MIRANDA

AUTO SENSOREX EE

SERVICE MANUAL

AIC Photo, Inc.
Carle Place, New York 11514

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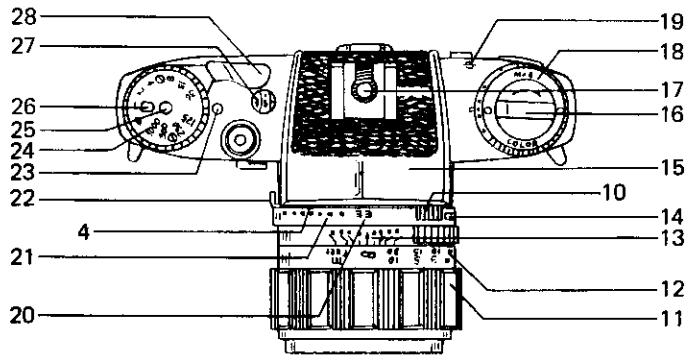
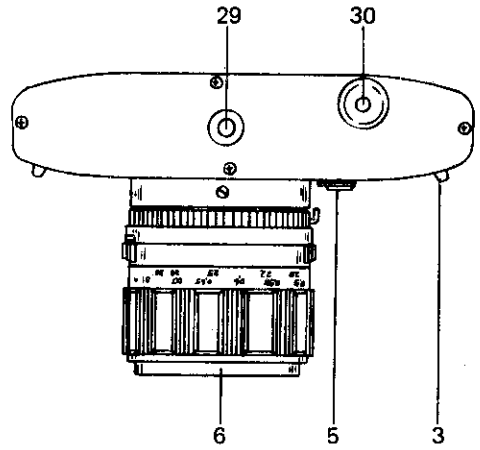
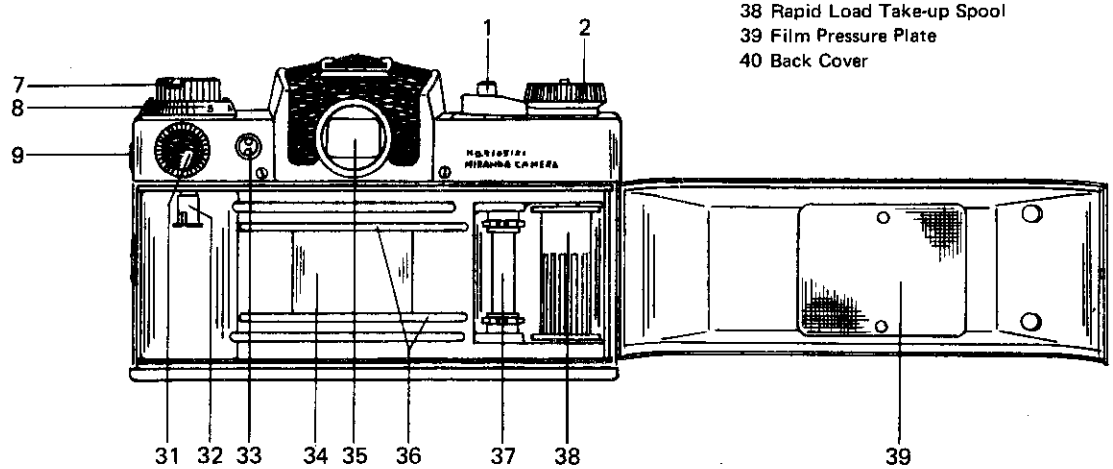
EXTERNAL PARTS DIAGRAMS







NAME OF PARTS

1 Shutter Release Button
2 ASA Film Speed Setting Ring
3 Neckstrap Eyelet
4 Lens Positioning Mark
5 Self-Timer
6 Standard Lens
7 Film Rewind Knob (Back Cover Release)
8 CdS Meter Switch
9 Flash Terminal
10 Preview Lever
11 Focusing Ring
12 Distance Scale
13 Depth of Field Scale
14 EE Lock Button
15 Pentaprism Viewfinder
16 Film Rewind Crank
17 Accessory Shoe (w/Hot Shoe)
18 Film Memory Dial
19 Film Plane Index
20 EE Mark
21 Aperture Scale
22 Lens Locking Button
23 Shutter Speed Index (w/Film Wind Indicator)
24 Shutter Speed Dial
25 EE-overriding Button
26 ASA Film Speed Dial
27 Automatic Film Counter
28 Film Advance Lever
29 Tripod Socket
30 Rewind Release Button
31 Mercury Battery Compartment
32 Film Rewind Shaft
33 Viewfinder Release Button
34 Shutter Curtain
35 Viewfinder Eyepiece
36 Film Guide Rail
37 Sprocket Wheel
38 Rapid Load Take-up Spool
39 Film Pressure Plate
40 Back Cover

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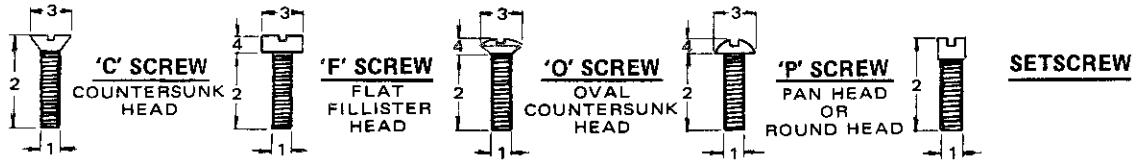
SECTION 1 EXPLODED DIAGRAMS, ASSEMBLIES, AND PARTS LIST

EXPLANATION OF MIRANDA CAMERA NOMENCLATURE

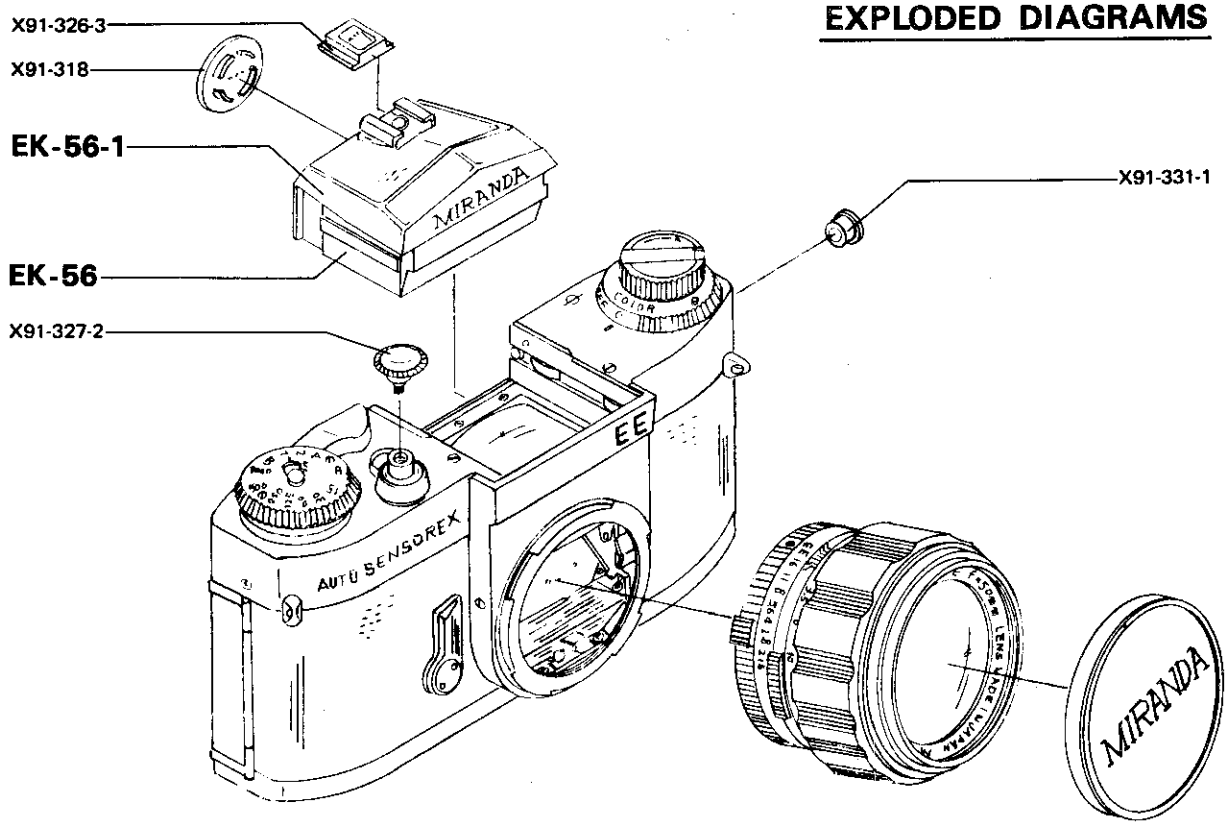
1—DIAMETER OF SCREW SHAFT, *2*—LENGTH OF SCREW SHAFT, *3*—DIAMETER OF HEAD, *4*—THICKNESS OF HEAD



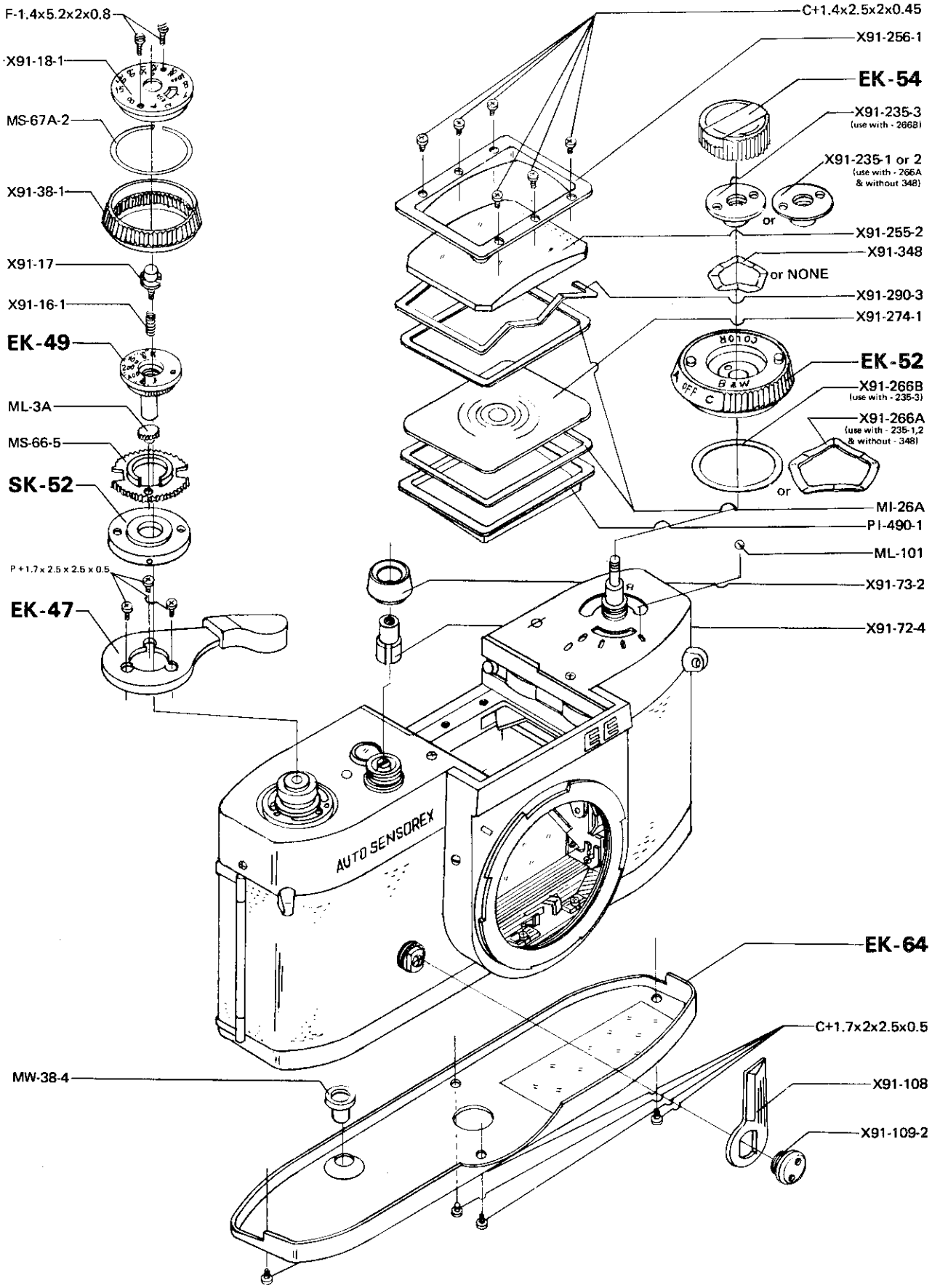
SCREW DESIGNATION—Screws are usually noted as in the example, U-1x2x3x4. The first figure is a letter which tells what type of screw it is, as illustrated above. Two exceptions are B and S which refer to the material the screw is made of; brass and steel, respectively. Following the letter will be a '—', '+', or no sign.' The '—' refers to the standard screw head which has a single groove, and is turned by using a flat blade screwdriver. A '+' or no sign refers to a Philips (cross-grooved head) screw. As part of the ongoing production upgrading, '—' screws are being replaced by '+' screws where possible. When camera repair is necessary we recommend replacing '—' screws with '+' screws of the same dimensions. The numbers separated by 'x' refer to the dimensions of the screws in mm, as illustrated above.

PART DESIGNATION—Miranda camera part numbers are usually composed of two letters (except X91) followed by a few numbers. X91 refers to Auto Sensorex EE unique parts. The other two-letter, 1—3 place series numbers refer to the camera model the part originated with. On two-letter coded parts, the second letter refers to the location of the part in the camera, as follows: B-body, C-counter, F-flash, I-mirror housing, L-meter, P-prism, Q-mirror quick-return, S-shutter, T-self-timer, W-winding. The exception is K-assembly.

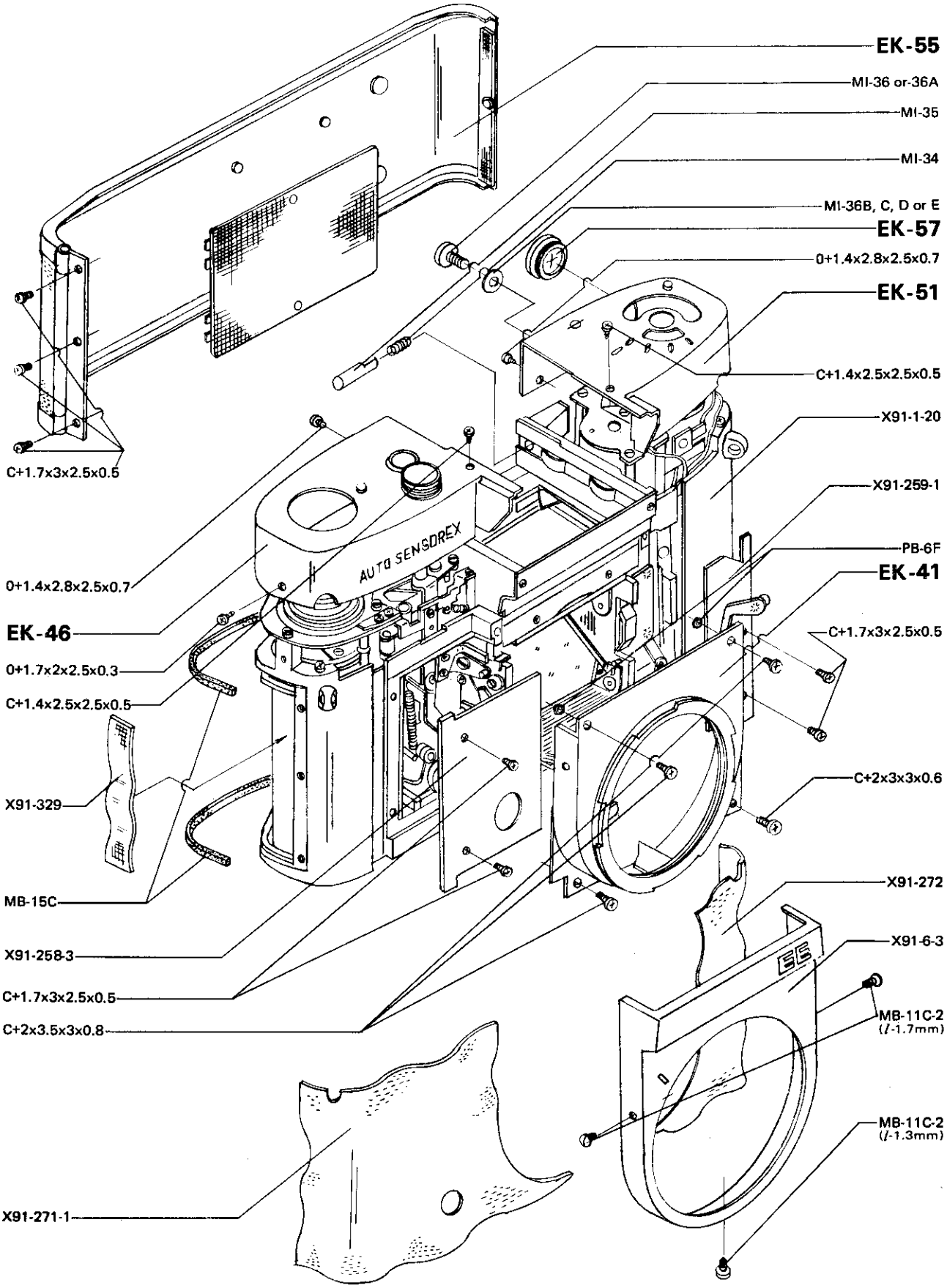
EXPLODED DIAGRAMS



SECTION 1 EXPLODED DIAGRAMS, ASSEMBLIES, AND PARTS LIST



SECTION 1 EXPLODED DIAGRAMS, ASSEMBLIES, AND PARTS LIST



SECTION 4 MALFUNCTION SYMPTOMS & REPAIR GUIDE

QUICK-REFERENCE REPAIR GUIDE

MALFUNCTION SYMPTOM	POSSIBLE CAUSES	REPAIR/SERVICE	REFERENCE PAGES
8. EXPOSURE METER SYSTEM 8.3 NEEDLE STICKS AT EITHER END OF F/STOP SCALE	Needle catches in either of ceramic stoppers inside meter movement (EK-65)	Take out meter movement (EK-65). —If ceramic stopper is cracked, replace meter movement (X91-277-5). —If ceramic stopper is tilted, straighten it.	D5 (9) A23 (10) R24 (8D)
8.4 NEEDLE MOVES WHEN CAMERA TILTED OR HELD VERTICAL	a. Meter (EK-65) needle bent	a. Replace meter (X91-277-5).	D5 (9) A23 (10)
	b. Counterbalance inside meter (EK-65) defective	b. Replace meter (X91-277-5).	D5 (9) A23 (10)
8.5 UNSTABLE METER INDICATION	a. Defective variable resistor(s) (M6-2A-15K/C6-2A-15K)	a. Replace resistor(s).	D3 (4) A27 (10.3f)
	b. Weak contact between switch contact (X91-261-3 of EK-52) and meter switch printed circuit (EK-60)	b. Bend contact (X91-261-3) down.	15 D2 (3) A24 (10.1) R24 (8E)
	c. Defective wire/soldering	c. Check wiring throughout meter circuitry.	A24 (10.1)
8.6 UNSTABLE METER INDICATION & WIDE INITIAL FLUCTUATION OF NEEDLE WHEN SWITCHING SHUTTER SPEED	Insufficient pressure of spring (on top of meter drum) against top insulation cover	Remove top insulation cover and gently bend mid-contact point of spring up so it makes better contact with top insulation cover.	D2 (3) R24 (8F)
8.7 DOESN'T OPERATE (NO RESPONSE WHEN ON)	a. Dirt around needle	a. Carefully clean meter (EK-65). If still no response, replace meter (X91-277-5).	D5 (9) A23 (10)
	b. Broken wire/soldering	b. Check meter circuitry.	A24 (10.1)
	c. Defective/broken soldering on end(s) of spring on top of meter drum, under top insulation cover	c. Remove meter (EK-65) top insulation cover, and resolder the end(s) of the spring.	D2 (3) R24 (8F)
8.8 ASSORTED CdS PROBLEMS	Defective wiring of CdS parts	See Repair Instructions.	R21 (8B)

SECTION 4 MALFUNCTION SYMPTOMS & REPAIR GUIDE

QUICK-REFERENCE REPAIR GUIDE

MALFUNCTION SYMPTOM	POSSIBLE CAUSES	REPAIR/SERVICE	REFERENCE PAGES
8. EXPOSURE METER SYSTEM 8.9 UNDER-EXPOSURE WARNING MARK DOESN'T MOVE	a. Defective f-number adjustment ring (X91-204-3) movement/operation	a. —First replace three retainers (X91-205-1) to adjust ring (X91-204-3) movement. —If still defective replace the f-number adjustment ring (X91-204-3).	14 (EK-41) D4 (7) A25 (10.3a & b)
	b. U-x coupling pin on meter (EK-65) not making contact with the under-exposure warning lever-C assembly (EK-43)	b. Adjust the u-x coupling pin on meter (EK-65) so it makes proper contact.	D5 (9) A23 (10.2d-1)
	c. Poor contact between f-number adjustment ring (X91-204-3) bottom finger and meter interlocking lever (EK-48)	c. Adjust height of meter interlocking lever-C (X91-56-1) by bending or in extreme case replace entire meter interlocking lever (EK-48).	14 (EK-41 & EK-48) D3 (4) D9 (15.6) A11 (2.1i) A23 (10)
8.10 INACCURATE U-X WARNING MARK POSITION	a. Incorrect position of u-x warning lever-B assembly (EK-42)	a. Adjust lever-B assembly (EK-42) position at f3.5 (ie. with tool J-34 on lens mount) and secure u-x warning lever-B stud (X91-208C) position by applying chloroprene cement around stud.	D2 (3) A25 (10.3a & b)
	b. Sluggish u-x mechanism operation	b. Check mechanism couplings-X91-204-3 →X91-206-1→X91-208A-1(EK-42) →EK-43→EK-65 coupling pin.	D4 (7) A23 (10.2b-1)
8.11 LENS ON CAMERA SET AT EE BUT LENS DIAPHRAGM DOESN'T ADJUST	a. Manual lever (EK-17) doesn't make contact with lens EE-lever (ZG137-20-3)	a. Bend lens EE-lever (ZG137-20-3) outward so it makes better contact with camera manual lever (EK-17).	D7 (11) See Lens Supplement
	b. Manual lever (EK-17) loose	b. Install manual lever holder (X91-349) on mirror housing left.	10 D3 (6) D4 (7)
9. ASA & SHUTTER SPEED DIALS 9.1 MOVEMENT OF ASA DIAL NOT SMOOTH	a. ASA dial (EK-49) and shutter speed dial (X91-18-1) binding	a. Check shutter speed dial (X91-18-1). —If bent, straighten/replace. —If bottom surface rough, smooth with oilstone.	D1 (2) A30 (11.2d)
	b. ASA dial (EK-49) not symmetrical	b. Replace ASA dial (EK-49).	D (2) A30 (11.2a)
	c. Shutter dial base assembly (SK-52) incorrectly mounted	c. —Remount assembly (SK-52) correctly. —Check lever base (EK-35) not bent.	D (2) A29 (11.1c)

SECTION 4 MALFUNCTION SYMPTOMS & REPAIR GUIDE

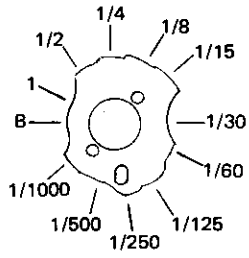
QUICK-REFERENCE REPAIR GUIDE

MALFUNCTION SYMPTOM	POSSIBLE CAUSES	REPAIR/SERVICE	REFERENCE PAGES
10. SYNCHRONIZATION MECHANISM 10.1 FLASH ISN'T TRIGGERED (X AND FP)	a. (X & FP) Incomplete circuit	a. Check X- and FP-contact circuits for disconnected or broken wires.	A24 (10.1)
	b. (X only) Poor/no contact between X--synch.-contact-A (X91-195) and X/FP-synch.-contact-B (X91-196-2) when X-synch.-contact assembly (EK-10) depressed by shutter	b. Bend/replace contacts as necessary.	10 D9 (15) R24 (10A)
	c. (FP only) Poor/no contact between X/FP-synch.-contact-B (X91-196-2) and X/FP-ground-contact (X91-197) when FP-contact lever (X91-189) depressed by mirror	c. Bend/replace contacts and/or lever as necessary.	10 D9 (15) R24 (10A)
	d. (FP only) Mirror action sluggish causing FP-contact lever (X91-189) to act slowly	d. Check resiliency of diaphragm lever spring (X91-136-4) and clearance of mirror assembly (EK-9).	D7 (11) 8 R23 (1C)
10.2 FLASH TRIGGERED IMMEDIATELY	a. Insulation plates wet/faulty	a. Dry/replace insulation plates.	10 D9 (15)
	b. Contacts touching	b. Bend contacts to separate them.	10 D9 (15) R24 (10A)
10.3 PHOTOS PARTIALLY MASKED	a. X-contact base (EK-32) incorrectly positioned so that X-contacts, A(X91-27-2) and B(X91-29), are not separated when the shutter speed is set at 1/60 sec.	a. Correct the position of X-contact base (EK-32) and check its compatibility with film winding lever base (EK-35).	D9 (14.7) A11(2.1e & f)
	b. 1/60 second shutter speed too fast	b. Decrease the contact surface of the governor cam (MS-38) by pushing 1/60 cam (MS-38-5) finger inward or filing down the 1/60 cam (MS-38-4) section.	13 D1 (2) A29 (11) R13 (1A)
	c. Time-lag in X-contact	c. –If flash occurs too soon (1st curtain in picture format) increase the gap between X/FP-synch.-contact-B(X91-196-2) and X-synch.-contact-A(X91-195). Make sure X-synch.-contact assembly (EK-10) does not extend more than 0.8 mm beyond the mirror housing. –If flash occurs too late (2nd curtain in picture format) decrease the gap between two contacts (X91-195/X91-196-2). –Check X-synch.-contact assembly (EK-10) position.	R24 (10A)

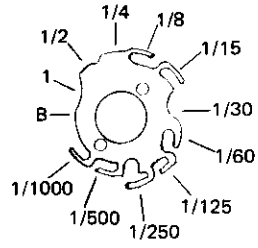
SECTION 4 MALFUNCTION SYMPTOMS & REPAIR GUIDE

NUMBER REPAIR INSTRUCTION SUBJECT

1A (1.1d, 1.2c) **SHUTTER**
ALTERING CAM SHAPE



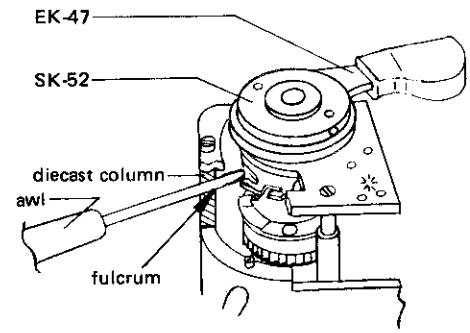
MS-38-4



MS-38-5

1A-1 Using an electronic shutter tester, each speed point on the shutter governor cam (from 1 to 1/1000 second) is checked for accuracy. Usually if the 1/15, 1/60 and 1/1000 second points are accurate, the other eight positions in the above range will also be correct. There are two possible shutter governor cam types present in this camera; MS-38-4, an irregular-shaped plate, and MS-38-5, a plate with seven fingers. Although both are equally accurate, the latter facilitates easier fine adjustment as seen below.

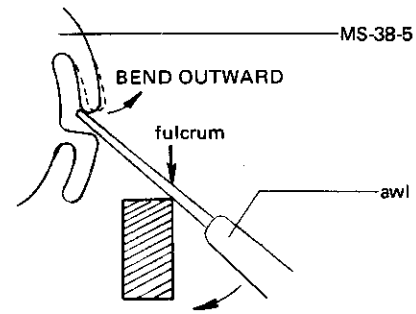
1A-2 Besides an electronic shutter tester, have ready a fine file, a blunted awl (or similar tool), and a needle-or blunt-nosed pliers



1A-3 Remove the right top cover (EK-46) as described in Section 2 Item 2 on page D1. Then reattach the film advance lever (EK-47) and the shutter dial base assembly (SK-52).

1A-4 When the shutter speed is too slow the contact surface at the respective cam position (see illustration at right) must be increased. The irregular-shaped cam (MS-38-4) is adjusted by pressing the section with a pair of pliers. This is done gradually, checking each small adjustment with the shutter tester.

1A-5 To increase the contact surface on the fingered cam (MS-38-5), bend the respective finger outward. This is done by placing a blunted awl. small screwdriver, or similar tool into the cam slot as shown at right, and pushing the awl in towards the camera body using the front outer edge of the diecast column as the fulcrum. Both the 1/30 and 1 second positions are also adjusted gradually, but in the manner described in 1A-4. Note that all the positions lie under a notch on the shutter dial click plate (MS-40-5) usually covered with lubricant.



INCREASE CONTACT SURFACE

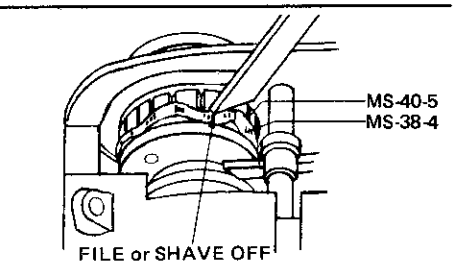
SECTION 4 MALFUNCTION SYMPTOMS & REPAIR GUIDE

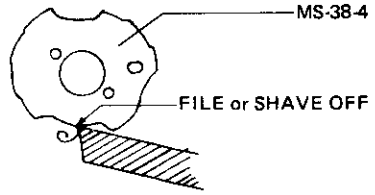
NUMBER	REPAIR INSTRUCTION SUBJECT

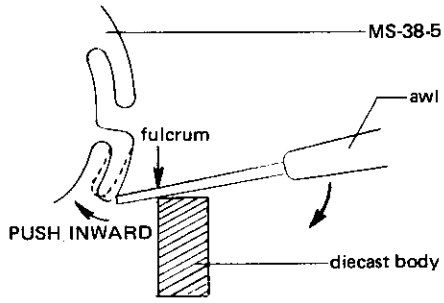
1A **SHUTTER**
ALTERING CAM SHAPE

1A-6 When the shutter speed is too fast the contact surface at the respective cam position must be decreased. The irregular-shaped cam (MS-38-4) is adjusted by filing, or, using a sharpened screwdriver, by shaving, the respective position.

1A-7 The fingered cam (MS-38-5) positions are decreased by pushing the respective finger inward. Place the blunted awl between the cam finger and the inner edge of the diecast column, pull the handle towards the column. As in all the above cases, adjustment is done in gradual steps, checking with a shutter tester after each small change.







DECREASE CONTACT SURFACE

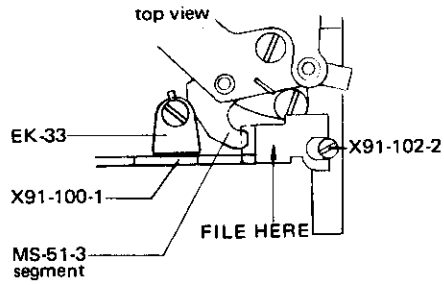
1B (1.12, 1.13) **SHUTTER**
'B' LEVER ADJUSTMENT

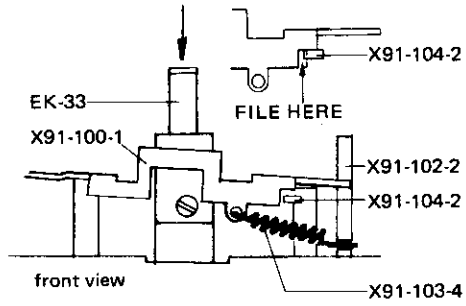
1B-1 In order for the 'B'-lever (X91-100-1) to operate properly it must be correctly positioned and tensioned.

1B-2 Check that the 'B'-lever spring (X91-103-4) is engaged securely, and that it hasn't lost its resiliency.

1B-3 The 'B'-lever (X91-100-1) tip should move smoothly up and down its guide post (X91-102-2). At the same end the 'B'-lever should clear the shutter governor (MS-51-3) segment gear as the lever moves down. If necessary, file a bit of the lever off until there is adequate clearance.

1B-4 Make sure the 'B'-lever also rests on its stopper plate (X91-104-2) properly as shown at right. File off a portion of the lever edge if necessary.





SECTION 4 MALFUNCTION SYMPTOMS & REPAIR GUIDE

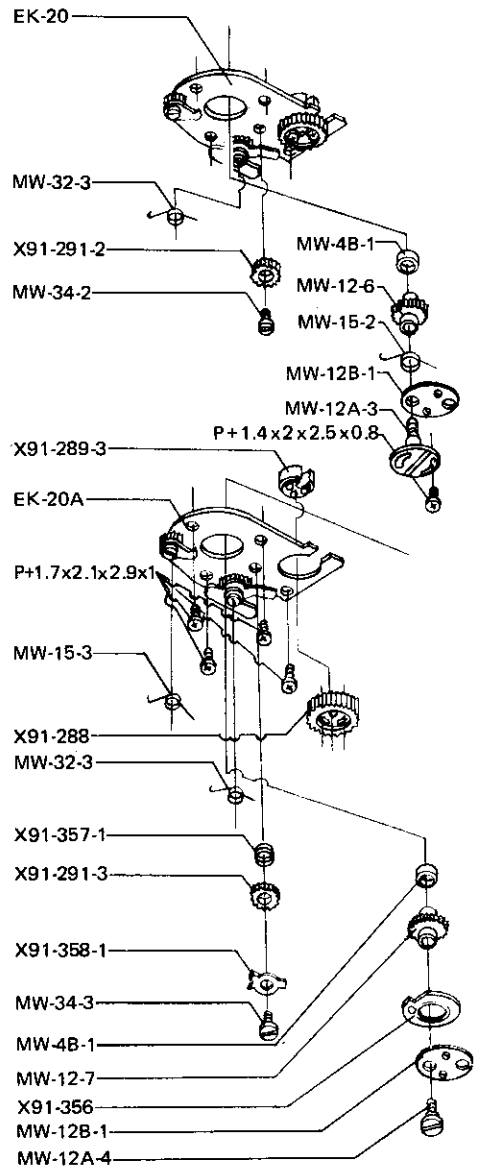
NUMBER REPAIR INSTRUCTION SUBJECT

2A (2) **WINDING & ANTI-REVERSE MECHANISMS**
ANTI-REVERSE MECHANISM MODIFICATION

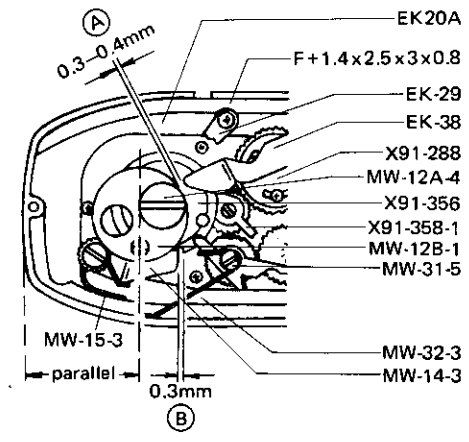
2A-1 If the lower shutter base plate assembly (EK-20) has to be removed to replace the safety cam with one having a larger slot (X91-289-3), and the anti-reverse mechanism must be modified as explained on page A4 (1.8d-1) then EK-20 must first be modified to EK-20A.

2A-2 Parts needed, discarded, or replaced are listed below, and illustrated at right or on page 12 (EK-20 & EK-20A).

NEED	REMOVE & DISCARD	REMOVE & SAVE
MW-12-7	MW-12-6	MW-12B-1
MW-12A-4	MW-12A-3 with P + screw	MW-32-3
MW-13-3	MW-13-2	
MW-14-3	MW-14-2	
MW-14A-3	MW-14A-2	
MW-15-3	MW-15-2	
MW-34-3	MW-34-2	
X91-291-3	X91-291-2	
X91-356		
X91-357-1		X91-288
X91-358-1		with
(X91-289-3)		3 P + screws



2A-3 Remove the anti-reverse eccentric collar (MW-13-2) and the anti-reverse claw-A (MW-14-2) by unscrewing their retainer (MW-14A-2). In their place attach the replacement pieces (MW-13-3, MW-14-3, MW-15-3, and MW-14A-3). EK-20 has now become EK-20A.



2A-4 Take off the P + screw attached to the lower spool gear retainer (MW-12A-3), and then unscrew the retainer. Lift off the lower spool gear (MW-12-6), the anti-reverse claw-A spring (MW-15-2), and the mirror setting cam (MW-12B-1).

SECTION 4 MALFUNCTION SYMPTOMS & REPAIR GUIDE

NUMBER	REPAIR INSTRUCTION SUBJECT

2A **WINDING & ANTI-REVERSE MECHANISM**
ANTI-REVERSE MECHANISM MODIFICATION

2A-5 Remove the intermediate gear (X91-291-2) by unscrewing its retainer (MW-34-2). Replace these parts with (in order) the intermediate gear spring (X91-357-1), the intermediate gear (X91-291-3) after a small amount of high viscous grease has been applied to both top and bottom, the film winding anti-reverse claw-B (X91-358-1), and the intermediate gear retainer (MW-34-3).

2A-6 Temporarily attach the safety cam (X91-289-3) and safety gear (X91-288) to the assembly (EK-20A) using only one P + 1.7 x 3 x 2.5 x 0.5 screw.

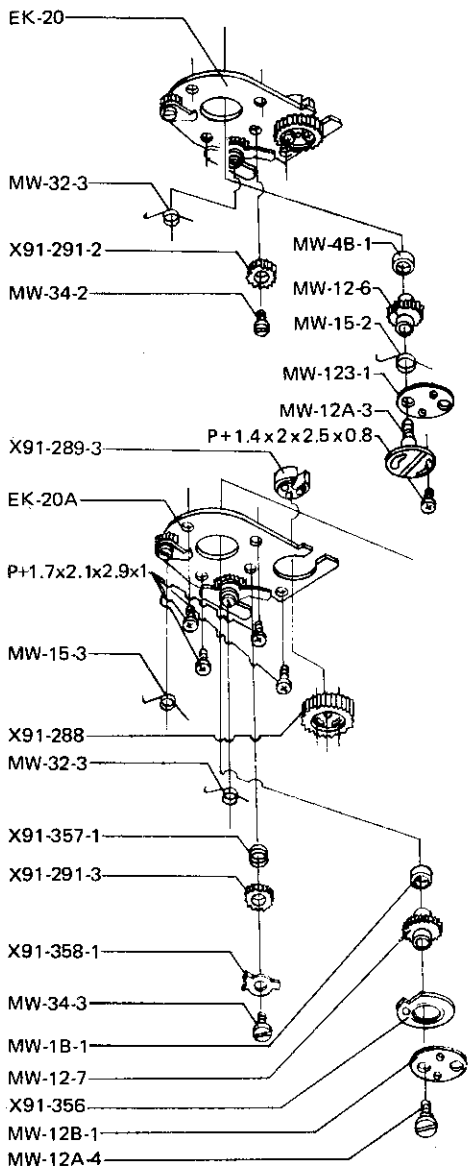
2A-7 Secure the lower shutter base plate assembly (EK-20A) to the camera body with the four screws (P + 1.2 x 2.1 x 2.9 x 1).

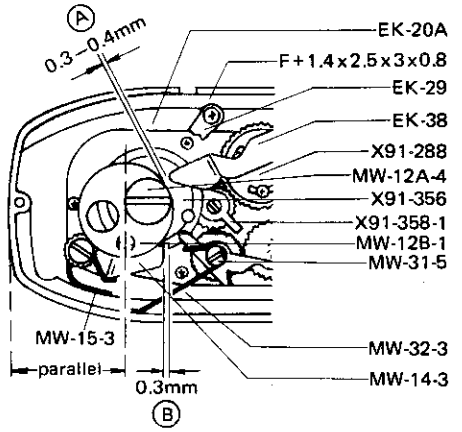
2A-8 Insert the lower spool gear (MW-12-7) long sleeve into the lower spool shaft gear collar (MW-4B-1) through the large hole on the assembly (EK-20A). The film winding anti-reverse cam (X91-356), with the beveled side facing up, is placed on the lower spool gear (MW-12-7) short sleeve. Make sure the film winding anti-reverse claw-A (MW-14-3) is sitting in the notch in the anti-reverse cam (X91-356), and then tension the claw-A spring (MW-15-3).

2A-9 Check that the claw-B (X91-358-1) is correctly positioned, then perform Items 1.8d-5 thru 1.8f on page A5. Continue with Item 2.3c on page A11. After Item 2.3e on page A12 reinstall and tension the rewind button holding lever spring (MW-32-3) on the gear shaft (MW-31-5).

2A-10 Cock and release the shutter at least six times to make sure that the safety cam (X91-289-3) is properly positioned, and clearances Ⓐ and Ⓑ are correct.

2A-11 Finish with Item 1.8i on page A5.





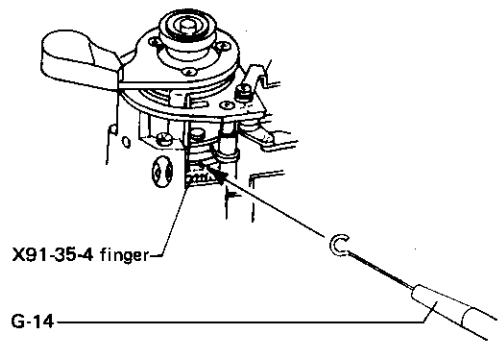
SECTION 4 MALFUNCTION SYMPTOMS & REPAIR GUIDE

NUMBER	REPAIR INSTRUCTION SUBJECT

2B (2.3c) **WINDING & ANTI-REVERSE MECHANISM**
REENGAGING WINDING CLAW SPRING

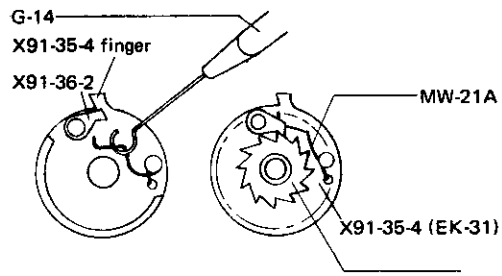
2B-1 The winding claw spring (MW-21A) can be reengaged by disassembling and then reassembling the winding mechanism as described on page D8 (14) and A10 (2.1).

2B-2 A quicker, but more challenging (requiring a few tries) method is to catch the spring (MW-21A) with the spring hook (G-14), and then maneuver the spring into the groove in the film winding claw (X91-36-2).



2B-3 Cock the shutter, but release the film advance lever back only slightly so that the winding claw base (X91-35-4) finger is in the position shown at right. Look under the claw base, and the spring (MW-21A) and claw (X91-36-2) can be seen.

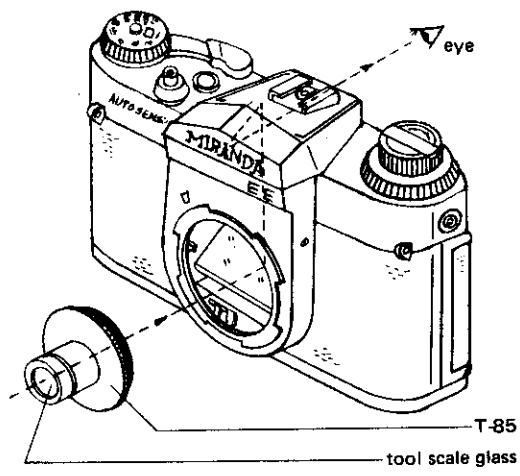
2B-4 While holding the advance lever in place, insert the spring hook (G-14), and try to catch the spring (MW-21A). After catching the spring push the film winding claw (X91-36-2) in so that it gears with the film winding ratchet gear (X91-34-1). Now carefully guide the spring back into the mechanism so that the winding claw spring (MW-21A) sits in the groove in the film winding claw (X91-36-2). Carefully extricate the spring hook (G-14). If unsuccessful, try again until the spring is reengaged properly.



5A (5.3, 5.4) **MIRROR MECHANISM**
ADJUSTING MIRROR TO 45° ANGLE

5A-1 Mirror angle adjustment is related to the field of view, and is controlled by the mirror position adjusting lever (X91-163-1) and mirror stopper-A (X91-157-3).

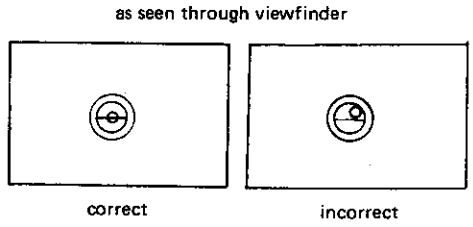
5A-2 Remove the lens, and screw the mirror 45° angle adjustment tool (T-85) into the lens mount assembly (EK-41). When seen through the viewfinder, the small black ring on the tool scale glass should be in the center of the viewfinder micro-split ring, as shown on the next page.



SECTION 4 MALFUNCTION SYMPTOMS & REPAIR GUIDE

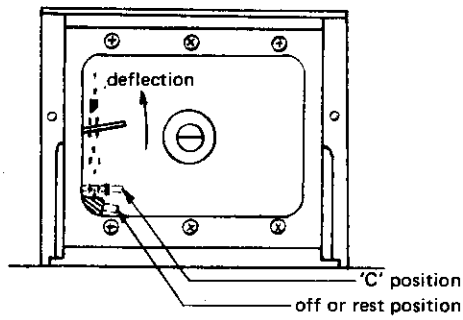
NUMBER	REPAIR INSTRUCTION SUBJECT

5A MIRROR MECHANISM
ADJUSTING MIRROR TO 45°ANGLE



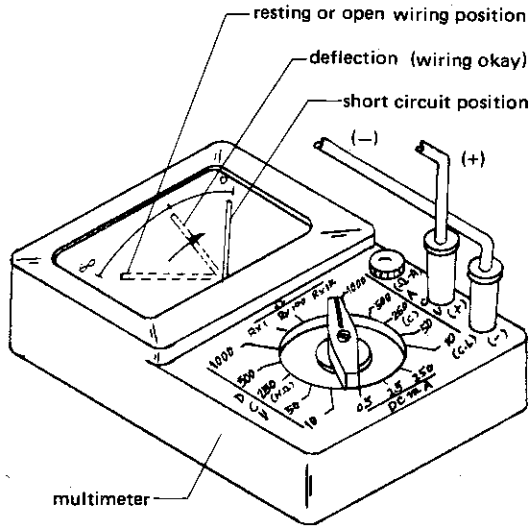
5A-3 If the black ring is incorrectly positioned read page A15. Horizontal movement of the mirror is controlled by mirror stopper-A (X91-157-3) and its eccentric adjusting screw (X91-162-2). Vertical movement of the mirror is controlled by the mirror position adjusting lever (X91-163-1) and its adjusting eccentric screw (X91-283-1).

8A EXPOSURE METER SYSTEM
(8) METER TROUBLESHOOTING



8A-1 Remove the lens, and set the shutter speed at the 1/4 second position. Move the CdS meter switch from 'OFF' to 'C' (battery check), 'A' (average), and 'S' (spot). The meter needle should move to the appropriate positions.

8A-2 If the meter needle remains at the bottom of the aperture scale remove the battery and check it with a voltmeter or multimeter. The voltage should be within 1.3 to 1.33 volt range. When the battery voltage is less than 1.3 V replace it.



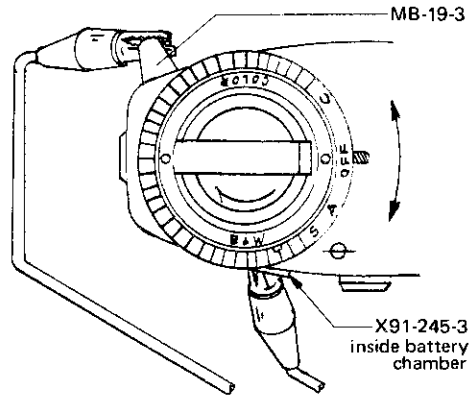
8A-3 The wiring of the meter circuit (schematic drawing on page A24). is checked in the remaining steps. When the multimeter needle points to 'O', shorting is indicated. An '∞' reading indicates open wiring. Note that '∞' is also the resting position of the multimeter needle.

SECTION 4 MALFUNCTION SYMPTOMS & REPAIR GUIDE

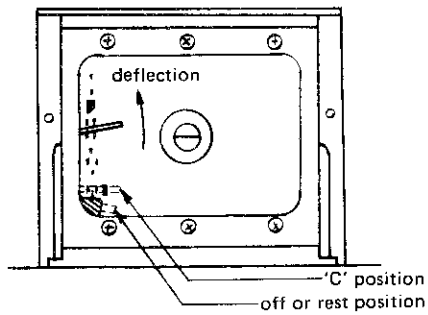
NUMBER	REPAIR INSTRUCTION SUBJECT

8A **EXPOSURE METER SYSTEM**
METER TROUBLESHOOTING

8A-4a Set the multimeter at the 1 KΩ range. Remove the battery; attach the plus (+) prod to the contact (X91-245-3) inside the chamber, and the minus (–) prod to one of the neckstrap eyelets (MB-19-3).

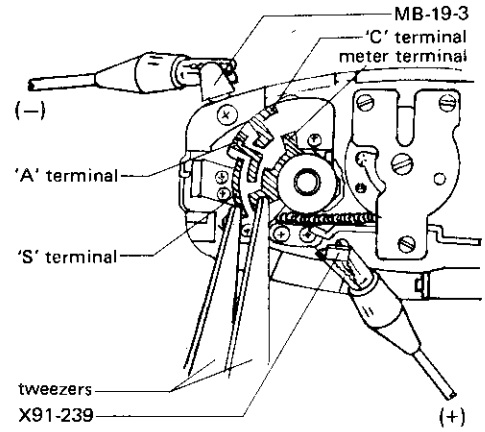


8A-4b Turn the CdS meter switch from the OFF position to 'C' (battery check). The multimeter needle should deflect towards the middle of the scale, and the meter needle should point to about '1.4'. Check 'A', then 'S', and note that the multimeter needle should deflect further right each time, and the meter needle should swing up towards '16'.



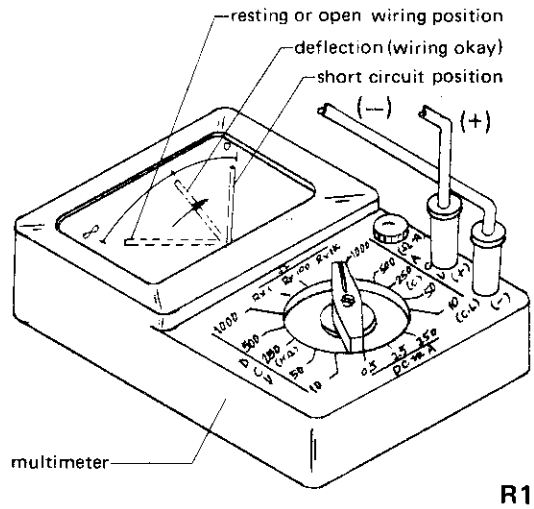
8A-4c If the exposure meter needle doesn't move up check whether shorting or open wiring is indicated on the multimeter scale.

8A-4d If all the previous steps have indicated no problem, check that the battery cap is not loose (ie. makes proper contact with the battery) when it is reinstalled, and that the chamber contact (X91-245-3) makes adequate contact with the battery.

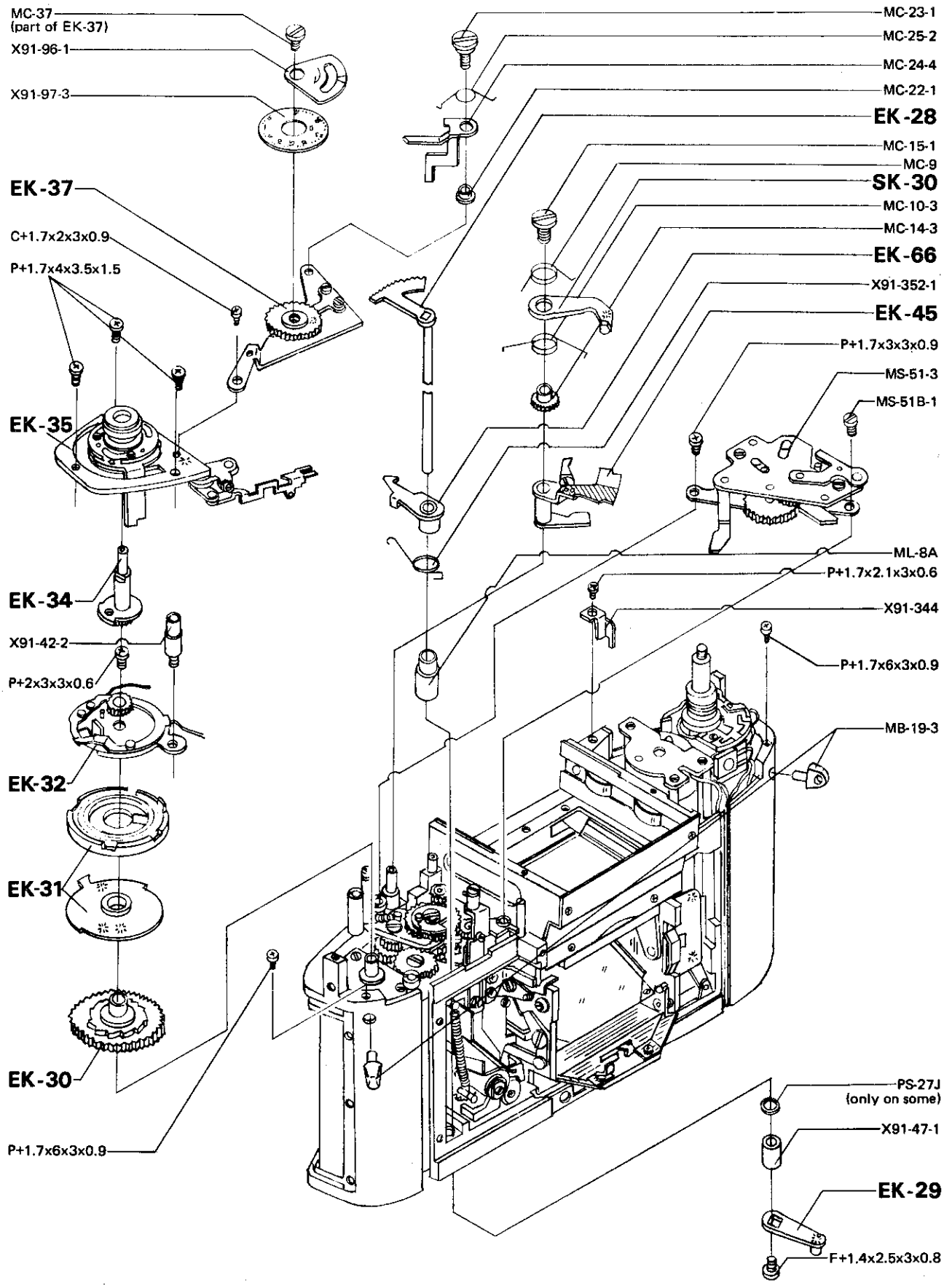


8A-5a When trouble is noted in step 4, remove the left top cover (page D2). Attach the plus (+) prod to the battery contact (X91-239) and the minus (–) prod to one of neckstrap eyelets (MB-19-3). A pair of tweezers is used to simulate the movement of the CdS meter switch (ie. X91-261-3).

8A-5b On the meter switch printed circuit (EK-60) there are four terminals. Place one prong of the tweezers on the meter terminal, and the other prong on the 'S' terminal. Move that prong from 'S' to 'A', to 'C', while keeping the other prong on the meter terminal. When the wiring to the exposure meter and the CdS cells is okay, both the multimeter and meter needles should deflect from their rest position. Trouble is due to a defective contact between the two battery contacts (X91-239 & X91-245-3).



SECTION 1 EXPLODED DIAGRAMS, ASSEMBLIES, AND PARTS LIST



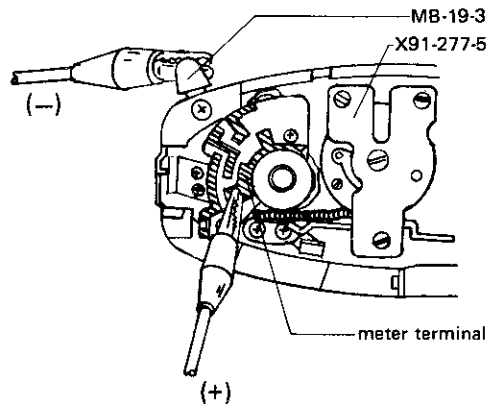
SECTION 4 MALFUNCTION SYMPTOMS & REPAIR GUIDE

NUMBER	REPAIR INSTRUCTION SUBJECT

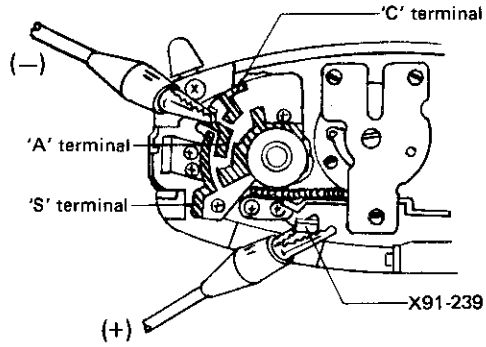
8A **EXPOSURE METER SYSTEM**
METER TROUBLESHOOTING

8A-5c If the exposure meter doesn't react in 5b, then the exposure meter and CdS cells must be checked individually.

8A-6 To check the exposure meter, remove the tweezers, and move the plus (+) prod to the meter terminal. When the exposure meter is okay, both meter needles deflect. If both meters don't react, replace the defective meter (X91-277-5).

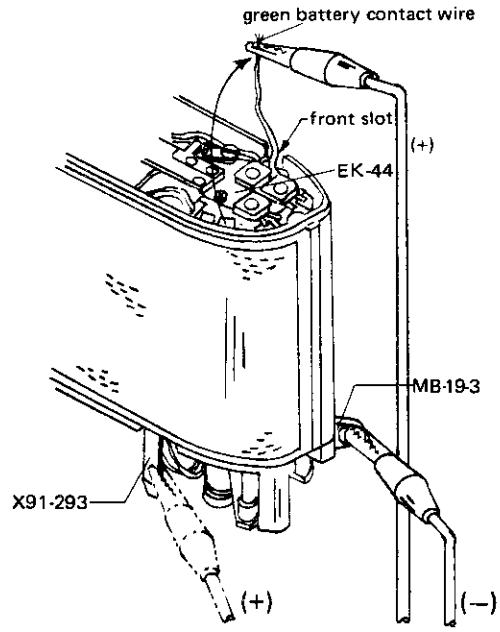


8A-7a When the exposure meter is not at fault, the CdS cells are checked next. Move the plus (+) prod back to the battery contact (X91-239), and the minus (–) prod to the 'C', then 'S', then 'A' terminals (EK-60). As before, the deflection of the multimeter needle indicates normal, shorted or disconnected wiring. Shorting at 'C' is due to check wiring contacting the camera body.



8A-7b When checking 'S' first note the reading, and then shade the mirror. The multimeter needle should return to the '∞' position. Repate this when checking 'A'.

8A-8a Move the minus (–) prod to the neckstrap eyelet (MB-19-3). Turn the camera over, and remove the green battery contact wire (the one going thru the slot under the left front cover) from the lower variable resistor assembly (EK-44). Attach the plus (+) prod to the end of the green wire. If shorting is indicated, check the mounting of the battery contact (X91-239).



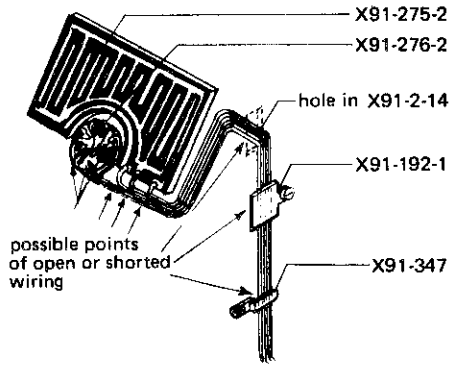
8A-8b When shorting is not indicated (ie. multimeter needle stays at '∞') move the – prod to the battery contact (X91-239). If the multimeter needle doesn't swing out, the green wire or the soldering on the battery contact (X91-239) is defective.

8A-9 After all the previous steps have been completed, and the malfunction cause has not been located, the CdS wiring from the lower variable resistor assembly (EK-44) to the CdS cells must be checked as outlined in 8B.

SECTION 4 MALFUNCTION SYMPTOMS & REPAIR GUIDE

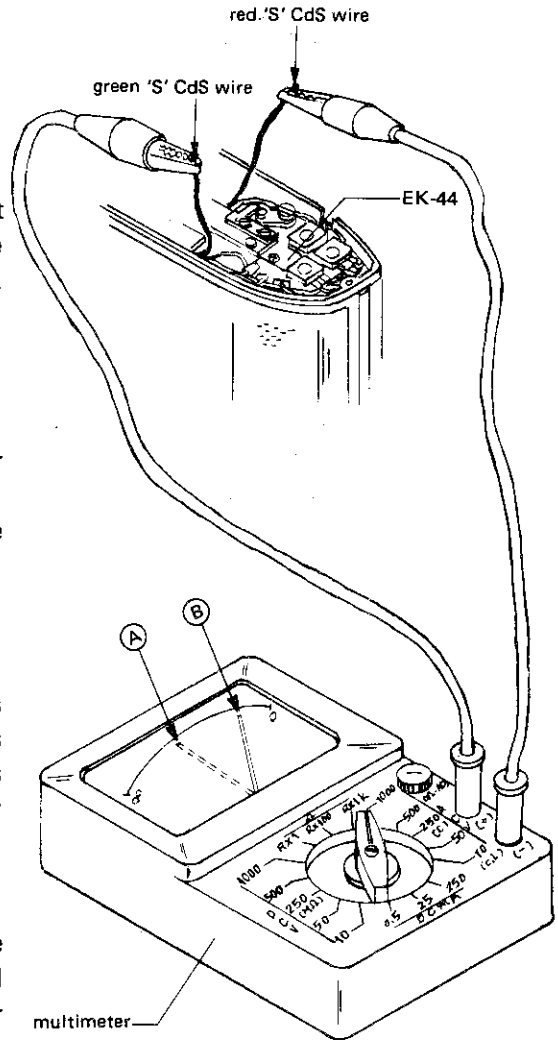
NUMBER REPAIR INSTRUCTION SUBJECT

8B (8.1f, 8.8) **EXPOSURE METER SYSTEM**
CdS TROUBLESHOOTING



8B-1 If erroneous readings at LV values checked on page A27 cannot be corrected by adjusting the four variable resistors, and the ZERO meter needle position (10.3C, page A26) has been adjusted correctly, then CdS malfunction is indicated.

8B-2 If the lens and viewfinder have not been removed, then remove them now.



8B-3 Using a voltmeter or multimeter, set the instrument for reading in the 1KΩ range. Short the instrument by placing the two prongs together, and adjust the ZERO point.

8B-4 Any time the meter movement (X91-277-5) and/or any of the variable resistors (R1-4, page A27) is/are replaced the CdS response must also be checked using the procedure discussed below.

8B-5 Movement of the instrument needle to '0' indicates a short circuit, while movement to '∞' indicates open wiring. Either reading at any time requires complete replacement of the mirror assembly (EK-9) as described on page D11 (16.12).

8B-6 There are six wires (① thru ⑥) attached to the lower variable resistor assembly (EK-44) that will be tested. Remove page A24 so that you can refer to the schematic diagram (10.1) when necessary. These six wires (① thru ⑥) all pass through the camera bottom to the mirror housing left, NOT through the slot under the left front cover.

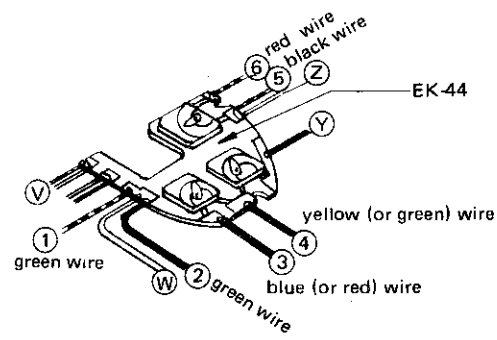
SECTION 4 MALFUNCTION SYMPTOMS & REPAIR GUIDE

NUMBER	REPAIR INSTRUCTION SUBJECT

8B-6 (cont.)

Note the following wires:

① – green wire for 'S' CdS
② – green wire for 'A' CdS
③ – blue (or red) wire for 'A' CdS
④ – yellow (or green) wire for 'A' CdS
⑤ – black wire for 'S' CdS
⑥ – red wire for 'S' CdS
Ⓥ – X/FP contact wires
Ⓦ – green wire for battery contact thru front slot
Ⓨ – black wire to EK-60 thru front slot
Ⓩ – black wire to EK-58 (near EK-44)

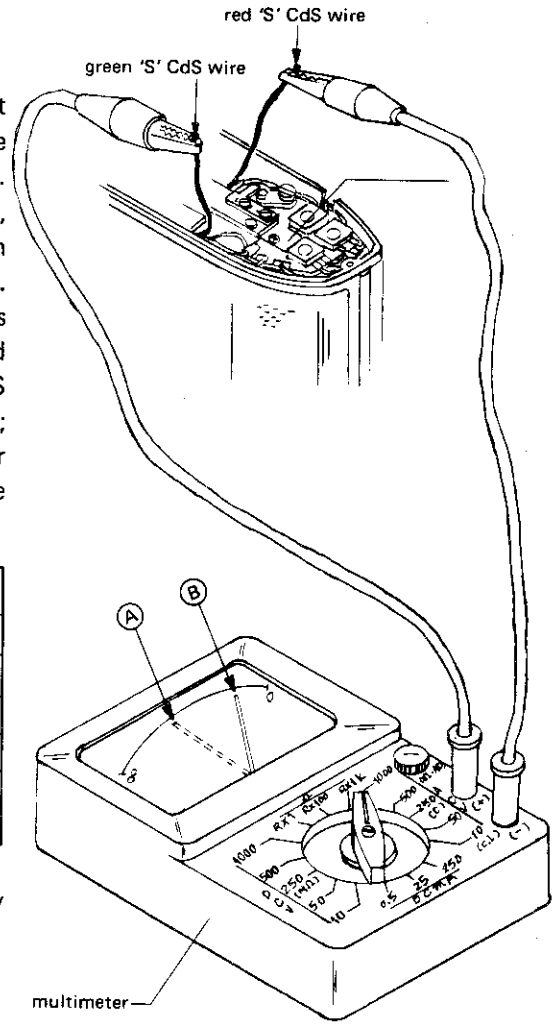


8B-7

Carefully lift off six wires, ① thru ⑥. Connect either voltmeter prod to the black wire ⑤. There are two (three) green wires, one is for 'S' CdS. When the other prod is connected to that one, the needle deflects to point Ⓑ, the other green wire(s) give no response, and is/are for 'A' CdS. Twist the three (①, ⑤, ⑥) 'S' CdS wires together temporarily so they can be distinguished easily from the three (②, ③, ④) 'A' CdS wires. At each combination take two readings; one with the mirror shaded, and the other without. The instrument needle should move (ie. reading differ) slightly.

check	wires	reading position
'S' CdS	5 + 1	Ⓑ
'S' CdS	5 + 6	Ⓑ
'S' CdS	1 + 6	Ⓐ
'A' CdS	4 + 3	Ⓐ
'A' CdS	4 + 2	Ⓐ
'A' CdS	3 + 2	almost '0'

Readings may vary from the above, but are okay as long as they are not '0' or '∞'.

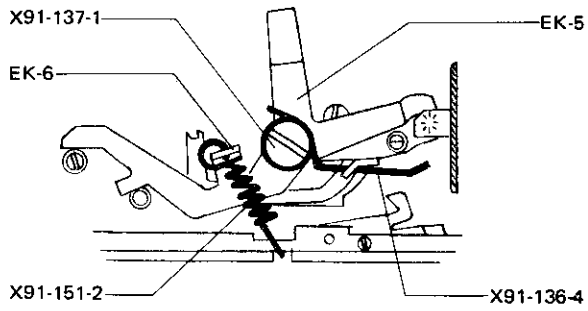


SECTION 4 MALFUNCTION SYMPTOMS & REPAIR GUIDE

NUMBER REPAIR INSTRUCTION SUBJECT

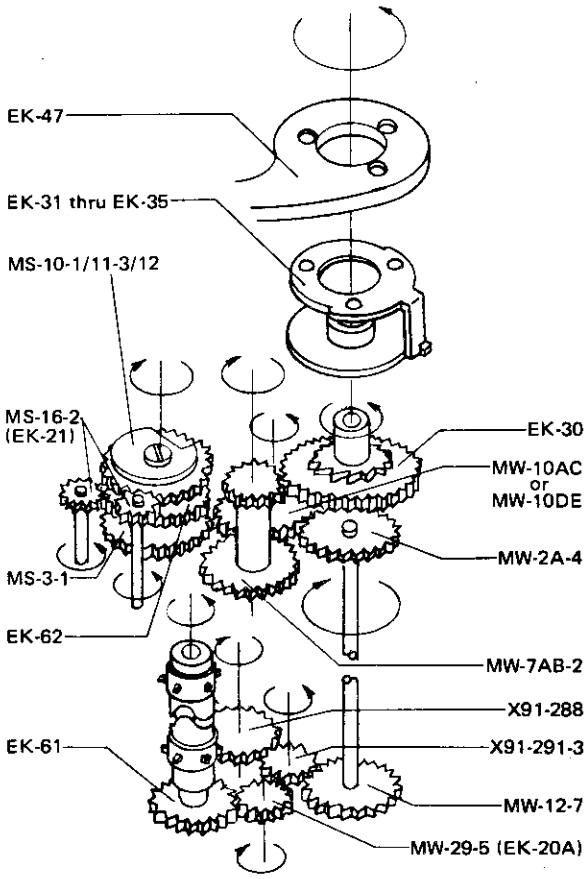
1C SHUTTER
(1.8, 1.9, 10.1d)

Reengage springs, X91-136-4 and/or X91-151-2.



2C WINDING & ANTI-REVERSE MECHANISMS
(2-all)

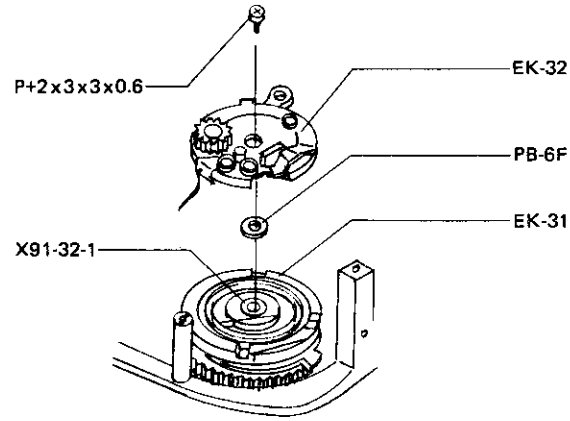
Remove the bottom and right top covers as shown on pages D3 (4) and D1 (2) respectively. Carefully check both mechanisms for dirt, etc. accumulation. Check movement and meshing of gears as shown below.



NUMBER REPAIR INSTRUCTION SUBJECT

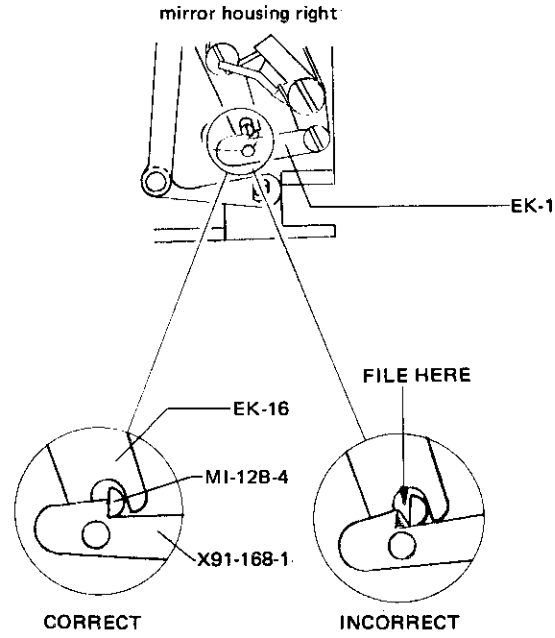
2D WINDING & ANTI-REVERSE MECHANISMS
(2.5a)

Add large general adjustment washer (PB-6F).



4A SELF-TIMER
(4.4d)

File the self-timer actuator transmission lever (X91-168-1) hook until it is parallel with the mirror actuator delay pin (MI-12B-4) which is part of the mirror actuator lever assembly (EK-4), and sticks through the mirror housing (X91-2-14) right side (see page 7 for exploded view).



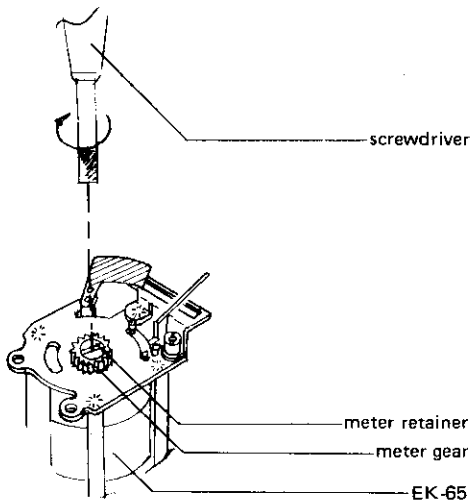
SECTION 4 MALFUNCTION SYMPTOMS & REPAIR GUIDE

NUMBER REPAIR INSTRUCTION SUBJECT

8C EXPOSURE METER SYSTEM

(8.1g & i)

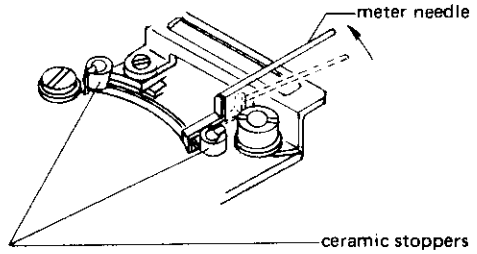
Remove the meter (EK-65) and tighten the gear retainer on the bottom.



8D EXPOSURE METER SYSTEM

(8.3)

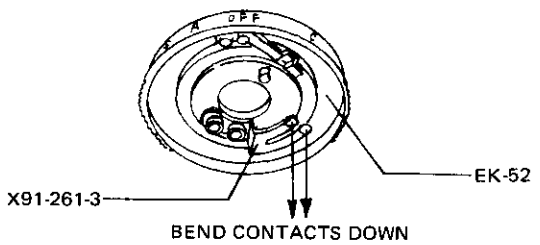
Straighten, bent/replace, broken ceramic meter needle stoppers on the bottom of the meter.



8E EXPOSURE METER SYSTEM

(8.5b)

Bend the switch contact (X91-261-3 of EK-52) down.

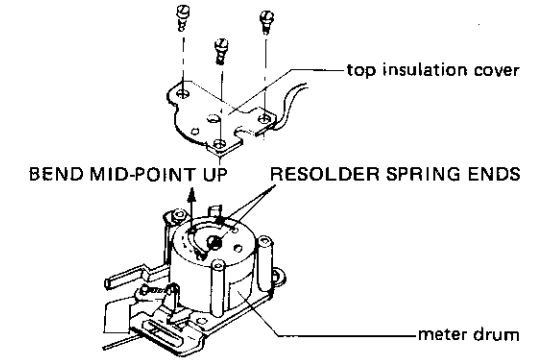


NUMBER REPAIR INSTRUCTION SUBJECT

8F EXPOSURE METER SYSTEM

(8.6 & 8.7c)

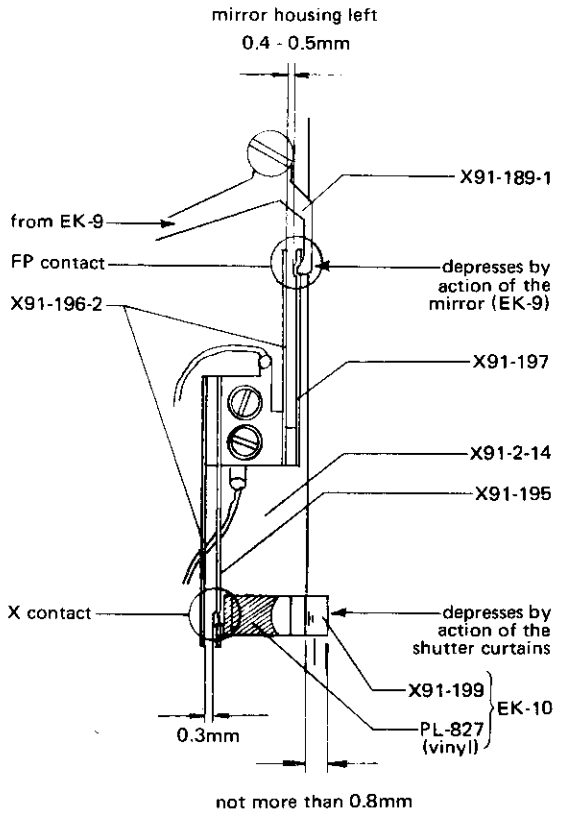
Remove the meter top insulation cover by taking off the three screws. Bend/solder semi-circular spring on drum.



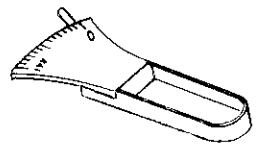
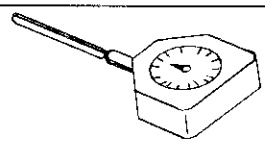
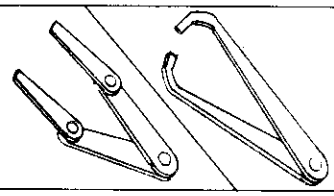
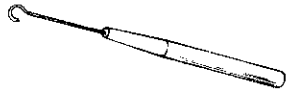
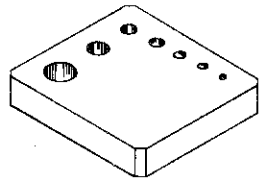
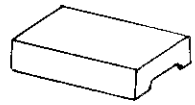
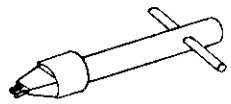
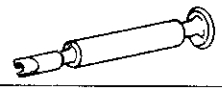
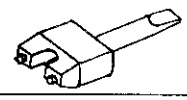
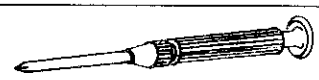
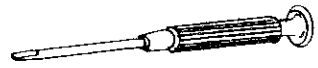
10A SYNCHRONIZATION MECHANISM

(10.1b & c, 10.2b, 10.3c)

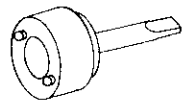
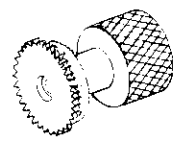
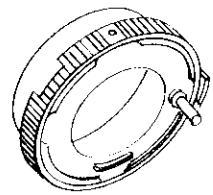
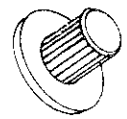
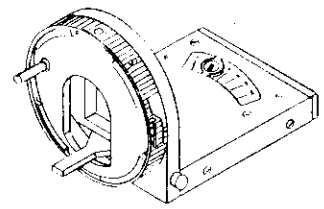
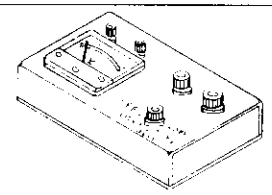
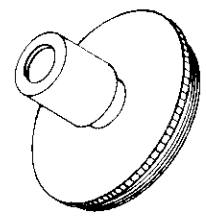
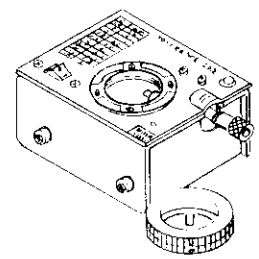
Check X/FP contact points, soldering points, and action of the two activating levers (EK-10 & X91-189-1, respectively). Make sure plastic cover (PL-827) is intact.



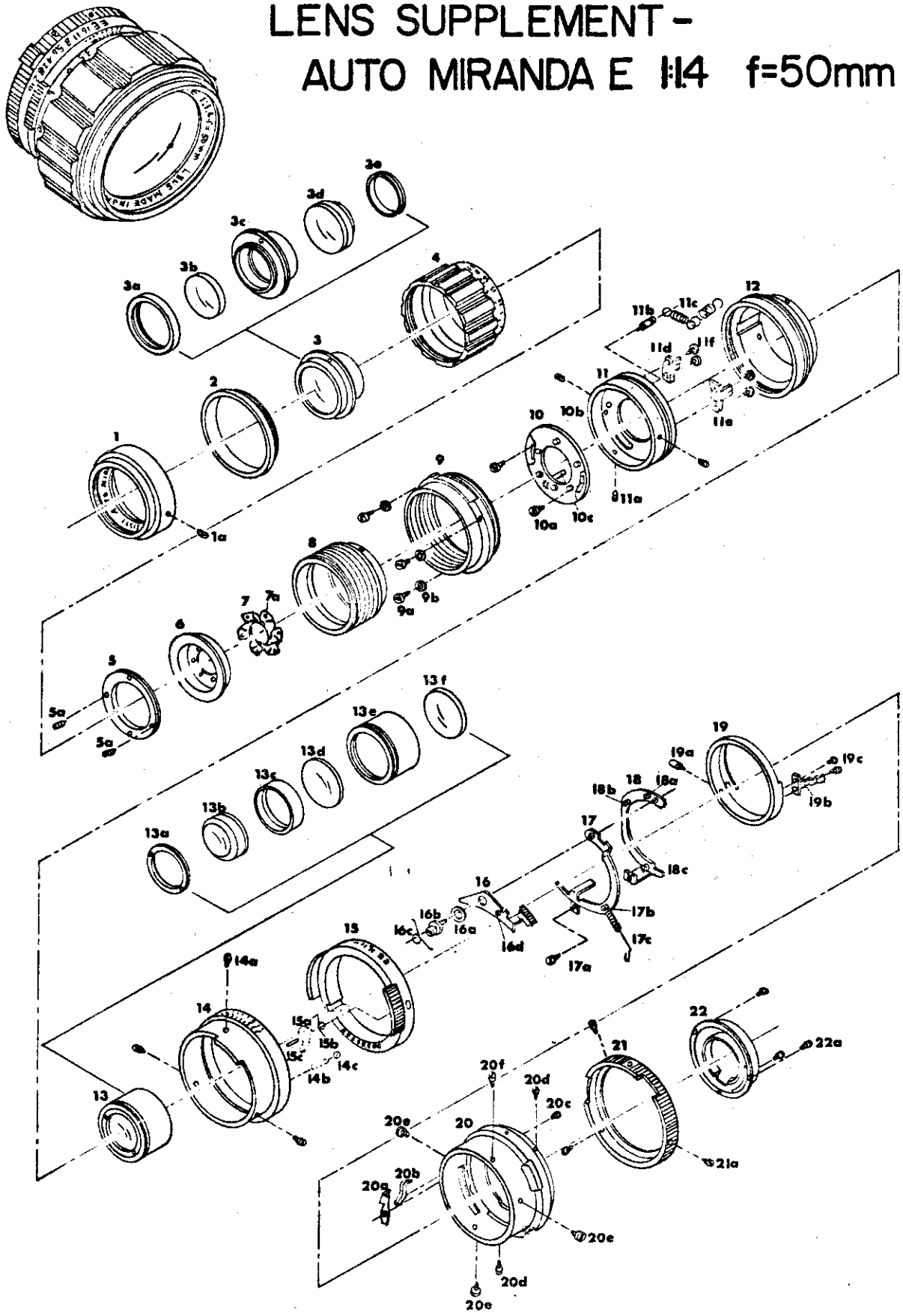
SECTION 5 SPECIAL TOOLS & EQUIPMENT

TOOL NO.	NAME	SKETCH	FOR USE ON	REFERENCE PAGES & REMARKS
NONE	Tension Gauge, Pull Type		EK – 24, EK – 25, Etc.	A2 (1.4) A3 (1.5) (1.6) A17 (5.2f) A18 (5.2h) Lens supplement
NONE	Tension Gauge, Dial Type			
G – 2 G – 15	Tweezers		Lens Retainer Rings	Lens Supplement
G – 14	Spring Hook		All Springs	R17 (2B)
G – 16	Rivetting Plate		All Rivets	
G – 17	Depth Plate		Miranda Camera Bodies	A22 (9)
G – 18	Depth Gauge			
G – 23	Spanner		MI – 36	D2 (3.6)
G – 35	Spanner		MS – 16 – 2	12 A1 (1.2c)
G – 71	Spanner Bit		X91 – 17	D1 (2.2)
G – 72	Spanner Bit		X91 – 235 – 3	D2 (3.3)
G – 73	Spanner Bit		X91 – 109 – 2	D2 (3.3) D3 (5.2)
G – 77	Screw-driver, cross blade		(designed for) C+1.7x2x2.5x0.5)	longer shaft for work inside mirror housing
G – 78	Screw-driver, flat blade		X91 – 283 – 1	15 D2

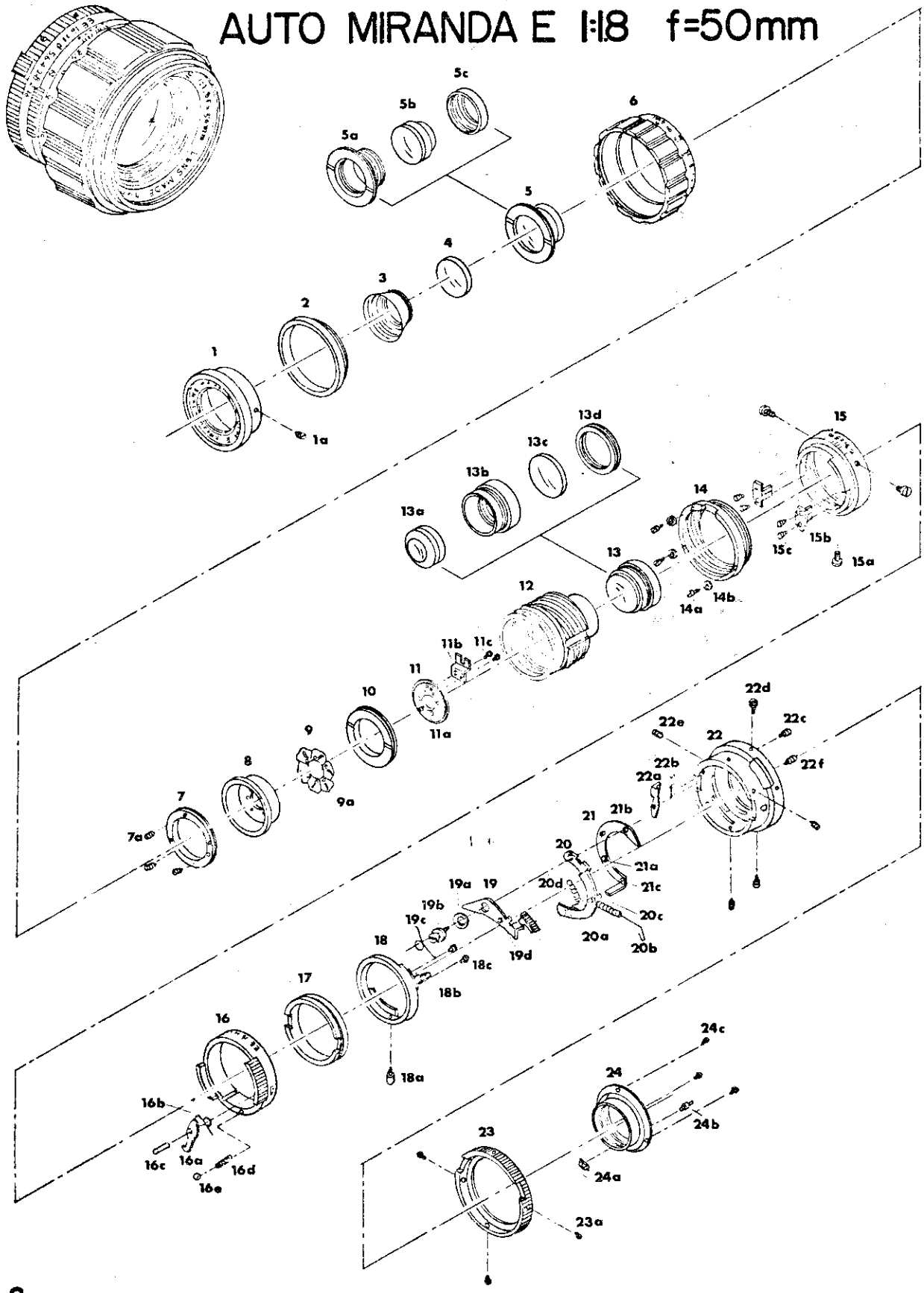
SECTION 5 SPECIAL TOOLS & EQUIPMENT

TOOL NO.	NAME	SKETCH	FOR USE ON	REFERENCE PAGES & REMARKS
G – 81	Spanner Bit		X91 – 268 – 1	15 D2
G – 104	Shutter Cocking Knob		EK – 23	A10 (2.1a)
J – 34	F-number Ring Gauge (f3.5)		X91 – 277	A25 (10.3b)
J – 35	F-number Ring Gauge (f4)			
J – 98A	LV Adjusting Jig		EK – 52	A26 (10.3d)
J – 98B	LV Adjusting Washer			
J – 107	EE-Diaphragm Controller Position Measuring Tool		EK – 5	A28 (10.4)
M – 107	Power Supply Unit		X91 – 277	A26 (10.3d)
T – 85	Mirror 45° Angle Adjustment Tool		EK – 9	R17 (5A)
T – 116	EE Lens Diaphragm Coupling Lever Measuring Equipment		Auto Miranda E Series Lenses	Lens Supplement can be used for calibrating J-107

LENS SUPPLEMENT - AUTO MIRANDA E 1:1.4 f=50mm



LENS SUPPLEMENT-
AUTO MIRANDA E 1:1.8 f=50mm

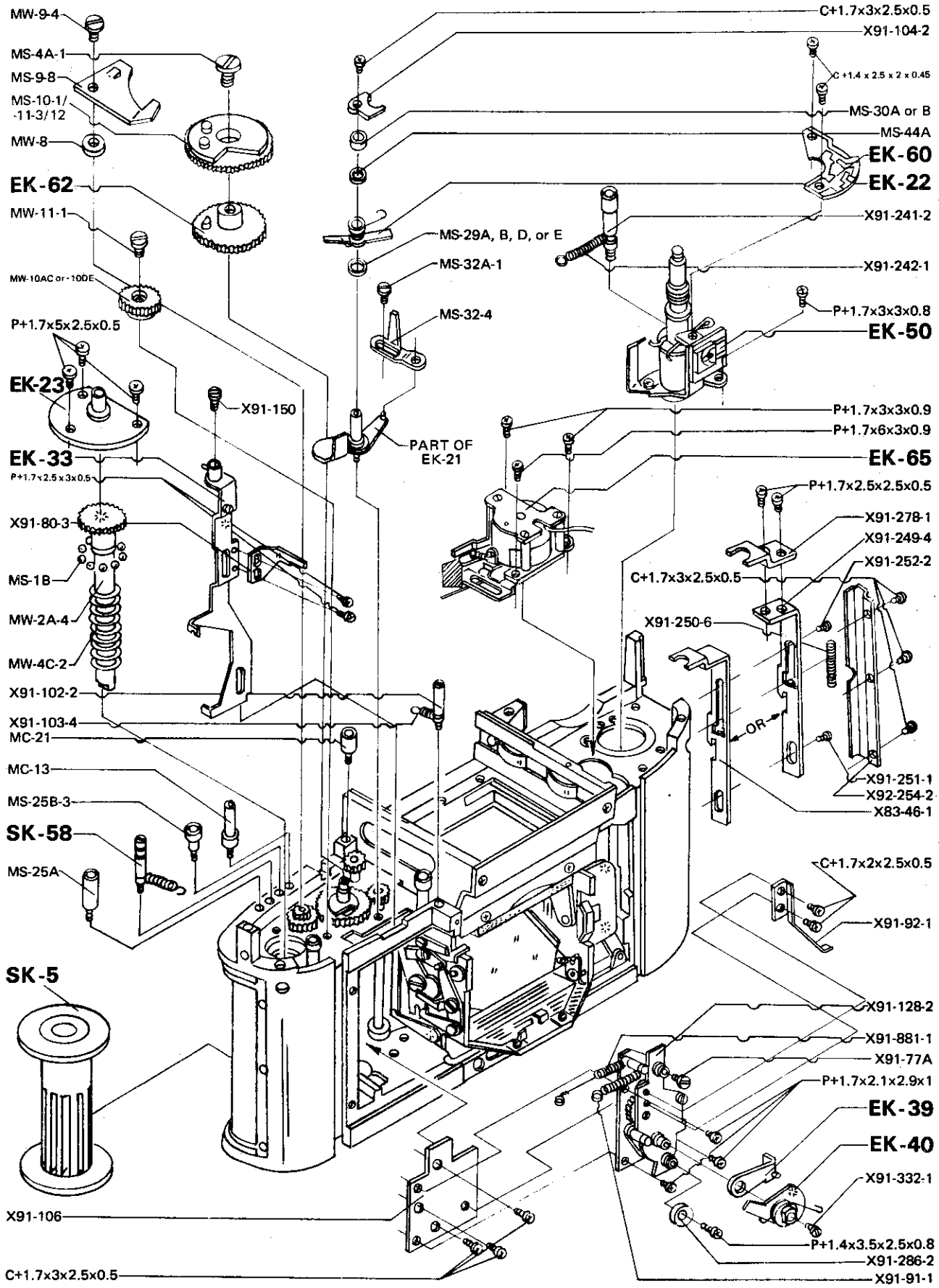


LENS SUPPLEMENT — AUTO MIRANDA E 1:1.4 f=50mm

#	PART NUMBER	PIECES	ENGLISH NAME
1	ZG 137-1	1	Front Ring
1a	Z 27-745	1	(Front Ring) Retaining Screw
2	ZG 137-16-1	1	Dressing Ring
3	NONE		Group Assembly
3a	ZG 137-2	1	1st Element Retaining Ring
3b	Z 137-G 1	1	1st Element
3c	ZB 137-2	1	Front Group Housing
3d	Z 137-G2, G3	1	2nd & 3rd Elements
3e	ZB 137-3	1	2nd Group Retaining Ring
4	ZG 137-15	1	Focusing Ring
5	ZG 137-5	1	Blade Base Retaining Ring
5a	ZA 26-219	2	Blade Base R. Ring Screw
6	ZG 137-6-2	1	Blade Base
7	ZG 137-12	6	Diaphragm Blade
7a	Z 27-716-1	6	Blade Stud
8	ZG 137-7-4	1	Helicoid - B
9	ZG 137-14-1	1	Helicoid - A
9a	Z 22-417-1	3	Focusing Ring Retainer
9b	ZB 106-3	3	Focusing Ring Retainer Washer
10	ZG 137-9-6	1	Diaphragm Actuating Ring
10a	ZG 137-11	2	Actuating Ring Retainer
10b	ZG 137-10-2	6	Actuating Ring Stud
10c	ZG 137-3-1	1	Diaphragm Controlling Transmittal Pin
11c	ZG 137-8-2	1	Central Barrel
11a	Z 27-755	3	Barrel Retainer
11b	Y 46-118	1	Spring Hook
11c	ZG 137-41/42 *	1	Lever-B Actuating Spring
11d	ZG 137-39-1	1	Guide Key
11e	ZG 137-40	1	Adjustable Guide Key
11f	YB 67-45a	4	Key Retainer
12	ZG 137-17-3	1	Helicoid - C
13	NONE		Group Assembly
13a	ZB 137-4	1	Third Lens Retaining Ring
13b	Z 137-G4, G5	1	4th & 5th Elements
13c	ZB 137-5	1	Middle Ring
13d	Z 137-G6	1	6th Element
13e	ZB 137-6-2	1	Rear Group Housing
13f	Z 137-G7	1	7th Element
14	ZG 137-18-1	1	Depth of Field Ring
14a	Y 45-42	3	Depth of Field Ring Retainer
14b	Y 45-46-2	1	Click Spring
14c	Y 45-47	1	Click Ball
15	ZG 137-23-1	1	Aperture Ring
15a	ZG 137-33-2	1	EE-lock Button
15b	ZG 137-34-1	1	EE-lock Button Spring
15c	MS-19A	1	Spring Pin
16	ZG 137-27-3	1	Preview Lever
16a	ZB 137-23	1	Preview Lever Washer
16b	ZB 137-17-1	1	Preview Lever Retainer
16c	ZB 137-19	1	Preview Lever Spring
16d	Y 45-28-2	1	(Preview Lever)Spring Stud

* earlier part was ZG 137-13

SECTION 1 EXPLODED DIAGRAMS, ASSEMBLIES, AND PARTS LIST



LENS SUPPLEMENT — AUTO MIRANDA E 1:1.4 f=50mm

#	PART NUMBER	PIECES	ENGLISH NAME
17	ZG 137-24-5	1	Diaphragm Lever-B
17a	ZA 26-231	1	Guide Pin
17b	Y 45-28	1	(Returning) Spring Stud
17c	ZG 137-4-2	1	Lever-B Returning Spring
18	ZG 137-25-3	1	Diaphragm Lever-A
18a	Y 46-115-1	1	Preview Lever Stopper
18b	ZG 137-30	1	Lever-A Stud
18c	ZF 137-32-3	1	Lever-B Guide Stud
19	ZG 137-19-3	1	Cam Ring
19a	ZC 64-26	1	Aperture Ring Connecting Pin
19b	ZG 137-20-3	1	EE-Lever
19c	ZG 137-21-1	2	EE-lever Retainer
20	ZG 137-22-5	1	Mount
20a	ZG 137-31-1	1	Lens Lock Button
20b	Y 45-35-4	1	Lens Lock Button Spring
20c	ZA 26-238-1	1	Lens Lock Button Retainer
20d	Y 45-44	2	Bayonet Mount Stopper
20e	C+A 1.7 x 3	3	Screw
20f	ZA 26-231	1	Guide Pin
21	ZG 137-26	1	Rear Ring
21a	Y 45-48	3	Rear Ring Retainer
22	ZG 137-28-2	1	Rear Dressing Ring
22a	Y 45-41-1	3	Rear Dressing Ring Retainer

— AUTO MIRANDA E 1:1.8 f=50mm

1	ZG 108-1-1	1	Front Ring
1a	Y 45-42-1	1	Front Ring Retainer
2	ZG 108-25-1	1	Dressing Ring
3	ZF 108-4-3	1	1st Element Retaining Ring
4	Z 108-G 1	1	1st Element
5	NONE		Group Assembly
5a	ZF 108-2-2	1	Front Lens Retaining Ring
5b	Z 108-G2, G3	1	2nd & 3rd Elements
5c	Y 45-14	1	Front Group Housing
6	ZG 108-11-1	1	Focusing Ring
7	ZG 108-2	1	Blade Base Retaining Ring
7a	Z 27-745	3	(Blade Base R. Ring) Retaining Screw
8	ZG 108-3-4	1	Blade Base
9	ZG 108-6-1	6	Diaphragm Blade
9a	Y 45-22-5	6	Blade Stud
10	ZG 108-5	1	Actuating Ring Retainer
11	ZG 108-4-3	1	Diaphragm Actuating Ring
11a	ZG 137-10-2	6	Actuating Ring Stud
11b	ZG 108-7-1	1	Diaphragm Controlling Pin Fork
11c	Z 27-710	2	Fork Retainer

LENS SUPPLEMENT — AUTO MIRANDA E 1:1.8 f=50mm

#	PART NUMBER	PIECES	ENGLISH NAME
12	ZG 108-8-2	1	Helicoid B
13	NONE		Group Assembly
13a	Z 108-G4, G5	1	4th & 5th Elements
13b	ZF 108-3-1	1	Rear Group Housing
13c	Z 108-G6	1	6th Element
13d	ZF 108-5-1	1	6th Element Retaining Ring
14	ZG 108-9-1	1	Helicoid - A
14a	ZA 26-222	3	Focusing Ring Retainer
14b	ZB 106-3	3	Focusing Ring Retainer Washer
15	ZG 108-10-3	1	Depth of Field Ring
15a	O + A 1.7 x 2.5	1	Screw
15b	ZG 108-12-2	2	Guide Key
15c	P + 1.7x3x2.5x0.5	4	Screw
16	ZG 108-16-5	1	Aperture Ring
16a	ZG 108-26-1	1	EE lock Button
16b	ZG 108-27-3	1	EE lock Button Spring
16c	MS-19A	1	Spring pin
16d	Y45-46-2	1	Click Spring
16e	Y45-47	1	Click Ball
17	ZG 108-13-1	1	Cam Ring Retainer
18	ZG 108-14-2	1	Cam Ring
18a	ZA 26-226	1	Aperture Ring Connecting Pin
18b	ZG 137-20-3	1	EE-lever
18c	ZG 137-21-1	2	EE-lever Retainer
19	ZG 108-21-1	1	Preview Lever
19a	ZB 64-466A or B	1	Preview Lever Washer
19b	ZG 108-18	1	Preview Lever Retainer
19c	Y 46-111-2	1	Preview Lever Spring
19d	Y 45-28-2	1	(Preview Lever) Spring Stud
20	ZG 108-20-1	1	Diaphragm Lever-B
20a	ZG 108-22-2	1	Returning Spring Stud
20b	Y 46-116-8	1	Lever-B Returning Spring
20c	ZG 108-24-1	1	Diaphragm Controlling Pin
20d	Y 46-119	1	Lever-B Actuating Spring
21	ZG 108-19	1	Diaphragm Lever-A
21a	ZG 137-30	1	Lever-A Stud
21b	Y46-115-1	1	Preview Lever Stopper
21c	ZG 137-29-1	1	Lever-B Guide Stud
22	ZG 108-15-3	1	Mount
22a	Y 45-34-8	1	Lens Lock Button
22b	Y 45-35-4	1	Lens Lock Button Spring
22c	Y 45-36-6	1	Lens Lock Button Retainer
22d	Y 45-44	2	Bayonet Mount Stopper
22e	MS-72	3	Setscrew
22f	Y 46-118	1	Spring Hook
23	ZB 106-8-2	1	Rear Ring
23a	O + A 1.4x2	3	Screw
24	ZG 108-17	1	Rear Dressing Ring
24a	ZG 108-28-1	1	Aperture Pin Support
24b	ZG 108-23-3	1	Maximum Aperture Pin
24c	Y 45-41-1	3	Rear Dressing Ring Retainer

LENS SUPPLEMENT — AUTO MIRANDA E f=50mm

1.0 DISASSEMBLY 1:1.4

1.1 Numbers refer to the parts shown on page L1. Note that it usually isn't necessary to completely disassemble the lens.

1.2 Rotate 4 to extend the lens.

1.3 Unscrew 1a.

1.4 Using a rubber strip to provide a firm grip, remove 1 and 2.

1.5 Using tool G-2 loosen 3, and remove it.

1.6 Unscrew 5a, and using tool G-2, remove 5.

1.7 Remove 6, and then take off 7 one by one.

1.8 Take off the three 9a and 9b, and then turn 4 until the projection inside lines up with the cut-out in 9. Slide 4 off.

1.9 Unscrew the three 14a, then rotate 14 so it moves out.

1.10 Unscrew the three 20e, and remove 14, watching that 14b and 14c don't fall out.

1.11 Separate 12 from 20.

1.12 Unscrew the four 11f and remove 11d and 11e.

1.13 Separate 12 from 9.

1.14 Unscrew the three 11a, and separate 8 from 9.

1.15 Separate 13 from 11.

1.16 Remove 11c, and then 11b.

1.17 Unscrew the two 10a, and then remove 10.

1.18 Remove 20f.

1.19 While depressing 15a rotate 15, and pull it off.

1.20 Take 17c off.

1.21 After removing 16c, 16b, and 16a, take 16 off.

1.22 Remove 17 and 18 together.

1.23 Remove 19a, and slide 19 off.

1.24 Unscrew the three 21a, and 21 can be removed.

1.25 After removing 20c, 20a and 20b can be removed.

1.26 Remove the three 22a pulling 22 off.

1.0 DISASSEMBLY 1:1.8

1.1 Numbers refer to the parts shown page L2. Note that it usually isn't necessary to completely disassemble the lens.

1.2 Rotate 6 to extend the lens.

1.3 Unscrew 1a.

1.4 Using a rubber strip to provide a firm grip, remove 1 and 2.

1.5 Unscrew 3, being careful not to drop 4. Take 4 out.

1.6 Using Tool G-15 loosen 5, and remove it.

1.7 Unscrew the three 7a, and using Tool G-2 remove 7.

1.8 Remove 8, and then take off 9 one by one.

1.9 Using Tool G-2 remove 10, then 11.

1.10 Take off the three 14a and 14b, and then turn 6 until '∞' is aligned with the notch in 14. Slide 6 off.

1.11 Unscrew the three 15a, then 12 thru 15 will come off as a unit.

1.12 Depress 16a, and rotate 16 a little.

1.13 Unscrew the three 24c, and remove 24.

1.14 Unscrew the three 23a, and remove 23.

1.15 Loosen (do not remove) the three 22e, and remove 17.

1.16 Remove 20b, and then disengage 20d from 22f.

1.17 After removing 19c, 19b, and 19a, take 19 off, and then 20.

1.18 Remove 18a, and then 18.

1.19 Remove 21.

1.20 Take out 22c, and then 22a and 22b come off.

LENS SUPPLEMENT — AUTO MIRANDA E 1:1.4/1.8 f=50mm

2.0 ASSEMBLY AND ADJUSTMENT

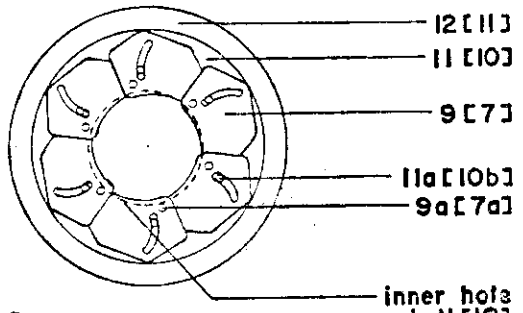
2.1 Assembly is performed by following the opposite order of procedures outlined in Disassembly, the last step being performed first, the next to last, second, etc. Only special steps differing from disassembly, and adjustments required are mentioned in this section. Numbers in [ ] refer to 1.4 lens, and in ( ) to 1.8 lens. Illustrations are of the 1.8 lens with similar 1.4 parts noted in [ ].

2.2 ASSEMBLING [7] OR (9)

2.2a Place [7] (9) onto [10] (11) one by one, overlapping the last blade with part of the first one, and fitting each [10b](11a) into the slot in one of the blades.

2.2b After all [7](9) have been mounted, rotate them so they form an inner circle just a bit smaller than the hole in [10] (11), as shown at right.

2.2c Maintaining about the same size inner circle, mount [6] (8) on the blades, coupling the holes in [6](8) with [7a](9a). Mount [5](7) on [6] (8).



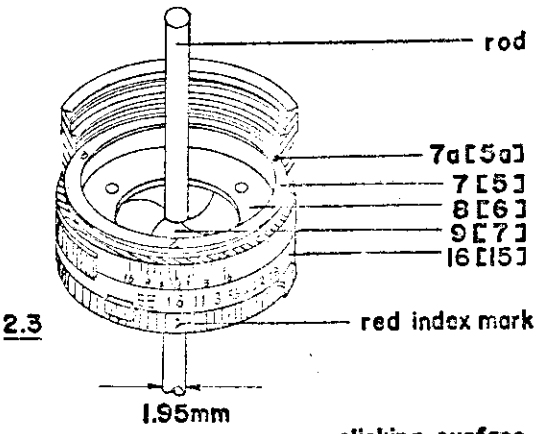
2.2

2.3 ADJUSTING DIAPHRAGM APERTURE

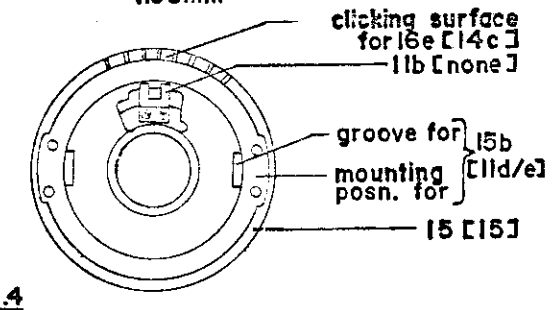
2.3a Remove [13] (13), and check that the blades move freely when [6](8) is rotated.

2.3b Turn [15] (16) to f/11, and then insert a rod having a diameter of 1.95mm into the aperture.

2.3c Turn [15](16) to f/16. The rod should fit securely. If not, adjust as necessary. When the correct positioning is obtained, fasten [5](7) with the two [5a]/three (7a), and secure the heads by applying chloroprene cement.

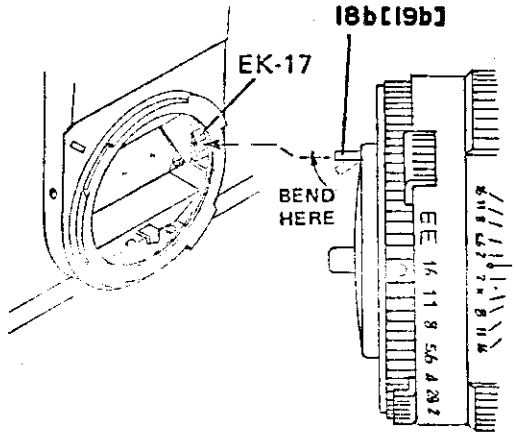


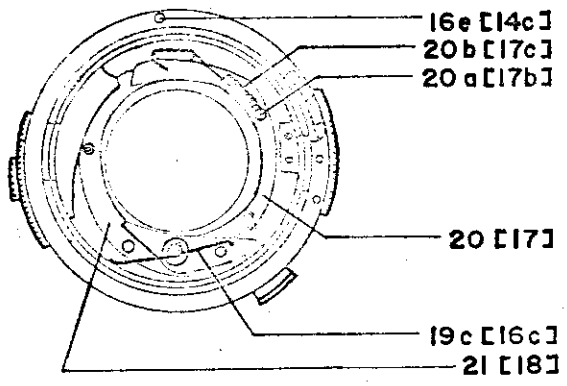
2.3



2.4

See QUICK-REFERENCE REPAIR GUIDE 8.11a, page R11





LENS SUPPLEMENT — AUTO MIRANDA E 1:1.4/1.8 f=50mm

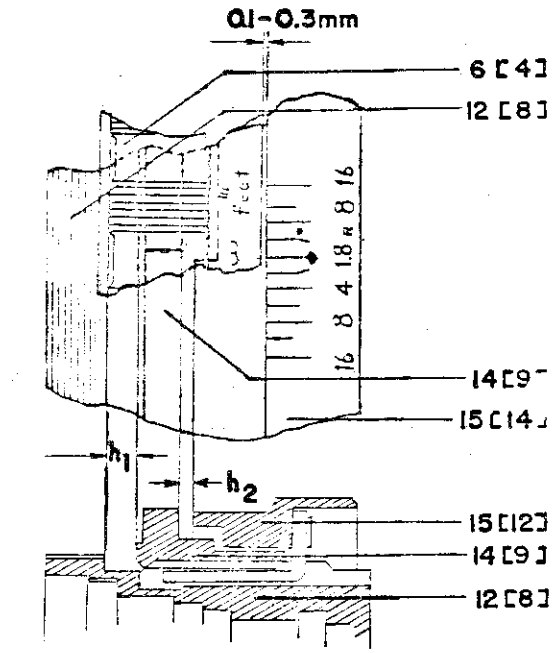
2.0 ASSEMBLY AND ADJUSTMENT

2.4 ASSEMBLING [8, 9, 11, 12, & 11d/e] OR (12, 14, 15, & 15b)

2.4a Reassemble [8, 9, 11, & 12](12, 14, & 15). [11d & 11e] (15b) must be matched to the grooves in [12](12 & 15), and in 1.8 lens (11b) must seat properly.

2.4b The clearance should be as shown at right and noted below:

	h_1	h_2
1.4 lens	0.75 mm	1.5 mm
1.8 lens	2.5-3.0 mm	1.0 mm



2.4

2.5 FOCUSING ADJUSTMENT

2.5a Remove [1] (1) and [2] (2). Retract the barrel so it is set at '∞', and place the lens in an auto-collimator. If the proper focus isn't achieved, extend the barrel until it is.

2.5b Loosen the three [9a](14a), and match [4] (6) to '∞', then retighten screws.

2.6 POSITIONING [17 arm] (20c)

2.6a Remove the three [14a](15a) from [14](15), and place the rear half on T-116. Set [15](16) to f/16.

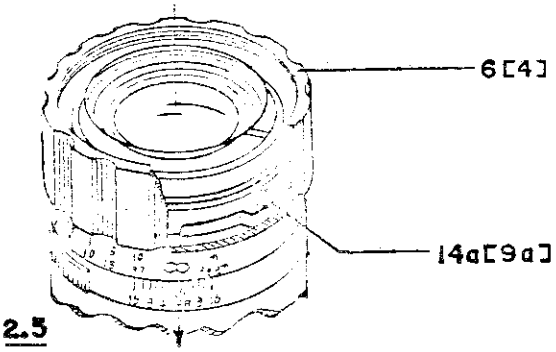
2.6b Turn the eccentric [18b] (21a) to adjust [17 arm](20c) to the position noted on the left of T-116. Secure [18b] (21a) with LOCTITE after proper position is attained.

2.7 TENSION OF [11c] (20d)

2.7a Using a tension gauge to check the tension of [17 arm](20c) as it just begins to move, check that the tension of [11c] (20d) is about 100 grams.

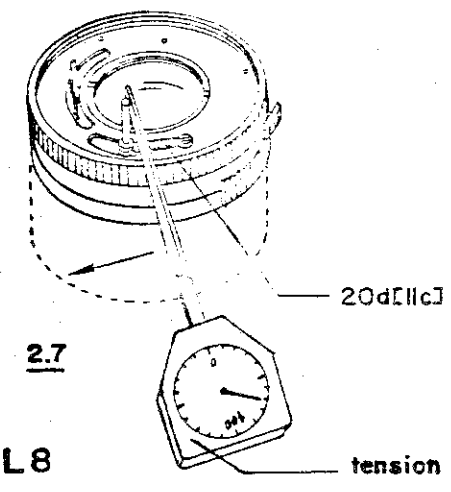
2.7b If [17 arm](20c) moves sluggishly, check [17, 18, & 11c] (20, 21, & 20d), and replace or straighten parts, as necessary.

REMOVE 1 [1] & 2 [2]

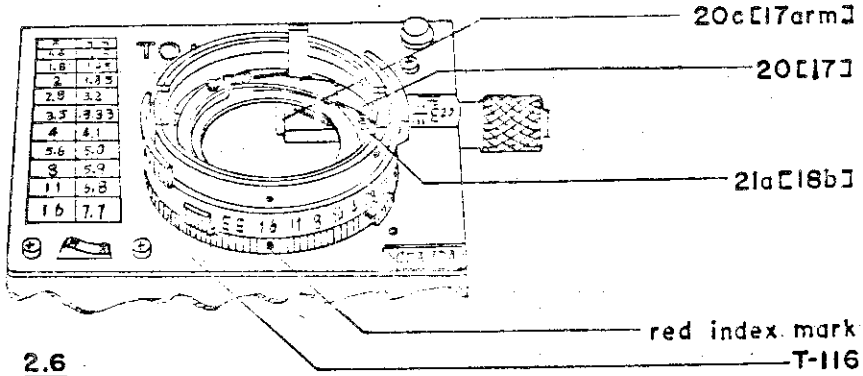


2.5

collimator base

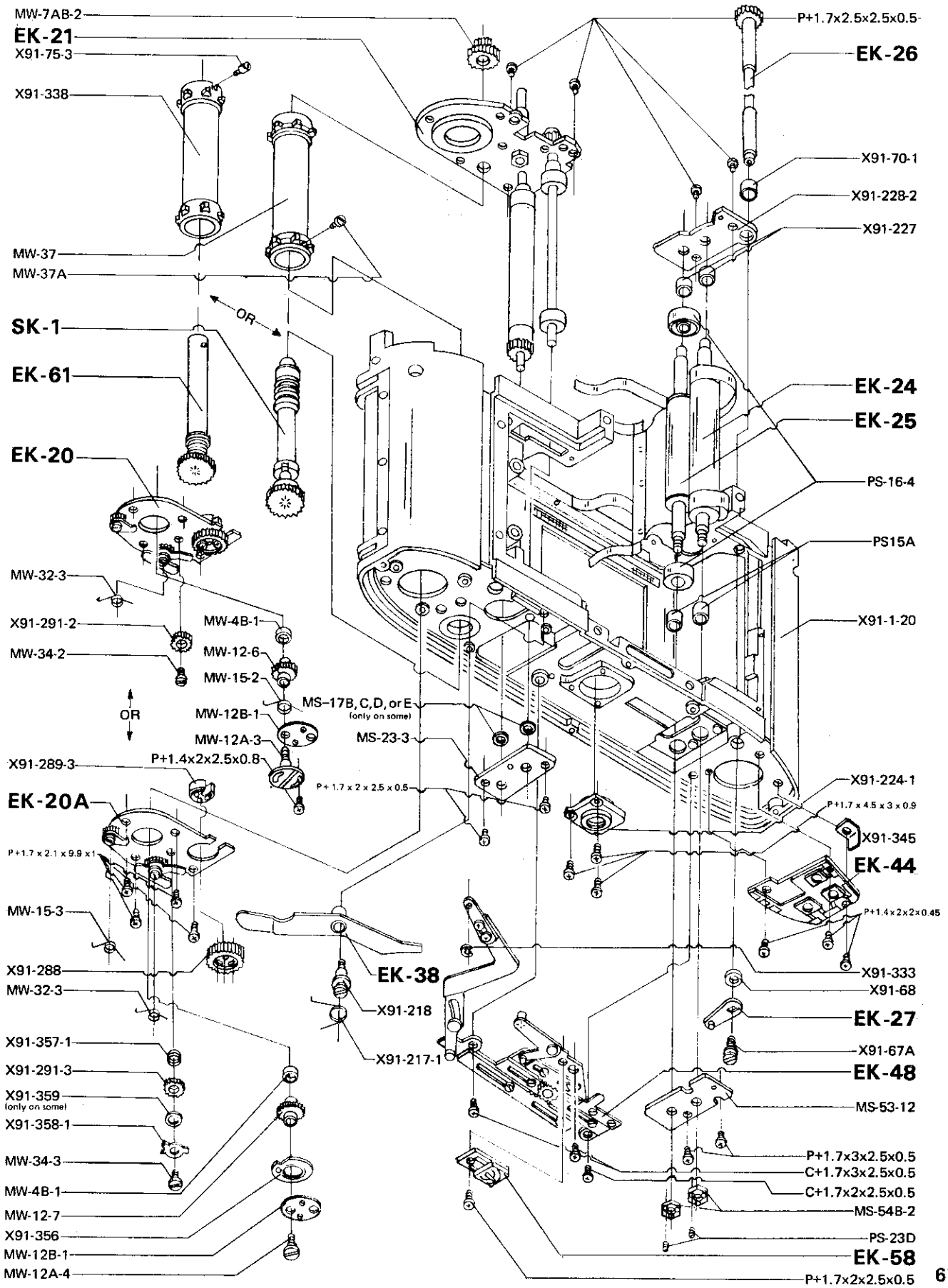


2.7

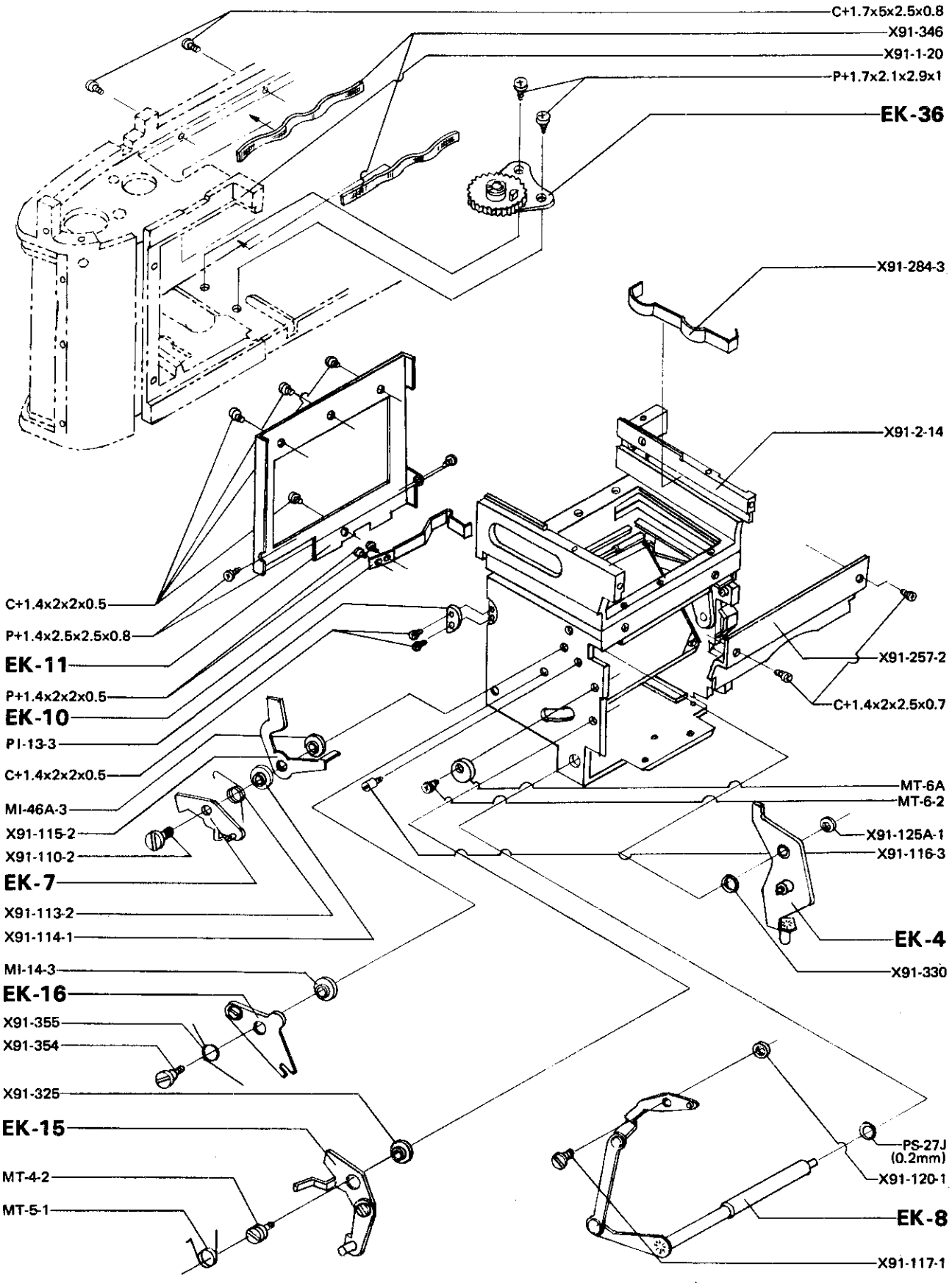


2.6

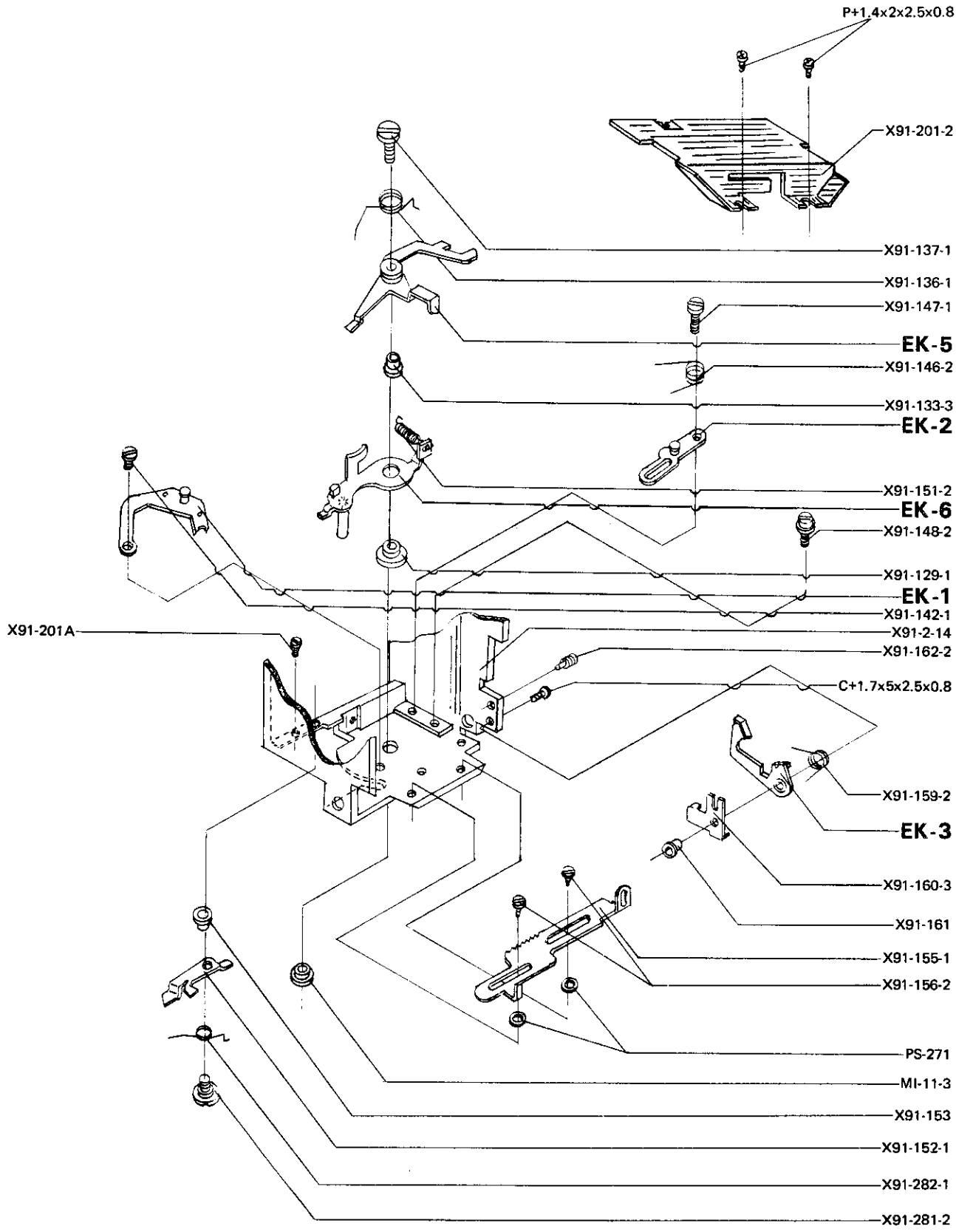
SECTION 1 EXPLODED DIAGRAMS, ASSEMBLIES, AND PARTS LIST



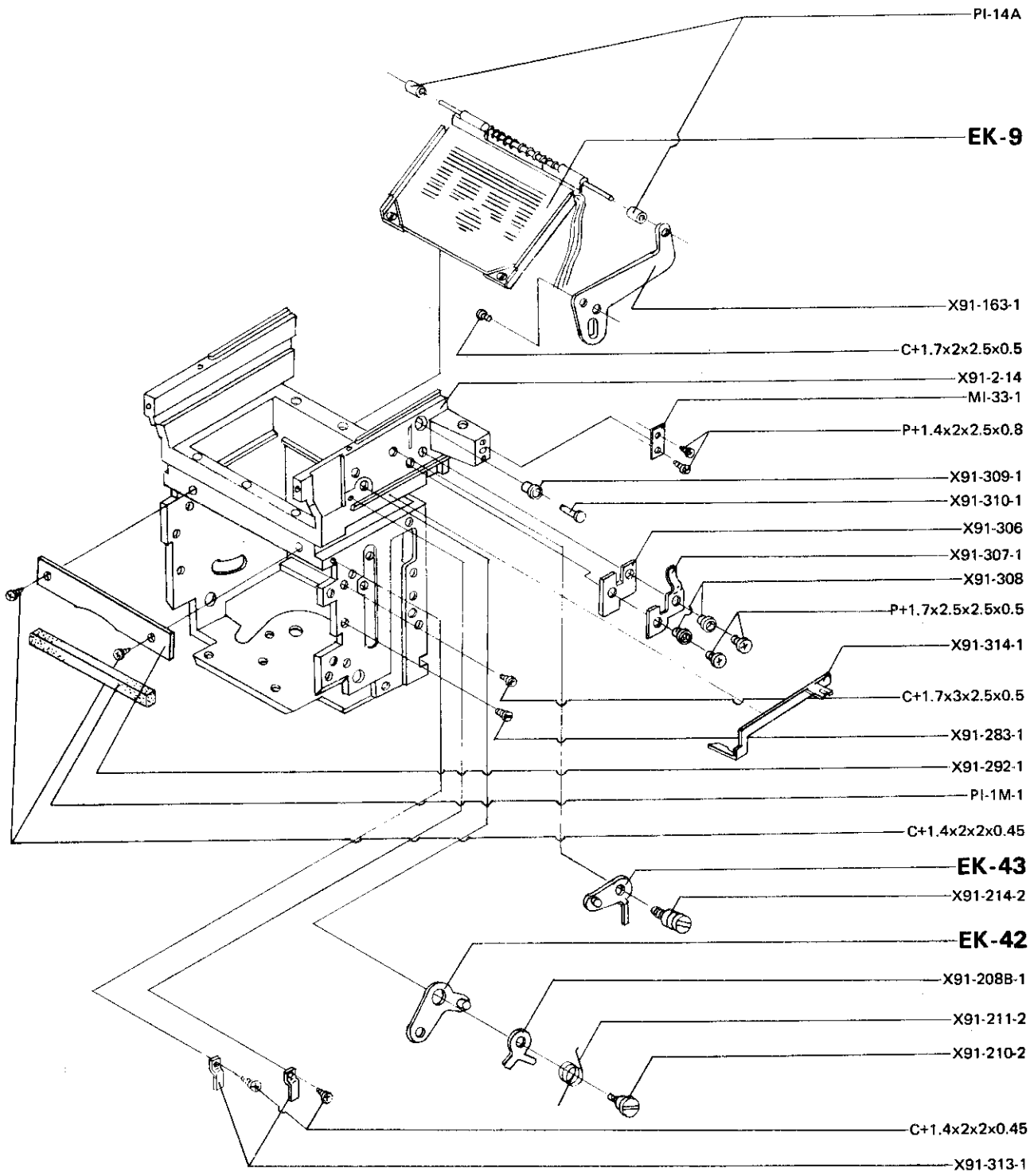
SECTION 1 EXPLODED DIAGRAMS, ASSEMBLIES, AND PARTS LIST



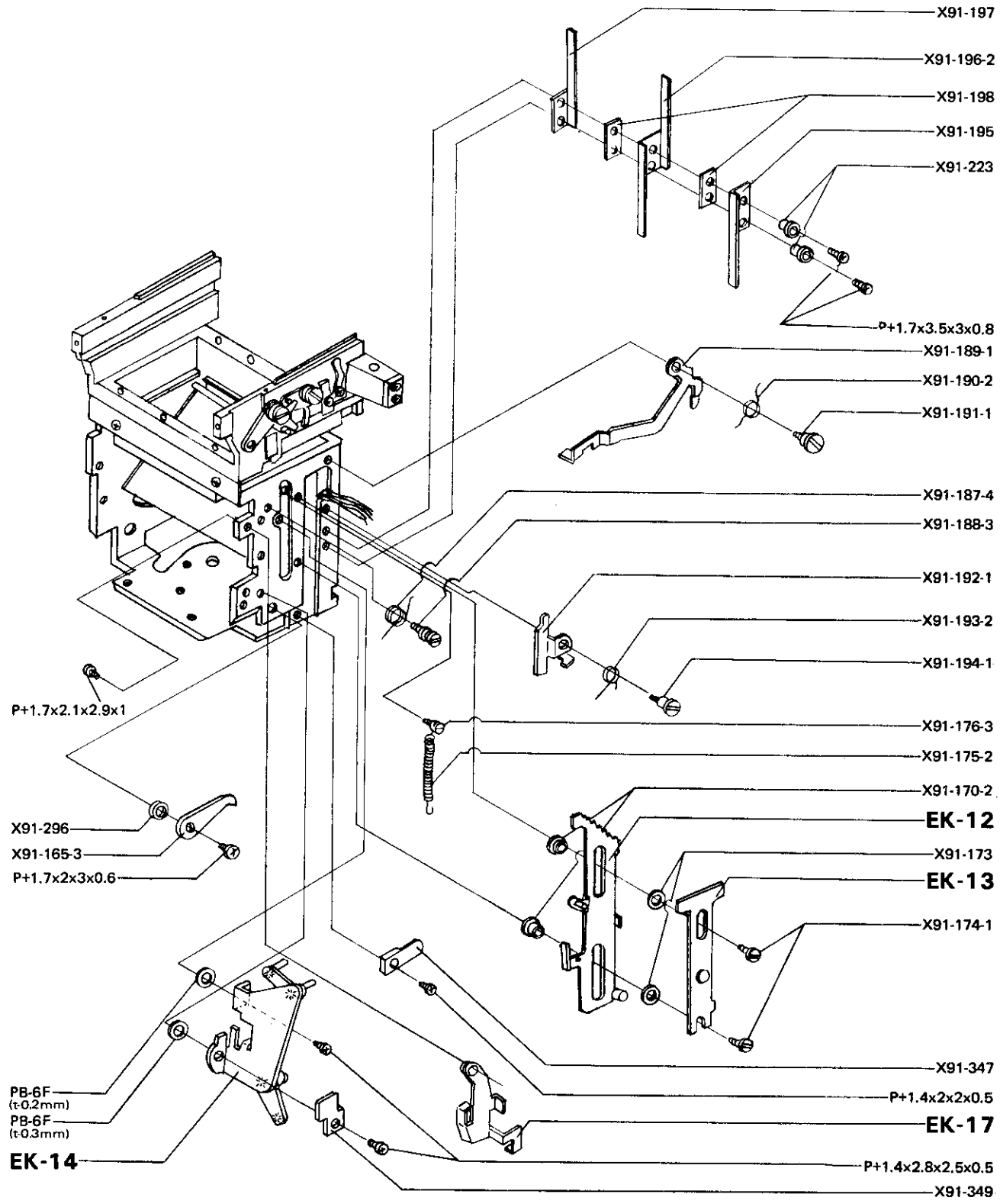
SECTION 1 EXPLODED DIAGRAMS, ASSEMBLIES, AND PARTS LIST



SECTION 1 EXPLODED DIAGRAMS, ASSEMBLIES, AND PARTS LIST

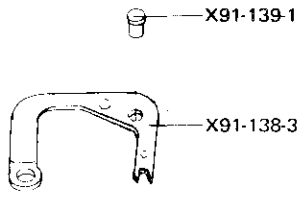


SECTION 1 EXPLODED DIAGRAMS, ASSEMBLIES, AND PARTS LIST



SECTION 1 EXPLODED DIAGRAMS, ASSEMBLIES, AND PARTS LIST

EK-1



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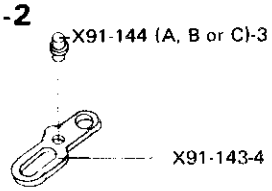

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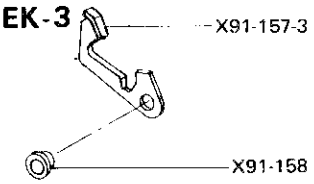

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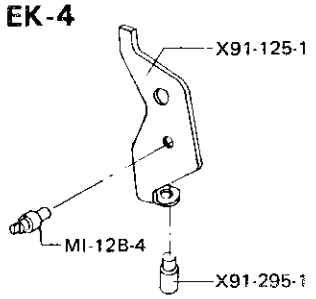

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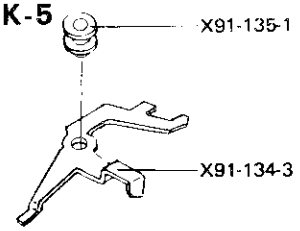

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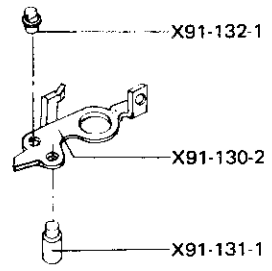

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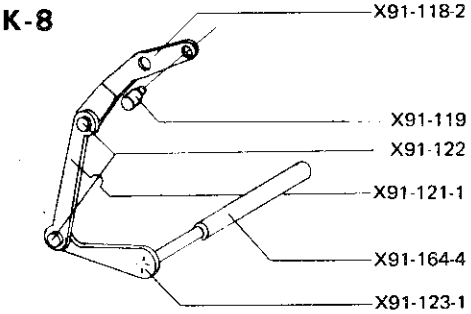
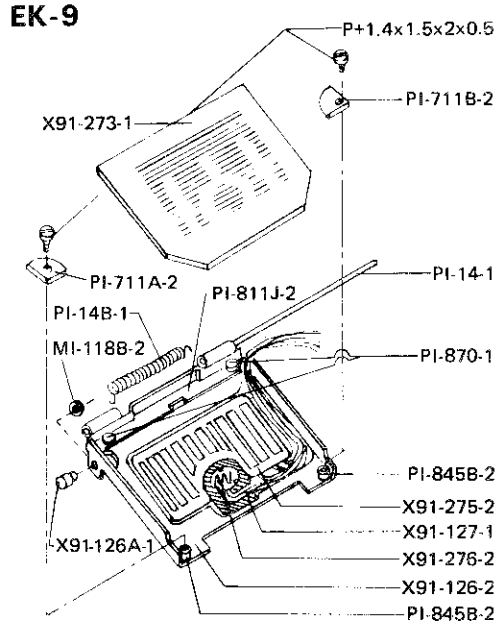
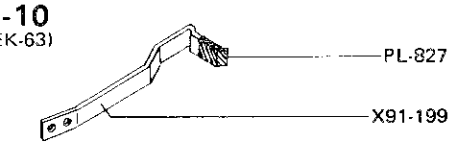


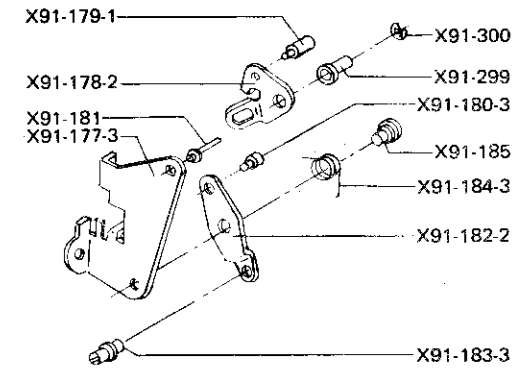
EK-9



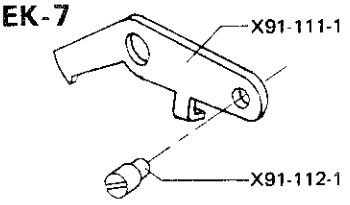
EK-10
(on EK-63)



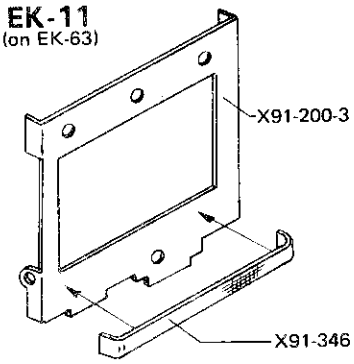
EK-14



EK-7



EK-11
(on EK-63)



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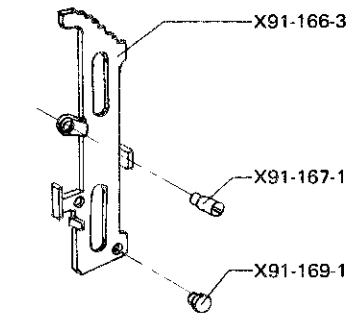

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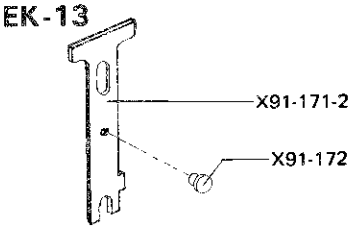

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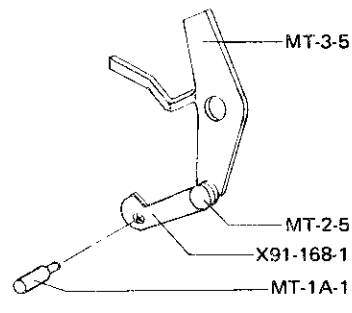
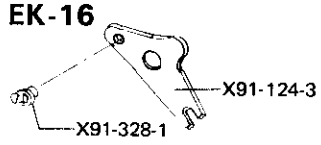
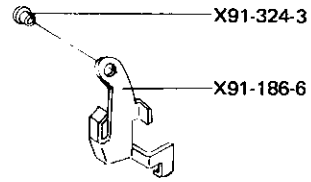


SECTION 1 EXPLODED DIAGRAMS, ASSEMBLIES, AND PARTS LIST

EK-16



EK-17



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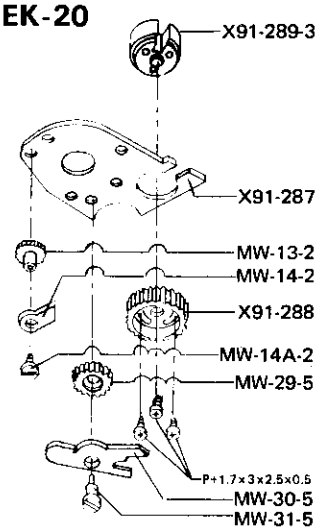
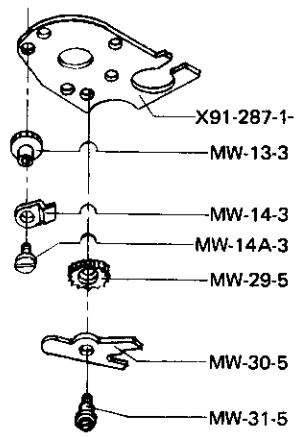
EK-20



EK-20A



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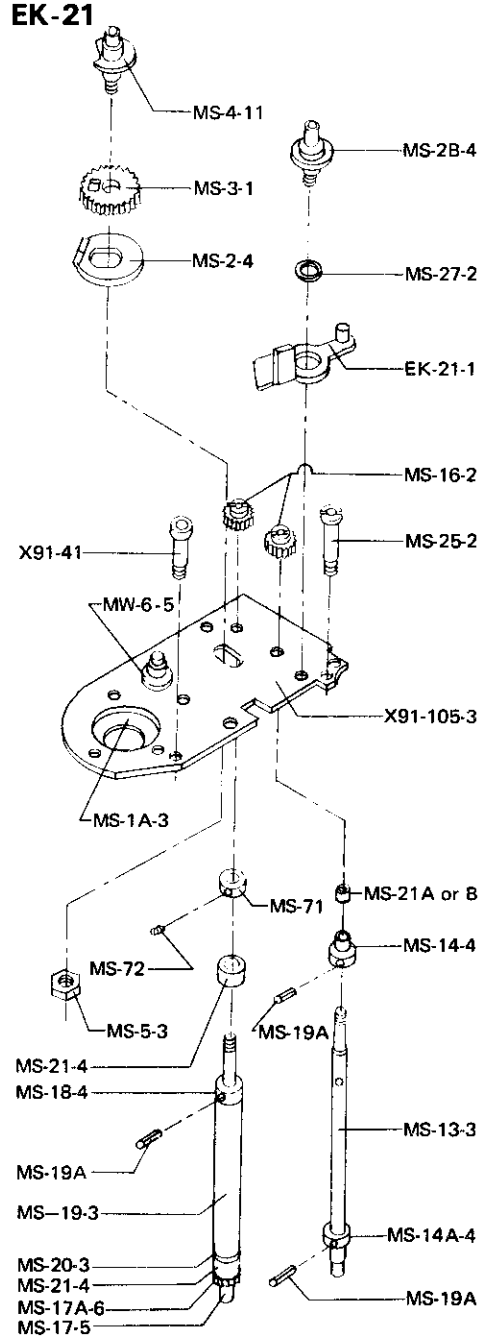
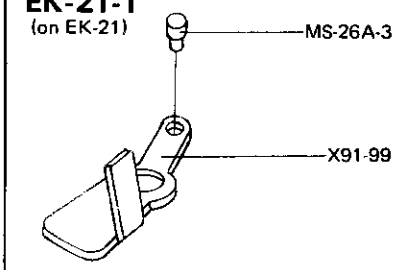
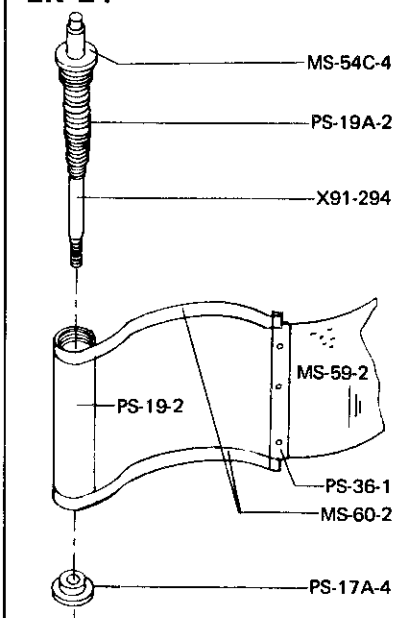


EK-21-1

(on EK-21)



EK-24



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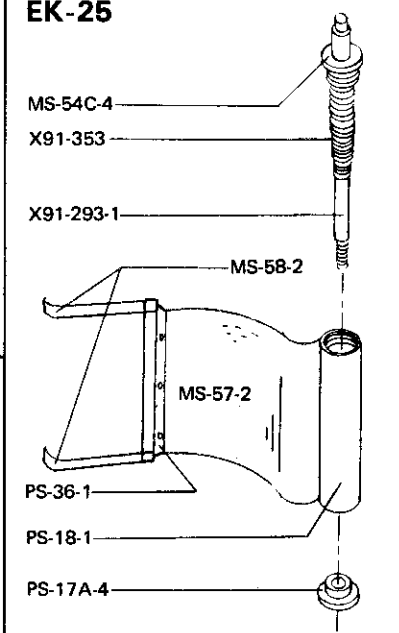
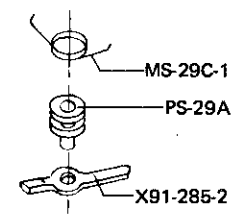


EK-22



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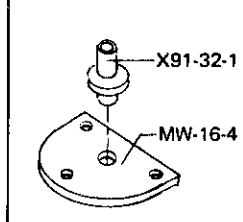
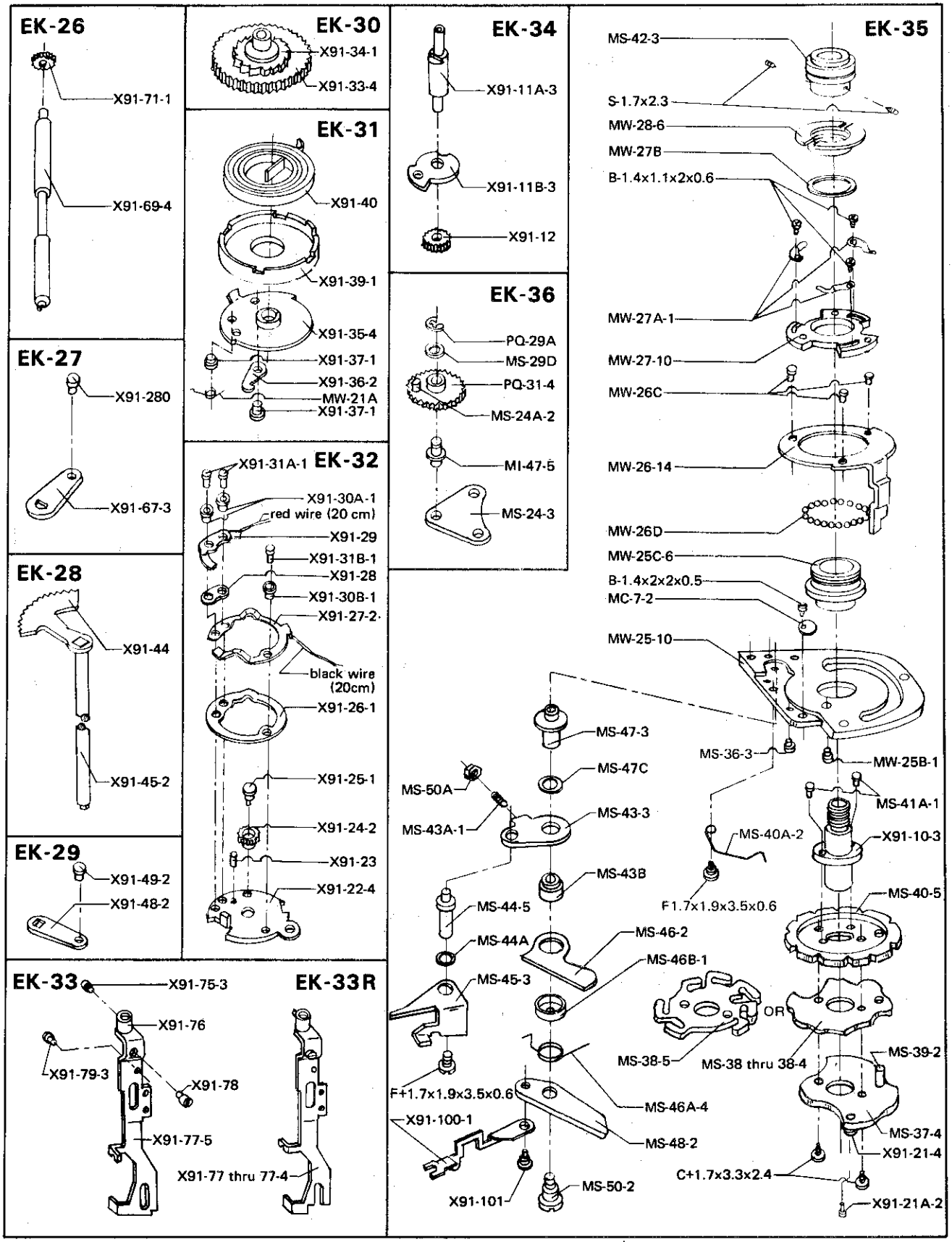
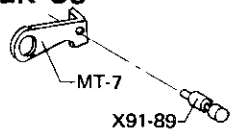


SECTION 1 EXPLODED DIAGRAMS, ASSEMBLIES, AND PARTS LIST

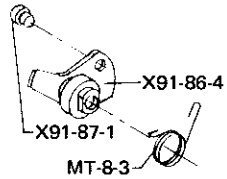


SECTION 1 EXPLODED DIAGRAMS, ASSEMBLIES, AND PARTS LIST

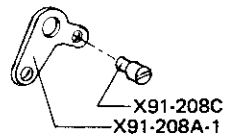
EK-39



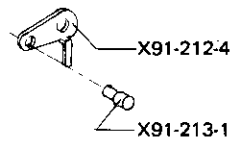
EK-40



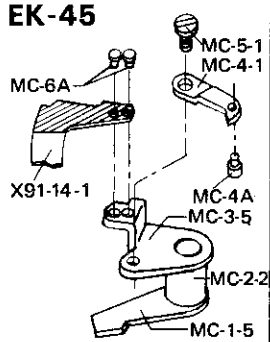
EK-42



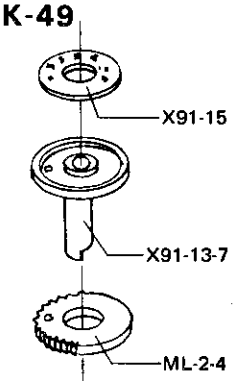
EK-43



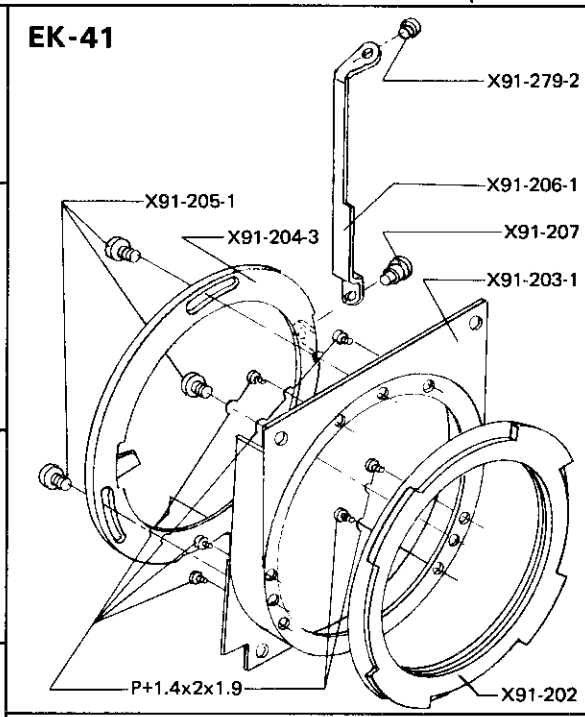
EK-45



EK-49



EK-41



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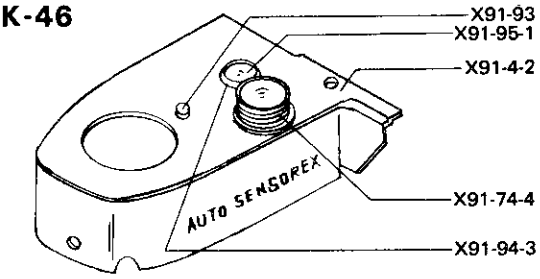

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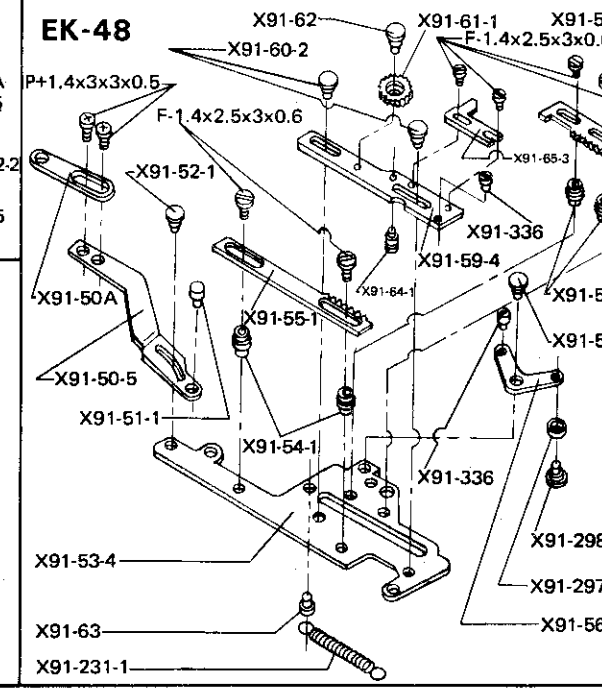

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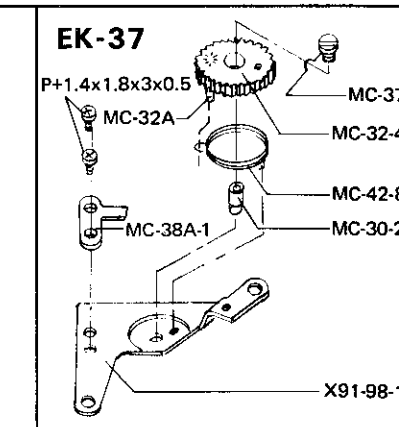
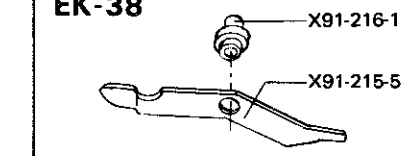
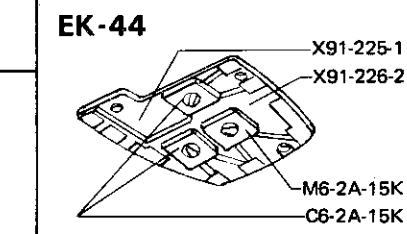


EK-38



EK-44



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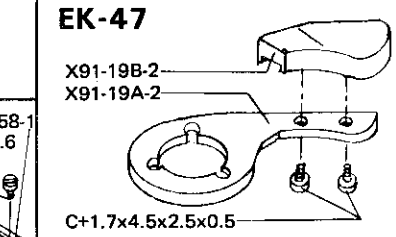
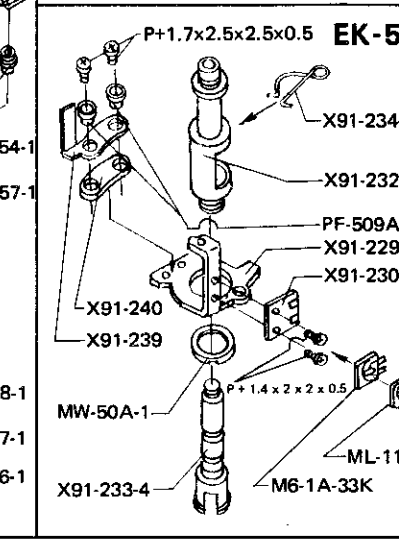
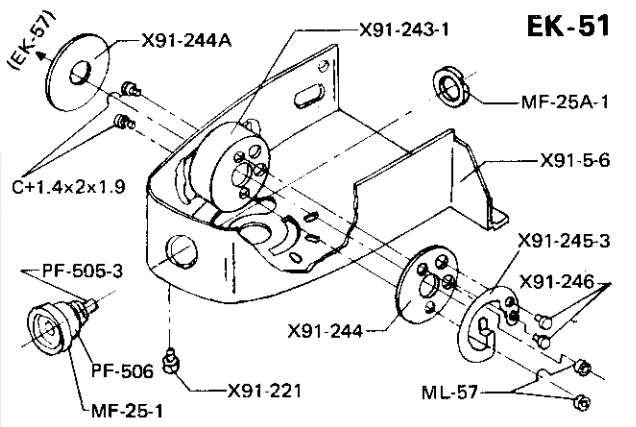


EK-50



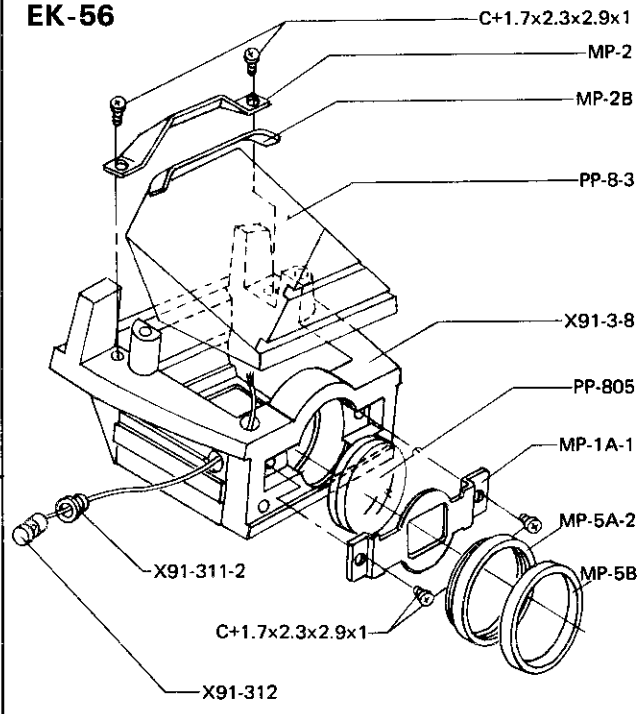
SECTION 1 EXPLODED DIAGRAMS, ASSEMBLIES, AND PARTS LIST

EK-51

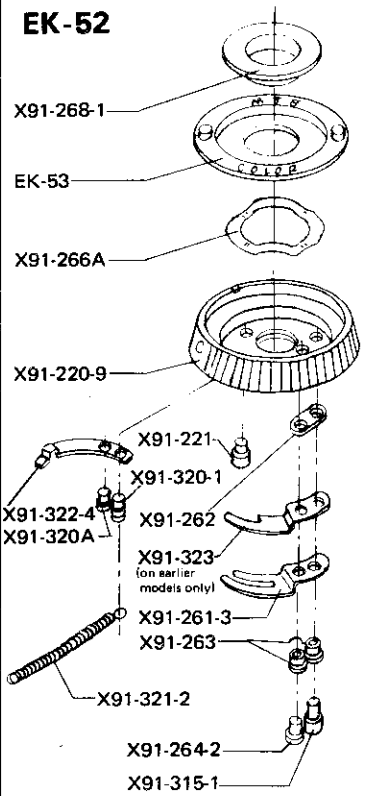


EK-55 SEE NEXT PAGE →

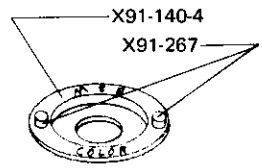
EK-56



EK-52



EK-53



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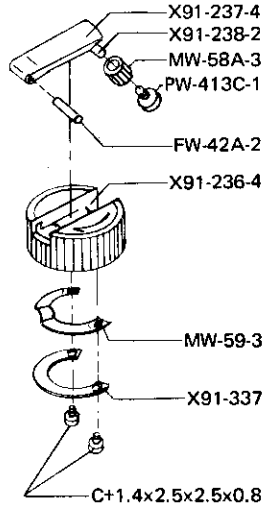
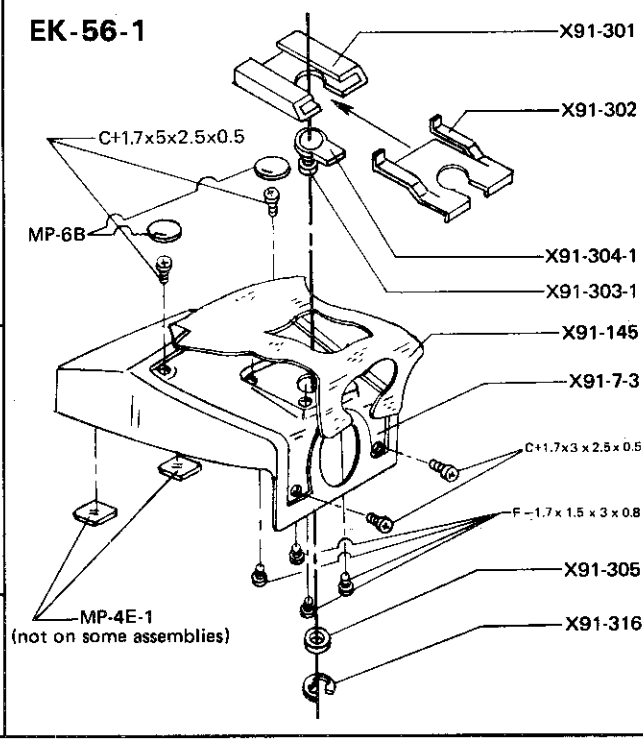
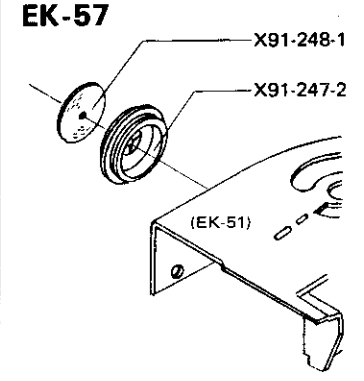


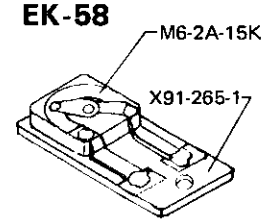
EK-56-1



EK-57

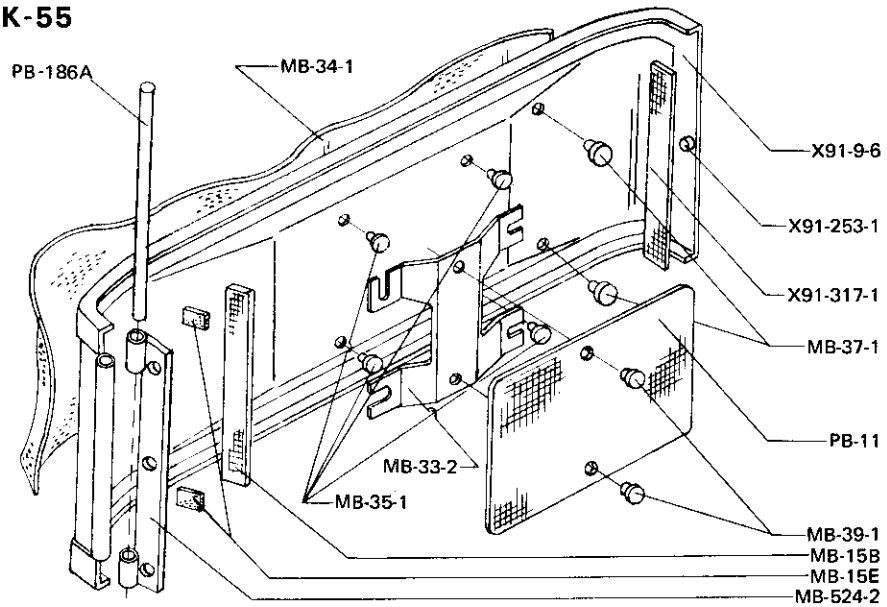


EK-58

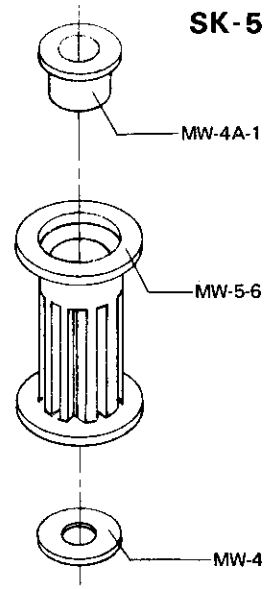


SECTION 1 EXPLODED DIAGRAMS, ASSEMBLIES, AND PARTS LIST

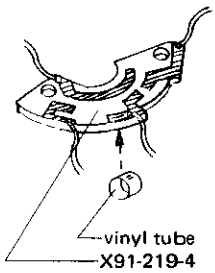
EK-55



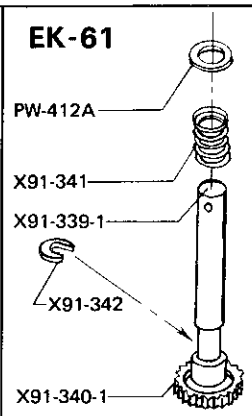
SK-5



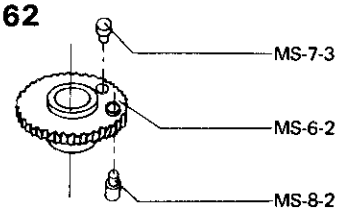
EK-60



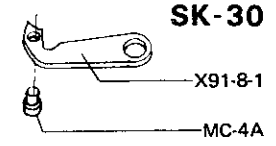
EK-61



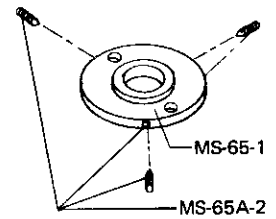
EK-62



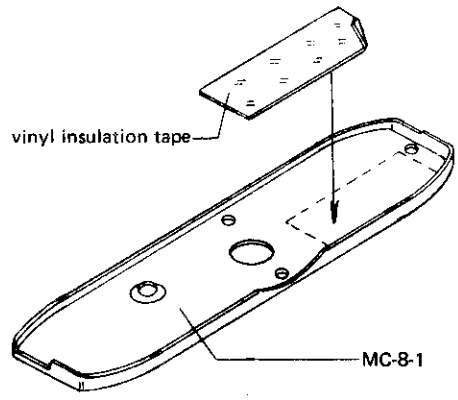
SK-30



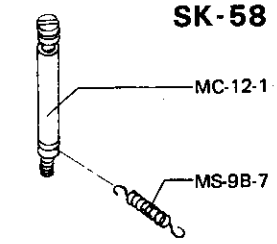
SK-52



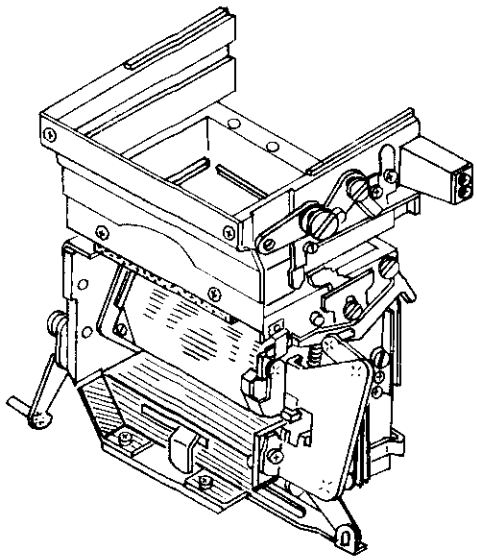
EK-64



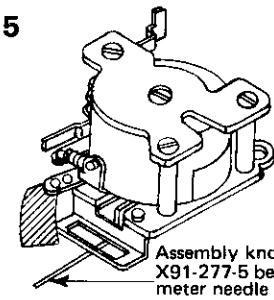
SK-58



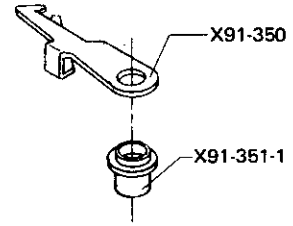
EK-63



EK-65



EK-66



SECTION 1 EXPLODED DIAGRAMS, ASSEMBLIES, AND PARTS LIST

PART NUMBER	ENGLISH NAME	JAPANESE NAME	ASSEMBLY EXPLODED PLACE	PAGE #
	ASSEMBLIES			
EK-1	EE-diaphragm controller locking lever assembly	コントローラー ロック レバー組	11	8
EK-2	Magnifying lever assembly	拡大板組	11	8
EK-3	Mirror stopper-A assembly	ミラーストッパーA組	11	8
EK-4	Mirror actuator lever assembly	黒レバー組	11	7
EK-5	Diaphragm lever assembly	絞りレバー組	11	8
EK-6	Oscillating lever assembly	廻動レバー組	11	8
EK-7	Mirror stopper lever assembly	ミラー係止杆組	11	7
EK-8	EE-actuator lever assembly	EE作動レバー組	11	7
EK-9	Mirror assembly	ミラー枠組	11	9
EK-10	X-synch. contact assembly	X-接片組	11	7
EK-11	Rear light baffle assembly	後部遮光板組	11	7
EK-12	EE-meter needle stopper assembly	鋸歯組	11	10
EK-13	EE-meter needle holder assembly	針押え板組	11	10
EK-14	EE-diaphragm transmission section assembly	鋸歯連動基板組	11	10
EK-15	Self-timer mirror actuator lever assembly	セルフ連動レバー組	11	7
EK-16	Connector lever assembly	連結杆組	12	7
EK-17	Manual lever assembly	マニュアルレバー組	12	10
EK-20 or-20A	Lower shutter base plate assembly	巻上下部基板組	12	6
EK-21	Shutter base assembly	巻上基板組	12	6
EK-21-1	Clutch plate assembly	クラッチ板組	12	5
EK-22	Release lever assembly	幕レリーズレバー組	12	5
EK-23	Film winding ratchet wheel base assembly	大歯車台	12	5
EK-24	2nd curtain assembly	後幕組	12	6
EK-25	1st curtain assembly	先幕組	12	6
EK-26	Meter link assembly	メーター回転軸	13	6
EK-27	Meter revolving lever-C assembly	メーター回転板	13	6
EK-28	ASA segment gear link assembly	扇形ギャー	13	4
EK-29	Meter ASA setting transmission lever assembly	ASA連動板	13	4
EK-30	Film winding ratchet gear assembly	大歯車	13	4
EK-31	Winding lever spring assembly	巻上レバー台	13	4
EK-32	X-contact base assembly	X-接片台組	13	4
EK-33 or-33R	Shutter release lever assembly	シャッター レリーズ板組	13	5

SECTION 1 EXPLODED DIAGRAMS, ASSEMBLIES, AND PARTS LIST

PART NUMBER	ENGLISH NAME	JAPANESE NAME	ASSEMBLY EXPLODED	PAGE # PLACE
EK-34	EE-override button shaft assembly	切換ボタン軸組	13	4
EK-35	Film winding lever base assembly	ヤ グ ラ	13	4
EK-36	Mirror resetting gear assembly	解放ギャ組	13	7
EK-37	Exposure counter base assembly	カウンター基板組	14	4
EK-38	Mirror setting lever assembly	ミラーセットレバー組	14	6
EK-39	Self-timer connecting lever assembly	セルフ連結板組	14	5
EK-40	Self-timer cam assembly	セルフ カム組	14	5
EK-41	Lens mount assembly	レンズマウント組	14	3
EK-42	Under-exposure warning lever-B assembly	指標連動レバー -B組	14	9
EK-43	Under-exposure warning lever-C assembly	指標連動レバー -C組	14	9
EK-44	Lower printed circuit assembly	メーター調整 プリント板組	14	6
EK-45	Film wind indicator assembly	赤 旗 組	14	4
EK-46	Right top cover assembly	右カバー組	14	3
EK-47	Film advance lever assembly	巻上レバー組	14	2
EK-48	Meter interlocking lever assembly	メーター連動基板	14	6
EK-49	ASA dial assembly	ASAダイヤル組	14	2
EK-50	Film rewind shaft assembly	巻戻し基板組	14	5
EK-51	Left top cover assembly	左カバー組	15	3
EK-52	Meter switch assembly	切換リング組	15	2
EK-53	Film memory dial assembly	指標リング組	15	2
EK-54	Film rewind crank assembly	巻戻しクランク組	15	2
EK-55	Back cover assembly	裏 蓋 組	16	3
EK-56	Prism case assembly	プリズム組	15	1
EK-56-1	Prism cover assembly	プリズムカバー組	15	1
EK-57	Battery cover assembly	電池キャップ	15	3
EK-58	Variable resistor assembly	可変抵抗組	15	6
EK-60	Meter switch printed circuit	メーター スイッチ 基 板 組	16	5
EK-61	Sprocket shaft assembly	スプロケット軸組	16	6
EK-62	1st curtain gear assembly	先幕ギヤー組	16	5
EK-63	Mirror housing assembly	中 枠 組	16	6
EK-64	Bottom cover assembly	底カバー組	16	2
EK-65	Meter movement assembly	メ ー タ ー	16	5
EK-66	1st curtain gear locking lever assembly	先幕ストッパー組	16	4

SECTION 1 EXPLODED DIAGRAMS, ASSEMBLIES, AND PARTS LIST

PART NUMBER	ENGLISH NAME	JAPANESE NAME	ASSEMBLY EXPLODED	PAGE # PLACE
SK-1	Sprocket shaft assembly	スプロケット軸組		6
SK-5	Rapid load take-up spool	スプール	16	5
SK-30	Counter stopper claw assembly	カウンター係止爪組	16	4
SK-52	Shutter dial base assembly	スピードダイヤル台組	16	2
SK-58	1st curtain setting lever spring assembly	先幕ストッパーバネ掛軸組	16	5

SECTION 1 EXPLODED DIAGRAMS, ASSEMBLIES, AND PARTS LIST

PART NUMBER	ENGLISH NAME	JAPANESE NAME	ASSEMBLY	PAGE #
	X91 PARTS			
X91-1-20	Body	本 体		6, 7
X91-2-14	Mirror housing frame	中 枠		8, 9
X91-3-8	Prism case base	プリズムケース	EK-56	15
X91-4-2	Right cover	右カバー	EK-46	14
X91-5-6	Left cover	左カバー	EK-51	15
X91-6-3	Front cover	前カバー		3
X91-7-3	Prism cover base	プリズムカバー	EK-56-1	15
X91-8-1	Bottom cover	底カバー	EK-64	16
X91-9-6	Back cover	裏 蓋	EK-55	16
X91-10-3	Cam shaft	カ ム 軸	EK-35	13
X91-11A-3	Stopper-A	切換ストッパーA	EK-34	13
X91-11B-3	Stopper-B	切換ストッパーB	EK-34	13
X91-12	Interlocking pinion	連動ピニオン	EK-34	13
X-91-13-7	ASA Dial base	感度ダイヤル台	EK-49	14
X91-14-1	Film wind indicator	巻上表示板	EK-45	14
X91-15	ASA dial	感度ダイヤル	EK-49	14
X91-16-1	EE-override button spring	切換軸スプリング		2
X91-17	EE-override button	切換ボタン		2
X91-18-1	Shutter speed dial	スピードダイヤル		2
X91-19A-2	Wind lever	巻上レバー	EK-47	14
X91-19B-2	Wind lever tip	巻上レバーツマミ	EK-47	14
X91-21-4	X-contact switching pin	クラッチピン	EK-35	13
X91-21A-2	X-contact switching pin insulator	絶 縁 座	EK-35	13
X91-22-4	X-contact base	X-接片台	EK-32	13
X91-23	X-contact base pin	位置決メピン	EK-32	13
X91-24-2	X-contact intermediate gear	中間歯車	EK-32	13
X91-25-1	X-contact intermediate gear shaft	中間歯車軸	EK-32	13
X91-26-1	X-contact support base-A	X-接片ベースA	EK-32	13
X91-27-2	X-contact-A	X-接片A	EK-32	13
X91-28	X-contact support base-B	X-接片ベースB	EK-32	13
X91-29	X-contact-B	X-接片B	EK-32	13
X91-30A-1	X-contact rivet insulator-A	X-絶縁パイプ	EK-32	13
X91-30B-1	X-contact rivet insulator-B	X-絶縁パイプB	EK-32	13
X91-31A-1	X-contact rivet-A	X-接片鋲	EK-32	13

SECTION 1 EXPLODED DIAGRAMS, ASSEMBLIES, AND PARTS LIST

PART NUMBER	ENGLISH NAME	JAPANESE NAME	ASSEMBLY	PAGE #
X91-31B-1	X-contact rivet-B	X-接片鋲	EK-32	13
X91-32-1	Film winding ratchet wheel shaft	歯車軸	EK-23	12
X91-33-4	Film winding gear	大歯車	EK-30	13
X91-34-1	Film winding ratchet gear	巻上ラチェット	EK-30	13
X91-35-4	Film winding claw base	爪台	EK-31	13
X91-36-2	Film winding claw	巻上爪	EK-31	13
X91-37-1	Film winding claw pin	爪カシメ軸	EK-31	13
X91-38-1	ASA film speed setting ring	調節リング		2
X91-39-1	Film winding spring case	スプリングケース	EK-31	13
X91-40	Film winding spring	巻上ゼンマイ	EK-31	13
X91-41	X-contact base support	X-接片台支柱	EK-21	12
X91-42-2	Film winding lever base support	巻上基板支柱		4
X91-44	ASA segment gear	扇歯車	EK-28	13
X91-45-2	ASA segment gear link-A	連動軸A	EK-28	13
X91-47-1	ASA segment gear link lower collar	連動軸下部カラー		4
X91-48-2	Meter ASA setting transmission lever-A	連動板	EK-29	13
X91-49-2	Meter ASA setting transmission lever-A pin	連動板Aピン	EK-29	13
X91-50-5	Bottom connector lever-B	連動板B	EK-48	14
X91-50A	Bottom connector lever-B adjusting plate	調整板	EK-48	14
X91-51-1	Bottom connector lever-B	連動板Bピン	EK-48	14
X91-52-1	Bottom connector lever-B shaft	連動板B軸	EK-48	14
X91-53-4	Meter interlocking lever base	連動基板	EK-48	14
X91-54-1	Meter interlocking lever base collar	連動ラック座	EK-48	14
X91-55-1	Meter interlocking rack-A	連動ラックA	EK-48	14
X91-56-1	Meter interlocking lever-C	連動板C	EK-48	14
X91-57-1	Meter interlocking lever-C shaft	連動板C軸	EK-48	14
X91-58-1	Meter interlocking rack-B	連動ラックB	EK-48	14
X91-59-4	Meter revolving lever-A	メーター回転板A	EK-48	14
X91-60-2	Meter revolving lever-A guide pin	回転板ガイド	EK-48	14
X91-61-1	Meter interlocking lever pinion	Mピニオン	EK-48	14
X91-62	Meter interlocking lever pinion shaft	Mピニオン軸	EK-48	14

SECTION 1 EXPLODED DIAGRAMS, ASSEMBLIES, AND PARTS LIST

PART NUMBER	ENGLISH NAME	JAPANESE NAME	ASSEMBLY	PAGE #
X91-63	Meter revolving lever spring retainer-A	回転バネ掛A	EK-48	14
X91-64-1	Meter revolving lever spring retainer-B	回転バネ掛B	EK-48	14
X91-65-3	Meter revolving lever-B	メーター回転板B	EK-48	14
X91-67-3	Meter revolving lever-C	メーター回転板C	EK-27	13
X91-67A	Meter link retaining pin	メーター回転板C取付		6
X91-68	Meter link lower collar	メーター回転板C座		6
X91-69-4	Meter link shaft	メーター回転軸	EK-26	13
X91-70-1	Meter link upper collar	メーター歯車座		6
X91-71-1	Meter link gear	メーター歯車	EK-26	13
X91-72-4	Shutter release button	押しボタン		2
X91-73-2	Shutter release button outer collar	押しボタンリング		2
X91-74-4	Shutter release button inner collar	押しボタンリング座	EK-46	14
X91-75-3	Anti-revolve retaining pin	押しボタン止メ	EK-33	13
X91-76	Shutter release lever pin	レリーズ板ピン	EK-33	13
X91-77-5	Shutter release lever	レリーズ板	EK-33	13
X91-77A-1	Shutter release lever retaining screw	レリーズ板取付		5
X91-78	'B' eccentric pin	バルブエキセン	EK-33	13
X91-79-3	Shutter release lever rivet pin	レリーズ板カシメピン	EK-33	13
X91-80-3	Self-timer starter arm	レリーズ板アーム		5
X91-81-3	Self-timer component	セルフタイマー上基板	X91-128	5
X91-82-1	Self-timer component	レリーズ板座A	X91-128	5
X91-83-2	Self-timer component	レリーズ板座B	X91-128	5
X91-85-3	Self-timer component	セルフタイマー支柱	X91-128	5
X91-86-4	Self-timer cam	セルフ回転カム	EK-40	14
X91-87-1	Self-timer stopper stud	セルフ解放突起	EK-40	14
X91-88-1	Self-timer spring	原動スプリング		5
X91-89	Self-timer cam spring hook	復帰SP掛ケ	EK-39	14
X91-90-2	Self-timer component	レリーズ板SP掛ケ	X91-128	5
X91-91-1	Shutter release lever spring	レリーズ板スプリング		5
X91-92-1	Self-timer brake lever	クリックバネ		5
X91-93	Film wind indicator window	巻上表示窓	EK-46	14
X91-94-3	Counter window frame	カウンター窓枠	EK-46	14
X91-95-1	Counter window glass	カウンターレンズ	EK-46	14

SECTION 1 EXPLODED DIAGRAMS, ASSEMBLIES, AND PARTS LIST

PART NUMBER	ENGLISH NAME	JAPANESE NAME	ASSEMBLY	PAGE #
X91-96-1	Counter indicator	カウンター指標		4
X91-97-3	Counter number disk	カウンター		4
X91-98-1	Counter base plate	カウンター基板	EK-37	14
X91-99	Clutch plate	クラッチ板	EK-21-1	12
X91-100-1	'B'- lever	バルブレバー	EK-35	13
X91-101	'B'- lever shaft	バルブレバー軸	EK-35	13
X91-102-2	'B'- lever guide post	案 内 軸		5
X91-103-4	'B'- lever spring	バルブスプリング		5
X91-104-2	'B'- lever stopper plate	バ ル ブ 板		5
X91-105-3	Shutter base plate	シャッター基板	EK-21	12
X91-106	Self-timer camera base plate	セルフ基板		5
X91-107-1	Self-timer component	セルフ原動SP軸	X91-128	5
X91-108	Self-timer lever	セルフレバー		2
X91-109-2	Self-timer lever retainer	セルフレバー押え		2
X91-110-2	Mirror stopper lever retainer	係止杆ネジ		7
X91-111-1	Mirror stopper lever	係 止 杆	EK-7	11
X91-112-1	Mirror stopper eccentric stud	係止杆エキセン	EK-7	11
X91-113-2	Mirror stopper lever spring	係止杆スプリング		7
X91-114-1	Mirror stopper lever washer	係 止 杆 台		7
X91-115-2	1st curtain release lever	レリーズレバー		7
X91-116-3	Mirror stopper lever spring hook	係止杆SP		7
X91-117-1	EE-actuator lever assembly retaining screw	EE連動板Aネジ		7
X91-118-2	EE-actuator lever-A	EE連動板A	EK-8	11
X91-119	EE-actuator lever-A pin	EE連動板Aピン	EK-8	11
X91-120-1	EE-actuator lever-A spacer	EE連動板A軸		7
X91-121-1	EE-actuator lever-B	EE連動板	EK-8	11
X91-122	EE-actuator lever-B rivet	EE連動板Bカシメ軸	EK-8	11
X91-123-1	EE-actuator lever-C	EE連動板C	EK-8	11
X91-124-3	Connector lever	連 結 杆	EK-16	12
X91-125-1	Mirror actuator lever	ミラー駆動杆	EK-4	11
X91-125A-1	Mirror actuator lever washer	ミラー作動レバー間座		7
X91-126-2	Mirror frame	ミ ラ ー 枠	EK-9	11
X91-126A	Mirror actuator stud	ミラー作動鋲	EK-9	11
X91-127-1	'S' CdS cell support	c d s. 座	EK-9	11
X91-128-2	Self-timer	セルフタイマー		5

SECTION 1 EXPLODED DIAGRAMS, ASSEMBLIES, AND PARTS LIST

PART NUMBER	ENGLISH NAME	JAPANESE NAME	ASSEMBLY	PAGE #
X91-129-1	Oscillating lever shaft	廻動杆座		8
X91-130-2	Oscillating lever	廻動杆	EK-6	11
X91-131-1	Oscillating lever stud	廻動杆ノック	EK-6	11
X91-132-1	Oscillating lever stopper pin	廻動杆止メピン	EK-6	11
X91-133-3	Diaphragm lever shaft	絞リレバー座		8
X91-134-3	Diaphragm lever	絞りレバー	EK-5	11
X91-135-1	Diaphragm lever collar	絞りレバーパイプ	EK-5	11
X91-136-4	Diaphragm lever spring	絞りレバースプリング		8
X91-137-1	Diaphragm/oscillating lever retaining screw	廻動杆ネジ		7
X91-138-3	EE-diaphragm controller locking lever	ロックアーム	EK-1	11
X91-139-1	EE-diaphragm controller locking lever pin	ロックアームピン	EK-1	11
X91-140-4	Film memory dial	指標リング	EK-53	15
X91-141-2	Self-timer component	セルフ下基板	X91-128	5
X91-142	EE-diaphragm controller locking lever shaft	ロックアーム軸		8
X91-143-4	Magnifying lever	拡大板	EK-2	11
X91-144A-3	Magnifying lever pin (*o.d.*-2.1mm)	拡大板作動ピン	EK-2	11
B-3	(*o.d.*-1.9mm)	〃	EK-2	11
C-3	(*o.d.*-2.3mm)	〃	EK-2	11
X91-145	Prism cover top leather	プリズム張革	EK-56-1	15
X91-146-2	Magnifying lever spring	拡大板スプリング		8
X91-147-1	Magnifying lever retaining screw	拡大板ネジ		8
X91-148-2	Diaphragm lever stopper shaft	ストッパー軸		8
X91-150-1	Shutter release button adjustment screw	調整ネジ		5
X91-151-2	Osxillating lever spring	廻動杆スプリング		8
X91-152-1	Mirror resetting lever	解放杆		8
X91-153	Mirror resetting lever shaft	解放杆座		8
X91-155-1	EE-diaphragm controller	コントローラ		8
X91-156-2	EE-diaphragm controller retaining screw	コントローラ押えネジ		8
X91-157-3	Mirror stopper-A	ミラーストッパーA	EK-3	11
X91-158	Mirror stopper-A shaft	ミラーストッパー軸	EK-3	11
X91-159-2	Mirror stopper spring	ミラーストッパースプリング		8
X91-160-3	Mirror stopper-B	ミラーストッパーB		8

SECTION 1 EXPLODED DIAGRAMS, ASSEMBLIES, AND PARTS LIST

PART NUMBER	ENGLISH NAME	JAPANESE NAME	ASSEMBLY	PAGE #
X91-161	Mirror stopper shaft	ミラーストッパーメネジ		8
X91-162-2	Mirror stopper adjusting eccentric screw	ミラーストッパーエキセン		8
X91-163-1	Mirror position adjusting lever	ミラー杆調整レバー		9
X91-164-4	EE-actuator lever shaft	EE連動軸	EK-8	11
X91-165-3	EE-connector lever-D	EE連動板D		10
X91-166-3	EE-meter needle stopper	鋸　歯	EK-12	11
X91-167-1	EE-meter needle stopper eccentric screw	鋸歯エキセン	EK-12	11
X91-168-1	Self-timer mirror actuator transmission lever	始　動　杆	EK-15	11
X91-169-1	EE-meter needle stopper pin	鋸歯ピン	EK-12	11
X91-170-2	EE-meter needle s/h collar	針押え座		10
X91-171-2	EE-meter needle holder	針押え板	EK-13	11
X91-172	EE-meter needle holder pin	針押えスプリング掛ケ	EK-13	11
X91-173	EE-meter needle s/h washer	針押えワッシャー		10
X91-174-1	EE-meter needle s/h retainer	針押えネジ		10
X91-175-2	EE-meter needle stopper spring	鋸歯スプリング		10
X91-176-3	EE-meter needle stopper spring retainer	鋸歯SP掛ケ		10
X91-177-3	EE-diaphragm transmission section base	鋸歯連動基板	EK-14	11
X91-178-2	EE-diaphragm transmission lever-A	鋸歯連動板A	EK-14	11
X91-179-1	EE-diaphragm transmission lever-A pin	鋸歯連動板Aピン	EK-14	11
X91-180-3	EE-diaphragm transmission guide pin	鋸歯連動板A軸	EK-14	11
X91-181	EE-diaphragm lever-A shaft	鋸歯連動板B	EK-14	11
X91-182-2	EE-diaphragm controller connecting lever-B	鋸歯連動エキセン	EK-14	11
X91-183-3	EE-diaphragm lever-B eccentric screw	鋸歯連動板	EK-14	11
X91-184-3	EE-diaphragm lever-B returning spring	鋸歯連動板スプリング	EK-14	11
X91-185	EE-diaphragm lever-B shaft	鋸歯連動板B軸	EK-14	11
X91-186-6	Manual lever	マニアルレバー	EK-17	12
X91-187-4	Manual lever spring	マニアルレバーSP		10

SECTION 1 EXPLODED DIAGRAMS, ASSEMBLIES, AND PARTS LIST

PART NUMBER	ENGLISH NAME	JAPANESE NAME	ASSEMBLY	PAGE #
X91-188-3	Manual lever spring retainer	マニアルレバーバネ掛		10
X91-189-1	FP-contact lever	接　触　杆		10
X91-190-2	FP-contact lever spring	接触杆バネ		10
X91-191-1	FP-contact lever retainer	接触杆ネジ		10
X91-192-1	Wire and spring holder	リード押え板		10
X91-193-2	EE-meter needle holder spring	針押えスプリング		10
X91-194-1	EE-meter needle holder spring retainer	リード押え板ネジ		10
X91-195	X-synch.-contact-A	シンクロ接片A		10
X91-196-2	X/FP synch.-contact-B	シンクロ接片B		10
X91-197	X/FP ground-contact	アース接片		10
X91-198	Synch.-contact insulator	シンクロ絶縁板		10
X91-199	X synch.-contact lever	X-接触片レバー	EK-10	11
X91-200-3	Mirror housing rear light baffle	後遮光板	EK-11	11
X91-201-2	Mirror housing bottom light baffle	中底カバー		8
X91-201A	Bottom light baffle guide screw	中底カバー押え		8
X91-202	Lens mount	前　口　金	EK-41	14
X91-203-1	Lens mount base	口金基板	EK-41	14
X91-204-3	F-number adjustment ring	Fナンバーリング	EK-41	14
X91-205-1	F-number adjustment ring retainer	リング押え	EK-41	14
X91-206-1	Under-exposure warning transmission lever-A	指標連動レバーA	EK-41	14
X91-207	U-x transmission lever-A rivet-A	支　点　鋲	EK-41	14
X91-208A-1	Under-exposure warning lever-B	指標連動レバーB	EK-42	14
X91-208B-1	U-x transmission adjusting lever	指標連動調整レバー		9
X91-208C	U-x warning lever-B stud	指標連動調節ノック	EK-42	14
X91-210-2	U-x warning lever-B retainer	指標連動レバーB軸		9
X91-211-2	U-x warning lever-B spring	Fナンバーリング復帰SP		9
X91-212-4	Under-exposure transmission lever-C	指標連動レバーC	EK-43	14
X91-213-4	U-x transmission lever-C stud	指標連動レバーCピン	EK-43	14
X91-214-2	U-x transmission lever-C retainer	指標連動レバー C止ネジ		9
X91-215-5	Mirror setting lever	ミラーセットレバー	EK-38	14
X91-216-1	Mirror setting lever shaft	セットレバー軸	EK-38	14
X91-217-1	Mirror setting lever spring	セットレバーSP		6
X91-218	Mirror setting lever retainer	セットレバーネジ		6

SECTION 1 EXPLODED DIAGRAMS, ASSEMBLIES, AND PARTS LIST

PART NUMBER	ENGLISH NAME	JAPANESE NAME	ASSEMBLY	PAGE #
X91-219-4	Meter switch printed circuit	スイッチ基板	EK-60	16
X91-2209	Meter switch base ring	切換リング	EK-52	15
X91-221	Left top cover stopper pin	ストッパーピン	EK-52, 51	15
X91-223	Synch. insulation bushing	シンクロ接片絶縁ブッシュ		10
X91-224-1	Tripod socket	三脚ネジ		6
X91-225-1	Lower printed circuit base plate	パトローネ底板	EK-44	14
X91-226-2	Lower printed circuit plate	プリント板	EK-44	14
X91-227	Curtain assembly upper collar	スプリング軸カラー		6
X91-228-2	Upper curtain drum base plate	スプリング軸上部基板		6
X91-229-3	Film rewind base	巻戻基板	EK-50	14
X91-230-1	Resister base	抵抗基板	EK-50	14
X91-231-1	Meter revolving lever-A returning spring	メーター回転板Aスプリング	EK-48	14
X91-232-4	Rewing shaft outer collar	巻戻軸受	EK-50	14
X91-233-4	Rewind shaft	巻戻軸	EK-50	14
X91-234-3	Rewind shaft spring	巻戻シ軸バネ	EK-50	14
X91-235-3	Meter switch retainer	巻戻軸ナット		2
X91-236-4	Rewind knob	巻戻ノブ	EK-54	15
X91-237-4	Crank	ハンドル	EK-54	15
X91-238-2	Crank knob shaft	ツマミ軸	EK-54	15
X91-239	Battery contact	電池接片	EK-50	14
X91-240	Battery contact insulator	電池接片絶縁板	EK-50	14
X91-241-2	Meter spring shaft	メータースプリング掛ケ		5
X91-242-1	Meter spring	メータースプリング		5
X91-243-1	Battery chamber	電池ケース	EK-51	15
X91-244	Outer chamber insulator	電池絶縁板	EK-51	15
X91-244A	Inner chamber insulator	絶縁板	EK-51	15
X91-245-3	Chamber contact	電池接片ケース	EK-51	15
X91-246	Chamber contact retainer	電池接片カシメ鋲	EK-51	15
X91-247-2	Battery cover	電池キャップ	EK-57	15
X91-248-1	Battery cover leather	電池キャップ革	EK-57	15
X91-249-4	Back cover locking lever-A	弘出シA		5
X91-250-6	Back cover lock release spring	引出シスプリング		5
X91-251-1	Back cover locking lever guide pin	引出シガイドネジ		5
X91-252-2	Back cover lock release spring stopper screw	引出シSPネジ		5
X91-253-1	Back cover locking pin	ロックピン	EK-55	16

SECTION 1 EXPLODED DIAGRAMS, ASSEMBLIES, AND PARTS LIST

PART NUMBER	ENGLISH NAME	JAPANESE NAME	ASSEMBLY	PAGE #
X91-254-2	Back cover locking lever cover plate	引出シカバー		5
X91-255-2	Condenser lens	コンデンサレンズ		2
X91-256-1	Condenser lens frame	コンデンサ押エ		2
X91-257-2	Mirror housing front plate	中枠前板		7
X91-258-3	Right front cover	右前カバー		3
X91-259-1	Left front cover	左前カバー		3
X91-261-3	Switch contact	切換接片	EK-52	15
X91-262	Switch contact insulator	切換接片間座	EK-52	15
X91-263	Switch contact insulating collar	絶縁ブッシュ	EK-52	15
X91-264-2	Switch contact rivet-A	切換接片鋲A	EK-52	15
X91-265-1	Resistor-printed circuit	プリント板	EK-58	15
X91-266A or B	Meter switch washer	指標リング指標間座	EK-52	15
X91-267	Film memory dial pin	指標ピン	EK-53	15
X91-268-1	Memory dial retainer	指標リング押え	EK-52	15
X91-271-1	Right front leather cover	右張皮		3
X91-272	Left front leather cover	左張皮		3
X91-273-1	Mirror	ミラー	EK-9	11
X91-274-1	Focusing screen	集点板		2
X91-275-2	'A' CdS cell	A – CdS	EK-9	11
X91-276-2	'S' CdS cell	S – CdS	EK-9	11
X91-277-5	Meter movement	メーター	EK-65	16
X91-278-1	Back cover locking lever-B	引出しB		5
X91-279-2	U-x transmission lever-A rivet-B	支点鋲B	EK-41	14
X91-280	Meter revolving lever-C pin	メーター回転板Cピン	EK-27	13
X91-281-2	Mirror resetting lever retainer	解放杆ネジ		8
X91-282-1	Mirror resetting lever spring	解放杆バネ		8
X91-283-1	Mirror position adjusting screw	ミラー枠調整ネジ		9
X91-284-3	Viewfinder mounting guide-rail spring	ファインダーバネ		7
X91-285-2	Release lever	レリーズレバー	EK-22	12
X91-286-2	Self-timer eccentric washer	セルフレバーストッパー		5
X91-287-1	Lower shutter base plate	下部基板	EK-20	12
X91-288	Safety gear	安全ギア	EK-20	12
X91-289-3	Safety cam	安全カム	EK-20	12
X91-290-3	Condenser lens spring	コンデンサースプリング		2

SECTION 1 EXPLODED DIAGRAMS, ASSEMBLIES, AND PARTS LIST

PART NUMBER	ENGLISH NAME	JAPANESE NAME	ASSEMBLY	PAGE #
X91-291-3	Intermediate gear	安全中間ギヤ		6
X91-292-1	Mirror housing front baffle	前遮光板		9
X91-293-1	1st curtain assembly shaft	先幕スプリング軸	EK-25	12
X91-294	2nd curtain assembly shaft	後幕スプリング軸	EK-24	12
X91-295-1	Mirror actuator lever pin	ミラー駆動杆ピン	EK-4	11
X91-296	EE-connector lever-D collar	EE連動板Dカラー		10
X91-297-1	Interlocking lever-C pin collar	連動板Cローラー	EK-48	14
X91-298-1	Interlocking lever-C pin	連動板Cローラー軸	EK-48	14
X91-299	EE-diaphragm transmission lever-A collar	鋸歯連動板Aパイプ	EK-14	11
X91-300	Mirror housing circlip	Eリング	EK-14	11
X91-301	Accessory shoe	アクセサリーシュー	EK-56-1	15
X91-302	Accessory shoe spring	板バネ	EK-56-1	15
X91-303-1	Hot-shoe contact	コードレス接点	EK-56-1	15
X91-304-1	Hot-shoe insulator-A	シュー絶縁座A	EK-56-1	15
X91-305	Hot-shoe insulator-B	シュー絶縁座B	EK-56-1	15
X91-306	Hot-shoe spring insulator	バネ接片絶縁板		9
X91-307-1	Hot-shoe contact spring	バネ接片		9
X91-308	Hot-shoe spring insulation washer	絶縁間座		9
X91-309-1	Hot-shoe contact pin-A insulation tube	接続ピンA筒		9
X91-310-1	Hot-shoe contact pin-A	接続ピンA		9
X91-311-2	Hot-shoe contact pin-B insulation tube	接続ピンB筒	EK-56	15
X91-312	Hot-shoe contact pin-B	接続ピンB	EK-56	15
X91-313-1	FP/selector holder	AS指標押え		9
X91-314-1	'A-S' selector	AS指標		9
X91-315-1	Switch contact rivet-B	切換接片鋲B	EK-52	15
X91-316	Hot-shoe circlip	湾曲リング	EK-56-1	15
X91-317-1	Back cover locking light shield	裏蓋遮光布	EK-55	16
X91-318	Eye-piece cover	接眼蓋		1
X91-320-1	Switch spring retainer	バネ掛	EK-52	15
X91-320A	Switch click spring retainer	バネ掛	EK-52	15
X91-321-2	Switch spring	復帰バネ	EK-52	15
X91-322-4	Switch click spring	クリック板バネ	EK-52	15
X91-323	Switch contact-B	切換接片B	EK-52	15
X91-324-3	Manual lever shaft	マニアルレバー軸	EK-17	12

SECTION 1 EXPLODED DIAGRAMS, ASSEMBLIES, AND PARTS LIST

PART NUMBER	ENGLISH NAME	JAPANESE NAME	ASSEMBLY	PAGE #
X91-325	Self-timer mirror actuator lever washer	間　　座		7
X91-326-3	Hot-shoe cover	接点カバー		1
X91-327-2	Soft release button	ソフトレリーズ		1
X91-328-1	Connector lever stud	連結杆ダボ	EK-16	12
X91-329	Hinge light shield	ボデー遮光布		3
X91-330	Mirror actuator lever shaft	間　　座		7
X91-331-1	Flash terminal cap	シンクロカバー		1
X91-332-1	Self-timer cam retaining screw	セルフ回転止メビス		5
X91-333	Bottom circlip	E型止メ輪 ＃1.2		6
X91-336	Interlocking lever-C eccentric pin	連動板Cエキセン	EK-48	14
X91-337	Crank spring retainer	ハンドルバネ受	EK-54	15
X91-338	Sprocket	スプロケット		5
X91-339-1	Sprocket shaft	スプロケット軸	EK-61	16
X91-340-1	Sprocket gear	スプロケット歯車	EK-61	16
X91-341	Sprocket spring	スプロケットスプリング	EK-61	16
X91-342	Sprocket circlip	座　金	EK-61	16
X91-344	'A-S' switching lever stopper	AS切換レバーストッパー		4
X91-345	Bottom wire holder	コード押え		6
X91-346	Light shield ribbon	角窓遮光板	EK-11	11
X91-347	Mirror housing wire holder	cdsリード線押え		10
X91-348	Rewind washer	指標リング指標間座		2
X91-349	Manual lever holder	マニアルレバー押え		10
X91-350	Lock lever	ロックレバー	EK-66	16
X91-351-1	Lock lever tube	ロックレバー	EK-66	16
X91-352-1	Lock lever spring	ロックレバーSP		4
X91-353	1st curtain spring	先幕スプリング	EK-25	12
X91-354	Connector lever retainer	連結杆軸		7
X91-355	Connector lever spring	連結杆バネ		7
X91-356	Film winding anti-reverse cam	逆転防止カム		6
X91-357-1	Intermediate gear spring	スプリング		6
X91-358-1	Film winding anti-reverse claw-B	逆転防止爪		6
X91-359	Vinyl washer	ビニール間座		6
X83-46-1	Back cover locking lever	引出しA		5

SECTION 1 EXPLODED DIAGRAMS, ASSEMBLIES, AND PARTS LIST

PART NUMBER	ENGLISH NAME	JAPANESE NAME	ASSEMBLY	PAGE #
	FW PART			
FW-42A-2	Crank shaft	クランク軸	EK-54	15
	MB PARTS			
MB-11C-2	Front cover retaining screw	前カバー取付ビス		3
MB-15B	Back cover hinge light shield	蓋遮光テレンプB	EK-55	16
MB-15C	Back cover light shield cushion	遮光モルトプレン		3
MB-15E	Hinge shield cushion	裏蓋遮光用片	EK-55	16
MB-19-3	Neckstrap eyelet	ツリ金具		4
MB-33-2	Film pressure plate spring	圧板スプリング	EK-55	16
MB34-1	Back cover leather	裏蓋張皮	EK-55	16
MB-35-1	Pressure plate mounting rivet	圧板取付鋲	EK-55	16
MB-37-1	Film cassette stabilizer	パトローネ押え	EK-55	16
MB-39-1	Pressure plate spring rivet	圧板バネ鋲	EK-55	16
MB-524-2	Back cover hinge	蝶番	EK-55	16
	MC PARTS			
MC-1-5	Exposure counter actuator lever	カウンター作動杆	EK-45	14
MC-2-2	Film wind indicator connecting shaft	連結筒	EK-45	14
MC-3-5	Exposure/wind feeding lever	カウンター送り廻動杆	EK-45	14
MC-4-1	Exposure counter feeding claw	カウンター送り爪	EK-45	14
MC-4A	Exposure counter stud	爪突起	EK-45 SK-30	14 16
MC-5-1	Exposure counter feeding claw retainer	送り爪止	EK-45	14
MC-6A	Film wind indicator rivet	鋲	EK-45	14
MC-7-2	Exposure/wind eccentric cam	偏芯カム	EK-35	13
MC-8-1	Counter stopper claw	カウンター停止爪	SK-30	16
MC-9	Counter stopper claw spring	係止爪		4
MC-10-3	Counter feeding claw spring	送り爪		4
MC-12-1	1st curtain setting lever spring holder	スプリング掛軸	SK-58	16
MC-13	Film wind indicator assembly mounting post	連結筒軸		5
MC-14-3	Counter feeding claw spring washer	間座		4

SECTION 1 EXPLODED DIAGRAMS, ASSEMBLIES, AND PARTS LIST

PART NUMBER	ENGLISH NAME	JAPANESE NAME	ASSEMBLY	PAGE #
MC-15-1	Counter stopper claw retainer	送り爪取付ビス		4
MC-21	Exposure counter base support post	基板受軸		5
MC-22-1	Counter release lever washer	間座		4
MC-23-1	Counter release lever retainer	開放杆取付ビス		4
MC-24-4	Counter release lever	カウンター解放杆		4
MC-25-2	Counter release lever spring	解放杆スプリング		4
MC-30-2	Counter ratchet wheel shaft	カウンターギヤー軸	EK-37	14
MC-32-4	Counter ratchet wheel	カウンターツメ歯車	EK-37	14
MC-32A	Counter ratchet wheel rivet	カシメ鋲	EK-37	14
MC-37	Counter ratchet wheel retainer	カウンター押えビス	EK-37	14
MC-38A-1	Counter ratchet wheel stopper	ストッパー	EK-37	14
MC-42-8	Counter number disk zeroing spring	カウンター復帰バネ	EK-37	14
	MF PARTS			
MF-25-1	Flash terminal	シンクロターミナル	EK-51	15
MF-25A-1	Flash terminal retainer	シンクロターミナル止	EK-51	15
	MI PARTS			
MI-11-3	Oscillating lever retainer nut	ナット		8
MI-12B-4	Mirror actuator delay pin	掛ケ突起	EK-4	11
MI-14-3	Connector lever washer	間座		7
MI-26A	Finder spacer	ピント調節座金		2
MI-33-1	Locking pin spring holding plate	スプリング押え板		9
MI-34	Viewfinder locking pin spring	スプリング		3
MI-35	Viewfinder locking pin	係止片		3
MI-36	Viewfinder release button (/-6.1mm)	ツマミ		3
MI-36A	Viewfinder release button (/-6.4mm)	ツマミ		3
MI-36B	Viewfinder release button adjustment washer (*t*-0.3mm)	間座		3
MI-36C	(*t*-0.4mm)	間座		3
MI-36D	(*t*-0.5mm)	間座		3
MI-36E	(*t*-0.2mm)	間座		3
MI-46A-3	1st curtain release lever washer	レリーズレバー軸間座		7
MI-47-5	Mirror resetting gear shaft	解放ギア軸	EK-36	13
MI-118B-2	Mirror actuator stud washer	ミラー作動鋲加締間座	EK-9	11

SECTION 1 EXPLODED DIAGRAMS, ASSEMBLIES, AND PARTS LIST

PART NUMBER	ENGLISH NAME	JAPANESE NAME	ASSEMBLY	PAGE #
	ML PARTS			
ML-2-4	ASA half gear	規制歯車	EK-49	14
ML-3A	Small ASA gear	小歯車		2
ML-8A-2	Segment gear shaft tube	パイプ		4
ML-51	Mercury battery	水銀電池		
ML-57	Inner chamber insulator retainer	電池接片止ナット	EK-51	15
ML-1010	Click ball (*dia*—1.6")	クリックボール		2
ML-113	Resistor cap	カバー	EK-50	14
	MP PARTS			
MP-1A-1	Eyepiece lens holder	接眼レンズ押え	EK-56	15
MP-2	Prism holder	プリズム押え	EK-56	15
MP-2B	Prism holder cushion	プリズム当りゴム	EL-56	15
MP-5A-2	Eyepiece frame	接眼枠	EK-56	15
MP-5B	Eyepiece outer ring	接眼枠覆	EK-56	15
MP-6B	Prism cover leveling plate	座板	EK-56-1	15
MP-4E-1	Prism cover cushion	プリズムカバー当りゴム	EK-56-1	15
	MS PARTS			
MS-1A-3	Ball bearing receptacle	ボール枠	EK-21	15
MS-1B	Ball bearing (*dia*—20mm)	スチールボール		5
MS-2-4	Secondary clutch plate	クラッチ	EK-21	12
MS-3-1	Secondary clutch gear	クラッチ歯車	EK-21	12
MS-4-11	Secondary clutch gear shaft	歯車軸	EK-21	12
MS4A-1	Curtain gear retainer	取付ネジ		5
MS-5-3	Secondary clutch gear shaft retainer	ナット	EK-21	12
MS-6-2	1st curtain gear	先幕歯車	EK-62	16
MS-7-3	Coupler stud	クラッチピン	EK-62	16
MS-8-2	1st curtain gear stud	掛止ピン	EK-62	16
MS-9-8	1st curtain setting lever	ストッパー		5
MS-9B-7	1st curtain lever spring	コイルスプリング	SK-58	16
MS-10-1/11-3/12	2nd curtain gear parts	後幕歯車組		5
MS-13-3	1st curtain shaft	先幕巻上軸	EK-21	12
MS-14-4	1st curtain upper ribbon reel	先幕リボン巻筒	EK-21	12
MS-14A-4	1st curtain lower ribbon reel	先幕リボン巻筒	EK-21	12
MS-16-2	Curtain assembly small gear	小歯車	EK-21	12

SECTION 1 EXPLODED DIAGRAMS, ASSEMBLIES, AND PARTS LIST

PART NUMBER	ENGLISH NAME	JAPANESE NAME	ASSEMBLY	PAGE #
MS-17-5	2nd curtain shaft	後幕巻上軸	EK-21	12
MS-17A-6	2nd curtain lower gear	後幕下部歯車	EK-21	12
MS-17B	Curtain assembly lower adjustment washer (*t*-0.05mm)	調整間座		6
-17C	(*t*-0.1mm)	調整間座		6
-17D	(*t*-0.15mm)	調整間座		6
-17E	(*t*-0.2mm)	調整間座		6
MS-18-4	2nd curtain shaft roller upper edge	後幕ローラー端	EK-21	12
MS-19-3	2nd curtain shaft roller	後幕巻取ローラー	EK-21	12
MS-19A	Spring pin	スプリングピン	EK-21	12
MS-20-3	2nd curtain shaft roller lower edge	後幕ローラー端	EK-21	12
MS-21-4	1st curtain roller	先幕ローラー	EK-21	12
MS-21A	1st curtain shaft adjustment collar (*l*-2.3mm)	間座	EK-21	12
-21B	(*l*-1.7mm)	間座	EK-21	12
MS-23-3	Lower curtain base plate	シャッター巻上部下部基板		6
MS-24-3	Mirror resetting gear base	基板	EK-36	13
MS-24A-2	Mirror resetting gear stud	解放位置止鋲	EK-36	13
MS-25-2	Shutter governor mounting post-A	支柱	EK-21	12
MS-25A	Film winding lever base mounting post	支柱		5
MS-25B-3	Shutter governor mounting post-B	支柱		5
MS-26A-3	Clutch plate stud	リベット	EK-21-1	12
MS-27-2	Clutch plate spring	クラッチスプリング	EK-21	12
MS-28-4	Release lever shaft	レリーズレバー軸	EK-21	12
MS-29A	Release lever adjustment washer (*t*-0.2mm)	レリーズレバー調整間座		5
-29B	(*t*-0.1mm)	レリーズレバー調整間座		5
-29D	(*t*-0.3mm)	レリーズレバー調整間座	EK-36	13
-29E	(*t*-0.15mm)	レリーズレバー調整間座		5
MS-29C-1	Release lever spring	レリーズレバーバネ	EK-22	12
MS-30A	'B' plate collar (*t*-1.9mm)	カラー		5
-30B	(*t*-1.6mm)	カラー		5
MS-32-4	Relay lever	アンクル掛ケ外板		5
MS-32A-1	Relay lever guide pin	アンクル板案内		5
MS-36-3	Shutter dial click plate spring stopper	バルブカム	EK-35	13

SECTION 1 EXPLODED DIAGRAMS, ASSEMBLIES, AND PARTS LIST

PART NUMBER	ENGLISH NAME	JAPANESE NAME	ASSEMBLY	PAGE #
MS-37-4	Shutter speed cam	スピードカム	EK-35	13
MS-38-5	Shutter governor cam	ガバナーカム	EK-35	13
MS-39-2	Shutter cam connecting stud	カム連結ピン	EK-35	13
MS-40-5	Shutter dial click plate	クリック板	EK-35	13
MS-40A-2	Shutter dial click plate spring	クリップスプリング	EK-35	13
MS-41A-1	Cam shaft rivet	クリック板取付鋲	EK-35	13
MS-42-3	Film advance base cylinder	ダイヤル台	EK-35	13
MS-43-3	Shutter speed adjusting lever	スピード調整レバー	EK-35	13
MS-43A-1	Shutter speed adjusting lever setscrew	押 ビ ス	EK-35	13
MS-43B	Shutter speed adjusting lever collar	スピード調整レバーカラー	EK-35	13
MS-44-5	Governor lever shaft	ガバナーレバー軸	EK-35	13
MS-44A	Governor lever adjustment washer	調 整 間 座	EK-35	13, 5
MS-45-3	Governor lever	ガバナーレバー	EK-35	13
MS-46-2	Speed lever	スピードレバー	EK-35	13
MS-46A-4	Speed adjusting lever spring	スプリング	EK-35	13
MS-46B-1	Lever bearing cup	スピード調整レバー受け	EK-35	13
MS-47-3	Speed adjusting shaft	スピード調整軸	EK-35	13
MS-47C	Stabilizing washer	調 整 間 座	EK-35	13
MS-48-2	'B' lever	バルブレバー	EK-35	13
MS-50-2	Speed adjusting retainer	スピードレバービス	EK-35	13
MS-50A	Shutter speed adjusting lever nut	ナ ッ ト	EK-35	13
MS-51-3	Shutter governor (pre-assembled)	ガ バ ナ		4
MS-51B-1	Shutter governor retainer	ガバナ止ネジ		4
MS-53-12	Lower curtain drum base plate	スプリング軸下部基板		6
MS-54B-2	Shutter curtain tension adjusting nut	調 節 輪		6
MS-54C-4	Curtain drum top	スプリングドラム軸受	EK-24, 25	12
MS-57-2	1st shutter curtain	シャッター先幕	EK-25	12
MS-58-2	1st curtain leader ribbon	シャッター先幕リボン	EK-25	12
MS-59-2	2nd shutter curtain	シャッター後幕	EK-24	12
MS-60-2	2nd curtain leader ribbon	シャッター後幕リボン	EK-24	12
MS-65-1	Shutter speed dial base	ダイヤル基部	SK-52	16
MS-65A-2	Shutter speed dial base fastener	ダイヤル基部止ネジ	SK-52	16
MS-66-5	Large ASA gear	大 歯 車		2

SECTION 1 EXPLODED DIAGRAMS, ASSEMBLIES, AND PARTS LIST

PART NUMBER	ENGLISH NAME	JAPANESE NAME	ASSEMBLY	PAGE #
MS-67A-2	ASA spring	スプリング		2
MS-71	1st curtain roller retaining collar	ローラ受け	EK-21	12
MS-72	Roller retaining collar setscrew	ローラ受止ネジ	EK-21	12
	MT PARTS			
MT-1A-1	S-t mirror actuator t-lever pin	ピ ン	EK-15	11
MT-2-5	S-t mirror actuator connecting pin	始動杆押ビス	EK-15	11
MT-3-5	Self-timer mirror actuator lever	制 止 杆	EK-15	11
MT-4-2	S-t mirror actuator lever retainer	ビ ス		7
MT-5-1	S-t mirror actuator lever spring	スプリング		7
MT-6-2	S-t mirror actuator lever stopper retainer	ストッパー取付ビス		7
MT-6A	S-t mirror actuator lever stopper	偏心間座		7
MT-7	Self-timer connecting lever	連 結 杆	EK-39	14
MT-8-3	Self-timer cam spring	スプリング	EK-40	14
	MW PARTS			
MW-2A-4	Spool gear shaft	スプール歯車軸		5
MW-4	Spool bottom plate	スプール座金	SK-5	16
MW-4A-1	Spool spring retainer	スプリング筒	SK-5	16
MW-4B-1	Lower spool shaft gear collar	カ ラ ー		6
MW-4C-2	Spool spring	スプリング		5
MW-5-6	Take-up spool	巻取スプール	SK-5	16
MW-6-5	Sprocket intermediate gear shaft	歯 車 軸	EK-21	12
MW-7AB-2	Sprocket intermediate gear	中間歯車		6
MW-8	1st curtain setting lever washer	座 金		5
MW-9-4	1st curtain setting lever retainer	ストッパー軸		5
MW-10AC/DE	Winding intermediate gear	中間歯車		5
MW-11-1	Winding intermediate gear shaft	歯 車 軸		5
MW-12-7	Lower spool gear	スプール下部歯車		6
MW-12A-4	Lower spool gear retainer	スプール下部歯車止		6
MW-12B-1	Mirror setting cam	ミラーセットカム		6
MW-13-3	Anti-reverse eccentric collar	逆転止爪止座金	EK-20	12
MW-41-3	Film-winding anti-reverse claw-A	逆転止爪	EK-20	12
MW-14A-3	Anti-reverse claw-A retainer	逆転止爪取付ビス	EK-20	12

SECTION 1 EXPLODED DIAGRAMS, ASSEMBLIES, AND PARTS LIST

PART NUMBER	ENGLISH NAME	JAPANESE NAME	ASSEMBLY	PAGE #
MW-15-3	Anti-reverse claw-A spring	スプリング		6
MW-16-4	Film winding ratchet wheel base	大歯車台	EK-23	12
MW-21A-3	Winding claw spring	ラチェットバネ	EK-31	13
MW-25-10	Film winding lever base	巻上上部基板	EK-35	13
MW-25B-1	Shutter dial click plate stopper	ストッパーピン	EK-35	13
MW-25C-6	Cam shaft collar	軸カラー	EK-35	13
MW-26-14	Film winding intermediate lever	巻上中間レバー	EK-35	13
MW-26C	Wind lever base guide pins	巻上中間レバーノックピン	EK-35	13
MW-26D	Ball bearing (*dia*—1.2mm)	スチールボール	EK-35	13
MW-27-10	Wind lever base	レバー台	EK-35	13
MW-27A-1	Winding click spring	巻上クリックバネ	EK-35	13
MW-27B	Wind lever base washer	レバー台間座	EK-35	13
MW-28-6	Wind lever base holder	レバー台押え	EK-35	13
MW-29-5	Sprocket actuating intermediate gear	中間歯車	EK-20	12
MW-30-5	Rewind button holding lever	巻戻しボタン押え	EK-20	12
MW-31-5	Sprocket actuating intermediate gear shaft	中間歯車軸	EK-20	12
MW-32-3	Rewind button holding lever spring	スプリング		6
MW-34-3	Intermediate gear retainer	ミラーセット歯車軸		6
MW-38-4	Rewind release button	巻返しボタン		2
MW-50A-1	Rewind assembly retaining ring	巻戻し軸受ナット	EK-50	14
MW-58A-3	Crank knob	クランクツマミ	EK-54	15
MW-59-3	Crank spring	板スプリング	EK-54	15
	PB PARTS			
PB-11	Film pressure plate	押板	EK-55	16
PB-6F	Large general adjustment washer (*o.d.*—4.0mm) (*t*—0.02/0.03/0.05/0.1/0.2/0.3/0.5/1.0)	調整間座		10
PB-816A	Back cover hinge shaft	蝶番軸	EK-55	16
	PF PARTS			
PF-505-3	Flash terminal inner tube	内筒	EK-51	16
PF-506	Flash terminal outer tube	外筒	EK-51	16
PF-509A-1	Battery contact insulator tube	絶縁間座	EK-50	14

SECTION 1 EXPLODED DIAGRAMS, ASSEMBLIES, AND PARTS LIST

PART NUMBER	ENGLISH NAME	JAPANESE NAME	ASSEMBLY	PAGE #
	PI PARTS			
PI-1M-1	Mirror shock absorber	ミラークッション		9
PI-13-3	Mirror shaft retainer	ミラー軸受		7
PI-14-1	Mirror shaft	ミラー軸	EK-9	11
PI-14A	Mirror shaft collar (*t*—1.3/1.5/1.7/1.8/1.9/2.0/2.1/2.2/2.3)	カラー		9
PI-14B-1	Mirror spring	ミラースプリング	EK-9	11
PI-409-1	Viewfinder base frame	ピントグラス中枠		2
PI-711A-2	Mirror holder-A	ミラー押えA	EK-9	11
PI-711B-2	Mirror holder-B	ミラー押えB	EK-9	11
PI-811J-2	Mirro holder light shield	ミラー押え遮光板	EK-9	11
PI-845B-2	Mirror holder spacer	ミラー押え受け	EK-9	11
PI-870-1	Mirror holder head	ミラー押鉄	EK-9	11
	PL PART			
PL-827	X-synch. contact plastic cover	ヒシライトチューブ	EK-10	10
	PP PARTS			
PP-8-3	Pentaprism	プリズム	EK-56	15
PP-805	Eyepiece lens	接眼レンズ	EK-56	15
	PQ PARTS			
PQ-29A	Mirror resetting gear circlip	E型リング	EK-36	13
PQ-31-4	Mirror resetting gear	解放ギヤー	EK-36	13
	PS PARTS			
PS-15A	Curtain assembly lower collar	カラー		6
PS-16-4	2nd curtain roller	後幕ローラー		6
PS-17A-4	Curtain drum bottom	スプリングドラム端	EK-24, 25	12
PS-18-1	1st curtain drum	先幕スプリングドラム	EK-25	12
PS-19-2	2nd curtain drum	後幕リボンスプリングドラム	EK-24	12
PS-19A-2	2nd curtain spring	後幕スプリング	EK-24	12
PS-23D	Adjusting nut stopper screw	調節環止ネジ		6
PS-27 I	EE-diaphragm controller adjustment washer	調整間座		8
PS-27J	Small general adjustment washer (*o.d.*—3.9mm) (*t*—0.05/0.1/0.2/0.3)	調整間座		7, 4

SECTION 1 EXPLODED DIAGRAMS, ASSEMBLIES, AND PARTS LIST

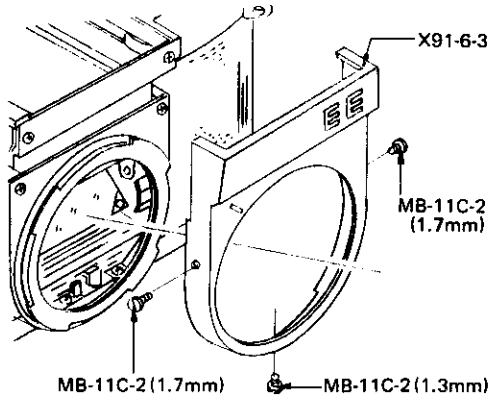
PART NUMBER	ENGLISH NAME	JAPANESE NAME	ASSEMBLY	PAGE #
PS-29A	Release lever shaft	レリーズレバー軸	EK-22	12
PS-36-1	Shutter curtain edge strip	幕 金 具	EK-24, 25	12
PS-727A	Special adjustment washer	調整間座		A17
	PW PARTS			
PW-412A	Sprocket ring	座 金	EK-61	16
PW-413C-1	Crank knob retainer	ネ ジ	EK-54	15
	VARIABLE RESISTORS			
C6-2A-15K	Low intensity light measuring variable resistor	半固定抵抗 C6−2A・15K	EK-44	14
M6-2A-15K	High intensity light measuring variable resistor	半固定抵抗 M6−2A・15K	EK-44, 58	14, 15
M6-1A-33K	Battery checker variable resistor	半固定抵抗 M6−1A・33K	EK-50	14

SECTION 2 DISASSEMBLY

ITEM 1 FRONT COVER

1.1 The lens and viewfinder must be removed from the camera body as described in the Instructions Manual.

1.2 Remove the retaining screws (MB-11C-2) from the sides, and the screw (MB-11C-2) from the bottom of the front cover (X91-6-3). Then, lift the front cover (X91-6-3) away from the body.



ITEM 2 RIGHT TOP COVER

2.1 Loosen the two screws (F-1.4x5.2x2x0.8) from the shutter speed dial (X91-18-1), and lift off the knurled ASA film speed setting ring (X91-38-1).

2.2 Using special tool (G-71) or a tweezers, remove the EE-override button (X91-17) by turning it counter-clockwise.

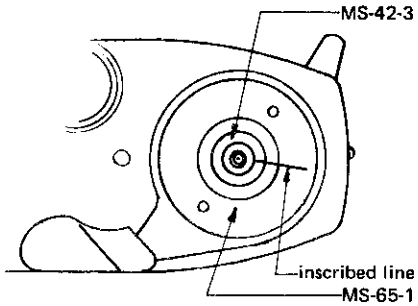
2.3 Next, lift off the large ASA gear (MS-66-5).

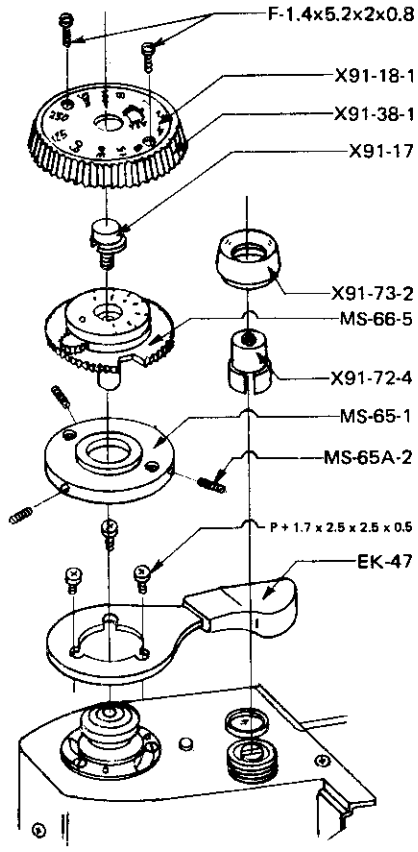
2.4 If a line is not present as shown at right, inscribe one so that the shutter speed dial base (MS-65-1) and the film advance base cylinder (MS-42-3) can be mated properly during reassembly.

2.5 As the three fasteners (MS-65A-2) are tightly fixed with an adhesive carefully loosen them, and remove the shutter speed dial base (MS-65-1).

2.6 Remove the three screws (P+1.7x2.5x2.5x0.5), and lift off the film advance lever assembly (EK-47).

2.7 The shutter release button outer collar (X91-73-2) is removed by twisting it in a counter-clockwise direction. If you must use a pliers make sure you use a piece of rubber under the teeth to avoid marring the machine finish. The shutter release button (X91-72-4) can now be removed.

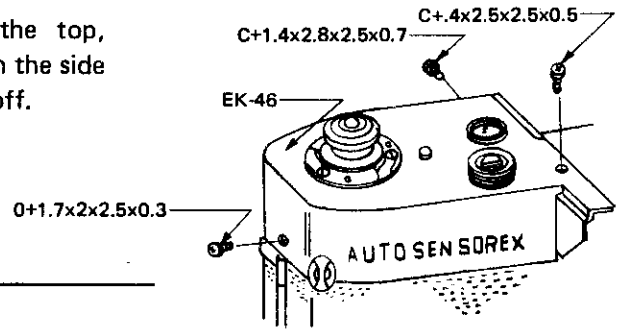




SECTION 2 DISASSEMBLY

ITEM 2 RIGHT TOP COVER

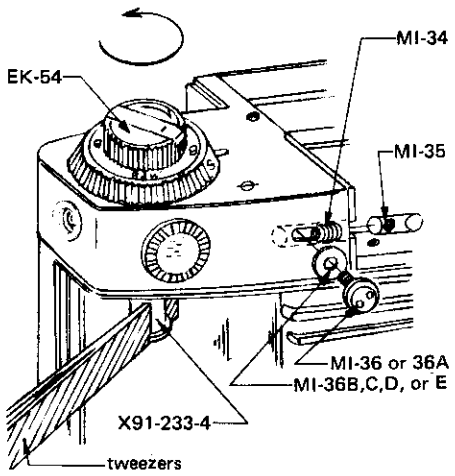
2.8 Remove the three screws, one from the top, another from the back, and the other from the side of the right top cover (EK-46), and lift it off.



ITEM 3 LEFT TOP COVER

3.1 Open the back cover by pulling the film rewind knob (EK-54) up. Then push it down to its original position.

3.2 Remove the rewind knob by turning it counter-clockwise while holding the rewind shaft (X91-233-4) with a tweezer handle inserted into the shaft slot as shown at right.



3.3 The meter switch retainer (X91-235-3) is removed next with the tool (G-72). Note two possible retainer-washer combinations illustrated at right.

3.4 Lift the meter switch assembly (EK-52) up being careful to watch for the click ball (ML-101) which tends to roll off the left top cover.

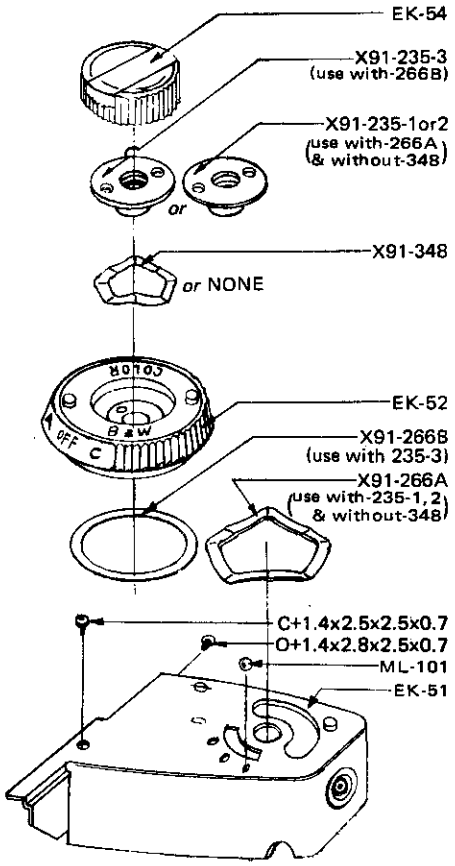
3.5 Remove the washer (X91-266A or B).

3.6 From the rear remove the viewfinder release button (MI-36 ro 36A) with the tool (G-23), and the adjustment washer (MI-36B, C, D, or E) comes off.

3.7 Remove the viewfinder locking pin (MI-35) and spring (MI-34) from the inside of the left guide rail in the mirror housing.

3.8 Two screws, one from the top, the other from the back are removed from left top cover (EK-51). Carefully lift the cover up as wires are connected inside to the flash terminal.

3.9 Unsolder the flash terminal wires, and separate the cover from the body.

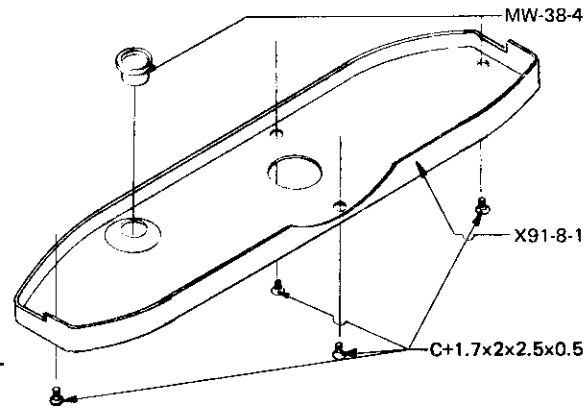


SECTION 2 DISASSEMBLY

ITEM 4 BOTTOM COVER

4.1 Unscrew the four retainers (C+1.7x2x 2.5x0.5) from the bottom cover (X91-8-1).

4.2 When the bottom cover is taken off the body, the rewind release button (MW-38-4) will be freed. Take care not to lose it.



ITEM 5 RIGHT FRONT COVER

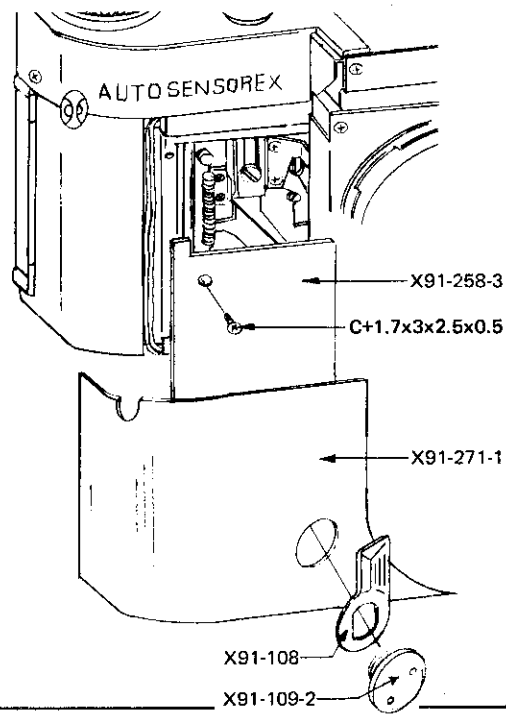
5.1 Remove the front cover (X91-6-3) and the bottom cover (X91-8-1) as described on page D1 and above in Item 4.

5.2 Take off the self-timer lever (X91-108) by removing its retainer (X91-109-2) with special tool (G-73).

5.3 Remove the leather cover (X91-271-1) with a skinning tool or a wide flat-bladed screwdriver if a skinning tool is not available.

A few drops of alcohol may be used to loosen the glue under the leather cover.

5.4 Unscrew the two retainers (C+1.7x2x2.5x0.5), and take the right front cover (X91-258-3) off the body.

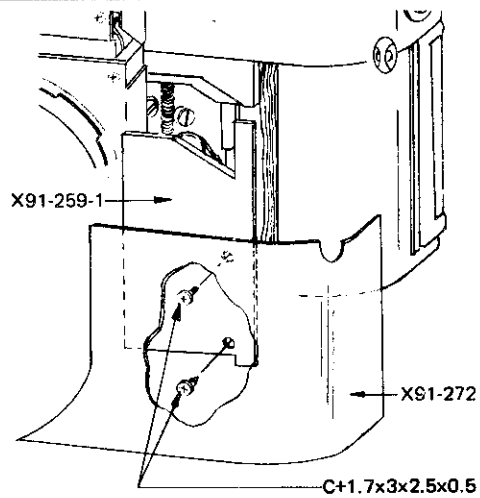


ITEM 6 LEFT FRONT COVER

6.1 Remove the front cover (X91-6-3) and the bottom cover (X91-8-1) as described on page D1 and above in Item 4.

6.2 The leather cover (X91-272) is removed as instructed in Item 5.3 above.

6.3 Unscrew the two retainers (C+1.7x2x2.5x0.5), and take the left front cover (X91-259-1) off the body.



SECTION 2 DISASSEMBLY

ITEM 7 LENS MOUNT ASSEMBLY

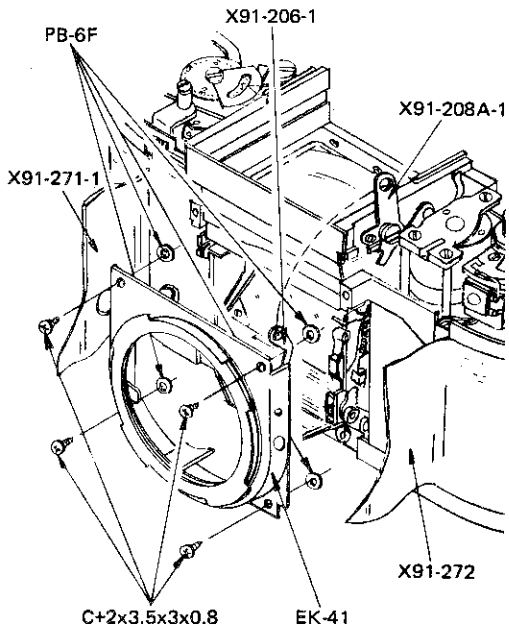
7.1 Remove the front cover (X91-6-3), the left top cover assembly (EK-51), and the bottom cover (X91-8-1) as described on pages D1, D2, and D3.

7.2 Pull the right and left leather cover (X91-271-1/272) bottom flaps back until they are free of the lens mount assembly (EK-41) (see Item 5.3).

7.3 Disengage the top rivet on the u-x warning transmission lever-A (X91-206-1) from the hole in lever-B (X91-208A-1) by inserting a flat blade between the two levers, and turning the blade slightly.

7.4 Lie the camera down, face up, and remove the four screws (C+2X3.5X3X0.8) holding the assembly (EK-41) onto the camera body.

7.5 Carefully lift off the lens mount assembly (EK-41) without moving the adjustment washer (PB-6F) under each of the four countersunk holes. Store these washers so that each one can be placed under the same hole during reassembly.



ITEM 8 SELF-TIMER MECHANISM

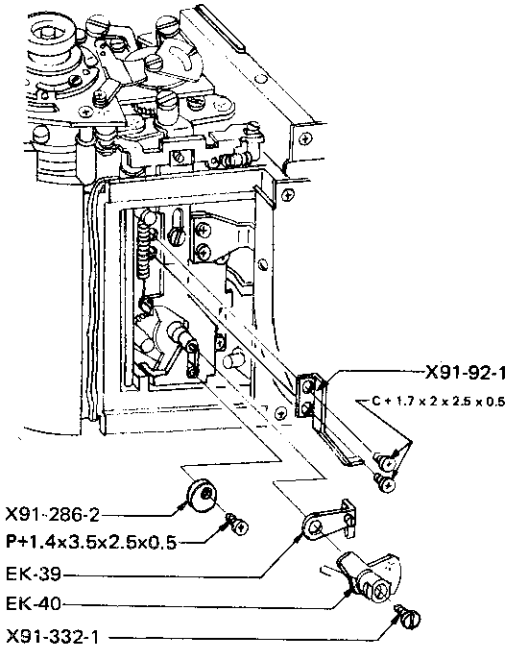
8.1 Cock the shutter.

8.2 Remove the front cover (X91-6-3), the right top cover (EK-46), the bottom cover (X91-8-1), and the right front cover (X91-258-3) as described on pages D1, D2, and D3.

8.3 Remove the two screws (C+1.7x2x2.5x0.5) from the self-timer brake lever (X91-92-1), and take it out.

8.4 Take off the screw (X91-332-1), and remove the self-timer cam assembly (EK-40) and self-timer connecting lever assembly (EK-39).

8.5 Next, unfasten the screw (P+1.4x3.5x2.5x0.8), and remove the eccentric washer (X91-286-2).



SECTION 2 DISASSEMBLY

ITEM 8 SELF-TIMER MECHANISM

8.6 Disconnect the self-timer spring (X91-88-1) from the bottom rod.

8.7 Remove the two screws (P+1.7x2.5x3x0.5) from the self-timer starter arm (X91-80-3), and lift it out.

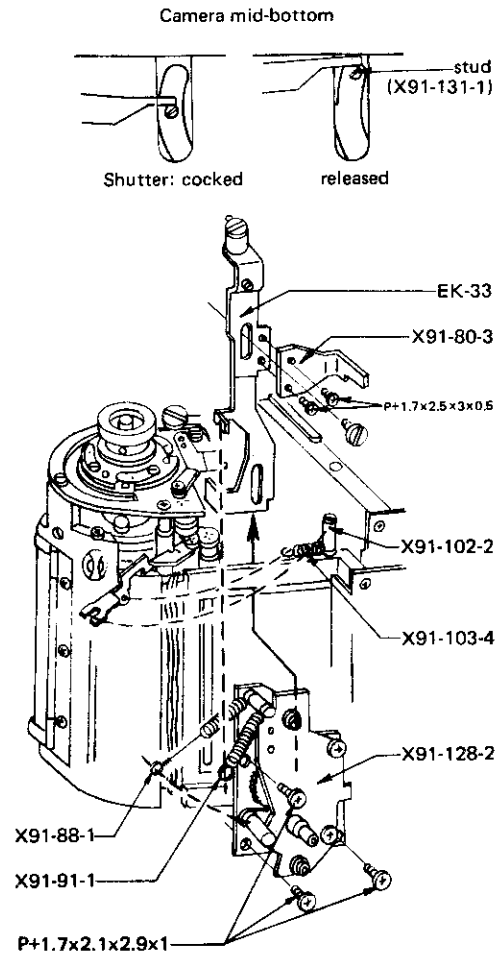
8.8 Confirm the shutter is cocked by checking the camera bottom. When the shutter is cocked the oscillating lever stud (X91-131-1) is in the center of the arc slot as shown at right.

8.9 With a tweezers, unhook the 'B'-lever spring (X91-103-4) from the lever (91-100-1), and then lift the lever off its guide post (X91-102-2).

8.10 Remove the spring (X91-91-1), and then the screw (X91-77A-1) from the shutter release lever assembly (EK-33) arm and slot, respectively.

8.11 Lift the shutter release lever assembly (EK-33) up through the top of the camera while watching that the segment gear (EK-28) is not in the way.

8.12 The self-timer (X91-128-2) can now be removed by unfastening the three screws (P+1.7x2.1x 2.9x1) holding it.



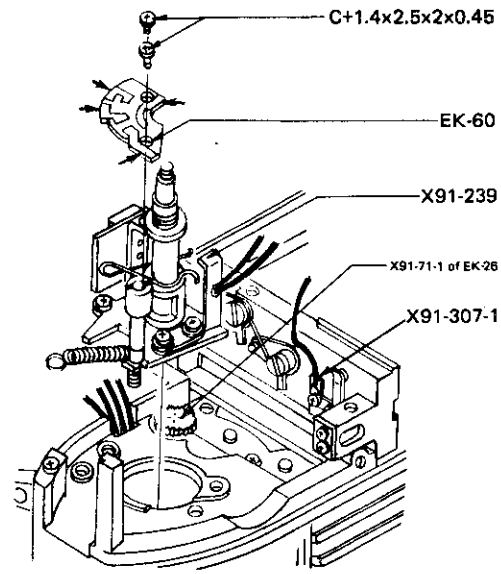
ITEM 9 METER MOVEMENT

9.1 Remove the front cover (X91-6-3) and the left top cover (EK-51) as shown on pages D1 and D2, and then open the back cover (EK-55).

9.2 Unsolder the four colored wires coming from the meter switch printed circuit (EK-60), and then the two green ones from the battery contact (X91-239).

9.3 Unsolder the wire from the hot-shoe contact spring (X91-307-1) on the mirror housing.

9.4 Take out the two screws (C+1.4x2.5x2x0.45), and remove the printed circuit (EK-60).



SECTION 2 DISASSEMBLY

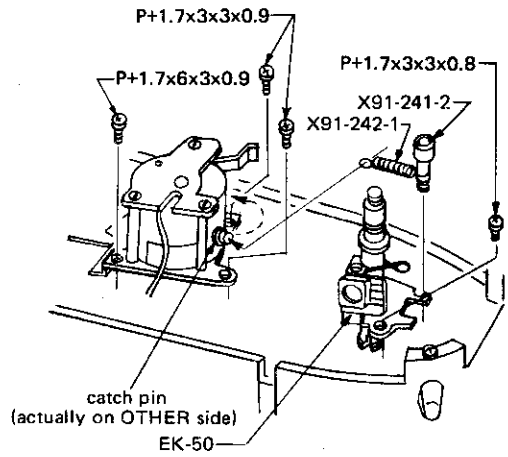
ITEM 9 METER MOVEMENT

9.5 Note Item 10 below. If the earlier back cover locking lever-A (X91-249-4) is present just remove the two screws (P+1.7x2.5x2.5x0.5), and lift lever-B (X91-278-1) off. If the later back cover locking lever (X83-46-1) is present, remove it as shown in Item 10 below.

9.6 Unscrew the meter spring shaft (X91-241-2), and at the same time release the meter spring (X91-242-1) from its hook on the meter movement.

9.7 Remove the screw (P+1.7x3x3x0.8) from the rewind shaft assembly (EK-50), and lift the assembly out.

9.8 Take out the three screws (as shown), and carefully remove the meter movement assembly (EK-65) watching that the meter needle is not damaged as it is removed from the slit on the side of the mirror housing. Store the sensitive meter movement in a dust-free place free from impact.



ITEM 10 BACK COVER LOCKING LEVER

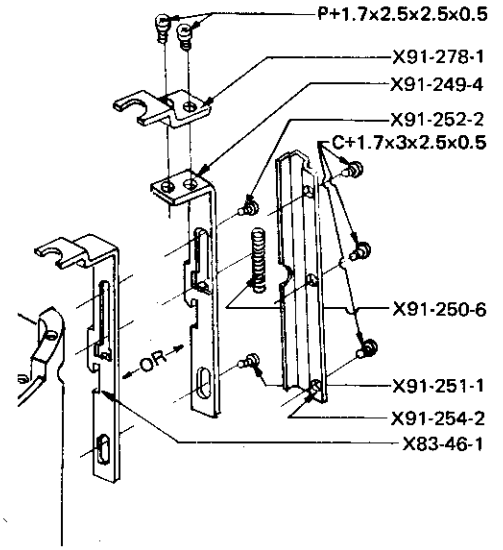
10.1 Remove the front cover (X91-6-3) and the left top cover (EK-51) as shown on pages D1 and D2, and then open the back cover (EK-55).

10.2 Peel (see Item 5.3) the front leather cover (X91-272) back only until the lever cover plate (X91-254-2) is completely exposed.

10.3 Take out the three screws (C+1.7x3x2.5x0.5), and remove the back cover locking lever cover plate (X91-254-2). If the earlier plate (254-1) is present, remove the washers (PS-727A) which lie under the cover plate.

10.4 Carefully (it jumps out) remove the lock release spring (X91-250-6).

10.5 The back cover locking lever (X83-46-1) can now be lifted out. Do not remove the two guide pins (X91-251-1 and 252-2) from the body.



SECTION 2 DISASSEMBLY

ITEM 10 BACK COVER LOCKING LEVER

10.6 If three pins are present remove the top one, and/or if a two-part lever is present, read Section 3 Items 6.2 and 6.3 pages A20 & 21!

ITEM 11 MIRROR HOUSING BOTTOM LIGHT BAFFLE

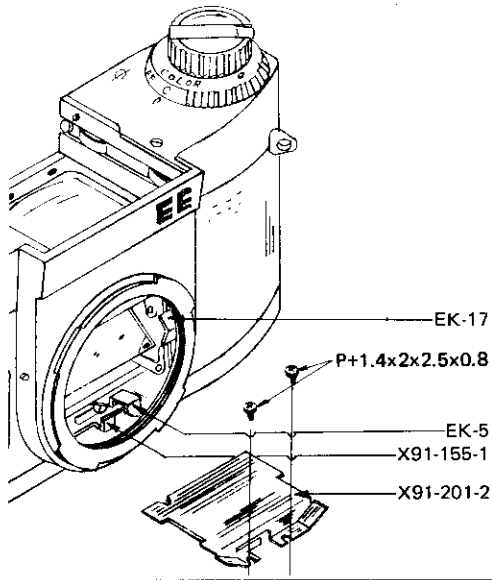
11.1 Take the lens off the body.

11.2 Remove the two screws (P+1.4x2x2.5x0.8) from the mirror housing bottom light baffle (X91-201-2).

11.3 Cock the shutter.

11.4 Depress the shutter release button while pushing in on the manual lever (EK-17). Now move the tip of the EE-diaphragm controller (X91-155-1) to the right, behind the diaphragm lever (EK-5).

11.5 While depressing the shutter release button, the light baffle can now be lifted outward with a tweezers.



ITEM 12 FOCUSING SCREEN UNIT

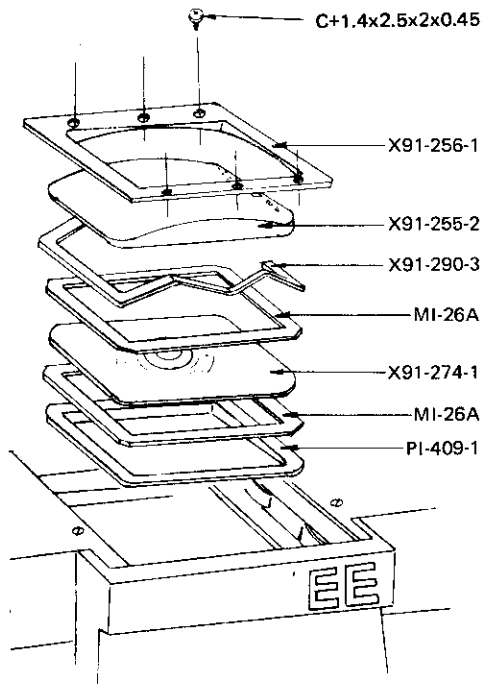
12.1 Slide the viewfinder off.

12.2 Remove the six screws (C+1.4x2.5x2x0.45) from the condensor lens frame (X91-265-1).

12.3 With a tweezers lift off the following:

(a) condensor lens frame (X91-256-1),
(b) condensor lens (X91-255-2),
(c) condensor lens spring (X91-290-3),
(d) finder spacer (MI-26A),
(e) focusing screen (X91-274-1),
(f) and finder spacer (MI-26A).

12.4 It is not necessary to remove the viewfinder base frame (PI-409-1) which has been secured to the body with an adhesive bond.



SECTION 2 DISASSEMBLY

ITEM 13 COUNTER AND SHUTTER GOVERNOR

13.1 Set the shutter speed at 1 or ½ sec., then cock the shutter.

13.2 Remove the front cover (X91-6-3), and the right top cover (EK-46) as shown on pages D1 and D2.

13.3 Carefully unscrew (the pieces jump out) the retainer (MC-15-1), and remove the counter stopper claw spring (MC-9), claw assembly (SK-30), counter feeding claw spring (MC-10-3), and the spring washer (MC-14-3).

13.4 Disengage the counter release lever spring (MC-25-2) from its lever (MC-24-4).

13.5 Remove the lever retainer (MC-23-1), and lift off the counter release lever (MC-24-4) and washer (MC-22-1).

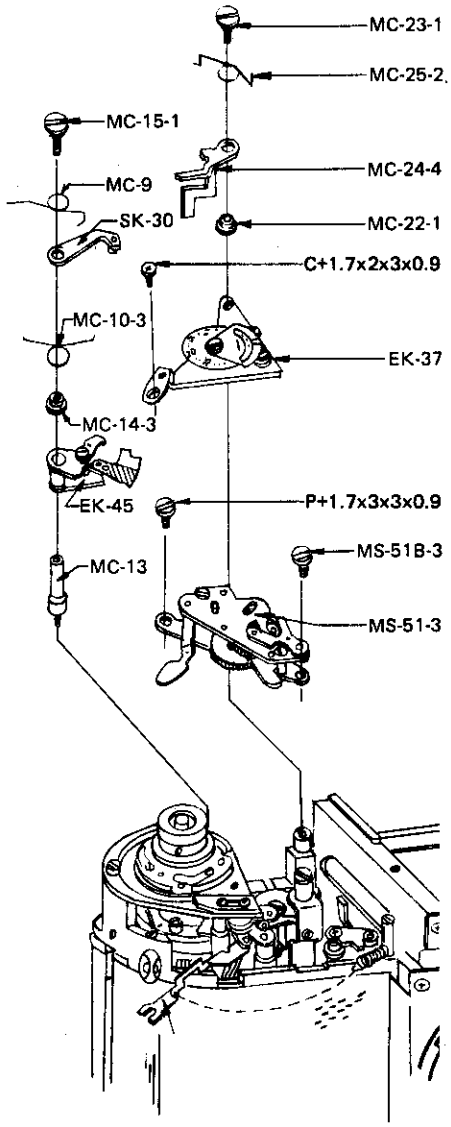
13.6 Remove the exposure counter base assembly (EK-37) by taking out the screw (C+1.7x2x3x0.9).

13.7 Swing the film wind indicator assembly (EK-45) counter-clockwise so the levers are sticking out of the camera body, and then lift it out.

13.8 Disengage the 'B'-lever spring (X91-103-4) from its 'B'-lever (X91-100-1).

13.9 Using a spanner remove the film wind indicator assembly mounting post (MC-13) from the camera body.

13.10 Remove the two screws (P+1.7x3x3x0.9 & MB-51B-1) from the shutter governor, and then lift it out.

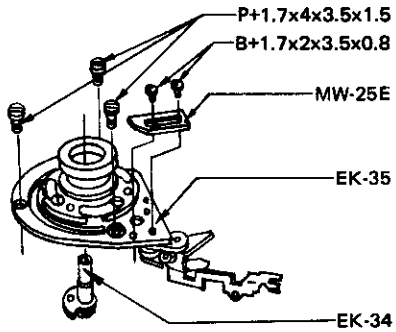


ITEM 14 FILM WINDING BASE PARTS

14.1 Remove the exposure counter base assembly (EK-37) as described in Items 13.1 thru 13.6, above.

14.2 If the winding intermediate lever stopper (MW-25E) is present, remove it.

14.3 Remove the three screws from the winding lever base assembly (EK-35), and lift it, and then the EE-override button shaft assembly (EK-34), out.



SECTION 2 DISASSEMBLY

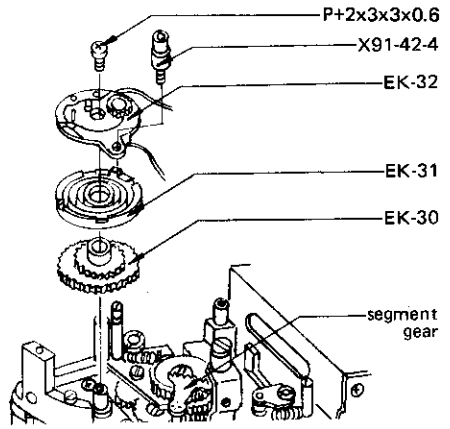
ITEM 14 FILM WINDING BASE PARTS

14.4 Remove the bottom circlip (X91-333) as shown below (Item 15) so the segment gear can be moved.

14.5 Turn the camera rightside up, and unsolder the two wires connected to the X-contact base assembly (EK-32).

14.6 Remove the film winding lever base support (X91-42-2) by unscrewing it.

14.7 Take off the retainer (P+2x3x3x0.6), and remove the X-contact base (EK-32), the winding lever spring assembly (EK-31), and the film winding lever ratchet gear assembly (EK-30).



ITEM 15 MIRROR HOUSING ASSEMBLY

15.1 Remove all the covers, the lens mount assembly, the self-timer mechanism, the meter movement, and the focusing screen unit as described in Items 1–9, & 12 on pages D1 through D7.

15.2 Confirm the shutter is cocked (see Item 8.8, page D5). If not, rotate the sprocket wheel counter-clockwise until the shutter is fully cocked.

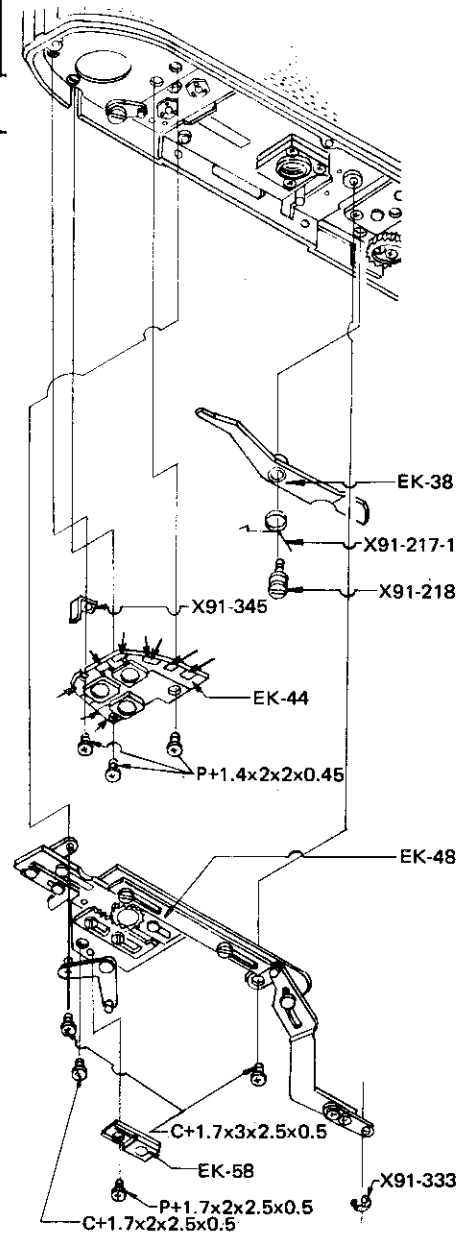
15.3 If the bottom wire holder (X91-345) is present, lift the tip up, and remove the four wires under it.

15.4 Unsolder all the wires connected to the lower printed circuit assembly (EK-44). If necessary, remove the circuit by taking out three screws.

15.5 Remove the variable resistor assembly (EK-58) by taking out the screw holding it.

15.6 Remove the bottom circlip (X91-333), and the three screws holding the meter interlocking lever assembly (EK-48), and lift the lever out.

15.7 Take out the mirror setting lever assembly (EK-38) by removing its retainer (X91-218) and spring (X91-217).

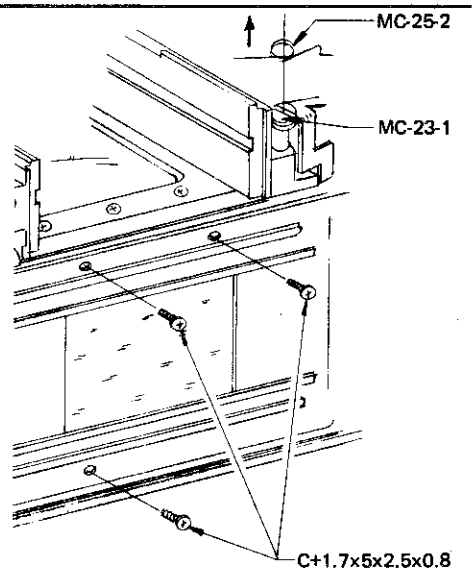


SECTION 2 DISASSEMBLY

ITEM 15 MIRROR HOUSING ASSEMBLY

15.8 Unscrew the counter release lever retainer (MC-23-1) from the back top right of the camera. Take off the counter release lever spring (MC-25-2), and then refasten the retainer (MC-23-1) to its original position on the camera body.

15.9 Remove the three screws (C+1.7x5x2.5x0.8) above and below the shutter curtain window, and then pull the mirror housing assembly (EK-63) out through the front of the camera body.



ITEM 16 MIRROR HOUSING-EE SECTIONS

16.1 Remove the mirror housing assembly (EK-63) as shown in Item 15.

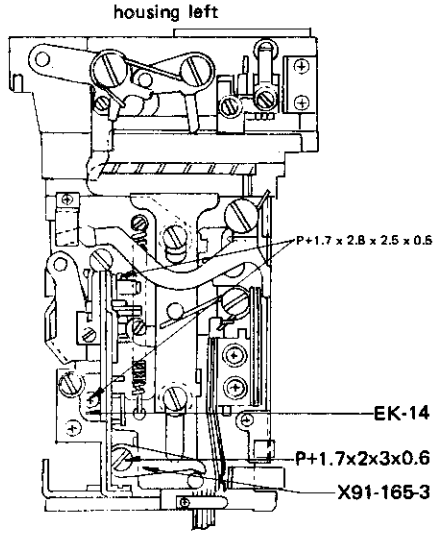
16.2 Take off the mirror housing bottom light baffle as shown in Item 11 on page D7.

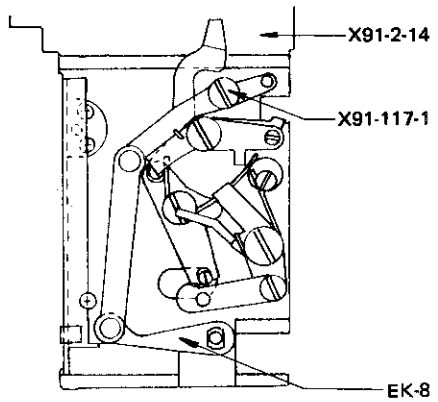
16.3 Exploded diagrams will be found on pages 7–10. Take these out so they can be readily referred to while performing the steps in this Item. Numbers in [ ] refer to the page where the part discussed is shown.

16.4 On the housing left, remove the screw from EE-connector lever D (X91-165-3), [10], and take lever-D, its collar (X91-29b) [10], and the washer(s) (PS-22J) [10], if present, off.

16.5 On the housing right, unscrew the retainer (X91-117-1) [7] on the EE-actuator lever assembly (EK-8) [7], and remove the assembly and its spacer (X91-120-1) [7] from the frame (X91-2-14) [7].

16.6 On the housing left, remove the two screws from the EE-diaphragm transmission section assembly (EK-14) [10], and then take off the manual lever holder (X91-349) [10], if present, the assembly (EK-14) [10], and the washers (PB-6F) [10], if present.





SECTION 2 DISASSEMBLY

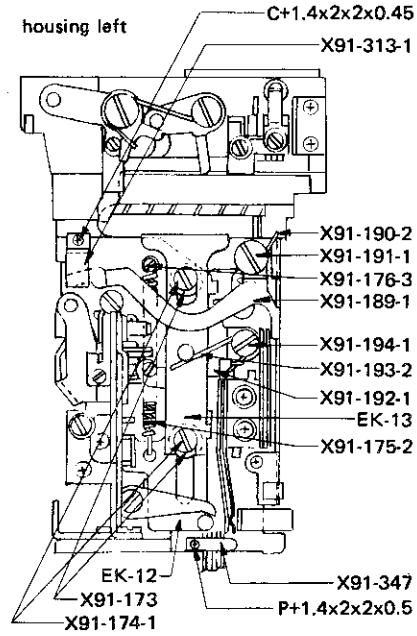
ITEM 16 MIRROR HOUSING-EE SECTIONS

16.7 Remove the screw and FP/selector holder (X91-313-1) [9] covering the front tip of the FP-contact lever (X91-189-1) [10], and then unscrew the retainer (X91-191-1) [10] and take off the lever and its spring (X91-190-2).

16.8 Disconnect the EE-meter needle stopper spring (X91-175-2) [10] from its retainer (X91-176-3) [10].

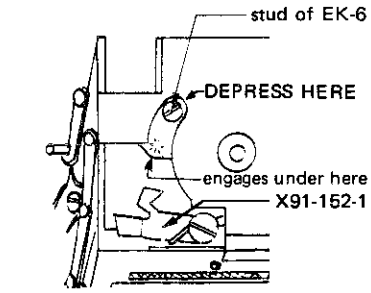
16.9 Remove the EE-meter needle holder spring (X91-193-2) [10] and its retainer (X91-194-1) [10].

16.10 Unscrew the two retainers (X91-174-1) [10], and lift off the EE-meter needle stopper assembly (EK-12) with two washers (91-173) and the EE-meter needle holder assembly (EK-13). Then, lift off the two loose collars (X91-170-2) and the wire and spring holder (X91-192-1) [10]. Remove the other wire holder (X91-347) [10] below.

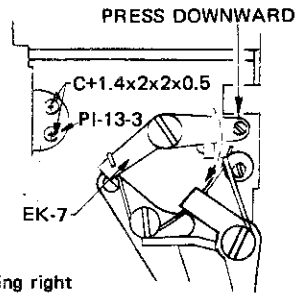


16.11 On the housing rear, remove the four screws from the back and one on each side of the rear light baffle assembly (EK-11) [7], and take it off.

16.12 On the housing right, remove the two screws and the mirror shaft retainer (PI-13-3) [7] they hold. Slide the right mirror shaft collar (PI-14A) [9] off the shaft, and then gently pull the shaft toward the right side until the left mirror shaft collar (PI-14A) slides off. The mirror assembly (EK-9) [9] can now be removed through the back of the housing after carefully lifting off the six wires glued in the groove on the housing left, coming from the mirror and going to the CdS cell.



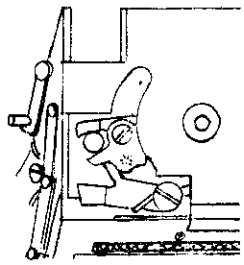
housing bottom



housing right

16.13 On the housing bottom, depress the oscillating lever assembly (EK-6) stud until the assembly is engaged by the mirror resetting lever (X91-152-1).

16.14 On the housing right, press downward on the front tip of the mirror stopper lever assembly (EK-7). The housing bottom should now appear as shown in the illustration at right.


housing bottom

SECTION 2 DISASSEMBLY

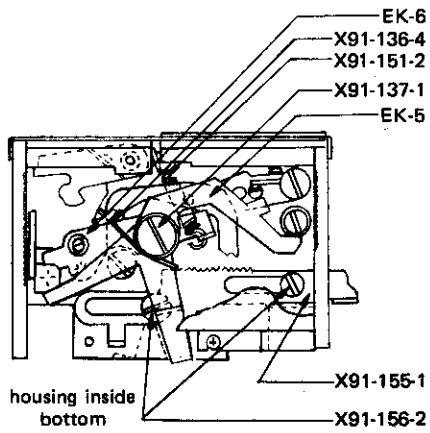
ITEM 16 MIRROR HOUSING-EE SECTIONS

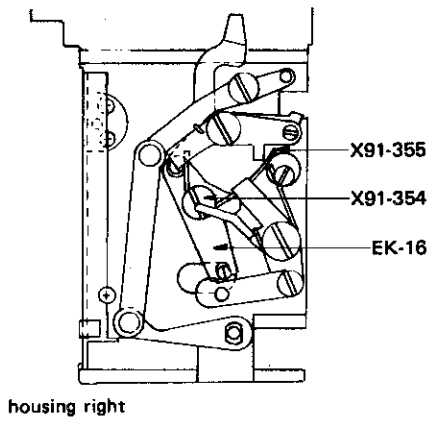
16.15 On the housing inside bottom, unscrew the two retainers (X91-156-2) on the EE-diaphragm controller (X91-155-1) [8], and remove the controller and the two washers (PS-271) underneath.

16.16 Disengage the oscillating lever spring (X91-151-2) [8] from its assembly (EK-6) [8], and then the diaphragm lever spring (X91-136-4) from its assembly (EK-5) [8].

16.17 Remove the d/o lever retaining screw (X91-137-1) [8], and lift off the oscillating lever assembly (EK-6) [8] with the oscillating lever shaft (X91-129-1), diaphragm lever assembly (EK-5), shaft (X91-133-3), and spring (X91-136-4) attached.

16.18 Unscrew the connector lever retainer (X91-354) [7] from its assembly (EK-16) and remove the mirror actuator lever assembly (EK-4) [7], its shaft (X91-330) and washer (X91-125A-1) from the housing inside right, and the connector lever assembly (EK-16), its washer (MI-14-3) and spring (X91-355) from the outside.





SECTION 3 ASSEMBLY AND ADJUSTMENT

ITEM 1 SHUTTER

1.1 INSTALLING THE SHUTTER CURTAINS

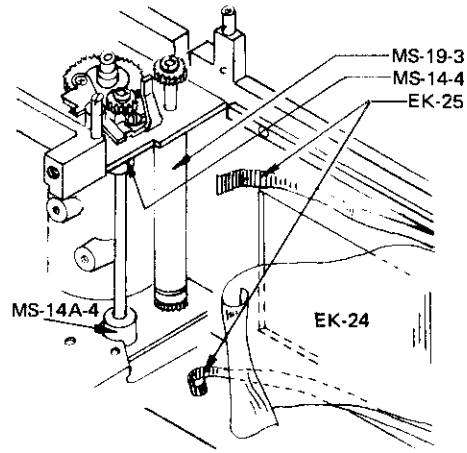
1.1a Affix the two leader ribbons of the first curtain (EK-25) to the ribbon reels (top, MS-14-4; bottom, MS-14A-4) with an adhesive*.

1.1.b Next, affix the second curtain (EK-24) to the 2nd curtain shaft roller (MS-19-3) with an adhesive.

1.1c Check to see if there is any difference in the width of the overlapping section between the two curtains when they are wound up.

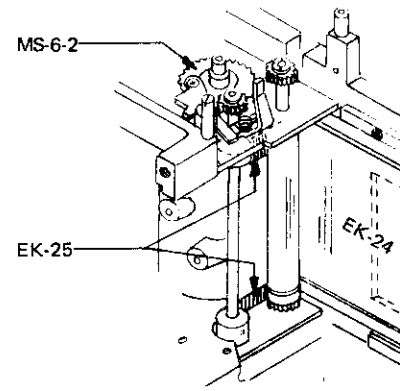
1.1d If the overlap becomes narrower as the curtains are wound up, correct it by shortening the 1st curtain leader ribbon(s).

1.1e Conversely, if the overlap becomes larger, correct it by glueing more curtain leader ribbon to the reel(s) until the overlap has been compensated for.



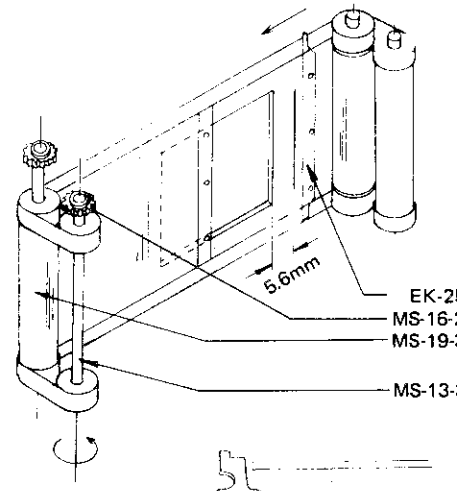
1.2 STARTING POSITION OF THE FIRST CURTAIN

1.2a Open the 2nd curtain by turning the 2nd curtain roller (MS-19-3) with a finger.

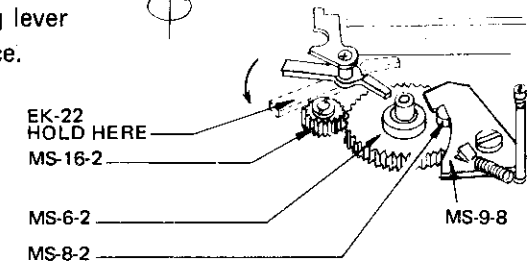


1.2b Align the 1st curtain edge strip with the inscribed line which is 5.6mm from the side of the picture window, by turning the 1st curtain shaft (MS-13-3) with a finger.

1.2c Then, place the 1st curtain gear (MS-6-2) into position while holding the front curtain small gear (MS-16-2) with the release lever (EK-22). See figure at right.



1.2d There should be no play between the stud (MS-8-2) on the 1st curtain gear (MS-6-2) and setting lever (MS-9-8) when the 1st curtain gear is in place.



*We recommend using Goodyear Tire Co.'s Pliobond® adhesive (see Page A21).

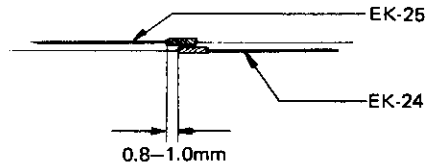
NOTE: Assembly is performed by following the opposite order of procedures outlined in Section 2, Disassembly, the last step being performed first, the next to last, second, etc. Only special steps differing from disassembly, and adjustments required are mentioned in this section.

SECTION 3 ASSEMBLY AND ADJUSTMENT

ITEM 1 SHUTTER

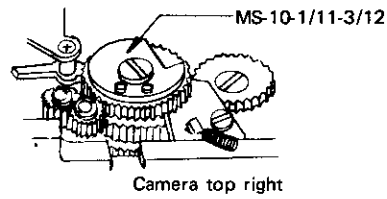
1.3 OVERLAP OF THE TWO CURTAINS

1.3a Make sure the 1st curtain (EK-25) edge strip has been aligned with the inscribed line (Item 1.2b).



1.3b Next, turn the 2nd curtain roller (MS-19-3) with a finger adjusting the 2nd curtain (EK-24) edge strip so that it is 0.8 – 1.0mm to the right of the 1st curtain (EK-25) edge strip.

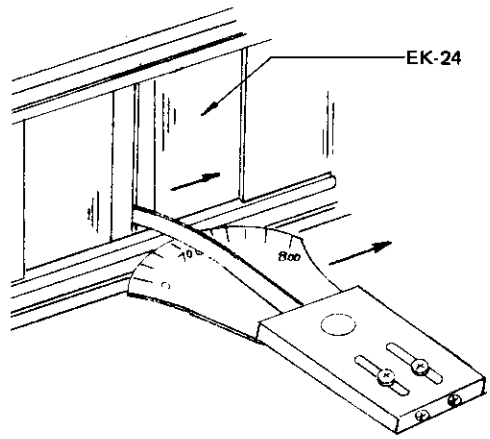
1.3c Install the preassembled 2nd curtain gear parts (MS-10, 11-3, and 12) as shown at right.



After installing the 2nd curtain gear parts (MS-10, 11-3, and 12), recheck the position of the two curtains.

1.4 2ND CURTAIN SPRING TENSION

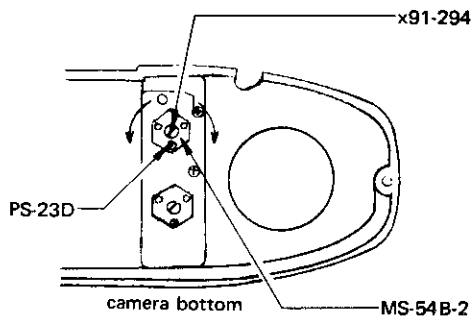
1.4a Wind the advance lever until the 2nd curtain (EK-24) edge strip is in the center of the picture format window. Next, the 2nd curtain (EK-24) should be opened slightly with the tip of the tension gauge, as shown in the figure at right.



1.4b Loosen the stopper screw (PS-23D) on the adjusting nut (MS-54B-2) and measure the 2nd curtain spring tension with the tension gauge. The 2nd curtain spring tension should be adjusted to between 70–80g.

1.4b-1 To increase the tension, turn the 2nd curtain assembly shaft (X91-294) counter-clockwise (usually 2½ to 3 turns). When the correct tension (70–80g) is obtained, fasten the nut (MS-54B-2) to keep the position.

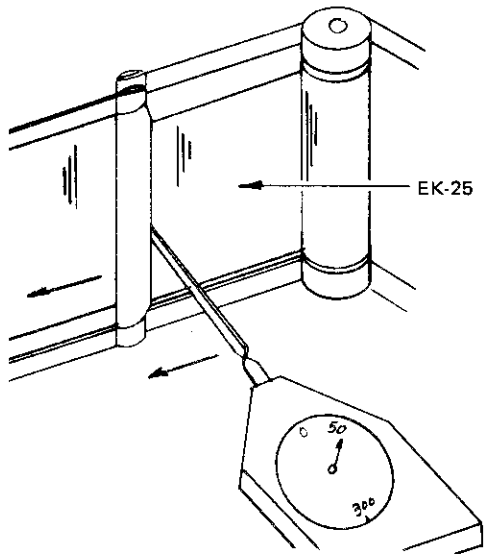
1.4b-2 To decrease the tension, turn the 2nd curtain assembly shaft (X91-294) clockwise while holding the fastening nut (MS-54B-2). When free, the 2nd curtain tension will decrease due to the tension of the 2nd curtain spring. After adjustment, fasten the stopper screw (PS-23D) on nut (MS-54B-2) to hold the obtained tension.



SECTION 3 ASSEMBLY AND ADJUSTMENT

ITEM 1 SHUTTER

1.5 1ST CURTAIN SPRING TENSION

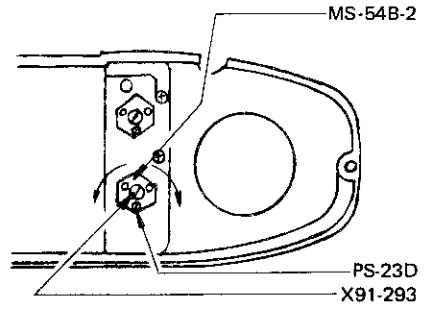


1.5a The 1st curtain (EK-25) tension measurement should be taken from the front side of the camera body.

1.5b With the curtains in the position previously described (Item 1.4a), loosen the other (around X91-293) stopper screw (PS-23D), and measure the 1st curtain spring tension with the tension gauge. The tension should be adjusted to between 50—60g.

1.5c Adjustment is made as in Items 1.4b-1&2 except the adjusting nut (MS-54B-2) and the stopper screw (PS-23D) around the 1st curtain assembly shaft (X91-293) are used instead of those around the 2nd curtain assembly shaft (X91-294).

1.6 TRAVELING SPEED OF THE CURTAINS

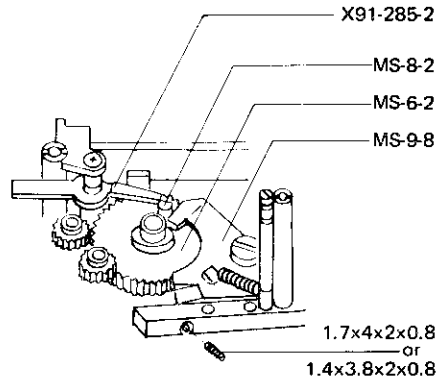


camera bottom

1.6a An electronic shutter tester is used for measuring the traveling speed of the curtains. The speed at room temperature should be between 12.5—13.0 mm/sec for the 34mm travel of the curtains within the picture format.

1.6b Adjustment of the curtains is made depending on the reading of the electronic shutter tester. If one of the curtains is too fast decrease the spring tension, or if too slow increase the spring tension.

1.7 ADJUSTING THE 1ST CURTAIN GEAR



camera top right

1.7a After cocking the shutter, the stud (MS-8-2), which is rivetted onto the 1st curtain gear (MS-6-2), should be firmly held (no play) by the 1st curtain setting lever (MS-9-8) and the release lever (X91-285-2).

1.7b If there is some play between these parts, adjustment is made by turning the setscrew (1.7x4 or 1.4 x3.8x2x0.8). When the results prove unsatisfactory, replace the setting lever (MS-9-8).

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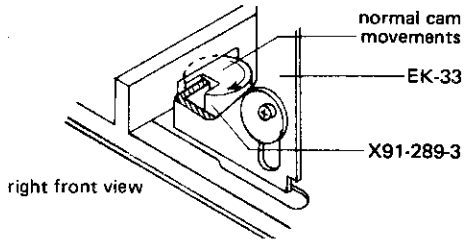
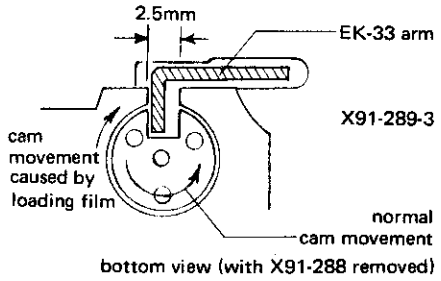
1.8 ADJUSTING THE SAFETY CAM

When the shutter is cocked, the shutter release lever assembly (EK-33) arm (viewed from inside the right front cover) should lie in the safety cam (X91-389-3) slot in the position shown at right. To make an adjustment carry out the steps below.

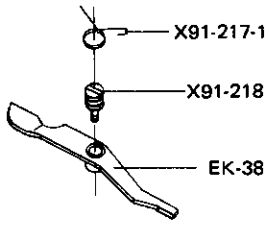


1.8a After making sure the shutter is cocked, remove the mirror setting lever assembly (EK-38) by first taking off its spring (X91-217-1) and then its retainer (X91-218).

1.8b Remove the bottom circlip (X92-333), and then push the bottom connector lever-B (X91-50-5) down and to the right, out of the way of the safety gear (X91-288).

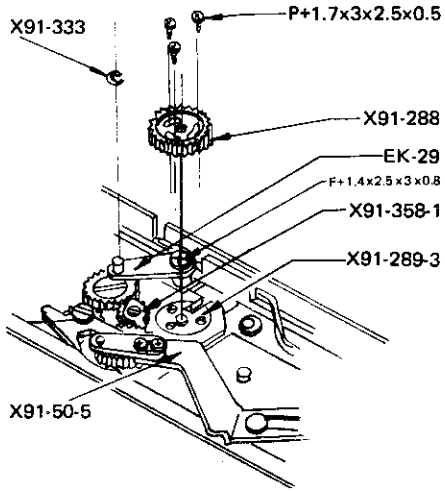


1.8c Take out the three screws (P+1.7x3x2.5x0.5), and remove the safety gear (X91-288).

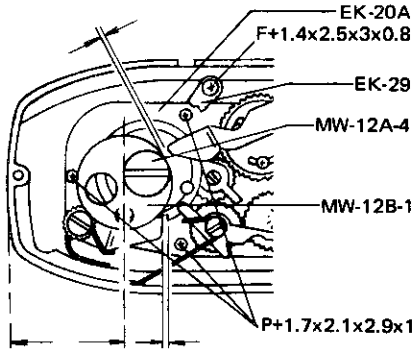


1.8d Measure the width of the safety cam (X91-289-3) slot. If the slot is 2.5mm then continue from 1.8e; if it is 2.0mm, follow the next step.

1.8d-1 The 2.0mm slot safety cam must be replaced with one having a 2.5mm slot (X91-289-3). To accomplish this the lower shutter base plate assembly (EM-20) must be taken out of the camera body. First check whether EK-20 or EK-20A and related parts are present (see page 6) by checking if the copper film winding anti-reverse claw-B (X91-385-1) is in the mechanism. If EK-20A is present, continue from 1.8d-2, if it is the early one, EK-20, modify the anti-reverse mechanism as described in Section 4, Repair Instructions, on page R15 .



1.8d-2 Remove the lower shutter base plate assembly (EK-20A) by taking off the meter ASA setting transmission lever assembly (EK-29) and the F+ screw holding it. Unscrew the lower spool gear retainer (MW-12A-4) and take the mirror setting cam (MW-12B-1) off. Remove the four screws (P+1.7x2.1x 2.9x1) and lift the assembly (EK-20A) out.



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ITEM 1 SHUTTER

1.8d-3 Replace the safety cam with a 2.0mm slot (X91-289-2) with one having a 2.5mm slot (X91-289-3).

1.8d-4 Secure the lower shutter base plate assembly (EK-20A) to the camera body with the four screws (P+1.2x2.1x2.9x1).

1.8d-5 Reinstall the mirror setting cam (MW-12B-1) and the lower spool gear retainer (MW-12A-4). These will be readjusted during the final steps.

1.8e. Adjust the safety cam (X91-289-3) so the shutter release lever assembly (EK-33) arm is positioned correctly as shown at right. Carefully place the safety gear (X91-288) over the cam so that the cam screw holes can be seen through the gear oversized screw holes.

1.8f Refasten the three gear screws (P+1.7x3x2.5x0.5) while checking that the cam and shutter release lever are still seated properly as the safety gear (X91-288) and cam (X91-289-3) tend to move while the screws are being tightened.

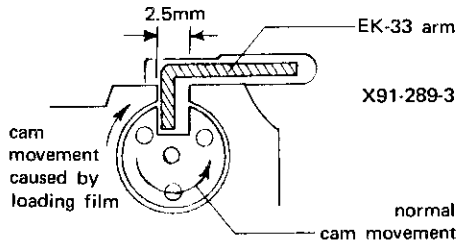
1.8g Remount the mirror setting lever assembly (EK-38), its retainer (X91-281), and spring (X91-217-1).

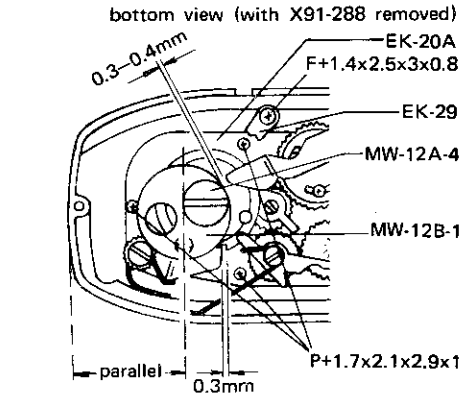
1.8h If the lower shutter base plate assembly (EK-20A) has been removed, adjust its related parts as shown in Item 2.3d on page A12.

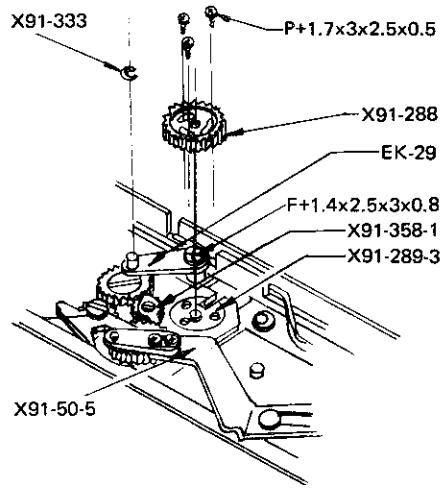
1.8i Remount the meter ASA setting transmission lever assembly (EK-29) if it has been removed, and then reattach it to the bottom connector lever-B (X91-50-5) fastening them with the bottom circlip (X91-333).

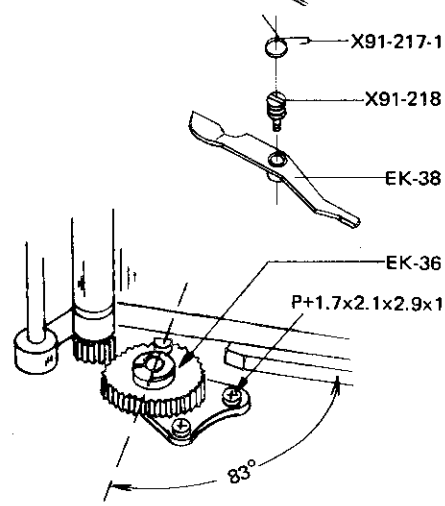
1.9 ADJUSTING THE RELEASE LEVER

When the shutter is cocked, the angle of the mirror resetting gear assembly (EK-36) in relation to the rear of the camera body, as shown at right, should be about 83° (versus 90° in other Miranda SLR cameras). Adjustment is made by removing the rear screw (P+1.7x2.1x2.9x1), loosening the front one, adjusting, and retightening.





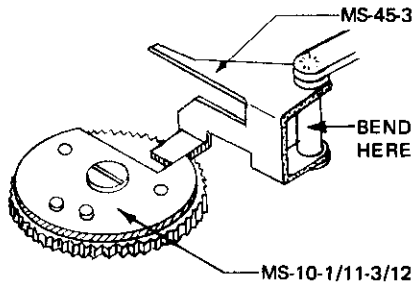




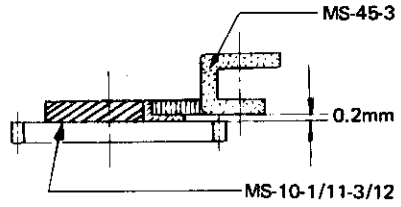
SECTION 3 ASSEMBLY AND ADJUSTMENT

ITEM 1 SHUTTER

1.10 MOUNTING THE FILM WINDING LEVER BASE ASSEMBLY (W/GOVERNOR LEVER)

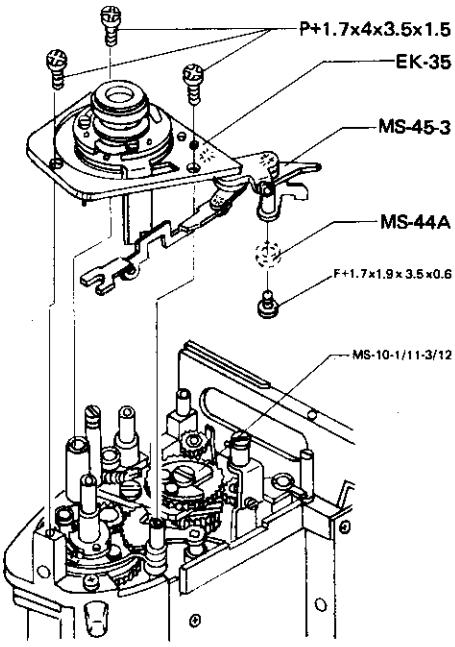


1.10a Remount the film winding lever base assembly (EK-35) on the camera top right, watching that the bottom arm of the governor lever (MS-45-3) sits in the notch of the second curtain gear parts (MS-10-1/11-3/12). Secure the assembly with the three P + screws.



1.10b The governor lever (MS-45-3) should not move up or down excessively (more than 0.4mm), and the play between the bottom of the lever arm and the second curtain gear parts (MS-10-1/11-3/12) should be 0.2mm as shown at right.

1.10c If there is excessive play, remove the assembly (EK-35). Take off the screw on the bottom of the governor lever (MS-45-3), and add one or two adjustment washers (MS-44A), as necessary. No more than two washers should be between the lever and the screw (F+1.7x1.9x3.5x0.6).

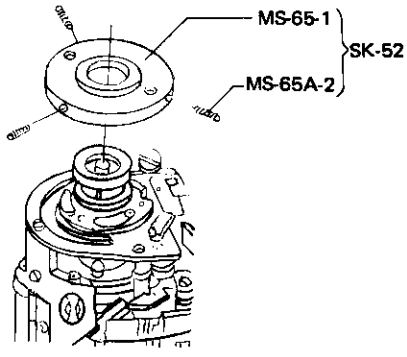


1.10d If the lever bottom arm doesn't sit 0.2mm above the bottom half of the second curtain gear parts (MS-10-1/11-3/12), correct the position by slightly bending the governor lever (MS-45-3) shaft with a pliers.

1.10e When one or both adjustments above can't be made, replace the film winding lever base assembly (EK-35) with an entirely new one. The lever and gear parts must mate properly.

1.11 MOUNTING THE SHUTTER GOVERNOR

The pre-assembled shutter governor (MS-51-3) is remounted only when the shutter speed is set at 1 second.



1.11a Temporarily mount the shutter dial base assembly (SK-52) on the film winding lever base assembly (EK-35), and secure it with the three fasteners (MS-65A-2).

1.11b Turn the shutter dial base assembly (SK-52) clockwise as far as it will go. Confirm the 'B' setting,

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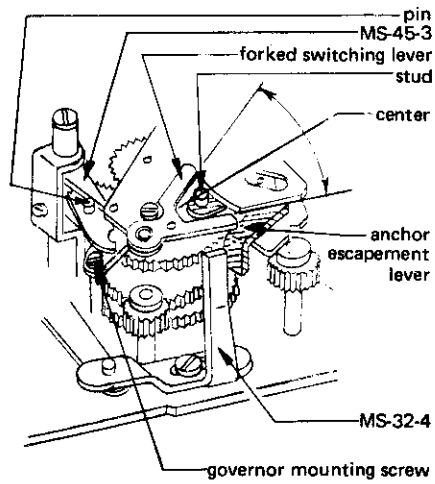
1.11b (cont.) and then turn the assembly one click counter-clockwise to the 1 second setting.

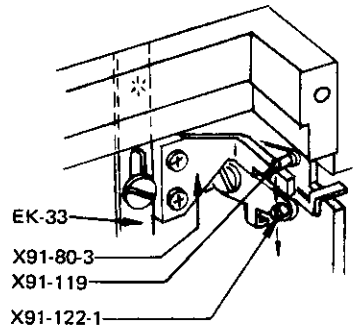
1.11c Carefully unscrew the film wind indicator assembly mounting post (MC-13) as it is secured with a chloroprene cement.

1.11d Cock the shutter, and then install the shutter governor (MS-51-3), securing it with the two screws as shown in the illustration on page 4. Make sure the pin on the shutter governor is outside the governor lever (MS-45-3) as seen at right.



1.11e After confirming that the shutter is cocked, check to see if the stud rivetted on the anchor escapement lever is positioned in the center of the forked switching lever.

1.11f If the stud is not in the center, remove the shutter governor (MS-51-3) temporarily, and bend the relay lever (MS-32-4) toward the front or rear of the camera until the stud is properly positioned when the shutter governor is reinstalled. Note that the relay lever should be in contact with the anchor escapement lever.

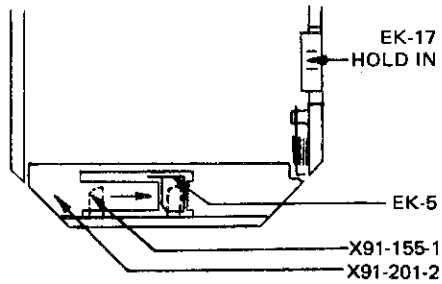


1.12 ADJUSTING THE SHUTTER STROKE

Shutter stroke is determined by the position of the self-timer starter arm (X91-80-3) on the shutter release lever (EK-33).

1.12a Make sure the shutter isn't cocked, and the battery is switched off.

1.12b In this position the self-timer starter arm (X91-80-3) finger top edge should be in contact with the bottom of the EE-actuator lever-A pin (X91-119).



1.12c While holding the manual lever (EK-17) in, and depressing the shutter release lever (EK-33) very slightly, the EE-diaphragm controller (X91-155-1) tip showing in the mirror housing bottom light baffle should begin moving towards the camera left.

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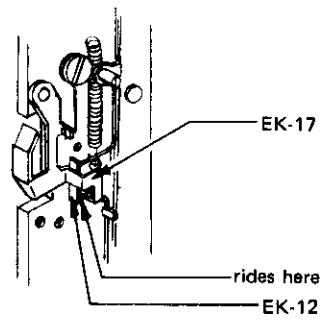
1.12d If the levers don't operate properly as discussed in Items b & c on the previous page, then adjust the self-timer starter arm (X91-80-3) up or down as necessary after loosening the two screws (P+1.7x 2.5x3x0.5).



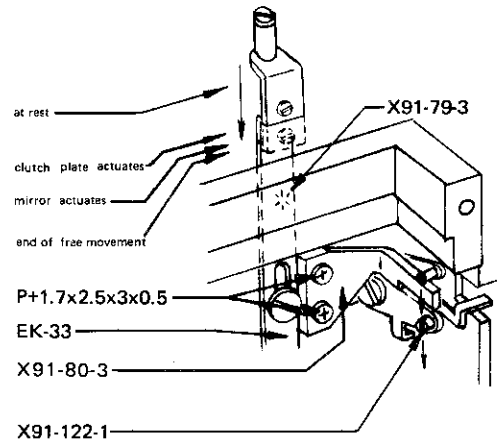
1.12e Hold the manual lever (EK-17) in, and press the shutter release lever (EK-33) all the way down. Next release the manual lever, and while slowly allowing the shutter release lever to return upward watch the movement on the left side of the mirror housing. The manual lever (EK—17) should ride on the EE-meter needle stopper (EK-12), and then snap back to its original position at the end of the movement.

1.12f Cock the shutter. As the shutter release lever is depressed check that the following occurs:

1.12f-1 Most of the way down, the pin (X91-79-3) on the rear of the lever (EK-33), actuates the clutch plate assembly (EK-21-1).

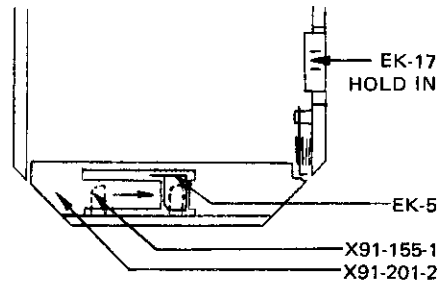
1.12f-2 Next, the self-timer starter arm (X91-80-3) pushes down on the mirror stopper eccentric stud, causing the mirror to flip up.

1.12f-3 There should be approx. 0.4mm free movement of the shutter release lever (EK-33) after activation of the curtains and mirror.



1.12g If the free movement distance is not enough, adjustment is made by turning the mirror stopper eccentric stud (X91-122-1) to raise or lower it.

1.12h Making sure the shutter is cocked, hold the manual lever (EK-17) in. While watching the two arms sticking through the mirror housing bottom light baffle (X91-201-2), slowly depress the shutter release lever (EK-33). The bottom arm, EE-diaphragm controller (X91-155-1), should move all the way over to the camera left, and under the diaphragm lever (EK-5) arm, before the shutter activates.



1.12i Adjustment is made by turning the eccentric stud (X91-122-1) downward.

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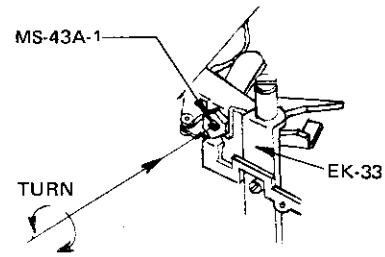
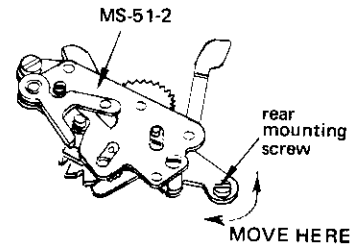
1.13 ADJUSTING SHUTTER SPEED

Shutter speed adjustment is made at slow speeds, and then at high speeds using an electronic shutter tester.



1.13a For SLOW SPEED MEASUREMENT set the shutter speed at 1/15 second. If adjustment is needed turn the speed adjusting lever setscrew (MS-43A-1) clockwise for prolonging or counter-clockwise for shortening the duration.

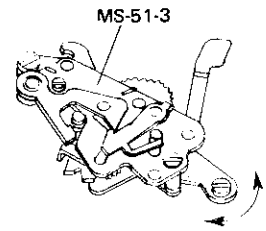
1.13b Shutter HIGH SPEED MEASUREMENT is taken at 1/1000 second. Adjustment is made by loosening the rear mounting screw of the shutter governor (MS-51-3), and moving the governor right or left within the oversized hole on its mounting arm, as necessary.

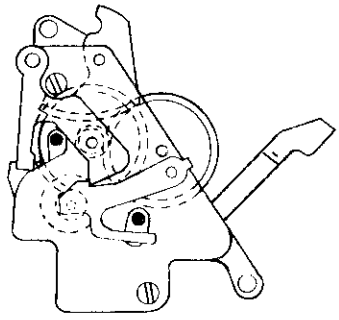


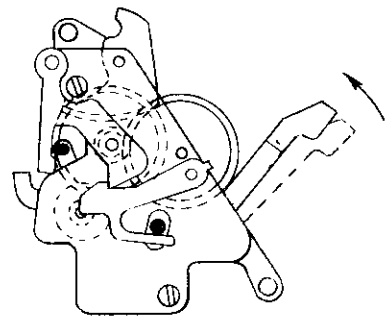
1.13c If the shutter speeds are not functioning properly after the previous adjustments, it may be necessary to change the shape of the shutter governor cam (MS-38-5). Special instructions for this operation can be found in Section 4.

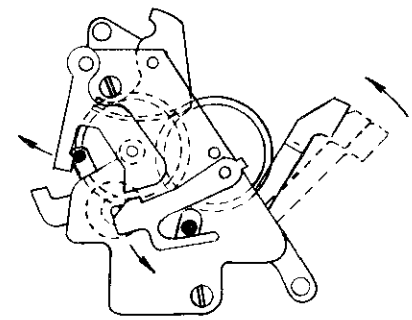
1.14 SHUTTER GOVERNOR-FINAL CHECK

Check that the shutter governor is meshing correctly by observing the position of the inner mechanism parts at all shutter speeds. Note the three positions-slow, medium, and high.




SLOW SPEEDS
1-1/15 second


MEDIUM SPEEDS
1/30-1/250 second


HIGH SPEEDS
1/500 & 1/1,000 second

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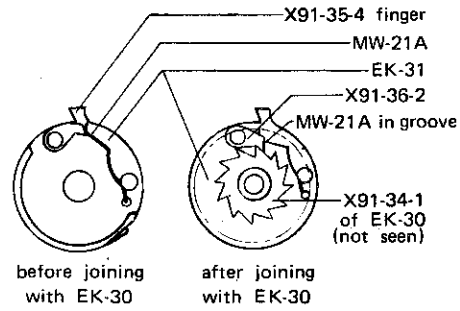
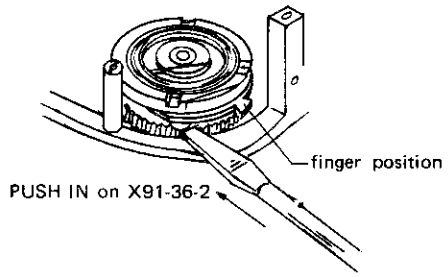
ITEM 2 WINDING AND ANTI-REVERSE MECHANISMS

2.1 MOUNTING AND ADJUSTING WINDING MECHANISM

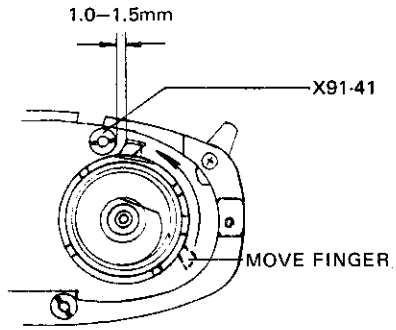
2.1a Confirm the shutter is cocked as shown in Section 2 Item 8.8, page D5. If not, cock using tool G-104.

2.1b On the winding lever spring assembly (EK-31) bottom, tension the spring (MW-21A) so that it is resting on the tip at the level of the groove in the film winding claw (X91-36-2), but not in it as shown at right. Put the winding lever spring assembly (EK-31) on the ratchet gear assembly (EK-30). With a screwdriver push in on the film winding claw (X91-36-2). The spring (MW-12A) should move into the claw (X91-36-2) groove, and at the same time, the claw should mesh with the ratchet gear (X91-34-1) teeth as shown at right.

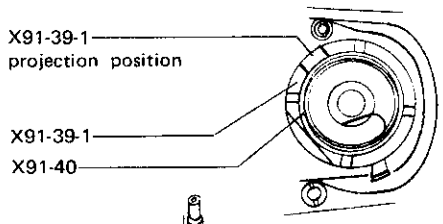




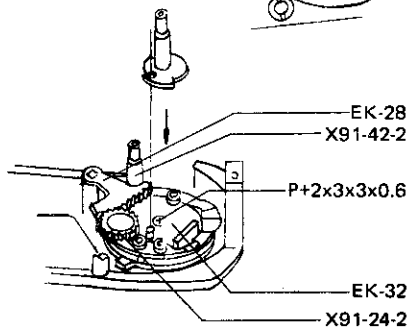
2.1c Place these two assemblies (EK-30 and EK-31) on the body. The finger of the film winding claw base (X91-35-4) should be about in the position shown at right. Release the shutter, and then press up on the mirror. Using a screwdriver move the finger counter-clockwise to recock the shutter. When the shutter is fully cocked, the finger should be near the X-contact base support (X91-41) as illustrated. If not, lift the ratchet gear assembly (EK-30) up, release and recock the shutter, and then reposition the assemblies (EK-30 & EK-31). Check and readjust until the claw base finger is positioned properly.



2.1d Solder the two wires onto the X-contact base assembly (EK-32) as shown in the schematic diagram, page A24.



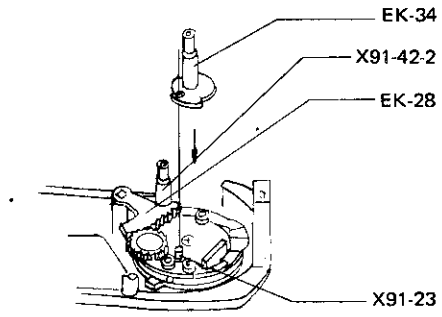
2.1e Tension the spring (X91-40) by turning the case (X91-39-1) clockwise at least 360° until the projection sticking up is in the position seen at right. Holding the case (X91-39-1) in place, secure the X-contact base assembly (EK-32) with the screw (P+2x3x3x0.6) and the base support (X91-42-2). Before tightening check that the segment gear (EK-28) and the X-contact intermediate gear (X91-24-2) mesh.



SECTION 3 ASSEMBLY AND ADJUSTMENT

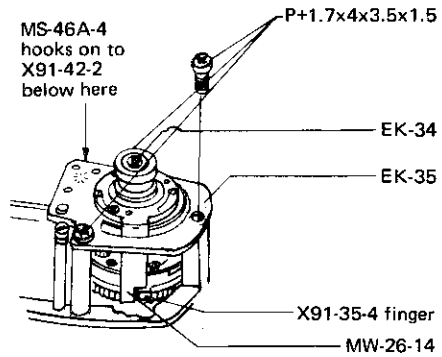
ITEM 2 WINDING AND ANTI-REVERSE MECHANISMS

2.1f Look at page 13. If X91-21A-2 is present on EK-35, there shouldn't be a vinyl covering on X91-27-2 in EK-32. If the covering is present, remove it. In the reverse if there is no X91-21A-2 on EK-35 there should be a vinyl covering on X91-27-1. Make sure the segment gear (EK-28) is in the position shown at right, and that it stays there until item 2.1i.

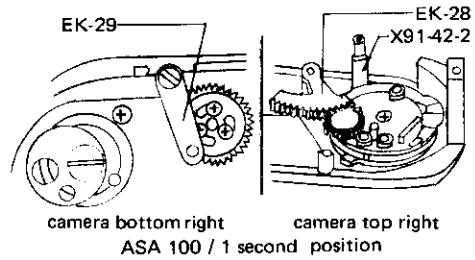


2.1g Hook the EE-override button shaft assembly (EK-34) onto the X-contact base pin (X91-23) making sure that the gears mesh properly.

2.1h Tension the spring (MS-46A-4) (see p.13) by hooking one end on the shutter speed adjusting lever nut (MS-50A) while the other end is held out with a screwdriver. Hook that end onto the base support (X91-42-2) while lowering the film winding lever base assembly (EK-35) into place watching that the EE-override button shaft assembly (EK-34) is not shifted. Push the claw base finger counterclockwise so that the film winding intermediate lever (MW-26-14) is positioned as shown at right.

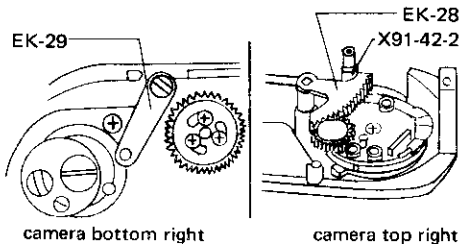


2.1i Temporarily fasten the three screws (P+1.7x4x3.5x 1.5), and then turn the camera over. This frees EK-34. Check the segment gear (EK-28) meshing by moving the lever (EK-29). See drawings at right.



2.2 MODIFYING ANTI-REVERSE MECHANISM

Instructions for modifying the anti-reverse mechanism are on page R15.

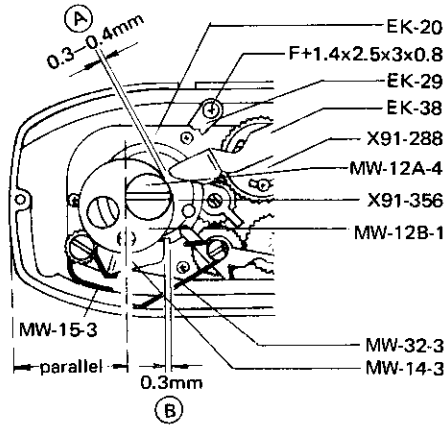


2.3 MOUNTING & ADJUSTING ANTI-REVERSE MECHANISM

2.3a If the lower shutter base plate assembly (EK-20A) has been removed to replace the safety cam (X91-289-3), return and secure it with its four P+ screws.

2.3b Continue with Items 1.8 e&f on page A5.

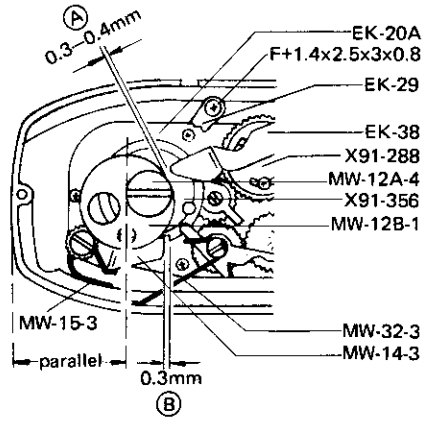
2.3c Before performing Item 1.8g, make sure the shutter is cocked, and the stud (X91-131-1) is positioned as shown on page D5, then continue with Item 2.3d.



SECTION 3 ASSEMBLY AND ADJUSTMENT

ITEM 2 WINDING AND ANTI-REVERSE MECHANISMS

2.3d Position the mirror setting cam (MW-12B-1) so that the clearances at (A) and (B) are as shown at right, and then tighten the retainer (MW-12A-4) noting the alignment of the cam (MW-12B-1) holes.



2.3e Cock and release the shutter making sure there is a small amount of clearance between the mirror setting lever (EK-38) and the cam (MW-12B-1) (A) at all times. Also make sure there is a small gap between the anti-reverse claw (MW-14-3) and the anti-reverse cam (X91-356) (B) after the shutter is released.

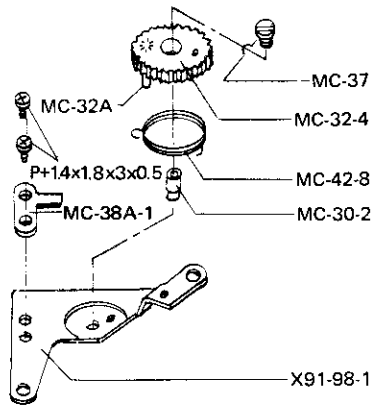
2.3f Perform Item 1.8i on page A5.

ITEM 3 COUNTER

3.1 INSTALLATION OF COUNTER PARTS

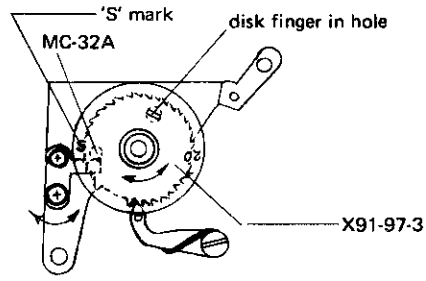
If the exposure counter base assembly (EK-37) has been disassembled, follow the procedures below, otherwise start with item 3.3.

3.2 COUNTER BASE REASSEMBLY



3.2a Mount the counter ratchet wheel shaft (MC-30-2) in the center hole of the counter base plate (X91-89-1). Connect one end of the counter number disk zeroing spring (MC-42-8) to the rivet on the ratchet wheel (MC-32-4), and the other end to the hole in the indented portion of the base plate. Secure the ratchet wheel (MC-32-4) with its retainer (MC-37).

3.2b Partially tension the spring by rotating the ratchet wheel (MC-32-4) one full turn. While holding the ratchet wheel in place, install its stopper (MC-38A) as shown at right noting the position of the ratchet wheel rivet (MC-32A). Secure the stopper (MC-38A) with its two screws.



3.2c Apply chloroprene cement to the top of the ratchet wheel (MC-32-4), and attach the counter number disk (X91-97-3) as shown at right. Make sure the finger on the disk is in the hole in the ratchet wheel.

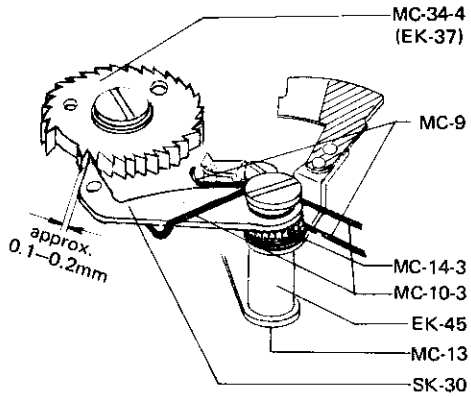
SECTION 3 ASSEMBLY AND ADJUSTMENT

ITEM 3 COUNTER

3.3 MOUNTING AND ADJUSTMENT

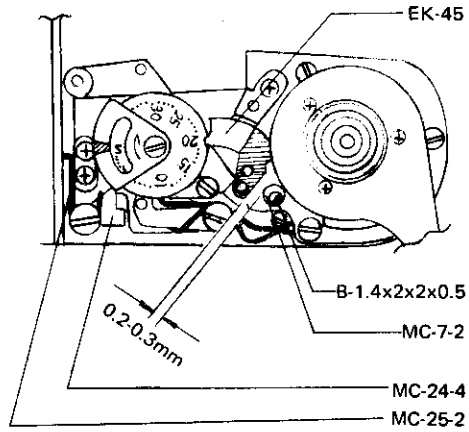
3.3a Reinstall the film wind indicator assembly (EK-45) and its mounting post (MC-13) if they have been removed from the body.

3.3b Mount the exposure counter base assembly (EK-37), and then the counter release lever (MC-24-4) on the body, but do not tension the three springs (MC-9, 10-5, & 25-2). See the exploded diagram on page 4.

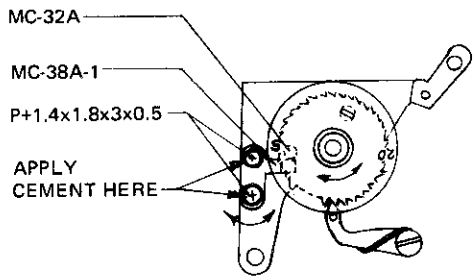


3.3c Making sure the shutter is released, adjust the gap between the film wind indicator assembly (EK-45) and the exposure/wind eccentric cam (MC-7-2) so it is 0.2–0.3mm, by loosening the B- screw and moving the cam.

3.3d Tension the counter stopper claw spring (MC-9) and the feeding claw spring (MC-10-3). Cock the shutter, and then check that the counter stopper claw assembly (SK-30) sits in the ratchet wheel groove and makes contact as shown at right.
Adjustment is made by moving the counter feeding claw spring washer (MC-14-3) which is eccentric. Rotate the ratchet wheel (MC-32-4) by pressing in on the counter release lever (MC-24-4), and continuously cocking and releasing the shutter. Check that the claw assembly (SK-30) makes contact in ALL the ratchet wheel grooves (MC-32-4) properly.



3.3e Release the shutter, and set the start ('S') position of the ratchet wheel rivet (MC-32A) and the stopper (MC-38A-1) as shown at right by loosening the rear P+ screw, and adjusting the stopper (MC-38A-1). Retighten the screw, and lock both P+ screws by applying chloroprene cement around the edge of the heads.



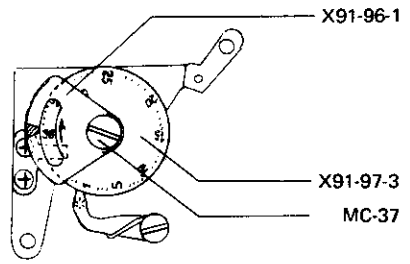
3.4 FINAL ADJUSTMENT

3.4a Press in on the counter release lever (MC-24-4) and hold it in until item 3.4b is completed.

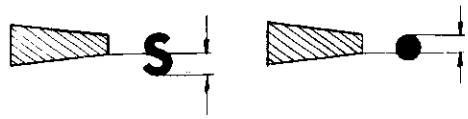
SECTION 3 ASSEMBLY AND ADJUSTMENT

ITEM 3 COUNTER

3.4b Wind the advance lever until '36' is in the position shown at right. Press down and hold the position of the counter number disk (X91-97-3). Unscrew the retainer (MC-37), and slip the counter indicator (X91-96-1) on. Screw the retainer (MC-37) most of the way down, adjust to the alignment shown at right, and tighten.



3.4c Press in again on the counter release lever (MC-24-4), the indicator should show 'S', and then check the counter advance from 'S' to '36'. Clean the disk and indicator.



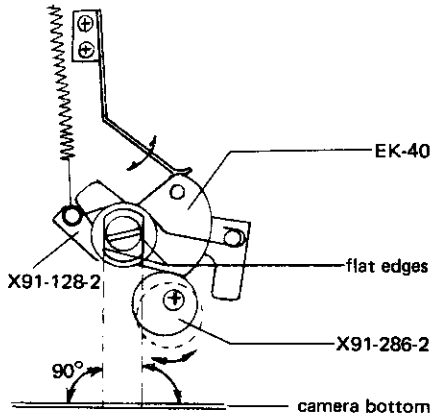
for numerics counter indicator — for dots mark alignment

3.4d Tension the counter release lever spring (MC-25-2).

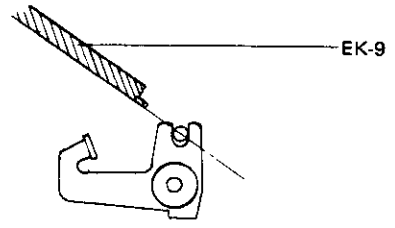
ITEM 4 SELF-TIMER

4.1 Cock the shutter, and install the self-timer (X91-128-2) and related parts. Make sure the two springs (X91-88-1 & X91-91-1) are connected properly. Note that with EK-33R the springs are in the reverse position of those shown on page D5.

4.2 The self-timer cam assembly (EK-40) should be positioned so that the flat edges where the self-timer lever (X91-108) attaches are perpendicular to the camera bottom. Adjustment is made by turning the eccentric washer (X91-286-2).



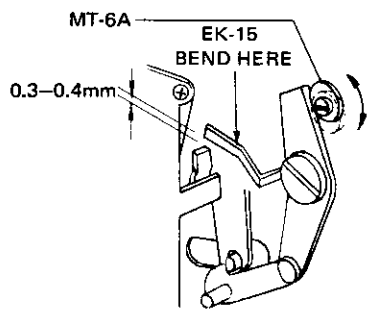
4.3 After temporarily attaching the self-timer lever (X91-108), set the self-timer and release the shutter. In this mode the bottom surface of the mirror assembly (EK-9) should be in alignment as shown at right. Adjust by turning the s-t mirror actuator lever stopper (MT-6A) as required.



housing inside left

4.4 Cock the shutter, and set the self-timer. The tip of s-t mirror actuator lever assembly (EK-15) arm should rest on the self-timer ankle. Adjust by bending the tip down.

4.5 When the shutter is activated the tip should be 0.3–04.mm above the ankle, otherwise bend it as necessary.



SECTION 3 ASSEMBLY AND ADJUSTMENT

ITEM 5 MIRROR HOUSING MECHANISM

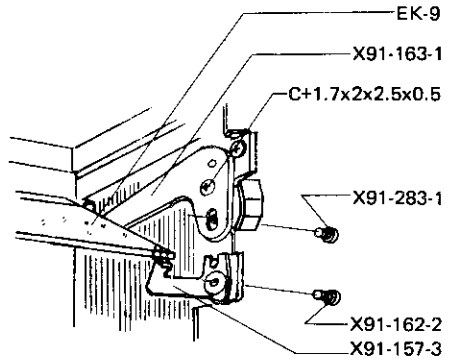
5.1 VIEWFINDER: ADJUSTMENT OF FIELD OF VIEW

Correction of error in the field of view in relation to the image on the film plane is accomplished by resetting the mirror position adjusting lever (X91-163-1), and by adjusting mirror stopper-A (X91-157-3) with the adjusting screw (X91-283-1) so the mirror assembly (EK-9) is at a 45° angle.

5.1a Remove the front cover and the left front cover as described in Sect. 2 Items 1 & 6 on pp.D1 & D3, respectively.

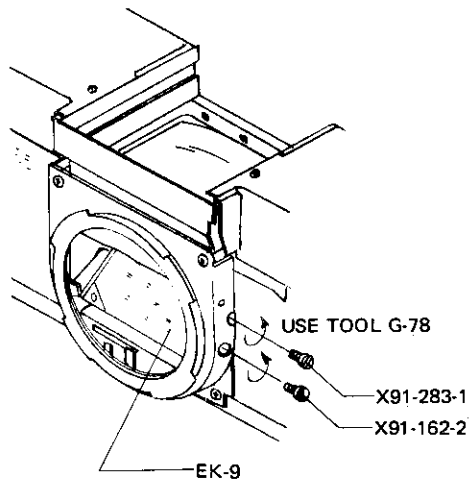
5.1b Loosen screw (C+1.7x2x2.5x0.5) while holding the mirror position adjusting lever (X91-163-1) with special tool G-77.

5.1c From the outside of the mirror housing frame (X91-2-14) loosen the mirror position adjusting screw (X91-283-1) with special tool G-78 to move the mirror position adjusting lever (X91-163-1) forward or backward.



5.1d Loosen the mirror stopper adjusting eccentric screw (X91-162-2) to move stopper-A (X91-157-3) up or down.

5.1e When adjustment is completed, firmly tighten screw (C+1.7x2x2.5x0.5), and using a hypodermic syringe apply LOCTITE* (an adhesive) to the top of the mirror stopper adjusting eccentric screw (X91-162-2).



5.1f If it is absolutely necessary to adjust the mirror position adjusting lever (X91-163-1), do so while lifting up the mirror assembly (EK-9) from the rear with a pencil. Mirror stopper-A (X91-157-3) should be set first to adjust the field of view. The screw (X91-283-1) holding the mirror position adjusting lever (X91-163-1) is screwed on from the inside of the mirror housing in the present model, but in the earlier model it is screwed on from the outside. In the earlier model it cannot be moved if the mirror housing is installed in the body.

* LOCTITE, manufactured by Intercontinental Chemical Co. Ltd., Kylemorepark N., Dublin, Indiana, U.S.A., cannot be supplied by us since it contains inflammables, and therefore cannot be shipped.

SECTION 3 ASSEMBLY AND ADJUSTMENT

ITEM 5 MIRROR HOUSING MECHANISM

5.2 POSITIONING EE-DIAPHRAGM CONTROLLER LOCKING LEVER (EK-1), MAGNIFYING LEVER (EK-2), AND DIAPHRAGM LEVER (EK-5) ASSEMBLIES

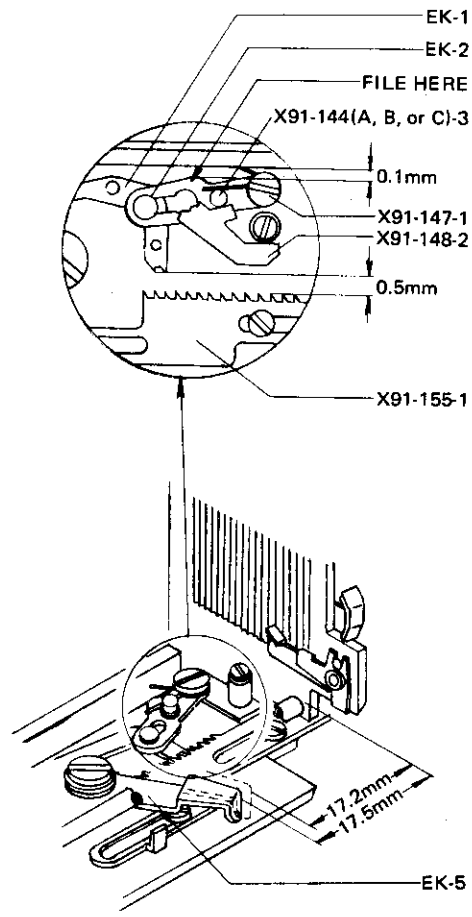
5.2a Remove the light baffle following the directions in Section 2 Item 11 on page D7.

5.2b Make sure the shutter is not cocked. In this position the tip of the diaphragm lever assembly (EK-5) should be 17.2mm from the inner edge of the mirror housing. If not, replace the diaphragm lever stopper shaft (X91-148-2) with another of a different diameter (3.0, 4.5, 4.0mm o.d.). The standard shaft most likely in the mechanism is one with an outer diameter of 3.5mm.

5.2c Cock the shutter. Now the diaphragm lever assembly (EK-5) tip should be 17.5—17.6mm from the inner edge of the mirror housing. Even if the distance is greater, continue on to the next step.

5.2d Check the margin between the EE-diaphragm controller locking lever assembly (EK-1) teeth and the EE-diaphragm controller (X91-155-1) teeth. The clearance between the teeth of these two pieces should be greater than 0.5mm. If not, adjust the clearance by replacing the magnifying plate assembly (EK-2) with one having a larger magnifying lever pin (X91-144A-3, 2.1mm or X91-144C-3, 2.3mm o.d.).

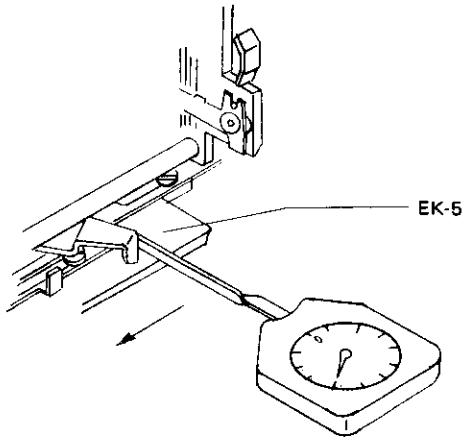
5.2e Next, check the margin between the magnifying plate (EK-2) and the mirror housing frame. There should be a clearance of at least 0.1mm, otherwise file off a portion of the magnifying lever assembly (EK-2) until the proper clearance is obtained.



SECTION 3 ASSEMBLY AND ADJUSTMENT

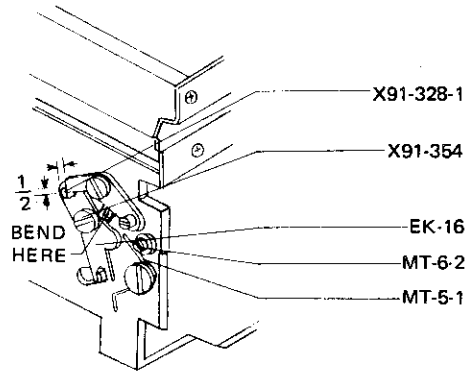
ITEM 5 MIRROR HOUSING MECHANISM

5.2f Making sure the shutter is not cocked, depress the shutter release button, thereby uncoupling the mirror stopper lever (EK-7) and the connector lever (EK-16). Measure the diaphragm lever (EK-5) spring tension by placing a tension guage at the tip of the diaphragm lever. The tension should be 180-220g when the diaphragm lever just begins to move.



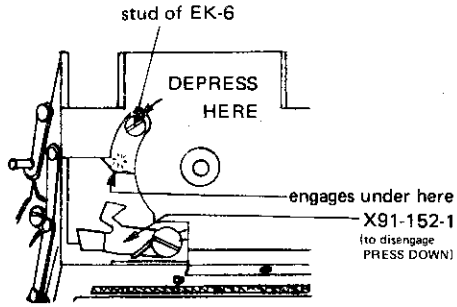
5.2g After completing the above, remove the mirror housing from the camera body in accordance with Section 2 Item 15 (p.D9), and check for proper coupling between the mirror stopper lever (EK-7) and the connector lever (EK-16) as follows:

5.2g-1 If the difference between the distances measured on the previous page (5.2c minus 5.2b) is abnormally large (greater than 0.8mm) remove the connector lever retainer (X91-354), and replace the connector lever (EK-16) with another lever having a wider stud* (X91-328-1) of either 1.1 or 1.2mm width as shown at right.



5.2g-2 The mirror stopper lever (EK-7) should cover about 1/2 of the connector lever stud (X91-328-1). Adjustment is made by bending the bottom tip of the projection (between the two screws) on the mirror stopper lever (EK-7) outward or inward.

5.2g-3 Set the oscillating lever (EK-6) on the bottom of the mirror housing in the fully wound position by pressing it to the rear until it is engaged by the mirror resetting lever (X91-152-1). Next, disengage the s-t mirror actuator lever spring (MT-5-1) from the s-t mirror actuator lever stopper retainer (MT-6-2). The mirror stopper lever (EK-7) is then disengaged from the connector lever (EK-16) by pressing down on the front tip of the mirror stopper lever.

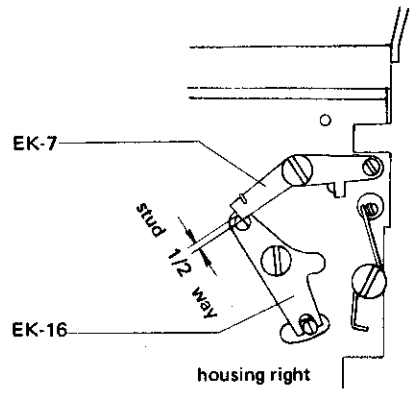


* When ordering replacement parts note which one(s) of the three connector lever/stud (EK-16) combinations is (are) desired by noting the stud width as follows: EK-16 (1.0mm), EK-16 (1.1mm), EK-16 (1.2mm).

SECTION 3 ASSEMBLY AND ADJUSTMENT

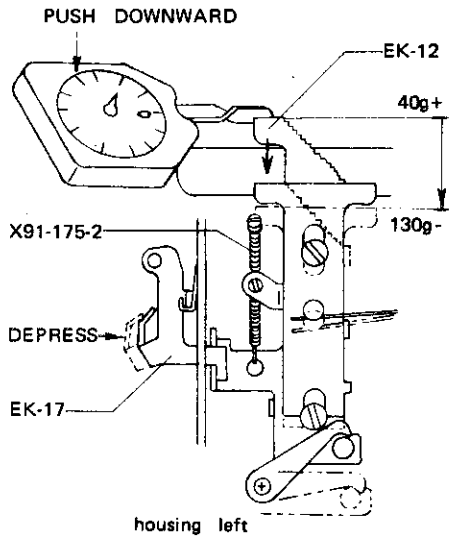
ITEM 5 MIRROR HOUSING MECHANISM

5.2g-3 (cont.) While holding the diaphragm lever (EK-5) with a finger, release the oscillating lever (EK-6) by pushing the mirror resetting lever (X91-152-1) to the rear allowing the diaphragm lever to return slowly. The mirror stopper lever (EK-7) should return smoothly to its position pictured at right, and by pressing oscillating lever (EK-6) slightly to the rear, diaphragm lever (EK-5) should also move slightly.



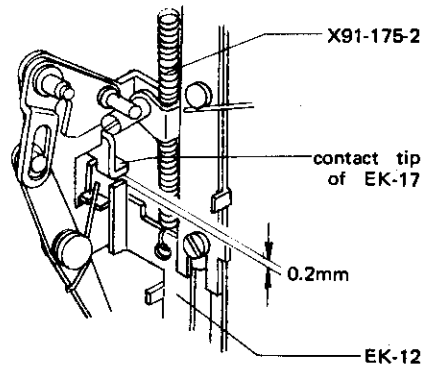
5.2g-4 The contact surface of the mirror stopper lever (EK-7) (where it meets EK-16 stud) should not be rough. If it is, it should be smoothed with an oil stone.

5.2h On the left side of the housing while depressing the manual lever (EK-17), measure the tension of the EE-meter needle stopper spring (X91-175-2). The tension gauge should be placed at the top of the EE-meter needle stopper (EK-12), and measurement taken by pushing downward. The tension should be greater than 40g at the start, and less than 130g at the end of the movement of the EE-meter needle stopper (EK-12).

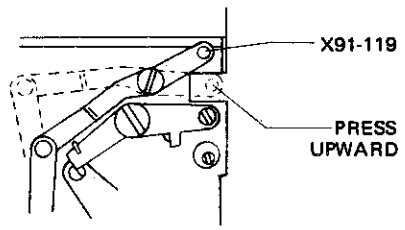


5.2i If the manual lever (EK-17) has been removed, when replacing it, be sure the following conditions in relation to the EE-meter needle stopper (EK-12) are met:

5.2i-1 The contact tip of the manual lever should be in a horizontal position, not bent in or out, up or down.



5.2i-2 Tension the EE-meter needle stopper (EK-12) by pressing upward on the EE-actuator lever-A pin (X91-119) (housing right) as far as it can go, and hold it there. The gap between the black tip of the manual lever (EK-17) and the silver tip of the EE-meter needle stopper (EK-12) (housing left) should be at least 0.2mm.



SECTION 3 ASSEMBLY AND ADJUSTMENT

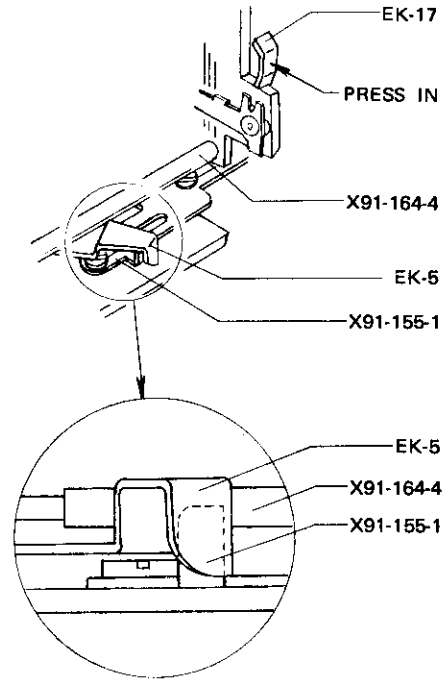
ITEM 5 MIRROR HOUSING MECHANISM

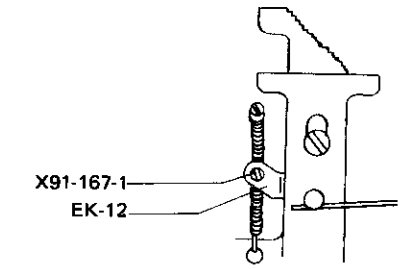
5.2j Position the EE-diaphragm controller (X91-155-1) in the mirror housing as follows:

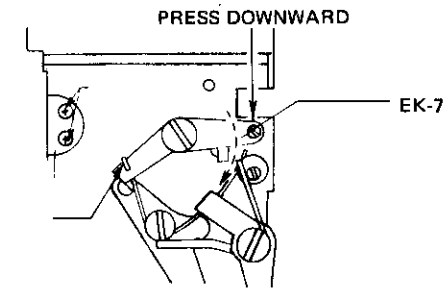
5.2j-1 Be sure the gap between the EE-diaphragm controller locking lever (EK-1) and the EE-diaphragm controller (X91-155-1) is 0.5mm when the oscillating lever (EK-6) is in its fully wound position as described in Item 5.2g-3 (page A17).

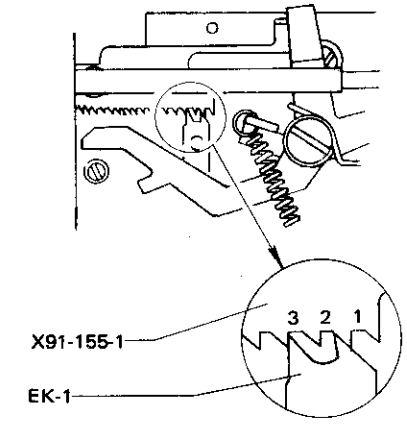
5.2j-2 Next, position the EE-diaphragm controller at full aperture (F1.4) by making sure the oscillating lever (EK-6) is in its fully wound position, and the EE-meter needle stopper (EK-12) is not tensioned [by pressing in on the manual lever EK-17)]. The EE-diaphragm controller (X91-155-1) is properly positioned when its tip overlaps the diaphragm lever (EK-5). Adjustment is made by turning the EE-meter needle eccentric screw (X91-167-1) on the EE-meter needle stopper (EK-12) which will move the EE-diaphragm controller (X91-155-1) either left or right.

5.2j-3 Check the mating of the EE-diaphragm controller locking lever (EK-1) and the controller (X91-155-1) by first pressing downward on the front tip of the mirror stopper lever (EK-7) locking the mirror up. Turn the mirror housing around so that you are looking in from the rear. On the front of the housing push the diaphragm lever (EK-5) to your left so that it just covers about 1/2 of the EE-diaphragm controller (X91-155-1). Inside the housing on your left side, the teeth of the EE-diaphragm controller locking lever (EK-1) should be in the second and third grooves of the EE-diaphragm controller (X91-155-1).





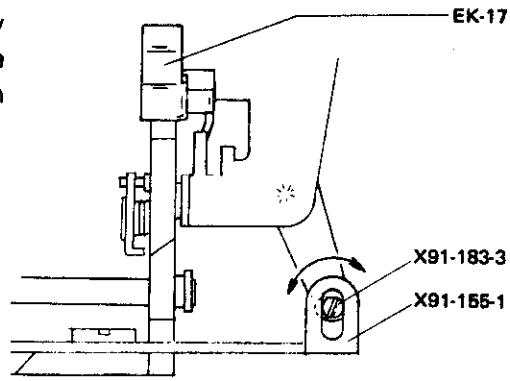




SECTION 3 ASSEMBLY AND ADJUSTMENT

ITEM 5 MIRROR HOUSING MECHANISM

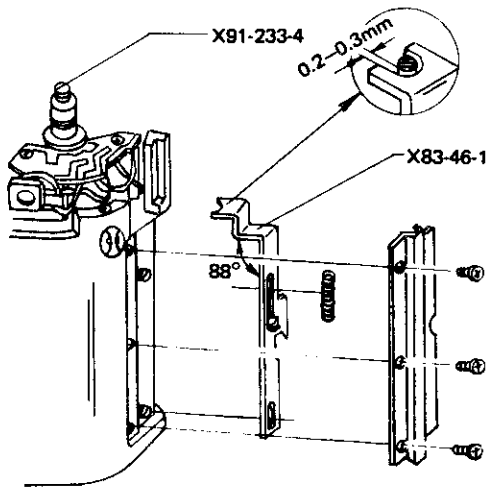
5.2j-4 After the mirror housing is installed in the body the EE-diaphragm controller (X91-155-1) can be further adjusted by turning the EE-diaphragm lever-B eccentric screw (X91-183-3).



ITEM 6 BACK COVER LOCK MECHANISM

6.1 INSTALLING BACK COVER LOCKING LEVER (X83-46-1)

The lower angle of the lever should be about 88°. If the angle is 90° or more, bend it down carefully taking care not to bend it too much. There should be 0.2—0.3mm clearance between the lever top and the rewind shaft (X91-233-4).

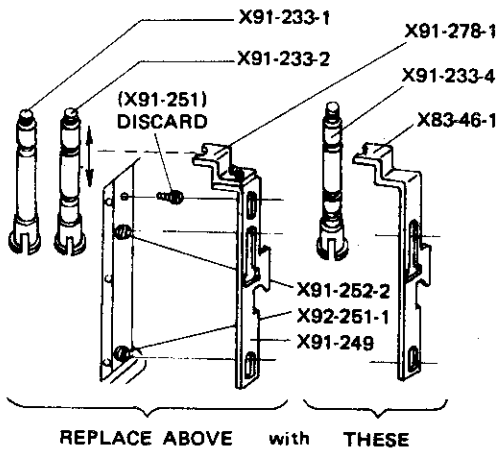


6.2 REPLACEMENT OF MECHANISM PARTS

6.2a If the earliest type of lever-A (X91-249), having three holes, is installed in the camera, replace it and lever-B (X91-278) with the latest type (X83-46-1). At the same time, the rewind shaft must be replaced with the latest type (X91-233-4), having three grooves. Then continue as instructed below.

6.2b If the earlier type of lever-A (X91-249-4), having 2 holes (see p. 5) is installed, check the rewind shaft (X91-233-4), and make sure it has 3 grooves. When the earlier shaft (1 or 2 grooves is present, replace it with the later one (3 grooves). Only if lever-A is damaged should it be replaced with the latest lever (X83-46-1):

6.2c When installing the back cover locking lever (X83-46-1), two guide screws (X91-251-1 & 252-2) are first placed on the body (if removed in disassembly). If the earliest lever (X91-249) was on the camera, remove the top guide screw as only the lower two are needed. Next place the locking lever (X83-46-1 or X91-249-4 & 278-1) over the guide screws. Place the spring (X91-250-6) in the top hole.

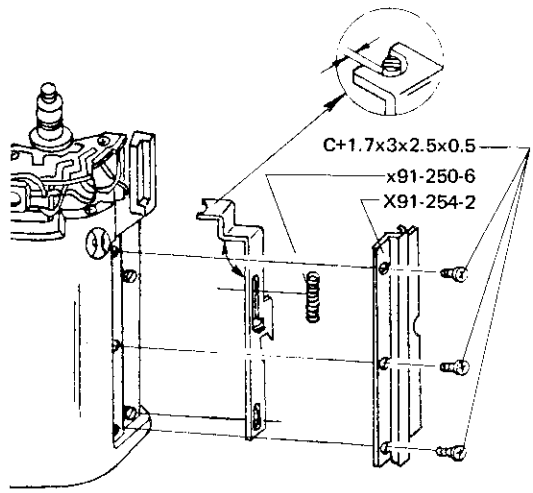


SECTION 3 ASSEMBLY AND ADJUSTMENT

ITEM 6 BACK COVER LOCK MECHANISM

6.3 INSTALLING LOCKING LEVER COVER PLATE (X91-254-4)

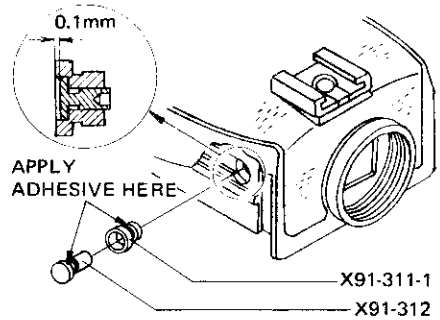
Secure the cover plate (X91-254-2) with three screws (C+1.7x3x2.5x0.5). An adjustment washer (PS-727A) is used on each screw, under the earlier cover plate (X91-254 or 254-1). If present in disassembly, use them in reassembly. Only a damaged cover plate should be replaced with the later type (X91-254-2) which does not require washers.



ITEM 7 PRISM CASE (EK-56) AND PRISM COVER (EK-56-1)

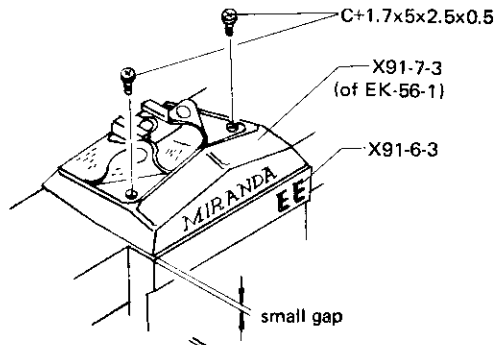
7.1 INSTALLING HOT SHOE CONTACT PIN-B (X91-312)

Apply adhesive* to pin-B (X91-312). Insert it into its insulation tube (X91-311-1) so it is 0.1mm below the tube outer rim. Apply adhesive to the tube shaft, and insert it into the left side of the prism case base (X91-3-8). Don't use the previous type tube (X91-311) as pin-B can't be depressed 0.1mm!



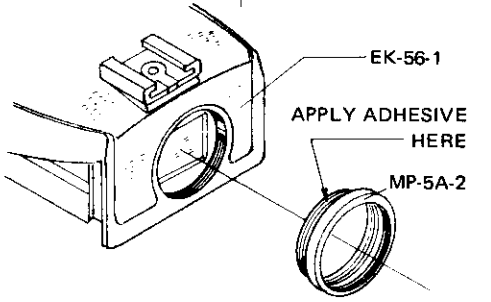
7.2 INSTALLING PRISM CASE (EK-56) AND PRISM COVER (EK-56-1)

After sliding the prism case (EK-56) onto the camera body, attach the prism cover (EK-56-1). Using the two front screws adjust their mating so there is a small gap between the front edge of the prism cover base (X91-7-3) and the top of the front cover (X91-6-3). This must be done so the viewfinder moves smoothly on or off the body.



7.3 INSTALLING EYEPIECE FRAME (MP-5A-2)

Apply adhesive* to the eyepiece frame (MP-5A-2) thread, and screw it into the prism cover (EK-56-1). Use an amyl solvent to dissolve the adhesive when removing the eyepiece frame.



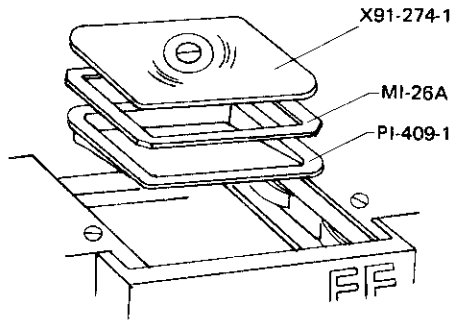
* We recommend using Goodyear Tire Co.'s Pliobond® adhesive. It cannot be supplied by us since it contains inflammables, and cannot be shipped.

SECTION 3 ASSEMBLY AND ADJUSTMENT

ITEM 8 VIEWFINDER

8.1 FOCUSING ADJUSTMENT

After optical parts, such as the focusing screen and condenser are replaced, or the mirror is replaced and its position adjusted, the focus of the viewfinder must be checked. A collimator is generally used, but even without one the focus can be adjusted. Sight on an object with a vertical surface (eg. telephone pole) at a distance greater than 60m. If a sharp focus is obtained before reaching ∞ when turning the focusing ring to retract the lens, add more finder spacers (MI-26A) under the focusing screen. If a clear focus is not obtained when the ring is at ∞, remove some spacers (MI-26A) from under the focusing screen. If a large number of finder spacers have to be added or removed, check the viewfinder as described in Item 5.1 (page A15).

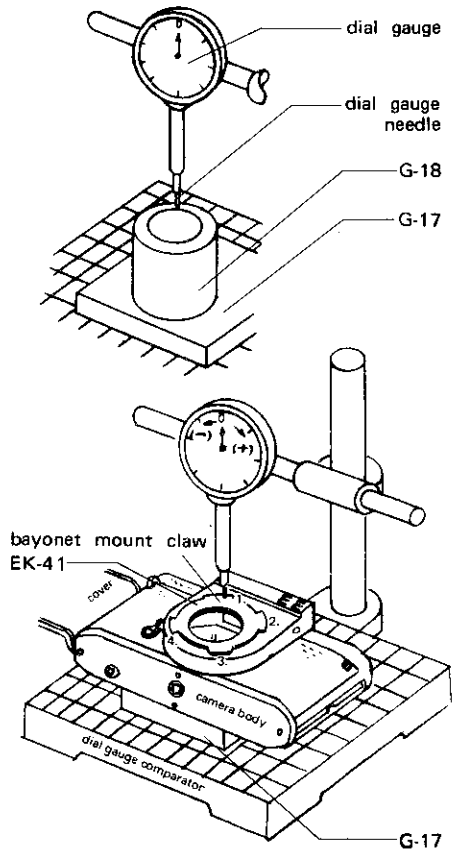


ITEM 9 FILM PLANE

9.1 Place the depth plate (G-17) on the measuring platform of the dial gauge comparator. Next, place the depth gauge (G-18) on top of the depth plate. Lower the dial gauge until the needle point just touches the top of the depth gauge (G-18), and the dial gauge reads '0'.

9.2 Remove the lens and the viewfinder from the camera body. Replace the depth gauge (G-18) with the camera body to be measured. The camera body should now be resting, bayonet mount up, on the depth plate (G-17).

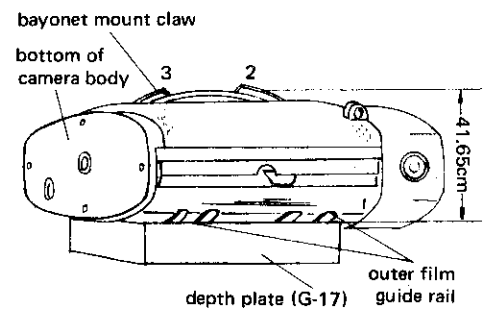
9.3 The distance from the top of the lens bayonet mount assembly (EK-41) to the outer film guide rail is now measured by sliding the four claws under the needle, one at a time. These four depth distances are read as plus (+) or minus (−) values on the millimeter scale of the dial gauge. The tolerance of the difference between the depths at the four claws is ±0.02mm. Adjustment is made by inserting washers (PB-6F) of the appropriate



SECTION 3 ASSEMBLY AND ADJUSTMENT

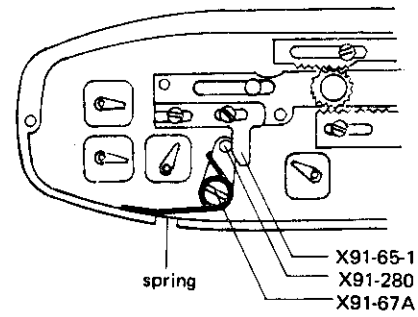
ITEM 9 FILM PLANE

9.3 (cont.) thickness (0.03, 0.05, 0.08, 0.15, 0.2mm) under the retaining screws of the lens mount assembly (EK-41).



ITEM 10 EXPOSURE METER SYSTEM

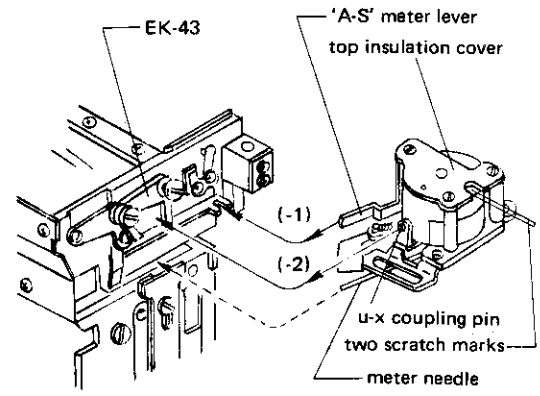
10.1 SCHEMATIC DIAGRAM
See next page.



10.2a ASSEMBLY
Set the shutter speed at 1/4 sec., ASA film speed to ASA-100.

10.2b Prepare an appropriate spring and connect it temporarily to the retaining pin (X91-67A) on the bottom of the camera body (as illustrated). Arrange the spring so that lever-C pin (X91-280) is always contacting the arm of lever-B (X91-65-1).

10.2c Set the meter movement at its ZERO position by turning the round black meter movement drum, so the two scratch marks on the brown insulation top of the drum match the two edges of the top insulation cover slot (see illustration →).



10.2d After inserting the meter needle into the slit of the mirror housing frame, ensure that the two following connections are properly made:

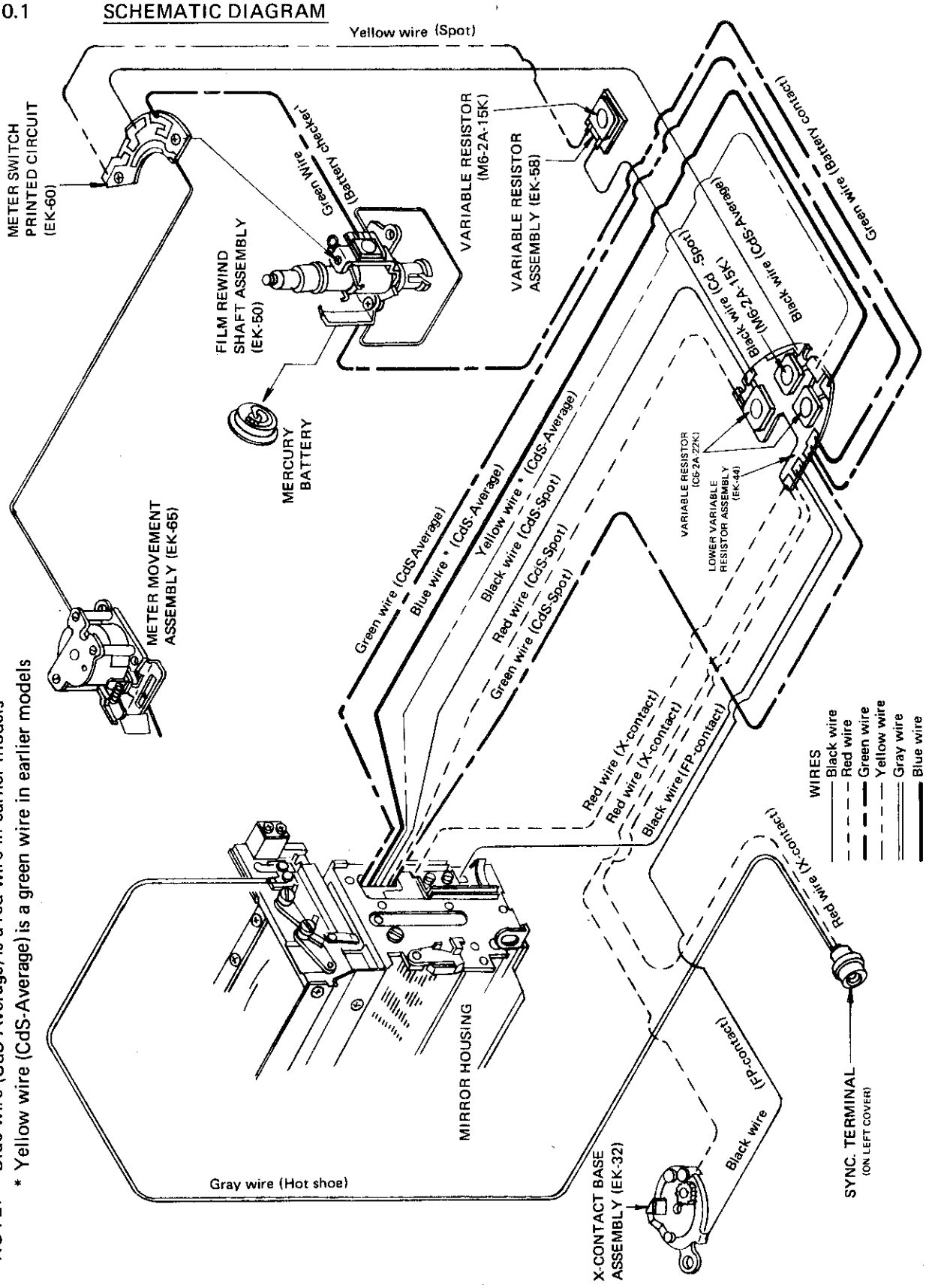
10.2d-1 Meter movement u-x coupling pin is in contact with the u-x warning lever-C (EK-43) lower arm, front edge.

10.2d-2 Average (A) — Spot (S) meter lever sits in the slot of the 'A-S' selector (X91-314-1).

SECTION 3 ASSEMBLY AND ADJUSTMENT

ITEM 10 EXPOSURE METER SYSTEM

10.1 SCHEMATIC DIAGRAM



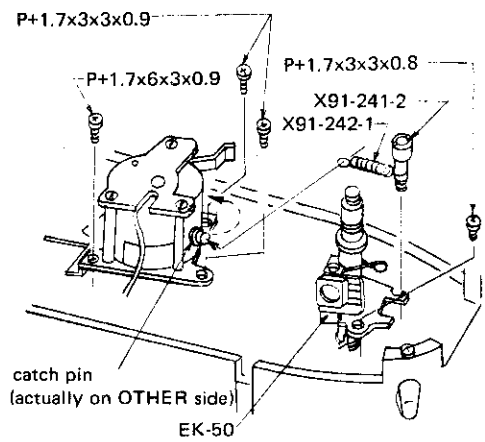
NOTE: * Blue wire (CdS-Average) is a red wire in earlier models
* Yellow wire (CdS-Average) is a green wire in earlier models

SECTION 3 ASSEMBLY AND ADJUSTMENT

ITEM 10 EXPOSURE METER SYSTEM

10.2e Mount the meter movement onto the top, left side of the body while watching for the correct connections described previously.

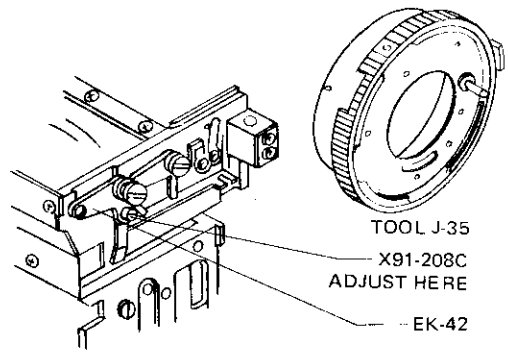
Use two screws (P+1.7x3x3x0.9), and one screw (P+1.7x6x3x0.9) to secure the meter movement to the camera body.



10.2f Mount the rewind shaft assembly (EK-50) to the camera body by fastening screw (P+1.7x3x3x0.8).

10.2g Slip the meter spring (X91-242-1) into the meter spring shaft groove (X91-241-2), and then screw the shaft into place.
Connect the other end of the meter spring (X91-242-1) to the catch pin of the meter movement.

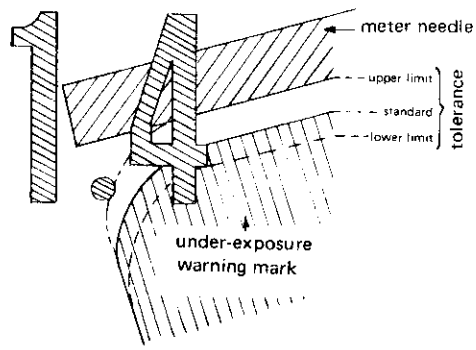
10.2h Leave the spring which was temporarily connected (in 10.2b) until Item 10.3f-9 is completed.



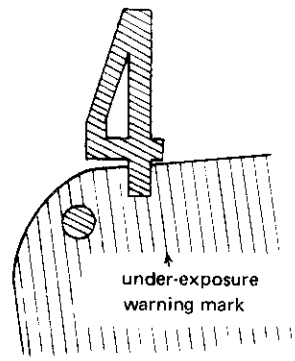
10.3 ADJUSTMENT

10.3a Under-exposure Warning Mark at f1.4
Initially the position at f1.4 should be determined as follows:

Adjust the position of u-x warning lever-B stud (X91-208C) that is rivetted on the u-x warning lever-B assembly (EK-42), by turning it with a screwdriver so that the upper edge of the under-exposure warning mark (red) is correctly positioned as illustrated.



10.3b Under-exposure Warning Mark at f4
At f4 the under-exposure warning mark should be positioned as seen at right when the f-number ring gauge (J-35) is mounted on the bayonet mount of the body in place of the lens. If the mark is incorrectly positioned, remove the ring gauge from the camera and turn lever-B stud (X91-208C) with a screwdriver until the u-x warning mark is correctly positioned.

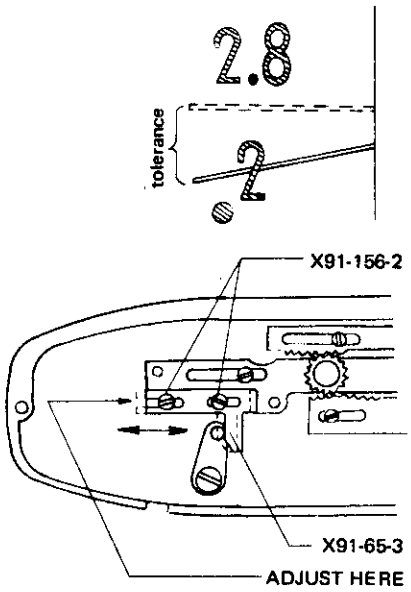


SECTION 3 ASSEMBLY AND ADJUSTMENT

ITEM 10 EXPOSURE METER SYSTEM

10.3c Meter needle at the ZERO position

Set the shutter speed at 1/4 sec., and turn the exposure meter off. The ZERO position of the meter needle is correct if the meter needle points anywhere from 2 to 2.5 on the scale in the viewfinder when the f-number ring gauge (J-35) is mounted on the bayonet mount of the body. If not, adjust the ZERO position by moving the fitting position of meter revolving lever-B (X91-65-3) after loosening the two retaining screws (X91-156-2).

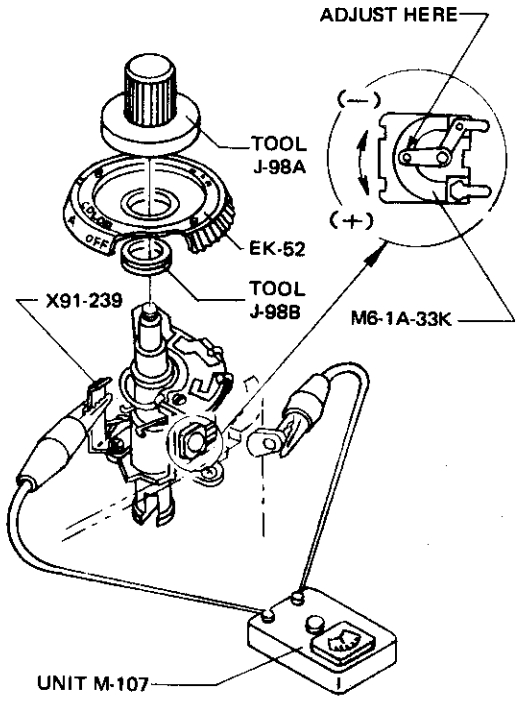


10.3d Battery Checker

For this adjustment, power supply unit (M-107), adjusting knob (J-98A), and special washer (J-98B) are used.

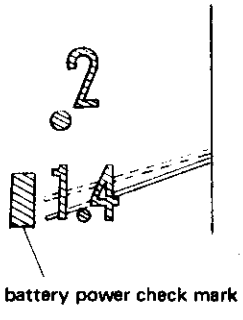
10.3d-1 Fit the adjusting knob (J-98A) and special washer (J-98B) onto the switch assembly (EK-52) as illustrated.

Now, connect wires from the power supply unit (M-107) to the film rewind shaft assembly (EK-50) as illustrated; i.e. one wire to the battery contact (X91-239) of the film rewind assembly (EK-50), and the other wire to the neck strap eyelet of the body, for grounding.



10.3d-2 Set the shutter speed at 1/125 sec., ASA film speed to ASA-100.

10.3d-3 Change the position of the camera meter needle by adjusting resistor (M6-1A-33K) on the film rewind shaft assembly (EK-50). Adjust it so that the meter needle is positioned lower than the middle point of the battery power check mark.



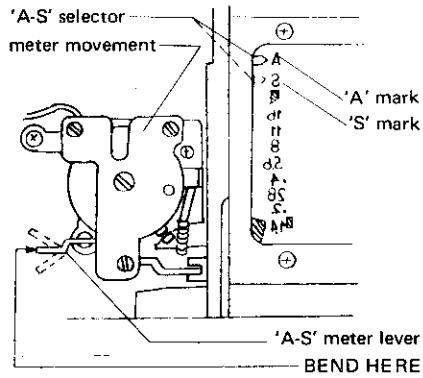
SECTION 3 ASSEMBLY AND ADJUSTMENT

ITEM 10 EXPOSURE METER SYSTEM

10.3e Average (A)-Spot(S) Switching of CdS Meter Switch

Check the performance of the 'A-S' switch by turning the switch from 'A' to 'S', and vice-versa, while watching through the viewfinder whether the 'A-S' selector mark is properly positioned.

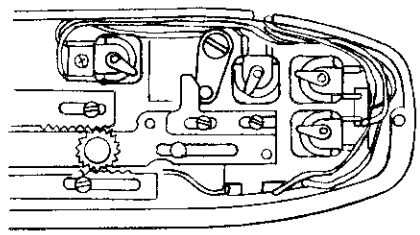
If the selector mark does not point correctly, adjust it by bending the 'A-S' meter lever outer tip.



10.3f Exposure Meter

10.3f-1 Before adjustment, ensure that a mercury battery is in the camera.

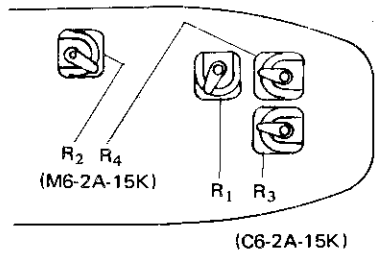
10.3f-2 The exposure meter is checked by means of Light Value (LV) measurement. The LV measurement is performed and adjusted by changing the resistance of four variable resistors, which are located in the bottom of the camera body, using an LV meter.



10.3f-3 Variable resistor (R_1) is used for low intensity light at spot measurement.

10.3f-4 Variable resistor (R_2) is used for high intensity light at spot measurement.

10.3f-5 Variable resistor (R_3) is used for low intensity light at average measurement.



10.3f-6 Variable resistor (R_4) is used for high intensity light at average measurement.

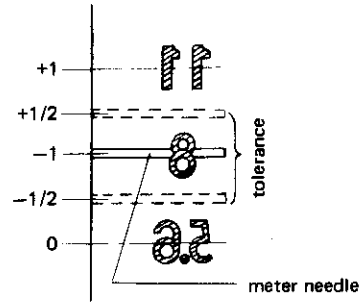
10.3f-7 The Spot measurement(S) is checked before the Average measurement (A), and is done at LV-14 (high intensity), LV-11, and LV-8 (both low intensity). For each of these readings set the camera as shown at right. →

At LV meter value:	LV-14	LV-11	LV-8
Set ASA to:	100	100	100
Set f-stop to:	8	8	8
Set speed to:	1/250	1/30	1/4

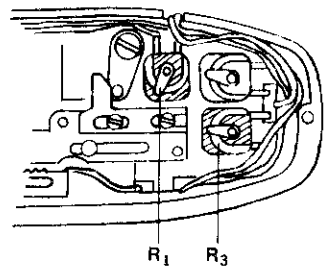
SECTION 3 ASSEMBLY AND ADJUSTMENT

ITEM 10 EXPOSURE METER SYSTEM

10.3f-8 At each of the previous settings (LV-14, 11, 8) taken first at Spot measurement (S), and then at Average measurement (A), the camera meter needle in the viewfinder should point to '8'. Deflection tolerance from '8' is ½ the distance between '8' and the next f-number (5.6 or 11). The closer the camera meter needle points to the middle of '8', the better the reading. Further readings at LV-16 or 5 are not necessary.



10.3f-9 If any of the above readings are not accurate, the camera meter needle reading can be adjusted by changing the resistance of the low intensity variable resistors (C6-2A-15K) ONLY. After an adjustment in the resistance is made, recheck the readings at all six settings.



(C6-2A-15K)
adjust ONLY these

10.4 FINAL ADJUSTMENT

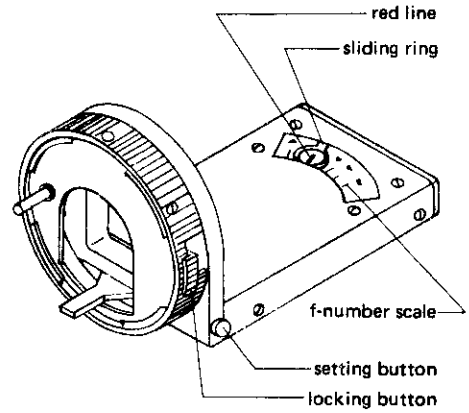
10.4a After all the adjustments in Items 10.2 & .3 are completed, the position of the EE-diaphragm controller (X91-155-1) is checked using tool (J-107), which was designed exclusively for use with this camera.

10.4b-1 Making sure there is no lens on the camera body, fit the tool (J-107), onto the lens mount of the camera while depressing the setting button on the tool.

10.4b-2 Turn the camera exposure meter on, set the shutter speed dial at 'B', and fully tension the film advance lever.

10.4b-3 Look through the viewfinder of the camera, and note to which f-number the meter needle is pointing.

10.4b-4 While depressing the camera shutter release button, observe the f-number under the red line on the sliding ring of the tool scale. This f-number should be the same as that seen in the camera viewfinder.



DIAPHRAGM CONTROLLER MEASURING TOOL
(J-107)

SECTION 3 ASSEMBLY AND ADJUSTMENT

ITEM 11 ASA & SHUTTER SPEED DIALS

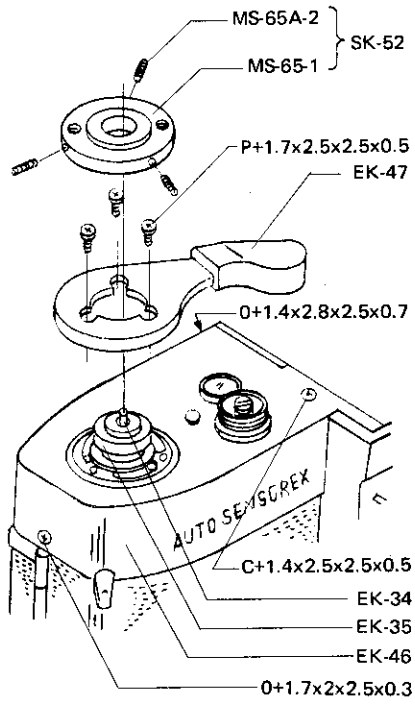
11.1 PRELIMINARY ASSEMBLY

11.1a Place the right cover assembly (EK-46) on the camera body, and secure it with the three screws (C+1.4x2.5x2.5x0.5 on top, 0+1.7x2x2.5x0.3 on the right side, and 0+1.4x2.8x2.5x0.7 in back). Make sure the screw on top is always one with a flat head.

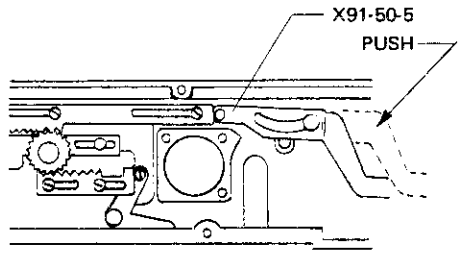
11.1b Attach the film advance lever assembly (EK-47) by tightening the three screws (P+1.7x2.5x2.5x0.5) on top.

11.1c Next, the shutter speed dial base (MS-65-1) is placed around the film winding lever base assembly (EK-35). Carefully align the inscribed line on top of these two parts, and firmly tighten the three fasteners (MS-65A-2).

11.1d With the front of the camera facing away from you, turn the shutter speed dial base (MS-65-1) clockwise until it cannot be turned further. Cock the shutter, then release slowly. This confirms the 'Bulb(B)' shutter speed setting. Now turn the shutter speed dial base (MS-65-1) three clicks counterclockwise thereby setting the shutter speed at 1/4 second.



11.1e Turn the camera over with the front facing you. Push the bottom connector lever-B (X91-50-5) to the left as far as it will go. While holding the connector lever-B in place, depress the EE-override button shaft (EK-34), in the center of the film winding lever base assembly (EK-35) on the top of the camera, so that the shaft protrudes only about 0.8mm.



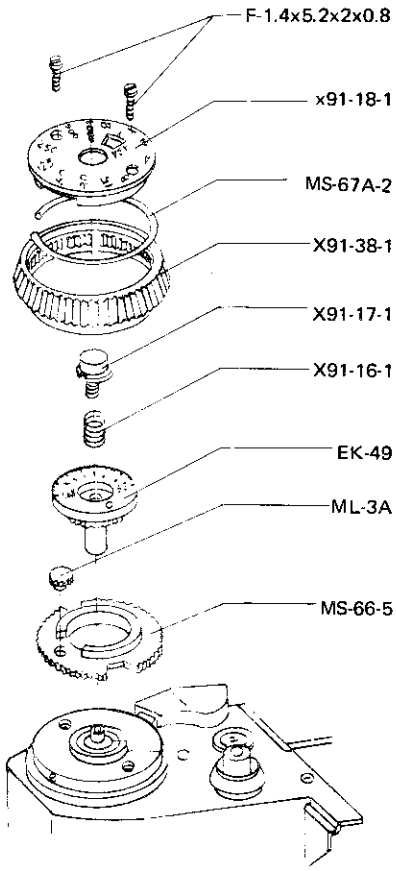
camera bottom

11.1f Keep your finger on the EE-override button shaft (EK-34), and turn the camera body top-side up. This sets the shutter speed at 1/4 second.

SECTION 3 ASSEMBLY AND ADJUSTMENT

ITEM 11 ASA & SHUTTER SPEED DIALS

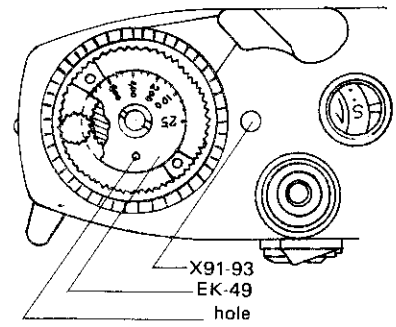
11.2 ADJUSTING ASA DIAL (EK-49)



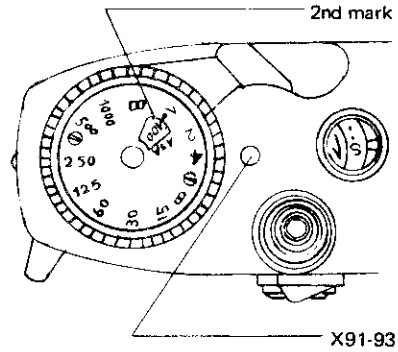
11.2a Set the large ASA gear (MS-66-5) in place so that the two cut-outs are over the two holes on the shutter speed dial base (MS-65-1). Next, insert the ASA dial (EK-49) into the large ASA gear (MS-66-5). Turn the ASA dial (EK-49) so that '25' is in line with the film wind indicator window (X91-93), and the hole is facing forward. Lift the ASA dial (EK-49) slightly, and insert the small ASA gear (ML-3A) into the hole on the large ASA gear (MS-66-5).

11.2b Drop the spring (X91-16-1) into the center column of the ASA dial (EK-49) and then insert the EE-override button (X91-17) in place. With the special tool (G-71) or a pair of tweezers, screw the button clockwise until tight.

11.2c Make sure the ASA dial (EK-49) is properly positioned as above, and the small ASA gear (MS-66-5) is next to the hole in the ASA dial. Place the ASA spring (MS-67A-2) inside the ASA film speed setting ring (X91-38-1). Carefully place the ASA film speed setting ring over the large ASA gear (MS-66-5). Turn the ring a bit to make sure all gears are meshing properly.



11.2d With the ASA dial (EK-49) properly positioned, fit the shutter speed dial (X91-18-1) in place. The '4' on the shutter speed dial should be in line with the film wind indicator window (X91-93) and the red ASA indicator mark aligned with '100' on the ASA dial (EK-49). Firmly set the shutter speed dial (X91-18-1) by tightening the two setscrews (F-1.4x5.2x2x0.8).



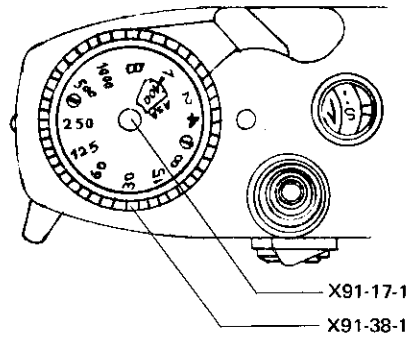
11.2e Reset the shutter speed from 1/4 second to 1/8 or 1/15. Check for slippage of the ASA dial (EK-49). If any occurs, remove the two setscrews (F-1.4x5.2x2x0.8), and readjust as necessary.

SECTION 3 ASSEMBLY AND ADJUSTMENT

ITEM 11 ASA & SHUTTER SPEED DIALS

11.2f Reset the ASA reading to '25', and repeat the previous step.

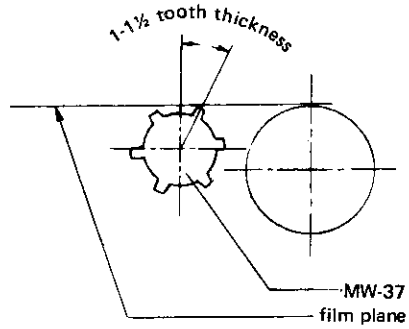
11.2g Check the movement of the EE-override button (X91-17-1) by turning the ASA film speed setting ring (X91-38-1) to 1/2 second while depressing the button. When the ring is reset at 1/4 second the button should pop up. Set the ring at 1/1,000 second, depress the button, and while holding it down, reset the ring at 1/500 second. The EE-override button (X91-17-1) should remain depressed. When the ring is returned to 1/1,000 second, the button should pop up.



ITEM 12 SPROCKET WHEEL

12.1 POSITIONING SPROCKET WHEEL (MW-37)

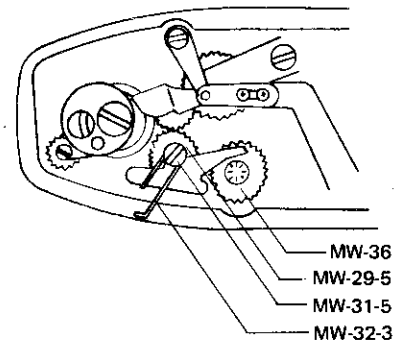
Fully cock the shutter. One of the teeth on the sprocket should be off-center 1-1½ times the thickness of one sprocket tooth as illustrated at right.



12.2 ADJUSTING POSITION

12.2a Turn the camera over with the front facing away from you. Release the rewind button holding lever spring (MW-32-3), and loosen the sprocket actuating intermediate gear shaft (MW-31-5) by turning it clockwise.

12.2b Reposition the relationship between the sprocket actuating intermediate gear (MW-29-5) and the sprocket wheel gear (MW-36) by turning the sprocket wheel (MW-37) until it is positioned properly. Tighten the sprocket actuating intermediate gear (MW-31-5), and reset the spring (MW-32-3) to its original position.



SECTION 4 MALFUNCTION SYMPTOMS & REPAIR GUIDE

QUICK-REFERENCE REPAIR GUIDE

MALFUNCTION SYMPTOM	POSSIBLE CAUSES	REPAIR/SERVICE	REFERENCE PAGES
1. SHUTTER 1.1 HIGH SPEEDS-SLOW	a. 1st curtain too fast	a. Decrease 1st curtain tension.	D9 (15) A3 (1.5)
	b. 2nd curtain too slow	b. Increase 2nd curtain tension.	D9 (15) A2 (1.4)
	c. Governor (MS-51-3) action sluggish	c. Clean/adjust/ or replace governor (MS-51-3).	D8 (13) A6 (1.11) A9 (1.13)
	d. Governor cam (MS-38) contact surface at 1/500 and/or 1/1000 position isn't large enough	d. Increase contact surface at respective cam positions by bending cam (MS-38-5) finger outward or pressing the section (MS-38-4) with pliers.	13 D1 (2) A29 (11) R13 (1A)
	e. Governor lever (MS-45-3) improperly installed	e. Adjust position of lever (MS-45-3).	D8 (14) A7 (1.11d)
	f. The following part(s) need lubrication: —mirror resetting gear (EK-36) —secondary clutch gear shaft (MS-4-11) —1st curtain shaft (MS-13-3) —2nd curtain shaft (MS-17-5)	f. Lubricate with hypodermic syringe using low viscous lubricant.	12 (EK-21) D9 (15)
1.2 HIGH SPEEDS-FAST	a. 1st curtain too slow	a. Increase 1st curtain tension.	D9 (15) A3 (1.5)
	b. 2nd curtain too fast	b. Unlikely cause so check travelling speed.	A3 (1.6)
	c. Governor cam (MS-38) contact surface at 1/500 and/or 1/1000 position is too large	c. Decrease contact surface at respective cam positions by pushing cam (MS-38-5) finger inward or filing cam edge (MS-38-4).	13 D1 (2) A29 (11) R13 (1A)
	d. Governor lever (MS-45-3) improperly installed	d. Adjust lever (MS-45-3).	D8 (14) A7 (1.11d)
	e. Same as 'f' above	e. Same as 'f' above.	
1.3 LOW SPEEDS-SLOW	a. Movement of governor lever (MS-45-3) against governor (MS-51-3) pin incorrect or not smooth	a. Adjust governor lever (MS-45-3) or smooth with oilstone.	D8 (14) A7 (1.11d)
	b. Improper action of governor (MS-51-3) segment gear	b. Replace governor (MS-51-3).	D8 (13) A6 (1.11)
	c. Governor lever (MS-45-3) improperly positioned	c. Adjust by turning setscrew (MS-43A-1) clockwise.	D1 (2) A9 (1.13a)

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MALFUNCTION SYMPTOM	POSSIBLE CAUSES	REPAIR/SERVICE	REFERENCE PAGES
1.SHUTTER 1.4 LOW SPEEDS-FAST	a. Governor lever (MS-45-3) improperly positioned	a. Adjust by turning setscrew (MS-43A-1) counterclockwise.	D1 (2) A9 (1.13a)
	b. Incorrect positioning of relay lever (MS-32-4)	b. Adjust relay lever (MS-32-4).	D9 (15) A7 (1.11f)
1.5 IRREGULAR OPERATION	a. Uneven slit between curtains at start of shutter action	a. Adjust starting position of curtains.	A1 (1.2) D9 (15)
	b. Irregular speed of curtains	b. Adjust travelling speed of curtains.	A3 (1.6) D9 (15)
1.6 NO SLIT WHILE CURTAINS TRAVEL	a. Release lever (X91-385-2) improperly set	a. Adjust film winding intermediate lever (MW-26-14) position —Check that the release lever spring (MS-29C-1) has not become disengaged from the release lever (X91-285-2).	D8 (14) A11 (2.1h)
	b. Improper action of governor (MS-51-3)	b. Clean/replace governor lever (MS-45-3).	D8 (13) A6 (1.11)
	c. Lower finger of the governor lever (MS-45-3) touching the bottom half of the second curtain gear parts (MS-10-1/11-3/12)	c. Raise the governor lever (MS-45-3).	A6 (1.10) D8 (14)
1.7 JAMS	a. Safety gear (X91-288) and/or safety cam (X91-289-3) improperly positioned	a. Adjust safety gear (X91-288) cam (X91-289-3) position.	A4 (1.8) D3 (5)
	b. Anti-reverse mechanism improperly adjusted	b. Adjust mechanism.	D3 (4) A11 (2.3)
	c. Shutter release lever (EK-33) bent/broken	c. Replace lever (EK-33) making sure the proper model (33 vs 33R) is used.	D5 (8) A4 (1.8) A8 (1.12f)
1.8 WORKS, BUT MIRROR STAYS UP	Oscillating lever spring (X91-151-2) disengaged/resiliency lost	Reengage/replace spring (X91-151-2).	8 D7 (11) R23 (1C)
1.9 DOESN'T WORK & MIRROR STAYS DOWN	Diaphragm lever spring (X91-136-4) disengaged/broken	Reengage/replace spring (X91-136-4).	8 D7 (11) R23 (1C)

SECTION 4 MALFUNCTION SYMPTOMS & REPAIR GUIDE

QUICK-REFERENCE REPAIR GUIDE

MALFUNCTION SYMPTOM	POSSIBLE CAUSES	REPAIR/SERVICE	REFERENCE PAGES
1. SHUTTER 1.10 DOESN'T WORK, MIRROR STAYS UP, 1st CURTAIN DOESN'T TRAVEL	1st curtain release lever (X91-115-2)/release lever (EK-22) doesn't move enough or at all	—Using a low viscous lubricant in a hypodermic syringe, lubricate the joint of the lever (X91-115-2) if the lever sticks. —Usually the release lever spring (MS-29-1) is disengaged/has lost resiliency, if so reengage/replace. Short end of spring, hooks on release lever (X91-285-2) while longer one hooks on shutter governor mounting post-A (MS-25-2).	5 7 D3 (5) D8 (13)
1.11 DOESN'T WORK, MIRROR STAYS UP, USUALLY 1st CURTAIN TRAVELS (EXTREME CASES DOESN'T)	a. (with/without lens) Mirror stopper lever (EK-7) improperly positioned	a. Reposition lever (EK-7).	D9 (15) A17 (5.2g)
	b. (with lens on) Tension of lever-B actuating spring (ZG137-13) greater than 100 grams	b. Reduce tension of lens spring.	See Lens Supplement
	* If film is wound while the shutter is operating at 1 second speed, the mirror may remain up. The mirror can be lowered by MISHANDLING by manipulating the shutter button; but the CORRECT way is to remove the lens, and gently press up on the mirror (EK-9) bottom with a finger.		
1.12 'B' OPERATION ERRATIC	Improper action of 'B' lever (X91-100-1)	File portion of 'B' lever (X91-100-1) and/or check tension of 'B' lever spring (X91-103-4)	D5 (8.9) R14 (1B)
1.13 'B' STAYS OPEN	Shutter release lever (EK-33) doesn't return properly	—Check resiliency of shutter release lever spring (X91-91-1)/EE-meter needle stopper spring (X91-175-2). Tension of lever spring (X91-91-1) should be less than 1 kg. —If shutter release lever (EK-33) bent or broken then replace.	D5 (8.10) A18 (5.2h)
1.14 BUTTON MOVES IN TWO STEPS	Mirror stopper lever (EK-7) tip is rough	Smooth tip with an oilstone.	D9 (15) A18 (5.2g-4)
1.15 BUTTON MOVEMENT ROUGH	Shutter release lever (EK-33) drags against safety cam (X91-289-3) slot	Adjust safety cam (X91-289-3).	D3 (5) A4 (1.8)
1.16 BUTTON STICKS	Shutter release lever (EK-33) wedges against safety cam (X91-289-3)	If shutter release lever (EK-33) is depressed when shutter is just short of being cocked, lever may become wedged in cam (X91-289-3). To release lever, remove button (X91-72-4) and outer collar (X91-73-2), and lift lever up. Adjust cam if necessary, and if lever (EK-33) is bent, replace.	D1 (2.7) D3 (5) D5 (8.11) A4 (1.8)

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QUICK-REFERENCE REPAIR GUIDE

MALFUNCTION SYMPTOM	POSSIBLE CAUSES	REPAIR/SERVICE	REFERENCE PAGES
2. WINDING & ANTI-REVERSE MECHANISMS 2.1 INCOMPLETE WINDUP ACTION	a. Release lever (X91-285-2) incorrectly positioned	a. Reposition release lever (X91-285-2).	D8 A3 (1.7)
	b. Mirror incorrectly positioned	b. Correct gap between setting lever (EK-38) and mirror setting cam (MW-12B-1).	A12 (2.3d & e)
	c. Film winding intermediate lever (MW-26-14) arm bent	c. Replace, do not straighten lever (MW-12B-1).	D8 (14) A11 (2.1h)
2.2 WINDUP NOT POSSIBLE	a. 2nd curtain lower gear (MS-17A-6) loose/dirt accumulation	a. Remove mirror housing (EK-63) then lower curtain base plate (MS-23-3), and tighten/clean 2nd curtain lower gear (MS-17A-6).	6 D9 (15)
	b. Dirt accumulation on 2nd curtain gear parts (MS-10-1/11-3/12) and/or sprocket intermediate gear(MW-7AB-2)	b. Remove counter and shutter governor, then 2nd curtain gear parts, and if necessary, sprocket intermediate gear (MW-7AB-2). Clean with carbon tetrachloride or similar compound.	5, 6 D8 (13) A2 (1.3c) A6 (1.10 & 1.11) A12 (3)
	c. Curtain gear retainer (MS-4A-1) loose	c. Remove counter and shutter governor, and tighten retainer (MS-4A-1).	D8 (13) A6 (1.11) A12 (3)
	d. Mirror resetting gear assembly (EK-36) retaining screws (P+1.7x2.1x2.9x1) loose	d. Remove mirror housing and tighten retaining screws.	D9 (15) A5 (1.9)
2.3 WINDUP WITHOUT COCKING	a. Film winding claw base (X91-35-4) finger broken	a. Replace the winding lever spring assembly (EK-31).	D8 (14) A10 (2.1)
	b. Film winding claw (X91-36-2) broken/bent/rusted	b. Replace the winding lever spring assembly (EK-31).	D8 (14) A10 (2.1)
	c. Winding claw spring (MW-21A-3) disengaged	c. Reengage spring (MW-21A-3) by removing the winding lever spring assembly (EK-31) or using spring hook (G-14) as shown in Repair Instructions.	D9 (14) A10 (2.1) R17 (2B)
2.4 COCKS,BUT RETURNS WHEN FINGER REMOVED FROM ADVANCE LEVER	Anti-reverse claw-A spring (MW-15-3) disengaged/resiliency lost	Reengage/replace spring (MW-15-3).	D3 (4) A11 (2.3)

SECTION 4 MALFUNCTION SYMPTOMS & REPAIR GUIDE

QUICK-REFERENCE REPAIR GUIDE

MALFUNCTION SYMPTOM	POSSIBLE CAUSES	REPAIR/SERVICE	REFERENCE PAGES
2. WINDING & ANTI-REVERSE MECHANISMS 2.5 ROUGH OR NO RETURN ACTION OF ADVANCE LEVER	a. Winding lever spring assembly (EK-31) binding against bottom of X-contact base assembly (EK-32)	a. Insert large general adjustment washer (PB-6F) between film winding ratchet wheel shaft (X91-32-1) and X-contact base assembly (EK-32).	D9 (14) A10 (2.1e) R23 (2D)
	b. Film winding claw base (X91-35-4) finger broken	b. Replace winding lever spring assembly (EK-31).	A10 (2.1) D8 (14)
	c. Film winding intermediate lever (MW-26-14) top surface not lubricated properly	c. Place a few drops of low viscous lubricant between the film winding intermediate lever (MW-26-14) and wind lever base (MW-27-10).	13 (EK-35) D1 (2)
3. COUNTER MECHANISM 3.1 DOESN'T ADVANCE	a. Counter feeding claw spring (MC-10-3) disengaged or broken	a. Reengage or replace spring (MC-10-3).	D8 (13) A13 (3.3)
	b. Counter release lever (MC-24-4) bent	b. Straighten lever (MC-24-4).	D8 (13) A13 (3.3d) A14 (3.4c)
	c. Loose exposure counter feeding claw retainer (MC-5-1)	c. Tighten retainer (MC-5-1).	14 (EK-45) D1 (2)
3.2 DOESN'T RESET AT 'S'	a. Counter ratchet wheel (MC-32-4) binding	a. Insert special adjustment washer (PS-727A) between counter ratchet wheel shaft (MC-30-2) and wheel retainer (MC-37).	D8 (13) A12 (3.2)
	b. Counter ratchet wheel retainer (MC-37) loose	b. Tighten, but if wheel binds as above, insert washer (PS-727A).	D8 (13) A12 (3.2)
	c. Counter indicator (X91-96-1) and number disk (X91-97-3) touching each other	c. Bend the counter indicator (X91-96-1) up slightly.	D3 (5) A14 (3.4b)
3.3 NUMBERS NOT POSITIONED PROPERLY	a. Counter number disk (X91-97-3) off-center	a. Adjust counter number disk (X91-97-3).	D3 (5) A14 (3.4b)
	b. Counter indicator (X91-96-1) improperly positioned	b. Adjust counter indicator (X91-96-1).	D3 (5) A14 (3.4b)
* After all adjustments be sure to check mating and positioning of counter parts from 'S' to '36'.			A13 (3.4)

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MALFUNCTION SYMPTOM	POSSIBLE CAUSES	REPAIR/SERVICE	REFERENCE PAGES
4. SELF-TIMER			
4.1 STARTS BEFORE RELEASING SHUTTER	S-t mirror actuator lever (EK-51) arm incorrectly positioned	Bend arm (EK-15) tip down.	A14 (4.4) D4 (8)
4.2 DURATION SHORT	a. Self-timer brake lever (X91-92-1) incorrectly positioned	a. Adjust lever (X91-92-1) position.	D4 (8) A14 (4-top illustration)
	b. Defective self-timer (X91-128-2)	b. Replace self-timer (X91-128-2).	D4 (8) A14 (4)
4.3 STOPS	a. Dirt accumulation inside self-timer (X91-128-2) mechanism	a. Remove clean/replace self-timer (X91-128-2). Clean with carbon tetrachloride or similar compound.	D4 (8) A14 (4)
	b. S-t mirror actuator lever (EK-15) arm incorrectly positioned	b. Adjust arm (EK-15) tip.	D4 (8) A14 (4.4 & 4.5)
4.4 CANNOT BE SET	a. Self-timer (X91-128-2) defective	a. Replace self-timer (X91-128-2).	D4 (8) A14 (4)
	b. Self-timer mirror actuator transmission lever (X91-168-1) pin not in self-timer connecting lever (EK-39) slot	b. Reinstall self-timer connecting lever (EK-39) correctly.	D4 (8) A14 (4)
	c. Self-timer cam spring (MT-8-3) disengaged from self-timer connecting lever assembly (EK-39) hook	c. Engage spring and make sure it will not disengage easily.	D4 (8) A14 (4)
	d. Self-timer mirror actuator transmission lever (X91-168-1) hook making incorrect contact with mirror actuator delay pin (MI-12B-4)	d. File self-timer mirror actuator transmission lever (X91-168-1) hook until it is parallel with mirror actuator delay pin (MI-12B-4). Check mirror assembly (EK-9) alignment.	D8 (14) A14 (4.3) R23 (4A)
5. MIRROR MECHANISM			
5.1 MIRROR LOOSE	Mirror retaining screws (P + 1.4 x 1.5 x 2 x 0.5) loose	Tighten & apply chloroprene cement to top of screws while supporting bottom of mirror.	11
5.2 MIRROR REMAINS UP	See SHUTTER 1.8, 1.10 & 1.11	See SHUTTER 1.8, 1.10 & 1.11.	R2–R3

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QUICK-REFERENCE REPAIR GUIDE

MALFUNCTION SYMPTOM	POSSIBLE CAUSES	REPAIR/SERVICE	REFERENCE PAGES
5. MIRROR MECHANISM 5.3 IMAGE OUT OF FOCUS AT ALL TIMES	a. Mirror assembly (EK-9) not at a 45° angle	a. Adjust mirror position to 45°.	A15 (5.1) R17 (5A)
	b. Focusing screen (X91-274-1) improperly positioned	b. Adjust number of finder spacers (MI-26A).	D7 A22
5.4 IMAGE OUT OF FOCUS ONLY WHEN SHUTTER COCKED	Mirror actuator stud (X91-126A-1) not positioned on mirror actuator lever assembly (EK-4) properly	First check mirror (EK-9) angle to make sure it is 45°. If mirror is at 45° then decrease clearance between mirror stopper lever (EK-7) and connector lever stud (X91-328-1) by bending stud or replacing connector lever (EK-16).	D9 (15) A17 (5.2g) R17 (5A)
5.5 AFTER COCKING SHUTTER, EE-DIAPHRAGM CONTROLLER DOESN'T MOVE OR MOVES SLUGGISHLY (WITH LENS OFF)	When the shutter is cocked EE-diaphragm controller locking lever assembly (EK-1) and EE-diaphragm controller (X91-155-1) teeth touch	Adjust clearance between two (EK-1 & X91-155-1) sets of teeth to 0.5 mm.	D9 (15) A16 (5.2d)
5.6 BEFORE COCKING SHUTTER, EE-DIAPHRAGM CONTROLLER DOESN'T MOVE OR MOVES SLUGGISHLY (WITH LENS OFF)	Parts connected with EE-diaphragm controller (X91-155-1) binding	Check all parts from EE-actuator lever (EK-8) on mirror housing right to EE-meter needle stopper (EK-12) on mirror housing left. Reposition/file/replace parts as necessary.	D9 (15) A16–A20(5)
5.7 EE-DIAPHRAGM CONTROLLER DOESN'T MOVE OR MOVES SLUGGISHLY, AND F/OPENING SLIPS WHEN SHUTTER RELEASED (WITH LENS ON)	EE-diaphragm controller (X91-155-1) stops at the wrong position due to broken or burred teeth on EE-diaphragm controller locking lever (EK-1)	Replace EE-diaphragm controller locking lever (EK-1). Check position between it and controller (X91-155-1).	D12 (16, 17) A19 (5.2j)
* After making any repair/adjustment the EE-diaphragm controller (X91-155-1) position must be checked.			A16 (5.2 - 5.2e)

SECTION 4 MALFUNCTION SYMPTOMS & REPAIR GUIDE

MALFUNCTION SYMPTOM	POSSIBLE CAUSES	REPAIR/SERVICE	REFERENCE PAGES
6. BACK COVER 6.1 OPENING & CLOSING PROBLEMS	a. Incorrect locking lever (X83-46-1) angle/position	a. Correct angle/position.	D6 (10) A20 (6)
	b. Incorrect locking lever-A (X91-249-4) and/or lever-B (X91-278-1) angle/position	b. Correct angle/position.	D6 (10) A20 (6)
	c. Locking lever (X83-46-1 / X91-249-4 & X91-278-1) not compatible with rewind shaft (X91-233)	c. Replace shaft and/or lever.	14 (EK-50) D6 (10) A20 (6.2b)
	d. Back cover (EK-55) rubbing against bottom cover (EK-64) due to bent back cover or hinge (MB-524-2)	d. Straighten or replace back cover (EK-55) or hinge (MB-524-2).	3 16 (EK-55)
6.2 DOESN'T LOCK	Lock release spirng (X91-250-6) disengaged/broken/resiliency lost	Engage/replace spring (X91-250-6).	D6 (10) A21 (6.2c)
7. PRISM CASE & COVER 7.1 NO OR WEAK ELECTRICAL CONNECTION BETWEEN HOT-SHOE AND CONTACT PIN-A	a. Contact pin-B (X91-312) dented or incorrectly positioned	a. Replace or reposition pin-B (X91-312).	A21 (7.1)
	b. Prism case (EK-56) pushed to one side by guide-rail spring (X91-284-3)	b. Replace or reposition pin-A (X91-310-1).	9 D1 (1) D2 (3)
	c. Contact pin-A (X91-310-1) broken or incorrectly positioned	c. Replace or reposition pin-A (X91-310-1).	9 D1 (1) D2 (3)
7.2 MOTION ON/OFF CAMERA ROUGH	Guide-rail of prism case (EK-56) scratched/burred	–Refinish surface of guide rail with an oilstone. –Check guide-rail spring (X91-284-3) surface for dirt, etc. that might be causing abrasion, and clean if necessary.	Instruction Manual (page 30)

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QUICK-REFERENCE REPAIR GUIDE

MALFUNCTION SYMPTOM	POSSIBLE CAUSES	REPAIR/SERVICE	REFERENCE PAGES
8. EXPOSURE METER SYSTEM	* Most symptoms below can be caused by a weak battery. Remove the battery first, before checking any of the other possible causes,and check the battery power using a voltmeter.		
8.1 INACCURATE METER READING	a. Incorrect setting of variable resistor(s) (M6-2A-15K/M6-1A-33K/C6-2A-15K)	a. Adjust resistor(s).	D2 (3) D3 (4) A26 (10.3d) A27 (10.3f)
	b. Defective variable resistor(s) (M6-2A-15K/M6-1A-33K/C6-2A-15K)	b. Replace resistors(s).	D2 (3) D3 (4) A26 (10.3d) A27 (10.3f)
	c. Broken soldering to printed circuits (EK-44 & EK-60)/variable resistor assemblies (EK-50 & EK-58)	c. Check soldering points, and resolder where necessary.	A24 (10.1)
	d. Defective printed circuits (EK-44 & EK-60)	d. Replace circuit(s).	A24 (10.1)
	e. Incorrect 'ZERO' position of needle	e. Adjust 'ZERO' needle position.	D3 (4) A26 (10.3c)
	f. CdS cell deteriorated or short circuited	f. Replace mirror assembly (EK-9).	D11 (16.12) A15 (5.1) R21 (8B)
	g. Meter (EK-65) gear retainer loose	g. Remove meter (EK-65), and tighten gear retainer on bottom.	D5 (9) A23 (10) R24 (8C)
	h. Meter spring (X91-242-1) detached/ resiliency lost	h. Reattach/replace meter spring (X91-242-1).	D2 (3) A25 (10.2g)
	i. Incomplete action between meter revolving lever assembly (EK-27) and meter interlocking lever assembly (EK-48)	i. —Check h & i above —Check meshing of meter (EK-65) gear with meter link gear (X91-71-1 of EK-26).	D5 (9) A23 (10) R24 (8C)
8.2 NEEDLE MOTION NOT SMOOTH OR STICKS	a. Needle bent	a. Replace meter movement (X91-277-5)	D5 (9) A23 (10)
	b. Needle doesn't clear EE-meter needle holder assembly (EK-13)	b. —Readjust self-timer starter arm (X91-80-3) position. —Readjust gap between manual lever (EK-17) and EE-meter needle stopper (EK-12).	D3 (5) D3 (6) A7 (1.12) A18 (5.2i)
	c. Dirt in meter movement (EK-65)	c. Remove meter movement (EK-65) and clean/replace.	D5 (9) A23 (10)