

Service  
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# Service Manual



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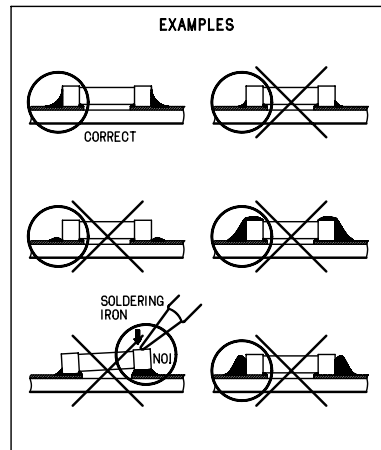
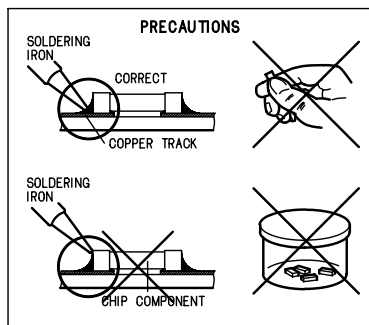
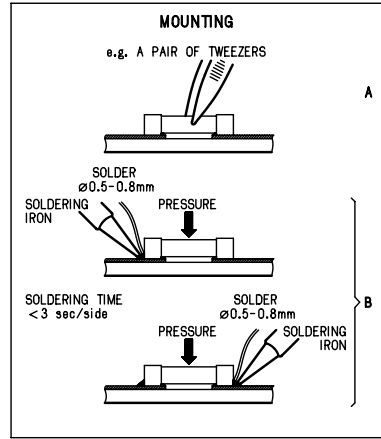
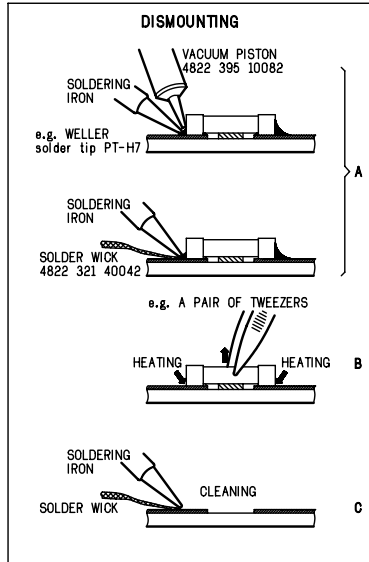
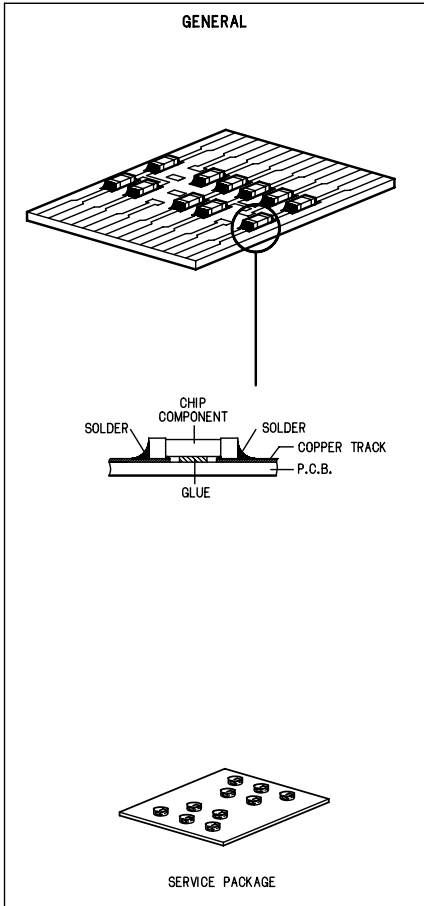
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Safety regulations require that the set be restored to its original condition and that parts which are identical with those specified be used.

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# HANDLING CHIP COMPONENTS



**(GB) WARNING**

All ICs and many other semiconductors 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 wristband with resistance. Keep components and tools 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 enfilier 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. Sorgen Sie dafür, daß Sie im Reparaturfall über ein Pulsarmband mit Widerstand mit dem Massepotential des Gerätes verbunden sind. Halten Sie Bauteile und Hilfsmittel ebenfalls auf diesem Potential.

**(I) AVVERTIMENTO**

Tutti IC e parecchi semi-conduttori sono sensibili alle scariche statiche (ESD). La loro longevità potrebbe essere fortemente ridotta 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 braccialetto 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 ▲

**(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 ▲

**SAFETY**



**(D)**

Bei jeder Reparatur sind die geltenden Sicherheitsvorschriften zu beachten. Der Originalzustand des Gerätes darf nicht verändert werden. Für Reparaturen sind Originalersatzteile zu verwenden. Sicherheitsbauteile sind durch das Symbol ▲ markiert.

**(NL)**

Veiligheidsbepalingen vereisen, dat het apparaat in zijn oorspronkelijke toestand wordt teruggebracht en dat onderdelen, identiek aan de gespecificeerde, worden toegepast. De Veiligheidsonderdelen zijn aangeduid met het symbool ▲

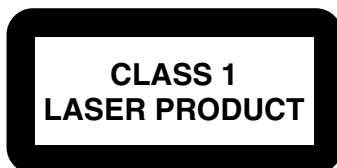
**(I)**

Le norme di sicurezza estigono 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 ▲

**(GB) DANGER:** Invisible laser radiation when open. AVOID DIRECT EXPOSURE TO BEAM.

**(S) Varning !**  
Osynlig laserstrålning när apparaten är öppnad och spårren är urkopplad. Betrakta ej strålen.

**Advarsel !**  
Usynlig laserstrålning ved åbning når sikkerhedsafbrydere er ude af funktion. Undgå udsættelse for strålning.



**(FIN) Varoituis !**  
Avatussa laitteessa ja suojalukituksen ohitettaessa olet alttiina näkymättömälle laserisäteilylle. Älä katso säteeseen !

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

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

## TECHNICAL SPECIFICATIONS

### AMPLIFIER

Output power ..... 2 x 12 W RMS  
 ..... 500 W PMPO  
 Signal-to-noise ratio ..... 60 dBA (IEC)  
 Frequency response ..... 80 – 15000 Hz,  $\pm$  3 dB  
 Microphone input sensitivity ..... 3.5 mV  
 Output impedance ..... 8  
 (1) (8 , 1 kHz, 10% THD)

### DISC PLAYER

Number of programmable tracks ..... 20  
 Frequency response ..... 20 – 20000 Hz  
 Signal-to-noise ratio ..... 60 dBA  
 Channel separation ..... 40 dB  
 Total harmonic distortion ..... 0.6%  
 MPEG 1 ..... VCD version 2.0  
 MPEG 1 Layer 3 (MP3-CD) ..... MPEG AUDIO  
 MP3-CD bit rate ..... 32 – 256 kbps  
 Sampling frequencies ..... 44.1 kHz

### TUNER

FM wave range ..... 87.5 – 108 MHz  
 AM wave range ..... 531 – 1602 kHz  
 Tuning grid ..... 9 kHz  
 Number of presets (FM/AM) ..... 20/10  
 Antenna ..... 4.85 kg  
 FM ..... 75 wire  
 AM ..... Loop antenna

### TAPE DECK

Frequency response ..... 100 – 10 kHz ( $\pm$ 8 dB)  
 Signal-to-noise ratio ..... 44 dB  
 Wow and flutter ..... 0.4% DIN

### SPEAKERS

System ..... 2 way, double port output  
 Impedance ..... 8  
 Woofer ..... 1 x 5.25"  
 Tweeter ..... 1 x 1.5"  
 Dimensions (w x h x d) .. 160 x 268 x 226 (mm)  
 Weight ..... 2.45 kg each

### GENERAL INFORMATION

Material ..... Polystyrene  
 AC Power ..... 110 – 127 / 220 – 240 V;  
 ..... 50/60 Hz Switchable  
 Power Consumption  
 Active ..... 40 W  
 Standby ..... 10 W  
 Dimensions (w x h x d) .. 160 x 268 x 226 (mm)  
 Weight (without speakers) .....

### Subject to modification

## SERVICE TOOLS

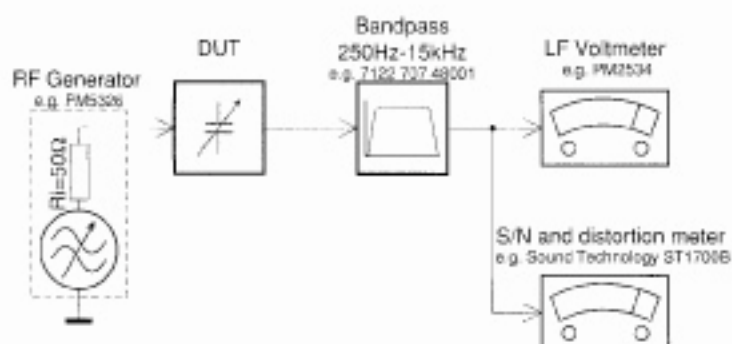
**Audio signal disc** SBC 429.....4822 397 30184  
**Playability test disc** SBC 444.....4822 397 30245  
**Test disc 5** (disc without errors) +  
**Test disc 5A** (disc with dropout errors, black spots and fingerprints)  
 SBC 426/426A.....4822 397 30096  
**Burn in test disc** (65 min. 1kHz signal at -30 dB level without "pause").....4822 397 30155  
**Universal test cassette Fe** SBC 420 .....4822 397 30071

## AVAILABLE ESD PROTECTION EQUIPMENT

**anti-static table mat** large 1200x650x1.25mm 4822 466 10953  
 small 600x650x1.25mm 4822 466 10958  
**anti-static wristband** 4822 395 10223  
**connection box** (3 press stud connections, 1M ) 4822 320 11307  
**extendible cable** (2m, 2M , to connect wristband to connection box) 4822 320 11305  
**connecting cable** (3m, 2M , to connect table mat to connection box) 4822 320 11306  
**earth cable** (1M , to connect any product to mat or to connection box) 4822 320 11308  
**KIT ESD3** (combining all 6 prior products - small table mat) 4822 310 10671  
**wristband tester** 4822 344 13999

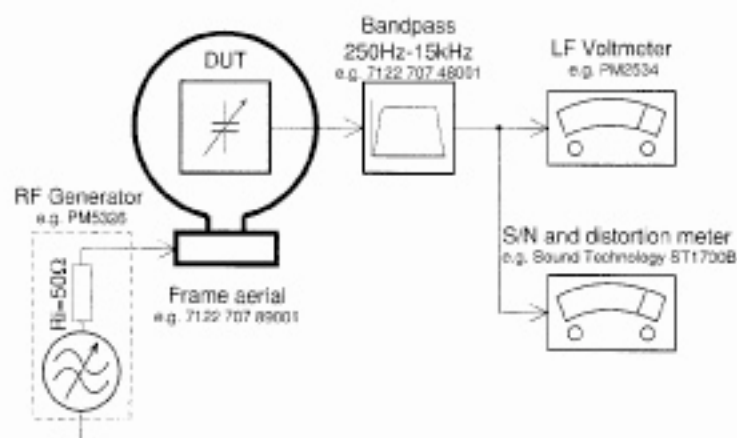
## SERVICE MEASUREMENTS

## Tuner FM



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

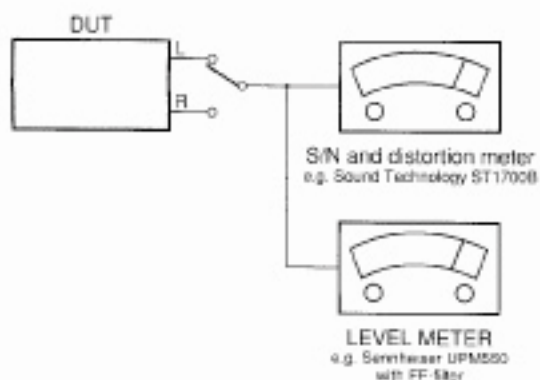
## Tuner AM (MW,LW)



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).

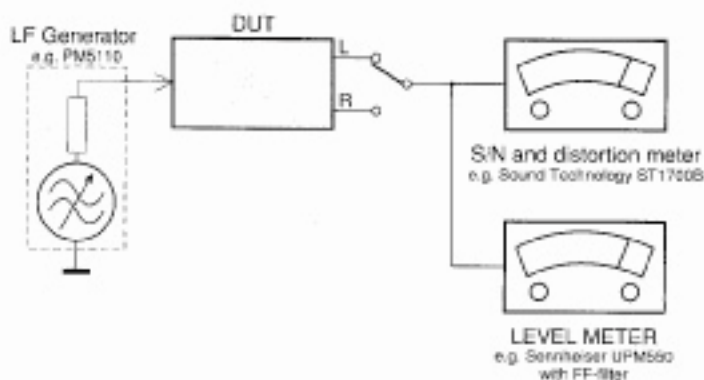
## CD

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



## RECORDER

Use Universal Test Cassette Fe SBC420 4822 397 30071



Controls

for Tuner .....to tune to a lower or higher radio frequency or to search radio stations.

for Tape .....to rewind or fast forward.  
for Clock .....to set the hour and minutes.  
for Timer .....to set the timer function.

**PRESET** ▼ ▲

**PLAY•PAUSE** ▶ II

**DIRECTION** II ◀ ▶ II

for CD/VCD/MP3-CD...to start or interrupt playback (only ▶ II is available).

for Tuner .....to select a preset radio station.

for Tape .....to start playback in selected direction or pause.

**13** ▲ **OPEN**

to open the tape deck door.

**14** **Tape compartment**

**15** **RECORD** ●

to start recording (in CD/VCD or Tuner mode only).

**16** **REPEAT•DEMO**

for MP3-CD only...to repeat a track, an album or whole disc.

for CD/VCD ...to repeat a disc track or the whole disc.

for DEMO .....to activate/deactivate the demonstration.

**17** **MIC**

to connect microphone.

**18** **PROGRAM**

for CD/VCD/MP3-CD...to programme disc tracks.

for Tuner .....to programme preset radio stations.

for Clock .....to set or reset clock  
for Timer .....to set or reset timer

for System .....to erase EEPROM.

**19** **IR SENSOR**

infrared sensor for remote control.

**20** **TIMER ON/OFF / SET**

to activate/deactivate or set the timer.

**21** **CLOCK**

to view the clock or set the clock

to select the sleep time.

**22** **SLEEP**

to select the sleep time.

Controls on the system and remote control

**1** **STANDBY ON** ⏻

to switch the system on or to Standby mode.

**2** **DISPLAY SCREEN**

to view the current status of the system.

**3** **Disc tray**

to select CD/VCD mode (this system can playback MP3-CD format disc). When in CD/VCD mode, press to start or stop shuffle play mode.

**4** **VCD / SHUFFLE**

to select Tuner mode. When in tuner mode, press to select the waveband: FM or MW.

**6** **TAPE / REV. MODE**

to select Tape mode. When in tape mode, press to select AUTO REVERSE.

**7** **OPEN/CLOSE**

to open or close the disc tray.

**8** **STEREO/VOCAL**

for Tuner .....to switch between stereo/mono mode (on FM band only).

for CD/VCD ...to set vocal mode.

**9** **OSD/DIM**

to switch on/off the on screen display on the TV screen.

**10** **VOLUME** ▲ ▼

to increase or decrease the volume.

**11** **DIGITAL SOUND CONTROL (DSC)**

to select the desired sound effect: POP; CLASSIC, ROCK, JAZZ or FLAT.

to switch on/off BASS mode.

**12** **Mode Selection**

**STOP•CLEAR** ■  
for CD/VCD/MP3-CD...to stop playback or to clear a programme.

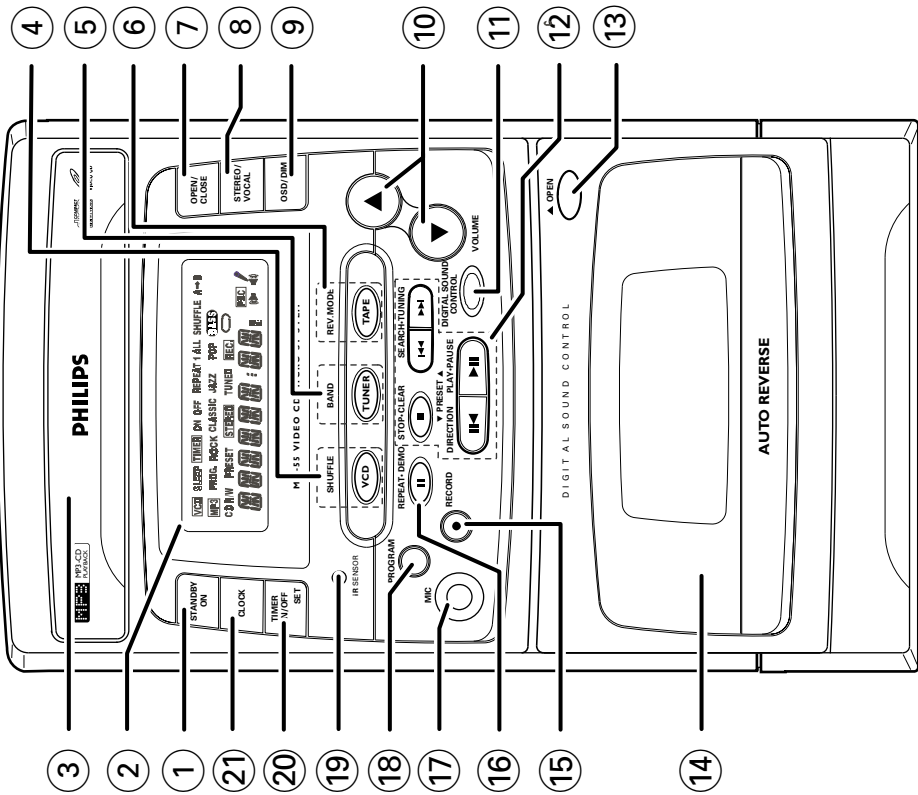
for Tuner .....to stop programming.

for Tape .....to stop playback or recording.

**SEARCH•TUNING** ◀◀ ▶▶ (◀▶▶▶)

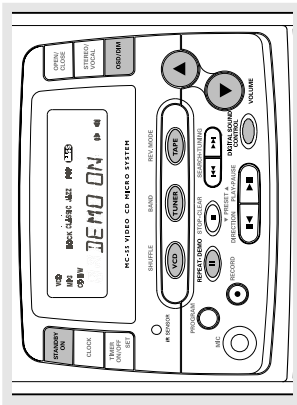
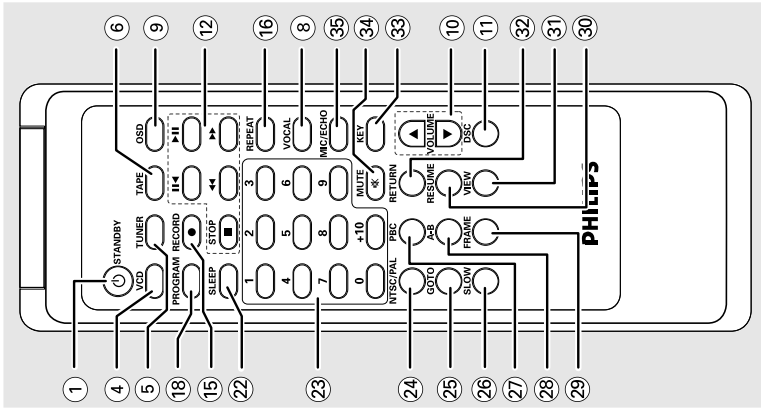
for MP3-CD only...to select previous/next album or track.

for CD/VCD ...to search backward/forward or to skip to the previous/next track during playback.



## Controls

- 23 **DIGITS 0 - 9, +10**  
for CD/VCD/MP3-CD... to select a track number;
- for Tuner ..... to select a preset radio station.
- 24 **NTSC/PAL**  
to select the video output for NTSC or PAL system.
- 25 **GOTO**  
to start playback at any chosen time on the disc (for CD/VCD operation only).
- 26 **SLOW**  
to watch a VCD at a slower speed (for VCD operation only).
- 27 **PBC (PLAYBACK CONTROL)**  
to switch on or off PBC mode (for VCD version 2.0 only).
- 28 **A - B**  
to playback a certain scene or passage repeatedly (for CD/VCD operation only).
- 29 **FRAME**  
to start playing the VCD frame-by-frame (for VCD operation only).
- 30 **RESUME**  
to continue playback again from where you have stopped. Only when PBC mode is switched off (for CD/VCD operation only).
- 31 **VIEW**  
to scan through a VCD with 9 pictures display on TV screen. Only when PBC mode is switched off (for VCD operation only).
- 32 **RETURN**  
to return to the previous MENU level during playback (for VCD with PBC on).
- 33 **KEY**  
to display and set the key tone level.
- 34 **MUTE**  
to interrupt and resume sound reproduction.
- 35 **MIC/ECHO**  
to display and set the MIC volume level and echo level for karaoke.



**IMPORTANT!**  
Before you operate the system, complete the preparation procedures.

### Demonstration mode

The system has a demonstration mode that shows the various features offered by the system.

### To activate the demonstration

- In Standby mode, press **REPEAT-DEMO** on the system or **REPEAT** on the remote control.  
→ "DEMO ON" will be displayed.  
→ The demonstration will begin.

### To deactivate the demonstration

- Press **REPEAT-DEMO** again or **STANDBY ON**.  
→ "DEMO OFF" will be displayed.  
→ The system will switch to Standby mode.

### Switching the system on

- Press **STANDBY ON** or **CD/TUNER/TAPE**.  
→ The system will switch to the last selected source or the selected source.

Note:

- If the demonstration mode is active, it is not possible to switch on the system, "DEMO ON", will be displayed.

## Basic Functions

### Switching the system to Standby mode

- Press **STANDBY ON**.  
→ "MEMO ON" will scroll through briefly and the clock will be displayed.

### Volume control

- Press **VOLUME ▲** to increase or **VOLUME ▼** to decrease the volume level.  
→ "VOL. X.X" will be displayed. "X.X" denotes the volume level.

### To switch off the volume temporarily

- Press **MUTE** on the remote control.  
→ Playback will continue without sound and "MUTE" will be displayed.  
● To restore the volume, press **MUTE** again or increase the **VOLUME** level.

### Sound control

#### Digital Sound Control (DSC)

The Digital Sound Control (DSC) feature enables you to enjoy special sound effects that have preset equaliser settings, providing the best music reproduction.

- Press **DIGITAL SOUND CONTROL (DSC)** to select the desired sound effect: **POP**, **CLASSIC**, **ROCK**, **JAZZ** or **FLAT**.

### To switch the BASS on/off

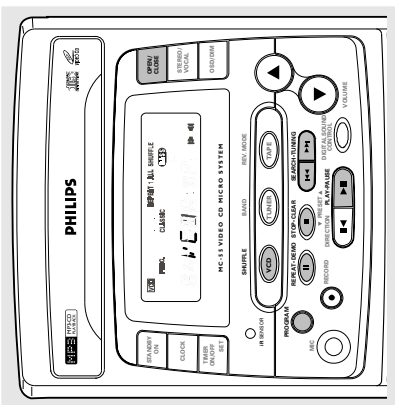
- Press and hold **DIGITAL SOUND CONTROL (DSC)** until "BASS ON" or "BASS OFF" is displayed.  
→ If **BASS** is switched on, **BASS** will appear on the display

### Dim mode

- You can select the desired brightness for the display.  
Press and hold **OSD/DIM** to select **DIM HIGH**, **DIM LOW** or **LED OFF**.  
→ "DIM HIGH", "DIM LOW" or "LED OFF" will be displayed.



## CD / VCD / MP3-CD



### IMPORTANT!

- This system is designed for regular discs. Therefore, do not use any accessories such as disc stabilizer rings or disc treatment sheets, etc., as offered on the market, because they may jam the disc mechanism.
- Do not load more than one disc into the tray.
- When the tray is loaded with disc, do not shake the system, this may jam the tray.

The CD part of this system also serves as a Video CD player if you connect it to your TV set.

Before viewing the Video CD, ensure that the set is switched to corresponding PAL or NTSC system of your TV set (exception Multi-system TV).

### Discs for Playback

This system can playback all digital audio CD, video CD, finalised digital audio CD-Recordable (CD-R) discs and finalised digital audio CD-Rewritable (CDRW) discs.



### Support following MP3-CD formats:

ISO 9660 format - Max. 17 characters  
 Max. Track number plus Album is 256  
 Max. nested directory is 8 levels  
 The max. ALB number is 99  
 The max. MP3 programme track number is 99  
 The max. length of each track is 255 minutes 59 seconds

The player can play mixed mode disc:  
 a. MP3 + CDDA can only play the MP3 tracks in the first block.

b. VCD + CDDA full support

Supported VBR bit-rate

Supported sampling frequencies for MP3 disc:  
 44.1 kHz

Supported Bit-rates of MP3 disc are: 32, 64, 96, 128, 192, 256 (kbps)

### Following formats can't be supported

The files like \*.WMA, \*.AAC, \*.DLF, \*.M3U, \*.PLS  
 Chinese filename  
 The non-session closed discs  
 The discs recorded under UDF format

### Loading a disc

- 1 Press **VCD** to select CD/VCD mode.
- 2 Press **OPEN-CLOSE**.  
The disc tray slides out.
- 3 Load a disc with the label side facing up.
- 4 Press **OPEN-CLOSE** to close the disc tray.  
The total number of tracks and the playing time of the disc appear on the display.

**For MP3-CD only**  
 Load a MP-3 CD format music disc on the CD tray.  
 The total album number and total track number will scroll through the display briefly, then "ALB TRACK" will be displayed.

On TV screen, the total ALBUM and TRACK number will display, also with the album list (max. 5 lines per page) and an arrow. The arrow indicates the current selected music.

### Notes:

- To ensure good system performance, wait until the disc tray completely reads the disc before proceeding.
- For MP3-CD, the disc reading time may exceed 10 seconds due to the large number of songs compiled into one disc.

### Playing a normal disc

- 1 Press **▶||** to start playback.  
The track number and elapsed playing time of the current track appear on the display.  
To interrupt playback, press **▶||**.  
The playing time will start flashing.  
To resume playback, press **▶||** again.
- 2 To stop playback, press **■**.

### Selecting a desired track/passage

#### To select a desired track

Press **◀◀** or **▶▶** repeatedly (or **digits 0-9, +10** on the remote control) until the desired track appears on the display.  
 If playback is stopped, press **▶||** to start playback.

#### To search for a particular passage during playback

Press and hold **◀◀** or **▶▶** and release it when the desired passage is located.  
 During searching, the volume will be reduced.

### For MP3-CD only

#### To select a desired Album

Press and hold **◀◀** or **▶▶** until the desired Album number appear on the display.  
 "ALB TRACK" will be displayed and the album name will scroll through the display briefly.  
 On TV screen, the arrow will move forward/backward in the ALBUM menu.

#### To select a desired Track

Press **◀◀** or **▶▶** repeatedly to select a desired track from the current Album.  
 "ALB TRACK" will be displayed and the track name will scroll through the display briefly.  
 On TV screen, the arrow will move forward/backward in the TRACK menu.  
 Use the digital keys on the remote control to select the track under current Album directly.

## INSTRUCTIONS FOR USE

## CD / VCD / MP3-CD

### To select and playback another track during playback mode

- 1 Press **◀◀** or **▶▶** repeatedly to select another track.  
The current track continues playing.  
The new selected track will show on the display screen and TV screen.
- 2 Press **▶||** to start playback the new selected track.

### Note:

- "ALB" represents ALBUM and "TR" represents TITLE. "ALB" or "TR" is the current selected Album or Track number.

### Programming tracks

Programming tracks of disc is possible when playback is stopped. Up to 20 tracks can be stored in the memory in any order (except for MP-3 CD).

- 1 In stop mode, press **PROGRAM** to enter programme setting.  
**PROG** and the current selected track number will start flashing.  
"PROG TRACK" will show on the display screen and TV screen.

- 2 Press **digits 0-9, +10** on the remote control or **◀◀** / **▶▶** to select the desired track.

- 3 Press **PROGRAM** to store the select track.  
"PROG TRACK" will show on the display screen and TV screen.

- 4 Repeat steps **1** to **3** to store other tracks.  
Press **■** to end programme setting.

The total tracks number and elapsed playing times will appear on the display.  
**PROG** will remain on the display.  
 Press **◀◀** or **▶▶** in stop mode to review the programme sequence.

- 5 Press **▶||** to play the programmed tracks.  
If you press **REPEAT** during programme playback, the current track or all programmed tracks will be played repeatedly.

**REPEAT** / **REPEAT ALL** and **PROG** will appear on the display.

- 6 Press **■** in stop mode to clear the programme.  
"PROG CLEAR" will be displayed.  
**PROG** will disappear from the display.

- Notes:
- "P" represents PROGRAMME and "T" represents TRACK, "X.X" is the current selected Programme or Track number.
  - The programming is automatically cleared as soon as the CD compartment is opened.
  - The function of programme setting is disable in PLAY/PAUSE mode.
  - Programme cannot be used for VCDs when PBC is switched on. Switch off PBC before storing tracks from such a VCD.

**For MP3-CD only PROGRAM.**

- In stop mode, press **PROGRAM**.  
On TV screen, "P.X.X T.X.X" will start flashing.  
On TV screen, "PXXAXX TXX" and "PROGRAM" will be displayed.
- Press and hold **◀** / **▶** to select the desired ALBUM and press **◀** / **▶** repeatedly (or **digits 0 - 9 +10** on the remote control) to select the desired TRACK for programming.  
Press **PROGRAM** to store the selection.  
"P.X.X T.X.X" will appear on the display briefly and the programmed album and track number will be displayed.  
**PROG** will remain on the display.  
Repeat steps **1** to **3** to store other desired album and track.  
Press **◀** or **▶** in stop mode can review the programme sequence.  
"P.X.X T.X.X" will scroll through briefly.  
Press **OSD** in stop mode to show the programme information.  
The Album's name and Track's name will scroll through briefly.  
Press **▶** **II** to start programme playback. You can press **◀** / **▶** to select the programmed track to play.  
Press **■** once stop programme playback or **twice** to clear the programme.

**Shuffle**

- You can play all the tracks/programmed tracks in random order.
- During playing, pause or stop mode, press **SHUFFLE (VCD)** to enable SHUFFLE play mode.  
**SHUFFLE** will appear on the display.
  - To exit shuffle mode, press **SHUFFLE (VCD)** again or **■**.  
**SHUFFLE** will disappear from the display.

Note:

- If the Shuffle function enabled, and the Repeat function is set on, will disable the Shuffle play mode.

**Repeat**

- You can play the current track or the whole disc repeatedly.
- During CD Playing or Pause mode, press **REPEAT** on the remote control or **REPEAT/DEMO** on the system to select REPEAT 1 or REPEAT ALL mode.  
**REPEAT 1** - to repeat the current track.  
**REPEAT ALL** - to repeat the whole disc.  
For MP3-CD, you are able to select REPEAT 1, REPEAT ALL or REPEAT ALB mode.  
**REPEAT ALB** - to repeat the current album.  
The current track or whole disc will now be played repeatedly until you press **■**.  
To exit the repeat mode, press **REPEAT** until the **REPEAT 1/REPEAT ALL/REPEAT ALB** disappears from the display.

Notes:

- If the Repeat function is enable, and the Shuffle function is set on, will disable all the Repeat play modes.
- If the Repeat function is enable, and the Stop button is pressed, will disable all the Repeat play modes.
- In programme mode, you can only select Repeat 1 or Repeat All function.

**If the menu consists of a list of titles, you can select a sequence directly**

- Press **digits 0 - 9, +10** on the remote control to select your choice.  
The VCD starts playing of the selected sequence automatically.
  - Press **RETURN** on the remote control to go back to the previous menu.
- Note:
- If a menu consists of more than one pages, press **◀** / **▶** to go through the pages.

**Switching off PBC**

- In stop mode, press **PBC**.  
On TV screen, "PBC OFF" will be displayed.
- Notes:
- Programme mode is not available whenever PBC mode is switched on.
  - The menu structure depends on the programme stored on the VCD. Please refer to the information supplied with the disc.

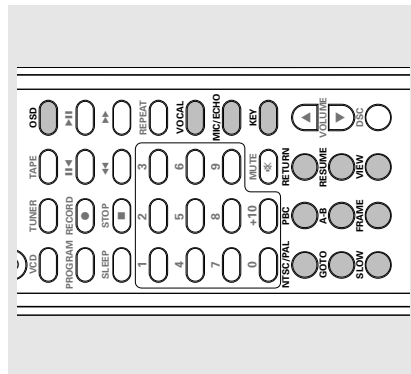
**Pause**

- During playback, press **▶** **II** to have a still picture on the TV screen.  
The sound will be muted.  
On TV screen, "PAUSE" will be displayed.
- Press **▶** **II** again to continue playback.

**Goto**

- Press **GOTO** on the remote control.  
"GG X.X.X" will be displayed.  
On TV screen, "GOTO XX:XX" will be displayed.
  - Press **digits 0 - 9 +10** on the remote control to key in the disc time which you want the disc to begin playback.
- Note:
- The disc time entered should not be greater than the total disc time.

**VIDEO CD**



**Adjusting the TV System**

- Before viewing the Video CD, ensure that the set is switched to corresponding PAL or NTSC system of your TV set (exception Multi - system TV).
- Press **NTSC/PAL** on the remote control to switch between NTSC and PAL TV system.  
After TV system is selected, the set will automatically switch to the last TV system setting every time the VCD source is selected.

**OSD - On Screen Display**

- If you insert VCD/CD, your TV screen will serve as an additional display for messages (e.g. PLAY, STOP), and information stored on the VCD/CD.
- Press **OSD** on the remote control or **OSD/DIM** on the system repeatedly to select viewing various information.  
The current track and current /remaining time in the track/disc appear on the display.

**Playing a Video CD with PBC**

- VCD with PBC (Playback Control) will be indicated on the display of the set and on your TV screen as soon as they are inserted. PBC is a predefined play sequence stored on the VCD.
- Switch on the TV, insert a VCD with PBC.
  - Menu appears on the TV screen.



## CD / VCD / MP3-CD

### Slow

- 1 Press **SLOW** on the remote control to watch a VCD at a slower speed. There are 3 types of slow modes to select.

The sound will be muted.

On TV screen, "SLOW 1/2", "SLOW 1/4" or "SLOW 1/8" will be displayed.

- 2 To resume playback at normal speed, press **SLOW** repeatedly until "SLOW XIX" disappears from the TV screen or press **▶ II**.

### A-B repeat

This feature is also applicable to audio CD (except for MP3-CD). To Play a certain scene or passage of the disc repeatedly.

- 1 Press **A-B** on the remote control during playback to mark the start point of the chosen scene or passage.  
"A-" will appear on the display.  
"B" will start flashing.
- 2 Press **A-B** again to mark the end of the chosen scene or passage.  
"A-B" will appear on the display.  
The selected scene or passage will start playing repeatedly.
- 3 Press **A-B** once more to return to normal playback.  
"A-B" will disappear from the display.

### Notes:

- You can also cancel A-B repeat by pressing **◀◀** or **▶▶**
- A-B repeat marking can cross from one track to another. But for VCD 2.0, you can only able to set the A-B repeat marking within the same track.

### Frame

- 1 Press **FRAME** on the remote control repeatedly to get the still picture and frame-by-frame playback.  
The player will go into pause mode
- 2 To resume normal playback, press **▶ II**.

### Resume

In stop mode, press **RESUME** on the remote control to start playback again from where you have stopped.

### Note:

- Resume will not be available if you have changed the disc, opened the disc tray or disconnected the system the power supply.

### View

This feature allows you to scan through a VCD for a quick review. PBC mode must be switched off.

Press **VIEW** on the remote control.

- 1 On TV screen, 9 pictures will be displayed. To view the previous/next page, press **◀◀** or **▶▶**. The first 20 seconds of each track will be played.

- 2 To exit review mode, press **digits 0 - 9 +10** to playback the desired track or **▶ II** to play the current selected track.

### Return

Press **RETURN** on the remote control to return to the previous VCD disc MENU level. It is functional only for Video CD when PBC is switched on.

### Key ( b h # )

This feature allows you to change the key tone of your vocal range.

Press **KEY** on the remote control.

- 1 The last selected key tone level will be displayed.

- 2 Press **KEY** again to change the tone level to "0".  
Press **VOLUME ▲** or **▼** to adjust the key tone.  
The key tone level can be increase or decrease between level **+8** and **-8**.

## INSTRUCTIONS FOR USE

## CD / VCD / MP3-CD

### MIC Volume and Echo

This feature allows you to add echo while singing or talking through a microphone.

#### To adjust microphone volume level

- 1 Press **MIC/ECHO** on the remote control repeatedly until "MIC 5" is displayed.
- 2 Press **VOLUME ▲** or **▼** to increase or decrease the MIC volume.  
The volume level will be displayed.

#### To adjust echo level

- 1 Press **MIC/ECHO** on the remote control repeatedly until "ECHO 5" is displayed.
- 2 Press **VOLUME ▲** or **▼** to increase or decrease the echo level.  
The echo level will be displayed.

### Vocal

This feature allows you to fade out the original vocal from a Karaoke VCD. You can also use it to select the different audio modes.

Press **VOCAL** on the remote control or

**STEREO/VOCAL** on the system repeatedly to select the following modes:

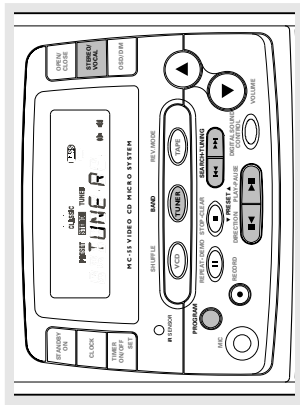
"ORIGINAL LEFT" → "ORIGINAL RIGHT" →  
"S.P. LEFT" → "S.P. RIGHT" → "STEREO" ...

**STEREO** – same effect as the original recorded disc.

**VOCAL LEFT/RIGHT** – fade out the original vocal for special recorded Karaoke disc only (with the ECHO mode switched on).

**MONO LEFT/RIGHT** – select the language on a bilingual VCD.

**Tuner**



- Press **PROGRAM** again to store the radio station.  
"STEREO" will be displayed.  
Repeat steps **3** to **6** to store other preset radio stations.

**Note:**  
– During programming, if no button is pressed within 5 seconds, the system will exit programme mode automatically.

**Tuning to preset radio stations**

Press **II** or **III** to select the desired preset number.  
The preset number, radio frequency, and waveband will appear on the display

**Mono/Stereo**

Press **STEREO/VOCAL** repeatedly to select mono or stereo mode.  
When STEREO mode is selected, **STEREO** will appear on the display.

**Note:**  
– You are able to select **mono or stereo mode** in **FM band only**.

**Tuning to radio stations**

- Press **TUNER** to select Tuner mode.  
"TUNER" will be displayed and then followed by the current radio frequency.
- Press **BAND (TUNER)** to select the desired waveband: **FM** or **AM**.
- Press and hold **II** or **III** until "SEARCH" is displayed.  
"SEARCH" will start flashing until a radio station with sufficient signal strength is found. Repeat this procedure until the desired station is reached.

To tune to a weak station, briefly press **II** or **III** repeatedly until the display shows the desired frequency or when the best reception has been obtained.

**Storing preset stations**

You can store up to 20 for **FM** and 10 for **AM** radio stations in the memory. When a preset radio station is selected, the preset number appears on the display.

**Manual programming**

- Press **TUNER**.
- Press **BAND (TUNER)** to select the desired waveband: **FM** or **AM**.
- Press **II** or **III** to tune to the desired frequency.
- Press **PROGRAM**.  
The current preset number will be displayed for selection.
- If you wish to store the radio station to another preset number, press **II** or **III** to select the desired preset number.

**Tape Operation/Recording**

**Rewind/Fast forward**

- Press **II** or **III** to rewind or fast forward the tape.  
"RPT" with the direction indicator will appear on the display.
- Press **II** to stop rewinding or fast forwarding. The tape will stop automatically at the end of the rewinding or fast forwarding.

**General information on recording**

Recording is permissible if copyright or other rights of third parties are not infringed upon. If you do not intend to record via the microphone, unplug the microphone to avoid accidental mixing with other recording source. For recording, use only tape of IEC type I (normal tape).  
The recording level is set automatically, regardless of the position of the Volume, DSC and so forth.

The tape is secured at both ends with leader tape. At the beginning and end of the tape, nothing will be recorded for six to seven seconds.

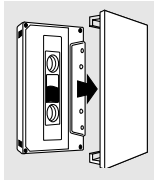
To prevent accidental recording, break out the tab on the left shoulder of the tape side you want to protect.  
If "ERRR" or "TAPE PROTECT" is displayed, the protection tab has been broken. Put a piece of clear adhesive tape over the opening.

**Recording**

- Load a recordable tape into the tape deck.
- Press **REV. MODE (TAPE)** repeatedly to select a recording mode.  
– for recording on one side only  
– for recording on both sides.
- Press **VCD** or **TUNER** to select the recording source.
- Press **RECORD**.  
"REC" will be displayed and **REC** starts flashing.
- Press **II** or **III** to start and select the direction for recording.  
**REC** will remain on the display.  
To stop recording, press **II**.  
The selected recording source will continue playing.

**Loading a tape**

- Press **OPEN** to open the tape deck door.
- Insert a recorded tape and close the tape door.  
Load the tape with the open side down.



**Tape playback**

- Press **TAPE** to select Tape mode.
- Press **II** or **III** to select the direction for playback.  
"RPT" with playback direction indicator will appear on the display.  
To interrupt playback, press the last selected **II** or **III** button.  
"PAUSE" will be displayed.  
To resume playback, press **II** or **III** again.
- To stop playback, press **II**.

**Auto Reverse**

Press **REV. MODE (TAPE)** repeatedly to select the different playback modes.  
– : playback on one side of the tape only.  
– : both sides are played once.  
– : both sides are played repeatedly, up to 10 times each side unless you press **II**.

## Tape Operation/Recording

**Note:**

- During recording, it is not possible to change tape direction or listen to another source.

### Recording timer

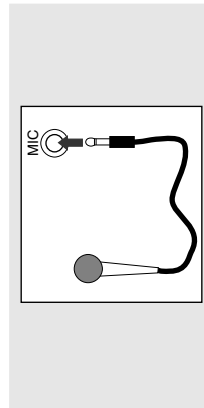
To record a radio station from a specified time, you will need to use a preset radio station and to set a start (ON) and finish (OFF) time.

- 1 Load a recordable tape into the tape deck.
- 2 If desired, select tape reverse mode option. Follow the "TIMER SETTING" procedure as described on page 21 to store the starting and finishing time for recording. Select "REC TU" as the wake up source for timer recording.

**Note:**

- If the system is switched on at the preset time, the recording will not be made.

## Karaoke



- 5 Start singing or talking through the microphone.

**Notes:**

- Keep the microphone away from the speakers to prevent howling.
- Microphone mixing only available in CD/VCD mode.

### Microphone Mixing

Connect a microphone (not supplied) to the system allowing you to sing along with the music source.

- 1 Connect a microphone to the MIC jack. Before connecting the microphone, press **MIC/ECHO** to set the microphone volume to the minimum level to prevent howling sound (refer to "MIC Volume and Echo", page 17).
- 2 Select **VCD** and press **II** to start playback.
- 3 Adjust the volume level of the source with **VOLUME** control.
- 4 Press **MIC/ECHO** to adjust the MIC and ECHO level to the desired mixing level.

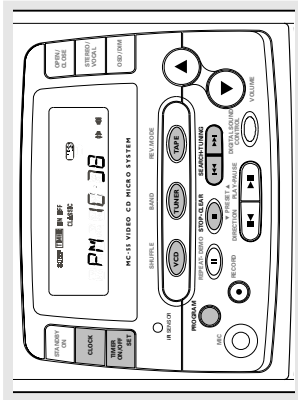
## Clock/Timer

### Timer setting

The system can switch on to VCD, TUNER or TAPE mode automatically at a preset time, serving as an alarm to wake you up.

**IMPORTANT!**

- Before setting the timer, ensure that the clock is set correctly.
- The timer will not start at the preset time if the system is switched on in one of the source mode (VCD, TUNER, for example).
- The timer can only be activated from Standby mode.



### View clock

The clock (if it is set) will be shown in Standby mode.

### To view the clock in any source mode (VCD or TUNER for example) Press CLOCK.

The clock will be displayed for a few seconds. If the clock has not been set, "12:00" or "12:00" will start flashing.

### Clock setting

The clock can be set in either 12- or 24-hour mode, for example "12:00" or "00:00".

- 1 Press **CLOCK** to select clock mode.
- 2 Press **PROGRAM** to select clock setting mode. "12:00" or "12:00" will start flashing.
- 3 Press **LEFT** or **RIGHT** to select 12- and 24-hour mode.
- 4 Press **PROGRAM** to confirm the selection. The hour indication will start flashing.
- 5 Press **LEFT** or **RIGHT** to set the hours.
- 6 Press **PROGRAM** to confirm the selection. The minutes indication will start flashing.
- 7 Press **LEFT** or **RIGHT** to set the minutes.
- 8 Press **PROGRAM** to store the setting. The clock will start working. To exit without storing the setting, press **STOP** on the system.

**Notes:**

- The clock setting will be erased when the power cord is disconnected or if a power failure occurred.
- During clock setting, if no button is pressed within 5 seconds, the system will exit clock setting mode automatically.

- 1 Press and hold **TIMER ON/OFF (SET)** for more than 2 seconds to select timer setting mode. **TIMER** will appear on the display. Press **LEFT** or **RIGHT** repeatedly to view the previous setting.
- 2 Press **PROGRAM** to change the previous setting or start a new setting. "12:00", "12:00", "12:00" or "00:00" will start flashing.
- 3 Press **LEFT** or **RIGHT** to select the desired source.
- 4 Press **PROGRAM** to confirm the selection. If "12:00" or "12:00" is selected, press **TUNER** to select the current radio station or press **LEFT** or **RIGHT** to select a desired preset radio station. "00" and the volume level will start flashing.
- 5 Press **LEFT** or **RIGHT** to set the volume level.
- 6 Press **PROGRAM** to confirm the setting. **ON** and the hour indication will start flashing. Set the time to start playback.
- 7 Press **LEFT** or **RIGHT** to set timer start hours and press **PROGRAM** to store the setting and repeat the same procedure to set the minutes. **OFF** and the hour indication will start flashing.
- 8 Set the time to stop playback following the above procedure. "TIMER CL" will be display briefly and the timer is now set.
- 9 Switch the system to standby mode. When reached the preset timer, the selected source will play if the timer has been activated.

## Clock/Timer

### To deactivate the TIMER

Press **TIMER ON/OFF (SET)**.  
TIMER will appear on the display.

### To activate the TIMER

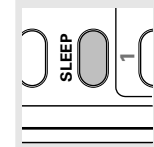
Press **TIMER ON/OFF (SET)**.  
TIMER will disappear from the display.

#### Notes:

- The timer will not be activated if the starting and stopping time are the same.
- If the selected source (CD or TAPE) is not available when preset timer is reached, TUNER will be selected automatically.
- During timer setting, if no button is pressed within 5 seconds, the system will exit timer setting mode automatically.

### Sleep timer setting

If the sleep timer is activated, the system will switch to standby mode after the selected time has expired.



**1** When the **SLEEP** on the remote control is pressed for the first time, the set turn to sleep mode.

"SLEEP OFF" will be displayed.

**2** Press **SLEEP** again repeatedly to select a sleep time.

The selections are as follows:

120 MIN → 110 MIN ... → 20 MIN →  
10 MIN → 1 MIN → SLEEP OFF →  
120 MIN ...

**3** When you reach the desired length of time, stop pressing the **SLEEP** button.

**SLEEP** will appear on the display, except for "SLEEP OFF" mode.

### While SLEEP mode is activated

#### To check the remaining length of time

Press **SLEEP** once.  
"SLEEP XXX" will be displayed. "XXX" is the time in minutes.

#### To change the preset sleep timer

Press **SLEEP** twice.  
The display will show the remaining time followed by the nearest sequence of sleep timer options.

### To deactivate the Sleep Timer

Press **SLEEP** repeatedly until "SLEEP OFF" is displayed, or press the **STANDBY ON** button.

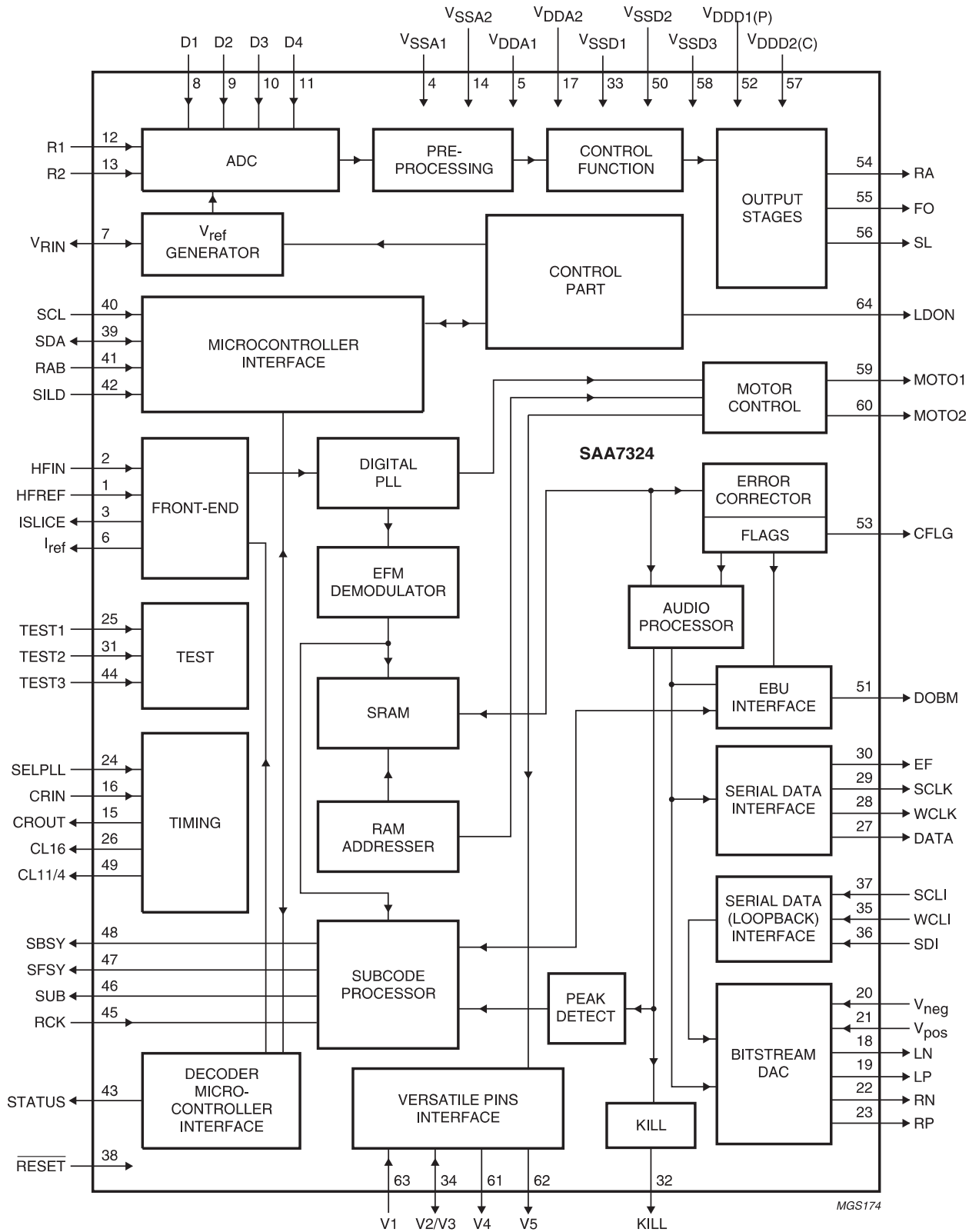
#### Notes:

- Press and hold the **CLOCK** button on the system to switch to sleep mode, the **CLOCK** button will now able to operate the same function as **SLEEP** button on the remote control.
- If timer off and the sleep off are all activated, the system will switch to standby mode by the earlier time set.

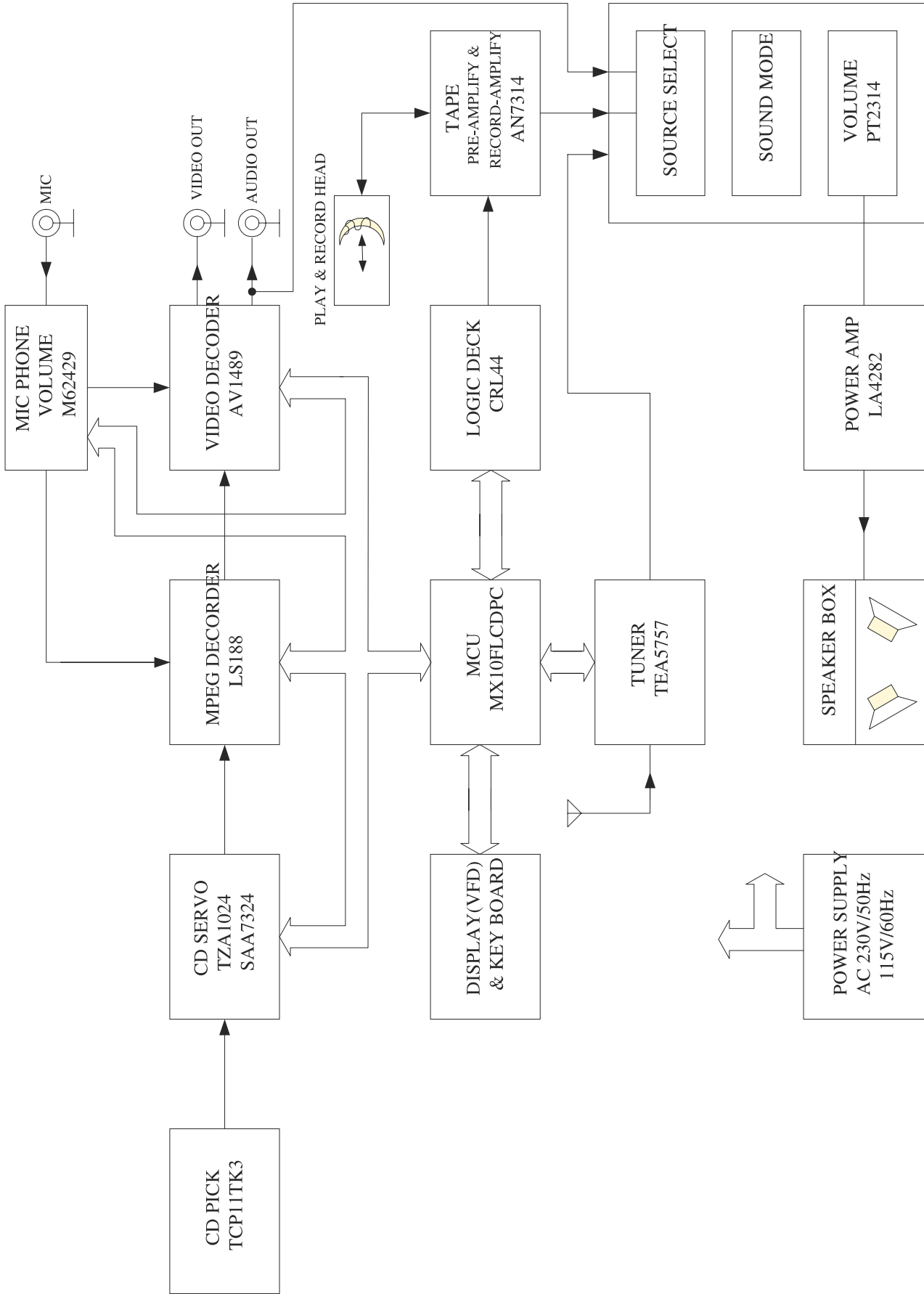
## Troubleshooting

| Problem   | Solution  |
|---|---|
| <b>CD/VCD OPERATION</b><br>"NO DISC" is displayed.                            | <ul style="list-style-type: none"> <li>- Insert a disc.</li> <li>- Check if the disc is inserted upside down.</li> <li>- Wait until the moisture condensation at the lens has cleared.</li> <li>- Replace or clean the disc, see "Maintenance".</li> <li>- Use a readable disc or correct recorded format MP3-CD.</li> </ul>  |
| <b>No picture on TV screen.</b>   | - Connect the cable between the system and TV.  |
| <b>No colour on TV.</b>   | - Change the system to the respective PAL or NTSC setting.  |
| <b>RADIO RECEPTION</b><br>Radio reception is poor.                            | <ul style="list-style-type: none"> <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 Micro System and your TV or VCR.</li> </ul>  |
| <b>TAPE OPERATION/RECORDING</b><br>"RECORDING" is displayed.                  | - Stop the recording or wait until it is finished.  |
| <b>Recording or playback cannot be made.</b>                                  | <ul style="list-style-type: none"> <li>- Clean deck parts, see "Maintenance".</li> <li>- Use only NORMAL (IEC I) tape.</li> <li>- Apply a piece of adhesive tape over the missing tab space.</li> </ul>   |
| <b>The tape deck door cannot open.</b>  | - Remove and reconnect the AC power plug and switch on the system again.  |
| <b>GENERAL</b>  |   |
| <b>The system does not react when buttons are pressed.</b>                    | - Remove and reconnect the AC power plug and switch on the system again.  |
| <b>Sound cannot be heard or is of poor quality.</b>                           | <ul style="list-style-type: none"> <li>- Adjust the volume.</li> <li>- Check that the speakers are connected correctly.</li> <li>- Check if the stripped speaker wire is clamped.</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> </ul>  |
| <b>The left and right sound outputs are reversed.</b>                         | - Check the speaker connections and location.   |
| <b>The remote control does not function properly.</b>                         | <ul style="list-style-type: none"> <li>- Select the source (VCD or TUNER, for example) before pressing the function button (◀▶▶▶).</li> <li>- Reduce the distance between the remote control and the system.</li> <li>- Insert the batteries with their polarities (+/- signs) aligned as indicated.</li> <li>- Replace the batteries.</li> <li>- Point the remote control in the direction of the system's IR sensor.</li> </ul> |
| <b>The timer is not working.</b>  | <ul style="list-style-type: none"> <li>- Set the clock correctly.</li> <li>- Press <b>TIMER ON/OFF</b> to switch on the timer.</li> <li>- Switch the system to standby mode.</li> </ul>   |
| <b>Not all lighted buttons are showing light.</b>                             | - Press <b>OSD/DIM</b> to select <b>DIM HIGH</b> display mode.  |
| <b>The Clock/Timer setting is erased.</b>                                     | - Power has been interrupted or the power cord has been disconnected. Reset the clock/timer.  |
| <b>The system displays features automatically and buttons start flashing.</b> | - Press <b>REPEAT•DEMO</b> to switch off the demonstration.   |

**BLOCK DIAGRAM - IC SAA7324P**



# BLOCK DIAGRAM

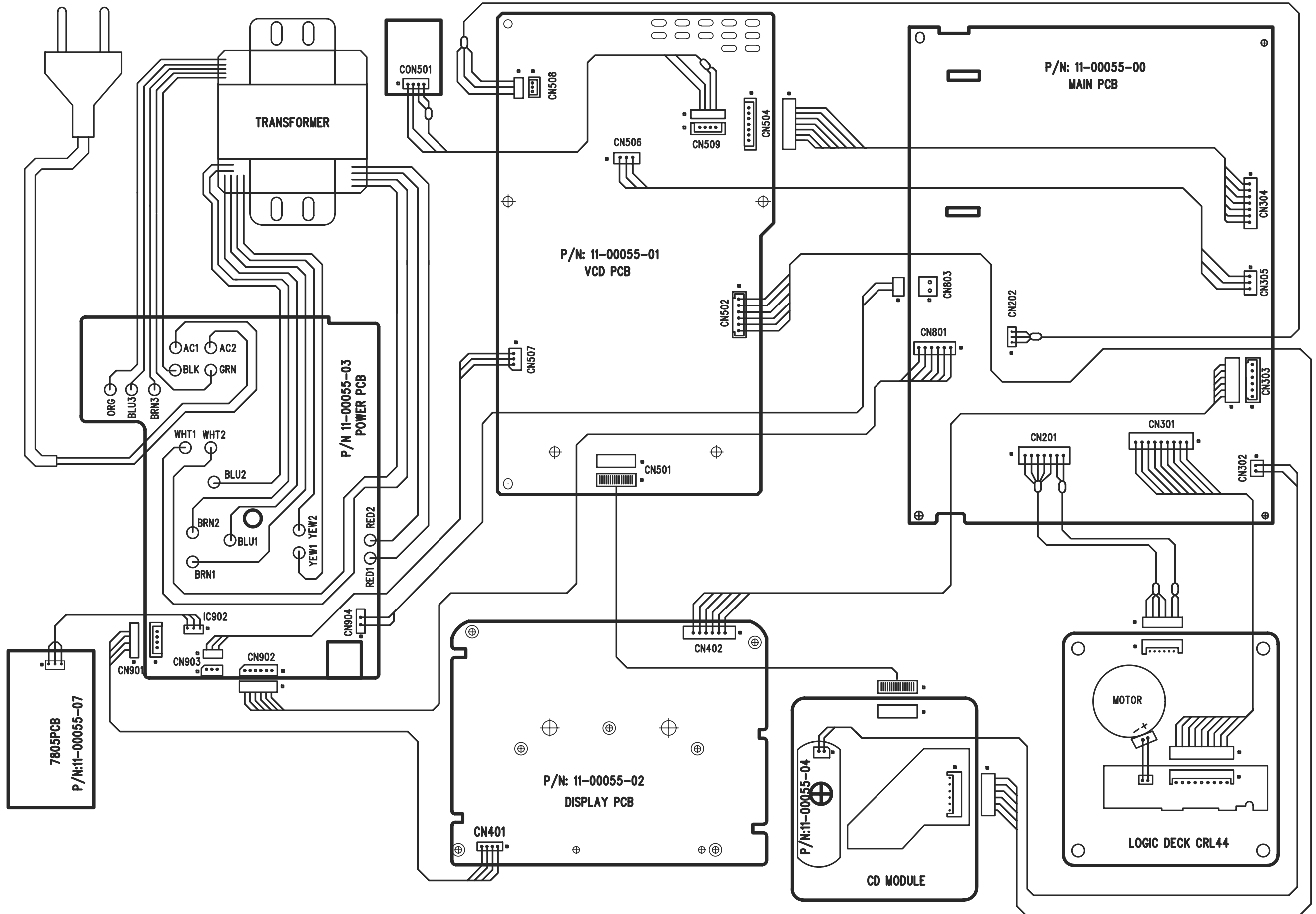




WIRING DIAGRAM

5-1

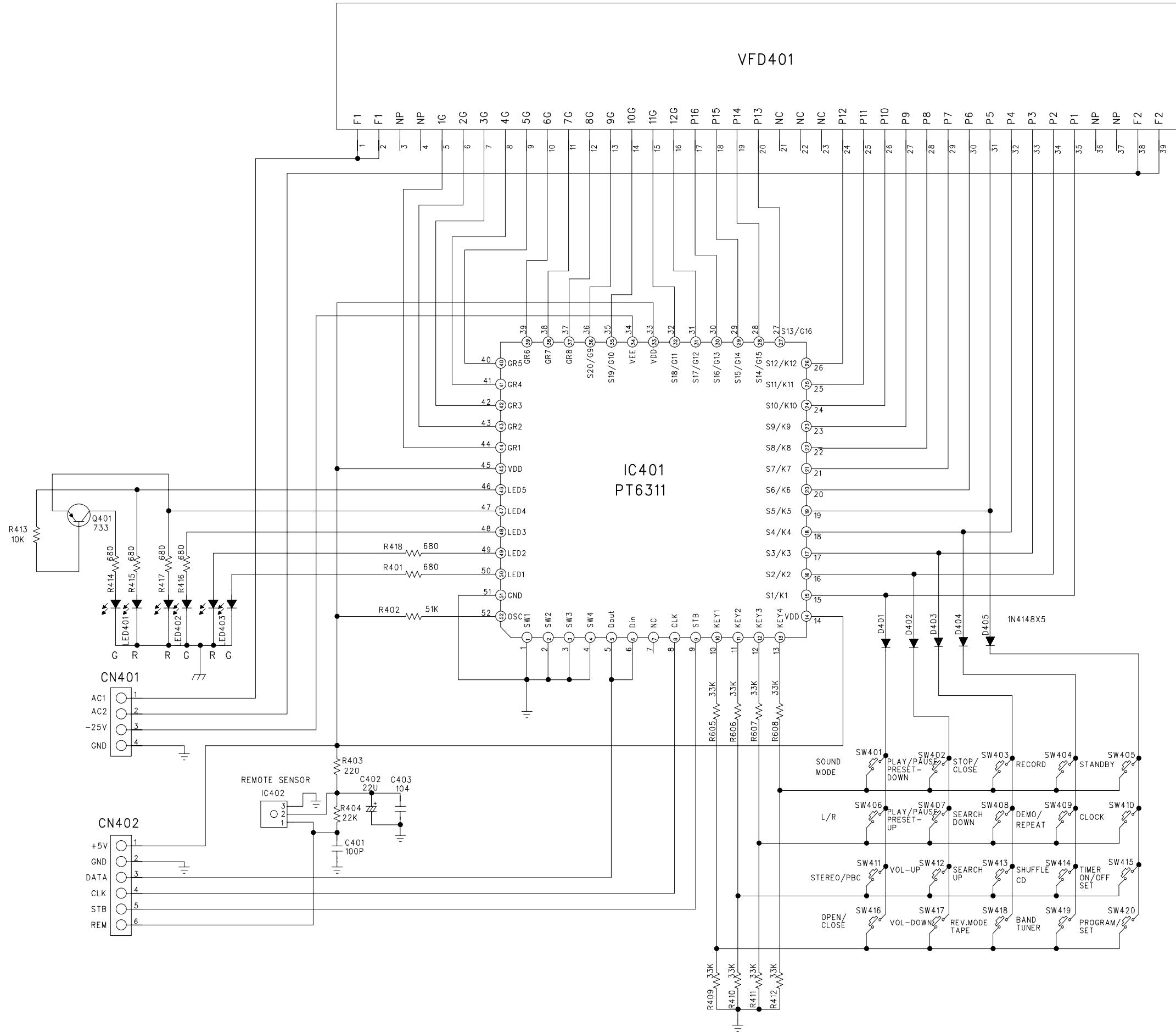
5-1



FRONT BOARD - CIRCUIT DIAGRAM

6-1

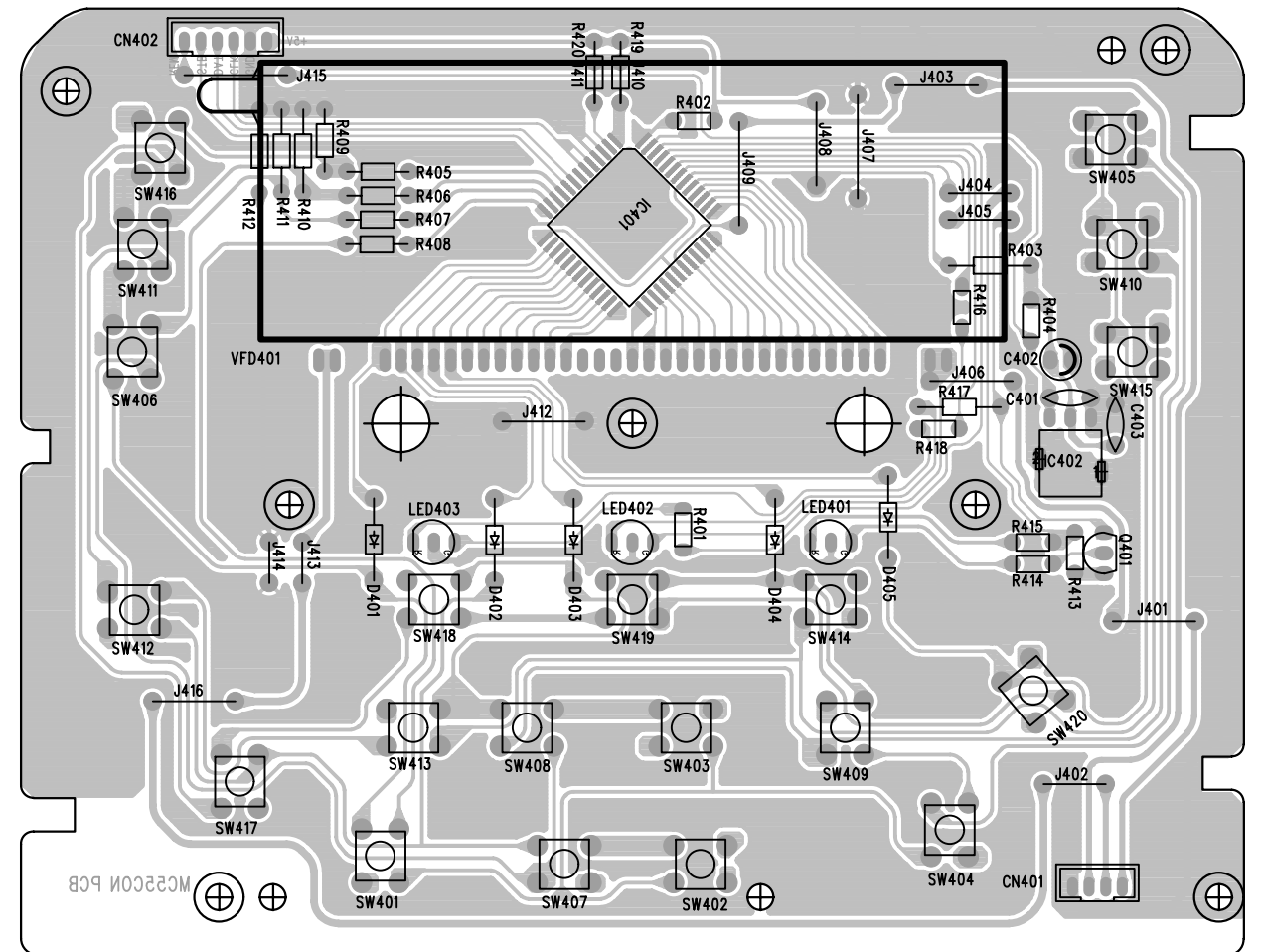
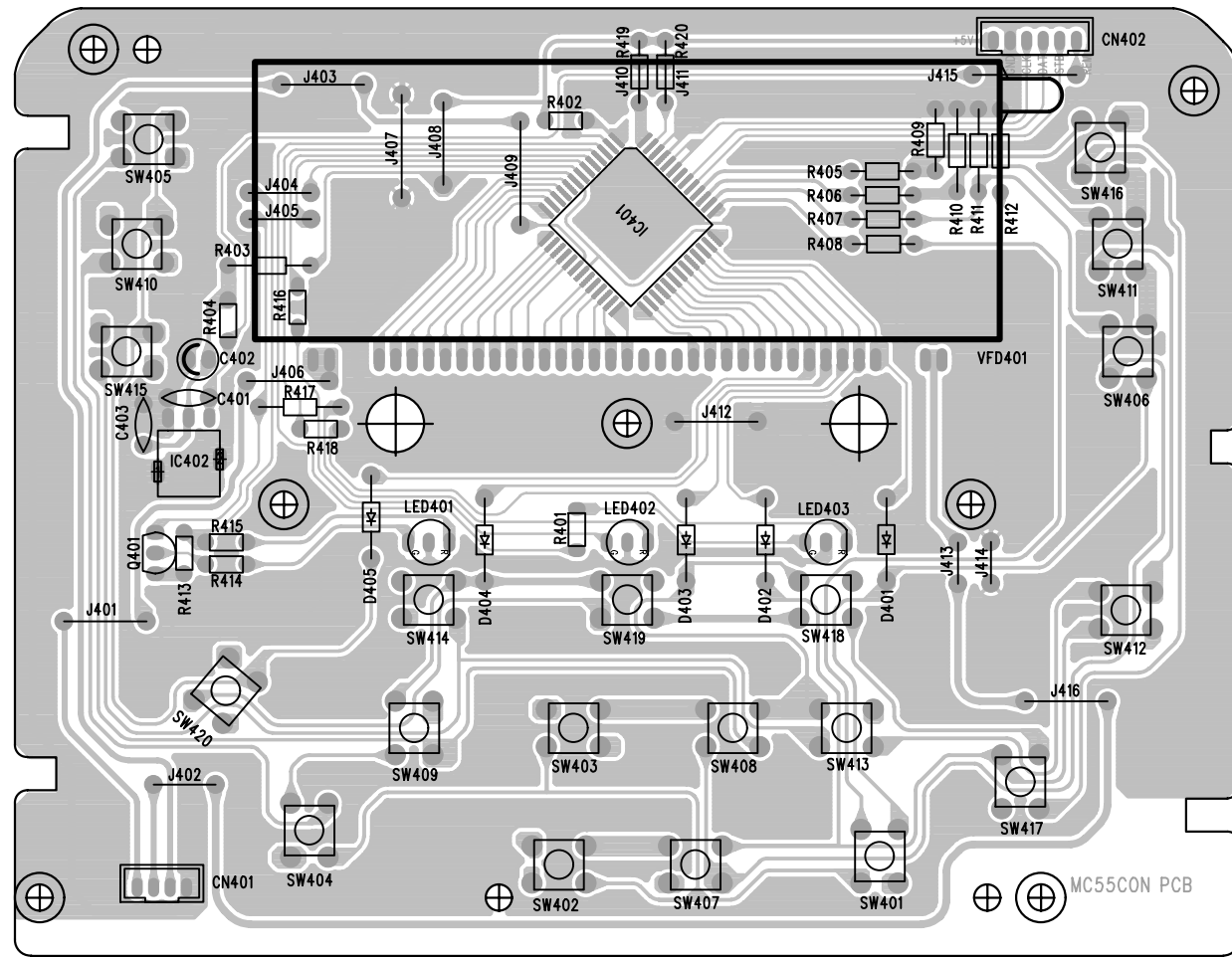
6-1



FRONT BOARD - LAYOUT DIAGRAM

6-2

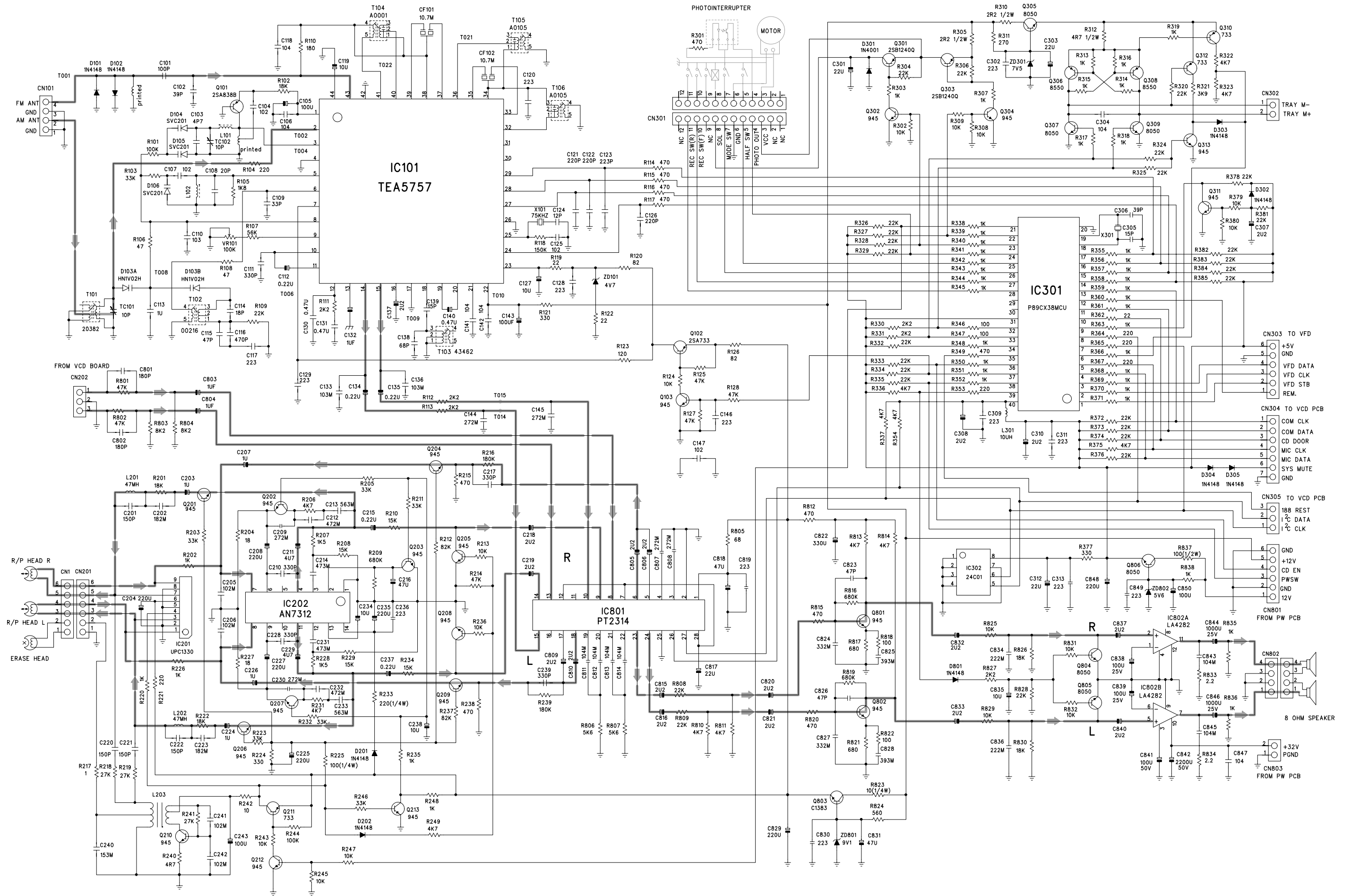
6-2



# MAIN BOARD - CIRCUIT DIAGRAM

7-1

7-1

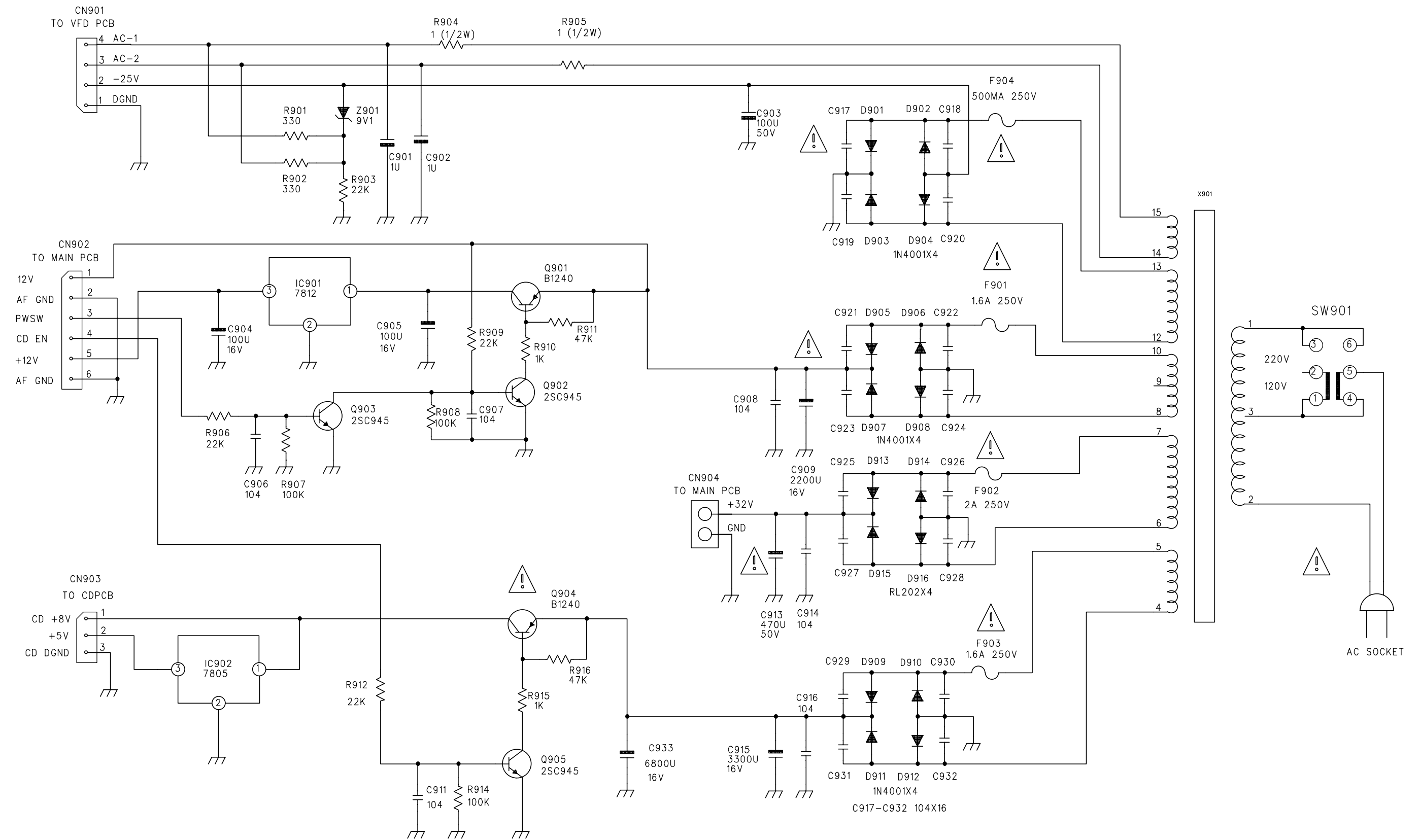






8-1  
**POWER SUPPLY BOARD - CIRCUIT DIAGRAM**

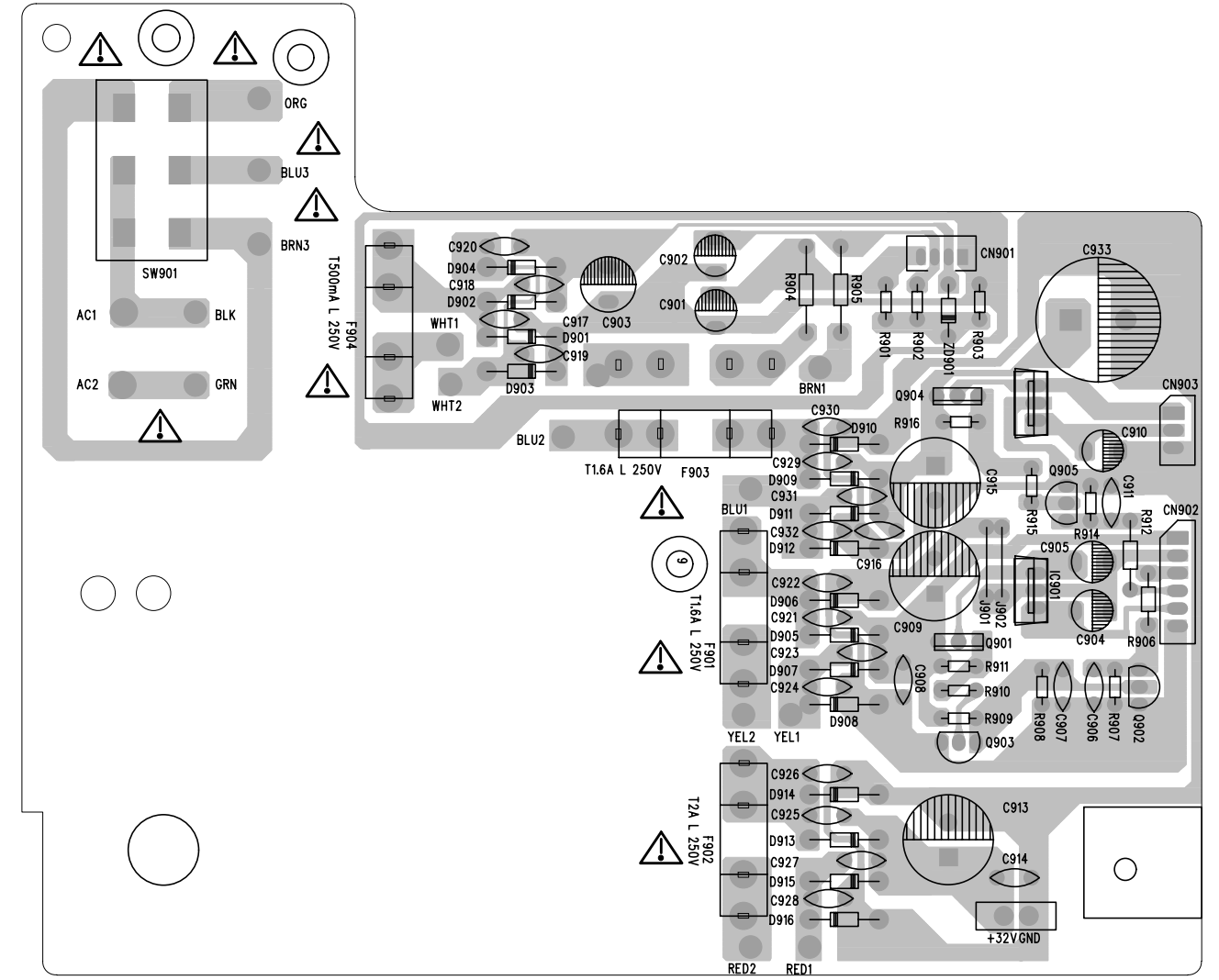
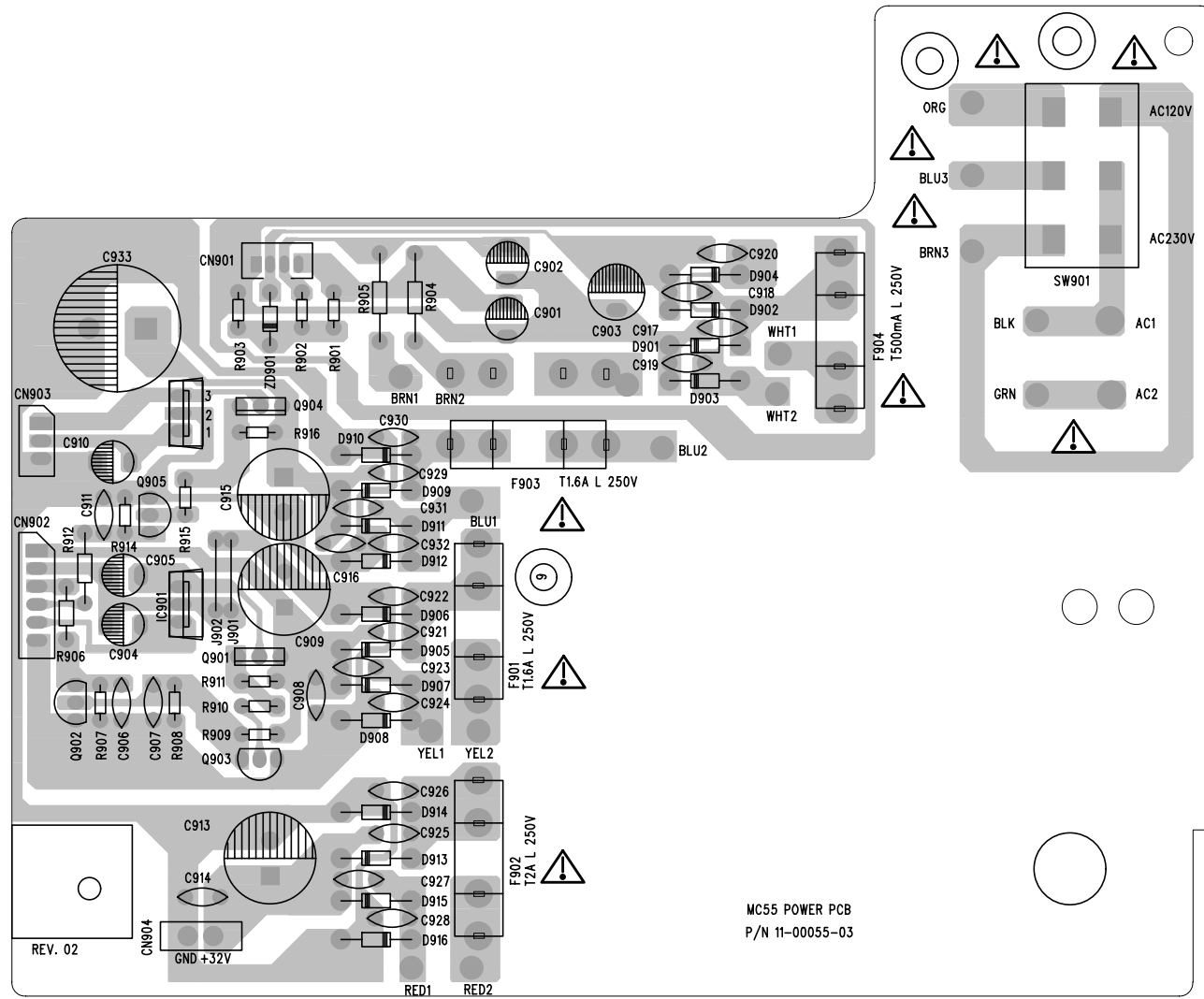
8-1



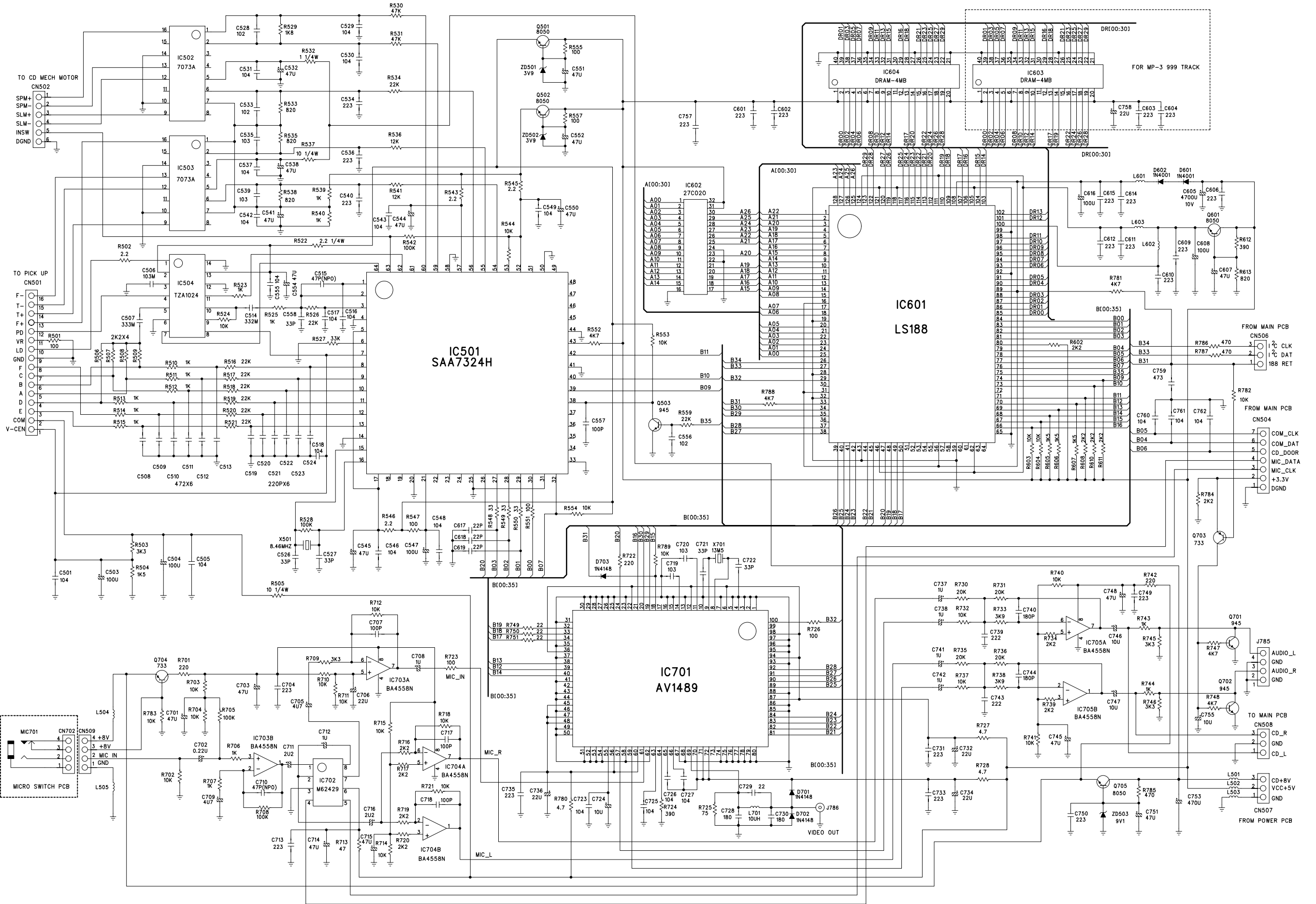


8-2  
**POWER SUPPLY BOARD - CIRCUIT DIAGRAM**

8-2

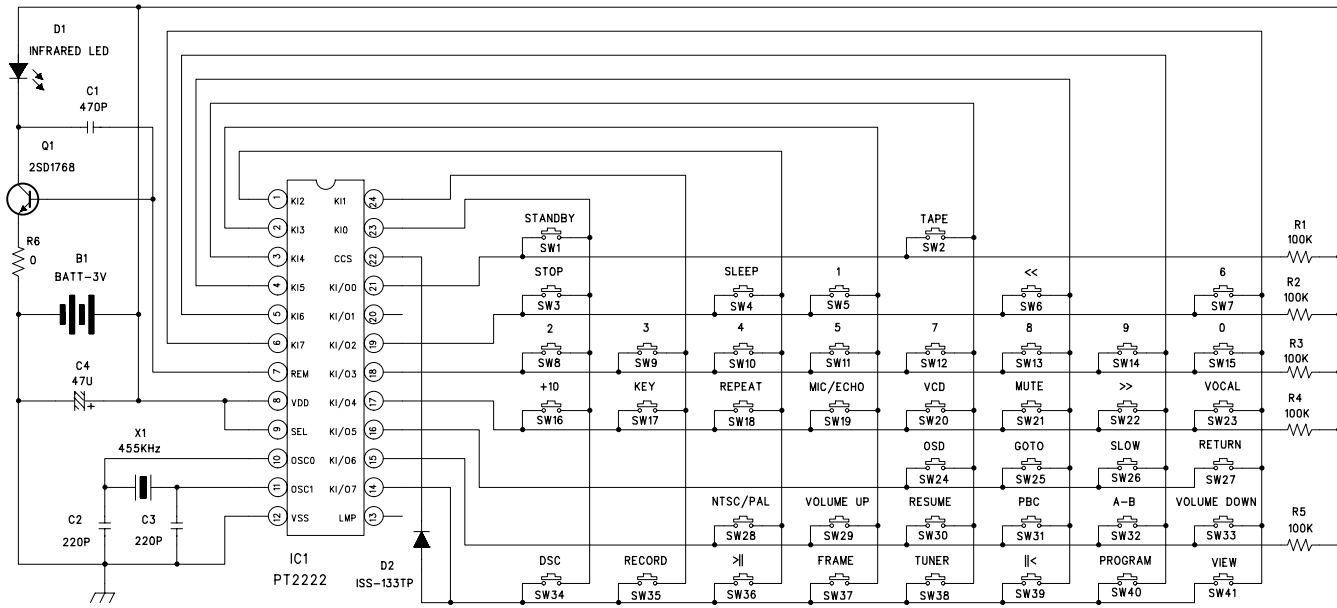


# VCD BOARD - CIRCUIT DIAGRAM

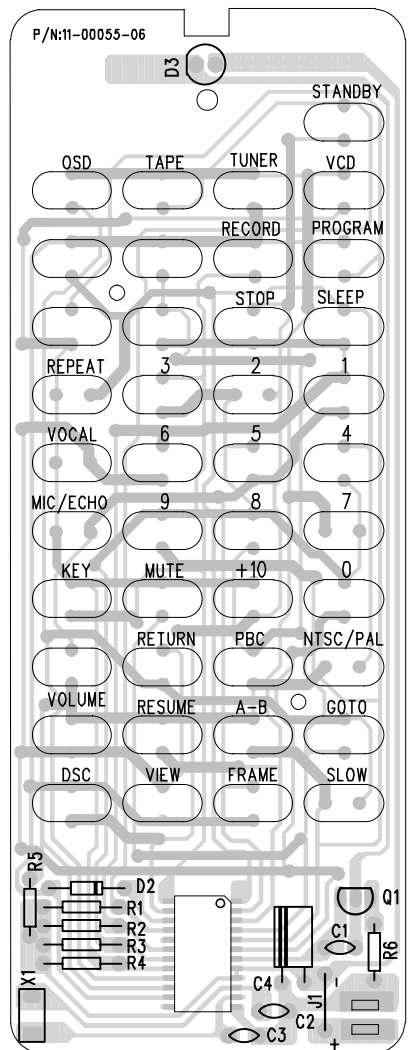




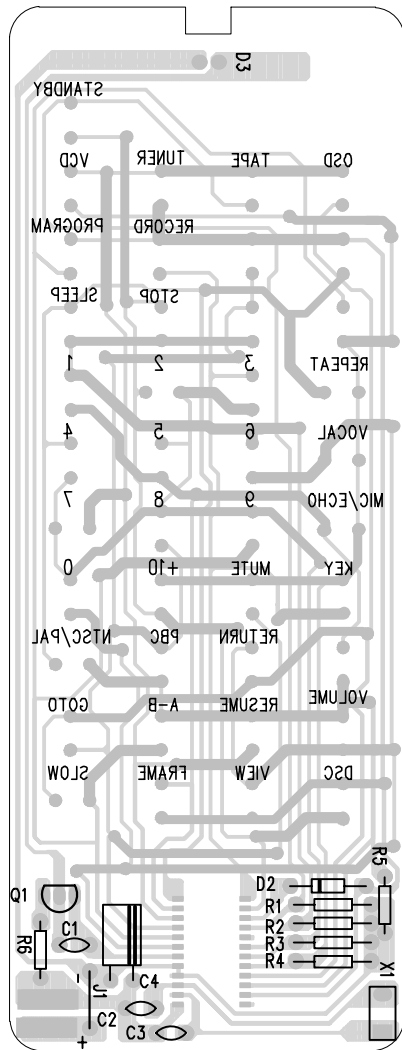
### REMOTE CONTROL - CIRCUIT DIAGRAM



### REMOTE CONTROL - LAYOUT DIAGRAM

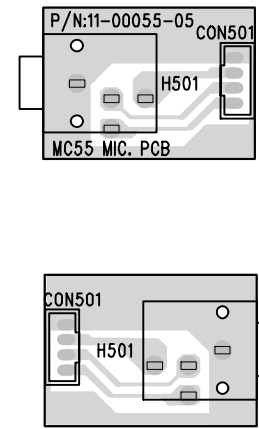


Component Side

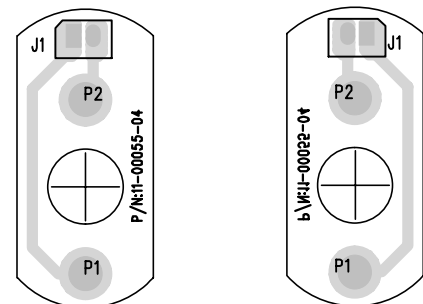


Copper Side

### MIC BOARD - LAYOUT DIAGRAM



### MOTOR BOARD - LAYOUT DIAGRAM



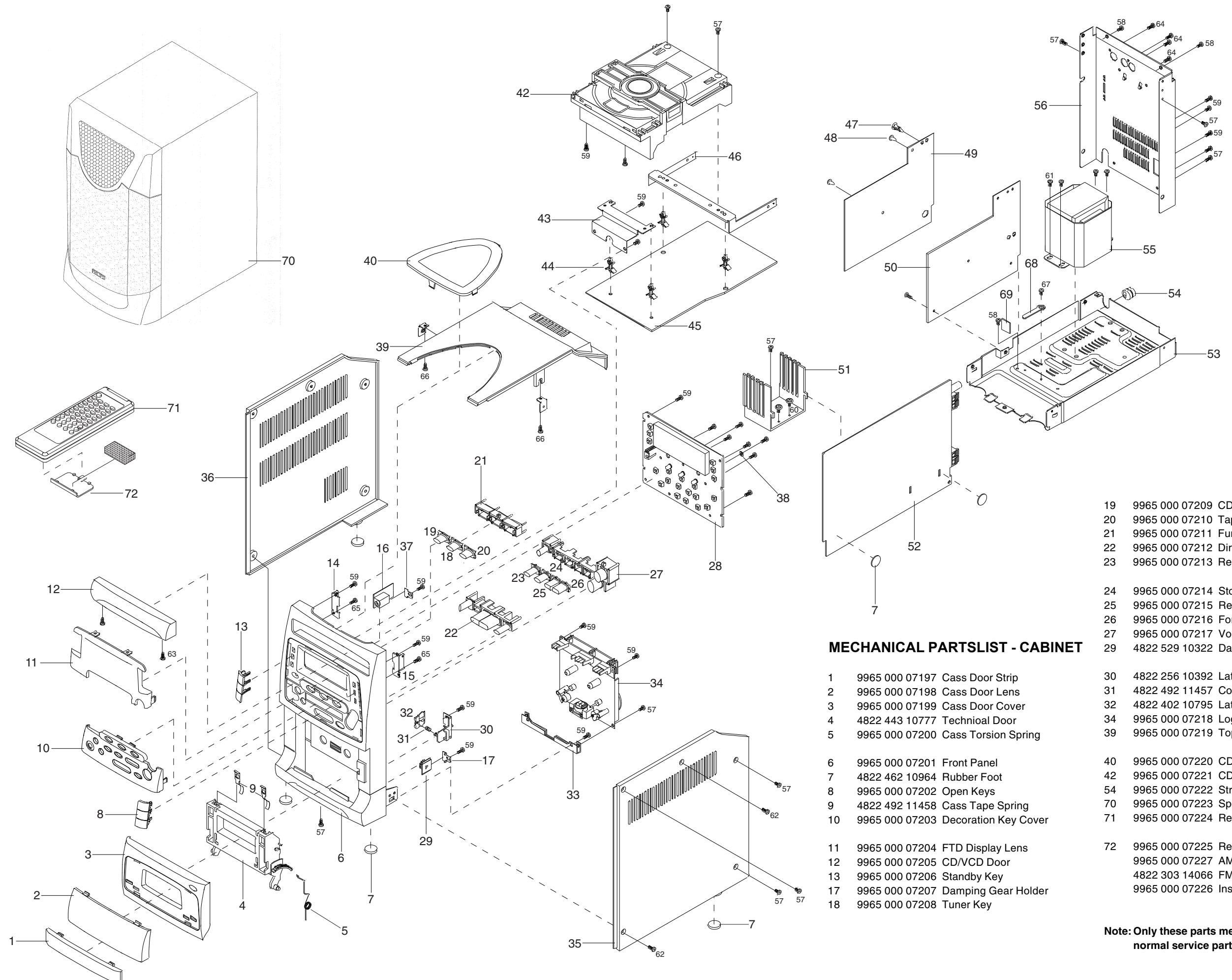
### CONNECTOR BOARD - LAYOUT DIAGRAM



# EXPLODED VIEW DIAGRAM - CABINET

11-1

11-1



- 19 9965 000 07209 CD/VCD Key
- 20 9965 000 07210 Tape Key
- 21 9965 000 07211 Function Knob
- 22 9965 000 07212 Directions Key
- 23 9965 000 07213 Repeat/Demo Key

- 24 9965 000 07214 Stop/Clear Key
- 25 9965 000 07215 Rewind Key
- 26 9965 000 07216 Forward Key
- 27 9965 000 07217 Volume/Program Set Key
- 29 4822 529 10322 Damper Assy

## MECHANICAL PARTSLIST - CABINET

- 1 9965 000 07197 Cass Door Strip
- 2 9965 000 07198 Cass Door Lens
- 3 9965 000 07199 Cass Door Cover
- 4 4822 443 10777 Technioal Door
- 5 9965 000 07200 Cass Torsion Spring
- 6 9965 000 07201 Front Panel
- 7 4822 462 10964 Rubber Foot
- 8 9965 000 07202 Open Keys
- 9 4822 492 11458 Cass Tape Spring
- 10 9965 000 07203 Decoration Key Cover
- 11 9965 000 07204 FTD Display Lens
- 12 9965 000 07205 CD/VCD Door
- 13 9965 000 07206 Standby Key
- 17 9965 000 07207 Damping Gear Holder
- 18 9965 000 07208 Tuner Key
- 30 4822 256 10392 Latching Cam Holder
- 31 4822 492 11457 Compress Spring Eject Cam
- 32 4822 402 10795 Latching Cam
- 34 9965 000 07218 Logic Tape Deck CRL44-25
- 39 9965 000 07219 Top Cover
- 40 9965 000 07220 CD/VCD Window
- 42 9965 000 07221 CD Deck TCP11TK3
- 54 9965 000 07222 Strain Relief Bushing
- 70 9965 000 07223 Speaker Box Assy
- 71 9965 000 07224 Remcote Control Assy
- 72 9965 000 07225 Remote Battery Door
- 9965 000 07227 AM Loop Type Antenna
- 4822 303 14066 FM Aerial
- 9965 000 07226 Instructions Manual

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

# EXPLODED VIEW DIAGRAM - TAPE DECK

11-2

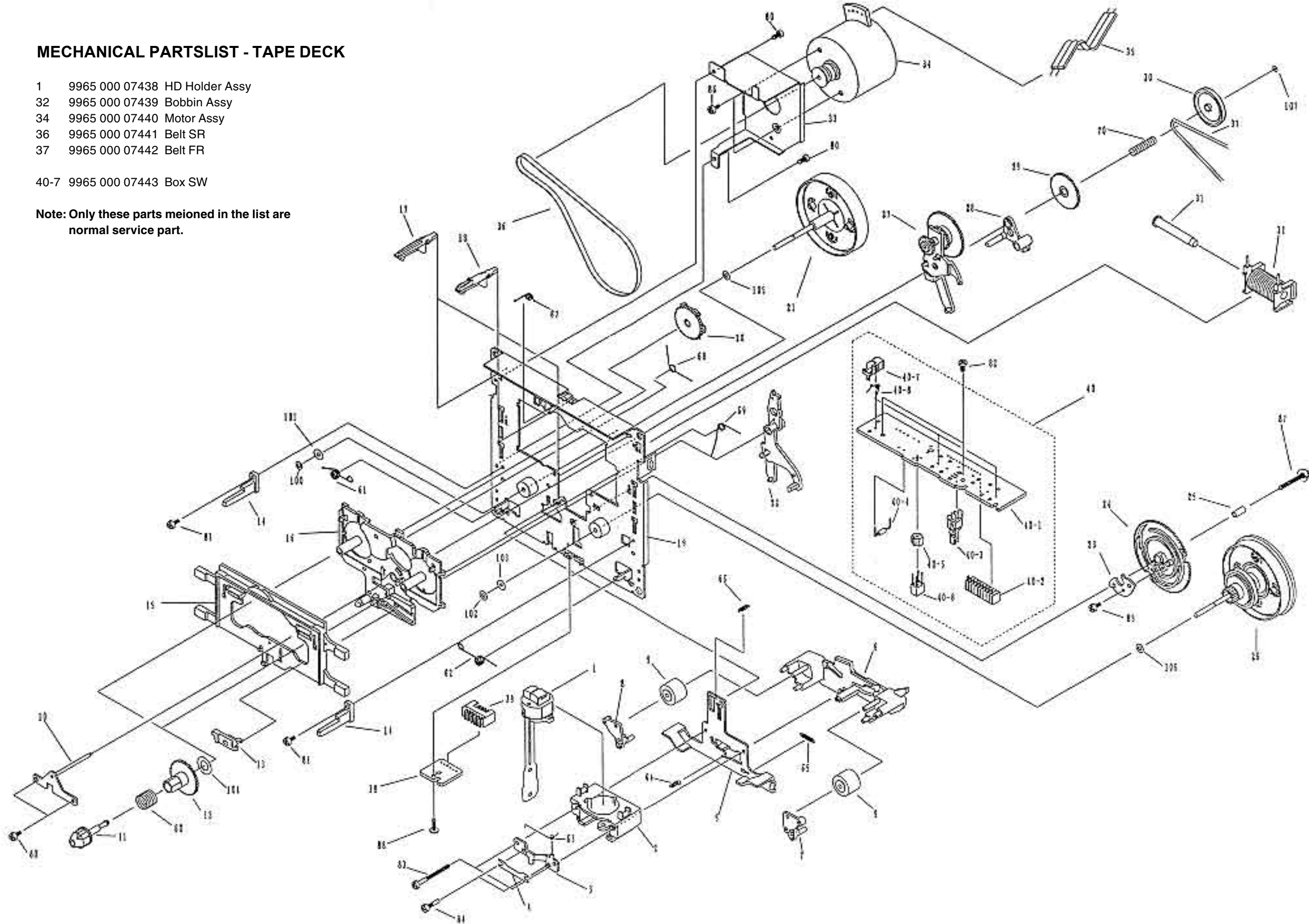
11-2

## MECHANICAL PARTSLIST - TAPE DECK

- 1 9965 000 07438 HD Holder Assy
- 32 9965 000 07439 Bobbin Assy
- 34 9965 000 07440 Motor Assy
- 36 9965 000 07441 Belt SR
- 37 9965 000 07442 Belt FR

40-7 9965 000 07443 Box SW

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





**ELECTRICAL PARTSLIST - MAIN BOARD****- CAPACITORS -**

TC101 4822 125 11099 Var Cap 10pF  
 TC102 4822 125 11099 Var Cap 10pF

**- RESISTOR -**

VR101 9965 000 07228 Var Resistor 100K

**- COILS, CRYSTAL & FILTERS -**

CF101 9965 000 07239 Filter 10MHz  
 CF102 9965 000 07239 Filter 10MHz  
 L101 9965 000 07236 FM Osc Coil  
 L102 9965 000 07236 FM Osc Coil  
 L201 9965 000 07237 Choke Coil 47mH  
  
 L202 9965 000 07237 Choke Coil 47mH  
 L203 4822 157 11365 Osc Coil  
 L301 9965 000 07238 Choke Coil 10mH  
 T101 9965 000 07231 MW Aerial Coil  
 T102 9965 000 07232 Ind Var 7mm 7P  
  
 T103 9965 000 07233 Ind Var 7mm 7KM  
 T104 9965 000 07234 AM IF Coil  
 T105 9965 000 07235 AM IF Coil  
 T106 9965 000 07235 AM IF Coil  
 X101 9965 000 07229 Crystal 75 kHz  
  
 X301 9965 000 07230 Crystal 12.072 MHz

**- DIODES -**

D101 4822 130 30621 Diode 1N4148  
 D102 4822 130 30621 Diode 1N4148  
 D103 9965 000 07240 Var Diode HN1V02H  
 D105 4822 130 62625 Diode SVC201SPA  
 D106 4822 130 62625 Diode SVC201SPA  
  
 D201 4822 130 30621 Diode 1N4148  
 D202 4822 130 30621 Diode 1N4148  
 D301 4822 130 31438 Diode 1N4001G  
 D302 4822 130 30621 Diode 1N4148  
 D303 4822 130 30621 Diode 1N4148  
  
 D304 4822 130 30621 Diode 1N4148  
 D305 4822 130 30621 Diode 1N4148  
 D801 4822 130 30621 Diode 1N4148  
 ZD101 9965 000 07241 Zener 4.7V 0.5W  
 ZD301 9965 000 07245 Zener 7.5V 0.5W  
  
 ZD801 4822 130 10971 Diode UZ9.1W  
 ZD802 9965 000 07246 Zener 5.6V 0.5W

**- IC & TRANSISTORS -**

IC201 4822 209 61667 IC UPC1330HA  
 IC202 4822 209 70997 IC AN7312  
 IC301 9965 000 07250 IC P89CX38MCU  
 IC302 9965 000 05603 IC ST24C01 FLAT  
 IC801 9965 000 07251 IC PT2314  
  
 Q102 9965 000 07247 Trans 2SA733P  
 Q103 4822 130 41198 Trans 2SC945P  
 Q201 4822 130 41198 Trans 2SC945P  
 Q202 4822 130 41198 Trans 2SC945P  
 Q203 4822 130 41198 Trans 2SC945P  
  
 Q204 4822 130 41198 Trans 2SC945P  
 Q205 4822 130 41198 Trans 2SC945P  
 Q206 4822 130 41198 Trans 2SC945P  
 Q207 4822 130 41198 Trans 2SC945P  
 Q208 4822 130 41198 Trans 2SC945P  
  
 Q209 4822 130 41198 Trans 2SC945P  
 Q210 4822 130 41198 Trans 2SC945P  
 Q211 9965 000 07247 Trans 2SA733P  
 Q212 4822 130 41198 Trans 2SC945P  
 Q213 4822 130 41198 Trans 2SC945P  
  
 Q301 4822 130 10974 Trans 2SB1240Q  
 Q302 4822 130 41198 Trans 2SC945P  
 Q303 4822 130 10974 Trans 2SB1240Q  
 Q304 4822 130 41198 Trans 2SC945P  
 Q305 9965 000 07248 Trans 8050D  
  
 Q306 4822 130 63423 Trans 8550C  
 Q307 9965 000 07248 Trans 8050D  
 Q308 4822 130 63423 Trans 8550C  
 Q309 9965 000 07248 Trans 8050D  
 Q310 9965 000 07247 Trans 2SA733P  
  
 Q311 4822 130 41198 Trans 2SC945P  
 Q312 9965 000 07247 Trans 2SA733P  
 Q313 4822 130 41198 Trans 2SC945P  
 Q801 4822 130 41198 Trans 2SC945P  
 Q802 4822 130 41198 Trans 2SC945P  
  
 Q803 9965 000 07249 Trans 2SC1383R  
 Q804 9965 000 07248 Trans 8050D  
 Q805 9965 000 07248 Trans 8050D  
 Q806 9965 000 07248 Trans 8050D

**- MISCELLANEOUS -**

CN101 9965 000 07252 Ant Terminal  
 CN802 9965 000 07253 Terminal Board MSP-324V-01

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

**ELECTRICAL PARTSLIST - VCD BOARD****ELECTRICAL PARTSLIST - FRONT BOARD****- COILS & CRYSTALS -**

|      |                |                    |
|------|----------------|--------------------|
| L501 | 9965 000 07256 | Ferrite Bead       |
| L502 | 9965 000 07256 | Ferrite Bead       |
| L503 | 9965 000 07256 | Ferrite Bead       |
| L504 | 9965 000 07256 | Ferrite Bead       |
| L505 | 9965 000 07256 | Ferrite Bead       |
| L601 | 9965 000 07256 | Ferrite Bead       |
| L602 | 9965 000 07256 | Ferrite Bead       |
| L603 | 9965 000 07256 | Ferrite Bead       |
| L701 | 9965 000 07257 | Lead Inductor 10mH |
| X501 | 9965 000 07254 | Crystal 8.4672 MHz |

|      |                |                  |
|------|----------------|------------------|
| X701 | 9965 000 07255 | Crystal 13.5 MHz |
|------|----------------|------------------|

**- DIODES -**

|      |                |               |
|------|----------------|---------------|
| D601 | 4822 130 31438 | Diode 1N4001G |
| D602 | 4822 130 31438 | Diode 1N4001G |
| D701 | 4822 130 30621 | Diode 1N4148  |
| D702 | 4822 130 30621 | Diode 1N4148  |
| D703 | 4822 130 30621 | Diode 1N4148  |

|       |                |                 |
|-------|----------------|-----------------|
| ZD501 | 9965 000 07258 | Zener 3.9V 0.5W |
| ZD502 | 9965 000 07258 | Zener 3.9V 0.5W |
| ZD503 | 4822 130 10971 | Diode UZ9.1W    |

**- IC & TRANSISTORS -**

|       |                |                   |
|-------|----------------|-------------------|
| IC501 | 9352 641 80557 | IC SAA7324H/M2B   |
| IC502 | 9965 000 07259 | IC TDA7073/N4     |
| IC503 | 9965 000 07259 | IC TDA7073/N4     |
| IC504 | 9965 000 07260 | IC TZA1024        |
| IC601 | 9965 000 07261 | IC LS188          |
| IC602 | 9965 000 07262 | IC W27C020-70     |
| IC604 | 9965 000 07263 | DRAM ASC 256K X16 |
| IC701 | 9965 000 07264 | IC AV1489         |
| IC702 | 9965 000 07265 | IC M62429/P       |

|       |                |             |
|-------|----------------|-------------|
| IC703 | 4822 209 16265 | IC BA4558N  |
| IC704 | 4822 209 16265 | IC BA4558N  |
| IC705 | 4822 209 16265 | IC BA4558N  |
| Q501  | 9965 000 07248 | Trans 8050D |
| Q502  | 9965 000 07248 | Trans 8050D |

|      |                |               |
|------|----------------|---------------|
| Q503 | 4822 130 41198 | Trans 2SC945P |
| Q601 | 9965 000 07248 | Trans 8050D   |
| Q701 | 4822 130 41198 | Trans 2SC945P |
| Q702 | 4822 130 41198 | Trans 2SC945P |
| Q703 | 9965 000 07247 | Trans 2SA733P |

|      |                |               |
|------|----------------|---------------|
| Q704 | 9965 000 07247 | Trans 2SA733P |
| Q705 | 9965 000 07248 | Trans 8050D   |

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

**- DIODES -**

|        |                |                       |
|--------|----------------|-----------------------|
| D401   | 4822 130 30621 | Diode 1N4148          |
| D402   | 4822 130 30621 | Diode 1N4148          |
| D403   | 4822 130 30621 | Diode 1N4148          |
| D404   | 4822 130 30621 | Diode 1N4148          |
| D405   | 4822 130 30621 | Diode 1N4148          |
| LED401 | 4822 130 10976 | LED L-59EGW Red/Green |
| LED402 | 4822 130 10976 | LED L-59EGW Red/Green |
| LED403 | 4822 130 10976 | LED L-59EGW Red/Green |

**- IC & TRANSISTOR -**

|       |                |                      |
|-------|----------------|----------------------|
| IC401 | 9965 000 07267 | IC PT6311 VFD Driver |
| IC402 | 9965 000 07266 | IR Rec PIC-28042TEZ  |
| Q401  | 9965 000 07247 | Trans 2SA733P        |

**- MISCELLANEOUS -**

|       |                |                       |
|-------|----------------|-----------------------|
| SW401 | 4822 276 13893 | Push Switch EVQJAE05R |
| SW402 | 4822 276 13893 | Push Switch EVQJAE05R |
| SW403 | 4822 276 13893 | Push Switch EVQJAE05R |
| SW404 | 4822 276 13893 | Push Switch EVQJAE05R |
| SW405 | 4822 276 13893 | Push Switch EVQJAE05R |
| SW406 | 4822 276 13893 | Push Switch EVQJAE05R |
| SW407 | 4822 276 13893 | Push Switch EVQJAE05R |
| SW408 | 4822 276 13893 | Push Switch EVQJAE05R |
| SW409 | 4822 276 13893 | Push Switch EVQJAE05R |
| SW410 | 4822 276 13893 | Push Switch EVQJAE05R |
| SW411 | 4822 276 13893 | Push Switch EVQJAE05R |
| SW412 | 4822 276 13893 | Push Switch EVQJAE05R |
| SW413 | 4822 276 13893 | Push Switch EVQJAE05R |
| SW414 | 4822 276 13893 | Push Switch EVQJAE05R |
| SW415 | 4822 276 13893 | Push Switch EVQJAE05R |
| SW416 | 4822 276 13893 | Push Switch EVQJAE05R |
| SW417 | 4822 276 13893 | Push Switch EVQJAE05R |
| SW418 | 4822 276 13893 | Push Switch EVQJAE05R |
| SW419 | 4822 276 13893 | Push Switch EVQJAE05R |
| SW420 | 4822 276 13893 | Push Switch EVQJAE05R |

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

**ELECTRICAL PARTSLIST - POWER BOARD****- DIODES -**

|      |                |                 |
|------|----------------|-----------------|
| D901 | 4822 130 31438 | Diode 1N4001G   |
| D902 | 4822 130 31438 | Diode 1N4001G   |
| D903 | 4822 130 31438 | Diode 1N4001G   |
| D904 | 4822 130 31438 | Diode 1N4001G   |
| D905 | 4822 130 31438 | Diode 1N4001G   |
|      |                |                 |
| D906 | 4822 130 31438 | Diode 1N4001G   |
| D907 | 4822 130 31438 | Diode 1N4001G   |
| D908 | 4822 130 31438 | Diode 1N4001G   |
| D909 | 4822 130 31438 | Diode 1N4001G   |
|      |                |                 |
| D910 | 4822 130 31438 | Diode 1N4001G   |
| D911 | 4822 130 31438 | Diode 1N4001G   |
| D912 | 4822 130 31438 | Diode 1N4001G   |
| D913 | 9965 000 07268 | Rectifier RL202 |
| D914 | 9965 000 07268 | Rectifier RL202 |
|      |                |                 |
| D915 | 9965 000 07268 | Rectifier RL202 |
| D916 | 9965 000 07268 | Rectifier RL202 |
| D917 | 4822 130 31438 | Diode 1N4001G   |
| D918 | 4822 130 31438 | Diode 1N4001G   |
| Z901 | 4822 130 10971 | Diode UZ9.1W    |

**- IC & TRANSISTORS -**

|       |                |                |
|-------|----------------|----------------|
| IC901 | 4822 209 70084 | IC NJM7812A    |
| IC902 | 4822 209 83824 | IC NJM7805FA   |
| Q901  | 4822 130 10974 | Trans 2SB1240Q |
| Q902  | 4822 130 41198 | Trans 2SC945P  |
| Q903  | 4822 130 41198 | Trans 2SC945P  |
|       |                |                |
| Q904  | 4822 130 10974 | Trans 2SB1240Q |
| Q905  | 4822 130 41198 | Trans 2SC945P  |
| Q906  | 4822 130 10803 | Trans KTD2058Y |

**- MISCELLANEOUS -**

|        |                  |                      |
|--------|------------------|----------------------|
| F901   | △ 4822 252 11252 | Fuse 1.6A 250V       |
| F902   | △ 4822 070 32002 | Fuse 2A              |
| F903   | △ 4822 252 11252 | Fuse 1.6A 250V       |
| F904   | △ 9965 000 07271 | Fuse 500mA 250V      |
| J785   | 9965 000 07273   | RCA Jack RCA-214     |
|        |                  |                      |
| J786   | 9965 000 07274   | Pin Jack Board       |
| MIC701 | 9965 000 07272   | 3.5MM Mic Jack       |
| X901   | △ 9965 000 07269 | Transformer 120/230V |
|        | 9965 000 07270   | AC Cord              |
|        | 9965 000 07275   | FFC 16P Cable        |

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