

COLOR PHOTOGRAPHY

4. Do Not Read the Shadow Cast by the Meter . . .

Your meter and hand may cast a shadow on the subject being measured. If so, be careful not to read the shadow. To do so will cause a lowered reading and hence overexposure. Hold the meter at an angle to the direction from which the light is coming.

5. Set Normal Arrow . . .

Set the Arrow midway between the darkest and brightest color light values. This centers the exposure and utilizes the film range in the most expeditious manner.



The A and C Positions



The Limits of Film Range . . .

The A and C positions on the exposure control dial are indications of the range of color film. The A position represents the lower limit of the film range, while the C position represents the upper limit. After setting the dial for any scene, all objects whose light values fall on or between these two positions will be correctly exposed. If an object has a light value such that it falls below the A position on the dial, it will be underexposed; and if above the C position, the object will be overexposed.

It is recognized that the scene range can be defined as the relationship between the brightest and darkest color light values. For example, if the brightest color light value is 100 and the darkest 20, the

scene range is $5 (100 \div 20)$. The range of color film is generally considered to be about 4, and the range represented by the A and C positions is 4. Therefore, it is easy to determine whether or not the scene range will fit the film range . . . if the scene range is 4 or less, it fits, if 5 or more, it doesn't.

If possible the scene should be lighted in such a way that the scene range conforms to the film range. This means lighting as flat as possible. Many times it is possible to change the angle from which the photograph is being made, and thus shorten the scene range.

However, when the scene range is greater than the film range, and cannot be shortened in any way, it is possible to expose particularly for the part of the scene of greatest interest.

Color Photography

www.orphancameras.com

The Dark Colors. . .

If the dark colors are of interest, the A position on the exposure control dial should be set opposite the darkest color light value in the scene. This matches the lower limit of the scene range, with the lower limit of the film range.

The Middle Colors . . .

If the middle colors are of interest the Arrow should be set midway between the darkest and brightest color light values. This matches the middle of the scene range with the middle of the film range.

The Bright Colors . . .

If the bright colors are of principal interest, the C position on the guide dial should be set opposite the brightest color light value. This matches the upper limit of the scene range with the upper limit of the film range.

Usually the most pleasing color picture results from the third alternative, exposure for the bright colors. Hence, unless the darker colors are the main subjects, it is suggested that this method be used for all scenes.





7. Face Tones . . .

When the color picture is to be a portrait usually the brightest color is the face. Since that is the most important color anyway, an excellent way of exposing for color portraits is to measure the highlight on the face and set the C position opposite the light value.

8. Substitute The Hand . . .

By substituting the palm of the hand for a person's face, and then setting the C position to that light value, excellent color portraits can be made, quickly and easily.

9. Do Not Read the Shadow Cast by the Meter . . .

When taking the reading from the hand, your meter may cast a shadow onto the hand. If so, be careful not to read the shadow. This would result in a meter reading that was too low and an exposure too long.



10. Lighting . . .

Do not use a lighting set-up of extreme contrast when photographing in color. Color itself will provide ample contrast in the picture. Too great lighting contrast results in a scene beyond the range of the film, making correct exposure for all objects impossible.

11. Time of Day . . .

If pictures are taken before 10 A.M. or after 3 P.M. a color correction filter should be used, and the exposure corrected accordingly.

12. Subjects In Shade . . .

Do not photograph shaded subjects in color. The shaded portions of the scene are lighted by reflected sky light rather than sunlight. Sky light is bluer than the sunlight for which the film was balanced.





EQUIPMENT ERRORS

All photographic equipment is manufactured to accuracy tolerances which make it possible to produce this material in quantity. These tolerances result in small errors in shutter speeds and f/stops. Usually these errors cancel each other. But it is possible for them to be additive resulting in consistently over or under exposed color pictures. If your pictures indicate such errors, change the listed film ratings, lowering them if consistently under exposed and raising them if over exposed. A test of a few exposures at different film speeds all of the same scene is helpful in determining if such compensation is necessary.



CINE' PHOTOGRAPHY

www.orphancamerale OF THE EXPOSURE METER

A ciné camera is theoretically the same as a still one. It has various f/stops to control the quantity of light entering the camera, and a shutter to control the duration of exposure. The main difference is the fact that the ciné camera makes a series of pictures one after another of the same scene. The theory of exposure is the same in both cases and the use of the exposure meter is identical.

Since the exposure meter is used the same for ciné photography as for still, all methods described before are correct. The best method is the brightness range wherein two readings are made and the camera settings determined by setting the Arrow position midway between.

When panning, be sure to change exposure setting if the lighting in one part is materially different from that in another. Make meter readings in both parts of the scene and change the camera settings when the camera views a lighter or darker portion of the scene.

Every movie camera has a definite shutter speed. Usually this is given for the normal "frames per second" of 16. For example, 1/30th of a second. After the exposure control dial is set the correct f/stop will be

found directly opposite 1/30. At 32 frames per second, the shutter speed will be twice that at 16, or 1/60th of a second. At 8 frames, the speed will be half as great, or 1/15th. Note the table.

rames per	Shutter
second	speed
8	1/15
16	1/30
24	1/45
32	1/60
10	1/00

If the shutter speed is not marked on the exposure meter control dial, use the nearest number on the dial. For example, 1/45th could be considered 1/40th. The same relationship applies for cameras having a shutter speed different from 1/30th of a second at 16 frames, for example 1/40th at 16 frames, or 1/50th.

Your new exposure meter is rugged and well made. But like a fine watch, which it resembles in many ways, normal care should be given.

If your meter has been damaged, pack it carefully. Do not send carrying cases, booklets, etc. Return to:

Service Department,

WESTON ELECTRICAL INSTRUMENT CORP.,

Newark 5, New Jersey, U. S. A.

Or through your regular photographic dealer. Prompt attention is paid to all damaged meters. Charges are nominal, depending upon the amount of work needed.

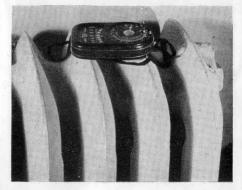
Do Not Overheat Meter!

Normal or even abnormal summer temperatures will not harm the meter. But do not store in α hot place such as on a radiator or in the glove compartment of a car.

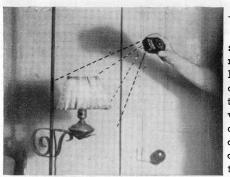
Do Not Drop Meter! Like a watch, the jeweled bearings and exactly shaped pivots may be damaged by a fall.

Do Not Submerge Meter!

Your meter is moisture proofed, that is water vapor in the air will not harm it. However it is not waterproofed, so don't drop it in the lake.



ADDITIONAL HINTS



1. The Two Scales

When the meter is pointed at a small light source such as a reading lamp light, the high and low scales might not read exactly the same. This is due to the difference in viewing angles when the battle is opened or closed. In practical use, this difference does not show up, and does not influence the results obtained in any case.

3. Zero Corrector

If your meter does not indicate zero when no light strikes the cell, do not be alarmed. This occasionally happens to all electrical indicating instruments. The zero corrector, located on the back of the meter as shown in the illustration should be revolved until the pointer rests at zero. Cover the cell with a card or your hand when making this adjustment.





2. Use of Filters

When filters are used, exposure should be increased, the exact amount being indicated by the filter factor of the film-factor combination. The easiest way to compensate for this is to divide the film speed rating of the film in use by the filter factor, setting the resultant number on the dial of the meter. For example, if the film speed were 100, and the filter factor 2, the meter dial would be set with a film speed of 50.

f/stop Equivalents of Other Step Systems . . .

Camera with stops marked 1, 2, 3, and $4, \ldots$ the f: equivalents usually are f: 14, f: 16, f: 22 and f: 32 respectively.

Camera with stops marked 1, 2, and 3, \dots the f: equivalents usually are f: 16, f: 22 and f: 32 respectively.

For V.P.K. cameras with stops 1, 2, and 3, the fequivalents are f: 11, f: 16, f: 22.

Conversion of f Stops to U.S. Stops

f 4 4.5 5 5.6 6.3 8 11 16 22 33 U.S. 1 1.4 1.6 2 2.5 4 8 16 32 6

Computing Exposure in Close-Up Work . . .

- (A) Set the Exposure Control Dial of the Meter to the film speed specified for use with the white card reading. If film being used is other than types designed for "white card reading," divide the film rating by 5, using nearest film speed on the Control Dial.
- (B) Place a white card in copying position, directly on subject to be copied.
- (C) Take a close-up brightness reading of the white card.
- (D) Place the Normal Arrow on the Exposure Control Dial opposite the brightness reading obtained, and then select the exposure in the usual manner.

Where the subject-to-lens distance is less than 8 times the normal focal length of the lens, the indicated aperture values do not hold true and thus a corrective shutter speed must be computed.

In this computation, if the focal length of the camera is in inches, millimeters, centimeters, etc., then the new focal distance must be measured in identical units. The corrected shutter speed or effective aperture opening can then be computed withwheeftprocure accountrol Dial in the following manner:

(1) Assume a 4-inch focal length lens with a film in use having a Weston Film Speed of 4, the brightness reading as suggested above on the white card to be one block below 100. Let us select the exposure of 1/10 second at f/6.3.

(2) Measure the new focal distance (lens-to-film) of the copy set-up in inches, e.g., 9 inches.

(3) Align shutter speed selected in step 1, 1/10 second, with the f/stop value which is equal to the lens focal length in inches, f/4.

(4) Opposite the f/stop value which is equal to the new focal distance in inches, f/9, will be found α corrected shutter speed value, ½ second, to be used with the f/value selected, f/6.3.

(5) Align the corrected shutter speed, $\frac{1}{2}$ second, and the aperture selected, f/6.3, and any of the exposure combinations aligned may be used, e.g., 2 second at f/12.7, 1 second at f/9, 1/5 sec. at f/4, etc.

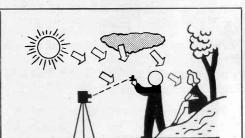
Illumination vs. Speed . . .

Film sensitivity varies with the type of illumination to which it is exposed. Therefore a given film is rated for daylight, or

natural light, and tungsten, or incandescent light. Daylight means all types of natural light whether the day is sunny or cloudy. Tungsten means photofloods and the regular incandescent lamps used in some types of spot and flood lamps. Use daylight ratings with daylight type fluorescent lamps.

Weston Speeds . . .

Weston Exposure Meters are calibrated in terms of Weston film speeds particularly compiled for you, the photographer. It is a photographer's standard developed over 15 years ago by Weston which has proven to be the key to the solution of modern exposure problems. In a new modern laboratory equipped and staffed for the purpose, film samples, secured as you secure them for every day use are processed to determine the ratings. Not only in the laboratory but also in the field, film speeds are accurately and impartially determined and checked for your information. Even the best exposure meter is worthless with improper film speed values and in Weston Film Speeds and the Weston Exposure Meter you have the two factors to insure correct exposure.



Measuring Incident Light

Weston Master Universal Exposure Meters, with the Invercone Adapter, measure incident rather than reflected light. The meter "sees" all of the light falling upon the subject.

The meter is aimed at the camera from the subject position.

FIGURE 1

*INVERCONE trade-mark

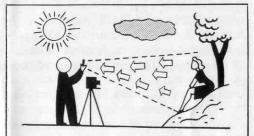
INCIDENT LIGHT MEASUREMENTS WITH THE *INVERCONE

The Weston *INVERCONE Incident Light Adapter, when associated with Weston Master Meters, extends the scope of the basic Brightness Meter to embrace the method of Incident Light Exposure Determination. The INVER-CONE permits the user to retain the many basic advantages of Reflected Light, yet extends the use of the device



The INVERCONE consists of two parts, the INVERTED CONE and the AUXILIARY MULTI-PLIER.

for Incident Light readings when that method is desired. Comparatively, Incident Light readings (Refer to figure 1) are based upon the intensity and angle at which the light strikes the subject, and Brightness readings (refer to figure 2) are based upon the light falling on the subject and the ability of the subject to reflect the light.



Measuring Reflected Light

Weston Exposure Meters are designed to measure reflected light, or brightness, rather than incident light. The meter "sees" approximately the same light as strikes the film in your camera.

The meter is aimed at the subject from the camera position.

FIGURE 2

The INVERCONE consists of two parts, an Inverted Cone (Refer to figure 3) and an Auxiliary Multiplier (Refer to figure 4). It is easy to attach. Open the meter baffle and hold it against the back of the meter, insert the Multiplier and then position the Inverted Cone in place over it. The high range and scale of the meter are then in use for high light intensity conditions. For low light conditions encountered indoors and occasionally out-of-doors, the Multiplier is removed and the Inverted Cone used alone, which places the low light scale in position.



The INVERTED CONE in position . . . low light scale in use.

FIGURE 5

www.orphancameras.com



The AUXILIARY MULTIPLIER in position . . . high light scale readings require the use of the Multiplier and Inverted Cone in combination.

FIGURE 4

The Auxiliary Multiplier automatically changes the light scales to the proper positions for either low or high light conditions, serving a purpose similar to that of the baffle when the meter is used for Reflected Light readings. Thus, with this unique automatic feature, and with no added adjustment, the user is aware which range of the meter is in operation.

USING THE *INVERCONE

After attaching the INVERCONE to the meter, point the meter at the camera from the subject position.

Note the meter reading and use the Exposure Control Dial in exactly the same manner as used when Reflected Light readings are taken.

For scenes where it is impractical to reach the subject position to measure the light falling upon the subject, detach the INVERCONE and take a conventional camera position reflected light measurement.

However, if the light at or near the camera position appears to be equal to the subject's illumination take a substitute reading of incident light using the INVERCONE.

Unlike reflected light exposure meters an incident light type of exposure meter must be calibrated for a scene of average light reflectance. The INVERCONE is so calibrated.

Note the following recommended Exposure Control Dial settings for typical scenes.

TYPE OF SCENE

Average, where highlights and shadow areas are evenly distributed . . . groups of people, portraits or similar subjects . . . all color work.

Flatly lighted, such as landscapes where using black-and-white film.

Contrasty, dark object or subjects where shadow areas predominate or where good shadow detail is desired.

DIAL SETTING

Set NORMAL AR-ROW to reading obtained on the meter scale.

Set the "A" position to the reading obtained on the meter scale.

Set the "C" position to the reading obtained on the meter scale.

The INVERCONE integrates all the light regardless of the number of the lights or their position. Therefore in an outdoor scene, the meter should be aimed toward the camera from the subject position, thus taking into consideration the light falling on the subject. Under conditions of identical illumination at both the subject and camera

position, the reading may be made at the latter, retaining the same direction of aiming the meter in relationship to the subject-camera angle. However, when the area to be photographed is composed of both sunlight and shade areas of equal proportion or importance, a reading should be made under each illumination condition and the arrow placed midway between the values indicated. For indoor work under artificial illumination the reading must be made close to the subject, as the light at the camera position usually differs from that at the subject position.

The scope of the meter has been increased to facilitate readings under certain conditions, and provides an easier means of controlling the lighting contrast ratio. It does not, however, eliminate the necessity of determining whether or not the brightness range of the scene exceeds the reproduction limits of the film. Frequently the light-

ing contrast, range of the scene and the exposure determined with emphasis placed on the objects of interests, can all be accomplished by one set of readings with the Reflected Light Meter. It should remain the basic tool of the photographer in view of its versatility.

No one method of exposure determination is a cure-all. The ease of operation of Incident Light readings increases the scope of application of the Exposure Meter. All are subject to failure under certain conditions when not in the hands of the careful worker, yet in the hands of the skilled worker, both perform an important part of his applications. Under identical light and subject conditions the two methods may give slightly divergent results, yet this is the phase of photography where the careful worker, having calibrated his equipment, applied his experience, departs into the esthetic or artistic phase to accomplish the desired results.

CARE OF THE INVERCONE

The two components of the INVER-CONE are durable, yet as all photographic equipment, should receive reasonable care. The Inverted Cone should not be snapped into place, but by holding the baffle against the rear of the meter, it will be found to slide smoothly into place. Both parts can readily be cleaned with soap and luke warm water if they become dirty and affect the light transmission.