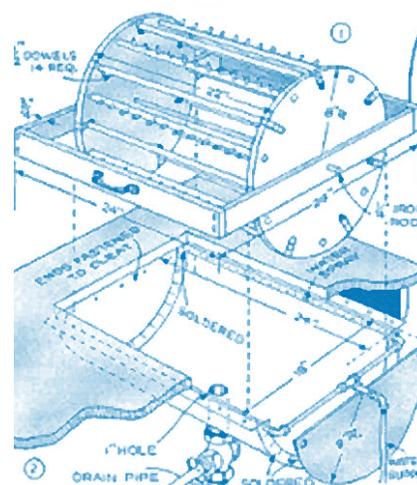
The method described here is obviously not industry standard. This is literally a hands on approach, so there may be a few fingerprints, hairs and dust on the film once you are done.

Note: When using chemicals it is best to be aware of health and safety issues. Adequate ventilation should be in place esp. when developing and fixing the film, and rubber gloves or tongs should be used to avoid skin contact with chemicals while handling film whilst in dev and fix.



THE 'RUSSIAN TANK'

A Bakelite container that contain a plastic spiral onto which you can load both you neg. and print stocks for developing. They can take two times 50 feet of 16mm film. The film is loaded onto this spindle by attaching the film to the middle and slowly spinning it clock wise like a top until it is all wound onto the spiral grooves ready for developing. But practice with some scrap film in daylight a few times until you get the hang of it. ➡



THE MORSE G3 TANK

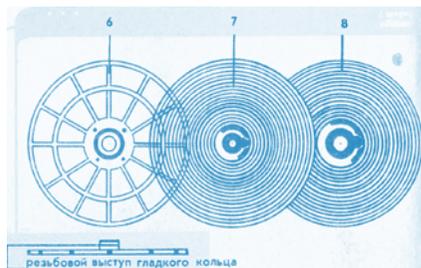
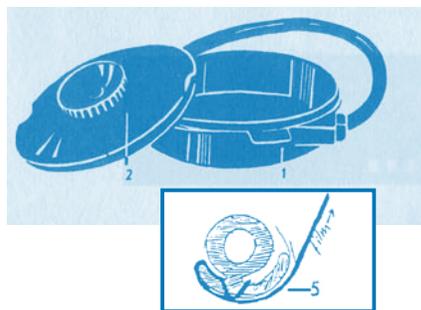
Film is wound on to a spindle (of course) but it is attached to another spindle in the tank, and then the film is wound back and forth in a smooth and orderly fashion for what seems like an interminable amount of time. It gives good clean results for the patient and you can do a whole 100' roll in one go. Note: by adding water for a pre-rinse before the developer was added made the developing more even as the film was them already wetted and willing to receive the developer, and this also avoided the film sticking together. ➡

Very handy to have, but very fragile and... They are not manufactured anymore and therefore very hard to find. If parts of it break or get lost you're very unlucky as they're not replacable at all.

The tank in mint condition can hold one or two layers of each 50 ft or 15m. Of super8 and/or 16mm or one layer of 35mm.

THE PARTS

1. Tank with hose
2. Cover
5. Slits (film treat)
6. Upperreel
7. Bottomspiral (small hole)
8. Middlespiral (big hole) only if you want to develop two layers
9. Small black ring (for one layer of super8 or 16mm)
10. Small transparent ring for two layers of 16mm or one layer of 35mm
11. Tip of the screw
12. Head of the screw



HOW TO GET THE FILM IN THE TANK (do this in complete dark)

Two 50ft layers of 16mm 100ft in total Put the end of the film in the 2 slits of the bottem-spiral (nr:7 And 5) and turn it around the corner (always put the perforation down). Hold the film with your finger down at the outer edge of the spiral. Place with your other hand the middlespiral nr.8 (With the transparant ring nr. 10 Screwed on the bottem) exact above the bottomspiral and screw in the tip of the screw nr.11 And fasten it (but not too tight).

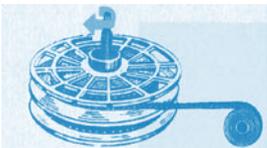
Now hold the film loosely in between your fingertips, in a angle of approximately 45 degrees. Start turning the wheel/screw clockwise with your other hand. The film should get in the grooves automatically. When the spiral is full tear or cut the film.

Then put the end of the other 50ft in the slits of the middlespiral in the same way as at the bottomspiral. Put the upperreel nr:6 On top with the raised border downwards and screw the head of the screw (nr.12) In (not to tight). Turn clockwise till all film is in the spiral. Put the spiral in the tank. Close it with the cover (nr.2) Turning it clockwise. Make sure its not tilted.

Now you can switch on the light. Pour in the chemicals you want to use in the opening of the cover. Agitate by gently turning the spiral by its screw. Clockwise only. Empty the tank trough the hose. Make yourself accustomed to always putting the hose back in the hole after.

With one layer of super8 or 16mm (50ft) you only need the upperreel (nr:6) And the bottomspiral (nr:7). For super8 the raised border of the upperreel should face upwards, for 16mm downwards. Adapt the small black ring (nr:9) In the hole of the upperreel and use the tip (nr.11) And the head (nr.12) Of the screw together.

Two layers of 16mm (or super8) film needs two liters of solution, one layer one liter.



OPERATION

The Morse G-3 developer is a manually operated rewind processing tank 16mm and 35 mm motion picture film. The G-3 requires a minimum of 32 ounces of solution for processing 16 mm and 64 ounces for 35 mm. Film may be processed complete through reversal to a positive image, ready for projection, or to a negative image from which positive copies can be made.

As a true D-I-Y device, the G-3 must be hand turned. At the rate of two turns per second, a 100 foot roll of film will pass from one reel to the other in about one minute. This is not critical, however, and the important feature to be remembered in turning cranks is to prevent excessive clenching of the film at the end of each pass.

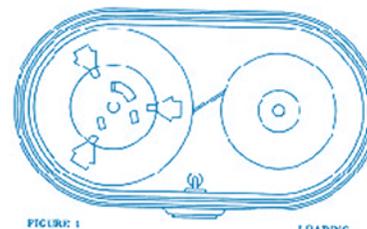


FIGURE 1 LOADING

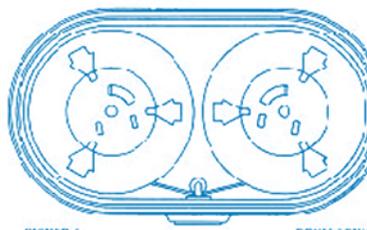
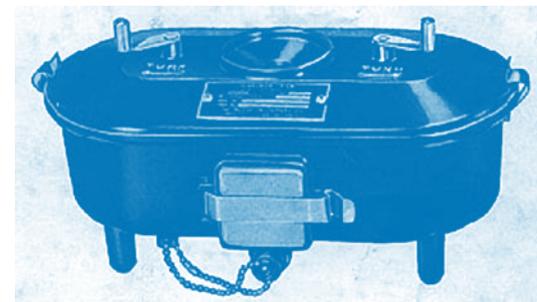


FIGURE 2 DEVELOPING

LOADING

1. Window (for re-exposure) should face operator. Remove tank cover and reels.
2. Adjust top plate on both reels to the proper width of film to be processed, either 16 mm. or 35 mm. (double 8 is the same as 16 mm.)
3. Load light-sensitive films in total darkness. Slower films may be loaded in safe-light. Place film spool on the right hand spin-



dle so that it will unwind counter-clockwise. Place empty reel on left spindle.

4. In sert the end of the film in the left-hand reel and clamp. To insure straight winding, give the reel two turns clockwise, loosen clamp and re-clamp. Make sure the end is securely clamped, however, before continuing. Unwinding the film spool is the only time that the two spindles revolve in opposite directions. The loading is performed in this manner so that the film will be wound emulsion side out.

5. Place cover in position and wind the left hand crank clockwise until all the film is off the spool.

6. If using safe-light, continue in total darkness from this point. Remove cover and the empty film spool. Replace right-hand reel and insert loose film end in reel and clamp.

7. Pass film over idler roll and give right-hand reel two full turns. Loosen clamp and retighten to assure in-line positioning of film.

8. Replace the tank cover. Make certain cover snaps are in place and that re-exposure window is to front and window cover closed.

9. With tank cover in place, re-exposure window cover closed and facing operator, remaining operations may be carried out in bright light.

10. Solutions are poured into the tank through the opening on the top of tank cover. They are emptied by pulling out rubber stopper, located in bottom of tank beneath window cover. Both inlet and outlet are light proof. Wind crank in the direction indicated on tank cover, each crank has direction indicated by arrow beneath it.

CAMERALESS 16MM TECHNIQUES

Just remember that 24 Frames is 1 Second

CLEAR AND BLACK LEADER

If getting clear and black leader through the official channels is too difficult or expensive: Make your own clear leader by bleaching old film to clear the entire image with toilet chlorine. And labs will sometime let you have black leader from overexposed prints if you ask nicely. On these surfaces you can create a surface by:

Drawing: marker pens, inks, etc.

Scratching: pins, nails sandpaper

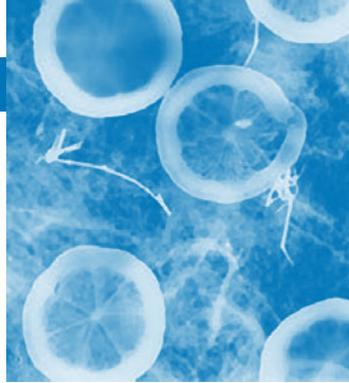
Bleaching: partial or entire bleaching (result: clear stock). Brushing it on, droplets, toothbrush 'spritz' all give differing results. Wear gloves and remember to dry the film after any wet process.

Dying: Anything you have worked on can be dyed using fabric dyes mixed up in a bucket (natch!) and submerged until the desired saturation is achieved. All the clear areas will turn colour.

Objects: Anything flexible enough to pass through the eye of a projector (or printer) can be used and adhered to film stock. Stan Brackage did it with moth wings... Also grass, weeds, hair, skin, dust, feathers, salt and pepper can all be stuck onto film under splice tape for effect.

DARK ROOM FOTOGRAM STYLE

All of the above objects can also be laid on top of unexposed print stock in the dark room and then exposed to light to leave a shadow impression. Man Ray style. Anything that casts an interesting shadow such as bits of screen, wire, fishline. Pins nails sand glass screws pasta



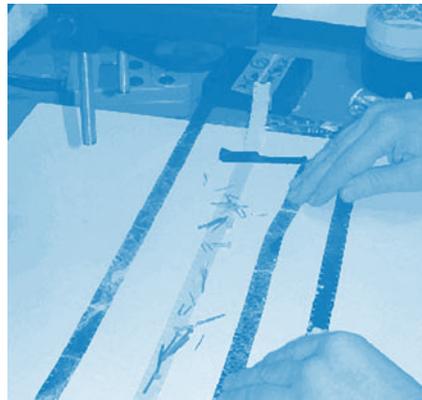
FOUND FOOTAGE

Found footage is a favourite starting point. This can be re-edited, drawn on, bleached, dyed, letrasetted, scratched, sandpapered and stamped on to create your own personalised mark making technique and a 'new' moving image.

ACTUALLY FILM IS JUST EMULSION AND BASE.

Emulsion can be erased by scratching, bleach. Bleach can be applied by immersion, spraying, painting. Colour film is made up of 3 layers of coloured emulsion. The length of time one applies the bleach determines how many layers, and what colour, if any, is left behind.

Emulsion is made with *gelatin* which can absorb various water based materials like food dyes. These can be applied with methods like rubber stamps, potatoes, toothbrush, painting brush etc. Batik techniques of covering over with tape, glue or white-out will allow the other sections of film to receive, bleach, dye etc while rest of emulsion remains intact. To develop complexity of image involves working out a pathway and layering of all the above techniques.



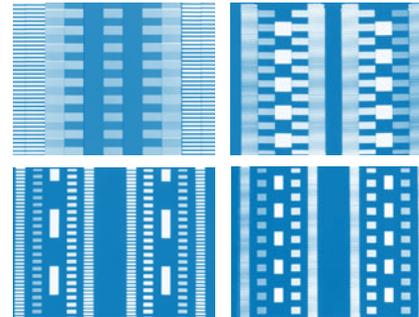
CREATING AN OPTICAL SOUND TRACK WITHOUT RECORDING

OPTICAL SOUND -

Optical Sound is the system used by a projector to play back sound from a film print. The sound is exposed onto the film as a clear modulating line against black. The projector reads the track by passing it between the exciter lamp a light-sensitive photo-electric cell which generates a voltage that is amplified and fed into a speaker.

Actually everything which gives a transparent - non transparent pattern on the soundtrack part of your film will make sound (or noise). So drawings with marker pens, inks, etc. Taped (or contact printed) dust, sand, weeds. On sticker print sheet made photocopied images and patterns and so on...

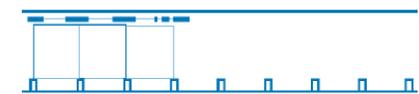
SOUND IS 28 FRAMES ADVANCED FROM CORRESPONDING IMAGE.



Synchrony stills by Norman McLaren

But you can also use the original soundtrack of found footage: Cover the soundtrack on the emulsion side with tape/scotch. Bleach away the image partial or entire (the tape will prohibit the optical track to disappear) and create a new surface by drawing, stamping, taping...

EXAMPLE BY DIRK DE BRUYN



Add tape to soundtrack and various frames then add yellow food dye. It is important to cover soundtrack with great care.

Batik techniques of covering over with tape, glue or white-out will allow the other sections of film to receive, bleach, dye etc while rest of emulsion remains intact.



Add more tape and/or glue and/or white-out then add blue food dye.



Add more tape etc, take some away then add some red food dye, or spray with toothbrush.



Add more tape etc, take some away then bleach to remove some emulsion.



Remove all tape by hand or with methylated spirits (this will also remove everything that is not absorbed in the emulsion that remains).

After this process you can start to add other images to the base areas or the areas that have been bleached. And/or: Add Indian ink (black or red). Scratch away Indian Ink. Draw with felt pens in various colours. Add strips of (on A4 size clear sticker copier paper) photocopied images, animation, drawings

CONTACT PRINTING

A FEW BASIC METHODS HERE.

As with any exposure method, you will have to initially do test strips to get the best overall basic exposure time depending on your light source. Exposures are not usually more than a couple of seconds as a rule.

FILM UNDER GLASS Contact printing using a piece of glass to keep negative and stock together is a good way to print up short lengths of film that can be joined together later. Sections of film are aligned with the print stock underneath and the negative above, and both are pressed together under the glass emulsion to emulsion, and exposed a section at a time, to light. This can be done underneath an enlarger as the area of light can be directed onto the film or a hand held torch passed over the film.

DOUBLE LOADED CAMERA. The camera itself can be loaded with neg. and print in the dark room and then run with out a lens allowing light to expose the stock. Longer sections can be done this way but the camera has a tendency to jam with the double thickness of film, so a hand crank

assist is useful. Again, do exposure tests before attempting a mega length.

STEENBECK PRINTING. A Steenbeck (a film-viewing table) can be adapted for printing film. Negative and print stock are double loaded over the picture area while the light from the prism has been reduced with neutral density filters and a cardboard slit. Plenty of gaffer tape is also needed to make the Steenbeck light tight (the screen is also blanked out) and the 'printing' area needs to be masked as well. With a bit of trial and error results can be very good and consistent.

Other methods. In fact, anything that transports film with a light source could be adapted. Picture synchs and projectors can all be used as make shift printers.

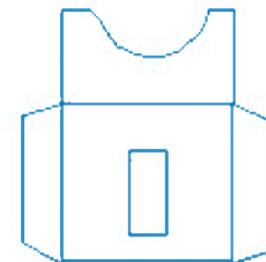


CONVERTING A STEENBECK INTO A CONTACT PRINTER

THE WHOLE SETTING HAS TO BE IN A DARK ROOM

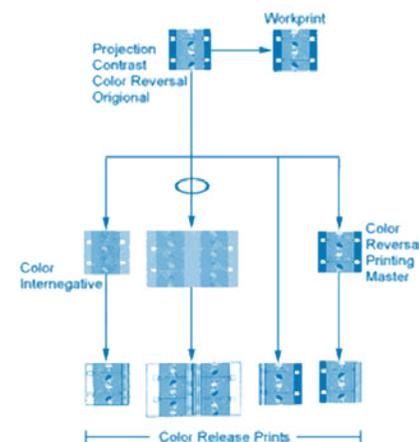
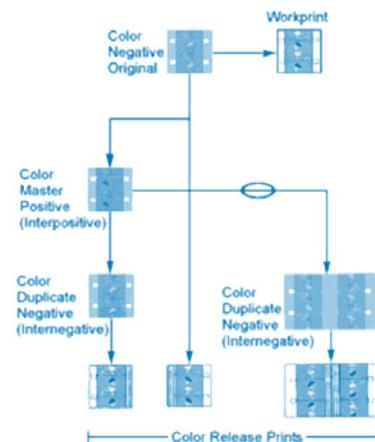
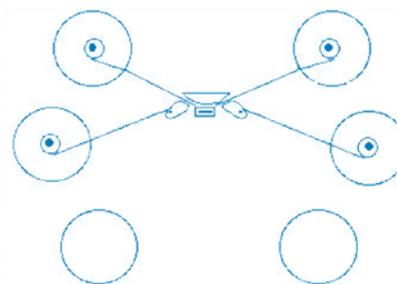
STEPS TO CONVERT THE FLATBED.

1. cover the viewer troughly with black cloth and/or cardboard or change bags. check in complete dark. if you have a flatbed/table with a small viewer in the table, cover this too.
2. make cotton (gaffer) tape curtains to cover (leak light) the prism holder.
3. make a cardboard frame with a small window cut out. insert this frame with the small window in front of the prism. you can tape the necessary ND filters a/o. (depends of your printing material) on the frame covering the window.



HOW TO RUN YOUR MATERIAL (depending of your raw stock you use to print on this has to be done in safe light or complete dark)

1. wind your original footage on the mag. track.
2. wind the raw stock on the picture track.
3. make sure that the emulsions are facing each other.
4. run the film at normal speed
5. develop



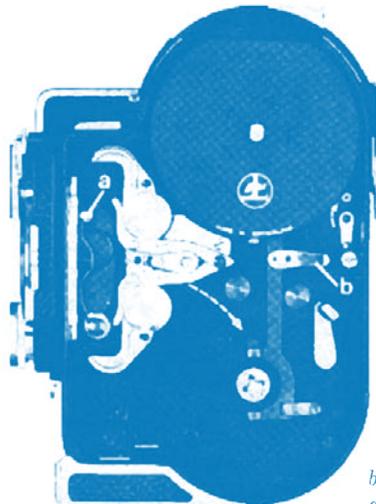
THE BOLEX CAMERA

ARE MAINLY CLOCKWORK (I.E. 'WIND - UP') CAMERAS.

That means you don't have to worry about your batteries going flat. The similarities are more with still camera technology rather than video or digital cameras. You load up the camera with unexposed film stock and then have to process the negative and then print it onto print stock. So no instant gratification here. Apart, of course, from winding up the camera and hearing it purrr. Most 16mm cameras use a variety of interchangeable lenses that vary in focal length (i.e. 10mm is wide; 25mm is standard; 75mm is tele) or a zoom is used that covers all the ground that the 'prime' lenses do. So a bit of manual dexterity is required for focusing, using a light meter, and planning your shots.

THE BOLEX COMES IN

A
Non reflex camera means you have to use a side viewfinder when filming, as you are not looking thorough the lens on this type of camera. Parallax correction is needed when doing close-ups i.e. the viewfinder needs shifting to compensate the fact that what you are seeing, is not at the same angle as what the lens is seeing. This becomes critical when filming at 6' or closer. You also have to pay more attention to focussing and f-stops,



bolex inside
a Pressure Plate
b Spool Ejector

as it is easy to forget if you are not looking through the lens while filming.

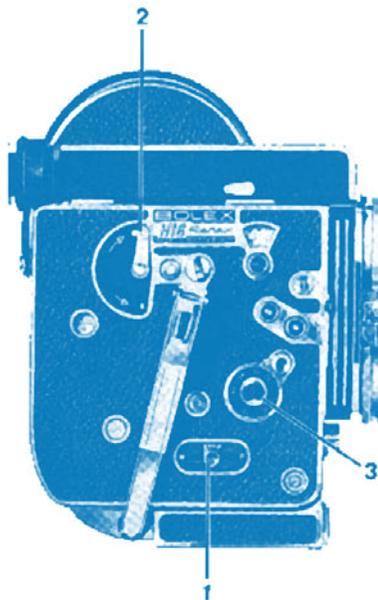
B

Reflex cameras. What you see through the lens is what you get. Through the lens viewing means easier focussing, framing and... filming! as you see your subject as you are filming.

HOW TO LOAD THE FILM IN THE CAMERA

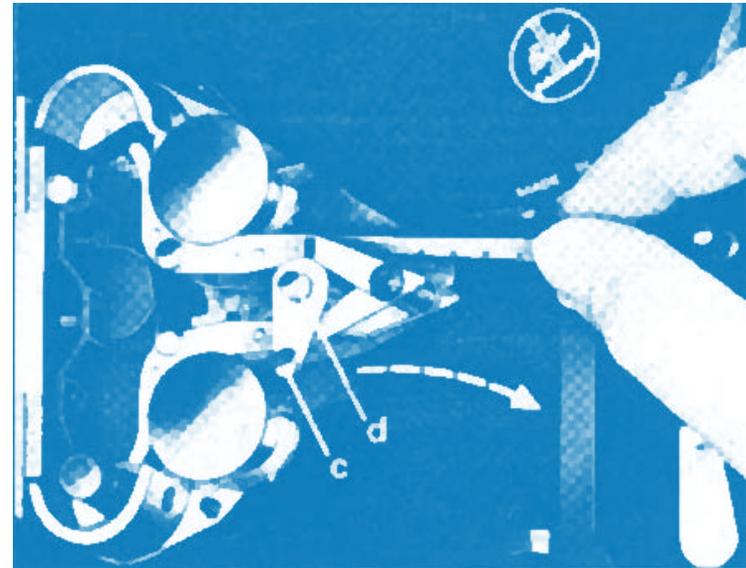
In subdued light, take the new 100ft spool of film from its can and immediately put it into the camera, pressing it firmly home onto the top spindle. The film should curl off of the roll in a clockwise direction on it's way to the camera gate. (You should make sure the gate is clean and free of dust, etc. to avoid the famous 'hair in the gate' syndrome.)

The Bolex has a semi auto load facility; you push the film into position and feed it through by running the camera on a slow



bolex outside
1 M Continuous Run
P Single Frame
2 Spring Disengage Lever
3 Film Speed Selector

THE BOLEX CAMERA



bolex loading
c Loop Former
d Lock Release

(12 or 24 fps) speed. Once through the gate, the film is then wound onto the take up spool, with the end of the film tucked into the slit in the spool. Push the spool firmly onto the bottom spindle and turn it clockwise by hand to take up any slack. Once the cover is back on, run the film for a few seconds to make sure the leader has gone through the gate.

BEFORE FILMING

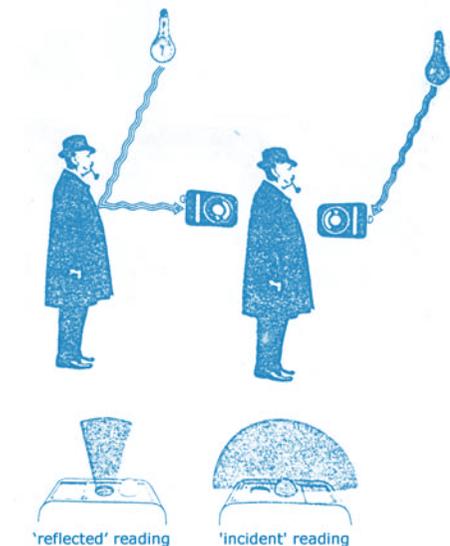
Check that the camera running speed is correctly set, you will want to film at 24frames per second for normal action. At this setting, the shutter speed is an 80th of a second for reflex cameras, and a 60th for non-reflex, and this is the figure to be used when calculating exposure with a separate light meter.

LIGHT METER

The most consistent reading with a light meter will be obtained with an 'incident' reading rather than 'reflected' reading. Most light meters have a white cone that fits or slides over the light sensor. With this in place, point the meter back at the camera from the subject or subject area. Adjust the meter, having 'dialed in' your ASA or DIN film speed number found on the film stock can, so that you can now calculate what your

'f' stop should be turned to on the lens. This will give you the correct exposure for your filming.

With reflected reading you point the meter towards your subject in line with the camera. This has to be done quite close but without making (and therefor measuring) a shadow.



First developer: D19 or dektol or whatever BW developer you want to try-out (for working solutions follow the directions on the package)
Bleach: For 1 liter you need 10gr. Potassium Dichromate (K₂CR₂O₇) and 10ml. of Sulfuric Acid 96% (H₂SO₄).
Note: Always add the Sulfuric Acid to water and never vice versa as it can explode! So its clever to ad first the 10gr. Potassium dichromate in 400ml warm water. When it's desolved add cold water till almost 1l. Add the Sulfuric Acid and ad water till 1l.
Clear: 40gr. of Sodium Sulfito (Na₂SO₃) for 1 liter
Second developer: any BW developer that will make the film turn black (you could use the first).
Fix: universal BW film/paper fixer will do.
Be carefull: these chemicals are poison and explosive (sulfuric acid). Wear protective clothing, gloves and glasses



BW REVERSAL PROCESS

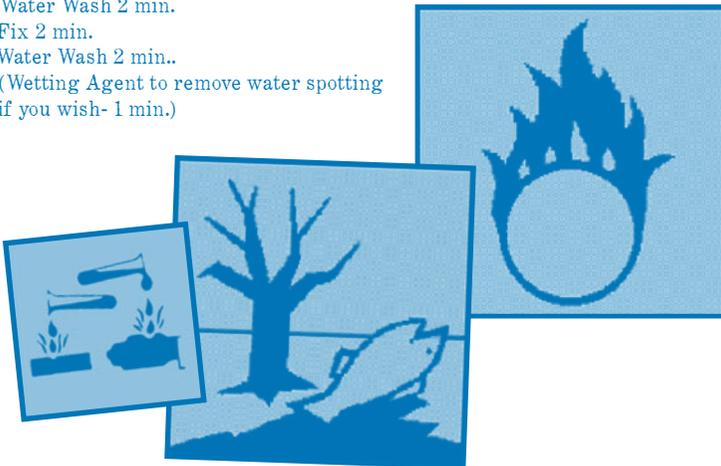
1. Dev. D19 3-6 min. (depending on temperature of solution you are processing - shorter time if warmer, longer if cold/room temp. and film type) or 1. Dev. DEKTOL 3 min. (DEKTOL:1 WATER:9)
2. Water Wash 1 min.
3. Bleach 2 min.
4. Water Wash 1 min.
5. Clearing Bath (you can skip just wash well) 1 min.
6. Water Wash 1 min.
7. RE-EXPOSE to Light 1-5 min. (depending on how close to light)
8. Back into Dev. D19 for 2 min.
9. Water Wash 2 min.
10. Fix 2 min.
11. Water Wash 2 min..
12. (Wetting Agent to remove water spotting if you wish- 1 min.)

BW NEGATIVE PROCESSING

1. Dev. D-19 5-6 min. or DEKTOL 4-5 min.
2. Water Wash 2 min.
3. Fix 5 min.
4. Water Wash 5 min.
5. Wetting Agent if you wish to remove water spots. 1 min.

IF YOU WANT TO SOLARIZE YOUR IMAGE:

Reversal (quickly shine a light within 2 min. of putting in 1st dev.)
 Negative (quickly shine a light within 30-45 sec. of putting in dev.)



Developing color 16mm film is as easy as B&W as long if you don't mind non-consistent results. Best to buy chemistry kits and follow the instructions. E-6 kits for color reversal, C41 for color negative and print film. There are only a few extras to deal with:

- You need a thermometer: The temperature of the working solutions has to be pretty precise at 38C/100F. Just put the containers with the working solution into a bucket with hot water until it's the right temperature. Then temper the water in the bucket till its 38C/100F to use as rinse water.
- Complete darkness is essential, no LED, red, orange, green or amber - any light will fog the film.
- Color (camera) negative film has a back layer. Specially the one on Kodak films is hard to get off. Fuji give less problem. Wipe the film with a wet chamois leather during the last water rinse until the layer is gone. Be very gentle as a wet film emulsion scratches quick and easily.

E-6 kits for color reversal film such as Kodak Ektachrome 100D is (often) a 3 bath; 1th First developer. 2th Color developer. 3th Bleachfix.

Brands still sold are Tetenal E-6 and Fuji Hunt E-6 kits. Rinse very well between the different bath. Specially between the first and color developer as pollution will make the image muddy and your working solution ready to throw away. Developing time for the separate bath shall be around 6min.15sec. each. Longer the developing time 15 to 30

sec. for every new film. You can use 1 l. of working solution for a maximum of 4 times 50ft of 16mm film.

C-41 chemistry kits (such as Amaloco Mono Negacolor kit) are suitable for color negative and print film (although Kodak Vision print film comes out ugly, better to use the Fuji F-CP print film). It comes in a two bath process: Developer and Bleachfix. A water rinse between both bath is not always needed and



the time for developing and bleachfix is often short: 3min. 15sec. for developing, 4-6 min. for bleachfix, final water rinse 6min: Done. The chemicals and working solution don't get exhausted quick. You can develop a much bigger amount of films then the instruction booklet says and store it over a much longer period. As long as you use containers that can be squeezed to expel all air and make sure the lids are very tightly fitting!

TINTING is adding color to a film, usually with dye. It colors the entire image.

With TONING you replace the black (developed emulsion) with color through a chemical process. It leaves whites untouched.

Water based colored food dyes are very effective for tinting and can be mixed with a variety of substances- acts like a dye. Also permanent markers, some brands of acrylic paints and glass paints.

Kits for tinting or toning are still sold in photo supply stores but more fun is to make them yourself.

MAKE YOUR OWN HIOCARBOMIDE (SEPIA) TONER

Mixing and Use Instructions (Wear mask, goggles, plastic or pvc gloves and protective clothing.)

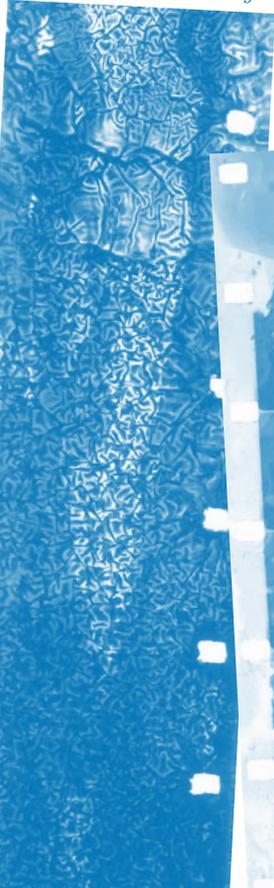
Bleaching Solution: Water 500 ml Potassium Ferricyanide 50 g Potassium Bromide 50 g Water to make 1000 ml

Toning Bath: Thiourea 2 g Sodium Carbonate (anhydrous) 100 g Water to make 1000 ml

Toning Procedure:

- 1) Process film (Non hardening Fix and wash film as usual)
- 2) Bleach film for 1 to 3 minutes (or more) in bleaching solution.
- 3) Wash for up to 10 minutes.
- 4) Immerse the bleached and washed film in the toning bath for 2 to 4 minutes or until the desired tone is achieved (up to several days depending on film and the freshness of solution)
- 5) Wash for up to five minutes

sulfuric acid & tinting



peroxide



SVEMA stock print



AND IRON TONER (blue)

2 gr. Potassium Ferricyanide = $K_3(Fe(CN)_6)$

10 gr. Oxal acid = $COOH.COOH.2H_2O$ (poison)

4 gr. Ferri-ammoniumsulfate = $NH_4Fe(SO_2).12H_2O$ (poison)

Water to make 1000 ml

Mix your solution in the following order: bleach (Potassium Ferricyanide), preservative (Oxal acid) and toner.

OTHER CORROSIVE TECHNIQUES TO TREAT YOUR FILM EMULSION

Unfortunately no longer made still has to be mentioned as it was the best corrosive kit ever sold: the TETENAL FOTOGRAFIC KIT. Probably partly peroxide, partly an acid and ... So if you find a kit in whatever store: Buy it and explore. Works only on B&W film

All underneath chemicals are extremely dangerous. You only can get them with a chemical handling clearance or chamber of commerce certificate.

Wear mask, goggles, plastic or pvc gloves and protective clothing.

Peroxide 30% (very corrosive): Reacts heavy on the silver of the B&W film emulsion.

Potassium Permanganate = $KMnO_4$ (poison): Dissolve in water, stronger solution stronger effect. It burns away de gelatin in B&W film, specially when first treated with peroxide (don't rinse in-between)

96% Sulfuric Acid (very corrosive). Run film through a shallow bath of it and immediately dunk your film in water to stop the acid's effect. Watch your emulsion crack, drip and slide off in 1 second flat! Try to do it outside as fumes and contact can be fatal.

One of the nicest RETICULATION EFFECTS (cracking of the emulsion in a regular pattern) can be achieved by filming on Russian Svema stock (both B&W as color) and make radical temperature changes during the processing procedure.

SVEMA stock dripping



solarisation



16MM FILM MATERIALS

Many varieties are available (see internet mail order shops or get direct from Kodak or Fuji) but these will get you started. And... Tungsten means used with indoor lighting; Daylight - does exactly what it says on the can.

A CAMERA NEGATIVE AND REVERSAL STOCK
 B&W negative Kodak 7231 Plus X for daytime outdoor 80 asa; good all rounder low grain rich tones



B&W negative Kodak 7222 Double X for indoor and low light conditions 250 ASA; as above but slightly grainier

Color negative Fuji F-64D for daytime outdoor 64 asa; If developed hand wise, back layer can be removed with a soft (wet) leather cloth during the last rinse.

B&W reversal KODAK 7265 PLUS-X for daytime outdoor 100 asa. After developing you will have a positive original so no reprints from a neg!

Other B&W reversal films are FOMA 100D (Czech) and SVEMA 200 asa (Russian).

Color reversal Kodak 7285 Ektachrome 100D for daytime outdoor 100 asa; After developing you will have a positive original.

B PRINT STOCK

B&W 7302 Kodak Hi - Contrast. Can be developed under red safelight so you can see what you are printing. And is therefore a favorite with the experimental film person. It is very slow in film speed (approx. 4 ASA!)

B&W St8 Agfa. Officially to print optical sound neg. on. Has a polyester base so you can only cut it with a scissors. Can be developed under red safelight so you can see what you are printing. And ... possible to develop as both negative and reversal. Slow in film speed (approx. 20 ASA) It can be used in the camera, but results in contrasty orthochromatic images once printed or developed reversal (i.e. reds turn black so wear pancake makeup!). Works sublime with corrosive chemicals.

Color Fuji F-CP. Has to be used in complete dark as sensitive for all (color) light. Has a polyester base so you can only cut it with a scissors. Easy to develop hand wise with a C-41 kit.

WHAT THE INFORMATION ON A FILM CAN MEANS:

EOA + EOB = emulsion outside

EIA + EIB = emulsion inside (the emulsion is facing the inner core/bobine)

A = perforation A-wind (perforation facing towards you if hold as it would fit in a Bolex camera)

B = perforation B-wind

IR = single perforated

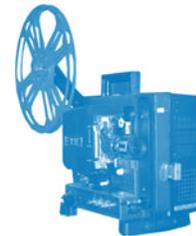


16MM IN TIME/FOOTAGE/METER AT 24 FPS

10 sec. =	6 feet =	1,83 meter
30 sec. =	18 feet =	5,49 meter
1 min. =	36 feet =	11 meter = 1440 frames
3 min. =	108 feet =	33 meter
5 min. =	180 feet =	55 meter
10 min. =	360 feet =	110 meter
20 min. =	720 feet =	220 meter
30 min. =	1080 feet =	330 meter



100 feet or 30,5 meter of 16mm is 2 minutes and 44 seconds
 400 feet or 122 meter of 16mm is 10 minutes and 56 seconds



1 foot of 16mm is 40 frames.
 1 meter of 16mm is 130 beeldjes

How Heavy

100ft/30,5m. = 0,350 kg

400ft/122m. = 0,600 kg

