

HOW TO USE YOUR
WESTON
UNIVERSAL
EXPOSURE METER

Model 617

*FOR STILL AND MOTION
PICTURES*

WESTON ELECTRICAL
INSTRUMENT CORPORATION
NEWARK, N. J.

How to Use your
WESTON UNIVERSAL
EXPOSURE METER

CAUTION

When aiming the Exposure Meter at the scene to be photographed, do not allow your fingers to drop behind the meter in such a manner as to partially cut off the light from the photoelectric cells which are beneath the glass windows.

Direct sunlight does not harm the photo cells but if it is allowed to enter the cell openings it will cause an erroneous reading of the scene's brightness.

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Weston Electrical Instrument Corp.

DESCRIPTION OF EXPOSURE METER

The Weston Model 617 Exposure Meter functions by instantaneously indicating the accurate light value of the scene or object being photographed, with means for immediately translating that information into proper combinations of aperture and shutter speed.

If you look at the face of the meter you will note that at the left is a circular plate giving condensed operating instructions; at the center is a light value indicator and at the right is an exposure dial. The use of this dial, as explained later, translates the brightness of the scene into proper exposure values in accordance with the various plate or film speeds and the type of scene being photographed. On the back of the meter you will notice there are two wells under glass. At the bottom of these wells are two Weston PHOTRONIC photoelectric cells or "electric eyes." The light from the object or scene falls on these dry plate electric eyes and is instantly converted into electrical energy which directly operates the light value indicator.

DIRECT THE METER AT THE CENTER OF THE SCENE. IF THE SCENE INCLUDES TOO MUCH SKY LIGHT TURN THE LINE OF SIGHT SLIGHTLY DOWNWARD.

THE CORRECT WAY TO
HOLD THE WESTON
EXPOSURE METER



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FOLLOW INSTRUCTIONS CAREFULLY

Let us assume that you are photographing an average scene and are using amateur film which is designated with a speed of 12. Set the middle, or white dial so that the arrow points to 12 on the bottom black dial as shown at D in Fig. 1. When turning the white dial, slightly lift it with the thumb nail under the arrow. This setting stands until a film of different speed is used—thereafter only the top dial requires setting. Then proceed as follows:

1. Aim and Read the Meter.

Hold the meter at eye level, pointing it at the object or scene to be photographed as shown by the illustration on page 2. Note the number to which the light indicator points. Let us assume that it points to 180, as shown at E in Fig. 2. (If the indicator shows a deflection of less than 130 then use the push button as described on page 8.

2. Set Dial and Read Aperture and Shutter Speed.

Assuming the scene is "average" or "normal", turn the top black dial around until the "Normal" B arrow points to 180 on the bottom black dial as shown at F and G in Fig. 3.

The correct combinations of shutter speed and aperture are then automatically shown on the top black dial and white dial. If 1/25 sec. is selected as the desired shutter speed, then as shown directly above at H, stop f11 should be used. When taking stills you have the option of using several combinations, and any one selected will give good negatives. To illustrate, if you are taking an action picture, and must have a sharp definition, then a higher shutter speed may be required, say 1/100 sec. which shows that stop f5.6 should be used. If the scene is devoid of action and a smaller stop is desired to obtain depth of focus, use for instance 1/10 sec. with stop f16 or any of the combinations shown on the dial.

In general, the smaller the lens opening, the sharper the picture. If the shutter speeds of your camera do not correspond to those shown on the white dial, use the nearest shutter speed shown on your camera. For instance, if 1/32 is indicated on the dial and the nearest speed shown

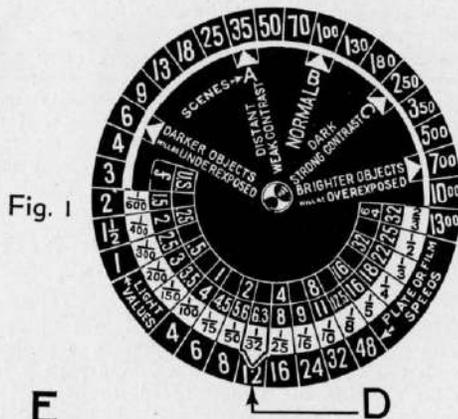


Fig. 1

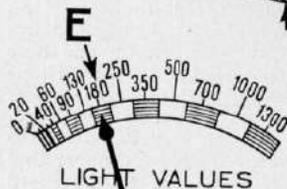


Fig. 2

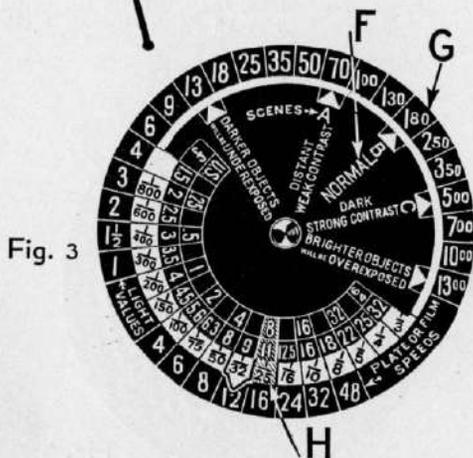


Fig. 3

on your camera is $1/25$, use that speed. The difference is extremely slight, and the latitude of all present day film fully compensates for this variation. Also, if the lens opening (stop number) indicated by the meter does not appear on your camera choose the next nearest stop opening that your camera has. For instance, if the meter indicates $f7$ and the camera reads $f5.6$, $f6.3$, $f8$, etc., set the lens at the nearest number, $f6.3$, or you may approximate more closely by setting the lens between $f6.3$ and $f8$.

HOW TO USE THE METER WITH YOUR MOVIE CAMERA

The normal speed of a movie camera is 16 frames per second but the actual time of exposure varies for different cameras in accordance with the design of the shutter. On page 9 is a table showing the shutter speeds to be used on the exposure meter for various cameras. Select the shutter speed of your own camera and note how it varies when frame speeds other than normal are used. Remember that only the figures applying to your own camera need be considered. Thus, if you own an Eastman K or Filmo 71-A-B two speed camera, you need only remember that if you shoot at regular speed, the shutter speed applying is $1/32$, and when shooting at half speed, the shutter speed is $1/16$. No other figures apply. If Super Cine Kodak Pan. film is used, which has a speed of 16, the arrow on the white dial should be placed at 16 on the bottom black dial.

PROPER CLASSIFICATION OF SCENES WILL IMPROVE PHOTOGRAPHIC RESULTS

Uniformly good results will not be obtained if all scenes are considered as average. The Exposure Meter dial divides the various types of scenes into three general groups as shown, namely, A, B and C. See Fig. 4.

A—Distant Scenes—These include distant landscapes and sea views which, because of their distance and generally small shadow areas, require less exposure than average scenes.

B—Normal Scenes—These include average scenes where the area of high lights and shadows are approximately equal and include such views as open streets, ordinary landscapes, portraits in the sun or shade, beach and river scenes and all normal objects.

C—Dark Scenes with Strong Contrast—These include scenes having dark shadow areas and strong contrasts such as are found in narrow streets among high buildings, ravines and scenes under trees with heavy foliage, etc. In these scenes more than normal exposure is required.

Exposure values for scenes falling in class A or C are determined exactly as described for average scenes except that the A or C scene arrow is used instead of the Normal B arrow.

The arrows marked "DARKER OBJECTS WILL BE UNDER-EXPOSED" and "BRIGHTER OBJECTS WILL BE OVER-EXPOSED" are used when fitting the brightness range of the scene to the film latitude as discussed in the booklet described on page 15.

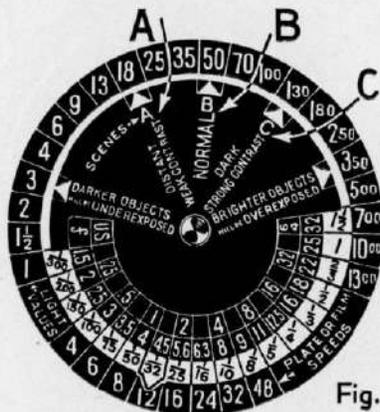


Fig. 4

HOW TO SET THE METER FOR ANY SPEED OF FILM

Various makes and kinds of film differ in speed and vary with the kind of illumination. It is therefore necessary to know the speed of the film to be used, which is given in the following table for those most commonly used.

To set the meter for the film being used, turn the white dial arrow to its speed value indicated on the bottom black dial—slightly lift the white dial with the thumb nail under the arrow and turn to the film speed to be used. This setting then remains unchanged until a film of different speed is used.

FILM AND PLATE SPEEDS

The following is a list of the speeds of films and plates commonly used. The values given are the most accurate obtainable at the time the list was compiled.

Agfa-Ansco	Daylight	Tungsten
Plenachrome Roll Film and Film Pack.....	16	6
Supersensitive Plenachrome	24	8
Supersensitive Panchromatic, Cut Film.....	24	16
Standard Roll Film and Film Pack.....	12	4
Speedex Film	12	4
Leica Super Pan Film.....	24	16
16 mm. Reversible Ortho	12	4
16 mm. Reversible Panchromatic	16	12
Standard Ciné Film, Extra Rapid	12	4
Standard Ciné Film, Panchromatic	16	12
Portrait Panchromatic Cut Film	24	16
Portrait Film Regular.....	8	3
Super Panchromatic Roll Film and Pack.....	24	16

Cramer Plates	Daylight	Tungsten
Instantaneous Iso.....	8	4
Crown	12	4
Banner	12	4

Defender

Panchromatic X—Fast.....	24	16
Panchromatic Regular.....	16	12
Portrait	8	3
Commercial Ortho.....	8	4
Commercial	8	3
Ciné	8	4

Dupont

Super Panchromatic	24	16
Mono Film.....	8	3

Eastman

Super Panchromatic Roll or Cut Film.....	24	16
Commercial Panchromatic Film	16	8
Regular Ciné Kodak Pan Film	12	6
Super Ciné Kodak Pan Film	16	12
Portrait Superspeed Film..	24	8
Portrait Par Speed Film...	12	6
Portrait Panchromatic.....	16	12
Amateur N.C. Film.....	12	4
Verichrome Film	16	6
Hyper Press Plates.....	24	12
Eastman Polychrome.....	8	4
Eastman Post Card.....	8	4
Eastman Process (Use 4 and 12 times exposure as for speed 6).....	1.5	0.5
Wratten Hypersensitive Pan Plates.....	24	16
Wratten Regular Pan Plates	12	8
Wratten Process Pan Plates	6	3

Gevaert

Ortho Sensima.....	12	4
Super Sensima Special.....	16	8
Express Films.....	16	6
Regular Films.....	8	3

Hammer	Daylight	Tungsten
Ultra Rapid Press Plates.....	24	16
Ortho Double Coated.....	8	3
Special Ortho Plates.....	12	4
Iford		
Hypersensitive Panchromatic Plates.....	24	16
Soft Gradation Pan Plates.....	16	8
Portrait Film—Ortho Fast	16	6
Hypersensitive Panchromatic Film.....	24	16
Regular Panchromatic Film	12	6
Commercial Ortho Film....	6	2
Mono Film Co.		
Mono Film.....	8	3
Perutz		
Leica Special Film.....	8	3
Leica Persenso Film.....	24	16
Fine Grain Roll Film.....	12	6
Persenso Film.....	24	16
Selo		
Supersensitive Panchromatic Ciné.....	16	12
16 mm. Panchromatic Ciné	8	4
Roll Film.....	8	3
Standard Plates		
Extra Imperial.....	12	4
Orthonon.....	12	4
Voigtlander		
Illustra, Plates, Roll Film and Packs.....	24	12
Zeiss		
Ultra Fast Roll Film and Pack.....	16	8
Ikon Fast Roll Film and Pack.....	8	3
Ikon Ciné Film.....	8	3

COLOR PHOTOGRAPHY (DAYLIGHT)

Agfa Color Plates

Use a plate speed of 16 and multiply the indicated exposure by 60; by simply reading the shutter speed in terms of minutes instead of the usual seconds.

Autochrome Plates

Use a plate speed of 8 and multiply the indicated exposure by 60; by simply reading the shutter speed in terms of minutes instead of the usual seconds.

Finley Color Process

With Regular Panchromatic Plates or Films and the Finley compensating filter, use speed 6.

Kodacolor

Exposures of Kodacolor film should be made in bright sunlight for the best results. To use the exposure meter, direct it toward the scene, going close enough to obtain an average light value without including sky or other bright lights not part of the object to be photographed. Read the light value and without using the calculator proceed in accordance with the following table:

Light Values	Filter
Below 80.....	Not enough light
80 to 130 incl.....	Kodacolor only
Above 130 to and including 200.....	Kodacolor and ND-1
Above 200.....	Kodacolor and ND-2

COMPARISON OF H & D, SCHEINER, AND WESTON SPEED VALUES

Relative Value	Scheiner ^o	H & D	Weston
5.5	8	33.0	1
7.0	9	42.0	
8.9	10	53.5	
11.3	11	67.8	2
14.4	12	86.3	
18.3	13	110.0	3
23.4	14	141	4
29.8	15	179	
37.9	16	228	6
48.3	17	290	8
61.6	18	370	12
78.5	19	471	
100	20	600	16
127	21	762	24
162	22	972	
207	23	1240	32
264	24	1585	48
336	25	2020	

WHEN TO USE PUSH BUTTON TO CHANGE INSTRUMENT RANGE

The light value indicator has two ranges. When the button on top of the meter is not pressed the scale should be read directly, viz., from 0 to 1300. When the pointer indications are less than 130 depress the push button on top of the meter. The pointer will then move ten times farther up the scale, making it much easier to read. When the button is depressed, the pointer indications or readings must be divided by ten because the scale then becomes 0 to 130 instead of 0 to 1300.

USE OF FILTERS

When color filters are used over the lens it is always necessary to increase the time of exposure. Simply open your lens wider to the following number of stops over and above that indicated by the Exposure Meter, 1 stop if a 2-x filter is used; 2 stops if a 4-x filter is used, and 2½ stops if a 6-x filter is used.

For motion picture cameras having shutter speeds designated in frames per second, set the meter dial to the corresponding time in seconds tabulated below.

Camera	No. of Speeds	FRAMES PER SECOND							
		8	12	16	24	32	48	64	
Eastman K	2	1/16	.....	1/32	.....	.....	.....	.....	.....
Eastman 8	1	.....	.....	1/32	.....	.....	.....	.....	.....
Eastman B & BB	2	1/16	.....	1/32	.....	.....	.....	.....	.....
Filmo 70-D & Da	7	1/10	1/16	1/25	1/32	1/50	1/75	1/100	.....
Filmo 70-A-C	2	1/10	.....	1/25	.....	.....	.....	.....	.....
Filmo 70-A-C	2	.....	.....	1/25	.....	1/50	.....	.....	.....
Filmo 70-A-C	3	1/25	.....	1/50	.....	.....	.....	.....	.....
Filmo 71-A-B	2	1/16	.....	1/32	.....	.....	.....	.....	.....
Filmo 71-A-B	2	.....	.....	1/32	.....	1/75	.....	.....	.....
Filmo 71-A-B	3	.....	1/25	1/32	.....	.....	.....	.....	.....
Filmo 75	1	.....	.....	1/50	.....	.....	.....	.....	.....
Kodacolor 75	1	.....	1/25	1/32	.....	.....	.....	.....	.....
Simplex	2	.....	.....	1/32	.....	.....	.....	.....	.....
Victor Mod. 5	5	1/16	.....	1/32	1/50	.....	1/100	1/150	.....

NOTE—The comparatively large differences in shutter time given in this table corresponding to the same number of frames per second, are due to the fact that in different makes and types of cameras, the angular openings in the shutters are not the same, but vary from 110 degrees to 216 degrees.

INTERIORS

For photographing interiors the use of photo flood lamps is suggested to increase and round out the illumination. These lamps give about ten times more light than the ordinary 60 watt lamp.

Use the same plate speeds given in table on page 8 for tungsten (Mazda).

ZERO SETTING OF INSTRUMENT POINTER

When no light reaches the "electric eyes" in the back of the Exposure Meter the instrument pointer should rest directly over the zero position on the scale.

If this is not the case then the pointer can be readily set to its zero position by slightly turning the zero corrector located in the glass over the instrument scale.

When making this correction place the meter back downward on some opaque object, as a card or a book so as to exclude all light from the photoelectric cells, and hold it at an angle of about 45°.

FOR THE ADVANCED AMATEUR AND PROFESSIONAL PHOTOGRAPHER

For those more advanced in the art of photography there are additional methods of obtaining exposures with the Weston Universal Exposure Meter, by which the brightness range in the scene can be so fitted to the film range or latitude as to obtain any desired average density in the negative, and special lighting effects.

This information is contained in the booklet, "Instructions for Advanced Amateurs and Professionals for Using the Weston Universal Exposure Meter."