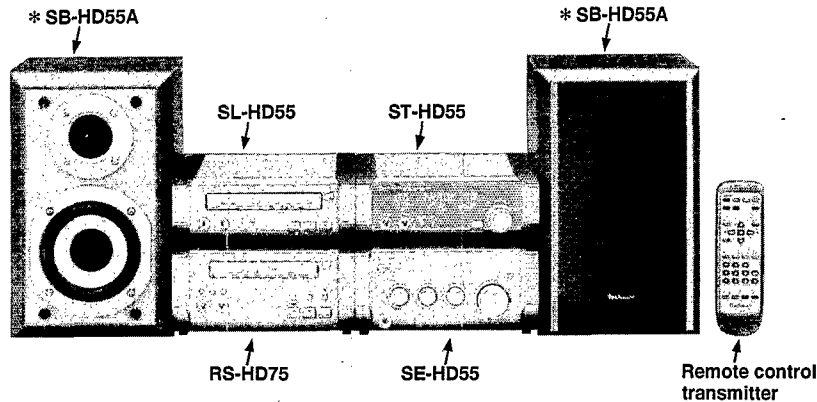


Service Manual

Tuner

Tuner

ST-HD55



Colour

(S)Silver Type

Area

EEurope.

EGGermany and Italy.

System: SC-HD55

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

Specifications

Pre-amplifier section

Input sensitivity/impedance

EXTERNAL: 300 mV/15 k Ω

Output level

EXTERNAL: 250 mV/1.5 k Ω

FM tuner section

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

S/N

MONO: 70 dB (75 dB, IHF)

Antenna terminal(s): 75 Ω (unbalance)

AM tuner section

Frequency range: 522—1629 kHz (9 kHz steps) 520—1630 kHz (10 kHz steps)

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 (W×H×D): 202(Wide)/ 76(High)/ 262.5(Depth) mm

Weight: 1.2 kg

Note:

1. Specifications are subject to change without notice.
2. Weight and dimensions are approximate.

System/SC-HD55:

Tuner: ST-HD55, Compact Disc Player: SL-HD55, Amplifier: SE-HD55, Cassette Deck: RS-HD75, Speakers: *SB-HD55A

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.

Technics®

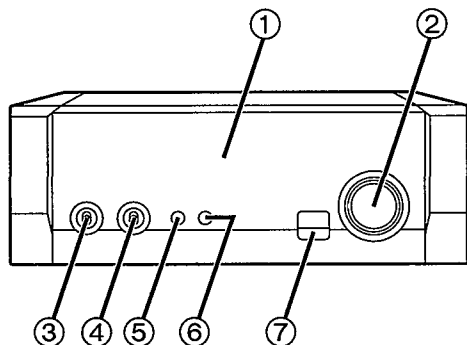
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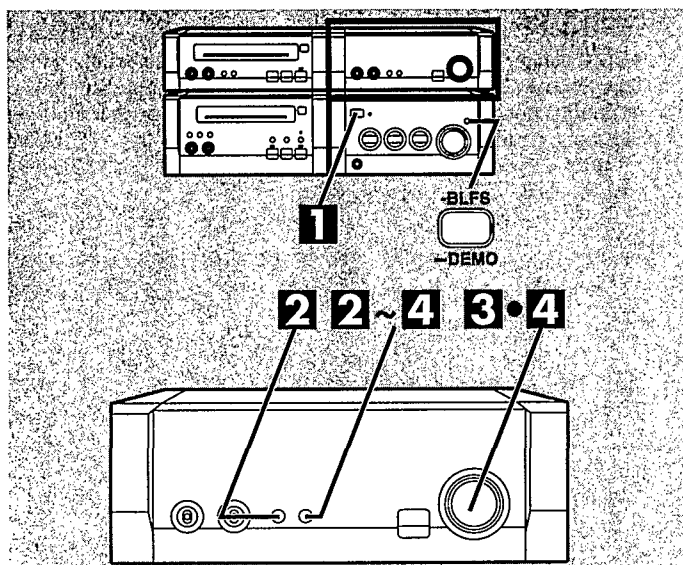
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Location of Controls



- ① **Display panel**
The display shows information for the cassette deck, CD player, and amplifier as well.
- ② **Station selection and JOG dial (TUNE/JOG)**
- ③ **Tuning mode switch (TUNE MODE)**
- ④ **Side light switch (SPOT)**
- ⑤ **Clock/timer button (CLOCK/TIMER)**
- ⑥ **Set button (SET)**
- ⑦ **Band select button (BAND)**

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.

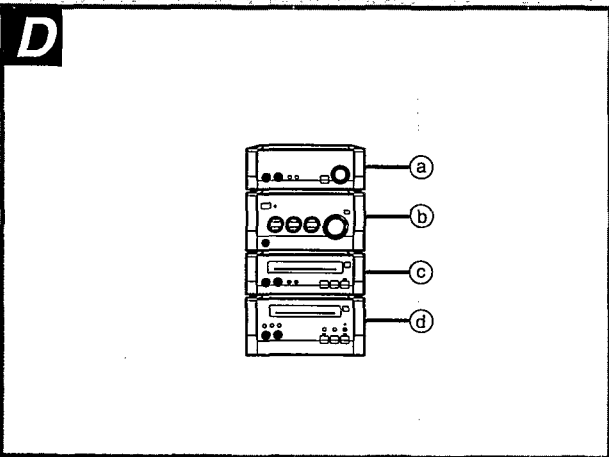
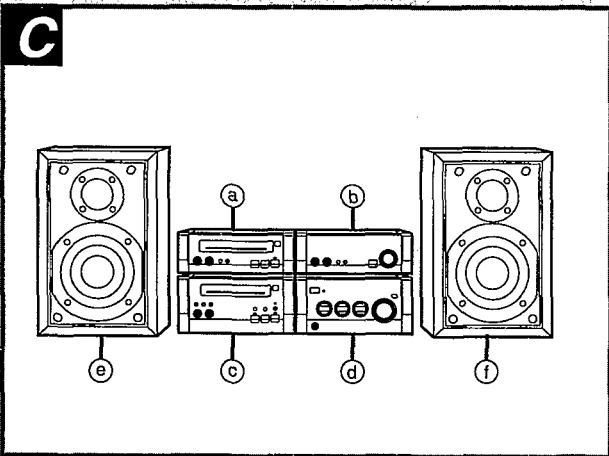
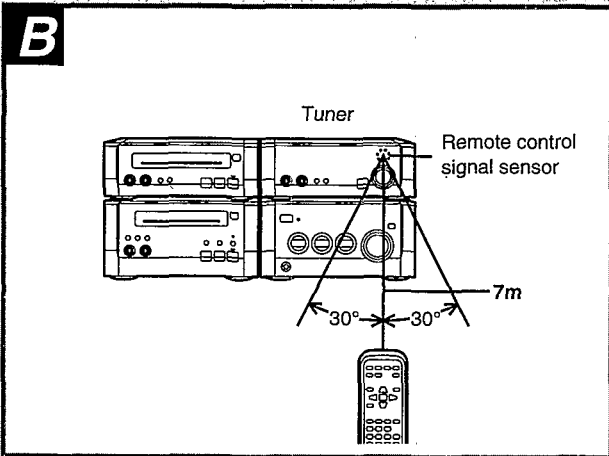
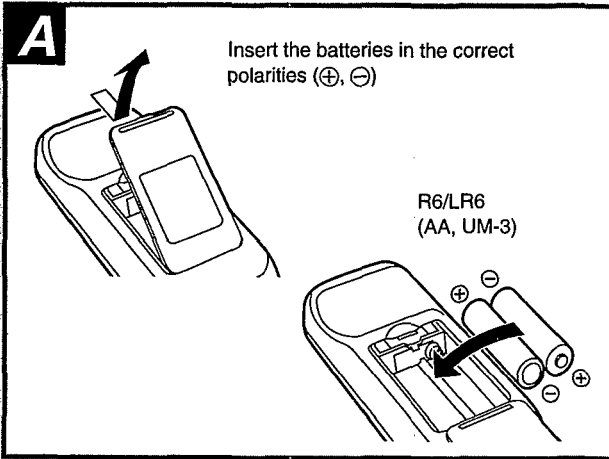
- 1** Switch on the power.
- 2** ① Press **CLOCK/TIMER** to show "CLOCK".
Every time you press the button,
CLOCK → ⊕ PLAY → ⊕ REC → Original display.
② Within 7 seconds:
Press SET.
- 3** ① Turn **TUNE/JOG** to show the day
② Press **SET**
- 4** ① Turn **TUNE/JOG** to show the time
② Press **SET**
The time is now set and the panel will return to the previous display.

To see the clock while the power is on

Press **CLOCK/TIMER**.
The clock display will appear for about 5 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.



■ Preparing for the Remote Control

Battery installation **A**

- Do not mix old and new batteries, or batteries of different types (manganese and alkaline, etc.).
- Never subject batteries to excessive heat or flame; do not attempt to disassemble them; and be sure they are not short-circuited.
- If the remote control is not to be used for a long period of time, remove the batteries and store them in a cool, dark place.
- Do not attempt to recharge alkaline or manganese batteries.
- Do not use rechargeable type batteries.

The batteries should be replaced if commands from the remote control transmitter do not operate the unit even when the transmitter is held close to the front panel.

Correct method of use **B**

- Aim the remote control's transmission window toward the unit's sensor. Avoid any obstacles.
- The maximum distance is within 7 meters directly facing toward the remote control signal sensor.
- Be sure the transmission window and the unit's sensor are free from dust. Excessive dust might affect its performance.
- The operation may not be correct if direct sunlight or other strong light source strikes the receiving sensor of this unit. If there is a problem, place the unit away from the light source.
- If this system is installed in a rack with glass doors, the glass doors' thickness or color might make it necessary to use the remote control a shorter distance from the system.
- Never place heavy items.
- Do not disassemble or reconstruct.
- Do not spill water or other liquids.

■ Installation

Locating the components

Side-by-side set-up **C**

- (a) CD player (SL-HD55)
- (b) Tuner (ST-HD55)
- (c) Cassette deck (RS-HD75)
- (d) Amplifier (SE-HD55)
- (e) Left speaker (SB-HD55A)
- (f) Right speaker (SB-HD55A)

Stacking **D**

- (a) Tuner (ST-HD55)
- (b) Amplifier (SE-HD55)
- (c) CD player (SL-HD55)
- (d) Cassette deck (RS-HD75)

Caution

Use the speakers only with the recommended system. Failure to do so may lead to damage to the amplifier and/or the speaker, and may result in the risk of fire. Consult a qualified service person if damage has occurred or if you experience a sudden change in performance.

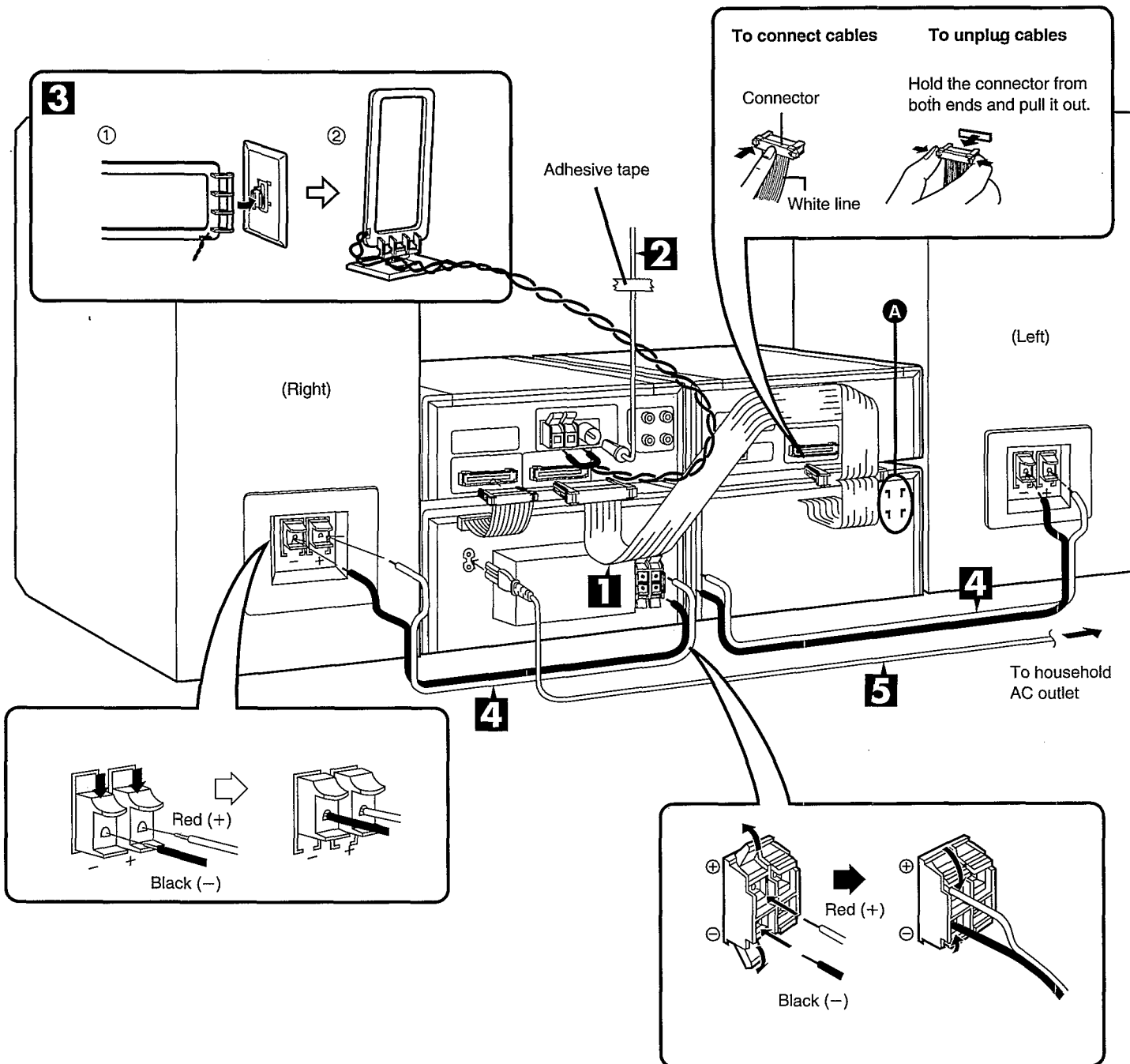
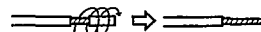
Note

Left and right speakers are exactly the same.

Connections

Connect the AC mains lead after you have connected all other cables.

To prepare the AM loop antenna wire and speaker cords, twist the vinyl cover tip and pull off.



1 Connect the flat cables.

Connect two flat cables to the terminal of each units.

Note

Do not try connecting or disconnecting the flat cables while the power is switched to ON.

After connection:

Keep cables as flat against the back of the unit as possible.

2 Connect the FM indoor antenna.

Tape the antenna to a wall or column, in a position where radio signals are received with the least amount of interference.

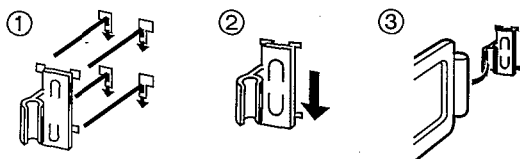
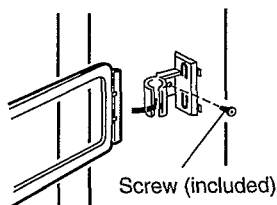
Note

When you cannot get a good reception with this FM indoor antenna, we recommend you install an FM outdoor antenna (not included).

3 Connect the AM loop antenna.

You can also install the AM loop antenna on the rear of the cassette deck, wall or pillars.

In this case, be sure to use the antenna holder with the hole.

•To install on the cassette deck rear (A)**•To install on walls or pillars****Note**

To minimize noise pickup, bundle the loop antenna cord using a tape or so to keep the flat cables away from the AM loop antenna cord.

4 Connect the right (R) and left (L) speaker cables.**Note**

- To prevent damage to circuitry, never short-circuit positive (+) and negative (-) speaker wires.
- Be sure to connect only positive (red) wires to positive (+) terminals and negative (black) wires to negative (-) terminals.

These speakers are made so as to be able to be used in close proximity to the TV, but irregular coloring may result due to how the system is placed. If such distortion occurs, turn off the TV for sometime between 15 and 30 minutes. The demagnetizing function of the TV will eliminate the distortion. If the irregular coloring is still visible, then move the speaker further away from the TV.

Please note that if there is a magnetic object near the TV, irregular coloring may result due to the interaction between the TV and the speakers.

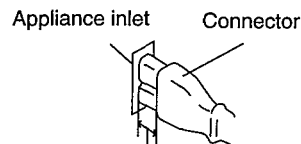
5 Connect the AC mains lead.**(United Kingdom only)**

BE SURE TO READ THE CAUTION FOR AC MAINS LEAD ON PAGE 3 OF SE-HD55 BEFORE PROCEEDING TO STEP 5.

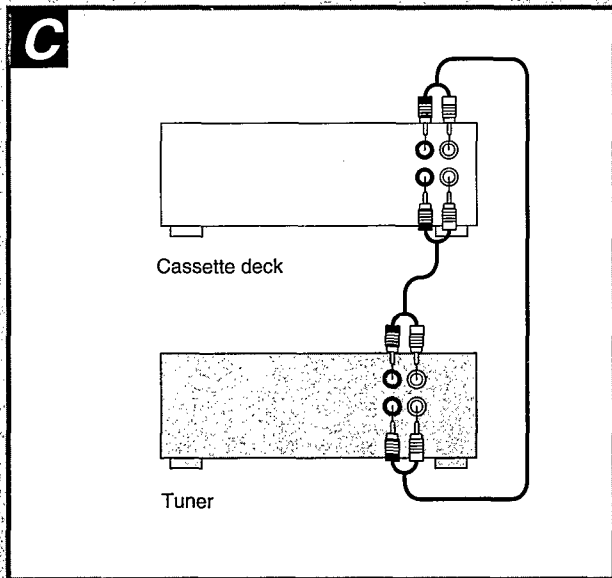
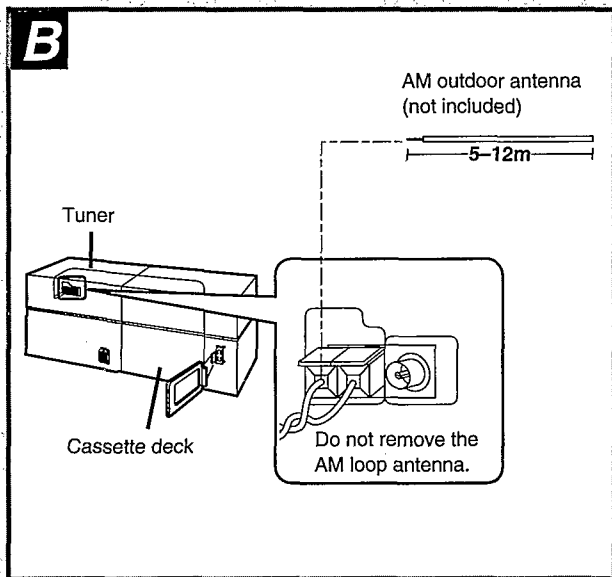
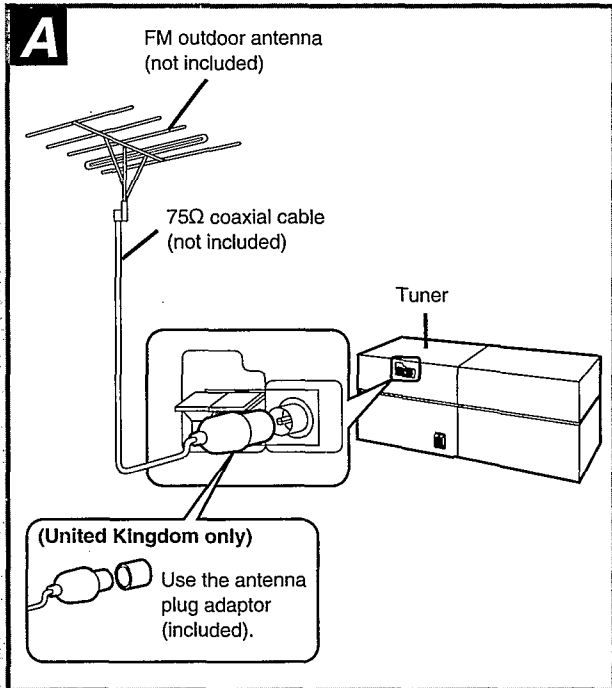
Insertion of Connector

Even when the connector is perfectly inserted, depending on the type of inlet used, the front part of the connector may jut out as shown in the drawing.

However there is no problem using the unit.



Approx. 6 mm



Optional antenna connections

You may need an outdoor antenna if you use this system in a mountainous region or inside a reinforced-concrete building, etc.

FM outdoor antenna (not included) A

Note

An outdoor antenna should be installed by a competent technician only.

AM outdoor antenna (not included) B

Connect the outdoor antenna without removing the AM loop antenna. Run 5 to 12 m of vinyl-covered wire horizontally along a window or other convenient location.

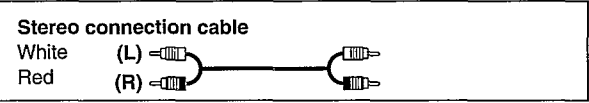
Note

When the unit is not in use, disconnect the outdoor antenna to prevent possible damage that may be caused by lightning. Never use an outdoor antenna during an electrical storm.

External unit connections

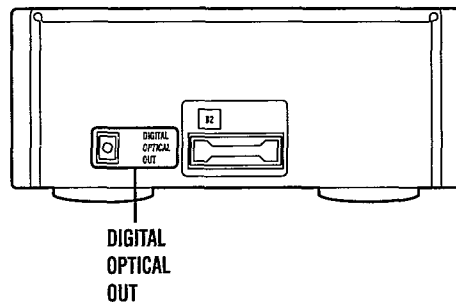
Connecting a cassette deck C

- Make sure that the power supply for all components has been turned off before making any connections.
- For details, refer to the operating instructions of the cassette deck which is to be connected.
- All peripheral components and cables sold separately.



Connections to "DIGITAL OPTICAL OUT" terminal:

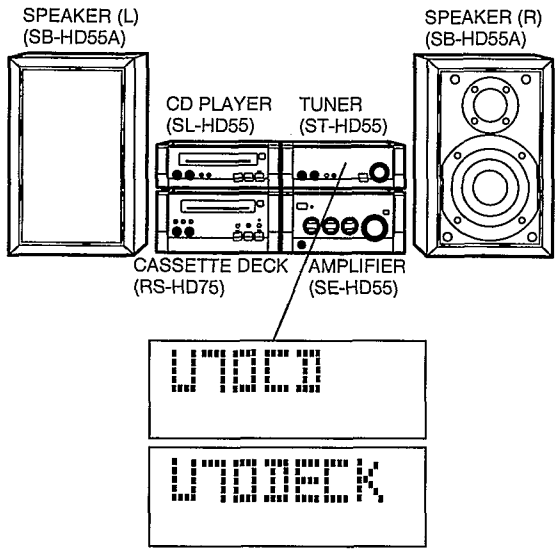
CD player



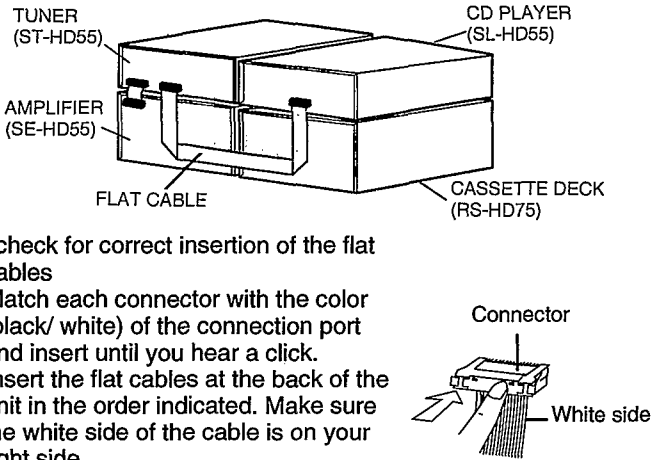
Before using this terminal, take out the dust protection cap. Connect an optical-fiber cable to the optical input terminal of the DCC or minidisc deck (cables and components not included).

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 malfunctions. 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 tuner when a malfunction occurs.</p> <p>F61 Automatically displays on the tuner 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 tuner. ● To re-display the code, switch the power off (POWER STANDBY button), and then switch power back on again. <p>2. For F61:</p> <ul style="list-style-type: none"> ● If "F61" is displayed, the power will automatically be switched off. ● "F61" will be displayed for 3 seconds, and then the clock will be displayed. ● To re-display the code, switch the power on. "F61" 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" is displayed on the tuner, the Cassette deck or CD player cannot be operated by remote control.</p>	 <p>1. To check for correct insertion of the flat cables</p> <ol style="list-style-type: none"> ① Match each connector with the color (black/ white) of the connection port and insert 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. <p>2. Breakage of flat cable (Check and replace as necessary.)</p> <p>3. If the problem is not corrected by items (1.) and (2.) above, this indicates a faulty IC.</p> <p>U70CD (ST-HD55: IC401 (M30610MA152F) SL-HD55: IC403 (LC66358C4J75) Check these IC's and replace as necessary.</p>
<p>F61</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 amplifier (SE-HD55) output IC (IC501). (When a DC voltage is applied to the speaker terminals.)

Blue LED

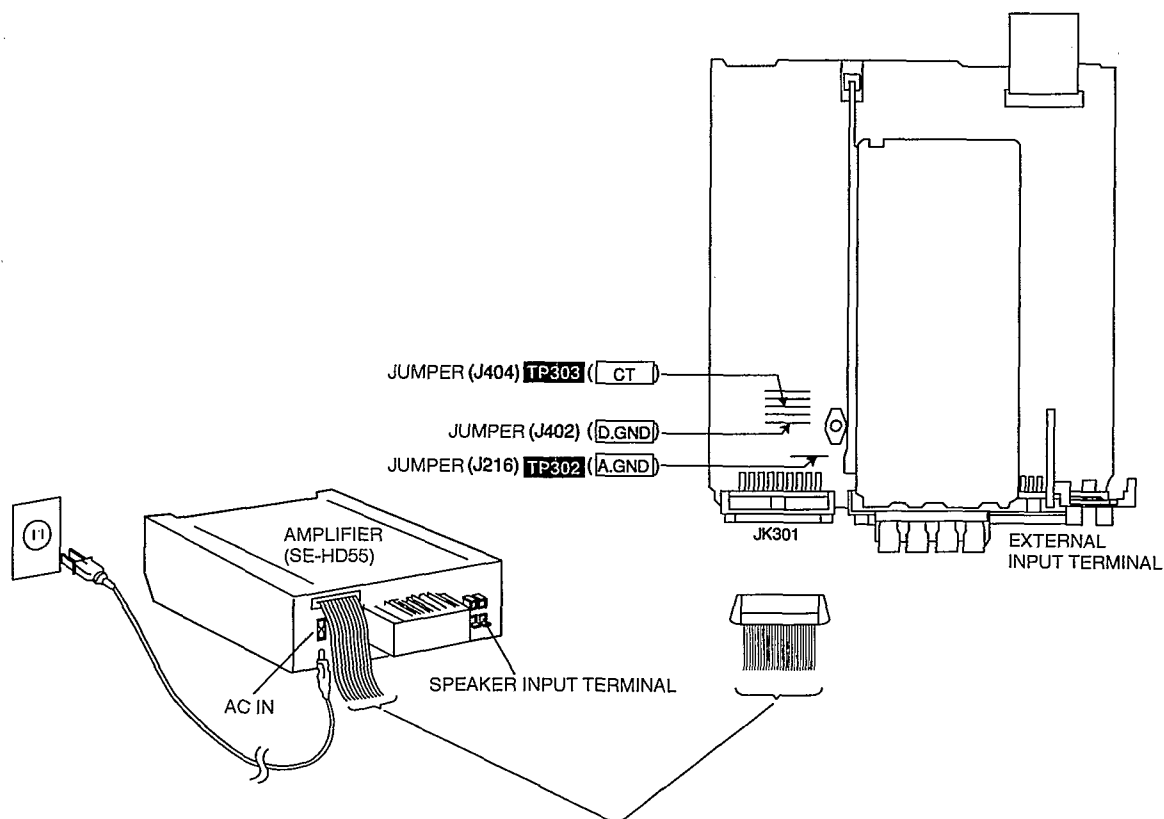
- The LED mounted to each side of the front panel of this set is very sensitive to static electricity. When handling the LED base plate, be very careful about it.
 - Do not replace a blue LED singly. If replaced singly, it may be subject to electrostatic breakdown or deterioration in quality. When replacing the LED base plate, be sure to replace L and R sides simultaneously to permit the brightness adjustment.
- * For configuration at the time of supply of replacement parts, refer to the PCB Diagram (on Page 15).

Power Source ON/OFF and Signal Check

This unit ST-HD55 is not operate normally without connection the unit SE-HD55.

When operate the unit ST-HD55, be sure to connect the unit SE-HD55 with included connection cable.

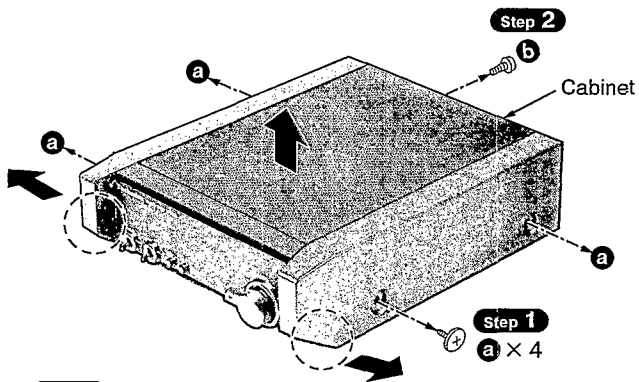
1. Short the section between the jumper (J216) **TP302** (A. GND) and (J402) (D. GND), and as well as the section between the jumper (J404) (**TP303**) (CT) and (J402) (D. GND).
2. Connect the Amplifier (SE-HD55).
3. Connect the AC mains lead.
4. Connect the speakers to speaker input terminal.
5. Switch on the power of the Amplifier (SE-HD55).
6. Press INPUT SELECTOR to select the external souce (EXT) of the Amplifier (SE-HD55).
7. Input a sound signal to external input terminal of Tuner (ST-HD55), and confirm to be outputted from the speaker.



Operation Checks and Main Component Replacement Procedures

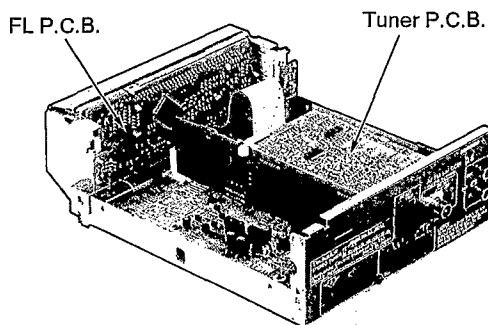
- NOTE**
1. This section describes procedures for checking the operation of the major printed circuit boards and replacing the main components.
 2. For reassembly after operation checks or replacement, reverse the respective procedures. Special reassembly procedures are described only when required.

1. Checking for the tuner P.C.B. and FL P.C.B.



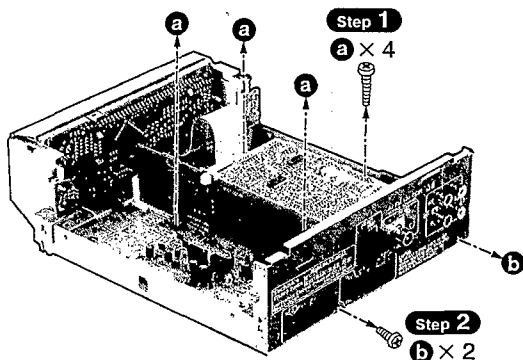
Step 3
Spreading the both front tails indicated with (○) of cabinet a small amount, lift up and remove the cabinet in the direction of arrow.

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



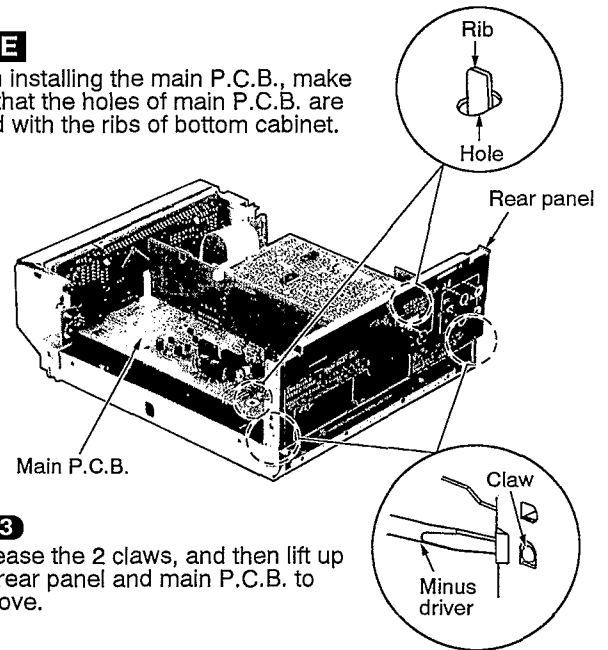
2. Checking for the main P.C.B.

- Follow **Step 1** ~ **Step 3** in item 1.



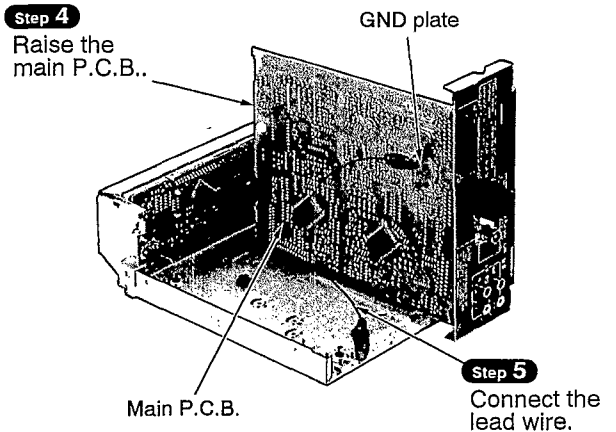
NOTE

When installing the main P.C.B., make sure that the holes of main P.C.B. are aligned with the ribs of bottom cabinet.

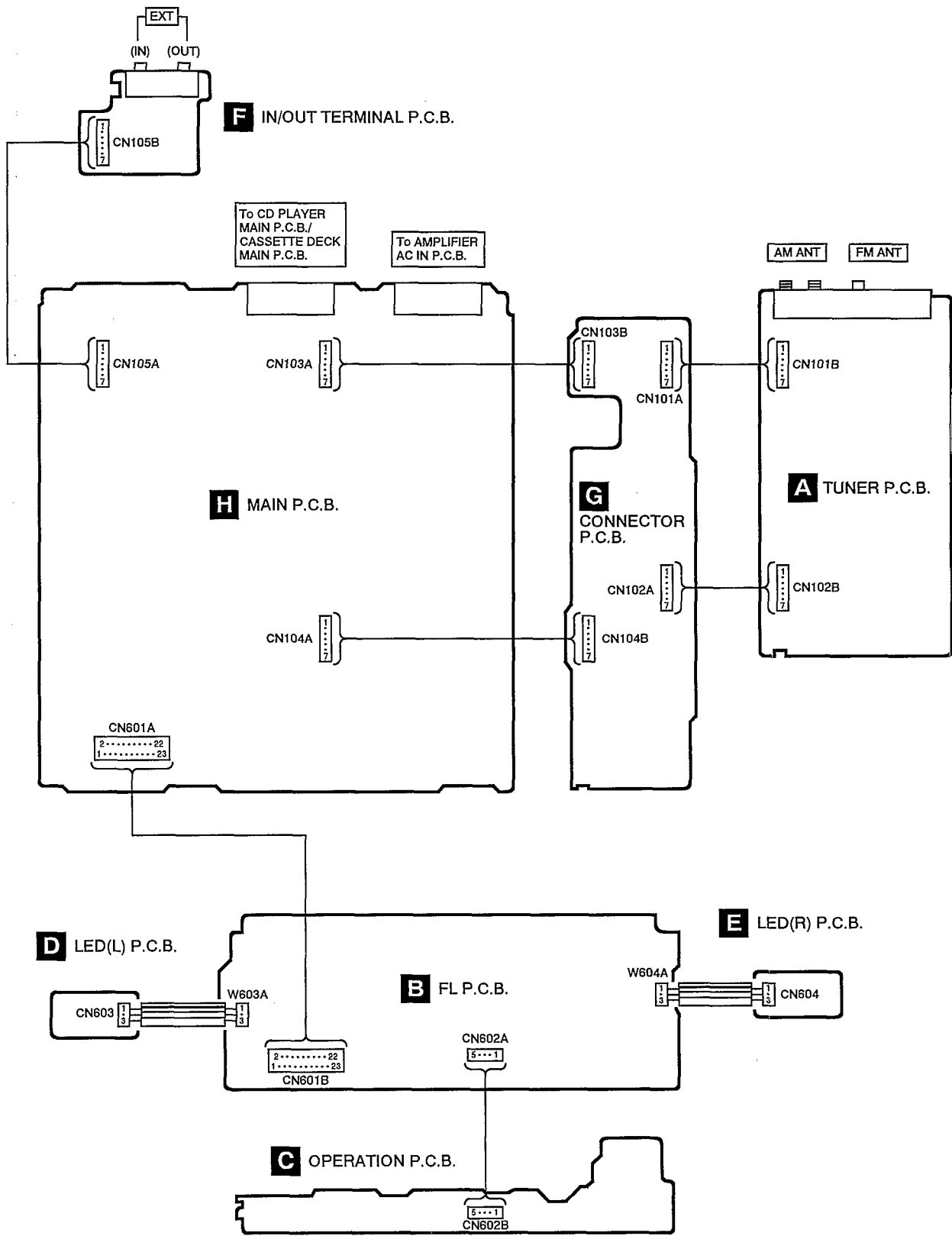


Step 3
Release the 2 claws, and then lift up the rear panel and main P.C.B. to remove.

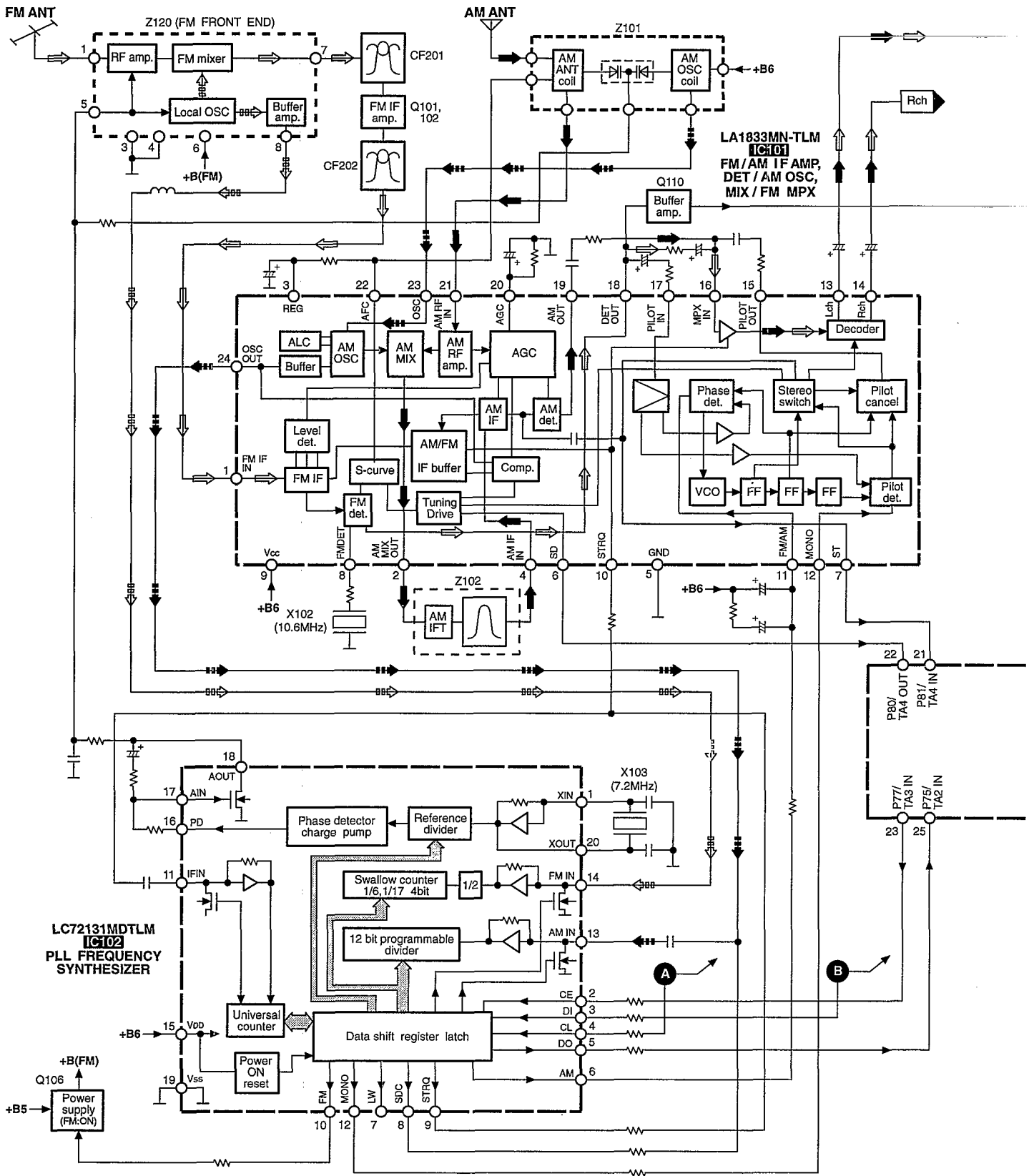
- Check the main P.C.B. as shown below.

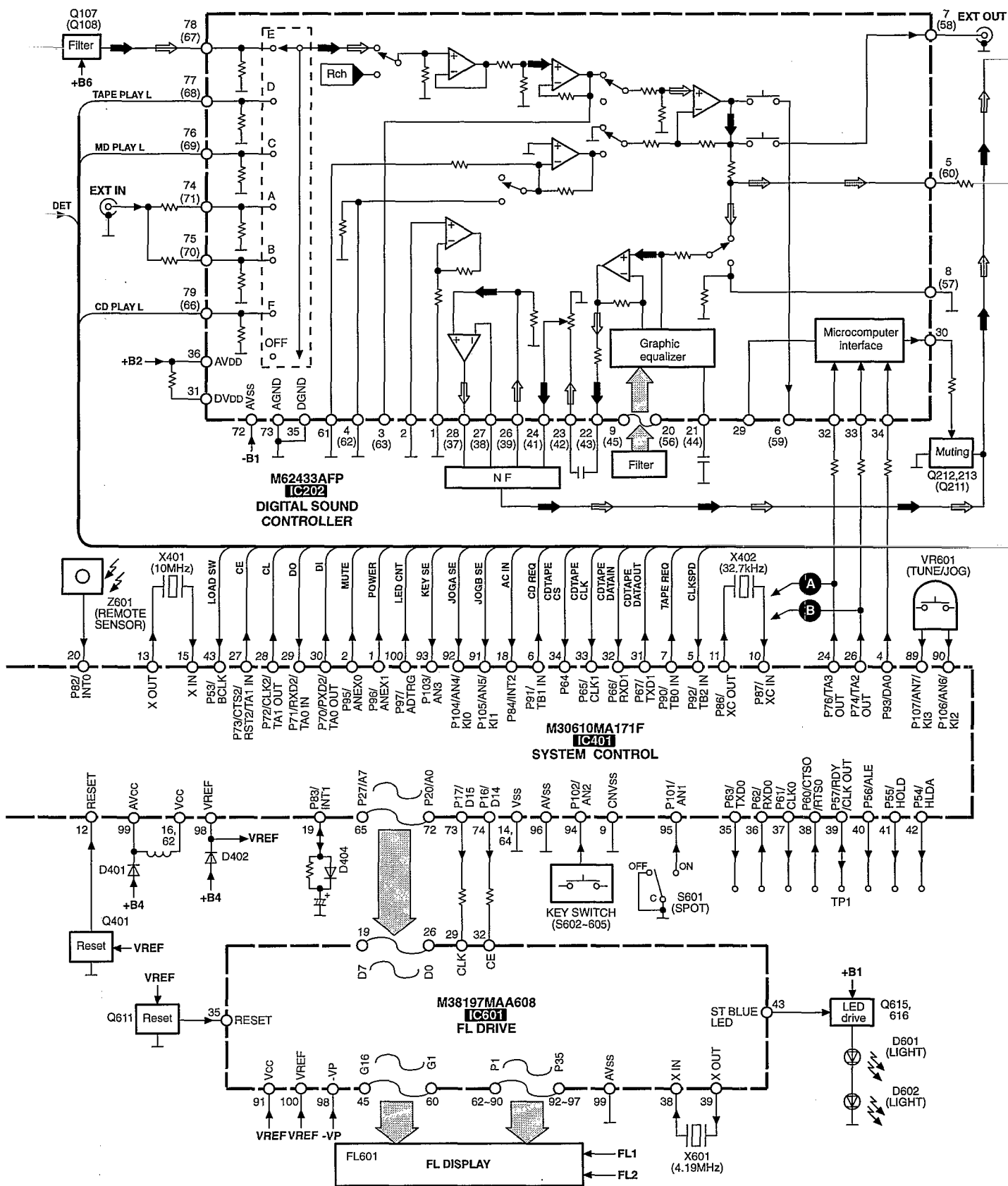


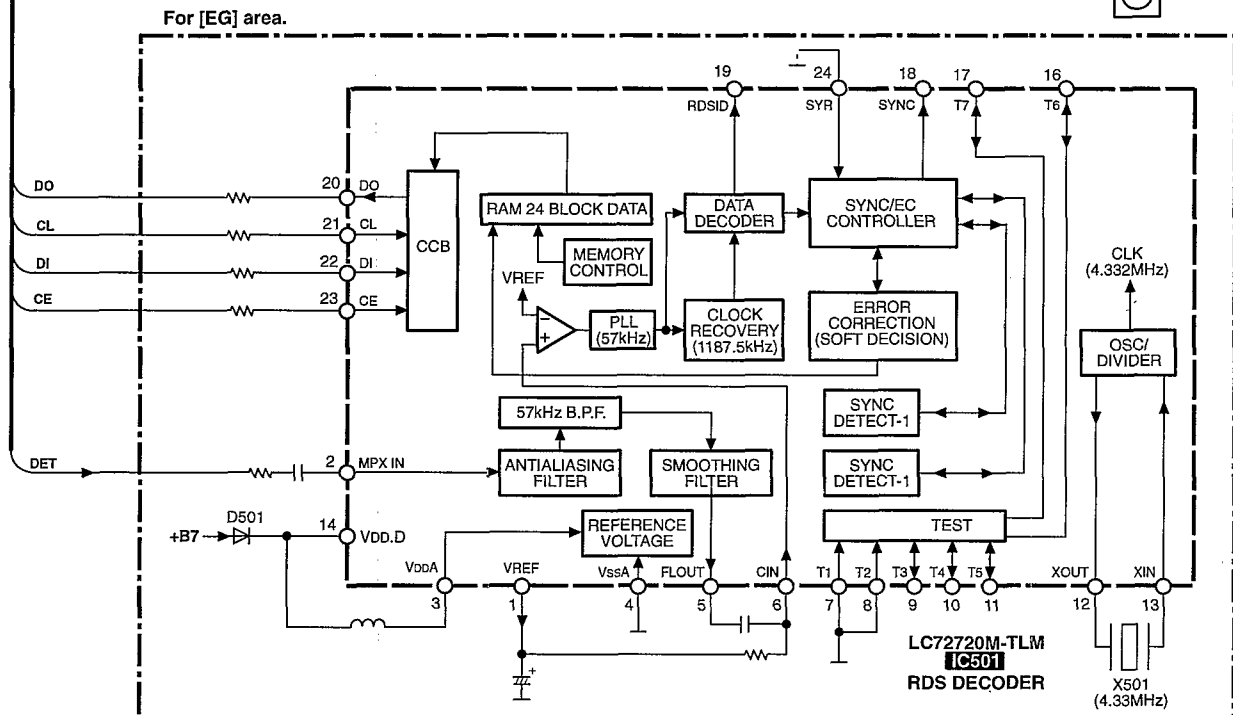
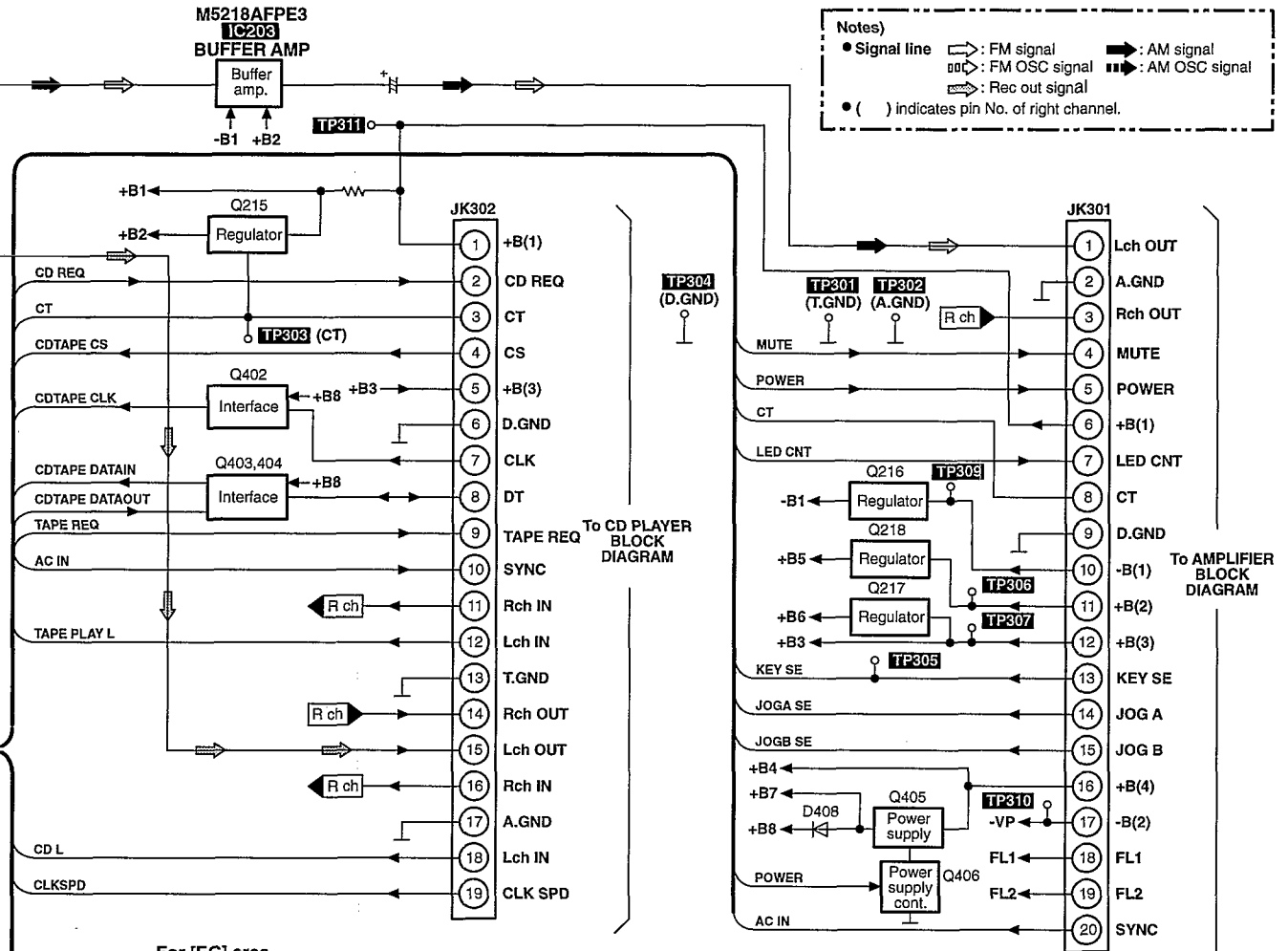
Wiring Connection Diagram



Block Diagram



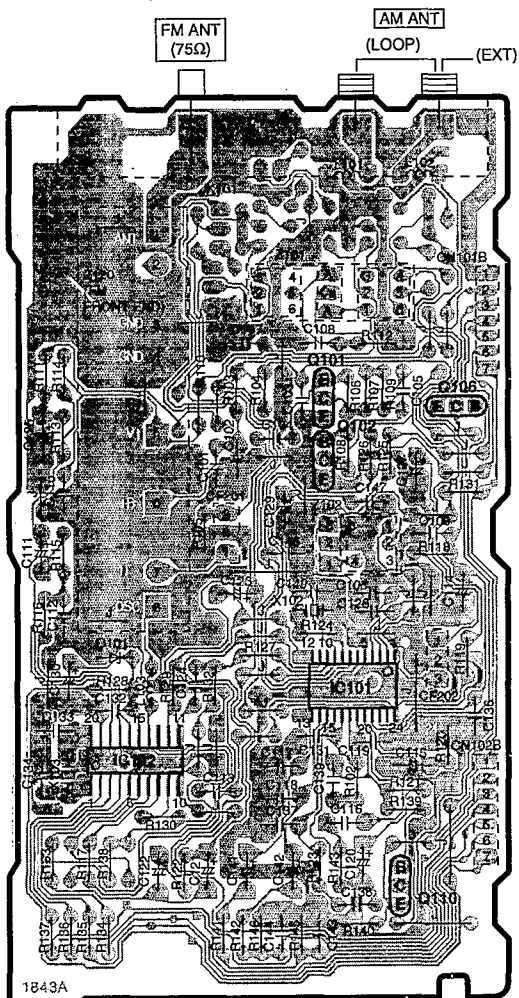




Printed Circuit Board Diagram

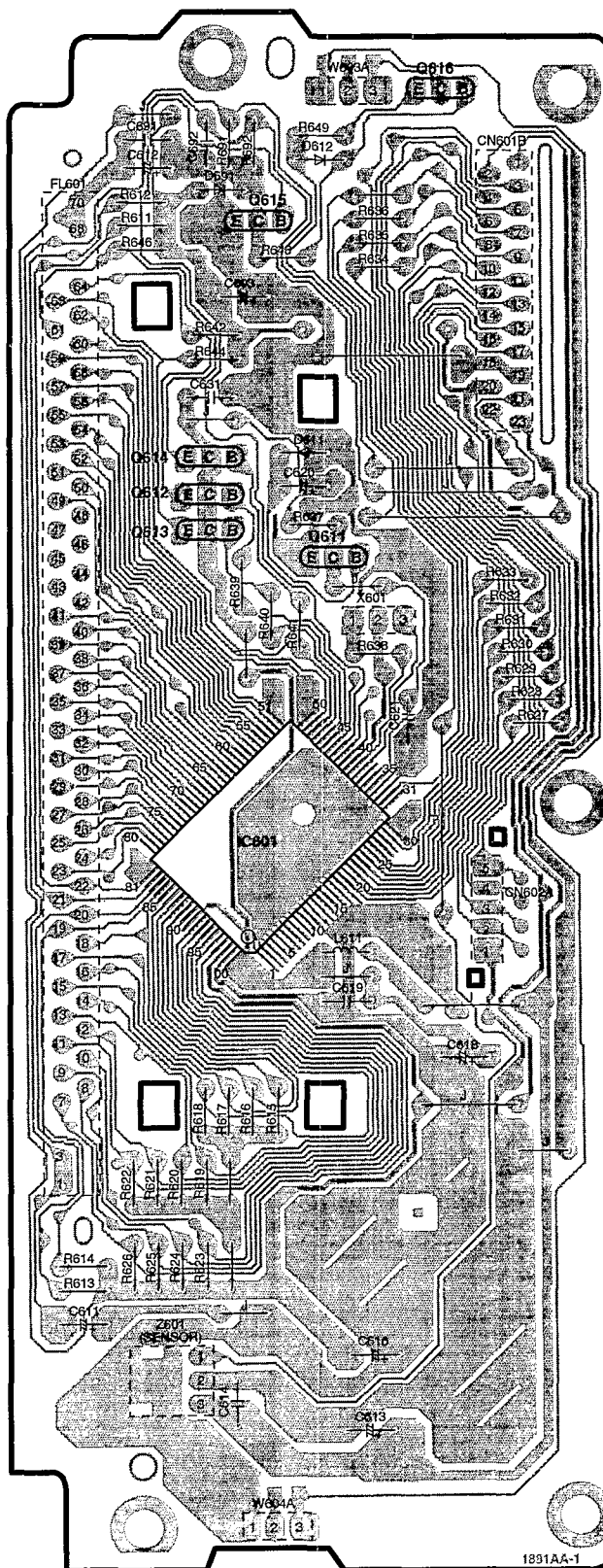
(This printed circuit board diagram may be modified at any time with the development of new technology.)

A TUNER P.C.B.



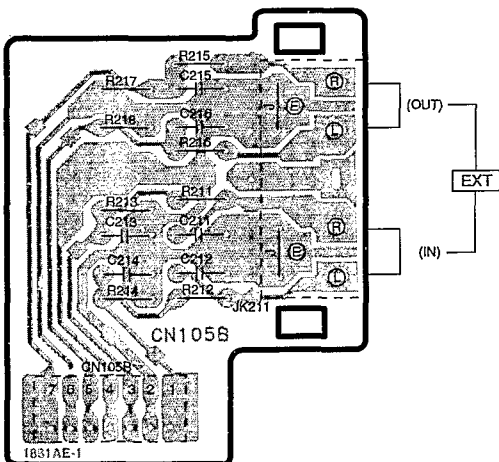
(REP2592C-T)

B FL P.C.B.



(REP2596BA-S)

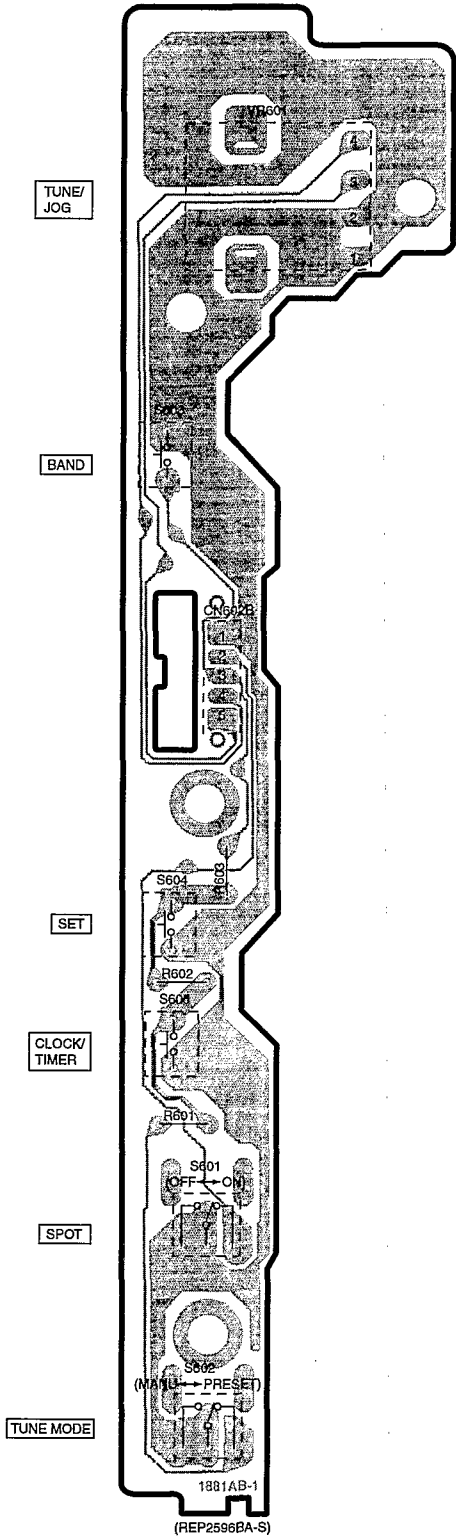
F IN/OUT TERMINAL P.C.B.



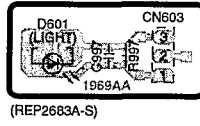
(REP2596BB-S)

Keeping to the rule of unit supply, we do not supply single parts.

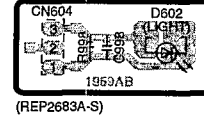
C OPERATION P.C.B.



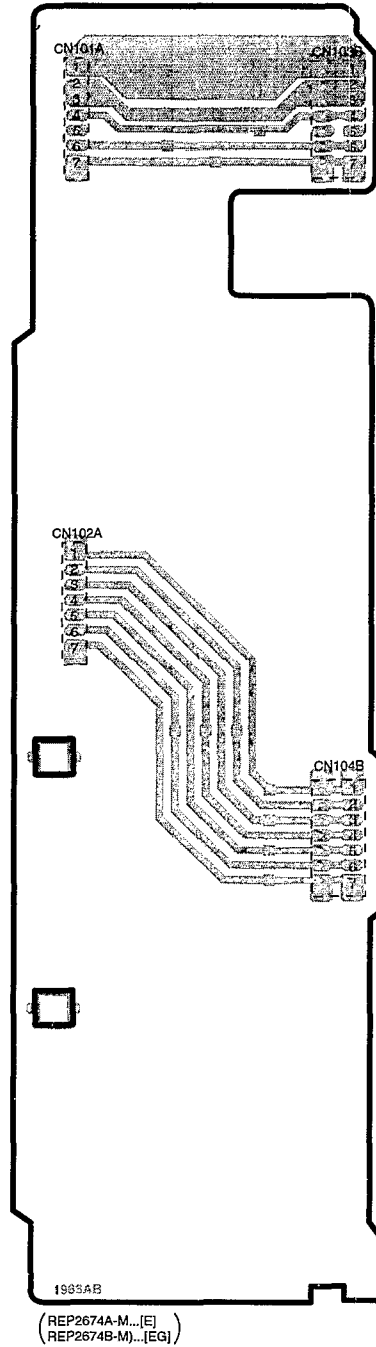
D LED(L) P.C.B.



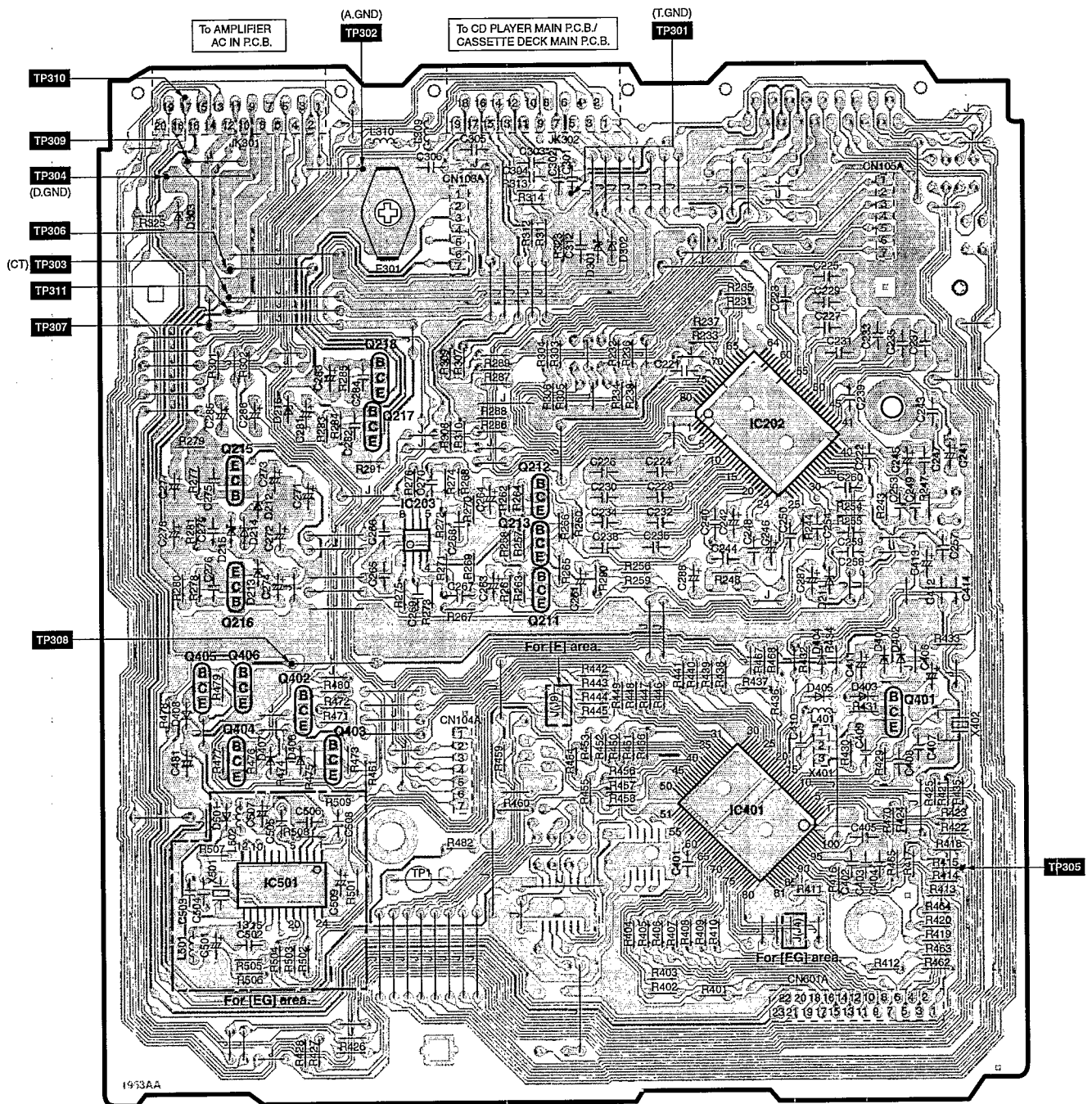
E LED(R) P.C.B.



G CONNECTOR P.C.B.



H MAIN P.C.B.



■ Schematic Diagram (Parts list on pages 31~33.)

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

A TUNER CIRCUIT	18, 19
B FL CIRCUIT	20, 21
C OPERATION CIRCUIT	20
D LED (L) CIRCUIT	21
E LED (R) CIRCUIT	21
F IN/OUT TERMINAL CIRCUIT	21
G CONNECTOR CIRCUIT	21
H MAIN CIRCUIT	22~25


Notes:

- **S601:** Side light switch (SPOT)
- **S602:** Tuning mode switch (TUNE MODE)
- **S603:** Band select switch (BAND)
- **S604:** Set switch (SET)
- **S605:** Clock/timer switch (CLOCK/TIMER)

- 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: FM mode (): AM mode

- Important safety notice:

Components identified by  mark have special characteristics important for safety.

Furthermore, special parts which have purpose 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.

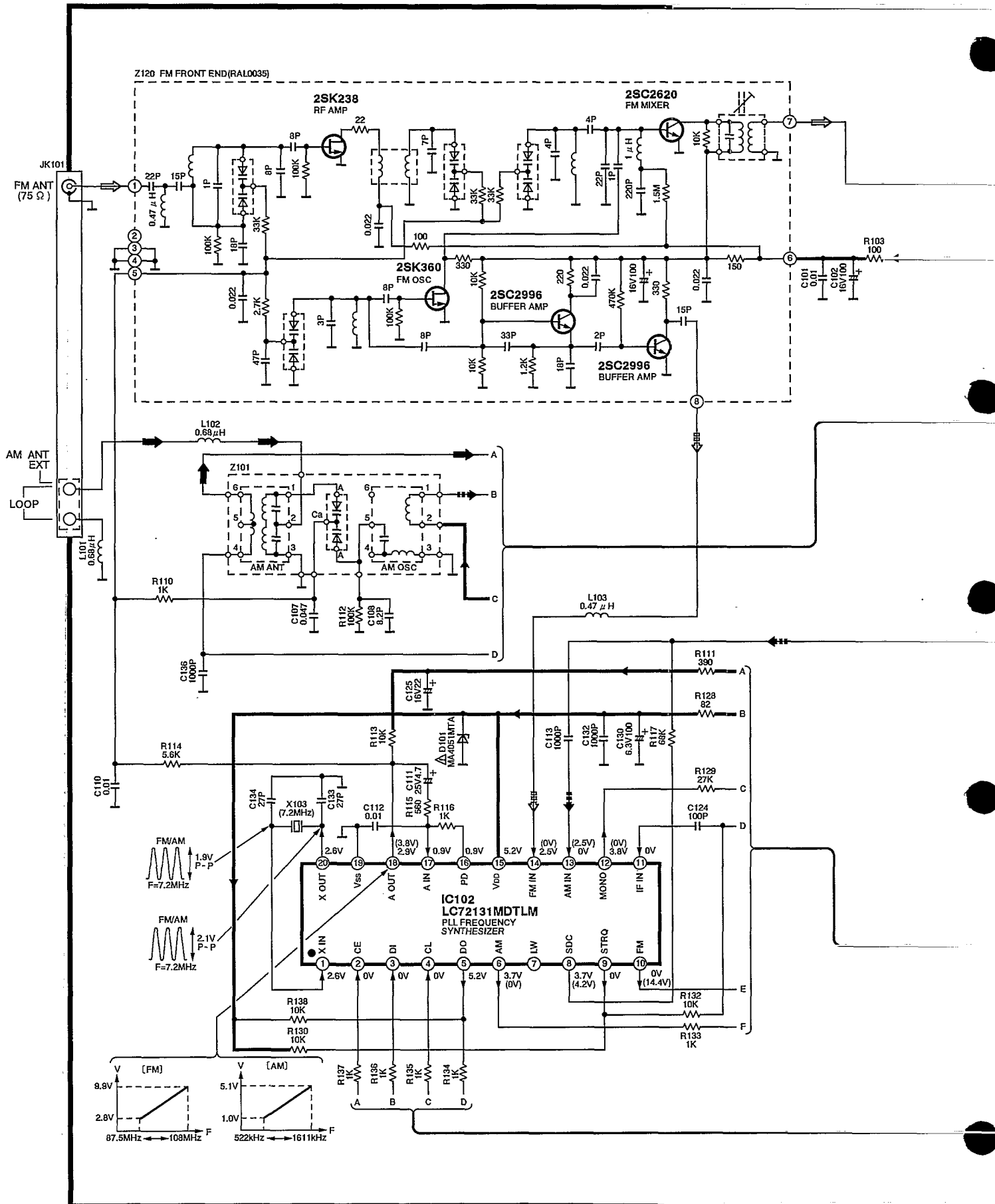
Put a conductive mat on the work table.



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



- Voltage and signal line

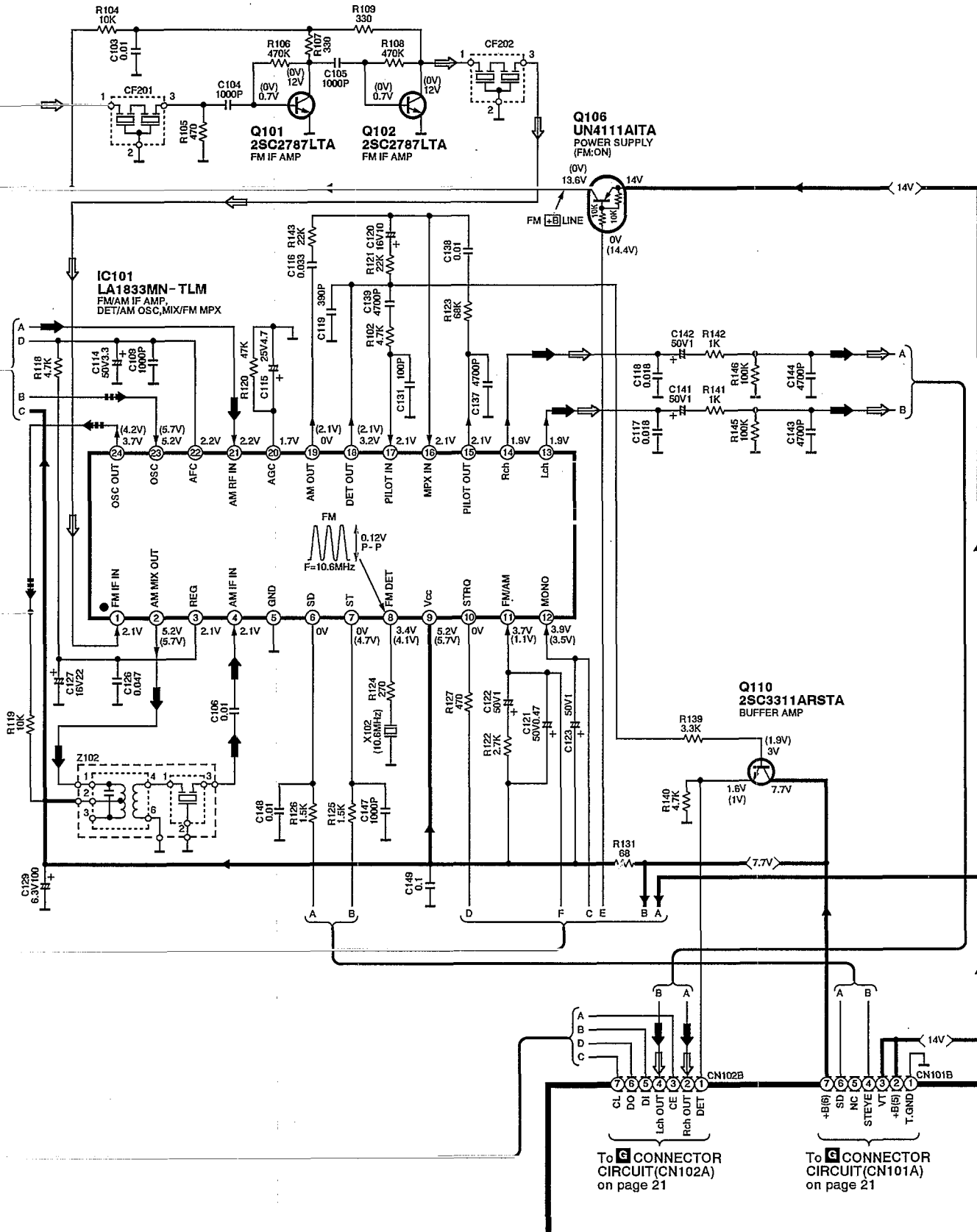
	: Positive voltage line		: Negative voltage line
	: FM signal line		: FM OSC signal line
	: AM signal line		: AM OSC signal line
	: REC OUT line		

A TUNER CIRCUIT (P.C.Board: on page 14)

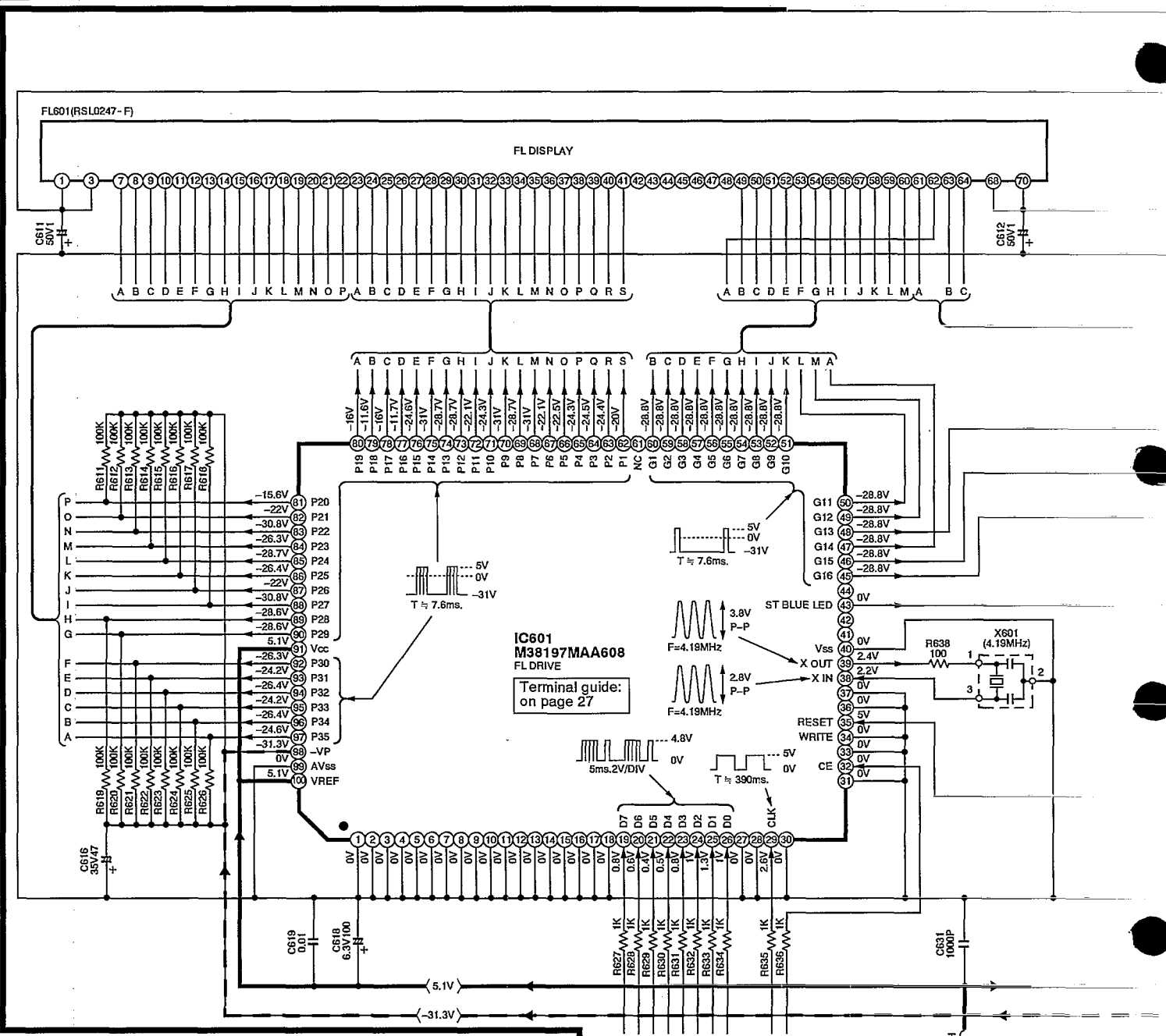


• Notes:  : FM signal line
 : AM signal line

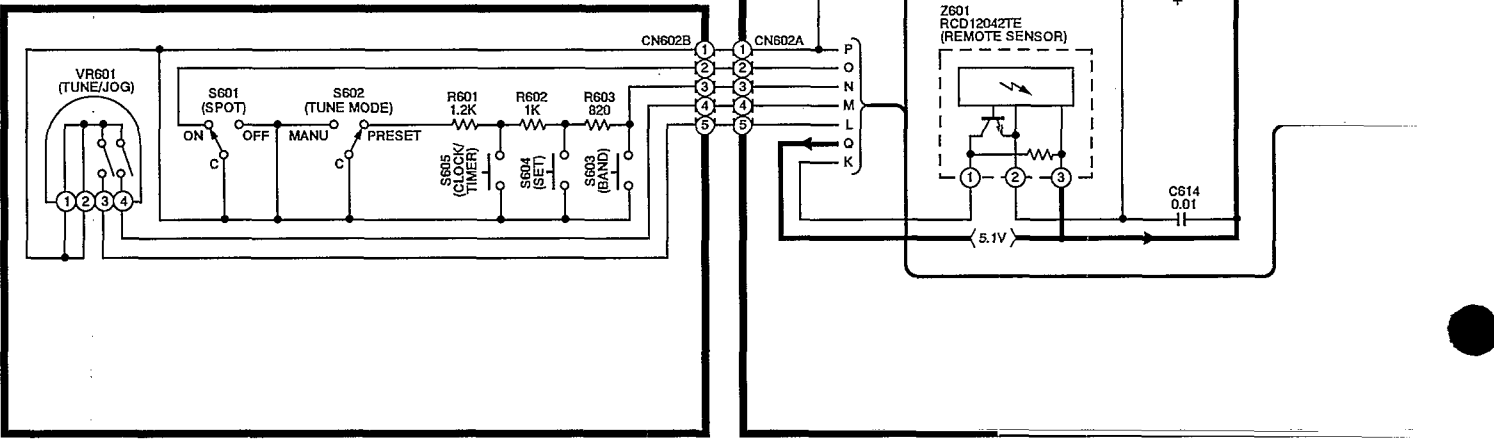
 : FM OSC signal line
 : AM OSC signal line






B FL CIRCUIT (P.C.Board: on page 14)

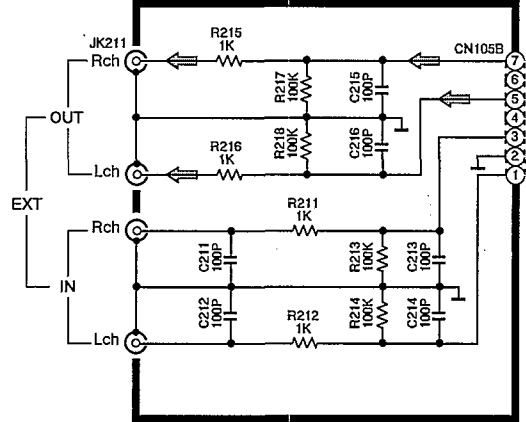


C OPERATION CIRCUIT (P.C.Board: on page 15)

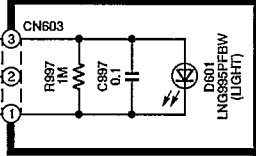


● Notes:  : FM signal line
 : REC OUT signal line
 : AM signal line

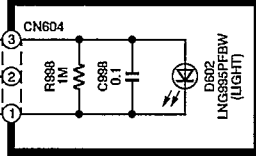
F IN/OUT TERMINAL CIRCUIT
 (P.C.Board: on page 14)



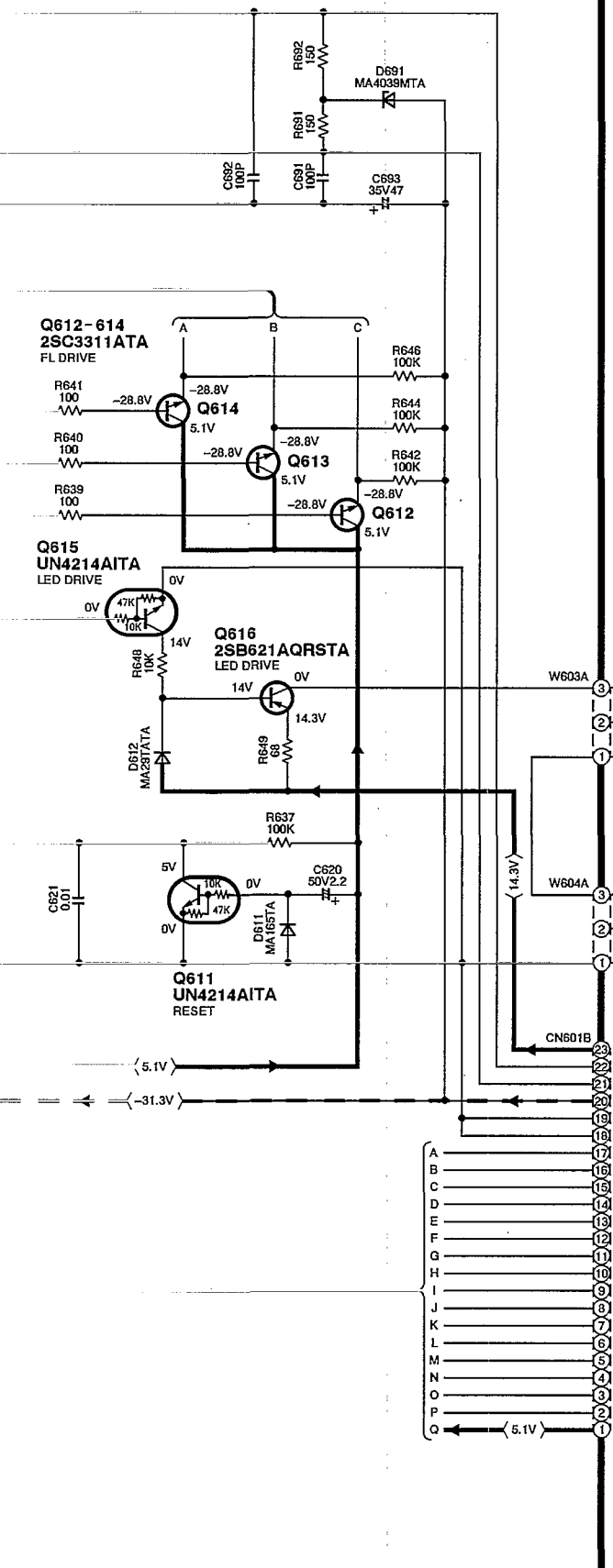
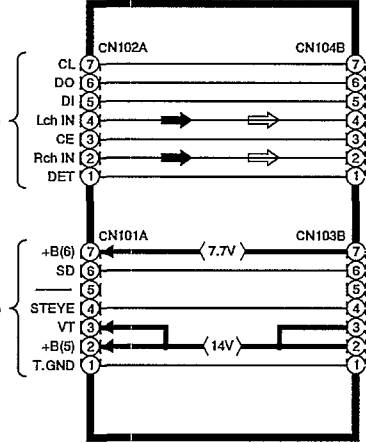
D LED(L) CIRCUIT
 (P.C.Board: on page 15)






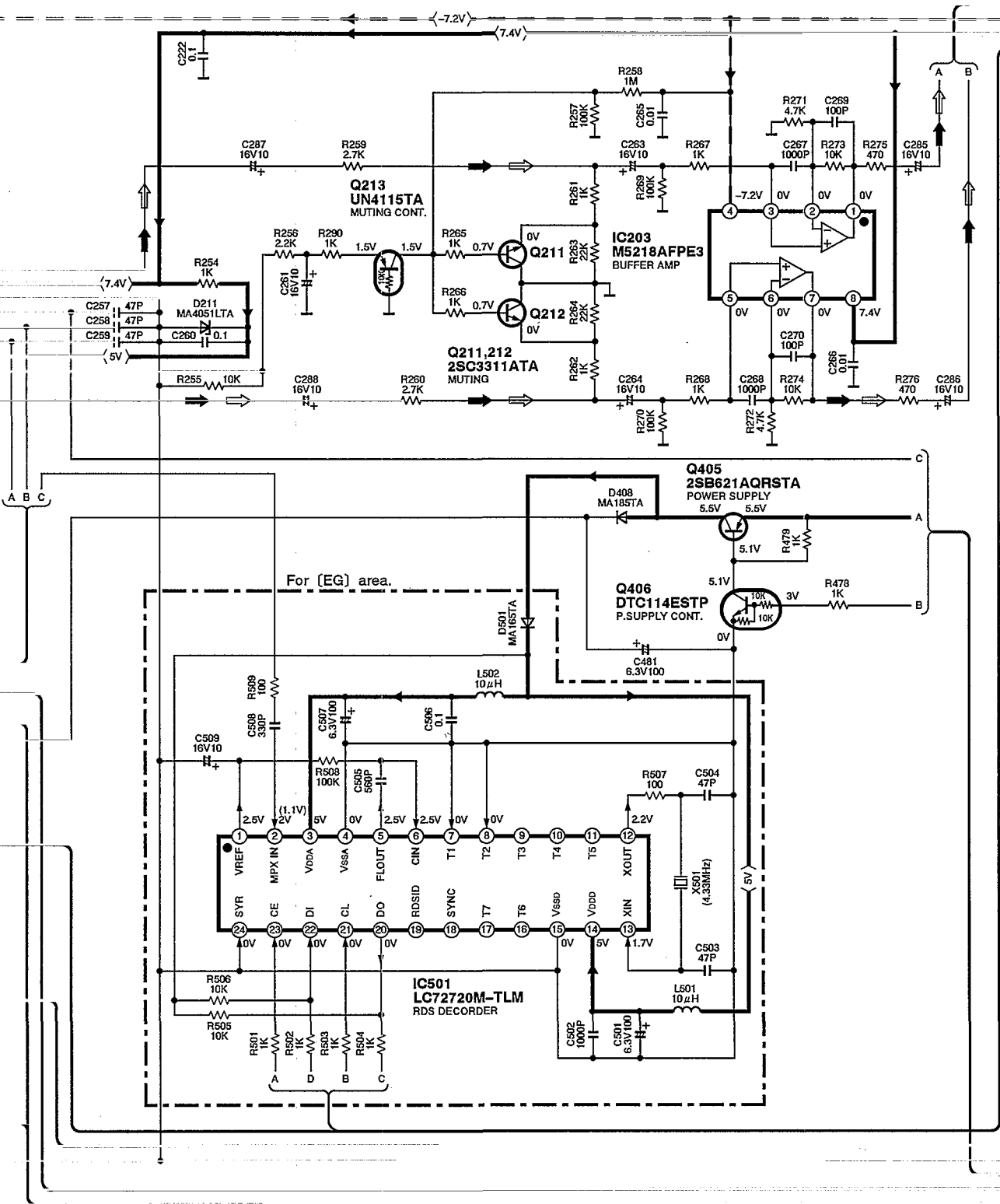
E LED(R) CIRCUIT
 (P.C.Board: on page 15)



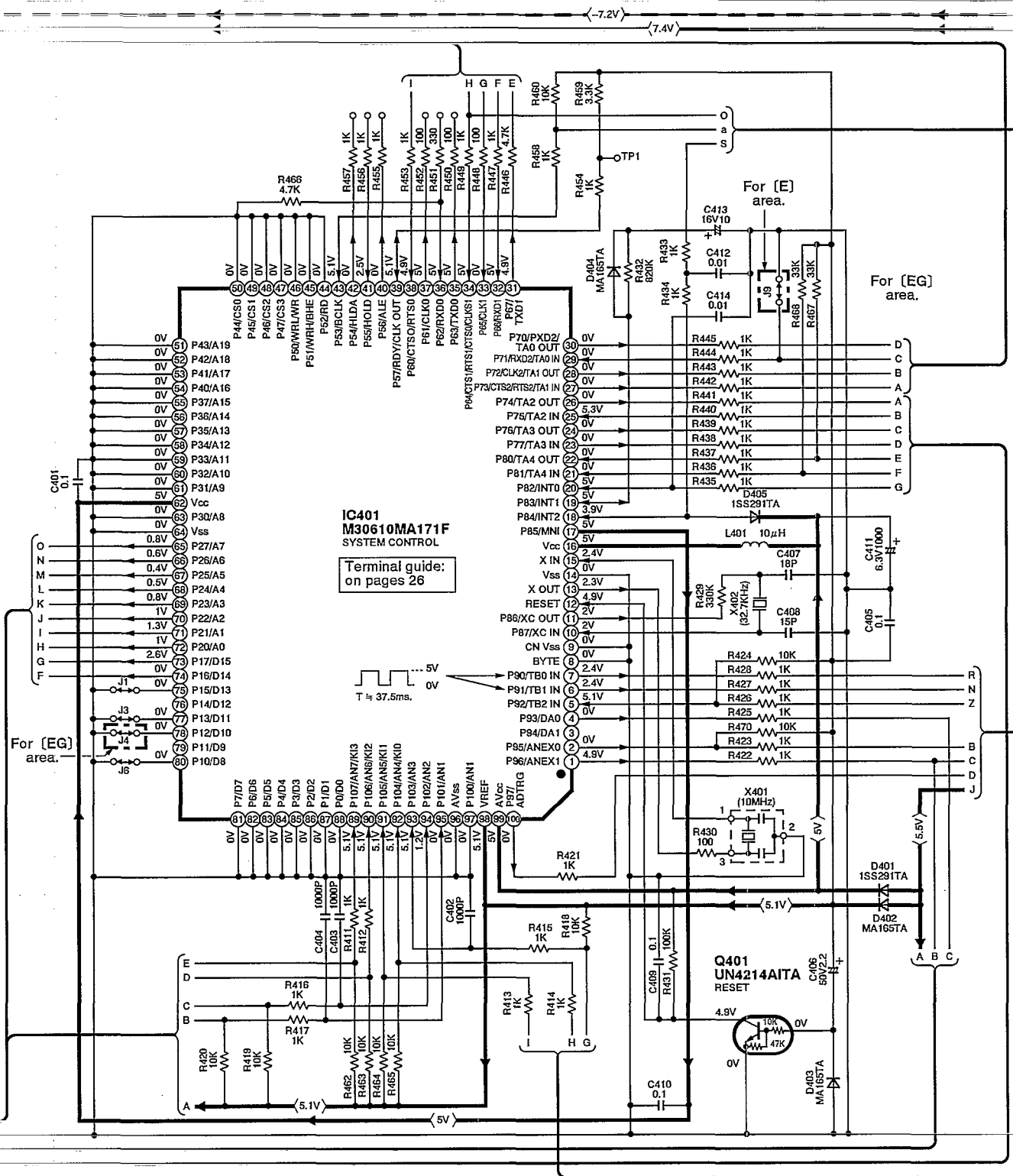
G CONNECTOR CIRCUIT
 (P.C.Board: on page 15)



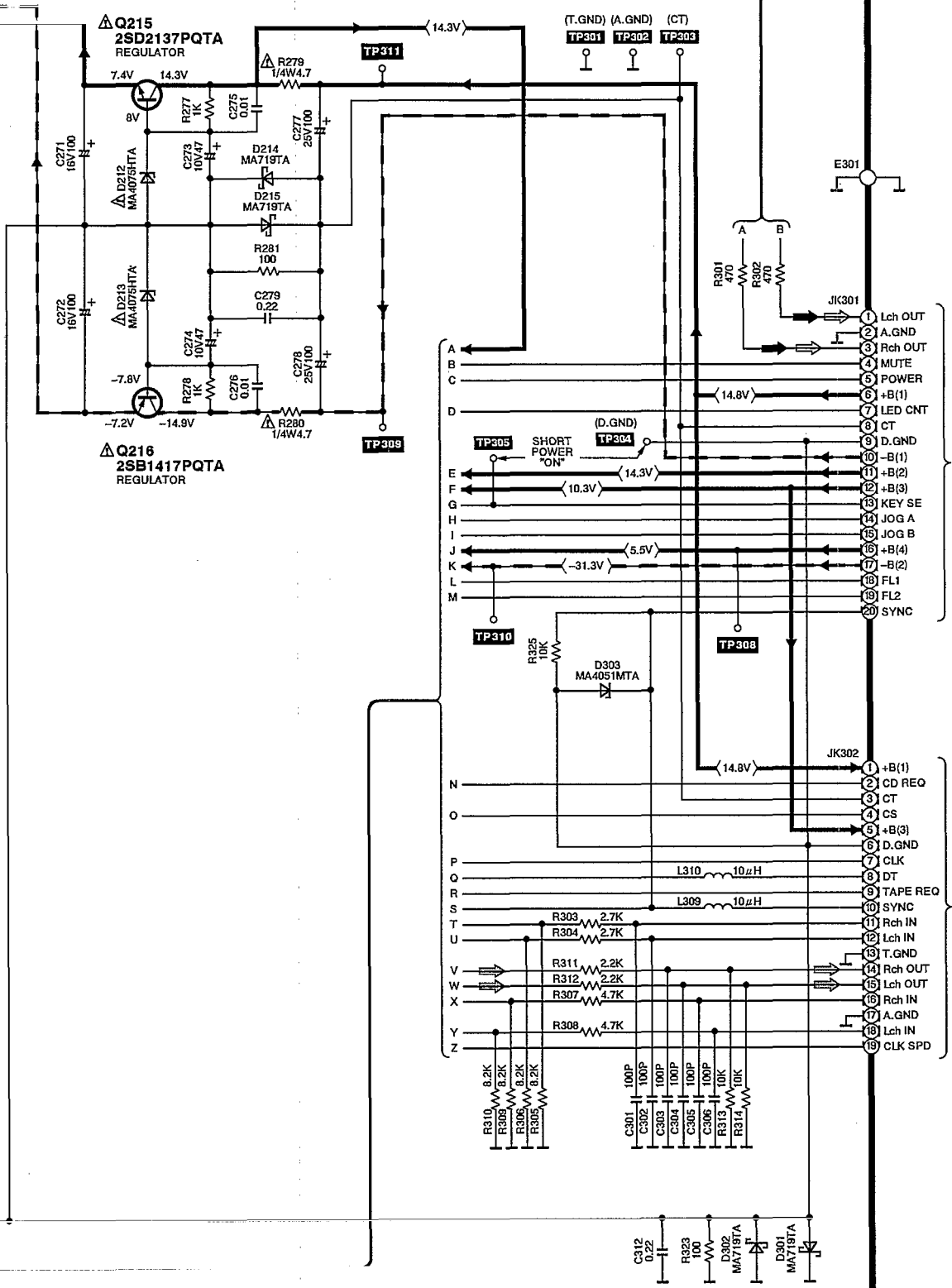
- Notes:  : FM signal line
-  : REC OUT signal line
-  : AM signal line



H MAIN CIRCUIT (P.C.Board: on page 16)



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



To AMPLIFIER
AC IN CIRCUIT

To CD PLAYER
MAIN CIRCUIT/
CASSETTE DECK
MAIN CIRCUIT

Terminal Function of IC's

● IC401 (M30610MA171F): SYSTEM CONTROL

Pin No.	Mark	I/O Division	Function
1 └ 7	P96 └ P90	I/O	8 bit input/output terminal
8	BYTE	I	Not used, connected to GND
9	CNVss	—	GND terminal
10 └ 11	P87 └ P86	I/O	Crystal oscillator connect terminal (f=32.7 kHz)
12	RESET	I	Reset signal input terminal
13	XOUT	O	Ceramic oscillator connect terminal (f=10 MHz)
14	Vss	—	GND terminal
15	XIN	I	Ceramic oscillator connect terminal
16	Vcc	I	Power supply terminal
17	P85	I	Not used, connected to power supply
18 └ 22 └ 23 └ 30 └ 31 └ 38 └ 39 └ 43	P84 └ P80 └ P77 └ P70 └ P67 └ P60 └ P57 └ P53	I/O	8 bit input/output terminal
44 └ 46 └ 47 └ 54 └ 55 └ 61	P52 └ P50 └ P47 └ P40 └ P37 └ P31	I	8 bit input terminal (Not used, connected to GND)

Pin No.	Mark	I/O Division	Function
62	Vcc	I	Power supply terminal
63	P30	I	8 bit input terminal (Not used, connected to GND)
64	Vss	—	GND terminal
65 └ 72	P27 └ P20	O	8 bit output terminal
73 └ 74	P17 └ P16	O	8 bit output terminal
75	P15	I	8 bit input terminal (Not used, connected to GND)
76	P14	I	8 bit input terminal (Not used, open)
77 └ 78	P13 └ P12	I	8 bit input terminal (Not used, connected to GND)
79	P11	I	8 bit input terminal (Not used, open)
80 └ 81 └ 88	P10 └ P7 └ P0	I	8 bit input terminal (Not used, connected to GND)
89 └ 95	P107 └ P101	I	8 bit input terminal
96	AVss	—	GND terminal
97	P100	I	8 bit input terminal (Not used, connected to GND)
98	VREF	I	Reference voltage input terminal
99	AVcc	I	Power supply terminal
100	P97	O	8 bit output terminal

● IC601 (M38197MAA-608FP): FL DRIVE

Pin No.	Mark	I/O Division	Function
1 ┆ 18	/	I	Not used, connected to GND
19 ┆ 26	D7 ┆ D0	I	Data signal input terminal
27 ┆ 28	/	I	Not used, connected to GND
29	CLK	I	Clock signal input terminal
30 ┆ 31	/	I	Not used, connected to GND
32	CE	I	Chip enable signal input terminal
33 ┆ 34	/	I	Not used, connected to GND
34	WRITE	I	
35	RESET	I	Reset signal input terminal
36 ┆ 37	/	I	Not used, connected to GND
38	XIN	I	Ceramic oscillator connect terminal
39	XOUT	O	Ceramic oscillator connect terminal

Pin No.	Mark	I/O Division	Function
40	Vss	—	GND terminal
41 ┆ 42	/	O	Not used, open
43	ST. BLUE LED	O	LED drive signal output terminal
44 ┆ 45 ┆ 60	/	O	Not used, open
45 ┆ 60	G16 ┆ G1	O	FL grid control signal output terminal
61	NC	—	Not used, open
62 ┆ 90	P1 ┆ P29	O	FL segment control signal output terminal
91	Vcc	I	Power supply terminal
92 ┆ 97	P30 ┆ P35	O	FL segment control signal output terminal
98	-VP	I	Pull down power input terminal
99	AVss	—	GND terminal
100	VREF	I	Reference voltage input terminal

● IC202 (M62433AFP): DIGITAL SOUND CONTROL

Pin No.	Mark	I/O Division	Function
1	PS-IN	I	R/L input terminal for surround (Not used, connected to GND)
2	PS+IN	I	Phase shift filter input terminal for surround (Not used, connected to GND)
3	KIN1	O	Key control adaptor output terminal (Not used, open)

Pin No.	Mark	I/O Division	Function
4	KOUT1	I	Key control adaptor input terminal (Not used, connected to GND)
5	TAPREC1	O	Rec signal output terminal
6 ┆ 7	MDREC1 ┆ EXT OUT1	O	Rec signal output terminal

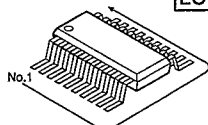
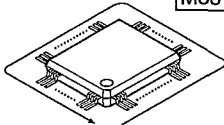
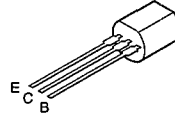
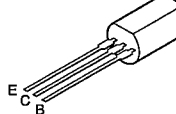
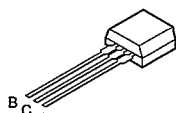
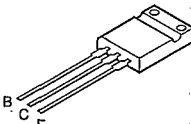
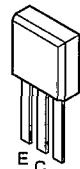
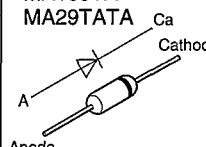
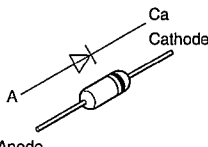
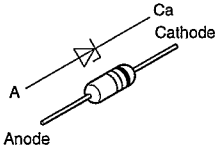
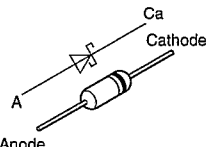
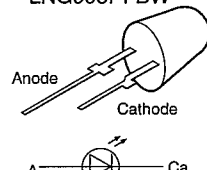
Pin No.	Mark	I/O Division	Function
8	DPL1	I	Tone signal input terminal (Not used, connected to GND)
9	F1F1	I	Resonance impedance connect terminal
10	F1O1	O	Resonance buffer amp output terminal
11	FIN1	I	Resonance buffer amp input terminal
12	F2F1	I	Resonance impedance connect terminal
13	F2O1	O	Resonance buffer amp output terminal
14	F2IN1	I	Resonance buffer amp input terminal
15	F3F1	I	Resonance impedance connect terminal
16	F3O1	O	Resonance buffer amp output terminal
17	F3IN1	I	Resonance buffer amp input terminal
18	F4F1	I	Resonance impedance connect terminal
19	F4O1	O	Resonance buffer amp output terminal
20	F4IN1	I	Resonance buffer amp input terminal
21	F5F1	I	Band pass filter connect terminal
22	GEQOUT1	O	Tone signal output terminal
23	VOLIN1	I	R ladder volume input terminal
24	VOLOUT1	O	R ladder volume output terminal
25	BB1	I	Not used, connected to GND
26	BUFIN1	I	Bass boost amp (+) input terminal
27	BUFNF1	I	Bass boost amp (-) input terminal
28	BUFOUT1	O	Bass boost amp output terminal
29	PORTA	O	Port A output terminal (Not used, open)
30	PORTB	O	Port B output terminal

Pin No.	Mark	I/O Division	Function
31	DVDD	I	Power supply terminal
32	CLK	I	Clock input terminal
33	DATA	I	Control data input terminal
34	LATCH	I	Latch signal input terminal
35	DGND	—	GND terminal
36	AVDD	I	Power supply terminal
37	BUFOUT2	O	Bass boost amp output terminal
38	BUFNF2	I	Bass boost amp (-) input terminal
39	BUFIN2	I	Bass boost amp (+) input terminal
40	BB2	I	Not used, connected to GND
41	VOLOUT2	O	R ladder volume output terminal
42	VOLIN2	I	R ladder volume input terminal
43	GEQOUT2	O	Tone signal output terminal
44	F5F2	I	Band pass filter connect terminal (Connected to capacitor)
45	F4IN2	I	Resonance buffer amp input terminal
46	F4O2	O	Resonance buffer amp output terminal
47	F4F2	I	Resonance impedance connect terminal
48	F3IN2	I	Resonance buffer amp input terminal
49	F3O2	O	Resonance buffer amp output terminal
50	F3F2	I	Resonance impedance connect terminal
51	F2IN2	I	Resonance buffer amp input terminal
52	F2O2	O	Resonance buffer amp output terminal
53	F2F2	I	Resonance impedance connect terminal

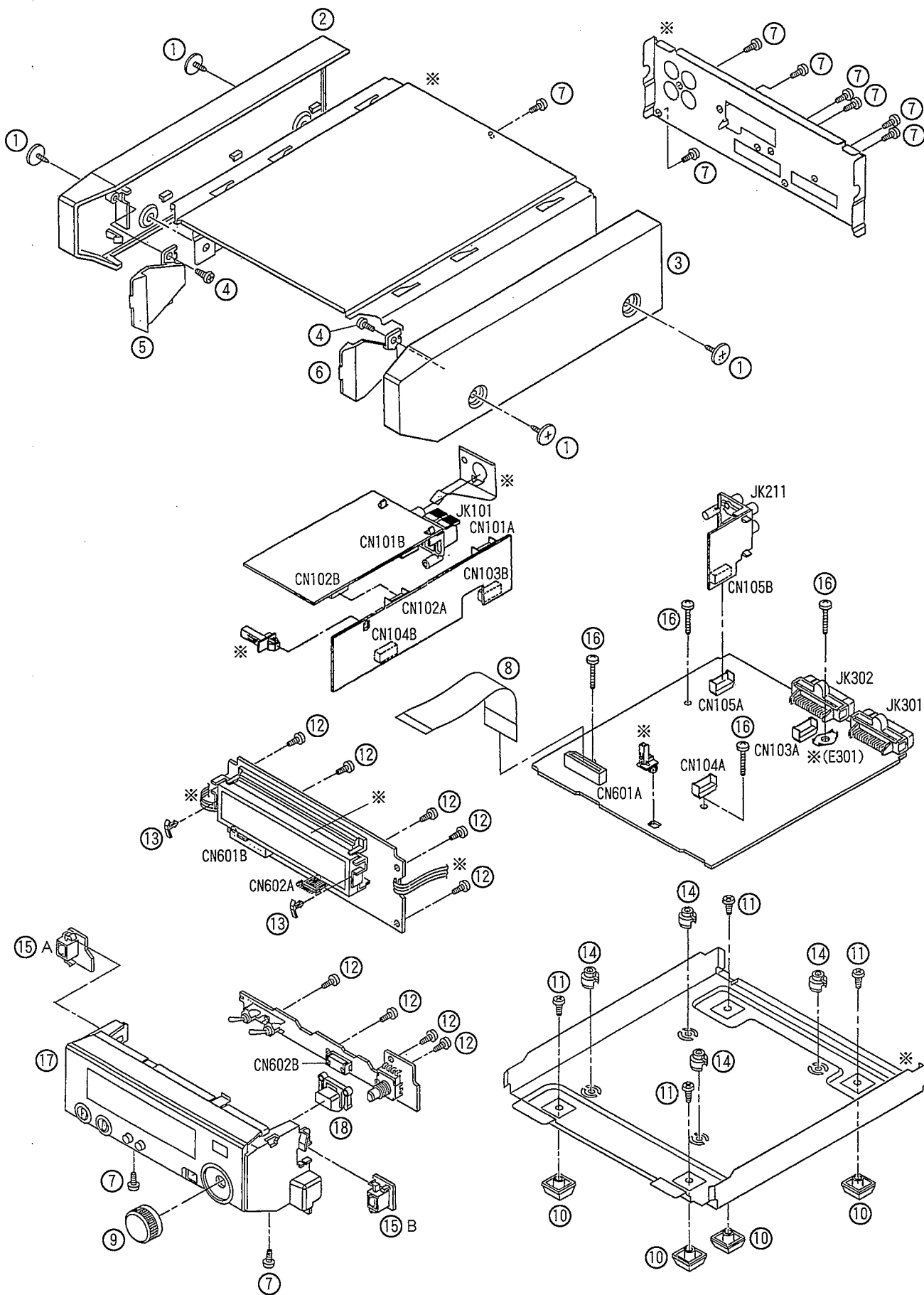
Pin No.	Mark	I/O Division	Function
54	F1IN2	I	Resonance buffer amp input terminal
55	F1O2	O	Resonance buffer amp output terminal
56	F1F2	I	Resonance impedance connect terminal
57	DPL2	I	Tone signal input terminal (Not used, connected to GND)
58	EXT OUT2	O	Rec signal output terminal
59	MD REC2	O	
60	TAPE REC2	O	Rec signal output terminal
61	MIC IN	I	Mic signal input terminal (Not used, connected to GND)
62	KOUT2	I	Key control adaptor input terminal (Not used, connected to GND)
63	KIN2	O	Key control adaptor output terminal (Not used, open)
64	BPOUT	O	Band pass filter amp output terminal for vocal cancel
65	BPIN	I	Band pass filter amp input terminal for vocal cancel

Pin No.	Mark	I/O Division	Function
66	CD	I	Input terminal for Rch
67	TUNER		
68	TAPE		
69	MD		
70	AUXH		
71	AUXL		
72	AVSS	O	Power supply terminal
73	AGND	—	GND terminal
74	AUXL	I	Input terminal for Lch
75	AUXH		
76	MD		
77	TAPE		
78	TUNER		
79	CD		
80	DELIN	O	R/L output terminal for surround (Not used, open)

■ Type Illustration of IC's, Transistors and Diodes

<table border="1"> <tr> <td>LA1833MN-TLM</td> <td>24PIN</td> </tr> <tr> <td>LC72131MDTLM</td> <td>20PIN</td> </tr> <tr> <td>LC72720M-TLM</td> <td>24PIN</td> </tr> </table> 	LA1833MN-TLM	24PIN	LC72131MDTLM	20PIN	LC72720M-TLM	24PIN	<table border="1"> <tr> <td>M62433AFP</td> <td>80PIN</td> </tr> <tr> <td>M30610MA171F</td> <td>100PIN</td> </tr> <tr> <td>M38197MAA608</td> <td>100PIN</td> </tr> </table> 	M62433AFP	80PIN	M30610MA171F	100PIN	M38197MAA608	100PIN	<p>2SB621AQRSTA</p> 	<p>2SC3940AQSTA</p> 
LA1833MN-TLM	24PIN														
LC72131MDTLM	20PIN														
LC72720M-TLM	24PIN														
M62433AFP	80PIN														
M30610MA171F	100PIN														
M38197MAA608	100PIN														
<p>DTC114ESTP DTC143XSTP</p> 	<p>2SB1417PQTA 2SD2137PQTA</p> 	 <p>2SC2787LTA 2SC3311ATA 2SC3311ARSTA UN4111AITA UN4115TA UN4214AITA</p>	<p>1SS291TA MA165TA MA29TATA</p> 	<p>MA185TA</p> 											
 <p>MA4039MTA MA4051MTA MA4051LTA MA4075HTA MA4082LTA</p>	<p>MA719TA</p> 	<p>LNG995PFBW</p> 													

■ Cabinet Parts Location



※ Not supplies.

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	RHD30007-S	SCREW	4	
2	RCK0969-S1	SIDE PANEL (L)	1	
3	RCK0970-S1	SIDE PANEL (R)	1	
4	XTBS26+8J	SCREW	2	
5	RGL0391-Q	PANEL LIGHT (L)	1	
6	RGL0392-Q	PANEL LIGHT (R)	1	
7	XTBS3+8JFZ1	SCREW	10	
8	REZ1083	FFC (23P)	1	
9	RGW0276-S	KNOB, TUNER/JOG	1	
10	RKA0098-K	FOOT	4	
11	XTB3+5JFZ	SCREW	4	
12	XQN26+AJ6FZ	SCREW	9	
13	RMND195	FL. HOLD PIECE	2	
14	SHE170-2	P. C. B. SUPPORT	4	
15	REP2683A-S	LED L, R P. C. B.	1	
16	XTB3+12JFZ	SCREW	4	
17	RFKGTHD55-S	FRONT PANEL ASS'Y	1	
18	RGU1602-S	BUTTON, BAND	1	
C101	ECBT1C103NS5	16V 0.01U	1	
C102	ECEA1CKA101B	16V 100U	1	
C103	ECBT1C103NS5	16V 0.01U	1	
C104, 05	ECBT1H102KB5	50V 1000P	2	
C106	ECBT1C103NS5	16V 0.01U	1	
C107	ECBT1H473ZF5	50V 0.047U	1	
C108	ECBT1H8R2KC5	50V 8.2P	1	
C109	ECBT1H102KB5	50V 1000P	1	
C110	ECBT1C103NS5	16V 0.01U	1	
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	ECFR1C33KR	16V 0.033U	1	
C117, 18	ECFR1C183KR	16V 0.0018U	2	
C119	ECQP1391JZ3	100V 390P	1	
C120	RCE1CKA100BG	16V 10U	1	
C121	RCE1HKAR47BG	50V 0.47U	1	
C122, 23	ECEA1HKA010B	50V 1U	2	

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
C124	ECBT1H101KB5	50V 100P	1	
C125	ECEA1CKA220B	16V 22U	1	
C126	ECBT1H473ZF5	50V 0.047U	1	
C127	ECEA1CKA220B	16V 22U	1	
C129, 30	ECEA0JKA101B	6.3V 100U	2	
C131	ECBT1H101KB5	50V 100P	1	
C132	ECBT1H102KB5	50V 1000P	1	
C133, 34	ECBT1H270JU5	50V 27P	2	
C136	ECBT1H102KB5	50V 1000P	1	
C137	ECFR1E472KR	25V 4700P	1	
C138	ECBT1C103KS5	16V 0.01U	1	
C139	ECFR1E472KR	25V 4700P	1	
C141, 42	ECEA1HKA010B	50V 1U	2	
C143, 44	ECBT1C472KR5	16V 4700P	2	
C147	ECBT1H102KB5	50V 1000P	1	
C148	ECBT1C103NS5	16V 0.01U	1	
C149	ECBT1H104ZF5	50V 0.1U	1	
C211-16	ECBT1H101KB5	50V 100P	6	
C221, 22	ECBT1H104ZF5	50V 0.1U	2	
C223, 24	ECQV1H224JM3	50V 0.22U	2	
C225, 26	ECQB1H333JF3	50V 0.033U	2	
C227, 28	ECQV1H224JM3	50V 0.22U	2	
C229, 30	ECQV1H683JM3	50V 0.068U	2	
C231-34	ECQV1H473JM3	50V 0.047U	4	
C235-38	ECQB1H103JF3	50V 0.01U	4	
C239, 40	ECBT1C332KR5	16V 3300P	2	
C241, 42	RCE1CKA100BG	16V 10U	2	
C243, 44	ECBT1H331KB5	50V 330P	2	
C245, 46	RCE1CKA100BG	16V 10U	2	
C247, 48	ECBT1H331KB5	50V 330P	2	
C249, 50	ECBT1H102KB5	50V 1000P	2	
C253, 54	ECBT1H471KB5	50V 470P	2	
C257-59	ECBT1H470J5	50V 47P	3	
C260	ECBT1H104ZF5	50V 0.1U	1	
C261	RCE1CKA100BG	16V 10U	1	
C263, 64	RCE1CKA100BG	16V 10U	2	
C265, 66	ECBT1E103ZF5	25V 0.01U	2	
C267, 68	ECBT1H102KB5	50V 1000P	2	
C269, 70	ECBT1H101KB5	50V 100P	2	
C271, 72	ECEA1CKA101B	16V 100U	2	
C273, 74	RCE1AKA470BG	10V 47U	2	
C275, 76	ECBT1E103ZF5	25V 0.01U	2	
C277, 78	ECA1EM101B	25V 100U	2	
C279	ECQV1H224JM3	50V 0.22U	1	
C281	ECEA1CKA101B	16V 100U	1	
C282	ECBT1E103ZF5	25V 0.01U	1	
C283	ECEA1CKA101B	16V 100U	1	
C284	ECBT1E103ZF5	25V 0.01U	1	
C285-88	RCE1CKA100BG	16V 10U	4	
C301-06	ECBT1H101KB5	50V 100P	6	
C312	ECQV1H224JM3	50V 0.22U	1	
C401	ECBT1H104ZF5	50V 0.1U	1	
C402-04	ECBT1H102KB5	50V 1000P	3	
C405	ECBT1H104ZF5	50V 0.1U	1	
C406	ECEA1HKA2R2B	50V 2.2U	1	
C407	ECBT1H180J5	50V 18P	1	
C408	ECBT1H150J5	50V 15P	1	
C409, 10	ECBT1H104ZF5	50V 0.1U	2	
C411	ECA0JMJ102	6.3V 1000U	1	
C412	ECBT1E103ZF5	25V 0.01U	1	
C413	RCE1CKA100BG	16V 10U	1	
C414	ECBT1E103ZF5	25V 0.01U	1	
C481	ECEA0JKA101B	6.3V 100U	1	
C501	ECEA0JKA101B	6.3V 100U	1 (EG)	
C502	ECBT1H102KB5	50V 1000P	1 (EG)	
C503, 04	ECBT1H470J5	50V 47P	2 (EG)	
C505	ECBT1H561KB5	50V 560P	1 (EG)	
C506	ECBT1H104ZF5	50V 0.1U	1 (EG)	
C507	ECEA0JKA101B	6.3V 100U	1 (EG)	
C508	ECBT1H331KB5	50V 330P	1 (EG)	
C509	RCE1CKA100BG	16V 10U	1 (EG)	
C611, 12	ECEA1HKS010	50V 1U	2	
C613	ECEA0JKA221B	6.3V 220U	1	
C614	ECBT1E103ZF5	25V 0.01U	1	
C616	ECEA1VKA470B	35V 47U	1	

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks	Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
C618	ECEA0JKA101B	6.3V 100U	1		Q612-14	2SC3311AR	TRANSISTOR	3	
C619	ECBT1E103ZF5	25V 0.01U	1		Q615	UN4214TA	TRANSISTOR	1	
C620	ECEA1HKS2R2B	50V 2.2U	1		Q616	2SB621AQRSTA	TRANSISTOR	1	
C621	ECBT1E103ZF5	25V 0.01U	1						
C631	ECBT1H102KB5	50V 1000P	1		R102	ERDS2FJ472	1/4W 4.7K	1	
C691, 92	ECBT1H101KB5	50V 100P	2		R103	ERDS2FJ101	1/4W 100	1	
C693	ECEA1VKA470B	35V 47U	1		R104	ERDS2FJ103	1/4W 10K	1	
					R105	ERDS2TJ471T	1/4W 470	1	
CF201	RLFFETNGD01L	CERAMIC FILTER	1		R106	ERDS2FJ474	1/4W 470K	1	
CF202	RLFFETMGD01L	CERAMIC FILTER	1		R107	ERDS2TJ331T	1/4W 330	1	
					R108	ERDS2FJ474	1/4W 470K	1	
CN101A, 2A	RJT100W07	CONNECTOR (7P)	2		R109	ERDS2TJ331T	1/4W 330	1	
CN103A-5A	RJT057W007-1	CONNECTOR (7P)	3		R110	ERDS2FJ102	1/4W 1K	1	
CN601A	RJS1A6823	CONNECTOR (23P)	1		R111	ERDS2TJ391T	1/4W 390	1	
CN602A	RJT066H05A	CONNECTOR (5P)	1		R112	ERDS2FJ104	1/4W 100K	1	
					R113	ERDS2FJ103	1/4W 10K	1	
CN101B, 2B	RJT100W07	CONNECTOR (7P)	2		R114	ERDS2J562	1/4W 5.6K	1	
CN103B-5B	RJT057W007	CONNECTOR (7P)	3		R115	ERDS2TJ561T	1/4W 560	1	
CN601B	RJS1A6223-1	CONNECTOR (23P)	1		R116	ERDS2FJ102	1/4W 1K	1	
CN602B	RJT066H05	CONNECTOR (5P)	1		R117	ERDS2TJ683T	1/4W 68K	1	
					R118	ERDS2FJ472	1/4W 4.7K	1	
△D101	MA4051MTA	DIODE	1		R119	ERDS2FJ103	1/4W 10K	1	
D211	MA4051-L	DIODE	1		R120	ERDS2TJ473T	1/4W 47K	1	
△D212, 13	MA4075HTA	DIODE	2		R121	ERDS2TJ223T	1/4W 22K	1	
D214, 15	MA719TA	DIODE	2		R122	ERDS2FJ272	1/4W 2.7K	1	
△D216	MA4082LTA	DIODE	1		R123	ERDS2TJ683T	1/4W 68K	1	
D301, 02	MA719TA	DIODE	2		R124	ERDS2TJ271T	1/4W 270	1	
D303	MA4051MTA	DIODE	1		R125, 26	ERDS2TJ152T	1/4W 1.5K	2	
D401	1SS291TA	DIODE	1		R127	ERDS2TJ471T	1/4W 470	1	
D402-04	MA165	DIODE	3		R128	ERDS2TJ820T	1/4W 82	1	
D405	1SS291TA	DIODE	1		R129	ERDS2TJ273T	1/4W 27K	1	
D406, 07	MA165	DIODE	2		R130	ERDS2FJ103	1/4W 10K	1	
D408	MA185TA	DIODE	1		R131	ERDS2FJ680	1/4W 68	1	
D501	MA165	DIODE	1	(EG)	R132	ERDS2FJ103	1/4W 10K	1	
D611	MA165	DIODE	1		R133-37	ERDS2FJ102	1/4W 1K	5	
D612	MA29TATA	DIODE	1		R138	ERDS2FJ103	1/4W 10K	1	
D691	MA4039MTA	DIODE	1		R139	ERDS2TJ332T	1/4W 3.3K	1	
					R140	ERDS2FJ472	1/4W 4.7K	1	
FL601	RSL0247-F	DISPLAY TUBE	1		R141, 42	ERDS2FJ102	1/4W 1K	2	
					R143	ERDS2TJ223T	1/4W 22K	1	
IC101	LA1833MN-TLM	IC	1		R145, 46	ERDS2FJ104	1/4W 100K	2	
IC102	LC72131MDTLM	IC	1		R211, 12	ERDS2FJ102	1/4W 1K	2	
IC202	M62433AFP	IC	1		R213, 14	ERDS2FJ104	1/4W 100K	2	
IC203	M5218AFPPE3	IC	1		R215, 16	ERDS2FJ102	1/4W 1K	2	
IC401	M30610MA171F	IC	1		R217, 18	ERDS2FJ104	1/4W 100K	2	
IC501	LC72720M-TLM	IC	1	(EG)	R231, 32	ERDS2TJ332T	1/4W 3.3K	2	
IC601	M38197MAA608	IC	1		R233, 34	ERDS2FJ104	1/4W 100K	2	
					R235, 36	ERDS2TJ223T	1/4W 22K	2	
JK101	RJH5210M	ANT. TERMINAL	1		R237, 38	ERDS2FJ103	1/4W 10K	2	
JK211	SJF3069-5N	EXT OUT/IN	1		R243, 44	ERDS2FJ472	1/4W 4.7K	2	
JK301	RJT065K20	SYSTEM CONNECTOR (20P)	1		R247, 48	ERDS2FJ472	1/4W 4.7K	2	
JK302	RJT065K19	SYSTEM CONNECTOR (19P)	1		R254	ERDS2FJ102	1/4W 1K	1	
					R255	ERDS2FJ103	1/4W 10K	1	
L101, 02	ELESNR68MA	COIL, CHOKE	2		R256	ERDS2FJ222	1/4W 2.2K	1	
L103	ELETR47MA9	COIL, CHOKE	1		R257	ERDS2FJ104	1/4W 100K	1	
L309, 10	RLQA100JT-Y	COIL, CHOKE	2		R258	ERDS2FJ105	1/4W 1M	1	
L401	RLQA100JT-Y	COIL, CHOKE	1		R259, 60	ERDS2FJ272	1/4W 2.7K	2	
L501, 02	RLQA100JT-Y	COIL, CHOKE	2	(EG)	R261, 62	ERDS2FJ102	1/4W 1K	2	
L611	RLQA100JT-Y	COIL, CHOKE	1		R263, 64	ERDS2TJ223T	1/4W 22K	2	
					R265-68	ERDS2FJ102	1/4W 1K	4	
Q101, 02	2SC2787L	TRANSISTOR	2		R269, 70	ERDS2FJ104	1/4W 100K	2	
Q106	UN4111	TRANSISTOR	1		R271, 72	ERDS2FJ472	1/4W 4.7K	2	
Q110	2SC3311ARSTA	TRANSISTOR	1		R273, 74	ERDS2FJ103	1/4W 10K	2	
Q211, 12	2SC3311AR	TRANSISTOR	2		R275, 76	ERDS2TJ471T	1/4W 470	2	
Q213	UN4115TA	TRANSISTOR	1		R277, 78	ERDS2FJ102	1/4W 1K	2	
△Q215	2SD2137PQTA	TRANSISTOR	1		△R279, 80	ERD2FCJ4R7	1/4W 4.7	2	
△Q216	2SB1417PQTA	TRANSISTOR	1		R281	ERDS2FJ101	1/4W 100	1	
△Q217	2SC3940AQSTA	TRANSISTOR	1		R283	ERDS2FJ102	1/4W 1K	1	
Q218	2SC3311AR	TRANSISTOR	1		R284	ERDS2TJ221T	1/4W 220	1	
Q401	UN4214TA	TRANSISTOR	1		R285-87	ERDS2FJ102	1/4W 1K	3	
Q402	DTC143XSTP	TRANSISTOR	1		R288, 89	ERDS2FJ103	1/4W 10K	2	
Q403, 04	2SC3311AR	TRANSISTOR	2		R290	ERDS2FJ102	1/4W 1K	1	
Q405	2SB621AQRSTA	TRANSISTOR	1		△R291	ERD2FCG100	1/4W 10	1	
Q406	DTC114ESTP	TRANSISTOR	1		R301, 02	ERDS2TJ471T	1/4W 470	2	
Q611	UN4214TA	TRANSISTOR	1		R303, 04	ERDS2FJ272	1/4W 2.7K	2	

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks	Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
R305, 06	ERDS2TJ822T	1/4W 8.2K	2						
R307, 08	ERDS2FJ472	1/4W 4.7K	2						
R309, 10	ERDS2TJ822T	1/4W 8.2K	2						
R311, 12	ERDS2FJ222	1/4W 2.2K	2						
R313, 14	ERDS2FJ103	1/4W 10K	2						
R323	ERDS2FJ101	1/4W 100	1						
R325	ERDS2FJ103	1/4W 10K	1						
R401-08	ERDS2FJ102	1/4W 1K	8						
R409	ERDS2TJ331T	1/4W 330	1						
R410-17	ERDS2FJ102	1/4W 1K	8						
R418-20	ERDS2FJ103	1/4W 10K	3						
R421-23	ERDS2FJ102	1/4W 1K	3						
R424	ERDS2FJ103	1/4W 10K	1						
R425-28	ERDS2FJ102	1/4W 1K	4						
R429	ERDS2TJ334T	1/4W 330K	1						
R430	ERDS2FJ101	1/4W 100	1						
R431	ERDS2FJ104	1/4W 100K	1						
R432	ERDS2TJ824T	1/4W 820K	1						
R433-45	ERDS2FJ102	1/4W 1K	13						
R446	ERDS2FJ472	1/4W 4.7K	1						
R447	ERDS2FJ102	1/4W 1K	1						
R448	ERDS2FJ101	1/4W 100	1						
R449	ERDS2FJ102	1/4W 1K	1						
R450	ERDS2FJ101	1/4W 100	1						
R451	ERDS2TJ331T	1/4W 330	1						
R452	ERDS2FJ101	1/4W 100	1						
R453-58	ERDS2FJ102	1/4W 1K	6						
R459	ERDS2TJ332T	1/4W 3.3K	1						
R460-65	ERDS2FJ103	1/4W 10K	6						
R466	ERDS2FJ472	1/4W 4.7K	1						
R467, 68	ERDS2TJ333T	1/4W 33K	2						
R470-73	ERDS2FJ103	1/4W 10K	4						
R474	ERDS2TJ223T	1/4W 22K	1						
R475	ERDS2FJ103	1/4W 10K	1						
R476	ERDS2FJ472	1/4W 4.7K	1						
R477	ERDS2TJ473T	1/4W 47K	1						
R478, 79	ERDS2FJ102	1/4W 1K	2						
R480	ERDS2TJ331T	1/4W 330	1						
R482	ERDS2TJ473T	1/4W 47K	1						
R501-04	ERDS2FJ102	1/4W 1K	4 (EG)						
R505, 06	ERDS2FJ103	1/4W 10K	2 (EG)						
R507	ERDS2FJ101	1/4W 100	1 (EG)						
R508	ERDS2FJ104	1/4W 100K	1 (EG)						
R509	ERDS2FJ101	1/4W 100	1 (EG)						
R601	ERDS2TJ122T	1/4W 1.2K	1						
R602	ERDS2FJ102	1/4W 1K	1						
R603	ERDS2TJ821T	1/4W 820	1						
R611-26	ERDS2FJ104	1/4W 100K	16						
R627-36	ERDS2FJ102	1/4W 1K	10						
R637	ERDS2FJ104	1/4W 100K	1						
R638-41	ERDS2FJ101	1/4W 100	4						
R642	ERDS2FJ104	1/4W 100K	1						
R644	ERDS2FJ104	1/4W 100K	1						
R646	ERDS2FJ104	1/4W 100K	1						
R648	ERDS2FJ103	1/4W 10K	1						
R649	ERDS2FJ680	1/4W 68	1						
R691, 92	ERDS2TJ151T	1/4W 150	2						
S601, 02	RST2A001-D	SW, SPOT/TUNE MODE	2						
S603-05	EVQPTD05Q	SW, TACT	3						
VR601	EVQVENF0124B	V. R, TUNE/JOG	1						
X102	RLFDF13DD	OSCILLATOR	1						
X103	RSXC7M20S05T	OSCILLATOR	1						
X401	RSXY10M0M01T	OSCILLATOR	1						
X402	RSXD32K7S05	OSCILLATOR	1						
X501	RSXC4M33S02T	OSCILLATOR	1 (EG)						
X601	EF0EC4194T4F	OSCILLATOR	1						
Z101	RLA2Z003M-T	COMPONENT COMBINATION	1						
Z102	RL12Z006M-T	COMPONENT COMBINATION	1						
Z120	RALD035	FM FRONT END	1						
Z601	RCD12042TE	REMOTE SENSOR	1						

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