

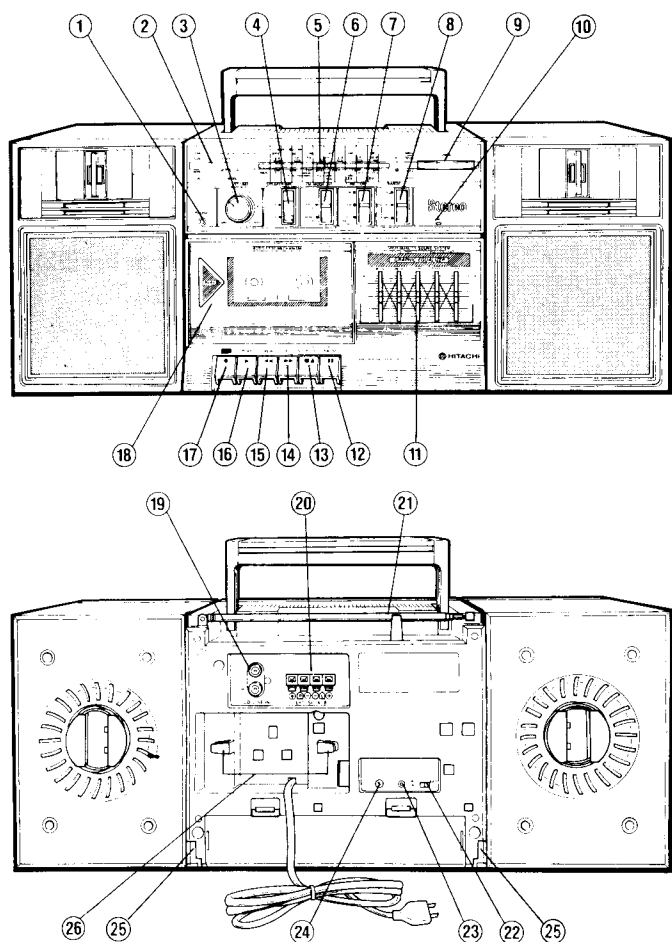
# **HITACHI** **SERVICE MANUAL**

**TY**

**No. 540E**

**TRK-902**  
**E, E(BS), W**

**TN-21FC-829**



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## **KEY TO ILLUSTRATIONS**

### **CONTROLS**

- |                               |                                 |
|-------------------------------|---------------------------------|
| ① HEADPHONES SOCKET           | ⑭ FAST FORWARD BUTTON           |
| ② FM STEREO INDICATOR         | ⑮ REWIND BUTTON                 |
| ③ VOLUME CONTROL              | ⑯ PLAYBACK BUTTON               |
| ④ SPEAKER/INNER MIC. SELECTOR | ⑰ RECORD BUTTON                 |
| ⑤ DIAL POINTER                | ⑱ CASSETTE HOLDER               |
| ⑥ FM MODE/RIF SELECTOR        | ⑲ CD/LINE IN SOCKET             |
| ⑦ FUNCTION SELECTOR           | ⑳ SPEAKER TERMINALS             |
| ⑧ AM BAND SELECTOR            | ㉑ TELESCOPIC ANTENNA (AERIAL)   |
| ⑨ TUNING CONTROL              | ㉒ AC/BATT. SELECTOR             |
| ⑩ INNER MICROPHONE (MONAURAL) | ㉓ DC9V SOCKET (for W)           |
| ⑪ GRAPHIC EQUALIZER CONTROLS  | ㉔ VOLTAGE SELECTOR (for W)      |
| ⑫ PAUSE BUTTON                | ㉕ SPEAKER ASSEMBLY/REMOVAL TABS |
| ⑬ STOP/EJECT BUTTON           | ㉖ CORD CLAMP                    |

**SPECIFICATIONS AND PARTS ARE SUBJECT TO CHANGE FOR IMPROVEMENT.**

**FM/SW/MW/LW**  
**FM/SW<sub>2</sub>/SW<sub>1</sub>/MW**

**RADIO CASSETTE TAPE RECORDER**

**January 1987**

**TOYOKAWA WORKS**

**SAFETY PRECAUTION**

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  $\Delta$  in the circuit diagram and printed wiring board.
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****General Section****Semiconductors**

ICs: 5  
Transistors: 6 [For W, E (BS)]  
7 [For E]

Diodes: 6  
LEDs: 1

**Power supply**

AC: 220V, 50Hz [For E]  
AC: 240V, 50Hz [For E (BS)]  
AC: 110–127V/200–220V  
230–250V, 50/60Hz [For W]  
DC: 9V ("D" CELL or IEC R20  
x 6 or equivalent)

Car: Use car battery adaptor (9V)  
16W

**Power Consumption****Power Output****Speakers**

1.8W/CH (T.H.D. 10% DC)  
10cm, 4 ohms x 2

**Dimensions Weight**

2cm, 300 ohms x 2  
540 (W) x 205 (H) x 167 (D) mm  
4.5kg (with batteries)

**Radio Section****Circuit System**

FM/SW/MW/LW 4-band  
[For E, E (BS)]  
FM/SW2/SW1/MW 4-band  
[For W]

**Tuning Range**

Super heterodyne

FM: 87.5 to 108 MHz  
SW: 6.0 to 18.0 MHz  
MW: 530 to 1,605 kHz  
LW: 150 to 285 kHz

[For E, E (BS)]

FM: 88 to 108 MHz  
SW2: 7.0 to 22.0 MHz  
SW1: 2.3 to 7.0 MHz  
MW: 530 to 1,605 kHz

[For W]

**Intermediate Frequency**

FM: 10.7 MHz  
AM: 465 kHz [For E, E (BS)]  
AM: 455 kHz [For W]

**Sensitivity**

FM: 14 dB (pra.),  
6 dB (max.)  
SW: 30 dB (pra.),  
20 dB (max.)  
MW: 50 dB (pra.),  
40 dB (max.)  
LW: 55 dB (pra.),  
46 dB (max.)

[For E, E (BS)]

FM: 14 dB (pra.),  
6 dB (max.)  
SW2: 30 dB (pra.),  
24 dB (max.)  
SW1: 46 dB (pra.),  
38 dB (max.)  
MW: 50 dB (pra.),  
40 dB (max.)

[For W]

**Antennas (Aerials)**

FM/SW: Rod antenna  
MW/LW: Built-in ferrite core antenna  
FM/SW2: Rod antenna  
SW1/MW: Built-in ferrite core antenna

[For E, E (BS)]

[For W]

**Tape Recorder Section****Tape**

Cassette tape (C-30, 60, 90)

**Track System**

4 track 2 channel stereo

**Tape Speed**

4.75 cm/sec.

**Recording System**

AC bias, 58 kHz

**Erasing System**

Magnet

**Frequency Response**

Normal: 60 to 10000 Hz

**Signal to Noise Ratio**

40 dB

**Wow and Flutter**

0.25% (WRMS)

**Cross Talk**

Between tracks: 60 dB  
Between channels: 30 dB

**Distortion**

3%

**Erasing Ratio**

60 dB

**Motor**

DC Micro motor

**Heads**

Permalloy

**Input Sensitivity and Impedance**

CD/Line in: 500mV, 220k ohms

**Headphones Output Impedance**

8 ohms to 300 ohms

**Speaker Output Impedance**

4 ohms to 8 ohms

## DISASSEMBLY

### 1. Removing the Speaker Units (Fig. 1)

Press the unit's ① claw in the direction of the arrow, and lift up the speaker in the direction of arrow ②.

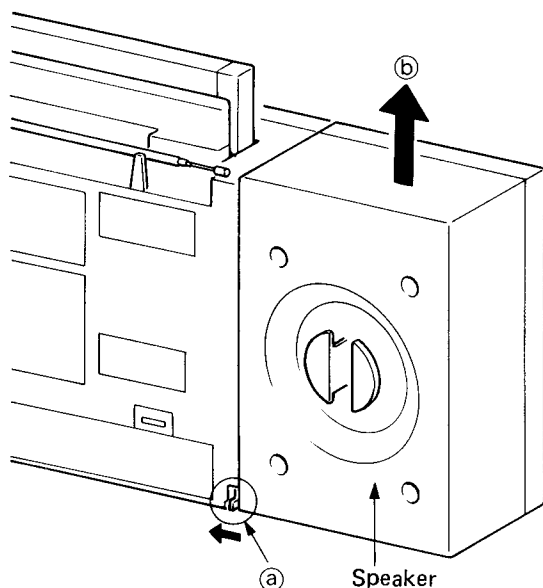


Fig. 1

### 2. Removing the Front Case (Figs. 2, 3)

After removing the speaker units, press the eject button, open the cassette lid, remove the volume knob, remove the five screws ①, and take off the front case toward the front.

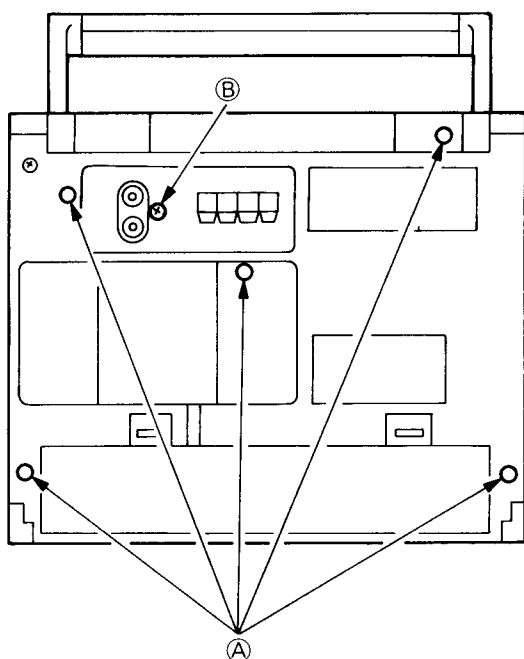


Fig. 2

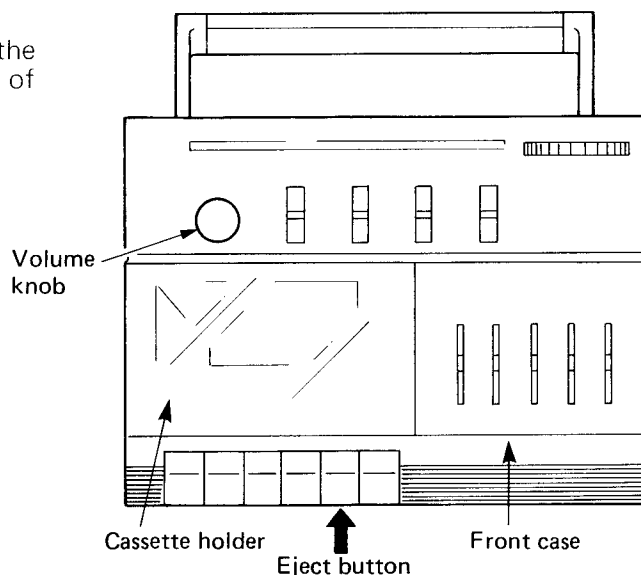


Fig. 3

### 3. Removing the Main P.W.B. (Fig. 4)

After removing the front case, remove screw ②, connector ③, and remove the three connectors ④. Then pull the Main P.W.B. toward the front and remove.

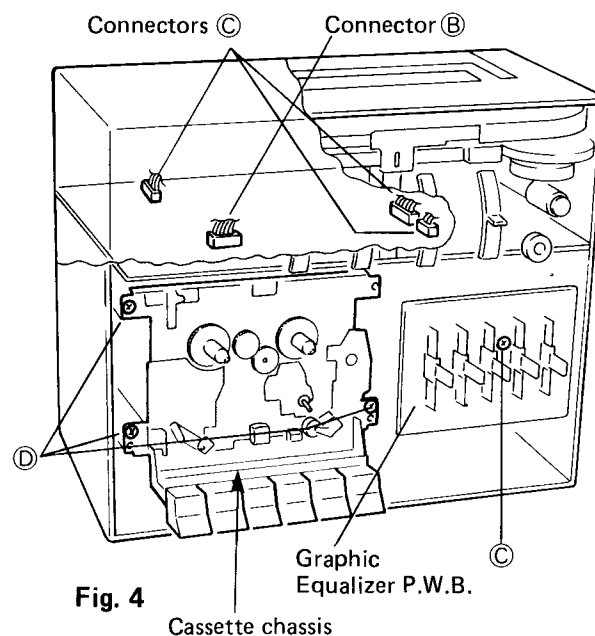


Fig. 4

### 4. Removing the Graphic Equalizer P.W.B. (Fig. 4)

After removing the front case, remove screw ⑤, and remove connector ③.

#### 5. Removing the Cassette Chassis (Fig. 4)

After removing the front case, remove three screw ① and the three connectors ③.

#### 6. Removing the Power Supply P.W.B. (Fig. 5)

After removing the cassette chassis, remove the two screws ⑤ and connector ④.

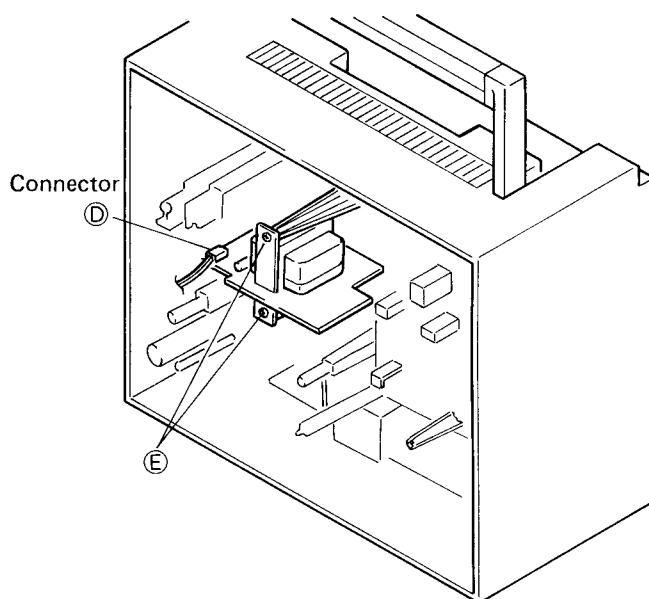


Fig. 5

## TUNING DIAL POINTER ADJUSTMENT

1. Turn the tuning knob clockwise fully in the direction of the arrow.
2. Set the dial pointer at the low end position of frequency.

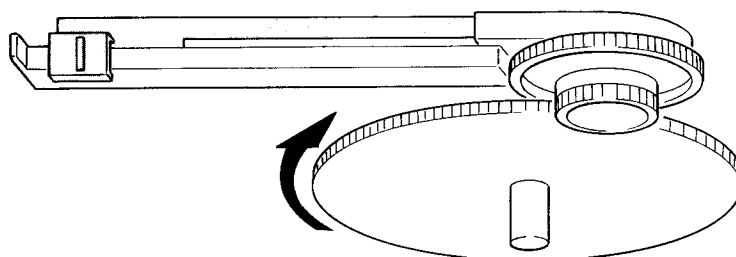


Fig. 6

ADJUSTMENT

1. Radio Section

ADJUSTMENT PARTS LOCATION

● TUNER SECTION

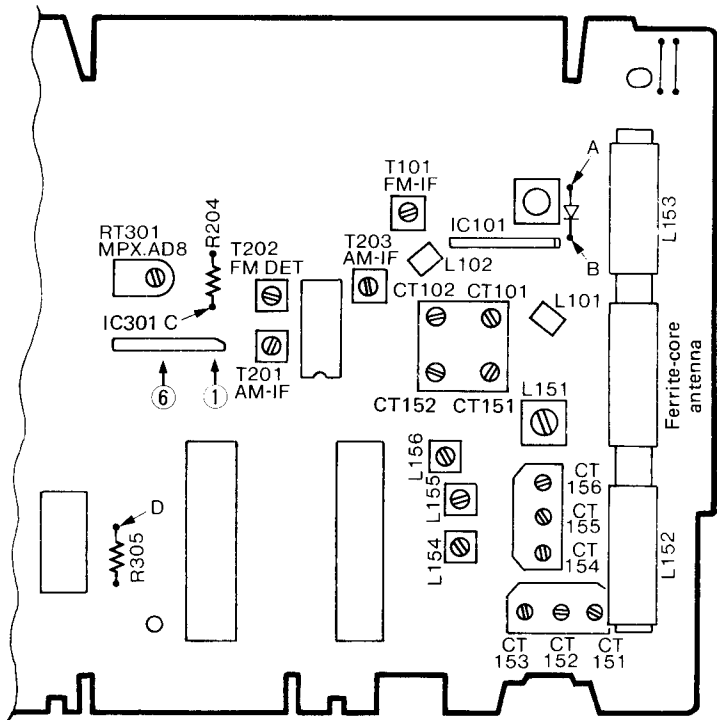


Fig. 7

FM Section

Step		Adjustment Item	Measuring Instrument and Connection			Genescope or Signal Generator Frequency	Dial Pointer Position	Adjust	Reading			
			Measuring Instrument	Input Terminal	Output Terminal							
1	(1)	FM IF	Turn T202 fully counterclockwise.			10.7 MHz	Highest	T101	Note 1			
	(2)	S-Curve	● Genescope (10.7 MHz)	IC 101 Body	Ⓒ			T202	Note 2			
2	(1)	FM OSC (Covering)	● FM signal generator (400 Hz, 30% dev.) ● Oscilloscope ● VTVM	Ⓐ +, Ⓑ – (Note 3)	Ⓒ	E, E(BS) 87.25 MHz other 87 MHz	Lowest	L102	Max.			
	(2)					E, E(BS) 108.25 MHz other 109 MHz	Highest	CT102				
	(3)					Repeat steps (1) and (2)						
3	(1)	FM ANT. (Tracking)				● Oscilloscope ● VTVM		Ⓒ	90 MHz	90 MHz	L101	Max.
	(2)								106 MHz	106 MHz	CT101	
	(3)								Repeat steps (1) and (2)			
4	(1)	FM MPX. (Multiplex)	● Frequency counter	Connect a 10μF 25V electrolytic capacitor between the No. 1 pin of IC301 and the ground	Ⓓ				—	—	RT301	38 kHz ± 50 Hz (Note 4)

AM Section

Step			Adjustment Item	Measuring Instrument and Connection			Genescope or Signal Generator Frequency	Dial Pointer Position	Adjust	Reading
				Measuring Instrument	Input Terminal	Output Terminal				
For E, E (BS)	1	(1)	AM IF	● Genescope (465 kHz)	SW: (A) +, (B) — MW, LW: Ferrite-core antenna (Note 5)	©	465 kHz	Highest	T201 T203	Note 6
		(2)					Repeat step (1)			
	2	(1)	LW OSC. (Covering)	● AM signal generator (400 Hz, 30 % mod.) ● VTVM ● Oscilloscope	Loop antenna	©	145 kHz	Lowest	L156	Max.
		(2)					290 kHz	Highest	CT156	
		(3)					Repeat steps (1) and (2)			
	3	(1)	LW ANT. (Tracking)	● VTVM ● Oscilloscope	Loop antenna	©	160 kHz	160 kHz	L153	Max.
		(2)					270 kHz	270 kHz	CT153	
		(3)					Repeat steps (1) and (2)			
	4	(1)	MW OSC. (Covering)	● AM signal generator (400 Hz, 30 % mod.) ● VTVM ● Oscilloscope	Loop antenna (Note 5)	©	515 kHz	Lowest	L155	Max.
		(2)					1650 kHz	Highest	CT155	
		(3)					Repeat steps (1) and (2)			
	5	(1)	MW ANT. (Tracking)	● VTVM ● Oscilloscope	Loop antenna (Note 5)	©	600 kHz	600 kHz	L152	Max.
		(2)					1400 kHz	1400 kHz	CT152	
		(3)					Repeat steps (1) and (2)			
	6	(1)	SW OSC. (Covering)	● AM signal generator (400 Hz, 30 % mod.) ● VTVM ● Oscilloscope	(A) +, (B) — Through SW dummy antenna. Note 7	©	5.8 MHz	Lowest	L154	Max.
		(2)					18.5 MHz	Highest	CT154	
		(3)					Repeat steps (1) and (2)			
	7	(1)	SW ANT. (Tracking)	● VTVM ● Oscilloscope	(A) +, (B) — Through SW dummy antenna. Note 7	©	6.5 MHz	6.5 MHz	L151	Max.
		(2)					16 MHz	16 MHz	CT151	
		(3)					Repeat steps (1) and (2)			
For W	8	(1)	AM IF	● Genescope (455 kHz)	SW <sub>2</sub> : (A) +, (B) — SW <sub>1</sub> , MW: Ferrite core antenna (Note 5)	©	455 kHz	Highest	T201 T203	Note 6
		(2)					Repeat step (1)			
	9	(1)	MW OSC. (Covering)	● AM signal generator (400 Hz, 30 % mod.) ● VTVM ● Oscilloscope	Loop antenna (Note 5)	©	515 kHz	Lowest	L156	Max.
		(2)					1650 kHz	Highest	CT156	
		(3)					Repeat steps (1) and (2)			
	10	(1)	MW ANT. (Tracking)	● VTVM ● Oscilloscope	Loop antenna (Note 5)	©	600 kHz	600 kHz	L152	Max.
		(2)					1400 kHz	1400 kHz	CT152	
		(3)					Repeat steps (1) and (2)			
	11	(1)	SW1 OSC. (Covering)	● AM signal generator (400 Hz, 30 % mod.) ● VTVM ● Oscilloscope	Loop antenna (Note 5)	©	2.2 MHz	Lowest	L155	Max.
		(2)					7.3 MHz	Highest	CT155	
		(3)					Repeat steps (1) and (2)			
	12	(1)	SW1 ANT. (Tracking)	● VTVM ● Oscilloscope	Loop antenna (Note 5)	©	2.7 MHz	2.7 MHz	L153	Max.
		(2)					6.3 MHz	6.3 MHz	CT153	
		(3)					Repeat steps (1) and (2)			
	13	(1)	SW2 OSC. (Covering)	● AM signal generator (400 Hz, 30 % mod.) ● VTVM ● Oscilloscope	(A) +, (B) — (Through SW dummy antenna) (Note 7)	©	6.7 MHz	Lowest	L154	Max.
		(2)					23 MHz	Highest	CT154	
		(3)					Repeat steps (1) and (2)			
	14	(1)	SW2 ANT. (Tracking)	● VTVM ● Oscilloscope	(A) +, (B) — (Through SW dummy antenna) (Note 7)	©	8 MHz	8 MHz	L151	Max.
		(2)					20 MHz	20 MHz	CT151	
		(3)					Repeat steps (1) and (2)			

Note:

1. Feed in a weak signal to IC101 body from the genescope. Adjust T101 for maximum gain and the waveform indicated in Fig. 8. If the center of the waveform cannot be lined up on the marker, adjust the right/left balance.

Adjust the genescope output so that there is a little noise riding on the leading edge.

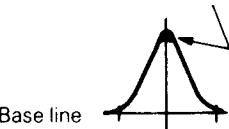


Fig. 8

2. Use the T202 core to form the S-curve shown in Fig. 9. Adjust the symmetry of A and B about point C for linearity..

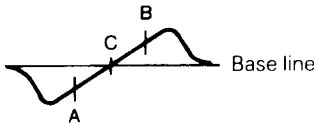


Fig. 9

3. FM dummy antenna is shown in Fig. 10.

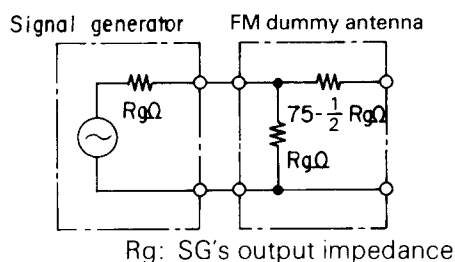


Fig. 10

4. Connect the frequency counter to IC301 ⑥ pin and connect a 220 kΩ resistor series with the frequency counter.
5. Connect the output of AM signal generator to the loop antenna, and put it near to the ferrite core antenna.

6. Feed in a weak signal from the genescope. Adjust T201, T203 for maximum gain and the waveform of Fig. 11.

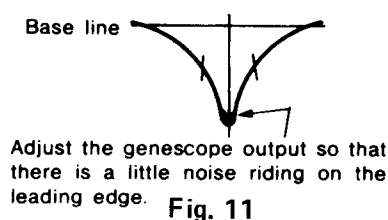


Fig. 11

7. SW dummy antenna is shown in Fig. 12.

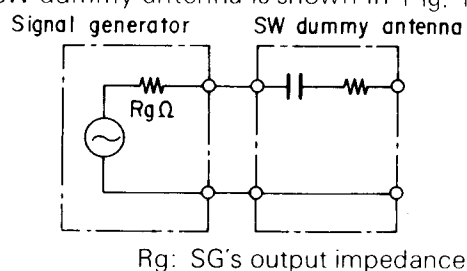


Fig. 12

## 2. Tape Recorder Section

Perform the following adjustments in the sequence stated after cleaning the head, pressure roller, and capstan with a head cleaning stick moistened in alcohol.

Step	Adjustment Item	Measuring Instrument and Connection			Check Tape	Mode	Adjusted Position	Adjusted Value	Remarks
		Measuring Instrument	Input Terminal	Output Terminal					
1	Tape speed	● Frequency counter	—	Speaker terminal	Tape speed adjustment tape (3 kHz)	Playback	Semivariable resistor in the motor (Fig. 13)	3 kHz ± 20 Hz	Note 1
2	Head azimuth	● VTVM	—	Speaker terminal	Head azimuth adjustment tape (10 kHz)	Playback	Azimuth adjusting screw	Output max.	Note 2

### Note:

1. Adjust within 30 sec. after heat-running for more than 20 minutes.
2. When the maximum values of both channels are different, adjust to the maximum value of the L channel. In this case, the difference between the maximum values of both channels should be within 2 dB.

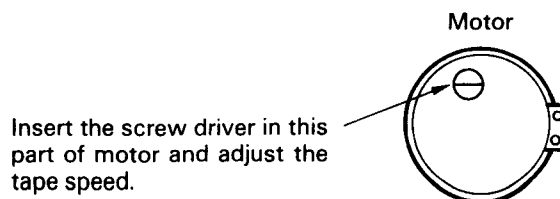


Fig. 13

INSPECTION OF MECHANISM

Item	Checking item		Reference value	Remarks
1	Pressure of pressure roller		300 – 500g	Note
2	Take-up torque		35 – 65 g·cm	
3	Fast forward/Rewind torque		60 – 140 g·cm	
4	Auto-Stop sensor operation force		40 – 75 g	
5	Brake torque		15 g·cm or more	Measured in stop mode
6	Back tension torque	Take-up	1 – 6 g·cm	
		Supply	2 – 6 g·cm	
7	Flywheel thrust gap		0.05 – 0.5 mm	
8	Button operation force	Play button	1.8 kg or less	
		FF button	1.0 kg or less	
		Rewind button	1.4 kg or less	
		Eject button	1.0 kg or less	
		Record button	1.0 kg or less	
		Pause button	1.0 kg or less	

**Note:**  
Set this unit in the playback mode and press the pressure roller in the direction of the arrow using a fan type tension gauge, and measure the pressure when the pressure roller is released form the capstan.

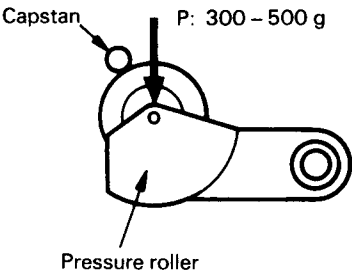


Fig. 14

LUBRICATION

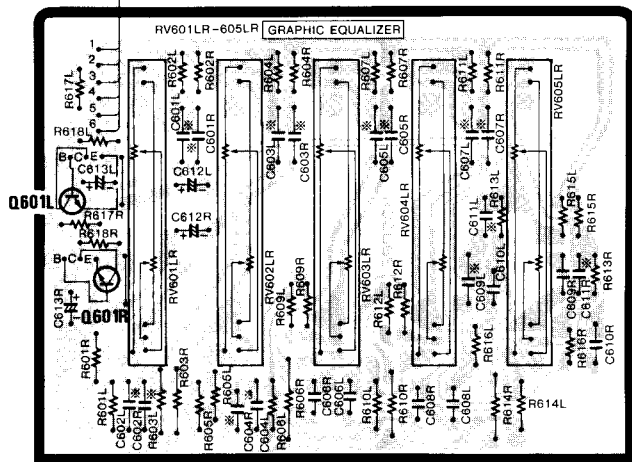
Lubricate one or two drops of oil to rotating point or lubricate grease to sliding point.  
Lubricate the respective parts listed once every 1000 hours or once a year under normal conditions of use.  
Avoid oiling them excessively, or rotation may become irregular because of oil splashes.

Lubrication point		Oil or Grease
Rotary section	Metal and metal	Pan motor oil (10W-40)
	Mold and metal	Sonic slider oil (# 1600)
Sliding section	Metal and metal	Hitasol (MO-138)
	Mold and mold	White grease (FL-LUBE-A)
	Mold and metal	
Spring resonance prevention		Floil (GB-TS-1)

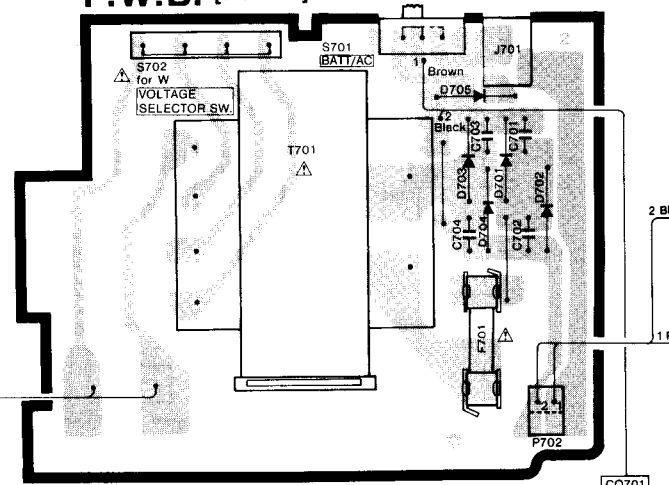


# PRINTED WIRING BOARD

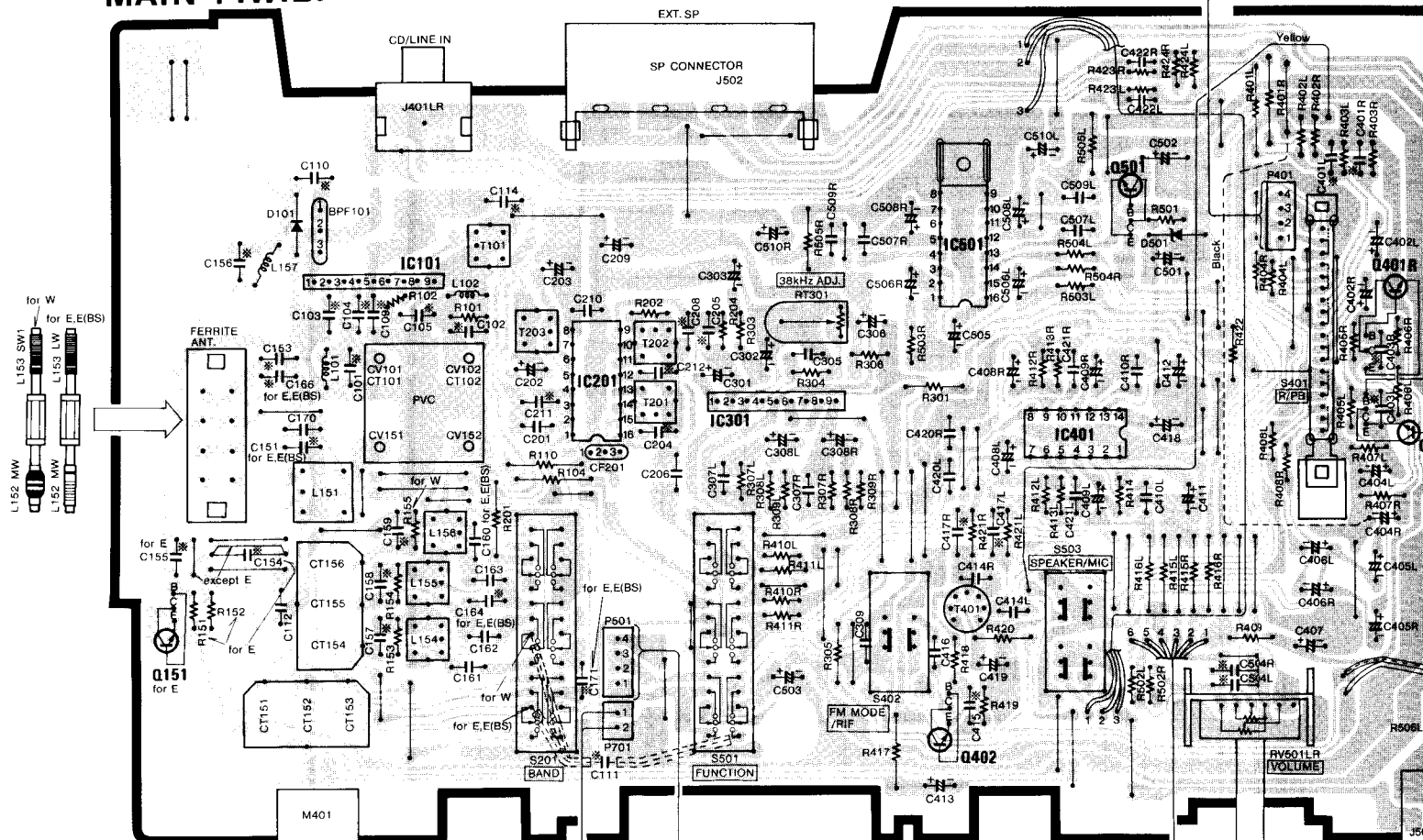
## G. EQ. P.W.B.



## POWER SUPPLY P.W.B. [For W]



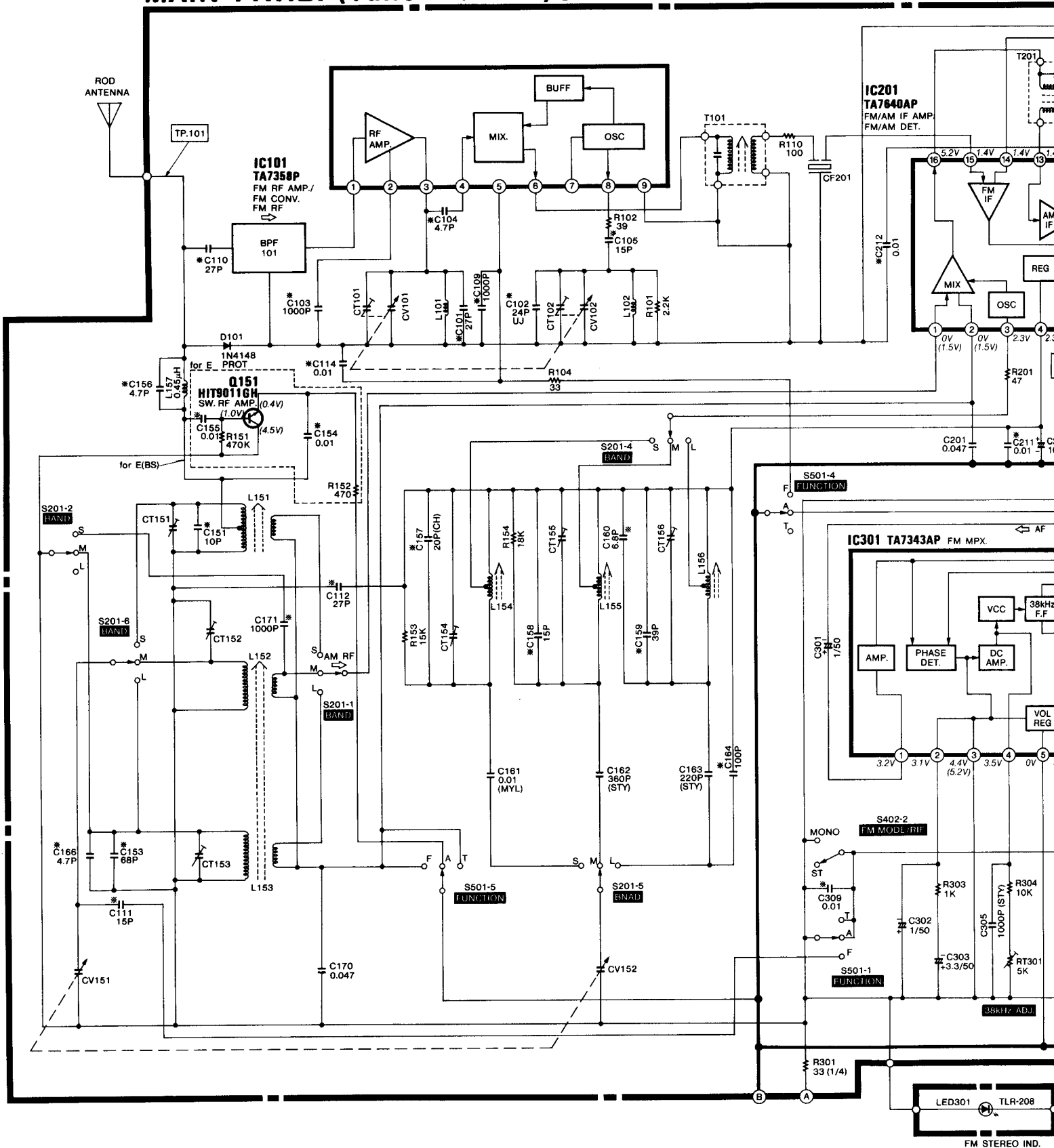
## MAIN P.W.B.





## CIRCUIT DIAGRAM

## MAIN P.W.B. (Tuner section) [For E, E(BS)]

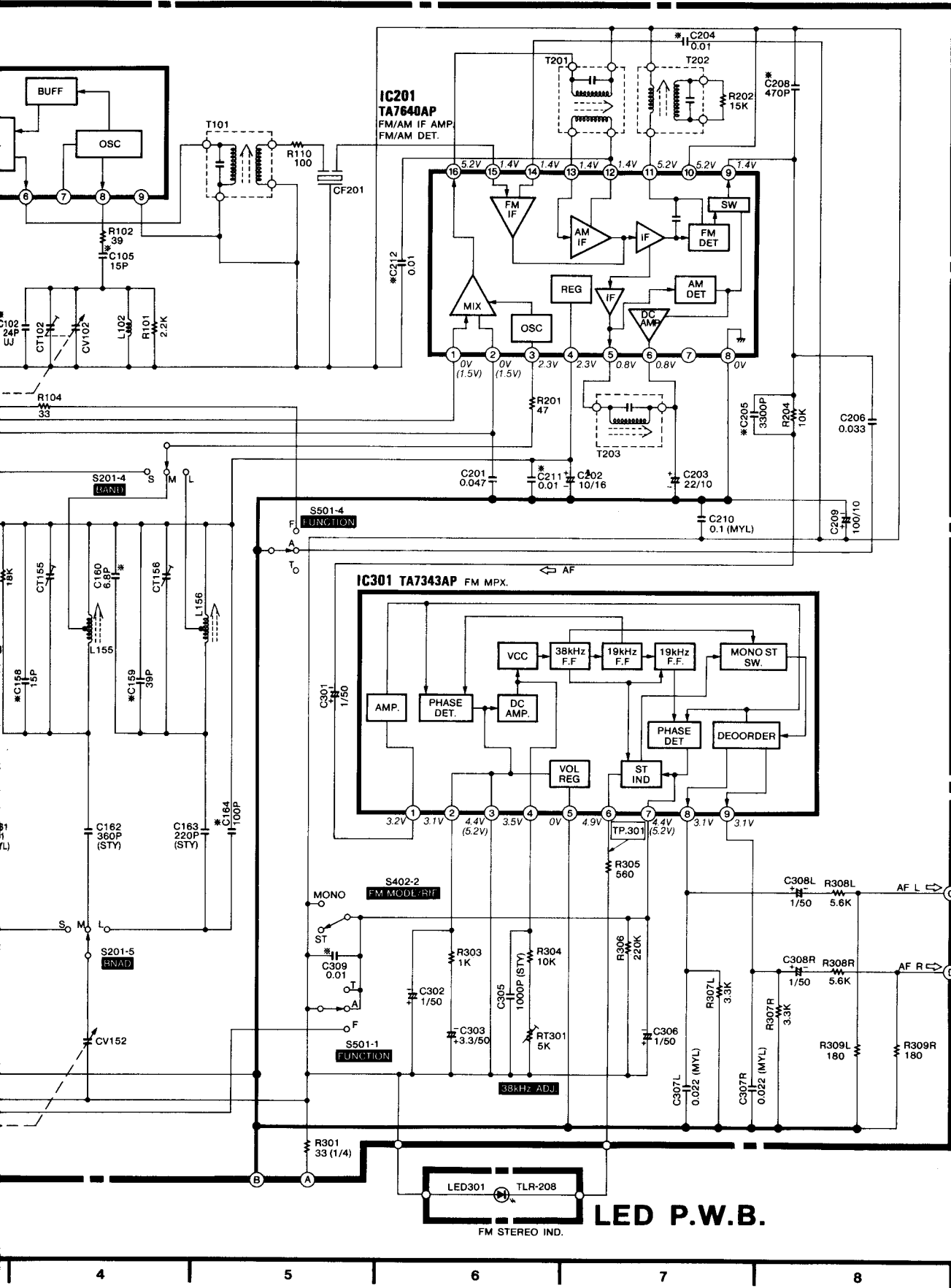


\* : Axial lead cylindrical ceramic capacitor

CAUTION

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

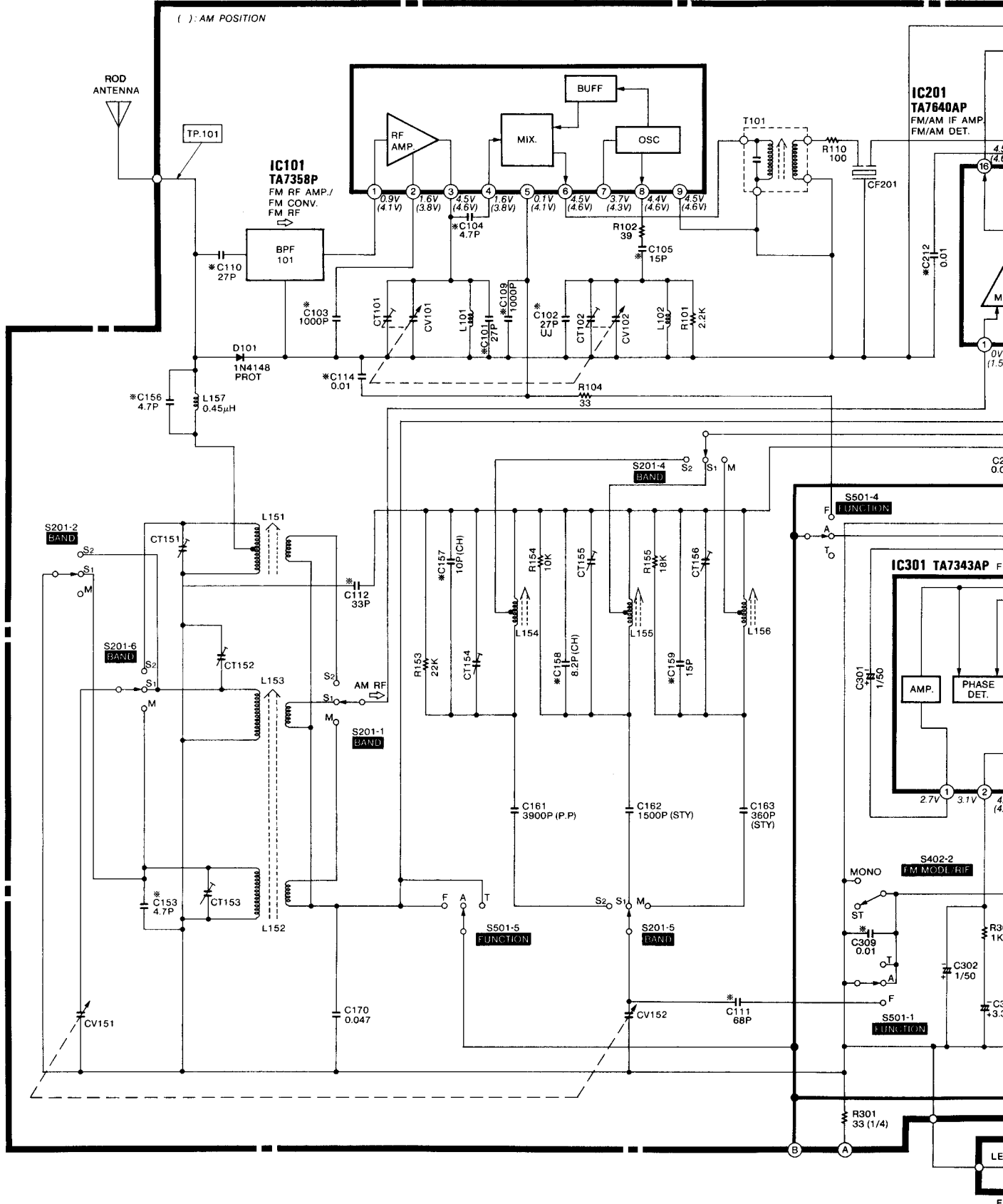
on) [For E, E(BS)]



A  
B  
C  
D  
E  
F

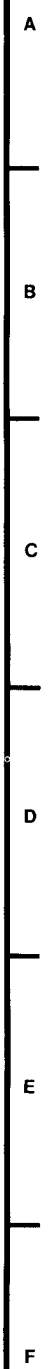
# MAIN P.W.B. (Tuner section) [For W]

( ) : AM POSITION

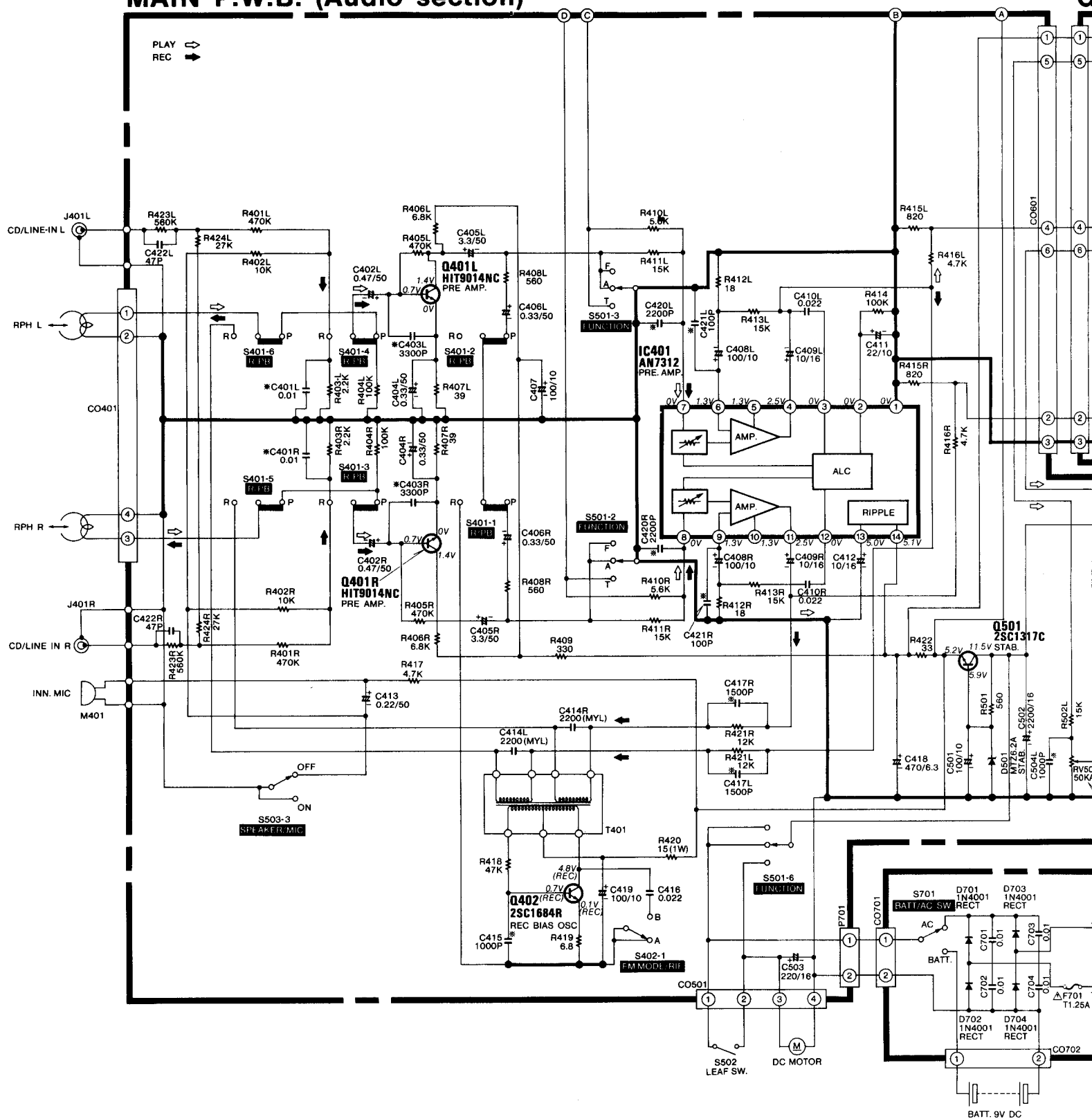


**CAUTION**

**er section) [For W]**



## MAIN P.W.B. (Audio section)



## POWER SUPPLY I

[For E,E(BS)]

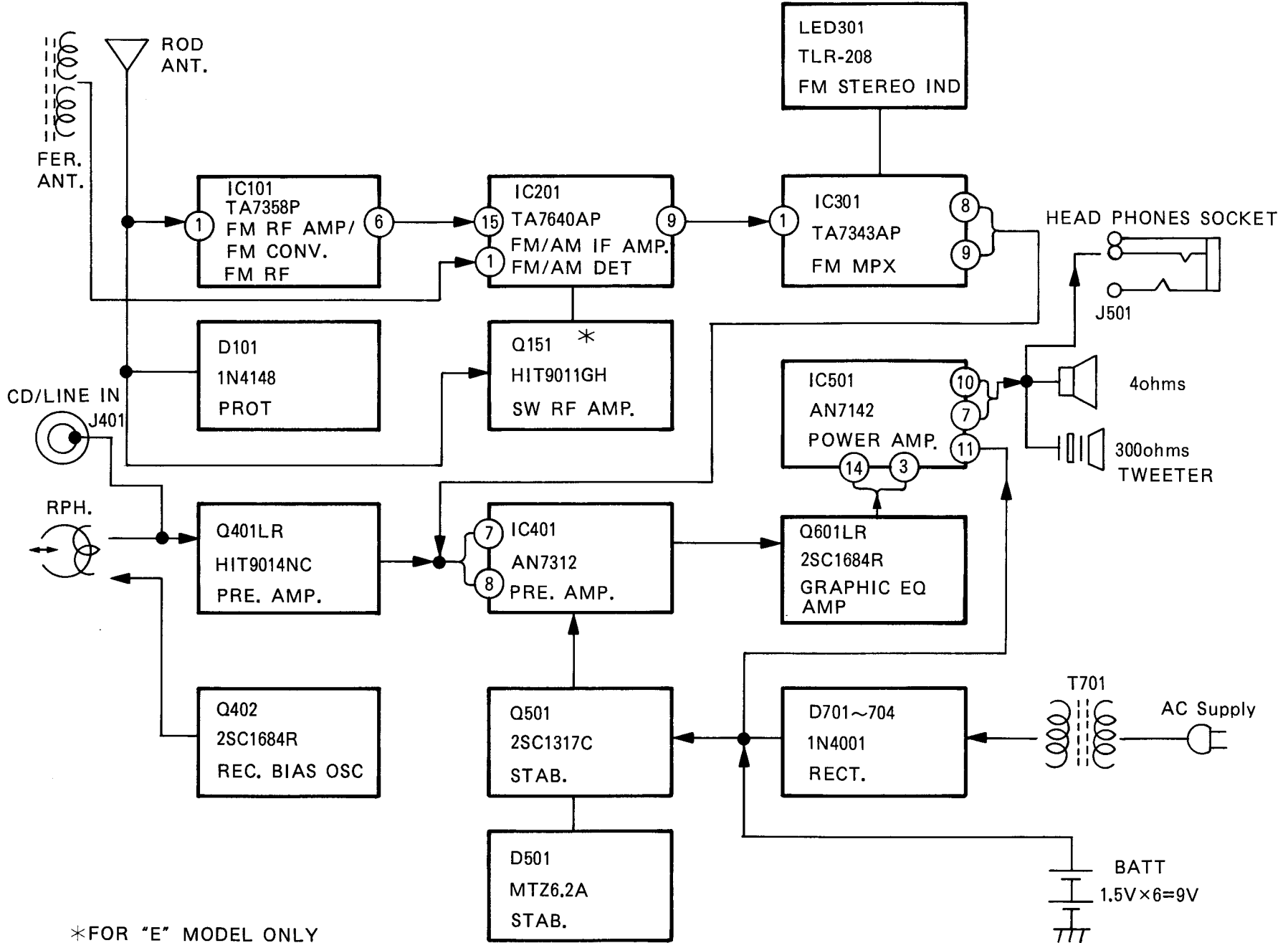
### CAUTION

**G. EQ. P.W.B.**





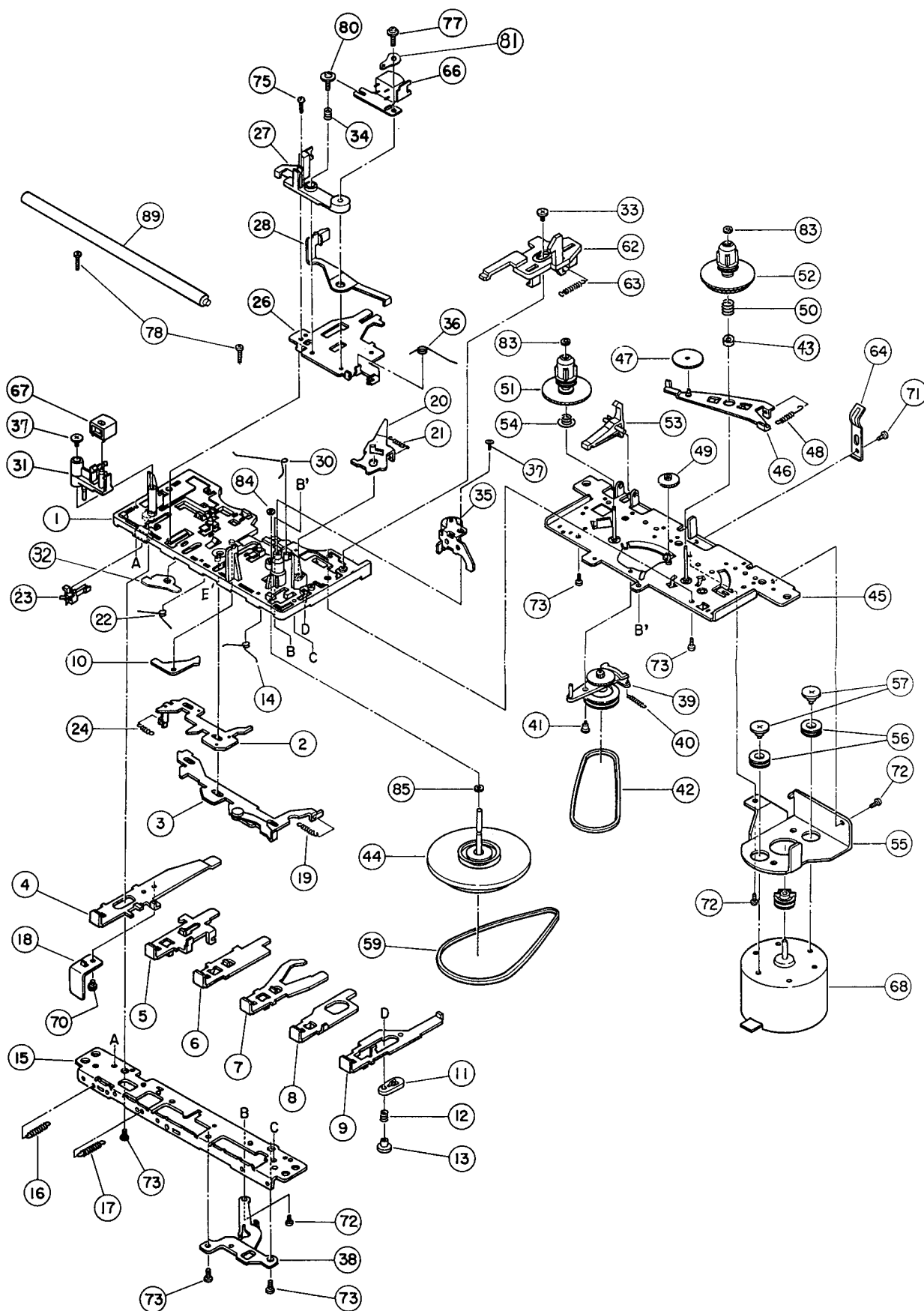
# BLOCK DIAGRAM



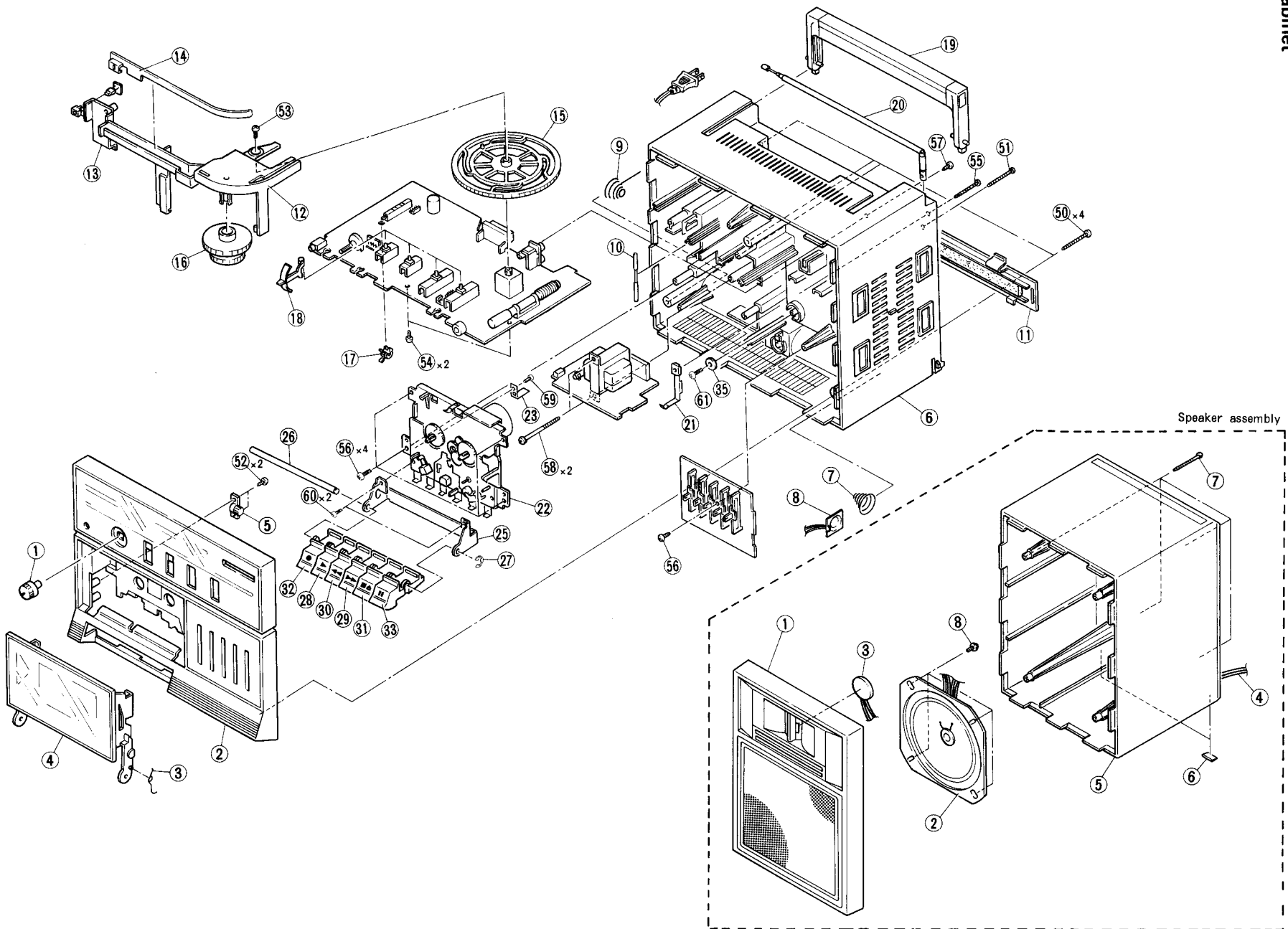
\*FOR "E" MODEL ONLY

**EXPLODED VIEW** (Nos. are reference Nos. of parts list)

- Cassette deck mechanism  
(TN-21FC-829)



● Cabinet



## REPLACEMENT PARTS LIST

CD..... Ceramic discal

EL..... Electrolytic

ST..... Styrol

ME..... Metal

CO..... Composition

CC..... Cylindrical ceramic

MF..... Mylar, film

CF..... Carbon film

MO..... Metal, oxide

FR..... Fuse resistor

SYMBOL NO.	PART NO.	DESCRIPTION			
CAPACITORS					
C101	0230622	CC	27pF	±5%	50V
C102	0230711	CC	24pF	±5%	50V
C102			[for E, E (BS)]		
C103	0240045	CC	1000pF	±10%	50V
C104	0230608	CC	4.7pF	±10%	50V
C105	0230616	CC	15pF	±5%	50V
C109	0240045	CC	1000pF	±10%	50V
C110	0230622	CC	27pF	±5%	50V
C111	0230632	CC	68pF	±5%	50V
			[forW]		
C111	0230616	CC	15pF	±5%	50V
			[for E, E (BS)]		
C112	0230622	CC	27pF	±5%	50V
			[for E, E (BS)]		
C112	0230624	CC	33pF	±5%	50V
			[forW]		
C114	0240061	CC	0.01μF	±30%	50V
C151	0230612	CC	10pF	±5%	50V
			[for E, E (BS)]		
C153	0230632	CC	68pF	±5%	50V
			[for E, E (BS)]		
C153	0230608	CC	4.7pF	±10%	50V
			[forW]		
C154	0240061	CC	0.01μF	±30%	16V
			[for E]		
C155	0240061	CC	0.01μF	±30%	16V
			[for E]		
C156	0230608	CC	4.7pF	±10%	50V
C157	0230652	CC	10pF	±5%	50V
			[forW]		
C157	0230659	CC	20pF	±5%	50V
			[for E, E (BS)]		
C158	0230651	CC	8.2pF	±10%	50V
			[forW]		
C158	0230616	CC	15pF	±5%	50V
			[for E, E (BS)]		
C159	0230616	CC	15pF	±5%	50V
			[forW]		
C159	0230626	CC	39pF	±5%	50V
			[for E, E (BS)]		
C161	02750112	MF	0.01μF	±10%	50V
			[for E, E (BS)]		
C161	02684432	PP	3900pF	±5%	250V
			[forW]		
C162	1221393	ST	360pF	±5%	50V
			[for E, E (BS)]		
C162	1221396	ST	1500pF	±5%	50V
			[forW]		
C163	1221392	ST	220pF	±5%	50V
			[for E, E (BS)]		
C163	1221393	ST	360pF	±5%	50V
			[forW]		

SYMBOL NO.	PART NO.	DESCRIPTION		
C164	0240033	CC	100pF ±10%	50V
			[for E, E (BS)]	
C166	0230608	CC	47pF ±10%	50V
			[for E, E (BS)]	
C170	0209765	CD	0.047μF ±20%	25V
C171	0240045	CC	1000pF ±10%	50V
			[for E, E (BS)]	
C201	0209765	CD	0.047μF ±20%	25V
C202	0252521	EL	10μF	16V
C203	0252382	EL	22μF	10V
C204	0240061	CC	0.01μF ±30%	16V
C205	0240055	CC	3300pF ±20%	16V
C206	0209764	CD	0.033μF ±20%	25V
C208	0240041	CC	470pF ±10%	50V
C102	0230712	CC	27pF ±5%	50V
			[for W]	
C106	0230610	CC	6.8pF ±10%	50V
			[for E, E (BS)]	
C209	02523312	EL	100μF	10V
C210	02760112	MF	0.1μF ±10%	50V
C211	0240061	CC	0.01μF ±30%	16V
C212	0240061	CC	0.01μF ±30%	16V
C301	02528112	EL	1μF	50V
C302	02528112	EL	1μF	50V
C303	02528132	EL	3.3μF	50V
C305	1221395	ST	1000pF ±5%	50V
C306	02528112	EL	1μF	50V
C307L,R	02750132	MF	0.022μF ±10%	50V
C308L,R	02528112	EL	1μF	50V
C309	0240061	CC	0.01μF ±30%	50V
C401L,R	0240061	CC	0.01μF ±30%	16V
C402L,R	02528052	EL	0.47μF	50V
C403L,R	0240055	CC	3300pF ±20%	16V
C404L,R	0252803	EL	0.33μF	50V
C405L,R	02528132	EL	3.3μF	50V
C406L,R	0252803	EL	0.33μF	50V
C407	02523312	EL	100μF	10V
C408L,R	02523312	EL	100μF	10V
C409L,R	0252521	EL	10μF	16V
C410L,R	02097632	CD	0.022μF ±20%	25V
C411	0252382	EL	22μF	10V
C412	0252521	EL	10μF	16V
C413	0252802	EL	0.22μF	50V
C414L,R	02740132	MF	2200pF ±10%	50V
C415	0240045	CC	1000pF ±10%	50V
C416	02097632	CD	0.022μF ±20%	25V
C417L,R	0240051	CC	1500pF ±20%	16V
C418	02522352	EL	470μF	6.3V
C419	02523312	EL	100μF	10V
C420L,R	0240053	CC	2200pF ±20%	16V
C421L,R	0240033	CC	100pF ±10%	50V
C501	02523312	EL	100μF	10V
C502	0252542	EL	2200μF	16V

SYMBOL NO.	PART NO.	DESCRIPTION		
C503	02525322	EL	220μF	16V
C504L,R	0240045	CC	1000pF ±10%	50V
C505	02523222	EL	22μF	10V
C506L,R	0252382	EL	22μF	10V
C507L,R	0209765	CD	0.047μF ±20%	25V
C508L,R	0252331	EL	100μF	10V
C509L,R	02760112	MF	0.1μF ±10%	50V
C510L,R	02523352	EL	470μF	10V
C601L,R	0240037	CC	220pF	50V
C602L,R	0240059	CC	6800pF ±20%	16V
C603L,R	0240051	CC	1500pF ±20%	16V
C604L,R	0240061	CC	0.01μF ±30%	16V
C605L,R	0240055	CC	3300pF ±20%	16V
C606L,R	02097632	CD	0.022μF ±20%	25V
C607L,R	0240057	CC	4700pF ±20%	16V
C608L,R	02097632	CD	0.022μF ±20%	25V
C609L,R	0240059	CC	6800pF ±20%	16V
C610L,R	0209765	CD	0.047μF ±20%	25V
C611L,R	0240059	CC	6800pF ±20%	16V
C612L,R	0252521	EL	10μF	16V
C613L,R	0252521	EL	10μF	16V
C701	02441712	CD	0.01μF $\begin{smallmatrix} +80\% \\ -20\% \end{smallmatrix}$	50V
C702	02441712	CD	0.01μF $\begin{smallmatrix} +80\% \\ -20\% \end{smallmatrix}$	50V
C703	02441712	CD	0.01μF $\begin{smallmatrix} +80\% \\ -20\% \end{smallmatrix}$	50V
C704	02441712	CD	0.01μF $\begin{smallmatrix} +80\% \\ -20\% \end{smallmatrix}$	50V
C420L,R	0240053	CC	2200pF ±20%	16V
C421L,R	0240033	CC	100pF ±10%	50V
RESISTORS				
R101	0113623	CF	2.2kΩ ±5%	SRD1/6P
R104	0113579	CF	33Ω ±5%	SRD1/6P
R110	0113591	CF	100Ω ±5%	SRD1/6P
R151	0113679	CF	470kΩ ±5%	SRD1/6P
			[for E]	
R152	0113607	CF	470Ω ±5%	SRD1/6P
			[for E]	
R153	0113647	CF	22kΩ ±5%	SRD1/6P
			[for W]	
R154	0113639	CF	10kΩ ±5%	SRD1/6P
			[for W]	
R154	0113645	CF	18kΩ ±5%	SRD1/6P
			[for E, E (BS)]	
R155	0113645	CF	18kΩ ±5%	SRD1/6P
			[for W]	
R201	0113583	CF	47Ω ±5%	SRD1/6P
R202	0113643	CF	15kΩ ±5%	SRD1/6P
R204	0113639	CF	10kΩ ±5%	SRD1/6P
R301	0129543	CF	33Ω ±5%	SRD1/6P
R303	0113615	CF	1kΩ ±5%	SRD1/6P
R304	0113639	CF	10kΩ ±5%	SRD1/6P
R305	0113609	CF	560Ω ±5%	SRD1/6P
R306	0113670	CF	220kΩ ±5%	SRD1/6P
R307L,R	0113627	CF	3.3kΩ ±5%	SRD1/6P

SYMBOL NO.	PART NO.	DESCRIPTION
R308L,R	0113633	CF 5.6kΩ ±5% SRD1/6P
R309L,R	0113597	CF 180 Ω ±5% SRD1/6P
R401L,R	0113679	CF 470kΩ ±5% SRD1/6P
R402L,R	0113639	CF 10kΩ ±5% SRD1/6P
R403L,R	0113623	CF 2.2kΩ ±5% SRD1/6P
R404L,R	0113663	CF 100kΩ ±5% SRD1/6P
R405L,R	0113679	CF 470kΩ ±5% SRD1/6P
R406L,R	0113635	CF 6.8kΩ ±5% SRD1/6P
R407L,R	0113581	CF 39Ω ±5% SRD1/6P
R408L,R	0113609	CF 560Ω ±5% SRD1/6P
R409	0113603	CF 330Ω ±5% SRD1/6P
R410L,R	0113633	CF 5.6kΩ ±5% SRD1/6P
R411L,R	0113643	CF 15kΩ ±5% SRD1/6P
R412L,R	0113573	CF 18 Ω ±5% SRD1/6P
R413L,R	0113643	CF 15kΩ ±5% SRD1/6P
R414	0113663	CF 100kΩ ±5% SRD1/6P
R415L,R	0113613	CF 820Ω ±5% SRD1/6P
R416L,R	0113631	CF 4.7kΩ ±5% SRD1/6P
R417	0113631	CF 4.7kΩ ±5% SRD1/6P
R418	0113655	CF 47kΩ ±5% SRD1/6P
R419	0113563	CF 6.8 Ω ±5% SRD1/6P
R420	0129535	CF 15Ω ±5% SRD1/6P
R421L,R	0113641	CF 12kΩ ±5% SRD1/6P
R422	0129543	CF 33Ω ±5% SRD1/6P
R423L,R	0113681	CF 560kΩ ±5% SRD1/6P
R424L,R	0113649	CF 27kΩ ±5% SRD1/6P
R501	0113609	CF 560Ω ±5% SRD1/6P
R502L,R	0113643	CF 15kΩ ±5% SRD1/6P
R503L,R	0113593	CF 120Ω ±5% SRD1/6P
R504L,R	0113591	CF 100Ω ±5% SRD1/6P
R505L,R	0129509	CF 2.2Ω ±5% SRD1/6P
R506L,R	0129549	CF 56Ω ±5% SRD1/6P
R601L,R	0113637	CF 8.2kΩ ±5% SRD1/6P
R602L,R	0113623	CF 2.2kΩ ±5% SRD1/6P
R603L,R	0113633	CF 5.6kΩ ±5% SRD1/6P
R604L,R	0113633	CF 5.6kΩ ±5% SRD1/6P
R605L,R	0113629	CF 3.9kΩ ±5% SRD1/6P
R606L,R	0113637	CF 8.2kΩ ±5% SRD1/6P
R607L,R	0113637	CF 8.2kΩ ±5% SRD1/6P
R609L,R	0113625	CF 2.7kΩ ±5% SRD1/6P
R610L,R	0113641	CF 12kΩ ±5% SRD1/6P
R611L,R	0113641	CF 12kΩ ±5% SRD1/6P
R612L,R	0113631	CF 4.7kΩ ±5% SRD1/6P
R613L,R	0113677	CF 390kΩ ±5% SRD1/6P
R614L,R	0113641	CF 12kΩ ±5% SRD1/6P
R615L,R	0113641	CF 12kΩ ±5% SRD1/6P
R616L,R	0113649	CF 27kΩ ±5% SRD1/6P
R617L,R	0113631	CF 4.7kΩ ±5% SRD1/6P
R618L,R	0113685	CF 820kΩ ±5% SRD1/6P

## ICS &amp; TRANSISTORS

C101	2398201	TA7358P
C201	2389511	TA7640AP
C301	2301041	TA7343AP
C401	2300881	AN7312
C501	2301271	AN7142

Q151 2319083 HIT9011GH[for E]

SYMBOL NO.	PART NO.	DESCRIPTION
Q401L,R	2319091	HIT9014N©
Q402	2319101	2SC1684 R
Q501	2318011	2SC1317C
Q601L,R	2319101	2SC1684R
DIODES		
D101	2398082	IN4148
D501	2397261	MTZ6.2A
D701	2398062	IN4001
D702	2398062	IN4001
D703	2398062	IN4001
D704	2398062	IN4001
D705	2398062	IN4001 [for W]
LED301	2397311	TLR-208
VARIABLE RESISTORS		
RV501 L,R	0166945	50kΩ-(A) VOLUME
RV601 L,R	0189451	100kΩ-(B)
RV602 L,R	0189451	100kΩ-(B)
RV603 L,R	0189451	100kΩ-(B)
RV604 L,R	0189451	100kΩ-(B)
RV605 L,R	0189451	100kΩ-(B)
RT301	0199332	5kΩ-(B) 38 kHz Adj
COILS & TRANSFORMERS		
L101	2137683	FM RF coil
L102	2137682	FM OSC coil [for W]
L102	2135253	FM-oscillator 7 [for E, E(BS)]
L151	2137667	Antenna coil [for W]
L151	2137661	SW ANT coil [for E (BS)]
L151	2137662	SW ANT coil [for E]
L152	2757982	Ferrite antenna [for W]
L152	2757994	Ferrite antenna [for E, E(BS)]
L153	2757982	Ferrite antenna [for W]
L153	2757994	Ferrite antenna [for E, E(BS)]
L154	2137672	SW OSC coil [for W]
L154	2137671	SW OSC coil [for E, E(BS)]
L155	2137633	SW OSC coil [for W]
L155	2137631	MW OSC coil [for E, E(BS)]
L156	2137631	MW OSC coil [for W]
L156	2137632	LW OSC coil [for E, E(BS)]
L157	2137684	Choke coil
T101	2154962	FM IF transformer
T201	2154952	AM IF transformer
T202	2154964	FM IF transformer
T203	2154951	AM IF transformer

SYMBOL NO.	PART NO.	DESCRIPTION
T401	2136891	REC OSC transformer
MISCELLANEOUS		
S201	2628623	Switch, lever
S401	2628361	Slide switch (6-2)
S402	2628621	Switch, lever
S501	2628623	Switch, lever
S503	2628622	Switch, lever
S701	2628351	Slide switch (1-2)
†S702	2618471	VOL switch [for W]
†T701	2249783	Power transformer 300G 7.5 VA [for W]
†T701	2249782	Power transformer [for E(BS)]
†T701	2249781	Power transformer 300G 7.5 VA [for E]
CF201	2135321	Ceramic filter
BPF101	2137191	FM band pass filter
CV101	0282401	Capacitor variable
CV102		
CV151		
CV152		
CT101		
CT102	0282401	Capacitor variable
CT151	0283130	Trimmer capacitor 3T-8M
CT152		
CT153	0283130	Trimmer capacitor 3T-8M
CT154	0283130	Trimmer capacitor 3T-8M
CT155		
CT156	0283130	Trimmer capacitor 3T-8M
†F701	2728073	Fuse T1.25A
M401	2737101	Mic
J401	2678152	Jack, 2P pin
L,R	2678801	Jack, 3.5
J501	2678801	Jack, 3.5
P703	2689462	2P Terminal [for E, E (BS)]
†	2706584	Power supply cord [for W]
†	2717902	Power supply cord [for E(BS)]
†	2707709	Power supply cord [for E]
	2504962	MAIN PWB assembly [for E]
	2504963	MAIN PWB assembly [for E(BS)]
	2504964	MAIN PWB assembly [for W]
	3180341	MIC cover
	2727832	Fuse holder

# REPLACEMENT PARTS LIST

## Cabinet chassis assembly

ITEM NO.	PART NO.	DESCRIPTION
1	3802481	Knob, volume
2	4040952	Front case assembly [For E, E (BS)]
	4040953	Front case assembly [For W]
3	3368563	Spring, eject
4	4042511	Cassette holder assembly
5	3950382	Damper
6	4040973	Rear case assembly [For E]
	4040974	Rear case assembly [For E (BS)]
	4040975	Rear case assembly [For W]
7	3367143	Spring
8	4436666	Terminal
9	3369942	Spring
10	4469471	Record rod
11	4042521	Battery cover assembly
12	4040991	Tuning assembly
13	3802561	Holder, pointer
14	3802571	Pointer
15	3978462	Variable capacitor gear
16	3802581	Knob, tuning

ITEM NO.	PART NO.	DESCRIPTION
17	3802631	Lever, record
18	3802641	Knob, function
19	4040981	Handle assembly
20	2757901	Rod antenna
21	4469461	Terminal, antenna
22	2588991	TN-21 Mechanism assembly
23	4469481	Plate, record
25	4469811	Holder, button
26	4595041	Shaft, button
27	4584376	E ring
28	3804021	Button, PLAY
29	3804041	Button, FF
30	3804031	Button, REWIND
31	3804051	Button, STOP/EJECT
32	3804011	Button, RECORD
33	3804061	Button, PAUSE
35	4930405	Washer
50	4577816	Screw, BT 3 x 20
51	8691414	Screw, 3 x 14 BT bind head
52	86914102	Screw, 3 x 10 BT bind head
53	07413062	Bind screw
54	86914082	Screw, 3 x 8 BT bind head
55	4567435	3D x 14 CT bind screw

ITEM NO.	PART NO.	DESCRIPTION
56	86994102	Screw, 3 x 10 BT bind head
57	86994082	Screw, 3 x 8 BT bind head
58	4577818	Screw, bind tapping 3 x 50
59	8741103	2 x 3 bind screw
60	4819072	Screw, M 2 x 7
61	4578973	Screw, bind tapping 3x8 BT

## Speaker assembly

ITEM NO.	PART NO.	DESCRIPTION
1	3802611	Plate buffer,
2	2403921	Speaker
3	2403354	Piezo tweeter
4	2712231	Cord, speaker
5	3802621	Speaker Box
6	4692091	Leg
7	4577816	Screw BT 3 x 20
8	4578972	3 x 10 BT flange screw

## Cassette chassis (TN-21 FC-829)

ITEM NO.	PART NO.	DESCRIPTION
2	4818992	Switch plate
3	4839371	Push button actuator assembly
4	4823651	REC button lever
5	4823661	PLAY button lever
6	4823671	RWD button lever
7	4823681	FF button lever
8	4823691	STOP button lever
9	4823701	PAUSE button lever
10	4818990	Lever, RWD
11	4819131	Lever, PAUSE
12	4819132	Spring, PAUSE lever
13	4819133	Stopper, PAUSE
14	4819100	Spring, button lever
15	4820215	Sub chassis
16	4819007	Spring, button lever
17	4820217	Spring, PLAY button lever
18	4842991	REC spring plate
19	4819008	Spring, actuator
20	4819009	Lever, auto
21	4819000	Spring, auto lever
22	4820214	Spring, button lever
23	4826101	Leaf switch
24	4820218	Spring, switch actuator
26	4820219	Head panel
27	4819014	Head base
28	4819015	Sensing plate assembly
30	4820221	Spring, head panel

ITEM NO.	PART NO.	DESCRIPTION
31	4819018	MG arm
32	4819006	PR stopper
33	4819045	Screw
34	4819017	Spring
35	4820222	Pressure roller arm assembly
36	4820223	Spring, pressure roller arm
37	4819002	Screw
38	4831610	Metal guide
39	4833453	Pulley arm assembly, REWIND/FORWARD
40	4820225	Spring, RF pulley arm
41	4820226	Screw, RF arm collar
42	4820227	Belt
43	4838241	TG plate collar
44	4820231	Fly wheel assembly
46	4842992	Take up gear plate
47	4839378	Take up roller gear
48	4819020	Spring, TG plate
49	4832417	FF gear
50	4842993	Back tension spring
51	4819003	Supply reel assembly
52	4839381	Take up reel assembly
53	4832421	Record safety lever
54	4839370	Spring, back tension
55	4820251	Bracket, motor
56	4819039	Motor rubber
57	4819533	Screw, motor collar
59	4820252	Main belt

ITEM NO.	PART NO.	DESCRIPTION
62	4819043	Lever, eject slide
63	4819044	Spring, eject slide lever
64	4819036	Pack spring
66	2555671	RECORD PLAYBACK head
67	2557581	ERASE head
68	4831655	Motor assembly
70	4819186	2 x 3 screw with washer
71	4819063	Screw, tapping 2 x 3
72	4819068	Screw, tapping 2 x 4
73	4819607	Screw, bind tapping 2 x 5
75	4819069	Screw, 2 x 6
77	4819060	Screw, 2 x 7
78	4819072	Screw, 2 x 7
80	4819600	Screw, azimuth
81	4819062	Lug
83	4842994	P washer cut 1.2 x 3.7 x 0.4
84	4819078	Washer, 1.55
85	4832432	P washer cut 2.05 x 4 x 0.
89	4819538	Button lever shaft

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