

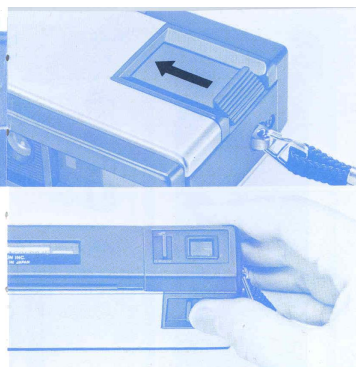
Set the Aperture Scale (Weather Mark)

Move the aperture knob and set the aperture scale to the indicated position most appropriate to the shooting conditions.

indoor (f/2) cloudy (f/4) bright sky (f/8) (f/16)



● For close-up photography such as copy work, set the aperture scale to ☐ or ☐. In a dark room, use additional light.

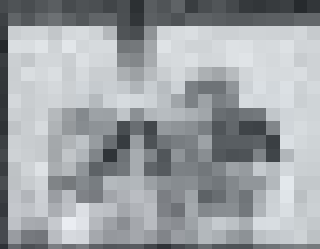
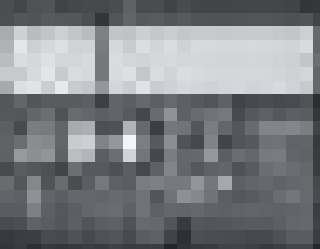
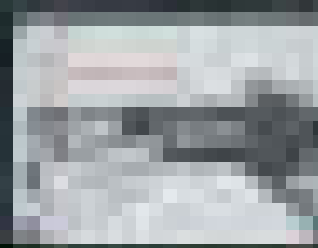
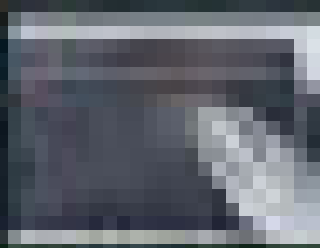
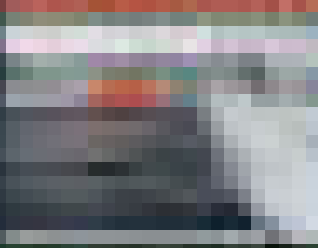
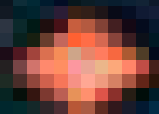


Wind the Film

Slide the winding knob completely in the direction of the arrow. Press the shutter button and winding the film repeatedly until "1" appears in the frame counter.

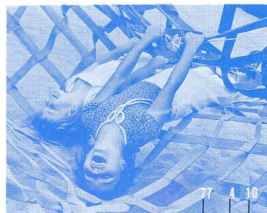
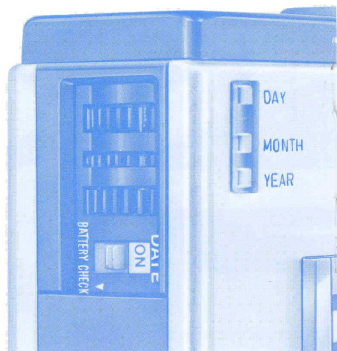
● If the winding knob does not move, press the shutter button, and then wind the film.

Project 1: The Future of Work



Set the Date

- 1 Set the desired date by turning the three date dials on the left side of the body while looking at the date indicator. The date offers the following sets of numbers.
 YEAR 0, 1-9, 77-87, ■ (blank)
 MONTH 0, 1-12, ■
 DAY 0, 1-31, ■
- 2 Slide down the date switch to "ON".
- 3 When pressing the shutter button lightly while looking into viewfinder, the date is displayed below the picture frame. (The display does not appear unless the date switch



DAY
MONTH
YEAR

- is "ON" and the film is wound.)
- The date will be imprinted on the bottom right corner of the picture with the year, month and day appearing from left to right.
 - The ■ mark indicated that nothing will be imprinted on the photograph. If date imprinting is not desired, turn off the date switch or set all dials to the ■ marks.
 - To prevent blurred date imprinting, continue pressing the shutter button for at least half of a second after releasing the shutter. Then, once the shutter button has completely risen, wind the film.
 - To even the row of numbers, adjust the date dials.

Canon

CANOLITE ED

INSTRUCTIONS

Canolite ED

The Canolite ED is a mini-sized high performance electronic flash unit which can be attached to all cameras having hot shoes.

Guide number calculations are unnecessary if used with the Datematic, and Canon's Pocket Cameras. Proper exposure can be obtained immediately after the ready light begins to glow.

The Canolite ED is an indispensable accessory when automatic exposure photography is not possible such as in dark rooms or at night. It has the advantage that it consumes little energy.

The Canolite ED uses Canon's original diffusing screen to make your color pictures as beautiful as those taken in bright daylight.

Moreover, the Canolite ED is very easy to handle. Shooting with it is exactly like taking pictures in daylight.

Specifications

Type: Directly coupled clip-on type.

Guide Number: 14m at ASA 100. At the time 30 seconds after the pilot lamp lights up, when using new batteries.

Flash Coverage Angle: With the 35mm camera, possible to fulfill its function using with the lens whose focal distance is longer than 40mm.

Flashing Intervals: Alkaline-manganese batteries: Shorter than 14 seconds. Interval between flashing and lighting-up of the pilot lamp, when using new batteries.

Number of Flashes: Alkaline-manganese batteries: More than 180 times. With 30-second intervals, using new batteries.

Color Temperature: Equivalent to daylight. Corrected with the colored light-diffusion plate.

Flash Duration: 1/1000 of a second.

Power Source: Two penlight alkaline-manganese (AM-3) batteries.

Pilot Lamp: Built-in.

Synchronization Contact: Directly coupled.

Size: 68 x 32 x 60mm (2-11/16" x 1-1/4" x 2-3/8")

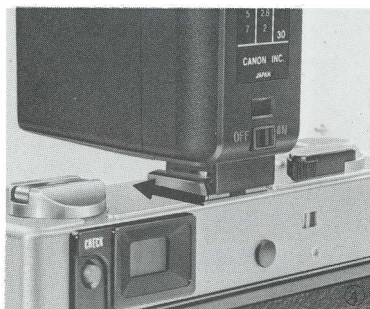
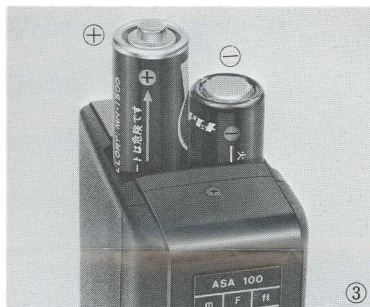
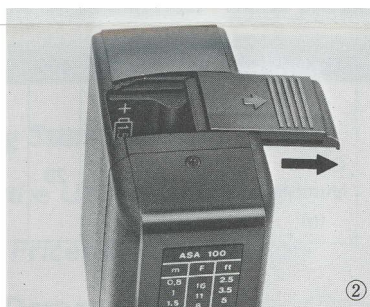
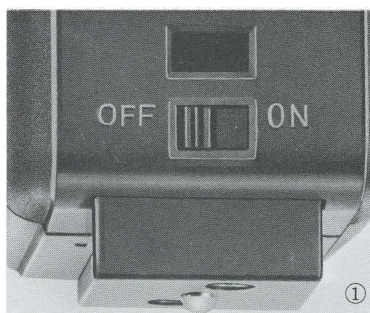
Weight: 130g (4.6 ozs.) with batteries.

Using the Canolite ED

1. Battery Loading

1. Turn the switch off before loading batteries. (Photo ①)
2. Remove the battery chamber cover by pressing it in the direction of the arrow. (Photo ②)
3. Insert the batteries according to the diagram on the side of the battery chamber. Make sure not to mistake the positions of the poles. (Photo ③)
4. Replace the cover.

■ When changing batteries, replace both at the same time with two new batteries of the same brand.



Canon

キヤノライト ED

使用説明書

キヤノン キヤノライト ED

お買いあげありがとうございます。

キヤノライト EDは、アクセサリシューに直接接点を持つ、すべてのカメラに使用できる小型高性能のストロボです。

特にデートマチックおよびキヤノンの110カメラに使用する場合は、ガイドナンバーセットも不要で、パイロットランプ点灯直後に適正露出が得られます。E E撮影不可能の暗い室内や夜の撮影には欠かさないアクセサリで、電池消耗の少ない利点もあります。

キヤノン独特の散光板の採用によって、明るい戸外で撮影した写真と同じような、美しいカラー写真が得られます。しかも、操作は簡単、昼の撮影と全く同じです。

性能

型 式：直結式 クリップオンタイプ

ガイドナンバー：14m (ASA100) 新品電池にてパイロットランプ点灯後30秒経過のとき

照射角度：35mm判で40mmレンズまでカバー

発光間隔：アルカリマンガン電池…14秒以下新品電池にて発光後パイロットランプが点灯するまでの時間

発光回数：アルカリマンガン電池…180回以上新品電池にて30秒間隔の発光回数

色 温 度：昼光相当、独自の着色散光板により色温度補正

閃光時間：1/1000 秒

電 源：単三型アルカリマンガン乾電池 (AM-3) 2本使用

パイロットランプ：あり

シンクロ接点：直結式

大きさ・重量：68mm x 32mm x 60mm・130g (電池込み)

使い方

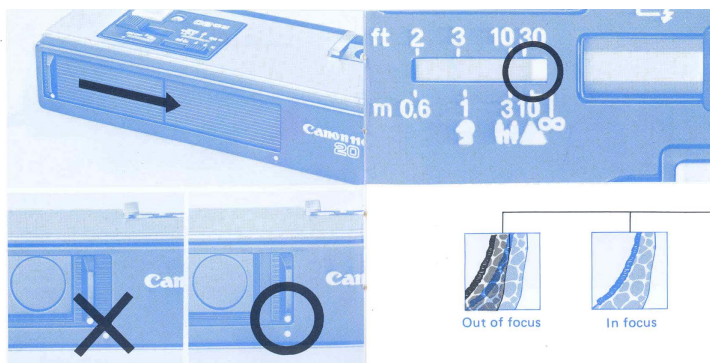
1. 電池のつめ方

- ①電池装填はスイッチをOFFにしておいてください。(写真①)
- ②電池室カバーを矢印方向に押して、はずしてください。(写真②)
- ③電池室内の側面図に従って⊕⊖の向きを間違えないよう電池を入れてください。(写真③)
- ④カバーをします。

Open the Protector

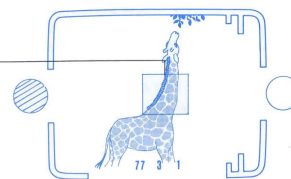
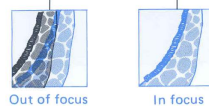
Open the protector aligning the white dot on the cover with the one on the body.

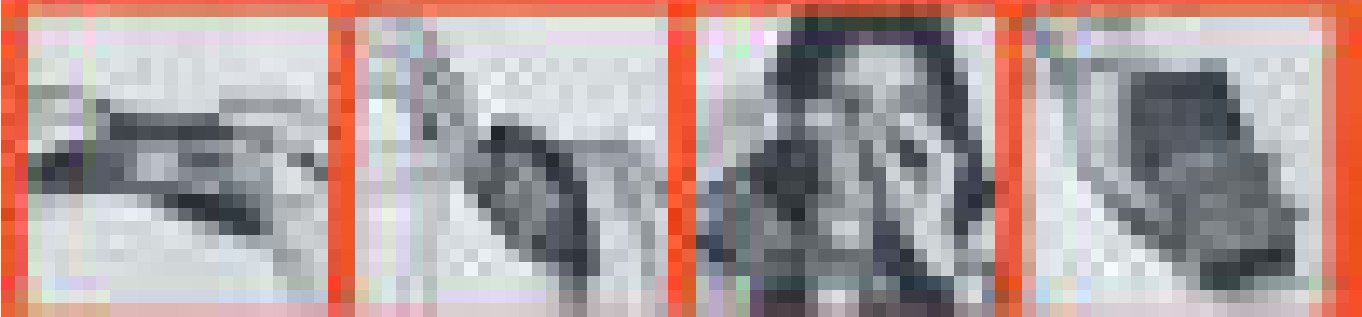
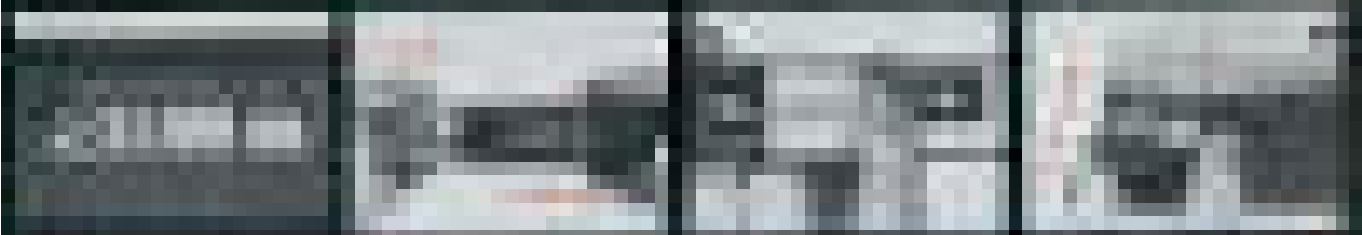
● Unless the protector is opened completely, the shutter will not release.

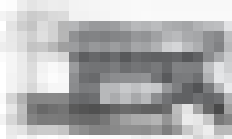
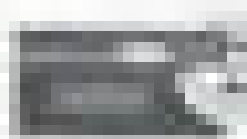


Set the Distance Scale

While looking into the viewfinder, slide the distance knob to coincide the two images of the subject.

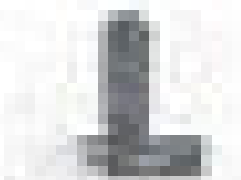
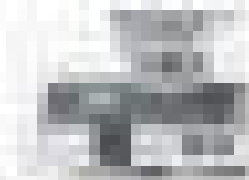




[illegible]



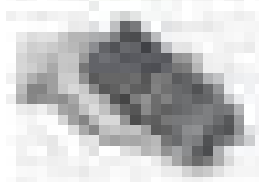
100



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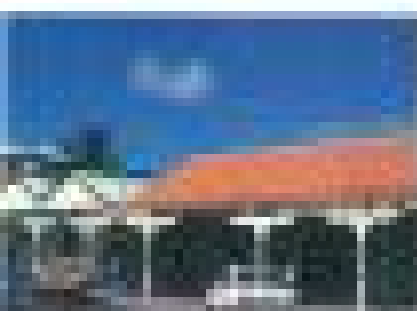


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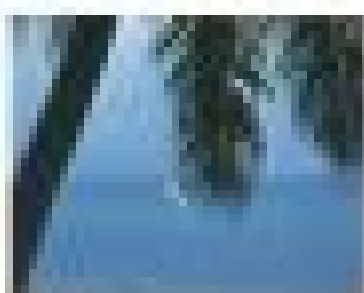


The following photo is a photograph of a building that is a school building. The building is a large, modern building with a prominent red roof. The building is located in a city and is a well-known landmark. The building is a school building and is a well-known landmark in the city.

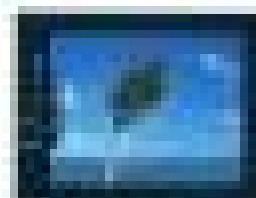
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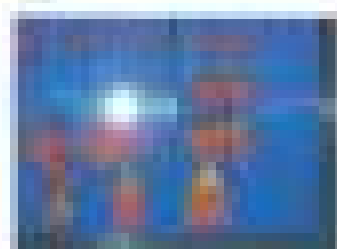
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Kontrollfahrgang | 1. April 1972

- Achtung bei Kurven: Das bei Kurven gehen zum rechten 12. Schritt ist bereits mit.
- Überprüfen Sie sich um das Verhalten der Maschine nach der 12. Step ist das noch nicht möglich.
- Beachten: Immer über dem 12. Schritt die positionierte Maschine stehen lassen.
- Von der 12. Schritt bis 1000 der Motor überprüfend ist möglich.

1. April 1972 | 1. April 1972

- 1. April 1972: Maschine nach 12. Schritt ist bereits mit.
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- 1. April 1972: Maschine nach 12. Schritt ist bereits mit.



Minolta 110 Zoom SLR

by Terry Scott:

Top of the tree for the 110 enthusiast – the world's first SLR for the 13 x 17mm, cartridge-load, format.

Here is a very small, very light-weight SLR. It has a built-in 25-50mm f/4.5 Zoom Rokkor-Macro lens, with focusing to 3.5 feet (close-focus to 8 $\frac{1}{4}$ inches) and exposure automation of the aperture-priority type. When you set the f/stop on the ring around the front-mounted CdS meter cell, the stepless electronic shutter adjusts to a value between 10 seconds and 1/1000sec. There's through-lens viewing and focusing, in-finder signals for over-exposure and for slow speeds (1/50sec or longer) and an override switch for ± 2 stops variation on the metered reading. The Minolta 110 Zoom SLR is a very sophisticated little piece of hardware.

Operation is eminently simple. Press a catch on the back of the camera to release the back, drop in a 110 cartridge, click the back into place again and wind to frame 1 – using the 80-degree stroke film-wind lever on the baseplate. The shutter release button is smooth, has a short travel and is lockable – and between the release and the prism housing is the red-tipped battery-check button. Pressure on this should light the red LED in the finder that also serves duty as the over-exposure and B/X setting warning light.

Zoom

Little else remains to be done before taking the first shot. Just check the mode setting – A for automatic exposure, X for

electronic flash (at a mechanically-timed 1/150sec) and B. Set the override switch if necessary, then zoom, focus and shoot.

As with all zoom lenses, it's best to zoom to the telephoto (50mm) end of the range to assure really accurate focus – and then change the zoom setting, if desired. We found focusing to be quite accurate, although not as swift or as certain as in a 35mm SLR with a fast lens. A microprism aid can be a help – and there's one in the middle of the 110 Zoom SLR's focusing screen.

Macro

To move to the macro setting, turn the zoom ring to 25mm, pull in on the ring gently, and move it until the orange arrow aligns with the index line of the lens barrel. The extra versatility provided by this extra-close setting is well worth having.

Lens quality? Minolta have widely resisted the temptation to stretch lens parameters, and the 2:1 zoom range and f/4.5 maximum aperture give surprisingly good performance.

Handling, in both horizontal and vertical modes, can be speedy as well as comfortable, and is enhanced by one of the most significant features of all – the fact that this compact SLR tips the scales at just 430 grams (15 ounces)!

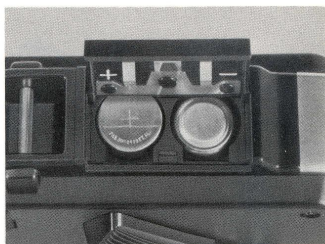
Conclusion: a unique and attractive camera.

BATTERIES

- 4 Your Minolta 110 Zoom's automatic exposure-control system and viewfinder signals are powered by two 1.5-volt silver-oxide batteries Eveready S-76, UCAR S-76, or equivalent. Be careful not to use 1.35-volt mercury batteries, which are available in a similar shape.

To install

1. Slide the battery-chamber cover toward the bottom of the camera to unlatch it. Then swing the cover open on its hinges by lifting the lower edge up and out.
2. Insert two of the specified batteries with plus (+) and minus (–) ends positioned as indicated inside the cover.
3. Close the cover and latch it by depressing the bottom edge slightly and sliding it toward the top of the camera until secure.



OPTIONAL ACCESSORIES



Auto Electroflash 25

This light, compact unit is ideal for use on the Minolta 110 Zoom and can also be used cordlessly or with its attachable sync. cord on many other cameras. It makes completely automatic electronic-flash exposures over a considerable range by means of a built-in sensor or can be used as a conventional non-auto unit. Recycling condition is indicated by a monitor lamp. Guide number is up to 25 for meters at ASA 100, 37 for feet at ASA 25.

6 Low-voltage warning

Your Minolta 110 Zoom SLR is equipped with a device to warn you to minimize wasted film if battery voltage becomes insufficient for proper exposure while the shutter-setting selector is at "A" (automatic): If the shutter is released when voltage is too low, the built-in eyepiece shutter will remain closed to prevent viewing.

Should this happen, depress the release and turn the selector to "X" at once to return the mirror. Then insert fresh batteries and return the selector to "A" to continue shooting with automatic exposure control. (The frame in taking position when the eyepiece shutter closes will be lost.) You can continue to make exposures using manual exposure control at the mechanical "X" or "B" settings (p. 20) even if battery power is insufficient or completely lacking.

NOTE

- Shutter may operate and eyepiece shutter open even when the battery check indicator does not light, but the picture will be more or less overexposed.
- If the batteries are unserviceable and you are taking pictures with "X" setting, be sure to remove the batteries from the chamber.

CARE AND STORAGE

- Your 110 Zoom camera or film cartridges for it should never be kept in direct sunlight or left in the glove compartment or other places in motor vehicles or elsewhere in which they may be subject to relatively high temperatures. They should also not be exposed to moisture, shock, chemicals, or corrosive conditions.
- The camera should be examined and cleaned from time to time in normal use. If it has been exposed to dust, dirt, or corrosive conditions (such as salt spray, etc.), it should be cleaned as soon as possible after such exposure. Avoid touching glass lens and finder-eyepiece surfaces with the fingers. If necessary, blow away loose matter from them or use a bellows lens brush. Then use special photographic lens tissue or a soft clean cloth to remove smudges or fingerprints with a gentle circular motion. Only if absolutely necessary, the tissue may be moistened very slightly with not more than one drop of a satisfactory quick-evaporating fluid cleaner specially compounded for coated photographic lenses. *Like other fluids,*

these must never be dropped directly on the glass surface.

Other external parts of the camera may be wiped with a silicone-treated cloth. Alcohol or other chemicals or solvents should never be allowed to contact it, and no part should ever be lubricated.

The electric-eye lens and the inside of the camera may be cleaned by holding the camera at an angle so that dust will fall out and then whisking the surfaces with a bellows lens brush.

- When the camera is not to be used for more than two weeks, be sure to remove the batteries to avoid the possibility of corrosion.

Keep your camera in a cool, dry place away from dust or chemicals. Placing it in the optional soft case may help to protect it.

If the camera is to be stored for an extended period, it would be best to return it to its original packing and seal it in an airtight container (such as a heavy or double plastic bag) along with a small bag of a drying agent (such as silica gel).

- 26 2. Proceed as under usual auto exposure (pp. 16-17). Because of the extremely shallow depth of field at such close-up settings, it is advisable to use as small a lens opening (that is, as large an f-number) as possible and to focus with care. While close-up focusing can be done in the same way as normal (p. 13), because of the relatively short range of adjustment possible with the focusing collar at the distance involved, it may be easier and more practical instead to move the camera or subject nearer or farther until the subject image appears clearest in the microprism spot. With close-ups, as high a shutter speed as possible should generally be used; for hand-held shots, it definitely should not be below 1/50 sec. (i.e., finder yellow triangle should not be on). The shutter should be released with extreme care, and use of a tripod and cable release is recommended for best results.



NOTE

If the subject is too dark to focus visually, it may be located at the distance for proper focus by measuring from the line on the body where the back cover joins it (which represents the film plane).

Cold-weather operation

Batteries by nature tend to decrease in capacity as the temperature goes down. Though the silver-oxide batteries used in the 110 Zoom are superior to most others in this respect, it also happens with them.

If old batteries are used at temperatures below 0°C (32°F), the camera's electronic operation may not be satisfactory. You should thus replace older batteries with fresh ones before using your 110 Zoom in cold weather and carry spare fresh batteries with you during such use.

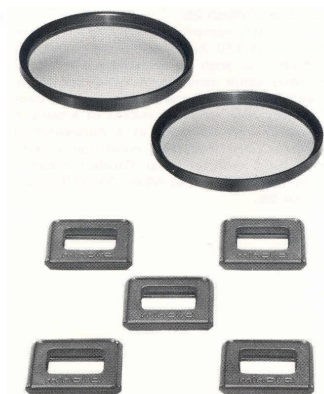
NOTE

- Spare fresh batteries should be kept warm until use.
- Batteries whose temperature has decreased because of low temperatures will of course become serviceable again when brought to levels for normal living.

- 32 Battery warning Built-in finder shutter remains closed if shutter is released at "AUTO" system: setting when battery power is insufficient.
- Flash sync.: X synchronization through direct-contact hot shoe only at "X" setting and stepless auto speeds under 1/150 sec.
- Films usable: No.110 cartridges for 12 or 20 exposures 13 x 17mm, film-speed setting unnecessary
- Film advance: Lever type, with single 80° stroke
- Focusing: 1m (3.3 ft.) to infinity by distance scale or finder microprism spot; close-up range at "M" setting: film-to-subject distances of 286 to 307mm by microprism for respective image magnifications on film of 0.126 to 0.106X
- Others: Cable-release socket, tripod socket, strap-attachment provision
- Accessories available: Hand strap, retractable rubber lens hood, soft case with detachable neck strap, ϕ 40.5mm filters, Cable Release II, Auto Electroflash 25, eyepiece correction lenses
- Size and weight: 53.5 x 108 x 132mm (2-1/8 x 4-1/4 x 5-1/4 in.), 430g (15-1/8 oz.)

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Minolta Filters

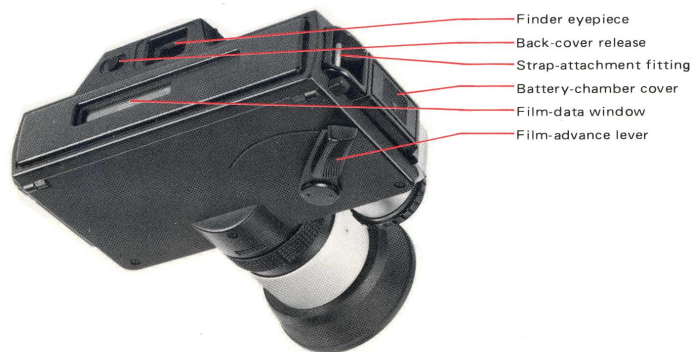
These are specially designed with 40.5mm-diameter threads to fit the Minolta 110 Zoom's screw mount.

The UV filter (L39) cuts ultraviolet light and can be used to protect the lens. The yellow filter (Y52) increases contrast and gives better cloud effects with black-and-white film.

The exposure-adjustment control (p.18) must be set at "+1" for proper exposure when the yellow (Y52) filter is used.

Eyepiece Correction Lenses

Focusing aid for far- and near-sighted photographers is provided by these special lenses which snap into grooves provided in the 110 Zoom's eyepiece. These are available in nine different diopter strengths, from -4 to +3.



Your fine-quality compact Minolta 110 Zoom SLR is the world's first single-lens reflex for the 110 pocket format. Its 25 — 50mm genuine Rokkor also makes it the first 110 camera with the convenience of a 2X true-zoom lens. And it has built-in macro capability for exciting close-up focusing. Simply drop in a 110 film cartridge; no need to set film speed. Then you select the aperture, and the 110 Zoom's electronic exposure-control system automatically varies the shutter speed steplessly from 1/1000 to ten full seconds for pinpoint exposure over a wide range. And you can adjust exposure up to two stops over or under the auto setting if you wish. The clear parallax-free SLR viewfinder has a microprism focusing spot, and LED's visible while viewing come on to warn you when light is too bright or shutter speed is slow, plus giving other important shooting information. A short-stroke thumb lever advances film quickly. A convenient hot shoe and 1/150-sec. "X" setting make electronic-flash pictures easy; this and the bulb setting operate without battery power.

Before using this camera for the first time, please read this manual through carefully while installing the batteries and handling and acquainting yourself with the parts and features of your Minolta 110 Zoom SLR. In this way, you can take good pictures and begin to realize its potential right from the start.

Minolta Camera Co., Ltd., 30, 2-Chome, Azuchi-Machi, Higashi-Ku, Osaka 541, Japan
Minolta Corporation, 101 Williams Drive, Ramsey, New Jersey 07446, U.S.A.
Minolta Camera (Canada), Inc. 1344 Fewster Drive, Mississauga Ontario L4W 1A4 Canada
Minolta Camera Handelsgesellschaft m.b.H., Kurt-Fischer-Strasse 50, D-2070 Ahrensburg, West Germany
Minolta France S.A., Tour Albert 1er, 65 Avenue de Colmar, F-92508 Reuil-Malmaison, France
Minolta Hong Kong Limited, 49 Chatham Road, Kowloon, Hong Kong
Minolta Singapore (Pte) Ltd., Tong Fong Bldg., 52-E, Chin Swee Road, Singapore 3

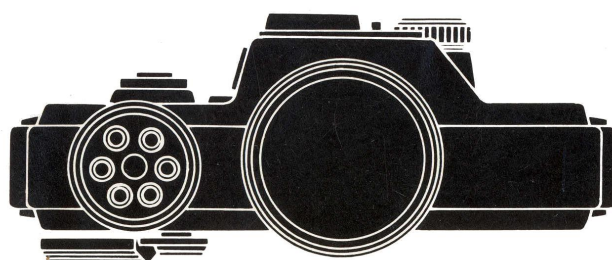
Minolta MINOLTA MASTERS PHOTOGRAPHY

110Z 707E B7

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Printed in Japan

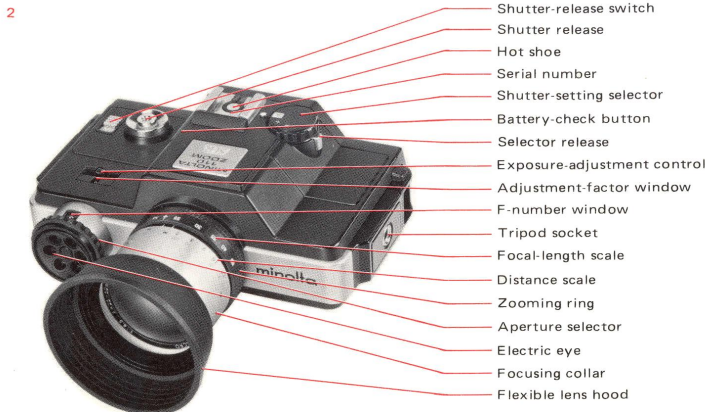
MINOLTA 110 ZOOM SLR



OWNER'S MANUAL



NAMES OF PARTS



TECHNICAL INFORMATION

- 31
- Type: Compact, single-lens-reflex camera for No. 110 film format with zoom/macro lens and automatic electronic exposure control
- Lens: 25 — 50mm f/4.5 Zoom Rokkor-Macro, 10 elements in 10 groups plus swing-in close-up element; auto-preset apertures f/4.5, 5.6, 8, 11, and 16 with click stops, intermediate settings possible; filter thread diameter: 40.5mm
- Metering: By lens-side CdS cell, angle of acceptance: 12° vertically, 18° horizontally
- Exposure control: Aperture-priority automatic, from EV 1 (e.g., 10 sec. at f/4.5) to EV 18 (1/1000 sec. at f/16); control for up to ±2 EV continuous exposure adjustment in 1 EV steps
- Shutter: Metal-blade, behind-the-lens type, stepless electronically controlled speeds 1/1000 to 10 sec. plus mechanical "X" (1/150 sec.) and "B" (bulb) settings, shutter-setting and -release locks.
- Power source: Two 1.5v silver-oxide cells, Eveready S-76, or equivalent; battery check by button and finder LED
- Mirror: Quick-return type
- Viewfinder: Eye-level Porro-mirror type showing 85% of film-frame area with microprism focusing aid centered in mat field; magnification: 0.56X (at f = 25mm) to 1.1X (f = 50mm) focused at infinity; red and yellow light-emitting diodes (LED's) indicate shutter speed under 1/50 sec., over-range warning, mechanical setting, and battery condition; eyepiece frame accepts Minolta SLR eyepiece correction lenses.

DEPTH-OF-FIELD TABLE

Unit: Meters

Unit: Feet

28	f = 25mm	Dist. (m)					Dist. (ft)					
		4.5	5.6	8	16	4.5	5.6	8	16			
		∞	∞	∞	∞	∞	∞	∞	∞	∞		
			8.59	6.91	4.85	2.45		63' 2"	22' 8"	15' 11"	8' 5 1/2"	
	7		33.84	3.92	3.55	2.93	1.87	20	68' 9 1/2"	138' 6 3/4"	9' 1 1/2"	5' 11 1/2"
			3.92	3.55	2.93	1.87			11' 11"	10' 10 1/4"	9' 1 1/2"	5' 11 1/2"
	2		2.51	2.68	3.15	7.55		7	8' 11 1/2"	9' 7 7/8"	11' 6 1/4"	33' 7 7/8"
			1.66	1.60	1.47	1.17			5' 9"	5' 6 1/8"	5' 5"	3' 11 1/2"
	1.5		1.75	1.83	2.02	3.15		5	5' 10 3/8"	6' 1 5/8"	6' 9 1/2"	10' 8 1/2"
			1.31	1.27	1.20	1.00			4' 4 3/8"	4' 2 3/4"	3' 11 1/2"	3' 3 3/8"
	1		1.09	1.12	1.18	1.45		3.5	3' 10 3/8"	3' 11 1/2"	4' 2 1/2"	5' 3 3/8"
			0.92	0.90	0.87	0.77			3' 2 3/8"	3' 1 5/8"	3'	2' 7 7/8"
	f = 50mm	∞	∞	∞	∞	∞	∞	∞	∞	∞	∞	∞
			31.30	25.16	17.62	8.82		∞	102' 7 7/8"	82' 1 1/2"	57' 5 1/2"	28' 9 1/4"
	7		8.93	8.57	11.37	30.40		20	24' 7 7/8"	26' 1 3/8"	30' 3 3/4"	60' 8 3/4"
			5.76	5.52	5.06	3.97			16' 10"	16' 3 1/2"	14' 11 1/8"	12'
	2		2.12	2.15	2.22	2.50		7	7' 5 1/2"	7' 6 3/4"	7' 10 1/8"	8' 11 1/8"
			1.89	1.87	1.82	1.67			6' 7 1/8"	6' 6 1/8"	6' 9 7/8"	8' 9 1/8"
	1.5		1.56	1.58	1.62	1.75		5	5' 2 1/2"	5' 3 1/8"	5' 4 3/8"	5' 10 1/4"
			1.44	1.43	1.40	1.31			4' 9 3/8"	4' 9 1/8"	4' 7 7/8"	4' 4 3/8"
	1		1.02	1.03	1.04	1.09		3.5	3' 7 1/8"	3' 7 3/8"	3' 8"	3' 10 1/4"
			0.98	0.97	0.96	0.92			3' 4 3/8"	3' 4 3/8"	3' 4 1/8"	3' 2 3/8"
	Close-up	0.307	0.314	0.315	0.319	0.332		1.00592'	1' 1 1/8"	1' 3 3/8"	1' 1 1/8"	1' 3 3/8"
			0.301	0.300	0.287	0.287			11 5/8"	11 5/8"	11 5/8"	11 5/8"
	0.286		0.293	0.294	0.296	0.306		0.939'	11 5/8"	11 5/8"	11 5/8"	11 5/8"
			0.284	0.283	0.281	0.273			11 5/8"	11 5/8"	11 5/8"	11 5/8"

f = 50mm

Close-up

To check

While looking into the finder eyepiece, depress the battery-check button. If the red triangle to the upper right outside the finder frame lights (see p. 11), batteries are serviceable; if not, they should be replaced with fresh ones.

Test batteries immediately after installing them; if the lamp does not light, make sure that they are fresh and have been inserted correctly. A set of batteries will generally last for about one year in proper normal use, but it is recommended to test them briefly with each new roll of film particularly before starting picture-taking sessions or trips.



NOTE

- To avoid the possibility of excessive battery drain from the finder indicator lamps, keep the shutter release locked (p. 15) when not taking pictures.
- If the camera is not to be used for more than two weeks, it is advisable to remove the batteries to avoid the possibility of corrosion.

- 24 3. Set the required f-number by means of the aperture selector according to the instructions for the flash unit in use.
4. Follow the instructions for the flash unit in use and focus, compose, and squeeze the shutter release all the way down to fire the flash and make the exposure.

NOTE

- Be sure that the shutter-setting selector is set at "X" whenever the camera is used for flash pictures.
- For optimum range when using Auto Electroflash 25 in automatic mode, the lens aperture should be set as follows: f/4.5 for color negative of ASA 80 and color reversal of ASA 64, f/5.6 for black and white of ASA 125.

4. Operate the film-advance lever repeatedly with your thumb until it locks (about three full strokes). A series of 1's should then be visible to the right in the film-data window to indicate that film is in position for the first exposure.



Each succeeding frame is positioned for exposure by operating the film-advance lever one full stroke until it locks, and the shutter release cannot be depressed until this is done.

NOTE

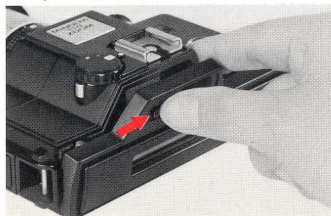
Keep the shutter release locked when you are not taking pictures.



LOADING AND ADVANCING FILM

8

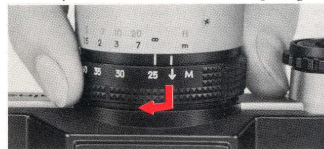
1. While depressing the back-cover release toward the finder eyepiece to unlatch it, open the camera back.
2. Insert the film cartridge into the camera as shown.
3. Close the cover and push in on it to click it shut.



CLOSE-UP PHOTOGRAPHY

In addition to its normal focusing range, the 110 Zoom's built-in close-up capability enables focusing objects between 28.6 and 30.7cm (11-1/4 and 12-1/8 in.) from the film. The subject field taken in at this distance range averages about 11.3 x 14.9cm (4-1/2 x 5-7/8 in.) for subject images that become nearly life size in usual enlarged prints. These can be form striking or useful views of many small objects from flowers to pamphlets. To make close-ups:

1. With the zoom ring turned so that "25" is aligned with the white index and the orange arrow is lined up with orange one, depress the zoom ring slightly



toward the camera body and turn it so that the arrow is lined up with the white index and the orange "M" is opposite the orange one.

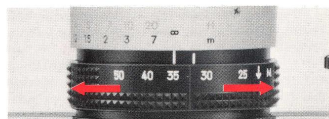
25



ZOOMING

- 12 The focal length of your Minolta 110 Zoom can be changed continuously between normal (25mm) and short telephoto (50mm), enabling you to adjust subject image size and composition without changing position. To do this, simply turn the knurled zooming ring as desired.

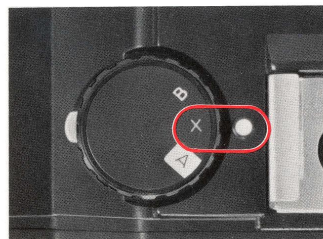
f = 25mm



f = 50mm



Turning the shutter-setting selector to align "X" with the index (while depressing the selector release) provides a fixed shutter speed of 1/150 sec. for fully synchronized exposure with electronic flash (see p. 23) and/or existing continuous light.



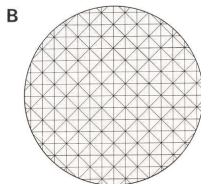
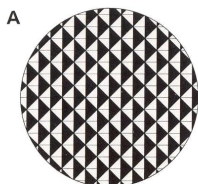
Turning the shutter-setting selector to align "B" with the index (while depressing the selector release) sets the camera for making "bulb" exposures. That is, the shutter will open when the shutter release or cable-release plunger is pushed and remain open until it is released.

NOTE

If the red triangle does not come on when shutter release is pushed slightly at the "X" or "B" setting, the batteries are not serviceable; remove the batteries from the chamber and go on shooting with "X."

14 **NOTE**

- Focusing should be done with the eye centered in the finder eyepiece. If not, the microprism focusing spot may appear darkened as shown in illustration A. Should this happen, simply adjust the position of your eye until the focusing spot appears as in B.
- Normal-range focusing can be done most accurately and easily with the lens set at its longest (50mm) focal length, after which it can be zoomed to the desired value.
- The finder eyepiece of the 110 Zoom accepts Minolta eyepiece correction lenses to aid viewing and focusing for near-sighted or far-sighted individuals (see p. 30).



necessary in cases where the most important subject area is considerably darker than the area surrounding it or a bright area or light is in the picture. Examples of pictures that may benefit from a plus setting are back-lighted ones with no fill-in or subjects against a background of snow or light-colored sand, predominantly light-colored posters, etc.

Decreasing exposure may be desirable or necessary in cases where the main subject area is much brighter than the rest of the

picture. Examples might include subjects in a spotlight or shaft of sunlight or against a very dark background (unless the background occupies only a small part of the image area), predominantly dark copy matter, etc.

CAUTION

Be sure to reset the exposure-adjustment control to "0" when more or less than normal exposure is no longer desired.

Without adjustment



Exposure decreased

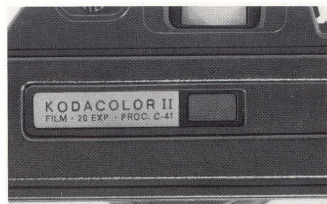


UNLOADING THE CAMERA

22 After taking the last picture in a cartridge, operate the film advance repeatedly until it locks (about two full strokes), but do not force it any farther. (You will still be able to see backing paper in the window.) Then open the back cover and remove the cartridge.

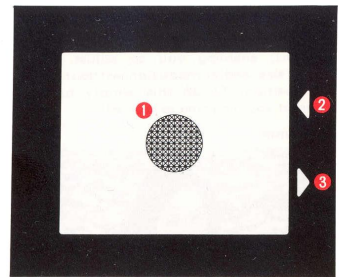
NOTE

Be sure that the shutter-release switch is in its "LOCK" position (see p. 15) when not taking pictures.



VIEWFINDER

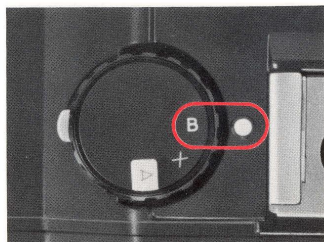
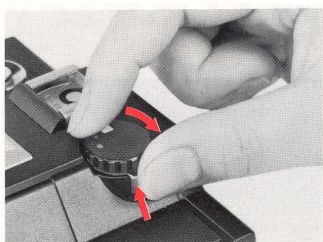
Looking through the finder of your 110 Zoom, you can see the black frame with a central *microprism focusing spot* ①. When the shutter release is depressed slightly, a *red triangle* ② to the upper right outside the frame lights pointing the way to turn the aperture selector for adjustment if the auto shutter speed is over range (more than 1/1000 sec.) or when "X" or "B" is set (p. 20); it also serves as a battery-check indication (see p. 5). A *yellow triangle* ③ to the lower right outside the frame lights when the shutter release is depressed slightly to point the direction of aperture adjustment when the auto shutter speed is slow (under 1/50 sec.); it also lights at the moment the shutter is released if batteries are serviceable.



20 "X" and "B" settings

Both of these shutter settings are mechanically controlled. With either "X" or "B" aligned with the index, then, you can view, make exposures, and advance film even though batteries are unserviceable or completely lacking. The upper red triangle at the right outside the finder frame (p. 11) will come on when the shutter release is depress-

ed slightly when the selector is set at "X" or "B" indicating that the built-in meter and exposure-control system cannot be used, and the aperture must be selected for appropriate exposure as determined by some other means.



FOCUSING

To focus visually in either normal or macro (p. 25) range, look through the finder and turn the focusing collar until the subject image in the microprism appears clearest, seeming to blend with that in the mat field around it and not shimmering or with lines appearing broken up.

In normal range, the lens may also be focused by aligning the film-to-subject distance value on the focusing scale with the index line on the lens barrel.

13

Out of focus



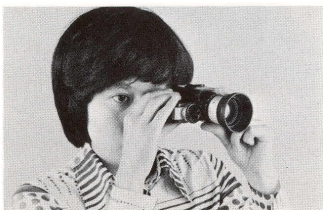
Subject in focus



SUPPORTING THE CAMERA

10

Your camera should be held in a comfortable position preferably with it and/or hands supporting it steadied against your face or body to prevent it from moving when you take the picture. Recommendable horizontal and vertical ways that permit operation of necessary controls are illustrated here.



For best results, especially at low shutter speeds when the yellow indicator in the viewfinder (p. 11) is lighted, the camera should be placed on a tripod or braced against some other firm support and exposures made with a cable release.

CAUTION

Always be careful that the electric eye on the front of the camera is not covered by a finger, strap, or any other object.



FLASH PHOTOGRAPHY



Your Minolta 110 Zoom is circuited for "X" flash synchronization only through the convenient hot shoe. It is intended for use with cordless electronic flash under relatively dark conditions; while fill-in flash may be possible under certain conditions, using it is not generally recommended. Do not use bulb-flash units of any kind. To take flash pictures with your 110 Zoom:

1. Push the release and turn the shutter-setting selector until "X" clicks into place opposite the index.
2. Slide a suitable cordless electronic or autoflash unit all the way into the hot shoe. The special design of the Minolta Auto Electroflash 25 (p. 29) makes it ideal for use with this camera, and it can also be used on many others.

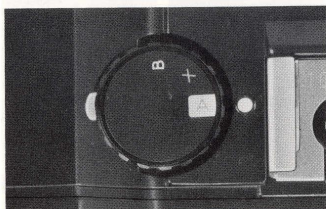
23

TAKING PICTURES

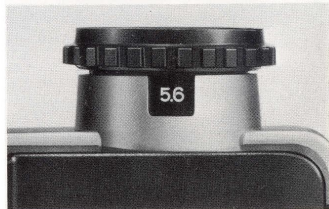
16

Usual automatic operation

1. Make sure that the "A" on the shutter-setting selector is aligned with the index (depressing the selector release if necessary to turn it from another setting).
2. Select the desired lens opening by turning the aperture selector. Settings between f-number click-stops are possible.



3. With the lens hood extended, adjust focus (p. 13), focal length (p. 12), and composition.
4. With the shutter release unlocked (p. 15), depress it *slightly*.
 - a. If neither signal lights at the right outside the finder frame, hold the camera steady and continue to squeeze the shutter release smoothly all the way down to make the exposure.



- b. If the red triangle at upper right outside the finder frame (p. 11) lights on automatic mode, a shutter speed above the upper range limit (1/1000 sec.) is indicated, and the aperture selector should be turned in the direction pointed by the triangle (i.e., left) to set a smaller lens opening (higher f-number) until the red arrow does not come on when the release is depressed. (The same red triangle also lights when the release is depressed slightly if the shutter-setting selector is set at either "X" or "B" setting explained later.)
- c. If the yellow triangle at the lower right outside the finder frame (p. 11) lights when the shutter release is depressed slightly, a slow speed (below 1/50 sec.) is indicated, and the aperture selector should be turned in the direction pointed to (i.e., right) to set a larger lens opening

(smaller f-number) until the yellow arrow does not come on when the release is depressed if the camera is to be hand-held for exposure. Otherwise, the camera should be placed on a tripod or braced against some other firm support and the exposure made with a cable release screwed into the socket provided.

NOTE

Since the shutter will close when the shutter button or cable-release plunger is released whether the auto exposure time has been completed or not, it is essential that the button or plunger be kept depressed until you are sure that exposure is complete (as indicated by mirror return for viewing and the sound of the shutter closing).

17

18 Exposure adjustment

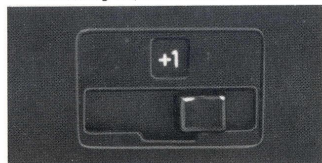
To give more or less exposure than would be set automatically, push the exposure-adjustment control slightly forward to release it from the "0" position and slide it to left or right until the desired number appears in the adjustment-factor window. The numbers indicate the amount of adjustment in stops or EV steps (e.g., "-1" is one stop less or half the exposure, and "-2" produces two stops less or one quarter the normal exposure). Intermediate values can-

Without adjustment



not be set.

Increasing exposure may be desirable or

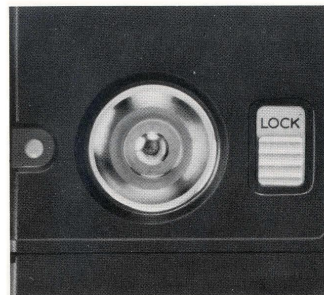


Exposure increased



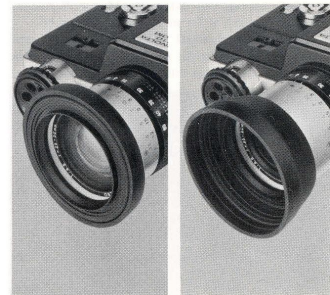
SHUTTER-RELEASE SWITCH

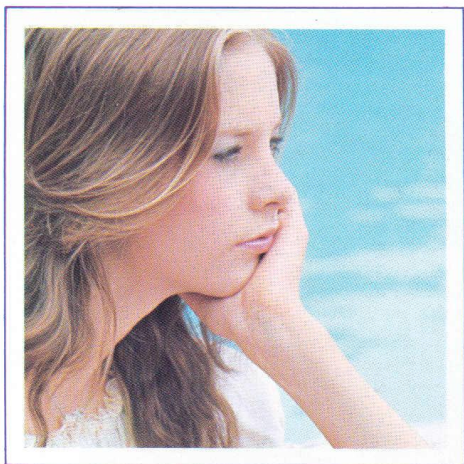
This has two positions: When "LOCK" is visible on its slide the shutter release cannot be depressed; keep the switch at this position when not taking pictures. Make sure it is in its "ON" position to avoid false starts when starting to shoot.



FLEXIBLE LENS HOOD

It is strongly recommended that the flexible rubber lens hood be extended whenever you are taking pictures. This shades the lens from stray light and helps protect it from damage. The lens hood may be folded back for storage.





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MINOLTA 110 ZOOM SLR



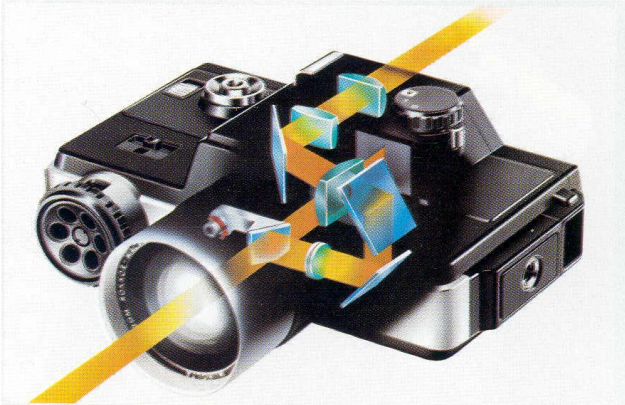
The SLR that zooms, computes,
macros and pockets.



The Minolta 110 Zoom SLR (Actual Size)

SLR Viewing

The precision of SLR now comes in an exciting, compact package. 110 Zoom SLR's single lens reflex system lets you see through the lens what will appear on the film—essential when you are using the zoom or close-up capability. Utilization of an eye-level Porro mirror prism and quick return mirror results in compact design and precision.



2x Zoom Rokkor Lens

The design is totally new. And, the completely new development of the 110 Zoom camera has produced a zoom lens with the versatility of 35mm format. The 25mm—50mm f/4.5 Zoom Rokkor is equivalent to a 50mm—100mm lens in 35mm format, and the 2x zoom allows you to frame your subject with pinpoint accuracy and sharp definition that Rokkor lenses are known for.

Built-in Close-up Capability

Another exciting plus inherent in the Minolta 110 Zoom SLR is the fact that it has been designed for close-up photography. Just twist the ring and you are ready for those close-ups. Come as close as 30cm (12 in.) and you still retain the crisp definition that Rokkor is renowned for.

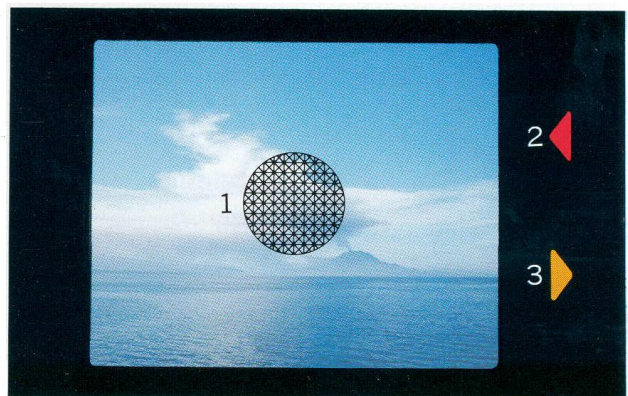


Electronic Auto Exposure

The Minolta 110 Zoom SLR is the camera that's easy to live with. Because it does all the work for you. Simply set the f-stop anywhere between the f/4.5 to f/16 range. The aperture-priority of the 110 Zoom ensures that the fully automatic electronic exposure system controls the shutter speed steplessly from 1/1000th to ten full seconds, giving you the exact exposure, such as 1/325th, 1/571th, 1/989th. You can also adjust the exposure manually for up to two stops over or under the auto setting, for difficult lighting conditions or professional effects.

Bright Viewfinder

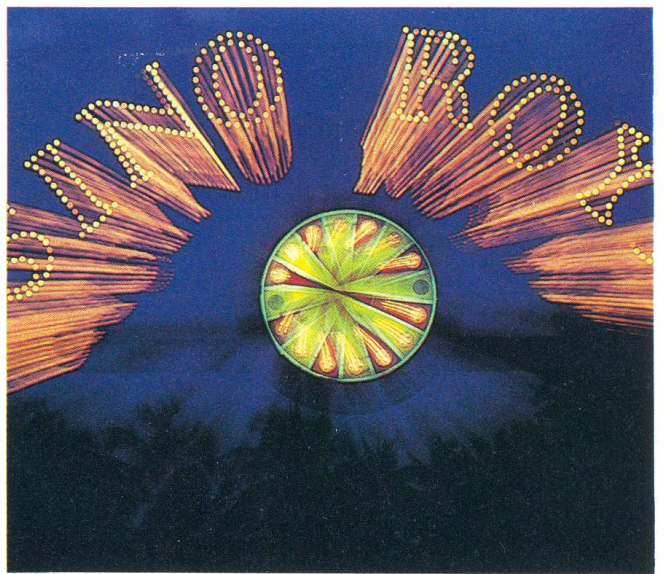
What you see is what you get because the bright, parallax-free SLR viewfinder shows the image crisply and clearly. Simple focusing is achieved by means of the microprism. In the viewfinder there are two warning lights: the yellow LED glows for slow-speed warning when the shutter speed would be under 1/50. The red LED serves three important functions: It warns that, at the f-stop chosen, the shutter speed required for proper exposure is beyond the 1/1000th sec. top shutter speed of the camera. (So stopping down to a lower f-stop is necessary.) It also serves as the battery check and indicates "B" or "X" setting.



1. Microprism.
2. Red LED multi-function light.
3. Yellow LED slow-speed warning light.



25mm, f/8, 1/250
Auto



Zooming 25~67mm, f/8, Auto



50mm, f/8, 1/250
Auto



67mm, f/8, 1/250 Auto



Left is 110 film actual size. Below is enlargement taken by our 110 Zoom SLR.



The 110 Zoom SLR camera's lens is equivalent to a 50–100mm in 35mm format.



25mm



37.5mm



50mm

Flash Photography

If you're a night person you'll be happy to know that the X setting is for electric flash and sets the shutter speed at 1/150 sec. With Minolta's Auto Electroflash 25 fitted to the direct-contact hot shoe you don't have to worry about difficult calculations. The 110 Zoom SLR camera and Auto Electroflash 25 are designed for compatibility.



Single Stroke Winder

Film advance is operated by a single short stroke action of the thumb. The light and easy action saves time and effort so you can catch those impromptu shots.

Soft Shutter Release

The Minolta 110 Zoom SLR is a "soft-touch" with a good reason. An important feature of the 110 Zoom's design is the soft shutter release which cuts out camera shake and gives an easy "feel" to the 110 Zoom SLR camera.

Safety Features

The battery checker ensures that there is sufficient power in the batteries. In addition, if the shutter is released when battery power is too low, the eyepiece shutter remains closed, which blacks out the viewfinder as a warning. The camera can still be used manually on the "X" setting with a shutter speed of 1/150 sec.

The 110 Zoom camera has three built-in safety locks: the shutter release lock to avoid releasing the shutter by mistake; the shutter function dial lock, to ensure that the function stays as set; and exposure adjustment control lock, to avoid accidental movement of the control.

SPECIFICATIONS

110 Zoom SLR

Type: Single-lens-reflex camera for No. 110 film cartridges with zoom/macro lens and automatic exposure control

Lens: 25–50mm f/4.5 Zoom Rokkor-Macro, 10 elements in 10 groups plus swing-in macro element; auto-preset apertures f/4.5, 5.6, 8, 11, and 16, intermediate settings possible; filter thread diameter: 40.5mm

Focusing: 1m (3.3 ft.) to infinity, 286 to 307mm (11-1/4 to 12-1/8 in.) in close-up setting

Shutter: Metal-blade, behind-the-lens type, stepless electronically controlled speeds 1/1000 to 10 sec., mechanical "X" (1/150 sec.) and "B" (bulb) settings

Exposure control: Aperture-priority automatic exposure; metering by CdS cell; exposure range: EV 1 (e.g., 10 sec. at f/4.5) to EV 18 (1/1000 sec. at f/16) with ASA 100 film; ± 2 EV adjustment possible

Power source: Two 1.5v silver-oxide cells

Battery warning system: Built-in finder shutter remains closed if shutter is released in auto when battery power is insufficient

Viewfinder: Eye-level Porro-mirror type with micro-prism focusing aid in mat field; magnification: 0.56X (at f=25mm) to 1.1X (f=50mm) focused at infinity; red and yellow light-emitting diodes (LED's) indicate shutter-speed range, X and B settings and battery condition

Mirror: Quick-return type

Film advance: Lever type, with single 80° stroke

Flash sync.: Direct-contact hot shoe for electronic flash only

Others: Cable release socket, tripod socket, shutter setting, release locks and strap-attachment provision

Accessories: Hand strap, rubber lens hood, soft case with detachable neck strap, filters, cable release and eyepiece correction lenses

Size and weight: 53.5 x 108 x 132mm (2-1/8 x 4-1/4 x 5-1/4 in.), 430g (15-1/8 oz.)

Auto Electroflash 25

Maximum guide number: 25 in meters with ASA 100 film, 41 in feet with ASA 25

Automatic working range: 4.5 to 0.7m (14.8 to 2.3 ft.)

Flash duration: 1/40,000 to 1/2,000 sec. in auto; 1/2,000 sec. in manual

Recycling time: Approx. 6 sec.

Number of flashes: 210 with alkaline-manganese batteries

Power source: Four 1.5v penlight-size batteries

Size and weight: 55 x 61 x 105mm (2-1/8 x 2-3/8 x 4-1/8 in.), 155g (5-1/2 oz.)

Specifications subject to change without notice

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MINOLTA

110 ZOOM SLR MARK II

Ultra-compact SLR camera with
zooming and macro capability



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Introducing the SLR that Zooms, Computes, Macros and Pockets.

The Minolta 110 Zoom SLR:

A design destined to become a classic.

If you designed a camera that is so totally unique that it offers state of the electronic camera art features and broad versatility in remarkably compact design, you'd have good reason to be excited, right?

At Minolta we're enjoying just that kind of feeling. Because we've come up with just such a camera. We call it The Minolta 110 Zoom SLR. And it's a new breed of camera. One that could only be born of the world's largest selling SLR camera maker. A camera made with a proud heritage in subminiature camera and easy-to-use pocket cameras. It's a camera that can boast convenient usability to every level of camera enthusiast. And back up the claims with precision features.

To beginners, it's an electronically forgiving, 110 film cartridge loading, automatic exposure camera. One that lets its user zoom in and out effortlessly to frame beautifully composed pictures.

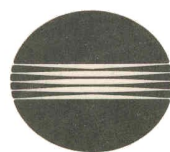
To the seasoned professional, it's a go anywhere SLR camera that lets you enlarge with unbelievable resolution. Shoot close-up photography. It's an SLR system that carries its own lenses right with it. Because the 110 Zoom's precision Rokkor lens zips from 25mm normal all the way to 50mm short telephoto with just a smooth gliding twist.

Every now and then someone comes up with a design that is destined to merit great acceptance. The Minolta 110 Zoom SLR is such a creation. But don't take our word for it. Experience the SLR that zooms, computes, macros and pockets for yourself. It's a great addition to anybody's photographic bag.



Service Manual

MINOLTA 110 ZOOM (253)



MINOLTA



At long last! A camera that combines the convenient size of 110 cartridge-loading with the features of a 35mm SLR to give incredibly bright, clear results! The Minolta 110 Zoom SLR Mark II.

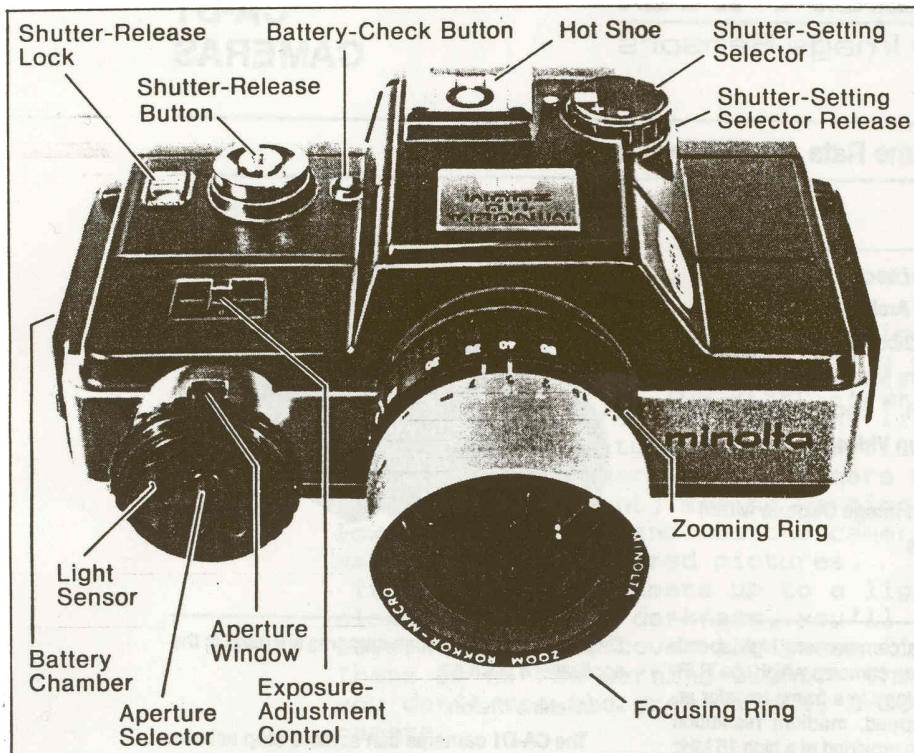
Here's a new Minolta camera that gives you both convenient size and professional photos. It's a 110 cartridge-loading camera... in size only! Yet it is a miniaturized, advanced 35mm single lens reflex in operation... and results!

The Minolta 110 Zoom SLR Mark II brings a revolutionary new look to 110-size film use. The results? Negatives of such clarity and precision that they can be enlarged many times while retaining the crispness, the brilliant color, the spectacular effects that rival the results of most 35mm SLRs.

How can Minolta do this? By combining advanced electronics and precision, miniaturized components of unusual quality, the Mark II offers a host of special, built-in systems to assure perfect results, and to give a new, wide range of creativity to the adventurous photographer who has progressed from the beginning photography stage, and who wishes new worlds to conquer.

In brief: this is the ideal camera for those who want the features of a wholly self-contained 35mm SLR combined with the smaller size of a 110 format camera. It makes an ideal travelling companion—weighing about one pound—and it fits easily into any nook or cranny of a briefcase or travel bag. The Mark II takes incredibly crisp photos of large scenes and precision close-ups of smaller objects with equal ease.

The Minolta 110 Zoom SLR Mark II. The biggest little advance in camera technology to come along in decades. We invite you to read on!



110 ZOOM SLR

In addition to SLR cameras using 35mm film, Minolta produces SLR cameras that use 110 size film in cartridges. These offer many of the advantages of the larger SLR cameras, combined with compact size, economy, and the convenience of drop-in cartridge loading.

The 110 film frame is 13mm x 17mm—about one-fourth the area of a standard 35mm film frame. For many photographic purposes, this is not a handicap.

Color negative, color slide and b&w film are available. Most users of 110 film prefer color negative because they want to end up with color prints. For this purpose, 110 film is a very good choice unless you plan to make enlargements larger than 8 x 10. Medium and small enlargements in color or b&w have excellent quality when made with these Minoltas.

There are special slide projectors for 110-size slides but they are not necessary. Most film processors routinely mount 110 slides in holders with the same outside dimensions as 35mm slides. To be certain, specify 2" x 2" mounts.

Film loading is simple and foolproof. Open the back of the camera, drop in the cartridge and close the back. You don't have to thread the film across the camera or insert the film end into a takeup spool. For some people, this is an important feature.

Both camera models use non-detachable zoom lenses so you have a choice of focal lengths without having to carry several lenses and interchange them. Both models also have a special lens setting to increase magnification for closeup photography such as flowers or insects.

The Minolta 110 Zoom was the first SLR for 110 film. It is unconventional when viewed as a 110 camera and also unconventional when viewed as an SLR.

The camera is automatic only and operates with aperture priority. Aperture range is f/4.5 to f/16. Shutter speed range is 1/1000 to 10 seconds.

THE LENS

An f/4.5 zoom lens with focal lengths from 25mm to 50mm is permanently installed.

The lens has two control rings. The Focusing Ring, at the front sets focused distance from infinity to about 1 meter.

OPERATION

There are three modes: A. puts the camera on aperture-priority automatic exposure, which is the normal setting. In the B. position, the shutter remains open as long as you hold the shutter button depressed. At X, the shutter operates mechanically at 1/150 second, X-sync speed for this camera.

Select the mode of operation by turning the Shutter-Setting Selector while depressing the adjacent release button.

Film speed setting is done automatically when you load ASA 100 or ASA 400 film cartridges.

To conserve battery power, the viewfinder display does not operate unless incorrect exposure is likely.

The top, red LED lights up to indicate that the shutter speed required for correct exposure of an average scene is faster than the camera can provide—that is, faster than 1/1000 second.

The bottom, yellow LED indicates that shutter speeds will be slower than 1/50 second as a reminder to put the camera on a tripod or other firm support.

The companion Minolta Auto Electroflash 118X: multiplying your 110 Zoom SLR Mark II's effectiveness

Here is a compact, lightweight, easy-to-clip-on Minolta X-series flash attachment that electronically mates with the 110 Zoom SLR Mark II for excellent flash-action photography by day or night.

- Compact, to take anywhere with ease.
- Optional diffuser panel for close-up and macro work.
- X-series synchronization, to automatically set the Mark II's shutter to X sync.
- Electronically indicates flash-ready in viewfinder via blinking LED.
- Powerful flash: guide number 30 in feet at ASA 25.



Other features of the versatile 110 Zoom SLR Mark II: to make your photography easier

• Self-Timer

A two-step blinking self-timer LED on the front of the Mark II gives ten seconds delay of the shutter release; the LED operates 7.5 seconds at slow speed, and 2.5 seconds at a faster rate, allowing you to step into your own picture and get prepared.

• One-Stroke Film Advance

With one smooth stroke of your left thumb, you can advance the film firmly to the next frame.

• Eyepiece Shutter and Adjustment

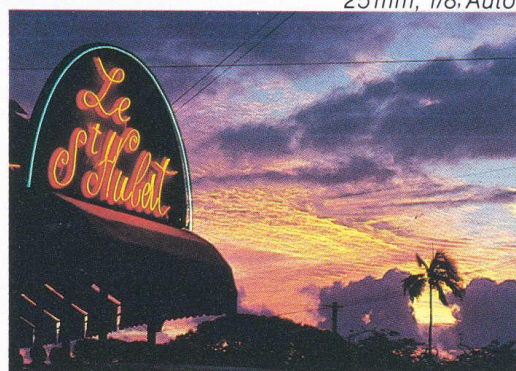
Two thoughtful engineering features: an eyepiece shutter to prevent light from entering the eyepiece and altering metering values, and eyepiece-correction adjustment that compensates for an individual's eyesight (from -1.1 diopters to +0.8 diopters).

• Automatic Film Speed Adjustment

The Mark II automatically adjusts for use of ASA 100 or ASA 400 cartridge film.



25 mm, f/8, Auto



SPECIFICATIONS

Type: Compact, single-lens-reflex camera for No. 110 film format with zoom/macro lens and automatic electronic exposure control

Lens: 25—67mm f/3.5 Minolta Zoom-Macro, 12 elements in 10 groups plus swing-in close-up element; auto-preset apertures (f/3.5, 4·5·6·8·11·16); filter thread diameter: 40.5mm

Metering: Full-aperture TTL center-weighted type

Exposure control: Aperture-priority Automatic, from EV 5.6 to 17 (at ASA 100); control for up to ±2EV continuous adjustment

Flash contact: X contact hot shoe only; extra contact receives signal from X-series Auto Electroflashes

Power source: Two 1.5V silver-oxide cells

Viewfinder: Eye-level fixed pentaprism type; split-image focusing spot centered in mat field; LED indicators for shutter speeds, over-/under- exposure and flash-ready signal with the X-series Auto Electroflashes; eyepiece corrector

Focusing: 1.1m (4 ft.) to infinity by distance scale or finder split-image spot

Self-timer: Electronic, LED indicator, approx. 10 sec. delay

Size and weight: 75 × 102 × 105mm (2¹⁵/₁₆ × 4 × 4¹/₈ in.) 465g (16³/₈ oz.)

Accessories: Action grip, lens hood, hand strap, lens cap

Specifications subject to change without notice

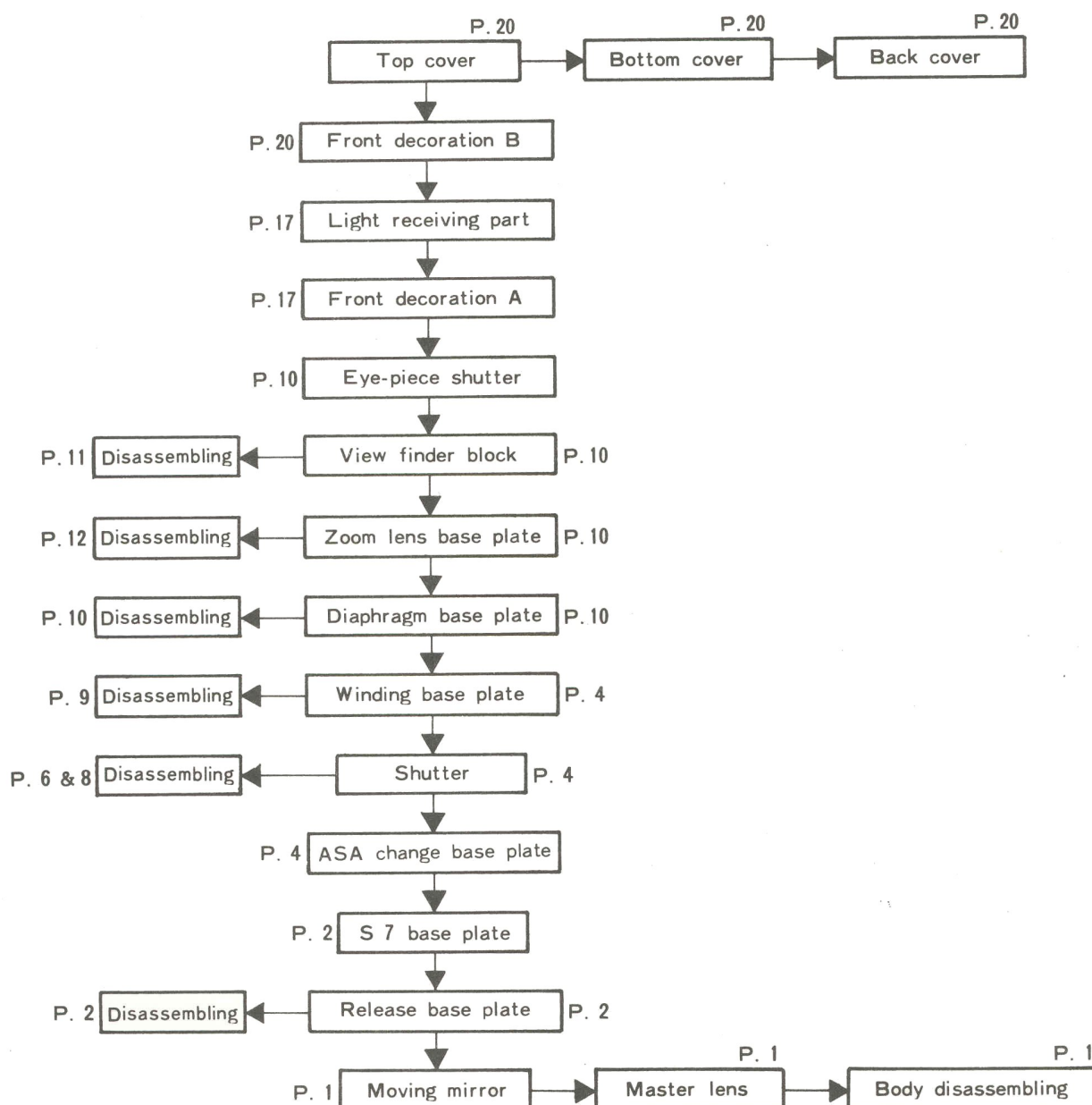
Disassembly, Assembly and Adjustment

◆ For disassembly, refer to the related pages in the reverse order as the contents of this manual are arranged in the order of procedures for assembling and adjusting.

— Abbreviations —

- ◆ : Assembly note and caution in general.
- [G] : Grease to be used and where to use it.
- [B] : Bond to be used and where to use it.
- [L] : Screw lock to be used.

◆ Disassembling Procedures Chart



Check Point	Check Item	Contents of Check					
Shutter	General functions	A, B and X securely work irrespective of the shutter button pressing speed. (In the case of the automatic operation, however, the pressing of the shutter button in a great hurry may result in under-exposure.) There is no bound of the shutter curtains and no re-exposure. In the case of the automatic operation, the shutter speed changes according to variations in the light volume and the aperture.					
	Auto-exposure	EE error...Be sure to satisfy the measuring procedure 5 on P.19 of the Disassembly, Assembly and Adjustments. Warning level...Be sure to satisfy the measuring procedures 7 to 10 on P.19 of the Disassembly, Assembly and Adjustments. Over-ride...Be sure to satisfy the measuring procedure on P.19 of the Disassembly, Assembly and Adjustments. NOTE: See P.18 of the Disassembly, Assembly and Adjustments for particulars about the setting of measured luminance.					
	Synchronizer	X contact delaying time (Shutter speed X) <table border="1"> <tr> <td>XA</td><td>Until the X contact is turned on following the full opening of the shutter</td><td>Over 0</td></tr> <tr> <td>XB</td><td>Until the second curtain begins to close following the turning-on of the X contact</td><td>Over 1ms</td></tr> </table> Contact efficiency...Over 70% at a shutter speed of X and a measuring time of 1ms.	XA	Until the X contact is turned on following the full opening of the shutter	Over 0	XB	Until the second curtain begins to close following the turning-on of the X contact
XA	Until the X contact is turned on following the full opening of the shutter	Over 0					
XB	Until the second curtain begins to close following the turning-on of the X contact	Over 1ms					

The red LED serves as a battery-check indicator when you depress the Battery-Check Button on top of the camera. If the batteries are OK, the LED will glow. The red LED also glows when you have set the camera shutter to X or B as a reminder that the camera does not control exposure automatically in these modes.

A microprism focusing aid is in the center of the frame in the viewfinder.

EXPOSURE METER

The CdS exposure meter does not view through the lens. It's in a turret projecting forward from the camera body, combined with the Aperture-Selector. When you turn the Aperture-Selector ring, two things happen. The aperture size is set and the amount of light admitted to the sensor is changed in proportion. There the sensor always "sees" the same amount of light that the lens transmits to the film.

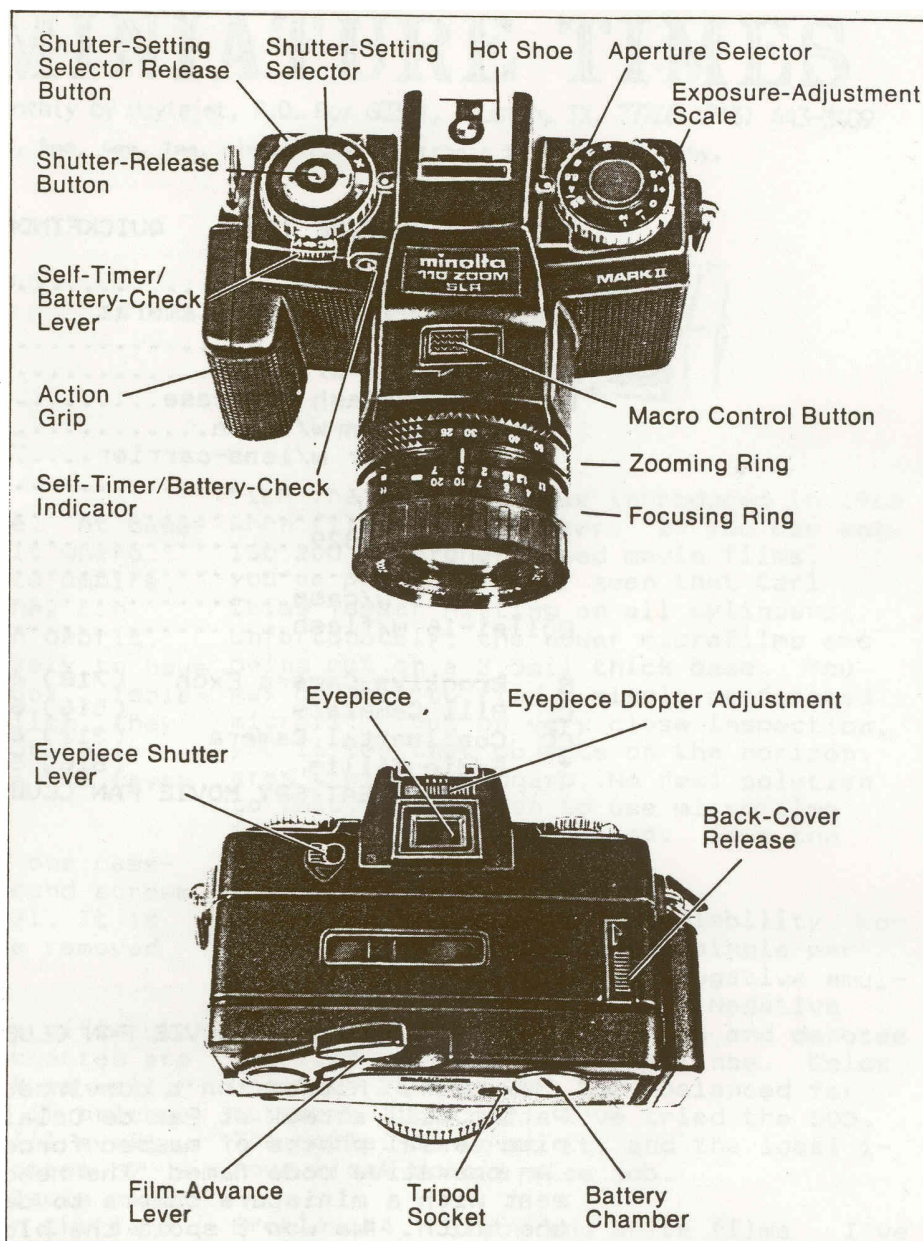
MARK II

In nearly every way, the Mark II camera can be regarded as a smaller version of the Minolta 35mm SLR cameras. This model was introduced later than the 110 Zoom SLR, and there are significant differences between the two models.

Metering in the Mark II model is done behind the lens with a center-weighted pattern. The metering and operating range is from EV 5.6 to EV 17 with ASA 100 film. The camera selects shutter speeds steplessly within the operating range.

The camera is automatic only and operates with aperture priority. The aperture range is f/3.5 to f/16.

Submitted by D. Holland



**MINOLTA 110 ZOOM
SLR MARK II**

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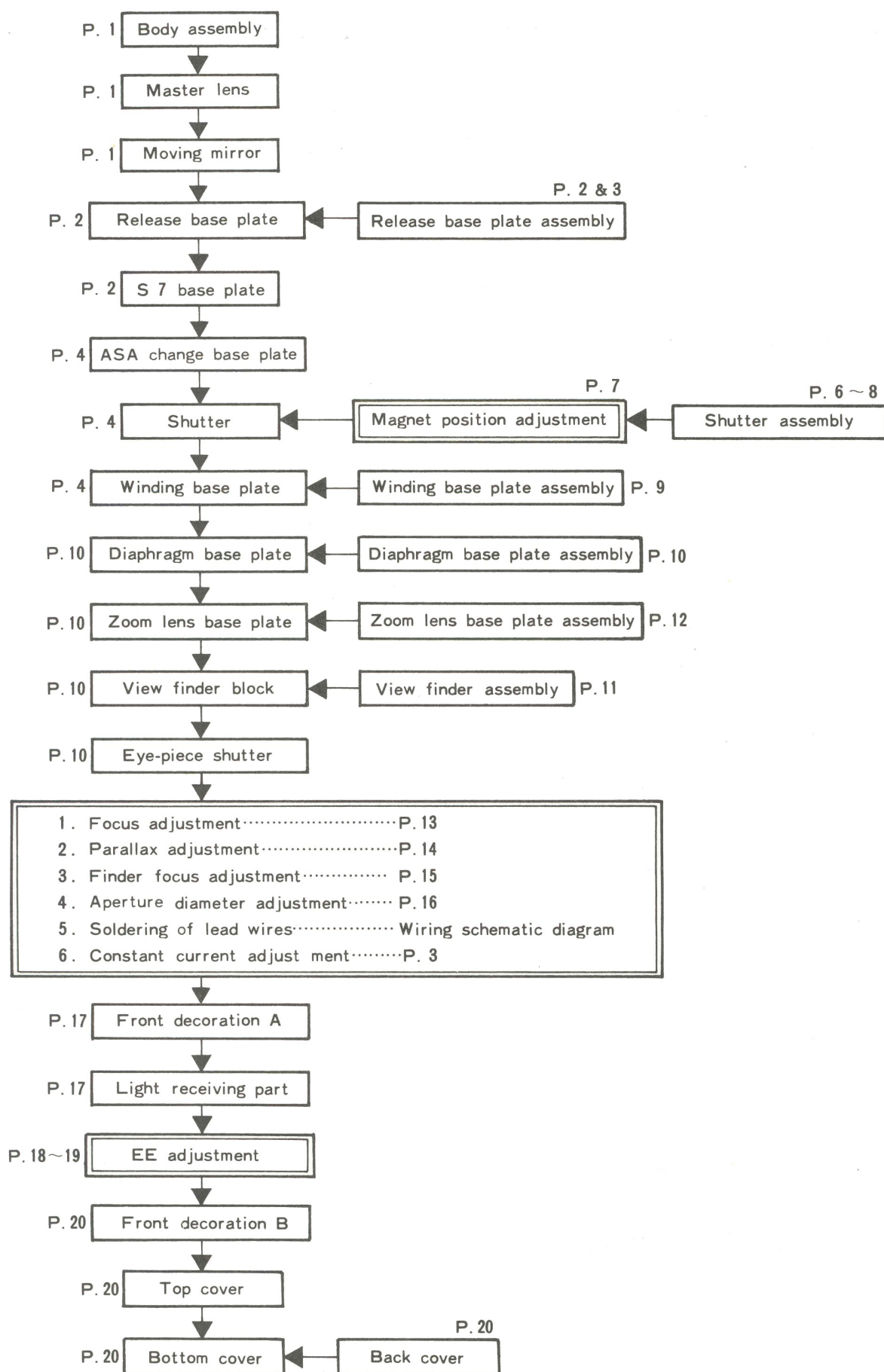
CHECK LIST

For reference, please use the standard values preceded by the ※ mark in this list.

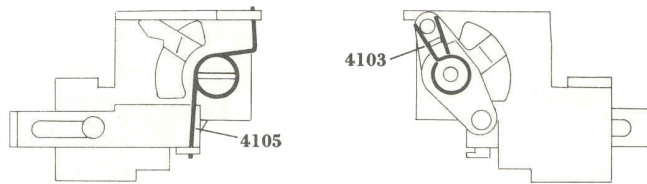
Check Point	Check Item	Contents of Check
Finder	Viewing	Setting of ∞; inclination of the image at less than 15°; dust, a stain and a blur; and clear indication of LED.
Back cover	Lock	Clatter and loosening of the lock.
	Cartridge pressing spring	Elasticity and resilience; and the back cover sponeously moves up when the back cover lock is released after film is put in.
Winding	Winding stop	Ineffective at the film leader part.
	Reversal stop	Firmly effective at each tooth.
	Prevention of double pressing	Double pressing is preventive during the winding of film.
	Winding lever	Up and down rattle, return and defective winding-at the top of the lever without film. ※600g.
	Perceive lever	The perceive lever moves smoothly when it is slid with the fingers in the direction of the winding gear after completing the winding. The lever returns to its original position before the reversal stop is made following its movement, release and winding.
Shutter button	Performance	The button works smoothly, and shows no marked play in its returning, vertical and revolving directions.
	Stroke	On the basis of the upper surface of the button base: LED lighting position... ※ $0.3 \pm 0.3\text{mm}$ below the button base. Releasing position..... ※ $1.0 \pm 0.3\text{mm}$ below the button base. From the lighting of the lamp to the release... ※ over 0.5mm. Excess after the release... ※ over 0.3mm.
	Pressing weight	A, B and X..... ※ 100~250g B..... ※ Less than 400g
	Lock button	There is no noticeable slippage in a click or an index.

Check Point	Check Item	Contents of Check
Shutter dial	Turning round	There is no catch while the shutter dial turns round.
	Setting of the index	The index is set to the center of A, B or X.
	Dial lock	The dial is securely locked or its lock is released, and a click is keenly felt.
Diaphragm ring	Turning round	A click is felt, and the ring causes no noticeable rattle at each click point. There is no catch while the ring turns round.
	Slippage in the index	The index causes no noticeable slippage against the window.
Over-ride	Performance	A click is felt. The over-ride can be securely locked and hardly slips from the 0 position even if pushed left or right with a finger.
	Slippage in the index	The index does not contact the indicating window at each click point.
	Function	The shutter clearly shows changes in its speed when released at -2, -1, 0, +1 and +2 with the same luminance.
Helicoid	Performance	The helicoid causes no irregular performance, creak and rattle. It is not felt extremely heavy or light.
	Slippage in the index	∞ stop position.....The index line comes within 1/2 or the ∞ mark. Short distance stop position.....The index line does not go much beyond the center of the figure 1.
Zoom ring	Performance	The zoom ring causes no irregular performance, creak and rattle. It is not felt extremely heavy or light.
	Slippage in the index	Stop position on the TELE side...The index line remains within the scope of its contact with the two-digit figure of 50, halfway between the 5 and 0 on the one hand and near the left top of 5 on the other. Stop position on the WIDE side...The index line remains within the scope of its contact with the two-digit figure of 25, halfway between the 2 and 5 on the one hand and near the right top of 5 on the other. Macro stop position...The index line remains within the scope of its contact with the inside ends of the two vertical, parallel arrow marks. Besides, the index line (orange) remains within the scope of its contact with the whole width of the letter M.

◆ Assembling/Adjustment Procedures Chart



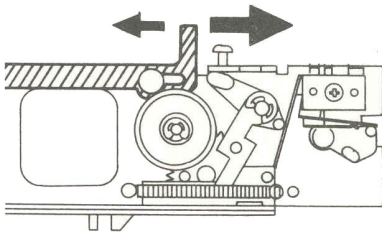
◆ Fig. 1 How to engage 4103, 4105 SP



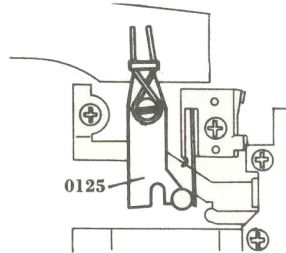
◆ How to Assemble the Shutter

1. Charge the shutter by pressing the release operation plate and the first curtain simultaneously in the direction of the two arrow marks on the left page, and move the ABX change lever in the direction of the bigger arrow mark in Fig.2.
2. Set the shutter speed change operation plate (0125) on the body side to the position shown in Fig.3.
3. Set the shutter uprightly to the body, while cautiously preventing the synchro-lead wire (green) and the two magnet lead wires (red) from being caught between the shutter and the body. (Be sure to put the lead wires over the body.)
4. Confirm that the ABX change lever and the spring (2074) are related to each other as shown in Fig.4, and then fasten them with two screws.

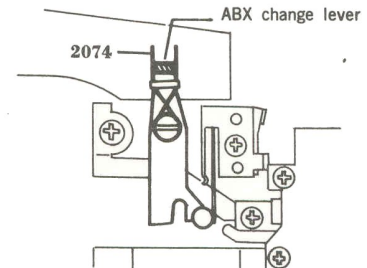
◆ Fig. 2



◆ Fig. 3



◆ Fig. 4

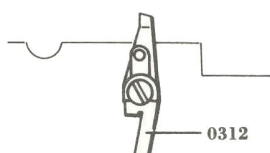


5. Confirm the operativeness of the shutter by pressing the arrow mark part of the release base plate on P.2. Also confirm that the shutter moves to "B" when released after shifting the ABX change lever in the direction of the smaller arrow mark in Fig.2.

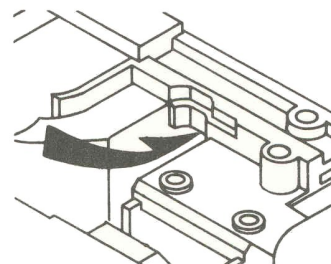
◆ How to Assemble the Winding Base Plate

1. Charge the shutter.
2. Put the perceive lever (0312) in the direction shown in Fig.5, and set the winding base plate by inserting the tip of 0312 into the body port shown in Fig.6 first.
3. Release the shutter while pressing the winding base plate by hand. Thus it can be confirmed whether the shutter is charged well.
4. Fasten the winding base plate with 4 screws.

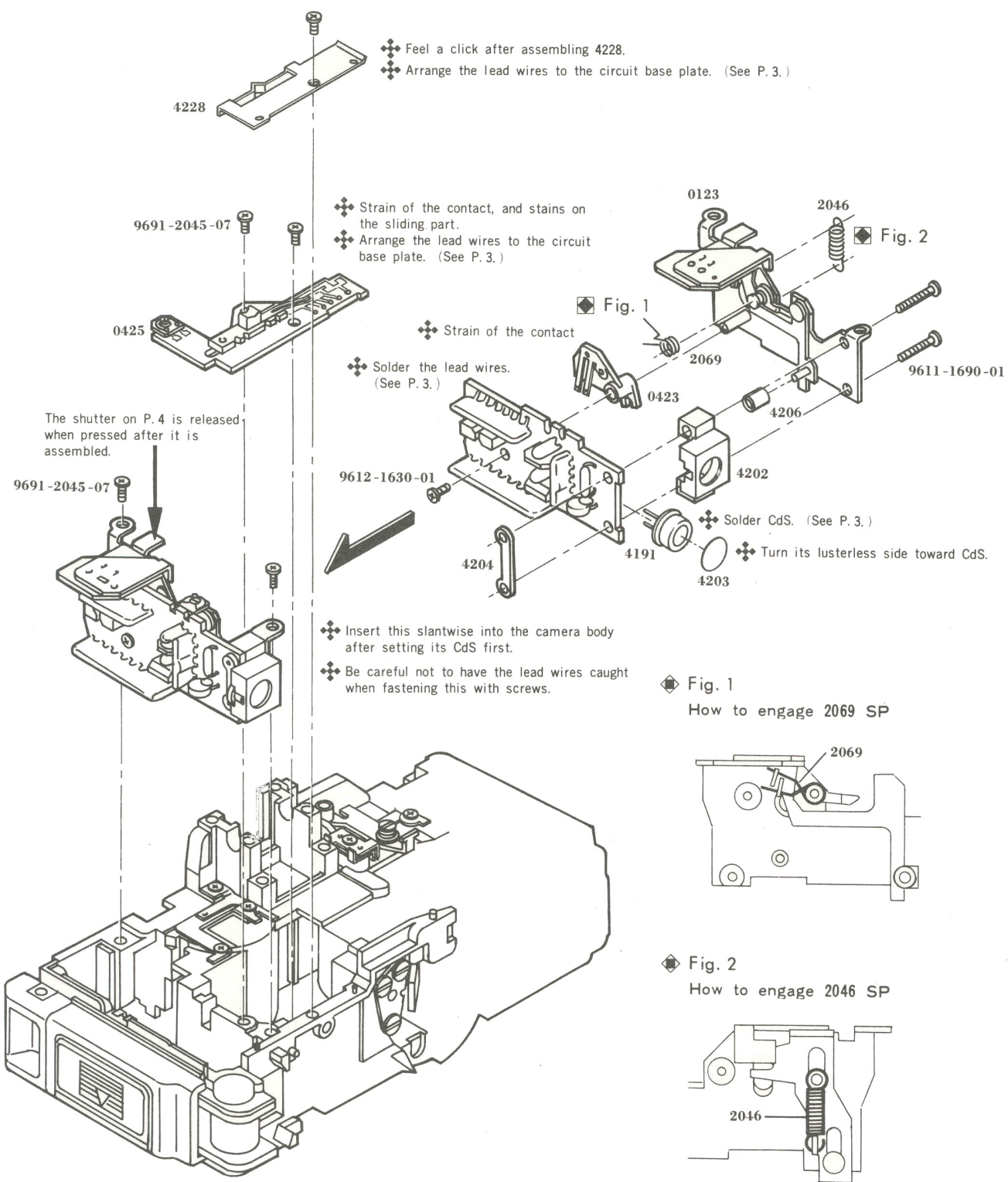
◆ Fig. 5



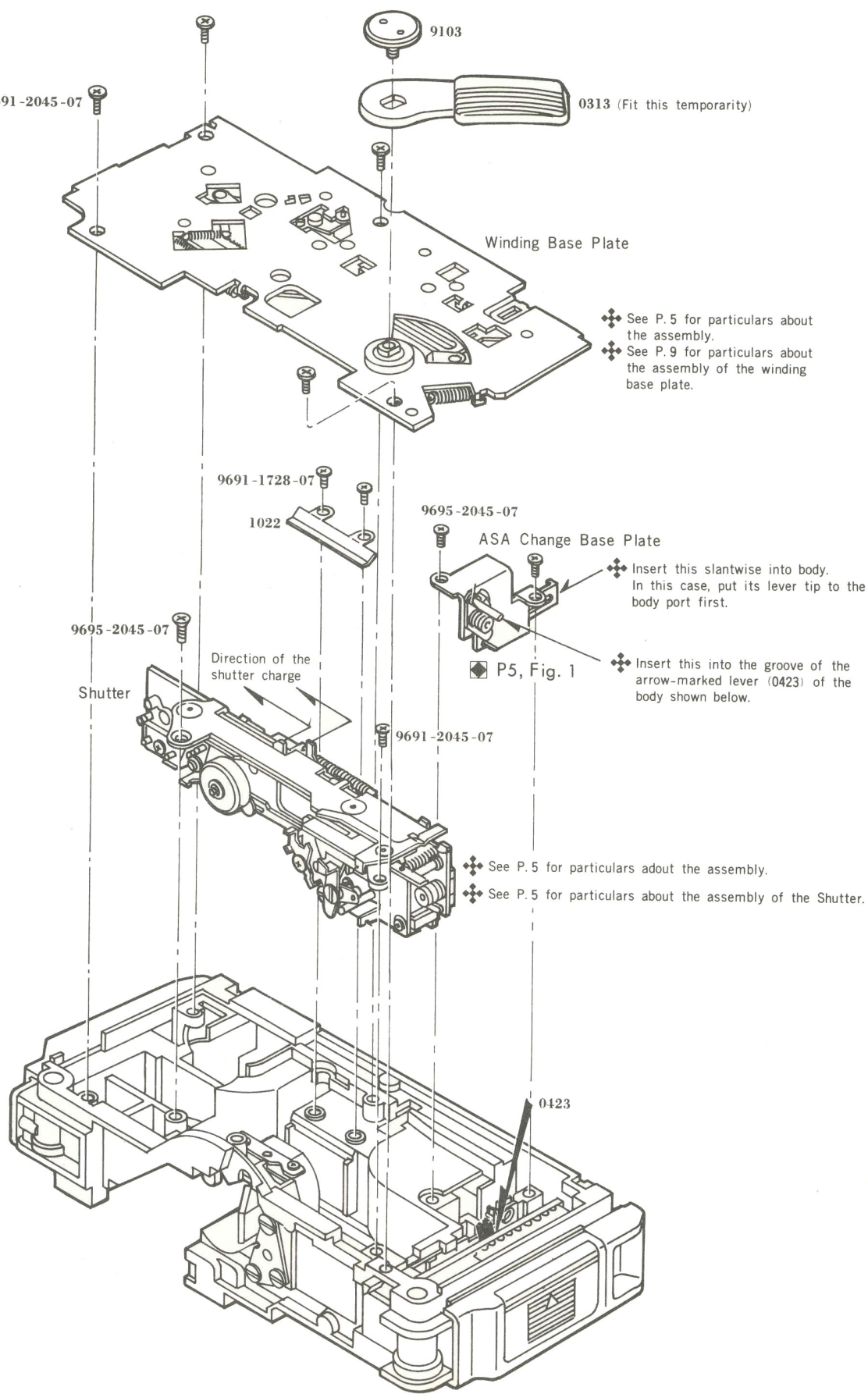
◆ Fig. 6



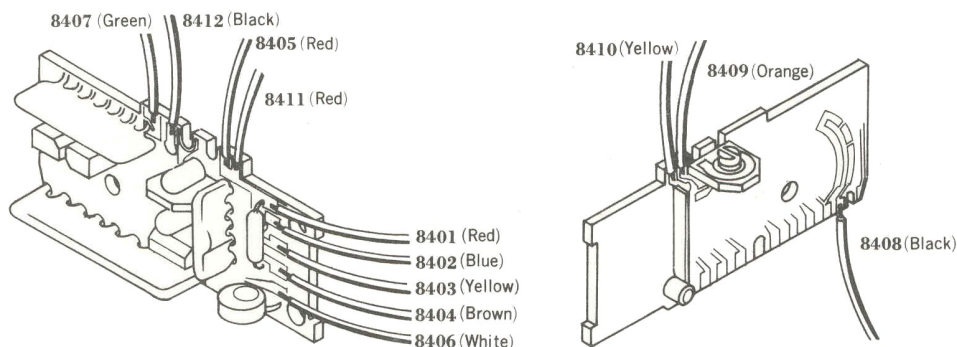
2. Release Base Plate and S7 Base Plate



3. ASA Change Base Plate, Shutter and Winding Base Plate

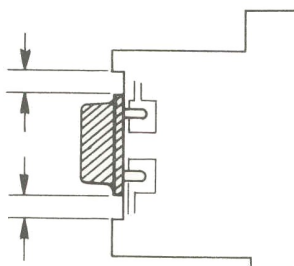


◆ Soldering of the Lead Wires of the Circuit Base Plate



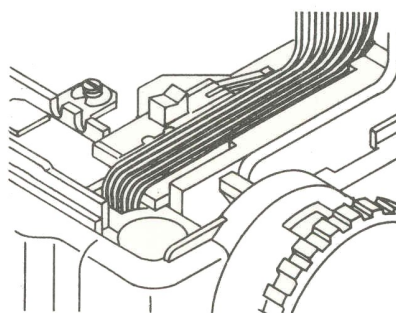
◆ Soldering of CdS

Cut CdS legs to the length of 2.5~3mm and solder them with clearances at an equal distance to the notches of the circuit base plate.



◆ Arrangement of the Lead Wires

When assembling 0425 (S7 base plate), take out the 7 lead wires (8401-8404 and 8406-8407) from the clearance between 0425 and the camera body. Then set them on 0425 when fitting the over-ride click plate.



◆ Constant Current Adjustment

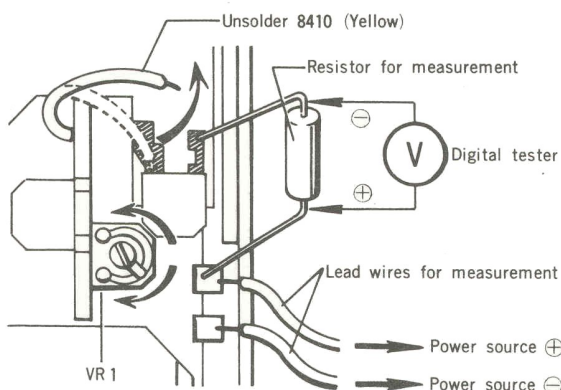
❖ Perform this adjustment after finishing the assembly work on P.10 and setting the lead wires.

◆ Measuring Instruments

- D.C Power source.
- Digital tester (TYPE 2507)
- Resistor (about 10 K Ω)

◆ Preparations

1. Read the resistance value of the resistor on the digital tester.
2. Perform the connections as shown in the right diagram.
3. Set the power supply output to 2.8 V.
4. Press the release lever, and read the voltage shown on the digital tester.

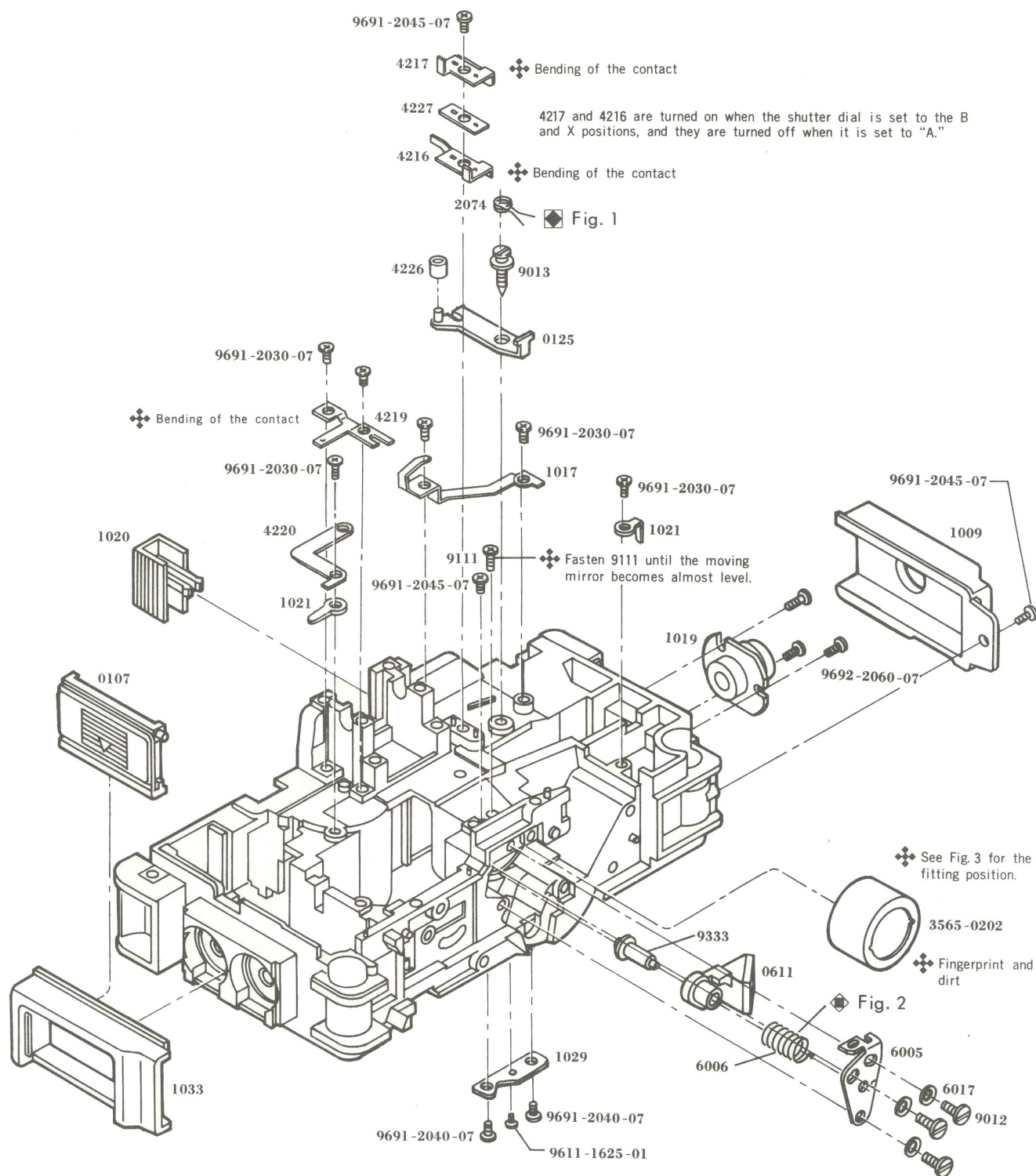


◆ Adjustments

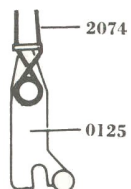
1. Turn VR1 to flow a constant current of $50\mu\text{A} \pm 1\mu\text{A}$ through the circuit base plate. Since the current is converted into a voltage in this case, make the following adjustments:
2. When the actually measured value of the resistor is 9.95 K Ω :
As $V=IR$, $I=50\mu\text{A}=5 \times 10^{-5}\text{A}$, $R=9.95\text{K}\Omega=9.95 \times 10^3\Omega$, Therefore, $V=5 \times 10^{-5} \times 9.95 \times 10^3=0.4975$ (V)
Consequently, turn VR1 so that the digital tester may indicate 0.488~0.507 (V).

◆ **Note:** When measuring the voltage, be sure to press the release lever (arrow-marked part on P.2) to turn on the main switch.

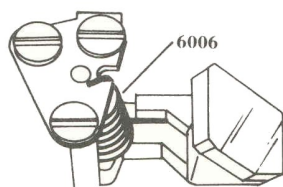
1. Master lens, Moving mirror, Battery case and Others



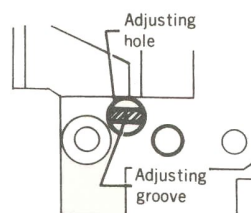
◆ Fig. 1
How to engage 2074 SP



◆ Fig. 2
How to engage 6006 SP

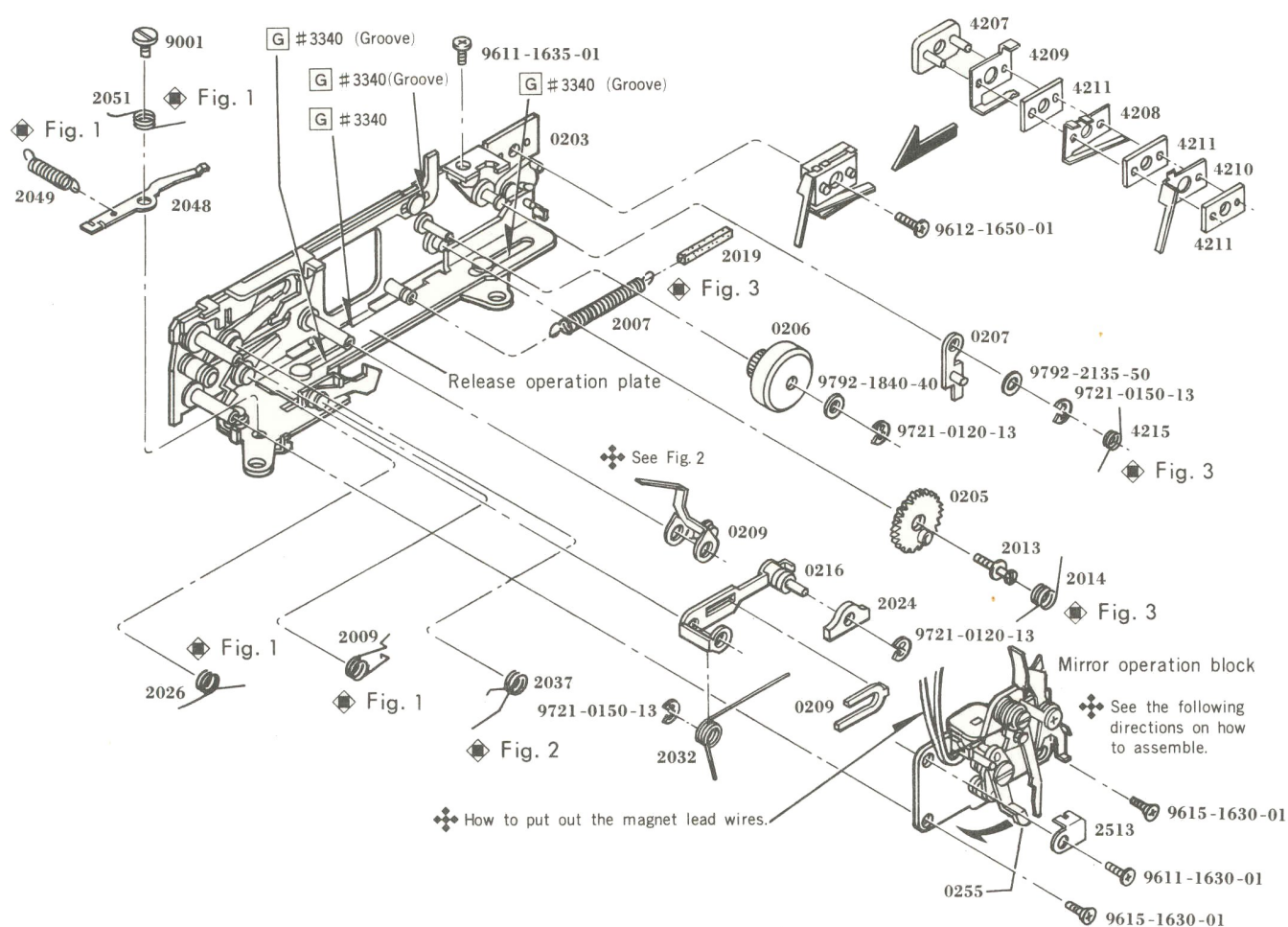


◆ Fig. 3
Master lens fitting position



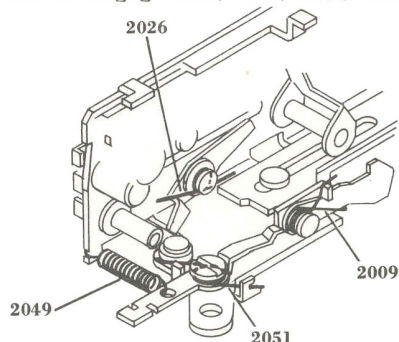
Fit the master lens with its adjusting groove facing the adjusting port of the camera body.

Shutter Assembly Part-1



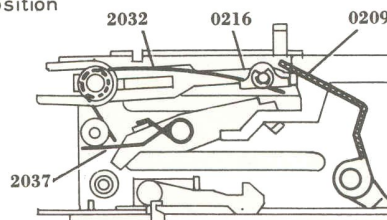
◆ Fig. 1

How to engage 2009, 2026, 2049, 2051 SP



◆ Fig. 2

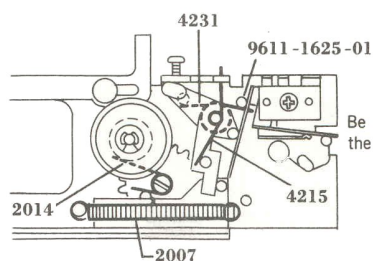
How to engage 2032, 2037 SP and 0209 fitting position



Be sure to set the tip of 0209 over 0216.

◆ Fig. 3

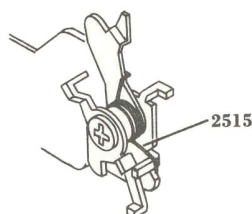
How to engage 2007, 2014, 4231, 4215 SP



Be sure to set 4231 when performing the assembling work shown on P. 8.

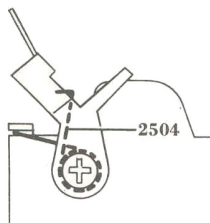
◆ Fig. 4

How to engage 2515 SP



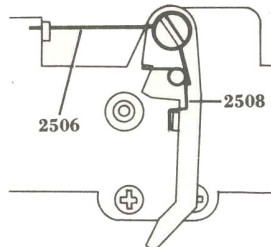
◆ Fig. 5

How to engage 2504 SP



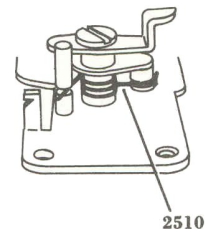
◆ Fig. 6

How to engage 2506, 2508 SP

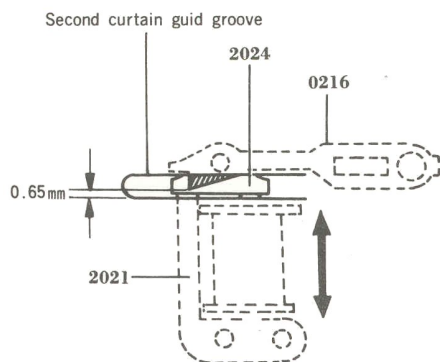


◆ Fig. 7

How to engage 2510 SP

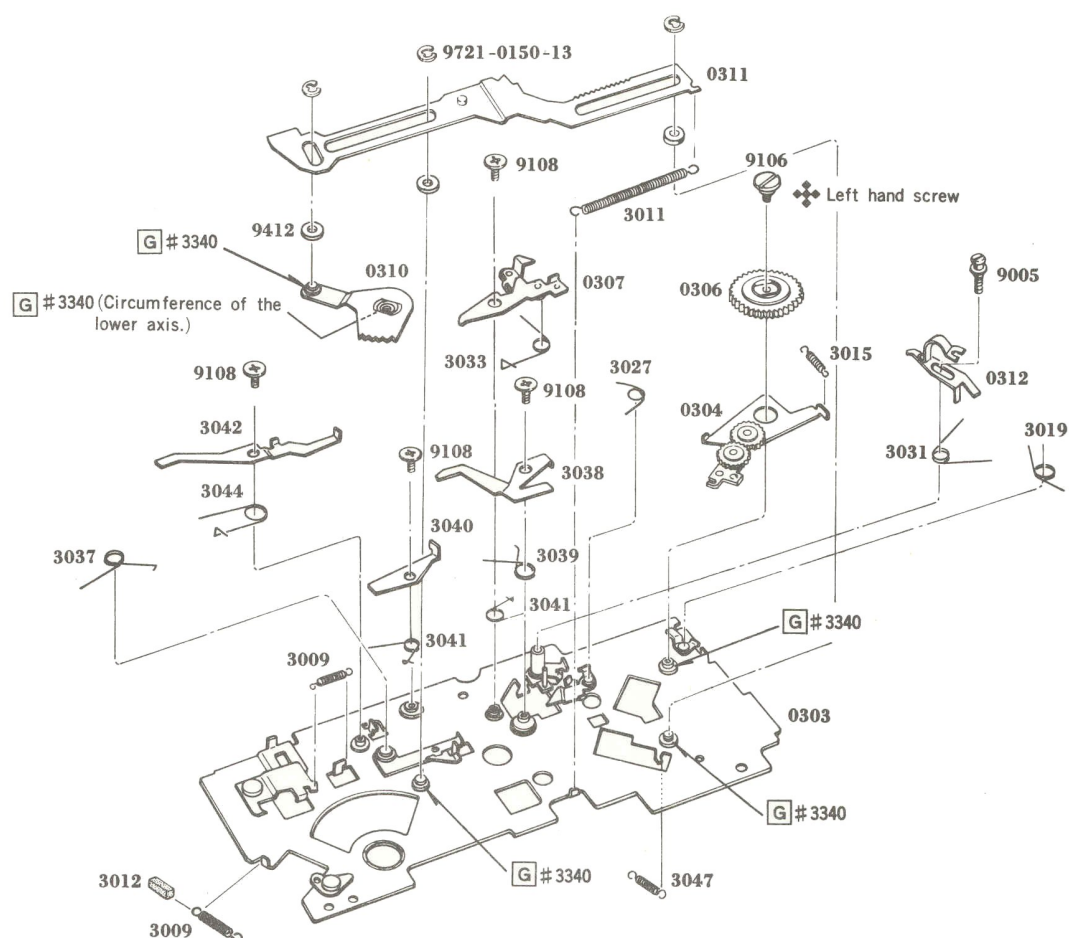


◆ Magnet Position Adjustment

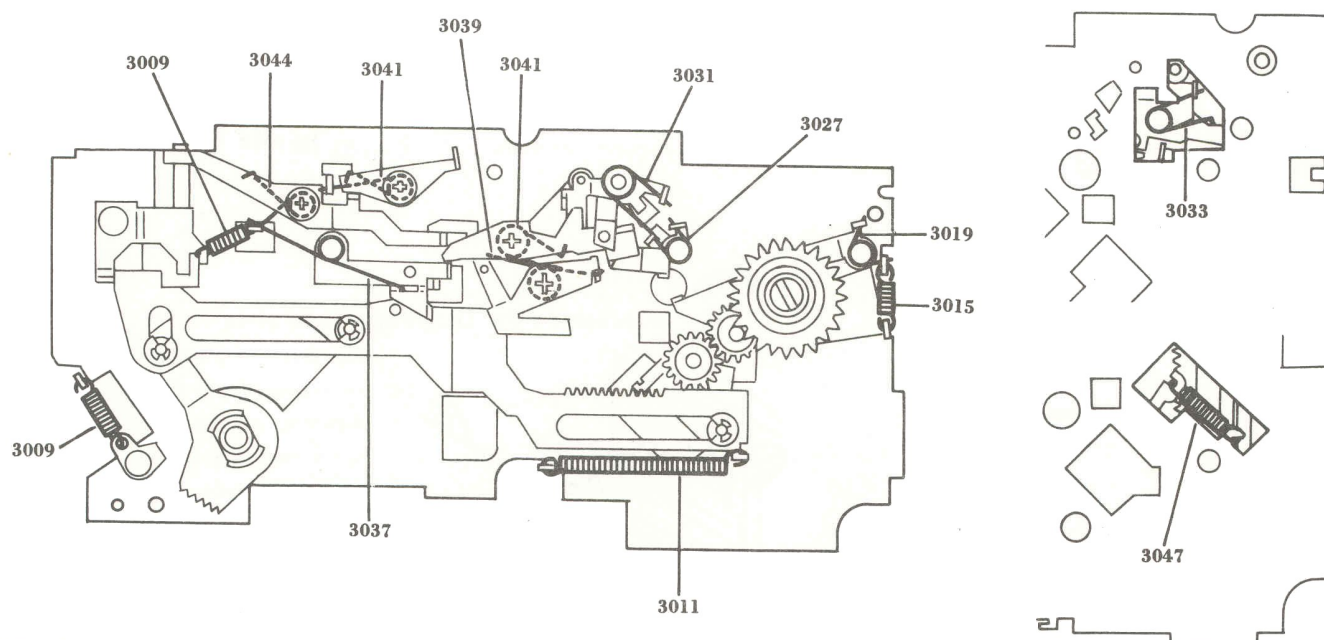


1. When the assembling work on P.6 has been completed, press the release operation plate. Then the shutter becomes suspended by the shutter stop lever (2048), and the magnet core (2021) and the magnet sticker (2024) become tight together.
2. Then slightly loosen two magnet fastening screws (9611-1655-01) and move the magnet up and down so that a clearance of 0.65 mm may arise between the bottom of the second curtain guide groove of the shutter base plate on the one hand and the tip of the suspending part of the second curtain stop lever (0216) on the other. (Measure the clearance with slide calipers.) On this occasion, be sure to prevent 2021 from inclining (toward the groove).
3. Be sure to check the clearance again after fastening the magnet with the screws.

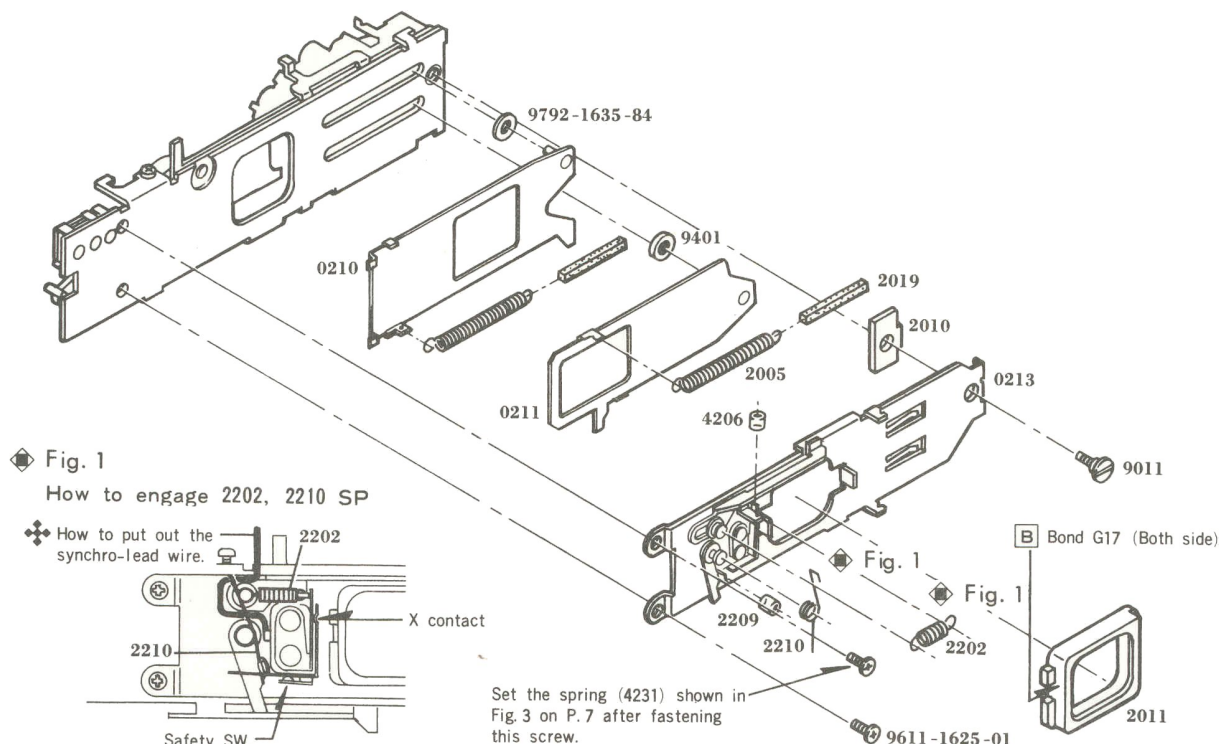
◆ Winding Base Plate Assembly



◆ How to Engage Spring of the Winding Base Plate



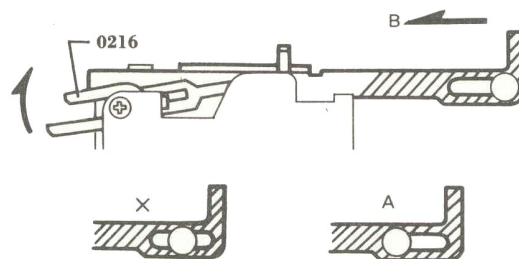
◆ Shutter Assembly Part-2



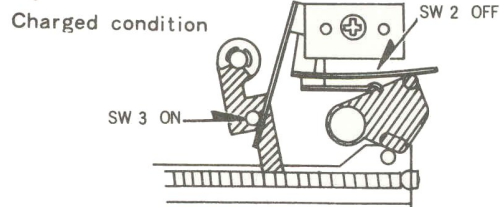
◆ Checks after Assembling the Shutter

1. Confirm that the shutter smoothly functions without any noise when charged and released.
2. Confirm that B, X and A function well.
 - ① In the case of B, push up 0216 in the direction of the arrow mark while keeping the ABX change lever pressed in the direction of B shown in Fig. 2, fix the lever to prevent it from coming down when released. Then release it. As a result, the shutter reaches B (open). Separate 0216, and the shutter closes.
 - ② In the case of X, release the ABX change lever at X position in Fig. 2. Then the shutter opens and runs. Release the lever at A position, and the shutter runs, keeping itself closed.
3. Check the condition of the X contact, and keep it "ON" until the first curtain opens wide and the suspended second curtain is released. (Make the check by slowly moving the first curtain by hand.) The check is also possible with the strobo retarder.
4. Confirm that the safety switch is turned off when the release is completed, and that it is turned on when the winding is completed.
5. Confirm that the S2 contact lever is mounted on the release operation plate and the switch 2 is turned off when the shutter is charged, and that it is turned on when the shutter is released. Also confirm that the switch 3 is definitely turned on when the shutter is charged. See Figs. 3 and 4.

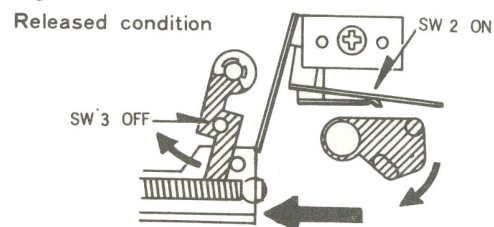
◆ Fig. 2



◆ Fig. 3

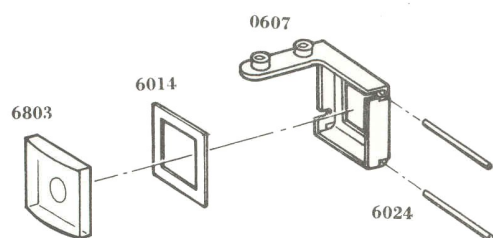


◆ Fig. 4

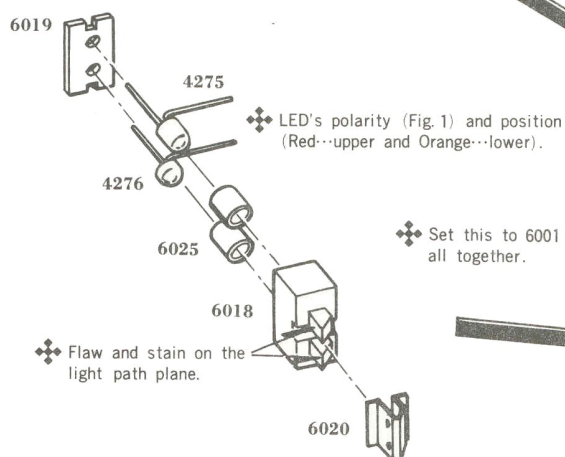


Viewfinder Assembly

- ◆ Be sure not to leave fingerprints and stains on the Fresnel lens, the eye-piece lens and the mirrors when assembling them.



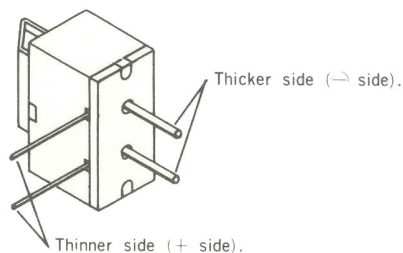
- ◆ Before setting them, clean them by lightly wiping them with FLONSOLVE.



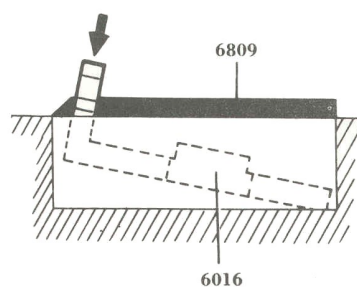
- ◆ Flaw and stain on the light path plane.

- ◆ Set this to 6001 and then assemble all together.

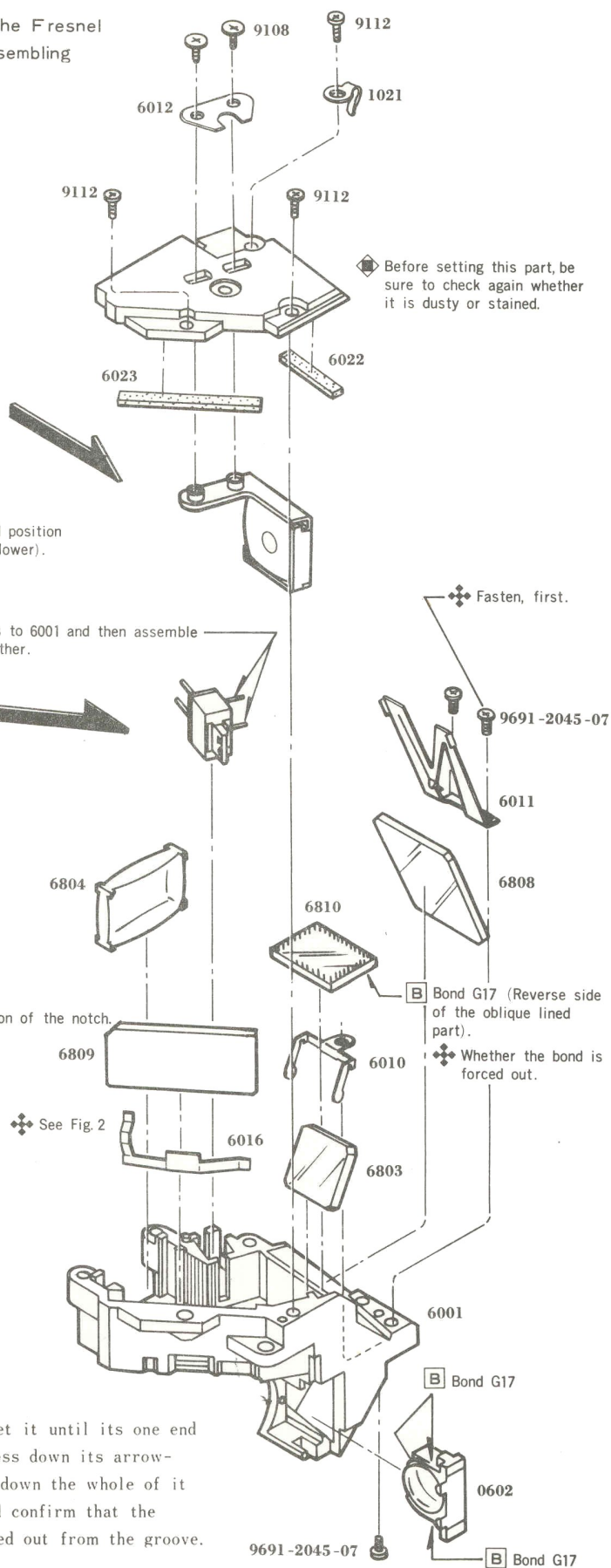
◆ Fig. 1
LED's polarity

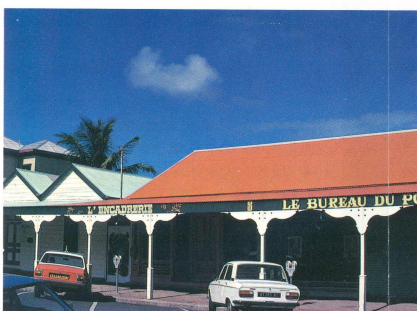


◆ Fig. 2
How to insert 6016



Hold 6016 aslant; set it until its one end hits the bottom; press down its arrow-marked part; press down the whole of it with a pincette; and confirm that the mirror is not forced out from the groove.





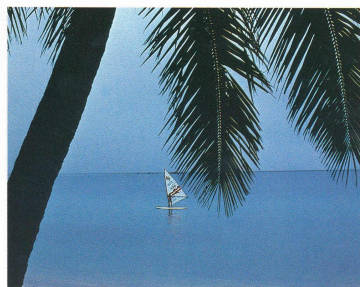
The surprising Minolta 110 Zoom SLR Mark II. How can a sophisticated SLR camera fit in the palm of your hand, and yet give such professional- looking results? Here's how!

These actual, unretouched photos were taken by the Minolta 110 Zoom SLR Mark II in New Caledonia during July, 1979. No attempt has been made to alter them in any manner. They are precisely what they claim to be: 35mm-quality photographs from a trend-setting 110-format camera... showing the variety and creativity anyone can achieve, using the Mark II.

Automatic Exposure Controls: to capture your favorite scenes

The Mark II is an Aperture Priority AE SLR, with an aperture range from f/3.5 to f/16, and an automatic shutter speed range from 1/4 to 1/1000 sec. The Mark II's shutter speed is automatically and steplessly decided for proper exposure, meaning you will take uniformly excellent photographs under almost all lighting conditions you'll ever encounter. Additionally, you have an X sync. (1/125th sec.) and a B (Bulb) exposure selection.

The Minolta 110 Zoom SLR Mark II's override selection gives you an automatic exposure correction up to $\pm 2EV$ for backlighting or spotlighting. And like all Minolta SLRs, the Mark II's single-lens-reflex focusing and TTL (through the lens) metering gives you absolute precision and fidelity in attaining extremely sharp focusing for near or distant objects, and critically-sharp



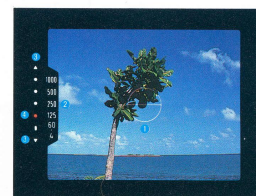
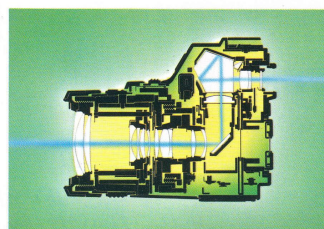
50mm, f/5.6, Auto



MACRO, f/16, 1/125 Auto

focusing for close-ups and photomacrography. This is particularly beneficial when using the Mark II's zoom lens and built-in macro lens. A sensitive photo-cell gives instantaneous and extremely accurate light metering and reading, selecting the proper shutter speed with uncanny precision for the maximum exposure quality... unaffected by zoom or macro lens use, or any change in the angle of view.

The 110 Zoom SLR Mark II's electronic magnetic shutter release features a vertical shutter curtain for achieving the highest possible speed, and when the batteries are low, the shutter will automatically lock to prevent mis-exposure.



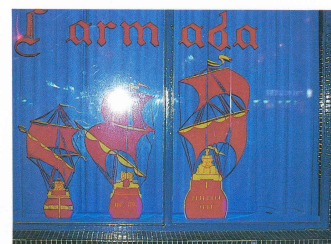
- Split-image in mat screen, for unusually fast, precise focusing
- Shutter-speed scale by LED
- Over/under exposure warning by LED
- Flash-ready signal by flashing LED (1/125 sec.)

* shutter speed range: 1/4 to 1/1000 sec.

The Mark II's viewfinder: to frame a beautiful world

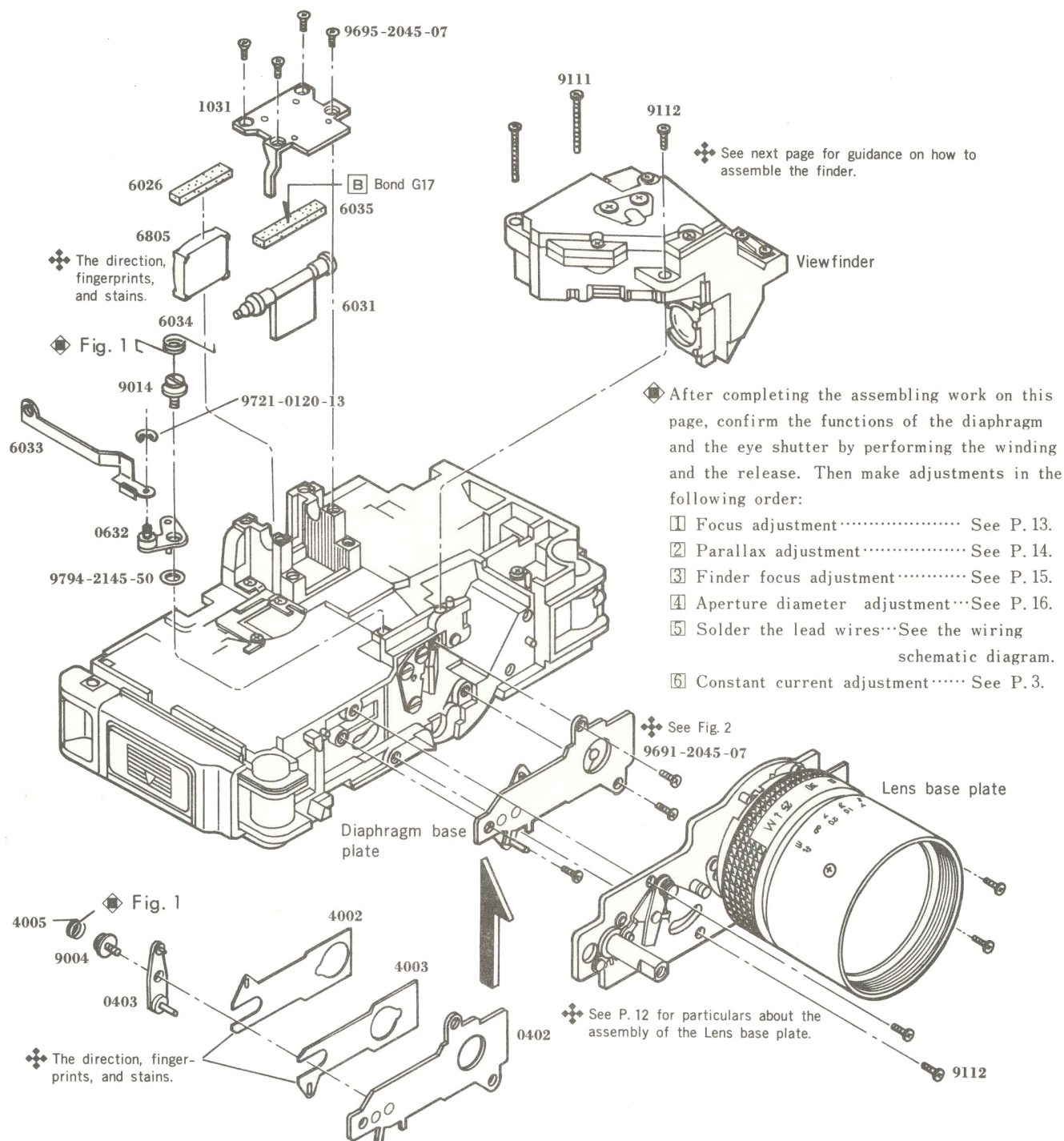
The Mark II's built-in zoom capability gives you an unusually versatile outlook through the bright viewfinder: a 25mm—67mm f/3.5 lens (which is the same as a 50mm—135mm range in 35mm format). This Minolta quality lens gives excellent sharpness and clarity, superior color rendition, and a brighter, easier-to-focus image that will result in photographs of unusual crispness. A close-up lens is also built in: a convenient fingertip control actuates the macro lens for extreme close-ups.

Within the 110 Zoom SLR Mark II's viewfinder is a host of LED indicators, to guide you to uniformly excellent results.



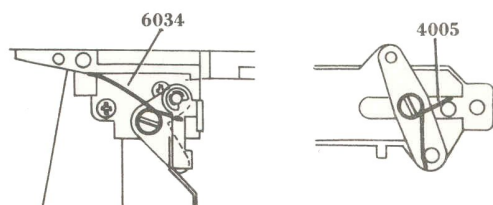
25mm, f/4, with flash

4. Diaphragm Base Plate, Lens Base Plate, Viewfinder and Eye-Shutter



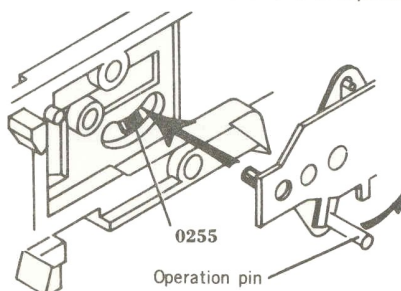
◆ Fig. 1

How to engage 6034 and 4005 SP



◆ Fig. 2

How to assemble the Diaphragm base plate



Completely turn the operation pin in the direction of the arrow mark, keep the diaphragm open wide, put the pin on the opposite side to the right side of 0255, and fasten the pin with a

◆ Aperture Diameter Adjustment-1

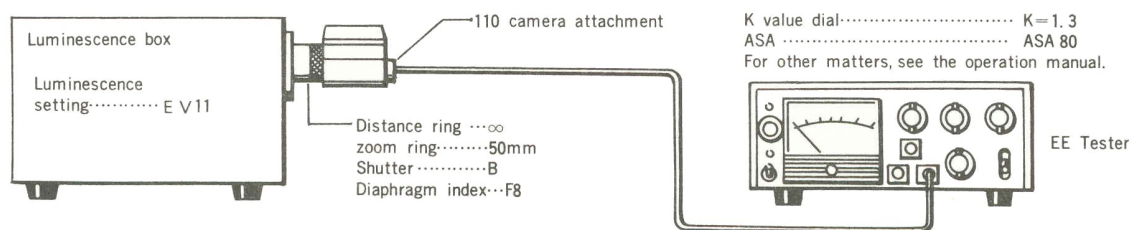
◆ Measuring Instruments

- Luminescence Box L 222 or L 223
- EE Tester MODEL III

Note: The conventional EE Tester Model II cannot check the aperture diameter, because no standard-time circuit is built into it.

Consequently, see "Aperture Diameter Adjustment 2" if Model III are unavailable.

◆ Preparations ◆ Fig. 1

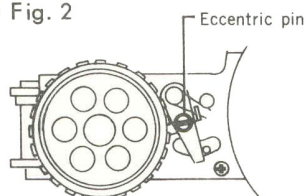


1. Fit the diaphragm ring temporarily according to "Focus Adjustment" on P.13. Set the EE tester, the luminance box, and the camera as shown in Fig.1.
2. Set the diaphragm to F8, bring the lens into contact with the luminous plane of the luminance box, and release the shutter.
3. Operate RESET-CAL. of the MEAS.-CAL. change switch of the EE tester to swing the pointer of the tester.

◆ Adjustments

1. Repeat 3 of the above "Preparations," and turn round the eccentric pin so that the pointer of the EE tester may indicate -0.7 EV. Then release the shutter several times, and confirm what has been adjusted. (See Fig.2.)
2. Confirm that the state as shown in Fig.3 can be reached even if the diaphragm ring is set to F4.5 in order to open the diaphragm wide (the worst condition).
3. Fasten the eccentric pin with the screw lock.

◆ Fig. 2



◆ Fig. 3

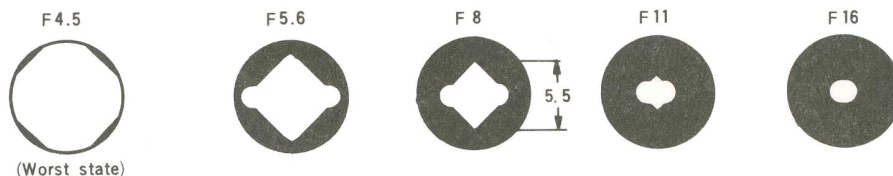


◆ Aperture Diameter Adjustment-2

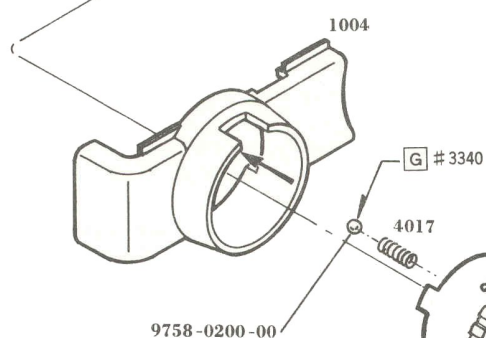
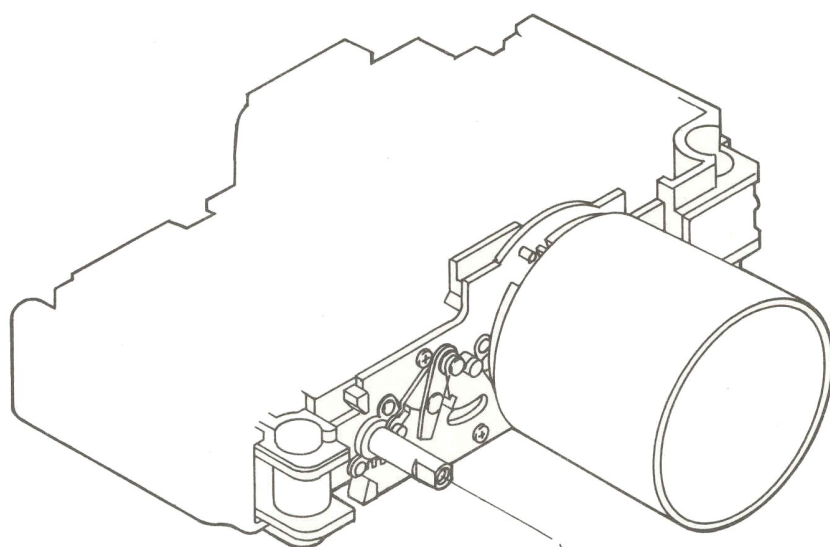
Make the adjustments described here only when replacing the zoom lens base plate (0602) or when the aperture is shaped extremely different from the following reference diagrams.

◆ Procedures

1. Fit the zoom lens base plate after fitting the diaphragm base plate, and fit the diaphragm ring temporarily. However, be sure to remove the zoom lens block and the close-up lens from the zoom lens base plate.
2. Set the diaphragm ring to F8 and the shutter speed to "B", and turn round the eccentric pin (Fig. 2) so that the aperture at F8 may be shaped as shown in the following diagram at F8.



5. Front Decoration A and Light Receiving Part

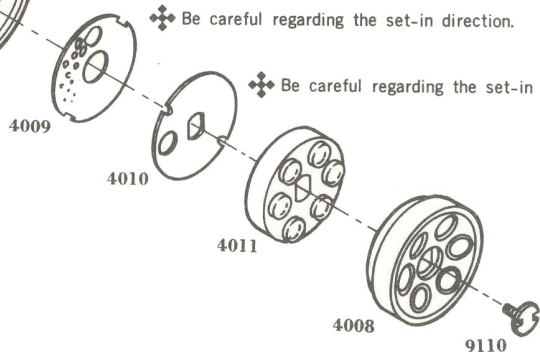


✦ Confirm the state shown in Fig. 1; insert 4017 into 4006; apply grease to 9758-0200-00 and put it on 4017; with the index of F 4.5 facing the arrow mark of 1004, set 4006 to the axle of 1004, and turn 4006 clockwise while pressing it slightly toward 1004. Thus 4006 can be set in with a click.

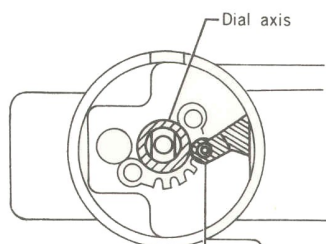
4006

✦ Be careful regarding the set-in direction.

✦ Be careful regarding the set-in direction.



◆ Fig. 1 Make a confirmation before assembling the diaphragm ring.



Be sure to confirm that the tip of the lever is not mounted on the dial axis.

◆ Focus Adjustment

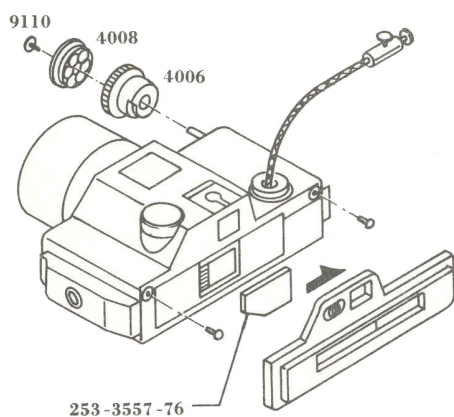
◆ Measuring Instruments and Tool

- Autocollimator (120 mm or 200 mm)
- Focus adjustment mirror (251-3557-76)
- Master lens turning driver (384-9101-77) or minus driver

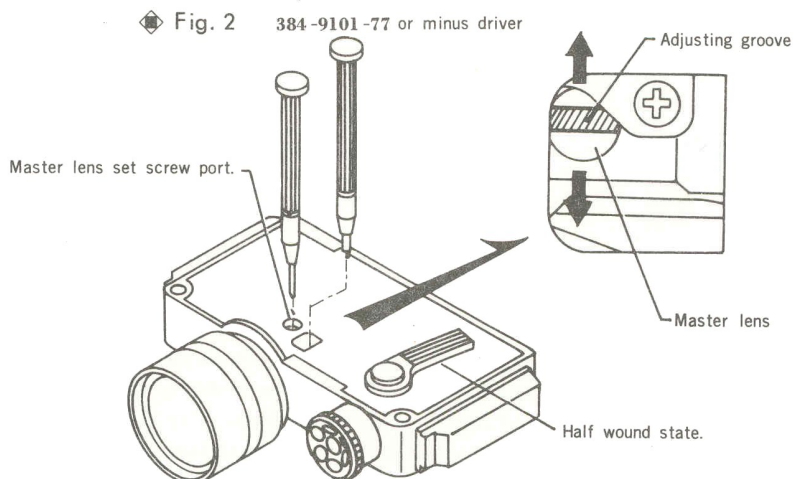
◆ Preparations

1. Fit the upper cover and the light receiving part temporarily. In the case of the light receiving part, set the diaphragm ring (4006) and the light receiving part hood (4008) to the axis, and fasten them with light receiving part set screw (9110). When fitting the upper cover, be careful about the position of the shutter dial. (See P.20.)
2. Place the focus adjustment mirror (251-3557-76) on the film plane, and put on the back cover while pressing its lock button in the direction of the arrow mark shown in Fig.1. Thus the back cover and the upper cover are locked with each other, and the reflection mirror can be fixed.
3. Set the shutter dial to "B", and release the shutter with the cable release to keep the shutter open.

◆ Fig. 1



◆ Fig. 2

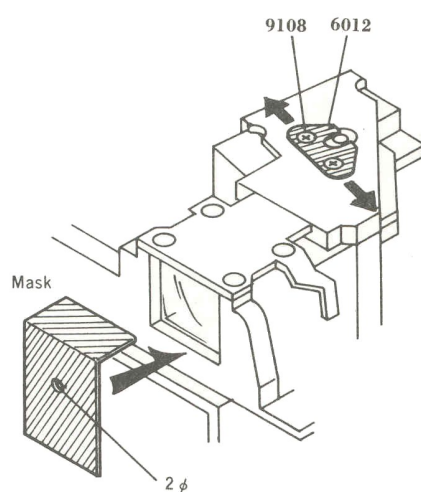


◆ Adjustments

1. Set the diaphragm to F4.5, the distance scale ring to ∞ , and the zoom ring to 50 mm and 25 mm; focalize the chart image of the auto-collimator; read the index indicated by the auto-collimator; and check whether the index remains within the permissible scope shown in the following table. If the index is beyond the scope, make the adjustments described in 2~5.
2. Loosen the master lens set screw (9611-1625-01).
3. Set the zoom ring to 50 mm; set the auto-collimator to the standard index shown in the following table; and move the master lens back and forth with the master lens turning driver or a minus driver. (See Fig.2.)
4. Set the zoom ring to 25 mm, focalize the auto-collimator, and confirm that the chart image remains within the permissible scope shown in the following table.
5. Fasten the master lens set screw with the screw lock.

Zoom ring position	Auto-collimator				Note
	200mm		120mm		
	Standard value	Acceptable range	Standard value	Acceptable range	
50mm	+7.5 scale	+5~+10.5 scale	+3 scale	+2~+4 scale	Adjustment with the master lens.
25mm		0~+58 scale		0~+22.5 scale	Confirmation only.

◆ Finder Focus Adjustment



◆ Measuring Instrument

- Collimator

◆ Preparations

Make a mask as shown in the left diagram—a mask (possibly a paper mask) which is big enough to cover the eye-piece lens part; make a hole, 2 mm in diameter, in a point of the mask which contacts the center of the eye-piece lens; set the mask to the eye-piece lens part; and stick the mask on the part with a tape.

Note: The flicker of light through the microprism may hardly be recognized depending on the eye point. This mask makes the eye point stationary.

◆ Adjustments

1. Set the zoom ring to 50 mm and the distance scale ring to ∞ ; place the finder face-to-face with the collimator; slightly loosen 2 pieces of 9108 (but not to the extent that they can be further loosened with fingers) so that the chart image may cease to flicker; and make an adjustment by moving 6012 with a minus driver in the directions of the two arrow marks shown in the diagram.
2. Make a reconfirmation after completing the above adjustments and fastening 9108.

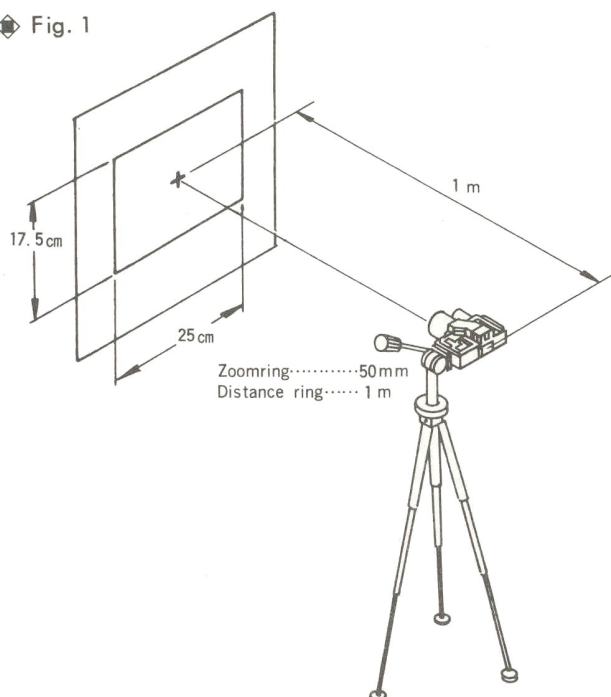


2406

1. Before loosening the stopper ring (2236) or separating the helicoid, be sure to read the index indicated by the auto-collimator in the conditions of a ∞ distance and a 50 mm f. When assembling the zoom lens base plate block, make an adjustment with 2236 so that the above index may be indicated by the auto-collimator again.
2. When replacing the distance scale ring (2233) with a new one because of a dent, etc. in it, remove 3 stop screws (9613-1625-04), and pull 2233 inwardly with caution toward the deformed name ring (2375). Thus 2375 can be separated from the block of the first lens elements, and it can be removed inwardly.
3. When separating the block of the front lens elements from the zoom block, be sure to memorize the position from which the helicoid was pulled out. When assembling the helicoid, be sure to set it back to the same position.
4. When setting the lens block (0601) to the zoom lens base plate (0602), be sure to set the center of the close-up lens (2372) to that of the second lens elements of 0601 by utilizing the play of the stop screws (9612-1630-07).

◆ Parallax Adjustment

◆ Fig. 1



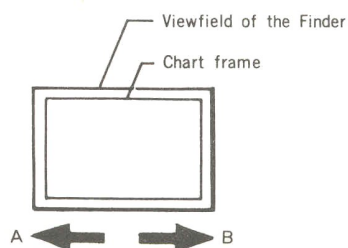
◆ Preparations

1. Make a chart frame, 25 cm × 17.5 cm, as shown in Fig.1, set the camera with a tripod so that the center of the chart may almost meet the optical axis of the camera at a distance of 1 m.
2. Set the shutter speed to "B" to keep the diaphragm open wide, bring the focal glass into contact with the aperture frame, and readjust the camera position so that the center of the chart frame may meet that of the aperture frame.

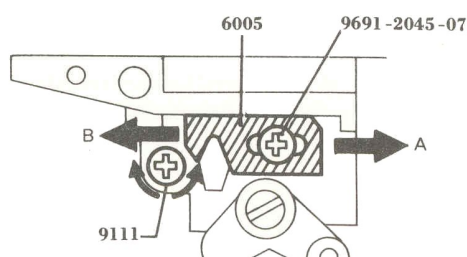
◆ Adjustments

1. Look into the finder, loosen 9691-2045-07 and move 6005 left and right so that the center of the chart frame may meet that of the viewfield of the finder in the horizontal direction.
2. Next, correct the inclination of the chart frame with 9111. If the chart frame is inclined downward to the left, turn 9111 clockwise. If the frame is inclined upward to the left, turn 9111 counter clockwise.

◆ Fig. 2



◆ Fig. 3



3. If the center of the viewfield of the finder does not meet that of the chart frame even after completing the above adjustments, 1~2, make a readjustment with emphasis on the inclination of the chart image viewed through the finder.

◆ Fig. 4



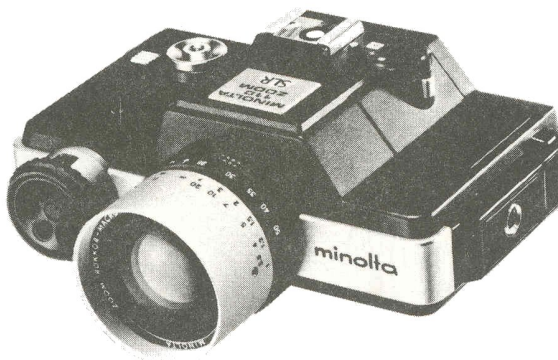
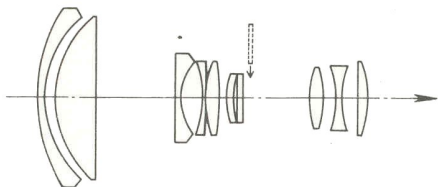
◆ Fig. 5



MINOLTA 110 ZOOM (253)

LENS

ZOOM ROKKOR-MACRO F4.5 f 25~50mm



Lens element : 10 elements in 10 groups
(Photomacrography 11 elements in 11 groups)
Diaphragm : Auto pre-set slide type
Aperture scale : F4.5, 5.6, 8, 11, 16
Diaphragm blade : 2 blades

SHUTTER

Type : Electronic control of the slide type slit shutter
Speed : A (Auto), X and B
Auto...10 ~ 1/1000 sec. (Non stage shutter speed)
X1/150 sec.
X and B are of the mechanical control type, and are workable with out batteries.
Shutter blade : 2 blades
Dial : A, B and X (with dial lock)
Sync. contact : X (Hot shoe only)

FILM ADVANCE

Winding method : Single-stroke winding by a lever (winding with several small strokes are impracticable)
Winding angle : 80°
Counter : Paper backing appear through the film window

VIEW-FINDER

Type : Eye-level viewfinder using a porro mirror
Focusing screen : Center microprism type
Visual field percentage: 85% (for the standard frame, 13 × 17mm)
Image magnification: ×0.56 (f 25mm)
~ ×1.1 (f 50mm)

Unit of measurment: -1 diopter
Mirror : Quick return mirror
Indication in viewfinder: Shutter speed warning signal and battery checker (see the under table)

EXPOSURE METER

Built in CdS cell
Light receiving angle: Vartical angle 12°
Holinzontal angle 28°
Coupling method : Aperture-priority type
Working range : ASA 80 EV 1 (F4.5 10 sec)
~ EV 18 (F16 1/1000 sec)
With manual override: +2, +1, 0, -1 and -2 EV
Batterys : Silber oxide batterys 1.5V × 2
JIS-G 13 type
S 76 or S 76E (Evaready)
MS 76 (Mallory)
RS 76G (Ray-O-Vac)

FOCUSING

Focusing method : Front lens element focusing
Minimum focusing distance: 1m
Photomacrography distance: 28.6 ~ 30.7 cm
Distance scale : $\frac{1}{3.5}$ $\frac{1.2}{4}$ $\frac{1.5}{5}$ $\frac{2}{7}$ $\frac{3}{10}$ $\frac{7}{20}$ $\frac{\infty}{\infty}$ m
Focal length scale: 25, 30, 35, 40, 50mm

DIMENTIONS and WEIGHT

Dimentions : 132 (W) × 53.5 (H) × 108 (L)
Weight : 430 g

OTHERS

- Built in battery warning by eye-piece shutter
- With shutter button lock
- Available Eye-piece correction type V

Shutter spned	Less than 1/50 sec	1/50~1/1000 sec	More than 1/1000 sec	X	B	B · C
LED (Red)	●	●	○	○	○	○
LED (Orange)	○	●	●	●	●	●

◆ Adjustments

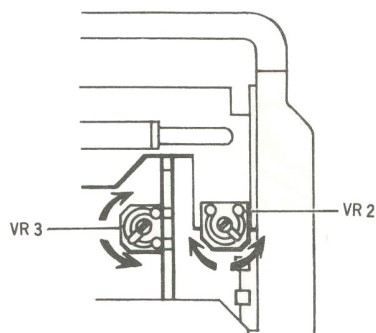
1. Before making adjustments, set all measuring instruments with TR 3 (Fig. 3) as the nucleus, and turn on their power supply sources.
2. Make the necessary adjustments according to the procedures described in the following Table 2. See Table 1 on P. 18 for procedures for measuring luminance at an adjustment or checkup time.
3. When the Luminesce Box L 222 is used, the permitted limits of the Time Counter and the EE Tester should be the ones shown below. When you use L 223, please refer to the figures in the bracket.

Table-2

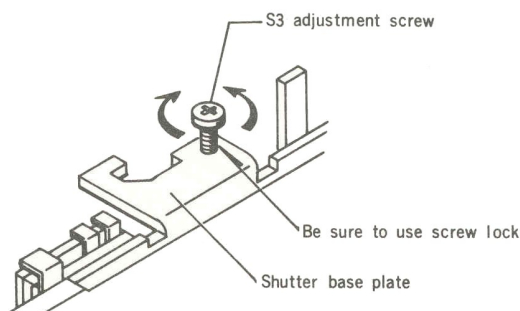
Procedures	Measuring luminescence	Aperture index	253 attachment	How to adjust and confirm
1	BV 4	F 4.5	Detach	◆ Release the shutter, and make an adjustment with VR 2 (Fig. 1) so that the time counter may indicate 60~66 ms (71~78ms).CR time adjustment (1/30 sec)
2	BV 10	F 4.5	Detach	◆ Turn round the VR 3 (Fig. 1) so that the time counter may indicate 0.9~1.1 ms (1.07~1.3 ms).CR time adjustment (1/1000 sec)
3	BV 5	F 4.5	Fit up	◆ Confirm EE. $0 \pm 0.5 \text{ EV}$ ($+0.3 \pm 0.5 \text{ EV}$) indicated by the EE tester must be within the scope of EV.
4	BV 9	F 4.5	Fit up	◆ Turn round the S 3 adjustment screw (Fig. 2) so that $+0.2 \pm 0.1 \text{ EV}$ indicated by the EE tester may be within the scope of EV.EE adjustment After the adjustment, be sure to fasten the adjustment screw with the screw lock.
5	BV 7.3	F 4.5 ~F 16	Fit up	◆ Check EE against each diaphragm index.Confirm that $0 \pm 1 \text{ EV}$ ($+0.3 \pm 1 \text{ EV}$) indicated by the EE tester is within the scope of EV.
6	BV 7.3	F 8	Fit up	◆ Confirm the over-ride.Check the EE error when the over-ride amount is 0; check EE when the over-ride amount is +1 and -1; and confirm that the over-ride error is within $\pm 0.3 \text{ EV}$ when its amount is 0. (For example, the error become $+1.2 \pm 0.3 \text{ EV}$ against a +1 amount when it is $\pm 0.2 \text{ EV}$ against a 0 amount.)
7	BV 4.3	F 4.5	Detach	◆ Confirm that LED (orange) lights up.
8	BV 7.3	F 4.5	Fit up	◆ Confirm that LED (orange) is put out.
9	BV 9	F 4.5	Detach	◆ Confirm that LED (red) is put out.
10	BV 10.3	F 4.5	Detach	◆ Set the over-ride amount is -1, confirm that the LED (red) lights up.

Caution: When you check the warning level, you must either keep the back cover open or load the test film.

◆ Fig. 1



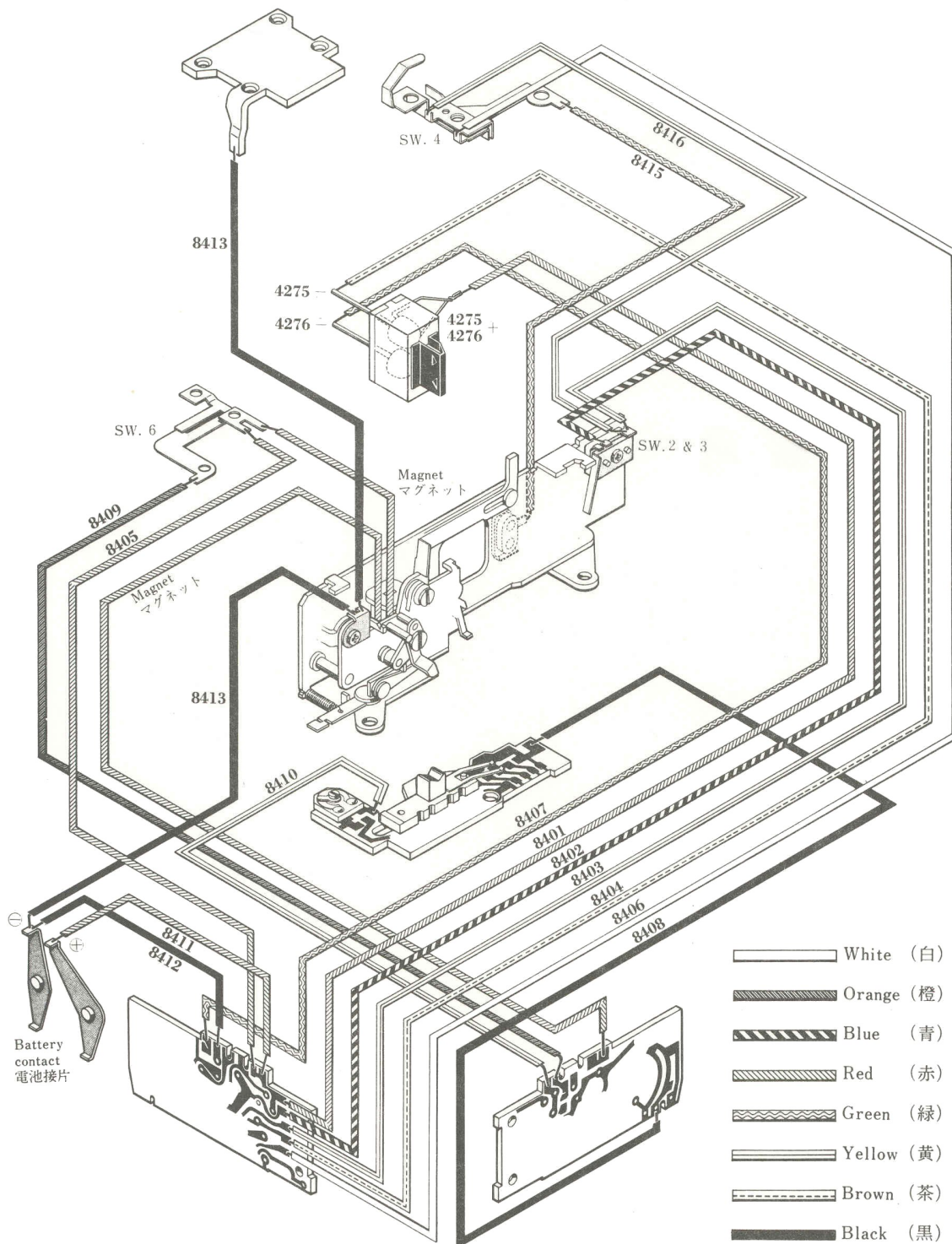
◆ Fig. 2



◆ Confirmation of the minimum working voltage and the B. C lighting voltage

1. The shutter normally works when the power source voltage is set at 1.75V.
2. LED is put out when the B.C button is pressed after setting the power source voltage at 1.8V.
3. LED lights up when the B.C button is pressed after setting the power source voltage at 2.1V.

Wiring Schematic Diagram



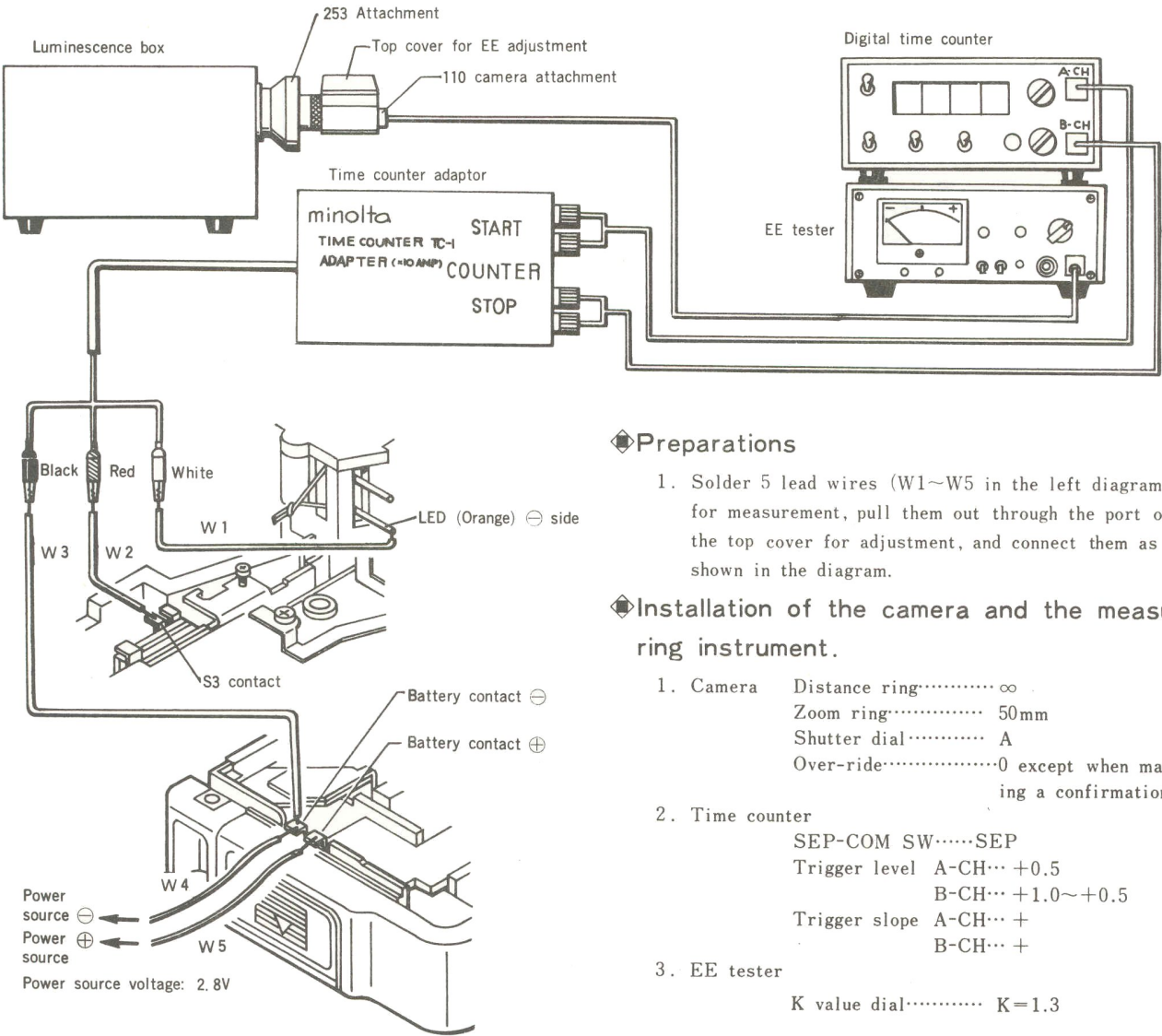
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EE Adjustment

Measuring Instruments and tool

- Luminescence Box (L 222 or L 223)
- EE Tester (MODEL III)
- Digital Time Counter (TC-1)
- D.C Power Source
- Time Counter Adaptor
- Digital Tester (2507)
- 253 Attachment
- Top Cover for EE Adjustment (253-1002-75)
- Luminance adjustment driver B



Preparations

1. Solder 5 lead wires (W1~W5 in the left diagram) for measurement, pull them out through the port of the top cover for adjustment, and connect them as shown in the diagram.

Installation of the camera and the measuring instrument.

1. Camera
Distance ring..... ∞
Zoom ring..... 50mm
Shutter dial..... A
Over-ride..... 0 except when making a confirmation.
2. Time counter
SEP-COM SW..... SEP
Trigger level A-CH... +0.5
 B-CH... +1.0~+0.5
Trigger slope A-CH... +
 B-CH... +
3. EE tester
K value dial..... K=1.3

For other matters, see the operation manual.

4. Light control button (Luminescence box)
See the following Table 1 for procedures for measuring luminance.

Table-1 Luminescence box setting

Measuring procedures	Measuring luminescence	Light control button		Measuring procedures	Measuring luminescence	Light control button	
		S, C button	Luminescence setting button			S, C button	Luminescence setting button
1	BV 4	S	EV 9	6	BV 7.3	C	F 11
2	BV 10	S	EV 15	7	BV 4.3	C	F2.8
3	BV 5	S	EV 11	8	BV 7.3	C	F 11
4	BV 9	S	EV 15	9	BV 9	S	EV 14
5	BV 7.3	C	F 11	10	BV 10.3	C	F22

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253-3039	6	253-4219	4	253-6805	2
253-3040	6	253-4220	4	253-6807	6
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253-4005	2	253-6001	6	253-8404	3
253-4006	1	253-6002	6	253-8405	3
253-4008	1	253-6005	3	253-8406	3
253-4009	1	253-6006	3	253-8407	3
253-4010	1	253-6010	6	253-8408	3
253-4011	1	253-6011	6	253-8409	3
253-4017	1	253-6012	6	253-8410	3
		253-6014	6	253-8411	3
253-4103	3	253-6016	6	253-8412	3
253-4105	3	253-6017	3	253-8413	5
253-4191	3	253-6018	6	253-8415	4
		253-6019	6	253-8416	4
253-4202	3	253-6020	6		
253-4203	3	253-6022	6	253-9001	5

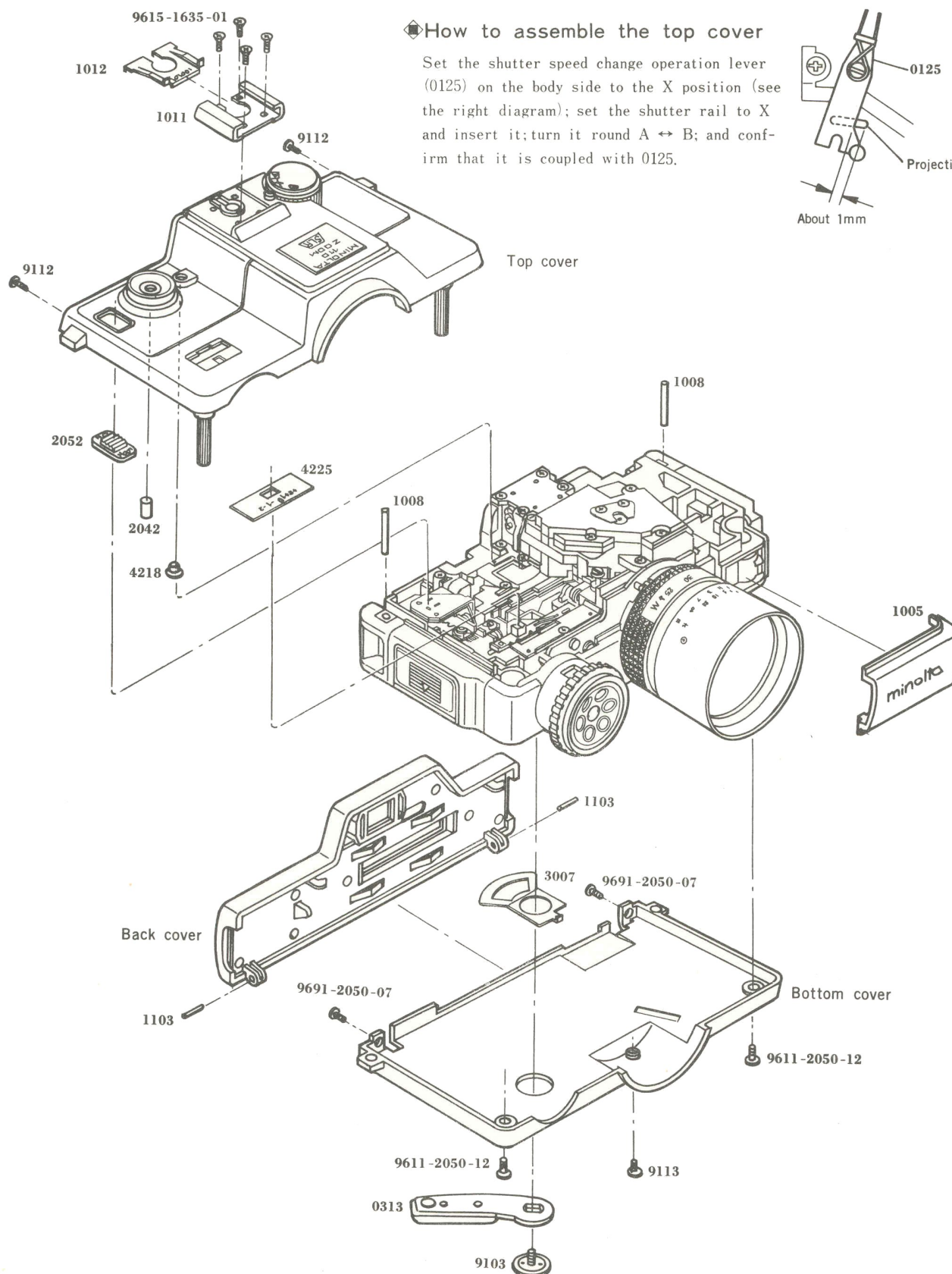
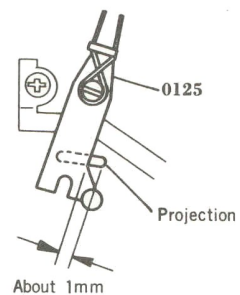
Part No. 部品番号	Part Name 部 品 名 称	Unit 員数
253-0111-01	Back cover set 裏蓋セット	1
253-0313-01	Winding lever set 巻上げレバーセット	1
253-1003-03	Bottom cover 下カバー	1
253-1004-02	Front decoration A 正面飾りA	1
253-1005-02	Front decoration B 正面飾りB	1
253-1008-02	Strap axis ストラップ支柱	2
253-1011-02	Accessory shoe アクセサリーシュー	1
253-1012-01	Accessory shoe spring アクセサリーシュースプリング	1
253-1103-02	Back cover hinge axis 裏蓋ヒンジ軸	2
253-2042-02	Shutter button axis シャッター鉤芯	1
253-2052-03	Release lock knob レリーズロックノブ	1
253-3007-01	Winding lever spring 巻上げレバースプリング	1
253-4006-03	Diaphragm ring 絞りダイヤル	1
253-4008-01	Light receiving part hood 受光部フード	1
253-4009-03	CdS aperture plate CdS 絞り板	1
253-4010-02	CdS aperture lock plate CdS 絞り固定板	1
253-4011-02	Light receiving lens 受光レンズ	1
253-4017-01	Diaphragm ring click spring 絞りダイヤルクリックスプリング	1
253-4218-01	B.C button B.C 釦	1
253-4225-02	Over-ride plate オーバーライド銘板	1
253-9103-03	Winding lever set screw 巻上げレバー止めねじ	1
253-9110-01	Light receiving part set screw 受光部止めねじ	1
253-9112-01	Screw B タイト6	2
253-9113-01	Cover set screw カバー止めねじ	1
9611-2050-12	Phillips type screw 十字穴付きなべ頭小ねじ	2
9615-1635-01	Phillips type screw 十字穴付き皿頭小ねじ	4
9691-2050-07	Phillips type tapping screw 十字穴付きタッピンねじ	2
9758-0200-00	Steel ball 鋼 球	1

6. Top Cover, Bottom Cover and Back Cover

✦ Before setting the top cover, insert two batteries; check the function of each part; and confirm again that no dust is in the finder.

◆ How to assemble the top cover

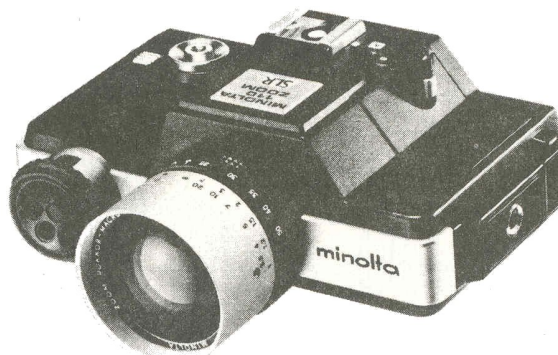
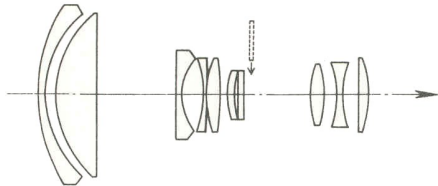
Set the shutter speed change operation lever (0125) on the body side to the X position (see the right diagram); set the shutter rail to X and insert it; turn it round A ↔ B; and confirm that it is coupled with 0125.



MINOLTA 110 ZOOM (253)

レンズ

ZOOM ROKKOR-MACRO F 4.5 f=25~50mm



構 成：10群10枚（マクロ撮影時11群11枚）
 絞 り 形 式：オートプリセットスライド式
 絞 り 目 盛：F 4.5, 5.6, 8, 11, 16
 羽 根：2枚

シャッター

形 式：電子制御スライド式スリットシャッター
 速 度：A (Auto), X, B
 Auto……………10~1/1000秒（無段階）
 X ……………1/150秒
 X, Bは機械制御式で電池が無い時でも使用可能

羽 根：2枚
 ダ イ ヤ ル：A, B, X 各位置ロック付
 シ ン ク ロ 接 点：X接点（ホットシューのみ）

フィルム送り

巻 上 形 式：一操作レバー巻上げ（小きざみ不可）
 二重露出防止付
 巻 上 角 度：80°
 カ ウ ン タ ー：裏蓋窓によるフィルム裏紙読取り

ファインダー

形 式：ポロミラー式一眼レフレックス
 焦 点 板：中央マイクロプリズム（周辺マット）
 視 野 率：85%（標準画面13×17mmに対し）
 倍 率：0.56（f 25mm）~1.1（f 50mm）
 視 度：-1ディオプター
 ミ ラ ー：クイックリターン式
 ファインダー内表示：LEDによるシャッター速度のゾーン表示及びB.C表示（下表参照）

シャッター速度	1/50以下	1/50~1/1000	1/1000以上	X	B	B.C
LED(赤)	●	●	○	○	○	○
LED(黄)	○	●	●	●	●	●

露 出 計

受 光 部：CdS 受光素子，外部測光
 受 光 角 度：上下12°，左右18°
 連 動 方 式：絞り優先式
 連 動 範 囲：ASA 80 EV 1（F 4.5 10秒）~
 EV 18（F 16 1/1000秒）
 マニュアルオーバーライド付：+2, +1, 0, -1, -2 EV
 電 源：酸化銀電池 1.5V×2
 JIS-G 13型, MS 76（マロリー）
 S 76又はS 76E（エバレディー）
 RS 76G（レイ・オ・バック）

焦 点 調 節

形 式：前玉回転繰出し式
 最 短 撮 影 距 離：1(m)
 距 離 目 盛：

1	1.2	1.5	2	3	7	∞	m
3.5	4	5	7	10	20	∞	ft

 ズームリング焦点距離目盛：25, 30, 35, 40, 50mm
 マクロ 撮 影 距 離：28.6~30.7cm

寸 法

大 き さ：132(巾)×53.5(高さ)×108(奥行)mm
 重 量：430 g

そ の 他

- ・アイピースシャッターによる電源警告装置付。
- ・マクロレンズ内蔵，シャッター釦ロック付。
- ・視度調整アタッチメント装着可能（ミノルター一眼レフ用と共用）。

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253-9112	1, 2, 6	9792-1635-84	5	253-4015	7
253-9113	1	9792-1840-40	5		
		9792-2135-50	5	9611-1635-07	7
253-9333	3	9792-6078-84	4	9611-2022-01	7
		9794-2145-50	2	9612-1630-07	7
253-9401	5	9799-4180-84	4	9613-1625-04	7
253-9405	5			9622-1625-01	7
253-9412	6	Coupling washer			
		9721-0120-13	2, 5	9758-0120-00	7
9472-1019-34	3	9721-0150-13	5, 6		
9472-2229-34	3	9721-0300-13	4		
9472-3329-34	3				
		Steel ball			
Screw		9758-0200-00	1		
9611-1625-01	4, 5				
9611-1630-01	5				
9611-1635-01	5				
9611-1655-01	5				

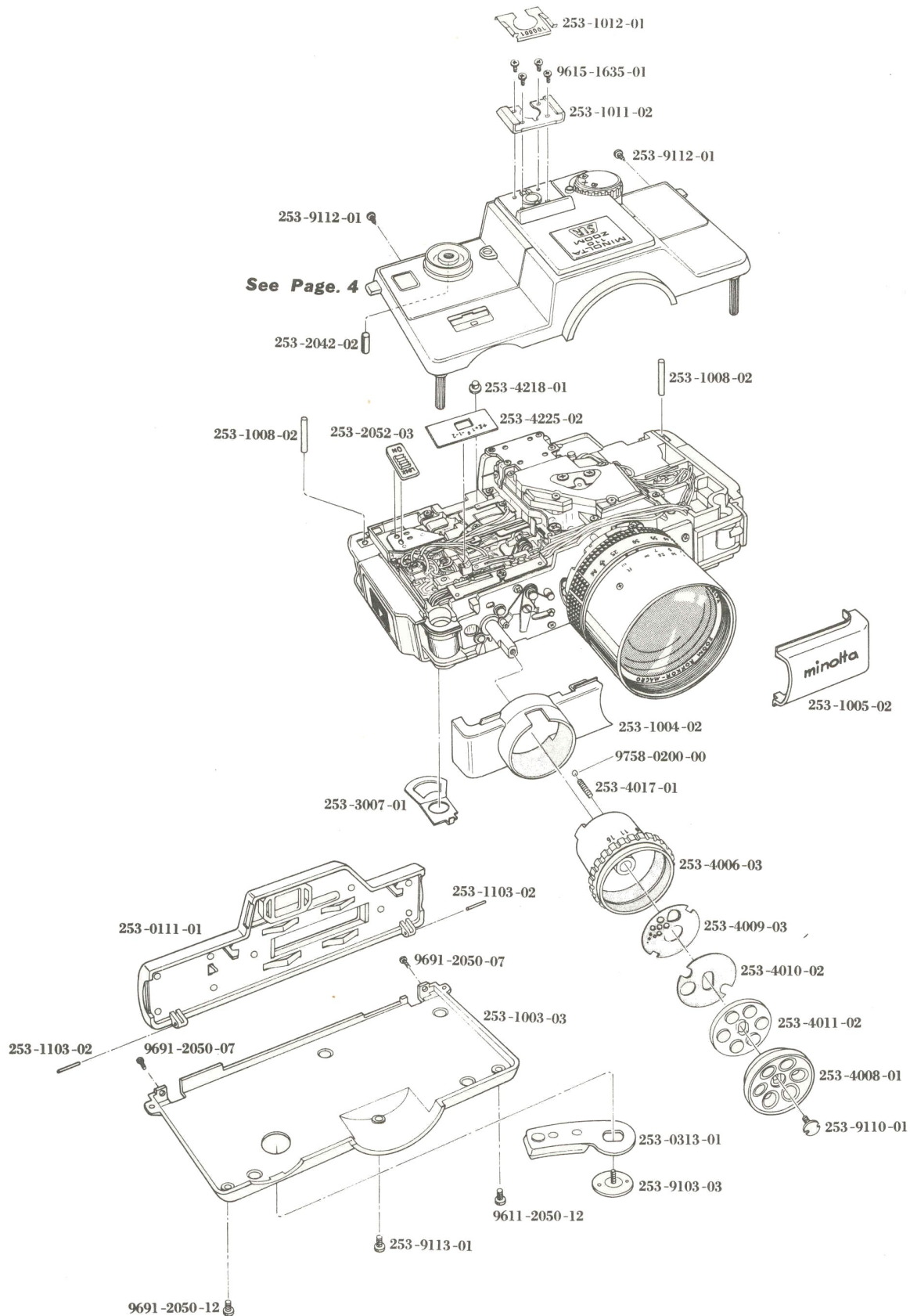
Part No. 部品番号	Part Name 部 品 名 称	Unit 員数
253-0402-01	Diaphragm base plate set 絞り台板セット	1
253-0403-01	Diaphragm lever set 絞りレバーセット	1
253-0632-01	Eye-shutter operation lever set アイシャッター駆動レバーセット	1
253-1031-02	Accessory shoe set plate アクセサリーシュー取付板	1
253-4002-01	Diaphragm blade A 絞り羽根A	1
253-4003-01	Diaphragm blade B 絞り羽根B	1
253-4005-01	Diaphragm lever spring 絞りレバースプリング	1
253-6026-01	Packing piece 防ジン片C	1
253-6031-01	Eye-shutter アイシャッター	1
253-6033-01	Eye-shutter operation plate アイシャッター連動板	1
253-6034-03	Eye-shutter spring アイシャッター駆動スプリング	1
253-6035-02	Eye-shutter damper アイシャッターダンパー	1
253-6805-01	Eye-piece lens B 接眼レンズB	1
253-9004-01	Diaphragm lever set screw 絞りレバー止めねじ	1
253-9014-02	Eye-shutter operation lever axis アイシャッター駆動レバー軸	1
253-9111-01	Screw B タイト10	2
253-9112-01	Screw B タイト6	5
9691-2045-07	Phillips type tapping screw 十字穴付きタッピンねじ	7
9695-2045-07	Phillips type tapping screw 十字穴付きタッピンねじ	4
9721-0120-13	Coupling washer 割ワッシャー	1
9794-2145-50	Washer 薄ワッシャー	1

Part No. 部品番号	Part Name 部 品 名 称	Unit 員数
253-0104-01	Top cover set 上カバーセット	1
9691-2030-07	Phillips type tapping screw 十字穴付きタッピンねじ	1
253-0105-01	Shutter speed change plate set シャッター切換板セット	1
253-0107-01	Battery cover set 電池蓋セット	1
253-0125-01	Shutter speed change operation lever set シャッター切換連動板セット	1
3565-0202-01	Master lens set マスターレンズセット	1
253-1009-03	Side cover 側面飾り	1
253-1010-02	Name plate 上部銘板	1
253-1017-01	Contact terminal B コンタクトターミナル接片 B	1
253-1019-03	Tripod screw 三脚ねじ	1
253-1020-03	Body cap ボデーキャップ	1
253-1021-02	Lead wire pressure コード押え	2
253-1029-01	Master lens set screw plate マスターレンズセットビス取付板	1
253-1033-03	Battery case 電池ケース	1
253-2041-02	Shutter button シャッター釦	1
253-2055-02	Shutter button guide ring S釦ガイドリング	1
253-2061-04	Shutter dial シャッターダイヤル	1
253-2062-03	Shutter dial index シャッターダイヤル目盛板	1
253-2064-02	Dial lock button ダイヤルロック釦	1
253-2065-03	Shutter dial friction spring シャッターダイヤルフリクションスプリング	1
253-2072-02	Dial lock button return spring ダイヤルロック釦戻しスプリング	1
253-2074-02	Shutter speed change operation plate spring シャッター切換連動板スプリング	1
253-4216-02	S 4 contact A S 4 接片 A	1
253-4217-01	S 4 contact B S 4 接片 B	1
253-4219-02	S 6 contact A S 6 接片 A	1
253-4220-01	S 6 contact B S 6 接片 B	1
253-4226-01	S 4 isolation tube S 4 絶縁チューブ	1
253-4227-01	S 4 contact isolation plate S 4 接片絶縁板	1
253-8415-01	Lead wire Green (25mm) 0.6φ 0.08φ / 7 wirs リード線緑(25mm) 0.6φ 0.08φ / 7芯	1
253-8416-03	Lead wire Yellow (65mm) 0.6φ 0.08φ / 7 wirs リード線黄(65mm) 0.6φ 0.08φ / 7芯	1
253-9013-02	Shutter speed change operation plate axis シャッター切換連動板軸	1
253-9101-02	Shutter speed change plate set screw シャッター切換板止めねじ	1
9611-1625-01	Phillips type screw 十字穴付きなべ頭小ねじ	1
9691-2030-07	Phillips type tapping screw 十字穴付きタッピンねじ	6
9691-2040-07	Phillips type tapping screw 十字穴付きタッピンねじ	2
9691-2045-07	Phillips type tapping screw 十字穴付きタッピンねじ	2
9692-2060-07	Phillips type tapping screw 十字穴付きタッピンねじ	3
9721-0300-13	Coupling washer 割ワッシャー	1
9791-6078-50	Washer 薄ワッシャー	1
9792-6078-84	Washer 薄ワッシャー	1
9799-4180-84	Washer 薄ワッシャー	1

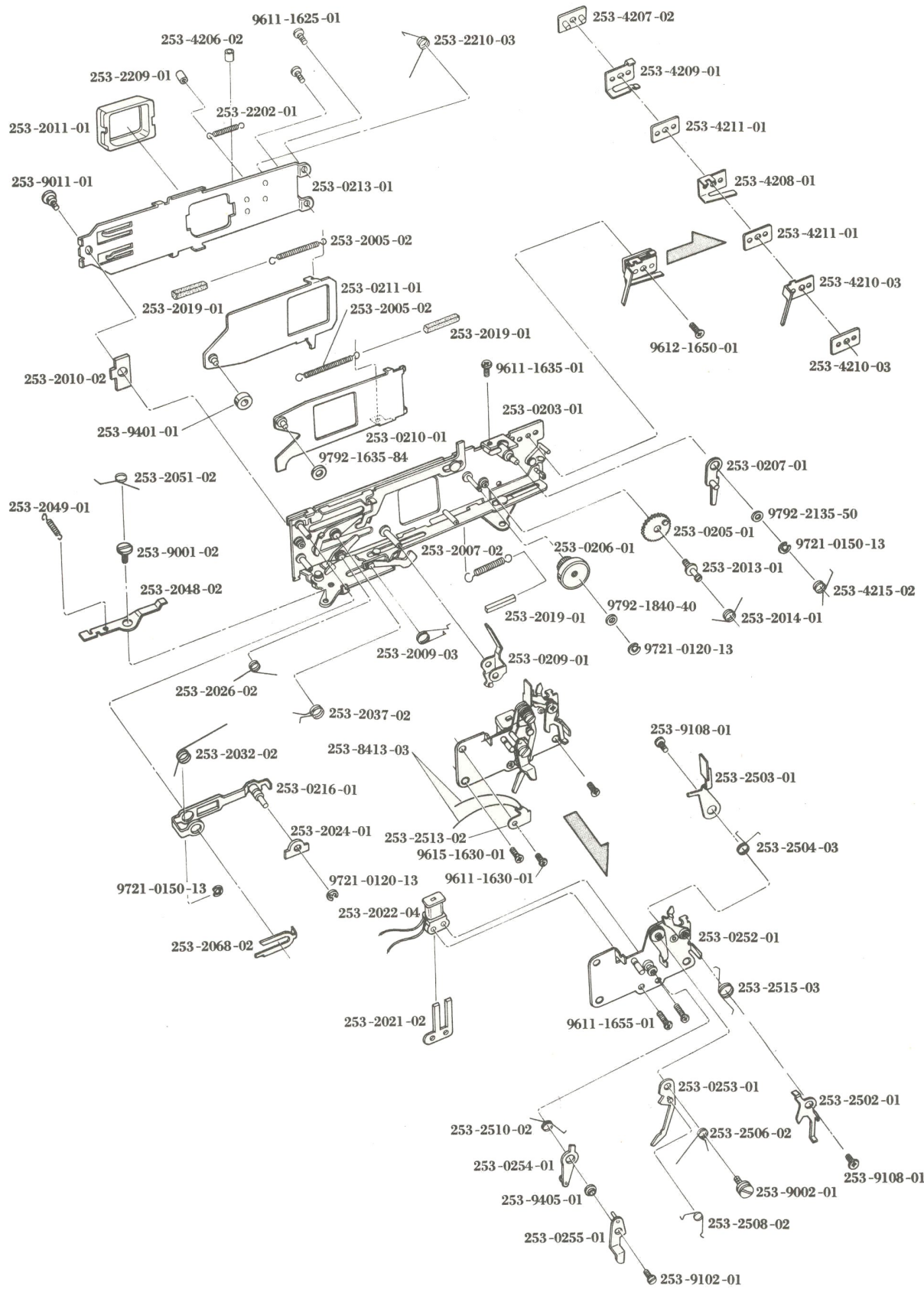
Part No. 部品番号	Part Name 部 品 名 称	Unit 員数
253-0123-01	Release base plate set レリーズ台板セット	1
253-0413-01	ASA change base plate A set ASA切換台板Aセット	1
253-0423-01	ASA change contact set ASA切換接片セット	1
253-0424-01	Circuit base plate set 回路基板セット	1
9472-1019-34	Semi-fixed resistor VR 3 (100Ω) 半固定抵抗VR 3 (100Ω)	1
9472-3329-34	Semi-fixed resistor VR 1 (3.3KΩ) 半固定抵抗VR 1 (3.3KΩ)	1
253-8401-03	Lead wire Red (185mm) 0.6φ 0.08φ /7 wires リード線赤(185mm)0.6φ 0.08φ /7芯	1
253-8402-03	Lead wire Blue (160mm) 0.6φ 0.08φ /7 wires リード線青(160mm)0.6φ 0.08φ /7芯	1
253-8403-03	Lead wire Yellow (160mm) 0.6φ 0.08φ /7 wires リード線黄(160mm)0.6φ 0.08φ /7芯	1
253-8404-03	Lead wire Brown (200mm) 0.6φ 0.08φ /7wires リード線茶(200mm)0.6φ 0.08φ /7芯	1
253-8405-03	Lead wire Red (50mm) 0.6φ 0.08φ /7wires リード線赤(50mm)0.6φ 0.08φ /7芯	1
253-8406-03	Lead wire White (205mm) 0.6φ 0.08φ /7wires リード線白(205mm)0.6φ 0.08φ /7芯	1
253-8407-03	Lead wire Green (200mm) 0.6φ 0.08φ /7wires リード線緑(200mm)0.6φ 0.08φ /7芯	1
253-8408-04	Lead wire Black (106mm) 0.6φ 0.08φ /7wires リード線黒(106mm)0.6φ 0.08φ /7芯	1
253-8409-04	Lead wire Orange (37mm) 0.6φ 0.08φ /7wires リード線橙(37mm)0.6φ 0.08φ /7芯	1
253-8410-02	Lead wire Yellow (15mm) 0.6φ 0.08φ /7wires リード線黄(15mm)0.6φ 0.08φ /7芯	1
253-8411-03	Lead wire Red (18mm) 0.6φ 0.08φ /7wires リード線赤(18mm)0.6φ 0.08φ /7芯	1
253-8412-01	Lead wire Black (15mm) 0.6φ 0.08φ /7wires リード線黒(15mm)0.6φ 0.08φ /7芯	1
253-0425-01	S7 base plate set S 7 基板セット	1
9472-2229-34	Semi-fixed resistor VR 2 (2.2KΩ) 半固定抵抗VR 2 (2.2KΩ)	1
253-0611-01	Moving mirror holder set 可動ミラーセット	1
253-1022-01	Light shield plate ボデー遮光板	1
253-2046-01	Release slide plate spring レリーズスライド板スプリング	1
253-2069-03	B spring バルブスプリング	1
253-4103-02	ASA perceive lever spring ASA検知レバースプリング	1
253-4105-02	ASA perceive lever return plate spring ASA検知レバー戻し板スプリング	1
253-4191-01	CdS CdS	1
253-4202-01	CdS holder CdS ホルダー	1
253-4203-01	Diffusion plate 拡散板	1
253-4204-01	CdS holder set plate CdS ホルダー止め板	1
253-4206-02	S 1 isolation tube S 1 絶縁チューブ	1
253-4228-02	Over-ride click plate オーバーライドクリック板	1
253-6005-02	Moving mirror holding plate 可動ミラーホルダー板	1
253-6006-02	Moving mirror holder spring 可動ミラーホルダースプリング	1
253-6017-01	Moving mirror holding plate washer 可動ミラーホルダー板スプリングワッシャー	3
253-9008-02	ASA perceive lever return spring axis ASA検知レバー戻し板スプリング軸	1
253-9012-02	Moving mirror holding plate axis 可動ミラーホルダー板軸	3
253-9111-01	Screw B タイト10	1
253-9333-04	Moving mirror holder axis 可動ミラーホルダー軸	1
9611-1690-07	Phillips type screw 十字穴付きなべ頭小ねじ	2
9612-1630-01	Phillips type screw 十字穴付きなべ頭小ねじ	1
9691-1728-07	Phillips type topping screw 十字穴付きタッピンねじ	3
9691-2045-07	Phillips type tapping screw 十字穴付きタッピンねじ	8
9695-2045-07	Phillips type tapping screw 十字穴付きタッピンねじ	1

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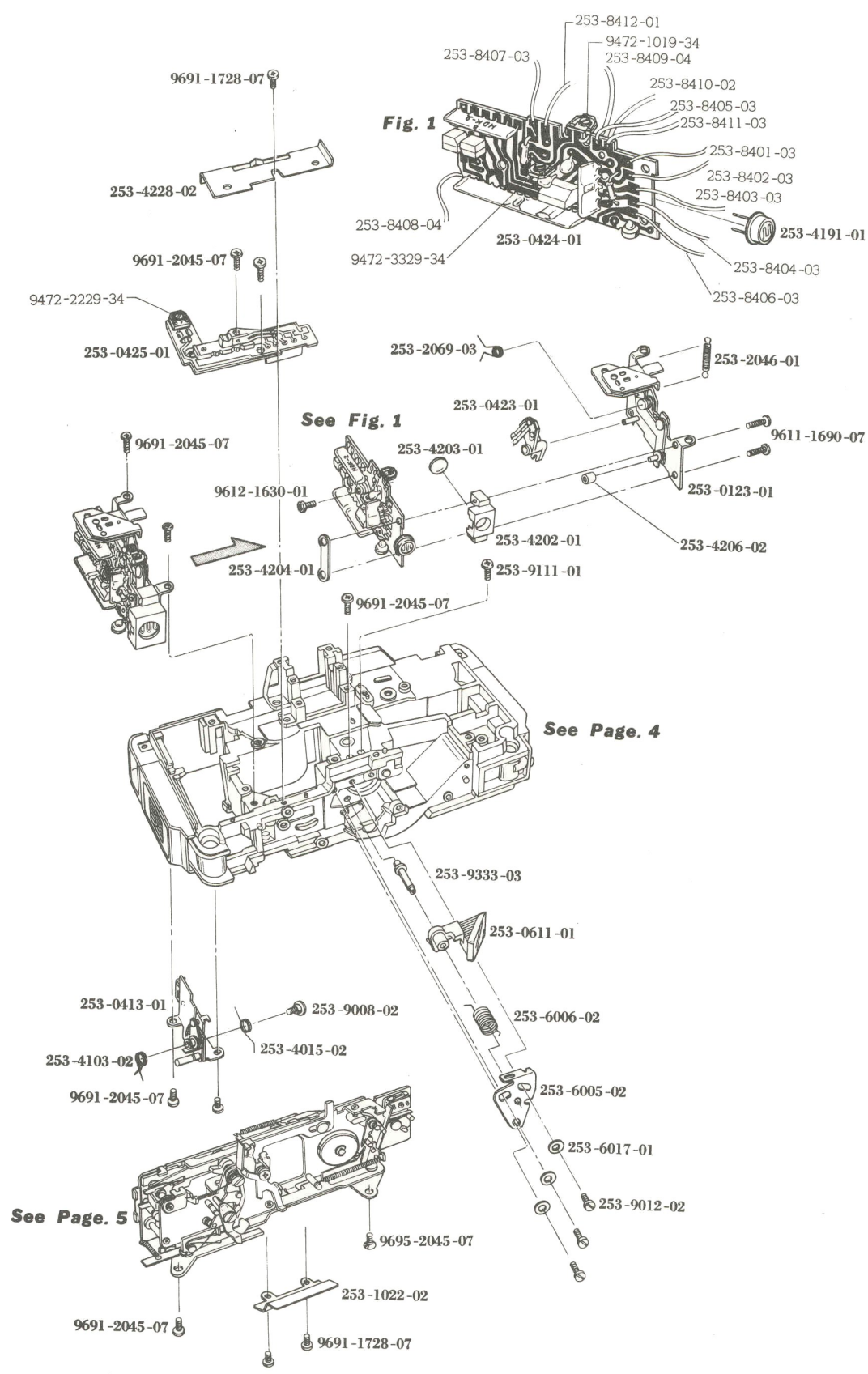


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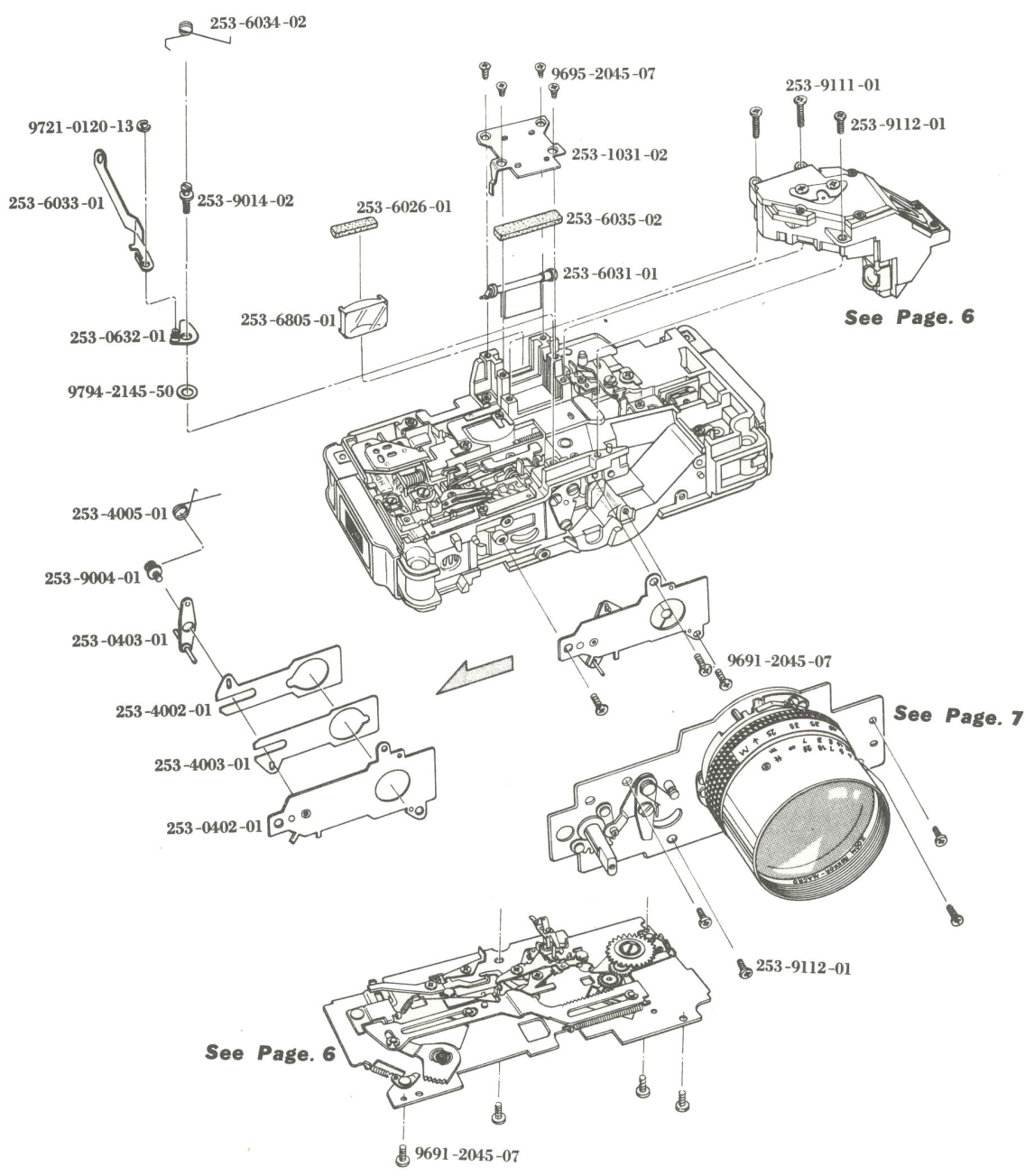


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Part No. 部品番号	Part Name 部 品 名 称	Unit 員数
3565-0601-01	Zoom lens set ズームレンズセット	1
3565-2233-03	Distance scale ring 距離環	1
3565-2234-05	Index ring 指標板	1
3565-2236-02	Stopper ring 距離環ストッパーリング	1
3565-2407-01	Moving lens operation pin 第二移動レンズ操作ピン	1
9611-1635-07	Phillips type screw 十字穴付きなべ頭小ねじ	3
9613-1625-04	Phillips type screw 十字穴付き丸皿頭小ねじ	3
9622-1625-01	Screw とがり先止めねじ	3
3565-0602-01	Zoom lens base plate set 鏡胴台板セット	1
3565-2235-05	Zooming index ring ズーム目盛環	1
3565-2372-02	Close-up lens クローズアップレンズ	1
3565-2373-01	Clic spring plate クリックプレートスプリング	3
3565-2375-01	Name ring レンズ銘板	1
3565-2402-01	Close-up lens frame axis クローズアップレンズ枠軸	1
3565-2405-01	Click support axis クリック補助軸	3
3565-2406-01	Close-up lens spring ねじりスプリング	1
253-4015-01	Diaphragm control lever spring 絞り制御レバースプリング	1
9611-2022-01	Phillips type screw 十字穴付きなべ頭小ねじ	3
9612-1630-07	Phillips type screw 十字穴付きなべ頭小ねじ	3
9758-0120-00	Steel ball 鋼 球	3



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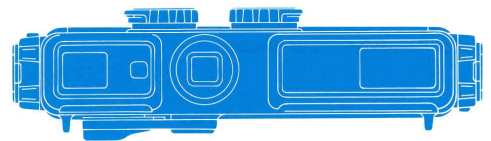
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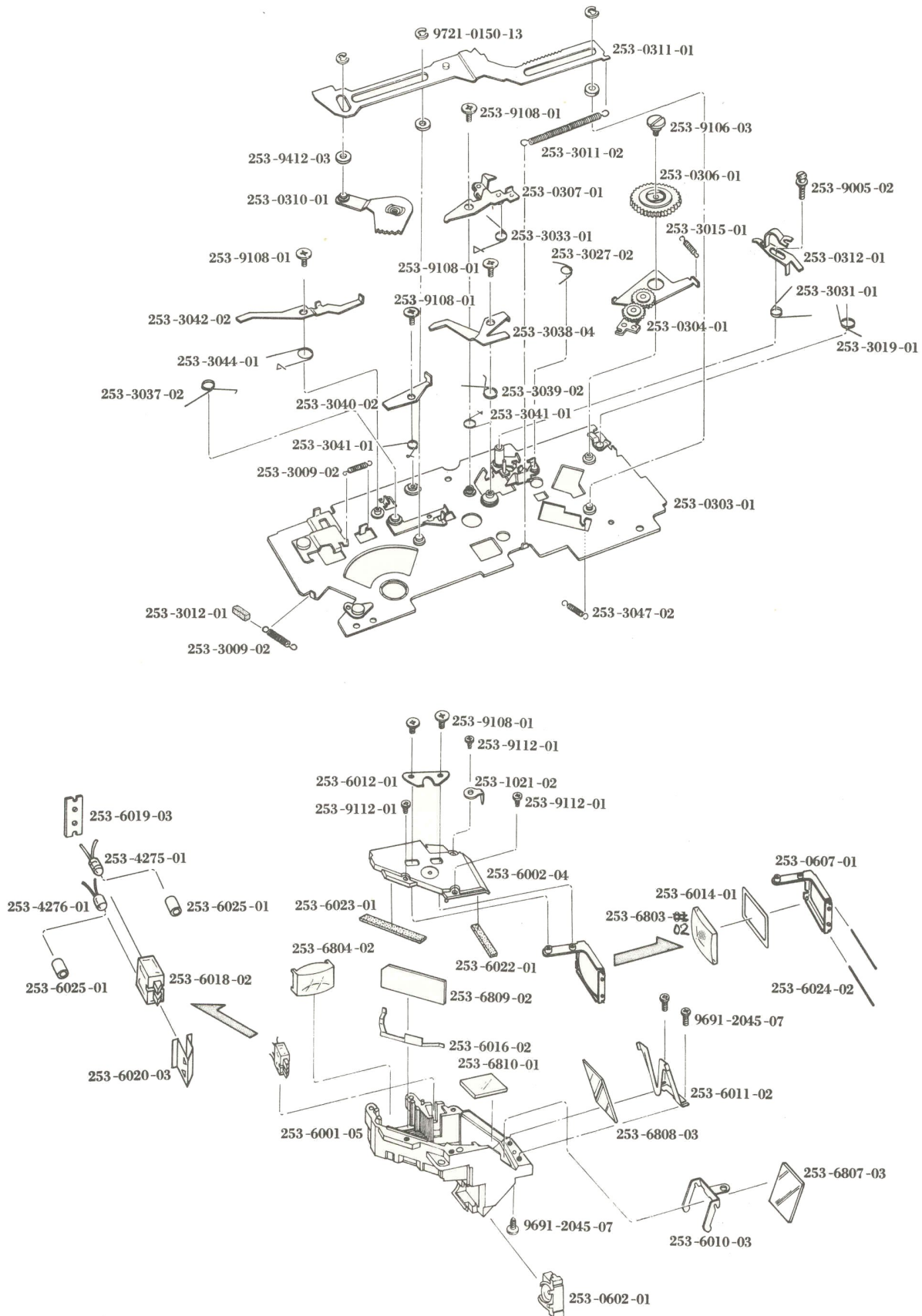
WEATHERMATIC-A

OWNER'S MANUAL

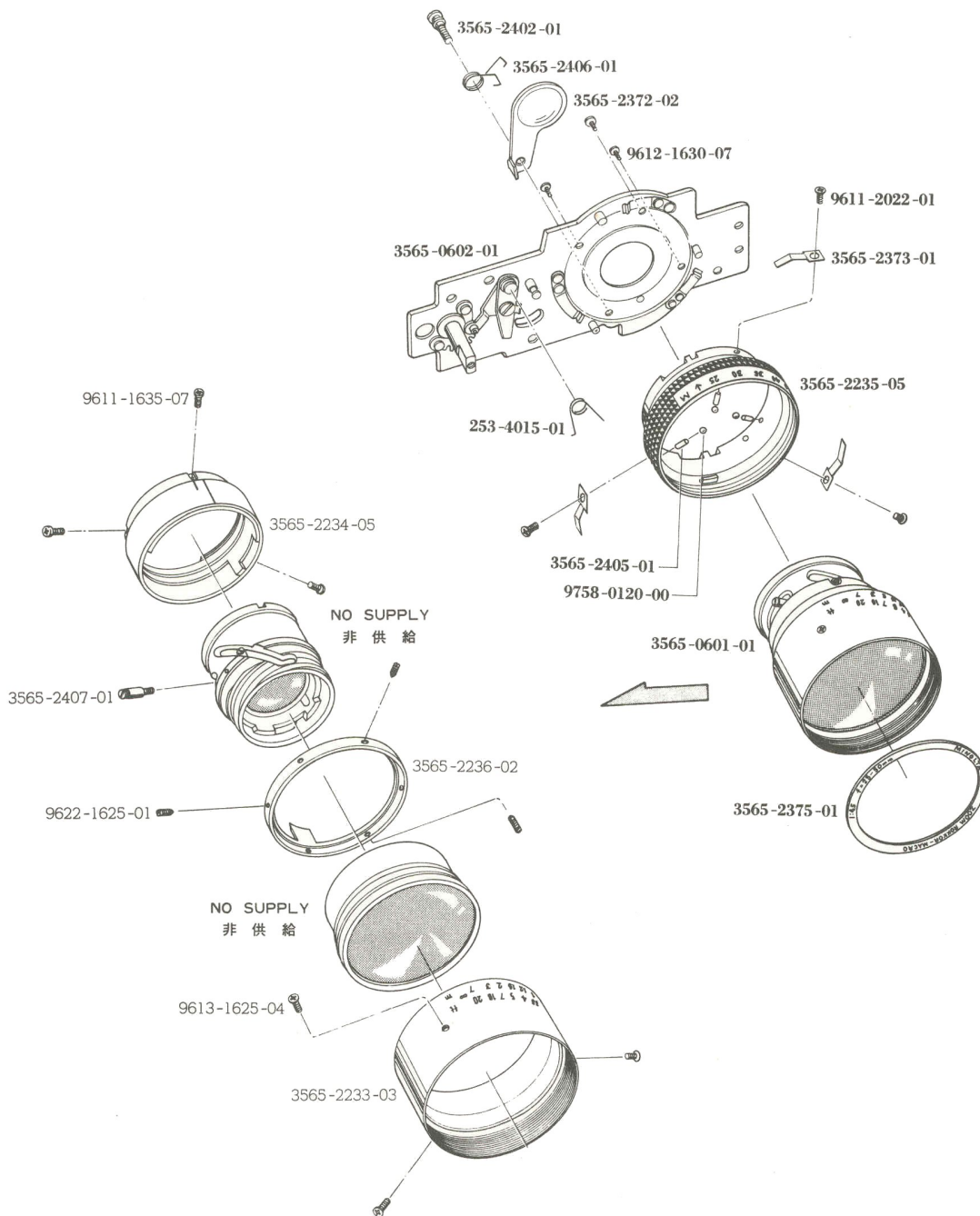
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Part No.	Part Name	Unit
部品番号	部 品 名 称	員数
253-0303-01	Winding base plate set 巻上げ台板セット	1
253-0304-01	Idle gear lever A set 中間ギヤーレバーAセット	1
253-0306-01	Winding gear set 巻取りギヤーセット	1
253-0307-01	Charge set lever set チャージセットレバーセット	1
253-0310-01	Charge lever set チャージレバーセット	1
253-0311-01	Rack set ラックセット	1
253-0312-01	Perceive lever set 触知レバーセット	1
253-0602-01	Objective lens holder set 対物レンズホルダーセット	1
253-0607-01	Fresnel lens holder set 焦点板ホルダーセット	1
253-1021-02	Lead wire pressure コード押え	1
253-3009-02	Returning nail spring 逆転爪スプリング	2
253-3011-02	Rack spring ラックスプリング	1
253-3012-01	Returning nail spring packing piece 逆転爪スプリング消音片	1
253-3015-01	Idle gear lever A spring 中間ギヤーレバーAスプリング	1
253-3019-01	Winding gear returning nail spring 巻取ギヤー逆転爪スプリング	1
253-3027-02	Set lever spring セットレバースプリング	1
253-3031-01	Winding stop lever spring 巻止めレバースプリング	1
253-3033-01	Perceive release lever spring 触知解除レバースプリング	1
253-3037-02	Charge nail spring チャージ爪スプリング	1
253-3038-04	Winding stop nail 巻止め爪	1
253-3039-02	Winding stop nail spring 巻止め爪スプリング	1
253-3040-02	Cartridge sensor カートリッジセンサー	1
253-3041-01	Cartridge sensor spring カートリッジセンサースプリング	2
253-3042-02	Shutter release stopper 不時露光防止板	1
253-3044-01	Shutter release stopper spring 不時露光防止板スプリング	1
253-3047-02	Idle gear lever B spring アイドルギヤーレバーBスプリング	1
253-4275-01	LED (Red) LED (赤)	1
253-4276-01	LED (Orange) LED (橙)	1
253-6001-05	View-finder base ファインダー本体	1
253-6002-04	View-finder cover ファインダーカバー	1
253-6010-03	Reflection mirror S pressure ダハミラー (小) 押え板	1
253-6011-02	Reflection mirror L pressure ダハミラー (大) 押え板	1
253-6012-01	Fresnel lens holder set plate 焦点板ホルダーねじ受板	1
253-6014-01	View-finder frame 視野枠	1
253-6016-02	Mirror pressure 正転ミラー押えばね	1
253-6018-02	Light guide 光路棒	1
253-6019-03	LED holder 警告LEDホルダー	1
253-6020-03	Light guide cover 光路棒カバー	1
253-6022-01	Packing piece A 防じん片A	1
253-6023-01	Packing piece B 防じん片B	1
253-6024-02	Fresnel lens pressure spring 焦点板押えスプリング	2
253-6025-01	LED right shield tube LED遮光チューブ	2
253-6803-02	Fresnel lens 焦点板	1
253-6804-02	Eye-piece lens A 接眼レンズA	1
253-6807-03	Reflection mirror S ダハミラー (小)	1
253-6808-03	Reflection mirror L ダハミラー (大)	1
253-6809-02	Image correction mirror 正転ミラー	1
253-6810-01	Protection glass 保護ガラス	1
253-9005-02	Perceive lever set screw 触知レバー止めねじ	1
253-9106-03	Winding gear set screw 巻取りギヤー止めねじ	1
253-9108-01	Winding set screw 巻取りセット止めねじ	6
253-9112-01	Screw B タイト10	3
253-9412-03	Winding lever roller 巻上げレバーローラー	3
9691-2045-07	Phillips type tapping screw 十字穴付きタッピンねじ	3
9721-0150-13	Coupling washer 割ワッシャー	3

- Was the focus knob at correct setting?
 - Was shutter released smoothly?
 - Did outside temperature change rapidly?
 - If flash was used, was it within the working range?
 - Was monitor lamp pulsating before flash was fired?
 - Was the focus knob set correctly when the flash was used?
10. Photos are not clear or are bluish (when taken underwater)
- Camera-to-subject distance too far? [0.9 — 1.5m (3 — 5 ft.) is recommended.]
 - Was water clear?
 - If flash was used, was the light scattered by particles in the water?
 - Was focus setting compensated for? (3/4 actual distance)
11. Spots or bright spots on photos
- Light from the flash reflected by snow or particles in the water
 - Water drops or dust on the lens-cover glass
 - Bright source of light in the picture frame
12. Subject is not positioned correctly in photo
- Was subject within the bright frame?
 - If the subject was close to the camera, was it framed with the parallax correction marks?
 - If the Sportsfinder was used, was it positioned on the camera correctly and was the eye positioned properly?
13. Condensation in the finder, flash, or lens-cover glass
- Did the outside temperature change rapidly?
 - Was water dropped into the camera?
 - Is the back-cover O-ring seated properly?
14. Battery life is too short
- Was the exposure/function knob left at the flash position?
15. Unloading the film cartridge is difficult
- Was the film-advance operated past the point at the end of the film where  or  is seen in the film-data window?

IMPORTANT SAFEGUARDS

When using your camera, the specific cautionary notices in the owner's manual should always be observed and complied with, as well as basic precautions, including the following:

1. Read and understand all instructions.
2. Close supervision is necessary when the camera is used by or near children. Do not leave the camera unattended while in use.



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1.2 Objectives	2.2 Scope	3.2 Participants	4.2 Analysis
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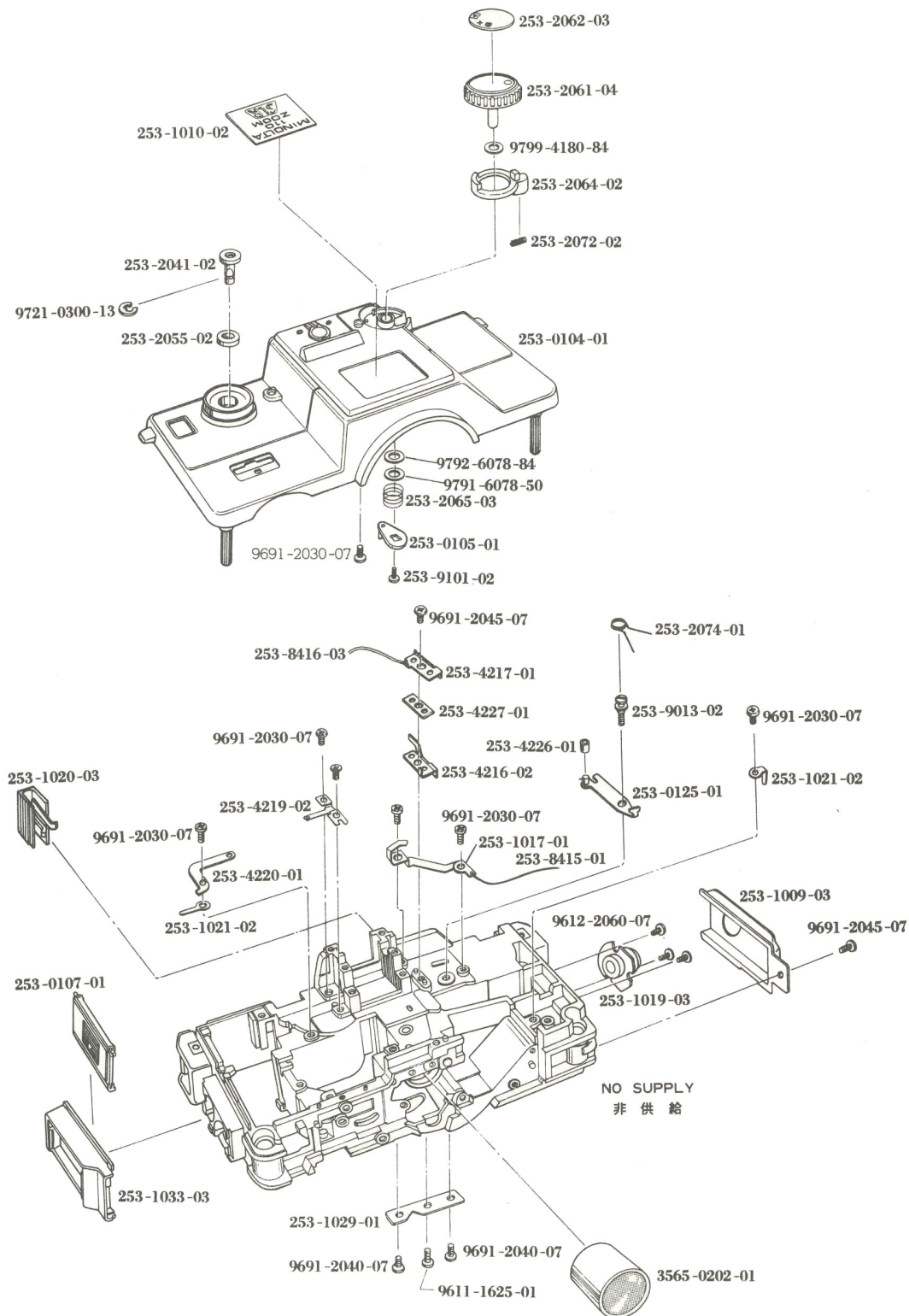


Flash range:	Type of film	Distance (above water)
	Color negative	
	ASA 100	0.8 — 4.0m (2.6 — 13 ft.)
	ASA 400	0.8 — 6.3m (2.6 — 20 ft.)
	Color reversal	
	ASA 64	0.8 — 2.7m (2.6 — 9 ft.)
	Black and white	
	ASA 125	0.8 — 5.3m (2.6 — 17 ft.)
Recycle time*:	Approx. 10 sec. with fresh alkaline-manganese cell, approx. 6 sec. with rechargeable nickel-cadmium cell; indication by pulsation of monitor and finder lamp	
Number of flashes*:	Approx. 180 with fresh alkaline-manganese cell, approx. 90 with nickel-cadmium cell	
	* As determined by Minolta's standard testing method. Actual performance will depend on type, brand, manufacturer's lot, age of batteries, and ambient temperature.	
Film advance:	Thumb-actuated lever; 52°	
Sealing:	By water-tight O-ring (maximum usable depth 5m)	
Dimensions:	53 x 72 x 190mm (2-1/16 x 2-13/16 x 7-1/2 in.)	
Weight:	355g (12-1/2 oz.) without cell	
Other:	High-visibility and buoyant ABS plastic housing; neon monitor lamp for flash, focus-symbol and flash-range tables on bottom	
Optional accessories:	Sportsfinder, neckstrap, carrying case and sportscase.	

5. To reduce the risk of electric shock, do not disassemble this camera, but take it to an authorized Minolta service facility when some service or repair work is required. Incorrect reassembly can cause electric shock when the camera is subsequently used.

SAVE THESE INSTRUCTIONS

MINOLTA 110 ZOOM CODE No. 253



Part No.	Part Name	Unit
部品番号	部 品 名 称	員数
253-0203-01	Shutter base plate set シャッター台板セット	1
253-0205-01	First gear set ガバナー 1 番車セット	1
253-0206-01	Second gear set ガバナー 2 番車セット	1
253-0207-01	S 3 contact lever set S 3 接片レバーセット	1
253-0209-01	Magnet pressure lever マグネット押下げレバーセット	1
253-0210-01	Second curtain set 後幕セット	1
253-0211-01	First curtain set 先幕セット	1
253-0213-01	Shutter curtain guide plate set シャッター幕案内板セット	1
253-0216-01	Second curtain stop lever set 後幕係止レバーセット	1
253-0252-01	Mirror operation base plate set ミラー駆動台板セット	1
253-0253-01	Return lever set リターンレバーセット	1
253-0254-01	Diaphragm operation lever set 絞り駆動レバーセット	1
253-0255-01	Diaphragm moving lever set 絞り連動レバーセット	1
253-2005-02	Shutter operation spring シャッター駆動スプリング	2
253-2007-02	Release operation plate spring レリーズ駆動板スプリング	1
253-2009-03	Release operation plate hook spring レリーズ駆動板フックスプリング	1
253-2010-02	Shutter curtain stopper シャッター幕ストッパー	1
253-2011-01	Light shield frame 遮光筒	1
253-2013-01	First gear axis ガバナー 1 番真	1
253-2014-01	First gear return spring ガバナー 1 番車戻しスプリング	1
253-2019-01	Packing piece 防音片	3
253-2021-02	Magnet core シャッターマグネット鉄芯	1
253-2022-04	Magnet coil シャッターマグネットコイル	1
253-2024-01	Magnet sticker シャッターマグネット吸着片	1
253-2026-02	First curtain stop lever spring 先幕係止レバースプリング	1
253-2032-02	Second curtain stop lever spring 後幕係止レバースプリング	1
253-2037-02	Mechanical shutter lever spring 機械シャッターレバースプリング	1
253-2048-02	Shutter stop lever シャッター係止レバー	1
253-2049-01	Shutter stop lever spring シャッター係止レバースプリング	1
253-2051-02	Second curtain signal lever spring 後幕信号レバースプリング	1
253-2068-02	B perceive lever バルブ検知レバー	1
253-2202-01	X contact lever spring X 接片レバースプリング	1
253-2209-01	X contact lever B isolation tube X 接片レバー B 絶縁チューブ	1
253-2210-03	X contact lever B spring X 接片レバー B スプリング	1
253-2502-01	Mirror operation lever ミラー駆動レバー	1
253-2503-01	Battery perceive lever バッテリー検知レバー	1
253-2504-03	Battery perceive lever spring バッテリー検知レバースプリング	1
253-2506-02	Return lever spring リターンレバースプリング	1
253-2508-02	Mirror stop hook spring ミラー戻り止めフックスプリング	1
253-2510-02	Diaphragm operation lever spring 絞り駆動レバースプリング	1
253-2513-02	Earth plate シャッターアース板	1
253-2515-03	Support lever spring バッテリー検知補助レバースプリング	1
253-4206-02	S 1 isolation tube S 1 絶縁チューブ	1
253-4207-02	S 2 & S 3 base plate S 2, S 3 基板	1
253-4208-01	S 2 contact A S 2 コンタクト A	1
253-4209-01	S 2 contact B S 2 コンタクト B	1
253-4210-03	S 3 contact S 3 コンタクト	1
253-4211-01	S 2 & S 3 isolation plate S 2, S 3 絶縁板	3
253-4215-02	S 3 contact lever spring S 3 接片レバースプリング	1
253-8413-03	Lead wire Black (45mm) 0.6φ 0.07φ/7 wires リード線黒(45mm)0.6φ 0.07φ/7芯	2
253-9001-02	Shutter stop lever set screw シャッター係止レバー止めねじ	1
253-9002-01	Return lever set screw リターンレバー止めねじ	1
253-9011-01	Shutter curtain guide plate set screw シャッター幕案内板止めねじ	1
253-9102-01	Diaphragm operation lever set screw 絞り駆動レバー止めねじ	1
253-9108-01	Winding set screw 巻取りセット止めねじ	2
253-9401-01	First curtain collar 先幕カラー	1
253-9405-01	Diaphragm operation lever base 絞り連動レバー座	1
9611-1625-01	Phillips type screw 十字穴付きなべ頭小ねじ	2
9611-1630-01	Phillips type screw 十字穴付きなべ頭小ねじ	1
9611-1635-01	Phillips type screw 十字穴付きなべ頭小ねじ	1
9611-1655-01	Phillips type screw 十字穴付きなべ頭小ねじ	2
9612-1650-01	Phillips type screw 十字穴付きなべ頭小ねじ	1
9615-1630-01	Phillips type screw 十字穴付き皿頭小ねじ	2
9721-0120-13	Coupling washer 割ワッシャー	2
9721-0150-13	Coupling washer 割ワッシャー	2
9792-1635-84	Washer 薄ワッシャー	1
9792-1840-40	Washer 薄ワッシャー	1
9792-2135-50	Washer 薄ワッシャー	1

3. Do not operate the camera if it has been dropped or damaged — until it has been examined by an authorized Minolta service facility.
4. To protect against electrical shock hazards, do not immerse the camera in water or other liquids while the camera's back cover is open. Also do not open the back cover while in or under the water, or while the camera is wet.

TROUBLE-SHOOTING GUIDE

Things to check if your camera does not operate properly

1. Film-advance lever won't operate
 - Has the film already been advanced?
 - Have all the pictures on the cartridge been taken?
2. Shutter can not be released.
 - Has the film-advance lever been completely cocked?
3. Low-light warning lamp does not light
 - Is battery installed correctly?
 - Is the battery dead?
4. Monitor lamp does not pulsate
 - Is battery installed correctly?
 - Is battery dead?
 - Has Exposure/Function control been set at flash position?
5. Flash does not fire
 - Was shutter released before monitor lamp came on?
 - Is the battery dead?
6. Back cover cannot be closed
 - Are both back-cover release knobs in "OPEN" position?
 - Is the back cover's O-ring attached correctly?
 - Is the back cover positioned correctly?
 - Has the back-cover connector strap gotten between the cover and the body?
7. Back-cover release tabs cannot be worked
 - Are the back-cover release knobs in the "CLOSE" position?
 - Is the back cover position properly?
 - Have the pins on the release tabs been bent?
8. Exposure/function and/or focus knobs are difficult to move
 - Water between the knobs and the body has become frozen
 - Dirt or sand has gotten between the knobs and body
 - Temperature is very low
9. Exposure and/or focus is not satisfactory
 - Is lens-cover glass soiled?
 - Was there water drops or condensation on the lens-cover glass?
 - Was exposure/function knob set correctly?

TAKING PICTURES UNDERWATER

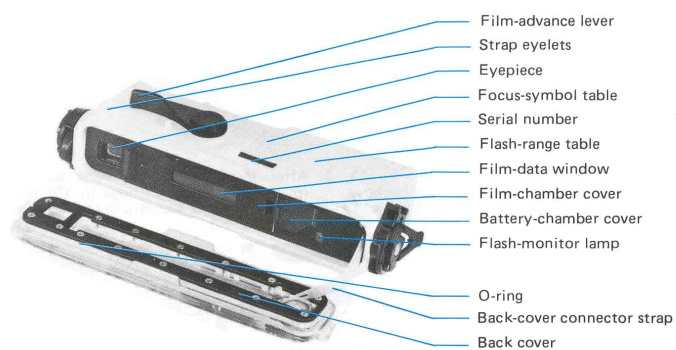
30 THE WEATHERMATIC-A'S WATER-TIGHT SEAL IS DESIGNED TO BE USED AT DEPTHS NO GREATER THAN 5M (15 FT.).

Focusing

The refractive index of water is greater than that of air. Thus, underwater subjects will appear to be closer and larger than they actually are. This also has the effect of increasing the focal length of the lens in your Weathermatic A and narrowing its field of view. For all practical purposes, however, as the camera's lens and your eyes are affected equally by refraction, they will "see" alike and underwater focusing is the same as on land. If it is easier to preset the lens focus out of the water, set the focus knob to a point that represents a distance which is approximately 25% closer than the focus-symbol setting for "on-land" shooting. For example, for underwater photography set focus at the "∪" symbol (0.9m or 3 ft.) instead of the mid-chest figure for an on-land distance of 1.2m (4 ft.).

Tips for taking pictures underwater

- Do not jump or dive into the water or swim while holding the camera or throw the camera into the water as impact with the water could damage the camera or break its water-tight seal and cause leakage.
- As visibility in water is limited by the amount of light penetrating its surface, the clarity of the water and the camera-to-subject distance, it is best to take underwater pictures as close to the surface and your subject as possible. This also improves the color and contrast of your subjects.
- For more life-like underwater pictures, set focus to "∪" symbol 0.9m (3 ft.) and use the flash. ASA 100 film is recommended for all underwater photography. The maximum effective flash range for underwater subjects is 2m (7 ft.).



Your new Minolta Weathermatic-A is the ideal do-anything, go-anywhere photographic traveling companion. It is just as at home in a backpack on top of a mountain or skiing down one as it is at the beach or around the pool.

Its rugged watertight construction and 110 format conveniences, such as drop-in cartridge film loading, built-in electronic flash, and compact size makes taking quality photos simple and easy in even the most adverse conditions.

Please read this manual carefully all the way through and follow the simple instructions for the best results and longest service with your camera. Then keep it for later reference as needed.

CARE AND STORAGE

- If operation is not as you think it should be, carefully restudy the applicable instructions or consult an authorized Minolta service representative.
- Never lubricate body parts.
- Never subject your camera to shock, high heat or harmful chemicals or gasses.
- Never put your camera on a hot surface such as sand, or keep it in the glove compartment or any other place in a motor vehicle or elsewhere in which it may be subject to relatively high temperatures.
- Always keep the O-ring clean, dry.
- Do not use alcohol or other chemical solvents to clean the camera or back-cover as they may damage the plastic structure. Use only clean fresh water.
- If the camera is not to be used for more than two weeks, the battery should be removed.
- If the camera is to be stored for a long period of time, keep it in a cool dry place away from dust or chemicals, preferably in an airtight container with a drying agent such as silica gel.

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MAINTENANCE OF O-RING

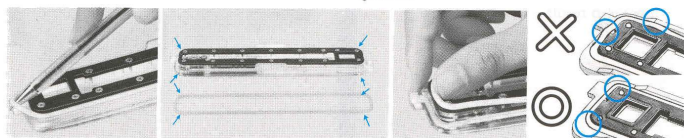
Your Weathermatic-A's ability to resist the elements and stay watertight depends on the condition of the back cover's O-ring. With proper care, it should be serviceable for approximately one year. Be sure to inspect the O-ring for cuts, tears, abrasion and fit each time the back cover is opened. If there is any sand or dirt on the inside of the back cover or O-ring, remove the O-ring as described below and wash both thoroughly in fresh running water. Then blot off excess moisture and allow them to air dry in subdued light, never in direct sunlight. If the O-ring is worn or stretched so that the back cover will not seat properly, the O-ring should be replaced.

Removing the O-ring

Insert the tip of a ball point pen or similar blunt object into the knotted end of the black retainer and carefully lift the O-ring out of the groove. Then being careful not to stretch the O-ring, remove it from the back cover.

Installing the O-ring

Making sure to carefully align the corners of the O-ring with those of the back cover's black O-ring retainer, fit one of the short sides of the O-ring over the black retainer and into the groove on one end of the back cover. Then carefully lay the O-ring in the space between the clear outer cover and the black retainer. With your thumbs on the exposed corners of the O-ring, roll the O-ring over the black retainer and into the groove.



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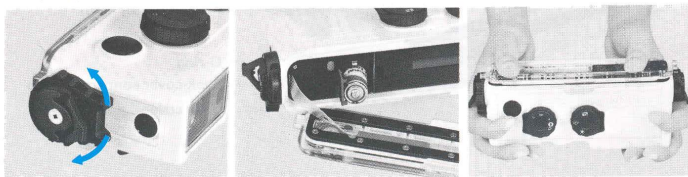
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SUMMARY OF OPERATION

8 The steps pictured on this page outline use of your Weathermatic-A in normal "on-land" conditions. They give a general idea of how very easy it is to get properly exposed pictures with this camera and are keyed to corresponding sections of this manual for ready reference.

1. Make sure camera is *completely* clean and dry.
2. Lift back-cover release tabs, twist back-cover release knobs and open back cover (p. 10).
3. After installing and checking battery (p. 13), insert film cartridge (p. 15), and press back cover securely in to place and lock it (p. 12).



In snow and cold weather



Batteries by nature tend to decrease in capacity as the temperature goes down. Though considerably better than sealed carbon-zinc in this respect, Ni-Cd Batteries and alkaline batteries are no exception.

If an old battery is used at temperatures below 0°C (32°F), the flash may not work and the warning light may not come on. Thus it is recommended that the battery be fresh if the camera is to be used in cold weather. (For taking pictures without a battery, see the note on p. 23).

Though the mechanical operation should be satisfactory down to considerably lower temperatures, it is best to keep the camera in a warm inside pocket when not taking pictures and try to minimize the amount of time it is subject to cold temperatures. This also applies to carrying extra cartridges of film.

When entering a warm building from the cold, allow your Weathermatic-A to warm up to room temperature and wipe it completely dry before opening the back cover to change the film or battery.

Also, be sure the camera is wiped completely dry before going into cold outdoors as water droplets could freeze under camera controls and possibly damage the camera.

USING YOUR WEATHERMATIC-A IN VARIOUS WEATHER CONDITIONS AND PICTURE TAKING SITUATIONS

On or near the water

Always be sure the camera's lens-cover glass is clean and dry before taking pictures. Water droplets left on the glass will cause picture blur and spots caused by water drying on its surface may reduce picture contrast. If this is not practicable, as when taking pictures near or on the surface of the ocean, lake or swimming pool, dip the camera into the water for an instant before taking the picture. This spreads the water evenly over the entire surface of the lens-cover glass and provides an effective way to obtain good results.

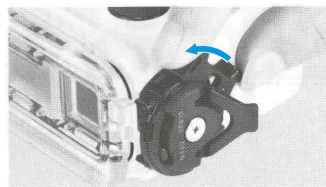
Always make sure the camera is clean and wiped dry before opening the back cover and that your hands, face, hair, etc. are dry before loading and unloading film.

NEVER OPEN THE BACK COVER IN PLACES WHERE WATER DROPLETS MAY FALL OR BE SPLASHED INTO THE CAMERA.

After using the camera in or near chlorinated or salt water, rinse the outside of the camera **(WITH THE BACK COVER ATTACHED AND SEALED)** thoroughly with fresh running water to remove any salts or residue. Then wipe it dry with a clean soft cloth. **NEVER USE HEAT TO DRY THE CAMERA.**

knobs. Then turn the back-cover release knobs counterclockwise in the direction of the arrows until the back cover opens.

2. Lift the back cover away from the camera body. You can let the back cover hang from the back-cover connector strap or remove it completely for cleaning by disengaging the strap from the pin on the back cover.



NOTE

Be sure never to crease or twist the connector strap.

ONCE THE BACK COVER IS OPEN THE CAMERA IS NO LONGER WATERTIGHT AND MAY BE DAMAGED IF WATER OR SAND ENTERS THE CAMERA.

