CHAPTER 6 FILM DEVELOPING

The Darkroom

A photographic *darkroom* is simply a room with the equipment needed for developing film and making a print. Any room from which light can be blocked can be used, such as a large closet or a bathroom. Window light can be blocked out with dark shades or homemade plywood shutters.

Any table or counter top will hold the developing and printing equipment. Running water is ideal, but not required; water can be brought in and chemicals taken out of the room in pails.

The main problems with home darkrooms are with convenience, cleanliness, and fumes. For purposes of convenience, use space that is not normally used, such as an extra bedroom, a large closet, or a room in a basement. In this way, equipment can be kept in place and not have to be set up, then packed away after each use.

Darkrooms should be kept clean; however, some mess is unavoidable. Spilled chemicals, for example, can leave stains long after a cursory clean-up. Take special care to keep the darkroom area spotless, particularly if it doubles as a living area. Food preparation areas, such as kitchens and pantries, are not recommended for darkroom use.

Photographic chemicals have an unmistakable odor that some find unpleasant or physically irritating. The best darkrooms have ventilation systems. Since this is not practical in most home darkrooms, air out the room regularly. An open window helps, though a window fan is better. (Be sure the fan is aimed out a window or a door to remove the odor from the house, not displace it to another living area.) A darkroom located away from a general living area is best to control this problem.

Many communities have darkroom facilities open to the public or available for rent. Check local schools, universities, libraries, city halls, YMCAs or YWCAs. Try adult education programs or camera clubs. Camera store personnel may be able to provide information about such facilities.

A good rental darkroom eliminates the immediate problems of space, convenience, cleanliness, and odor. It is likely to be better

equipped than most home darkrooms. In addition, a group of interested photographers, with ideas and information to share, may gather around school, community, or rental darkrooms, and make the darkroom time more informative, interesting, and fun.

Equipment Needed

The following equipment is needed for film developing:

reel and tank
thermometer
scissors
can opener
clothespins and string
graduates or measuring containers
storage containers
funnel
photo sponge
timer
stirring rod and containers
rubber gloves
negative envelopes
changing bag (optional)

Reel and tank. Since film is light-sensitive, it must be processed in total darkness. A roll of film is loaded in the dark onto a spiral *reel*, and the reel is placed in a light-tight *processing tank*. The top of the tank contains a *light trap*, an opening that allows developing chemicals to be poured in and out while keeping out light.

Reels and tanks are made of either plastic or stainless steel. Stainless steel is more durable, but some find the reel difficult to use. Plastic reels are easier to use and most models are less expensive.

Reels are sold according to film size, such as 35-millimeter and 120. Stainless reels are made for one size film only. Some models of plastic reels are adjustable and can be used for different film sizes.

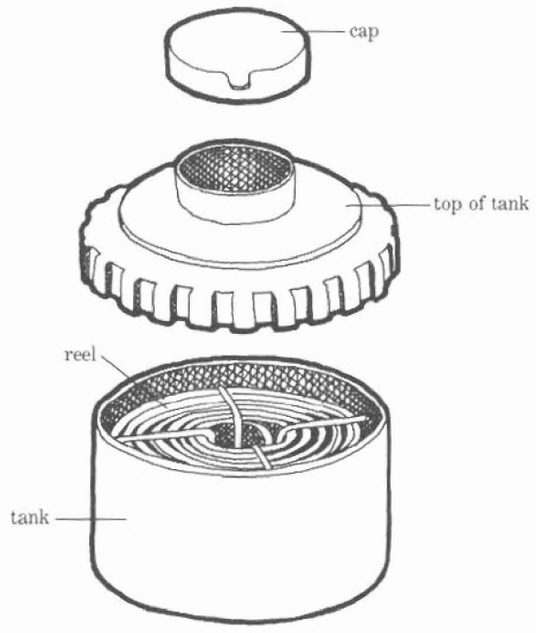
Processing tanks can be purchased in sizes that hold one or more reels, thus saving time when processing several rolls of film. Two rolls can be developed at once in a 2-reel tank; 4 rolls can be developed in a 4-reel tank.

Thermometer. The temperature of processing chemicals is critical and must be monitored regularly. For this purpose, a good photographic thermometer is a must. Most models have a wide temperature range (such as 30° to 120° F), and will measure solutions accurately within 1°.

Scissors. A pair of sharp scissors is needed to cut film.

g reel and tank

t tank with spiral reel in-
film is loaded onto the reel
k and placed in the tank.
can then be turned out.
are poured into the top of
which has a light trap to
ds in and keep light out.



Can opener. A common beer-can opener is used to pry open 35-millimeter film cassettes.

Clothespins and string. Spring-type clothespins and string can be used for hanging processed film to dry.

Graduates. Either glass or chemical-resistant plastic graduates or measuring containers are needed to measure processing solutions. At least one large (32 to 64 ounce) and one small (about 6 to 10 ounce) graduate are necessary. The small one should be capable of accurately measuring 1 ounce or less of solution.

Storage containers. Some photographic solutions are sensitive to light or air, so storage containers should be dark and kept filled to capacity. Plastic storage bottles can be squeezed when partially filled to remove excess air. All containers must be resistant to chemical contamination.

Funnel. A funnel is helpful for pouring solutions into storage bottles with thin necks.

Photo sponge. A special photo sponge (or chamois cloth) is used for wiping wet film after it is hung to dry.

Timer. Developing procedures must be carefully timed, so a timer that accurately measures both minutes and seconds is needed. Special photographic timers are preferable, but a clock or a watch with a second hand will do.

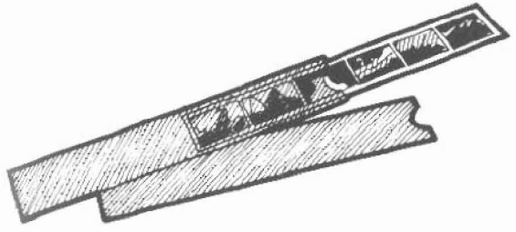
Stirring rod and containers. To mix chemical solutions, use a stirring rod and container. Special stirring rods are available, but a thermometer will also work. The container can also be a graduate or a storage container with a wide opening.

Rubber gloves. Any pair of plastic gloves will protect skin when mixing and handling photographic chemicals, and minimize potential physical reactions to the chemicals. Some people develop skin allergies to processing solutions; others experience dry or chafed skin.

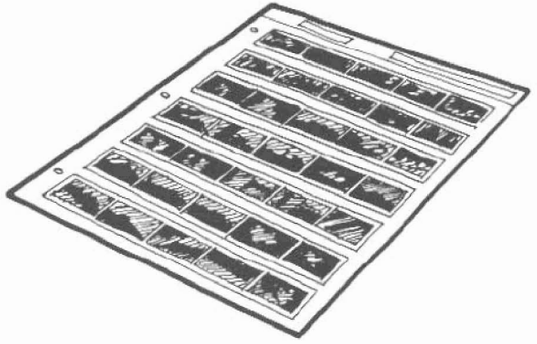
Negative envelopes. Once negatives are processed and dried, they should be protected from damage. Several types of protective envelopes are available. Clear plastic envelopes are excellent, especially for long-term storage, but they are expensive. *Glassine envelopes* made of a translucent paper are less expensive and commonly used.

Changing bag. When a darkroom is unavailable, film can be loaded onto a developing reel by using a *changing bag.* These bags are black sacks that have two holes for arms. The holes allow the entry of film, reel, and processing tank, but keep out light.

Negative envelopes



Translucent glassine envelopes that hold individual strips of film.



Clear plastic envelopes that hold an entire roll of film.

Chemicals Needed

Several chemicals are needed for film processing, and many different brands of each chemical are available. There is a list of most brand names in Appendix Four.

Chemicals are packaged in either powdered or liquid form. The powder must be mixed with water to make a *stock solution* — the form in which chemicals are generally stored. Chemicals that come packaged as liquids are essentially premixed stock solutions. They are more convenient and easier to use and store than powdered chemicals.

Most stock solutions must be diluted with water before use. The usable form of the chemical (whether diluted or undiluted) is called a *working solution*. Most stock solutions store for a longer time than working solutions, though many working solutions can be stored and reused for a while if bottled in dark, filled containers.

These are common film-developing chemicals, followed by descriptions of their functions:

film developer
stop bath
fixer with hardener
fixer remover
wetting agent

Film developer. The primary processing chemical is the *developer*, which reacts with the film to make the latent image visible. The developer works to bind together only the exposed silver crystals and turn them into clumps of dark metallic silver. The greater the film exposure, the denser the silver.

Many different brands of film developers are available, each claiming its own characteristics. For example, some developers work to produce negatives with finer grain than others, while some produce negatives with greater contrast than others (more on contrast later).

Despite their different characteristics, all developers do develop film. Poor negatives are rarely caused by the type of developer used. More likely causes are:

inaccurate film exposure
improper loading of film onto the reel
chemicals mixed incorrectly
wrong processing temperatures or times

Most common negative problems, probable causes, and solutions are listed in Appendix Three.

Stock solutions of developer are prepared and used in different ways, depending on the brand. Some must be diluted with water, while others can be used undiluted. Some develop film quickly, while

others take much longer. "One-use" developers are used one time only, then thrown out; others can be replenished and reused.

A *replenisher* is a chemical used to extend the useful life of a developer. It replaces those chemical components of the developer that are used up during the processing.

The developing time is determined by several factors including the type of film, the type of film developer, the dilution of that developer, and the temperature of the solution. A *time-temperature chart* is provided with most packages of film or developer. (If not available, inquire at a camera store or contact the manufacturer of the film or developer for a chart.) Here is a sample time-temperature chart:

Film type: Kodak Tri-X
Film developer: Kodak D-76
Developer dilution: 1 part D-76 to 1 part water

Temperature	Time
65° F	11 minutes
68° F	10 minutes
70° F	9½ minutes
72° F	9 minutes
75° F	8 minutes

So if the temperature of the diluted developer solution is 70°, the developing time is 9½ minutes. If the temperature of the developer falls between the temperatures listed, adjust the developing time accordingly; at 71°, the developing time is 9¾ minutes.

Stop bath. Developer continues to develop film until it is neutralized by a *stop bath*, which usually consists of a plain water rinse or a mild solution of acetic acid. An acid stop bath helps preserve the useful life of the following bath — the fixer — which is a far more expensive solution than "stop."

Packaged stop baths have different ingredients and must be diluted for use according to the manufacturers' instructions. Plain acetic acid is packaged in liquid form and generally available in two strengths — 28% and 99%. The 28% acid makes a good stock solution. The 99% acid is so strong that it should be diluted for safe storage and use.

To dilute the 99% acid to a 28% stock solution, add 3 parts of 99% acetic acid to 8 parts of water (for example, 9 ounces of 99% to 24 ounces of water makes 33 ounces of 28% acid). The fumes are very strong. Avoid breathing them directly when mixing.

The 28% stock solution must be diluted down to a milder acid for use as a working solution of "stop." To do so, mix 1 part of 28% acid to 20 parts of water: for example, 2 ounces of 28% to 40 ounces of water, for 42 ounces of working solution.

Stock solutions of acetic acid will store for a long time. Working solutions can be used for several rolls of film; 1 quart can develop about 20 rolls of 36-exposure, 35-millimeter film. Some manufacturers sell an indicator stop bath that changes color when exhausted.

Fixer. After the stop bath, film must still be protected from light or the unexposed silver will become exposed and darken. *Fixer* (or *hypo*) removes the unexposed silver from the film and allows the film to be viewed in room light.

The terms hypo and fixer are sometimes used interchangeably. Actually, hypo is the primary fixing agent, but most fixers consist of other chemicals as well.

Fixer comes packaged in either a powdered or liquid form. Powdered fixers act in 5 to 10 minutes; most liquid fixers are rapid fixers, and require less than half as much processing time.

Film fixers should contain a *hardener*, a chemical that toughens the film emulsion and makes it more scratch-resistant. Most powdered fixers contain a hardener, while a separate hardening solution, generally packaged with the fixer, needs to be added to most liquid fixers.

Fixer can be stored and reused for several rolls of film. One quart of working solution of fixer, properly stored, can be used for about 20 rolls of 36-exposure, 35-millimeter film.

The fixing time should be extended as the fixer becomes used. If in doubt about the freshness of a solution, squeeze a few drops of a chemical called *fixer check* (or *hypo check*) into the used fixer solution. If a white precipitate forms, the fixer has gone bad and fresh fixer should be used.

Fixer remover. Fixer must be washed out of the film or it will eventually cause the film to deteriorate. However, a long water rinse is required to do an adequate job of washing. A quicker and better wash is possible with a presoak in a *fixer remover*. Fixer remover (also called *hypo remover*, *clearing bath*, *hypo eliminator*, and other names) converts the fixer in the film into a compound that is easy to wash out, thus providing a quicker and more efficient wash than a plain water rinse.

Use a fixer remover after the fixer for a short time (about 2 minutes with most brands). Then rinse the film with constantly changing running water for approximately 5 minutes. Fixer remover can be reused for approximately half the amount of film as fixers.

Wetting agent. When the film is washed and hung to dry, water may cling to its surface and leave streaks or spots. A brief treatment in a solution of *wetting agent* reduces the surface tension of the film, and allows water to flow more rapidly from the film without clinging to it. The stock solution of wetting agent is highly concentrated and must be diluted heavily with water for use.

Setting Up the Chemicals

Processing film is a straightforward procedure. Three solutions — developer, stop bath, and fixer — do all the important processing work. The rest of the steps involve washing and drying the film.

Each brand of chemical is prepared differently, so check the package for specific instructions. For example, a 1-quart package of powdered film developer must be mixed with enough water to make a total of 1 quart of stock solution of developer. The instructions on the box may say: "To use the developer, mix 1 part stock solution with 1 part water." Such a package would yield 1 quart of stock solution but 2 quarts of working solution of developer.

Before starting the process, set up three containers of working solutions — one each of developer, stop bath, and fixer. Graduates make excellent containers for this purpose. Be sure to mix enough of each solution to fill the processing tank fully. Most 1-reel tanks hold approximately 8 ounces of solution; 2-reel tanks hold about 16 ounces.

Film can be processed with solutions measuring over a wide range of temperatures. The ideal is 68° to 70° F, though 65° to 75° is usually acceptable. The higher the temperature of the solutions, the quicker the processing times. However, warm or hot solutions, particularly when coupled with great temperature variation from solution to solution, can lead to excess negative graininess or *reticulation* (a condition that appears as cracks in the film emulsion).

Setting up the chemicals

Before starting, set up three containers of working solutions of developer, stop bath, and fixer.

All processing solutions used for the same batch of film should be close to the same temperature, though this is not always possible. There are many ways to maintain equal temperature. When mixing stock solutions with water, measure the temperatures constantly and

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make the film emulsion ap-
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adjust each by using hot then cold water. Powdered chemicals frequently need to be mixed with hot water to make a stock solution, so will need extra time to cool down. After mixing, let the solutions stand unused for a while until they all reach the same temperature. Or place all the containers of working solution in a tray or dishpan filled with water at 70° to help even out the temperatures.

Like any chemical, processing solutions should be handled with caution. Read the hazard warnings printed on chemical packages. When mixing and using the chemicals, avoid inhaling the fumes as much as possible. Process by an open window or use a fan to exhaust fumes from a room (many bathrooms and kitchens have built-in exhaust fans). Take all reasonable precautions.

In addition, use rubber gloves when handling chemicals to protect skin. Rashes and other skin irritations are common enough to warrant concern.

Loading the Film

The hardest part of the film-developing process can be loading the film onto the spiral developing reel. Once loaded, the reel is placed in a processing tank, and the chemical solutions poured in and out until the film is fully processed.

The reel is used to guarantee that the chemical solutions reach all parts of the film evenly. When properly positioned on the reel, no section of the film touches any other section.

The tank is a light-tight container that holds both the film (on the reel) and the processing chemicals. Processing tanks consist of a container and a cover. The cover fits tightly on the container. It incorporates a light trap so that processing solutions can be poured into the tank through an opening on top of the tank cover without letting in light. The opening can then be closed off with a cap on most models of tanks.

The film must be loaded onto the reel in total darkness (or inside a changing bag), since it is sensitive to light. Be sure to practice with an unexposed roll of film in room light before trying to load exposed film for the first time. It is a difficult and awkward process.

Step inside a darkroom and lock the door, if possible, so that no one will enter inadvertently and expose the film. Shut off the room lights and check for light leaks. If there are leaks, close them off with whatever is available, such as tape and cardboard or towels.

The steps for loading film onto a reel are as follows:

1. *Remove the protective cover.* For 35-millimeter film, use a can opener to pry open the flat end of the metal cassette. (The other end

has a spool sticking out of it and is more difficult to pry open.) Then pull the film out of the cassette, and toss the cassette aside. The film is wound tightly on a spool, so tends to unravel rapidly once out. To keep the film from unraveling, cup the ends of the spool in the palm of one hand.

Roll film, such as 120 size, is packaged along with a protective paper backing. This backing protects the film from exposure. The film and the backing must be separated for loading the film onto the reel. To do so, slit the tape on the outside of the paper, and slowly start to unroll the backing. The film will roll out naturally, independent of the backing. Once loaded on the reel, the film must be detached from the backing by removing the tape that holds them together.

2. *Cut the leader.* The loading process requires that the end of the film be straight. At the beginning of a roll of 35-millimeter film there is a curved *leader* that must be cut off with scissors before the film can be loaded onto the reel. Try to keep the edge as straight as possible. This step is unnecessary with 120 and other roll films, since they come packaged with a straight end.

3. *Roll the film onto the reel.* This procedure varies with the type of reel used. The aim is to lay the film into the grooves of the spiral so that no part of the film touches any other part of the film. Touching sections will not develop fully.

Stainless-steel reels consist of two spiral, wire disks with their centers attached to each other by a wire post. The disks contain grooves that hold the film.

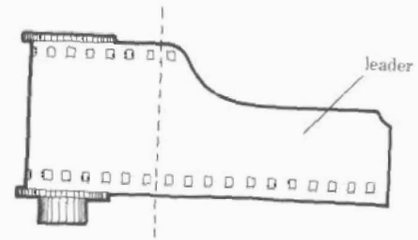
(These instructions assume that a right-handed person is loading the film. Left-handed people should reverse the directions as they refer to "left," "right," and "clockwise.")

The reels work only in one direction. To identify that direction, place the reel upright on a table or counter. Both spiral disks have a prong (or flat edge) at their outside point, where the spiral ends. These prongs should point to the right (remember, to the left for left-handed people), or the film cannot be rolled correctly onto the reel.

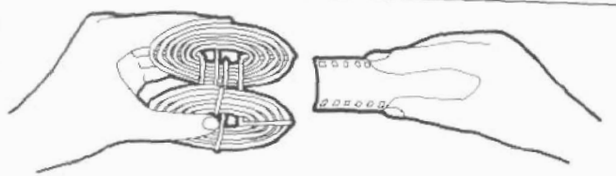
To roll the film, hold the reel in the left hand. It is easier if the reel is placed on a table or counter top to steady it. With the right hand, place the straight end of the film directly into the center of the reel. The center post has some sort of clip, wire, or other device to hold the film in place. The film should be pinched ever so slightly between the thumb and forefinger as it is put into the center of the reel. (The film is the same width as the distance between the spiral disks, so it must be curved slightly to enter properly.) Try to avoid touching the film anywhere but on its edges.

Loading the film onto the reel

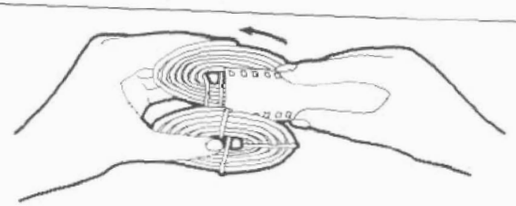
A. Remove the protective cover. Here, a can opener is used to pry open the metal cassette that holds a roll of 35-millimeter film.



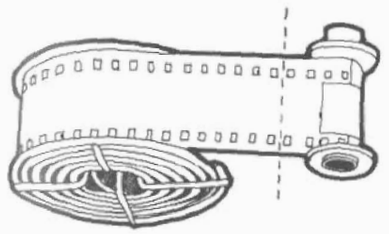
B. Cut off the film leader. Make sure the cut is straight.



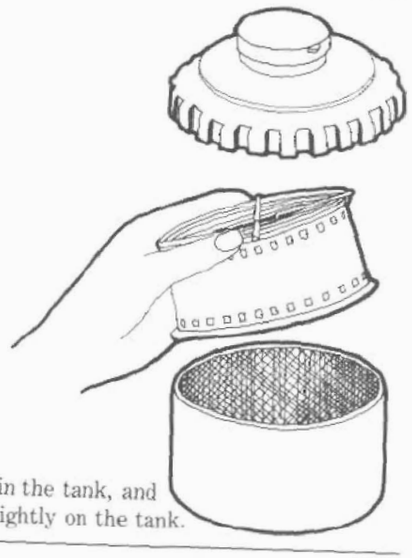
C. Begin to roll the film onto the reel. Keep the film pinched slightly between the thumb and forefinger.



D. Turn the reel counterclockwise, and it will pick up the film and load almost automatically.



E. Cut the end of the film off its spool.



F. Place the reel in the tank, and put the cover tightly on the tank.

Once the film is firmly set in the center of the reel, turn the reel counterclockwise (clockwise, if left-handed). The first turn is most important to guarantee that the film is aligned correctly in the reel. Once that turn is made, keep the reel on the table and continue to turn it counterclockwise. Make sure the film remains pinched in the same curved position, and move only the reel. It is not necessary to move the film, since the turning reel will pick up the film smoothly. Keep reel, film, and hand as steady as possible. Each edge of the film will fall properly into separate grooves on the spiral.

Plastic reels load more easily. These reels consist of two spiral disks that contain grooves and connect to each other in the center by a tube. Each disk moves independently back and forth on the tube, like a ratchet. The straight edge of the film is loaded from the outer edge of the spiral disks, rather than from the center of the disks as with stainless-steel reels. Both disks have slotted openings on their outer edges; these openings should be lined up to allow the film to enter the grooves.

Place the film in the plastic grooves, under the ball bearings located at the outer edge of the spiral. Then turn the reel back and forth with both hands and the film will "catch" and move toward the center of the reel. One disk moves back, while the other moves forward in an alternating pattern. The reel neatly picks up the film, and loads almost automatically.

Work slowly and steadily. Do not try to rush the loading process. Also, make sure the reel is completely dry before loading. Wet reels are difficult to load.

In the dark, an experienced hand can usually feel when the loading is going wrong. The film will move unsmoothly to one or the other side of the reel; or it will bend too much. An edge of the film may crinkle and cause the film to jump a groove. Or, on a plastic reel, it may get stuck and not move at all. If it feels wrong, do not continue loading the film. The problem is likely to get worse. Stop, unwind the film, and try again.

4. *Cut off the end.* Once the loading is completed, the film must be cut off from its spool. It is held on the spool by a piece of tape. Take a pair of scissors, and make the cut as close to the spool as possible to keep from cutting off exposed film by mistake.

5. *Place the reel in the tank.* Place the loaded reel in the processing tank and put the cover tightly on the tank. If the cover is the type that screws onto the tank, be sure it screws on straight.

The room lights can now be turned on, and the developing process started.

Summary: Film Processing*

Step	Time	Comments	Capacity**
1. Developer	Varies; refer to time-temperature chart.	Monitor temperature carefully; 68° to 70° is best, but range of 65° to 75° is acceptable; agitate by rotating and inverting tank for first 30 seconds, then for 5 seconds of every 30 seconds thereafter.	"One-use" type should be discarded immediately after use; others can be replenished and used for many rolls.
2. Stop bath	**15 seconds**	Agitate constantly; use a mild acetic acid or plain water rinse at same temperature as developer.	20 rolls of 36-exposure, 35-millimeter film per quart of working solution, if using an acetic acid bath; otherwise, change water with each batch of film developed.
3. Fixer	**5 to 10 minutes** with regular fixers; **2 to 4 minutes** with rapid fixers.	Agitate for half the fixer time; use at same temperature as developer.	20 rolls of 36-exposure, 35-millimeter film per quart of working solution.
4. Fixer remover	**2 minutes**	Optional step, but highly recommended; agitate for half the fixer-remover time at same temperature as developer.	10 rolls of 36-exposure, 35-millimeter film per quart of working solution.
5. Wash	**5 minutes** if treated first in fixer remover; **20 to 25 minutes** if not treated in fixer remover.	Use constantly changing water at same temperature as developer; pour out water from tank periodically to guarantee a water change; keep film on reel and in tank during wash for maximum efficiency.	
6. Wetting agent	**30 seconds**	Do not agitate; use at same temperature as developer; keep film on reel and place reel in wetting agent.	Many rolls; discard periodically.

* These times and capacities are intended as guidelines. They vary according to the brands used and the conditions of use. Refer to manufacturer's instructions before proceeding.

** A roll of 36-exposure, 35-millimeter film is approximately equal to 2 rolls of 20-exposure, 35-millimeter film, 1 roll of size 120 film, and 2 sheets of 4" × 5" film.

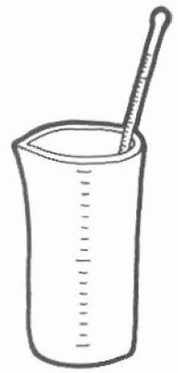
The Developing Process

Chemical solutions are poured in and out of the processing tank in the following order: developer, stop bath, and fixer. The processed film is then washed, preferably with a fixer remover and a short water rinse. Finally, the film is treated with a wetting agent and hung up to dry.

Read over these steps until totally familiar with them before beginning. This process needs to be timed, and should move smoothly from step to step, so make sure all of the solutions and containers are easily accessible. Follow these steps:

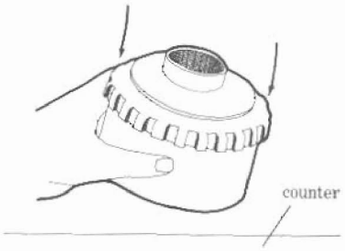
1. *Take the temperature of the developer, and determine the correct developing time* at that temperature by referring to the time-temperature chart for that developer/film combination. For best results, keep solution temperatures as constant as possible throughout all the processing steps, including the water wash.
2. *Pour the developer into the processing tank*, holding the tank at an angle to facilitate pouring. Start timing the development as soon as all the developer is in the tank.
3. *Gently tap the bottom of the tank against a table, counter, or sink* to dislodge any air bubbles that may have formed in the solution. If the tank has a cap, cover the opening with it. (The cap must be removed and replaced with each step.)
4. *Agitate the tank* for the first 30 seconds of development. To agitate, gently rotate the tank in a circular direction, then invert it. Repeat the rotation and inversion for the full 30 seconds. (Some plastic tanks have no caps on the top, so should be rotated only and not inverted to keep the solution from spilling out.) When the 30 seconds are up, stop agitating. For the remaining time in the developer, agitate the tank for about 5 seconds out of every 30 seconds. Overagitation can cause the film to become overdeveloped or streaked at its edges.
5. *Start pouring the developer out of the tank* approximately fifteen seconds before the developing time is up. If the developer is a "one-use" type, discard the used solution. If it is reusable, store the solution in a clean bottle and mark it "used developer." After the film has been processed, replenish the used developer with a replenisher solution according to the directions packaged with the replenisher.
6. *Pour the stop bath into the tank* as soon as all of the developer is poured out. Use either a plain water or mild acetic acid bath.
7. *Agitate the tank* continuously for a total of 15 seconds, rotating and inverting the tank, as described in step 4.
8. *Pour out the stop bath* just before the 15 seconds are up, and save the solution for reuse.
9. *Pour in the fixer.*

The film-developing process

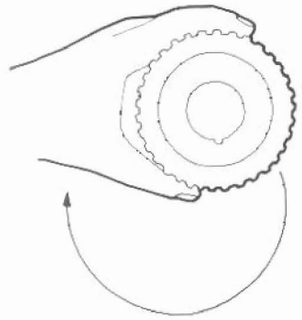


Take the temperature of the developer.

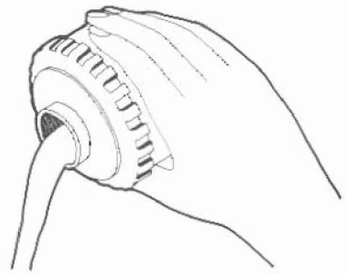
Pour the developer into the tank.



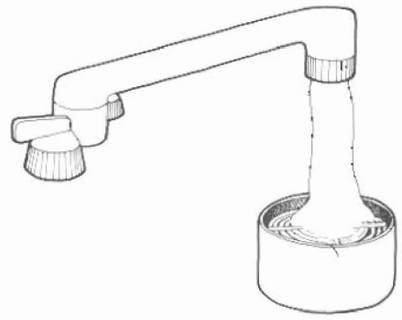
Tap the tank gently to dislodge air bubbles.



Agitate the tank by rotating it and inverting it for the first 30 seconds of development, and 5 seconds of every succeeding 30 seconds.



Pour the developer out of the tank.



A running-water wash. The film is still on the reel and the reel is still in the tank.

ıe film to dry. Place a clothes-
he bottom of the film to keep
curling. (Optional) Wipe the
h care, using a photo sponge
ıois soaked with diluted wet-
ent.

10. *Agitate the tank* for at least one-half the recommended fixing time. Most regular fixers work in 5 to 10 minutes; rapid fixers work in 2 to 4 minutes.

11. *Pour out the fixer* and save it for reuse. (Before reusing the fixer, test its usefulness with a fixer-check solution.) Once the time in the fixer bath is up, the reel can be removed and the film unwound for viewing. Unwind only a few frames, and handle the wet negatives with care. Rewind the film onto the reel before proceeding to wash the film.

12. *Add a fixer-remover solution* to help facilitate the film-washing process. The time is generally about 2 minutes, depending on the brand of fixer remover used. Agitate for at least half that time. Some manufacturers recommend a short water wash prior to treatment in the fixer remover.

13. *Pour out the fixer remover.* Some brands can be stored and reused.

14. *Wash the film* by removing the top of the processing tank, and allowing water to run directly into the tank. Keep the film on the reel and in the tank for best results, so all parts of the film are washed with equal efficiency. Pour out the water in the tank every 30 seconds or so to guarantee a complete change of water. A plain water wash takes about 20 to 25 minutes. A wash preceeded by a fixer remover takes about 5 minutes and washes the film more thoroughly.

Keep the temperature of the wash water as constant as possible, consistent with the processing temperatures, ideally at 68° to 70° F. If the water temperature from the faucet varies significantly, fill a bucket of water at the same temperature as the processing solutions. Then pour water from the bucket into the open tank, close up the tank, and agitate for 30 seconds. Pour out the water, refill the tank from the bucket, cover and agitate the tank for 30 more seconds. If treated first in a fixer remover, the film should receive a thorough wash — at a constant temperature — with a total of ten changes of water.

15. *Pour the wash water out of the tank* once the wash is complete.

16. *Take the developing reel out of the tank and place it gently in a container of diluted wetting agent.* Do not agitate. It may cause streaking on the surface of the film. Keep the film in the wetting agent for approximately 30 seconds.

17. *Take the reel out of the wetting agent, carefully remove the film from the reel, and hang the film to dry* in a dust-free environment. Handle the film by its edges to avoid damaging it as wet film is especially susceptible to gouging and scratching. Use a spring-type

clothespin to hang the film from a taut piece of string hung like a clothesline. Place another clothespin on the very bottom of the film to keep the film from curling.

18. (Optional) *Gently wipe the film from top to bottom on both sides with a photo sponge or chamois,* soaked with diluted wetting agent. This helps the film to dry more quickly and with less streaking. Be sure the sponge or cloth is clean, or it might scratch the film. Film takes about 1 to 4 hours to dry, depending on the temperature and humidity of the environment.

19. *Store the film as soon as it dries* to keep it clean and scratch-free. Carefully cut the roll of negatives into strips of five or six frames each (depending on the size of the storage envelopes used), and slip the strips into protective envelopes, one strip in each. Use either plastic or glassine envelopes.