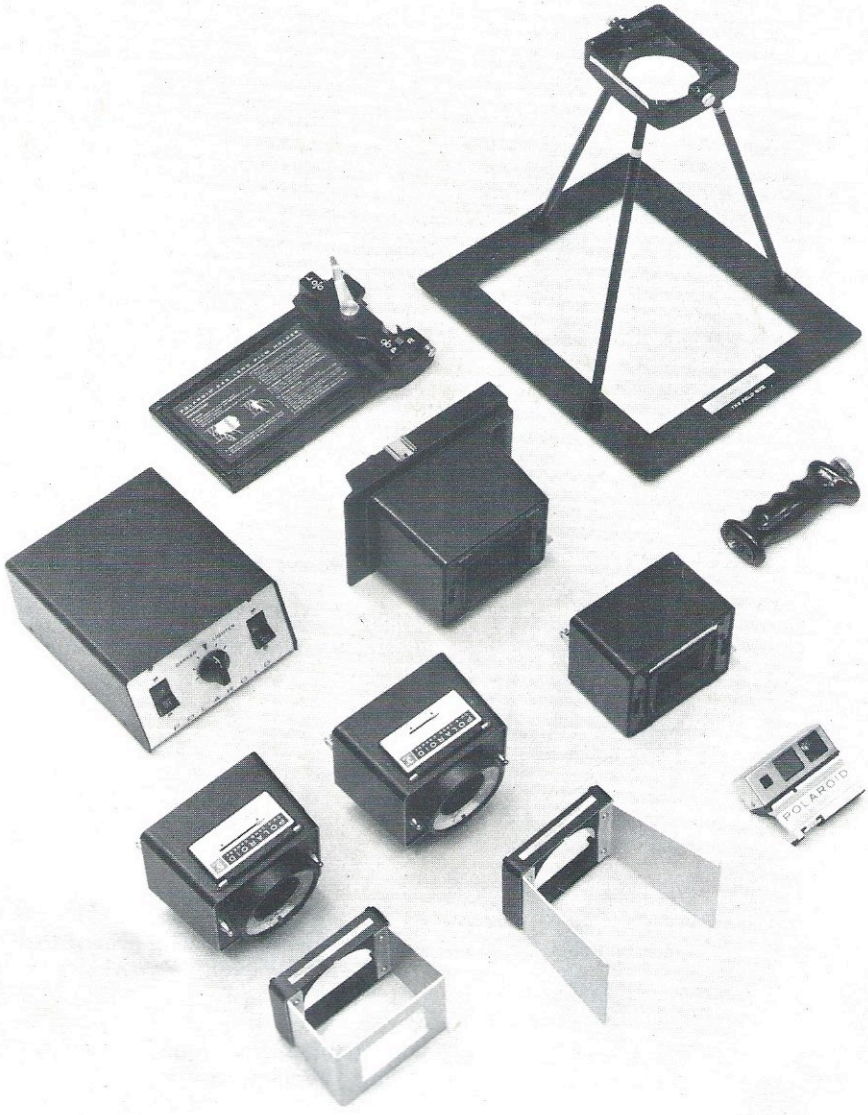
How to use the
Polaroid CU-5 Close-up Land Camera for 4 x 5 photography



Polaroid 4x5 Close-up System

Contents

The 4 x 5 close-up system

The Polaroid Close-up Land camera is the main part of a unique system for making 4 x 5 close-ups of subjects ranging in size from a person's head to a tiny electrical component.

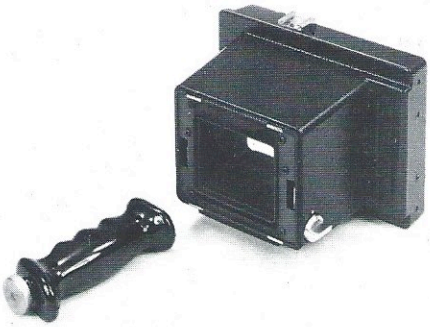
Interchangeable lenses and extenders provide a variety of image sizes from ¼ lifesize to twice lifesize. Built-in electronic flash ring lights give ideal illumination. Yet, due to the design of the system, there is no need for complicated exposure computations or focusing procedures.

As a result, even inexperienced persons can quickly learn to use the camera and can produce black and white or color pictures of excellent quality.

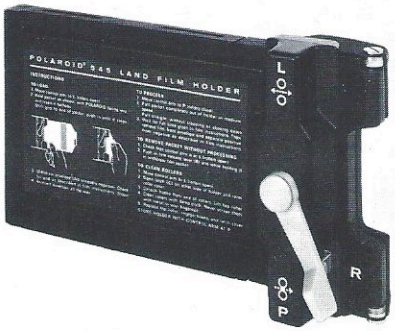
This booklet covers the use of the camera with Polaroid 4 x 5 Land films and a Polaroid 4 x 5 Land Film Holder 545. Complete operating instructions for the film holder will be found in the booklet supplied with it.

The main components

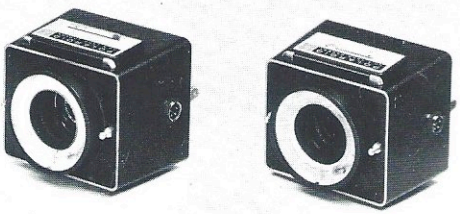
Camera body: It is designed for use with Polaroid 4 x 5 Land film packets. Lens units attach to the front of it.



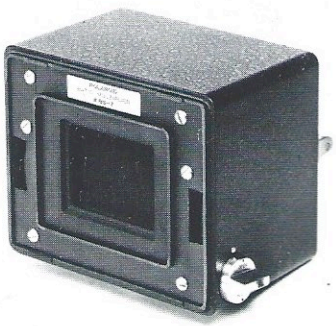
Polaroid 4 x 5 Land Film Holder #545: This slides into the back of the camera body. (The camera also accepts the Polaroid 4 x 5 Land Film Holder #500, as well as holders for 4 x 5 wet process films.)



Lens units: There are two interchangeable lenses, each mounted in its own shutter. One lens has a focal length of 5 in. (127mm), the other of 3 in. (75mm). They provide two basic degrees of magnification.

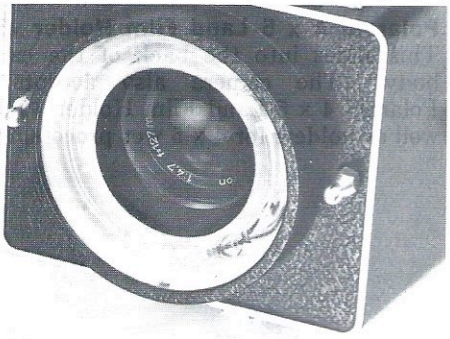


Ratio Multiplier: This is a spacer inserted between the camera body and the lens unit to increase the magnification.



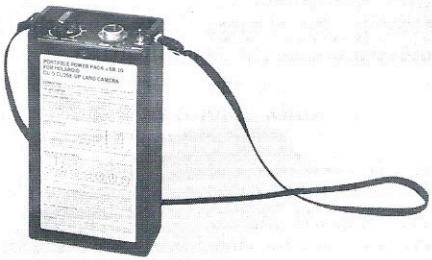
Viewfinder and frames: For each degree of magnification there is either a special frame or a viewfinder/rangefinder that makes it easy to frame the subject and get sharply focused pictures.

Light Source: Around each lens is a built-in electronic flash ring light. This is the main light source, but other types of lighting may be used, too. See EXPOSURE BY LIGHT SOURCES OTHER THAN THE RING LIGHT, page 24.



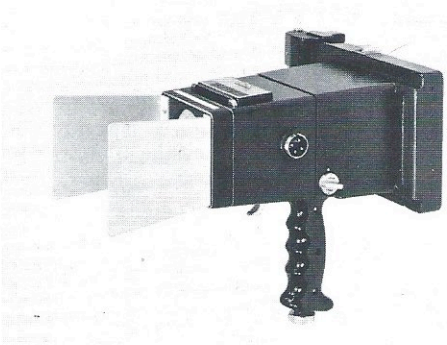
AC power pack: It connects to standard AC circuits and provides the power for the electronic flash ring light.

DC portable power pack: This permits the camera to be used in any location, independently of house current. The unit is battery-operated; full instructions for its use are on the power pack itself.

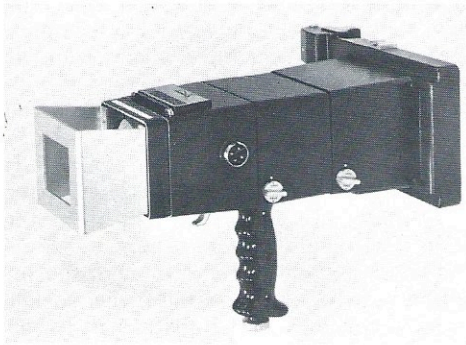


The camera combinations

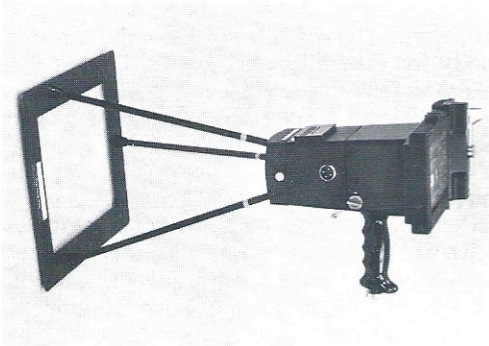
1:1 camera: The 3-in. lens mounted on the camera body gives a lifesize image. A frame that clips onto the front of the lens unit outlines the area included in the picture and places the camera at the correct distance for sharp focus.



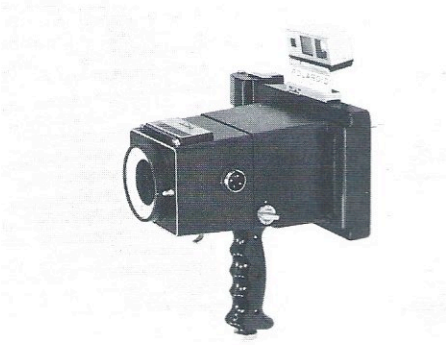
2:1 camera: When the Ratio Multiplier is added between the 3-in. lens and the camera body, the image is 2X lifesize. A frame that clips onto the front of the lens unit outlines the area included in the picture and places the camera at the correct distance for sharp focus.



½:1 camera: With the addition of a supplementary lens, the 5-in. lens unit mounted on the camera gives an image ½ lifesize. A framing device that clips onto the front of the lens unit outlines the area included in the picture and places the camera at the correct distance for sharp focus.

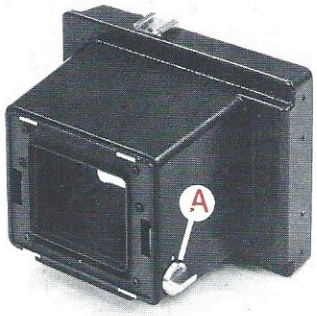


¼:1 camera: The 5-in. lens mounted on the camera body gives an image ¼ lifesize when the subject is 25 in. from the lens. Attached to the top of the camera is the ¼ : 1 viewfinder, comprising a fixed distance rangefinder and parallax corrected viewfinder for rapid focusing and framing.



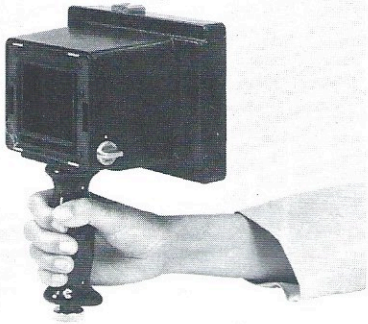
The camera body

Either lens unit or the ratio multiplier can be connected to the front of the camera body. A lock holds the unit in place. The lock knob (A) should be in the OPEN position when a unit is placed on the camera body, then turned to the LOCK position to hold it in place.



The camera is designed to be used hand held most of the time and a pistol-type hand grip is provided. It is attached to the camera body as shown below.

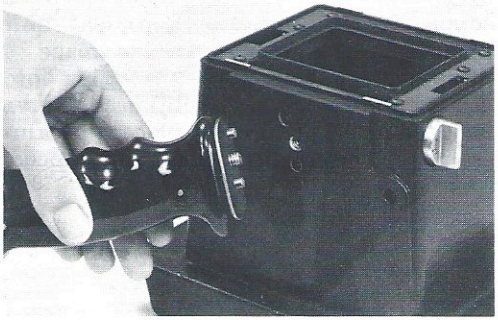
The hand grip screws into a standard tripod socket on the bottom of the camera body; additional pins and holes prevent it from turning sideways.



Similar fittings are on the bottom of the Ratio Multiplier. When using the Ratio Multiplier, fasten the hand grip to it. This will make it easier to reach the shutter trigger and the camera also will be better balanced with this arrangement.

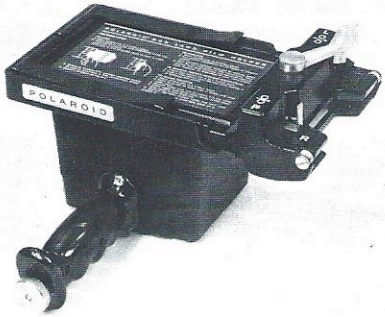
When the camera must be mounted on a tripod, always use the same tripod socket to which you attach the pistol grip when the camera is hand held.

In addition to the tripod socket, there are several threaded holes in the camera body for attaching accessories. Do not use these as tripod sockets.



A Polaroid 4 x 5 Land Film Holder #545 slides into the back of the camera body. The holder is described completely in the booklet HOW TO USE THE POLAROID 4 X 5 LAND FILM HOLDER #545, which is supplied with the holder. Please read this booklet carefully. It contains essential information about taking a picture and developing it, care of prints, and maintenance of the holder.

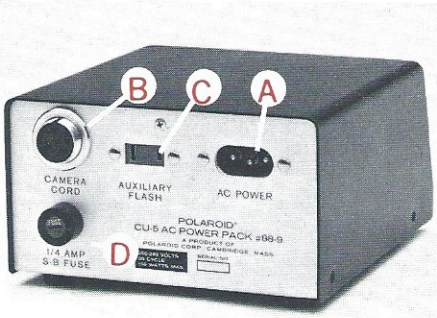
Slide the holder under the springs on the back of the camera body. Be sure to slide it all the way in; you will feel a definite click as it slides into place. To remove the holder, lift the protruding end slightly upward, away from the camera body; then pull the holder straight out.



The power supply

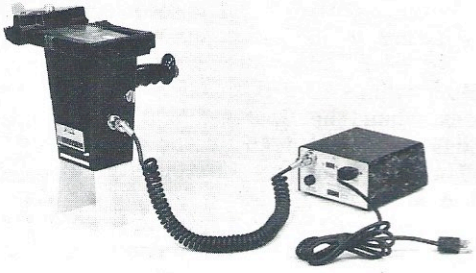
There are two AC power supplies for use with the camera: the #88-8 Power Pack for 120 volt, 60 cycle, AC lines; and the #88-9 Power Pack for 220-240 volt, 50 cycle, AC lines. The connections and controls are similar in both packs.

On the rear of the power pack are: (A) AC power input; (B) camera cord outlet; (C) auxiliary flash outlet; (D) AC power line fuse.

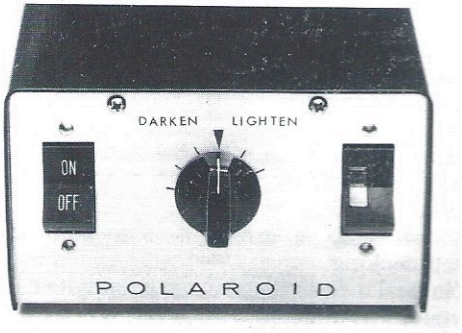


On the front of the power pack are the ON-OFF switch (left), the LIGHTEN/DARKEN (L/D) control (center), and the ready light and test switch (right).

The normal hookup of the power pack is as shown. Other arrangements for special purposes are shown on page 22.



For electronic flash pictures, minor changes in exposure can be made by varying the amount of power sent from the power pack to the ring light. This is done with the L/D control. Each mark on the control indicates an exposure change equal to about ½ stop (f-number).



The lens units

The two lens units have lenses of different focal lengths; otherwise, they are similar. Important parts are:

(A) lens, either 3-in. (75mm.) f/4.5 to f/45, or 5-in. (127mm.) f/4.7 to f/45; (B) electronic flash ring light; (C) mounting posts for focusing frame and accessories; (D) lever to control lens aperture; (E) access door to shutter controls; (F) flash connection; (G) shutter trigger; (H) latch. Under the door (E) is also a shutter speed control lever.

The lens units can be used interchangeably with CU-5 camera backs for pack film and camera backs for 4 x 5 film. The B&W and COLOR settings on the shutter access door should be used only when the lens is combined with a pack film body. When using 4 x 5 film packets, you must open the shutter access door (E) to reach the lens and shutter controls. The exposure guide on page 19 tells you how to select the correct lens aperture for each type of 4 x 5 film. With the ring light as illumination, the shutter speed should always be set at 1/60 sec.

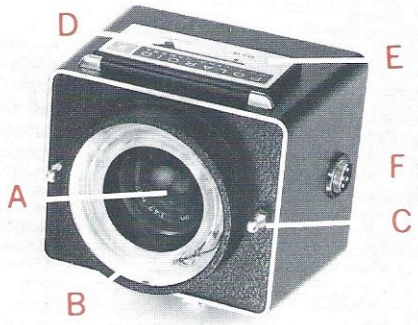
To set the lens opening (f-number) move the lens aperture control lever (D). The f-number is indicated by a pointer (J).

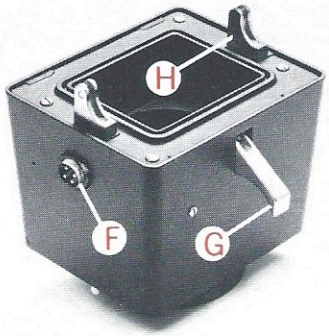
On both lens units, a neutral density filter swings into position in front of the lens when the aperture control lever is pushed toward f/45 as far as it will go. (The 3-in. lens has a 4 f-stop filter, and the 5-in. lens has a 1½ f-stop filter.)

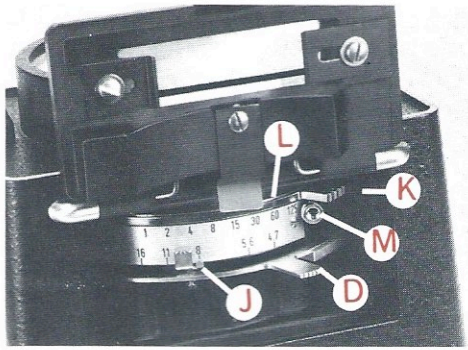
To remove the filter from in front of the lens, push the aperture control lever just far enough to the right so the pointer remains on f/45, but the lens is completely unobstructed by the filter. Check the front of the lens visually to be sure that the filter has been removed.

To adjust the shutter speed, move the lever (K); the speed is indicated by a red mark (L). The shutter has speeds from 1 sec. to 1/125 sec. and both B and T positions for time exposures. A cable release socket (M) is provided. The shutter is self-cocking.

Note: To close the shutter access door (E), you must first set the lever (D) at f/45.







The polarizing filter

The Polarizing Filter #88-41, shown at the right, greatly reduces flash reflections from the surface of objects photographed with the electronic flash ring light of the camera. It actually consists of two polarizers, crossed at 90° to each other. When it is in place over the lens, one polarizer covers the flash ring light and the other covers the lens.

The filter fits into the front of the lens unit and rests against the metal guard around the ring light. It is held in place by attachment of a distance frame to the lens unit.

With the 1:1 camera: When using the 1:1 camera, you must be careful to orient the filter correctly. Fit the key (A) on the filter into the slot on the 1:1 frame.

With the ¼:1 camera: The ¼:1 camera will most frequently be used for photographing people, and the polarizing filter is not required for that application. The polarizing filter is designed primarily for use with the 1:1, 2:1, and ½:1 cameras, where the lens-to-subject distance does not exceed 14 in. (35.5 cm.). It is not recommended for use with the ¼:1 camera because it will cause flare, or overexposed areas, in the print.

If you must photograph a large, highly reflective subject at ¼ lifesize, first try to adjust the camera angle to minimize flash reflections. If that method is not successful, try side lighting, as described on page 22. If neither of those methods produces satisfactory results, and you must use the polarizing filter, use the 1:1 frame to hold it in place. The frame will not obstruct the picture area.

With Polacolor film: When the polarizing filter is used with Polacolor film, it may cause a slight shift in color balance. Use of a color compensating filter (a CC filter of strength 05 or 10 should be sufficient) can often improve the color. Make a test exposure, to find the filter that gives the best result.

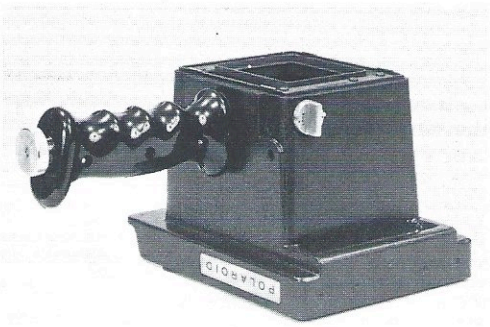
To allow for the light loss caused by the polarizing filter, appropriate shutter adjustments must be made. See the exposure guide on page 19.

A

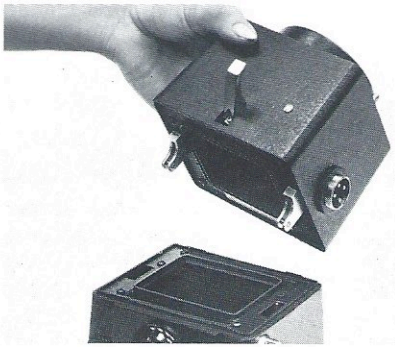
Assembling and using the 1:1 camera

This combination produces a lifesize image of the subject.

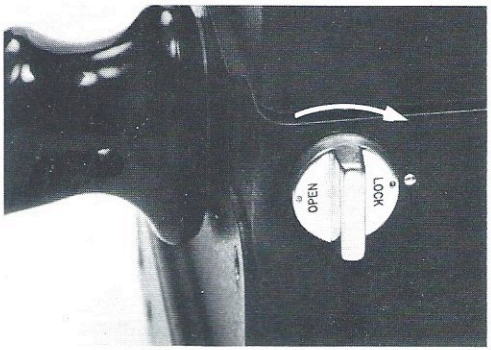
Start by attaching the hand grip (unless you plan to use a tripod). Then set the camera body on its back.



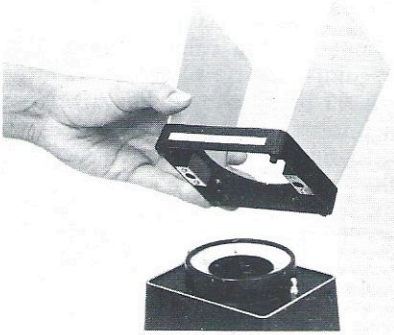
. Place the 3-in. lens unit on the camera body, engaging the ends of the latches, and press the lens unit into place.



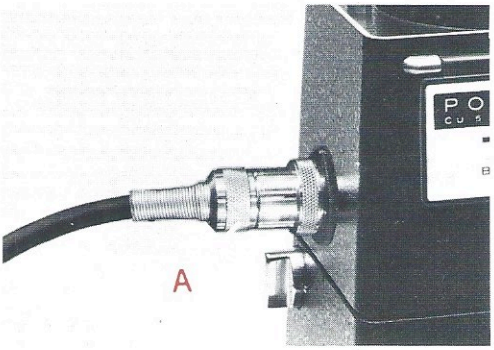
Turn the lock knob to bring LOCK opposite the mark; turn it as far as it will go; you will feel a definite click as it goes the last distance. Check that the lens unit is firmly attached. (To disassemble, turn the lock knob to OPEN position, lift the lens unit straight up.)



Place the 1:1 frame over the front of the lens unit and press it down onto the mounting posts; it will snap into place. (First insert the polarizing filter if it is needed. Be sure to fit the key on the filter into the slot on the frame.)

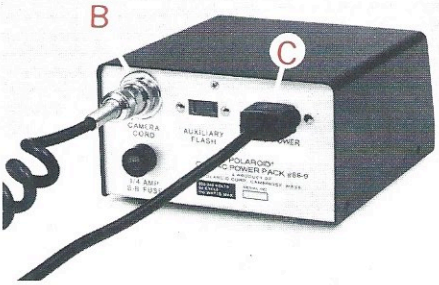


Plug the camera cord (A) to the outlet on the side of the lens unit.



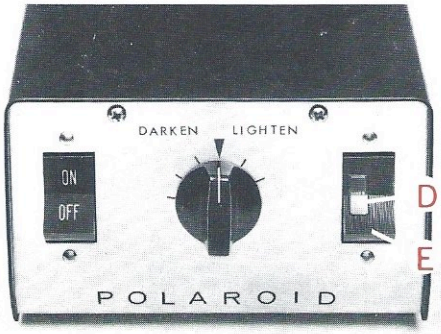
Plug the other end of the cord to its labeled outlet on the power pack (B). Both ends of the cord are keyed to prevent incorrect alignment.

Connect the AC line cord (C) to the AC POWER position on the rear of the power pack; note that the prongs are arranged so it can be connected in only one way. Plug the other end into the AC outlet.

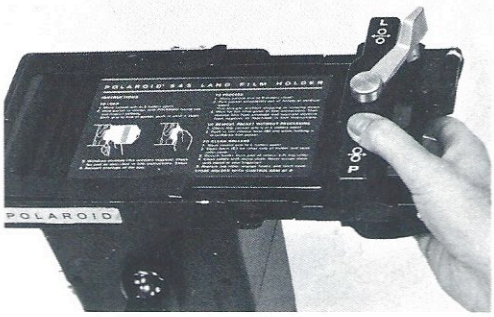


Press the ON side of the ON-OFF switch. Turn the L/D control to the Normal position, as shown. This will give you well exposed prints in most conditions. Exception: You may want to adjust the L/D control to get a lighter or darker print. See page 7.

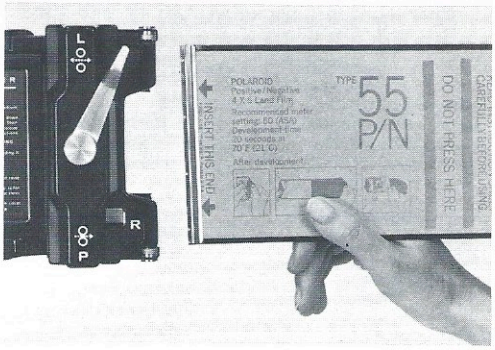
After a few seconds the ready light (D) should go on. Test the system by pressing the TEST switch (E); the ring light should flash. The power pack recharges fully in a few seconds.



Slide the 4 x 5 Film Holder #545 into the back of the camera body.

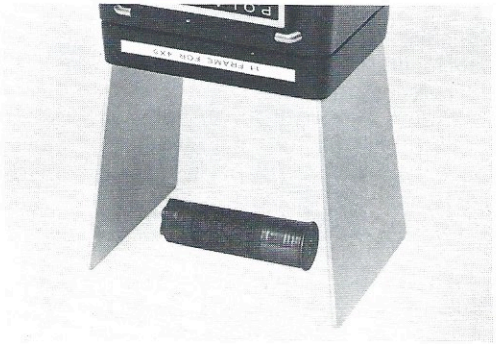


Insert a 4 x 5 film packet into the holder and withdraw the envelope, as described in the film holder instructions. Set the lens aperture according to instructions in the exposure guide, page 19.



Center the subject within the 1:1 frame. The front edge of the frame should be aligned with the most important part of the subject to assure sharp focus.

Squeeze the shutter trigger. The ring light will flash. Then develop the picture as described in the film holder instructions.



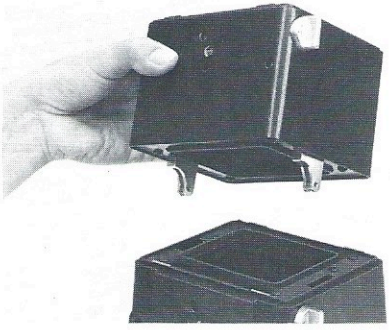
Assembling and using the 2:1 camera

This combination produces a 2X life-size image of the subject.

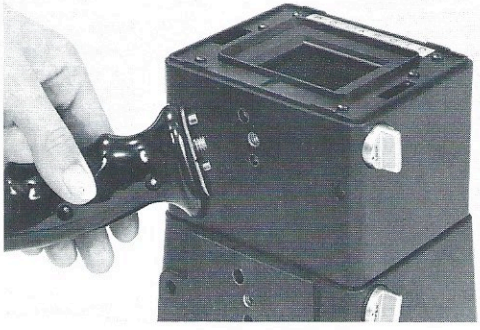
Set the camera body on its back, but do not attach the hand grip to it.

Make sure that the lock knob on the Ratio Multiplier is in the OPEN position. Then place the Ratio Multiplier on the camera body, engaging the ends of the latches, and press it into place.

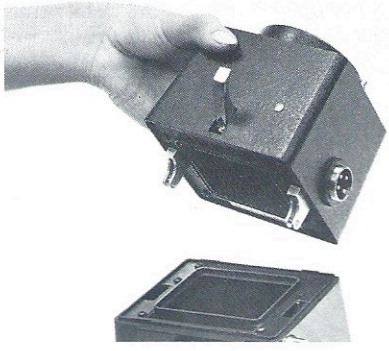
Lock the Ratio Multiplier to the camera body by turning the lock knob, as shown on page 10.



Attach the hand grip to the Ratio Multiplier. (If you plan to use a tripod, screw it into the Ratio Multiplier tripod socket after the camera is fully assembled.)

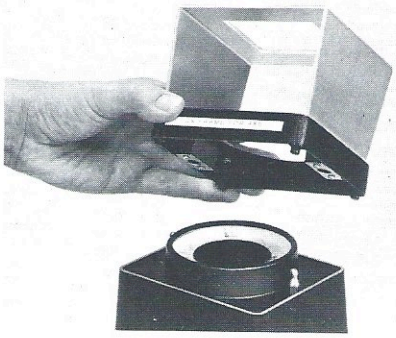


Place the 3-in. lens unit on the Ratio Multiplier, engaging the ends of the latches, and press the unit into place. Lock the lens unit to the Ratio Multiplier by turning the lock knob (page 10).



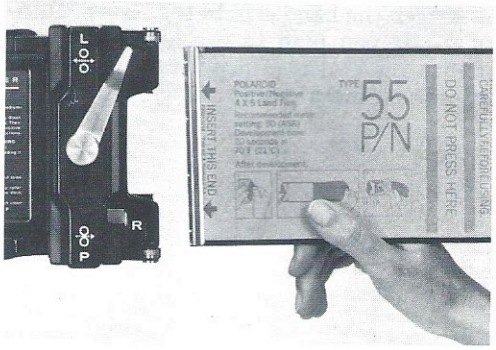
Place the 2:1 frame over the front of the lens unit and press it down onto the mounting posts; it will snap into place. (First insert the polarizing filter if it is needed.)

Connect the power pack to the AC supply and to the camera (see page 11)



Slide the 4 x 5 Film Holder #545 into the back of the camera body.

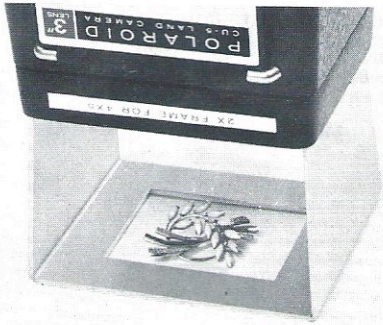
Insert a 4 x 5 film packet into the holder and withdraw the envelope, as described in the film holder instructions. Set the lens aperture according to instructions in the exposure guide, page 19.



Center the subject within the 2:1 frame. To assure critical focus, align the most important part of the subject in the plane of the front end of the frame.

If the subject has considerable depth, use the technique shown on page 26.

Squeeze the shutter trigger. The ring light will flash. Then develop the picture as described in the film holder instructions.

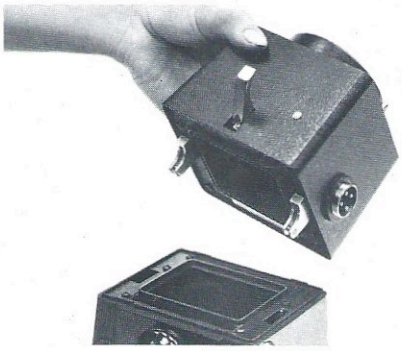


Assembling and using the ½:1 camera

This combination produces a ½ life size image of the subject.

Start by attaching the hand grip (unless you plan to use a tripod). Then set the camera body on its back.

Place the 5-in. lens unit on the camera body, engaging the ends of the latches, and press the unit into place. Lock the lens unit to the camera body by turning the lock knob, as shown on page 10.

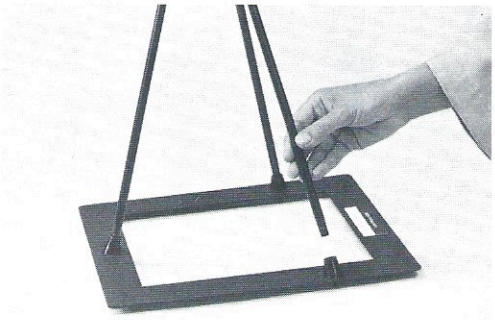


Hold the supplementary lens with the arrow pointing away from the camera body. Seat the lens in the center of the ring light. Insert the filter clip to retain it. Hold the clip by the metal tabs and press lightly until the ring is closed; then release the tabs. (If the polarizer is to be used, insert that in place of the filter clip.)

The framing device for the ½:1 camera is made up of an accessory mount, a frame, and three legs. Assemble the parts as follows.

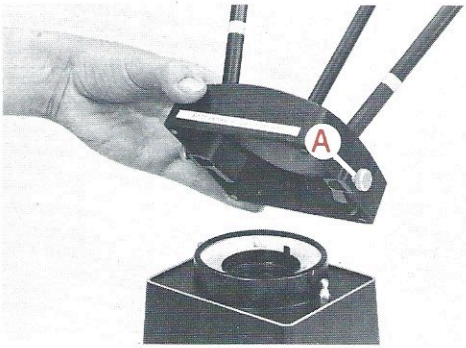
Screw the threaded end of each leg into one of the three holes on the curved surface of the accessory mount.

Place the frame on a flat surface and insert the legs into the three plastic sockets on the frame, orienting the mount so its sides are parallel with those of the frame.

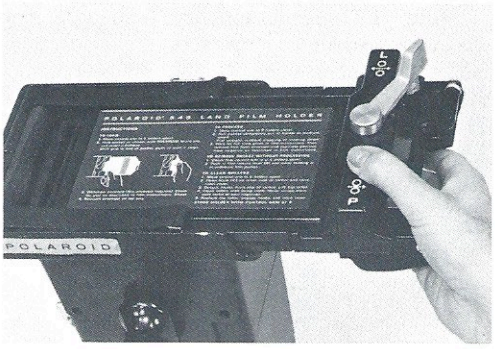


Snap the assembled framing kit onto the 5-in. lens unit of the camera body by pressing it over the two mounting posts on the front of the lens unit. Tighten the holding screws (A).

Connect the power pack to the AC supply and to the camera (see page 11)

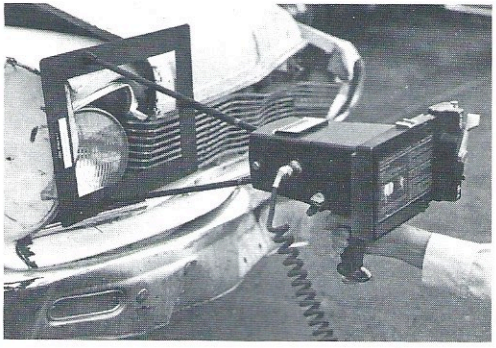


Slide the 4 x 5 Film Holder #545 into the back of the camera body. Insert a 4 x 5 film packet into the holder as described in the film holder instructions. Set the lens aperture according to instructions in the exposure guide, page 19.



Center the subject within the frame. To photograph an object or part of an object in an inaccessible location where the frame will not easily fit, remove the frame and use only the legs as a distance guide. You will have to estimate the field size.

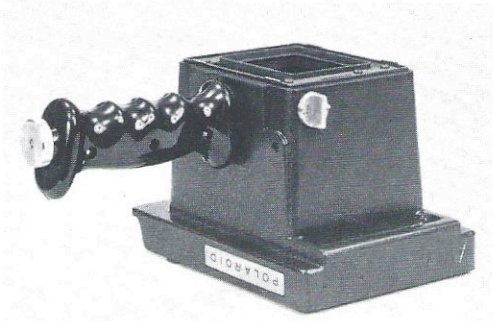
Squeeze the trigger. The ring light will flash. Then develop the picture as described in the film holder instructions.



Assembling and using the ¼:1 camera

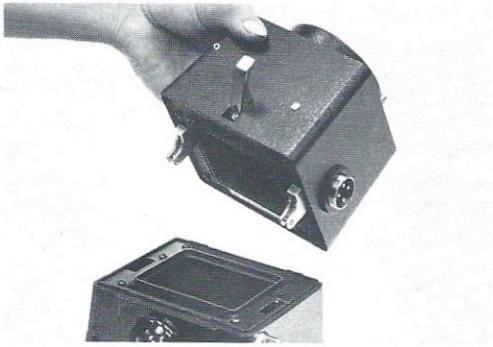
This combination produces a ¼ lifesize image of the subject.

Start by attaching the hand grip (unless you plan to use a tripod). Then set the camera body on its back.



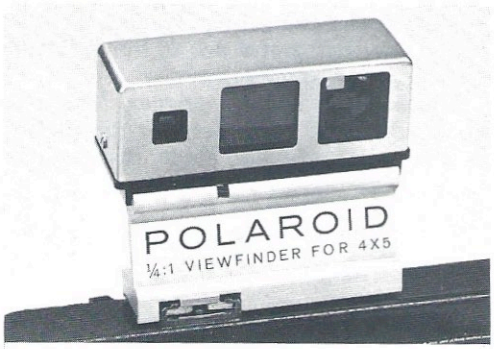
Place the 5-in. lens unit on the camera body, engaging the ends of the latches, and press the unit into place. Lock the lens unit to the camera body by turning the lock knob as shown on page 10.

Note: Please read the section concerning use of the polarizing filter with the ¼:1 camera, on page 9.

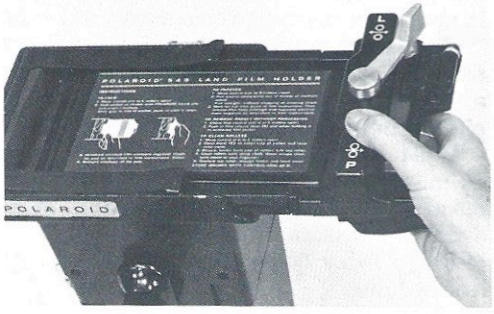


Hold the ¼:1 viewfinder with the label toward the front of the camera and slide it into the accessory shoe on top of the camera, starting from the rear.

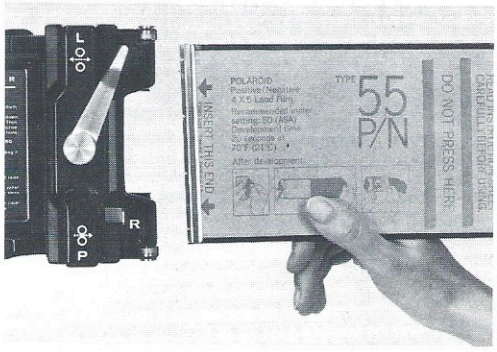
Connect the power pack to the AC supply and to the camera (see page 11).



Slide the 4 x 5 Film Holder #545 into the back of the camera body.



Insert a 4 x 5 film packet into the holder and withdraw the envelope, as described in the film holder instructions. Set the lens aperture according to instructions in the exposure guide, page 19.



The ¼:1 viewfinder is designed to show the area included in the picture when the subject is 25 in. (63.5 cm.) from the lens. Combined with the viewfinder is a fixed distance rangefinder that indicates when the subject is 25 in. from the lens.

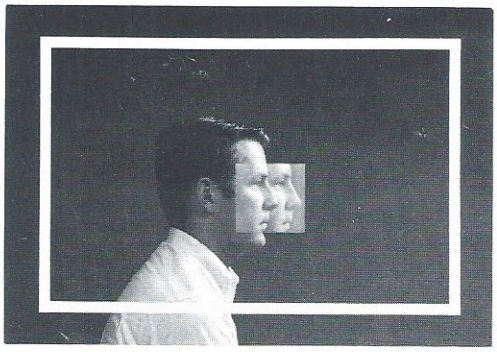
To use the finder, first position the camera about 3 ft. (91.5 cm.) from the subject and look through the rear window of the finder.

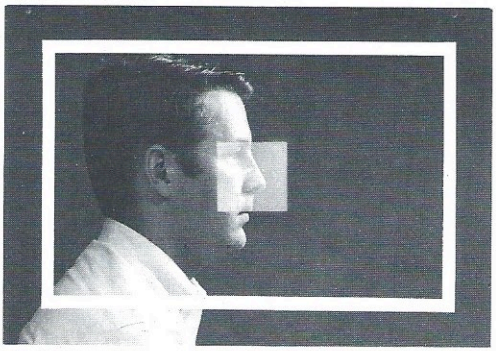
In the center of the field of view is a bright spot and in that bright spot you will see a double image of your subject (picture 2). Now move the camera slowly toward the subject — the images will come together as you do so.

When the two images become a single sharp one (picture 3) the lens will be approximately 25 in. from the subject and in sharp focus for that distance.

Now center the subject inside the white frame line. Be careful not to move farther from or closer to the subject.

Squeeze the shutter trigger. The ring light will flash. Then develop the picture as described in the film holder instructions.





Important

The lens will not always be **exactly** 25 in. from the subject each time the viewer judges that he sees a single image in the finder. Therefore, there may be differences in the size of the image on successive prints.

When extreme accuracy of image size is required, the camera should be placed on a tripod and the lens-to-subject distance should be measured with a ruler or tape.

When the lens is in focus for a point 25 in. distant, it will also include in sharp focus points somewhat closer and more distant than 25 in. The depth of this zone of sharp focus depends on the size of the lens opening.

Exposure guide for Polaroid CU-5 camera and Polaroid 4 x 5 Land films with electronic flash ring light

Note: Use only as a guide. Such variables as the age of the electronic flash tube, the age of the portable power pack battery, possible film speed fluctuations from batch to batch and the nature, texture and contrast of the subject will affect exposure to some extent. If the first exposure is not exactly right, it should generally be near enough to determine from it accurately the correction that will be needed.

How to use the tables:

To determine the appropriate exposure for a photograph, you must consider the operating conditions in five categories: power supply, film, reproduction scale, subject matter, and lighting intensity. Each condition within these categories is assigned a value in the tables on the following page. This makes it easy to calculate exposure. Just add the values associated with the operating conditions for a given photograph (Tables A to E), and convert the sum to a lens f-number setting (last table).

Example —	Table A	1
	Table B	4
	Table C	1
	Table D	2
	Table E	5
	Total	13

In the last table, the number 13 indicates a lens f-number setting of f/16.

If your total has a ½ in it, make a ½ f-number adjustment on the LIGHTEN/DARKEN control of the power pack, as described below. Alternatively, set the lens aperture halfway between f-numbers. Thus, for example, the number 13½ would indicate a setting between f/11 and f/16.

When using electronic flash, set the shutter speed at 1/60 sec.

TABLE A Power supply

Mains (AC) power pack — L/D set at normal	1
Battery power pack (new battery) — L/D set at normal	3

TABLE B Film type and film speed (ASA equivalent)

Film types	Speed	
51	320	4½
52	400	4
55P/N	50	7
57	3000	1
58 — without filtration	75	6½

TABLE C Reproduction scale

2x magnification	(3 in. lens unit)	1½
1:1 (life size)	(3 in. lens unit)	1
½:1 reduction	(5 in. lens unit)	1
¼:1 reduction	(5 in. lens unit)	2½

TABLE D Flat copy or solid object

Flat copy (photo, sketch, chart, etc.)	1
Solid object	2

TABLE E Polarizing filter

Using crossed polarizing filters	5
Without crossed polarizing filters*	1

*The crossed polarizing filters are almost always required with the ring light. Only in rare cases, where the texture or nature of the subject is such that it does not throw back a disturbing reflection of the ring light, can they be successfully omitted.

Recommended lens f-number settings

Total from A,B,C,D,E.	f-number setting
6	(3 in. lens unit*) f/45 + neutral density filter over lens
7	(3 in. lens unit*) f/45 + neutral density filter over lens
8	(5 in. lens unit*) f/45 + neutral density filter over lens
9	(5 in. lens unit*) f/45 + neutral density filter over lens
10	f/45 without neutral density filter over lens**
11	f/32
12	f/22
13	f/16
14	f/11
15	f/8
16	f/5.6
16½	f/4.5 — f/4.7

*Numbers 6 to 9: In most cases some LIGHTEN/DARKEN control adjustment will also be required. This must be based on an initial test exposure.
**When swinging the neutral density filter away from the lens, be sure that
1. the aperture indicator is not moved away from the f/45 setting
2. the filter is moved away far enough not to partly obstruct the lens.

The LIGHTEN/DARKEN control

A one-mark adjustment of the L/D control on either of the power packs is equivalent to a ½ f-number change in exposure. The L/D control can be used:

1. to make the needed fine adjustment, when the sum in the last table has a ½ in it. Thus, if the sum is 12½, the aperture can be set to f/22 and the L/D control can at the same time be set 1 mark toward LIGHTEN.

2. to make exposure corrections without altering the f-number setting.

3. to enable a smaller aperture (larger f-number) to be used, than is indicated in the last table. This can at times be useful in increasing depth of field or improving sharpness over the entire picture area. For example, if the f-number indicated by the last table is f/5.6, you can set the L/D control of the AC power pack 2 marks toward LIGHTEN and use an aperture setting of f/8 instead.

When photographing on Type 58 color film or on Type 55P/N film, and using the crossed polarizing filters, the mains (AC) power pack is recommended for all uses. The output of the portable pack will be insufficient.

To assure satisfactory sharpness over the entire picture area

When working at the ½:1 reproduction scale, it is best to work only within the range f/45 to f/11 and not at any larger lens aperture.

When working at the ¼:1 reproduction scale, it is best to work within the range f/45 to f/8 and not at any larger lens aperture.

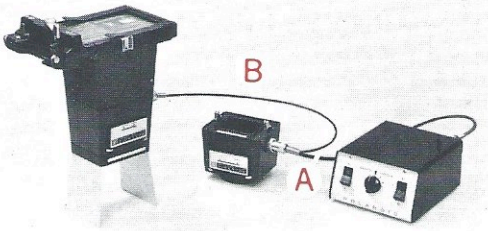
If necessary, set the L/D control of the power pack all the way toward LIGHTEN, to enable you to use the smallest possible lens aperture.

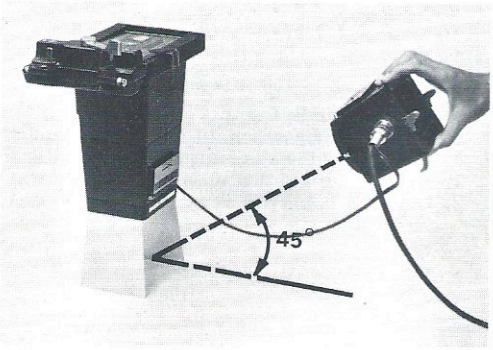
Side lighting, using the second lens unit as the light source

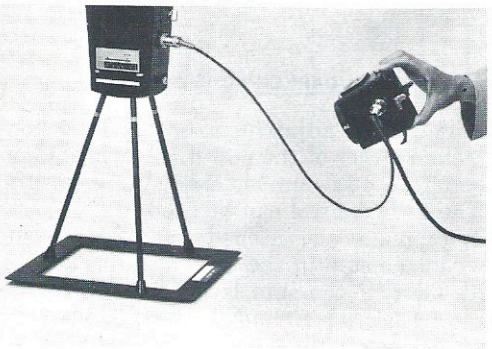
With some shiny surfaces, the reflection of the ring light will not be reduced sufficiently with the use of the crossed polarizers. In such cases, the only way to eliminate unwanted reflections is to light the original from the side, rather than from the lens position.

Side lighting can be achieved by using a second lens unit as the light source. Use the Y-Cord #88-19 to connect the power packs and the lens units so that the electronic ring light of one lens unit will flash when the shutter of the other lens is tripped.

Both cables of the Y-Cord should lead to the second lens unit, which is to provide the light, as shown. The power cord (A) should then be connected to the power pack and the synchronizing cord (B) should be connected to the lens unit on the camera.







How to direct the light at the subject: The light source should be pointed at the subject at an angle of about 45°, as shown. Be sure that no part of the camera is permitted to obstruct the path of the light to the subject. When working with the ½:1 assembly, direct the light in toward the subject from the side which has no legs attached to it, as shown. If your first picture shows an unwanted reflection, this will be due to reflection of the flash from some part on the edge of the camera.To remove the reflection, move the light source up or down a little for the next picture.

The correct lamp to subject distance is indicated in the table on the next page. It is important to keep the lamp sufficiently far from the subject. If it is brought too close, the result will be uneven illumination over the picture area.

Exposure with side lighting:

1. Be sure there is no polarizer on either of the lens units.

2. Assess the exposure from the exposure guide, in the normal way.

IMPORTANT: In Table E, use the number 5 (**not** 1).

3. Having found the exposure, modify the f-number as indicated below, and hold the light source at approximately the distance specified.

	f-number adjustment	approx. lamp-subject distance
2x magnification	close lens by 1 f-number setting	3x camera lens to subject distance
1:1 (life size)	close lens by 1 f-number setting	3x camera lens to subject distance
½:1 reduction	no adjustment	3x camera lens to subject distance
¼:1 reduction	no adjustment	2x camera lens to subject distance

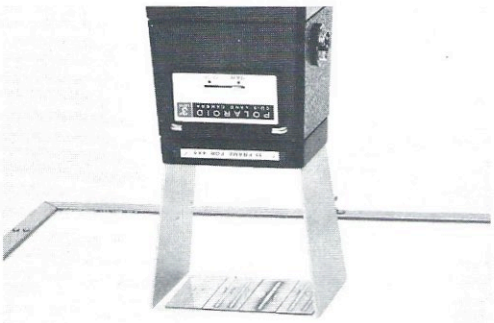
Exposure by light sources other than the ring light

Existing light: Pictures can be made using light sources other than the ring light: for example, daylight or tungsten lamps. Take a meter reading of the background to determine the appropriate lens aperture and shutter speed.

Sub-illumination: Certain transparent and semi-transparent subjects require sub-illumination for best rendition of detail. Among these are, for example, x-rays and stained electrophoresis discs. An x-ray viewer is the ideal light source. Turn the viewing box on and the power to the ring light off; do not connect the lens unit to the power pack. Exposure settings will vary with subject matter and characteristics of the light source.

If you are using sub-illumination to photograph gross specimens with color film, try a transparent colored background to outline the subject or emphasize color contrast. Place a sheet of colored cast acrylic over the light table. Use two light sources: the ring light on the lens unit to illuminate the subject from above and the viewing box light to sub-illuminate both subject and background.

Select a lens opening suitable for the illumination from the ring flash. Take a meter reading of the background to determine an appropriate shutter speed. The shutter speed will have to be quite slow (probably on the order of $\frac{1}{4}$ to $\frac{1}{8}$ sec.) to allow the light from beneath the colored background to be recorded on the film.

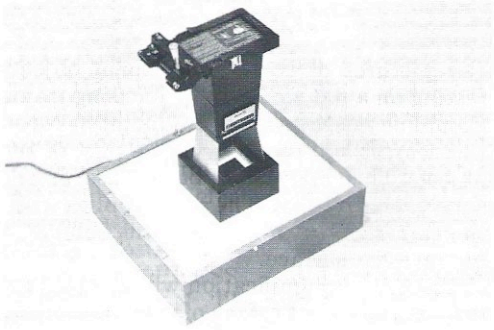


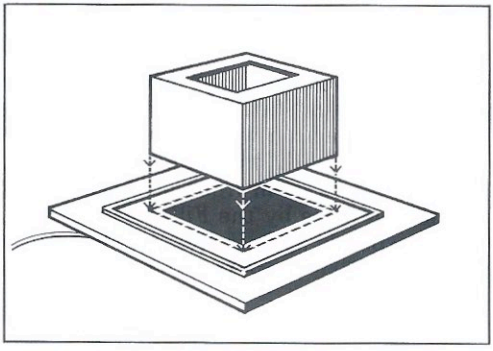
Dark-field illumination: Use this technique to photograph transparent or translucent micro-organisms immersed in a gel-type medium. Illumination from the light source falls on the subject obliquely from below and its various densities are well defined against a dark background.

Use a light box, such as an x-ray viewer, and a commercial dark-field illuminator. If you do not have the latter, you can make one quite easily from a box with a white interior. One of approximately 6 x 6 x 3 in. (15.2 x 15.2 x 7.6 cm.) is ideal for 3¼ x 4 in. (8.3 x 10.2 cm.) plates. For plates of other sizes, a box of different dimensions may be required. You will have to experiment to determine the best size. The lower end of the box should be completely open, and the upper end should have a rectangle cut out of it, just a little smaller than the plate to be photographed.

Cut a rectangle of opaque black paper approximately ½ in. (approx. 12 mm.) smaller than the inside of the lower end of the box and place it on the light surface of a device like an x-ray viewer. Place the open end of the box squarely over the paper so that there is ¼ in. (approx. 6 mm.) of space all the way around the black paper.

Position the plate over the open rectangle on the top of the box. Place the camera over it, and make the photograph, with the power to the ring flash off. Exposure settings will vary with the subject matter and the characteristics of the illuminator.





Fluorescence in ultraviolet radiation: Dyes that fluoresce under ultraviolet radiation produce colors that can be recorded with Polacolor film. Ultraviolet is a particularly good source of illumination for photographing thin-layer chromatograms.

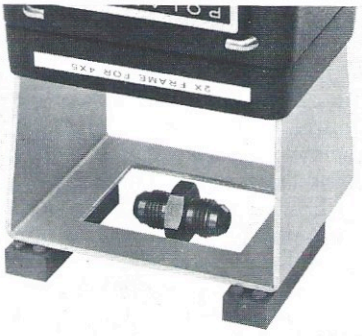
The photographic procedure must be accomplished in total darkness. Center the subject in a frame and place an ultraviolet light source to the side, so that light falls on the subject from an angle of 45° Or, place the ultraviolet light source below the subject.

Fit the camera lens with a Kodak Wratten 2A filter or equivalent, which transmits fluorescent light but not ultraviolet radiation.

Objects with depth

For pictures of three-dimensional objects resting on a flat surface, the focusing frame should be raised to about midpoint between the nearest and farthest visible part of the object. This makes for better use of the zone of sharp focus. The same applies when the camera is hand-held and the subject is not on a flat surface.

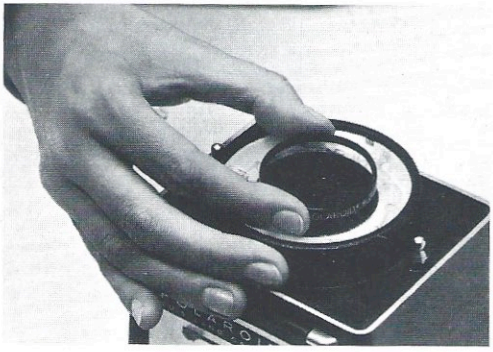
The exact magnification will be obtained only at the front surface of the appropriate focusing frame.



Filters

Color correction and contrast filters: The camera accepts Standard Series VI filters for color correction with color film or contrast control with black and white films.

These filters fit in front of the lens and are held in place by the Filter Clip #88-60, which expands against the housing of the lens unit. The method of installation is shown at the right.



Maintenance

The CU-5 camera is rugged and should be trouble free. The preventive maintenance described below will eliminate potential difficulties. If a serious malfunction occurs, the camera should be sent to the nearest Polaroid repair station.

Do not attempt to disassemble the camera or the power pack. Do not oil any part of the camera.

Lenses: To remove dust, hold the lens unit so the lens points down and use a camel hair brush. Breathe on the lens to dampen it and gently wipe it with clean, dry absorbent cotton wrapped around a soft object, such as the eraser on a pencil.

Clean the neutral density filter in the same way.

Never use silicone coated eyeglass tissues to clean the lens.

Shutter: The mechanism should be exercised at all speeds periodically (at least three times a year) to prevent it from sticking due to inactivity.

Power pack and ring light: Prolonged disuse may cause the capacitors in the power pack to deteriorate. The unit should be plugged in and flashed several times at least three times a year.

The power pack recharges fully in a few seconds. However, if the ring light is flashed repeatedly and continuously as soon as the READY light goes on, the ring light will become excessively hot and both it and the power pack may be damaged. Two or three quick flashes will not be harmful, but more extended rapid flashing should be avoided.

If the unit is overloaded by too rapid flashing, the fuse on the rear of the power pack may blow. This is a ½-ampere slow-blowing fuse in the #88-8 and a ¼-ampere slow-blowing fuse in the #88-9; replacement parts may be obtained at most electrical suppliers. If the fuse blows repeatedly without apparent cause, it is a sign of a malfunction in the system.

Warranty

Your Polaroid CU-5 Land Camera has been thoroughly tested and inspected before shipment. All parts are guaranteed against defects in materials for one full year from the date of delivery. During this period any such defects will be remedied by Polaroid without charge, except for transportation costs.

NO EXPRESS WARRANTIES, OTHER THAN THOSE EXPRESSLY SET FORTH ABOVE, AND NO IMPLIED WARRANTIES, WHETHER OF MERCHANTABILITY OR FITNESS FOR ANY PARTICULAR USE SHALL APPLY.

Servicing

Camera damaged by mishandling or worn from normal use will be promptly repaired at a reasonable charge. Please pack the camera carefully in a solid container, with plenty of padding, and ship it, prepaid and insured, to the nearest Polaroid repair station (see list of addresses on last page.)

CAUTION: The Polaroid Land picture process uses a caustic jelly which is safely packed inside sealed containers within the metal-plastic film pack. **If accidentally you should get some of this jelly on your skin, wipe if off immediately.** To avoid an alkali burn, wash the area with plenty of water as soon as possible. **It is particularly important to keep the jelly away from eyes and mouth.** Keep discarded materials out of reach of children and animals, and out of contact with clothing and furniture, as discarded materials still contain some jelly.

Polaroid offices and repair stations

CALIFORNIA
Polaroid Corp.
875 Stanton Road, Burlingame 94010
Polaroid Corp.
2040 East Maple Ave., El Segundo 90245

GEORGIA
Polaroid Corp.
3720 Browns Mill Road, S.E.
Atlanta 30315

ILLINOIS
Polaroid Corp.
2020 Swift Drive, Oak Brook 60521

MASSACHUSETTS
Polaroid Corp.
89 Second Avenue, Waltham 02154

NEW JERSEY
Polaroid Corp.
W-95 Century Road, Paramus 07652

OHIO
Polaroid Corp.
4640 Manufacturing Ave., Cleveland 44135

TEXAS
Polaroid Corp.
9029 Governors Row, Dallas 75247

AUSTRALIA
Polaroid Australia Pty. Ltd.
2 Small Street
Ultimo, N.S.W. 2007
Mailing address:
P.O. Box 335
Broadway, N.S.W. 2007

BELGIUM
Polaroid (Belgium) S.A.
12-16 rue de la Victoire
Brussels 6

CANADA
Polaroid Corp. of Canada, Ltd.
350 Carlingview Drive
Rexdale, Ontario

ENGLAND
Polaroid (U.K.) Ltd.
Office:
Rosanne House
Welwyn Garden City
Hertfordshire
Repairs:
Huggins Lane
Welham Green, near Hatfield
Hertfordshire

FRANCE
Polaroid (France) S.A.
57, rue de Villiers
92-Neuilly sur Seine

GERMANY
Polaroid GMBH
Königslacher Strasse 15-21
6 Frankfurt/Main-Niederrad 1

ITALY
Polaroid (Italia) S.p.A.
Viale Certosa 222
20156 Milan

JAPAN
Nippon Polaroid Kabushiki Kaisha
Mori Bldg. No. 6
32, Nishikubo Tomoe-cho
Shiba, Minato-ku
Tokyo

MEXICO
Repairs:
Michelmex S.A.*
Apartado Postal #6-952
Mexico 6 D.F.

THE NETHERLANDS
Polaroid (Europa) N.V.
Verkoopkantoor Nederland
Office:
Maassluisstraat 258
P.O. Box 9167
Amsterdam W. III
Repairs:
24 Markt
Enschede

PUERTO RICO
Polaroid of Puerto Rico, Inc.
P.O. Box 2032, Ceramica Annex
Carolina, Puerto Rico 00630

SOUTH AFRICA
Repairs:
Frank & Hirsch (Pty) Ltd.*
P.O. Box 1803
Bree & Nugget Streets
Johannesburg

SWEDEN
Polaroid AB
Box 20
S-127 21 Skärholmen

SWITZERLAND
Polaroid A.G.
Hardturmstrasse 175
Zurich 8037

*Authorized Repair Station

In addition to the repair stations listed here, there are approved repair stations in other countries. To locate the one closest to you, write to the nearest Polaroid office shown above.

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