E

OLYMPUS OM-SYSTEM WINDER 2

REPAIR MANUAL

INDEX

OLYMPUS OPTICAL CO., LTD. TOKYO, JAPAN

PARTS LIST

AND

EXPLODED PARTS DIAGRAM

EXPLANATION OF MARKS

(1) Indicates parts that are supplied both as a single piece and as an assembled unit. In the latter case, the single part is incorporated in the assembled unit indicated with the mark (1).
Exception: Parts in the mark ( ) are not supplied in single pieces.
(Parts that are supplied only in single pieces are not indicated with any mark. While parts that are supplied as an assembled unit are prefixed with "Z" or "U".)

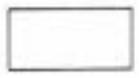
] Several types of parts for the same position are available, from which most suitable one is to be selected.

* 3 Parts differ according to different models and types. This mark is used to indicate various combinations in a picture.

Left-handed screw. The mate screw hole is not marked particularly.

Indicates parts that should not be touched directly by bare hand because special surface treatment is applied. Wear fingerstalls or use tweezers.

★ Not supplied as a repair part.



Used exclusively for black finish models.

——— Indicates original parts. New, modified ones are not indicated with this mark. Both original and modified parts are supplied.

No more available parts due to design change or out of stock.

A correction mark. Parts with this mark are not available.

〈 2 〉 Modified parts that are unable to show in the technical manual. The figure indicates reference page number.

2-A3 This notation is entered in the "Remarks" column of parts list and indicates parts position in the technical manual.

2-A3 → Parts position. The technical manual is divided into 16 equal sections. Each section can be identified by using A, B, C and D from left to right and 1, 2, 3 and 4 from top to bottom.

→ Indicates page number in which the technical manual appears. However, 1/1 (page 1 of 1) is not indicated particularly.

OLYMPUS OM-SYSTEM WINDER 2

PARTS LIST

PARTS NO.	NAME OF PARTS	NOTE	(Q'ty used/ per unit)
CA615500	T SPRING	1 - C4	(1)
CA796300	E RING	1 - A1	(2)
CA807600	TUBE		(2)
CA872900	R KNOB SCREW	1 - C4	(1)
CA880400	E RING	1 - C3	(1)
CE001900	O RING 44	1 - C2	(1)
CE002600	ECCENTRIC COLLAR	1 - B3	(1)
CE002700	MAIN GEAR	1 - B3	(1)
CE002800	CLAW SHAFT	1 - B3	(1)
CE003100	CLAW FASTENER	1 - C2	(1)
CE003200	CLAW	1 - C2	(1)
CE003300	CLAW SPRING	1 - C3	(1)
CE004400	1 GEAR SPRING	1 - C3	(1)
CE004800	STOP SPRING	1 - C3	(1)
CE005800	CONNECTING SPRING	1 - C3	(1)
CE008500	CONTACT SPRING	1 - A1	(1)
CE008700	CONTACT PIN	1 - A1	(2)
CE009700	CUSHION	1 - C1	(2)
CE009900	COVER CASE	1 - C2	(1)
CE135900	J NUT	1 - D1	(1)
CE140600	1 GEAR	1 - C2	(1)
CE142400	COVERING PLATE	1 - B4	(1)
CE142700	SPRING FASTENER	2 - B4	(1)
CE143000	CONTACT 1	2 - D2	(1)
CE143100	CONTACT 2	2 - D2	(1)
CE143200	LOCK KNOB	2 - D3	(1)
CE143500	FASTENING PLATE	2 - D3	(1)
CE143600	LOCK SPRING	2 - D3	(1)
CE143900	DIAL RING	2 - D2	(1)
CE144300	STRAP EYELET	2 - C3	(1)
CE144400	STOPPER	2 - B3	(1)
CE144500	SPRING	1 - B2	(1)
CE144600	STOP SCREW	1 - B2	(1)
CE144700	STOP SCREW KNOB	1 - B2	(1)
CE144800	STOP SCREW WASHER	1 - B2	(1)
CE144900	STOPPER	1 - C1	(1)
CE145100	POSITIONING PIN	1 - C2	(1)
CE145300	INSULATING WASHER A	1 - B3	(1)
CE145400	INSULATING WASHER B	1 - B3	(1)
CE145500	SPRING	2 - B4	(1)
CE145600	SPRING	2 - C4	(1)
CE145700	PLATE	2 - B3	(1)
CE146000	BUTTON CASE	1 - D1	(1)
CE146200	SW PLATE	1 - C1	(1)
CE146300	BUTTON	1 - D1	(1)
CE146400	BUTTON SPRING	1 - D1	(1)
CE146500	BUTTON HOLDER	1 - D1	(1)
CE146600	E PLATE	1 - D1	(1)
CE146900	M STOPPER	1 - C2	(2)
CE147000	K INSULATOR	1 - B4	(1)
CE147200	SW DIAL	2 - D3	(1)
CE147300	SW PLATE	2 - D4	(1)
CE147400	SW BASE PLATE	2 - D2	(1)

OLYMPUS OM-SYSTEM WINDER 2

PARTS LIST

PARTS NO.	NAME OF PARTS	NOTE	(Q'ty used/ per unit)
CE147500	SW CONTACT 1	2 - D2	(2)
CE147600	SW CONTACT 2	2 - C2	(2)
CE147700	D. SPRING	2 - D2	(1)
CE148100	SLIDE SPRING	1 - B3	(1)
CE148200	FINGER GRIP	1 - B1	(1)
CE148800	SLIDE PLATE	1 - B3	(1)
CE149100	RELEASE SPRING	1 - C3	(1)
CE149400	CASE	1 - A1	(1)
CE149600	FASTENER	1 - C4, B4	(2)
CE149700	STRAP EYELET		(1)
CE149800	COVER		(1)
ZC122600	CONNECTING GEAR ASS'Y	1 - C3	(1)
ZC123300	25 GEAR ASS'Y	1 - C2	(1)
ZC123400	GEAR COVER ASS'Y	1 - C2	(1)
ZC124200	LOCK PLATE ASS'Y	2 - D3	(1)
ZC124500	HOLDER ASS'Y	2 - B3	(1)
ZC147400	LOWER BASE PLATE ASS'y	1 - C4	(1)
ZC147500	GEAR NO. 2, 3 ASS'Y	1 - C4	(1)
ZC147800	RELEASE LEVER ASS'Y	1 - C3	(1)
ZC184900	RELEASE CAM ASS'Y	1 - C3	(1)
ZC195500	C, BASE PLATE ASS'Y	1 - A2	(1)
ZC197000	UPPER BODY ASS'Y	1 - B1	(1)
ZC197200	LOWER BODY ASS'Y	2 - C3	(1)
ZC197800	CENTER PLATE ASS'Y	1 - C2	(1)
ZC197900	CASE 25 ASS'Y	1 - A2	(1)
ZC198000	GEAR NO. 4 ASS'Y	1 - C4	(1)
ZC198100	GEAR NO. 1 ASS'Y	1 - C3	(1)
ZC198200	S, LEVER ASS'Y	1 - C3	(1)
ZC198300	BASE PLATE ASS'Y		
QS0001	TRANSISTOR	Q102 ~ Q105	(4)
QS0027	TRANSISTOR	Q101	(1)
QS0028	TRANSISTOR	Q106	(1)
QS0029	TRANSISTOR	Q107	(1)
ES1002	DIODE	D101 ~ D112	(12)
KS0001	CAPACITOR	C104	(1)
KS0067	CAPACITOR	C103	(1)
KS0068	CAPACITOR	C105	(1)
KS0069	CAPACITOR	C101, C102	(2)
KS0070	CAPACITOR	C106	(1)
RS0191	RESISTOR	R101, R102	(2)
RS0192	RESISTOR	R103 ~ R106	(4)
RS0193	RESISTOR	R110	(1)
RS0194	RESISTOR	R111	(1)
RS0195	RESISTOR	R112	(1)
RS0196	RESISTOR	R114	(1)
RS0197	RESISTOR	R113	(1)
RS0198	RESISTOR	R107	(1)
RS0199	RESISTOR	R108	(1)
RS0200	RESISTOR	R109	(1)

OLYMPUS OM-SYSTEM WINDER 2

PARTS LIST

PARTS NO.	NAME OF PARTS	NOTE	(Q'ty used/ per unit
DS1003	MOTOR	M101	(1)
DS2002	SWITCH	SW102	(1)
DS5001	SM JACK	J101	(1)
DS5002	POWER CONNECTOR	J102	(1)
PUK1.4 - 605SN	SCREW		
PUK2 x 3SN	SCREW		
PUK2 x 3.5SN	SCREW		
PUK2 x 4.5SN	SCREW		
PUK2 x 4.5SH	SCREW		
PUK2 x 6.5SH	SCREW		
PUK2 - 306SN	SCREW		
3PUK1.4 x 2SN	SCREW		
3PUK1.4 x 3SN	SCREW		
3PUK2 x 3.5SN	SCREW		
3PUK2 x 4SN	SCREW		
PUTB1.7 x 2.5SN	SCREW		
PUTB2 x 2.5SN	SCREW		
PSK1.4 x 3SN	SCREW		
PSK1.4 x 3SH	SCREW		
PSK1.4 x 4SN	SCREW		
PSK2 x 3SN	SCREW		
PSK2 x 3.5SN	SCREW		
PSK2 x 3.5SH	SCREW		
PSTB1.7 x 3SN	SCREW		
PSTB2 x 3.5SH	SCREW		
PSTB2 x 7SH	SCREW		
HU2.7 - 20SN	SCREW		
NW2.1 - 340BO	WASHER		
NW2.2 - 450BO	WASHER		
NW2.6 - 350BO	WASHER		
B1	BALL		
B0.8	BALL		

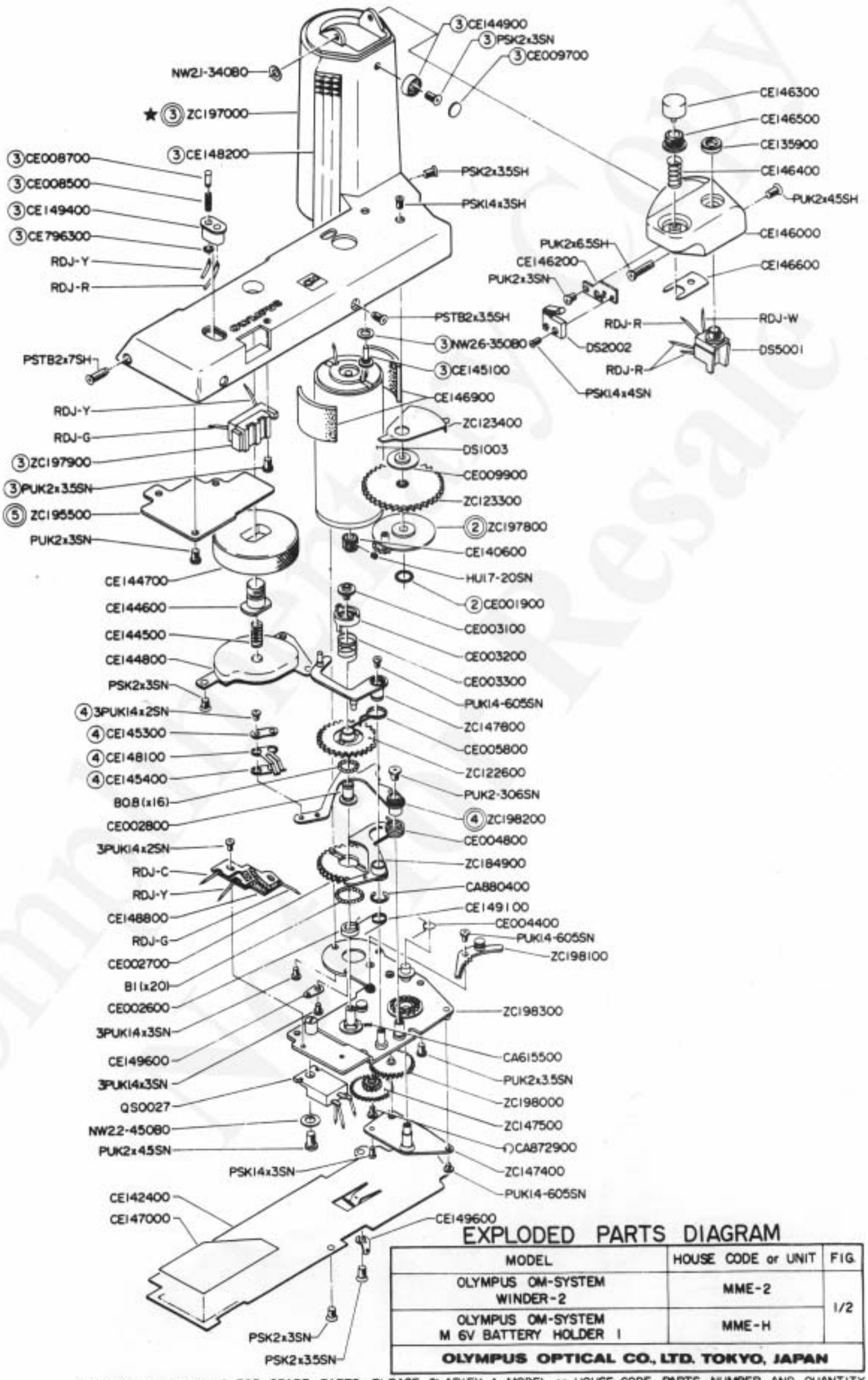
A | B | C | D

1 —

2

3

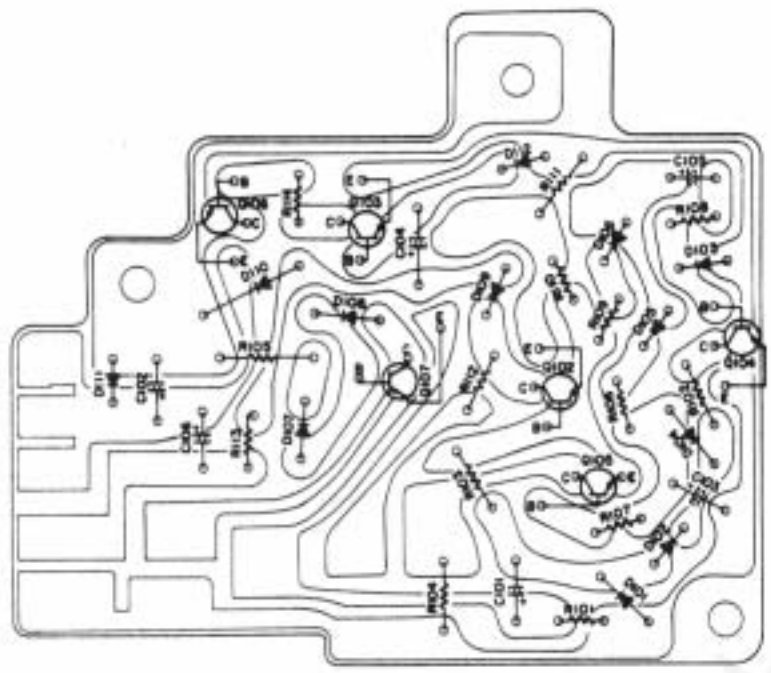
4



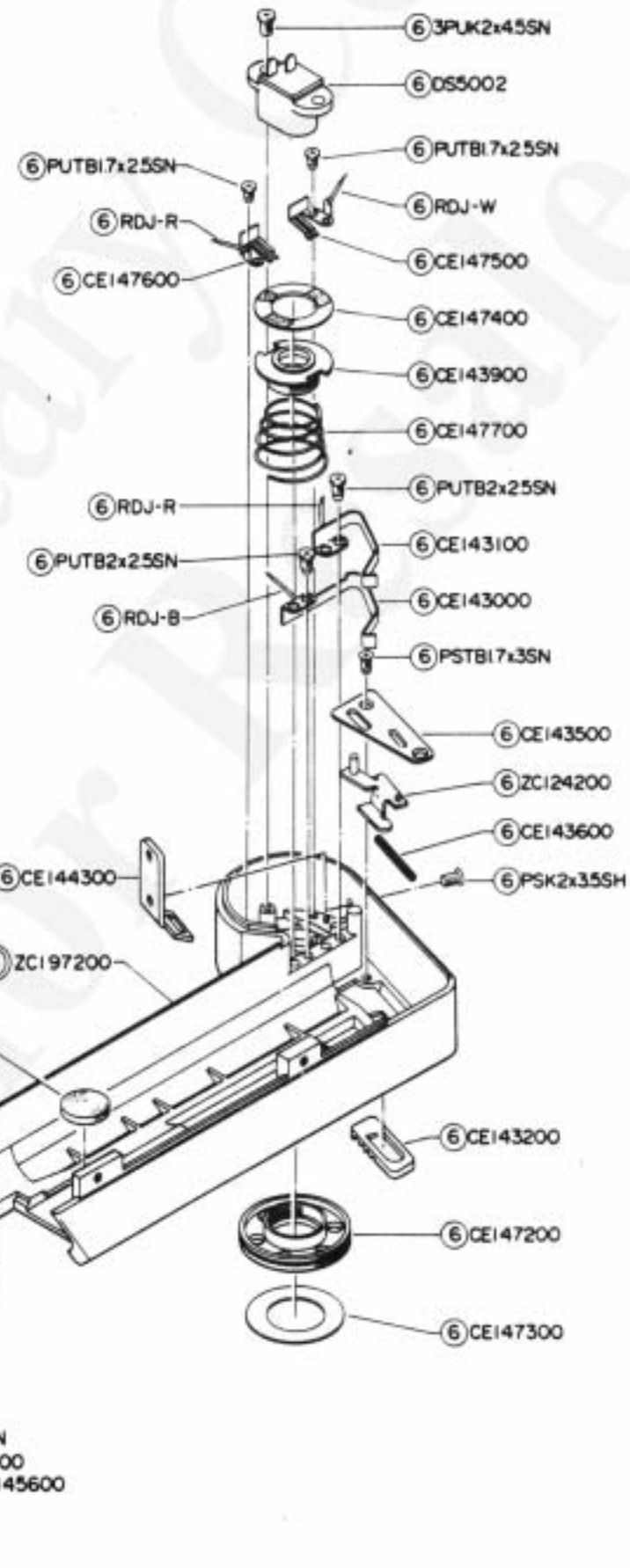
EXPLODED PARTS DIAGRAM

MODEL	HOUSE CODE or UNIT	FIG.
OLYMPUS OM-SYSTEM WINDER-2	MME-2	1/2
OLYMPUS OM-SYSTEM M 6V BATTERY HOLDER I	MME-H	
OLYMPUS OPTICAL CO., LTD. TOKYO, JAPAN		

NOTE : WHEN ORDERING FOR SPARE PARTS, PLEASE CLARIFY A MODEL or HOUSE CODE, PARTS NUMBER AND QUANTITY.



ZC195500 (WINDER-2)

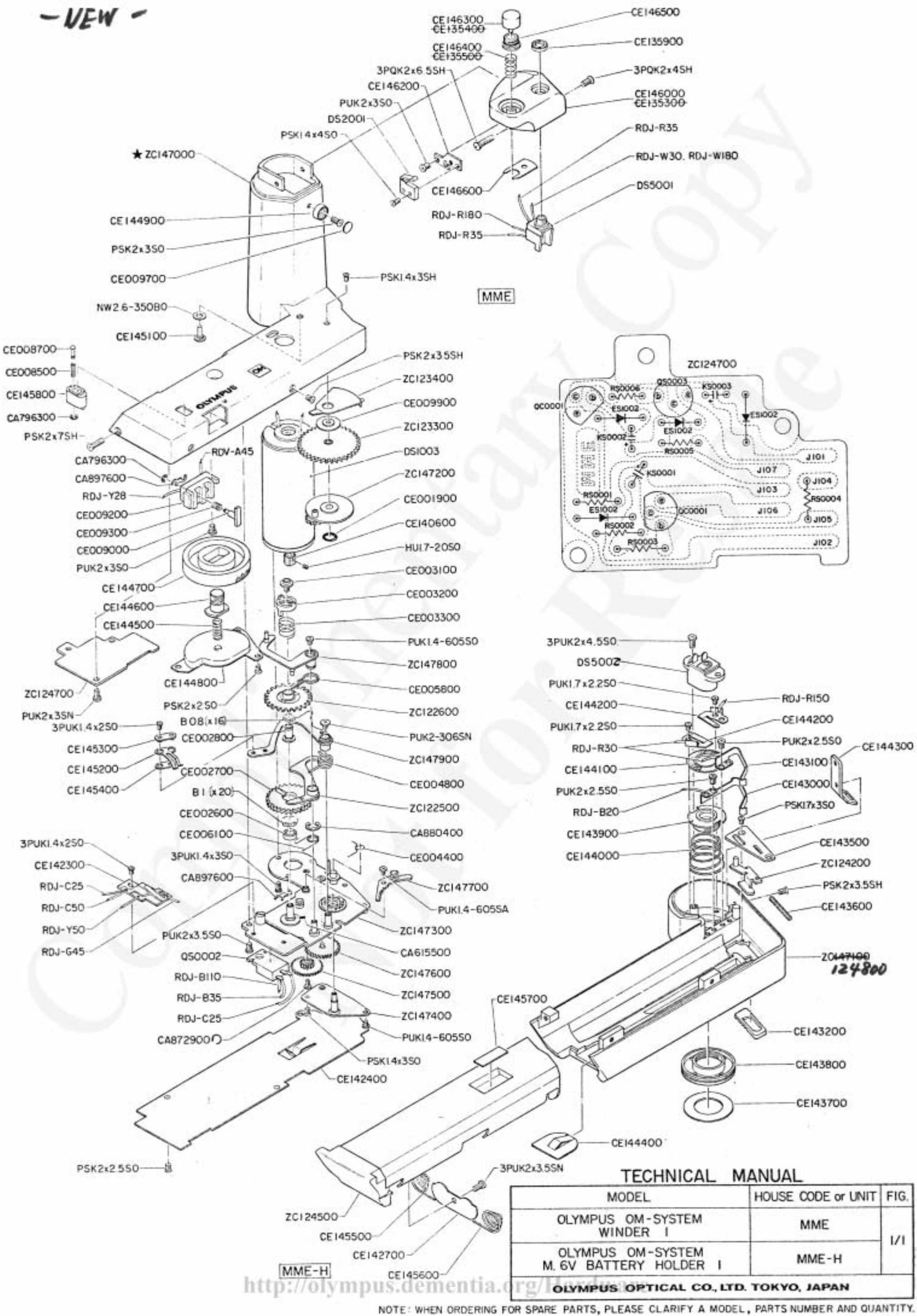


EXPLODED PARTS DIAGRAM

MODEL	HOUSE CODE or UNIT	FIG.
OLYMPUS OM-SYSTEM WINDER-2	MME-2	2/2
OLYMPUS OM-SYSTEM M 6V BATTERY HOLDER I	MME-H	
OLYMPUS OPTICAL CO., LTD. TOKYO, JAPAN		

NOTE : WHEN ORDERING FOR SPARE PARTS, PLEASE CLARIFY A MODEL or HOUSE CODE, PARTS NUMBER AND QUANTITY.

-VIEW-



TECHNICAL MANUAL

MODEL	HOUSE CODE or UNIT	FIG.
OLYMPUS OM-SYSTEM WINDER I	MME	I/I
OLYMPUS OM-SYSTEM M. 6V BATTERY HOLDER I	MME-H	
OLYMPUS OPTICAL CO., LTD. TOKYO, JAPAN		

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

OLYMPUS OM-SYSTEM WINDER 2

PARTS LIST

PARTS NO.	NAME OF PARTS	NOTE	(Q'ty used/ per unit)
CA615500	T SPRING	1 - C4	(1)
CA796300	E RING	1 - A1	(2)
CA807600	TUBE		(2)
CA872900	R KNOB SCREW	1 - C4	(1)
CA880400	E RING	1 - C3	(1)
CE001900	O RING 44	1 - C2	(1)
CE002600	ECCENTRIC COLLAR	1 - B3	(1)
CE002700	MAIN GEAR	1 - B3	(1)
CE002800	CLAW SHAFT	1 - B3	(1)
CE003100	CLAW FASTENER	1 - C2	(1)
CE003200	CLAW	1 - C2	(1)
CE003300	CLAW SPRING	1 - C3	(1)
CE004400	1 GEAR SPRING	1 - C3	(1)
CE004800	STOP SPRING	1 - C3	(1)
CE005800	CONNECTING SPRING	1 - C3	(1)
CE008500	CONTACT SPRING	1 - A1	(1)
CE008700	CONTACT PIN	1 - A1	(2)
CE009700	CUSHION	1 - C1	(2)
CE009900	COVER CASE	1 - C2	(1)
CE135900	J NUT	1 - D1	(1)
CE140600	1 GEAR	1 - C2	(1)
CE142400	COVERING PLATE	1 - B4	(1)
CE142700	SPRING FASTENER	2 - B4	(1)
CE143000	CONTACT 1	2 - D2	(1)
CE143100	CONTACT 2	2 - D2	(1)
CE143200	LOCK KNOB	2 - D3	(1)
CE143500	FASTENING PLATE	2 - D3	(1)
CE143600	LOCK SPRING	2 - D3	(1)
CE143900	DIAL RING	2 - D2	(1)
CE144300	STRAP EYELET	2 - C3	(1)
CE144400	STOPPER	2 - B3	(1)
CE144500	SPRING	1 - B2	(1)
CE144600	STOP SCREW	1 - B2	(1)
CE144700	STOP SCREW KNOB	1 - B2	(1)
CE144800	STOP SCREW WASHER	1 - B2	(1)
CE144900	STOPPER	1 - C1	(1)
CE145100	POSITIONING PIN	1 - C2	(1)
CE145300	INSULATING WASHER A	1 - B3	(1)
CE145400	INSULATING WASHER B	1 - B3	(1)
CE145500	SPRING	2 - B4	(1)
CE145600	SPRING	2 - C4	(1)
CE145700	PLATE	2 - B3	(1)
CE146000	BUTTON CASE	1 - D1	(1)
CE146200	SW PLATE	1 - C1	(1)
CE146300	BUTTON	1 - D1	(1)
CE146400	BUTTON SPRING	1 - D1	(1)
CE146500	BUTTON HOLDER	1 - D1	(1)
CE146600	E PLATE	1 - D1	(1)
CE146900	M STOPPER	1 - C2	(2)
CE147000	K INSULATOR	1 - B4	(1)
CE147200	SW DIAL	2 - D3	(1)
CE147300	SW PLATE	2 - D4	(1)
CE147400	SW BASE PLATE	2 - D2	(1)

OLYMPUS OM-SYSTEM WINDER 2

PARTS LIST

PARTS NO.	NAME OF PARTS	NOTE	(Q'ty used/ per unit)
CE147500	SW CONTACT 1	2 - D2	(2)
CE147600	SW CONTACT 2	2 - C2	(2)
CE147700	D. SPRING	2 - D2	(1)
CE148100	SLIDE SPRING	1 - B3	(1)
CE148200	FINGER GRIP	1 - B1	(1)
CE148800	SLIDE PLATE	1 - B3	(1)
CE149100	RELEASE SPRING	1 - C3	(1)
CE149400	CASE	1 - A1	(1)
CE149600	FASTENER	1 - C4, B4	(2)
CE149700	STRAP EYELET		(1)
CE149800	COVER		(1)
ZC122600	CONNECTING GEAR ASS'Y	1 - C3	(1)
ZC123300	25 GEAR ASS'Y	1 - C2	(1)
ZC123400	GEAR COVER ASS'Y	1 - C2	(1)
ZC124200	LOCK PLATE ASS'Y	2 - D3	(1)
ZC124500	HOLDER ASS'Y	2 - B3	(1)
ZC147400	LOWER BASE PLATE ASS'y	1 - C4	(1)
ZC147500	GEAR NO. 2, 3 ASS'Y	1 - C4	(1)
ZC147800	RELEASE LEVER ASS'Y	1 - C3	(1)
ZC184900	RELEASE CAM ASS'Y	1 - C3	(1)
ZC195500	C, BASE PLATE ASS'Y	1 - A2	(1)
ZC197000	UPPER BODY ASS'Y	1 - B1	(1)
ZC197200	LOWER BODY ASS'Y	2 - C3	(1)
ZC197800	CENTER PLATE ASS'Y	1 - C2	(1)
ZC197900	CASE 25 ASS'Y	1 - A2	(1)
ZC198000	GEAR NO. 4 ASS'Y	1 - C4	(1)
ZC198100	GEAR NO. 1 ASS'Y	1 - C3	(1)
ZC198200	S, LEVER ASS'Y	1 - C3	(1)
ZC198300	BASE PLATE ASS'Y		
QS0001	TRANSISTOR	Q102 ~ Q105	(4)
QS0027	TRANSISTOR	Q101	(1)
QS0028	TRANSISTOR	Q106	(1)
QS0029	TRANSISTOR	Q107	(1)
ES1002	DIODE	D101 ~ D112	(12)
KS0001	CAPACITOR	C104	(1)
KS0067	CAPACITOR	C103	(1)
KS0068	CAPACITOR	C105	(1)
KS0069	CAPACITOR	C101, C102	(2)
KS0070	CAPACITOR	C106	(1)
RS0191	RESISTOR	R101, R102	(2)
RS0192	RESISTOR	R103 ~ R106	(4)
RS0193	RESISTOR	R110	(1)
RS0194	RESISTOR	R111	(1)
RS0195	RESISTOR	R112	(1)
RS0196	RESISTOR	R114	(1)
RS0197	RESISTOR	R113	(1)
RS0198	RESISTOR	R107	(1)
RS0199	RESISTOR	R108	(1)
RS0200	RESISTOR	R109	(1)

OLYMPUS OM-SYSTEM WINDER 2

PARTS LIST

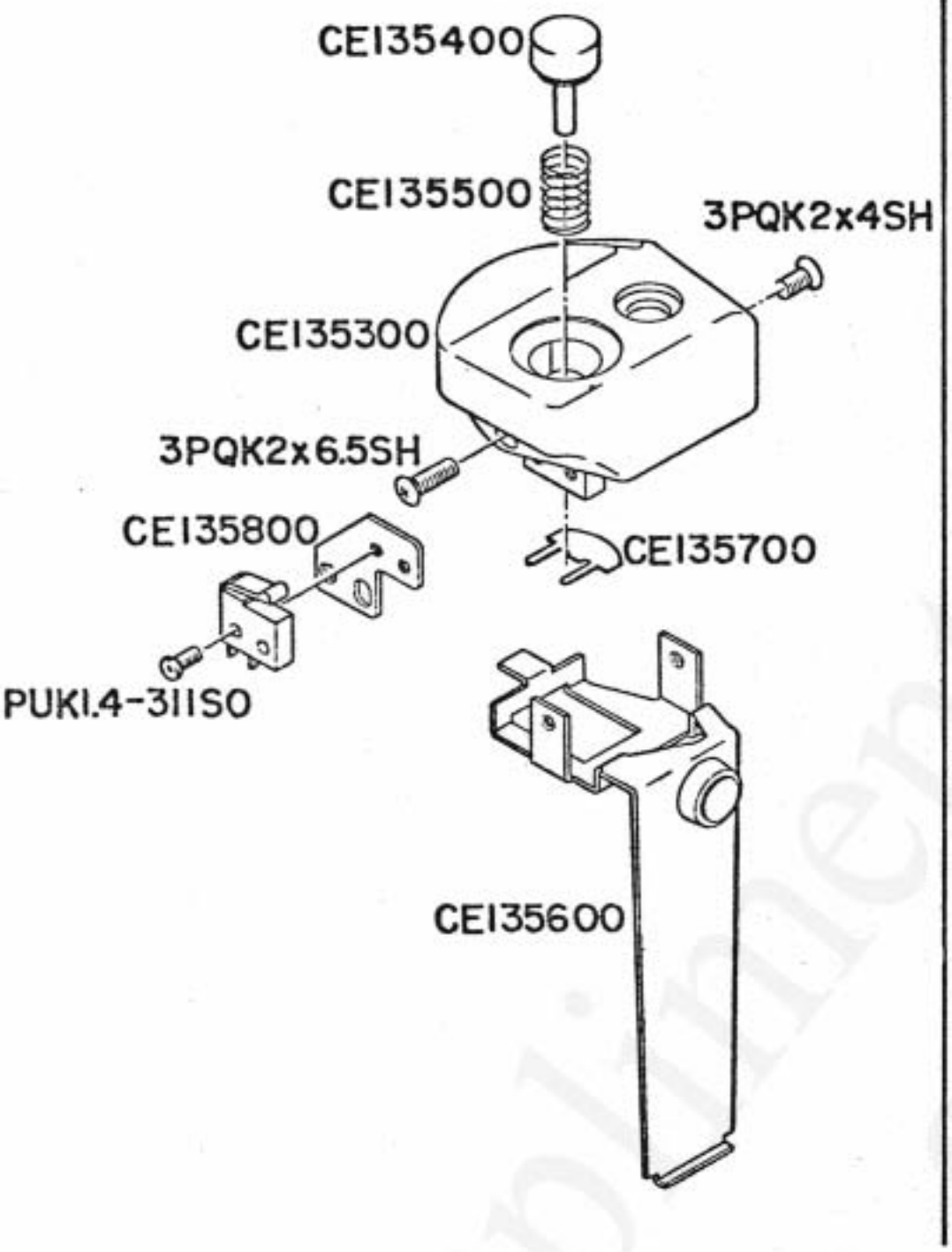
PARTS NO.	NAME OF PARTS	NOTE	(Q'ty used/ per unit
DS1003	MOTOR	M101	(1)
DS2002	SWITCH	SW102	(1)
DS5001	SM JACK	J101	(1)
DS5002	POWER CONNECTOR	J102	(1)
PUK1.4 - 605SN	SCREW		
PUK2 x 3SN	SCREW		
PUK2 x 3.5SN	SCREW		
PUK2 x 4.5SN	SCREW		
PUK2 x 4.5SH	SCREW		
PUK2 x 6.5SH	SCREW		
PUK2 - 306SN	SCREW		
3PUK1.4 x 2SN	SCREW		
3PUK1.4 x 3SN	SCREW		
3PUK2 x 3.5SN	SCREW		
3PUK2 x 4SN	SCREW		
PUTB1.7 x 2.5SN	SCREW		
PUTB2 x 2.5SN	SCREW		
PSK1.4 x 3SN	SCREW		
PSK1.4 x 3SH	SCREW		
PSK1.4 x 4SN	SCREW		
PSK2 x 3SN	SCREW		
PSK2 x 3.5SN	SCREW		
PSK2 x 3.5SH	SCREW		
PSTB1.7 x 3SN	SCREW		
PSTB2 x 3.5SH	SCREW		
PSTB2 x 7SH	SCREW		
HU2.7 - 20SN	SCREW		
NW2.1 - 340BO	WASHER		
NW2.2 - 450BO	WASHER		
NW2.6 - 350BO	WASHER		
B1	BALL		
B0.8	BALL		

MMS(N) 変更部品表

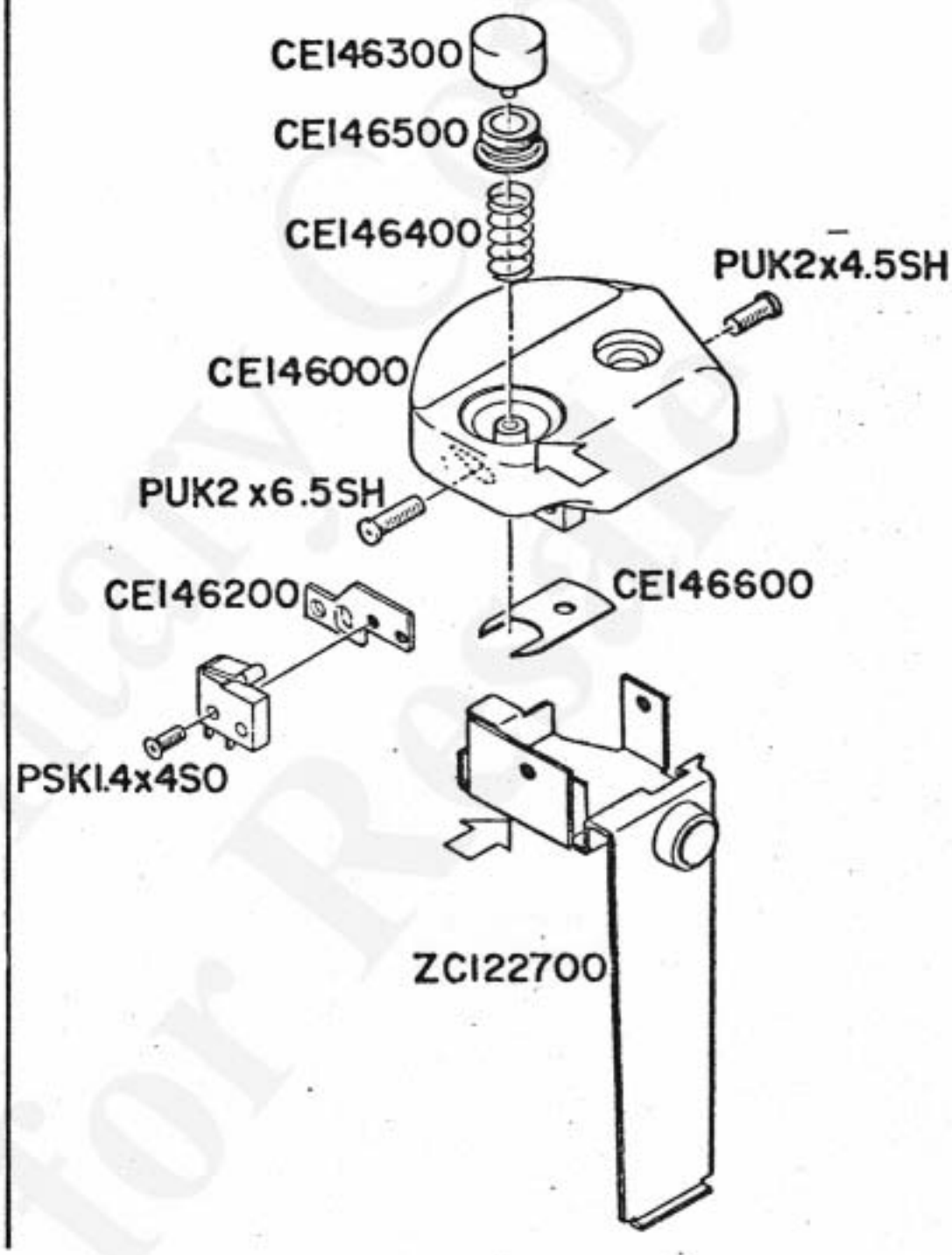
IMPROVED PARTS TABLE

〈1〉

OLD



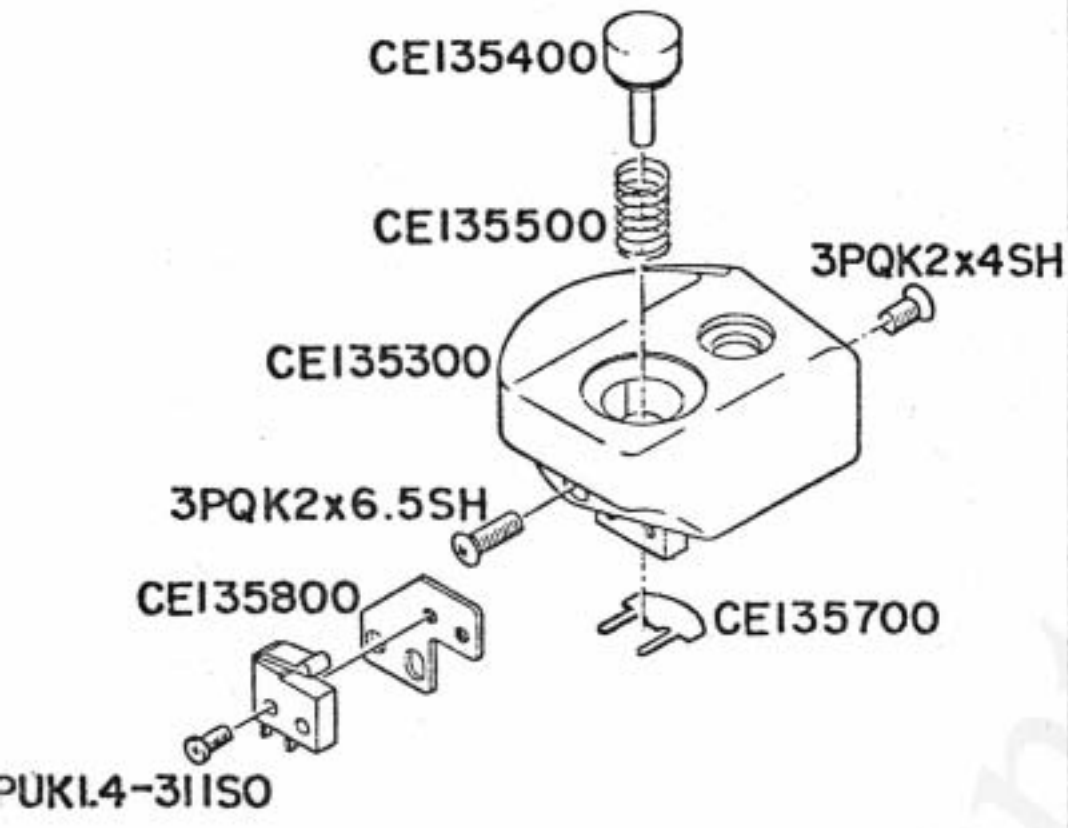
NEW



MME　　変更部品表　　IMPROVED PARTS TABLE

〈1〉

OLD



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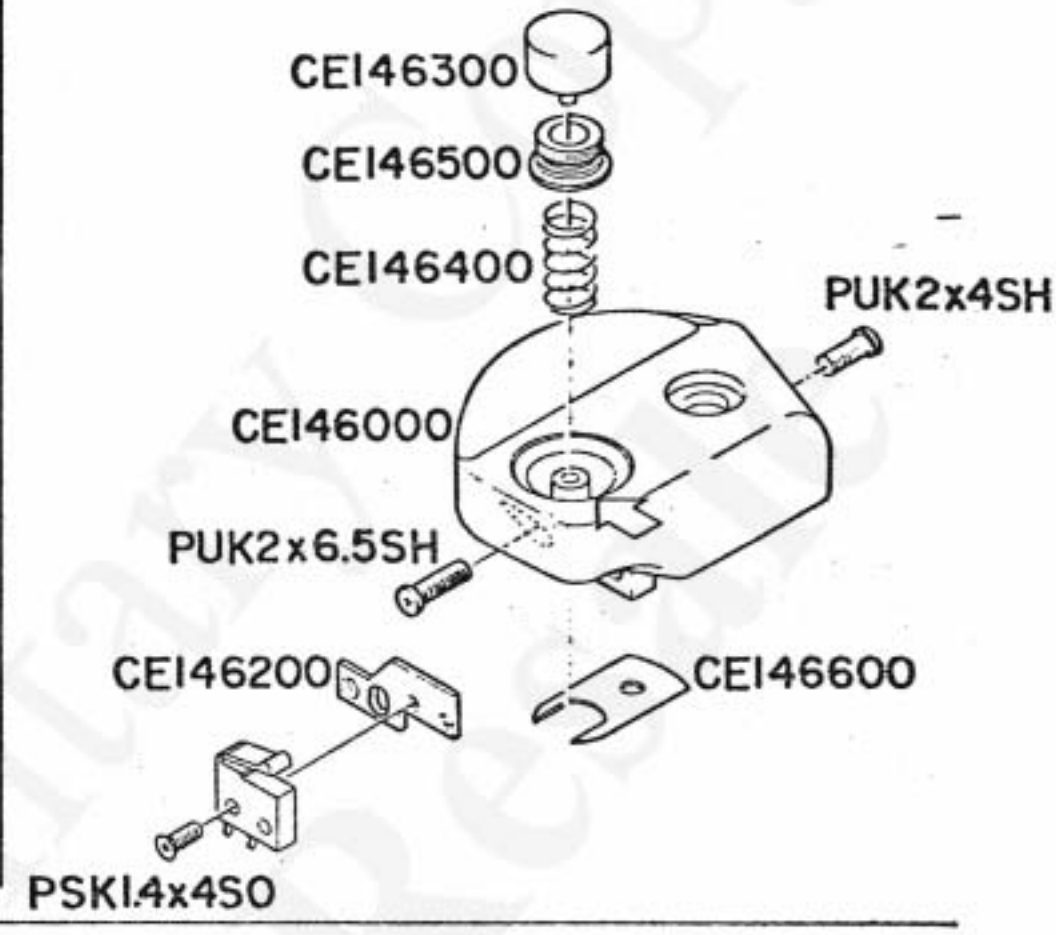


A

GENERAL OUTLINE
AND
MECHANICAL FEATURES

A. GENERAL OUTLINE AND MECHANICAL FEATURES

MAIN SPECIFICATIONS

Model Name . . . . . .OLYMPUS OM-SYSTEM WINDER 2
House Code. MME-2

Companion cameras OM-1; OM-2; OM-1N; OM-2N; OM-10
Film winding. . . . . .Single-frame shooting:
Instant one-frame winding upon each shooting.
Continuous shooting:
Repetition of one-frame winding action, the maximum rate being 2.5 frames per second (approx.).
Film wind time . . . . . .Approximately 0.3 second
Mode selection . . . . . .By lifting and turning three-position dial, SINGLE-OFF-SEQUENCE
Shutter speed . . . . . .With OM-1 or OM-1N:
1 ~ 1/1000 sec.
With OM-2 or OM-2N:
MANUAL: 1 ~ 1/1000 sec.
AUTO: Several tens ~ 1/1000 sec.
With OM-10:
MANUAL: 1 ~ 1/1000 sec. (with M adaptor)
AUTO: 2 ~ 1/1000 sec.
Power source. . . . . .Four SUM-3 or AM-3 battery cells or NiCd (NR-AA) battery cells. (A jack for connection to external power source is provided.)
Battery loading . . . . . .One-touch loading with M6V magazine-type holder, complete with protection against polarity mismatching.
Operating voltage . . . . . .4 ~ 6 volts
Battery capacity in terms of films . . . . .Approximately 20 film rolls for SUM-3 battery, 50 film rolls for AM-3 battery and 15 film rolls for NiCd (NR-AA) battery at normal temperature, each roll being 36 exposures.
Connection for remote control. . . . . .Through a 2.5-mm mini-jack.
Coupling to camera . . . . . .By fastening to camera's tripod socket with pin-guided screws.
Shutter releasing . . . . . .Release pushbutton provided in the hand grip.
Coupling to 250-film back. . . . . .Through link gears for automatic direct contact, complete with cover and auto-stop contact.
(This feature does not apply to OM-10 camera.)
Film end stop . . . . . .Automatic film end stop after last exposure.
Dimensions . . . . . .130 x 64 x 98 mm
Weight. . . . . 290 grams (excl. batteries).

ELECTRICAL CIRCUITS

I. SWITCHES

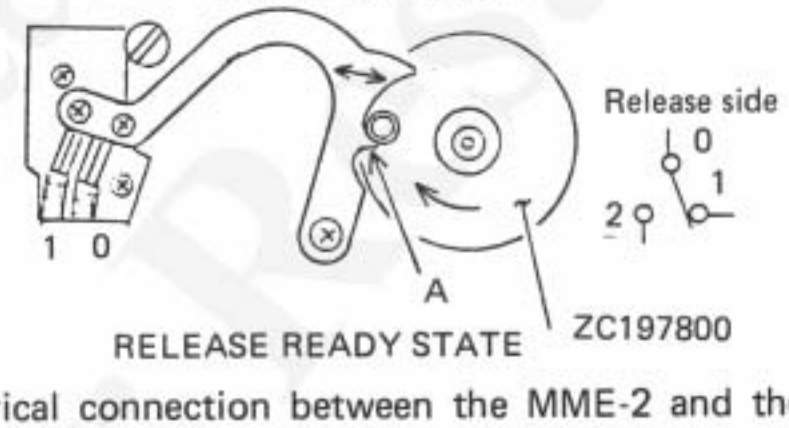
- SW101 a. b.: This switch is for selecting between SINGLE, OFF and SEQUENCE.

- SW102: A release pushbutton switch.

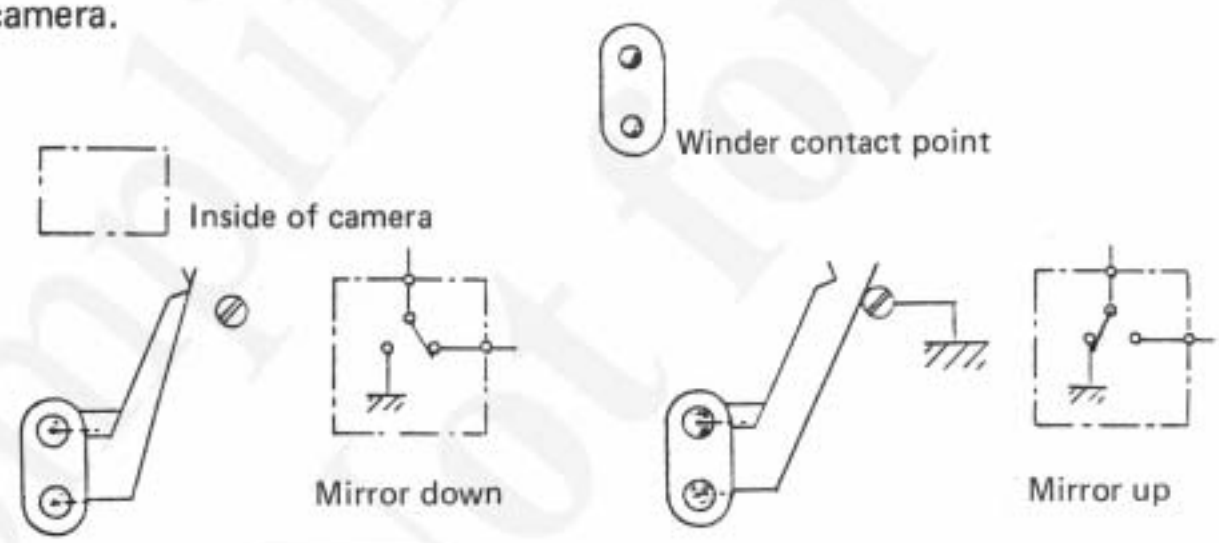
- SW103: This is a sliding switch located inside the winder associated with the selector mechanism. Electrical switching and mechanical switching take place at the same time to control the motor for selection between FILM WIND and RELEASE.

With the MME-2 coupled to the camera, the motor runs by itself to wind the film, regardless of position of release pushbutton (SW102).

As one-frame advance is completed in the camera, the pin overrides the hill (A) to turn the lever, thereby shifting the winder into ready-for-RELEASE state, both mechanically and electrically.

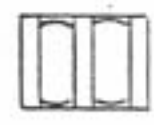


- J104: This is a contactor for controlling electrical connection between the MME-2 and the camera.



Camera contact (Camera bottom cover removed)

- J101: The jack for connection to remote control.



- J103: The contactor for working with the 250-film back.

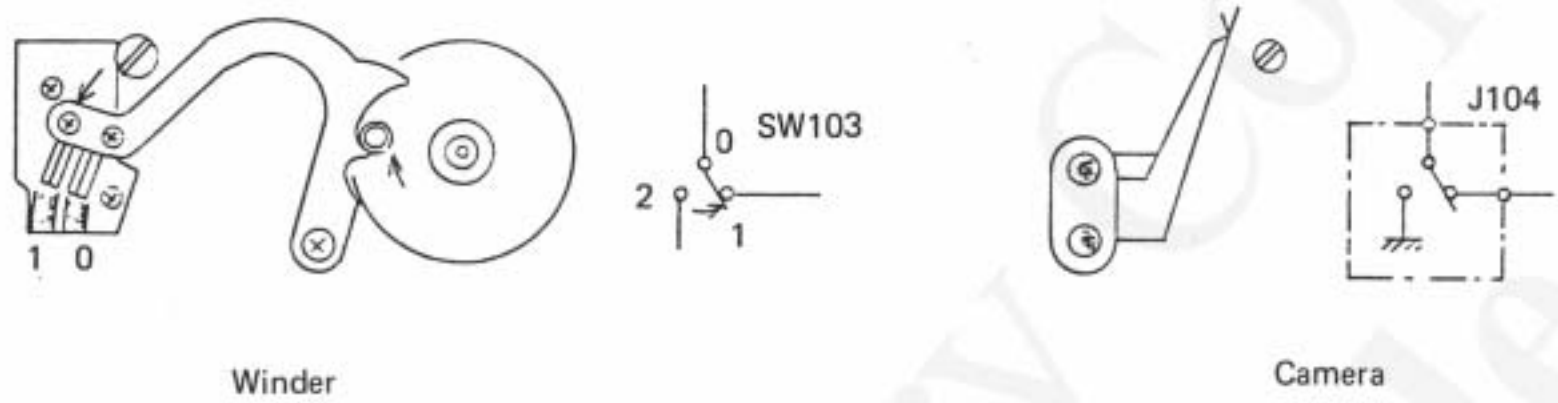
- J102: The jack for receiving power supply from an external source.

II. SINGLE-FRAME ADVANCE CIRCUIT

(This circuit is in two parts: release circut and film-wind circuit.)

1. Release circuit

(1) Attaching the camera to the winder results in an automatic winding action to shift SW103 and J104 into the illustrated conditions, thereby making the release circuit.



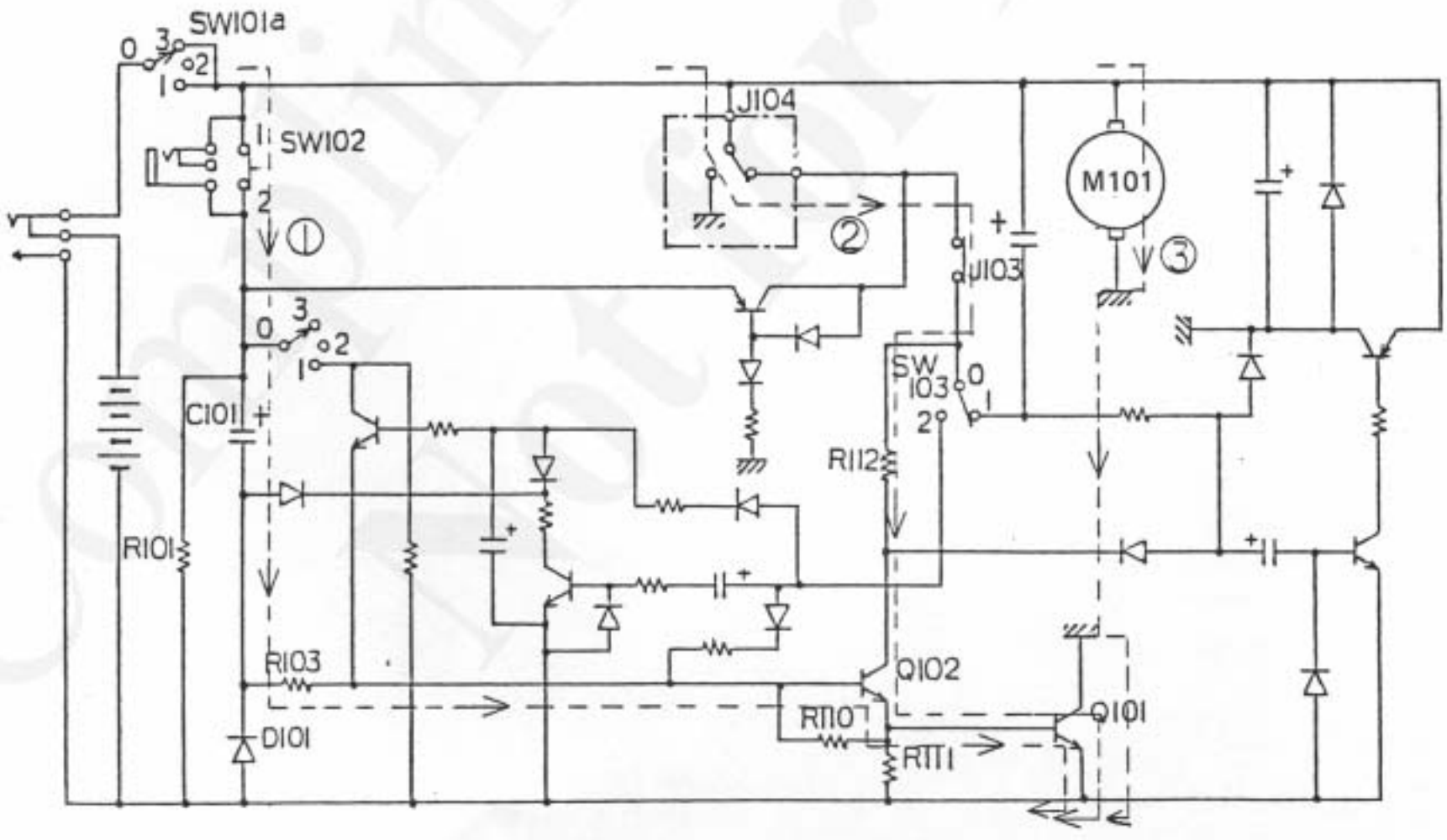
Winder　　Camera

(2) With the release circuit closed, pressing down the release pushbutton (SW102) allows a current to flow in the following paths:

1) SW102 → C101 → R103 → Q102 → Q101. This current persists only while C101 is getting charged and, for this duration, Q102 remains switched on. It ceases to flow as the capacitor approaches its charged-up condition.

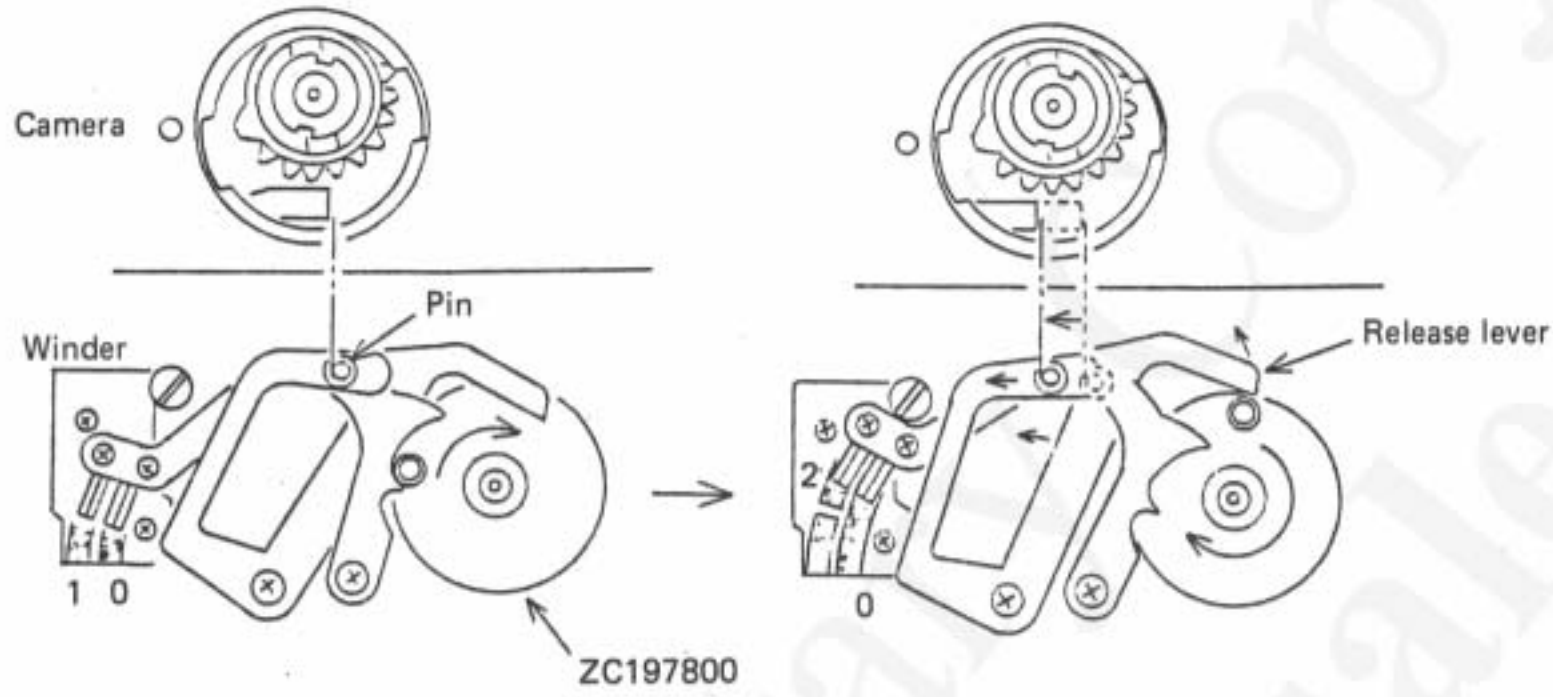
2) With Q102 switched on: J104 → J103 → R112 → Q102 → Q101. This is the collector current of Q102; by this current, Q101 turns on to pass motor current.

3) Motor (M101) draws current and starts running: the winder releases the shutter.



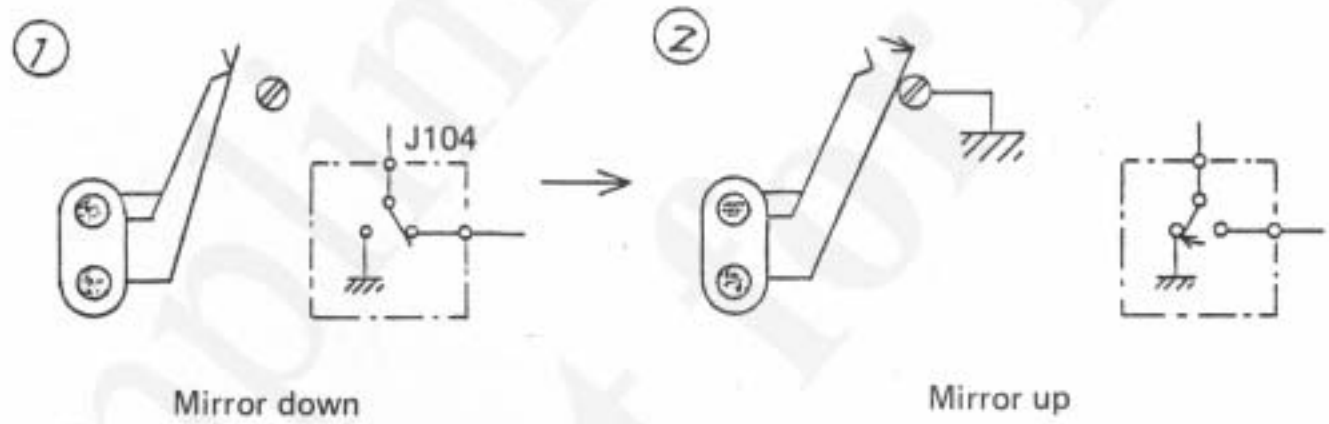
As motor runs, ZC197800 rotates in the direction of the arrow.

The pin roller on ZC197800 kicks up the release lever, and the pin of this lever becomes displaced by the indicated amount to release the shutter in the camera.

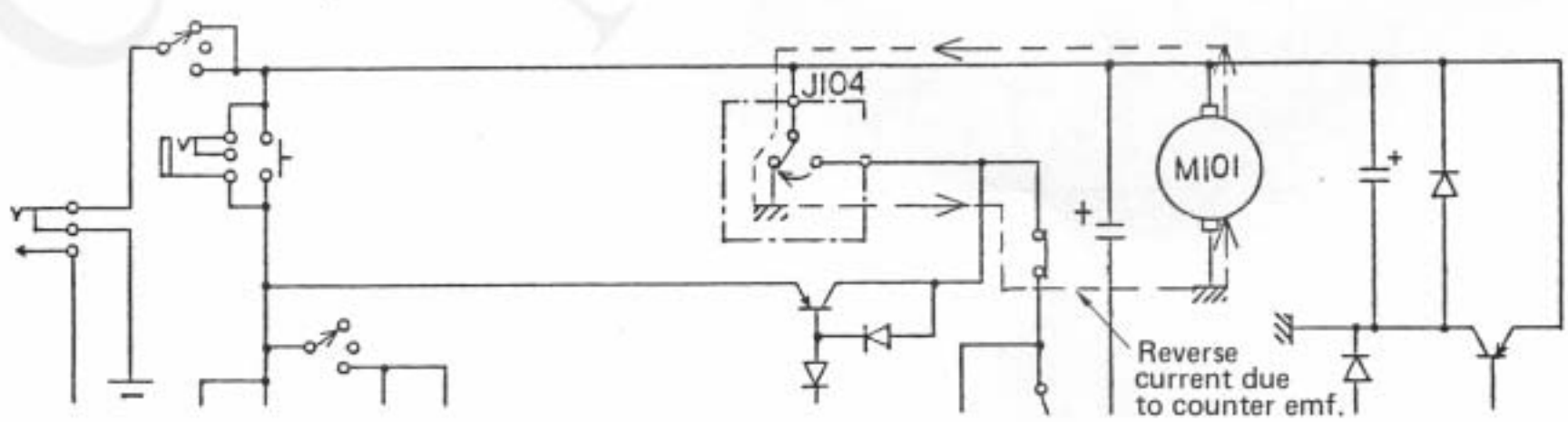


NOTE: R110 and R111, associated with Q102, serve to terminate the current through Q101 before the film-wind action is completed: they ensure the articulate single-frame advance.

(3) Upon releasing the shutter, the mirror begins to rise, actuating the switch (J104) into grounding position (grounding the line).



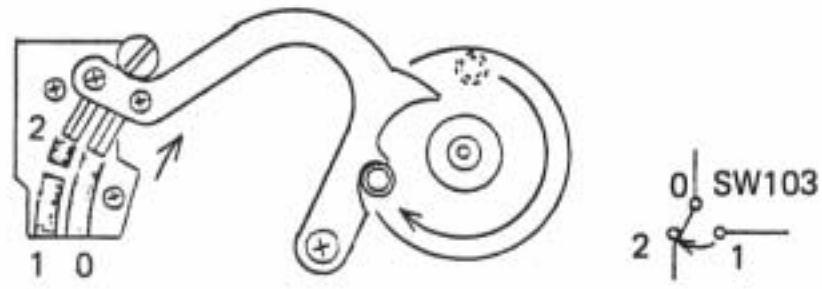
(4) By this grounding, the motor becomes shunted and draws and can no longer draw current but, since it is running, it experiences electrical braking due to a reverse current induced in the motor by its counter-electromotive force: the motor then stops running instantly.
(Since the motor stops abruptly, the film remains standstill without getting jolted by the exposure action of the shutter.)



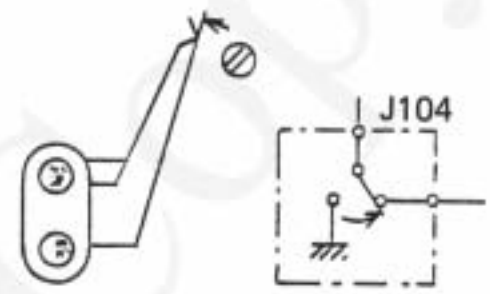
(5) The mirror reaches its raised position and the shutter runs.

2. Film-wind circuit

(1) As the shutter is released, as above, making the front and rear curtains run one after the other, the quick-return mirror then snaps back to its down position. Under this condition, the winder and camera will be in the conditions illustrated here:



Winder

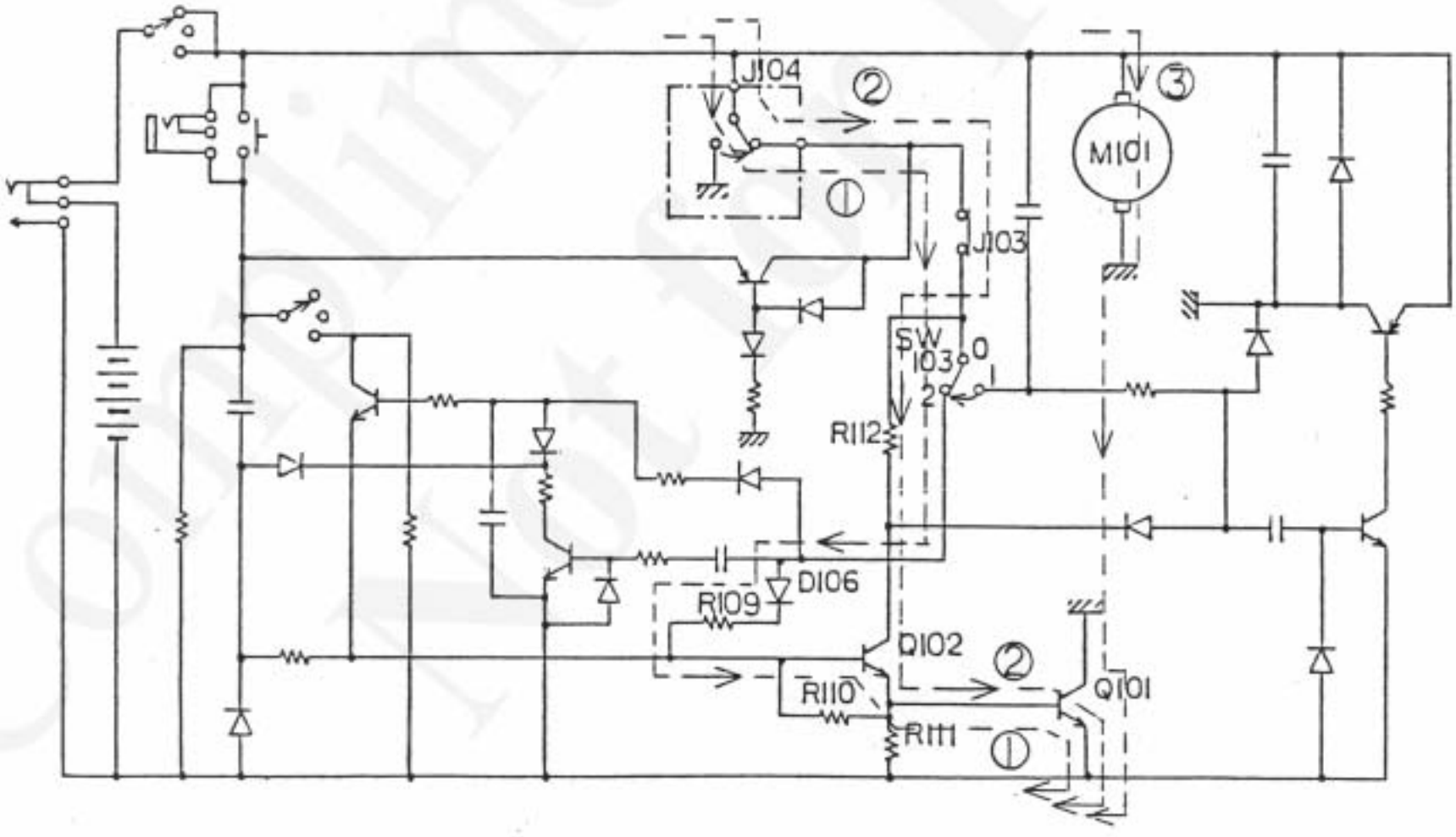


Camera

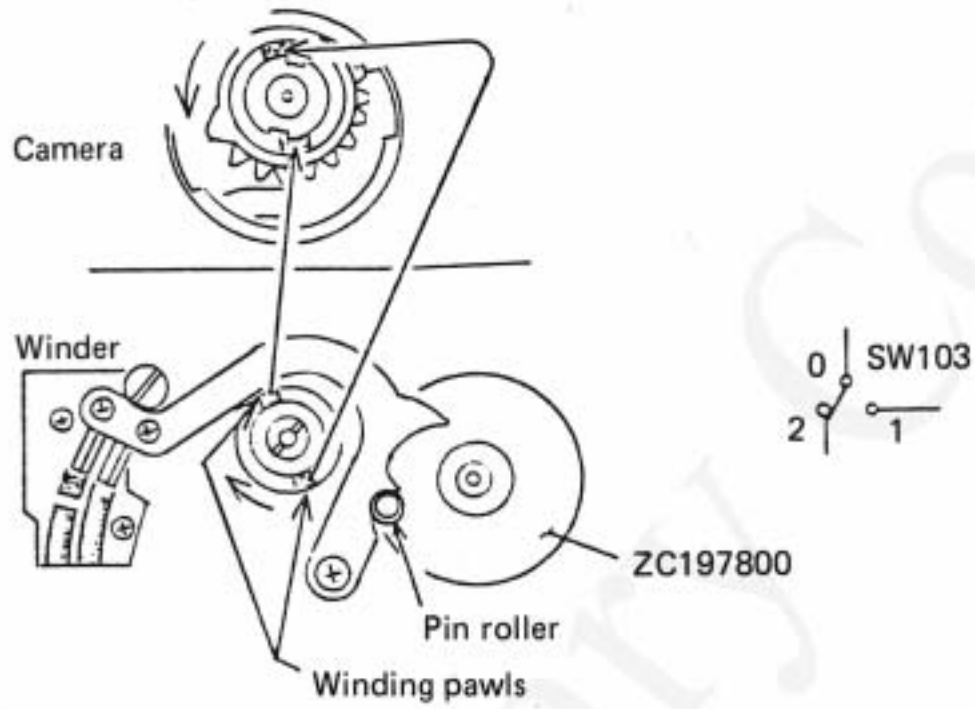
With SW103 and J104 in the indicated positions, the film-wind circuit is now made.

(2) With the circuit made, currents are induced in the following paths, regardless of the position of the release pushbutton:

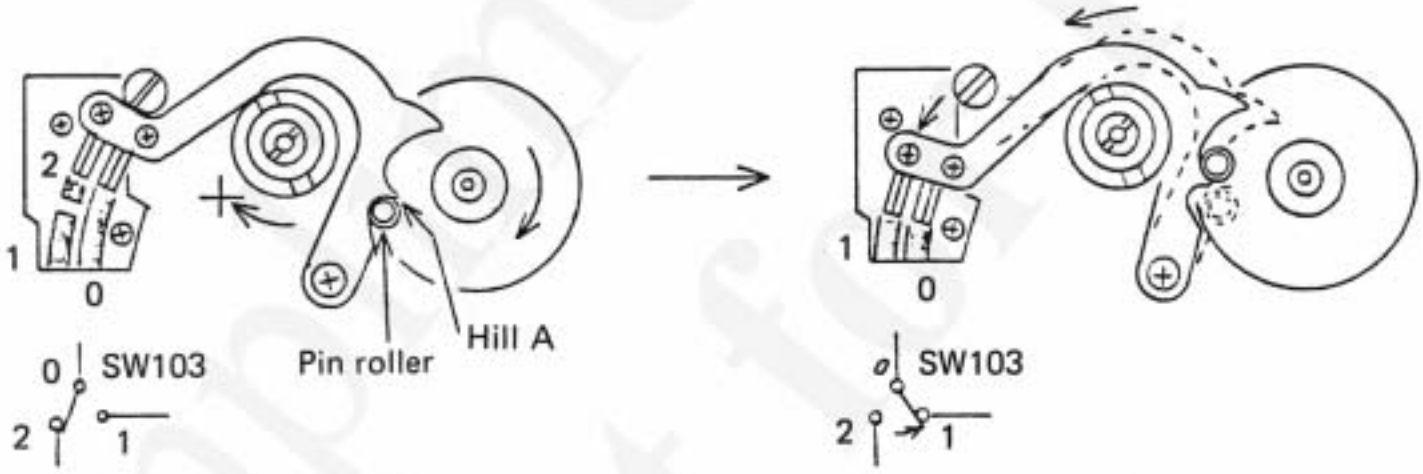
1) J104 → J103 → SW103 → D106 → R109 → Q102 → Q101. By this current, Q102 is switched on.
2) With Q102 now conductive, it passes the current to switch on Q101: J104 → J103 → R112 → Q102 → Q101.
3) With Q101 so turned on, motor (M101) starts running again.



(3) As the motor runs, with the pin roller of ZC197800 hitched to the lever as shown, the winding pawls revolve to advance the film by winding in the camera:

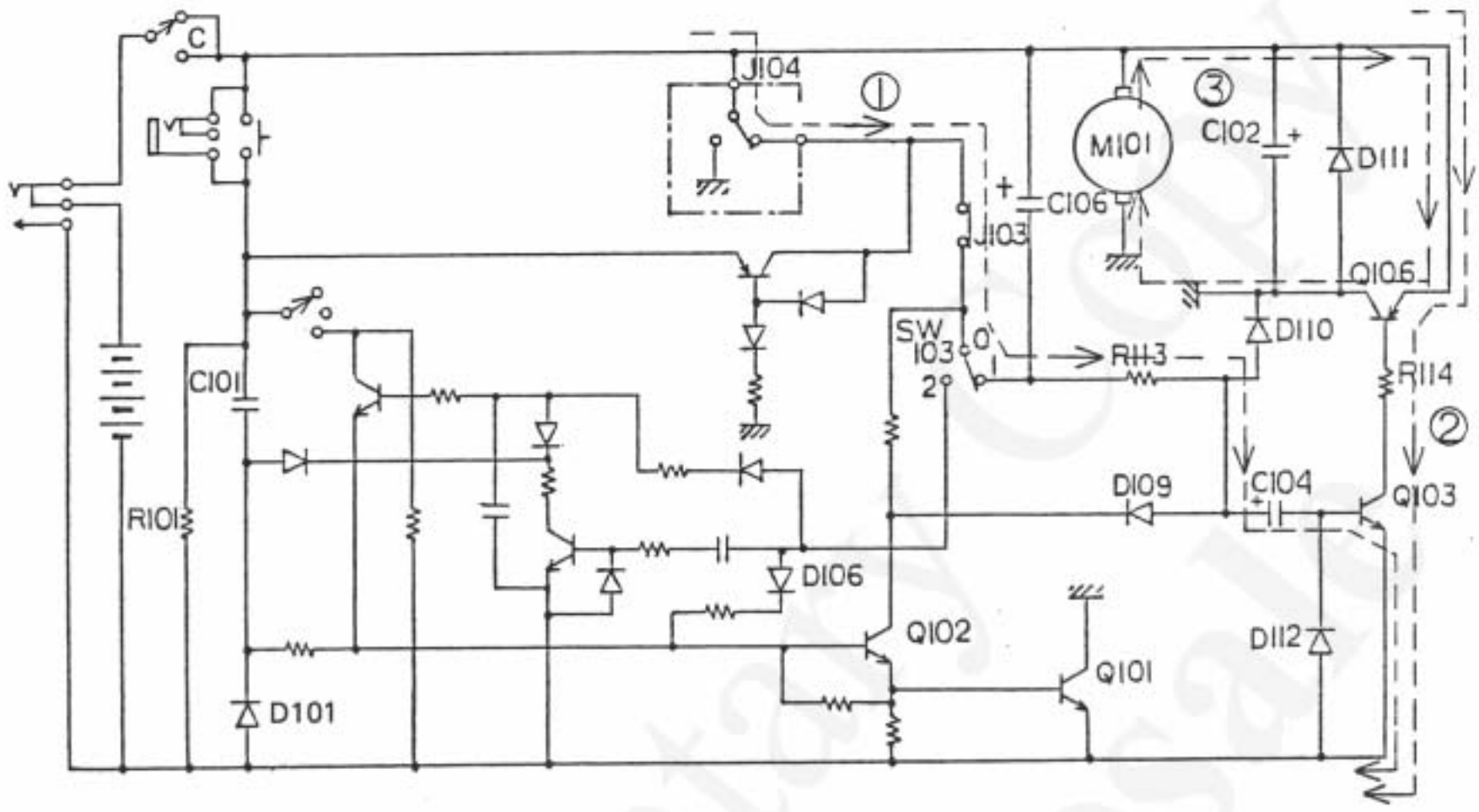


(4) The gear on camera side stops when the winding action is completed, so that the pin roller of ZC197800 overrides the hill (A), causing switch 103 to change its circuit from 0-2 to 0-1:



(5) This change from 0-2 to 0-1 inside switch 103 triggers a sequence of events by which the running motor experiences an electric braking (due to counter-emf as when J104 is actuated to short-circuit side) and stops abruptly. The sequence of events is as follows:

1) With switch 103 in 0-1 condition, a current flows in this path to charge C104: J104 → J103 → SW103 → R113 → C104 → Q103. In other words, until C104 becomes fully charged, the base of Q103 remains driven up to hold this transistor in conducting state.
2) With Q106 so turned on, a current flows from the base of Q106: Q106 → R114 → Q103, thereby driving down the base of Q106 to switch on this transistor.
3) Q106 being now switched on, a new circuit is made through M101 to allow a current to flow due to the counter-emf. It is this current that brakes the motor into a halt.



(6) One cycle of shutter releasing and single-frame advancing is thus completed, and the winder switch 103 and the camera switch J104 are now back in their original state [mentioned in II. 1. (1) above]. Assume that the release pushbutton is kept depressed after releasing the shutter: the current for charging C101 and hence turning on Q102 will soon cease as C101 reaches a fully charged state. In other words, Q102 and Q101 will soon switch off to halt the winder positively after the pushbutton is pressed down. Removing the fingertip from the pushbutton turns off SW102, and this closes the discharging circuit: C101 → R101 → D101 → C101

C101 dumps its charge through this circuit, and the whole single-frame advance circuit becomes ready for the next exposure.

EXPLANATORY NOTES:

- D110 and D112 are for discharging C104.
- C102 is for absorbing the noise occurring inside the motor.
- D111 is for protecting Q101 from the counter-emf. of the motor, which could be high enough to rupture this transistor.
- C106 and D109 serve to prevent SW103 from chattering, thereby ensuring the articulate stopping action.
- D106 is for ensuring the positive releasing action.

III. CONTINUOUS-ACTION CIRCUIT OPERATION

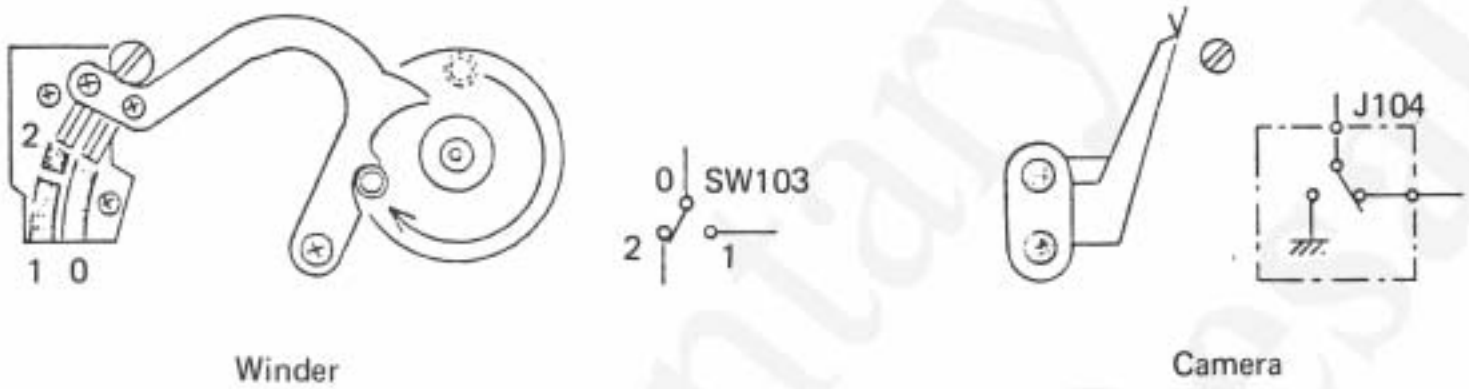
(As in single-frame advancing, the release circuit and film-wind circuit operate to perform the continuous action.)

1. Release circuit

One cycle of shutter releasing, described in II. 1. in reference to this circuit, takes place also in the continuous action.

2. Film-wind circuit

(1) Suppose the release circuit has just operated, the operation being terminated with the rear curtain running back to close the shutter and the mirror snapping back to its down position: under this condition, SW103 and J104 will be in the illustrated positions and, therefore, the film-wind circuit is made:



Winder　　Camera

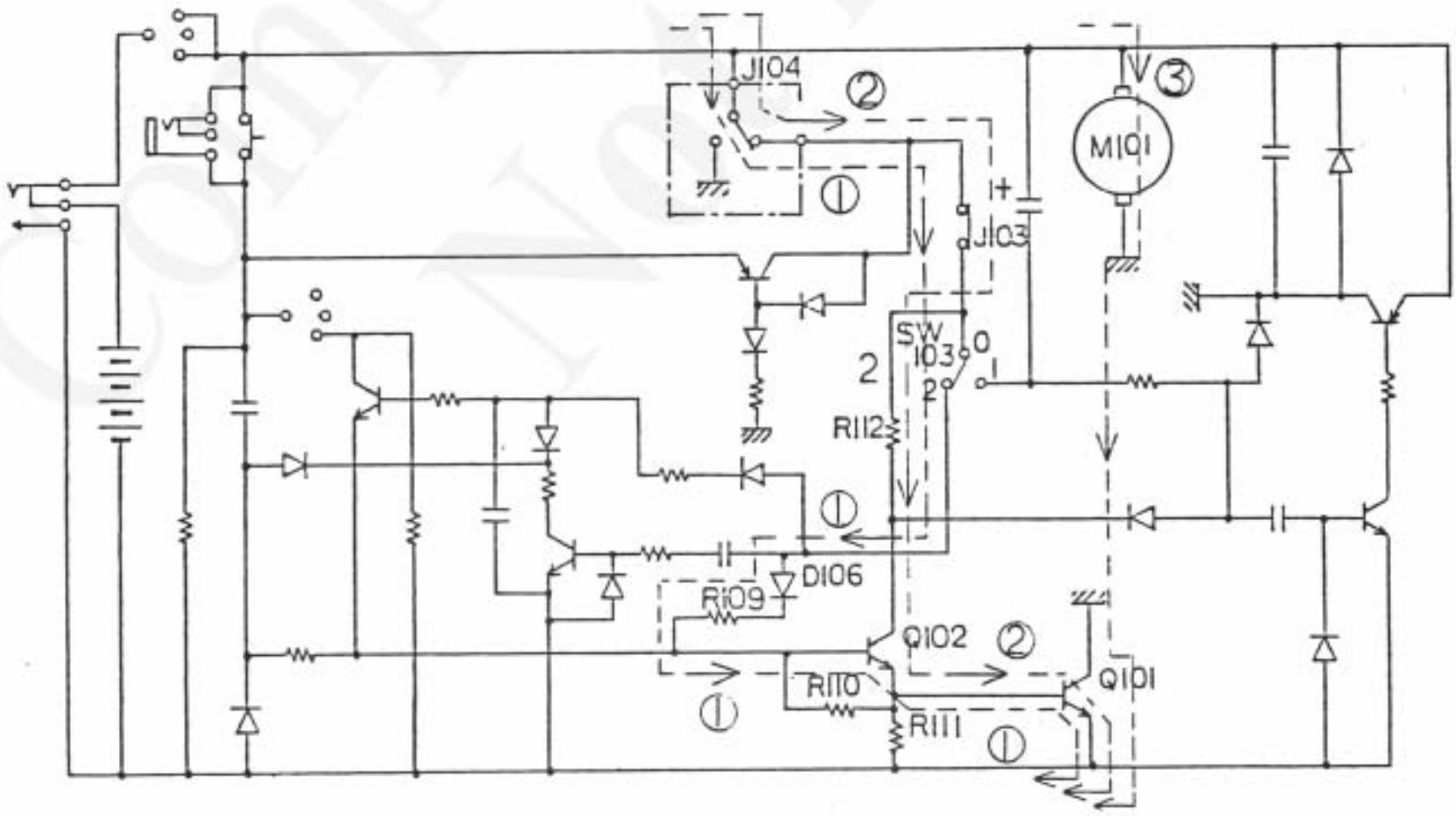
From this point onward, two series of events take place side by side to wind the film for a single-frame advance. One series will be outlined in (2) and the other in (3).

(2) The motor (M101) is started by switching on Q101 through the following process:

1) With J104 in the indicated position, a current flow in this path: J104 → J103 → SW103 → D106 → R109 → Q102 → Q101. Consequently, Q102 becomes conductive.

2) With Q102 conducting, Q101 is then switched on because of this path: J104 → J103 → R112 → Q102 → Q101.

3) Motor current flows, and M101 runs to wind the film in the camera.



(3) For continuous shooting (SEQUENCE), Q104 and Q105 are operated additionally in the following manner:

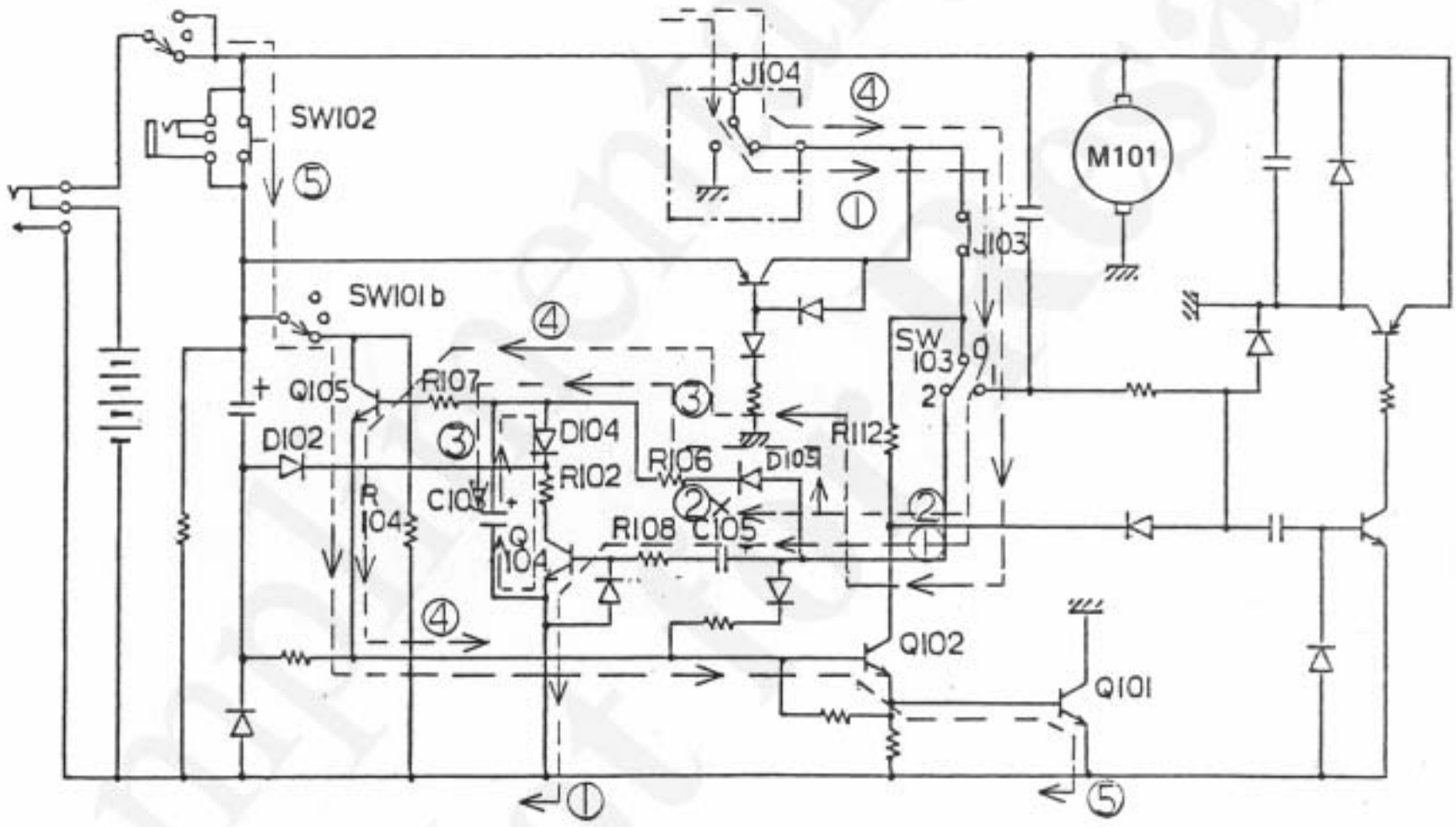
1) Q104 is switched on by this path: J104 → J103 → SW103 → C105 → R108 → Q104.
(With Q104 so switched on, the discharging circuit is closed for C103, so that its charge, if any, will be dumped through Q104.)

2) Q104 remains on as long as C105 is being charged. When this capacitor reaches fully charged state, Q104 becomes non-conductive (off).

3) While Q104 is conducting as in 2), above, current flows into C103 through D105 and R106, thereby charging this capacitor.

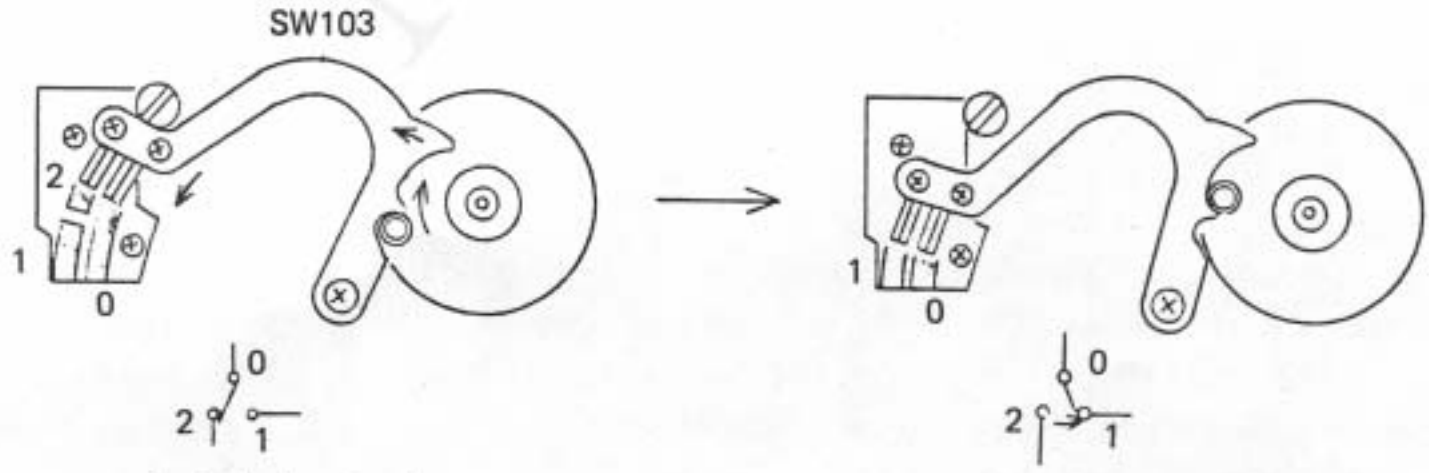
4) With C103 getting charged, Q105 is switched on by this path: J104 → J103 → SW103 → D105 → R106 → R107 → Q105. (This switching on of Q105 occurs about 100 milliseconds after the start of film winding action.)

5) With Q105 conducting, base current is directly passed onto Q102 to keep this transistor on and, as explained previously, hold Q101 in conducting state: thus, the motor is allowed to keep on running.



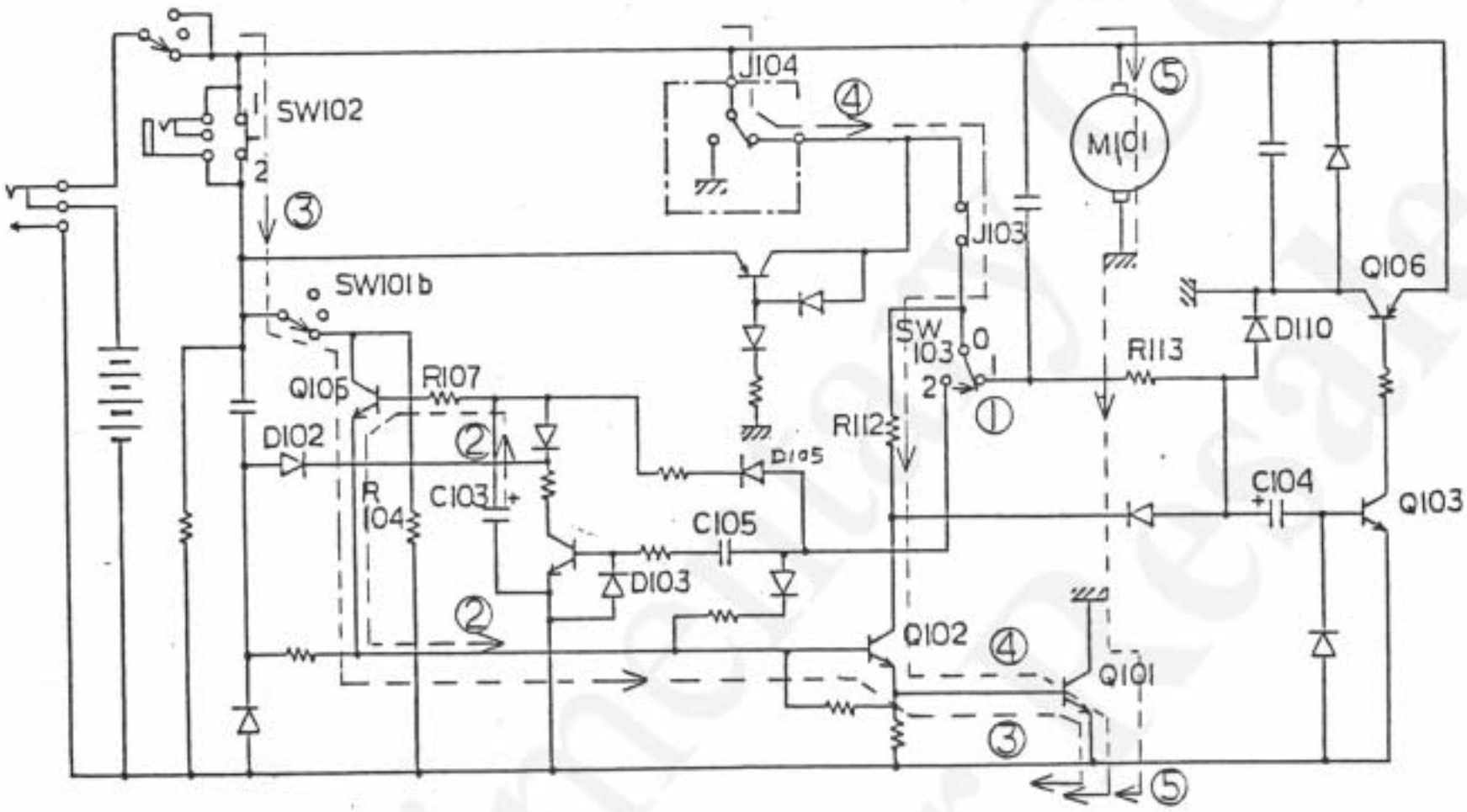
(4) The single-frame advance is completed in the following manner:

1) As the film is wound by one frame, SW103 changes its position from 0-2 to 0-1.

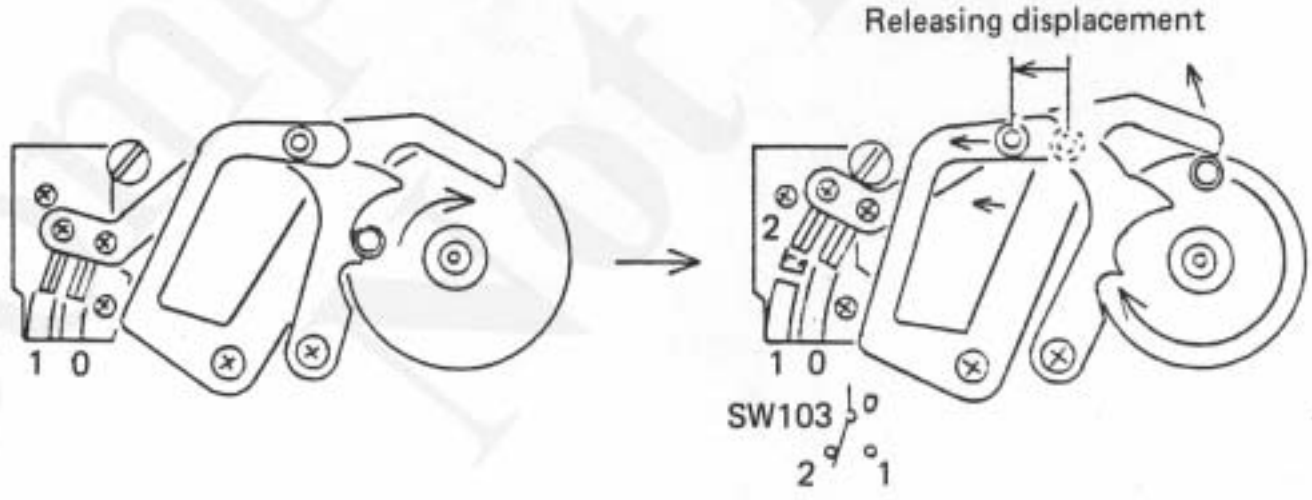


2) In the case of SINGLE, it will be recalled, Q101 will turn off to stop the winder. In SEQUENCE, however, Q101 remains on because, at this time, C103 will be discharging to hold Q105 in switched-on state: C103 → R107 → Q105.

3) Q105, Q102 and Q101 being so related, Q101 remains on as long as the release pushbutton is kept depressed (and C103 is discharging) and, consequently, the motor continues to run. Currents are indicated here as 3 , 4 and 5 .



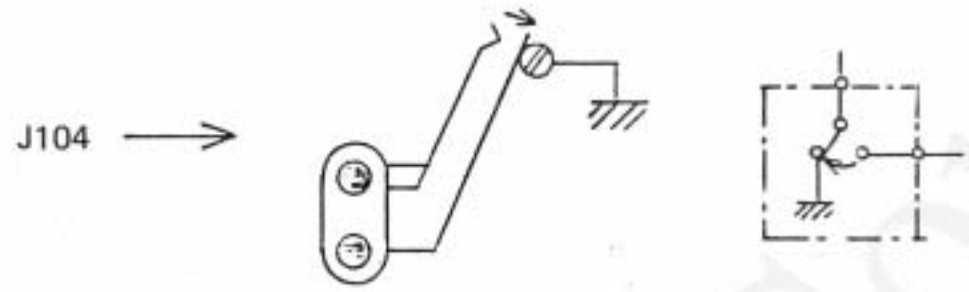
(5) By this time, the film has been advanced by one frame and, since the motor (M101) is kept running, the shutter gets released in the camera for another exposure.



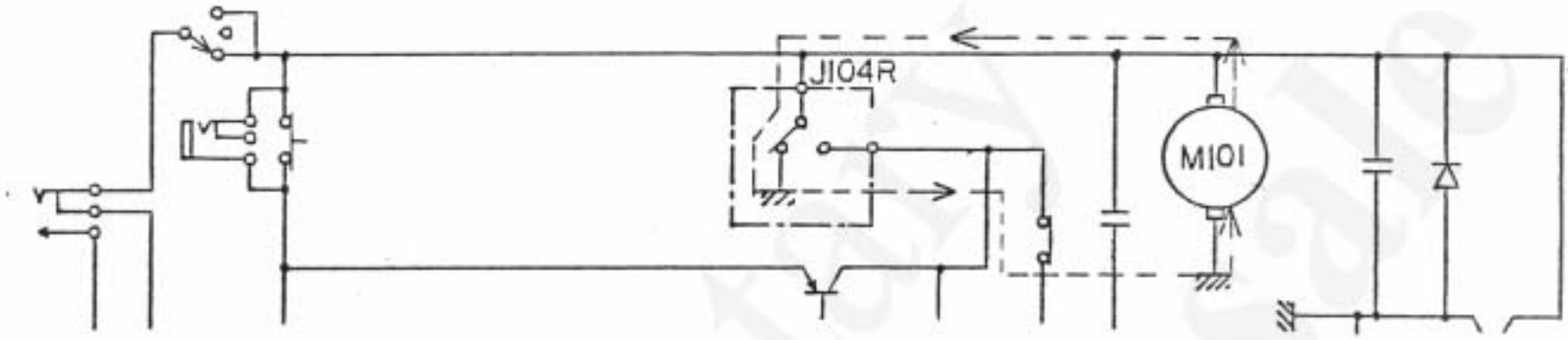
Pin roller of ZC197800 actuating the release mechanism

NOTE: In the case of SINGLE, Q101 is off, so that the braking circuit is made to halt the motor instantly. In SEQUENCE, Q101 is on at this time to form this path: J104 → J103 → SW103 → R113 → D110 → Q101. Thus, the current for switching on Q103 (and hence Q106 of the braking circuit) in SINGLE is redirected through D110 to Q101. This explains why the motor experiences no braking at this time in SEQUENCE.

(6) As the releasing action is initiated, the mirror rises, actuating J104 (inside the camera) into grounded condition:



By this grounding, motor current is interrupted. The motor, now in coasting condition, experiences braking due to counter-electromotive force: another braking circuit is made as shown here:



(7) The shutter runs to complete an exposure.

(8) The mirror snaps down, actuating J104 from grounded condition to normal position.

SW103 is back to 0-2 position [see III. 2. (5), above] and, since J104 is now back to the position indicated above, the whole circuit is back to the original state (at the beginning of III. 2.).
As long as the release pushbutton is kept depressed (SW102 closed), the foregoing process repeats itself to automatically operate the shutter and film winder for making one exposure after another.

(9) Removing the pressure from the release pushbutton opens SW102 to shut off the current flowing to Q102 through SW102, SW101b and Q105, and the whole work stops operating upon completing the on-going film winding action.

EXPLANATORY NOTES:

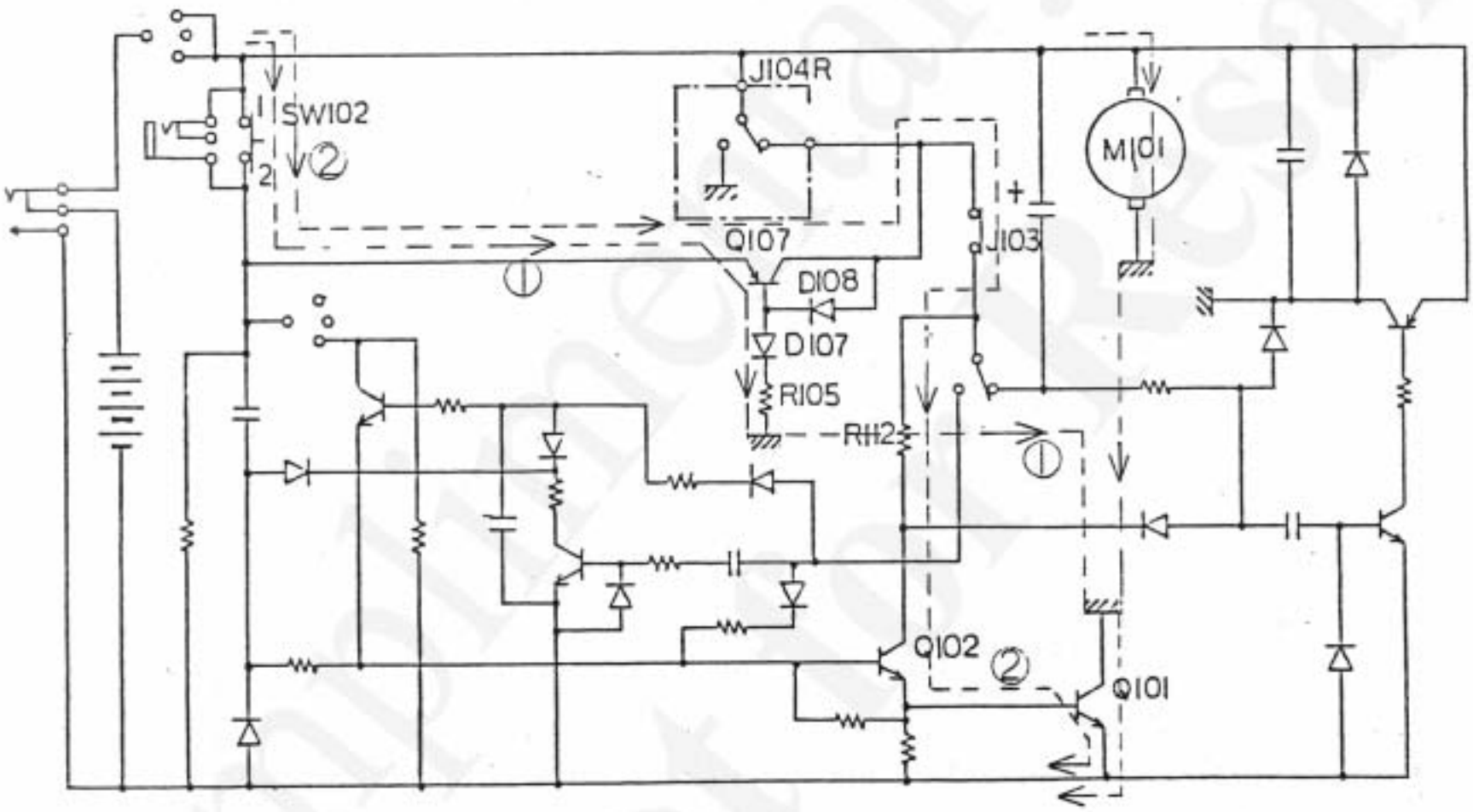
- D103 is for allowing C105 to discharge. This capacitor starts discharging when SW103 shifts from 0-2 to 0-1.
- D105 is for preventing the discharging current of C103 from flowing back toward SW103.
- R104 is a bypass resistor for avoiding misoperation due to leakage current of Q105.

IV. FUNCTION OF Q107

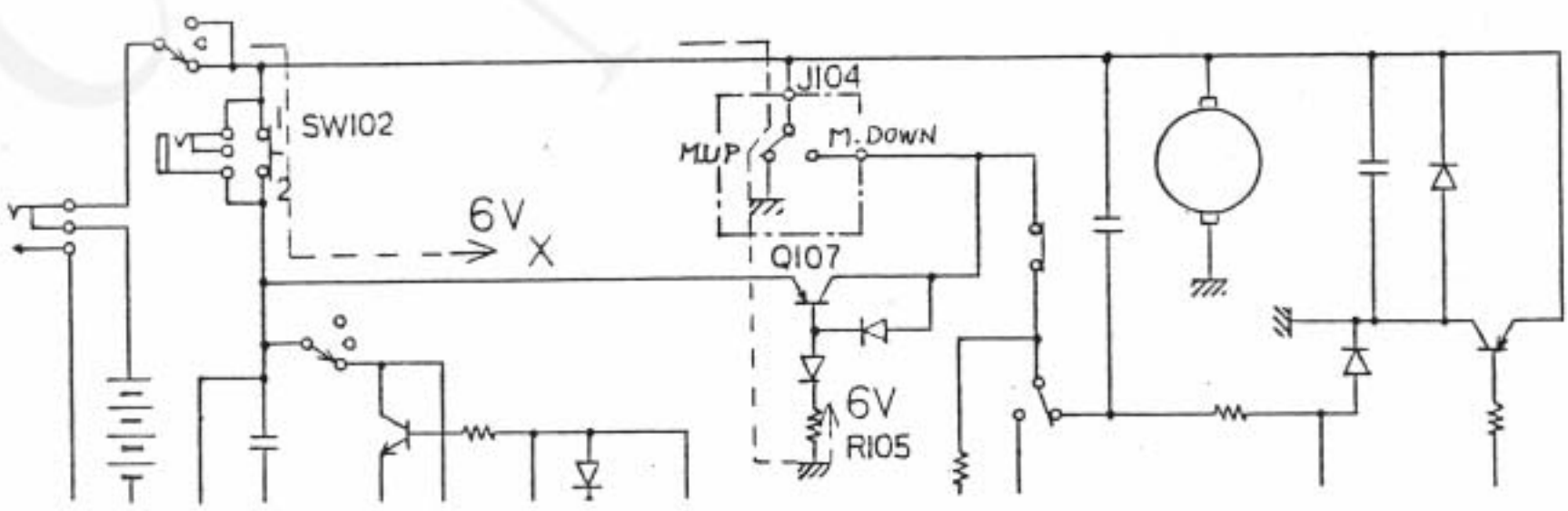
Three elements, D107, R105 and D108, in addition to Q107 constitute a circuit for preventing the camera-side contactor, J104, from chattering and for compensating its contact performance for contact deterioration. How these two purposes are accomplished will be explained.
When the motor is running, with Q101 switched on by Q102, the base potential of Q101 is kept up by the collector current of Q102. If J104 happens to be in deteriorated condition to offer a larger contact resistance, the collector current will be reduced. Under this condition, Q101 might switch off by itself to stop the motor were it not for the presence of Q107.

1) If Q102's collector current should so decrease, a current would flow this path: SW102 → Q107 → D107 → R105 → Q101.
2) The collector current of Q102 then would flow not through J104 but through this new path: SW102 → Q107 → J103 → R112 → Q102 → Q101.

Q102's collector is thus maintained even when J104 is presenting a large contact resistance, whereby Q101 is reliably held in switched-on condition to allow the motor to keep on running.



Should J104 chatter during the process of exposure, causing its contacting foil touch mirror-UP side (ground side), the +6 V from the source would apply to the base of Q107, thereby driving this transistor into non-conductive state.



B

CHECK POINTS
(INSPECTION STANDARDS)

C

ORDER OF DISASSEMBLY

D

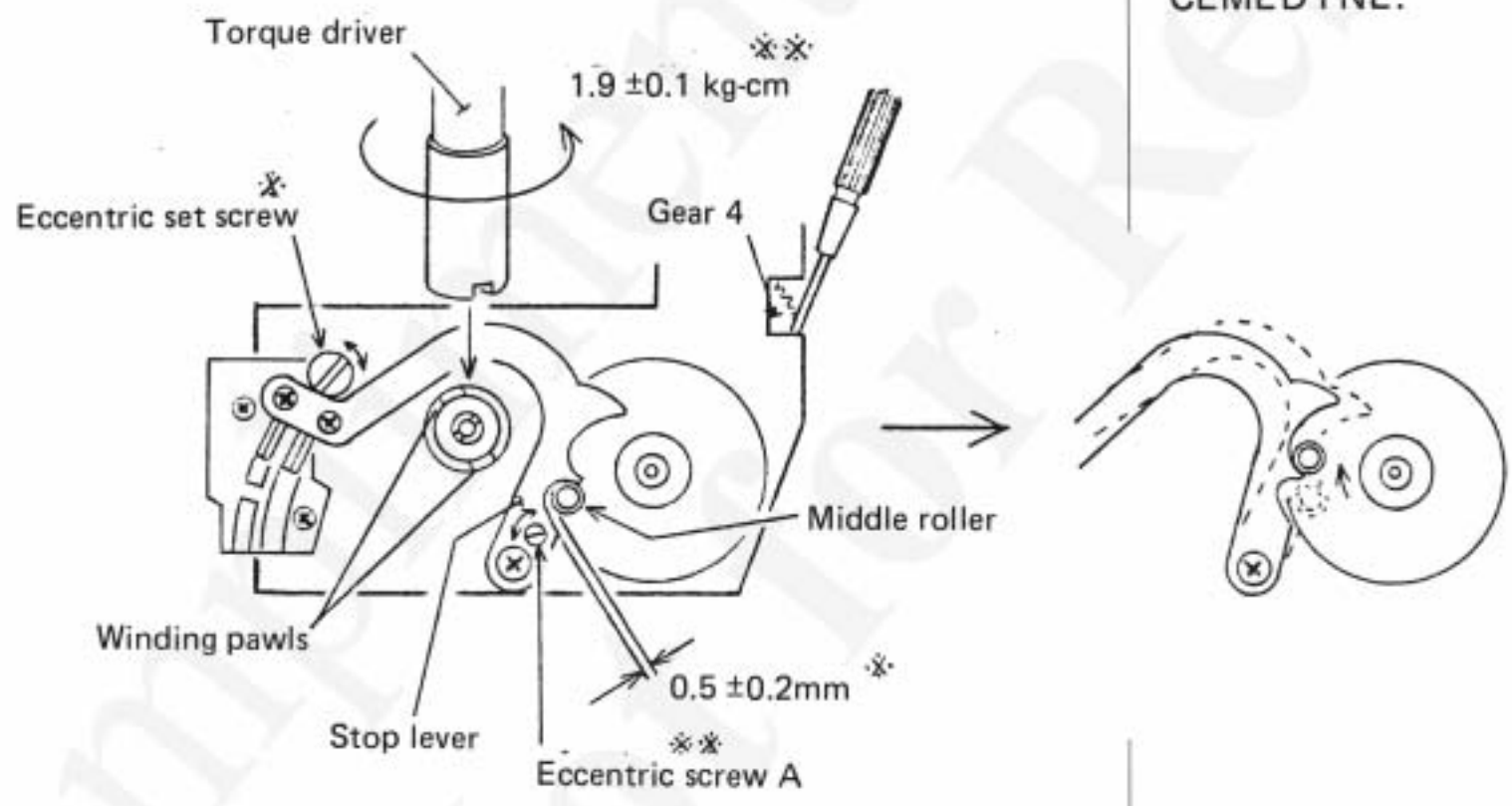
OUTLINE OF REPAIRS

D. OUTLINE OF REPAIR

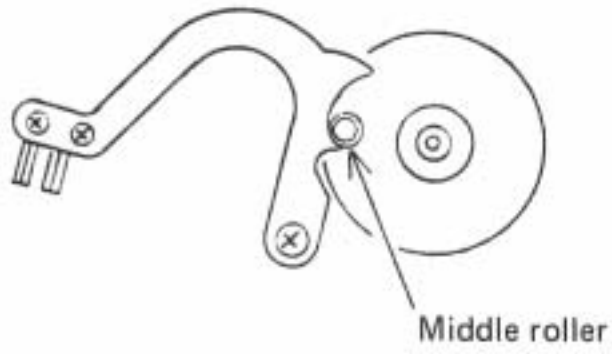
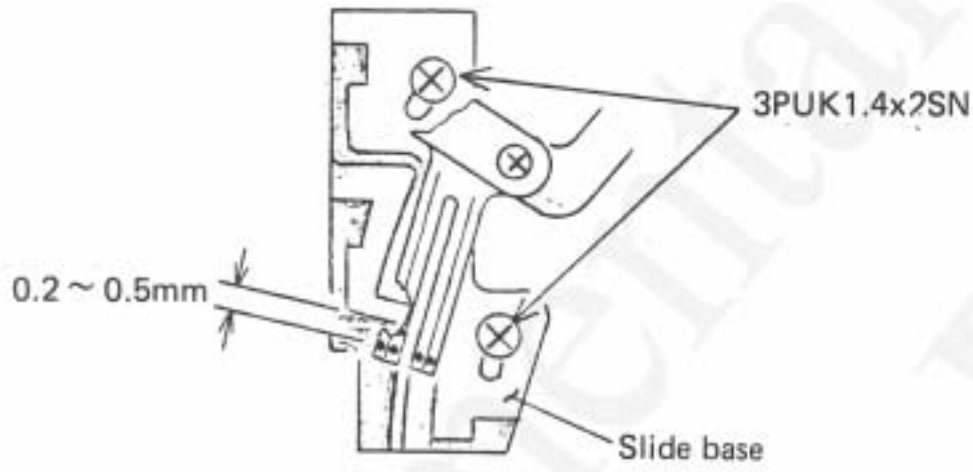
I. ADJUSTMENTS

1. Adjustment of the overriding torque of stop lever

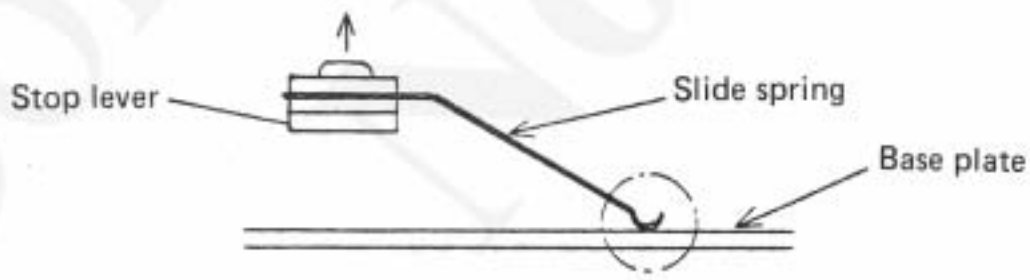
Adjusting procedure	Remarks
1-1. Adjust the clearance between stop lever and middle roller to 0.5 ± 0.2 mm. This is to be effected by turning the eccentric set screw.	After repositioning the screw, lock it by using CEMEDYNE.
1-2. Adjust the overriding torque to 1.9 ± 0.1 kg-cm, as follows:	
1) Block gear 4 with No. 2 screwdriver, so that the gear will not turn.	
2) Fit the driver bit to the tip of torque driver. Through the bit, apply torque to the winding pawls and take a torque reading (overriding torque).	
3) Adjust the torque by turning eccentric screw A.	After repositioning this screw, lock it by using CEMEDYNE.



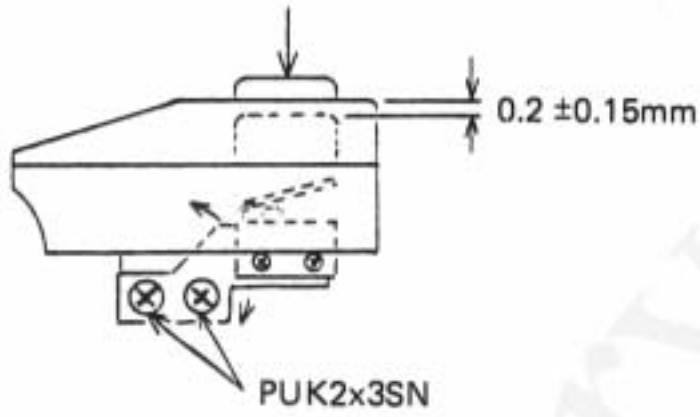
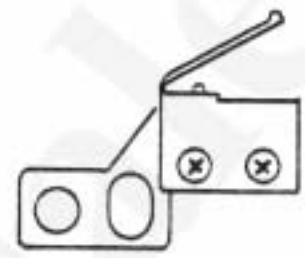
2. Sliding base positioning

Adjusting procedure	Remarks
2-1. Leave middle roller in the position indicated.  2-2. Loosen two screws (3PUK1.4x2SN), and adjust the base.  2-3. Secure the base in the adjusted position by tightening the two screws. Lock the screws by using PLIOBOND.	

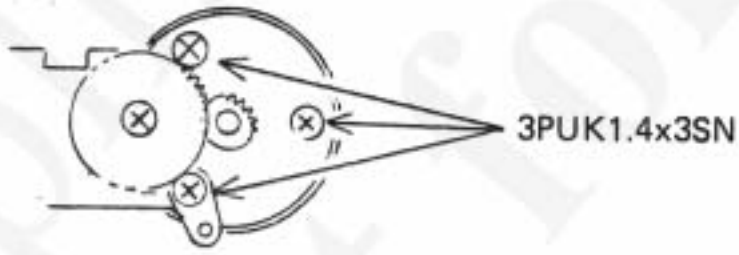
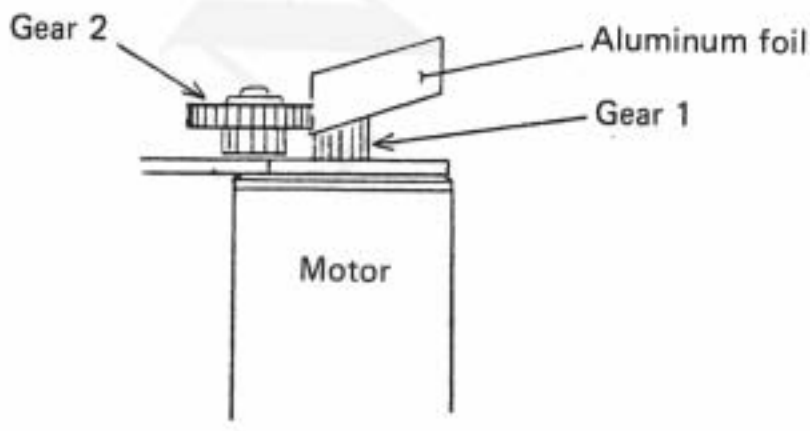
3. Slide spring bearing pressure adjustment

Adjusting procedure	Remarks
 3-1. Be sure that, in the absence of sliding base, the tip of slide spring bears on the base plate. 3-2. Be sure that slide spring bears on the base plate even when stop lever is prised.	

4. Adjustment of the switching-off position of release pushbutton

Adjusting procedure	Remarks
4-1. Loosen two screws (PUK2x3SN).	
4-2. Displace the microswitch vertically to find the position that provides the indicated dimension (0.2 ± 0.15 mm). 	One of the two screw holes is oblong. Be careful not to allow PLIOBOND to enter the oblong hole or the switch will become permanently locked to refuse re-adjustment. 
4-3. Secure the switch in that position by tightening the screws. Lock the screws by using PLIOBOND.	

5. Motor positioning

Adjusting procedure	Remarks
5-1. Loosen three screws (3PUK1.4x3SN). 	
5-2. Insert a 0.1-mm thick aluminum foil into between gear 1 and gear 2, and tighten the three screws. 	Lock the two screws (having no lug) by using BELLOCK KMM.

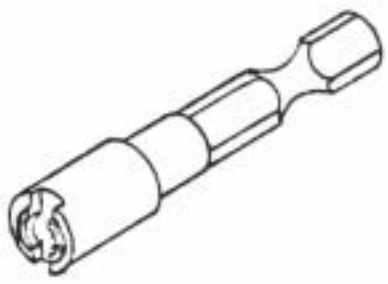
E

PARTS WHERE OIL, GREASE, ETC. SHALL BE USED

F

SPECIAL TOOLS

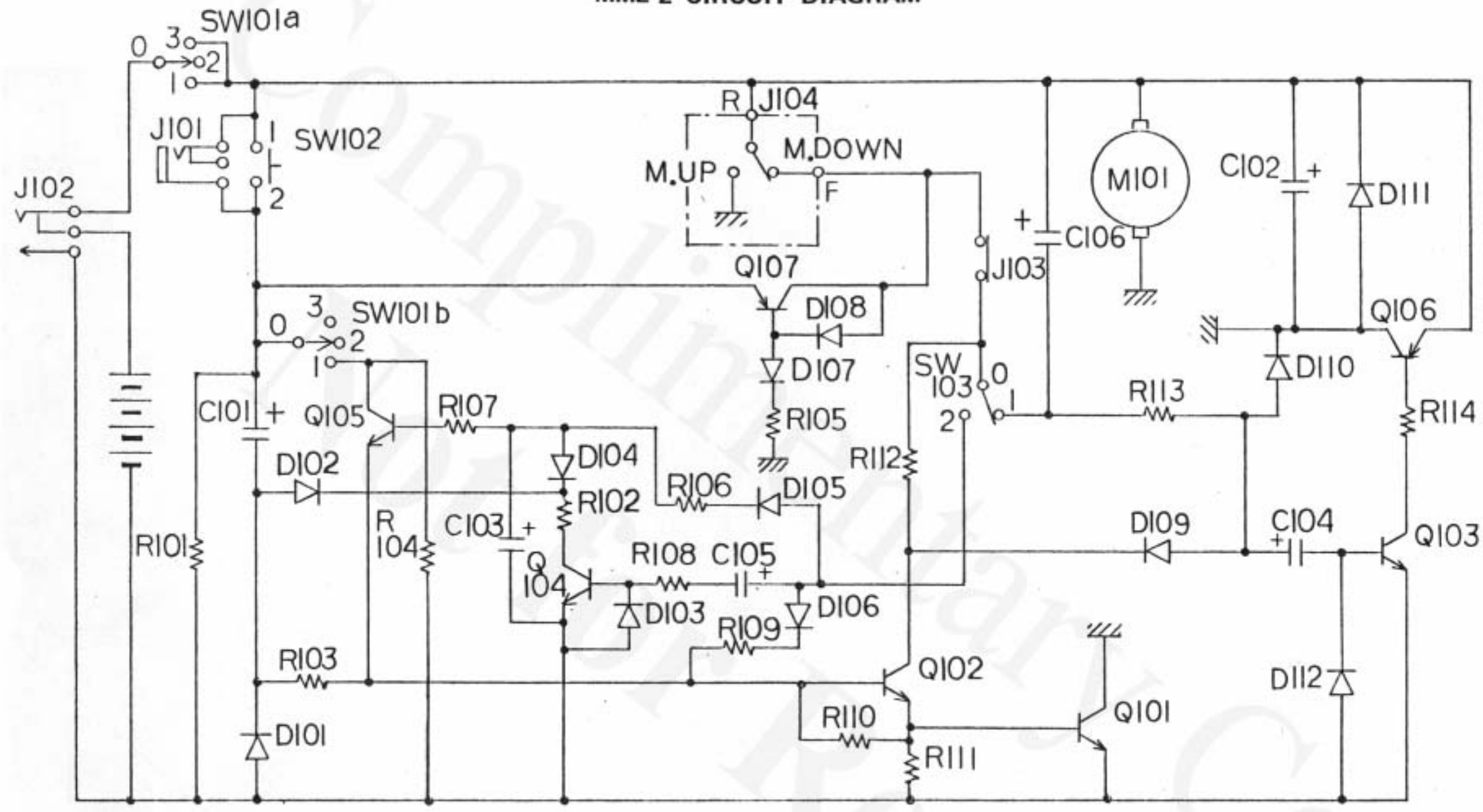
F. SPECIAL TOOLS

Nomenclature	Uses	Remarks
KC-CE0032G Bit for torque driver 	This bit is to be fitted to the tip of torque driver (5 kg-cm) in order to use the driver for measurement of stop lever overriding torque.	The overriding torque specification is: 1.9 ± 0.1 kg-cm

H

OTHERS

MME-2 CIRCUIT DIAGRAM



C101	6.3V 10μF	R101	1KΩ 1/8W	R108	150KΩ 1/8W	Q101	2SD826F	D101	1S1588
C102	6.3V 10μF	R102	〃 〃	R109	4.7 〃 〃	Q102	2SC536E	〜	〜
C103	6.3V 4.7μF	R103	10KΩ 〃	R110	47 〃 〃	Q103	〃	D112	1S1588
C104	6.3V 22μF	R104	〃 〃	R111	470 〃 〃	Q104	〃		
C105	6.3V 0.33μF	R105	〃 〃	R112	270 〃 〃	Q105	〃		
C106	6.3V 1.5μF	R106	〃 〃	R113	33 〃 〃	Q106	2SB598F		
		R107	68KΩ 〃	R114	62 〃 〃	Q107	2SA608E		

MME-2 WIRING DIAGRAM