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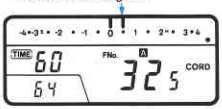
Monitoring subject contrast with reflected light metering as described on the preceding page is a particularly effective means of adjusting lighting to control reflections, to depict of translucent objects and to accurately place of highlights and shadows. Consider the scene on the page at right.

To emphasize the tones of the purple glass illuminated by light from below, the scene was metered with reflected light metering and the reading locked with the A key. The blue glass on the transparency beneath the purple glass and the bright white were then monitored.

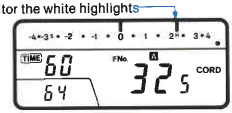
These readings showed that when the exposure is weighted for the purple glass (which then becomes the 0 reference), the white areas will appear as highlights on the printed film and the blue glass will be reproduced at approximately the same density as the 0 reference for the purple glass.

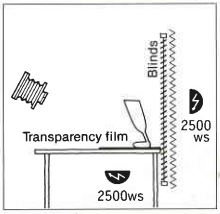
• Meter the purple glass ("A" key) f/32 + 1/2, 1/60 sec.

• Monitor the blue glass



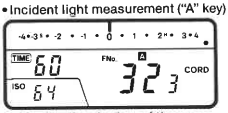
• Monitor the white highlights



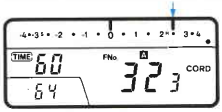


Another application is demonstrated by the photograph below. Here the exposure was determined with incident light metering, then the digital display was locked by pressing the "A" key. The tiles and shadow of the can were then monitored with reflected light metering to confirm that colors would appear in the shadow with the remaining tiles being a bright white.

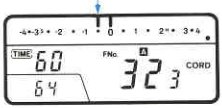
• Incident light measurement ("A" key)



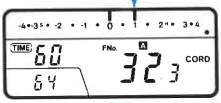
• Monitor the white areas on the tiles

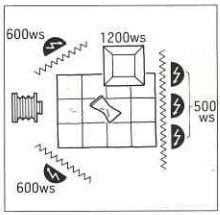


• Monitor the shadow of the can



• Monitor the front tiles





Exposure: f/22 + 2/3, 1/60 sec.

Contrast control

When the subject contrast exceeds the latitude of the film, shadows or highlights are often sacrificed the composition (see page 23). Both in the studio and out, lighting can be controlled to adjust subject contrast without losing any detail in the picture. In the scene at right, the outside is brighter than the inside (the contrast is high), and the subject contrast exceeds the film latitude.

If the exposure is adjusted for the outside, the model and car will be too dark as shown in photo C at the bottom right. Similarly, if the exposure is adjusted to the inside, the outside will be grossly overexposed (photo B, bottom left). In such situations, daylight synchronized flash* will add light and decrease the contrast, producing photograph A. In short, additional lighting (flash light in this case) lowers the subject contrast to within the film latitude.

Metered outside (memorized)

Metered indoors, on face

Metered indoors, on face with synchronized flash

In the photograph (A) the natural (ambient) light outside is metered, the flash is then synchronized to fill the shadows inside and lower the contrast to approximately 2:1 so that the background is slightly overexposed. Shadows (on the radiator grill), the model's face and highlights (on the wall) were then monitored with reflected light metering.

Shadows monitored

Face monitored

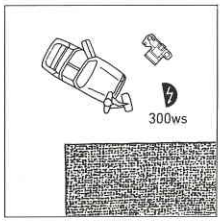
Highlights monitored

*Daylight flash sync is a process is which sunlight (ambient light) and flash light are both used in the exposure. The analyze and memory functions of the Flash Meter IV are very effective when photographing scenes using both daylight and flash light.

(A) Exposure: f/5.6, 1/60 sec.

(B) Exposure: f/4, 1/4 sec.

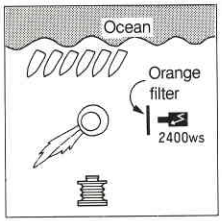
(C) Exposure: f/5.6, 1/125 sec.



Creative exposure measurement:
mixing ambient and flash lighting

Mixing ambient light with a flash and an orange filter can effectively create a twilight atmosphere on cloudy days. In the photograph right, exposure was balanced for the background.

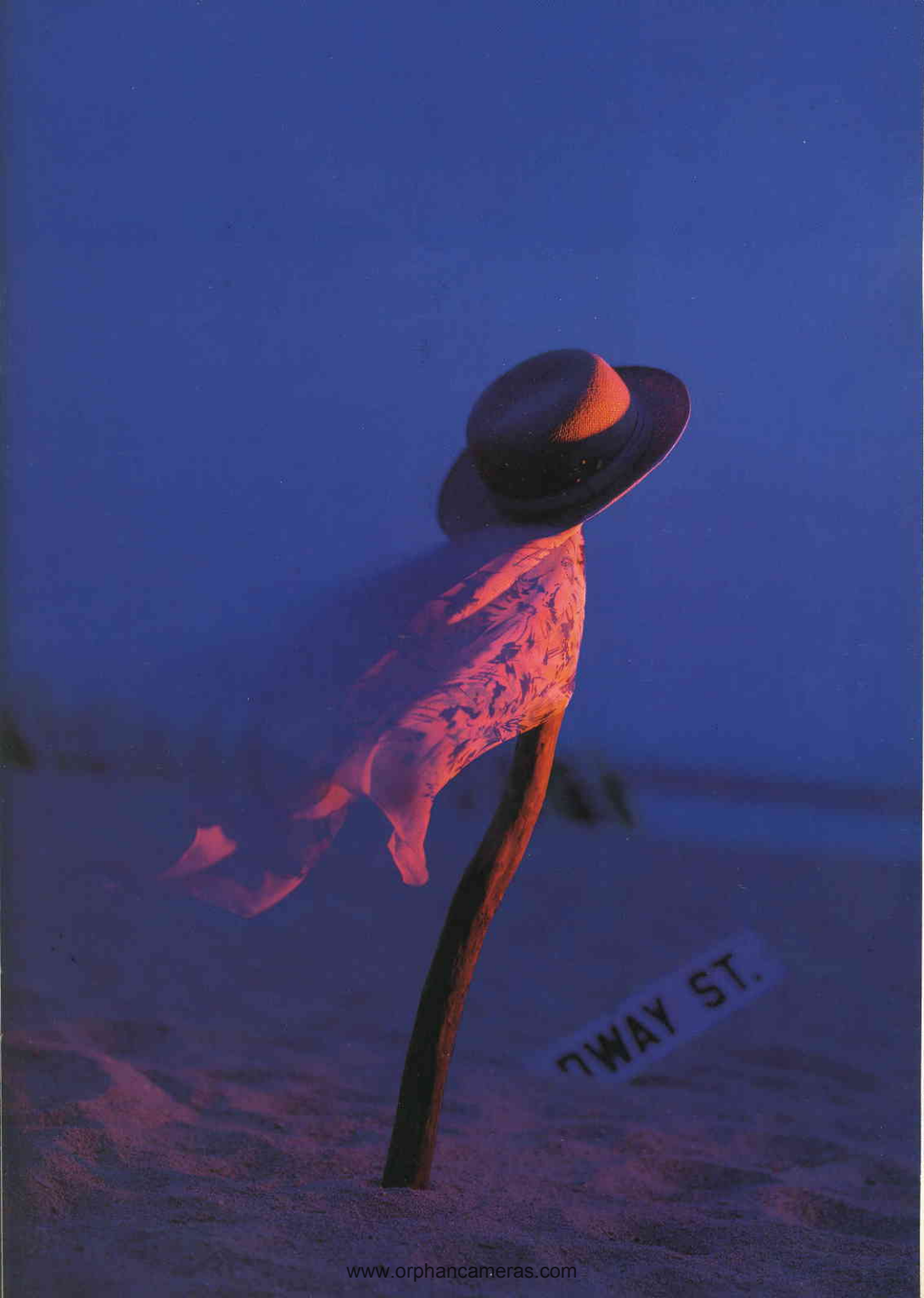
The hat was then measured and a strong flash added to enhance contrast and accents, turning an otherwise non-descript, cloudy sky into a bright evening sky with sunlight slanting down through the clouds.

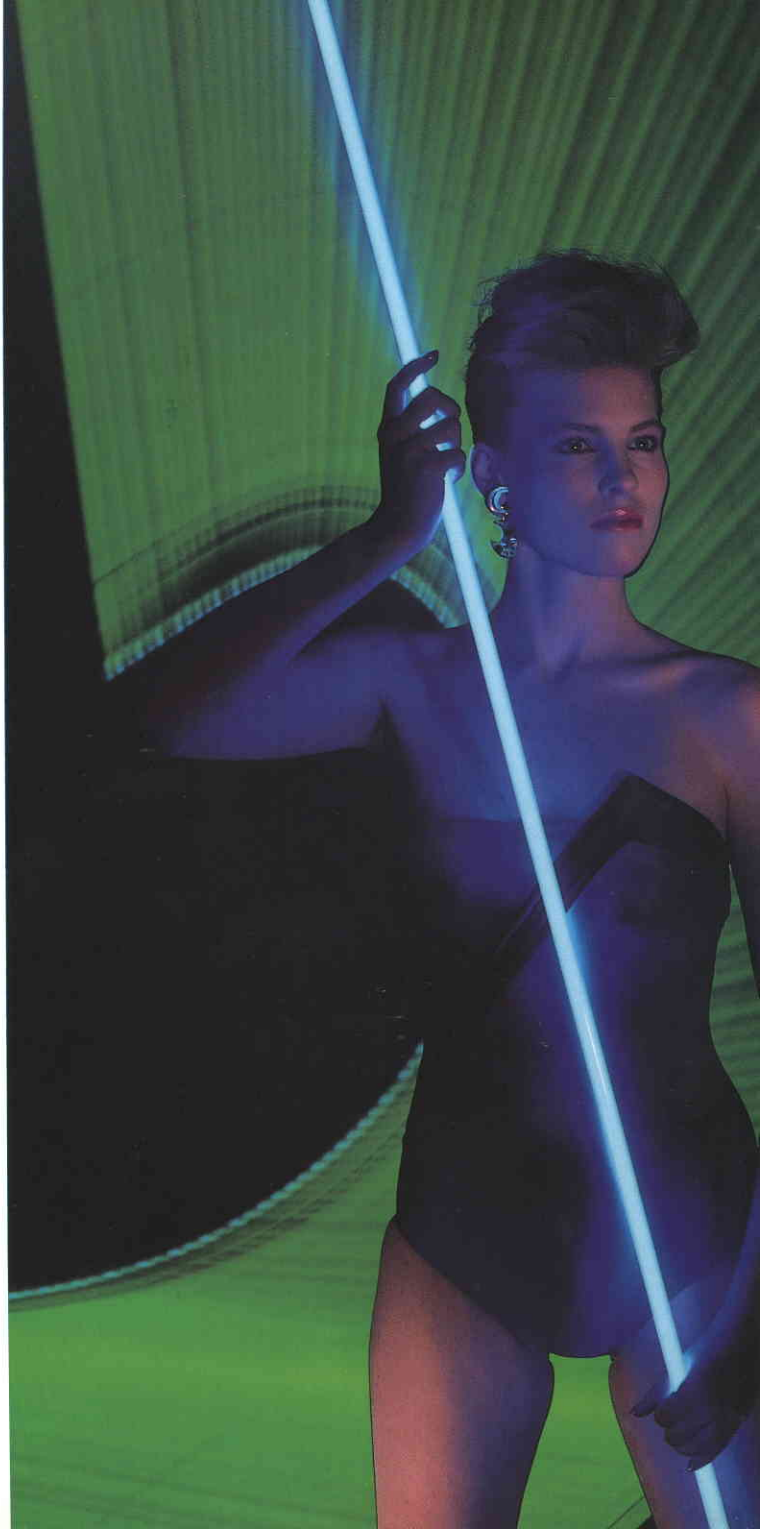


• Flash exposure was meterd.

• Measure ambient light

EXposure: f/5.6 + 1/2, 1/2 sec.

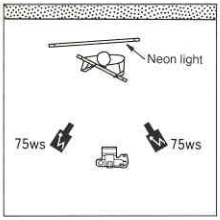




Mixed lighting control: neon and flash lighting

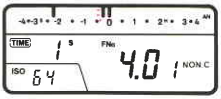
Flash light was added to the model holding a blue neon tube and the green neon light in the background was moved throughout the one-second exposure to create a flickering effect.

The model's face and legs, illuminated by both the blue neon light and flash, were metered. The analyze function was then used to determine the ratio between ambient and flash light on the face and legs to adjust the lighting. Flash intensity was decreased to emphasize the blue light from the neon tube.



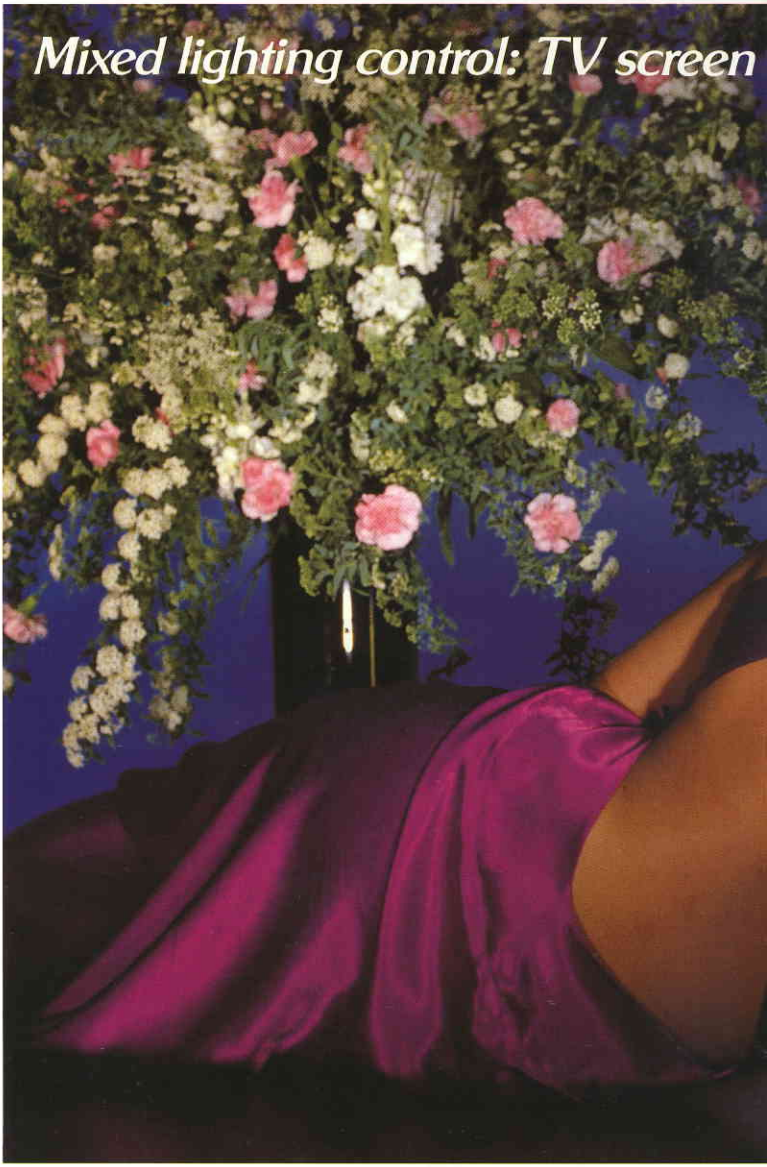
On face

On legs



Exposure: f/2.8 + 1/2, 1 sec.

Mixed lighting control: TV screen



The model's body and the flowers were illuminated with a spot flash, letting light from the television screen illuminate the face.
Using the analyze function, a measurement of the model's face indicated additional lighting was needed on the body and flowers; the spot flash was positioned to help accent the face.

The Flash Meter IV handles such assignments easily. Conventional metering techniques have a hard time determining the effect that subtle changes in lighting will have on exposure coming from sources such as a TV screen.

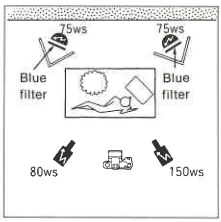
Reading on face

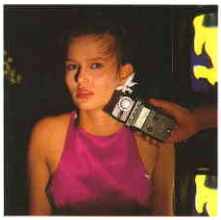
Reading near waist

Reading on flowers

Exposure: f/4 + 1/2, 1 sec.

and flash lighting

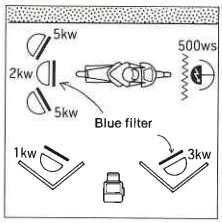




Mixed lighting control: Tungsten and flash lighting

A sense of dynamic action was captured by moving the camera during a one-second exposure under mixed lighting consisting of a blue filter over a tungsten light and normal flash. While the blurs are accented highlights illuminated only by the tungsten, flash light was added when the camera was stopped.

The analyze function was used to determine the illumination and color reproduction of the motorcycle while the camera was still. The bike was almost completely exposed with a 1/30 sec. exposure following shutter release and prior to camera movement. With an f/5.6 aperture, the tungsten light had virtually no effect on colors.



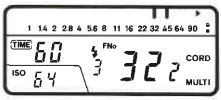
Analyzed at f/5.6, 1 sec.

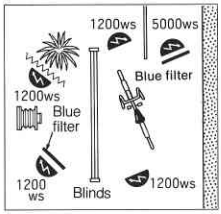
Cumulative exposure metering

The first exposure captured the blues of the blinds. The second exposure turned the spaces between the slats white and caught the tire peeking through from the bottom. In the third exposure, the blinds were removed and the bicycle was exposed as a blue silhouette.

Cumulative readings with reflected light metering enabled the photographer to control the contrast between the slats and monitor the exposure of those areas silhouetted by the bicycle through the blinds and those areas not silhouetted.

The digital display indicates the integrated value of the three exposures creating the bicycle silhouette. The pointer above f/45 on the analog scale indicates the part of the slats which will not be silhouetted; f/90 is the cumulative exposure for the spaces between the slats.





Exposure: 1st Blinds exposed blue.
2nd Tires visible through blinds exposed: illumination from behind the blinds; blue lights in front extinguished.
3rd Bicycle silhouetted: white background lit with blue lights; blinds have been removed.

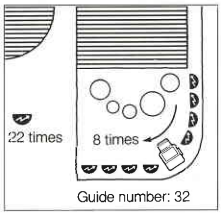
Cumulative exposure metering: Mul

tiple bursts of flash

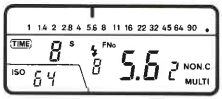
To illuminate these large buildings with a small flash (GN 32), the tables were exposed by firing a flash 8 times. The building was exposed by firing a flash 22 times with the flash unit as shown in the figure below.

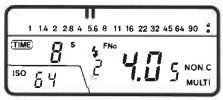
The tables and patio were metered eight times with incident light metering and the cumulative readings; the building was metered 22 times with the reflected light metering and the cumulative readings.

The exposure was adjusted so the background would be slightly underexposed because ambient light has an effect on the exposure during the duration. Flash recharge per exposure was 8 seconds with the camera set at "bulb".



Meter the building



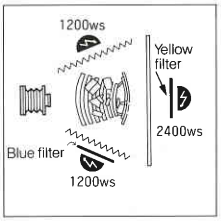


Exposure: f/5.6, bulb exposure (approx. 4 min.)
Flash fired 8 times towards the tables, 22 times towards the buildings.

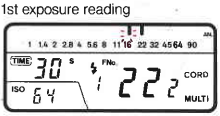
Cumulative exposure metering

Cumulative exposure metering of this scene indicated most objects would be fully exposed with the first and second exposures, leaving the lamp-lit miniatures to be finished with ambient and flash light. The miniatures on the chair were illuminated by both the lamp light and blue-filtered flash light. The miniatures on the chair were slightly overexposed, compared with the edges lit only by the flash.

In the third exposure, the photographer sought to flare the light coming through the openings in the chair and illuminated from behind. An aperture-priority cumulative reading indicated that the flash should be fired four times with the lens at f/90 to overexpose the gaps by about three stops compared with the main lighting in exposures one and two.

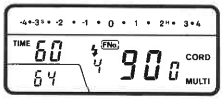


1st exposure reading



Cumulative reading of 1st and 2nd exposure

3rd exposure reading



Exposure: 1st	Exposure made with a small tungsten lamp on the chair and flash light with blue filter.	f/22+ 1/2, 30 sec.
2nd	Exposure from small stand lamp on chair top; soft effects filter on lens.	f/22 + 1/2, 30 sec.
3rd	All lights on chair turned off; illumination from back-ground flash with yellow filter; soft effects filter on lens.	f/22 + 1/2, "bulb" exposure; flash fired 4 times.

Booster II

Booster II and attachments

The Minolta Booster II is a TTL exposure meter cell which permits direct metering of low light levels using any of the Booster II reflected-light receptors. The receptors enable direct metering via Flash Meter IV* of light levels which cannot be metered with a flash meter alone.

Some examples: brightness at the focusing screen of large format cameras, at the film plane of SLR cameras or at the eyepiece of the viewfinder, in the eyepiece of a microscope and other applications in which light has already passed through an optical system.

The booster's cable plugs into the accessory jack on the Flash Meter IV, and the spot-probe attachment, SLR eyepiece attachment, microscope receptor or 35mm film plane attachment is attached to the booster. One of two metering techniques is used:

Fixed aperture metering

In this technique the aperture is preset. The meter reading can be read from the Flash Meter IV data panel as when metering with Flash Meter IV alone. This technique corresponds to exposure measurement at open aperture and is used with the spot-probe attachment or SLR eyepiece attachment.

Stop-down metering

As the name implies, the aperture is stopped down to the desired aperture and the shutter speed or guide value (GV) is read when the Flash Meter IV indicates a specified aperture. This technique corresponds to stopped-down, TTL metering and is used with the 35mm film plane attachment or microscope receptor.

When first using the booster, it is also necessary to obtain the compensation factor indicated on the compensation scale according to the optical characteristics of the photographic equipment used, including the camera and lens.
If the same equipment and materials for which this compensation factor is determined are used, TTL metering is possible under the same conditions as reflected light metering.

• For details refer to pages 48 and 49 and the Booster II instruction manual.
* The Booster II can also be used with Minolta Flash Meter III, Flash Meter II, and Auto Meters III, IIIF, and II.

Spot-probe attachment

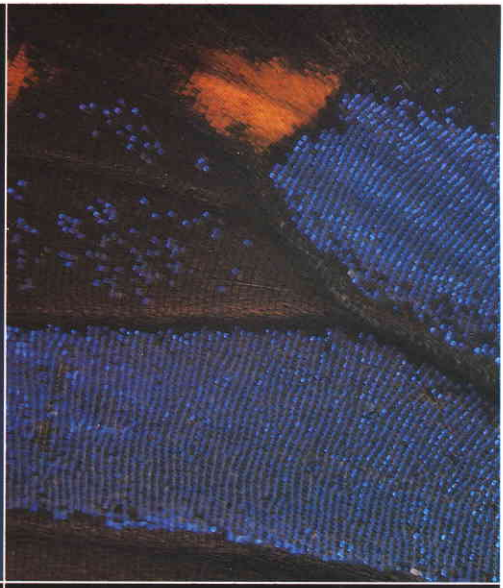
SLR eyepiece attachment

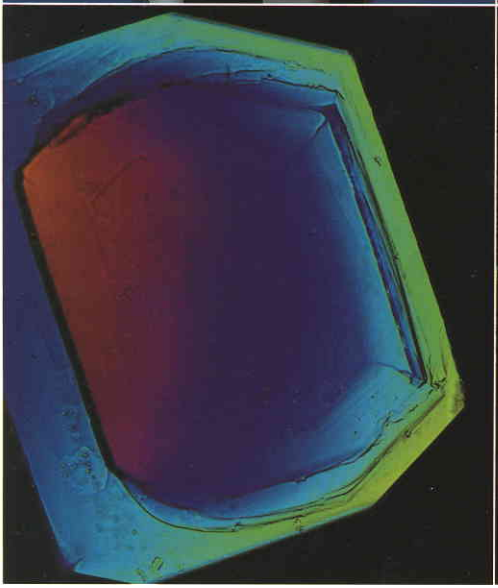
Microscope receptor

35mm film plane attachment

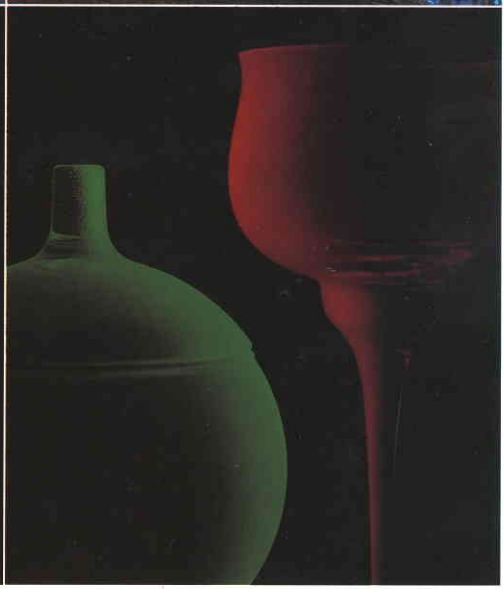
Taken with large format view camera
(using spot-probe attachment)
4×5 view camera; f/32, 1/250 sec.

Macrophotography with 35mm SLR, magnification 3.35X
(using SLR eyepiece attachment)
35mm camera; f/11, 1/60 sec.





Photomicrograph (10X objective, 10X close-up lens)
(using microscope receptor)
35mm camera; using polarizing light



Low illumination exposure
(using boosted sensitivity, reflected light receptor)
4×5 camera (with UV filter); f/22, 12 min.; 30 ws ultra-violet light source

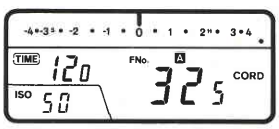
Exposures with the spot-probe attachment:

view camera exposures

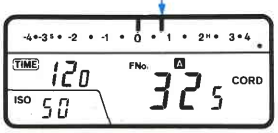
TTL metering within a 5 mm diameter circle on the focusing screen of a view camera is possible by attaching the spot-probe attachment to the Booster II. Commonly used in product photography, on-screen metering with the spot-probe permits accurate metering of the exposure and subject contrast without calculating exposure increases. Even more precise measurement is made possible by using three choices of exposure (highlight biased, shadow biased and averaging).

For example, the photograph at right was taken with illumination shining through the glasses. The spot-probe attachment was used to carefully meter the subjects and various locations in the background to determine the exposure so that subject contrast remained within the latitude of the film. To emphasize the tones of the bird, the bird was metered and key [A] was pressed to lock the reading. Numerous spots from highlights to shadows in the background, various parts along the stem of the purple glass and the glass with liqueur were all then metered.

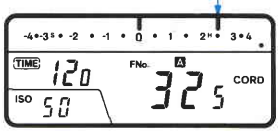
Reading: Glass bird



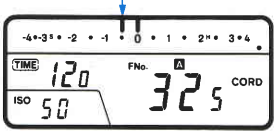
Purple glass stem



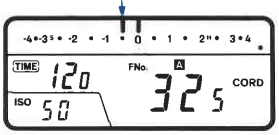
Background highlights



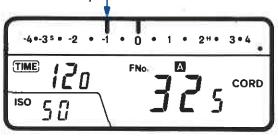
Blue in center glass



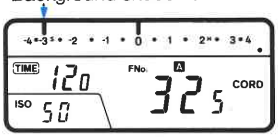
Blues in the background

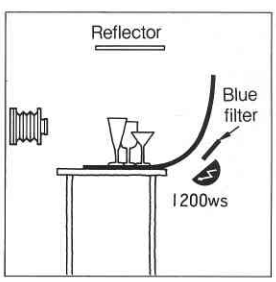


Green liqueur

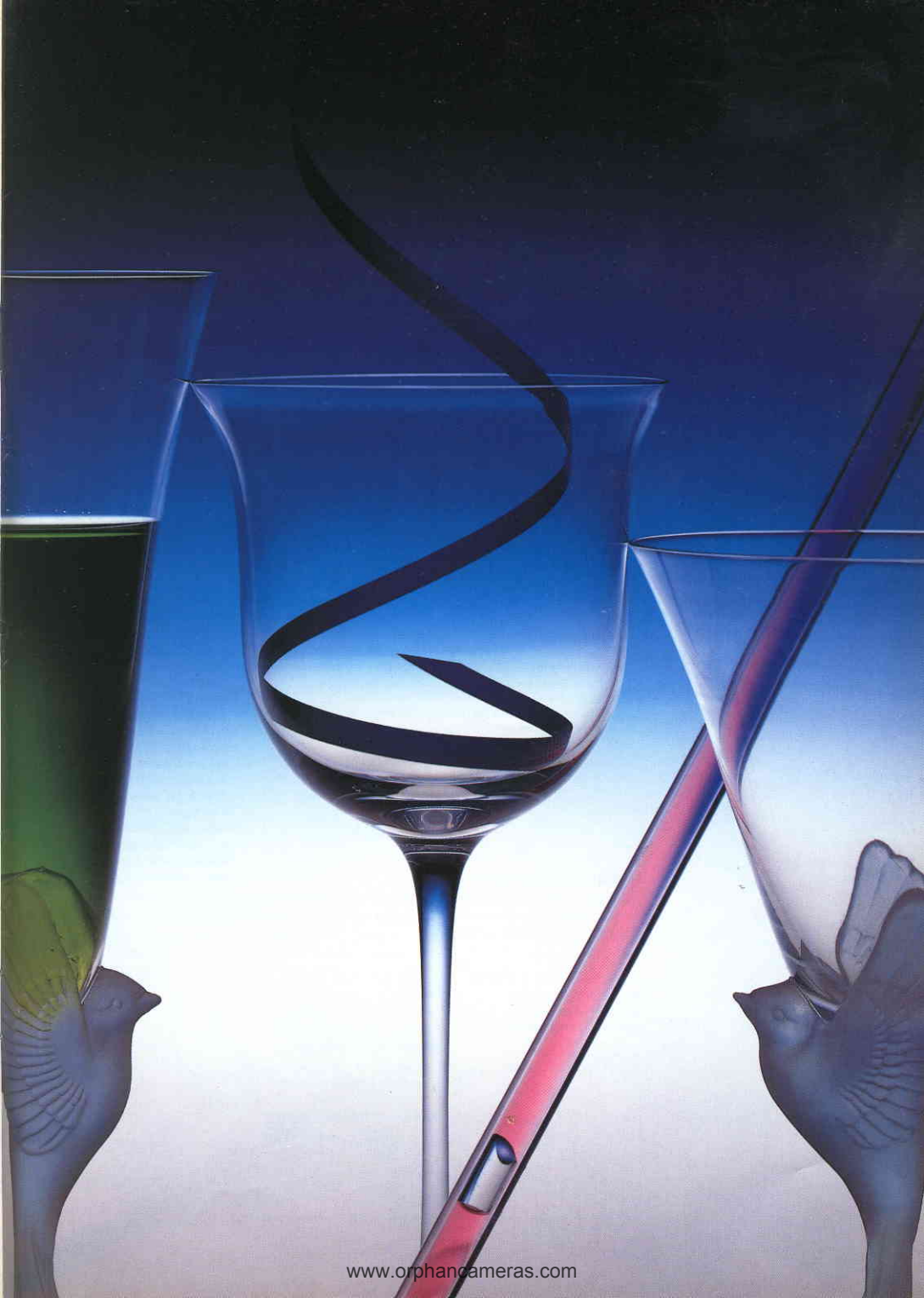


Background shadows





Exposure: f/32 + 1/2, 1/125 sec.
Reading: Flash Meter IV with Booster II and spot-probe attachment



Booster compensation

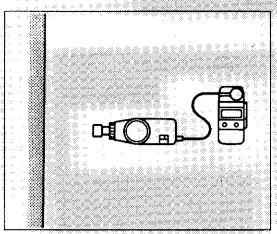
The Booster II contains a built-in increased sensitivity feature which boosts meter sensitivity in 1/3 stop intervals; when the compensation dial is set to C, sensitivity is boosted five stops; when set to H, sensitivity is boosted approx. eight stops.

Booster sensitivity matches that of the Flash Meter IV when the dial is set to L, allowing the booster to be used as a reflected light receptor with a 60° acceptance angle by extending the receptor hood.

The difference in sensitivity between optics of the photographic system and spot-probe attachment must be determined with the booster set up as a reflected light meter before using the spot-probe attachment. After calibrating the booster, the scene is metered with either fixed aperture or stop-down metering.

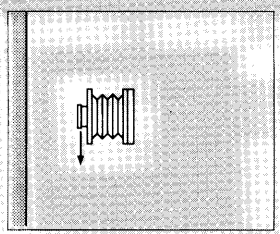
Fixed aperture metering

Calibration

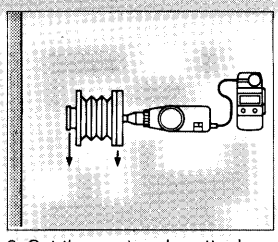


1. Set the sensitivity dial to L and meter a flat surface with even reflectance* using reflected light receptor. Jot down the reading.

*The surface should be an evenly illuminated surface, such as a wall, large enough to cover the angle of the lens to be used.



2. Direct the camera at the same even reflectance surface and hold it firmly. Focus the lens at infinity and close the aperture to the desired setting.



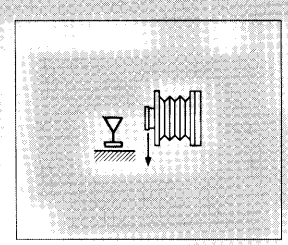
3. Set the spot-probe attachment to the focusing screen and turn the compensation dial until the reading matches that noted in step 1.

- Setting the dial to H may in some circumstances not be sufficient. If this happens, increase the ISO setting on the Flash Meter IV until the readings match or use the stop-down metering technique.
- Block any light which does not come directly through the lens when metering on the focusing screen.

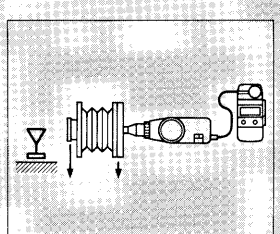
Metering: Fixed aperture

The compensation dial should be set to the position determined in step 3 above before metering. As the compensation factor differs according to the lens in use, the compensation factor has to be changed when the lens is changed.

Adjust the camera and lights and set the lens to the aperture used when calibrating the booster.



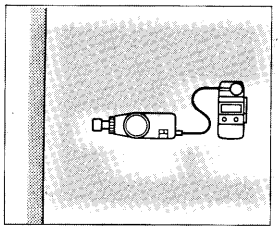
Set the spot-probe attachment on the groundglass and take a reading. Readings indicated on the Flash Meter IV display can be used as is.



Stop-down metering

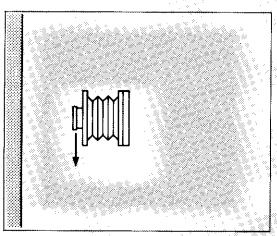
Calibration

Compensation required for the stop-down metering mode is determined as explained below:

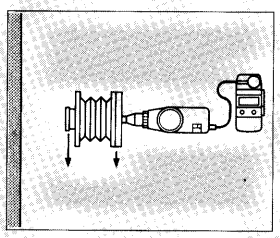


1. Set the sensitivity dial to L and meter a flat surface with even reflectance* using the reflected light receptor. Jot down the reading.

*The reading should be a shutter speed and aperture smaller than the full lens aperture.



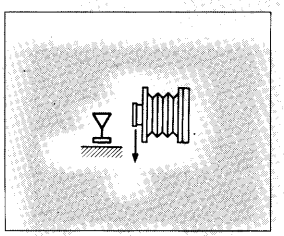
2. Direct the camera at the same even reflectance surface. Focus the lens at infinity and close the aperture to obtain the same reading as in step 1.



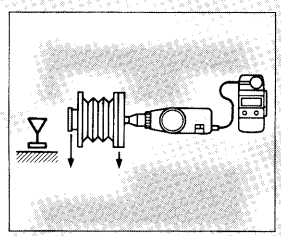
3. Set the spot-probe attachment on the focusing screen and meter with the shutter speed noted in step 1. Turn the compensation dial until the display on the Flash Meter Ⅳ indicates the same aperture setting.
   - Block any light which does not come directly through the lens when metering on the focusing glass.

Metering

The compensation dial should be set to the position determined in step 3 above before metering. (If the booster is calibrated in fixed aperture metering with an f/5.6 aperture, that setting on compensation dial can be used in stop-down metering, too.)



Adjust the camera and lights and close the lens to the desired aperture.



Set the spot-probe attachment to the groundglass and take a reading. Use the shutter speed or GV reading indicated when the display on the Flash Meter Ⅳ for correct exposure.
- Either aperture-priority or shutter priority metering can be used. If aperture-priority metering is used, set the Flash Meter Ⅳ to FNo. mode. Use f/5.6 to take the reading.