

Service  
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**Service**



# Service Manual



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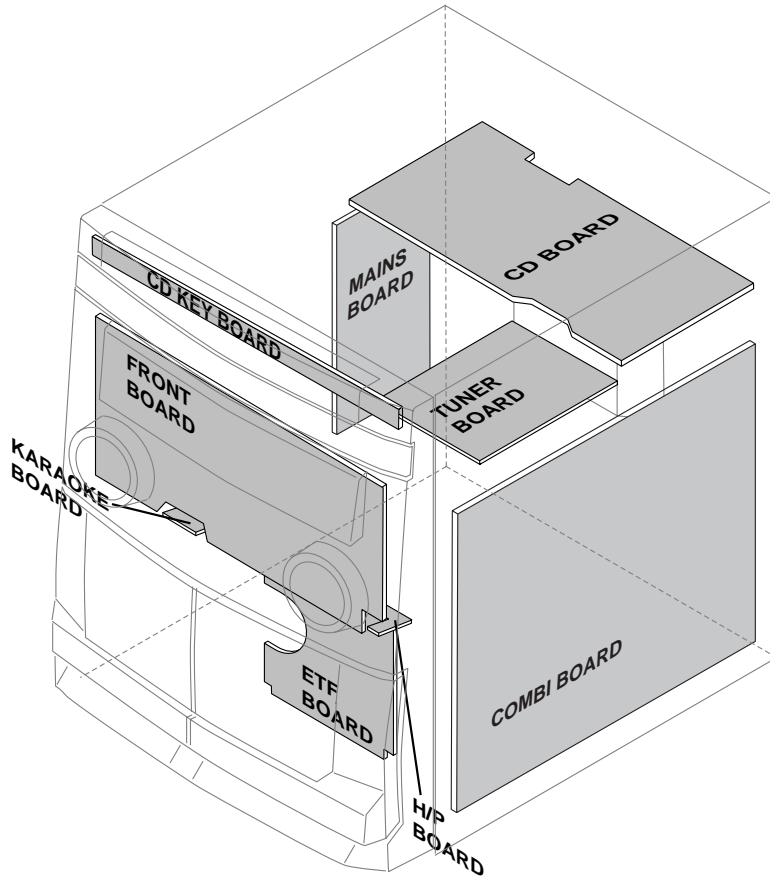
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SPR 00 0054



# PHILIPS

# LOCATION OF PC BOARDS



## VERSION VARIATIONS:

Type /Versions:	FW-C200							
	/21	/21M	/30	/33				
Features & Board in used:								
Incredible Surround								
Karaoke	x	x						
News								
RDS								
Rotary Encoder (volume control)	x	x	x	x				
Jog Shuttle								
Voltage Selector	x	x						
Aux Input	x	x	x	x				
Digital Output								
Headphone Socket	x	x	x	x				
Line Output								
Subwoofer Output								
Surround Output								
Matrix Surround Loudspeakers								
Standby - Clock Display	x	x	x	x				
Standby - Dark								
Tuner board - ECO5 Sys	x	x	x	x				
Tuner board - Tuner 95								
Combi board 12W version								
Combi board 18W version	x	x	x	x				
Combi board 25W version								

## SPECIFICATIONS

### GENERAL:

Mains voltage : 110-127V/220-240V Switchable for /21/21M  
 120V for /37  
 220-230V for /22/34  
 230-240V for /30

Mains frequency : 50/60Hz

Power consumption : < 15W at Standby  
 < 44W Active

Clock accuracy : < 4 seconds per day

Dimension centre unit : 265 x 310 x 320mm

### TUNER:

#### FM

Tuning range : 87.5-108MHz  
 65.81-74MHz for /34 <sup>1)</sup>

Grid : 50kHz (& 30kHz for /34)  
 100kHz for /37

IF frequency : 10.7MHz ± 25kHz

Aerial input : 75Ω coaxial  
 300Ω click fit for /37

Sensitivity at 26dB S/N : < 7μV

Selectivity at 600kHz bandwidth : > 30dB

Image rejection : > 25dB [> 60dB]

Distortion at RF=1mV, dev. 75kHz : < 3%

-3dB Limiting point : < 8μV

Crosstalk at RF=1mV, dev. 40kHz : > 18dB

#### MW

Tuning range : 531-1602kHz  
 530-1700kHz for /21/21M/37

Grid : 9kHz  
 10kHz for /21/21M/37

IF frequency : 450kHz ± 1kHz

Aerial input : Frame aerial

Sensitivity at 26dB S/N : < 4.0mV/M

Selectivity at 18kHz bandwidth : > 18dB

IF rejection : > 40dB

Image rejection : > 28dB

Distortion at RF=50mV, m=80% : < 5%

#### LW

Tuning range : 153-279kHz for /22

Grid : 3kHz

IF frequency : 450kHz ± 1kHz

Aerial input : Frame aerial

Sensitivity at 26dB S/N : [< 7.0mV/M]

Selectivity at 18kHz bandwidth : [> 30dB]

IF rejection : [> 25dB]

Image rejection : [> 35dB]

Distortion at RF=50mV, m=80% : [< 5%]

### AMPLIFIER:

Output power (6Ω, 1 kHz, 10% THD) : 2 x 20W ± 1dB

Frequency response within -3dB : 50Hz-15kHz

Dynamic Bass Boost : DBB ON, DBB Off <sup>2)</sup>

Digital Sound Control : Jazz, Techno, Optimal, Rock <sup>2)</sup>

Headphone output at 32Ω : 16mW

Input sensitivity

Aux/Line-in : 700mV ± 2dB at 600Ω

Mic : {3.5mV}

### CASSETTE RECORDER:

Number of track : 2 x 2 stereo

Tape speed : 4.76 cm/sec ± 2%

Wow and flutter : < 0.4% DIN

Fast-wind/rewind time C60 : 130 sec

Bias system : 75kHz ± 10kHz

Rec/Pb frequency response within 8dB : 80Hz - 12.5kHz

Signal to noise ratio Type I : > 48dBA  
 Type II : > 52dB

### COMPACT DISC:

Measurement done at output conn. of the CDC module.

Frequency response within ± 1.5dB : 20Hz - 20kHz

Output level (in Vrms) : 550mV, Z<sub>out</sub> = 100Ω

Signal/Noise ratio (A-weighted) : > 80dBA

Distortion at 1kHz : < 0.003%

Channel unbalance at 1kHz : ±1dB

Channel separation at 1kHz : > 60dB

De-emphasis : 0 or 15/50 mS (Switched by subcode on the disc)

[...] Values indicated are for "Tuner 95 Board" only

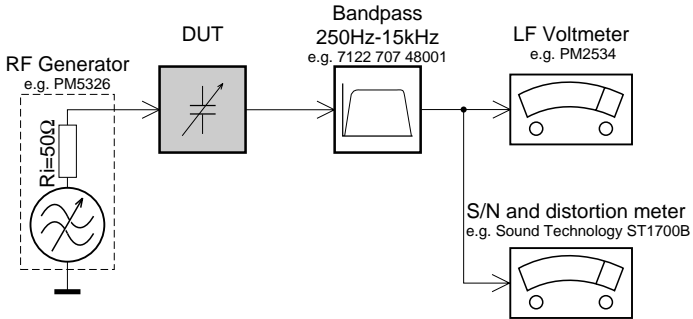
{...} Values for /21/21M only

<sup>1)</sup> Default setting is OFF, to switch on please refer page 3-4.

<sup>2)</sup> Frequency response in each setting is software controlled.

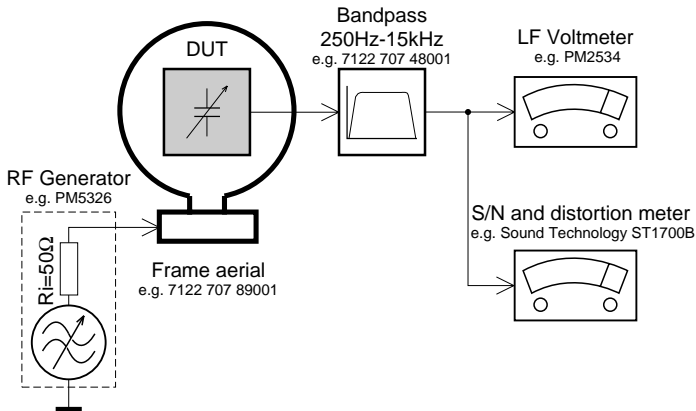
# MEASUREMENT SETUP

## Tuner FM



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

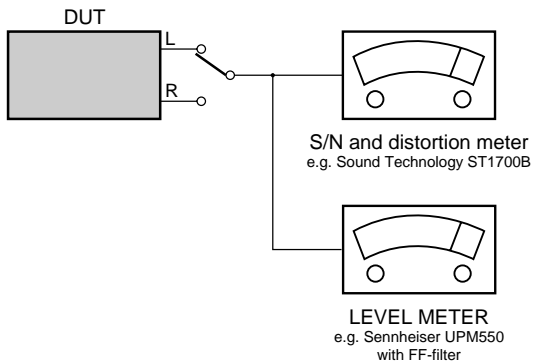
## Tuner AM (MW,LW)



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).

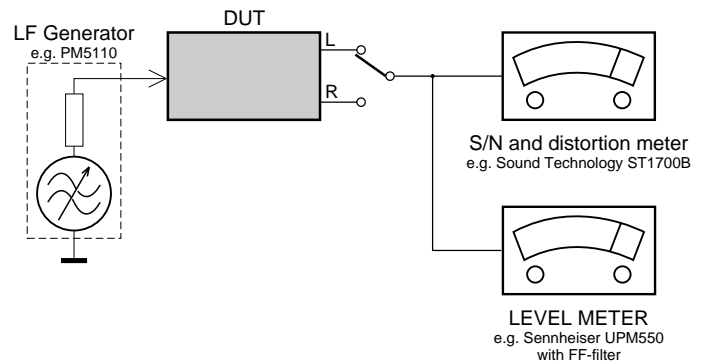
## CD

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

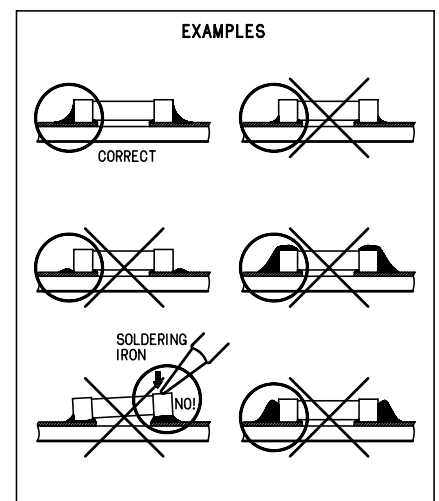
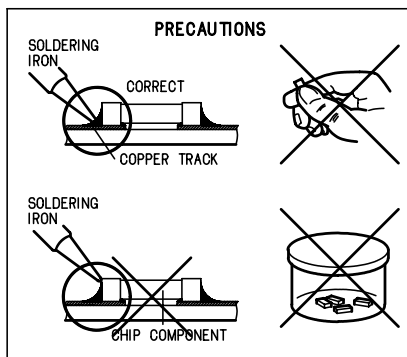
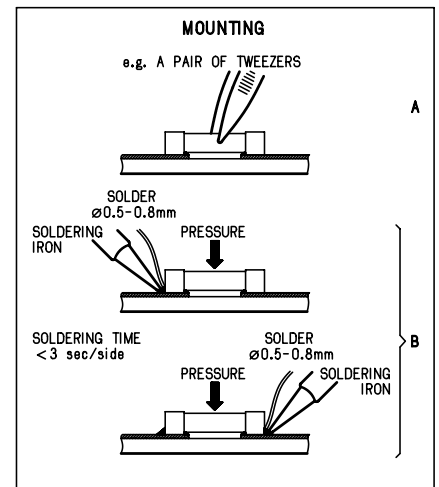
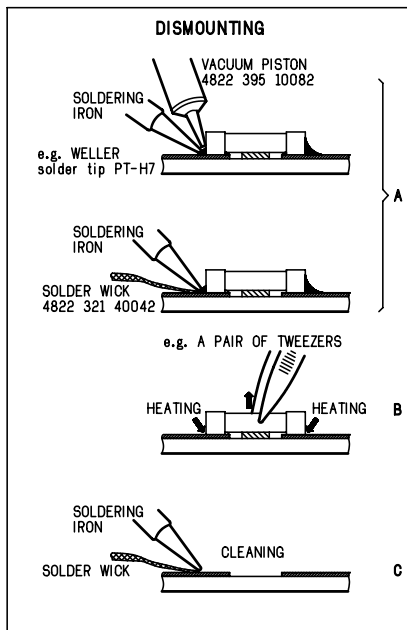
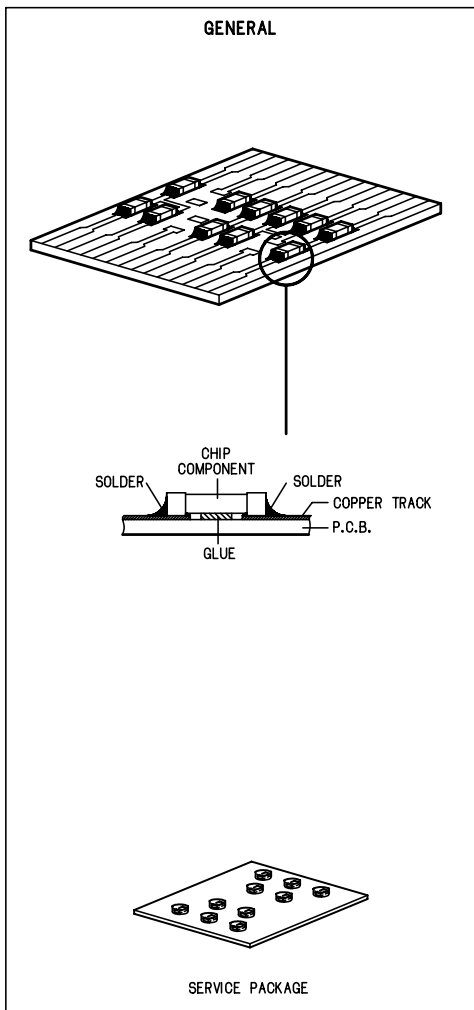
### Compact Disc:

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 enfilez 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 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.

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

**(NL)**

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

**(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.

**(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.

**(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.

**(GB) Warning !**

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

**(S) Varning !**

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

**(SF) Varoitus !**

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

**(DK) Advarse !**

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



## General Information

### IMPORTANT:

**PLEASE NOTE THAT THE VOLTAGE SELECTOR LOCATED AT THE REAR OF THIS SYSTEM IS PRESET AT 220V FROM THE FACTORY. FOR COUNTRIES THAT OPERATE AT 110V, PLEASE ADJUST TO 110V BEFORE YOU SWITCH ON THE SYSTEM.**

- The **type plate (which contains the serial number)** is located at the rear of the **player**.
- **Recording is permissible if copyright or other rights of third parties are not infringed.**

### Environmental Information

All unnecessary packaging has been omitted. We have tried to make the packaging easy to separate into three materials: cardboard (box), polystyrene foam (buffer) and polyethylene (bags, protective foam sheet).

Your system consists of materials which can be recycled and reused if disassembled by a specialized company. Please observe the local regulations regarding the disposal of packaging materials, exhausted batteries and old equipment.

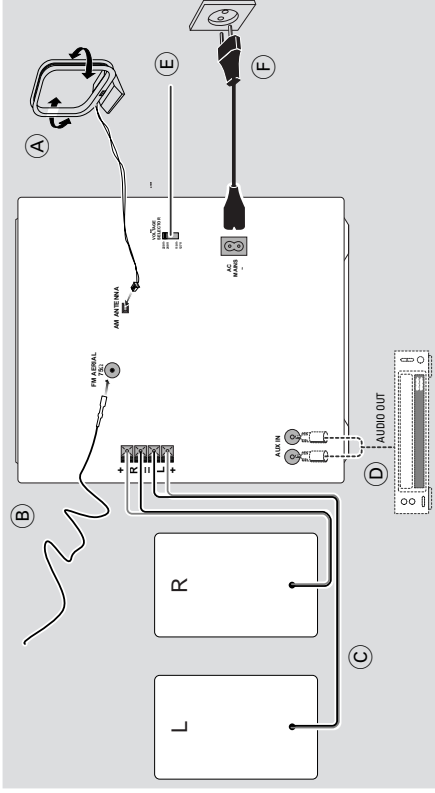
### Supplied Accessories

- Remote control
- Batteries (two AA size) for remote control
- AM loop antenna
- FM wire antenna
- AC power cord

### Safety Information

- Before operating the player, check that the operating voltage indicated on the typeplate (or the voltage indication beside the voltage selector) of your player is identical with the voltage of your local power supply. If not, please consult your dealer. The typeplate is located at the rear of your player.
- When the player is switched on, do not move it around.
- Place the player on a solid base (e.g. a cabinet).
- Place the player in a location with adequate ventilation to prevent internal heat build-up in your player. Allow at least 10 cm (4 inches) clearance from the rear and the top of the unit and 5 cm (2 inches) from the each side.
- Do not expose the player to excessive moisture, rain, sand or heat sources.
- Under no circumstances should you repair the player yourself, as this will invalidate the warranty.
- If the player is brought directly from a cold to a warm location, or is placed in a very damp room, moisture may condense on the lens of the disc unit inside the player. Should this occur, the CD player will not operate normally. Leave the power on for about one hour with no disc in the player until normal playback is possible.
- Electrostatic discharge may cause unexpected problems. See whether these problems disappear if you unplug the AC power cord and plug it in again after a few seconds.
- **To disconnect the player from the power supply completely, remove the AC power plug from the wall socket.**

## Preparations



### Rear Connections

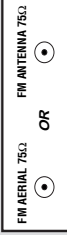
- (A) AM Loop Antenna Connection**  
Connect the supplied loop antenna to the AM ANTENNA terminal. Place the AM loop antenna far away from the system and adjust its position for the best reception.

### FM Wire Antenna Connection

Connect the supplied FM wire antenna to the FM AERIAL (FM ANTENNA) 75 Ω terminal. Adjust the position of the FM antenna for the best reception.

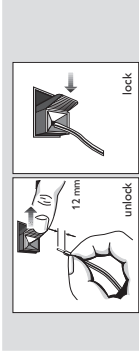
### Outdoor Antenna

For better FM stereo reception, connect an outdoor FM antenna to the FM AERIAL (FM ANTENNA) 75 Ω terminal using a 75 Ω coaxial wire.



### Speakers Connection

- Connect the right speaker to Front terminal R, with the colored wire to + and the black wire to -.
- Connect the left speaker to Front terminal L, with the colored wire to + and the black wire to -.
- Clip the stripped portion of the speaker wire as shown.



### CAUTION:

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

English

English

## Controls

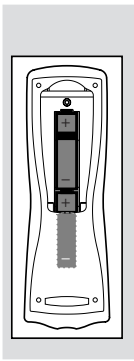
- (15) MODE SELECTION**  
**SEARCH ◀◀ ▶▶ (TUNING ◀◀▶▶)**  
 for CD ..... to search backward/forward.  
 for TUNER ..... to tune to a lower or higher radio frequency.  
 for TAPE ..... to rewind or fast forward a tape.  
 for CLOCK ..... to set the hour (on the system only).
- STOP-CLEAR ■**  
 for CD ..... to stop disc playback or to clear a programme.  
 for TUNER ..... to stop programming (on the system only).  
 for TAPE ..... to stop playback or recording.  
 for DEMO ..... to start or stop demonstration mode (on the system only).  
 for CLOCK ..... to exit clock setting or cancel timer (on the system only).  
 for PLUG & PLAY ..... to exit plug & play mode and return to standby mode (on the system only).

English

## Preparation

### Inserting batteries into the Remote Control

- Insert the batteries (Type R06 or AA) into the remote control as shown in the battery compartment.



- To avoid damage from possible battery leakage, remove dead batteries or batteries that will not be used for a long time.

**Batteries contain chemical substances, so they should be disposed off properly.**

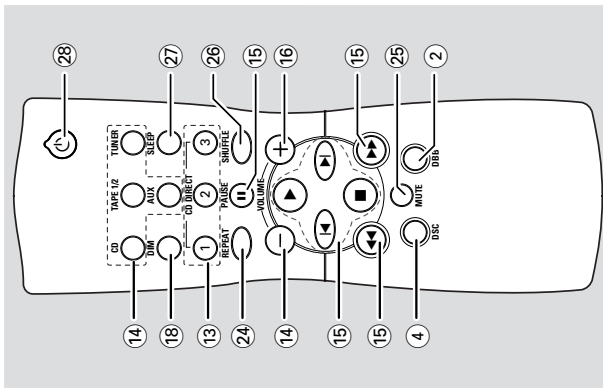
- (D) Connecting other equipment to your player**  
 You can connect the audio left and right OUT terminals of a TV/VCR, Laser Disc player, DVD player or CD Recorder to the AUX IN terminals at the rear of the system.

- (E) Adjusting the Operating Voltage** (not available for version /30)  
 Before connecting the AC power cord to the wall outlet, make sure that the voltage selector at the rear of the system is set to the local power line voltage. If not, reset the selector before connecting to the wall outlet.
- (F) AC Power Supply**  
 After all other connections have been made, connect the AC power cord to the system and to the wall outlet.

English

## Controls (illustrations on page 3)

- (8) RECORD**  
 - to start recording on tape deck 2.
- (9) DISPLAY SCREEN**  
 - to view the current setting of the system.
- (10) CD CHANGER TRAY**
- (11) DISC CHANGE**  
 - to change disc(s).
- (12) OPEN-CLOSE**  
 - to open or close the CD changer tray.
- (13) DISC 1 / DISC 2 / DISC 3 (DISC DIRECT PLAY)**  
 - to select a disc tray for playback.
- (14) SOURCE -** to select the following  
 CD / (CD 1-2-3)  
 - to select CD mode. When disc playback is stopped, press to select disc tray 1, 2 or 3.
- TUNER / (BAND)**  
 - to select Tuner mode. When in tuner mode, press to select the waveband: FM or MW.
- TAPE / (TAPE 1-2)**  
 - to select Tape mode. When tape playback is stopped, press to select either tape deck 1 or 2.
- AUX (VIDEO)**  
 - to select sound from an external source (e.g. TV, VCR, Laser Disc player, DVD player or CD Recorder).
- Controls on the player and remote control**
- (1) STANDBY-ON ◊**  
 - switches the system to standby/on.
- (2) DBB (DYNAMIC BASS BOOST)**  
 - to switch on bass boost to enhance bass response or to switch off bass boost.
- (3) DIGITAL SOUND CONTROL PANEL**  
 - to view the desired DSC display.
- (4) DSC (DIGITAL SOUND CONTROL)**  
 - to select the desired sound effect : OPTIMAL, JAZZ, ROCK or TECHNO.
- (5) PROGRAM**  
 for CD ..... to programme disc tracks.  
 for TUNER ..... to programme preset radio stations.  
 for CLOCK ..... to select 12 or 24 hour in clock setting mode.  
**(6) MICROPHONE** (not available for version /30)  
 - to connect microphone jack.
- (7) MIC LEVEL** (not available for version /30)  
 - to adjust the mixing level for karaoke or microphone recording.



- (22) TAPE DECK 2**
- (23) TAPE DECK 1**
- (24) REPEAT**  
 - to repeat a disc track, a disc, or all available discs.
- (25) MUTE**  
 - to switch off the sound temporarily.
- (26) SHUFFLE**  
 - to play all the available discs and their tracks in random order.
- (27) SLEEP**  
 - to switch the system to standby mode at a selected time.
- (28) ◊**  
 - to switch the system to standby mode.
- Notes for remote control:**  
 - First select the source you wish to control by pressing one of the source select keys on the remote control (e.g. CD, TUNER, etc.).  
 - Then select the desired function (▶, ◀, ◂, ▸, etc.).






## Operating the System

### Sound Control

#### VOLUME ADJUSTMENT

Adjust **VOLUME** to increase or decrease the sound level.

For Personal Listening

Connect the headphones plug to the  socket at the front of the system. The speakers will be muted.

#### DIGITAL SOUND CONTROL (DSC)

The DSC feature enables you to enjoy special sound effects that have preset equalizer settings, providing the best music reproduction.

- Press **DSC** to select **OPTIMAL**, **JAZZ**, **ROCK** or **TECHNO**.

→ The Digital Sound Control display panel will light up respectively.

→ "OPTIMAL", "JAZZ", "ROCK" or "TECHNO" and the respective flag will be displayed.

Note:

- When "OPTIMAL" sound is selected, **DBB** will be switched on automatically.

### DYNAMIC BASS BOOST (DBB)

The DBB mode enhances the bass response.

Press **DBB** to switch on bass response.

- The **DBB** button lights up.
- "DBB ON" and the **DBB** flag will be displayed.

### To switch off DBB

Press **DBB** again.

→ The **DBB** button light is switched off.

- "DBB OFF" will be displayed.

Note:

- Some CDs or tapes might be recorded in high modulation, which causes a distortion at high volume. If this occurs, switch off **DBB** or reduce the volume.

### MUTE (only on remote control)

This feature allows you to temporarily switch off the sound of the system without switching off the system when you require a moment of silence.

- Press **MUTE** on the remote control to switch off the sound.

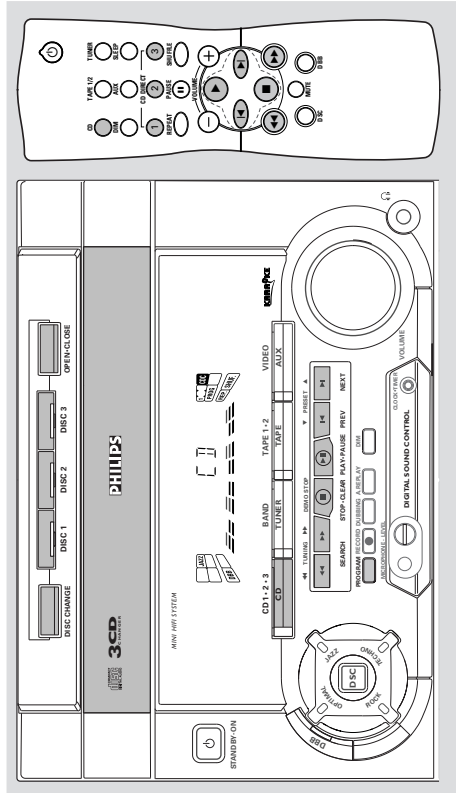
→ "MUTE" and the **MUTE** flag will be displayed.

- Press **MUTE** again on the remote control or increase the **VOLUME** to switch on the sound.

## Compact Disc

English

English



### Warning!

- This system is designed for conventional discs. Do not use any accessories such as disc stabilizer rings or disc treatment sheets, etc., which may damage the disc mechanism.
  - Do not load more than one disc into each tray.
  - When the CD changer is loaded with discs, do not turn over or shake the system. This may jam the changer.
- You may load three discs in the CD changer for continuous playback without interruption.

### Discs for playback

This system can play all digital audio disc, finalized digital audio CD-Recordable and finalized digital audio CD-Rewritable format discs.



### Loading the CD Changer

- Press **CD** to select CD mode.
- Press **OPEN-CLOSE**.  
→ The CD changer tray slides out.
- Load a disc with the printed side up in the right tray.
- You can load another disc in the left tray.
- To load the third disc, press the **DISC CHANGE** button.  
→ The CD changer tray will rotate until the empty tray is ready for loading.
- Press **OPEN-CLOSE** to close the CD changer tray.  
→ The total number of tracks and the playing time of the selected disc appear on the display.

Note:

- To ensure good system performance, wait until the CD changer completely reads the disc(s) before proceeding.

### Disc Direct Play

- You can play a disc directly by pressing the **DISC 1**, **DISC 2** or **DISC 3** button. The CD player will stop at the end of playback of the selected disc.  
→ A lit button indicates that a disc is loaded in the disc tray.  
→ A flashing button indicates that a disc is playing.

## Compact Disc

English

## Playing the programme

- 1 Press ► to start programme playback.  
→ "PLAY PROGRAM" will be displayed.  
→ The track number and elapsed playing time of the current track will appear on the display.  
If you press **REPEAT** during programme playback, the current track or all programmed tracks will be played repeatedly.  
→ "TRACK" or "PROGRAM" will be displayed.  
→ The **REP** and **PROG** flags appear on the display.  
Press ■ to stop programme playback.
- 2 **Notes:**
  - If you press any of the **DISC DIRECT PLAY** buttons, the system will play the selected disc and the stored programme will be ignored temporarily. The **PROG** display also will disappear temporarily from the display. It will reappear when playback of the selected disc ends.
  - **REPEAT** DISC mode will be cancelled when programme playback begins.

## Erasing the programme (when playback is stopped)

- Press ■.
- "PROGRAM CLEAR" will be displayed.

**Note:**

- The programme will be erased when the system is disconnected from the power supply or when the CD changer tray is opened.

English

## Compact Disc

## Searching for a particular passage during playback

- Press and hold ◀◀ or ▶▶ until the desired passage is located.  
→ The volume will be reduced.
- Play returns to normal when ◀◀ or ▶▶ is released.

## Programming Tracks

Programming tracks of a loaded disc is possible when playback is stopped. The display will indicate the total tracks stored in the programme. Up to 40 tracks can be stored in the memory in any order. When 40 tracks are stored and you attempt to store another track, the display will show "FULL".

- 1 Load the desired discs in the disc trays.
- 2 Press **PROGRAM** to start programming.
- 3 Press the **CD** (CD 1•2•3) or **DISC 1/2/3** button to select the disc.
- 4 Press ◀ or ▶ to select the desired track.
- 5 Press **PROGRAM** to store the track.
- Repeat steps 3 to 5 to store other discs and tracks.
- 6 Press ■ once to end programming.  
→ The total number of tracks programmed and total playing time appear on the display.

**Notes:**

- If the total playing time is more than "99:59" or if one of the programmed tracks has a number greater than 30, then "....." appears on the display instead of the total playing time.
- If the system is reading the discs, programming is not possible. "READING" will be displayed and followed by "DISC N" where "N" is the current read disc number.
- During programming, if no button is pressed within 20 seconds, the system will exit programme mode automatically.
- "SELECT A DISC" will be displayed when programming an empty disc slot.

## Reviewing the programme

- Reviewing of the programme is possible only when playback is stopped.
- Press ◀ or ▶ repeatedly to review the programmed tracks.
  - Press ■ to exit review mode.

15

## Playing a Disc

- 1 Press ► to start playback.  
→ The disc tray, track number and elapsed playing time of the current track appear on the display.
- To interrupt playback, press II.
- To resume playback, press ► again.
- 2 To stop playback, press ■.

**Note:**

- All the available discs will play once, then stop.

## Disc Change

You can change the outer two discs while the third inner disc is stopped or is playing.

- 1 Press **DISC CHANGE**.  
→ The CD changer tray slides out.
- 2 Replace the discs in the left and right disc trays.
- If you wish to change the inner disc during playback, press **DISC CHANGE** again.  
→ "DISC CHANGE" will be displayed.  
→ The disc will stop playing.  
→ The CD changer tray will close to retrieve the inner disc and then open again with the inner disc accessible.
- 3 Press **OPEN•CLOSE** to close the CD changer tray.

## Selecting a desired track

## Selecting a desired track when playback is stopped

- 1 Press ◀ or ▶ until the desired track appears on the display.
- 2 Press ► to start playback.  
→ The selected track number and elapsed playing time appear on the display.

## Selecting a desired track during playback

- Press ◀ or ▶ until the desired track appears on the display.  
→ The selected track number and elapsed playing time appear on the display.
- If you press ◀ once it will skip to the beginning of the current track and play the track again.

**Note:**

- Pressing ◀ during shuffling can only skip to the beginning of the current track.

## Shuffle (only on remote control)

In shuffle mode, the system plays all the available discs and their tracks in random order. Shuffle may be used also when tracks are programmed.

## To shuffle all the discs and tracks

- 1 Press **SHUFFLE**.  
→ "SHUFFLE" will be displayed.  
→ The **SHUF** flag, the disc and the track selected at random appear on the display.  
● The discs and the tracks will be played in random order until you press ■.
  - If you press **REPEAT** during shuffling, the current track or all available discs will be played repeatedly.  
→ "TRACK" or "ALL DISC" will be displayed.  
→ The **REP** and **SHUF** flags appear on the display.
  - 2 Press **SHUFFLE** again to resume normal playback.  
→ The **SHUF** flag disappears from the display.
- Note:**
- **REPEAT** DISC mode will be cancelled when shuffle is selected.

## Repeat (only on remote control)

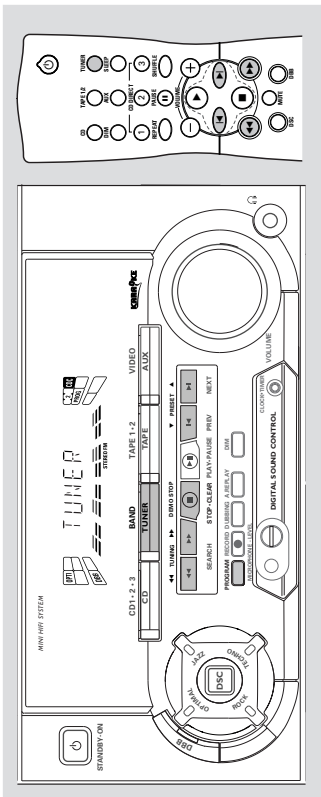
You can play the current track, a disc or all available discs repeatedly.

- 1 Press **REPEAT** on the remote control to select the various repeat modes.  
→ "TRACK", "DISC", "ALL DISC" or "OFF" will be displayed.  
→ The **REP** flag appears on the display.
  - The selected track, selected disc or all available discs will now be played repeatedly until you press ■.
  - 2 Press **REPEAT** until the "OFF" mode is displayed to resume normal playback.  
→ The **REP** flag disappears from the display.
- Notes:**
- **REPEAT** DISC mode is not available during programme play or shuffle mode.
  - You can also repeat shuffling a programme.
    - i) "TRACK" or "PROGRAM" will be displayed.
    - ii) The **REP**, **PROG**, and **SHUF** flags appear on the display.

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# Tuner



English

- 1 **Manual programming**
- 2 Press **TUNER (BAND)**.
- 3 Press **PROGRAM** for less than one second.
- 4 Press **◀** or **▶** to tune to the desired frequency.
- 5 Press **PROGRAM** again.

## Changing the MW tuning grid (not available for version /30)

The frequency step can be changed if necessary. In North and South America, the frequency step between adjacent channels in the MW band is 10 kHz. In other parts of the world, it is 9 kHz. The frequency step preset in the factory is 9 kHz.

**For MW Band**  
To change from 9 kHz to 10 kHz or vice versa

## Changing of tuning grid will erase all previously stored preset stations.

- 1 Disconnect the system from the AC power supply (pull out the AC power cord).
  - 2 Press and hold **TUNER** and **TUNING ▶▶** while reconnecting the system to the AC power supply.
- Display will show "GRID" or "GRID 9".
- Notes:**
- GRID 9 indicates that the tuning grid is in step of 9 kHz in MW band. GRID 10 indicates that the tuning grid is in step of 10 kHz in MW band.
  - FM tuning grid will also be changed from 50 kHz to 100 kHz or vice versa.

# Tuner

English

- Note:**
- For "PLUG & PLAY" feature, please refer to page 11.
- 1 **Automatic programming**
  - 2 Press **PROGRAM** for more than one second.
- The PROG flag starts flashing and "PLUG" will be displayed.
- The system will search for every available station in the FM waveband first, then search the MW waveband.
- All available stations will be stored automatically. The frequency and preset number will be displayed briefly.
- The system will stop searching when all the available radio stations are stored or when the memory for 40 preset radio stations is used.
- The system will remain tuned to the last stored preset radio station.

- Notes:**
- You can cancel the automatic programming by pressing **PROGRAM** or **■** (on the system only).
  - If you want to reserve a section of preset numbers, for example preset numbers 1 to 9, select preset 10 before starting automatic programming, only the preset numbers 10 to 40 will be programmed.

- Tuning to radio stations**
- 1 Press **TUNER (BAND)** to select TUNER mode.
  - 2 Press **TUNER (BAND)** again to select the desired waveband : FM or MW.
  - 3 Press **◀** or **▶** for more than one second, then release.
- The display will show "SEEK" 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 **◀** or **▶** repeatedly until the display shows the desired frequency and/or when the best reception has been obtained.

- Storing Preset Stations**
- You can store up to 40 radio stations in the memory. When a preset radio station is selected, the preset number appears next to the frequency on the display.

## Tuning to Preset Radio Stations

- Press **▼** or **▲** to select the desired preset number.
- The preset number, radio frequency, and waveband appear on the display.

Tape

- Tape Playback**

  - Press **TAPE** (TAPE 1/2) to select TAPE mode.  
→ "TAPE 1" or "TAPE 2" will be displayed and followed by "1" or "2" or "1/2" or "2/2" or "1/2" or "2/2".
  - Load the tape into the selected tape deck.
  - Press **▶** to start playback.  
→ "1" or "1/2" with ">" scrolling right will be displayed.
  - Press **A.REPLAY** to select the different type of playback mode (see Auto Replay).
  - Press **■** to end playback.  
→ "1" or "1/2" with ">>>" will be displayed.

- Rewind/Fast Forward**

**When playback is stopped**

  - You can rewind or fast forward the tape by pressing **◀◀** or **▶▶** respectively.  
→ If rewinding, "1" or "1/2" with "<" scrolling left will be displayed.  
→ If fast forwarding, "1" or "1/2" with ">" scrolling right will be displayed.  
→ The tape will stop automatically at the end of rewinding or fast forwarding.
  - Press **■** to stop rewinding or fast forwarding.

- During playback**

Press and hold **◀◀** or **▶▶** until the desired passage is located.  
→ "1" or "1/2" with "<<<" or ">>>" scrolling left or right will be displayed depending on which button is pressed.

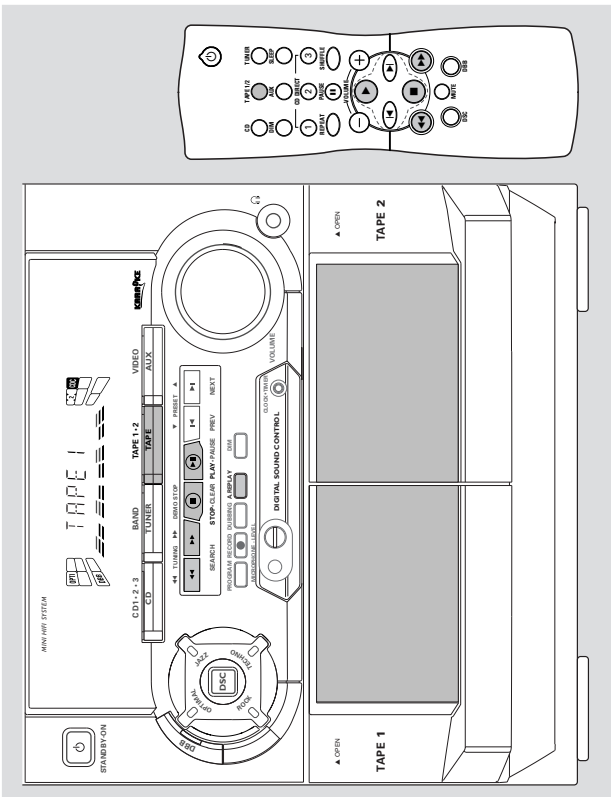
During searching, the sound is reduced to a low volume.

→ When you release **◀◀** or **▶▶**, the tape continues playing.

- Notes:**
- During rewinding or fast forwarding of a tape, it is also possible to select another source (e.g. CD, TUNER, or AUX).
  - Before playing a tape, check and tighten slack tape with a pencil. Slack tape may get jammed or may burst in the mechanism.
  - C-120 tape is extremely thin and is easily deformed or damaged. It is not recommended for use in this system.
  - Store the tapes at room temperature and do not put them too close to a magnetic field (for example, a transformer, TV, or speaker).

English

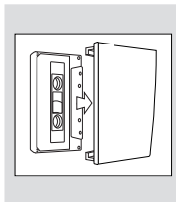
Tape



English

- Loading a tape**

  - Press **OPEN**.
  - The tape deck door opens.
  - Load the tape with the open side downward and the full spool to the left.



- Close the tape deck door.

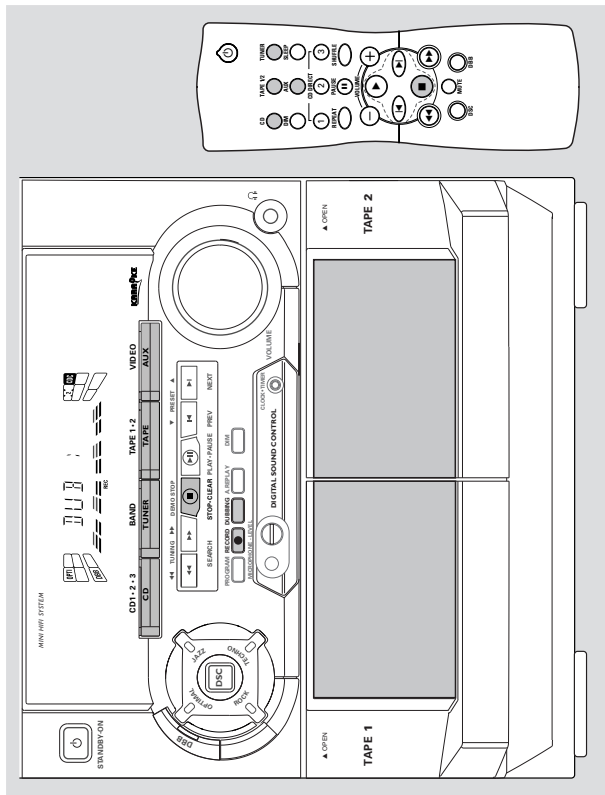
**Auto Replay**

- Press **A.REPLAY** to select either continuous **AUTO REPLAY** or **ONCE** during tape playback.  
→ "AUTO REPLAY" (∞) or "ONCE" (1) will be displayed.

**Notes:**

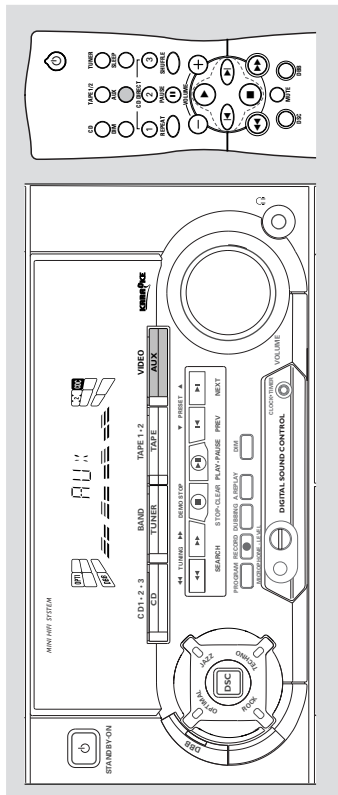
- This feature is available during tape playback only.
- When "AUTO REPLAY" is selected, the tape will rewind automatically at the end of playback for the selected side. Then it will start playing again. It will replay up to a maximum of 20 times until you press **■**.
- When "ONCE" is selected, the tape will play the selected side once and then stop.

## Recording



English

## Aux



English

### Selecting External Equipment

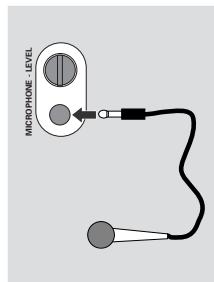
If you have connected the audio out terminals of the external equipment (TV, VCR, Laser Disc player, DVD player or CD Recorder) to the AUX IN terminals, you can hear the enhanced sound from the system.

- Press **AUX** to select the external equipment.  
→ "AUX" will be displayed.

#### Note:

- All the sound control features (e.g. DSC, DBB, etc.) are available for selection.

## Karaoke



### Microphone Mixing (not available for version /30)

- 1 Set the **MIC LEVEL** control to the minimum level to prevent acoustic feedback (e.g. a loud howling sound) before you connect the microphone.
- 2 Connect a microphone to the **MICROPHONE** socket.
- 3 Press **CD, TUNER, TAPE** or **AUX**.
- 4 Play the selected source.
- 5 Adjust the volume level with **VOLUME** control.
- 6 Adjust the **MIC LEVEL** control to the mixing level that you want.
- 7 Start singing or talking through the microphone.

#### Note:

- Keep the mic away from the speakers to prevent howling

#### Notes:

- 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 tape is secured at both ends with leader tape. At the beginning and end of tape, nothing will be recorded for six to seven seconds.
- The recording level is set automatically, regardless of the position of **VOLUME, DBB** or **DSC**.
- To prevent accidental recording, break out the tab on the left shoulder of the tape side that you want to protect.
- If "CHECK TAPE" is displayed, the protection tab has been broken. Put a piece of clear adhesive tape over the opening.

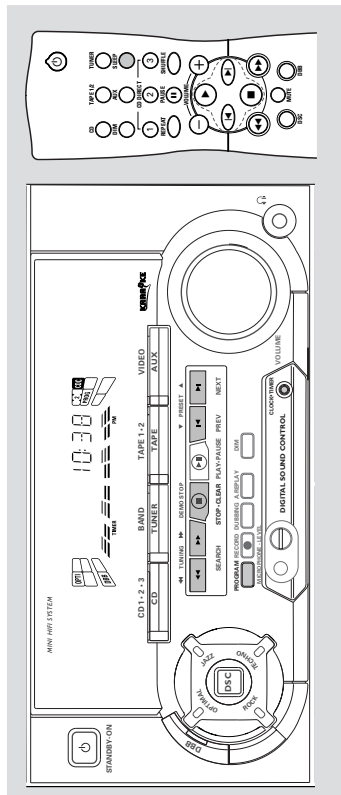
### Recording the mixed sound / One Touch Recording

- During microphone mixing, you can record the mixed sound on a tape in tape deck 2, except dubbing mode.
  - For One Touch Recording, as soon as you press **RECORD**, the current source (CD, TUNER or AUX) will be recorded on tape deck 2.
- 1 Load a blank tape in tape deck 2.
  - 2 Press **RECORD** to start recording.
  - 3 Press **REC** to stop recording.

#### Note:

- When you press **RECORD** while in **TAPE** mode, "SELECT SOURCE" will be displayed. One Touch Recording is not possible in **TAPE** mode.

## Clock/Timer



English

## Recording

English

### Recording from other sources

(only on tape deck 2)

- 1 Load a blank tape into tape deck 2, with the open side downward.
- 2 Press **CD, TUNER** or **AUX**.
- 3 Start playback of the selected source. Press **RECORD** to start recording.
- 4 Press **REC** to stop recording.

#### Notes:

- During recording, it is not possible to listen to another source.

### CD Synchro Start Recording

- 1 Load a blank tape into tape deck 2, and a disc into a disc tray.
- 2 Press **CD** to select CD mode.
- 3 You can programme the tracks in the order you want them to be recorded (see Programming Tracks). If not, select the disc by pressing **CD** (CD 1•2•3) and the tracks are recorded according to the order on the selected disc.
- 4 Press **RECORD** to start recording.
- 5 Press **REC** to stop recording.

### Dubbing tapes (from tape deck 1 to tape deck 2)

- 1 Press **TAPE** (TAPE 1•2) to select tape deck 2.
- 2 Load the prerecorded tape into tape deck 1 and a blank tape into tape deck 2, with full spool to the left.
- 3 Press **DUBBING**.
- 4 Press **RECORD** to start recording.
- 5 Press **REC** to stop recording.

#### Notes:

- At the end of side A, flip the tapes to side B and repeat the procedure.
- Dubbing of tapes is only possible from tape deck 1 to tape deck 2.
- To ensure good dubbing, use tapes of the same length.
- You can switch to other source while dubbing.

#### Notes:

- During clock setting, if no button is pressed within 90 seconds, the system will exit clock setting mode automatically.
- When a power interruption occurs, the clock setting is erased.

### View Clock

You can view the clock (if it is set) if the system is in Standby mode or when any sound source is selected (CD, TUNER, etc.). The clock will be displayed for about seven seconds.

- Press **CLOCK-TIMER** briefly (on the system only).
- "10:38 PM or 22:38" (the current time) will be displayed depending on whether you have selected 12- or 24-hour mode.
- "----:--:" will be displayed if the clock is not set.

### Clock Setting

The clock can be set in either 12- or 24-hour mode, e.g. "12:00 AM" or "00:00". Before setting the clock, you must be in the View Clock mode.

- 1 Press **CLOCK-TIMER** to select clock mode.
- 2 Press **PROGRAM** to select 12- and 24-hour mode.
- 3 If 12-hour mode is selected, "12:00" starts flashing and the **AM** lights up.
- 4 If 24-hour mode is selected, "00:00" starts flashing.
- 5 Set the hour with **◀** or **▶** on the system.
- 6 Set the minute with **◀** or **▶** on the system.
- 7 Press **CLOCK-TIMER** again to store the setting.
- 8 The clock starts.
- 9 To exit without storing the setting, press **■** on the system.

### Timer Setting

- The system can switch on to CD, TUNER or TAPE 2, mode automatically at a preset time. It can serve as an alarm to wake you up.
- Before setting the timer, make sure the clock is set correctly.
- The timer will always be switched on once it is set.
- The volume of the timer will increase from the minimum level to the most recently selected volume level.

- 1 Press and hold **CLOCK-TIMER** for more than two seconds to select timer mode.
- 2 Press **PROGRAM** to select timer mode.
- 3 If 12-hour mode is selected, "12:00" starts flashing and the **AM** lights up.
- 4 If 24-hour mode is selected, "00:00" starts flashing.
- 5 Set the hour with **◀** or **▶** on the system.
- 6 Set the minute with **◀** or **▶** on the system.
- 7 Press **CLOCK-TIMER** again to store the setting.
- 8 The clock starts.
- 9 To exit without storing the setting, press **■** on the system.

## Clock/Timer

- 3 Press **◀◀** or **▶▶** on the system to set the hour for the timer to start.
  - 4 Press **⏪** or **⏩** on the system to set the minute for the timer to start.
  - 5 Press **CLOCK•TIMER** to store the start time.
    - The timer is now set.
    - The **TIMER** remains on the display.
  - At the preset time, the timer will be activated.
    - The selected source will be played.
- Notes:**
- During timer setting, if no button is pressed within 90 seconds, the system will exit timer setting mode automatically.
  - If the source selected is **TUNER**, the last tuned frequency will be switched on.
  - If the source selected is **CD**, playback will begin with the first track of the selected disc or programme. If the disc trays are empty, the **TUNER** will be selected instead.
  - The timer will not activate if a recording is in progress.
- 1 Press **SLEEP** on the remote control repeatedly to select a period of time.
    - The selections are as follows (time in minutes): 15 → 30 → 45 → 60 → OFF → 15 ...
    - "SLEEP :;" or "OFF" will be displayed. ":", ":", " is the time in minutes.
  - 2 When you reach the desired length of time, stop pressing the **SLEEP** button.
    - The **SLEEP** display lights up.
    - The Sleep Timer is now set. Before the system switches to standby mode, a countdown of 10 seconds will be displayed.
    - "SLEEP 10" → "SLEEP 9" ... → "SLEEP 1" → "SLEEP"

### While SLEEP mode is activated

- Press **SLEEP** once to view the remaining length of time.
- Press **SLEEP** twice to change the pre-selected period of time.
  - The display will show the remaining time followed by the sequence of sleep timer options.

### To switch off the Sleep Timer

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

### To switch off the TIMER

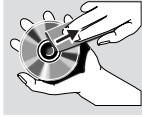
- 1 Press and hold **CLOCK•TIMER** for more than two seconds.
  - The timer is now switched off.
  - The display will show "OFF" and the **TIMER** disappears.

**To start the TIMER again** (for the same preset time and source)

- 1 Press and hold **CLOCK•TIMER** for more than two seconds.
- 2 Press **CLOCK•TIMER** again to store the start time.
  - The timer is now on.
  - The **TIMER** appears on the display.

## Maintenance

- **Cleaning the Cabinet**
  - Use a soft cloth slightly moistened with a mild detergent solution. Do not use a solution containing alcohol, spirits, ammonia or abrasives.
- **Cleaning the Heads and the Tape Paths**
  - To ensure good recording and playback quality, clean the heads, the capstan(s), and pressure roller(s) after every 50 hours of tape operation.
  - Use a cotton swab slightly moistened with cleaning fluid or alcohol.
  - You can also clean the heads by playing a cleaning tape once.
- **Demagnetizing the heads**
  - Use a demagnetizing tape available at your dealer.



### Cleaning the DISC lens

- When a disc becomes dirty, clean it with a cleaning cloth. Wipe the disc from the center out.
- Do not use solvents such as benzine, thinner, commercially available cleaners, or artistic spray intended for analog records.
- After prolonged use, dirt or dust may accumulate at the disc lens. To ensure good playback quality, clean the disc lens with Philips CD Lens Cleaner or any commercially available cleaner. Follow the instructions supplied with cleaner.

## Troubleshooting

### WARNING

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

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

### Symptom Remedy

Symptom	Remedy
"NO DISC" is displayed.	<ul style="list-style-type: none"> <li>- If the disc is inserted upside down.</li> <li>- Moisture condensation at the lens.</li> <li>- There is no disc in the CD tray.</li> <li>- The disc is dirty, badly scratched or warped.</li> <li>- The disc lens is dirty or dusty, refer to section under Maintenance.</li> </ul>
"DISC NOT FINALIZED" is displayed.	<ul style="list-style-type: none"> <li>- The CD-RW or CD-R disc is not properly recorded for use with a standard CD player.</li> <li>- The disc is badly scratched or dirty.</li> </ul>
Poor radio reception.	<ul style="list-style-type: none"> <li>- The signal is too weak, adjust the antenna or connect an external antenna for better reception.</li> <li>- The TV or VCR is too close to the stereo system.</li> </ul>

## Troubleshooting

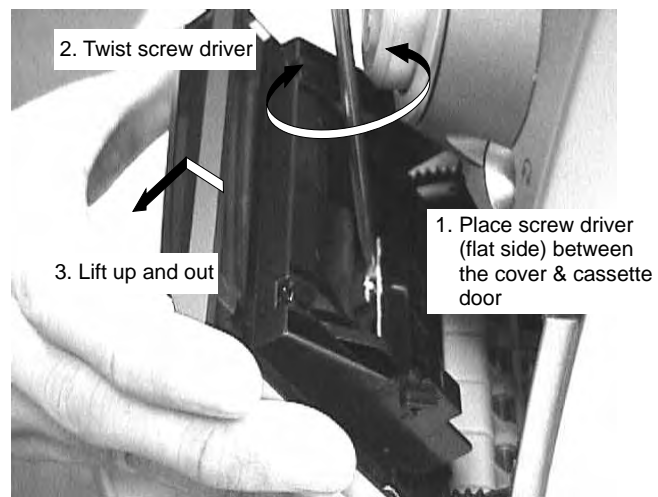
English

<b>Cannot tune to station</b>	<ul style="list-style-type: none"> <li>- Wrong tuning grid.</li> </ul>
<b>Recording or playback cannot be made or there is a decrease in audio level.</b>	<ul style="list-style-type: none"> <li>- Dirty tape heads, capstans or pressure rollers; refer to section under Maintenance.</li> <li>- Magnetic build-up in the record/playback head, use demagnetizing tape.</li> </ul>
<b>Tape deck door cannot open.</b>	<ul style="list-style-type: none"> <li>- Reconnect the AC power plug and switch on the system again.</li> </ul>
<b>System does not react when any button is pressed.</b>	<ul style="list-style-type: none"> <li>- Press STANDBY-ON to switch the system off. Remove the AC power plug from the wall outlet, then reconnect the power plug and switch on the system again.</li> </ul>
<b>No or poor sound.</b>	<ul style="list-style-type: none"> <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> </ul>
<b>Reversed left and right sound.</b>	<ul style="list-style-type: none"> <li>- Check the speaker connections and location.</li> </ul>
<b>Lack of bass sound or apparently imprecise physical location of musical instruments.</b>	<ul style="list-style-type: none"> <li>- Check the speaker connection for proper phasing, colored/black wires to colored/black terminals.</li> </ul>
<b>Remote control has no effect on the system.</b>	<ul style="list-style-type: none"> <li>- Select the source (CD, TUNER, etc.) before pressing the function button (▶, ◀, ▲, ▼, etc.).</li> <li>- Reduce the distance to the system.</li> <li>- Insert the batteries with their polarities (+ / - signs) as indicated.</li> <li>- Replace the batteries.</li> </ul>
<b>Timer is not working.</b>	<ul style="list-style-type: none"> <li>- Set the clock.</li> <li>- Press CLOCK • TIMER to switch on the timer.</li> <li>- If recording is in progress, stop recording.</li> </ul>
<b>Clock setting is erased.</b>	<ul style="list-style-type: none"> <li>- Reset the clock.</li> </ul>
<b>System displays features automatically; buttons flash continuously.</b>	<ul style="list-style-type: none"> <li>- Press and hold ■ (on the system) for five seconds to switch off the demonstration.</li> </ul>
<b>All lighted buttons are not lit.</b>	<ul style="list-style-type: none"> <li>- Press DIM until DIM OFF display mode is shown.</li> </ul>



## DISMANTLING INSTRUCTIONS

### Dismantling of the Cassette Cover

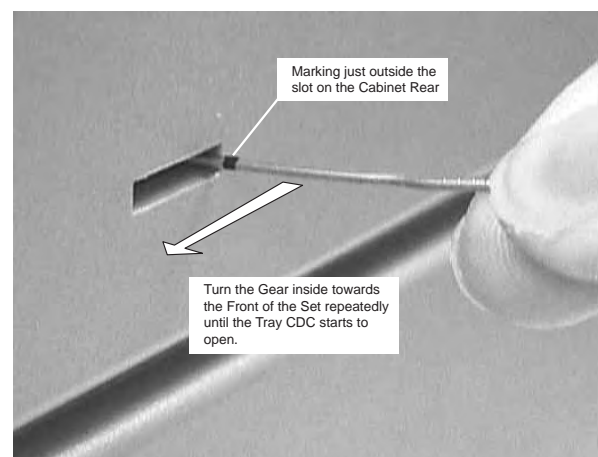
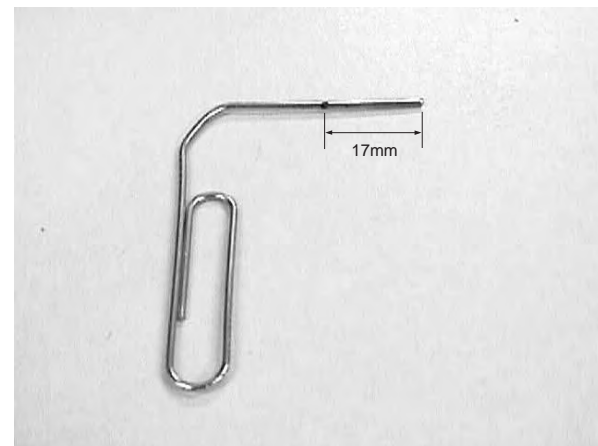


Cassette door

### Opening the CDC Tray manually

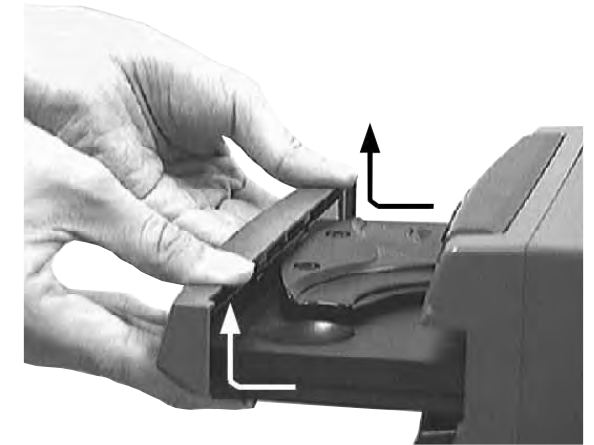
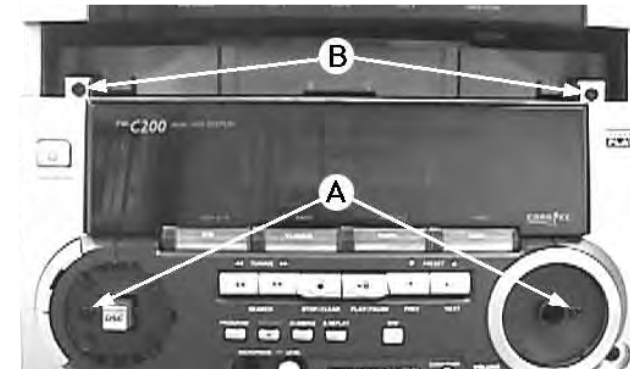
- 1) Take a paper clip or any stiff wire diameter of 1mm -1.5mm and make a marking about 17mm from the tip.
- 2) Place the set in an upright position and insert the paper clip into the slot on the right side of the Cabinet Rear.
- 3) With the marking just outside the Cabinet Rear, you should be able to engage the gear on the side of the 3CDC-LC Module. Because of the distance between the gear and the Cabinet Rear the chance of the paper clip slipping above or below the gear is high, therefore you have to feel and adjust slightly to engage the gear correctly.
- 4) Push the gear slowly towards the front as shown until the Tray CDC starts to move out of the Front Cabinet. The Tray CDC is now disengage and can be pulled out completely

**Note:** If the Cabinet Rear has to be replaced, it has to be replaced by one that has a similar slot on the right side of the Cabinet otherwise there is no possibility to disassemble the same set in the future.



### Dismantling of the Front Panel

- 1) With the CDC tray opened remove the Cover Tray CDC (pos 107) as indicated.
- 2) Loosen the 8 screws to separate the Front Panel from the rear portion.
  - 2 screws B on the front
  - 2 screws each on the left & right side
  - 2 screws at the bottom

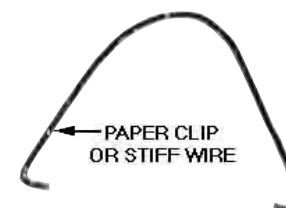
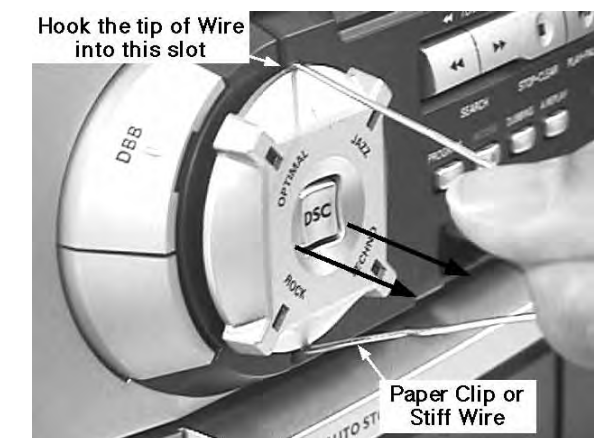


### Dismantling of the Cover Control on the Front (see Notes)

- 1) Insert a strong string into the slot between the Volume knob (pos 146) and Cover Ring Volume (pos 144), looped it 1,5 turns securely around the Volume knob and pulled it out as shown.
- 2) Use a 0.5mm thick paper clip or stiff wire and bend into the shape as shown. Hook the 2 ends of the clip or wire into the slots.
- 3) Hold the clip or wire in position and pulled out the Cover Ring DSC (pos 143).
- 4) Remove the 2 hidden screws A to take out the Cover Control (pos 153).

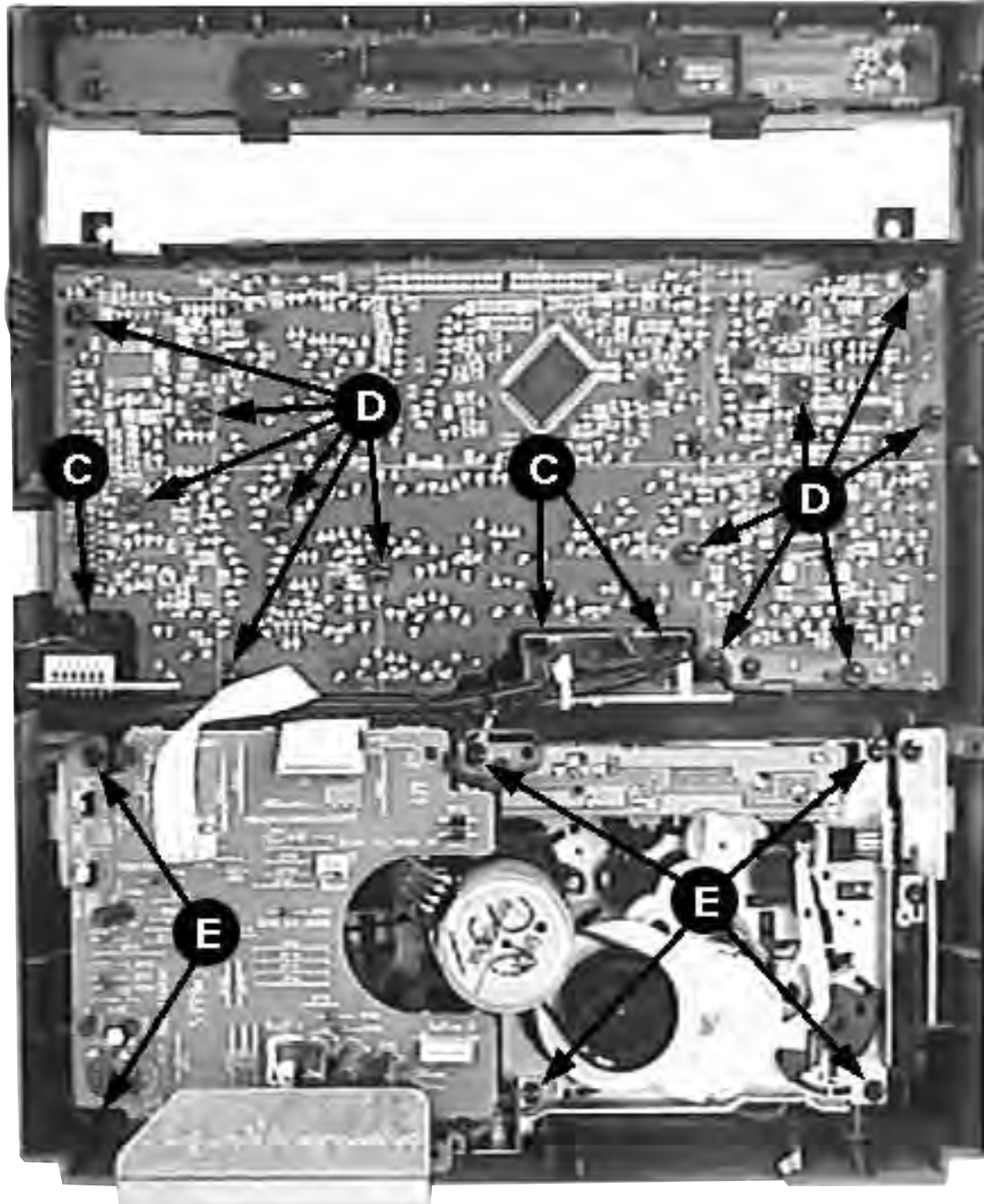
**Note:** Only the Lightguide DSC (pos 127) is sandwiched between the Front Cabinet (pos 101) & Cover Control (pos 153).

**Removal of Cover Ring DSC is not recommended unless any of the parts (pos 101, 127, 143 & 153) need to be replaced and it may cause some damage to the existing parts!**

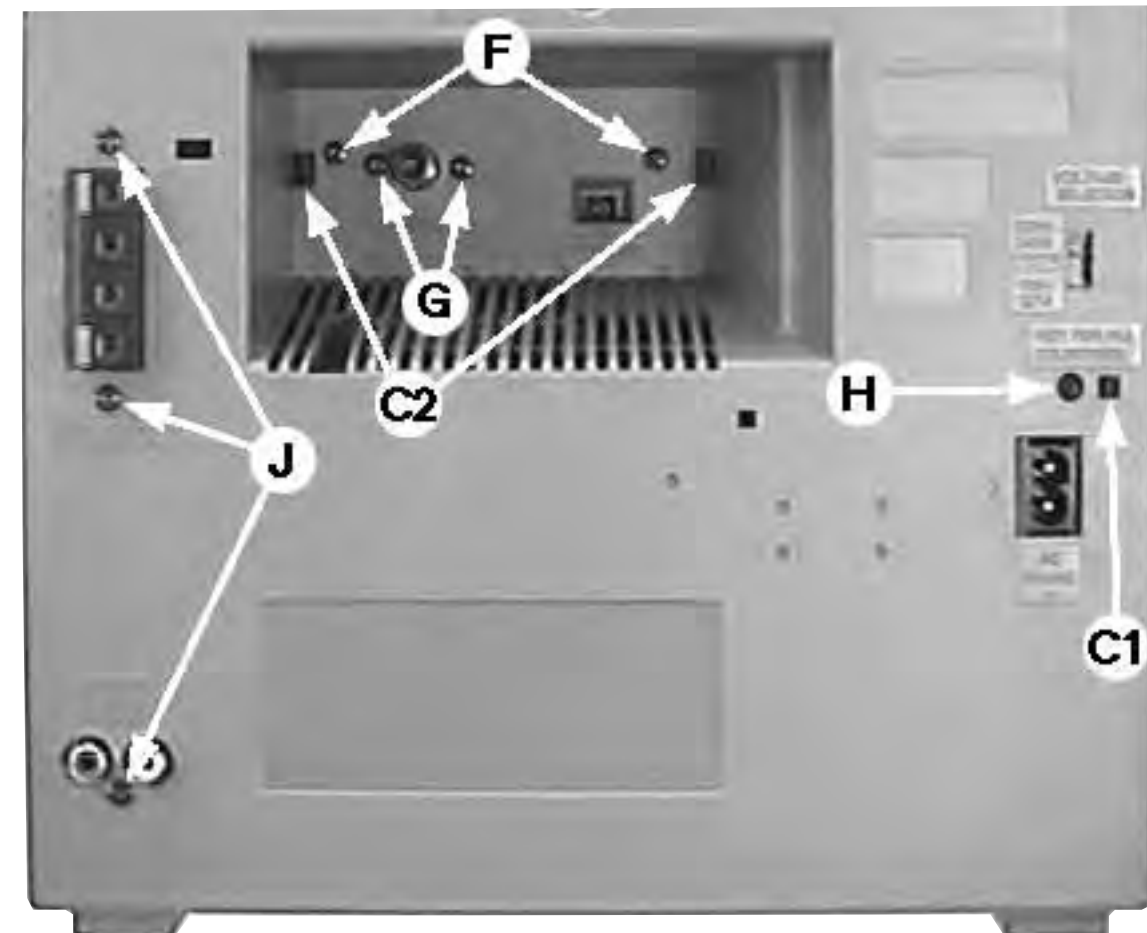
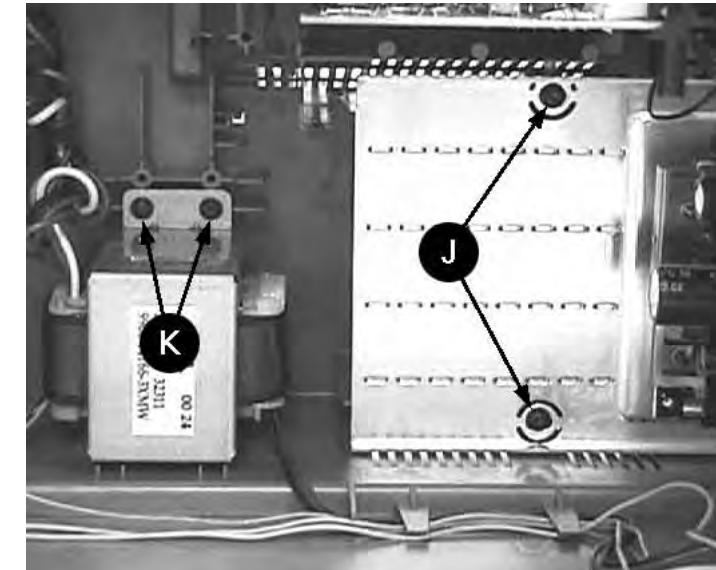


**Dismantling of Assemblies on the Front Panel**

- 1) Remove 3 screw C to loosen the Headphone board (1x) and the Karaoke board (2x).  
*Note: Karaoke boare is for some version only.*
- 2) Remove 12 screws D as indicated to loosen the Front board.
- 3) Remove 6 screws E to loosen the ETF7 Module

**Dismantling of Rear Portion**

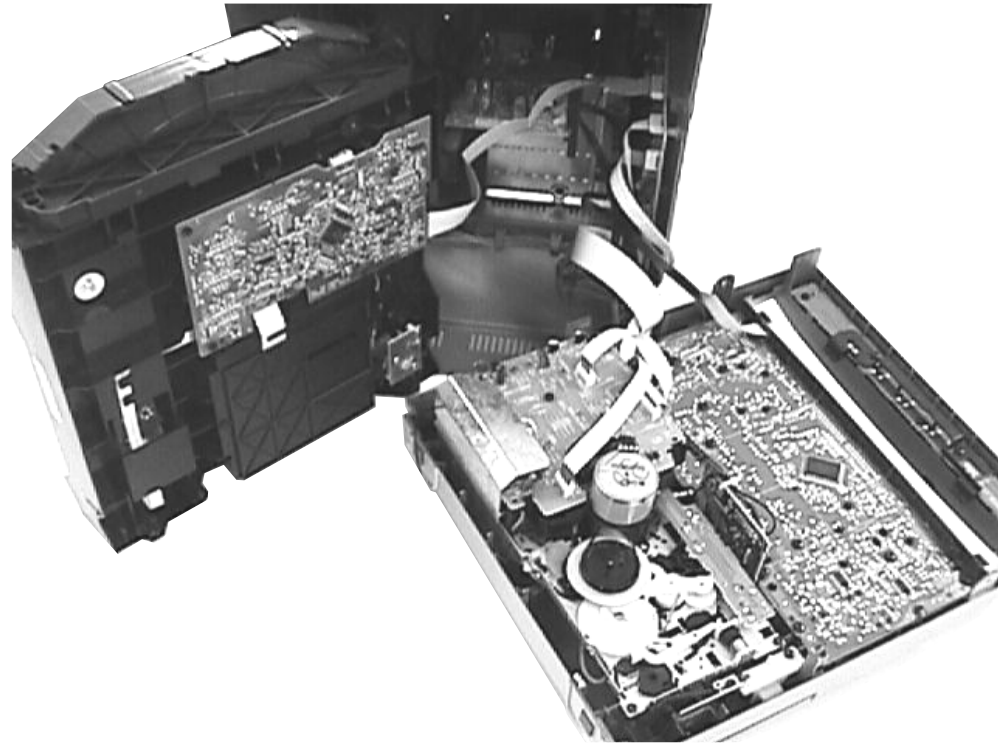
- 1) Remove 1 screw H & uncatch C1 to loosen the Mains socket board.
- 2) Remove 2 screws F, 2 screws G and uncatch C2 to loosen the Tuner board assembly.
- 3) Remove 5 screws J (3x on the rear and 2x on the heatsink) to loosen the Combi board (Main part).
- 4) Remove 2 screws K to loosen the Mains Transformer.



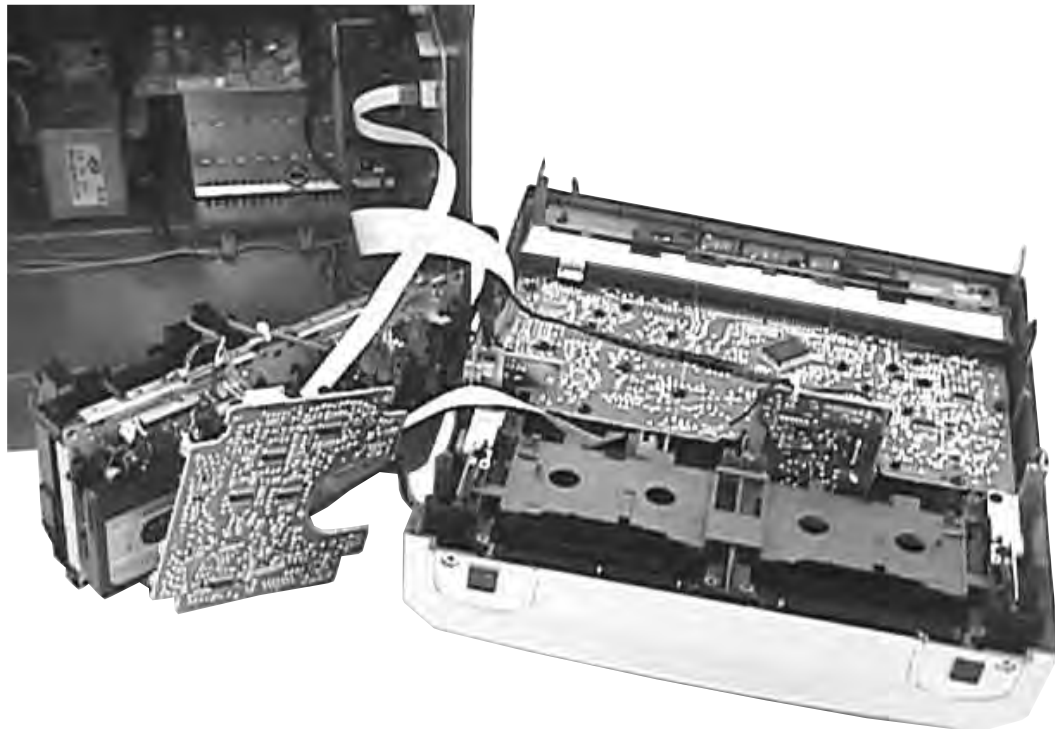


Service pos A

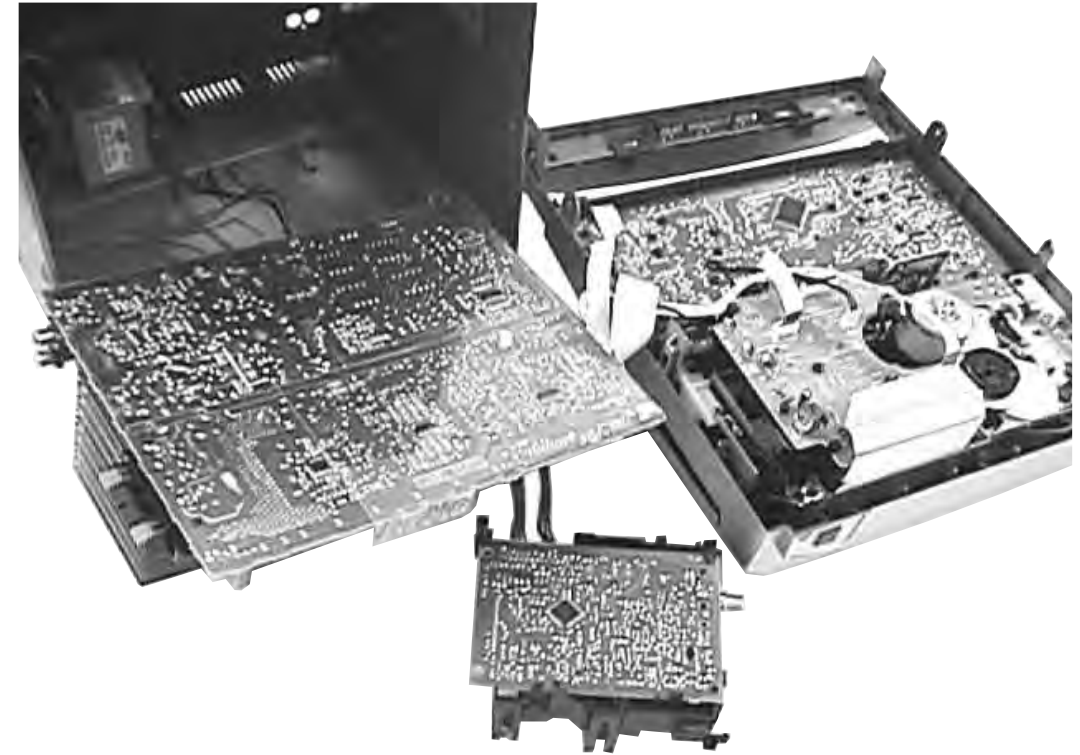
Note: Flex cables are very fragile, care should be taken not to damage them during repair. After repair, be very sure that the flex cables are inserted properly into the flex sockets before encasing, otherwise faults may occur.



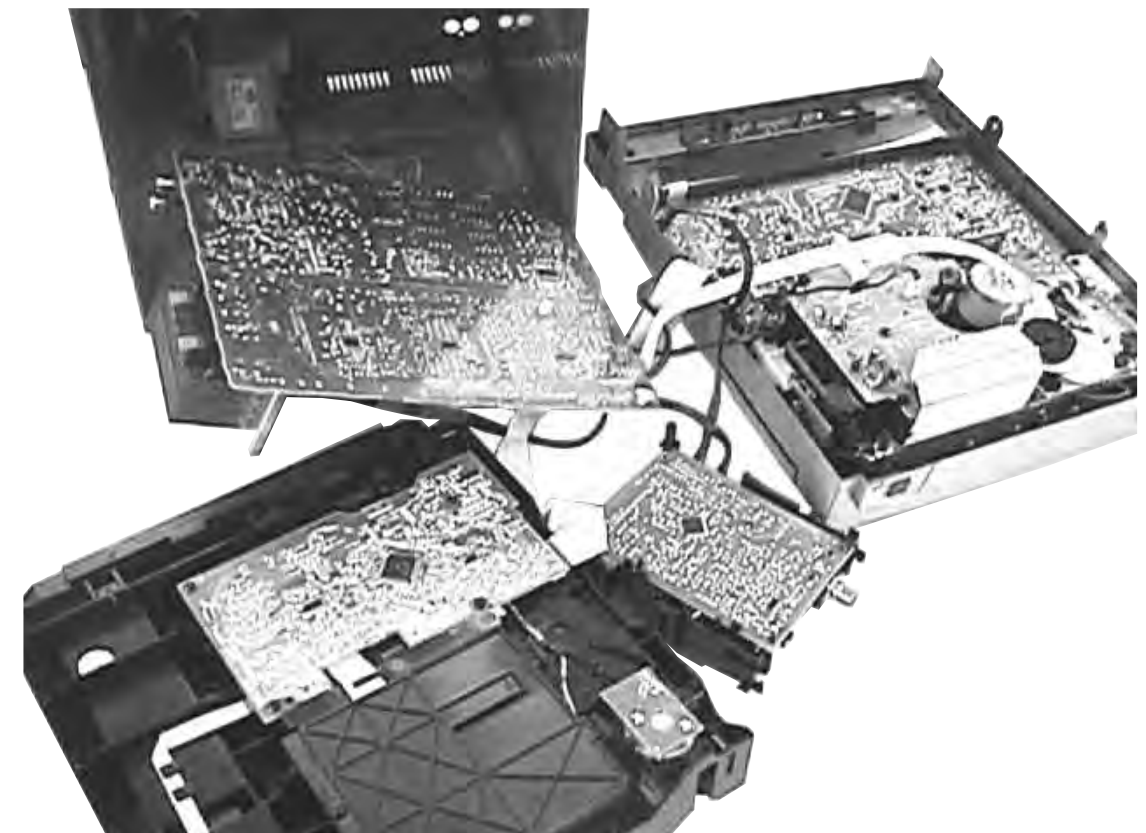
Service pos B



Service pos C



Service pos D



# SERVICE TEST PROGRAM

To start service test program hold **▶▶** & **AUX** depressed while plugging in the mains cord

Display shows the ROM version \* "S-Vyy" (Main menu)

S refers to Service Mode.  
V refers to Version.  
yy refers to Software version number of Processor. (Counting up from 01 to 99)

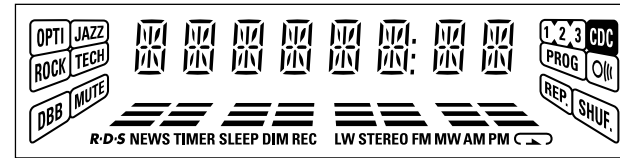
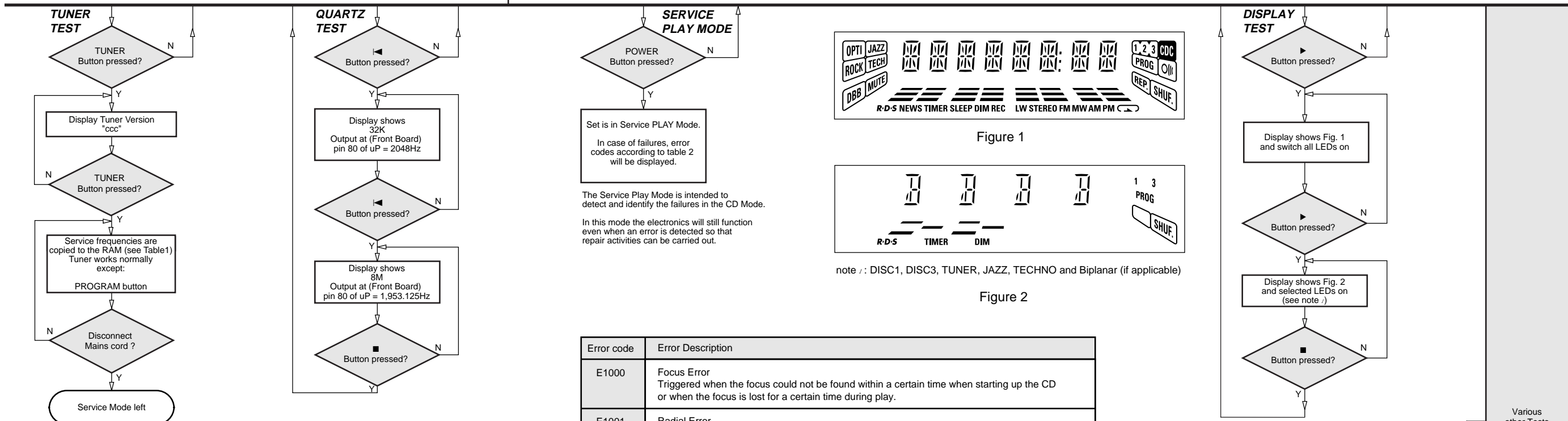


Figure 1

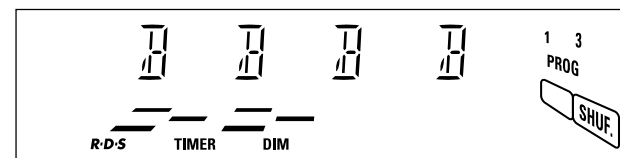


Figure 2

note : DISC1, DISC3, TUNER, JAZZ, TECHNO and Biplanar (if applicable)

Error code	Error Description
E1000	Focus Error Triggered when the focus could not be found within a certain time when starting up the CD or when the focus is lost for a certain time during play.
E1001	Radial Error Triggered when the radial servo is off-track for a certain time during play.
E1002	Sledge In Error The sledge did not reach its inner position (inner-switch is still close) before approximately 6 Sec. have passed by. Inner-switch or sledge motor problem.
E1003	Sledge Out Error The sledge did not come out of its inner position (inner-switch is still open) before approximately 250 mSec. have passed by. Inner-switch or sledge motor problem.
E1005	Jump-offtrack error Triggered in normal play when the jump destination could not be found within a certain time. When this error occurred, software will try to recover by initiating the jump command again. If it is recoverable, the disc will continue to play.
E1006	Subcode Error Triggered when a new subcode was missing for a certain time during play.
E1007	PLL Error The Phase Lock Loop could not lock within a certain time.
E1008	Turntable Motor Error Generated when the CD could not reached 75% of speed during startup within a certain time. Discmotor problem.
E1020	Focus Search Error The focus point has not been found within a certain time.
E1070	The carousel switch is not open within certain time. This can happen when either the switch is defective and closed all the time, or when the carousel is blocked when located exactly at a disc position.
E1071	The carousel position switch did not close within a certain time. This can happen when the switch is defective and never closes electrically, or when the carousel is blocked in between two disc positions. The time-out is approximately 5 Sec.
E1079	The drawer could not enter the inside position and is opening again. This happen when the drawer is blocked and cannot go fully inside or when the drawer switch is defective and does not close.

Table 2

PRESET	Europe "EUR"	East Eur. "EAS"	East Eur. Extended-band "EAS"	USA "USA"	Oversea "OSE"
1	87.5MHz	87.5MHz	65.81MHz	87.5MHz	87.5MHz
2	108MHz	108MHz	108MHz	108MHz	108MHz
3	531kHz	531kHz	74MHz	530kHz	531/530kHz*
4	1602kHz	1602kHz	87.5MHz	1700kHz	1602/1700kHz*
5	558kHz	558kHz	531kHz	560kHz	558/560kHz*
6	1494kHz	1494kHz	1602kHz	1500kHz	1494/1500kHz*
7	153kHz	87.5MHz	558kHz	98MHz	87.5/98MHz*
8	279kHz	87.5MHz	1494kHz	87.5MHz	87.5MHz
9	198kHz	87.5MHz	98MHz	87.5MHz	87.5MHz
10	98MHz	87.5MHz	70.01MHz	87.5MHz	87.5MHz
11	87.5MHz	98MHz	65.81MHz	87.5MHz	98/87.5MHz*

Table 1

Note: \* Depending on the selected grid frequency (9 or 10kHz)  
By holding the TUNER and **▶▶** buttons depressed while switching on the Mains supply, one of the undermentioned features will be activated:  
- the tuning grid frequency is toggled between 9kHz and 10kHz for the Oversea (/21) version.  
- the extended FM1 (65.81MHz - 74MHz) is toggled on and off for East Eur. (/34) version.

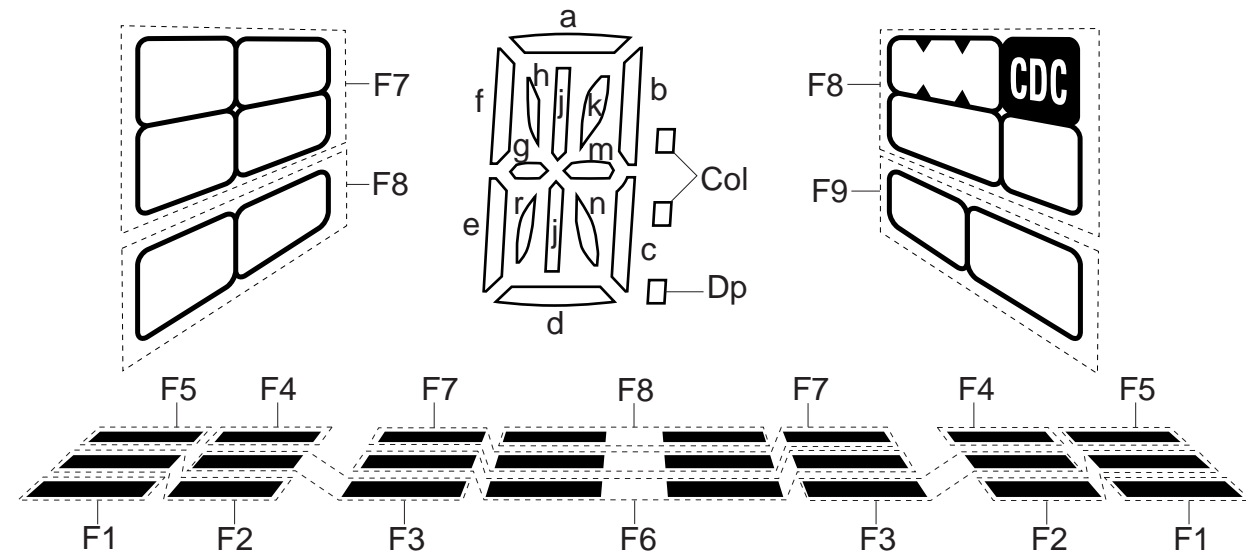
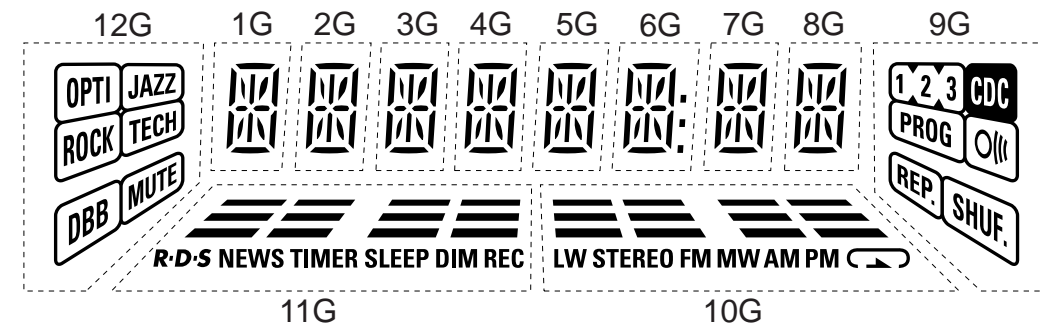
TEST	Activated with	ACTION
EEPROM TEST	<b>▶▶</b>	A test pattern will be sent to the EEPROM. "PASS" is displayed if the uProcessor read back the test pattern correctly, otherwise "ERROR" will be displayed.
EEPROM FORMAT	<b>◀◀</b>	Load default data. Display shows "NEW" for 1 second. <b>Caution!</b> <b>All presets from the customer will be lost!!</b>
ENCODER TEST	Volume Knob or Jog Shuttle knob	Display shows value for 2 seconds. Values increases or decreases in steps of 1 until 0 (Min.) or 40 (Max.) is reached.
LEAVE SERVICE TESTPROGRAM	Disconnect mains cord	







FTD DISPLAY PIN CONNECTIONS



# FRONT BOARD

TABLE OF CONTENTS

FTD Display pin connection ..... 6-1  
 Variation Table ..... 6-2  
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 Component Layout ..... 6-4  
 Chip layout ..... 6-5  
 Electrical parts list ..... 6-6

	1G - 5G	6G	7G - 8G	9G	10G	11G	12G
P1	a	a	a	1	F1	F1	OPTI
P2	h	h	h	2	F2	F2	JAZZ
P3	j	j	j	3	F3	F3	TECH
P4	k	k	k	⏸	F4	F4	MUTE
P5	b	b	b	SHUF.	F5	F5	DBB
P6	f	f	f	REP.	F6	F6	ROCK
P7	m	m	m	PROG	F7	F7	F7
P8	g	g	g	F8	F8	F8	F8
P9	c	c	c	F9	LW	R-D-S	-
P10	e	e	e	-	STEREO	NEWS	-
P11	r	r	r	-	FM	TIMER	-
P12	n	n	n	-	MW	SLEEP	-
P13	d	d	d	-	AM	DIM	-
P14	-	Col	-	-	PM	REC	-
P15	-	Dp	-	-	▶	-	-
P16	-	-	-	-	⏪	-	-

Front Board application

A53920	FW-C200/12/21/21M/33
A53930	FW-C220/22/34
A53950	FW-C100/21/21M/22/30/33/34/37
A53970	FW-C250/37
A53980	FW-C250/18/19/21
A53990	FW-C280/22/34
A54000	FW-C290/18/19/21
A54340	FW-C200/30

FEATURES:	A53920	A53930	A53950	A53970	A53980	A53990	A54000	A54340		
RDS	-	x	-	-	-	x	-	-		
Rotary Encoder	x	x	-	x	x	x	x	x		
Jog Encoder	-	-	-	x	x	x	x	-		
Spectrum Analyzer	-	-	-	-	-	x	x	-		
Biplaner LED	x	x	-	x	x	x	x	x		
Small FTD	x	x	x	x	x	-	-	x		
Large FTD	-	-	-	-	-	x	x	-		
NTC	-	-	-	-	x	-	x	-		
LED Control	x	x	-	x	x	x	x	x		

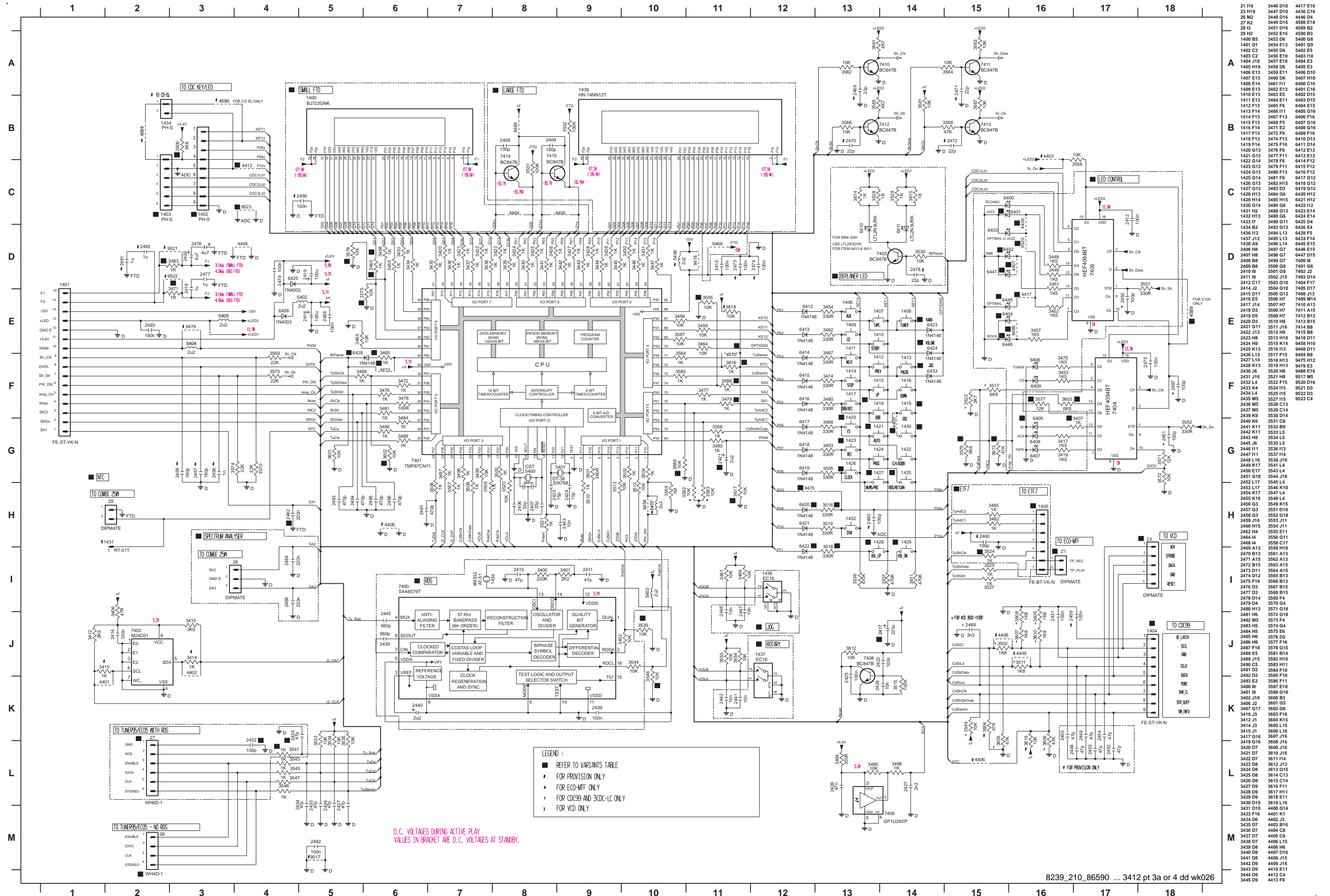
Variations table for Front Board

ITEM NO.	A53920	A53930	A53950	A53970	A53980	A53990	A54000	A54340		
DM21	-	-	x	x	x	-	-	-		
DM23	-	-	-	-	-	-	-	-		
DM26	x	-	x	x	x	-	x	x		
DM27	-	x	-	-	-	x	-	-		
DM29	-	-	-	-	x	-	x	-		
1402	-	-	-	-	-	x	x	-		
1403	x	x	x	x	x	-	-	x		
1404	x	x	x	x	x	x	x	x		
1405	x	x	-	-	-	x	x	x		
1418	-	-	-	-	-	x	x	-		
1419	-	-	-	-	-	x	x	-		
1420	-	-	-	-	-	x	x	-		
1421	x	x	-	-	-	x	x	x		
1423	x	x	-	-	-	x	x	x		
1425	-	x	-	-	-	x	-	-		
1426	x	x	-	-	-	x	x	x		
1427	-	x	-	-	-	x	-	-		
1428	-	-	x	-	-	-	-	-		
1429	-	-	x	-	-	-	-	-		
1430	x	x	x	-	-	-	-	x		
2417	220µF	220µF	-	220µF	220µF	220µF	220µF	220µF		
2421	22µF	22µF	2,2µF	22µF	22µF	22µF	22µF	22µF		
2432	-	100pF	-	-	-	100pF	-	-		
2433	-	47pF	-	-	-	47pF	-	-		
2462	220nF	220nF	-	220nF	220nF	220nF	220nF	220nF		

ITEM NO.	A53920	A53930	A53950	A53970	A53980	A53990	A54000	A54340		
3407	-	-	-	-	-	1k	1k	-		
3458	-	-	-	-	-	1k	1k	-		
3460	-	-	-	-	-	1k	1k	-		
3465	1k	1k	-	1k	1k	1k	1k	1k		
3471	4R7	4R7	4R7	4R7	4R7	1R	4R7	4R7		
3479	1k	1k	-	1k	1k	1k	1k	1k		
3483	4R7	4R7	4R7	4R7	4R7	1R	4R7	4R7		
3516	-	-	330R	-	-	-	-	-		
3518	-	-	-	-	-	330R	330R	-		
3524	1k	1k	-	-	-	1k	1k	1k		
3539	10k	-	10k	10k	10k	-	10k	10k		
3541	-	1k	-	-	-	1k	-	-		
3546	10k	-	10k	10k	10k	-	10k	10k		
3555	10k	10k	10k	10k	10k	-	-	10k		
3575	10k	10k	10k	10k	10k	-	-	10k		
3576	10k	10k	10k	10k	10k	-	-	10k		
3577	-	-	-	-	-	12k	12k	-		
3578	-	-	-	-	-	5k6	5k6	-		
3586	-	-	-	-	-	1k	1k	-		
3588	-	-	10k	-	-	-	-	-		
3600	5k6	5k6	5k6	5k6	5k6	-	-	5k6		
3602	-	-	10k	10k	10k	-	-	-		
3603	10k	10k	6k8	10k	10k	10k	10k	10k		
3613	12k	12k	47k	12k	12k	12k	12k	12k		
3616	-	-	-	-	1k	-	1k	-		
3617	10k	10k	10k	10k	-	10k	-	10k		
4400	x	x	x	-	-	-	-	x		
4407	x	x	-	x	x	-	-	x		
4410	x	x	x	x	-	x	-	x		
4412	-	-	-	-	-	x	x	-		
4413	-	-	x	-	-	-	-	-		
4417	x	x	-	-	-	-	-	x		
4436	x	x	-	-	-	-	-	x		
4588	-	-	x	-	-	-	-	-		
6401	-	-	-	x	x	x	x	-		
6402	-	-	-	-	-	x	x	-		
6404	-	-	-	x	x	x	x	-		
6405	-	-	-	-	-	x	x	-		
6420	-	-	-	-	-	x	x	-		
6422	-	-	x	-	-	-	-	-		
6423	x	-	-	-	x	-	x	-		
6424	-	-	-	x	x	-	-	-		
6428	x	x	-	x	x	x	x	x		
6433	-	-	-	x	x	-	-	-		
6445	x	x	-	-	-	-	-	x		
6446	x	x	-	-	-	-	-	x		
6447	x	x	-	x	x	-	-	x		
9475	x	x	x	x	x	-	-	x		
9488	-	-	-	x	x	x	x	-		
9520	-	-	-	x	x	x	x	-		
9523	x	x	x	x	x	-	-	x		

x = Item in use.

CIRCUIT DIAGRAM



21 H6	3446 D10	4417 E16
23 H18	3447 D10	4436 C16
26 M2	3448 D16	4446 D4
27 K2	3449 D16	4588 E18
28 I3	3451 D16	4589 B2
29 H2	3452 E16	4590 B3
1400 B5	3453 D6	5400 B8
1401 D1	3454 E13	5401 G9
1402 C3	3455 D6	5402 E5
1403 C2	3456 E10	5403 H10
1404 J18	3457 E16	5404 E3
1405 H16	3458 D6	5405 E3
1406 E13	3459 E11	5406 D10
1407 E13	3460 D6	5407 H10
1408 E14	3461 H11	6400 C16
1409 E13	3462 E13	6401 H12
1410 E13	3463 E5	6402 D15
1411 E13	3464 E11	6403 D15
1412 F13	3465 F6	6404 E15
1413 F14	3466 H11	6405 G16
1414 F13	3467 F13	6406 F16
1415 F13	3469 F5	6407 G16
1416 F14	3471 E3	6408 G16
1417 F13	3472 F6	6409 F16
1418 F13	3474 F13	6410 D13
1419 F14	3475 F16	6411 D14
1420 G13	3476 F6	6412 E12
1421 G13	3477 F11	6413 E12
1422 G14	3478 F6	6414 F12
1423 G13	3479 F11	6415 F12
1424 G13	3480 F13	6416 F12
1425 G14	3481 F6	6417 G12
1426 G13	3482 H15	6418 G12
1427 G13	3483 D3	6419 G12
1428 H13	3484 G6	6420 H12
1429 H14	3485 H15	6421 H12
1430 G14	3486 G6	6422 H12
1431 H2	3488 G13	6423 E14
1432 H3	3489 G6	6424 E14
1433 I7	3490 H11	6425 G14
1434 B2	3493 G13	6426 E4
1436 I12	3494 L13	6428 F5
1437 J12	3495 L13	6433 F14
1438 A9	3496 L14	6435 F14
2406 H8	3497 G7	6446 E15
2407 H8	3498 G7	6447 D15
2408 B8	3500 G8	7401 G6
2410 H8	3501 G9	7402 J2
2411 B9	3502 J10	7403 D14
2412 C17	3503 G10	7404 F17
2414 J2	3504 H10	7405 D17
2415 D11	3505 G13	7406 D13
2416 E5	3506 H7	7409 M14
2417 J14	3507 H7	7410 A13
2418 D3	3508 H7	7411 A15
2419 D5	3509 H7	7412 B13
2420 D3	3510 H9	7413 B15
2421 G11	3511 J16	7414 B8
2422 J13	3512 H10	7415 B8
2423 H8	3513 H10	9418 D11
2424 H9	3515 K14	9458 H10
2425 K13	3516 H13	9472 H12
2426 L13	3517 F15	9469 B8
2427 L14	3518 H13	9475 H12
2428 K13	3519 H13	9479 E3
2430 J6	3520 H8	9478 E3
2431 J16	3521 H8	9517 M5
2432 L4	3522 F15	9520 D16
2433 K4	3523 H10	9521 D3
2434 L4	3525 H15	9522 D3
2435 M5	3527 H15	9523 C4
2436 M5	3528 C13	
2437 M5	3529 C14	
2439 K9	3530 D19	
2440 K6	3531 C3	
2441 K11	3532 B9	
2442 K11	3533 L5	
2443 H9	3534 L5	
2445 J6	3535 L5	
2446 H11	3536 H3	
2447 H11	3537 H4	
2448 L16	3539 J10	
2449 K17	3541 L4	
2450 E17	3543 L4	
2451 G18	3544 J10	
2452 L17	3545 L4	
2453 L17	3546 K10	
2454 K17	3547 L4	
2455 K16	3548 L4	
2456 G3	3549 K15	
2457 G3	3551 D18	
2458 G3	3552 G18	
2459 J16	3553 J11	
2460 H15	3554 J11	
2462 H4	3555 E11	
2464 I4	3556 G11	
2468 I4	3558 C17	
2469 A13	3559 H10	
2470 B13	3561 A13	
2471 A15	3562 A13	
2472 B15	3563 A15	
2473 D11	3564 A15	
2474 D12	3565 B13	
2475 F18	3566 B13	
2476 G18	3567 B15	
2477 D3	3568 B15	
2478 D4	3569 F4	
2479 D4	3570 G4	
2480 H13	3571 H18	
2481 H6	3572 G18	
2482 M5	3573 F4	
2483 H5	3574 G4	
2484 H5	3575 E6	
2485 H6	3576 D5	
2486 H6	3577 F16	
2487 F18	3578 H15	
2490 C5	3581 B14	
2491 D2	3584 F10	
2492 D2	3585 F10	
2493 E2	3586 F11	
3400 I8	3587 E10	
3401 I9	3588 G10	
3402 J10	3589 B5	
3406 J2	3601 G5	
3407 G17	3602 G6	
3410 L3	3603 F16	
3412 J1	3604 K15	
3414 J3	3605 L15	
3415 J1	3606 L16	
3417 G16	3607 J16	
3419 G16	3608 J16	
3420 D7	3609 J16	
3421 D7	3610 J16	
3422 D7	3611 I4	
3423 D8	3612 J13	
3424 D8	3613 G15	
3425 D8	3614 C13	
3426 D8	3615 C14	
3427 D8	3616 F11	
3428 D9	3617 H11	
3429 D9	3618 E11	
3430 D18	3619 L16	
3431 D10	4400 G14	
3433 F16	4401 K1	
3434 D6	4402 J3	
3435 D7	4403 B16	
3436 D7	4404 C8	
3437 D7	4405 C9	
3438 D7	4406 L15	
3439 D8	4406 H6	
3440 D8	4407 D16	
3441 D8	4408 J15	
3442 D9	4409 J16	
3443 D9	4410 E11	
3444 D9	4411 C4	
3445 D9	4412 F8	

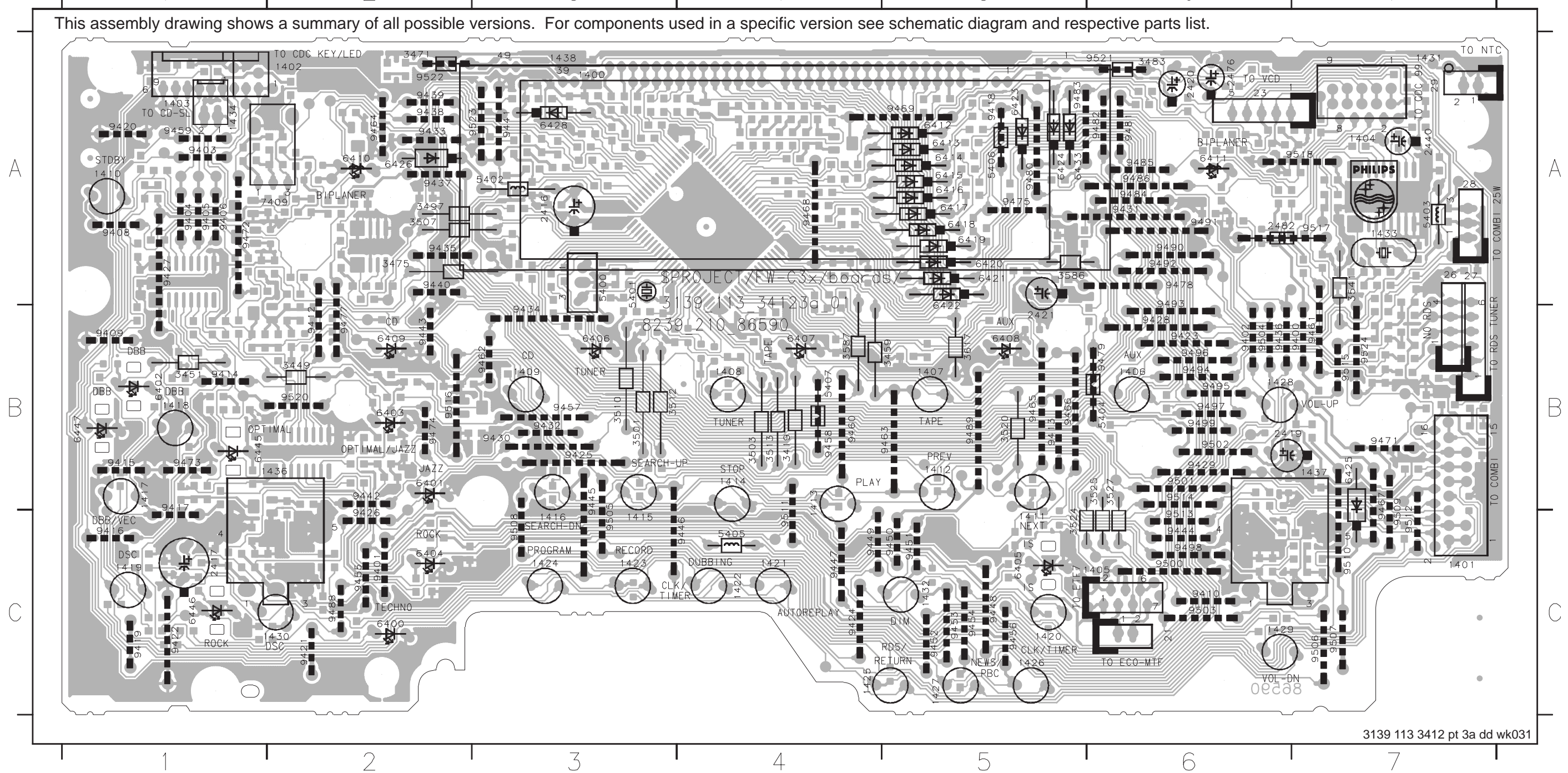
8239\_210\_86590 ... 3412 pt 3a or 4 dd wk026



# COMPONENT LAYOUT

14001	C6	14006	B5	14011	C7	14016	B1	14021	C6	14026	B5	14031	C7	14036	B1	14041	C6	14046	B5	14051	C7	14056	B1
14002	A7	14007	A6	14012	A7	14017	A6	14022	A7	14027	A6	14032	A7	14037	A6	14042	A7	14047	A6	14052	A7	14057	A6
14003	A7	14008	A6	14013	A7	14018	A6	14023	A7	14028	A6	14033	A7	14038	A6	14043	A7	14048	A6	14053	A7	14058	A6
14004	A7	14009	A6	14014	A7	14019	A6	14024	A7	14029	A6	14034	A7	14039	A6	14044	A7	14049	A6	14054	A7	14059	A6
14005	C6	14010	B5	14015	C7	14020	B1	14025	C6	14030	B5	14035	C7	14040	B1	14045	C6	14050	B5	14055	C7	14060	B1

This assembly drawing shows a summary of all possible versions. For components used in a specific version see schematic diagram and respective parts list.



3139 113 3412 pt 3a dd wk031





## ELECTRICAL PARTS LIST - FRONT BOARD

## MISCELLANEOUS

1400	3139 110 52070	FTD Display BJ722GNK
1401	2422 025 14546	Flex Socket 16pin Hort.
1404	4822 265 11531	Flex Socket 9pin Hort.
1405	4822 267 10953	Flex Socket 7pin Vert.
1406	4822 276 13775	Tact Switch
1407	4822 276 13775	Tact Switch
1408	4822 276 13775	Tact Switch
1409	4822 276 13775	Tact Switch
1410	4822 276 13775	Tact Switch
1411	4822 276 13775	Tact Switch
1412	4822 276 13775	Tact Switch
1413	4822 276 13775	Tact Switch
1414	4822 276 13775	Tact Switch
1415	4822 276 13775	Tact Switch
1416	4822 276 13775	Tact Switch
1417	4822 276 13775	Tact Switch
1421	4822 276 13775	Tact Switch
1422	4822 276 13775	Tact Switch
1423	4822 276 13775	Tact Switch
1424	4822 276 13775	Tact Switch
1426	4822 276 13775	Tact Switch
1430	4822 276 13775	Tact Switch
1432	4822 276 13775	Tact Switch
1437	4822 273 10365	Rotary Encoder 24pin

## CAPACITORS

2406	5322 122 32659	33pF 5% 50V
2407	5322 122 32659	33pF 5% 50V
2412	4822 126 14585	100nF 10% 50V
2414	4822 126 13838	100nF +80/-20% 50V
2415	4822 126 14585	100nF 10% 50V
2416	4822 124 23432	100µF 20% 10V
2417	4822 124 12245	220µF 20% 10V
2418	4822 126 14043	1µF +80-20% 16V
2419	4822 124 41584	100µF 20% 10V
2420	4822 124 12032	4,7µF 20% 50V
2421	4822 124 81151	22µF 20% 50V
2422	4822 126 14585	100nF 10% 50V
2423	4822 126 13486	15pF 2% 63V
2424	4822 126 13486	15pF 2% 63V
2425	4822 126 13838	100nF +80/-20% 50V
2426	4822 126 13751	47nF 10% 63V
2427	4822 122 33127	2,2nF 10% 63V
2428	4822 122 33177	10nF 20% 50V
2431	4822 126 14585	100nF 10% 50V
2434	4822 126 13692	47pF 1% 63V
2435	4822 126 13692	47pF 1% 63V
2436	4822 126 13692	47pF 1% 63V
2437	4822 126 13692	47pF 1% 63V
2441	4822 122 33177	10nF 20% 50V
2442	4822 122 33177	10nF 20% 50V
2443	4822 122 33177	10nF 20% 50V

2462	4822 126 14076	220nF +80/-20% 25V
2475	4822 126 14585	100nF 10% 50V
2476	4822 124 12032	4,7µF 20% 50V
2477	4822 126 14043	1µF +80-20% 16V
2479	4822 126 14585	100nF 10% 50V
2481	5322 122 32268	470pF 10% 50V
2482	4822 126 12882	100nF +80-20% 50V
2483	5322 122 32268	470pF 10% 50V
2484	5322 122 32268	470pF 10% 50V
2485	5322 122 32268	470pF 10% 50V
2486	5322 122 32268	470pF 10% 50V
2488	4822 126 14585	100nF 10% 50V
2489	4822 122 33891	3,3nF 10% 63V
2493	4822 126 14585	100nF 10% 50V

## RESISTORS

3406	4822 051 20479	47R 5% 0,1W
3410	4822 051 20392	3k9 5% 0,1W
3412	4822 051 20392	3k9 5% 0,1W
3417	4822 117 11139	1k5 1% 0,1W
3419	4822 116 52243	1k5 5% 0,5W
3420	4822 051 10102	1k 2% 0,25W
3421	4822 051 10102	1k 2% 0,25W
3422	4822 051 10102	1k 2% 0,25W
3423	4822 051 10102	1k 2% 0,25W
3424	4822 051 10102	1k 2% 0,25W
3425	4822 051 10102	1k 2% 0,25W
3426	4822 051 10102	1k 2% 0,25W
3427	4822 051 10102	1k 2% 0,25W
3428	4822 051 10102	1k 2% 0,25W
3429	4822 051 10102	1k 2% 0,25W
3430	4822 051 10102	1k 2% 0,25W
3431	4822 051 10102	1k 2% 0,25W
3433	4822 117 11139	1k5 1% 0,1W
3434	4822 051 10102	1k 2% 0,25W
3435	4822 051 10102	1k 2% 0,25W
3436	4822 051 10102	1k 2% 0,25W
3437	4822 051 10102	1k 2% 0,25W
3438	4822 051 10102	1k 2% 0,25W
3439	4822 051 10102	1k 2% 0,25W
3440	4822 051 10102	1k 2% 0,25W
3441	4822 051 10102	1k 2% 0,25W
3442	4822 051 10102	1k 2% 0,25W
3443	4822 051 10102	1k 2% 0,25W
3444	4822 051 10102	1k 2% 0,25W
3445	4822 051 10102	1k 2% 0,25W
3446	4822 051 10102	1k 2% 0,25W
3447	4822 051 10102	1k 2% 0,25W
3448	4822 117 11139	1k5 1% 0,1W
3449	4822 116 52243	1k5 5% 0,5W
3451	4822 116 52243	1k5 5% 0,5W
3452	4822 117 11139	1k5 1% 0,1W

## ELECTRICAL PARTS LIST - FRONT BOARD

3453	4822 051 10102	1k 2% 0,25W
3454	4822 117 13577	330R 1% 0,1W
3455	4822 051 10102	1k 2% 0,25W
3456	4822 117 10833	10k 1% 0,1W
3457	4822 117 11139	1k5 1% 0,1W
3459	4822 050 21003	10k 1% 0,6W
3461	4822 117 10833	10k 1% 0,1W
3462	4822 117 13577	330R 1% 0,1W
3463	4822 117 10833	10k 1% 0,1W
3464	4822 117 10833	10k 1% 0,1W
3465	4822 051 10102	1k 2% 0,25W
3466	4822 117 10833	10k 1% 0,1W
3467	4822 117 13577	330R 1% 0,1W
3469	4822 051 10102	1k 2% 0,25W
3471	4822 050 24708	4R7 1% 0,6W
3472	4822 051 10102	1k 2% 0,25W
3474	4822 117 13577	330R 1% 0,1W
3475	4822 116 52243	1k5 5% 0,5W
3476	4822 051 10102	1k 2% 0,25W
3477	4822 051 10102	1k 2% 0,25W
3478	4822 051 20101	100R 5% 0,1W
3479	4822 051 10102	1k 2% 0,25W
3480	4822 117 13577	330R 1% 0,1W
3481	4822 051 10102	1k 2% 0,25W
3482	4822 051 10102	1k 2% 0,25W
3483	4822 050 24708	4R7 1% 0,6W
3484	4822 051 10102	1k 2% 0,25W
3485	4822 051 10102	1k 2% 0,25W
3486	4822 051 10102	1k 2% 0,25W
3488	4822 117 13577	330R 1% 0,1W
3489	4822 051 10102	1k 2% 0,25W
3490	4822 051 10102	1k 2% 0,25W
3493	4822 117 13577	330R 1% 0,1W
3494	4822 117 13577	330R 1% 0,1W
3495	4822 117 10833	10k 1% 0,1W
3496	4822 051 10102	1k 2% 0,25W
3497	4822 050 11002	1k 1% 0,4W
3498	4822 051 10102	1k 2% 0,25W
3499	4822 117 10833	10k 1% 0,1W
3500	4822 051 10102	1k 2% 0,25W
3501	4822 116 52226	560R 5% 0,5W
3502	4822 051 20182	1k8 5% 0,1W
3503	4822 050 11002	1k 1% 0,4W
3504	4822 051 10102	1k 2% 0,25W
3505	4822 117 13577	330R 1% 0,1W
3506	4822 051 10102	1k 2% 0,25W
3507	4822 050 11002	1k 1% 0,4W
3508	4822 051 10102	1k 2% 0,25W
3509	4822 051 10102	1k 2% 0,25W
3510	4822 050 11002	1k 1% 0,4W
3511	4822 051 20182	1k8 5% 0,1W
3512	4822 050 21003	10k 1% 0,6W

3513	4822 050 21003	10k 1% 0,6W
3515	4822 117 10837	100k 1% 0,1W
3517	4822 117 11507	6k8 1% 0,1W
3519	4822 117 13577	330R 1% 0,1W
3520	4822 050 21003	10k 1% 0,6W
3521	4822 051 10102	1k 2% 0,25W
3522	4822 117 12955	2k7 1% 0,1W 0805
3524	4822 050 11002	1k 1% 0,4W
3525	4822 050 11002	1k 1% 0,4W
3527	4822 050 11002	1k 1% 0,4W
3528	4822 051 10102	1k 2% 0,25W
3529	4822 051 10102	1k 2% 0,25W
3530	4822 117 10833	10k 1% 0,1W
3533	4822 117 10833	10k 1% 0,1W
3534	4822 117 10833	10k 1% 0,1W
3535	4822 117 10833	10k 1% 0,1W
3536	4822 051 20474	470k 5% 0,1W
3537	4822 051 20474	470k 5% 0,1W
3539	4822 117 10833	10k 1% 0,1W
3543	4822 051 10102	1k 2% 0,25W
3545	4822 051 10102	1k 2% 0,25W
3546	4822 117 10833	10k 1% 0,1W
3547	4822 051 10102	1k 2% 0,25W
3548	4822 051 10102	1k 2% 0,25W
3549	4822 117 10833	10k 1% 0,1W
3551	4822 117 13577	330R 1% 0,1W
3552	4822 117 13577	330R 1% 0,1W
3553	4822 117 10833	10k 1% 0,1W
3554	4822 117 10833	10k 1% 0,1W
3555	4822 117 10833	10k 1% 0,1W
3556	4822 051 10102	1k 2% 0,25W
3558	4822 117 10833	10k 1% 0,1W
3559	4822 051 20105	1M 5% 0,1W
3561	4822 051 20472	4k7 5% 0,1W
3562	4822 117 10833	10k 1% 0,1W
3563	4822 117 10833	10k 1% 0,1W
3564	4822 117 10833	10k 1% 0,1W
3565	4822 051 20472	4k7 5% 0,1W
3566	4822 117 10833	10k 1% 0,1W
3567	4822 117 10833	10k 1% 0,1W
3568	4822 117 10834	47k 1% 0,1W
3569	4822 051 20223	22k 5% 0,1W
3570	4822 051 20223	22k 5% 0,1W
3571	4822 117 11383	12k 1% 0,1W
3572	4822 117 10833	10k 1% 0,1W
3573	4822 051 20223	22k 5% 0,1W
3574	4822 051 20223	22k 5% 0,1W
3575	4822 117 10833	10k 1% 0,1W
3576	4822 117 10833	10k 1% 0,1W
3581	4822 117 10833	10k 1% 0,1W
3584	4822 051 10102	1k 2% 0,25W
3585	4822 051 10102	1k 2% 0,25W

**ELECTRICAL PARTS LIST - FRONT BOARD****RESISTORS**

3587	4822 050 21003	10k 1% 0,6W	4445	4822 051 20008	0R Jumper 0805
3600	4822 051 20562	5k6 5% 0,1W	4446	4822 051 20008	0R Jumper 0805
3601	4822 117 10833	10k 1% 0,1W	4447	4822 051 20008	0R Jumper 0805
3603	4822 117 10833	10k 1% 0,1W	4448	4822 051 20008	0R Jumper 0805
3607	4822 051 20182	1k8 5% 0,1W	4449	4822 051 20008	0R Jumper 0805
3608	4822 051 20182	1k8 5% 0,1W	4450	4822 051 20008	0R Jumper 0805
3609	4822 051 20182	1k8 5% 0,1W	4451	4822 051 20008	0R Jumper 0805
3610	4822 051 20182	1k8 5% 0,1W	4452	4822 051 20008	0R Jumper 0805
3611	4822 051 20474	470k 5% 0,1W	4453	4822 051 20008	0R Jumper 0805
3612	4822 117 10833	10k 1% 0,1W	4454	4822 051 20008	0R Jumper 0805
3613	4822 117 11383	12k 1% 0,1W	4455	4822 051 20008	0R Jumper 0805
3614	4822 051 10102	1k 2% 0,25W	4456	4822 051 20008	0R Jumper 0805
3615	4822 051 10102	1k 2% 0,25W	4457	4822 051 20008	0R Jumper 0805
3617	4822 050 21003	10k 1% 0,6W	4458	4822 051 20008	0R Jumper 0805
4400	4822 051 20008	0R Jumper 0805	4459	4822 051 20008	0R Jumper 0805
4401	4822 051 20008	0R Jumper 0805	4460	4822 051 20008	0R Jumper 0805
4402	4822 051 20008	0R Jumper 0805	4461	4822 051 20008	0R Jumper 0805
4404	4822 051 20008	0R Jumper 0805	4462	4822 051 20008	0R Jumper 0805
4405	4822 051 20008	0R Jumper 0805	4463	4822 051 20008	0R Jumper 0805
4407	4822 051 20008	0R Jumper 0805	4464	4822 051 20008	0R Jumper 0805
4410	4822 051 20008	0R Jumper 0805	4465	4822 051 20008	0R Jumper 0805
4411	4822 051 20008	0R Jumper 0805	4466	4822 051 20008	0R Jumper 0805
4414	4822 051 20008	0R Jumper 0805	4467	4822 051 20008	0R Jumper 0805
4416	4822 051 20008	0R Jumper 0805	4468	4822 051 20008	0R Jumper 0805
4417	4822 051 20008	0R Jumper 0805	4469	4822 051 20008	0R Jumper 0805
4418	4822 051 20008	0R Jumper 0805	4470	4822 051 20008	0R Jumper 0805
4419	4822 051 20008	0R Jumper 0805	4471	4822 051 20008	0R Jumper 0805
4420	4822 051 20008	0R Jumper 0805	4472	4822 051 20008	0R Jumper 0805
4421	4822 051 20008	0R Jumper 0805	4473	4822 051 20008	0R Jumper 0805
4422	4822 051 20008	0R Jumper 0805	4474	4822 051 20008	0R Jumper 0805
4423	4822 051 20008	0R Jumper 0805	4475	4822 051 20008	0R Jumper 0805
4424	4822 051 20008	0R Jumper 0805	4476	4822 051 20008	0R Jumper 0805
4425	4822 051 20008	0R Jumper 0805	4477	4822 051 20008	0R Jumper 0805
4426	4822 051 20008	0R Jumper 0805	4478	4822 051 20008	0R Jumper 0805
4427	4822 051 20008	0R Jumper 0805	4479	4822 051 20008	0R Jumper 0805
4428	4822 051 20008	0R Jumper 0805	4480	4822 051 20008	0R Jumper 0805
4429	4822 051 20008	0R Jumper 0805	4481	4822 051 20008	0R Jumper 0805
4430	4822 051 20008	0R Jumper 0805	4482	4822 051 20008	0R Jumper 0805
4431	4822 051 20008	0R Jumper 0805	4483	4822 051 20008	0R Jumper 0805
4432	4822 051 20008	0R Jumper 0805	4484	4822 051 20008	0R Jumper 0805
4433	4822 051 20008	0R Jumper 0805	4485	4822 051 20008	0R Jumper 0805
4434	4822 051 20008	0R Jumper 0805	4486	4822 051 20008	0R Jumper 0805
4435	4822 051 20008	0R Jumper 0805	4487	4822 051 20008	0R Jumper 0805
4436	4822 051 20008	0R Jumper 0805	4488	4822 051 20008	0R Jumper 0805
4437	4822 051 20008	0R Jumper 0805	4489	4822 051 20008	0R Jumper 0805
4438	4822 051 20008	0R Jumper 0805	4490	4822 051 20008	0R Jumper 0805
4439	4822 051 20008	0R Jumper 0805	4491	4822 051 20008	0R Jumper 0805
4440	4822 051 20008	0R Jumper 0805	4492	4822 051 20008	0R Jumper 0805
4441	4822 051 20008	0R Jumper 0805	4493	4822 051 20008	0R Jumper 0805
4442	4822 051 20008	0R Jumper 0805	4494	4822 051 20008	0R Jumper 0805
4443	4822 051 20008	0R Jumper 0805	4495	4822 051 20008	0R Jumper 0805
4444	4822 051 20008	0R Jumper 0805	4496	4822 051 20008	0R Jumper 0805



**ELECTRICAL PARTS LIST - FRONT BOARD****RESISTORS**

4497	4822 051 20008	OR Jumper 0805
4498	4822 051 20008	OR Jumper 0805
4499	4822 051 20008	OR Jumper 0805
4500	4822 051 20008	OR Jumper 0805
4501	4822 051 20008	OR Jumper 0805
4502	4822 051 20008	OR Jumper 0805
4503	4822 051 20008	OR Jumper 0805
4504	4822 051 20008	OR Jumper 0805
4505	4822 051 20008	OR Jumper 0805
4506	4822 051 20008	OR Jumper 0805
4507	4822 051 20008	OR Jumper 0805
4508	4822 051 20008	OR Jumper 0805
4509	4822 051 20008	OR Jumper 0805
4510	4822 051 20008	OR Jumper 0805
4511	4822 051 20008	OR Jumper 0805
4512	4822 051 20008	OR Jumper 0805
4513	4822 051 20008	OR Jumper 0805
4514	4822 051 20008	OR Jumper 0805
4515	4822 051 20008	OR Jumper 0805
4516	4822 051 20008	OR Jumper 0805
4517	4822 051 20008	OR Jumper 0805
4518	4822 051 20008	OR Jumper 0805
4519	4822 051 20008	OR Jumper 0805
4520	4822 051 20008	OR Jumper 0805
4521	4822 051 20008	OR Jumper 0805
4522	4822 051 20008	OR Jumper 0805
4523	4822 051 20008	OR Jumper 0805
4524	4822 051 20008	OR Jumper 0805
4525	4822 051 20008	OR Jumper 0805
4526	4822 051 20008	OR Jumper 0805
4527	4822 051 20008	OR Jumper 0805
4528	4822 051 20008	OR Jumper 0805
4529	4822 051 20008	OR Jumper 0805
4530	4822 051 20008	OR Jumper 0805
4531	4822 051 20008	OR Jumper 0805
4532	4822 051 20008	OR Jumper 0805
4533	4822 051 20008	OR Jumper 0805
4534	4822 051 20008	OR Jumper 0805
4535	4822 051 20008	OR Jumper 0805
4536	4822 051 20008	OR Jumper 0805
4537	4822 051 20008	OR Jumper 0805
4538	4822 051 20008	OR Jumper 0805
4539	4822 051 20008	OR Jumper 0805
4540	4822 051 20008	OR Jumper 0805
4541	4822 051 20008	OR Jumper 0805
4542	4822 051 20008	OR Jumper 0805
4543	4822 051 20008	OR Jumper 0805
4544	4822 051 20008	OR Jumper 0805
4545	4822 051 20008	OR Jumper 0805
4546	4822 051 20008	OR Jumper 0805
4547	4822 051 20008	OR Jumper 0805

**COILS & FILTERS**

5400	4822 242 72066	Ceram Resonator 8MHz
5401	2422 543 01069	X'tal Resonator 32,768kHz
5402	4822 157 62552	Coil 2,2 $\mu$ H 5%
5404	4822 157 62552	Coil 2,2 $\mu$ H 5%
5405	4822 157 62552	Coil 2,2 $\mu$ H 5%

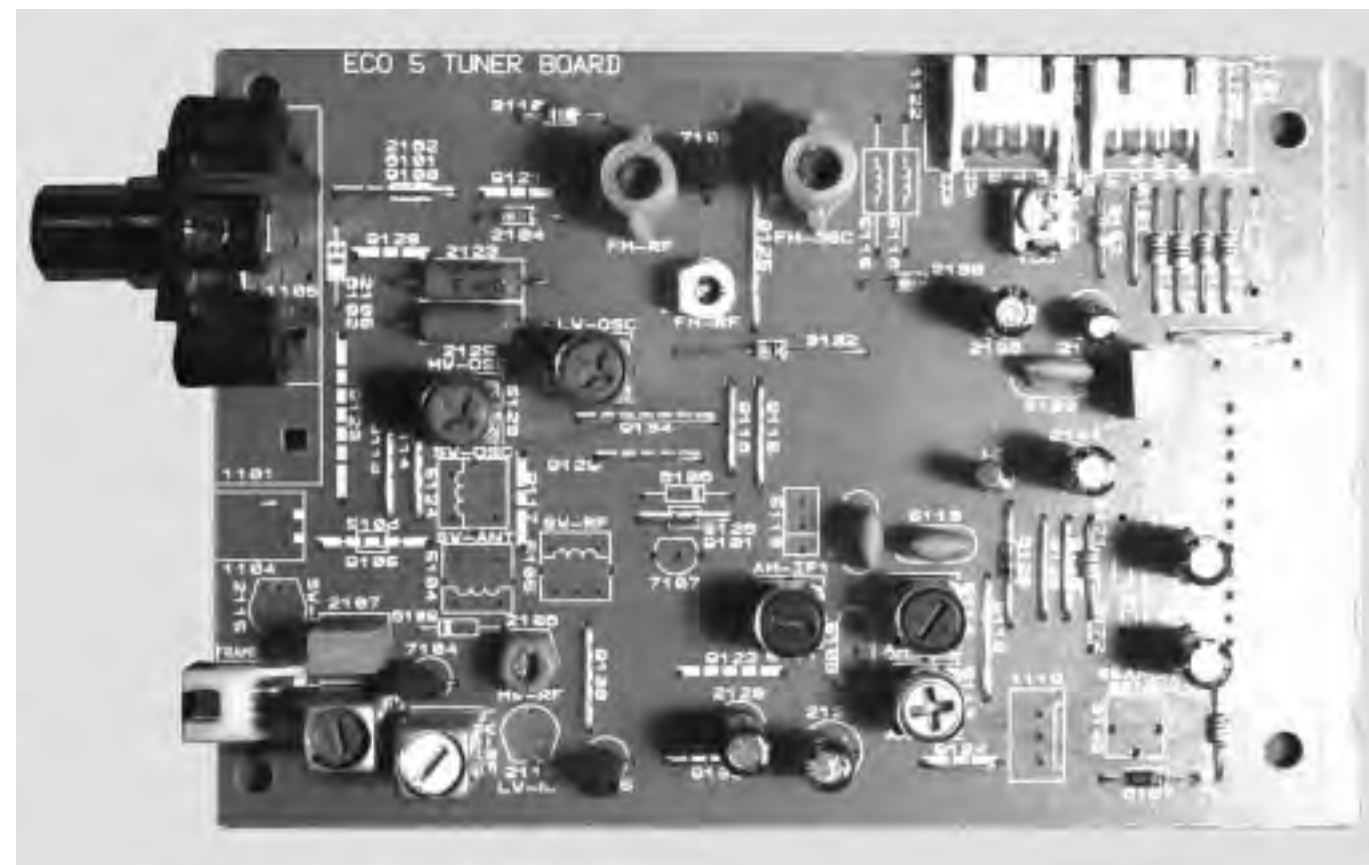
**DIODES**

6400	4822 130 11589	LTL-1CHAE
6403	4822 130 11589	LTL-1CHAE
6406	4822 130 11589	LTL-1CHAE
6407	4822 130 11589	LTL-1CHAE
6408	4822 130 11589	LTL-1CHAE
6409	4822 130 11589	LTL-1CHAE
6410	9322 159 86676	LTL-2R3QYK
6411	9322 159 86676	LTL-2R3QYK
6412	4822 130 30621	1N4148
6413	4822 130 30621	1N4148
6414	4822 130 30621	1N4148
6415	4822 130 30621	1N4148
6416	4822 130 30621	1N4148
6417	4822 130 30621	1N4148
6418	4822 130 30621	1N4148
6419	4822 130 30621	1N4148
6421	4822 130 30621	1N4148
6423	4822 130 30621	1N4148 /21/21M
6425	4822 130 31878	1N4003G
6426	4822 130 31878	1N4003G
6428	4822 130 30621	1N4148
6445	4822 130 11589	LTL-1CHAE
6446	4822 130 11589	LTL-1CHAE
6447	4822 130 11589	LTL-1CHAE

**TRANSISTORS & INTEGRATED CIRCUITS**

7401	3139 110 52510	TMP87CS71F "C200S52511"
7402	9965 000 04931	M24C01-WMN6
7403	5322 130 60159	BC847B
7404	5322 209 11306	HEF4094BT
7405	5322 209 11306	HEF4094BT
7408	5322 130 60159	BC847B
7409	4822 130 10165	GP1U28XP
7410	5322 130 60159	BC847B
7411	5322 130 60159	BC847B
7412	5322 130 60159	BC847B
7413	5322 130 60159	BC847B

Note: Only the parts mentioned in this list are normal service spare parts.



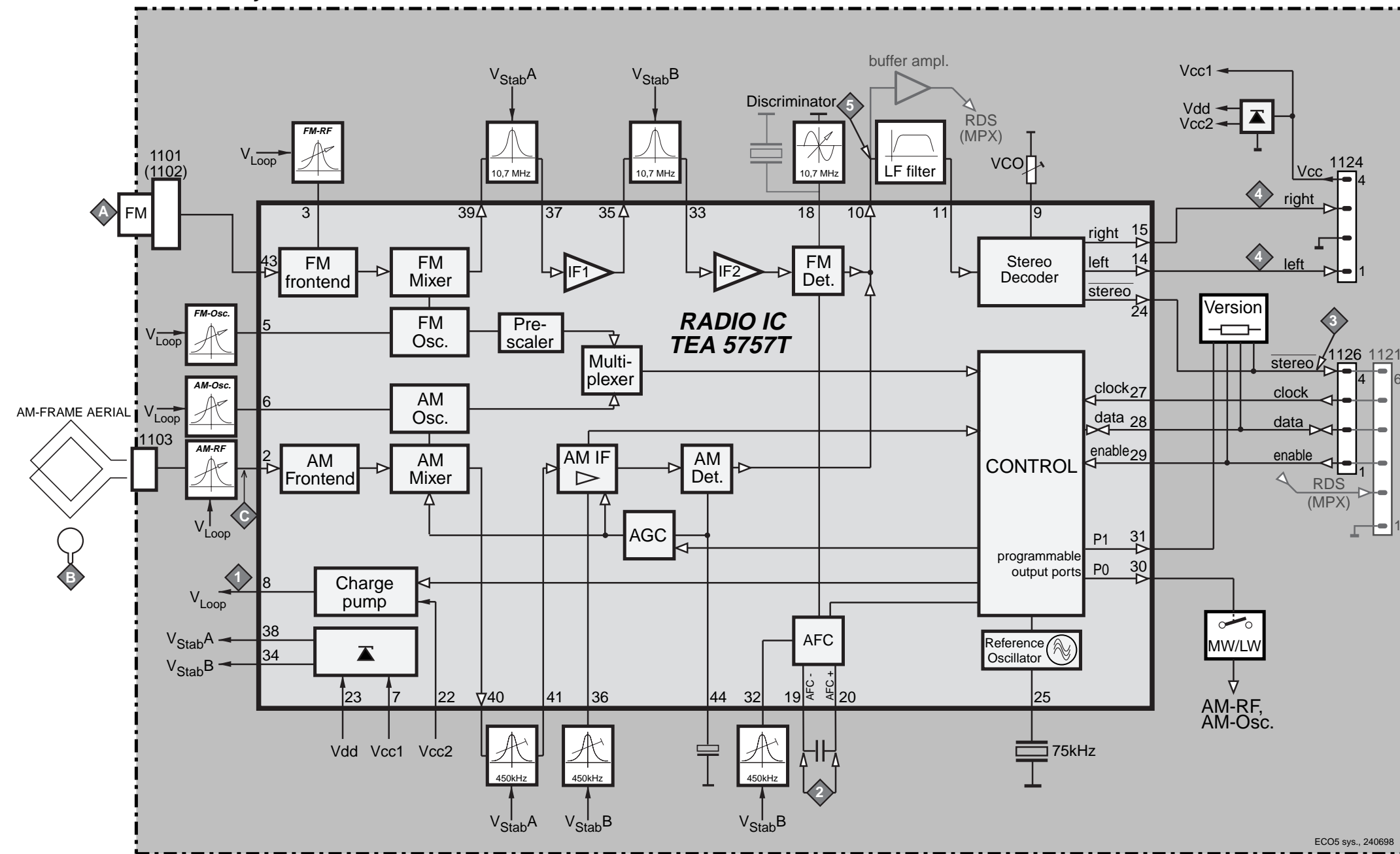
# TUNER BOARD ECO5

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**BLOCKDIAGRAM**

**TUNER BOARD  
ECO 5 systems**



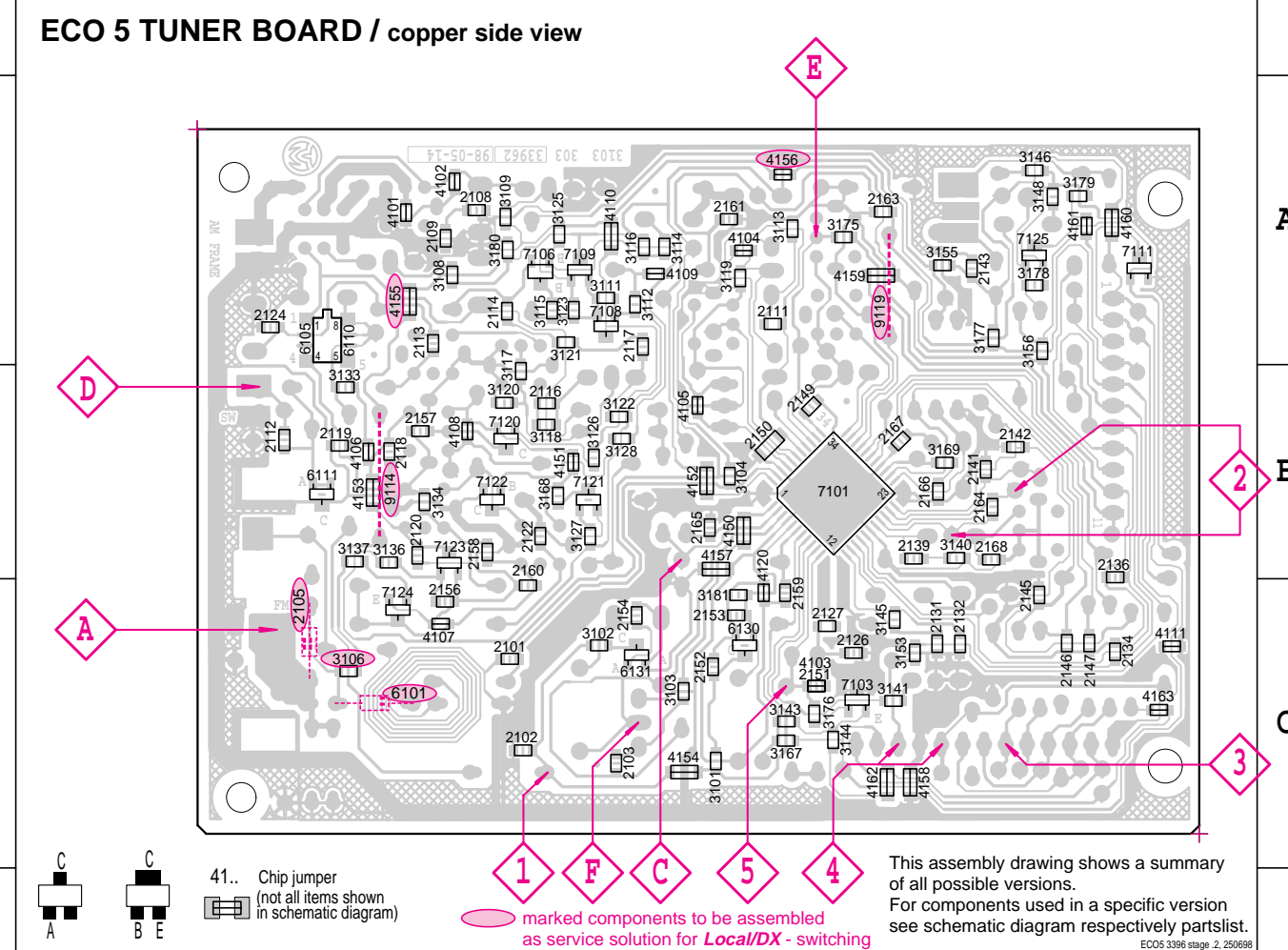
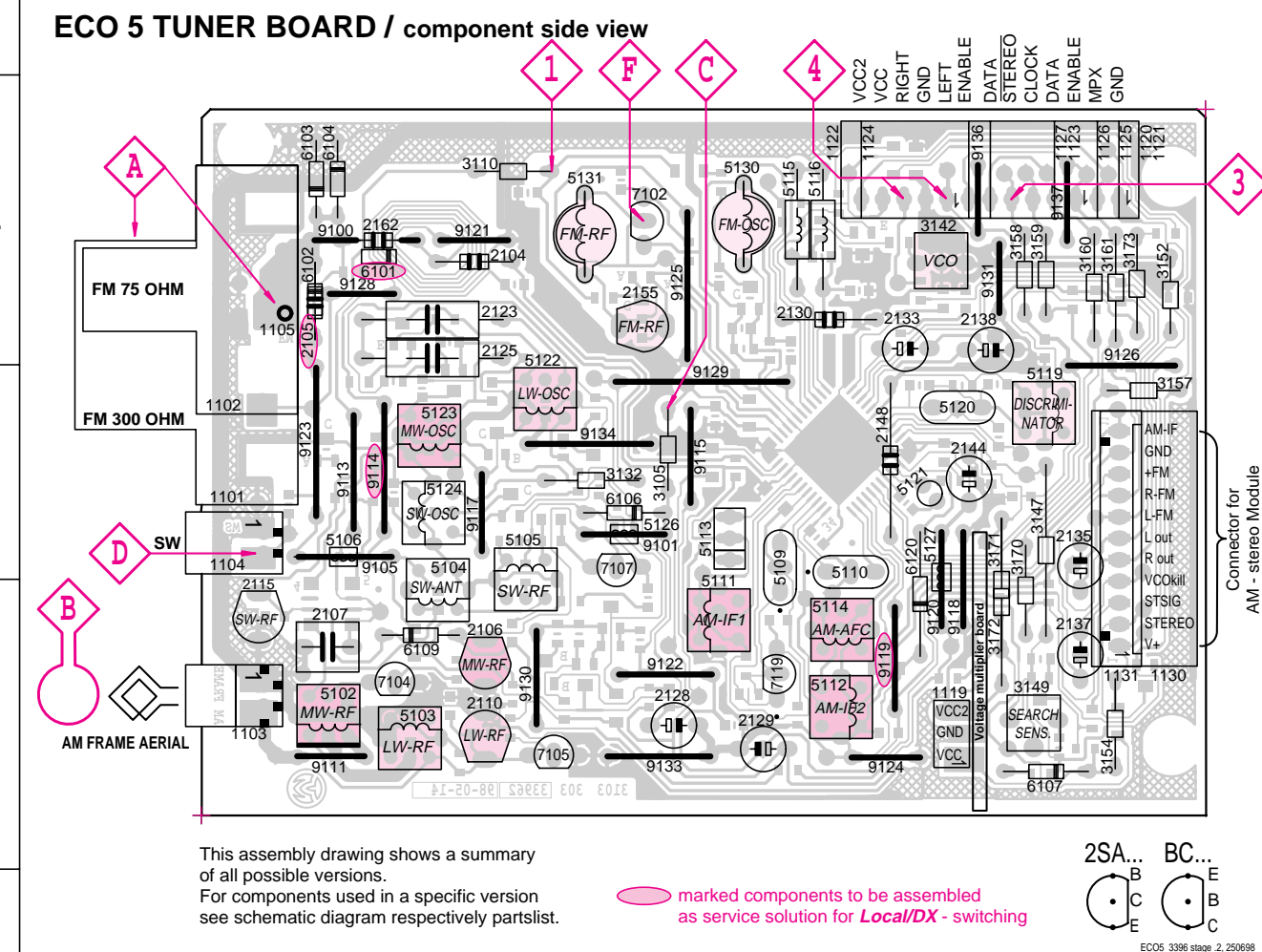
ECO5 sys., 240698

1101 A1	2106 C2	2137 C5	3149 C5	3173 A5	5114 C4	5130 A3	7104 C2	9117 B2	9129 B3
1102 A1	2107 C2	2138 A5	3152 A5	5102 C2	5115 A4	5131 A3	7105 C3	9118 B4	9130 C3
1103 C1	2110 C2	2144 B5	3154 C5	5103 C2	5116 A4	6101 A2	7107 B3	9119 C4	9131 A5
1104 B1	2115 C1	2148 B4	3157 B5	5104 C2	5119 B5	6102 A1	7119 C4	9120 B4	9133 C3
1105 A1	2123 A2	2155 A3	3158 A5	5105 B2	5120 B4	6103 A1	9100 A2	9121 A2	9134 B3
1119 C5	2125 A2	2162 A2	3159 A5	5106 B2	5121 B4	6104 A2	9101 B3	9122 C3	9136 A5
1120 A5	2128 C3	3105 B3	3160 A5	5109 B4	5122 B3	6106 B3	9105 B2	9123 B1	9137 A5
1130 B5	2129 C4	3110 A2	3161 A5	5110 B4	5123 B2	6107 C5	9111 C2	9124 C4	
1131 B5	2130 A4	3132 B3	3170 C5	5111 C3	5124 B2	6109 C2	9113 B2	9125 A3	
2104 A2	2133 A4	3142 A4	3171 C5	5112 C4	5126 B3	6120 C4	9114 B2	9126 B5	
2105 A1	2135 B5	3147 B5	3172 C5	5113 B3	5127 B4	7102 A3	9115 B3	9128 A2	

2101 C4	2118 B4	2139 B2	2153 C3	2166 B2	3112 A3	3123 A3	3143 C2	3175 A2	4105 B3	4153 B4	6105 A4	7120 B4
2102 C4	2119 B4	2141 B1	2154 C3	2167 B2	3113 A2	3125 A3	3144 C2	3176 C2	4106 B4	4154 C3	6110 A4	7121 B3
2103 C3	2120 B4	2142 B1	2156 C4	2168 B1	3114 A3	3126 B3	3145 C2	3177 A1	4107 C4	4155 A4	6111 B4	7122 B4
2108 A4	2122 B3	2143 A1	2157 B4	3101 C3	3115 A3	3127 B3	3146 A1	3178 A1	4108 B4	4156 A2	6130 C2	7123 B4
2109 A4	2124 A5	2145 C1	2158 B4	3102 C3	3116 A3	3128 B3	3148 A1	3179 A1	4109 A3	4157 B3	6131 C3	7124 C4
2111 A2	2126 C2	2146 C1	2159 C2	3103 C3	3117 B4	3133 B4	3153 C2	3180 A4	4110 A3	4158 C2	7101 B2	7125 A1
2112 B5	2127 C2	2147 C1	2160 C4	3104 B3	3118 B3	3134 B4	3155 A2	3181 C3	4111 C1	4159 A2	7103 C2	
2113 A4	2131 C2	2149 B2	2161 A3	3106 C4	3119 A3	3136 B4	3156 A1	4101 A4	4120 C2	4160 A1	7106 A3	
2114 A4	2132 C1	2150 B2	2163 A2	3108 A4	3120 B4	3137 B4	3167 C2	4102 A4	4150 B2	4161 A1	7108 A3	
2116 B3	2134 C1	2151 C2	2164 B1	3109 A4	3121 A3	3140 B2	3168 B3	4103 C2	4151 B3	4162 C1	7109 A3	
2117 A3	2136 B1	2152 C3	2165 B3	3111 A3	3122 B3	3141 C2	3169 B2	4104 A2	4152 B3	4163 C1	7111 A1	

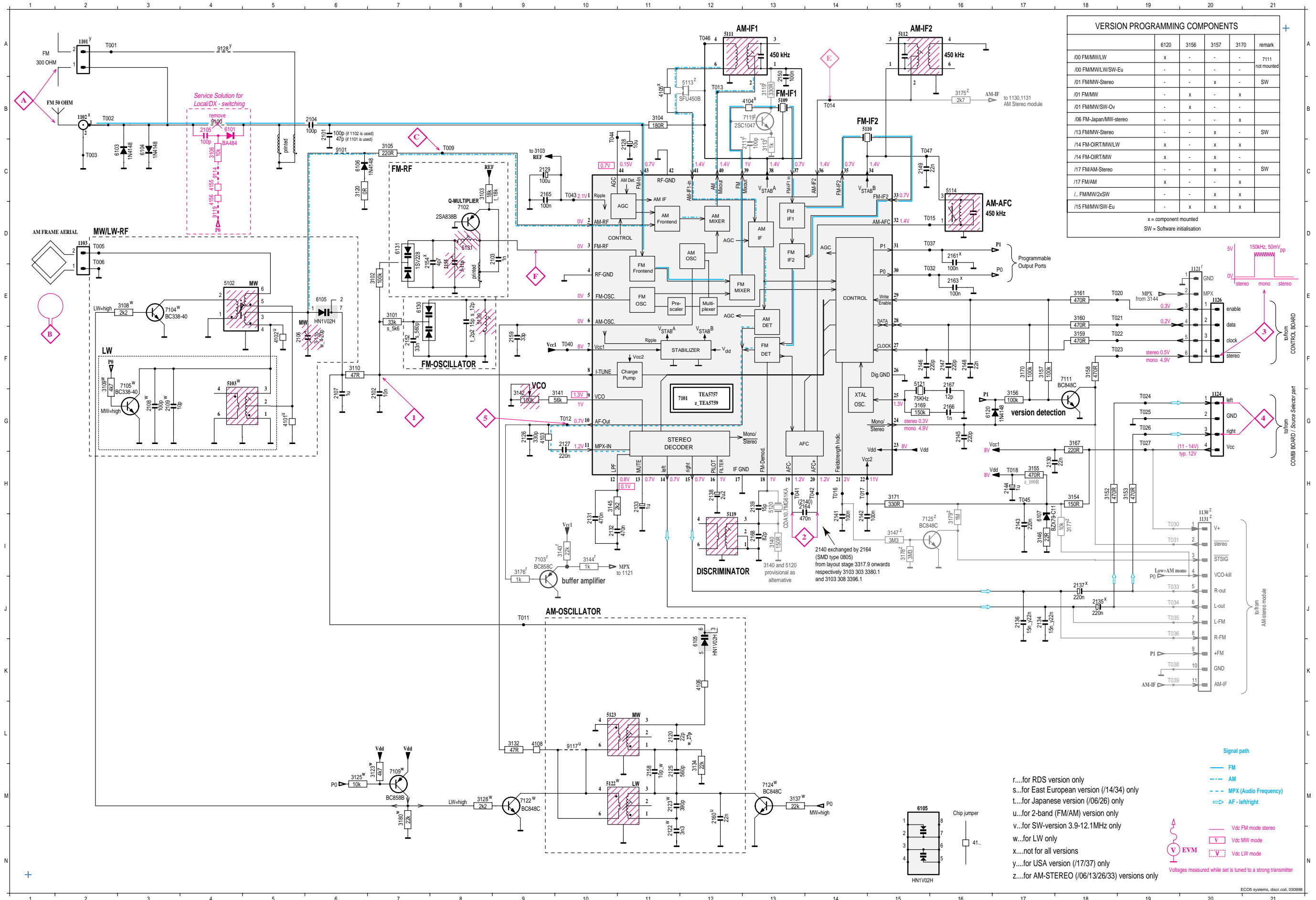
TUNER ADJUSTMENT TABLE ( ECO5 FM/MW- and FM/MW/LW - versions with AM-frame aerial )

Waverange	Input frequency	Input	Tuned to	Adjust	Output	Scope/Voltmeter
<b>VARICAP ALIGNMENT</b>						
<b>FM</b> 87.5 - 108MHz (65.81 - 74, 87.5 - 108MHz)			108MHz	5130		8V ±0.2V
			87.5MHz (65.81MHz)	check		4.3V ±0.5V (1.2V ±0.5V)
<b>MW</b> FM/AM-version, 10kHz grid 530 - 1700kHz			1700kHz	5123		8V ±0.2V
			530kHz	check		1.1V ±0.4V
<b>FM/MW-version, 9kHz grid</b> 531 - 1602kHz			1602kHz	5123	1	6.9V ±0.2V
			531kHz	check		1.1V ±0.4V
<b>LW</b>	153 - 279kHz		279kHz	5122		8V ±0.2V
			153kHz	check		1.1V ±0.4V
<b>MW</b> FM/MW/LW-version, 9kHz grid 531 - 1602kHz			1602kHz	5123		8V ±0.2V
			531kHz	check		1.1V ±0.4V
<b>FM IF</b>						
<b>FM</b>	10.7MHz, 50mV continuous wave	F	IC 7101 21 shortcircuit to block AFC	5119	2	0 ± 3 mV DC
<b>FM RF</b>						
<b>FM</b> 87.5 - 108MHz (65.81 - 74, 87.5 - 108MHz)	108MHz	A	108MHz	2155	4	MAX
	87.5MHz (65.81MHz)	mod=1kHz Δf=±22.5kHz	87.5MHz (65.81MHz)	5131		
<b>VCO</b>						
<b>FM</b>	98MHz, 1mV continuous wave	A	98MHz	3142	3	152kHz ±1kHz <sup>1)</sup>
<b>AM IF</b>						
<b>MW</b>	450kHz  connect pin 6 of IC 7101 (AM Osc.) with short wire to ground (pin 4)	C	IC 7101 36 100nF	5111	4	symmetric
		C	IC 7101 40 100nF see remark 2)	5112		
<b>AM AFC</b>		C		5114	2	0 ± 2 mV DC
<b>AM RF<sup>3)</sup></b>						
<b>MW<sup>4)</sup></b> FM/MW/LW- and FM/MW-version (9kHz grid) 531 - 1602kHz	1494kHz	B	1494kHz	2106	4	symmetric
	558kHz		558kHz	5102		
<b>LW</b>	198kHz		198kHz	5103		
<b>MW</b> FM/AM-version, 10kHz grid 530 - 1700kHz	1500kHz	Δf = ±30kHz V <sub>RF</sub> as low as possible	1500kHz	2106		
	560kHz		560kHz	5102		



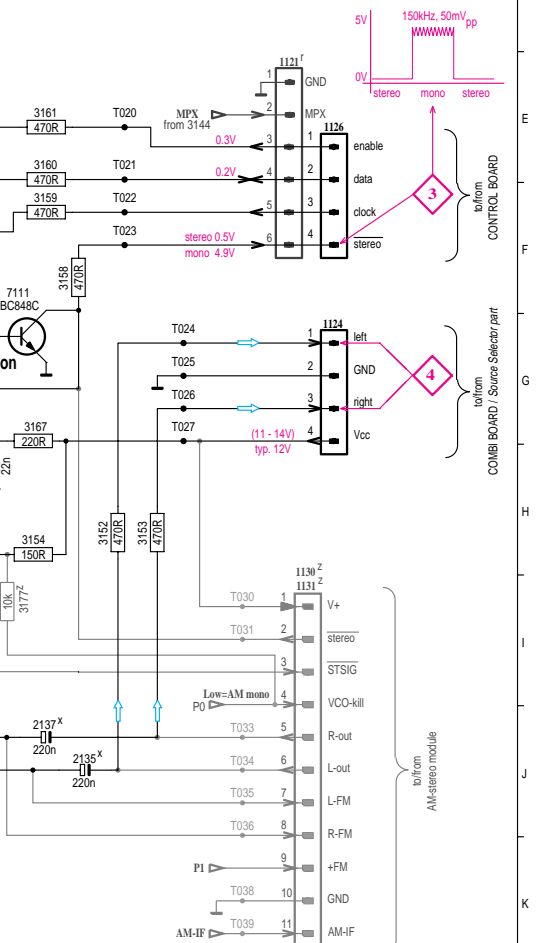


# TUNER BOARD ECO5 / Systems

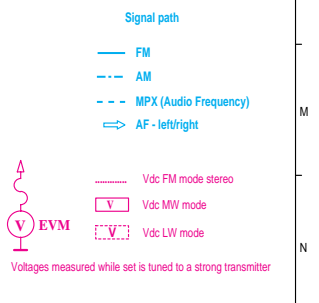


VERSION PROGRAMMING COMPONENTS					
	6120	3156	3157	3170	remark
/00 FMMW/LW	x	-	-	-	7111
/00 FMMW/LW/SW-Eu	-	-	-	-	not mounted
/01 FMMW-Stereo	-	-	x	-	SW
/01 FMMW	-	x	-	x	
/01 FMMW/SW-Ov	-	x	-	-	
/06 FMMW/Japan/MW-stereo	-	-	-	x	
/13 FMMW-Stereo	-	-	x	-	SW
/14 FMMW-Stereo	x	-	x	-	
/14 FM-ORIT/MW	x	-	x	-	
/17 FM/AM-Stereo	-	-	x	-	SW
/17 FM/AM	x	-	-	x	
/1 FMMW/2xSW	-	-	x	x	
/15 FMMW/SW-Eu	-	x	x	x	

x = component mounted  
SW = Software initialisation



r....for RDS version only  
s....for East European version (/14/34) only  
t....for Japanese version (/06/26) only  
u....for 2-band (FM/AM) version only  
v....for SW-version 3.9-12.1MHz only  
w....for LW only  
x....not for all versions  
y....for USA version (/17/37) only  
z....for AM-STEREO (/06/13/26/33) versions only



## ELECTRICAL PARTS LIST - ECO5 TUNER BOARD

## MISCELLANEOUS

1101	4822 267 31505	Antenna Socket 300R
1102	4822 267 10283	Antenna Socket Coax IEC 75R

## CAPACITORS

2101	5322 122 32531	100pF 5% 50V	
2101	4822 126 13692	47pF 1% 63V	for USA
2102	4822 122 33177	10nF 20% 50V	
2103	5322 122 34123	1nF 10% 50V	
2104	4822 122 33195	100pF 10% 50V	
2106	4822 125 50355	Trimmer 4-20pF	for LW version
2106	4822 125 60101	Trimmer 3-11pF 100V	
2107	4822 121 51319	1μF 10% 63V	
2108	5322 122 32531	100pF 5% 50V	for LW version
2109	5322 122 32448	10pF 5% 50V	for LW version
2120	4822 126 13691	27pF 1% 63V	for LW version
2120	5322 122 32658	22pF 5% 50V	
2122	4822 122 33891	3,3nF 10% 63V	for LW version
2125	4822 121 51381	560pF 5% 400V	
2126	5322 122 31863	330pF 5% 50V	
2127	4822 126 13473	220nF +80/-20% 50V	
2128	4822 124 41579	10μF 20% 50V	
2129	4822 124 41584	100μF 20% 10V	
2130	4822 126 11585	22nF+80/- 20% 25V	
2131	4822 122 33325	470nF 16V	
2132	4822 122 33325	470nF 16V	
2131	4822 126 13482	470nF +80/- 20% 16V	
2132	4822 126 13482	470nF +80/- 20% 16V	
2133	4822 124 40242	1μF 20% 63V	
2134	4822 126 13188	15nF 5% 63V	
2134	5322 122 32654	22nF 10% 63V	for USA
2135	4822 124 40746	0,22μF 20% 63V	
2136	4822 126 13188	15nF 5% 63V	
2136	5322 122 32654	22nF 10% 63V	for USA
2137	4822 124 40746	0,22μF 20% 63V	
2138	4822 124 41576	2,2μF 20% 50V	
2139	4822 126 14236	50V 15pF 5%	
2140	4822 121 51252	470nF 5% 63V	
2141	4822 126 10002	100nF 20% 25V	
2142	4822 126 10002	100nF 20% 25V	
2143	4822 126 13473	220nF +80/-20% 50V	
2144	4822 124 40242	1μF 20% 63V	
2145	4822 122 33575	220pF 5% 50V	
2146	4822 122 33575	220pF 5% 50V	
2147	4822 122 33575	220pF 5% 50V	
2148	4822 126 11585	22nF+80/- 20% 25V	
2149	5322 122 32654	22nF 10% 63V	
2150	4822 122 31947	100nF 20% 63V	
2152	5322 116 80853	560pF 5% 63V	for East. Europe
2152	4822 126 12105	33nF 5% 63V	
2153	4822 122 32139	12pF 2% 63V	for East. Europe
2153	4822 122 32504	15pF 2% 63V	
2155	4822 125 60101	Trimmer 3-11pF 100V	

2158	5322 122 32448	10pF 5% 50V	for LW version
2159	5322 122 32659	33pF 5% 50V	
2160	5322 122 32654	22nF 10% 63V	
2161	4822 126 10002	100nF 20% 25V	
2163	4822 126 10002	100nF 20% 25V	
2164	4822 126 13482	470nF +80/- 20% 16V	
2165	4822 126 10002	100nF 20% 25V	
2166	5322 122 34123	1nF 10% 50V	
2167	4822 122 32139	12pF 2% 63V	
2168	4822 126 13695	82pF 1% 63V	

## RESISTORS

3101	4822 051 20562	5k6 5% 0,1W	for East. Europe
3101	4822 051 20333	33k 5% 0,1W	
3102	4822 051 20104	100k 5% 0,1W	
3103	4822 117 10965	18k 1% 0,1W	
3104	4822 117 11448	180R 1% 0,1W	
3105	4822 116 83872	220R 5% 0,5W	
3108	4822 117 11449	2k2 1% 0,1W	for LW version
3109	4822 051 20472	4k7 5% 0,1W	for LW version
3110	4822 116 52195	47R 5% 0,5W	
3120	4822 051 20008	0R Jumper 0805	
3123	4822 051 20472	4k7 5% 0,1W	for LW version
3125	4822 117 10833	10k 1% 0,1W	for LW version
3128	4822 117 11449	2k2 1% 0,1W	for LW version
3132	4822 116 52195	47R 5% 0,5W	
3134	4822 051 20223	22k 5% 0,1W	
3137	4822 051 20223	22k 5% 0,1W	for LW version
3140	4822 051 20008	0R Jumper 0805	
3140	4822 117 10353	5120=CDA10.7MG40K 150R 1% 0,1W	
3141	4822 051 20563	5120=CDA10.7MG61KA 56k 5% 0,1W	
3142	4822 100 11163	Trimmer 100k 30% 0,1W	
3143	4822 051 20223	22k 5% 0,1W	for RDS version
3144	4822 051 10102	1k 2% 0,25W	for RDS version
3145	4822 117 11449	2k2 1% 0,1W	
3146	4822 051 20229	22R 5% 0,1W	
3152	4822 116 83883	470R 5% 0,5W	
3153	4822 051 20471	470R 5% 0,1W	
3154	4822 116 83868	150R 5% 0,5W	
3155	4822 051 20471	470R 5% 0,1W	
3156	4822 051 20104	100k 5% 0,1W	for /21/30/33 only
3157	4822 116 52234	100k 5% 0,5W	for East. Europe
3158	4822 116 83883	470R 5% 0,5W	
3159	4822 116 83883	470R 5% 0,5W	
3160	4822 116 83883	470R 5% 0,5W	
3161	4822 116 83883	470R 5% 0,5W	
3167	4822 117 11503	220R 1% 0,1W	
3169	4822 051 20154	150k 5% 0,1W	
3170	4822 116 52234	100k 5% 0,5W	
3171	4822 116 52219	330R 5% 0,5W	

## ELECTRICAL PARTS LIST - ECO5 TUNER BOARD

3176	4822 051 10102	1k 2% 0,25W	for RDS version
3180	4822 051 20223	22k 5% 0,1W	for LW version
4101	4822 051 20008	0R Jumper 0805	for 2-Band only
4102	4822 051 20008	0R Jumper 0805	for 2-Band only
4103	4822 051 20008	0R Jumper 0805	
4104	4822 051 20008	0R Jumper 0805	
4105	4822 051 20008	0R Jumper 0805	
4106	4822 051 20008	0R Jumper 0805	
4108	4822 051 20008	0R Jumper 0805	
4111	4822 051 20008	0R Jumper 0805	
4120	4822 051 20008	0R Jumper 0805	
4150	4822 051 10008	0R Jumper 1206	
4151	4822 051 20008	0R Jumper 0805	
4152	4822 051 10008	0R Jumper 1206	
4153	4822 051 10008	0R Jumper 1206	
4154	4822 051 10008	0R Jumper 1206	
4155	4822 051 10008	0R Jumper 1206	
4156	4822 051 20008	0R Jumper 0805	
4157	4822 051 10008	0R Jumper 1206	
4158	4822 051 10008	0R Jumper 1206	
4159	4822 051 10008	0R Jumper 1206	
4162	4822 051 10008	0R Jumper 1206	

## COILS &amp; FILTERS

5102	4822 157 71634	MW RF Coil	
5103	4822 157 71635	LW RF Coil	for LW version
5109	4822 242 70665	Ceram Filter 10,7MHz	
5110	4822 242 70665	Ceram Filter 10,7MHz	
5111	4822 158 60511	AM-IF Filter 450kHz	
5112	4822 157 70302	AM-IF Filter 450kHz	
5114	4822 157 70302	AM-IF Filter 450kHz	
5119	4822 157 11443	Discriminator 10,7MHz	
5120	4822 242 82065	Cer. Disc. 10,7MG40K	
5120	4822 242 10251	Cer. Disc.10,7MG61KA-TF21	
5121	4822 242 10261	Quartz 75kHz	
5122	4822 157 60517	Osc. Coil LW	for LW version
5123	4822 157 60517	Osc. Coil MW	
5130	4822 156 30947	RF-Coil 1.5T	
5131	4822 156 30947	RF-Coil 1.5T	

## DIODES

6103	4822 130 30621	1N4148	
6104	4822 130 30621	1N4148	
6105	4822 130 83075	HN1V02H-B	
6106	4822 130 30621	1N4148	
6107	4822 130 34488	BZX79-B11	
6120	4822 130 30621	1N4148	not for /21/30/33
6130	4822 130 82833	1SV228	
6131	4822 130 82833	1SV228	

## TRANSISTORS &amp; INTEGRATED CIRCUITS

7101	4822 209 90924	TEA5757H/V1	
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7102	4822 130 60093	2SA838B	
7103	4822 130 42513	BC858C	for RDS version
7104	5322 130 44779	BC338-40	for LW version
7105	5322 130 44779	BC338-40	for LW version
7109	5322 130 41983	BC858B	for LW version
7111	5322 130 42136	BC848C	
7122	5322 130 42136	BC848C	for LW version
7124	5322 130 42136	BC848C	for LW version

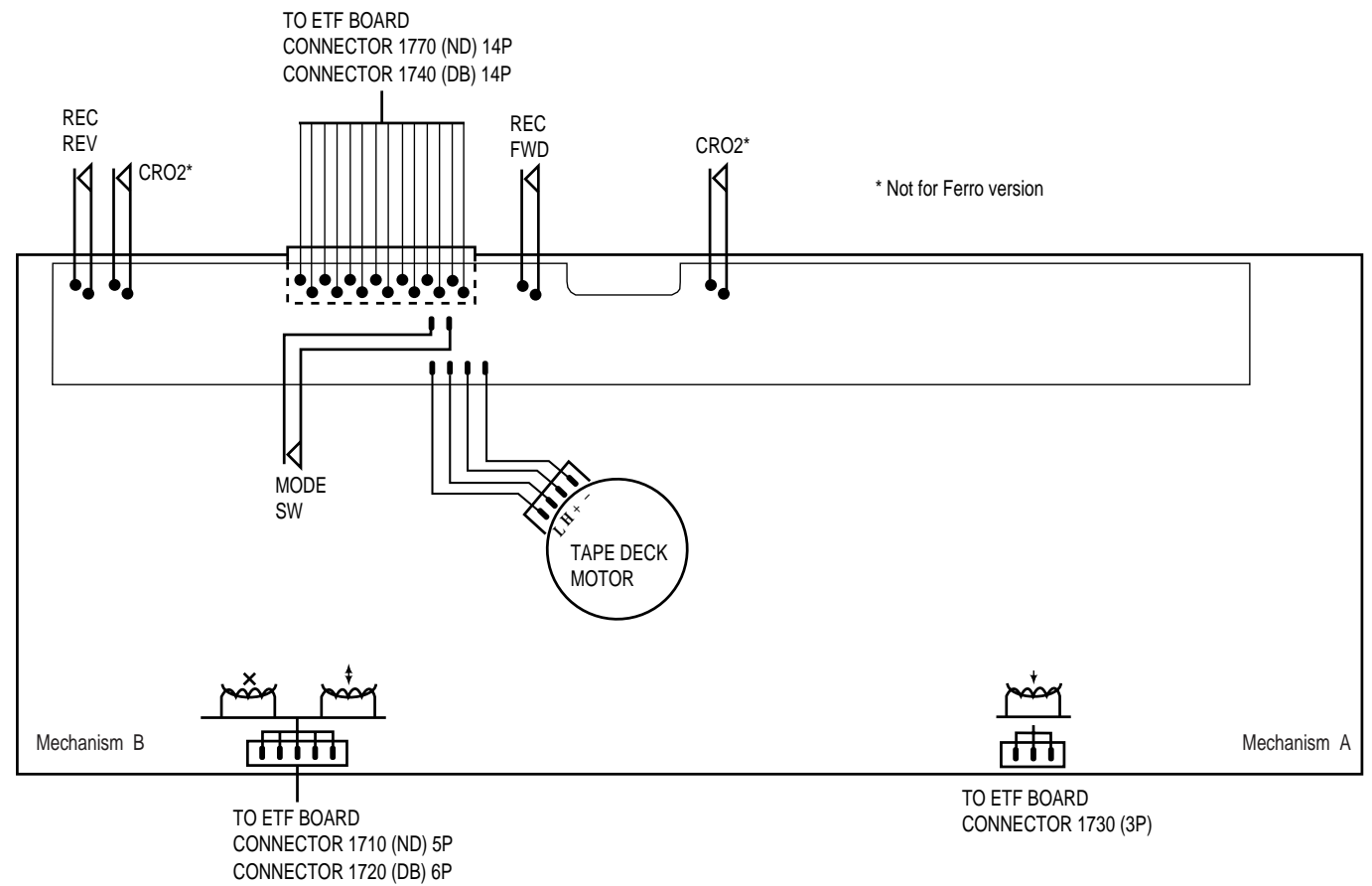
Note: Only the parts mentioned in this list are normal service spare parts.



# ETF7 TAPE MODULE

## (Non-Dolby Version)

### Tapedeck wiring (Double deck)



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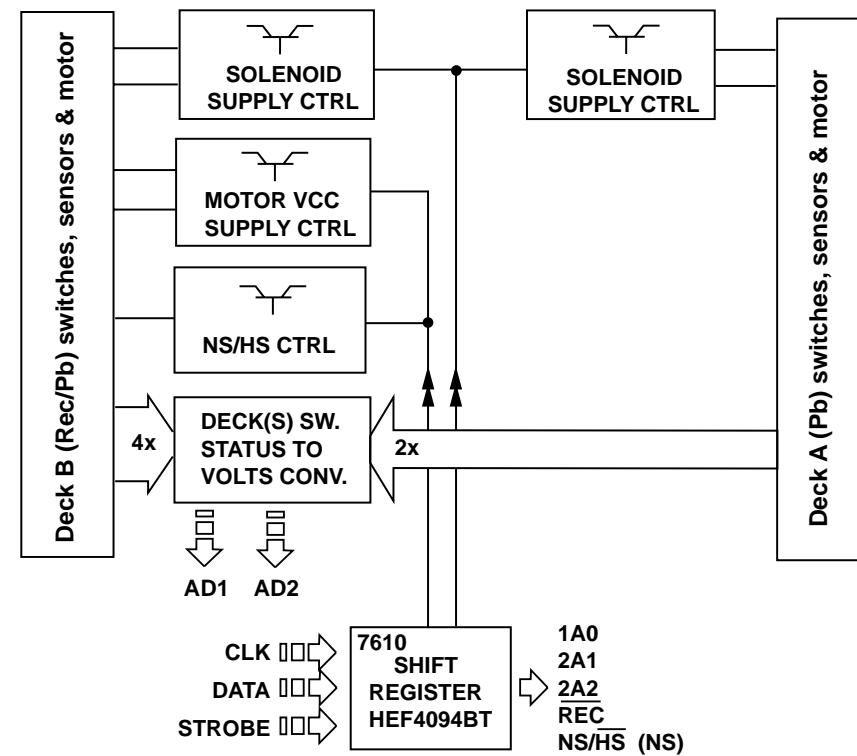
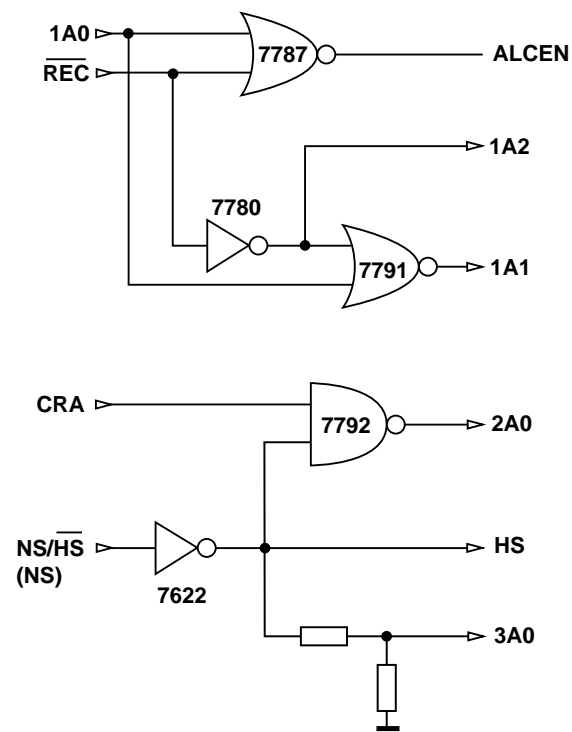
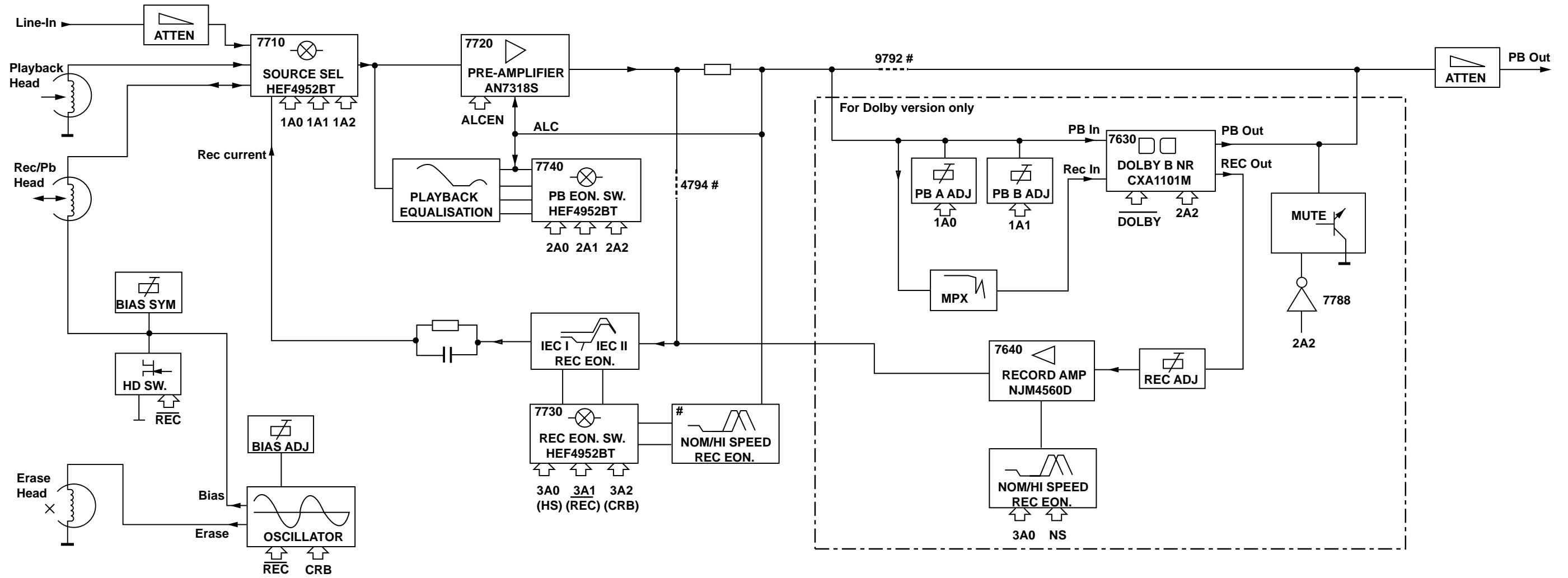
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#### Variations table for Analog Circuit

	Autoreverse	Non-autoreverse	
	ND/DD/FR	ND/DD/FF	FF
	Chrome/Ferro	Chrome/Ferro	Ferro
2624	-	-	100nF
2701 , 2702	150pF	270pF	270pF
2703 , 2704	100pF	220pF	220pF
2717 , 2718	10nF	15nF	15nF
2721 , 2722	6,8nF	6,8nF	-
2727 , 2728	470pF	1nF	1nF
3616	10k	1k	1k
3618	6k8	-	-
3620	10k trimmer	-	-
3622	-	10k trimmer	10k trimmer
3672	4k7	-	-
3676	47k	-	-
3687	220R	220R	-
3688	680R	-	-
3723 , 3724	15k	18k	18k
3725 , 3726	10R	10R	-
3727 , 3728	5k6	6k8	6k8
3729 , 3730	3k3	4k7	4k7
3743 , 3744	1k5	2k2	2k2
3745 , 3746	3k3	5k6	5k6
3754 , 3755	1M	47R	47R

	Autoreverse	Non-autoreverse	
	ND/DD/FR	ND/DD/FF	FF
	Chrome/Ferro	Chrome/Ferro	Ferro
3769	12k	8k2	8k2
3772	6k8	5k6	5k6
4785	-	-	0R jumper
3774	15k	8k2	8k2
6614	1N4148	-	-
7616	BC857B	-	-
7622	BC847B	-	-

**BLOCK DIAGRAM**



NOTE: # For Non-dolby version only  
Only 1 channel is presented.

- ▣▣▣ MicroProcessor Control / Communication lines
- ▣ Direct / Indirect Control lines from Shift Registers

## Brief introduction

### General

1. Playback Mode  
Signal from the playback head Deck A or Deck B is selected and fed through by the Mode Selector IC7710 (HEF4952BT). The signal is amplified by amplifier IC7720 (AN7323S) before feeding to the IC7740 (HEF4952BT) and out to the AF Board via connector 1701.
2. Recording Mode  
Recording Signal is selected and fed through by the Mode Selector IC7710 (HEF4952BT) which is then amplified by the amplifier IC7720 (AN7323S). The amplified output signal will pass through IC7730 (HEF4952BT) for record equalization and back to IC7710 (HEF4952BT) before registered into the Rec/PB Head of Deck B.
3. Dubbing Mode  
In Dubbing mode, signal from the playback head Deck A is selected and fed through by the Mode Selector IC7710 (HEF4952BT) which is then equalised for playback mode by the amplifier IC7720 (AN7323S) so that a flat response is obtained after the pre-amp. The equalised signal will then follow the same path as in the Recording mode.
4. Mode Selector  
The Mode Selector IC7710 (HEF4952BT) caters for 4 inputs signal, namely Playback Signal from Deck A, Playback Signal from Deck B, Recording Signal and Dubbing Signal.
5. Amplifier PB/REC  
Amplifier IC7720 (AN7323S) is for the purpose of amplifying the Playback and Recording signal from the Mode Selector.
6. Automatic Level Control (ALC)  
ALC circuit consists of resistors (3760, 3765, 3766, 3767), capacitors (2762, 2763) and control by transistor 7787 (BC847B). ALC limits the amplifier output to a constant value when input signal becomes too large, thus limiting recording current to below saturation level, to prevent recording distortion.
7. Muting Circuit (For Non-Dolby version only)  
Switch S4 of the IC7740 (HEF4952BT) is for the purpose of muting the output during Recording mode. During Recording mode, S4 is closed and shorted to the ground.
8. IC7740 (HEF4952BT)  
The function of the IC7740 (HEF4952BT) is to change time constant between 120us Ferro (IEC I) and 70us Chrome (IEC II) during playback mode. It will automatically determined whether the tape type is 120us Ferro (IEC I) or 70us Chrome (IEC II). This IC will switch to Flat Gain during the Recording mode.
9. IC7730 (HEF4952BT)  
The function of the IC7730 (HEF4952BT) is to change gain and time constant according to tape type and recording speed to boost recording current at higher frequency during recording to compensate for head loss. It will automatically determined whether the tape type is 120us Ferro (IEC I) or 70us Chrome (IEC II).
10. Bias Level  
Bias Level making use of the Variable resistor (3773) for adjusting the optimal level of the bias current for Ferro or Chrome.
11. Bias Symm (For Dolby B NR version only)  
Bias Symm making use of the Variable resistor (3785) to adjust the bias current for the left and the right channel to be equal.
12. PB Switch  
Playback Switch which consists of the FETs 7785 (For Dolby B NR version only) & 7786 (J111) is for the purpose of providing a virtual ground for the Rec/PB Head (Deck B) during Playback mode. During the Playback mode, the FETs are turn on and shorted pin 2 and 4 of connector 1720 to the ground. During Recording mode, the FETs are turn off to allow the oscillator signal to be superposition onto the Recording signal for recording.

13. Motor Speed (For FR versions only)  
During High speed dubbing, a feedback signal from the uP through pin 03 of the IC7610 (HEF4094BT) will trigger the transistors 7622 (BC847B) and 7616 (BC857B) to cause a change in the voltage level between High and Low, thus changing the speed of the motor.
14. IC7610 (HEF4094BT)  
IC7610 (HEF4094BT) is a Shift Register use for issues the logic for cmos switch ICs (HEF4952BT) via 1A0, 2A1 and 2A2. It also issues logic to On/Off SOL\_A, SOL\_B and MOT. Recording speed is controlled via NS/HS.

### Dolby Circuit (For sets with Dolby B NR version only)

15. IC7630 (CXA1551M)  
IC7630 (CXA1551M) in the Dolby circuit is a Dolby Noise Reduction Type B IC for the Playback and Recording signal. Noise Reduction ON/OFF are controlled by  $\overline{\text{DOLBY}}$ , which is from CLK, direct from uP. After clocking in DATA, CLK is set to HIGH/LOW for NR OFF/ON.
16. 19kHz Filter  
The 19kHz filters 5631 & 5632 (LXD-210) in the Dolby circuit is for the purpose of filtering the 19kHz Pilot Tone (for Tuner signal only) of the Recording signal.
17. Level Adjust  
The Variable resistor 3635, 3636, 3641 and 3642 in the Dolby circuit is for adjusting the playback level of the Dolby reference (400Hz, 200nWb/m). Transistor 7631, 7632 are ON to enable adjustment of 3641, 3642 during Playback Deck A. Transistor 7633, 7634 and 3635, 3636 are active for Playback Deck B.
18. Amplifier IC7640 (NJM4560M)  
The Amplifiers 7640A & 7640B (NJM4560M) in the Dolby circuit is for the purpose of amplified the Recording signal.
19. Muting Circuit  
The muting circuit which consists of transistors 7788, 7789 and 7790 (BC847B) is for the purpose of muting the output during Recording mode.

### NOTATIONS & ABBREVIATIONS USED IN THIS DOCUMENT

CR	Chrome (IEC type II)
DB	Dolby NR type B
DD	Double Deck
DM	Double Motor
FE	Ferro (IEC type I)
FF	Non-Autoreverse
FR	Autoreverse Deck B
Gnd x	Ground x
HSD	High speed dubbing
ND	Non Dolby
NR	Noise Reduction
NSD	Normal speed dubbing
PB	Playback
REC	Record
S/A	Sub-assy
SD	Single Deck
SM	Single Motor

**CONNECTORS ASSIGNMENTS:****CONNECTOR 1701****INTERCONNECTION TO AF BOARD**

○ 1	REC-L	Record input left
○ 2	REC-R	Record input right
○ 3	GND A	AF Ground
○ 4	TAPE-L	Playback output left
○ 5	+12V	D.C. supply (+12V) for AF electronics
○ 6	TAPE-R	Playback output right
○ 7	-CMOS	Negative d.c. supply (-9V) for CMOS ICs

**CONNECTOR 1703****INTERCONNECTION TO AF BOARD**

○ 1	GND M	Motor Ground
○ 2	+MOTOR	D.C. supply (+12V) for tape deck motor & solenoid

**CONNECTOR 1706****INTERCONNECTION TO FRONT BOARD**

○ 1	AD2	Deck sensing switches output voltage / Deck A EOT
○ 2	AD1	Deck sensing switches output voltage / Deck B EOT
○ 3	+5V	DC supply +5V for ADC network
○ 4	GND P	Control & Oscillator Ground
○ 5	CLK	HEF4094BT shift register Clock line
○ 6	DATA	HEF4094BT shift register Data line
○ 7	STROBE	HEF4094BT shift register Strobe line

**CONNECTOR 1710****DECK B HEADS CONNECTOR (For Non-Dolby version only)**

○ 1	B R/P HD L+	R/P Head left channel positive
○ 2	GND A	R/P Head return ground
○ 3	B R/P HD R+	R/P Head right channel positive
○ 4	ERASE HEAD	Erase Head
○ 5	GND A	Erase Head ground

**CONNECTOR 1720****DECK B HEADS CONNECTOR (For Dolby B NR version only)**

○ 1	B R/P HD L+	R/P Head left channel positive
○ 2	B R/P HD L-	R/P Head left channel negative
○ 3	B R/P HD R+	R/P Head right channel positive
○ 4	B R/P HD R-	R/P Head right channel negative
○ 5	ERASE HEAD	Erase Head
○ 6	GND A	Erase Head ground

**CONNECTOR 1730****DECK A HEAD CONNECTIONS (For Double Deck versions only)**

○ 1	A PB HD L+	Pb Head left channel positive
○ 2	GND A	Pb Head return ground shield
○ 3	A PB HD R+	Pb Head right channel positive

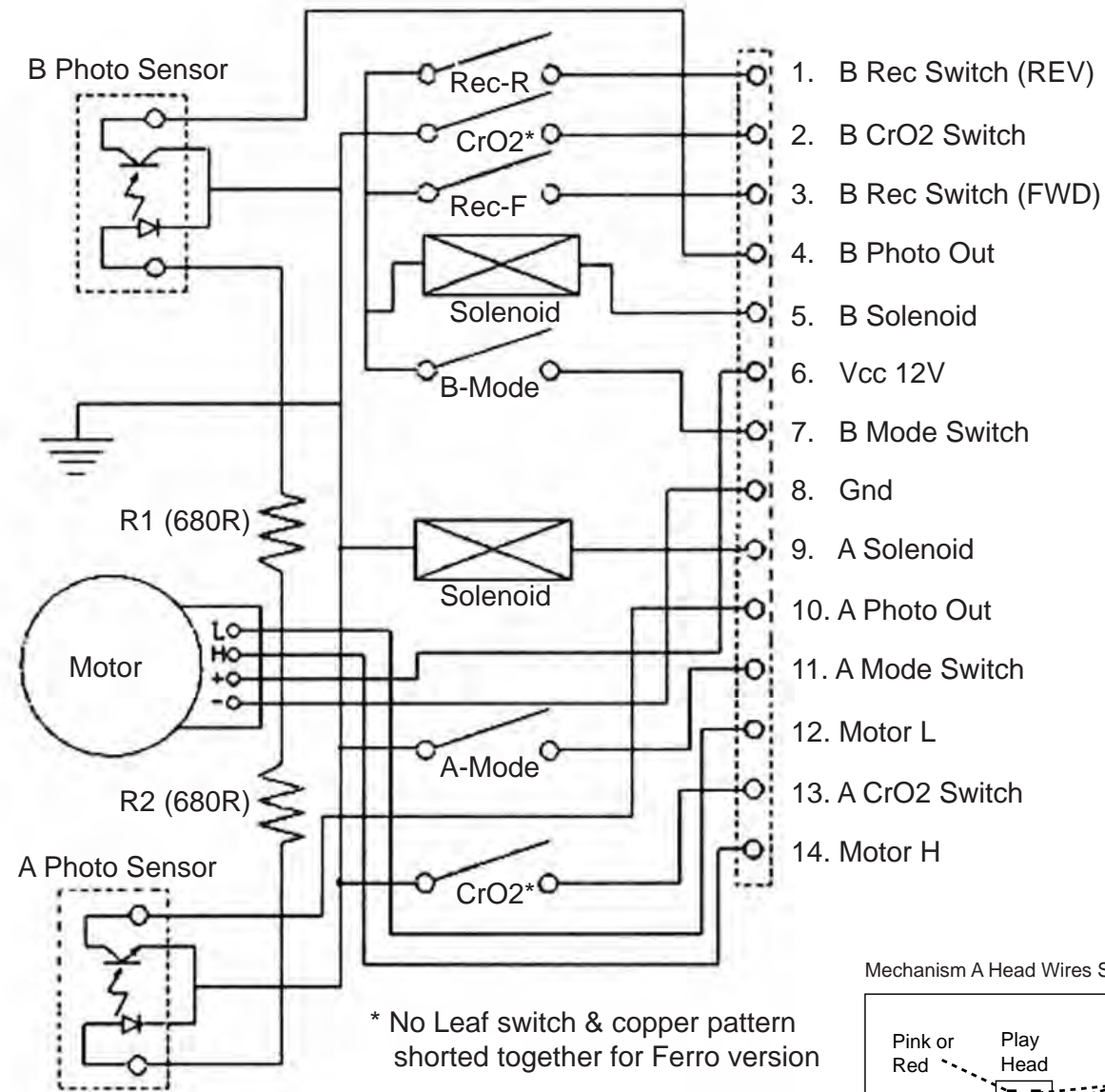
**CONNECTOR 1740****DECK A & B CONTROL INTERFACE (For Dolby B NR version only)**

○ 1	REC REW	Record tab protection status switch (reverse)	[open=on: close=off]
○ 2	CrO2 B	Chrome tape detection switch deck B	[open=Cr: close=Fe]
○ 3	REC FWD	Record tab protection status switch (forward)	[open=on: close=off]
○ 4	PHOTO B	Photo sensor output (tape movement indication)	
○ 5	SOL B	Solenoid supply for deck B	
○ 6	Vcc	Deck / Motor supply	
○ 7	MODE B	Mode switch (head engagement)	[open=off: close=engaged]
○ 8	GND M	Deck / Motor ground	
○ 9	SOL A	Solenoid supply for deck A	
○ 10	PHOTO A	Photo sensor output (tape movement indication)	
○ 11	MODE A	Mode switch (head engagement)	[open=off: close=engaged]
○ 12	L	L pin for motor	
○ 13	CrO2 A	Chrome tape detection switch deck A	[open=Cr: close=Fe]
○ 14	H	H pin for motor	

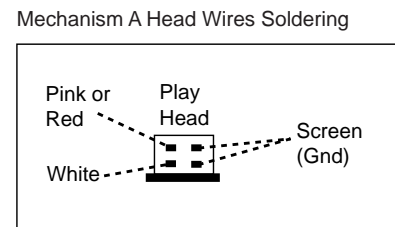
**CONNECTOR 1770****DECK A & B CONTROL INTERFACE (For Non-Dolby version only)**

○ 1	REC REW	Record tab protection status switch (reverse)	[open=on: close=off]
○ 2	CrO2 B	Chrome tape detection switch deck B	[open=Cr: close=Fe]
○ 3	REC FWD	Record tab protection status switch (forward)	[open=on: close=off]
○ 4	PHOTO B	Photo sensor output (tape movement indication)	
○ 5	SOL B	Solenoid supply for deck B	
○ 6	Vcc	Deck / Motor supply	
○ 7	MODE B	Mode switch (head engagement)	[open=off: close=engaged]
○ 8	GND M	Deck / Motor ground	
○ 9	SOL A	Solenoid supply for deck A	
○ 10	PHOTO A	Photo sensor output (tape movement indication)	
○ 11	MODE A	Mode switch (head engagement)	[open=off: close=engaged]
○ 12	L	L pin for motor	
○ 13	CrO2 A	Chrome tape detection switch deck A	[open=Cr: close=Fe]
○ 14	H	H pin for motor	

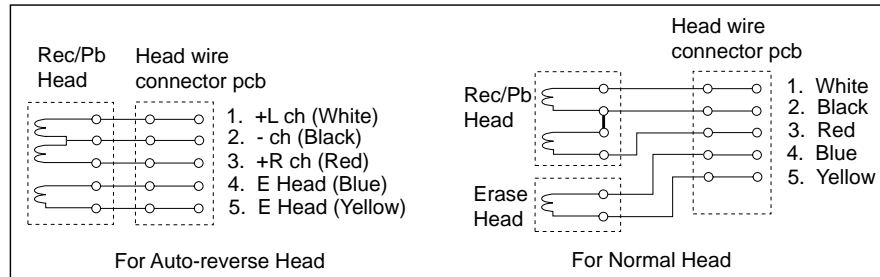
TAPE MECHANISM ELECTRONICS



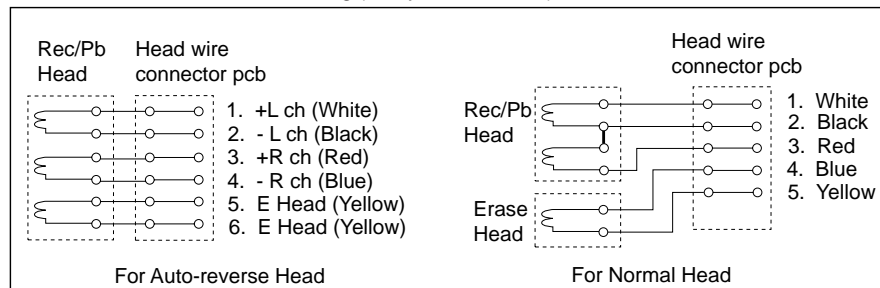
\* No Leaf switch & copper pattern shorted together for Ferro version



Mechanism B Head Wires Soldering (Non-Dolby version)



Mechanism B Head Wires Soldering (Dolby B NR version)

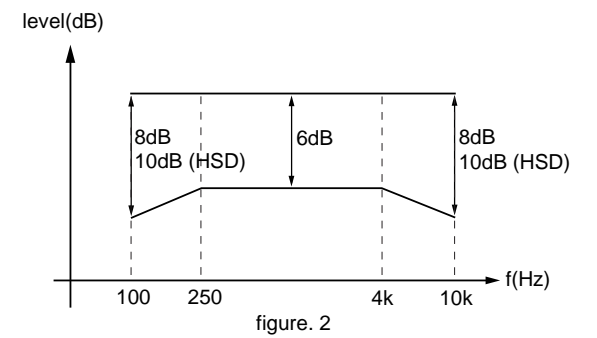
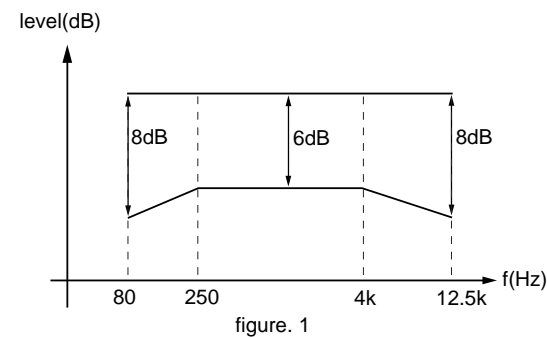


TAPE ADJUSTMENT & CHECK TABLE

	TEST CASSETTE	RECORDER MODE	MEASURE ON	READ ON	ADJUST	
					with	to
<b>ADJUST MOTOR SPEED</b>						
NORMAL SPEED	SBC420 3150Hz	PLAY B	1 or 2	frequency counter	3620	3150Hz - 0.5%
		PLAY A	LEFT RIGHT		check	3150Hz -0.8/+1.8%
<b>CHECK WOW &amp; FLUTTER</b>						
DECK A & B	SBC420 3150Hz	PLAY	1 or 2 LEFT RIGHT	W&F-meter	check	†0.4 % DIN
<b>ADJUST AZIMUTH</b>						
DECK A & B	SBC420 10kHz	PLAY FWD	1 or 2	mV-meter	left hand screw	max. output level & left=right
		PLAY REV #	LEFT RIGHT		right hand screw	
<b>CHECK PLAYBACK FREQUENCY RESPONSE</b>						
DECK A & B	SBC420	PLAY	1 or 2 LEFT RIGHT	mV-meter	check	limits see fig.1
<b>ADJUST BIAS CURRENT</b>						
DECK B	SBC419A^	RECORD	5 or 6	mV-meter	3773	995mV
	SBC420		LEFT RIGHT		check	750mV - 1.5dB
<b>CHECK OVERALL FREQUENCY RESPONSE AND DISTORTION</b>						
Inject 3mV signals 100Hz, 250Hz, 1kHz, 10kHz, 12.5kHz via 3 or 4	SBC419A^ or SBC420	RECORD B				
	RECORDED CASSETTE	PLAY B	1 or 2 LEFT RIGHT	mV-meter	check	limits see fig. 2 *
Inject 1kHz 8.85mV via 3 or 4	SBC419A^ or SBC420	RECORD B				
	RECORDED CASSETTE	PLAY B	1 or 2 LEFT RIGHT	THD-meter	check	†3% *

SBC419A^ : 4822 397 30069  
SBC420 : 4822 397 30071

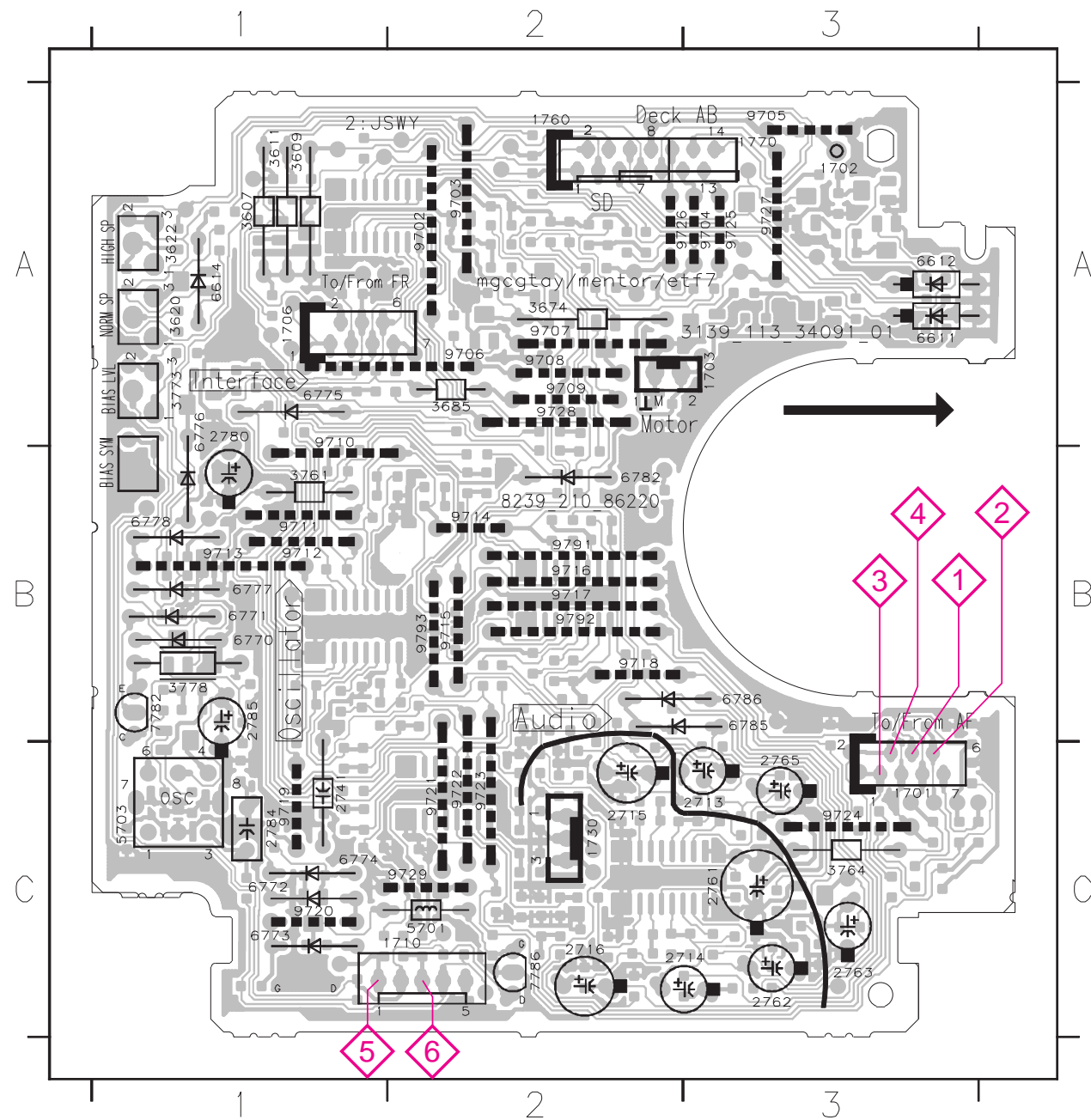
# For Auto-reverse version only  
\* If high frequencies are not within limits, decrease bias and re-measure. If distortion is too high, increase bias and re-measure  
^ Not applicable for Ferro version





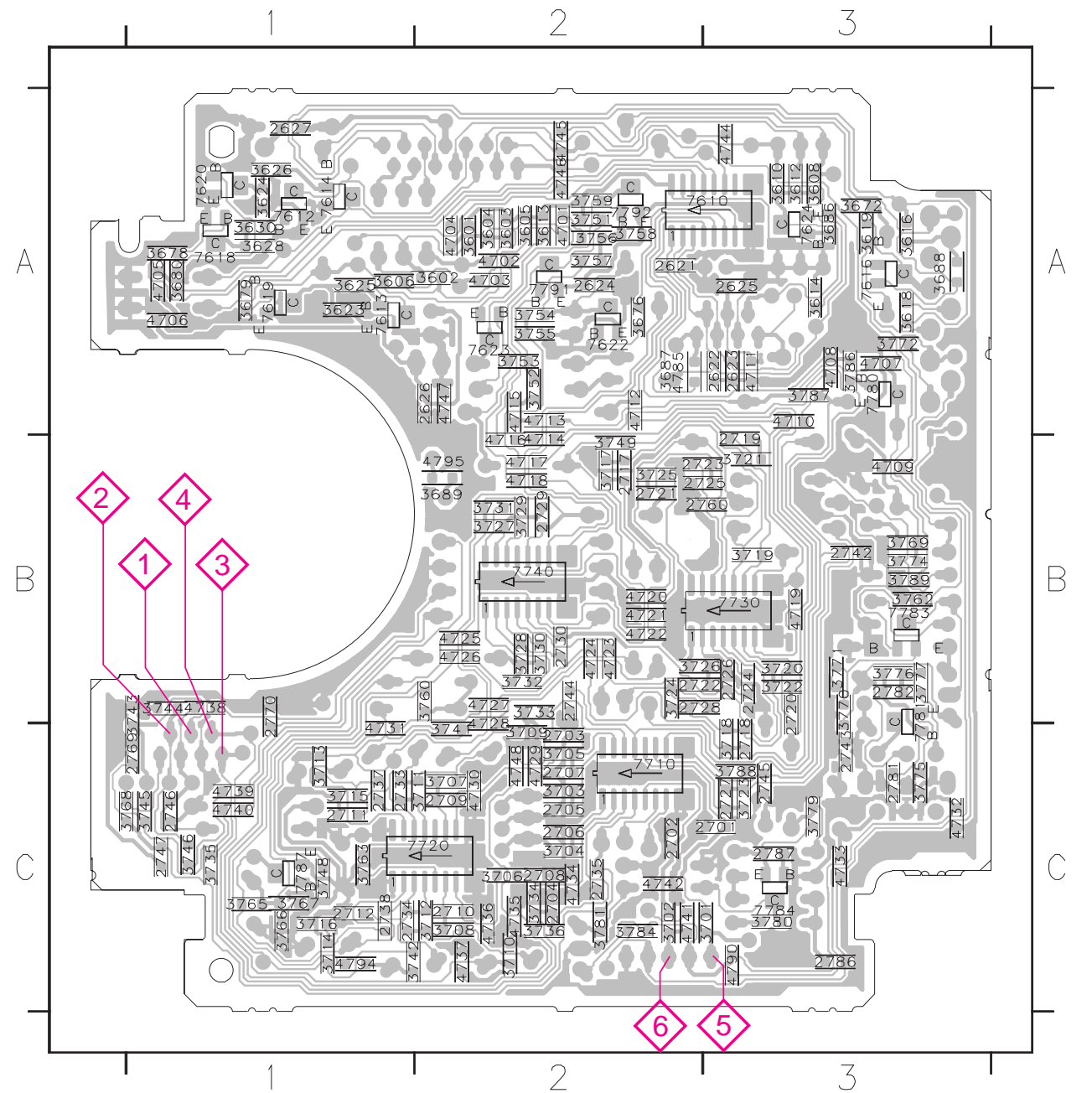
COMPONENT LAYOUT

1701 C3	2715 C2	3607 A1	3778 B1	6774 C1	9702 A2	9712 B1	9722 C2	9793 B2
1702 A3	2716 C2	3609 A1	5701 C2	6775 A1	9703 A2	9713 B1	9723 C2	
1703 A3	2741 C1	3611 A1	5703 C1	6776 A1	9704 A3	9714 B2	9724 C3	
1706 A1	2761 C3	3620 A1	6611 A3	6777 B1	9705 A3	9715 B2	9725 A3	
1710 C2	2762 C3	3622 A1	6612 A3	6778 B1	9706 A2	9716 B2	9726 A2	
1730 C2	2763 C3	3674 A2	6614 A1	6782 B2	9707 A2	9717 B2	9727 A3	
1760 A2	2765 C3	3685 A2	6770 B1	6785 B3	9708 A2	9718 B2	9728 A2	
1770 A3	2780 A1	3761 B1	6771 B1	6786 B3	9709 A2	9719 C1	9729 C2	
2713 C3	2784 C1	3764 C3	6772 C1	7782 B1	9710 A1	9720 C1	9791 B2	
2714 C3	2785 B1	3773 A1	6773 C1	7786 C2	9711 B1	9721 C2	9792 B2	



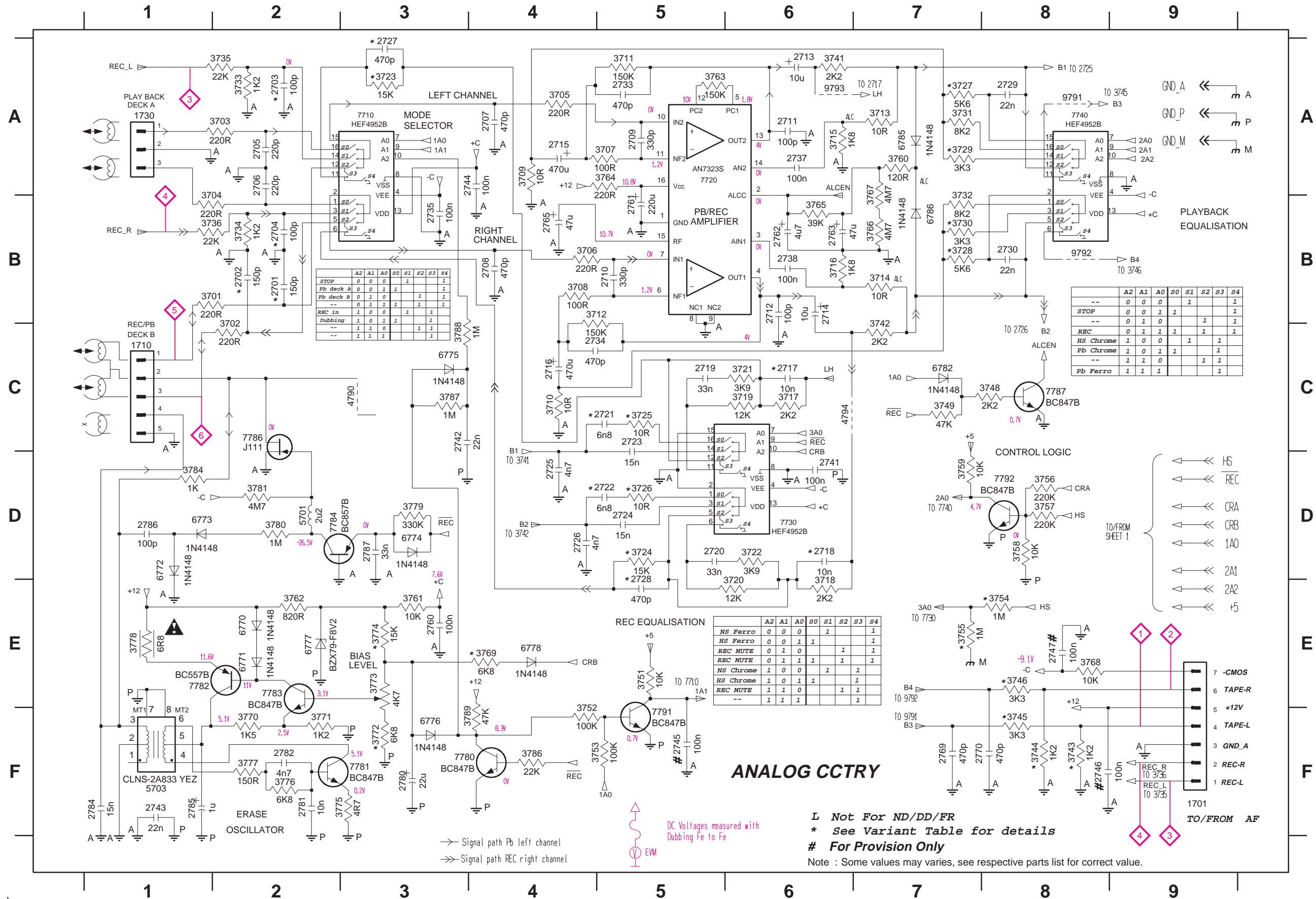
CHIP LAYOUT

2621 A2	2724 B3	3602 A2	3688 A3	3725 B2	3757 A2	4701 A2	4727 B2	7612 A1
2622 A3	2725 B3	3603 A2	3689 B2	3726 B2	3758 A2	4702 A2	4728 C2	7613 A1
2623 A3	2726 B3	3604 A2	3701 C3	3727 B2	3759 A2	4703 A2	4729 C2	7614 A1
2624 A2	2727 C3	3605 A2	3702 C2	3728 B2	3760 B2	4704 A2	4730 C2	7616 A3
2625 A3	2728 B2	3606 A1	3703 C2	3729 B2	3762 B3	4705 A1	4731 C1	7618 A1
2626 A2	2729 B2	3608 A3	3704 C2	3730 B2	3763 C1	4706 A1	4732 C3	7619 A1
2627 A1	2730 B2	3610 A3	3705 C2	3731 B2	3765 C1	4707 A3	4733 C3	7620 A1
2701 C3	2733 C1	3612 A3	3706 C2	3732 B2	3766 C1	4708 A3	4734 C2	7622 A2
2702 C2	2734 C1	3613 A2	3707 C2	3733 B2	3767 C1	4709 B3	4735 C2	7623 A2
2703 C2	2735 C2	3614 A3	3708 C2	3734 C2	3768 C1	4710 A3	4736 C2	7624 A3
2704 C2	2737 C1	3616 A3	3709 C2	3735 C1	3769 B3	4711 A3	4737 C2	7710 C2
2705 C2	2738 C1	3618 A3	3710 C2	3736 C2	3770 B3	4712 A2	4738 B1	7720 C2
2706 C2	2742 B3	3619 A3	3711 C2	3741 C2	3771 B3	4713 A2	4739 C1	7730 B3
2707 C2	2743 C3	3623 A1	3712 C2	3742 C1	3772 A3	4714 B2	4740 C1	7740 B2
2708 C2	2744 C2	3624 A1	3713 C1	3743 B1	3774 B3	4715 A2	4741 C2	7780 A3
2709 C2	2745 C3	3625 A1	3714 C1	3744 B1	3775 C3	4716 B2	4742 C2	7781 B3
2710 C2	2746 C1	3626 A1	3715 C1	3745 C1	3776 B3	4717 B2	4744 A3	7783 B3
2711 C1	2747 C1	3628 A1	3716 C1	3746 C1	3777 B3	4718 B2	4745 A2	7784 C3
2712 C1	2760 B3	3630 A1	3717 B2	3748 C1	3779 C3	4719 B3	4746 A2	7787 C1
2717 B2	2769 C1	3672 A3	3718 C3	3749 B2	3780 C3	4720 B2	4747 A2	7791 A2
2718 C3	2770 B1	3676 A2	3719 B3	3751 A2	3781 C2	4721 C2	4748 C2	7792 A2
2719 B3	2781 C3	3678 A1	3720 B3	3752 A2	3784 C2	4722 B2	4785 A2	
2720 B3	2782 B3	3679 A1	3721 B3	3753 A2	3786 A3	4723 B2	4790 C3	
2721 B2	2786 C3	3680 A1	3722 B3	3754 A2	3787 A3	4724 B2	4794 C1	
2722 B2	2787 C3	3686 A3	3723 C3	3755 A2	3788 C3	4725 B2	4795 B2	
2723 B2	3601 A2	3687 A2	3724 B2	3756 A2	3789 B3	4726 B2	7610 A3	



# ANALOG CIRCUIT

1701 F9	2705 A2	2712 B6	2719 C5	2726 D4	2735 B3	2745 F5	2765 B4	2785 F1	3705 A4	3712 B4	3719 C6	3726 D5	3733 A2	3744 F8	3753 F5	3760 A7	3767 A7	3774 E3	3781 D2	4794 C6	6774 D3	6786 B7	7782 E1	9791 A8
1710 C1	2706 A2	2713 A6	2720 D5	2727 A3	2737 A6	2746 F8	2769 F7	2786 D1	3706 B4	3713 A7	3720 E6	3727 A7	3734 B2	3745 F8	3754 E8	3761 E3	3768 E8	3775 F3	3784 D1	5701 D2	6775 C3	7710 A3	7783 E2	9792 B8
1730 A1	2707 A4	2714 B6	2721 C5	2728 E5	2738 B6	2747 E8	2770 F8	2787 D3	3707 A5	3714 B7	3721 C6	3728 B7	3735 A2	3746 E8	3755 E7	3762 E2	3769 E4	3776 F2	3786 F4	5703 F1	6776 F3	7720 A5	7784 D2	9793 A6
2701 B2	2708 B4	2715 A4	2722 D5	2729 A8	2741 D6	2760 E3	2780 F3	3701 B1	3708 B4	3715 A6	3722 D6	3729 A7	3736 B1	3748 C8	3756 D8	3763 A5	3770 F2	3777 F2	3787 C3	6770 E2	6777 E2	7730 D6	7786 C2	
2702 B2	2709 A5	2716 C4	2723 C5	2730 B8	2742 C3	2761 B5	2781 F2	3702 C2	3709 A4	3716 B6	3723 A3	3730 B7	3741 A6	3749 C7	3757 D8	3764 A5	3771 F2	3778 E1	3788 C3	6771 E2	6778 E4	7740 A8	7787 C8	
2703 A2	2710 B5	2717 C6	2724 D5	2733 A5	2743 F1	2762 B6	2782 F2	3703 A2	3710 C4	3717 C6	3724 D5	3731 A7	3742 C7	3751 E5	3758 D8	3765 B6	3772 F3	3779 D3	3789 F4	6772 D1	6782 C7	7780 F4	7791 F5	
2704 B2	2711 A6	2718 D6	2725 D4	2734 C4	2744 A4	2763 B6	2784 F1	3704 B1	3711 A5	3718 E6	3725 C5	3732 B7	3743 F8	3752 F4	3759 D7	3766 B7	3773 E3	3780 D2	4790 C3	6773 D1	6785 A7	7781 F3	7792 D8	



	A2	A1	A0	S0	S1	S2	S3	S4
STOP	0	0	0	1	1	1	1	1
Pb deck A	0	0	1	1	1	1	1	1
Pb deck B	0	1	1	1	1	1	1	1
REC in	1	0	0	1	1	1	1	1
Dubbing	1	1	0	1	1	1	1	1
--	1	1	1	1	1	1	1	1

	A2	A1	A0	S0	S1	S2	S3	S4
--	0	0	0	1	1	1	1	1
STOP	0	0	1	1	1	1	1	1
--	0	1	0	1	1	1	1	1
REC	0	1	1	1	1	1	1	1
HS Chrome	1	0	0	1	1	1	1	1
Pb Chrome	1	0	1	1	1	1	1	1
--	1	1	0	1	1	1	1	1
Pb Ferro	1	1	1	1	1	1	1	1

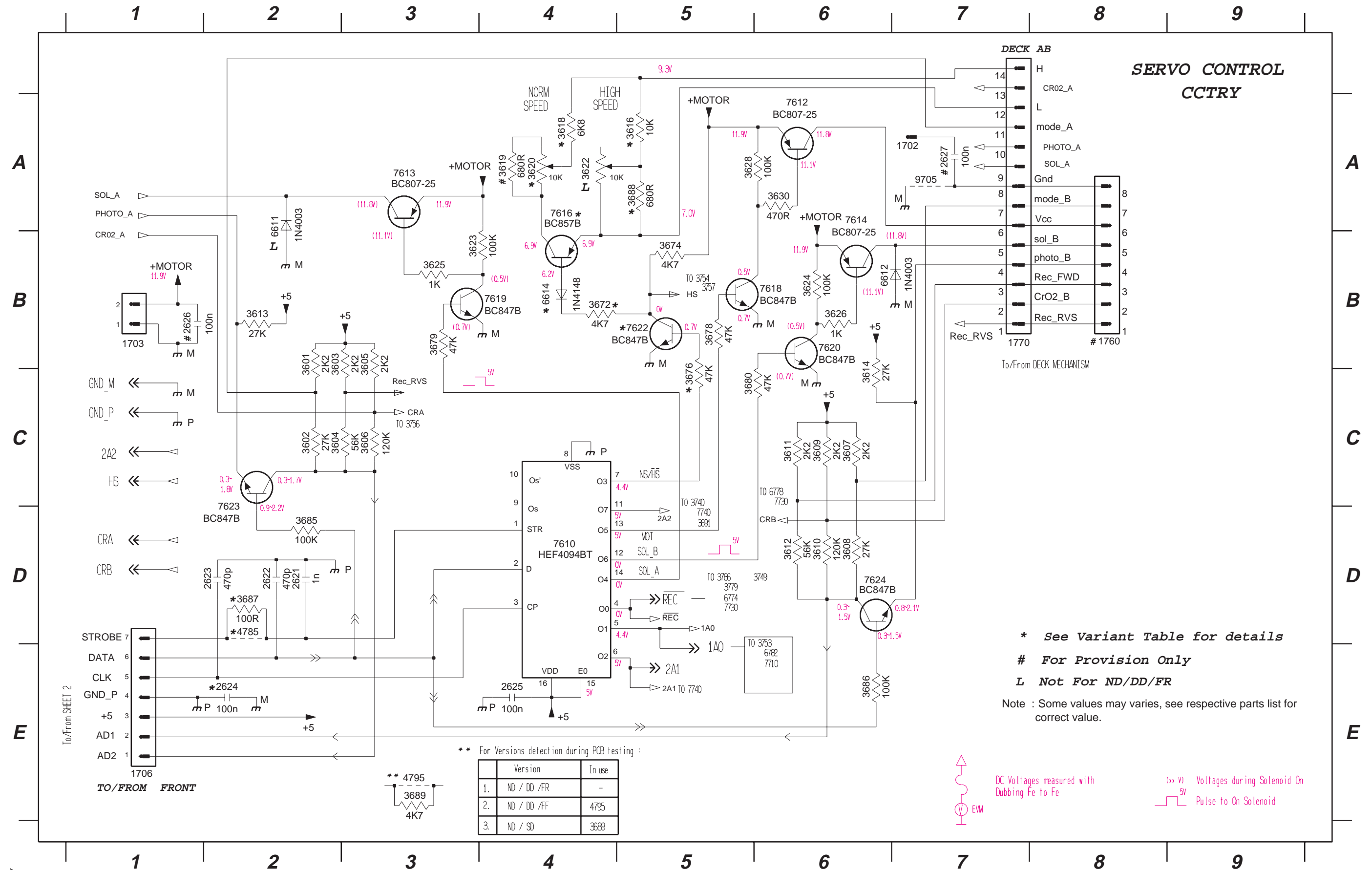
	A2	A1	A0	S0	S1	S2	S3	S4
NS Ferro	0	0	0	1	1	1	1	1
HS Ferro	0	0	1	1	1	1	1	1
REC MUTE	0	1	0	1	1	1	1	1
REC MUTE	0	1	1	1	1	1	1	1
NS Chrome	1	0	0	1	1	1	1	1
HS Chrome	1	0	1	1	1	1	1	1
REC MUTE	1	1	0	1	1	1	1	1
--	1	1	1	1	1	1	1	1

## ANALOG CCTRY

L Not For ND/DD/FR  
 \* See Variant Table for details  
 # For Provision Only  
 Note : Some values may varies, see respective parts list for correct value.

SERVO CONTROL CIRCUIT

1702 A7	1760 B8	2622 D2	2625 E4	3601 B2	3604 C2	3607 C6	3610 D6	3613 B2	3618 A4	3622 A4	3625 B3	3630 A6	3676 C5	3680 C5	3687 D2	4785 D2	6612 B6	7612 A6	7616 A4	7620 B6	7624 D6
1703 B1	1770 B7	2623 D2	2626 B1	3602 C2	3605 B3	3608 D6	3611 C6	3614 C6	3619 A4	3623 B3	3626 B6	3672 B4	3678 B5	3685 D2	3688 A5	4795 E3	6614 B4	7613 A3	7618 B6	7622 B5	9705 A7
1706 E1	2621 D2	2624 E2	2627 A7	3603 B2	3606 C3	3609 C6	3612 D6	3616 A5	3620 A4	3624 B6	3628 A5	3674 B5	3679 B3	3686 E6	3689 E3	6611 A2	7610 D4	7614 A6	7619 B4	7623 D2	



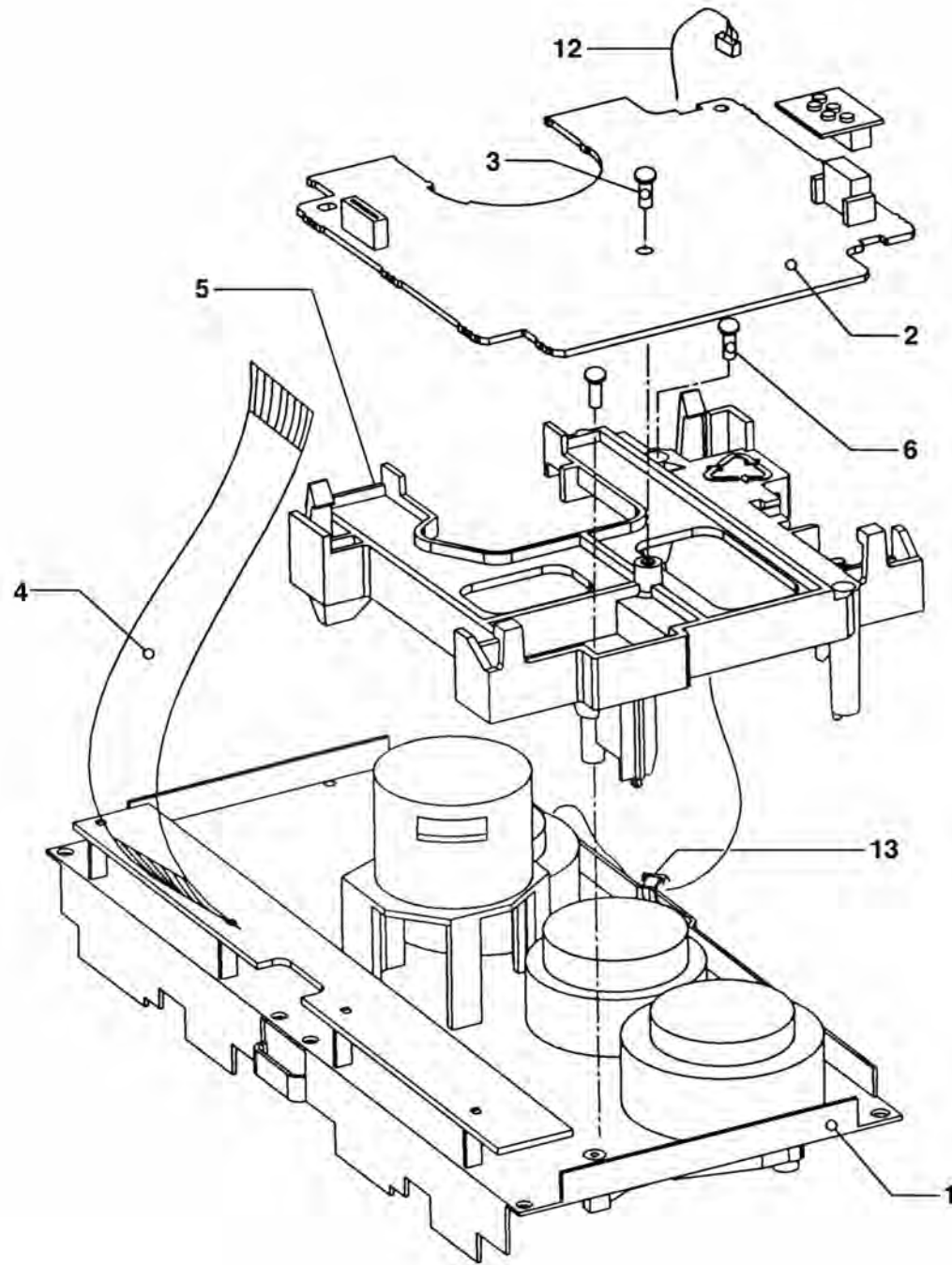
\* See Variant Table for details  
 # For Provision Only  
 L Not For ND/DD/FR  
 Note : Some values may varies, see respective parts list for correct value.

\*\* For Versions detection during PCB testing :

Version	In use
1. ND / DD /FR	-
2. ND / DD /FF	4795
3. ND / SD	3689





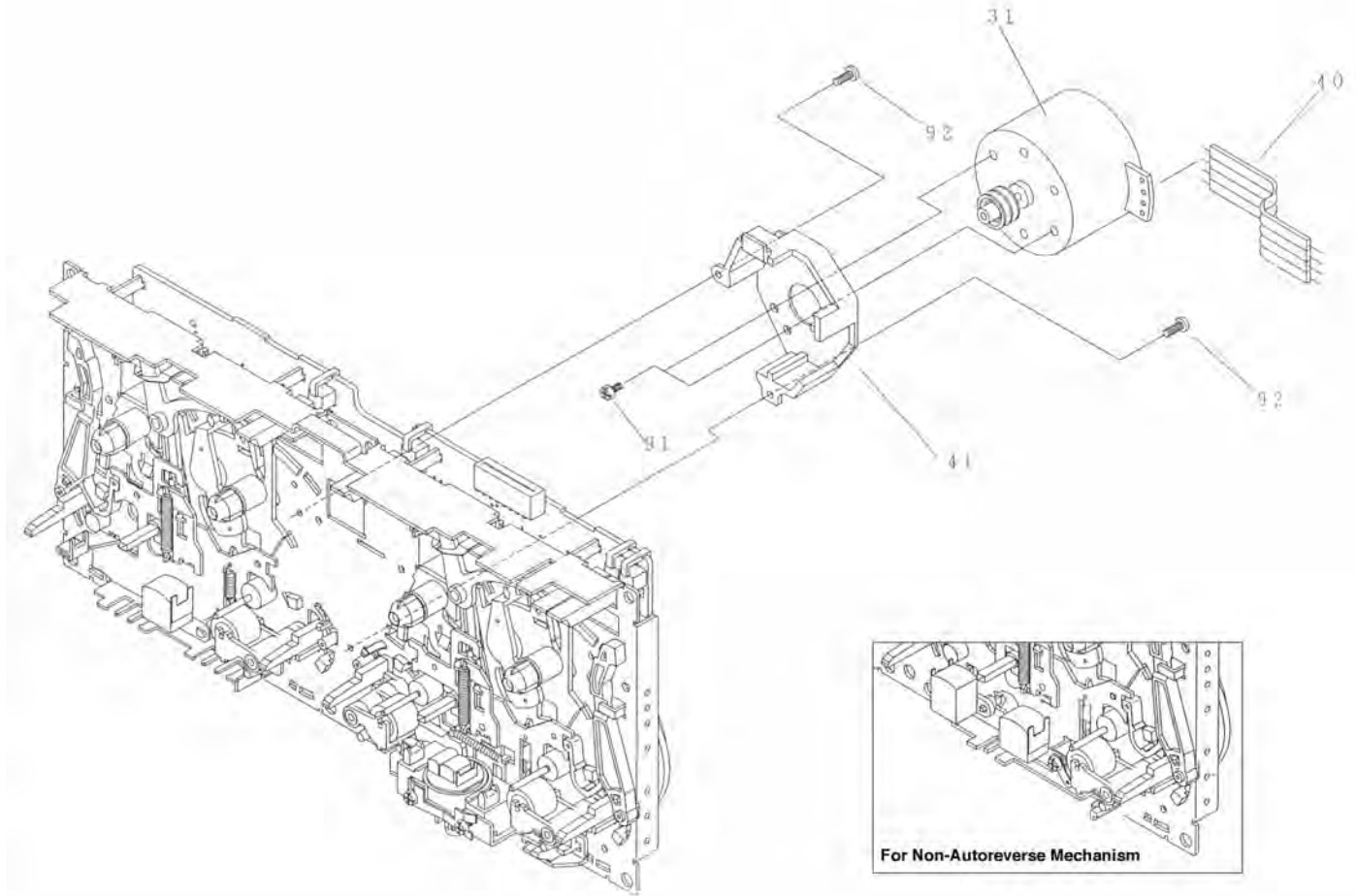


3139 118 77070 (Incl. ...77080) dd wk926

**TAPE MODULE EXPLODED VIEW**

- 1 3139 118 77130 Autoreverse Mech. CWE44FR01
- 1 3139 118 77140 Non-Autoreverse Mech. CWE44FF02 Chrome/Ferro
- 1 3139 118 77950 Non-Autoreverse Mech. CWE44FF05 Ferro
- 3 - Screw D3 x 10
- 5 - Screw M2 x 16
- 6 - Screw M2 x 16
- 7 3139 110 34080 Flex Cable 14 pin 7,5 cm

Note: Only the parts mentioned in this list are normal service spare parts.



For Non-Autoreverse Mechanism

**TAPE MECHANISM - MOTOR EXPLODED VIEW**

- 31 4822 361 11055 Motor Assembly
- 91 - Screw M2,6 x 5
- 92 - Screw M2 x 5

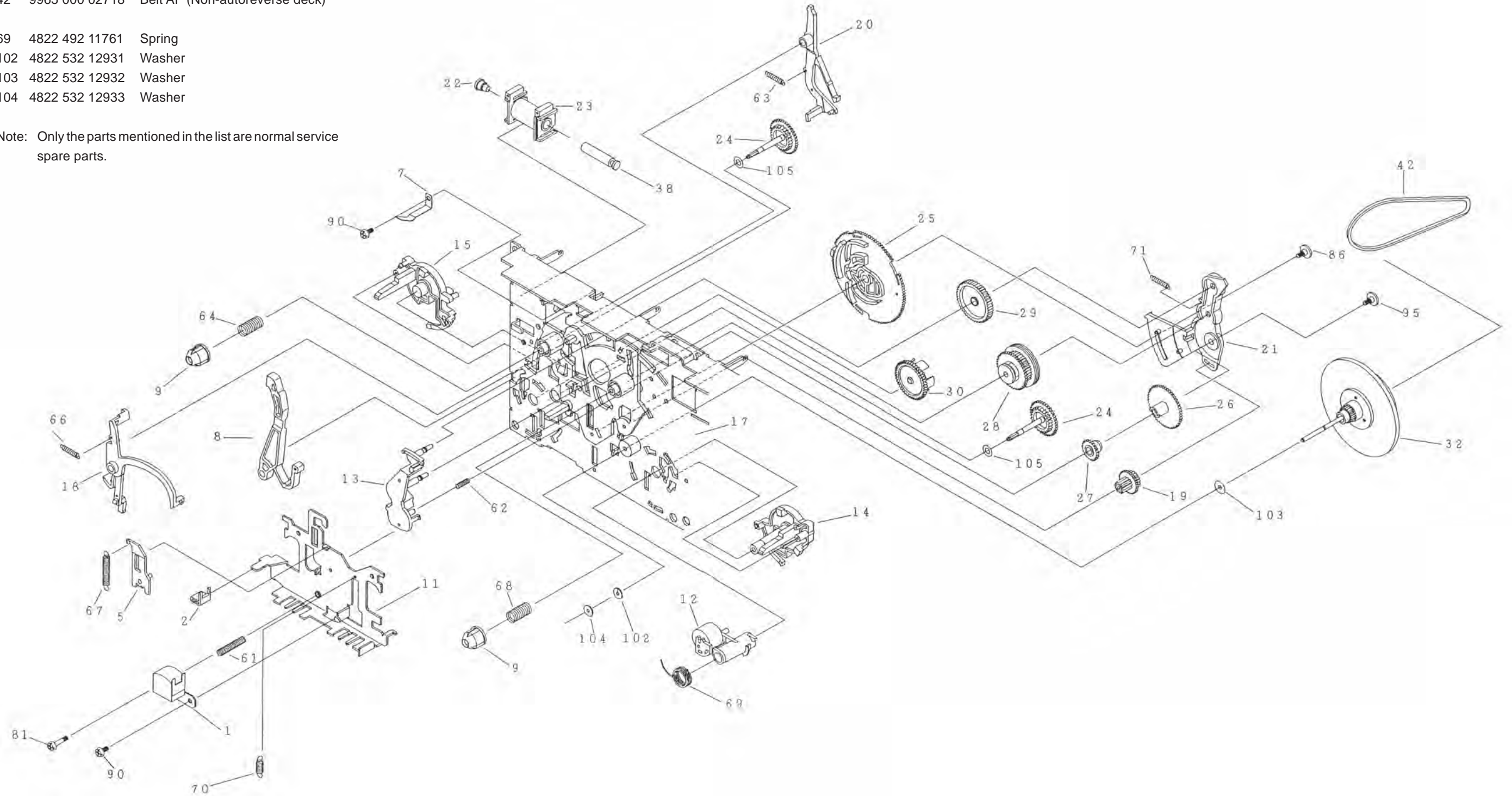
Note: Only the parts mentioned in this list are normal service spare parts.

**TAPE MECHANISM A - PLAY**

**MECHANICAL PARTS - PLAY MECHANISM**

1	9965 000 02313	Play Head (Non-Autoreverse deck)
1	9965 000 02321	Play Head (Autoreverse deck)
12	4822 402 10972	Pinch Arm Assembly R
23	9965 000 02314	Coil Assembly
25	9965 000 06443	Cam Gear
32	4822 528 11209	Flywheel Assembly RV
42	9965 000 02315	Belt AF (Autoreverse deck)
42	9965 000 02718	Belt AF (Non-autoreverse deck)
69	4822 492 11761	Spring
102	4822 532 12931	Washer
103	4822 532 12932	Washer
104	4822 532 12933	Washer

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



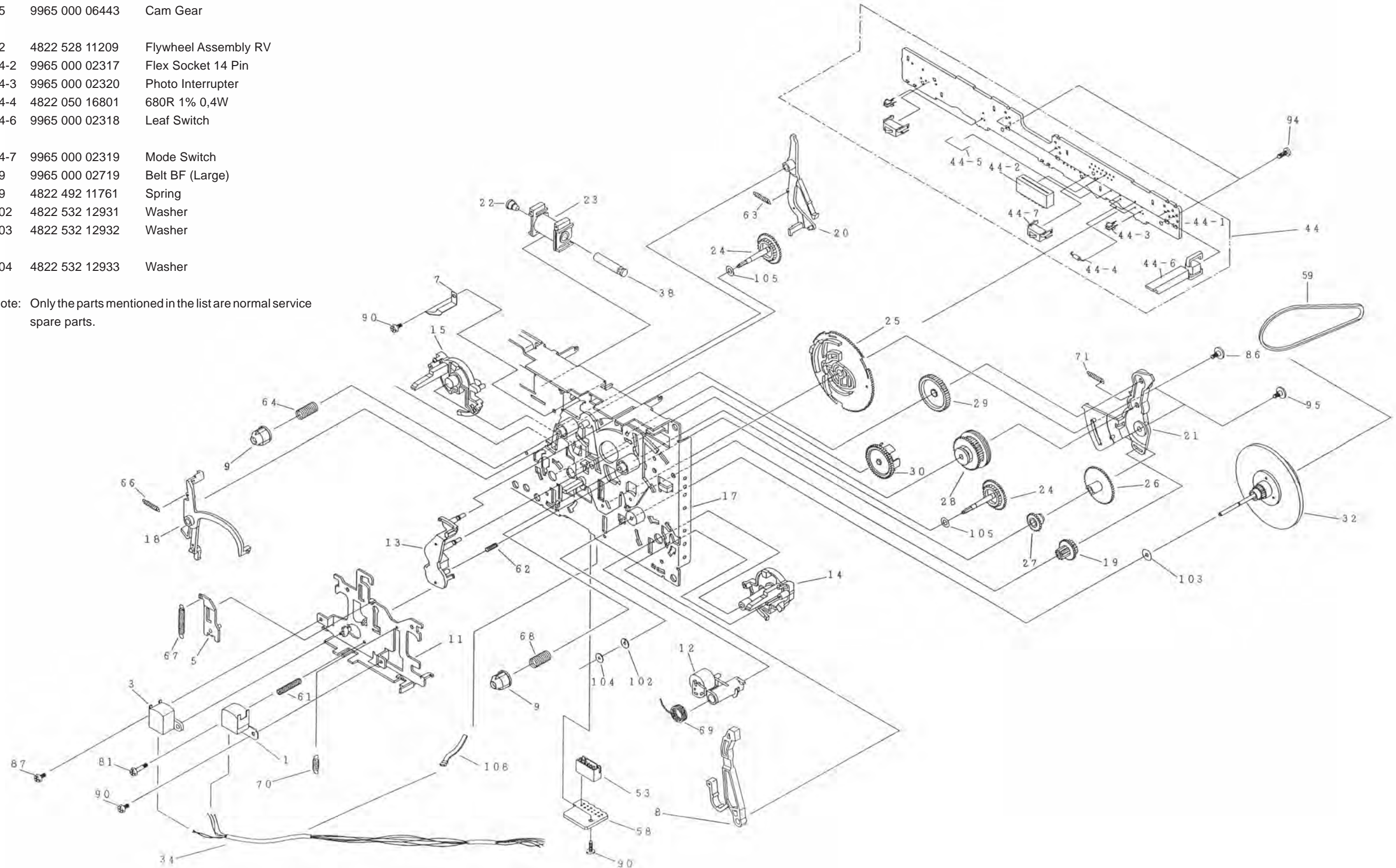


**TAPE MECHANISM B - RECORD/PLAYBACK (Non-Autoreverse version)**

**MECHANICAL PARTS - REC/PB MECHANISM**

1	9965 000 02313	Play Head
3	9965 000 02600	Head, Erase
12	4822 402 10972	Pinch Arm Assembly R
23	9965 000 02314	Coil Assembly
25	9965 000 06443	Cam Gear
32	4822 528 11209	Flywheel Assembly RV
44-2	9965 000 02317	Flex Socket 14 Pin
44-3	9965 000 02320	Photo Interrupter
44-4	4822 050 16801	680R 1% 0,4W
44-6	9965 000 02318	Leaf Switch
44-7	9965 000 02319	Mode Switch
59	9965 000 02719	Belt BF (Large)
69	4822 492 11761	Spring
102	4822 532 12931	Washer
103	4822 532 12932	Washer
104	4822 532 12933	Washer

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



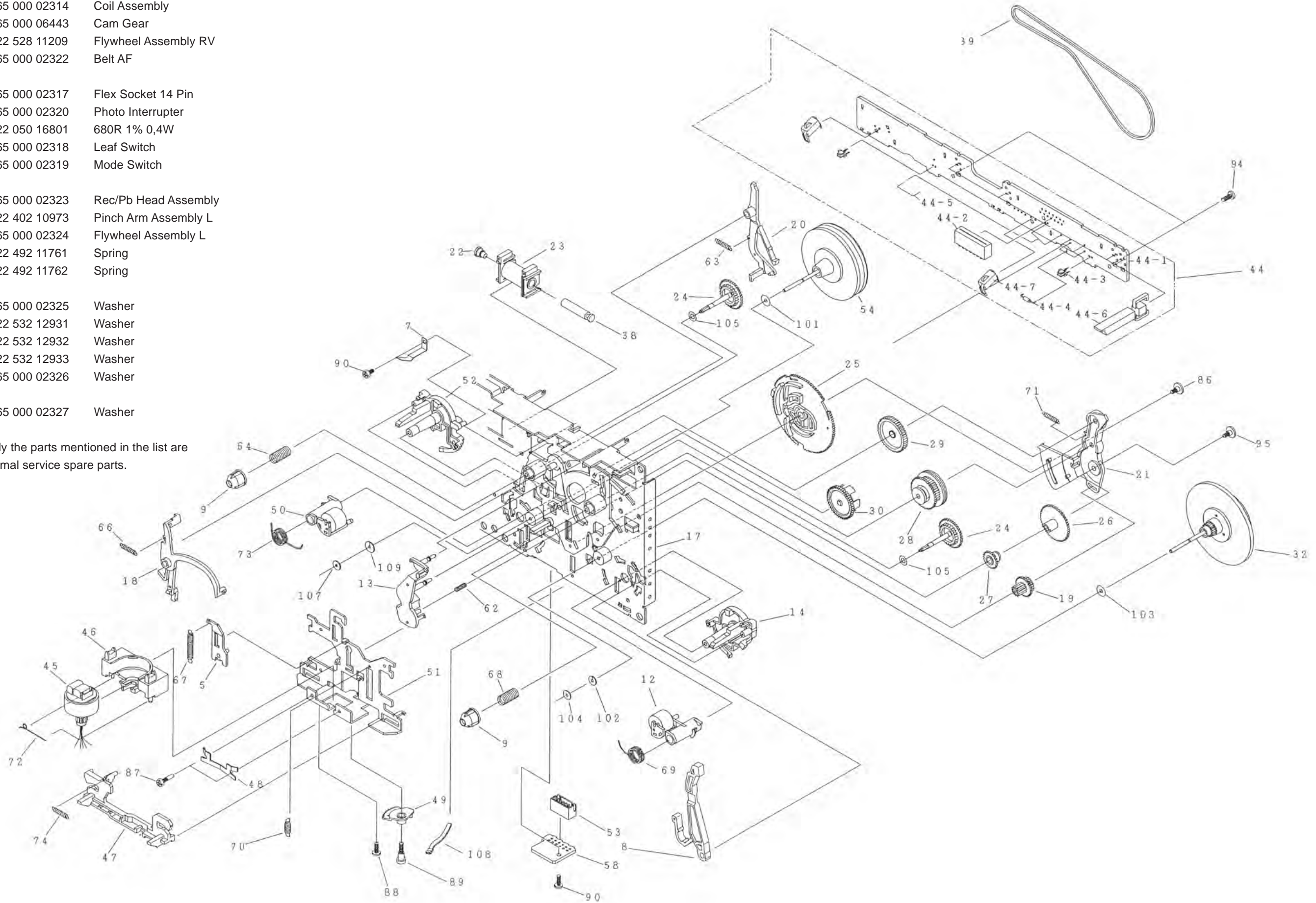


**TAPE MECHANISM B - RECORD/PLAYBACK (Autoreverse version)**

**MECHANICAL PARTS - REC/PB MECHANISM**

12	4822 402 10972	Pinch Arm Assembly R
23	9965 000 02314	Coil Assembly
25	9965 000 06443	Cam Gear
32	4822 528 11209	Flywheel Assembly RV
39	9965 000 02322	Belt AF
44-2	9965 000 02317	Flex Socket 14 Pin
44-3	9965 000 02320	Photo Interrupter
44-4	4822 050 16801	680R 1% 0,4W
44-6	9965 000 02318	Leaf Switch
44-7	9965 000 02319	Mode Switch
45	9965 000 02323	Rec/Pb Head Assembly
50	4822 402 10973	Pinch Arm Assembly L
54	9965 000 02324	Flywheel Assembly L
69	4822 492 11761	Spring
73	4822 492 11762	Spring
101	9965 000 02325	Washer
102	4822 532 12931	Washer
103	4822 532 12932	Washer
104	4822 532 12933	Washer
107	9965 000 02326	Washer
109	9965 000 02327	Washer

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



**ELECTRICAL PARTS LIST - ETF7 NON-DOLBY BOARD**

**MISCELLANEOUS**

1701	482226710953	Flex Socket 7pin Vert.
1706	482226710953	Flex Socket 7pin Vert.
1770	482226751255	Flex Socket 14pin Vert.

**CAPACITORS**

2621	532212231647	1nF 10% 63V
2622	532212234099	470pF 10% 63V
2623	532212234099	470pF 10% 63V
2624	482212614585	100nF 10% 50V only for Ferro
2625	482212614585	100nF 10% 50V
2701	532212233538	150pF 2% 63V Autoreverse
2701	482212233216	270pF 5% 63V Non-autoreverse
2702	532212233538	150pF 2% 63V Autoreverse
2702	482212233216	270pF 5% 63V Non-autoreverse
2703	532212232531	100pF 5% 50V Autoreverse
2703	482212233575	220pF 5% 63V Non-autoreverse
2704	532212232531	100pF 5% 50V Autoreverse
2704	482212233575	220pF 5% 63V Non-autoreverse
2705	482212233575	220pF 5% 63V
2706	482212233575	220pF 5% 63V
2707	532212234099	470pF 10% 63V
2708	532212234099	470pF 10% 63V
2709	532212231863	330pF 5% 63V
2710	532212231863	330pF 5% 63V
2711	532212232531	100pF 5% 50V
2712	532212232531	100pF 5% 50V
2713	482212440248	10µF 20% 63V
2714	482212440248	10µF 20% 63V
2715	482212480195	470µF 20% 10V
2716	482212480195	470µF 20% 10V
2717	482212233177	10nF 20% 50V Autoreverse
2717	482212613188	15nF 5% 63V Non-autoreverse
2718	482212233177	10nF 20% 50V Autoreverse
2718	482212613188	15nF 5% 63V Non-autoreverse
2719	482212612105	33nF 5% 50V
2720	482212612105	33nF 5% 50V
2721	532212231866	6,8nF 10% 63V not for Ferro
2722	532212231866	6,8nF 10% 63V not for Ferro
2723	482212613188	15nF 5% 63V
2724	482212613188	15nF 5% 63V
2725	532212610223	4,7nF 10% 63V
2726	532212610223	4,7nF 10% 63V
2727	532212234099	470pF 10% 63V Autoreverse
2727	532212231647	1nF 10% 63V Non-autoreverse
2728	532212234099	470pF 10% 63V Autoreverse
2728	532212231647	1nF 10% 63V Non-autoreverse
2729	532212232654	22nF 10% 63V
2730	532212232654	22nF 10% 63V
2733	532212234099	470pF 10% 63V
2734	532212234099	470pF 10% 63V
2735	482212614585	100nF 10% 50V
2737	482212614585	100nF 10% 50V

2738	482212614585	100nF 10% 50V
2741	482212611585	22nF +80/-20% 25V
2742	532212232654	22nF 10% 63V
2743	532212232654	22nF 10% 63V
2744	482212614585	100nF 10% 50V
2760	482212614585	100nF 10% 50V
2761	482212480144	220µF 20% 25V
2762	482212440769	4,7µF 20% 100V
2763	482212440433	47µF 20% 25V
2765	482212440433	47µF 20% 25V
2769	532212234099	470pF 10% 63V
2770	532212234099	470pF 10% 63V
2780	482212481151	22µF 20% 50V
2781	482212233177	10nF 20% 50V
2782	532212610223	4,7nF 10% 63V
2784	482212151305	15nF 10% 50V
2785	482212421913	1µF 20% 63V
2786	532212232531	100pF 5% 50V
2787	482212612105	33nF 5% 50V

**RESISTORS**

3601	482211711449	2k2 1% 0,1W
3602	482205120273	27k 5% 0,1W
3603	482211711449	2k2 1% 0,1W
3604	482211711148	56k 1% 0,1W
3605	482211711449	2k2 1% 0,1W
3606	482205120124	120k 5% 0,1W
3607	482211652256	2k2 5% 0,5W
3608	482205120273	27k 5% 0,1W
3609	482211652256	2k2 5% 0,5W
3610	482205120124	120k 5% 0,1W
3611	482211652256	2k2 5% 0,5W
3612	482211711148	56k 1% 0,1W
3613	482205120273	27k 5% 0,1W
3614	482205120273	27k 5% 0,1W
3616	482211710833	10k 1% 0,1W Autoreverse
3616	482205110102	1k 2% 0,25W Non-autoreverse
3618	482211711507	6k8 1% 0,1W Autoreverse
3620	482210011141	Trim. 10k 30% Autoreverse
3622	482210011141	Trim. 10k 30% Non-autoreverse
3623	482211710837	100k 1% 0,1W
3624	482211710837	100k 1% 0,1W
3625	482205110102	1k 2% 0,25W
3626	482205110102	1k 2% 0,25W
3628	482211710837	100k 1% 0,1W
3630	482205120471	470R 5% 0,1W
3672	482205120472	4k7 5% 0,1W Autoreverse
3674	482211652283	4k7 5% 0,5W
3676	482211710834	47k 1% 0,1W Autoreverse
3678	482211710834	47k 1% 0,1W
3679	482211710834	47k 1% 0,1W
3680	482211710834	47k 1% 0,1W

**ELECTRICAL PARTS LIST - ETF7 NON-DOLBY BOARD**

3685	482211652234	100k 5% 0,5W
3686	482211710837	100k 1% 0,1W
3687	482211711503	220R 1% 0,1W not for Ferro
3688	482211710361	680R 1% 0,1W Autoreverse
3701	482211711503	220R 1% 0,1W
3702	482211711503	220R 1% 0,1W
3703	482211711503	220R 1% 0,1W
3704	482211711503	220R 1% 0,1W
3705	482211711503	220R 1% 0,1W
3706	482211711503	220R 1% 0,1W
3707	482205120101	100R 5% 0,1W
3708	482205120101	100R 5% 0,1W
3709	482205120109	10R 5% 0,1W
3710	482205120109	10R 5% 0,1W
3711	482205120154	150k 5% 0,1W
3712	482205120154	150k 5% 0,1W
3713	482205120109	10R 5% 0,1W
3714	482205120109	10R 5% 0,1W
3715	482205120182	1k8 5% 0,1W
3716	482205120182	1k8 5% 0,1W
3717	482211711449	2k2 1% 0,1W
3718	482211711449	2k2 1% 0,1W
3719	482211711383	12k 1% 0,1W
3720	482211711383	12k 1% 0,1W
3721	482205120392	3k9 5% 0,1W
3722	482205120392	3k9 5% 0,1W
3723	482211683933	15k 1% 0,1W Autoreverse
3723	482211710965	18k 1% 0,1W Non-autoreverse
3724	482211683933	15k 1% 0,1W Autoreverse
3724	482211710965	18k 1% 0,1W Non-autoreverse
3725	482205120109	10R 5% 0,1W not for Ferro
3726	482205120109	10R 5% 0,1W not for Ferro
3727	482205120562	5k6 5% 0,1W Autoreverse
3727	482211711507	6k8 1% 0,1W Non-autoreverse
3728	482205120562	5k6 5% 0,1W Autoreverse
3728	482211711507	6k8 1% 0,1W Non-autoreverse
3729	482205120332	3k3 5% 0,1W Autoreverse
3729	482205120472	4k7 5% 0,1W Non-autoreverse
3730	482205120332	3k3 5% 0,1W Autoreverse
3730	482205120472	4k7 5% 0,1W Non-autoreverse
3731	482205120822	8k2 5% 0,1W
3732	482205120822	8k2 5% 0,1W
3733	482205120122	1k2 5% 0,1W
3734	482205120122	1k2 5% 0,1W
3735	482205120223	22k 5% 0,1W
3736	482205120223	22k 5% 0,1W
3741	482211711449	2k2 1% 0,1W
3742	482211711449	2k2 1% 0,1W
3743	482211711139	1k5 1% 0,1W Autoreverse
3743	482211711449	2k2 1% 0,1W Non-autoreverse
3744	482211711139	1k5 1% 0,1W Autoreverse
3744	482211711449	2k2 1% 0,1W Non-autoreverse

3745	482205120332	3k3 5% 0,1W Autoreverse
3745	482205120562	5k6 5% 0,1W Non-autoreverse
3746	482205120332	3k3 5% 0,1W Autoreverse
3746	482205120562	5k6 5% 0,1W Non-autoreverse
3748	482211711449	2k2 1% 0,1W
3749	482211710834	47k 1% 0,1W
3751	482211710833	10k 1% 0,1W
3752	482211710837	100k 1% 0,1W
3753	482211710837	100k 1% 0,1W
3754	482205120105	1M 5% 0,1W Autoreverse
3754	482205120479	47R 5% 0,1W Non-autoreverse
3755	482205120105	1M 5% 0,1W Autoreverse
3755	482205120479	47R 5% 0,1W Non-autoreverse
3756	482211713579	220k 1% 0,1W
3757	482211713579	220k 1% 0,1W
3758	482211710833	10k 1% 0,1W
3759	482211710833	10k 1% 0,1W
3760	482205120121	120R 5% 0,1W
3761	482205021003	10k 1% 0,6W
3762	482211711454	820R 1% 0,1W
3763	482205120154	150k 5% 0,1W
3764	482211683872	220R 5% 0,5W
3765	482205120393	39k 5% 0,1W
3766	482205120475	4M7 5% 0,1W
3767	482205120475	4M7 5% 0,1W
3768	482211710833	10k 1% 0,1W
3769	482211711383	12k 1% 0,1W Autoreverse
3769	482205120822	8k2 5% 0,1W Non-autoreverse
3770	482211711139	1k5 1% 0,1W
3771	482205120122	1k2 5% 0,1W
3772	482211711507	6k8 1% 0,1W Autoreverse
3772	482205120562	5k6 5% 0,1W Non-autoreverse
3773	482210012227	Trimmer 4k7 30% 0,1W
3774	482211683933	15k 1% 0,1W Autoreverse
3774	482205120822	8k2 5% 0,1W Non-autoreverse
3775	482205120478	4R7 5% 0,1W
3776	482211711507	6k8 1% 0,1W
3777	482211710353	150R 1% 0,1W
3778	482205210688	△ 6R8 5% 0,33W
3779	482205120334	330k 5% 0,1W
3780	482205120105	1M 5% 0,1W
3781	482205120475	4M7 5% 0,1W
3784	482205110102	1k 2% 0,25W
3786	482205120223	22k 5% 0,1W
3787	482205120105	1M 5% 0,1W
3788	482205120105	1M 5% 0,1W
3789	482211710834	47k 1% 0,1W
4701	482205120008	0R Jumper 0805
4702	482205120008	0R Jumper 0805
4703	482205120008	0R Jumper 0805
4704	482205120008	0R Jumper 0805
4705	482205120008	0R Jumper 0805



**ELECTRICAL PARTS LIST - ETF7 NON-DOLBY BOARD****RESISTORS**

4706	482205120008	OR Jumper 0805	6612	482213031878	1N4003G	
4707	482205120008	OR Jumper 0805	6614	482213030621	1N4148	Autoreverse
4708	482205120008	OR Jumper 0805	6770	482213030621	1N4148	
4709	482205120008	OR Jumper 0805	6771	482213030621	1N4148	
4710	482205120008	OR Jumper 0805	6772	482213030621	1N4148	
4711	482205120008	OR Jumper 0805	6773	482213030621	1N4148	
4712	482205120008	OR Jumper 0805	6774	482213030621	1N4148	
4713	482205120008	OR Jumper 0805	6775	482213030621	1N4148	
4714	482205120008	OR Jumper 0805	6776	482213030621	1N4148	
4715	482205120008	OR Jumper 0805	6777	482213034382	BZX79-F8V2	
4716	482205120008	OR Jumper 0805	6778	482213030621	1N4148	
4717	482205120008	OR Jumper 0805	6782	482213030621	1N4148	
4718	482205120008	OR Jumper 0805	6785	482213030621	1N4148	
4719	482205120008	OR Jumper 0805	6786	482213030621	1N4148	
4720	482205120008	OR Jumper 0805				
4721	482205120008	OR Jumper 0805				
4722	482205120008	OR Jumper 0805				
4723	482205120008	OR Jumper 0805				
4724	482205120008	OR Jumper 0805				
4725	482205120008	OR Jumper 0805				
4726	482205120008	OR Jumper 0805				
4727	482205120008	OR Jumper 0805				
4728	482205120008	OR Jumper 0805				
4729	482205120008	OR Jumper 0805				
4730	482205120008	OR Jumper 0805				
4731	482205120008	OR Jumper 0805				
4732	482205120008	OR Jumper 0805				
4733	482205120008	OR Jumper 0805				
4734	482205120008	OR Jumper 0805				
4735	482205120008	OR Jumper 0805				
4736	482205120008	OR Jumper 0805				
4737	482205120008	OR Jumper 0805				
4738	482205120008	OR Jumper 0805				
4739	482205120008	OR Jumper 0805				
4740	482205120008	OR Jumper 0805				
4741	482205120008	OR Jumper 0805				
4742	482205120008	OR Jumper 0805				
4744	482205120008	OR Jumper 0805				
4745	482205120008	OR Jumper 0805				
4746	482205120008	OR Jumper 0805				
4748	482205120008	OR Jumper 0805				
4785	482205120008	OR Jumper 0805 only for Ferro				
4790	482205120008	OR Jumper 0805				
4794	482205120008	OR Jumper 0805				
4795	482205120008	OR Jumper 0805				

**TRANSISTORS & INTEGRATED CIRCUITS**

7610	532220911306	HEF4094BT			
7612	532213060845	BC807-25			
7613	532213060845	BC807-25			
7614	532213060845	BC807-25			
7616	482213060373	BC857B			Autoreverse
7618	482213060511	BC847B			
7619	482213060511	BC847B			
7620	482213060511	BC847B			
7622	482213060511	BC847B			Autoreverse
7623	482213060511	BC847B			
7624	482213060511	BC847B			
7710	482220932919	HEF4952BT			
7720	932214000668	AN7323S			
7730	482220932919	HEF4952BT			
7740	482220932919	HEF4952BT			
7780	482213060511	BC847B			
7781	482213042804	BC817-25			
7782	482213044568	BC557B			
7783	482213060511	BC847B			
7784	482213060373	BC857B			
7786	482213063494	J111			
7787	482213060511	BC847B			
7791	482213060511	BC847B			
7792	482213060511	BC847B			

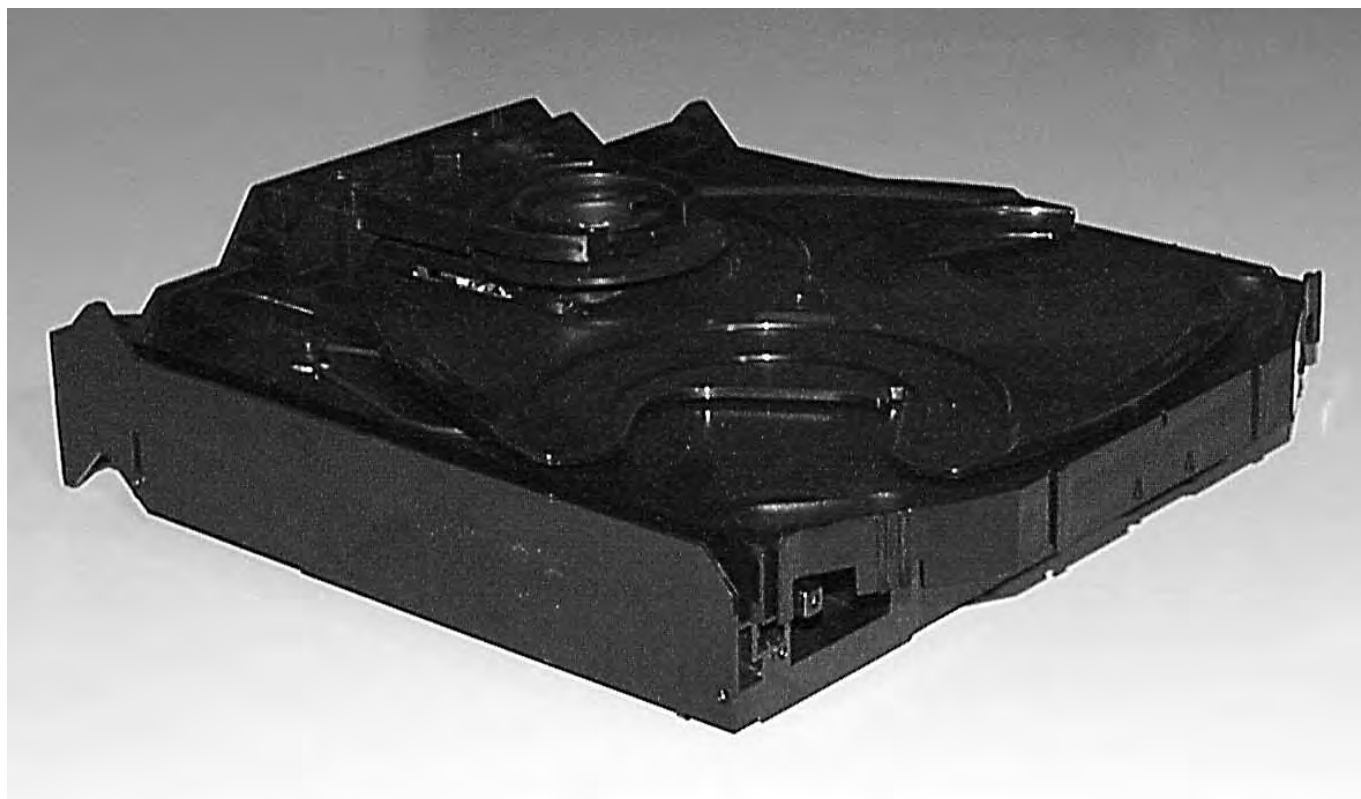
Note: Only the parts mentioned in this list are normal service spare parts.

**COILS & FILTERS**

5701	482215711477	Coil 2,2μH 5%
5703	482215620946	Osc Coil 100kHz

**DIODES**

6611	482213031878	1N4003G
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# **3CDC-LC**

## **(3 Disc Carrousel Changer)**

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**WARNING**

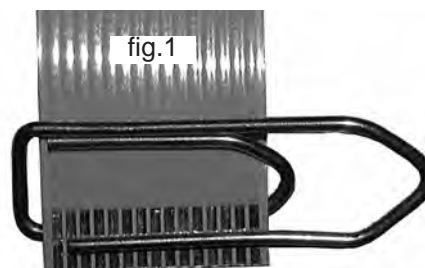
**CHARGED CAPACITORS ON THE SERVO BOARD MAY DAMAGE THE CD DRIVE ELECTRONICS WHEN CONNECTING A NEW CDM MECHANISM. THAT'S WHY, BESIDES THE SAFETY MEASURES LIKE**

- **SWITCH OFF POWER SUPPLY**
- **ESD PROTECTION**

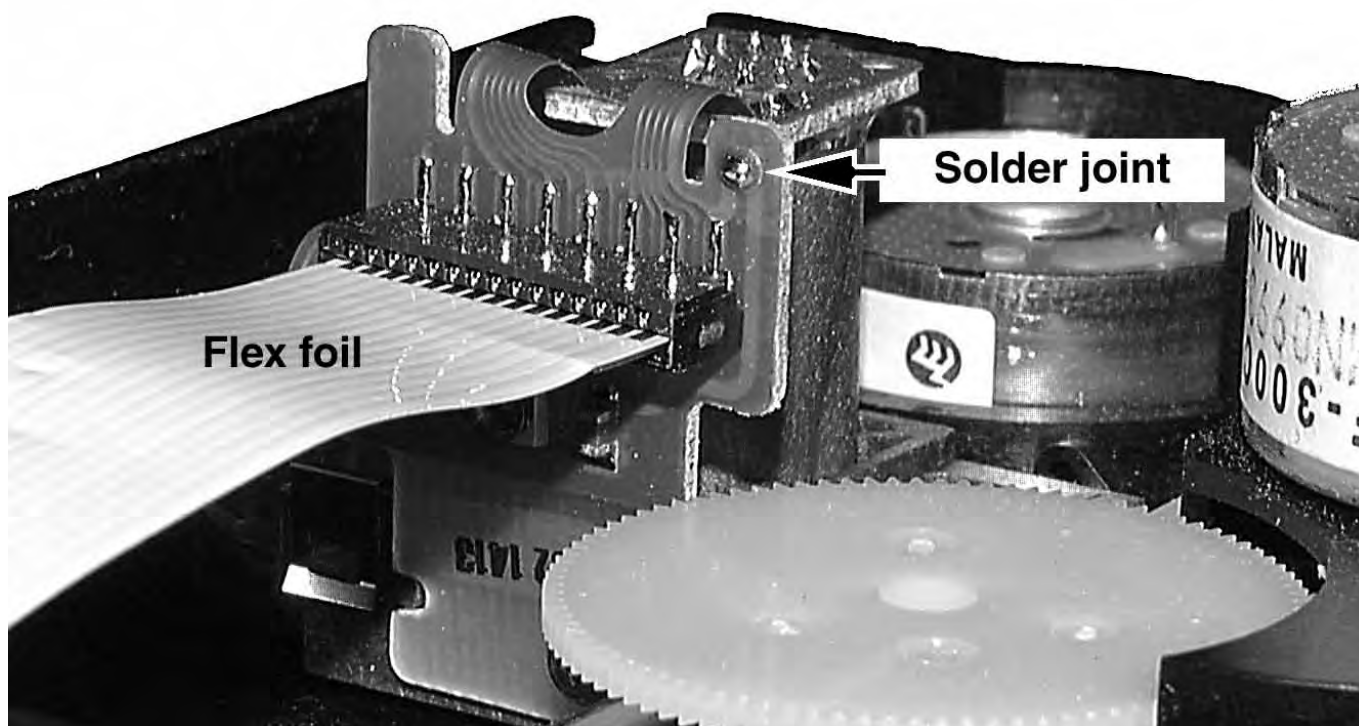
**ADDITIONAL ACTIONS MUST BE TAKEN BY THE REPAIR TECHNICIAN.**

The following steps have to be done when replacing the CD mechanism:

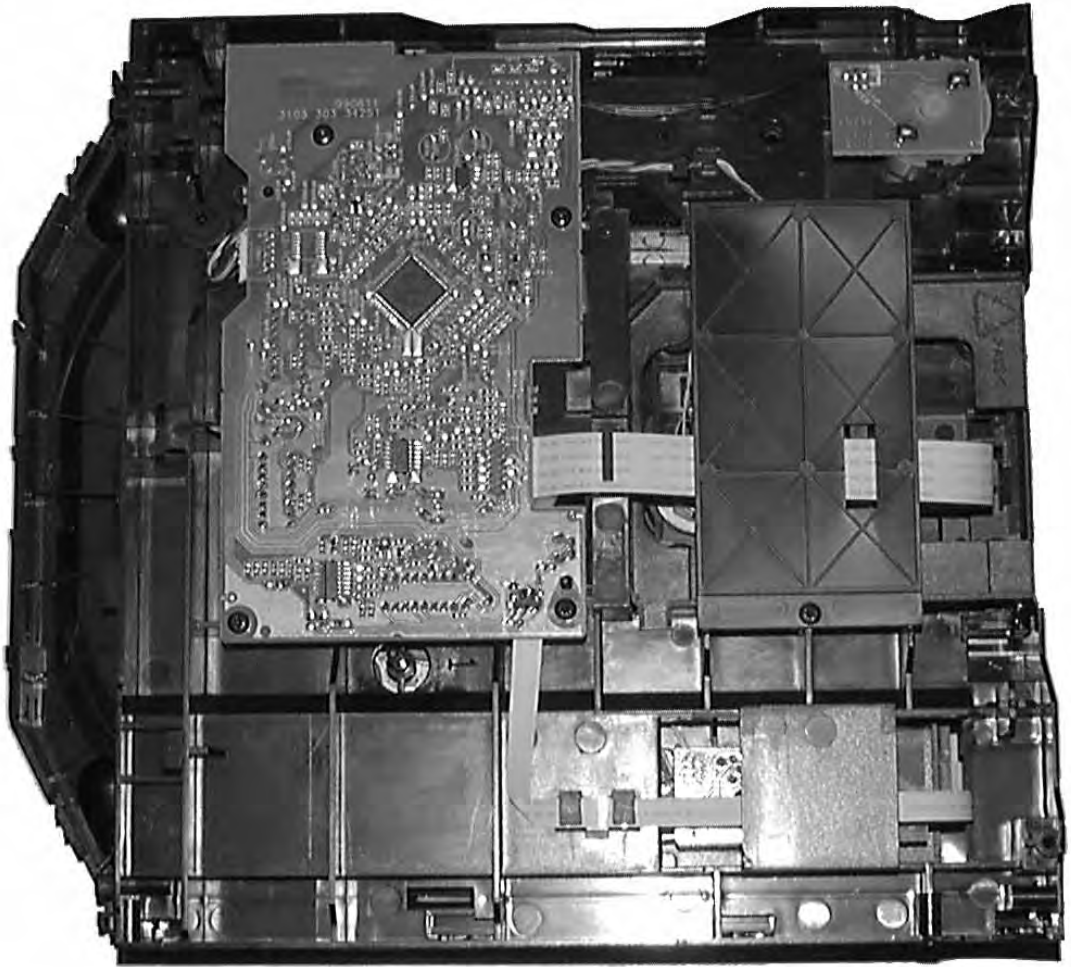
1. Disconnect CD drive flexfoil from old CD drive
2. Connect paperclip to CD drive flexfoil to short-circuit flexfoil (fig.1)
3. Remove old CD drive
4. Remove short-circuit from flexfoil
5. Connect flexfoil to new CD drive
6. Position new CD drive in its studs
7. Remove short-circuit from Laserunit



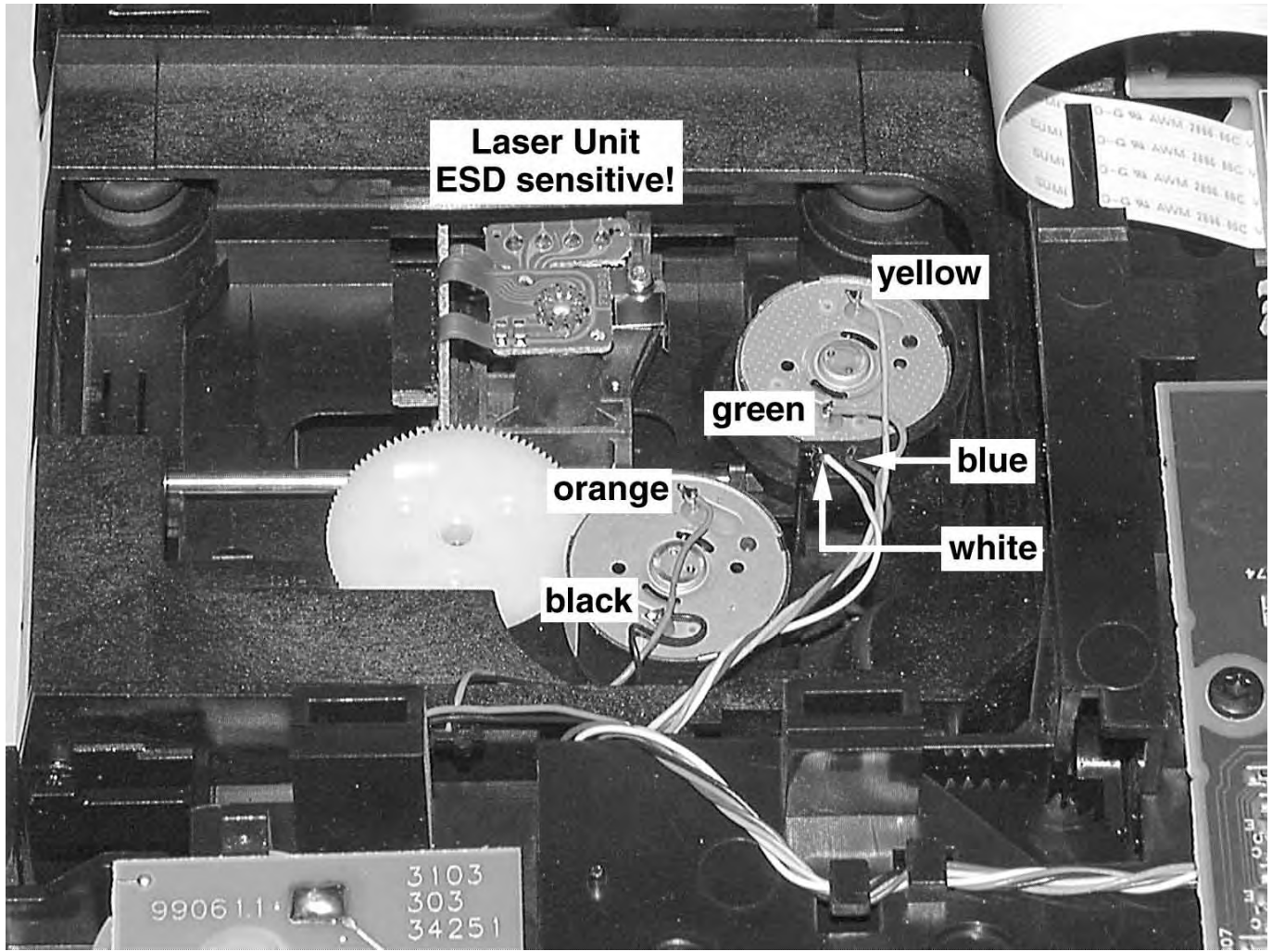
**Attention:** The laser diode of this CD drive is protected against ESD by a solder joint which shortcircuits the laserdiode to ground.  
For proper functionality of the CD drive this solder joint must be removed **after** connection the drive to the set.

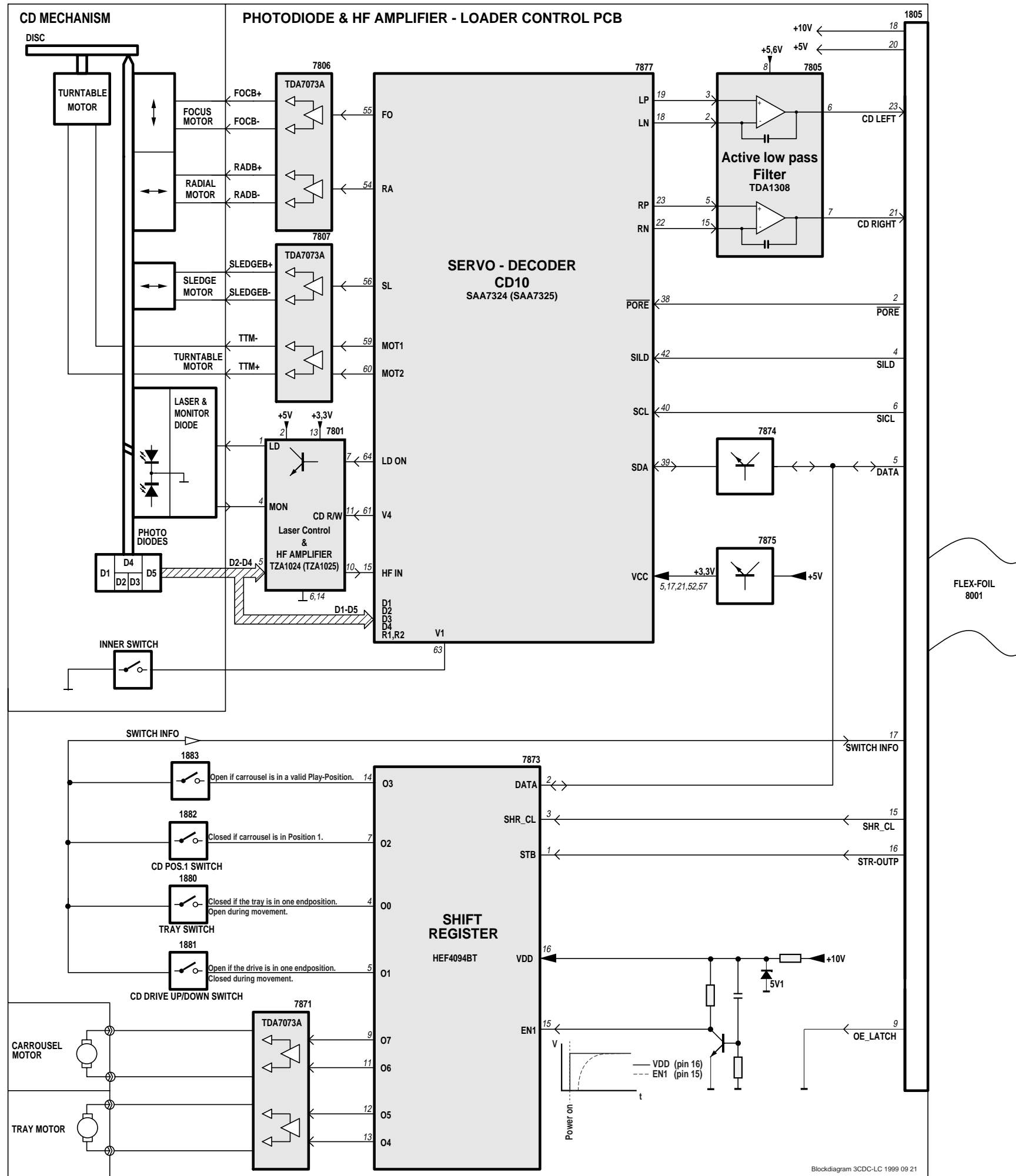


Service Position



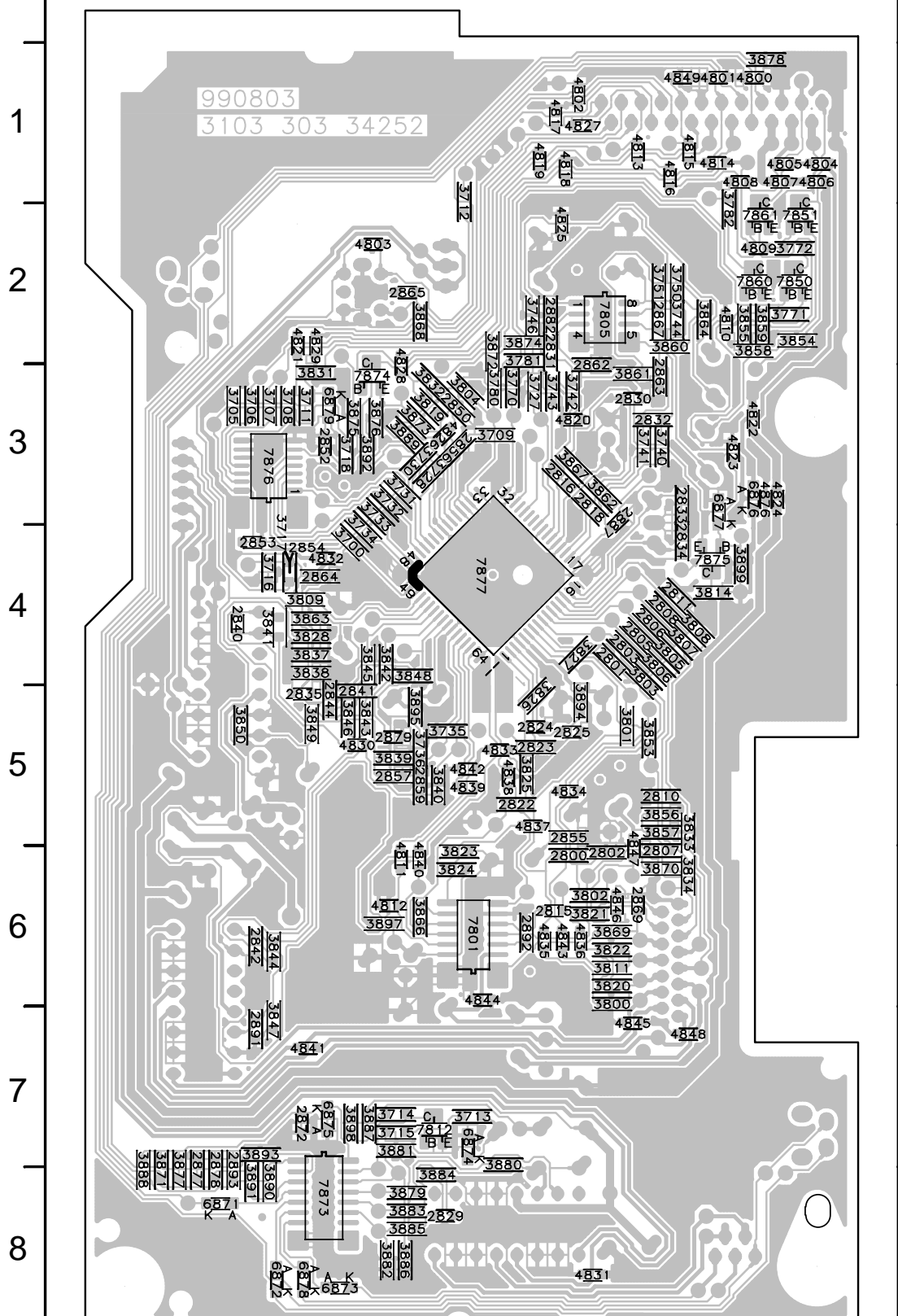
# Wiring







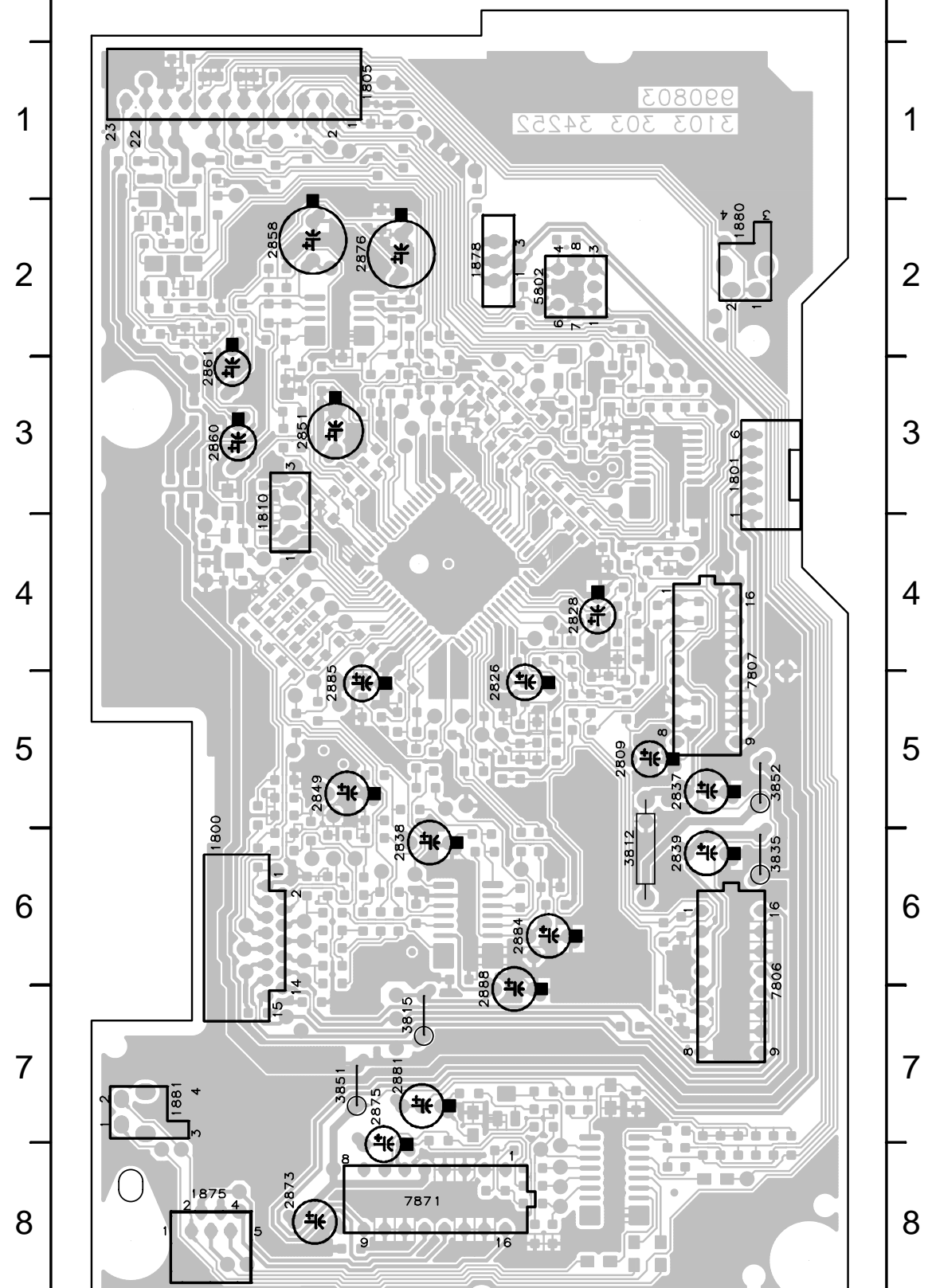
### 3CDC-LC Mainboard Copperside view



### Mapping

Copperside			Componentside
2800	B6	3770	C3
2801	B4	3771	A2
2802	B6	3772	A2
2803	B4	3780	C3
2805	B4	3781	C2
2806	B4	3782	A2
2807	B6	3800	B6
2808	B4	3801	B5
2810	B5	3802	B6
2811	B4	3803	B4
2815	C6	3804	C3
2816	C3	3805	B4
2818	B3	3806	B4
2822	C5	3807	B4
2823	C5	3808	B4
2824	C5	3809	D4
2825	B5	3811	B6
2829	C8	3814	B4
2830	B3	3819	C3
2831	C2	3820	B6
2832	B3	3821	B6
2833	B3	3822	B6
2834	B4	3823	C6
2835	D5	3824	C6
2840	E4	3825	C5
2841	D5	3826	C5
2842	D6	3827	B4
2844	D5	3828	D4
2850	C3	3831	D3
2852	D3	3832	C3
2853	D4	3833	B5
2854	D4	3834	B6
2855	B5	3837	D4
2856	C3	3838	D4
2857	D5	3839	D5
2859	C5	3840	C5
2862	B3	3841	D4
2863	B3	3842	D4
2864	D4	3843	D5
2865	C2	3844	D6
2867	B2	3845	D4
2869	B6	3846	D5
2872	D7	3847	D7
2877	E8	3848	C4
2878	E8	3849	D5
2879	D5	3850	E5
2882	C2	3853	B5
2887	B3	3854	A2
2891	D7	3855	A2
2892	C6	3856	B5
2893	E8	3857	B5
3700	E4	3858	A2
3705	F3	3859	A2
3706	D3	3860	B2
3707	D3	3861	B3
3708	D3	3862	B3
3709	C3	3863	D4
3711	D3	3864	B2
3712	C1	3866	C6
3713	C7	3867	B3
3714	D7	3868	C2
3715	D7	3869	B6
3716	D4	3870	B6
3717	D4	3871	E8
3718	D3	3872	C2
3728	C3	3874	C2
3730	C3	3875	D3
3731	D3	3876	D3
3732	D3	3877	E8
3733	D3	3878	A1
3734	D4	3879	C8
3735	C5	3880	C7
3736	C5	3881	D7
3740	B3	3882	D8
3741	B3	3883	C8
3742	B3	3884	C8
3743	C3	3885	C8
3744	B2	3886	D8
3746	C2	3887	D7
3750	B2	3888	E8
3889	D3	3890	D8
3891	D8	3892	D3
3893	D7	3894	B5
3895	C5	3895	C5
3897	D6	3897	D6
3898	D7	3898	D7
4800	A1	4800	A1
4801	B1	4801	B1
4802	B1	4802	B1
4803	D2	4803	D2
4804	A1	4804	A1
4805	A1	4805	A1
4806	A1	4806	A1
4807	A1	4807	A1
4808	A1	4808	A1
4809	A2	4809	A2
4810	B2	4810	B2
4811	D6	4811	D6
4812	D6	4812	D6
4813	B1	4813	B1
4814	B1	4814	B1
4815	B1	4815	B1
4816	B1	4816	B1
4817	C1	4817	C1
4818	C1	4818	C1
4819	C1	4819	C1
4820	B3	4820	B3
4821	D2	4821	D2
4822	A3	4822	A3
4823	A3	4823	A3
4824	A3	4824	A3
4825	C2	4825	C2
4826	C3	4826	C3
4827	B1	4827	B1
4828	D3	4828	D3
4829	D2	4829	D2
4830	D5	4830	D5
4831	B8	4831	B8
4832	D4	4832	D4
4833	C5	4833	C5
4834	B5	4834	B5
4835	C6	4835	C6
4836	B6	4836	B6
4837	C5	4837	C5
4838	C5	4838	C5
4839	C5	4839	C5
4840	C6	4840	C6
4841	D7	4841	D7
4842	C5	4842	C5
4843	C6	4843	C6
4844	C6	4844	C6
4845	B7	4845	B7
4846	B6	4846	B6
4847	B6	4847	B6
4848	B7	4848	B7
4849	B1	4849	B1
4876	A3	4876	A3
4877	E8	4877	E8
4878	D8	4878	D8
4879	D3	4879	D3
4880	C6	4880	C6
4881	B2	4881	B2
4882	C7	4882	C7
4883	D3	4883	D3
4884	D3	4884	D3
4885	D3	4885	D3
4886	D3	4886	D3
4887	B4	4887	B4
4888	D3	4888	D3
4889	C4	4889	C4

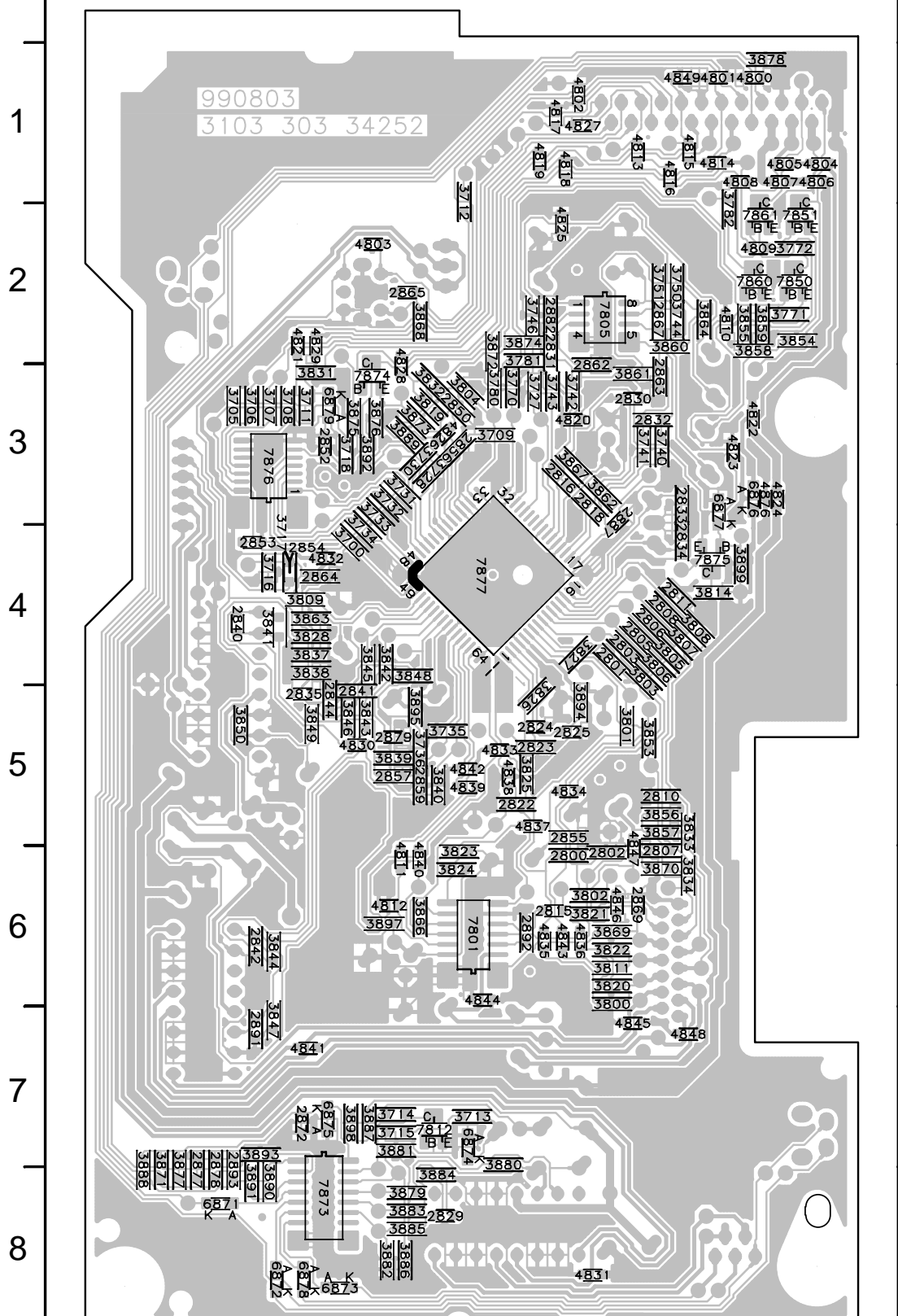
### 3CDC-LC Mainboard Componentside view







### 3CDC-LC Mainboard Copperside view



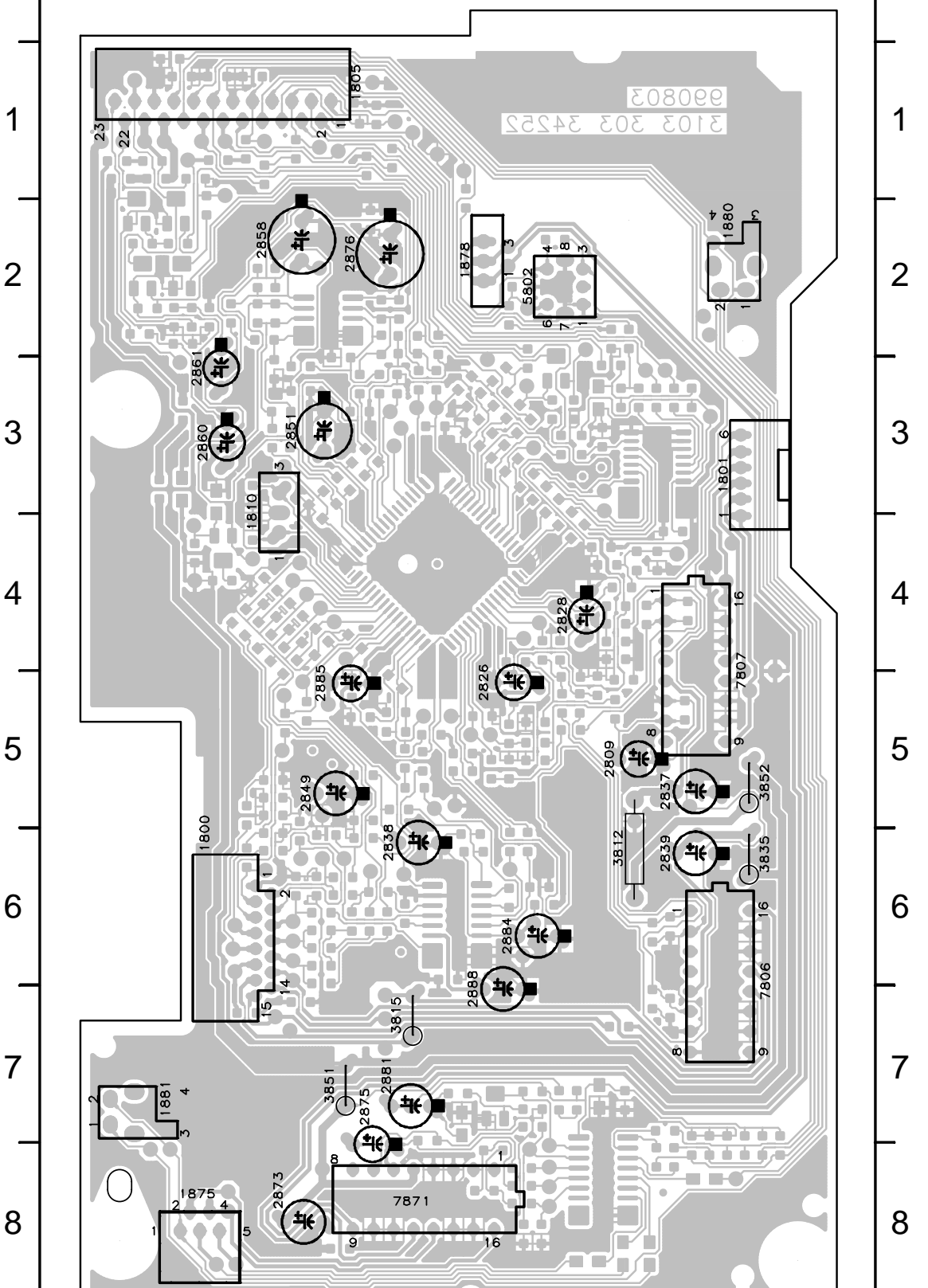
This assembly drawing shows a summary of all possible versions. For components used in a specific version see schematic diagram respectively partslist.

3CDC-LC Mainboard Layout stage :2 990920

### Mapping

Copperside			Componentside				
2800	B6	3770	C3	3899	D3	1800	A6
2801	B4	3771	A2	3891	D8	1801	E3
2802	B6	3772	A2	3892	D3	1805	B1
2803	B4	3780	C3	3893	D7	1810	B3
2805	B4	3781	C2	3894	B5	1875	A8
2806	B4	3782	A2	3895	C5	1878	C2
2807	B6	3800	B6	3897	D6	1880	E2
2808	B4	3801	B5	3898	D7	1881	A7
2810	B5	3802	B6	3899	A4	2809	D5
2811	B4	3803	B4	4800	A1	2826	C5
2815	C6	3804	C3	4801	B1	2828	D4
2816	C3	3805	B4	4802	B1	2837	D5
2818	B3	3806	B4	4803	D2	2838	C6
2822	C5	3807	B4	4804	A1	2839	D6
2823	C5	3808	B4	4805	A1	2849	B5
2824	C5	3809	D4	4806	A1	2851	B3
2825	B5	3811	B6	4807	A1	2858	B2
2829	C8	3814	B4	4808	A1	2860	A3
2830	B3	3819	C3	4809	A2	2861	A3
2831	C2	3820	B6	4810	B2	2873	B8
2832	B3	3821	B6	4811	D6	2875	B7
2833	B3	3822	B6	4812	D6	2876	B2
2834	B4	3823	C6	4813	B1	2881	C7
2835	D5	3824	C6	4814	B1	2884	C6
2840	E4	3825	C5	4815	B1	2885	B5
2841	D5	3826	C5	4816	B1	2888	C7
2842	D6	3827	B4	4817	C1	3812	D6
2844	D5	3828	D4	4818	C1	3815	C7
2850	C3	3831	D3	4819	C1	3835	E6
2852	D3	3832	C3	4820	B3	3851	B7
2853	D4	3833	B5	4821	D2	3852	E5
2854	D4	3834	B6	4822	A3	5802	D2
2855	B5	3837	D4	4823	A3	7806	E6
2856	C3	3838	D4	4824	A3	7807	E5
2857	D5	3839	D5	4825	C2	7871	C8
2859	C5	3840	C5	4826	C3		
2862	B3	3841	D4	4827	B1		
2863	B3	3842	D4	4828	D3		
2864	D4	3843	D5	4829	D2		
2865	C2	3844	D6	4830	D5		
2867	B2	3845	D4	4831	B8		
2869	B6	3846	D5	4832	D4		
2872	D7	3847	D7	4833	C5		
2877	E8	3848	C4	4834	B5		
2878	E8	3849	D5	4835	C6		
2879	D5	3850	E5	4836	B6		
2882	C2	3853	B5	4837	C5		
2887	B3	3854	A2	4838	C5		
2891	D7	3855	A2	4839	C5		
2892	C6	3856	B5	4840	C6		
2893	E8	3857	B5	4841	D7		
3700	E4	3858	A2	4842	C5		
3705	F3	3859	A2	4843	C6		
3706	D3	3860	B2	4844	C6		
3707	D3	3861	B3	4845	B7		
3708	D3	3862	B3	4846	B6		
3709	C3	3863	D4	4847	B6		
3711	D3	3864	B2	4848	B7		
3712	C1	3866	C6	4849	B1		
3714	D7	3868	C2	6871	E8		
3715	D7	3869	B6	6872	D8		
3716	D4	3870	B6	6873	D8		
3717	D4	3871	E8	6874	C7		
3718	D3	3872	C2	6875	D7		
3728	C3	3874	C2	6877	B3		
3730	C3	3875	D3	6878	D8		
3731	D3	3876	D3	6879	D3		
3732	D3	3877	E8	7801	C6		
3733	D3	3878	A1	7805	B2		
3734	D4	3879	C8	7812	C7		
3735	C5	3880	C7	7850	A2		
3736	C5	3881	D7	7851	A2		
3740	B3	3882	D8	7860	A2		
3741	B3	3883	C8	7861	A2		
3742	B3	3884	C8	7873	D8		
3743	C3	3885	C8	7874	D3		
3744	B2	3886	D8	7875	B4		
3746	C2	3887	D7	7876	D3		
3750	B2	3888	E8	7877	C4		

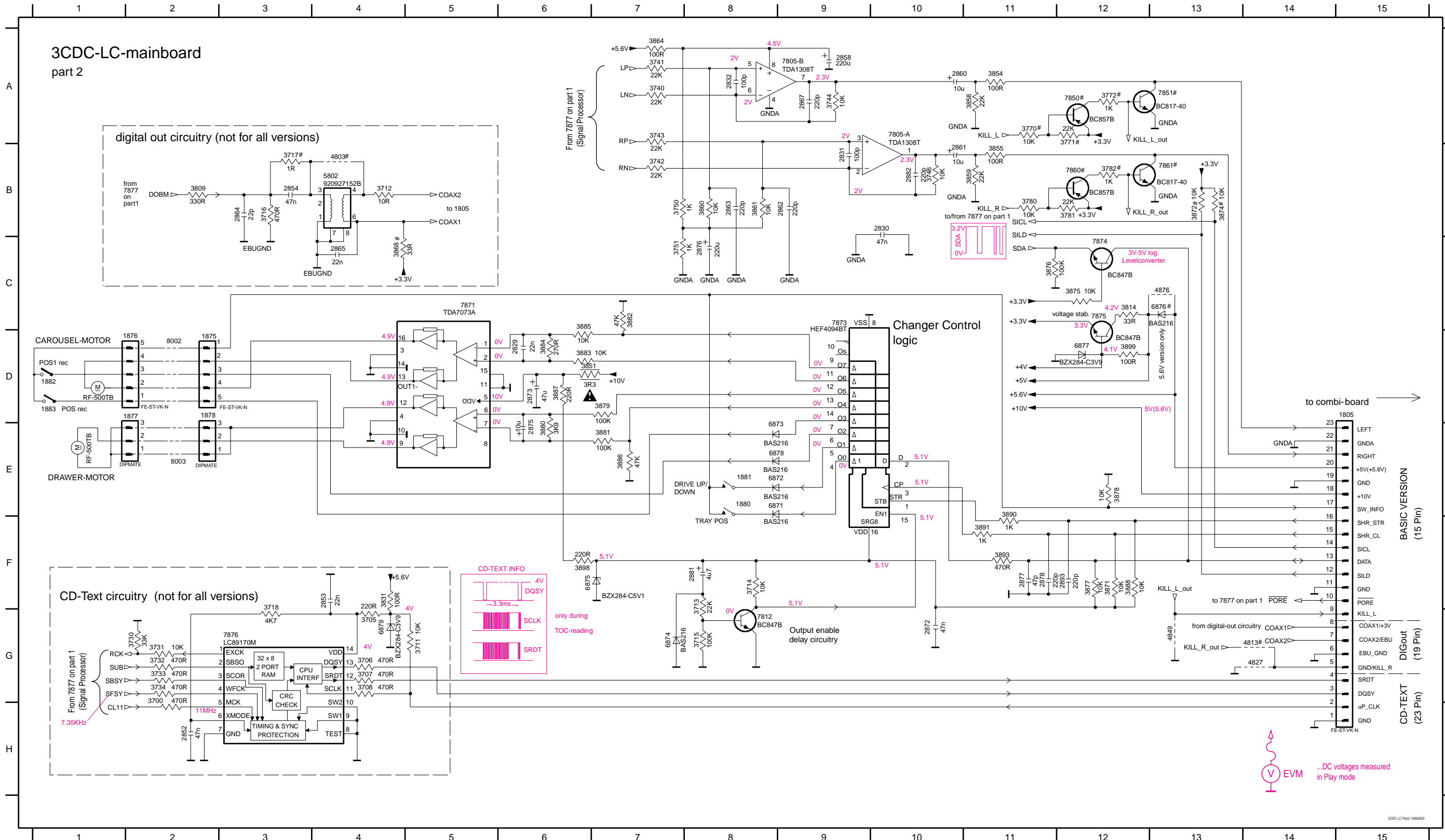
### 3CDC-LC Mainboard Componentside view



This assembly drawing shows a summary of all possible versions. For components used in a specific version see schematic diagram respectively partslist.

3CDC-LC Mainboard Layout stage :2 990920

1805 D15	2830 B10	2858 A10	2865 C4	2877 F11	3705 G4	3713 F8	3730 G2	3741 A7	3751 C7	3782 B12	3855 B11	3868 C4	3877 F12	3883 D6	3890 F11	4813 G14	6872 E8	6878 E8	7851 A13	7875 C12	MP725 D8	MP803 F10	MP810 F13	MP830 A9	MP856 E14	MP867 E8	MP882 G2	MP891 B5
1875 D2	2831 B9	2860 A10	2867 A9	2878 F11	3706 G4	3714 F8	3731 G2	3742 B7	3770 A11	3809 B2	3858 A11	3871 F12	3878 E12	3884 D6	3891 F11	4827 G14	6873 E8	6879 G4	7860 B12	7876 G3	MP726 D8	MP804 G14	MP811 F13	MP832 G9	MP857 B13	MP868 F8	MP886 G3	MP892 B5
1878 D2	2832 A8	2861 B10	2872 G10	2881 F8	3707 G4	3715 G8	3732 G2	3743 A7	3771 A12	3814 C12	3859 B11	3872 B13	3879 D7	3885 C6	3893 F11	4849 G13	6874 F7	7805-A A10	7861 B13	MP721 C8	MP740 H14	MP805 E13	MP822 E3	MP833 F13	MP862 G13	MP869 C12	MP887 H5	MP897 D12
1880 E8	2852 H2	2862 B9	2873 D6	2882 B10	3708 G4	3716 B3	3733 G2	3744 A9	3772 A12	3814 C12	3860 B8	3874 B13	3880 E6	3886 E7	3898 F6	4876 C13	6875 F6	7805-B A9	7871 C5	MP722 E8	MP741 G14	MP806 F13	MP823 D3	MP834 G14	MP863 C11	MP871 D6	MP888 G5	MP898 D13
1881 E8	2853 F4	2863 B8	2875 E6	2893 F12	3711 G5	3717 B3	3734 G2	3746 B10	3780 B11	3851 D6	3861 B8	3875 C12	3881 E7	3887 D6	3899 D12	5802 B4	6876 C13	7812 G8	7873 C9	MP723 C8	MP742 G14	MP807 F14	MP824 D4	MP835 F14	MP865 D11	MP874 D12	MP889 G5	MP899 E14
2829 D6	2854 B3	2864 B3	2876 C8	3700 H2	3712 B4	3718 G3	3740 A7	3750 B7	3781 B12	3854 A11	3864 A7	3876 C11	3882 C7	3888 F12	4803 B4	6871 E8	6877 D12	7850 A12	7874 C12	MP724 D8	MP801 D12	MP808 E13	MP825 D4	MP854 A13	MP866 E8	MP881 G2	MP890 B3	



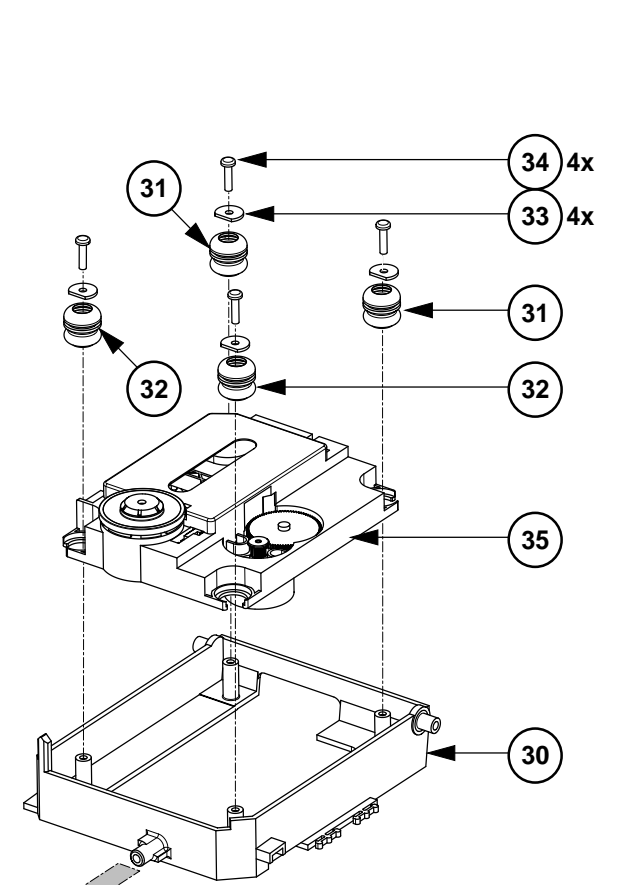
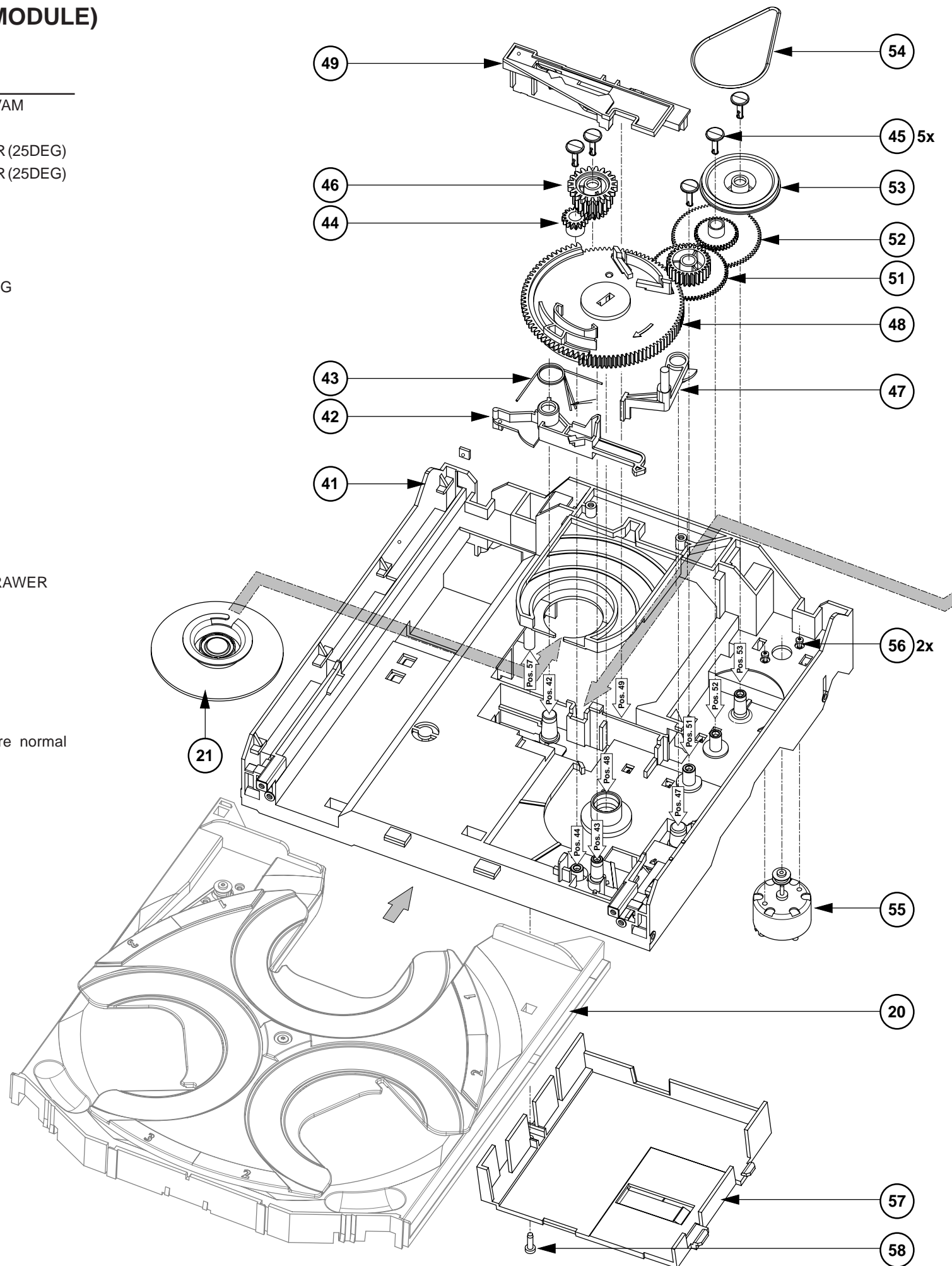


### EXPLODED VIEW (3CDC-LC MODULE)

**Mechanical Parts List - 3CDC-LC Module**

21	314011758650	CLAMPER ASSY-VAM
30	310330466560	SUPPORT
31	482252910431	DAMPER - RUBBER (25DEG)
32	482252910431	DAMPER - RUBBER (25DEG)
33	310330406970	WASHER
35	482269110772	VAM2201/01
41	310330466480	FRAME
42	310330466540	BRACKET-GUIDING
43	310330106460	SPRING-GUIDING
44	310330406890	GEAR-3
45	310330406980	NAIL
46	310330406880	GEAR-2
47	310330466530	BRACKET-LOAD
48	310330406910	CAM
49	310330466510	GUIDING
51	310330406900	GEAR-4
52	310330406870	GEAR-1
53	310330406960	PULLEY-FRAME
54	310330466910	DRIVING-BELT-DRAWER
55	482236110753	MOTOR ASSY
56	482250212548	SCREW M2,6X2,9
57	310330468890	COVER-VAM
59	482246612146	RUBBER

Notes: Only the parts mentioned in this list are normal service spare parts.

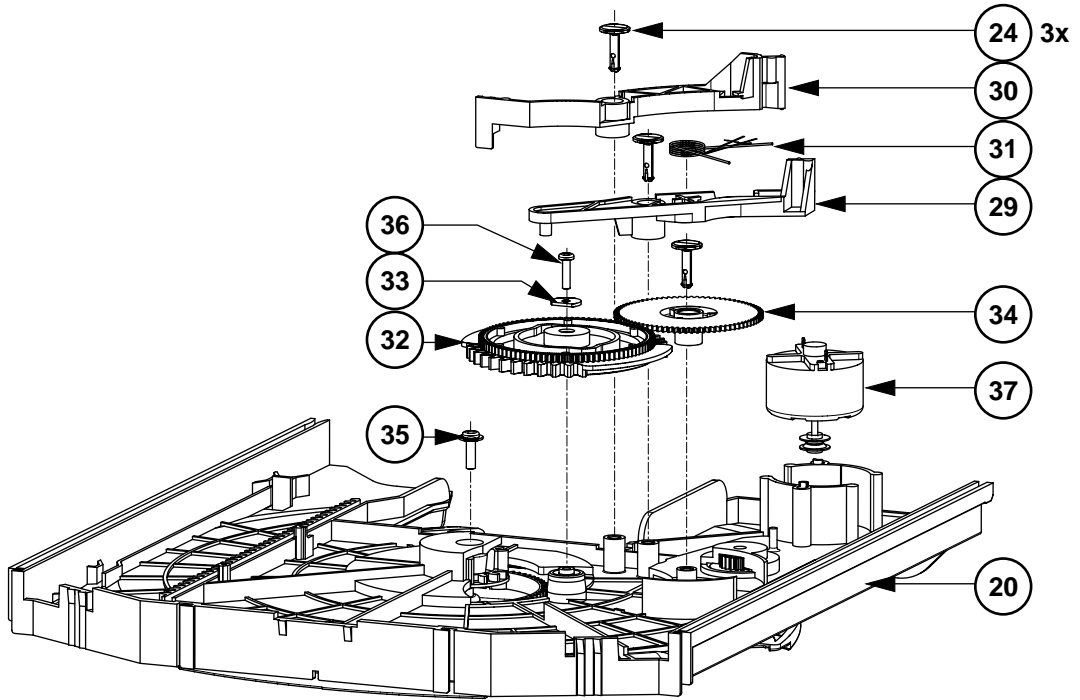


**Mechanical Parts list - Drawer Top & Bottom view**

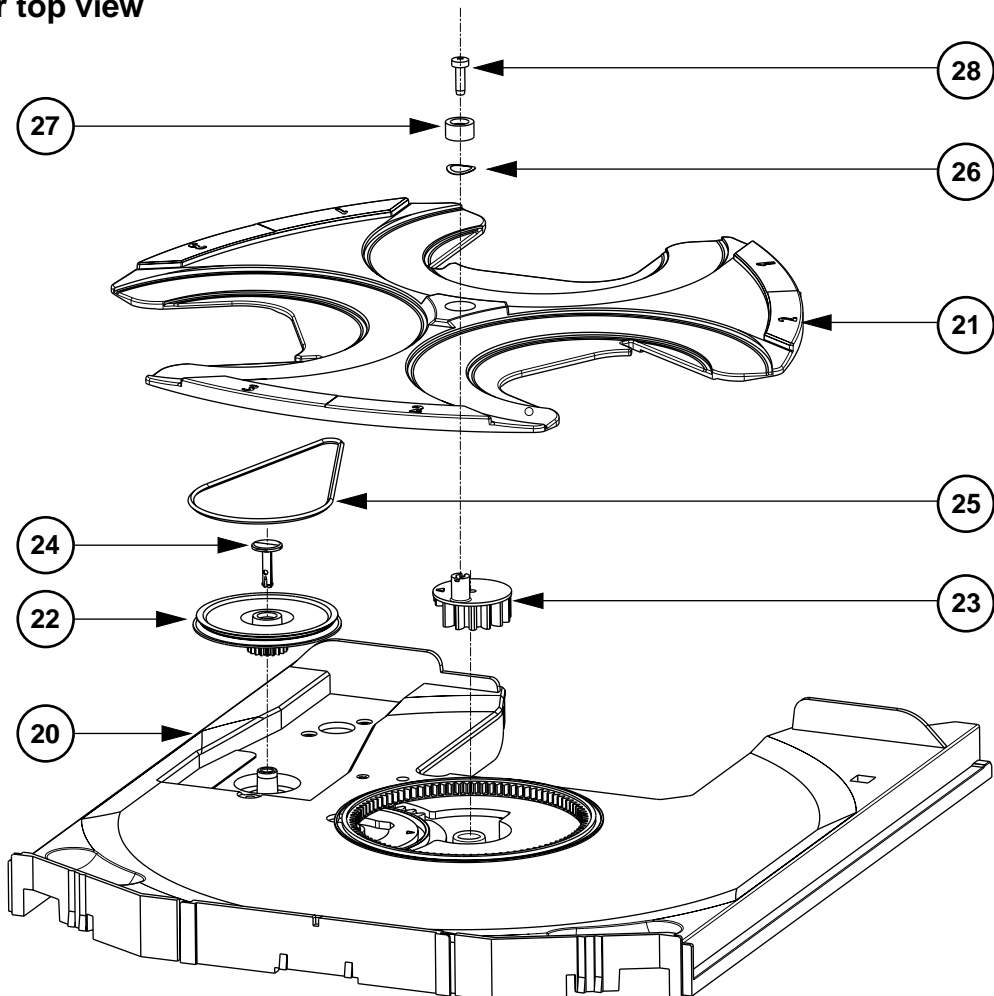
20	3103 304 66500	DRAWER
21	3103 304 66490	CARROUSELL
22	3103 304 06860	PULLEY-DRAWER
23	3103 304 06850	ECCENTRIC
24	3103 304 06980	NAIL
25	3103 304 66850	DRIVING-BELT
27	3103 304 07100	BUSH DRAWER
29	3103 304 66550	BRACKET-DISC
30	3103 304 66520	TUMBLER
31	3103 301 06470	SPRING-DISC
32	3103 304 06920	CONTROL-DISC
33	3103 304 06970	WASHER
34	3103 304 06870	GEAR-1
37	4822 361 10753	MOTOR ASSY

Notes: Only the parts mentioned in this list are normal service spare parts.

**Drawer bottom view**



**Drawer top view**



**ELECTRICAL PARTS LIST - 3CDC-LC MODULE****MISCELLANEOUS**

1800	482226510925	Flex Foil Connector 15P
1805	482226510979	Flex Foil Connector 15P
1805	482226511545	Flex Foil Connector 19P
1805	482226511182	Flex Foil Connector 23P
1810	482224210849	RES XTL 8MHz4672
1810	482224273557	RES CER 8MHz467
1875	482226710958	Flex Foil Connector 5P
1876	242202508332	Flex Foil Connector 5P
1880	482227613503	Switch
1881	482227613503	Switch
1882	482227613503	Switch
1883	482227613503	Switch
8002	310330891990	Flex Foil 5P 200mm
8005	310330891980	Flex Foil 15P 170mm

**CAPACITORS**

2800	482212610326	180pF 5% 63V
2801	482212233575	220pF 5% 63V
2802	482212610326	180pF 5% 63V
2803	482212233575	220pF 5% 63V
2805	482212233575	220pF 5% 63V
2806	482212233575	220pF 5% 63V
2807	532212231863	330pF 5% 63V
2808	482212233575	220pF 5% 63V
2809	532212441948	470nF 20% 50V
2810	482212610326	180pF 5% 63V
2811	482212233575	220pF 5% 63V
2815	482212614076	220nF +80/-20% 25V
2816	482212613344	1,5nF 5% 63V
2818	482212613344	1,5nF 5% 63V
2822	222286115222	2,2nF 5% 50V
2823	482212613692	47pF 1% 63V
2824	482212613751	47nF 10% 63V
2825	482212233177	10nF 20% 50V
2826	482212412362	47μF 20% 4V
2828	482212412362	47μF 20% 4V
2829	532212232654	22nF 10% 63V
2830	482212613751	47nF 10% 63V
2831	532212232531	100pF 5% 50V
2832	532212232531	100pF 5% 50V
2833	532212232659	33pF 5% 50V
2834	532212232659	33pF 5% 50V
2835	482212613751	47nF 10% 63V
2837	482212440433	47μF 20% 25V
2838	482212440248	10μF 20% 63V
2839	482212440433	47μF 20% 25V
2840	482212614585	100nF 10% 50V
2841	482212233216	270pF 5% 50V
2842	482212233127	2,2nF 10% 63V
2844	482212233216	270pF 5% 50V
2849	482212440769	4,7μF 20% 100V
2850	532212231647	1nF 10% 63V

2851	482212442383	220μF 20% 4V
2852	482212613751	47nF 10% 63V
2853	532212232654	22nF 10% 63V
2854	482212613751	47nF 10% 63V
2855	532212234099	470pF 10% 63V
2856	482212613691	27pF 1% 63V
2857	482212233177	10nF 20% 50V
2858	482212412245	220μF 20%
2859	482212233177	10nF 20% 50V
2860	482212411947	10μF 20% 16V
2861	482212411947	10μF 20% 16V
2862	482212233575	220pF 5% 63V
2863	482212233575	220pF 5% 63V
2864	532212232658	22pF 5% 50V
2865	532212232654	22nF 10% 63V
2867	482212233575	220pF 5% 63V
2869	482212613751	47nF 10% 63V
2872	482212613751	47nF 10% 63V
2873	482212480231	47μF 20% 16V
2875	482212411947	10μF 20% 16V
2876	482212412245	220μF 20%
2877	482212613692	47pF 1% 63V
2878	482212233575	220pF 5% 63V
2879	482212613751	47nF 10% 63V
2881	482212440769	4,7μF 20% 100V
2882	482212233575	220pF 5% 63V
2884	482212440769	4,7μF 20% 100V
2885	482212440769	4,7μF 20% 100V
2887	482212614585	100nF 10% 50V
2888	482212440769	4,7μF 20% 100V
2891	532212231865	1,5nF 10% 63V
2892	532212610223	4,7nF 10% 63V
2893	482212233575	220pF 5% 63V

**RESISTORS**

3700	482205120471	470R 5% 0,1W
3705	482211711503	220R 1% 0,1W
3706	482205120471	470R 5% 0,1W
3707	482205120471	470R 5% 0,1W
3708	482205120471	470R 5% 0,1W
3709	482205120108	1R 5% 0,1W
3711	482211710833	10k 1% 0,1W
3712	482205120109	10R 5% 0,1W
3713	482205120223	22k 5% 0,1W
3714	482211710833	10k 1% 0,1W
3715	482211710837	100k 1% 0,1W
3716	482205120471	470R 5% 0,1W
3718	482205120472	4k7 5% 0,1W
3727	482205120472	4k7 5% 0,1W
3728	482205120472	4k7 5% 0,1W
3730	482205120333	33k 5% 0,1W
3731	482211710833	10k 1% 0,1W

**ELECTRICAL PARTS LIST - 3CDC-LC MODULE****RESISTORS**

3732	482205120471	470R 5% 0,1W	3850	482205120392	3k9 5% 0,1W
3733	482205120471	470R 5% 0,1W	3851	482205210338	△ 3R3 5% 0,33W
3734	482205120471	470R 5% 0,1W	3852	482205210228	△ 2R2 5% 0,33W
3740	482205120223	22k 5% 0,1W	3853	482205120471	470R 5% 0,1W
3741	482205120223	22k 5% 0,1W	3854	482205120101	100R 5% 0,1W
3742	482205120223	22k 5% 0,1W	3855	482205120101	100R 5% 0,1W
3743	482205120223	22k 5% 0,1W	3856	482211712521	68R 1% 0,1W
3744	482211710833	10k 1% 0,1W	3857	482211712521	68R 1% 0,1W
3746	482211710833	10k 1% 0,1W	3858	482205120223	22k 5% 0,1W
3750	482205110102	1k 2% 0,25W	3859	482205120223	22k 5% 0,1W
3751	482205110102	1k 2% 0,25W	3860	482211710833	10k 1% 0,1W
3800	482211711148	56k 1% 0,1W	3861	482211710833	10k 1% 0,1W
3801	482211710833	10k 1% 0,1W	3862	482205120121	120R 5% 0,1W
3802	482211711148	56k 1% 0,1W	3863	482205120101	100R 5% 0,1W
3803	482211710833	10k 1% 0,1W	3863	482205120339	33R 5% 0,1W
3804	482211710833	10k 1% 0,1W	3864	482205120101	100R 5% 0,1W
3805	482211710833	10k 1% 0,1W	3866	482211710833	10k 1% 0,1W
3806	482211710833	10k 1% 0,1W	3867	482205120121	120R 5% 0,1W
3807	482211710833	10k 1% 0,1W	3869	482205120478	4R7 5% 0,1W
3808	482211710833	10k 1% 0,1W	3870	482205120101	100R 5% 0,1W
3809	482211713577	330R 1% 1,25W	3871	482211710833	10k 1% 0,1W
3811	482211710965	18k 1% 0,1W	3873	482205120471	470R 5% 0,1W
3812	482205310228	2R2 5% 1W	3875	482211710833	10k 1% 0,1W
3814	482205120339	33R 5% 0,1W	3876	482211710837	100k 1% 0,1W
3815	482205210478	△ 4R7 5% 0,33W	3877	482211710833	10k 1% 0,1W
3819	482205120471	470R 5% 0,1W	3878	482211710833	10k 1% 0,1W
3820	482205120472	4k7 5% 0,1W	3879	482211710837	100k 1% 0,1W
3821	482205120472	4k7 5% 0,1W	3880	482205120392	3k9 5% 0,1W
3822	482211712955	2k7 1% 0,1W	3881	482211710837	100k 1% 0,1W
3823	482205110102	1k 2% 0,25W	3882	482211710834	47k 1% 0,1W
3824	482205110102	1k 2% 0,25W	3883	482211710833	10k 1% 0,1W
3825	482205110102	1k 2% 0,25W	3884	482211711504	270R 1% 0,1W
3826	482205120223	22k 5% 0,1W	3885	482211710833	10k 1% 0,1W
3827	482205120333	33k 5% 0,1W	3886	482211710834	47k 1% 0,1W
3828	482205120223	22k 5% 0,1W	3887	482211711503	220R 1% 0,1W
3831	482205120101	100R 5% 0,1W	3888	482211710833	10k 1% 0,1W
3832	482211710833	10k 1% 0,1W	3889	482205120471	470R 5% 0,1W
3833	482205120223	22k 5% 0,1W	3890	482205110102	1k 2% 0,25W
3834	482205120223	22k 5% 0,1W	3891	482205110102	1k 2% 0,25W
3835	482205210338	△ 3R3 5% 0,33W	3892	482205120471	470R 5% 0,1W
3837	482205110102	1k 2% 0,25W	3893	482205120471	470R 5% 0,1W
3838	482205110102	1k 2% 0,25W	3894	482205120101	100R 5% 0,1W
3839	482211710837	100k 1% 0,1W	3895	482205120159	15R 5% 0,1W
3840	482211710837	100k 1% 0,1W	3897	482205120101	100R 5% 0,1W
3841	482205120472	4k7 5% 0,1W	3898	482211711503	220R 1% 0,1W
3842	482211710834	47k 1% 0,1W	3899	482205120101	100R 5% 0,1W
3843	482205120333	33k 5% 0,1W	4800	482205120008	0R Jumper 0805
3844	482205120472	4k7 5% 0,1W	4801	482205120008	0R Jumper 0805
3845	482211710834	47k 1% 0,1W	4802	482205120008	0R Jumper 0805
3846	482205120333	33k 5% 0,1W	4804	482205120008	0R Jumper 0805
3847	482211711507	6k8 1% 0,1W	4805	482205120008	0R Jumper 0805
3848	482211710837	100k 1% 0,1W	4806	482205120008	0R Jumper 0805
3849	482211710837	100k 1% 0,1W	4807	482205120008	0R Jumper 0805



**ELECTRICAL PARTS LIST - 3CDC-LC MODULE**

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**RESISTORS**

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4808	482205120008	0R Jumper 0805	7805	482220933165	TDA1308T/N1
4810	482205120008	0R Jumper 0805	7806	482220932852	TDA7073A/N2
4812	482205120008	0R Jumper 0805	7807	482220932852	TDA7073A/N2
4817	482205120008	0R Jumper 0805	7812	482213060511	BC847B
4818	482205120008	0R Jumper 0805	7871	482220932852	TDA7073A/N2
4819	482205120008	0R Jumper 0805	7873	532220911306	HEF4094BT
4820	482205120008	0R Jumper 0805	7874	482213060511	BC847B
4821	482205120008	0R Jumper 0805	7875	482213060511	BC847B
4822	482205120008	0R Jumper 0805	7876	482220916143	LC89170M
4823	482205120008	0R Jumper 0805	7877	482220917324	SAA7325H
4824	482205120008	0R Jumper 0805			
4825	482205120008	0R Jumper 0805			
4826	482205120008	0R Jumper 0805			
4827	482205120008	0R Jumper 0805			
4828	482205120008	0R Jumper 0805			
4830	482205120008	0R Jumper 0805			
4831	482205120008	0R Jumper 0805			
4832	482205120008	0R Jumper 0805			
4833	482205120008	0R Jumper 0805			
4834	482205120008	0R Jumper 0805			
4835	482205120008	0R Jumper 0805			
4836	482205120008	0R Jumper 0805			
4837	482205120008	0R Jumper 0805			
4838	482205120008	0R Jumper 0805			
4839	482205120008	0R Jumper 0805			
4840	482205120008	0R Jumper 0805			
4841	482205120008	0R Jumper 0805			
4842	482205120008	0R Jumper 0805			
4843	482205120008	0R Jumper 0805			
4844	482205120008	0R Jumper 0805			
4845	482205120008	0R Jumper 0805			
4846	482205120008	0R Jumper 0805			
4847	482205120008	0R Jumper 0805			
4848	482205120008	0R Jumper 0805			
4849	482205120008	0R Jumper 0805			
4876	482205120008	0R Jumper 0805			

Note: Only the parts mentioned in this list are normal service spare parts.

**COILS & FILTERS**

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5802	482215631058	100 $\mu$ H
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**DIODES**

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6871	482213083757	BAS216
6872	482213083757	BAS216
6873	482213083757	BAS216
6874	482213083757	BAS216
6875	482213011383	BZX284-C5V1
6877	482213011366	BZX284-C3V9
6878	482213083757	BAS216
6879	482213011366	BZX284-C3V9

**TRANSISTORS & INTEGRATED CIRCUITS**

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7801	935262236118	IC SM TZA1025T/V2
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3CDC-LC-MB BLOCK DIAGRAM

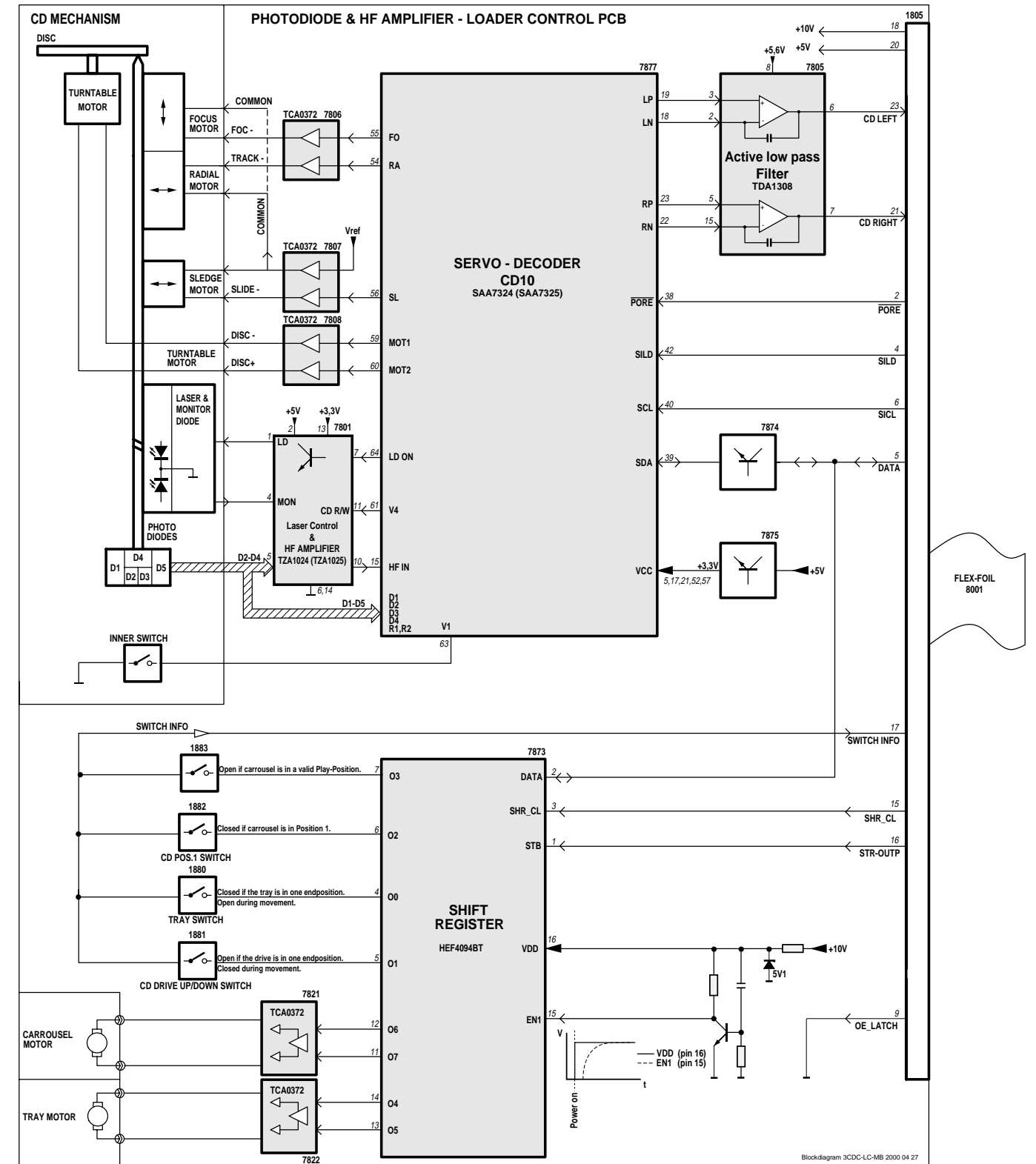
# 3CDC-LC-MB Module

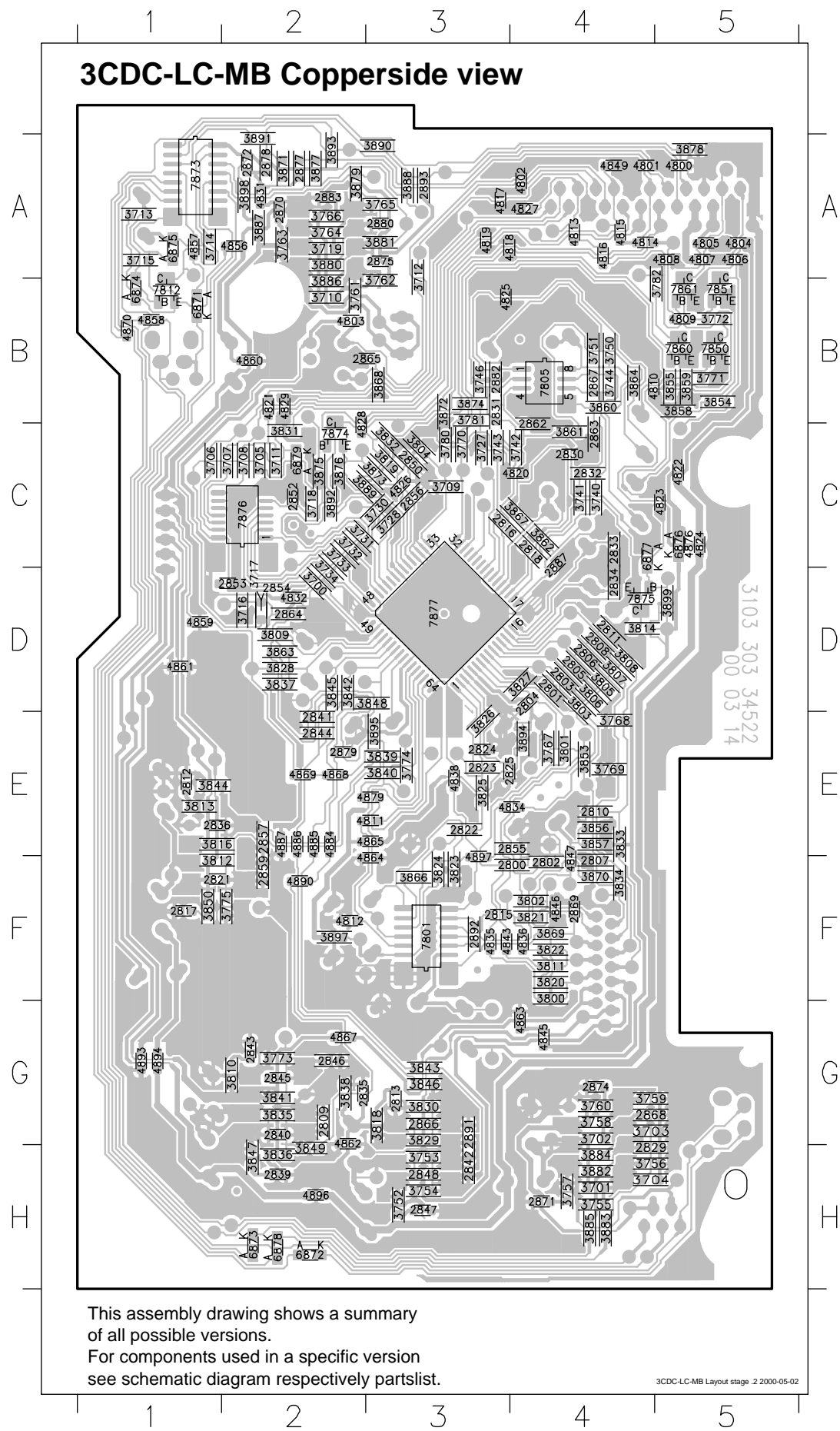
## (3 Disc Carousel Changer)

**Note:**  
 This module is mechanically the same as the 3CDC-LC Module.  
 All service information refers to Chapter 10 except the schematics, layouts & electrical parts list related to the CDC board.  
 The CDC board can be recognized by 12NC: 3103 303 34522 printed on the board.

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CDC Board component & copper side views .....	10A-2
Circuit diagram Part 1 .....	10A-3
CDC Board component & copper side views .....	10A-4
Circuit diagram Part 2 .....	10A-5
Electrical parts list .....	10A-6



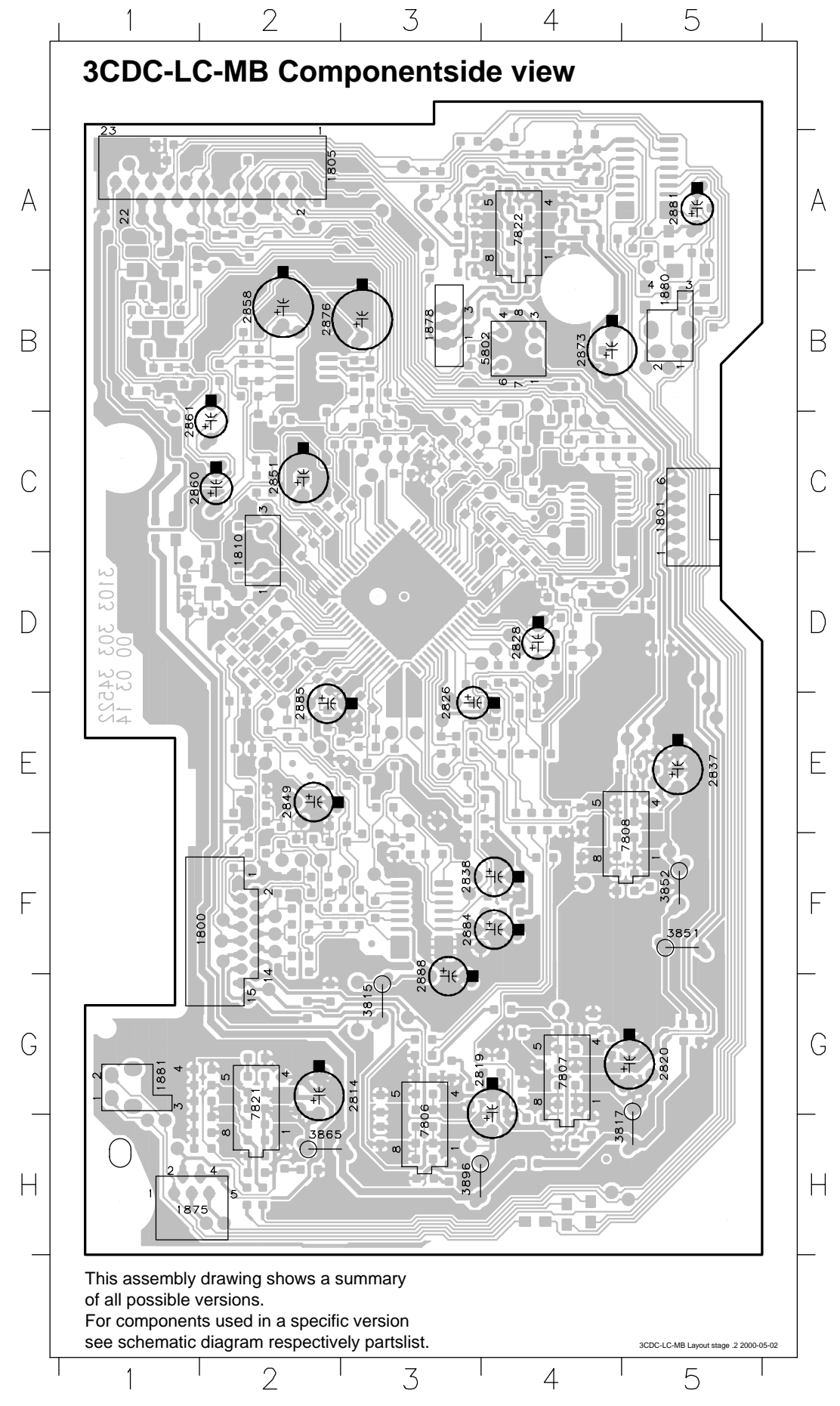


Copper side

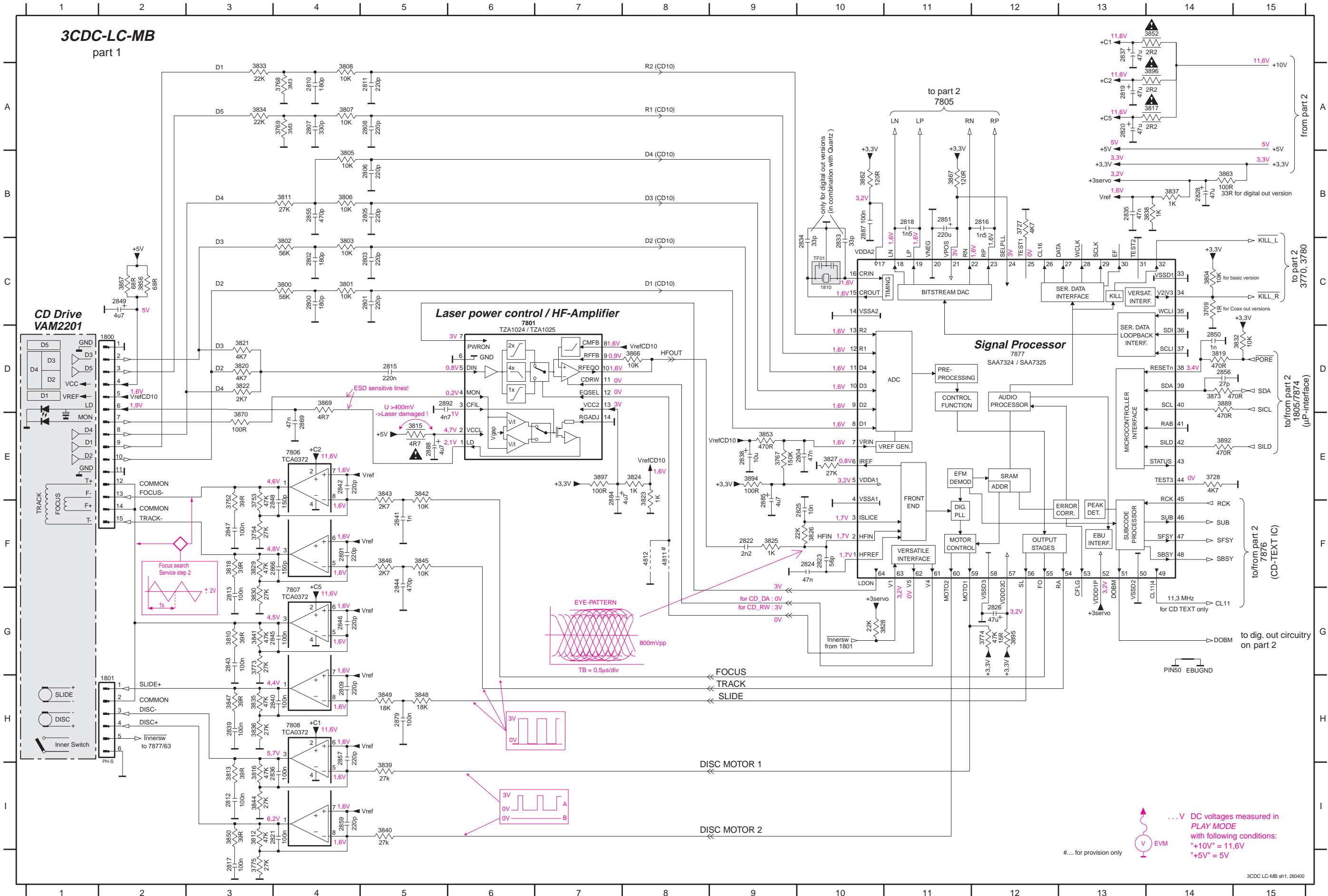
2800 F4	3751 B4	3883 H4
2801 D4	3752 H3	3884 H4
2802 F4	3753 H3	3885 H4
2803 D4	3754 H3	3886 B2
2804 D4	3755 H4	3887 A2
2805 D4	3756 H4	3888 A3
2806 D4	3757 H4	3889 C2
2807 F4	3758 G4	3890 A3
2808 D4	3759 G4	3891 A2
2809 G2	3760 G4	3892 C2
2810 E4	3761 B2	3893 A2
2811 D4	3762 B3	3894 E4
2812 E1	3763 A2	3895 E3
2813 G3	3764 A2	3897 F2
2815 F3	3765 A3	3898 A2
2816 C3	3766 A2	3899 D5
2817 F1	3767 E4	4800 A5
2818 C4	3768 E4	4801 A4
2821 F1	3769 E4	4802 A4
2822 E3	3770 C3	4803 B2
2823 E3	3771 B5	4804 A5
2824 E3	3772 B5	4805 A5
2825 E3	3773 G2	4806 A5
2829 H4	3774 E3	4807 A5
2830 C4	3775 F2	4808 A5
2831 B3	3780 C3	4809 B5
2832 C4	3781 B3	4810 B4
2833 C4	3782 B5	4811 E3
2834 D4	3800 F4	4812 F2
2835 G2	3801 F4	4813 A4
2836 E1	3802 F4	4814 A4
2839 H2	3803 D4	4815 A4
2840 G2	3804 C3	4816 A4
2841 E2	3805 D4	4817 A3
2842 H3	3806 D4	4818 A3
2843 G2	3807 D4	4819 A3
2844 E2	3808 D4	4820 C4
2845 G2	3809 D2	4821 B2
2846 G2	3810 G2	4822 C5
2847 H3	3811 F4	4823 C5
2848 H3	3812 F1	4824 C5
2850 C3	3813 E1	4825 B3
2852 C2	3814 D4	4826 C3
2853 D2	3816 E1	4827 A4
2854 D2	3818 G3	4828 C2
2855 E4	3819 C3	4829 B2
2856 C3	3820 F4	4831 A2
2857 E2	3821 F4	4832 D2
2859 F2	3822 F4	4834 E4
2862 C4	3823 F3	4835 F3
2863 C4	3824 F3	4836 F4
2864 D2	3825 E3	4838 E3
2865 B3	3826 E3	4843 F3
2866 G3	3827 D4	4845 G4
2867 B4	3828 D2	4846 F4
2868 G4	3829 G3	4847 F4
2869 F4	3830 G3	4849 A4
2870 A2	3831 C2	4856 A2
2871 H4	3832 C3	4857 A1
2872 A2	3833 E4	4858 B1
2874 G4	3834 F4	4859 D1
2875 A3	3835 G2	4860 B2
2877 A2	3836 H2	4861 D1
2878 A2	3837 D2	4862 G2
2879 E2	3838 G2	4863 G4
2880 A3	3839 E3	4864 F3
2882 B3	3840 E3	4865 E3
2883 A2	3841 G2	4867 G2
2887 C4	3842 D2	4868 E2
2891 G3	3843 G3	4869 E2
2892 F3	3844 E1	4870 B1
2893 A3	3845 D2	4876 C5
3700 D2	3846 G3	4879 E3
3701 H4	3847 H2	4884 E2
3702 G4	3848 D3	4885 E2
3703 G4	3849 H2	4886 E2
3704 H4	3850 F1	4887 E2
3705 C2	3853 E4	4890 F2
3706 C1	3854 B5	4893 G1
3707 C2	3855 B5	4894 G1
3708 C2	3856 F4	4896 H2
3709 C3	3857 E4	4897 F3
3710 B2	3858 B5	6871 B1
3711 C2	3859 B5	6872 H2
3712 A3	3860 B4	6873 H2
3713 A1	3861 C4	6874 B1
3714 A1	3862 C4	6875 A1
3715 A1	3863 D2	6876 C5
3716 D2	3864 B4	6877 C4
3717 D2	3866 F3	6878 H2
3718 C2	3867 C4	6879 C2
3719 A2	3868 B3	7801 F3
3727 C3	3869 F4	7805 B4
3728 C3	3870 F4	7812 B1
3730 C3	3871 A2	7850 B5
3731 C2	3872 B3	7851 B5
3732 C2	3873 C3	7860 B5
3733 C2	3874 B3	7861 B5
3734 D2	3875 C2	7873 A1
3740 C4	3876 C2	7874 C2
3741 C4	3877 A2	7875 D4
3742 C4	3878 A5	7876 C2
3743 C3	3879 A2	7877 D3
3744 B4	3880 A2	
3746 B3	3881 A3	
3750 B4	3882 H4	

Component side

1800 F1
1801 C5
1805 A2
1810 C2
1875 H1
1878 B3
1880 B5
1881 G1
2814 G3
2819 G3
2820 G5
2826 E3
2828 D4
2837 E5
2838 F3
2849 E2
2851 C2
2858 B2
2860 C1
2861 C1
2873 B4
2876 B2
2881 A5
2884 F3
2885 E2
2888 G3
3815 G3
3817 H4
3851 F5
3852 F5
3865 H2
3896 H3
5802 B4
7806 H3
7807 G4
7808 E4
7821 G2
7822 A3

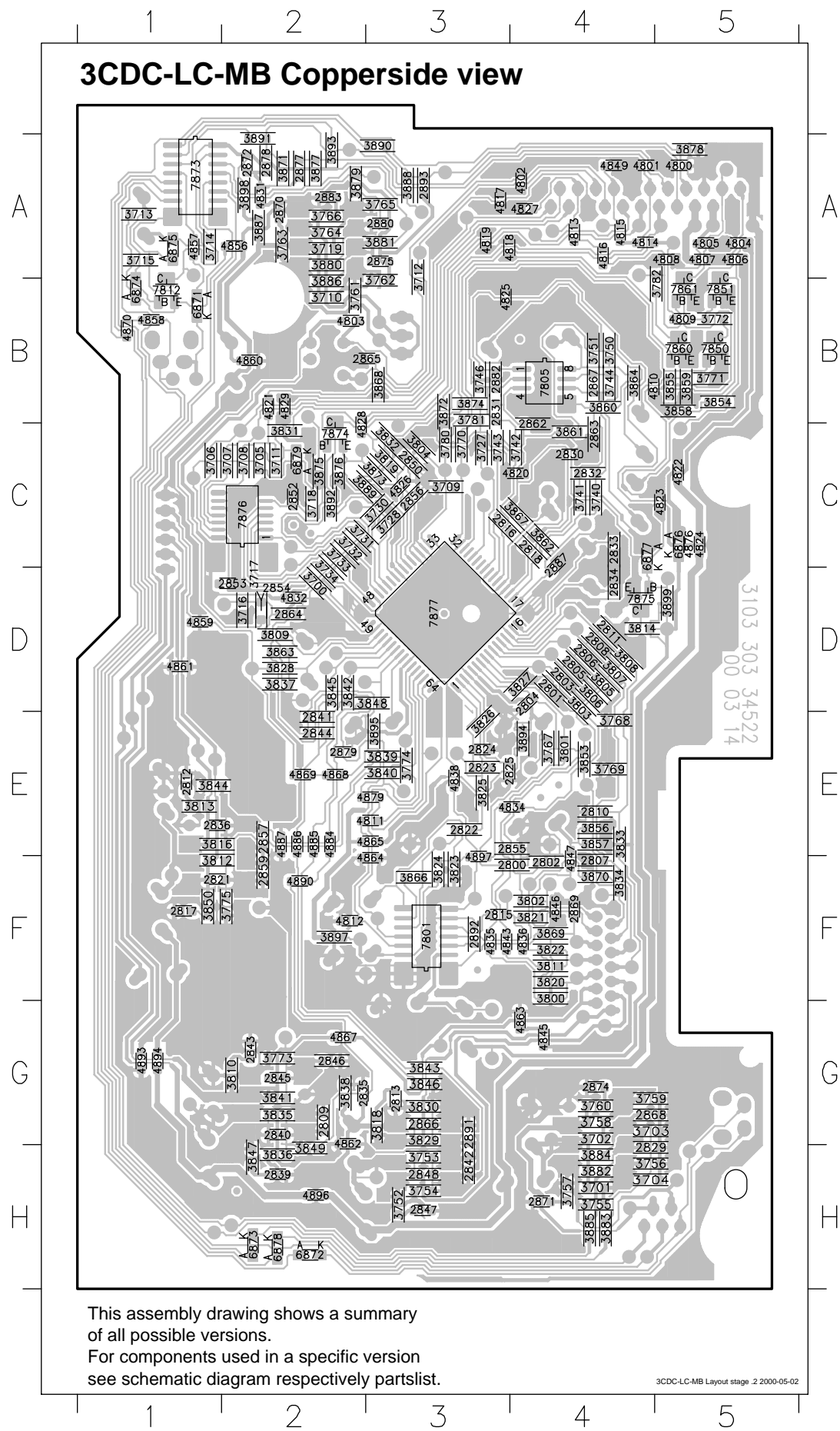


1800 D1 2801 C5 2805 B5 2809 H4 2813 G3 2818 B11 2822 F9 2826 G12 2835 B13 2839 H3 2843 G3 2847 F3 2851 B11 2859 I4 2884 E7 2891 F4 3728 E14 3767 E9 3774 G12 3802 C4 3806 B4 3811 B4 3816 I3 3820 D3 3824 E8 3828 G10 3833 A3 3837 B14 3841 G3 3845 F5 3849 H5 3856 C2 3866 D8 3873 D14 3895 G12 4812 F8 7808 H4  
 1801 G1 2802 C4 2806 B5 2810 A4 2815 D5 2819 A13 2823 F10 2828 B12 2836 I4 2840 H4 2844 F5 2848 F4 2855 B4 2866 F4 2885 F9 2892 D5 3752 F3 3768 A4 3803 C4 3807 A4 3812 I3 3817 A14 3821 D3 3825 F9 3830 G3 3835 H3 3839 I5 3843 E5 3847 H5 3855 I3 3867 B11 3877 D14 3896 A14 3899 E7 7801 E7 7877 D12  
 1810 C10 2803 C5 2807 A4 2811 A5 2816 B12 2820 A13 2824 F10 2833 C10 2837 A13 2841 F5 2845 G4 2849 C2 2856 D14 2869 E4 2887 B10 3709 C14 3753 F3 3769 A4 3800 C4 3804 C14 3808 A4 3813 I3 3818 F3 3822 D3 3826 F9 3830 G3 3835 H3 3839 I5 3843 E5 3847 H5 3855 I3 3867 B11 3877 D14 3896 A14 3899 E7 7801 E7 7877 D12  
 2800 C4 2804 E10 2808 A5 2812 I3 2817 I3 2821 I4 2825 F10 2834 C10 2838 E8 2842 E4 2846 G4 2850 D14 2857 H4 2868 E5 3727 B12 3754 F3 3773 G3 3801 C4 3805 B4 3810 G3 3815 E5 3819 D14 3823 E8 3827 F9 3832 D15 3836 H3 3840 I5 3844 I5 3848 H5 3853 E9 3863 B14 3870 E3 3874 E9 4811 F8 7807 G4



... V DC voltages measured in PLAY MODE with following conditions:  
 \*+10V\* = 11.6V  
 \*+5V\* = 5V  
 #... for provision only



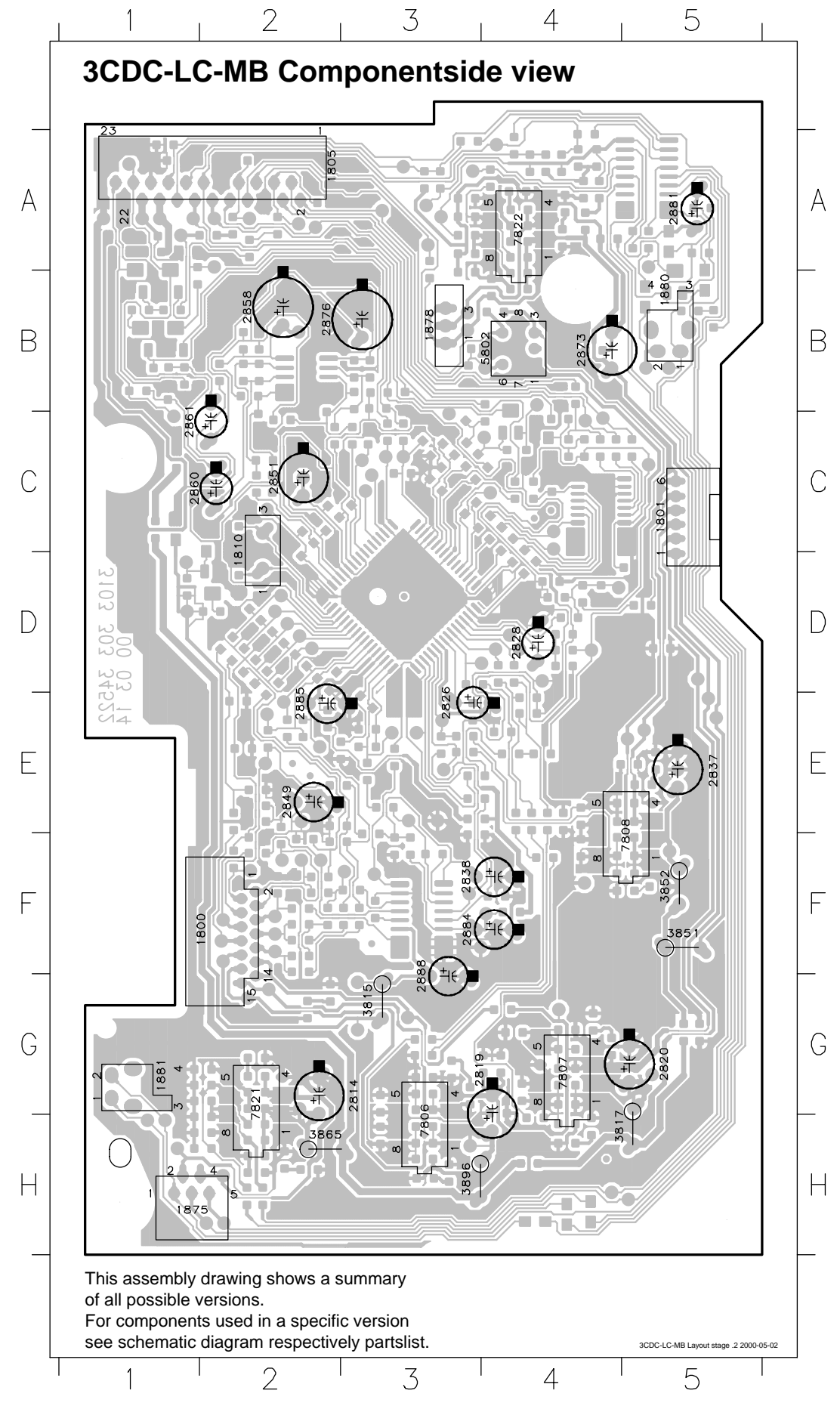


Copper side

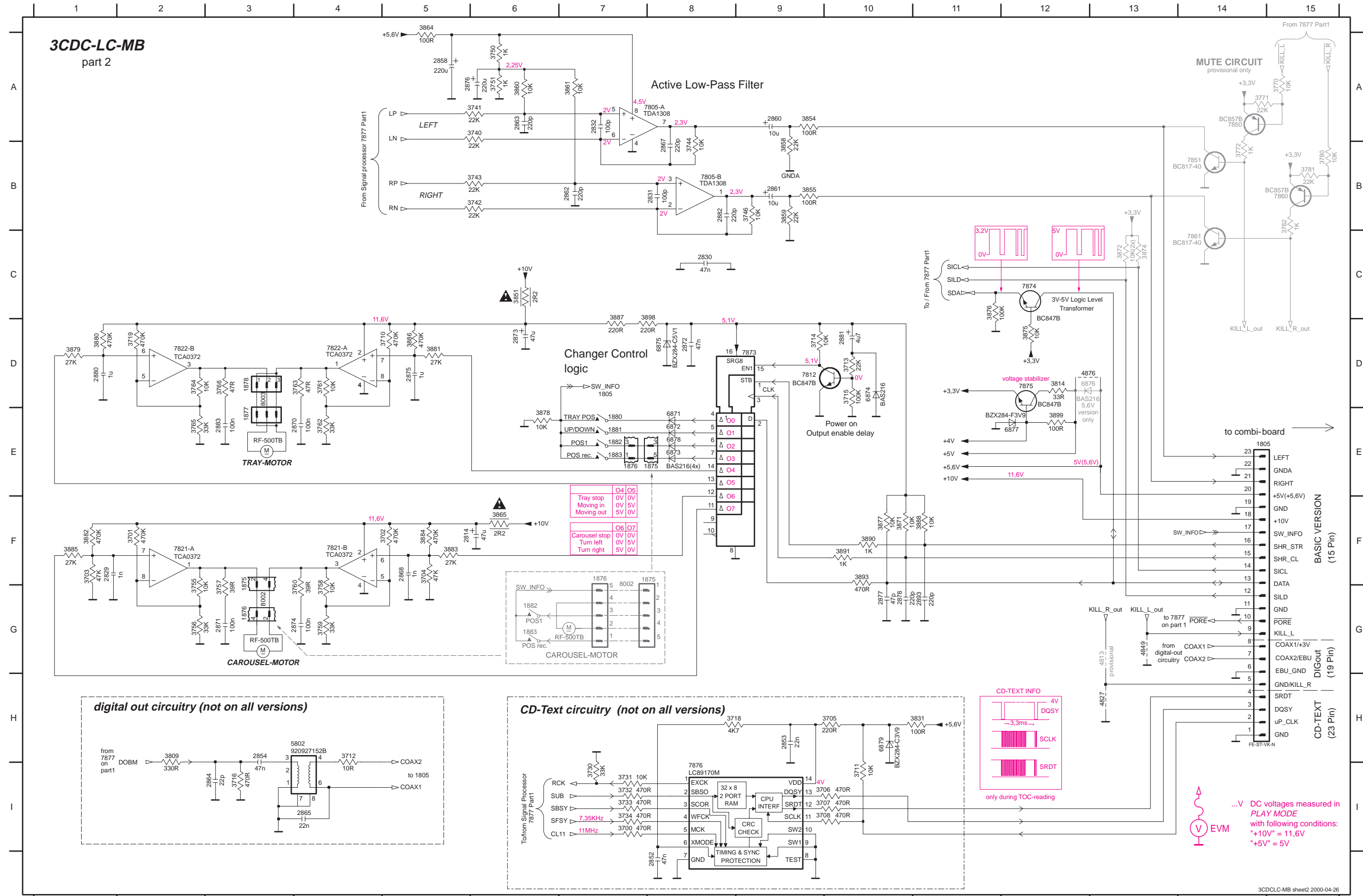
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2801 D4	3752 H3	3884 H4
2802 F4	3753 H3	3885 H4
2803 D4	3754 H3	3886 B2
2804 D4	3755 H4	3887 A2
2805 D4	3756 H4	3888 A3
2806 D4	3757 H4	3889 C2
2807 F4	3758 G4	3890 A3
2808 D4	3759 G4	3891 A2
2809 G2	3760 G4	3892 C2
2810 E4	3761 B2	3893 A2
2811 D4	3762 B3	3894 E4
2812 E1	3763 A2	3895 E3
2813 G3	3764 A2	3897 F2
2815 F3	3765 A3	3898 A2
2816 C3	3766 A2	3899 D5
2817 F1	3767 E4	4800 A5
2818 C4	3768 E4	4801 A4
2821 F1	3769 E4	4802 A4
2822 E3	3770 C3	4803 B2
2823 E3	3771 B5	4804 A5
2824 E3	3772 B5	4805 A5
2825 E3	3773 G2	4806 A5
2829 H4	3774 E3	4807 A5
2830 C4	3775 F2	4808 A5
2831 B3	3780 C3	4809 B5
2832 C4	3781 B3	4810 B4
2833 C4	3782 B5	4811 E3
2834 D4	3800 F4	4812 F2
2835 G2	3801 F4	4813 A4
2836 E1	3802 F4	4814 A4
2839 H2	3803 D4	4815 A4
2840 G2	3804 C3	4816 A4
2841 E2	3805 D4	4817 A3
2842 H3	3806 D4	4818 A3
2843 G2	3807 D4	4819 A3
2844 E2	3808 D4	4820 C4
2845 G2	3809 D2	4821 B2
2846 G2	3810 G2	4822 C5
2847 H3	3811 F4	4823 C5
2848 H3	3812 F1	4824 C5
2850 C3	3813 E1	4825 B3
2852 C2	3814 D4	4826 C3
2853 D2	3816 E1	4827 A4
2854 D2	3818 G3	4828 C2
2855 E4	3819 C3	4829 B2
2856 C3	3820 F4	4831 A2
2857 E2	3821 F4	4832 D2
2859 F2	3822 F4	4834 E4
2862 C4	3823 F3	4835 F3
2863 C4	3824 F3	4836 F4
2864 D2	3825 E3	4838 E3
2865 B3	3826 E3	4843 F3
2866 G3	3827 D4	4845 G4
2867 B4	3828 D2	4846 F4
2868 G4	3829 G3	4847 F4
2869 F4	3830 G3	4849 A4
2870 A2	3831 C2	4856 A2
2871 H4	3832 C3	4857 A1
2872 A2	3833 E4	4858 B1
2874 G4	3834 F4	4859 D1
2875 A3	3835 G2	4860 B2
2877 A2	3836 H2	4861 D1
2878 A2	3837 D2	4862 G2
2879 E2	3838 G2	4863 G4
2880 A3	3839 E3	4864 F3
2882 B3	3840 E3	4865 E3
2883 A2	3841 G2	4867 G2
2887 C4	3842 D2	4868 E2
2891 G3	3843 G3	4869 E2
2892 F3	3844 E1	4870 B1
2893 A3	3845 D2	4876 C5
3700 D2	3846 G3	4879 E3
3701 H4	3847 H2	4884 E2
3702 G4	3848 D3	4885 E2
3703 G4	3849 H2	4886 E2
3704 H4	3850 F1	4887 E2
3705 C2	3853 E4	4890 F2
3706 C1	3854 B5	4893 G1
3707 C2	3855 B5	4894 G1
3708 C2	3856 F4	4896 H2
3709 C3	3857 E4	4897 F3
3710 B2	3858 B5	6871 B1
3711 C2	3859 B5	6872 H2
3712 A3	3860 B4	6873 H2
3713 A1	3861 C4	6874 B1
3714 A1	3862 C4	6875 A1
3715 A1	3863 D2	6876 C5
3716 D2	3864 B4	6877 C4
3717 D2	3866 F3	6878 H2
3718 C2	3867 C4	6879 C2
3719 A2	3868 B3	7801 F3
3727 C3	3869 F4	7805 B4
3728 C3	3870 F4	7812 B1
3730 C3	3871 A2	7850 B5
3731 C2	3872 B3	7851 B5
3732 C2	3873 C3	7860 B5
3733 C2	3874 B3	7861 B5
3734 D2	3875 C2	7873 A1
3740 C4	3876 C2	7874 C2
3741 C4	3877 A2	7875 D4
3742 C4	3878 A5	7876 C2
3743 C3	3879 A2	7877 D3
3744 B4	3880 A2	
3746 B3	3881 A3	
3750 B4	3882 H4	

Component side

1800 F1
1801 C5
1805 A2
1810 C2
1875 H1
1878 B3
1880 B5
1881 G1
2814 G3
2819 G3
2820 G5
2826 E3
2828 D4
2837 E5
2838 F3
2849 E2
2851 C2
2858 B2
2860 C1
2861 C1
2873 B4
2876 B2
2881 A5
2884 F3
2885 E2
2888 G3
3815 G3
3817 H4
3851 F5
3852 F5
3865 H2
3896 H3
5802 B4
7806 H3
7807 G4
7808 E4
7821 G2
7822 A3



1805	E14	1880	E7	2831	B8	2861	B9	2870	E4	2877	G10	3372	C13	3705	H10	3713	D10	3730	I7	3743	B6	3757	G3	3764	D2	3781	B15	3855	B9	3871	F10	3881	D5	3888	F11	4827	H13	6874	D10	7805-B	B8	7851	B14
1850	G3	1881	E7	2832	A7	2862	B7	2871	G3	2878	G10	3374	C13	3706	I10	3714	D9	3732	I7	3744	B8	3758	G4	3765	E2	3782	B15	3858	B9	3875	D12	3882	F1	3890	F10	4849	G13	6875	D8	7812	D9	7860	B15
1875	E8	1882	E7	2852	I8	2863	A6	2872	D8	2880	D1	3700	I7	3707	I10	3715	D10	3733	I7	3746	B9	3759	G4	3766	D3	3809	H2	3859	B9	3876	F10	3883	F5	3891	F10	4876	D12	6876	D12	7821-A	F2	7861	C14
1876	E7	1893	E7	2853	H9	2864	I3	2873	D6	2881	D10	3701	F2	3708	I10	3716	I5	3734	I7	3750	A6	3760	G4	3770	A14	3814	D12	3860	A6	3877	F10	3884	F5	3893	F10	5802	H4	6877	E12	7821-B	F4	7873	D9
1877	E3	2814	F6	2854	H3	2865	I4	2874	G4	2882	B8	3702	F5	3710	D5	3718	H8	3734	I7	3751	A6	3761	D4	3771	A14	3831	H11	3861	A7	3878	E5	3885	F1	3898	D7	5802	H4	6877	E8	7822-A	D4	7874	C12
1878	D3	2829	F2	2858	A5	2867	B8	2875	D5	2883	E3	3703	F1	3711	I10	3719	D2	3741	A6	3755	G2	3762	E4	3772	B14	3851	C6	3864	A5	3879	D1	3886	D5	3899	E12	6872	E8	6879	H10	7822-B	D2	7875	D12
1878	G3	2830	C8	2860	A9	2868	F5	2876	A6	2893	G11	3704	F5	3712	H4	3730	I7	3742	B6	3756	G2	3763	D4	3780	B15	3854	A9	3865	F6	3880	D1	3887	D7	4813	G13	6873	E8	7805-A	A7	7850	A14	7876	I8





## ELECTRICAL PARTS LIST 3CDC-LC-MB MODULE

## MISCELLANEOUS

1800	4822 265 10925	FFC-CONNECTOR, 15P, SIDE ENTRY
1805	4822 265 10979	FLEX FOIL CONNECTOR 15PIN
1805	4822 265 11182	FLEX FOIL CONNECTOR 23PIN
1805	4822 265 11545	FLEX FOIL CONNECTOR 19PIN
1875	4822 267 10958	FFC-CONNECTOR, 5P, SIDE ENTRY
1876	2422 025 08332	FLEX FOIL CONNECTOR 5PIN
1880	4822 276 13503	SWITCH, Tray in endposition
1881	4822 276 13503	SWITCH, Drive up/down
1882	4822 276 13503	SWITCH, Position 1
1883	4822 276 13503	SWITCH, Position recognized
8002	3103 308 91990	FLEX FOIL CABLE 5P, 200mm
8005	3103 308 91980	FLEX FOIL CABLE 15P, 170mm

## CAPACITORS

2800	© 4822 126 10326	180pF	5%	
2801	© 4822 122 33575	220pF	5%	50V
2802	© 4822 126 10326	180pF	5%	
2803	© 4822 122 33575	220pF	5%	50V
2804	© 4822 126 13751	47nF	10%	50V
2805	© 4822 122 33575	220pF	5%	50V
2806	© 4822 122 33575	220pF	5%	50V
2807	© 5322 122 31863	330pF	5%	50V
2808	© 4822 122 33575	220pF	5%	50V
2809	© 4822 122 33575	220pF	5%	50V
2810	© 4822 126 10326	180pF	5%	
2811	© 4822 122 33575	220pF	5%	50V
2812	© 4822 126 14585	100nF	10%	50V
2813	© 4822 126 14585	100nF	10%	50V
2814	4822 124 40433	47µF	20%	25V
2815	© 4822 126 14076	220nF	20%	25V
2816	© 4822 126 13344	1,5nF	5%	63V
2817	© 4822 126 14585	100nF	10%	50V
2818	© 4822 126 13344	1,5nF	5%	63V
2819	4822 124 40433	47µF	20%	25V
2820	4822 124 40433	47µF	20%	25V
2821	© 4822 126 14585	100nF	10%	50V
2822	© 2222 861 15222	2,2nF	10%	50V
2823	© 4822 126 13693	56pF	1%	63V
2824	© 4822 126 13751	47nF	10%	50V
2825	© 4822 122 33177	10nF	20%	50V
2826	4822 124 12362	47µF	20%	4V
2828	4822 124 12362	47µF	20%	4V
2829	© 5322 122 31647	1nF	10%	63V
2830	© 4822 126 13751	47nF	10%	50V
2831	© 5322 122 32531	100pF	5%	50V
2832	© 5322 122 32531	100pF	5%	50V
2833	© 5322 122 32659	33pF	5%	50V
2834	© 5322 122 32659	33pF	5%	50V
2835	© 4822 126 13751	47nF	10%	50V
2836	© 4822 126 14585	100nF	10%	50V
2837	4822 124 40433	47µF	20%	25V
2838	4822 124 40248	10µF	20%	63V
2839	© 4822 126 14585	100nF	10%	50V
2840	© 4822 126 14585	100nF	10%	50V
2841	© 5322 122 31647	1nF	10%	63V
2842	© 5322 126 10794	220pF	10%	
2843	© 4822 126 14585	100nF	10%	50V
2844	© 5322 122 34099	470pF	10%	63V
2845	© 4822 126 14585	100nF	10%	50V
2846	© 4822 122 33575	220pF	5%	50V
2847	© 4822 126 14585	100nF	10%	50V
2848	© 5322 122 33538	150pF	5%	63V
2849	4822 124 40769	4,7µF	20%	100V
2850	© 5322 122 31647	1nF	10%	63V

## CAPACITORS

2851	4822 124 42383	220µF	20%	4V
2852	© 4822 126 13751	47nF	10%	50V
2853	© 5322 122 32654	22nF	10%	63V
2854	© 4822 126 13751	47nF	10%	50V
2855	© 5322 122 34099	470pF	10%	63V
2856	© 4822 126 13691	27pF	1%	63V
2857	© 4822 122 33575	220pF	5%	50V
2858	4822 124 12245	220µF	20%	16V
2859	© 4822 122 33575	220pF	5%	50V
2860	4822 124 11947	10µF	20%	16V
2861	4822 124 11947	10µF	20%	16V
2862	© 4822 122 33575	220pF	5%	50V
2863	© 4822 122 33575	220pF	5%	50V
2864	© 5322 122 32658	22pF	5%	50V
2865	© 5322 122 32654	22nF	10%	63V
2866	© 5322 122 33538	150pF	5%	63V
2867	© 4822 122 33575	220pF	5%	50V
2868	© 5322 122 31647	1nF	10%	63V
2869	© 4822 126 13751	47nF	10%	50V
2870	© 4822 126 14585	100nF	10%	50V
2871	© 4822 126 14585	100nF	10%	50V
2872	© 4822 126 13751	47nF	10%	50V
2873	4822 124 40433	47µF	20%	25V
2874	© 4822 126 14585	100nF	10%	50V
2875	© 4822 126 14043	1µF	20%	16V
2876	4822 124 12245	220µF	20%	16V
2877	© 4822 126 13692	47pF	1%	63V
2878	© 4822 122 33575	220pF	5%	50V
2879	© 4822 126 14585	100nF	10%	50V
2880	© 4822 126 14043	1µF	20%	16V
2881	4822 124 40769	4,7µF	20%	100V
2882	© 4822 122 33575	220pF	5%	50V
2883	© 4822 126 14585	100nF	10%	50V
2884	4822 124 40769	4,7µF	20%	100V
2885	4822 124 40769	4,7µF	20%	100V
2887	© 4822 126 14585	100nF	10%	50V
2888	4822 124 40769	4,7µF	20%	100V
2891	© 4822 122 33575	220pF	5%	50V
2892	© 5322 126 10223	4,7nF	10%	63V
2893	© 4822 122 33575	220pF	5%	50V
RESISTORS				
3700	© 4822 051 20471	470Ω	5%	0,1W
3701	© 4822 051 20474	470kΩ	5%	0,1W
3702	© 4822 051 20474	470kΩ	5%	0,1W
3703	© 4822 117 10834	47kΩ	1%	0,1W
3704	© 4822 117 10834	47kΩ	1%	0,1W
3705	© 4822 117 11503	220Ω	5%	0,1W
3706	© 4822 051 20471	470Ω	5%	0,1W
3707	© 4822 051 20471	470Ω	5%	0,1W
3708	© 4822 051 20471	470Ω	5%	0,1W
3709	© 4822 051 20108	1Ω	5%	0,1W
3710	© 4822 051 20474	470kΩ	5%	0,1W
3711	© 4822 117 10833	10kΩ	1%	0,1W
3712	© 4822 051 20109	10Ω	5%	0,1W
3713	© 4822 051 20223	22kΩ	5%	0,1W
3714	© 4822 117 10833	10kΩ	1%	0,1W
3715	© 4822 117 10837	100kΩ	1%	0,1W
3716	© 4822 051 20471	470Ω	5%	0,1W
3718	© 4822 051 20472	4,7kΩ	5%	0,1W
3719	© 4822 051 20474	470kΩ	5%	0,1W
3727	© 4822 051 20472	4,7kΩ	5%	0,1W
3728	© 4822 051 20472	4,7kΩ	5%	0,1W
3730	© 4822 051 20333	33kΩ	5%	0,1W
3731	© 4822 117 10833	10kΩ	1%	0,1W
3732	© 4822 051 20471	470Ω	5%	0,1W
3733	© 4822 051 20471	470Ω	5%	0,1W

## ELECTRICAL PARTS LIST 3CDC-LC-MB MODULE

## RESISTORS

3734	© 4822 051 20471	470Ω	5%	0,1W
3740	© 4822 051 20223	22kΩ	5%	0,1W
3741	© 4822 051 20223	22kΩ	5%	0,1W
3742	© 4822 051 20223	22kΩ	5%	0,1W
3743	© 4822 051 20223	22kΩ	5%	0,1W
3744	© 4822 117 10833	10kΩ	1%	0,1W
3746	© 4822 117 10833	10kΩ	1%	0,1W
3750	© 4822 051 10102	1kΩ	2%	0,25W
3751	© 4822 051 10102	1kΩ	2%	0,25W
3752	© 4822 051 20399	39Ω	5%	0,1W
3753	© 4822 117 10834	47kΩ	1%	0,1W
3754	© 4822 117 12024	27kΩ	1%	0,1W
3755	© 4822 117 10833	10kΩ	1%	0,1W
3756	© 2120 108 92632	33kΩ	1%	0,1W
3757	© 4822 051 20399	39Ω	5%	0,1W
3758	© 4822 117 10833	10kΩ	1%	0,1W
3759	© 2120 108 92632	33kΩ	1%	0,1W
3760	© 4822 051 20399	39Ω	5%	0,1W
3761	© 4822 117 10833	10kΩ	1%	0,1W
3762	© 2120 108 92632	33kΩ	1%	0,1W
3763	© 4822 051 20479	47Ω	5%	0,1W
3764	© 4822 117 10833	10kΩ	1%	0,1W
3765	© 2120 108 92632	33kΩ	1%	0,1W
3766	© 4822 051 20479	47Ω	5%	0,1W
3773	© 4822 117 12024	27kΩ	1%	0,1W
3775	© 4822 117 12024	27kΩ	1%	0,1W
3800	© 4822 117 11148	56kΩ	1%	0,1W
3801	© 4822 117 10833	10kΩ	1%	0,1W
3802	© 4822 117 11148	56kΩ	1%	0,1W
3803	© 4822 117 10833	10kΩ	1%	0,1W
3804	© 4822 117 10833	10kΩ	1%	0,1W
3805	© 4822 117 10833	10kΩ	1%	0,1W
3806	© 4822 117 10833	10kΩ	1%	0,1W
3807	© 4822 117 10833	10kΩ	1%	0,1W
3808	© 4822 117 10833	10kΩ	1%	0,1W
3809	© 4822 117 13577	330Ω	1%	0,1W
3810	© 4822 051 20399	39Ω	5%	0,1W
3811	© 4822 051 20273	27kΩ	5%	0,1W
3812	© 4822 117 10834	47kΩ	1%	0,1W
3813	© 4822 051 20399	39Ω	5%	0,1W
3814	© 4822 051 20339	33Ω	5%	0,1W
3815	4822 052 10478	4,7Ω	5%	NFR
3816	© 4822 117 10834	47kΩ	1%	0,1W
3817	4822 052 10228	2,2Ω	5%	0,33W
3818	© 4822 051 20399	39Ω	5%	0,1W
3819	© 4822 051 20471	470Ω	5%	0,1W
3820	© 4822 051 20472	4,7kΩ	5%	0,1W
3821	© 4822 051 20472	4,7kΩ	5%	0,1W
3822	© 4822 117 12955	2,7kΩ	1%	0,1W
3823	© 4822 051 10102	1kΩ	2%	0,25W
3824	© 4822 051 10102	1kΩ	2%	0,25W
3825	© 4822 051 10102	1kΩ	2%	0,25W
3826	© 4822 051 20223	22kΩ	5%	0,1W
3827	© 4822 051 20273	27kΩ	5%	0,1W
3828	© 4822 051 20223	22kΩ	5%	0,1W
3829	© 4822 117 10834	47kΩ	1%	0,1W
3830	© 4822 117 12024	27kΩ	1%	0,1W
3831	© 4822 051 20101	100Ω	5%	0,1W
3832	© 4822 117 10833	10kΩ	1%	0,1W
3833	© 4822 051 20223	22kΩ	5%	0,1W
3834	© 4822 051 20223	22kΩ	5%	0,1W
3835	© 4822 117 10834	47kΩ	1%	0,1W
3836	© 4822 117 12024	27kΩ	1%	0,1W
3837	© 4822 051 10102	1kΩ	2%	0,25W
3838	© 4822 051 10102	1kΩ	2%	0,25W

## RESISTORS

3839	© 4822 051 20273	27kΩ	5%	0,1W
3840	© 4822 051 20273	27kΩ	5%	0,1W
3841	© 4822 117 10834	47kΩ	1%	0,1W
3842	© 4822 117 10833	10kΩ	1%	0,1W
3843	© 4822 117 12955	2,7kΩ	1%	0,1W
3844	© 4822 117 12024	27kΩ	1%	0,1W
3845	© 4822 117 10833	10kΩ	1%	0,1W
3846	© 4822 117 12955	2,7kΩ	1%	0,1W
3847	© 4822 051 20399	39Ω	5%	0,1W
3848	© 4822 117 10965	18kΩ	2%	0,1W
3849	© 4822 117 10965	18kΩ	2%	0,1

**ELECTRICAL PARTS LIST 3CDC-LC-MB MODULE****RESISTORS**

4807 ©	4822 051 20008	CHIP JUMPER 0805
4808 ©	4822 051 20008	CHIP JUMPER 0805
4809 ©	4822 051 20008	CHIP JUMPER 0805
4810 ©	4822 051 20008	CHIP JUMPER 0805
4812 ©	4822 051 20008	CHIP JUMPER 0805
4814 ©	4822 051 20008	CHIP JUMPER 0805
4815 ©	4822 051 20008	CHIP JUMPER 0805
4816 ©	4822 051 20008	CHIP JUMPER 0805
4817 ©	4822 051 20008	CHIP JUMPER 0805
4818 ©	4822 051 20008	CHIP JUMPER 0805
4819 ©	4822 051 20008	CHIP JUMPER 0805
4820 ©	4822 051 20008	CHIP JUMPER 0805
4821 ©	4822 051 20008	CHIP JUMPER 0805
4822 ©	4822 051 20008	CHIP JUMPER 0805
4823 ©	4822 051 20008	CHIP JUMPER 0805
4824 ©	4822 051 20008	CHIP JUMPER 0805
4825 ©	4822 051 20008	CHIP JUMPER 0805
4826 ©	4822 051 20008	CHIP JUMPER 0805
4827 ©	4822 051 20008	CHIP JUMPER 0805
4828 ©	4822 051 20008	CHIP JUMPER 0805
4831 ©	4822 051 20008	CHIP JUMPER 0805
4832 ©	4822 051 20008	CHIP JUMPER 0805
4834 ©	4822 051 20008	CHIP JUMPER 0805
4835 ©	4822 051 20008	CHIP JUMPER 0805
4836 ©	4822 051 20008	CHIP JUMPER 0805
4838 ©	4822 051 20008	CHIP JUMPER 0805
4843 ©	4822 051 20008	CHIP JUMPER 0805
4845 ©	4822 051 20008	CHIP JUMPER 0805
4846 ©	4822 051 20008	CHIP JUMPER 0805
4847 ©	4822 051 20008	CHIP JUMPER 0805
4849 ©	4822 051 20008	CHIP JUMPER 0805
4856 ©	4822 051 20008	CHIP JUMPER 0805
4857 ©	4822 051 20008	CHIP JUMPER 0805
4858 ©	4822 051 20008	CHIP JUMPER 0805
4859 ©	4822 051 20008	CHIP JUMPER 0805
4860 ©	4822 051 20008	CHIP JUMPER 0805
4861 ©	4822 051 20008	CHIP JUMPER 0805
4862 ©	4822 051 20008	CHIP JUMPER 0805
4863 ©	4822 051 20008	CHIP JUMPER 0805
4864 ©	4822 051 20008	CHIP JUMPER 0805
4865 ©	4822 051 20008	CHIP JUMPER 0805
4867 ©	4822 051 20008	CHIP JUMPER 0805
4868 ©	4822 051 20008	CHIP JUMPER 0805
4869 ©	4822 051 20008	CHIP JUMPER 0805
4870 ©	4822 051 20008	CHIP JUMPER 0805
4876 ©	4822 051 20008	CHIP JUMPER 0805
4879 ©	4822 051 20008	CHIP JUMPER 0805
4884 ©	4822 051 20008	CHIP JUMPER 0805
4885 ©	4822 051 20008	CHIP JUMPER 0805
4886 ©	4822 051 20008	CHIP JUMPER 0805
4887 ©	4822 051 20008	CHIP JUMPER 0805
4890 ©	4822 051 20008	CHIP JUMPER 0805
4893 ©	4822 051 20008	CHIP JUMPER 0805
4894 ©	4822 051 20008	CHIP JUMPER 0805
4896 ©	4822 051 20008	CHIP JUMPER 0805
4897 ©	4822 051 20008	CHIP JUMPER 0805

**COILS**

1810	2422 543 01068	RESONATOR 8MHZ
1810	4822 242 73557	CERAMIC RES. 8.46MHZ
5802	4822 156 31058	FILTER DIGITAL OUT

**DIODES**

6871 ©	4822 130 11397	BAS316
6872 ©	4822 130 11397	BAS316
6873 ©	4822 130 11397	BAS316
6874 ©	4822 130 11397	BAS316
6875 ©	9340 548 52115	BZX284-C5V1
6877 ©	9322 129 34685	BZX284-C3V9
6878 ©	4822 130 11397	BAS316
6879 ©	9322 129 34685	BZX284-C3V9

**TRANSISTORS**

7812 ©	5322 130 60159	BC846B
7874 ©	5322 130 60159	BC846B
7875 ©	5322 130 60159	BC846B

**INTEGRATED CIRCUITS**

7801 ©	9352 622 36118	TZA1025T/V2, HF-Amplifier
7805 ©	4822 209 33165	TDA1308T/N1, OPAMP
7806	4822 209 62059	TCA0372DP1, Motor driver
7807	4822 209 62059	TCA0372DP1, Motor driver
7808	4822 209 62059	TCA0372DP1, Motor driver
7821	4822 209 62059	TCA0372DP1, Motor driver
7822	4822 209 62059	TCA0372DP1, Motor driver
7873	5322 209 11306	HEF4094BT, Shift register
7876	4822 209 16143	LC89170M, CD TEXT IC
7877 ©	9352 642 17557	SAA7325H/M2B Signal processor CD10



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# COMBI BOARD

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## Brief introduction of the Combi Board

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### A. TRANSFORMER PRIMARY PART

Transformer Primary Circuit provide connection for AC mains supply and primary wires of transformer.

### B. POWER SUPPLY PART

Power Supply Circuit consists of rectifiers, capacitive filters and voltage regulators. Regulated voltage include +5V6, +LED, +12A, +12M, -32V, PWDN. The +C supply to the power amplifier is not regulated. F1-F2 is the ac supply voltage to the FTD Display filament.

### C. SOURCE SELECT & AMPLIFIER PART

#### a) SHIFT REGISTER (AF CONTROL)

This shift register deliver commands from the  $\mu$ P to control the AF functions which include source selection (A0 & A1 control lines), DSC modes , DBB, IS and CD\_STBY. Other control lines such as MUTE, AMPON, STBY and PWM are coming directly from the  $\mu$ P on the Front board.

#### b) SOURCE SELECTION

One of the 4 sources, namely AUX, TAPE, TUNER, CD, can be selected via A0 & A1 lines which control the IC 7501 (HEF4052BT). Karaoke mic. mixing is connected to th e selected source before the signal is amplified with a buffer amplifier (Tr 7503 & 7504). The source signal is then split into recording path (for recording on tape) and main signal path (to the PWM volume control).

#### c) PWM VOLUME CONTROL

The discrete volume control makes use of 4 Transistors 7505, 7506, 7507 & 7508 (ON4986 or selected BC557B) and PWM control signal from  $\mu$ P. For good performance transistors for the left and right channels should be paired for gain characteristics.

#### d) SOUND FEATURES

Sound Features include the DBB, IS and 4 DSC modes. The sound features are realised with a hex-inverter IC 7530 (HEF4069UBT) as analog buffer/amplifier and transistors as electronic switches controlled by the shift registers (AF control).

#### e) POWER AMPLIFIER

IC 7391 (AN7125) is used as power amplifier.

#### f) CD\_STBY CONTROL

This Transistor 7401 (BC337-25) switches on the supply +CD supply (derived from +12A) to CD servo control, HF circuit and the laser light pen on the CD Module during the CD mode only.

#### g) MATRIX SURROUND OUTPUT

The matrix surround feature is provided on board. This feature is only optional on certain type version.

### D. KARAOKE PART

This simple Karaoke consists of a 1-mic. mono amplifier using discrete components. It has a level control using a rotary potmeter. This feature is available for some version only.

### E. HEADPHONE PART

The headphone output is derived from the power amplifier output after the attenuation resistors which are tailored to deliver 18mW output power into a 32 ohm headphone.

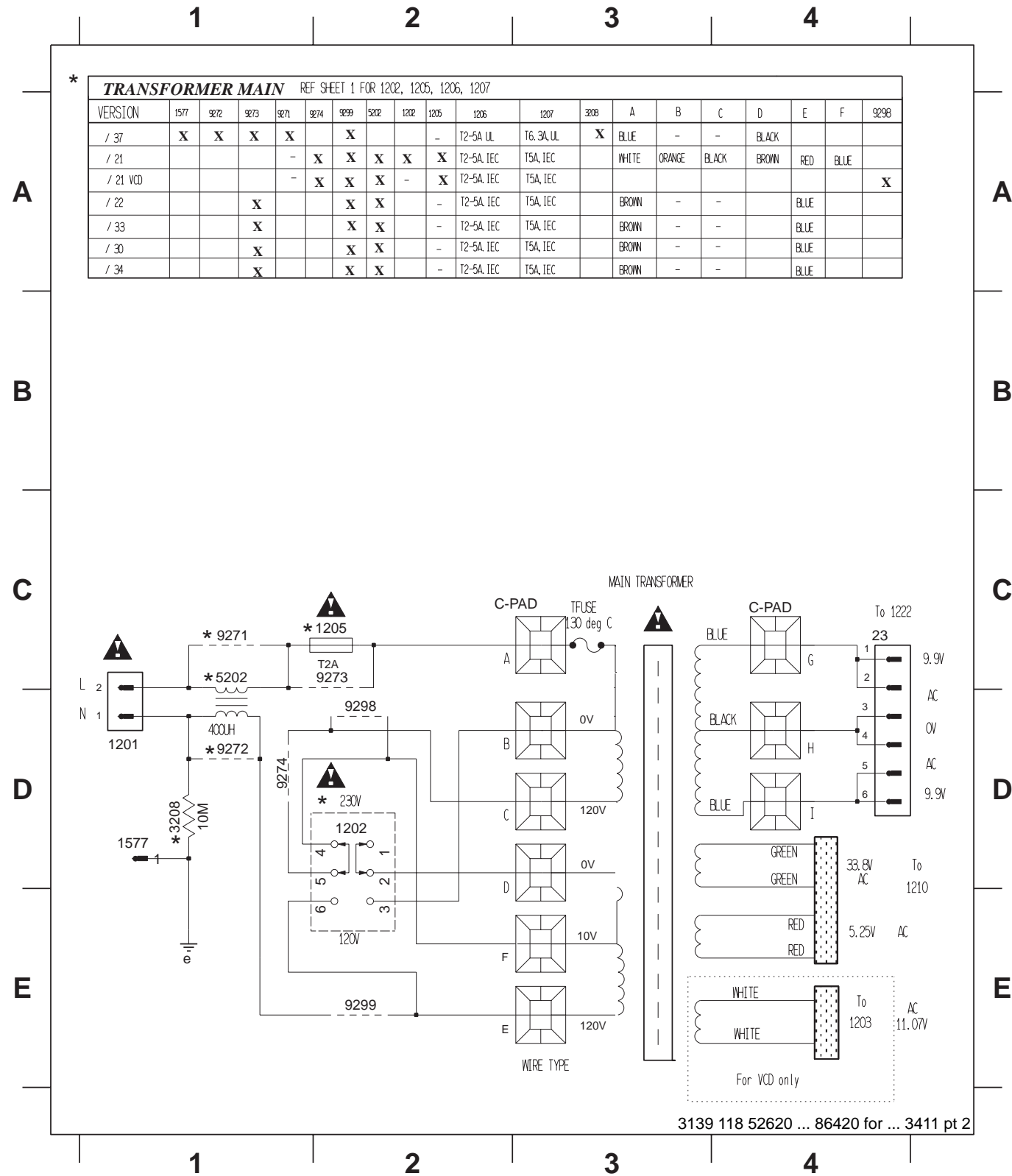
### F. CDC KEY PART

The CDC key buttons and LEDs are provided on this board.



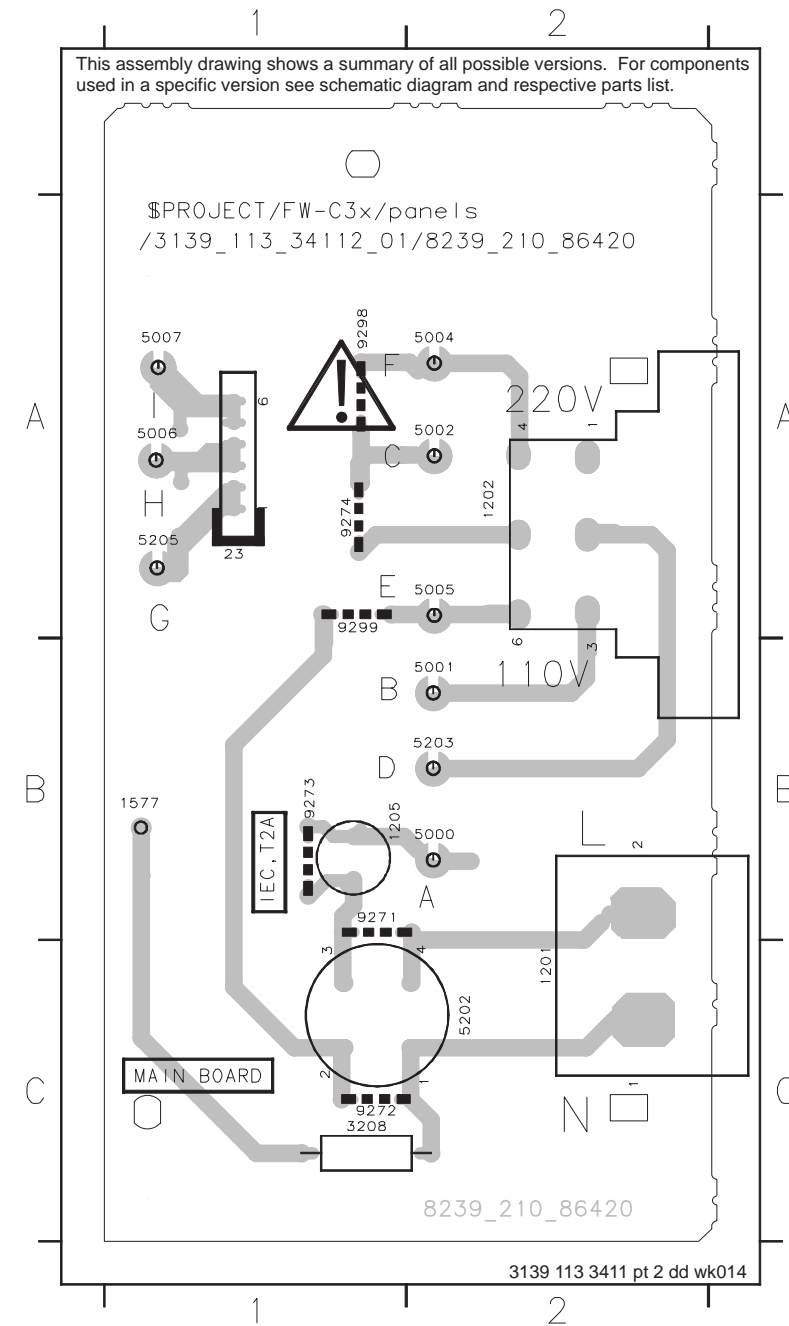
CIRCUIT DIAGRAM - TRANSFORMER PRIMARY PART

23 C4 1202 D2 1577 D1 5202 C1 9272 D1 9274 D1 9299 E2  
 1201 D1 1205 C2 3208 D1 9271 C1 9273 C2 9298 D2



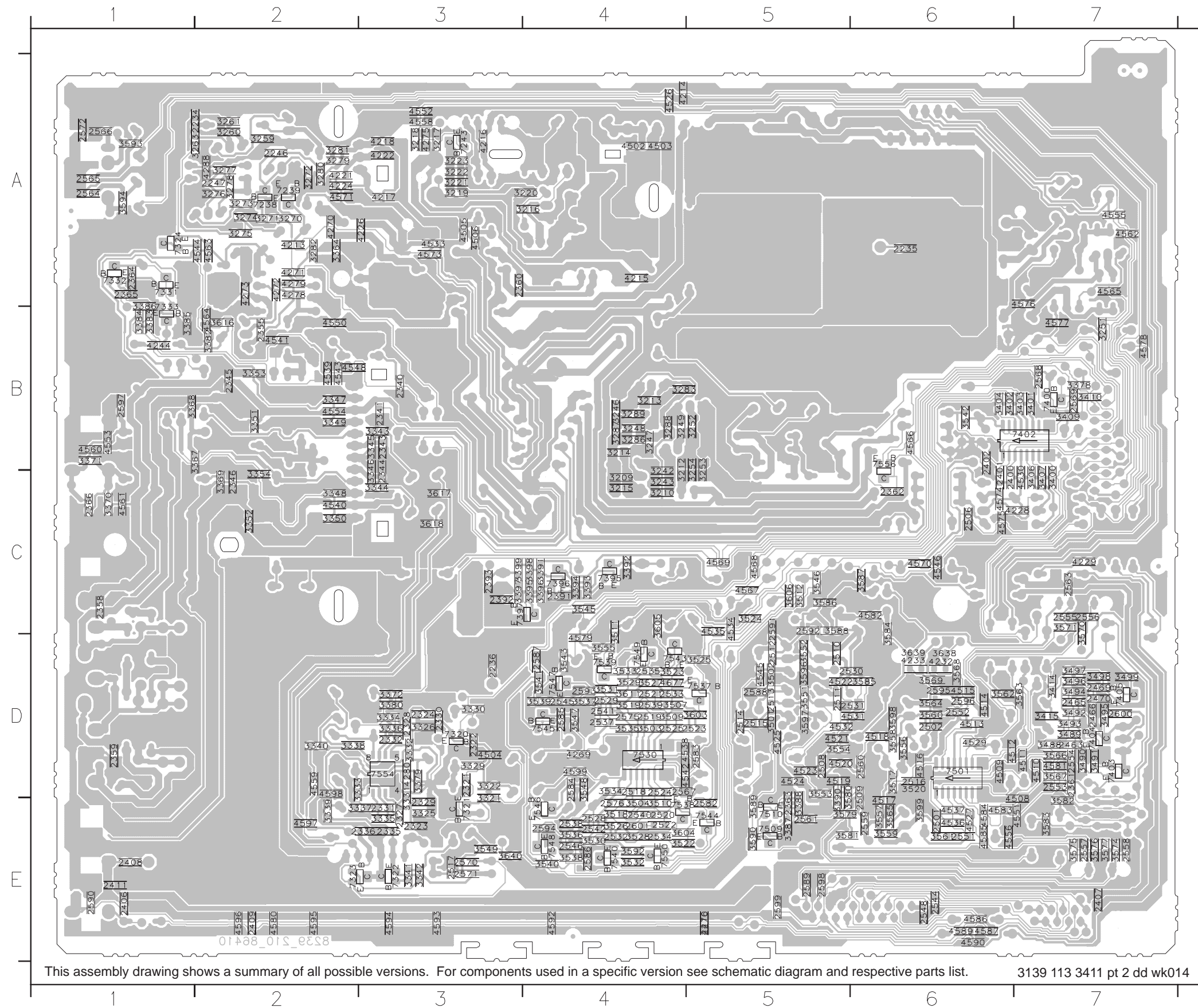
COMPONENT LAYOUT - TRANSFORMER PRIMARY

23 A1 1577 B1 5002 A2 5007 A1 9271 B1 9298 A1  
 1201 C2 1205 C2 5004 A2 5005 C2 9272 C1 9299 A1  
 1205 B1 5001 B2 5006 A1 5205 A1 9273 D1 9274 A1





# CHIP LAYOUT - MAIN PART

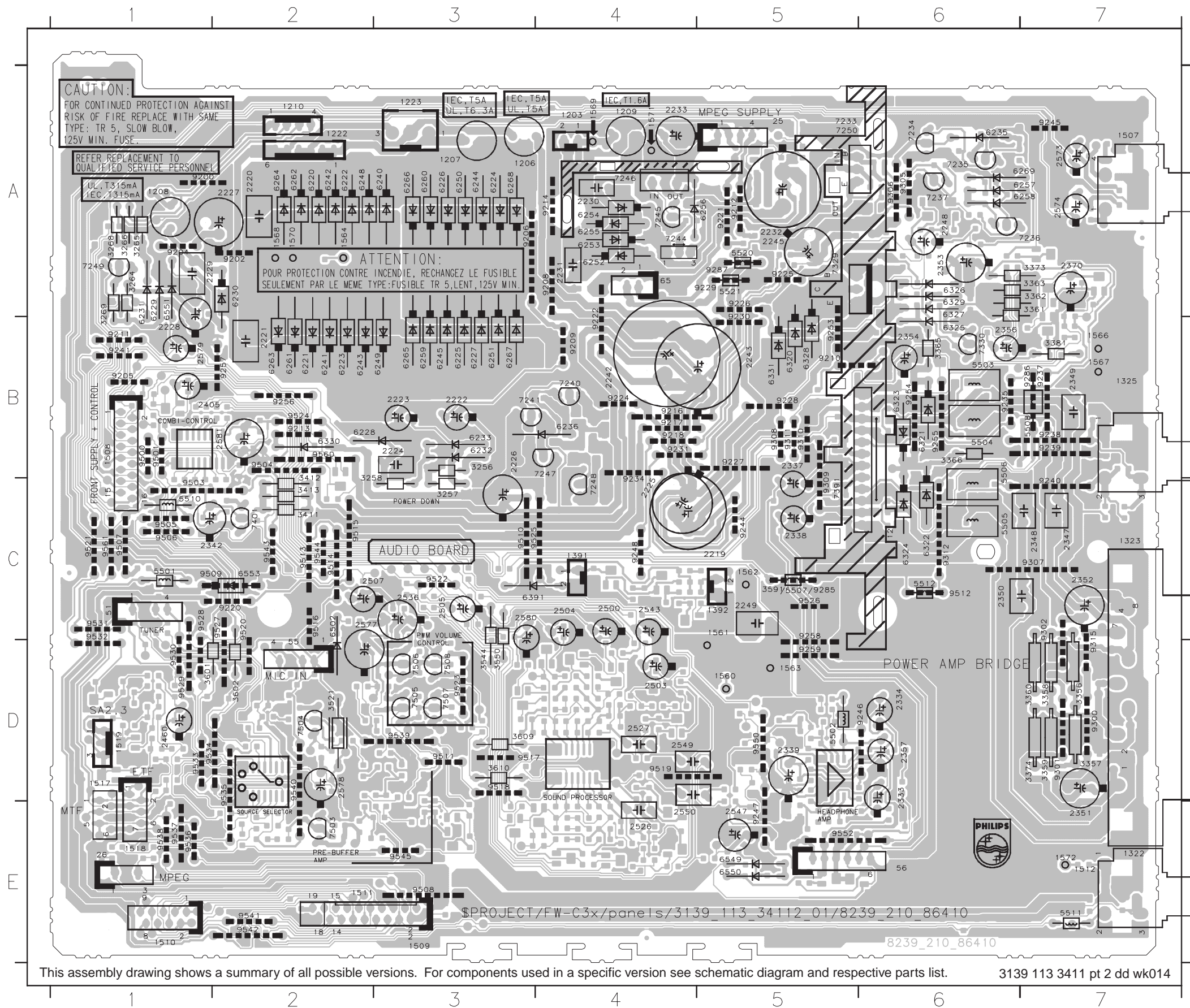


A  
 B  
 C  
 D  
 E  
 F  
 1  
 2  
 3  
 4  
 5  
 6  
 7  
 8

This assembly drawing shows a summary of all possible versions. For components used in a specific version see schematic diagram and respective parts list. 3139 113 3411 pt 2 dd wk014

A  
 B  
 C  
 D  
 E  
 F  
 1  
 2  
 3  
 4  
 5  
 6  
 7  
 8

COMPONENT LAYOUT - MAIN PART

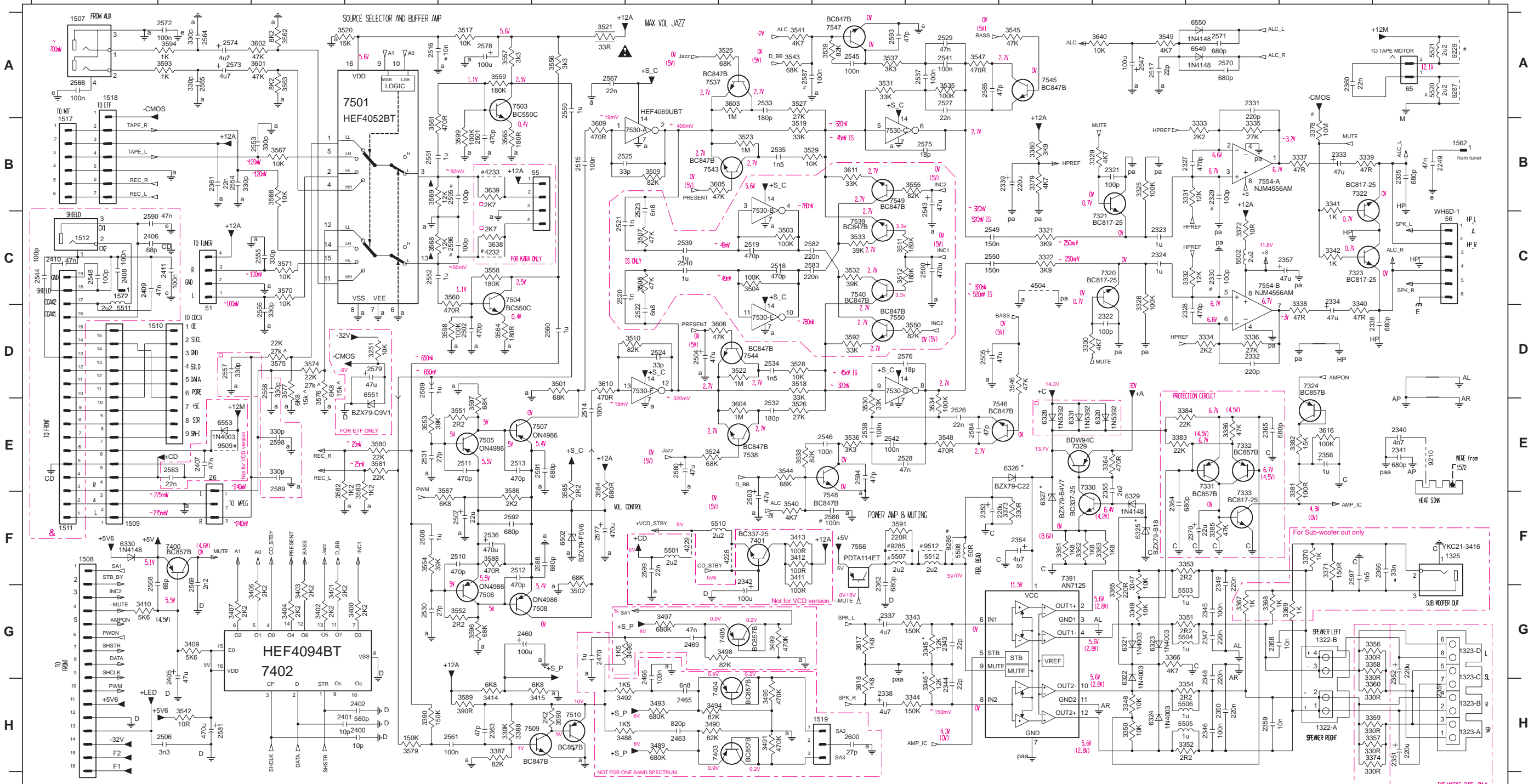






# CIRCUIT DIAGRAM - SOURCE SELECT & AMPLIFIER PART

26 E2	1511 F1	2331 A13	2347 G13	2363 H5	2463 H7	2511 E5	2527 A10	2543 B10	2559 A6	2576 D9	2592 F5	3331 B13	3347 F12	3364 E12	3383 E12	3411 F8	3499 G8	3522 D8	3538 E8	3554 F4	3570 C3	3589 H5	3609 B6	5503 G12	6325 F12	7324 D14	7505 E5	7543 B7	9509 E2
51 D2	1512 C1	2332 D13	2348 G12	2364 F12	2465 H7	2512 F5	2528 E9	2544 C1	2560 D6	2577 F6	2593 A9	3332 C13	3348 H12	3365 G12	3384 E12	3412 F8	3501 D6	3523 B8	3539 A9	3555 B10	3571 C3	3590 H6	3610 D6	5504 G12	6326 E11	7329 E11	7506 F5	7544 D8	9512 F10
55 B6	1517 B1	2333 B14	2349 F13	2365 E13	2466 G7	2513 E5	2529 A10	2545 A9	2561 H5	2578 A5	2594 E9	3333 B13	3349 G12	3366 G12	3385 F13	3413 F8	3502 G6	3524 E7	3540 F8	3556 A10	3572 D3	3591 F9	3611 B9	5505 H12	6327 F11	7329 E11	7507 E6	7545 A11	
56 C15	1518 A1	2334 C14	2350 H13	2366 F15	2469 G7	2514 E6	2530 C4	2546 E9	2562 E2	2579 D4	2595 B5	3334 D13	3350 H12	3367 G13	3386 E13	3414 H5	3503 C8	3525 A8	3541 A8	3557 A5	3573 D3	3592 D9	3616 E14	5506 H12	6328 E11	7331 E13	7508 G6	7546 E11	
65 A15	1519 B1	2335 B15	2351 H15	2370 F13	2470 G6	2515 E4	2531 E4	2547 A12	2564 A2	2580 E7	2596 C5	3335 B13	3351 G13	3368 G13	3387 H5	3415 H6	3504 C8	3526 E8	3542 H2	3558 C5	3574 D3	3593 A2	3617 G9	5507 F9	6329 F12	7332 F13	7509 H5	7547 A9	
1322-A H14	1522 B15	2336 D15	2352 G15	2360 C10		2516 A4	2532 E8	2548 C1	2565 A2	2581 H2	2597 F14	3336 D13	3352 H13	3369 G14	3388 H5	3416 H6	3505 C7	3527 A8	3543 A8	3559 A5	3577 D3	3594 A2	3618 H9	5508 F10	6330 F11	7333 F13	7510 H6	7548 F9	
1322-B H14	1522 C1	2337 G9	2353 F10	2401 H3	2501 B5	2517 A12	2533 A8	2549 C10	2566 A1	2582 C8	2598 E3	3337 B14	3353 F13	3370 F14	3390 H4	3489 H7	3508 C7	3528 D8	3544 E8	3560 C5	3579 H4	3596 G5	3638 C5	5510 F7	6331 E11	7331 F11	7530-A B7	7549 B9	
1323-A H15	1524 B15	2338 H9	2354 F11	2402 H4	2502 D5	2518 C8	2534 D8	2550 C10	2567 A6	2583 C8	2599 F7	3338 D14	3354 H13	3371 F14	3400 G4	3490 H7	3509 B7	3529 B8	3545 A11	3561 B4	3580 E4	3597 E5	3639 B5	5511 D1	6502 F6	7400 F2	7530-C B9	7554-B C13	
1323-B H15	1524 C1	2339 B11	2355 E12	2405 G2	2503 F8	2519 C8	2535 B8	2551 B4	2568 F1	2584 E10	2600 H9	3339 B14	3356 F13	3372 C13	3401 G3	3491 H8	3510 D7	3530 E9	3546 D11	3562 A3	3581 E4	3598 D5	3640 A12	5512 F10	6549 A13	7401 F8	7530-D B9	7554-A B13	
1323-C H15	1524 D12	2340 E15	2356 E14	2406 C1	2504 D7	2520 C6	2536 F5	2552 C4	2569 F2	2585 A10	2601 H9	3340 D14	3357 H15	3373 F13	3402 G3	3492 H6	3511 C9	3531 A9	3547 A10	3563 A3	3582 E3	3599 B5	4228 F8	5520 A15	6550 A13	7402 G3	7530-E D9	7554-B C13	
1323-D H15	1524 E1	2341 E15	2357 C14	2407 E2	2505 D10	2521 C6	2537 A10	2553 B3	2570 A13	2586 F9	2602 H9	3341 B14	3358 G15	3374 H15	3403 G3	3493 H7	3512 C9	3532 C9	3548 E10	3564 D5	3583 E4	3601 A3	4229 F7	5521 A15	6551 D4	7403 H7	7530-F D8	7556 F9	
1325-F H15	1524 F15	2342 C12	2348 F15	2408 C1	2506 H2	2522 D7	2538 E9	2554 B2	2571 A13	2587 A8	2603 H9	3342 C14	3359 H15	3378 B14	3404 G3	3494 H7	3513 A5	3533 C9	3549 A12	3565 B5	3584 E6	3602 A3	4232 C5	5522 A15	6552 E2	7404 H7	7530-G D7	7557 F9	
1507 A1	2327 B13	2343 G10	2359 H13	2409 C1	2507 F5	2523 B7	2539 C7	2555 C3	2572 A2	2588 E6	2604 H9	3343 G10	3360 H15	3379 B11	3406 G3	3495 H8	3518 D8	3534 E10	3550 D10	3566 B3	3585 E6	3603 A8	4233 B5	5523 G12	6321 G12	7320 C12	7405 G8	7537 A8	9229 A15
1508 F1	2328 D13	2344 H10	2360 A14	2410 C1	2508 F4	2524 D7	2540 C7	2556 D3	2573 A2	2589 E3	2605 H9	3344 H10	3361 F11	3380 B11	3407 G2	3496 G7	3519 B8	3535 A10	3551 E5	3567 B3	3586 F5	3604 E8	4504 C11	6322 G12	7321 C12	7501 A3	7538 E8	9285 F9	
1509 F1	2329 B13	2345 G13	2361 B2	2411 C2	2509 D4	2525 B6	2541 A10	2557 D2	2574 A2	2590 C1	2606 H9	3345 G10	3362 F11	3381 E14	3407 G2	3497 G7	3520 A4	3536 E9	3552 G5	3568 C4	3587 F5	3605 B7	5501 F7	6323 G12	7322 B14	7503 A5	7539 C9	9286 F10	
1510 D2	2330 C13	2346 H13	2362 F9	2460 G5	2510 F5	2526 E10	2542 E9	2558 D3	2575 B10	2591 E6	2607 H9	3346 H10	3363 F12	3382 E14	3410 G1	3498 G8	3521 A6	3537 A9	3553 E4	3569 B4	3588 F5	3606 D8	5502 C13	6324 H12	7323 C14	7504 C5	7540 C9	9287 A15	



# Provision on layout  
 ▲ For set with Karaoke  
 ▲ For set without Karaoke  
 & For set with Digital Out  
 ^ For VCD version only  
 □ Refer to parts list for usage

	Inc1	Inc2	Jazz	Bass	Pre	DB
Jazz	X	X	L	H	L	L
rock	X	X	H	H	H	H
Techno	X	X	L	H	L	H
Optimal	X	X	H	L	H	L/H
IS(vol<24)	L	H	X	X	X	X
IS(vol>24)	L	L	X	X	X	X

	A0	A1
AUX	1	1
TUNE	1	1
CD	0	0

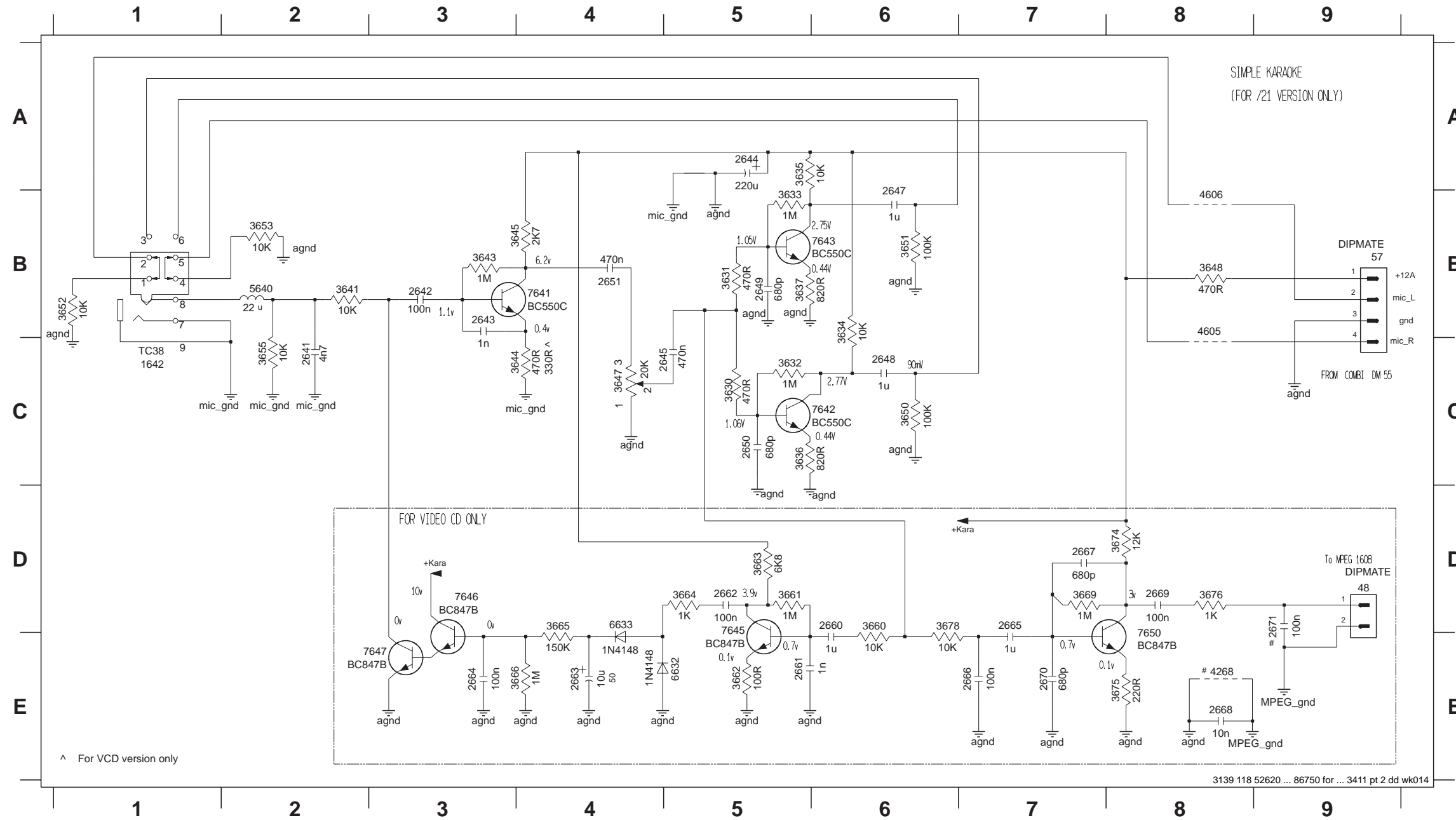
% VALUE FOR ONE BAND SPECTRUM ANALYZER			
ITEM #	3497	3498	3499
VALUE	150K	56K	220K

Remark : +A AND +C SUPPLY SWITCH AT VOL 32

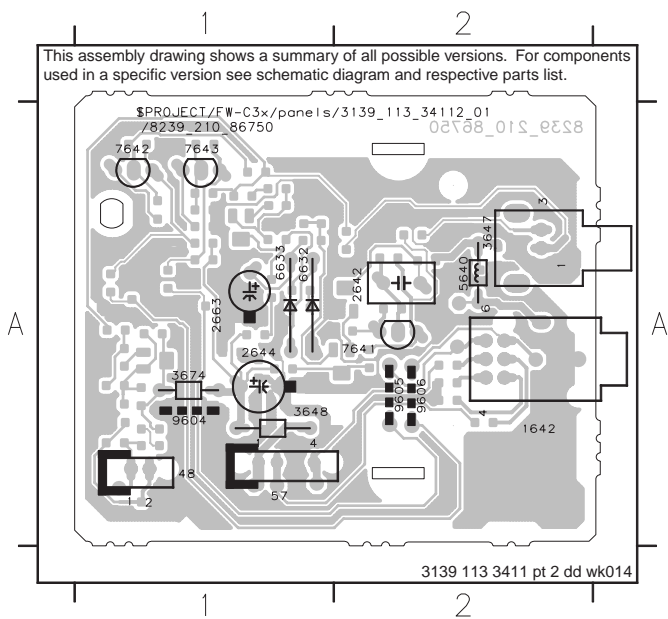
* VALUE FOR 12W & 18W VERSIONS					
ITEM	3345	3346	6325	6326	6327
12W	6K8	6K8	BZX79-F15	BZX79-C18	BZX79-B3V3
18W	10K	10K	BZX79-F15	BZX79-C18	BZX79-B3V3



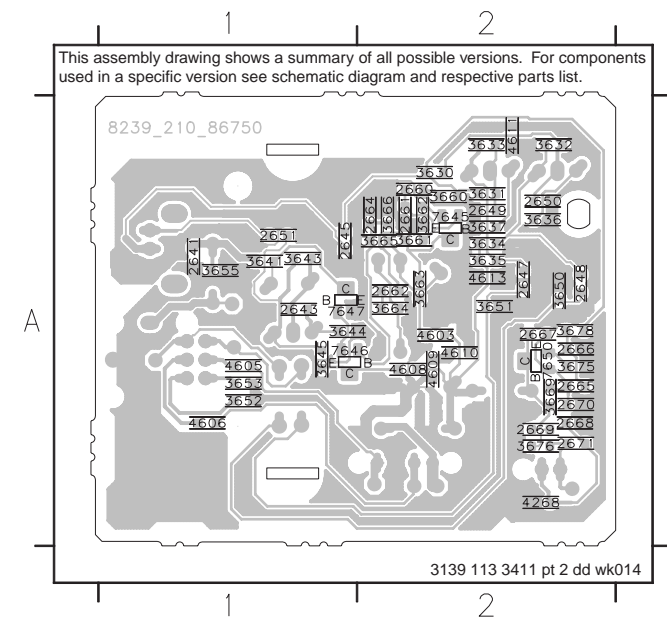
# KARAOKE PART - CIRCUIT & COMPONENT LAYOUT



- 48 D9
- 57 B9
- 1642 C1
- 2641 C2
- 2642 B3
- 2643 B3
- 2644 A5
- 2645 C5
- 2647 B6
- 2648 C6
- 2649 B5
- 2650 C5
- 2651 B4
- 2660 D6
- 2661 E5
- 2662 D5
- 2663 E4
- 2664 E3
- 2665 D7
- 2666 E7
- 2667 D7
- 2668 E8
- 2669 D8
- 2670 E7
- 2671 D9
- 3630 C5
- 3631 B5
- 3632 C5
- 3633 B5
- 3634 B6
- 3635 A5
- 3636 C5
- 3637 B5
- 3641 B2
- 3643 B3
- 3644 C4
- 3645 B4
- 3647 C4
- 3648 B8
- 3650 C6
- 3651 B6
- 3652 B1
- 3653 B2
- 3655 C2
- 3660 D6
- 3661 D5
- 3662 E5
- 3663 D5
- 3664 D5
- 3665 D4
- 3666 E4
- 3669 D7
- 3674 D8
- 3675 E8
- 3676 D8
- 3678 D6
- 4268 E8
- 4605 B8
- 4606 B8
- 5640 B2
- 6632 E5
- 6633 D4
- 7641 B4
- 7642 C6
- 7643 B6
- 7645 E5
- 7646 D3
- 7647 E3
- 7650 E8

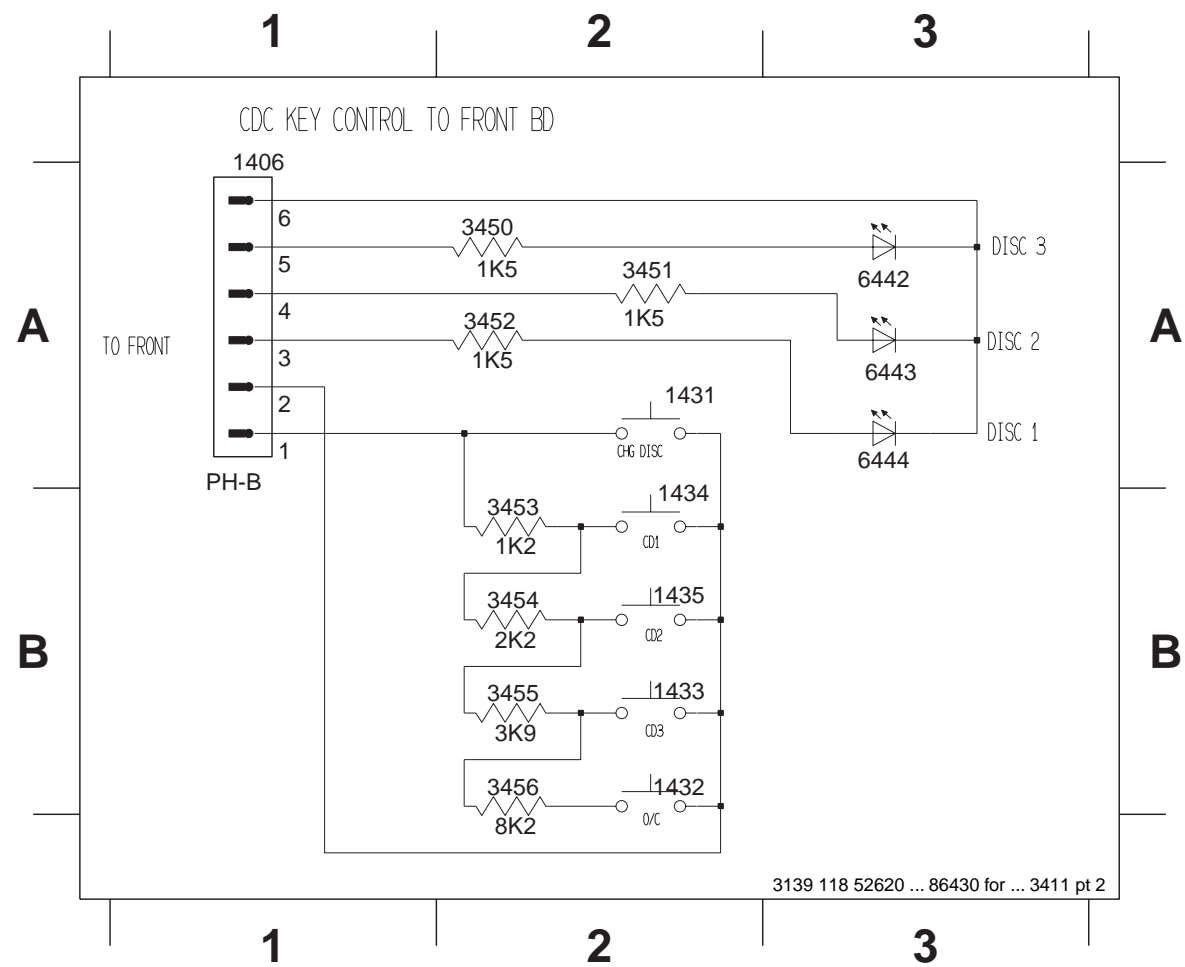


- 48 A1
- 57 A1
- 1642 A2
- 2641 A2
- 2642 A1
- 2643 A1
- 2644 A1
- 2645 A1
- 2647 A1
- 2648 A1
- 2649 A1
- 2650 A1
- 2651 A1
- 2660 A1
- 2661 A1
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- 2670 A1
- 2671 A1
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- 6633 A1



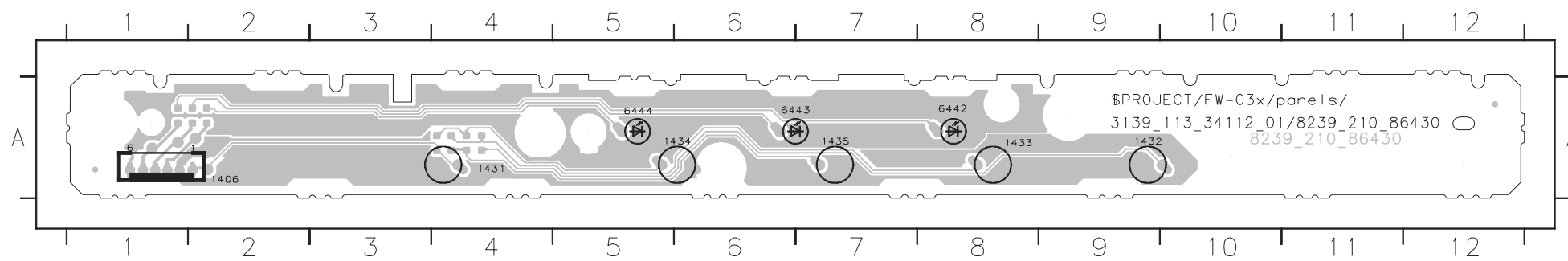
- 2641 A1
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- 5640 A1
- 6632 A1
- 6633 A1

CDC KEY PART - CIRCUIT & COMPONENT LAYOUT

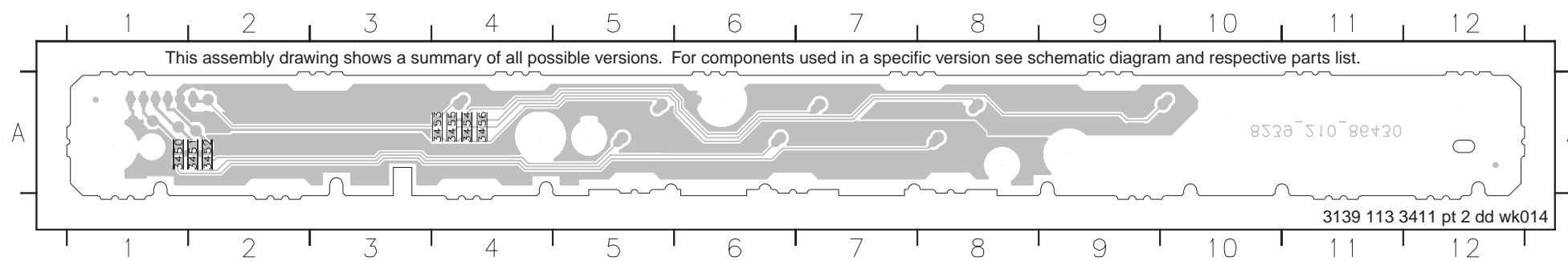


3139 118 52620 ... 86430 for ... 3411 pt 2

1406 A2 1431 A4 1432 A9 1433 A8 1434 A6 1435 A7 6442 A8 6443 A6 6444 A5

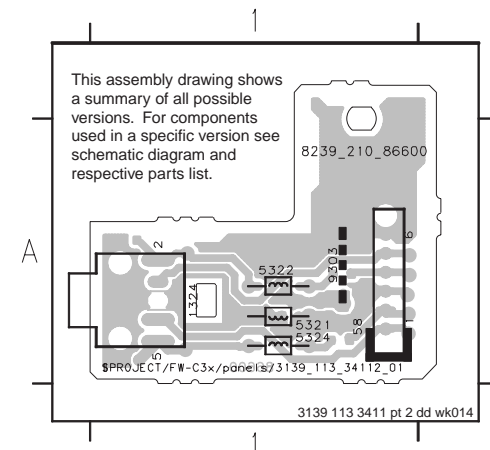


3450 A1 3451 A2 3452 A2 3453 A4 3454 A4 3455 A4 3456 A4

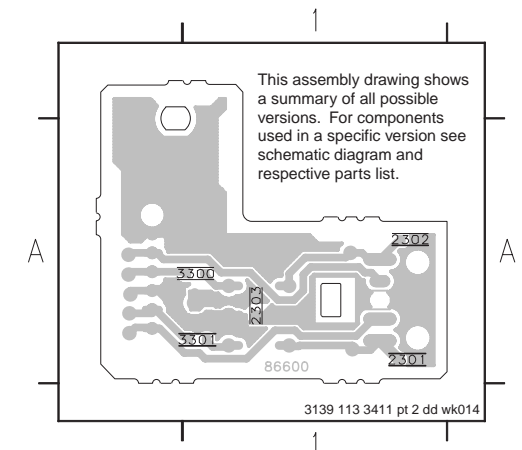


HEADPHONE PART - CIRCUIT & COMPONENT LAYOUT

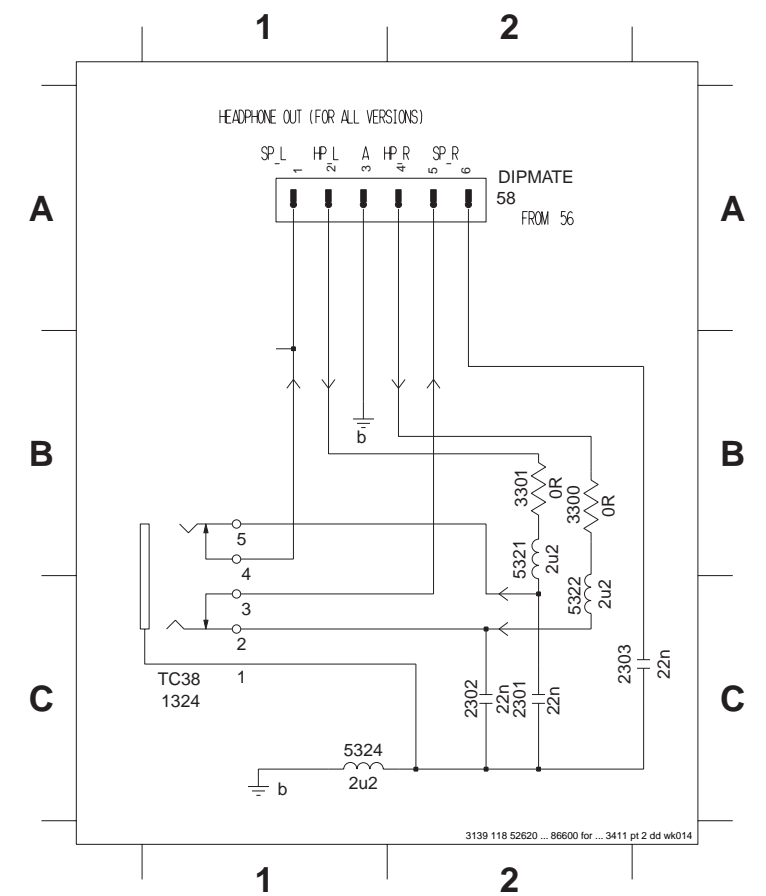
58 A1 5321 A1 5324 A1  
1324 A1 5322 A1 9303 A1



2301 A1 2303 A1 3301 A1  
2302 A1 3300 A1



58 A2 2301 C2 2303 C2 3301 B2 5322 C2  
1324 C1 2302 C2 3300 B2 5321 B2 5324 C1



## ELECTRICAL PARTS LIST - COMBI BOARD

## MISCELLANEOUS

1201	4822 265 31015	△	Mains Socket
1202	4822 272 10269	△	Voltage Selector /21/21M
1205	4822 071 52002	△	Fuse T2A 250V /21/21M
1206	4822 071 55002	△	Fuse T5A 250V
1207	4822 071 55002	△	Fuse T5A 250V
1208	4822 071 53151	△	Fuse T315mA 250V
1322	4822 267 31176		Loudspeaker Socket L/R
1324	4822 265 11547		Headphone Socket
1431	4822 276 13775		Tact Switch
1432	4822 276 13775		Tact Switch
1433	4822 276 13775		Tact Switch
1434	4822 276 13775		Tact Switch
1435	4822 276 13775		Tact Switch
1507	4822 265 20553		Aux-in Socket
1508	2422 025 14526		Flex Socket 16pin Vert.
1509	4822 265 10981		Flex Socket 15pin Vert.
1510	2422 025 14518		Flex Socket 9pin Vert.
1518	4822 267 10953		Flex Socket 7pin Vert.
1642	4822 265 11529		Mic Socket Karaoke /21/21M

## CAPACITORS

2220	5322 121 42386		100nF 5% 63V
2221	5322 121 42386		100nF 5% 63V
2222	4822 124 21913		1µF 20% 63V
2223	4822 124 21913		1µF 20% 63V
2224	4822 121 43526		47nF 5% 250V
2225	4822 124 40784		3300µF 20% 16V
2226	4822 124 80144		220µF 20% 25V
2227	4822 124 40255		100µF 20% 63V
2228	4822 124 41751		47µF 20% 50V
2229	5322 121 42386		100nF 5% 63V
2235	5322 122 32654		22nF 10% 63V
2243	4822 124 80563		4700µF 20% 35V
2245	4822 124 81144		1000µF 20% 16V
2246	5322 122 31647		1nF 10% 63V
2247	5322 122 31647		1nF 10% 63V
2248	4822 124 40433		47µF 20% 25V
2249	4822 121 43526		47nF 5% 250V
2301	5322 122 32654		22nF 10% 63V
2302	5322 122 32654		22nF 10% 63V
2303	5322 122 32654		22nF 10% 63V
2321	5322 122 32531		100pF 5% 50V
2322	5322 122 32531		100pF 5% 50V
2323	4822 126 14043		1µF +80-20% 16V
2324	4822 126 14043		1µF +80-20% 16V
2327	5322 122 34099		470pF 10% 63V
2328	5322 122 34099		470pF 10% 63V
2331	4822 122 33575		220pF 5% 63V
2332	4822 122 33575		220pF 5% 63V
2333	4822 124 40433		47µF 20% 25V
2334	4822 124 40433		47µF 20% 25V
2335	4822 122 32535		680pF 10% 63V
2336	4822 122 32535		680pF 10% 63V
2337	4822 124 40769		4,7µF 20% 100V

2338	4822 124 40769		4,7µF 20% 100V
2339	4822 124 80144		220µF 20% 25V
2340	5322 126 10223		4,7nF 10% 63V
2341	4822 122 32535		680pF 10% 63V
2342	4822 124 40207		100µF 20% 25V
2343	5322 122 32658		22pF 5% 50V
2344	5322 122 32658		22pF 5% 50V
2345	4822 126 14585		100nF 10% 50V
2346	4822 126 14585		100nF 10% 50V
2347	4822 121 42408		220nF 5% 63V
2348	4822 121 42408		220nF 5% 63V
2349	4822 121 42408		220nF 5% 63V
2350	4822 121 42408		220nF 5% 63V
2353	4822 124 80144		220µF 20% 25V
2354	4822 124 40769		4,7µF 20% 100V
2355	4822 122 33127		2,2nF 10% 63V
2356	4822 124 21913		1µF 20% 63V
2357	4822 124 40433		47µF 20% 25V
2358	4822 122 33177		10nF 20% 50V
2359	4822 122 33177		10nF 20% 50V
2360	5322 122 32654		22nF 10% 63V
2361	5322 122 32654		22nF 10% 63V
2362	4822 122 32535		680pF 10% 63V
2363	4822 126 13692		47pF 1% 63V
2364	4822 122 32535		680pF 10% 63V
2365	4822 122 32535		680pF 10% 63V
2370	4822 124 81151		22µF 20% 50V
2400	5322 122 32448		10pF 5% 63V
2401	5322 122 32448		10pF 5% 63V
2402	5322 116 80853		560pF 5% 63V
2405	4822 124 40433		47µF 20% 25V
2407	4822 126 13751		47nF 10% 50V
2460	4822 124 40207		100µF 20% 25V
2469	4822 126 14585		100nF 10% 50V
2501	5322 122 32268		470pF 10% 50V
2502	5322 122 32268		470pF 10% 50V
2503	4822 124 40433		47µF 20% 25V
2504	4822 124 40433		47µF 20% 25V
2505	4822 124 40433		47µF 20% 25V
2506	4822 122 33891		3,3nF 10% 63V
2507	4822 124 81151		22µF 50V
2508	4822 126 14043		1µF +80-20% 16V
2509	4822 126 14043		1µF +80-20% 16V
2510	5322 122 34099		470pF 10% 63V
2511	5322 122 34099		470pF 10% 63V
2512	5322 122 34099		470pF 10% 63V
2513	5322 122 34099		470pF 10% 63V
2514	4822 126 14585		100nF 10% 50V
2515	4822 126 14585		100nF 10% 50V
2517	5322 122 32658		22pF 5% 50V
2518	5322 122 34099		470pF 10% 63V
2519	5322 122 34099		470pF 10% 63V
2524	5322 122 32659		33pF 5% 50V
2525	5322 122 32659		33pF 5% 50V

## ELECTRICAL PARTS LIST - COMBI BOARD

2526	4822 121 41856		22nF 5% 250V
2527	4822 121 41856		22nF 5% 250V
2528	4822 126 13751		47nF 10% 63V
2529	4822 126 13751		47nF 10% 63V
2530	4822 126 13691		27pF 1% 63V
2531	4822 126 13691		27pF 1% 63V
2532	4822 126 10326		180pF 5% 63V
2533	4822 126 10326		180pF 5% 63V
2534	5322 122 31865		1,5nF 10% 63V
2535	5322 122 31865		1,5nF 10% 63V
2536	4822 124 80195		470µF 20% 10V
2537	4822 126 13838		100nF +80/-20% 50V
2538	4822 126 13838		100nF +80/-20% 50V
2541	4822 126 14585		100nF 10% 50V
2542	4822 126 14585		100nF 10% 50V
2545	4822 126 13838		100nF +80/-20% 50V
2546	4822 126 13838		100nF +80/-20% 50V
2547	4822 124 40207		100µF 20% 25V
2549	4822 121 41854		150nF 5% 63V
2550	4822 121 41854		150nF 5% 63V
2551	4822 126 14043		1µF +80-20% 16V
2552	4822 126 14043		1µF +80-20% 16V
2553	5322 122 31863		330pF 5% 63V
2554	5322 122 31863		330pF 5% 63V
2555	5322 122 31863		330pF 5% 63V
2556	5322 122 31863		330pF 5% 63V
2557	5322 122 31863		330pF 5% 63V
2558	5322 122 31863		330pF 5% 63V
2559	4822 126 14043		1µF +80-20% 16V
2560	4822 126 14043		1µF +80-20% 16V
2561	4822 126 14585		100nF 10% 50V
2563	5322 122 32654		22nF 10% 63V
2564	5322 122 31863		330pF 5% 63V
2565	5322 122 31863		330pF 5% 63V
2566	4822 126 13838		100nF +80/-20% 50V
2567	5322 122 32654		22nF 10% 63V
2568	4822 126 13694		68pF 1% 63V
2569	4822 122 33127		2,2nF 10% 63V
2570	4822 122 32535		680pF 10% 63V
2571	4822 122 32535		680pF 10% 63V
2572	4822 126 13838		100nF +80/-20% 50V
2573	4822 124 40769		4,7µF 20% 100V
2574	4822 124 40769		4,7µF 20% 100V
2575	4822 126 13689		18pF 1% 63V
2576	4822 126 13689		18pF 1% 63V
2577	4822 124 80195		470µF 20% 10V
2578	4822 124 40207		100µF 20% 25V
2579	4822 124 40433		47µF 20% 25V
2580	4822 124 40433		47µF 20% 25V
2581	4822 124 80791		470µF 20% 16V
2584	4822 126 13692		47pF 1% 63V
2585	4822 126 13692		47pF 1% 63V
2588	4822 122 32535		680pF 10% 63V
2591	4822 122 32535		680pF 10% 63V

2592	4822 122 32535		680pF 10% 63V
2593	4822 126 13692		47pF 1% 63V
2594	4822 126 13692		47pF 1% 63V
2599	5322 122 32654		22nF 10% 63V
2641	5322 126 10223		4,7nF 10% 63V /21/21M
2642	5322 121 42386		100nF 5% 63V /21/21M
2643	5322 122 31647		1nF 10% 63V /21/21M
2644	4822 124 80144		220µF 20% 25V /21/21M
2645	4822 126 13482		470nF 80/20% 16V /21/21M
2647	4822 126 14043		1µF +80-20% 16V /21/21M
2648	4822 126 14043		1µF +80-20% 16V /21/21M
2649	4822 122 32535		680pF 10% 63V /21/21M
2650	4822 122 32535		680pF 10% 63V /21/21M
2651	4822 126 13482		470nF 80/20% 16V /21/21M

## RESISTORS

3209	4822 051 20478		4R7 5% 0,1W
3210	4822 051 20478		4R7 5% 0,1W
3212	4822 051 20109		10R 5% 0,1W
3213	4822 051 20122		1k2 5% 0,1W
3214	4822 051 20478		4R7 5% 0,1W
3215	4822 051 20478		4R7 5% 0,1W
3242	4822 051 20478		4R7 5% 0,1W
3243	4822 051 20478		4R7 5% 0,1W
3246	4822 117 13577		330R 1% 0,1W
3247	4822 117 12521		68R 1% 0,1W
3248	4822 117 13577		330R 1% 0,1W
3249	4822 117 12521		68R 1% 0,1W
3251	4822 117 10833		10k 1% 0,1W
3252	4822 051 10102		1k 2% 0,25W
3253	4822 051 20109		10R 5% 0,1W
3254	4822 051 20109		10R 5% 0,1W
3256	4822 050 21003		10k 1% 0,6W
3257	4822 050 21003		10k 1% 0,6W
3258	4822 116 52283		4k7 5% 0,5W
3264	4822 116 52289		5k6 5% 0,5W
3265	4822 116 52257		22k 5% 0,5W
3266	4822 116 83872		220R 5% 0,5W
3268	4822 116 83872		220R 5% 0,5W
3269	4822 116 52256		2k2 5% 0,5W
3270	4822 117 10833		10k 1% 0,1W
3271	4822 117 10833		10k 1% 0,1W
3272	4822 051 20472		4k7 5% 0,1W
3273	4822 117 11449		2k2 5% 0,1W
3274	4822 051 20472		4k7 5% 0,1W
3275	4822 051 20472		4k7 5% 0,1W
3276	4822 051 20393		39k 5% 0,1W
3277	4822 117 10834		47k 1% 0,1W
3278	4822 117 10361		680R 1% 0,1W
3279	4822 117 11139		1k5 1% 0,1W
3280	4822 117 11139		1k5 1% 0,1W
3281	4822 117 11139		1k5 1% 0,1W
3282	4822 117 10833		10k 1% 0,1W
3283	4822 051 20121		120R 5% 0,1W



## ELECTRICAL PARTS LIST - COMBI BOARD

## RESISTORS

3286	4822 117 13577	330R 1% 0,1W	3390	4822 051 20154	150k 5% 0,1W
3287	4822 117 13577	330R 1% 0,1W	3401	4822 117 11449	2k2 5% 0,1W
3288	4822 117 13577	330R 1% 0,1W	3402	4822 117 11449	2k2 5% 0,1W
3289	4822 117 13577	330R 1% 0,1W	3403	4822 117 11449	2k2 5% 0,1W
3300	4822 051 20008	0R Jumper 0805	3404	4822 117 11449	2k2 5% 0,1W
3301	4822 051 20008	0R Jumper 0805	3406	4822 117 11449	2k2 5% 0,1W
3321	4822 051 20392	3k9 5% 0,1W	3407	4822 117 11449	2k2 5% 0,1W
3322	4822 051 20392	3k9 5% 0,1W	3409	4822 051 20562	5k6 5% 0,1W
3325	4822 117 10837	100k 1% 0,1W	3410	4822 051 20562	5k6 5% 0,1W
3326	4822 117 10837	100k 1% 0,1W	3411	4822 116 52175	100R 5% 0,5W
3329	4822 051 20472	4k7 5% 0,1W	3412	4822 116 52175	100R 5% 0,5W
3330	4822 051 20472	4k7 5% 0,1W	3413	4822 116 52175	100R 5% 0,5W
3331	4822 117 11383	12k 1% 0,1W	3414	4822 117 11507	6k8 1% 0,1W
3332	4822 117 11383	12k 1% 0,1W	3415	4822 117 11507	6k8 1% 0,1W
3333	4822 117 11449	2k2 5% 0,1W	3450	4822 117 11139	1k5 1% 0,1W
3334	4822 117 11449	2k2 5% 0,1W	3451	4822 117 11139	1k5 1% 0,1W
3335	4822 051 20273	27k 5% 0,1W	3452	4822 117 11139	1k5 1% 0,1W
3336	4822 051 20273	27k 5% 0,1W	3453	4822 051 20122	1k2 5% 0,1W
3337	4822 051 20479	47R 5% 0,1W	3454	4822 117 11449	2k2 5% 0,1W
3338	4822 051 20479	47R 5% 0,1W	3455	4822 051 20392	3k9 5% 0,1W
3339	4822 051 20479	47R 5% 0,1W	3456	4822 051 20822	8k2 5% 0,1W
3340	4822 051 20479	47R 5% 0,1W	3496	4822 117 11139	1k5 1% 0,1W
3341	4822 051 10102	1k 2% 0,25W	3497	4822 051 20154	150k 5% 0,1W
3342	4822 051 10102	1k 2% 0,25W	3498	4822 117 11148	56k 1% 0,1W
3343	4822 051 20154	150k 5% 0,1W	3499	4822 117 13579	220k 1% 0,1W
3344	4822 051 20154	150k 5% 0,1W	3501	4822 051 20683	68k 5% 0,1W
3345	4822 117 10833	10k 1% 0,1W	3502	4822 051 20683	68k 5% 0,1W
3346	4822 117 10833	10k 1% 0,1W	3509	4822 117 11149	82k 1% 0,1W
3347	4822 117 10833	10k 1% 0,1W	3510	4822 117 11149	82k 1% 0,1W
3348	4822 117 10833	10k 1% 0,1W	3517	4822 117 10833	10k 1% 0,1W
3349	4822 117 10833	10k 1% 0,1W	3518	4822 051 20333	33k 5% 0,1W
3350	4822 117 10833	10k 1% 0,1W	3519	4822 051 20333	33k 5% 0,1W
3351	4822 051 20228	2R2 5% 0,1W	3520	4822 116 83933	15k 1% 0,1W
3352	4822 051 20228	2R2 5% 0,1W	3521	4822 052 10339 Δ	33R 5% 0,33W
3353	4822 051 20228	2R2 5% 0,1W	3522	4822 051 20105	1M 5% 0,1W
3354	4822 051 20228	2R2 5% 0,1W	3523	4822 051 20105	1M 5% 0,1W
3361	4822 116 52249	1k8 5% 0,5W	3524	4822 051 20683	68k 5% 0,1W
3362	4822 116 52249	1k8 5% 0,5W	3525	4822 051 20683	68k 5% 0,1W
3363	4822 116 52249	1k8 5% 0,5W	3526	4822 051 20273	27k 5% 0,1W
3364	4822 051 20471	470R 5% 0,1W	3527	4822 051 20273	27k 5% 0,1W
3365	4822 116 83872	220R 5% 0,5W	3528	4822 117 10833	10k 1% 0,1W
3366	4822 116 52283	4k7 5% 0,5W	3529	4822 117 10833	10k 1% 0,1W
3372	4822 051 20109	10R 5% 0,1W	3530	4822 051 20333	33k 5% 0,1W
3373	4822 116 52219	330R 5% 0,5W	3531	4822 051 20333	33k 5% 0,1W
3379	4822 051 20472	4k7 5% 0,1W	3534	4822 117 10837	100k 1% 0,1W
3380	4822 051 20392	3k9 5% 0,1W	3535	4822 117 10837	100k 1% 0,1W
3381	4822 116 52175	100R 5% 0,5W	3536	4822 051 20332	3k3 5% 0,1W
3382	4822 116 83933	15k 1% 0,1W	3537	4822 051 20332	3k3 5% 0,1W
3383	4822 051 20223	22k 5% 0,1W	3538	4822 117 11149	82k 1% 0,1W
3384	4822 051 20223	22k 5% 0,1W	3539	4822 117 11149	82k 1% 0,1W
3385	4822 117 10834	47k 1% 0,1W	3540	4822 051 20472	4k7 5% 0,1W
3386	4822 117 10834	47k 1% 0,1W	3541	4822 051 20472	4k7 5% 0,1W
3387	4822 117 11149	82k 1% 0,1W	3542	4822 051 20109	10R 5% 0,1W
3388	4822 051 20334	330k 5% 0,1W	3543	4822 051 20683	68k 5% 0,1W

## ELECTRICAL PARTS LIST - COMBI BOARD

3544	4822 116 52297	68k 5% 0,5W	3606	4822 117 10834	47k 1% 0,1W
3545	4822 117 10834	47k 1% 0,1W	3609	4822 116 83883	470R 5% 0,5W
3546	4822 117 10834	47k 1% 0,1W	3610	4822 116 83883	470R 5% 0,5W
3547	4822 051 20471	470R 5% 0,1W	3616	4822 117 10837	100k 1% 0,1W
3548	4822 051 20471	470R 5% 0,1W	3617	4822 051 20182	1k8 5% 0,1W
3549	4822 051 20472	4k7 5% 0,1W	3618	4822 051 20182	1k8 5% 0,1W
3551	4822 051 20228	2R2 5% 0,1W	3630	4822 051 20471	470R 5% 0,1W /21/21M
3552	4822 051 20228	2R2 5% 0,1W	3631	4822 051 20471	470R 5% 0,1W /21/21M
3553	4822 051 20393	39k 5% 0,1W	3632	4822 051 20105	1M 5% 0,1W /21/21M
3554	4822 051 20393	39k 5% 0,1W	3633	4822 051 20105	1M 5% 0,1W /21/21M
3556	4822 051 20332	3k3 5% 0,1W	3634	4822 117 10833	10k 1% 0,1W /21/21M
3557	4822 051 20332	3k3 5% 0,1W	3635	4822 117 10833	10k 1% 0,1W /21/21M
3558	4822 051 20184	180k 5% 0,1W	3636	4822 117 11454	820R 1% 0,1W /21/21M
3559	4822 051 20184	180k 5% 0,1W	3637	4822 117 11454	820R 1% 0,1W /21/21M
3560	4822 051 20471	470R 5% 0,1W	3638	4822 117 11449	2k2 5% 0,1W /21/21M
3561	4822 051 20471	470R 5% 0,1W	3639	4822 117 11449	2k2 5% 0,1W /21/21M
3562	4822 051 20822	8k2 5% 0,1W	3640	4822 117 10833	10k 1% 0,1W
3563	4822 051 20822	8k2 5% 0,1W	3641	4822 117 10833	10k 1% 0,1W /21/21M
3564	4822 117 11448	180R 1% 0,1W	3643	4822 051 20105	1M 5% 0,1W /21/21M
3565	4822 117 11448	180R 1% 0,1W	3644	4822 051 20471	470R 5% 0,1W /21/21M
3566	4822 117 10833	10k 1% 0,1W	3645	4822 117 12955	2k7 1% 0,1W /21/21M
3567	4822 117 10833	10k 1% 0,1W	3647	4822 101 21204	Rotary Potm 20KA /21/21M
3568	4822 117 11383	12k 1% 0,1W /30	3648	4822 116 83883	470R 5% 0,5W /21/21M
3569	4822 117 11383	12k 1% 0,1W /30	3650	4822 117 10837	100k 1% 0,1W /21/21M
3570	4822 117 10833	10k 1% 0,1W	3651	4822 117 10837	100k 1% 0,1W /21/21M
3571	4822 117 10833	10k 1% 0,1W	3652	4822 117 10833	10k 1% 0,1W /21/21M
3574	4822 051 20223	22k 5% 0,1W	3653	4822 117 10833	10k 1% 0,1W /21/21M
3575	4822 051 20223	22k 5% 0,1W	3655	4822 117 10833	10k 1% 0,1W /21/21M
3576	4822 117 11507	6k8 1% 0,1W	4214	4822 051 20008	0R Jumper 0805
3577	4822 117 11507	6k8 1% 0,1W	4217	4822 051 20008	0R Jumper 0805
3579	4822 051 20154	150k 5% 0,1W	4221	4822 051 20008	0R Jumper 0805
3580	4822 051 20223	22k 5% 0,1W	4226	4822 051 20008	0R Jumper 0805
3581	4822 051 20223	22k 5% 0,1W	4229	4822 051 20008	0R Jumper 0805
3582	4822 051 20122	1k2 5% 0,1W	4244	4822 051 20008	0R Jumper 0805
3583	4822 051 20122	1k2 5% 0,1W	4269	4822 051 20008	0R Jumper 0805
3584	4822 117 10361	680R 1% 0,1W	4270	4822 051 20008	0R Jumper 0805
3585	4822 051 20228	2R2 5% 0,1W	4271	4822 051 20008	0R Jumper 0805
3586	4822 117 11449	2k2 5% 0,1W	4272	4822 051 20008	0R Jumper 0805
3587	4822 117 11507	6k8 1% 0,1W	4273	4822 051 20008	0R Jumper 0805
3588	4822 051 20471	470R 5% 0,1W	4275	4822 051 20008	0R Jumper 0805
3589	4822 051 20391	390R 5% 0,1W	4276	4822 051 20008	0R Jumper 0805
3590	4822 117 11449	2k2 5% 0,1W	4278	4822 051 20008	0R Jumper 0805
3591	4822 116 83872	220R 5% 0,5W	4279	4822 051 20008	0R Jumper 0805
3593	4822 051 10102	1k 2% 0,25W	4280	4822 051 20008	0R Jumper 0805
3594	4822 051 10102	1k 2% 0,25W	4288	4822 051 20008	0R Jumper 0805
3596	4822 051 20683	68k 5% 0,1W	4502	4822 051 20008	0R Jumper 0805
3597	4822 051 20683	68k 5% 0,1W	4503	4822 051 20008	0R Jumper 0805
3598	4822 117 10837	100k 1% 0,1W	4504	4822 051 20008	0R Jumper 0805
3599	4822 117 10837	100k 1% 0,1W	4505	4822 051 20008	0R Jumper 0805
3601	4822 116 83884	47k 5% 0,5W	4506	4822 051 20008	0R Jumper 0805
3602	4822 116 83884	47k 5% 0,5W	4508	4822 051 20008	0R Jumper 0805
3603	4822 051 20105	1M 5% 0,1W	4509	4822 051 20008	0R Jumper 0805
3604	4822 051 20105	1M 5% 0,1W	4510	4822 051 20008	0R Jumper 0805
3605	4822 117 10834	47k 1% 0,1W	4511	4822 051 20008	0R Jumper 0805



## ELECTRICAL PARTS LIST - COMBI BOARD

## RESISTORS

4512	4822 051 20008	OR Jumper 0805	4570	4822 051 20008	OR Jumper 0805
4513	4822 051 20008	OR Jumper 0805	4571	4822 051 20008	OR Jumper 0805
4514	4822 051 20008	OR Jumper 0805	4573	4822 051 20008	OR Jumper 0805
4515	4822 051 20008	OR Jumper 0805	4574	4822 051 20008	OR Jumper 0805
4516	4822 051 20008	OR Jumper 0805	4575	4822 051 20008	OR Jumper 0805
4517	4822 051 20008	OR Jumper 0805	4576	4822 051 20008	OR Jumper 0805
4518	4822 051 20008	OR Jumper 0805	4577	4822 051 20008	OR Jumper 0805
4519	4822 051 20008	OR Jumper 0805	4578	4822 051 20008	OR Jumper 0805
4520	4822 051 20008	OR Jumper 0805	4579	4822 051 20008	OR Jumper 0805
4521	4822 051 20008	OR Jumper 0805	4580	4822 051 20008	OR Jumper 0805
4522	4822 051 20008	OR Jumper 0805	4581	4822 051 20008	OR Jumper 0805
4523	4822 051 20008	OR Jumper 0805	4582	4822 051 20008	OR Jumper 0805
4524	4822 051 20008	OR Jumper 0805	4583	4822 051 20008	OR Jumper 0805
4525	4822 051 20008	OR Jumper 0805	4584	4822 051 20008	OR Jumper 0805
4526	4822 051 20008	OR Jumper 0805	4585	4822 051 20008	OR Jumper 0805
4527	4822 051 20008	OR Jumper 0805	4586	4822 051 20008	OR Jumper 0805
4529	4822 051 20008	OR Jumper 0805	4587	4822 051 20008	OR Jumper 0805
4530	4822 051 20008	OR Jumper 0805	4589	4822 051 20008	OR Jumper 0805
4531	4822 051 20008	OR Jumper 0805	4590	4822 051 20008	OR Jumper 0805
4532	4822 051 20008	OR Jumper 0805	4591	4822 051 20008	OR Jumper 0805 /21/21M
4533	4822 051 20008	OR Jumper 0805	4592	4822 051 20008	OR Jumper 0805
4534	4822 051 20008	OR Jumper 0805	4593	4822 051 20008	OR Jumper 0805
4535	4822 051 20008	OR Jumper 0805	4594	4822 051 20008	OR Jumper 0805
4536	4822 051 20008	OR Jumper 0805	4595	4822 051 20008	OR Jumper 0805
4537	4822 051 20008	OR Jumper 0805	4596	4822 051 20008	OR Jumper 0805
4538	4822 051 20008	OR Jumper 0805	4597	4822 051 20008	OR Jumper 0805
4539	4822 051 20008	OR Jumper 0805	4598	4822 051 20008	OR Jumper 0805
4540	4822 051 20008	OR Jumper 0805	4599	4822 051 20008	OR Jumper 0805
4541	4822 051 20008	OR Jumper 0805	4603	4822 051 20008	OR Jumper 0805 /21/21M
4542	4822 051 20008	OR Jumper 0805	4605	4822 051 20008	OR Jumper 0805 /21/21M
4543	4822 051 20008	OR Jumper 0805	4606	4822 051 20008	OR Jumper 0805 /21/21M
4544	4822 051 20008	OR Jumper 0805	4608	4822 051 20008	OR Jumper 0805 /21/21M
4545	4822 051 20008	OR Jumper 0805	4609	4822 051 20008	OR Jumper 0805 /21/21M
4546	4822 051 20008	OR Jumper 0805	4610	4822 051 20008	OR Jumper 0805 /21/21M
4548	4822 051 20008	OR Jumper 0805	4611	4822 051 20008	OR Jumper 0805 /21/21M
4550	4822 051 20008	OR Jumper 0805	4613	4822 051 20008	OR Jumper 0805 /21/21M
4551	4822 051 20008	OR Jumper 0805	4677	4822 051 20008	OR Jumper 0805
4552	4822 051 20008	OR Jumper 0805			
4553	4822 051 20008	OR Jumper 0805			
4554	4822 051 20008	OR Jumper 0805			
4555	4822 051 20008	OR Jumper 0805			
4556	4822 051 20008	OR Jumper 0805			
4558	4822 051 20008	OR Jumper 0805			
4559	4822 051 20008	OR Jumper 0805			
4560	4822 051 20008	OR Jumper 0805			
4561	4822 051 20008	OR Jumper 0805			
4562	4822 051 20008	OR Jumper 0805			
4563	4822 051 20008	OR Jumper 0805			
4564	4822 051 20008	OR Jumper 0805			
4565	4822 051 20008	OR Jumper 0805			
4566	4822 051 20008	OR Jumper 0805			
4567	4822 051 20008	OR Jumper 0805			
4568	4822 051 20008	OR Jumper 0805			
4569	4822 051 20008	OR Jumper 0805			

## COILS &amp; FILTERS

5202	4822 157 11832	Mains Filter 400µH 3A
5321	4822 157 62552	Coil 2,2µH 5%
5322	4822 157 62552	Coil 2,2µH 5%
5324	4822 157 62552	Coil 2,2µH 5%
5501	4822 157 62552	Coil 2,2µH 5%
5502	4822 157 62552	Coil 2,2µH 5%
5503	4822 157 62255	Coil 18,5 Turns 1µH
5504	4822 157 62255	Coil 18,5 Turns 1µH
5505	4822 157 62255	Coil 18,5 Turns 1µH
5506	4822 157 62255	Coil 18,5 Turns 1µH
5508	4822 526 10704	FE Bead 100MHz
5510	4822 157 62552	Coil 2,2µH 5%
5512	4822 157 62552	Coil 2,2µH 5%
5521	4822 157 62552	Coil 2,2µH 5%
5640	4822 157 11235	Coil 22µH 5% /21/21M

## ELECTRICAL PARTS LIST - COMBI BOARD

## COILS &amp; FILTERS

## DIODES

6220	4822 130 31878	1N4003G	7237	4822 130 40981	BC337-25
6221	4822 130 31878	1N4003G	7238	5322 130 60159	BC847B
6222	4822 130 31878	1N4003G	7239	4822 130 42804	BC817-25
6223	4822 130 31878	1N4003G	7240	4822 130 40981	BC337-25
6224	4822 130 31878	1N4003G	7241	4822 130 40981	BC337-25
6225	4822 130 31878	1N4003G	7247	4822 130 40981	BC337-25
6227	4822 130 31878	1N4003G	7248	4822 130 40981	BC337-25
6228	4822 130 34173	BZX79-B5V6	7249	4822 130 41246	BC327-25
6229	4822 130 34142	BZX79-B33	7320	4822 130 42804	BC817-25
6230	4822 130 31878	1N4003G	7321	4822 130 42804	BC817-25
6231	4822 130 34174	BZX79-B4V7	7322	4822 130 42804	BC817-25
6232	4822 130 30621	1N4148	7323	4822 130 42804	BC817-25
6233	4822 130 30621	1N4148	7324	4822 130 60373	BC857B
6236	4822 130 34174	BZX79-B4V7	7329	4822 130 10847	BDW94C
6240	4822 130 31878	1N4003G	7330	4822 130 40981	BC337-25
6241	4822 130 31878	1N4003G	7331	4822 130 60373	BC857B
6242	4822 130 31878	1N4003G	7332	4822 130 60373	BC857B
6243	4822 130 31878	1N4003G	7333	4822 130 42804	BC817-25
6244	4822 130 31878	1N4003G	7391	4822 209 16224	AN7125
6248	4822 130 31878	1N4003G	7400	4822 130 60373	BC857B
6249	4822 130 31878	1N4003G	7401	4822 130 40981	BC337-25
6250	4822 130 31878	1N4003G	7402	5322 209 11306	HEF4094BT
6251	4822 130 31878	1N4003G	7405	4822 130 60373	BC857B
6257	4822 130 30621	1N4148	7501	5322 209 11102	HEF4052BT
6258	4822 130 34173	BZX79-B5V6	7503	4822 130 41096	BC550C
6267	4822 130 31878	1N4003G	7504	4822 130 41096	BC550C
6268	4822 130 31878	1N4003G	7505	4822 130 44568	ON4986
6269	4822 130 30621	1N4148	7506	4822 130 44568	ON4986
6320	4822 130 31878	1N4003G	7507	4822 130 44568	ON4986
6321	4822 130 31878	1N4003G	7508	4822 130 44568	ON4986
6322	4822 130 31878	1N4003G	7509	5322 130 60159	BC847B
6323	4822 130 31878	1N4003G	7510	4822 130 60373	BC857B
6324	4822 130 31878	1N4003G	7530	5322 209 14482	HEF4069UBT
6325	4822 130 34281	BZX79-B15	7537	5322 130 60159	BC847B
6326	4822 130 31024	BZX79-B18	7538	5322 130 60159	BC847B
6327	5322 130 31504	BZX79-B3V3	7543	5322 130 60159	BC847B
6328	4822 130 31878	1N4003G	7544	5322 130 60159	BC847B
6329	4822 130 30621	1N4148	7545	5322 130 60159	BC847B
6442	4822 130 11589	LTL-1CHAE	7546	5322 130 60159	BC847B
6443	4822 130 11589	LTL-1CHAE	7548	5322 130 60159	BC847B
6444	4822 130 11589	LTL-1CHAE	7554	4822 209 31378	NJM4556MB
6502	4822 130 34173	BZX79-B5V6	7556	3198 010 44010	PDTA114ET
6549	4822 130 30621	1N4148	7641	4822 130 41096	BC550C /21/21M
6550	4822 130 30621	1N4148	7642	4822 130 41096	BC550C /21/21M
6551	4822 130 30862	BZX79-B9V1	7643	4822 130 41096	BC550C /21/21M
6553	4822 130 31878	1N4003G			

Note: Only the parts mentioned in this list are normal service spare parts.

## TRANSISTORS &amp; INTEGRATED CIRCUITS

7233	9322 139 22687	BD242BFP
7236	4822 130 41246	BC327-25



**MECHANICAL & ACCESSORIES PARTS LIST - MAIN UNIT****SCREW LISTS - MAIN UNIT**

101	3139 118 13630	Cabinet Front	385	4822 321 10954	△ Mains Cord /30	185	D3 x 25	
105	3139 118 10440	Window CDC Control	386	4822 263 21092	△ Adapter Plug /21	211	D3 x 12	
106	3139 118 13430	Button Set CDC Select	387	3139 115 20140	Instruction For Use	213	D3 x 12	
107	3139 118 13210	Cover Tray CDC-LC	1450	3139 110 34770	Flex Cable 15pin 22cm BD	214	D3 x 12	
108	4822 454 13408	Badge Philips	1451	4822 320 12604	Flex Cable 9pin 22cm AD	277	D3 x 12	
124	3139 118 13440	Window Display /21/21M	1455	4822 320 12752	Flex Cable 7pin 18cm AD	278	D3 x 12	
124	3139 118 13650	Window Display /30	1456	3139 110 34180	Flex Cable 16pin 22cm AD	280	D3 x 12	
125	3139 118 13450	Button DBB	1557	4822 320 12663	Flex Cable 7pin 34cm BD	282	D3 x 12	
127	3139 114 67670	Lightguide DSC	5001	3139 118 32310	△ Mains Transformer /21/21M	283	D3 x 16	
131	3139 118 13460	Button Set Program	5001	3139 118 32320	△ Mains Transformer /30	284	M3 x 15	
132	3139 118 13550	Button Power On/Off	Note: Only the parts mentioned in this list are normal service spare parts.				285	D3 x 16
133	3139 114 69720	Button Set Source Sel. Blue					286	D3 x 12
135	3139 118 13560	Button Set Controls					288	D3 x 12
136	3139 118 10310	Lightcap Source Select Blue					289	D3 x 12
139	3139 114 71860	Button Clock/Timer					290	D3 x 12
143	3139 118 13470	Cover Ring DSC					293	D3 x 12
144	3139 118 13570	Cover Ring Volume					294	D2 x 8
145	3139 118 13480	Button DSC					297	D3 x 12
146	3139 118 13490	Knob Volume Rotary					298	D3 x 12
152	3139 114 72010	Knob Karaoke /21/21M					299	D3 x 12
153	3139 118 13640	Cover Control DSC /21/21M						
153	3139 118 13620	Cover Control DSC /30						
158	3139 118 13500	Cover Cassette Left						
159	3139 118 13510	Cover Cassette Right						
160	3139 114 71840	Lens Cassette Left						
161	3139 114 71850	Lens Cassette Right						
197	4822 443 10488	Door Cassette Right						
198	4822 443 10487	Door Cassette Left						
199	4822 402 10621	Push-Catch						
200	4822 529 10322	Damper Assembly						
203	4822 492 11344	Spring Compression						
204	4822 402 11246	Bracket Right						
205	4822 402 11246	Bracket Right						
208	4822 492 11345	Spring Tension						
209	4822 492 42787	Spring Cassette						
251	3139 114 69830	Cabinet Rear /21/30						
251	3139 114 69840	Cabinet Rear /21M						
252	4822 462 40683	Foot Rubber SQ						
255	4822 466 93148	Spacer 5mm						
260	4822 492 11734	Spring IC						
350	3139 118 78060	Loudspeaker Box						
351	4822 303 50063	FM Aerial 75Ω						
356	3139 228 83610	Remote Control RC282425/01						
384	4822 303 50082	AM Frame Aerial						
385	4822 321 10249	△ Mains Cord /21/21M						