

# Service Manual

Amplifier

Control Amplifier

SU-C800UM2

System: SU-A900DM2



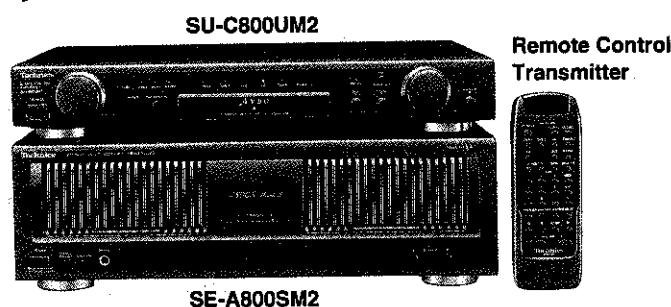
Colour  
(K).....Black Type

Area  
(E) ..... Europe.

System: SU-A900DM2

Control amplifier	SU-C800UM2
Power amplifier	SE-A900SM2

System: SU-A800DM2



System: SU-A800DM2

Control amplifier	SU-C800UM2
Power amplifier	SE-A800SM2

Because of unique interconnecting cables, when a component requires service, send or bring in the entire system.

## Specifications (DIN 45 500)

Total harmonic distortion 20 Hz – 20 kHz 0.01 % (Vol. Max.)

Input sensitivity/impedance

PHONO 2.5 mV/47 k $\Omega$

TUNER, CD, AUX, TAPE 1, TAPE 2 200 mV/27 k $\Omega$

Phono maximum input voltage (1 kHz, RMS) 150 mV

S/N

PHONO 76 dB (77 dB, IHF '66)

TUNER, CD, AUX, TAPE 1, TAPE 2 90 dB (97 dB, IHF '66)

Frequency response

PHONO RIAA standard curve  $\pm 1$  dB (30 Hz – 15 kHz)

TUNER, CD, AUX, TAPE 1, TAPE 2

3 Hz – 80 kHz (+0, – 3 dB)

+0 dB, – 0.3 dB (20 Hz – 20 kHz)

Tone controls

BASS 50 Hz, +10 dB, –10 dB

TREBLE 20 kHz, +10 dB, –10 dB

Muting –  $\infty$

Output voltage

TAPE 1, TAPE 2, REC OUT 200 mV

PRE OUT1, 2 1 V

Channel balance (AUX, 250 Hz – 6.3 kHz)  $\pm 1$  dB

Channel separation (AUX, 1 kHz) 50 dB

### ■ GENERAL

Dimensions (W  $\times$  H  $\times$  D)

430  $\times$  69.3  $\times$  307 mm

Weight

2.7 kg

### Notes:

1. Specifications are subject to change without notice.

Weight and dimensions are approximate.

2. Total harmonic distortion is measured by the digital spectrum analyzer.

### ⚠ WARNING

This service information is designed for experienced repair technicians only and is not designed for use by the general public. It does not contain warnings or cautions to advise non-technical individuals of potential dangers in attempting to service a product. Products powered by electricity should be serviced or repaired only by experienced professional technicians. Any attempt to service or repair the product or products dealt with in this service information by anyone else could result in serious injury or death.

# Technics®

© 1997 Matsushita Electric Industrial Co., Ltd.  
All rights reserved. Unauthorized copying  
and distribution is a violation of law.

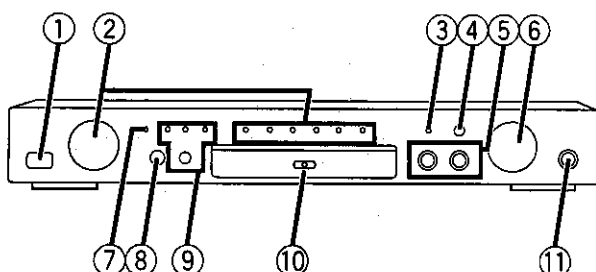
## ■ Contents

	Page		Page
Front Panel Controls .....	2	Wiring Connection Diagram .....	13
Operation Check and		Type Illustration of IC's, Transistors and Diodes .....	13
Main Component Replacement Procedures .....	3, 4	Block Diagram .....	14
To Supply Power Source .....	5	Replacement Parts List (Electrical) .....	15, 16
Terminal Function of IC's .....	6	Replacement Parts List (Cabinet) .....	16
Schematic Diagram .....	6 - 10	Replacement Parts List (Resistors and Capacitors) .....	17
Printed Circuit Board Diagram .....	11, 12	Cabinet Parts Location .....	18

### NOTE:

Refer to the service manual for Model No. SE-A900SM2 (ORDER No. AD9707099C2) or SE-A800SM2 (ORDER No. AD9707098C2) for information on "Accessories", "Connections" and "Packaging".


## ■ Front Panel Controls



### ① Power "STANDBY /ON" switch (POWER, STANDBY /ON)

Press to switch the unit from on to standby mode or vice versa. In standby mode, the unit is still consuming a small amount of power.

#### Note

The control amplifier switches between ON and the standby mode only if the power amplifier POWER switch is in the "  ON" position.

### ② Input selector/indicators (SELECTOR)


### ③ Muting indicator (MUTING)

### ④ Tone control button (TONE)

### ⑤ Tone controls (BASS, TREBLE)

### ⑥ Volume control (VOLUME)

### ⑦ "STANDBY" indicator (STANDBY)

When the power amplifier POWER switch is in the "  ON" position, this indicator lights up in standby mode and goes out when the unit is turned on.

### ⑧ Remote control signal sensor (SENSOR)

### ⑨ Tape-monitor button/indicators (TAPE MONITOR)

### ⑩ "ADVANCED VIRTUAL BATTERY OPERATION" indicator

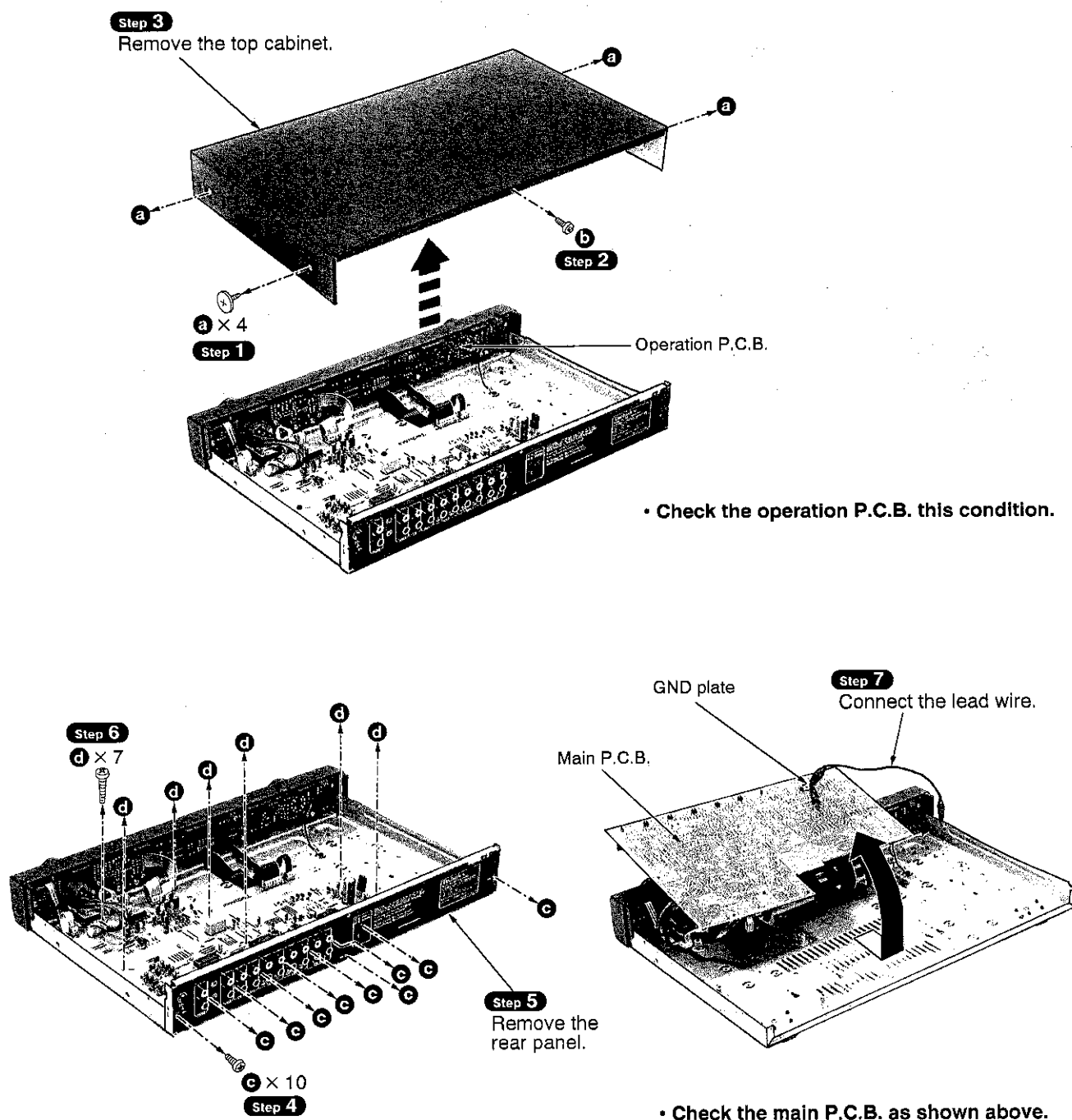
### ⑪ Balance control (BALANCE)

## ■ Operation Check and Main Component Replacement Procedures

### NOTE

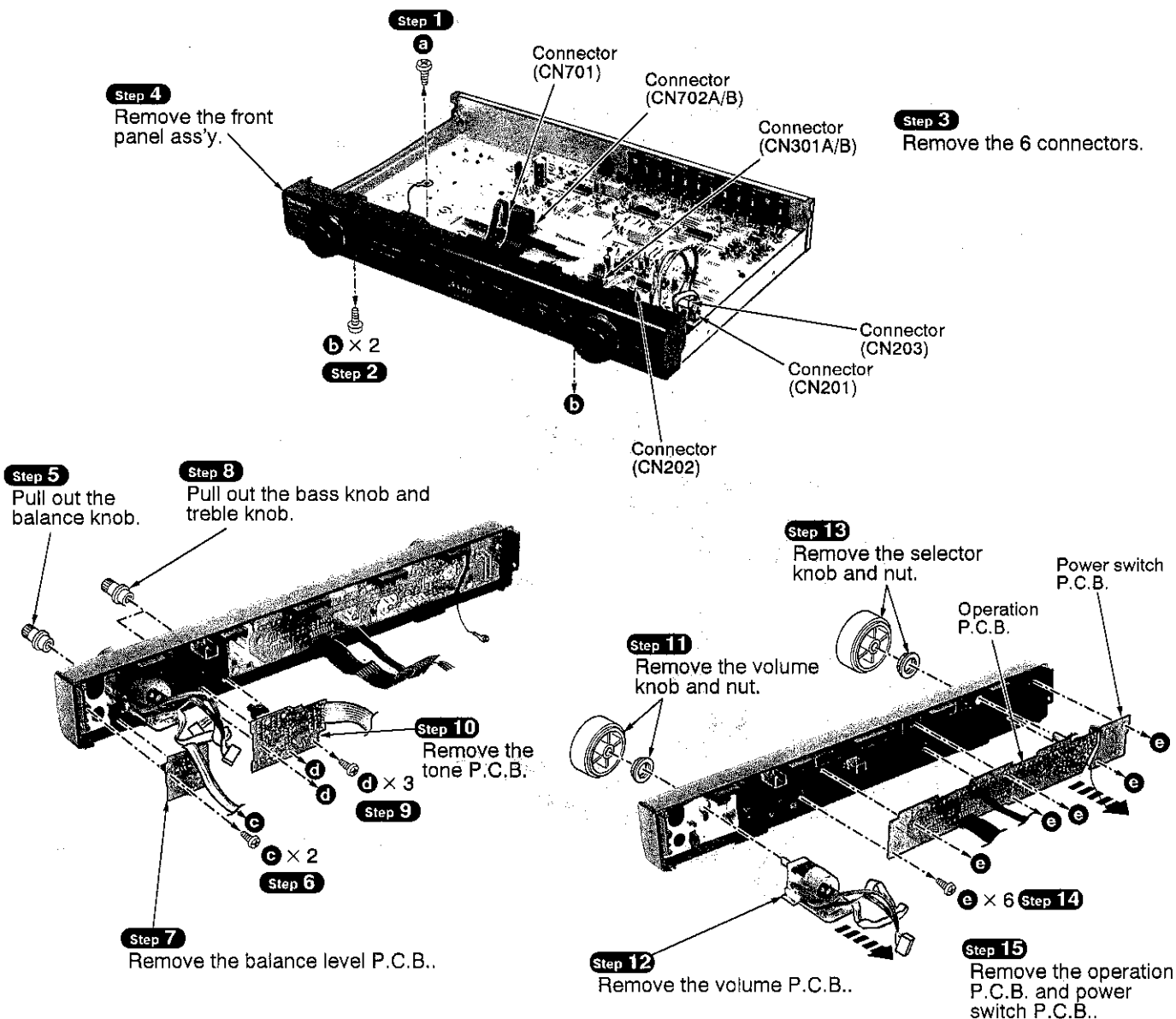
1. This section describes procedures for checking the operation of the major printed circuit boards and replacing the main components.
2. For reassembly after operation checks or replacement, reverse the respective procedures. Special reassembly procedures are described only when required.

### 1. Checking for the operation P.C.B. and main P.C.B.



**To remove each P.C.B.**

- Follow the **Step 1** ~ **Step 3** in Item 1 on page 3.



## ■ To Supply Power Source

This unit SU-C800UM2 is designed to operate on power supplied from the Power Amplifier SE-A900SM2 or SE-A800SM2.

When operating the unit SU-C800UM2 alone for testing and servicing, without having power supplied from the Power Amplifier SE-A900SM2 or SE-A800SM2, use the following method.

### Power Supply to Main Circuit

1. Apply 11 V AC power to the section between the point **TP1** and the point **TP2**.
2. Connect the DC +12 V to +15 V (more than 0.1 A) to the point **TP5**, and the **GND** terminal to the point **TP4** using the DC power supply.
3. Connect the DC -12 V to -15 V (more than 0.1 A) to the point **TP3**, and the GND terminal to the point **TP4** using the DC power supply.

### Operation Check

1. Input a signal (1 kHz, 100 mV) to the each line-in terminal.
3. Connect the oscilloscope or the speaker with the built-in amplifier to the PRE OUT terminals and check if the signals are outputting from this unit.

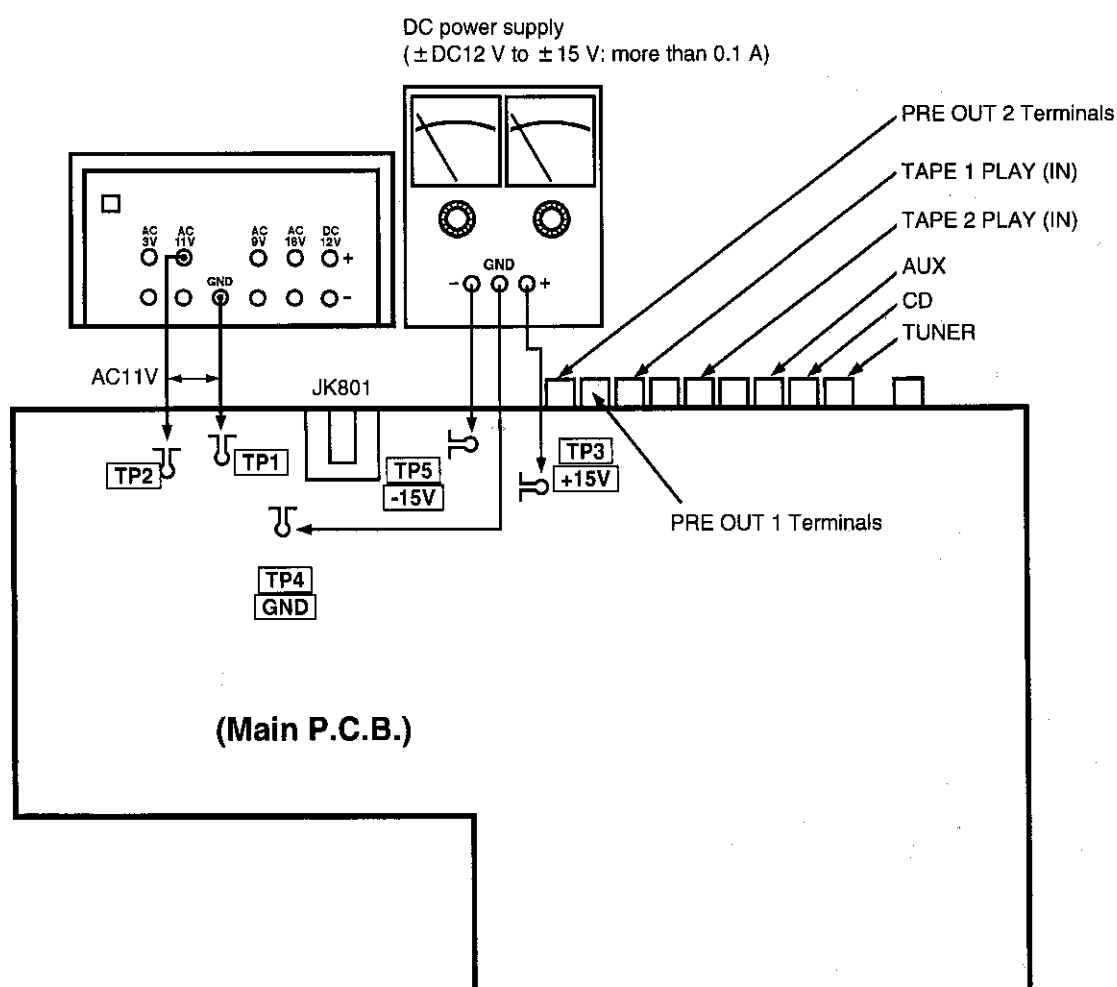


Fig. 1

## ■ Terminal Function of IC's

### ● IC701 (M37470M2362S)

Pin No.	Terminal Name	I/O	Function
1	SDATA	O	Data signal output for input select IC (IC201 and IC202)
2	CLOCK	O	Clock signal output for input select IC (IC201 and IC202)
3	STB	O	Strobe signal output for input select IC (IC201 and IC202)
4	SELLED2	O	Input select LED drive signal output
5	SELLED1		
6	SELLED0		
7	VRDOWN	O	Motor drive signal output (Volume down)
8	VRUP	O	Motor drive signal output (Volume up)
9	ASWMUTE	O	Audio signal muting signal output
10	BATLVL1	I	Not used, connect to GND
11	KEYAD	I	Power switch and Tape monitor switch signal
12	RSWAD	I	Input selector switch (S804) signal input
13	VREF	I	Reference voltage input
14	XIN	I	Connect to the ceramic oscillator
15	XOUT	O	
16	GND	—	Connect to GND

Pin No.	Terminal Name	I/O	Function
17	VCC	I	Power supply (+5V)
18	RESET	I	System reset signal input
19	BACKUP	I	Power failure detect signal input
20	REMCON	I	Remote control signal input
21	BATLVL2	I	Not used, connect to GND
22	CS	I	Chip select signal input (Connect to GND)
23	MUTLED	O	Muting LED (D711) drive signal output
24	SRCELED	O	Source LED (D810) drive signal output
25	TP2MLED	O	Tape 2 LED (D811) drive signal output
26	TP1MLED	O	Tape 1 LED (D812) drive signal output
27	BATFLED	O	Not used, connect to GND
28	BATELED		
29	BATRLY		
30	CHRGRLY		
31	OPTRLY	O	Relay drive signal output
32	PWRRLY	O	Power control signal output

## ■ Schematic Diagram

Page

<b>A</b>	<b>MAIN CIRCUIT</b> .....	7 – 10
<b>B</b>	<b>TONE SWITCH CIRCUIT</b> .....	8, 9
<b>C</b>	<b>VOLUME CIRCUIT</b> .....	8
<b>D</b>	<b>BALANCE VR CIRCUIT</b> .....	8
<b>E</b>	<b>POWER SWITCH CIRCUIT</b> .....	8
<b>F</b>	<b>OPERATION CIRCUIT</b> .....	8, 9

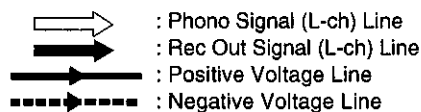
● This schematic diagram may be modified at any time with the development of new technology.

#### Notes:

- **S301** : Tone control switch (TONE : DEFEAT, : ON)
- **S801** : Power "STANDBY /ON" switch (POWER, STANDBY /ON)
- **S802** : Tape monitor switch (TAPE MONITOR)
- **S804** : Input select switch (SELECTOR)
- **VR201** : Volume control VR (VOLUME)
- **VR202** : Balance control VR (BALANCE)
- **VR301** : Tone control VR (BASS)
- **VR302** : Tone control VR (TREBLE)

● Indicated voltage values are the standard values for the unit measured by the DC electronic circuit tester (high-impedance) with the chassis taken as standard. Therefore, there may exist some errors in the voltage values, depending on the internal impedance of the DC circuit tester.  
No mark: Power ON

#### ● Voltage and signal line



#### ● Important safety notice:

Components identified by mark have special characteristics important for safety.

Furthermore, special parts which have purposes of fire-retardant (resistors), high-quality sound (capacitors), low-noise (resistors), etc. are used. When replacing any of components, be sure to use only manufacturer's specified parts shown in the parts list.

#### ● Caution!

IC and LSI are sensitive to static electricity.

Secondary trouble can be prevented by taking care during repair.

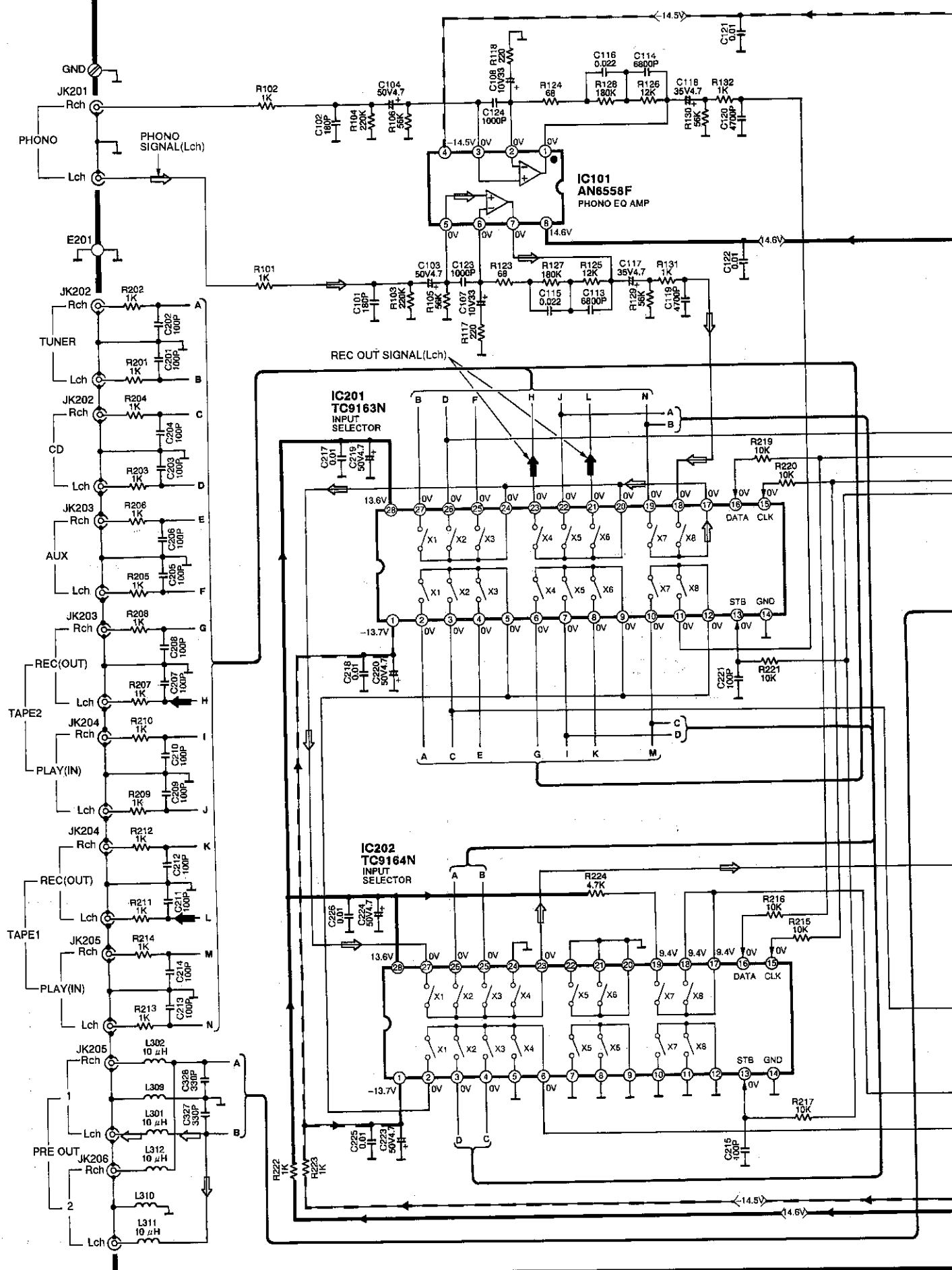
Cover the parts boxes made of plastics with aluminum foil.



Ground the soldering iron.

Put a conductive mat on the work table.

Do not touch the legs of IC or LSI with the fingers directly.

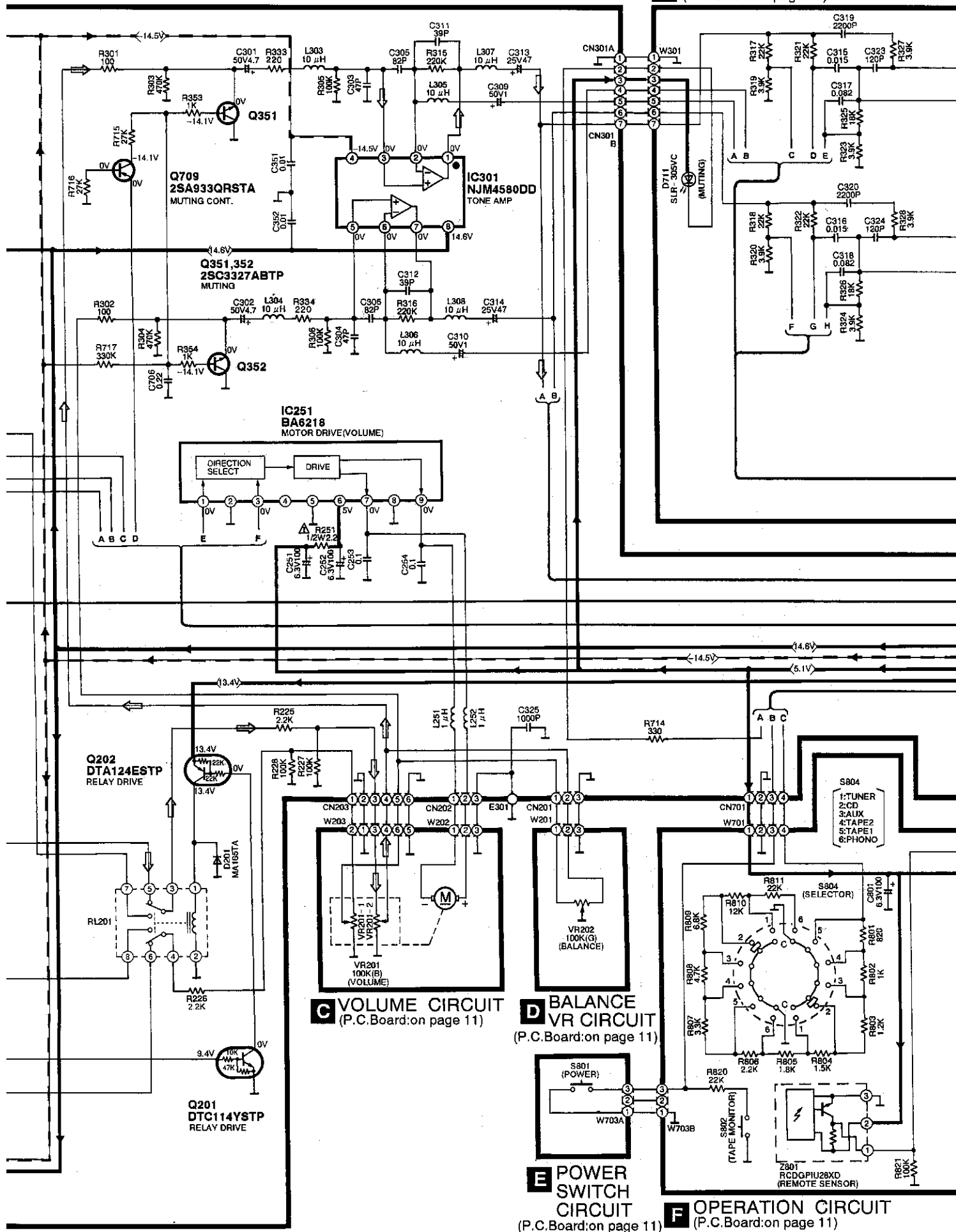
## A MAIN CIRCUIT (P.C.Board: on page 12)



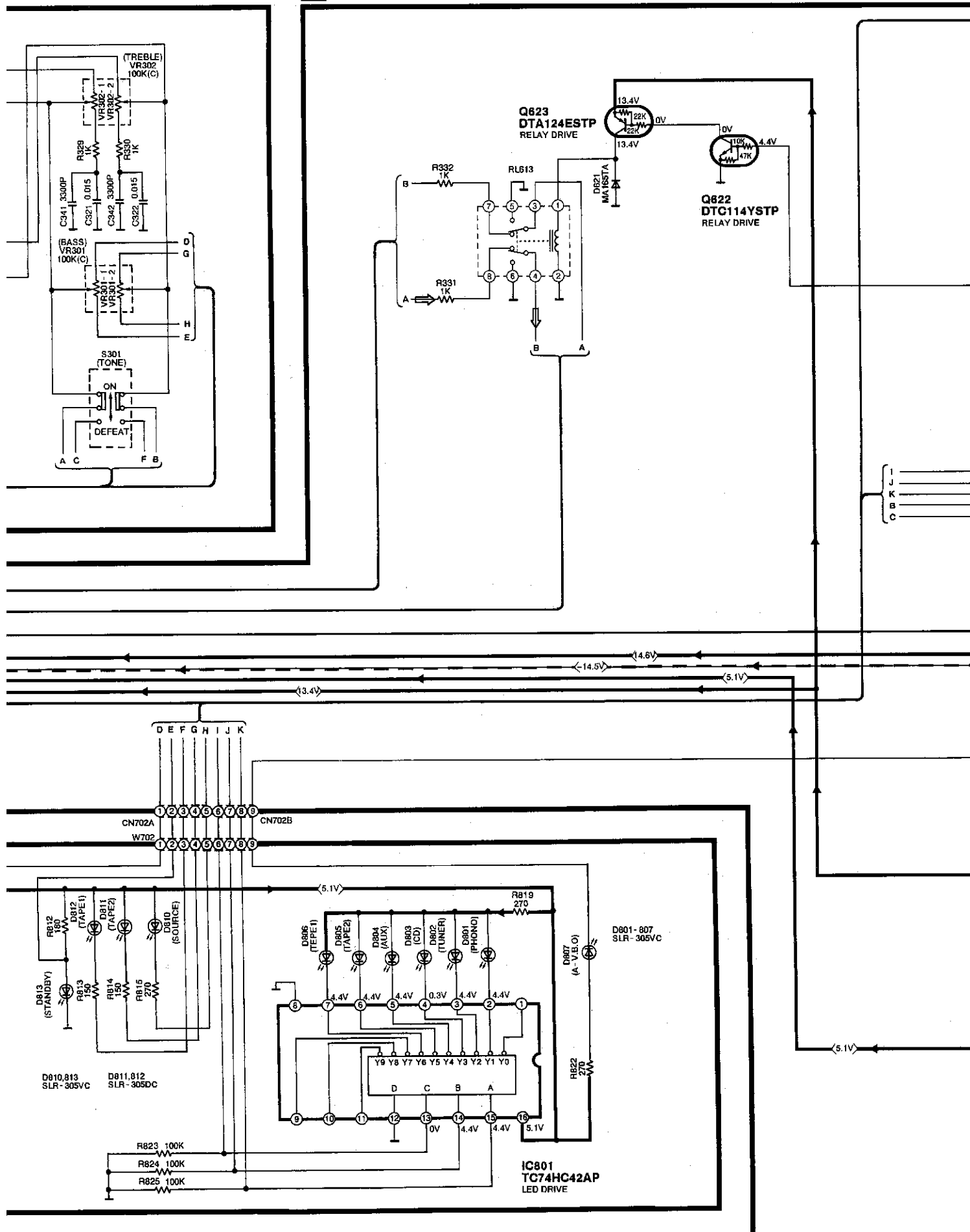
 : Phono Signal (L-ch) Line  
 : Positive Voltage Line

 : Rec Out Signal (L-ch) Line  
 : Negative Voltage Line

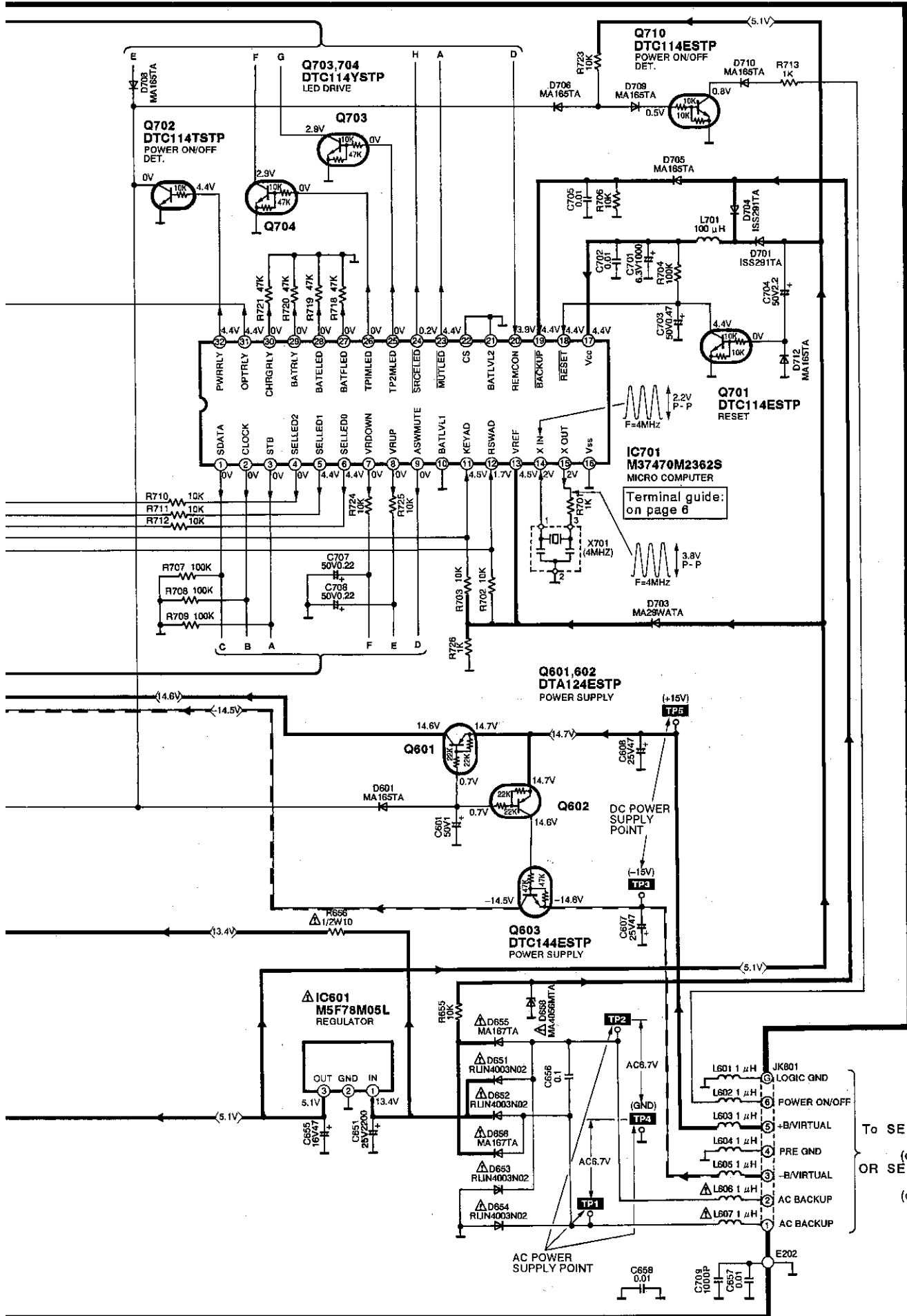
## **B** TONE SWITCH CIRCUIT





**A** MAIN CIRCUIT (P.C.Board: on page 12)

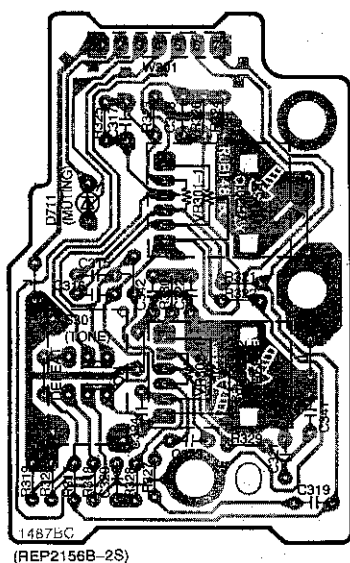
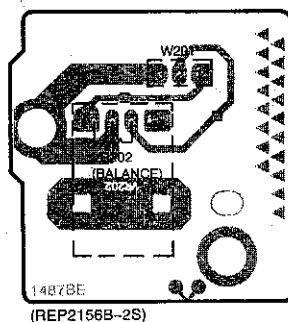
 : Phono Signal (L-ch) Line  
 : Positive Voltage Line  
 : Rec Out Signal (L-ch) Line  
 : Negative Voltage Line



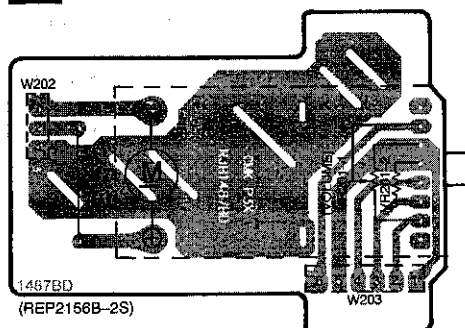
## ■ Printed Circuit Board Diagram

- This circuit board diagram may be modified at any time with the development of new technology.

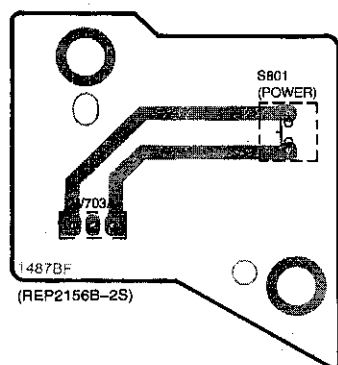
## B TONE SWITCH P.C.B.

**D BALANCE VR P.C.B.**

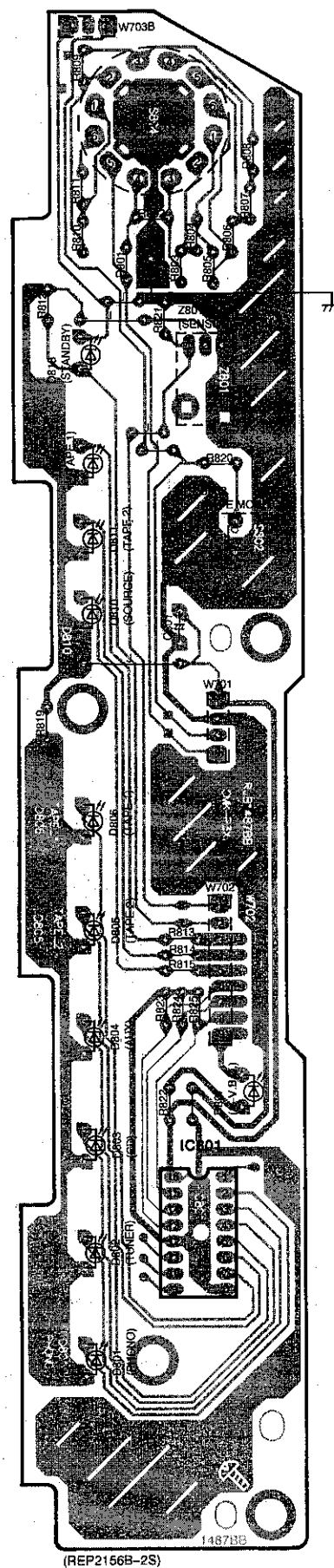
**C VOLUME P.C.B.**



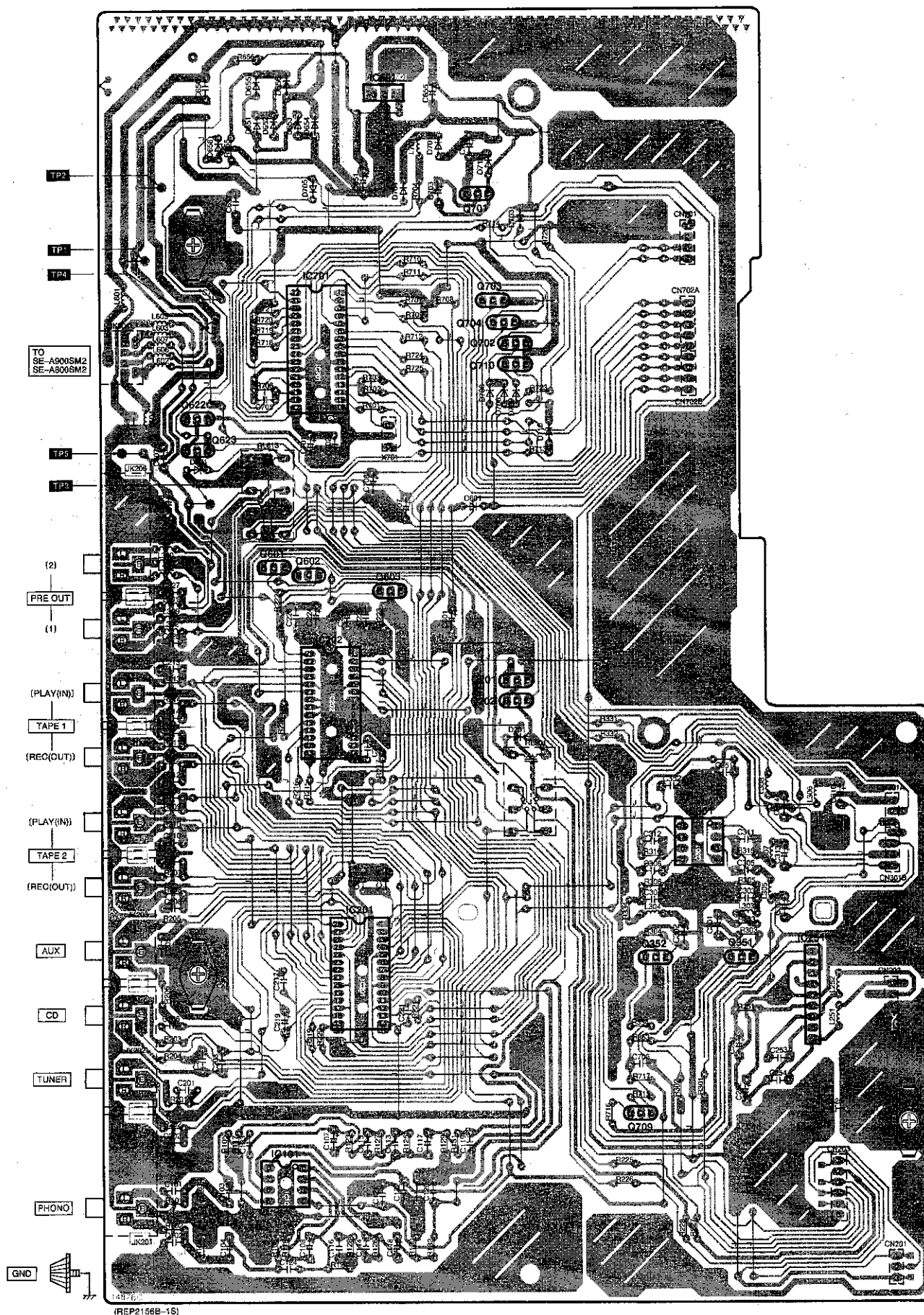
## **E** POWER SWITCH P.C.B.



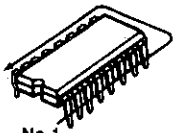
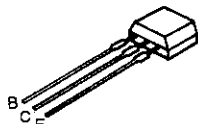
## **F** OPERATION P.C.B.



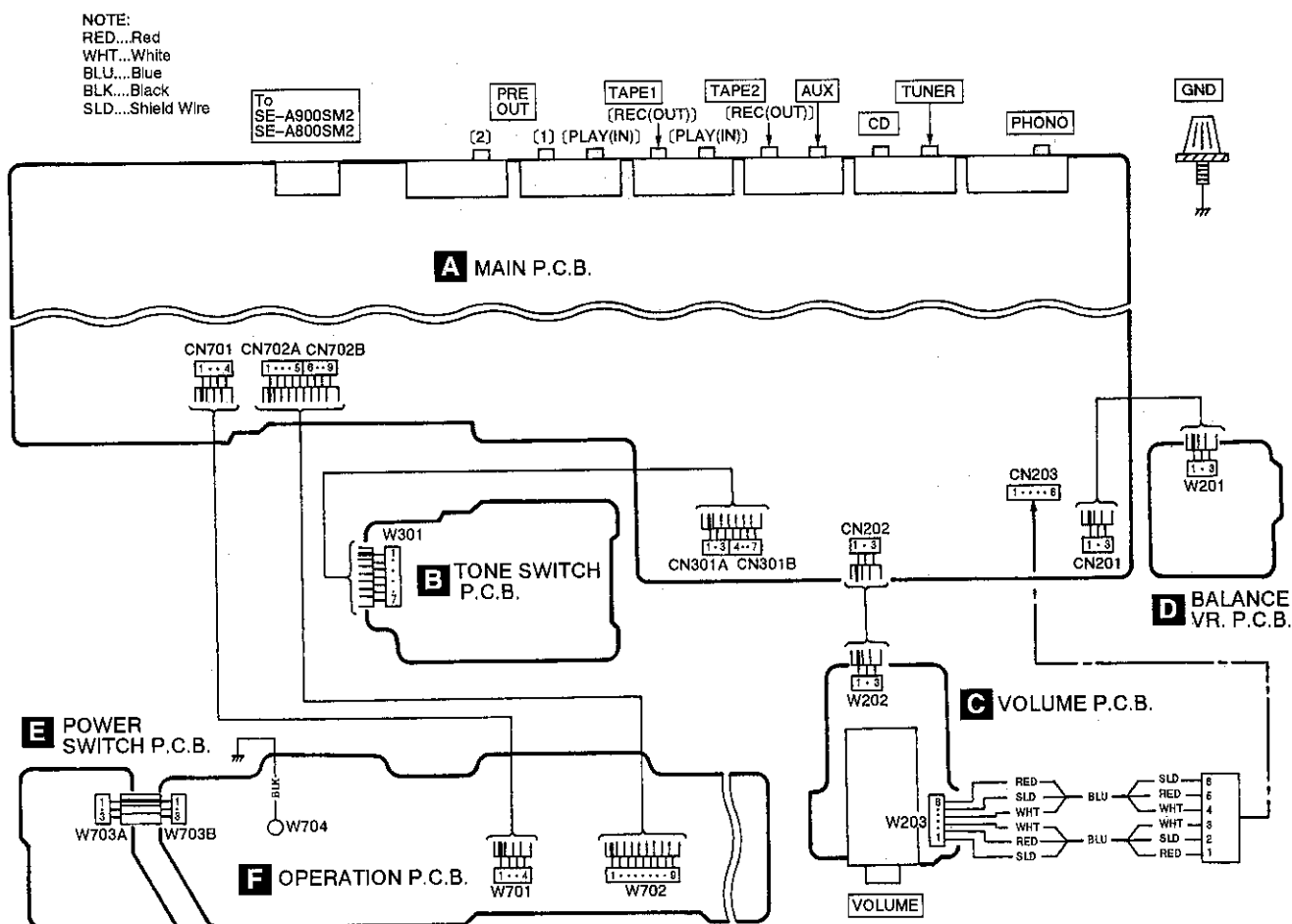
**A MAIN P.C.B.**



## ■ Type Illustration of IC's, Transistors and Diodes

AN6558F	NJM4580DD	 <table border="1"><tr><td>TC74HC42AP</td><td>16Pin</td></tr><tr><td>TC9163N</td><td>28Pin</td></tr><tr><td>TC9164N</td><td>28Pin</td></tr><tr><td>M37470M2332S</td><td>32Pin</td></tr></table>	TC74HC42AP	16Pin	TC9163N	28Pin	TC9164N	28Pin	M37470M2332S	32Pin	BA6218	M5F78M05L
TC74HC42AP	16Pin											
TC9163N	28Pin											
TC9164N	28Pin											
M37470M2332S	32Pin											
2SA933QRSTA	2SC3327-A	 <div>DTA124ESTP DTC114ESTP DTC114TS DTC114YSTP DTC144ESTP</div>	RL1N4003N02	MA165 MA167 MA29WA								
1SS291TA	MA4056MTA	SLR-305DC SLR-305VC										

## ■ Wiring Connection Diagram





## ■ Replacement Parts List (Electrical)

**Notes:** \*Important safety notice:

Components identified by Δ mark have special characteristics important for safety.

Furthermore, special parts which have purposes of fire-retardant (resistors), high-quality sound (capacitors), low-noise (resistors), etc. are used.

When replacing any of components, be sure to use only manufacture's specified parts shown in the parts list.

\*The parenthesized indications in the Remarks columns specify the areas. (Refer to the cover page for area.)

Parts without these indications can be used for all areas.

\* [M] Indicates in Remarks columns parts that are supplied by MESA.

Ref. No.	Part No.	Part Name & Description	Remarks	Ref. No.	Part No.	Part Name & Description	Remarks
		INTEGRATED CIRCUIT (S)				VARIABLE RESISTOR (S)	
IC101	AN6558F	IC	[M]	VR201	EJWMGEF20B15	V. R	[M]
IC201	TC9163N	IC	[M]	VR202	EVJ02QF02G15	V. R	[M]
IC202	TC9164N	IC	[M]	VR301, 302	EVJYA1F02C15	V. R	[M]
IC251	BA6218	IC	[M]			COMPONENT COMBINATION (S)	
IC301	NJM4580DD	IC	[M]				
IC601Δ	M5F78M05L	IC	[M]	Z801	RCDGP1U28XD	REMOTE SENSOR	[M]
IC701	M37470M2362S	IC	[M]			COIL (S)	
IC801	TC74HC42AP	IC	[M]				
		TRANSISTOR (S)		L251, 252	ELEXT1R0KA9	COIL	[M]
Q201	DTC114YSTP	TRANSISTOR	[M]	L301-308	RLQA100JT-Y	COIL	[M]
Q202	DTA124ESTP	TRANSISTOR	[M]	L309, 310	BL02RN1R62T2	COIL	[M]
Q351, 352	2SC3327-A	TRANSISTOR	[M]	L311, 312	RLQA100JT-Y	COIL	[M]
Q601, 602	DTA124ESTP	TRANSISTOR	[M]	L606, 607Δ	ELEXT1R0KA9	COIL	[M]
Q603	DTC144ESTP	TRANSISTOR	[M]	L701	ELEXT101KA9	COIL	[M]
Q622	DTC114YSTP	TRANSISTOR	[M]			OSCILLATOR (S)	
Q623	DTA124ESTP	TRANSISTOR	[M]				
Q701	DTC114ESTP	TRANSISTOR	[M]	X701	EF0GC4004A4	OSCILLATOR	[M]
Q702	DTC114TS	TRANSISTOR	[M]			SWITCH (ES)	
Q703, 704	DTC114YSTP	TRANSISTOR	[M]				
Q709	2SA933QRSTA	TRANSISTOR	[M]	S301	ESB68047	SW	[M]
Q710	DTC114ESTP	TRANSISTOR	[M]	S801, 802	EVQPTD05Q	SW	[M]
		DIODE (S)		S804	RSR9A001-A	SW	[M]
						CONNECTOR (S)	
D201	MA165	DIODE	[M]	CN201, 202	RJS1A6603	CONNECTOR (3P)	[M]
D601	MA165	DIODE	[M]	CN203	SJT3611	CONNECTOR (6P)	[M]
D621	MA165	DIODE	[M]	CN701	RJS1A6604	CONNECTOR (4P)	[M]
D651-654Δ	RL1N4003N02	DIODE	[M]	CN301A	RJS1A6603	CONNECTOR (3P)	[M]
D655, 656Δ	MA167	DIODE	[M]	CN702A	RJS1A6605	CONNECTOR (5P)	[M]
D658Δ	MA4056MTA	DIODE	[M]	CN301B	RJS1A6604	CONNECTOR (4P)	[M]
D701	1SS291TA	DIODE	[M]	CN702B	RJS1A6604	CONNECTOR (4P)	[M]
D703	MA29WA	DIODE	[M]			EARTH TERMINAL (S)	
D704	1SS291TA	DIODE	[M]				
D705, 706	MA165	DIODE	[M]	E201, 202	SNE1004-2	EARTH TERMINAL	[M]
D708-710	MA165	DIODE	[M]	E301	SNE1004-2	EARTH TERMINAL	[M]
D711	SLR-305VC	LED	[M]			RELAY (S)	
D712	MA165	DIODE	[M]				
D801-807	SLR-305VC	LED	[M]				
D810	SLR-305VC	DIODE	[M]				
D811, 812	SLR-305DC	LED	[M]				
D813	SLR-305VC	LED	[M]				

## ■ Replacement Parts List (Cabinet)

[illegible][illegible]

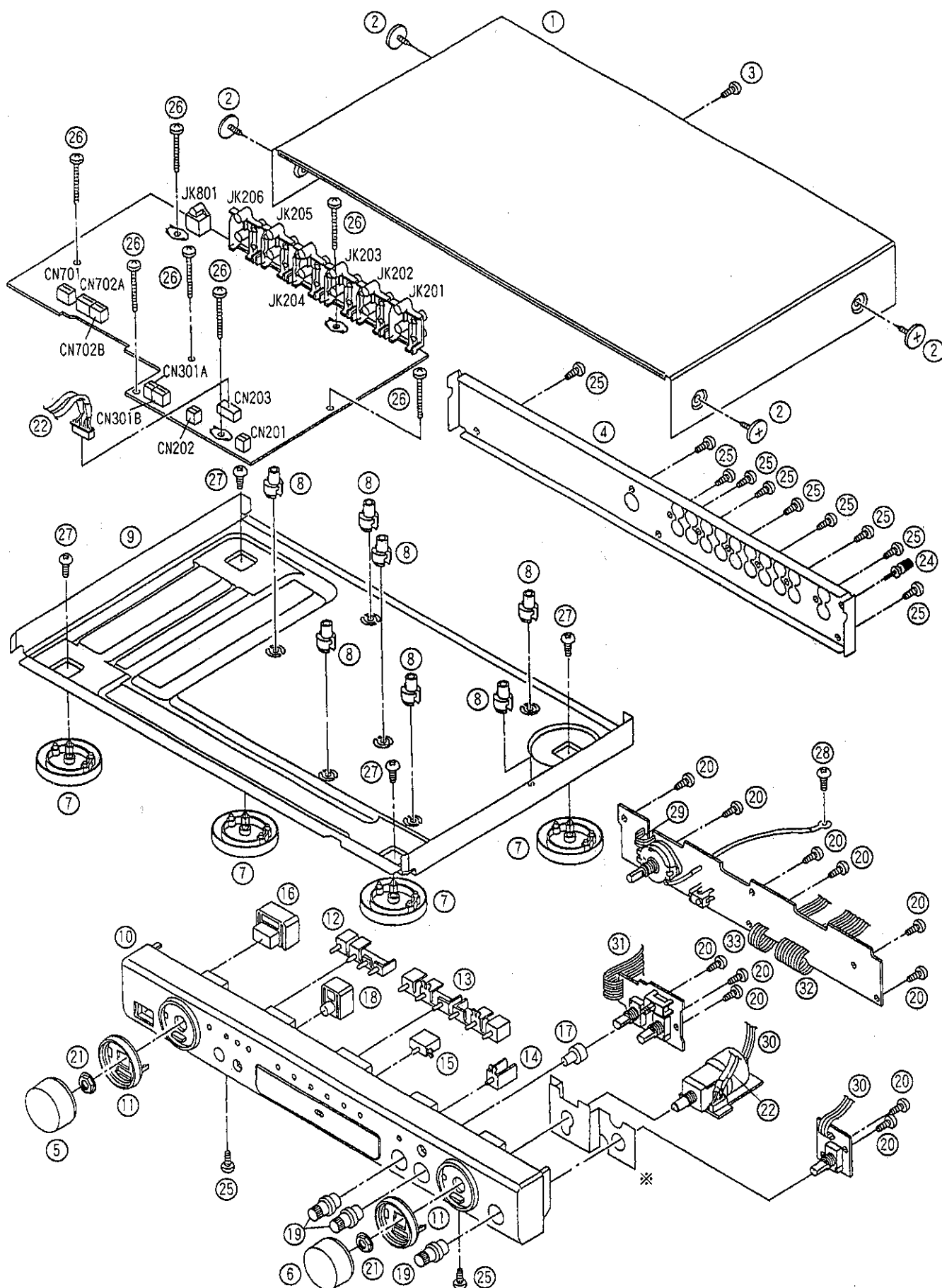


# ■ Replacement Parts List (Resistors and Capacitors)

Notes : \* Capacity value are in microfarads (uF) unless specified otherwise, P=Pico-farads (pF) F=Farads (F)  
 \* Resistance values are in ohms, unless specified otherwise, 1K=1,000 (OHM) , 1M=1,000k (OHM)

Ref. No.	Part No.	Values & Remarks	Ref. No.	Part No.	Values & Remarks	Ref. No.	Part No.	Values & Remarks
		RESISTORS						
R101, 102	ERDS2FJ102	1/4W 1K [M]	R802	ERDS2FJ102	1/4W 1K [M]	C313, 314	ECA1EPX470TB	25V 47U [M]
R103, 104	ERDS2FJ224	1/4W 220K [M]	R803	ERDS2FJ122	1/4W 1.2K [M]	C315, 316	ECBT0J153MS5	6.3V 0.015U [M]
R105, 106	ERDS2FJ563	1/4W 56K [M]	R804	ERDS2FJ152	1/4W 1.5K [M]	C317, 318	ECQV1H823JM3	50V 0.082U [M]
R117, 118	ERDS2FJ221	1/4W 220 [M]	R805	ERDS2FJ182	1/4W 1.8K [M]	C319, 320	ECBT1C222KR5	16V 2200P [M]
R123, 124	ERDS2FJ680	1/4W 68 [M]	R806	ERDS2FJ222	1/4W 2.2K [M]	C321, 322	ECBT0J153MS5	6.3V 0.015U [M]
R125, 126	ERDS2FJ123	1/4W 12K [M]	R807	ERDS2FJ332	1/4W 3.3K [M]	C323, 324	ECBT1H121KB5	50V 120P [M]
R127, 128	ERDS2FJ184	1/4W 180K [M]	R808	ERDS2FJ472	1/4W 4.7K [M]	C325	ECBT1H102KB5	50V 1000P [M]
R129, 130	ERDS2FJ563	1/4W 56K [M]	R809	ERDS2FJ682	1/4W 6.8K [M]	C327, 328	ECKR1H331KB5	50V 330P [M]
R131, 132	ERDS2FJ102	1/4W 1K [M]	R810	ERDS2FJ123	1/4W 12K [M]	C341, 342	ECBT1C332KR5	16V 3300P [M]
R201-214	ERDS2FJ102	1/4W 1K [M]	R811	ERDS2FJ223	1/4W 22K [M]	C351, 352	ECKR1H103ZF5	50V 0.01U [M]
R215-217	ERDS2FJ103	1/4W 10K [M]	R812	ERDS2FJ181	1/4W 180 [M]	C601	ECEA1HKA010B	50V 1U [M]
R219-221	ERDS2FJ103	1/4W 10K [M]	R813, 814	ERDS2FJ151	1/4W 150 [M]	C607, 608	ECA1EPXS470B	25V 47U [M]
R222, 223	ERDS2FJ102	1/4W 1K [M]	R815	ERDS2FJ271	1/4W 270 [M]	C651	ECA1EM222E	25V 2200U [M]
R224	ERDS2FJ472	1/4W 4.7K [M]	R819	ERDS2FJ271	1/4W 270 [M]	C655	RCE1CKA470BG	16V 47U [M]
R225, 226	ERDS2FJ222	1/4W 2.2K [M]	R820	ERDS2FJ223	1/4W 22K [M]	C656	ECQV1H104JM3	50V 0.1U [M]
R227, 228	ERDS2FJ104	1/4W 100K [M]	R821	ERDS2FJ104	1/4W 100K [M]	C657, 658	ECKR1H103ZF5	50V 0.01U [M]
R251△	ERDS1FJ2R2	1/2W 2.2 [M]	R822	ERDS2FJ271	1/4W 270 [M]	C701	ECA0JM102B	6.3V 1000U [M]
R301, 302	ERDS2FJ101	1/4W 100 [M]	R823-825	ERDS2FJ104	1/4W 100K [M]	C702	ECBT1C103NS5	16V 0.01U [M]
R303, 304	ERDS2FJ474	1/4W 470K [M]			CAPACITORS	C703	RCE1HKA47BG	50V 0.47U [M]
R305, 306	ERDS2FJ104	1/4W 100K [M]	C101, 102	ECBT1H181KB5	50V 180P [M]	C704	ECEA1HKA2R2B	50V 2.2U [M]
R315, 316	ERDS2FJ224	1/4W 220K [M]	C103, 104	ECA1HPXS4R7B	50V 4.7U [M]	C705	ECBT1C103NS5	16V 0.01U [M]
R317, 318	ERDS2FJ223	1/4W 22K [M]	C107, 108	RCE1AKA330BG	10V 33U [M]	C706	ECQV1H224JM3	50V 0.22U [M]
R319, 320	ERDS2FJ392	1/4W 3.9K [M]	C113, 114	ECQB1H682JF3	50V 6800P [M]	C707, 708	ECEA1HKA2R2B	50V 0.22U [M]
R321, 322	ERDS2FJ223	1/4W 22K [M]	C115, 116	ECQB1H223JF3	50V 0.022U [M]	C709	ECBT1H102KB5	50V 1000P [M]
R323, 324	ERDS2FJ392	1/4W 3.9K [M]	C117, 118	ECEA1VKA4R7B	35V 4.7U [M]	C801	ECEA0JKA101B	6.3V 100U [M]
R325, 326	ERDS2FJ183	1/4W 18K [M]	C119, 120	ECQB1H472JF3	50V 4700P [M]			
R327, 328	ERDS2FJ392	1/4W 3.9K [M]	C121, 122	ECKR1H103ZF5	50V 0.01U [M]			
R329-332	ERDS2FJ102	1/4W 1K [M]	C123, 124	ECBT1H102KB5	50V 1000P [M]			
R333, 334	ERDS2FJ221	1/4W 220 [M]	C201, 202	ECBT1H101KB5	50V 100P [M]			
R353, 354	ERDS2FJ102	1/4W 1K [M]	C203, 204	ECKT1H101KB	50V 100P [M]			
R655	ERDS2FJ103	1/4W 10K [M]	C205-208	ECBT1H101KB5	50V 100P [M]			
R656△	ERDS1FJ100	1/2W 10 [M]	C209, 210	ECKT1H101KB	50V 100P [M]			
R701	ERDS2FJ102	1/4W 1K [M]	C211, 212	ECBT1H101KB5	50V 100P [M]			
R702, 703	ERDS2FJ103	1/4W 10K [M]	C213, 214	ECKT1H101KB	50V 100P [M]			
R704	ERDS2FJ104	1/4W 100K [M]	C215	ECBT1H101KB5	50V 100P [M]			
R706	ERDS2FJ103	1/4W 10K [M]	C217, 218	ECBT1E103ZF	25V 0.01U [M]			
R707-709	ERDS2FJ104	1/4W 100K [M]	C219, 220	RCE1HKA4R7BG	50V 4.7U [M]			
R710-712	ERDS2FJ103	1/4W 10K [M]	C221	ECBT1H101KB5	50V 100P [M]			
R713	ERDS2FJ102	1/4W 1K [M]	C223, 224	RCE1HKA4R7BG	50V 4.7U [M]			
R714	ERDS2FJ331	1/4W 330 [M]	C225, 226	ECBT1E103ZF	25V 0.01U [M]			
R715, 716	ERDS2FJ273	1/4W 27K [M]	C251, 252	ECEA0JKA101B	6.3V 100U [M]			
R717	ERDS2FJ334	1/4W 330K [M]	C253, 254	ECQV1H104JM3	50V 0.1U [M]			
R718-721	ERDS2FJ473	1/4W 47K [M]	C301, 302	ECA1HPXS4R7B	50V 4.7U [M]			
R723-725	ERDS2FJ103	1/4W 10K [M]	C303, 304	ECCR1H470JC5	50V 47P [M]			
R726	ERDS2FJ102	1/4W 1K [M]	C305, 306	ECCR1H820JC5	50V 82P [M]			
R801	ERDS2FJ821	1/4W 820 [M]	C309, 310	ECA1HPXS010B	50V 1U [M]			
			C311, 312	ECCR1H390JC5	50V 39P [M]			

## ■ Cabinet Parts Location



We do not supply the item of the part marked ※.