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**Mamiya**  
**M645**

R. Pauli

Mamiya-Sekor C  
**70mm f/2.8** (Lens-shutter Type)

**Instructions**

  
**Mamiya**  
CAMERA CO., LTD.

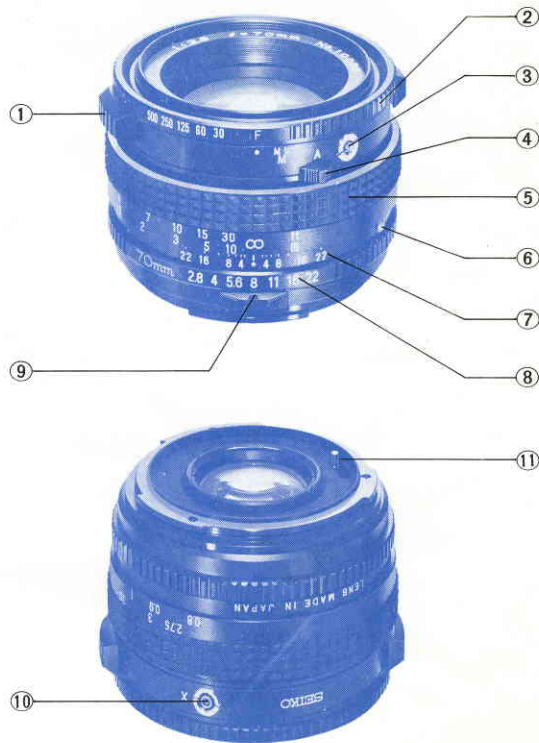
## ● Features

The Mamiya-Sekor C 70mm f/2.8 is a standard lens for the Mamiya M645, and has a built-in between-the-lens shutter which makes it possible to synchronize electronic flash at shutter speeds up to 1/500 second. It is, therefore, ideal for synchro-sunlight photography. Moreover, the built-in between-the-lens shutter can be completely disengaged, making it possible to instantly switch to the focal plane shutter of the camera body.

## ● Specifications

Lens Construction:	6 elements in 4 groups
Angle of View:	53°
Minimum Aperture:	f/22
Minimum Focusing Distance:	2.75 ft. or 0.8 m
Filter Size:	58 mm dia. Screw-in
Lens Hood:	Screw-in
Dimensions:	76φ × 54.2 mm
Weight:	13.9 oz. (395 g)

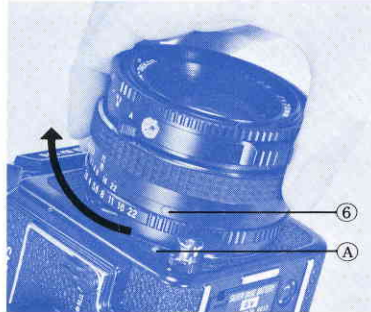
★ Avoid using two or more screw-in filters at the same time because doing so will result in some cut-off in the corners.



## ● Names of Parts

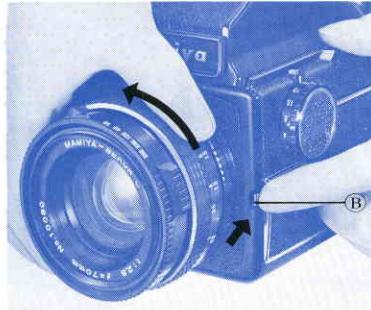
1. Shutter Cocking Ring
2. Shutter Speed Ring
3. Cable Release Socket
4. A. M. Lever (Refer to the "Mirror Lock-up Operation" on p.8 for the letters "MU".)
5. Focusing Ring
6. Alignment Dot
7. Depth-of-field Scale
8. Aperture Ring
9. Exposure Meter Coupler
10. X-sync Terminal
11. Automatic Diaphragm Pin

## ● Attaching and Removing the Lens



### Attaching

While matching alignment dots of lens and camera body (6 & A), insert lens into camera body, and grasping the lens firmly, twist clockwise until it locks into place with a click.



### Removing

Grasp the lens securely and while depressing the Lens Release Button (B), twist the lens counterclockwise until it stops, and lift out.

## Short Course of Instructions

There are two ways of using the lens.

### [1] Using the Focal Plane Shutter

(Refer to page 6 for details)

1 Align the A.M. Lever with the white "A".

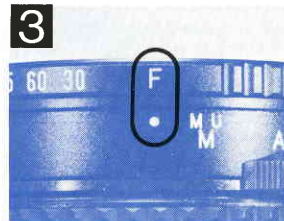


2 Twist the Shutter Cocking Ring clockwise as far as it will go.



Unnecessary to repeat this step.

3 Rotate the Shutter Speed Ring and align "F" (FOCAL plane shutter) with the red alignment dot.



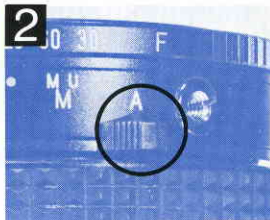
### [2] Using the Lens Shutter

(Refer to page 7 for details)

1 Set the Shutter Speed Dial of the camera to 1/8 sec. or longer (1/8—8 sec., B.).



2 Align the A.M. Lever with the white "A".

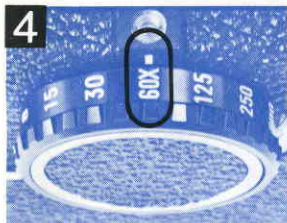


3 Cock the shutter by twisting the Shutter Cocking Ring clockwise as far as it will go.

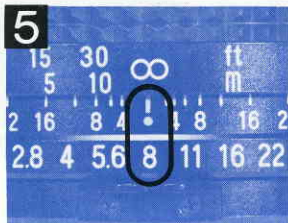


Be sure to repeat this step for each shot.

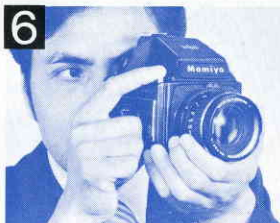
Set the Shutter Speed Dial of the camera to the desired shutter speed.



Select the appropriate aperture.



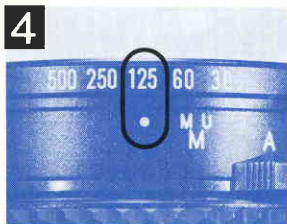
Focus, and release the shutter.



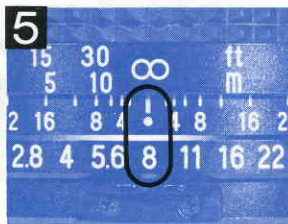
Advance the film.



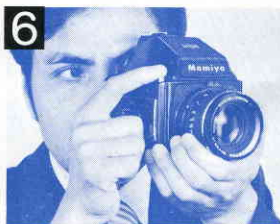
Set the Shutter Speed Ring to the desired shutter speed.



Select the appropriate aperture.



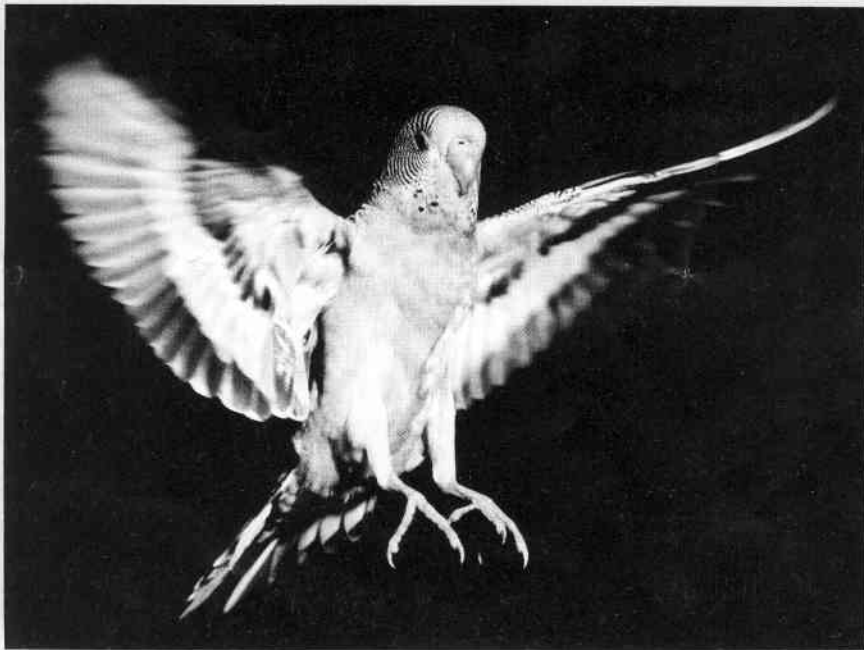
Focus, and release the shutter.



Advance the film.



## Operating the 70mm f/2.8 Lens



## [ 1 ] Using the Lens with the Focal Plane Shutter

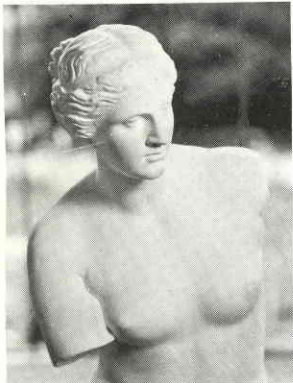
1. Align the A.M. Lever with the white "A" (Auto).
2. Grasp the two grips of the Shutter Cocking Ring (1) and rotate clockwise (with the front element of the lens facing you) until it stops. When this is done, the blades of the lens shutter will open completely.
3. Rotate the Shutter Speed Ring (2) and align the green "F" (FOCAL plane shutter) with the red alignment dot found immediately below the Shutter Speed Ring. (Completing the above step disengages the lens shutter.)
4. Set the Shutter Speed Dial of the camera to the desired shutter speed.
5. Select the appropriate aperture.
6. Focus, and release the shutter.
7. Advance the film then you are ready for next exposure.

### [ Note: ]

- a) Once the lens shutter has been cocked, it will remain open making recocking of the shutter unnecessary.
- b) If the lens shutter is already open when first beginning, omit step 2.
- c) When using an electronic flash with a cord, connect the cord to the X-sync Terminal of the camera body.
- d) Steps 1—5 may be carried out in any order.



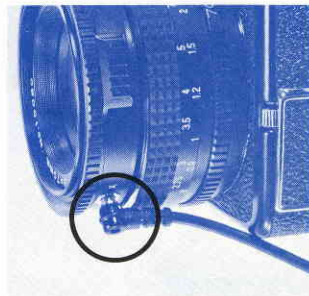
Taken with flash



Taken without flash

## [ 2 ] Using the Lens with its Built-in Shutter

1. Set the Shutter Speed Dial of the camera to 1/8 sec. or longer (1/8—8 sec., B.). Electronic flash will not synchronize if the Shutter Speed Dial is set to 1/15 sec. or shorter (1/15—1/500 sec.).
2. Align the A.M. Lever (4) with the white "A" (Auto).
3. Grasp the two grips of the Shutter Cocking Ring (1) and rotate clockwise (when the front lens element faces you) until it stops. When this is done, the blades of the lens shutter will open completely, and the shutter will be cocked.
4. Rotate the Shutter Speed Ring and align the desired shutter speed with the red alignment dot found immediately below the Shutter Speed Ring.
5. Select the appropriate aperture.
6. Focus, and release the shutter. After the exposure, the lens shutter will be closed and no image will be visible in the camera viewfinder.
7. Advance the film and cock the Shutter Cocking Ring, then you are ready for next exposure.



Note:

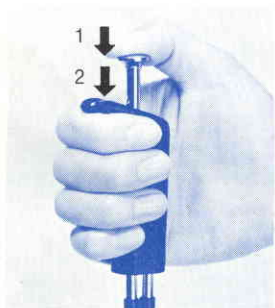
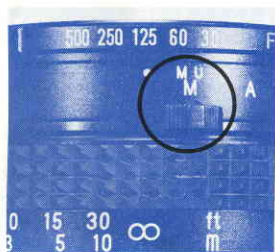
- a) The "hot-shoe" on the finder will not be synchronized to the lens-shutter. Be sure to attach the cord of the electronic flash to the X-sync Terminal (10) of the lens, even when using an electronic flash with "hot-shoe contact".
- b) The Shutter Cocking Ring is spring-loaded and automatically returns to its original position after the shutter is cocked and the ring is released. Be careful, however, not to block the return of the Shutter Cocking Ring because if the Shutter Release Button is depressed while the Shutter Cocking Ring is still held in the cocked position, the lens shutter will be prevented from functioning.
- c) The A.M. Lever may be set to "M" (manual) to preview the depth-of-field. However, be sure to return the A.M. Lever to "A" (Auto) before releasing the shutter. If the Shutter Release Button is depressed with the A.M. Lever set to "M", the focal plane shutter will operate, but the lens shutter will not function, and the film will be unexposed. If the Shutter Release Button is inadvertently depressed while the A.M. Lever is set to "M", the focal plane shutter can be recoiled without advancing the film by utilizing the built-in multiple-exposure provision (for details see p.40 of your camera's instruction manual); next, recock the lens shutter, and the picture can be retaken without wasting any film.
- d) The first five steps indicated on p.7 may be carried out in any order.

## ● Mirror Lock-up Operation

By using the Mirror-up Cable Release (available as an optional accessory for the Mamiya RB 67 and M645), it is possible to release the lens shutter after first locking the mirror in the up position, thereby completely eliminating vibrations during exposure.

1. The Mirror-up Cable Release is a double cable release and attached as follows:
  - a) The short black-tipped release is attached to the Cable Release Socket (3) of the lens.
  - b) The long silver-tipped release is attached to the Cable Release Socket built-into the Front Shutter Release Button of the camera body.
2. Set the Shutter Speed Dial of the camera to "B". If any other shutter speed is used, the lens shutter will fail to synchronize.





3. Cock the lens shutter via the Shutter Cocking Ring (1).
4. Set the Shutter Speed Ring (2) to the desired Shutter Speed.
5. For bright viewing and easy focusing, set the A.M. Lever (4) to "A" (Auto).
6. Select an appropriate aperture and focus the lens.
7. Set the A.M. Lever to M/MU (MIRROR Lock-UP).  
The camera is now ready for the first exposure (see photo on upper left-hand side).
8. The Mirror-up Cable Release is depressed in two steps. Depressing the cable release button for the initial step will cause the mirror to lock in the up position, the blades of the lens shutter to close, and the focal plane shutter to open. Further, additional pressure on the cable release button will cause the blades of the lens shutter to open and close, making the exposure (see photo on lower left-hand side). Finally, releasing pressure from the cable release button will cause the focal plane shutter to close.
9. Advance the film, and repeat steps 3—8 as often as desired.

Note:

- a) Do not release pressure from the cable release button after depressing it for the first step (mirror is upraised, lens shutter blades closed, and focal plane shutter open), for if pressure is released the focal plane shutter will close, making it impossible to expose the film even if the lens shutter is later operated. If you inadvertently release pressure from the cable release button too early, the focal plane shutter can be recocked without advancing (and wasting) film by using the Multiple-Exposure Lever (for details, see p.40 of your camera's instruction manual); finally, recock lens shutter, if necessary, and retake the picture.
- b) When using electronic flash, attach the cord to the X-sync Terminal of the lens.
- c) When using the Mirror-up (double) Cable Release, exercise care that the long release which is attached to the camera body does not move in front of the lens and appear in the picture.
- d) When using the Mirror-up Cable Release, there is absolutely no need to use the Mirror Lock-up Lever of the camera body.

## Exposure Measurement with the PD Prism Finder

(Refer also to the separate instructions of the PD Prism Finder)




### 1. When using the Focal Plane Shutter

After first setting the Shutter Speed Ring of the lens to "F" and the A.M. Lever to "A," the lens may be used as any other Mamiya-Sekor C lens for exposure measurement.



### 2. When using the lens shutter

Since the lens shutter does not couple to the PD Prism Finder, follow the procedure outlined below.

- Set the Shutter Speed Ring of the lens to the desired shutter speed and set the A.M. Lever to "A".
- Set the same shutter speed on the Shutter Speed Dial of the PD Prism Finder.
- Cock the lens shutter.
- Make an exposure measurement by adjusting the Aperture Ring until the green LED illuminates.
- Switch the Shutter Speed Dial of the camera from  position to 1/8 sec. or longer, then focus and release the shutter.

## ● The Auto Extension Rings can also be used.

### Close-up Photography Table

Ring combination	Magnification	Distance	Subject size	Exposure factor
No.1	0.16 — 0.27	1'4-1/2" — 1'3-11/16" (41.9 — 39.9cm)	9-15/16" × 1'1-7/16" — 6" × 8-1/16" (25.3 × 34.1 — 15.2 × 20.5cm)	1.3 — 1.5
No.2	0.33 — 0.44	1'1-15/16" — 11-13/16" (35.5 — 30.0cm)	5" × 6-11/16" — 3-3/4" × 5-1/16" (12.6 × 17.0 — 9.5 × 12.8cm)	1.7 — 1.9
No.3	0.49 — 0.60	11-1/16" — 10-1/16" (28.2 — 25.5cm)	3-5/16" × 4-1/2" — 2-3/4" × 3-11/16" (8.4 × 11.4 — 6.9 × 9.3cm)	2.0 — 2.3
No.1 + No.3	0.66 — 0.77	9-11/16" — 9-1/16" (24.5 — 23.0cm)	2-1/2" × 3-3/8" — 2-1/8" × 2-7/8" (6.3 × 8.5 — 5.4 × 7.3cm)	2.5 — 2.8
No.2 + No.3	0.82 — 0.93	8-13/16" — 8-3/8" (22.3 — 21.3cm)	2" × 2-11/16" — 1-3/4" × 2-3/8" (5.1 × 6.8 — 4.5 × 6.0cm)	2.9 — 3.3
No.1+No.2+No.3	0.99 — 1.09	8-1/4" — 7-15/16" (20.9 — 20.2cm)	1-11/16" × 2-1/4" — 1-1/2" × 2" (4.2 × 5.7 — 3.8 × 5.1cm)	3.5 — 3.8

1. Distances shown in the close-up photography table indicate distance from the front edge of the lens barrel to the subject.

2. Figures in the left column of the table indicate the lens when unextended. Figures on the right indicate the lens extended to the closest focusing distance.

The Auto Extension Ring interlocks with the automatic diaphragm of the lens, whereby picture taking is effected in the same manner as for conventional photography. However, when the lens is extended for close-up photography, and distance between the lens and film plane

increases beyond normal, image brightness on the film plane decreases, requiring an increase in exposure. To adjust the exposure, refer to the exposure factor prescribed in the close-up photography table.

The relationship between the exposure factor and the amount of exposure increase is shown below.

Exposure factor (X)	1	1.5	2	3	4
Aperture opening degree (stop)	0	1/2	1	1-1/2	2

When determining correct exposure with the PD prism finder, the exposure adjustment is unnecessary.

R. Pauli X 335 85702