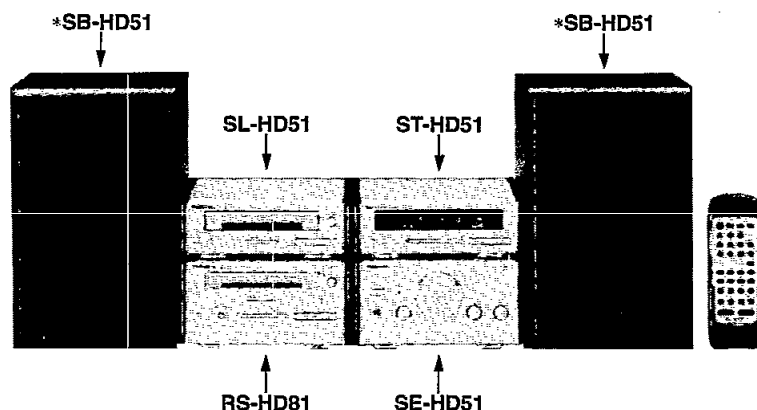


Service Manual

Tuner

Tuner



ST-HD51

Colour

(N) Gold

Areas

(E) Europe.

(EG) Germany and Italy, etc.

System : SC-HD51

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

Specifications

Pre-amplifier Section

Input sensitivity/impedance

EXTERNAL: 250 mV/15 kohm

Output level

EXTERNAL: 250 mV/1.5 kohm

Frequency response

EXTERNAL: 50 Hz — 25 kHz

S/N

EXTERNAL: DIN 82 dB (83 dB, IHF)

FM tuner Section

Frequency range: 87.50 — 108.00 MHz (0.05 MHz steps)

Sensitivity: 1.8 μ V (IHF usable)S/N 26dB: 1.5 μ V

S/N

MONO: 70 dB (75 dB, IHF)

Stereo separation

1 kHz: 35 dB

Antenna terminal(s): 75 ohm (unbalanced)

AM tuner Section

Frequency range: 522 — 1611 kHz (9 kHz steps)

530 — 1620 kHz (10 kHz steps)

Sensitivity (S/N 20 dB): 500 μ V/m

Timer Section

Clock: Quartz-lock type

Function: 24-hour programmable;

Play timer (1 time), Rec timer (1 time)

Sleep (120 min., 30 min., intervals)

Setting: 1 minute-23 hours 59 minutes (1 min. intervals)

General

Dimensions: 196(W)/67(H)/235(D) mm

Weight: 1.2 kg

Notes:

- Specifications are subject to change without notice.
- Weight and demensions are approximate.

System/SC-HD51:

Tuner: ST-HD51, Compact Disc Player: SL-HD51, Amplifier: SE-HD51, Cassette Deck: RS-HD81, Speakers: *SB-HD51

Notes: *.....Made in PAES

⚠ 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.

© 1998 Matsushita Electric Industrial Co., Ltd.
All rights reserved. Unauthorized copying and distribution is a violation of law.

Technics®

Contents

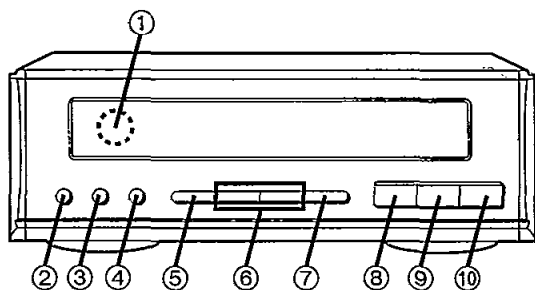
	Page
Location of Controls	2
Setting the Time	2
About the Self-Diagnostic Mode	3
Operation Checks and Main Component Replacement Procedures	4, 5
Type Illustration of ICs, Transistors and Diodes	5
To Supply Power Source	6

	Page
Schematic Diagram	7 ~ 15
Printed Circuit Board Diagram	16 ~ 19
Block Diagram	20 ~ 23
Wiring Connection Diagram	24
Terminal Function of IC's	25
Replacement Parts List	26 ~ 29
Cabinet Parts Location	30

NOTE:

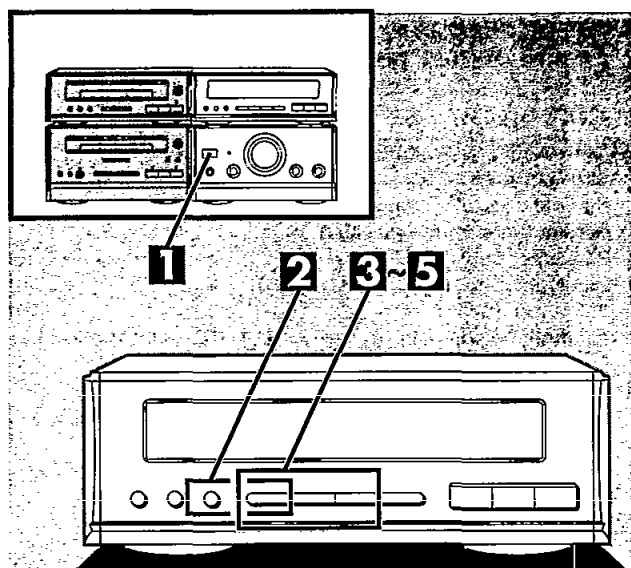
Refer to the service manual for Model No. SE-HD51 (ORDER No. AD9802031C2) for information on "Accessories", "Installation", "Connections" and "Packaging".

Location of Controls



- ① Remote control signal sensor
- ② Record timer button (Ⓞ REC)
- ③ Play timer button (Ⓞ PLAY)
- ④ Clock/timer button (CLOCK/TIMER)
- ⑤ Set button (SET)
- ⑥ Tuning/time adjust buttons (∇, ▲ TUNING/TIME ADJUST)
- ⑦ Tuning mode select button (TUNING MODE)
- ⑧ Source input select button (INPUT SELECTOR)
- ⑨ FM band select button (FM)
- ⑩ AM band select button (AM)

Setting the Time



The tuner displays the time, frequency and other information on CDs and tapes.

This is a 24-hours display clock.

These instructions explain how to set the timer for 16:25 on Wednesday.

1 Switch on the power.

- 2** ① Press CLOCK/TIMER to show "CLOCK".
Every time you press the button, the indication changes in the order of CLOCK → Ⓞ REC → Ⓞ PLAY → Original display.
Within 8 seconds:
② Press SET.

- 3** ① Press ∇ or ▲ to select the day.
Every time you press one of the buttons, the indication changes in the order of SUN → MON → TUE → WED → THU → FRI → SAT.
② Press SET.
- 4** ① Press ∇ or ▲ to select the hour.
② Press SET.
- 5** ① Press ∇ or ▲ to select the minutes.
② Press SET to finish setting the time.

The display will return to the previous display after about 3 seconds.

When "--:--" appears:

It flashes when you connect the AC power supply cord for the first time or if there has been a power failure.
Reset the time as explained above.

If the minutes setting is off:

1. Press CLOCK/TIMER.
2. Press SET 3 times.
3. Press ∇ or ▲ to set the minute, and then press SET.

To display the clock again:

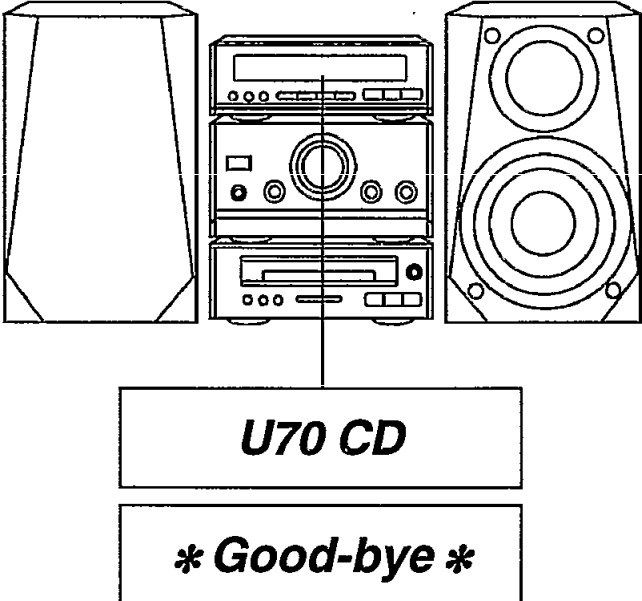
Press CLOCK/TIMER.
The clock display will appear for about 8 seconds.

For your reference:

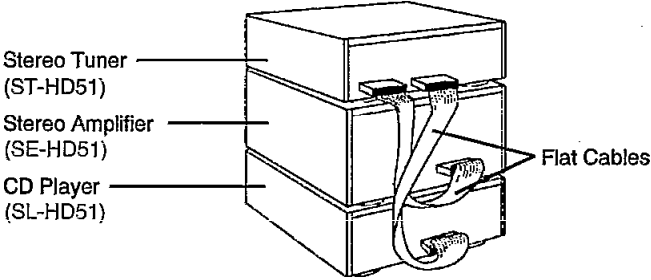
When you turn OFF the system from the POWER button, the system goes on standby and the STANDBY indicator lights up.

■About the Self-Diagnostic Mode

This unit is equipped with a self-diagnostic function which, in the event of a malfunction, automatically displays a code indicating the nature of the malfunction. Use this self-diagnostic function when servicing the unit.

Display method	Display location
<p>To display the malfunction code</p> <p>U70 CD Automatically displays on the stereo tuner processor when a malfunction occurs.</p> <p>* Good-bye * Automatically displays on the stereo tuner processor when a malfunction occurs.</p> <p>To return to the normal display</p> <p>1. For U70 CD:</p> <ul style="list-style-type: none"> ● Press any operation button on the stereo tuner. ● To re-display the code, switch the power off (POWER STANDBY button), and then switch power back on again. <p>2. For * Good-bye * :</p> <ul style="list-style-type: none"> ● If " * Good-bye * " is displayed, the power will automatically be switched off and the standby indicator will light up. ● " * Good-bye * " will be displayed for 3 seconds, and then the clock will be displayed. ● To re-display the code, switch the power on. " * Good-bye * " will be re-displayed, and then after 3 seconds the clock will be displayed and the power will automatically switch off. 	

Display contents

Display code	Problem or condition	Correction procedure
<p>U70 CD (displayed automatically)</p>	<p>A bus-line communications error has occurred as a result of the flat cables being inserted incorrectly, thus preventing the system from operating.</p> <p>1. If "U70 CD" is displayed on the stereo tuner, the CD Player cannot be operated by remote control.</p>	 <p>Stereo Tuner (ST-HD51)</p> <p>Stereo Amplifier (SE-HD51)</p> <p>CD Player (SL-HD51)</p> <p>Flat Cables</p> <p>White side</p> <ol style="list-style-type: none"> 1. To check for correct insertion of the flat cables. <ol style="list-style-type: none"> ① Insert each connector until you hear a click. ② Insert the flat cables at the back of the unit in the order indicated. Make sure the white side of the cable is on your right side. 2. Breakage of flat cable. (Check and replace as necessary.) 3. If the problem is not corrected by items (1.) and (2.) above, this indicates a faulty IC. <p>ST-HD51:</p> <p>IC901 (M38197MA146F...[E]) (M38197MA180F...[EG])</p> <p>SL-HD51:</p> <p>IC403 (LC66356B4H02)</p> <p>Check these IC's and replace as necessary.</p>
<p>* Good-bye *</p>	<p>When the power switch is switched on, it automatically switches back off, making it impossible to switch power on.</p>	<ul style="list-style-type: none"> ● Faulty Stereo Tuner (ST-HD51) output IC (IC501). (When a DC voltage is applied to the speaker terminals.)

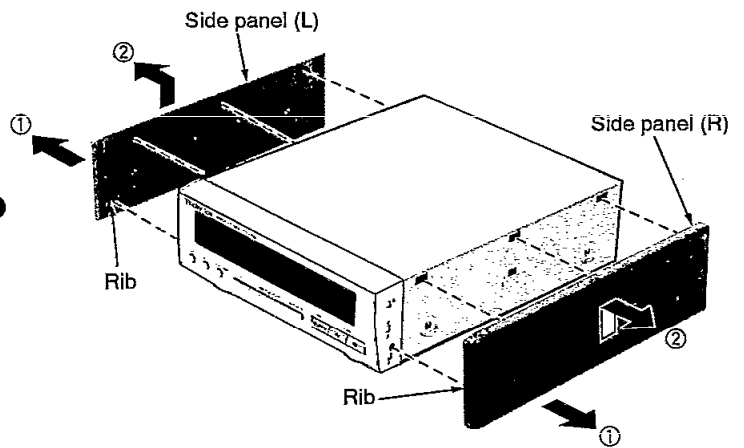
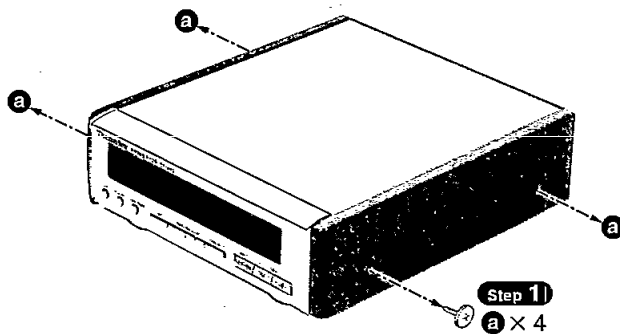
Operation Checks and Main Component Replacement Procedures

- 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 tuner P.C.B. and FL P.C.B.

Step 2

Remove the side panel (L),(R).
 • Spread the lower part of the side panels in the direction of arrow (→①) to release the ribs, and then lift to remove the side panels (→②).

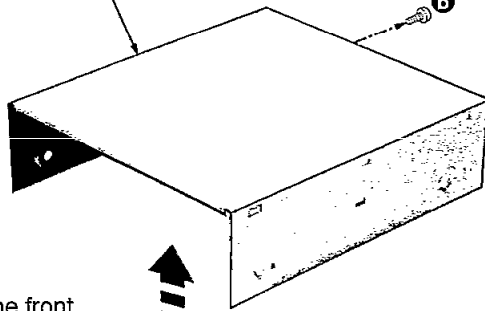


Step 4

Remove the cabinet.

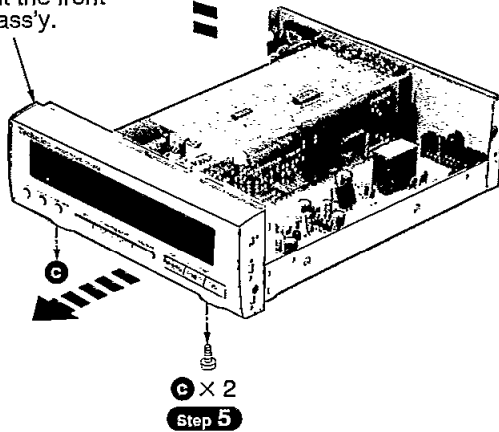
Step 3

b

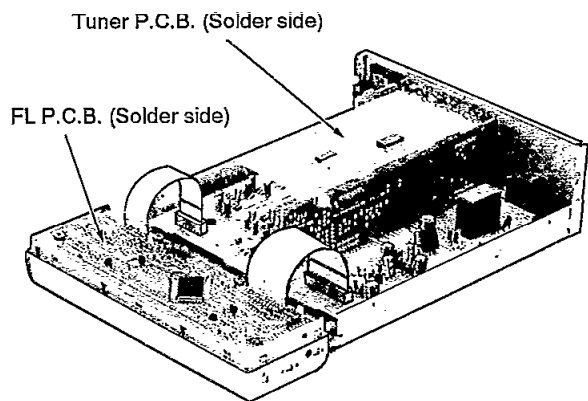


Step 6

Pull out the front panel ass'y.



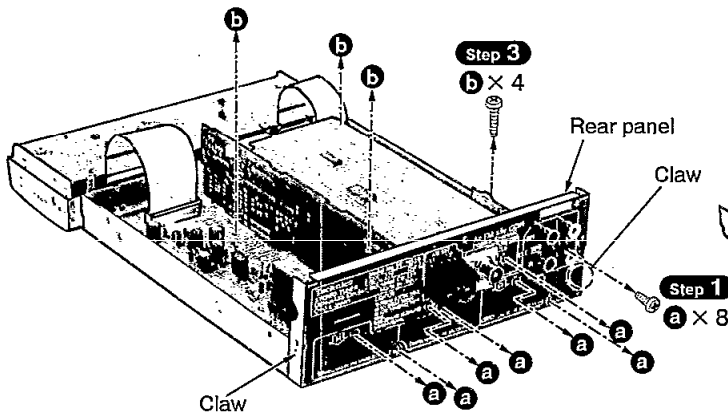
• Check the tuner P.C.B. and FL P.C.B. as shown below.



2. Checking for the main P.C.B.

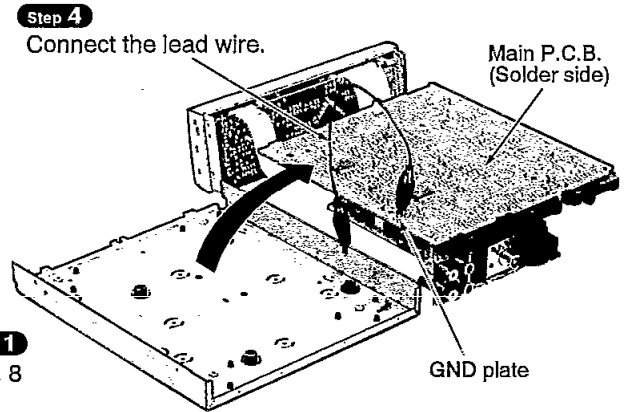
• Follow **Step 1** ~ **Step 6** in item 1 on page 4.

• Check the main P.C.B. as shown below.



Step 2

Release the 2 claws, and then remove the rear panel.



Step 4

Connect the lead wire.

Main P.C.B. (Solder side)

GND plate

<table border="1"> <tr> <td>LA1832MH-TEL</td> <td>24PIN</td> </tr> <tr> <td>LC7218M-TE-L</td> <td>24PIN</td> </tr> <tr> <td>M62425FPE1</td> <td>36PIN</td> </tr> <tr> <td>NJU7313AMT2</td> <td>30PIN</td> </tr> </table>	LA1832MH-TEL	24PIN	LC7218M-TE-L	24PIN	M62425FPE1	36PIN	NJU7313AMT2	30PIN	<p>M5218AFPE3 M5219FPTA</p>	<p>M38197MA146F M38197MA180F</p>	<p>LC72720M-TLM</p>	<p>2SB621AQRSTA</p>
LA1832MH-TEL	24PIN											
LC7218M-TE-L	24PIN											
M62425FPE1	36PIN											
NJU7313AMT2	30PIN											
<p>2SC3940AQSTA</p>	<p>2SA1309ATA 2SC2785FETA 2SC2787LTA 2SC3311ATA 2SC3311ARSTA</p> <p>UN411FTA UN4111AITA UN4115TA UN4211AITA UN4214AITA</p>	<p>2SB1417PQTA 2SD2137PQTA</p>	<p>2SD2144STA DTC143XSTP</p>	<p>1SS291TA MA165TA</p> <p>Anode Cathode</p>								
<p>MA185TA</p> <p>Anode Cathode</p>	<p>MA719TA</p> <p>Anode Cathode</p>	<p>MA4039MTA MA4051MTA MA4062HTA MA4082LTA</p> <p>Anode Cathode</p>	<p>MA4150MTA MA4300MTA</p> <p>Anode Cathode</p>	<p>RL1N4003N02</p> <p>Anode Cathode</p>								

■ To Supply Power Source

This unit ST-HD51 is designed to operate on power supplied from the Amplifier SE-HD51.

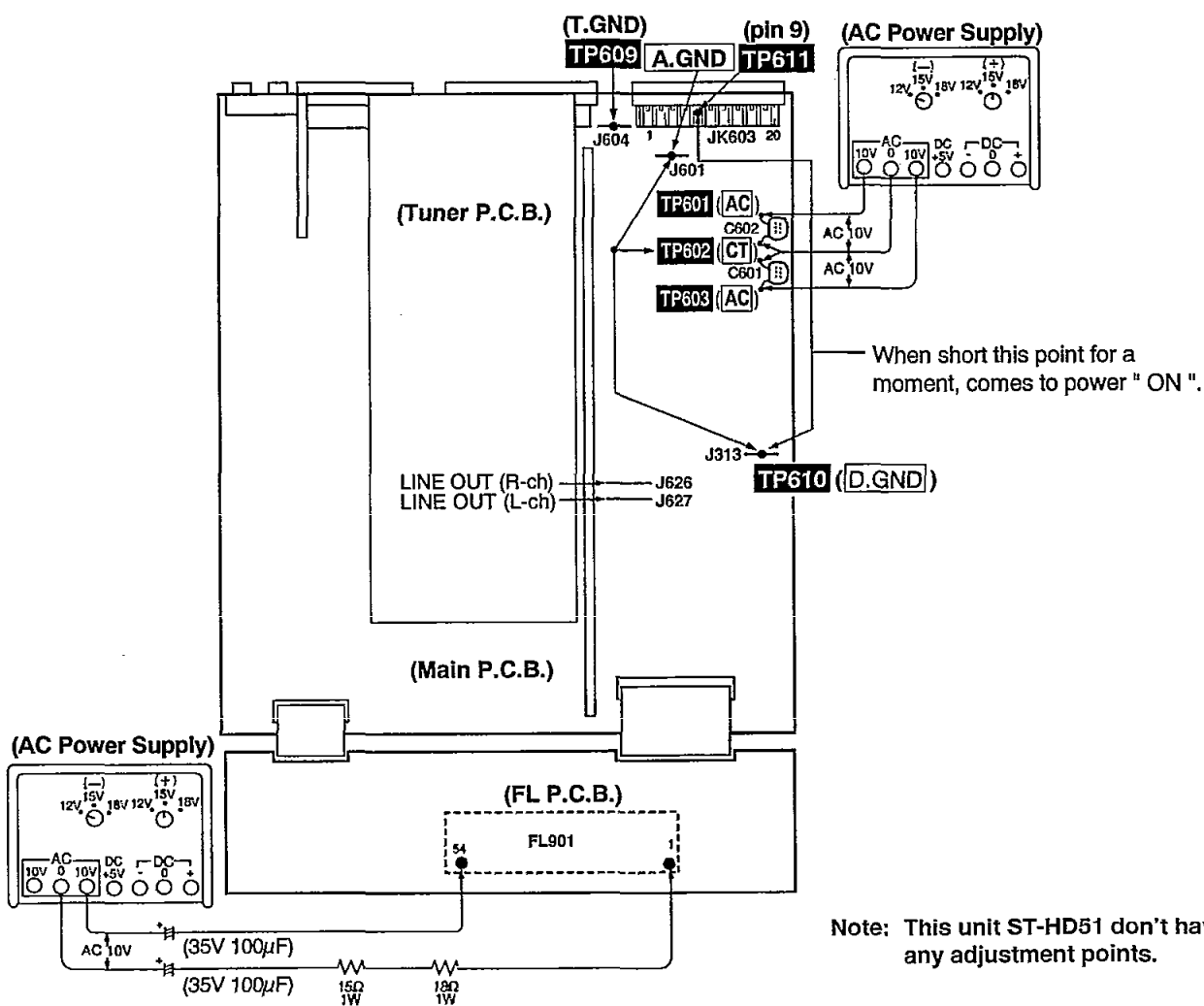
When operating the unit ST-HD51 alone for testing and servicing, without having power supplied from the Amplifier SE-HD51, use the following method.

Power Supply to Main Circuit

1. Short the section between the test points **TP602** (**[CT]**) and **TP610** (**[D.GND]**), and as well as the section between the test points **A.GND** (**[J601]**) and **TP610** (**[D.GND]**).
2. Connect the 10V AC power through the capacitor (35V 100 μ F) to pin 1 of the indicator module FL901 and the GND terminal through the capacitor (35V 100 μ F) to pin 57 of the same FL901 module.
3. Apply 10V AC power to the section between the point **TP601** (**[AC]**) and the point **TP602** (**[CT]**) as well as the section between the point **TP603** (**[AC]**) and the point **TP602** (**[CT]**). This unit comes to stand-by mode.
4. Short the section between the jumper **TP611** (**[JK603-pin 9]**) and the point **TP610** (**[D.GND]**) for a moment. The main circuit comes to power ON mode. (Whenever this operation is performed, power, ON/OFF mode is repeated.)

To Check Signals

Connect the oscilloscope or the speaker with the built-in amplifier to the section between the point J626 [LINE OUT (R-ch)] and the point **TP610** (**[D.GND]**) as well as the section between the point J627 [LINE OUT (L-ch)] and the point **TP610** (**[D.GND]**) as shown in Fig. 1, and check if the signals are outputting from this unit.



Note: This unit ST-HD51 don't have any adjustment points.

Fig. 1

■ Schematic Diagram (Parts list on page 26~29.)

	Page
A TUNER CIRCUIT	8, 9
B CONNECTOR CIRCUIT	10
C INPUT/OUTPUT CIRCUIT	11
D MAIN CIRCUIT	11~13
E FL CIRCUIT	14, 15
F OPERATION CIRCUIT	15

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

Notes:

- **S901** : Record timer switch (⊖REC)
- **S902** : Play timer switch (⊖PLAY)
- **S903** : Clock/Timer switch (CLOCK/TIMER)
- **S904** : Set switch (SET)
- **S905, 906** : Tuning/Time adjust switch (TUNING/TIME ADJUST)
(S905: DOWN, S906: UP)
- **S907** : Tuning mode select switch (TUNING)
- **S908** : Source input select switch (INPUT SELECTOR)
- **S909** : [E] : FM band select switch (TUNER, FM)
[EG] : Display mode switch (RDS DISPLAY MODE)
- **S910** : [E] : AM band select switch (TUNER, AM)
[EG] : FM/AM band select switch (FM/AM)

• 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 values and waveform are measured as indicated in the schematic diagram when test points between **TP602** and **TP610**, and between **TP610** and **A.GND**, and between **TP609** and **A.GND** are shoted.
No mark: FM MODE (): AM MODE

• 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 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.

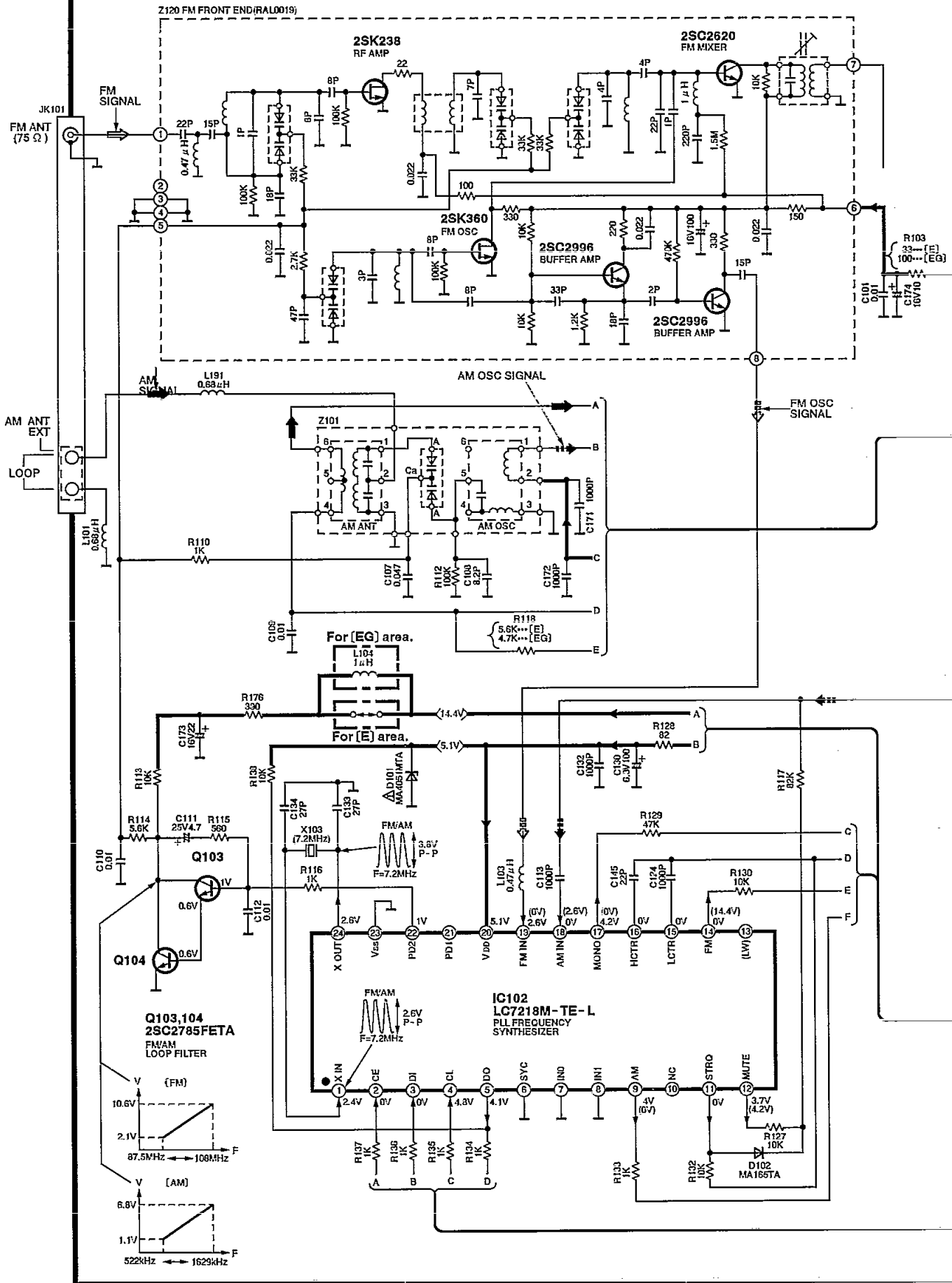
Put a conductive mat on the work table.

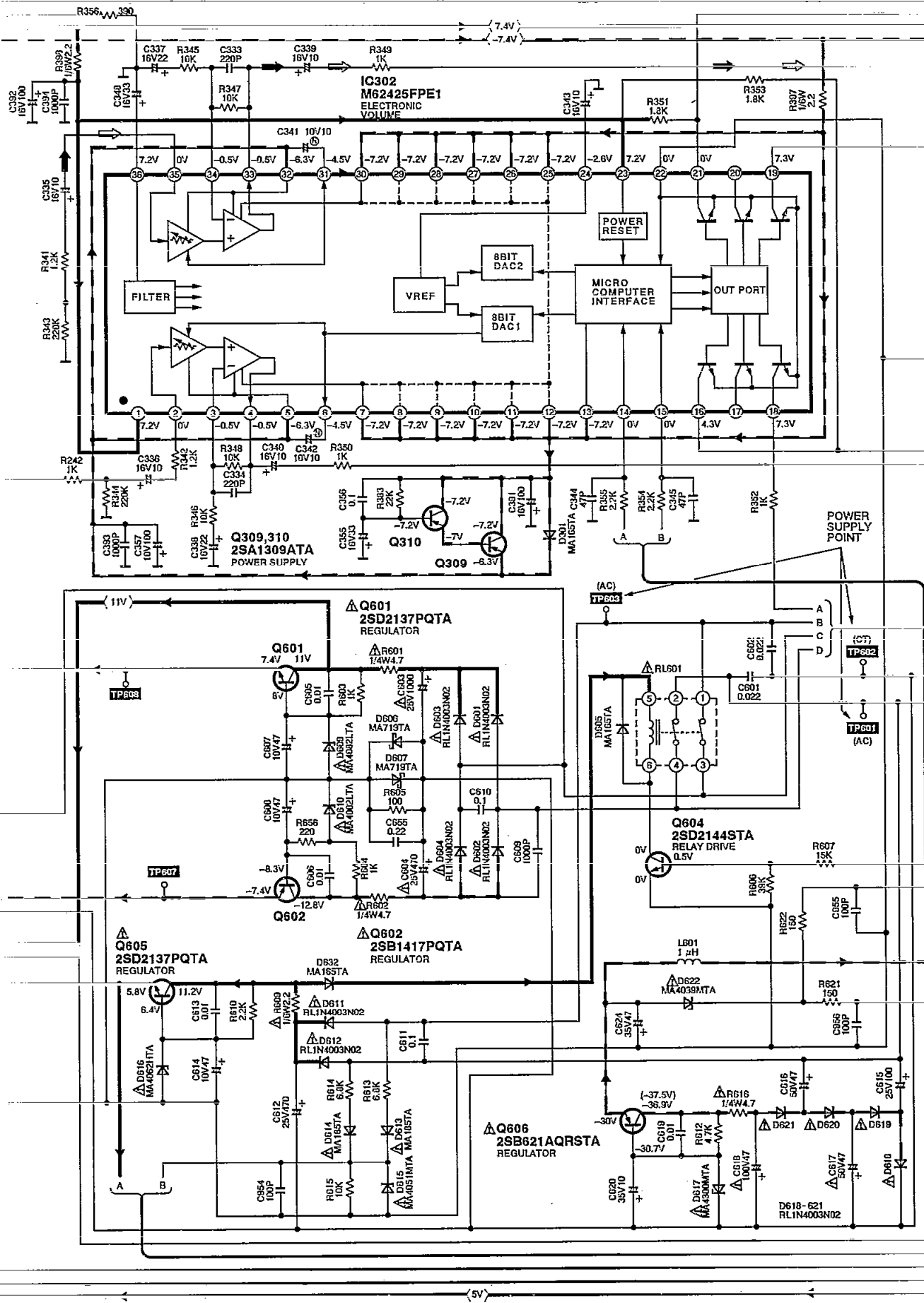
Do not touch the legs of IC or LSI with the fingers directly.

• Voltage and signal line

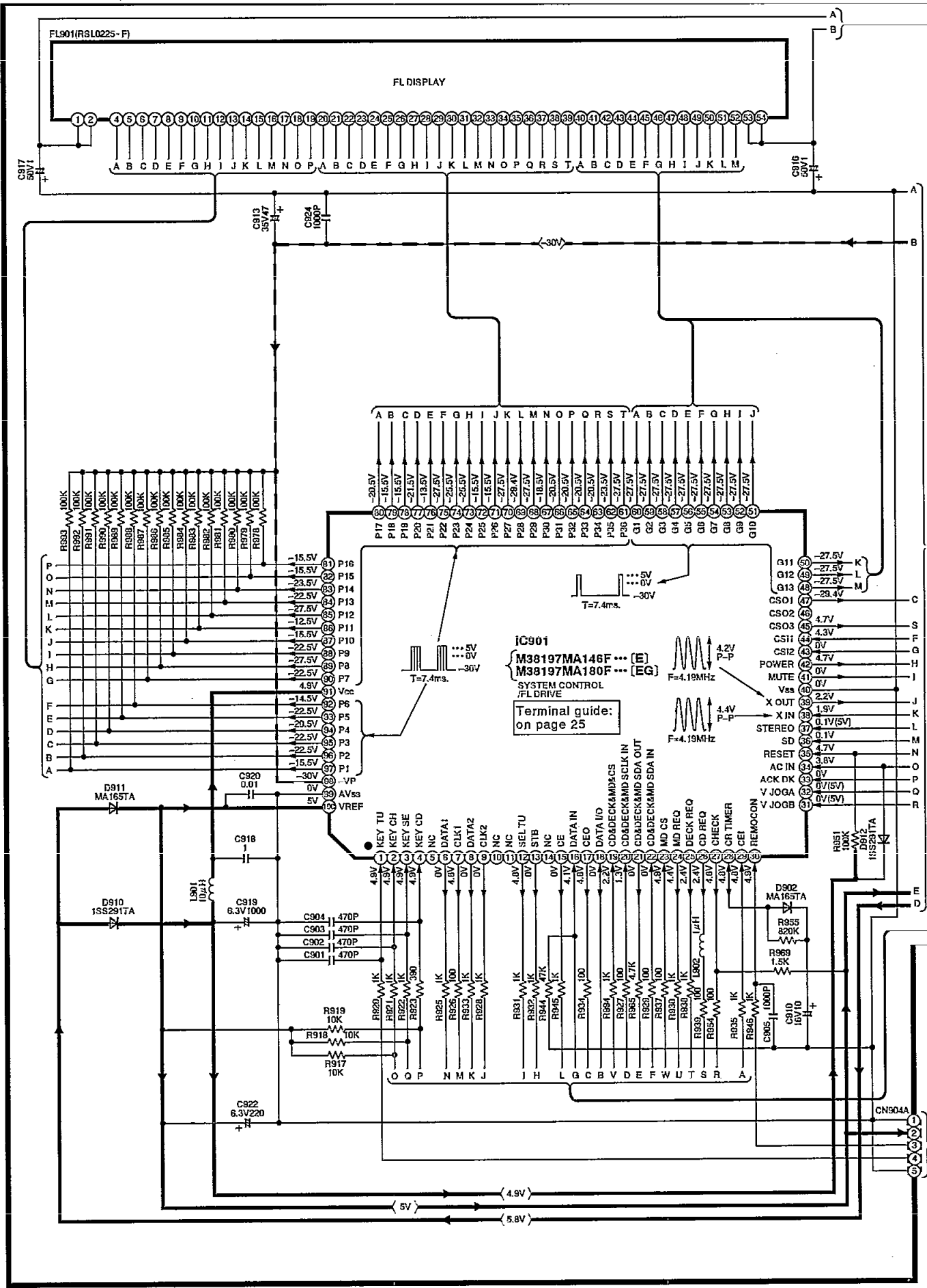
- | | | | |
|---|--|--|---|
|  : Positive voltage line |  : AM signal line |  : AM OSC signal line |  : REC OUT signal line |
|  : Negative voltage line |  : FM signal line |  : AM OSC signal line | |

A TUNER CIRCUIT (P.C.Board: on page 16)

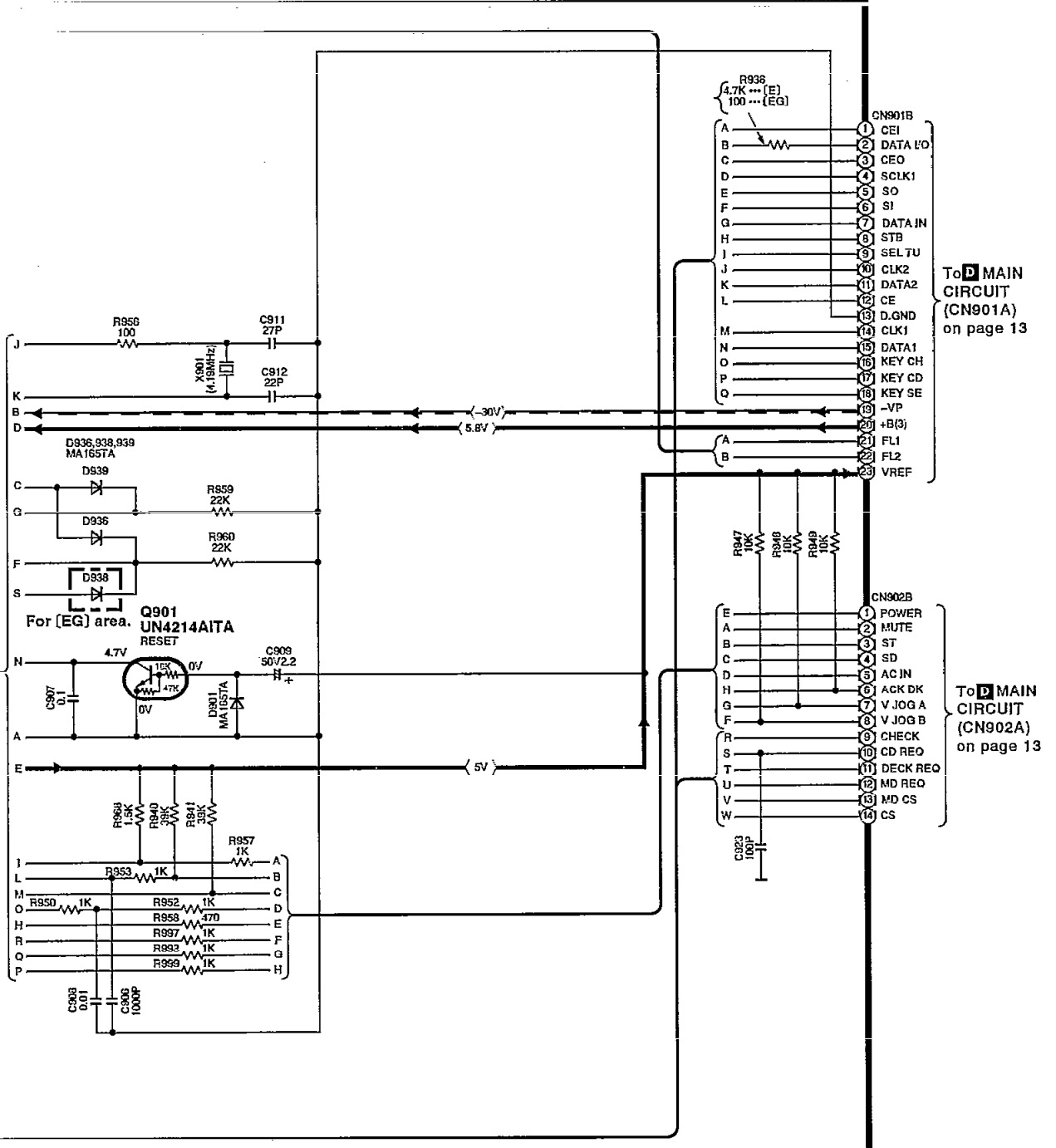




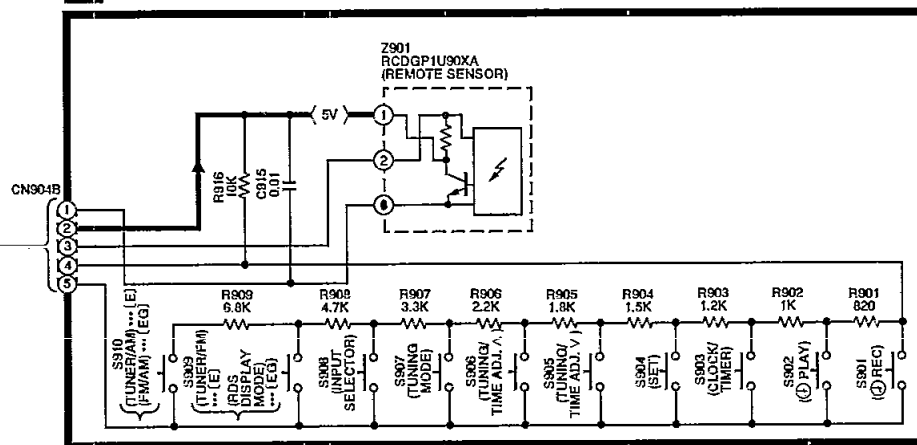
E FL CIRCUIT (P.C.Board: on page 19)



Notes: ● → : AM signal line
 → : REC OUT signal line
 ⇨ : FM signal line



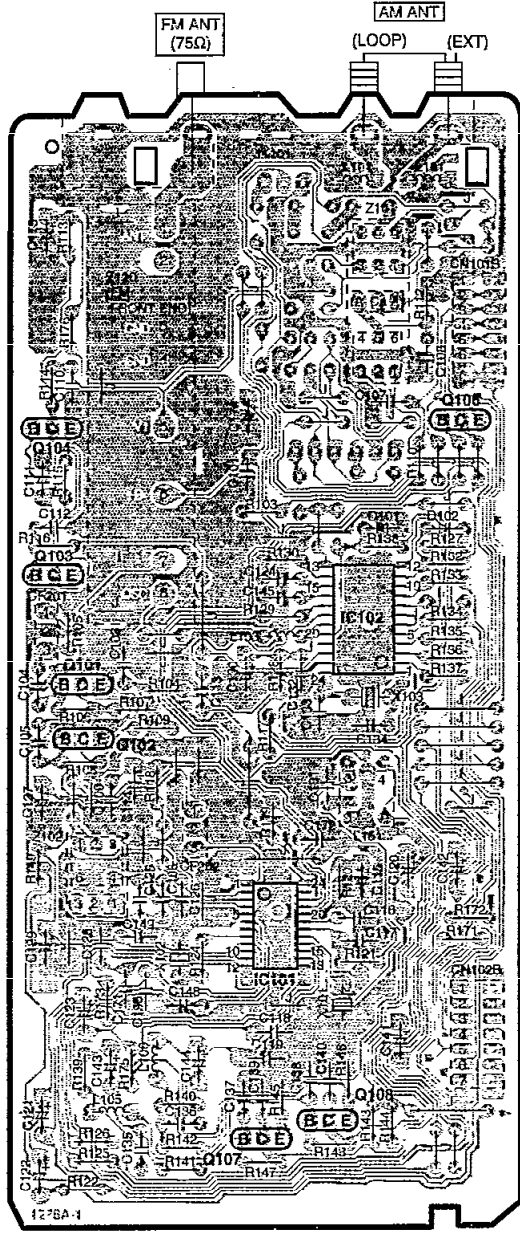
F OPERATION CIRCUIT (P.C.Board: on page 19)



Printed Circuit Board Diagram

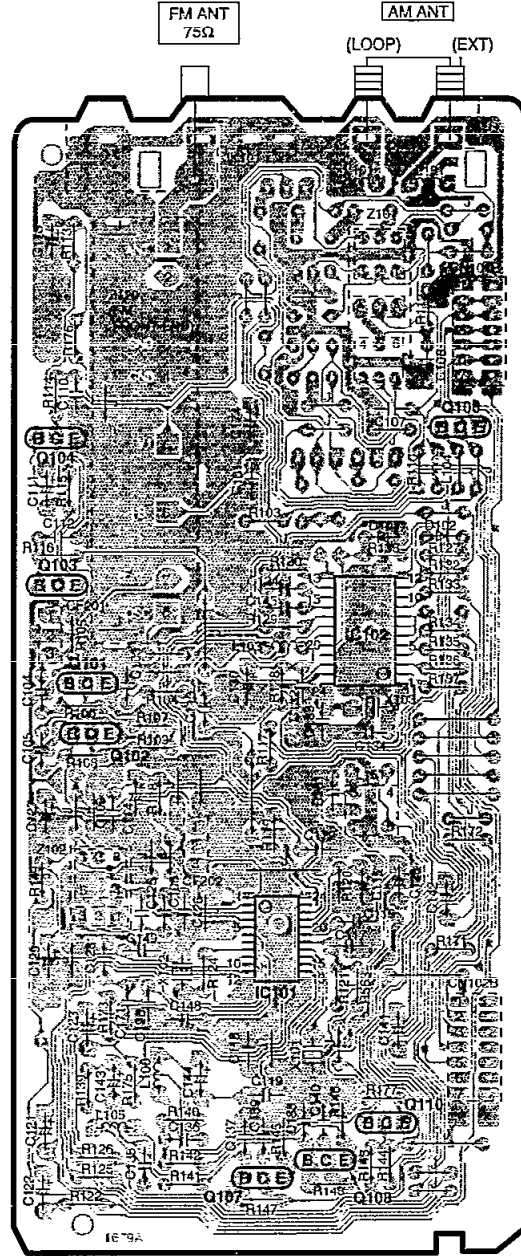
(This schematic diagram may be modified at any time with the development of new technology.)

A TUNER P.C.B.
For [E] area.



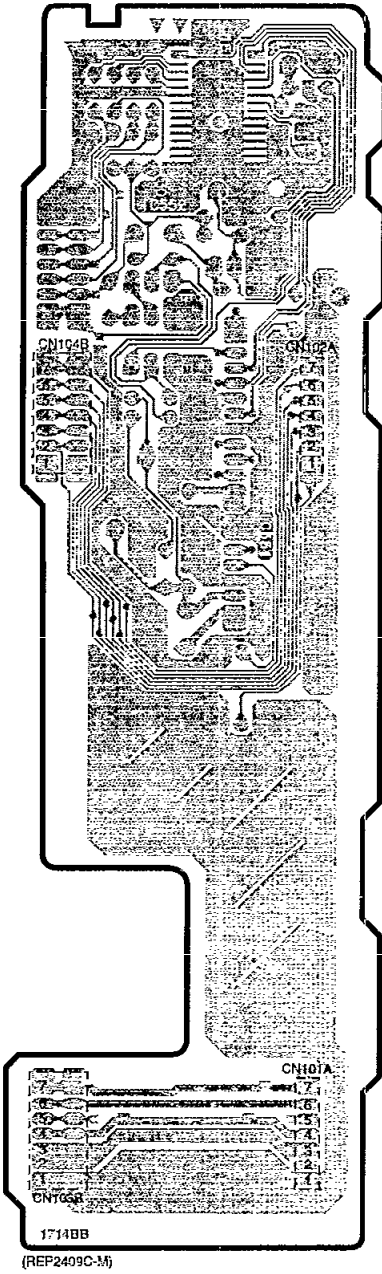
(REP1930B-T)

A TUNER P.C.B.
For [EG] area.

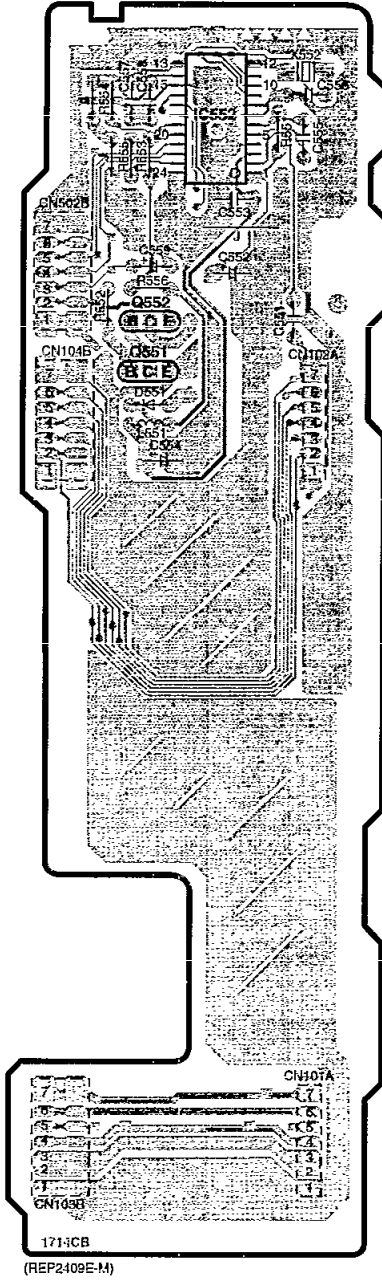


(REP2374A-T)

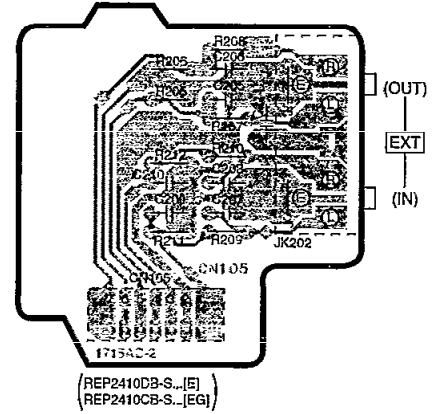
B CONNECTOR P.C.B.
For [E] area.



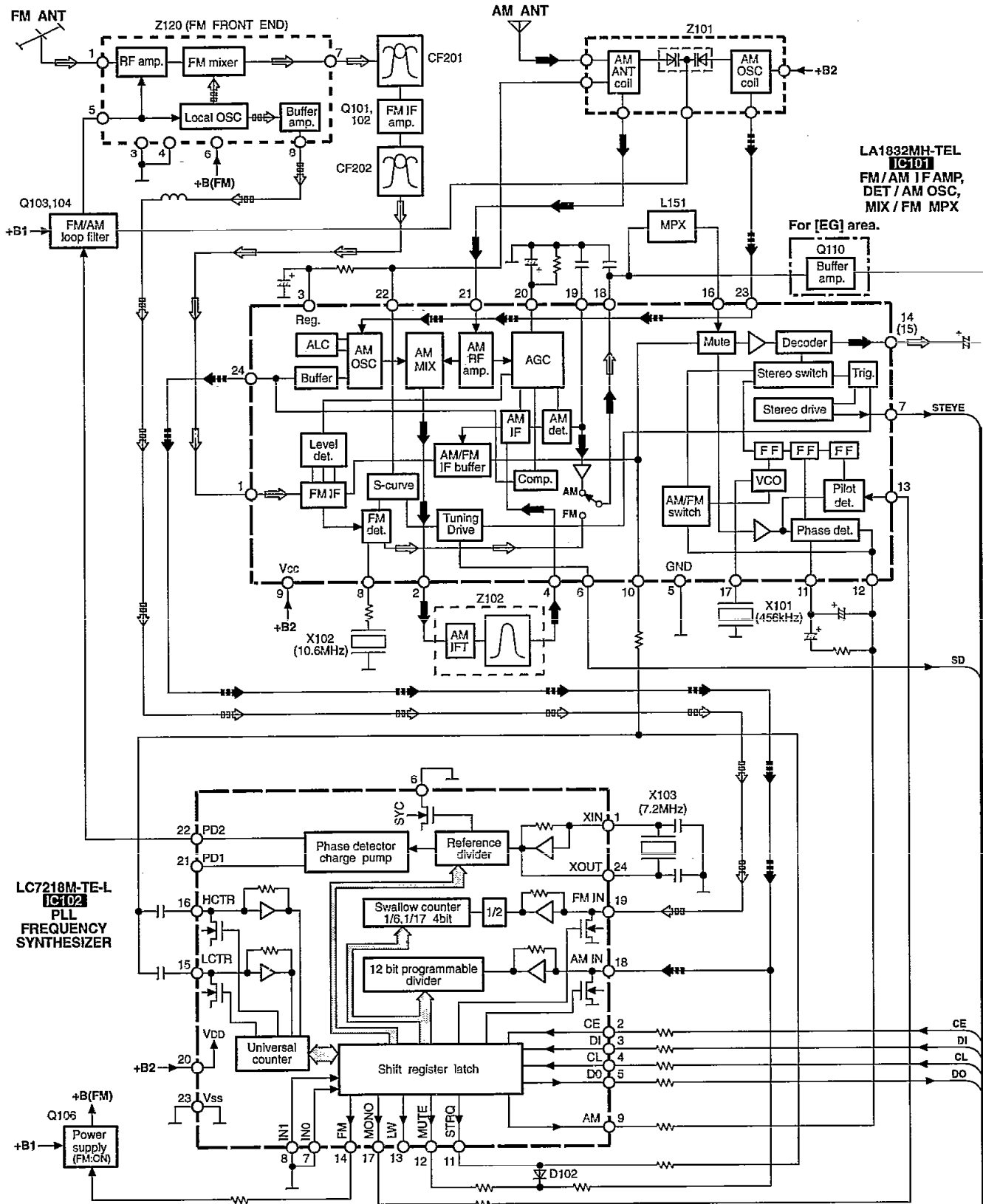
B CONNECTOR(RDS) P.C.B.
For [EG] area.

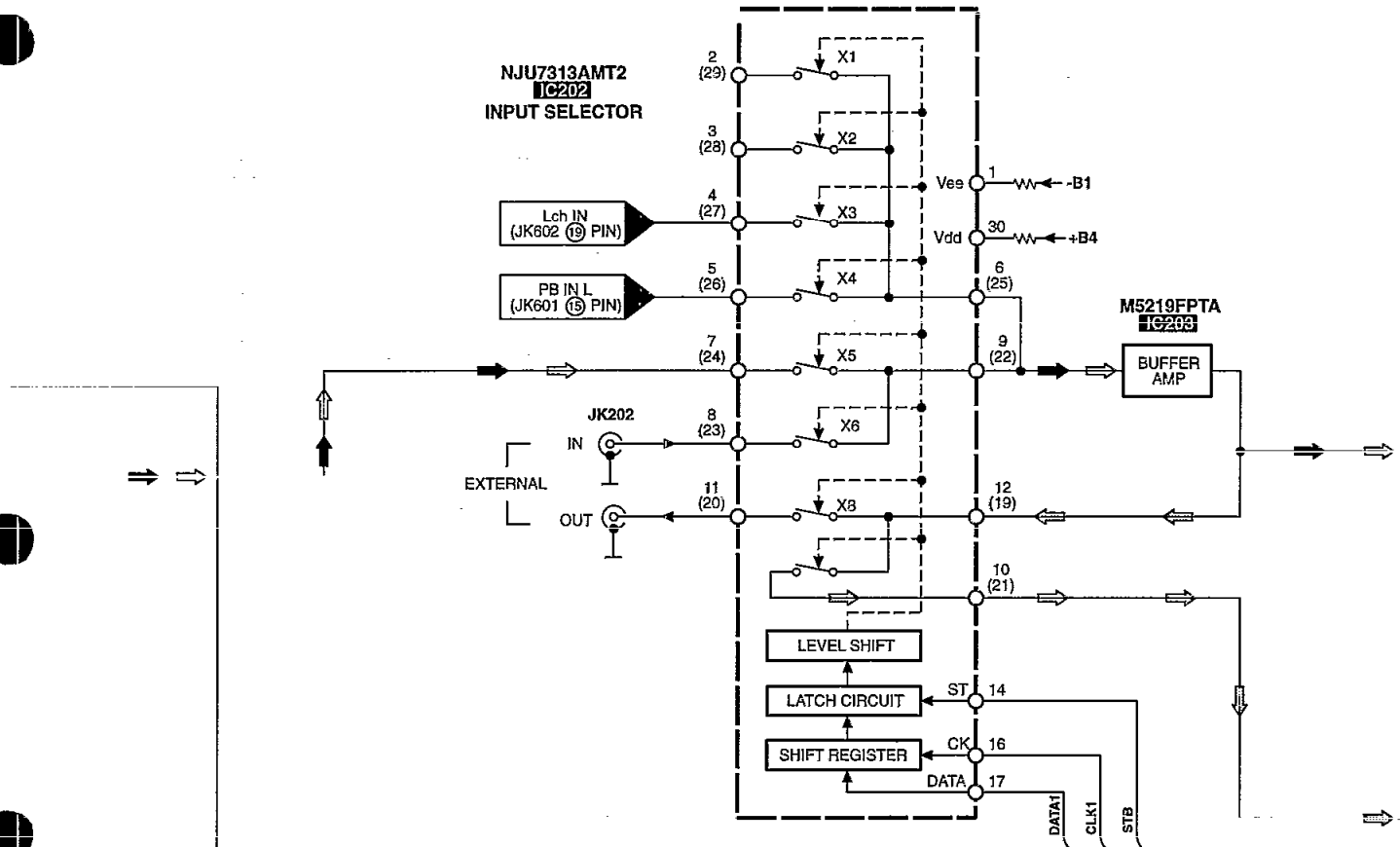


C INPUT/OUTPUT P.C.B.

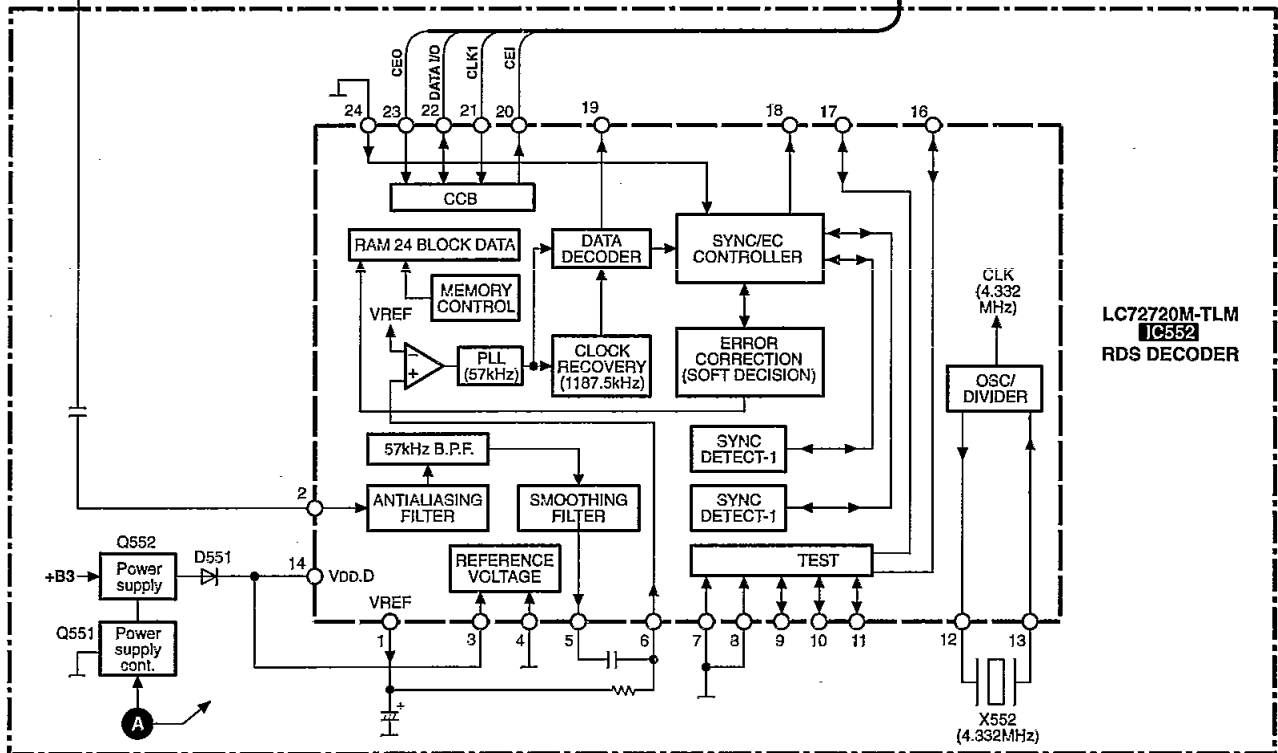


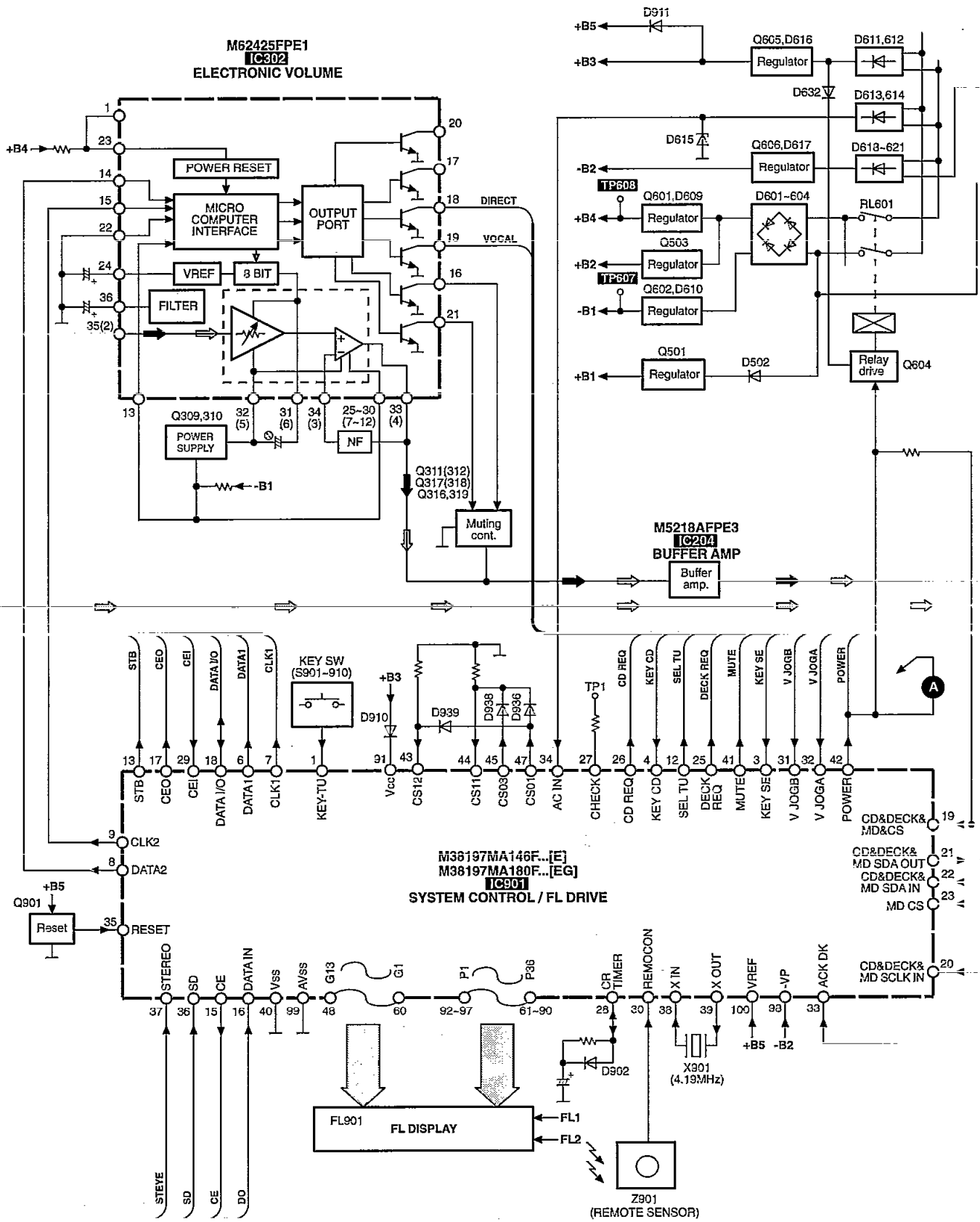
Block Diagram

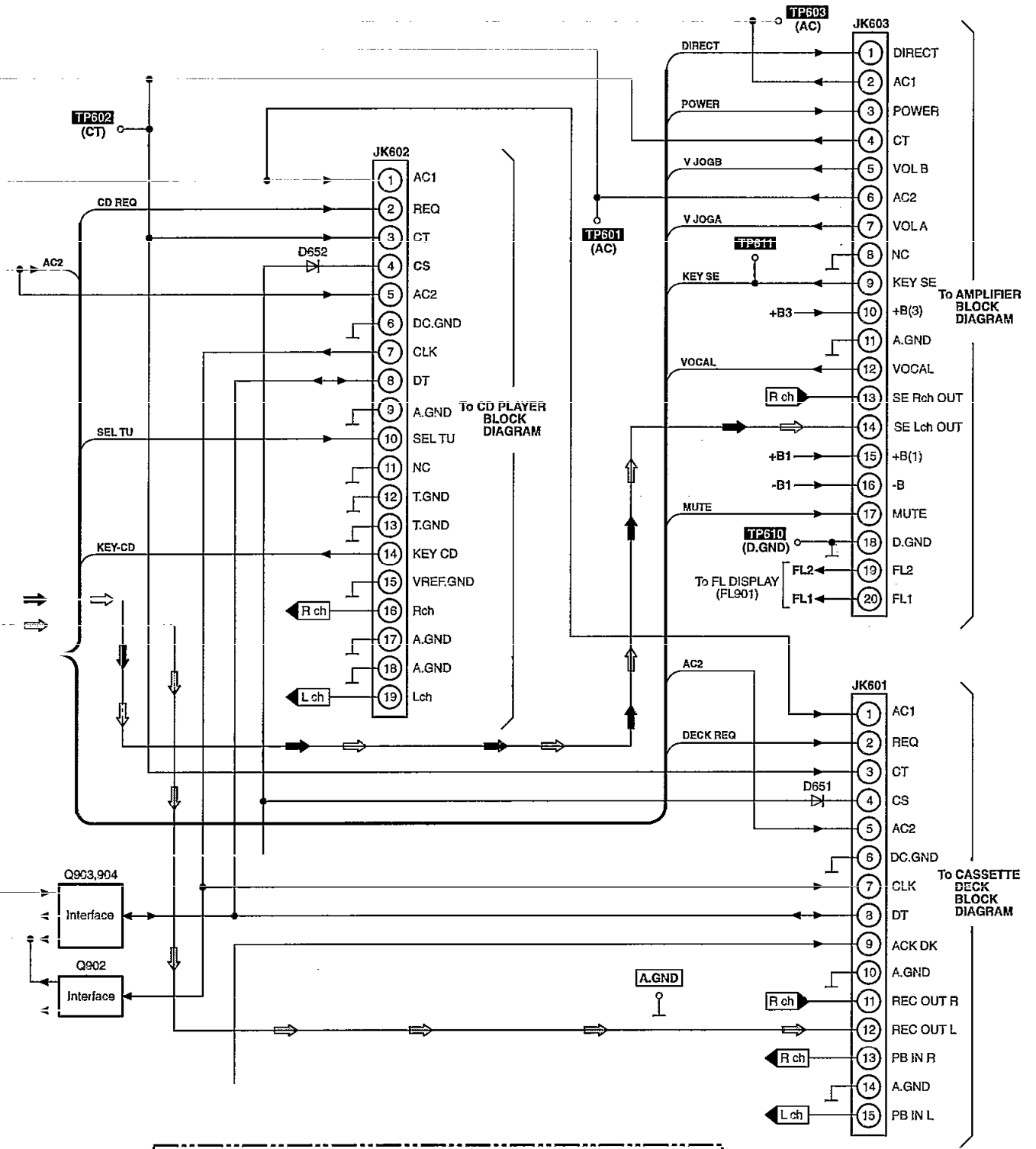




For [EG] area.



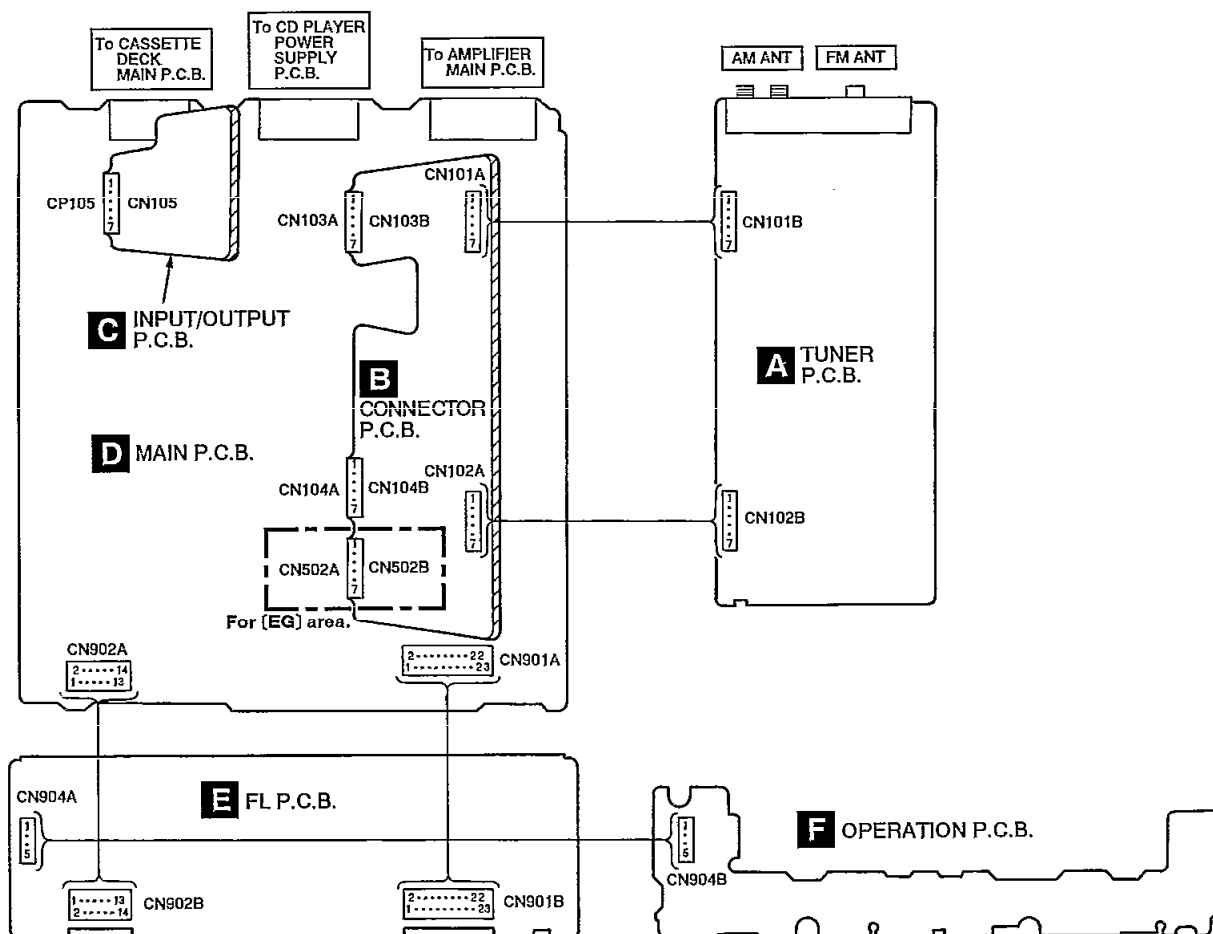




Notes)

- Signal line \Rightarrow : FM signal \Rightarrow : AM signal \Rightarrow : FM OSC signal
- \Rightarrow : AM OSC signal \Rightarrow : Rec out signal
- () indicates pin No. of right channel.

■ Wiring Connection Diagram



Terminal Function of IC's

● IC901 (M3819MA146F...for [E] area/M38197MA180F...for [EG] area): SYSTEM CONTROL/FL DRIVE

Pin No.	Terminal Name	I/O	Function
1	KEY-TU	I	Tuner operation switch signal input
2	KEY-CH	I	Input selector operation switch signal input
3	KEY-SE	I	SE-HD51 operation switch signal input
4	KEY-CD	I	SL-HD51 operation switch signal input
5	NC	—	Not used, open
6	DATA 1	O	Serial data output terminal
7	CLK 1	O	Serial clock signal output terminal
8	DATA 2	O	Serial data output terminal
9	CLK 2	O	Serial clock signal output terminal
10, 11	NC	—	Not used, open
12	SEL-TU	O	Tuner select signal output
13	STB	O	Strobe signal output
14	NC	—	Not used, open
15	CE	O	Chip enable output
16	DATA IN	I	Serial data input terminal
17	GEO	O	Serial data output terminal for (EG) area only
18	DATA I/O	I/O	Serial data input/output terminal for (EG) area only
19	CD & DECK & MD CS	I	Serial data input terminal
20	CD & DECK & MD SCLK IN	I	Serial clock signal input terminal
21	CD & DECK & MD SDA OUT	O	Serial data output terminal
22	CD & DECK & MD SDA IN	I	Serial data input terminal
23	MD CS	I	Chip select signal input for MD
24	MD REQ	O	Request signal output for MD
25	DECK REQ	O	Request signal output for RS-HD81
26	CD REQ	O	Request signal output for SL-HD51
27	CHECK	O	Clock checking terminal
28	CR TIMER	I/O	Capacitor and resistor oscillation terminal

Pin No.	Terminal Name	I/O	Function
29	CEI	I	Serial data input terminal for (EG) area only
30	REMOCON	I	Remote control signal input
31	V-JOGB	I	Volume control signal input
32	V-JOGA	I	
33	ACK DK	I	Serial data input for RS-HD81
34	AC IN	I	AC power in detection signal input
35	RESET	I	Reset signal input
36	SD	I	SD control signal input for tuner circuit
37	STEREO	I	STEREO signal input for tuner circuit
38	XIN	I	Connected to the ceramic oscillator
39	XOUT	O	
40	Vss	—	GND terminal
41	MUTE	O	Muting control signal output
42	POWER	O	Power ON/OFF control signal output
43	CSI 2	I	Connect to GND through the resistor
44	CSI 1	I	
45	CSO 3	O	Connect to GND through the diode
46	OSO 2	O	Not used, open
47	CSO 1	O	Connect to GND through the diode
48 ~ 60	G13 ~ G1	O	Grid control signal output
61 ~ 90	P36 ~ P7	O	Segment control signal output
91	VCC	—	Power supply (+5V)
92 ~ 97	P6 ~ P1	O	Segment control signal output
98	-VP	—	Negative power supply
99	AVSS	—	Connected to GND
100	VREF	—	Reference voltage input terminal

Replacement Parts List

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 manufacturer'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.

* Capacity values are in microfarads (μ F) 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.	Part Name & Description	Pcs	Remarks
1	RHD30073-K	SCREW	4	
2	XTBS26+8J	SCREW	9	
3	XTB3+8JFZ	SCREW	1	
4	REZ0883	FFC(14P)	1	
5	REZ0944	FFC(23P)	1	
6	XTBS3+8JFZ1	SCREW	10	
7	RGK0817-1M	SIDE PANEL (L)	1	
8	RKA0076-N	FOOT	4	
9	RGK0818-1M	SIDE PANEL (R)	1	
10	PMN0195	FL HOLD PIECE	2	
11	SHE170-2	P.C.B. SUPPORT	4	
12	RFKGTHD51E-N	FRONT PANEL ASS'Y	1 (E)	
12	RFKGTHD51EGN	FRONT PANEL ASS'Y	1 (EG)	
13	RGK0819-N3	SIDE ORNAMENT (L)	1	
14	RGK0820-N3	SIDE ORNAMENT (R)	1	
15	XTB3+12JFZ	SCREW	4	
16	RGU1394-S	BUTTON	1 (E)	
16	RGU1394A-S	BUTTON	1 (EG)	
C101	ECBT1C103NS5	16V 0.01U	1	
C103	ECBT1C103NS5	16V 0.01U	1	
C104, 05	ECBT1H102KB5	50V 1000P	2	
C106	ECBT1C103NS5	16V 0.01U	1	
C107	ECBT1H4732F5	50V 0.047U	1	
C108	ECBT1H8R2KCS	50V 8.2P	1	
C109, 10	ECBT1C103NS5	16V 0.01U	2	
C111	ECEA1EKA4R7B	25V 4.7U	1	
C112	ECBT1C103NS5	16V 0.01U	1	
C113	ECBT1H102KB5	50V 1000P	1	
C114	RCE1HKA3R3BG	50V 3.3U	1	
C115	ECEA1EKA4R7B	25V 4.7U	1	
C116	ECBT1C822KSS	16V 8200P	1	
C117	ECQP1391JZ3	100V 390P	1	
C118, 19	ECFR1C103KR	16V 0.01U	2	
C120, 21	ECEA1HKA010B	50V 1U	2	
C122	ECEA1HKA2R2B	50V 2.2U	1	
C123	ECEA1HKA010B	50V 1U	1	
C124	ECBT1H102KB5	50V 1000P	1	
C125	ECBT1H150JCS	50V 15P	1	

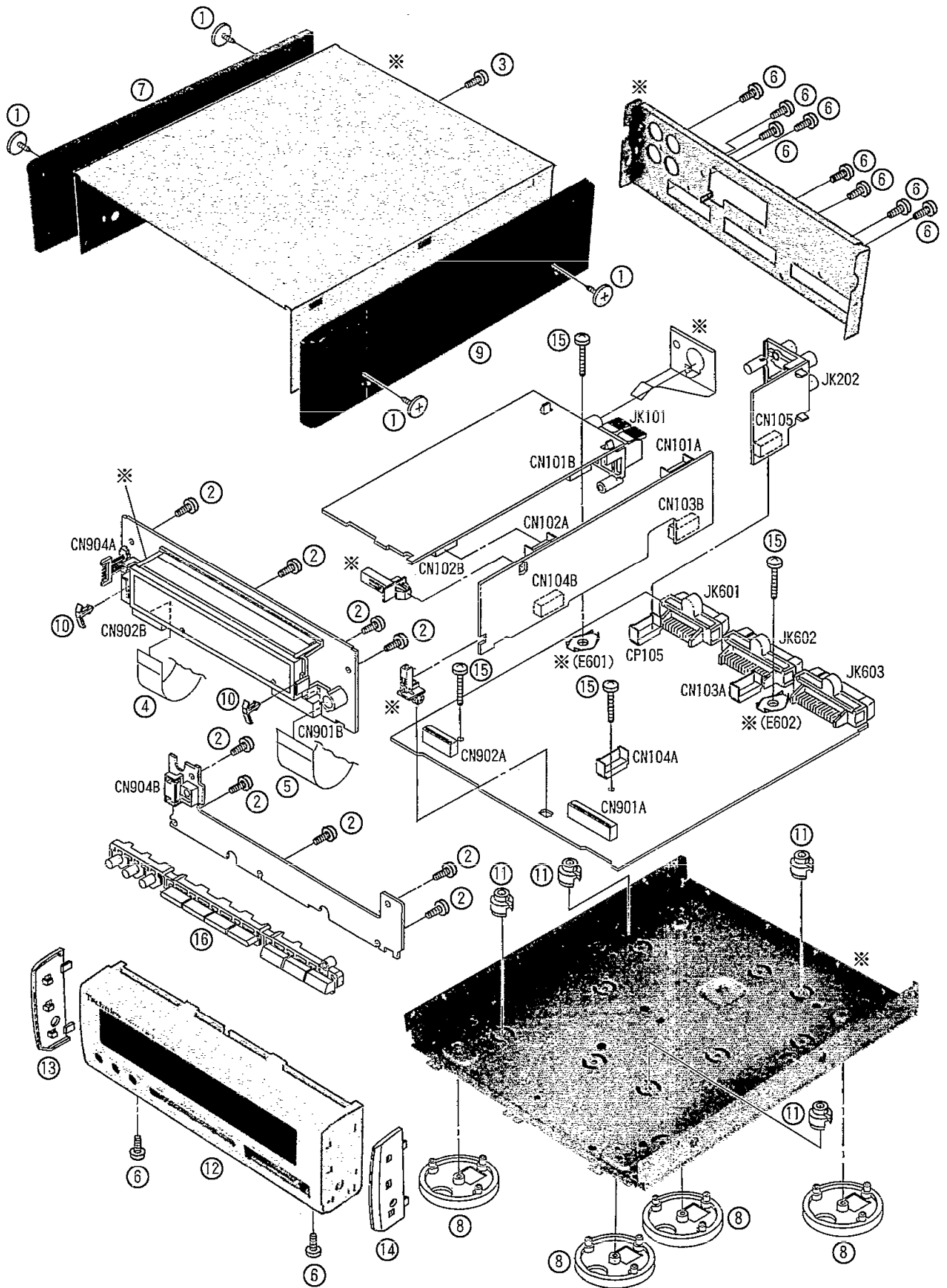
Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
C126	ECBT1H4732F5	50V 0.047U	1	
C127	ECEA1CKA220B	16V 22U	1	
C128	ECBT1H102KB5	50V 1000P	1	
C129, 30	ECEA0JKA101B	6.3V 100U	2	
C132	ECBT1H102KB5	50V 1000P	1	
C133, 34	ECBT1H270JU5	50V 27P	2	
C135, 36	ECBT1C103KS5	16V 0.01U	2	
C137, 38	ECBT1H561KB5	50V 560P	2	
C139, 40	ECBT1C682KR5	16V 6800P	2	
C141-44	ECEA1HKA010B	50V 1U	4	
C145	ECBT1H220JCS	50V 22P	1	
C148	ECBT1C103NS5	16V 0.01U	1	
C149	ECBT1H1042F5	50V 0.1U	1	
C171, 72	ECBT1H102KB5	50V 1000P	2	
C173	ECEA1CKA220B	16V 22U	1	
C174	RCE1CKA100BG	16V 10U	1	
C181	ECBT1H471KB5	50V 470P	1	
C196	ECBT1H102KB5	50V 1000P	1	
C205-08	ECBT1H101KB5	50V 100P	4	
C209, 10	ECBT1H180J5	50V 18P	2	
C211	ECBT1H102KB5	50V 1000P	1	
C223, 24	ECBT1H1042F5	50V 0.1U	2	
C225-27	ECBT1H470J5	50V 47P	3	
C231, 32	ECBT1E1032F5	25V 0.01U	2	
C233, 34	ECBT1H102KB5	50V 1000P	2	
C235, 36	ECBT1H101KB5	50V 100P	2	
C237, 38	ECBT1H470J5	50V 47P	2	
C321, 22	ECBT1E1032F5	25V 0.01U	2	
C323, 24	ECBT1H102KB5	50V 1000P	2	
C325, 26	ECBT1H101KB5	50V 100P	2	
C327, 28	RCE1AKA470BG	10V 47U	2	
C333, 34	ECBT1H221KB5	50V 220P	2	
C335, 36	RCE1CKA100BG	16V 10U	2	
C337, 38	ECEA1CKA220B	16V 22U	2	
C339, 40	RCE1CKA100BG	16V 10U	2	
C341, 42	ECEA1AKN100B	10V 10U	2	
C343	RCE1CKA100BG	16V 10U	1	
C344, 45	ECBT1H470J5	50V 47P	2	
C348	ECEA1CKA330B	16V 33U	1	
C350	ECEA0JKA470B	6.3V 47U	1	
C351, 52	RCE1CKA100BG	16V 10U	2	
C355	ECEA1CKA330B	16V 33U	1	
C356	ECBT1H1042F5	50V 0.1U	1	
C357	RCE1AKA101BG	10V 100U	1	
C365	ECEA0JKA470B	6.3V 47U	1	
C391, 92	ECEA1CKA101B	16V 100U	2	
C393, 94	ECBT1H102KB5	50V 1000P	2	
C501	ECEA1EKA101B	25V 100U	1	
C502	ECA1VM101B	35V 100U	1	
C503	ECBT1E1032F5	25V 0.01U	1	
C504	ECEA1EKA101B	25V 100U	1	
C509	ECBT1E1032F5	25V 0.01U	1	
C510	RCE1AKA101BG	10V 100U	1	
C513-15	ECBT1H102KB5	50V 1000P	3	
C551	ECBT1H331KB5	50V 3300P	1 (EG)	
C552	RCE1CKA100BG	16V 10U	1 (EG)	
C553	ECBT1H1042F5	50V 0.1U	1 (EG)	
C554	ECA0JKF101B	6.3V 100U	1 (EG)	
C555	ECBT1H561KB5	50V 560P	1 (EG)	
C556, 57	ECBT1H470J5	50V 47P	2 (EG)	
C558	ECBT1H102KB5	50V 1000P	1 (EG)	
C559	ECA0JKF101B	6.3V 100U	1 (EG)	
C601, 02	ECKR1H2232F5	50V 0.022U	2	
Δ C603	ECA1EM102B	25V 1000U	1	
Δ C604	RCE1EM471BV	25V 470U	1	
C605, 06	ECBT1E1032F5	25V 0.01U	2	
C607, 08	RCE1AKA470BG	10V 47U	2	
C609	ECBT1H102KB5	50V 1000P	1	
C610, 11	ECBT1H1042F5	50V 0.1U	2	
C612	RCE1EM471BV	25V 470U	1	
C613	ECBT1E1032F5	25V 0.01U	1	
C614	RCE1AKA470BG	10V 47U	1	
C615	ECEA1EKA101B	25V 100U	1	
C616	ECA1HM470B	50V 47U	1	
Δ C617	ECA1HM470B	50V 47U	1	

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
△ C618	ECA2AM470B	100V 47U	1	
C619	ECKR1H103ZF5	50V 0.01U	1	
C620	RCE1VKA100BG	35V 10U	1	
C623	RCE1AKA101BG	10V 100U	1	
C624	ECEA1VKA470B	35V 47U	1	
C631-36	ECBT1H101KB5	50V 100P	1	
C651, 52	ECBT1H104ZF5	50V 0.1U	1	
C655	ECQV1H224JM3	50V 0.22U	1	
C656	ECQV1H474JM3	50V 0.47U	1	
C901-04	ECBT1H471KB5	50V 470P	4	
C905, 06	ECBT1H102KB5	50V 1000P	2	
C907	ECBT1H104ZF5	50V 0.1U	1	
C908	ECBT1E103ZF5	25V 0.01U	1	
C909	ECEA1HKA2R2B	50V 2.2U	1	
C910	RCE1CKA100BG	16V 10U	1	
C911	ECBT1H270JU5	50V 27P	1	
C912	ECBT1H220GG5	50V 22P	1	
C913	ECEA1VKA470B	35V 47U	1	
C915	ECBT1E103ZF5	25V 0.01U	1	
C916, 17	ECEA1HKA010B	50V 1U	2	
C918	ECBT1C105ZF5	16V 1U	1	
C919	RCE0JU102BV	6.3V 1000U	1	
C920	ECBT1E103ZF5	25V 0.01U	1	
C922	ECEA0JKA221B	6.3V 220U	1	
C923	ECBT1H101KB5	50V 100P	1	
C924	ECBT1H102KB5	50V 1000P	1	
C954-57	ECBT1H101KB5	50V 100P	4	
CF201	RLFFETNG001L	CERAMIC FILTER	1	
CF202	RLFFETNG001L	CERAMIC FILTER	1	
CN101A	RJT057W007-1	CONNECTOR (7P)	1	
CN101B	RJU057W007	SOCKET (7P)	1	
CN102A	RJT057W007-1	CONNECTOR (7P)	1	
CN102B	RJU057W007	SOCKET (7P)	1	
CN103A	RJT057W007-1	CONNECTOR (7P)	1	
CN103B	RJU057W007	SOCKET (7P)	1	
CN104A	RJT057W007-1	CONNECTOR (7P)	1	
CN104B, 05	RJU057W007	SOCKET (7P)	2	
CN502A	RJT057W007-1	CONNECTOR (7P)	1 (EG)	
CN502B	RJU057W007	SOCKET (7P)	1 (EG)	
CN901B	RJS1A6223-1	CONNECTOR (23P)	1	
CN901A	RJS1A6823	CONNECTOR (23P)	1	
CN902B	RJS1A6214-1	CONNECTOR (14P)	1	
CN902A	RJS1A6814	CONNECTOR (14P)	1	
CN904A	RJT066H05A	CONNECTOR (5P)	1	
CN904B	RJU066H05	SOCKET (5P)	1	
CP105	RJT057W007-1	CONNECTOR (7P)	1	
△ D101	MA4051MTA	DIODE	1	
D102	MA165	DIODE	1	
D301	MA165	DIODE	1	
△ D501, 02	MA185TA	DIODE	2	
△ D503	MA4150MTA	DIODE	1	
△ D504	MA4082LTA	DIODE	1	
D551	MA165TA	DIODE	1 (EG)	
△ D601-04	RL1N4003N02	DIODE	4	
D605	MA165	DIODE	1	
D606, 07	MA719TA	DIODE	2	
△ D609, 10	MA4082LTA	DIODE	2	
△ D611, 12	RL1N4003N02	DIODE	2	
△ D613, 14	MA185TA	DIODE	2	
△ D615	MA4051MTA	DIODE	1	
△ D616	MA4062-H	DIODE	1	
△ D617	MA4300MTA	DIODE	1	
△ D618-21	RL1N4003N02	DIODE	4	
△ D622	MA4039MTA	DIODE	1	
D632	MA165	DIODE	1	
D651, 52	MA165	DIODE	2	
D653	MA719TA	DIODE	1	
D901, 02	MA165	DIODE	2	
D910	1SS291TA	DIODE	1	
D911	MA165	DIODE	1	
D912	1SS291TA	DIODE	1	

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
D936	MA165	DIODE	1	
D938	MA165TA	DIODE	1 (EG)	
D939	MA165	DIODE	1	
D960	MA165	DIODE	1	
D963, 64	MA165	DIODE	2	
FL901	RSL0225-F	DISPLAY TUBE	1	
IC101	LA1832WH-TEL	IC	1	
IC102	LC7218W-TE-L	IC	1	
IC202	NJU7313AMT2	IC	1	
IC203	MS219FPTA	IC	1	
IC204	MS218AFPE3	IC	1	
IC302	MS2425FPE1	IC	1	
IC552	LC72720W-TLM	IC	1 (EG)	
IC901	M38197MA146F	IC	1 (E)	
IC901	M38197MA180F	IC	1 (EG)	
JK101	RJHS210W	JACK, ANTENNA	1	
JK202	SJF3069-5N	JACK, EXT	1	
JK601	RJT065K15	CONNECTOR (15P)	1	
JK602	RJT065K19	CONNECTOR (19P)	1	
JK603	RJT065K20	CONNECTOR (20P)	1	
L101	ELESNR68WA	COIL	1	
L103	ELEXT47MA9	COIL	1	
L104	ELEXT1R0KA9	COIL	1 (EG)	
L105, 06	ELELN822KL	COIL	2	
L151	SLM1B10W-1W	COIL	1	
L191	ELESNR68WA	COIL	1	
L551	ELEXT101KA9	COIL	1 (EG)	
L601	ELEXT1R0KA9	COIL	1	
L901	RLQA100JT-Y	COIL	1	
L902	ELEXT1R0KA9	COIL	1	
Q101, 02	2SC2787L	TRANSISTOR	2	
Q103, 04	2SC2785FETA	TRANSISTOR	2	
Q106	UN411JAITA	TRANSISTOR	1 (EG)	
Q106	UN411JFTA	TRANSISTOR	1 (E)	
Q107, 08	2SC3311ARSTA	TRANSISTOR	2	
Q110	2SC3311ARSTA	TRANSISTOR	1 (EG)	
Q309, 10	2SA1309ATA	TRANSISTOR	2	
Q311, 12	2SC3311AR	TRANSISTOR	2	
Q316	UN4115TA	TRANSISTOR	1	
Q317, 18	2SC3311AR	TRANSISTOR	2	
Q319	UN4115TA	TRANSISTOR	1	
△ Q501	2SC3940AQSTA	TRANSISTOR	1	
△ Q503	2SC3940AQSTA	TRANSISTOR	1	
Q551	UN4211	TRANSISTOR	1 (EG)	
Q552	UN411FTA	TRANSISTOR	1 (EG)	
△ Q601	2SD2137PQTA	TRANSISTOR	1	
△ Q602	2SB1417PQTA	TRANSISTOR	1	
Q604	2SD2144STA	TRANSISTOR	1	
△ Q605	2SD2137PQTA	TRANSISTOR	1	
△ Q606	2SB621AQRSTA	TRANSISTOR	1	
Q901	UN4214TA	TRANSISTOR	1	
Q902	DTC143XSTP	TRANSISTOR	1	
Q903, 04	2SC3311AR	TRANSISTOR	2	
R103	ERDS2TJ101T	1/4W 100	1 (EG)	
R103	ERDS2TJ330T	1/4W 33	1 (E)	
R104	ERDS2FJ103	1/4W 10K	1	
R105	ERDS2TJ471T	1/4W 470	1	
R106	ERDS2FJ474	1/4W 470K	1	
R107	ERDS2TJ331T	1/4W 330	1	
R108	ERDS2FJ474	1/4W 470K	1	
R109	ERDS2TJ331T	1/4W 330	1	
R110	ERDS2FJ102	1/4W 1K	1	
R112	ERDS2FJ104	1/4W 100K	1	
R113	ERDS2FJ103	1/4W 10K	1	
R114	ERDS2FJ562	1/4W 5.6K	1	
R115	ERDS2TJ561T	1/4W 560	1	
R116	ERDS2FJ102	1/4W 1K	1	
R117	ERDS2FJ823	1/4W 82K	1	
R118	ERDS2FJ562	1/4W 5.6K	1 (E)	

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks	Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
R118	ERDS2TJ472T	1/4W 4.7K	1	(EG)	R606	ERDS2FJ393	1/4W 39K	1	
R119	ERDS2TJ103T	1/4W 10K	1	(EG)	R607	ERDS2TJ153T	1/4W 15K	1	
R119	ERDS2TJ822T	1/4W 8.2K	1	(E)	△ R609	ERQ16NKM2R2E	1/6W 2.2	1	
R120	ERDS2TJ473T	1/4W 47K	1		R610	ERDS2FJ222	1/4W 2.2K	1	
R121	ERDS2TJ332T	1/4W 3.3K	1		R612	ERDS2FJ472	1/4W 4.7K	1	
R122	ERDS2FJ272	1/4W 2.7K	1		R613, 14	ERDS2FJ682	1/4W 6.8K	2	
R124	ERDS2TJ271T	1/4W 270	1		R615	ERDS2FJ103	1/4W 10K	1	
R125, 26	ERDS2TJ152T	1/4W 1.5K	2		△ R616	ERDS2FJ4R7	1/4W 4.7	1	
R127	ERDS2FJ103	1/4W 10K	1		R621, 22	ERDS2TJ151T	1/4W 150	2	
R128	ERDS2TJ820T	1/4W 82	1		R623, 24	ERDS2FJ224	1/4W 220K	2	
R129	ERDS2TJ473T	1/4W 47K	1		R627-30	ERDS2FJ472	1/4W 4.7K	4	
R130	ERDS2FJ103	1/4W 10K	1		R631, 32	ERDS2TJ471T	1/4W 470	2	
R132	ERDS2FJ103	1/4W 10K	1		R635, 36	ERDS2FJ472	1/4W 4.7K	2	
R133-37	ERDS2FJ102	1/4W 1K	5		R637, 38	ERDS2FJ150	1/4W 15	2	
R138	ERDS2FJ103	1/4W 10K	1		R641, 42	ERDS2TJ471T	1/4W 470	2	
R139, 40	ERDS2FJ272	1/4W 2.7K	2		R656	ERDS2TJ221T	1/4W 220	1	
R141, 42	ERDS2FJ102	1/4W 1K	2		R901	ERDS2TJ821T	1/4W 820	1	
R143, 44	ERDS2FJ222	1/4W 2.2K	2		R902	ERDS2FJ102	1/4W 1K	1	
R145, 46	ERDS2TJ821T	1/4W 820	2		R903	ERDS2TJ122T	1/4W 1.2K	1	
R147, 48	ERDS2FJ474	1/4W 470K	2		R904	ERDS2TJ152T	1/4W 1.5K	1	
R149	ERDS2FJ680	1/4W 68	1		R905	ERDS2TJ182T	1/4W 1.8K	1	
R171, 72	ERDS2FJ102	1/4W 1K	2		R906	ERDS2FJ222	1/4W 2.2K	1	
R173	ERDS2TJ471T	1/4W 470	1		R907	ERDS2TJ332T	1/4W 3.3K	1	
R175	ERDS2FJ102	1/4W 1K	1		R908	ERDS2FJ472	1/4W 4.7K	1	
R176	ERDS2TJ391T	1/4W 390	1		R909	ERDS2FJ682	1/4W 6.8K	1	
R177	ERDS2TJ472T	1/4W 4.7K	1	(EG)	R911	ERDS2TJ473T	1/4W 47K	1	
R205, 06	ERDS2FJ224	1/4W 220K	2		R916-19	ERDS2FJ103	1/4W 10K	4	
R207, 08	ERDS2FJ102	1/4W 1K	2		R920-22	ERDS2FJ102	1/4W 1K	3	
R209-12	ERDS2TJ822T	1/4W 8.2K	4		R923	ERDS2TJ391T	1/4W 390	1	
R225, 26	ERDS2TJ122T	1/4W 1.2K	2		R925	ERDS2FJ102	1/4W 1K	1	
R229-31	ERDS2FJ222	1/4W 2.2K	3		R926, 27	ERDS2FJ101	1/4W 100	2	
R233, 34	ERDS2TJ223T	1/4W 22K	2		R928	ERDS2FJ102	1/4W 1K	1	
R235, 36	ERDS2TJ822T	1/4W 8.2K	2		R929	ERDS2FJ101	1/4W 100	1	
R237, 38	ERDS2TJ123T	1/4W 12K	2		R930-33	ERDS2FJ102	1/4W 1K	4	
R239-44	ERDS2FJ102	1/4W 1K	6		R934	ERDS2FJ101	1/4W 100	1	
R331, 32	ERDS2FJ102	1/4W 1K	2		R935	ERDS2FJ102	1/4W 1K	1	
R333, 34	ERDS2FJ104	1/4W 100K	2		R936	ERDS2FJ472	1/4W 4.7K	1	(E)
R335, 36	ERDS2TJ562	1/4W 5.6K	2		R936	ERDS2TJ101T	1/4W 100	1	(EG)
R337, 38	ERDS2TJ123T	1/4W 12K	2		R937	ERDS2FJ101	1/4W 100	1	
R339, 40	ERDS2TJ471T	1/4W 470	2		R938	ERDS2FJ102	1/4W 1K	1	
R341, 42	ERDS2TJ122T	1/4W 1.2K	2		R939	ERDS2FJ101	1/4W 100	1	
R343, 44	ERDS2FJ224	1/4W 220K	2		R940, 41	ERDS2FJ393	1/4W 39K	2	
R345-48	ERDS2FJ103	1/4W 10K	4		R942	ERDS2FJ472	1/4W 4.7K	1	
R349, 50	ERDS2FJ102	1/4W 1K	2		R944	ERDS2TJ473T	1/4W 47K	1	
R351	ERDS2TJ182T	1/4W 1.8K	1		R945, 46	ERDS2FJ102	1/4W 1K	2	
R352	ERDS2FJ102	1/4W 1K	1		R947-49	ERDS2FJ103	1/4W 10K	3	
R353	ERDS2TJ182T	1/4W 1.8K	1		R950	ERDS2FJ102	1/4W 1K	1	
R354, 55	ERDS2FJ222	1/4W 2.2K	2		R951	ERDS2FJ104	1/4W 100K	1	
R356-58	ERDS2TJ391T	1/4W 390	3		R952, 53	ERDS2FJ102	1/4W 1K	2	
R361, 62	ERDS2TJ223T	1/4W 22K	2		R954	ERDS2FJ101	1/4W 100	1	
R363, 64	ERDS2FJ102	1/4W 1K	2		R955	ERDS2TJ824T	1/4W 820K	1	
R365, 66	ERDS2FJ105	1/4W 1M	2		R956	ERDS2FJ101	1/4W 100	1	
R372	ERDS2FJ105	1/4W 1M	1		R957	ERDS2FJ102	1/4W 1K	1	
R374	ERDS2TJ182T	1/4W 1.8K	1		R958	ERDS2TJ471T	1/4W 470	1	
R375, 76	ERDS2FJ102	1/4W 1K	2		R959, 60	ERDS2TJ223T	1/4W 22K	2	
R377, 78	ERDS2TJ121T	1/4W 120	2		R961	ERDS2FJ103	1/4W 10K	1	
R379, 80	ERDS2TJ223T	1/4W 22K	2		R962	ERDS2TJ473T	1/4W 47K	1	
R381	ERDS2FJ105	1/4W 1M	1		R963, 64	ERDS2FJ103	1/4W 10K	2	
R382	ERDS2FJ472	1/4W 4.7K	1		R965	ERDS2FJ472	1/4W 4.7K	1	
R383	ERDS2TJ223T	1/4W 22K	1		R966	ERDS2TJ223T	1/4W 22K	1	
R397, 98	ERQ16NKM2R2E	1W 2.2	2		R967	ERDS2FJ472	1/4W 4.7K	1	
R501	ERDS2TJ152T	1/4W 1.5K	1		R968, 69	ERDS2TJ152T	1/4W 1.5K	2	
R502	ERDS2TJ221T	1/4W 220	1		R970	ERDS2TJ473T	1/4W 47K	1	
R506	ERDS2TJ152T	1/4W 1.5K	1		R971	ERDS2FJ104	1/4W 100K	1	
R507	ERDS2TJ221T	1/4W 220	1		R978-93	ERDS2FJ104	1/4W 100K	16	
R508, 09	ERDS2TJ223T	1/4W 22K	2		R994	ERDS2FJ102	1/4W 1K	1	
R511, 12	ERDS2FJ472	1/4W 4.7K	2		R997-99	ERDS2FJ102	1/4W 1K	3	
R551	ERDS2TJ104T	1/4W 100K	1	(EG)					
R552, 53	ERDS2TJ102T	1/4W 1K	2	(EG)	△ RL501	RSY0017M-0	RELAY	1	
R554	ERDS2TJ103T	1/4W 10K	1	(EG)					
R555, 56	ERDS2TJ102T	1/4W 1K	2	(EG)					
R563	ERDS2TJ332T	1/4W 3.3K	1	(EG)	S901-10	EVQPT005Q	SW	10	
△ R601, 02	ERD2FCJ4R7	1/4W 4.7	2						
R603, 04	ERDS2FJ102	1/4W 1K	2		X101	RSXZ456KW07M	OSCILLATOR	1	
R605	ERDS2FJ101	1/4W 100	1		X102	PLFDG705DD	OSCILLATOR	1	
					X103	RSXC7M20S05T	OSCILLATOR	1	

Cabinet Parts Location



※ : Not supplies.



026