ORDER NO. AD9607155C8

Service Manual

Receiver

Home THX control receiver

DOLBY SURROUND PRO · LOGIC

SA-TX50

LUCASFILM THX®

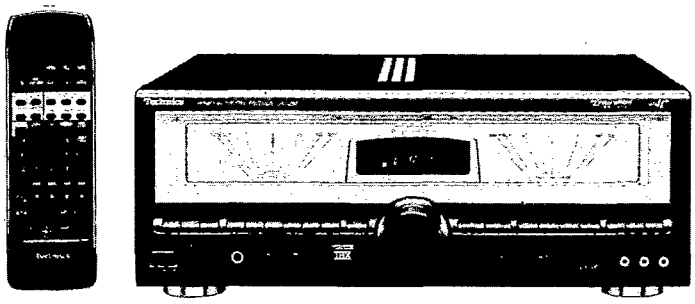
Manufactured under license from Lucasfilm Ltd. U.S. patent numbers 5,043,970; 5,189,703; and 5,222,059. Foreign patents pending. Lucasfilm, THX and Home THX Cinema are registered trademarks of Lucasfilm Ltd.

Colour

(B)...Black Type

Area

Suffix for Model No.	Area	Colour
(E)	Europe.	(K)
(EB)	Great Britain.	
(EG)	Germany and Italy.	
(GU)	Asia, Middle Near East and Africa, Latin America, .	
(GN)	Oceania.	



Specifications (DIN 45 500)

■ POWER AMPLIFIER SECTION

(POWER AMPLIFIER INPUT)

Power output
- **DIN 1 kHz (T.H.D. 1%)** 2×130 W (6 Ω)

20 Hz–20 kHz continuous power output both channels driven 2×125 W (6 Ω)

Total harmonic distortion
- **rated power at 20 Hz–20 kHz** 0.05% (6 Ω)
- **half power at 1 kHz** 0.03% (6 Ω)

Power output at the Dolby Pro Logic operation
- **DIN 1 kHz (T.H.D. 1%)**
  - **Front** 2×120 W (6 Ω)
  - **Center** 120 W (6 Ω)
  - **Surround** 2×100 W (6 Ω)

Intermodulation distortion
- **rated power at 60 Hz: 7 kHz=4:1, SMPTE** 0.3% (8 Ω)

Damping factor 25 (6 Ω)

Load impedance
- **Front**
  - **A or B** 4–16 Ω
  - **A and B** 8–16 Ω
- **Center** 4–16 Ω
- **Surround** 4–16 Ω

■ PRE AMPLIFIER SECTION

Frequency response
- **CD, TAPE, VCR 1, VCR 2, VCR 3, VDP, VDP6CH, TV** 20 Hz–20 kHz, ±1 dB

Input sensitivity and impedance
- **CD, TAPE, VCR 1, VCR 2, VCR 3, VDP, VDP6CH, TV** 300 mV/34 kΩ

S/N at rated power (6 Ω)
- **CD, TAPE, VCR 1, VCR 2, VCR 3, VDP, VDP6CH, TV** 70 dB

Tone controls
- **BASS** 50 Hz, +10 to –10 dB
- **TREBLE** 20 kHz, +10 to –10 dB

* Manufactured under license from Dolby Laboratories Licensing Corporation. Additionally licensed under one or more of the following patents: U.S. numbers 3,632,886, 3,7,56,792 and 3,959,590; Canada numbers 1,004,603 and 1,037,877.
"Dolby" and the double-D symbol are trademarks of Dolby Laboratories Licensing Corporation.

■ FM TUNER SECTION

Frequency range 87.50–108.00 MHz

Sensitivity
- **S/N 30 dB** 1.5 µV/75 Ω
- **S/N 26 dB** 1.3 µV/75 Ω
- **S/N 20 dB** 1.2 µV/75 Ω

IHF usable sensitivity 1.5 µV/75 Ω (IHF '58)

IHF 46 dB stereo quieting sensitivity 22 µV/75 Ω

Total harmonic distortion
- **MONO** 0.2%
- **STEREO** 0.3%

S/N
- **MONO** 60 dB (75 dB, IHF)
- **STEREO** 58 dB (71 dB, IHF)

Frequency response 20 Hz–15 kHz, +1 dB, –2 dB

Alternate channel selectivity
- **±400 kHz** 65 dB

Capture ratio 1 dB

Image rejection at 98 MHz 40 dB

IF rejection at 98 MHz 70 dB

Spurious response rejection at 98 MHz 70 dB

AM suppression 50 dB

Stereo separation
- **1 kHz** 40 dB

Carrier leak
- **19 kHz** –30 dB (–35 dB, IHF)
- **38 kHz** –50 dB (–55 dB, IHF)

Channel balance (250 Hz–6.3 kHz) ±1.5 dB

Limitting point 1.2 µV

Bandwidth
- **IF amplifier** 180 kHz

Technics®

⚠ 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.

FM demodulator	1000 kHz
Antenna terminal(s)	75 Ω (unbalanced)

■ AM TUNER SECTION

For (E, EB) areas.

Frequency range	
MW	522–1611 kHz (9 kHz steps) 530–1620 kHz (10 kHz steps)
LW	144–288 kHz
Sensitivity	
MW	20 µV, 330 µV/m
LW	45 µV
Selectivity	
MW (at 999 kHz)	55 dB
LW (at 252 kHz)	55 dB
Image rejection	
MW (at 999 kHz)	40 dB
LW (at 252 kHz)	40 dB
IF rejection	
MW (at 999 kHz)	55 dB
LW (at 252 kHz)	55 dB

For (EG, GU, GN) areas.

Frequency range	
522–1611 kHz (9 kHz steps)	
530–1620 kHz (10 kHz steps)	
Sensitivity	20 µV, 330 µV/m
Selectivity at 999 kHz	55 dB
Image rejection at 999 kHz	40 dB
IF rejection at 999 kHz	55 dB

■ VIDEO SECTION

Output voltage at 1 V input (unbalanced)	1 ±0.1 Vp-p
Maximum input voltage	1.5 Vp-p
Input/output impedance	75 Ω (unbalanced)

■ GENERAL

Power supply	
For (EB, GN) areas.	AC 50 Hz, 230–240 V
For (E, EG, GU) areas.	AC 50 Hz, 230 V
Power consumption	330 W
Dimensions (W×H×D)	430×170×375 mm
Weight	12.0 kg

■ REMOTE CONTROL TRANSMITTER

Control keys	57 keys
Dimensions (W×H×D)	70×28×215 mm
Weight (including batteries)	160 g
Power source	Two UM-4 / "AAA" (Panasonic R03 / LR03 or equivalent)

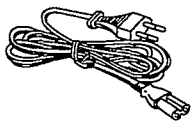
Notes:

1. *Design and Specifications are subject to change without notice. Weight and dimensions are approximate.*
2. Total harmonic distortion is measured by the digital spectrum analyzer.

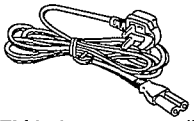
■Contents

■Accessories

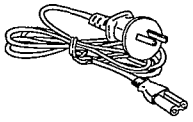
AC power supply cord .....1pc.
(RJA0019-2K): **For (E, EG, GU) areas.**



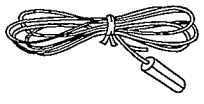
(RJA0049-K)
: For (EB) area.



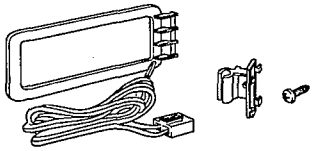
(RJA0035-K)
: For (GN) area.



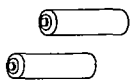
FM indoor antenna (RSA0007).....1 pc.



AM loop antenna set (RSA0010) .....1 pc.
- AM antenna holder (RMN0244).....1 pc.
- Screw (XTN3+12AFZ).....1 pc.



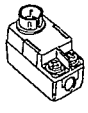
Remote control transmitter
(RAK-SA610WH) ..... 1 pc.
Batteries for remote control transmitter .....2 pcs.
(UM-4, "AAA", R03)



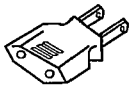
Note: These are available on sales route.

Attachment plug (SJP9009).....1 pc.
For (EB) area only.

Antenna plug (RFE0014) .....1 pc.
For (GU, GN) areas.



Power plug adaptor (RFE0028) .....1 pc.
For (GU) area only.



■Cautions for AC Mains Lead

(For (EB) area only.)
For your safety, please read the following text carefully.

This appliance is supplied with a moulded three pin mains plug for your safety and convenience.
A 5-ampere fuse is fitted in this plug.
Should the fuse need to be replaced please ensure that the replacement fuse has a rating of 5-ampere and that it is approved by ASTA or BSI to BS1362.
Check for the ASTA mark ⓐ or the BSI mark ⓚ on the body of the fuse.

If the plug contains a removable fuse cover you must ensure that it is refitted when the fuse is replaced.
If you lose the fuse cover the plug must not be used until a replacement cover is obtained.
A replacement fuse cover can be purchased from your local dealer.

CAUTION!
IF THE FITTED MOULDED PLUG IS UNSUITABLE FOR THE SOCKET OUTLET IN YOUR HOME THEN THE FUSE SHOULD BE REMOVED AND THE PLUG CUT OFF AND DISPOSED OF SAFELY.
THERE IS A DANGER OF SEVERE ELECTRICAL SHOCK IF THE CUT OFF PLUG IS INSERTED INTO ANY 13-AMPERE SOCKET.

If a new plug is to be fitted please observe the wiring code as shown below.
If in any doubt please consult a qualified electrician.

IMPORTANT

The wires in this mains lead are coloured in accordance with the following code:
Blue: Neutral, Brown: Live.
As these colours may not correspond with the coloured markings identifying the terminals in your plug, proceed as follows:
The wire which is coloured Blue must be connected to the terminal which is marked with the letter N or coloured Black or Blue.
The wire which is coloured Brown must be connected to the terminal which is marked with the letter L or coloured Brown or Red.

WARNING: DO NOT CONNECT EITHER WIRE TO THE EARTH TERMINAL WHICH IS MARKED WITH THE LETTER E, BY THE EARTH SYMBOL ⏚ OR COLOURED GREEN OR GREEN/YELLOW.

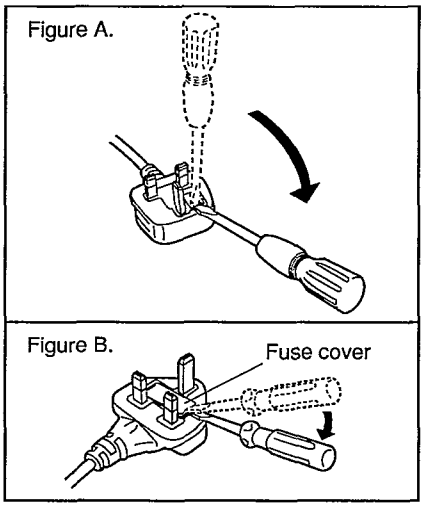
THIS PLUG IS NOT WATERPROOF–KEEP DRY.

Before use

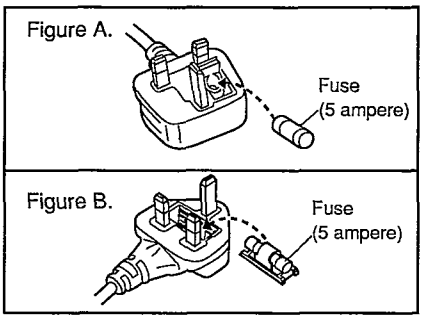
Remove the connector cover.

How to replace the fuse

The location of the fuse differ according to the type of AC mains plug (figures A and B). Confirm the AC mains plug fitted and follow the instructions below. Illustrations may differ from actual AC mains plug.
1. Open the fuse cover with a screwdriver.



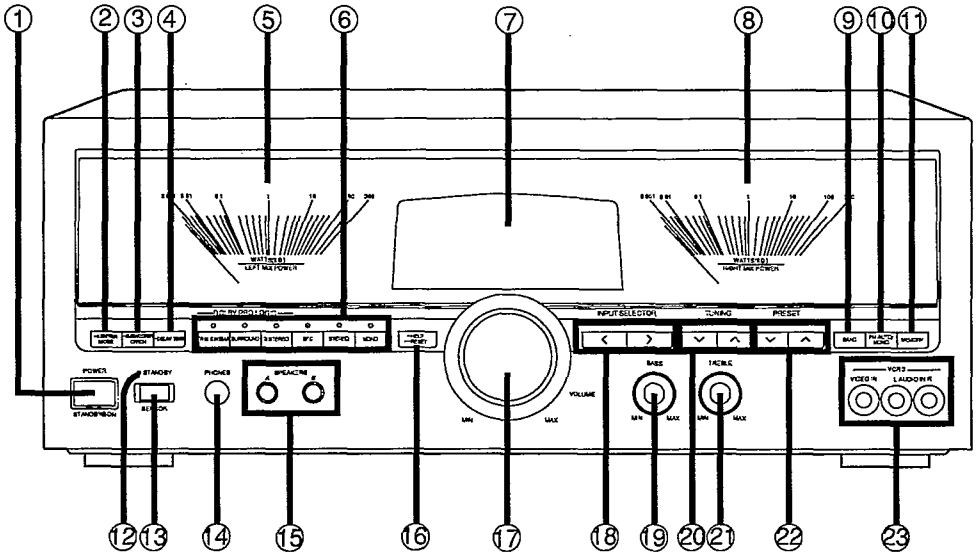
2. Replace the fuse and close or attach the fuse cover.



(For (EG, GU, GN) areas.

THIS TUNER/RECEIVER IS CAPABLE OF RECEIVING THE NEW AM STEREO BROADCASTS FROM THE AM BAND RADIO STATIONS. HOWEVER LIKE MANY TUNERS AND RECEIVERS CURRENTLY AVAILABLE ON THE MARKET IT WILL REPRODUCE THIS AM STEREO SIGNAL ONLY IN AM MONO, WHICH, IN EFFECT, IS OF NO LESSER QUALITY THAN YOUR EXISTING AM MONO TUNER/RECEIVER.

■Front Panel Controls



No.	*Name*
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.
②	**Center mode select button (–CENTER MODE)**
③	**Subwoofer OFF/ON button (–SUBWOOFER OFF/ON)**
④	**Delay time adjust button (–DELAY TIME)**
⑤	**Left channel power meter (LEFT MIX POWER)**
⑥	**Playback mode select buttons/indicators**
⑦	**Display**
⑧	**Right channel power meter (RIGHT MIX POWER)**
⑨	**Band select button (BAND)**
⑩	**FM mode select button (FM AUTO/MONO)**
⑪	**Memory button (MEMORY)**
⑫	**"STANDBY" indicator (STANDBY)** When the unit is connected to the AC mains supply, this indicator lights up in standby mode and goes out when the unit is turned on.

No.	*Name*
⑬	**Remote control signal sensor (SENSOR)**
⑭	**Headphone jack (PHONES)**
⑮	**Speaker select buttons (SPEAKERS)**
⑯	**Help/reset button (-HELP –RESET)**
⑰	**Volume control (VOLUME)**
⑱	**Input select buttons (INPUT SELECTOR)**
⑲	**Bass control (BASS)**
⑳	**Tuning control buttons (TUNING)**
㉑	**Treble control (TREBLE)**
㉒	**Preset channel select button (PRESET)**
㉓	**VCR 3 front input terminals (VCR 3)**

Power meters (⑤, ⑧)

The meters on each side of the display indicate the power mix of all the speakers combined, the left power mix on the left and the right power mix on the right.
When only the center speaker is producing sound, as is the case with monaural signals, output testing or dialogues heard in the Dolby Pro Logic playback mode, the left and right needles waver exactly the same.

For your reference

The short and long bars found on some of the buttons indicate whether you have to press (-) the button or hold it down (–) to access/operate the function.

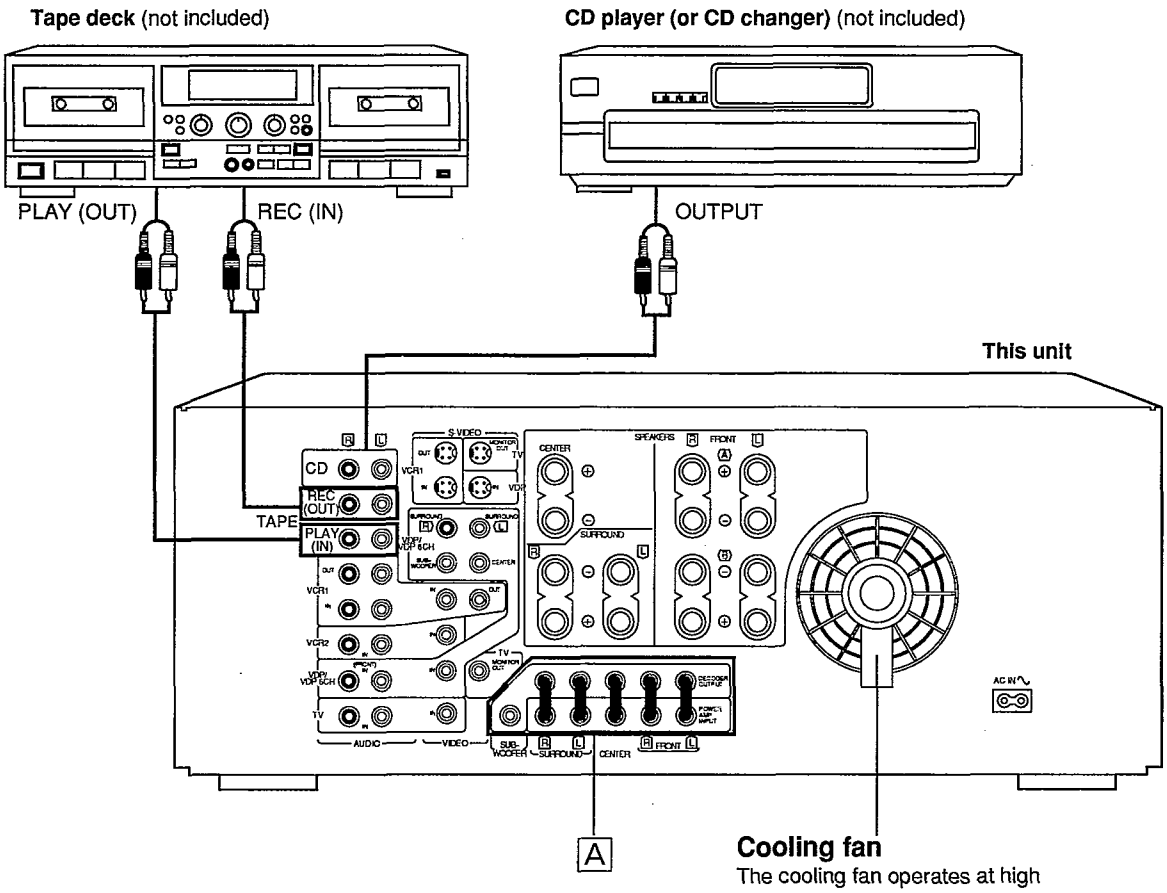
■Equipment Connections

Connecting audio equipment

Make sure that the power supply for all components has been turned off before making any connections.

Note
Do not place books, etc., on top of this unit or block the heat radiation vents in any way.

Stereo connection cable (not included) (L) White (R) Red
Video connection cable (not included)



A "DECODER OUTPUT"/ "POWER AMP INPUT" terminals

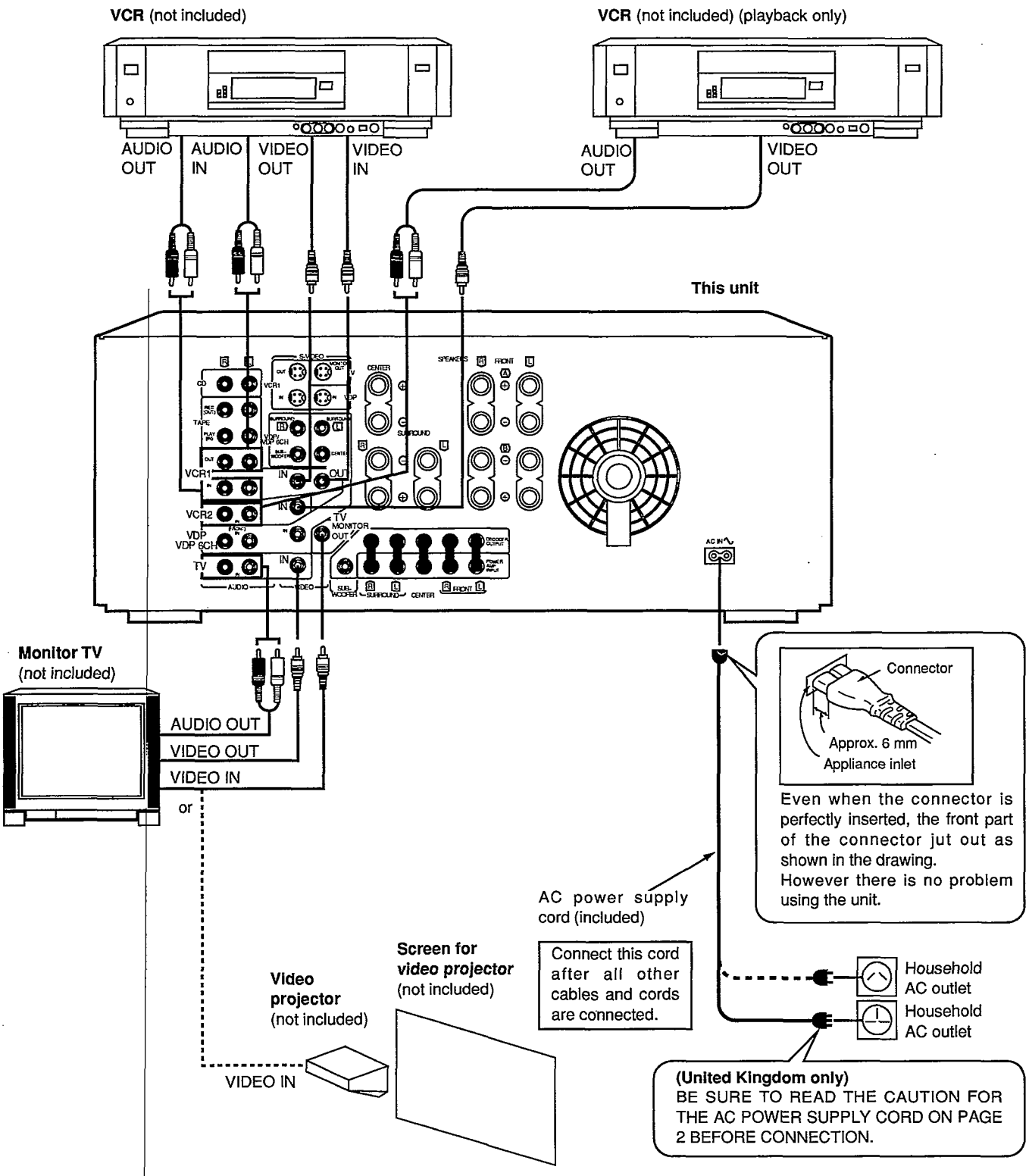
These terminals can be used in either of the following two ways.

1. For connecting a power amplifier (not included). This will allow you to enjoy amply reproduced sounds in large rooms of more than about 85 cubic meters. (See page 13.)

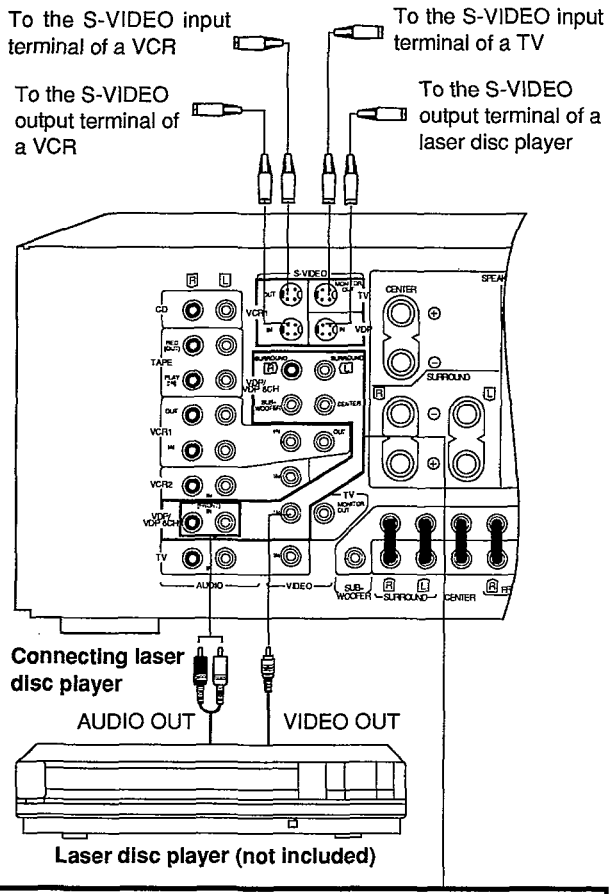
2. For connecting a graphic equalizer (not included). This lets you correct the sound quality of your system, such as adjusting frequency characteristics to the listening room.
With a graphic equalizer, you have to use the "DECODER OUTPUT" and "POWER AMP INPUT" terminals of a specific channel whose sound quality you want to correct. Connect the "DECODER OUTPUT" terminal to the input terminal on the graphic equalizer, and the output terminal on the graqhic equalizer to the "POWER AMP INPUT" terminal.

Connecting video equipment

Stereo connection cable (not included) (L) White (R) Red
Video connection cable (not included)



Connections to/from S-VIDEO terminals
This receiver has an S-VIDEO terminal for a TV, laser disc player and VCR (VCR 1 only)



Caution when using a TV with an S-VIDEO terminal

On some television models, the video signal from components which do not use S-VIDEO input and are connected only to the VIDEO terminals will not be shown on the television screen.
If this occurs, use one of the following methods to view the video signal.

Does the television have a "VIDEO/S-VIDEO" selector switch?

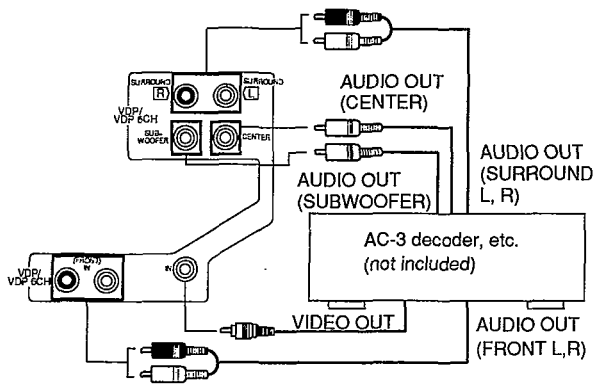
YES — Set the switch to "VIDEO".

NO —

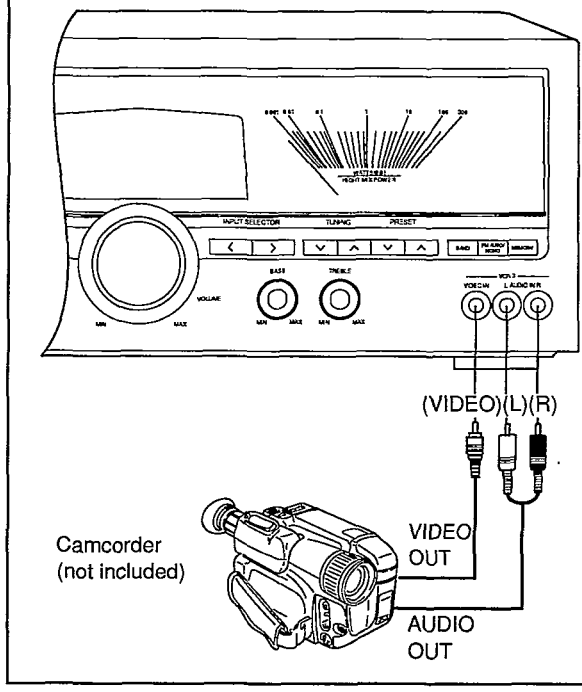
If the television has two or more video input terminals
Connect the VIDEO terminal and the S-VIDEO terminal to different video input terminals on the television, and switch the picture on the television according to the video source being played.

If the television has only one video input terminal
Disconnect the S-VIDEO cable connected to the television's S-VIDEO terminal and connect only the video terminal.

Connecting components capable of 6 channel output such as AC-3 decoders

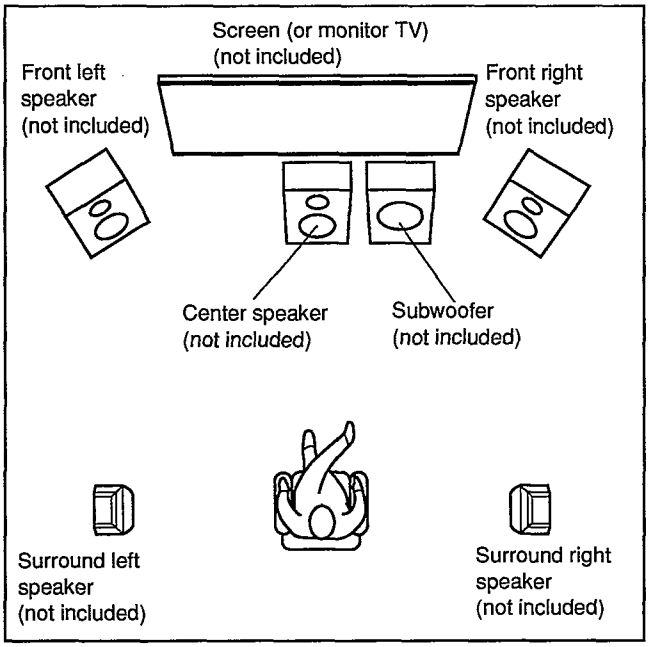


Connecting to the front VCR 3 terminals



■Speaker Connections

Placement of speakers



For front speakers

Place the front left/right speakers at both the left and right edges of the screen at seated ear height so that there is good coherency between the picture and sound.

For center speaker

Place the center speaker underneath or above the center of the screen (or monitor TV).
Aim the speaker such that it is pointed at the seating area.

For surround speakers

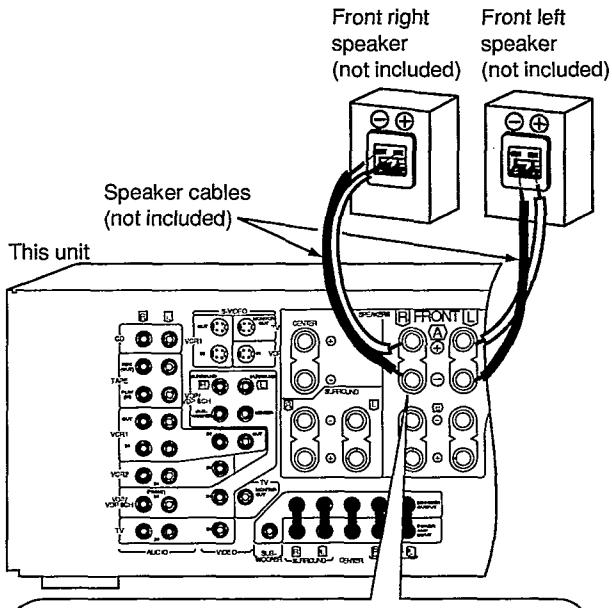
Place these speakers somewhere between 1.5 m–2 m from the floor on the left and right sides of the listening position.

For subwoofer

The subwoofer can be placed in any position as long as it is at a reasonable distance from the screen or monitor TV.
Note that some experimentation in placement of the subwoofer can yield smoothest low frequency performance. Placement near a corner can increase the apparent output level, but can result in unnatural bass.

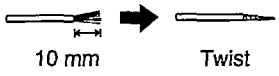
For your reference:
The SA-TX50 will provide outstanding performance when used with any speaker system. For most accurate multichannel soundtrack reproduction, the use of a THX-certified speaker system is recommended.

Connection of front speakers



To connect cords to terminals

① Strip off the outer covering, and twist the center conductor.

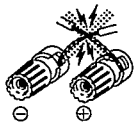


② Turn completely to the left.

③ Insert the wire and turn completely to the right. Pull the cord to assure a proper connection.
Be sure to only connect positive (+) cords to positive (+) terminals, and negative (–) cords to negative (–) terminals.

Note

To prevent damage to circuitry, never short-circuit the positive (+) and negative (–) speaker wires.



- Banana type connectors are not suitable for use with the speaker terminals of this unit.
- When connecting THX-approved front speakers, be sure to also use a THX-approved subwoofer in order to achieve a full THX system.

■ "B" terminals

For connection to a second pair of speakers.

■ Speaker impedance

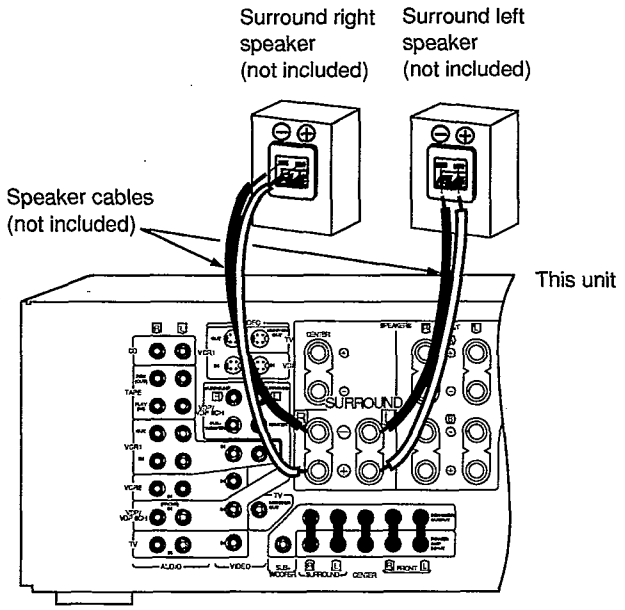
When only the "A" or "B" speakers are connected:
The impedance of the speaker used with this unit must be 4–16 Ω.

Note

If speakers under 6 Ω are connected, be sure to set the impedance on the unit to LOW according to step 2 on page 10.

When both the "A" and "B" speakers are connected simultaneously:
The impedance of the speaker used with this unit must be 8–16 Ω.

Connection of surround speakers



Note

Before sound can be heard from the surround speakers, both surround speakers must be connected.

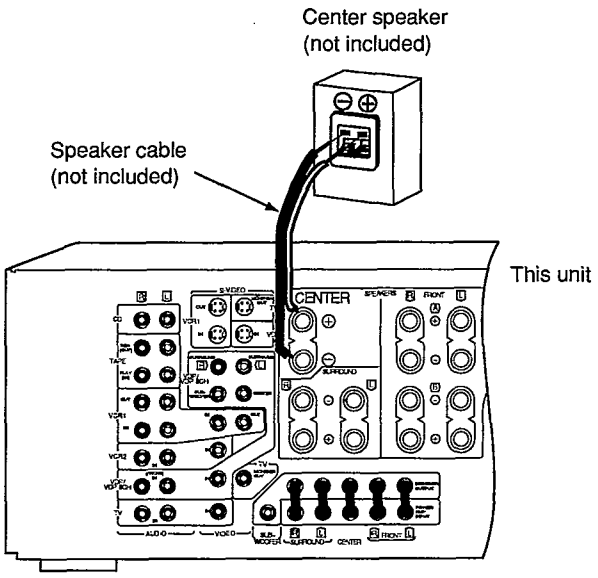
■ Speaker impedance

The impedance of any speaker used with this unit must be 4–16 Ω.

Note

If speakers under 6 Ω are connected, be sure to set the impedance on the unit to LOW according to step 2 on page 10.

Connection of center speaker



■ Speaker impedance

The impedance of any speaker used with this unit must be 4–16 Ω.

Note

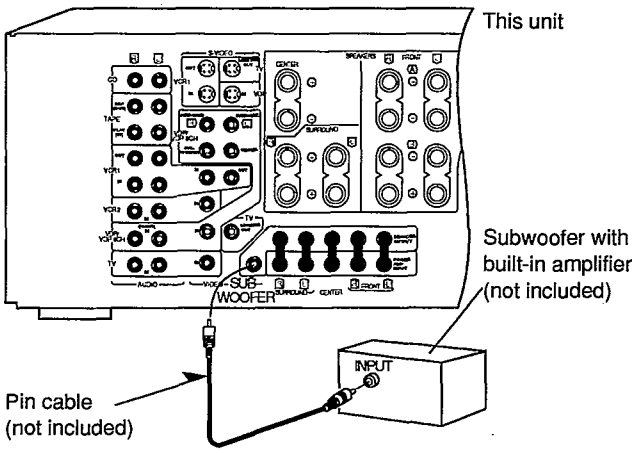
If a speaker under 6 Ω is connected, be sure to set the impedance on the unit to LOW according to step 2 on page 10.

Connection of subwoofer

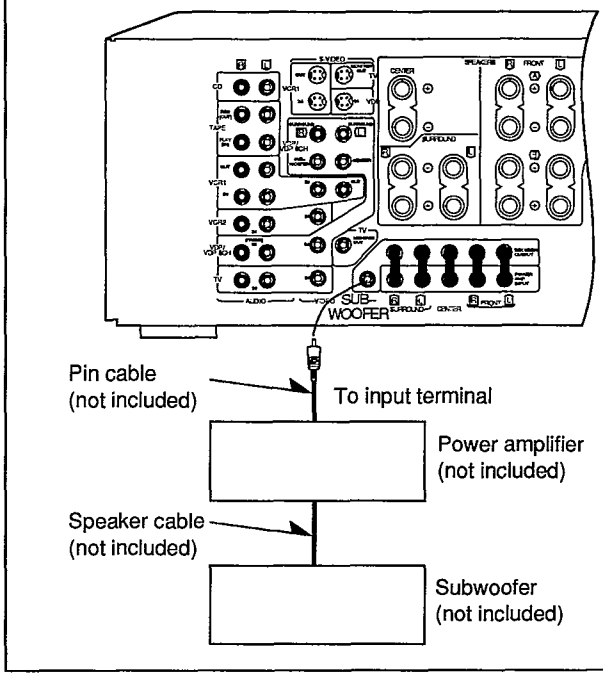
A subwoofer is recommended when bass sounds are inadequately reproduced from front speakers that are too small.
For subwoofer placement, see page 8.

Note

- The SA-TX50 has no amplifier section designed especially for the subwoofer, so it is necessary to purchase a subwoofer with a built in amplifier or buy the two separately.
- The SA-TX50 will provide outstanding performance when used with any subwoofer and power amplifier.
  For most accurate sound reproduction, the use of THX-certified subwoofer and power amplifier is recommended.

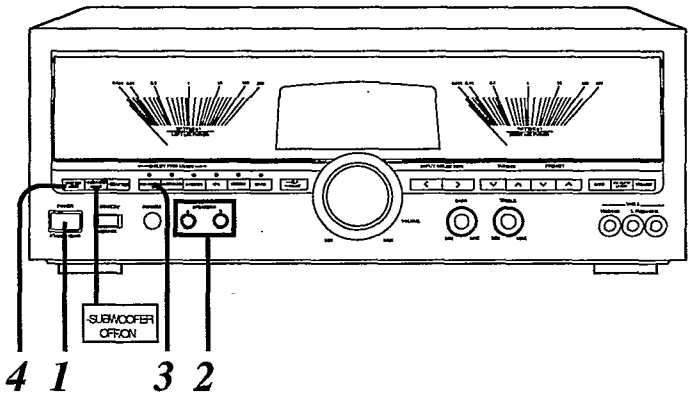


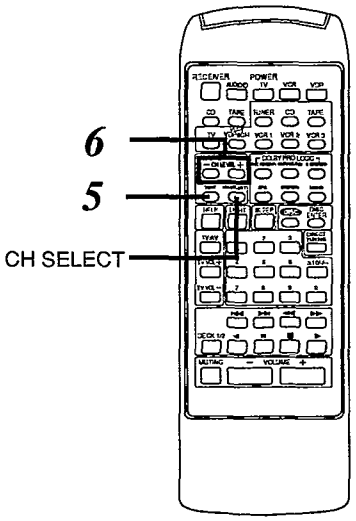
Connecting a subwoofer which does not have a built-in amplifier



■Preparation for Dolby Pro Logic Operation

Adjusting the output level of each speaker





- Before operation, set VOLUME to the "MIN" position.
- When viewing a video, turn on the power supply for the TV and set the TV to video mode.
- When ready to adjust speakers output level, situate yourself away from the speakers as you normally do when listening.

1 POWER

Press POWER to switch on the power.

2 SPEAKERS A B

Press A or B to select the front speaker systems to be used.

A and B refer to the speaker terminals at the rear of the unit.

Illuminates

If the button is pressed once more, the indicator will switch off and no sound will be heard from the speakers.

When using speakers with under 6 Ω impedance

If even one of the speakers being used has an impedance of under 6 Ω, press either button A or button B for 4 seconds or more to set the impedance on the main unit to LOW.

Illuminates

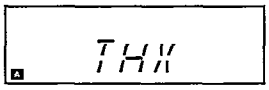
(*Press once again for 4 seconds or more to turn it off.*)
Note that when this indicator is illuminated, speakers A and B cannot both be used at the same time.

To change a speaker:

e.g. To use B speaker press A (the [A] indicator goes out), and then press B to activate the B speaker.

3 THX CINEMA

Press THX CINEMA to turn on the THX CINEMA mode.



The indicator above this button will illuminate.

4 CENTER MODE

Press CENTER MODE to select the correct center mode.

When the button is pressed, the current center mode is displayed. Holding it down again changes the center mode.

NORM [NORMAL <SMALL>]
When the center speaker is smaller than the front speakers

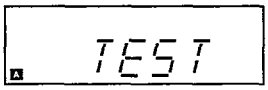
WIDE [WIDE <LARGE/THX>]
When the center speaker is the same size as the front speakers or when your speaker system is THX certified and includes a subwoofer

PHAN [PHANTOM <NONE>]
When no center speaker is connected.

5 TEST

by remote control only

Press TEST to output a test signal.



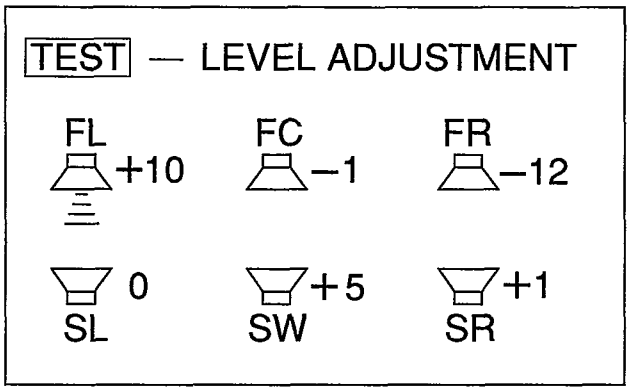
Test signal sounds automatically and switches from speaker to speaker.
You can also select a particular speaker without waiting until its turn comes, by pressing CH SELECT.

Front left speaker → Center speaker → Front right speaker
↑
Subwoofer ← Surround left speaker ← Surround right speaker
↓

Note

In the PHANTOM mode, the sound from the center speaker can not be heard.

When you turn on the TV and set the TV to the video mode, the output test display will appear on the TV. (See page 16.)



In this example, the test signal is being emitted by the front left speaker.

6 — CH LEVEL +

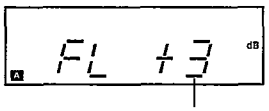
by remote control only

Press CHANNEL LEVEL (–) or (+) to adjust the output level balance.

Adjust each speaker with CHANNEL LEVEL "+", "–" to obtain equal sound level all around.

: Decrease the output level.

: Increase the output level.



The output levels can be varied within a range of –12 dB to +12 dB.

For your reference:

- If you have a sound level meter, set all speakers to 75 dB SPL (C-weighted/slow mode at seating position).
- To help you balance your speakers accurately, the test signal is output at a uniform volume and is not effected by volume control settings.

TEST

To stop the test signal

Press TEST on the remote control.

For your reference

When you adjust speaker output level (steps 2–6), output level is automatically adjusted for not only the THX CINEMA mode but also the SURROUND and 3 STEREO modes.

Note

If you replace your front speakers after adjusting output level, playback balance may be lost depending on speaker efficiency. If this happens, simply readjust output level.

If a subwoofer is not connected to this unit.

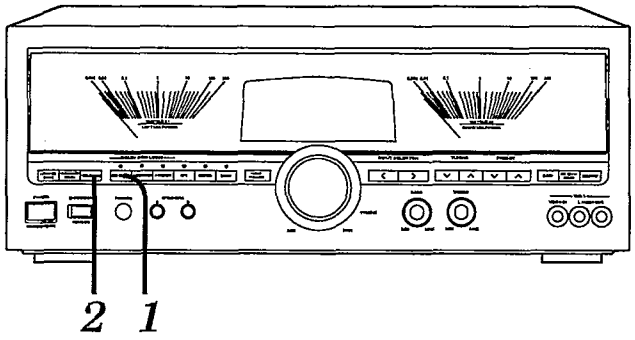
SUBWOOFER OFF/ON

Hold down SUBWOOFER OFF/ON until "OFF" appears.

To return to the "ON" condition, hold down the button until the "ON" appears.

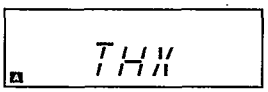
Adjusting the delay time

This adjustment reduces audible crosstalk from the surround speakers so that screen sounds such as dialogue will be correctly heard from their normal position at the front.



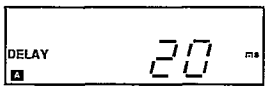
1 — THX CINEMA

Press THX CINEMA to turn on the THX CINEMA mode.

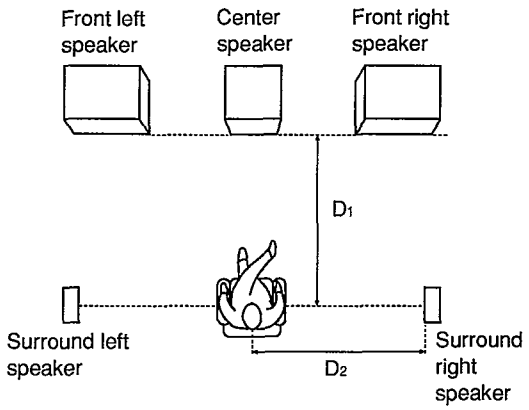


2 — DELAY TIME

Press DELAY TIME to set to the suitable time.



When the button is pressed, the current delay time is displayed. If you then hold it down, the delay time changes.
Each time you perform this combination, the delay time will increase by 5 ms within a range of 15 ms to 30 ms.
To calculate the delay time, refer to the calculation method below.
The standard setting is 20 ms.



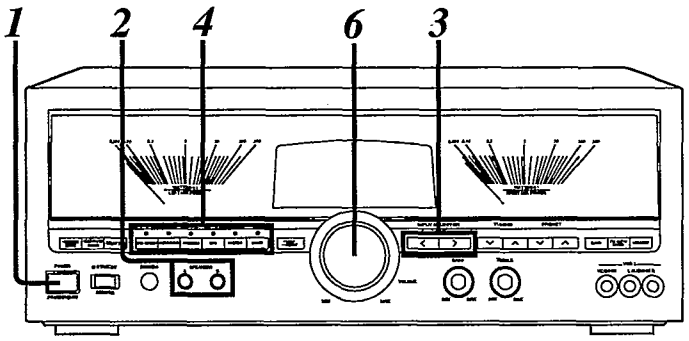
D_1: Distance from front speakers
D_2: Distance from surround speakers

- **If D_1 is equal to or less than D_2**
  Set to 15 ms.
- **If D_2 is less than D_1**
  Start at 15 ms and increase by 5 ms for every 1.5 m of difference between D_1 and D_2.

For your reference

When you adjust delay time (steps 1 and 2), delay time is automatically adjusted for not only the THX CINEMA mode but also the SURROUND mode.

■Basic Operations



- Before operation, set VOLUME to the "MIN" position.
- Before operation, turn on the power supply for the TV and set the TV/VIDEO mode as described below.

To enjoy videos or laser discs
Set it to VIDEO mode.
To watch TV
Set it to TV mode.

1 POWER

Press POWER to switch on the power.

2 SPEAKERS A B

Press A or B to select the speaker system to be used.

Note

If using both speakers A and B at the same time, be sure to set the playback mode to "STEREO" (see step 4.).

3 INPUT SELECTOR < >

Press INPUT SELECTOR (< or >) to select the desired source.

Each time you press this button, audio and video sources will be switched as follows.

TUNER → CD → TAPE → VCR 1 → VCR 2 → VCR 3 → VDP → VDP6CH → TV → TUNER

These indications correspond to terminals on the front and rear panels. Switch the displayed indication to the source you want to use.

Note

When you select "VDP6CH" as the input source, you do not have to perform step 4 because the playback mode is fixed for VDP6CH sources.

4 THX CINEMA

Press to select the desired playback mode.

THX CINEMA: For motion picture program material recorded in the Dolby Surround format (See the right page.)
SURROUND: For program material recorded in the Dolby Surround format but which was not mixed in a film dubbing stage (See the right page.)
3 STEREO: For program material which has been recorded in the Dolby Surround format without the use of surround speakers (See the right page.)
SFC: For giving the music or movie presence and spread.
STEREO: For CD's and tapes recorded in stereo
MONO: For monaural recordings

5

Start the desired source.

- See the operating instructions for listening to radio broadcasts.
- See the appropriate operating instructions for operating optional equipments.

6 VOLUME

Turn VOLUME to adjust the volume level.

For your reference
If you want, you can reproduce the same volume used in dubbing stages. To do so, set output level from all your speakers to 75 dB SPL (see step 6 on page 11). Watch the sound level meter to get an accurate setting. And, select the THX CINEMA mode (step 4 on this page). Finally, and most importantly, set volume control to "REFERENCE".

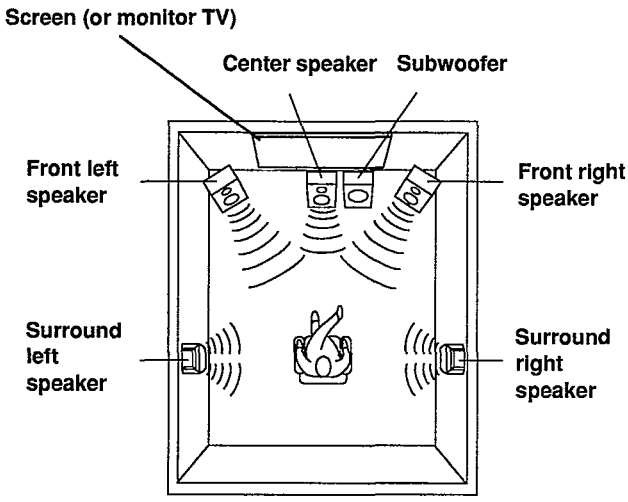
After listening is finished
Be sure to reduce the volume level, and switch the power to the standby condition by pressing POWER.

DOLBY PRO LOGIC modes

There are three modes of operation. BEFORE using any of them, be sure you make all the preparations explained on pages 10 and 11.

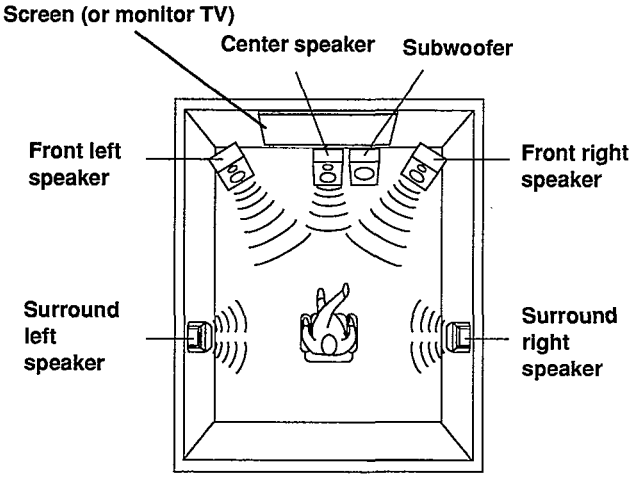
THX CINEMA

This mode faithfully reproduces motion picture program material which has been recorded in the Dolby Surround format.
It achieves this by recreating the sonic qualities of film studio sound recording stages (known as the dubbing stage).
Home THX systems provide home viewers with the same degree of sound quality as the THX theater sound systems created by Lucasfilm Ltd. By combining this sound with the picture on a wide screen, this mode lets you enjoy a true home sound system with full intensity and feeling of "being there".



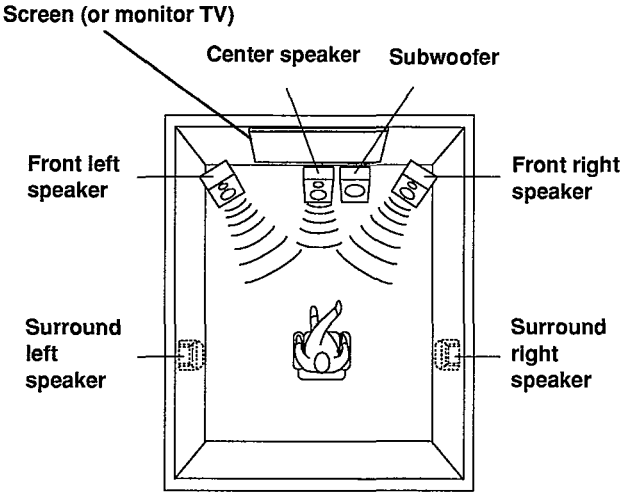
SURROUND

This mode is for program material which has been recorded in the Dolby Surround format but which was not mixed in a film dubbing stage. By reproducing the feeling of depth and movement of sound, video software or compact discs recorded with Dolby Surround provide the listener with a feeling of "being there".



3 STEREO

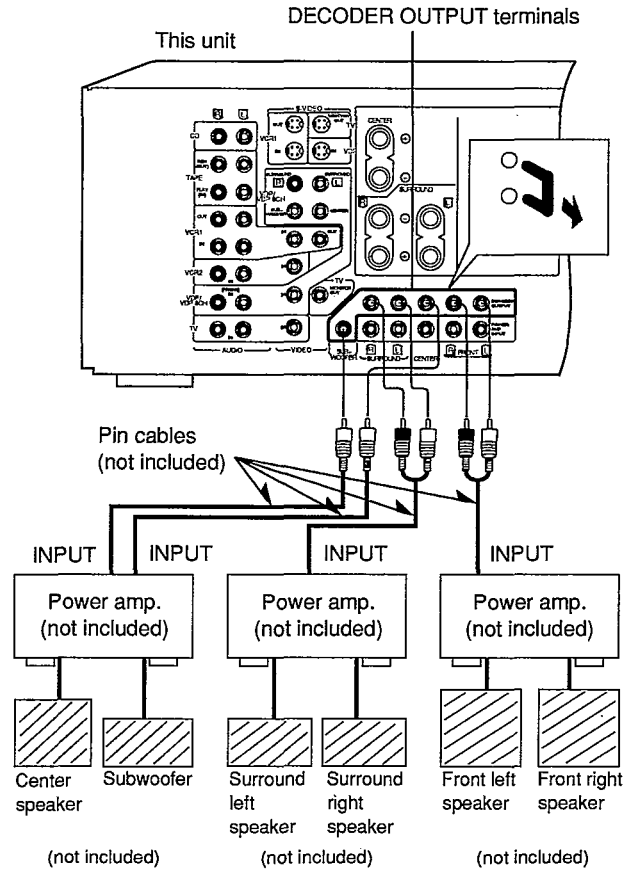
This mode reproduces program material which has been recorded in the Dolby Surround format without the use of surround speakers. Also music and news programs can be heard with better clarity and localization.



■Optional Power Amplifier Connections

(Using the DECODER OUTPUT terminals)

If the listening room in your home has a total volume of more than about 85 cubic meters you can best experience THX sound by connecting larger external power amplifiers (sold separately) to the "DECODER OUTPUT" terminals on the rear of this unit.



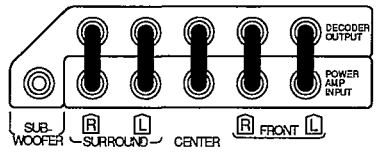
Note when using the "DECODER OUTPUT" terminals

- In order to obtain correct multi-channel playback performance, be sure to press speaker select button A or B on the front of this unit (A and/or B will illuminate).
  If you do not do this (if neither A or B is illuminated on the display), sound will not come out from any speakers other than the front left/right speakers.
- The SA-TX50 will provide outstanding performance when used with any speaker and power amplifier.
  For most accurate sound reproduction, the use of THX-certified speakers and power amplifiers is recommended.

When DECODER OUTPUT terminals are not in use

Be sure to insert the "shorting" pins (included).

Always insert pins top-to-bottom, never sideways, and completely to the rear.



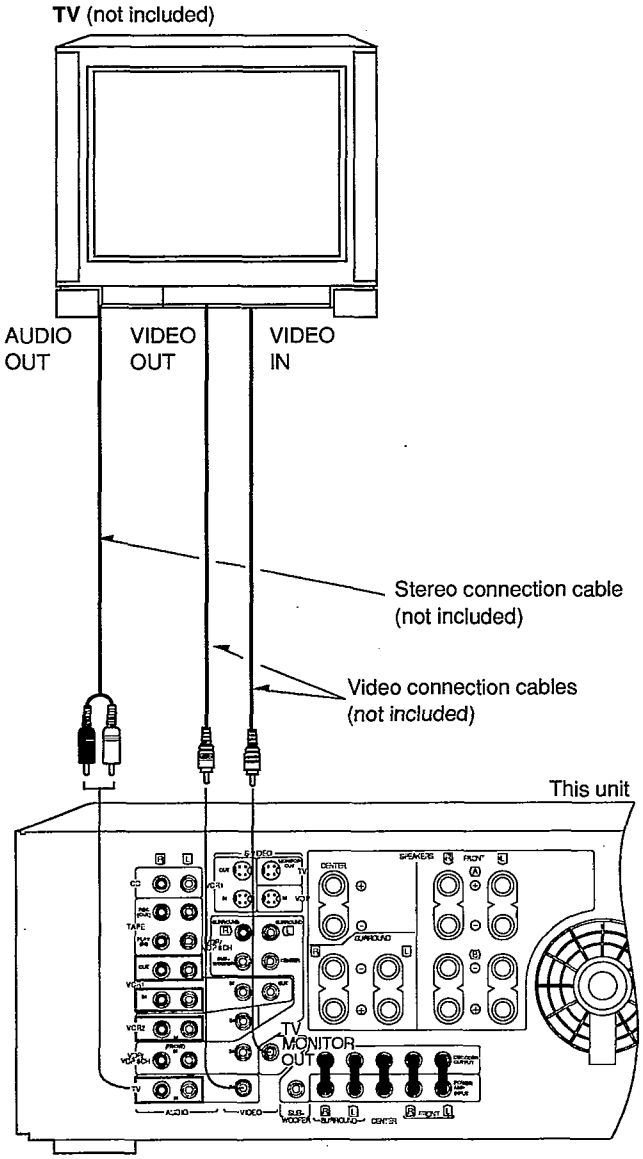
■On-Screen Display Function

The On-Screen Display function can provide a wide range of information on a TV screen, thus making operation easier.
For example, by pressing the button(s), the state of each setting will display. If there is no sound and you do not understand why, press the HELP button to display an outline drawing of the unit and applicable operating procedures on the TV.

Note
The On-Screen Displays are produced as PAL system video signals. With TVs of other video systems, the displays may not be clear.

Before trying to display anything
- Check your receiver is connected from "TV MONITOR OUT" on the rear panel to "VIDEO INPUT" on the TV rear panel.
- Turn on the power supply for the TV and set the TV to the video mode.

Note
When using a TV with an S-VIDEO terminal, see page 7.



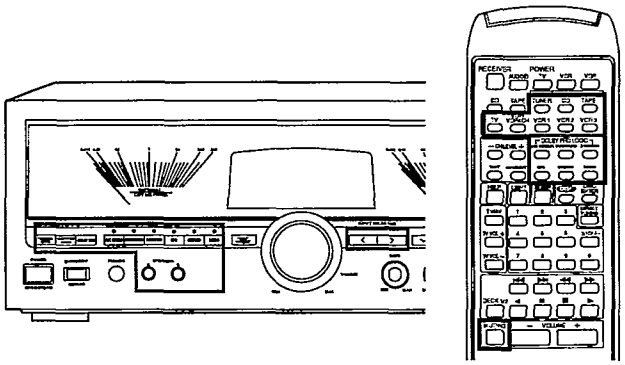
Types of displays for TV screens

There are 5 different types of displays that appear on the TV.

1 *Simple stereo operation displays*

These displays mirror operation as you press buttons.

They are directly superimposed over the picture while you watch and operate your receiver, except, of course, if no picture is projected, then a blue background is produced.
Messages are displayed only when you operate the controls show below.



In this example, the VCR1 has been selected as the input source.

Note
While muting is ON, the message "MUTING ON NOW" is displayed. The box and wording are alternately highlighted to call your attention to the fact that the sound has been muted.

■ Auto HELP

The following messages run across the TV screen when you turn ON the power to the receiver, if your receiver is set as described below.

Receiver setting	Messages
Both speakers A and B are OFF	SPEAKERS OFF NOW

To turn OSDs (On-screen display) ON/OFF
Hold down the FM AUTO/MONO button on the main unit for a moment. Every time you hold the button down, the function switches between ON and OFF. On the TV, OSD ON and OSD OFF will be displayed as you make your selection.
REMEMBER the FM AUTO/MONO button turns ON/OFF the simple stereo operation displays only and has nothing to do with other displays mentioned in this section.

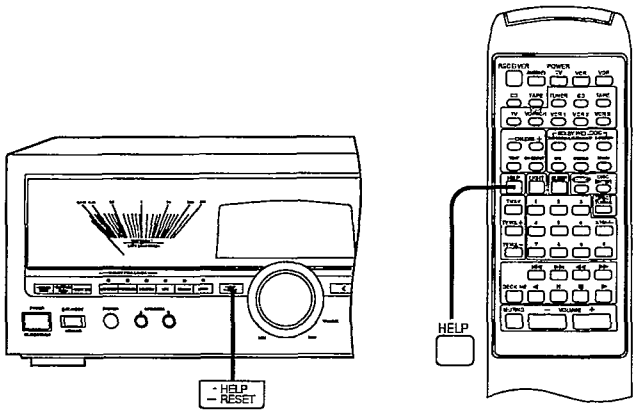
Types of displays for TV screens

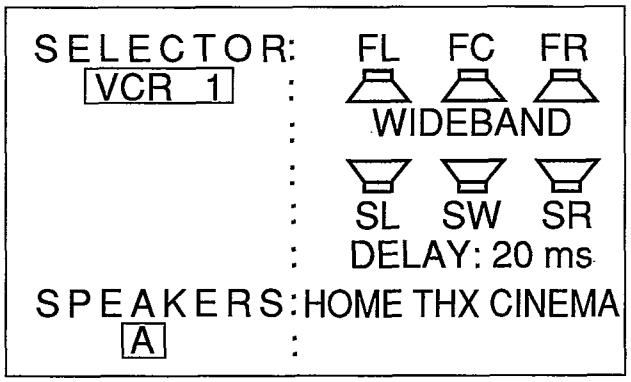
2 *Basic control status display*

This display lets you get a quick view of your present settings.

Though basic, it puts the status of the settings below on a single screen, in front of a blue background, for your review.
To view, press the HELP button. (Touch only.)
Pressing again turns off the display.

- Currently set input source
- Selected speaker systems
- Dolby Pro Logic/SFC/STEREO/MONO/VDP6CH modes





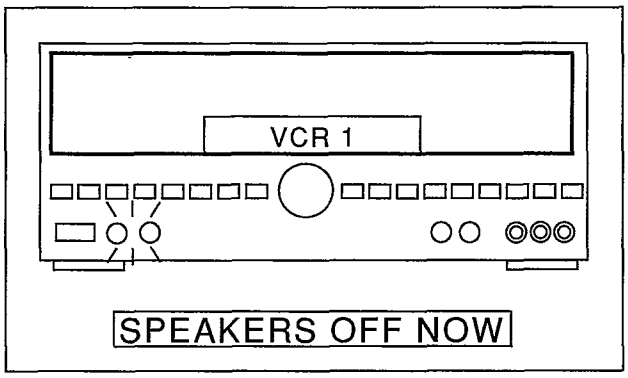
In this example, VCR1 has been selected as the input source, speaker A is selected, delay time is 20 ms, the DOLBY PRO LOGIC THX CINEMA mode is ON and the WIDEBAND is selected as the center mode.

When you're having trouble operating your receiver, the help display appears when you press the HELP button (Touch only). (See "Help displays" at the right.)

3 *Help displays*

These displays promptly advise you on what to do when you're having trouble operating your receiver, for example, when no sound comes out.
To get help, press the HELP button (Touch only). The button you need to operate will start flashing on the illustration and information you'll want to know will be highlighted on a green background.

Example 1

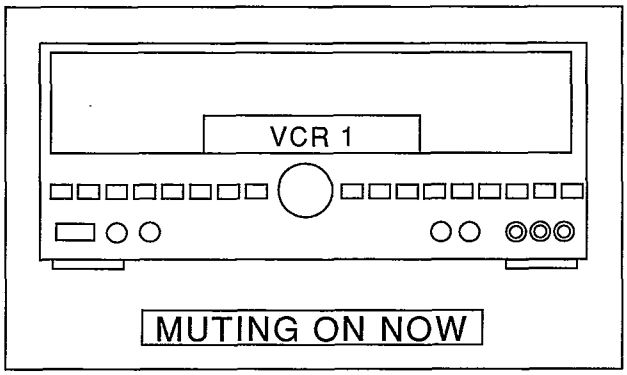


In this example, sound is not coming out because the speaker select buttons are both OFF.

Note

In the above example, after the message shown is displayed, the message "SELECT SPEAKER A OR B" runs across the screen from right to left, instructing you how to gain back the sound.

Example 2



In this example, sound is not coming out because muting is ON.

Note

In the above example, after the message is displayed, the message "PRESS THE MUTING BUTTON ON REMOTE CONTROLLER" runs across the screen from right to left, instructing you how to gain back the sound.

If you press the wrong button or do something the receiver won't let you, the message "ERROR" will be shown on the receiver's display. At the same time, the message "PLEASE PRESS THE HELP BUTTON" will run across the TV screen.
In such a case, press the HELP button (Touch only). A worded message explaining how to fix the trouble will run across the display while the button you need to press will flash on the illustration also.

■ When you wrongly input the frequency in direct tuning

The message "ENTER CORRECT FREQUENCY" will run across the screen.

■ When you try turning ON both speaker A and B while Dolby Pro Logic (THX CINEMA, SURROUND, 3 STEREO), SFC or MONO is ON

The message "PRESS THE STEREO BUTTON OR SELECT ONLY SPEAKER A OR B" will run across the screen.

■ When you try turning ON both speaker A and B while VDP6CH mode is ON

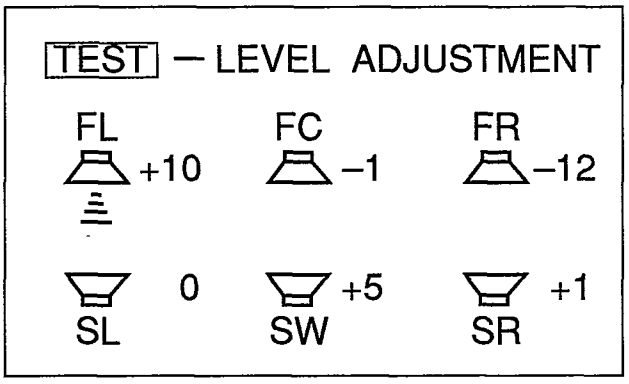
The message "SELECT ONLY SPEAKER A OR B" will run across the screen.

■ When you try turning ON either Dolby Pro Logic (THX CINEMA, SURROUND, 3 STEREO), SFC or MONO while both speaker A and B are ON

The message "TURN OFF SPEAKER A OR B" will run across the screen.

4 *Output test display*

This display is handy when adjusting speaker output level if you're using Dolby Pro Logic (THX CINEMA, SURROUND, 3 STEREO) and VDP6CH.
As each speaker emits the test signal, that speaker's icon is highlighted on the TV. The display follows the sequence the speakers do, unless of course, you select a particular speaker, then it returns to that speaker's icon.



In this example, the THX CINEMA mode has been selected and the test signal is being emitted by the front left speaker.

Note

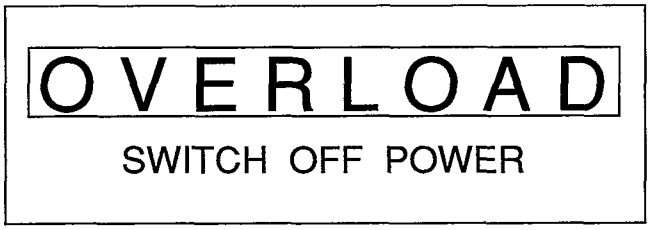
While you adjust output level, the test signal is produced only from the speaker you are now adjusting. At the same time, the display stops on that speaker's icon and a volume bar indicating output in dB appears. The level then changes as you adjust output.

5 *Overload display*

When this message is displayed, you have overloaded your system.

Probable cause(s)
The protection circuitry has functioned because the positive and negative speaker connection wires are "shorted". Speaker systems with an impedance less than the indicated rated impedance of this unit are used or under severe use, such as loud volume, excessive power and in an excessively hot environment.

The "OVERLOAD" message will appear on a red background. When this display comes up, switch off the power, and after determining and correcting the cause, switch ON the power once



■Service Mode

Turn ON the power button simultaneously pressing "POWER", "SP A" and "MONO" buttons as shown in **Fig.1.**

↓

"SURR" appears in the display as shown in **Fig.2.**

↓

Press the button "CHANNEL LEVEL(+) or (-)" on the remote control transmitter as shown in **Fig.3.**

↓

The numbers appears in the display (min. -12 ~ max.+12) as shown in **Fig.4.**

↓

Amplifier circuit is "OK".

Note: To cancel, turn the power button OFF.

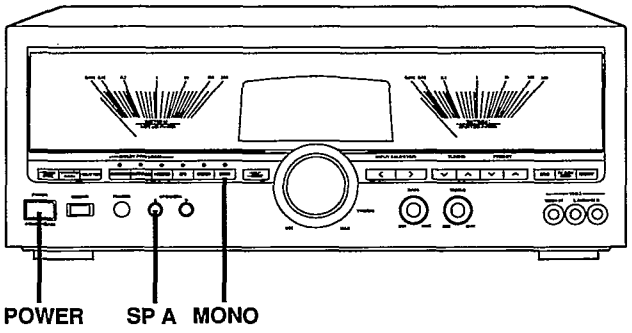


Fig.1

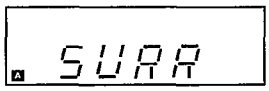


Fig.2

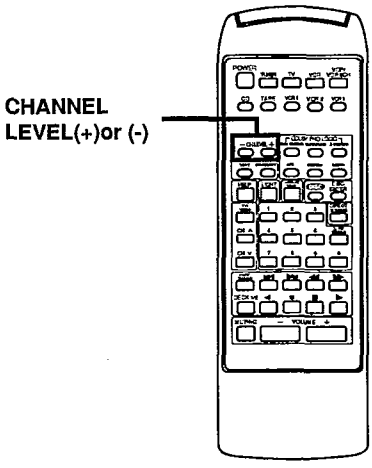


Fig.3

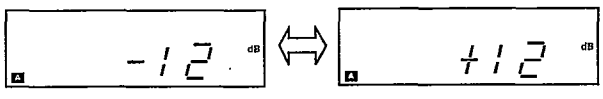


Fig.4

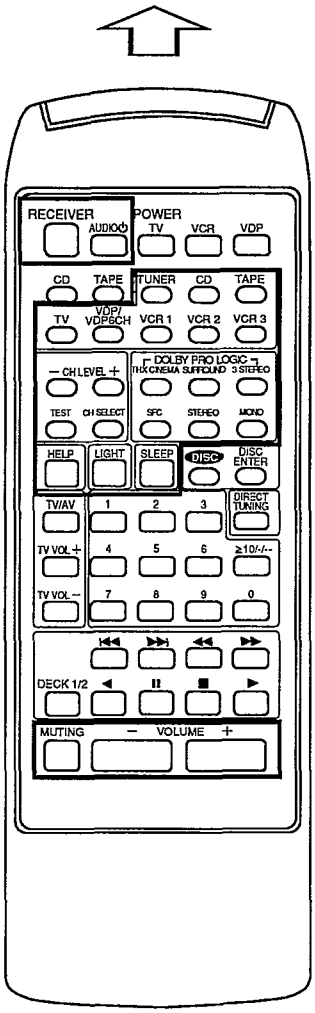
■Remote Control Operation

This remote control transmitter can be used to operate other units manufactured by this company in addition to this receiver, including TVs and VCRs manufactured since 1985, laser disc players, CD players (or CD changers) and cassette decks which are equipped with a remote control sensor.

For detailed information concerning operation steps, etc., please refer to the appropriate page for each unit and the respective operating instructions.

To operate the receiver

Facing toward the receiver



Basic operations

To turn the receiver ON/OFF	RECEIVER
To select an input source	TUNER CD TAPE / TV VDP/VDP6CH VCR 1 VCR 2 VCR 3 Each time you press the VDP/VDP6CH button, "VDP" and "VDP6CH" will be switched alternately.
To select the desired playback mode	THX CINEMA SURROUND 3 STEREO SFC STEREO MONO Each time you press the SFC button, you can change the SFC mode.
To output a test signal	When the THX CINEMA, SURROUND, 3 STEREO or VDP6CH mode is ON TEST Press once more to stop the test signal.
To adjust the output level of each speaker	CH SELECT ➡ – CH LEVEL + or (See pages 10 and 11.) TEST ➡ – CH LEVEL +
To select the sleep timer	SLEEP Changes as follows each time the button is pressed. 30 → 60 → 90 → OFF
To display basic control status and procedures for remedying trouble	HELP (See pages 12 and 15.)
To mute the sound level	MUTING Press once more to return to the original volume.
To adjust the volume level	– VOLUME +
To turn the power meter light OFF/ON	LIGHT
To turn the audio system OFF	AUDIO (This may not be possible with some models.)

■ Operation Checks and Main Component Replacement Procedures

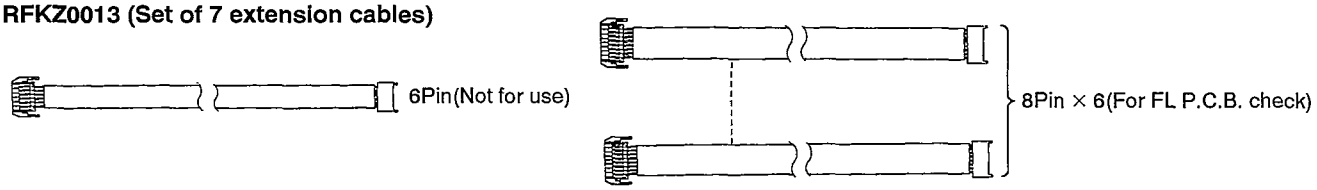
NOTE

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.
3. Select items from the following index when checks or replacement are required.
4. *Illustrated screws are equivalent to actual size.*
5. Refer the parts No. on the page of "Main Component Replacement Procedures", if necessary.

• Contents

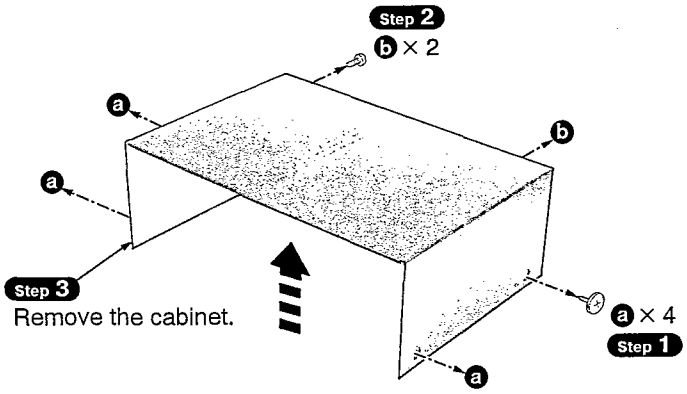
• The following extension cable kits is necessary to check the unit's P.C.B.

• **RFKZ0013 (Set of 7 extension cables)**

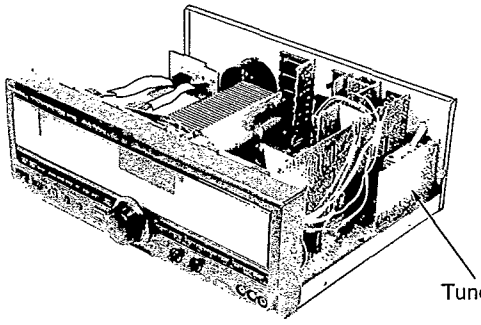


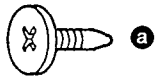
■ Checking Procedure for each P.C.B.

1. Checking for the tuner P.C.B., IN/OUT terminal P.C.B. and video terminal P.C.B.

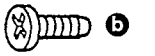


• **Check the tuner P.C.B. as shown below.**

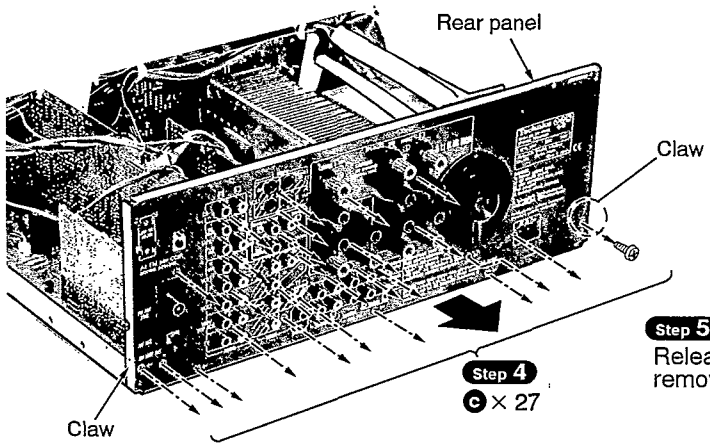




[SNE2129–3] (Black)



[XTBS3+8JFZ1] (Black)

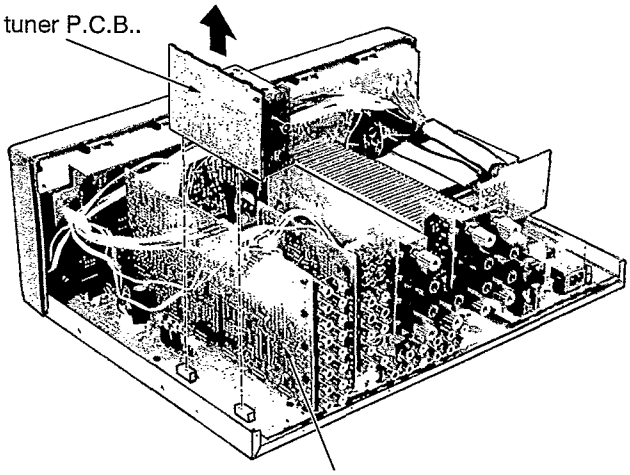


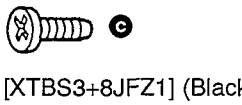
Step 4
ⓒ × 27

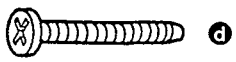
Step 5
Release the claws, and then remove the rear panel.

• **Check the IN/OUT terminal P.C.B. as shown below.**

Step 6
Pull out the tuner P.C.B..

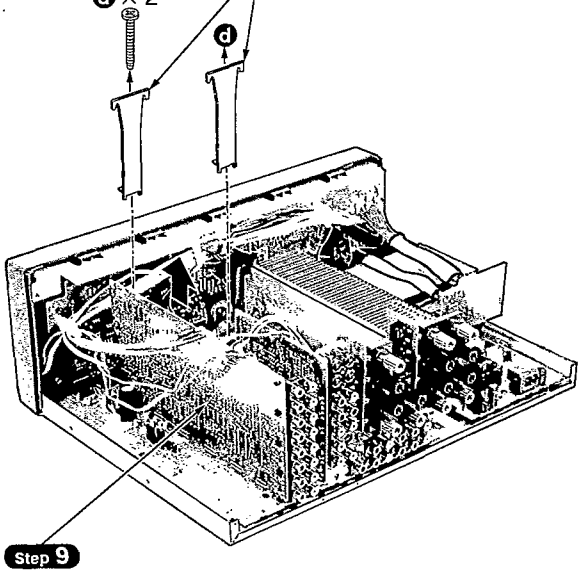



ⓒ
[XTBS3+8JFZ1] (Black)


ⓓ
[XTB3+20JFZ] (Black)

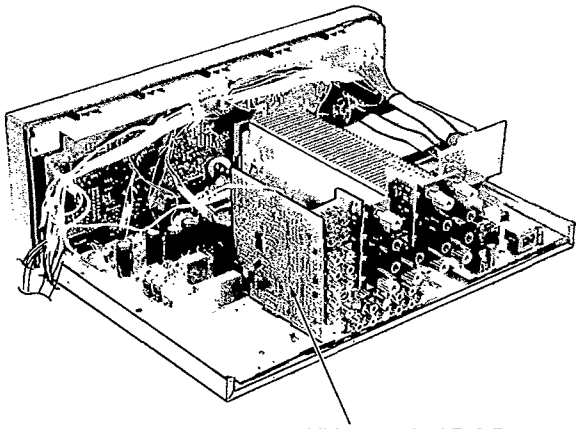
Step 8
Remove the hold ornament.

Step 7
ⓓ × 2



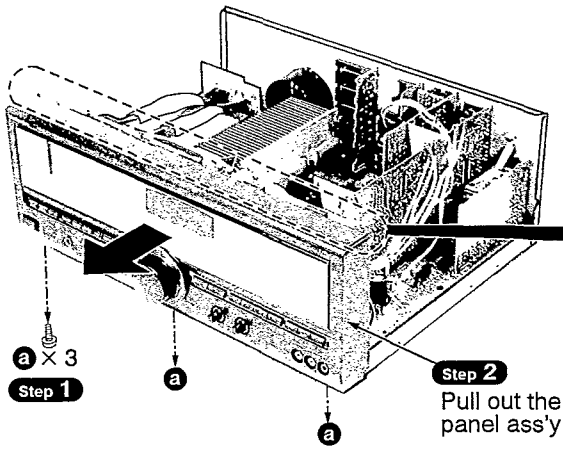
Step 9
Pull out the IN/OUT terminal P.C.B..

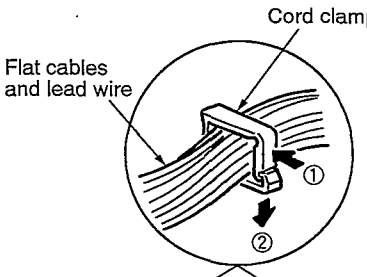
• **Check the video terminal P.C.B. as shown below.**



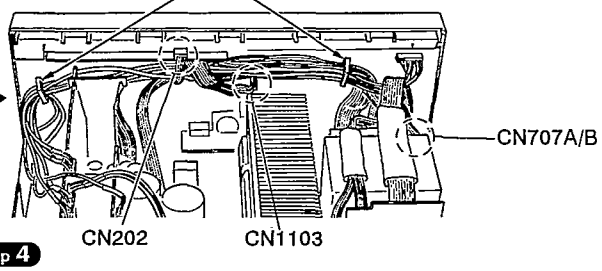
2. Checking for the digital P.C.B. and FL panel P.C.B.

• Follow the Step 1 ~ Step 3 in item 1 on checking procedure for each P.C.B. on page 18.

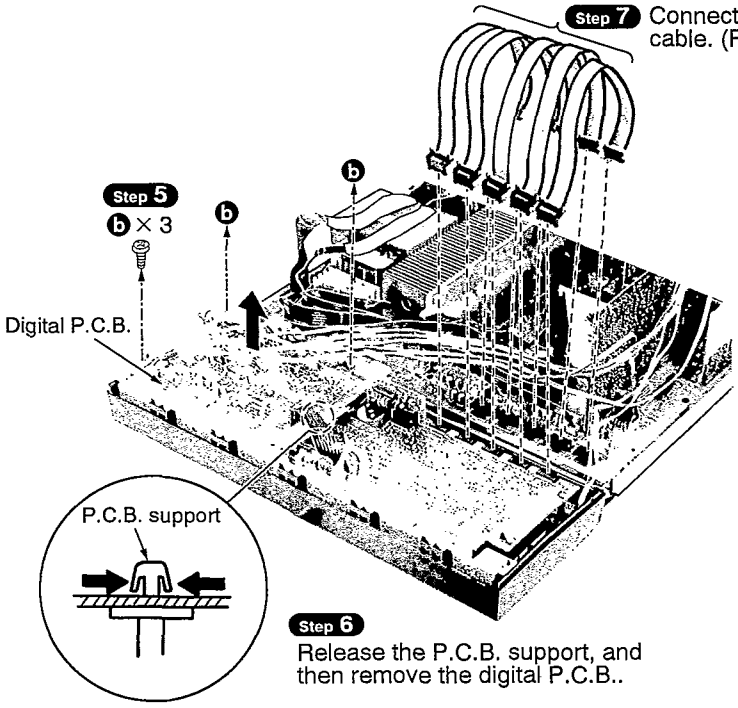




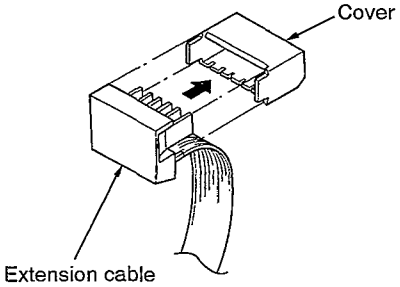
Step 3 Remove the flat cable and lead wire from cord clamper.



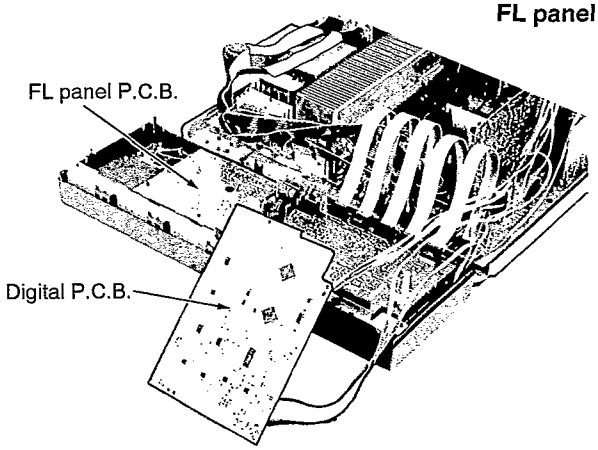
Step 4 Remove the 3 connectors(CN202,CN707A/B,CN1103), and then release the lead wire arrangement.
After releasing the lead wires, reinstall the 3 connectors (CN202,CN707A/B,CN1103)



NOTE
Remove the cover of extension cable.



• **Check the digital P.C.B. and FL panel P.C.B. as shown below.**

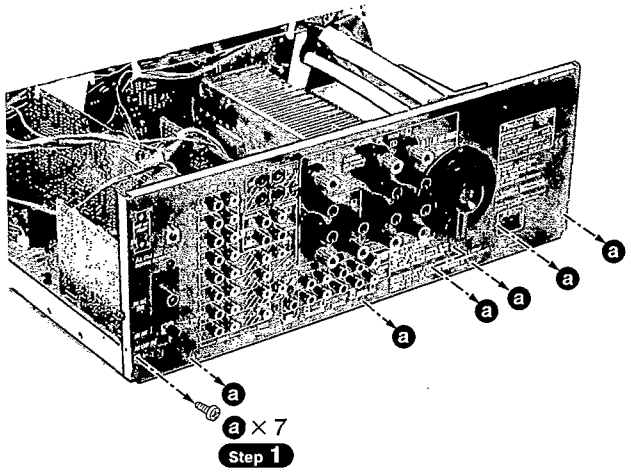



ⓐ
[XTBS3+8JFZ1] (Black)

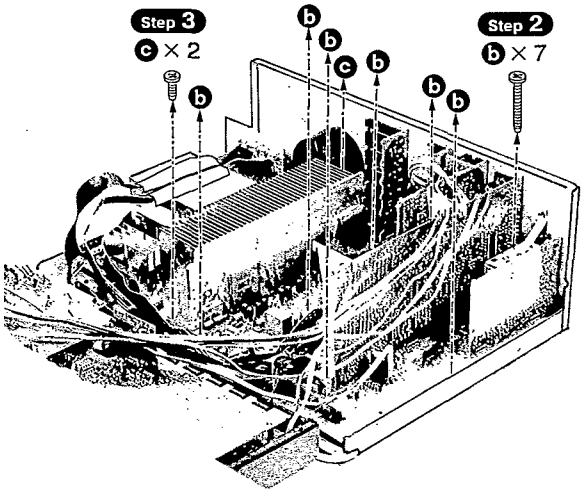

ⓑ
[XTBS26+8J] (Black)

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

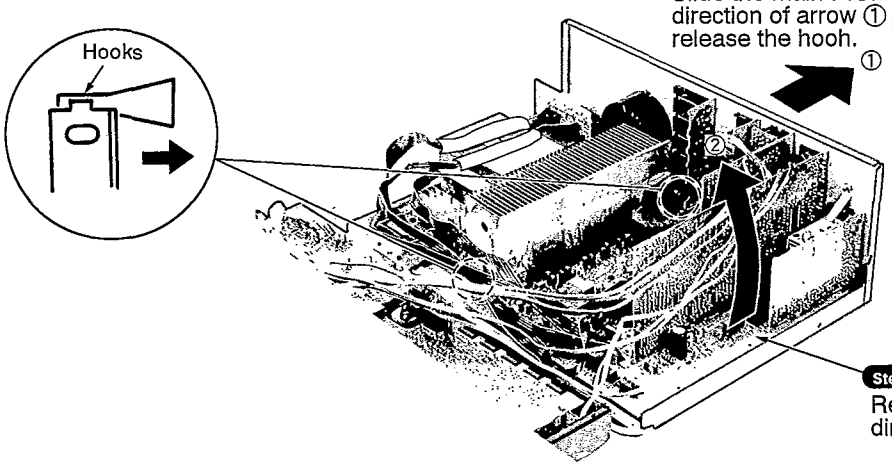
- Follow the Step 1 ~ Step 3 in item 1 on checking procedure for each P.C.B. on page 18.
- Follow the Step 1 ~ Step 4 in item 2 on checking procedure for each P.C.B. on page 20.



Step 1

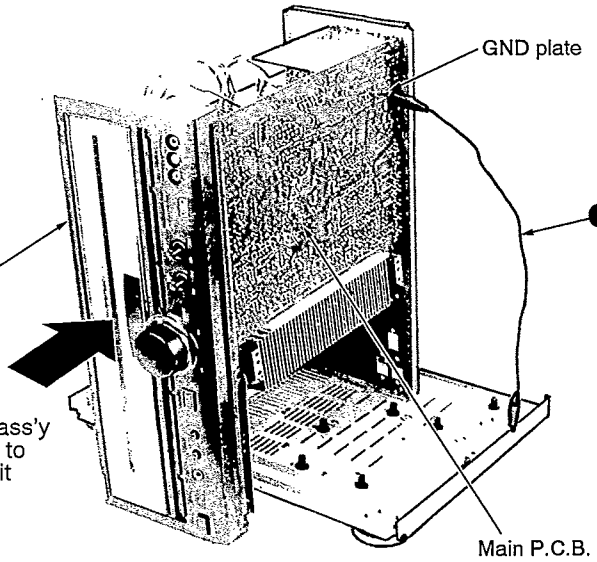


Step 4
Slide the main P.C.B. in the direction of arrow ①, and the release the hooh.



Step 5
Remove the main P.C.B. in the direction of arrow ②.

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



Step 7
Connect the lead wire.

Step 6
Connect the front panel ass'y of the P.C.B. connectors to the main P.C.B. and set it as the illustration right.

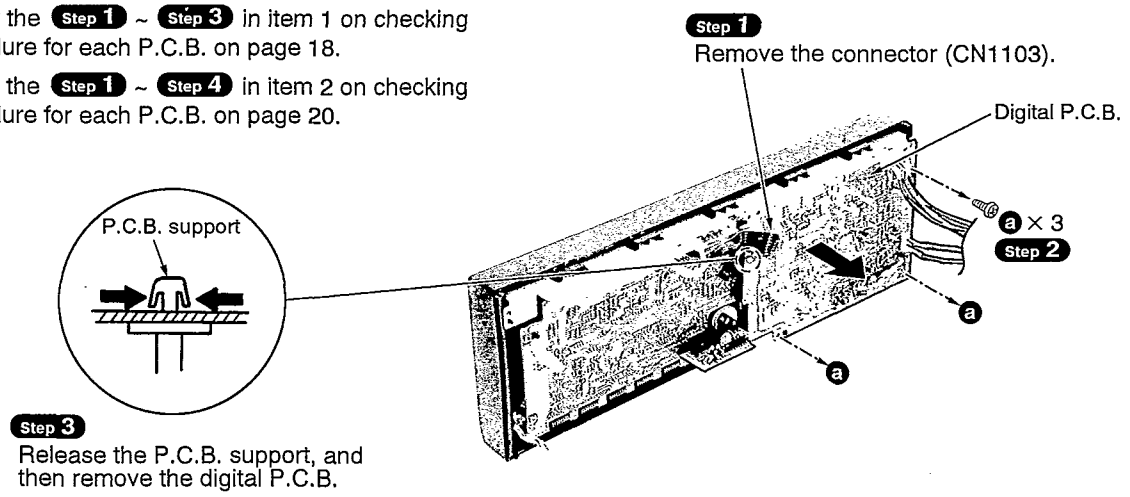
[XTBS3+8JFZ1] (Black)

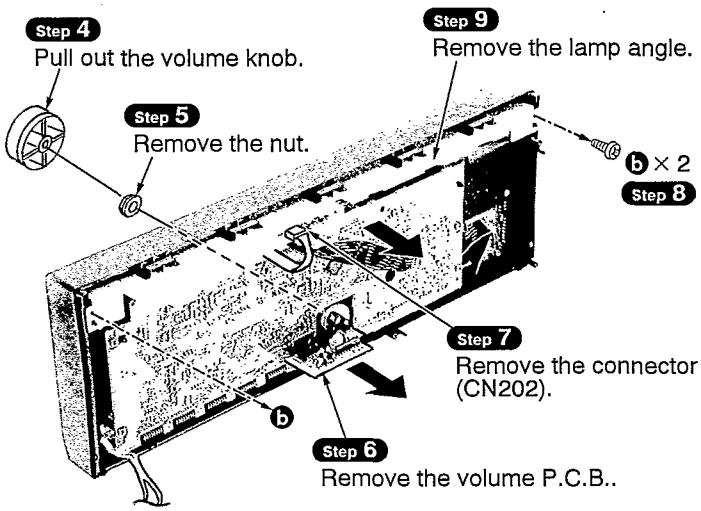
[XTB3+20JFZ] (Black)

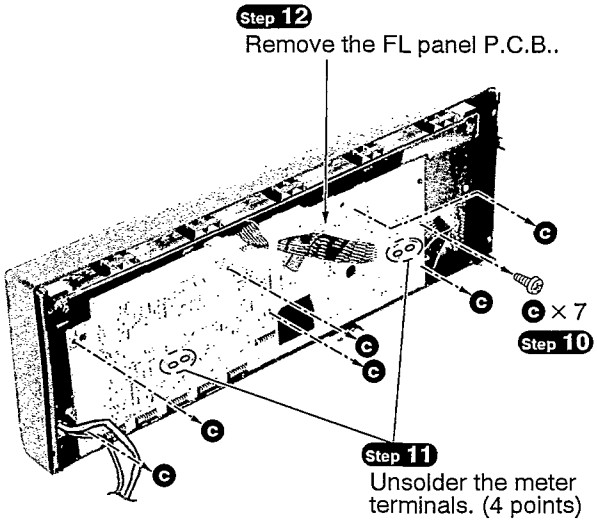
■ Main Component Replacement Procedures

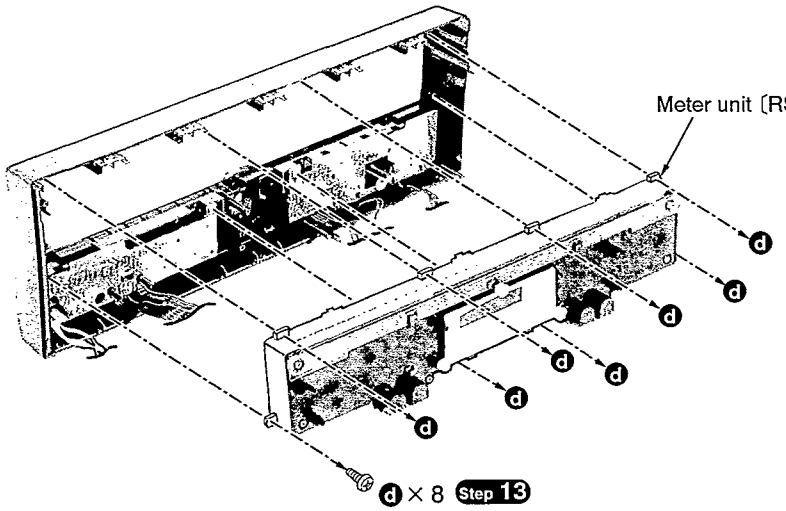
1. Replacement for the meter ass'y

- Follow the Step 1 ~ Step 3 in item 1 on checking procedure for each P.C.B. on page 18.
- Follow the Step 1 ~ Step 4 in item 2 on checking procedure for each P.C.B. on page 20.







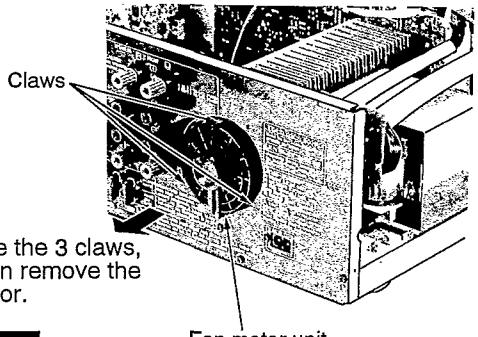


a, b, c, d

[XTBS26+8J]

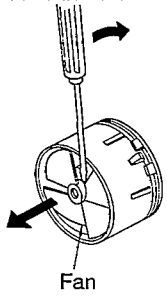
2. Replacement for the fan motor

• Follow the Step 1 ~ Step 3 in item 1 on checking procedure for each P.C.B. on page 18.

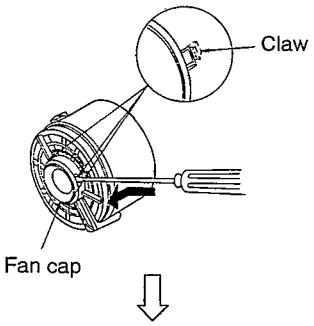


Step 1
Release the 3 claws, and then remove the fan motor.

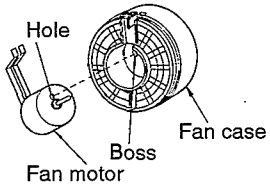
Step 2
Put a screwdriver at the root of the fan and remove it.



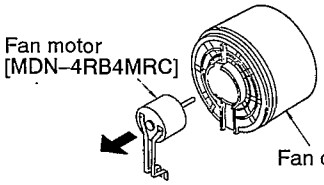
Step 3
Remove the fan cap.



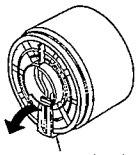
NOTE
When replacing the fan motor, align the boss of the fan case with the hole of the fan motor.



Step 5
Remove the fan motor.



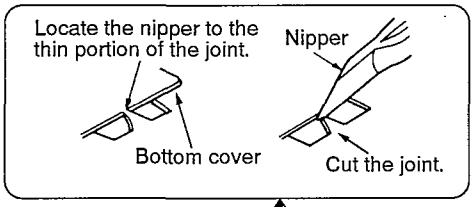
Step 4
Remove the fan terminal cap.

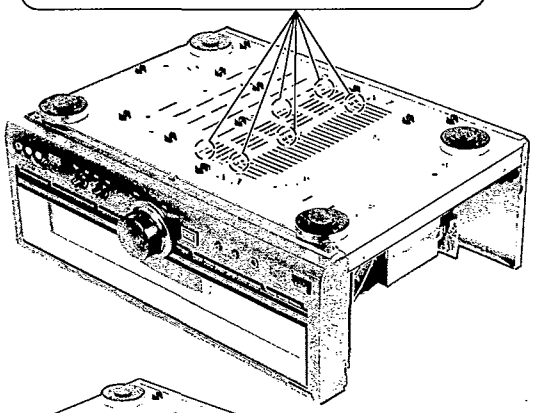


3. Replacement for the power IC and regulator transistor

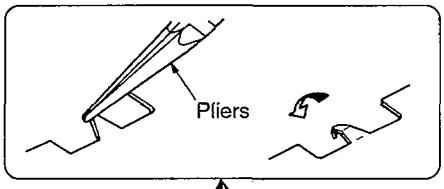
• Follow the Step 1 ~ Step 3 in item 1 on checking procedure for each P.C.B. on page 18.

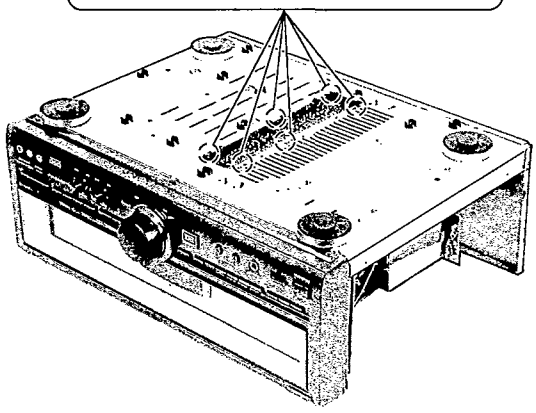
Step 1 Cut the joints as shown below.(6 portions)

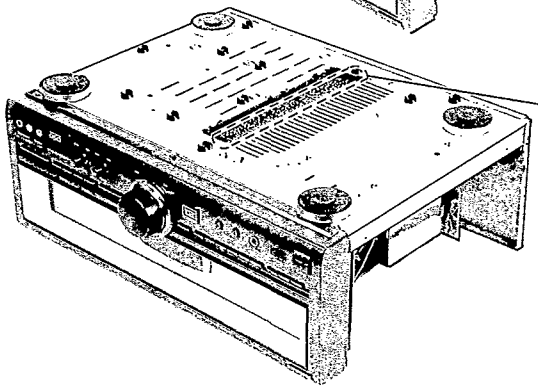




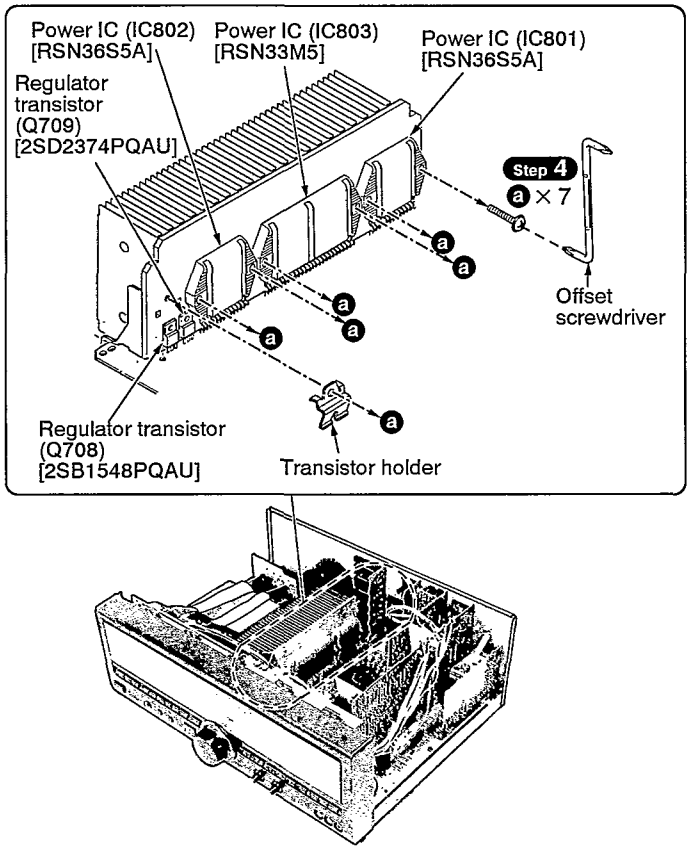
Step 2 Fold the joints.(6 portions)



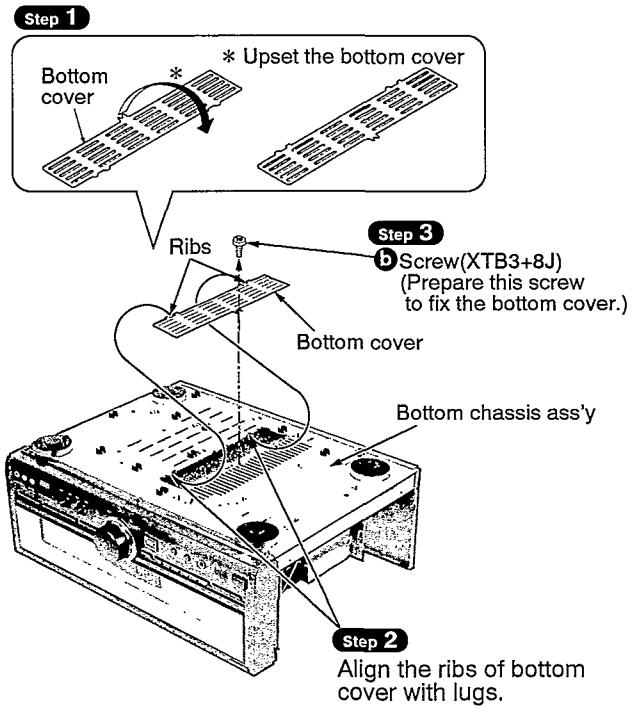


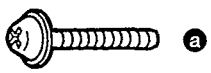


Step 3
Unsolder the terminals of powerIC and regulator transistor.



Installation of the bottom cover after replacement





[XTW3+15T]

(Prepare this screw to fix the bottom cover.)

[XTB3+8J](Black)

CAUTION

1. After replceing the power IC or regulator transistor,apply a sufficient quantity of compound grease (RFKX0002) between the heat sink and the power IC or regulator transistor (Radiation of power IC).
2. Tighten enough the screws (ⓐ) after replacing the power IC and regulator transisitor. Otherwise, the heat rabiation works little.
3. When installing or removing the power IC or transistor holder, be sure to use an offset screwdriver.

- A long straight screwdriver cannot be used for removal or mounting since its long grip interferes with the neighboring P.C.B.(See Fig.1)
- A short straight screwdriver may be used for removal, but cannot be used for mounting because the limited space in the unit will not allow sufficient tightening torque. (See Fig.2)

A short straight screwdriver A long straight screwdriver

Fig.2

- Insufficient tightening will cause poor heat dissipation from the power IC and regulator transistor and, in the worst case, may lead their thermal breakdown. (See Fig.2)

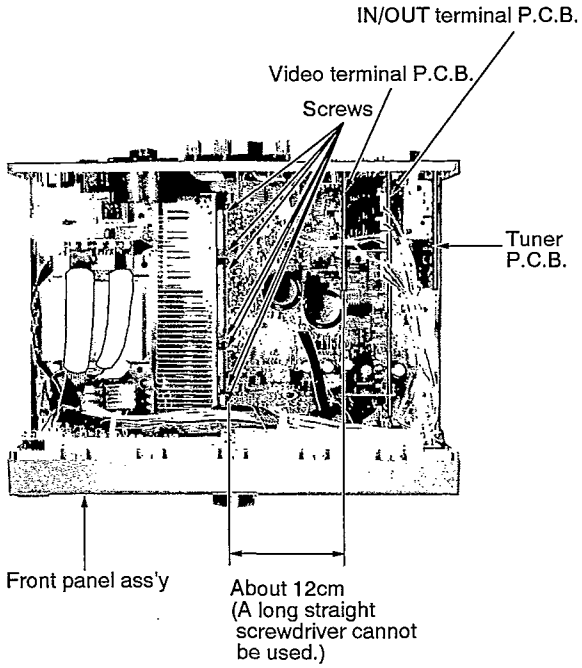
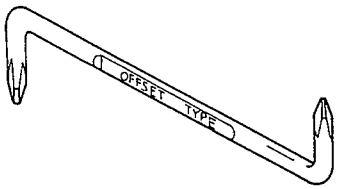


Fig.1

——OFFSET SCREWDRIVER——

• The PROTO offset screwdriver No.34-¼ is recommended for use in the application above.



No.	⊕	← L →
34¼	1 & 2	4¾"

• The address of PROTO International Sales is as follows.

International Sales

International Sales Office
Stanley-Proto Industrial Tools
14117 Industrial Park Blvd.
Covington, GA 30209 U.S.A.
Fax: 706-786-4387
Phone: 706-787-3800

Australia, New Zealand & South Pacific
Stanley-Proto Industrial Tools
P.O.Box 10
400 Whitehorse Road
Nunrweding 3131
Victoria, Australia
Fax: 61-3-894-1173
Phone: 61-3-878-9244

Singapore, Indonesia, Philippines, Korea, Hong Kong, Malaysia, China.
Stanley-Proto Asia Pacific
12 Gul Drive
Singapore 2262
Fax: 65-861-3206
Phone: 65-862-0883

Thailand
Stanley-Proto Thailand Ltd.
1017 Moo 13 Bangnatrad Highway, Tambol Bankaew
Amphur Bangplee
Samutprakarn, Thailand
Fax: 66-2-316-6071
Phone: 66-2-316-8655

Japan
Stanley Works Japan
110, Sanmai-cho
Kanagawa-ku Yokohama
221 Japan
Fax: 81-45-413-3031
Phone: 81-45-413-3030

Mexico
Herramientas Stanley S.A. DE C.V.
Apartado Postal 675
72030 Puebla, Pue, Mexico
Fax: 52-22-494-4880
Phone: 52-22-495-300

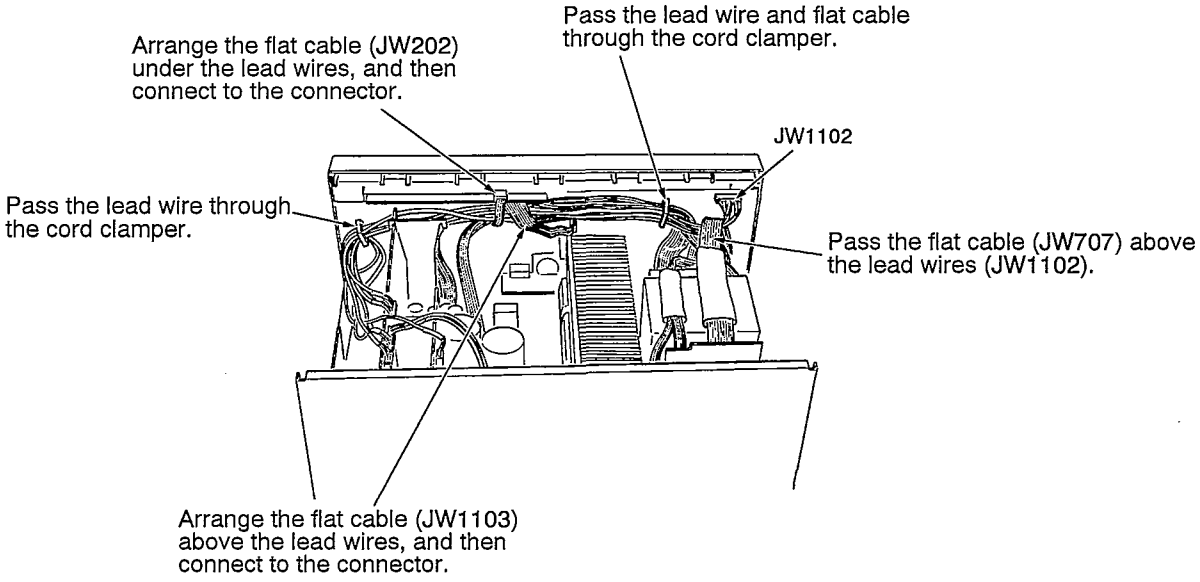
South & Central America, Puerto Rico, The Caribbian
Stanley Inter-America
2101 N.W. 84th Ave.
Miami, Florida 33122
Fax: 305-594-4261
Phone: 305-591-3828

Europe
Stanley-Proto Europe
Woodside, Sheffield
539PD
England
Fax: 44-742-739-038
Phone: 44-742-768-888

Canada
Stanley-Proto Canada
1100 Corporate Drive
Burlington, Ontario
Canada, L7L 5R6
Fax: 416-335-0075
Phone: 416-335-0075

Middle East, Mediterranean & Africa
Stanley-MEMA
Cory House The Rlng
Bracknell Berkshire
RG 12 1A2
England
Fax: 44-344-485-526
Phone: 44-344-51813

● Lead wire and flat cable arrangement



■Protection Circuitry

The protection circuitry may have operated if either of the following conditions is noticed:
- No sound is heard when the power is turned ON.
- Sound stops during a performance.

The function of this circuitry is to prevent circuitry damage if, for example, the positive and negative speaker connection wires are "shorted", or if speaker systems with an impedance less than the indicated rated impedance of the amplifier is used.

If this occurs, follow the procedure outlined below:
1. Turn OFF the power.
2. Determine the cause of the problem and correct it.
3. Turn ON the power again after one minute.

Note:
When the protection circuitry functions, the unit will not operate unless the power is turned OFF first and then ON again.

■Before Repair and Adjustment

Disconnect AC power, Discharge both Power Supply Capacitors C711(4700μF), C718~721(3300μF), C722/ 723(15000μF) and C729(1000μF) through a 10Ω, 5W resistor to ground. DO NOT SHORT-CIRCUIT DIRECTLY (with a screwdriver blade, for instance), as this may destroy solid state devices. After repairs are completed, restore power gradually using a variac, to avoid overcurrent.
Current consumption at 230V / 240V, 50Hz in NO SIGNAL mode should be 150~500mA.

■Mesurements and Adjustment

Control positions and equipment used.
- BASS, TREBLE knob ..... Center
- INPUT SELECTOR ..... CD
- AF Oscillator
- AC EVM (Electronic Voltmeter)

• POWER METER ADJUSTMENT

1. Confirm the meter indicators, as shown in **Fig. 1**.
2. Connect an AF oscillator and AC EVM to the unit, as shown in **Fig. 2**.
3. Turn the power on to the unit and apply a signal (**1kHz**) from the CD terminal as shown in **Fig. 2**.
4. Adjust the volume control so that the output level of a signal (**1kHz**) from the speakers terminals is within the range of **2.76~2.90V** (LR= ∞ or 8Ω).
5. Adjust **VR350** (Rch) and **VR351** (Lch) until the power meter reads 1W, as shown in **Fig. 3**.

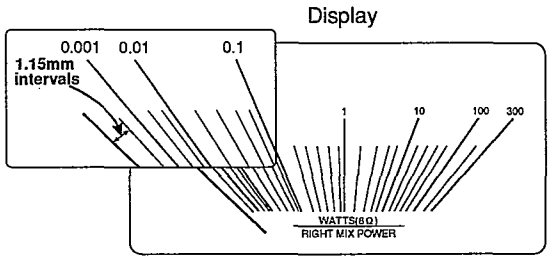


Fig. 1

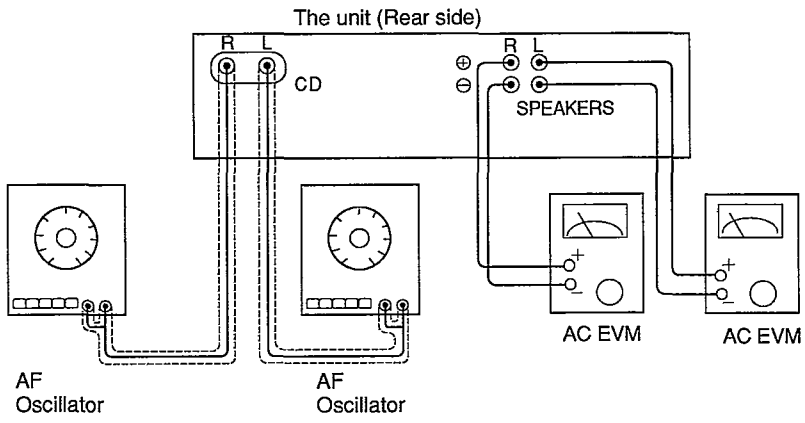


Fig. 2.

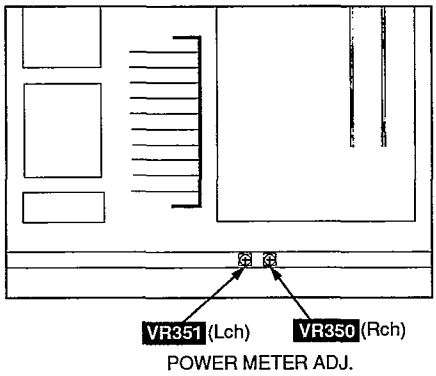


Fig. 3.

■Fan Motor Troubleshooting Guide

The Model SA-TX50 employ fan motor error sensing electronics.
If the cooling fan is not operation and "OVER LOAD" is displayed on the FL display, check the fan motor and its driving circuit.

"OVERLOAD" is displayed on the FL display.

Is the air cooling path blocked or the fan motor jammed by any external obstacle?
YES → Remove the obstacle.
NO

Remove the fan from the unit.

Is the fan motor's DC resistance 20~30Ω ?
NO → Fan motor failure
Short circuit: DC resistance below 5Ω
Open circuit: DC resistance over 1kΩ
YES

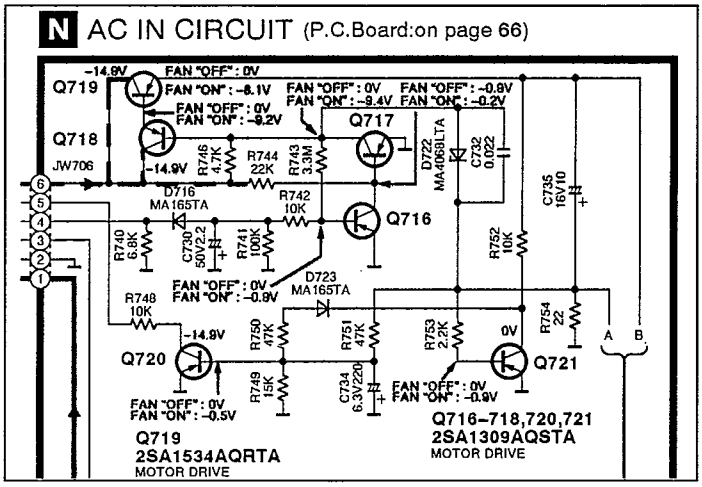
Reinstall the fan on the unit.

Are the terminal voltage of Q716~Q719 normal in both active and inactive states of the fan motor? (See table 1.)
NO → Check the integrity of Q716~Q719 and the fan motor driving circuit. (See Fig.1.)
YES

Ref No. \ Voltage		fan. off	fan. on
Q716	E	0V	0V
	C	−0.9V	−0.2V
	B	0V	−0.9V
Q717	E	0V	0V
	C	0V	−9.4V
	B	−0.9V	−0.2V
Q718	E	0V	−9.2V
	C	−14.9V	−14.9V
	B	0V	−9.4V
Q719	E	0V	−8.1V
	C	−14.9V	−14.9V
	B	0V	−9.2V

(Table 1)

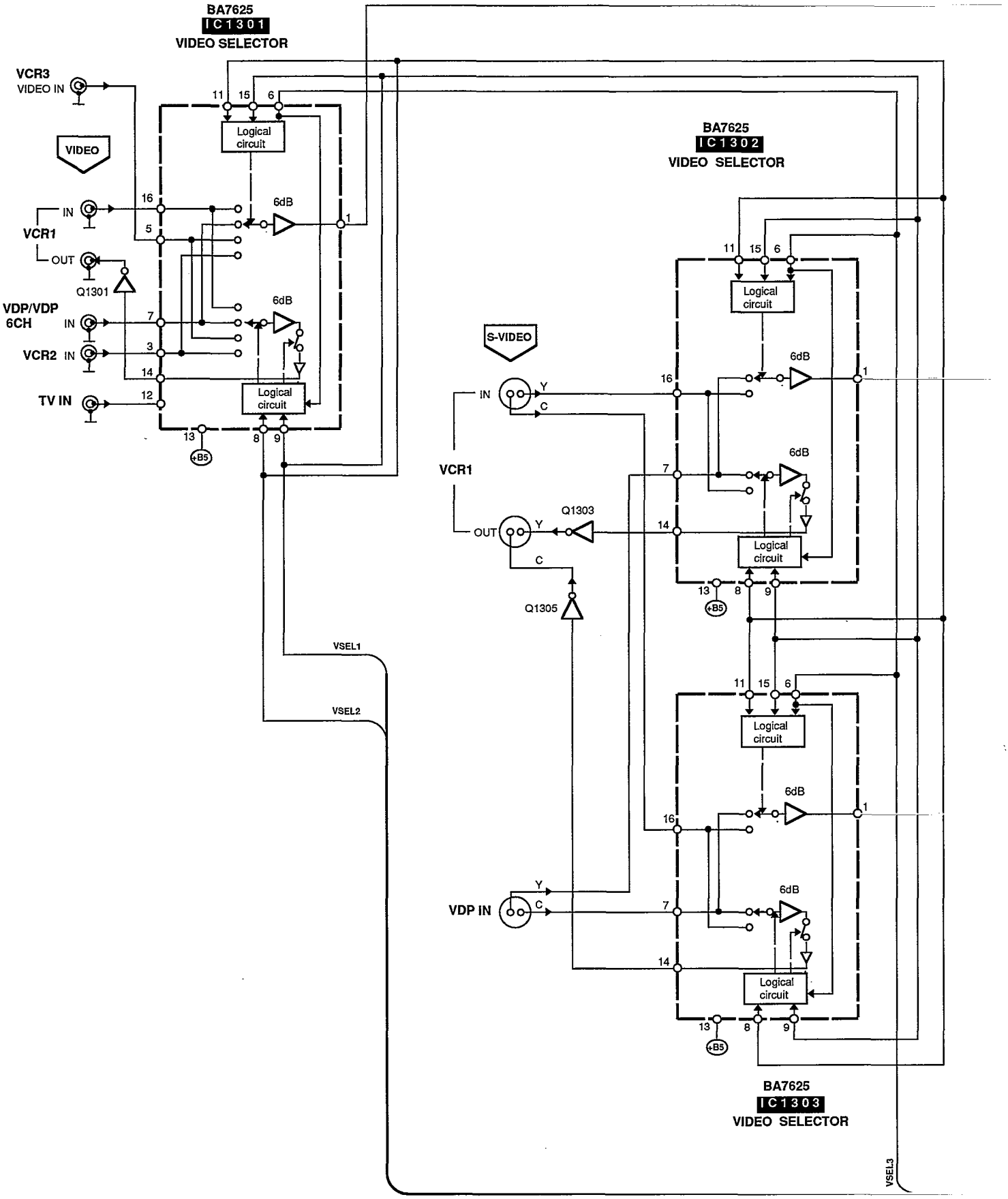
Fig. 1

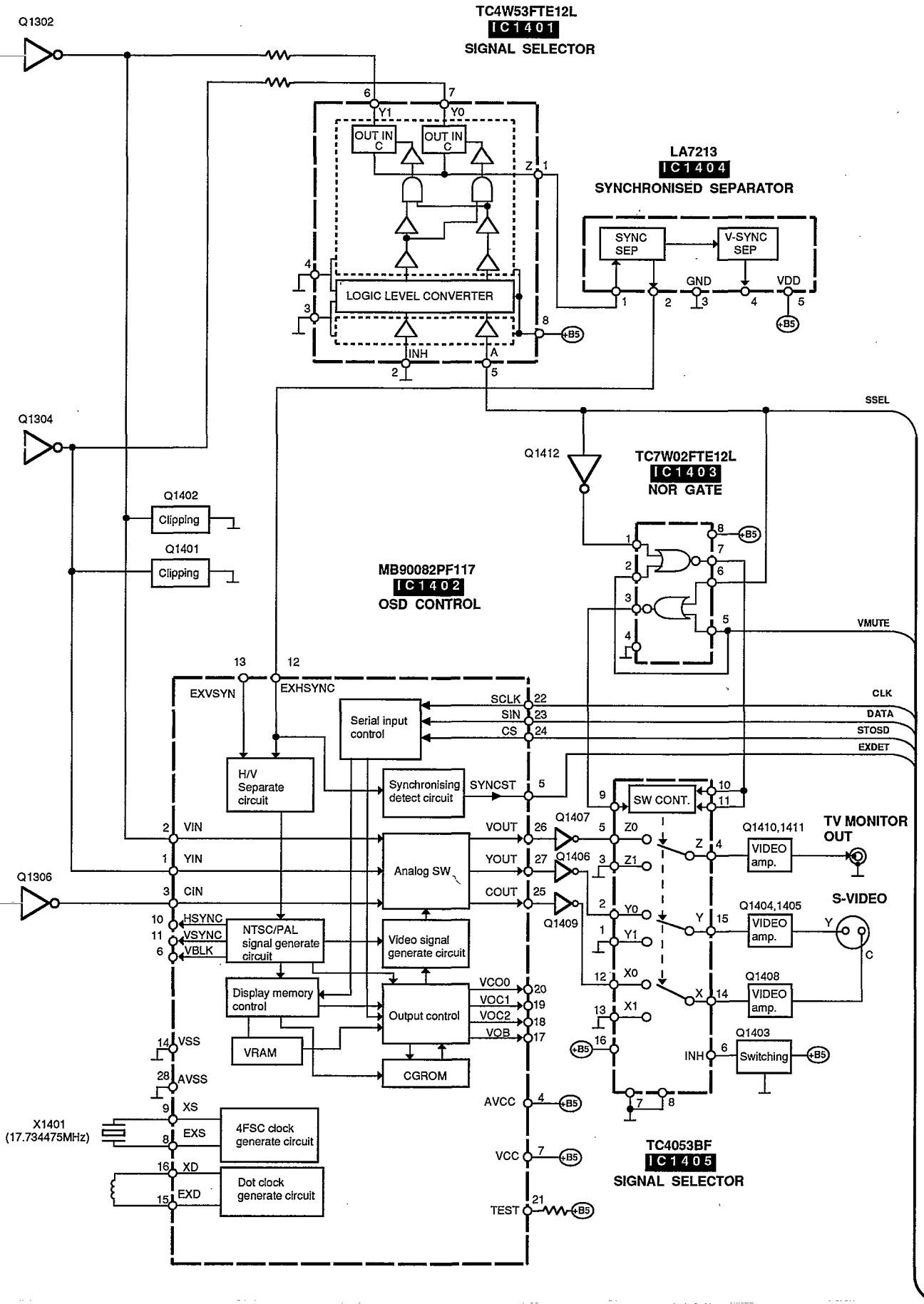


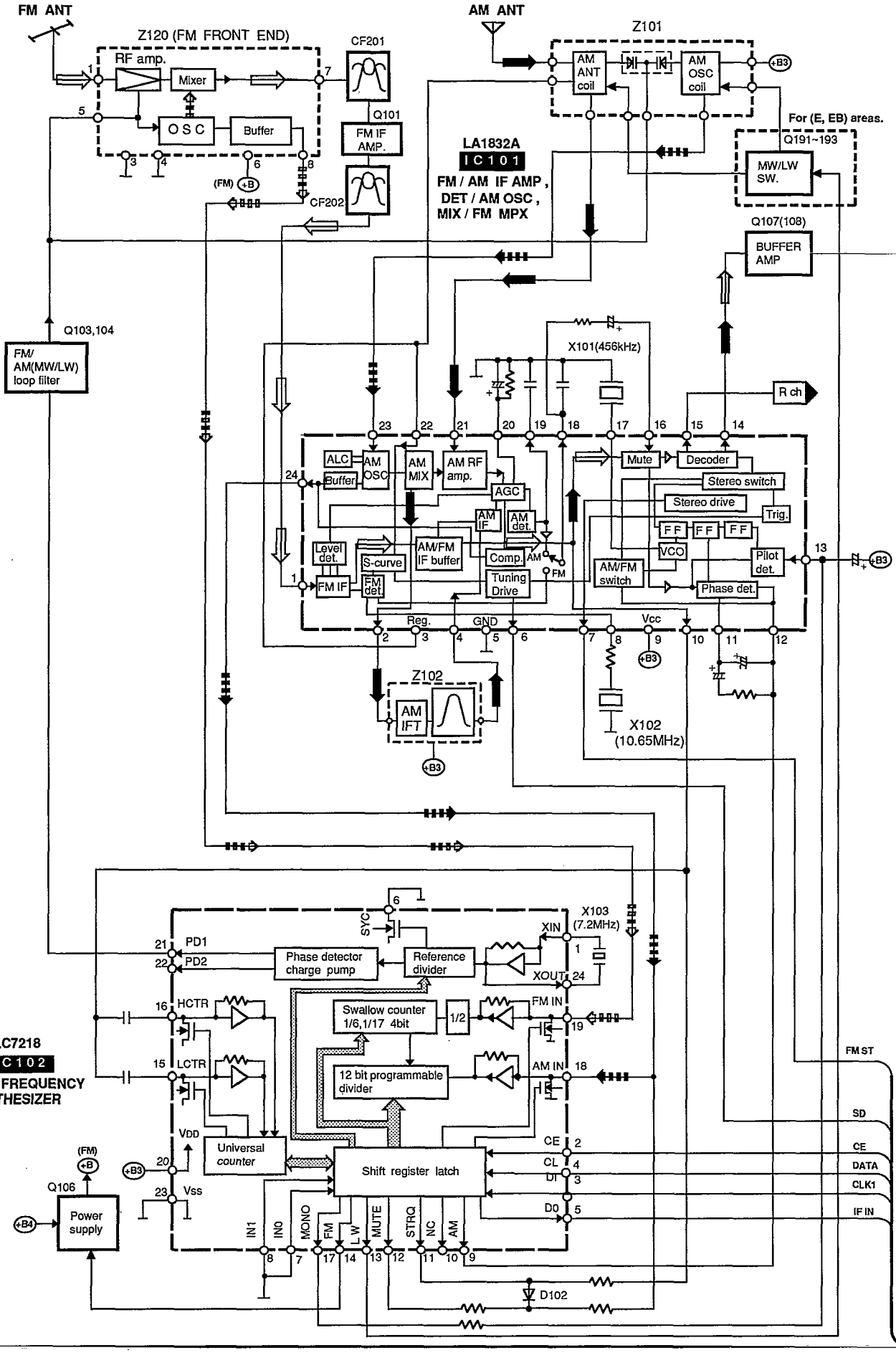
Is an audio signal present at pins ① and ④ of IC801 or pins ① and ④ of IC802 or pin ⑦ of IC803.
NO → The power IC (IC801 or IC802 or IC803) is defective.
YES

The fan motor, power ICs and fan driver are functioning normally.

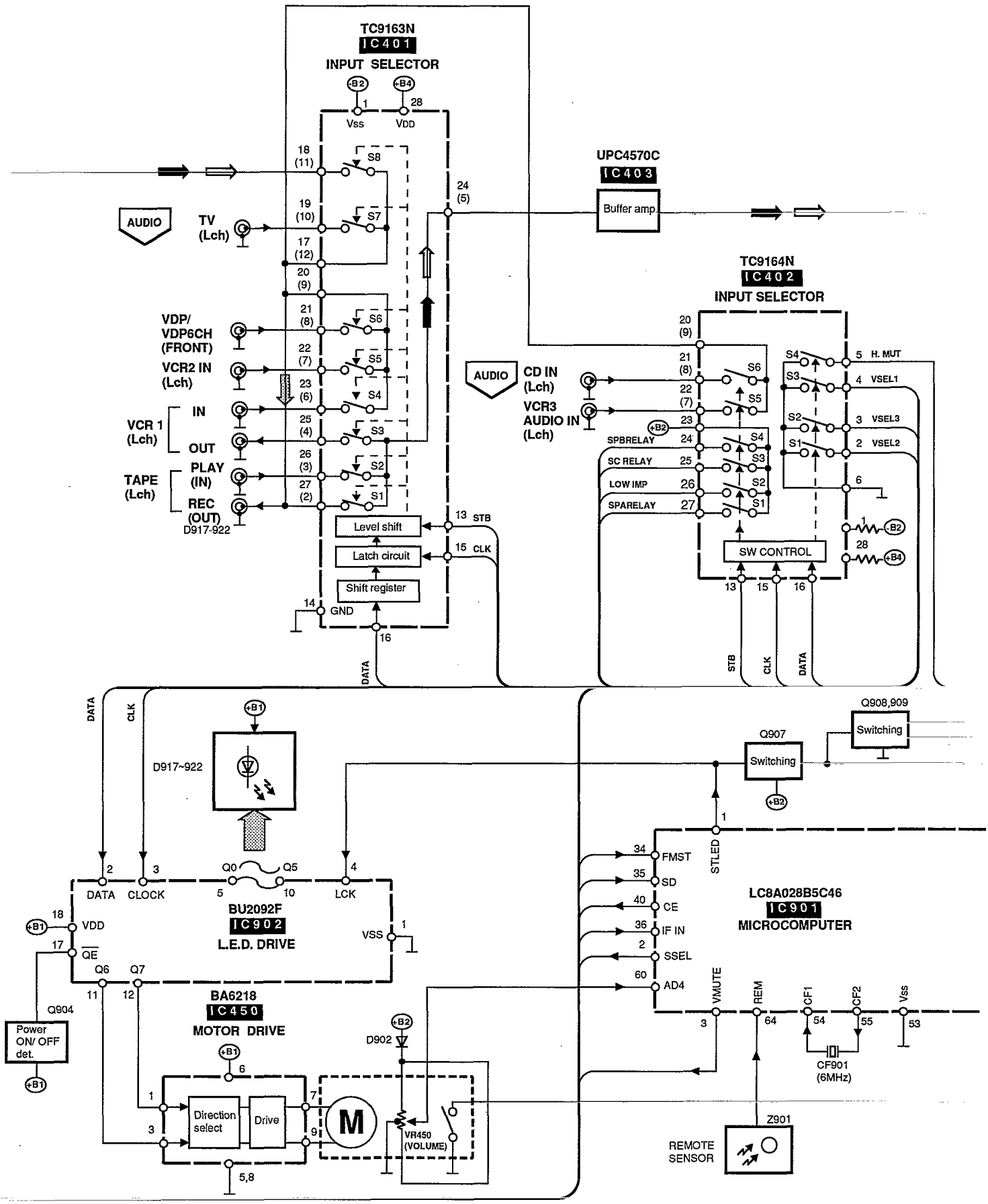
■Block Diagram



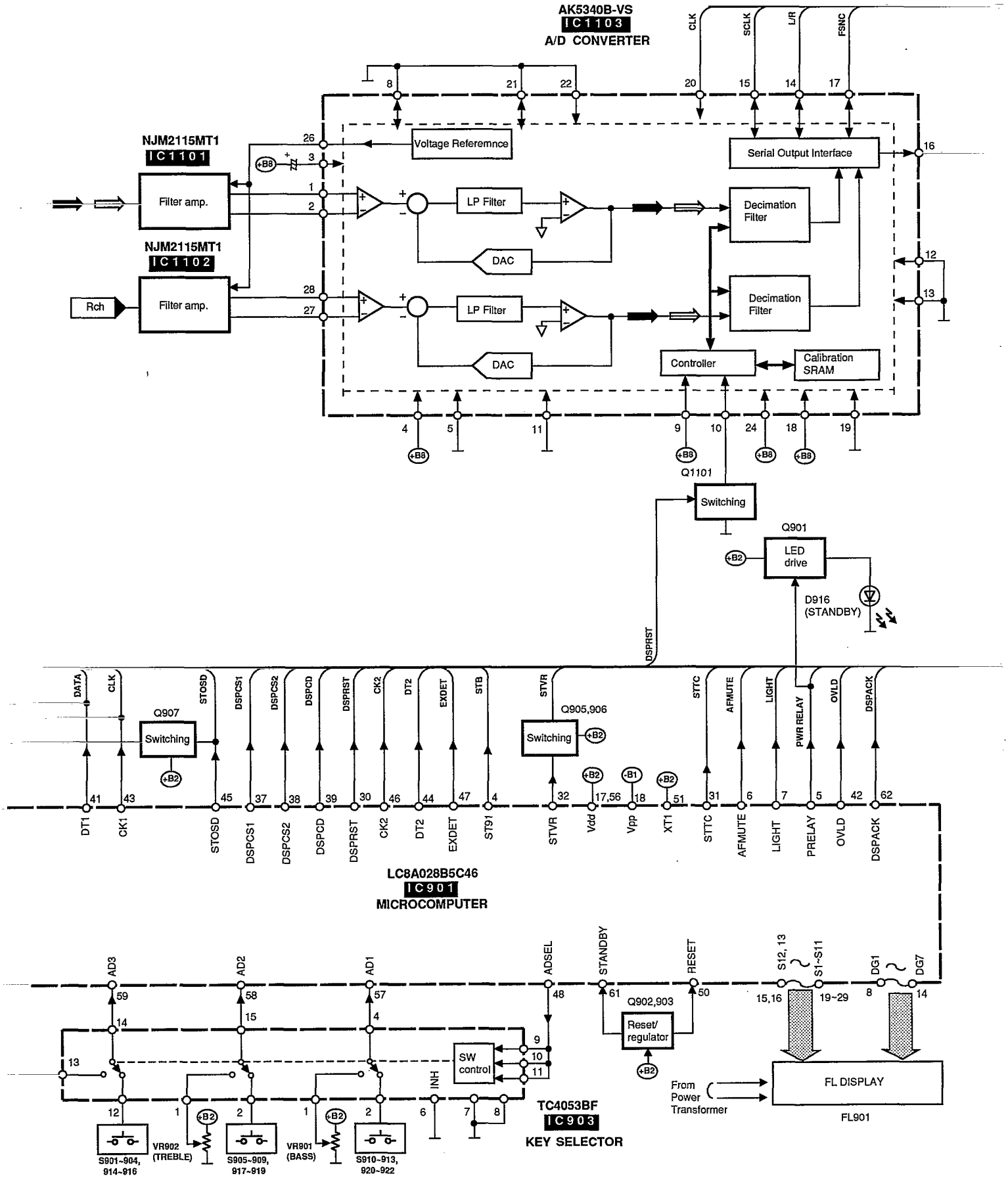

TC4W53FTE12L
IC1401
SIGNAL SELECTOR
LA7213
IC1404
SYNCHRONISED SEPARATOR
SYNC SEP
V-SYNC SEP
GND
VDD
LOGIC LEVEL CONVERTER
INH
SSEL
Q1302
Q1304
Q1306
Q1412
TC7W02FTE12L
IC1403
NOR GATE
Q1402
Clipping
Q1401
Clipping
MB90082PF117
IC1402
OSD CONTROL
VMUTE
CLK
DATA
STOSD
EXDET
EXVSYN
EXHSYNC
Serial input control
SCLK
SIN
CS
H/V Separate circuit
Synchronising detect circuit
SYNCST
SW CONT.
VIN
YIN
CIN
HSYNC
VSYNC
VBLK
Analog SW
VOUT
YOUT
COUT
Q1407
Q1406
Q1409
Q1410,1411
VIDEO amp.
TV MONITOR OUT
S-VIDEO
Q1404,1405
Q1408
Z0
Z1
Y0
Y1
X0
X1
NTSC/PAL signal generate circuit
Video signal generate circuit
Display memory control
Output control
VCO0
VOC1
VOC2
VOB
VRAM
CGROM
VSS
AVSS
AVCC
VCC
TEST
XS
EXS
XD
EXD
X1401
(17.734475MHz)
4FSC clock generate circuit
Dot clock generate circuit
Q1403
Switching
TC4053BF
IC1405
SIGNAL SELECTOR

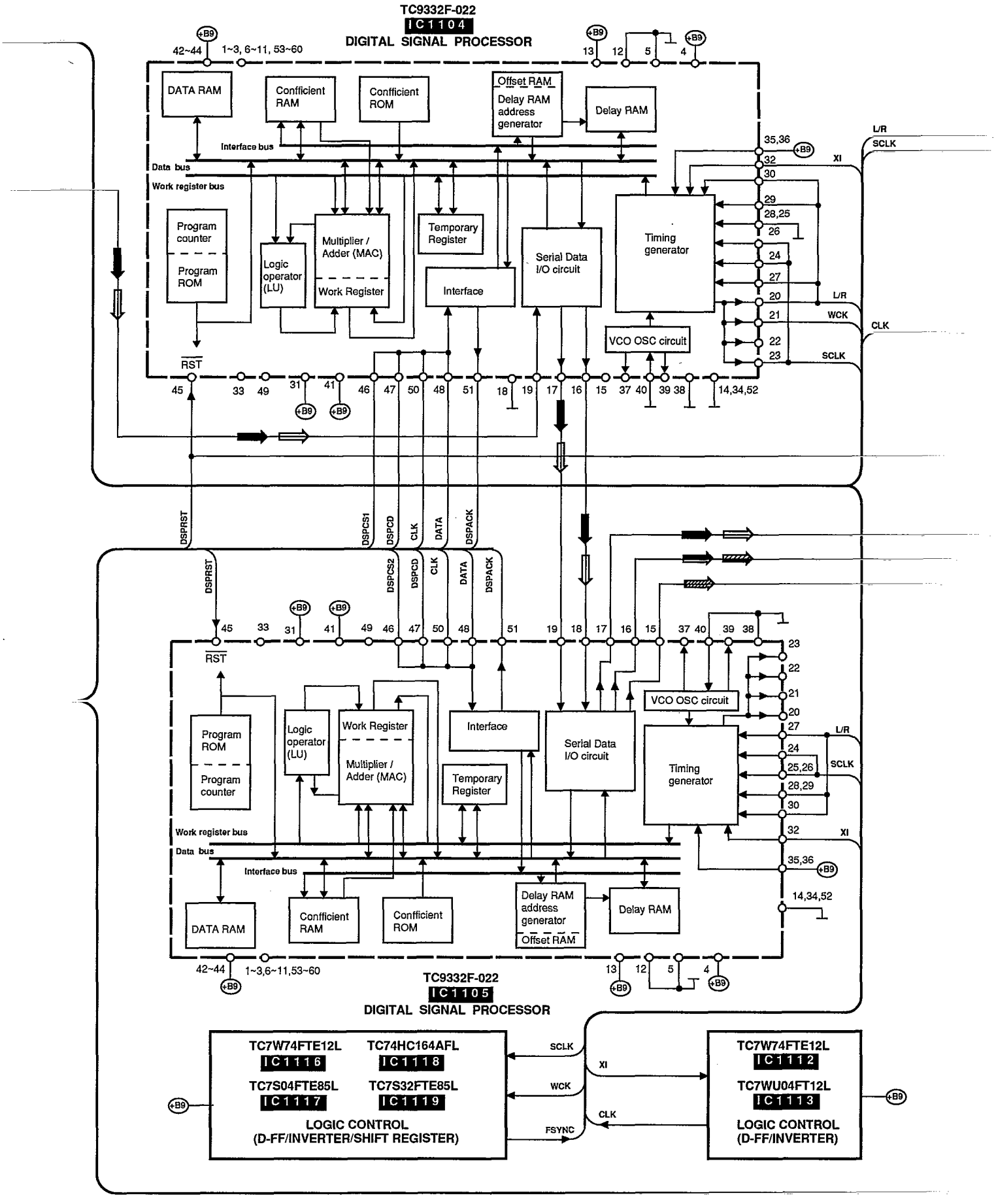

FM ANT
Z120 (FM FRONT END)
RF amp.
Mixer
O S C
Buffer
CF201
Q101
FM IF AMP.
CF202
(FM) +B
AM ANT
Z101
AM ANT coil
AM OSC coil
+B3
For (E, EB) areas.
Q191~193
MW/LW SW.
LA1832A
IC101
FM / AM IF AMP , DET / AM OSC , MIX / FM MPX
Q107(108)
BUFFER AMP
Q103,104
FM/ AM(MW/LW) loop filter
X101(456kHz)
R ch
ALC
Buffer
AM OSC
AM MIX
AM RF amp.
AGC
AM IF
AM det.
Mute
Decoder
Stereo switch
Stereo drive
Trig.
F F
VCO
Pilot det.
Level det.
S-curve
AM/FM IF buffer
Comp.
Tuning Drive
AM/FM switch
Phase det.
FM IF
FM det.
Reg.
GND
Vcc
Z102
AM IFT
X102 (10.65MHz)
LC7218
IC102
PLL FREQUENCY SYNTHESIZER
X103 (7.2MHz)
XIN
XOUT
SYC
PD1
PD2
Phase detector charge pump
Reference divider
Swallow counter 1/6,1/17 4bit
1/2
FM IN
AM IN
12 bit programmable divider
HCTR
LCTR
VDD
Vss
Universal counter
Shift register latch
CE
CL
DI
DO
Power supply
Q106
IN1
IN0
MONO
FM
L/W
MUTE
STRQ
NC
AM
D102
FM ST
SD
CE
DATA
CLK1
IF IN

● Signal line : FM signal : FM OSC signal : AM(MW/LW) signal : AM OSC signal
: Rec out signal ※ ( ) indicates pin No. of right channel.

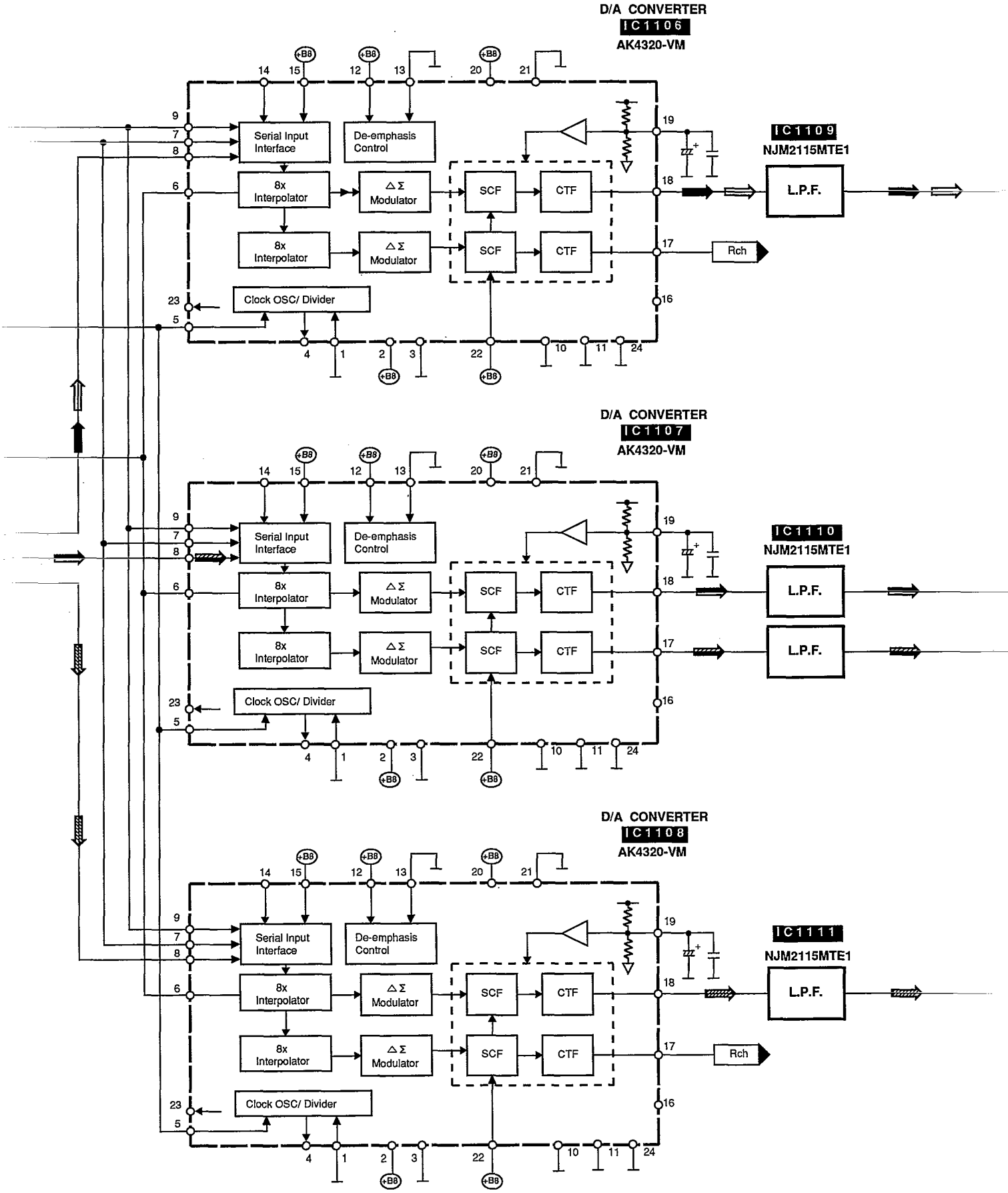


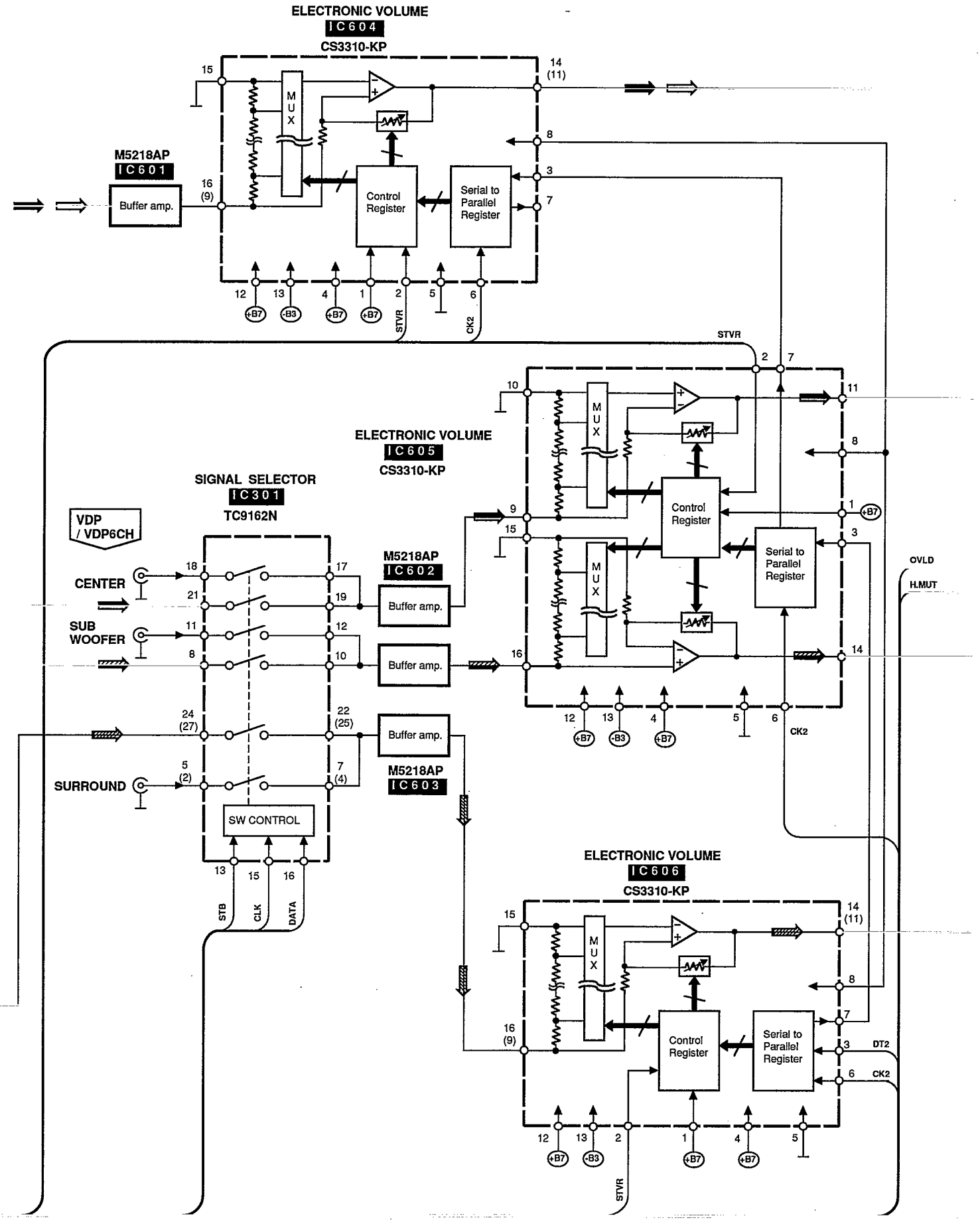
• Signal line ⇨ : FM signal ➡ : AM(MW/LW) signal
⇨ : Subwoofer signal ⇨ : Surround speaker drive signal ⇨ : Center speaker drive signal



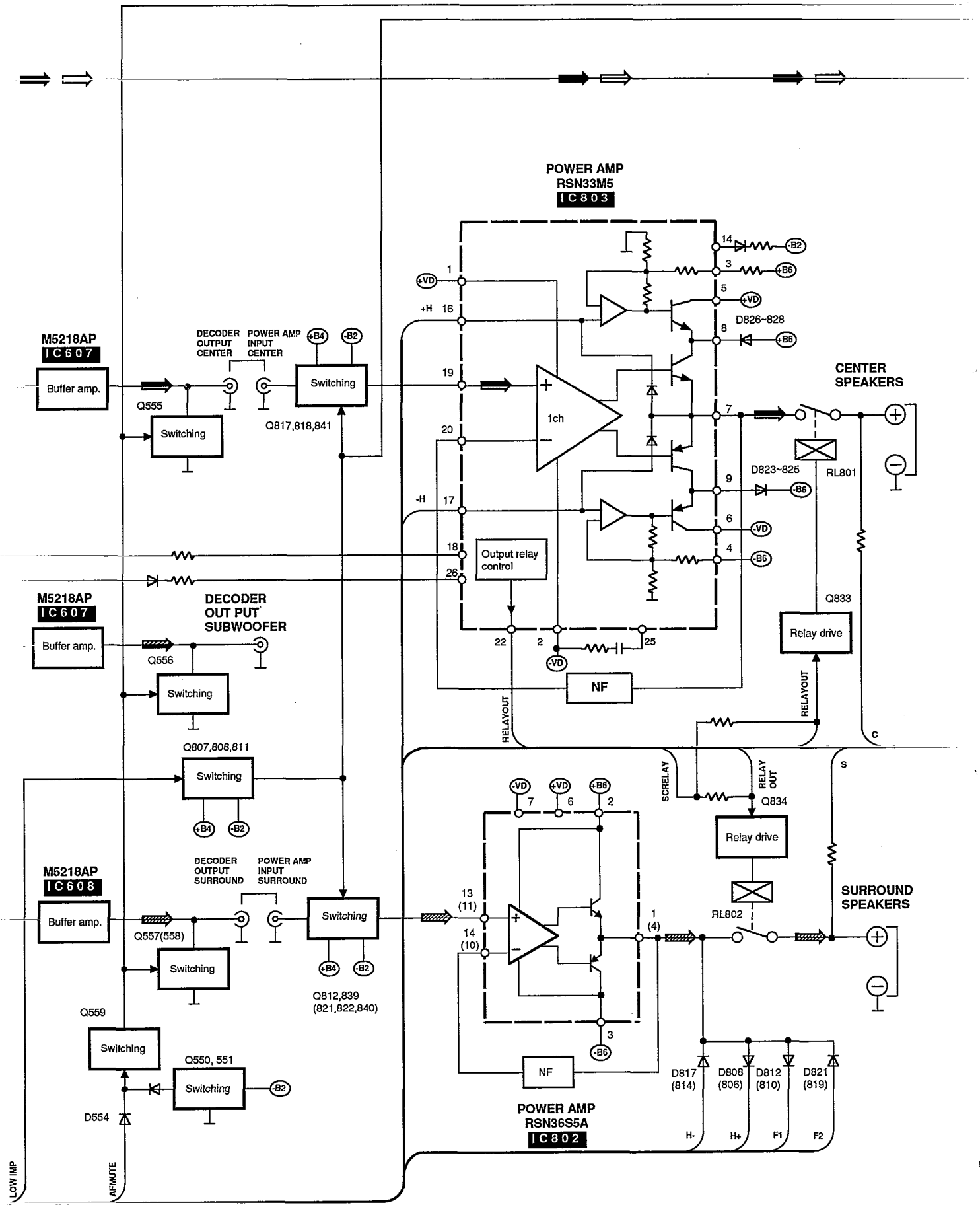

TC9332F-022
IC1104
DIGITAL SIGNAL PROCESSOR
DATA RAM
Confficient RAM
Confficient ROM
Offset RAM
Delay RAM address generator
Delay RAM
Interface bus
Data bus
Work register bus
Program counter
Program ROM
Logic operator (LU)
Multiplier / Adder (MAC)
Work Register
Temporary Register
Interface
Serial Data I/O circuit
Timing generator
VCO OSC circuit
RST
L/R
SCLK
XI
WCK
CLK
DSPRST
DSPCS1
DSPCS2
DSPCD
CLK
DATA
DSPACK
TC9332F-022
IC1105
DIGITAL SIGNAL PROCESSOR
TC7W74FTE12L IC1116
TC74HC164AFL IC1118
TC7S04FTE85L IC1117
TC7S32FTE85L IC1119
LOGIC CONTROL
(D-FF/INVERTER/SHIFT REGISTER)
SCLK
WCK
FSYNC
XI
CLK
TC7W74FTE12L IC1112
TC7WU04FT12L IC1113
LOGIC CONTROL
(D-FF/INVERTER)
+B9

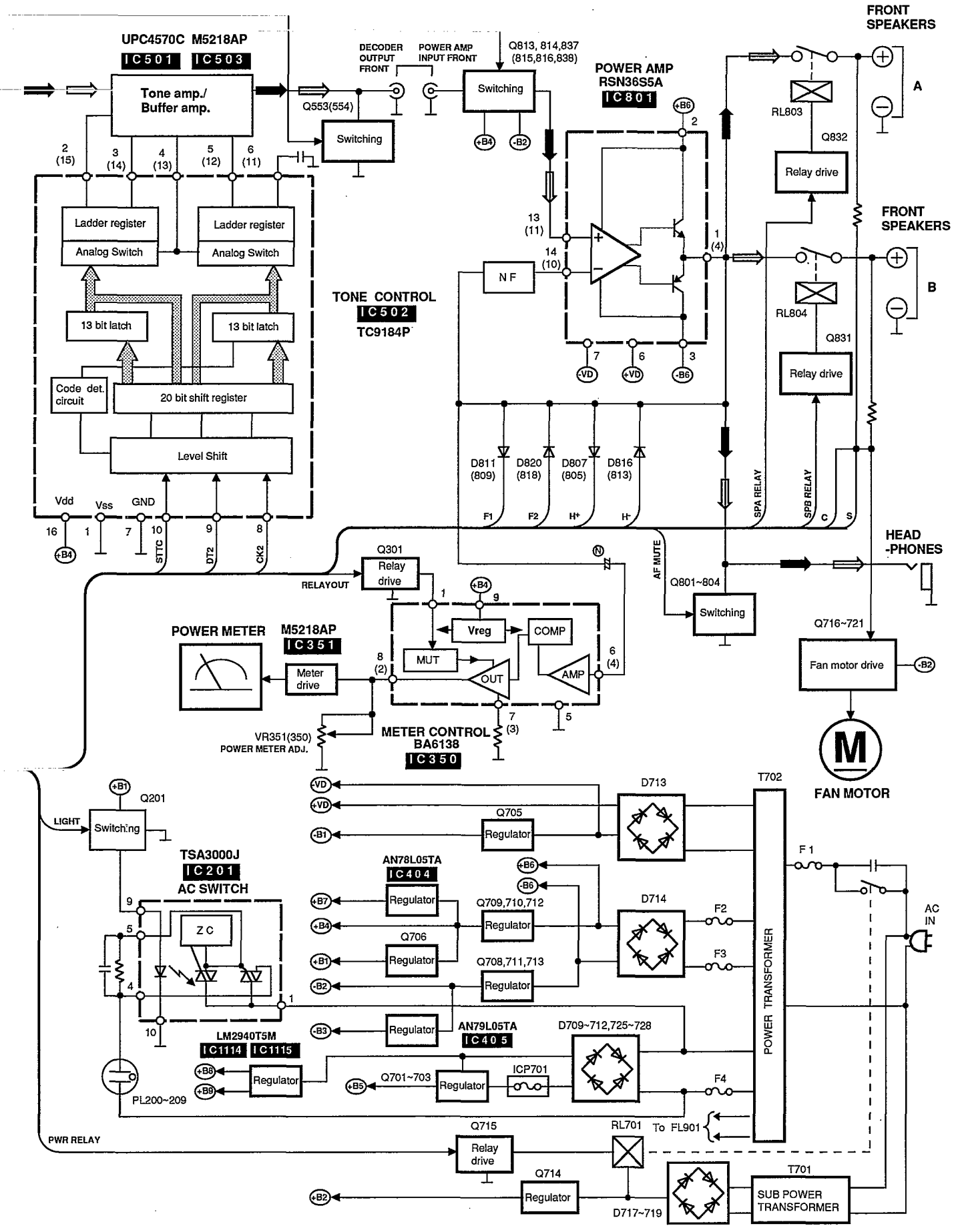
• Signal line : FM signal : AM(MW/LW) signal
: Subwoofer signal : Surround speaker drive signal : Center speaker drive signal




ELECTRONIC VOLUME
IC604
CS3310-KP
M5218AP
IC601
Buffer amp.
MUX
Control Register
Serial to Parallel Register
STVR
CK2
ELECTRONIC VOLUME
IC605
CS3310-KP
SIGNAL SELECTOR
IC301
TC9162N
VDP / VDP6CH
CENTER
SUB WOOFER
SURROUND
M5218AP
IC602
M5218AP
IC603
SW CONTROL
STB
CLK
DATA
ELECTRONIC VOLUME
IC606
CS3310-KP
OVLD
H.MUT
DT2
CK2

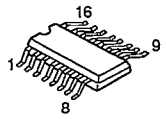
• Signal line : FM signal : AM(MW/LW) signal
: Subwoofer signal : Surround speaker drive signal : Center speaker drive signal



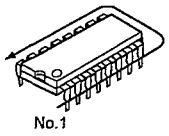

UPC4570C M5218AP
IC501 IC503
Tone amp./ Buffer amp.
DECODER OUTPUT FRONT
POWER AMP INPUT FRONT
Q553(554)
Switching
Q813, 814,837 (815,816,838)
POWER AMP RSN36S5A
IC801
FRONT SPEAKERS
A
B
RL803
RL804
Q832
Q831
Relay drive
Ladder register
Analog Switch
13 bit latch
Code det. circuit
20 bit shift register
Level Shift
TONE CONTROL
IC502
TC9184P
NF
D811 (809)
D820 (818)
D807 (805)
D816 (813)
SPA RELAY
SPB RELAY
HEAD -PHONES
AF MUTE
Q801~804
Q301
Relay drive
RELAYOUT
POWER METER
M5218AP
IC351
Meter drive
Vreg
COMP
MUT
OUT
AMP
METER CONTROL
BA6138
IC350
VR351(350)
POWER METER ADJ.
Q716~721
Fan motor drive
FAN MOTOR
LIGHT
Q201
TSA3000J
IC201
AC SWITCH
ZC
AN78L05TA
IC404
Q705
Q709,710,712
Q706
Q708,711,713
Regulator
D713
D714
T702
POWER TRANSFORMER
F1
F2
F3
F4
AC IN
LM2940T5M
IC1114 IC1115
AN79L05TA
IC405
D709~712,725~728
Q701~703
ICP701
PL200~209
PWR RELAY
Q715
RL701
To FL901
Q714
D717~719
T701
SUB POWER TRANSFORMER

■Terminal Guide of IC's, Transistors and Diodes

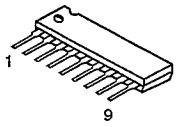
TC4053BF



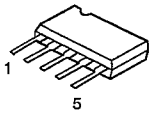
UPC4570C



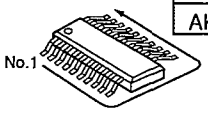
BA6218
BA6138



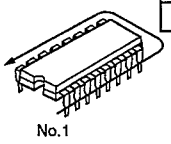
LA7213



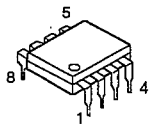
MB90082PF117	28PIN
BU2092F	18PIN
AK5340B-VS	28PIN
AK4320-VM	24PIN



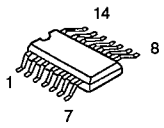
TC9162N	28PIN
TC9163N	28PIN
TC9164N	28PIN



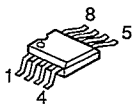
TC9184P



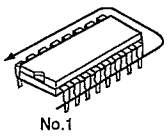
TC74HC164AFL



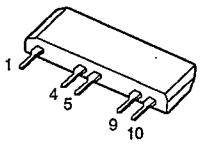
TC4W53FTE12L
TC7W02FTE12L



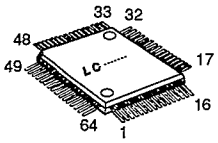
BA7625



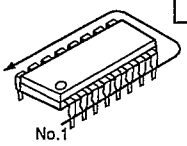
TSA3000J



LC8A028B5C46



M5218AP	8PIN
LA1832A	24PIN
LC7218	24PIN



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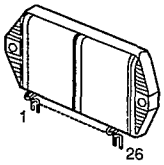

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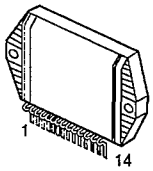
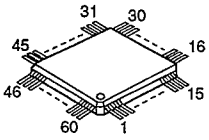


TC9332F-022



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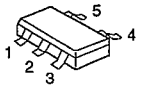
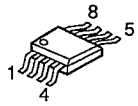
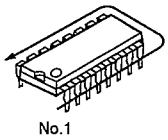


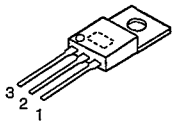
NJM2115MTE1
TC7W74FTE12L
TC7WU04FT12L



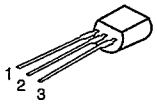
CS3310-KP



LM2940T5M



AN79L05TA



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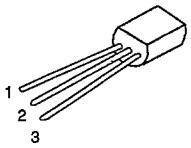

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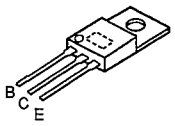
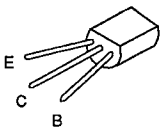
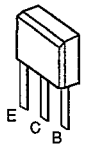


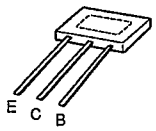
2SA1534AQRTA





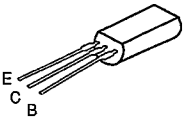
2SA1309AQSTA
2SC2785FETA
2SC2787LTA
2SC3311ARSTA
2SC3311AQSTA
2SD1915FTA

UN411FTA
UN4119TA
UN4211AITA
UN4213AITA
UN4214AITA
UN4111AITA
UN4115TA

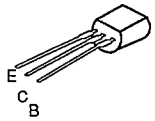


UN4113AITA
UN4219TA
UN4210TA
UN4216TA

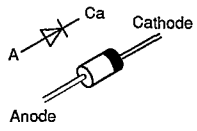
2SC3940AQSTA



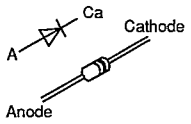
2SB621AQRSTA



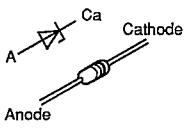
SB360L6508



1SS291TA
MA167ATA
MA4220MTA

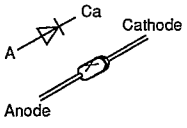


MA4062LTA
MA4068LTA

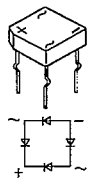


MA4030MTA
MA4039MTA
MA4051MTA
MA4056MTA
MA4062MTA
MA4068MTA
MA4075MTA
MA4091MTA

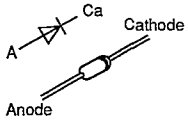
1SR35200TB



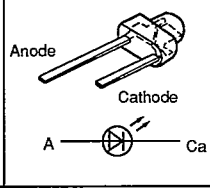
SVDS10VB20F



MA165TA
MA700ATA



SLR-325VC



■Schematic Diagram

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

Note :

- **S901:** Playback mode select (SFC) Switch.
- **S902:** Playback mode select (THX CINEMA) Switch.
- **S903:** Center mode select (— CENTER MODE) Switch.
- **S904:** Power "STANDBY ⏻ / ON" (POWER, STANDBY ⏻ /ON) Switch.
- **S905:** Subwoofer OFF/ ON (— SUBWOOFER OFF/ ON) Switch.
- **S906:** Help/ reset (— HELP— RESET) Switch.
- **S907:** Playback mode select (STEREO) Switch.
- **S908:** Speaker select (SPEAKERS A) Switch.
- **S909:** Playback mode select (SURROUND) Switch.
- **S910:** Playback mode select (MONO) Switch.
- **S911:** Speaker select (SPEAKERS B) Switch.
- **S912:** Playback mode select (3 STEREO) Switch.
- **S913:** Delay time adjust (— DELAY TIME) Switch.
- **S914:** Band select (BAND) Switch.
- **S915:** Tuning control (TUNING ∧) Switch.
- **S916:** Input select (INPUT SELECTOR <) Switch.
- **S917:** FM mode select (FM AUTO / MONO) Switch.
- **S918:** Preset channel select (PRESET ∨) Switch.
- **S919:** Input select (INPUT SELECTOR >) Switch.
- **S920:** Memory (MEMORY) Switch.
- **S921:** Preset channel select (PRESET ∧) Switch.
- **S922:** Tuning control (TUNING ∨) Switch.
- Signal line
- : FM OSC signal
- : AM(MW/LW) OSC signal
- : Rec out signal (Lch)
- : Surround speaker drive signal (Lch)
- : Positive voltage lines
- : Negative voltage lines
- : FM signal
- : AM(MW/LW) signal
- : Center speaker drive signal (Lch)
- : Subwoofer speaker drive signal

- 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-nose (resistors), etc. are used as occation calls. When replacing any of components, be sure to use only manufacture's specified parts shown in the parts list.
- The supply part number is described alone in the replacement parts.
- All voltage values shown in circuitry are DC voltage in FM signal (Stereo signal) reception mode.

✱Figures in ( ) Stand for DC-voltage in AM(MW) signal reception mode.

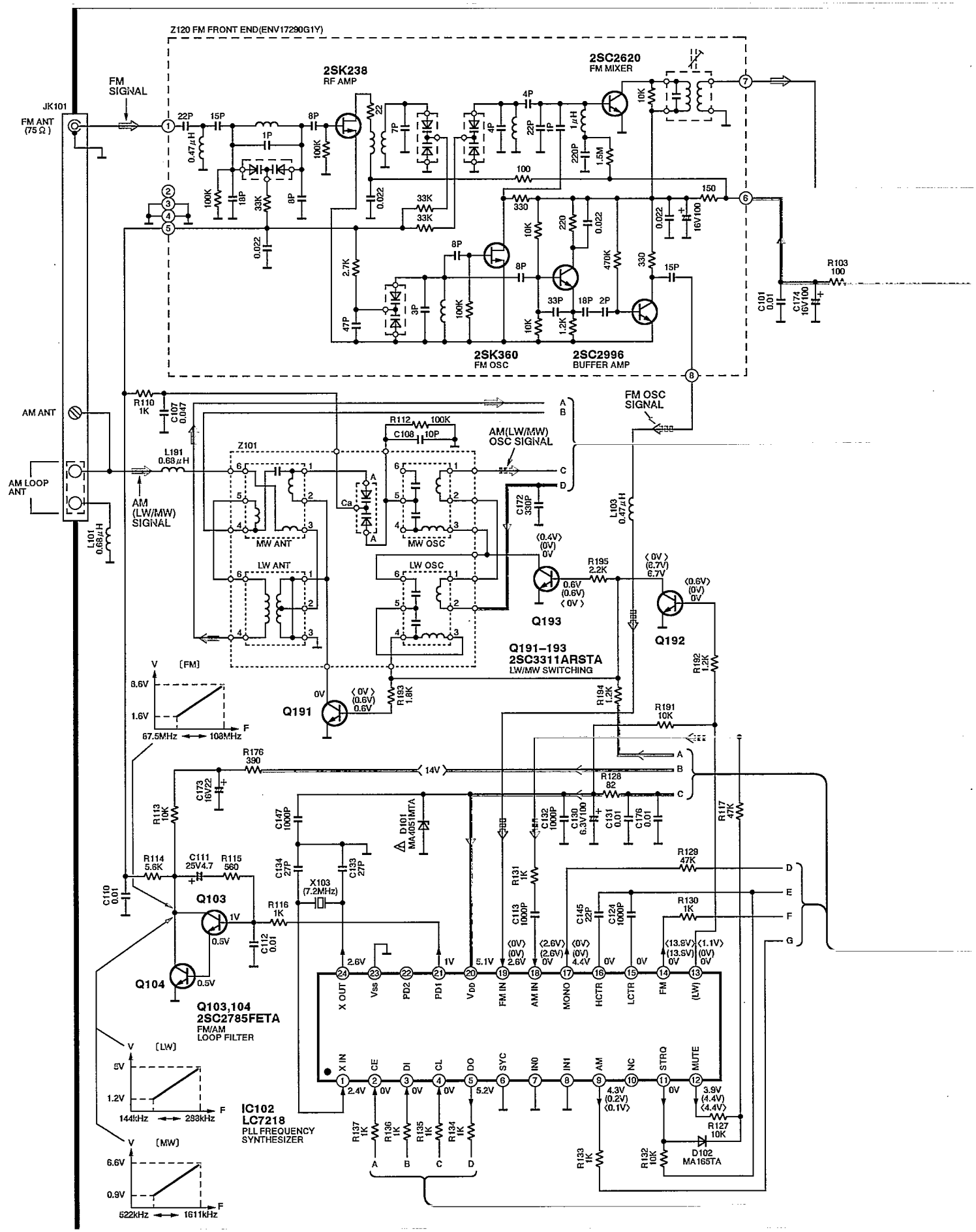
✱Figures in < > Stand for DC-voltage in LW signal reception mode.

● Caution!

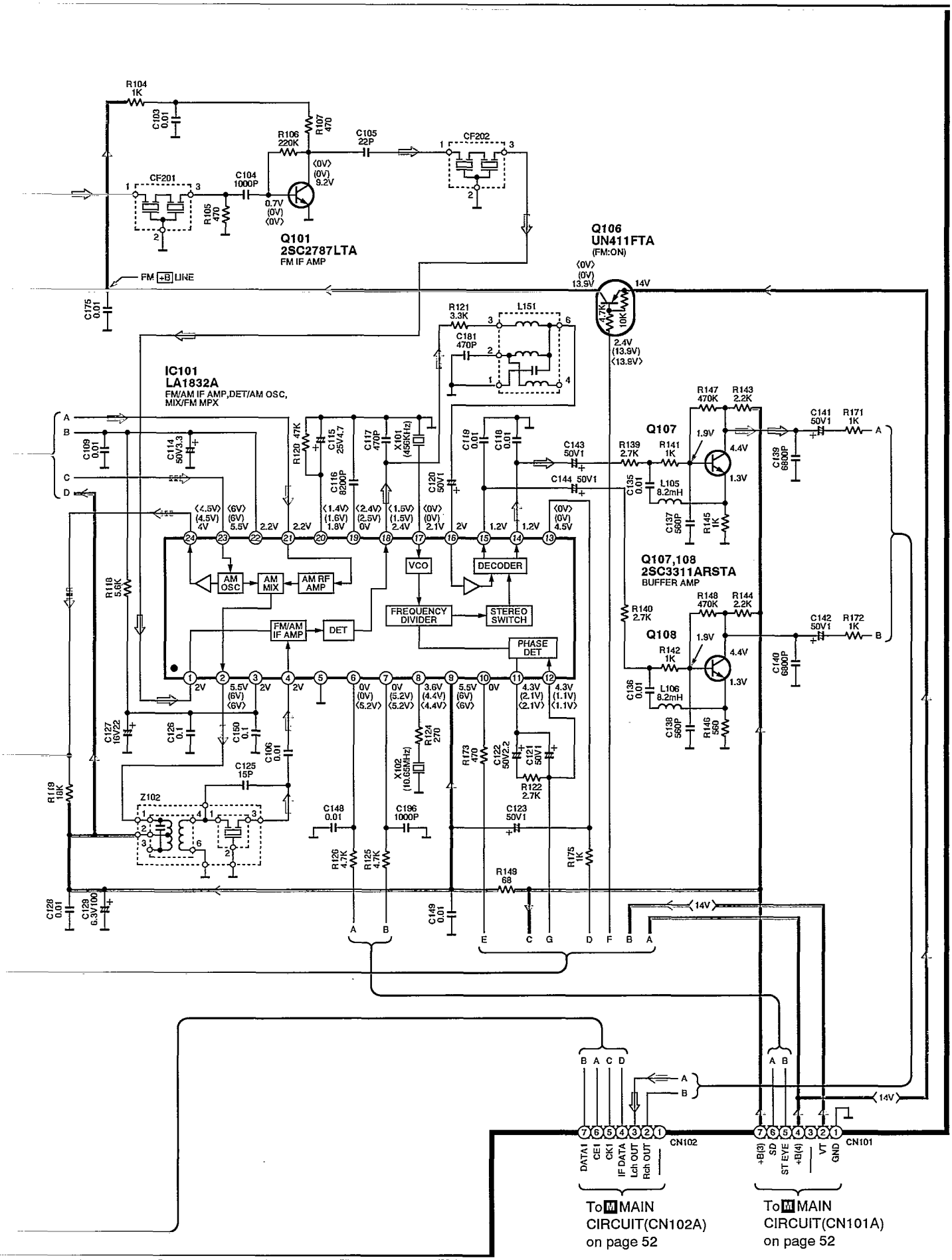
IC and LSI are sensitive to static electricity.
Secondary trouble can be prevented by taking care during repair.

- 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.

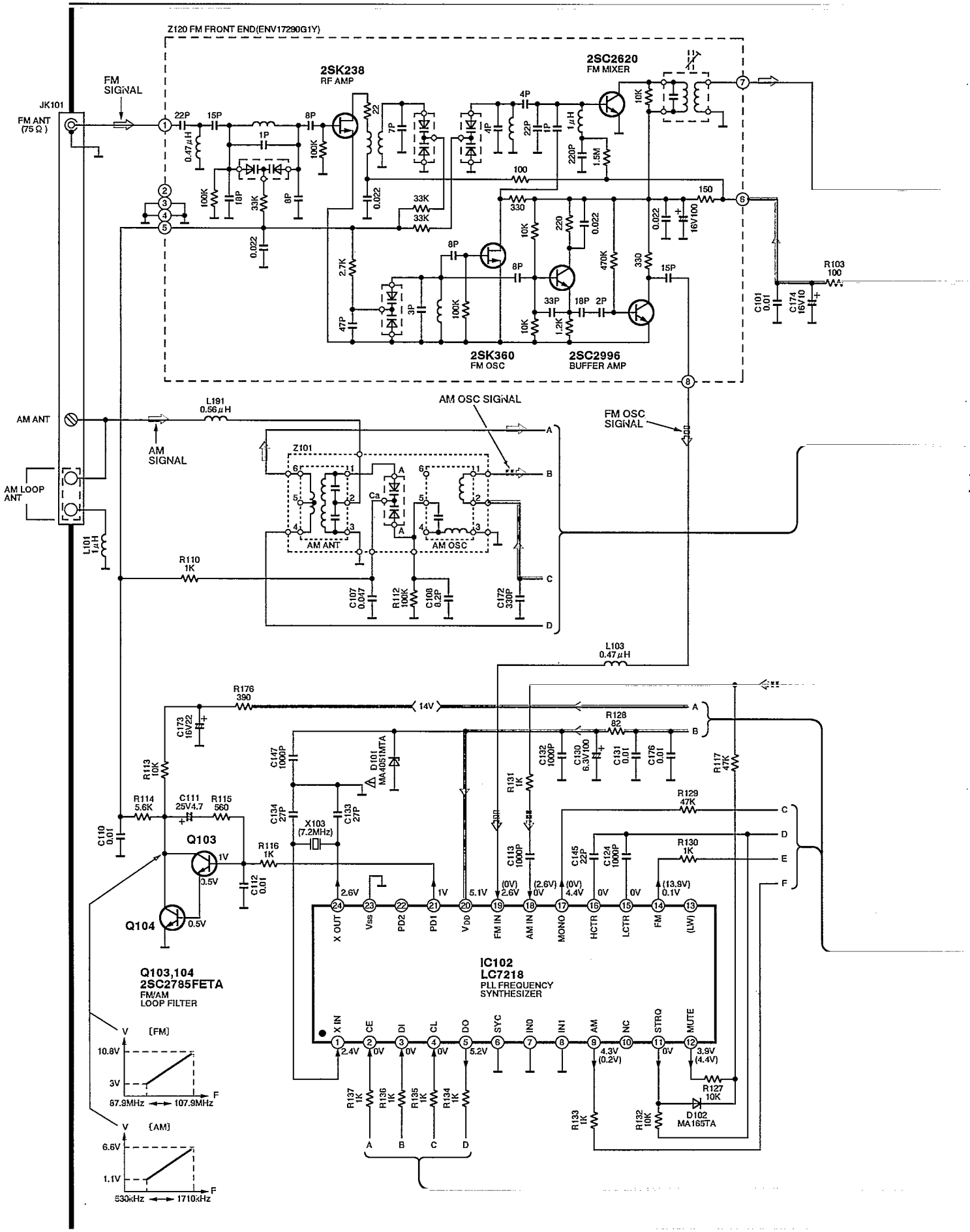
A TUNER CIRCUIT For [E,EB] areas. (P.C. Board: on page 60)



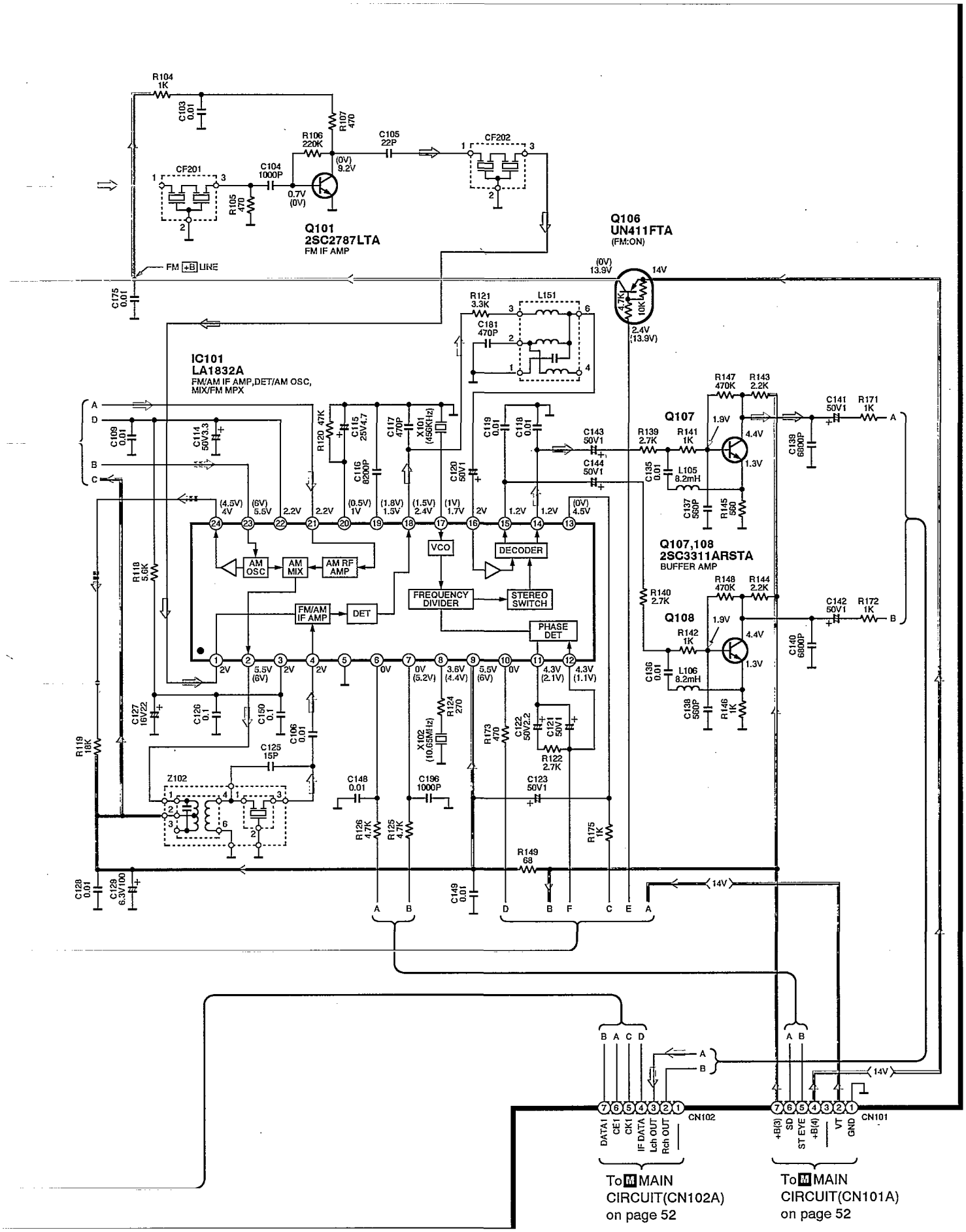
Notes: ● ⟹ : FM signal ● ⟹ : FM OSC signal
● ⟹ : AM signal ● ⟹ : AM OSC signal

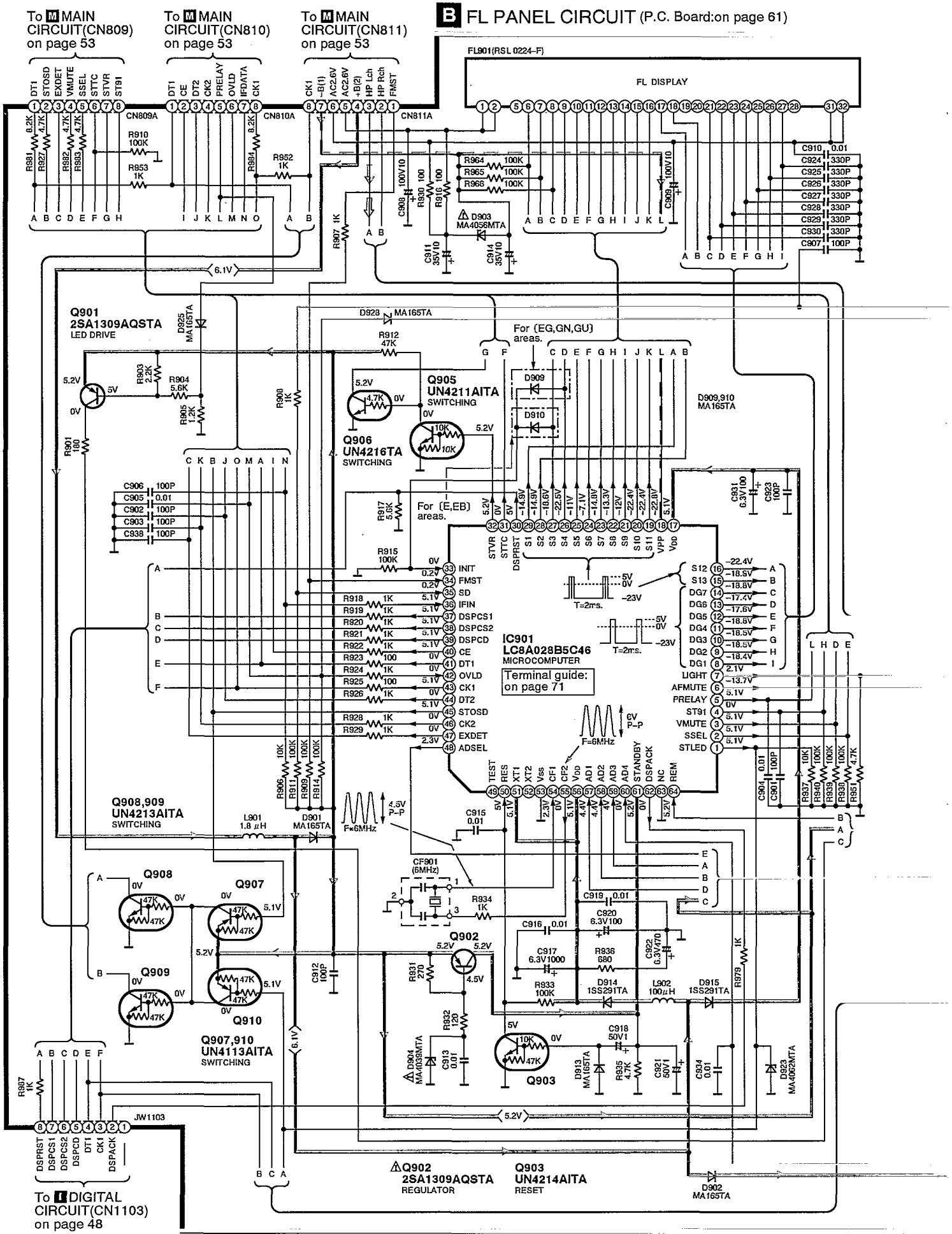


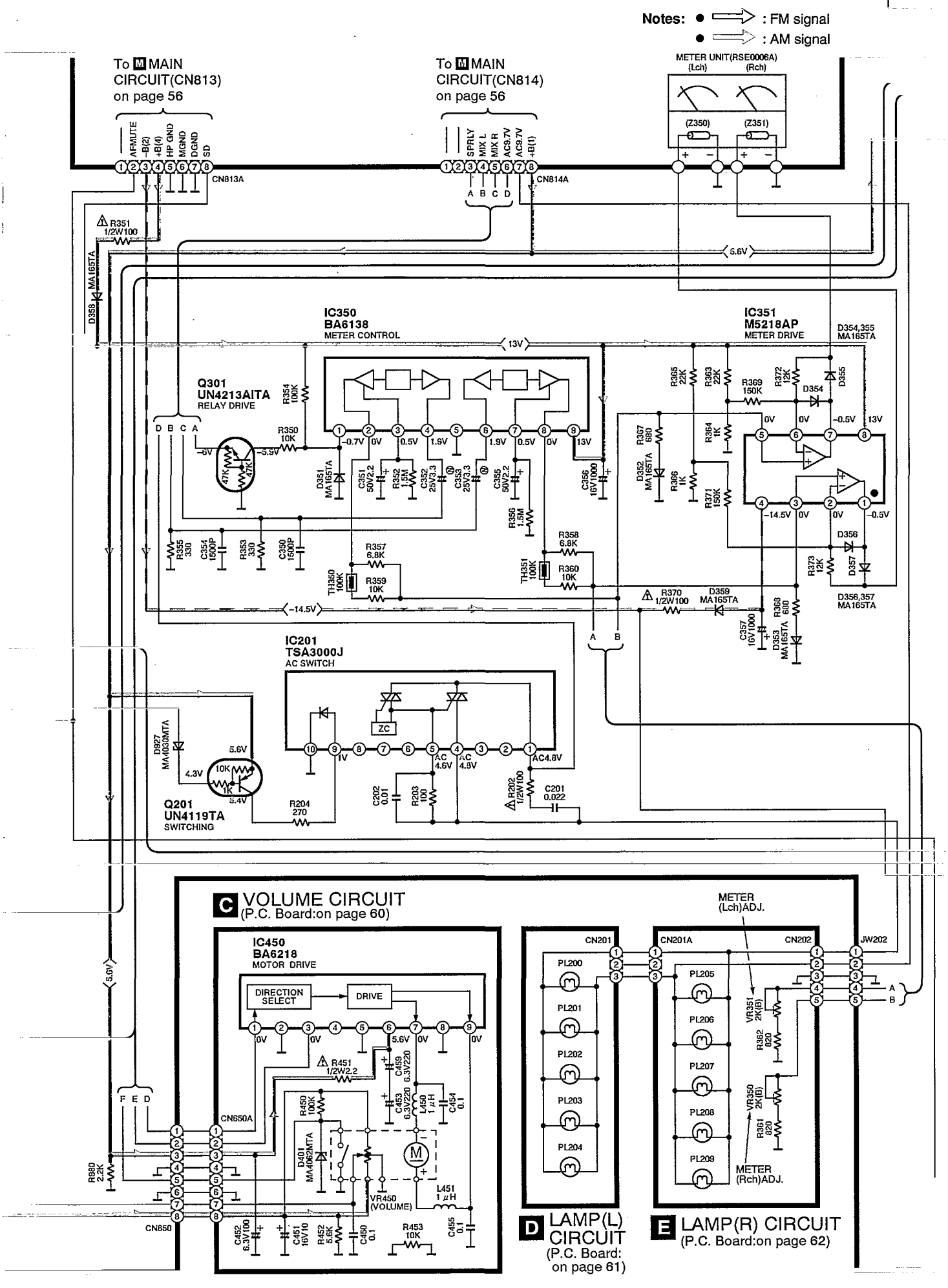
A TUNER CIRCUIT For {EG,GN,GU} areas. (P.C. Board: on page 60)



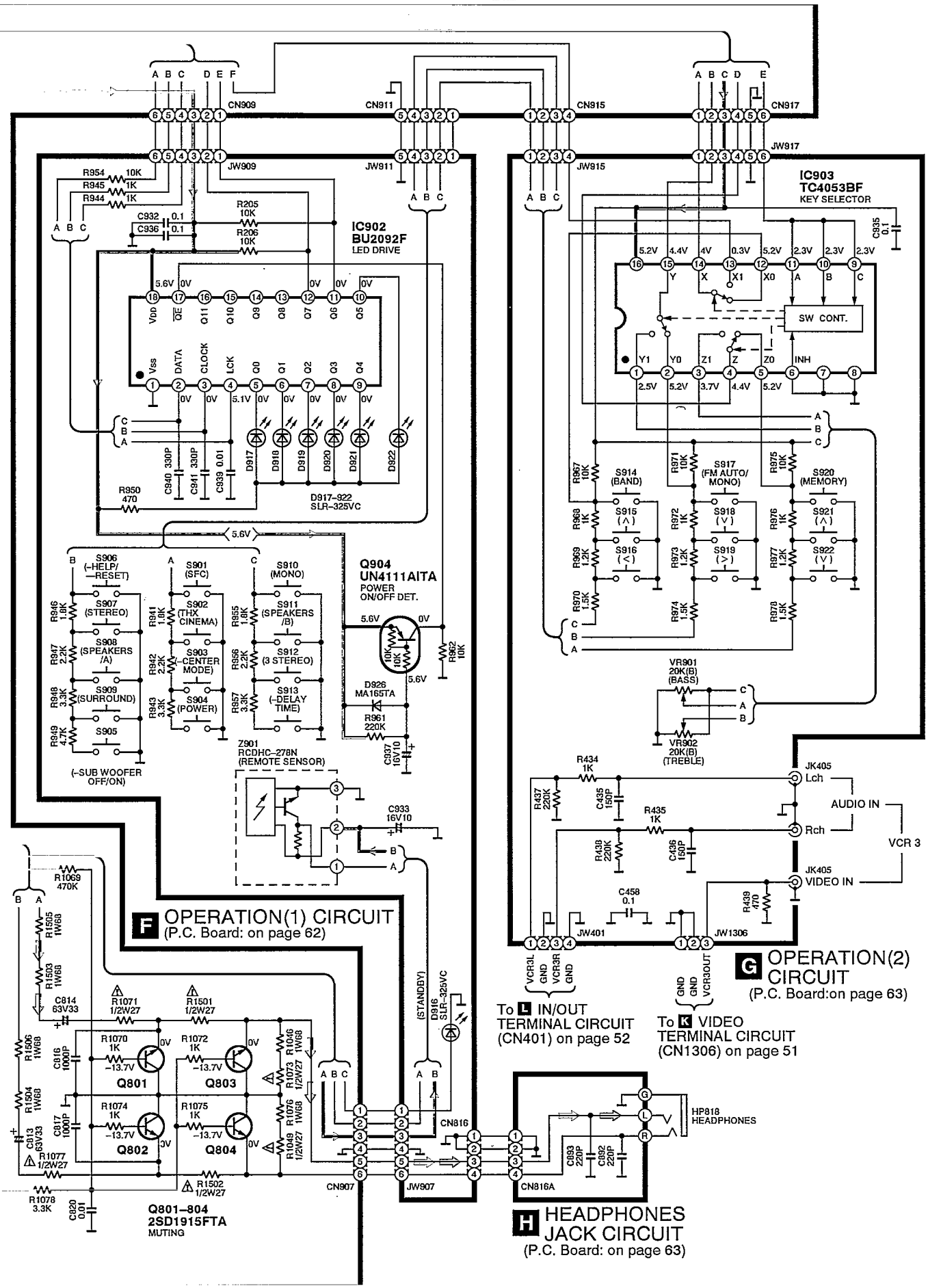
Notes: ● ⟹ : FM signal ● ⟹ : AM signal ● ⇨ : FM OSC signal ● ⇨ : AM OSC signal




To M MAIN CIRCUIT(CN809) on page 53
To M MAIN CIRCUIT(CN810) on page 53
To M MAIN CIRCUIT(CN811) on page 53
B FL PANEL CIRCUIT (P.C. Board:on page 61)
FL901(RSL 0224-F)
FL DISPLAY
CN809A
CN810A
CN811A
Q901 2SA1309AQSTA LED DRIVE
Q905 UN4211AITA SWITCHING
Q906 UN4216TA SWITCHING
Q908,909 UN4213AITA SWITCHING
Q907,910 UN4113AITA SWITCHING
Q902 2SA1309AQSTA REGULATOR
Q903 UN4214AITA RESET
IC901 LC8A028B5C46 MICROCOMPUTER
Terminal guide: on page 71
For (EG,GN,GU) areas.
For (E,EB) areas.
D909,910 MA165TA
To I DIGITAL CIRCUIT(CN1103) on page 48
— 44 —

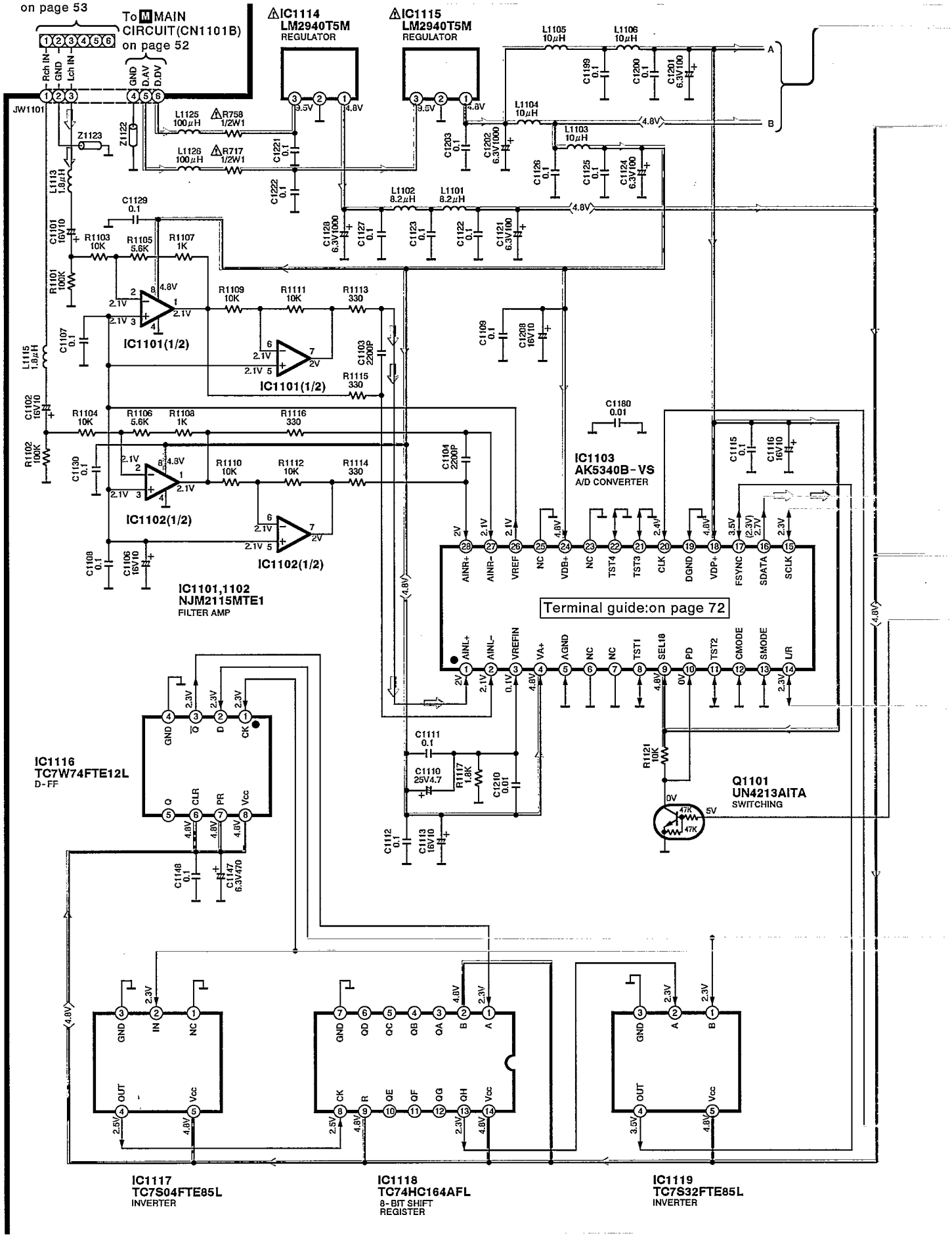

Notes: : FM signal
: AM signal
To MAIN CIRCUIT(CN813) on page 56
To MAIN CIRCUIT(CN814) on page 56
METER UNIT(RSE0006A)
(Lch) (Rch)
(Z350) (Z351)
ARMUTE
-B(2)
+B(4)
HP GND
MGND
DGND
SD
SPRLY
MIX L
MIX R
AC9.7V
AC9.7V
+B(t)
CN813A
CN814A
R351 1/2W100
D358 MA165TA
5.6V
IC350
BA6138
METER CONTROL
IC351
M5218AP
METER DRIVE
D354,355 MA165TA
Q301
UN4213AITA
RELAY DRIVE
R354 100K
R350 10K
D351 MA165TA
C351 50V2.2
R352 1.5M
C352 25V3.3
C353 25V3.3
C355 50V2.2
C356 16V1000
R356 1.5M
R358 6.8K
R360 10K
TH350 100K
R359 10K
TH351 100K
R355 330
C354 1500P
R353 330
C350 1500P
R357 6.8K
R365 22K
R363 22K
R369 150K
R372 12K
D354
D355
R367 680
R364 1K
D352 MA165TA
R366 1K
R371 150K
D356
D357
R373 12K
D356,357 MA165TA
R370 1/2W100
D359 MA165TA
C357 16V1000
R368 680
D353 MA165TA
-14.5V
IC201
TSA3000J
AC SWITCH
ZC
AC4.8V
D927 MA4030MTA
Q201
UN4119TA
SWITCHING
R204 270
C202 0.01
R203 100
R202 1/2W100
C201 0.022
C VOLUME CIRCUIT
(P.C. Board:on page 60)
IC450
BA6218
MOTOR DRIVE
DIRECTION SELECT
DRIVE
R451 1/2W2.2
C459 6.3V220
C453 6.3V220
L450 1 μH
C454 0.1
R450 100K
D401 MA4062MTA
VR450 (VOLUME)
L451 1 μH
C455 0.1
R453 10K
C452 6.3V100
C451 16V10
R452 5.6K
C450 0.1
R980 2.2K
CN650A
CN650
CN201
CN201A
CN202
JW202
PL200
PL201
PL202
PL203
PL204
PL205
PL206
PL207
PL208
PL209
METER (Lch)ADJ.
METER (Rch)ADJ.
VR351 2K(B)
R362 820
VR350 2K(B)
R361 820
D LAMP(L) CIRCUIT
(P.C. Board: on page 61)
E LAMP(R) CIRCUIT
(P.C. Board:on page 62)

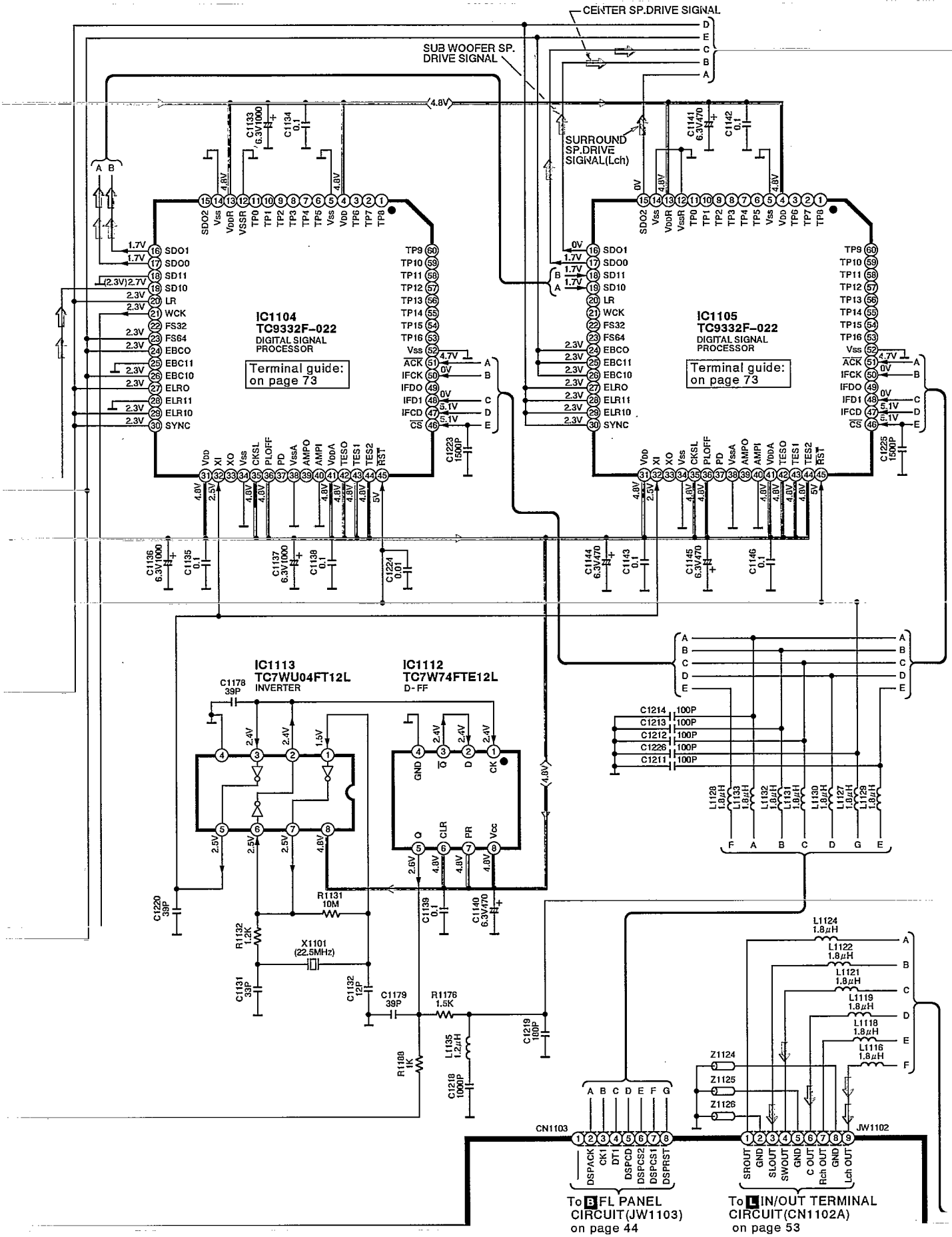
B FL PANEL CIRCUIT (P.C. Board: on page 61)



Notes: ● ⇨ : FM signal
● ⇨ : AM signal

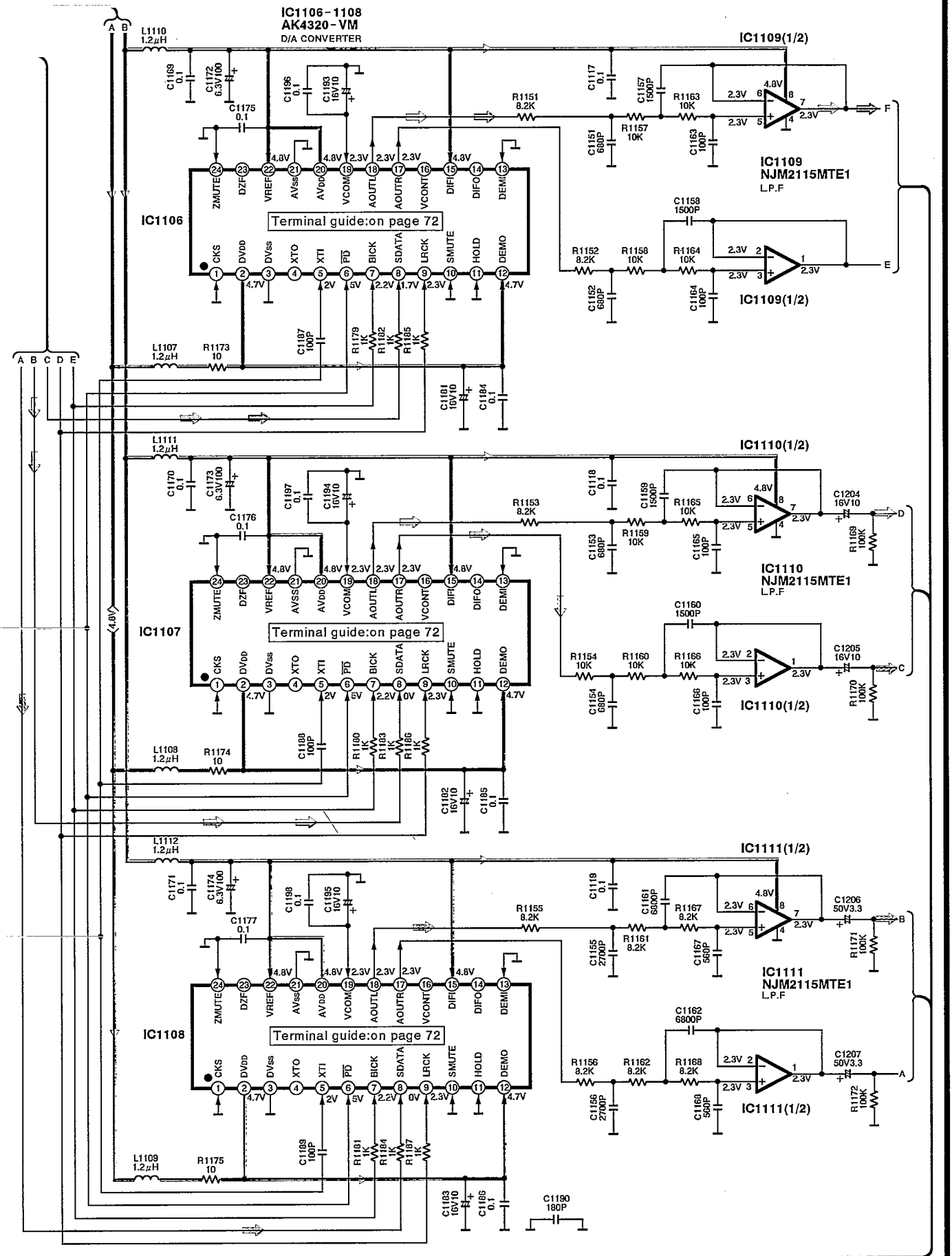
I DIGITAL CIRCUIT (P.C.Board:on page 64)




CENTER SP.DRIVE SIGNAL
SUB WOOFER SP. DRIVE SIGNAL
SURROUND SP.DRIVE SIGNAL(Lch)
IC1104
TC9332F-022
DIGITAL SIGNAL PROCESSOR
Terminal guide: on page 73
IC1105
TC9332F-022
DIGITAL SIGNAL PROCESSOR
Terminal guide: on page 73
IC1113
TC7WU04FT12L
INVERTER
IC1112
TC7W74FTE12L
D-FF
X1101 (22.5MHz)
CN1103
JW1102
To B FL PANEL CIRCUIT(JW1103) on page 44
To L IN/OUT TERMINAL CIRCUIT(CN1102A) on page 53

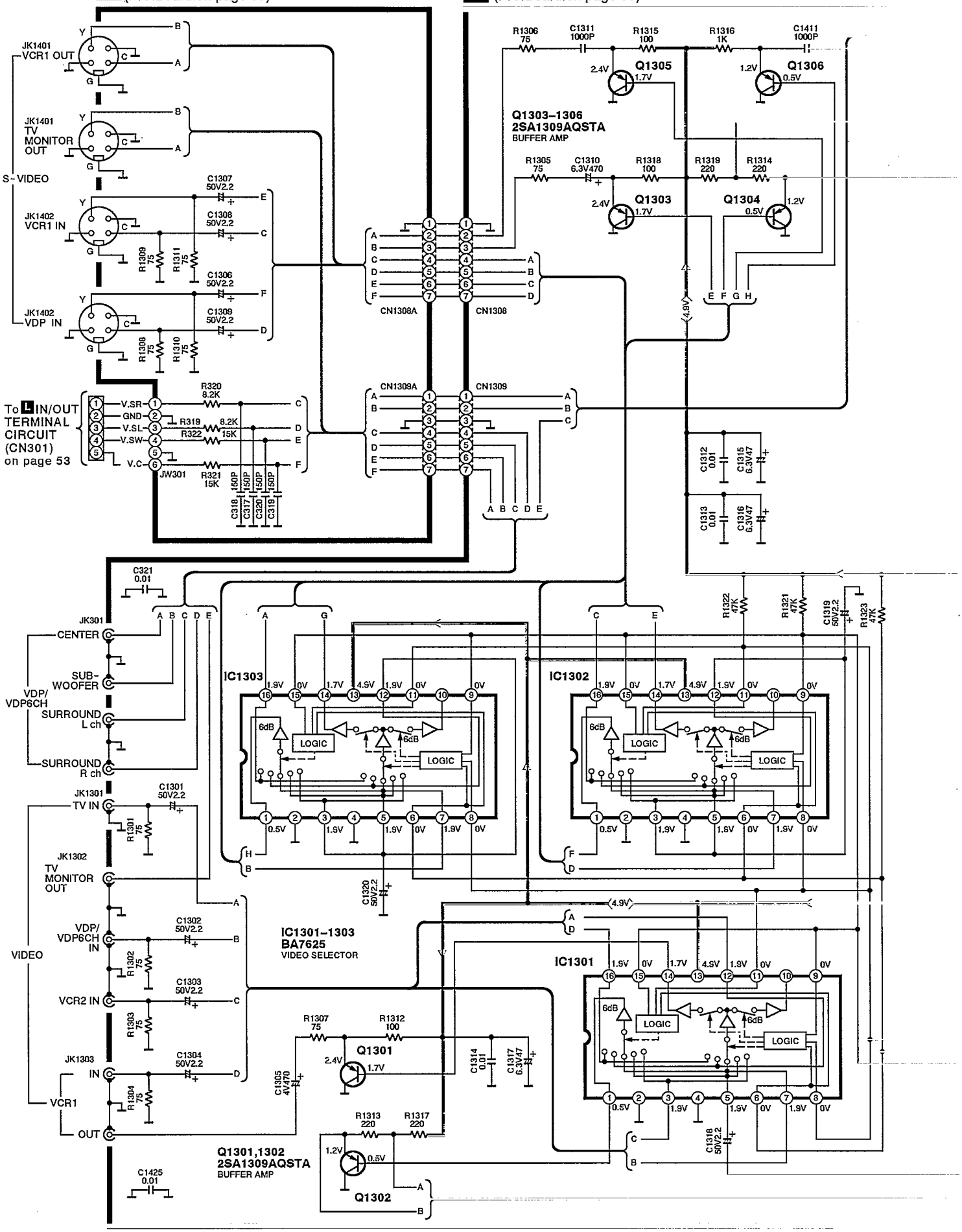
Notes: ● ⇨ : FM signal ● ⇨ : AM signal ● ⇨ : Surround speaker drive signal (Lch) ● ⇨ : Subwoofer speaker drive signal ● ⇨ : Center speaker drive signal

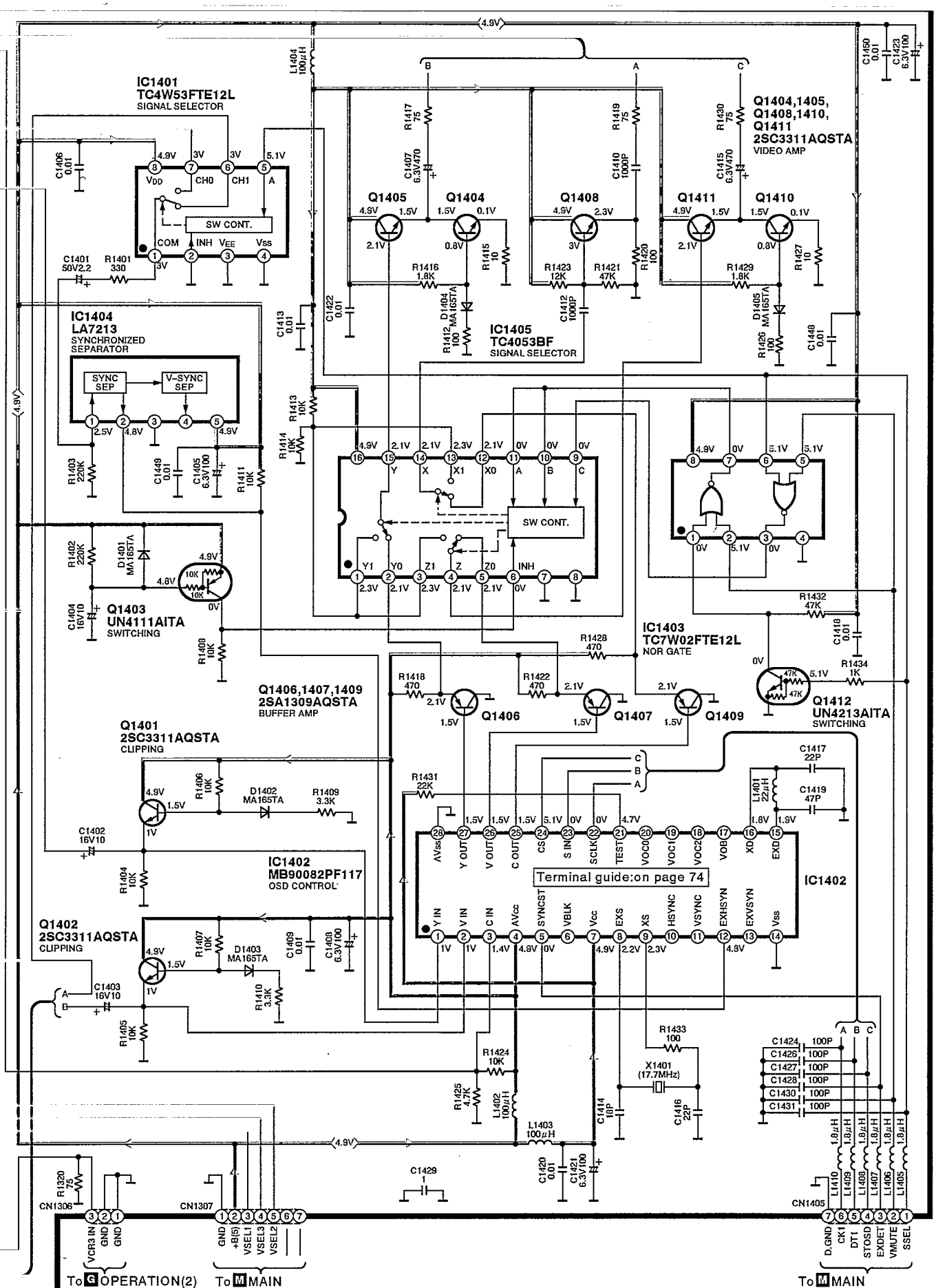
I DIGITAL CIRCUIT
(P.C.Board:on page 64)



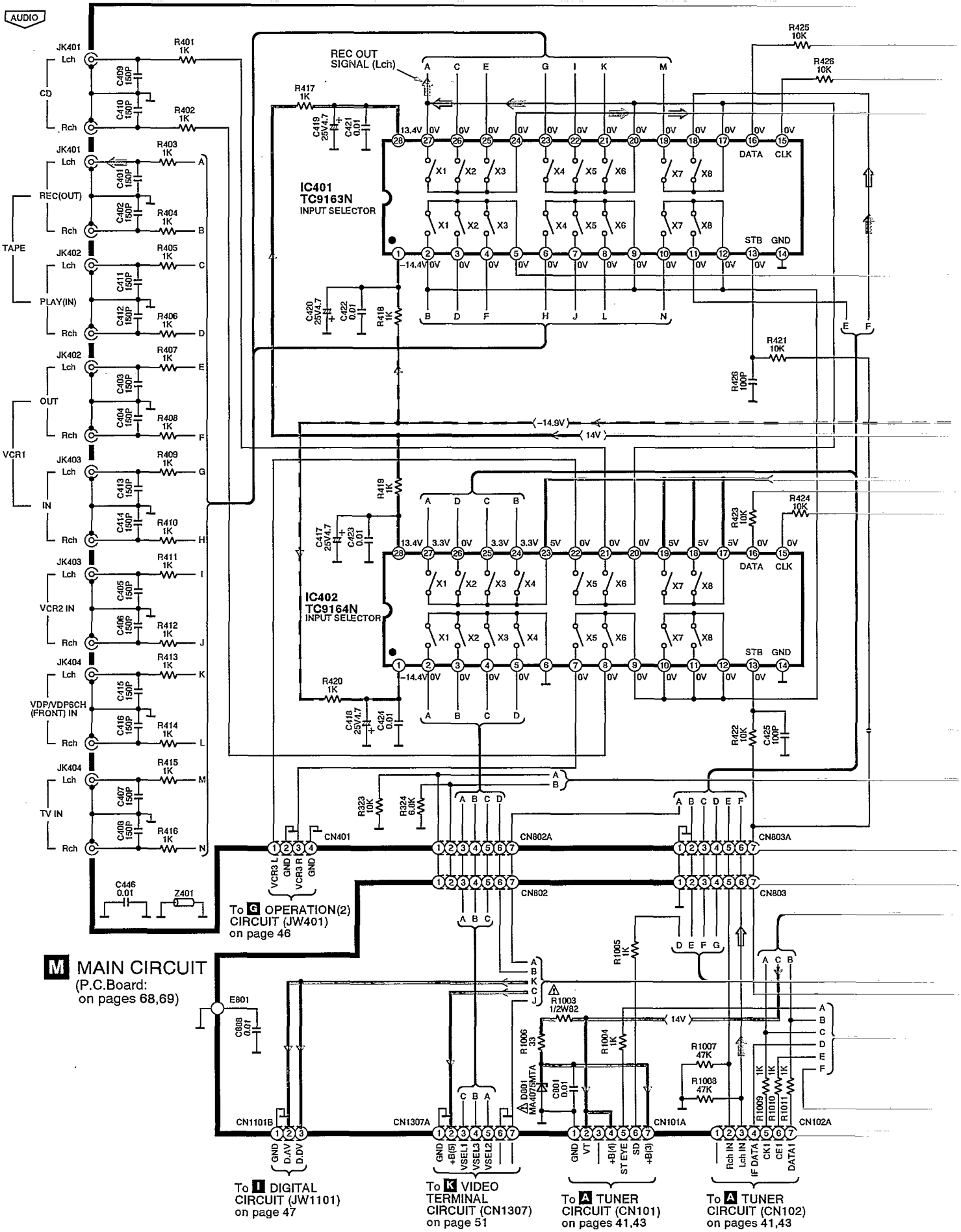
J S-VIDEO JACK CIRCUIT
(P.C.Board:on page 65)

K VIDEO TERMINAL CIRCUIT
(P.C.Board:on page 65)

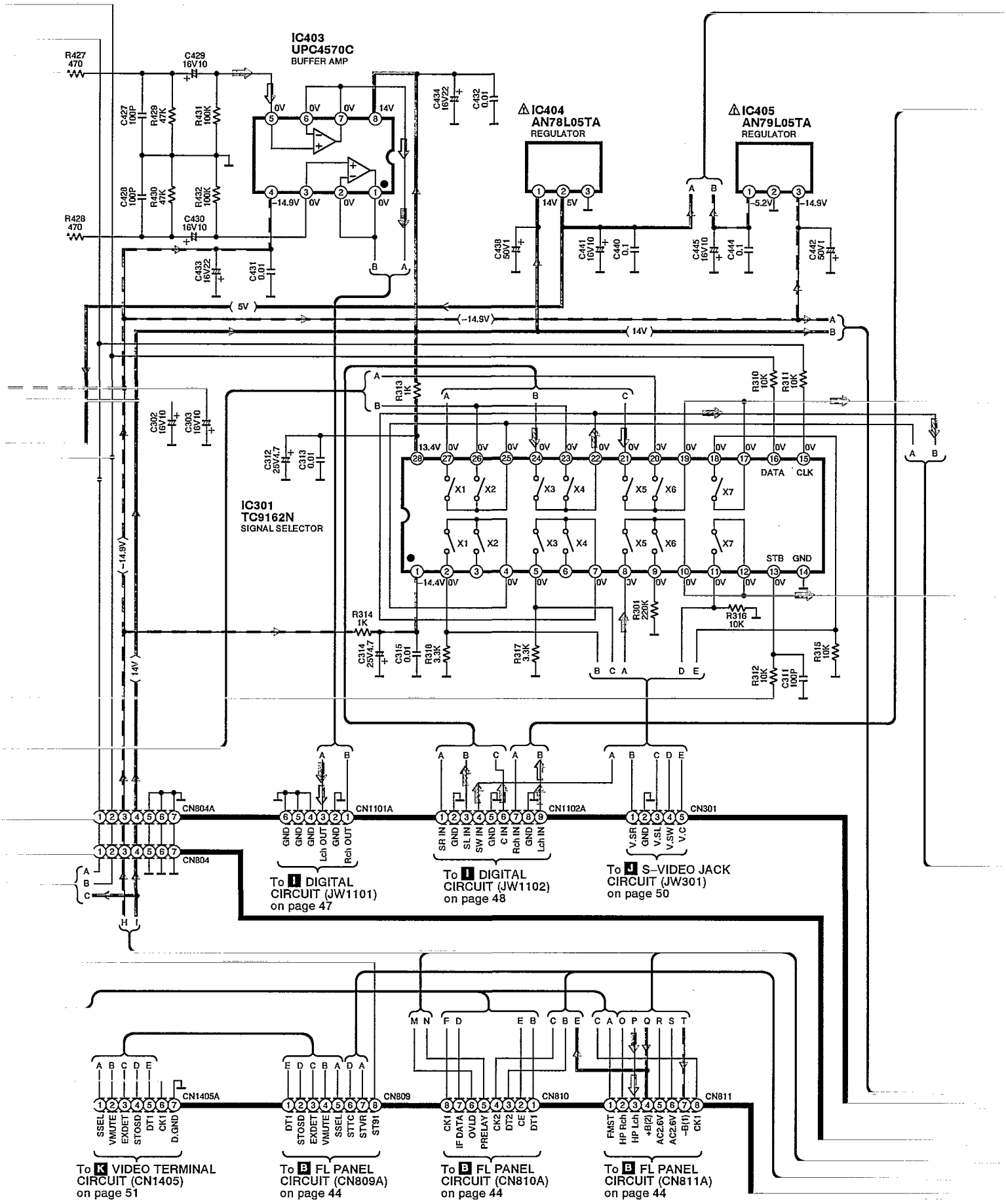



IC1401
TC4W53FTE12L
SIGNAL SELECTOR
SW CONT.
IC1404
LA7213
SYNCHRONIZED SEPARATOR
SYNC SEP
V-SYNC SEP
Q1405
Q1404
Q1408
Q1411
Q1410
Q1404,1405,
Q1408,1410,
Q1411
2SC3311AQSTA
VIDEO AMP
IC1405
TC4053BF
SIGNAL SELECTOR
SW CONT.
IC1403
TC7W02FTE12L
NOR GATE
Q1403
UN4111AITA
SWITCHING
Q1412
UN4213AITA
SWITCHING
Q1406,1407,1409
2SA1309AQSTA
BUFFER AMP
Q1406
Q1407
Q1409
Q1401
2SC3311AQSTA
CLIPPING
Q1402
2SC3311AQSTA
CLIPPING
IC1402
MB90082PF117
OSD CONTROL
Terminal guide:on page 74
X1401
(17.7MHz)
CN1306
CN1307
CN1405
VCR3 IN
GND
GND
GND
+B(5)
VSEL1
VSEL3
VSEL2
D.GND
CK1
DT1
STOSD
EXDET
VMUTE
SSEL
To G OPERATION(2) CIRCUIT(JW1306) on page 46
To M MAIN CIRCUIT(CN1307A) on page 52
To M MAIN CIRCUIT(CN1405A) on page 53

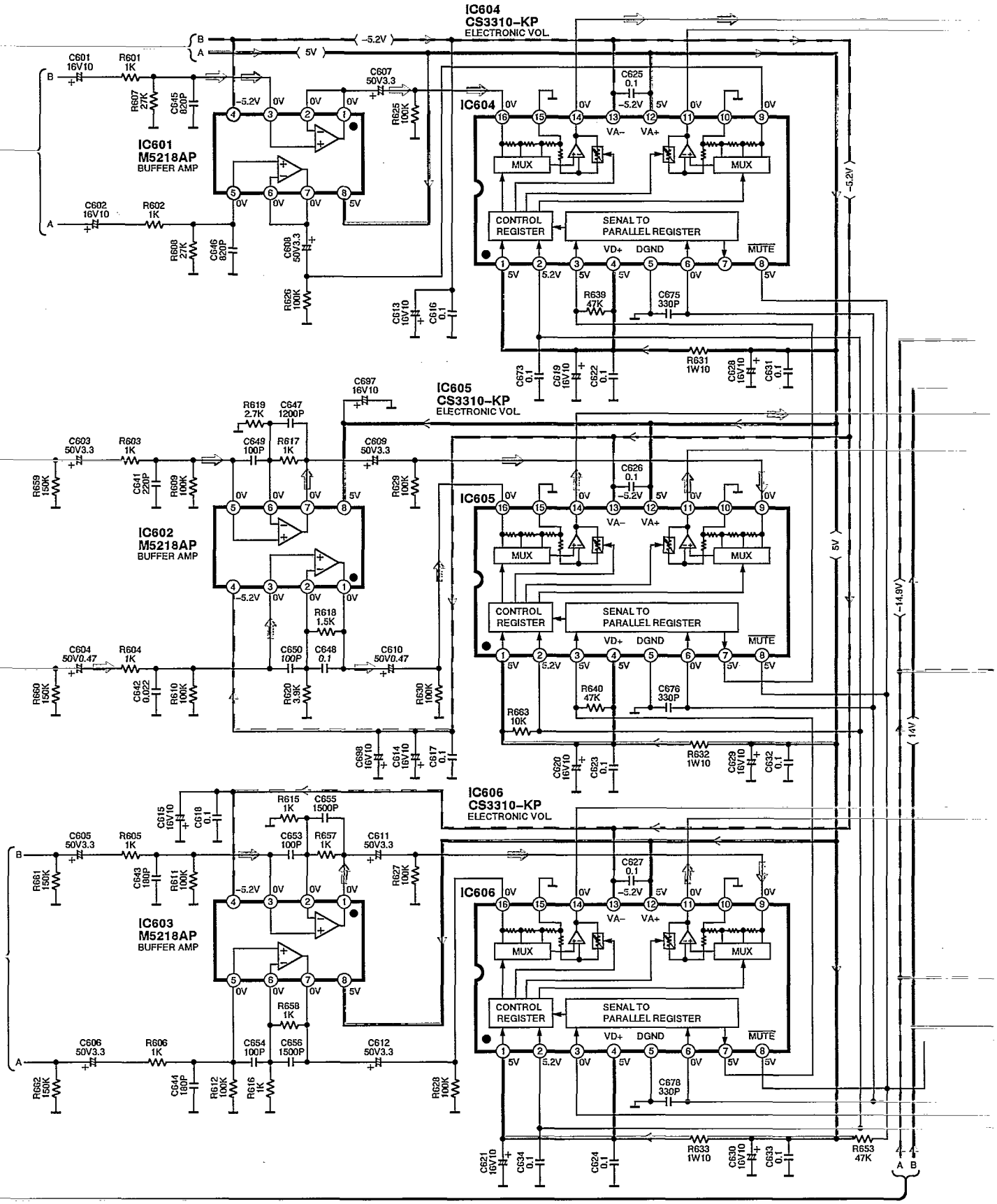
L IN/OUT TERMINAL CIRCUIT (P.C.Board:on page 67)



Notes: ● : FM signal ● : AM signal ● : Surround speaker drive signal (Lch) ● : Subwoofer speaker drive signal ● : Center speaker drive signal ● : Rec out signal (Lch)

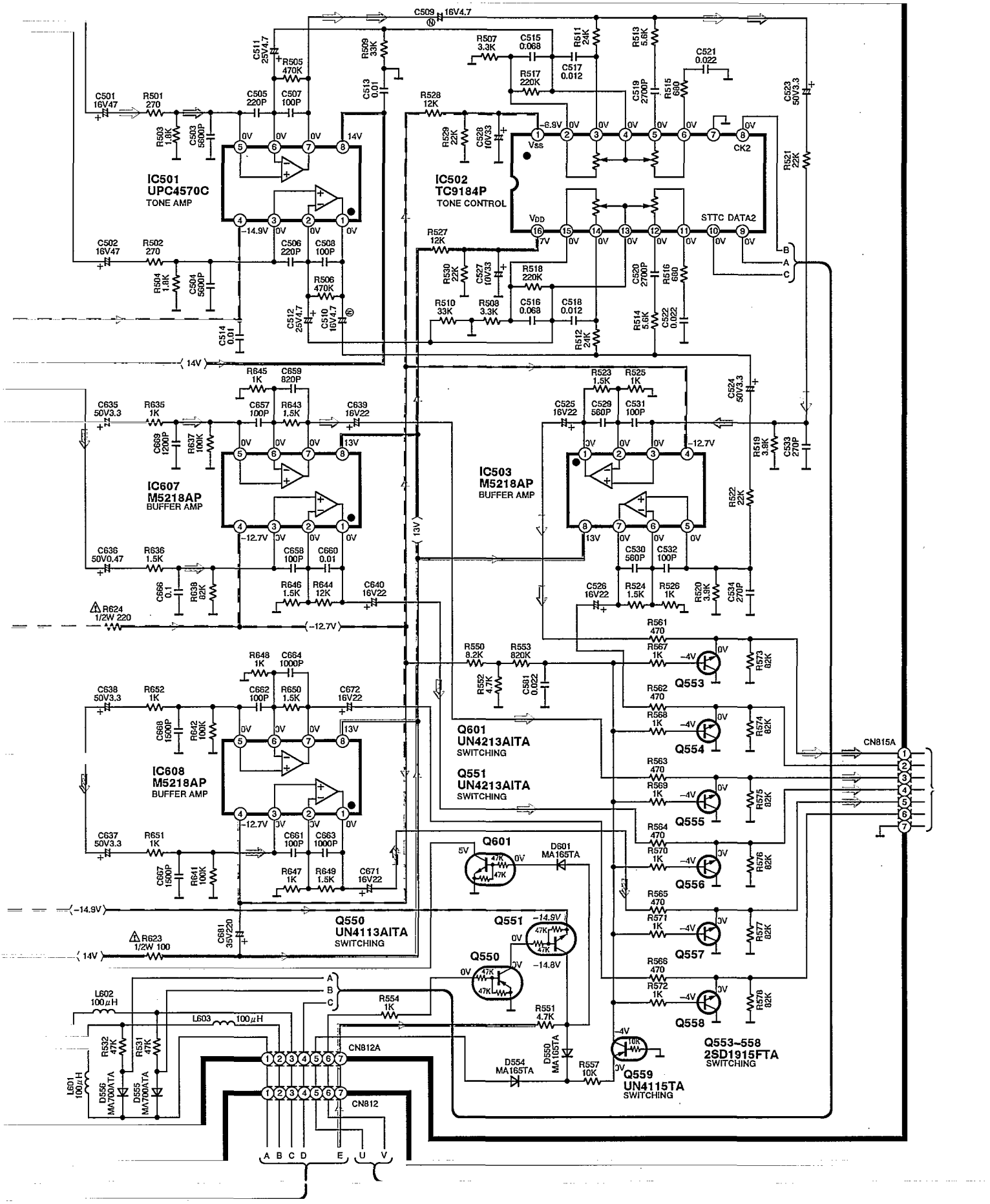


L IN/OUT TERMINAL CIRCUIT (P.C.Board:on page 67)

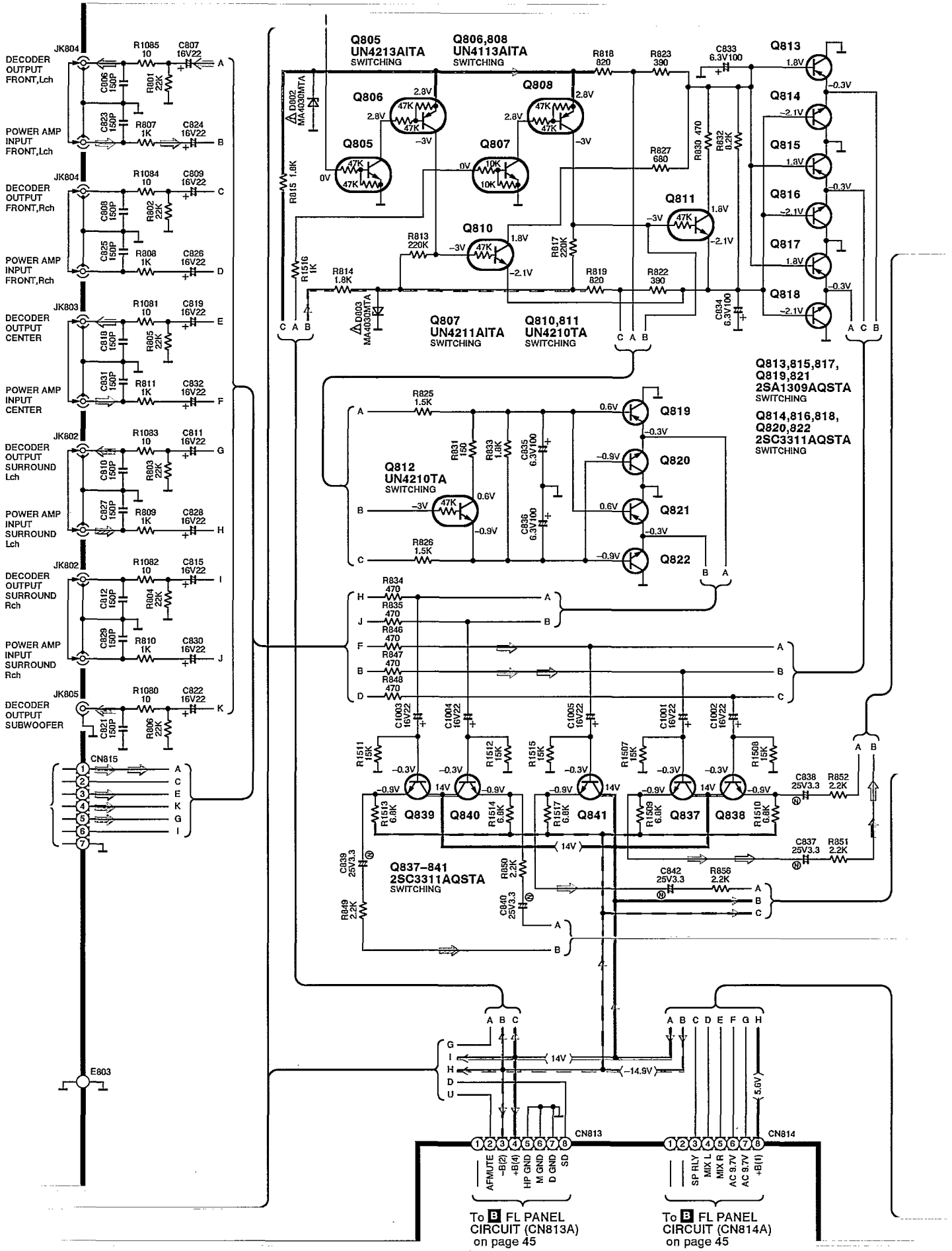


M MAIN CIRCUIT (P.C.Board:on pages 68,69)

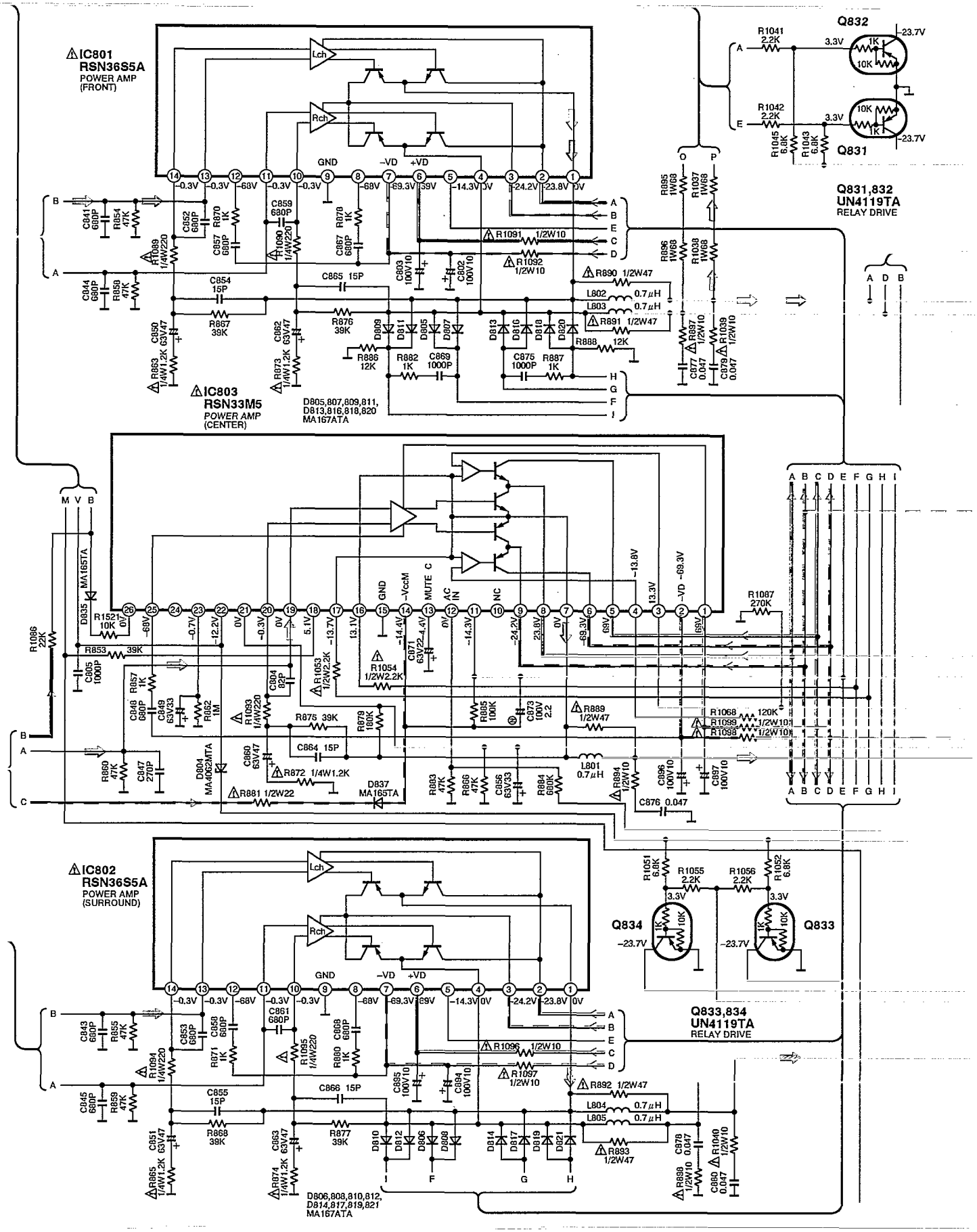
Notes: ● : FM signal ● : AM signal ● : Surround speaker drive signal (Lch) ● : Subwoofer speaker drive signal ● : Center speaker drive signal



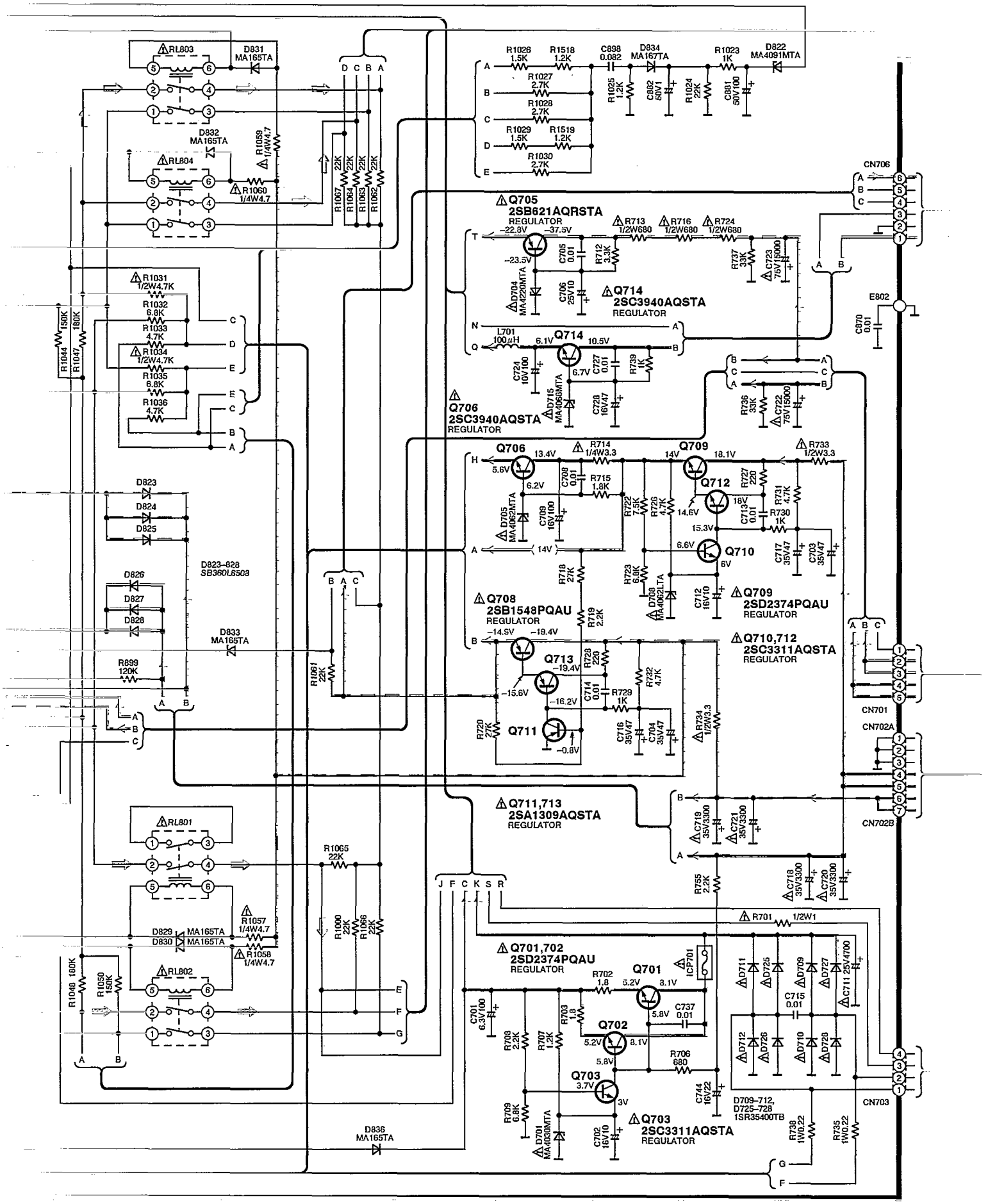
M MAIN CIRCUIT (P.C.Board:on pages 68,69)



Notes: ● : FM signal ● : AM signal ● : Surround speaker drive signal (Lch) ● : Subwoofer speaker drive signal ● : Center speaker drive signal



M MAIN CIRCUIT (P.C.Board:on pages 68,69)



Notes: ● ⇨ : FM signal ● ⇨ : Surround speaker drive signal (Lch)
● ⇨ : AM signal ● ⇨ : Center speaker drive signal

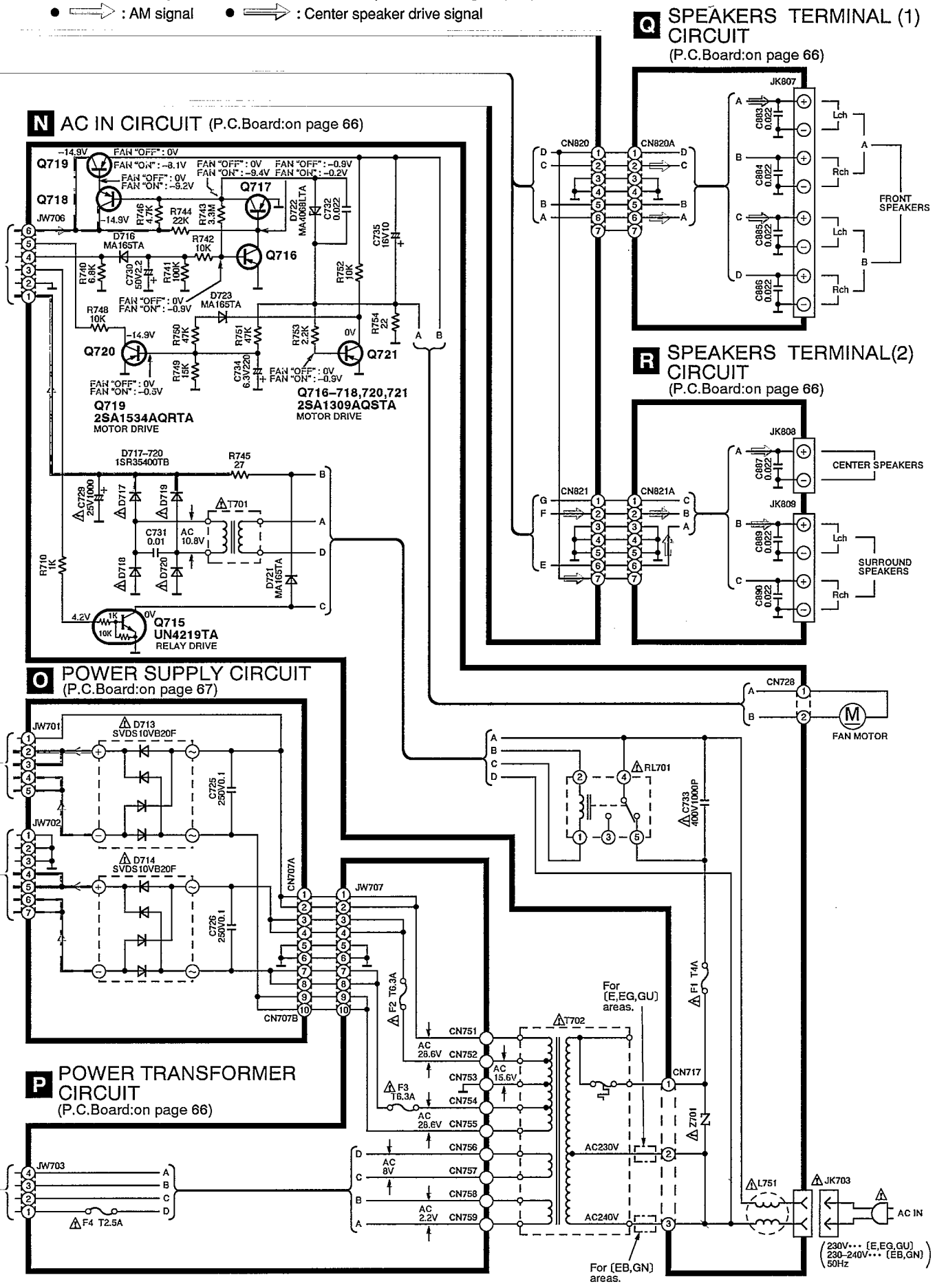
Q SPEAKERS TERMINAL (1) CIRCUIT
(P.C.Board:on page 66)

R SPEAKERS TERMINAL(2) CIRCUIT
(P.C.Board:on page 66)

N AC IN CIRCUIT (P.C.Board:on page 66)

O POWER SUPPLY CIRCUIT
(P.C.Board:on page 67)

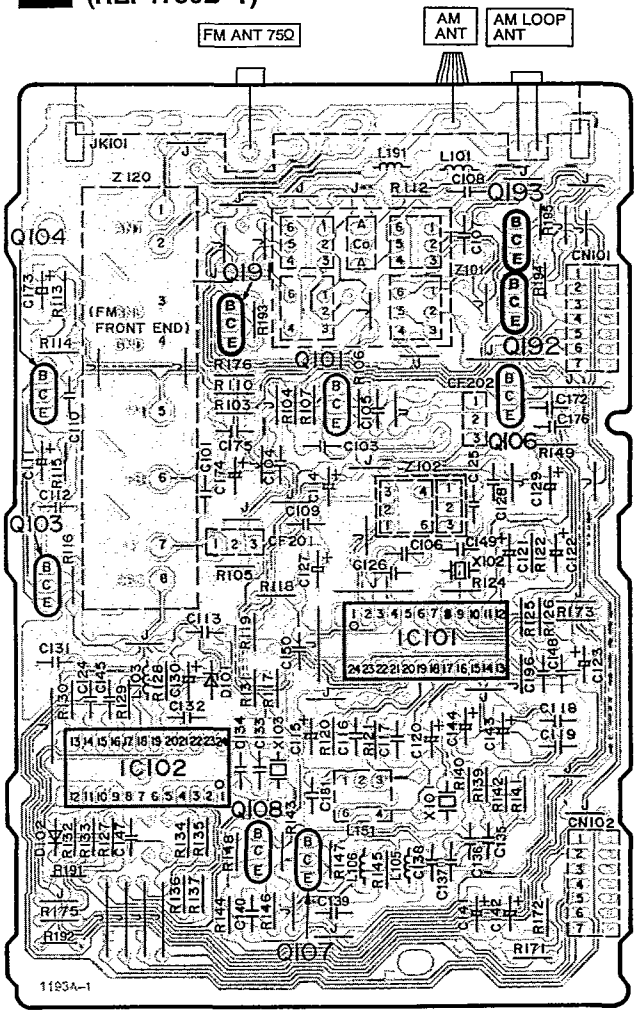
P POWER TRANSFORMER CIRCUIT
(P.C.Board:on page 66)



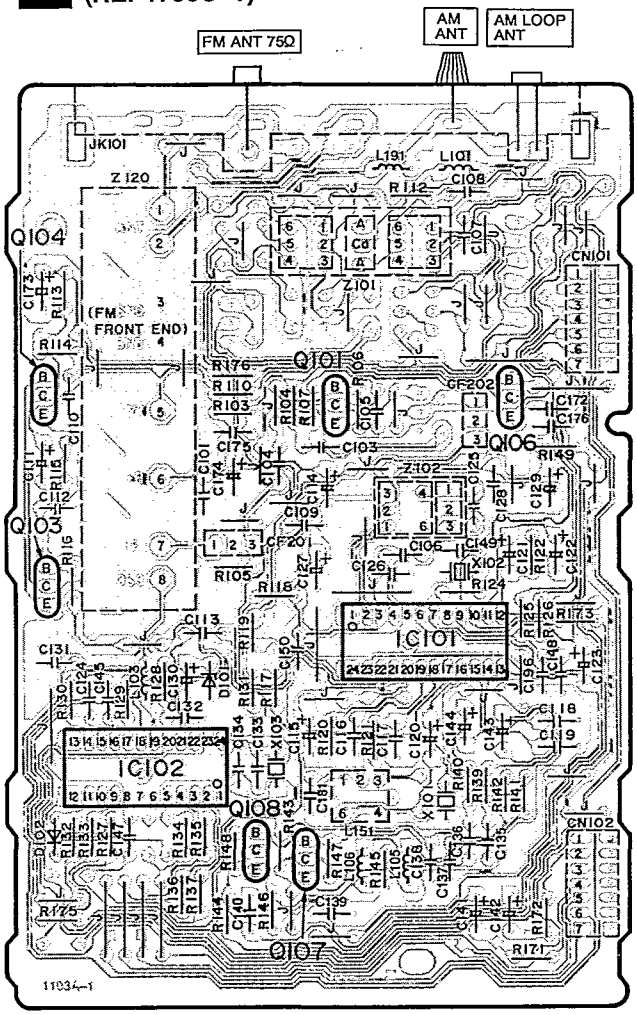
■Printed Circuit Board Diagram

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

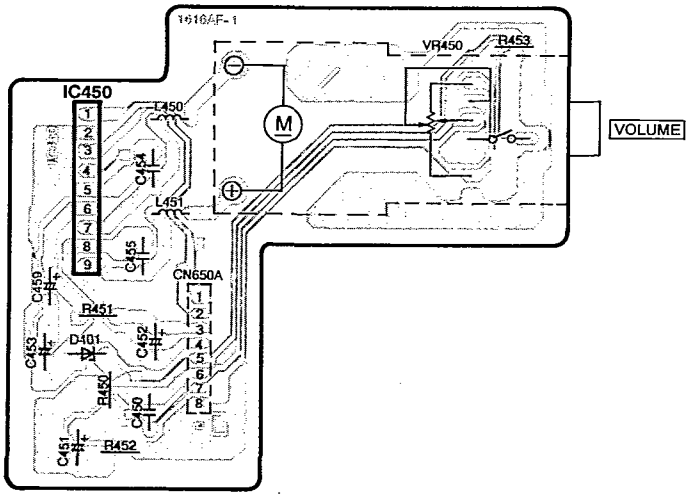
A TUNER P.C.B. For [E,EB] areas. (REP1750B–T)



A TUNER P.C.B. For [EG,GN,GU] areas. (REP1750C–T)

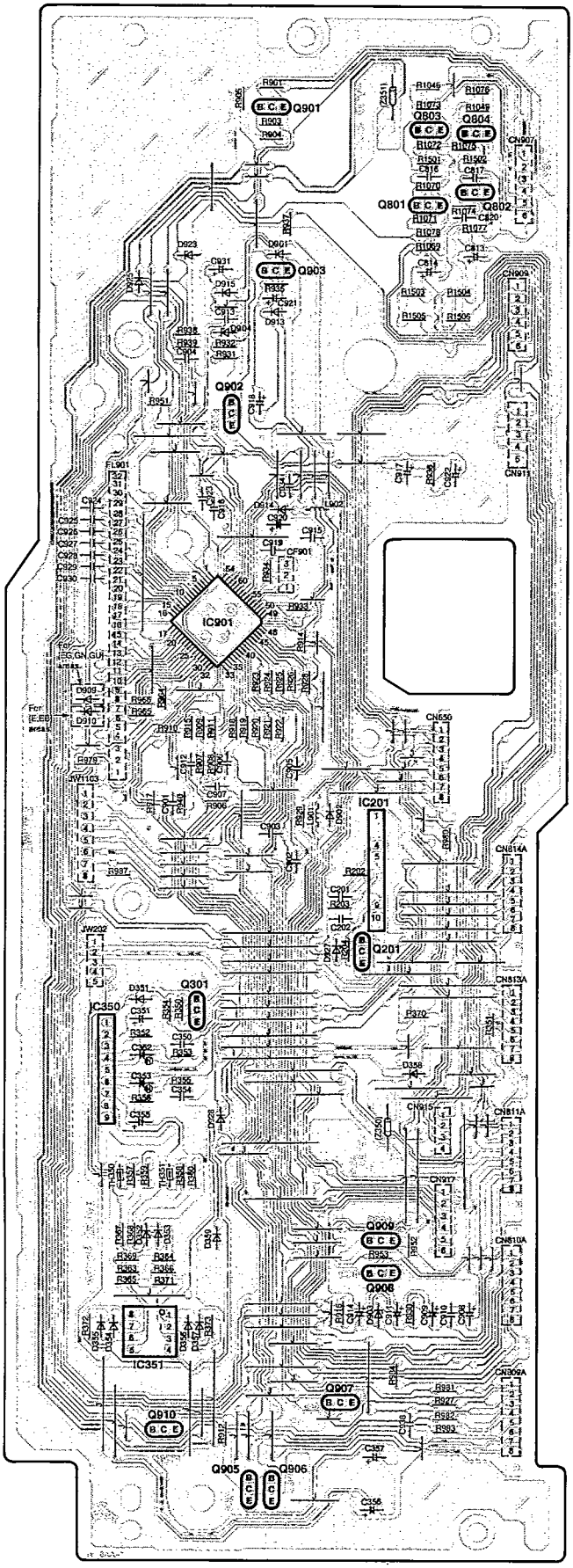


C VOLUME P.C.B.
(REP2277C–S•••[EG,GN,GU])
(REP2277D–S•••[E,EB])

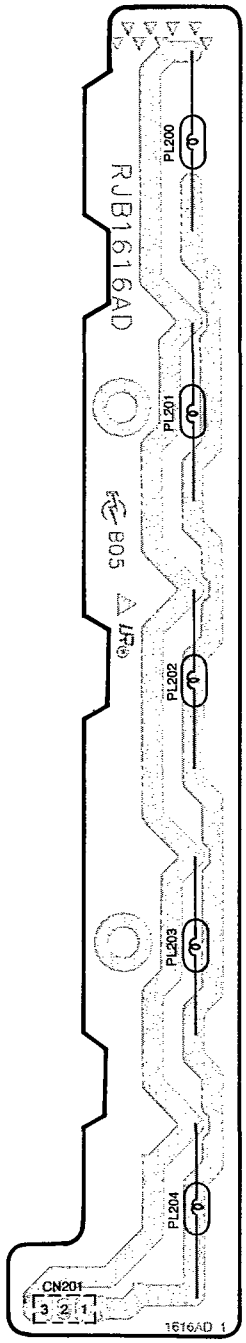


6 7 8 9 10

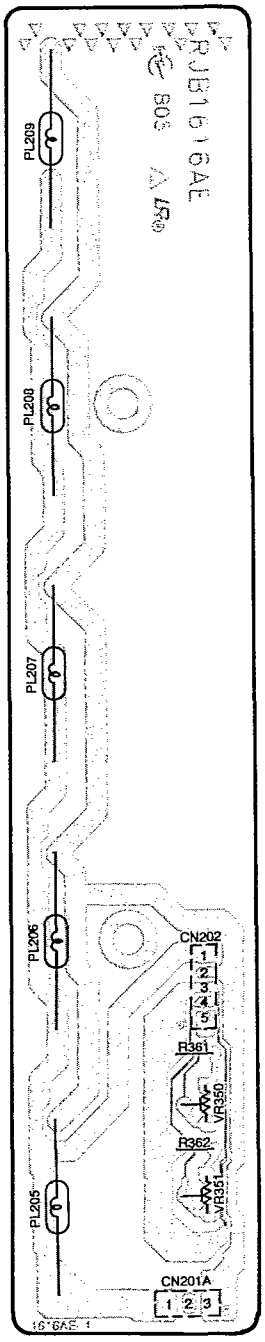
B FL PANEL P.C.B.
(REP2277C-S•••[EG,GN,GU])
(REP2277D-S•••[E,EB])



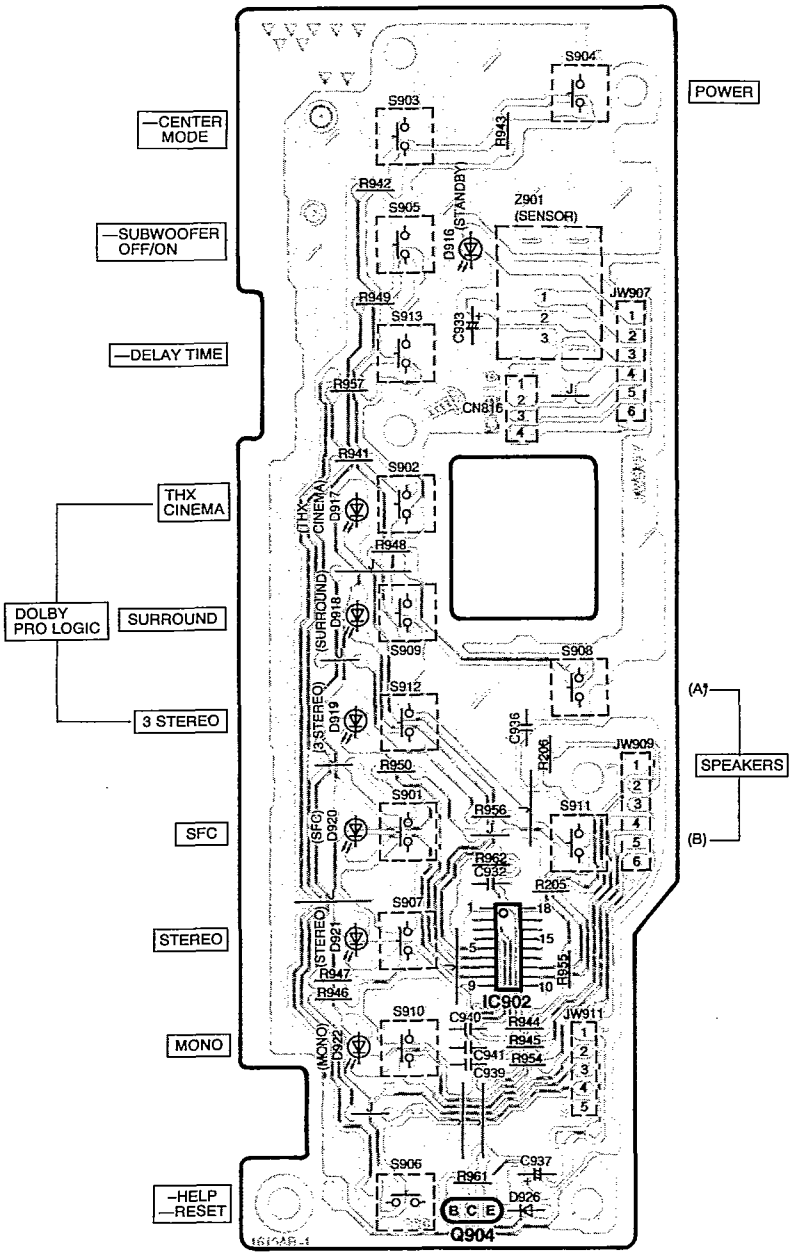
D LAMP (L) P.C.B.
(REP2277C-S•••[EG,GN,GU])
(REP2277D-S•••[E,EB])



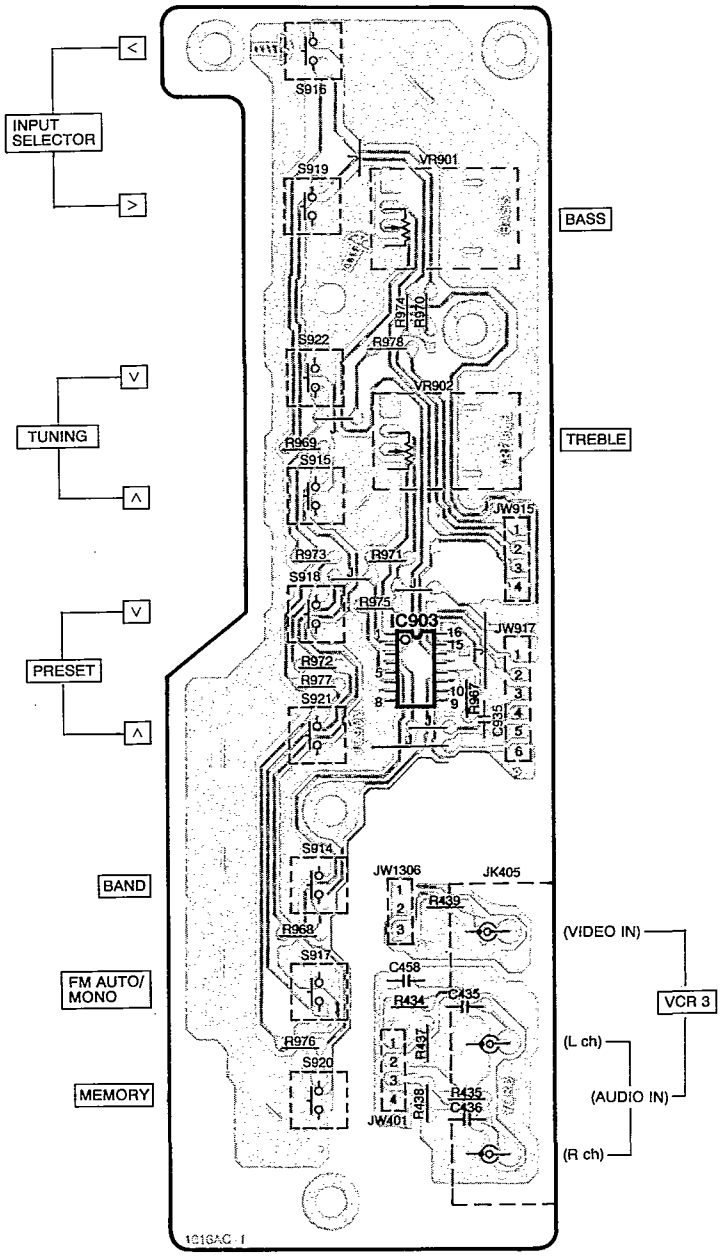
E LAMP (R) P.C.B.
(REP2277C–S•••[EG,GN,GU]
REP2277D–S•••[E,EB])



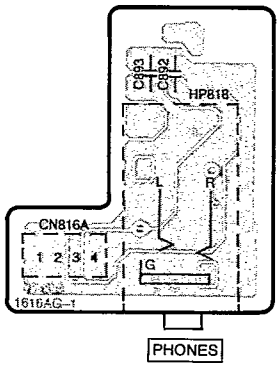
F OPERATION (1) P.C.B.
(REP2277C–S•••[EG,GN,GU]
REP2277D–S•••[E,EB])



G OPERATION (2) P.C.B.
(REP2277C–S•••[EG,GN,GU])
(REP2277D–S•••[E,EB])



H HEADPHONES JACK P.C.B.
(REP2277C–S•••[EG,GN,GU])
(REP2277D–S•••[E,EB])



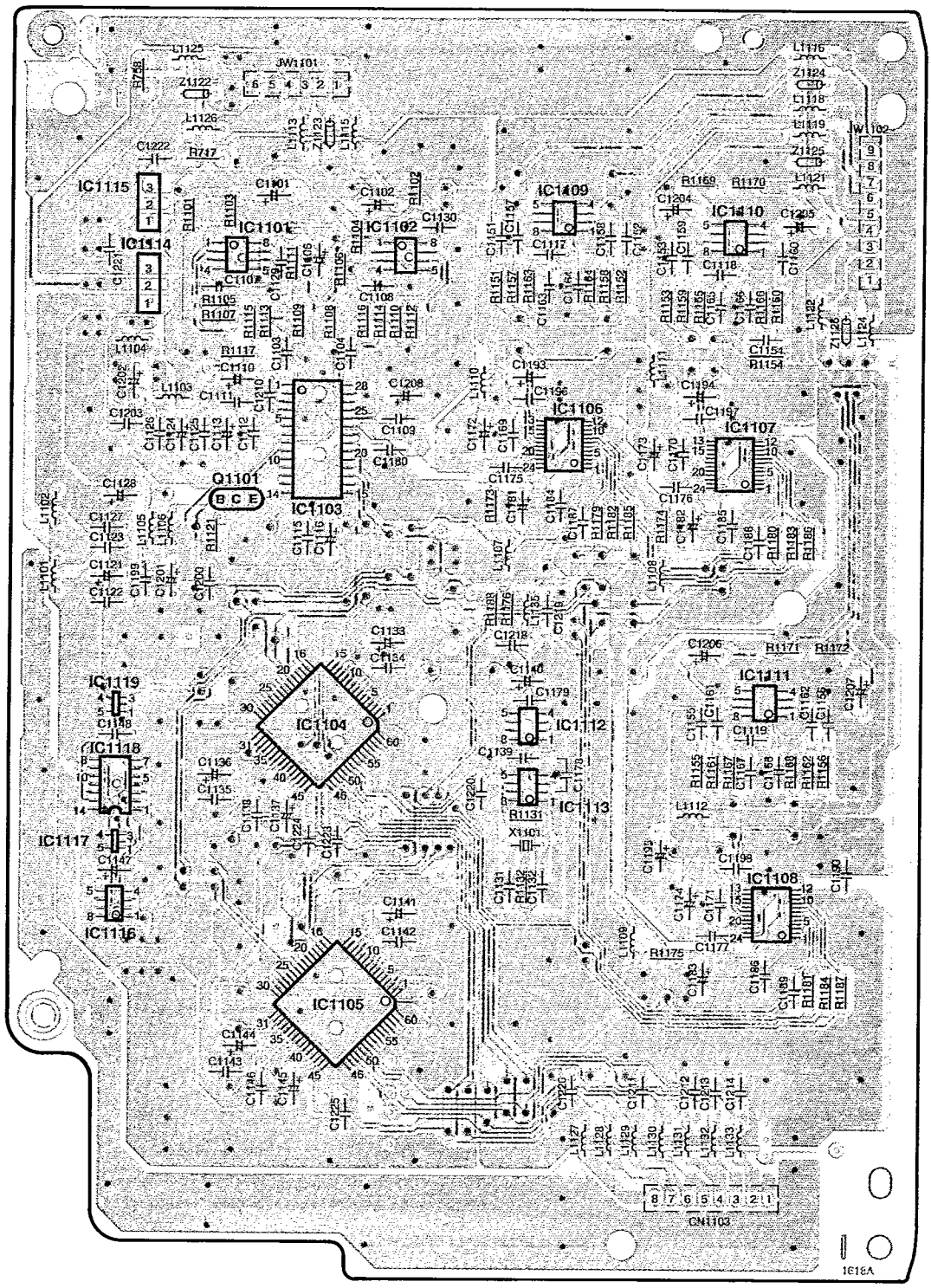
1 2 3 4 5

A B C D E F

Notes:

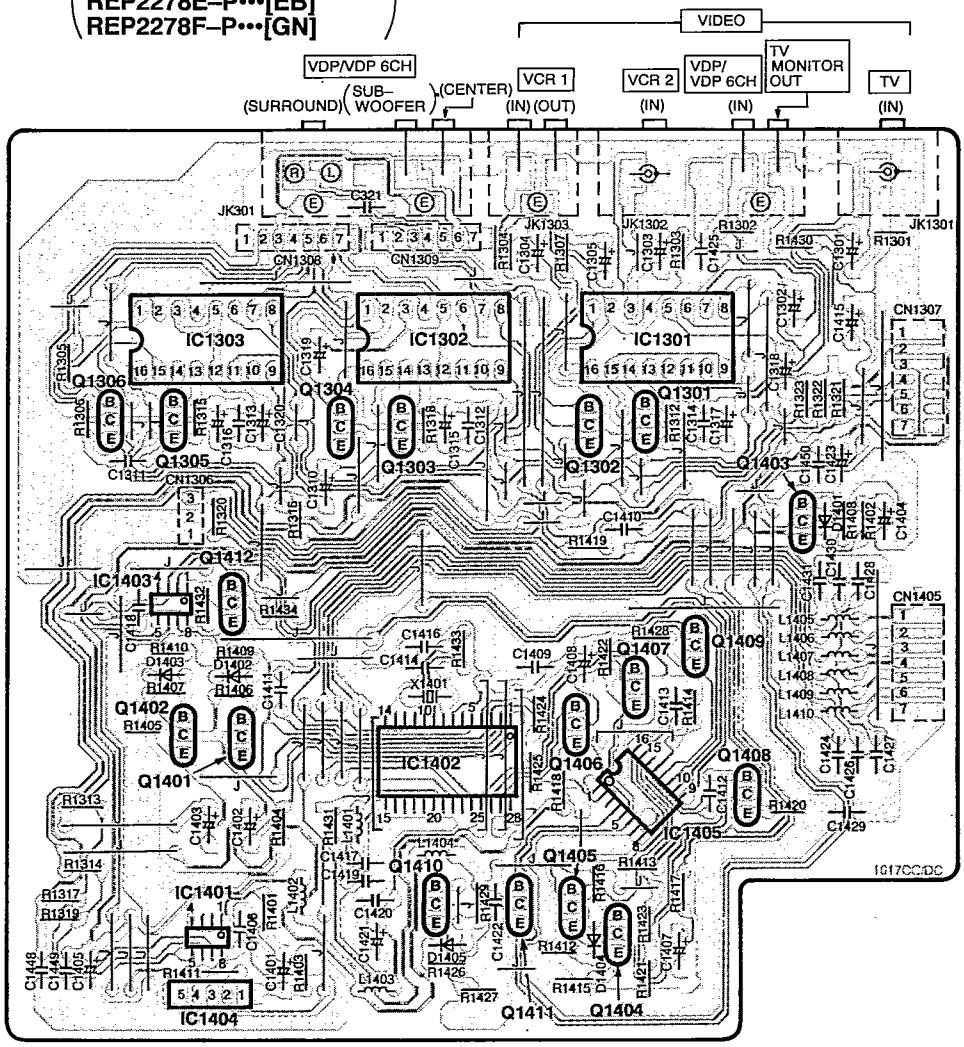
- In this printed circuit board diagram, the parts and foil patterns on the board facing toward you are printed in black.
- The "●" mark denotes the connection points of double-faced foil patterns (through holes) on both sides of the printed circuit board.

I DIGITAL P.C.B. (REP2279A–T)



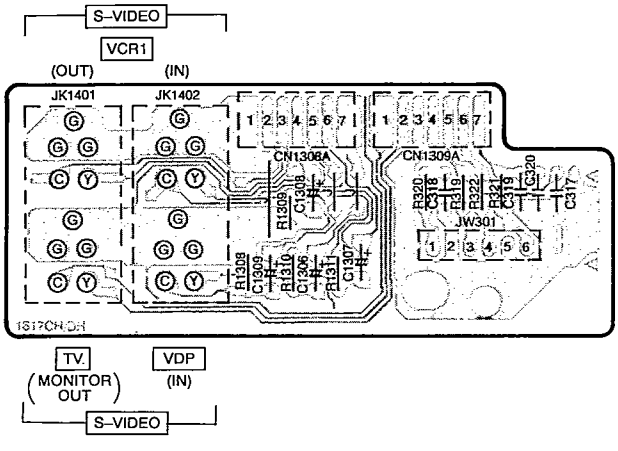
K VIDEO TERMINAL P.C.B.

(REP2278C–P•••[E,EG,GU]
REP2278E–P•••[EB]
REP2278F–P•••[GN])

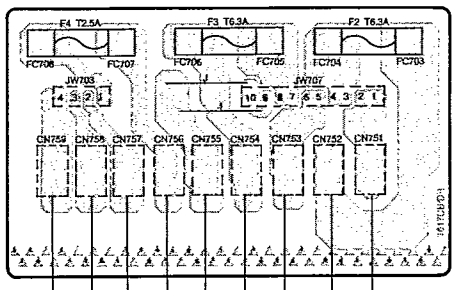


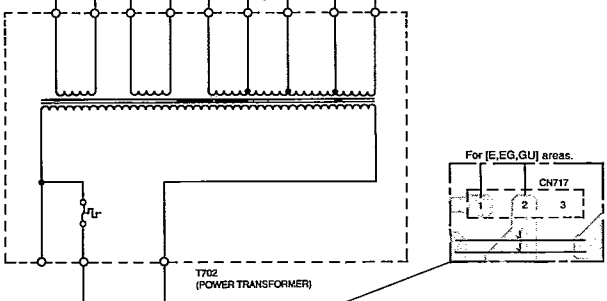
J S–VIDEO JACK P.C.B.

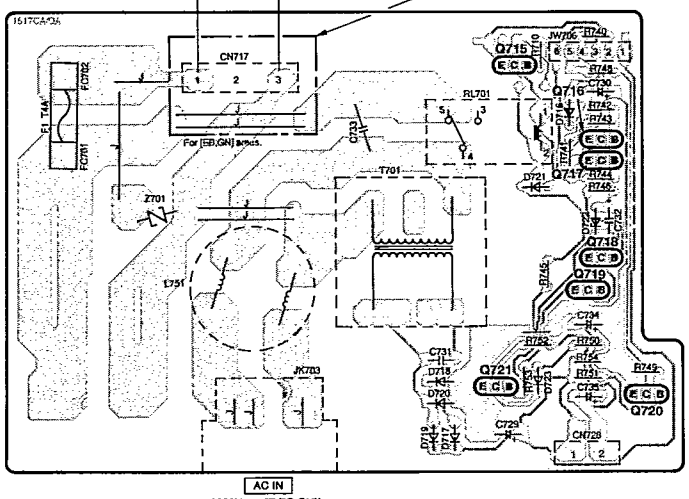
(REP2278C–P•••[E,EG,GU]
REP2278E–P•••[EB]
REP2278F–P•••[GN])



P POWER TRANSFORMER P.C.B.
(REP2278C–P•••[E,EG,GU]
REP2278E–P•••[EB]
REP2278F–P•••[GN])

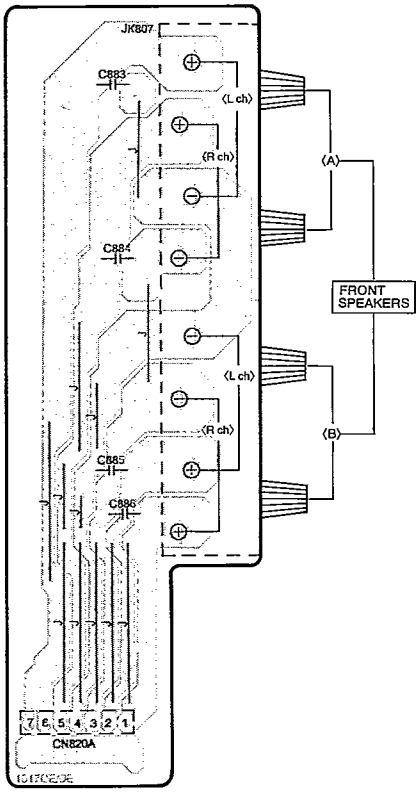




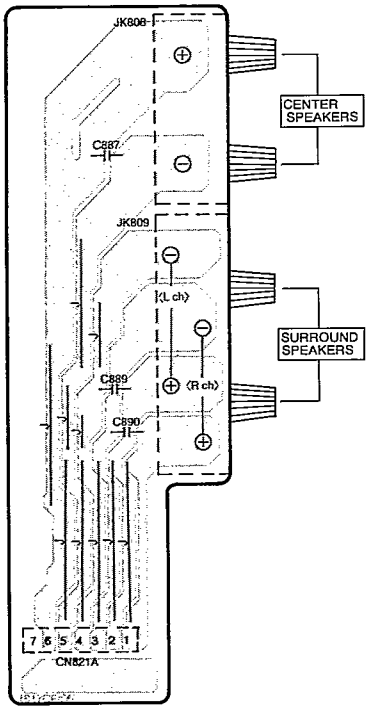


N AC IN P.C.B.
(REP2278C–P•••[E,EG,GU]
REP2278E–P•••[EB]
REP2278F–P•••[GN])

Q SPEAKERS TERMINAL (1) P.C.B.
(REP2278C–P•••[E,EG,GU]
REP2278E–P•••[EB]
REP2278F–P•••[GN])

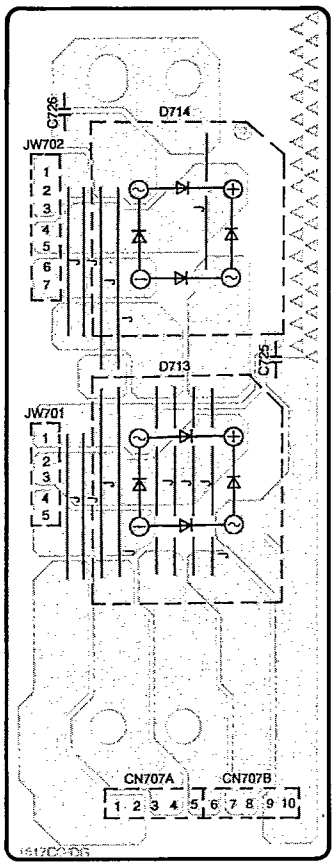


R SPEAKERS TERMINAL (2) P.C.B.
(REP2278C–P•••[E,EG,GU]
REP2278E–P•••[EB]
REP2278F–P•••[GN])

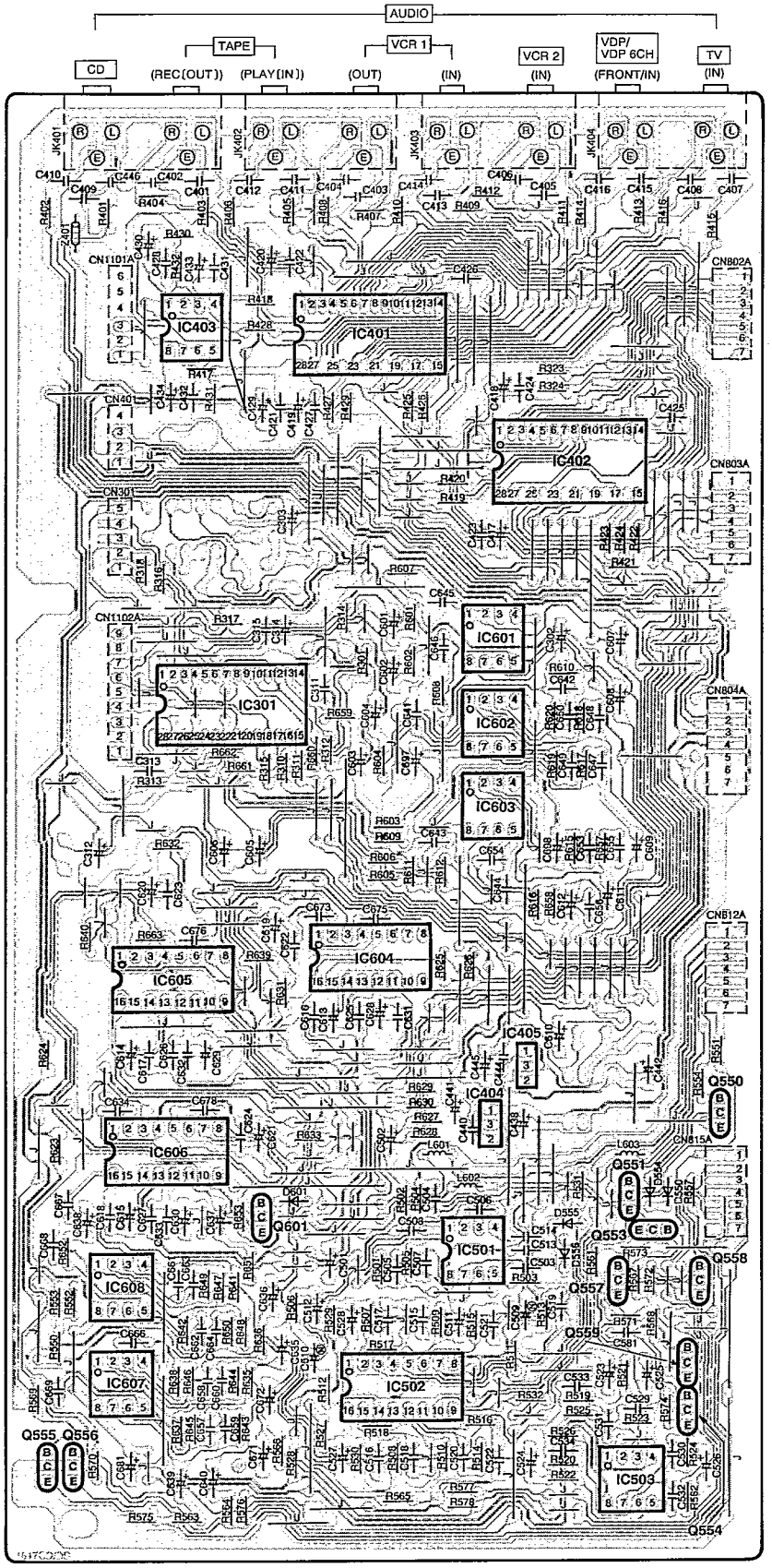


6 7 8 9 10

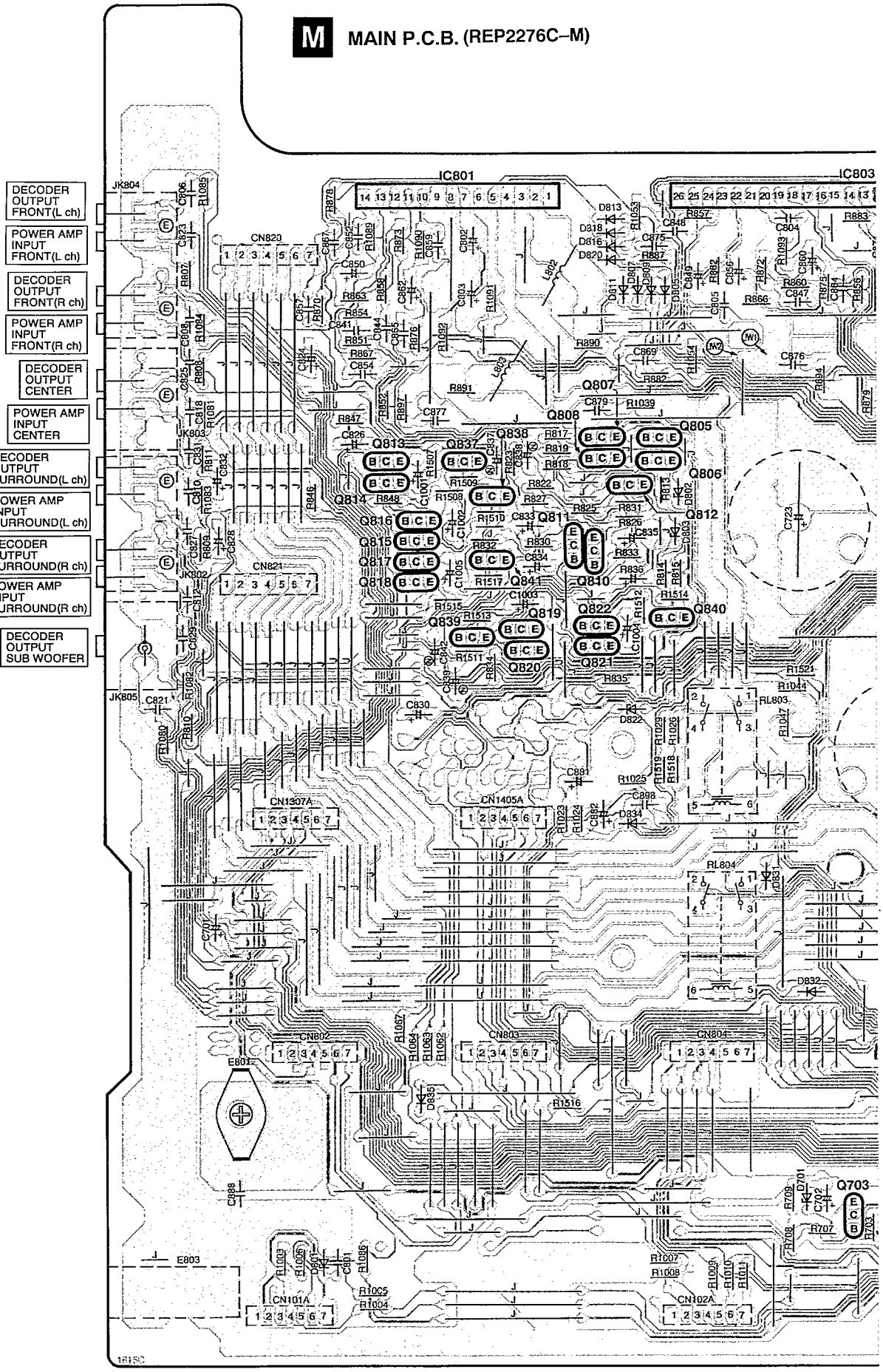
O POWER SUPPLY P.C.B. (REP2278C–P•••[E,EG,GU] REP2278E–P•••[EB] REP2278F–P•••[GN])

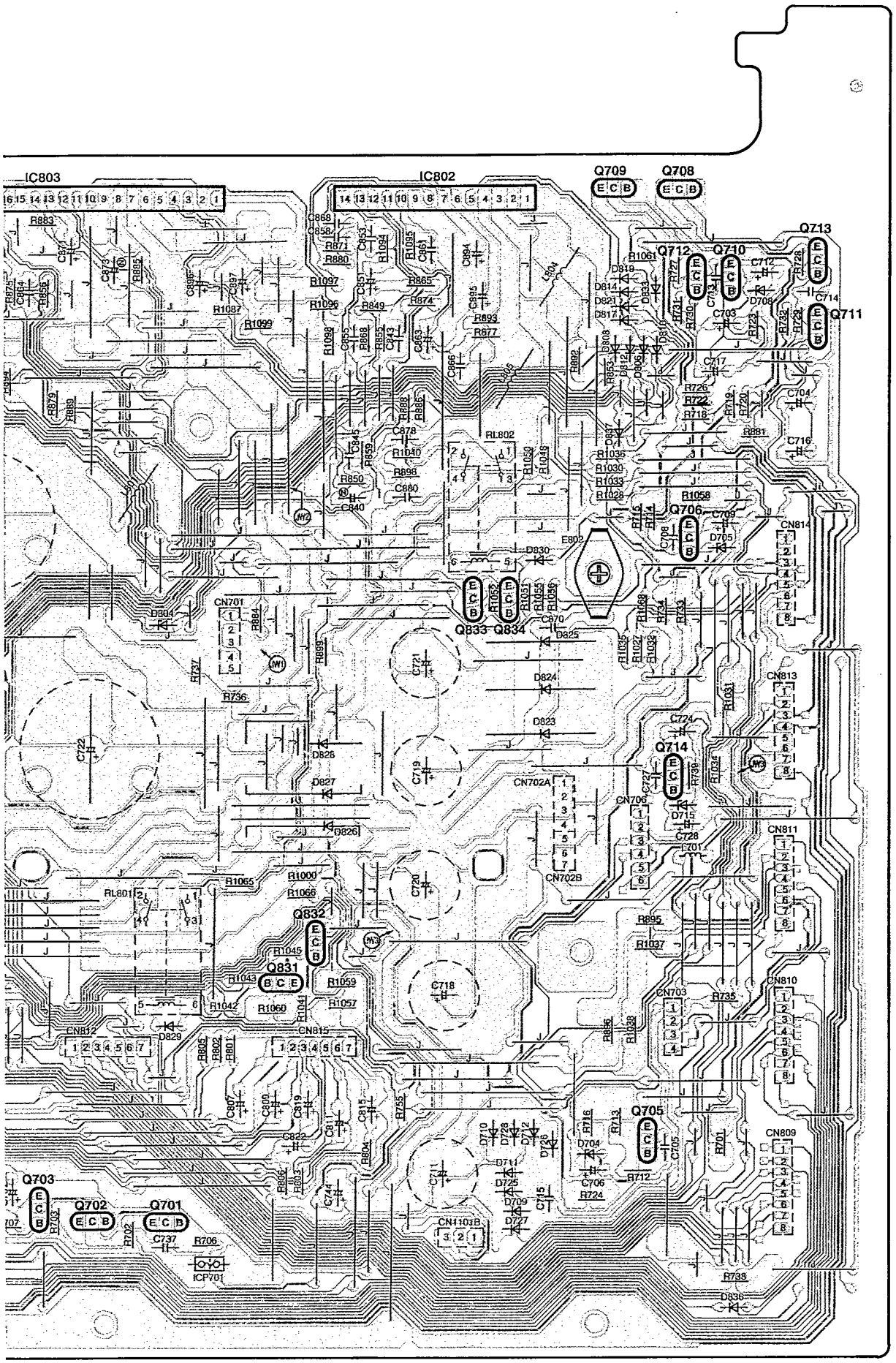


L IN/OUT TERMINAL P.C.B. (REP2278C–P•••[E,EG,GU] REP2278E–P•••[EB] REP2278F–P•••[GN])

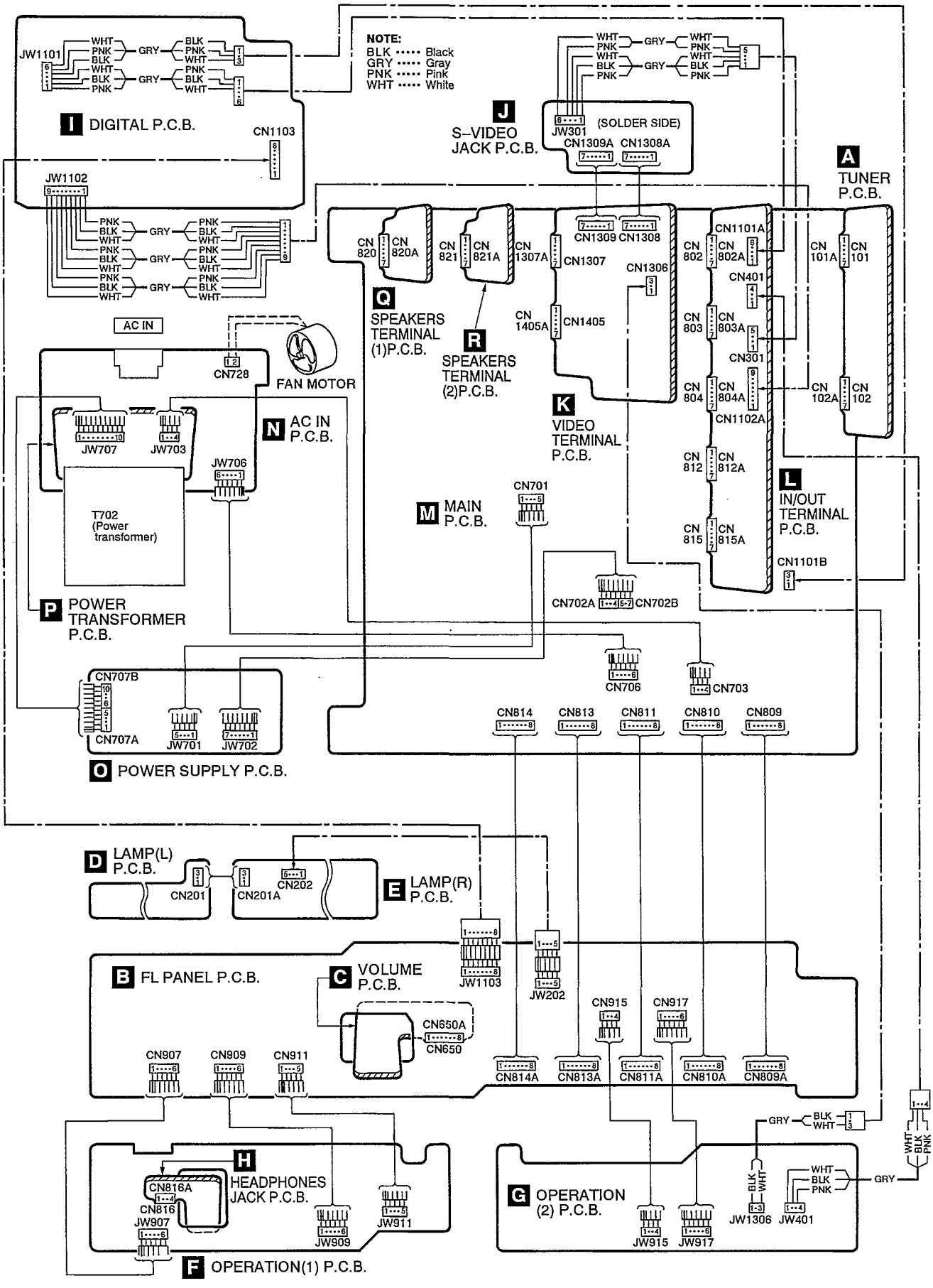


M MAIN P.C.B. (REP2276C–M)




6
7
8
9
10
IC803
IC802
Q709
Q708
Q713
Q712
Q710
Q711
Q706
Q833
Q834
Q714
Q832
Q831
Q705
Q703
Q702
Q701
CN701
CN702A
CN702B
CN706
CN703
CN814
CN813
CN811
CN810
CN809
CN812
CN815
CN1101B
RL802
RL801
E802
ICP701

■Wiring Connection Diagram



■Terminal Guide

• IC901 (LC8A028B5C46): Microcomputer

Pin No.	Mark	I/O	Function
1	STLED	O	LED drive clock signal terminal.
2	SSEL	O	Signal select terminal.
3	VMUTE	O	Muting control terminal of video circuit.
4	ST91	O	Level shift control terminal.
5	PRELAY	O	Relay control terminal of power supply circuit.
6	AFMUTE	O	Muting control terminal.
7	LIGHT	O	AC switch control terminal.
8 ∫ 14	DG1 ∫ DG7	O	Digital signal of FL display.
15	S13	O	Segment signal of FL display.
16	S12		
17	VDD	I	Power supply terminal.
18	VPP	I	Power supply terminal of FL display.
19 ∫ 27	S11 ∫ S3	O	Digital signal of FL display.
28	S2	O	Segment signal of FL display.
29	S1		
30	DSPRST	O	Reset signal terminal of DSP.
31	STTC	O	Strobe terminal.
32	STVR	O	Chip select terminal.
33	INIT	I	Initial setting terminal.
34	FMST	I	Stereo signal det. terminal.
35	SD	I	Received signal det. terminal.
36	IF IN	I	Serial data signal.
37	DSPCS1	O	Chip select terminal of DSP 1.
38	DSPCS2	O	Chip select terminal of DSP 2.

Pin No.	Mark	I/O	Function
39	DSPCD	O	Command/ data input mode select terminal.
40	CE	O	Chip enable terminal.
41	DT1	O	Serial data signal.
42	OVLD	I	Overload det. terminal.
43	CK1	O	Serial clock signal.
44	DT2	O	Serial data signal.
45	STOSD	O	Chip select control terminal.
46	CK2	O	Serial clock signal.
47	EXDET	O	Synchronizing signal det. terminal.
48	ADSEL	O	Analog switch control terminal.
49	TEST	–	Test terminal.
50	RES	I	Reset det. terminal.
51	XT1	I	Not used, connected to power supply.
52	XT2	–	Not used, open.
53	VSS	–	GND terminal.
54	CF1	I	Crystal OSC terminal. (f=6MHz)
55	CF2	O	Crystal OSC terminal. (f=6MHz)
56	VDD	I	Power supply terminal.
57	AD1	I	Bass control level det. terminal.
58	AD2	I	Treble control level det. terminal.
59	AD3	I	Key switch det. terminal.
60	AD4	I	Volume control level det. terminal.
61	STANDBY	I	Power det. terminal.
62	DSPACK	O	Acknowledged signal terminal.
63	NC	–	Not used, open.
64	REM	I	Remote control terminal.

• IC1103 (AK5340B-VS): A/D converter

Pin No.	Mark	I/O	Function
1	AINL+	I	Analog signal terminal. (Lch)
2	AINL−		
3	VREF IN	I	Reference voltage terminal.
4	VA+	I	Analog power supply terminal.
5	AGND	–	Analog GND terminal.
6	NC	–	Not used, connected to GND.
7	NC		
8	TST1	–	Test terminal.
9	SEL18	I	Data with select terminal ("L": 16bit, "H": 18bit)
10	PD	I	Power down det. terminal.
11	TST2	I/O	Test terminal.
12	CMODE	I	Master clock select terminal ("L": 256fs, "H": 384fs)
13	SMODE	I	Interface clock select terminal ("L": Slave mode, "H": Master mode)
14	L/R	I/O	Input channel select terminal (Slave mode: fs clock input, Master mode: fs clock output)
15	SCLK	I/O	Serial data clock terminal (Slave mode: 32fs~64fs clock input, Master mode: 64fs clock output)
16	SDATA	O	Serial data signal (Power down [PD: "H"]: "L")
17	FSYNC	I/O	Frame synchronizing clock terminal (Slave mode: SDATA enable with "H", Master mode: 2fs clock output)
18	VDP+	I	Digital power supply terminal.
19	DGND	–	Digital GND terminal.
20	CLK	I	Master clock terminal. (CMODE: "H": 384fs, CMODE: "L": 256fs)
21	TST3	I/O	Test terminal.
22	TST4		
23	NC	–	Not used, connected to GND.
24	VDB+	I	Digital power supply terminal.
25	NC	–	Not used, connected to GND.
26	VREF	O	Reference voltage terminal.
27	AINR−	I	Analog signal terminal. (Rch)
28	AINR+		

• IC1106~1108 (AK4320-VM): D/A converter

Pin No.	Mark	I/O	Function
1	CKS	I	IClock select terminal. ("L": XTI=256fs, "H": XTI=384fs)
2	DVDD	I	Digital power supply terminal.
3	DVSS	–	Digital GND terminal.
4	XTO	O	Crystal OSC terminal. (Not used, open.)
5	XTI	I	Clock terminal.
6	PD	I	Power down det. terminal.
7	BICK	I	Serial bit clock terminal.
8	SDATA	I	Serial data terminal.
9	LRCK	I	L/R channel clock select terminal.
10	SMUTE	I	Soft mute terminal.
11	HOLD	I	Soft mute hold terminal.
12	DEM0	I	De-emphasis mode terminal.
13	DEM1	I	De-emphasis mode terminal.
14	DIF0	I	Input format terminal.
15	DIF1		
16	VCONT	O	Mute voltage control terminal. (Not used, open.)
17	AOUTR	O	Analog signal (R ch)
18	AOUTL	O	Analog signal (L ch)
19	VCOM	I	Common voltage (AVDD/Z) terminal.
20	AVDD	I	Analog power supply terminal.
21	AVSS	–	Analog GND terminal.
22	VREF	I	Reference voltage terminal.
23	DZF	O	Zero input det. terminal. (Not used, open.)
24	ZMUTE	I	Zero mute terminal.

• IC1104, 1105 (TC9332F-022): Digital signal processor

Pin No.	Mark	I/O	Function
1 ∫ 3	TP8 ∫ TP6	O	Test data terminal. (Not used, open.)
4	VDD	I	Power supply terminal.
5	VSS	–	GND terminal.
6 ∫ 11	TP5 ∫ TP0	O	Test data terminal. (Not used, open.)
12	VSSR	–	GND terminal of internal delay RAM (DLRAM)
13	VDDR	I	Power supply terminal of internal delay RAM. (DLRAM)
14	VSS	–	GND terminal.
15 ∫ 17	SDO2 ∫ SDO0	O	Serial data terminal.
18	SD11	I	Serial data terminal.
19	SD10		
20	LR	O	LR clock terminal. (1fs)
21	WCK	O	Word clock terminal. (2fs)
22	FS32	O	Bit clock terminal. (32fs) (Not used, open.)
23	FS64	O	Bit clock terminal. (64fs)
24	EBCO	I	Bit clock terminal.
25	EBC11		
26	EBC10		
27	ELRO	I	LR clock terminal.
28	ELR11	I	LR clock terminal.
29	ELR10		
30	SYNC	I	Synchronizing signal terminal.

Pin No.	Mark	I/O	Function
31	VDD	I	Power supply terminal.
32	XI	I	Crystal OSC terminal.
33	XO	–	Not used, open.
34	VSS	–	GND terminal.
35	CKSL	I	Clock select terminal ("L": 384fs, "H": 512fs)
36	PLOFF	I	X'tal OSC mode/ VCO OSC mode select terminal.
37	PD	O	Phase comparative data terminal. (Not used, open.)
38	VSSA	–	Analog GND terminal.
39	AMPO	O	Amp. terminal of L.P.F.
40	AMPI	I	
41	VDDA	I	Analog power supply terminal. (Not used, open.)
42 ∫ 44	TES0 ∫ TES2	I	Test terminal.
45	$\overline{RST}$	I	Reset signal terminal.
46	$\overline{CS}$	I	Chip select signal terminal.
47	IFCD	I	Command/ data input mode select terminal.
48	IFDI	I	Data signal terminal.
49	IFDO	O	Data (DBUS) terminal. (Not used, open)
50	IFCK	I	Shift clock terminal of data.
51	$\overline{ACK}$	I	Acknowledged signal terminal.
52	VSS	–	GND terminal
53 ∫ 60	TP16 ∫ TP9	O	Test data terminal. (Not used, open.)

• IC1402 (MB90082PF117): OSD control

Pin No.	Mark	I/O	Function
1	YIN	I	Brightness signal input terminal.
2	VIN	I	Composite video signal input terminal
3	CIN	I	Color signal input terminal.
4	AVCC	I	Power supply terminal.
5	SYNCST	O	Synchronizing signal of $\overline{\text{EXHSYN}}$ input detect terminal.
6	VBLK	O	Vertical blanking signal output terminal. (Not used, open.)
7	VCC	I	Power supply terminal.
8	EXS	I	Clock generator for colour burst terminal. (PAL: 17.734475MHz)
9	XS	O	
10	HSYNC	O	Horizontal synchronizing signal output. (Not used, open.)
11	VSYNC	O	Vertical synchronizing signal output. (Not used, open.)
12	EXHSYN	I	External horizontal synchronizing signal input.
13	EXVSYN	I	External vertical synchronizing signal input. (Not used, open.)
14	VSS	–	GND terminal.

Pin No.	Mark	I/O	Function
15	EXD	I	Dot clock generator terminal. (Not used, connected to capacitor.)
16	XD	O	
17	VOB	O	Background of display output. (Not used, open.)
18	VOC2	O	Color signal output terminal. (Not used, open.)
19	VOC1	O	Color signal output terminal. (Not used, open.)
20	VCO0	O	Color signal output terminal. (Not used, open.)
21	TEST	I	Test signal input terminal (Not used, connected to power supply.)
22	SCLK	I	Shift clock input terminal.
23	SIN	I	Serial data input terminal.
24	CS	I	Chip select terminal.
25	COUT	O	Color signal output terminal.
26	VOUT	O	Composite video signal output terminal.
27	YOUT	O	Brightness signal output terminal.
28	AVSS	–	GND terminal.

■Replacement Parts List

Notes: * 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.
* 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
		INTEGRATED CIRCUIT(S)	
IC101	LA1832A	IC	
IC102	LC7218	IC	
IC201	TSA3000J	IC	
IC301	TC9162N	IC	
IC350	BA6138	IC	
IC351	M5218AP	IC	
IC401	TC9163N	IC	
IC402	TC9164N	IC	
IC403	UPC4570C	IC	
IC404	AN78L05TA	IC	⚠
IC405	AN79L05TA	IC	⚠
IC450	BA6218	IC	
IC501	UPC4570C	IC	
IC502	TC9184P	IC	
IC503	M5218AP	IC	
IC601-603	M5218AP	IC	
IC604-606	CS3310-KP	IC	
IC607, 608	M5218AP	IC	
IC801, 802	RSN36S5A	IC	⚠
IC803	RSN33M5	IC	⚠
IC901	LC8A028B5C46	IC	
IC902	BU2092F	IC	
IC903	TC4053BF	IC	
IC1101	NJM2115MT1	IC	
IC1102	NJM2115MT1	IC	
IC1103	AK5340B-VS	IC	
IC1104	TC9332F-022	IC	
IC1105	TC9332F-022	IC	
IC1106	AK4320-VM	IC	
IC1107	AK4320-VM	IC	
IC1108	AK4320-VM	IC	
IC1109	NJM2115MT1	IC	
IC1110	NJM2115MT1	IC	
IC1111	NJM2115MT1	IC	
IC1112	TC7W74FTE12L	IC	
IC1113	TC7WU04FT12L	IC	
IC1114	LM2940T5	IC	⚠
IC1115	LM2940T5	IC	⚠
IC1116	TC7W74FTE12L	IC	
IC1117	TC7S04FTE85L	IC	
IC1118	TC74HC164AFL	IC	
IC1119	TC7S32FTE85L	IC	
IC1301	BA7625	IC	
IC1302	BA7625	IC	
IC1303	BA7625	IC	
IC1401	TC4W53FTE12L	IC	
IC1402	MB90082PF117	IC	
IC1403	TC7W02FTE12L	IC	
IC1404	LA7213	IC	
IC1405	TC4053BF	IC	
		TRANSISTOR(S)	
Q101	2SC2787L	TRANSISTOR	
Q103, 104	2SC2785FE	TRANSISTOR	
Q106	UN411FTA	TRANSISTOR	
Q107, 108	2SC3311ARSTA	TRANSISTOR	
Q191-193	2SC3311ARSTA	TRANSISTOR	(E, EB)
Q201	UN4119	TRANSISTOR	
Q301	UN4213AITA	TRANSISTOR	
Q550	UN4113	TRANSISTOR	
Q551	UN4213AITA	TRANSISTOR	
Q553-558	2SD1915FTA	TRANSISTOR	
Q559	UN4115	TRANSISTOR	
Q601	UN4213AITA	TRANSISTOR	
Q701, 702	2SD2374PQAU	TRANSISTOR	⚠
Q703	2SC3311A-Q	TRANSISTOR	⚠
Q705	2SB621A-R	TRANSISTOR	⚠
Q706	2SC3940AQSTA	TRANSISTOR	⚠
Q708	2SB1548PQAU	TRANSISTOR	⚠
Q709	2SD2374PQAU	TRANSISTOR	⚠
Q710	2SC3311A-Q	TRANSISTOR	⚠
Q711	2SA1309A-R	TRANSISTOR	⚠
Q712	2SC3311A-Q	TRANSISTOR	⚠
Q713	2SA1309A-R	TRANSISTOR	⚠
Q714	2SC3940AQSTA	TRANSISTOR	⚠
Q715	UN4219TA	TRANSISTOR	
Q716-718	2SA1309A-R	TRANSISTOR	
Q719	2SA1534AQRTA	TRANSISTOR	[M]
Q720, 721	2SA1309A-R	TRANSISTOR	
Q801-804	2SD1915FTA	TRANSISTOR	
Q805	UN4213AITA	TRANSISTOR	
Q806	UN4113	TRANSISTOR	
Q807	UN4211	TRANSISTOR	
Q808	UN4113	TRANSISTOR	
Q810-812	UN4210-S	TRANSISTOR	
Q813	2SA1309A-R	TRANSISTOR	
Q814	2SC3311A-Q	TRANSISTOR	
Q815	2SA1309A-R	TRANSISTOR	

Ref. No.	Part No.	Part Name & Description	Remarks
Q816	2SC3311A-Q	TRANSISTOR	
Q817	2SA1309A-R	TRANSISTOR	
Q818	2SC3311A-Q	TRANSISTOR	
Q819	2SA1309A-R	TRANSISTOR	
Q820	2SC3311A-Q	TRANSISTOR	
Q821	2SA1309A-R	TRANSISTOR	
Q822	2SC3311A-Q	TRANSISTOR	
Q831-834	UN4119	TRANSISTOR	
Q837-841	2SC3311A-Q	TRANSISTOR	
Q901	2SA1309A-R	TRANSISTOR	
Q902	2SA1309A-R	TRANSISTOR	⚠
Q903	UN4214TA	TRANSISTOR	
Q904	UN4111	TRANSISTOR	
Q905	UN4211	TRANSISTOR	
Q906	UN4216-S	TRANSISTOR	
Q907	UN4113	TRANSISTOR	
Q908, 909	UN4213AITA	TRANSISTOR	
Q910	UN4113	TRANSISTOR	
Q1101	UN4213AITA	TRANSISTOR	
Q1301-1306	2SA1309A-R	TRANSISTOR	
Q1401, 1402	2SC3311A-Q	TRANSISTOR	
Q1403	UN4111	TRANSISTOR	
Q1404, 1405	2SC3311A-Q	TRANSISTOR	
Q1406, 1407	2SA1309A-R	TRANSISTOR	
Q1408	2SC3311A-Q	TRANSISTOR	
Q1409	2SA1309A-R	TRANSISTOR	
Q1410, 1411	2SC3311A-Q	TRANSISTOR	
Q1412	UN4213AITA	TRANSISTOR	
		DIODE(S)	
D101	MA4051MTA	DIODE	⚠
D102	MA165	DIODE	
D351-359	MA165	DIODE	
D401	MA4062MTA	DIODE	
D550	MA165	DIODE	
D554	MA165	DIODE	
D555, 556	MA700	DIODE	
D601	MA165	DIODE	
D701	MA4030MTA	DIODE	⚠
D704	MA4220MTA	DIODE	⚠
D705	MA4062MTA	DIODE	⚠
D708	MA4062	DIODE	⚠
D709-712	1SR35200TB	DIODE	⚠
D713, 714	SVDS10VB20F	DIODE	⚠
D715	MA4068M	DIODE	⚠
D716	MA165	DIODE	
D717-720	1SR35200TB	DIODE	⚠
D721	MA165	DIODE	
D722	MA4068L	DIODE	
D723	MA165	DIODE	
D725-728	1SR35200TB	DIODE	⚠

Ref. No.	Part No.	Part Name & Description	Remarks
D801	MA4075MTA	DIODE	⚠
D802, 803	MA4030MTA	DIODE	⚠
D804	MA4062MTA	DIODE	
D805-814	MA167	DIODE	
D816-821	MA167	DIODE	
D822	MA4091-M	DIODE	
D823-828	SB360LS508	DIODE	
D829-833	MA165	DIODE	
D834	MA167	DIODE	
D835-837	MA165	DIODE	
D901, 902	MA165	DIODE	
D903	MA4056MTA	DIODE	⚠
D904	MA4039MTA	DIODE	⚠
D909	MA165	DIODE	(EG, GU, GN)
D910	MA165	DIODE	(E, EB)
D913	MA165	DIODE	
D914, 915	1SS291TA	DIODE	
D916-922	SLR-325VC	L. E. D.	[M]
D923	MA4062MTA	DIODE	
D925, 926	MA165	DIODE	
D927	MA4030MTA	DIODE	
D928	MA165	DIODE	
D1401-1405	MA165	DIODE	
		IC PROTECTOR(S)	
ICP701	SRUN10	IC PROTECTOR	⚠
		VARIABLE RESISTOR(S)	
VR350, 351	EVNDXAA00B23	V. R	
VR450	EUWMR9F201J9	V. R	
VR901, 902	EVJ02KF02B24	V. R	
		THERMISTOR(S)	
TH350, 351	ERTD2ZHL104T	THERMISTOR	
		COIL(S)	
L101	ELESNR68MA	COIL	(E, EB)
L101	ELESN1R0MA	COIL	(EG, GU, GN)
L103	ELEXTR47MA9	COIL	
L105, 106	RLQZB822KT-D	COIL	
L151	SLM1B10M-1M	COIL	
L191	ELESNR68MA	COIL	(E, EB)
L191	ELESNR56MA	COIL	(EG, GU, GN)
L450, 451	RLQZP1R0KT-Y	COIL	
L601-603	RLQZP101KT-Y	COIL	
L701	ELEPK101KA	COIL	
L751	SLQZ650MH49	COIL	⚠
L801-805	SLQY07G-40	COIL	

Ref. No.	Part No.	Part Name & Description	Remarks
L901	RLQZP1R8KT-Y	COIL	
L902	RLQZP101KT-Y	COIL	
L1101, 1102	RLQZB8R2KT-D	COIL	
L1103-1106	RLQZP100KT-Y	COIL	
L1107-1112	RLQZP1R2KT-Y	COIL	
L1113	RLQZP1R8KT-Y	COIL	
L1115, 1116	RLQZP1R8KT-Y	COIL	
L1118, 1119	RLQZP1R8KT-Y	COIL	
L1121, 1122	RLQZP1R8KT-Y	COIL	
L1124	RLQZP1R8KT-Y	COIL	
L1125, 1126	RLQZB101KT-D	COIL	
L1127-1133	RLQZP1R8KT-Y	COIL	
L1135	RLQZP1R2KT-Y	COIL	
L1401	RLQZP220KT-Y	COIL	
L1402	RLQZB101KT-D	COIL	
L1403	RLQZP101KT-Y	COIL	
L1404	RLQZB101KT-D	COIL	
L1405-1410	RLQZP1R8KT-Y	COIL	
		TRANSFORMER(S)	
T701	RTP1I5E006	TRANSFORMER	⚠
T702	RTP1Q5B002-W	TRANSFORMER	⚠
		COMPONENT COMBINATION(S)	
Z101	RLA6Z005M-T	COMPONENT COMBINATION	(E, EB)
Z101	RLA2Z002M-T	COMPONENT COMBINATION	(EG, GU, GN)
Z102	RLI2Z006M-T	COMPONENT COMBINATION	
Z401	BLO2RN2R65T2	COMPONENT COMBINATION	
Z701	ERZV10V511CS	SURGE ABSORBER	⚠
Z901	RCDHC-278N	REMOTE SENSOR	
Z1122-1126	BLO2RN2R65T2	COMPONENT COMBINATION	
		FILTER(S) AND OSCILLATOR(S)	
CF201	RLFFETNGD01L	FILTER	
CF202	RLFFETMGD01L	FILTER	
CF901	EFOEC6004T4	OSCILLATOR	
X101	RSXZ456KM07M	OSCILLATOR	
X102	RLFDGTD01I	OSCILLATOR	
X103	RSXC7M20S05T	OSCILLATOR	
X1101	RSXC22M5S01T	OSCILLATOR	
X1401	RSXC17M7S01	OSCILLATOR	
		DISPLAY TUBE	
FL901	RSL0224-F	DISPLAY TUBE	
		LAMP(S)	
PL200-209	XAMR131	LAMP	

Ref. No.	Part No.	Part Name & Description	Remarks
		FM FRONT END PACK ASS'Y(S)	
Z120	ENV17290G1Y	FM FRONT END	
		FUSE(S)	
F1	XBA2C40TB0	FUSE, 250V, T4A	⚠
F2, 3	XBA2C63TB0	FUSE, 250V, T6.3A	⚠
F4	XBA2C25TB0	FUSE, 250V, T2.5A	⚠
		SWITCH(ES)	
S901-922	EVQ21405R	SW	
		RELAY(S)	
RL701	RSY0019-0	RELAY	⚠
RL801-804	RSY0013M-0	RELAY	⚠
		CONNECTOR(S) AND SOCKET(S)	
CN101	RJU057W007	SOCKET(7P)	
CN101A	RJT057W007-1	CONNECTOR(7P)	
CN102	RJU057W007	SOCKET(7P)	
CN102A	RJT057W007-1	CONNECTOR(7P)	
CN201	SJT30345JQ	CONNECTOR(3P)	
CN201A	SJS50382JQH	SOCKET(3P)	
CN202	RJP5G17ZA	CONNECTOR(5P)	
CN301	SJT3513	CONNECTOR(5P)	
CN401	SJT3417	CONNECTOR(4P)	
CN650	RJT003K008-1	CONNECTOR(8P)	
CN650A	RJU003K008M1	SOCKET(8P)	
CN701	RJS1A6605	CONNECTOR(5P)	
CN702A	RJS1A6604	CONNECTOR(4P)	
CN702B	RJS1A6603	CONNECTOR(3P)	
CN703	RJS1A6604	CONNECTOR(4P)	
CN706	RJS1A6606	CONNECTOR(6P)	
CN707A	RJS1A6605	CONNECTOR(5P)	
CN707B	RJS1A6605	CONNECTOR(5P)	
CN717	SJS305-1	CONNECTOR(3P)	
CN728	RJS1A7402-1	CONNECTOR(2P)	
CN751-759	RJS1A1101T1	CONNECTOR(1P)	
CN802	RJT057W007-1	CONNECTOR(7P)	
CN802A	RJU057W007	SOCKET(7P)	
CN803	RJT057W007-1	CONNECTOR(7P)	
CN803A	RJU057W007	SOCKET(7P)	
CN804	RJT057W007-1	CONNECTOR(7P)	
CN804A	RJU057W007	SOCKET(7P)	
CN809	RJU003K008M1	SOCKET(8P)	
CN809A	RJT003K008-1	CONNECTOR(8P)	
CN810	RJU003K008M1	SOCKET(8P)	

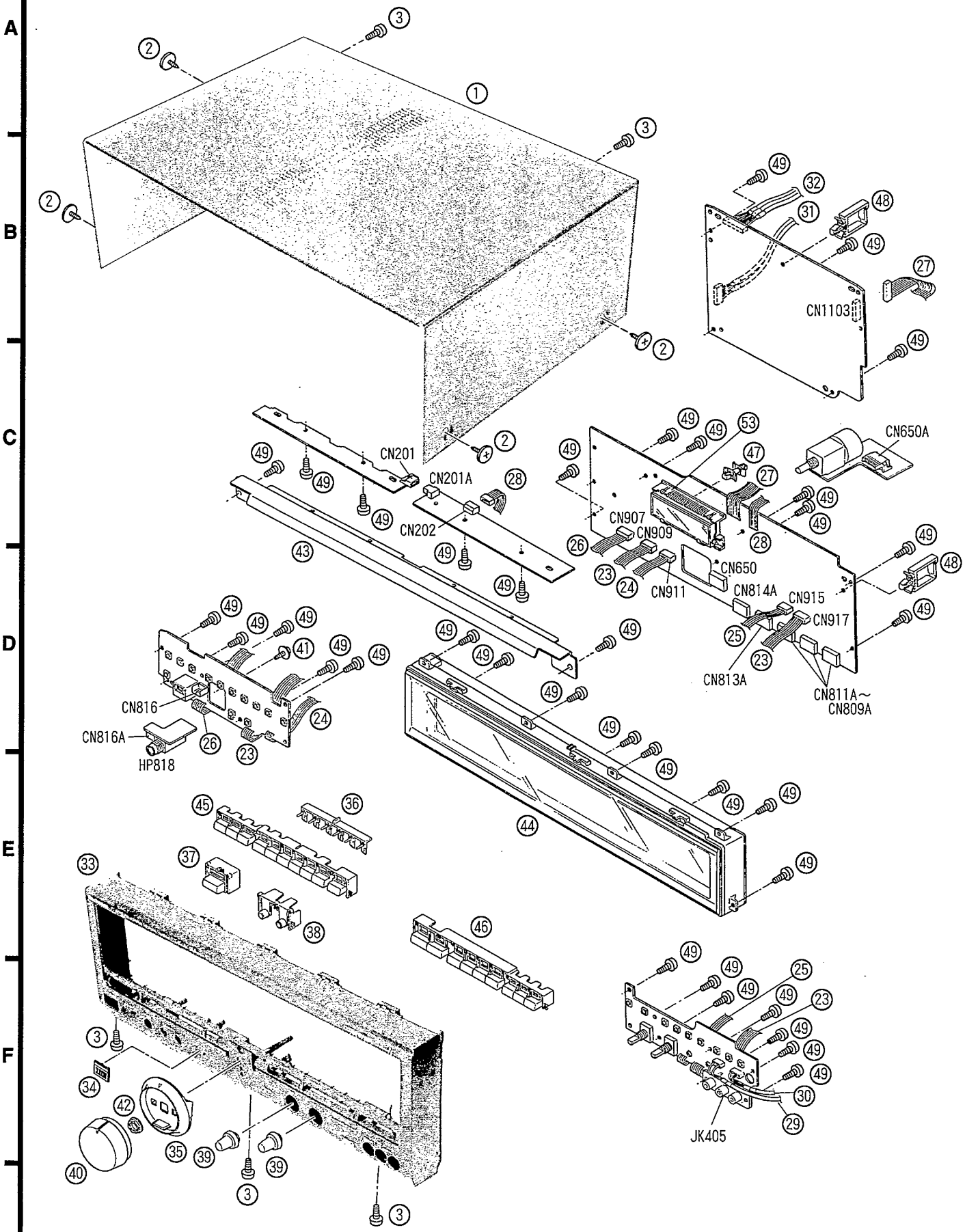
Ref. No.	Part No.	Part Name & Description	Remarks
CN810A	RJT003K008-1	CONNECTOR (8P)	
CN811	RJU003K008M1	SOCKET (8P)	
CN811A	RJT003K008-1	CONNECTOR (8P)	
CN812	RJT057W007-1	CONNECTOR (7P)	
CN812A	RJU057W007	SOCKET (7P)	
CN813	RJU003K008M1	SOCKET (8P)	
CN813A	RJT003K008-1	CONNECTOR (8P)	
CN814	RJU003K008M1	SOCKET (8P)	
CN814A	RJT003K008-1	CONNECTOR (8P)	
CN815	RJT057W007-1	CONNECTOR (7P)	
CN815A	RJU057W007	SOCKET (7P)	
CN816	RJT057W004-1	CONNECTOR (4P)	
CN816A	RJU057W004	SOCKET (4P)	
CN820	RJU060G07T	SOCKET (7P)	
CN820A	RJT060R07	CONNECTOR (7P)	
CN821	RJU060G07T	SOCKET (7P)	
CN821A	RJT060R07	CONNECTOR (7P)	
CN907	RJS1A6606	CONNECTOR (6P)	
CN909	RJS1A6606	CONNECTOR (6P)	
CN911	RJS1A6605	CONNECTOR (5P)	
CN915	RJS1A6604	CONNECTOR (4P)	
CN917	RJS1A6606	CONNECTOR (6P)	
CN1101A	SJT3613	CONNECTOR (6P)	
CN1101B	RJT029W03VT	CONNECTOR (3P)	
CN1102A	SJT3909	CONNECTOR (9P)	
CN1103	SJT3809	CONNECTOR (8P)	
CN1306	SJT3321	CONNECTOR (3P)	
CN1307	RJU057W007	SOCKET (7P)	
CN1307A	RJT057W007-1	CONNECTOR (7P)	
CN1308	RJT057W007-1	CONNECTOR (7P)	
CN1308A	RJU057W007	SOCKET (7P)	
CN1309	RJT057W007-1	CONNECTOR (7P)	
CN1309A	RJU057W007	SOCKET (7P)	
CN1405	RJU057W007	SOCKET (7P)	
CN1405A	RJT057W007-1	CONNECTOR (7P)	
		JACK (S) AND TERMINAL (S)	
HP818	RJJ63TA01	HEADPHONES JACK	
JK101	RJH4202M	ANT TERMINAL	
JK301	SJF3069-13N	VDP 6 CH IN (AUDIO)	
JK401	SJF3069-5N	CD IN, TAPE REC OUT (AUDIO)	
JK402	SJF3069N	VCR1 OUT, TAPE PLAYIN (AUDIO)	
JK403	SJF3069N	VCR1 IN, VCR2 IN/OUT (AUDIO)	
JK404	SJF3069N	VDP/VDP 6CH/TV IN (AUDIO)	
JK405	SJFK5-1	VCR 3 AUDIO/IN	
JK703	SJS9236	AC INLET	⚠
JK802	SJF3069-2N	P. AMP IN, D. OUT (SURROUND)	
JK803	SJF3068-3N	P. AMP IN, D. OUT (CENTER)	
JK804	SJF3069-2N	P. AMP IN, D. OUT (FRONT)	
JK805	SJFD7	DECODER OUT (SUBWOOFER)	
JK807	RJH4801-1	FRONT SPEAKERS	

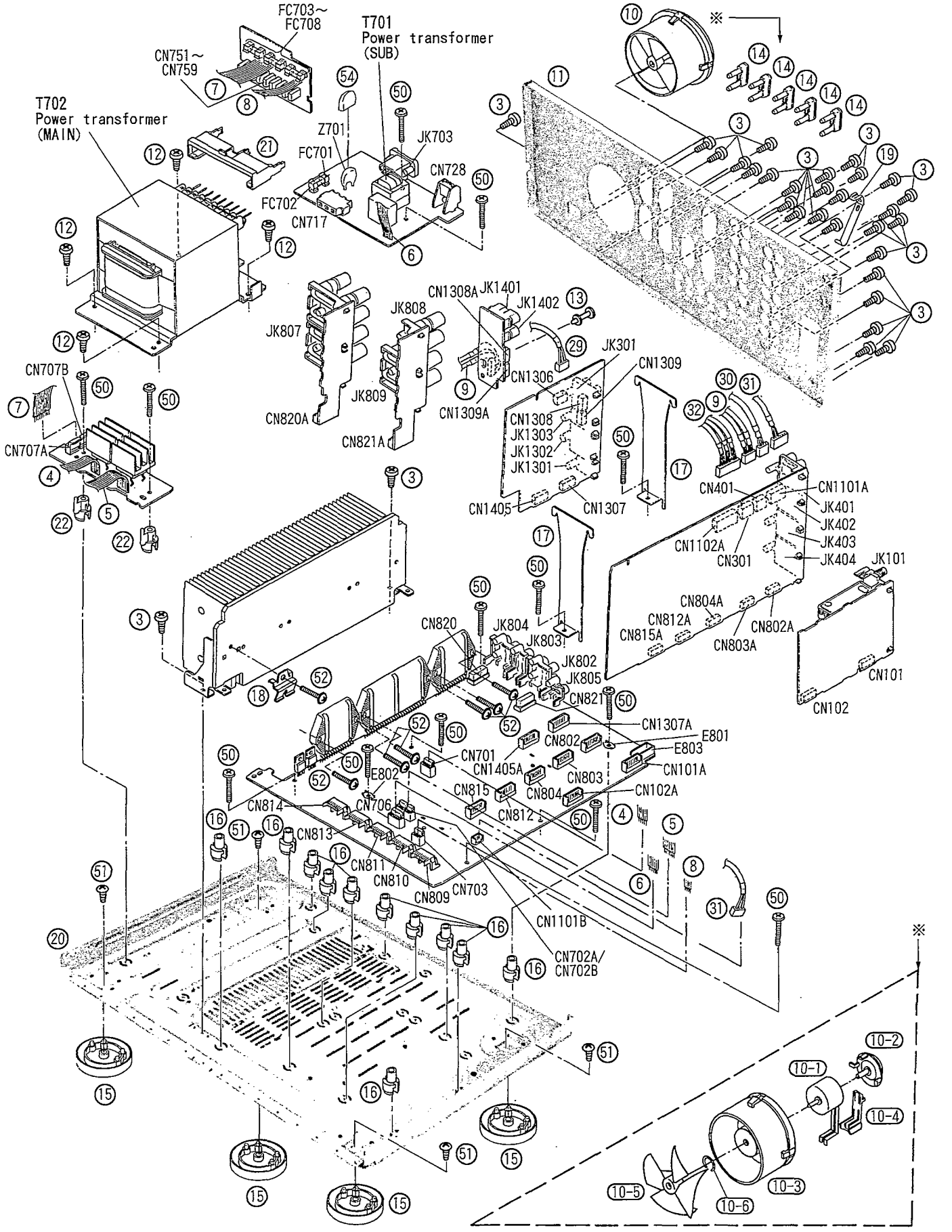
Ref. No.	Part No.	Part Name & Description	Remarks
JK808	RJH4203A	CENTER SPEAKERS	
JK809	RJH4406	SURROUND SPEAKERS	
JK1301	SJFD7-5	TV IN (VIDEO)	
JK1302	SJF3069-12N	VCR2/VDP IN, TV MONI. (VIDEO)	
JK1303	SJF3068-2N	VCR1 IN/OUT (VIDEO)	
JK1401	RJS1D1104	VCR1/TV MONITOR (S-VIDEO)	
JK1402	RJS1D1104	VCR1/VDP IN (S-VIDEO)	
		GND PLATE (S)	
E801, 802	SNE1004-2	GND PLATE	
E803	RMA0824	GND PLATE	
		FUSE HOLDER (S)	
FC701-708	EYF52BC	FUSE HOLDER	

Ref. No.	Part No.	Part Name & Description	Remarks
		CABINET AND CHASSIS	
1	RKM0331A-K	CABINET	
2	SNE2129-3	SCREW	
3	XTBS3+8JFZ1	SCREW	
4	RWJ1805480KQ	FLAT CABLE (5P) (CN/JW701)	
5	RWJ1807470KQ	FLAT CABLE (7P) (CN/JW702)	
6	RWJ1806650KQ	FLAT CABLE (6P) (CN/JW706)	
7	RWJ1810330KQ	FLAT CABLE (10P) (CN/JW707)	
8	RWJ1804570KQ	FLAT CABLE (4P) (CN/JW703)	
9	REZ0924	CONNECTOR ASS'Y	
10	REM0020-1	FAN MOTOR UNIT	
10-1	MDN-4RB4MRC	FAN MOTOR	
10-2	RMQ0208-K	FAN CAP	
10-3	RMQ0209-K	FAN CASE	
10-4	RMQ0212-K	FAN TERMINAL CAP	
10-5	SHE232-1	FAN	
10-6	SUS271	SPRING	
11	RGR0244C-A1	REAR PANEL	(EG)
11	RGR0244C-C	REAR PANEL	(EB)
11	RGR0244C-D	REAR PANEL	(GN)
11	RGR0244C-E	REAR PANEL	(GU)
11	RGR0244C-B1	REAR PANEL	(E)
12	RHD30061-K	SCREW	
13	RHR1370ZA	SPACER	
14	RJR0168	SHORT PIN PLUG	
15	RKA0053-A	FOOT	
16	RKQ0089	P.C.B. SUPPORT	
17	RMA0977	HOLD ORNAMENT	
18	RMC0158	TRANSISTOR HOLDER	
19	RMC0272	TUNER EARTH SPRING	
20	RMK0200-3	CHASSIS	
21	RMN0217	P.C.B. HOLDER	
22	RMN0392	P.C.B. HOLDER	
23	RWJ1806070KQ	FLAT CABLE(6P) (JW909/917)	
24	RWJ1805070KQ	FLAT CABLE (5P) (CN/JW911)	
25	RWJ1804070KQ	FLAT CABLE (4P) (CN/JW915)	
26	RWJ1806100KQ	FLAT CABLE (6P) (CN/JW907)	
27	RFKEATX50PAK	CONNECTOR ASS'Y (8P)	
28	RFKEATX50PBK	CONNECTOR ASS'Y (5P)	
29	RFKEATX50PCK	CONNECTOR ASS'Y (3P)	
30	RFKEATX50PDK	CONNECTOR ASS'Y (4P)	
31	RFKEATX50PEK	CONNECTOR ASS'Y (4P)	
32	RFKEATX50PFK	CONNECTOR ASS'Y (9P)	
33	RFKGATX50E-K	FRONT PANEL ASS'Y	
34	RGB0077-N	THX BADGE	
35	RGK0842A-S	ORNAMENT RING	
36	RGL0344-Q	OPTICAL CONDUCTIVE PLATE	
37	RGU0882-K	POWER BUTTON	
38	RGU1438-K	SPEAKERS SELECT BUTTON	
39	RGW0175-2K	BASS/TREBLE KNOB	

Ref. No.	Part No.	Part Name & Description	Remarks
40	RGW0176-K	VOLUME KNOB	
41	RHD26016	SCREW	
42	RHN90001	NUT	
43	RMA0869	LAMP ORNAMENT	
44	RSE0006A	METER UNIT	
45	RGU1436-K	DOLBY PRO LOGIC BUTTON	
46	RGU1437-K	SELECTOR BUTTON	
47	SHR9793	SPACER	
48	SHR9814	CABLE CLIP	
49	XTBS26+8J	SCREW	
50	XTB3+20JFZ	SCREW	
51	XTB3+6G	SCREW	
52	XTW3+15T	SCREW	
53	RMN0389	FL HOLDER	
54	RMZ0339	SURGE ABSORBER COVER	

■Cabinet Parts Location




FC703~
FC708
T701
Power transformer
(SUB)
CN751~
CN759
T702
Power transformer
(MAIN)
Z701
FC701
JK703
CN728
FC702
CN717
CN1308A
JK1401
JK1402
JK807
JK808
JK809
CN820A
CN821A
CN1309A
CN1306
JK301
CN1309
CN1308
JK1303
JK1302
JK1301
CN1405
CN1307
CN707B
CN707A
CN401
CN1101A
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JK402
JK403
JK404
JK101
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CN102
CN820
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JK803
JK802
JK805
CN821
CN1307A
E801
E803
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E802
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CN804
CN102A
CN814
CN706
CN812
CN813
CN811
CN810
CN809
CN703
CN1101B
CN702A/
CN702B
10-1
10-2
10-3
10-4
10-5
10-6

■Resistors and Capacitors

Notes: * Capacity values 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)
* [MAV] indicates in Remarks columns parts that are supplied by MAV.

Ref. No.	Part No.	Values & Remarks
		RESISTORS
R103	ERDS2TJ101	1/4W 100
R104	ERDS2TJ102	1/4W 1K
R105	ERDS2TJ471	1/4W 470
R106	ERDS2TJ224T	1/4W 220K
R107	ERDS2TJ471	1/4W 470
R110	ERDS2TJ102	1/4W 1K
R112	ERDS2TJ104	1/4W 100K
R113	ERDS2TJ103	1/4W 10K
R114	ERDS2TJ562	1/4W 5.6K
R115	ERDS2TJ561	1/4W 560
R116	ERDS2TJ102	1/4W 1K
R117	ERDS2TJ473	1/4W 47K
R118	ERDS2TJ562	1/4W 5.6K
R119	ERDS2TJ183T	1/4W 18K
R120	ERDS2TJ473	1/4W 47K
R121	ERDS2TJ332	1/4W 3.3K
R122	ERDS2TJ272T	1/4W 2.7K
R124	ERDS2TJ271	1/4W 270
R125, 126	ERDS2TJ472	1/4W 4.7K
R127	ERDS2TJ103	1/4W 10K
R128	ERDS2TJ820	1/4W 82
R129	ERDS2TJ473	1/4W 47K
R130, 131	ERDS2TJ102	1/4W 1K
R132	ERDS2TJ103	1/4W 10K
R133-137	ERDS2TJ102	1/4W 1K
R139, 140	ERDS2TJ272T	1/4W 2.7K
R141, 142	ERDS2TJ102	1/4W 1K
R143, 144	ERDS2TJ222	1/4W 2.2K
R145, 146	ERDS2TJ102	1/4W 1K (E, EB)
R145, 146	ERDS2TJ561	1/4W 560 (EG, GU, GN)
R147, 148	ERDS2TJ474	1/4W 470K
R149	ERDS2TJ680T	1/4W 68
R171, 172	ERDS2TJ102	1/4W 1K
R173	ERDS2TJ471	1/4W 470
R175	ERDS2TJ102	1/4W 1K
R176	ERDS2TJ391	1/4W 390
R191	ERDS2TJ103	1/4W 10K (E, EB)
R192	ERDS2TJ122	1/4W 1.2K (E, EB)
R193	ERDS2TJ182	1/4W 1.8K (E, EB)
R194	ERDS2TJ122	1/4W 1.2K (E, EB)
R195	ERDS2TJ222	1/4W 2.2K (E, EB)
R202	ERDS1FVJ101T	1/2W 100 ⚠
R203	ERDS2TJ101	1/4W 100
R204	ERDS2TJ271	1/4W 270
R205, 206	ERDS2TJ103	1/4W 10K
R301	ERDS2TJ224T	1/4W 220K
R310-312	ERDS2TJ103	1/4W 10K
R313, 314	ERDS2TJ102	1/4W 1K
R315, 316	ERDS2TJ103	1/4W 10K
R317, 318	ERDS2TJ332	1/4W 3.3K
R319, 320	ERDS2TJ822	1/4W 8.2K
R321, 322	ERDS2TJ153	1/4W 15K
R323	ERDS2TJ103	1/4W 10K
R324	ERDS2TJ682T	1/4W 6.8K
R350	ERDS2TJ103	1/4W 10K
R351	ERDS1FVJ101T	1/2W 100 ⚠
R352	ERDS2TJ155	1/4W 1.5M
R353	ERDS2TJ331	1/4W 330
R354	ERDS2TJ104	1/4W 100K
R355	ERDS2TJ331	1/4W 330
R356	ERDS2TJ155	1/4W 1.5M
R357, 358	ERDS2TJ682T	1/4W 6.8K
R359, 360	ERDS2TJ103	1/4W 10K
R361, 362	ERDS2TJ821	1/4W 820
R363	ERDS2TJ223	1/4W 22K
R364	ERDS2TJ102	1/4W 1K
R365	ERDS2TJ223	1/4W 22K
R366	ERDS2TJ102	1/4W 1K
R367, 368	ERDS2TJ681	1/4W 680
R369	ERDS2TJ154	1/4W 150K
R370	ERDS1FVJ101T	1/2W 100 ⚠
R371	ERDS2TJ154	1/4W 150K
R372, 373	ERDS2TJ123	1/4W 12K
R401-420	ERDS2TJ102	1/4W 1K
R421-426	ERDS2TJ103	1/4W 10K
R427, 428	ERDS2TJ471	1/4W 470
R429, 430	ERDS2TJ473	1/4W 47K
R431, 432	ERDS2TJ104	1/4W 100K
R434, 435	ERDS2TJ102	1/4W 1K
R437, 438	ERDS2TJ224T	1/4W 220K
R439	ERDS2TJ471	1/4W 470
R450	ERDS2TJ104	1/4W 100K
R451	ERDS1FVJ2R2T	1/2W 2.2 ⚠
R452	ERDS2TJ562	1/4W 5.6K
R453	ERDS2TJ103	1/4W 10K
R501, 502	ERDS2TJ271	1/4W 270
R503, 504	ERDS2TJ182	1/4W 1.8K
R505, 506	ERDS2TJ474	1/4W 470K
R507, 508	ERDS2TJ332	1/4W 3.3K
R509, 510	ERDS2TJ333	1/4W 33K
R511, 512	ERDS2TJ243T	1/4W 24K
R513, 514	ERDS2TJ562	1/4W 5.6K
R515, 516	ERDS2TJ681	1/4W 680
R517, 518	ERDS2TJ224T	1/4W 220K
R519, 520	ERDS2TJ392T	1/4W 3.9K
R521, 522	ERDS2TJ223	1/4W 22K
R523, 524	ERDS2TJ152	1/4W 1.5K
R525, 526	ERDS2TJ102	1/4W 1K
R527, 528	ERDS2TJ123	1/4W 12K
R529, 530	ERDS2TJ223	1/4W 22K
R531, 532	ERDS2TJ473	1/4W 47K
R550	ERDS2TJ822	1/4W 8.2K
R551, 552	ERDS2TJ472	1/4W 4.7K
R553	ERDS2TJ824	1/4W 820K
R554	ERDS2TJ102	1/4W 1K
R557	ERDS2TJ103	1/4W 10K
R561-566	ERDS2TJ471	1/4W 470
R567-572	ERDS2TJ102	1/4W 1K
R573-578	ERDS2TJ823T	1/4W 82K
R601-606	ERDS2TJ102	1/4W 1K
R607, 608	ERDS2TJ273	1/4W 27K
R609-612	ERDS2TJ104	1/4W 100K
R615-617	ERDS2TJ102	1/4W 1K
R618	ERDS2TJ152	1/4W 1.5K
R619	ERDS2TJ272T	1/4W 2.7K
R620	ERDS2TJ392T	1/4W 3.9K
R623	ERDS1FVJ101T	1/2W 100 ⚠
R624	ERDS1FVJ221T	1/2W 220 ⚠
R625-630	ERDS2TJ104	1/4W 100K
R631-633	ERG1SJ100E	1W 10
R635	ERDS2TJ102	1/4W 1K
R636	ERDS2TJ152	1/4W 1.5K
R637	ERDS2TJ104	1/4W 100K
R638	ERDS2TJ823T	1/4W 82K
R639, 640	ERDS2TJ473	1/4W 47K
R641, 642	ERDS2TJ104	1/4W 100K
R643	ERDS2TJ152	1/4W 1.5K
R644	ERDS2TJ123	1/4W 12K
R645	ERDS2TJ102	1/4W 1K
R646	ERDS2TJ152	1/4W 1.5K
R647, 648	ERDS2TJ102	1/4W 1K
R649, 650	ERDS2TJ152	1/4W 1.5K
R651, 652	ERDS2TJ102	1/4W 1K
R653	ERDS2TJ473	1/4W 47K
R657, 658	ERDS2TJ102	1/4W 1K
R659-662	ERDS2TJ154	1/4W 150K
R663	ERDS2TJ103	1/4W 10K
R701	ERDS1FVJ1R0T	1/2W 1.0 ⚠
R702, 703	ERDS2TJ1R8T	1/4W 1.8
R706	ERDS2TJ681	1/4W 680
R707	ERDS2TJ122	1/4W 1.2K
R708	ERDS2TJ222	1/4W 2.2K
R709	ERDS2TJ682T	1/4W 6.8K
R710	ERDS2TJ102	1/4W 1K

Ref. No.	Part No.	Values & Remarks
R712	ERDS2TJ332	1/4W 3.3K
R713	ERDS1FVJ681T	1/2W 680 ⚠
R714	ERD25FVJ3R3T	1/4W 3.3 ⚠
R715	ERDS2TJ182	1/4W 1.8K
R716	ERDS1FVJ681T	1/2W 680 ⚠
R717	ERDS1FVJ1R0T	1/2W 1.0 ⚠
R718	ERDS2TJ273	1/4W 27K
R719	ERDS2TJ222	1/4W 2.2K
R720	ERDS2TJ273	1/4W 27K
R722	ERDS2TJ752T	1/4W 7.5K
R723	ERDS2TJ682T	1/4W 6.8K
R724	ERDS1FVJ681T	1/2W 680 ⚠
R726	ERDS2TJ472	1/4W 4.7K
R727, 728	ERDS2TJ221	1/4W 220
R729, 730	ERDS2TJ102	1/4W 1K
R731, 732	ERDS2TJ472	1/4W 4.7K
R733, 734	ERDS1FVJ3R3T	1/2W 3.3 ⚠
R735	ERX1SJR22E	1W 0.22
R736, 737	ERDS2TJ333	1/4W 33K
R738	ERX1SJR22E	1W 0.22
R739	ERDS2TJ102	1/4W 1K
R740	ERDS2TJ682T	1/4W 6.8K
R741	ERDS2TJ104	1/4W 100K
R742	ERDS2TJ103	1/4W 10K
R743	ERDS2TJ335T	1/4W 3.3M
R744	ERDS2TJ223	1/4W 22K
R745	ERDS2TJ270T	1/4W 27
R746	ERDS2TJ472	1/4W 4.7K
R748	ERDS2TJ103	1/4W 10K
R749	ERDS2TJ153	1/4W 15K
R750, 751	ERDS2TJ473	1/4W 47K
R752	ERDS2TJ103	1/4W 10K
R753	ERDS2TJ222	1/4W 2.2K
R754	ERDS2TJ220T	1/4W 22
R755	ERDS2TJ222	1/4W 2.2K
R758	ERDS1FVJ1R0T	1/2W 1.0 ⚠
R801-806	ERDS2TJ223	1/4W 22K
R807-811	ERDS2TJ102	1/4W 1K
R813	ERDS2TJ224T	1/4W 220K
R814, 815	ERDS2TJ182	1/4W 1.8K
R817	ERDS2TJ224T	1/4W 220K
R818, 819	ERDS2TJ821	1/4W 820
R822, 823	ERDS2TJ391	1/4W 390
R825, 826	ERDS2TJ152	1/4W 1.5K
R827	ERDS2TJ681	1/4W 680
R830	ERDS2TJ471	1/4W 470
R831	ERDS2TJ151	1/4W 150
R832	ERDS2TJ822	1/4W 8.2K
R833	ERDS2TJ182	1/4W 1.8K
R834, 835	ERDS2TJ471	1/4W 470
R846-848	ERDS2TJ471	1/4W 470
R849-852	ERDS2TJ222	1/4W 2.2K

Ref. No.	Part No.	Values & Remarks
R853	ERDS2TJ393	1/4W 39K
R854, 855	ERDS2TJ473	1/4W 47K
R856	ERDS2TJ222	1/4W 2.2K
R857	ERDS2TJ102	1/4W 1K
R858-860	ERDS2TJ473	1/4W 47K
R862	ERDS2TJ105T	1/4W 1M
R863	ERD25FVJ122T	1/4W 1.2K ⚠
R865	ERD25FVJ122T	1/4W 1.2K ⚠
R866	ERDS2TJ473	1/4W 47K
R867, 868	ERDS2TJ393	1/4W 39K
R870, 871	ERDS2TJ102	1/4W 1K
R872-874	ERD25FVJ122T	1/4W 1.2K ⚠
R875-877	ERDS2TJ393	1/4W 39K
R878	ERDS2TJ102	1/4W 1K
R879	ERDS2TJ184T	1/4W 180K
R880	ERDS2TJ102	1/4W 1K
R881	ERDS1FVJ220T	1/2W 22 ⚠
R882	ERDS2TJ102	1/4W 1K
R883	ERDS2TJ473	1/4W 47K
R884	ERDS2TJ684	1/4W 680K
R885	ERDS2TJ104	1/4W 100K
R886	ERDS2TJ123	1/4W 12K
R887	ERDS2TJ102	1/4W 1K
R888	ERDS2TJ123	1/4W 12K
R889-893	ERDS1FVJ470T	1/2W 47 ⚠
R894	ERDS1FVJ100T	1/2W 10 ⚠
R895, 896	ERG1SJ680E	1W 68
R897, 898	ERDS1FVJ100T	1/2W 10 ⚠
R899	ERDS2TJ124T	1/4W 120K
R901	ERDS2TJ181T	1/4W 180
R903	ERDS2TJ222	1/4W 2.2K
R904	ERDS2TJ562	1/4W 5.6K
R905	ERDS2TJ122	1/4W 1.2K
R906	ERDS2TJ103	1/4W 10K
R907, 908	ERDS2TJ102	1/4W 1K
R909-911	ERDS2TJ104	1/4W 100K
R912	ERDS2TJ473	1/4W 47K
R914, 915	ERDS2TJ104	1/4W 100K
R916	ERDS2TJ101	1/4W 100
R917	ERDS2TJ562	1/4W 5.6K
R918-922	ERDS2TJ102	1/4W 1K
R923	ERDS2TJ101	1/4W 100
R924	ERDS2TJ102	1/4W 1K
R925	ERDS2TJ101	1/4W 100
R926	ERDS2TJ102	1/4W 1K
R927	ERDS2TJ472	1/4W 4.7K
R928, 929	ERDS2TJ102	1/4W 1K
R930	ERDS2TJ101	1/4W 100
R931	ERDS2TJ271	1/4W 270
R932	ERDS2EJ121	1/4W 120
R933	ERDS2TJ104	1/4W 100K
R934	ERDS2TJ102	1/4W 1K

Ref. No.	Part No.	Values & Remarks
R935	ERDS2TJ472	1/4W 4.7K
R936	ERDS2TJ681	1/4W 680
R937	ERDS2TJ103	1/4W 10K
R938-940	ERDS2TJ104	1/4W 100K
R941	ERDS2TJ182	1/4W 1.8K
R942	ERDS2TJ222	1/4W 2.2K
R943	ERDS2TJ332	1/4W 3.3K
R944, 945	ERDS2TJ102	1/4W 1K
R946	ERDS2TJ182	1/4W 1.8K
R947	ERDS2TJ222	1/4W 2.2K
R948	ERDS2TJ332	1/4W 3.3K
R949	ERDS2TJ472	1/4W 4.7K
R950	ERDS2TJ471	1/4W 470
R951	ERDS2TJ472	1/4W 4.7K
R952, 953	ERDS2TJ102	1/4W 1K
R954	ERDS2TJ103	1/4W 10K
R955	ERDS2TJ182	1/4W 1.8K
R956	ERDS2TJ222	1/4W 2.2K
R957	ERDS2TJ332	1/4W 3.3K
R961	ERDS2TJ224T	1/4W 220K
R962	ERDS2TJ103	1/4W 10K
R964-966	ERDS2TJ104	1/4W 100K
R967	ERDS2TJ103	1/4W 10K
R968	ERDS2TJ102	1/4W 1K
R969	ERDS2TJ122	1/4W 1.2K
R970	ERDS2TJ152	1/4W 1.5K
R971	ERDS2TJ103	1/4W 10K
R972	ERDS2TJ102	1/4W 1K
R973	ERDS2TJ122	1/4W 1.2K
R974	ERDS2TJ152	1/4W 1.5K
R975	ERDS2TJ103	1/4W 10K
R976	ERDS2TJ102	1/4W 1K
R977	ERDS2TJ122	1/4W 1.2K
R978	ERDS2TJ152	1/4W 1.5K
R979	ERDS2TJ102	1/4W 1K
R980	ERDS2TJ222	1/4W 2.2K
R981	ERDS2TJ822	1/4W 8.2K
R982, 983	ERDS2TJ472	1/4W 4.7K
R984	ERDS2TJ822	1/4W 8.2K
R987	ERDS2TJ102	1/4W 1K
R1000	ERDS2TJ223	1/4W 22K
R1003	ERDS1FVJ820T	1/2W 82 ⚠
R1004, 1005	ERDS2TJ102	1/4W 1K
R1006	ERDS2TJ330	1/4W 33
R1007, 1008	ERDS2TJ473	1/4W 47K
R1009-1011	ERDS2TJ102	1/4W 1K
R1023	ERDS2TJ102	1/4W 1K
R1024	ERDS2TJ223	1/4W 22K
R1025	ERDS2TJ122	1/4W 1.2K
R1026	ERDS2TJ152	1/4W 1.5K
R1027, 1028	ERDS2TJ272T	1/4W 2.7K
R1029	ERDS2TJ152	1/4W 1.5K

Ref. No.	Part No.	Values & Remarks
R1030	ERDS2TJ272T	1/4W 2.7K
R1031	ERDS1FVJ472T	1/2W 4.7K ⚠
R1032	ERDS2TJ682T	1/4W 6.8K
R1033	ERDS2TJ472	1/4W 4.7K
R1034	ERDS1FVJ472T	1/2W 4.7K ⚠
R1035	ERDS2TJ682T	1/4W 6.8K
R1036	ERDS2TJ472	1/4W 4.7K
R1037, 1038	ERG1SJ680E	1W 68
R1039, 1040	ERDS1FVJ100T	1/2W 10 ⚠
R1041, 1042	ERDS2TJ222	1/4W 2.2K
R1043	ERDS2TJ682T	1/4W 6.8K
R1044	ERDS2TJ154	1/4W 150K
R1045	ERDS2TJ682T	1/4W 6.8K
R1046	ERG1SJ680E	1W 68
R1047, 1048	ERDS2TJ184T	1/4W 180K
R1049	ERDS1FJ270	1/2W 27 ⚠
R1050	ERDS2TJ154	1/4W 150K
R1051, 1052	ERDS2TJ682T	1/4W 6.8K
R1053, 1054	ERDS1FVJ222T	1/2W 2.2K ⚠
R1055, 1056	ERDS2TJ222	1/4W 2.2K
R1057-1060	ERD2FCVJ4R7T	1/4W 4.7 ⚠
R1061-1067	ERDS2TJ223	1/4W 22K
R1068	ERDS2TJ124T	1/4W 120K
R1069	ERDS2TJ474	1/4W 470K
R1070	ERDS2TJ102	1/4W 1K
R1071	ERDS1FJ270	1/2W 27 ⚠
R1072	ERDS2TJ102	1/4W 1K
R1073	ERDS1FJ270	1/2W 27 ⚠
R1074, 1075	ERDS2TJ102	1/4W 1K
R1076	ERG1SJ680E	1W 68
R1077	ERDS1FJ270	1/2W 27 ⚠
R1078	ERDS2TJ332	1/4W 3.3K
R1080-1085	ERDS2TJ100	1/4W 10
R1086	ERDS2TJ223	1/4W 22K
R1087	ERDS2TJ274	1/4W 270K
R1089, 1090	ERD25FVJ221T	1/4W 220 ⚠
R1091, 1092	ERDS1FVJ100T	1/2W 10 ⚠
R1093-1095	ERD25FVJ221T	1/4W 220 ⚠
R1096-1099	ERDS1FVJ100T	1/2W 10 ⚠
R1101, 1102	ERDS2TJ104	1/4W 100K
R1103, 1104	ERDS2TJ103	1/4W 10K
R1105, 1106	ERDS2TJ562	1/4W 5.6K
R1107, 1108	ERDS2TJ102	1/4W 1K
R1109-1112	ERDS2TJ103	1/4W 10K
R1113-1116	ERDS2TJ331	1/4W 330
R1117	ERDS2TJ182	1/4W 1.8K
R1121	ERDS2TJ103	1/4W 10K
R1131	ERDS2TJ106T	1/4W 10M
R1132	ERDS2TJ122	1/4W 1.2K
R1151-1153	ERDS2TJ822	1/4W 8.2K
R1154	ERDS2TJ103	1/4W 10K
R1155, 1156	ERDS2TJ822	1/4W 8.2K

Ref. No.	Part No.	Values & Remarks
R1157-1160	ERDS2TJ103	1/4W 10K
R1161, 1162	ERDS2TJ822	1/4W 8.2K
R1163-1166	ERDS2TJ103	1/4W 10K
R1167, 1168	ERDS2TJ822	1/4W 8.2K
R1169-1172	ERDS2TJ104	1/4W 100K
R1173-1175	ERDS2TJ100	1/4W 10
R1176	ERDS2TJ152	1/4W 1.5K
R1179-1188	ERDS2TJ102	1/4W 1K
R1301-1311	ERDS2TJ750	1/4W 75
R1312	ERDS2TJ101	1/4W 100
R1313, 1314	ERDS2TJ221	1/4W 220
R1315	ERDS2TJ101	1/4W 100
R1316	ERDS2TJ102	1/4W 1K
R1317	ERDS2TJ221	1/4W 220
R1318	ERDS2TJ101	1/4W 100
R1319	ERDS2TJ221	1/4W 220
R1320	ERDS2TJ750	1/4W 75
R1321-1323	ERDS2TJ473	1/4W 47K
R1401	ERDS2TJ331	1/4W 330
R1402, 1403	ERDS2TJ224T	1/4W 220K
R1404-1408	ERDS2TJ103	1/4W 10K
R1409, 1410	ERDS2TJ332	1/4W 3.3K
R1411	ERDS2TJ103	1/4W 10K
R1412	ERDS2TJ101	1/4W 100
R1413, 1414	ERDS2TJ103	1/4W 10K
R1415	ERDS2TJ100	1/4W 10
R1416	ERDS2TJ182	1/4W 1.8K
R1417	ERDS2TJ750	1/4W 75
R1418	ERDS2TJ471	1/4W 470
R1419	ERDS2TJ750	1/4W 75
R1420	ERDS2TJ101	1/4W 100
R1421	ERDS2TJ473	1/4W 47K
R1422	ERDS2TJ471	1/4W 470
R1423	ERDS2TJ123	1/4W 12K
R1424	ERDS2TJ103	1/4W 10K
R1425	ERDS2TJ472	1/4W 4.7K
R1426	ERDS2TJ101	1/4W 100
R1427	ERDS2TJ100	1/4W 10
R1428	ERDS2TJ471	1/4W 470
R1429	ERDS2TJ182	1/4W 1.8K
R1430	ERDS2TJ750	1/4W 75
R1431	ERDS2TJ223	1/4W 22K
R1432	ERDS2TJ473	1/4W 47K
R1433	ERDS2TJ101	1/4W 100
R1434	ERDS2TJ102	1/4W 1K
R1501, 1502	ERDS1FJ270	1/2W 27 ⚠
R1503-1506	ERG1SJ680E	1W 68
R1507, 1508	ERDS2TJ153	1/4W 15K
R1509, 1510	ERDS2TJ682T	1/4W 6.8K
R1511, 1512	ERDS2TJ153	1/4W 15K
R1513, 1514	ERDS2TJ682T	1/4W 6.8K
R1515	ERDS2TJ153	1/4W 15K

Ref. No.	Part No.	Values & Remarks
R1516	ERDS2TJ102	1/4W 1K
R1517	ERDS2TJ682T	1/4W 6.8K
R1518, 1519	ERDS2TJ122	1/4W 1.2K
R1521	ERDS2TJ103	1/4W 10K
		CAPACITORS
C101	ECBT1C103NS5	16V 0.01U
C103	ECBT1C103NS5	16V 0.01U
C104	ECBT1H102KB5	50V 1000P
C105	ECBT1H220JC5	50V 22P
C106	ECBT1C103NS5	16V 0.01U
C107	ECBT1H473ZF5	50V 0.047U
C108	ECBT1H100JC5	50V 10P (E, EB)
C108	ECBT1H8R2KC5	50V 8.2P (EG, GU, GN)
C109, 110	ECBT1C103NS5	16V 0.01U
C111	ECEA1EKA4R7B	25V 4.7U
C112	ECBT1C103NS5	16V 0.01U
C113	ECBT1H102KB5	50V 1000P
C114	RCE1HKA3R3BG	50V 3.3U
C115	ECEA1EKA4R7B	25V 4.7U
C116	ECBT1C822MS5	16V 8200P
C117	ECQB1H471JF3	50V 470P
C118, 119	ECQB1H103JF3	50V 0.01U
C120, 121	ECEA1HKA010B	50V 1U
C122	ECEA1HKA2R2B	50V 2.2U
C123	ECEA1HKA010B	50V 1U
C124	ECBT1H102KB5	50V 1000P
C125	ECBT1H150JC5	50V 15P
C126	ECBT1H104ZF5	50V 0.1U
C127	ECEA1CKA220B	16V 22U
C128	ECBT1C103NS5	16V 0.01U
C129, 130	ECEA0JKA101B	6.3V 100U
C131	ECBT1C103NS5	16V 0.01U
C132	ECBT1H102KB5	50V 1000P
C133, 134	ECBT1H270JU5	50V 27P
C135, 136	ECBT1C103KS5	16V 0.01U
C137, 138	ECBT1H561KB5	50V 560P
C139, 140	ECQB1H682JF3	50V 6800P
C141-144	ECEA1HKA010B	50V 1U
C145	ECBT1H220JC5	50V 22P
C147	ECBT1H102KB5	50V 1000P
C148, 149	ECBT1C103NS5	16V 0.01U
C150	ECBT1H104ZF5	50V 0.1U
C172	ECBT1H331KB5	50V 330P
C173	ECEA1CKA220B	16V 22U
C174	ECEA1CKA101B	16V 100U
C175, 176	ECBT1C103NS5	16V 0.01U
C181	ECBT1H471KB5	50V 470P
C196	ECBT1H102KB5	50V 1000P
C201	ECBT1E223ZF	25V 0.022U
C202	ECBT1E103ZF	25V 0.01U

Ref. No.	Part No.	Values & Remarks
C302, 303	RCE1CKA100BG	16V 10U
C311	ECBT1H101KB5	50V 100P
C312	ECEA1EKA4R7B	25V 4.7U
C313	ECBT1E103ZF	25V 0.01U
C314	ECEA1EKA4R7B	25V 4.7U
C315	ECBT1E103ZF	25V 0.01U
C317-320	ECBT1H151KB5	50V 150P
C321	ECBT1E103ZF	25V 0.01U
C350	ECBT1C152KR5	16V 1500P
C351	ECEA1HKA2R2B	50V 2.2U
C352, 353	ECEA1EKN3R3B	25V 3.3U
C354	ECBT1C152KR5	16V 1500P
C355	ECEA1HKA2R2B	50V 2.2U
C356, 357	ECA1CM102B	16V 1000U
C401-416	ECBT1H151KB5	50V 150P
C417-420	ECEA1EKA4R7B	25V 4.7U
C421-424	ECBT1E103ZF	25V 0.01U
C425-428	ECBT1H101KB5	50V 100P
C429, 430	RCE1CKA100BG	16V 10U
C431, 432	ECBT1E103ZF	25V 0.01U
C433, 434	ECEA1CKA220B	16V 22U
C435, 436	ECBT1H151KB5	50V 150P
C438	ECEA1HKA010B	50V 1U
C440	ECBT1H104ZF5	50V 0.1U
C441	RCE1CKA100BG	16V 10U
C442	RCE1HKS010BV	50V 1U
C444	ECBT1H104ZF5	50V 0.1U
C445	RCE1CKA100BG	16V 10U
C446	ECBT1E103ZF	25V 0.01U
C450	ECBT1H104ZF5	50V 0.1U
C451	RCE1CKA100BG	16V 10U
C452	ECEA0JKA101B	6.3V 100U
C453	ECEA0JKA221B	6.3V 220U
C454, 455	ECFR1E104KR	25V 0.1U
C458	ECBT1H104ZF5	50V 0.1U
C459	ECEA0JKA221B	6.3V 220U
C501, 502	RCE1CKA470BG	16V 47U
C503, 504	ECBT1C562KR5	16V 5600P
C505, 506	ECBT1H221KB5	50V 220P
C507, 508	ECBT1H101KB5	50V 100P
C509, 510	ECEA1CKN4R7B	16V 4.7U
C511, 512	ECEA1EKA4R7B	25V 4.7U
C513, 514	ECBT1E103ZF	25V 0.01U
C515, 516	ECQV1H683JM3	50V 0.068U
C517, 518	ECFR1C123KR	16V 0.012U
C519, 520	ECBT1C272KR5	16V 2700P
C521, 522	ECFR1C223KR	16V 0.022U
C523	RCE1HKS3R3BV	50V 3.3U
C524	RCE1HKA3R3BG	50V 3.3U
C525	ECEA1CKS220	16V 22U
C526	ECEA1CKA220B	16V 22U
C527, 528	RCE1AKA330BG	10V 33U

Ref. No.	Part No.	Values & Remarks
C529, 530	ECBT1H561KB5	50V 560P
C531, 532	ECBT1H101KB5	50V 100P
C533, 534	ECBT1H271KB5	50V 270P
C581	ECBT1E223ZF	25V 0.022U
C601, 602	RCE1CKA100BG	16V 10U
C603	RCE1HKA3R3BG	50V 3.3U
C604	RCE1HKAR47BG	50V 0.47U
C605-609	RCE1HKA3R3BG	50V 3.3U
C610	RCE1HKAR47BG	50V 0.47U
C611, 612	RCE1HKA3R3BG	50V 3.3U
C613-615	RCE1CKA100BG	16V 10U
C616-618	ECBT1H104ZF5	50V 0.1U
C619-621	RCE1CKA100BG	16V 10U
C622-627	ECBT1H104ZF5	50V 0.1U
C628-630	RCE1CKA100BG	16V 10U
C631-634	ECBT1H104ZF5	50V 0.1U
C635	RCE1HKA3R3BG	50V 3.3U
C636	RCE1HKAR47BG	50V 0.47U
C637, 638	RCE1HKA3R3BG	50V 3.3U
C639, 640	ECEA1CKA220B	16V 22U
C641	ECBT1H221KB5	50V 220P
C642	ECBT1E223ZF	25V 0.022U
C643, 644	ECBT1H181KB5	50V 180P
C645, 646	ECBT1H821KB5	50V 820P
C647	ECBT1C122KR5	16V 1200P
C648	ECBT1H104ZF5	50V 0.1U
C649, 650	ECBT1H101KB5	50V 100P
C653, 654	ECBT1H101KB5	50V 100P
C655, 656	ECBT1C152KR5	16V 1500P
C657, 658	ECBT1H101KB5	50V 100P
C659	ECBT1H821KB5	50V 820P
C660	ECBT1E103ZF	25V 0.01U
C661, 662	ECBT1H101KB5	50V 100P
C663, 664	ECBT1H102KB5	50V 1000P
C666	ECBT1H104ZF5	50V 0.1U
C667, 668	ECBT1C152KR5	16V 1500P
C669	ECBT1C122KR5	16V 1200P
C671, 672	ECEA1CKA220B	16V 22U
C673	ECBT1H104ZF5	50V 0.1U
C675, 676	ECBT1H331KB5	50V 330P
C678	ECBT1H331KB5	50V 330P
C681	ECA1VM221B	35V 220U
C697, 698	RCE1CKA100BG	16V 10U
C701	ECEA0JKA101B	6.3V 100U
C702	RCE1CKA100BG	16V 10U
C703, 704	ECEA1VKA470B	35V 47U
C705	ECBT1E103ZF	25V 0.01U
C706	ECEA1EKA100B	25V 10U
C708	ECBT1E103ZF	25V 0.01U
C709	ECEA1CKA101B	16V 100U
C711	ECA1EM472E	25V 4700U ⚠
C712	RCE1CKA100BG	16V 10U

Ref. No.	Part No.	Values & Remarks
C713, 714	ECBT1E103ZF	25V 0.01U
C715	ECKR1H103ZF5	50V 0.01U
C716, 717	ECEA1VKA470B	35V 47U
C718-721	ECA1VM332E	35V 3300U ⚠
C722, 723	ECET75V153WX	75V 15000U ⚠
C724	RCE1AU101BV	10V 100U
C725, 726	ECQE2104KF3	250V 0.1U
C727	ECBT1E103ZF	25V 0.01U
C728	RCE1CKA470BG	16V 47U
C729	ECA1EM102E	25V 1000U ⚠
C730	ECEA1HKA2R2B	50V 2.2U
C731	ECKR1H103ZF5	50V 0.01U
C732	ECBT1E223ZF	25V 0.022U
C733	ECKWRS102MBC	400V 1000P ⚠[MAV]
C734	ECEA0JKA221B	6.3V 220U
C735	RCE1CKA100BG	16V 10U
C737	ECBT1E103ZF	25V 0.01U
C744	ECEA1CKA220B	16V 22U
C801	ECBT1E103ZF	25V 0.01U
C802, 803	ECEA2AU100	100V 10U
C804	ECBT1H820KB5	50V 82P
C805	ECBT1H102KB5	50V 1000P
C806	ECBT1H151KB5	50V 150P
C807	ECEA1CKA220B	16V 22U
C808	ECBT1H151KB5	50V 150P
C809	ECEA1CKA220B	16V 22U
C810	ECBT1H151KB5	50V 150P
C811	ECEA1CKA220B	16V 22U
C812	ECBT1H151KB5	50V 150P
C813, 814	ECA1JM330B	63V 33U
C815	ECEA1CKA220B	16V 22U
C816, 817	ECBT1H102KB5	50V 1000P
C818	ECBT1H151KB5	50V 150P
C819	ECEA1CKA220B	16V 22U
C820	ECBT1E103ZF	25V 0.01U
C821	ECBT1H151KB5	50V 150P
C822	ECEA1CKA220B	16V 22U
C823	ECBT1H151KB5	50V 150P
C824	ECEA1CKA220B	16V 22U
C825	ECBT1H151KB5	50V 150P
C826	ECEA1CKA220B	16V 22U
C827	ECBT1H151KB5	50V 150P
C828	ECEA1CKA220B	16V 22U
C829	ECBT1H151KB5	50V 150P
C830	ECEA1CKA220B	16V 22U
C831	ECBT1H151KB5	50V 150P
C832	ECEA1CKA220B	16V 22U
C833-836	ECEA0JKA101B	6.3V 100U
C837-840	ECEA1EKN3R3B	25V 3.3U
C841	ECBA1H681KB5	50V 680P
C842	ECEA1EKN3R3B	25V 3.3U
C843-845	ECBA1H681KB5	50V 680P

Ref. No.	Part No.	Values & Remarks
C847	ECBT1H271KB5	50V 270P
C848	ECBA1H681KB5	50V 680P
C849	ECA1JM330B	63V 33U
C850, 851	ECA1JM470B	63V 47U
C852, 853	ECBA1H681KB5	50V 680P
C854, 855	ECCD1H150KC	50V 15P
C856	ECA1JM330B	63V 33U
C857-859	ECBA1H681KB5	50V 680P
C860	ECA1JM470B	63V 47U
C861	ECBA1H681KB5	50V 680P
C862, 863	ECA1JM470B	63V 47U
C864-866	ECCD1H150KC	50V 15P
C867, 868	ECBA1H681KB5	50V 680P
C869	ECBT1H102KB5	50V 1000P
C870	ECKR1H103ZF5	50V 0.01U
C871	ECEA1JU220	63V 22U
C873	ECEA2AN2R2SB	100V 2.2U
C875	ECBT1H102KB5	50V 1000P
C876-880	ECQV1H473JM3	50V 0.047U
C881	ECA1HM101B	50V 100U
C882	ECEA1HKA010B	50V 1U
C883-887	ECKT1H223ZF	50V 0.022U
C888	ECBT1E103ZF	25V 0.01U
C889, 890	ECKT1H223ZF	50V 0.022U
C892, 893	ECBT1H221KB5	50V 220P
C894-897	ECEA2AU100	100V 10U
C898	ECQV1H823JM3	50V 0.082U
C901-903	ECBT1H101KB5	50V 100P
C904, 905	ECBT1E103ZF	25V 0.01U
C906, 907	ECBT1H101KB5	50V 100P
C908, 909	ECA2AM100B	100V 10U
C910	ECBT1E103ZF	25V 0.01U
C911	RCE1VKA100BG	35V 10U
C912	ECBT1H101KB5	50V 100P
C913	ECBT1E103ZF	25V 0.01U
C914	RCE1VKA100BG	35V 10U
C915, 916	ECBT1E103ZF	25V 0.01U
C917	ECA0JM102B	6.3V 1000U
C918	ECEA1HKA010B	50V 1U
C919	ECBT1E103ZF	25V 0.01U
C920	ECEA0JKA101B	6.3V 100U
C921	ECEA1HKA010B	50V 1U
C922	ECA0JM471B	6.3V 470U
C923	ECBT1H101KB5	50V 100P
C924-930	ECBT1H331KB5	50V 330P
C931	ECEA0JKA101B	6.3V 100U
C932	ECBT1H104ZF5	50V 0.1U
C933	RCE1CKA100BG	16V 10U
C934	ECBT1E103ZF	25V 0.01U
C935, 936	ECBT1H104ZF5	50V 0.1U
C937	RCE1CKA100BG	16V 10U
C938	ECBT1H101KB5	50V 100P
C939	ECBT1E103ZF	25V 0.01U
C940, 941	ECBT1H331KB5	50V 330P
C1001-1005	ECEA1CKA220B	16V 22U
C1101, 1102	RCE1CKA100BG	16V 10U
C1103, 1104	ECBT1C222KR5	16V 2200P
C1106	RCE1CKA100BG	16V 10U
C1107-1109	ECBT1H104ZF5	50V 0.1U
C1110	ECEA1EKA4R7B	25V 4.7U
C1111, 1112	ECBT1H104ZF5	50V 0.1U
C1113	RCE1CKA100BG	16V 10U
C1115	ECBT1H104ZF5	50V 0.1U
C1116	RCE1CKA100BG	16V 10U
C1117-1119	ECBT1H104ZF5	50V 0.1U
C1121	ECEA0JKA101B	6.3V 100U
C1122, 1123	ECBT1H104ZF5	50V 0.1U
C1124	ECEA0JKA101B	6.3V 100U
C1125-1127	ECBT1H104ZF5	50V 0.1U
C1128	ECA0JM102B	6.3V 1000U
C1129, 1130	ECBT1H104ZF5	50V 0.1U
C1131	ECBT1H330J5	50V 33P
C1132	ECBT1H120J5	50V 12P
C1133	ECA0JM102B	6.3V 1000U
C1134, 1135	ECBT1H104ZF5	50V 0.1U
C1136, 1137	ECA0JM102B	6.3V 1000U
C1138, 1139	ECBT1H104ZF5	50V 0.1U
C1140, 1141	ECA0JM471B	6.3V 470U
C1142, 1143	ECBT1H104ZF5	50V 0.1U
C1144, 1145	ECA0JM471B	6.3V 470U
C1146	ECBT1H104ZF5	50V 0.1U
C1147	ECA0JM471B	6.3V 470U
C1148	ECBT1H104ZF5	50V 0.1U
C1151-1154	ECBA1H681KB5	50V 680P
C1155, 1156	ECBT1C272KR5	16V 2700P
C1157-1160	ECBT1C152KR5	16V 1500P
C1161, 1162	ECBT1C682KR5	16V 6800P
C1163-1166	ECBT1H101KB5	50V 100P
C1167, 1168	ECBT1H561KB5	50V 560P
C1169-1171	ECBT1H104ZF5	50V 0.1U
C1172-1174	ECEA0JKA101B	6.3V 100U
C1175-1177	ECBT1H104ZF5	50V 0.1U
C1178, 1179	ECBT1H390J5	50V 39P
C1180	ECBT1E103ZF	25V 0.01U
C1181-1183	RCE1CKA100BG	16V 10U
C1184-1186	ECBT1H104ZF5	50V 0.1U
C1187-1189	ECBT1H101KB5	50V 100P
C1190	ECBT1H181KB5	50V 180P
C1193-1195	RCE1CKA100BG	16V 10U
C1196-1200	ECBT1H104ZF5	50V 0.1U
C1201	ECEA0JKA101B	6.3V 100U
C1202	ECA0JM102B	6.3V 1000U
C1203	ECBT1H104ZF5	50V 0.1U
C1204, 1205	RCE1CKA100BG	16V 10U
C1206, 1207	RCE1HKA3R3BG	50V 3.3U
C1208	RCE1CKA100BG	16V 10U
C1210	ECBT1E103ZF	25V 0.01U
C1211-1214	ECBT1H101KB5	50V 100P
C1218	ECKT1H102KB	50V 1000P
C1219	ECCT1H181K	50V 180P
C1220	ECBT1H390J5	50V 39P
C1221, 1222	ECBT1H104ZF5	50V 0.1U
C1223	ECBT1C152KR5	16V 1500P
C1224	ECBT1E103ZF	25V 0.01U
C1225	ECBT1C152KR5	16V 1500P
C1226	ECBT1H101KB5	50V 100P
C1301-1303	ECEA1HKA2R2B	50V 2.2U
C1304	ECEA1HKS2R2B	50V 2.2U
C1305	ECEA0GKA471B	4V 470U
C1306-1309	ECEA1HKS2R2B	50V 2.2U
C1310	ECA0JM471B	6.3V 470U
C1311	ECBT1H102KB5	50V 1000P
C1312-1314	ECBT1E103ZF	25V 0.01U
C1315-1317	ECEA0JKA470B	6.3V 47U
C1318-1320	ECEA1HKA2R2B	50V 2.2U
C1401	ECEA1HKA2R2B	50V 2.2U
C1402	RCE1CKA100BG	16V 10U
C1403	ECEA1CKS100L	16V 10U
C1404	RCE1CKA100BG	16V 10U
C1405	ECEA0JKA101B	6.3V 100U
C1406	ECBT1E103ZF	25V 0.01U
C1407	ECA0JM471B	6.3V 470U
C1408	ECEA0JKA101B	6.3V 100U
C1409	ECBT1E103ZF	25V 0.01U
C1410-1412	ECBT1H102KB5	50V 1000P
C1413	ECBT1E103ZF	25V 0.01U
C1414	ECBT1H180JC5	50V 18P
C1415	ECA0JM471B	6.3V 470U
C1416, 1417	ECBT1H220JC5	50V 22P
C1418	ECBT1E103ZF	25V 0.01U
C1419	ECBT1H470J5	50V 47P
C1420	ECBT1E103ZF	25V 0.01U
C1421	ECEA0JKA101B	6.3V 100U
C1422	ECBT1E103ZF	25V 0.01U
C1423	ECEA0JKA101B	6.3V 100U
C1424	ECBT1H101KB5	50V 100P
C1425	ECBT1E103ZF	25V 0.01U
C1426-1428	ECBT1H101KB5	50V 100P
C1429	ECBT1C105ZF5	16V 1U
C1430, 1431	ECBT1H101KB5	50V 100P
C1448-1450	ECBT1E103ZF	25V 0.01U

■Replacement Parts List

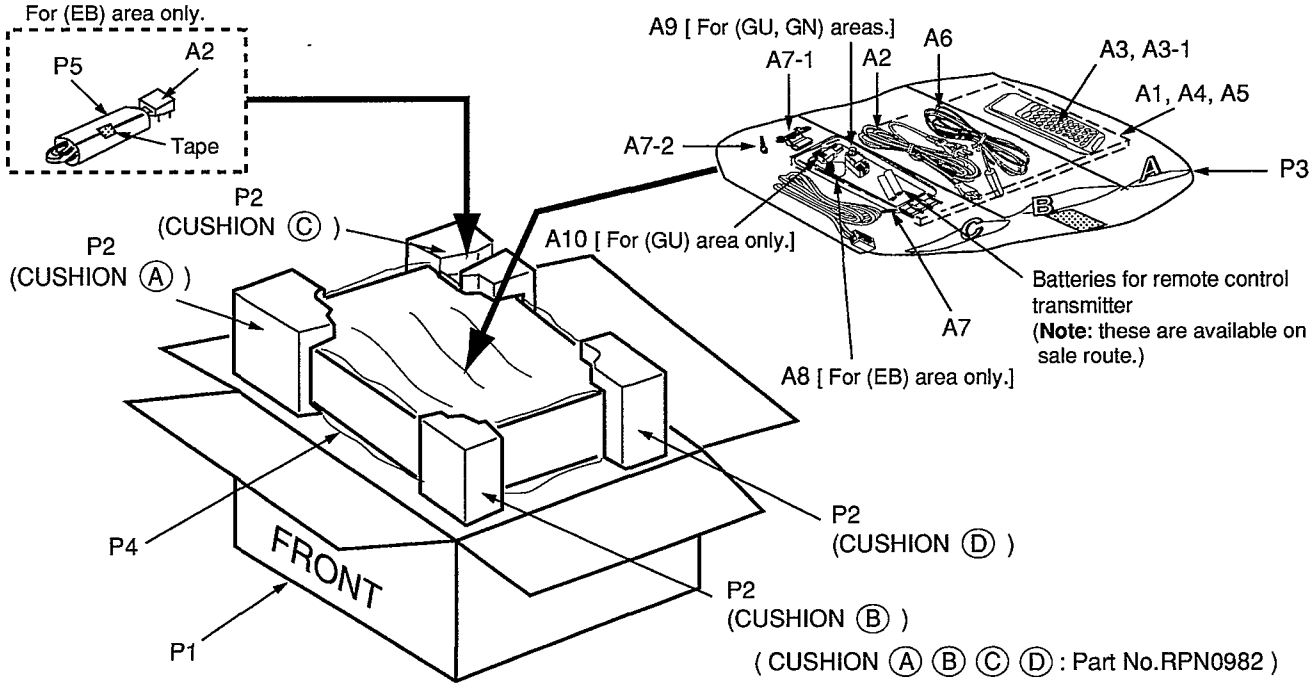
Notes: * Important safety notice:
Components identified by ⚠ mark have special characteristics important for safety.
Furthermore, special parts which have purposes of fire-retardant (resistors), high-quality sound (capacitors), low-noise (resistors), etc. are used.
When replacing any of components, be sure to use only manufacturer's specified parts shown in the parts list.
* 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.
* Remote Control Ass'y: Supply period for three years from termination of production.
* The "(SF)" mark denotes the standard part.

Ref. No.	Part No.	Part Name & Description	Remarks
		PACKING MATERIAL	
P1	RPG3160	PACKING CASE	
P2	RPN0982	CUSHION	
P3	RPF0139	PROTECTION BAG(F.B.)	
P4	SPP730	PROTECTION BAG(UNIT)	
P5	RPH0032	PROTECTION SHEET	(EB)
		ACCESSORIES	
A1	RQT3601-E	INSTRUCTION MANUAL	(E)<IA>
A1	RQT3602-D	INSTRUCTION MANUAL	(E, EG)<IB>
A1	RQT3603-B	INSTRUCTION MANUAL	(EB, GN)<IC>
A1	RQT3604-G	INSTRUCTION MANUAL	(GU)<ID>
A2	RJA0019-2K	AC POWER SUPPLY CORD	(E, EG, GU)⚠(SF)
A2	RJA0049-K	AC POWER SUPPLY CORD	(EB)⚠
A2	RJA0035-K	AC POWER SUPPLY CORD	(GN)⚠
A3	RAK-SA610WH	REMOTE CONTROL TRANSMITTER	
A3-1	RKK0020-K	BATTERY COVER	FOR R/C TRANSMITTER

Ref. No.	Part No.	Part Name & Description	Remarks
A4	RQA0117	WARRANTY CARD	(E, EB, EG)
A4	RQX7433ZA	WARRANTY CARD	(GN)
A5	RQCB0169	SERVICENTER LIST	
A6	RSA0007	FM INDOOR ANTENNA	
A7	RSA0010	AM LOOP ANTENNA SET	
A7-1	RMN0244	AM ANTENNA HOLDER	
A7-2	XTN3+12AFZ	SCREW	
A8	SJP9009	ATTACHMENT PLUG	(EB)⚠
A9	RFE0014	ANTENNA PLUG	(GU, GN)
A10	RFE0028	POWER PLUG ADAPTOR	(GU)⚠
		<GREASE OR JIG/TOOL>	
		GREASE	
SA1	RFKX0002	COMPOUND GREASE	
		EXTENSION CABLE	
SA2	RFKZ0013	EXTENSION CABLE ASS'Y	

Note: The " < IA > , < IB > , < IC > , < ID > " marks in Remarks indicate language of instruction manual.
[< IA > : English, Spanish, Dutch, Swedish < IC > : English
< IB > : German, Italian, French, Russian < ID > : English, Spanish, Chinese, Arabic]

■Packaging



Printed in Japan
H960711200 NH/HH

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