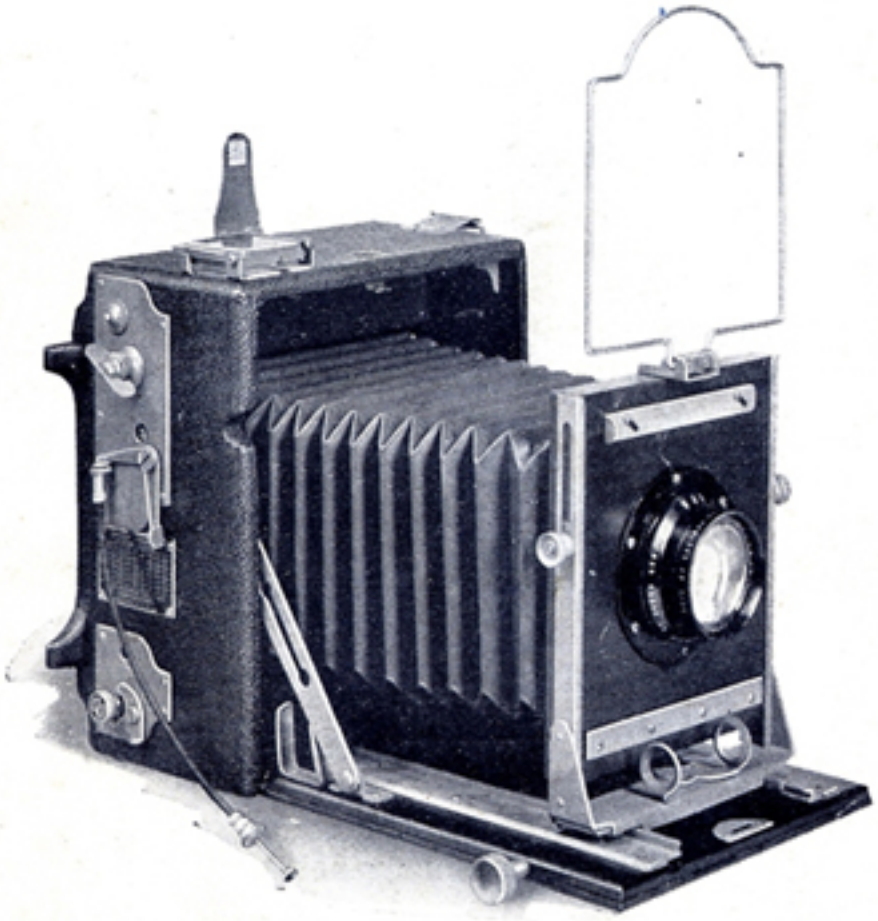
Directions for Operating the

4 x 5 SPEED GRAPHIC

No. 3

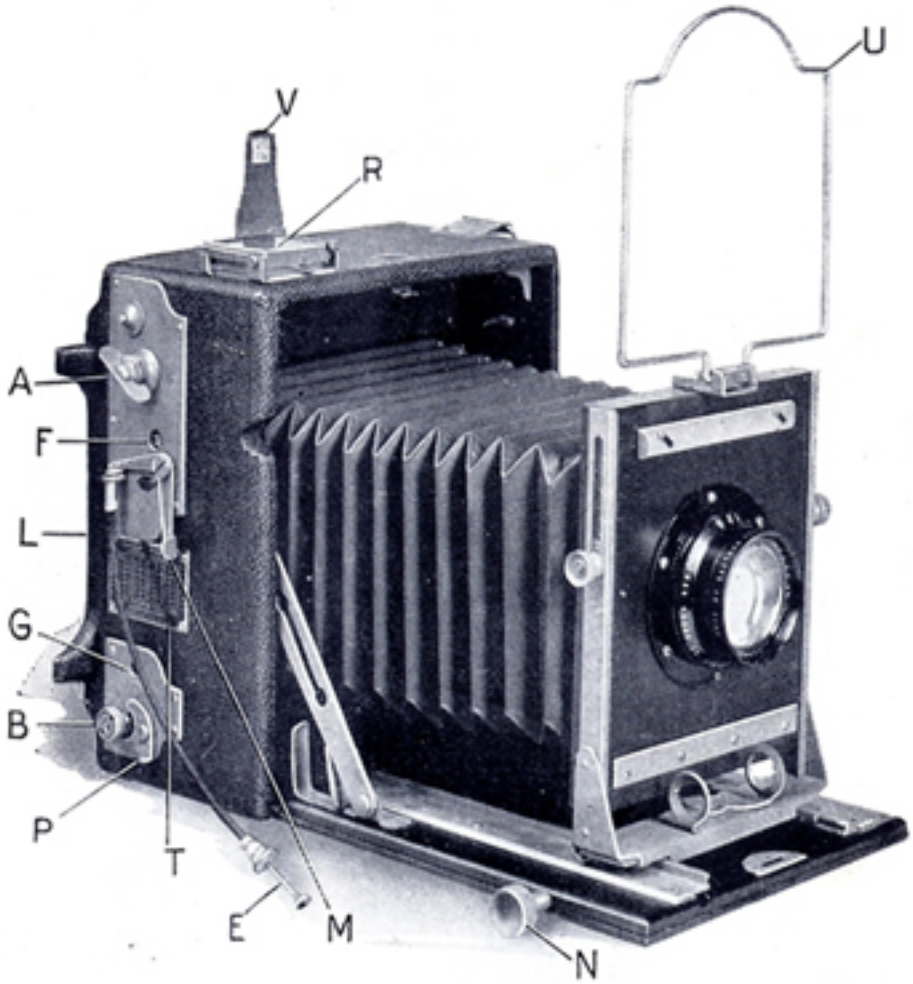


Folmer Graflex Corporation

ROCHESTER, N. Y., U. S. A.

Directions for Operating the

4 x 5 SPEED GRAPHIC No. 3



Open the camera by pressing the concealed spring at the top; swing the bed down until the spring-actuated side arms lock the bed in extended position. Grasp the front standard clamp and draw the lens standard out to the "infinity stop" fastened on the bed track.

FOCUSING

When the lens is set at the "infinity stop," the white line on the focusing pointer, attached to the base of the lens standard, should be in line with the infinity mark on the graduated focusing scale on bed of camera. When focusing upon objects nearer than 100 feet, the lens is advanced into focus by

means of the focusing pinion **N,** to a point on the focusing scale representing the distance from the camera to a point focused upon.

THE FOCUSING PANEL

The spring-actuated Focusing Panel **L** is provided with side shields to facilitate focusing upon the Ground Glass Screen. This panel recedes to accept the Graphic Film Holder, Plate Holder or Film Pack Adapter. (Graphic cameras fitted with Graflex back accept removable focusing panel and all of the Graflex film and plate attachments.)

When the Plate Holder or Film Pack Adapter is withdrawn from the camera, and the curtain aperture **O** (open) is registered at **F,** accurate focus of the full negative size image can be obtained on the Ground Glass Screen by varying the position of the lens with the focusing pinion **N.**

The adjustable Rising Front affords a means for photographic registration of vertical lines located above the level of the camera.

THE VIEW FINDERS

A Graphic View Finder **R,** located on top of the camera, allows the subject being photographed to be properly centered. This is accomplished by means of the sighting bar and the vertical and horizontal lines engraved on the finder lens. When not in use the finder is folded down and compactly closed.

A wire Frame Finder **U** is attached to the Front Standard. Unlike the Graphic View Finder, which is intended for centering purposes only, the Wire Finder enables the operator to observe the picture (full size) from eye-level position. A peep sight **V** is attached as an aid to sighting.

WIDE ANGLE BED

For Wide Angle work depress bed braces and partly close bed, allowing the braces to be slipped off the guide pins in the camera box. This will allow the bed of the camera to be dropped out of the way. In order to use Wide Angle lenses with maximum efficiency, an auxiliary Wide Angle bed may be attached to the tracks fitted in camera box.

BETWEEN-THE-LENS SHUTTER

A between-the-lens shutter used to supplement the focal plane shutter provides a range of controlled shutter speeds as slow as one second.

CAUTION

When using the focal plane shutter, be sure that the between-the-lens shutter is set at "Time," and open. Conversely, be sure that the focal plane shutter is set at **O,** full opening, when using the between-the-lens shutter.

TABLE SPEED

The Shutter Speed Table **T,** attached to the camera, gives approximate shutter speeds in fractional parts of seconds, obtainable with the various curtain apertures 0, 1½, ¾, ⅜ and ⅛, and the tension numbers 1 to 6.

SETTING THE SHUTTER

The shutter is set by turning key **A** to the left, until the curtain aperture indicated on the Speed Plate for a certain exposure, is registered at **F.** If the curtain is already set so that any one of the aperture numbers 1½, ¾, ⅜ or ⅛ appears at **F,** release the curtain by pressing Shutter Release **M** until the proper aperture is in position.

CAUTION

The dark slide of Plate Holder, or Film Pack Adapter MUST BE IN POSITION WHEN THE SHUTTER IS SET; otherwise injurious fogging of Plate or Film will result.

REGULATING THE SHUTTER SPEED

Tension on the curtain is regulated by turning the milled head **B** to the right until the tension number indicated on the Shutter Speed Plate for a certain exposure, appears at **G.** The numbers run from 1 to 6—the highest number indicating the greatest speed, at any given aperture.

To decrease speed of shutter, release tension on shutter curtain by pushing escapement **P** back and forth until the required lower tension number is registered at **G.**

INSTANTANEOUS EXPOSURES

When the shutter has been set in accordance with the above directions, the exposure is made by carefully pressing Shutter Release **M,** or plunger **E** of the Cable Release.

EXAMPLE

For an Instantaneous Exposure of 1/235 second, use curtain aperture 3/8 and tension No. 5. To set shutter for 1/295 second, wind the tension to No. 6.

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.

DEPTH OF FIELD*

Depth of Field expresses the ability of a lens to give a sharply defined image of both near and distant objects. It is impossible to secure speed and great depth of field at the same time, except with lenses of a very short focal length.

The degree of depth depends upon the relation between the focal length of lens, stop used, and the distance to the subject

The depth of field increases as the focal length of lens and diameter of stop decreases, and the distance to the subject increases. Focus a lens of known focal length upon a point at the hyperfocal distance of the stop used and objects beyond one-half that distance from camera will be in focus.

Example: =6⅜ in. Lens—Stop F.16—Point of Focus, 43 ft. = Area in focus, 21 ft. from camera to infinity.

HYPERFOCAL DISTANCES

The following tables are based upon a circle of confusion of 1/200 in.

	STOP F	3.5	4.5	5.6	8	11	16	22	32
FOCAL LENGTH OF LENS	4⅜″	91′	71′	57′	40′	29′	20′	14′	10′
	5¼″	130′	102′	82′	57′	41′	29′	21′	14′
	5½″	144′	112′	90′	63′	46′	32′	23′	16′
	5¾″	157′	122′	98′	69′	50′	34′	25′	17′
	6⅜″	193′	151′	121′	85′	62′	43′	31′	21′
	7½″	268′	208′	167′	117′	85′	59′	43′	29′
	8½″	344′	268′	215′	151′	108′	75′	55′	38′

When it is required that subject be sharply defined throughout its area, focus upon a point at the hyperfocal distance, in large figures on table, for lens and stop designated, and objects from about one-half that distance—21½ feet—from camera to infinity will be in focus. With next smaller stop nearest object in focus will be about 16 feet.

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.

Table shows the nearest and farthest objects in focus when focusing lenses of different focal length, with stop *f*.8, upon a point 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	4⅜″	62″—85″	9′—17′	15′—66′	22′—Infinity
	5¼″	65″—79″	10′—15′	17′—44′	26′—Infinity
	5½″	65″—79″	10′—15′	18′—41′	28′—Infinity
	5¾″	66″—78″	10′—14½′	18′—39′	29′—182′
	6⅜″	67″—78″	10½′—13¾′	19′—35′	31′—121′
	7½″	68½″—76″	10¾′—13½′	20½′—32′	35′—88′
	8½″	69″—75″	11′—13′	21′—30′	37½′—75′

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

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			4¾″	5½″	6½″	7½″	8¼″	10″	12″
SPEED OF OBJECT PER HOUR	DISTANCE OF OBJECT FROM CAMERA								
5 MILES	Feet								
Pedestrians		25	110	135	160	235	350	440	550
Cattle		50	90	110	135	160	195	235	350
Average Views		100	90	110	135	160	195	235	350
10 MILES									
Street Traffic		25	235	295	350	440	550	680	825
Boating		50	110	135	160	235	295	350	440
Children Playing		100	90	110	135	160	195	235	295
20 MILES									
Athletics		25	440	550	680	825	1000		
Boat Races		50	235	295	350	440	550	680	825
Baseball									
Autos in Street		100	110	135	195	235	295	350	440
30 MILES									
Horse Racing		25	680	825	1000	45° 825			
Motor Boats		50	350	440	550	680	825	1000	
Diving									
Views from Trains		100	160	235	295	350	440	680	825
				TOWARD CAMERA					
60 MILES									
Auto Races		25	45° 1000	550	680	825	1000		
Motorcycles									
Aeroplanes		50	680	825	1000	45° 825			
Fast Trains		100	350	440	550	680	825	1000	

GRAFLEX EXPOSURE TABLE FOR VIEWS

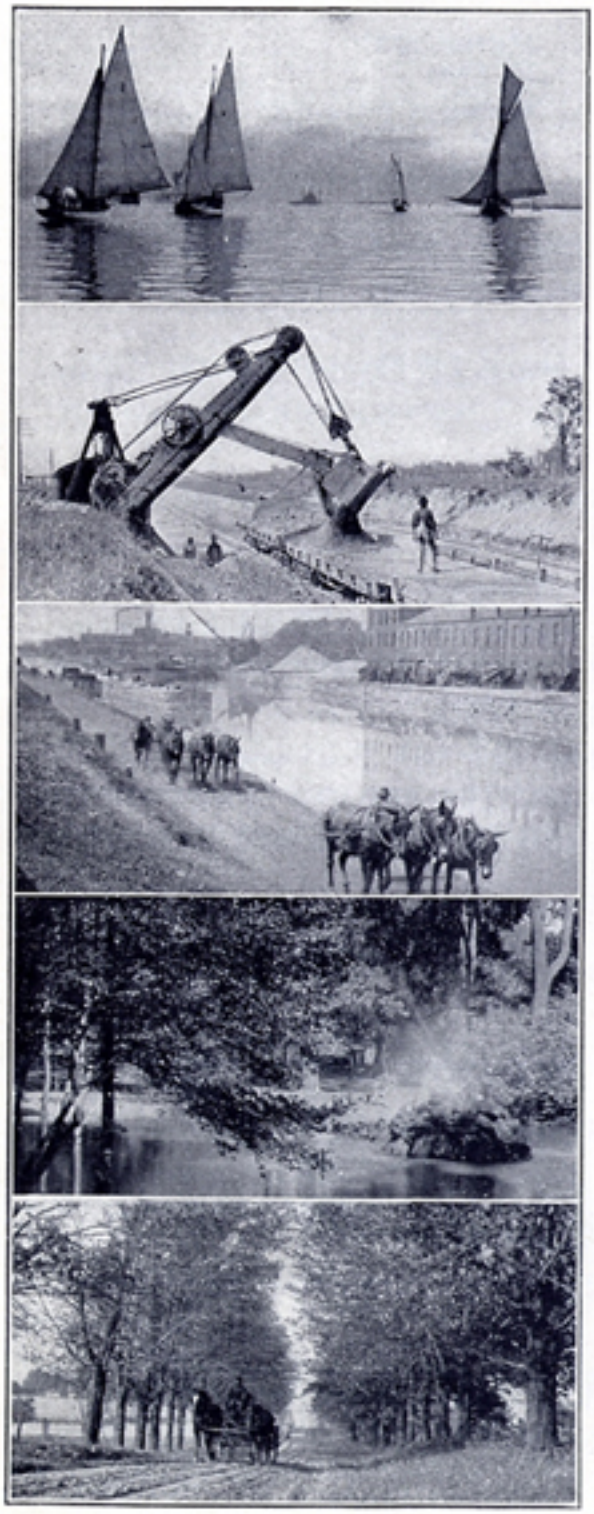
Approximately Correct Exposures with Stop F.8

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.=160—F8.

Stop numbers F=	4.5	5.6	6.3	8	11	16	22	32
Relative exposure	550	350	235	160	80	40	20	10

Table shows exposure when Vericarome Film is used.



		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 { Landscapes, Mountains, Vessels	Bright Sun	350	160	295	135	235	110
Very Open { Beach Views, Snow Scenes, River Views	Hazy	195	90	160	75	135	65
Aviators in Flight; Open Views from Train	Cloudy Dull	80	50	65	40	50	35
Open { Landscapes, Roads & Fields, Snow Scenes	Bright Sun	195	110	160	90	135	75
Nearby { Beach Views, Vessels and Boats	Hazy	110	65	90	50	65	40
Light Buildings; Athletic Events from Grandstand	Cloudy Dull	65	35	50	30	35	25
Open Park Views; Snow Scenes with Objects Nearby	Bright Sun	160	80	135	65	110	50
Large Figures or Groups in the Open; Vessels at Wharf	Hazy	90	50	75	40	65	35
Medium Buildings; Light Streets (wide)	Cloudy Dull	50	25	40	20	30	15
Shady Park Views; Figures in Shade of Building or in Direct Light with Dark or Foliage Background	Bright Sun	110	65	90	50	80	40
Dark Buildings; Light City Street; Shady Porch Groups	Hazy	65	35	50	30	40	25
	Cloudy Dull	35	20	30	15	20	10
Shady Driveway, Views with Overhanging Trees	Bright Sun	50	30	40	25	35	20
Figures under Piazza or Pergola	Hazy	30	20	25	15	20	10
Dark City Street	Cloudy Dull	20	10	15	½	10	½

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	6 3/8"
Exposure	1/550th of a second

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 1/195 to 1/350; *f*.5.6 with exposures 1/350 to 1/550; *f*.4.5 for exposures 1/680 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 second lower speed on Graflex exposure plate for 1/3 less, and the fifth lower exposure for 2/3 less.

Example:

	1000
	825
	680
Right angles →	550
	440
45 degrees; 1/3 less →	350
	295
	235
Toward camera; 2/3 less →	195
	160

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