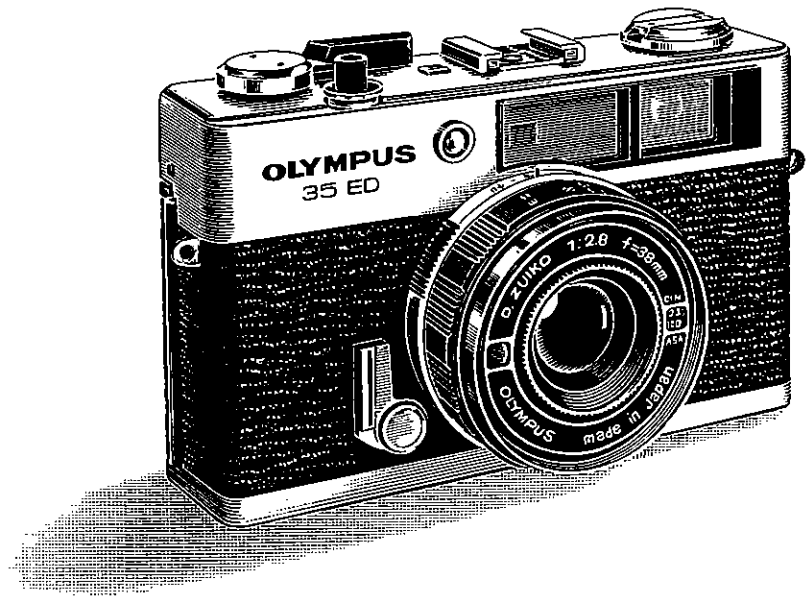
REPAIR MANUAL

OLYMPUS

35ED

35 ED

CONTENTS



DRAWING AND PARTS LIST

EXPLANATORY NOTES ON VARIOUS MARKS &
NUMBERS USED IN IMPROVED PARTS TABLE

★ Only Body Die-Cast is not available in case of overseas.

❶ An assembled parts is supplied including parts marked with ①

① Single parts is supplied.

( ) Not to be supplied in single parts, but as an assembled parts.


Left-handed screw, (the mate screw hole is not marked particularly). All right-handed screws have no special indication.

< > Improved parts. Number shows INDEX in IMPROVED PARTS TABLE where more details are explained.


No more available parts.


The place where parts have been improved.

[ ] Dimensions of improved parts and improved points.

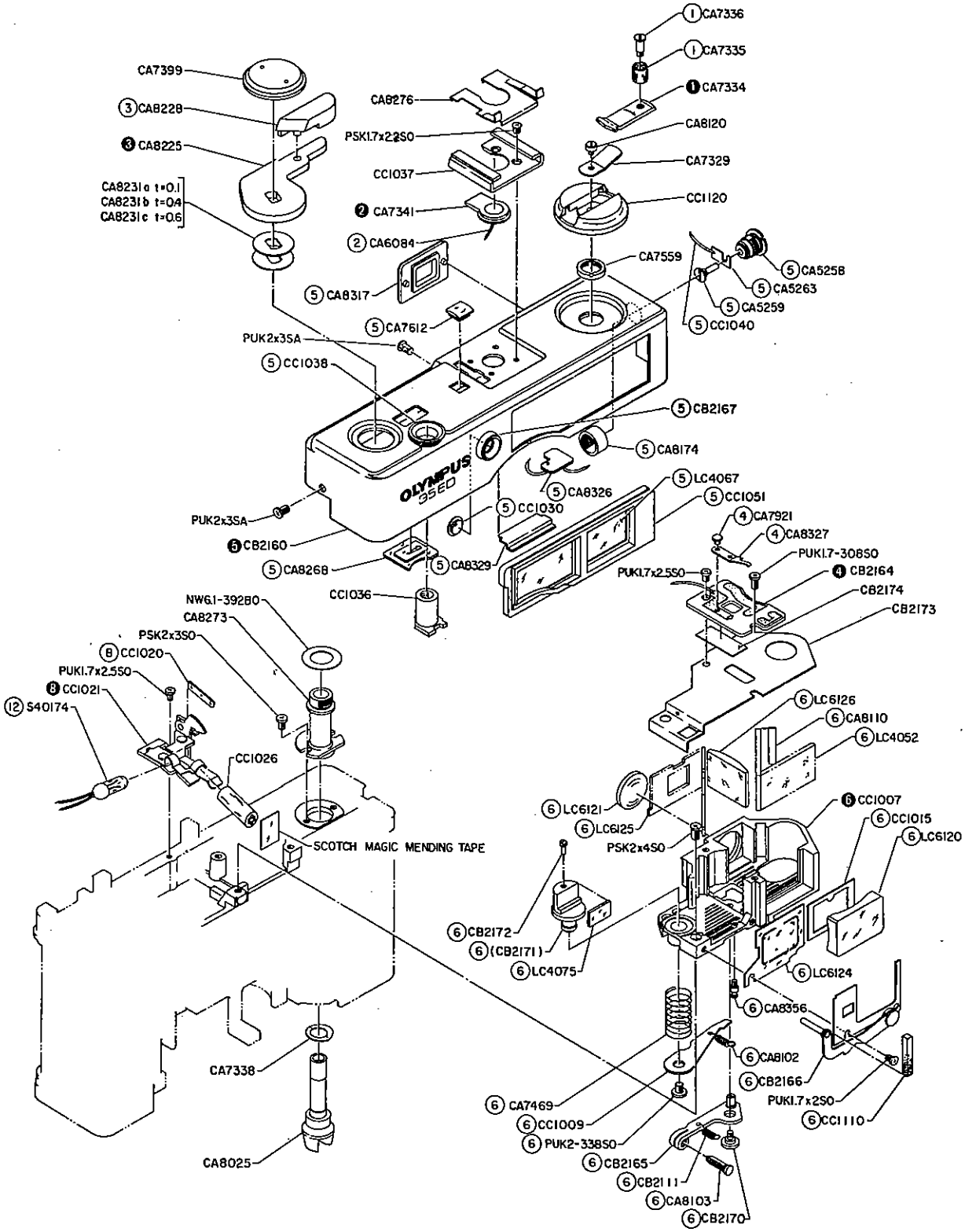
♡♤◇♧ Replacing parts of no more available parts marked with ═

※ How to replace parts or how to repair.

—— Original parts are also usable instead of improved parts.


Printing error. No parts are built-in cameras.

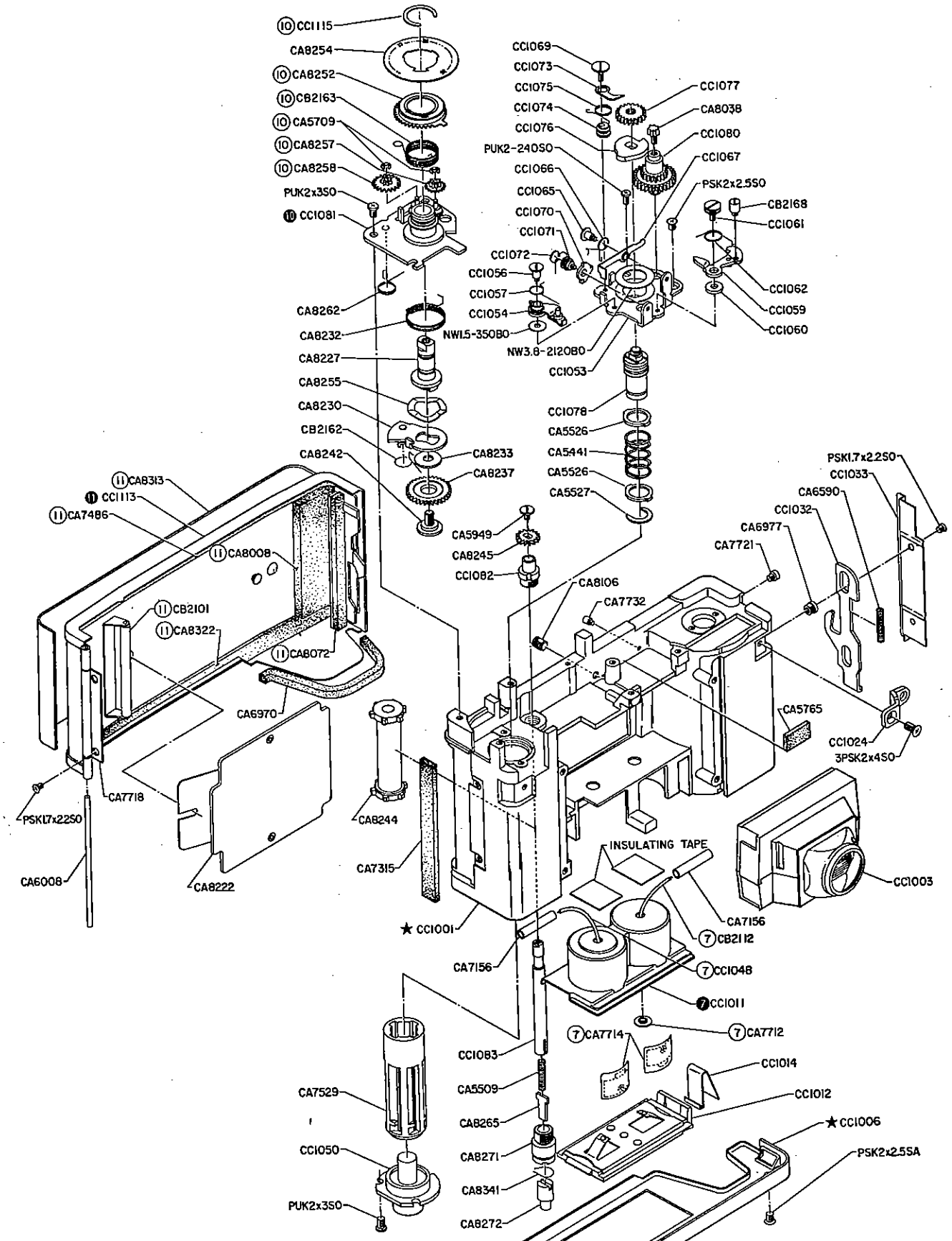
Clarify HOUSE CODE, PARTS NUMBER and QUANTITY in your ORDER SHEETS.



REPAIR MANUAL

MODEL	HOUSE CODE	FIG. 1/4
OLYMPUS 35 ED	LEE-17	
OLYMPUS OPTICAL CO., LTD. TOKYO. JAPAN		

NOTE: WHEN ORDERING FOR SPARE PARTS, PLEASE CLARIFY A MODEL, PARTS NUMBER AND QUANTITY



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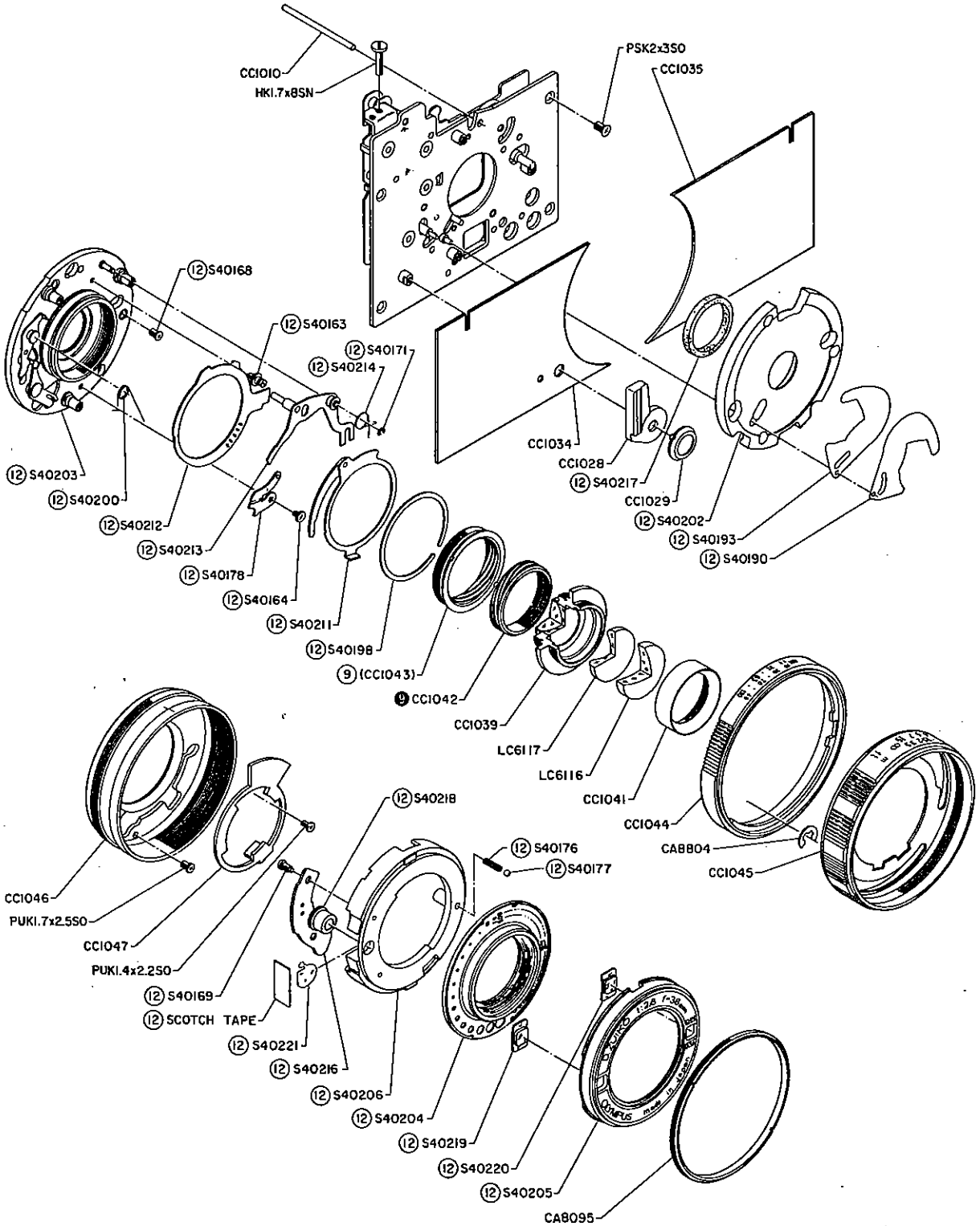
MODEL	HOUSE CODE	FIG. 2/4
OLYMPUS 35 ED	LEE-17	
OLYMPUS OPTICAL CO., LTD. TOKYO. JAPAN		

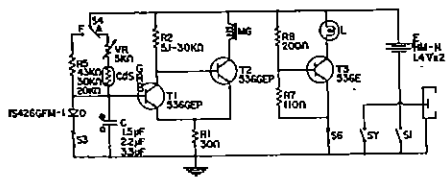
NOTE : WHEN ORDERING FOR SPARE PARTS, PLEASE CLARIFY A MODEL, PARTS NUMBER AND QUANTITY

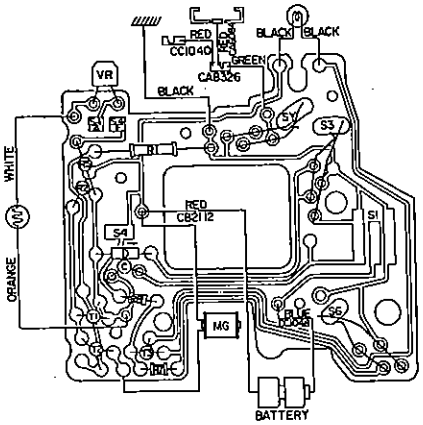


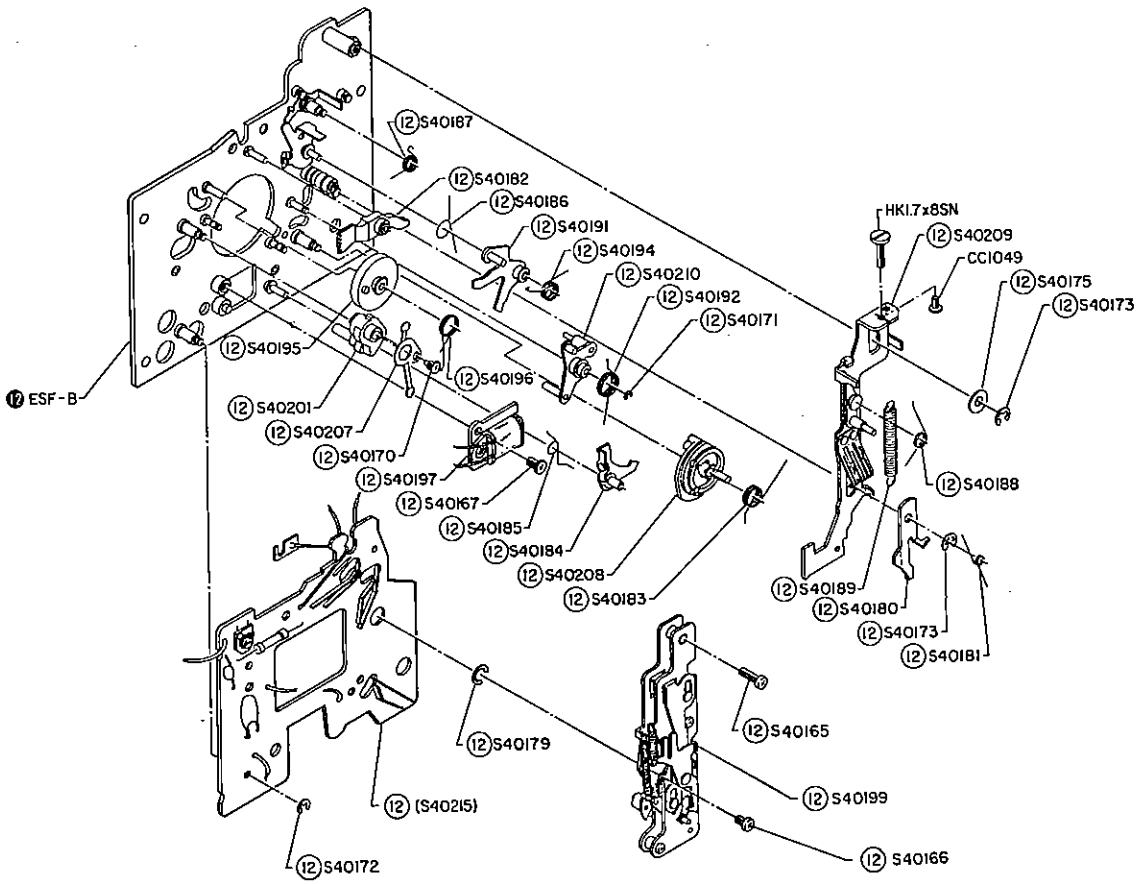
REPAIR MANUAL

MODEL	HOUSE CODE	FIG. 3/4
OLYMPUS 35 ED	LEE-17	
OLYMPUS OPTICAL CO., LTD. TOKYO. JAPAN		

NOTE: WHEN ORDERING FOR SPARE PARTS, PLEASE CLARIFY A MODEL, PARTS NUMBER AND QUANTITY







REPAIR MANUAL

MODEL	HOUSE CODE	FIG. 4/4
OLYMPUS 35 ED	LEE-17	
OLYMPUS OPTICAL CO., LTD. TOKYO. JAPAN		

NOTE: WHEN ORDERING FOR SPARE PARTS, PLEASE CLARIFY A MODEL, PARTS NUMBER AND QUANTITY

PARTS NO.	NAME OF PARTS	NOTE
CA 5258	SYNCHRO SOCKET TERMINAL	4 parts 4 kinds
5259	SYNCHRO SOCKET	
5263	SYNCHRO CONTACT POINT	
5441	SPOOL SPRING	
5509	CLUTCH SPRING	
5526	SPOOL HOLDER	
5527	C WASHER	
5709	E RING 3	
5765	COVER	
5949	SP GEAR SCREW	
6008	HINGE PIN	
6084	LEAD COIL C	
6590	KEY SPRING	
6970	LIGHT PROOF PADDING	
6977	KEY GUIDE	
7156	COIL COVERING TUBE	
7315	LIGHT PROOF PADDING	
7329	STOPPER SPRING	
7334	R LEVER	3 parts 3 kinds
7335	R PINCH	
7336	R PINCH SHAFT	
7338	FRICTION SPRING	
7341b	SHOE CONTACT POINT	3 parts 3 kinds
7399	LEVER HOLDER	
7460	MIRROR BASE SPRING	
7486	LIGHT PROOF PADDING	
7529	SPOOL A	
7559	R NUT	
7612	L WINDOW	
7712	CONTACT POINT	
7714	B PLATE	
7718	HINGE	
7721	STOPPER SCREW	
7732	FILM GUIDE	
7921	STOPPER SCREW	
8008	P HOLDER	
8025	R SHAFT	
8038	SCREW GEAR	
8072	LIGHT PROOF PADDING	
8095	RING HOLDER	
8102	M SPRING	
8103	AD SCREW	
8106	COVERING SCREW	
8110	MIRROR HOLDER	
8120	R SCREW	
8174	SYNCHRO TERMINAL NUT	
8222	PRESSURE PLATE	4 parts 3 kinds
8225	FILM WINDING LEVER	2 parts 2 kinds
8227	FW SHAFT	
8228	FW LEVER COVER	
8230	FW PLATE	3 parts 3 kinds
8231a	FW LEVER WASHER a	t: 0.1
8231b	FW LEVER WASHER b	t: 0.4
8231c	FW LEVER WASHER c	t: 0.6
8232	FW SPRING	

PARTS NO.	NAME OF PARTS	NOTE
CA 8233	GEAR NO.1 WASHER	
8237	GEAR NO.1	
8242	GEAR NO.1 SHAFT	
8244	SPROCKET	2 parts 2 kinds
8245	SP GEAR	
8252	FC GEAR	
8254	FC PLATE	
8255	FRICTION RING	
8257	K IDLE 1	
8258	K IDLE 2	
8262	RETURNING SPRING 1	
8265	CLUTCH	
8268	FC WINDOW	
8271	SP LOWER HOLDER	
8272	R BUTTON	
8273	R SHAFT HOLDER	
8276	SHOE SPRING	
8313	REAR COVER LEATHER	
8317	EYE PIECE FRAME	
8322	LIGHT PROOF PADDING	
8326	SHOE BASE PLATE	
8327	S CONTACT POINT	
8329	FRAME HOLDER	
8341	BUTTON SPRING	
8356	HOOK	
8804	E RING	
CC 1001	(CAMERA BODY)	Not available
1003	LIGHT PROOF FRAME	3 parts 3 kinds
1006	BOTTOM PLATE	
1007	VIEW FINDER HOUSING	32 parts 32 kinds
1009	M LEVER	
1010	FOCUS PIN	
1011	B CASE	7 parts 5 kinds
1012	BATTERY COMPARTMENT LID	
1014	B SPRING	
1015	OB FRAME	
1020	FM FILTER	
1021	FM PLATE	8 parts 7 kinds
1024	STRAP EYELET	
1026	L GUIDE	
1028	SELF TIMER SET LEVER	2 parts 2 kinds
1029	LEVER SET SCREW	
1030	L WINDOW	
1032	KEY PLATE A	
1033	KEY COVER	
1034	RIGHT SIDE LEATHER	
1035	LEFT SIDE LEATHER	
1036	SHUTTER RELEASE BUTTON	
1037	SHOE	
1038	BUTTON WASHER	
1039	LENS HOUSE	3 parts 3 kinds
1040	LEAD COIL	68mm long, Red
1041	FRONT LENS HOLDER	
1042	HELICOID	2 parts 2 kinds

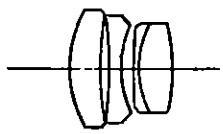
PARTS NO.	NAME OF PARTS	NOTE
CC 1044	GN RING	
1045	FOCUS RING	
1046	MOUNT RING	
1047	HELICOID GUIDE	
1048	LEAD COIL	30mm long, black
1049	C SCREW	
1050	S LOWER HOLDER	
1051	OBJECTIVE FRAME	
1053	FW BASE PLATE	2 parts 2 kinds
1054	A LEVER	3 parts 3 kinds
1056	SCREW NO.1	
1057	SPRING NO.1	
1059	LEVER NO.2	2 parts 2 kinds
1060	COLLAR NO.2	
1061	SCREW NO.2 A	
1062	SPRING NO.2	
1065	SCREW NO.3	
1066	SPRING NO.3	
1067	LEVER NO.3	2 parts 2 kinds
1069	CLAW SCREW	
1070	STOPPER	
1071	SCREW NO.4	
1072	SPRING NO.4	
1073	GEAR CHECKING CLAW	
1074	COLLAR NO.5	
1075	SPRING NO.5	
1076	CAM PLATE	
1077	S GEAR	
1078	S GEAR SHAFT	
1080	GEAR NO.2	2 parts 2 kinds
1081	FC BASE PLATE	18 parts 17 kinds
1082	SP UPPER HOLDER	
1083	SP SHAFT	
1110	LIGHT PROOF PADDING	
1113	REAR COVER	10 parts 10 kinds
1115	C RING	
1120	R KNOB	
LC 4052	HALF MIRROR	
4067	COVER GLASS	
4075	MIRROR NO.2	
6116	LENS NO.1	
6117	LENS NO.2	
6120	OBJECTIVE NO.1	
6121	EYE PIECE LENS	
6123	MAGNIFIER	4 parts 4 kinds
6124	VIEW FIELD FRAME	
6125	MIRROR NO.1	
CB 2101	FILM ROLLER	
2111	SPRING NO.1	
2112	LEAD COIL	50mm long, Black
2160	TOP COVER	18 parts 18 kinds
2162	FW PLATE SPRING	
2163	SP SPRING	

PARTS NO.	NAME OF PARTS	NOTE
CB 2164	F BASE PLATE	4 parts 3 kinds
2165	LEVER NO.1	2 parts 2 kinds
2166	F PLATE	8 parts 8 kinds
2167	L WINDOW FRAME	
2168	SCREW NO.2 B	
2170	LEVER NO.1 SHAFT	
2172	MIRROR SCREW	
2173	F COVER	
ESFB	SHUTTER ASS'Y	
	SET SCREW	
	PUK 1.7 x 2 SO	
	1.7 x 2.5 SO	
	1.7 - 308 SO	
	2 x 3 SO	
	2 x 3 SA	
	2 - 240 SO	
	2 - 338 SO	
	3PUK 1.4 x 2.2 SO	
	HK 1.7 x 8 SN	
	NW 1.5 - 350 BO	
	3.8 - 2120 BO	
	6.1 - 392 BO	
	PSK 1.7 x 2.2 SO	
	2 x 2.5 SO	
	2 x 2.5 SA	
	2 x 3 SO	
	2 x 4 SO	
	3PSK 2 x 4 SO	

Outline and Main Performance of the Product

Product Name OLYMPUS 35ED

Model Name LEE-17



Picture Size: 24 x 36mm

Lens: D. Zuiko F2.8 f=38mm (4 elements in 3 groups, Tessar type)

Picture Angle: 60°

Shutter: SEIKO ESF-B (electronic shutter)

4 - 1/800 sec., 1/30 sec. at flash shooting (Flash iris diaphragm: F2.8 - 22)

Synchronization: X contact

Guide Number: 10, 14, 20, 28, 40 (m) 32, 45, 65, 90, 130 (ft)

Finder: Bright frame finder, 0.55 magnification, Parallax correction mark, Battery checker/shutter operation checker (yellow lamp or green lamp - at flash - lights up to indicate normal function)

Film Winding: Lever type one-stroke winding, Preparatory angle 35°, Winding angle 135°, Multiple-stroke winding available, Double winding prevention, Double exposure prevention

Frame Counter: Forward counting, Automatic return

Film Rewinding: Crank rewinding, Sprocket release button

Focusing: Double image coincidence range finder, Rotary helicoid, Distance scale 0.9m ~ ∞ (3ft - ∞), Effective base length 17mm

Flash Adjustment: Automatically switched to flashmatic setting when electronic flash is mounted on the hot shoe.

Exposure Adjustment: F2.8 4 sec. - F13 1/800 sec., stepless program with electronic shutter

Light Sensor: Point-eye CdS, Receiving angle approx. 50°

Power Supply: Mercury cell JIS HM-N 1.4V 2 pcs.

Film Sensitivity Scale: ASA25 - 800 (DIN15 - 30)

Self-timer: Lever type 85° Approx. 10 sec. delay action

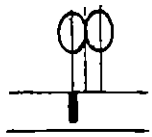
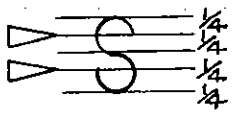
Rear Cover Opening: Hinge type

Hood: 45ϕ Fit-on type (common with 35RC, 35ECR, Pen EED)

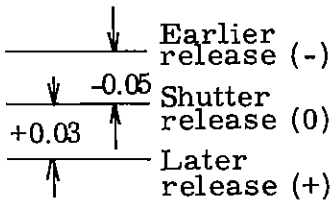
Filter Mounting: 43.5ϕ $^{p=0.5}$ Screw-in type

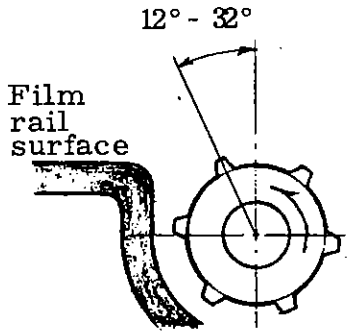
Dimensions and Weight: 114(W) x 71(H) x 51(D) mm, 415g

Inspection Standard

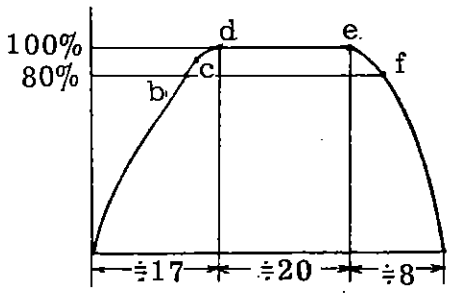
No.	Item	Description	Remarks
1	Distance scale	(in meters) 0.9. 1, 1.5, 2, 3, 5m, ∞ (white) (in feet) 3, 4, 5, 7, 15ft (fluorescent orange-yellow)	
2	Operation of distance ring	Operates smoothly without considerable rough, uneveness, squeak and backlash sounding no strange noise. Operation load is 100 - 400gcm.	
3	Accordance of scale graduation Displacement of ∞ mark	The displacement from the index center is within 1/4 of the ∞ mark.	
	Displacement of GNO mark	The circle of the ⑧ mark is not out of the index line center.	
	Displacement of ASA numerals	Not cut by the ASA indication window at the click stops.	ASA 100
	Displacement of the frame letter S (start)	The index center is not displaced more than 1/4 from the center of the letter S. Check with the rear cover closed.	

No.	Item	Description	Remarks
4	Click of ASA ring	Surely click stops without considerable backlash.	
5	Operation of ASA ring	Operates smoothly without considerable rough and squeak.	
6	Load of ASA ring	200 - 700gcm	
7	Indication of No.1 in the frame counter	Indicates "1" at the third frame after the winding from the S mark (fourth frame seldom available).	
8	End position of the frame counter	Not advances to 37 - 39 (assumed number) passing over 36.	
9	Return of the frame counter	Surely returns near to the S mark even when the rear cover is quietly opened.	
10	Backlash of the release button	There is not considerable backlash in the longitudinal and lateral directions. The vertical play is less than 0.2.	
11	Effective height of the release button	1.1 ± 0.4mm from the button seat The allowance after the effective release is more than 0.3mm.	
12	Assurance of the release lock	The release lock position is 0.7mm higher than the release effective height.	Surely locked when the battery is consumed or loaded upside down.

No.	Item	Description	Remarks
13	Two-step release (double winding prevention release and shutter release)	The tolerance limit at which the release of the wind-up prevention mechanism (wind-up becomes available) is made earlier than the effective shutter release is indicated as (-). The release button operation load is less than 600g.	
14	Operation of the wind-up lever	There is not abnormally heavy resistance, desirably less than 1200g in the film loaded condition.	
15	Assurance of double winding prevention	The next winding should not be available unless the shutter has been released. However, the winding is possible while the release button is depressed.	
16	Release of the wind-up prevention	The next winding should be available when the shutter has been released.	
17	Release on the halfway winding	Impossible. However, possible just before the completion of the winding.	
18	Inclination of the bright frame	Not outstanding.	
19	Indication of lamps	Seen simultaneously with the bright frame upon lighting. The lamp lights up when the release button is depressed by $0.5^{\pm 0.3}$mm from the button's free position.	

No.	Item	Description	Remarks
20	Voltage Accuracy of the battery checker	Lights up at 2.20V, but not at 1.80V.	
21	Displacement of range finder	o Lateral displacement: Within 1'00". o Vertical displacement: Within 1'30". o Image displacement at both ends of the range finder window: Within 1'30".	
22	Parallax of the range finder	Not outstanding.	
23	Flare and ghost in the range finder	Not outstanding.	
24	Image cut-off in the range finder window	None.	
25	Position of the sprocket	The sprocket tooth position is 12° - 32° as in the right illustration (measured with the backlash of the sprocket is put aside on the film rail surface side in the wound-up condition)	
26	Operation of the sprocket	Not make idle rotation with the R button not depressed. Rotates	

No.	Item	Description	Remarks
		smoothly without grating and friction when the R button is depressed.	
27	Assurance of the R button operation	For the one with free position of 0 - 0.4mm, the clutch is surely effected even when the R button is pushed 1mm from flush level of the baseplate. For the one with free position of more than 0.4mm, the clutch hook extent is more than 0.8mm.	
28	Free position of the R button	At the free position, the R button should not project more than 0.2mm from the flush level of the baseplate.	
29	Assurance of the R button returning	When the R button is depressed to the bottom, it should not enter exceeding the concave surface of the baseplate. Surely returns during two frames of the next winding.	
30	Spool rotary force	Rotates smoothly without considerable uneveness with the standard rotary force of (180 - 350) x 6gmm.	
31	Operation of the R knob	Rotates smoothly without considerable resistance and squeak. The returning extent of the R shaft is not considerable when the R lever is released in the middle of the winding.	

No.	Item	Description	Remarks
32	Operation of GNO ring	Operates smoothly without considerable backlash at 1.0 ~ 3.5kgcm.	
33	Effective time of the self-timer	8 ~ 14 sec.	
34	Self-timer setting force	Less than 450gcm at 15mm away from the pivot of the set lever.	
35	Assurance of the FM plate switch operation	Surely switch to the flashmatic setting at 1.5mm away from the upper surface of the shoe groove. Surely returns to the original position even when operated to the lower surface position.	
36	Effective time in the shutter manual		Fully open cd + de + ef > 22mS bf < 37mS Minimum iris tcf ≧ 16
37	Delay time	bc > 0mS	
38	Synchronization	1. Insulation resistance: More than 30MΩ at 500V. 2. Contact resistance: Conductive at DC 3V.	
39	Accuracy of the distance scale graduation	$+0.03^{\pm 0.03mm}$ at ∞ $+0.03^{\pm 0.1mm}$ at 1m	Check with the maximum aperture and on the optical axis.

No.	Item	Description	Remarks
40	Accuracy of RF coupling	$+0.03^{\pm 0.07mm}$	Check with the maximum aperture and on the optical axis.
41	ES accuracy (1)	Within the following range at ASA 100 BV 1 ~ 3 ±1.3EV (target value) BV 4 ~ 8 ±1.2EV BV 8 ~ 14 ±1.0EV BV 15 ~ 16 ±1.2EV BV 17 ±1.2EV (target value)	
42	ES accuracy (2)	The ASA sensitivity should be changed 0.5 ~ 1.5EV when the ASA ring is shifted one click-stop. K=1.3 Power supply voltage = $2.65^{\pm 0.005}$	
43	Picture space	The center line of the picture space should not reach the perforation. Each space is $2.0^{\pm 1.0mm}$	
44	Accuracy of the flashmatic mechanism	See the separate sheet (6-VII-X30 ~ X33).	
45	Minimum operation voltage	Operates normally at 1.8V.	
46	Current consumption	Less than 70mA at the static voltage of 2.8V.	
47	Current leakage	No leakage (less than 0.5uA)	

Disassembly Procedure of LEE17

Main Parts	Parts to be removed	Q'ty	Demountable Parts	Remarks
CC1006 (Base Plate)	PSK2x2.5SA	2	CC1006 (Base Plate) CC1012 (Cover B) CC1014 (Spring B)	Remove in order from the tripod screw.
CC1011 (Case B)				CC1006 (base plate) should be being removed. Although the case is bonded to the main body with Ever-stick, it can be removed by pulling strongly. See the Section of "Lubricants and Chemicals".
CB2160 (Upper Plate)	CA7399 (Lever Holder)	1	CA8225 (Wind-up Lever) CA8231 (Wind-up Lever Base)	Some LEE 17 use two wind-up lever bases.
	CC1120 (R Knob)	1	CA7338 (Friction Spring) CA8025 (R Shaft) (R Knob Base)	Equipped to the ones produced in the early period.

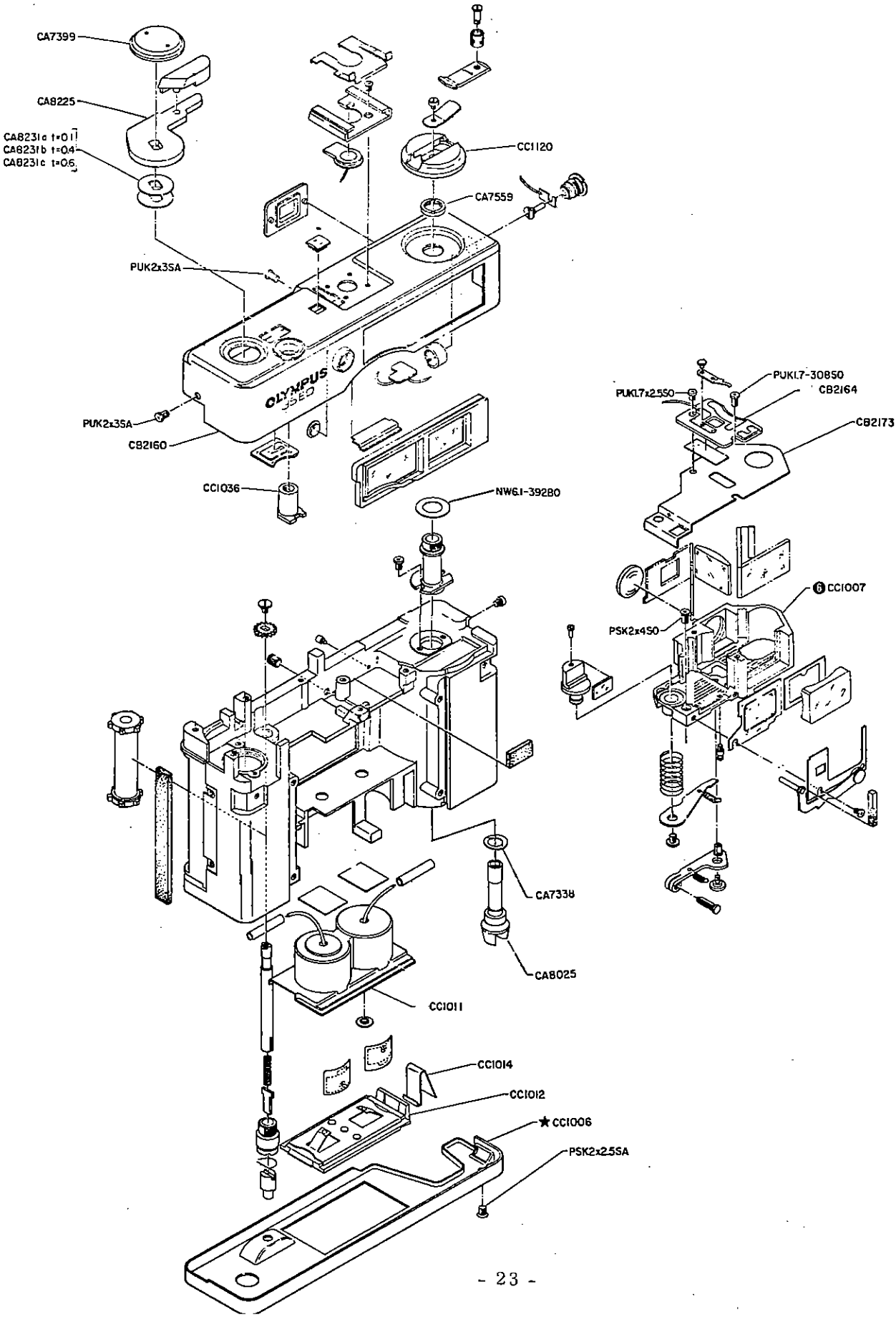
Main Parts	Parts to be removed	Q'ty	Demountable Parts	Remarks
	CA7559 (R Nut)	1		
	PUK2x3SA	2 or 1	CC1036 (Button) NW6.1-392BO CB2160 (Upper Plate)	
CC1007 (Finder) (F Main Body)	PUK1.7x2.5SO	1		
	PUK1.7-308SO	1	CB2164 (F Base Board)	This screw needn't be removed, but only loosened.
	PSK2x4SO	3	CC1007 (Finder) (F Main Body)	This finder is removed in a single body.
CC1081 (Guide Base Plate)	PUX2x3SO	3	CC1081 (Guide Base Plate) (guide plate, gear 1 and wind-up shaft in a single body) CC1080 (Gear 2)	o CB2160 (upper plate) should be being removed. o Tentative locking of the wind-up lever before removing CC1081 (guide base plate) is recommend-able for easy assembling.
CC1053 (Wind-up Base Plate)	PUK2-240SO	1		CC1081 (guide base plate) should be being removed.
	PSK2x2.5SO	2	CC1053 (Wind-up Base Plate)	o Removed in wound-up condition. o CC1076 (cam plate) and CC1078 (S gear shaft) and others are

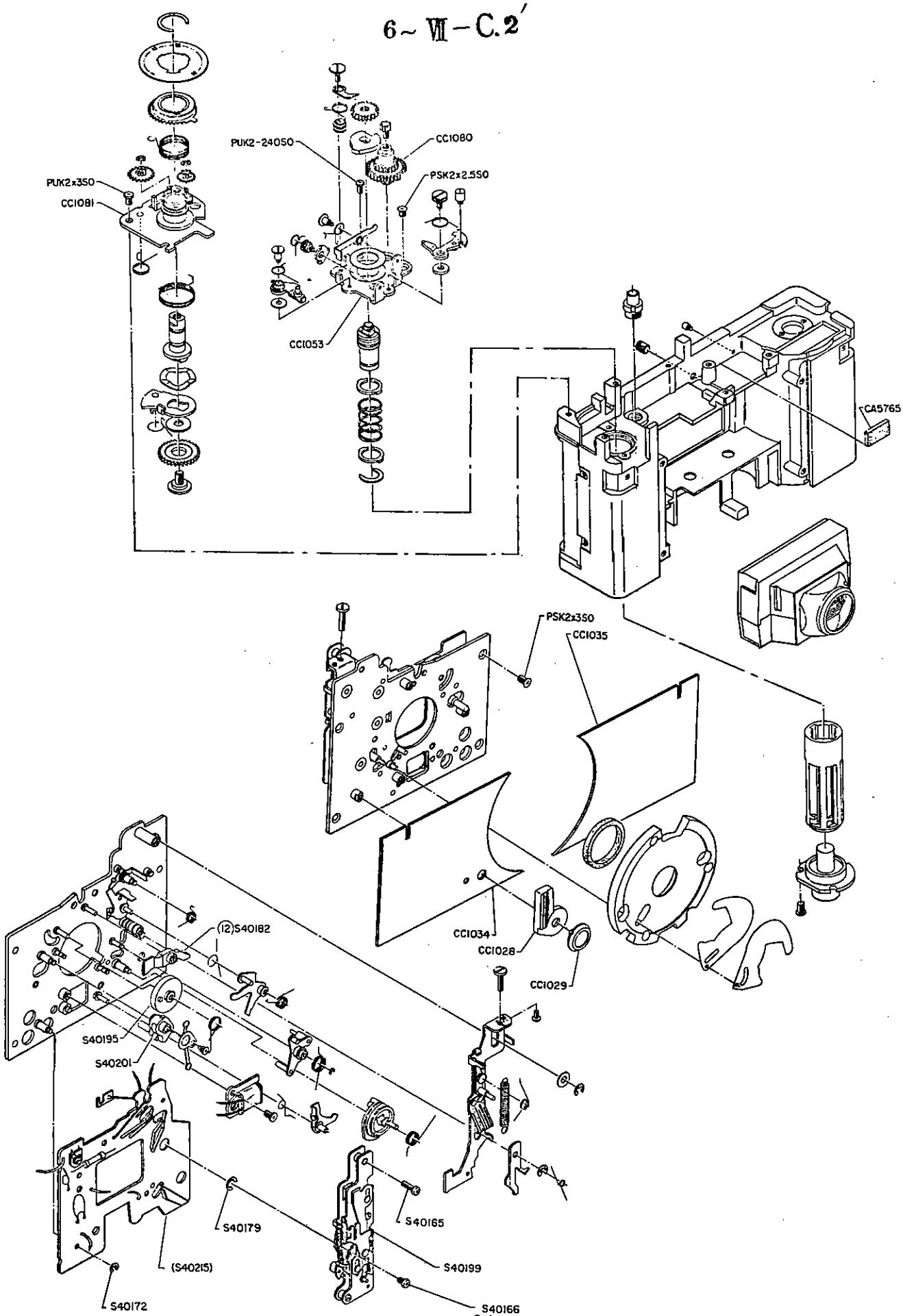
Main Parts	Parts to be removed	Q'ty	Demountable Parts	Remarks
				removed as a single body.
Shutter	CC1029 (Set Screw)	1	CC1028 (Set Lever)	
	CC1034 (Front Leather R)	1		Sufficient to peel off the extent equivalent to the base plate of the shutter.
	CC1035 (Front Leather L)	1		Same as above.
	PSK2x3SO	4	Shutter	o The scotch tape of upper plate, lower plate and CC1026 (L guide) should be being removed.
S40199 (Self-timer)	S40165 (VG Screw A)	1		o The base plate of the shutter should be being removed. o Though the earthing solder is coated, it can be removed by a plus screw-driver as it is.
	S40166 (VG Screw B)	1	S40199 (Self-timer)	
S40215 (Base Board A)	S40172 (E Ring)	4		o The self-timer should be being removed.

Main Parts	Parts to be removed	Q'ty	Demountable Parts	Remarks
	S40179 (C Ring)	1	S40215 (Base Board A) ┌S40201 (Selector Lever) S40195 (Flywheel) └S40182 (Coupling Gear) Take care, because the above parts tend to be disconnected.	The C ring is sometimes not removed due to the jamming of lead wires of CdS. In this case, the letter ring is recommendably removed. The lead wire of the magnet is very thin, so take care not to break it.
S40218 CdS	CA8095 (Letter Ring Holder)	1	S40206 (CdS Case)	S40205 (letter ring) and S40204 (ASA ring) and others are taken off as a single body.
	S40169 (Stopper Screw)	2	S40218 (CdS)	
CC1042 (Helicoid)	PUK1.4x2.2SO	3	CC1047 (Guide) CC1042 (Helicoid) Demounted as a single body with the lens.	o S40206 (CdS case) should be being removed. o It is recommendable to mark the positions of CC1047 (guide) and CC1041 (front holder) before the removal of three PUK1.4x 2.2SO screws.

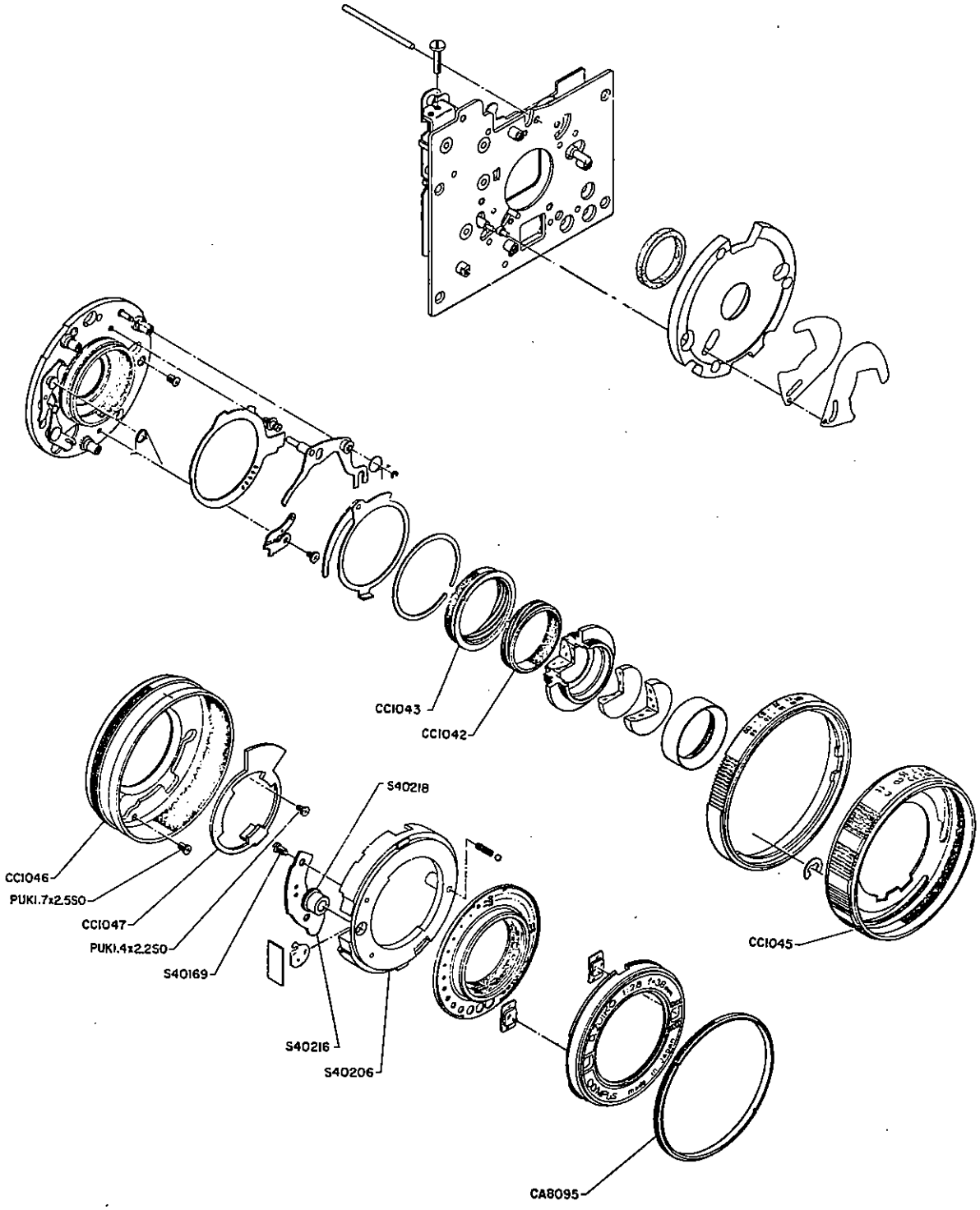
Main Parts	Parts to be removed	Q'ty	Demountable Parts	Remarks
CC1046 (Mount Ring)	PUK1.7x2.5SO	3	CC1046 (Mount Ring) (Demounted in a single body with CC1045 (distance ring))	o CC1042 (helicoid) should be being removed. o The distance ring is demounted by the counter-clockwise rotation.

6~Ⅶ-C.1


CA7399
CA8225
CA8231a t=01
CA8231b t=04
CA8231c t=06
CC1120
CA7559
PUK2x3SA
OLYMPUS
PUK2x3SA
CB2160
CC1036
NW6.1-39280
PUK1.7-30850
PUK1.7x2.5SO
CB2164
CB2173
6 CC1007
PSK2x4SO
CA7338
CA8025
CC1011
CC1014
CC1012
★CC1006
PSK2x2.5SA


PUK2x3S0
CC1081
PUK2-24050
CC1080
PSK2x2.5S0
CC1053
CA5765
PSK2x3S0
CC1035
CC1034
CC1028
CC1029
(12)S40182
S40195
S40201
S40179
S40165
S40199
(S40215)
S40172
S40166

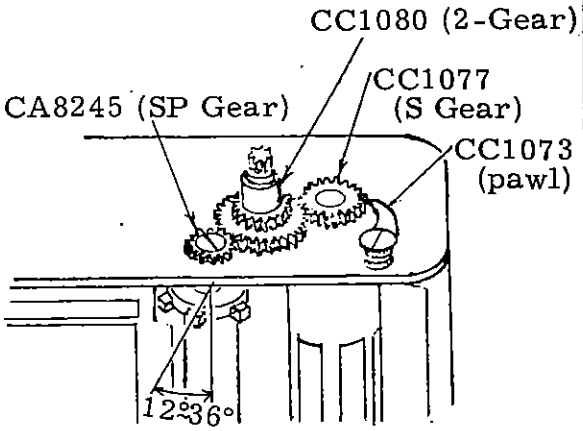
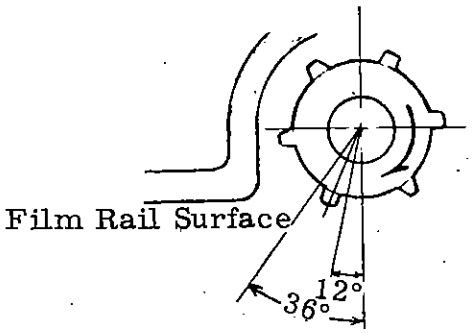
6~ Ⅶ－C.3′


CC1043
CC1042
S40218
CC1046
PUKI.7x2.5S0
CC1047
PUKI.4x2.2S0
S40169
S40216
S40206
CC1045
CA8095

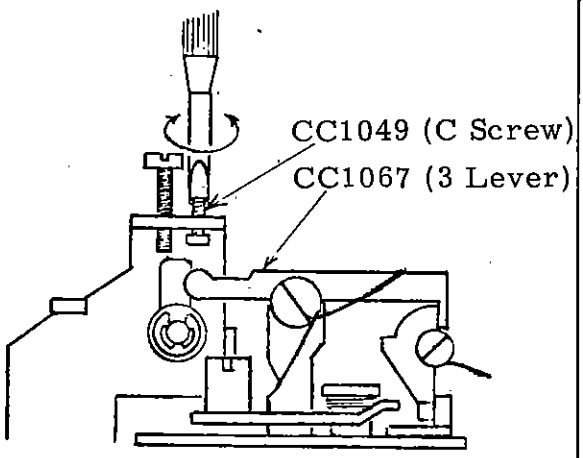
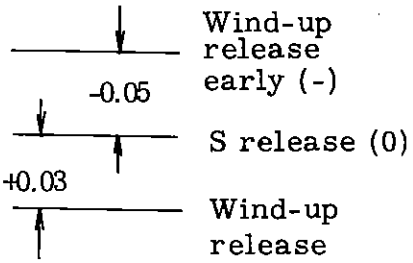
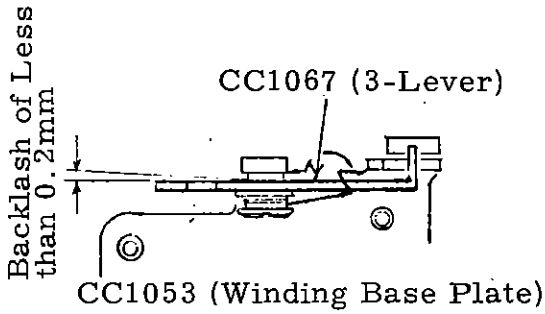
LEE-17 Troubleshooting

Contents

1. Picture space reaches the perforation

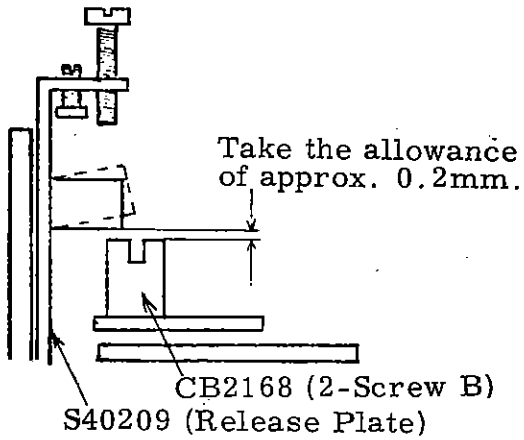
Cause	Remedy	Confirmation
1) Improper sprocket position	Adjust the sprocket position while watch the engagement of CA8245 (SP gear), CC1077 (S gear) and CC1080 (2 gear). The position of the sprocket tooth is made to be 12° - 36° as in the right illustration when the sprocket is pushed to the film rail, eliminating its backlash. In the troubleshooting, firstly remove CB2160 (upper plate) and CC1081 (guide base plate).  Caution: It is recommendable for easy assembly to remove the guide base plate with the winding lever tentatively locked.	 Take care for the backlash of CC1077 (S gear). If it is excessive, adjust it with the pawl. See the Section of the pawl adjustment.

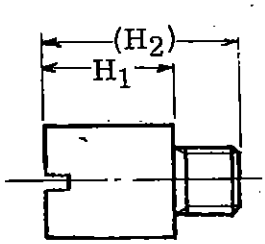
2. Two-step release

Cause	Remedy	Confirmation
1) Improper adjustment of CC1049 (C screw)	Remove CB2160 (upper plate), and adjust CC1049 (C screw) so that it becomes within the right indicated range.  	 If there is considerable dump backlash with the 3-lever, the adjustment of the two-step release is difficult. See the "Dump backlash of 3-Lever" in the following.
2) Excessive backlash of CC1067 (3-lever)	Adjust to have the backlash of less than 0.2mm at the point illustrated below with the lever caulked after tightening.  	The operation of the S lever is smooth without grating, and the backlash is less than 0.2mm.

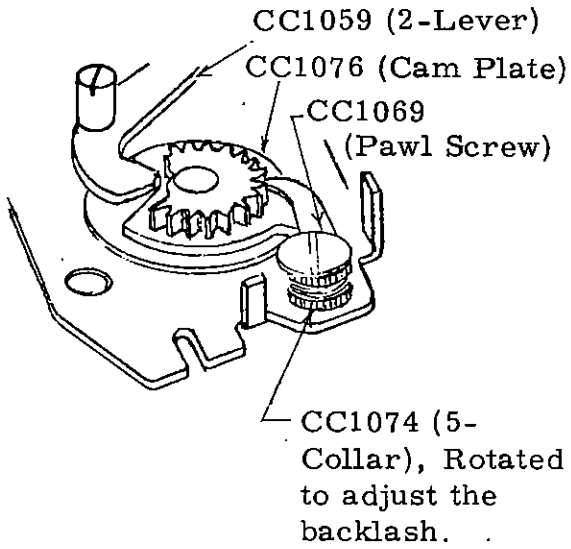
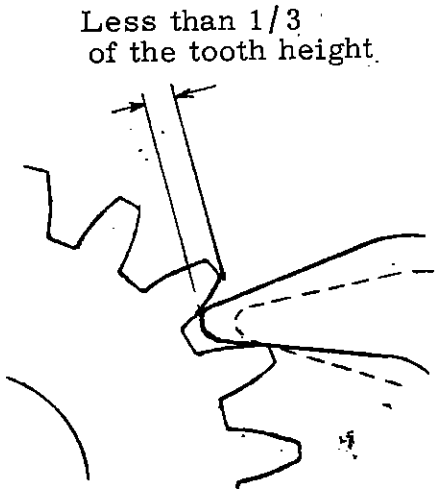
3. Check lamp lighting upon the release lock

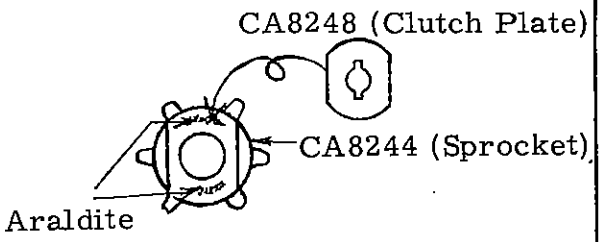
Cause	Remedy	Confirmation
1) Defor - mation of	If the release button is strongly depressed before the winding, the	(1) After the adjustment, the winding operation is

<table>
<tr><th>Cause</th><th>Remedy</th><th>Confirmation</th></tr>
<tr><td>the lock portion of S40209 (release plate)</td><td>lock portion of the release plate is deformed and the space between the lock portion and CB2168 (2-screw B) is enlarged, causing such trouble.
When the deformation of the lock portion is not serious, rectify it, but replace the release plate when serious.
 

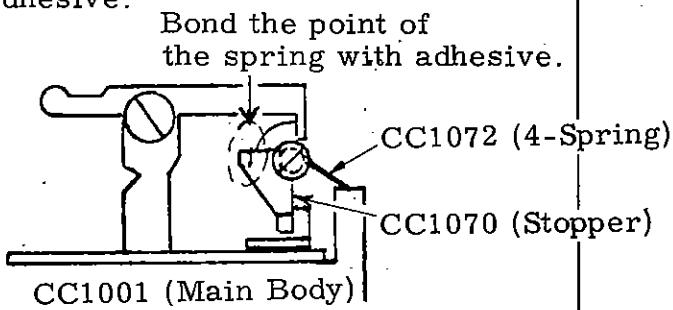
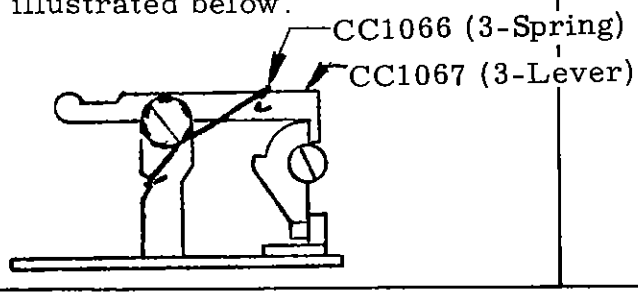
Deformed as indicated by the dotted line. Rectify as indicated by the actual line.</td><td>sure, and the double winding prevention and the returning prevention are assured.
(2) When the shutter is released, the next winding is made possible (allowance of 0.2mm required as in the left illustration).
(3) Release is impossible on the halfway winding.
(4) Wind-up lock after S releasing is sure, and the checker lamp should not light upon the wind-up lock.
(5) Allowance after S releasing is more than 0.3mm.</td></tr>
<tr><td>2) Improper selection of CB2168 (2-screw B)</td><td>CB2168 (2-screw B) is available in the following three kinds. Select the proper one to have the above mentioned allowance.
<table><tr><th>No.</th><th>H1 $^{\pm 0.05}$</th><th>(H2)</th></tr><tr><td>1</td><td>3.2</td><td>(4.9)</td></tr><tr><td>2</td><td>3.4</td><td>(5.1)</td></tr><tr><td>3</td><td>3.6</td><td>(5.3)</td></tr></table></td><td> 
</td></tr>
</table>

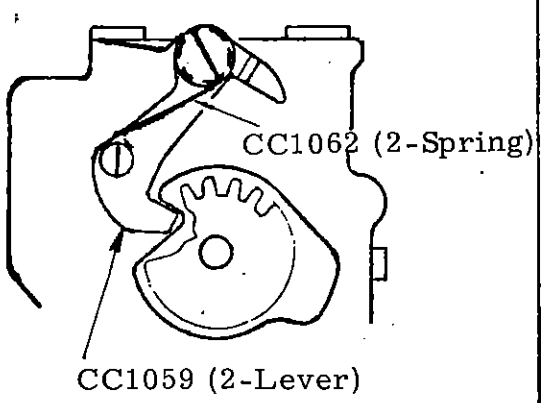
4. Excessive sprocket backlash

Cause	Remedy	Confirmation
1) Improper adjustment of CC1073 (pawl)	Remove CB2160 (upper plate) and CC1081 (guide base plate), loosen CC1069 (pawl), and adjust by rotating CC1074 (5-collar) (eccentric). Adjust so that the backlash becomes less than 1/3 of the tooth height. However, since CC1059 (2-lever) would not be disengaged from CC1076 (cam plate) if the backlash is made zero, some extent of the backlash is necessary.  Caution: The adjustment is to be done in the condition of the 3-gear rotated and the 2-lever engaged in the cam plate. o The guide base plate is recommendably removed with the winding lever tentatively locked previously for the easy later assembling.	(1) When the shutter is released, the 2-lever should be disengaged from the cam plate. (2) Backlash should be less than 1/3 of the tooth height as illustrated below. 

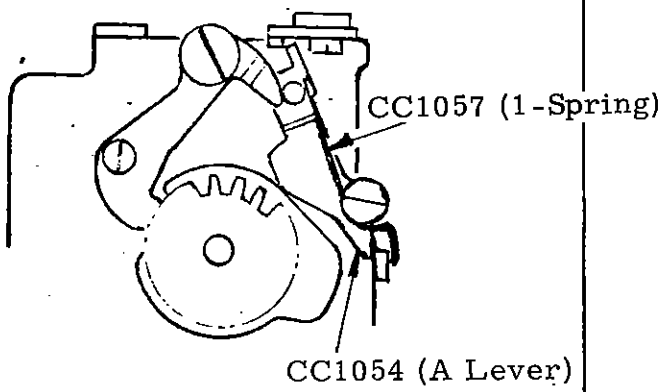
Cause	Remedy	Confirmation
2) Peeling off of CA8248 (clutch plate)	Cement it again to CA8244 (sprocket) or replace the sprocket (the sprocket comes as a set with the clutch plate). The cementing is done by Araldite with the beveled side of the clutch plate facing up.  	(1) The cementing should be done with beveled side up. (2) No adhesive should come out of the fitting portion of the clutch and the sprocket shaft. (3) Should be cemented on the position indicated in the left illustration with no floating.

5. Double exposure prevention ineffective

Cause	Remedy	Confirmation
1) Disengagement of CC1072 (4-spring)	Hook the 4-spring as illustrated. Bond CC1070 stopper side with adhesive.  	
2) Disengagement of CC1066 (3-spring)	Hook the 3-spring with the longer half engaging with CC1067 (3-lever) as illustrated below.  	

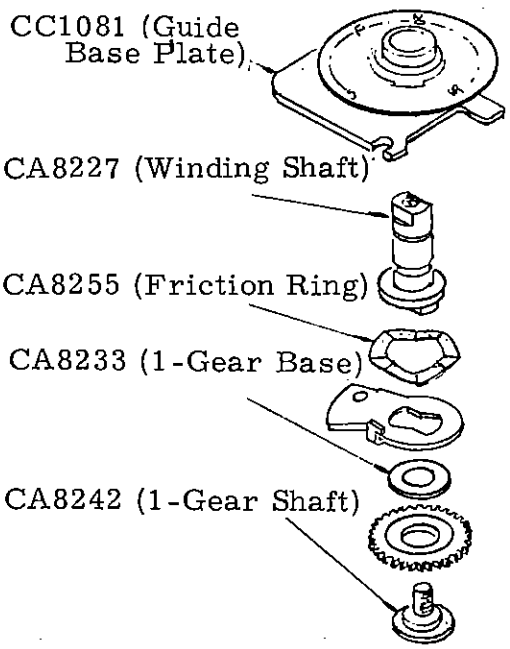
Cause	Remedy	Confirmation
3) Disengagement of CC1062 (2-spring)	Hook the 2-spring with the longer half engaging with CC1059 (2-lever) as illustrated below. 	

6. Winding impossible

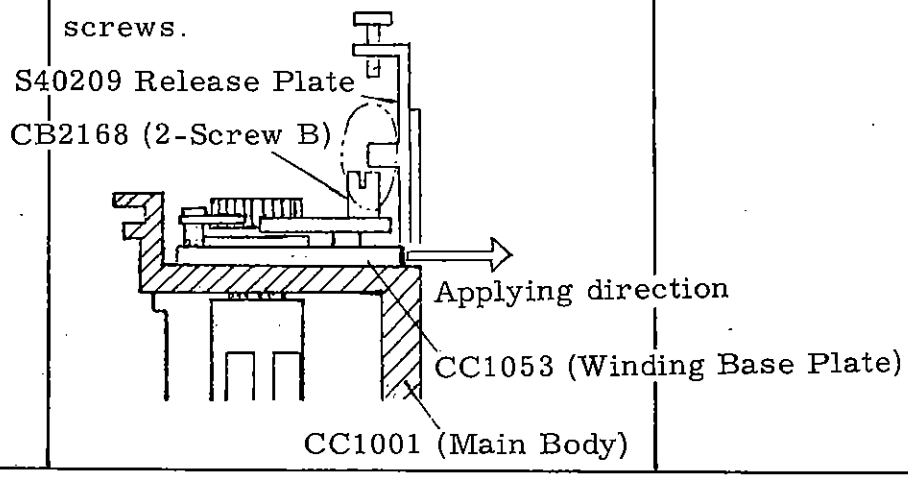
Cause	Remedy	Confirmation
1) Disengagement of CC1057 (1-spring)	Hook the 1-spring with the longer half engaging with CC1054 (A lever) as illustrated below. 	

7. Insufficient wind-up lever pulling force

Cause	Remedy	Confirmation
1) Deformation of	Remove the upper plate and CC1081 (guide base plate), and disconnect	1) Friction ring is not discriminative in the front

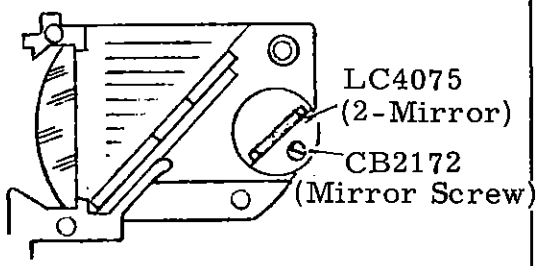
Cause	Remedy	Confirmation
CA8255 (friction ring)	CA8242 (1-gear shaft), and replace CA8255 (friction ring) or rectify it.  	and back. 2) The 1-gear base is applied with the loose side up. 3) Coat the Rocol Paste on the friction ring contact area of the winding shaft and the winding plate contact area. 4) The tightening of the 1-gear shaft is assured without floating and loose-ness (tightening torque is more than 2.5kgcm).

8. Insufficient hooking of the release plate lock to CB2168 (2-Screw B)

Cause	Remedy	Confirmation
1) Incorrect position of CC1053 (winding base plate)	After removing the upper plate and CC1081 (guide base plate), loosen two PUK2x2.5SO and one PUK2-240SO and apply the winding base plate forward as in the illustration below and tighten again the above screws.  	

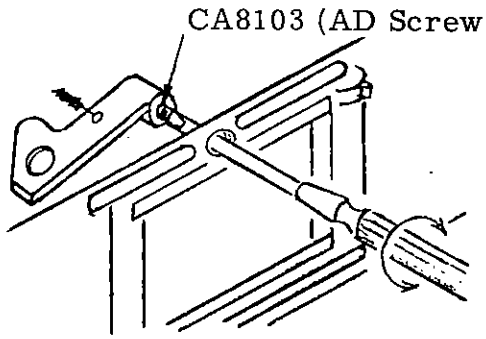
II. Range Finder and Relateds

1. Adjustment of vertical displacement

Cause	Remedy	Confirmation
1) Incorrect angle of LC4075 (2-mirror) due to improper adjustment of CB2172 (mirror screw)	With the cement of the mirror and lens not peeled off, if the reflected image is as follows with respect to the transmitted image when viewed through the collimator: The reflected image is displaced upward: Turn the mirror screw clockwise ↷ . The reflected image is displaced downward: Turn the mirror screw counter-clockwise ↶ .  	(1) Vertical image displacement should be less than 1'30" when measured by a collimator of f=600mm. (2) The images should not be displaced when the distance ring is rotated 2 - 3 times and strongly or quietly struck against the stopper, after the images have been superimposed once. (3) Should be within the rating at ∞ and 1m. If excess image displacement occurs at either of the above distances, adjust the mirror screw so as to satisfy the rating at each distance.

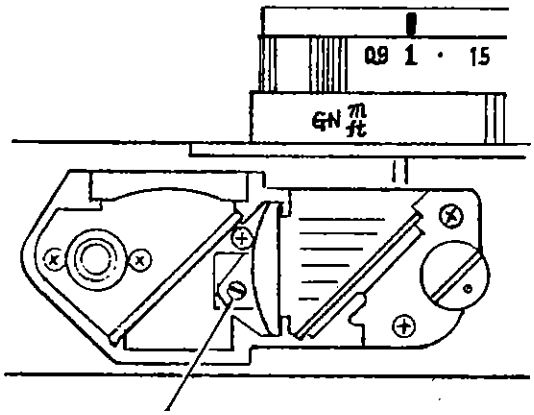
2. Lateral displacement at infinity

Cause	Remedy	Confirmation
1) Displacement due to improper adjustment of	Open CC1113 (rear cover), remove CA8106 (hole screw) and adjust by rotating the AD screw with the screwdriver No. 3. When viewing through the collimator,	(1) The lateral image displacement should be less than 1' when the collimator of f=600mm is used.

Cause	Remedy	Confirmation
CA8103 (AD screw)	if the reflected image is as follows against the transmitted image: Displaced leftward: Turn the AD screw counter-clockwise ↺ . Displaced rightward: Turn the AD screw clockwise ↻ .  	(2) If the rotary force of the AD screw is excessively light, replace or remedy the 1 lever. (3) The images should not be displaced when the distance ring is rotated 2 - 3 times and strongly or quietly set to focus at ∞ after the images have been matched once.

3. Defective coupling of the range finder

Cause	Remedy	Confirmation
1) Improper adjustment of coupling pin	The coupling pin is an eccentric pin caulked to CB2165 (1-lever). For the adjustment, remove the rear plate to find the coupling pin under LC6126 (magnifier lens), and fine-rotate it. Adjustment Procedure 1. Mount the attachment lens for 1m on to the collimator of 600mm. 2. Set the distance ring of the camera to 1m, and adjust by fine-rotating the coupling pin. 3. Remove the attachment lens from the collimator, and set the distance meter to ∞.	(1) Distance scale accuracy at ∞ : $+0.03^{\pm 0.03}$ mm at 1m: $+0.03^{\pm 01}$ mm (2) RF coupling accuracy: $+0.03^{\pm 0.07}$ mm (3) If the rotary force of the coupling pin is abnormally light, caulk it once more.

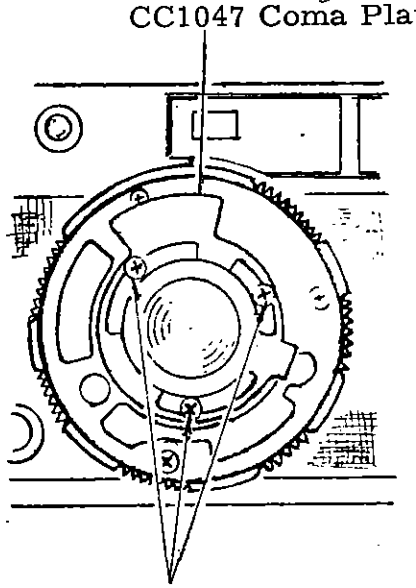
Cause	Remedy	Confirmation
	4. Adjustment lateral displacement at infinity focus as described in the preceding procedure. 5. Repeat the procedures 1 - 4, and adjust the lateral displacement at the close distance of 1m.  Coupling Pin	

4. Range finder inoperative

Cause	Remedy	Confirmation
1) Squeak of CB2171 (mirror base)	Cosmolbrick is applied to the sliding portion of the F main body (CC1007) and the mirror base. When there is squeaking due to the lubricant shortage or foreign matter intrusion, demount the mirror base and apply thin coat of cosmolbrick to the sliding portion after cleaning it. Caution: For the mirror base de-mounting. do it after marking the mirror base position.	Even when the distance ring is violently moved, the range finder follows correctly and quietly.

III. Lens and Relateds

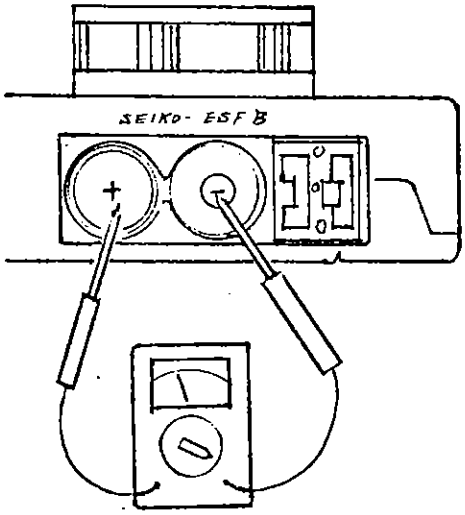
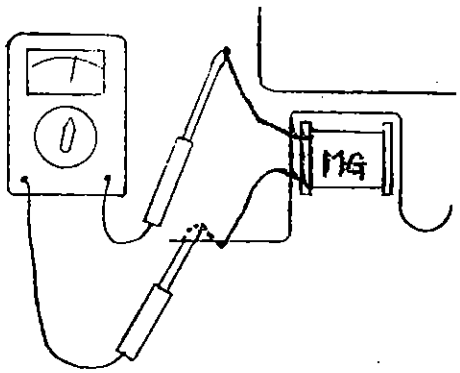
1. Improper FC adjustment

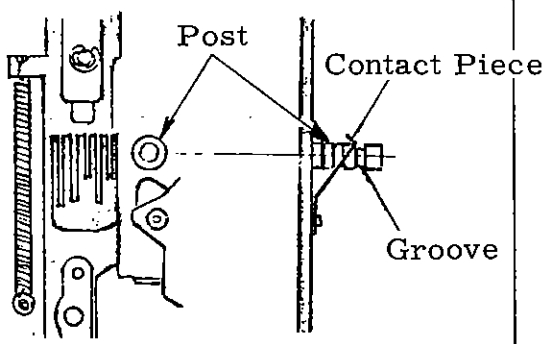
Cause	Remedy	Confirmation
1) Incorrect position of CC1047 (Guide)	Do the FC adjustment by shifting the guide held onto the lens barrel (CC1039). FC adjustment procedure (1) Remove the letter ring holder (CA8095) and CdS holder (S40206). (2) For full opening of the sector, take off the lead wire soldered to the base board (B S40216) (removing either one of the wires will be sufficient). (3) Set the distance ring to the ∞ position, and loosen three PUK1.4x2SO fixing the guide plate. (4) While depressing the shutter button, adjust so that the tolerance is within $+0.03^{\pm 0.03}$ at ∞ .	(1) FC adjustment $+0.03^{\pm 0.03}$ mm at ∞ CC1047 Coma Plate  PUK1.4x2.2SO

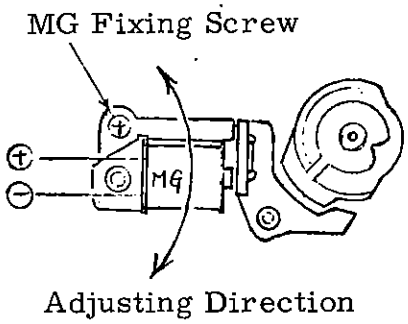
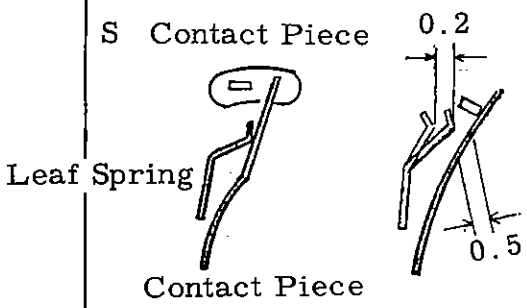
IV. Shutter and Relateds

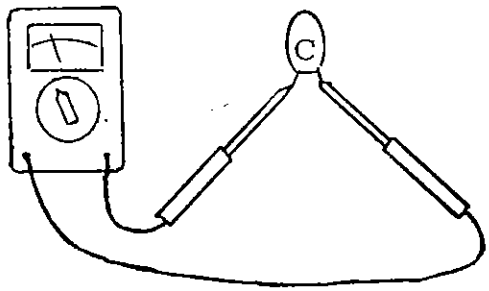
1. Shutter blade not open

Cause	Remedy	Confirmation
1) Wire breakage and short-circuit of	When the voltage of 2.65V is applied by the use of a constant voltage power supply (DC), the current flows at about 65mA if normal and	If the current flows at about 65mA or 30mA (with no lamp) when the shutter is released, the electric

Cause	Remedy	Confirmation
the electric parts	30mA if no lamp is used.  Range of a tester 20mA DC or more	parts are normal.
2) MG cord breakage	The cord is broken if the pointer needle does not deflect when measuring as follow with the use of a tester. In this case. replace the MG (magnet) and adjust the position.  	(1) If the MG is normal, the resistance value is approximately $60^{\pm 10}\ \Omega$ (2) The shutter blade should operate normally at 2.0V. (3) Confirm the EV value.

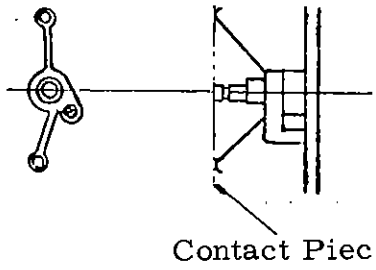
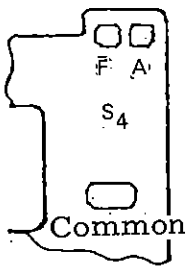
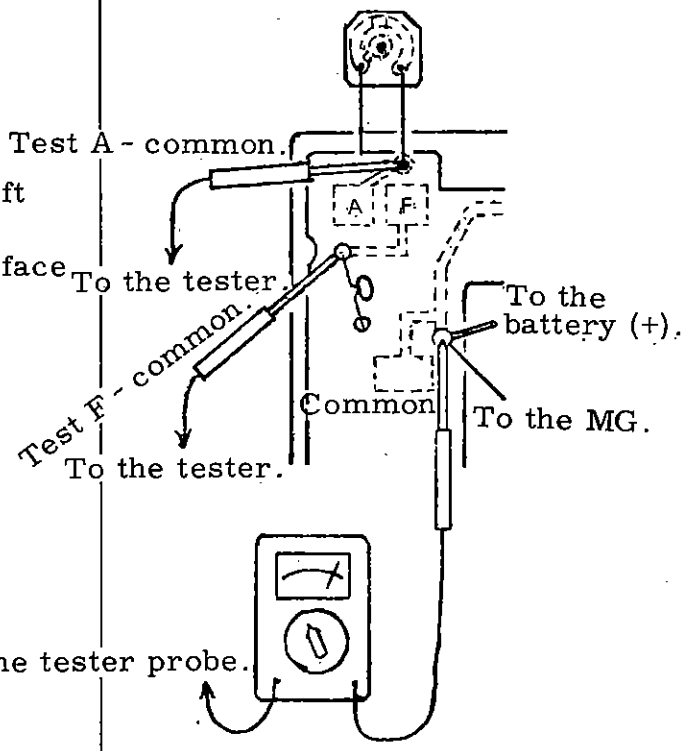
Cause	Remedy	Confirmation
3) Defective soldering of electric parts	Solder again for the following parts if the soldering is defective (peeled off). 1. Battery Cord (+) Red 2. Battery Cord (-) Blue 3. MG Cord (two cords)	(1) The shutter blade should operate normally at 2.0V. (2) Check EV.
4) Contact failure of S_1 contact piece	In case of the contact failure of the contact piece, correct the contact piece height to about the groove position of the post. 	If the contact piece is too high, the defect of "heavy release plate returning" may be caused.
5) Incorrect MG position	If the voltage at both ends of the MG are stable at 1.4V when the release plate is depressed. the MG position is incorrect (the battery voltage is 2.65V). 〔 MG Position Adjustment 〕 1. Connect the DC constant voltage power supply to the battery cord. 2. Gradually shift the MG in the arrow mark direction to find the best position so that the sector operates normally at 2.0V.	(1) The sector should operate normally at 2.0V.

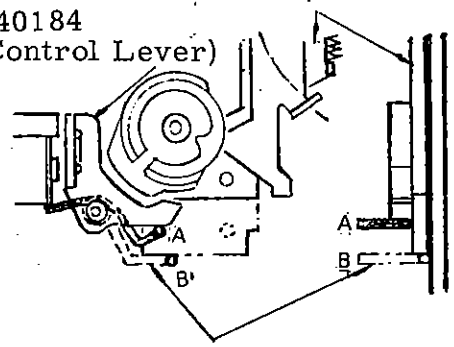
Cause	Remedy	Confirmation
	3. Tighten the MG fixing screw to fix the MG. 4. After fixing the MG, confirm that the sector operates normally.  	
6) Contact failure of S_3 contact piece	If the contact piece S_3 is separated from the leaf spring before releasing, adjust the contact piece with a pincette. 1. Adjust the contact piece so that the leaf spring is tensioned with approx. 0.2mm bend when the contact piece is contacted to the leaf spring. 2. Confirm that the space between the contact piece and the leaf spring is approximately 0.5mm upon releasing.  	

Cause	Remedy	Confirmation
7) Excessive contact resistance of S_3 contact piece	When the resistance at the both ends of C are more than 1 Ω in the condition prior to releasing: 1. Insufficient contact pressure (insufficient leaf spring tension) ⇨ Adjust the contact piece and the contact leaf. 2. Fouled contact surface ⇨ Clean the contact piece and the leaf spring with mixed solution, and adjust them. 	Normal if the resistance value is less than 1Ω at the both ends of the condenser.
8) Defective soldering of electric parts	If the tester needle does not deflect in the above checking (7), check the following parts. 1. S_3 Contact Piece 2. S_3 Leaf Spring 3. Condenser (C) } Check the soldering	

2. Shutter blade left full open (both on AUTO and FM)

Cause	Remedy	Confirmation
1) Contact failure of S_4 contact piece	Insufficient spring pressure of AF contact pieces (S_4 contact piece) and the fouled contact surface. 1. Insufficient contact piece pressure	(1) Normal if the resistance values between A and the common and between F and the common are ≒0Ω.

Cause	Remedy	Confirmation
	Selector Contact Piece  2. Fouled selector contact piece Wipe the portion of the contact piece contacting with the print board with mixed solution. 3. Fouled contact surface  Wipe the left illustrated contact surface with mixed solution.	See the following illustration. (2) The shutter blade should operate normally at 2.0V. (3) Check the EV and FM after the adjustment. {Test of S_4 Contact Piece Resistance} 
2) Defective operation of S40184 (control lever)	The control lever disengages from the release plate and holds the driving cam. ⇨ Confirm the release plate deflection, and then rectify the control lever spring shape.	(1) The shutter blade should operate normally at 2.0V. (2) The operation is normal when the control lever is pushed by the release

Cause	Remedy	Confirmation
	S40209 (Release Plate) S40184 (Control Lever)  S40185 (Control Spring)	plate in the released condition and shifted to the position B.
3) Defective soldering of electric parts	1. Shortcircuited S_3 soldering 2. Shortcircuited (+) and (-) lines of condenser (C) 3. Broken pattern between S_4 (common) and R } Solder again correctly	1) The shutter blade should operate normally at 2.0V. 2) Check EV. 3) Check FM.

3. Shutter blade full open in AUTO mode

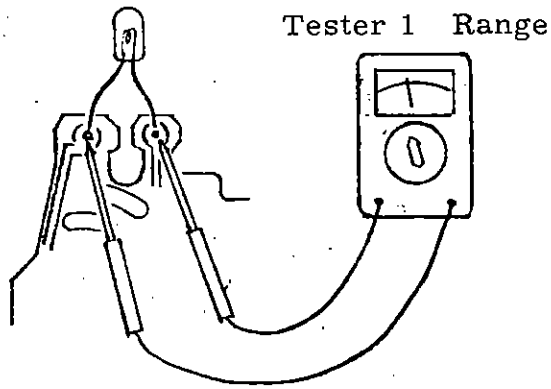
Cause	Remedy	Confirmation
1) Contact failure of S_4	This sometimes occures only in the AUTO mode because of the curved and fouled print board, so check the following points. 1. Insufficient contact piece pressure 2. Fouled contact surface	See the Item 2-1 on page 42.
2) Defective soldering of electric parts	1. Defective VR terminal soldering. 2. Defective soldering of the CdS cell cord. 3. Broken pattern between:	1) The shutter blade should operate at 2.0V. 2) Check EV.

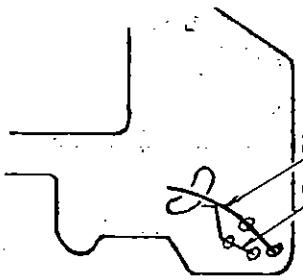
Cause	Remedy	Confirmation
	CdS cell cord (white or black) -- -- VR, S_4----- VR ⇨ Solder again or replace the cord.	
3) Defective soldering of CdS	1. Broken CdS base board pattern 2. Defective CdS soldering 3. Internal CdS cord breakage 4. Shortcircuit between the CdS cell cord (white or black) and the CdS cell post 5. Shortcircuited CdS cell cord (white or black) and R_1 } Solder again or replace the CdS	The CdS cord breakage is very few, so its replacement should be done only when the defective part cannot be found elsewhere. For the replacement, check the matching of the colored code previously.

4. Shutter blade full open in FM mode

Cause	Remedy	Confirmation
1) Contact failure of S_4.	This sometimes occurs only in the FM mode because of the curved and fouled print board, so check the following points. 1. Insufficient contact piece pressure 2. Fouled contact surface	See the Item 2-1 on page 42.
2) Defective soldering of electric parts	Defective and broken soldering of the resistor R_5 causes the same trouble. ⇨ Solder again for the resistor R_5 or replace it.	1) The shutter blade should operate normally at 2.0V. 2) Check EV and FM after the repair.

5. Lamp not light

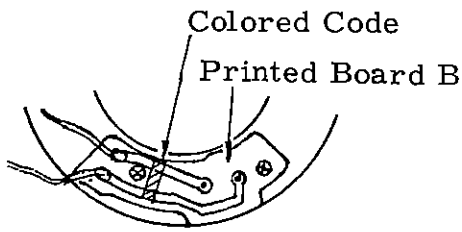
Cause	Remedy	Confirmation
1) Cord breakage of S40174 (micro-lamp)	If the pointer needle does not deflect when tester probes are applied to both ends of the lamp cords as illustrated below, replace the lamp.  	If the lamp is normal, the tester needle points approximately 60 Ω and the lamp lights.
2) Micro-lamp cord breakage	Check if the cord is broken at the lamp root, and if so, replace the lamp.	
3) Defective soldering of electric parts	The lamp does not light also if the soldering of the following parts are defective. 1. Lamp Cord 2. Battery Cord (+) Red Battery Cord (-) Blue 3. R_7 Cord 4. R_8 Cord 5. T_3 Cord } Solder again	

Cause	Remedy	Confirmation
4) Contact failure of S_6 contact piece	S_6 contact piece and the leaf spring are not contacted in the condition prior to releasing. ⇩ Bend the leaf spring with a pincette to make their contact. Before the adjustment, be sure to clean the both pieces with mixed solution.  	1) S_6 contact piece should contact to the leaf spring prior to the releasing, and the leaf spring should be bent by approximately 0.2mm. 2) The contact piece and the leaf spring should be separated by approximately 0.5mm after the sector is closed with the release plate being depressed.

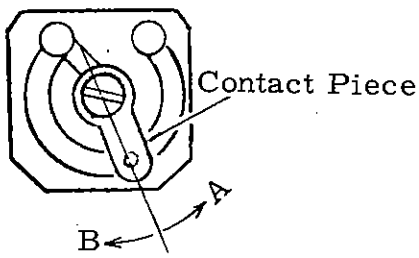
6. Slight deviation of B.C. lighting level

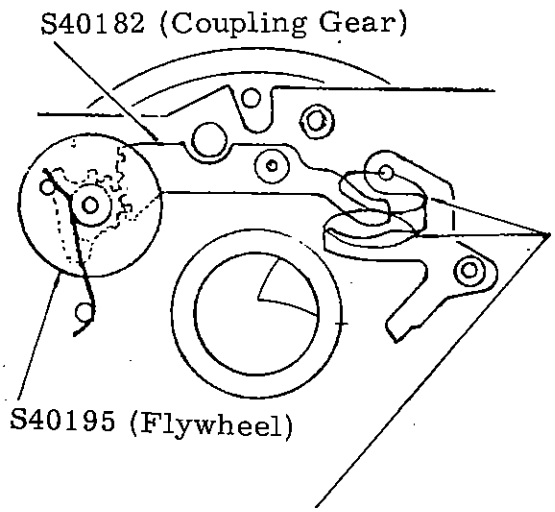
Cause	Remedy	Confirmation
1) Lamp lights even at 1.8V.	(1) Replace R_7 (110 Ω) by a 100 Ω one. (Replace R_7 by a resistor with the dimensions applicable to the printed board.) (2) If the above measure is not successful, connect the R_7, back again and replace the transistor T_3.	B.C. Level: $2.0^{+0.25}_{-0.1}$ V
2) Check lamp does not light at 2.25V.	1. Replace the B.C. lamp. 2. Replace R_8 (200 Ω) by a 180 Ω resistor. 3. If the above measures are unsucessful, return the R_8, and replace the transistor T_3.	

7. Low brightness EV defect

Cause	Remedy	Confirmation
1) Defective CdS	When the resistance value of BV 8 is considerably deviated from the following value, replace by a CdS of the same colored code. Green (G): 37.5 - 49.3KΩ Red (R): 22.4 - 37.4KΩ Blue (B): 14.9 - 22.3KΩ Adjust the EV after the replacement	EV accuracy at ASA100 is: BV 1 - 3: ±1.3EV (tentative) BV 4 - 8: ±1.2EV 

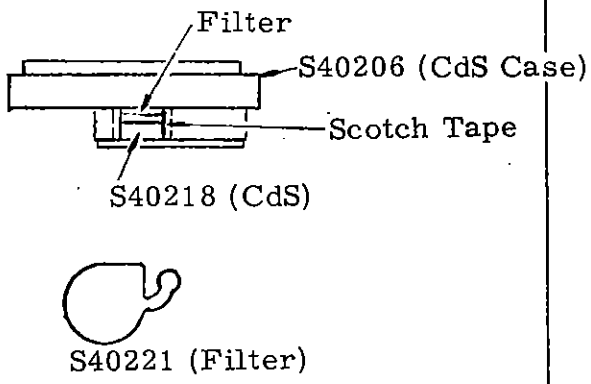
8. High brightness EV defect

Cause	Remedy	Confirmation
1) Defective soldering of electric parts	When the V_R soldering is defective, the high EV becomes excessive. ⇨ Solder again.	EV accuracy at ASA100 is: BV 8 - 14: ±1.0EV BV 15 - 17: ±1.2EV BV 17: ±1.2EV (tentative)
2) Improper adjustment of V_R	The V_R adjustment causes some change in the low brightness side, but mainly relates to the high brightness side.  When the contact piece is rotated: (1) in the A direction: EV becomes under (2) in the B direction: EV becomes over	(1) The shutter blade should operate normally at 2.0V. (2) EV accuracy at ASA100: BV 8 - 14: ±1.0EV BV 15 - 16: ±1.2EV BV 17: ±1.2EV (tentative)

Cause	Remedy	Confirmation
3) Incorrect position of S40182 (coupling gear)	If the position of S40182 (coupling gear) is incorrect in the assembling after the shutter disassembly, the high brightness becomes under. (Since the flywheel (S40195) actuates at the start of the sector operation, if wrongly positioned, the sector is delayed in action and opened not fully at high shutter speed.)  	

9. Brightness EV defect in overall range

Cause	Remedy	Confirmation
1) Improper adjustment of S40221 (filter)	When each EV is under or over, adjust by increasing or decreasing the filter of the CdS cell.	

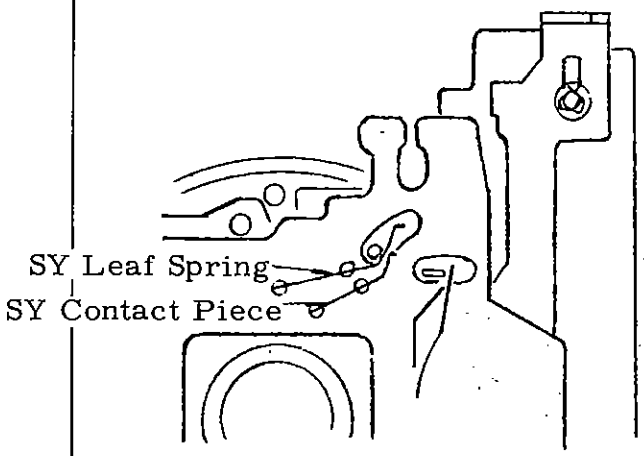
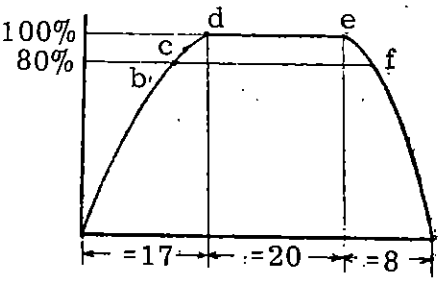
Cause	Remedy	Confirmation
	1. Each EV under: Increase the filter. 2. Each EV over: Decrease the filter.  	

10. Synchro defective (not flash)

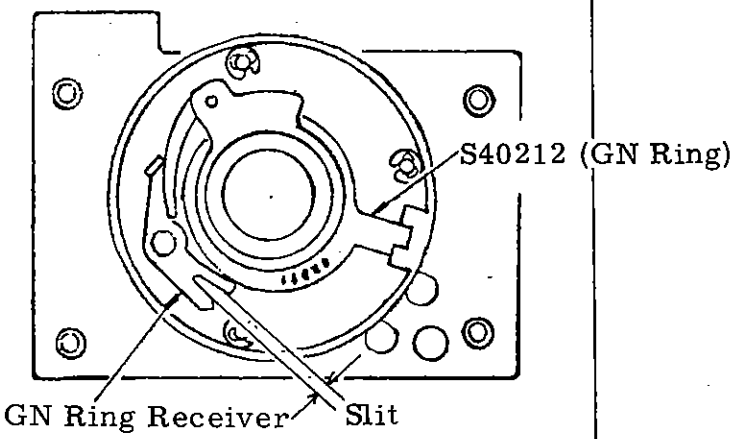
Cause	Remedy	Confirmation
1) Contact failure of SY contact piece	1. If the contact points are not closed even when the shutter blade is fully opened. correct the leaf spring with a pincette. See the step 11 "Synchro defective (not synchronize)" for the correction procedure. 2. Fouled contact surface Wipe the contact surface of the contact piece and the leaf spring with mixed solution, and readjust the leaf spring.	1. Contact Resistance Conductive at DC 3V 2. Contact Efficiency More than 60% at 2.5ms, More than 80% at 6ms 3. Insulation Resistance More than 30MΩ at 500V.

Cause	Remedy	Confirmation
2) Cord breakage	1. Defective grounding Should be surely grounded to the S base plate. 2. Each lead wire should be surely soldered. See the disassembly drawing Fig. 4/4.	

11. Synchro defective (not synchronize)

Cause	Remedy	Confirmation
1) Improper adjustment of SY contact piece	With the shutter removed, adjust the SY contact piece as follow. Correct the leaf spring with a pincette so that the contact piece is contacted to the leaf spring when the aperture is more than 80% (approx. 8.5ϕ) of the maximum aperture (10.61ϕ).  	 bc > 0 ms

12. Synchro defective (over or under aperture opening)

Cause	Remedy	Confirmation
1) Improper adjustment of GN ring receiver	Adjust the slitting of the GN ring receiver contacting to the cam of the GN ring (S40212). Enlarging the slitting: Iris diaphragm narrowed Narrowing the slitting: Iris diaphragm enlarged  	See the Item 6- VII-X30 - X33.

V. Others

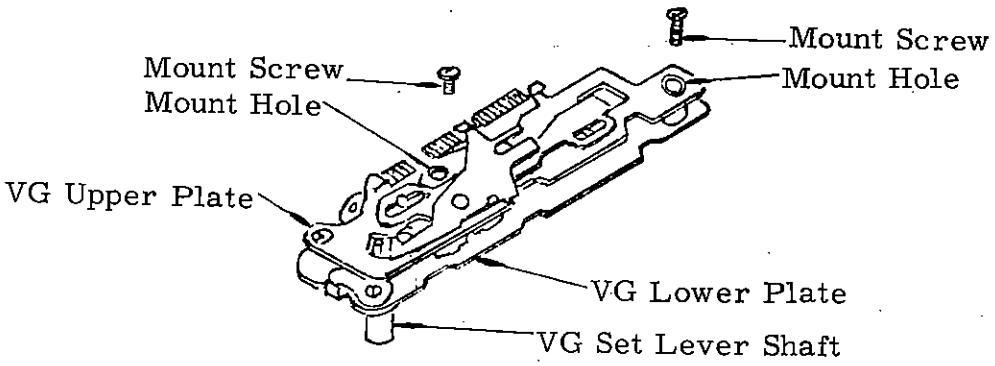
1. Self-timer (VG) mounting procedure and Checking

When the self-timer is abnormally stopped or any other trouble occurs, replace the whole VG unit.

a. VG mounting procedure

1) Fit the VG set lever shaft into the receiving hole of the base plate, and fit the two holes of the VG unit onto the tip of the posts of the base plate and engage the two units. In this case, take care not to touch the S_3 and S_6 leaf springs.

2) Fix the VG unit on the base plate with the VG mounting screws (two pieces).



b. Checking of VG

1) Connect the power of DC 2.65V to the shutter, and set the self-timer to the predetermined angle.

2) Release the shutter by means of the release plate, and check the delay time. ($10.0^{\pm 3}$ sec.)

3) Check the release plate holding time. (1.0 sec. or more)

4) Check the release position. ($6.0^{\pm 03}$ sec. from the stop position)

5) Check the timing of the release lock and the self-release.
(The release lock is earlier than the release timing.)

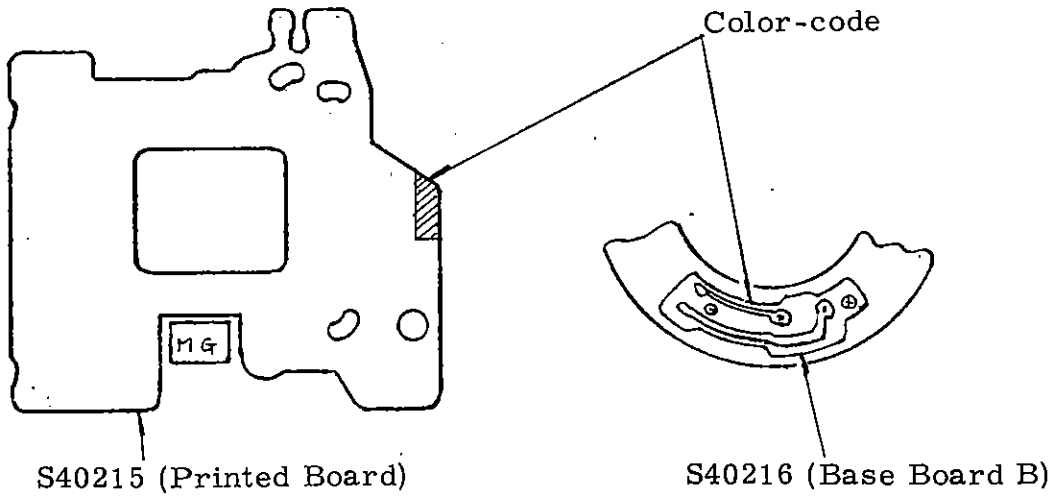
2. Combination of CdS cells and electric parts

a. Table of Electric Parts Combination

Class	Color-code	CdS Resistance (BV 8) (KΩ)	C (uF)	R_1 (Ω)	R_2 (KΩ)	R_5 (KΩ)	V_R (KΩ)	Disassembly Drawing Mark
1	Green	37.5-41.1-49.3	15	30	30-51	43	5	G
2	Red	22.4-28.0-37.4	22	"	"	30	"	R
3	Blue	14.9-18.7-22.3	33	"	"	20	"	B

b. Position of color-code

The color-code is provided at the lower illustrated position of S40215 (printed board) and S40216 (base board B). In the replacement, be sure to use the one which has the same color-code.



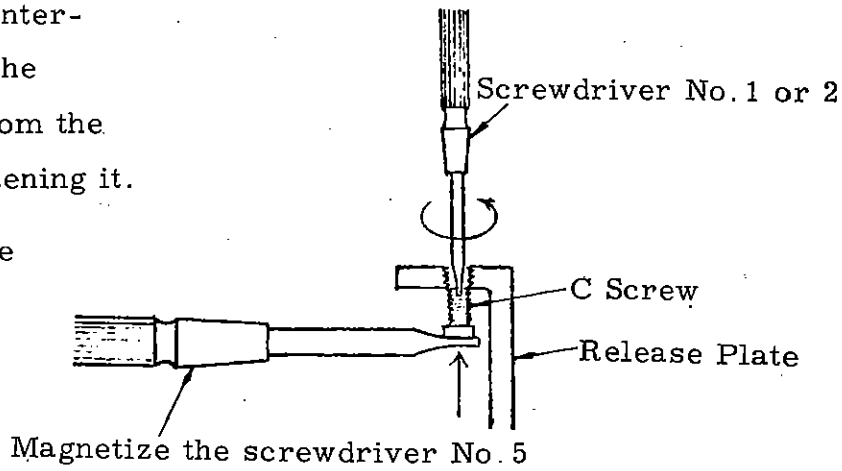
3. Positioning of CC1045 (distance ring)

Screw CC1046 (mount ring) into CC1046 (distance ring) fully, and return it to the distance scale position.

4. Mounting procedure of CC1049 (C screw)

1) Magnetize the screwdriver No. 5, put the C screw on the screwdriver and apply it to the threaded hole provided on the release plate.
2) Turn the screw in the counter-clockwise direction with the screwdriver No. 1 or 2 from the above of the hole for tightening it.

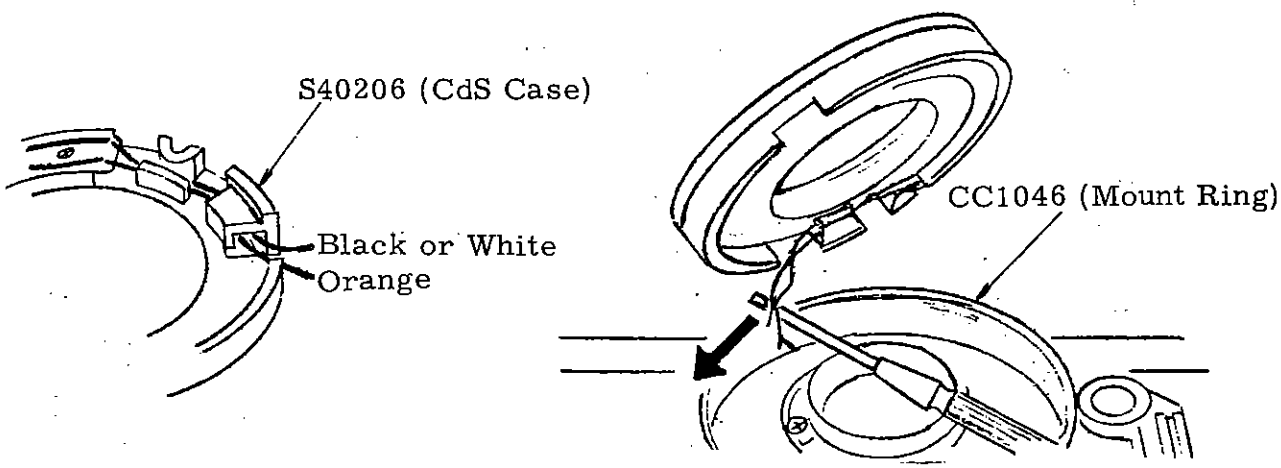
See the Item 6-VII-D4 for the adjustment of the screw.



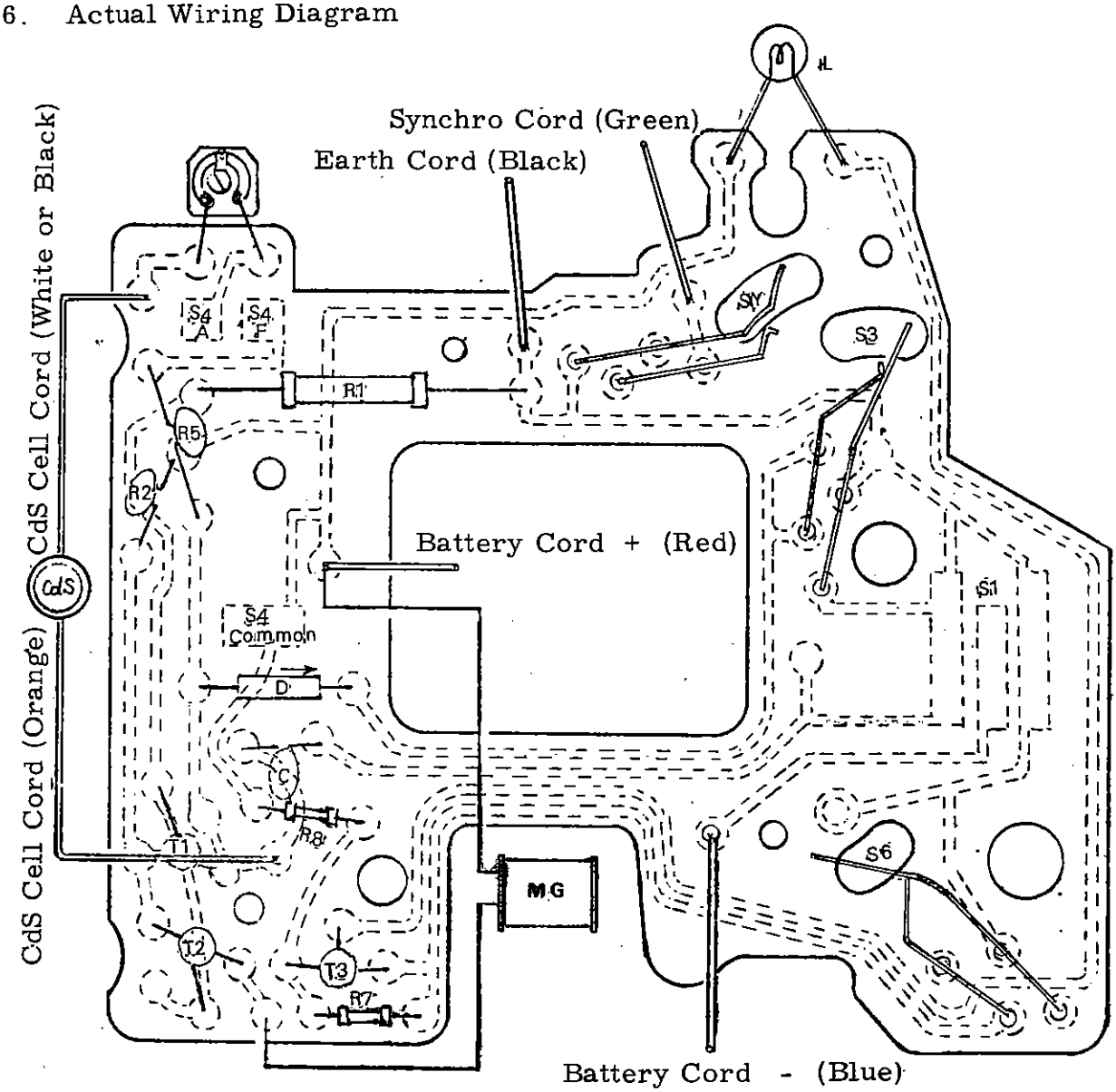
5. Handling of CdS lead wires

If the CdS lead wires are inserted in a wrong manner, the helicoid may get stuck (at ∞ or closet distance), so handle the lead wires properly as follow.

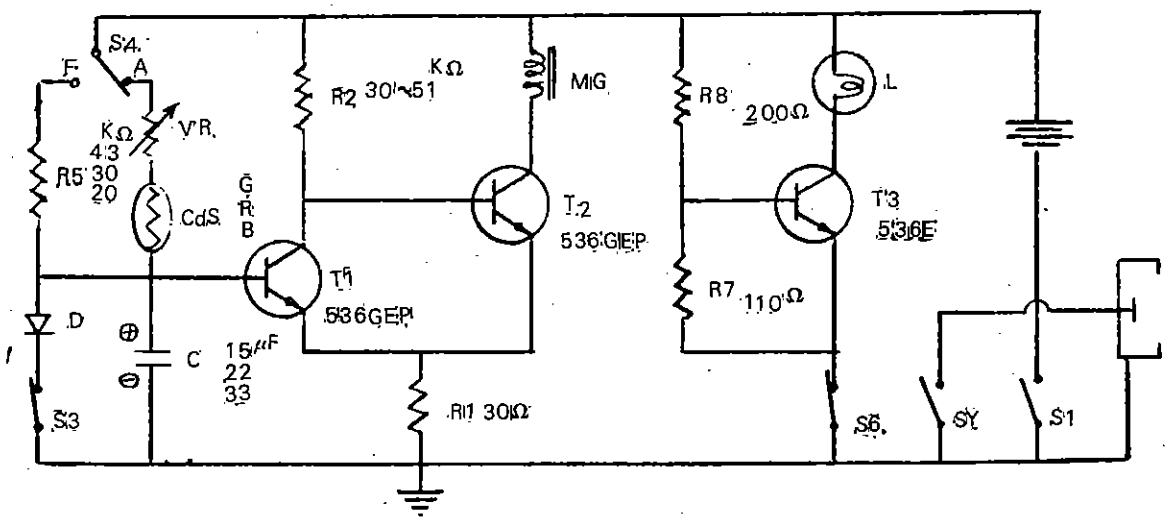
1) Insert the black (or white) lead wire first into the lead wire channel of S40206 (CdS case), and then the orange lead wire.
2) Twist the lead wires two times, and house them in CC1046 (mount ring) while folding them into two using a screwdriver as illustrated below.



6. Actual Wiring Diagram



7. Circuit Diagram



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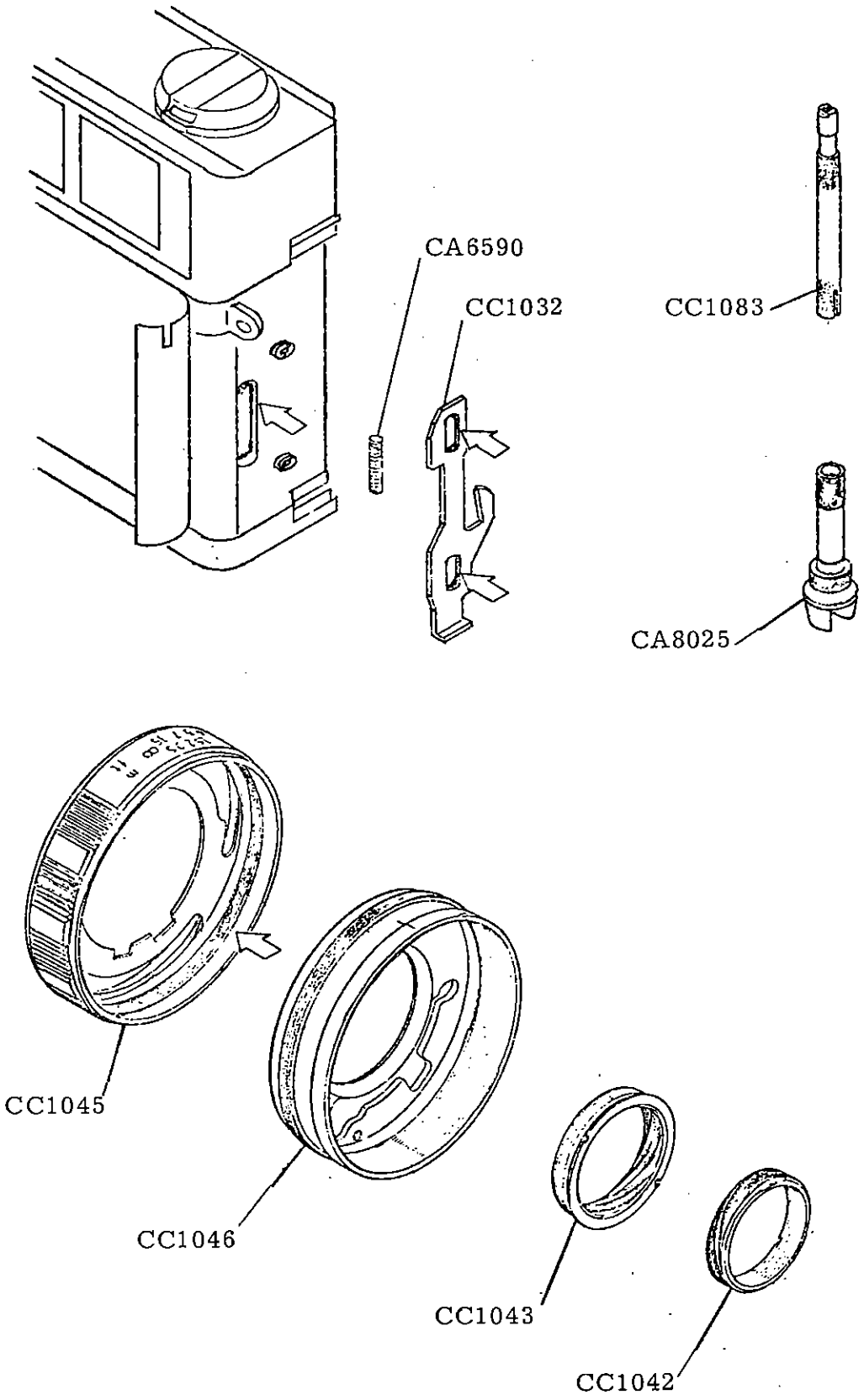
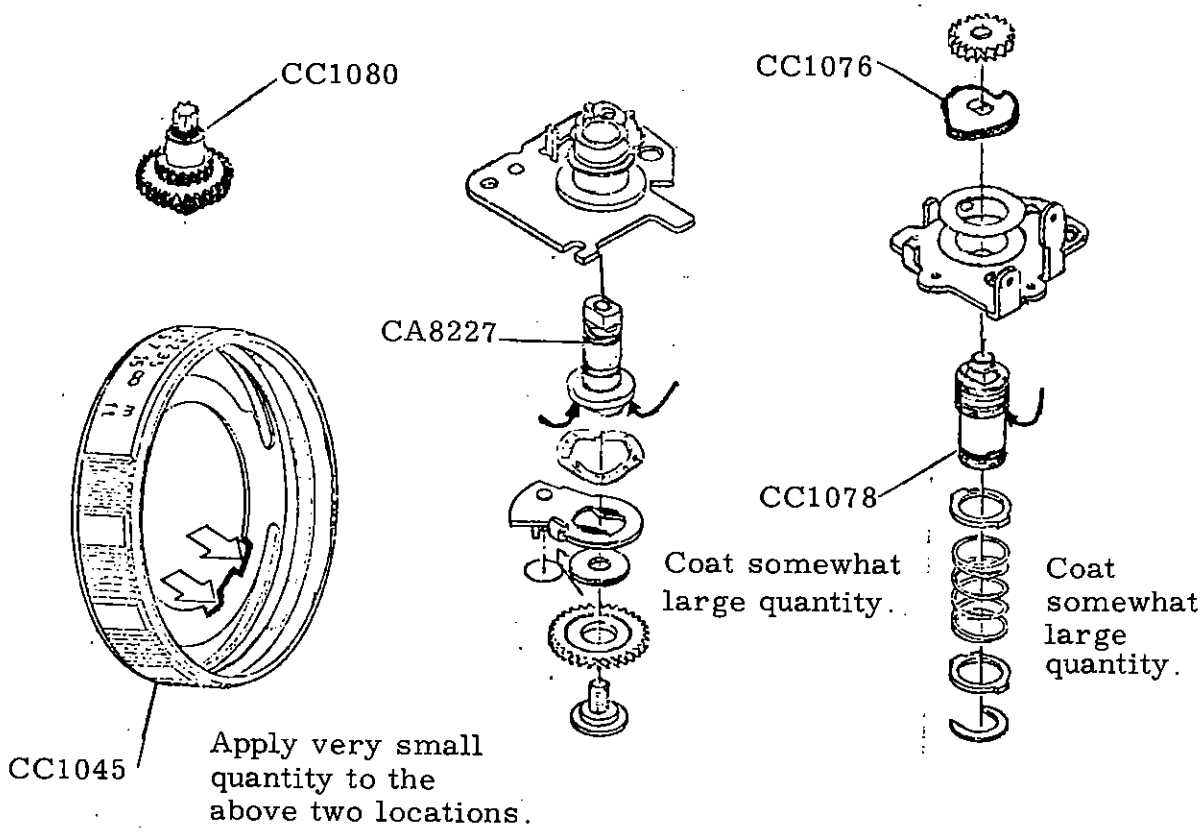
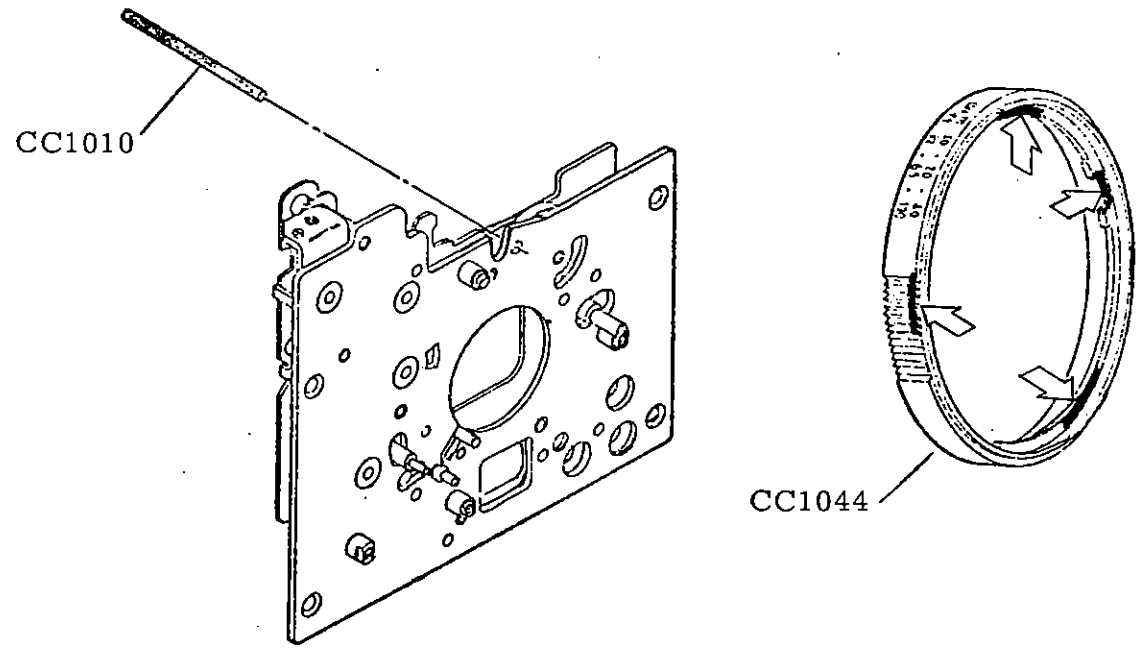
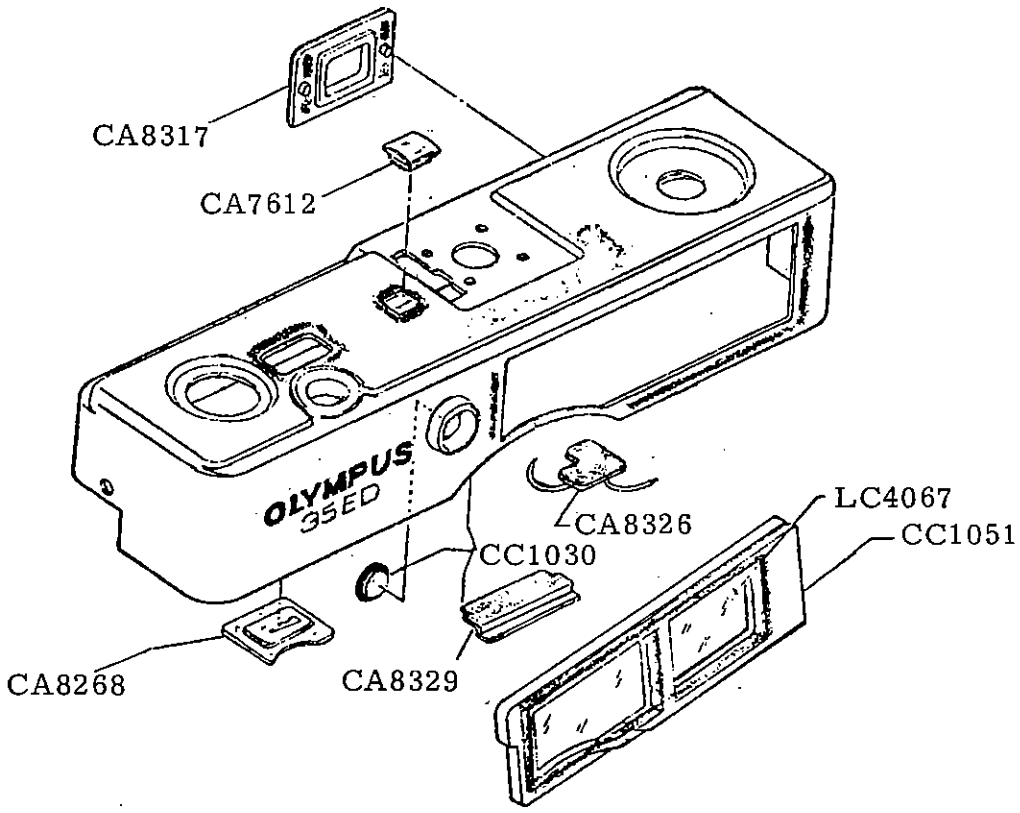


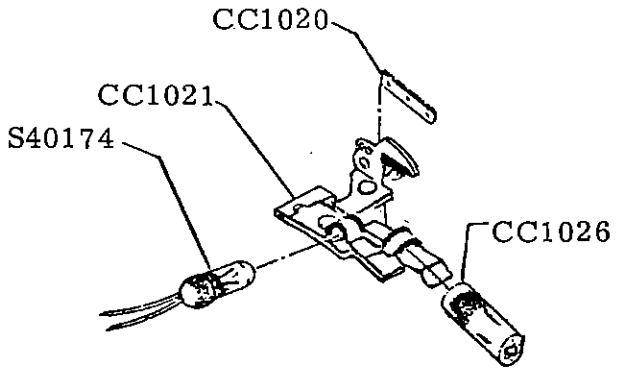
ROCOL PASTE

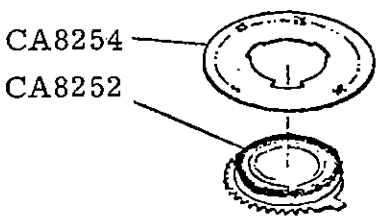

CC1080
CA8227
CC1076
CC1078
Coat somewhat large quantity.
Coat somewhat large quantity.
CC1045
Apply very small quantity to the above two locations.


CC1010
CC1044

EVERSTICK

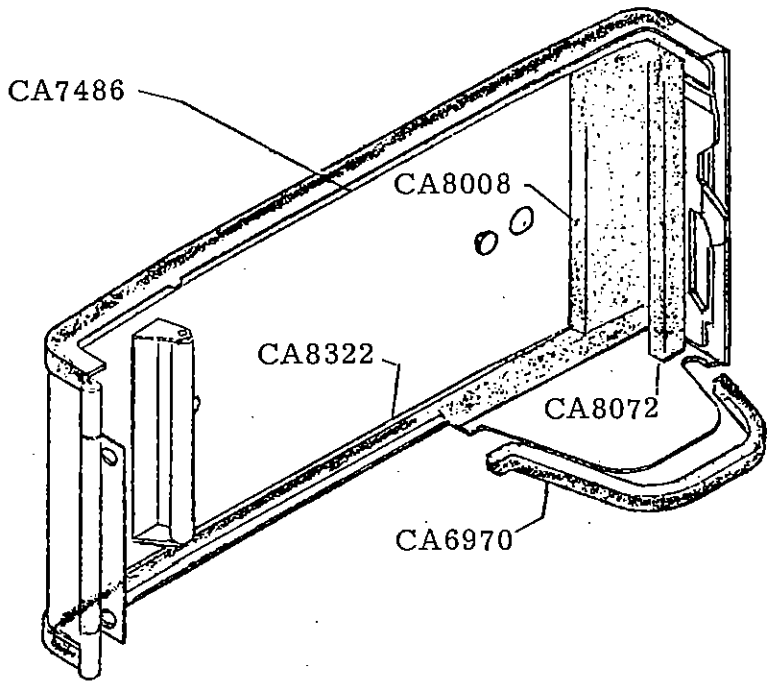


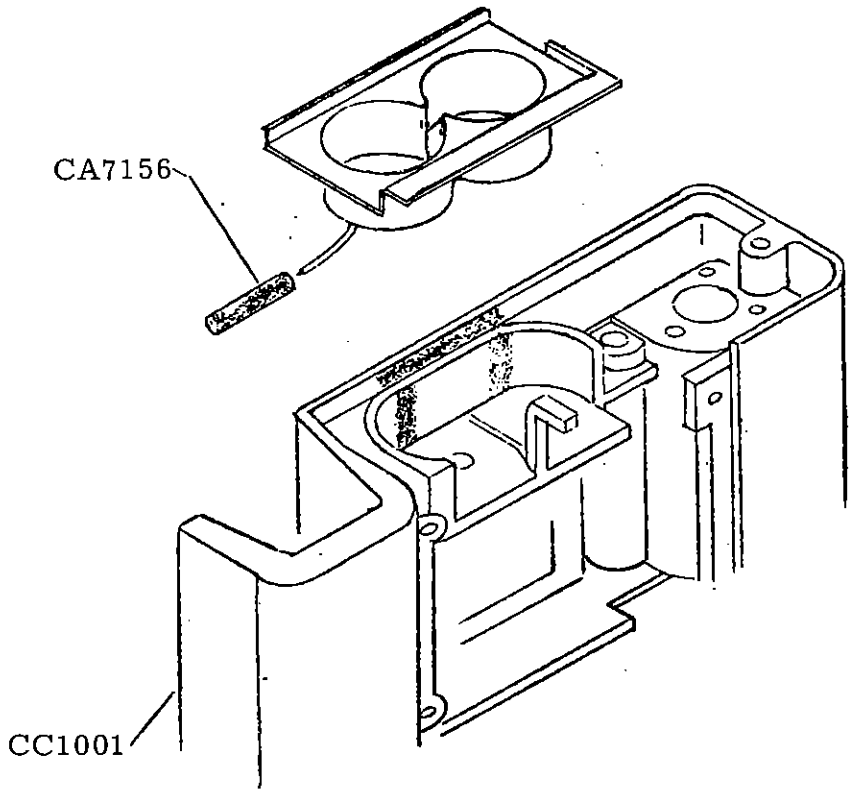


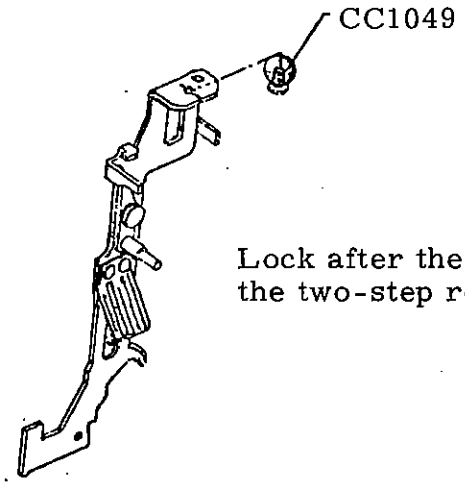


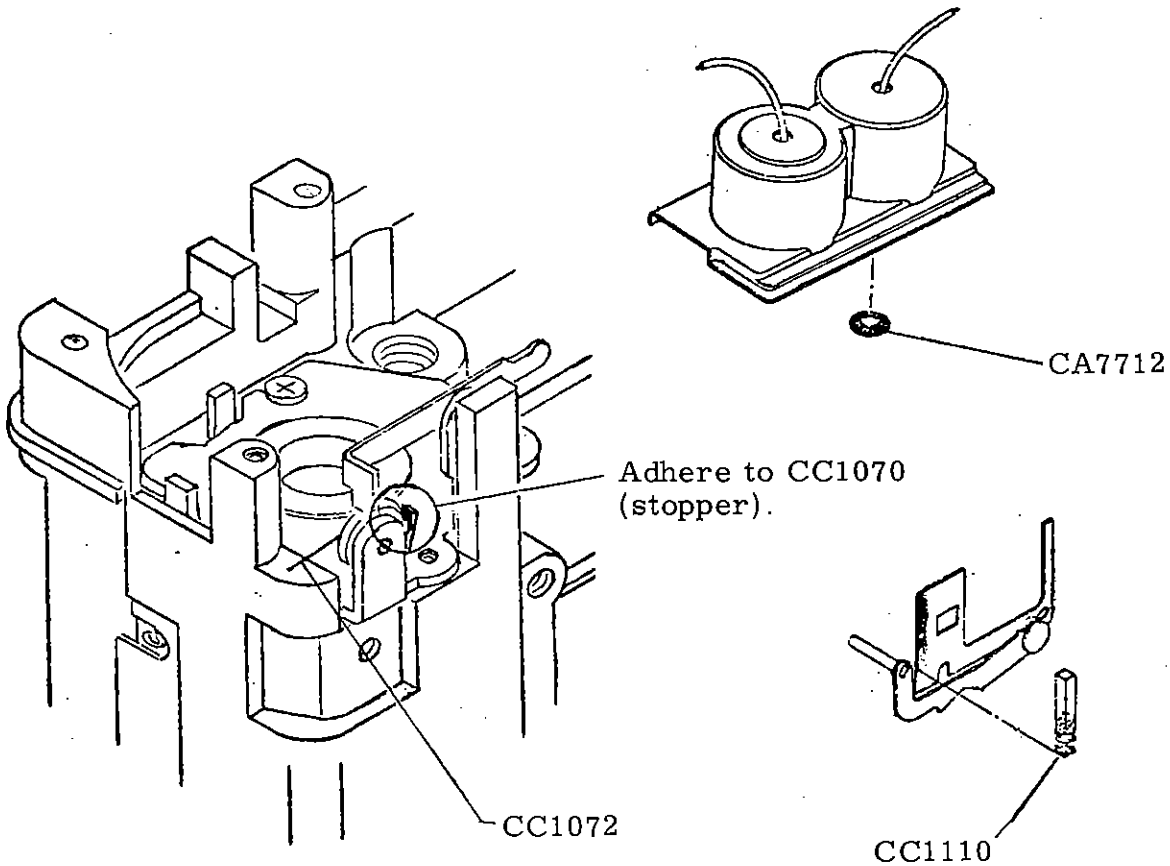
Apply to the periphery as far as possible taking care not to touch the Everstick to the C ring.

EVERSTICK

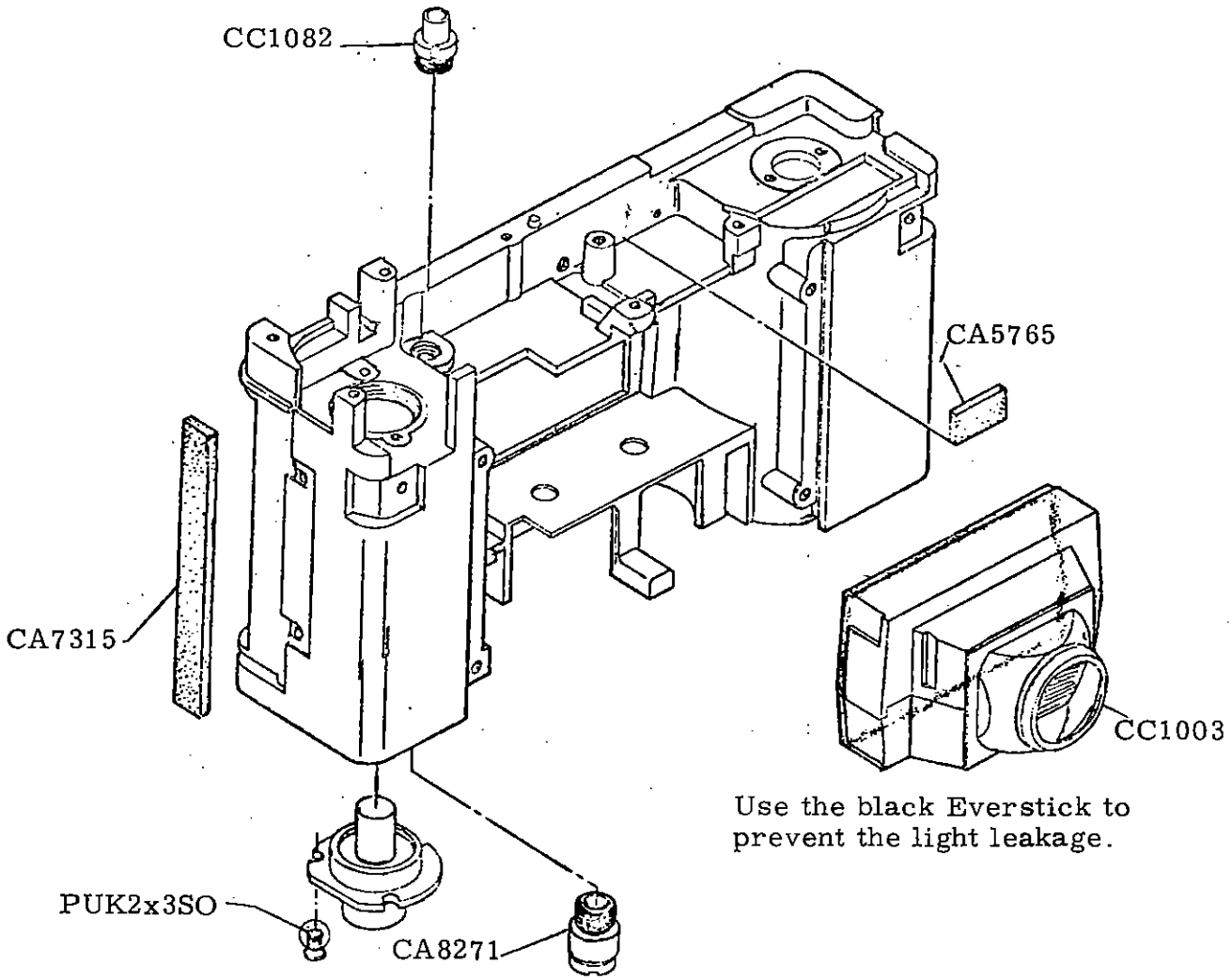




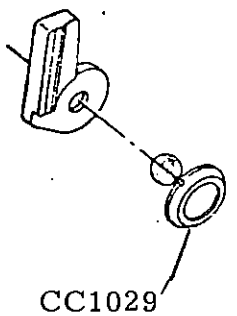

CC1049
Lock after the adjustment of
the two-step release.

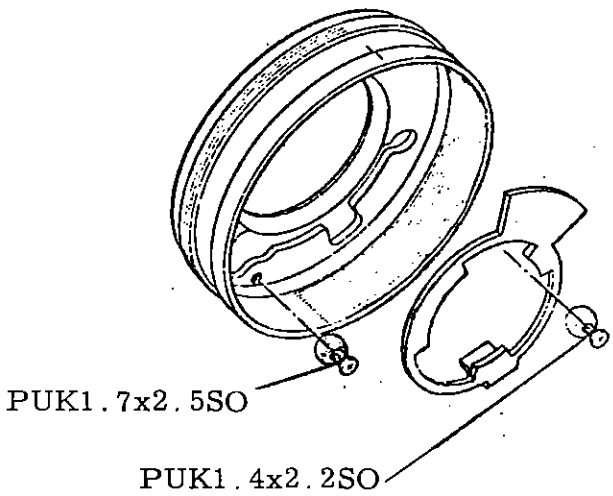

CA7712
Adhere to CC1070
(stopper).
CC1072
CC1110

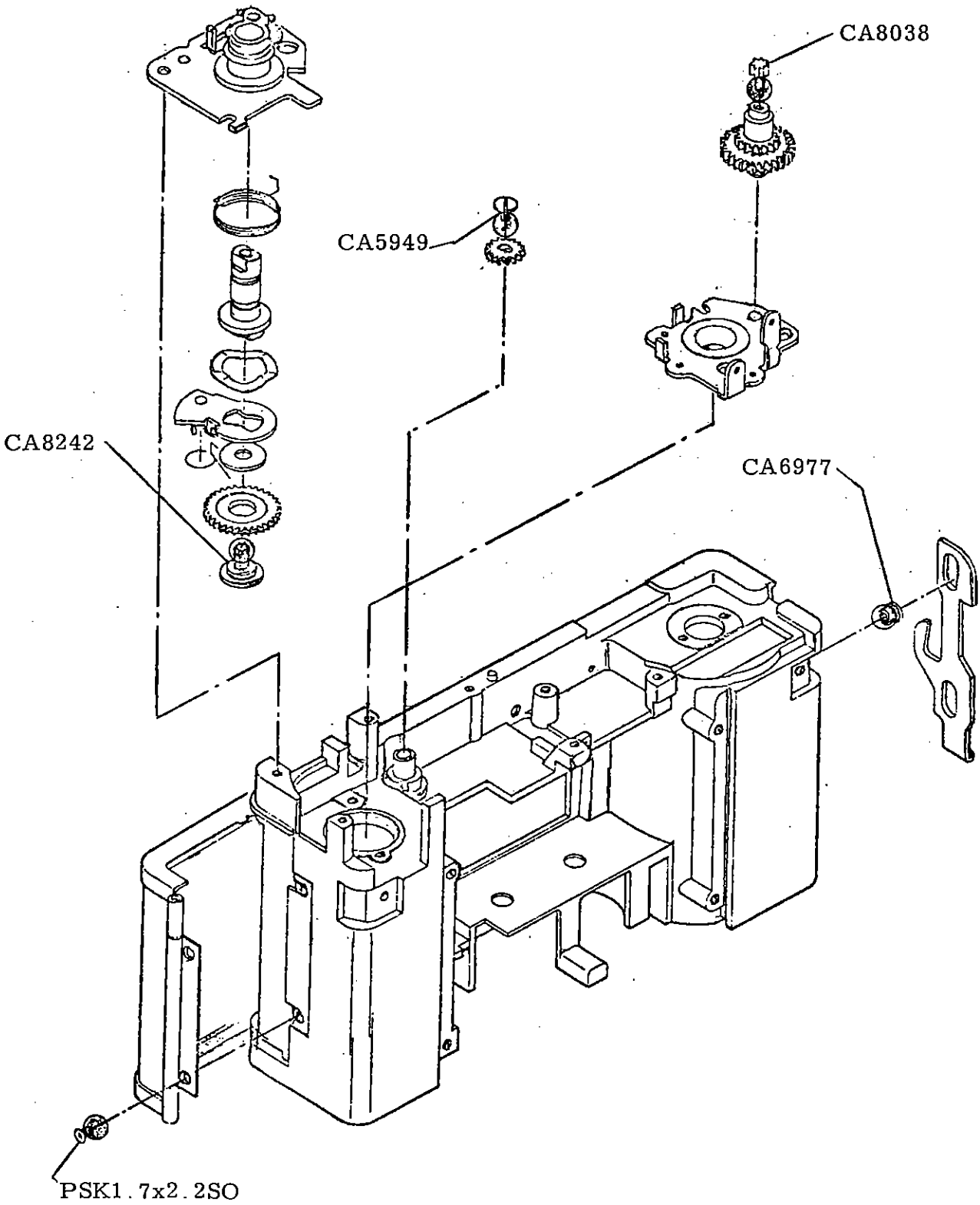
EVERSTICK

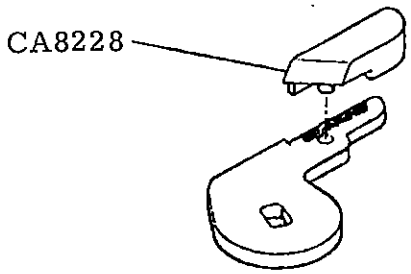


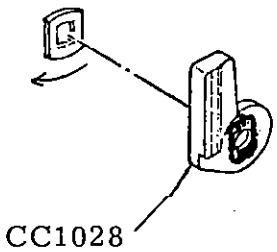
Use the black Everstick to prevent the light leakage.



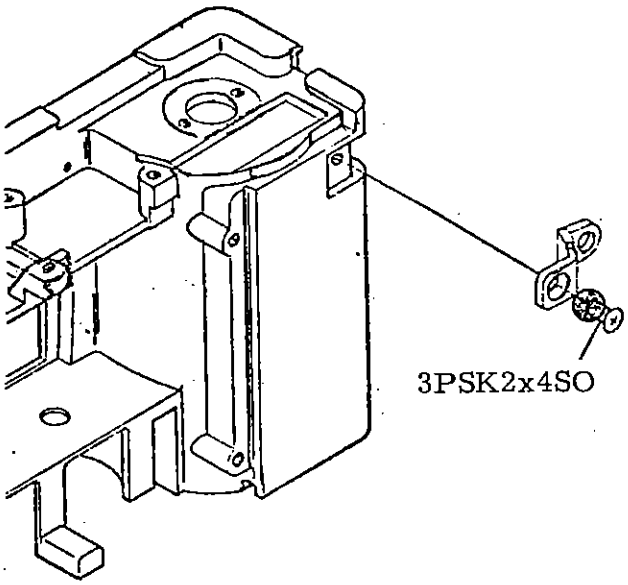



CA8038
CA5949
CA8242
CA6977
PSK1.7x2.2SO





Stick with the backlash portion put aside in the arrow mark direction.



Bond the clutch plate with the beveled side up.