FSA02401 - R.3244.A

Speedlight

SB-24

REPAIR MANUAL

修 理 指 針

Nikon | NIKON CORPORATION
Tokyo, Japan

I. SPECIFICATIONS

1. Guide number (m, ISO 100)

	Manual mode					Manual repeat	
	M1/1	M1/2	M1/4	M1/8	M1/16	MR1/8	MR1/16
T1 85mm	$50^{+5.5}_{-8.0}$	$36^{+9.9}_{-7.8}$	$25^{+6.9}_{-5.4}$	$18^{+4.9}_{-3.8}$	$12.5^{+3.4}_{-2.7}$	$18^{+4.9}_{-4.8}$	$12.5^{+3.4}_{-3.3}$
T2 70mm	$47^{+5.1}_{-7.5}$	$33^{+9.1}_{-7.1}$	$23^{+6.3}_{-4.9}$	$16.5^{+4.5}_{-3.6}$	$11.5^{+3.2}_{-2.5}$	$16.5^{+4.5}_{-4.4}$	$11.5^{+3.2}_{-3.1}$
S 50mm	$42^{+4.6}_{-6.7}$	$30^{+8.2}_{-6.5}$	$21^{+5.8}_{-4.5}$	$15^{+4.1}_{-3.2}$	$10.5^{+2.9}_{-2.3}$	$15^{+4.1}_{-4.0}$	$10.5^{+2.9}_{-2.8}$
N 35mm	$36^{+3.9}_{-5.7}$	$25^{+6.8}_{-5.4}$	$18^{+4.9}_{-3.9}$	$12.5^{+3.4}_{-2.7}$	$9^{+2.5}_{-1.9}$	$12.5^{+3.4}_{-3.3}$	$9^{+2.5}_{-2.4}$
W1 28mm	$32^{+3.5}_{-5.1}$	$22^{+6.0}_{-4.7}$	$16^{+4.4}_{-3.4}$	$11^{+3.0}_{-2.3}$	$8^{+2.2}_{-1.7}$	$11^{+3.0}_{-2.9}$	$8^{+2.2}_{-2.1}$
W2 24mm	$30^{+3.3}_{-4.8}$	$21^{+5.8}_{-4.5}$	$15^{+4.1}_{-3.2}$	$10.5^{+2.9}_{-2.3}$	$7.5^{+2.1}_{-1.6}$	$10.5^{+2.9}_{-2.8}$	$7.5^{+2.1}_{-2.0}$

2. Angle of flash coverage

Flash head position	Angle of flash coverage		Usable lenses
W2 (24mm)	Vertically 60°	Horizontally 78°	24mm
W1 (28mm)	53°	70°	28mm
N (35mm)	45°	60°	35mm
S (50mm)	34°	46°	50mm
T1 (70mm)	26°	36°	70mm
T2 (85mm)	23°	31°	85mm

3. Number of flashes/Recycling time (At manual 1/1 setting)

	No. of flashes	Recycling time
AA alkaline-manganese batteries	100 or more	7 sec or shorter
AA Ni-Cd battery	40 or more	5 sec or shorter

When external power source is used:

SD-6

Recycling time	3 sec	30 sec
No. of flashes	250 or more	500 or more

SD-7

Recycling time	6 sec	10 sec	30 sec
No. of flashes	200 or more	300 or more	400 or more

* Autofocus illuminator and display panel illuminator are to be off and zooming operation is not to be made.
* When the external power source is used, install four alkaline-manganese batteries in the SB-24 and a 315V layer built cell in SD-6 or A-type Alkaline-manganese batteries in SD-7.

4. Flash mode

The following flash mode can be selected:

(1) TTL flash mode (TTL)
TTL auto flash control is possible.
(2) Manual repeating flash mode (MR)
Flash fires repeatedly at the fixed amount of light (1/8 or 1/16).
(3) Manual flash mode (M)
Flash fires at the fixed amount of light (1/1, 1/2, 1/4, 1/8 or 1/16).
(4) Auto flash control mode (A)
Flash is controlled at the aperture f/2, f/2.8, f/4, f/5.6, f/8 and f/11. (ISO 100)

4-1. TTL auto exposure control range
Film speed: ISO 25 - 400 (FA, FE2, FG, F-401 or Nikonos V with sync cord for land use)
ISO 25 - 1000 (F-301, F-501, F-801)
Aperture : f/1.4 - f/32
Distance : 0.6 - 20m (Refer to the table in the page 4.)

4-2. Manual repeating flash
Frequency: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10 (Hz)
Number of flashes:
At M1/8 setting: 1, 2, 3, 4, 10 (Displays -- at 10 setting)
At M1/16 setting: 1, 2, 3, 4, 5, 6, 7, 8, 20 (Displays -- at 20 setting)
With the built-in batteries, repeating flash is available up to 4 times at M1/8 setting or 8 times at M1/16 setting (with fresh batteries).
The number of flashes is increased by using an external power source (SD-6, SD-7).

4-3. Synchronization with motordrive

Power source	Light output	Sync speed (Frame/sec)	Max. No. of flashes
Built-in batteries	M1/16	Slower than 6 Slower than 3.3	Approx. 8 Approx. 10
	M1/8	Slower than 6 Slower than 3.3	Approx. 4 Approx. 5
Built-in batteries plus SD-6	M1/16	Slower than 6 Slower than 3.3	Approx. 20 Approx. 40
	M1/8	Slower than 6 Slower than 3.3	Approx. 6 Approx. 20
Biult-in batteries plus SD-7	M1/16	Slower than 6 Slower than 3.3	Approx. 10 Approx. 30
	M1/8	Slower than 6 Slower than 3.3	Approx. 5 Approx. 9

Built-in battereies: AA alkaline batteries
SD-6: 315V layer built cell
SD-7: A-type alkaline batteries

4-4. Automatic exposure control range
Distance: 0.6 - 20m

ISO	F No.					
6, 8				1.4	2	2.8
10, 12, 16			1.4	2	2.8	4
20, 25, 32		1.4	2	2.8	4	5.6
40, 50, 64	1.4	2	2.8	4	5.6	8
80, 100, 125	2	2.8	4	5.6	8	11
160, 200, 250	2.8	4	5.6	8	11	16
320, 400, 500	4	5.6	8	11	16	22
640, 800, 1000	5.6	8	11	16	22	32
1250, 1600, 2000	8	11	16	22	32	
2500, 3200, 4000	11	16	22	32		
5000, 6400	16	22	32			

5. Bounce flash

Bounce angle

Vertically: Down to -7° or up to 90°
(Click stop at -7°, 45°, 60°, 75° and 90°)
Horizontally: 90° clockwise and 180° counterclockwise
(Click stop at 30°, 60°, 90°, 120°, 150° and 180°)
Flash head can be locked at the front position for both vertical and horizontal position.

6. Switches

	Name	Type	Mode	Function
a	Power SW	Slide	OFF-STBY-ON	To turn on/off power, To set Standby mode
b	Flash mode selector	Slide	A-M-MR-TTL	To switch flahs mode
c	Sync mode selector	Slide	NORMAL- REAR	To switch sync mode
d	ZOOM SW	Push		To shift zoom setting
e	Open-flash SW	Push		To trigger flash, To turn on power in STBY mode
f	Adjustment SW (UP)	Push		To adjust F No., exposure compensation or repeating flash frequency
g	Adjsutment SW (DOWN)	Push		To adjsut F No., exposure compensation or repeating flash number
h	M SW			To change light amount in M mode, To switch TTL1/TTL2
i	Illuminator SW	Push		To light up illuminator

j	SELECT SW	Push		To switch UP/DOWN SW input
k	m-ft SW	Slide	m-ft	To select indication (meters or feet)

Usable apertures/shooting distance range in TTL mode (m)

(Shaded portion: A mode)

ISO film speed							Shooting distance range (m)					
1600	800	400	200	100	50	25	W_2 24mm	W_1 28mm	N 35mm	S 50mm	T_1 70mm	T_2 85mm
	2	1.4					5.2 ~ 20	5.7 ~ 20	6.4 ~ 20	7.5 ~ 20	8.4 ~ 20	8.9 ~ 20
	2.8	2	1.4				3.7 ~ 20	4.0 ~ 20	4.5 ~ 20	5.2 ~ 20	5.9 ~ 20	6.3 ~ 20
	4	2.8	2	1.4			2.6 ~ 20	2.9 ~ 20	3.2 ~ 20	3.7 ~ 20	4.2 ~ 20	4.4 ~ 20
8	5.6	4	2.8	2	1.4		1.8 ~ 15	2.0 ~ 16	2.3 ~ 18	2.6 ~ 20	3.0 ~ 20	3.2 ~ 20
11	8	5.6	4	2.8	2	1.4	1.3 ~ 10	1.5 ~ 11	1.6 ~ 12	1.8 ~ 14	2.1 ~ 16	2.3 ~ 17
16	11	8	5.6	4	2.8	2	1.0 ~ 7.5	1.0 ~ 8.0	1.2 ~ 9.0	1.3 ~ 10	1.5 ~ 11	1.6 ~ 12
22	16	11	8	5.6	4	2.8	0.7 ~ 5.3	0.7 ~ 5.6	0.8 ~ 6.3	1.0 ~ 7.4	1.1 ~ 8.3	1.1 ~ 8.8
32	22	16	11	8	5.6	4	0.6 ~ 3.7	0.6 ~ 4.0	0.6 ~ 4.5	0.7 ~ 5.2	0.8 ~ 5.8	0.8 ~ 6.2
	32	22	16	11	8	5.6	0.6 ~ 2.6	0.6 ~ 2.8	0.6 ~ 3.1	0.6 ~ 3.7	0.6 ~ 4.1	0.6 ~ 4.4
		32	22	16	11	8	0.6 ~ 1.8	0.6 ~ 2.0	0.6 ~ 2.2	0.6 ~ 2.6	0.6 ~ 2.9	0.6 ~ 3.1
			32	22	16	11	0.6 ~ 1.3	0.6 ~ 1.4	0.6 ~ 1.5	0.6 ~ 1.8	0.6 ~ 2.0	0.6 ~ 2.2
				32	22	16	0.6 ~ 0.9	0.6 ~ 1.0	0.6 ~ 1.1	0.6 ~ 1.3	0.6 ~ 1.4	0.6 ~ 1.5

Usable aperture/shooting distance range in TTL mode (ft)

(Shaded portion: A mode)

ISO film speed							Shooting distance range (m)					
1600	800	400	200	100	50	25	W_2 24mm	W_1 28mm	N 35mm	S 50mm	T_1 70mm	T_2 85mm
	2	1.4					17 ~ 66	19 ~ 66	21 ~ 66	25 ~ 66	28 ~ 66	29 ~ 66
	2.8	2	1.4				12 ~ 66	14 ~ 66	15 ~ 66	17 ~ 66	20 ~ 66	21 ~ 66
	4	2.8	2	1.4			8.6 ~ 66	9.3 ~ 66	11 ~ 66	12 ~ 66	14 ~ 66	15 ~ 66
8	5.6	4	2.8	2	1.4		6.1 ~ 49	6.6 ~ 52	7.4 ~ 59	8.6 ~ 66	9.7 ~ 66	11 ~ 66
11	8	5.6	4	2.8	2	1.4	4.4 ~ 34	4.7 ~ 37	5.3 ~ 41	6.0 ~ 48	6.9 ~ 54	7.3 ~ 58
16	11	8	5.6	4	2.8	2	3.1 ~ 24	3.3 ~ 26	3.7 ~ 29	4.3 ~ 34	4.9 ~ 38	5.2 ~ 41
22	16	11	8	5.6	4	2.8	2.2 ~ 17	2.4 ~ 18	2.7 ~ 20	3.1 ~ 24	3.5 ~ 27	3.7 ~ 29
32	22	16	11	8	5.6	4	2.0 ~ 12	2.0 ~ 13	2.0 ~ 14	2.2 ~ 17	2.5 ~ 19	2.6 ~ 20
	32	22	16	11	8	5.6	2.0 ~ 8.7	2.0 ~ 9.2	2.0 ~ 10	2.0 ~ 12	2.0 ~ 13	2.0 ~ 14
		32	22	16	11	8	2.0 ~ 6.1	2.0 ~ 6.5	2.0 ~ 7.3	2.0 ~ 8.6	2.0 ~ 9.6	2.0 ~ 10
			32	22	16	11	2.0 ~ 4.3	2.0 ~ 4.6	2.0 ~ 5.2	2.0 ~ 6.0	2.0 ~ 6.8	2.0 ~ 7.2
				32	22	16	2.0 ~ 3.0	2.0 ~ 3.3	2.0 ~ 3.6	2.0 ~ 4.3	2.0 ~ 4.8	2.0 ~ 5.1

7. Display

7-1. LCD display

	Name	Function	Flash mode
a	Flash mode indicator	To show flash mode	TTL, M, MR, A
b	Distance segment	To indicate distance	TTL, M, MR, A
c	Distance (m)	Flash shooting distance scale	TTL, M, MR, A
d	Distance (ft)	Flash shooting distance scale	TTL, M, MR, A
e-1	ISO value	To show ISO setting, To show repeating flash number, To show repeating flash frequency	TTL, M, A MR MR
e-2	SET	To indicate to input ISO value To indicate to input number & frequency of repeating flash	TTL, M, A MR
e-3	ISO	To show ISO value is to be input	TTL, M, A
f-1	Aperture indicator	To show aperture value	TTL, M, MR, A
f-2	F	To show F No is to be input	TTL, M, A
g-1	Angle of coverage indicator	To show angle of coverage	TTL, M, MR, A
g-2	M (ZOOM)	To show manual zooming	TTL, M, MR, A
h-1	Exp. compensation	To show exp. compensation	TTL
h-2	+/-	To show compensation value is to be input	TTL
i	Light amount indicator	To show light amount in M mode	M, MR

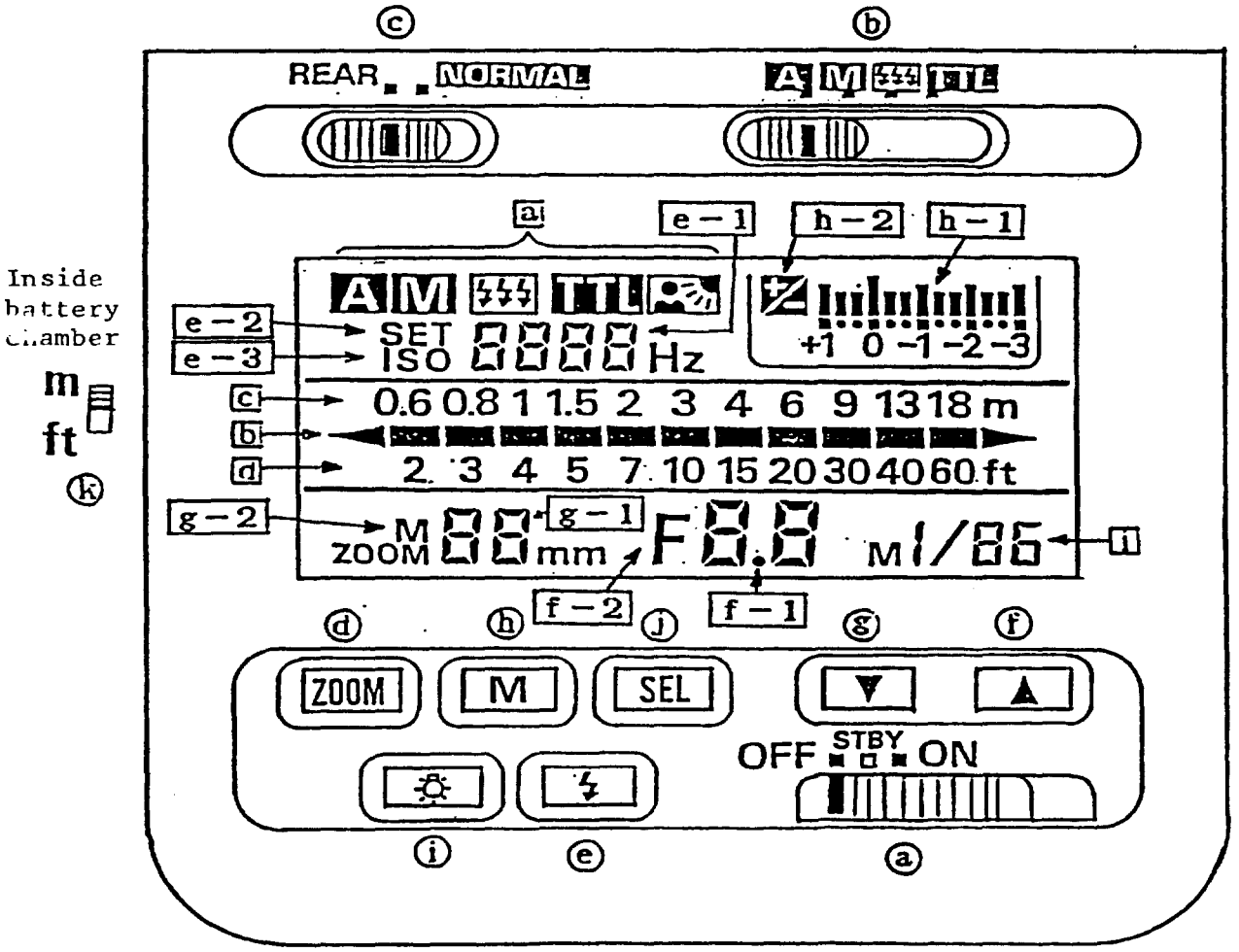
7-2. LED display
Ready-light/Warning (after shooting)

7-3. Ready-light in viewfinder (displayed in viewfinder via shoe contact CRY)
Ready-light/Warning (after and before shooting)

8. Warning

Ready-lights on SB-24 and in the camera viewfinder give the following warnings by blinking. (Blinking frequency; 4Hz)

Before shooting	TTL incapable warning	Viewfinder ready-light	TTL mode is set with non-TTL camera.
	Out of ISO range warning	Viewfinder ready-light	ISO setting is beyond usable range for TTL control.
After shooting	Full flash warning	Viewfinder & SB-24 ready-lights	Flash fires fully in A or TTL mode. (Blinks for approx. 3 sec.)



LCD display and operational switches

Ⅲ. 部 品 表 Parts List

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部品番号 Part No.	名称 Name	1台分個数 Pcs. Per Unit	部組品番号 Assembly	参照図番 Fig.	販売区分 Term of Delivery	備考 Remarks	要求単位 Q'ty per order
1	レンズ Lens	1	1B150-061		△	1G308-006-1	
3	丸 環 Ring	1	1B150-061		△	1K640-794	
4	ブロック Block	1	1B150-061		△	1K680-833	
5	ブロック Block	1	1B150-061		△	1K680-833-1	
6	板バネ Spring	1	1B150-061		△	1K240-464	
7	部品付きケーブル Cable	1	1S045-139 1B150-061		△	1S045-140	
8	樹脂ＰＣＢ ＰＣＢ	1	1S045-139 1B150-061		△	1S700-205	
9	半導体チップ Tip	2	1S045-139 1B150-061		△	1S100-003	
10	ケース Cover	1			×	1K108-071	
11	ケースひも String	2			×	1K116-372	
12	増灯ターミナル Sync. terminal	1	Ⅱ	1	○△	1B400-026	5
13	シンクロターミナル Sync. terminal	1	Ⅱ	1	○△	1B400-035	5
14	カスタムアナログ T1796F Custom analog	1	A		△	1S237-052	
15	カスタムロジック M50932-900 ＣＰＵ	1	A		△	1S210-012	
16	液表示素子（ＬＣＤ） ＬＣＤ	1	A		△	1S268-010	
101	上ケース Cover (upper)	1		1	○		1
102	下ケース Cover (lower)	1		1	○		1
103	ケースＣ Cover C	1		1	○		1

部品表 Parts List

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部品番号 Part No.	名称 Name	1台分個数 Pcs. Per Unit	部組品番号 Assembly	参照図番 Fig.	販売区分 Term of Delivery	備考 Remarks	要求単位 Q'ty per order
104	ケースD Cover D	1		1	○		1
105	ケース本体E Case E	1	F		△		
106	ケース本体F Case F	1	G		△		
107	電池蓋 Battery chamber lid	1	I		△		
108	電池室モールド（A） Battery mold A	1		1	○		1
109	電池室モールド（B） Battery mold B	1		1	○		1
110	フード Hood	1		1	○		1
111	アクリルパネル Acryle panel	1		1	○		5
112	フレネルレンズ Fresnel lens	1		1	○		1
113	フォーカシングパネル Focusing panel	1		1	○		5
114	LCD窓 LCD window	1	G		△		
115	フロントパネル Panel	1		1	○		5
116	リフレクターカバー Reflector cover	1		1	○		1
117	シューケース Shoe cover	1		1	○		1
118	ロックナット Nut	1		1	○		5
119	足台 Mounting foot	1		1	○	FSA02101-110	5
120	かさ駆動モールド Reflector actuating mold	1		1	○		5
121	ターミナルモールド Terminal mold	1	H	1	○△		1

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122	フラッシュボタン Flash button	1		1	○		5
123 dis 123-1	スイッチツマミ (A) Switch setting knob (A)	1		1	○	9216	5
124 dis 124-1	スイッチツマミ (B) Switch setting knob (B)	1		1	○	9216	5
125	スイッチツマミ (C) Switch setting knob (C)	1		1	○		5
126	モーター固定台 Motor base	1		1	○		5
127 dis 127-1	上下ロック釦 Lock button	1		1	○	9216	5
128	左右ロック釦 Lock button	1	S		△		
129	上下バウンス軸 (A) Bounce shaft (A)	1	T		△		
130	上下バウンス軸 (B) Bounce shaft (B)	1		1	○		5
131	シュー接点 Shoe contact	2		1	○		5
132	接片ガード Contact guard	2	M, N		△		
133	センサー台 Sensor base	1	L		△		
134	センサー保護板 Sensor protecting plate	1	F		△		
135	SPDフィルター SPD filter	1		1	○		5
136	LCD銘板 LCD plate	1		1	○		5
137	サイドゴム (A) Side rubber A	1		1	○		5
138	サイドゴム (B) Side rubber B	1		1	○		5
139	Xeブッシング Xe bush	1		1	○		5

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140	リフレクター Reflector	1		1	○		5
141	電池蓋接片 Contact battery chamber lid	2	I		△		
142	電池接片 (+) Battery contact (+)	1	N		△		
143	電池接片 (−) Battery contact (-)	1		1	○	SB-20#148 FSA02101	5
144	電池接片 (共通) Battery contact	1	M		△		
145	シュー (−) 接片 Soe (-) contact	1		1	○	SB-23#118 FSA02301	5
146	シュー接点バネ Shoe contact spring	4		1	○	SB-20#145 FSA02101	5
147	シュー接点 Shoe contact	4		1	○	SB-20#146 FSA02101	5
148	回転板 Retainer plate	1		1	○		5
149	パネル保持板 Panel retainer plate	1		1	○		5
150	LCD固定板 LCD base plate	1	A	1	○△		5
151	単発接片 Contact	1		1	○		5
152	スプリング押さえ Spring retainer	1		1	○		5
153	駆動軸 Shaft	1		1	○		5
154-1	クラッチ軸 Clatch shaft	1		1	○		5
155	ズーム検出ブラシ Zoom detection brush	1		1	○		5
156	左右ロックピン Lock pin	1		1	○		5
158	上下バウンスロックバネ Bounce lock spring	1		1	○		5

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部品番号 Part No.	名称 Name	1台分個数 Pcs. Per Unit	部組品番号 Assembly	参照図番 Fig.	販売区分 Term of Delivery	備考 Remarks	要求単位 Q'ty per order
159	左右バウンススプリング Bounce spring	1		1	○		5
160	クラッチスプリング Clatch spring	1		1	○		5
161	圧縮コイルバネ Coil spring	4		1	○		5
162	シンクロナット Sync nut	1	H	1	○△	SB-20#161	5
163	横止め板ナット Nut	4		1	○		5
166	増灯ナット Nut	1	H	1	○△		5
167	電源キャップ Power source cap	1		1	○		5
168	電源コネクター Power source connector	1		1	○		5
169	テトロンシート (A) Sheet (A)	1		1	○		5
170	テトロンシート (B) Sheet (B)	1		1	○		5
171	テトロンシート (C) Sheet (C)	1	D	1	△		
172	両面テープ (A) 35x15 t=0.12 Double sided adhesive tape	1	A		△		
174	タッピングネジ M2x6 Tapping screw	8		1	○		10
175	〃 M2x5	4		1	○		10
176	〃 M2x5	22		1	○		10
177	〃 M2x6	7		1	○		10
178	〃 M2x6	3		1	○		10
179	〃 M1.4x9	2		1	○		10

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180	小ネジ Screw	8		1	○		10
181	ラグ板 Lug plate	1	H	1	○△	SB-20#160	10
183	両面テープ 35x15 Double sided adhesive tape	1		1	○		10
184	スポンジ (A) 5x10x5t (black) Sponge (A)	1		1	○		10
186	スイッチブラシ Switch brush	2	S, T		△		
201	IC (S-8052ALO)	1	B		△	U4	
202	IC (S-8052ALD)	1	B		△	U3	
203 (A)	チップIC LB1631 Chip IC	1	E		△	U5	
(B)	〃 LB1634						
204	トランジスタ 2SB1148 Transistor	2	B	1	○△	Q5, Q6 SB-20#207	5
205	〃 2SD1225M	3	B	1	○△	Q14, Q15, Q17	5
206 (A)	チップトランジスタ 2SC2411K Chip transistor	1	B		△	Q7	
(B)	〃 2SD602						
(C)	〃 2SD780						
(D)	〃 2SC2859						
207 (A)	〃 2SC2412K	1	B		△	Q18	
(B)	〃 2SC3052						
(C)	〃 2SC3928						

部品番号 Part No.	名称 Name	1台分個数 Pcs. Per Unit	部組品番号 Assembly	参照図番 Fig.	販売区分 Term of Delivery	備考 Remarks	要求単位 Q'ty per order
207 (D)	チップトランジスタ Chip transistor 2SD601	1	B		△	Q18	
(E)	〃 2SC2712						
208	〃 DTA143XK	1	B		△	Q10	
209 (A)	〃 2SA1037K	1	B		△	Q13	
(B)	〃 2SA1530						
(C)	〃 2SA1235						
(D)	〃 2SB709						
(E)	〃 2SA1162						
210	〃 2SC4069	1	A		△	Q4	
211	〃 2SA1573	1	A		△	Q21	
212 (A)	〃 DTA143ZK	1	B		△	Q2	
(B)	〃 RN2401						
213 (A)	〃 DTA143ZK	1	B		△	Q9	
(B)	〃 RN2406						
214 (A)	〃 DTA114YK	1	B		△	Q16	
(B)	〃 UN2114						
(C)	〃 FN1A4P						
215 (A)	〃 DTA124XK	1	A		△	Q22	

部品表 Parts List

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部品番号 Part No.	名称 Name	1台分個数 Pcs. Per Unit	部組品番号 Assembly	参照図番 Fig.	販売区分 Term of Delivery	備考 Remarks	要求単位 Q'ty per order
215 (B)	チップトランジスタ RN2408 Chip transistor	1	A		△	Q22	
(C)	〃 FN1F4N						
216 (A)	〃 DTA123JK	1	A		△	Q19	
(B)	〃 RN2405						
217 (A)	〃 DTC114YK	2	B		△	Q1, Q3	
(B)	〃 UN2214						
(C)	〃 FA1A4P						
218 (A)	〃 DTC144EK	1	B		△	Q11	
(B)	〃 RT1N441C						
(C)	〃 FA1L4N						
(D)	〃 RN1404						
219 (A)	〃 DTC143ZK	2	B		△	Q12	
(B)	〃 RN1406						
220 (A)	〃 DTC124XK	1	A		△	Q23	
(B)	〃 RN1408						
(C)	〃 FA1F4N						
221	〃 DTB113ZK	1	A		△	Q24	
222	SCR (SA04)	1	D	1	○△	SCR2	5

部品表 Parts List

FSA02401-R. 3244. A

部品番号 Part No.	名称 Name	1台分個数 Pcs. Per Unit	部組品番号 Assembly	参照図番 Fig.	販売区分 Term of Delivery	備考 Remarks	要求単位 Q'ty per order
223	SCR (CR3EM-8)	1	D	1	○△	SCR3	5
224 (A)	SCR (CR02AM-8)	1	D	1	○△	SCR1	5
(B)	〃 (M21CA-Q)						
225	ダイオード Diode RGP-01-15	1	B		△	D4	
226	〃 SM1-XN08	5	B, D		△	D6, D9, D11, D13, D14	
227	〃 10D8	2			△	D7, D10	
228 (A)	〃 MA165	2	D		△	D8, D12	
(B)	〃 ISS133						
229 (A)	チップダイオード Chip diode MA151WK	2	E		△	D35/D36, D37/D38	
(B)	〃 DAN202K						
(C)	〃 ISS184						
230 (A)	〃 MA151K	2	B		△	D3, D34	
(B)	〃 ISS193						
231	〃 MA152K	1	A		△	D30	
232	〃 F1J2TPA	1	A		△	D2	
233 (A)	〃 MA151WA	6	A		△	D17/18, D19/20. D21/22, D23/24,D 25/26, D27/28	
(B)	〃 DAP202K						
(C)	〃 ISS181						

部品表 Parts List

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部品番号 Part No.	名称 Name	1台分個数 Pcs. Per Unit	部組品番号 Assembly	参照図番 Fig.	販売区分 Term of Delivery	備考 Remarks	要求単位 Q'ty per order
234	チップエナダイオード MA3100 Chip diode	1	B		△	D5	
235	〃 MA3430	1	A		△	D31	
236 (A)	ショットキーダイオード SS1J4 Diode	1	B		△	D1	
(B)	〃 SS1J2						
237	センサー (PPC201) Sensor	1		1	○		5
238	〃 (PPS303)	1	L		△	D33	
239	LCD (BR2222S)	1	A		△	D29	
240	電解コンデンサ 470 μF 10V(SU) Electrolytic condenser	1	B		△	C36	
241	〃 220 μF 10V(SU)	2	B		△	C1, C38	
242	〃 220 μF 6.3V (KA)	1	B		△	C37	
243	〃 1400μF(±15%)350V	1		1	○	C8	5
244	チップタンタルコンデンサ 1.5 μF 16-35V Tantalum condenser	1	B		△	C4	
245	〃 10μF 10V	1	D		△	C47	
246	〃 0.47μF 25V	1	B		△	C46	
247	MDコンデンサ 0.047 μF M35-2D MD condenser	2	D		△	C11, C13	
248	〃 0.033 μF M55-2D	1	D		△	C10	
249	〃 0.1 μF M35-2D	1	B		△	C6	
250	〃 3.3 μF K35-1T	1	D		○△	C12	5

部品表 Parts List

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部品番号 Part No.	名称 Name	1台分個数 Pcs. Per Unit	部組品番号 Assembly	参照図番 Fig.	販売区分 Term of Delivery	備考 Remarks	要求単位 Q'ty per order
251	セラミックコンデンサ 300PF 500V Ceramic condenser	1	B		△	C3	
253	ポリプロピレンコンデンサ 2200PF 400V Condenser	1	D		△	C7	
254	チップコンデンサ 0.047 μF Chip condenser	3	A, E		△	C20, C21, C45	
255	〃 0.01μF	8	A, B		△	C2, C24, C25, C27, C32 C39, C40, C44	
256	〃 0.047 μF	3	A, B		△	C5, C26, C43	
257	〃 2200PF	1	A		△	C23	
258	〃 8200PF	1	A		△	C22	
259	〃 6800PF	1	A		△	C41	
260	〃 4700PF	1	A		△	C42	
261	〃 220PF	10	A, C		△	C15, C16, C17, C18, C19 C30, C31, C33, C34, C35	
262	〃 33PF	1	A		△	C29	
263	〃 10PF	1	A		△	C28	
264	コンデンサ 0.047 μF/1KΩ Condenser	1	D		△	CR1	
265	EL (EL-24A)	1	A		△	EL	
266	Xeチューブ D-38030PL Xenon tube	1		1	○	Xe	5
267	セラロック KBR-1000HTS(1MHz) Ceramic oscillator	1	A		△	CLK2	
268	X-tal KF-38G(32.768KHz) X'tal oscillator	1	A		△	CLK1	
269	モーター Motor	1		1	○	M	5

部品表 Parts List

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部品番号 Part No.	名称 Name	1台分個数 Pcs. Per Unit	部組品番号 Assembly	参照図番 Fig.	販売区分 Term of Delivery	備考 Remarks	要求単位 Q'ty per order
270	トランス Tranceformer (16SH)	1	B	1	○△	T1	5
271	トランス Tranceformer (08EL)	1	B	1	○△	T3	5
272	トリガーコイル Trigger coil KP42	1		1	○	T2	5
273	チップインダクター Chip inducter ELJ-FA1ROM(1μF)	4	C		△	L2, L3, L4, L5	
274	インダクター Inducter BL-3	1	D	1	○△	L1	5
275	ボリウム Volume 50K	1	B		△	VR1	
277	ボリウム Volume 5K	1	B		△	VR2	
278	金属被膜抵抗 Carbon film resistor 2.2MΩ±1% 1/2W	1	B		△	R6	
279	〃 2MΩ±1% 1/2W	1	B		△	R8	
280	酸金抵抗 Resistor 10K Ω 2W	1	D		△	R22	
281	〃 7.5KΩ 2W	1	D		△	R18	
282	〃 10K Ω 1W	1	D		△	R17	
283	カーボン抵抗 Carbon resistor 2.2 Ω±5% 1/2W	1	B		△	R27	
284	〃 3.6 Ω±5% 1/4W	1	B		△	R25	
285	〃 4.3 Ω±5% 1/4W	2	B		△	R26, R30	
286	〃 100 Ω±5% 1/4W	1	D		△	R15	
287	〃 22Ω±5% 1/4W	1	D		△	R12	
288-1	〃 560 Ω±5% 1/4W	1	D		△	R20	
288	〃 1KΩ±5% 1/4W	1	D		△	R20 OLD	

部品番号 Part No.	名称 Name	1台分個数 Pcs. Per Unit	部組品番号 Assembly	参照図番 Fig.	販売区分 Term of Delivery	備考 Remarks	要求単位 Q'ty per order
289	カーボン抵抗 Carbon resistor 390KΩ ±5% 1/4W	1	D		△	R11	
290	〃 10Ω ±5% 1/6W	1	D		△	R13	
291	〃 100 Ω ±5% 1/6W	2	D		△	R14, R21	
293	〃 22Ω ±5% 1/6W	1	D		△	R16	
294	〃 7.5KΩ ±1% 1/8W	1	B		△	R37	
295	〃 30.1K Ω ±1% 1/8W	1	B		△	R9	
296	〃 680 Ω ±1% 1/10W	4	A		△	R45, R46, R47, R48	
297	〃 1KΩ ±1% 1/10W	1	B		△	R78	
298	〃 10Ω ±5% 1/10W	2	A, C		△	R60, R63	
299	〃 33Ω ±5% 1/10W	2	A, B		△	R23, R64	
300	〃 47Ω ±5% 1/10W	1	B		△	R24	
301	〃 150 Ω ±5% 1/10W	1	B		△	R28	
302	〃 220 Ω ±5% 1/10W	1	A		△	R51	
303	〃 330 Ω ±5% 1/10W	1	C		△	R62	
305	〃 820 Ω ±5% 1/10W	1	A		△	R61	
306	〃 1KΩ ±5% 1/10W	5	A, B		△	R1, R4, R29, R54, R66	
307	〃 1.5KΩ ±5% 1/10W	1	A		△	R67	
308	〃 2.2KΩ ±5% 1/10W	1	B		△	R5	

部品番号 Part No.	名称 Name	1台分個数 Pcs. Per Unit	部組品番号 Assembly	参照図番 Fig.	販売区分 Term of Delivery	備考 Remarks	要求単位 Q'ty per order
309	チップ抵抗 Chip resister 4.7KΩ±5% 1/10W	2	A, B		△	R2, R40	
310	〃 10KΩ±5% 1/10W	3	A, B		△	R3, R7, R52	
311	〃 15KΩ±5% 1/10W	1	A		△	R41	
312	〃 22KΩ±5% 1/10W	4	A		△	R10, R73, R74, R75	
313	〃 30KΩ±5% 1/10W	5	A		△	R31, R32, R33, R34, R35	
314	〃 33KΩ±1% 1/10W	1	A		△	R50	
315	〃 39KΩ±1% 1/10W	1	A		△	R49	
316	〃 68KΩ±5% 1/10W	1	B		△	R36	
317	〃 100KΩ±5% 1/10W	1	A		△	R71	
318	〃 180KΩ±5% 1/10W	1	A		△	R39	
319	〃 5.1KΩ+1% 1/10W	1	B		△	R53	
320	〃 1MΩ +5% 1/10W	1	A		△	R70	
321	〃 4.7MΩ+5% 1/10W	1	A		△	R65	
322	〃 10MΩ+5% 1/10W	1	A		△	R72	
323	〃 0Ω 1/10W	1	A		△	R76	
328	プリント基板 (A2) Printed circuit (A2)	1	A		△		
329	プリント基板 (B2) Printed circuit (B2)	1	B		△		
330	プリント基板 (C) Printed circuit (C)	1	C		△		

部品表 Parts List

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部品番号 Part No.	名称 Name	1台分個数 Pcs. Per Unit	部組品番号 Assembly	参照図番 Fig.	販売区分 Term of Delivery	備考 Remarks	要求単位 Q'ty per order
331	プリント基板 (D1) Printed circuit (D1)	1	D		△		
332	プリント基板 (E1) Printed circuit (E1)	1	E		△		
333	プリント基板 (F) Printed circuit (F)	1		1	○		5
334	プリント基板 (G) Printed circuit (G)	1		1	○		5
335	プリント基板 (H) Printed circuit (H)	1		1	○		5
336	フレキ FPC	1	A	1	○△		5
337	スライドスイッチ SS-300-A22B4C-2G Slide switch	1		1	○		5
338-1	ゴムスイッチ Rubber switch	1		1	○		5
339	ゴムコネクター Rubber connector	2	A	1	○△		5
342	PI 28 コネクター PI28A02M PI 28 connector	2	A, D		△		
343	〃 PI28A03M	1	B, D		△		
344	〃 PI28A03M-RE	1	A		△		
345	〃 PI28A03M-YL	1	A		△		
346	〃 PI28A03M-BL	1	A		△		
347	〃 PI28K04M	1	B		△		
348	〃 PI28K09M	1	A		△		
349	〃 PI28B05M	1	A		△		
350	PI 22 コネクター PI22A02M PI 22 connector	1	B		△		

部品表 Parts List

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部品番号 Part No.	名称 Name	1台分個数 Pcs. Per Unit	部組品番号 Assembly	参照図番 Fig.	販売区分 Term of Delivery	備考 Remarks	要求単位 Q'ty per order
351	PI 22 コネクター PI 22 connector PI22A03M	1	B		△		
352	〃 PI22I04M	1	B		△		
353	〃 PI25C02M	1	D		△		
354	FMコネクター FM connector 07FM-1.0BT	1	B		△		
355	〃 12FM-1.0BT	1	B		△		
362	TFコンデンサ TF condenser 0.047 μF	1	D		△	C14	
363	ボリュウム Volume 3KΩ	1	B		△	VR5	
364	〃 6.8KΩ	2	B		△	VR3, VR4	
365	MDコンデンサ MD condenser 0.068 μF M35-2D	1	D		△	C9	
366	リード線セット(A) Lead wire set (A)		O		△		
367	リード線セット(A) Lead wire set (A)		O		△		
368	リード線セット(B) Lead wire set (B)		P		△		
369	リード線セット(B) Lead wire set (B)		P		△		
370	リード線セット(C) Lead wire set (C)		Q		△		
371	リード線セット(C) Lead wire set (C)		Q		△		
372	リード線 (黒) Lead wire (black)		Q		△		
373	リード線 (白) Lead wire (white)		Q		△		
374	リード線セット(C) Lead wire set (C)		Q		△		

部品表 Parts List

FSA02401-R. 3244. A

部品番号 Part No.	名称 Name	1台分個数 Pcs. Per Unit	部組品番号 Assembly	参照図番 Fig.	販売区分 Term of Delivery	備考 Remarks	要求単位 Q'ty per order
375	リード線セット(D) Lead wire set (D)		R		△		
376	リード線セット(D) Lead wire set (D)		R		△		
377	リード線セット(D) Lead wire set (D)		R		△		
378	リード線セット(D) Lead wire set (D)		R		△		
379	リード線セット(E) Lead wire set (E)			1	○		5
380	リード線セット(F) Lead wire set (F)			1	○		5
381	チップ抵抗 33KΩ±5% 1/10W Chip resistor	1	A		△	R79	
382	チップ抵抗 4.7KΩ±5% 1/10W Chip resistor	1	A		△	R44	
383	Ceramic condenser 3300Pf.2V		88F-1017			#8902G	
1K999-091	Speedlight retaining plate						

部組品表 Subassembly List

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部組番号 Part No.	名称 Name	1台分個数 Pcs. Per Unit	構成部品番号 Constituent Parts	参照図番 Fig.	備考 Remarks	要求単位 Q'ty per order
A	A基板組 FPC unit (A)	1	14, 15, 16, 150, 151, 210, 211, 215(A) 216(A) 220(A) 221, 231, 232, 235, 239, 254, 255x7, 256x2, 257, 258, 259, 260, 261x7, 262 263, 265, 267, 268, 296x4 298, 299, 302, 305, 306, 307, 309, 310, 311, 312x4 313x5, 314x2, 315, 317, 318, 320, 321, 322, 323 328, 336, 339, 342, 344 345, 346, 348	1		1
B	B基板組 Printed circuit unit (B)	1	201, 202, 204x3, 205x2, 206(A), 207(A), 209(A)x3 212(A), 213(A), 214(A), 217(A), 218(A), 219(A), 224, 226x3, 230(A)x2, 234 236(A), 240, 241x2, 242, 244, 246, 249, 251, 255, 256, 270, 271, 275, 277, 278, 279, 283, 284, 285, 294, 295, 297, 299, 300 301, 306x3, 308, 309, 310x2, 316, 319, 324, 329, 343, 347, 350, 351, 352, 354, 355, 363, 364x2	1		1
C	C基板組 Printed circuit unit (C)	1	261x3, 273x4, 298, 303 330	1		5
D	D基板組 Printed circuit unit (D)	1	222, 223, 224A, 226x2, 227x2, 228Ax2, 247x2, 248 250, 253, 264, 274, 280, 281, 282, 286, 287, 288, 289, 290, 291x2, 293, 331, 342, 343, 353, 362, 365 171	1		1
E	E基板組 Printed circuit unit (E)	1	203(A), 229x2, 245 254x2, 332	1		1
F	ケース本体部（上） Cover unit (upper)	1	105, 134	1		1
G	ケース本体部（下） Cover unit (lower)	1	106, 114	1		1
H	シンクロターミナル組 Sync. terminal	1	12, 13, 121, 162, 166, 181	1		1
I	電池蓋組 Battery chamber lid	1	107, 141	1		1
J	フォーカシングモジュール Module	1	1G308-006-1 1K680-833 1K240-464 1S045-139 1K640-794 1K680-633-1	1	1B150-061	1
--K--	LEDモジュール Cable	1	1S100-003 1S700-205 1S045-140	1	Available as assem."J" only	1
L	センサー台部 Sensor base unit	1	133, 238	1		1

部組品表

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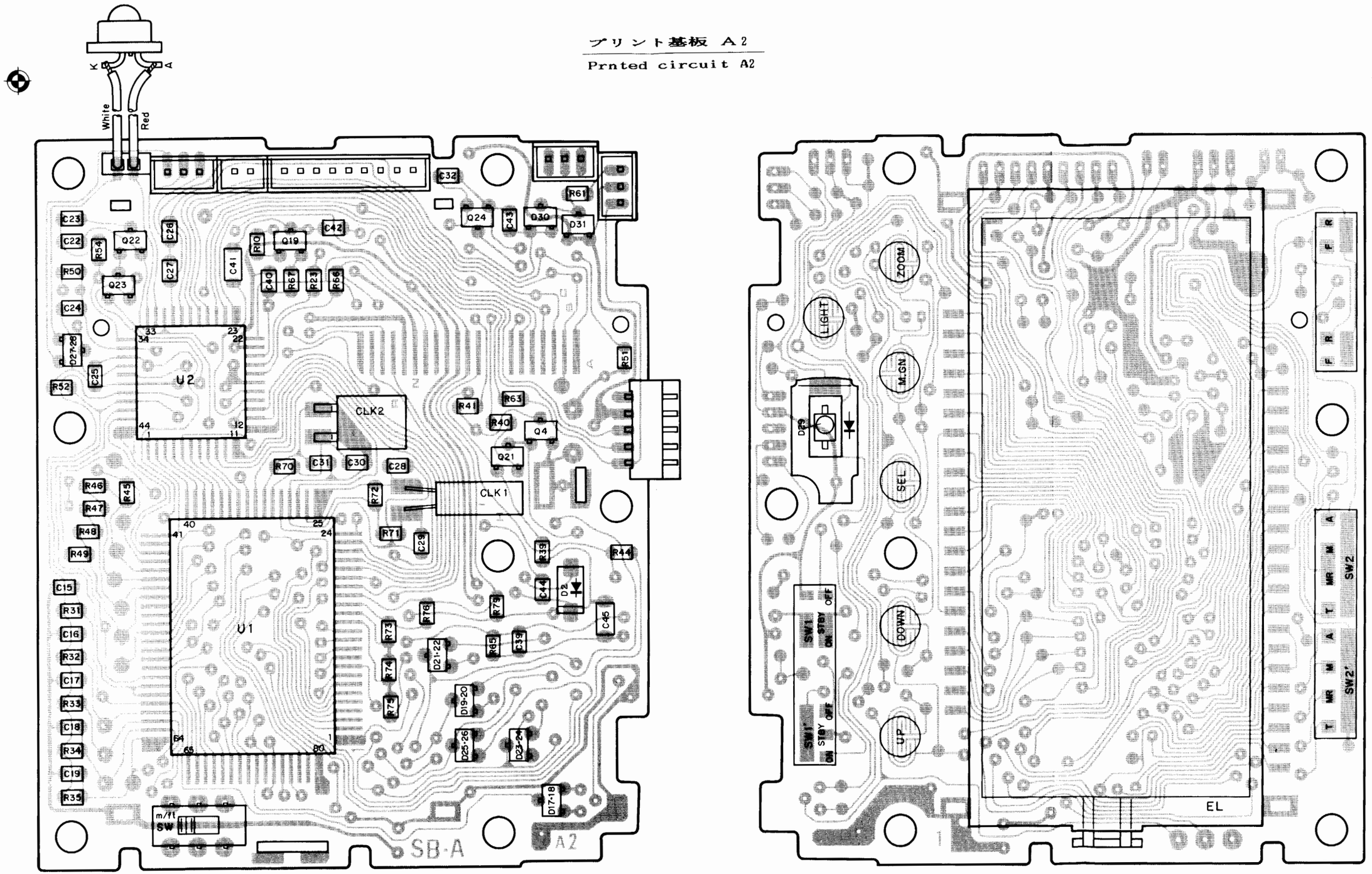
部組番号 Part No.	名　　称 Name	1台分個数 Pcs. Per Unit	構成部品番号 Constituent Parts	参照図番 Fig.	備　　考 Remarks	要求単位 Q'ty per order
M	接片ガード部 Contact guard unit	1	132, 144	1	SB-20 E FSA02101-E	1
N	電池接片（+）部 Battery contact (+) unit	1	132, 142	1	SB-20 F FSA02101-F	1
O	リード線セット（A） Lead wire set (A)	1	366, 367	1		5
P	リード線セット（B） Lead wire set (B)	1	368, 369	1		5
Q	リード線セット（C） Lead wire set (C)	1	370, 371, 372, 373, 374	1		5
R	リード線セット（D） Lead wire set (D)	1	375, 376, 377, 378	1		5
S	左右ロック釦組 Unit, lock button	1	128, 186	1		5
T	上下バウンス軸（A）組 Unit, bounce shaft (A)	1	129, 186	1		5

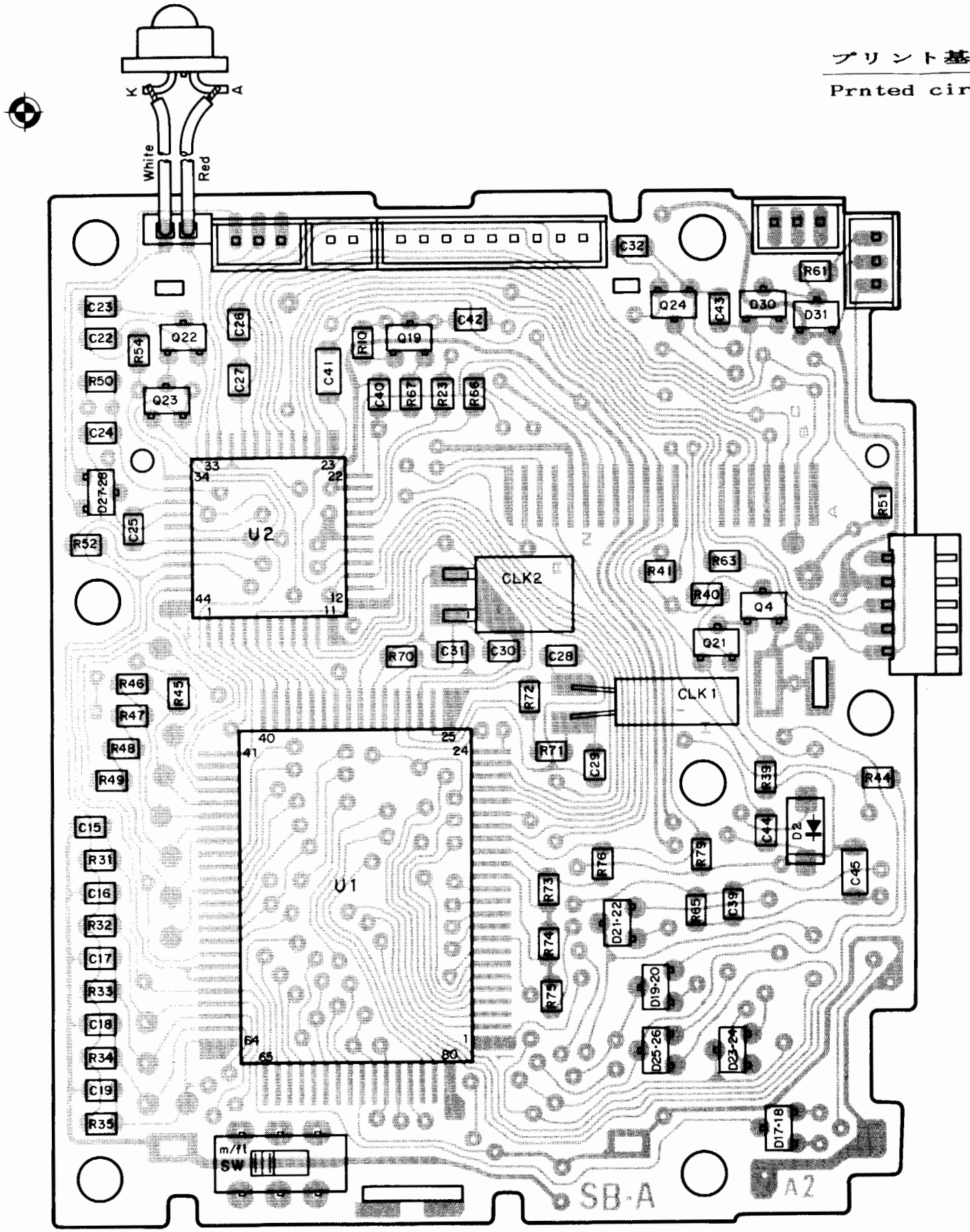
プリント基板 A2

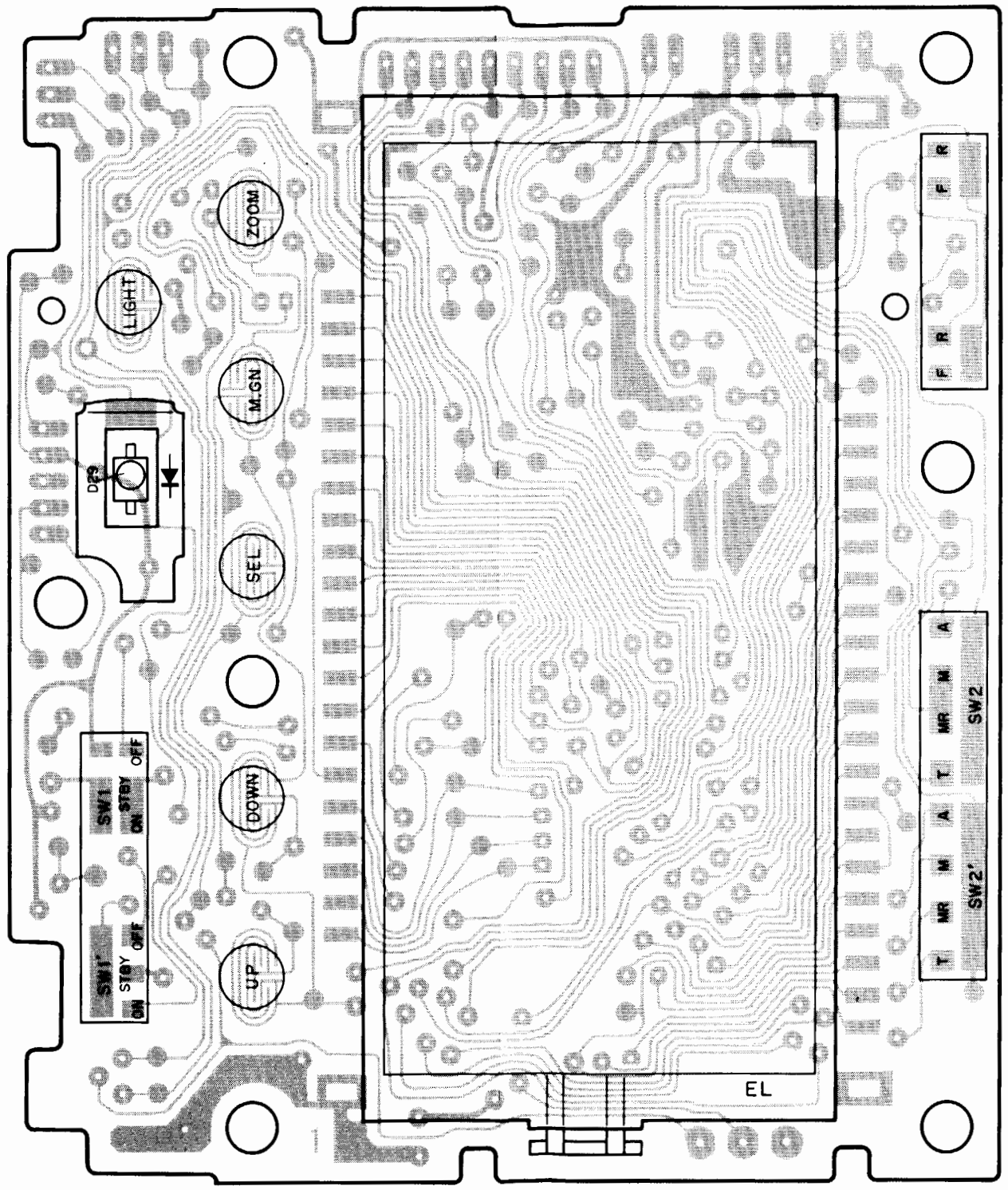
Prnted circuit A2



プリント基板 A2

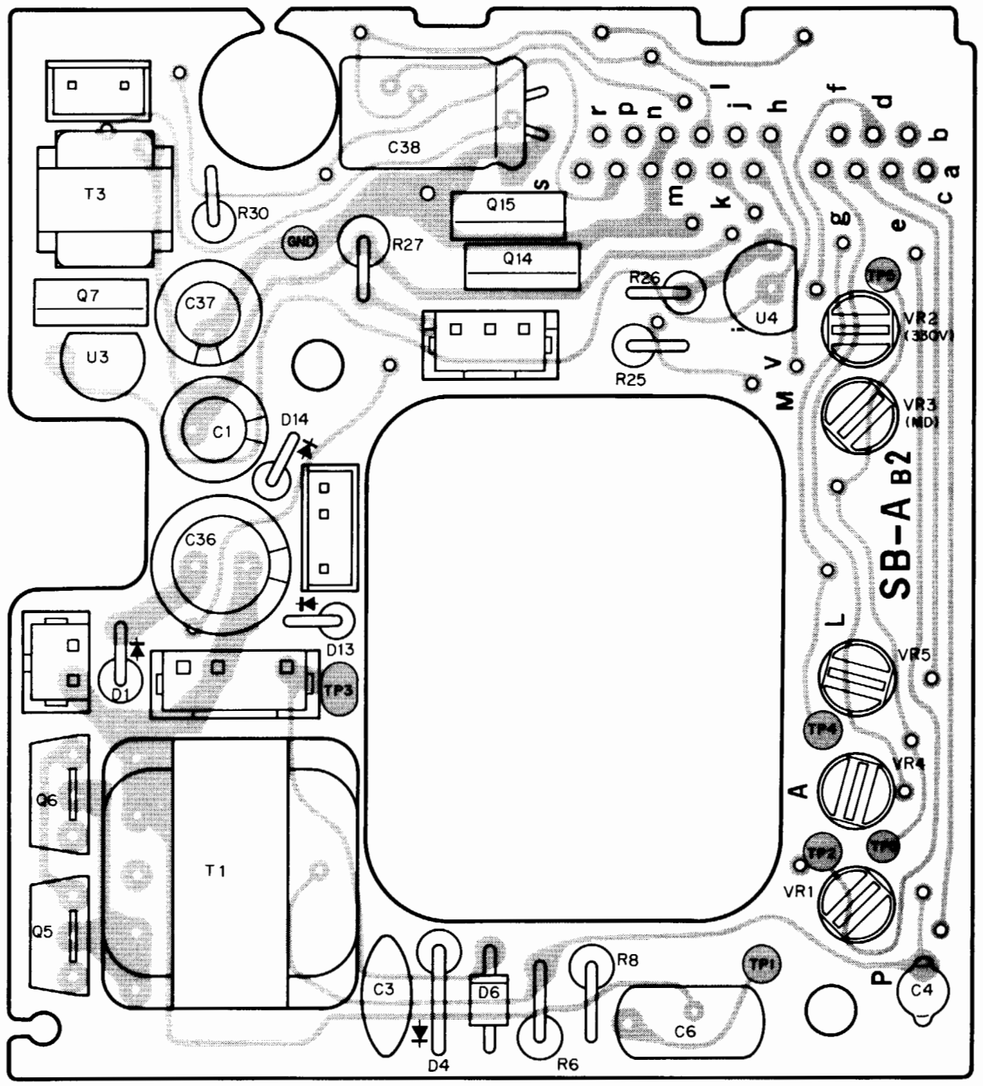
Prnted circuit A2

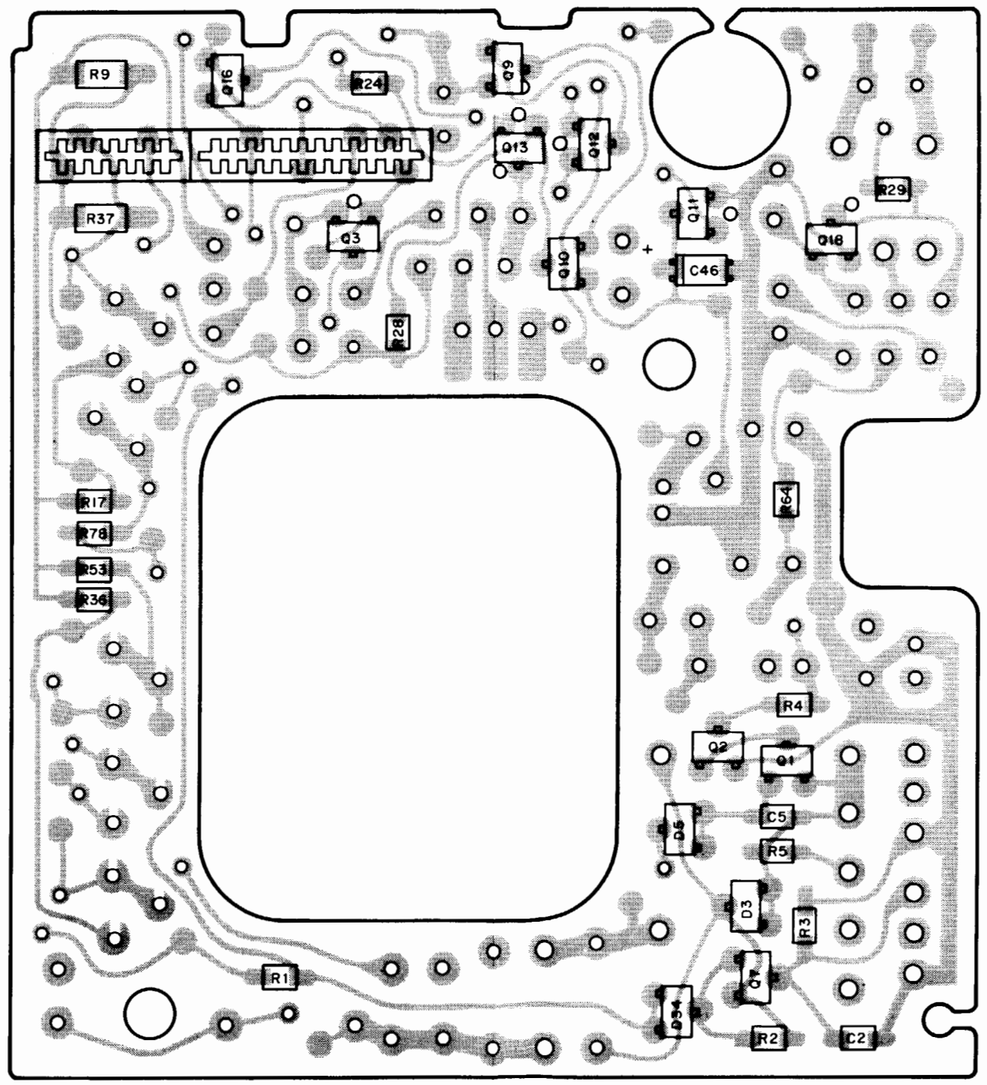




プリント基板 B2

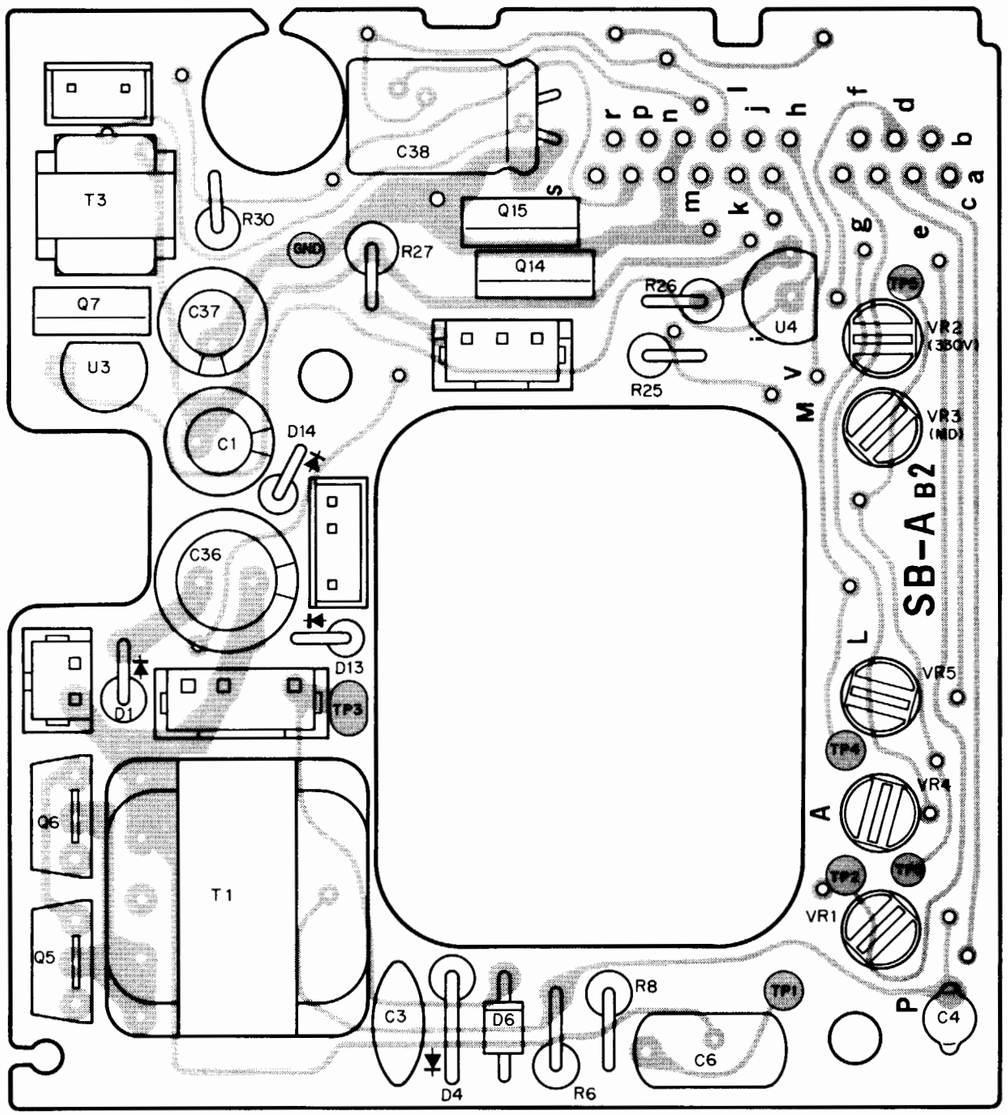
Prnted circuit B2

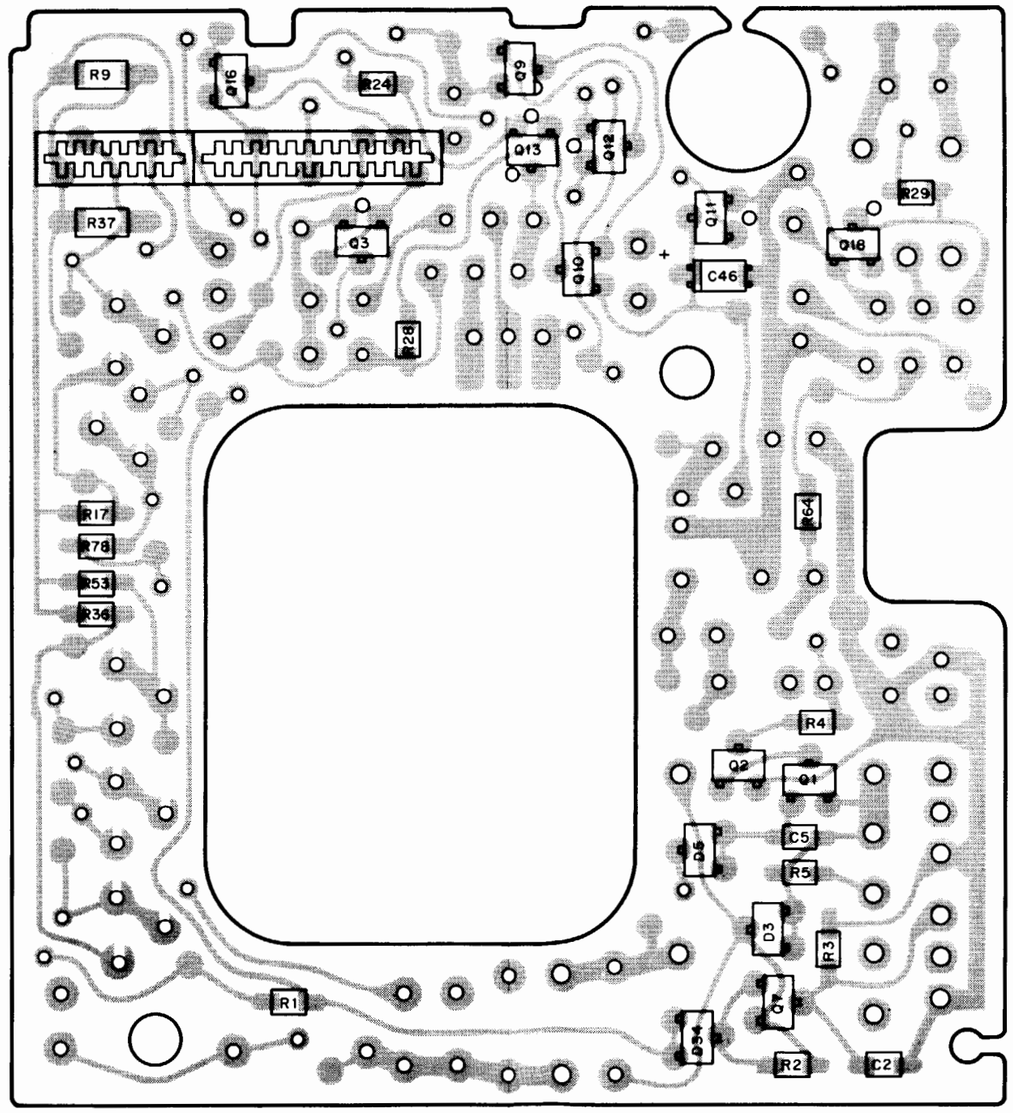




プリント基板 B 2

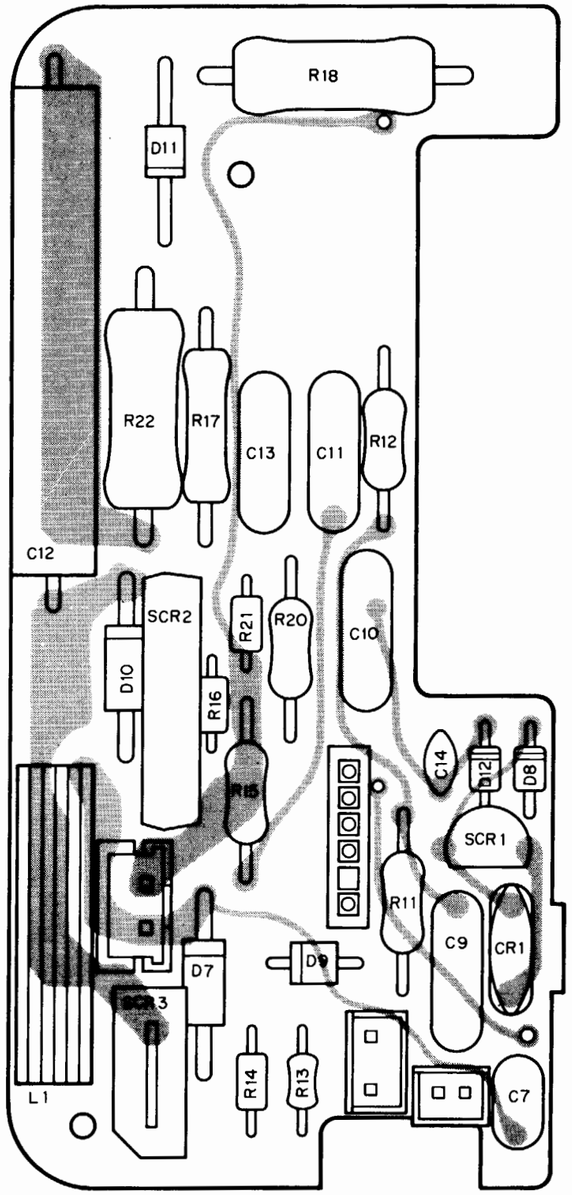
Prnted circuit B2

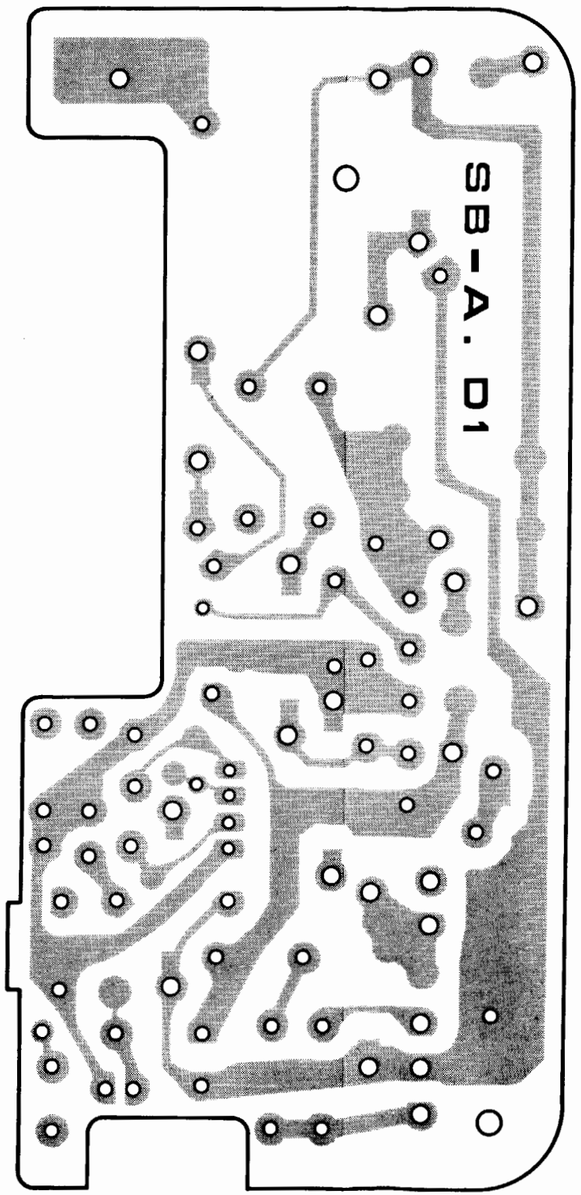




プリント基板 D1

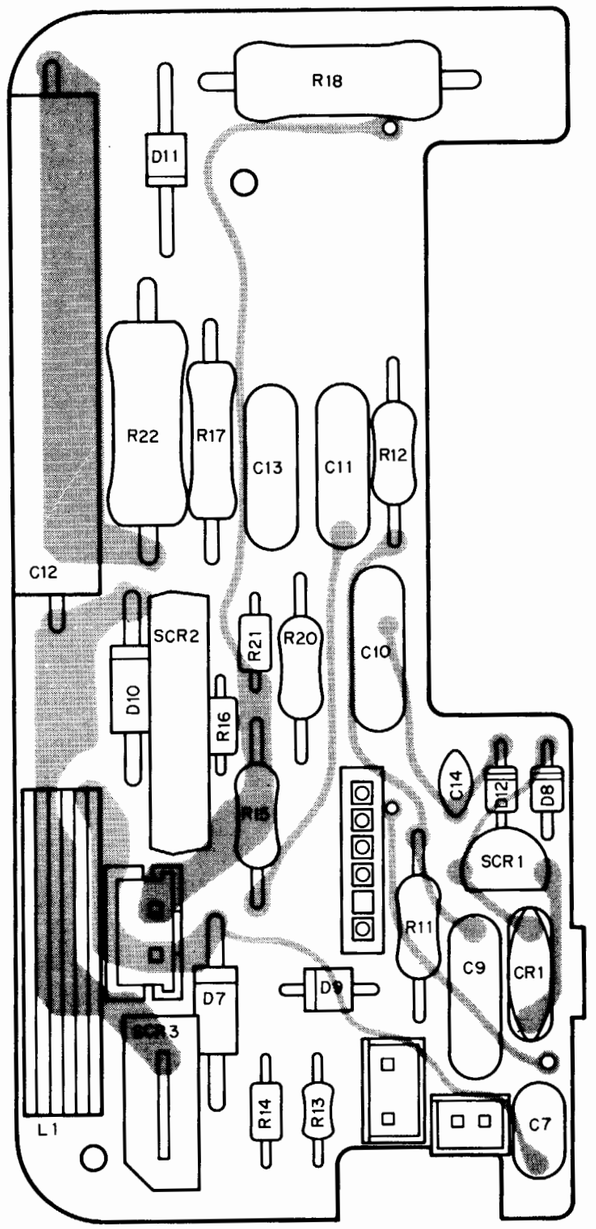
Prnted circuit D1

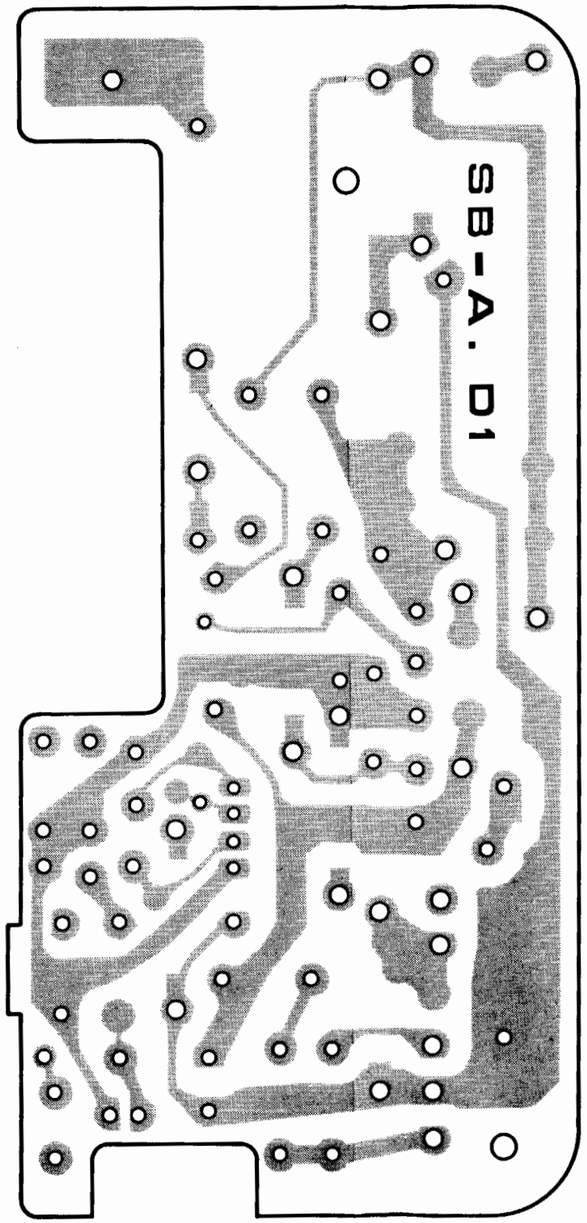




プリント基板 D1

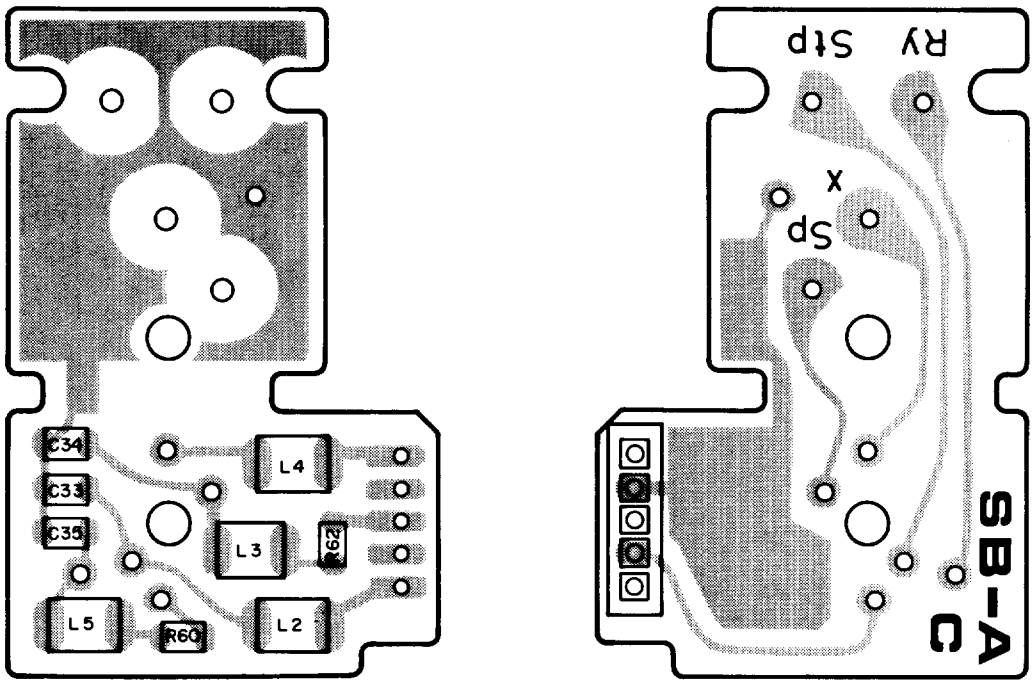
Prnted circuit D1





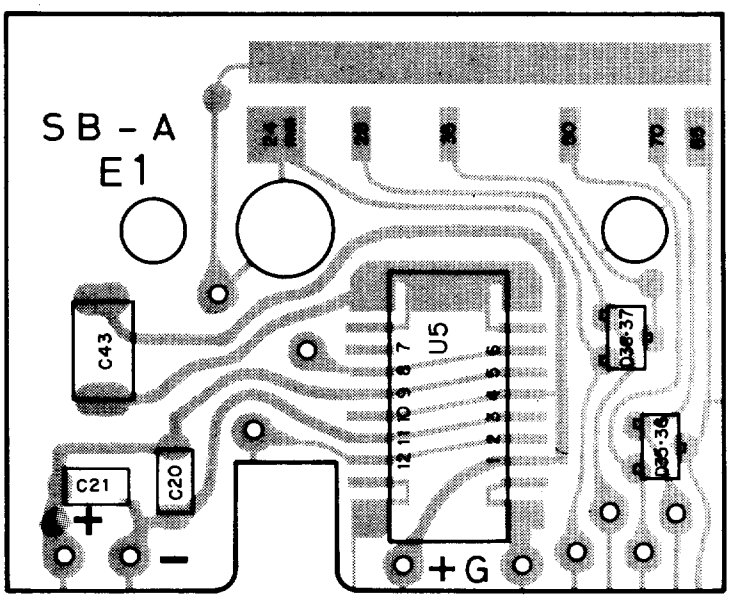
プリント基板 C

Prnted circuit C

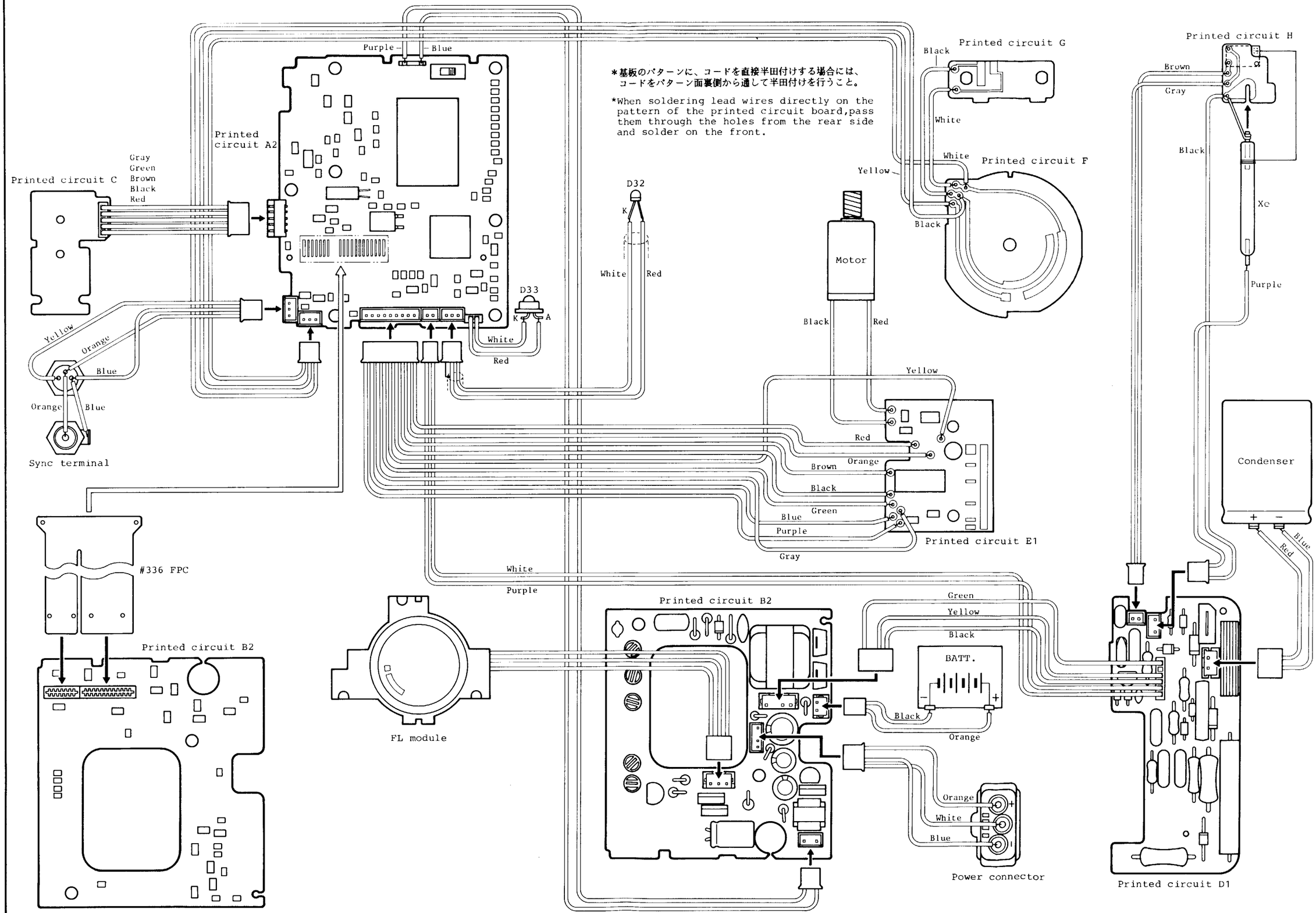


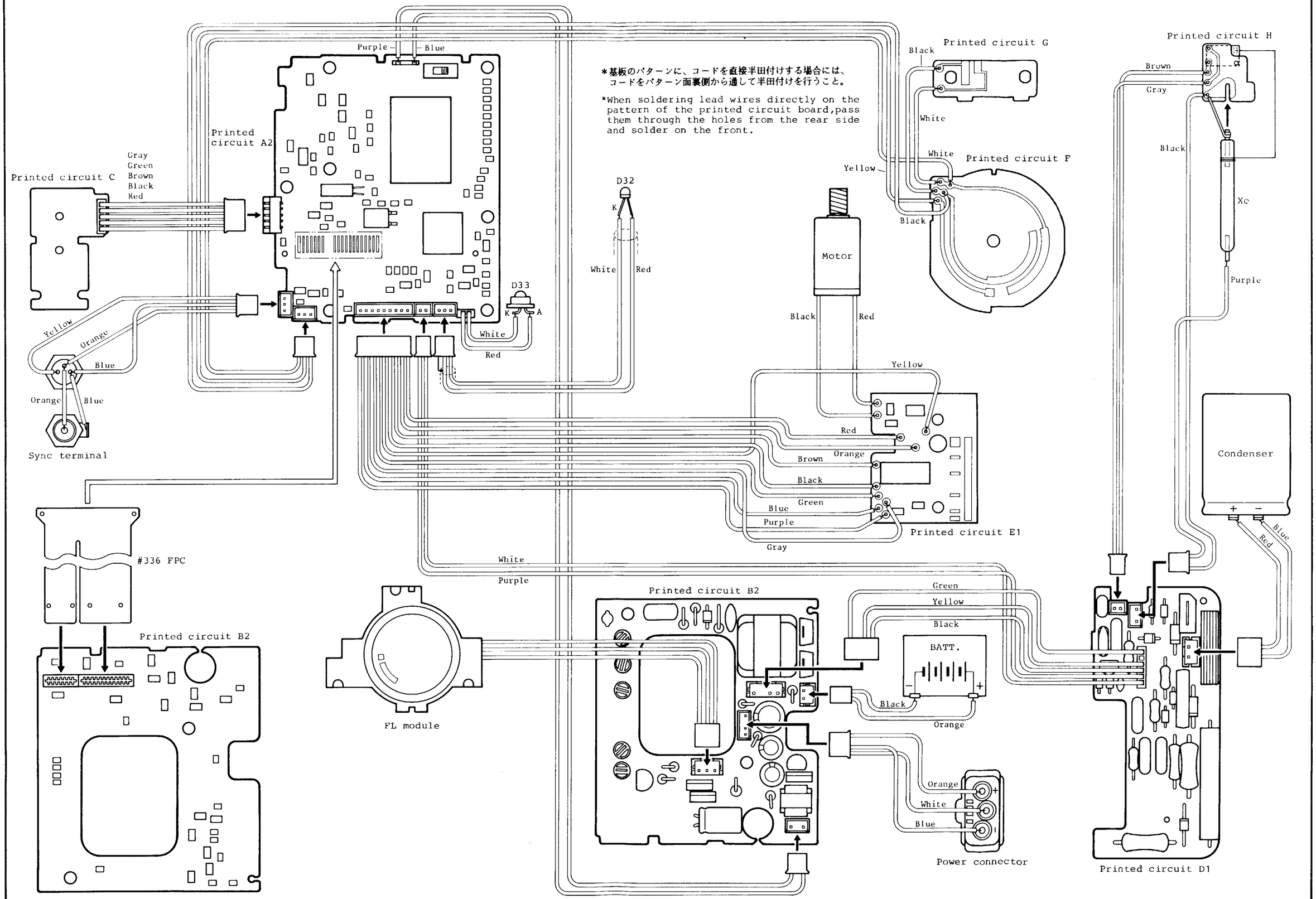
プリント基板 E1

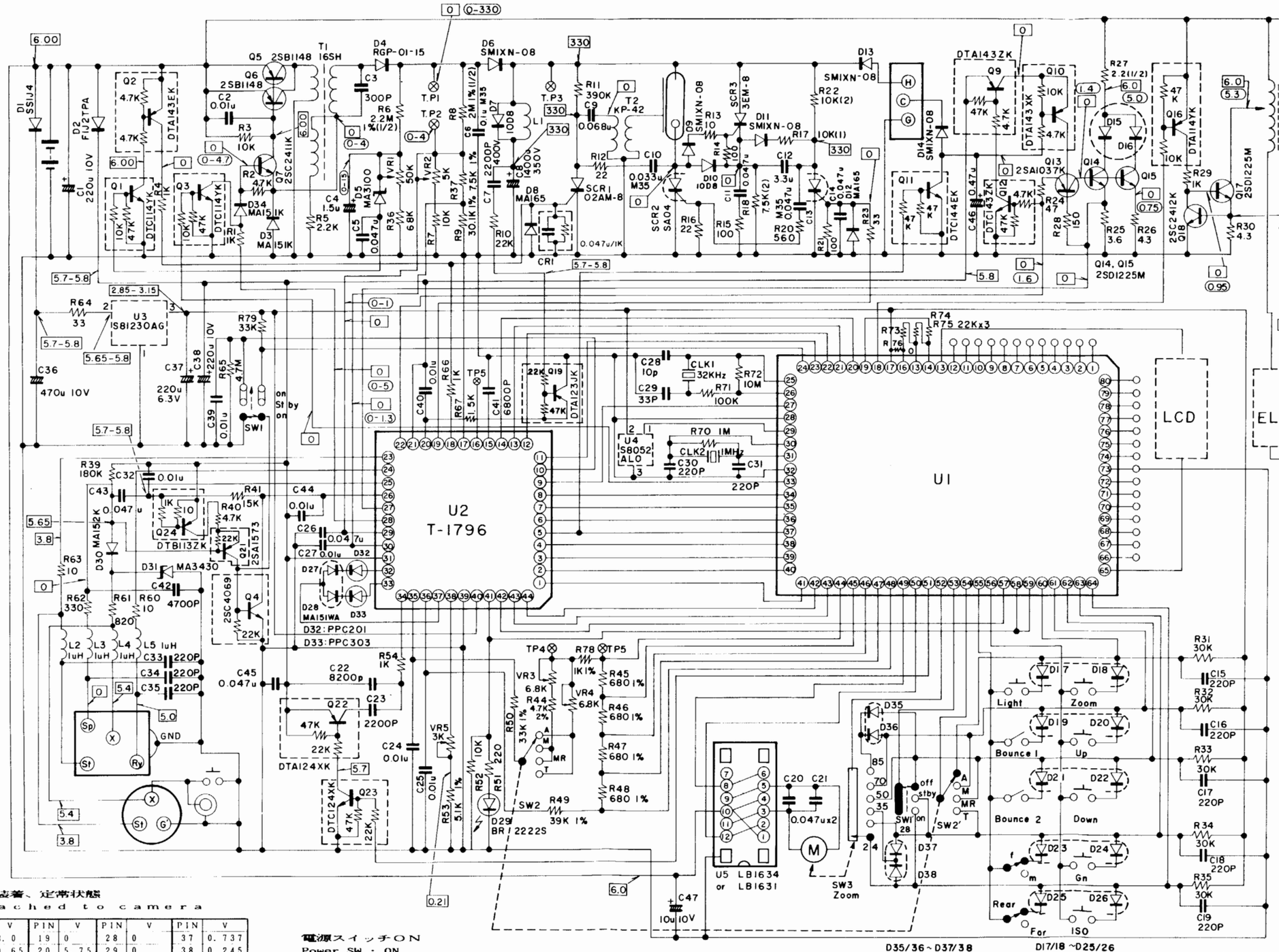
Prnted circuit E1



V. 実体配線図 Wiring Diagram

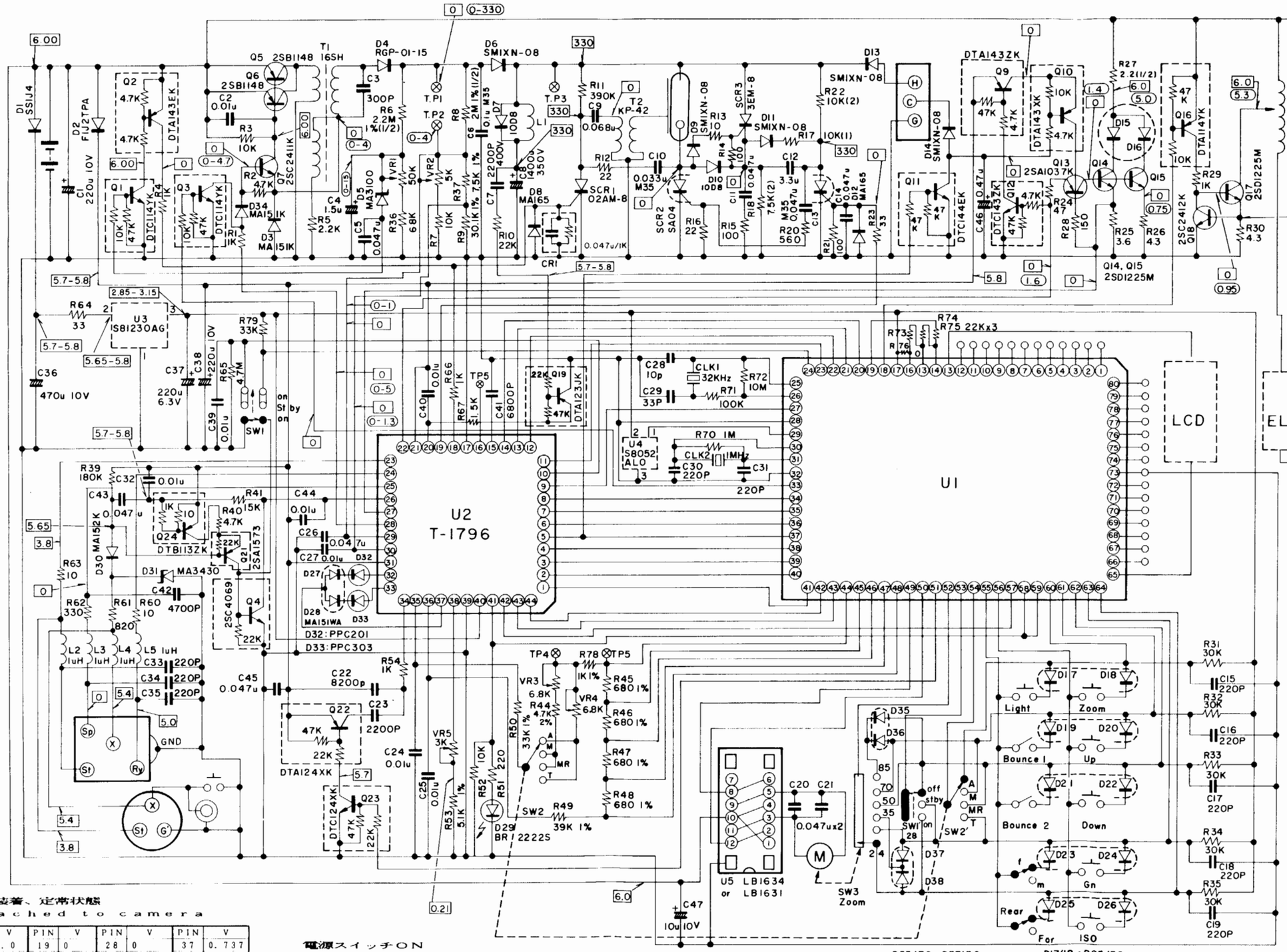



*基板のパターンに、コードを直接半田付けする場合には、
コードをパターン面裏側から通して半田付けを行うこと。
*When soldering lead wires directly on the pattern of the printed circuit board,pass them through the holes from the rear side and solder on the front.
Printed circuit A2
Purple
Blue
Printed circuit C
Gray
Green
Brown
Black
Red
D32
K
White
Red
D33
K
A
White
Red
Yellow
Orange
Blue
Orange
Blue
Sync terminal
#336 FPC
Printed circuit B2
FL module
White
Purple
Printed circuit B2
Motor
Black
Red
Printed circuit G
Black
White
White
Yellow
Black
Printed circuit F
Yellow
Red
Brown
Orange
Black
Green
Blue
Purple
Gray
Printed circuit E1
Green
Yellow
Black
BATT.
Black
Orange
Orange
White
Blue
Power connector
Printed circuit H
Brown
Gray
Black
Xe
Purple
Condenser
Blue
Red
Printed circuit D1



PIN	V	PIN	V	PIN	V	PIN	V	PIN	V
1	0	10	3.0	19	0	28	0	37	0.737
2	0	11	0.65	20	5.75	29	0	38	0.245
3	0	12	3.0	21	5.75	30	0	39	0
4	0	13	0	22	0	31	5.75	40	3.0
5	0	14	3.0	23	3.8	32	5.7	41	2.8
6	0	15	1.7	24	5.0	33	5.7	42	3.0
7	0	16		25	0	34	5.7	43	0
8	3.0	17	0	26	5.75	35	0.72	44	0
9	3.0	18	0	27	0	36	0.735		

PIN	V	PIN	V
1	1.50	41	0
2	1.50	42	0
3	1.50	43	0
4	1.50	44	40.7m
5	1.50	45	28 m
6	1.50	46	15.0m
7	1.50	47	2.5m
8	1.50	48	15.0m
9	1.50	49	0
10	1.50	50	0
11	1.50	51	0
12	1.50	52	
13	1.50	53	
14	1.0	54	
15	2.0	55	
16	3.0	56	
17	3.0	57	3.0
18	6.0	58	2.8
19	0	59	2.8
20	3.0	60	
21	0	61	
22	3.0	62	
23	0.65	63	
24	3.0	64	
25	1.2	65	1.5
26	1.3	66	1.5
27	3.0	67	1.5
28	0	68	1.5
29	3.0	69	1.5
30	1.37	70	1.5
31	1.45	71	1.5
32	0	72	1.5
33	0	73	0
34	3.0	74	1.5
35	0	75	1.5
36	0	76	1.5
37	0	77	1.5
38	0	78	1.5
39	0	79	1.5
40	0	80	1.5

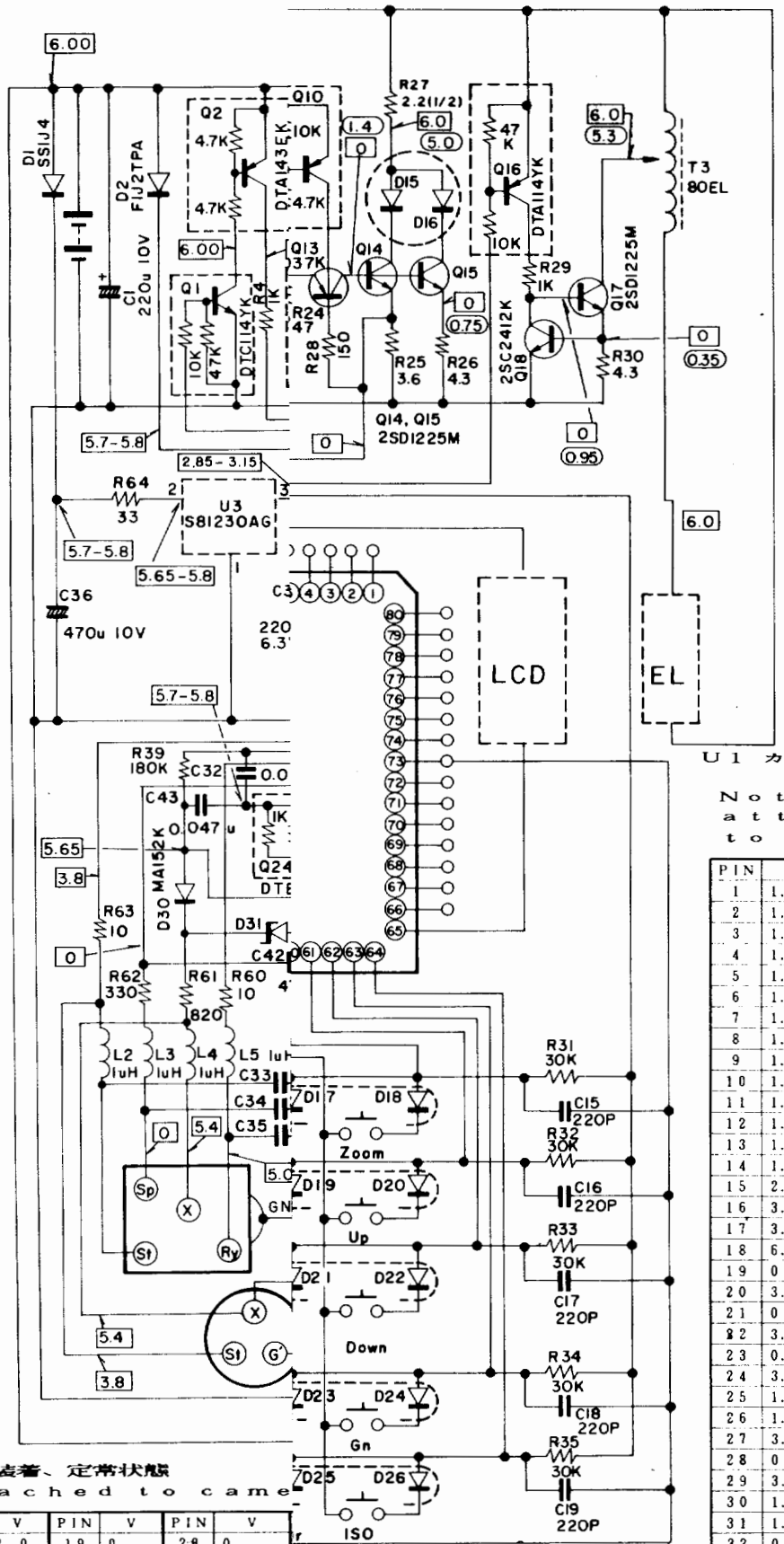


U2 カメラ未装着、定常状態
Not attached to camera

PIN	V	PIN	V	PIN	V	PIN	V	PIN	V
1	0	10	3.0	19	0	28	0	37	0.737
2	0	11	0.65	20	5.75	29	0	38	0.245
3	0	12	3.0	21	5.75	30	0	39	0
4	0	13	0	22	0	31	5.75	40	3.0
5	0	14	3.0	23	3.8	32	5.7	41	2.8
6	0	15	1.7	24	5.0	33	5.7	42	3.0
7	0	16		25	0	34	5.7	43	0
8	3.0	17	0	26	5.75	35	0.72	44	0
9	3.0	18	0	27	0	36	0.735		

U1 カメラ未装着、定常状態
Not attached to camera

PIN	V	PIN	V
1	1.50	41	0
2	1.50	42	0
3	1.50	43	0
4	1.50	44	40.7m
5	1.50	45	28 m
6	1.50	46	15.0m
7	1.50	47	2.5m
8	1.50	48	15.0m
9	1.50	49	0
10	1.50	50	0
11	1.50	51	0
12	1.50	52	
13	1.50	53	
14	1.0	54	
15	2.0	55	
16	3.0	56	
17	3.0	57	3.0
18	6.0	58	2.8
19	0	59	2.8
20	3.0	60	
21	0	61	
22	3.0	62	
23	0.65	63	
24	3.0	64	
25	1.2	65	1.5
26	1.3	66	1.5
27	3.0	67	1.5
28	0	68	1.5
29	3.0	69	1.5
30	1.37	70	1.5
31	1.45	71	1.5
32	0	72	1.5
33	0	73	0
34	3.0	74	1.5
35	0	75	1.5
36	0	76	1.5
37	0	77	1.5
38	0	78	1.5
39	0	79	1.5
40	0	80	1.5



U1 カメラ未装着、定常状態
Not attached to camera

PIN	V	PIN	V
1	1.50	41	0
2	1.50	42	0
3	1.50	43	0
4	1.50	44	40.7m
5	1.50	45	28 m
6	1.50	46	15.0m
7	1.50	47	2.5m
8	1.50	48	15.0m
9	1.50	49	0
10	1.50	50	0
11	1.50	51	0
12	1.50	52	
13	1.50	53	
14	1.0	54	
15	2.0	55	
16	3.0	56	
17	3.0	57	3.0
18	6.0	58	2.8
19	0	59	2.8
20	3.0	60	
21	0	61	
22	3.0	62	
23	0.65	63	
24	3.0	64	
25	1.2	65	1.5
26	1.3	66	1.5
27	3.0	67	1.5
28	0	68	1.5
29	3.0	69	1.5
30	1.37	70	1.5
31	1.45	71	1.5
32	0	72	1.5
33	0	73	0
34	3.0	74	1.5
35	0	75	1.5
36	0	76	1.5
37	0	77	1.5
38	0	78	1.5
39	0	79	1.5
40	0	80	1.5

U2 カメラ未装着、定常状態
Not attached to came

PIN	V	PIN	V	PIN	V	PIN	V
1	0	10	3.0	19	0	28	0
2	0	11	0.65	20	5.75	29	0
3	0	12	3.0	21	5.75	30	0
4	0	13	0	22	0	31	5.75
5	0	14	3.0	23	3.8	32	5.7
6	0	15	1.7	24	5.0	33	5.7
7	0	16	—	25	0	34	5.7
8	3.0	17	0	26	5.75	35	0.72
9	3.0	18	0	27	0	36	0.735

17/18 ~D25/26
MA151WA

電子部品対照表

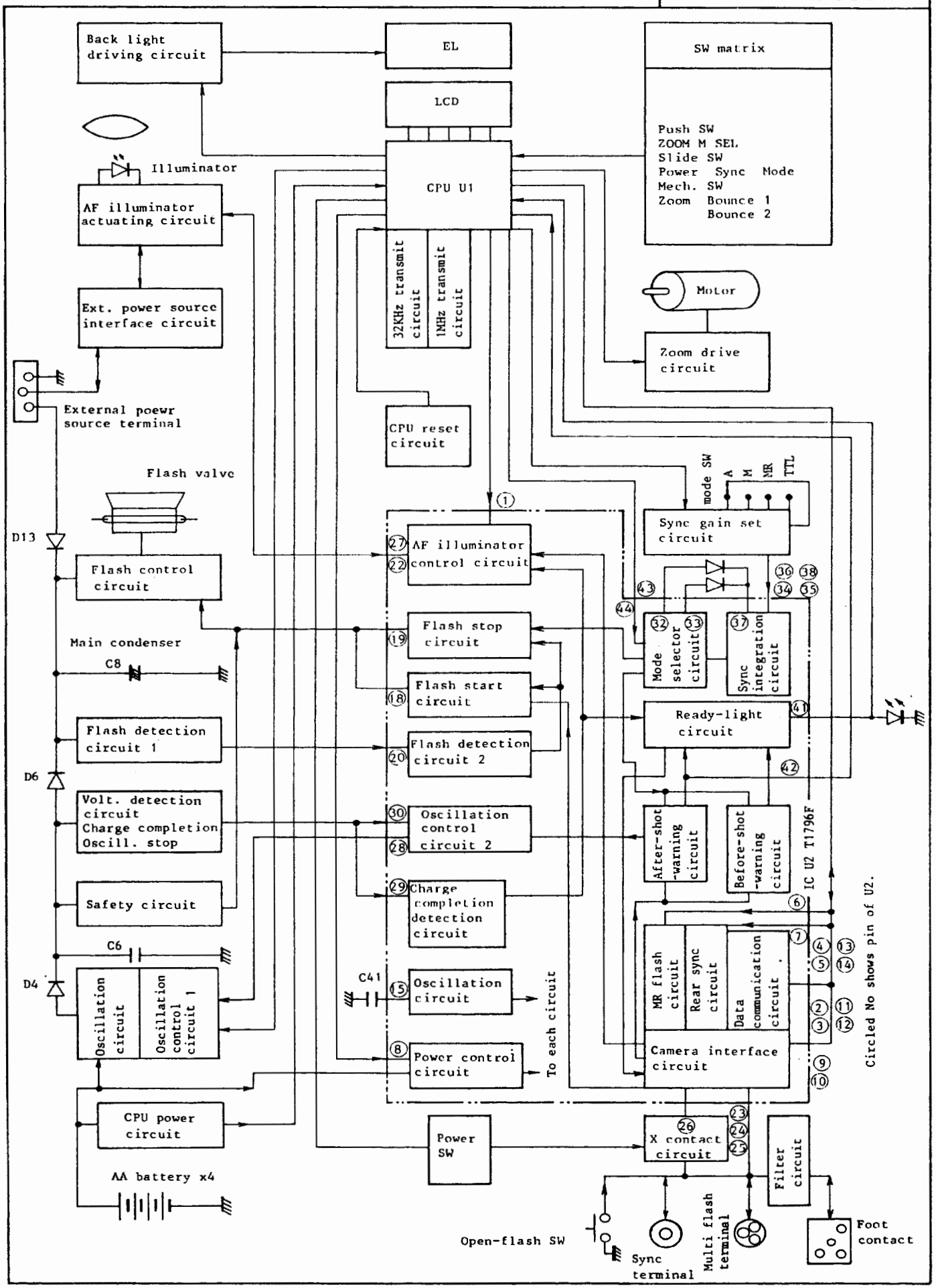
(Circuitry Parts Referenc Table)

記号 No.	部品番号 Part No.	備考 Remarks	記号 No.	部品番号 Part No.	備考 Remarks	記号 No.	部品番号 Part No.	備考 Remarks
Q1	217A	DTC114YK	Q22	215A	DTA124XK	D29	239	BR2222S
	B	UN2214		B	RN2408	D30	231	MA152K
	C	FA1A4P		C	FN1F4N	D31	235	MA3430
Q2	212A	DTA143EK	Q23	220A	DTC124XK	D32	237	PPC201
	B	RN2401		B	RN1408	D33	238	PPC303
Q3	217A	DTC114YK		C	FA1F4N	D34	230A	MA151K
	B	UN2214	Q24	221	DTB113ZK		B	ISS193
	C	FA1A4P				D35/36 D37/38	229A	MA151WK
Q4	210	2SC4069					B	DAN202K
Q5	204	2SB1148					C	ISS184
Q6								
Q7	206A	2SC2411K						
	B	2SD602				C1	241	220 μF 10V (SU)
	C	2SD780				C2	255	0.01μF
	D	2SC2859	SCR1	224A	CR02AM-8	C3	251	300PF 500V
Q9	213A	DTA143ZK		224B	M21CA-Q	C4	244	1.5 μF 16-35V
	B	RN2406	SCR2	222	SA04	C5	256	0.047 μF
Q10	208	DTA143XK	SCR3	223	CR3EM-8	C6	249	0.1 μF M35-2D
Q11	218A	DTC144EK				C7	253	2200PF 400V
	B	RT1N441C	D1	236A	SS1J4	C8	243	1400μF(±15%)350V
	C	FA1L4N		236B	SS1J2	C9	365	0.068 μF M35-2D
	D	RN1404	D2	232	F1J2TPA	C10	248	0.033 μF M55-2D
Q12	219A	DTC143ZK	D3	230A	MA151K	C11	247	0.047 μF M35-2D
	B	RN1406		B	ISS193	C12	250	3.3 μF K35-1T
Q13	209A	23A1037K	D4	225	RGP-01-15	C13	247	0.047 μF M35-2D
	B	23A1530	D5	234	MA3100	C14	362	0.047 μF
	C	2SA1235	D6	226	SM1-XN08	C15	261	220 μF
	D	2SB709	D7	227	10D8	C16		
	E	2SA1162	D8	228A	MA165	C17	261	220 μF
Q14	205	2SD1225M		B	ISS133	C18		
Q15			D9	226	SM1-XN08	C19		
Q16	214A	DTA114YK	D10	227	10D8	C20	254	0.047 μF
	B	UN2114	D11	226	SM1-XN08	C21	254	0.047 μF
	C	FN1A4P	D12	228A	MA165	C22	258	8200PF
Q17	205	2SD1225M		B	ISS133	C23	257	2200PF
Q18	207A	2SC2412K	D13	226	SM1-XN08	C24	255	0.01μF
	B	2SC3052	D14			C25		
	C	2SC3928	D17/18 D19/20	233A	MA151WA	C26	256	0.047 μF
	D	2SD601				C27	255	0.01μF
	E	2SC2712	D21/22 D23/24	B	DAP202K	C28	263	10PF
Q19	216A	DTA123JK				C29	262	33PF
	B	RN2405	D25/26	C	ISS181	C30	261	220 μF
Q21	211	2SA1573	D27/28			C31		

電子部品対照表

(Circuitry Parts Referenc Table)

記 号 No.	部品番号 Part No.	備 考 Remarks	記 号 No.	部品番号 Part No.	備 考 Remarks	記 号 No.	部品番号 Part No.	備 考 Remarks
C32	255	0.01μF	R1	306	1KΩ±5% 1/10W	R49	315	39K Ω±1% 1/10W
C33	261	220 μF	R2	309	4.7KΩ±5% 1/10W	R50	314	33K Ω±1% 1/10W
C34			R3	310	10K Ω±5% 1/10W	R51	302	220 Ω±5% 1/10W
C35			R4	306	1KΩ±5% 1/10W	R52	310	10K Ω±5% 1/10W
C36	240	470 μF 10V(SU)	R5	308	2.2KΩ±5% 1/10W	R53	319	3.3KΩ+1% 1/10W
C37	242	220 μF 6.3V(KA)	R6	278	2.2MΩ±1% 1/2W	R54	306	1KΩ±5% 1/10W
C38	241	220 μF 10V(SU)	R7	310	10K Ω±5% 1/10W	R60	298	10Ω±5% 1/10W
C39	255	0.01μF	R8	279	2MΩ±1% 1/2W	R61	305	820 Ω±5% 1/10W
C40	255	0.01μF	R9	295	30.1K Ω±1% 1/8W	R62	303	330 Ω±5% 1/10W
C41	259	6800PF	R10	312	22K Ω±5% 1/10W	R63	298	10Ω±5% 1/10W
C42	260	4700PF	R11	289	390KΩ±5% 1/4W	R64	299	33Ω±5% 1/10W
C43	256	0.047 μF	R12	287	22Ω±5% 1/2W	R65	321	4.7MΩ+5% 1/10W
C44	255	0.01μF	R13	290	10Ω±5% 1/6W	R66	306	1KΩ±5% 1/10W
C45	254	0.047 μF	R14	291	100 Ω±5% 1/6W	R67	307	1.5KΩ±5% 1/10W
C46	246	0.47μF	R15	286	100 Ω±5% 1/4W	R70	320	1MΩ+5% 1/10W
C47	245	10μF 10V	R16	293	22Ω±5% 1/6W	R71	317	100KΩ±5% 1/10W
			R17	282	10K Ω 1W	R72	322	10M Ω+5% 1/10W
			R18	281	7.5KΩ 2W	R73	312	22K Ω±5% 1/10W
CR1	264	0.047 μF/1KΩ	R20	OLD 288	1KΩ±5% 1/4W	R74		
EL	265	EL-24A	R20	288-1	560 Ω±5% 1/4W	R75		
Xe	266	D-3830PL	R21	291	100 Ω±5% 1/6W	R76	323	0 Ω+5% 1/10W
CLK1	268	KF-38G(32.768KHz)	R22	280	10K Ω 2W	R78	297	1KΩ±1% 1/10W
CLK2	267	KBR-1000HTS(1MHz)	R23	299	33Ω±5% 1/10W	R79	381	33K Ω±5% 1/10W
M	269	Motor	R24	300	47Ω±5% 1/10W			
			R25	284	3.6 Ω±5% 1/4W	U1	325	CPU F-50932
T1	270	16SH	R26	285	4.3 Ω±5% 1/4W	U2	326	T-1796F
T2	272	KP42	R27	283	2.2 Ω±5% 1/2W	U3	202	S-81230AG
T3	271	08EL	R28	301	150 Ω±5% 1/10W	U4	201	S-8052ALO
			R29	306	1KΩ±5% 1/10W	U5	203A	LB1631
L1	274	BL-3	R30	285	4.3 Ω±5% 1/4W		203B	LB1634
L2	273	ELJ-FA1ROM(1μF)	R31	313	30K Ω±5% 1/10W			
L3			R32			LCD	327	
L4			R33					
L5			R34					
			R35					
VR1	275	50K	R36	316	68K Ω±5% 1/10W			
VR2	277	5K	R37	294	7.5KΩ±1% 1/8W			
VR3	364	6.8KΩ	R39	318	180KΩ±5% 1/10W			
VR4			R40	309	4.7KΩ±5% 1/10W			
VR5	363	3KΩ	R41	311	15K Ω±5% 1/10W			
			R44	382	4.7KΩ±2% 1/10W			
			R45	296	680 Ω±1% 1/10W			
			R46					
			R47					
			R48					


Back light driving circuit
EL
LCD
SW matrix
Push SW
ZOOM M SEL
Slide SW
Power Sync Mode
Mech. SW
Zoom Bounce 1
Bounce 2
CPU U1
Illuminator
AF illuminator actuating circuit
Ext. power source interface circuit
32KHz transmit circuit
1MHz transmit circuit
Motor
Zoom drive circuit
External poewr source terminal
CPU reset circuit
Flash valve
mode SW
A
M
MR
TTL
D13
Sync gain set circuit
AF illuminator control circuit
Flash control circuit
Flash stop circuit
Main condenser
C8
Mode selector circuit
Sync integration circuit
Flash start circuit
Ready-light circuit
Flash detection circuit 1
Flash detection circuit 2
D6
Volt. detection circuit
Charge completion
Oscill. stop
Oscillation control circuit 2
After-shot -warning circuit
Before-shot -warning circuit
IC U2 T1796F
Safety circuit
Charge completion detection circuit
C6
D4
Oscillation circuit
Oscillation control circuit 1
C41
Oscillation circuit
MR flash circuit
Rear sync circuit
Data communication circuit
To each circuit
Power control circuit
Camera interface circuit
Circled No shows pin of U2.
CPU power circuit
Power SW
X contact circuit
Filter circuit
AA battery x4
Open-flash SW
Sync terminal
Multi flash terminal
Foot contact

ANALOG CONTROL IC (T1796F) TERMINALS

NO.	NAME	FUNCTION
1	ALC	AF illuminator sig. input terminal (Lights up at H.)
2	RWC	Data communication & camera distinction sig. input/output terminal (to CPU U1)
3	RWD	
4	IDA	
5	ISP	
11	COMP	
12	DIN	
13	DOUT	
14	CLK	
6	RPF	Repeating flash timing sig. input terminal
7	RSYC	Rear sync mode setting terminal (Rear sync at H)
8	PCON	Power control terminal (Power ON at H)
9	XINT	Outputs same sig. as input to CX (pin 26)
10	SPO	Turns to L when ISP current flows into CSP (pin 25)
15	OSCI	Connects condenser (6800pF) to generate reference clock of IC (Oscillation frequency: 1024Hz)
16	OSCO	2Hz oscillation output terminal (Not used)
17	GND(L)	GND for large current (GND line in IC is divided into two, for large current and for small current)
18	TG	Outputs flash start sig.
19	STP	Outputs flash stop sig.
20	LI	Flash detection sig. input terminal (Flash cannot be controlled correctly unless this terminal receives signal.)
21	Vcc	Power input terminal
22	ALB	Outputs AF illuminator sig.
23	CSTP	Flash stop sig. (from camera) input terminal
24	CRY	Output terminal for sync shutter speed changeover sig., charging completion sig. and warning signals
25	CSP	AF illuminator sig. input terminal
26	CX	Flash start sig. input terminal
27	ALE	AF illuminator light-up current control terminal
28	BLK	Oscillation control sig. output terminal
29	RY	Detects charging completion voltage in main condenser
30	MON	Detects oscillation stop voltage in main condenser
31	PSW	IC power on terminal IC starts functioning when this terminal turns to L. IC stops operation in approx. 76 sec after this terminal becomes open. (Not used)
32	MDM	Anode of light sensor for M & MR mode is connected.
33	MDA	Anode of light sensor for A mode is connected.

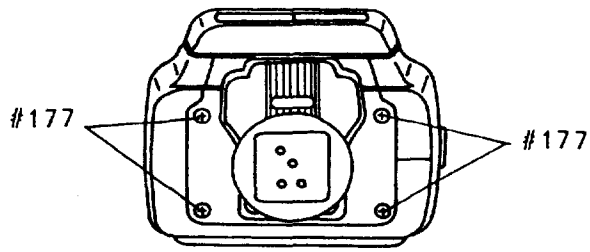
NO.	NAME	FUNCTION
34	INTG	Condenser to integrate light electric current in M, MR and A mode is connected. There is a comparator inside IC. Threshold voltage is Vcc-1.22V
35	IG2	Sets gain in M, MR and A modes. Fixed current (approx. 20μA) is output.
36	IG1	Same as IG2; Gain becomes larger when VIG1 is larger than VIG2.
37	SENS	Cathode of light sensors for M, MR and A modes is connected.
38	CS	Sets fixed current IIG1 and IIG2
39	GND(S)	GND for small current (Refer to pin 17.)
40	VDD	CPU power input terminal
41	SRY	Output terminal for ready-light Outputs when a signal is input into RY terminal (pin 29)
42	WAR	Warning output terminal; turns to L while warning is given
43	MD1	Mode switch terminal L / L — TTL — L / H — A — H / L — M
44	MD2	Mode switch terminal L / L — TTL — L / H — A — H / L — M

CPU (M50932) TERMINALS

NO	NAME	I/O	FUNCTION
1	S8	O	LCD driving (segment)
2	S7	O	
3	S6	O	
4	S5	O	
5	S4	O	
6	S3	O	
7	S2	O	
8	S1	O	
9	S0	O	
10	COM3	O	LCD driving (common)
11	COM2	O	
12	COM1	O	
13	COM0	O	
14	VL1	I	LCD power input 1V
15	VL2	I	2V
16	VL3	I	3V
17	VDD		Power source 3V
18	CNTR	O	Back light drive signal
19	P37	O	LCD power control (L:ON)
20	P36	I&O	Data communication & camera distinction signal I/O terminals
21	P35	O	
22	P34	I	
23	P33	I	
24	P32	I	Power ON iterrupt
25	XCIN	I	1MHz transmit circuit
26	XCOUT	O	
27	INT1	I	X contact ON interrupt
28	CNVss		GND
29	RESET	I	Reset
30	XIN	I	1MHz transmit circuit
31	XOUT	O	
32	Vss		GND
33	P27	O	Oscillation control
34	P26	O	Power control
35	P25	O	rear sync setting
36	P24	O	Repeating flash timing
37	P23	O	Data communication & camera distinction signal I/O terminals
38	P22	O	
39	P21	O	
40	P20	O	
41	P17	O	AF illuminator signal
42	P16	O	Mode setting signal
43	P15	O	
44	P14	O	Gain setting signal in A, M, MR mode
45	P13	O	
46	P12	O	
47	P11	O	
48	P10	O	
49	P07	O	Zooming motor driving signal
50	P06	O	
51	P05	O	A, M, MR gain set sig.
52	P04	O	Switch matrix reading output
53	P03	O	
54	P02	O	
55	P01	O	
56	P00	O	
57	P47	I	Warning after shot input
58	P46	I	Charge completion input
59	P45	I	Not used
60	P44	I	Switch matrix reading input
61	P43	I	
62	P42	I	
63	P41	I	
64	P40	I	
65	S23	O	LCD driving (segment)
66	S22	O	
67	S21	O	
68	S20	O	
69	S19	O	
70	S18	O	
71	S17	O	
72	S16	O	
73	VSS		GND
74	S15	O	LCD driving (segment)
75	S14	O	
76	S13	O	
77	S12	O	
78	S11	O	
79	S10	O	
80	S9	O	

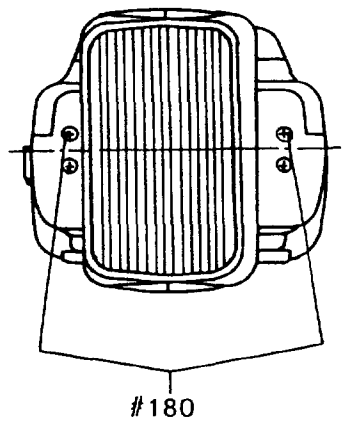
VIII. DISASSEMBLING (Assembling can be made in the reverse order.)

1. Mounting foot



Unfasten screws #177x4.

2. Front cover

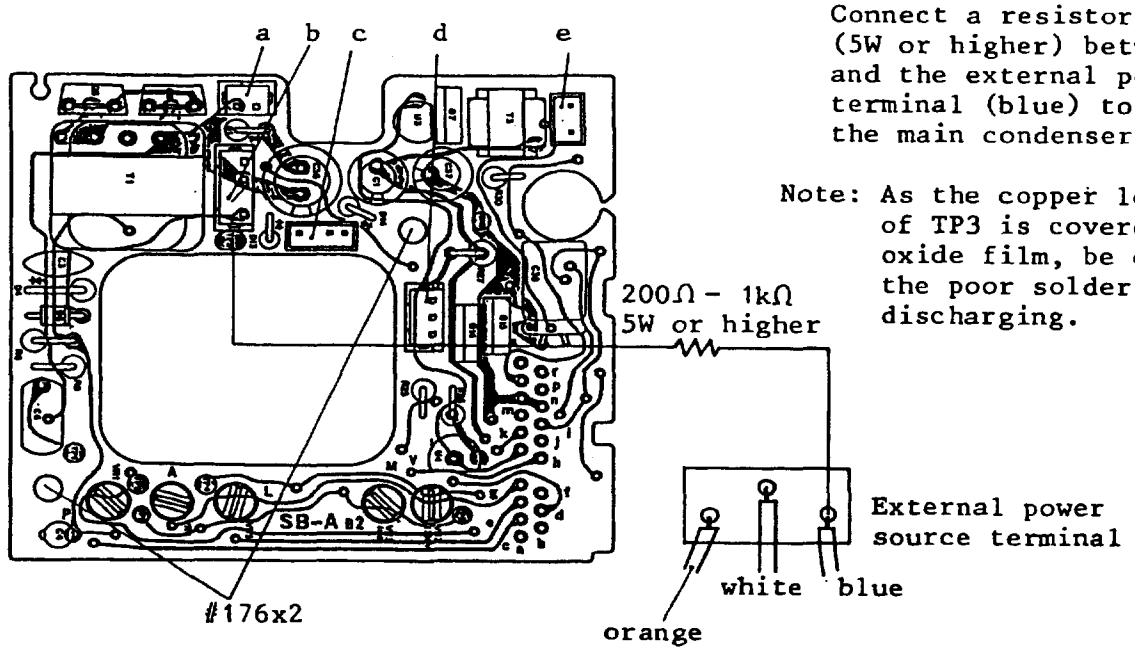


Rotate the flash head by 90° in the clockwise/counterclockwise direction and unfasten screws #180x2.

Restore the flash head to the front position and lock it.

Hold the rear cover and take off front cover.

Top printed board, battery case



1) Discharge the main condenser.

Connect a resistor 200Ω- 1kΩ (5W or higher) between TP3 and the external power source terminal (blue) to discharge the main condenser.

Note: As the copper leaf surface of TP3 is covered with oxide film, be careful of the poor soldering when discharging.

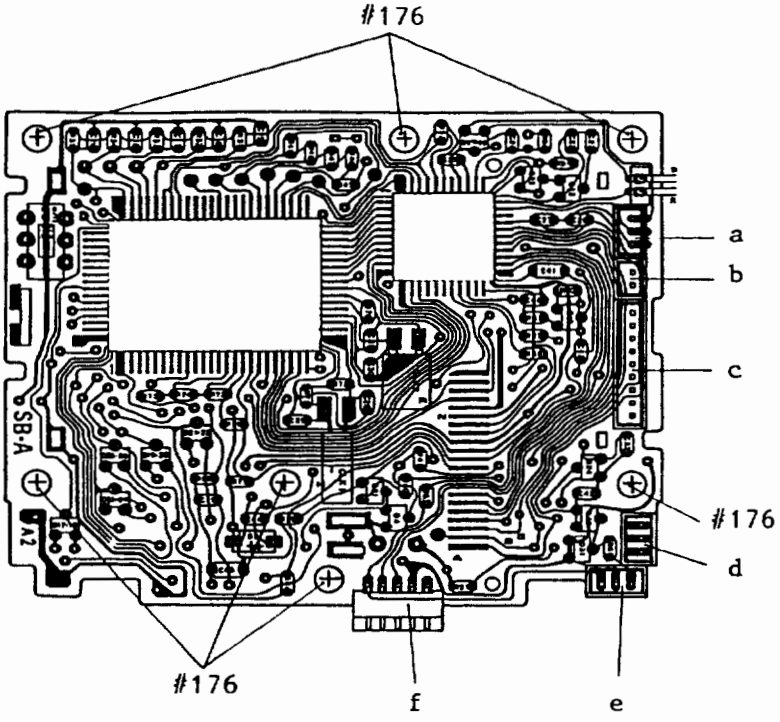
2) Remove five connectors ("a" to "e").

3) Unfasten screws #176x2

4) Remvoe battery case and take out the lead wire from the hole of the top printed board.

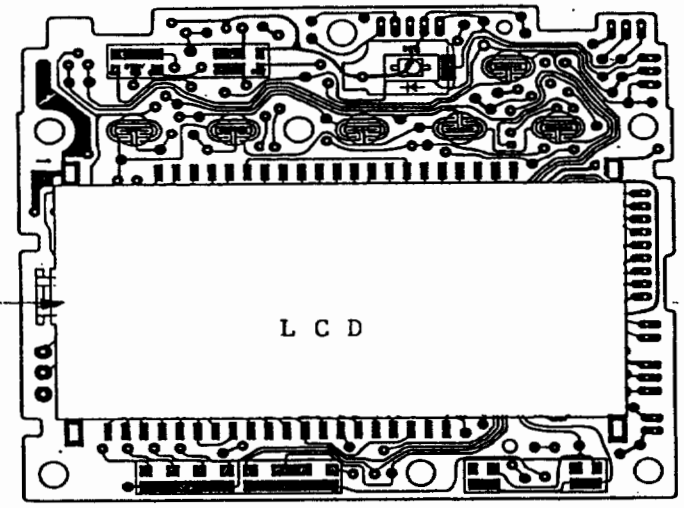
5) Remove two FPC connectors on the rear side of the top printed board.

4. Bottom printed board



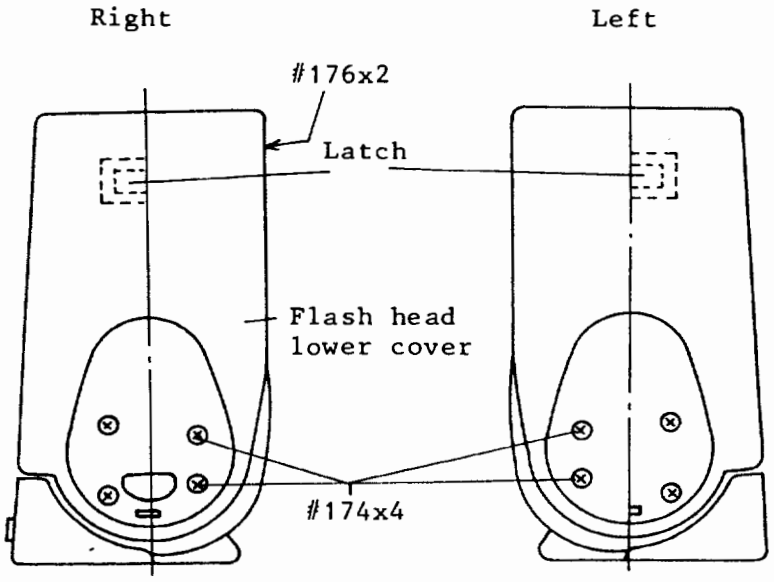
1) Remove six connectors ("a" to "f").

2) Unfasten screws #176x7.



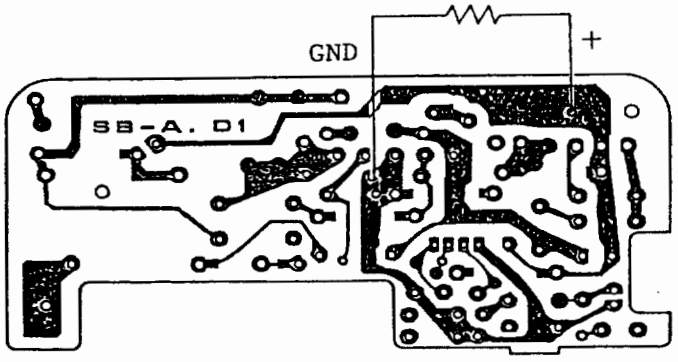
Set convex portion on the side of LCD to the left.

5. Flash head

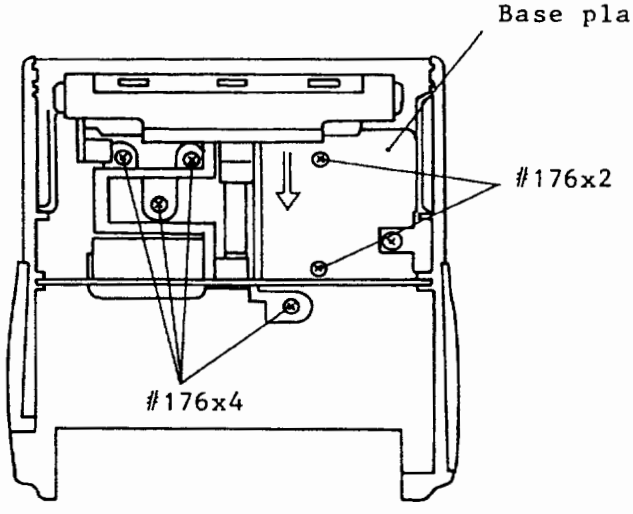


1) Remove two pieces of side rubber.
2) Unfasten screws #176x2 on the bottom of the flash head.
3) Unfasten screws #174x4.
4) Remove flash head lower cover.
5) When disassembling the flsh head only, be sure to discharge the main condenser.

200Ω - 1kΩ(5W or higher)



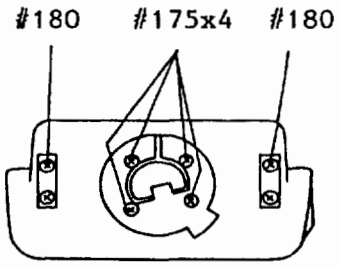
Printed board (D)



6) Remove E base plate unit.
Screw #176x4
7) Pull back the flash head and remove it together with motor gear unit.
Screw #176x4

Fasten this screw as follows in order to prevent the vibration sound of the motor.

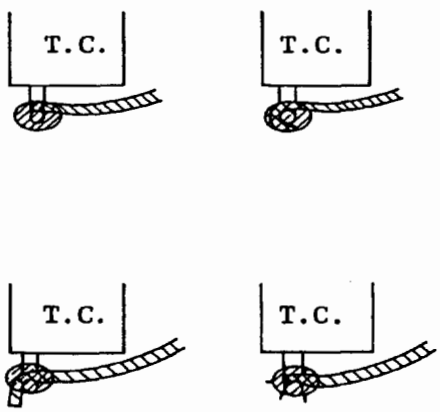
a. Adhere the motor base on the body mold. (Use Priobond or rubber adhesive.)
b. Fasten the screw #176 after applying Screw Lock on the screw. Then, unfasten it by one or a half rotation.



8) Main condenser cover

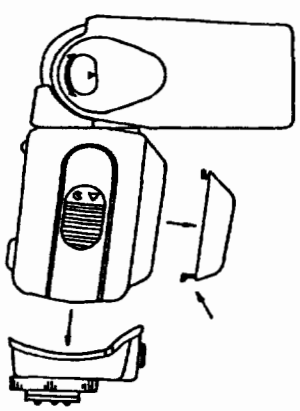
Screw #180x2
#175x4

Note: Soldering of trigger coil



Be careful that the end of wire or pickle of solder does not protrude.

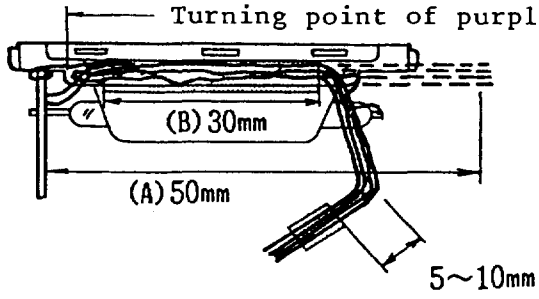
6. Autofocus illuminator panel



1) Take off the mounting foot.

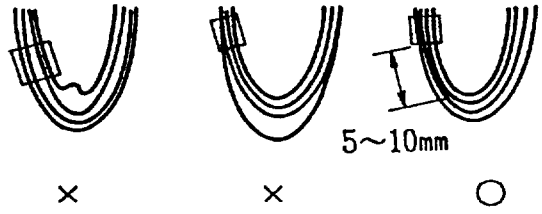
2) Take off the autofocus illuminator panel, while pushing two latched portions at its bottom.

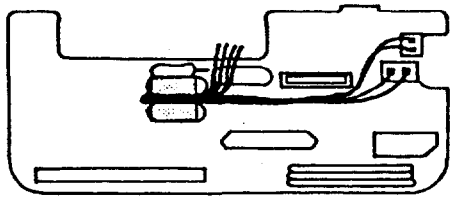
How to arrange lead wires (brown, gray, black, purple) connected to reflector



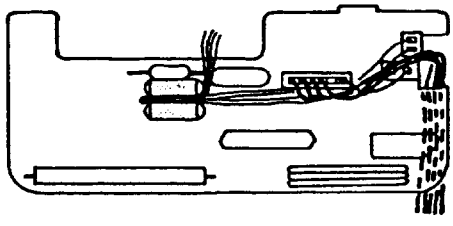
(A) Turn four lead wires by the length of 50mm.

(B) Attach adhesive tape of 12mm width to the lead wires and wind adhesive tape of 6mm width on the wires double or triple.

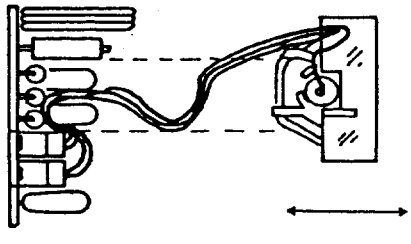




Pass four wires (brown, gray, black, purple) between two condensers (0.047μF) and fix them together with the condensers using adhesive tape of 6mm width.



Arrange five lead wires (green, yellow, black, purple, white) connected to the flash head on the double-pole connector.



If the reflector moves between the 24mm and 85mm setting positions, four lead wires should be inside the range indicated by dotted lines.

IX. ADJUSTMENT PROCEDURE

a) Outline
There are six adjustment points; five variable resistors (VR1 - VR5) and the focus assist illuminator angle. Because adjustment of the vaiable resistors VR1 - VR5 is an electrical one, the order of adjustment procedure should be followed exactly.

VR1: Safety circuit voltage (350±3V)
VR2: Recycling completion voltage (330±2V)
VR3: Flash output in M & MR mode
VR4: Flash output in A mode
VR5: Gammer in M, MR or A mode (regulated current)

Order of adjustment:

VR1 → VR2 → VR5 → VR3 / VR4

IMPORTANT

1. Since a monitor oscillation method is employed, the main condenser may be damaged if a DC regulated voltage of 5.7V as a power supply voltage is applied. Follow Adjustment Procedure b).

2. After finishing the adjustment of VR5, adjust VR3 and VR4. Then, if VR5 is readjusted again, VR3 and VR4 must be readjusted. However, even if VR3 (VR4) is readjusted, it's unnecessary to readjust VR4 (VR3).

3. Variable resistors VR1 - VR5 must be readjusted respectively when the parts listed below are replaced.

VR1: Pinted circuit B, R6, R36, VR1, D5, Q1

VR2: Printed circuit A, Printed circuit B, R7, R8, R9, R37, VR2, U2

VR3: VR3 must be readjusted when the flash head is disassembled (when the body mold B is taken off) disregarding replacement of parts.
Printed circuit A, Printed circuit B, U2, D27/28, Q22, C22, C23, VR3, VR5, R44, R45, R46, R47, R48, R49, R50, R78, R53, R54

VR4: Printed circuit A, Printed circuit B, U2, D33 (VR4 must be readjusted when D33 is taken off from the body mold E and again mounted.), Q22, C22, C23, VR4, VR5, D27/28, R45, R46, R47, R48, R49, R50, R78, R53, R54

VR5: Printed circuit A, U2, R53, VR5, R78

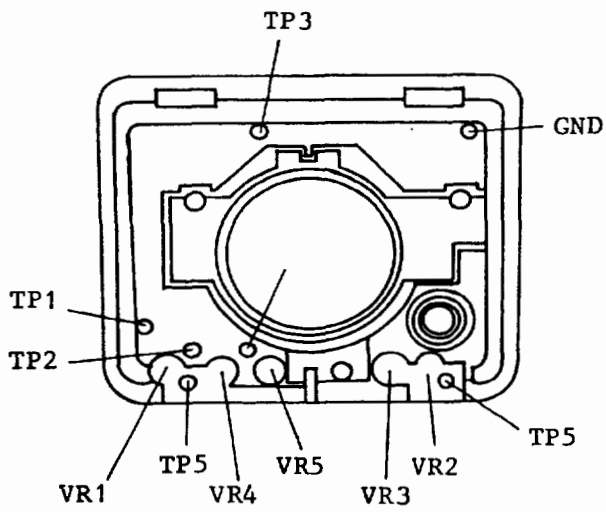
b) Adjustment Procedure

Variable resistors VR1 - VR5 can be adjusted after removing autofocus illuminator panel. However, the test point on the printed circuit B, which is used to measure the voltage, is not so close to the hole of the body mold E, and it is difficult to make contact. Therefore, it may be easier to adjust VR1, VR2 and VR5 after removing the body mold E to make the contact surely, because adjustment of VR1, VR2 and VR5 requires measurement of voltage.

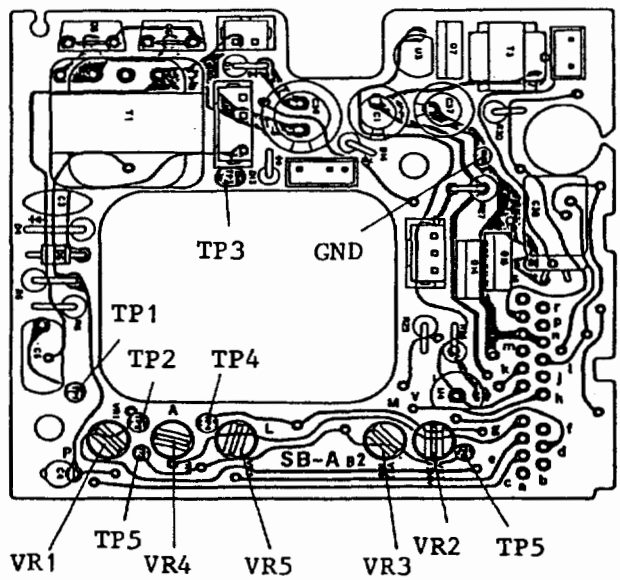
Be careful of the high voltage of the main condenser when disassembling.

Use a DC regulated power supply (5.7V, 2A) if not specified.

GND can be taken on the circumference of the sync connector or the right pin of the external power source terminal.



The state after autofocus illuminator panel is removed.



Base plate B2

Fig.1

1) VR1 (Safety circuit voltage)

Adjustment of VR1 is to decide the voltage (350V) at which the safety circuit starts operation. As shown in Fig.1, by turning the variable resistor VR1 in a clockwise direction, the voltage decreases. Boost the monitor voltage by turning VR2 fully in a counterclockwise direction, then adjust. As shown in Fig.2, connect the SB-24 with a DC regulated power supply and apply approx. 5.2V as the power source voltage. (current limit: 1A)
Connect a digital voltmeter between TP3 and GND shown in Fig.1. Adjust VR3 to start firing the SB-24 when the voltage at this point reaches 350±3V.

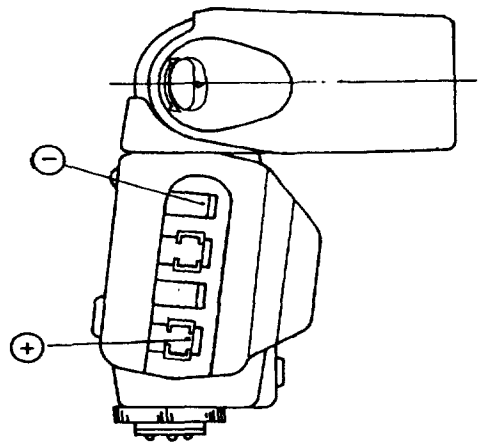


Fig.2

Note: Be careful that the voltage in the main condenser does not exceed 355V in adjustment.

The power automatically turns off unless the ready-light lights up for 60 seconds. In this case, turn off the power SW once, and then turn it on.

2) VR2 (Monitor voltage)

VR2 can be adjusted to maintain the terminal voltage of the main condenser at 330V, and also to decide the voltage for ready-light lighting. Adjust VR2, so that the voltage of TP3 is 330V.
(By turning VR2 clockwise, the voltage decreases.)
If the main condenser voltage reaches the monitor voltage once, oscillation stops. Oscillation does not start again in 32 seconds at longest. Accordingly, once the oscillation stops at the monitor voltage, it is necessary to fire the flash by pushing the open-flash button.

The adjustment of the voltage to light up the ready-light can also be completed by the above adjustment. Set the voltage of the DC regulated power supply at 3.8 - 4.0V and make sure that the ready-light lights up at the voltage of 260 - 268V. Guide number immediately after the ready-light lights up is:

$$GN = 25^{+5}_{-2} \text{ (ISO 100, m, 35mm) at manual full power}$$

3) VR5 (Gammer)

VR5 is adjusted, so that the level of light output in A, M or MR mode can be set correctly. Connect a voltmeter between TP4 and TP5. Then, adjust VR3, so that the voltmeter reads 18.4mV.
(By turning VR5 clockwise, the voltage decreases.)

4) VR3 (Flash output in M & MR mode)

Place the SB-24 two meters away from a flashmeter, and fire it by pushing the open-flash button or by closing the X contact. With the flash mode selector set to M, the light amount 1/16 and the zoom setting 35mm, adjust VR3, so that the value on the flashmeter should be as follows:
(By turning the VR3 clockwise, the light amount increases)

F4 - F4.25 ($F4^{+0.17}_{-0}$EV)

GN8 - GN8.5

All the light amount in M mode (1/16 - 1/1) and in MR mode (1/16, 1/8) can be adjusted by the above adjustment at M1/16 setting. Inspect the flash output at each setting (at least with zoom 28mm & 35mm setting) in accordance with the specifications.

5) VR4 (Flash output in A mode)

Place the SB-24 two meters away from a standard reflector paper, and fire it by pushing the open-flash button or by closing the X contact.
Set the flash mode selector to A, ISO film speed to 100, zoom to 35mm and aperture to F5.6. Measure the flash output using a flashmeter and adjust VR4, so that the following value is shown.
(By turning VR4 clockwise, the light amount increases.)

F5.6±0.1
(F5.6±0.05EV)

Inspect the flash output level at each setting as shown below:

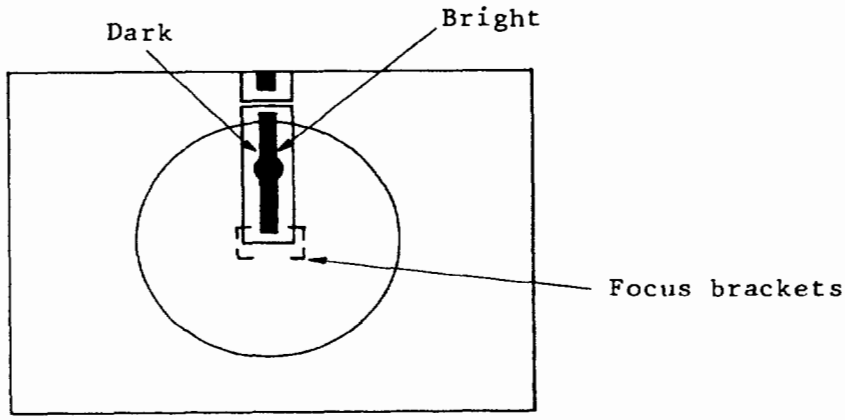
ISO	100	100	100	100	100	100	80	80
F No. in set	2	2.8	4	5.6	8	11	5.6	5.6
F No. measured	F2+0.5EV	F2.8+0.5EV	F4+0.5EV	F5.6+0.5EV	F8+0.5EV	F11+0.5EV	$F5.6^{+0.8EV}_{-0.2EV}$	$F5.6^{+0.2}_{-0.8}$

6) Adjustment of angle of FL module unit

The pattern of the autofocus assist illuminator should be inside the focus brackets of the camera.
If the shoe cover is replaced, the position of the AF illuminator projection may possibly be shifted. Be careful not catch lead wires when screwing the shoe cover, because the FL module unit may be inclined if the wires are caught by the shoe cover.

Note: 1. FL module is fixed on the body mold E by two springs (#161) and three screws (#177). The position of the AF illuminator projection can be adjusted by fastening or unfastening these three screws.
2. If the FL module has a problem, replace the whole FL module unit with new one. Focusing of the FL module is already adjusted and only three screws (#177) should be adjusted.

Adjustment should be made with the autofocus illuminator panel detached.
Attach the SB-24 to the F-501/N2020 on which an AF Nikkor 70-210mm F4 lens has been mounted. Set the focus mode selector to S (Single AF servo) mode and the lens to the 135mm setting, and mount the SB-24 firmly on the camera accessory shoe.
Place the camera (film plane) 1.6 meters away from the wall. Depress the shutter release button halfway to light up the AF illuminator light. As shown in the figure below, adjust three screws, so that the dark stripe of the AF illuminator light is at the center of the focus brackets in the right and left direction, and the lower end of the projection comes to the center in the up and down direction.



Viewfinder of F-501

For the adjustment after FL module is replaced, it is recommended to fasten three screws fully first, then unfasten each screw by the necessary amount. However, please note that, if the screws are fastened too tight, FL module may not move when other screws are untightened.

After completion of adjustment, apply adhesive around three screws (#177) to adhere the body mold E, FL module unit and screws (#177).

Attach the autofocus illuminator panel to the SB-24 after the above adjustment. Then, mount an AF 50mm F1.8 lens on the camera and make sure that the correct focusing is available at the distance of 1m and 8m.

Note: It is recommended to make the above adjustment using the the customer's camera whenever possible, because the shoe differs slightly in its right- and left-hand alignment.

X. TROUBLE SHOOTING

X-1. NORMAL OPERATION

The followings are not troubles.

1-1. LCD

* Flash shooting distance indicator goes out when flash head is rotated or tilts up.
* Flash shooting distance indicator blinks when flash head tilts down.
* The display, which should appear when SB-24 is attached on F-801/N8008, appears for approx. 0.5sec if batteries are installed at the power SW setting at ON or STBY without a camera.
* When the power SW of SB-24 is switched to STBY from OFF under the condition that SB-24 is attached to F-801/N8008 and the pre-release timer of the camera is off, the display shown for an instant is different from what should be. (ISO 100, F5.6 & 35mm will be displayed.)
* Rear sync mode cannot be used with repeating flash. (In this case, the display of the number and frequency of repeating flash disappears.)
* A part of LCD is dim.
* LCD has unevenness in colour when turned off.
* Response speed of display becomes slow or blinking display is hard to recognize at the low temperature (0°C or lower). (It's characteristics of LCD.)

1-2. Flash firing

* When open-flash button is pushed in TTL mode with SB-24 attached to F-801/N8008, the flash may fire at full output or at small amount output.
* Flash may not fire eight times at 1/16 setting or four times at 1/8 setting in repeating flash mode at the low temperature or when fresh batteries are not used. (In the low temperature, it not be restored by warming up only batteries.)
* 1/8 and 1/16 output in repeating flash mode is smaller than that in M mode. (Light amount in repeating flash mode is smaller than that in M mode by 1/3 EV.)

1-3. Power control

If ready-light does not light up in 60 sec with power SW set to ON or STBY due to insufficient battery power, the power automatically turns off.

1-4. Others

Refer to the page 42 (10-1) in the rpair manual of SB-22. (However, 4th item is not true of SB-24, that is, SB-24 does not turn off if the open-flash button keeps pushed.)

The following inspection is to be made with SB-24 only, if not specified. Battery power should be 6V.

X-2. POWER

2-1

Incorrect current is generated when power source is installed.

↓

Current flows when power is off or in STBY-OFF state. Normally, 20μA or less (actually 5μA) in OFF setting or 100μA or less (actually 10μA) in STBY-OFF.

↓

211

2-2

LCD fails to light up when power SW is turned to STBY from OFF.

↓

Oscillation starts when power SW is turned to STBY from OFF. (Check for oscillation with ammeter.) YES → 221

↓ NO

LCD lights up when SB-24 is attached to TTL camera (F-801, FE2, etc.) and shutter release button is lightly depresed in SB-24's STBY state. YES → 222

↓ NO

Pin 17 of U1 is provided with the voltage 3V YES → 223

↓ NO

224

2-3

SB-24 turns off (STBY-OFF) in a short time after power SW is turned to ON from STBY.

↓

Ready-light is lighting. NO → Power automatically turns off if ready-light does not light up in 60 sec. (Normal operation)

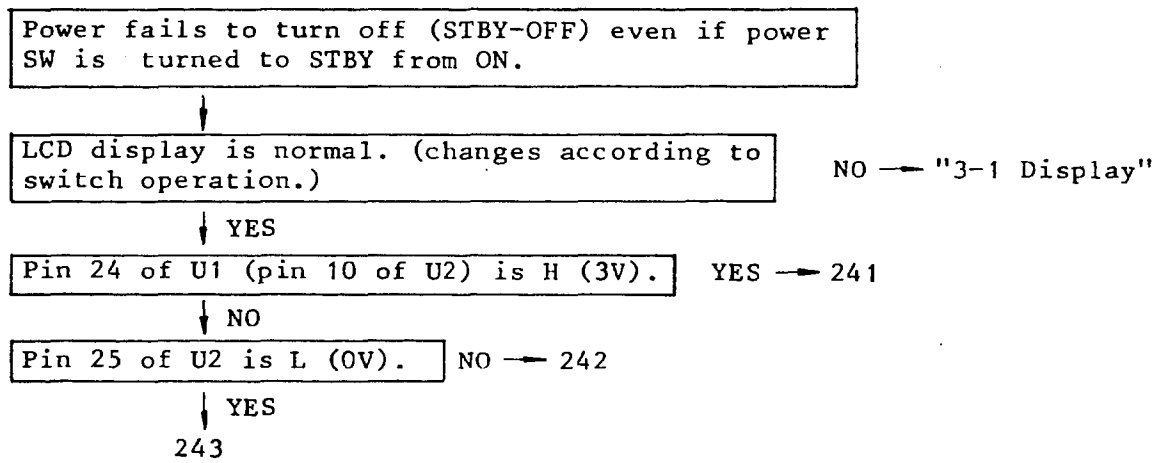
↓ YES

STBY OFF in 60 sec. YES → 231

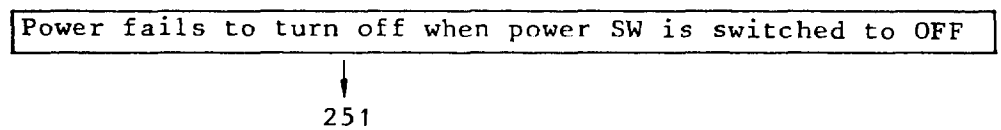
↓ NO

232

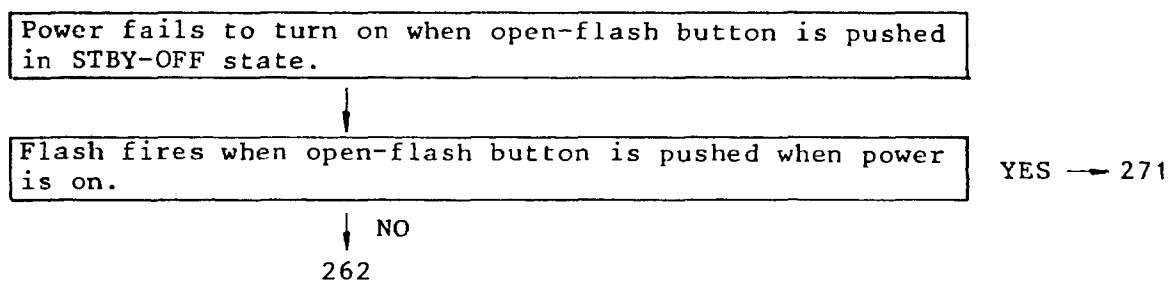
2-4


Power fails to turn off (STBY-OFF) even if power SW is turned to STBY from ON.
LCD display is normal. (changes according to switch operation.)
NO → "3-1 Display"
YES
Pin 24 of U1 (pin 10 of U2) is H (3V).
YES → 241
NO
Pin 25 of U2 is L (0V).
NO → 242
YES
243

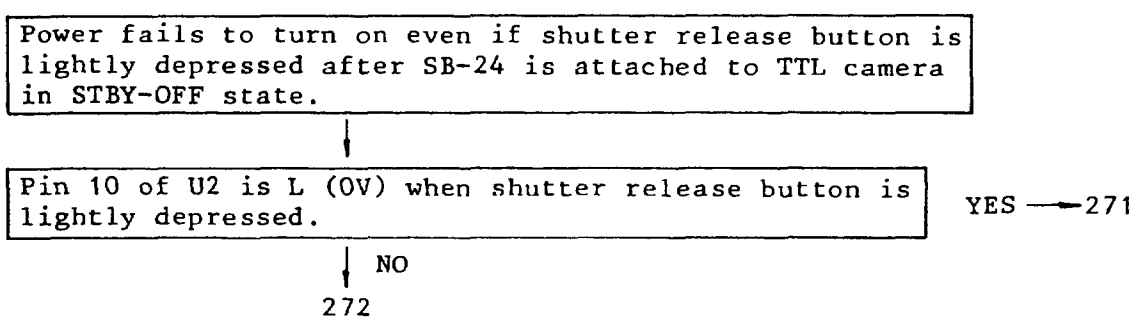
2-5


Power fails to turn off when power SW is switched to OFF
251

2-6


Power fails to turn on when open-flash button is pushed in STBY-OFF state.
Flash fires when open-flash button is pushed when power is on.
YES → 271
NO
262

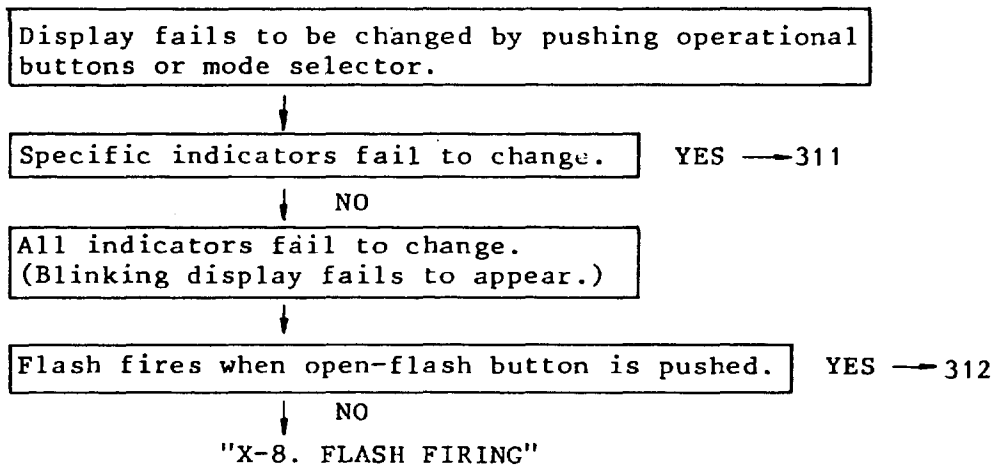
2-7


Power fails to turn on even if shutter release button is lightly depressed after SB-24 is attached to TTL camera in STBY-OFF state.
Pin 10 of U2 is L (0V) when shutter release button is lightly depressed.
YES → 271
NO
272

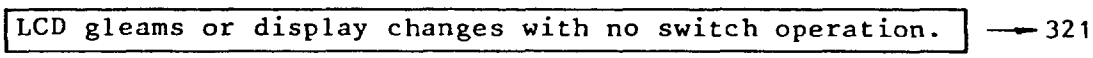
X-3. DISPLAY

(Refer to "X-5. DATA COMMUNICATION" as to the display for data communication when SB-24 is attached to F-801/N8008)

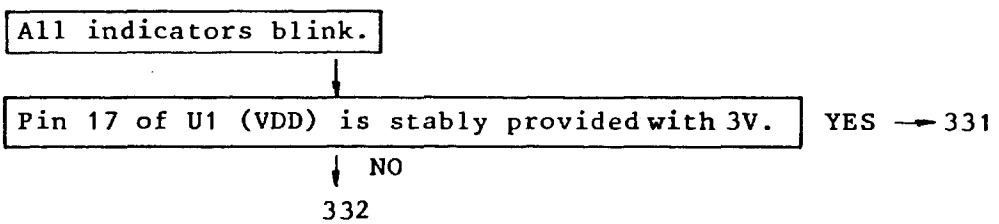
3-1



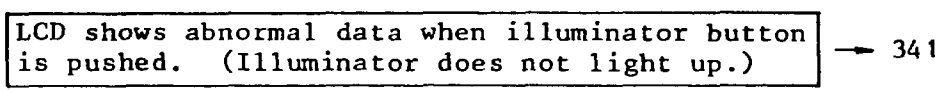
3-2



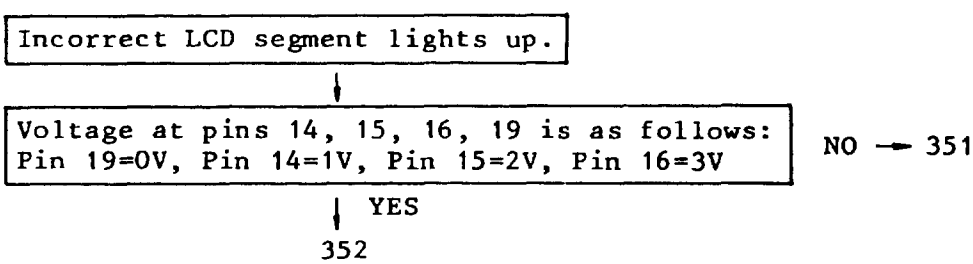
3-3



3-4



3-5



3-6

Flash shooting distance indicator is not correctly displayed when bounce setting is changed. (Refer to "1-1. LCD".)

↓

Indicator disappears when flash head is locked at front position.

YES → Disappears only when flash head is pushed to limit of play when locked. YES → 361

NO ↓ Always disappears when flash head is locked. YES → 362

NO ↓

Indicator blinks when flash head is locked at front position.

YES → Blinks only when flash head is pushed to limit of play when locked. YES → 363

NO ↓ Always blinks when flash head is locked. YES → 364

NO ↓

Indicator does not blink even if flash head tilts down. YES → 365

NO ↓

Indicator does not disappear even if flash head tilts up or is rotrated. YES → 366

NO ↓

Indicator does not disappear when flash head is rotated. YES → 367

NO ↓

Indicator does not disappear when flash head tilts up. YES → 368

NO ↓

Indicator gleams when flash head tilts up. → 369

3-7

All segments of LCD light up. → 371

3-8

Some segments of LCD fail to light up. → 381

3-9

Flash firing or zooming operation changes display which is unconcered with the operation. → 391

X-4. OSCILLATION (including monitor circuit)

4-1

Oscillation is not executed (needle of ammeter does not swing if power SW is turned to STBY from OFF) and ready-light does not light up.
(In case oscillation is stopped by monitor circuit, it does not start for 32 sec. Therefore, it is necessary to turn off power SW for inspection.)

↓

Oscillation starts if collector and emitter of Q7 are shortcircuited. NO → 411

↓ YES

Pin 8 of U2 is H (3V). NO → 412

↓ YES

Pin 28 of U2 is H (2V or higher). NO → 413

↓ YES

Anode of D34 is H (1V or higher). NO → Base of Q3 is H (3V). NO → 414

↓ YES (415)

↓ YES (416)

4-2

Oscillation is done for an instant (current approx. 0.1A flows) and soon stops. Ready-light lights up. But main condenser is not charged. → 421

4-3

Oscillation does not stop even if power voltage becomes 3V or lower.

↓

Oscillation is stopped by pushing zoom button before ready-light lights up. NO → 431

↓ YES

432

4-4

Oscillation does not stop if zoom button is pushed before ready-light lights up. (Normally, oscillation stops during zoom operation to prevent zoom motor rotation from slowing.)

↓

Oscillation does not stop even if voltage falls below 3V. YES → 441

↓ NO

442

4-5

Oscillation stop voltage (330V) is low. (Full flash guide number is small.)
Oscillation stop voltage (330V) is high. → 451

4-6

When power SW is turned to ON from OFF after power source (6V, 2A) is connected to SB-24, oscillation does not stop in 20 sec. (If oscillation continues in this condition, excessive voltage is given to main condenser. Therefore, power SW must be turned off immediately.)

↓

Voltage in main condenser is over 355V. — YES → Safety circuit fails to operate. → 461

↓ NO

Pull out connector of lead wire #368 from printed circuit unit B

↓

Oscillation stops. — YES → 462

↓ NO

463

4-7

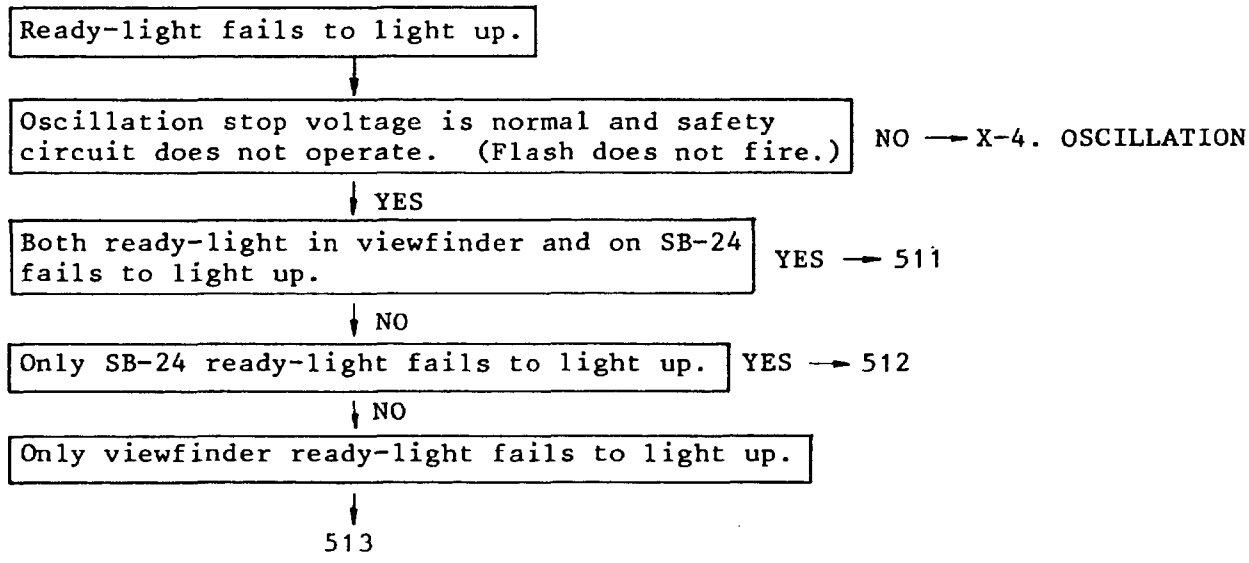
Oscillation stops as soon as ready-light lights up. → 471

4-8

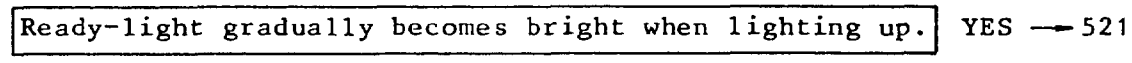
Current of only approx. 0.1A flows while oscillation is done. Voltage in main condenser does not rise. → 481

X-5. READY-LIGHT

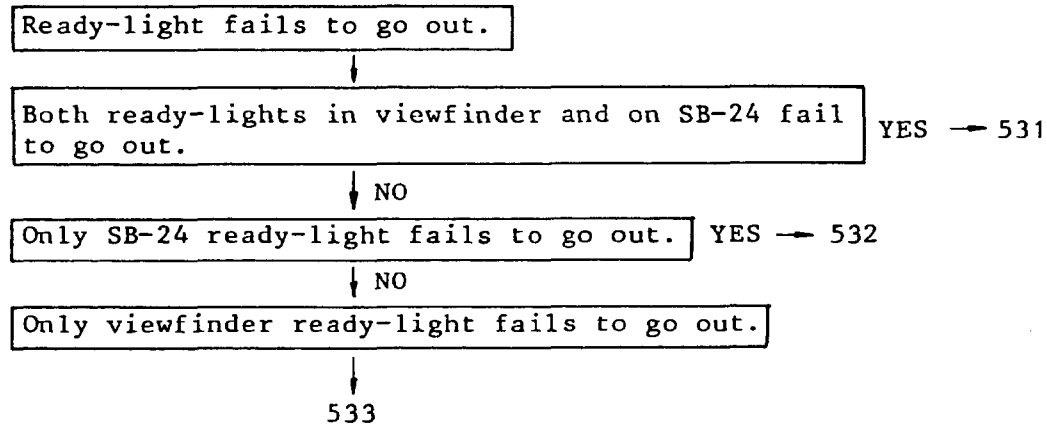
5-1



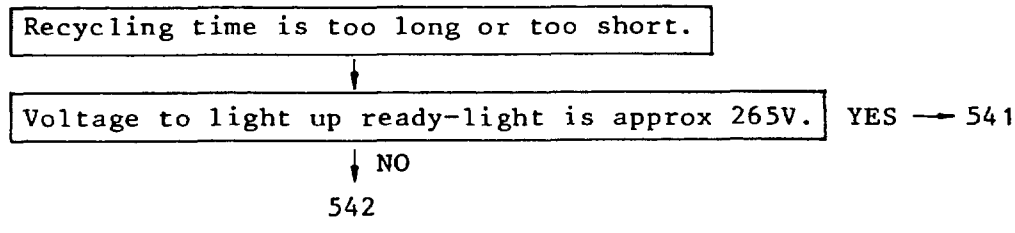
5-2



5-3



5-4



5-5

Ready-light is always blinking. → 551

X-6. SAFETY CIRCUIT

6-1

Safety circuit fails to operate correctly.

Operation of monitor circuit must be stopped to inspect safety circuit. Monitor circuit stops operating by shortcircuiting TP2 and GND. Then, voltage in main condenser rises over 330V.

Flash does not fire even if voltage in main condenser rises up to 350V. YES → 611

NO

Flash does not fully fire, but repeats firing of small light amount.

612

6-2

Flash automatically fires after power SW is turned to STBY from OFF. (Monitor circuit is faulty and safety circuit works.)

Voltage in main condenser is 350V when flash fires. NO → 621

YES

Oscillation is stopped by pushing zoom button before ready-light lights up. NO → 622

YES

623

6-3

Flash automatically fires when power Sw is turned to STBY from OFF using SD-7 as an external power source.

631

X-7. MODE SELECTOR

7-1

Incorrect flash mode is displayed on LCD. → X-4. DISPLAY

7-2

Flash mode indicator shows correct flash mode but flash is not controlled in that mode. (for ex. TTL control is made in A mode, or warning is given in M mode before shooting.)

Make sure of flash mode by covering sensor or camera and checking the light amount.

↓

TTL flash control is done in any flash mode. YES → 721

↓ NO

TTL flash control is done in A mode. YES → 722

↓ NO

TTL flash control is done in A or repeating flash mode.

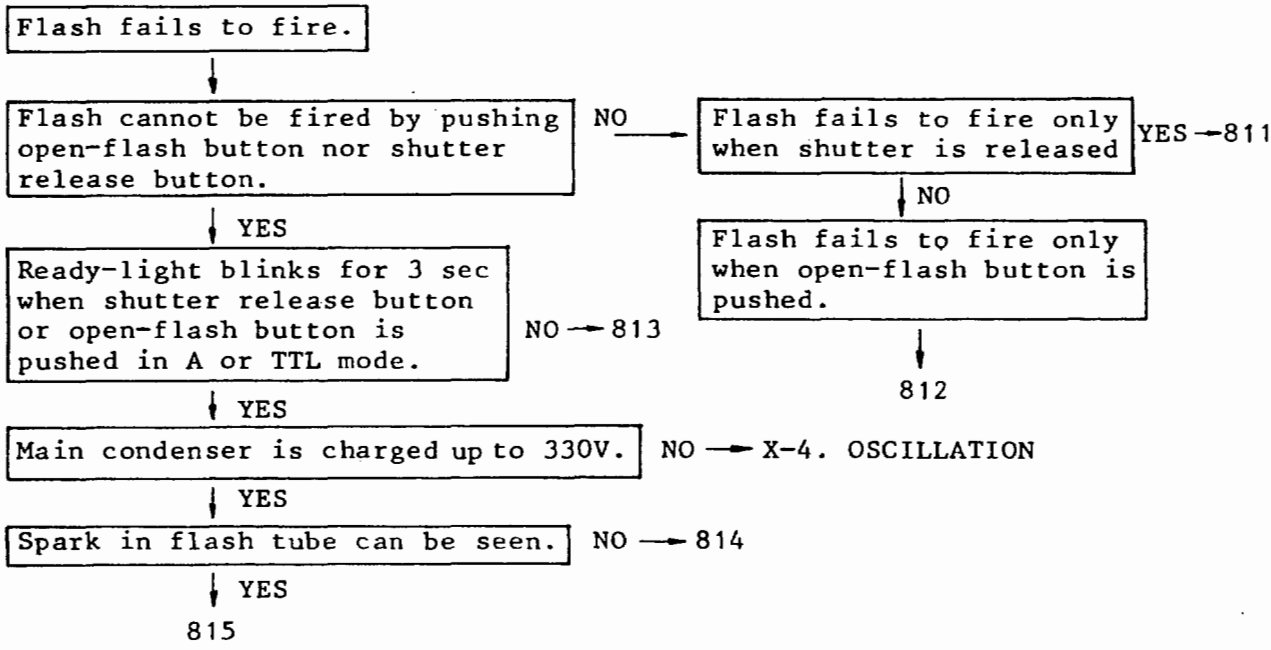
↓ YES → 723

↓ NO → 724

Pin No. of U2	43	44
TTL	L	L
A	L	H
M or Repeating	H	L

X-8. FLASH FIRING

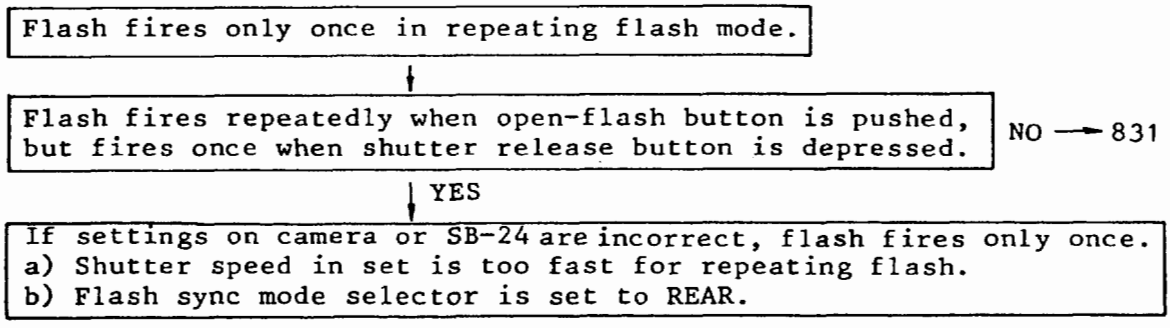
8-1



8-2

Flash does not fire while oscillation is done. (Fires after after oscillation stops.) Flash may sometimes fire after full flash warning is given in A or TTL mode. → 821

8-3



8-4

If frequency and number of repeating flash are set to 10Hz and 8 respectively, flash fails to fire eight times even with fresh batteries. → 841

8-5

Rear sync flash cannot operate normally (with F-801).

↓

Display by data communication with F-801 is normal. — NO → X-15. DATA COMMUNICATION

↓ YES

851

8-6

Flash automatically fires.

↓

Flash automatically fires after power SW is turned to STBY from OFF. — YES → Refer to 6-2.

↓ NO

Flash fires when zoom setting is changed. — YES → 861

↓ NO

Flash fires when shutter release button is lightly depressed to light up AF assist illuminator with AF camera. — YES → 862

↓ NO

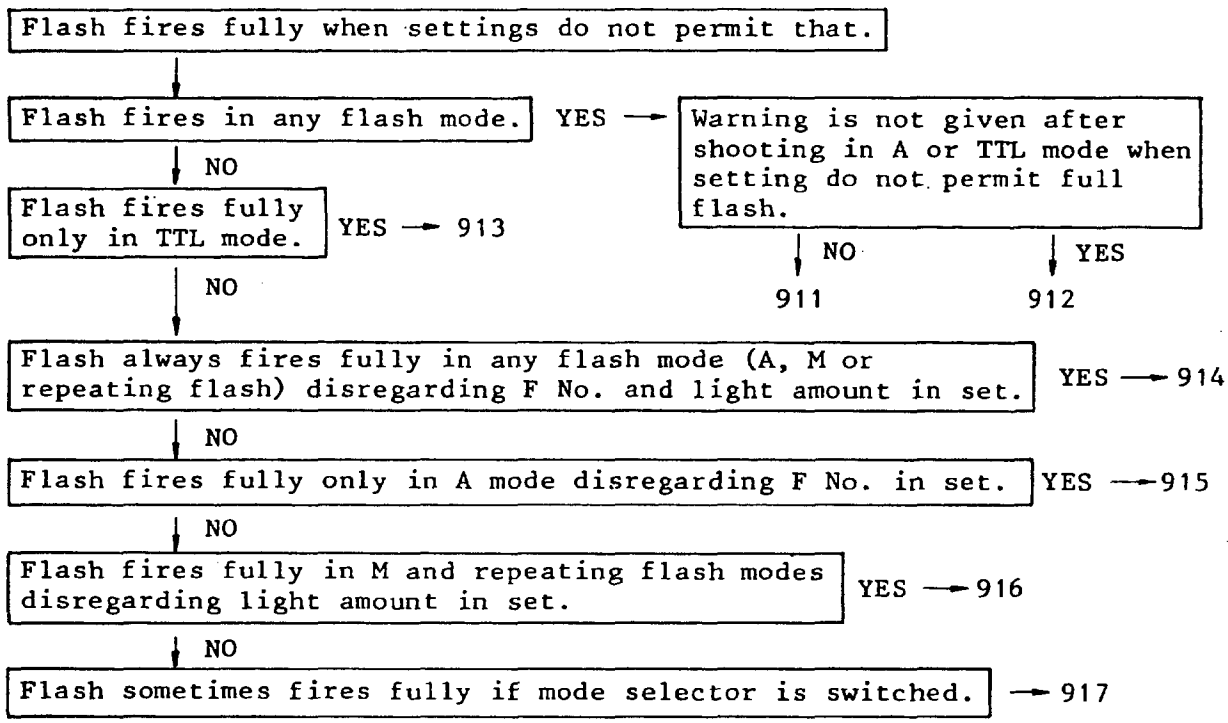
Flash fires when sync terminal or foot contact is touched with your hand if sync cord is connected or SB-24 is attached on camera.
(This may occur with normal SB-24, but if it occurs frequently, it must be repaired.)

YES → 863

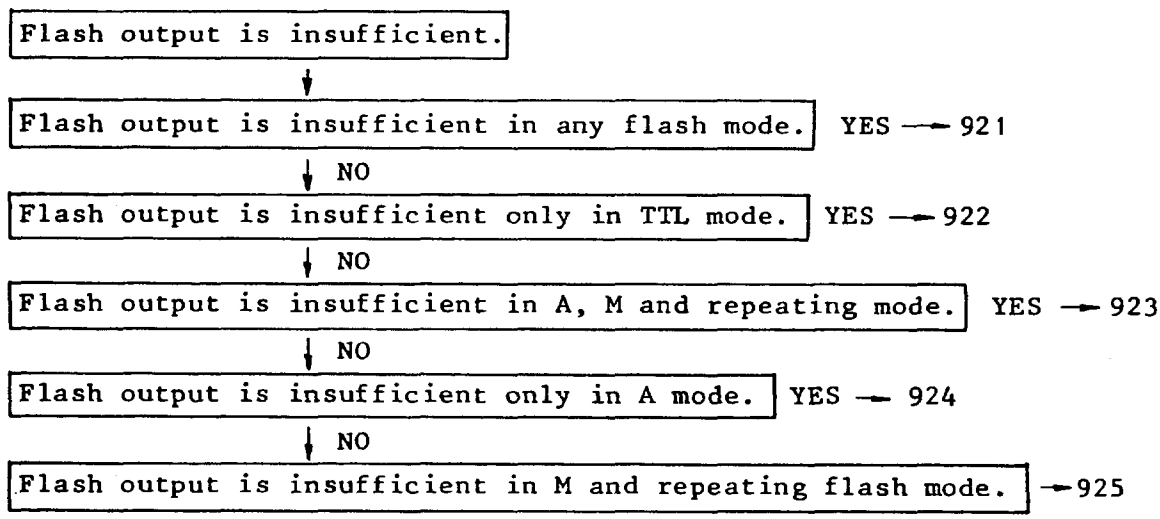
NO → 864

X-9. FLASH SYNC CONTROL
(The following checking is to be made assuming that the flash mode can be correctly switched.)

9-1



9-2



9-3

Flash may sometimes fire at incorrect output in A mode if F No. and ISO film speed is switched.
Flash may sometimes fire at incorrect output in M mode if light amount or zoom setting is changed. → 931

9-4

Light amount in M mode cannot be changed by adjusting VR. → 941

9-5

Flash output is unstable for every shot in A, M and repeating mode. → 951

9-6

Over-exposure happens when subject is close. → 961

9-7

Gammer adjustment is impossible with VR5. → 971

X-10. WARNING

10-1

Blinking of ready-lights fails to stop. → 1011

10-2

Blinking frequency for ready-light warning is incorrect. → 1021

10-3

Duration for warning (after shooting) is incorrect. → 1031

10-4

Warning is given before shooting in A, M, or repeating flash mode.
Warning is given after shooting in M or repeating flash mode. → 1041

10-5

Warning is given before shooting in TTL mode even if settings are correct.

↓

Voltage at pin 25 of U2 is 3V or lower when shutter release button is lightly depressed. YES → 1051

↓ NO

Voltage at pin 23 of U2 is 3V or lower. YES → 1052

↓ NO

1053

10-6

Warning before shooting fails to appear.

↓

Flash mode is not switched to TTL. YES → Refer to 7-2.

↓ NO

TTL incable warning fails to appear. YES → 1061

↓ NO

Over usable film speed warning fails to appear. YES → 1062

10-7

Warning fails to appear even if flash fires fully in A or TTL mode.

↓

Flash mode is not switched to A or TTL. YES → Refer to 7-2.

↓ NO

1071

X-11. ZOOM

11-1

Zooming motor fails to operate though zoom setting display changes. (Finally "--" will be displayed.) → 1111

11-2

Zooming motor continues rotating and clutch is disengaged. Then, "--" is displayed, reflector moves to 24mm position (sometimes does not) and motor stops. → 1121

11-3

Reflector moves back and forth repeatedly and does not stop. Then, "--" is displayed, reflector moves to 24mm position (sometimes does not) and motor stops. → 1131

X-12. AF assist illuminator
(The following checking is to be made assuming that warning before shooting is correctly operating.)

12-1

AF assist illuminator fails to light up.

↓

One LED of AF assist illuminator fails to light up. YES → Each LED can light up by itself. (See below for inspection of LED)

↓ NO

↓ YES → 1211

↓ NO → 1212

Set power voltage to 3V, current limit to 0.5A and shortcircuit pin 22 and 21 of U2. Then, AF assist illuminator lights up. YES → 1213

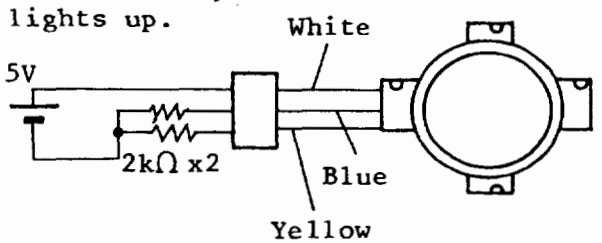
↓ NO

Voltage at base of Q13 is 1.5V or higher when pin 22 and 21 is shortcircuited.

↓ YES → 1215

↓ NO → 1214

Checking AF assist illuminator:
Pull off connector of AF assist illuminator from base plate and connect it to the circuit shown below. Then, confirm that LED lights up.



12-2

AF assist illuminator fails to go out.

↓

AF assist illuminator is always lighting if power SW is ON. YES → 1221

↓ NO

AF assist illuminator is always lighting while shutter release button is lightly depressed.

↓

1222

12-3

AF assist illuminator lights up for a moment when CSP contact is open and CRY contact is grounded. This may occur SB-24 is attached to camera which has only X contact on accessory shoe. → 1231

12-4

Position of AF illuminator projection is incorrect. → Refer to "Adjustment of angle of FL module".

X-13. LCD ILLUMINATOR

13-1

LCD illuminator fails to light up. → 1311

13-2

LCD illuminator is bright than normal one and becomes darker while zooming or oscillation is executed. (Even normal illuminator may become darker while zooming or oscillation is executed.) → 1321

13-3

LCD illuminator is dark. → 1331

X-14. OFFENSIVE ODOR

14-1

Offensive odor is given.

↓

R22 is burnt. YES → 1411

↓ NO

Safety valve of main condenser is open.

↓

1412

X-15. DATA COMMUNICATION

The following checking is to be made assuming that SB-24 operates by itself or in combination with F-501. SB-24 is to be attached to F-801. The listed bwlow are foreseen troubles. If they are not applicable to actual troubles, check for the wiring (short circuit and poor soldering) used for data communication.

Lines used for data communication are as follows:

Between foot contact and U2:
(Check it using F-501. If viewfinder ready-light, TTL flash control and warning is normal, connection is correct.)
Foot contact CSP-C34-L3-R62-C42-Pin 25 of U2, Wire #380(brown)
Foot contact CRY-C35-L5-R60-Pin 24 of U2, Wire #380(green)
Foot contact CSTP-C33-L2-R63-Pin 23 of U2, Wire #380(gray) #377(yellow)

Between U2 and U1:

Pin No. of U2:	2	3	4	5	10	11	12	13	14
Pin No. of U1:	40	39	38	37	24	23	22	21	20

15-1

When pre-release ON:
1) Display "F" blinks.
2) Display of ISO, F and ZOOM does not change even if settings are changed.

When pre-release OFF:
1) ISO and flash shooting distance indiactors go out.
2) Display "F" blinks and F No. does not go out.

→1511

15-2

1) SB-24 shows the display which should appear when SB-24 is not attached to camera.
2) Displays for ISO, F and ZOOM does not change even if settings are changed.

→1521

15-3

Pre-release ON: Normal
Pre-release OFF: SB-24 shows the display which should appear when SB-24 is not attached to camera.

→1531

CAUSES OF TROUBLES

"Failure of Part A" includes poor soldering or short circuit of the part A. If the cause of trouble is mainly considered short circuit or open circuit, the part number is marked with (S) or (O), respectively.
"Poor connection of lead wire" or "Poor connection of FPC" includes poor soldering or poor contact of connector.
Vcc and GND of IC is to be connected surely.

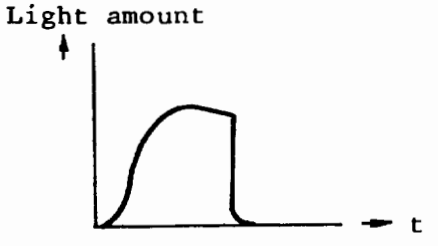
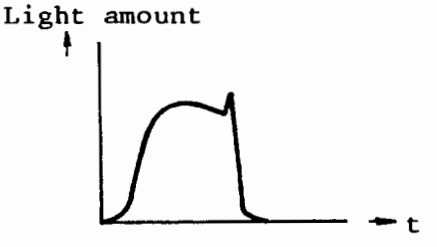
	CAUSES OF TROUBLES
211	Short circuit or some part is faulty in the circuit. Power source line is divided into six listed below. Search the circuit for abnormal current referring to circuit diagram. 1. U1 line (D1) 2. U2 line (D2) 3. Oscillation line 4. FL module line 5. LCD illuminator line 6. Motor driving line (Leak current flows at Q5 & Q6 if R3 is open, and oscillation is executed even if power SW is off when pins 8 and 9 of U2 are shortcircuited.)
221	Failure of LCD, Poor contact (fall down) of LCD rubber connector; Failure of U1 or R76 (O)
222	Failure of C39 (O) or R65 (O)
223	Failure of U1, Poor contact of power SW; Failure of 32kHz oscillation circuit (CLK1, C28, C29, R71, R72), 1MHz oscillation circuit (CLK2, C30, C31, R70) or U4; Poor connection of FPC (i); Poor connection of FPC (p); Short circuit in FPC (o-p, p-q); Failure of R79; Short circuit in U1 (23-24, 24-25, 25-26, 26-27, 27-28, 28-29, 29-30, 30-31, 31-32); Short circuit in U2 (9-10, 10-11); Poor soldering of pins 25, 26, 27, 29, 30, 31 of U1
224	Batteries are reversely installed.; Poor contact of battery contact (too large positive contact or dust on contact); Poor connection of lead wire #376; Failure of D1 (O), R64 (O) or U3; Poor connection of FPC (i)
231	Poor soldering of pin 58 of U2; Failure of U1
232	Poor contact of power SW; Poor soldering of pin 53 of U1; Failure of U1; Short circuit in U1 (53-52, 53-54)
241	Poor contact of power SW; Poor soldering of pin 53 of U1; Failure of U1; Short circuit in U1 (53-52, 53-54)
242	Cuurent is flowing into CSP contact. Short circuit between lead wire #380 (brown: CSP line) and other lines; Short circuit in U2 (24-25, 25-26); Failure of U2
243	Failure of R70 (O), R65 (S), C39 (S), U2 or U1
251	Poor contact of power SW; Poor soldering of pin 53 of U1; Failure of U1
261	Poor soldering of pin 10 of U2; Failure of U2
262	Refer to "X-8. FLASH FIRING".

271	Poor soldering of pin 10 of U2; Failure of U2
272	Failure of C34(S), C42(S), L3(O), R62(O) or U2; Poor connection or short circuit of lead wire #380 (brown)
311	State of switches are read by key matrix. Refer to circuit diagram and look for switch which is not read. Parts and U1 terminals concerned are as follows: R31, R32, R33, R34, R35, C15, C16, C17, C18, C19, D17/18, D19/20, D21/22, D23/24, D25/26, D35/36, D37/38 U1 switch matrix Input pin 60, 61, 62, 63, 64, Output pin 52, 53, 54, 55, 56 For slide SW, inspect poor contact of switch brush.
312	Short circuit between pin 27 of U1 (pin 9 of U2) and other lands; Poor soldering of pin 27 of U1 or pin 9 of U2; Failure of U1 or U2
321	Failure of R31(O), R32(O), R33(O), R34(O), R35(O), C15(O), C16(O), C17(O) C18(O) or C19(O); Poor soldering of pin 60, 61 62, 63 or 64 of U1; Failure of U1
331	Failure of U4, R31(O), R32(O), R33(O), R34(O), R35(O), C15(O), C16(O), C17(O), C18(O) or C19(O); Poor soldering pin 60, 61, 62, 63 or 64 of U1; Failure of U1
332	Failure of D1(S), C36(O), R64(O), U3 or C37
341	Poor connection of lead wire #378; Failure of illuminator; Failure or poor soldering of T3
351	Failure of R73, R74, R75 or U1
352	Short circuit in U1 (1-13, 65-80); Failure of U1
361	Play of bounce lock is too large. (If material of bounce lock part is deformed, replace it.)
362	Short circuit between lead wires #371 (white and black) or between #372 (black) and #373 (white)
363	Play of bounce lock is too large. (If material of bounce lock part is deformed, replace it.)
364	Short circuit between lead wires #371 (yellow and black)
365	Poor connection of lead wires #371 (black and yellow); Failure of D19(O); Poor contact of bounce SW (Down) (#333, #186)
366	Poor connection of lead wires #371 (black and white); Failure of D21(O)
367	Poor contact of bounce SW (Right/Left) (#334, #186); Poor connection of lead wires #372 (black) and #373 (white)
368	Poor contact of bounce SW (Up) (#333, #186)
369	Poor contact of bounce SW (Up) (#333, #186); Remove switch grease completely.

371	Short circuit between pins of U1 and some line of 3V or higher.; Short circuit in FPC (i-j); Failure of U3 or U1
381	Poor soldering of pin 1-13, 65-72 or 74-80 of U1; Dislocation of LCD rubber connector; Poor contact of LCD rubber connector (Wipe out LCD, rubber connector and base plate with alcohol.); Failure of LCD or U1
391	Failure of C15(O), C16(O), C17(O), C18(O), C19(O), C20(O), C21(O) or C47(O)
411	Failure of Q5, Q6, C2, R3, D3, T1, R
412	Poor soldering of pin 34 of U1 or pin 8 of U2; Short circuit in U1 (33-34, 34-35) or in U2 (7-8); Failure of U1 or U2
413	Poor connection of FPC (k); Short circuit in U2 (14-15, 27-28, 28-29, 30-31, 41-42, 42-43) or in FPC (b-c, c-d); Failure of C41(S) or U2
414	Poor soldering of pin 28 of U2; Poor connection of FPC (c); Failure of R1(O) or Q3
415	Failure of D34, R2(S), Q7
416	Failure of U1
421	Failure of D6(O); Poor connection of lead wire #370
431	Failure of Q7, R2(O), D3(O), D34(S)
432	Failure of U2
441	Failure of Q7, R2(O), D3(O), D34(S)
442	Failure of Q3; Poor connection of FPC (s); Poor soldering of pin 33 of U1; Failure of U1
451	Incorrect adjustment of VR2; Failure of VR2, R7, R8, R9, R37, C6, C26, C27 or U2; Leak in FPC (a, b)
461	Failure of both monitor circuit and safety circuit (Safety valve of main condenser may be open. Inspect bottom of main condenser. If there is a hole on rubber portion, replace main condenser. Refer to 6-2 and 6-1, as to monitor circuit and safety circuit, respectively.)
462	Leak or short circuit of high voltage line on printed circuit D or main condenser
463	Failure of oscillation circuit (Q5, Q6, C2, R3, Q7, D3, R5, T1, C3 or D4); Leak or short circuit of high voltage line on printed circuit B
471	Failure of R37(S); Short circuit in FPC (a-b) or in U2 (29-30)
481	Failure of D4(O) or T1
511	Failure of VR2 (b) or U2; Poor connection of FPC (b); Poor soldering of pin 29 of U2

512	Failure of D29, R51(O), R52(S), U2 or U1; Poor soldering of pin 41 of U2
513	Failure of R60(O), L3(O), C35(S) or U2; Poor connection or short circuit of lead wire #380 (green)
521	Failure of C26(O)
531	Short circuit in U2 (28-29, 30-31) or in FPC (b-c); Failure of U2
532	Short circuit in U2 (41-42); Failure of U2
533	Failure of U2; Short circuit between lead wire #380 (CRY line, green) and other lines
541	Poor connection of lead wire #376; Failure of C1(O); Failure of oscillation circuit (Q5,Q6, C2, R3, Q7, D3(S), R5, T1, C3 or D4)
542	Incorrect adjustment of VR2; Failure of VR2, R6, R7, R9, R37, C26, C27 or U2; Leak in FPC (a, b)
551	Short circuit in U2 (42-43); Failure of U2
611	Incorrect adjustment of VR1; Failure of VR1, R6, R36, R4, D5, C4(S), C5(S), Q1 or Q2; Poor connection of lead wire #368; Refer to "X-8. FLASH FIRING".
612	Failure of d8(O) or D12(O)
621	Incorrect adjustment of VR1; Failure of VR1, R6, R36, R4, D5, C4(S), C5(S) or Q1
622	Failure of oscillation (control) circuit (Failure of Q7, R2(O), D3(O), D34(S))
623	Failure of monitor circuit (Incorrect adjustment of VR2; Failure of VR2, R6(O), R7(S), R9(S), R37(S), C26(S), C27(S) or U2; Leak in FPC (a, b); Poor connection of FPC (a))
631	Failure of C4(O)
721	Short circuit in U2 (43-44) or in U1 (43-42); Poor soldering of pin 43 and 44 of U2 (pin 43 and 42 of U1); Failure of U2 or U1
722	Poor soldering of pin 44 of U2 (pin 42 of U1); Failure of U2 or U1
723	Poor soldering of pin 43 of U2 (pin 43 of U1); Failure of U2 or U1
724	Failure of U2 or U1
811	Poor connection of lead wire #380 (X contact, GND line) (red, black) Failure of L4; Poor soldering of foot contact
812	Poor contact of open-flash button (Bend of contact, poor soldering or peeling of printed circuit pattern

813	1) Short circuit of X contact line (X contact fails to open.); Short circuit of lead wire #380 (X line) (red); Short circuit in U2 (25-26, 26-27); Failure of D31(S), Q4 or Q21 2) X contact line is open. (X contact signal fails to reach U2.); Failure of D30(O), C32(S), C43(O), C44(S), R41(O) or R61(O); Poor soldering of pin 26 of U2 3) Failure of U2
814	Short circuit in U2 (17-18, 19-20); Poor connection of FPC (m) Short circuit in FPC (m-n); Poor conneciton of lead wire #366, #367 or #368; Failure of R66(O), D8(S), CR1(S), SCR1, R11(O), C9 T2 or C10(S); Trigger is discharged at other part than flash tube.
815	Poor connection of lead wire #366; Failure of Xe tube, SCR2, SCR3, R15(S), R16(S), R20(O), C12(O), C13(O), R14(O) or R18(S)
821	Safety circuit is always ON.; Failure of R6(S), R36(O), VR1, D5(S), Q1 or Q2
831	Failure of Q4, Q21 or Q24; Poor soldering of pin 6, 9 of U2 or pin 27, 36 of U1; Short circuit in U1 (27-28, 35-36) or in U2 (6-7, 9-10); Failure of U2 or U1
841	Incorrect setting of light amount (Refer to Adjustment.); Failure of R20 (If R20=1kΩ , replace it wkith 560Ω .)
851	Failure of Q4, Q21, Q24; Poor soldering of pin 7, 9 of U2 or pin 27, 35 of U1; Short circuit in U1 (27-28, 35-36); Failure of U2 or U1
861	Failure of CR1(O), C4(O), C5(O), C20(O), C21(O), C32(O), C44(O), C47(O) or U2
862	Short circuit in FPC (1-m)
863	Failure of C44(O), C32(O) or Q24
864	Failure of CR1(O), C4(O), C5(O), C44(O), C32(O), Q4, Q24 or U2
911	Poor soldering of pin 19 of U2; Poor connection of lead wire #368 (white); Failure of R23 (O); Failure of commutating circuit, SCR1, R18, R21(S), R22, R23(O), D12(S), D10(O), C12 or C14(S)
912	Poor connection of lead wire #368 (purple); Failure of C7, R22, Q19, R67, C40; Poor soldering of pin 20 of U2; Short cirucuit in U2 (20-21); Failure of U2
913	Poor connection of lead wire #380 (gray); Failure of R63(O); Poor soldering of pin 23 of U2; Failure of U2
914	Poor soldering of pin 37 of U2; Short circuit in U2 (37-38, 36-37); Poor contact of mode selector SW; Failure of U2, U1 D27/28, C22(S), C24(S), C25(S), VR5, R49, R50, R53 or R78(O); Short circuit in FPC (h-i, d-e, e-f); Poor connection of FPC (e, f)
915	Poor soldering of pin 3 of U2; Poor connection of lead wire #379; Failure of D33(O), D27(S), D28(O) or VR4; Poor connection of FPC (g) Poor contact of mosw selector SW

916	Poor soldering of pin 32 of U2; Short circuit in U2 (31-32); Poor connection of lead wire #374; Poor connection of FPC (h); Failure of R32(O), D27(O), D28(S), VR3(O) or R44(O); Poor contact mode selector SW
917	Poor contact of mode selector SW
921	Short circuit in U2 (18-19); Failure of C14(O), D12(O), C40(O), R10(S), R21(O), R67(S), Q19 or U2; Short circuit in FPC (k-l)
922	Failure of C33(S); Short circuit of lead wire #377 (yellow) or #380 (gray) with other lines; Short circuit in U2 (23-24)
923	Poor soldering of pin 34 or 36 of U2; Failure of R49(O), R54(O) C22(O) or U2
924	Incorrect adjustment of VR4; Failure of VR4 or D33(S); Short circuit of lead wire #379; Short circuit in FPC (f-g)
925	Incorrect adjustment of VR3; Failure of VR3, D32(S) or R44(S); Short circuit of lead wire #374
931	Failure of C22(O), C23, Q22, Q23, R45, R46, R47, R48 or U1; Poor soldering of pin 44, 45, 46, 47, 48 or 51 of U1
941	Mounting position of D32 or SPD filter (#135) is incorrect.
951	Failure of C24(O), C25(O), C40(O), R67(S) or Q19; Poor connection of lead wire #374 shield wire
961	Failure of D9(O), D10, SCR3, R13(O) or R14(S); SB-24 is provided with commutating flash eliminating circuit and flash firing after commutating is not found in the normal condition as shown in Fig.1. However, if this circuit has a trouble, additional flash is output like other speedlight as shown in Fig.2
971	Poor connection of FPC (e, f, g, h); Short circuit in FPC (d-e, e-f, f-g, h-i); Poor contact of mode selector; Poor soldering of pin 38, 35 of U2; Failure of R53, R50, R44, R78, C25(S), VR5, VR3, VR4, U2 or U1
1011	Short circuit in U2 (42-43); Failure of U2
1021	Failure of C41 or U2
1031	Failure of C41 or U2
1041	Refer to X-7. "MODE SELECTOR".
1051	Poor connection of lead wire #380 OCSP line (brown); Short circuit between lead wire #380 (brown) and other line; Poor solering of CSP line or pin 25 of U2; Failure of C34(S), C42(S), L3(O) or R62(O)
	 Fig. 1  Fig. 2

1052	Short circuit between lead wire #380 (gray) or #377 (yellow) CSTP line with other line; Failure of C33(S) or U2
1053	Failure of U2
1061	Short circuit between lead wire #380 (brown) CSP line and other line; Short circuit in U2 (24-25, 25-26); Failure of U2;
1062	Poor connection of lead wire #380 (gray) CSTP line; Poor soldering of CSTP line; Failure of L2(O) or R63(O)
1071	Failure of U2
1111	Failure of motor (#269); Poor connection of motor lead wire or lead wire #369; Poor connection of FPC (j); Poor soldering of pin 49, 50 of U1; Failure of U5; Sticking of motor gear
1121	1) If zooming head does not move to specified position: Arrangement bend of lead wires (#367, #368) is not correct. (This is liable to occur in low temperature.) 2) If zooming head position cannot be detected even though it moves to specified position: Poor connection of lead wire #369; Poor contact of zooming head detection brush #155; Poor soldering of pin 52 of U2; Failure of D35/36 or D37/38
1131	Since zooming head position could not be detected, zooming head passes through specified position and returns in reverse direction detecting next zooming position. And this procedure is repeated.: Poor connection of lead wire #369; Poor contact of zooming head detection brush #155; Poor soldering of pin 52 of U2; Failure of D35/36 or D37/38
1211	Failure of Q14, Q15, R25(O) or R26(O); Poor connection of AF module lead wire
1212	Failure of AF module; Poor connection of AF module lead wire
1213	Poor connection of FPC (d); Poor soldering of pin 27 of U2; Failure of U2
1214	Poor connection of FPC (l); Failure of R24, R25, R27, R28, Q13, Q14 or Q15; Poor connection of AF module lead wire
1215	Short circuit between lead wire #375 (white) C line and other line; Failure of Q10, Q11 or C46(S)
1221	Short circuit in U2 (21-22) or in FPC (k-l); Failure of U2 or U1
1222	Short circuit between CRY line and other line; Short circuit of lead wire #380 (green) CRY line; Failure of C35(S) or U2
1231	Failure of Q11 or C46(O); Poor connection of FPC (q)
1311	Poor connection of lead wire #378; Failure of LCD illuminator, Q16, Q17, Q18, R29(O), R30(O) or U1; Poor connection of FPC (r); Short circuit in FPC (q-r, r-s)
1321	Failure of regulated current circuit, Q18 or R30(S)
1331	Failure of LCD illuminator or T3

1411	Latch of commutating thyrister; Replace printed circuit D.
1412	Replace main condenser.; Refer to "X-4. OSCILLATION".
1511	Short circuit in U1 (19-20, 20-21, 21-22, 22-23, 38-39, 39-40) or in U2 (14-13, 13-12, 4-3, 3-2); Poor soldering of pin 20, 21, 22, 38 or 39 of U1 or pin 14, 13, 12, 3 or 2 of U2; Failure of U1 or U2
1521	Short circuit in U1 (23-24, 37-38) or in U2 (10-11, 5-4); Failure of U1 or U2
1531	Short circuit in U1 (36-37) or in U2 (5-6); Poor soldering of pin 37 of U1 or pin 5 of U2; Failure of U1 or U2