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# Mamiya Professional Electronic Flash Auto 480 Model 2

Instructions

BUKUS 05

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# Mamiya Professional Electronic Flash

## Auto 480 Model 2

Congratulations on your choice of the Mamiya Professional Electronic Flash Auto 480 Model 2. Before using this unit, please read these instructions carefully to insure correct operation and full satisfaction with the performance.

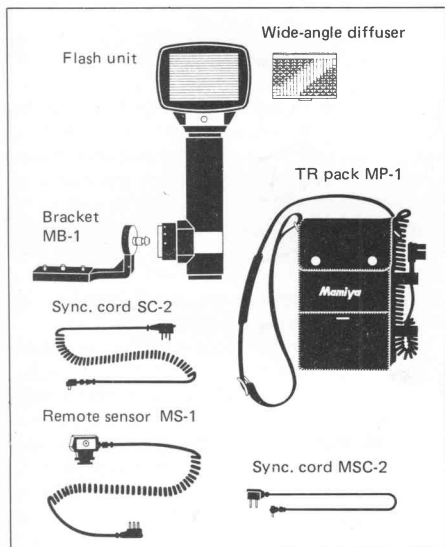
### Features

This auto electronic flash provides correct exposure at all times by the use of an SCR series controlled computer circuit that controls flash intensity in accordance with the light reflected from the subject. The computer discharges only the required amount of energy, the remainder being stored in the condensor for the next flash. This not only enables a faster recycling time but also reduces power consumption for longer battery life.

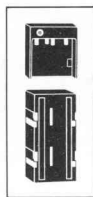
This powerful electronic flash has a guide number of 48 (ASA100 in meters) 157 (ASA 100 in feet) and three aperture settings. Coverage is sufficient to handle the field of view of a 50mm lens in the 6 x 9cm format, yet coverage is extremely uniform.

The highly heat-resistant metal reflector provides uniform light reflection and color quality that is optimum for color films.

Two power sources are available: the TR Pack which uses AA size batteries, and a Ni-Cd Cartridge. Batteries are included with the Ni-Cd Cartridge but AA size batteries are sold separately.



Ni-Cd cartridge with  
charger adapter



Ni-Cd charging adapter  
MCA-1

Ni-Cd cartridge



Ni-Cd charger MC-1 (for 100V)  
Ni-Cd charger MC-2 (for 120V)  
Ni-Cd charger MC-3 (for 220/240V)

The figure numbers throughout the text refer to the pictures on the fold-out pages at the back.

## Names of Parts

### Flash Unit (Fig. 1)

1. Extension socket
2. Clamp CL-1
3. Clamp ring CR-1
4. Light sensing window
5. Power socket
6. Sync cord socket
7. Clamp lever
8. Tripod socket
9. Aperture scale (for Auto)
10. Film speed setting dial
11. Film speed scale
12. Auto/Manual selector
13. Full charge lamp
14. Exposure guide plate
15. Pilot lamp
16. Open flash button

### Included Accessories

17. Camera set screw
18. Bracket MB-1
19. Sync cord SC-2
20. Remote sensor MS-1
21. Sync cord MSC-2
22. Wide-angle diffuser

### TR Pack MP-1 (Fig. 2)

23. TR Pack case
24. Wide-angle diffuser storage pocket
25. Power cord retaining band
26. Battery cartridge (AA size)
27. Power cord
28. Power switch

## How to Load the Batteries (Fig. 3)

Remove the TR Pack from the TR Pack Case and take out the Battery Cartridge by first pushing it toward the power cord side and then lifting up.

Load 12 alkaline AA size batteries into the Cartridge with the (+) and (—) poles located as indicated inside the Cartridge. Six batteries are loaded in each side of the Cartridge.

Replace the Cartridge into the TR Pack by pushing it in with the electrode holes pointed toward the electrodes of the TR Pack. (The Cartridge can be inserted with either side up.)

When the batteries have been loaded, replace the TR Pack into the TR Pack Case.

### Cautions

- Use only alkaline batteries. Using manganese batteries not only reduces the number of flashes possible but also increases the recycling time.
- Remove the batteries when the flash unit is not to be used for an extended period. This prevents damage to the internal parts due to possible battery leakage.
- Always replace all 12 batteries at the same time with fresh batteries of the same type.
- The Full Charge Lamp lights briefly when the Power Switch is turned off and then goes out again. This does not indicate that the flash is ready for use.

## Power Switch (Fig. 4)

Plug the Power Cord of the TR Pack into the socket of the flash unit and turn the Power Switch on. After a few seconds, the Pilot Lamp located on the left side will light (orange). This indicates a guide number of 32 in meters (105 in feet) with ASA 100 film.

After a few more seconds the Full Charge Lamp (green) on the right side will light to indicate full charge. The guide number at this time is 48 in meters (157 in feet) with ASA 100 film. (The Full Charge Lamp will make a clicking sound and go out briefly after a few seconds but will light again immediately.)

Turn the Power Switch off when the flash is not to be used for a while in order to conserve the batteries. The Power Cord should also be disconnected when use is not intended for a considerable time.

The Power Switch should always be turned off before connecting or disconnecting the Power Cord. Doing this with the Power Switch on may cause sparking which could lead to faulty contact.

## Testing and Open Flash (Fig. 5)

For flash tests or open flash operation, press the Open Flash Button after the Pilot Lamp or Full Charge Lamp lights. This allows the flash to be fired without regard to shutter release.

Always set the Auto/Manual Selector (12) to the A3 position for saving the energy when testing the flash.

## How to Attach to the Camera

1. Attach the flash bracket using the camera tripod socket.
2. Match the notched part of the outer rim of the clamp with the white dot on the bracket and press into position (Fig. 6).
3. Rotate until the white dots on the bracket and clamp are aligned to lock the unit into position (Fig. 7). For bounce flash, rotate the flash unit while pressing the Clamp Lever (7) until the desired angle is obtained. (Click stops are provided at three places.)
4. To remove the clamp from the bracket, press the clamp lever and rotate to the notched part. The clamp can then be removed.
5. To shift the flash unit up and down, or to rotate it left or right, use a coin to loosen the two clamp lock screws (Fig. 8).

## Sync Cord and Sync Terminal

Plug one end of the Sync Cord (19) into the Sync Cord Socket (6) and the other end into the sync cord terminal of the camera (Fig. 9).

- (1) If your camera has a sync selector lever, set the lever at the "X" position.
- (2) If your camera has two sync terminals, plug the cord into the "X" side.
- (3) "X" sync is provided by most cameras having only one sync terminal.

The flash will fire even if the sync cord is connected to other than the "X" termi-

nal, but it will not be synchronized with the shutter. For further details, refer to the instruction manual of your camera.

### **When Using with the Mamiya Press Cameras (Fig. 10)**

1. Loosen the two clamp lock screws and rotate the clamp 180°; then retighten the screws.
2. Pull out the stabilizing plate on the bottom of the camera and attach the bracket. After that, all operations are the same as described above.
  - With the hand grip removed, the flash can be mounted on the left side of the camera by holding it as shown in Fig. 11. In this case, the release lever on the lens barrel must be directly operated with the finger.

### **Using with a Wide-angle Lens (Fig. 12)**

Attach the Wide-angle Diffuser (22) to the front of the flash head when using this flash with a wide-angle lens having a field of view from 60° to 90°. The tab of the Wide-angle Diffuser should be on the bottom; then place the Wide-angle Diffuser over the front of the flash head and insert the top part of the Diffuser while pressing down. Using this Wide-angle Diffuser provides an angle of coverage of 90°. The guide number changes to 28 in meters (92 in feet) with ASA100 film.

## **Taking Flash Pictures**

### **Determining Shutter Speed**

1. With cameras equipped with leaf-type shutters, flash synchronization is possible at all shutter speeds using the X sync contact.

When photographing subjects at a distance, however, the flash duration increases so a shutter speed of 1/250 sec. or slower should be used. (In manual operation, the flash duration is normally 1/250 sec.)

2. With cameras equipped with focal plane shutters, synchronization is possible at the shutter speed indicated in red (or the X mark). Synchronization speed differs depending on the camera, so refer to the instruction manual of the camera.

### **Automatic Flash Operation**

Three different apertures are available for automatic operation.

1. Rotate the film speed setting dial (10) until the using film speed (ASA/DIN) number is aligned with the AS triangular mark (Fig. 13).
2. Rotate the Auto/Manual Selector (12) until the A1, A2 or A3 is aligned with the central triangular mark. The correct aperture is then indicated in the aperture scale window (9) (Fig. 14).
3. Set the camera lens to the indicated aperture. For example, the following apertures would be indicated for ASA 100 film:

A1:f/11    A2:f/8    A3:f/5.6

- When using a wide-angle lens with the Wide-angle Diffuser, the aperture setting is the same as the above method in automatic operation. (Do not change the setting of the Film Speed Setting Dial.)

The distance values on the following table for automatic flash operation are for when the green Full Charge Lamp is lit. The values in parenthesis are for when the orange Pilot Lamp is lit and are approximately 70% of the full charge values. The distance values for automatic flash operation remain the same even when the film speed changes.

### Automatic Flash Range

	Film Speed (ASA)					Distance without Wide-angle diffuser	Distance with Wide-angle diffuser
	400	200	100	50	25		
A1	f/22	f/16	f/11	f/8	f/5.6	3.3ft – 14ft (10ft) 1m – 4.3m (3m)	3.3ft – 8.2ft (5.6ft) 1m – 2.5m (1.7m)
A2	f/16	f/11	f/8	f/5.6	f/4	3.3ft – 19.7ft (13.8ft) 1m – 6.0m (4.2m)	3.3ft – 11.5ft (7.9ft) 1m – 3.5m (2.4m)
A3	f/11	f/8	f/5.6	f/4	f/2.8	3.3ft – 28ft (19.7ft) 1m – 8.5m (6m)	3.3ft – 16.4ft (11.2ft) 1m – 5.0m (3.4m)

The film speed scale is as follows.

ASA	25	50	100	200	400	800	1600					
	32	40	64	80	125	160	250	320	500	640	1000	1250
DIN	15	18	21	24	27	30	33					
	16	17	19	20	22	23	25	26	28	29	31	32

### Cautions for Automatic Flash Operation

1. The Light Sensing Window (4) should always be pointed toward the subject. Extra care should be taken for close distances. Attaching the Wide-angle Diffuser will make better result for close distances (i.e. 3.3ft or 1m) even when using a standard lens.
2. Flash intensity is determined by averaged metering in automatic operation, so the lens should be set to an aperture one-half or one f-stop larger than indicated when shooting near strongly reflective background such as a white wall or glass, etc., in order to obtain better exposure. Conversely, the lens should be stopped down one-half or one f-stop when shooting near dark background surfaces such as dark curtains, etc. Proceed as above also when the main subject is highly reflective or non-reflective.
3. Use a neutral density filter (ND) to reduce effective film speed when using ASA3000 Polaroid Land Pack Film. For example, using an ND16 filter would reduce the effective film speed to ASA200.
4. For flash diffusion, cover only the reflector part of the flash unit with gauze or other similar material, taking care not to cover the Light Sensing Window. The type of material used effects the degree of diffusion and reduction of intensity and the



automatic flash range also varies so a test exposure is recommended.

5. The Remote Sensor should be used for bounce flash.

6. Flash exposure should be set manually for daylight fill-in flash or for multiple flash exposure.

## How to Use the Remote Sensor

The Remote Sensor should be used for bounce flash or when the flash unit is used away from the camera.

### For cameras equipped with a hotshoe (Fig. 15)

Clip the Remote Sensor onto the hotshoe of the camera and plug the sensor cord plug into the Sync Cord Socket of the flash. It is not necessary to use Sync Cord MSC-2 for the sensor.

The light sensing window of the sensor should be pointed correctly toward the subject.

The automatic flash range differs depending on the distance to a bounce surface, reflection ratio, etc. For color photography, care should be taken because the color of the subject may be affected by the color of the reflecting material.

### For cameras without a hotshoe (Fig. 16)

Attach the Remote Sensor to the accessory shoe of the camera. Before connecting the cord to the flash, always plug the Sync Cord MSC-2 into the sensor socket. Plugging in retracts the contact connecting the sensor and hotshoe. Connect the other end of the cord to the camera or lens X-terminal. Next, connect the sensor cord to the Sync Cord Socket of the flash.

When the flash is charged, first connecting the sensor cord to the flash without connecting the Sync Cord MSC-2 and attaching to the camera will cause the flash to fire when the hotshoe contact touches the camera body.

## Manual Operation (Fig. 17)

*Backus. US*

1. Rotate the Film Speed Setting Dial (10) until the using film speed is aligned with the AS triangular mark. When using the Wide-angle Diffuser, set the film speed to the W triangular mark.

2. Rotate the Auto/Manual Selector (12) until the letter M is aligned with the central triangular mark.

3. Measure the distance to the subject and set the lens aperture by reading off the lens aperture indicated by the Exposure Guide Plate (14) for that distance. The correct aperture can also be calculated by the guide number using the formula:  
Guide number  $\div$  Subject distance = Aperture.

For example, when this flash is used with ASA100 film, the guide number is 48 so at a subject distance of 6 meters the calculation would be  $48 \div 6 = 8$ .

When the Wide-angle Diffuser is used, the guide number is 28 so the calculation would be  $28 \div 6 = 4.7$ . In this case, the aperture would be set at f/4.5.

The guide number differs with other film speeds so use the Exposure Guide Plate to determine the f/stop in such cases.

For manual flash photography in non-reflective places such as a large room, outdoors, etc., the calculated aperture should be opened up one or two f-stops to compensate.

When using flash in daylight for fill-in, flash exposure should be determined in accordance with the brightness of highlights caused by the natural lighting, or the brightness of the background when there is backlighting.

For example, if the correct daylight exposure is 1/250 sec. at f/8 using ASA100 film after considering the above factors, correct exposure will be obtained using the flash if the subject distance is 6 meters because the aperture as calculated using the above formula is the same. If the subject distance is 3 meters, however, the aperture according to the formula would have to be f/16 (two f-stops smaller) to obtain correct flash exposure, which would result in underexposure by two f-stops for the naturally lit part. To obtain correct exposure for both the filled in part and the part with natural lighting a shutter speed of 1/60 sec. would be required.

When using a camera with a focal plane shutter, refer to the instruction manual for the correct shutter speed for electronic flash synchronization.

If the flash intensity is too strong, adjust by using a diffuser, bounce flash or by holding the flash unit away from the camera.

When the subject is backlit and using the flash to fill-in the shadowed areas, set the aperture one f/stop smaller than the calculated aperture, then the picture can be clearly defined while retaining the backlit atmosphere.

## Multiple Flash Exposure

Open the cover of the Extension Socket of the flash. This bottom edge of this cover is inset into the flash unit to prevent loss. To open, push sidewise.

Plug the sync cord of another flash unit into this socket (Fig. 18). Picture taking is possible when the ready lamps of both units light. Determine exposure manually when using multiple flashes.

### How to Determine Exposure

1. There is no general rule for determining exposure when using multiple flash units. However, the general method of calculating the correct exposure consists of obtaining the correct aperture on the basis of the guide number of the main flash unit or else stopping down by 1/3 to 1/2 stop of the aperture setting thus obtained.
2. When using multiple units at the same position or different positions but the same distance as the main unit in order to increase flash intensity, the guide number can be found using the following formula:

$$G.N. = \sqrt{G.N. 1^2 + G.N. 2^2}$$

For example, the total guide number when using the 480 Model 2 with its guide number of 48 and another unit with a guide number of 20 would be:

$$G.N. = \sqrt{48^2 + 20^2} = 52$$

3. When it is necessary to determine exposure with accuracy, it is recommended to take test exposures or to use an accurate flash meter.

## How to Use the Ni-Cd Cartridge

1. Plug the Charging Plug of the Ni-Cd Charger into the Ni-Cd Charging Adapter MCA-1 already connected to the Ni-Cd Cartridge; then plug the AC plug of the Charger into a power outlet (Fig. 19). The batteries will be fully charged in approximately 14 hours.
2. When charging is completed, remove the plug from the Adapter and disconnect the Ni-Cd Cartridge from the Charging Adapter. Disconnect by holding the Cartridge and Adapter in both hands and pushing the Cartridge in and upward (Fig. 20).
3. Remove the Battery Cartridge from the TR Pack and replace it with the Ni-Cd Cartridge.
4. Connection to the electronic flash unit and handling of the power source is the same as when using AA size batteries.

### **Recharge the Ni-Cd batteries when the recycling time becomes long.**

1. Remove the Ni-Cd Cartridge from the TR Pack and plug it into the Ni-Cd Charging Adapter MCA-1, facing the electrode hole end toward the electrodes of the Adapter. (Either side of the cartridge may be upward.)
2. Holding the cartridge and adapter one in each hand, push the cartridge into the adapter at a slight downward angle and then straight in to make the connection.
3. Repeat the procedures described in items 1 to 4 above and use.

### **Cautions**

- Charge the batteries only where the temperature is between 0°C (32°F) and 40°C (104°F).
- Always disconnect the charger from the AC power when not in use.
- When connecting and disconnecting the charging cord to and from the Charging Adapter, always do so grasping the thick part of the plug. Pulling the cord can lead to breakage.
- Always use the Mamiya Ni-Cd Charger when charging the Ni-Cd cartridge. Use only the Ni-Cd Charging Adapter MCA-1 with this charger.
- Never for any reason disassemble the Ni-Cd Cartridge, Charging Adapter or Charger.

# Specifications

## Guide number:

Normal: 48 (ASA 100/DIN 21 in meters), 157 (ASA 100 in feet)  
Wide: 28 (ASA 100/DIN 21 in meters), 92 (ASA 100 in feet)

## Angle of coverage:

Normal: 60° vertical, 70° horizontal  
Wide: 90° vertical, 90° horizontal

## Power source:

TR Pack MP-1: twelve 1.5V AA size alkaline batteries  
Ni-Cd Cartridge: 12 Ni-Cd batteries included (use with TR Pack MP-1)

## Recycling time:

	(Alkaline)	(Ni-Cd)
Automatic:	approx. 0.5 — 14 sec.	approx. 0.5 — 5 sec.
Manual:	approx. 8 sec. (until Pilot Lamp lights) approx. 14 sec. (until Full Charge Lamp lights)	approx. 4 sec. (until Pilot Lamp lights) approx. 5 sec. (until Full Charge Lamp lights)

## Number of flashes:

Automatic:	approx. 100 — 2000	approx. 50 — 2000
Manual:	approx. 100	approx. 50

## Auto flash range selector switch:

Four-mode selection with three auto flash ranges (A1, A2, A3) and manual.

## Automatic flash range:

	A1	A2	A3
Normal:	3.3 — 14 ft. (1 — 4.3 m)	3.3 — 19.7 ft. (1 — 6.0 m)	3.3 — 28 ft. (1 — 8.5 m)
Wide:	3.3 — 8.2 ft. (1 — 2.5 m)	3.3 — 11.5 ft. (1 — 3.5 m)	3.3 — 16.4 ft. (1 — 5.0 m)

## Flash duration:

Automatic:	1/250 sec. — 1/3300 sec.
Manual:	1/250 sec.

## Color temperature:

Daylight balanced

## Included in set:

Flash unit, Bracket MB-1, Clamp CL-1, Clamp ring CR-1, Remote sensor MS-1, Sensor sync cord MSC-2, Sync cord SC-2, Wide-angle diffuser and TR Pack MP-1 with case.

## Optional accessories:

Ni-Cd Cartridge with Charging adapter MCA-1  
Ni-Cd Charger MC-1 for 100V, Ni-Cd Charger MC-2 for 120V, Ni-Cd Charger MC-3 for 220/240V

## Notes:

- Specifications are subject to change without notice.
- The above values are for fresh batteries or fully charged Ni-Cd batteries used at normal temperature (20°C/68°F).
- The number of flashes is found by discharging the flash continuously at 30 second intervals until 30 seconds are required for the Pilot Lamp and Full Charge Lamp to light.

1

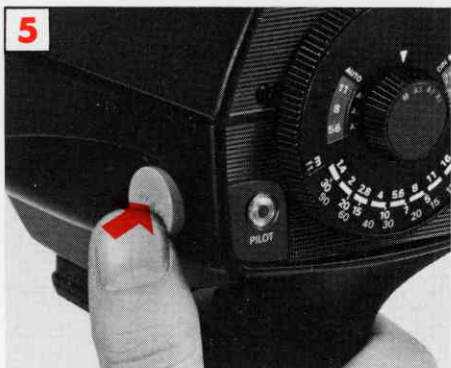


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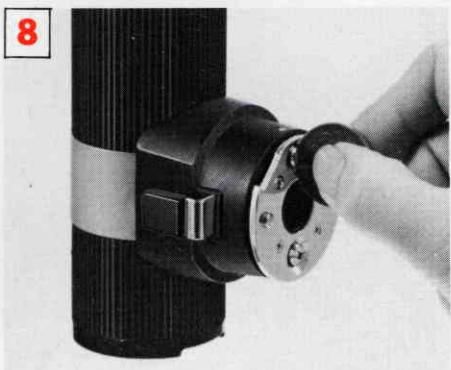




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