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**645** ***PRO TL***

**Instructions**

## **Congratulations on your purchase of the Mamiya 645 PRO TL**

Mamiya pioneered the 6 x 4.5 film format and introduced the world's first 645 SLR in 1975. The 645 PRO TL is the latest masterpiece in this series and incorporates all the latest mechanical, electronic and optical advances. Its external appearance, too, has been modernized and its ergonomic design further enhanced.

We are sure that you will enjoy the many advantages this camera and its accessories offer and want to particularly mention :

The 645 PRO TL has a built-in self-timer (delayed shutter release) which will also facilitate time exposures. Attaching special leaf shutter lenses will automatically set the focal plane shutter to 1/8 sec. Heavy duty gears connect to the improved Power Drive Grip WG401. This grip also automatically cocks the leaf shutter lenses and permits remote control.

The AE Prism Finder FE401, specially created for this camera, automates exposure and shows LED safety signals. 35mm film holders now come with panoramic adapters. A super fast 300mm f/2.8 APO lens was also designed for this camera.

We are convinced that your camera will serve you well, because we have designed it for heavy professional use. However, we ask you to please read all operating instructions carefully before you put your equipment to work, in order to ensure proper operation and maximum results

This manual covers the basic camera. Separate instructions are supplied with all system accessories, including lenses, finders, film holders, etc. For additional information please feel free to contact your authorized Mamiya dealer or the Mamiya importer in your country.

Battery needed:  
Duracell: PX28A Alkaline  
PX28L Lithium  
Kodak: K28L Lithium

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# ● Special Features of the Mamiya 645 PRO TL ●

## **1. Image Area about 3X larger than 35mm Format**

### **-- Bigger is better --**

The 6X4.5cm image size is about 3x larger than 35mm and therefore produces far superior results. It is large enough to be viewed without magnifier and its aspect ratio of about 1.25 (long side : short side) matches the standard 8 x 10 inch "ideal format", the most popular in photography and industrial use. It requires minimum cropping and gives maximum film utilization. (15 or 30 exposures on 120 or 220 film respectively)

## **2. Rugged, Versatile and Reliable Camera Body**

### **-- Built for professional use --**

Mamiya pioneered the 645 SLR camera system in 1975 to create medium format image quality with 35mm handling ease. New models have periodically followed over the years to keep in step with mechanical, optical and electronic advances

## **3. Interchangeable Rollfilm Holder System**

### **--120, 220, 35mm, 35mm Panoramic and Polaroid --**

Permits quick film change, even in mid-roll. Many fail safe features prevent accidental exposures or film waste.

## **4. Interchangeable Viewfinders**

### **1. AE Prism Finder FE401**

The AE (automatic exposure) Prism Finder FE401 features three modes of TTL metering, including automatic switching from center-weighted averaging to spot metering. It also has a  $\pm 3\text{EV}$  exposure compensation adjustment.

### **2. AE Finder FK402**

Light weight, Keplerian (non prism) AE aperture priority finder offers an unreversed, upright image. Features telescoping eyepiece with diopter adjustment from +5 to -5.

### **3. Prism Finder PF401**

The Prism Finder PF401 is without metering electronics and designed for manual photography mode. Both Prism Finders show an unreversed, upright image and are ideal for eyelevel photography.

### **4. Waist Level Finder N**

The Waist level Finder N is desirable for low angle photography and particularly for horizontal composition.

A self erecting hood with built-in magnifier shields groundglass from all ambient light. A built-in sporsfinder permits eyelevel viewing and is ideal for action photography.

## **5. Interchangeable Focusing Screens**

The camera comes with a Type E, bright, split image, micro prism screen, useful for most applications. Five other types, for all specialized requirements, are also available.

## **6. Large Selection of World-Class Mamiya Lenses**

Mamiya's in-house optical engineering and manufacturing department produces lenses specially designed for the medium format, of unsurpassable resolution, contrast and color fidelity. From 24mm Fisheye to 500mm telephoto, plus macro, zoom and APO lenses, these lenses have become the choice of the pros.

## 7. Motorized Power Drive Grips

Two accessory motorized drives, interchangeable with the manual film advance crank, are incorporated into an ergonomically designed grips for easy, right handed camera operation.

**Model WG 401** requires 6 AA batteries and features multiple exposure switch, cable release socket, battery check and continuous shooting. It also can be used with leaf shutter lenses.

**Model WG402**, a simplified version, permits only individual exposures, uses one 6 Volt lithium battery and is much lighter.

## 8. A Broad Accessory System For Specialized Applications

A useful accessory system to serve the specialized needs of the photographer. It includes Auto Bellows and Auto Extension Rings for close-up and copying work; Infrared Remote Control for studio and nature photography; External Battery Case for operating in cold surroundings; Camera Grips for convenient holding and more.

### <Self-timer>

Self-timer for delayed shutter release. When activated it will light a red pilot lamp in the front of the camera for eight seconds and will blink for two seconds before triggering the shutter.

### <Time Exposure>

Time exposures are made by utilizing the Self-timer and the "B" shutter setting. A new power saving circuit design switches the battery off and extends its life.

## 9. TTL (through-the-lens) Flash Exposure Automation

The light that hits the film surface during exposure is reflected to a photoreceptor within the camera body which automatically adjusts the flash output to the required level.

## 10. Other Features

### <Mirror Lock-up>

After focusing, the mirror can be locked up before making an exposure. This is convenient when the camera is used at slow shutter speeds and is mounted on a tripod for telephotography, copywork, etc., since even a very small amount of vibration should be eliminated.

### <Self-timer>

Shutter will be released 10 seconds after shutter button is pressed.

### <Time Exposure>

When making time exposures, the battery circuit is automatically disconnected, to save battery power. This is especially useful for astrophotography.



# Names and Functions of Parts

## Focusing Screen N

### Aperture Ring Coupling Pin

This pin is fitted into the Exposure Meter Coupler of the lens, to transmit the aperture data to the AE Prism Finder.

### Battery Check Lamp

### Focusing Screen Release Pin

When you want to change the screen, slide this pin to the left and remove the screen.

### Shutter Release Selector

Align the white index dot on the selector collar with the white square dot in the center for normal use. When the collar is turned to the red dot, the release is locked. To use the Self-timer, set it to ☺.

### Shutter Release Button

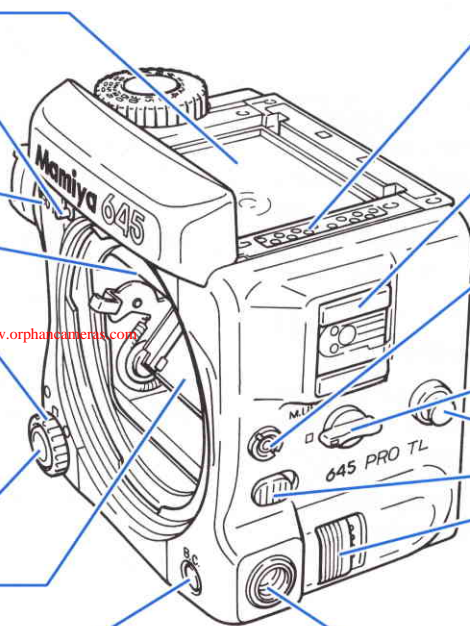
### Mirror

- Never touch the surface of the mirror.

### Battery Check Button

LED displays the present battery condition.

[www.orphancamera.com](http://www.orphancamera.com)



## 13 Gold Plated Contacts

These contacts interface the AE Prism Finder with the ISO dial on the film holder and the shutter speeds.

## Hot-shoe (X contact)

A cordless flash can be used with this shoe.

## Flash Sync Terminal

Flash cord and optional Terminal Adapter RA401 can be connected to this terminal.

## Mirror Lock-up Lever

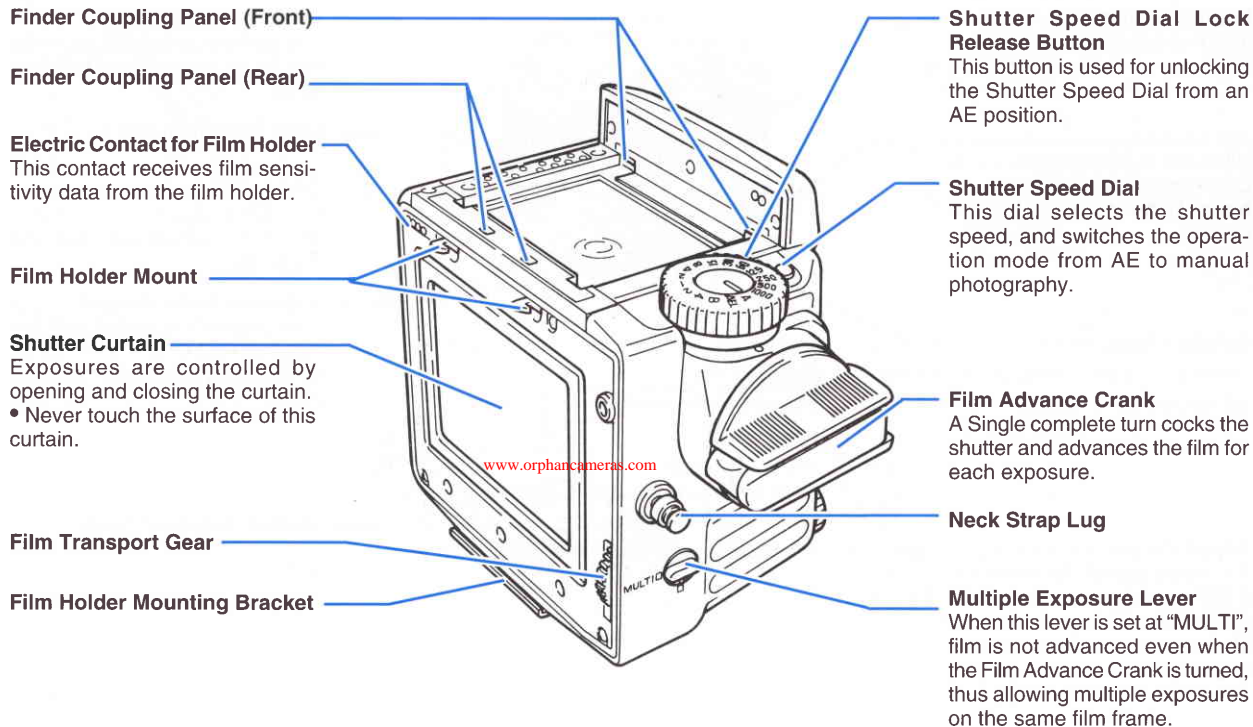
## Neck Strap Lug

## Lens Release Button

## Auxiliary Release Contact

When the cover is moved to the left, the contact appears. This contact is used for connections of external releases such as a special hand grip and remote control unit.

**6- Pin Coupling Connector for dedicated TTL flash automation. (Such as Metz SCA396)**



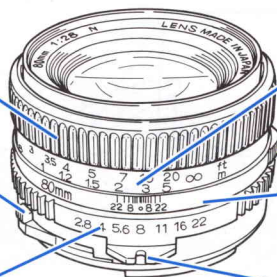
### Focusing Ring

This ring adjusts the focus.

### AM Lever

When set to "M" it permits you to check depth of field. Normally always leave it in "A" position.

### Aperture Ring



### Distance Scale

The camera to subject distance can be set or confirmed with this scale.

### Lens Alignment Dot

### Depth-of-field Scale

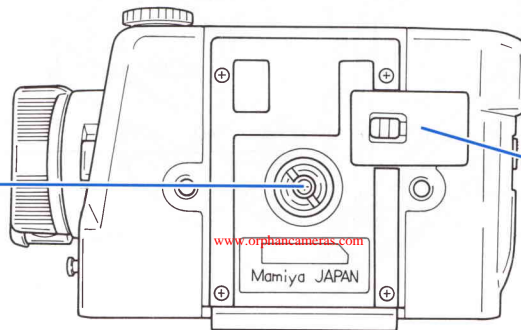
Provides a quick reading of depth-of-field for various apertures and distances.

### Exposure Meter Coupler

This coupler is engaged with the Aperture Ring Coupling Pin, transmitting diaphragm information to the AE Prism Finder.

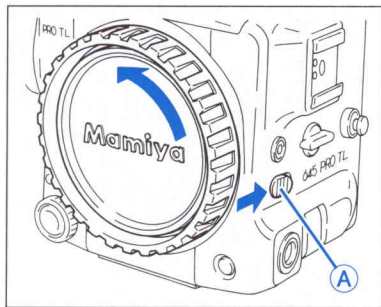
### Tripod Socket

1/4" tripod socket. To convert to a 3/8" socket, remove the small screw in the base of the socket. Then remove the bushing. See page 32.



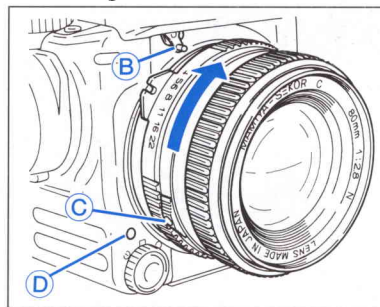
### Battery Chamber Cover

## Removing the Front Body Cap and Rear Cover



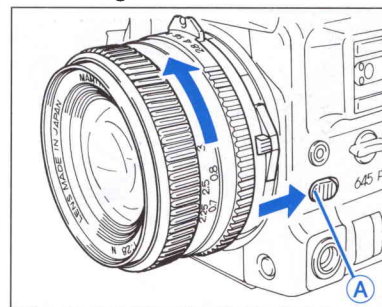
First remove the Front Body Cap in the direction of the arrow, while pushing the Lens Release Button (A) backwards as indicated by arrow. Rear Body Protective Cover can be readily removed by depressing the part of ⊖ as shown in the illustration.

## Attaching the Lens



Line up red Lens Alignment Dot (C) against red camera Alignment Dot (D) and gently insert the lens into the camera body. Then turn the lens clock wise, as indicated by arrow, until it clicks into place. Make sure that the Aperture Ring Coupler Pin is engaged with the Exposure Meter Coupling Pin (B), which sticks out under the Mamiya name plate of the camera.

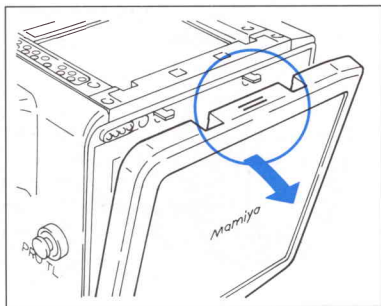
## Removing the Lens.



While pushing lens release button (A) backwards, turn lens counter-clockwise. (Same procedure as removing body cap).

# ● Attaching and Removing the Roll Film Holder ●

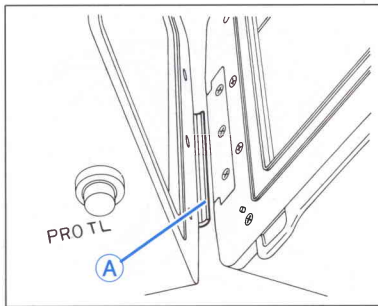
## Removing the Rear Body Cap



Rear Body Protective Cover can be readily removed by depressing the part of ⊖ as shown in the illustration.

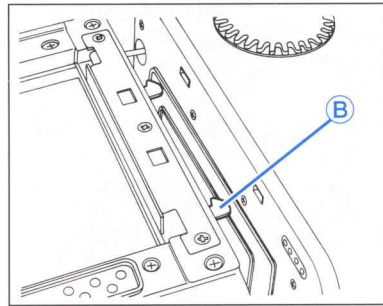
★ **After removing the rear cap, be careful not to touch the shutter blind. This can cause breakage of shutter.**

## Attaching the Roll Film Holder



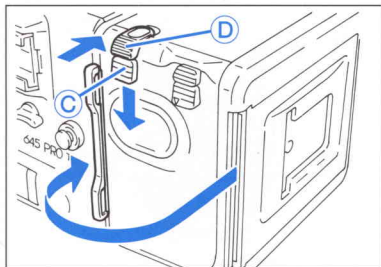
★ **Remove the Roll Film Holder Cover.**

1. While spanning the Roll Film Holder between your thumb and middle finger, holding it on the rubberized finger rests, carefully align its Film Holder Mounting Bracket with the corresponding center clip of the camera body.



2. While keeping this alignment, press the upper part of the Roll Film Holder against the camera body, so that it clicks into place by engaging the spring loaded twin camera catch.

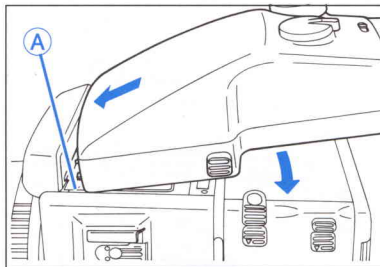
## Removing the Roll Film Holder



1. Insert the Dark slide into the slot marked by White Lines on the side of the holder.
2. Push the lower one of the Film Holder Detaching Lock Release Button (C) downward, while simultaneously pushing the Film Holder Detaching Button (D) inward.

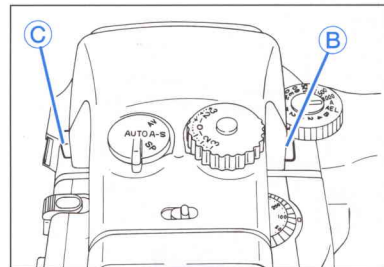
★ If the Dark Slide is not inserted, the safety lock will prevent the holder from being removed.

## Attaching the Finder.



- Lift the Upper Cover from the camera body.
- Insert the Attaching Latches of the finder into the Finder Coupling Panel (A) in the front wall of the body. Press the finder down until the rear latch locks securely in place.

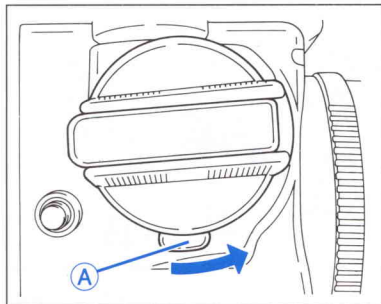
## Removing the Finder



- Spanning the finder with your fingers, push the button on its right side marked with a downward pointing arrow (B), downward, while pushing the other button, on the left side (C), inward.

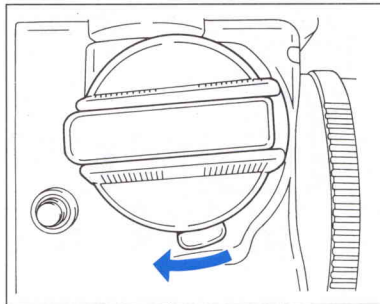
# ● Removing and Attaching the Film Advance Crank ●

## Removing the Crank

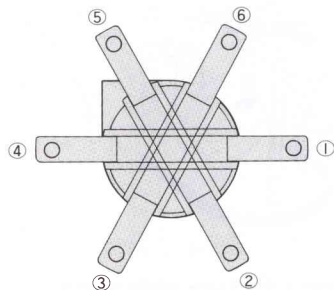


Push the lock Lever **A** on its bottom in a forward direction as far as it will go (see illustration).

## Attaching the Crank



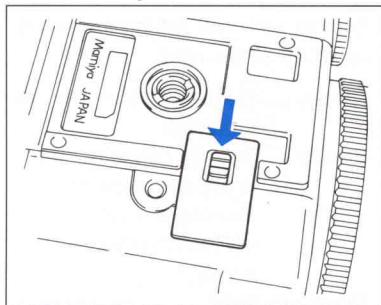
With the flat part, having a White Index Line, on top, line the Crank up against its mounting plate on the side of the body and push Film Advance Crank Lock Lever backward.



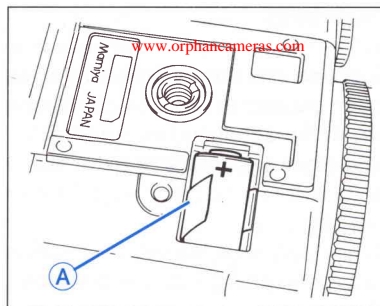
You may choose six different crank starting positions to suit your preference. The orientation of the crank proper against its base, before it is attached to the camera, will be maintained when the entire assembly is locked into place.



The camera will not function without a battery



With your fingernail, pull the Battery Chamber Cover latch, on the bottom of the camera body, as indicated by the arrow in the illustration. Lift the cover off. The camera requires a 6V alkaline, silver oxide or lithium battery. It is a good idea to wipe the battery terminals before insertion to assure proper contact. Observe polarity.  $\oplus$  position is marked in battery cavity. Insert the  $\ominus$  side first at a

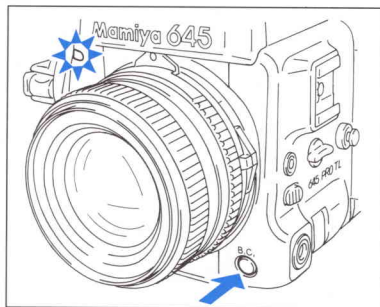


steep angle and then push entire battery into place, making sure that the lift ribbon wraps around battery. Close cover by inserting twin-prong end first and pushing it down.

★ Be particularly careful not to let the lift ribbon cover the  $\ominus$  terminal.



## ● Battery Check ●



Press Battery Check Button "B.C." (A) on lower front of the camera. Battery Check Lamp (B) on top opposite side should light. Bright light indicates good condition. Blinking light means replace battery. No light means battery is dead or improperly inserted.

### Important:

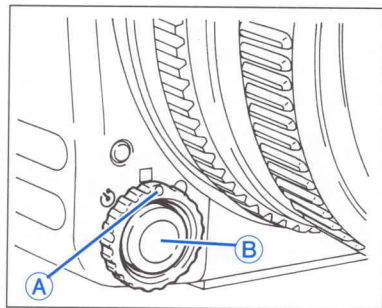
1. The sealed, new battery which is supplied with this camera may have been subject to storage conditions which have reduced its service life. Therefore it is desirable to replace it with a fresh battery as soon as possible.
2. Carefully wipe the battery contacts before inserting into the chamber. Failure to do so may result in poor electrical contact and consequent malfunctioning of the camera.
3. Always remove battery when camera is not used for a while. Always carry spare batteries.
4. Battery life differs, depending on type, age, storage condition, ambient temperature, frequency of use etc.

Battery strength will be indicated by whether the light:

**Glows ....** Battery strength is sufficient.

**Blinks ....** Battery capacity has dropped below the allowable level.  
(Replace the battery.)

**Does not light .....** The camera will not work. (Replace the battery.)



For normal operation set the White Dot of the Shutter Release Selector (A) against the White Square Dot □. When set to the Red Dot ●, the Release Button is locked.

★ **Select this mode if the camera will be idle for a period and to prevent accidental shutter release. Also when the Power Drive Grip is used.**

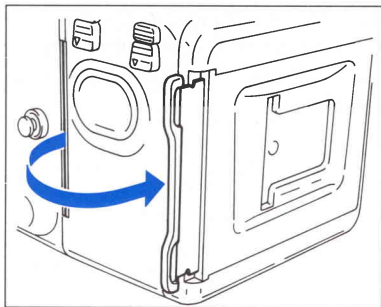
When set to the yellow clock symbol ☹ the self-timer is operative. See page 27 and 28 for further instructions.

## Operating the Shutter Release Button

1. The Shutter Release Button (B) functions in two steps. Gentle pressure will light the metering information display if the AE Prism Finder is used. Continued pressure will release the electromagnetic shutter.
2. If the film is not completely advanced, if the Dark Slide is not withdrawn or if the battery is dead, the shutter will not function, even when the Shutter Release Button is pressed. This will also be the case if the Shutter Speed Dial is set to "A" or "AEL" when the AE Prism Finder is not attached.

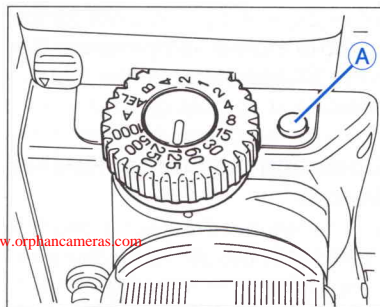
3. After releasing the shutter, the Film Advance Crank will automatically unlock and be ready to advance the film.

## ● Shutter Performance Test ●



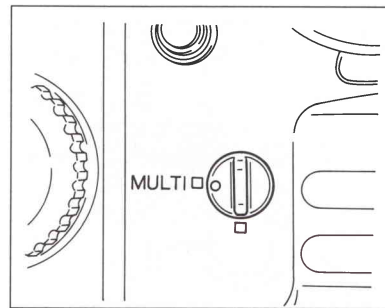
1. Attach the Roll Film Holder to the camera body.

2. Pull out the Dark Slide and place it into its Storage Slot.

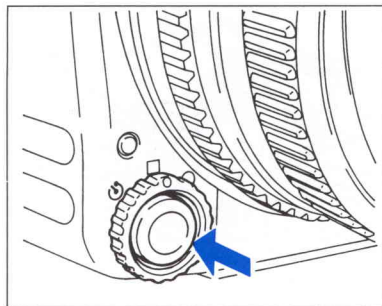


3. Set the Shutter Speed Dial to any other position than "A" or "AEL". When the AE Prism Finder is not mounted on the camera, the shutter will not release if the Shutter Speed Dial is in the "A" or "AEL" position.

The empty film spool included with the film holder is supplied with a vinyl tube. When placed in the take-up compartment it engages the film sensor and makes the holder function as if it is loaded with film. Please remove the tube after your test.



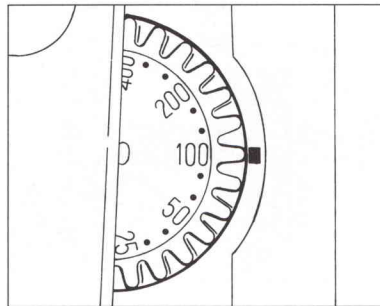
4. Set the Multiple Exposure Lever on the body to the "MULTI" position.



5. Set the Shutter Release Selector to "□" (normal mode), and press the Shutter Release Button.

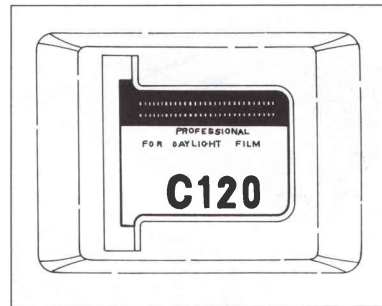
6. After the shutter has been released, advance the Film Advance Crank one complete revolution and the next frame will be ready.

## Film Speed (ISO) Dial



Each film holder has this important feature. It electronically interfaces the film holder with the AE Prism Finder, the focal plane shutter and the lens diaphragm, for exposure automation. This eliminates the need of having to manually reset the meter, every time you change film holders loaded with different films. Therefore make it a routine to always set this dial with the speed of the loaded film.

## Memo Clip

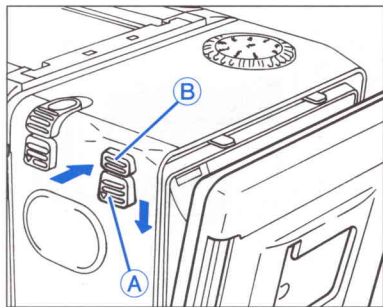


The Memo Clip on the back of the Roll Film Holder Cover accepts the box top of the film carton and can also be used for other reminders.

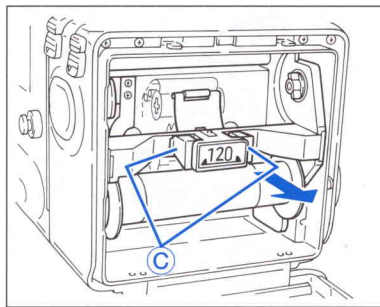
## Film Speed Index of film holder

ISO

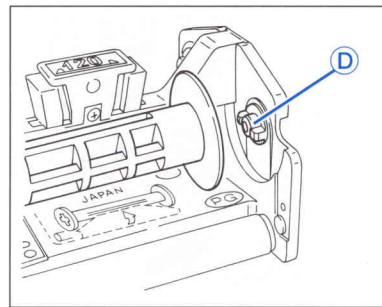
25 · · 50 · · 100 · · 200 · · 400 · · 800 · · 1600 · · 3200 · · 6400  
(32)(40) (64)(80) (125)(160) (250)(320) (500)(640) (1000)(1250) (2000)(2500) (4000)(5000)



**1.** While pushing the Back Cover Lock Release Button (A) downward, press the Back Cover Opening Button (B), and the Back Cover will open.

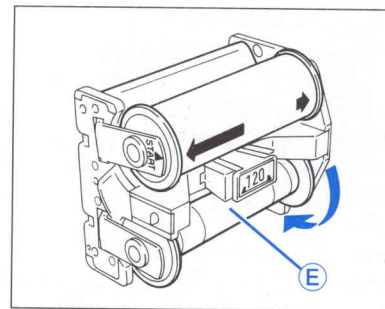
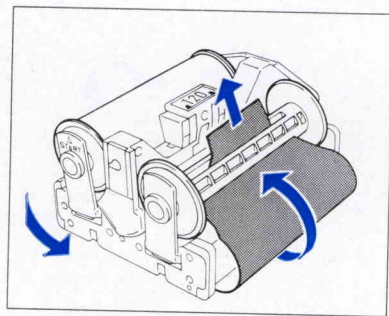
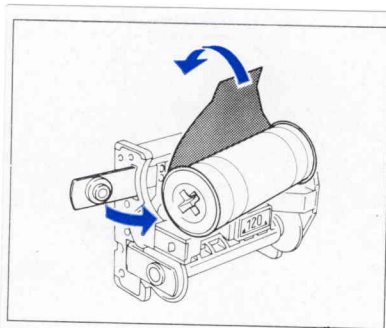


**2.** While squeezing in on both sides of the Release Latch (C), pull the Roll Film Insert out of the camera body. At that time, move the empty spool in the upper part down to the lower spool compartment.



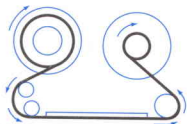
**3.** Align the right-hand side of this empty spool with the lower Spool Stud (D) (convex). Slide the spool into position making sure that the left-side of the spool is properly held by the Spool Clip.

When you load film for the first time, remove and discard the protective paper cover which is attached to the film rails in the roll film holder.



4. In the same manner, insert a roll of film in the upper compartment. At that time, check that the film leader paper is set as shown in the photo above. (The leader paper inside is facing outward on the pressure plate. Note that the film direction is wrong if the leader paper is facing inward.)

5. Pull out some of the leader paper. Insert the tip of the leader paper into the slot of the lower Take-up Spool.

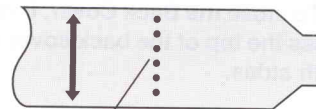


6. Gently rotate the take-up spool as shown in the photo until the start mark on the leader paper is aligned with the start mark ( $\triangle$ ) on the spool clip.

★ **Correctly align the start marks with each other, making sure that the film feeds properly. When improper feeding occurs, the proper number of exposures may not be taken.**

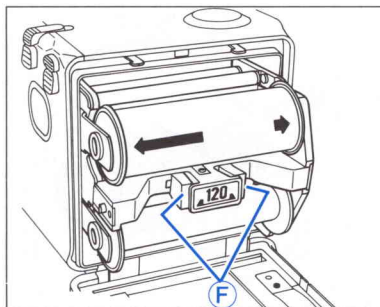
★ **Avoid exposing the film to direct sunlight when inserting or removing film.**

★ **220 Film Loading Caution**  
220 films have two types of Start Mark Lines across the paper leader. Always use the second one, a solid line with the legend "Start Mark for standard cameras", located about 14cm (5 1/2"), behind the first, dotted Mark line.



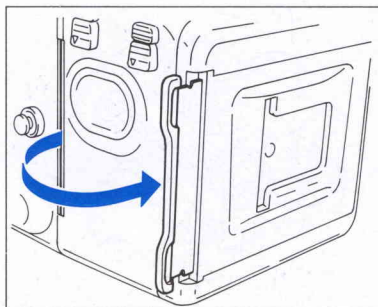
DO NOT use the dotted line for a start mark.

## ● Advancing the Film to the First Frame ●



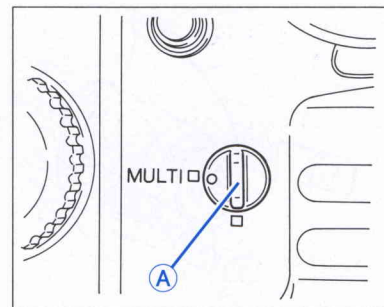
7. Insert the loaded Roll Film Insert into the holder, the film roll on top, while squeezing on both sides of the Release Latch ⑤ as shown in illustration. Make sure that it is properly seated and is locked in place. Then close cover by firmly pressing its top against the Roll Film Holder.

★ To close the Back Cover, firmly press the top of the back cover on both sides.



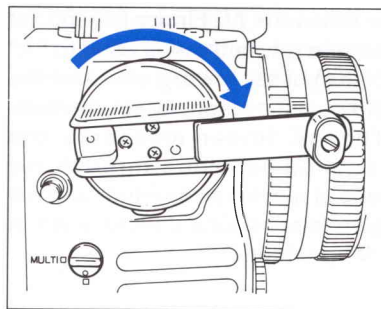
1. While spanning the Roll Film Holder between your thumb and middle finger, holding it on the rubberized finger rests, carefully align its Film Holder Mounting Bracket with the corresponding center clip of the camera body.

2. While keeping this alignment, press the upper part of the Roll Film Holder against the camera body, so that it clicks into place by engaging the spring loaded twin camera catch.



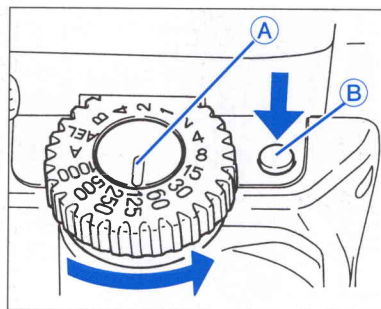
Set the multiple exposure switching lever A to the white square mark ☐ (normal mode).





### 3. Wind up.

Wind up the crank handle until it stops. In the film counter window, the number 1 appears, and the film and shutter are set.



### How to set the Shutter Speed Dial

1. Set the desired shutter speed against the white index line (A) on the shutter speed dial.
2. At the red "A" (for Automatic) and AEL (for Automatic Lock) settings, the shutter speed dial is locked between these two positions. These settings will only function if an AE Finder is mounted on the camera. To release this lock push button (B) while turning dial.
3. All while numbers are fractional seconds. (I.e. 30 = 1/30 sec).

The yellow 2 and 4 are full seconds. "B" (shutter stays open as long as it is depressed) is also yellow.

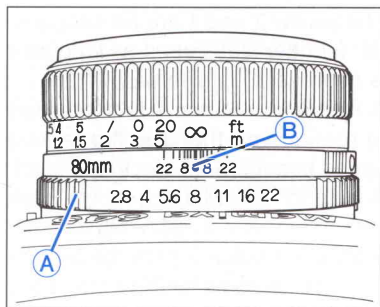
4. Red 60 is 1/60 sec. It is colored red to remind you that it is the fastest speed useable with electronic flash.

5. Note: When a Metz Electronic Flash Unit, together with SCA 396 module, is attached to the camera, the camera sets itself automatically to 1/60 sec., irrespective of the dial setting.

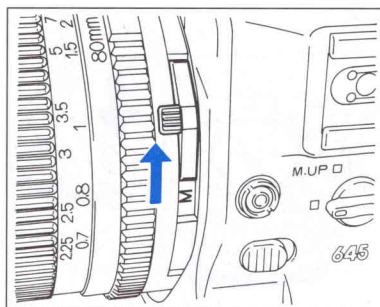
★ **When manually selected shutter speeds are set on the shutter speed dial, the intermediate shutter speeds available in the AE operation are not obtainable.**



## ● Aperture Ring/Stop-down Operation ●



Set the desired f/stop on the Aperture Ring ① by aligning the f/number with the red reference dot ② in the center of the Scale Ring. The Aperture Ring has a click stop for each f/stop. In-between settings can also be used.



The effect the set f/stop will have upon the picture area can be confirmed on the Finder Screen. Move the AM Lever on the lens so that "M" becomes visible – the lens then can be stopped down to the preselected aperture.

★ When the AE Finder is used, be sure to return the A/M lever to "A" (Auto), after having checked the effect of the manually set aperture. The AE finder measures the required exposure through the lens at maximum aperture and will give false results if lever is left in "M" position.