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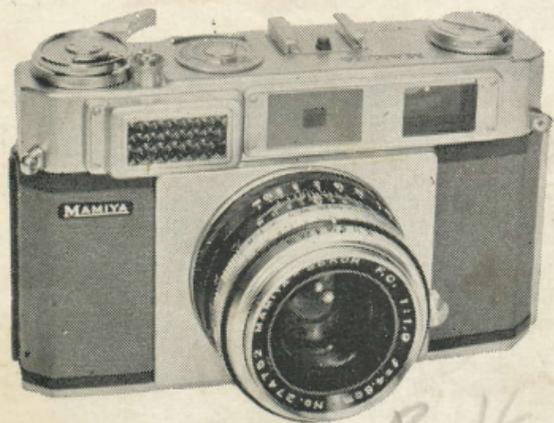
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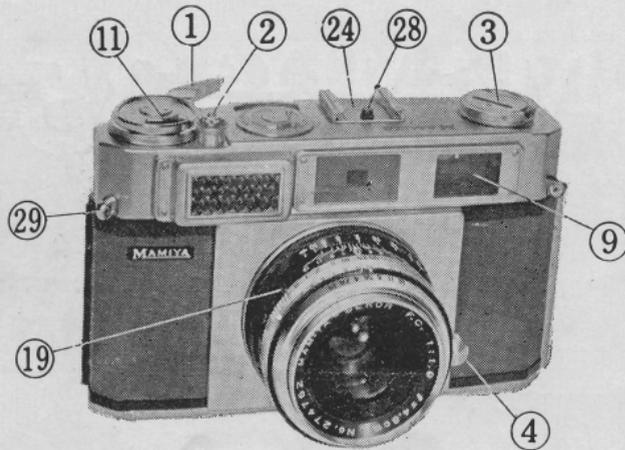
MAMIYA
metra **35**

Butkus

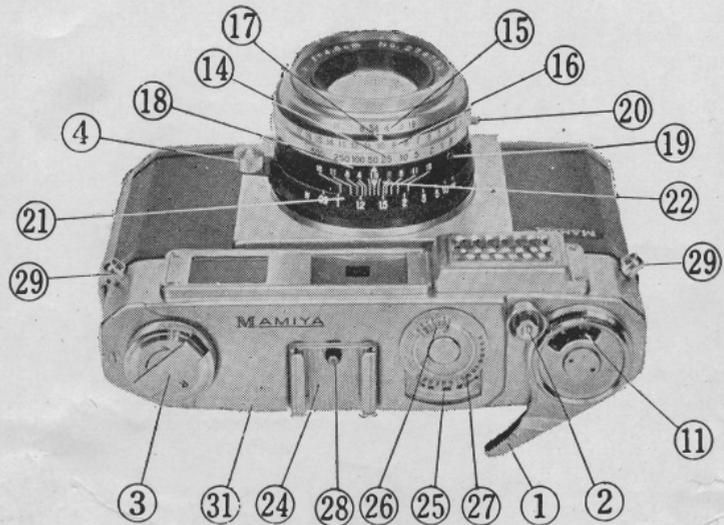
model 2

USER'S MANUAL

NOMENCLATURE



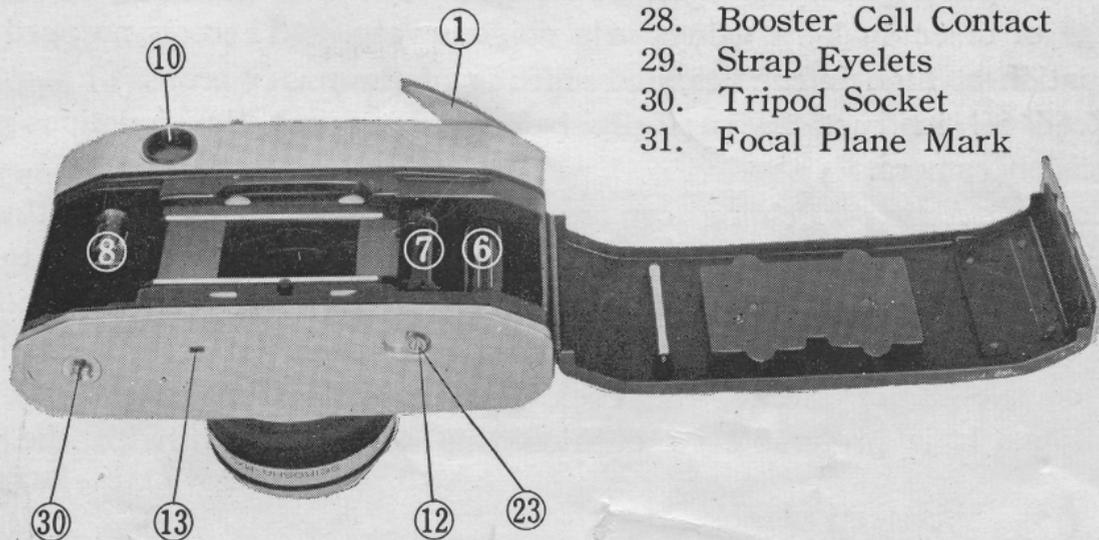
1. Cocking Lever
2. Shutter Button
3. Rewind Crank
4. Focusing Lever
5. Backlid Catch
6. Take-up Spool
7. Sprocket
8. Cartridge Chamber



9. Viewfinder Window
10. Eyepiece
11. Exposure Counter
12. Rewind Indication
13. Film Loaded Indication
14. Shutter speed Scale and Control
15. Lens
16. Lens Mount
17. Lens Element
18. Lens Element
19. Lens Element
20. Lens Element
21. Lens Element
22. Lens Element
23. Lens Element
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25. Lens Element
26. Lens Element
27. Lens Element
28. Lens Element
29. Lens Element
30. Lens Element
31. Lens Element

15. Aperture Scale
16. Light Value Scale
17. Aperture/LV Index Mark on Aperture Ring
18. Cock Indication
19. Synchroflash Terminal
20. Synchroflash M-F-X Adjustment

21. Distance Scale
22. Depth of Field Scale
23. Sprocket Release Button
24. Accessory Clip
25. Guide Lines
26. Filmspeed Scale
27. Light Value Meter Scale
28. Booster Cell Contact
29. Strap Eyelets
30. Tripod Socket
31. Focal Plane Mark



GENERAL DESCRIPTION

The MAMIYA METRA Model 2 is the latest development of the famed MAMIYA METRA series of 35-millimeter miniature cameras, acclaimed by discerning photo-enthusiasts who prefer the greater freedom of choice afforded by dispensing with mechanical cross-coupling of the built-in exposure meter to the exposure controls. The new improved exposure meter gives the whole range of essential light values in a single sweep. There is no need for attenuation at high intensities, and shifting of the meter scale.

Read all instructions carefully before trying out the functions of this precision camera.

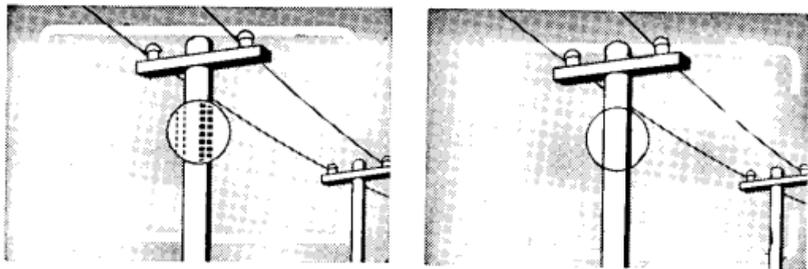
Cocking Action Holding camera in both hand, hook right thumb on cocking lever (1), and turn it through an arc of 180° till it comes to a stop. This action advances the film one frame, cocks the shutter mechanism, moves the exposure counter up one step, and turns the cock indication red. At completion of stroke, the cocking lever will spring back to its original position. It is preferable to cushion this return action with the thumb.

Once the camera is in cock, the cocking lever cannot be operated.

Automatic Aperture Control With the SEIKOSHA-MXL shutter of the MAMIYA METRA Model 2, the aperture settings are automatically regulated by the shutter speed control. Consequently, once the proper light value is set on the LV scale, correct exposure of the film is obtained regardless of changes in shutter speed.

Electronic Exposure Meter The built-in exposure meter is a specially designed, high-precision instrument which gives accurate measurements of the light value of the subject-matter. No mistakes in exposure can be made once the light value indicated by the meter is transferred to the LV scale on the shutter housing.

Coupled Rangefinder
Moving the focusing lever (4) back and forth causes the lens-shutter assembly to move in and out, and this movement is



transferred to the rangefinder system. This coupled action can be seen by the changes that occur in the double-image focusing spot at the center of the viewfinder field. Sight subject through eyepiece (10), and adjust focusing lever so that overlapping images of subject in the focusing spot merge. At this point the subject is in proper focus, and the distance is indicated on the distance scale (21). When focusing lever is at lower end of its arc, focus is set at infinity (∞), at 1 meter (approximately 3.3 feet) when at the other end.

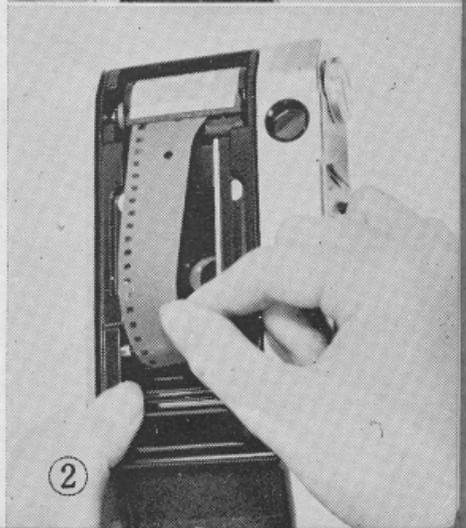
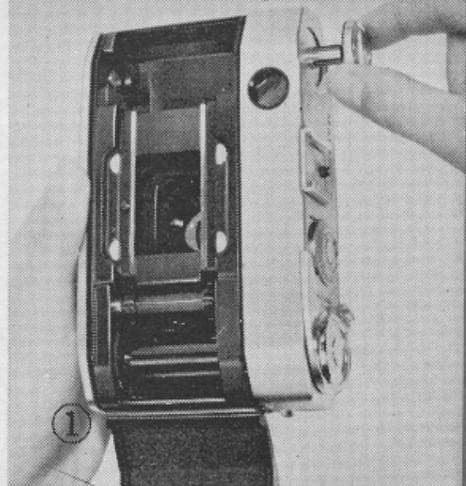
Film Rewind To return exposed film from take-up spool (6) into safety cartridge or special MAMIYA cassette, press sprocket release button (23) to release sprocket (7) from filmwind mechanism. Erect rewind crank (3) and turn in direction of arrow mark (clockwise) to take up exposed film into the cartridge. Do not touch sprocket release button (23) or operate rewind crank (3) while there still remains unexposed film in the camera.

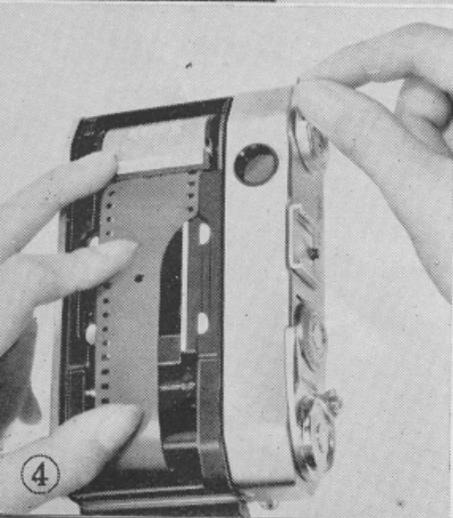
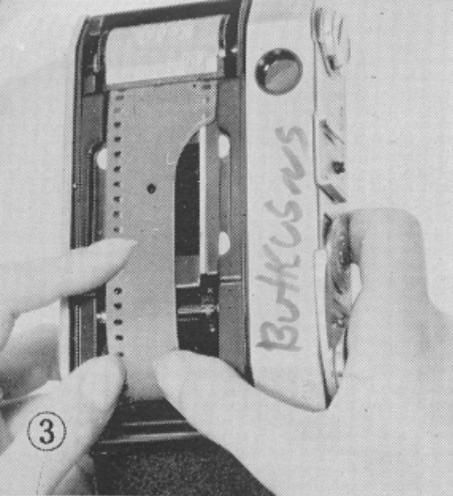
The depressed sprocket release button will spring out automatically upon operation of the cocking lever.

FILM LOADING

The 35-millimeter film used in the MAMIYA METRA Model 2 is standard monochrome or color film (20 or 36 exposures), preloaded in safety cartridges or the special MAMIYA cassette. Always avoid direct sunlight when loading or unloading. Light penetrating the safety cartridge will cause white streaks or blanks in the positive reproductions.

1. Pull up backlid catch (5), and swing backlid fully open. Pull out rewind crank as far as it will go (Fig. 1). Insert safety cartridge or cassette, reloaded with unexposed film, knob side down in the cartridge chamber (8), and secure by pushing rewind crank (3) back into original position. If spindle does not engage the cartridge





spool properly, turn rewind crank slightly until it snaps home with a click.

2. Pull out about four inches of film, and fold about a quarter inch of the end inward toward the emulsion (non-glossy) side (Fig. 2).

3. With tip of thumb turn take-up spool (6) until slit on spool appears in convenient position. Insert folded end of film in slit of take-up spool, and wind on to spool at least one turn, seeing to it that the sprocket teeth properly engage the film perforations (Fig. 3).

4. Holding the film in position on the sprocket (7), turn rewind crank (3) clockwise to take up all slack (Fig. 4).

Turn take-up spool slightly with thumb to see that film is played out properly from the cartridge or cassette, and that it meshes with the

sprocket (7).

5. Close backlid, and push down backlid catch (5). If too much film is wound on to the take-up spool during loading, and the perforations on both sides of the film are engaged by the sprocket, one or two frames may be wasted.

When the backlid is closed, the exposure counter indicates "START."

6. Keeping lens covered, operate cocking lever (1) and shutter button (2) to take two blank shots. Upon working the cocking lever for the third time, the exposure counter (11) will indicate "1," and the camera is ready for the first picture.

7. When film is being advanced and taken up properly by cocking action, the rewind crank will revolve in counterclockwise direction. If rewind crank (3) fails to turn, rewind all but a few inches of the film into the safety cartridge; open backlid; and rethread film on to the take-up spool in the manner described above.

8. When camera contains film, the film loaded indication (13) will turn red.

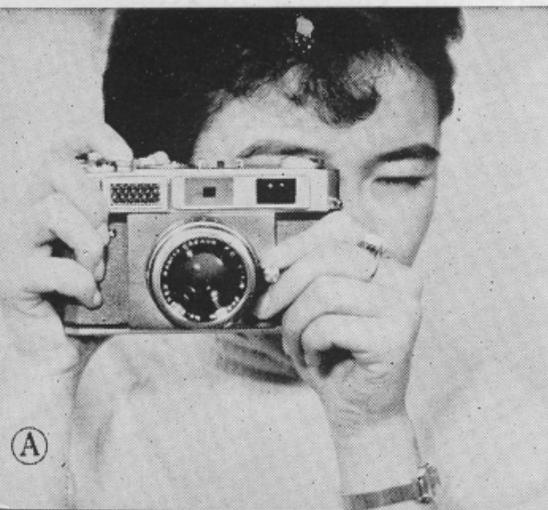
9. Finally, turn light value scale dial (27) so that the ASA rating of the film in the camera is indicated on the filmspeed scale (26).

CAMERA GRIP FOR PICTURE-TAKING

Any comfortable and relaxed manner of holding the camera will do, so long as the camera can be kept perfectly steady, and the fingers do not obstruct the viewfinder and rangefinder windows.

Grip camera from the sides with both hands, so that index and middle fingers of the left hand catch on the focusing lever (4), while the right thumb is hooked lightly on the cocking lever (1), and the right index finger rests lightly on the shutter button (2).

1. For horizontal pictures, bring camera up to eyelevel without changing grip. Close left eye, and sight with right eye through the eyepiece (10). Keep elbows close to body for



maximum steadiness, and hold breath momentarily when operating shutter button (see Cut A).

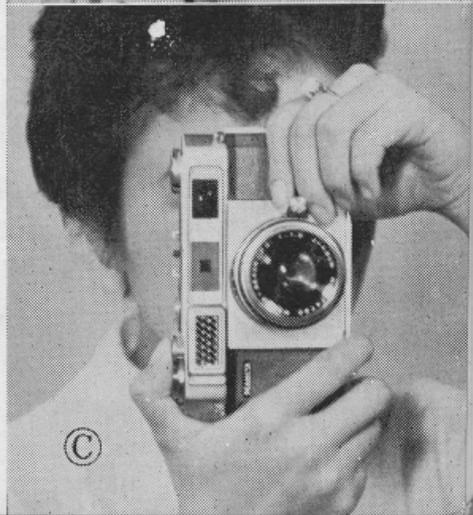
2. For vertical pictures, there are two basic grips.

Method one: Turn camera over to the left, with left arm held close to the body for steadiness, and with left palm in firm contact with cheek. When focusing in this position, use thumb and index finger of left hand (Cut B).

Method two: Turn camera over to the right, using right thumb and fingers to operate shutter button and grip the right side of the camera. Keep right elbow close to the body (Cut C).

FOCUSING

Sight subject through eyepiece (10) of the viewfinder. Note bright focusing spot in center of field. Adjust focusing lever (4) so that overlapping



images seen in the focusing spot merge into a single image. Accurate focusing is essential at close ranges. For ease of judging merging of images, make use of clearcut vertical lines, such as poles, window frames, and the nose and cheek lines in portriat work.

When the focusing spot images merge, the subject is in correct focus, and the distance from the camera to the subject is indicated on the distance scacle (21).

By means of the depth of field scale (22) which lies adjacent to the distance scale (21), it is possible to find the focusing tolerance for any given aperture size.

The bright translucent frame in the viewfinder field indicates the limits of the subject as registered on the film. Because the brightly illuminated optical frame is coupled to the focusing mechanism, parallax is automatically compensated. There is no fear of lopping off heads.

When taking vertical pictures, it is often easier to focus first in the horizontal position, then, shift to the vertical for picture composition and shooting.

DEPTH OF FIELD

Depth of field, or focusing tolerance, is the range along the optical axis of the camera lens within which sharp register of the subject can be obtained. This range depends on distance and aperture size (f/setting).

1. The smaller the lens opening, the greater the depth of field or focusing tolerance.
2. The farther away the subject, the greater the tolerance.
3. The shorter the focal length of the lens, the greater the depth of field.
4. There is more focusing tolerance beyond the subject in focus than in front.

Depth of field depends very much on lens design, and on the degree of sharpness of register (technically, the size of the circle of confusion) required.

The focusing tolerance (depth of field) of the MAMIYA-SEKOR F 1.9, $f=48$ mm lens of the MAMIYA METRA Model 2 is given in the subjoined table.

DEPTH OF FIELD TABLE (circle of confusion, 1.7/1,000 inch)

Aperture	Distances focused on (in feet)							
	∞	30	15	10	7	5	4	3.5
1.9	92' 1" ∞	22' 8½" 44' 3"	12' 11½" 17' 10"	9' ¾" 11' 2"	6' 6½" 7' 6½"	4' 9¼" 5' 3¼"	3' 10¼" 4' 2"	3' 4¾" 3' 7½"
2.8	62' 6¼" ∞	20' 4½" 57' 1¾"	12' 2" 19' 7"	8' 8" 11' 9¾"	6' 4" 7' 10"	4' 8" 5' 4¾"	3' 9½" 4' 3"	3' 4" 3' 8¼"
4	43' 9½" ∞	17' 11" 93' 6¼"	11' 3" 22' 6½"	8' 2½" 12' 9¾"	6' 1" 8' 3"	4' 6¼" 5' 7"	3' 8½" 4' 4¼"	3' 3¼" 3' 9¼"
5.6	31' 3¾" ∞	15' 5¼" 624' 5¼"	10' 2¾" 28' 3"	7' 8" 14' 5½"	5' 9½" 8' 10½"	4' 4¼" 5' 10¼"	3' 7" 4' 6¼"	3' 2¼" 3' 10½"
8	21' 11½" ∞	12' 9½" ∞	9' ¼" 45' 7¾"	6' 11½" 17' 10¾"	5' 4¾" 10' ½"	4' 1¾" 6' 4"	3' 5¼" 4' 9½"	3' ¾" 4' 1"
11	16' ∞	10' 6½" ∞	7' 10¼" 200' 6¼"	6' 3" 25' 6"	4' 11½" 12' ¼"	3' 10¾" 7' ½"	3' 3¼" 5' 2"	2' 11¼" 4' 4¼"
16	11' ½" ∞	8' 1¾" ∞	6' 5½" ∞	5' 4¼" 88' 8¾"	4' 4¾" 17' 11"	3' 6½" 8' 8¼"	3' ¼" 5' 11¾"	2' 8¾" 4' 10¾"

With proper awareness of depth of field, it is possible to obtain photographs with sharp register of subjects at varying distances from the camera.

For example, to obtain a picture of a human subject 10 feet (approximately 3 meters) from the camera in front of a building 40 feet (approximately 12 meters) distant, both in sharp register, the aperture setting should be at $f/8$, and the focus (distance setting) should be at 15 feet. If, at the same aperture setting, the camera is accurately focused on the subject at 10 feet, background objects up to only 17 feet distant will register sharply.

Using this principle, it is possible to dispense with focusing for subjects more than 13 feet (about 4 meters) distant from the camera by pre-setting the focus at 30 feet on the distance scale (21) and using aperture settings of $f/8$ or less (8, 11 and 16).

INFRA-RED PHOTOGRAPHY

When using infra-red film in conjunction with red color filter, correction in focusing must be made to allow for the difference in refraction characteristics. First adjust focus, then shift distance indicated on distance scale

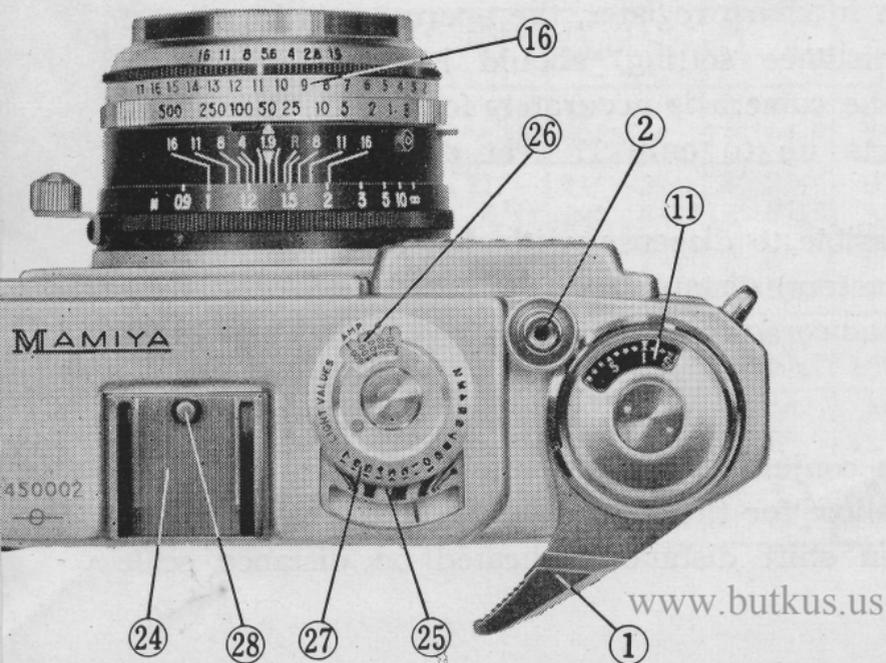
(21) to "R" index mark on depth of field scale (22).

USE OF THE BUILT-IN EXPOSURE METER

See that the rating of the film in use is set on the filmspeed scale (26).

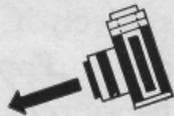
The index mark "AMP" of the filmspeed scale is used when the booster cell is in position to amplify the current actuating the microammeter.

Train camera on subject. The exposure meter needle will be deflected in proportion to the intensity of the light reflected by the subject (light value of the subject). Following the guide line indicated by the meter



needle, read the light value on the meter scale (27). Transfer this light value to the light value scale (16) on the lens-shutter barrel by adjusting the aperture ring (17). Correct exposure will now be obtained provided the available range of shutter-speed-aperture combinations is not exceeded (see section on shutter operation).

When illumination is inadequate, and movement of the meter needle cannot be discerned, use booster (amplifier) cell mounted on accessory clip (24). In this case, re-set light value meter scale (27),



using "AMP" index mark.

When measuring light value of subject, get close to main subject, and obtain average intensity of the reflected light. When, in taking snapshots or scenery, it is difficult to approach the subject, point camera at subject and foreground to avoid over-excitation of the photocell by skylight and background (See cut, preceding page).

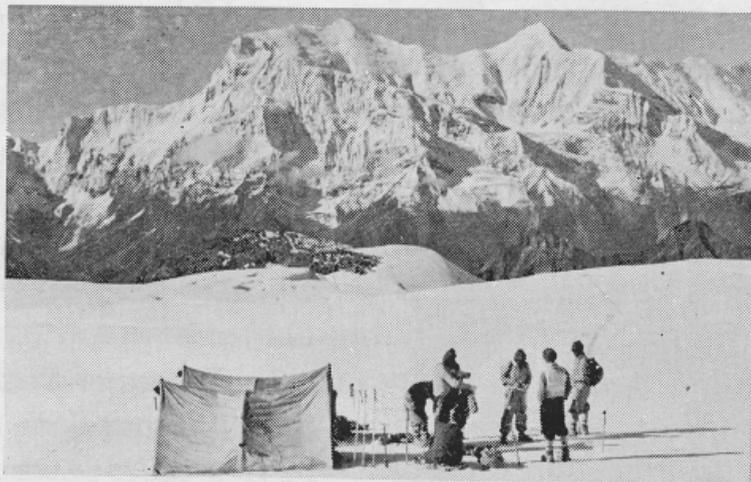
When photographing wide vistas or distant mountains, set light value scale setting on shutter at one numeral above the indicated reading (see cut).

When measuring light value of subject at close range, avoid creating shadows on the subject.

Under reverse illumination conditions, with light coming from behind subject, if silhouette effect is desired, measure background light value; if clear reproduction of subject detail is necessary, approach subject and measure dark portion of subject.

When under reverse lighting, details of both the subject and background are desired, use mean of the values obtained from the subject and the background.

When using a filter, compensate for absorption of the filter either by lowering the light value setting on scale (16), or shifting the filmspeed setting (26) to a lower value. For instance, with a filter of an exposure factor of $\times 2$, either the lens barrel light value setting is reduced one step, or the filmspeed scale setting is shifted from say 100 to 50.



UNLOADING FILM

When the number of exposures (20 or 36) available on the film have been used up, do not attempt to take more pictures. Push sprocket release button (23), erect rewind crank (3), and turn in direction of arrow mark (clockwise)

to return exposed film into safety cartridge or special cassette. When end of film, attached to the take-up spool, is freed, the easing of tension can be sensed by feel, while the rewind indication (12) will cease to turn. Stop rewinding as soon as the film loaded indication (13) turns blank. Open backlid, and remove safety cartridge or special cassette.

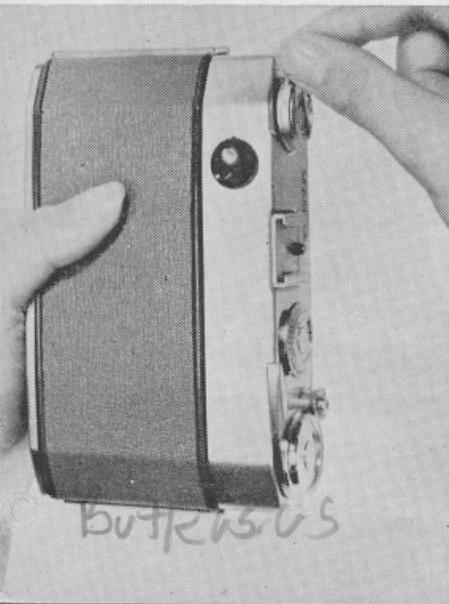
Sprocket release button (23) will automatically return to original position when cocking lever (1) is next operated.

CAUTION

1. When end of film is reached, the cocking lever (1) may jam before completion of its stroke. In this case, **never apply force**. Cocking lever can be freed simply by pressing the sprocket release button (23). Finish stroke, and allow cocking lever to return to original position.

2. If jammed cocking lever is forced, film may tear or break loose from cartridge spool to prevent rewinding except by opening camera in a photo-

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graphic darkroom.

3. If after unloading the camera is not reloaded, set light value meter scale dial (27) so that filmspeed scale (26) indicates "EMP" (empty).

SHUTTER OPERATION

The SEIKOSHA-MXL shutter of the MAMIYA METRA Model 2 is cocked at the time of film advance by operation of the cocking lever (1), so double exposure is positively prevented. All shutter controls (shutterspeed, and synchroflash MFX adjustment) are operable with the shutter cocked (however, see 3 below).

1. To set light value indicated by the built-in exposure meter on light value scale (16) by means of the index mark on the aperture ring (17), adjust both the aperture ring (17) and the shutterspeed control (14) on which is engraved the light value scale (16).

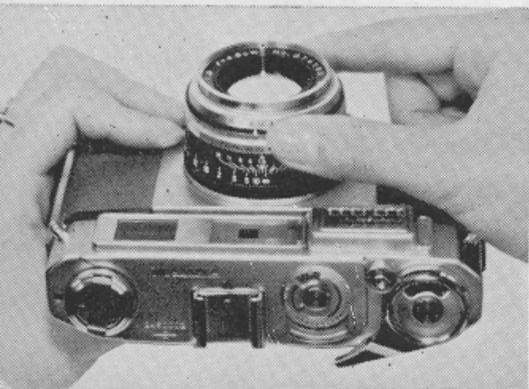
When, under extremely bright illumination, it is necessary to set the LV index mark (17) at 16 or 17 on the light value scale (16), it is easier to do so without the camera cocked.

2. Once the correct light value is set on the light value scale (16), the shutter speed control (14) will automatically regulate the aperture size; so when depth of field is necessary, use slow shutter speed. When taking action photographs of subjects in motion, use high shutter speeds, with extra care in focusing.

When changing shutter speed, apply finger pressure to aperture ring (17) so that it moves in unison with shutter speed control (14) (see cut). Otherwise, range of correct shutter speed-aperture combinations may be exceeded, with the index mark (17) slipping past the selected setting on the light value scale (16).

3. When shifting from $1/250$ to $1/500$ second with the camera cocked, considerable resistance is encountered because extra tension is applied to the shutter mechanism. It is preferable to make this change with the shutter uncocked.

4. With the SEIKOSHA-MXL shutter, the interval between 250 and 500 on the shutter speed scale (14) is double the normal step. Consequently, when shifting from 250 to 500



or vice versa, the light value scale (16) must be shifted one step to maintain correct correlation between shutter speed and aperture size. When shifting from 250 to 500, move up light value setting one step; when shifting from 500 to 250 or less, reduce light value setting one step.

When shifting from **1 (automatic shutter action)** to **B (manual control)**, exposure time must be doubled if no change is made in the aperture/LV setting. For each step of reduction in aperture size, the exposure time must be doubled—4 seconds, 8 seconds, 16 seconds, and so on.

5. Because of its internal construction, the SEIKOSHA-MXL shutter does not provide intermediate shutter speeds at intermediate settings. Consequently, the shutter speed settings must be at the click stops, and the shutter speed control must be adjusted before selection of aperture settings. On the other hand, the changes in aperture size are continuous; so it often happens that, when using LV control, the aperture index mark (17) falls at some intermediate position on the aperture scale (15).

6. The threaded socket at the center of the shutter button (2) is provided for attaching a cable release or a selftimer.

7. The shutter may be left cocked without harm to the mechanism except when the camera is put away in storage for some time.

8. The SEIKOSHA-MXL shutter provides full and accurate flash synchronization at all shutter speeds with all types of flash (see below), and is provided with M-F-X adjustment (20) and synchroflash terminal (19). In normal use, when not using synchroflash, the M-F-X adjustment should be kept at position X (no delayed action of the shutter).

9. When making blank shots, use shutter speeds faster than 25 (1/25 second) in order to save wear and tear on the automatic timing mechanism.

SYNCHROFLASH PHOTOGRAPHY

For accurate flash synchronization at all shutter speeds, the SEIKOSHA-MXL shutter of the MAMIYA METRA Model 2 incorporates a delay mechanism to allow for the time-lag that occurs before flashbulbs attain peak intensity. Always set synchroflash M-F-X adjustment (20) at correct position for the class of flashbulb used.

In synchroflash photography, the built-in exposure meter and light value control are not used. Read the instructions furnished with the flashbulbs or strobo (electronic) flash for aperture settings at various distances.

Position M is for class M flashbulbs (time to peak intensity about 20 milliseconds). Accurate synchronization of flash and shutter action is provided at all shutter speeds including $\frac{1}{500}$ second.

Position F is for class F flashbulbs (time to peak not more than 10 milliseconds). Shutter speeds up to $\frac{1}{100}$ second can be used. *BUTKUS-LS*

Position X is used in conjunction with strobo (electronic) flash units, which have no appreciable time lag, at all shutter speeds. Class M and class F flashbulbs can be used provided the shutter speed is not more than $\frac{1}{25}$ second.

Any of MAMIYA's synchroflash attachments may be used in conjunction with the MAMIYA METRA Model 2. If the MAMIYA B-C Flash Attachment is the choice, mount the gun on the accessory clip (24), and connect cord to synchroflash terminal (19). Check characteristics of the flashbulb to be used. Check flashbulb and synchro-circuit by means of tester incorporated in the MAMIYA B-C Flash Attachment. Set shutter speed, then aperture, on

basis of data furnished with flashbulb.

SPECIAL ACCESSORIES

To obtain maximum service and pleasure from the MAMIYA METRA Model 2, use only genuine MAMIYA accessories designed specially for this super-camera.

LENS HOOD (with leather carrying case) A lens hood, besides ensuring superior photography by exclusion of stray lights and reflections, affords extra protection for the lens against rain, spray, and snow.

FILTERS OF ALL TYPES For special effects and color correction, filters are essential. Landscape photography with blue sky and cloud effects, seaside shots, and picture of plant life, all call for filters. Low factor filters are also useful for safeguarding the exposed surface of the lens. Available in three shades of yellow, in green, and in other hues, including "skylight" for color photography.

Yellow Filters: for absorption of ultraviolet and blue rays in monochrome photography, will slightly darken the sky and emphasize white clouds.

Orange: used in the same way as yellow filters for photography of scenery. Suppression of blue light tends to darken the sky excessively.

Yellow-Green: absorbs ultraviolet and some blue, as well as infra-red and some red-orange. This filter is used for outdoor work as well as in portrait photography.

UV Filter: This colorless filter absorbs only ultraviolet light, and is used to reduce skylight as well as to afford protection for the lens.

Skylight Filter: For absorption of ultraviolet and bluish light reflected from the sky, to provide correct color balance when taking color pictures.

MAMIYA B-C FLASH ATTACHMENT This compact, collapsible flash attachment mounts



directly on the accessory clip, and incorporates the battery-capacitor principle of firing the flashbulb. This superior flashgun has the following features:

1. Usable either as a B-C (battery-capacitor) flashgun or a straight, battery-operated (two penlight batteries) unit.
2. When used as a B-C unit, the flashbulb, battery, and capacitor can be pretested by simply pressing a button, so misfire can be avoided.
3. Gimbal mount permits turning of flashgun at angles to the optical axis of the camera for indirect ("bounce") illumination.
4. Synchroflash circuit and contact can be pretested.
5. Provided with a circular exposure scale, which when set to the guide number for the flashbulb in use will give correct aperture setting (f/value) for any given distance.
6. High-grade capacitor of 300 mfd rating.

Extremely easy to operate, and superbly finished, this flash attachment will work excellently with cameras other than the MAMIYA. It is an essential piece of equipment for owners of cameras fitted with flash synchronization mechanisms.

AUTO-UP ATTACHMENT This attachment comprises auxiliary lens assemblies which permit portrait, copying, and other close range photography with full use of the coupled rangefinder for accurate focusing. The attachment is easily attached to the MAMIYA METRA Model 2, and is particularly useful for taking close-up pictures of people, flowers, insects, scientific specimens, documents, diagrams, and other objects at distances of less than 3 feet.

The optical system employed in the AUTO-UP attachment is the result of the tireless work undertaken by Dr. J. Koana, a leading authority in the field of optics. The single anastigmat system used is comparable in performance to the Zeiss-produced Proxar. The lens material is of the finest, with high light transmitting characteristics; so the AUTO-UP is superior to any portrait attachment heretofore available.

MAMIYA FILM CASSETTE For users of film purchased in bulk or in cut lengths, this safety magazine can be used over and over indefinitely. The advanced amateur will find this accessory both economical and helpful in many ways.

NOTES ON CARE AND STORAGE OF CAMERAS

Cameras, particularly MAMIYA high-grade products, are precision mechanisms that deserve handling with every care. Nevertheless, photography is done under every conceivable kind of weather condition, and the camera is exposed to dust, sand, salty air, spray, rain, snow and mist. Consequently, proper care after exposure to dust or moisture is needed to keep your MAMIYA camera in excellent working condition.

Cleaning after normal use Using a clean, dustfree, soft-haired brush, carefully remove all particles of dust from the camera body, then wipe clean with a thoroughly washed out and bleached, lintfree piece of cotton cloth. Remove all fingermarks from electroplated portions, and all traces of corrosive matter.

To clean lens and optical system, first brush glass surfaces free of dust with a soft-haired brush, then wipe clean with a new piece of soft gauze, using a circular motion. To remove stubborn spots, use a mixture of alcohol and ether, half and half, sparingly.

After exposure to rain or salt spray Particular care must be taken in cleaning, to be certain that all moisture and salt are removed. Clean lens and windows as described above. Use lens hood and certain types of filters for protection.

Storage Pointers Clean out interior of camera from time to time with a soft brush, paying particular attention to the interior of the lens barrel and to the magazine chamber. Check all functions.

When putting away the camera, remove from leather carrying case; wrapping in cellophane or polyethylene film will give extra protection. Place in dry, moisture-proof can or box, if possible with some silica-gel or other desiccant. Inspect from time to time, and air in the sun.

Never attempt oiling the camera or taking apart the delicate mechanism. Servicing and cleaning by MAMIYA CAMERA COMPANY at least once a year will greatly lengthen service life.

NOTE

All enquiries should be addressed to the Service Department, which will attend to all questions or complaints regarding MAMIYA products.



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