



**PICTURE TAKING**  
*with your*  
 **$2\frac{1}{4} \times 3\frac{1}{4}$  Miniature**  
**SPEED GRAPHIC**



## YOUR MINIATURE SPEED GRAPHIC AND ITS USE

Your Miniature  $2\frac{1}{4} \times 3\frac{1}{4}$  Speed Graphic camera has been carefully designed and constructed of the best materials and has been fitted and scaled in our factory with a high grade photographic lens. This complete unit will give you long and satisfactory service, if used with reasonable care. The following pages contain instructions covering the proper method of operating the controls of the camera and lens.



FIGURE 1

When fitted with an internally-coupled range-finder and flash equipment, the Miniature 2 1/4 x 3 1/4 Speed Graphic camera is truly an all purpose camera —equal to every picture opportunity.

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## OPENING THE CAMERA

Open the camera by pressing the concealed spring W, Fig. 3, at the top; swing the bed down until the spring-actuated side arms lock the bed in extended position. **IMPORTANT.** Rack the sliding track back with the focusing pinion N, Fig. 3. Press the two rings CC, Fig. 3, of the front standard clamp together and draw the lens standard out to the "infinity stops" DD, Fig. 3, fastened on the bed track.

## FOCUSING

When the track is racked back and the front standard is drawn out to the infinity stops, the lens will be focused on infinity, as indicated by the symbol  $\infty$  on the focusing scale Fig. 2. This camera is fitted with a special Vernier type focusing scale consisting of two parts, one part on the camera bed and other on the sliding track. To focus the lens upon a subject at a given distance, turn focusing pinion N, Fig. 3, until the lines on both scales in back of the figures indicating that distance coincide. **EXAMPLE:** The scale shown in Fig. 2 is set for 15 feet.

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FIGURE 2

The lens of your camera has been supplied with a focusing scale calibrated especially for it. To use this scale with any other lens, even of the same make, speed and focal length, may result in out of focus pictures.

If the lens moves too easily tighten the set screw in the bed beside the right hand focusing knob.

### THE FOCUSING PANEL

The spring-actuated Focusing Panel L, Fig. 3, is provided with side shields and metal door, which can be released by pressing down on the small latch K, Fig. 6, directly beneath it. When raised, this door permits ground glass focusing and composing of the image produced by the lens. Note: Make sure that the focal plane shutter is set at O in window F, the lens cap is removed and the between-the-lens shutter, if any, is open. Accurate focus on the ground glass screen can be obtained by varying the position of the lens with the focusing pinion N.

The focusing panel in a "Graphic Back" recedes to permit the entrance of a Graphic Film Holder or Film Pack Adapter so that the film will lie on the focal plane where the image has been brought to focus. If the camera is fitted with a "Graflex Back," the separate accessory Graflex focusing panel is removed after focusing to permit the fitting of any of the Graflex film or plate attachments.

### RANGEFINDER

This camera, as illustrated, is equipped with a special Kalart internally-coupled rangefinder supplied as an accessory. To use this finder, look at the subject through the window in the back of the finder. You will see an image over the entire field, and in the center of this, a small circle with another image. This image will move up or down as the focusing knob N is turned. When the two images overlap exactly and become one, the lens will be focused on that subject.

This rangefinder will work over the entire focusing scale range on the camera—four feet to infinity—with lenses of 10.5 cm. to 127 mm. focal length.

The two scales mounted on the front and rear sides of the rangefinder housing facilitate the adjustment of the rangefinder to synchronize with the lenses of different focal lengths. Both scales are arbitrarily marked and have no definite meaning other than to indicate the point of adjustment of the rangefinder. The longer scale on the rear of the rangefinder, reading from 2 to 32, is adjustable for the lens setting at fifteen feet. Adjustment is made by loosening the center screw on the indicator slide. The shorter scale on the front side of the rangefinder, reading from 2 to 15, is used to adjust rangefinder at four feet as explained below.

Should you desire to use with the camera and rangefinder a lens other than that originally supplied and for which the rangefinder had been originally adjusted, proceed in the following order:

When the second lens and lensboard assembly has been installed in the front standard of the camera, rack the sliding track back as far as it will go. After loosening and removing the infinity stops (a small mark on the sliding track indicating the original position of the infinity stops will facilitate resetting the original lens to the proper position), slide the front standard out and focus a well-defined subject at least  $\frac{1}{2}$  mile distant on the ground glass focusing screen. Check the sharpness of the image with a good magnifying lens. Reset the infinity stops on the sliding track. Fit to the camera bed the new focusing scale, supplied with the second lens, with the infinity markings correctly aligned. Position the camera four feet from some clearly defined subject as measured from the focal plane (back) of the camera. Again using the ground glass focusing screen, focus the lens on that subject by turning knob N.

Before changing the positions of the slides on the rangefinder, note down the original positions of the pointers of the scales so that they can be reset easily when the original lens is refitted to the camera. To synchronize the new lens with the rangefinder, move the slide on the rear of the rangefinder until

the images of the subject fifteen feet distant become one in the finder window. Move front slide to adjust image at four feet. If the new lens is of shorter focal length than the previous one, move the rear slide upward. If it is longer in focal length, move the slide downward to a greater reading. When the two images are aligned, lock the slide in position.

Return the lens to the infinity position and check the rangefinder image. If the images do not entirely coincide, adjust the rangefinder slide stop Q, Fig. 3, and reset the rangefinder for four feet as outlined above. Should the rangefinder be out of adjustment in any position between four feet and infinity, as checked against the focusing scale and a subject at a measured distance, this error can be corrected by moving the slide on the front of the rangefinder. CAUTION: Under no condition should the center screw on the front slide be disturbed.

#### RISING FRONT

The adjustable rising front can be raised and lowered after the knurled knobs HH, Fig. 3, on either side of the front standard have been loosened. Raising or lowering the lens will permit reproducing vertical parallel lines as such on the film. For instance, when photographing a subject higher than

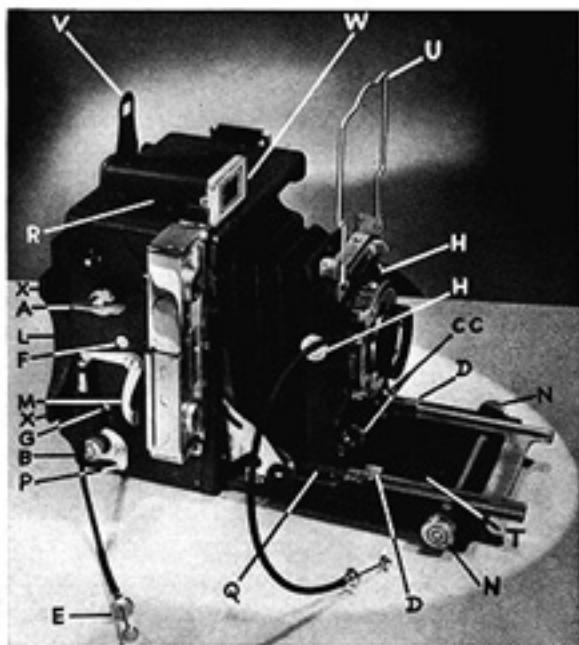


FIGURE 3

the camera, keep the back of the camera parallel to the subject and bring the subject into view on the ground glass by raising the lens. To recenter the rising front slide it up or down until the top of the sliding section is even with the top of the metal guides (See Fig. 3). Always be sure to recenter and lock in position by tightening knobs HH.

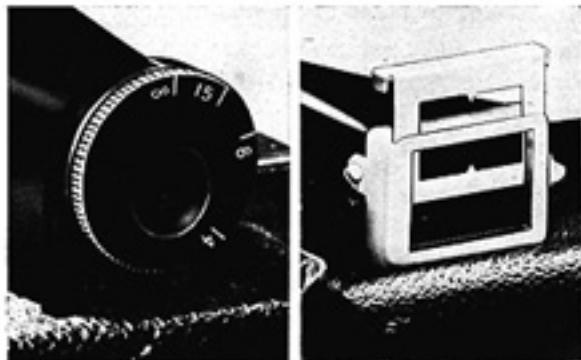


FIGURE 4  
THE VIEWFINDERS

The tubular viewfinder, R, Fig. 3, is supplied with an adjustment for parallax and with interchangeable masks.

The small dial at the back of the finder, Fig. 4, has four markings which can be aligned with the white line at the top of the finder. Notches assist in locating the four points so that subjects at distances of 4', 8', 15' and  $\infty$  (infinity), respectively, will be centered by the camera lens on the ground glass when the subject is centered in the finder. When using the finder set the dial to the figure which most closely corresponds to the distance to the subject.

The front of the finder has provision for accepting different masks indicating the field included by lenses of different focal lengths. The standard mask, Fig. 4, has been made to indicate as closely as possible the field included by average focal length

lenses. The distance at which the finder is placed from the eye, and whether or not the operator wears glasses, will to a slight degree affect the amount of subject matter seen through the finder. Therefore, you may find that it is advisable to set up the camera on a tripod so that you can view the ground glass focusing screen and sight through the finder—and thus determine how closely you can work to the exact margins of the finder. Masks for other lenses can be obtained on special order.

The wire frame finder U, Fig. 3, attached to the front standard, and the rear peep sight V, attached to the camera box, can be raised and used as a view-finder, permitting you to observe the picture full size from an eye level position. In use, place the eye as close as possible to the peep sight, so that the area being viewed will be delineated by the marginal limits of both the peep sight and the frame finder. This finder is especially suited for following moving subjects.

#### DOUBLE-EXTENSION BELLOWS

To utilize the entire bellows extension of the camera for extreme close up photography such as copying a picture, without moving the infinity stops: Rack the sliding bed forward about one inch, slip the front standard off the rear end of the track, rack the track all the way back, lift the front standard forward and refit to the front of the sliding track.

#### THE GRAFLEX FOCAL-PLANE SHUTTER

The efficient Graflex Focal-Plane Shutter, built into the back of this camera, is operated by the controls on the side of the camera box. See Fig. 3 for the location of the operating controls referred to below.

The shutter speed table T, attached to the camera bed gives approximate shutter speeds in fractional parts of seconds obtainable with the tension numbers 1 to 6 and the various curtain apertures O (open), A, B, C and D.

Tension on the curtain is regulated by turning the knurled knob B to the left until the tension number indicated on the shutter speed table for a certain exposure appears at G. The numbers run from 1 to 6—the highest number indicating the greatest speed at any given curtain aperture. To decrease the speed of the shutter, release tension on shutter curtain by pushing escapement P back and forth until the required lower tension number is registered at G.

**CAUTION.** The slide of the Film Accessory MUST BE IN POSITION WHEN THE FOCAL PLANE SHUTTER IS SET; otherwise injurious fogging of the film will result.

The shutter curtain is set by turning Key A to the left until the curtain aperture indicated on the shutter speed table for a specific exposure is registered at F. If the curtain is already set so that any one of the apertures A, B, C or D appears at F, release the curtain by pressing shutter release M or wind the key A until the proper aperture is in position. EXAMPLE—For instantaneous exposure of 1/280 use curtain aperture C and tension number 3. To set the shutter for 1/400, wind the tension to No. 6.

**CAUTION.** When using the focal plane shutter be sure that the between-the-lens shutter is set at "Time" and open. See page 14. Conversely, be sure that the focal-plane shutter is set at 0 (full opening) when using the between-the-lens shutter.

When the shutter has been set in accordance with the above directions load the camera as directed on page 20. Withdraw the slide of the holder and make the exposure by carefully drawing back on the shutter release M, or pressing the plunger E of the cable release.

After making the exposure replace the dark slide of the holder with the blackened side of the handle on the outside to signify that this film has been exposed. Remove the holder from the camera and place it in a carrying case or other container out of strong light. Remove the holder or adapter from the camera when not in use.

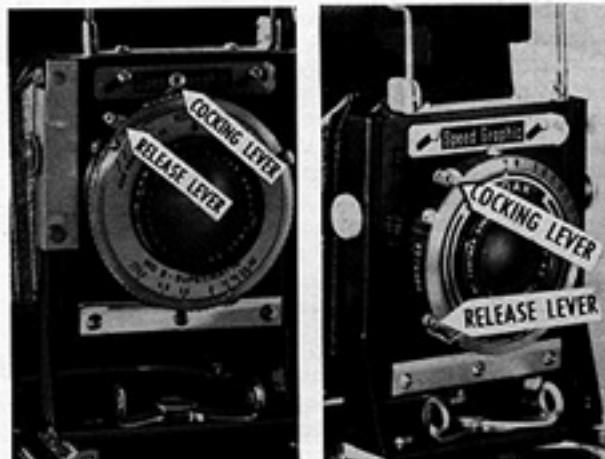


FIGURE 5

To make time exposures, wind or release the curtain until T (Time), appears at F. Set the tension at No. 1; rest the camera upon a rigid support; open the shutter with one pressure upon release M and terminate the exposure by a second pressure.

The Speed Graphic Cameras are usually fitted with a supplementary front shutter built around the lens, containing the iris diaphragm by which you set the stop or aperture. Such shutters also contain means for producing speeds from one second to 1/250 or 1/400, Bulb and Time exposures, and a delayed-action mechanism ("self-timer") which will automatically trip the shutter after a delay of 10 or 15 seconds.

The exposure speed of most between-the-lens shutters is set by rotating the knurled rim surround-

ing the shutter until the correct speed marking is aligned with the pointer for the scale concerned. Cocking must precede any instantaneous exposure, and is done by moving the cocking lever clockwise until it catches. After cocking, the shutter is released by moving the release lever counter-clockwise or pressing the cable release threaded into the cable-release socket. When a shutter is set for T the first pressure on the release opens the shutter, the second closes it. When set at B a pressure on the release will open the shutter leaves, and relieving this pressure will permit the leaves to close.

**THE SUPERMATIC SHUTTER.** Note the black speed scale and pointer for fast hand-held exposures, and the red scale and pointer for slow exposures. Cock this shutter for Time and Bulb as well as all instantaneous exposures, and set the speed either before or after cocking. *Do not remove the lens cells without first obtaining special instructions.* The shutter is prevented from rotating by a pin fitted into the lensboard. The delayed-action mechanism has its own cocking lever (to the right as you face the shutter), which is moved clockwise for cocking this mechanism after the shutter itself has been cocked, and is released by the regular release lever.

**THE COMPUR SHUTTER.** Never cock this shutter when it is set for Time or Bulb, nor change the speed setting after it has been cocked. To set the delayed-action mechanism, move back the delayed-action button *after* the shutter has been set and then move the cocking lever all the way to the right. The regular release is used for delayed-action exposures. Do not attempt to use delayed-action with the highest shutter speed, nor with T or B.

## FLASH SYNCHRONIZATION

At all shutter speeds from 1/60 to 1/1000 the focal-plane shutter of your camera may be used for synchronization with the recommended flash lamps.

All flash lamps can be used at T setting of the shutter, but none whatever can be used with curtain aperture A, which appears in red.

All flash lamps to be satisfactorily used should have a useful flash duration of at least 30 milliseconds. The Nos. 30 and 31 Photoflash and the Nos. 2 and 2A Superflash lamps meet this requirement.

For reasons of economy the smaller of the above flash lamps may be preferred. These lamps may be used for most satisfactory results from speeds beginning with 1/100 and faster when the camera is held in its normal picture taking position.

When vertical pictures are to be made or if synchronized speeds not falling within the above mentioned range are desired, the increased illumination as furnished over a longer period of time by the Nos. 31 and 2A flash lamps is recommended.

For information regarding other flash lamps and their possible use with your camera, please communicate with the Folmer Graflex Corporation.

Attach the battery case and reflector to the camera according to the instructions accompanying each unit. Insert the connecting cord Y, Fig. 6, into the socket Z in the back of the camera. Insert the phone

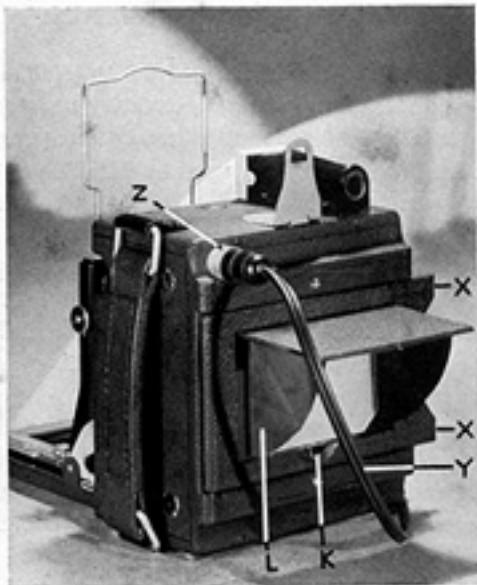


FIGURE 6

tips of the connecting cord into the proper place in the battery case. See instructions accompanying it. The flash lamp will be fired as the focal plane shutter is released in the normal manner. **Caution:** To prevent accidental firing of the flash lamp, insert it in the battery case socket *after* the shutter has been set to the desired speed.

For proper exposures with flash lamps used with focal-plane shutter, see table on page 25.

The compact 2-cell battery cases which will probably be widely used with the focal-plane shutter can be used satisfactorily with the Compur shutter. However for extended use with the Compur shutter, the exacting user may prefer the larger 3-cell battery case. Refer to flash lamp charts for exposure.

#### THE LENS AND EXPOSURE

Each lens is supplied with iris diaphragm which is located between the lens cells. The leaves of the iris diaphragm can be moved to form circular openings of different diameters by moving lever S1, Fig. 5, if the lens is in a shutter; or by the movable ring on the lens barrel if the lens is mounted in a barrel. The iris diaphragm is similar in name, appearance and function to the iris of the eye and it has another function in that as the leaves are closed, the depth of field increases. More information on this subject appears in the booklet, *Graflex and Graphic Focal-Plane Shutter Photography*. The settings of the diaphragm are according to the "f/" system in which each larger opening, designated by the next smaller figure, represents an increase of 100% in area or light passing ability. For instance,  $f/5.6$  is twice as fast as  $f/8$ , and  $f/11$  half as fast as  $f/8$ . The relative shutter speeds necessary to produce the same exposures are indicated at the top of the *Graflex EXPOSURE TABLE* at the back of this book. This table has been corrected for Verichrome film. When using the Eastman Super-XX and other films of similar speeds, use  $f/11$  with the indicated shutter speeds.

The shutter of the camera itself is described on page 11. The Compur shutter described on page 14 may be used if its speeds correspond with the focal-plane shutter speeds recommended for a given exposure. The shutter controls the length of exposure or the length of time the light passed by the lens is permitted to strike the film. It will be seen that there are several combinations of diaphragm openings and shutter speeds which will permit the same amount of light to reach the film, producing the same exposure. For instance, if a combination of  $f/8$  and  $1/320$  (see T, in Fig. 3) is recommended, the same exposure will be produced on the film by the combination of  $f/5.6$  and  $1/600$  or  $f/11$  and  $1/150$ . As you will notice, if the speed of the shutter is increased by two times, it is necessary to double the size of the diaphragm. Other combinations may also be worked out as indicated below.

After the proper shutter speed to use with  $f/8$  has been determined from the Graflex EXPOSURE TABLE FOR VIEWS page 28, the following table can be used to determine the proper shutter speed to use with any other diaphragm (or "Stop") opening so that the film will receive the same exposure.

To determine the shutter speed for a given diaphragm opening, divide shutter speed recommended for  $f/8$  by the figure below the lens diaphragm opening you wish to use. (See above paragraphs.)

$f/...$	3.5	4	4.5	5.6	6.3	8	11	16	22	32
factor	6	4	3	2	1.5	1	$\frac{1}{2}$	$\frac{1}{4}$	$\frac{1}{8}$	$\frac{1}{16}$

To determine the proper diaphragm opening when the shutter speed has been taken from the TABLE FOR STOPPING MOTION, page 29, divide the speed indicated there by the shutter speed recommended for that subject matter on the Graflex EXPOSURE TABLE FOR VIEWS and use from the table above the diaphragm opening over the factor or figure thus obtained. Example: Let us photograph a boy who is riding a bicycle twenty miles an hour down a city street at noon on a bright day in June. We will attempt to make the picture when the boy is at a distance of 50 feet from the camera. According to the TABLE FOR STOPPING MOTION, the shutter speed of  $1/240$  must be used. From the Graflex EXPOSURE TABLE FOR VIEWS we find that a subject on a city street requires an exposure such as produced by the combination  $1/125$  at  $f/8$ . To photograph the boy without showing movement of the subject, divide  $1/240$  by  $1/125$  securing a factor of 2. According to the above table this calls for a diaphragm opening of  $f/5.6$  in order to make a clear and properly exposed picture of the boy.

### THE EXPOSURE GUIDE

It is difficult, if not impossible, to give specific directions for setting up the camera to make every type of picture, and hence the only exposure information given herewith applies to out-of-door subjects. We strongly recommend that you carefully follow the EXPOSURE TABLE FOR VIEWS at the back

of this book (unless you are using a dependable exposure meter) using the recommended film until you have become well acquainted with the operation of the camera and some of its many possibilities. A small card on which to jot down a word or two about each subject with prevailing light conditions, shutter speed and lens diaphragm opening will be of great assistance in evaluating the resulting negatives. It will also assist in broadening out with the use of other films, diaphragm openings and shutter speeds.

### LOADING HOLDERS

If using sheet film holders, load them in a photographic darkroom. Lay the holders down on a clean work-bench and draw the slides out of the holders, laying them to one side well within reach. As the box of film is opened, note that each sheet is interleaved with a sheet of black paper. On one side of the film are identification notches. When the film is held between the thumb and fingers by the opposite edges so that the notches are along the top edge near the right side, the emulsion will face upward. Open the wood flap at the end of the holder and slide the film into it, making sure that the edges are beneath the side rails. The film should be pushed home so that it is under the rail on the other end of the holder. Close the wood flap and replace the slide in the holder with the raised dots on the outside. Work

in total darkness, especially if panchromatic film is used. If you are unable to secure an old film to practice with in daylight, use up a sheet of new film.

Plate holders are loaded in much the same fashion as film holders, except that there are no side rails and the end of the plate is slid in under a projection at the other end of the holder. The plate is held in place as the wood flap is closed and slide inserted.

Film packs can be loaded in daylight but strong light should be avoided. When unwrapping the pack and loading it grasp it only by the sides since the films will be fogged if the protective black paper is depressed. Release both catches and swing the back of the adapter open. Carefully insert the closed end of the film pack under the light break at the hinge and with the paper tabs held straight out close the back making sure that both catches lock. Remove the black safety paper before making the first exposure.

### FITTING HOLDERS TO CAMERAS

When fitting accessories such as the Graphic holder into the "Graphic back," grasp the holder with the slide end in the palm of the hand and with the fingers placed along the edges, draw back the ears XX, Fig. 3, on the focusing panel L, Fig. 3, with the end of the holder and push it into the camera until the raised edge of the holder drops into the recess in the camera back.

Graflex Film and Plate Holders and Magazines are loaded in the same manner as the Graphic accessories. Instructions for the magazines accompany each. Like the accessory Graflex Focusing Panel, this type of film and plate accessory is held in place on the camera by the retaining strip at the bottom and the slide lock on top. When fitting these accessories to the camera make sure that the slide lock is pushed down as far as possible.

### HOLDING THE CAMERA

When holding your Speed Graphic camera slide the left hand between the handle and the camera box so that the ends of the fingers will grip the side of the camera box. This is the method also employed when the camera is tipped on the side for the making of a vertical picture. You may work out some other method which will be convenient to you but be sure to brace your arms against the body to avoid camera movement.

When using the camera on a tripod for the making of a vertical picture allow the leather handle to swing free. The handle can be released by depressing the spring on the top of the camera and slipping the handle lug out of its normal position.

### CLOSING THE CAMERA

Before closing the camera, center the rising front (See page 8). Rack the sliding track back fully. Press

the two rings CC together and slide the front standard into the camera box as far as it will go. Press down on both front bed side arms, releasing the lock, and swing the bed up until it locks in position.

### TELEPHOTO LENSES

Accessory telephoto lenses for your camera may be in the form of attachments or complete photographic objectives. If the former, complete instructions will accompany them. If the latter, use them in the same manner as you use the lens now fitted to the camera for they are supplied with standard diaphragm openings which are just as fast as the same openings on the standard lens. Telephoto lenses are of long focal-length, but require little bellows extension because of their special design. They have a narrow field of view, but produce larger images in the picture, making them especially fine for scenic, sport and portrait photography.

### CARE OF THE CAMERA

Speed Graphic cameras are sturdily constructed but, like any piece of precision equipment, should be handled with consideration. To preserve the neat appearance of your camera the leather may be cleaned with an occasional application of saddle soap.

The life of the focal plane-shutter will be greatly lengthened if all tension is released when the camera

RACK THE TRA  
FLUSH WITH FB  
OF COVER

is not in use. This tension is released by operating levers M and P until the curtain and tension is run down.

For best results the lens of your camera should be regularly cleaned. To clean, use a well washed linen handkerchief only. First, blow off the dust, then wipe; to remove fingermarks or moisture, breathe upon the surface, and wipe; always wipe lightly and with a circular movement. A camel's hair brush is convenient to remove dust before cleaning; and afterward to remove lint. Special lens-cleaning fluid may be used, but never use acids or common solvents. If the inner surfaces require cleaning, the utmost care should be observed to remove the lens elements one by one, clean and replace before others are taken out.

Lensboards may be removed by pushing the slide lock to the right, which will permit the top of the lensboard to be drawn forward. When replacing, fit the bevelled edge to the bottom of the opening in the front standard. If the camera is fitted with a Telephoto or especially large lens, it may be necessary to unscrew the lens from the lensboard before this can be removed.

To prevent damage to the focal plane shutter when accessories are being attached to the camera box, use only very short screws; or, use them only where you can see that there is nothing on the inside of the box that will be damaged by them.

#### Exposure Table for Using Flash Lamps with the Focal-Plane Shutter

The following table giving approximate settings is based on the use of Eastman Super-XX or films of similar speed with the recommended flash lamps.

Distance	Shutter Speeds		
	1/100	1/280	1/700
6 feet	f/32	f/22	f/11
10 feet	f/22	f/16	f/8
15 feet	f/16	f/11	f/5.6
20 feet	f/11	f/8	f/4

For shutter speeds faster or slower than those indicated use larger or smaller stop openings.

For reasons of economy, the smaller recommended flash lamps may be preferred. These lamps may be used for most satisfactory results from speeds beginning with 1/100 and faster when the camera is held in its normal picture taking position.

When vertical pictures are to be made or if synchronized speeds not falling within the above mentioned range are desired, the increased illumination as furnished over a longer period of time by the Nos. 31 and 2A flash lamps is recommended.

## DEPTH OF FIELD\*

*Depth of Field* is the distance from the nearest to the farthest subjects that appear sharp when the lens is focused on any given point.

This depth of field depends on the focal length of the lens and the size of the stop used. The depth of field increases as the focal length of the lens and the diameter of the stop decrease.

The nearer the point focused upon the greater the loss in depth of field, unless the lens stop is decreased in diameter sufficiently to give the required sharpness to objects in foreground and background.

It is sometimes desirable to have such depth of field that practically all of the picture from foreground to distance will be fairly sharp. To secure such general sharpness the stop used should not be larger than  $f/8$  and the lens should be focused on an object at the hyperfocal distance rather than at 100 feet or at infinity.

The *hyperfocal distance* is the nearest point to the camera that has satisfactory sharpness when the lens is focused on infinity. This distance varies with the size of the stop used.

By focusing an object at the hyperfocal distance of the stop used, objects from one-half this distance to infinity will be satisfactorily sharp.

Example: For a  $4\frac{1}{2}$  inch lens, focus at 30 feet use stop  $f/11$  and objects will be in reasonably sharp focus from 15 feet to infinity.

## HYPERFOCAL DISTANCES

STOP f/	3.5	4.5	5.6	8	11	16	22	32
Focal Length of Lens	$4\frac{1}{8}''$	81'	63'	51'	36'	26'	18'	13'
	$4\frac{3}{8}''$	91'	71'	57'	40'	29'	20'	14'
	$4\frac{1}{2}''$	96'	75'	60'	42'	30'	21'	15'
	5"	120'	93'	75'	52'	38'	26'	19'
								13'

Table below shows the nearest and farthest objects in focus when lenses of different focal lengths are focused with stop  $f/8$ , upon points at different distances from camera.

## DEPTH OF FIELD\*

Distance focused upon at stop $f/8$	6 FT.	12 FT.	25 FT.	50 FT.
Focal Length of Lens	$4\frac{1}{8}''$	62"-86"	9'-18'	15'-82'
	$4\frac{3}{8}''$	62"-85"	9 $\frac{1}{4}$ '-17'	15 $\frac{1}{2}$ '-66'
	$4\frac{1}{2}''$	63"-84"	9 $\frac{1}{2}$ '-16 $\frac{1}{2}$ '	15 $\frac{3}{4}$ '-62'
	5"	65"-81"	9 $\frac{3}{4}$ '-15 $\frac{1}{2}$ '	17'-48'
				25' to Infinity

\*Depth of field is often referred to as depth of focus.

## GRAFLEX EXPOSURE TABLE FOR VIEWS

Approximately Correct Exposures with Stop f/8

Exposures with stops **LARGER** or **SMALLER** than  $f/8$  should be respectively **DECREASED** or **INCREASED ONE-HALF** with each succeeding larger or smaller stop used.

Example—Third group—May—Bright—9 A.M. to 3 P.M.—200— $f/8$

Stop numbers //	4.5	5.6	6.3	8	11	16	22	32
Relative exposure	1000	700	500	320	160	80	40	20
Table shows exposure when Verichrome Film is used. For Super XX and similar films set diaphragm between f/11 and f/16.								
		May, June, July, Aug.	Mar., Apr., Sept., Oct.	Jan., Feb., Nov., Dec.				
		9 am to 3 pm	7 am and 5 pm	10 am to 2 pm	8 am and 4 pm	11 am to 1 pm	9 am and 3 pm	
Distant Mountains	Bright Sun	500	240	400	200	320	150	
Very Beach Views	Hazy	240	125	200	90	150	70	
Open Snow Scenes								
River Views								
Aviators in Flight								
Open Views from Train	Cloudy Dull	125	70	90	40	70	30	
Landscapes	Bright Sun	240	125	200	100	150	80	
Open Road and Fields	Hazy	125	80	100	60	80	40	
Snow Scenes								
Beach Views								
Nearby Vessels								
and Boats								
Light Buildings								
Athletic Events from Grandstand	Cloudy Dull	80	40	60	30	40	25	
Open Park Views	Bright Sun	200	100	150	80	125	60	
Snow Scenes with Objects Nearby	Hazy	100	60	80	40	60	30	
Large Figures or Groups in the Open								
Vessels at Wharf								
Medium Buildings	Cloudy Dull	60	25	40	20	30	15	
Light Streets (wide)								
Shady Park Views	Bright Sun	125	80	100	60	80	40	
Figures in Shade of Building or in Direct Light with Dark or Foliage Background	Hazy	80	40	60	30	40	25	
Dark Buildings								
City Street								
Shady Porch Groups	Cloudy Dull	40	20	30	15	20	10	

## SUGGESTED GRAFLEX EXPOSURES FOR STOPPING MOTION AT RIGHT ANGLES TO CAMERA

One-third less will stop motion at 45 degrees.

Two-thirds less will stop motion directly toward or from camera.

	FOCAL LENGTH OF LENS	4 $\frac{1}{8}$ "	4 $\frac{3}{8}$ "	4 $\frac{1}{2}$ "	5"
		Feet	MILES	MILES	MILES
Pedestrians	25	125	150	150	150
Average Views	50	60	80	80	80
	100	60	80	80	80
Athletics	25	500	600	600	600
Boat Races	50	240	240	320	320
Baseball	100	125	150	150	150
Street Traffic	25	800	800	800	900
Horse Racing	50	400	400	400	400
Motor Boats	100	200	200	200	200
Diving	45°	45°			Toward Camera
Highway Traffic	25	1000	1000	600	600
Aeroplanes	50	800	800	800	900
Fast Trains	100	400	400	400	500

## How to Use Table to Stop Motion at Right Angles to Camera

Find the subject group, and the exposure for movement at right angles to camera will be found in the square on the line of "distance of object" and under "focal length of lens."

Example:

Subject	Motor boat
Distance	50 Feet
Speed of Subject	30 Miles per hour
Focal Length of Lens	4 3/8"
Exposure	400

The shutter speeds given are necessary to stop the motion. The lens opening must be regulated to meet the prevailing light conditions.

For bright days it is suggested that Stop f/8 be used with exposures 1/320 to 1/400; f/5.6 with exposures 1/500 to 1/700; f/4.5 for exposures 1/800 to 1/1000.

On hazy or dull days, with same exposure, proportionately larger lens openings should be used.

It is not advisable to operate the shutter at a higher speed than is necessary to stop movement of the subject, thereby gaining the advantage of full exposures and the ability to use smaller lens openings, which will give greater depth of field.

To decrease a given shutter speed 1/3 for movement at 45 degrees, or 2/3 for oncoming subjects, use the third lower speed on Graflex exposure plate for 1/3 less, and the fifth lower exposure for 2/3 less.

Example:

Right angles	→	1000
		900
		800
		700
45 degrees; 1/3 less	→	600
		500
		400
		360
Toward camera; 2/3 less	→	320
		280
		240

## NOTES

## OTHER GRAFLEX FAVORITES



"Just a Handful"

NATIONAL GRAFLEX Series II: Small, efficient, economical. Grafex Focal-Plane Shutter provides speeds from 1/30 to 1/500. Equipped with B & L 75 mm. Tessar f/3.5 lens. The many accessories include an interchangeable B & L 140 mm. Telephoto f/6.3 lens. Makes ten pictures on 8-exposure film rolls. Picture size:  $2\frac{1}{8} \times 2\frac{1}{2}$ .

R. B. SERIES B GRAFLEX: Reliable, practical, popular. Focal plane shutter gives 24 speeds from 1/10 to 1/1000 and any time desired. Kodak Anastigmat f/4.5 lens. Uses sheet film, roll film, plates, film packs. Made in sizes  $2\frac{1}{4} \times 3\frac{1}{4}$ ,  $3\frac{1}{4} \times 4\frac{1}{4}$ , 4 x 5. Also made without revolving back in 5 x 7 size.



R. B. SERIES D GRAFLEX: Deservedly popular because of its all around utility and ability. Same shutter as R. B. Series B and provides same choice of film and plates. Removable lens board permits wide selection of lenses as fast as f/2.9. Revolving back is standard equipment. Made in sizes  $3\frac{1}{4} \times 4\frac{1}{4}$ , 4 x 5.

## OUR SERVICE

We maintain a Technical Department, the facilities of which are available to you in solving any photographic problems which arise. You are invited to write us.

The return of the owner registration card for this camera, completely filled in, will enable us to identify your equipment and give you greater service. If you did not receive a registration card, we will gladly send one upon request.

**FOLMER GRAFLEX CORPORATION**

ROCHESTER, NEW YORK, U.S.A.