

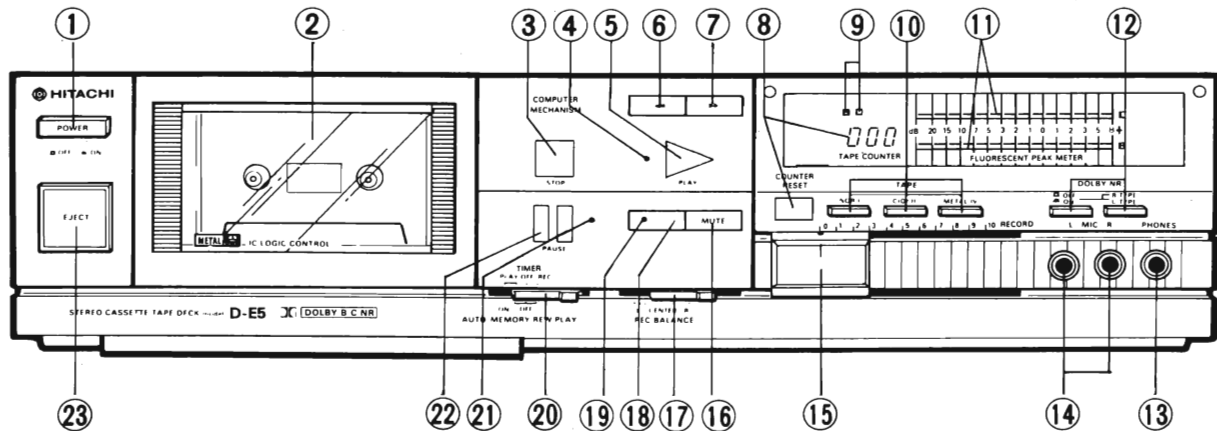
HITACHI

SERVICE MANUAL

TY

No. 396E

D-E5(U)



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KEY TO ILLUSTRATIONS

- | | |
|-----------------------------|---|
| ① POWER SWITCH | ⑬ HEADPHONE JACK |
| ② CASSETTE HOLDER | ⑭ MICROPHONE JACKS |
| ③ STOP BUTTON | ⑮ RECORDING LEVEL CONTROL |
| ④ PLAYBACK INDICATOR | ⑯ RECORDING MUTE BUTTON |
| ⑤ PLAYBACK BUTTON | ⑰ RECORDING BALANCE CONTROL |
| ⑥ REWIND BUTTON | ⑱ RECORD BUTTON |
| ⑦ FAST FORWARD BUTTON | ⑲ RECORDING INDICATOR |
| ⑧ TAPE COUNTER/RESET BUTTON | ⑳ TIMER SWITCH AND AUTO/
MEMORY REWIND PLAY SWITCH |
| ⑨ DOLBY NR INDICATORS | ㉑ PAUSE INDICATOR |
| ⑩ TAPE SELECT SWITCHES | ㉒ PAUSE BUTTON |
| ⑪ PEAK LEVEL INDICATOR | ㉓ EJECT BUTTON |
| ⑫ DOLBY NR SWITCHES | |

SPECIFICATIONS AND PARTS ARE SUBJECT TO CHANGE FOR IMPROVEMENT.

STEREO CASSETTE TAPE DECK

November 1983

TOYOKAWA WORKS

SAFETY PRECAUTIONS

The following precautions should be observed when servicing.

1. Since many parts in the unit have special safety related characteristics, always use genuine Hitachi's replacement parts. Especially critical parts in the power circuit block should not be replaced with other makers. Critical parts are marked with Δ in the circuit diagram.
2. Before returning a repaired unit to the customer, the service technician must thoroughly test the unit to ascertain that it is completely safe to operate without danger of electrical shock.

SPECIFICATIONS

Track System:	4 track 2 channel stereo	Input Sensitivity and Impedance:	Microphone: 0.4 mV (Suitable microphone impedance 300 ohms to 5 kohms) Line in: 80 mV, 50 kohms
Tape:	Cassette tape	Output Level and Impedance:	Line out: 500 mV (Suitable load impedance 50 kohms or more) Headphone: 60 mV (8 ohms) (Suitable load impedance 8 ohms to 2 kohms)
Tape Speed:	4.75 cm/s	Power Supply:	AC 120 V, 60 Hz
Recording System and Bias Frequency:	AC bias, 85 kHz	Power Consumption:	22 W
Erasing System:	AC erase	Dimensions:	435 (W) x 110 (H) x 218 (D) mm
Erase Ratio:	65 dB (at 1 kHz) or more	Weight:	3.7 kg
Frequency Response:	NOR-I: 20 Hz to 16 kHz 30 Hz to 16 kHz (± 3 dB)* CrO ₂ -II: 20 Hz to 18 kHz 30 Hz to 16 kHz (± 3 dB)* METAL-IV: 20 Hz to 19 kHz 30 Hz to 17 kHz (± 3 dB)*		
Signal to Noise Ratio:	Dolby NR OFF: 58 dB (57 dB*) Dolby B NR ON: 66 dB (65 dB*) Dolby C NR ON: 72 dB (71 dB*) (A weighted, Reference 3% T.H.D.)		
Wow and Flutter:	0.04% (WRMS) 0.13%*		* According to DIN 45 500
Distortion:	1% (1 kHz, 160 nWb/m)		
Crosstalk:	60 dB (at 1 kHz) or more		

Specifications are subject to change without notice for performance improvement.

FEATURES

1. Built-in Dolby B/C NR circuit
2. Auto REC MUTE function
3. Auto/Memory rewind play function
4. Tape stand-by function
5. Remote control terminal

DISASSEMBLY

1. **Top Cover (Fig. 1)**
Remove two screws ①.
2. **Bottom Cover (Fig. 1)**
After top cover is removed, remove screw ②, screw ③ (Fig. 7) and screw ④ (Fig. 8).
3. **Cassette Lid (Fig. 2)**
Press the eject button to open the cassette door. Remove nylon rivet, and then pull it upward.
4. **Front Panel (Fig. 3)**
After cassette lid is removed, remove five screws ⑤, screw ④ (Fig. 8) and screw ⑥ (Fig. 8).
5. **FL meter P.W.B. (Fig. 4)**
After front panel is removed, remove two connectors, screw ⑦ and screw ⑦ A.
6. **Control P.W.B., Sensor P.W.B. (Fig. 5)**
Remove the three screws ⑧ and screw ⑨, then remove six nails and plastic rivet.
7. **Control Buttons (Fig. 6)**
 - (1) Playback and stop button
After the control P.W.B. and the metal strip are removed, press the two fixing nails ① toward each other as indicated by arrows and remove the playback and stop button.
 - (2) Pause button
After the control P.W.B. and the metal strip are removed, remove the E-ring to remove the pause shaft. Then, remove the two nails ②.
8. **Main P.W.B. (Fig. 7)**
Remove the front panel. Then, remove the screw ③ and the screw ⑩ and then remove the P.W.B. setscrew.
9. **Cassette Chassis (Fig. 8)**
After the front panel is removed, remove the plastic rivet and two screws ⑪, then remove the counter belt.

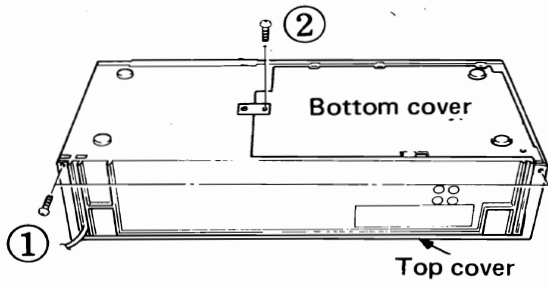


Fig. 1

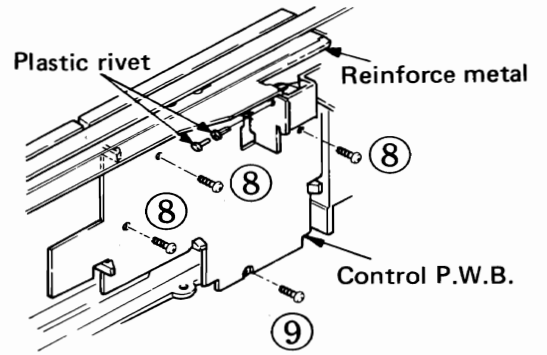


Fig. 5

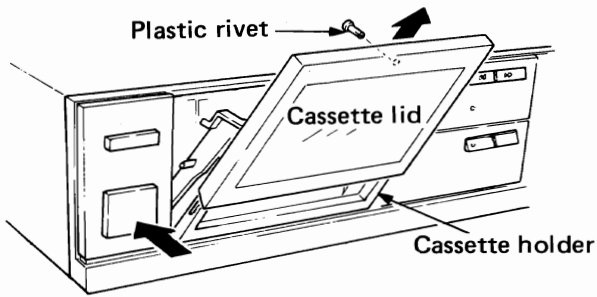


Fig. 2

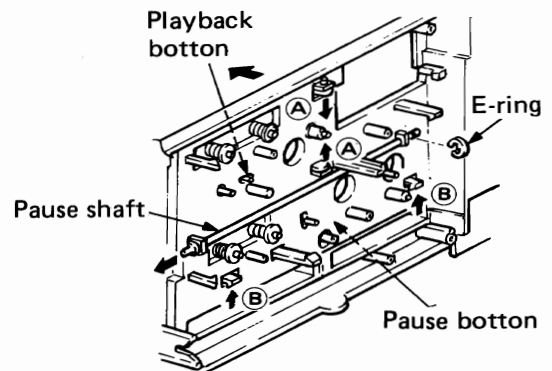


Fig. 6

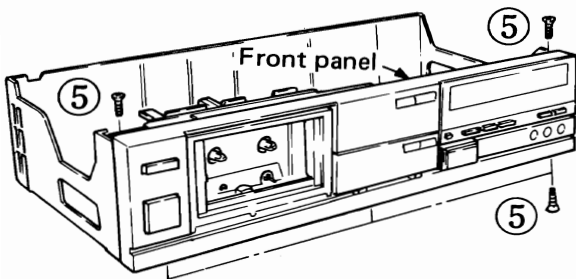


Fig. 3

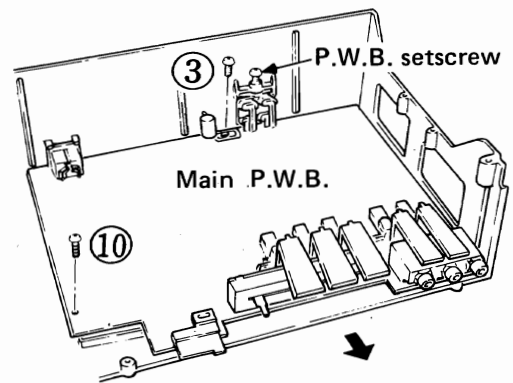


Fig. 7

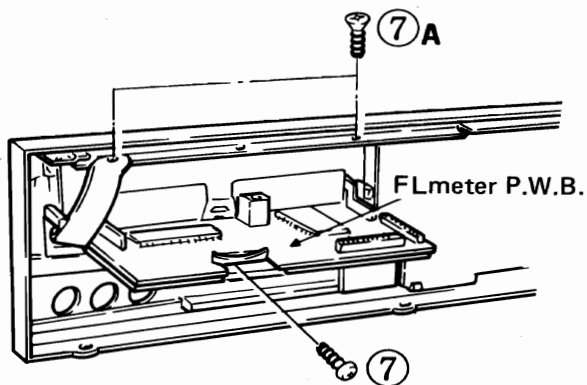


Fig. 4

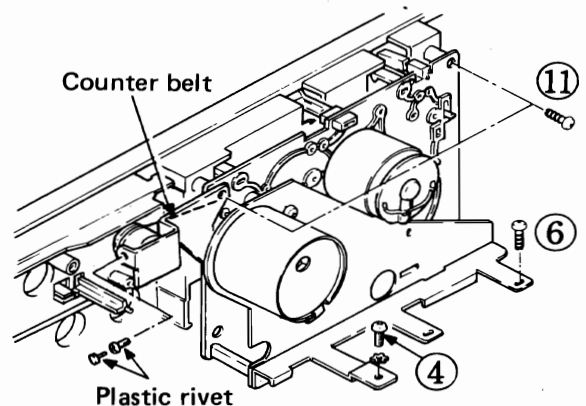


Fig. 8

ADJUSTMENTS

• Adjustment Points

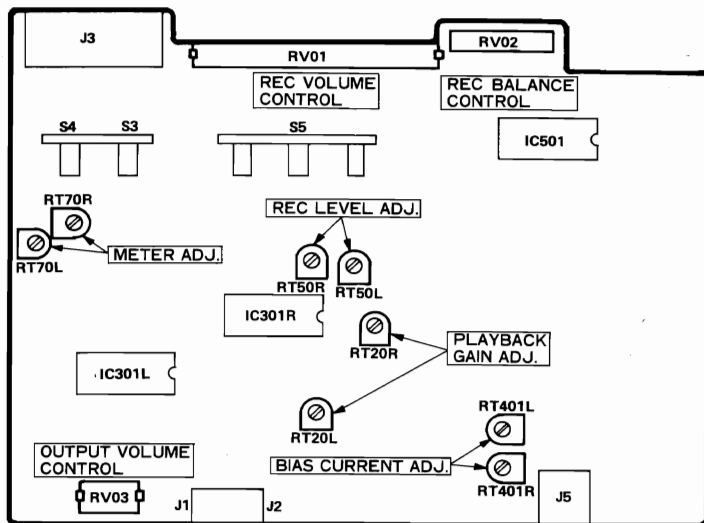


Fig. 9

• Jigs, and Test and Check Tapes

1. Head mounting jig
2. 400 Hz, Dolby alignment tape
3. 10 kHz, azimuth alignment tape
4. 3,000 Hz, tape speed alignment tape
- 5: Mirror tape (for run check)
6. NORMAL alignment tape (UD tape)
7. CHROME alignment tape (EX tape)
8. HITACHI METAL tape (ME tape, C-46)

• Measurement Instruments

1. Low-frequency oscillator
2. Electronic voltmeter
3. Attenuator
4. Frequency counter

• Positions of Knobs

Match the positions of switches and knobs to those shown in the table below unless otherwise specified.

Recording level control (RV01)	MAX
Dolby NR switch (S3)	OFF
Tape selector switch (S5-1 ~ 3)	See Note 1.
Output volume control (RV03L, R)	MAX

Note 1. Set tape select switch as shown below according to the tape being used.

Tape in use	Tape selector switch (S5-1 ~ 3)
Tape not used	NOR-I
Test tape	NOR-I
Normal tape	NOR-I
Chrome tape	CrO ₂ -II
HITACHI METAL tape	METAL-IV

Adjustments must be performed after the cassette lid is removed and the heads, pinchroller and capstan are cleaned with alcohol, according to the following procedure.

1. Tape Speed Adjustment

Input	Adjustment value	Adjustment point
Tape speed alignment tape	3,000 $\begin{matrix} +30 \\ -10 \end{matrix}$ Hz	Semi-fixed volume inside of the motor

Adjustment Procedure

Connect the frequency counter to the LINE OUT terminals and playback a test tape after the unit has been operated for 20 minutes or more. Adjust the tape speed at an intermediate portion of the tape.

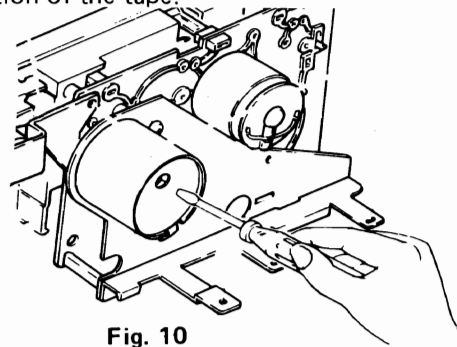


Fig. 10

2. Azimuth Adjustment of Recording/Playback Head

Input	Adjustment value	Adjustment point
Azimuth correction tape	Maximum output	Azimuth adjustment screw

Adjustment Procedure

Connect the electronic voltmeter to LINE OUT terminals and playback the test tape to adjust the REC/PLAY head. When the maximum values for the right and left channels are different, use the maximum values of the left channel (L) as the reference. At the same time, be sure to check that the difference between the maximum value for the two channels is within 2 dB. If the difference is large, readjust the azimuth of the head.

3. Adjustments of Play back Gain and Meter

(1) Adjustment of Playback Gain

Input	Adjustment value	Adjustment point
Dolby reference tape	580 mV	RT20L, R

Adjustment Procedure

Connect the electronic voltmeter to TP1L, R (No. 7 pin of IC301L, R), playback the Dolby reference tape

and adjust so that the electronic voltmeter reads the adjustment value.

(2) Adjustment of FL Meter

Adjustment Procedure

After playback gain is adjusted, playback Dolby reference tape to confirm that 0 dB is lit on the FL meter. If the FL meter indicate a value up to +1 dB, adjust RT70L, R that the FL meter indicate 0 dB JUST ON. (When TP1L, R : 580 mV—5 dB).

4. Bias Current Adjustment and REC/PLAY Output Level Adjustment

Set RT50L and R in the center positions and record at the recording levels shown in the table below to adjust for each tape, then check the playback level.

Order	Tape	Tape selector switch	Recording level			Playback level		Adjustment procedure
			Frequency (Hz)	Level	Adjustment point	Level	Adjustment location	
1	Normal tape	NOR	1.2k/12k	0dB -20dB	ATT	within ± 0.5 dB	RT401L, R	(1)
2	Normal tape	NOR	400	0dB	ATT	within ± 0.5 dB	RT50L, R	(2)
3	Normal tape	NOR	1.2k/12k	0dB -20dB	ATT	within ± 1.0 dB	Check	(1)
4	Chrome tape	CrO ₂	1.2k/12k	0dB -20dB	ATT	within ± 3 dB	Check	(1)
5	HITACHI METAL tape	METAL	1.2k/12k	0dB -20dB	ATT	within ± 3 dB	Check	(1)

Adjustment Procedure

(1) Bias Current Adjustment

- 1) Connect the low-frequency oscillator to the LINE IN terminal through the attenuator and adjust the output of the low-frequency oscillator so that the meter indicates 0 dB while recording. Then adjust the attenuator so as to obtain 0 dB -20 dB (Frequency: 1.2 kHz).
- 2) Record in this state and then set the low-frequency oscillator to 12 kHz and then perform recording.
- 3) Playback the recorded section, read the output and check that the output difference between the two frequencies is within ± 0.5 dB.
- 4) When the output difference is out of ± 0.5 dB range, adjust RT401L, R properly and repeat recording/playback so that the output difference is within ± 0.5 dB.

(2) Recording/Playback Output Level Adjustment

- 1) Connect a low frequency oscillator to LINE IN terminals, input a 400 Hz signal, set the unit to the record mode and adjust the output of the low fre-

quency oscillator so that the reading of the meter is 0 dB before recording.

- 2) Playback the recorded section to check that output is within 0 dB ± 0.5 dB.
- 3) When the output difference is out of the ± 0.5 dB range, adjust RT50L, R properly and repeat recording/playback in the same way so that the output difference is within ± 0.5 dB.

5. Dolby NR Operation Check

• Dolby-B Type

- (1) Record using metal tape (ME C46) at 5 kHz, -40 dB with respect to the Dolby level. Continuously record with "Dolby OFF" and "Dolby-B".
- (2) Playback with "Dolby OFF" and check that the output difference between "Dolby OFF" and "Dolby-B" is approximately 10 dB.

● **Dolby-C Type**

(1) Record using metal tape (ME C46) at 1 kHz, -40 dB with respect to the Dolby level. Continuously record with "Dolby OFF" and "Dolby-C".

(2) Playback with "Dolby OFF" and check that the output difference between "Dolby OFF" and "Dolby-C" is approximately 16 dB.

6. Check and Adjustment of Cassette Chassis Section

No.	Inspection Item	Reference Value	Remarks
1	Pinchroller compression strength	400 ± 50 g	Note 1
2	Take-up torque	30 ~ 70 g-cm	
3	FF torque	90 ~ 190 g-cm	
4	REW torque	90 ~ 190 g-cm	
5	PLAY back-tension	2.5 ~ 5.0 g-cm	Without counter
6	FF/REW back-tension	5.0 ~ 7.5/ 3.5 ~ 6.0 g-cm	Without counter
7	Axial play of flywheel	0.05 ~ 0.5 mm	

(Note 1) Pinchroller compressive force

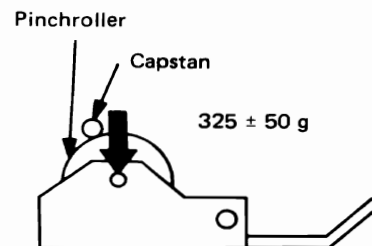


Fig. 11

LUBRICATION

One or two drops of Pan motor oil or Sonic slider oil are applied to the rotary sections. Molycoat (EL-10M) is applied to the slidable sections.

Lubrication must be performed once a year given normal operation or once every 1000 hours. Be sure not to apply the oil to the belt and idlers.

Rotary sections	between metal portions	pan motor oil (10W-40)
	between mold and metal	sonic slider oil (#1600)
Slidable sections	(Note) between molds and between mold and metal	Molycoat (EL-10M)
Spring vibration prevention		Floyl (GB-TS-1)

Note:

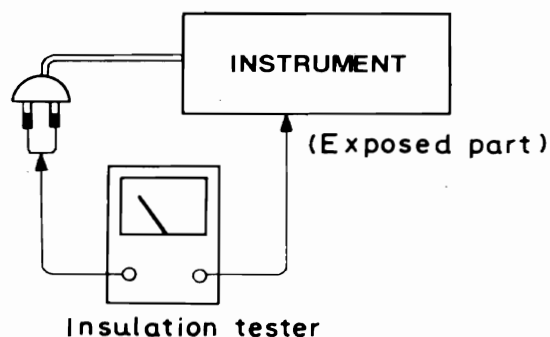
When front frame and slide knob are replaced, coat both contacting parts lightly with white grease.

Check that exposed parts are acceptably insulated from the supply circuit before returning the instrument repaired to the customer.

● **Checking method**

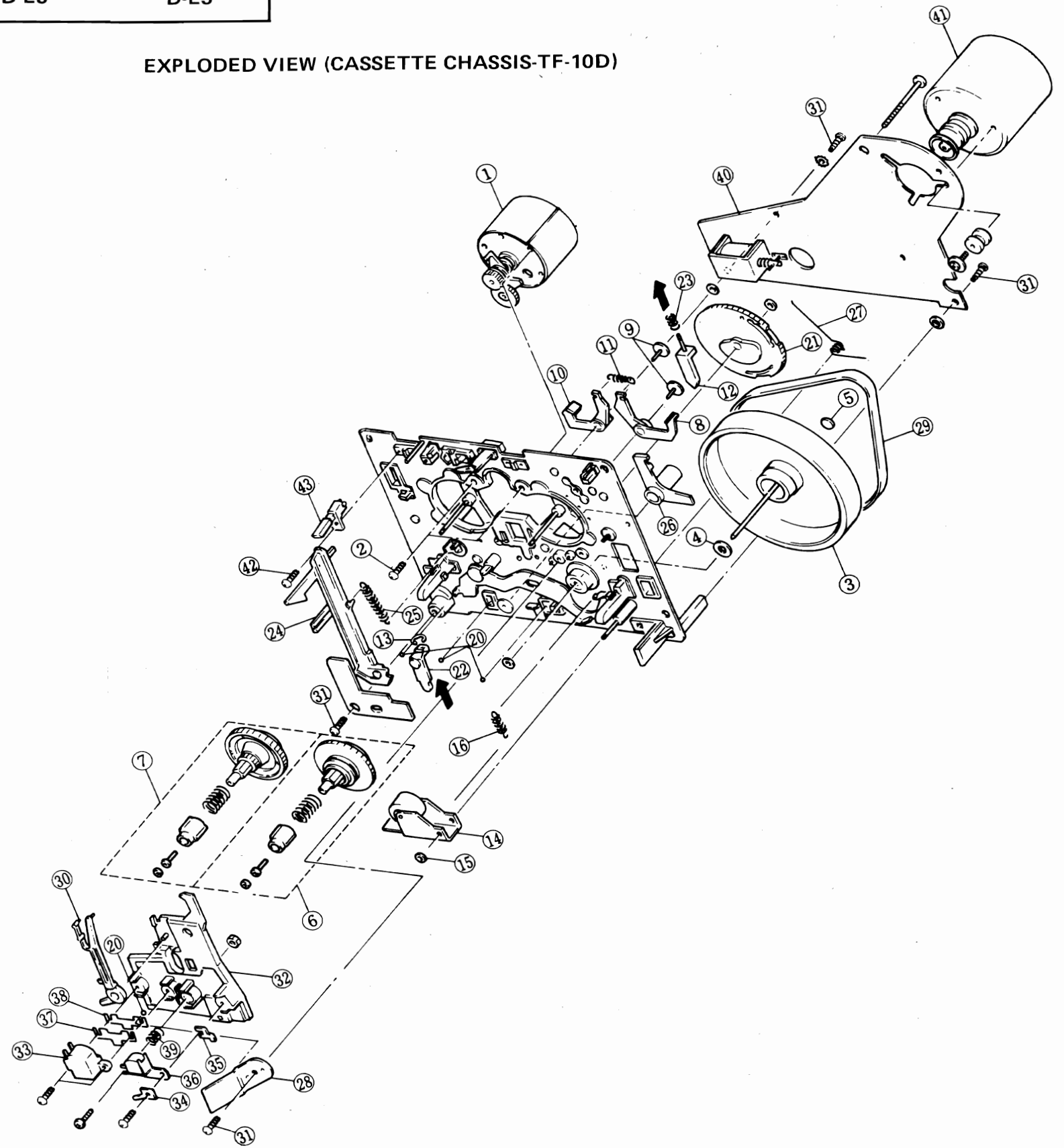
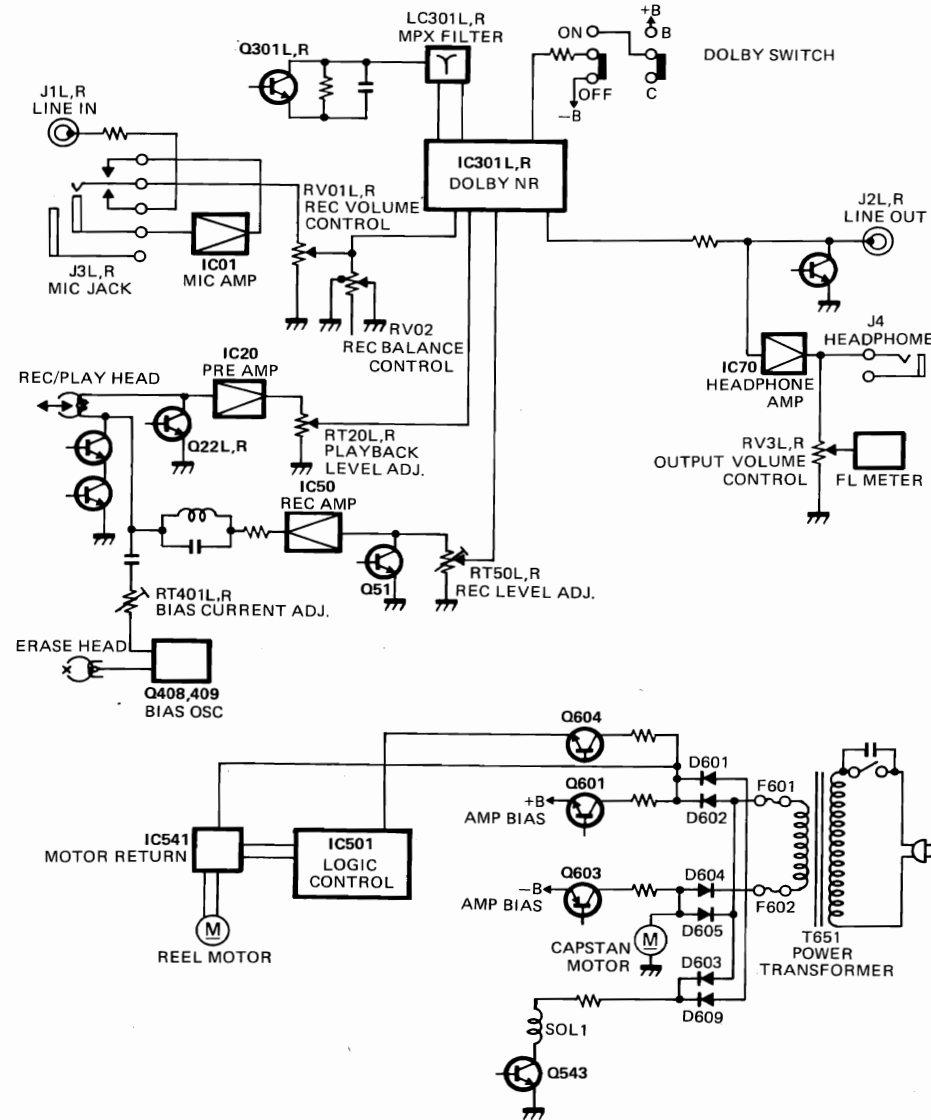
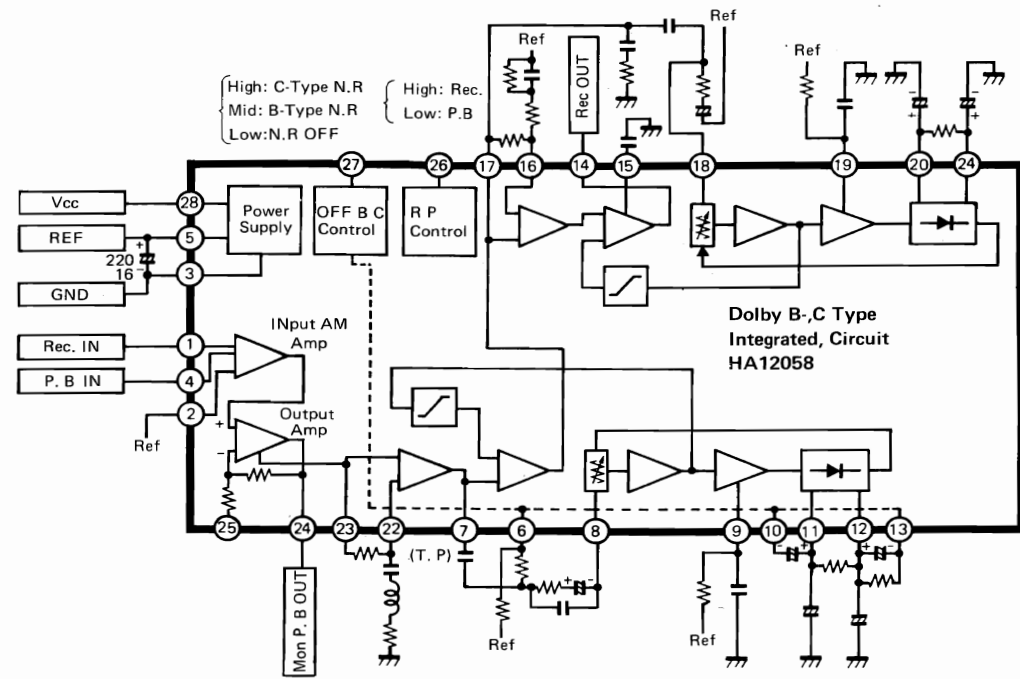
Power switch is set to ON.

Next, measure the resistance value between the both poles of attachment cup (Power supply plug) and the exposed parts (Parts such as Knob, Cover, etc. where the customer is easy to touch.) and check that the resistance value is 500 kohms or more.



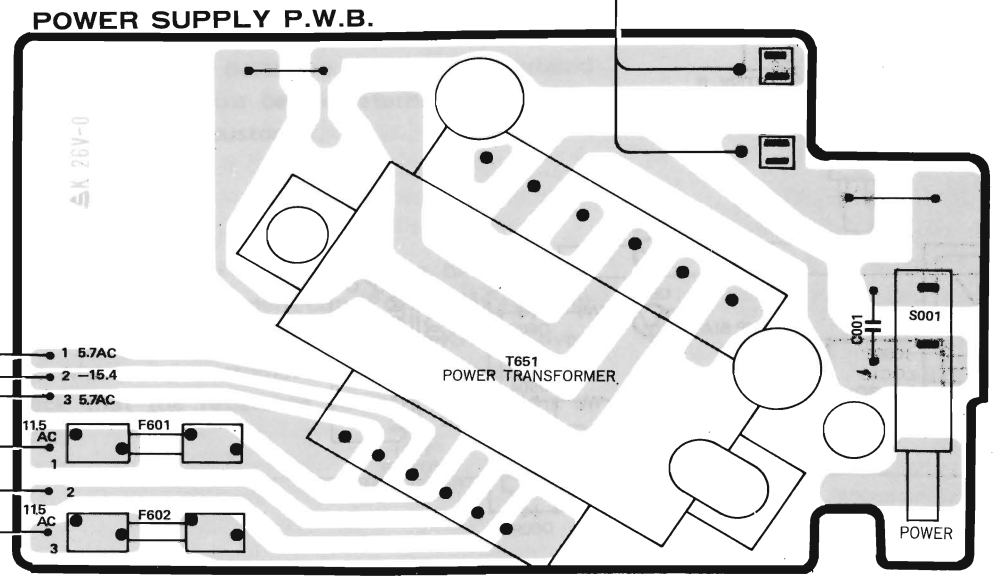
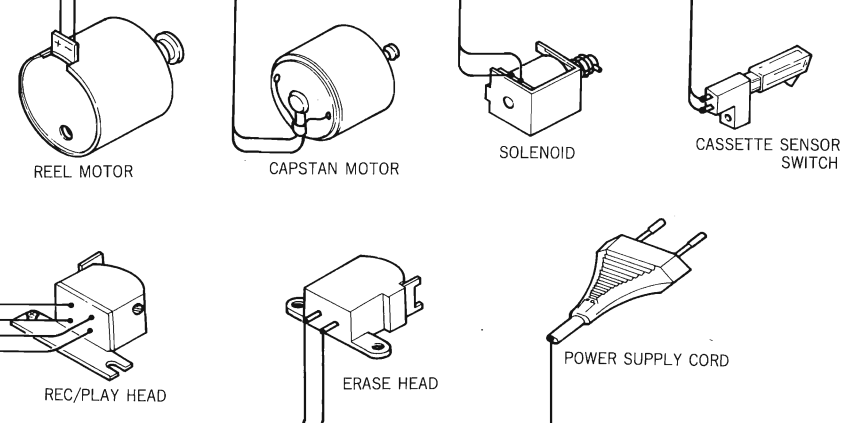
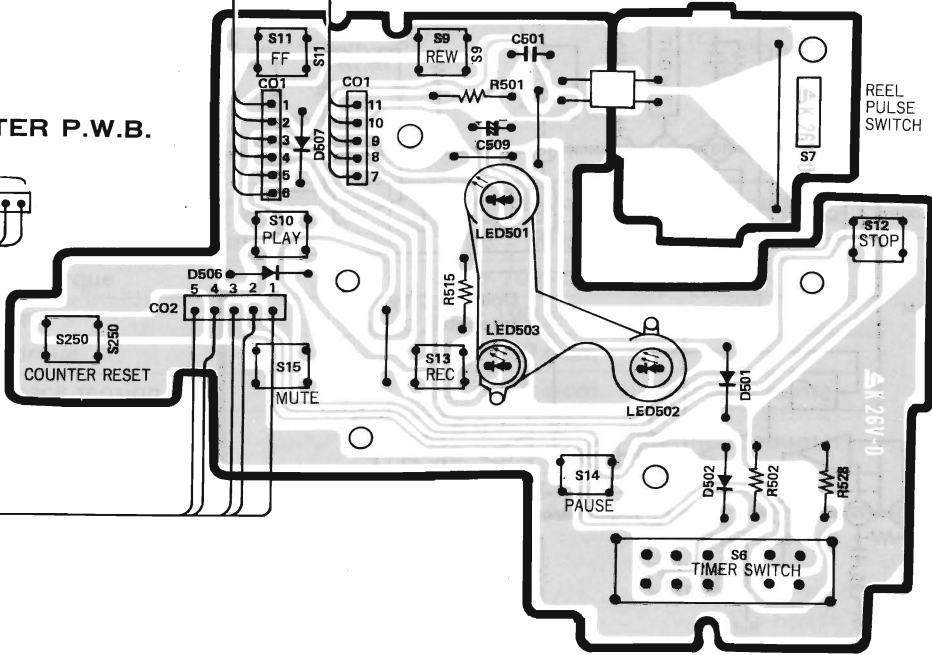
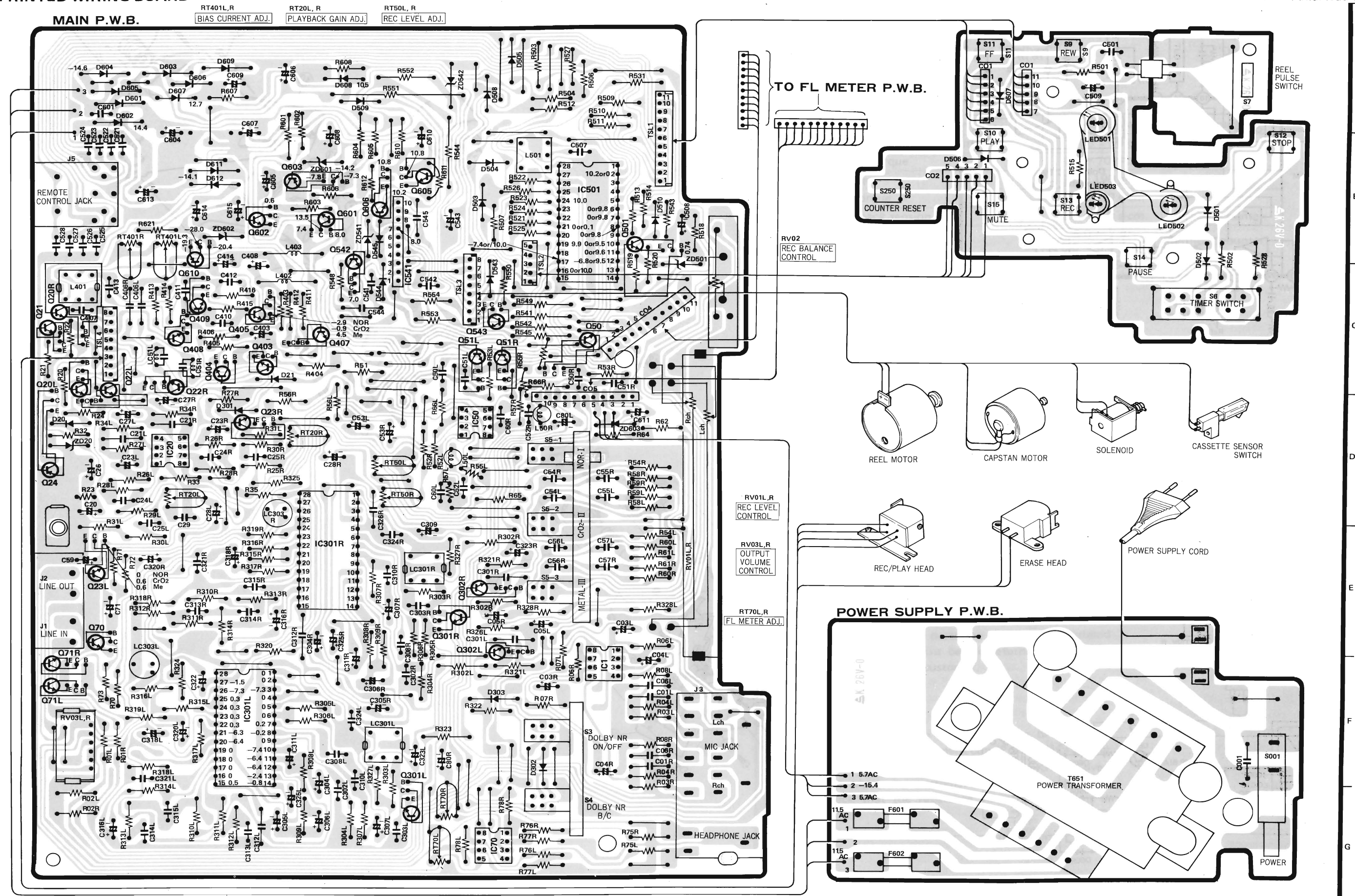
BLOCK DIAGRAM

EXPLODED VIEW (CASSETTE CHASSIS-TF-10D)



PRINTED WIRING BOARD

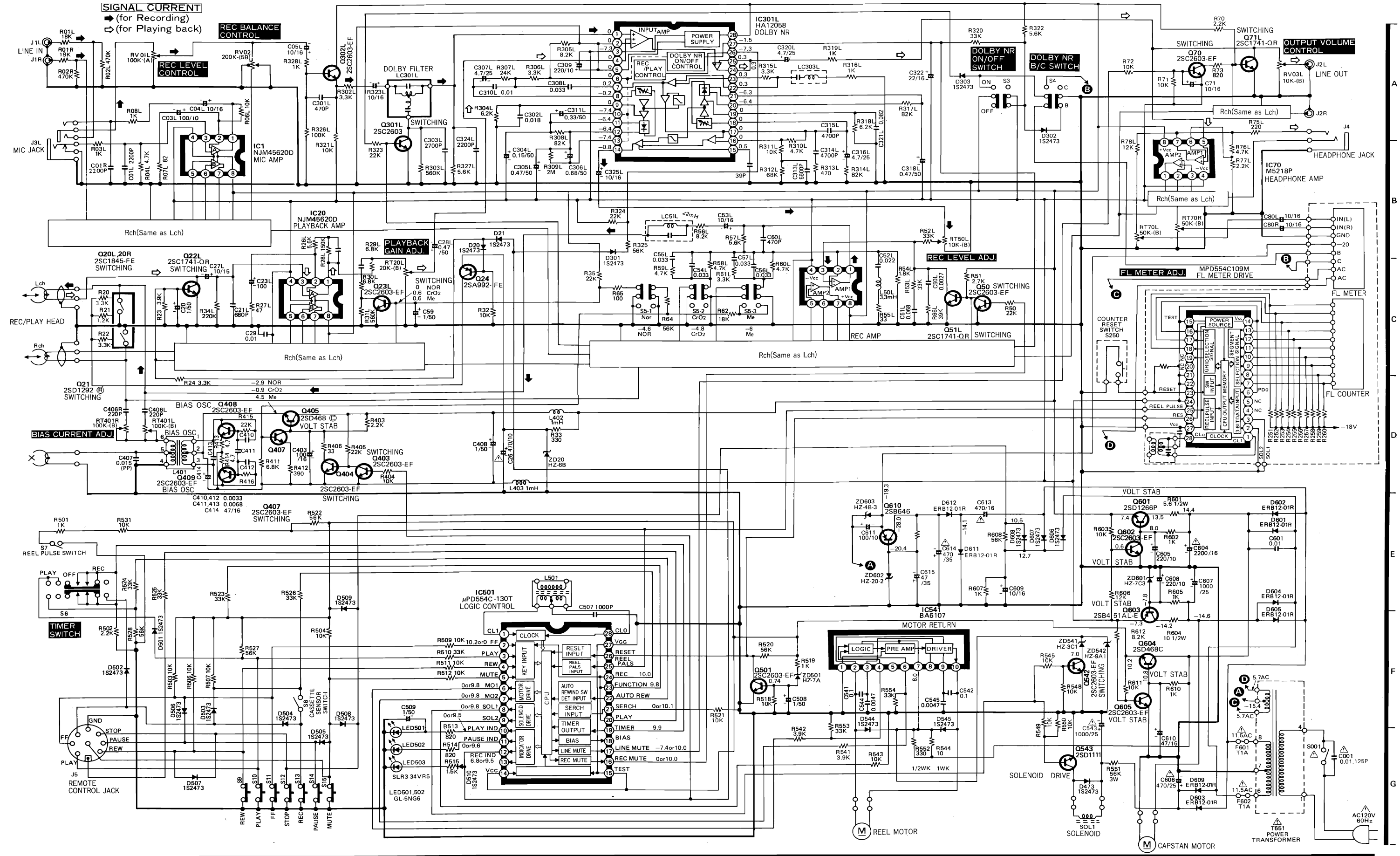
* : Axial lead cylindrical ceramic capacitor.



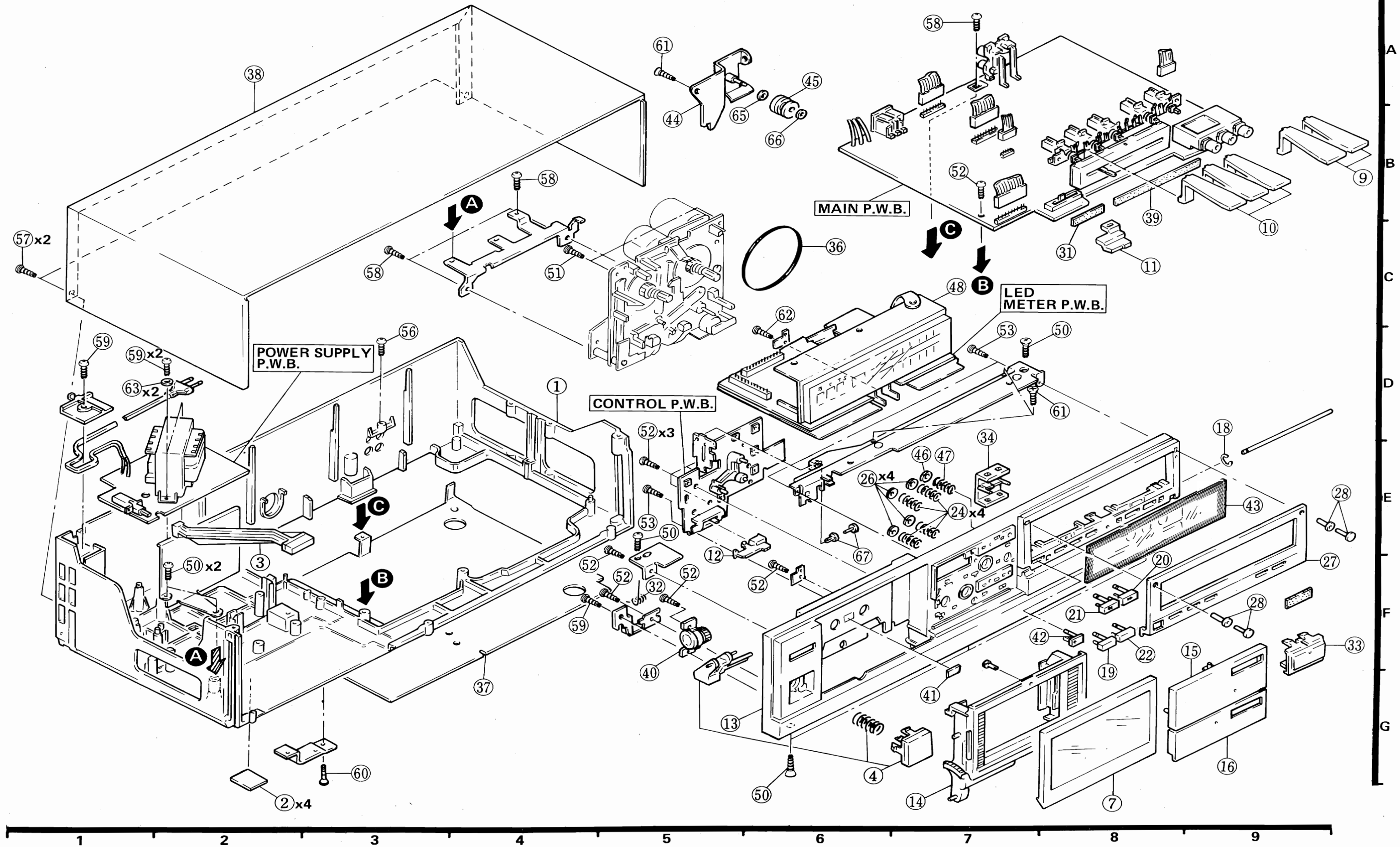
CIRCUIT DIAGRAM

CAUTION Use the electrolytic capacitors with explosion-proof valve when the diameter of them is more than 10 mmφ.

* : Axial lead cylindrical ceramic capacitor.



EXPLODED VIEW (CABINET CHASSIS)



**REPLACEMENT PARTS LIST
CABINET CHASSIS**

ITEM NO.	PART NO.	DESCRIPTION
1	3957533	Mold chassis ass'y
2	3942385	Brake pad
3	3296634	Power button ass'y
4	3957541	Eject button ass'y
7	3957511	Cassette lid
9	3902461	Push button (blue)
10	3902462	Push button (gray)
11	3296651	Balance knob
12	3297061	Timer knob
13	3249913	Front panel
14	3957501	Cassette holder
15	3299811	Play and stop button ass'y
16	3957552	Pause button ass'y
18	4450044	E ring
19	3295641	REC button ass'y
20	3295652	FF button ass'y
21	3295622	REW button ass'y
22	3295631	Mute button ass'y
24	3362641	Operation key spring
26	3901781	Washer S
27	3957485	Blind
28	3947541	Plastic rivet B
29	3958141	LED panel
31	4746902	Screen
32	3365371	Holder spring

ITEM NO.	PART NO.	DESCRIPTION
33	3296681	REC knob
34	3298671	REC body
36	4686531	Counter belt
37	3161393	Bottom cover
38	4434191	Upper cover
39	4746901	Screen
40	3902911	Oil damper
41	4901821	Sheet for window
42	3960452	Counter reset button ass'y
43	3962201	Smoke panel (Wine red)
44	4455131	Pulley bracket ass'y
45	3346462	Counter pulley ass'y
46	3902581	Washer
47	3364861	Counter reset spring
48	2597527	FL meter
50	4577831	3φ × 10BT flat head screw
51	8699410	3φ × 10BT bind screw
52	8691410	3φ × 10BT bind screw
53	8691308	2.6φ × 10BT bind screw
56	8691414	3φ × 14BT bind screw
57	8698410	3φ × 10BT bind screw
58	4567453	3φ × 8DT screw
59	8691412	3φ × 12BT bind screw
60	8691408	3φ × 8BT bind screw
61	4568812	3φ × 8BT flat head screw
62	8691406	3φ × 6BT screw
63	4428377	Special washer
65	4931986	Polyslider washer
66	4418005	Polyslider washer
67	3933805	3φ plastic rivet

CASSETTE CHASSIS (TF-10D)

ITEM NO.	PART NO.	DESCRIPTION
1	2523033	Reel motor gear ass'y
2	4583551	2.6φ × 16 screw
3	3356841	Flywheel ass'y
4	3363553	Spring
5	4433661	Flywheel thrust support
6	3955911	Turntable R ass'y
7	3955901	Turntable L ass'y
8	3949771	Brake R
9	4583481	Pin
10	3949761	Brake L
11	3364255	P spring
12	3949652	Playslider ass'y
13	4450043	E ring
14	4690252	Pinch roller arm ass'y
15	4435406	PS washer
16	3364254	P spring
20	4581152	2φ ball
21	3949733	Play PA gear
22	3949672	Play assist plate

ITEM NO.	PART NO.	DESCRIPTION
23	3364241	C spring
24	3949783	Eject slider
25	3364253	Spring
26	3949742	Play trigger arm
27	3364893	T spring
28	4435321	Head plate holder
29	4688931	FW belt
31	8691408	3φ × 8BT bind screw
33	2555341	R/P head
34	4450771	Spacer A
35	4450772	Spacer A
36	2555351	Erase head
37	4450781	Spacer B
38	4450782	Spacer B
39	3341213	Head spring
40	4971291	Solenoid ass'y
41	2523041	DC motor ass'y
42	8691108	2φ × 8BT screw
43	2639881	Cassette detection switch
	4745451	Head cleaning stick

REPLACEMENT PARTS LIST

SYMBOL NO.	PART NO.	DESCRIPTION		
CAPACITORS				
C01 L,R	0240102	Cylindrical ceramic	2200pF ±30%	25V
C03 L,R	0252331	Electrolytic	100μF	10V
C04 L,R	0252521	Electrolytic	10μF	16V
C05 L,R	0252521	Electrolytic	10μF	16V
C06 L,R	0240103	Cylindrical ceramic	3300pF ±30%	25V
C20	0252811	Electrolytic	1μF	50V
C21 L,R	0240010	Cylindrical ceramic	680pF ±10%	50V
C23 L,R	0252331	Electrolytic	100μF	10V
C24 L,R	0275013	Mylar, film	0.022μF	50V
C25 L,R	0275011	Mylar, film	0.01μF ±10%	50V
C26	0252335	Electrolytic	470μF	10V
C27 L,R	0252521	Electrolytic	10μF	15V
C28 L,R	0252805	Electrolytic	0.47μF	50V
C29	0244171	Ceramic discal	0.01μF +80% -20%	50V
C50 L,R	0274033	Mylar, film	2700pF ±10%	50V
C51 L,R	0275016	Mylar, film	0.068μF ±10%	50V
C52 L,R	0275013	Mylar, film	0.022μF ±10%	50V
C53 L,R	0252521	Electrolytic	10μF	16V
C54 L,R	0275014	Mylar, film	0.033μF ±10%	50V
C57 L,R	0275014	Mylar, film	0.033μF ±10%	50V
C59	0252811	Electrolytic	1μF	50V
C60 L,R	0239410	Cylindrical ceramic	470pF ±10%	50V
C71	0252521	Electrolytic	10μF	16V
C80 L,R	0252521	Electrolytic	10μF	16V
C301 L,R	0240008	Cylindrical ceramic	470pF ±10%	50V
C302 L,R	0275032	Mylar, film	0.018μF ±10%	50V
C303 L,R	0274033	Mylar, film	2700pF ±10%	50V
C304 L,R	0252804	Electrolytic	0.15μF	50V
C305 L,R	0252805	Electrolytic	0.47μF	50V
C306 L,R	0252807	Electrolytic	0.68μF	50V
C307 L,R	0252615	Electrolytic	4.7μF	25V
C308 L,R	0275014	Mylar, film	0.033μF ±10%	50V
C309	0252332	Electrolytic	220μF	10V
C310 L,R	0275011	Mylar, film	0.01μF ±10%	50V
C311 L,R	0252803	Electrolytic	0.33μF	50V
C312 L,R	0230026	Cylindrical ceramic	39pF ±5%	50V
C313 L,R	0274035	Mylar, film	5600pF ±10%	50V
C314 L,R	0274015	Mylar, film	4700pF	50V
C315 L,R	0274015	Mylar, film	4700pF	50V
C316 L,R	0252615	Electrolytic	4.7μF	25V
C318 L,R	0252805	Electrolytic	0.47μF	50V
C319 L,R	0252804	Electrolytic	0.15μF	50V
C320 L,R	0252615	Electrolytic	4.7μF	50V
C321 L,R	0275036	Mylar, film	0.082μF ±10%	50V
C322	0252522	Electrolytic	22μF	16V
C323 L,R	0252521	Electrolytic	10μF	16V
C324 L,R	0274013	Mylar, film	2200pF ±10%	50V
C325 L	0252521	Electrolytic	10μF	16V

SYMBOL NO.	PART NO.	DESCRIPTION		
C403	0252531	Electrolytic	100μF	16V
C406 L,R	0240004	Cylindrical ceramic	220pF ±10%	50V
C407	1279321	Mylar, film	0.015μF ±5%	100V
C408	0252811	Electrolytic	1μF	50V
C410	0274014	Mylar, film	3300pF ±10%	50V
C411	0274016	Mylar, film	6800pF ±10%	50V
C412	0274014	Mylar, film	3300pF ±10%	50V
C413	0274016	Mylar, film	6800pF ±10%	50V
C414	0252525	Electrolytic	47μF	16V
C507	0209731	Ceramic, discal	1000pF ±10%	50V
C508	0252811	Electrolytic	1μF	50V
C509	0252811	Electrolytic	1μF	50V
C541	0276011	Mylar, film	0.1μF ±10%	50V
C542	0276011	Mylar, film	0.1μF ±10%	50V
C543	0252636	Electrolytic	1000μF	25V
C544	0240104	Cylindrical ceramic	4700pF	25V
C545	0240104	Cylindrical ceramic	4700pF	25V
C60I	0244171	Ceramic, discal	0.01μF +80% -20%	50V
C604	0252542	Electrolytic	2200μF	16V
C605	0252332	Electrolytic	220μF	10V
C606	0252635	Electrolytic	470μF	25V
C607	0252636	Electrolytic	1000μF	25V
C608	0252332	Electrolytic	220μF	10V
C609	0252521	Electrolytic	10μF	16V
C610	0252525	Electrolytic	47μF	16V
C611	0252331	Electrolytic	100μF	10V
C613	0252535	Electrolytic	470μF	16V
C614	0252735	Electrolytic	470μF	35V
C615	0252725	Electrolytic	47μF	35V
C001	0243901	Ceramic, discal	0.01μF +100% -0	400V
RESISTORS				
R1 L,R	0129637	Carbon film	18kΩ ±5%	SRD¼P
R2 L,R	0129677	Carbon film	470kΩ ±5%	SRD¼P
R3 L,R	0129601	Carbon film	1kΩ ±5%	SRD¼P
R4 L,R	0129617	Carbon film	4.7kΩ ±5%	SRD¼P
R6 L,R	0129631	Carbon film	10kΩ ±5%	SRD¼P
R7 L,R	0129553	Carbon film	82Ω ±5%	SRD¼P
R8 L,R	0129601	Carbon film	1kΩ ±5%	SRD¼P
R20	0129613	Carbon film	3.3kΩ ±5%	SRD¼P
R21	0129603	Carbon film	1.2kΩ ±5%	SRD¼P
R22	0129613	Carbon film	3.3kΩ ±5%	SRD¼P

SYMBOL NO.	PART NO.	DESCRIPTION			
R23	0129884	Carbon film	3.9k Ω	$\pm 5\%$	SRD $\frac{1}{4}$ P
R24	0129613	Carbon film	3.3k Ω	$\pm 5\%$	SRD $\frac{1}{4}$ P
R26 L,R	0129619	Carbon film	5.6k Ω	$\pm 5\%$	SRD $\frac{1}{4}$ P
R27 L,R	0129547	Carbon film	47 Ω	$\pm 5\%$	SRD $\frac{1}{4}$ P
R28 L,R	0129665	Carbon film	150k Ω	$\pm 5\%$	SRD $\frac{1}{4}$ P
R29 L,R	0129621	Carbon film	6.8k Ω	$\pm 5\%$	SRD $\frac{1}{4}$ P
R30 L,R	0129621	Carbon film	6.8k Ω	$\pm 5\%$	SRD $\frac{1}{4}$ P
R31 L,R	0129679	Carbon film	560k Ω	$\pm 5\%$	SRD $\frac{1}{4}$ P
R32	0129631	Carbon film	10k Ω	$\pm 5\%$	SRD $\frac{1}{4}$ P
R33	0129573	Carbon film	330 Ω	$\pm 5\%$	SRD $\frac{1}{4}$ P
R34 L,R	0129669	Carbon film	220k Ω	$\pm 5\%$	SRD $\frac{1}{4}$ P
R35	0129639	Carbon film	22k Ω	$\pm 5\%$	SRD $\frac{1}{4}$ P
R50	0129902	Carbon film	22k Ω	$\pm 5\%$	SRD $\frac{1}{4}$ P
R51	0129611	Carbon film	2.7k Ω	$\pm 5\%$	SRD $\frac{1}{4}$ P
R52 L,R	0129643	Carbon film	33k Ω	$\pm 5\%$	SRD $\frac{1}{4}$ P
R53 L,R	0129906	Carbon film	33k Ω	$\pm 5\%$	SRD $\frac{1}{4}$ P
R54 L,R	0129607	Carbon film	1.8k Ω	$\pm 5\%$	SRD $\frac{1}{4}$ P
R55 L,R	0129834	Carbon film	33 Ω	$\pm 5\%$	SRD $\frac{1}{4}$ P
R56 L,R	0129623	Carbon film	8.2k Ω	$\pm 5\%$	SRD $\frac{1}{4}$ P
R57 L,R	0129888	Carbon film	5.6k Ω	$\pm 5\%$	SRD $\frac{1}{4}$ P
R58 L,R	0129617	Carbon film	4.7k Ω	$\pm 5\%$	SRD $\frac{1}{4}$ P
R59 L,R	0129617	Carbon film	4.7k Ω	$\pm 5\%$	SRD $\frac{1}{4}$ P
R60 L,R	0129617	Carbon film	4.7k Ω	$\pm 5\%$	SRD $\frac{1}{4}$ P
R61 L,R	0129613	Carbon film	3.3k Ω	$\pm 5\%$	SRD $\frac{1}{4}$ P
R62	0129637	Carbon film	18k Ω	$\pm 5\%$	SRD $\frac{1}{4}$ P
R64	0129649	Carbon film	56k Ω	$\pm 5\%$	SRD $\frac{1}{4}$ P
R65	0129561	Carbon film	100 Ω	$\pm 5\%$	SRD $\frac{1}{4}$ P
R66 L,R	0129645	Carbon film	39k Ω	$\pm 5\%$	SRD $\frac{1}{4}$ P
R70	0129609	Carbon film	2.2k Ω	$\pm 5\%$	SRD $\frac{1}{4}$ P
R71	0129631	Carbon film	10k Ω	$\pm 5\%$	SRD $\frac{1}{4}$ P
R72	0129631	Carbon film	10k Ω	$\pm 5\%$	SRD $\frac{1}{4}$ P
R73	0129583	Carbon film	820 Ω	$\pm 5\%$	SRD $\frac{1}{4}$ P
R75 L,R	0129569	Carbon film	220 Ω	$\pm 5\%$	SRD $\frac{1}{4}$ P
R76 L,R	0129617	Carbon film	4.7k Ω	$\pm 5\%$	SRD $\frac{1}{4}$ P
R77 L,R	0129609	Carbon film	2.2k Ω	$\pm 5\%$	SRD $\frac{1}{4}$ P
R78 L,R	0129633	Carbon film	12k Ω	$\pm 5\%$	SRD $\frac{1}{4}$ P
R302 L,R	0129613	Carbon film	3.3k Ω	$\pm 5\%$	SRD $\frac{1}{4}$ P
R303 L,R	0129679	Carbon film	560k Ω	$\pm 5\%$	SRD $\frac{1}{4}$ P
R304 L,R	0129620	Carbon film	6.2k Ω	$\pm 5\%$	SRD $\frac{1}{4}$ P
R305 L,R	0129623	Carbon film	8.2k Ω	$\pm 5\%$	SRD $\frac{1}{4}$ P
R306 L,R	0129613	Carbon film	3.3k Ω	$\pm 5\%$	SRD $\frac{1}{4}$ P
R307 L,R	0129640	Carbon film	24k Ω	$\pm 5\%$	SRD $\frac{1}{4}$ P
R308 L,R	0129653	Carbon film	82k Ω	$\pm 5\%$	SRD $\frac{1}{4}$ P
R309 L,R	0129708	Carbon film	2M Ω	$\pm 5\%$	SRD $\frac{1}{4}$ P
R310 L,R	0129617	Carbon film	4.7k Ω	$\pm 5\%$	SRD $\frac{1}{4}$ P
R311 L,R	0129631	Carbon film	10k Ω	$\pm 5\%$	SRD $\frac{1}{4}$ P
R312 L,R	0129651	Carbon film	68k Ω	$\pm 5\%$	SRD $\frac{1}{4}$ P
R313 L,R	0129577	Carbon film	470 Ω	$\pm 5\%$	SRD $\frac{1}{4}$ P
R314 L,R	0129653	Carbon film	82k Ω	$\pm 5\%$	SRD $\frac{1}{4}$ P
R315 L,R	0129613	Carbon film	3.3k Ω	$\pm 5\%$	SRD $\frac{1}{4}$ P
R316 L,R	0129601	Carbon film	1k Ω	$\pm 5\%$	SRD $\frac{1}{4}$ P
R317 L,R	0129653	Carbon film	82k Ω	$\pm 5\%$	SRD $\frac{1}{4}$ P
R318 L,R	0129620	Carbon film	6.2k Ω	$\pm 5\%$	SRD $\frac{1}{4}$ P

SYMBOL NO.	PART NO.	DESCRIPTION			
R319 L,R	0129601	Carbon film	1k Ω	$\pm 5\%$	SRD $\frac{1}{4}$ P
R320	0129643	Carbon film	33k Ω	$\pm 5\%$	SRD $\frac{1}{4}$ P
R321 L,R	0129631	Carbon film	10k Ω	$\pm 5\%$	SRD $\frac{1}{4}$ P
R322	0129619	Carbon film	5.6k Ω	$\pm 5\%$	SRD $\frac{1}{4}$ P
R323	0129639	Carbon film	22k Ω	$\pm 5\%$	SRD $\frac{1}{4}$ P
R324	0129639	Carbon film	22k Ω	$\pm 5\%$	SRD $\frac{1}{4}$ P
R325	0129649	Carbon film	56k Ω	$\pm 5\%$	SRD $\frac{1}{4}$ P
R326	0129661	Carbon film	100k Ω	$\pm 5\%$	SRD $\frac{1}{4}$ P
R327 L,R	0129619	Carbon film	5.6k Ω	$\pm 5\%$	SRD $\frac{1}{4}$ P
R328 L,R	0129601	Carbon film	1k Ω	$\pm 5\%$	SRD $\frac{1}{4}$ P
R403	0129609	Carbon film	2.2k Ω	$\pm 5\%$	SRD $\frac{1}{4}$ P
R404	0129631	Carbon film	10k Ω	$\pm 5\%$	SRD $\frac{1}{4}$ P
R405	0129639	Carbon film	22k Ω	$\pm 5\%$	SRD $\frac{1}{4}$ P
R406	0129543	Carbon film	33 Ω	$\pm 5\%$	SRD $\frac{1}{4}$ P
R411	0129621	Carbon film	6.8k Ω	$\pm 5\%$	SRD $\frac{1}{4}$ P
R412	0129575	Carbon film	390 Ω	$\pm 5\%$	SRD $\frac{1}{4}$ P
R413	0129517	Carbon film	4.7 Ω	$\pm 5\%$	SRD $\frac{1}{4}$ P
R414	0129517	Carbon film	4.7 Ω	$\pm 5\%$	SRD $\frac{1}{4}$ P
R415	0129639	Carbon film	22k Ω	$\pm 5\%$	SRD $\frac{1}{4}$ P
R416	0129639	Carbon film	22k Ω	$\pm 5\%$	SRD $\frac{1}{4}$ P
R501	0129601	Carbon film	1k Ω	$\pm 5\%$	SRD $\frac{1}{4}$ P
R502	0129609	Carbon film	2.2k Ω	$\pm 5\%$	SRD $\frac{1}{4}$ P
R503	0129631	Carbon film	10k Ω	$\pm 5\%$	SRD $\frac{1}{4}$ P
R504	0129631	Carbon film	10k Ω	$\pm 5\%$	SRD $\frac{1}{4}$ P
R506	0129631	Carbon film	10k Ω	$\pm 5\%$	SRD $\frac{1}{4}$ P
R507	0129631	Carbon film	10k Ω	$\pm 5\%$	SRD $\frac{1}{4}$ P
R509	0129631	Carbon film	10k Ω	$\pm 5\%$	SRD $\frac{1}{4}$ P
R510	0129643	Carbon film	33k Ω	$\pm 5\%$	SRD $\frac{1}{4}$ P
R511	0129631	Carbon film	10k Ω	$\pm 5\%$	SRD $\frac{1}{4}$ P
R512	0129631	Carbon film	10k Ω	$\pm 5\%$	SRD $\frac{1}{4}$ P
R513	0129583	Carbon film	820 Ω	$\pm 5\%$	SRD $\frac{1}{4}$ P
R514	0129583	Carbon film	820 Ω	$\pm 5\%$	SRD $\frac{1}{4}$ P
R515	0129605	Carbon film	1.5k Ω	$\pm 5\%$	SRD $\frac{1}{4}$ P
R518	0129631	Carbon film	10k Ω	$\pm 5\%$	SRD $\frac{1}{4}$ P
R519	0129601	Carbon film	1k Ω	$\pm 5\%$	SRD $\frac{1}{4}$ P
R520	0129649	Carbon film	56k Ω	$\pm 5\%$	SRD $\frac{1}{4}$ P
R521	0129631	Carbon film	10k Ω	$\pm 5\%$	SRD $\frac{1}{4}$ P
R522	0129649	Carbon film	56k Ω	$\pm 5\%$	SRD $\frac{1}{4}$ P
R523	0129643	Carbon film	33k Ω	$\pm 5\%$	SRD $\frac{1}{4}$ P
R526	0129643	Carbon film	33k Ω	$\pm 5\%$	SRD $\frac{1}{4}$ P
R527	0129649	Carbon film	56k Ω	$\pm 5\%$	SRD $\frac{1}{4}$ P
R528	0129649	Carbon film	56k Ω	$\pm 5\%$	SRD $\frac{1}{4}$ P
R531	0129631	Carbon film	10k Ω	$\pm 5\%$	SRD $\frac{1}{4}$ P
R541	0129615	Carbon film	3.9k Ω	$\pm 5\%$	SRD $\frac{1}{4}$ P
R542	0129615	Carbon film	3.9k Ω	$\pm 5\%$	SRD $\frac{1}{4}$ P
R543	0129631	Carbon film	10k Ω	$\pm 5\%$	SRD $\frac{1}{4}$ P
R544	0119401	Metal oxide	10 Ω	$\pm 10\%$	RS1B
R545	0129631	Carbon film	10k Ω	$\pm 5\%$	SRD $\frac{1}{4}$ P
R548	0129631	Carbon film	10k Ω	$\pm 5\%$	SRD $\frac{1}{4}$ P
R549	0129631	Carbon film	10k Ω	$\pm 5\%$	SRD $\frac{1}{4}$ P
R550	0129631	Carbon film	10k Ω	$\pm 5\%$	SRD $\frac{1}{4}$ P

SYMBOL NO.	PART NO.	DESCRIPTION			
R551	0119610	Metal oxide	56Ω	±10%	RS3B
R552	0134367	Composition	330Ω	±10%	RC½GF
R553	0129643	Carbon film	33kΩ	±5%	SRD¼P
R554	0129643	Carbon film	33kΩ	±5%	SRD¼P
R601	0170433	Carbon film	5.6Ω	±5%	SRD½P
R602	0129601	Carbon film	1kΩ	±5%	SRD¼P
R603	0129631	Carbon film	10kΩ	±5%	SRD¼P
R604	0170427	Carbon film	10Ω	±5%	SRD¼P
R605	0129601	Carbon film	1kΩ	±5%	SRD¼P
R606	0129633	Carbon film	12kΩ	±5%	SRD¼P
R607	0129601	Carbon film	1kΩ	±5%	SRD¼P
R608	0129649	Carbon film	56kΩ	±5%	SRD¼P
R610	0129601	Carbon film	1kΩ	±5%	SRD¼P
R611	0129631	Carbon film	10kΩ	±5%	SRD¼P
R612	0129623	Carbon film	8.2kΩ	±5%	SRD¼P
R621	0129609	Carbon film	2.2kΩ	±5%	SRD¼P
ICs & TRANSISTORS					
IC1	2387281	NJM 45620 D			
IC20	2387281	NJM 45620 D			
IC50	2387301	M5218P			
IC70	2387301	M5218P			
IC301 L,R	2388441	HA12058			
IC501	2369454	μPD554C-130 T			
IC541	2369431	BA6107			
	2369452	MPD554C 109M (for FL meter PWB)			
Q20 L,R	2329561	2SC1845 -FE			
Q21	2317873	2SD1292 (R)			
Q22 L,R	2329316	2SC1741 -QR			
Q23 L,R	2329553	2SC2603-EF			
Q24	2329571	2SA992 -FE			
Q50	2329553	2SC2603 -EF			
Q51 L,R	2329316	2SC1741 -QR			
Q70	2329553	2SC2603 -EF			
Q71 L,R	2329316	2SC1741 -QR			
Q301 L,R	2329553	2SC2603 -EF			
Q302 L,R	2329553	2SC2603 -EF			
Q403	2329553	2SC2603-EF			
Q404	2329553	2SC2603-EF			
Q405	2328003	2SD468 (C)			
Q407	2329553	2SC2603 -EF			
Q408	2329553	2SC2603 -EF			
Q409	2329553	2SC2603 -EF			
Q501	2329553	2SC2603 -EF			
Q542	2329553	2S2603 -EF			
Q543	2317741	2SD1111			
Q601	2317803	2SD1266P			
Q602	2329553	2SC2603-EF			
Q603	2328963	2SB514AL-E			

SYMBOL NO.	PART NO.	DESCRIPTION	
Q604	2328003	2SD468C	
Q605	2329553	2SC2603-EF	
Q610	2328452	2SB646	
DIODES			
D20	2338081	1S2473	
D21	2338081	1S2473	
D301	2338081	1S2473	
D302	2338081	1S2473	
D303	2338081	1S2473	
D501	2338081	1S2473	
∫	∫	∫	
D510	2338081	1S2473	
D543	2338081	1S2473	
D544	∫	∫	
D545	2338081	1S2473	
D601	2337762	ERB12-01R	
∫	∫	∫	
D605	2337762	ERB12-01R	
D606	2338081	1S2473	
∫	∫	∫	
D608	2338081	1S2473	
D609	2337762	ERB12-01R	
D611	2337762	ERB12-01R	
D612	2337762	ERB12-01R	
ZD20	2337122	HZ-6B	
ZD501	2327731	HZ-7A	
ZD541	2337617	HZ-3C1	
ZD542	2337521	HZ-9A1	
ZD601	2337549	HZ-7C3	
ZD602	2337180	HZ-20-2	
ZD603	2337626	HZ-4B-3	
LED501	2337811	GL-5NG6	
LED502	2337811	GL-5NG6	
LED503	2339031	SLR3-34VR5	
VARIABLE RESISTORS			
RV01 L,R	0166612	100kΩ-(A) (REC LEVEL)	
RV02	0166541	200kΩ-(5B) (REC BALANCE)	
RV03 L,R	0199511	10kΩ-(B) (OUTPUT VOLUME)	
RT20 L,R	0158956	20kΩ-(B) (PLAYBACK GAIN ADJ.)	
RT50 L,R	0158955	10kΩ-(B) (REC LEVEL ADJ.)	
RT70 L,R	0158954	5kΩ-(B) (FL METER ADJ.)	
RT401L,R	0158958	100kΩ-(B) (BIAS CURRENT ADJ.)	
COILS & TRANSFORMER			
L50 L,R	2227991	Choke coil (3.3mH)	
LC51 L,R	2135622	Trap coil	
LC301 L,R	2136433	Dolby filter	
LC303 L,R	2135624	Trap coil	
L401	2136451	Bias OSC coil	
L402	2227355	Choke coil	
L403	2227355	Choke coil	
L501	2154823	OSC coil	
△T651	2248512	Power trans	

SYMBOL NO.	PART NO.	DESCRIPTION
MISCELLANEOUS		
J1 L,R	2678348	4P US pin jack
J2 L,R	2678348	4P US pin jack
J3 L,R	2678024	Mic, Headphone jack
J4	2678024	Mic, Headphone jack
J5	2657961	8P DIN socket
S5	2639934	Push switch
S3, S4	2639825	Push switch
△S001	2639869	Power switch
S6	2628222	Slide switch (Timer)
S7	2647461	Lead switch
S9~S15	2639131	Key switch
S250	2639131	Key switch
△F601, F602	2727895	Fuse T1.0A
△	2718114	Power supply cord
for ACCESORIES		
	2717893	Patch cord



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