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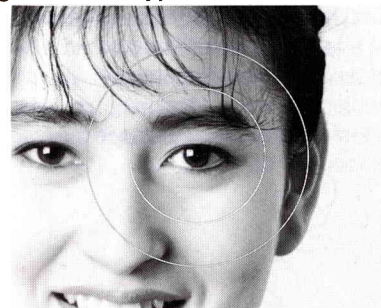
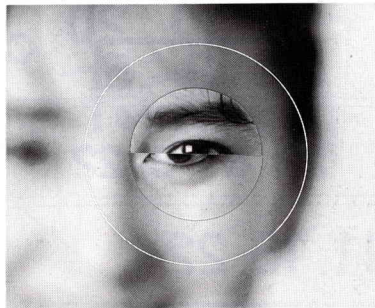
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While looking through the viewfinder, turn the lens Focusing Ring until the most important subject part appears sharp and clear.

Focusing with the Standard Focusing Screen N Type E



1. The camera comes equipped with a bright, Type E, Rangefinder/Microprism Focusing Screen. It features a center, split-image rangefinder spot and the subject is in sharp focus when the split images combine into one.
2. The microprism ring around the split-image center further facilitates focusing. The microprisms disappear only when the subject is in sharp focus.

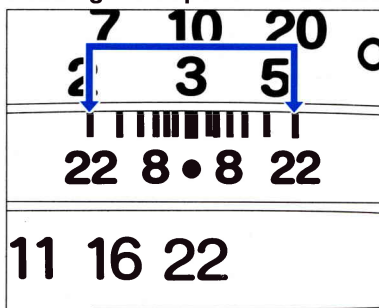
3. The rest of the ground glass area can also be used for focusing.

★ Interchangeable Focusing Screens

There are five additional focusing screens available for specialized applications. They are easy to interchange and come with instructions.

Depth of field is defined as the zone of sharpness before and behind the plane of focus. It depends on camera subject/distance, focal length of lens, aperture setting and distance the lens is focused at.

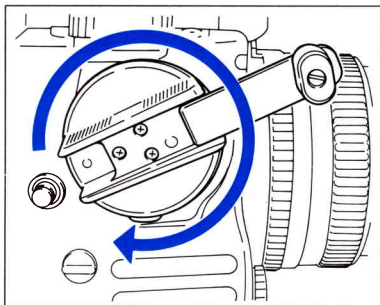
Reading the Depth of Field Scale



In addition to visual observation, the Depth of Field can be determined by using the Depth of Field Scale on each lens. f/stop numbers appear on both the right and left side of the red index mark in the center of the scale ring. Simply read the figures which appear above the f/stop numbers on the distance scale of the lens.

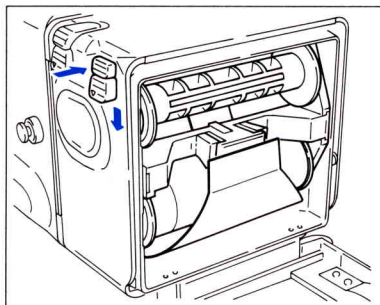
For example, with the 80mm f/2.8N lens focused at 3m and the aperture set at f/22, the depth of field scale indicates that the zone of sharp focus will extend from about 2m to 6m.

Film Advance



1. Giving the Film Advance Crank one complete turn, will cock the shutter and mirror and ready the camera for the next exposure.
2. When the film is completely exposed (15 exposures on 120, 30 on 220 film), the crank stop will disengage. Continue turning until the paper trailer is completely wound onto the take-up spool. (About five turns after the last exposure.)

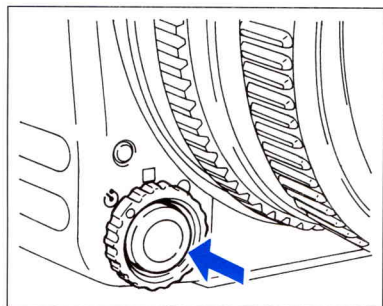
Unloading Exposed Film



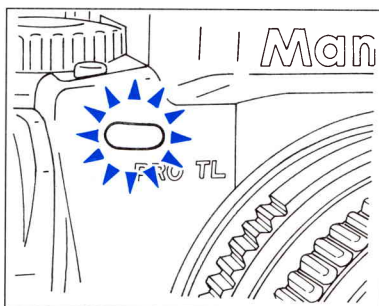
3. Open the Back Cover, and remove the Roll Film Insert. The Exposure Counter will return to S (start) automatically.
4. Pull the Spool Clip on the roll film insert out to remove the film.
5. Remove the film from the roll film insert; make sure that the film on the roll does not loosen, and seal immediately.

★ Move the empty spool from the top to the lower (take-up) compartment, ready for loading the next film roll.

★ Never load, unload or handle film in direct sunlight.



To use the Self-Timer, set the Shutter Release Selector to ☺ and press the Shutter Release Button.



The Battery Check Lamp will light for 8 seconds and blink for 2 seconds, whereupon the shutter will go off.

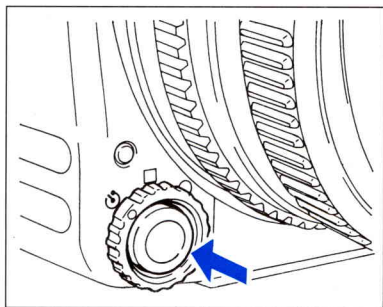
★ After using the self-timer mode, be sure to return the Shutter Release Selector to the White Square. (Normal mode.)


★ To override the self-timer, after having pressed the release, move the selector back to the white square.

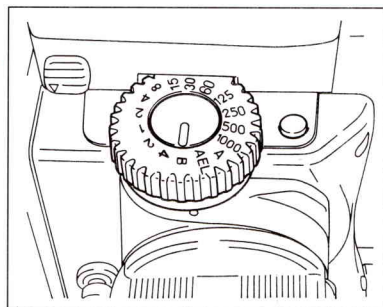
★ The Self-Timer can also be overridden by inserting the Dark Slide into the Film Holder or setting the camera Shutter Speed Dial to "B".


Please note:

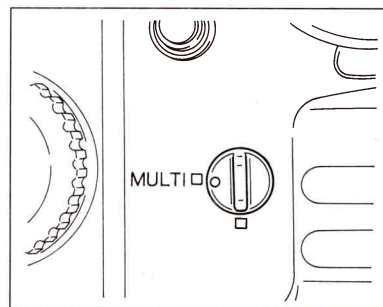
If you want to use the self-timer with the shutter speed dial set at "A" or "AEL" and there is no AE Finder attached to the camera, it will not release the shutter even though the light goes on for 10 seconds. However, when the dial is set to manual speeds, the self-timer will function.



For time exposures set the Shutter Release Selector to , the self-timer mode, and set the Shutter Speed Dial to "B". Press the shutter release and both mirror and shutter will stay open until the shutter release is pressed again. You may also use a cable release together with the cable release adapter. (The battery circuit will automatically switch off to save power.)

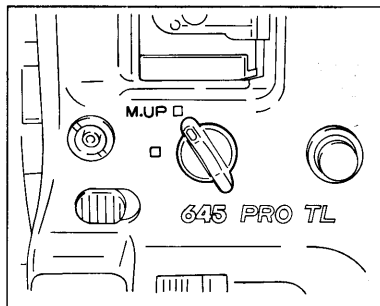


★ "B" can be terminated by shifting the Shutter Release Selector from  or the Shutter Speed Dial from "B".



Aligning the white dot of the Multiple Exposure Lever with the yellow "MULTI" square, disengages the multiple exposure prevention mechanism, and the film will not advance after an exposure is made and the Film Advance Crank is turned. However, the shutter will be recocked, thus making multiple exposures possible. In this mode the Exposure Counter will not advance.

★ To override the multiple exposure mode or to return to normal operation, be sure to return the lever's White Dot against the white square and then advance the film. (If you forget you will continue to make multiple exposures on the same frame.)



This is an important feature when the tripod mounted camera is used at slow or long exposure times and particularly also with use of long telephoto lenses. It eliminates the possibility of even the slightest "mirror bounce" which may affect image sharpness.

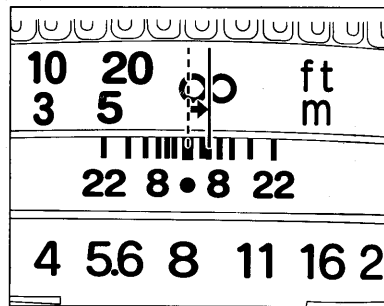
Move the Mirror look-up Lever to the yellow "M.UP" square, after you have composed and focused your picture. This will raise the mirror and the viewfinder image will be blacked out. After use, return lever to normal (white square) position.

★ When using the AE Prism Finder, set the Shutter Speed Dial to "AEL". Press the shutter release halfway and then lock the mirror up. If set to "A" and the mirror is locked up, "LT" (long time) will appear in the finder display and correct exposure cannot be obtained.

★ When using a Leaf Shutter Lens, be sure to read the instructions accompanying it.

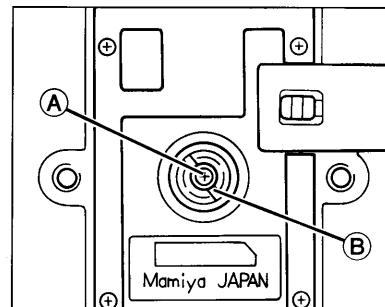
Infrared light rays – being of longer wavelength – focus at a slightly different plane and require the following adjustment:

1. Note the Red Index Mark against which you read your distance scale. The red infrared index mark is slightly to its right.
2. After focusing in the usual manner, read the distance scale and move it to the right to line up with the infrared index mark.

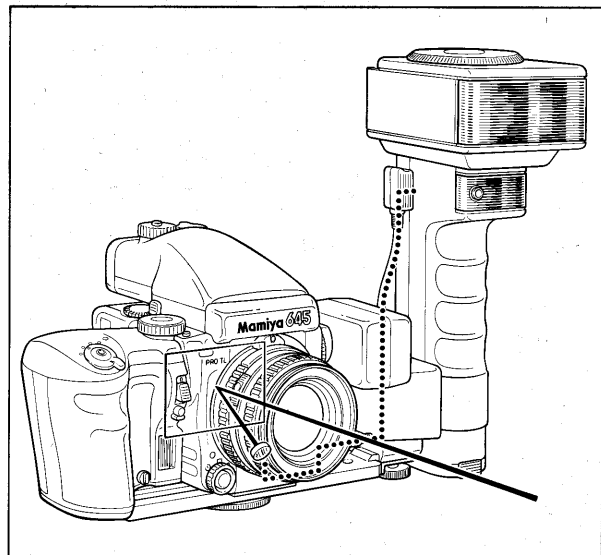


The 300mm and 500mm APO lenses for Mamiya 645 cameras, being also corrected for infrared light rays, do not need an index mark for infrared.

★ **For proper filter and exposure information be sure to consult the instructions enclosed with infrared film.**



The Mamiya 645 PRO TL Tripod Socket accepts a standard 1/4" tripod mounting screw. For use with tripods having 3/8" mounting screws, first unscrew the small black philips head retaining screw in the center of the tripod socket. Then remove the 1/4" bushing with a thin coin. To re-install the 1/4" bushing, reverse the process.



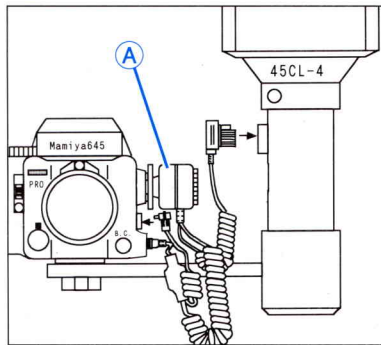
In addition to its standard flash sync system, the Mamiya 645 PRO TL features TTL (through the lens), off the film (OTF), electronic flash exposure automation. A flash sensor located inside the camera body reads the flash reflected from the film surface at the moment of exposure. The sensor is connected via coiled cords to a dedicated electronic Metz SCA 396 thyristor module, which is attached to the flash shoe of the camera. The module has an ISO dial on which the speed of the film in use is set. The resulting flash exposure automation determines correct flash exposure and automatically adjusts the output of the flash. It also automatically corrects for exposure compensation ordinarily required when using filters, close-up bellows or extension tubes. However, as all TTL systems, it requires manual compensation for differences in film surface reflection characteristics. Compensation is made by adjusting the film speed selector setting on SCA 396 module. The amount of compensation is determined by experimentation.

Important:

Read Operating Instructions which are supplied with flash unit before use.

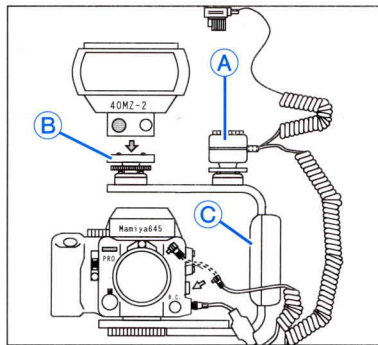
Always turn off camera's power switch when attaching or removing flash units.

Attaching Metz Flash Units

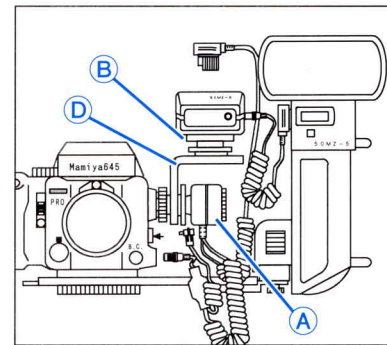


Metz flash 60CT-4/45CL-4

Various optional accessories are needed to attach different Metz Flash Units to the Mamiya 645 TL



Metz shoe mount flash type

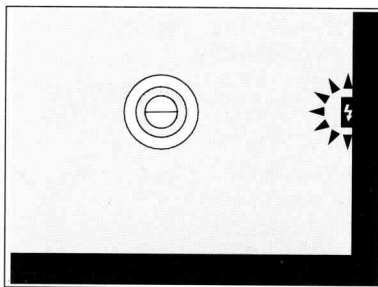
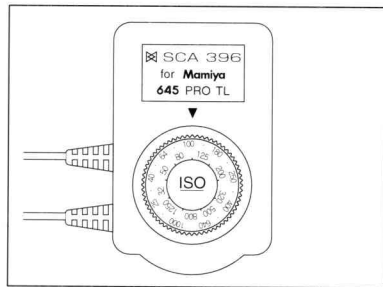


Metz flash 50MZ-5

This table shows accessories required with various Metz Flash Units

Metz Flash Units		SCA396 adapter (A)	SCA300 adapter (B)	Bracket AD401 (C)	Double shoe adapter AD402 (D)
Shoe mount flash	60CT-4	Yes	No	No	No
	50MZ-5	Yes	Yes	No	Yes
	45CL-4	Yes	No	No	No
Handle mount flash	40MZ-3	Yes	No	No	No
	40MZ-2	Yes	No	No	No
	32MZ-3	Yes	No	No	No
	32Z-2	Yes	No	No	No

TTL Flash Photography with Metz Flash Units



1. Attach a Metz flash unit which features TTL function to the camera. Attach the SCA396 module to the camera's flash shoe. Connect the module's coiled cables to the camera and the flash unit.

Set the film speed dial on the SCA396 module to the ISO rating for the film in use. The range of ISO is 25 to 1250.

2. Move the flash unit's power switch to ON and the mode selector to TTL.

3. Turn the camera's shutter release selector switch to ON. When the charge cycle is completed you will see an illuminated green ⚡ readylight in the middle of the right side of the

finder. When the SCA396 module is connected, the camera's focal plane shutter will automatically set at 1/60 sec, and ignore the settings on the shutter speed dial between 1/60 to 1/1000, including A and AEL. Slower shutter speed settings, however, (1/30 to 4 sec.) are not affected and will allow flash synchronization.

4. Set lens to the desired f/stop and shoot. After the exposure is made, the illuminated green ⚡ blinks, confirming proper flash exposure. If the illuminated green ⚡ does not blink after exposure, it is possible that

aperture selected is not within the exposure/ distance range of the flash. In this case, select a wider aperture setting. When using flash at maximum distance, which requires the full power of the flash unit, recycling time will be longer. Wait for the readylight to go on before firing the next frame. Exposure Compensation with TTL Flash Automation.

Because TTL Flash automation reads the light reflecting off the subject, exposure may require manual adjustment in cases where subject and background are predominantly white or black (e.g. bride in white dress against white background; bridegroom in tuxedo against dark background.) In these instances, the resulting TTL exposure will either be under-exposed or over-exposed. For such situations, adjustment of about 1 to 1 1/2 f/stops, plus or minus, may be required through experimentation. Alternatively, a hand held incident flash meter reading will show proper exposure in these cases.

Photography with Non-TTL Flash Units

<Caution>

When using the Hot-shoe, be sure to put an appropriate Safety Cover over the X-sync terminal so that you won't receive a high voltage electric shock if the terminal is accidentally touched. (A Safety Cover is put on the X-sync terminal when the camera leaves the factory.)

1. When using an electronic flash, plug the synchronization cord into the Sync Terminal and set the Shutter Speed Dial to 1/60 sec. or slower.

★ The Mamiya 645 PRO has an X-sync terminal.

Attach a shoe-mount flash to the hot-shoe of the camera or the Left Hand Grip GL401 (optional).

★ Do not use a flash unit specifically dedicated for another camera. It may damage your 645 PRO.

★ If you use a flash unit whose flash duration is slower than 1/1000 sec., set the shutter speed dial to 1/30 sec. or slower.

Flash synchronization Chart

Sync. Terminal	Shutter speed													
	$\frac{1}{1000}$	$\frac{1}{500}$	$\frac{1}{250}$	$\frac{1}{125}$	$\frac{1}{60}$	$\frac{1}{30}$	$\frac{1}{15}$	$\frac{1}{8}$	$\frac{1}{4}$	$\frac{1}{2}$	1	2	4	8
X	Cannot be used					Electronic flash								

Eye-level Operation



Hold the camera as shown in the illustration, with its base resting on your left hand, the right hand supporting it from the side and top. Press both elbows against your body and activate the shutter release with a smooth, steady pressure.

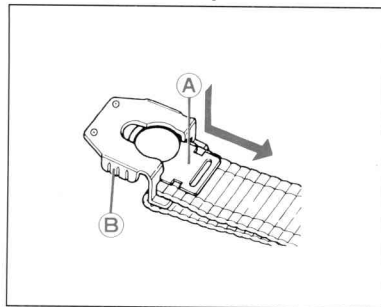
Waist Level Operation



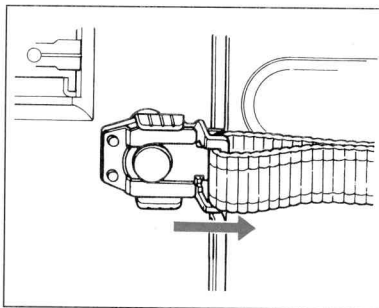
For waist level operation, it is desirable to have the Neck Strap attached and adjusted for your size. During exposure keep it taut and press the camera firmly against your body.

★ **Handholding the camera is even easier using the Power Drive Grip WG401 or Left Hand Grip GL401.**

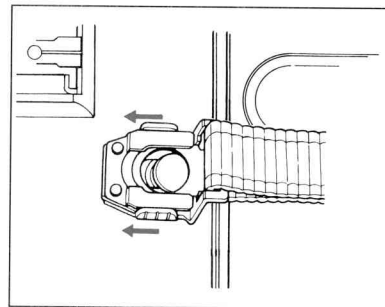
Attaching the Strap to the Camera



1. While pushing down, pull out the Neck Strap Fastener **A** of the attaching clip.



2. Place the hole of the strap fastener **A** over the Neck Strap on the camera body as illustrated, and pull until it clicks and locks into place.



With your fingers, pull the Neck Strap Fastener **A** of the attaching clip upward and push part **B** in the direction of the arrow. The strap can now be removed.

★ When attaching the Strap to the Neck Strap Lug on the side of the camera with the Film Advance Crank, insert the neck strap fastener **A** into the lower part of the double slot.

The AE Prism Finder FE401

The Mamiya AE (Automatic Exposure) Prism Finder FE401 pentaprism guarantees a true, upright image and features built-in electronic shutter control which ensures aperture-priority, TTL automatic exposure metering while in the A or AEL mode.

<3-Way Metering System>

The FE401 comes with three metering modes: average metering (AV), spot metering (SP), and AV-SP metering capable of automatically selecting AV or SP according to subject conditions.

The LED display in the viewfinder indicates correct exposure.

If you forget to extract the Dark Slide when the finder is being used with the 645 PRO TL, an LED will flash a warning.

Power Drive Grip WG401

The motorized film transport mechanism is placed in an ergonomically designed handgrip for speedy (2 f.p.s) and continuous shooting. Features include cable release socket, shutter release lock, multi-exposure switch, first frame advance, battery check, and power connector socket for leaf shutter lenses. Uses 6 AA 1.5 V. batteries.

AE Reflex Finder FK402

This aperture priority, Keplerian type, automatic (AE) reflex finder features TTL auto or manual exposure with center weighted averaging. It offers upright, eyelevel viewing with unreversed image.

Exposure is indicated by red and green LEDs. A built-in adjustable diopter eyepiece can be set from +/–5 for viewing convenience without eyeglasses.

Power Drive Grip WG 402

This simplified, compact, lightweight grip uses one 6 V. lithium battery. It has a shutter release with lock and offers single frame exposure mode.

Roll Film Holders

120 Roll Film Holder HA401

220 Roll Film Holder HB401

135 Roll Film Holder HC401

(with Panoramic Adapter)

Polaroid Land Pack Film Holder HP401

Metz TTL Flash Unit

Shoe Mount

Flash Bracket AD401

60CT-4

etc.

Handle Mount

40MZ-3

etc.

Interchangeable Lenses

Wide-angle Lenses : 35mm f/3.5N, 45mm f/2.8N,
55mm f/2.8N

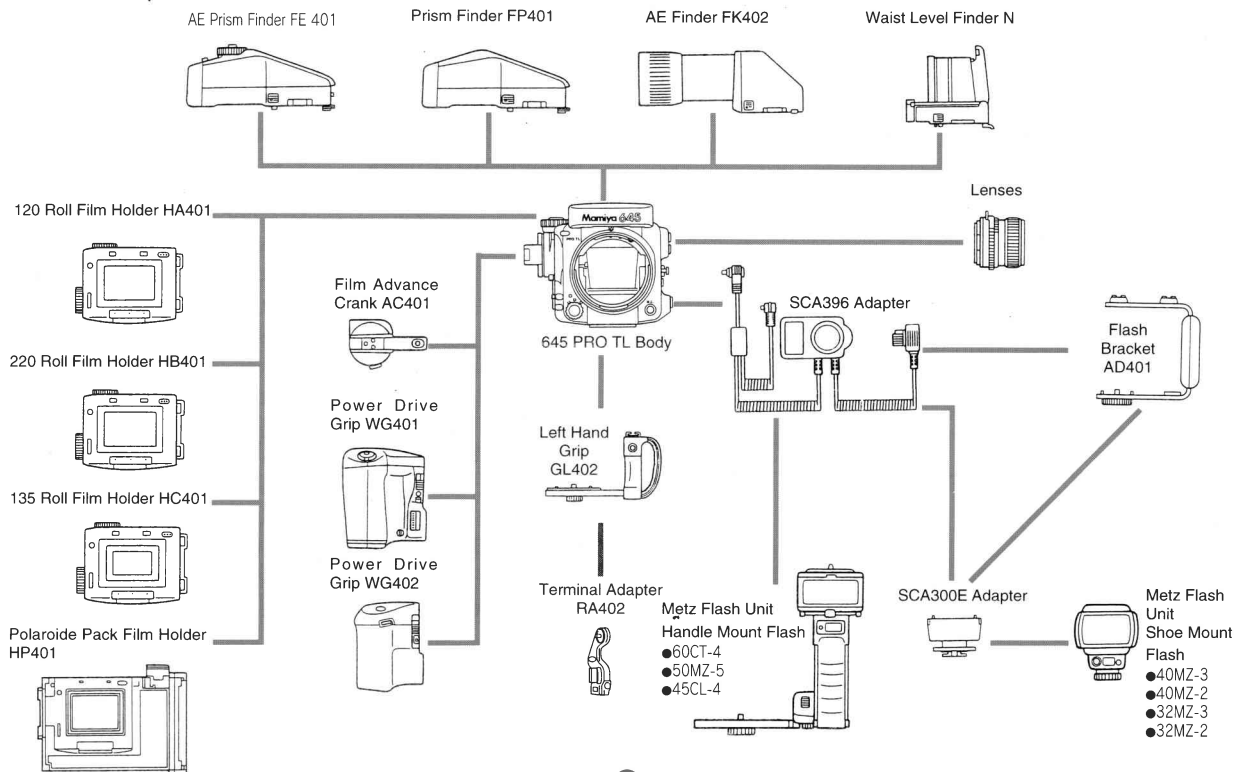
Telephoto Lenses : 150mm f/3.5N, A150mm
f/2.8, 210mm f/4N
ULD300mm f/5.6N, A200mm
f/2.8 APO, A300mm
f/2.8APO, A500mm
f/4.5 APO/500mm f/5.6

Standard Lenses : 80mm f/1.9N, 80mm f/2.8N,
Zoom Lenses : Zoom 55 ~ 110mm f/4.5N,
Zoom ULD105 ~ 210mm
f/4.5

Special Effect Lenses : Fish-eye ULD24mm f/4, Shift
50mm f/4, Macro 80mm f/4N
Macro 120mm f/4M

Leaf Shutter Lenses : A55mm f/2.8N/L, A80mm
f/2.8N/L, A150mm f/3.8N/L

Tele-Converter : 2 x Tele-Converter



★ If the camera should fail to function properly, please check the following:

1. The Shutter Release Button cannot be depressed.

Push the Battery Check Button.

If the lamp does not light, check:

Is a Battery in the camera?

If yes, is it correctly inserted? (Polarity)

Is it dead?

If the lamp does light, check:

Has the Film Holder Dark Slide been pulled?

Is the Shutter Release Selector in the locked (Red Dot) position?

If so, move it to the White Square and try again.

Is the Shutter Speed Dial in the "A" or "AEL" position?

If so, turn to other setting and try again.

2. The finder is black or very dark.

Has the Lens Cap been removed?

Is the Mirror-up Lever in the "M.UP" position?

If so, turn the lever to the White Square.

Is the "AM" setting on the lens at "M" (Depth of Field Preview)?

If so, move it to "A".

3. The Roll Film Holder cannot be removed from the camera body.

Insert the Dark Slide.

4. The developed film has fewer exposures than specified.

Most likely the Start Mark had not been aligned properly when the film was loaded. (See loading instructions page 20)

5. The Film Advance Crank continues to turn and does not stop.

Was the Roll Film Insert placed in the Roll Film Holder?

Was the empty film spool left in the upper compartment?

Camera type	6X4.5cm electronically focal-plane shutter SLR
Actual negative size	56mm X41.5mm
Film type	120 roll film (15 exposures) 220 roll film (30 exposures) Polaroid pack film (Polaroid 100, 600 series) 135 roll film in film cartridge
Film loading	Daylight loading - interchangeable film holders with film speed dial
Standard lenses	Mamiya-Sekor C 80mm f/2.8N Mamiya-Sekor C 80mm f/1.9N
Lens mount	M645 bayonet mount (applicable to all M645 lenses)
Shutter	Moving coil, electronic controlled focal-plane shutter
Shutter speed	(Manual) 4 sec. ~ 1/1000 sec., B (T) (Auto) 8 sec. ~ 1/1000 sec. (When the AE Finder is used.)
Shutter release	Electromagnetic release. Selectable release lock or self-timer mode.
Mirror	Instant return, front coated mirror, with mirror lock-up capability.
Viewfinder	Interchangeable (Waist Level Finder N, Prism Finder FP401, AE Prism Finder FE401 and AE Finder FK402) .
Focusing screen	Standard: Rangefinder Spot/Micoprism with Fresnel Lens,accessory screens available. (Same as the M645 Super)
Field of view	94%

Film transport	Single turn winding by Film Advance Crank AC401. Variable crank start position (6 positions). Interchangeable (Power Drive Grip WG401 and Power Drive Grip WG402).
Exposure counter	Progressive type, automatic reset. The counter for 120 and 220 film will be automatic.
Multiple exposure	Activated by the Multiple Exposure Lever.
Depth-of-field	Depth-of-field Scale provided on lens.
Self-timer	Electronic LED display: Lights for 8 seconds, flashes for 2 seconds, before shutter releases. Has manual override.
Auxiliary shutter release socket	Accepts Remote Control and Electronic Cable Releases.
Battery check	The Battery Check Button, indicates residual battery capacity in 3 stages.
Time exposure	Time (T) photography can be taken.
Synchronization	X terminal plus hot shoe, Flash synchronization at 1/60 sec. or slower speeds.
Back cover	Dark Slide Storage, Memo Clip.
Power supply	6V battery x 1 (4SR44 silver-oxide battery, 4LR44 alkaline-manganese battery or 2CR 1/3 lithium battery)
Others	With Neck-strap, Battery, Front cap of body, Rear cap of body, Upper cap of body, Synchro-cap and SCA396 Coupling Connector cap.
Dimensions and Weight	<div> <div>Body + holder (HA401)</div> <div>AE finder (FE401) with winder grip (WG401)</div> </div> <div> <div>124mm (W) X 103mm (H) X 124mm (D) 970g (excluding lens)</div> <div>172mm (W) X 135mm (H) X 170mm (D) 1,805g (with 80mm F2.8 lens)</div> </div>

★ When using the AE Prism Finder FE401

When using this finder it is imperative that the Film Speed Dial on the Roll Film Holder is properly set for the ISO number of the loaded film, as it interfaces with this finder. If not done, wrong exposures may result.

★ When the mirror is locked in the up position.

The Focal Plane Shutter Curtain may be damaged if the camera faces strong light sources, especially the sun. Return mirror to normal position or use lens cap to prevent such damage.

Your Mamiya 645 PRO TL is a precision mechanical-optical-electronic instrument, built for heavy and reliable professional use. It will reward you with a long service life if properly treated and maintained. Please observe these common sense rules:

- * Read instructions before using camera.
- * Protect camera against shocks and falls. Use neckstrap supplied with it, whenever possible.
- * Protect camera against rain and moisture. If it gets wet, wipe it with a soft, clean cloth.
- * Do not touch lens or mirror surfaces. To remove dust use air blower or lens tissue. To remove fingerprints use lens tissue and lens cleaning fluid if necessary.
- * Do not touch gold plated contacts on camera body, lenses, rollfilm holders and AE Finders. If necessary, wipe them with a clean, dry cloth.
- * Operate the film advance lever with even, measured strokes, to assure proper spacing.
- * Always test your equipment before going on important assignments.

Storage

- * When storing camera :
Turn shutter release selector dial to the red dot. (Off position)
Leave shutter and mirror in uncocked position.
The same applies to leaf shutter lenses.

- * Do not store camera at temperatures exceeding 40°C (105°F) and -10°C (15°F) and protect it against humid or sea air environment.
- * Periodically exercise your camera and lenses by making blind exposures at various shutter speeds. Also move the diaphragm ring and focusing mounts of all lenses repeatedly.

Battery Advice :

- * The battery supplied with the camera by the factory may have been subject to storage conditions which have reduced its service life. Check it before use and always carry spare batteries.
- * Be sure to wipe battery contacts before inserting it, in order to insure proper contact.
- * Be sure to observe proper polarity. (Match +pole of battery with +mark in battery chamber.)
- * Battery life varies, depending on make, frequency of use, age, storage condition and ambient temperature. (Place battery in External Battery Case accessory which you wear inside your clothing, when photographing in cold climates)
- * Always remove the battery when camera is not used for longer than a few weeks and store it in a cool, dry place.

Special Advice To Professional Photographers

Your Mamiya 645 PRO TL is designed for heavy professional use and will give you a long service life if properly maintained. Your camera and lenses have many moving parts which require periodic lubrication. Its electronic components, too, are subject to wear and tear and are affected by ambient conditions like dust, sand, sea air, heat and moisture.

If cameras had odometers like automobiles, it would be easier to specify servicing schedules. May we suggest that if you shoot thousands of film rolls per year, you send your equipment annually for servicing by the Mamiya distributor in your country.