

Service  
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# Service Manual

**TABLE OF CONTENTS**

	Page
Location of PC Boards & Versions Variation .....	1-2
Specifications .....	1-3
Measurement Setup .....	1-4
Service Aids, Safety Instruction, etc .....	1-5 to 1-7
Connections & Functional Overview.....	1-8 to 1-11
Troubleshooting.....	1-12 to 1-13
Repair Instructions.....	2
Disassembly Instructions & Service positions .....	3
Set Block Diagram.....	4-1
Set Wiring Diagram .....	4-2
Control Board .....	5
Main Board .....	6
Tuner Board.....	7
Power Board.....	8
Mechanical Exploded View & Parts List .....	9



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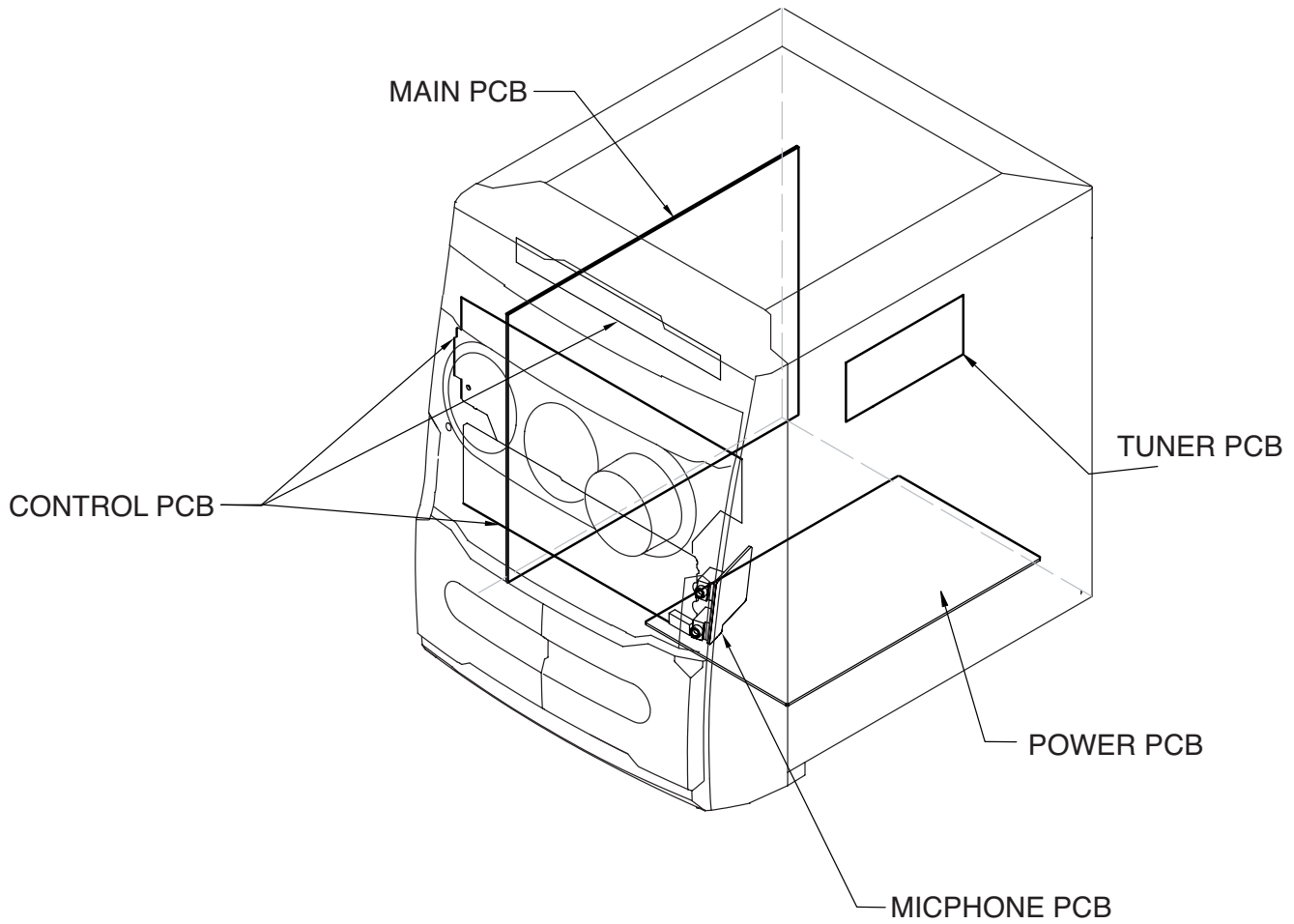


Version 1.0



# PHILIPS

## LOCATION OF PC BOARDS



## VERSION VARIATION:

Type /Versions Features&Board in used	FWD573	
	/98	/55
P-scan	X	X
Divx	X	X
Main board	X	X
Power board	X	X
Tuner board	X	X
Control board	X	X

## Specifications

---

### AMPLIFIER SECTION

Output power .....	3300 W PMPO
Stereo mode .....	2x125 W RMS
Frequency Response .....	150 Hz - 18 kHz / $\pm$ 3 dB
Signal-to-Noise Ratio .....	> 60dB (A-weighted)
Input Sensitivity	
AUX/TV In .....	500 mV
Output Sensitivity	
Headphone .....	1000 mV $\pm$ 2dB
Line Out....	450 mV – 550 mV

### TUNER SECTION

Tuning Range .....	FM 87.5 – 108 MHz ( 50 kHz steps)
.....	MW 531 – 1602 kHz (9 kHz steps)
.....	MW 530 – 1710 kHz (10 kHz steps)
Signal-to-Noise Ratio .....	FM $\geq$ 55 dB
.....	MW $\geq$ 35 dB

### TAPE SECTION

Frequency Response	
Normal tape (type 1) .....	80-12500 Hz
Signal-to-Noise Ratio	
Normal tape (type 1) .....	$\geq$ 45 dBA
Wow and flutter .....	$\leq$ 0.35% DIN

### DVD SECTION

Laser Type .....	Semiconductor
Disc Diameter .....	12cm / 8cm
Video Decoding .....	MPEG-2 / MPEG-1
Video DAC .....	10 Bits
Signal System .....	PAL / NTSC
Video Format .....	4:3 / 16:9
Video S/N .....	56 dB (minimum)
Composite Video Output .....	1.0 Vp-p, 75 W
S-Video Output.....	Y - 0.714 Vp-p, 75 W
.....	C - 0.286 Vp-p, 75 W
Audio DAC .....	24 Bits / 96 kHz
Frequency Response .....	4 Hz - 20 kHz (44.1kHz)
.....	4 Hz - 22 kHz (48kHz)
.....	4 Hz - 44 kHz (96kHz)

### MAIN UNIT

Power Supply Rating .....	110 - 127 / 220 - 240 V
.....	50/60HZ Switchable
Power Consumption	
Active .....	80 W
Standby .....	<10 W
Dimensions (w $\times$ d $\times$ h) .....	265 $\times$ 354 $\times$ 322 (mm)
Weight .....	5.4 kg
Packaging Dimensions (w $\times$ d $\times$ h) .....	
.....	524 x 611 x 420 (mm)
Gross weight .....	16.8Kg

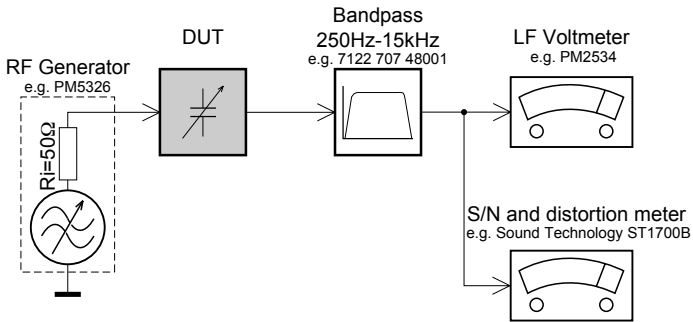
### SPEAKERS

Front speakers	
System .....	2-way, Bass reflex
Impedance .....	4 W
Speaker drivers .....	6.5" woofer,
.....	2" tweeter
Frequency response .....	50 Hz – 20 kHz
Dimensions (w $\times$ d $\times$ h) .....	
.....	242 $\times$ 240 $\times$ 310 (mm)
Weight .....	4.1kg/each

Specifications and external appearance are subject to change without notice.

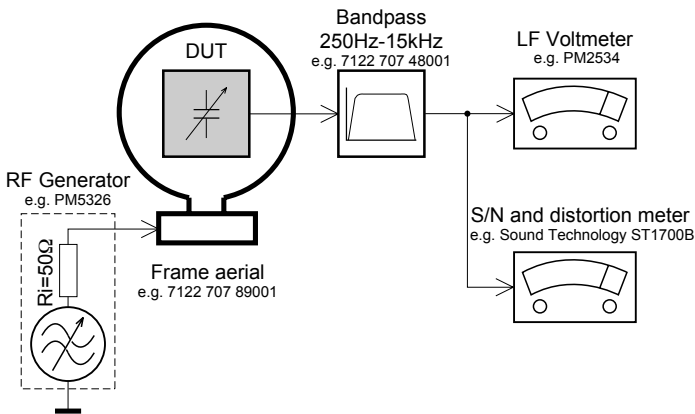
## MEASUREMENT SETUP

### Tuner FM



Use a bandpass filter to eliminate hum (50Hz, 100Hz) and disturbance from the pilotone (19kHz, 38kHz).

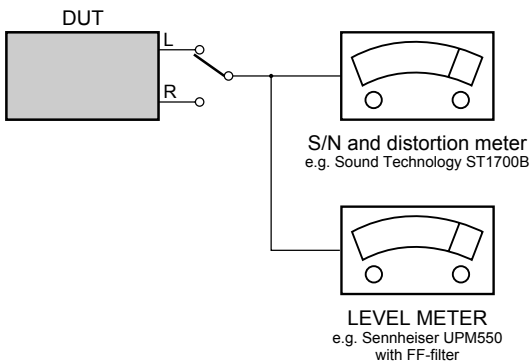
### Tuner AM (MW,LW)



To avoid atmospheric interference all AM-measurements have to be carried out in a Faraday's cage.  
Use a bandpass filter (or at least a high pass filter with 250Hz) to eliminate hum (50Hz, 100Hz).

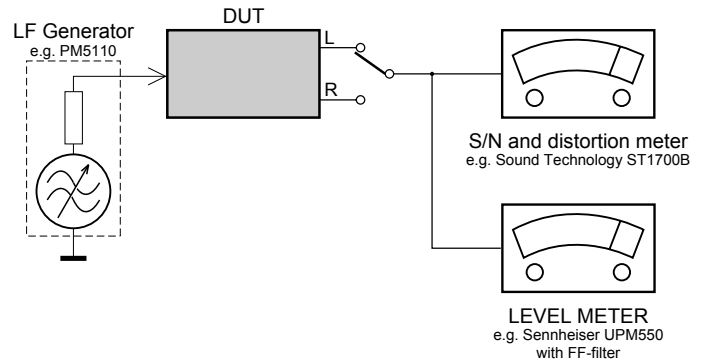
### CD

Use Audio Signal Disc SBC429 4822 397 30184  
(replaces test disc 3)



### Recorder

Use Universal Test Cassette **CrO2** SBC419 4822 397 30069  
or Universal Test Cassette **Fe** SBC420 4822 397 30071



## SERVICE AIDS

### Service Tools:

Universal Torx driver holder .....	4822 395 91019
Torx bit T10 150mm .....	4822 395 50456
Torx driver set T6 - T20 .....	4822 395 50145
Torx driver T10 extended .....	4822 395 50423

### Cassette:

SBC419 Test cassette CrO2 .....	4822 397 30069
SBC420 Test cassette Fe .....	4822 397 30071
MTT150 Dolby level 200nWb/M .....	4822 397 30271

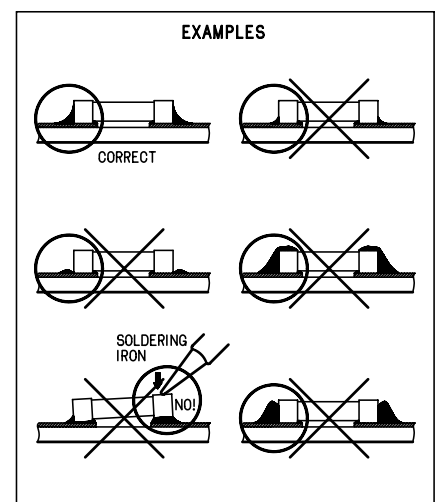
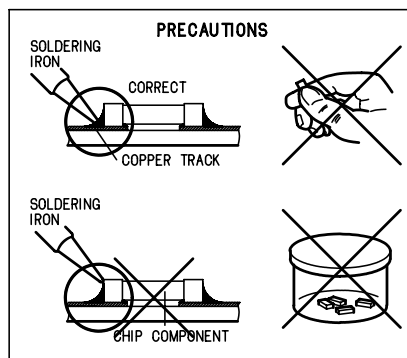
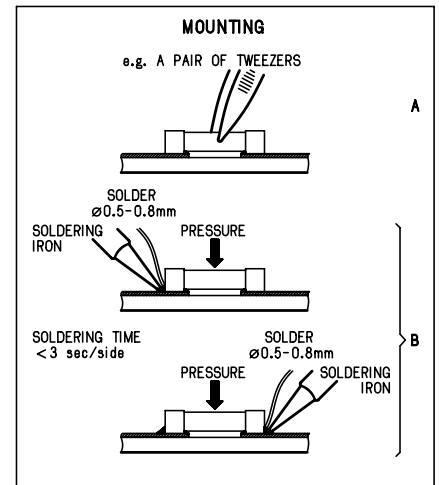
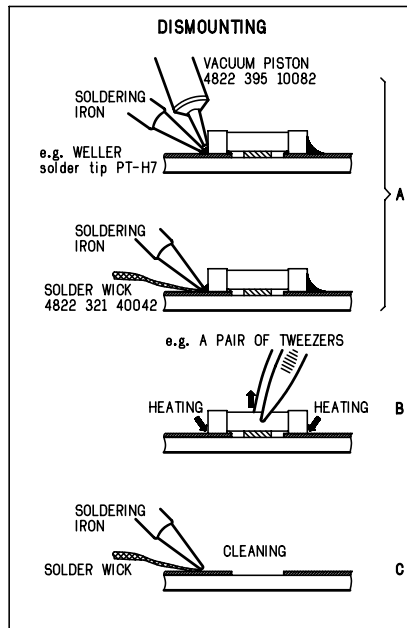
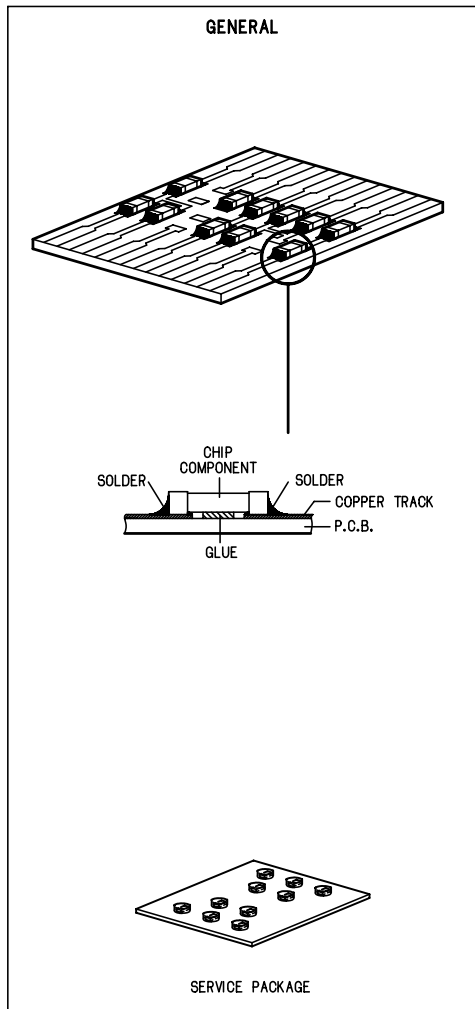
### Compact Disc:

SBC426/426A Test disc 5 + 5A .....	4822 397 30096
SBC442 Audio Burn-in Test disc 1kHz .....	4822 397 30155
SBC429 Audio Signals disc .....	4822 397 30184
Dolby Pro-logic Test Disc .....	4822 395 10216

### ESD Equipment:

Anti-static table mat - large 1200x650x1.25mm ...	4822 466 10953
Anti-static table mat - small 600x650x1.25mm .....	4822 466 10958
Anti-static wristband .....	4822 395 10223
Connector box (1MΩ) .....	4822 320 11307
Extension cable (to connect wristband to conn. box) .....	4822 320 11305
Connecting cable (to connect table mat to conn. box) .....	4822 320 11306
Earth cable (to connect product to mat or box) ....	4822 320 11308
Complete kit ESD3 (combining all above products) .....	4822 320 10671
Wristband tester .....	4822 344 13999

## HANDLING CHIP COMPONENTS



**GB WARNING**

All ICs and many other semi-conductors are susceptible to electrostatic discharges (ESD). Careless handling during repair can reduce life drastically.

When repairing, make sure that you are connected with the same potential as the mass of the set via a wrist wrap with resistance.

Keep components and tools also at this potential.

**ESD****NL WAARSCHUWING**

Alle IC's en vele andere halfgeleiders zijn gevoelig voor electrostatische ontladingen (ESD).

Onzorgvuldig behandelen tijdens reparatie kan de levensduur drastisch doen verminderen. Zorg ervoor dat u tijdens reparatie via een polsband met weerstand verbonden bent met hetzelfde potentiaal als de massa van het apparaat.

Houd componenten en hulpmiddelen ook op ditzelfde potentiaal.

**F ATTENTION**

Tous les IC et beaucoup d'autres semi-conducteurs sont sensibles aux décharges statiques (ESD).

Leur longévité pourrait être considérablement écourtée par le fait qu'aucune précaution n'est prise à leur manipulation.

Lors de réparations, s'assurer de bien être relié au même potentiel que la masse de l'appareil et enfiler le bracelet serti d'une résistance de sécurité.

Veiller à ce que les composants ainsi que les outils que l'on utilise soient également à ce potentiel.

**D WARNUNG**

Alle ICs und viele andere Halbleiter sind empfindlich gegenüber elektrostatischen Entladungen (ESD).

Unvorsichtige Behandlung im Reparaturfall kann die Lebensdauer drastisch reduzieren.

Veranlassen Sie, dass Sie im Reparaturfall über ein Pulsarmband mit Widerstand verbunden sind mit dem gleichen Potential wie die Masse des Gerätes.

Bauteile und Hilfsmittel auch auf dieses gleiche Potential halten.

**I AVVERTIMENTO**

Tutti IC e parecchi semi-conduttori sono sensibili alle scariche statiche (ESD).

La loro longevità potrebbe essere fortemente ridatta in caso di non osservazione della più grande cauzione alla loro manipolazione.

Durante le riparazioni occorre quindi essere collegato allo stesso potenziale che quello della massa dell'apparecchio tramite un bracciale a resistenza.

Assicurarsi che i componenti e anche gli utensili con quali si lavora siano anche a questo potenziale.

**GB**

Safety regulations require that the set be restored to its original condition and that parts which are identical with those specified, be used

Safety components are marked by the symbol  $\triangle$ .

**NL**

Veiligheidsbepalingen vereisen, dat het apparaat bij reparatie in zijn oorspronkelijke toestand wordt teruggebracht en dat onderdelen, identiek aan de gespecificeerde, worden toegepast.

De Veiligheidsonderdelen zijn aangeduid met het symbool  $\triangle$

**F**

Les normes de sécurité exigent que l'appareil soit remis à l'état d'origine et que soient utilisées les pièces de rechange identiques à celles spécifiées.

Les composants de sécurité sont marqués  $\triangle$

**D**

Bei jeder Reparatur sind die geltenden Sicherheitsvorschriften zu beachten. Der Originalzustand des Geräts darf nicht verändert werden; für Reparaturen sind Original-Ersatzteile zu verwenden.

Sicherheitsbauteile sind durch das Symbol  $\triangle$  markiert.

**I**

Le norme di sicurezza esigono che l'apparecchio venga rimesso nelle condizioni originali e che siano utilizzati i pezzi di ricambio identici a quelli specificati.

Componenti di sicurezza sono marcati con  $\triangle$

**GB**

After servicing and before returning set to customer perform a leakage current measurement test from all exposed metal parts to earth ground to assure no shock hazard exist. The leakage current must not exceed 0.5mA.

**GB Warning !**

Invisible laser radiation when open.  
Avoid direct exposure to beam.

**S Varning !**

Osynlig laserstrålning när apparaten är öppnad och spärren är urkopplad. Betrakta ej strålen.

**SF Varoitus !**

Avatussa laitteessa ja suojalukituksen ohitettaessa olet alttiina näkymättömälle laserisäteilylle. Älä katso säteeseen!

**DK Advarse !**

Usynlig laserstråling ved åbning når sikkerhedsafbrydere er ude af funktion. Undgå udsættelse for stråling.

**F**

"Pour votre sécurité, ces documents doivent être utilisés par des spécialistes agréés, seuls habilités à réparer votre appareil en panne".

## INFORMATION ABOUT LEAD-FREE SOLDERING

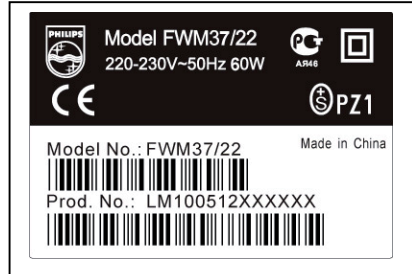
Philips CE is producing lead-free sets from 1.1.2005 onwards.

### IDENTIFICATION:

Regardless of special logo (not always indicated) one must treat all sets from 1 Jan 2005 onwards, according next rules:



### Example S/N:



Bottom line of typeplate gives a 14-digit S/N. Digit 5&6 is the year, digit 7&8 is the week number, so in this case 2005 wk12

So from 0501 onwards = from 1 Jan 2005 onwards

***Important note: In fact also products of year 2004 must be treated in this way as long as you avoid mixing solder-alloys (leaded/ lead-free). So best to always use SAC305 and the higher temperatures belong to this.***

Due to lead-free technology some rules have to be respected by the workshop during a repair:

- Use only lead-free solder alloy Philips SAC305 with order code 0622 149 00106. If lead-free solder-paste is required, please contact the manufacturer of your solder-equipment. In general use of solder-paste within workshops should be avoided because paste is not easy to store and to handle.
- Use only adequate solder tools applicable for lead-free solder alloy. The solder tool must be able
  - To reach at least a solder-temperature of 400°C,
  - To stabilize the adjusted temperature at the solder-tip
  - To exchange solder-tips for different applications.
- Adjust your solder tool so that a temperature around 360°C – 380°C is reached and stabilized at the solder joint. Heating-time of the solder-joint should not exceed ~ 4 sec. Avoid temperatures above 400°C otherwise wear-out of tips will rise drastically and flux-fluid will be destroyed. To avoid wear-out of tips switch off un-used equipment, or reduce heat.
- Mix of lead-free solder alloy / parts with leaded solder alloy / parts is possible but PHILIPS recommends strongly to avoid mixed solder alloy types (leaded and lead-free).  
If one cannot avoid or does not know whether product is lead-free, clean carefully the solder-joint from old solder alloy and re-solder with new solder alloy (SAC305).
- Use only original spare-parts listed in the Service-Manuals. Not listed standard-material (commodities) has to be purchased at external companies.
- **Special information for BGA-ICs:**
  - always use the 12nc-recognizable soldering temperature profile of the specific BGA (for de-soldering always use the lead-free temperature profile, in case of doubt)
  - lead free BGA-ICs will be delivered in so-called 'dry-packaging' (sealed pack including a silica gel pack) to protect the IC against moisture. After opening, dependent of MSL-level seen on indicator-label in the bag, the BGA-IC possibly still has to be baked dry. (MSL=Moisture Sensitivity Level). This will be communicated via AYS-website. Do not re-use BGAs at all.
- For sets produced before 1.1.2005 (except products of 2004), containing leaded solder-alloy and components, all needed spare-parts will be available till the end of the service-period. For repair of such sets nothing changes.
- On our website [www.atyourservice.ce.Philips.com](http://www.atyourservice.ce.Philips.com) you find more information to:
  - \* BGA-de-/soldering (+ baking instructions)
  - \* Heating-profiles of BGAs and other ICs used in Philips-sets

You will find this and more technical information within the "magazine", chapter "workshop news".

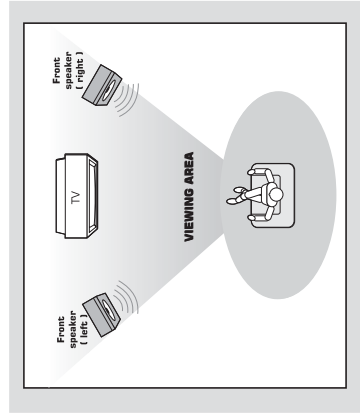
For additional questions please contact your local repair-helpdesk.

## SERVICE INSTRUCTION

Safety regulations require that after a repair, the set must be returned in its original condition. Pay in particular attention to the following points:

- Route the wire trees correctly and fix them with the mounted cable clamps.
- Check the insulation of the AC Power lead for external damage.
- Check the strain relief of the AC Power cord for proper function.
- Check the electrical DC resistance between the AC Power Plug and the secondary side (only for sets which have a AC Power isolated power supply):
  1. Unplug the AC Power cord and connect a wire between the two pins of the AC Power plug.
  2. Set the AC Power switch to the "on" position (keep the AC Power cord unplugged!).
  3. Measure the resistance value between the pins of the AC Power plug and the metal shielding of the tuner or the aerial connection on the set. The reading should be larger than 4.5 Mohm (For U.S. it should be between 4.2 Mohm and 12 Mohm).
  4. Switch "off" the set, and remove the wire between the two pins of the AC Power plug.
- Check the cabinet for defects, to avoid touching of any inner parts by the customer.

## Step 1: Placing speakers

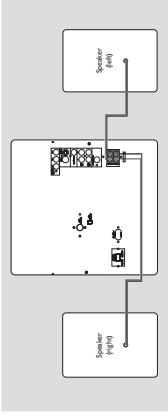


Place the front left and right speakers at equal distances from the TV set and at an angle of approximately 45 degrees from the listening position.

**Notes:**

- To avoid magnetic interference, do not position the front speakers too close to your TV set.
- Allow adequate ventilation around the DVD Mini Hi-Fi System.

## Step 2: Connecting speakers



Connect the speaker wires to the SPEAKERS (FRONT) terminals, right speaker to "R" and left speaker to "L", coloured (marked) wire to "+" and black (unmarked) wire to "-". Fully insert the stripped portion of the speaker wire into the terminal as shown.

Speakers	Black	White
Front Left (L)	Black	White
Front Right (R)	Black	Red

**Notes:**

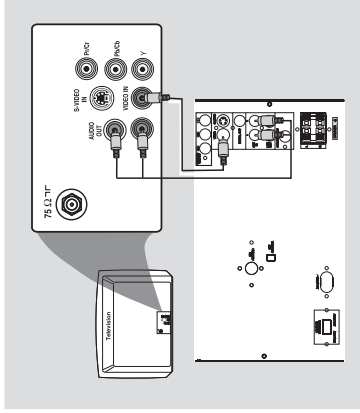
- For optimal sound performance, use the supplied speakers.
- Do not connect more than one speaker to any one pair of +/- speaker terminals.
- Do not connect speakers with an impedance lower than the speakers supplied. Please refer to the SPECIFICATIONS section of this manual.

**IMPORTANT!**

The type plate is located on the rear of the system.

To avoid overheating of the system, a safety circuit has been built in. Therefore, your system may switch to Standby mode automatically under extreme conditions. If this happens, let the system cool down before reusing it.

## Step 3: Connecting TV set



**IMPORTANT!**

- You only need to make one video connection from the following options, according to the capabilities of your TV system.
  - S-Video or Component Video connection provides higher picture quality. These options must be available on your TV set.
  - Connect the system directly to the TV set.

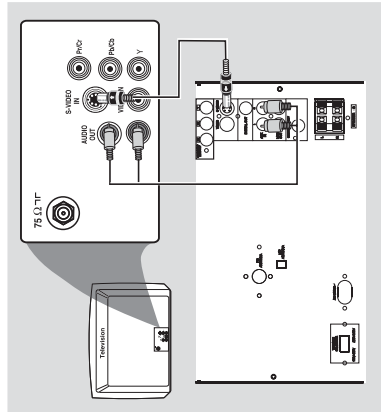
**Using Video In jack (CVBS)**

- Use the composite video cable (yellow) to connect the system's VIDEO jack to the video input jack (or labeled as A/V In, Video In, Composite or Baseband) on the TV set.
- To listen to TV channels through this system, use the audio cables (white/red) to connect **AUX IN (L/R)** jacks to the corresponding AUDIO OUT jacks on the TV set.
- Deactivate Progressive Scan through SYSTEM MENU. Refer to Using the Setup Menu / Using Progressive Scan to improve image quality.

**Using component Video In jack (Pr Pb Y)**

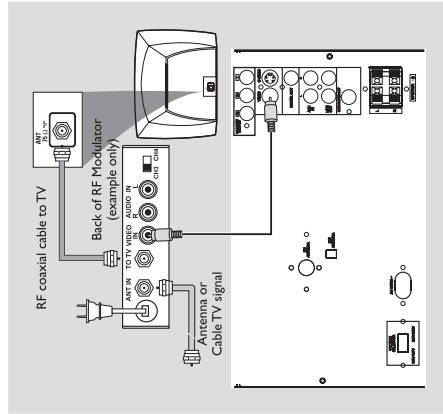
- Use the component video cables (red/blue/green) to connect the system's **Pr Pb Y** jacks to the corresponding Component video input jacks (or labeled as Pr/Cr Pb/Cb Y or YUV) on the TV set.
- To listen to TV channels through this system, use the audio cables (white/red) to connect **AUX IN** jacks to the corresponding AUDIO OUT jacks on the TV set.
- If you are using a Progressive Scan TV set (TV with Progressive Scan or ProScan capability), activate the **PROGRESSIVE SCAN** function through SYSTEM MENU.





### Using S-Video In Jack

- Use the S-Video cable (not supplied) to connect the system's **S-VIDEO** jack to the S-Video input jack (or labeled as Y/C or S-VHS) on the TV set.
- To listen to TV channels through this system, use the audio cables (white/red) to connect **AUX IN** jacks to the corresponding **AUDIO OUT** jacks on the TV set.
- Deactivate Progressive Scan through **SYSTEM MENU**. Refer to Using the Setup Menu' Using Progressive Scan to improve image quality.



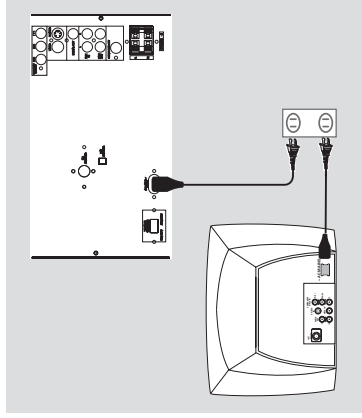
### IMPORTANT!

- If your TV set only has a single Antenna In jack (or labeled as 75 ohm or RF In), you will need a RF modulator in order to view the DVD playback via TV. See your electronics retailer or contact Philips for details on RF modulator availability and operations.

### Using an accessory RF modulator

- Use the composite cable (yellow) to connect the system's **VIDEO** jack to the video input jack on the RF modulator.
- Use the RF coaxial cable (not supplied) to connect the RF modulator to your TV's RF jack.
- Deactivate Progressive Scan through **SYSTEM MENU**. See "Using the Setup Menu' Using Progressive Scan to improve image quality".

### Step 5: Connecting the power cord

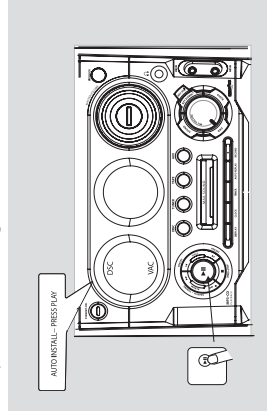


**After everything is connected properly, plug in the AC power cord to the power outlet.**

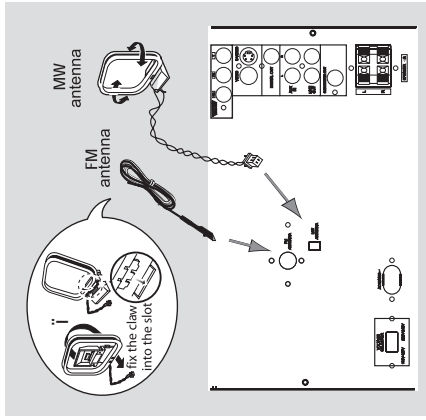
Never make or change any connection with the power switched on.

### On the DVD Mini Hi-Fi System

"AUTO INSTALL-PRESS PLAY" may appear on the display panel. Press 2; on the front panel to search and store all available radio stations or press ■ to exit (See "Tuner Operations' Presetting radio stations"). If your system is equipped with a Voltage Selector, set the **VOLTAGE SELECTOR** to the local power line voltage.



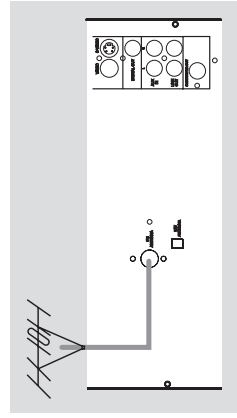
### Step 4: Connecting FM/MW antennas



● Connect the supplied MW loop antenna to the **MW** jack. Place the MW loop antenna on a shelf or attach it to a stand or wall.

● Connect the supplied FM antenna to the **FM** jack. Extend the FM antenna and fix its end to the wall.

For better FM stereo reception, connect an outdoor FM antenna to the **FM ANTENNA** terminal.



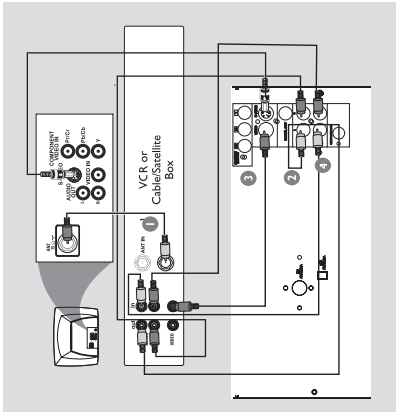
### Notes:

- Adjust the position of the antennas for optimal reception.
- Position the antennas as far as possible from your TV set, VCR or other radiation sources to prevent unwanted interference.

# CONNECTIONS

## Connections

### Step 6: Connecting a VCR or cable/satellite box



#### Viewing and listening to playback

- 1 Connect the VCR or Cable/Satellite Box to the TV system as shown.
- 2 Connect the system's AUX IN jacks to the AUDIO OUT jacks on the VCR or Cable/Satellite box.

Before starting operation, press **AUX** on the remote control to select "AUX" in order to activate the input source.

#### Using the VCR for recording DVDs

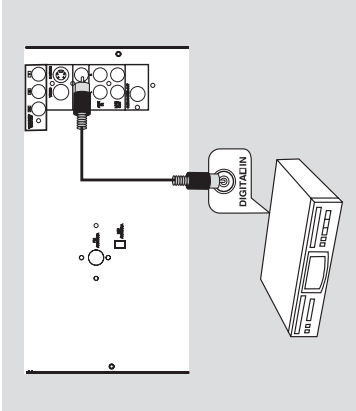
Some DVDs are copy protected. You cannot record or dub protected discs using a VCR.

- 3 Connect the system's **VIDEO** jack to the VIDEO IN jack on the VCR.
- 4 Connect the system's **LINE OUT (R/L)** jacks to the AUDIO IN jacks on the VCR. This will allow you to make analog stereo (two channel, right and left) recording.

#### To view DVD playback while recording

You must connect the system to your TV system using the S VIDEO (as shown above) or the Component (Pr Pb Y) video connection.

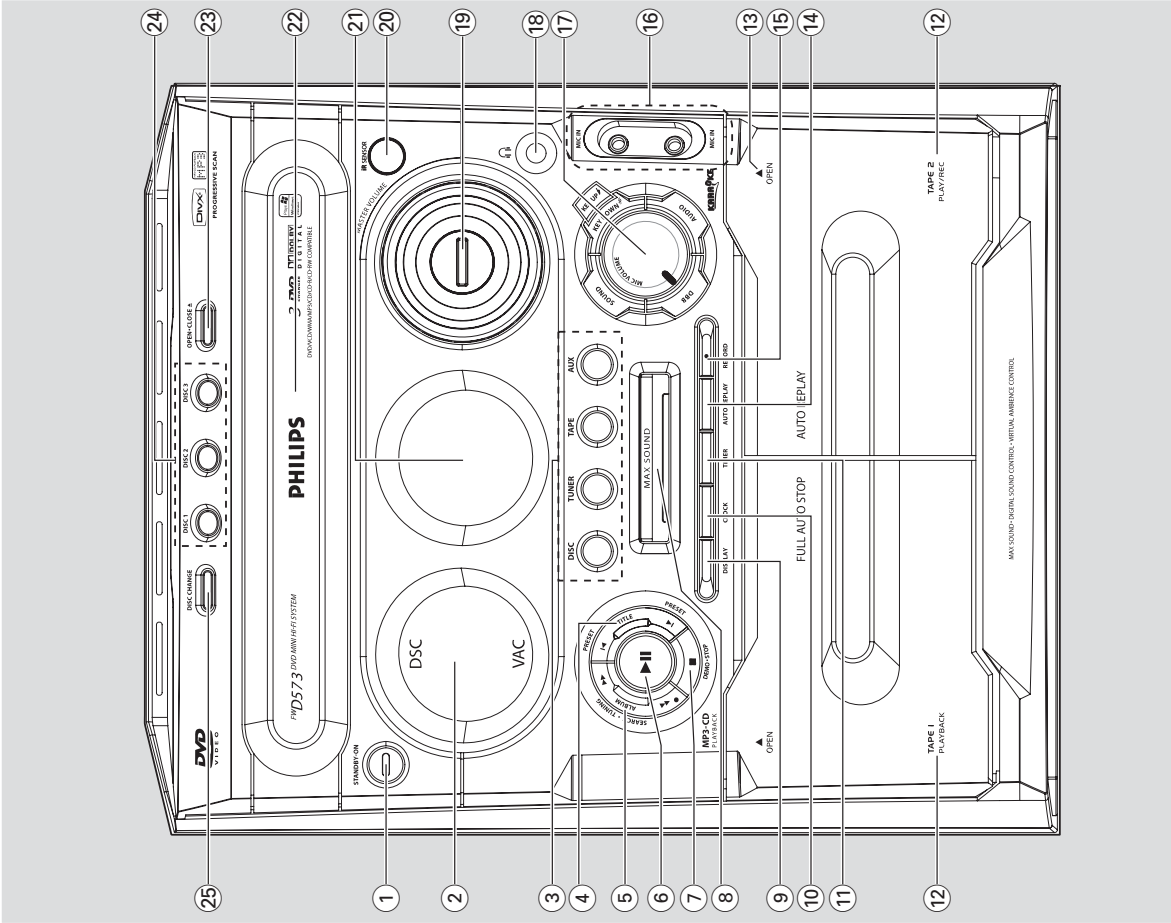
### Step 7: Connecting digital audio equipment



#### Recording (digital)

Connect the system's DIGITAL OUT jack to the DIGITAL IN jack on a digital recording device (DTS' Digital Theater System compatible, with a Dolby Digital decoder; for example).

Before operation, set the DIGITAL OUTPUT according to the audio connection. (See Using the Setup Menu — Setting the digital output).



# FUNCTIONAL OVERVIEW

## Functional Overview

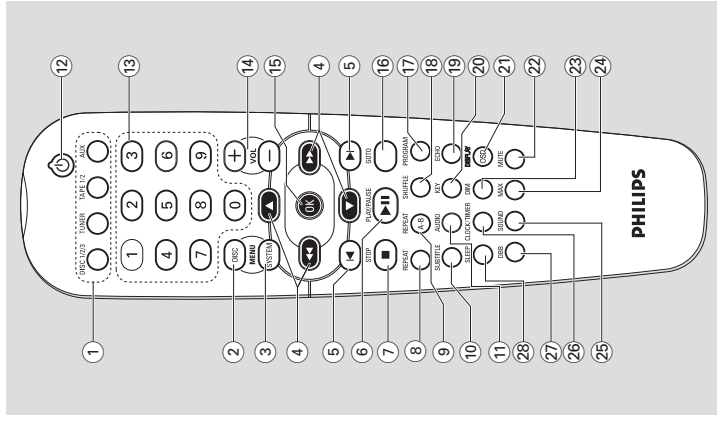
### Controls on the system

- ① **STANDBY ON**  
to switch the system on or to Standby mode.
- ② **DISPLAY SCREEN**  
to view the current status of the system.
- ③ **SOURCE**  
to select the following:  
**DISC**  
to select disc tray 1, 2 or 3  
**TUNER**  
to select waveband: FM or MW.  
**TAPE**  
to select tape deck 1 or 2.  
**AUX**  
to select a connected external source: TV/ AUX (auxiliary) mode.
- ④ **PREV / PRESET / NEXT** ◀ ◀ ▶ ▶  
**(TITLE - / +)**  
for DISC ..... to select previous/next title, chapter or track during playback.  
for TUNER ..... to select a preset radio station.  
for CLOCK ..... to set the hour.
- ⑤ **SEARCH•TUNING** ◀◀ / ▶▶  
**(ALBUM - / +)**  
for DISC ..... press and hold to search backward/forward.  
to select previous/next album in MP3/WMA stop mode (with MENU ON).  
for TAPE ..... to rewind or fast forward.  
for TUNER ..... to tune to a lower or higher radio frequency  
for CLOCK ..... to set the minute.
- ⑥ **▶▶ (PLAY/PAUSE)**  
for DISC ..... to start or interrupt playback.  
for TAPE ..... to start playback.  
for PLUG&PLAY ... (on the system only) to initiate plug & play mode.
- ⑦ **DEMO.STOP** ■  
for DISC ..... to stop playback or to clear a programme.  
for DEMO ..... (in Standby mode) to activate/deactivate demonstration.  
for PLUG&PLAY .. (on the system only) to exit plug&play mode.  
for TAPE ..... to stop playback.

- ⑧ **MAX SOUND**  
to activate or deactivate MAX sound.
- ⑨ **DISPLAY**  
to display disc information during disc playback.
- ⑩ **CLOCK**  
to view or to set clock.
- ⑪ **TIMER**  
to view or to set timer.
- ⑫ **TAPE DECK 1/2**  
**▲ OPEN**  
to open the tape deck door.
- ⑭ **AUTO REPLAY**  
to select continuous playback in either AUTO PLAY or ONCE mode only.
- ⑮ **RECORD**  
to start recording on tape deck 2.
- ⑯ **MIC IN**  
to connect microphone jack.
- ⑰ **SOUND**  
\* to select various sound effect.  
**DBB**  
\* to select the desired DBB level.  
**AUDIO**  
\* to select the preferred language for audio  
\* to select AUDIO channel in karaoke mode.
- KEY DOWN**  
\* to change down the tone level of vocal range.
- KEY UP**  
\* to change up the tone level of vocal range.
- MICVOL**  
to adjust the mixing level for karaoke or microphone recording.
- ⑱ **🎧**  
to connect headphones.
- ⑲ **VOLUME**  
to increase or decrease the volume.
- ⑳ **SENSOR**  
point the remote control towards this sensor.
- ㉑ **INTERACTIVE VU METER**  
to show the VU (volume unit) meter in music or volume mode depending on the display mode selected.
- ㉒ **DISC TRAYS**
- ㉓ **OPEN•CLOSE**  
to open or close the disc tray.
- ㉔ **DISC1/ DISC2/ DISC3**  
to select a disc tray for playback.
- ㉕ **DISC CHANGE**  
to change disc(s).

## Functional Overview

### Remote control



- ④ **◀◀ / ▶▶ / ▲ / ▼**  
to select movement direction in disc contents menu/system menu bar.  
in tuner mode, to tune to lower or higher radio frequency. (◀◀ / ▶▶ •• in Disc mode, press to fast reverse/forward the disc.
- ⑤ **◀ / ▶**  
in Disc mode, press to skip to the previous/next chapter/track.  
in Tuner mode, to select a preset radio station number
- ⑥ **PLAY/PAUSE ▶▶||**  
to start or interrupt disc playback.  
to resume playback from last stop point.
- ⑦ **STOP ■**  
to stop playing the disc.
- ⑧ **REPEAT**  
to select variations of continuous playback.
- ⑨ **REPEAT A-B**  
to repeat a specific section on a disc.
- ⑩ **SUBTITLE**  
to select desired subtitle.
- ⑪ **AUDIO**  
to select the audio channel.
- ⑫ **POWER ⏻**  
to switch to standby mode.
- ⑬ **Numeric Keypad (0-9)**  
to enter a track/title number of the disc.  
to enter a number of preset radio stations.
- ⑭ **VOL +/-**  
adjust the volume level.  
adjust key control/ ECHO level in karaoke mode.
- ⑮ **OK**  
to exit or confirm the selection.
- ⑯ **GOTO**  
to go direct to desired title, chapter or time.
- ⑰ **PROGRAM**  
in Disc mode, to program favorite tracks.  
in Tuner mode, to program favorite stations.
- ⑱ **SHUFFLE**  
to playback in random mode.

### Notes:

- First, select the source you wish to control by pressing one of the source select keys on the remote control (DISC or TUNER, for example).
- Then select the desired function (▶▶, ◀◀ or ▶ for example).

### ① SOURCE

- to select the relevant active mode: DISC1/2/3, TUNER, TAPE1/2 or AUX.

### ② DISC MENU (disc mode only)

- to enter or exit the disc contents menu.

### ③ SYSTEM MENU (disc mode only)

- to enter or exit the system menu bar.

# FUNCTIONAL OVERVIEW

## Functional Overview

---

- ⑲ **ECHO**
  - to adjust the echo level in karaoke mode.
- ⑳ **KEY**
  - to change the tone level to suit your vocal range.
- ㉑ **DISPLAY (OSD)**
  - to view the time, title or chapter information.
- ㉒ **MUTE**
  - to interrupt or resume sound reproduction.
- ㉓ **DIM**
  - to select different brightness for VFD.
- ㉔ **MAX**
  - To activate or deactivate MAX sound.
- ㉕ **SOUND**
  - to select various sound effect.
- ㉖ **CLOCK/TIMER**
  - to view and set clock/ timer.
- ㉗ **DBB (Dynamic Bass Boost)**
  - to select the desired DBB level (DBB 1, DBB 2, DBB3 or DBB OFF).
- ㉘ **SLEEP**
  - to set the sleep (auto' off) timer function.

# TROUBLESHOOTING

## Troubleshooting

### WARNING

Under no circumstances should you try to repair the system yourself, as this will invalidate the warranty. Do not open the system as there is a risk of electric shock.

If a fault occurs, first check the points listed below before taking the system for repair. If you are unable to remedy a problem by following these hints, consult your dealer or Philips for help.

Problem	Solution
<b>No power.</b>	<ul style="list-style-type: none"> <li>✓ Check if the AC power cord is properly connected.</li> <li>✓ Check if the disc is inserted upside down.</li> <li>✓ Wait until the moisture condensed at the lens has cleared.</li> <li>✓ Replace or clean the disc, see "Maintenance".</li> <li>✓ Use a readable disc or correctly recorded format MP3-CD.</li> </ul>
<b>No picture.</b>	<ul style="list-style-type: none"> <li>✓ Select the appropriate video input mode on the TV set.</li> <li>✓ Check if the TV set is switched on.</li> <li>✓ Check the video connection.</li> <li>✓ Check if the system is securely connected.</li> <li>✓ Sometimes a slight picture distortion may appear. This is not a malfunction.</li> <li>✓ Clean the disc.</li> <li>✓ Connect the system to the S-video input of your TV set.</li> </ul>
<b>Distorted or poor picture.</b>	<ul style="list-style-type: none"> <li>✓ The aspect ratio is fixed on the DVD disc.</li> <li>✓ The aspect ratio may not be changed for some TV systems.</li> <li>✓ Insert a readable disc.</li> <li>✓ Check the disc type, color system and region code.</li> <li>✓ Clean the disc.</li> <li>✓ Place the disc with the playback side down.</li> <li>✓ Press SYSTEM MENU to turn off the setup menu.</li> <li>✓ Cancel the parental control rating function or change the rating level.</li> <li>✓ Moisture has condensed inside the system.</li> <li>✓ Remove the disc and leave the system turned on for about an hour.</li> <li>✓ Disconnect the power plug from the jack and insert again.</li> </ul>
<b>The aspect ratio of the screen cannot be changed even though you have set the TV shape.</b>	
<b>The DVD player does not start playback.</b>	
<b>The system does not respond when the buttons are pressed.</b>	

Problem	Solution
<b>The language for the sound or subtitle cannot be changed when playing a DVD.</b>	<ul style="list-style-type: none"> <li>✓ Multi-language sound or subtitle is not recorded on the DVD.</li> <li>✓ Changing the language for the sound or subtitle is prohibited on the DVD.</li> <li>✓ Make sure the component is connected correctly.</li> <li>✓ Press the correct function button for the input source.</li> <li>✓ Adjust the volume.</li> <li>✓ Disconnect the headphones.</li> <li>✓ Check that the speakers are connected correctly.</li> <li>✓ Check if the stripped speaker wire is clamped.</li> <li>✓ If the system is in pause, slow motion or fast forward/reverse mode, press <b>▶  </b> to resume the normal play mode.</li> <li>✓ Make sure the MP3-CD was recorded within 32-256 kbps bit rate with sampling frequencies at 48 kHz, 44.1 kHz or 32 kHz.</li> <li>✓ If the signal is too weak, adjust the antenna or connect an external antenna for better reception.</li> <li>✓ Increase the distance between the System and your TV set or VCR.</li> <li>✓ Clean deck parts, see "Maintenance".</li> <li>✓ Use only NORMAL tape.</li> <li>✓ Apply a piece of adhesive tape over the missing tab space.</li> <li>✓ Remove and reconnect the AC power plug and switch on the system again.</li> </ul>
<b>No image is output when a function is selected.</b>	
<b>Sound cannot be heard or is of poor quality</b>	
<b>Poor radio reception.</b>	
<b>Recording or playback cannot be made</b>	
<b>The tape deck door cannot open</b>	
<b>Left and right sound outputs are reversed.</b>	
<b>The remote control does not function.</b>	
<b>The display is dark</b>	
<b>The timer is not working</b>	
<b>The Clock/Timer setting is erased</b>	

## System, Region code, Tuner, etc. setting procedure

### 1) System Reset

- Press "SYSTEM" button on R/C. TV show "SETUP"
- Select the menu using the "▼" and "▶" button on R/C
- Go feature setup page to do system reset

### 2) Region Code Change

After replacement / repair of the MPEG board, the customer setting and the region code may lost. Changing the Region code will put the player back in the state which it has left the factory.

#### Region Code

1	USA
2	EU
3	AP
4	Australia, NZ, Latam
5	RUSSIA, INDIA
6	CHINA

#### TV System

1	NTSC
2	PAL
3	AUTO

#### Menu/ Audio Subtitle (AS) Language

1	English
2	English
3	English
4	English

#### AFS

001	LX3000D/LX3500D /MRD200
002	MX3600D/MX3800
003	LX3700D/LX3750W
005	MRD210
006	MX3660D
008	FWD573/FWD792/FWD798

#### oem derivative

08

- region code = 1 digit
- tv system = 1 digit
- "as/menu lang" = 1 digit
- "AFS" = "architecture Feature Set" = 3 digits

This field is used to define the architecture / features sets for each product.

- "oem derivative" = 2 digit

This field is use to define the OEM set. This will affect the background display.

Hence in total, reprogramming will be done by way of the remote control. It should run as below :-

- Put the player in stop mode. No disc loaded.
- Press the following key on remote control:

For FW-D573/98 (A/P) :

<PLAY> <159> <331> <008> <08> <PLAY>

\* After the Region Code is changed it is necessary to reset the system so that the new Region Code will be fully effective. All customer setting will be lost.

\* On top of the maximum number of times allowed for changing the region code is changed to 25.

\* When the counter reach 25, you will not be able to further change the code until you reset the timer by the Region Code timer reset procedure

## CAUTION !

**This information is confidential and may not be distributed. Only a qualified service person should reprogram the Region Code.**

### 3) Region code change timer reset

Press below key to reset the timer :

- In DISC source, stop mode and no disc in tray.
- Press R/C "Play -159-PLAY" to reset timer to 25

### 4) Tuner area change

- Press the "OPEN/CLOSE" button to open the set's door
- Press "1" "5" "9" button by using R/C.
- TV Show "TUNER AREA"
- Select the tuner area you want by using the "▼" and "▶" button on R/C, then press "OK" to confirm. TV show " TUNER AREA CHANGED"

If you didn't press it in five seconds, the system will remain original status.

AREA	BAND	FREQUENCY (Hz)		STEP(Hz)
A/P (/98)	FM	87.5M	108M	50K
	MW	531K	1602K	9K
		530K	1710K	10K

Note :-

Please refer to the above different tuner area.

### 5. Video Out Change

- Press "SYSTEM" on R/C button
- Select the menu using the "▼" and "▶" button on R/C
- Go picture setup page select Video out item.

### 6. Password Change

- Press "SYSTEM" on R/C button
  - Select the menu using the "▼" and "▶" button on R/C
  - Go feature setup page select "PASSWORD". TV show "ENTER CODE". Press 4 times of "STOP" button on R/C.
  - Select "PARENTAL" "8 ADULT" on TV.
  - Enter PASSWORD to "1234".
- \* "1234" is a default password supplied.

### 7. Checking on the Software version

- Open the CD door.
- Press "123" and "OK" on the remote control.
- TV will show the version on screen.

### 8. Upgrading new software

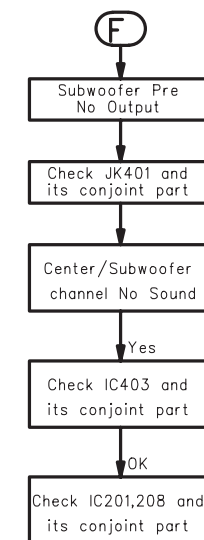
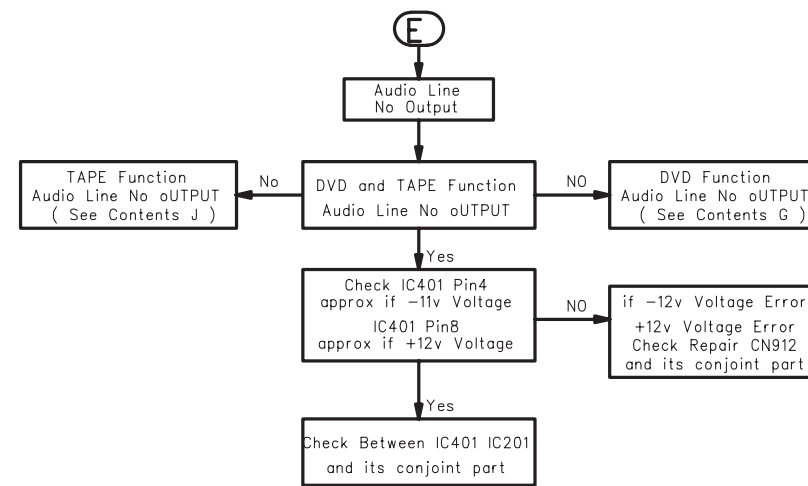
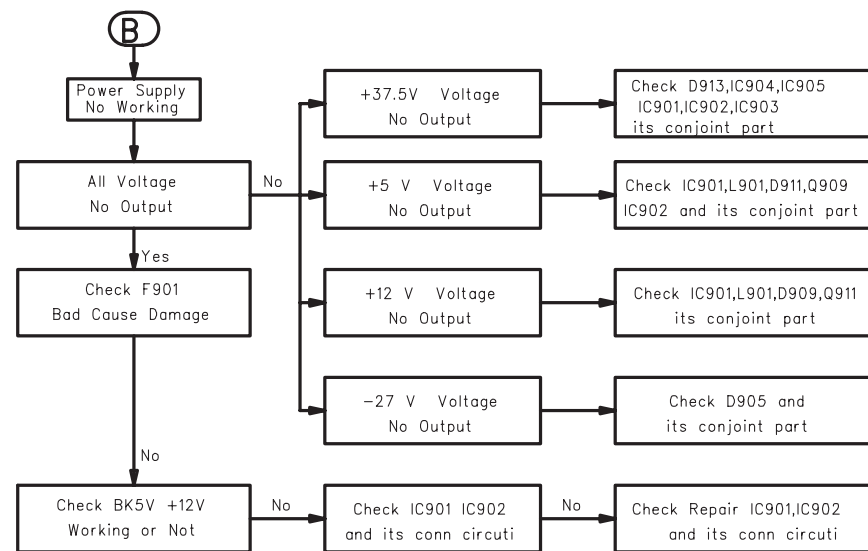
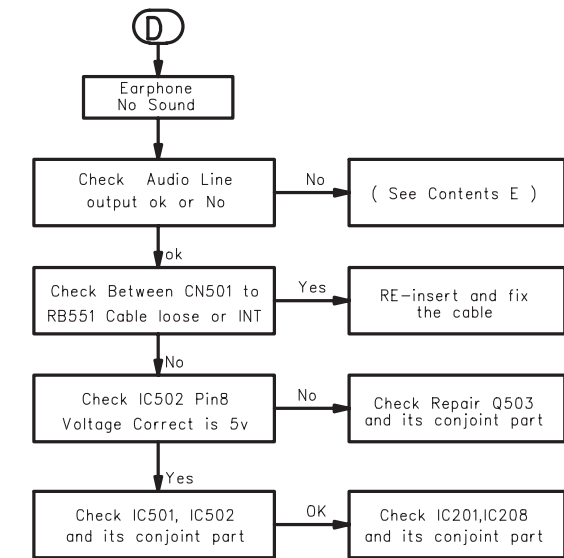
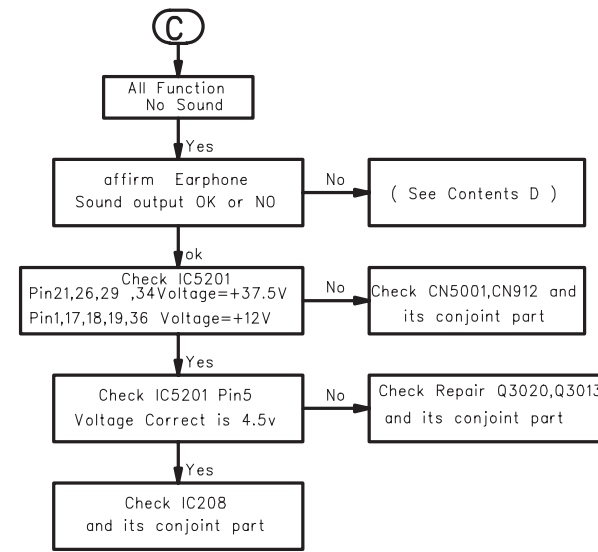
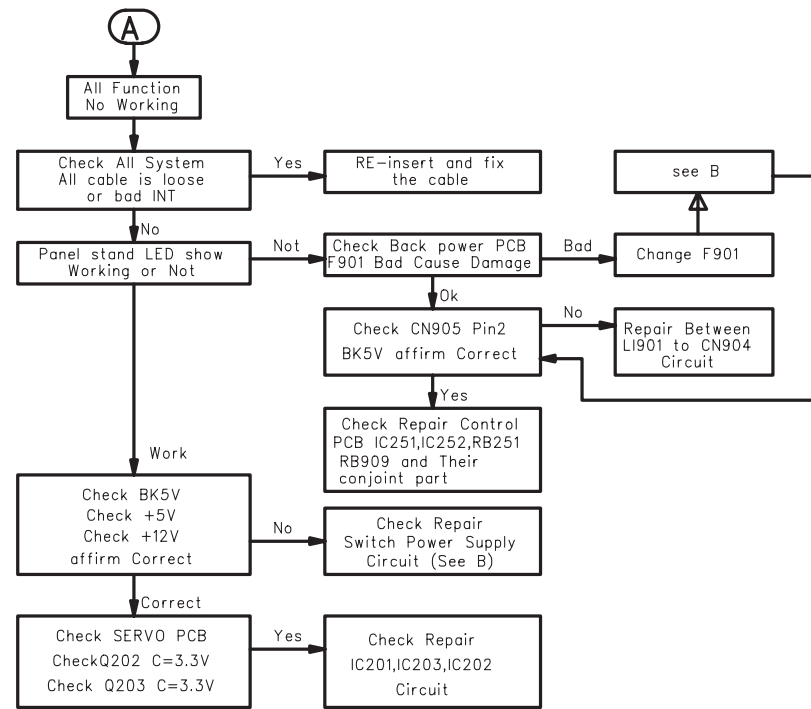
- Open the door, then insert the CD-R program disc.
- Close the door.
- TV will show:-
  - "disc loading"
  - "bank30.rom"
  - "writing" about 6 seconds.
  - "Done"

\* The latest upgraded is in version VER\*\*\*\*\*.

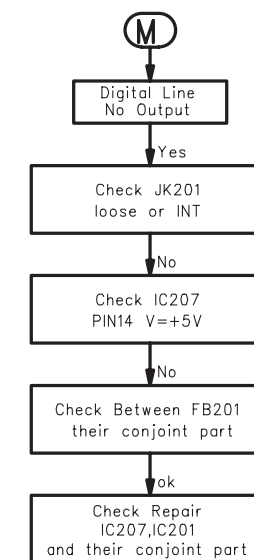
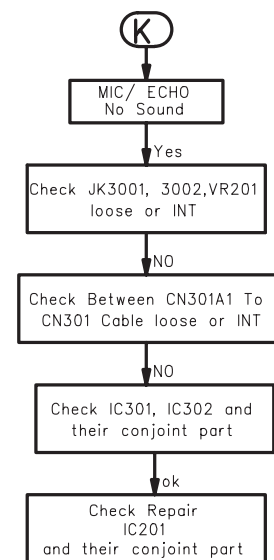
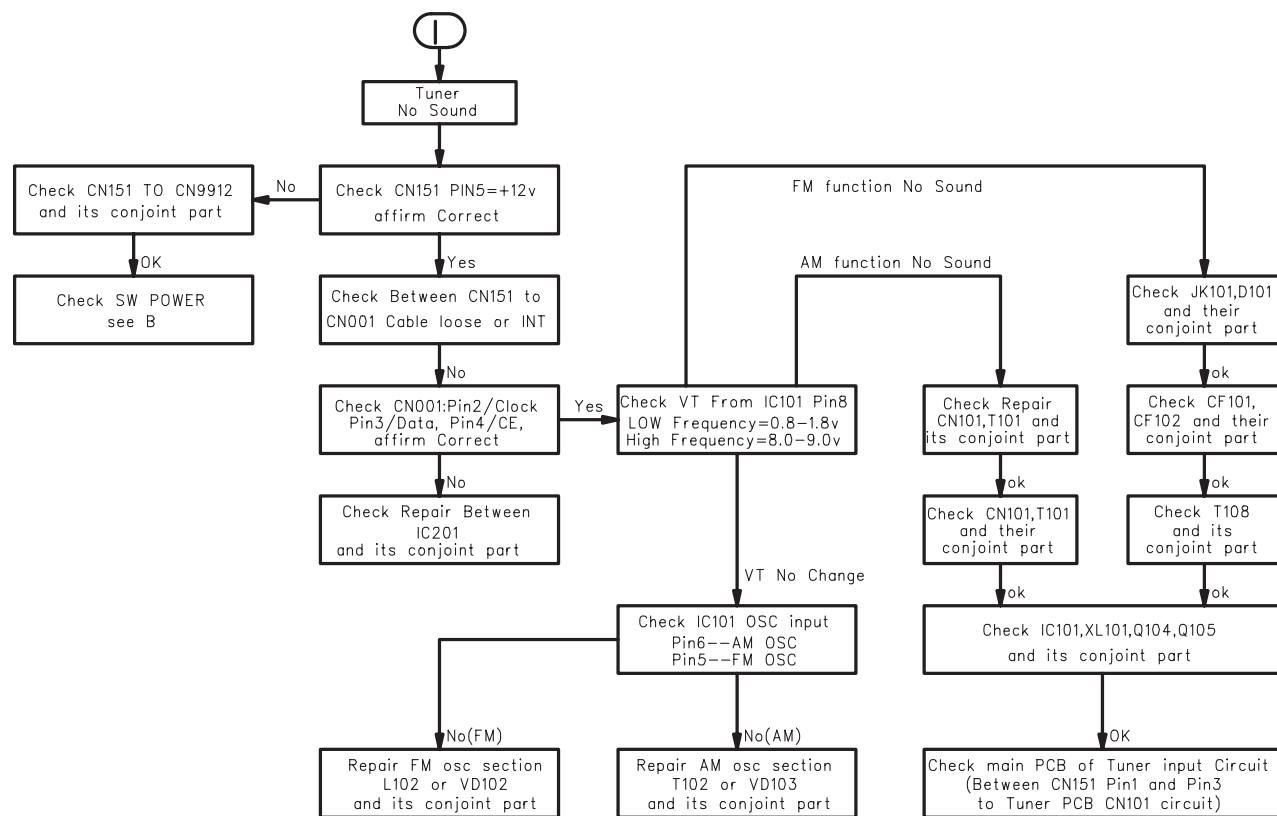
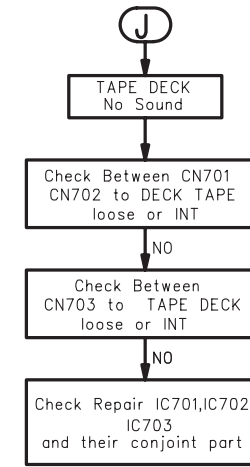
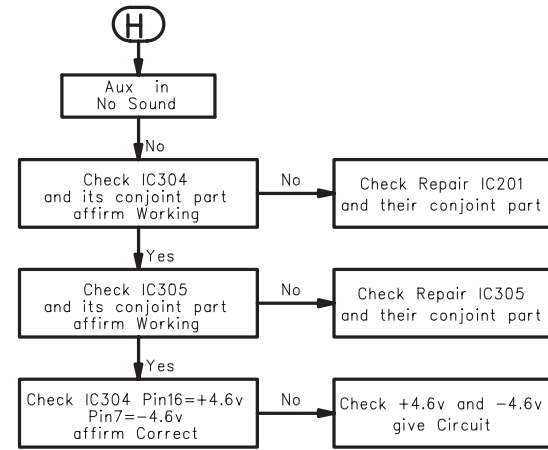
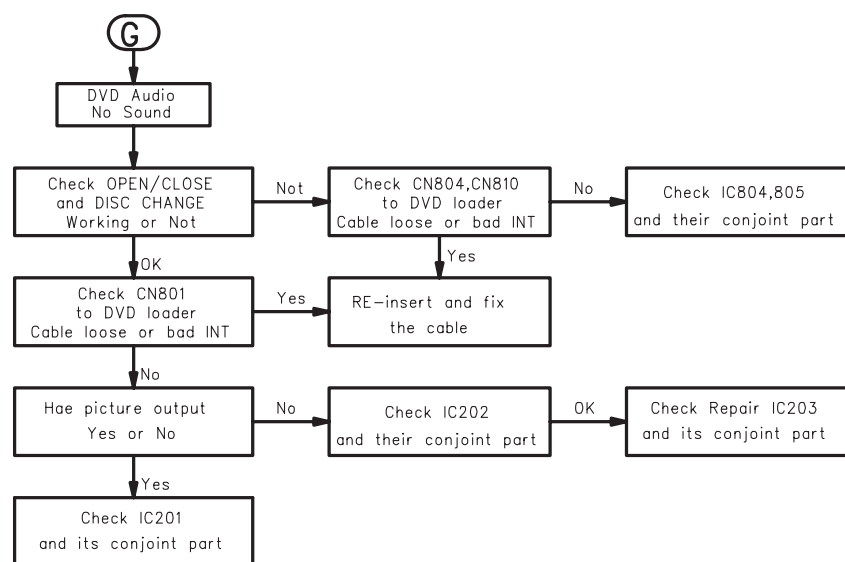
# REPAIR INSTRUCTIONS (1 of 2)

## MAIN UNIT REPAIR CHART

- (A)  
All Function  
No Working
- (B)  
Power Supply  
No Working
- (C)  
All Function  
No Sound
- (D)  
Earphone  
No Sound
- (E)  
Audio Line  
No Output
- (F)  
Subwoofer Pre  
No Output
- (G)  
DVD Audio  
No Sound
- (H)  
Aux in  
No Sound
- (I)  
Tuner  
No Sound
- (J)  
TAPE DECK  
No Sound
- (K)  
MIC/ ECHO  
No Sound
- (M)  
Digital Line  
No Output



# REPAIR INSTRUCTIONS (2 of 2)





# DISMANTLING INSTRUCTIONS

## Dismantling the DVD Module

- 1) Loosen the 4 screws at top cover , 2 screws at slide Cover and 4 screws at back panel as Figure 1 & 2.

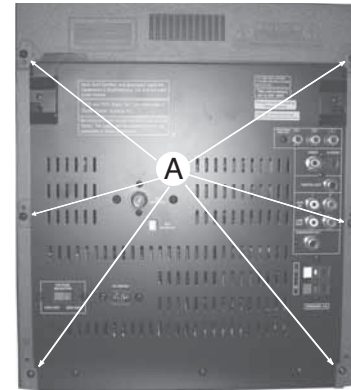


Figure 1



Figure 2

- 2) Push the gear slowly towards the front as shown in figure 3 until the CDC tray starts to move out of the Front Cabinet. The CDC tray is now disengaged and can be pulled out completely.

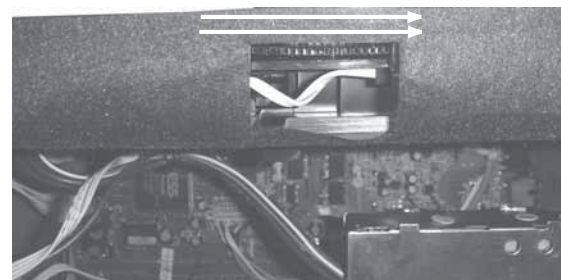


Figure 3

- 3) Remove the Cover Tray as shown in figure 4.

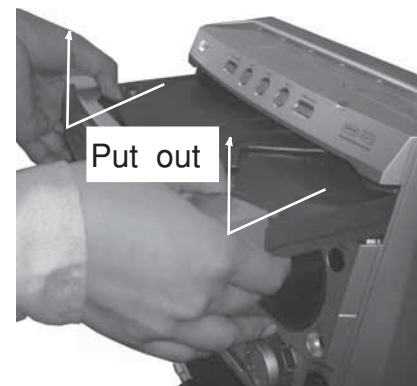


Figure 4

- 4) Loosen the 2 screws at front of DVD loader as Figure 5.

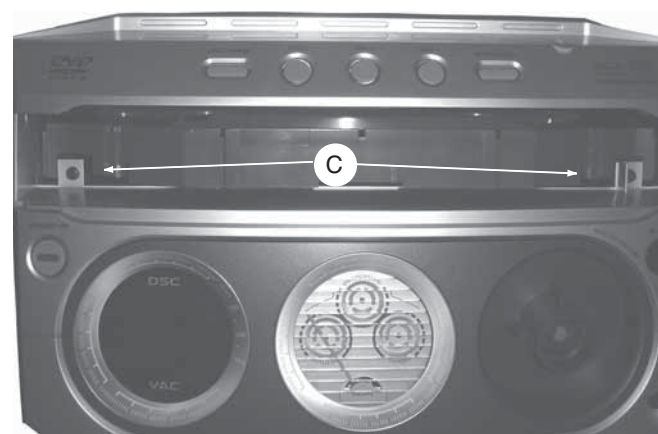


Figure 5

- 5) Loosen the 2 screws at back of DVD loader as Figure 6.

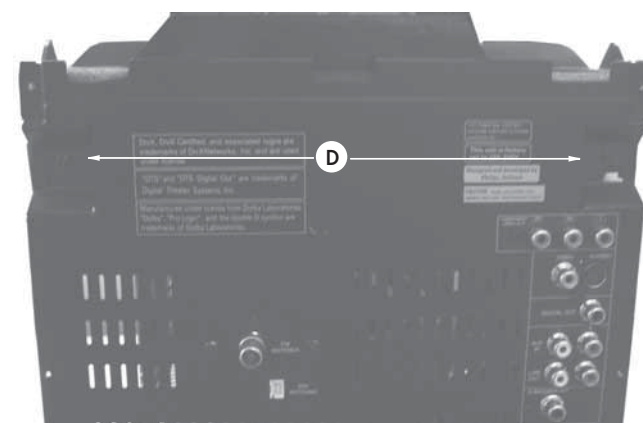


Figure 6

## Dismantling of the Cover Front Display

- 1) Remove the Volume knobs as stated in Dismantling the Cover Front Display in Figure 7.

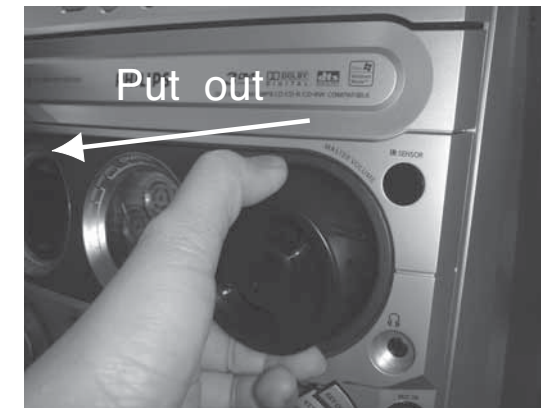


Figure 7

## Dismantling the Main board

- 1) Release 7 screws 'E' to free the Main board from the back panel assembly as shown in Figure 8.
- 2) Loosen 1 screw 'F' at the side of the set as shown in Figure 9.
- 3) Release 2 screws 'G' on the heat sink as shown in Figure 10.

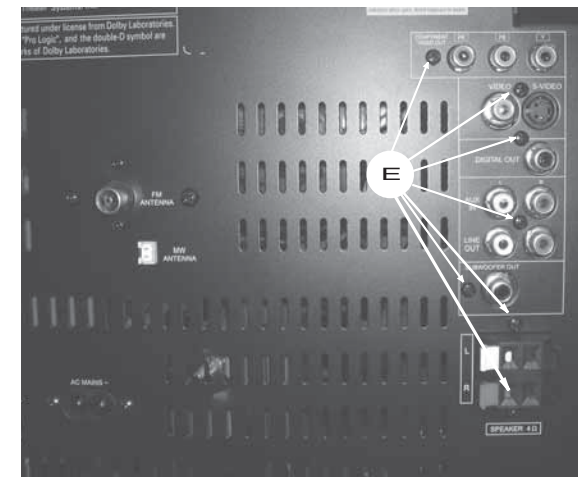


Figure 8

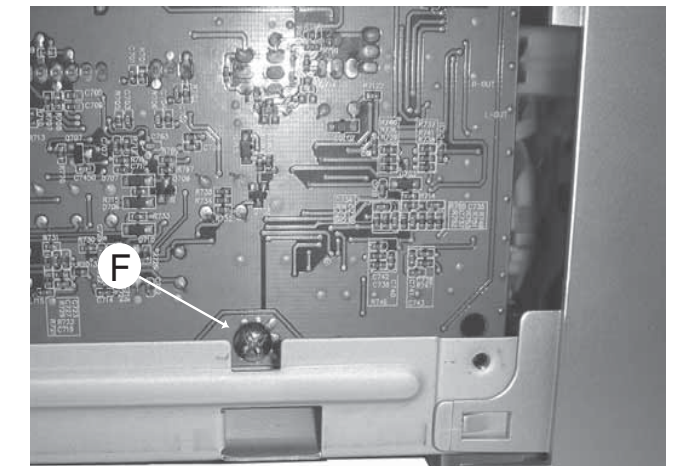


Figure 9

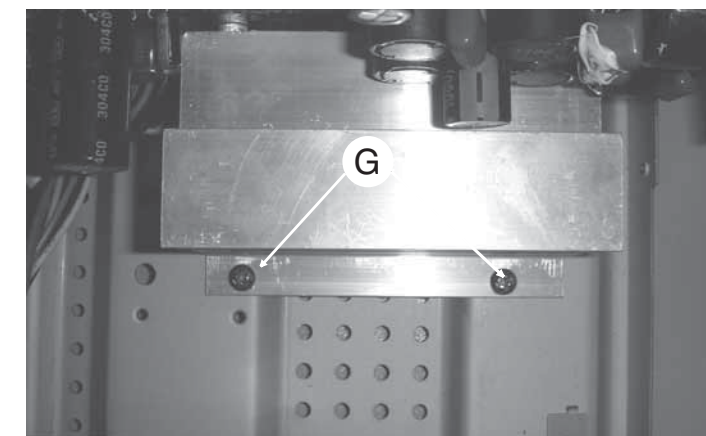


Figure 10

***Dismantling of the Control Board & Cassette Module***

1) Loosen 8 screws 'H' to remove the control board figure 11.

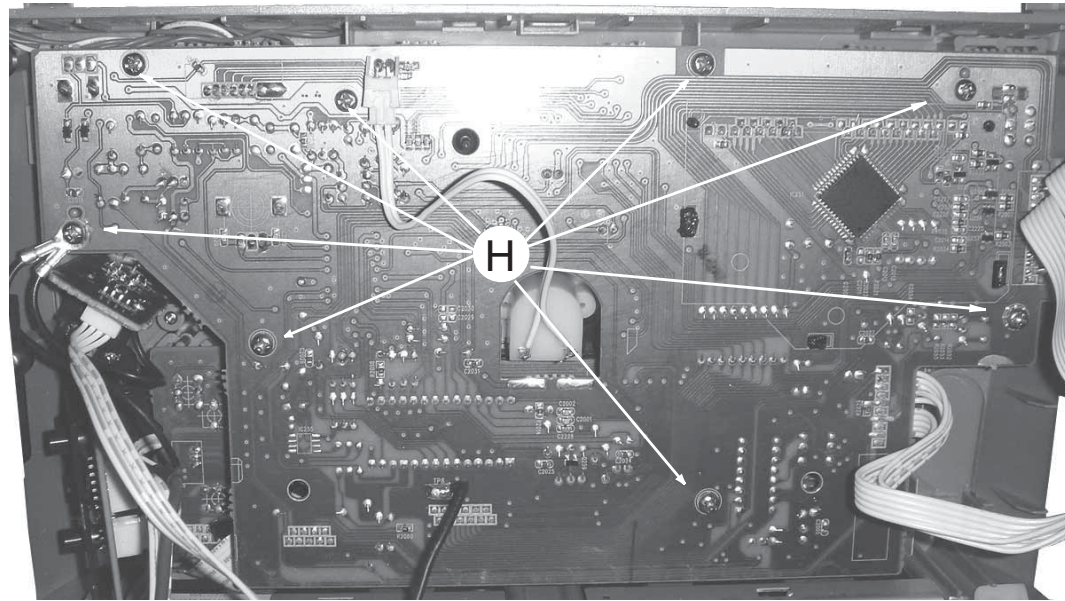


Figure 11

2) Loosen 4 screws 'I' to remove the Cassette Module figure 12.

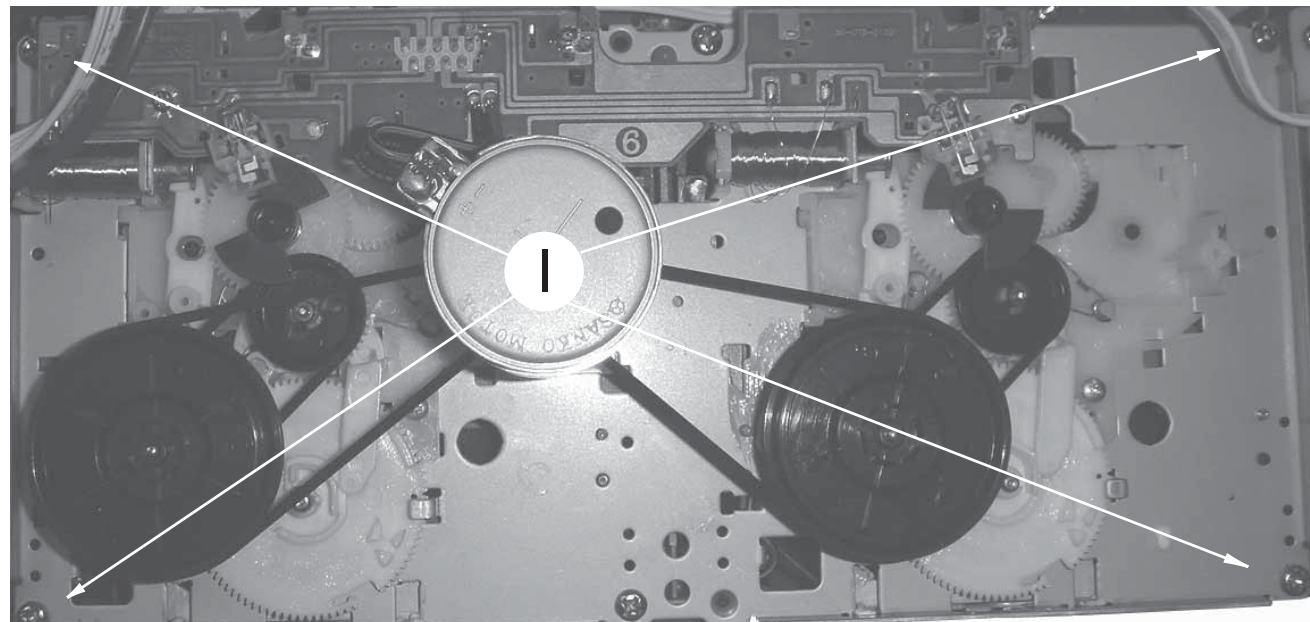


Figure 12

***Dismantling of the Power Board***

1) Loosen 4 screws 'J' to remove the Power Board figure 13.

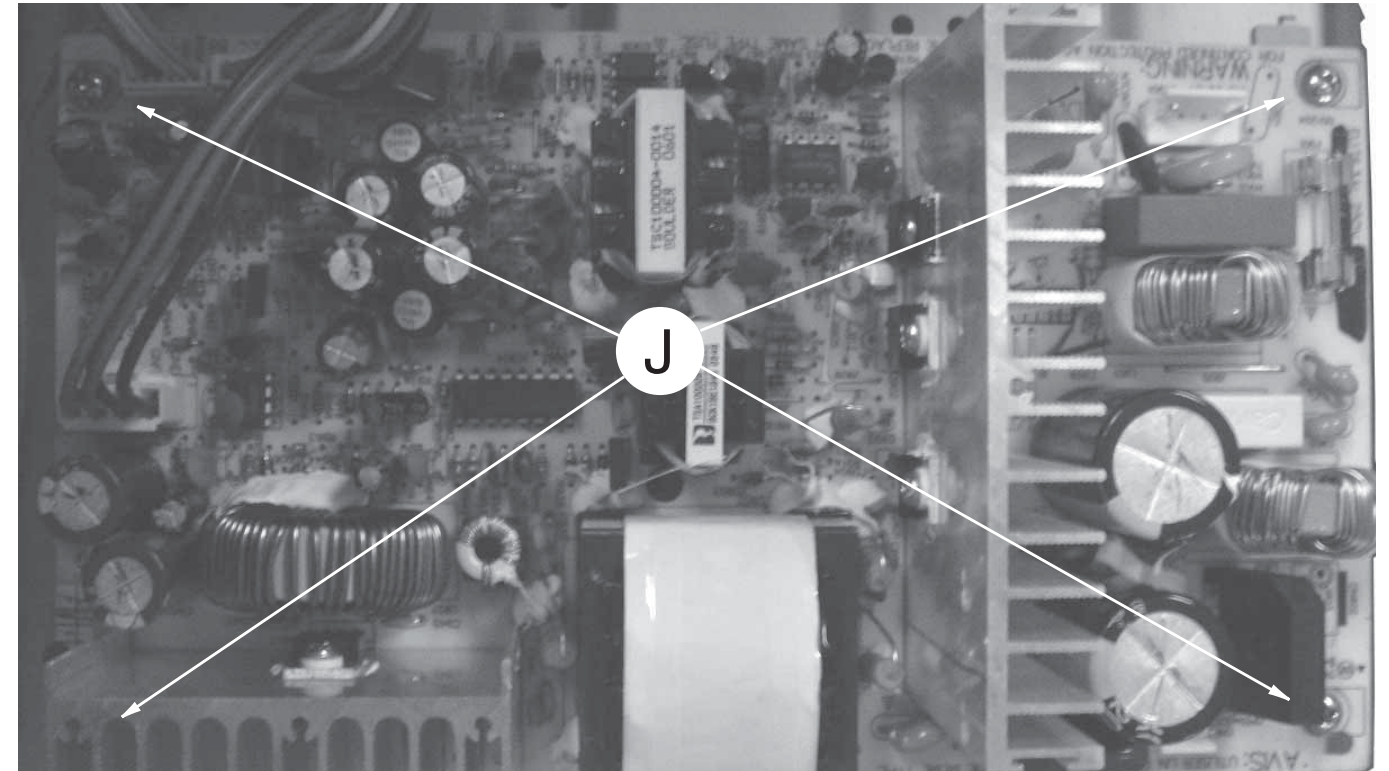


Figure 13

## Service positions

Service position A



Service position B

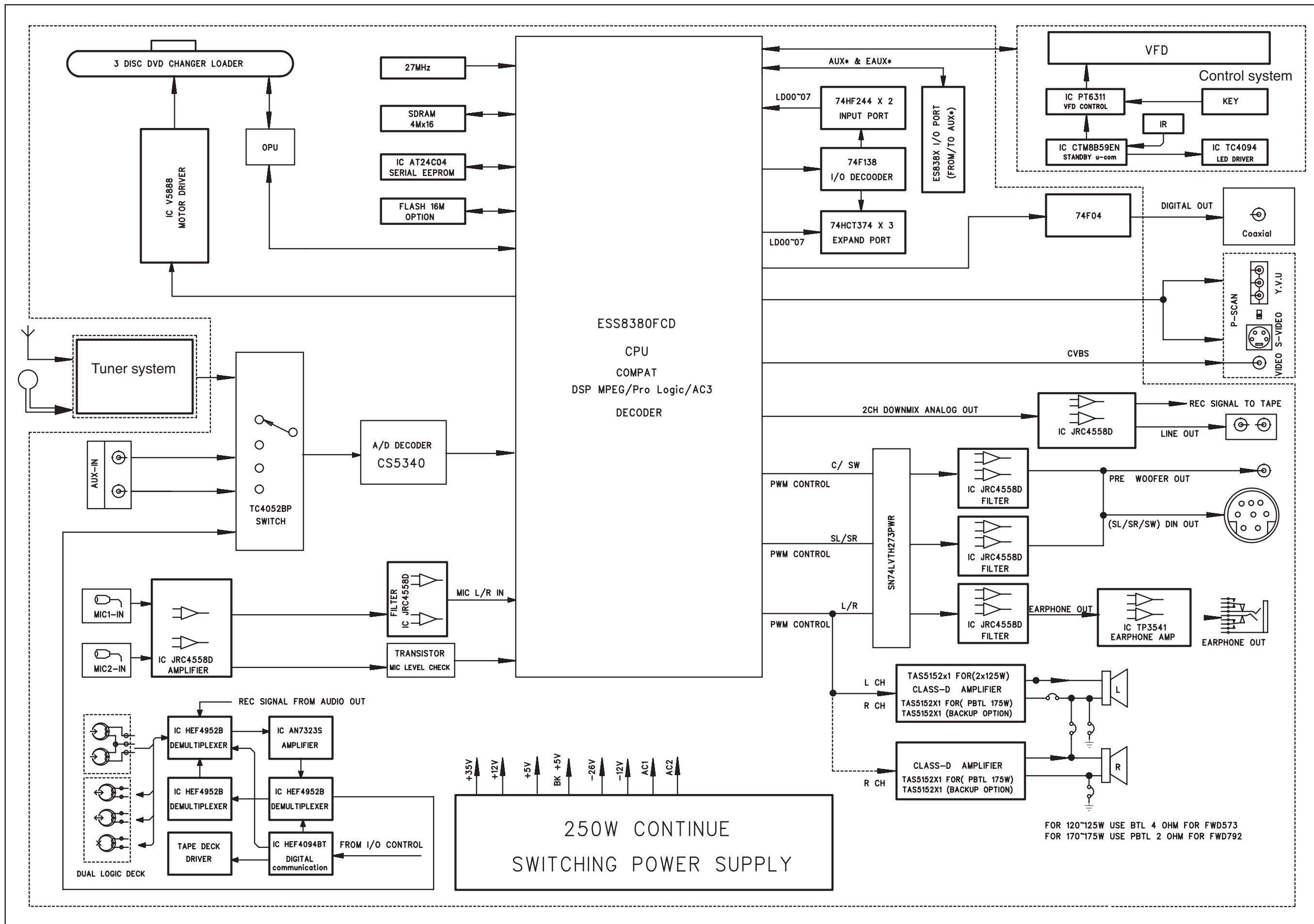


Note: After re-assembly, it is very important to ensure the wires are properly inserted into their respective sockets and routed not to touch or obstruct any moving parts.

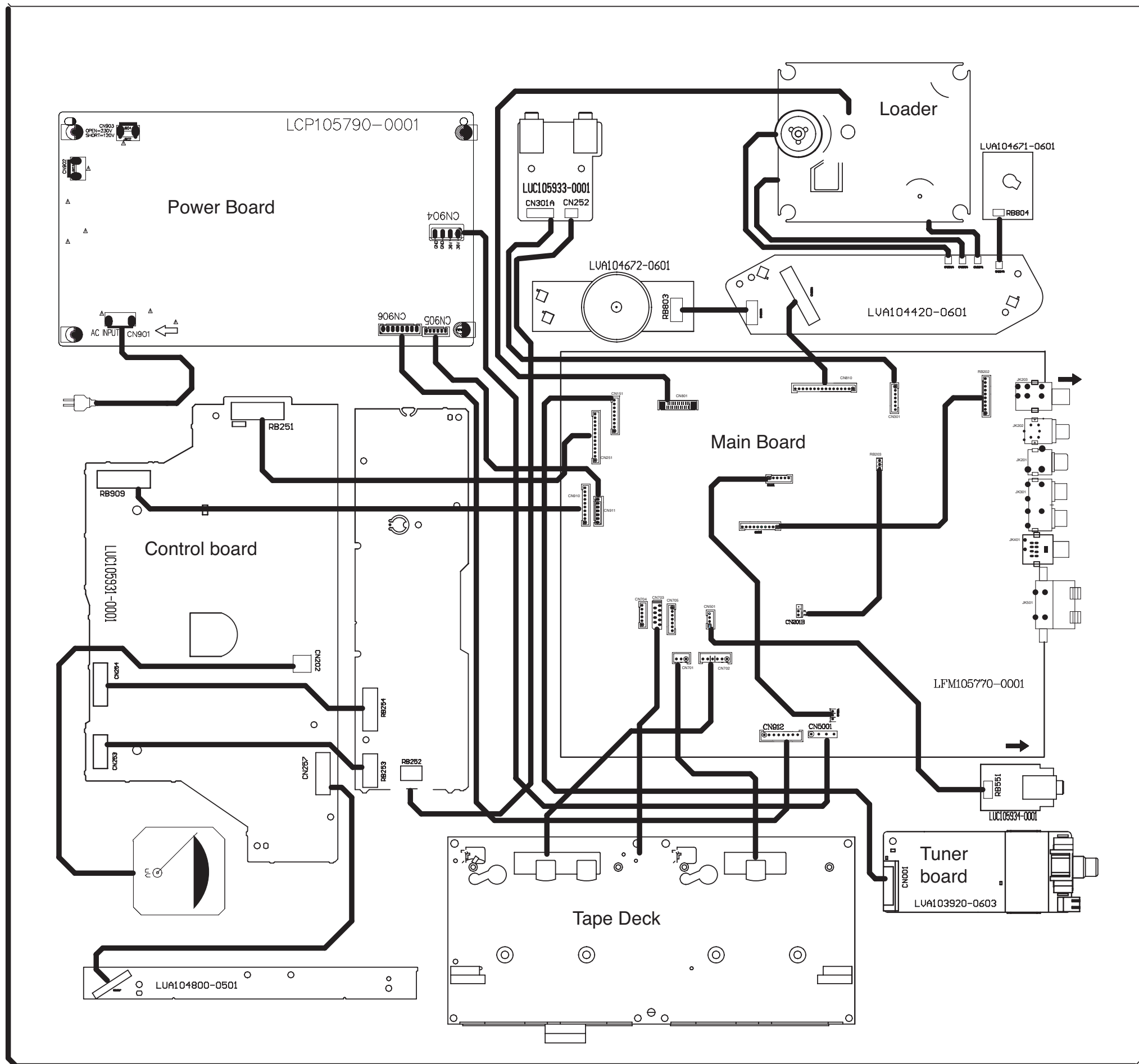
Service position C



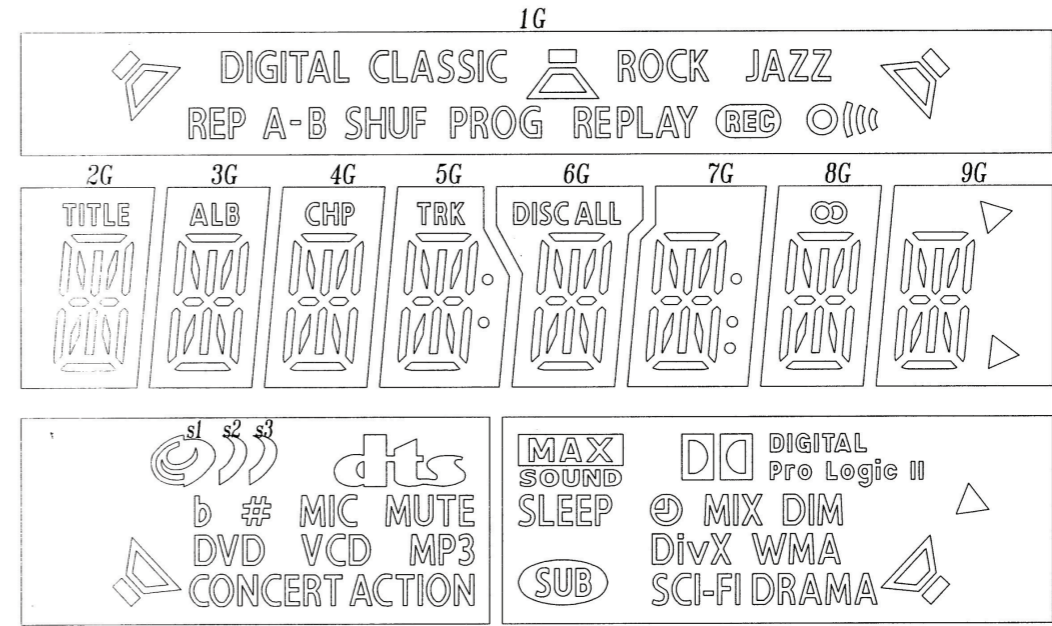
# BLOCK DIAGRAM



# WIRING DIAGRAM



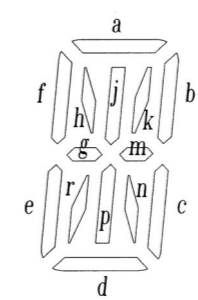
**FTD DISPLAY PIN ASSIGNMENT**



# CONTROL BOARD

**TABLE OF CONTENTS**

FTD Display Pin Assignment.....5-1  
 Pin Connection.....5-1  
 Circuit Diagram (Top left).....5-2  
 Circuit Diagram (Top right).....5-3  
 Circuit Diagram (Bottom left) .....5-4  
 Circuit Diagram (Bottom right).....5-5  
 PCB Layout Top View .....5-6  
 PCB Layout Bottom View .....5-7  
 PCB Layout sw PCB & Voltages .....5-8  
 Electrical Parts List .....5-9



	1G	2G	3G	4G	5G	6G	7G	8G	9G	10G	11G
P1		a	a	a	a	a	a	a	a	s1	
P2	DIGITAL	b	b	b	b	b	b	b	b	s2	DIGITAL
P3	CLASSIC	h	h	h	h	h	h	h	h	s3	Pro Logic
P4		j	j	j	j	j	j	j	j	dts	
P5	ROCK	k	k	k	k	k	k	k	k	b	
P6	JAZZ	f	f	f	f	f	f	f	f	#	
P7		g	g	g	g	g	g	g	g	MIC	SLEEP
P8	REP	m	m	m	m	m	m	m	m	MUTE	
P9	A	c	c	c	c	c	c	c	c	DVD	MIX
P10	-B	r	r	r	r	r	r	r	r	V	DIM
P11	SHUF	p	p	p	p	p	p	p	p	CD	DivX
P12	PROG	n	n	n	n	n	n	n	n	MP3	WMA
P13	RE	e	e	e	e	e	e	e	e		
P14	PLAY	d	d	d	d	d	d	d	d	CONCERT	SCI-FI
P15		TITLE	ALB	CHP	TRK	DISC	Col			ACTION	DRAMA
P16					Col	ALL	Dp				

**PIN CONNECTION**

PIN NO.	42	41	40	39	38	37	36	35	34	33	32	31	30	29	28	27	26	25	24	23	22-16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
CONNECTION	F2	NP	F2	NP	P1	P2	P3	P4	P5	P6	P7	P8	P9	P10	P11	P12	P13	P14	P15	P16	NX	11G	10G	9G	8G	7G	6G	5G	4G	3G	2G	1G	NP	F1	NP	F1

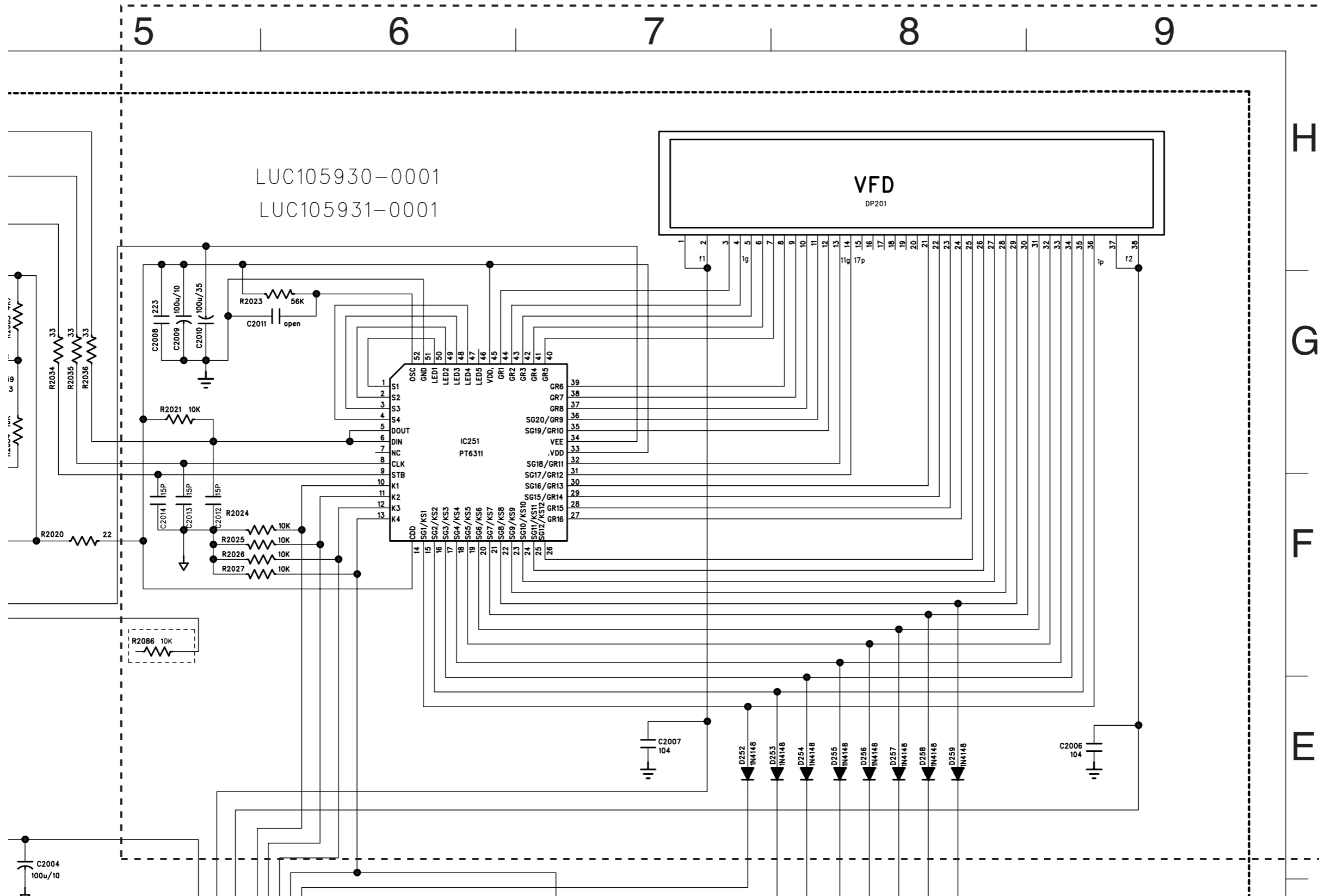
**## Note ##**

1. F : Filament      2. G :Grid      3. P :Anode      4. NP :No Pin      5. Nx :No extended



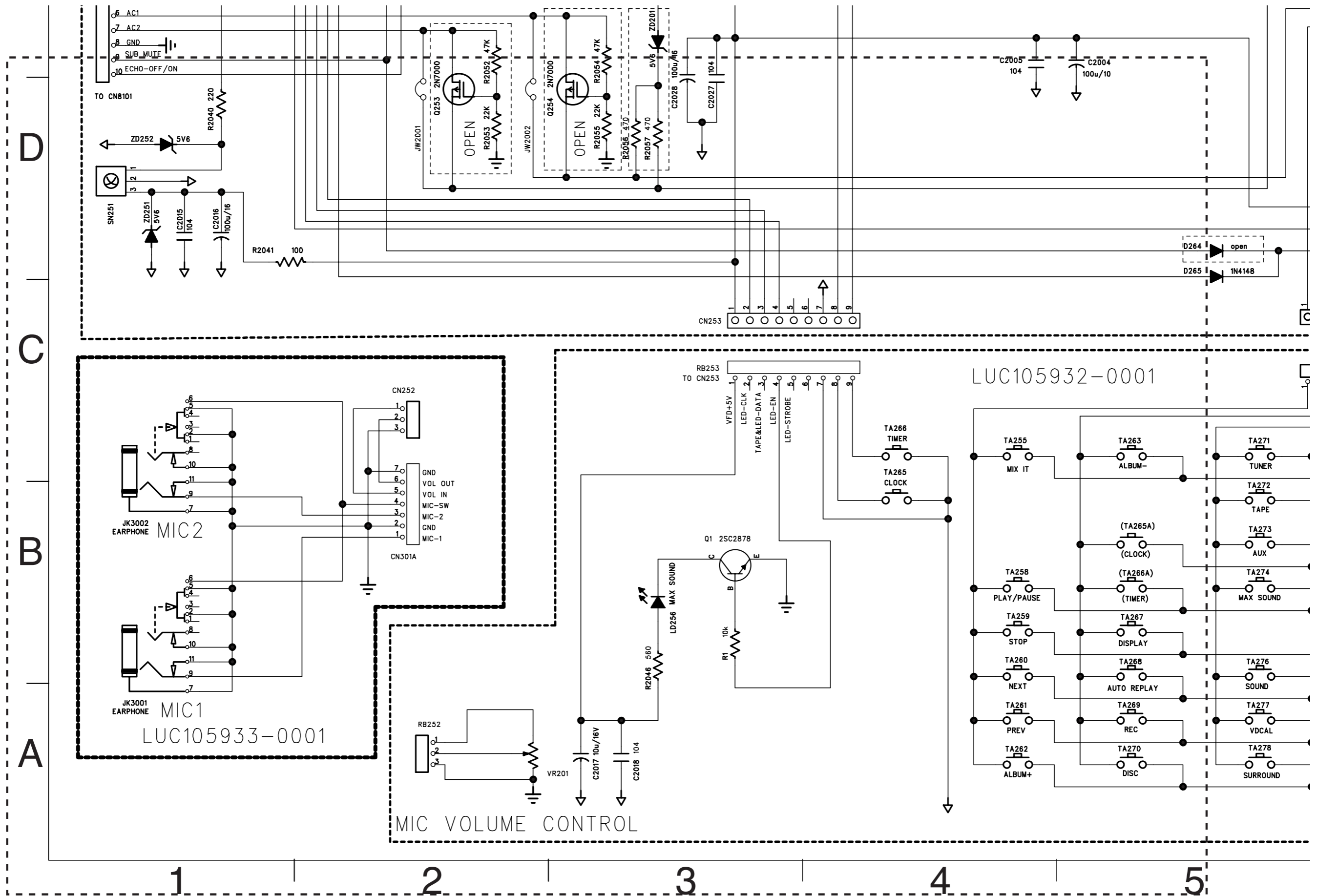
CIRCUIT DIAGRAM: CONTROL PCB (TOP RIGHT)

R2024	F5	R2031	G1	R2040	D1	R2056	D3	R2076	E2	R2087	F3	R286	C7	R293	D9	RB251	F1	TA251	G4	TA262	A4	TA270	A5	TA278	A5	XL251	G4
R2025	F5	R2032	G2	R2041	D1	R2057	D3	R2078	F1	R2088	F3	R287	C7	R294	C8	RB252	A2	TA253	G4	TA263	C5	TA271	C5	TA279	A6	XL252	F3
R2026	F5	R2033	G2	R2046	B3	R2066	G3	R2080	F2	R2098	F1	R288	C7	R295	C8	RB253	C3	TA255	C4	TA265	C4	TA272	B5	TA280	A7	ZD201	E3
R2027	F5	R2034	G5	R2052	E2	R2067	G3	R2081	F2	R230	C8	R289	C8	R296	C8	RB254	C6	TA258	B4	TA266	C4	TA273	B5	TA281	A7	ZD251	D1
R2028	F3	R2035	G5	R2053	D2	R2068	G3	R2082	F1	R283	C7	R290	C8	R297	C8	RB257	B7	TA259	B4	TA267	B5	TA274	B5	TA282	A7	ZD252	D1
R2029	F2	R2036	G5	R2054	E3	R2071	G4	R2084	G5	R284	C7	R291	D9	R298	C9	RB551	B8	TA260	B4	TA268	B5	TA276	B5	TA283	A7		
R2030	E2	R2039	F3	R2055	D3	R2074	G1	R2085	G5	R285	C7	R292	D9	R299	B8	RB909	E1	TA261	A4	TA269	A5	TA277	A5	TA284	A7		

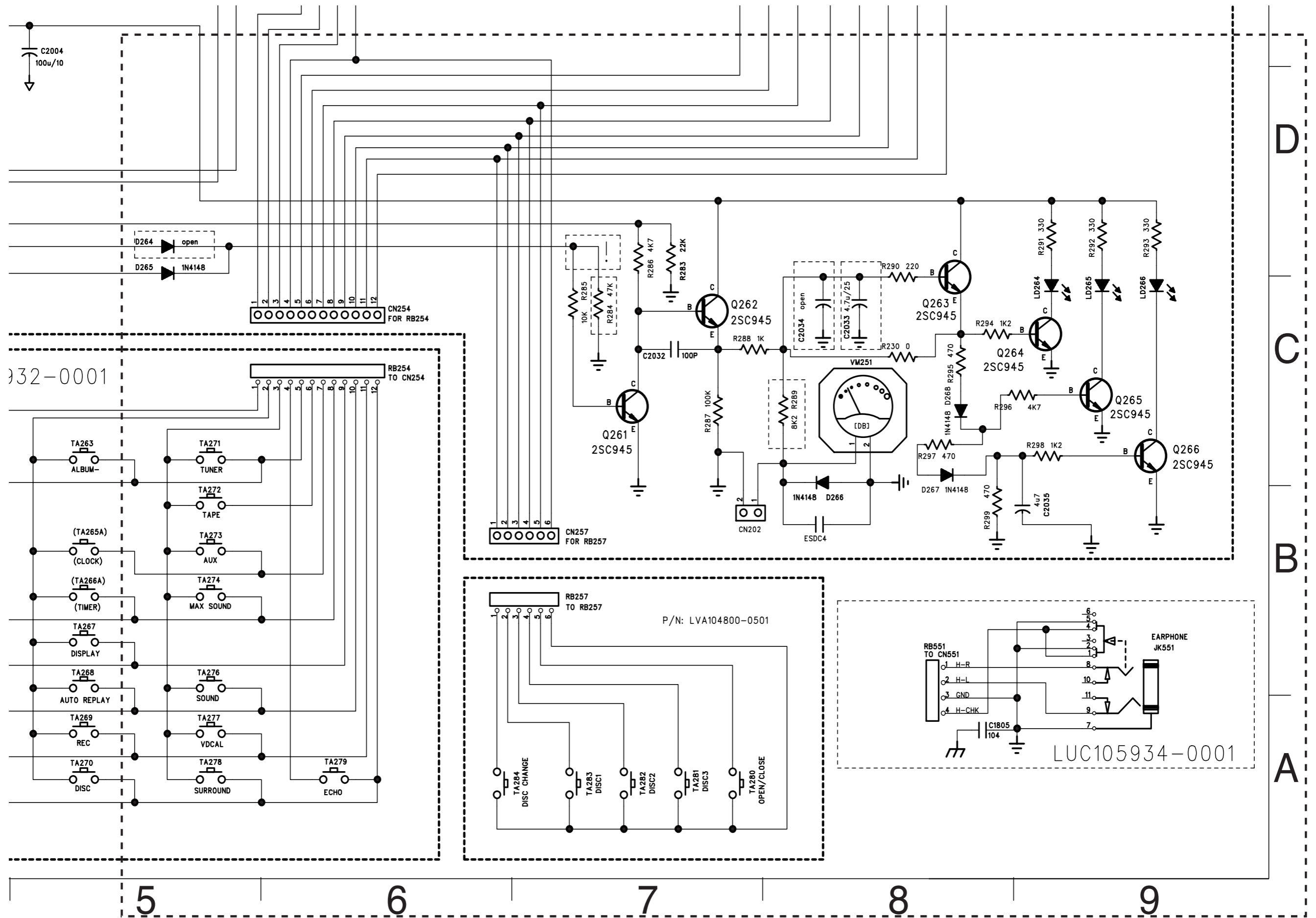




# CIRCUIT DIAGRAM: CONTROL PCB (BOTTOM LEFT)



# CIRCUIT DIAGRAM: CONTROL PCB (BOTTOM RIGHT)



D

C

B

A

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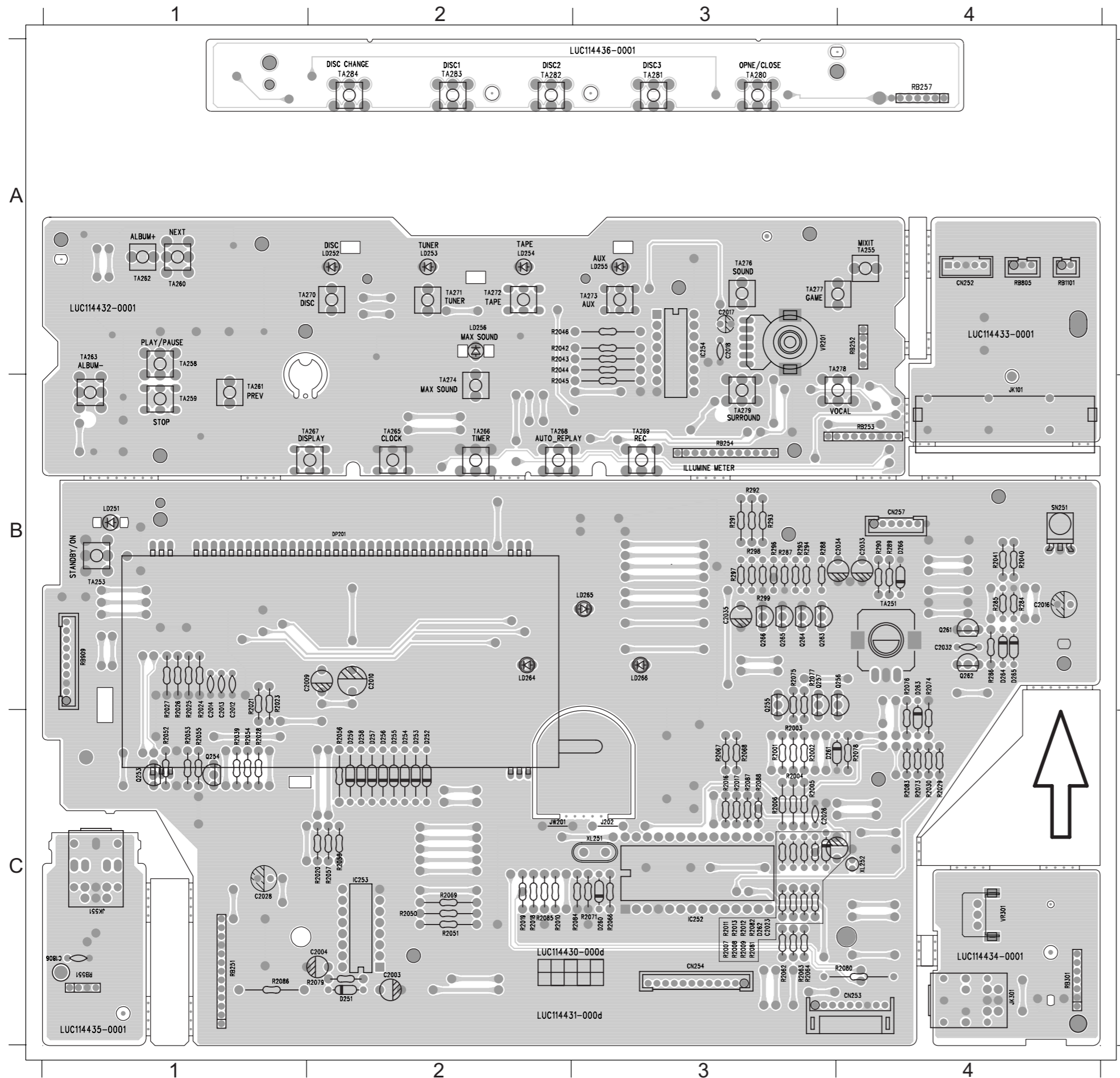
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32-0001

P/N: LVA104800-0501

LUC105934-0001

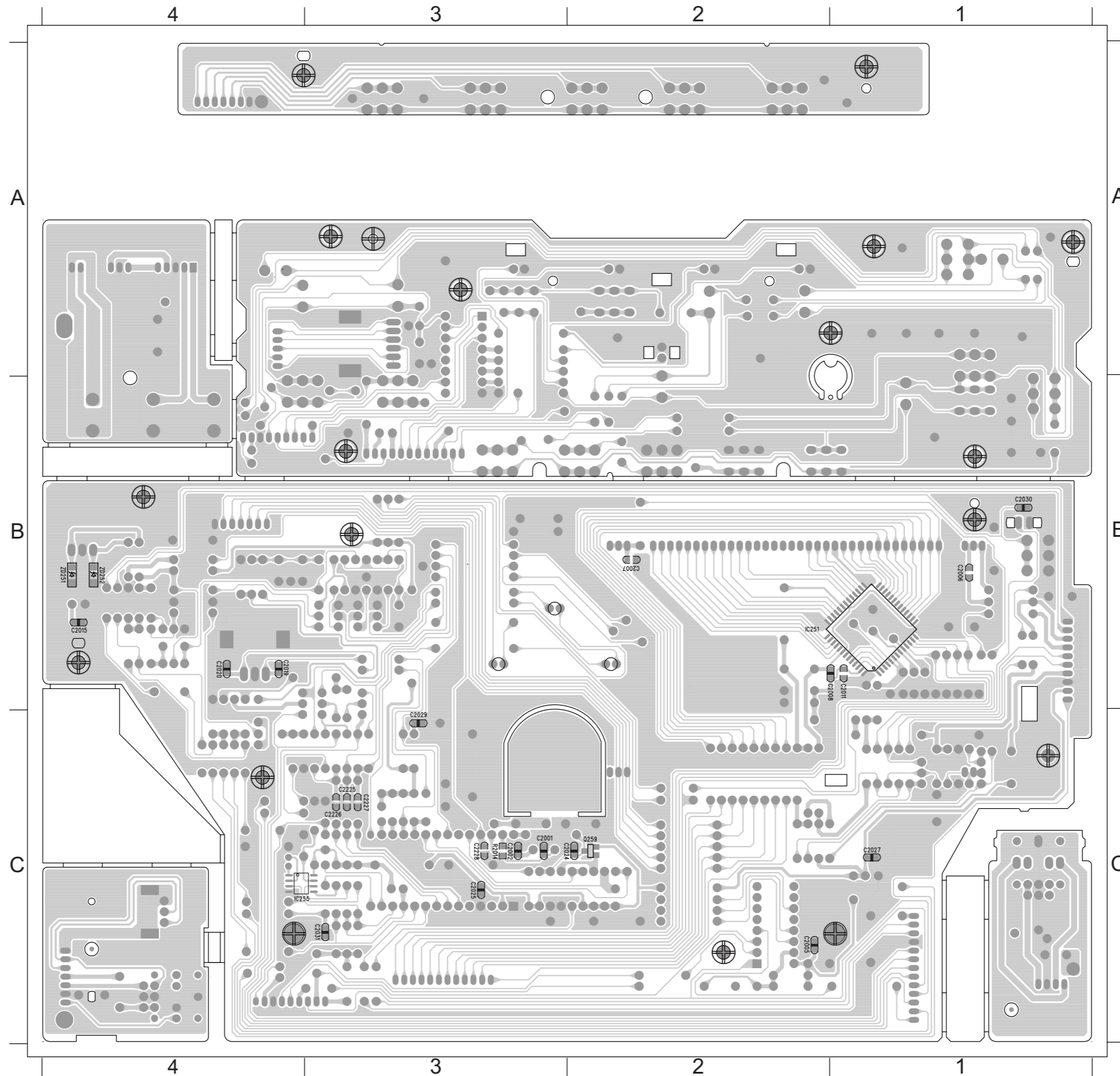
# PCB LAYOUT: CONTROL PCB (TOP VIEW)



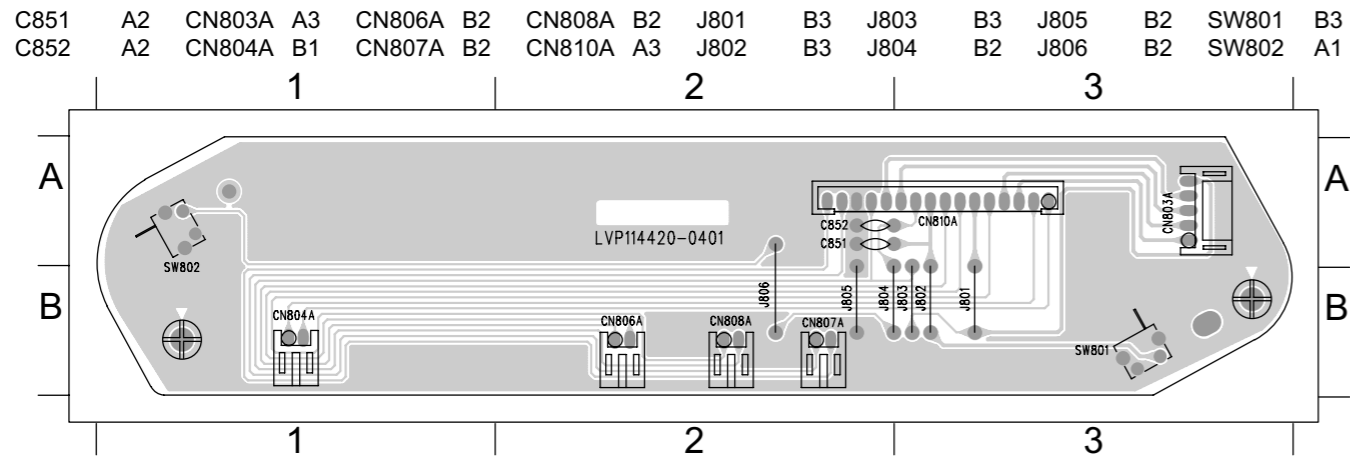
C4003	A4	C5154	C4	FB402	D7	R5089	C7
C4006	A4	C5179	D7	FB403	D6	R5090	C7
C4007	A4	C5205	B3	FB404	D6	R5091	C7
C4010	A4	C5210	C3	FB405	D6	R5092	C7
C4011	A3	C5211	C3	IC5002	B7	R5093	B6
C4012	A2	C5213	C3	IC5003	C7	R5094	B7
C4013	A5	C5217	B3	Q5009	D7	R5095	C7
C4014	A4	C5218	B3	Q5011	B7	R5096	C7
C4015	A4	C5220	D3	Q5013	C7	R5097	C6
C4016	A4	C5221	C3	Q5014	C7	R5098	B7
C4017	A3	C5223	D3	Q5015	D7	R5106	C5
C4018	A2	C5224	D2	Q5016	C7	R5107	C5
C4018	A4	C5225	B3	Q5017	D7	R5109	D4
C4103	A5	C5227	B3	Q5020	C7	R5110	C4
C4107	A5	C5230	C2	Q5021	B7	R5111	C4
C4109	A4	C5232	C2	Q5022	B6	R5151	B4
C411	D7	C5233	C2	Q5023	B6	R5152	C5
C4112	A5	C5241	C3	R4001	A4	R5153	B4
C421	D7	C5242	C3	R4003	A4	R5154	C4
C4303	A3	C5243	C3	R4013	A4	R5206	C3
C4309	A3	C5244	B3	R4031	A3	R5207	C3
C431	D6	C5251	B3	R4032	A4	R5208	C3
C441	D7	C5252	B3	R4033	D3	R5209	D3
C4503	A2	C5253	B3	R4034	D3	R5210	C2
C4509	A2	C5254	C3	R4103	A5	R5211	C2
C451	D6	C5279	D7	R4115	A5	R5251	B3
C5014	B7	C5305	B6	R4116	A5	R5252	B3
C5020	D7	C5312	D6	R4313	A3	R5253	B3
C5023	D7	C5313	C6	R461	D6	R5254	B3
C5031	B1	C5317	B6	R5009	C7	R5309	C6
C5032	C1	C5320	D6	R5016	D4	R5310	D6
C5033	D3	C5325	B5	R5017	D3	R5311	C6
C5034	D3	C5327	B6	R5018	D5	R5312	D5
C5035	D4	C5330	C6	R5018	D3	R5351	C6
C5036	D4	C5332	D5	R5019	D4	R5352	B6
C5037	D4	C5333	D5	R5020	D4	R5353	C5
C5038	D4	C5341	C6	R5021	D2	R5354	C5
C5039	D3	C5342	B5	R5036	D7	R5410	C2
C5040	D3	C5343	C6	R5038	D7	R5411	C2
C5041	D4	C5344	C6	R5039	D7	R5412	C1
C5042	D4	C5351	C6	R5053	C7	R5413	C1
C505	B6	C5352	B6	R5054	C7	R5451	B2
C5069	A3	C5354	C5	R5055	C7	R5452	B2
C5071	D4	C5363	C6	R5057	C6	R5453	D2
C5072	D3	C5379	D7	R5058	C6	R5454	C1
C5073	D3	C5405	B2	R5060	C6		
C5074	D4	C5413	C2	R5062	C7		
C5075	D4	C5416	B2	R5063	C6		
C5078	D7	C5417	B2	R5064	D7		
C5079	D7	C5420	C2	R5065	D7		
C5082	A4	C5421	C2	R5066	D7		
C5083	A3	C5425	B2	R5067	C6		
C5105	B4	C5427	B2	R5068	D6		
C5110	C5	C5430	C1	R5068	C7		
C5111	C4	C5433	C1	R5069	C7		
C5113	D5	C5441	B2	R5070	D7		
C5116	B4	C5442	C2	R5071	D7		
C5117	B4	C5443	C2	R5072	C7		
C5120	D5	C5444	C2	R5073	B7		
C5121	D5	C5451	C2	R5074	C6		
C5123	D4	C5452	C1	R5075	C7		
C5124	D4	C5452	C2	R5076	C7		
C5125	B4	C5453	D1	R5077	C6		
C5127	B4	C5454	C1	R5078	C7		
C5130	C4	C5918	B6	R5079	C2		
C5132	C4	D5002	B7	R5080	C2		
C5133	C4	D5011	C7	R5081	C7		
C5141	B4	D5012	D7	R5082	C7		
C5142	C4	D5013	D6	R5083	C7		
C5143	C5	D5015	C7	R5084	B7		
C5144	B5	D5016	C7	R5085	B7		
C5151	B5	D5019	B6	R5086	C7		
C5152	C4	D5020	B6	R5087	C7		
C5153	B4	FB401	D6	R5088	B7		

### PCB LAYOUT: CONTROL PCB (BOTTOM VIEW)

C2001 C3 C2005 C2 C2007 B2 C2011 B1 C2019 B4 C2024 C3 C2027 C1 C2030 B1 C2225 C3 C2227 C3 IC251 B1 Q259 C2 ZD251 B4  
 C2002 C3 C2006 B1 C2008 B1 C2015 B4 C2020 B4 C2025 C3 C2029 C3 C2031 C3 C2226 C3 C2228 C3 IC255 C4 R2014 C3 ZD252 B4



### PCB LAYOUT: CONTROL SW PCB



### Voltage

IC251																	
Pin NO	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Voltage	0.00	4.84	0.00	4.85	4.64	4.60	0.00	4.91	4.70	0.00	0.00	0.00	0.00	4.85	-7.5	-25.4	-25.3
Pin NO	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37
Voltage	-15.9	-20	-13.3	-15	-27.9	-27.9	-15.2	-20.3	-25.5	-22.8	-25.9	-25.9	4.80	-28.5	-25.7	-25.7	-25.8
Pin NO	41	42	43	44	45	46	47	48	49	50	51	52					
Voltage	-25	-25	0.00	-25.9	4.80	0.00	4.80	0.00	4.80	0.00	0.00	1.70					

IC252																	
Pin NO	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Voltage	0.00	4.97	0.00	0.00	4.93	4.35	4.80	4.90	4.90	4.96	0.00	2.80	0.00	4.83	0.00	0.00	0.00
Pin NO	21	22	23	24	25	26	27	28									
Voltage	4.96	4.96	5.00	5.00	4.97	2.39	2.38	4.96									

Q251			
Pin NO	1	2	3
Voltage	0.00	0.01	0.67

Q256			
Pin NO	1	2	3
Voltage	3.89	4.97	5.00

Q264			
Pin NO	1	2	3
Voltage	0.00	4.13	0.00

Q252			
Pin NO	1	2	3
Voltage	0.00	5.00	0.00

Q257			
Pin NO	1	2	3
Voltage	3.68	4.80	5.00

Q265			
Pin NO	1	2	3
Voltage	0.00	4.03	-0.03

Q253			
Pin NO	1	2	3
Voltage	-22.1	-7.1	-22.2

Q259			
Pin NO	1	2	3
Voltage	4.34	5.00	5.00

Q266			
Pin NO	1	2	3
Voltage	0.00	4.30	0.00

Q254			
Pin NO	1	2	3
Voltage	-22.2	-7.1	-22.2

Q261			
Pin NO	1	2	3
Voltage	0.00	0.6	0.00

Q255			
Pin NO	1	2	3
Voltage	3.38	4.58	5.00

Q262			
Pin NO	1	2	3
Voltage	0.00	5	0.71

**ELECTRICAL PARTS LIST - CONTROL BOARD**

DP201	9940 000 00879	VFD 46X26MM HNA-11LS11T	TA277	9940 000 00872	TACT SW 50MA 12V
ESDZ1	9965 000 26930	CHIP ZENER 5.6V 0.05 0.5W	TA278	9940 000 00872	TACT SW 50MA 12V
IC251	9940 000 00907	IC 52PIN TP6311QH	TA279	9940 000 00872	TACT SW 50MA 12V
IC252	9940 000 00923	IC 28PIN CTM8059EN	VR201	9940 000 05351	VOL ROTARY L=15MM 50KR
JK3001	9965 000 22276	PHONE JACK D3.5 11P	XL251	9940 000 05352	XTAL 4.194304MHZ -/ 10PPM
JK3002	9965 000 22276	PHONE JACK D3.5 11P	ZD201	9965 000 26942	DIODE ZENR 5.0-5.2V 0.5W
JK551	9940 000 00964	PHONE JACK D3.5 11P	ZD251	9965 000 26930	CHIP ZENER 5.6V 0.05 0.5W
LD251	9940 000 00878	LED 3 DIA RED ROUND	ZD252	9965 000 26930	CHIP ZENER 5.6V 0.05 0.5W
LD256	9940 000 01056	LED 3DIA BLUE LENS			
LD264	9940 000 01062	LED 3 DIA RED ROUND			
LD265	9940 000 01062	LED 3 DIA RED ROUND			
LD266	9940 000 00878	LED 3 DIA RED ROUND			
Q251	9940 000 00915	XISTR NPN 2SC1623			
Q252	9940 000 00915	XISTR NPN 2SC1623			
Q253	9940 000 00886	MOS FET 2N7000 60V 200MA			
Q254	9940 000 00886	MOS FET 2N7000 60V 200MA			
Q255	9940 000 00914	FET 2N7002LT1			
Q256	9940 000 00914	FET 2N7002LT1			
Q257	9940 000 00914	FET 2N7002LT1			
Q259	9940 000 00921	XISTR PNP 2SA812 HFE:200-400			
Q261	4822 130 41198	2SC945P			
Q262	4822 130 41198	2SC945P			
Q264	4822 130 41198	2SC945P			
Q265	4822 130 41198	2SC945P			
Q266	4822 130 41198	2SC945P			
Q267	4822 130 41198	2SC945P			
SN2501	9965 000 24088	IRT RECEIVER IRM-2638F4			
TA251	9940 000 00881	ENCODER			
TA253	9940 000 00872	TACT SW 50MA 12V			
TA255	9940 000 00872	TACT SW 50MA 12V			
TA258	9940 000 00872	TACT SW 50MA 12V			
TA259	9940 000 00872	TACT SW 50MA 12V			
TA260	9940 000 00872	TACT SW 50MA 12V			
TA261	9940 000 00872	TACT SW 50MA 12V			
TA262	9940 000 00872	TACT SW 50MA 12V			
TA263	9940 000 00872	TACT SW 50MA 12V			
TA265	9940 000 00872	TACT SW 50MA 12V			
TA266	9940 000 00872	TACT SW 50MA 12V			
TA267	9940 000 00872	TACT SW 50MA 12V			
TA268	9940 000 00872	TACT SW 50MA 12V			
TA269	9940 000 00872	TACT SW 50MA 12V			
TA270	9940 000 00872	TACT SW 50MA 12V			
TA271	9940 000 00872	TACT SW 50MA 12V			
TA272	9940 000 00872	TACT SW 50MA 12V			
TA273	9940 000 00872	TACT SW 50MA 12V			
TA274	9940 000 00872	TACT SW 50MA 12V			
TA276	9940 000 00872	TACT SW 50MA 12V			

**Note:** Only these parts mentioned in the list are normal service parts.

**ELECTRICAL PARTS LIST - KEY BOARD**

TA280	9940 000 00872	TACT SW 50MA 12V
TA281	9940 000 00872	TACT SW 50MA 12V
TA282	9940 000 00872	TACT SW 50MA 12V
TA283	9940 000 00872	TACT SW 50MA 12V
TA284	9940 000 00872	TACT SW 50MA 12V

**Note:** Only these parts mentioned in the list are normal service parts.

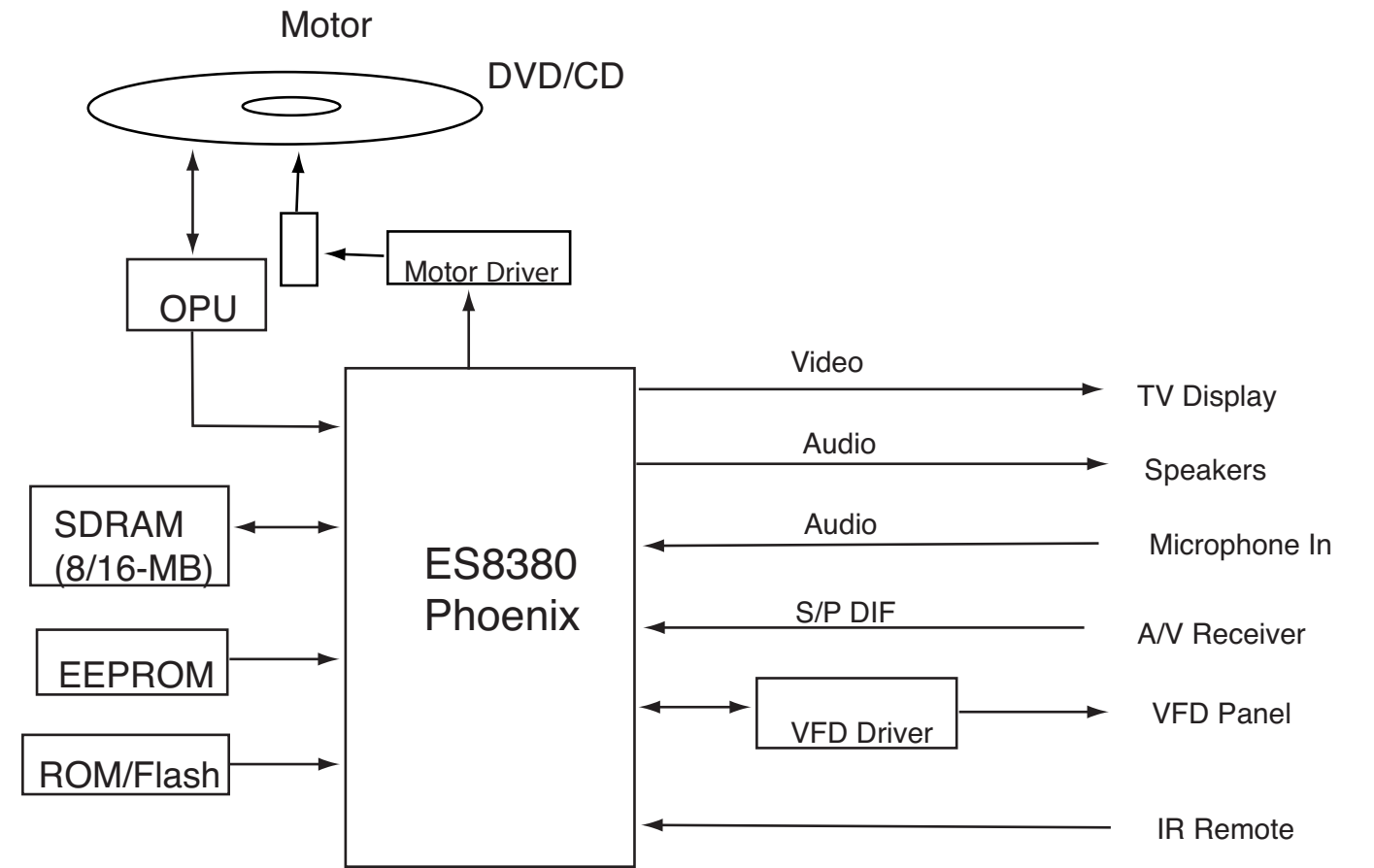
**ELECTRICAL PARTS LIST- SWITCH BOARD**

SW801	9940 000 01556	DETECTOR SWITCH
SW802	9940 000 01556	DETECTOR SWITCH

**Note:** Only these parts mentioned in the list are normal service parts.

# MAIN BOARD

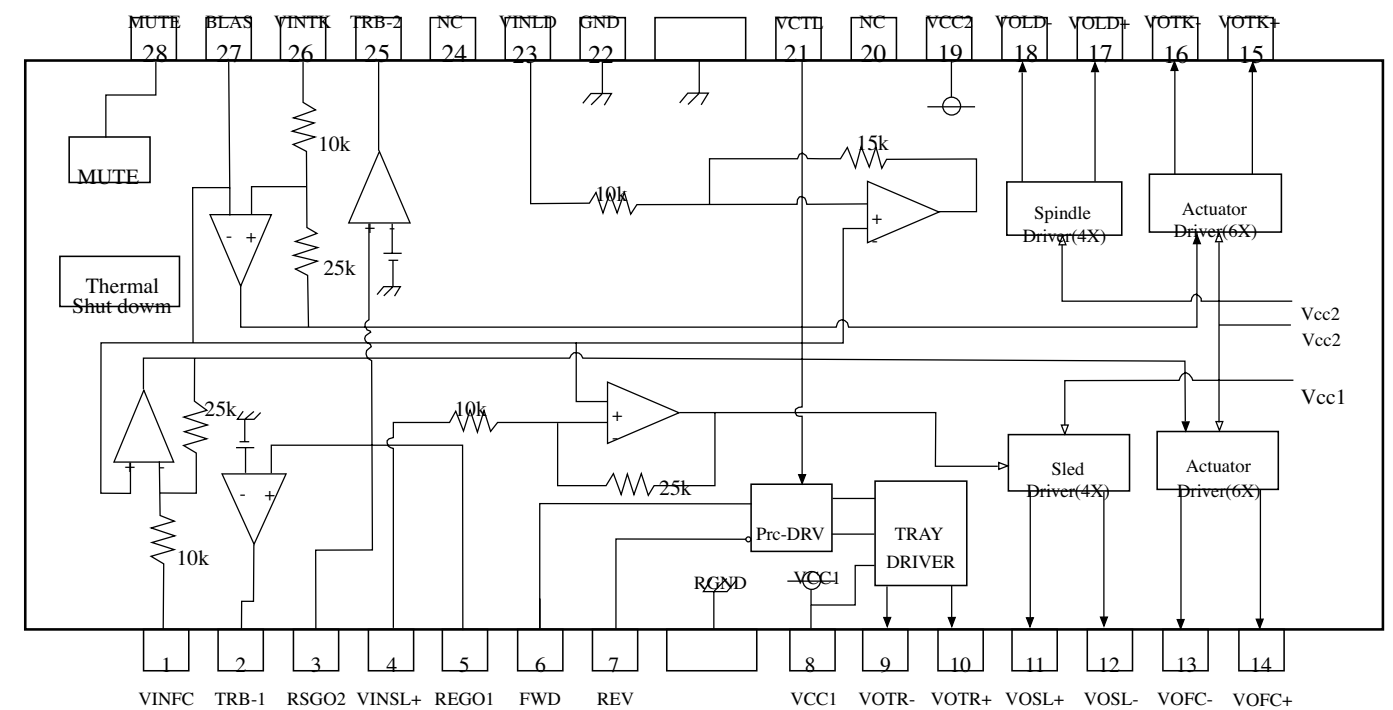
## ES8380 PHOENIX INTERNAL IC DIAGRAM



### TABLE OF CONTENTS

INTERNAL IC DIAGRAM.....	6-1
Voltage List .....	6-2
Circuit Diagram Servo .....	6-3
Circuit Diagram Amplifier(Top Left) .....	6-4
Circuit Diagram Amplifier(Top Right) .....	6-5
Circuit Diagram Amplifier(Bottom Left) .....	6-6
Circuit Diagram Amplifier(Bottom Right) .....	6-7
PCB Layout Top View .....	6-8
PCB Layout Bottom View .....	6-9
Electrical Parts List .....	6-10

## INTERNAL IC DIAGRAM-V5888S HSOP



VOLTAGE

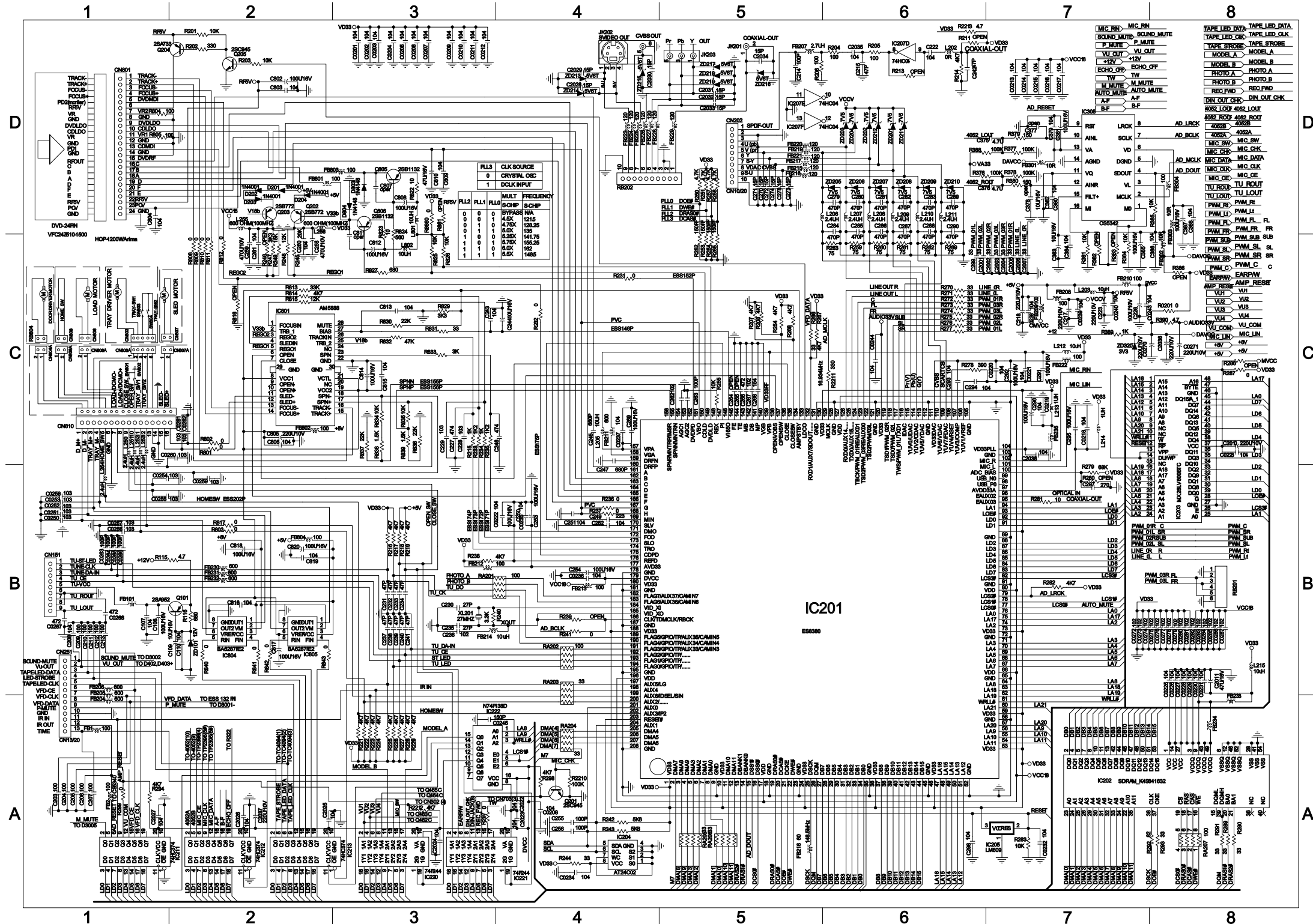
IC201																	
Pin NO	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Voltage	3.40	1.52	0.80	0.04	1.66	0.41	0.46	0.03	0.00	3.40	0.15	0.14	0.02	0.16	1.15	3.06	1.42
Pin NO	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37
Voltage	3.40	3.26	0.00	3.40	2.00	0.14	1.20	0.40	0.80	1.20	1.00	1.10	0.78	0.82	0.00	3.40	1.00
Pin NO	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57
Voltage	1.02	1.92	1.76	0.00	3.40	0.00	0.00	2.87	1.46	2.42	2.12	0.00	3.40	1.34	1.20	1.64	3.38
Pin NO	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77
Voltage	3.40	1.37	0.00	0.50	0.00	1.42	1.95	3.30	1.60	1.83	1.72	0.00	3.48	0.00	0.71	0.34	3.39
Pin NO	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97
Voltage	0.00	0.81	0.81	0.65	2.60	1.42	1.57	1.74	3.48	0.00	0.73	1.95	2.23	2.28	2.29	0.00	0.00
Pin NO	101	102	103	104	105	106	107	108	109	110	111	112	113	114	115	116	117
Voltage	0.66	1.08	1.07	3.40	0.00	0.00	0.00	0.87	0.70	3.40	0.04	0.00	0.00	0.87	1.86	1.80	1.70
Pin NO	121	122	123	124	125	126	127	128	129	130	131	132	133	134	135	136	137
Voltage	1.70	1.32	1.61	3.29	1.66	1.44	0.00	3.50	3.50	0.02	0.35	0.35	3.40	1.67	3.43	0.00	3.37
Pin NO	141	142	143	144	145	146	147	148	149	150	151	152	153	154	155	156	157
Voltage	1.23	1.28	1.61	1.66	1.62	1.59	0.05	0.12	0.20	0.12	0.00	0.05	3.30	3.30	0.87	0.90	3.38
Pin NO	161	162	163	164	165	166	167	168	169	170	171	172	173	174	175	176	177
Voltage	2.03	2.03	2.03	2.03	2.03	2.03	2.03	2.03	1.56	3.36	1.62	1.62	1.61	1.62	2.07	2.44	0.00
Pin NO	181	182	183	184	185	186	187	188	189	190	191	192	193	194	195	196	197
Voltage	0.00	1.10	3.34	1.90	1.86	1.45	0.00	3.42	1.20	3.43	1.42	1.30	1.15	1.18	0.00	1.42	4.09
Pin NO	201	202	203	204	205	206	207	208									
Voltage	4.09	3.43	5.00	3.23	1.59	1.44	0.00										
IC101																	
Pin NO	1	2	3	4	5	6	7	8									
Voltage	0.00	0.00	0.00	-11.95	0.00	0.00	0.00	13.32									
IC202																	
Pin NO	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Voltage	3.20	0.00	3.24	1.03	1.29	0.00	0.99	1.00	3.20	0.96	1.10	0.00	0.00	3.22	0.00	3.20	3.20
Pin NO	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37
Voltage	0.00	0.14	0.00	0.00	0.00	1.50	3.20	0.00	1.51	1.48	1.61	0.00	0.00	0.04	0.13	0.00	0.00
Pin NO	41	42	43	44	45	46	47	48	49	50	51	52	53	54			
Voltage	0.00	1.10	3.23	1.07	1.10	0.00	0.90	0.74	3.20	1.10	1.12	0.00	1.60	0.00			
IC203																	
Pin NO	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Voltage	0.00	2.23	1.00	2.12	1.30	1.50	1.90	0.00	0.00	3.20	3.30	3.20	3.20	3.20	1.23	0.00	0.00
Pin NO	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37
Voltage	1.93	1.66	1.60	1.58	1.64	0.00	0.00	1.00	1.27	1.38	1.17	1.20	1.22	1.00	1.13	3.20	1.30
Pin NO	41	42	43	44	45	46	47	48									
Voltage	1.40	1.29	1.80	0.00	1.60	0.00	0.00	0.00									
IC204																	
Pin NO	1	2	3	4	5	6	7	8									
Voltage	0	0	0	0	3.23	3.23	0	3.24									
IC205																	
Pin NO	1	2	3														
Voltage	0	3.24	3.23														
IC207																	
Pin NO	1	2	3	4	5	6	7	8	9	10	11	12	13	14			
Voltage	1.38	2.87	1.35	3.07	1.34	3.19	0.00	1.75	0.85	3.20	0.00	3.20	0.00	3.20			
IC211																	
Pin NO	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Voltage	0.00	0.12	1.07	1.38	4.96	0.12	1.24	0.91	3.75	0.00	4.75	0.12	1.32	1.80	3.90	4.07	1.32
IC212																	
Pin NO	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Voltage	0.00	0.13	1.07	1.40	0.00	3.70	1.25	0.89	4.30	0.00	4.41	3.70	1.35	1.79	3.37	3.37	1.39
IC213																	
Pin NO	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Voltage	0.05	0.13	1.04	1.38	0.13	3.68	1.20	0.92	0.13	0.00	4.40	3.51	1.35	1.72	3.51	3.51	1.34
IC220																	
Pin NO	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Voltage	4.43	0.06	1.48	0.06	1.32	0.03	1.80	0.05	1.38	0.00	4.89	0.80	0.08	1.20	4.93	1.37	4.98
IC221																	

IC501																	
Pin NO	1	2	3	4	5	6	7	8									
Voltage	0.00	0.00	0.00	-11.95	0.00	0.00	0.00	13.34									
IC502																	
Pin NO	1	2	3	4	5	6	7	8									
Voltage	2.29	4.97	3.22	0.00	5.00	2.30	2.30	2.30									
IC5201																	
Pin NO	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Voltage	12.41	3.57	3.57	1.62	4.96	0.08	1.05	0.01	0.01	3.37	0.01	3.37	3.37	0.08	4.96	0.08	12.43
Pin NO	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	
Voltage	29.50	14.80	0.00	0.00	14.70	29.00	26.00	25.80	28.70	14.00	0.00	0.00	13.50	0.00	24.90	12.38	
IC701																	
Pin NO	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	
Voltage	0.00	0.00	0.00	-9.39	0.00	0.00	4.45	0.00	0.00	0.60	0.00	0.00	7.94	0.00	0.00	0.00	
IC702																	
Pin NO	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	
Voltage	0.00	0.00	0.00	6.00	0.00	1.31	0.07	0.00	0.00	0.08	1.31	10.95	5.83	0.00	11.68	11.73	
IC703																	
Pin NO	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	
Voltage	0.00	0.00	0.00	-9.39	0.00	0.00	0.40	0.00	4.90	0.00	0.00	0.00	7.94	0.00	0.00	0.00	
IC704																	
Pin NO	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	
Voltage	0.00	0.00	0.00	-9.39	0.00	0.00	4.97	0.00	0.00	0.00	0.00	0.00	7.94	0.00	0.00	0.00	
IC705																	
Pin NO	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	
Voltage	0.00	3.68	0.13	4.90	4.45	0.00	4.94	0.00	0.00	0.00	0.00	0.00	4.98	0.00	4.98	4.98	
IC801																	
Pin NO	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Voltage	1.59	0.00	1.23	0.00	1.23	0.00	0.00	4.78	0.00	0.00	2.26	2.30	2.20	2.36	2.30	2.30	1.35
Pin NO	21	22	23	24	25	26	27	28									
Voltage	4.78	0.00	0.00	0.00	1.77	1.57	1.57	2.51									
IC804																	
Pin NO	1	2	3	4	5	6	7	8									
Voltage	0.01	9.30	4.78	3.50	3.50	4.80	0.00	0.00									
IC805																	
Pin NO	1	2	3	4	5	6	7	8									
Voltage	0.01	9.30	4.78	3.52	3.52	4.79	0.01	0.00									
Q101			Q3009			Q705			Q801								
Pin NO	1	2	3	Pin NO	1	2	3	Pin NO	1	2	3	Pin NO	1	2			
Voltage	12.41	12.42	13.21	Voltage	0.00	0.00	0.13	Voltage	0.00	0.08	0.08	Voltage	9.30	13.30			
Q202			Q301			Q706			Q805								
Pin NO	1	2	3	Pin NO	1	2	3	Pin NO	1	2	3	Pin NO	1	2			
Voltage	2.45	1.50	1.79	Voltage	0.00	0.00	0.00	Voltage	0.00	0.02	0.64	Voltage	3.23	0.06			
Q201			Q3013			Q707			Q806								
Pin NO	1	2	3	Pin NO	1	2	3	Pin NO	1	2	3	Pin NO	1	2			
Voltage	0.52	4.74	0.00	Voltage	0.68	0.01	0.00	Voltage	0.60	0.05	0.00	Voltage	2.02	1.88			
Q203			Q3020			Q708			Q408								
Pin NO	1	2	3	Pin NO	1	2	3	Pin NO	1	2	3	Pin NO	1	2			
Voltage	3.39	3.25	4.05	Voltage	0.00	4.93	0.22	Voltage	0.70	0.00	0.00	Voltage	0.60	0.05			
Q3001			Q304			Q709			Q409								
Pin NO	1	2	3	Pin NO	1	2	3	Pin NO	1	2	3	Pin NO	1	2			
Voltage	0.00	13.16	0.00	Voltage	1.66	13.23	1.19	Voltage	0.00	5.00	0.00	Voltage	0.60	0.07			
Q3002			Q501			Q710			Q450								
Pin NO	1	2	3	Pin NO	1	2	3										

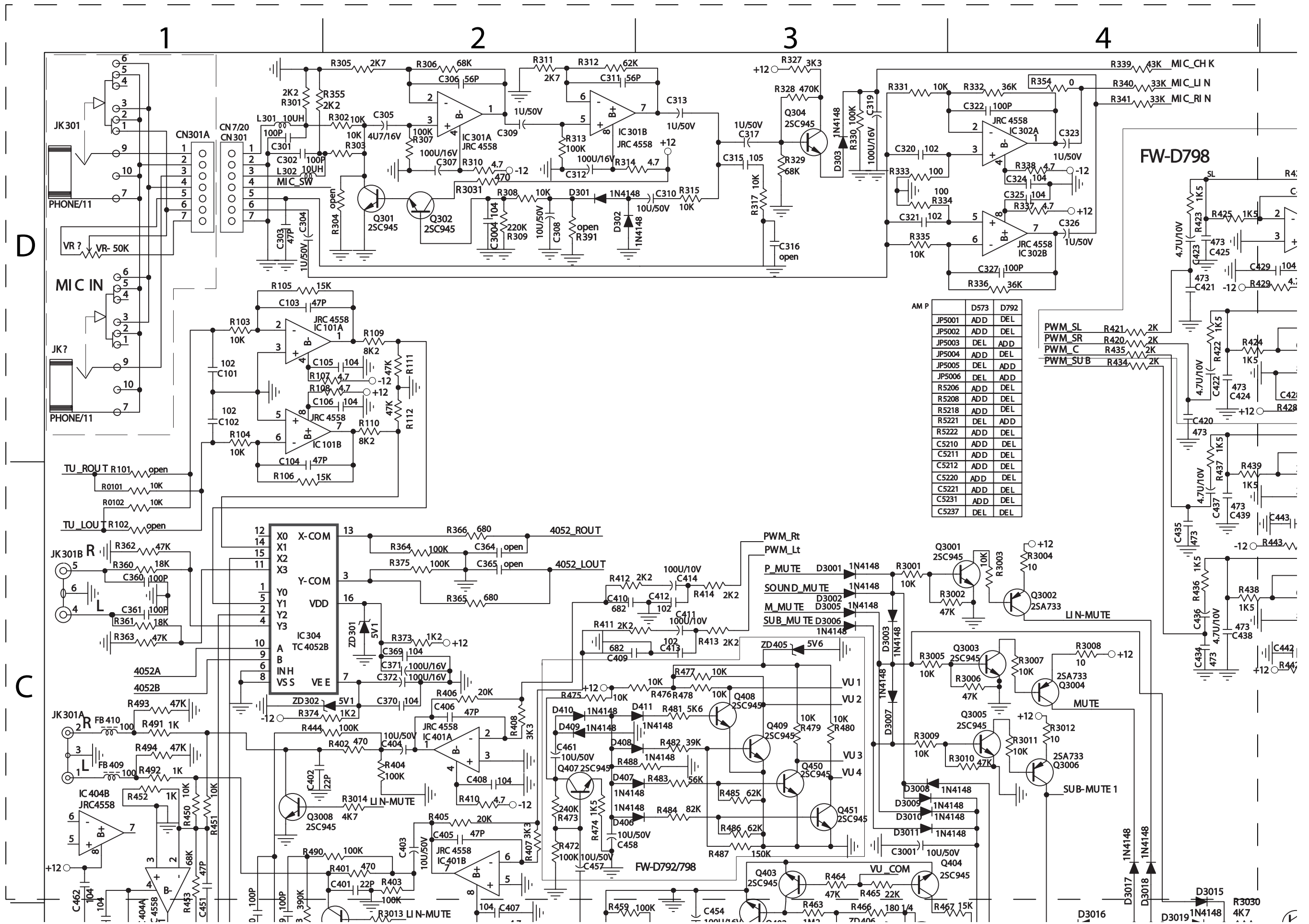


# CIRCUIT DIAGRAM -MAIN SERVO

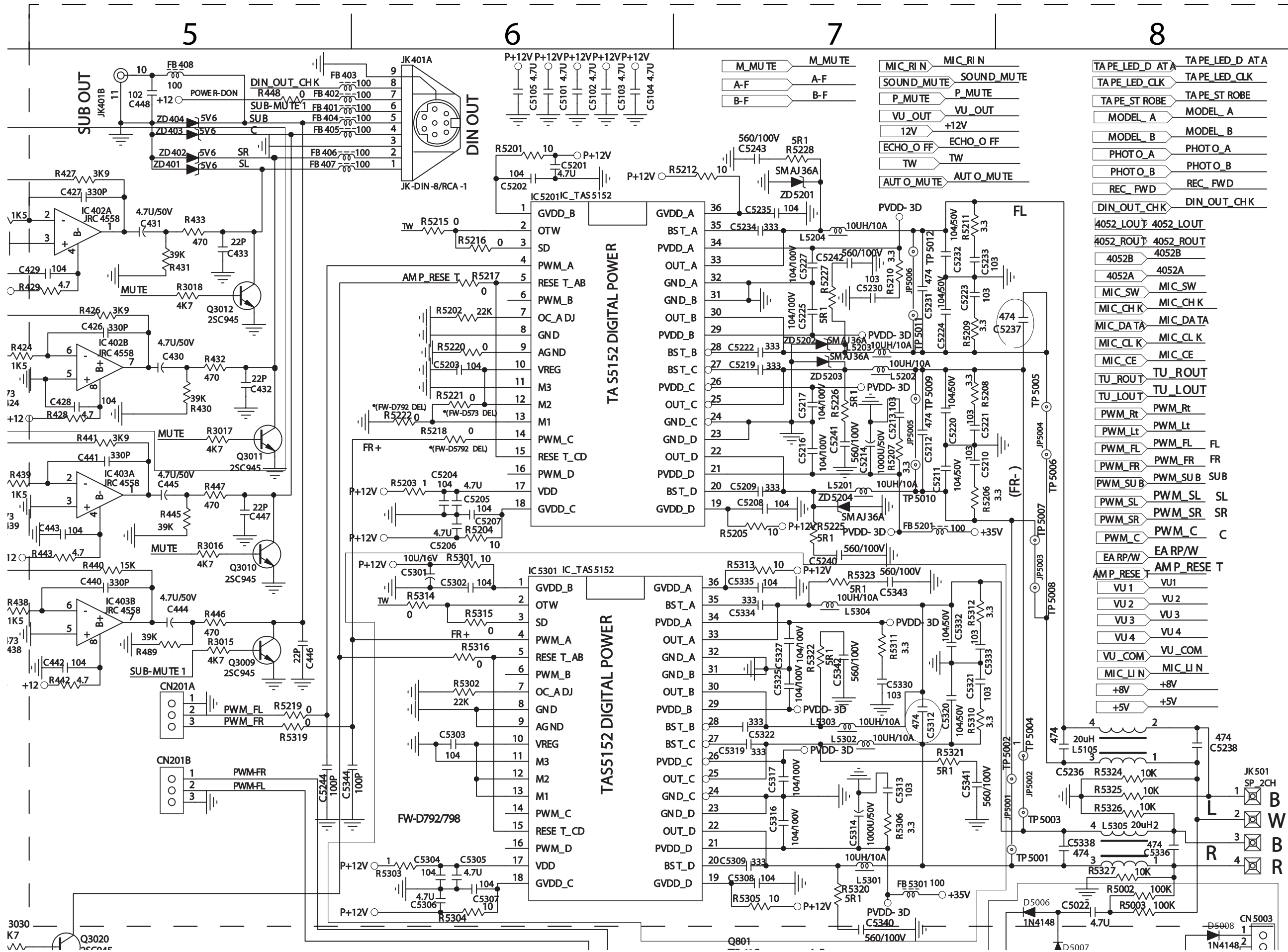
C0201 D3	C0225 B8	C0254 B1	C0283 B8	C2026 A2	C2111 B1	C238 B3	C261 C2	C287 D6	C385 C7	CN251 B1	FB212 B3	FB234 A8	IC305 D7	L251 C1	R203 D2	R226 A3	R250 D5	R273 C6	R378 D7	R814 C2	R841 B2	ZD209 D6
C0202 D3	C0226 B8	C0255 B1	C0284 B8	C2027 A1	C212 B1	C239 B3	C262 C5	C288 D6	C386 C8	CN703 A4	FB213 B4	FB235 C7	IC801 C2	L252 C1	R204 D6	R227 A3	R251 D5	R274 C6	R379 D7	R815 C2	R842 B2	ZD210 D6
C0204 D3	C0227 B8	C0256 B1	C0285 B8	C2028 D4	C213 B1	C240 B3	C263 C5	C289 D6	C387 D8	CN801 D1	FB214 B3	FB301 D7	IC804 B2	L253 C1	R205 D6	R228 A3	R252 C5	R275 C6	R380 D7	R817 B2	R843 B2	ZD211 D6
C0205 D3	C0228 B8	C0257 B1	C0286 B8	C2029 D4	C214 D5	C241 B3	C266 C5	C290 D6	C388 D8	D201 D2	FB215 D5	FB302 C8	IC805 B2	L254 B1	R206 D5	R229 A3	R253 C5	R276 C6	R381 C7	R822 D3	R860 D3	ZD212 D6
C0206 D3	C0229 B8	C0258 B1	C107 B1	C203 A1	C215 D6	C242 D6	C267 C5	C291 C7	C802 D2	D202 D2	FB216 D5	FB303 D8	JK201 D5	L255 D2	R207 C5	R231 C4	R254 C5	R277 C6	R384 C7	R823 D3	RA201 B3	ZD213 D4
C0207 D3	C0230 B8	C0259 B2	C108 B1	C2030 D4	C217 C7	C243 C3	C268 C5	C292 C7	C803 D2	D203 D2	FB217 D5	FB304 D8	JK202 D4	L801 D3	R208 C5	R232 C4	R257 D5	R278 C6	R385 D8	R824 D3	RA202 B4	ZD214 D4
C0209 D3	C0231 B8	C0261 C2	C109 B2	C2031 D5	C218 C7	C244 C4	C269 C4	C293 C6	C804 D1	D204 D2	FB218 A5	FB801 D2	JK203 D5	L802 C3	R214 D6	R233 C3	R258 D5	R279 B7	R386 C8	R825 C3	RA203 B4	ZD215 D4
C0210 D3	C0232 A7	C0262 C2	C110 B2	C2032 D5	C222 D6	C245 C4	C270 D5	C294 C6	C805 C2	D3005 A1	FB219 D5	FB802 C2	L202 D6	Q101 B2	R215 C3	R234 C3	R259 C6	R281 B7	R388 D6	R826 C3	RA204 A4	ZD216 D5
C0211 D3	C0234 A4	C0270 C7	C2001 C6	C2033 D5	C223 C7	C246 C3	C271 D5	C295 C7	C806 C2	D803 D3	FB220 D5	FB803 D3	L203 C7	Q201 A4	R216 B3	R235 C3	R260 C6	R282 B7	R389 C7	R827 C3	RA205 A5	ZD217 D5
C0212 D3	C0235 B4	C0271 C8	C2002 C7	C2034 D5	C226 C7	C247 C4	C272 D5	C296 C7	C808 D3	D804 D3	FB221 D5	FB804 B2	L205 C4	Q202 D2	R217 B3	R236 B4	R261 C6	R283 A7	R390 C8	R829 C3	RA206 A5	ZD218 D5
C0213 D7	C0236 B4	C0272 B7	C2003 C7	C2035 D6	C227 C3	C249 B4	C273 D5	C297 B7	C809 D3	FB1 A1	FB222 C7	IC201 B5	L206 D6	Q203 D2	R218 B3	R237 B4	R262 C6	R287 C8	R801 C2	R830 C3	RA207 A8	ZD219 D5
C0214 D7	C0237 C4	C0273 B7	C2004 C7	C2036 C8	C228 C3	C250 B4	C274 D5	C298 A6	C810 D3	FB101 B1	FB223 D4	IC202 A7	L207 D6	Q204 D2	R219 B3	R238 B3	R263 C6	R289 A8	R802 C2	R831 C3	XL201 B3	ZD220 D6
C0215 D7	C0238 C7	C0274 B7	C2005 C7	C2037 A2	C229 C3	C251 B4	C278 D5	C299 C6	C812 C3	FB2 A1	FB224 D4	IC203 B8	L208 D6	Q205 D2	R221 A3	R240 B3	R264 C5	R290 A8	R803 B2	R832 C3	ZD101 B2	
C0216 D7	C0239 C7	C0275 B8	C2006 C7	C2038 C7	C230 B3	C252 B4	C279 D6	C375 D7	C813 C3	FB204 A1	FB225 D4	IC204 A4	L209 D6	Q805 D3	R2210 A4	R241 B4	R265 C5	R291 A8	R804 D1	R833 C3	ZD201 D6	
C0217 D7	C0240 C7	C0276 B8	C2007 C7	C204 A1	C231 B3	C253 B4	C280 D6	C376 D7	C814 C3	FB205 B1	FB226 D4	IC207 D5	L210 D6	Q806 D3	R2211 C6	R242 A4	R266 C5	R292 A8	R805 D1	R834 C3	ZD202 D6	
C0218 C7	C0243 C7	C0277 B8	C2010 C8	C205 A1	C232 B3	C254 B4	C281 D6	C379 D7	C815 C3	FB206 B1	FB227 D4	IC211 A2	L211 D6	Q709 A4	R2212 A3	R243 A4	R267 C5	R293 A8	R808 C2	R835 C3	ZD203 D6	
C0219 C7	C0244 C6	C0278 B8	C2011 B8	C206 A1	C233 B3	C255 A4	C282 D6	C380 D7	C816 B2	FB207 D5	FB228 D4	IC212 A2	L212 C7	R0201 C8	R2213 D6	R244 A4	R268 C5	R294 A1	R809 C2	R836 C3	ZD204 D6	
C0220 C7	C0250 B1	C0279 B8	C2022 A4	C207 A1	C234 B3	C256 A4	C283 D6	C381 D7	C817 B2	FB208 C7	FB229 D5	IC213 A2	L213 C7	R115 B1	R221 A3	R245 C2	R269 C6	R297 A3	R810 C2	R837 C3	ZD205 D6	
C0221 C7	C0251 B1	C0280 B8	C2023 A4	C208 B1	C235 B3	C258 C2	C284 D6	C382 D7	C818 B2	FB209 C7	FB230 B2	IC220 A3	L214 C7	R116 B2	R223 A3	R247 C2	R270 C6	R298 A4	R811 C2	R838 C3	ZD206 D6	
C0222 B4	C0252 B1	C0281 B8	C2024 A3	C209 B1	C236 B3	C259 C2	C285 D6	C383 C7	C819 B2	FB210 C7	FB231 B2	IC221 A4	L215 B8	R201 D2	R224 A3	R248 C2	R271 C6	R376 D6	R812 C2	R839 C3	ZD207 D6	
C0223 C8	C0253 B1	C0282 B8	C2025 A2	C210 B1	C237 B3	C260 C2	C286 D6	C384 C7	C820 B2	FB211 C4	FB232 B2	IC222 A3	L250 C1	R202 D2	R225 A3	R249 C2	R272 C6	R377 D7	R813 C2	R840 B2	ZD208 D6	



# CIRCUIT DIAGRAM - MAIN AMPLIFIER(TOP LEFT)



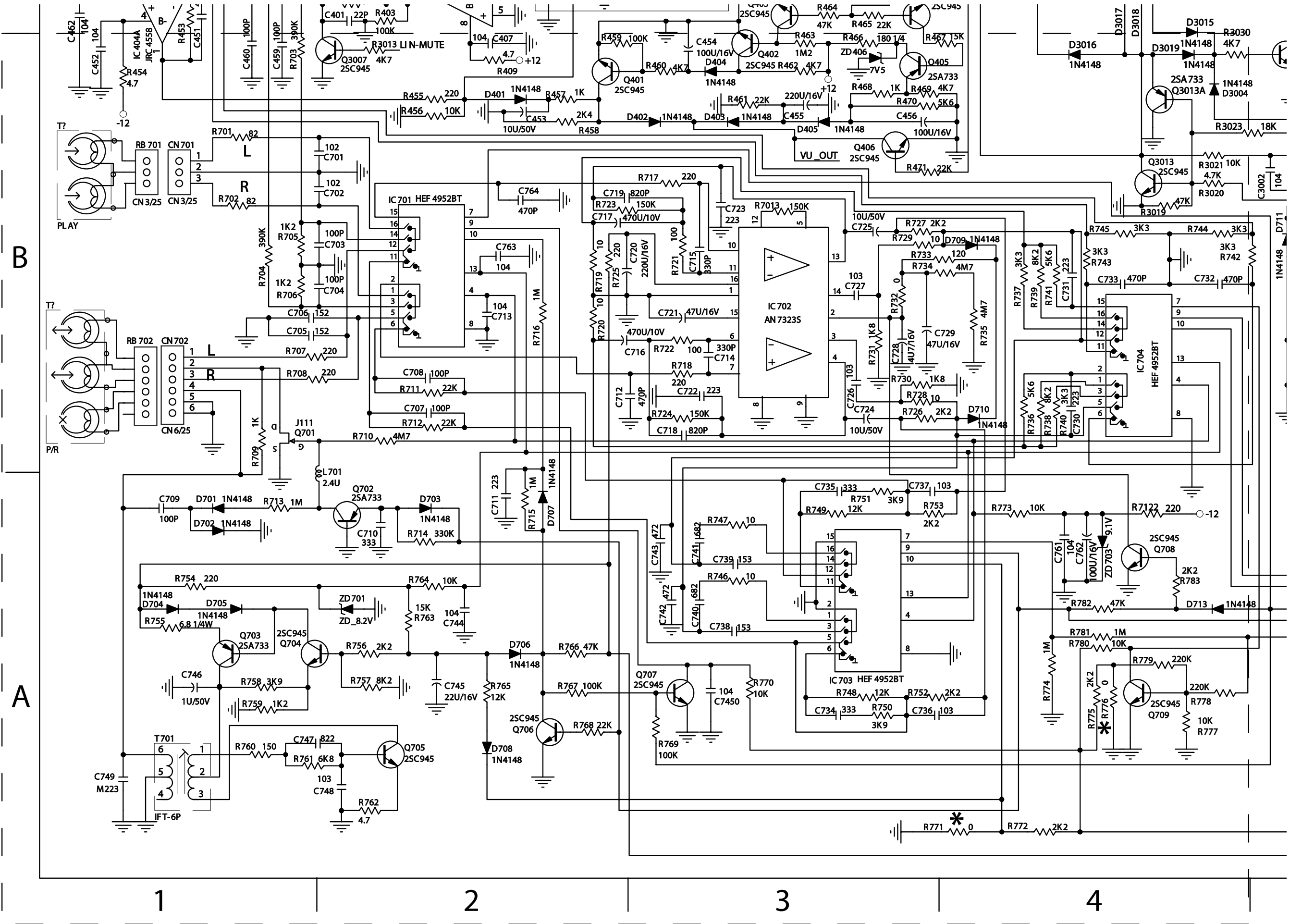
# CIRCUIT DIAGRAM - MAIN AMPLIFIER(TOP RIGHT)



D

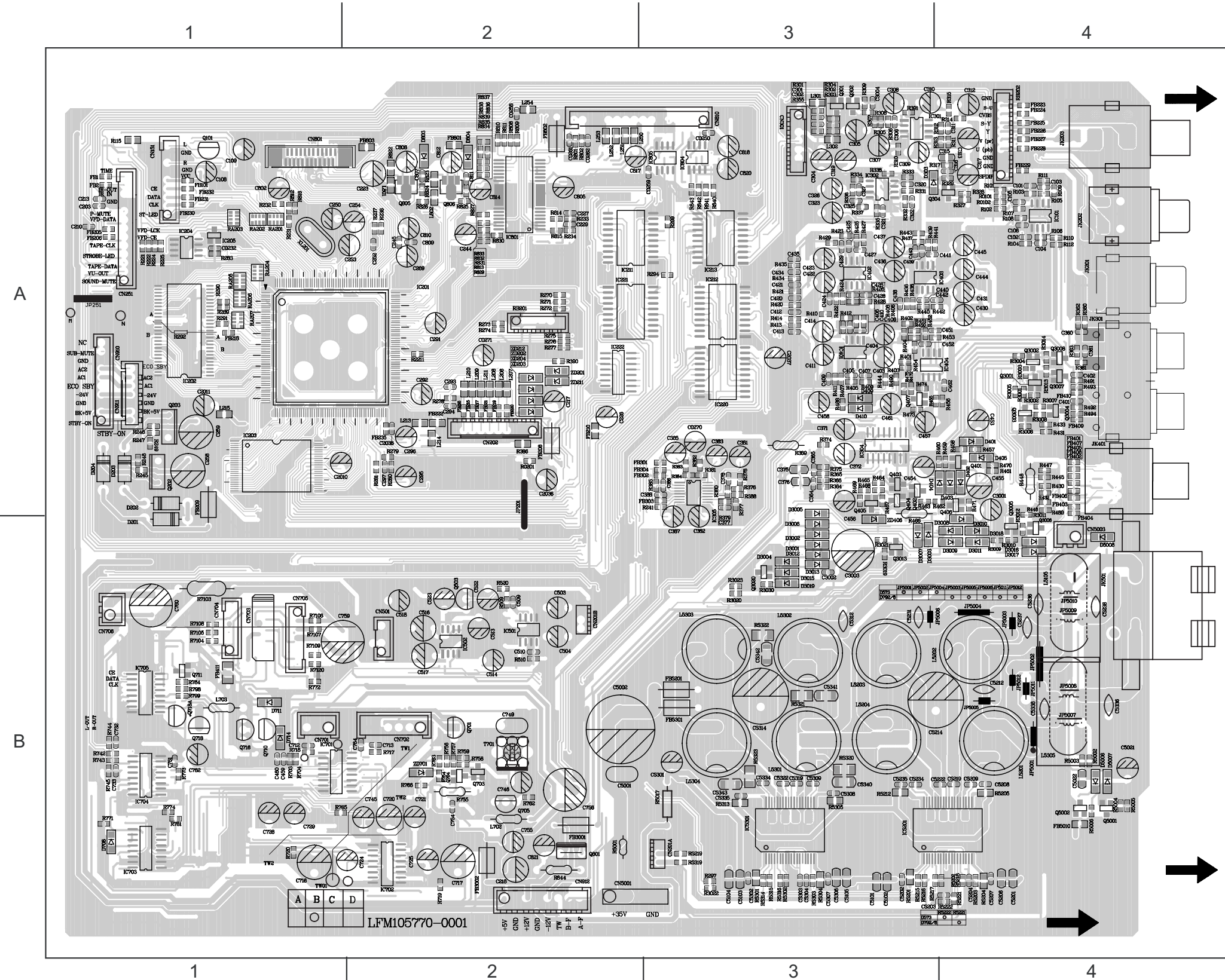
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# CIRCUIT DIAGRAM -MAIN AMPLIFIER (BOTTOM LEFT)





# PCB LAYOUT: MAIN (TOP) VIEW

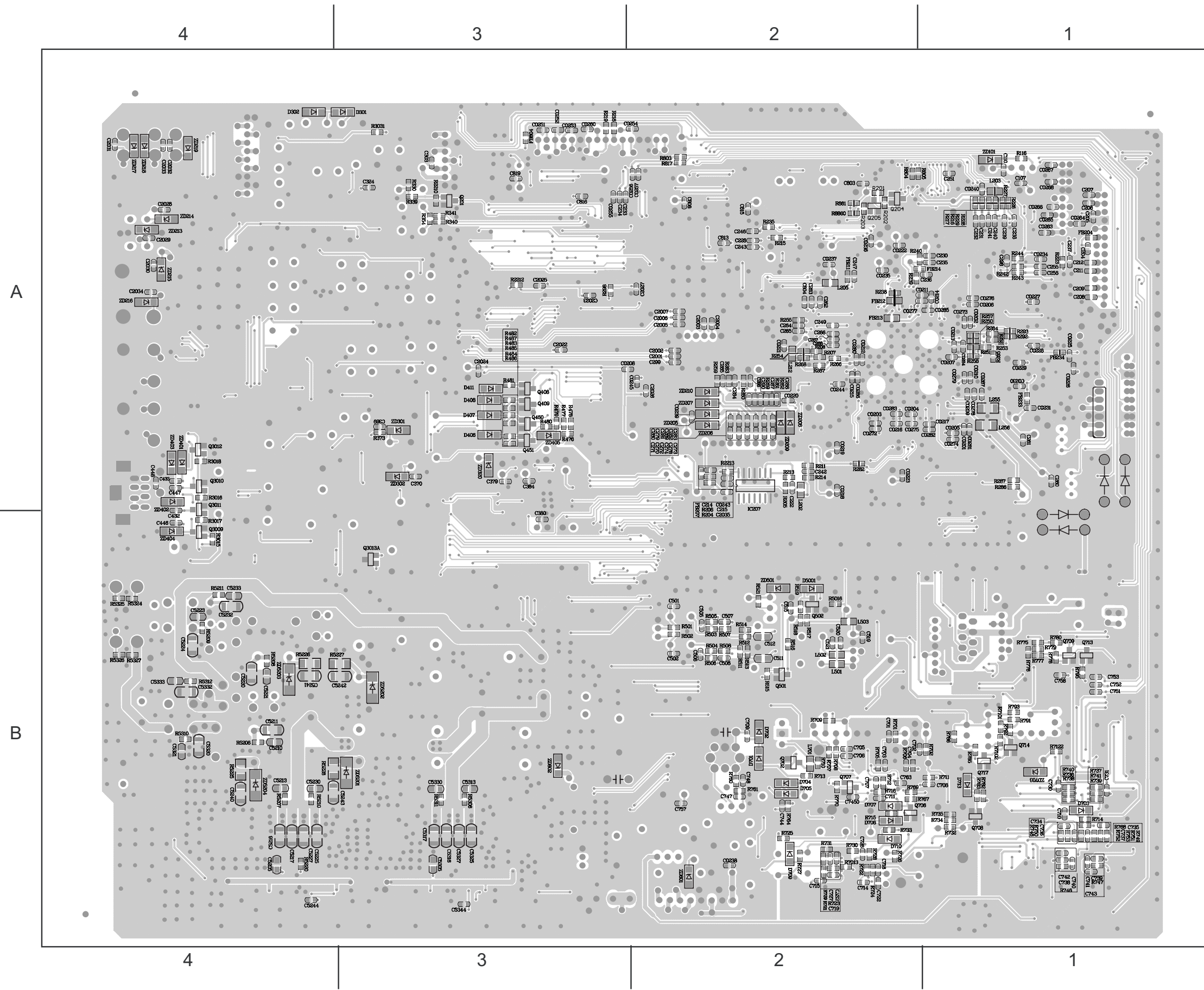


C0232	A1	C457	A3	D3010	B4	L211	A2	R3021	B3	R5004	B4
C0250	A3	C458	A3	D3011	B4	L213	A2	R3022	B3	R5005	B4
C0258	A2	C459	B1	D3011	B4	L214	A2	R3023	B3	R5006	B4
C0259	A3	C460	B3	D3012	B3	L215	A1	R3031	B3	R5017	B3
C0261	A2	C461	A3	D3013	B3	L250	A2	R3030	B3	R509	B2
C0262	A2	C462	A4	D3015	B3	L251	A2	R304	A3	R510	B2
C0270	A3	C465	A3	D3016	B4	L252	A2	R305	A3	R520	B2
C0271	A2	C5001	B2	D3017	B4	L253	A2	R306	A3	R5201	B3
C101	A4	C5002	B3	D3018	B4	L254	A2	R307	A3	R5202	B4
C102	A4	C5021	B4	D3019	B3	L301	A3	R308	A3	R5203	B4
C103	A4	C5022	B4	D303	A3	L302	A3	R309	A3	R5204	B4
C104	A4	C503	B2	D401	A4	L5105	B4	R310	A3	R5205	B4
C105	A4	C504	B2	D402	A4	L5201	B4	R311	A4	R5212	B3
C106	A4	C509	B2	D403	A4	L5202	B3	R312	A4	R5215	B3
C108	A1	C510	B2	D404	A3	L5203	B3	R313	A4	R5216	B3
C109	A1	C5101	B3	D405	A4	L5204	B3	R314	A4	R5217	B3
C2010	A1	C5102	B3	D409	A3	L5301	B3	R315	A4	R5218	B4
C2011	A1	C5103	B3	D410	A3	L5302	B3	R317	A4	R5219	B3
C203	A1	C5104	B3	D5006	B4	L5303	B3	R327	A4	R5221	B4
C2036	A2	C5105	B3	D5007	B4	L5304	B3	R328	A4	R5222	B4
C2037	A3	C513	B2	D5008	B4	L5305	B4	R329	A4	R5301	B3
C2038	A2	C514	B2	D708	B1	L702	B2	R331	A3	R5302	B3
C210	A1	C516	B2	D711	B1	L703	B1	R332	A3	R5303	B3
C213	A1	C517	B2	D714	B1	L801	A2	R333	A3	R5304	B3
C217	A2	C518	B2	D803	A2	L802	A2	R334	A3	R5305	B3
C218	B2	C5201	B4	D804	A2	Q101	A1	R335	A3	R5313	B3
C223	A2	C5202	B3	F81	A1	Q202	A1	R336	A3	R5314	B3
C226	A2	C5203	B4	F8101	A1	Q203	A1	R337	A3	R5315	B3
C227	A2	C5204	B4	F82	A1	Q3001	A4	R338	A3	R5316	B3
C229	A2	C5206	B4	F8205	A1	Q3002	A4	R355	A3	R5319	B3
C244	A2	C5207	B4	F8206	A1	Q3003	A4	R360	A4	R5320	B3
C245	A2	C5208	B4	F8208	A2	Q3004	A4	R361	A4	R5321	B3
C250	A1	C5209	B4	F8209	A1	Q3005	A4	R362	A4	R5322	B3
C252	A2	C5212	B4	F8210	A2	Q3006	B4	R363	A4	R5323	B3
C253	A2	C5214	B3	F8215	A2	Q3007	A4	R364	A3	R703	B1
C254	A2	C5219	B4	F8216	A2	Q3008	A4	R365	A3	R704	B1
C258	A1	C522	B2	F8217	A2	Q301	B2	R366	A3	R7103	B1
C259	A1	C5222	B4	F8218	A1	Q3013	B3	R374	A3	R7104	B1
C269	A2	C523	B2	F8219	A2	Q3021	B2	R375	A3	R7105	B1
C291	A2	C5231	B3	F8220	A2	Q3020	B3	R376	A3	R7106	B1
C292	A2	C5234	B3	F8221	A2	Q304	A4	R377	A3	R7107	B1
C293	A2	C5235	B3	F8222	A2	Q401	A4	R378	A3	R7108	B1
C294	A2	C5236	B4	F8223	A4	Q402	A3	R378	A3	R7109	B1
C295	A2	C5237	B4	F8224	A4	Q403	A3	R380	A3	R7120	B1
C296	A2	C5238	B4	F8225	A4	Q404	A3	R381	A3	R717	B2
C296	A2	C5239	B4	F8225	A4	Q405	A3	R382	A3	R718	B2
C297	A2	C5302	B3	F8227	A4	Q406	A4	R383	A3	R719	B2
C3001	A4	C5303	B3	F8228	A4	Q407	A3	R384	A3	R720	B1
C3002	B3	C5304	B3	F8229	A4	Q5001	B4	R385	A3	R742	B1
C3003	B3	C5306	B3	F8230	A1	Q5002	B4	R386	A2	R743	B1
C3004	A3	C5307	B3	F8231	A1	C503	B2	R388	A3	R744	B1
C301	A3	C5308	B3	F8232	A1	C701	B2	R389	A3	R745	B1
C302	A3	C5309	B3	F8235	A2	Q703	B2	R390	A2	R754	B2
C304	A3	C5312	B3	F83001	B2	Q704	B2	R391	A3	R755	B2
C305	A3	C5314	B3	F83002	B2	Q705	B2	R401	A3	R756	B2
C306	A3	C5319	B3	F8301	A3	Q710	B1	R402	A3	R757	B2
C307	A3	C5322	B3	F8302	A3	Q711	B1	R403	A3	R758	B2
C308	A3	C5324	B3	F8303	A3	Q716	B1	R404	A3	R759	B2
C309	A3	C5335	B3	F8304	A3	Q718	B1	R405	A3	R762	B2
C310	A3	C5336	B4	F8401	A4	Q718A	B1	R406	A3	R763	B2
C311	A4	C5338	B4	F8402	A4	Q801	B2	R407	A3	R765	B1
C312	A4	C5340	B3	F8403	A4	Q805	A2	R408	A3	R766	B2
C313	A4	C5341	B3	F8404	A4	Q806	A2	R409	A3	R771	B1
C315	A4	C5342	A4	F8405	A4	Q810	A2	R410	A3	R772	B1
C316	A4	C5343	B3	F8406	A4	R10102	A4	R411	A3	R773	B1
C317	A4	C712	B1	F8407	A4	R0201	A4	R412	A3	R774	B1
C319	A3	C713	B2	F8408	A4	R101	A4	R413	A3	R781	B1
C320	A3	C716	B2	F8409	A4	R102	A4	R414	A3	R784	B1
C321	A3	C717	B2	F8410	A4	R103	A4	R420	A3	R798	B1
C322	A3	C720	B1	F8411	B1	R104	A2	R421	A3	R799	B2
C323	A3	C721	B2	F8411	B1	R105	A4	R422	A3	R801	A2
C325	A3	C724	B2	F85010	B4	R106	A4	R423	A3	R802	A2
C326	A3	C725	B2	F85201	B3	R107	A4	R424	A3	R808	A2
C327	A3	C728	B1	F85301	B3	R108	A4	R424	A3	R809	A2
C360	A4	C729	B1	F8501	A2	R109	A4	R425	A3	R810	A2
C361	A4	C732	B1	F8502	A2	R110	A4	R426	A3	R811	A2
C364	A3	C733	B1	F8503	A2	R111	A4	R427	A3	R812	A1
C365	A3	C745	B2	IC101	A4	R112	A4	R428	A3	R813	A2
C371	A3	C746	B2	IC201	A2	R115	A1	R429	A3	R814	A2
C372	A3	C749	B2	IC202	A1	R221	A1	R430	A4	R815	A2
C375	A3	C752	A1	IC203	A1	R214	A2	R431	A4	R816	A1
C376	A3	C755	B2	IC204	A1	R222	A1	R432	A4	R822	A2
C377	A3	C756	B2	IC205	A1	R224	A1	R433	A4	R823	A2
C378	A3	C759	B1	IC211	A2	R225	A1	R434	A3	R824	A2
C381	A3	C760	B1	IC212	A3	R231	A1	R435	A3	R825	A2
C382	A3	C761	B1	IC213	A3	R232	A1	R436	A3	R827	A2
C383	A3	C762	A3	IC220	A2	R437	A3	R437	A3	R828	A2
C385	A3	C764	B2	IC221	A2	R234	A2	R438	A3	R829	A2
C386	A3	C802	A1	IC222	A2	R237	A2	R439	A3	R830	A2
C387	A3	C805	A2	IC301	A3	R238	A2	R440	A3	R831	A2
C388	A3	C807	A2	IC302	A3	R241	A3	R441	A3	R832	A2
C401	A4	C808	A2	IC304	A3	R245	A1	R442	A3	R833	A2
C402	A4	C809	A2	IC305	A3	R246	A1	R443	A3	R834	A2
C403	A3	C810	A2	IC401	A3	R247	A1	R444	A3	R835	A2
C404	A3	C811	A2	IC402	A3	R248	A1	R445	A4	R836	A2
C405	A3	C812	A2	IC403	A3	R249	A1	R446	A4	R837	A2
C406	A3	C814	A2	IC404	A3	R270	A2	R447	A4	R838	A2
C407	A3	C817	A2	IC501	B2	R271	A2	R448	A4	R839	A2
C408	A3	C818	A3	IC502	B2	R272	A2	R450	A3	R840	A3
C409	A3	C820	A3	IC5201	B3	R273	A2	R451	A3	R841	A3
C410	A3	C821	B2	IC5301	B3	R274	A2	R452	A3	R842	A3
C411	A3	CN151	A1	IC701	B1	R275	A2	R453	A3	R843	A3
C412	A3	CN201A	B3	IC702	B2	R276	A2	R454	A3	R844	B2
C413	A3	CN201B	B2	IC703	B1	R277	A2	R455	A4	RA201	A1
C414	A3	CN202	A2	IC704	B2	R278	A2	R456	A4	RA202	A1
C420	A3	CN251	A1	IC705	B1	R279	A2	R457	A4	RA203	A1
C421	A3	CN301	A3	IC801	A2	R280	A2	R458	A4	RA204	A1
C422	A3	CN5001	B2	IC804	A3	R281	A2	R459	A4	RA205	A1
C423	A3	CN5003	B4	IC805	A3	R283	A1	R460	A4	RA206	A1
C424	A3	CN501	B2	JK201	A4	R289	A1	R461	A4	RA207	A1
C425	A3	CN701	B1	JK202	A4	R290	A1	R462	A4	RA208	A1
C426	A3	CN702	B2	JK203	A4	R291	A1	R463	A3	RA202	A4
C427	A3	CN703	B1	JK301	A4	R292	A1	R464	A3	T701	B2
C428	A3	CN704	B1	JK401	A4	R294	A1	R465	A3	XL201	A1
C429	A3	CN705	B1	JK501	B4	R297	B3	R466	A3	ZD201	A2
C430	A4	CN706	B1	JP201	A2	R299	A3	R467	A3	ZD202	A2
C431	A4	CN801	A1	JP251	A1	R3001	A4	R468	A3	ZD203	A2
C434	A3	CN810	A3	JP5001	B4	R3002	A4	R469	A3	ZD204	A2
C435	A3	CN810	A1	JP5002	B4	R3003	A4	R470	A4	ZD211	A2
C436	A3	CN811	A1	JP5003	B4	R3004	A4	R471	A4	ZD212	A2
C438	A3	CN812	B2	JP5004	B4	R3005	A4	R472	A3	ZD406	B3
C439	A3	D201	B1	JP5005	B4	R3006	A4	R473	A3	ZD701	B2
C440	A3	D203	A1	JP5007	B4	R3008	A4	R474	A3		
C441	A3	D204	A1	JP5008	B4	R3009	B4	R488	A3		
C442	A3	D3001	B3	JP5009	B4	R301	A3	R488	A4		
C443	A3	D3002	B3	JP5010	B4	R3010	B4	R490	A3		
C444	A4	D3003	B3	JP5011	B4	R3011	B4	R491	A4		
C445	A4	D3004	B3	JP5012	B4	R3012	B4	R492	A4		
C451	A3	D3005	A3	L206	A2	R3013	A4	R493	A4		
C452	A3	D3006	B3	L207	A2	R3014	A4	R494	A4		
C453	A4	D3007	B3	L208	A2	R3019	B3	R5001	B2		
C454	A3	D3008	B4	L209	A2	R302	A3	R5002	B4		
C455	A4	D3009	B								

# PCB LAYOUT MAIN (BOTTOM) VIEW

6-9

6-9



C0201	A1	C273	A2	FB213	A2	RS207	B4
C0202	A1	C278	A2	FB214	A1	RS208	B4
C0203	A2	C279	A2	FB233	A1	RS209	B4
C0204	A2	C280	A2	FB234	A1	RS210	B2
C0205	A1	C281	A2	FB804	A3	RS210	B4
C0206	A1	C282	A2	IC207	A2	RS211	B4
C0207	A1	C283	A2	L202	A2	RS220	B4
C0208	A3	C284	A2	L203	A1	RS225	B4
C0209	A1	C285	A2	L205	A2	RS226	B4
C0210	A1	C286	A2	L212	A2	RS227	B4
C0211	A1	C287	A2	L255	A1	RS228	B4
C0212	A2	C289	A2	L256	A1	RS306	B3
C0213	A1	C290	A2	L501	B2	RS310	B4
C0214	A1	C298	A1	L502	B2	RS311	B3
C0215	A2	C299	A2	L503	B2	RS312	B4
C0216	A2	C303	A3	L701	B2	RS324	B4
C0217	A1	C324	A3	Q201	A3	RS325	B4
C0218	A2	C357	B2	Q204	A3	RS326	B4
C0219	A2	C360	B3	Q205	A2	RS327	B4
C0220	A2	C369	A3	Q3009	B4	R701	B2
C0221	A2	C370	A3	Q3010	A4	R7013	B2
C0222	A2	C379	A3	Q3011	A4	R702	B2
C0223	A2	C384	A3	Q3012	A4	R706	B2
C0225	A4	C432	B3	Q3013	B3	R706	B2
C0226	A1	C433	A4	Q408	A3	R707	B2
C0227	A1	C446	B4	Q409	A3	R708	B2
C0228	A1	C447	A4	Q450	A3	R709	B2
C0229	A1	C448	A4	Q451	A3	R710	B2
C0230	B2	C501	B2	Q501	B2	R7101	B1
C0231	A1	C502	B2	Q502	B2	R7102	B1
C0234	A1	C505	B2	Q5317	B3	R711	B1
C0234	A1	C506	B2	Q702	B2	R712	B2
C0235	A2	C507	B2	Q706	B2	R7122	B1
C0236	A2	C508	B2	Q707	B2	R713	B2
C0237	B2	C511	B2	Q708	B2	R714	B1
C0238	B2	C512	B2	Q709	B1	R715	B2
C0239	A2	C515	B2	Q713	B1	R716	B2
C0240	A1	C519	B2	Q714	B1	R721	B2
C0243	A2	C520	B2	Q717	B1	R722	B2
C0244	A4	R116	B4	R723	B2	R723	B2
C0245	A2	C521	B2	R201	A2	R724	B2
C0251	A3	C5210	B4	R202	A2	R725	B2
C0252	A3	C5211	B4	R203	A2	R727	B2
C0253	A3	C5213	B4	R204	A2	R728	B2
C0254	B4	C5216	B4	R206	A2	R729	B2
C0255	A3	C5217	B4	R207	A2	R730	B2
C0256	A2	C5220	B4	R208	A2	R731	B2
C0257	A2	C5221	B4	R208	A2	R732	B1
C0260	A3	C5223	B4	R211	A2	R733	B2
C0263	A1	C5224	B4	R213	A2	R734	B1
C0264	A1	C5225	B4	R214	A2	R735	B1
C0265	A1	C5227	B4	R215	A2	R736	B1
C0266	A1	C5230	B4	R216	A1	R737	B1
C0266	A2	C5232	B4	R216	A3	R738	B1
C0267	A1	C5233	B4	R217	A1	R739	B1
C0268	A1	C5240	B4	R219	A3	R740	B1
C0272	A2	C5241	B4	R2210	A3	R741	B1
C0273	A1	C5242	B4	R2212	A3	R746	B1
C0274	A1	C5243	B4	R2213	A2	R747	B1
C0275	A2	C5244	B4	R223	A1	R748	B1
C0276	A1	C5306	B3	R226	A1	R748	B2
C0277	A2	C5313	B3	R227	A1	R749	B1
C0278	A1	C5316	B3	R228	A1	R750	B1
C0278	A1	C5320	B4	R229	A1	R751	B1
C0280	A2	C5321	B4	R235	A2	R752	B1
C0281	A2	C5325	B3	R238	A2	R753	B1
C0282	A1	C5327	B3	R239	A2	R760	B2
C0283	A2	C5330	B3	R240	A2	R761	B2
C0285	A1	C5332	B4	R242	A1	R764	B2
C0287	A1	C5333	B4	R243	A1	R767	B2
C107	A1	C5344	B3	R244	A1	R768	B1
C110	A1	C701	B2	R250	A1	R770	B2
C2001	A2	C702	B2	R251	A1	R775	B1
C2002	A2	C703	B2	R252	A1	R776	B1
C2003	A2	C704	B2	R253	A1	R777	B1
C2003	A4	C705	B2	R254	A2	R778	B1
C2004	A2	C706	B2	R255	A1	R779	B1
C2005	A2	C707	B2	R255	A2	R780	B1
C2006	A2	C708	B1	R257	A1	R782	B1
C2007	A2	C709	B2	R258	A1	R783	B1
C0202	A3	C710	B1	R259	A2	R785	B1
C2023	A3	C711	B2	R260	A2	R786	B1
C0204	A3	C714	B2	R261	A2	R791	B1
C2025	A3	C715	B2	R262	A2	R792	B1
C2026	A2	C718	B2	R263	A2	R796	B1
C0207	A2	C719	B2	R264	A1	R799	B1
C0208	A1	C722	B2	R266	A2	R803	A2
C2029	A4	C726	B2	R266	A2	R804	A2
C2030	A4	C727	B2	R267	A2	R805	A1
C2031	A4	C730	B1	R268	A2	R817	A2
C0202	A4	C731	B1	R269	A2	R860	A2
C2034	A4	C734	A2	R274	A2	ZD101	A1
C2035	A2	C735	B1	R287	A1	ZD205	A2
C204	A1	C736	B1	R292	A1	ZD206	A2
C205	A1	C737	B1	R293	A1	ZD207	A2
C206	A1	C738	B1	R298	A3	ZD208	A2
C207	B4	ZD309	B4	Z309	B4	ZD309	A2
C208	A1	C740	B1	R3016	A4	ZD210	A2
C209	A1	C741	B1	R3017	B4	ZD213	A4
C211	A1	C742	B1	R3018	A4	ZD214	A4
C212	A1	C743	B1	R3031	A3	ZD215	A4
C214	A2	C744	B2	R330	A3	ZD216	A4
C215	A2	C7450	B2	R339	A3	ZD217	A4
C222	A2	C747	B2	R340	A3	ZD218	A4
C228	A2	C748	B2	R341	A3	ZD219	A4
C230	A1	C751	B1	R354	A3	ZD301	A3
C231	A1	C752	B1	R373	A3	ZD302	A3
C232	A1	C753	B1	R476	A3	ZD320	A3
C233	A3	C757	B2	R477	A3	ZD401	A4
C234	A3	C758	B1	R478	A3	ZD402	A4
C236	A1	C763	B2	R479	A3	ZD403	A4
C236	A1	C803	A2	R480	A3	ZD404	A4
C236	A1	C806	A2	R481	A3	ZD405	A3
C237	A1	C813	A2	R482	A3	ZD501	B2
C239	A1	C815	A2	R483	A3	ZD5202	B3
C240	A1	C816	A3	R484	A3	ZD5203	B4
C241	A1	C819	A3	R485	A3	ZD5204	B4
C241	A3	R486	A3	ZD601	B2	ZD601	B2
C243	A2	D302	A4	R487	A3	ZD6201	B3
C246	A2	D406	A3	R501	B2	ZD703	B1
C247	A2	D407	A3	R5016	B2	ZD802	B3
C249	A2	D408	A3	R502	B2		
C251	A1	D503	B2	R503	B2		
C255	A1	D5001	B2	R504	B2		
C256	A1	D701	B2	R505	B2		
C260	A1	D702	B2	R506	B2		
C261	A1	D703	B1	R507	B2		
C262	A2	D704	B2	R508	B2		
C263	A2	D705	B2	R511	B2		
C264	A2	D706	B2	R512	B2		
C264	A2	D707	B2	R513	B2		
C265	A2	D709	B2	R514	B2		
C266	A2	D710	B2	R515	B2		
C267	A2	D713	B1	R516	B2		
C268	A2	FB204	A1	RS17	B2		
C270	A2	FB207	A2	RS18	B2		
C271	A2	FB211	A2	RS19	B2		
C272	A2	FB212	A2	RS206	B4		

**ELECTRICAL PARTS LIST - MAIN BOARD**

IC101	9965 000 29611	IC 8P CO4558A SO8 CERAMATE	Q3001	9940 000 00915	XISTR NPN 2SC1623
IC201	9940 000 05336	IC 208P ES8380FCD PQFP	Q3002	9940 000 00921	XISTR PNP 2SA812 HFE:200-400
IC202	9940 000 00831	IC 54PIN K4S641632H-UC 75	Q3003	9940 000 00915	XISTR NPN 2SC1623
IC203	9940 000 00829	IC 48PIN MX29LV160ABTC-70	Q3004	9940 000 00921	XISTR PNP 2SA812 HFE:200-400
IC203	9940 000 05337	IC 48P EN29LV160AB-70TCP	Q3005	9940 000 00915	XISTR NPN 2SC1623
IC204	9940 000 00833	IC 8P M24C04-WMN6T EEPROM	Q3006	9940 000 00921	XISTR PNP 2SA812 HFE:200-400
IC207	9965 000 23948	IC 14PIN 74HCU04D	Q3007	9940 000 00915	XISTR NPN 2SC1623
IC211	9940 000 00835	IC 20PIN 74F374D	Q3008	9940 000 00915	XISTR NPN 2SC1623
IC212	9940 000 00835	IC 20PIN 74F374D	Q3009	9940 000 00915	XISTR NPN 2SC1623
IC213	9940 000 00835	IC 20PIN 74F374D	Q301	9940 000 00915	XISTR NPN 2SC1623
IC220	9940 000 00838	IC 20PIN 74F244	Q3013	9940 000 00915	XISTR NPN 2SC1623
IC221	9940 000 00838	IC 20PIN 74F244	Q3020	9940 000 00915	XISTR NPN 2SC1623
IC222	9940 000 00839	IC 16PIN 74F138D	Q304	9940 000 00915	XISTR NPN 2SC1623
IC301	9965 000 29611	IC 8P CO4558A SO8 CERAMATE	Q401	9940 000 00915	XISTR NPN 2SC1623
IC302	9965 000 29611	IC 8P CO4558A SO8 CERAMATE	Q402	9940 000 00915	XISTR NPN 2SC1623
IC304	9940 000 00841	IC 16PIN TC4052BFN	Q403	9940 000 00915	XISTR NPN 2SC1623
IC305	9940 000 05338	IC 16P CS5342-CZZ TSSOP	Q404	9940 000 00915	XISTR NPN 2SC1623
IC401	9965 000 29611	IC 8P CO4558A CERAMATE	Q405	9940 000 00921	XISTR PNP 2SA812 HFE:200-400
IC403	9965 000 29611	IC 8P CO4558A CERAMATE	Q406	9940 000 00915	XISTR NPN 2SC1623
IC404	9965 000 29611	IC 8P CO4558A CERAMATE	Q501	9940 000 00915	XISTR NPN 2SC1623
IC501	9965 000 29611	IC 8P CO4558A CERAMATE	Q502	9940 000 00915	XISTR NPN 2SC1623
IC502	9965 000 26923	IC 8P APA3541-TRL HEADPHONE	Q503	4822 130 41651	2SC2001L
IC5201	9940 000 05339	IC 36P TAS5152DKDR SSOP	Q701	9940 000 00864	FET J111TO92 40V 20MA
IC701	4822 209 32919	HEF4952BT	Q702	9940 000 00921	XISTR PNP 2SA812 HFE:200-400
IC702	9322 140 00668	IC SM AN7323S (MATJ)	Q703	9940 000 00921	XISTR PNP 2SA812 HFE:200-400
IC703	4822 209 32919	HEF4952BT	Q704	9940 000 00915	XISTR NPN 2SC1623
IC704	4822 209 32919	HEF4952BT	Q705	4822 130 41198	2SC945P
IC705	9940 000 01587	IC 16P HEF4094BT	Q706	9940 000 00915	XISTR NPN 2SC1623
IC801	9940 000 05214	IC 28P V5888S	Q707	9940 000 00915	XISTR NPN 2SC1623
IC804	9940 000 00855	IC 8PIN BA6287FE2	Q708	9940 000 00915	XISTR NPN 2SC1623
IC805	9940 000 00855	IC 8PIN BA6287FE2	Q709	9940 000 00915	XISTR NPN 2SC1623
JK201	9965 000 17363	RCA JACK 1P W/GND P	Q710	9965 000 26939	XISTR PNP 2SA952 NEC
JK202	9965 000 23599	RCA+DIN JK 1RCA+4P DIN YEL	Q711	9940 000 00915	XISTR NPN 2SC1623
JK203	9940 000 00857	RCA JACK 3P R-B-G	Q713	9940 000 00915	XISTR NPN 2SC1623
JK301	9940 000 00859	RCA JACK 4P W-W/R-R AUDIO IN	Q714	9940 000 00915	XISTR NPN 2SC1623
JK401	9940 000 00861	RCA+DIN JACK 1RCA+8P DIN	Q716	9965 000 26939	XISTR PNP 2SA952 NEC
JK501	9940 000 00862	SPK JACK 4P RED-WHT-BLK-BLK	Q717	9940 000 00915	XISTR NPN 2SC1623
L5105	9940 000 05331	TOROID COIL 10μH I=5A 300Ω 4P	Q718	4822 130 41651	2SC2001L
L5201	9940 000 05332	IND. 10μH/10A 20%	Q801	9940 000 05335	XISTR NPN TIP41C
L5202	9940 000 05332	IND. 10μH/10A 20%	Q805	9965 000 26927	XISTR PNP 2SB1132RT100
L5203	9940 000 05332	IND. 10μH/10A 20%	Q806	9965 000 26927	XISTR PNP 2SB1132RT100
L5204	9940 000 05332	IND. 10μH/10A 20%	RA201	9940 000 05229	RES.ARRAY 100Ω 1/16W 5%
L5305	9940 000 05331	TOROID COIL 10μH I=5A 300Ω 4P	RA202	9940 000 05229	RES.ARRAY 100Ω 1/16W 5%
Q101	4822 130 41651	2SC2001L	RA203	9940 000 05229	RES.ARRAY 100Ω 1/16W 5%
Q201	9940 000 00915	XISTR NPN 2SC1623	RA204	9940 000 05229	RES.ARRAY 100Ω 1/16W 5%
Q202	9965 000 26946	XISTR PNP 2SB772P/Q NEC	RA205	9940 000 05229	RES.ARRAY 100Ω 1/16W 5%
Q203	9965 000 26946	XISTR PNP 2SB772P/Q NEC	RA206	9940 000 05229	RES.ARRAY 100Ω 1/16W 5%

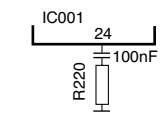
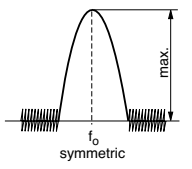
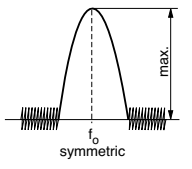
**ELECTRICAL PARTS LIST - MAIN BOARD**

RA207	9940 000 05229	RES.ARRAY 100Ω 1/16W 5%
T701	9940 000 00866	OSC COIL REC 3MH
XL201	9940 000 05201	X'TAL 27MHZ /-20PPM H=3.5MM
ZD101	9940 000 05334	ZENER ZMM5242B 500MW 12V 5%
ZD5201	9940 000 05333	TVS 36V SMAJ36A DO-214AC
ZD5202	9940 000 05333	TVS 36V SMAJ36A DO-214AC
ZD5203	9940 000 05333	TVS 36V SMAJ36A DO-214AC
ZD5204	9940 000 05333	TVS 36V SMAJ36A DO-214AC
ZD802	9940 000 05334	ZENER ZMM5242B 500MW 12V 5%

**Note: Only these parts mentioned in the list are normal service parts.**



**TUNER ADJUSTMENT TABLE**

Waverange	Input frequency	Input	Tuned to	Adjust	Output	Scope/Voltmeter
<i>VARICAP ALIGNMENT</i>						
<b>FM</b> 87.5 - 108MHz (50kHz grid)			108MHz	check		7.5V ±1V
			87.5MHz	check		1.4V ±0.2V
<b>MW</b> 531-1602kHz (9kHz grid) 530-1700kHz (10kHz grid) ( 98/ 55/ 51 )			1602KHz	check		7.2V ±1V
			531KHz	T005		1.1V ±0.2V
			1700KHz	check		7.2V ±1V
			531KHz	T005		1.1V ±0.2V
<i>FM - RF</i>						
<b>FM</b>	108MHz		106MHz	VC001	MAX	MAX
	87.5MHz	mod=1kHz Δf=±22.5kHz	90.1MHz	L001		
<i>AM IF</i>						
<b>AM</b>	450kHz			T001 T002	MAX	
<b>AM AFC</b> <b>MW</b>	Connect pin 6 of IC001 (AM Osc.) with short wire to ground (pin 4)	ΔV=mV		T003		
<i>AM RF 3)</i>						
<b>MW</b>	1404kHz		1404kHz	VC001	MAX	
	612kHz		612kHz	T006		
	1000kHz		1000kHz	VC001		
	600kHz		600kHz	T006		

# TUNER BOARD

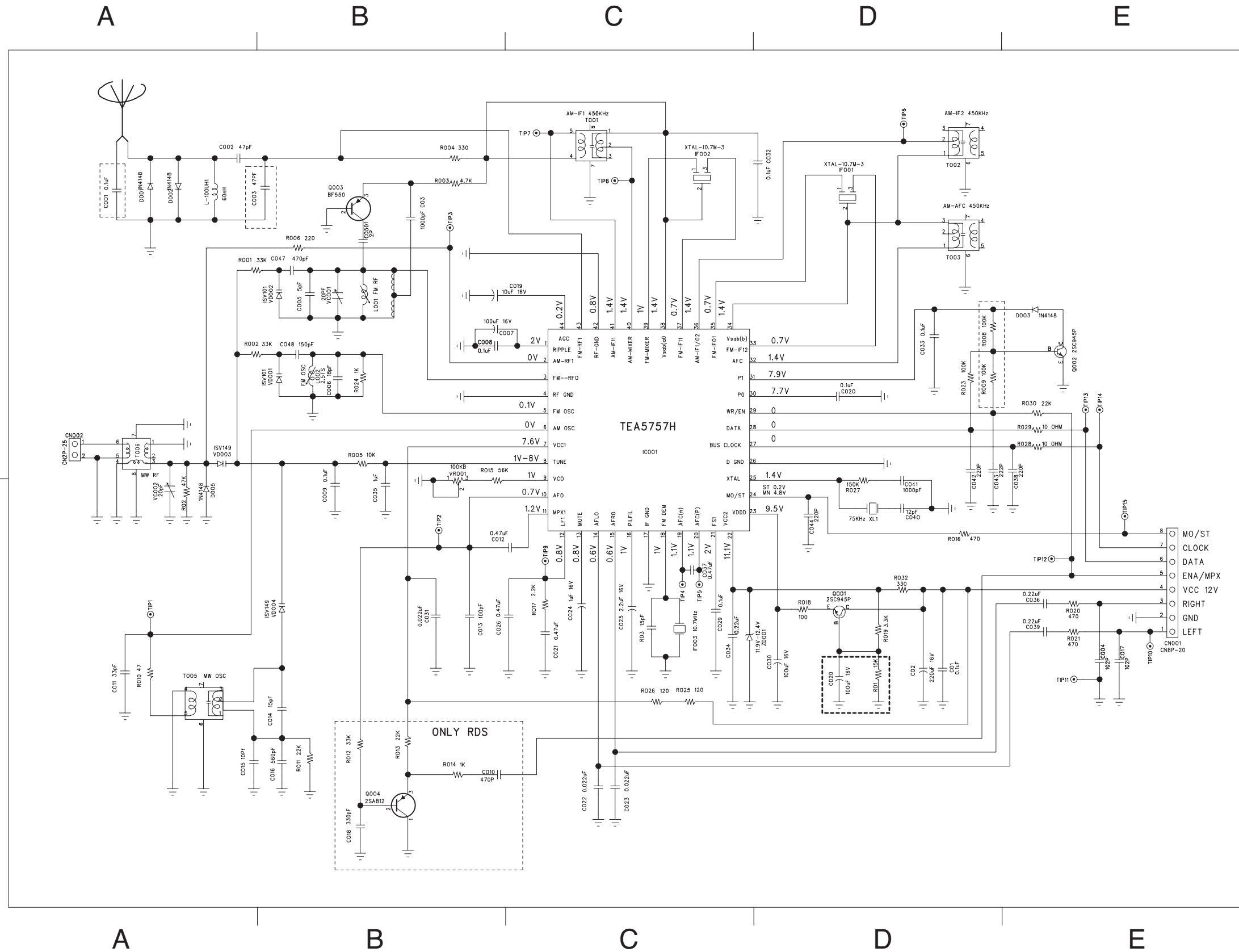
**TABLE OF CONTENTS**

Tuner Adjustment Table ..... 7-1  
 Circuit Diagram (/98 & /55 ver.) ..... 7-2  
 PCB Layout (/98 & /55 ver.) ..... 7-3  
 Electrical Parts List & Voltage List ..... 7-4

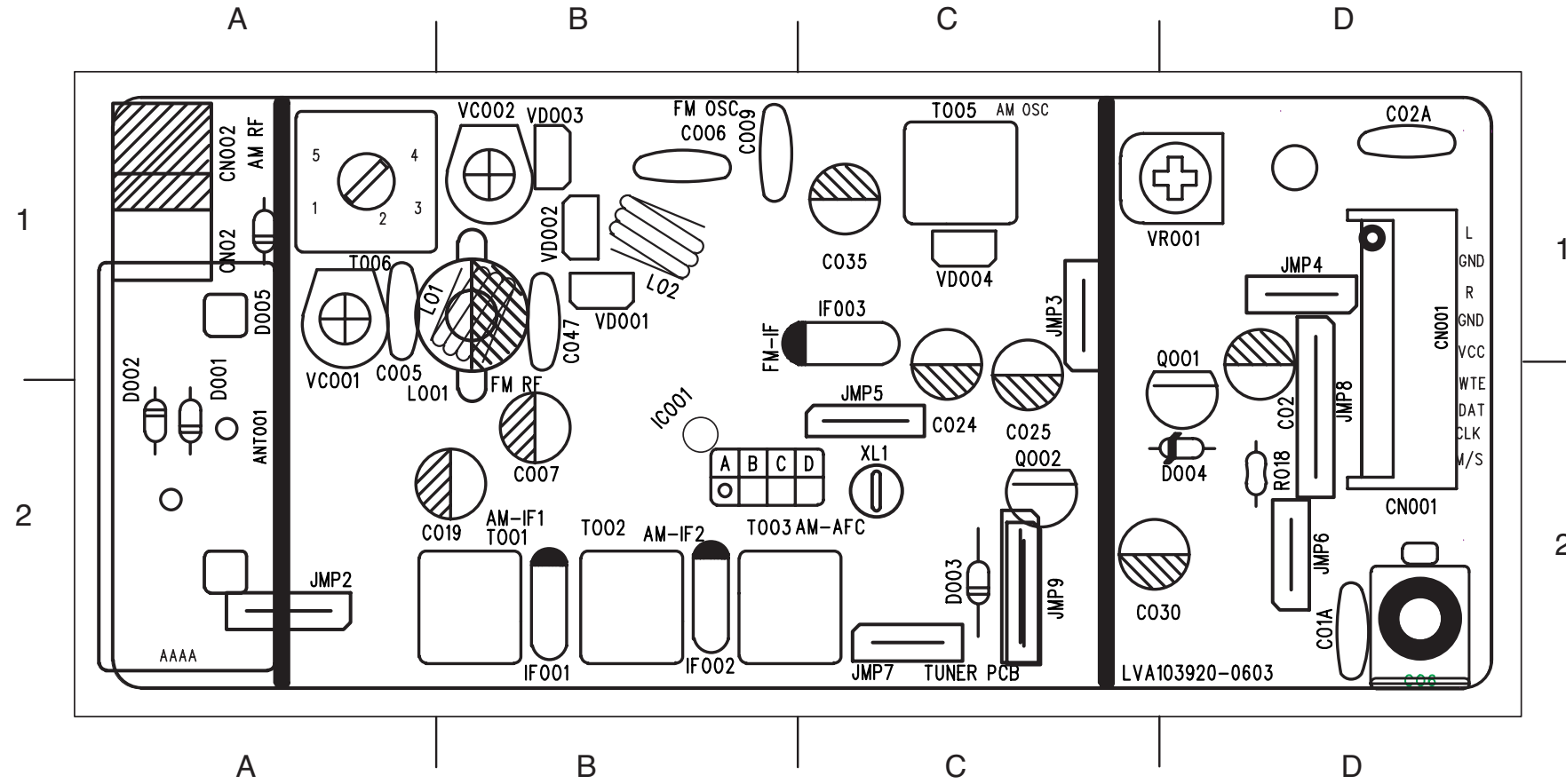
Use Service Testprogram. By selecting the TUNER TEST test frequencies will be stored as preset frequencies automatically.  
 1) If sensitivity of frequency counter is too low adjust to max. channel separation (input signal: stereo left 90% + 9%, adjust output on right channel to minimum)  
 2) RC network serves for damping the IF-filter while adjusting the other one.  
 3) For AM RF adjustments the original frame antenna has to be used!

### CIRCUIT DIAGRAM : TUNER BOARD (/55 & /98 ver.)

ANT001	A1	C011	A2	C022	C2	C033	D1	C043	D1	D004	C2	Q003	B1	R016	D2	R027	D1	VC001	B1
C002	A1	C012	B2	C023	C2	C034	C2	C044	D2	D005	A2	Q004	B2	R017	C2	R028	E1	VC002	A2
C004	E2	C013	B2	C024	C2	C035	B1	C047	B1	IC001	C1	R001	B1	R018	D2	R029	E1	VD001	B1
C005	B1	C014	B2	C025	C2	C036	E2	C048	B1	IF001	D1	R002	B1	R019	D2	R030	E1	VD002	B1
C006	B1	C015	A2	C026	B2	C037	C2	C050	B1	IF002	C1	R004	B1	R020	E2	R034	E1	VD003	A1
C007	B1	C016	B2	C029	C2	C038	E1	CN001	E2	IF003	C2	R005	B1	R021	E2	T001	C1	VD004	B2
C008	B1	C019	B1	C03	B1	C039	E2	CN002	A1	L02	A1	R006	B1	R023	D1	T002	D1	VR001	B1
C009	B1	C02	D2	C030	D2	C040	D2	D001	A1	L001	B1	R010	A2	R024	B1	T003	D1	XL1	D2
C01	D2	C020	D1	C031	B2	C041	D1	D002	A1	Q001	D2	R011	B2	R025	C2	T005	A2		
C010	B2	C021	C2	C032	D1	C042	D1	D003	E1	Q002	E1	R015	B1	R026	C2	T006	A1		

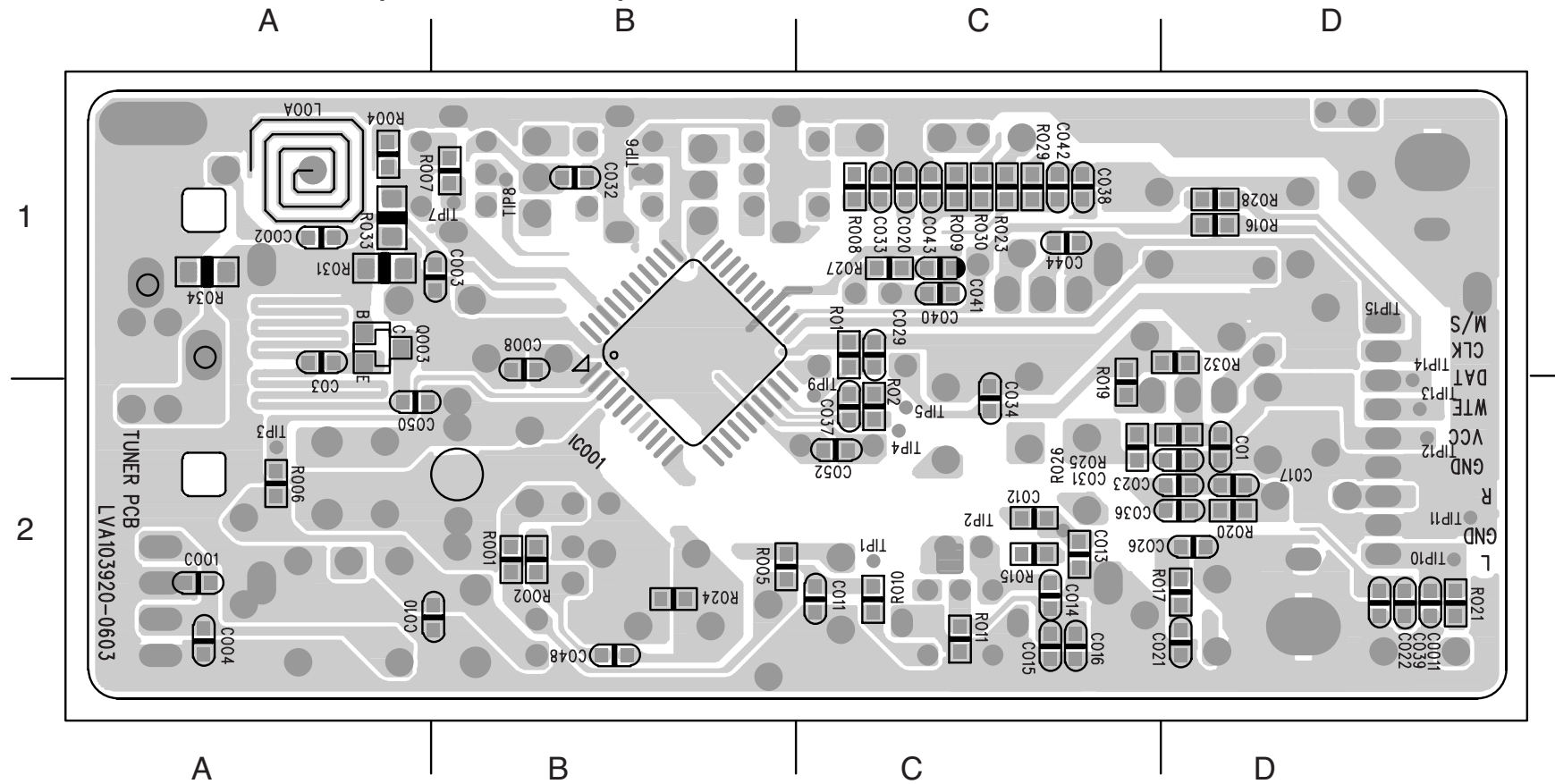


PCB LAYOUT - TUNER BOARD (TOP VIEW) - /55 & /98ver.



ANT001	A2	JMP4	D1
C005	A1	JMP5	C2
C006	B1	JMP6	D2
C007	B2	JMP7	C2
C009	B1	JMP8	D2
C01	D2	JMP9	C2
C019	B2	L001	B1
C024	C2	L02	B1
C025	C2	Q001	D2
C030	D2	Q002	C2
C035	C1	R018	D2
C047	B1	T001	B2
CN001	D1	T002	B2
CN002	A1	T003	B2
D001	A2	T005	C1
D002	A2	T006	A1
D003	C2	VC001	A1
D004	D2	VC002	B1
D005	A1	VD001	B1
IF001	B2	VD002	B1
IF002	B2	VD003	B1
IF003	C1	VD004	C1
JMP2	A2	VR001	D1
JMP3	C1	XL1	C2

PCB LAYOUT - TUNER BOARD (BOTTOM VIEW) - /55 & /98 ver.



C002	A1	C050	A2
C004	A2	C052	C2
C008	B1	IC001	B1
C010	A2	Q003	A1
C011	D2	R001	B2
C012	C2	R002	B2
C013	C2	R004	A1
C014	C2	R005	B2
C015	C2	R006	A2
C016	C2	R007	B1
C020	C1	R010	C2
C021	D2	R011	C2
C022	D2	R015	C2
C023	D2	R016	D1
C026	D2	R017	D2
C029	C1	R019	C2
C03	A1	R020	D2
C031	C2	R021	D2
C032	B1	R023	C1
C033	C1	R024	B2
C034	C2	R025	C2
C036	D2	R026	C2
C037	C2	R027	C1
C038	C1	R028	D1
C039	D2	R029	C1
C040	C1	R030	C1
C041	C1	R031	A1
C042	C1	R032	D1
C043	C1	R033	A1
C044	C1	R034	A1
C048	B2		

# POWER BOARD

**TABLE OF CONTENTS**

Voltage ..... 8-1  
 Circuit Diagram ..... 8-2  
 PCB Layout ..... 8-3  
 Electrical Parts List ..... 8-4

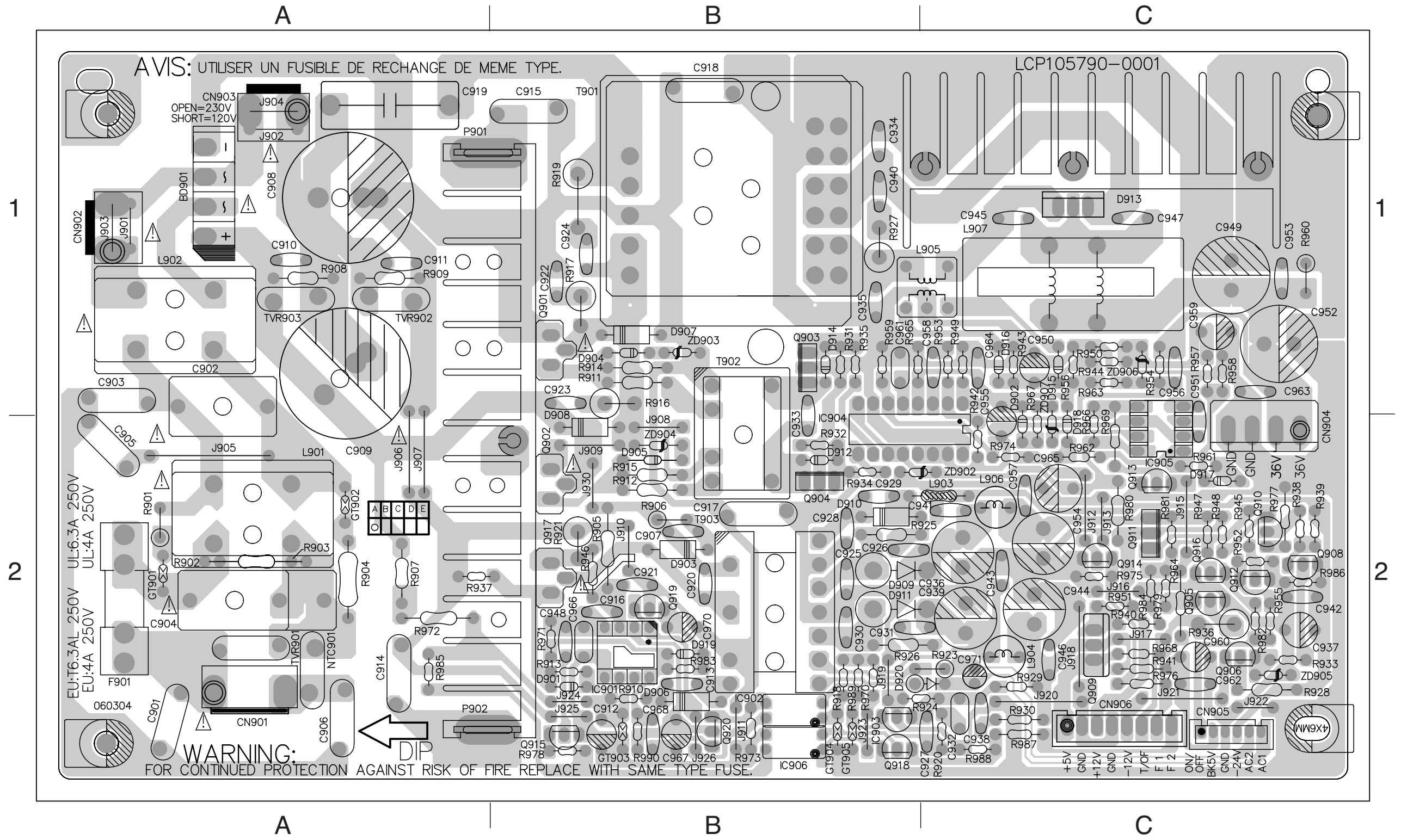
**VOLTAGE**

<b>IC901</b>																
Pin NO	1	2	3	4	5	6	7	8								
Voltage	3.66	0.01	0.40	1.90	0.00	2.66	15.87	5.00								
<b>IC902</b>																
Pin NO	1	2	3	4												
Voltage	5.00	-3	2.70	3.96												
<b>IC903</b>																
Pin NO	1	2	3													
Voltage	3.90	0.00	2.40													
<b>IC904</b>																
Pin NO	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Voltage	4.90	4.90	0.00	0.40	1.30	3.20	0.00	1.20	1.20	13.30	13.30	4.90	4.90	4.90	0.00	13.40
<b>IC905</b>																
Pin NO	1	2	3	4	5	6	7	8								
Voltage	0.00	4.90	0.70	0.00	1.20	4.90	12.00	13.30								
<b>IC906</b>																
Pin NO	1	2	3	4												
Voltage	1.10	-3.38	-3	0.04												
<b>Q901</b>			<b>Q909</b>			<b>Q916</b>										
Pin NO	1	2	3	1	2	3	1	2	3							
Voltage	0	278	0	5	5.18	11.94	0	0	0.6							
<b>Q902</b>			<b>Q910</b>			<b>Q917</b>										
Pin NO	1	2	3	Pin NO	1	2	3	Pin NO	1	2	3					
Voltage	248	296	243	Voltage	0	-27.5	0.5	Voltage	0	251	0					
<b>Q903</b>			<b>Q911</b>			<b>Q918</b>										
Pin NO	1	2	3	Pin NO	1	2	3	Pin NO	1	2	3					
Voltage	0.8	0	0.8	Voltage	13.02	0.65	13.03	Voltage	0	0	0.6					
<b>Q904</b>			<b>Q912</b>			<b>Q919</b>										
Pin NO	1	2	3	Pin NO	1	2	3	Pin NO	1	2	3					
Voltage	0.8	0	0.7	Voltage	0.6	0	0	Voltage	3.6	0	5					
<b>Q905</b>			<b>Q913</b>			<b>Q920</b>										
Pin NO	1	2	3	Pin NO	1	2	3	Pin NO	1	2	3					
Voltage	0	5.1	0	Voltage	0	0.02	0.65	Voltage	0.68	0	3					
<b>Q906</b>			<b>Q914</b>			<b>Q915</b>										
Pin NO	1	2	3	Pin NO	1	2	3	Pin NO	1	2	3					
Voltage	-11.9	-24.8	-12.4	Voltage	1	0.9	0.8	Voltage	0.13	2.2	0					
<b>Q908</b>			<b>Q915</b>			<b>Q915</b>										
Pin NO	1	2	3	Pin NO	1	2	3	Pin NO	1	2	3					
Voltage	-27.6	-28.3	-28.3	Voltage	0.13	2.2	0	Voltage	0.13	2.2	0					



### PCB LAYOUT-POWER BOARD

BD901 A1	C914 B1	C928 B2	C942 B3	C956 A3	C971 B3	D908 B2	GT902 B1	J905 B1	J920 B3	L907 A3	Q912 B3	R906 B2	R920 B3	R935 A2	R949 A3	R963 A3	R977 B3	T901 A2
C901 B1	C915 A2	C929 B2	C943 B3	C957 B3	CN901 B1	D909 B2	GT903 B2	J906 B1	J921 B3	NTC901B1	Q913 B3	R907 B1	R921 B2	R936 B3	R950 A3	R964 B3	R978 B2	T902 A2
C902 A1	C916 B2	C930 B2	C944 B3	C958 A3	CN902 A1	D910 B2	GT904 B2	J907 B1	J922 B3	P901 A1	Q914 B3	R908 A1	R923 B3	R937 B1	R951 B3	R965 A2	R979 B3	T903 B2
C903 A1	C917 B2	C931 B2	C945 A3	C959 A3	CN903 A1	D911 B2	GT905 B2	J908 B2	J923 B2	P902 B1	Q915 B2	R909 A1	R924 B2	R938 B3	R952 B3	R966 B3	R980 B3	TVR901B1
C904 B1	C918 A2	C932 B3	C946 B3	C960 B3	CN904 B3	D912 B2	IC901 B2	J909 B2	J924 B2	Q901 A2	Q916 B3	R910 B2	R925 B2	R939 B3	R953 A3	R967 A3	R981 B3	TVR902A1
C905 B1	C919 A1	C933 B2	C947 A3	C961 A2	CN905 B3	D913 A3	IC902 B2	J910 B2	J925 B2	Q902 B2	Q917 B2	R911 A2	R926 B2	R940 B3	R954 A3	R968 B3	R982 B3	TVR903A1
C906 B1	C920 B2	C934 A2	C948 B2	C962 B3	CN906 B3	D914 A2	IC903 B2	J911 B2	J926 B2	Q903 A2	Q918 B2	R912 B2	R927 A2	R941 B3	R955 B3	R969 B3	R983 B2	ZD902 B3
C907 B2	C921 B2	C935 A2	C949 A3	C963 A3	D901 B2	D915 A3	IC904 B2	J912 B3	J930 B2	Q904 B2	Q919 B2	R913 B2	R928 B3	R942 A3	R956 A3	R970 B2	R984 B3	ZD903 A2
C908 A1	C922 A2	C936 B3	C950 A3	C964 A3	D902 A3	D916 A3	IC905 B3	J913 B3	L901 B1	Q905 B3	Q920 B2	R914 A2	R929 B3	R943 A3	R957 A3	R971 B2	R985 B1	ZD904 B2
C909 B1	C923 A2	C937 B3	C951 A3	C965 B3	D903 B2	D917 B3	IC906 B2	J915 B3	L902 A1	Q906 B3	R901 B1	R915 B2	R930 B3	R944 A3	R958 A3	R972 B1	R986 B3	ZD905 B3
C910 A1	C924 A2	C938 B3	C952 A3	C966 B2	D904 A2	D918 B3	J901 A1	J916 B3	L903 B3	Q908 B3	R902 B1	R916 A2	R931 A2	R945 B3	R959 A2	R973 B2	R987 B3	ZD906 A3
C911 A1	C925 B2	C939 B3	C953 A3	C967 B2	D905 B2	D919 B2	J902 A1	J917 B3	L904 B3	Q909 B3	R903 B1	R917 A2	R932 B2	R946 B2	R960 A3	R974 B3	R988 B3	ZD907 A3
C912 B2	C926 B2	C940 A2	C954 B3	C968 B2	D906 B2	D920 B2	J903 A1	J918 B3	L905 A3	Q910 B3	R904 B1	R918 B2	R933 B3	R947 B3	R961 B3	R975 B3	R989 B2	
C913 B2	C927 B3	C941 B2	C955 A3	C970 B2	D907 A2	F901 B1	J904 A1	J919 B2	L906 B3	Q911 B3	R905 B2	R919 A2	R934 B2	R948 B3	R962 B3	R976 B3	R990 B2	

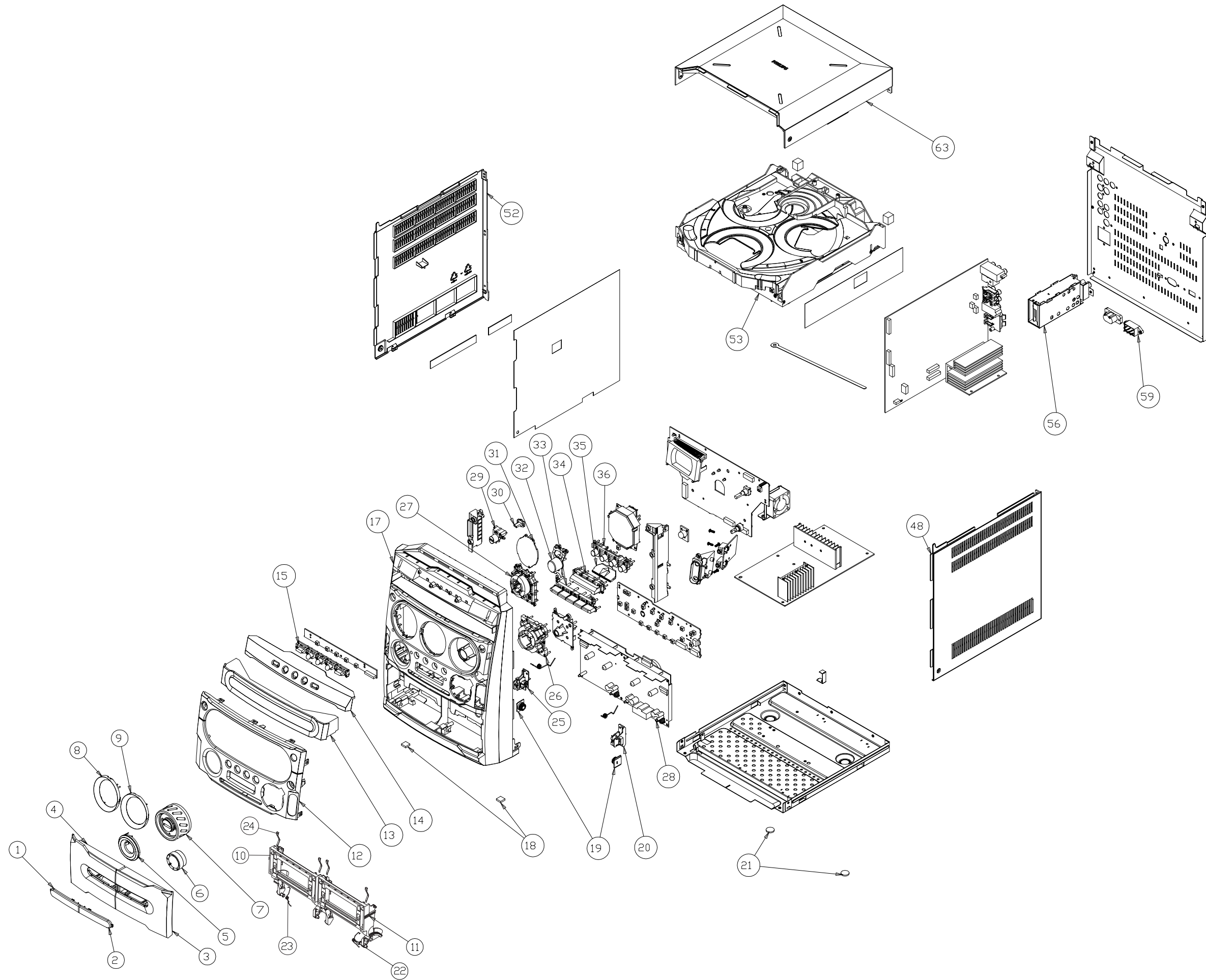


## ELECTRICAL PARTS LIST - POWER BOARD

BD901	9965 000 28768	BRIDGE KBU8B 8A 100V	L901	9940 000 05233	COMMON COIL 22MH
C902	△ 9940 000 05343	COND SAF. 0.22μF 275V 20%	L902	9940 000 05233	COMMON COIL 22MH
C903	△ 9965 000 27115	CAP. SAFTY 102PF 250V 20%	L904	9965 000 16694	6μH 13.5TS 2UEW
C904	△ 9940 000 00932	COND SAFTY 0.47μF 275V 10%	L905	9965 000 27102	TOROID COIL S1=1TS
C905	△ 9965 000 27115	CAP. SAFTY 102PF 250V 20%	L906	9965 000 16694	6μH 13.5TS 2UEW
C906	△ 9940 000 05344	CAP. SAFET. 560PF 400V 10%	L907	9940 000 05341	COMMON COIL 65μH /-10%
C907	9965 000 18042	COND DISC 0.01μF 1KV 20%	NTC901	9940 000 00957	NTC 5Ω 5A
C910	9965 000 18042	COND DISC 0.01μF 1KV 20%	Q901	9940 000 05349	MOSFET FQP12N60C N-CH
C911	9965 000 18042	COND DISC 0.01μF 1KV 20%	Q902	9940 000 05349	MOSFET FQP12N60C N-CH
C913	9940 000 05236	COND DISC 220PF 1KV 10%	Q903	9965 000 26946	XISTR PNP 2SB772P/Q NEC
C914	9965 000 27129	400V 0.0022μF P=10MM 125' C	Q904	9965 000 26946	XISTR PNP 2SB772P/Q NEC
C915	9965 000 27129	400V 0.0022μF P=10MM 125' C	Q905	4822 130 41651	2SC2001L
C917	△ 9965 000 27115	CAP. SAFTY 102PF 250V 20%	Q906	9940 000 05347	XISTR PNP 2SA952-K
C918	△ 9965 000 27115	CAP. SAFTY 102PF 250V 20%	Q908	4822 130 41198	2SC945P
C920	9940 000 05235	COND DISC 100PF 1KV 10%	Q909	4822 130 11336	STP16NF06FP
C922	9965 000 20264	COND DISC 470PF 1KV 10%	Q910	9965 000 28743	XISTR PNP 2SA733Q,P NEC
C923	9965 000 20264	COND DISC 470PF 1KV 10%	Q911	9965 000 26946	XISTR PNP 2SB772P/Q NEC
C924	9965 000 20261	COND DISC 0.001μF 1KV 20%	Q912	4822 130 41198	2SC945P
C925	9940 000 05236	COND DISC 220PF 1KV 10%	Q913	4822 130 41198	2SC945P
C926	9965 000 20264	COND DISC 470PF 1KV 10%	Q914	4822 130 41198	2SC945P
C928	9940 000 05236	COND DISC 220PF 1KV 10%	Q915	4822 130 41198	2SC945P
C929	9940 000 05236	COND DISC 220PF 1KV 10%	Q916	4822 130 41198	2SC945P
C930	9940 000 05236	COND DISC 220PF 1KV 10%	Q917	9940 000 05348	MOSFET STF3NK80Z N-CH 2.5A
C931	9965 000 20264	COND DISC 470PF 1KV 10%	Q918	4822 130 41198	2SC945P
C933	9940 000 05236	COND DISC 220PF 1KV 10%	Q919	9965 000 28743	XISTR PNP 2SA733Q,P NEC
C934	9965 000 20264	COND DISC 470PF 1KV 10%	Q920	4822 130 41198	2SC945P
C935	9965 000 20264	COND DISC 470PF 1KV 10%	R916	9965 000 27133	RES.METAL OXIDE FILM 120R
C940	9965 000 20261	COND DISC 0.001μF 1KV 20%	R917	9965 000 27133	RES.METAL OXIDE FILM 120R
C945	9965 000 20264	COND DISC 470PF 1KV 10%	R919	9965 000 27133	RES.METAL OXIDE FILM 120R
C947	9965 000 20264	COND DISC 470PF 1KV 10%	R922	△ 9940 000 05246	FUSE. RES 2.7Ω 1/4W 5%
D903	9940 000 00938	DIODE PR1507 1.5A 1000V	R923	△ 9940 000 05246	FUSE. RES 2.7Ω 1/4W 5%
D906	9965 000 09537	DIODE FR107 1A 1000V	R927	9965 000 27133	RES.METAL OXIDE FILM 120Ω
D909	9940 000 00943	DIODE UF3003 3A 200V	T901	△ 9965 000 27112	SW TRASFO FERRITE CORE
D910	9940 000 00941	DIODE HER104 1A 300V 50NS	T902	△ 9940 000 01057	SW. MODEL TRANSFORMER
D911	9940 000 05249	DIODE SB360 3A 60V	T903	9940 000 05342	TRANS FERRITE CORE ER-25
D913	9940 000 00947	BRIDGE MUR1620CT 8A 200V	TVR901	9965 000 32754	THERMIST 50A 561V
D913	9940 000 05346	RECTIFIER UF1602CT	TVR902	9965 000 27114	VARISTOR FOR SURGE VOLT.
F901	△ 9965 000 28769	FUSE 6.3A 250V	TVR903	9965 000 27114	VARISTOR FOR SURGE VOLT.
GT901	9965 000 29309	ABSORBER BL 500V 500A	ZD902	9965 000 26940	DIODE ZENR 11.9-12.4V 0.5W
GT903	9965 000 29310	ABSORBER BL 140V 500A	ZD903	9940 000 02067	DIODE ZENR 14.5-15.1V 0.5W
GT904	9965 000 29310	ABSORBER BL 140V 500A	ZD904	9940 000 02067	DIODE ZENR 14.5-15.1V 0.5W
GT905	9965 000 29310	ABSORBER BL 140V 500A	ZD905	9965 000 26940	DIODE ZENR 11.9-12.4V 0.5W
IC901	9940 000 05255	IC 8P UC3843AL	ZD906	9965 000 27138	DIODE ZENR 3.8-4.0V 0.5W
IC902	9940 000 00946	OPTICAL SENSOR 4P	ZD907	9965 000 28741	DIODE ZENR 9.1-9.5V 0.5W
IC904	9940 000 00951	IC 16PIN KA7500C			
IC905	9940 000 00949	IC 8PIN JRC4558D			
IC906	9940 000 00946	OPTICAL SENSOR 4P			

**Note:** Only these parts mentioned in the list are normal service parts.

# SET MECHANICAL EXPLODED VIEW





**MECHANICAL & ACCESSORIES PARTS LIST**

1	9940 000 00909	LENS CASS. (L)
2	9940 000 00911	LENS CASS. (R)
5	9940 000 00883	CAP KNOB VOLUME
6	9940 000 05361	KNOB ROTARY
7	9940 000 00891	KNOB VOLUME
8	9940 000 00901	COVER VFD
9	9940 000 00902	COVER VU METER
10	9965 000 22173	DOOR CASSETTE-RIGHT
11	9965 000 22172	DOOR CASSETTE LEFT
12	9940 000 05358	FRONT PANEL-DISPLAY
13	9940 000 05362	COVER TRAY CDC
14	9940 000 05359	FRONT CDC
15	9940 000 00887	BUTTON DISC SELECT
17	9940 000 05357	FRONT CAB.
18	9940 000 01546	FOOT RUBBER
19	9940 000 01547	DAMPER-ASSY-MODULE-0.8
20	9940 000 01515	BRACKET RIGHT
21	9940 000 00877	RUBBER DIA14XT2MM
22	9965 000 22200	SPRING TWIST ( R)
23	9965 000 22201	SPRING TWIST ( L)
24	9965 000 22205	SPRING-CASSETTE
25	9940 000 01516	BRACKET LEFT
26	9940 000 00893	BUT.CNTL(1)
27	9940 000 00895	BUT CNTL(3)
28	9965 000 37374	TAPE DECK
29	9940 000 00888	BUTTON POWER STANDBY
31	9940 000 00904	WINDOW DISPLAY
32	9940 000 00894	BUT.CNTL(2)
33	9940 000 00892	BUTTON CASS.
34	9940 000 02725	BUTTON MAX-WOOX
36	9940 000 02726	BUTTON SOURCE(MAX)
48	9940 000 01541	PANEL RIGHT
52	9940 000 01542	PANEL LEFT
53	9940 000 05355	3DVD CHANGER MECH & PCB
56	9940 000 05366	TUNER PCB ASS'Y
59	9940 000 01059	SW SLIDE 6PIN
63	9940 000 00899	COVER TOP

**Note: Only these parts mentioned in the list are normal service parts.**

**ELECTRICAL PARTS LIST - MISCELLANEOUS**

9940 000 00924	RCA CABLE 1500MM
9940 000 00925	LOOP ANT W/2P 2.5MM
△ 9940 000 01054	LINE CORD 2P 2000MM
9940 000 01553	REMOTE CONTROL 45KEY
9940 000 01556	DETECTOR SWITCH
9940 000 02731	FM ANTENNA 1500MM
9940 000 05363	MAIN SPK ASS'Y 125WX2 4Ω
9965 000 23267	RCA CABLE 1200MM OD2.6X5.2
9965 000 23580	RCA CABLE 1500MM OD2.6MM
9940 000 00824	FFC CABLE 9P P=1.27MM 80MM
9940 000 00825	FFC CABLE 12P P=1.27MM 100MM
9940 000 00919	FFC CABLE 24P P=0.5MM 380MM
9940 000 05353	FFC 9P 80MM P=1.27MM
9940 000 05354	FFC 12P 100MM P=1.27MM
9940 000 05356	FFC 9P 220MM P=1.27MM
9940 000 05365	POWER PCB ASS'Y 110V/230V
9940 000 05576	FFC 9P 220MM P=1.27MM

**Note: Only these parts mentioned in the list are normal service parts.**