

Service
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Service Manual

COMPACT
disc
DIGITAL AUDIO

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CLASS 1
LASER PRODUCT

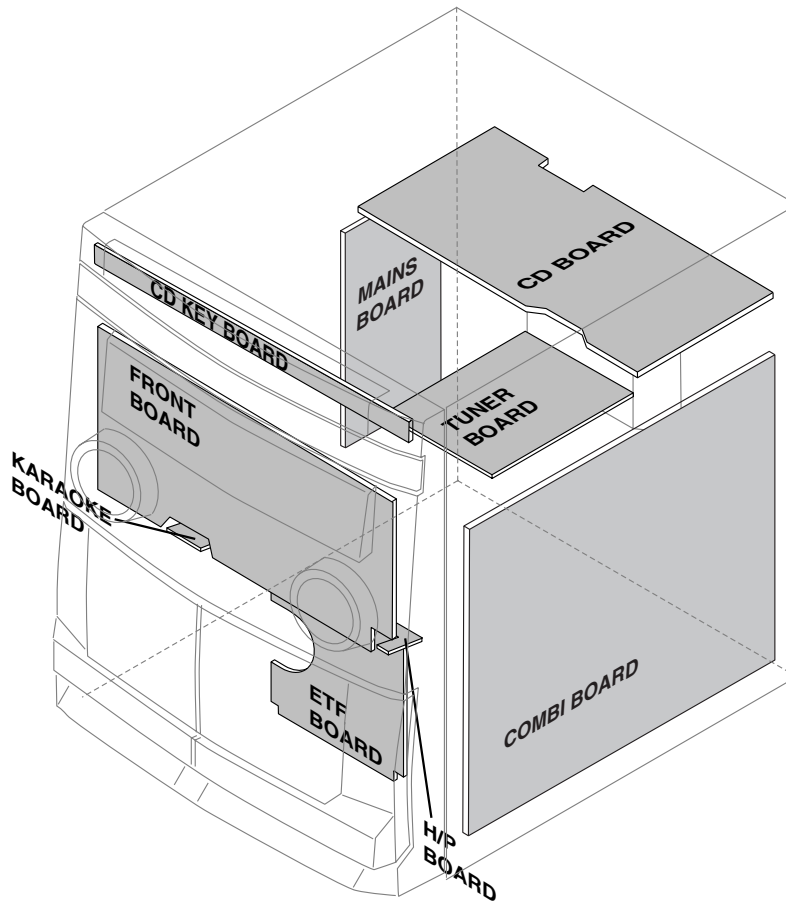


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PHILIPS

LOCATION OF PC BOARDS

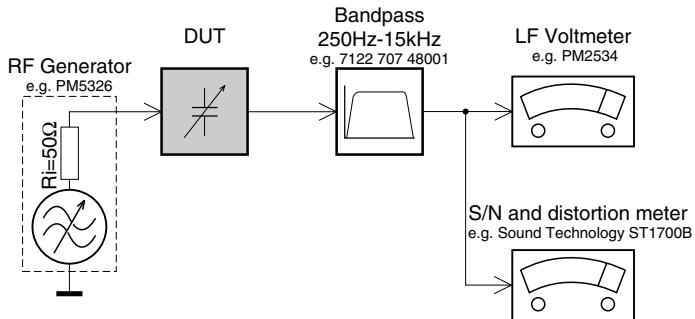


VERSION VARIATIONS:

Type /Versions:	FW-C220							
	/22	/34						
Features & Board in used:								
Incredible Surround								
Karaoke								
News	x	x						
RDS	x	x						
Rotary Encoder (volume control)	x	x						
Jog Shuttle								
Voltage Selector								
Aux Input	x	x						
Digital Output								
Headphone Socket	x	x						
Line Output								
Subwoofer Output								
Surround Output								
Matrix Surround Loudspeakers								
Standby - Clock Display	x	x						
Standby - Dark								
Tuner board - ECO5 Sys		x						
Tuner board - Tuner 95	x							
Combi board 12W version								
Combi board 18W version	x	x						
Combi board 25W version								

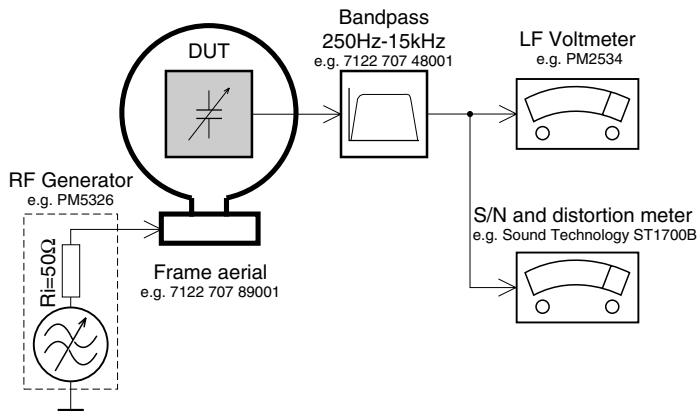
MEASUREMENT SETUP

Tuner FM



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

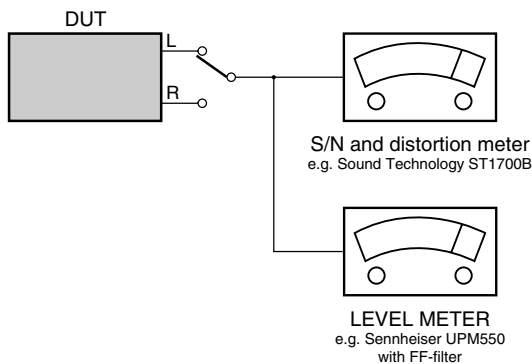
Tuner AM (MW,LW)



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).

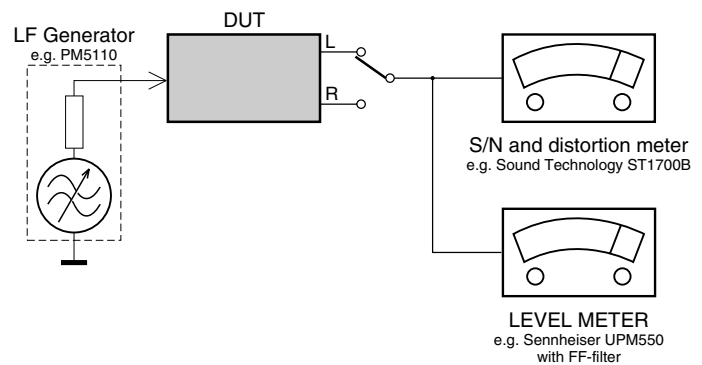
CD

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

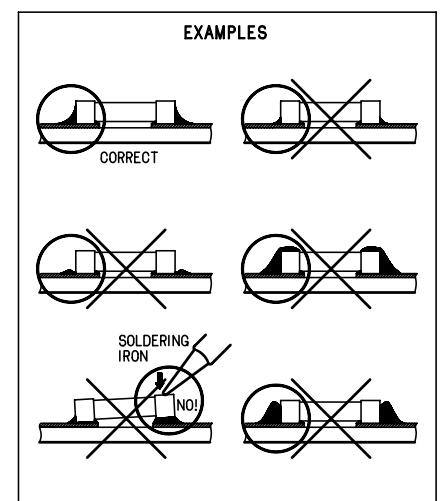
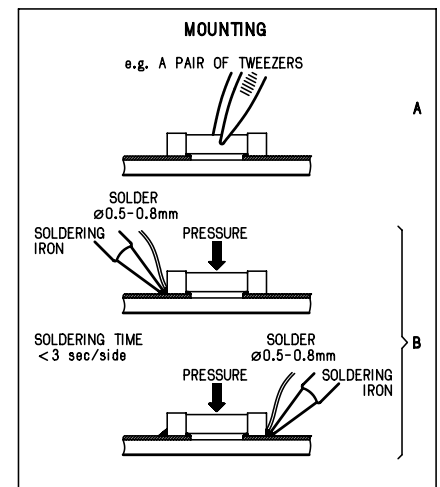
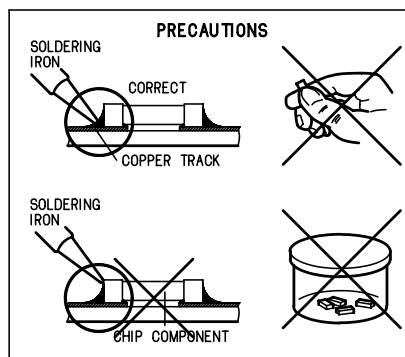
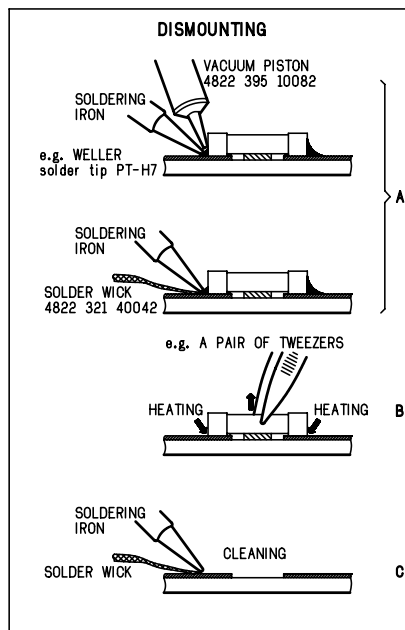
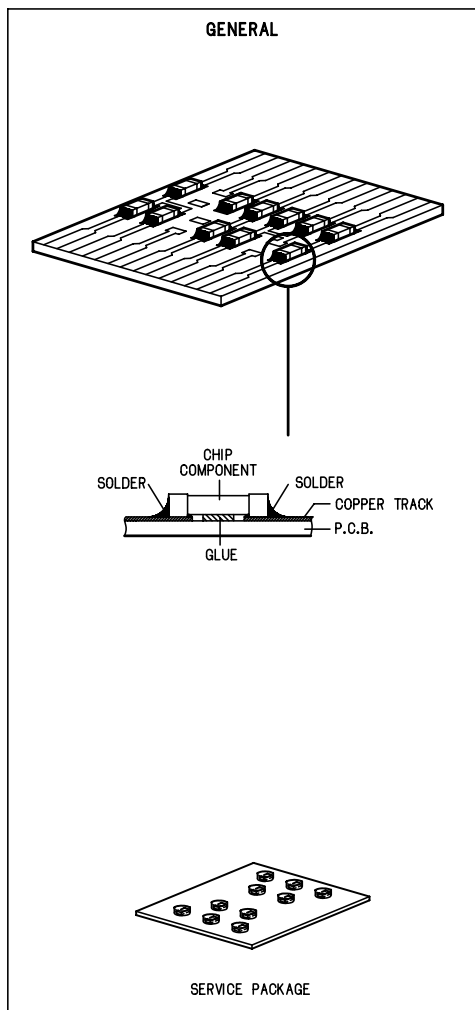
Compact Disc:

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 (1M Ω)	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 ridatta in caso di non osservazione della più grande cauzione alla loro manipolazione.

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

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

**(GB) Warning !**

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

(S) Varning !

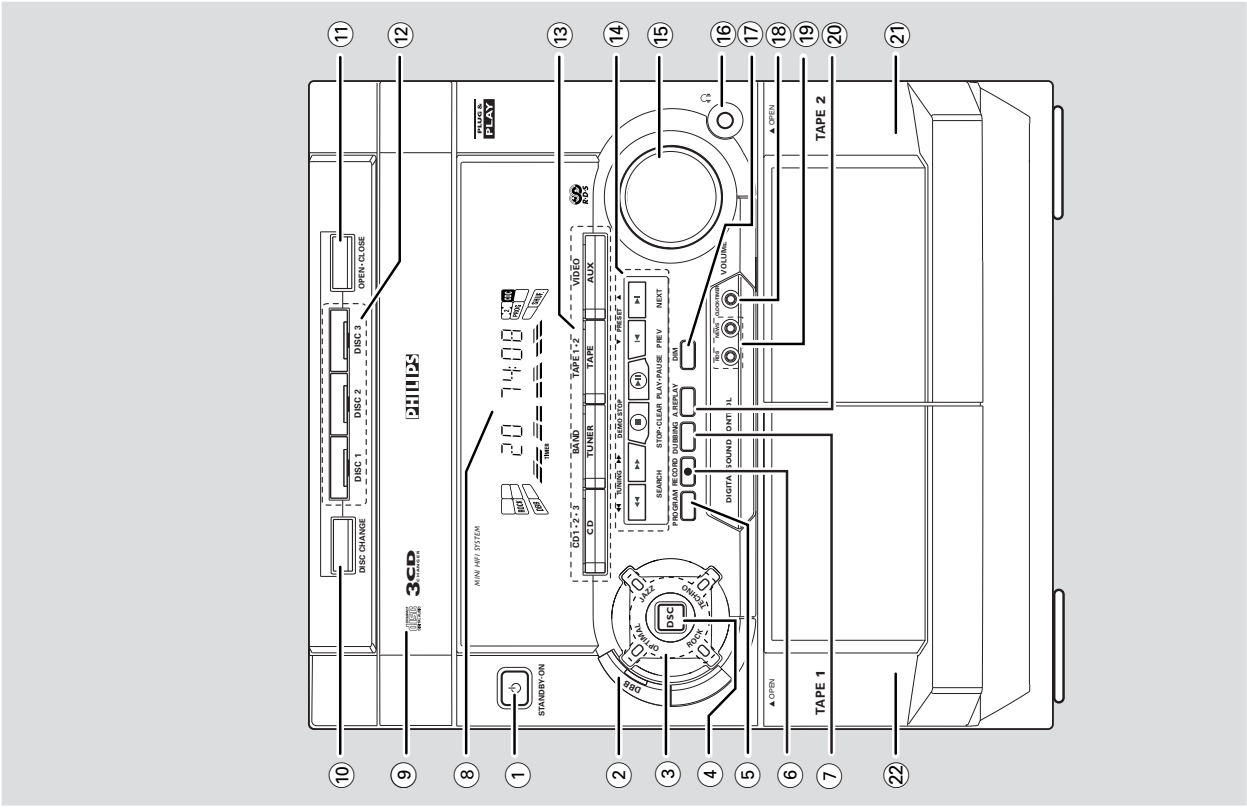
Osynlig laserstrålning när apparaten är öppnad och spärren är urkopplad. Betrakta ej strålen.

(SF) Varoitus !

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

(DK) Advarse !

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



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General Information

• 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.

• This product complies with the radio interference requirements of the European Community.

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.

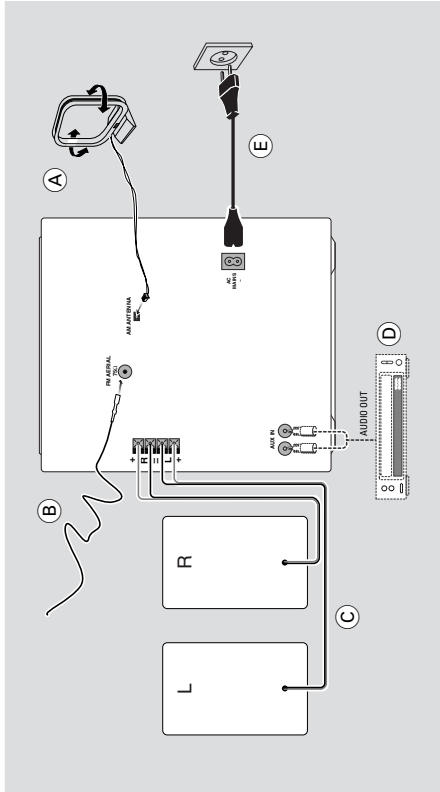
Supplied Accessories

- Remote control
- 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

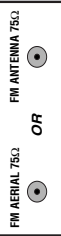


Rear Connections

- ① **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.

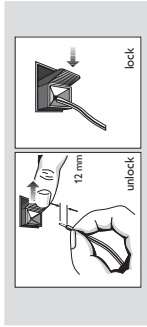
- ② **FM Wire Antenna Connection**
Connect the supplied FM wire antenna to the FM AERIAL (FM ANTENNA) 75 Ω terminal. Adjust the position of the FM antenna for the best reception.

- 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.

Preparation

① Connecting other equipment to your system

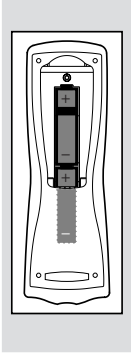
You can connect the audio left and right OUT terminals of a TV, VCR, Laser Disc player, DVD player or CD Recorder to the AUX IN terminals at the rear of the system.

② AC Power Supply

After all other connections have been made, connect the AC power cord to the system and to the wall outlet. Inserting batteries into the Remote Control

Inserting batteries into the Remote Control

- Insert the batteries (not supplied) into the remote control as shown in the battery compartment (Type R06 or AA).



CAUTION

- Remove batteries if they are exhausted or not to be used for a long time.
- Do not use old and new or different types of batteries in combination.
- Batteries contain chemical substances, so they should be disposed off properly.

Controls (illustrations on page 3)

Controls on the player and remote control

- ① **STANDBY-ON** Φ
 - 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 **RECORD**
 - to start recording on tape deck 2.
- ⑦ **DUBBING**
 - to dub a tape in normal speed.

⑧ DISPLAY SCREEN

- to view the current setting of the system.

⑨ CD CHANGER TRAY

⑩ DISC CHANGE

- to change disc(s).

⑪ OPEN-CLOSE

- to open or close the CD changer tray.

⑫ DISC 1 / DISC 2 / DISC 3 (DISC DIRECT PLAY)

- to select a disc tray for playback.

⑬ 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, MW or LW.

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).

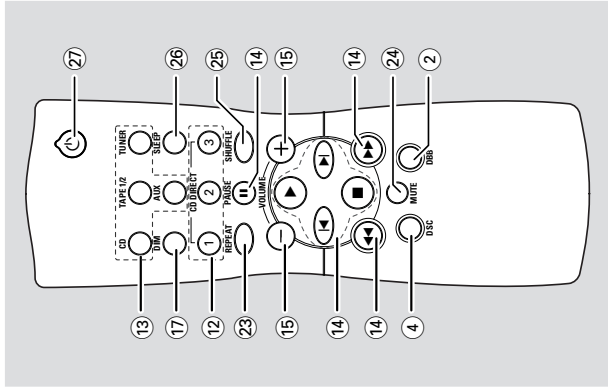
- 14 MODE SELECTION**
SEARCH ◀◀ ▶▶ (TUNING ◀▶▶▶)
for CD to search backward/forward.
for TUNER to tune to a lower or higher radio frequency.
for TAPE to rewind or fast forward a tape.
for CLOCK to set the hour (on the system only).
STOP•CLEAR ■
for CD to stop disc playback or to clear a programme.
for 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).

- PLAY** ▶ / **PAUSE** II
for CD to start or interrupt playback.
for TAPE to start playback.
for PLUG & PLAY
..... to initiate and start plug & play from standby/demo mode (on the system only).

- PREV** ◀ / **NEXT** ▶ (PRESET ▼▲)
for CD to skip to the beginning of the current, previous, or next track.
for TUNER to select a preset station in memory.
for CLOCK to set the minute (on the system only).

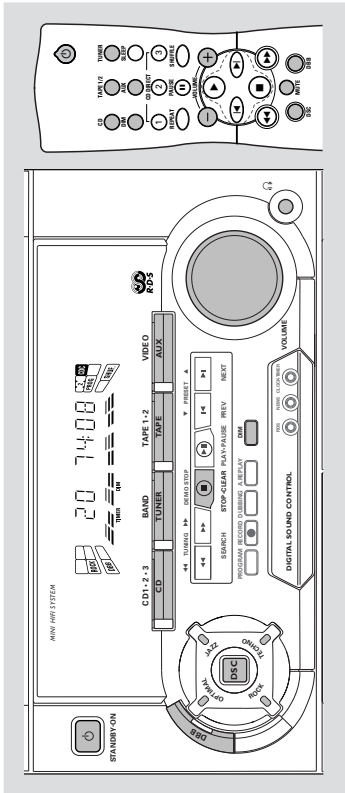
- VOLUME**
- to increase or decrease the volume.
- to connect headphones.
DIM
- to select different brightness for the display screen: DIM 1, DIM 2, DIM 3 or DIM OFF.
CLOCK•TIMER
- to view the clock set the clock or set the timer.
RDS
- to select RDS data in the following order: station name, program type, radio text and frequency.

- NEWS**
- to hear news automatically.



- 20 AUTO REPLAY**
- to select playback mode either in continuous AUTO PLAY or ONCE only.
21 TAPE DECK 2
22 TAPE DECK 1
23 REPEAT
- to repeat a disc track, a disc, or all available discs.
24 MUTE
- to switch off the sound temporarily.
25 SHUFFLE
- to play all the available discs and their tracks in random order.
26 SLEEP
- to switch the system to standby mode at a selected time.
27 ⏻
- 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.).



Important:
Before you operate the system, complete the preparation procedures.

Plug and Play

The system provides PLUG and PLAY feature that allows you to store all available radio stations and RDS stations automatically upon power up.

If the PLUG and PLAY has not been installed

- 1** Upon power up, "AUTO INSTALL - PRESET PLUG" will be displayed.
2 Press **PLAY** (on the system only) to start installation.
→ "INSTALL" will be displayed and followed by "TUNER" and then "PLUG".

- The **PROGRAM** starts flashing.
→ PLUG and PLAY will start searching for all RDS radio stations with sufficient signal strength and then followed by radio stations on FM, MW and LW band respectively. Weak RDS radio stations may be stored in later presets.
→ All available RDS and radio stations with sufficient signal strength will be stored. Up to 40 presets may be stored.
→ The last preset radio station or the first available RDS station will appear on the display when PLUG and PLAY is completed.

- 3** The system will proceed to set the RDS time automatically with the stored RDS preset station.
● If no RDS station is available in the first preset station, the program will exit automatically.
→ After the RDS radio station is found, "INSTALL" will be displayed and followed by "TIME".
● When searching RDS time:
→ "SEARCH RDS TIME" will be displayed.
→ When RDS time is read, "RDS TIME" will be displayed. The current time will be displayed for 2 seconds and stored automatically.

Note:

- If RDS station does not transmit RDS time within 90 seconds, the program will exit automatically and the display will show "NO RDS TIME".

To reinstall the PLUG & PLAY

- 1** In Standby or Demonstration mode, press and hold **PLAY** for 5 seconds (on the system only). "AUTO INSTALL - PRESET PLUG" will be displayed.
2 Press **PLAY** (on the system only) again to start installation.
● To exit without storing the PLUG and PLAY, press ■ button (on the system only).

Operating the System

Notes:

- **PLUG and PLAY** will be reinitiated again during the next power up if :
 - i) **PLUG and PLAY** installation was not completed.
 - ii) No stereo frequency being detected during **PLUG and PLAY**, "CHECK ANTENNA" will be displayed.
- You can store any radio stations manually or automatically after **PLUG and PLAY**.
- When **PLUG and PLAY** is used, all previously stored radio stations will be replaced.
- During **PLUG and PLAY**, if no button is pressed within 15 seconds, the system will go to demonstration mode (if demonstration mode is enable)

Demonstration mode

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

To disable the demonstration mode

- Press and hold **■** (on the system only) for **5 seconds** when the system is in demonstration mode.
 - "DEMO OFF" is displayed.
 - The system will switch to standby mode.

To enable the demonstration mode

- Press and hold **■** (on the system only) for **5 seconds** when the system is in standby mode.
 - The demonstration will begin.

Notes:

- If the demonstration mode has not been disabled, it will resume 5 seconds later after the system switches to standby mode.
- When the system is switched on from the main power outlet, the CD changer tray may open and close again to initialize the set.
- Even though the AC power cord is removed from and reconnected to the wall socket, the demonstration will remain off until it is switched on again.

Switching the system ON

- Press **CD, TUNER, TAPE** or **AUX**.
 - Press **STANDBY-ON** in demo.
- You can also switch on the system by pressing any one of the **CD DIRECT PLAY** buttons (on system only).

Switching the system to standby mode

- Press **STANDBY-ON** or **⏻** on the remote control.
 - The system will switch to standby mode.

Selecting the Source

- Press the respective source selection button: **CD, TUNER, TAPE** or **AUX**.
 - The display indicates the selected source.

Note:

- For an external source, make sure you have connected the audio left and right **OUT** terminals of the external equipment (TV/VCR, Laser Disc player, DVD player or CD Recorder) to the **AUX IN** terminals.

DIM mode

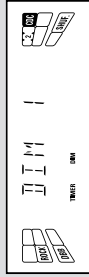
You can select the desired brightness for the display.

- Press **DIM** to select DIM 1, DIM 2, DIM 3 or DIM OFF display mode.
 - The **DIM** display lights up.
 - "DIM 1", "DIM 2", "DIM 3" or "DIM OFF" will be displayed depending on the mode selected.

DIM OFF - normal brightness with Spectrum Analyzer On



DIM 1 - normal brightness with Spectrum Analyzer Off



DIM 2 - half brightness with Spectrum Analyzer On



DIM 3 - half brightness with Spectrum Analyzer Off and all LEDs on the system will be switched off.



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.

Operating the System

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.

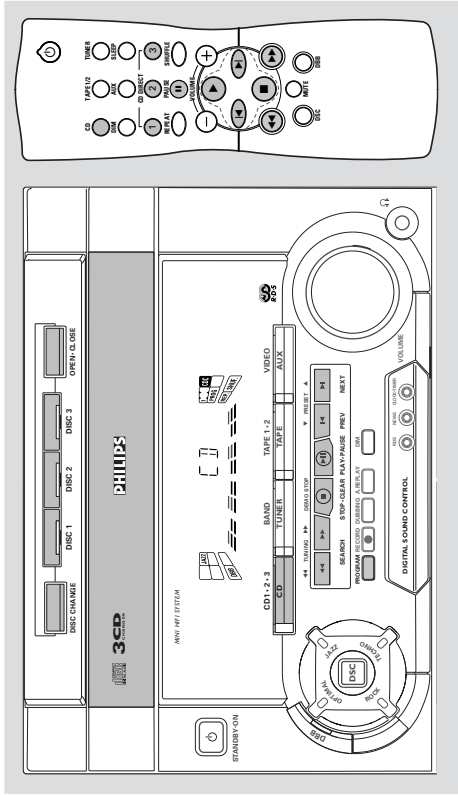
Note:

- 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.



Warning!

- 1) 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.
- 2) Do not load more than one disc into each tray.
- 3) When the CD changer is loaded with discs, do not turn over or shake the system. This may jam the changer.
- 4) 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.



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.

Loading the CD Changer

- 1 Press **CD** to select CD mode.
- 2 Press **OPEN-CLOSE**.
 - The CD changer tray slides out.
- 3 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.
- 4 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.

- 1 **Playing a Disc**
 - 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 **||**.
 - The playing time flashes.
 - To resume playback, press **▶** again.
 - 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

Press **SHUFFLE**.

- **SHUFF** flag and the track selected at random appear on the display.
- The **SHUFF** flag 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 "PLC DISC" will be displayed.
- The **REP** and **SHUF** flags appear on the display.
- Press **SHUFFLE** again to resume normal playback.
- The **SHUF** flag disappears from the display.

— 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** (only on remote control)

Press **REPEAT** on the remote control to select the various repeat modes.

the various repeat modes.
→ "TRACK", "DISC", "ALL DISC" or "OFF" will be displayed.

- The **REP** flag appears on the display.

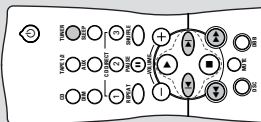
Note:

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

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.

English



Press **TUNER** (BAND).

- Press **PROGRAM** for more than one second.
- The **PROG** flag starts flashing and "RLUT" will be displayed.
 - The system will start searching for all radio stations with RDS and then followed by radio stations on FM, MW and LW band respectively.
 - 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.

- 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.

→ "TUNER" will be displayed.

- Press **TUNER** (BAND) to select TUNER mode.
 Press **→** "TUNER" will be displayed.
 A few seconds later, the current radio frequency will be displayed.
- Press **TUNER** (BAND) again to select the desired waveband : FM, MW or LW.
- Press **◀** or **▶** for more than one second, then release.
- ▶ The display will show "SEARCH" 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.

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.

Manual programming

- 1 Press **TUNER** (BAND).
- 2 Press **TUNER** (BAND) again to select the desired waveband : FM, MW or LW.
- 3 Press **PROGRAM** for less than one second.
→ The **PROG** flag starts flashing.
→ The next available preset number will be displayed for selection.
- 4 Press **◀** or **▶** to tune to the desired frequency.
- If you wish to store the radio station to another preset number, press **▼** or **▲** to select the desired preset number.
- 5 Press **PROGRAM** again.
→ The **PROG** flag disappears and the radio station will be stored.
- Repeat **steps 3 – 5** to store other preset radio stations.

Notes:

- When **40 radio stations are stored and you attempt to store another radio station, the display will show "FULL"**. If you want to change an existing preset number, repeat steps 3 – 5.
- You can cancel manual programming by pressing **■** (on the system only).
- During programming, if no button is pressed within 20 seconds, the system will exit programme mode automatically.

Tuning to Preset Radio Stations

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

Receiving RDS Radio Station

RDS (Radio Data System) is a broadcasting service that allows FM stations to send additional information along with the regular FM radio signal. This additional information can contain:

- **STATION NAME**: The radio station name is displayed.
- **PROGRAMTYPE**: The following program types exist and can be received by your tuner: News, Affairs, Info, Sport, Educate, Drama, Culture, Science, Varied, Pop M, Rock M, MOR, (middle of the road music), Light M, Classics, Other M, No type.
- **RADIO TEXT (RT)**: text messages appear in the display.

When you have tuned to a RDS station, the RDS logo  and the radio station name will appear on the display:

- The display normally shows the radio station name if available.
By repeatedly pressing **RDS** button you can change the type of display information:

→ The display shows in turn:
STATION NAME → PROGRAM TYPE →
RADIO TEXT → TUNED FREQUENCY →
STATION NAME ...

Note:

- When you press the **RDS** button and the display shows "NO RDS", it indicates that either the tuned station is not transmitting RDS signal or it is a non RDS station.

RDS Clock

Some RDS station may be transmitting a real clock time at an interval of every minute.

Setting the time with RDS clock

- 1 Press **CLOCK-TIMER**.
→ "----:--" or current time appears on the display.
- 2 Press **CLOCK-TIMER** once more to enter clock setting mode.
→ "00:00" or "12:00 AM" or current time starts flashing.
- 3 Press **RDS**.
→ The message "SEARCH RDS TIME" will be displayed.
→ If the current station is not receiving any RDS information, "NO RDS TIME" will be displayed.
→ When the RDS clock is read, "RDS TIME" will be displayed. The current clock time is displayed for 2 seconds and will be stored automatically.
→ If within 90 seconds, the RDS time is not detected, "NO RDS TIME" will be displayed.

Note:

- Some RDS station may be transmitting a real time clock at a minute interval. The accuracy of the transmitted time depends on the transmitting RDS station.

News (only available in Radio Station with RDS)

You can activate NEWS function in Standby or any source mode except Tuner mode. Once the News PTY (program type) is detected in a RDS station, it will switch to TUNER mode automatically.

To start NEWS function

- 1 Press **NEWS**.
 - The **NEWS** and "NEWS" will be displayed.
 - It will scan stations stored in the first 5 preset and wait for the News Program Type data to be available in any of these RDS stations. During the search :
 - The current source activity will remain uninterrupted.
 - If no RDS station is found in the first 5 presets, the NEWS function will be switched off. The display will show "NO RDS NEWS" and **NEWS** will disappear from the display.
 - When NEWS transmission is detected, the system will switch to Tuner mode.
 - The **NEWS** starts flashing.

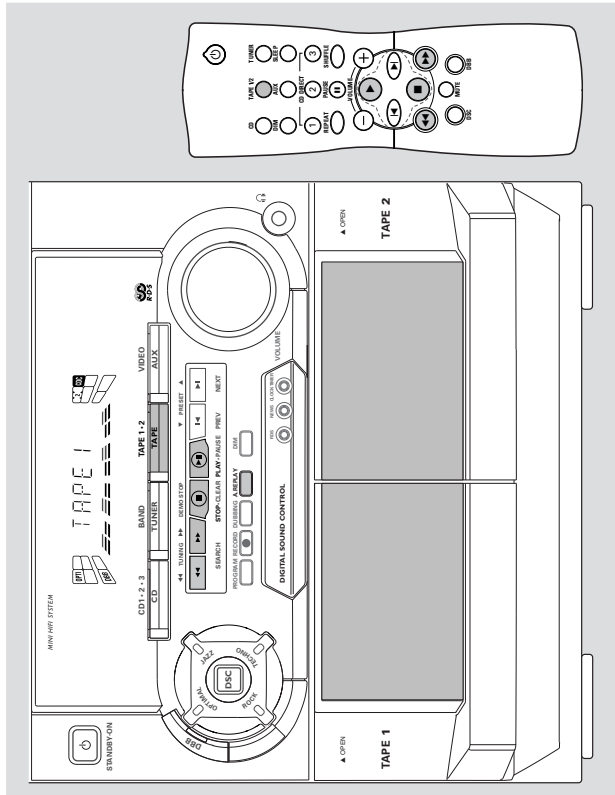
To cancel NEWS function

- Press **NEWS** again.
→ The **NEWS** disappears and "NEWS OFF" will be displayed.

Notes:

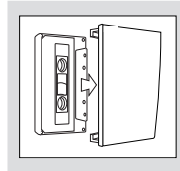
- If you are listening to a non RDS TUNER radio station and should you decide to hear NEWS, first select other source (e.g. CD, TAPE or AUX), then press **NEWS**.
- Before using the NEWS feature, ensure that the first 5 presets are RDS stations.
- The NEWS works only once for each activation.
- During News bulletin, you can press any available source or Tuner function keys to cancel NEWS function and execute the relevant source mode.
- If set is switched to Tuner source, the NEWS function will be cancelled, "NEWS OFF" will be displayed immediately after the "TUNE R" message.

Tape



Loading a tape

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



- 4 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" () 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.

Tape Playback

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

Tape

Rewind/Fast Forward

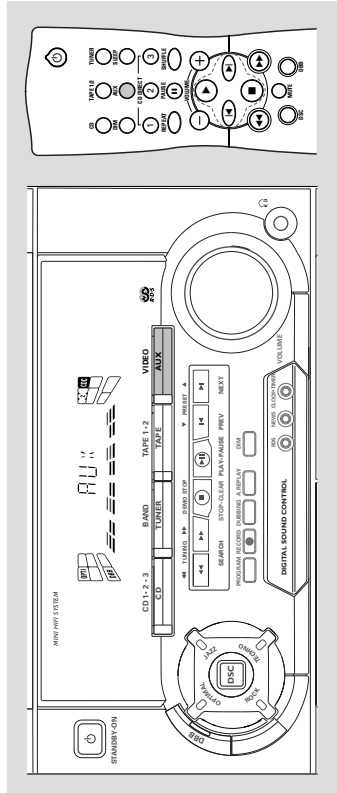
When playback is stopped

- 1 You can rewind or fast forward the tape by pressing **◀◀** or **▶▶** respectively.
→ If rewinding, "T 1 <" or "T 2 <" with "<" scrolling left will be displayed.
→ If fast forwarding, "T 1 >" or "T 2 >" with ">" scrolling right will be displayed.
→ The tape will stop automatically at the end of rewinding or fast forwarding.
- 2 Press **■** to stop rewinding or fast forwarding.
- **During playback**
Press and hold **◀◀** or **▶▶** until the desired passage is located.
→ "T 1" or "T 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).

Aux



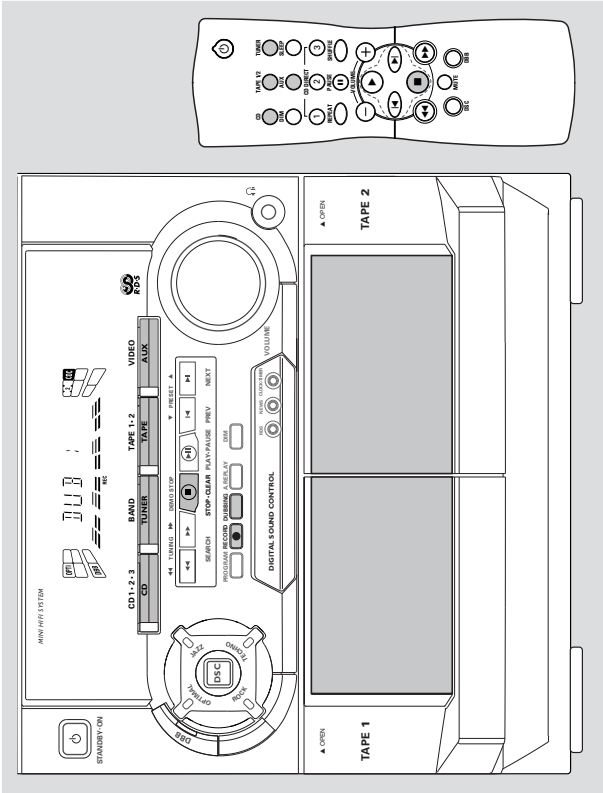
Selecting External Equipment

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.
→ "FLU:" will be displayed.

Note:

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



- Notes:
- 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.
- ### One Touch Recording
- For One Touch Recording, as soon as you press RECORD, the current source (CD, TUNER or AUX) will be recorded on tape deck 2.
- Load a blank tape in tape deck 2.
 - Press **RECORD** to start recording.
 - The **REC** starts flashing.
 - Press **■** 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.

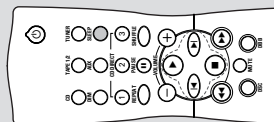
- ### CD Synchro Start Recording
- Load a blank tape into tape deck 2 and a disc into a disc tray.
 - Press **CD** to select CD mode.
 - You can program the tracks in the order you want them to be recorded (see Programming Tracks). If not, select the disc by pressing **CD** (CD 1•2•3) and the tracks are recorded according to the order on the selected disc.
 - Press **RECORD** to start recording.
 - The **REC** starts flashing.
 - Disc will start playback automatically.
 - Press **■** to stop recording.

- ### Dubbing tapes (from tape deck 1 to tape deck 2)
- Press **TAPE** (TAPE 1•2) to select tape deck 2.
 - Load the prerecorded tape into tape deck 1 and a blank tape into tape deck 2 with full spool to the left.
 - Press **DUBBING**
 - ">" scrolling right will be displayed. Dubbing will start immediately.
 - The **REC** starts flashing.
 - Press **■** to stop dubbing.

- 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.

- ### Recording from other sources (only on tape deck 2)
- Load a blank tape into tape deck 2 with the open side downward.
 - Press **CD, TUNER** or **AUX**.
 - Press **RECORD** to start recording.
 - The **REC** starts flashing.
 - Press **■** to stop recording.
- Notes:
- During recording, it is not possible to listen to another source.

Clock/Timer



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.

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 timer will always

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 2 seconds to select timer mode.
→ "12:00 AM" or "00:00" or the last timer setting starts flashing depending on whether you have selected 12- or 24-hour mode.
→ The **TIMER** starts flashing.
→ The selected source is lit while other available sources are flashing.
- 2 Press **CD, TUNER** or **TAPE** to select the desired source.
● Before selecting CD or TAPE, make sure a disc or tape is loaded in the CD tray or tape deck 2.

- ### Sleep Timer *(only on remote control)*
- This feature allows you to select a length of time after which the system will switch to the standby mode automatically.
- 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.
- 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" → "SLEEP 9" → "SLEEP 8" → "SLEEP 7" → "SLEEP 6" → "SLEEP 5" → "SLEEP 4" → "SLEEP 3" → "SLEEP 2" → "SLEEP 1" → "SLEEP 0"
- ### 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.

Press **SLEEP** once to view the remaining

- 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.

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

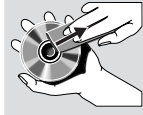
Maintenance

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 Discs

- 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 antistatic spray intended for analog records.



Cleaning the Disc lens

- 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.

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.

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

"NO DISC" is displayed.

- If the disc is inserted upside down.
- Moisture condensation at the lens.
- There is no disc in the CD tray.
- The disc is dirty, badly scratched or warped.
- The disc lens is dirty or dusty, refer to section under Maintenance.

"DISC NOT FINALIZED" is displayed.

- The CD-RW or CD-R disc is not properly recorded for use with a standard CD player.
- The disc is badly scratched or dirty.

Troubleshooting

English

Poor radio reception.

- The signal is too weak, adjust the antenna or connect an external antenna for better reception.
- The TV or VCR is too close to the stereo system.

Recording or playback cannot be made or there is a decrease in audio level.

- Dirty tape heads, capstans or pressure rollers, refer to section under Maintenance.
- Magnetic build-up in the record/playback head, use demagnetizing tape.

Tape deck door cannot open.

- Reconnect the AC power plug and switch on the system again.

System does not react when any button is pressed.

- 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.

No or poor sound.

- Adjust the volume.
- Disconnect the headphones.
- Check that the speakers are connected correctly.
- Check if the stripped speaker wire is clamped.

Reversed left and right sound.

- Check the speaker connections and location.

Lack of bass sound or apparently imprecise physical location of musical instruments.

- Check the speaker connection for proper phasing, colored/black wires to colored/black terminals.

Remote control has no effect on the system.

- Select the source (CD, TUNER, etc.) before pressing the function button (▶, ◀, ►, ◀, ►, etc.).
- Reduce the distance to the system.
- Insert the batteries with their polarities (+ / - signs) as indicated.
- Replace the batteries.

Timer is not working.

- Set the clock.
- Press CLOCK•TIMER to switch on the timer.
- If recording is in progress, stop recording.

Clock setting is erased.

- Reset the clock.

System displays features automatically; buttons flash continuously.

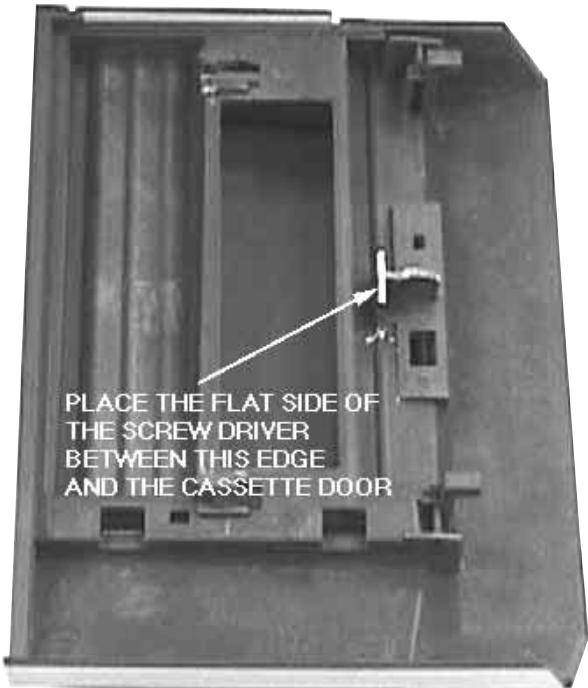
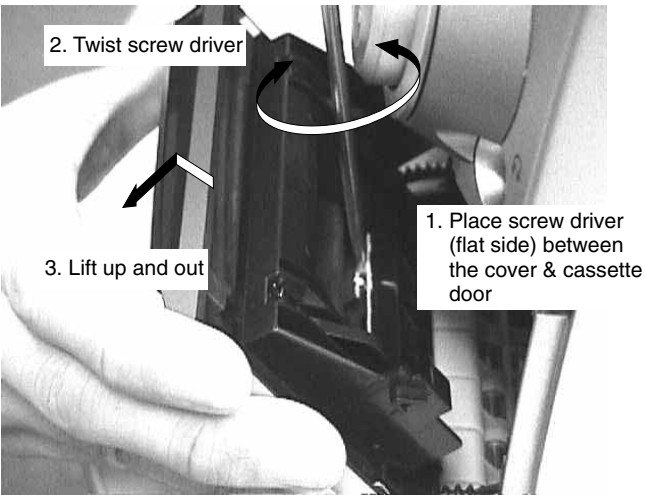
- Press and hold ■ (on the system) for five seconds to switch off the demonstration.

All lighted buttons are not lit.

- Press DIM until DIM OFF display mode is shown.

DISMANTLING INSTRUCTIONS

Dismantling of the Cassette Cover

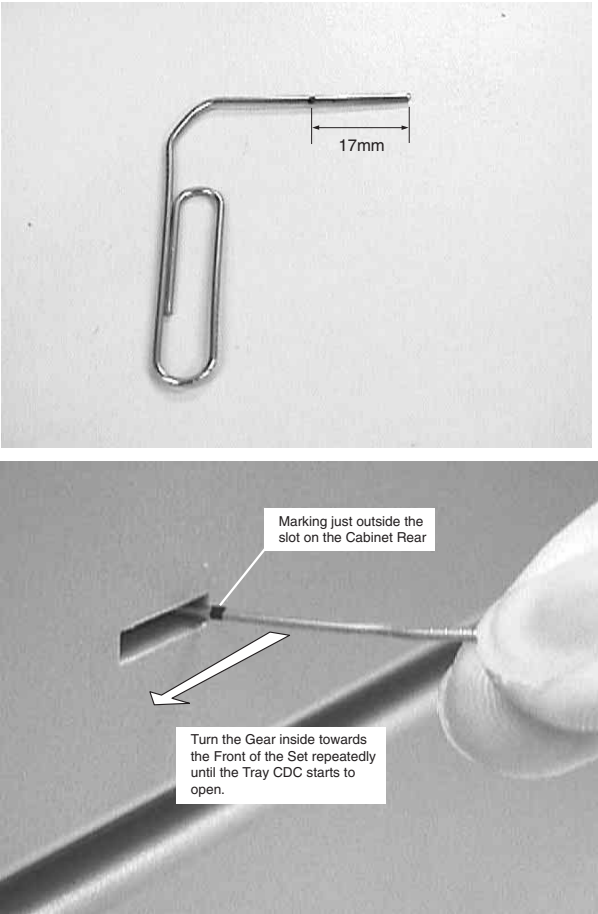


Cassette door

Opening the CDC Tray manually

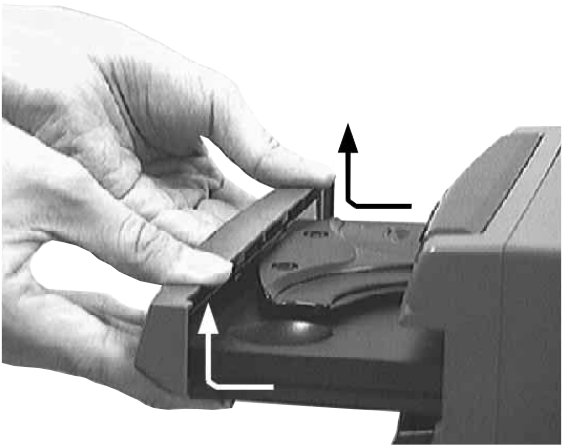
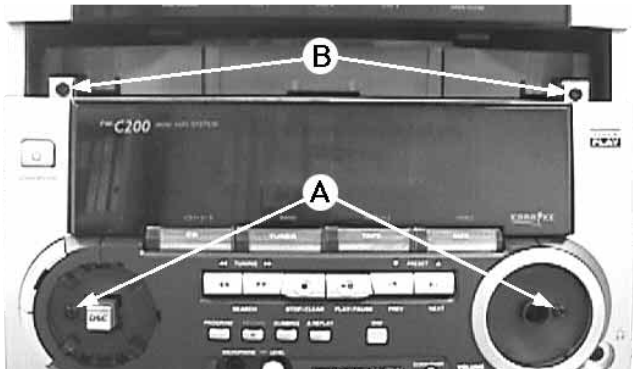
- 1) Take a paper clip or any stiff wire diameter of 1mm -1.5mm and make a marking about 17mm from the tip.
- 2) Place the set in an upright position and insert the paper clip into the slot on the right side of the Cabinet Rear.
- 3) With the marking just outside the Cabinet Rear, you should be able 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

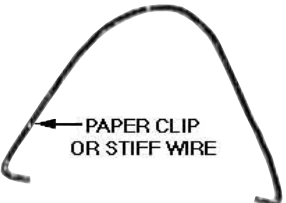
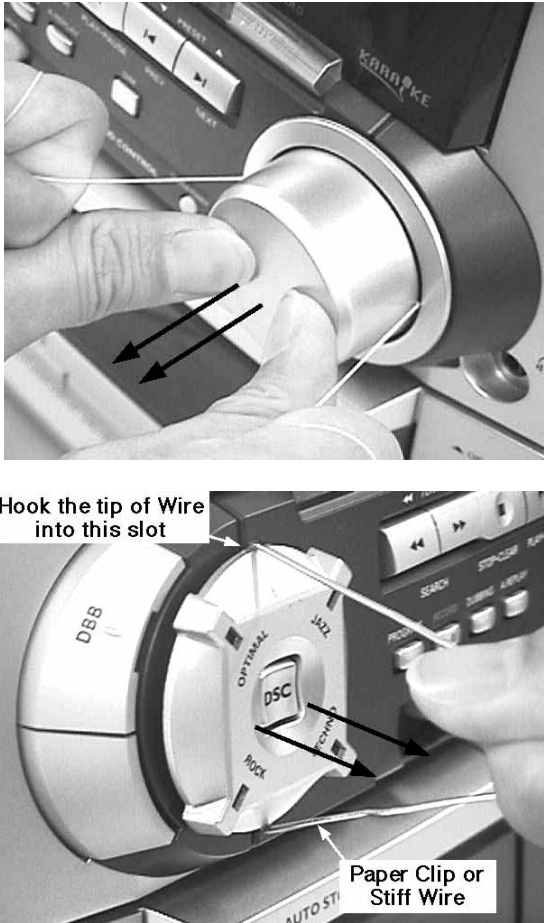
- 1) With the CDC tray opened remove the Cover Tray CDC (pos 107) as indicated.
- 2) Loosen the 8 screws to separate the Front Panel from the rear portion.
 - 2 screws B on the front
 - 2 screws each on the left & right side
 - 2 screws at the bottom



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

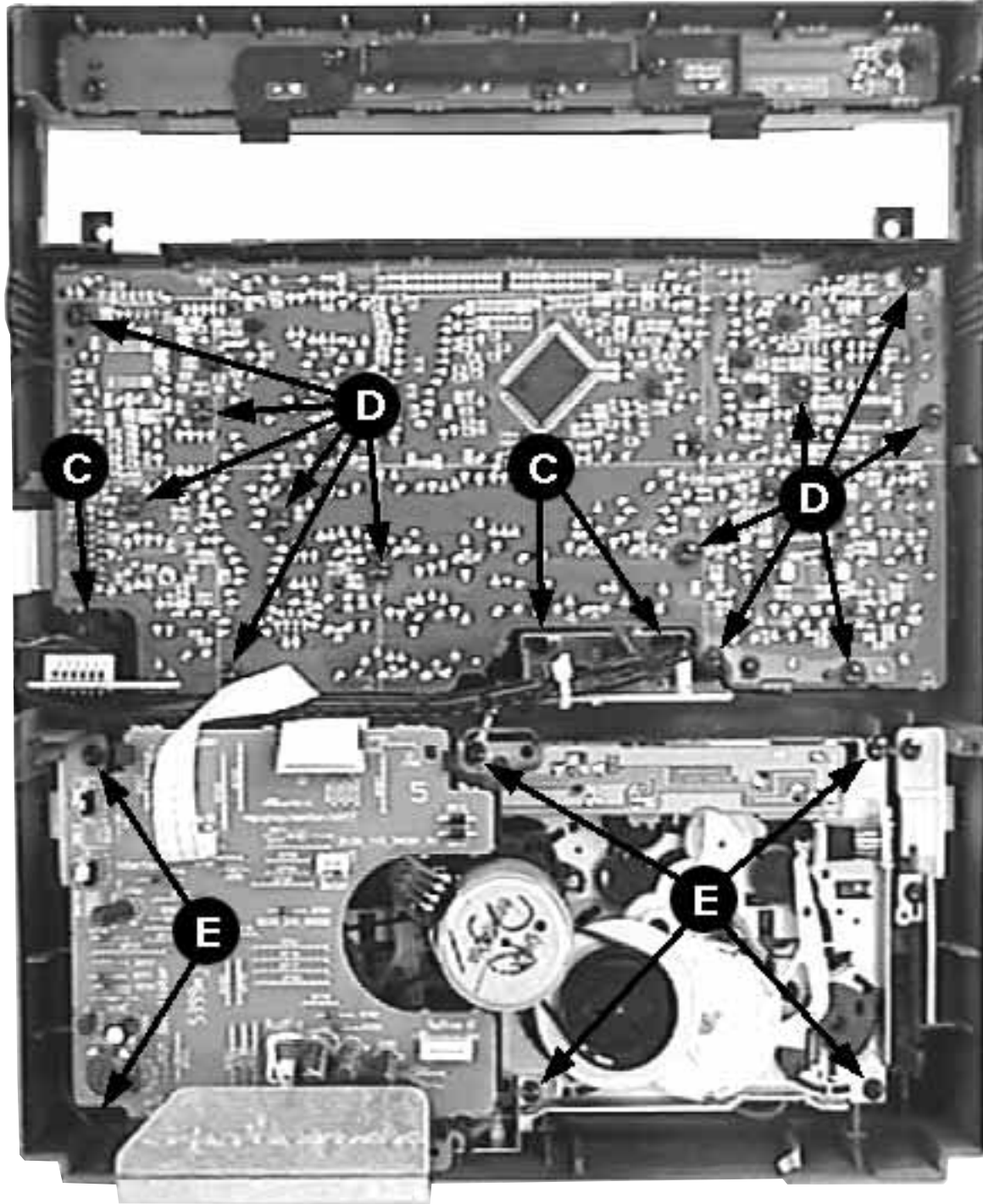
- 1) Insert a strong string into the slot between the Volume knob (pos 146) and Cover Ring Volume (pos 144), looped it 1,5 turns securely around the Volume knob and pulled it out as shown.
- 2) Use a 0.5mm thick paper clip or stiff wire and bend into the shape as shown. Hook the 2 ends of the clip or 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!



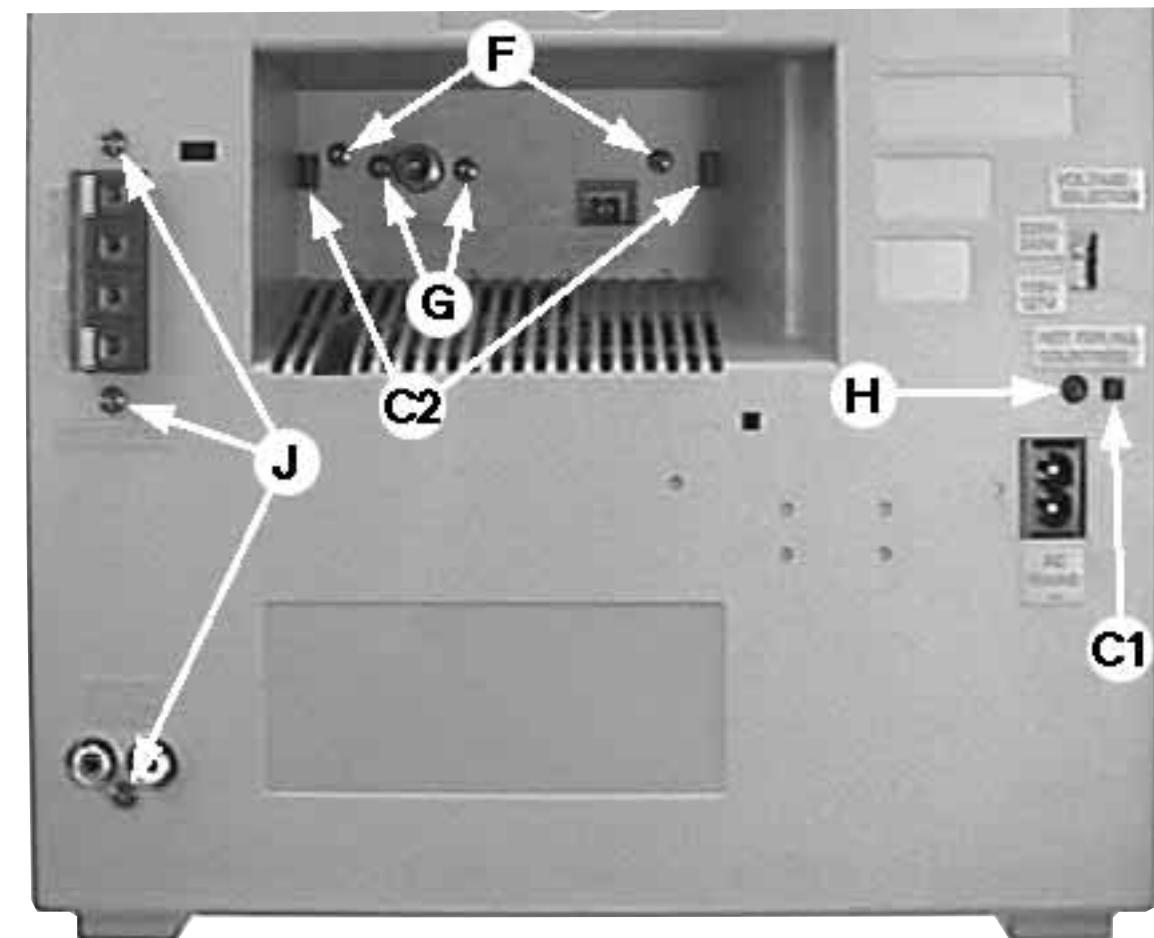
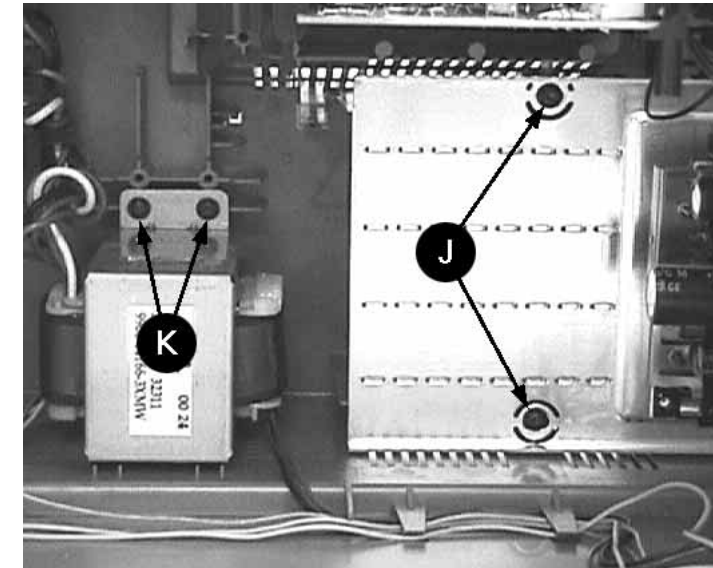
Dismantling of Assemblies on the Front Panel

- 1) Remove 3 screw C to loosen the Headphone board (1x) and the Karaoke board (2x).
Note: Karaoke board 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

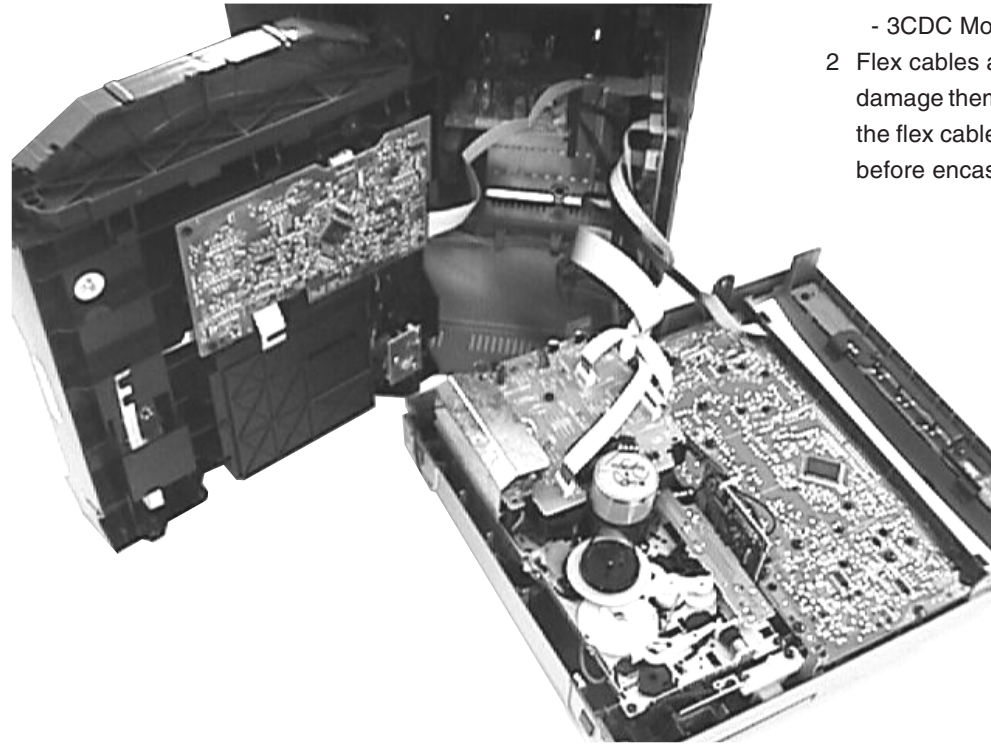


Dismantling of Rear Portion

- 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.



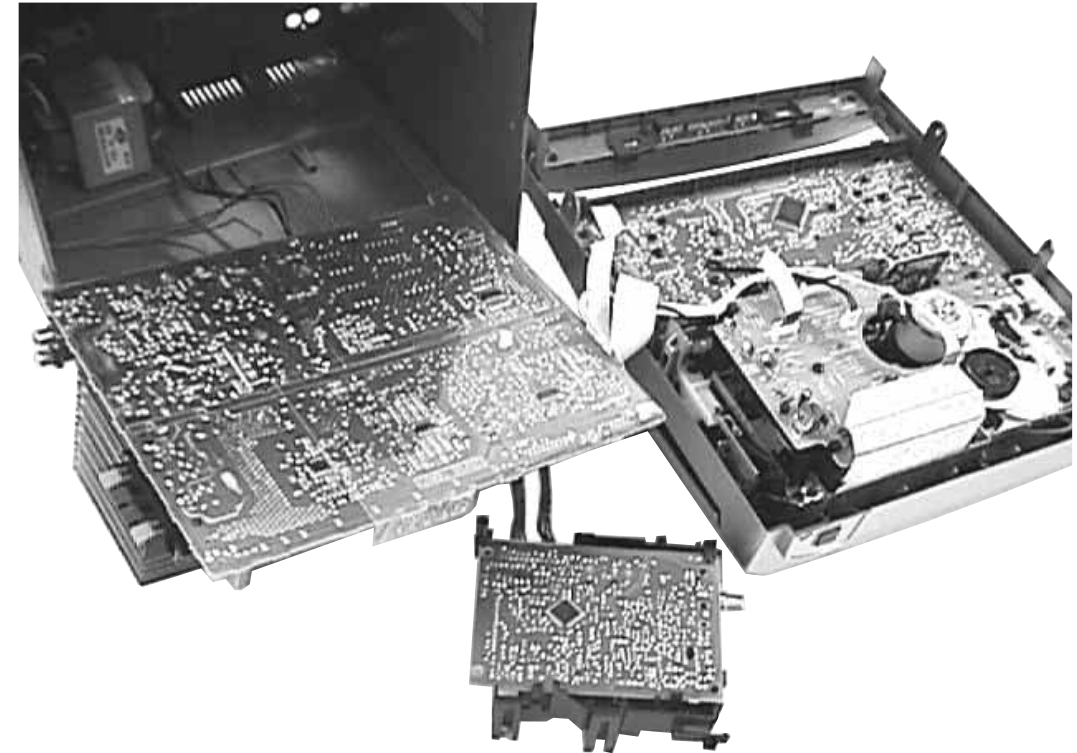
Service pos A



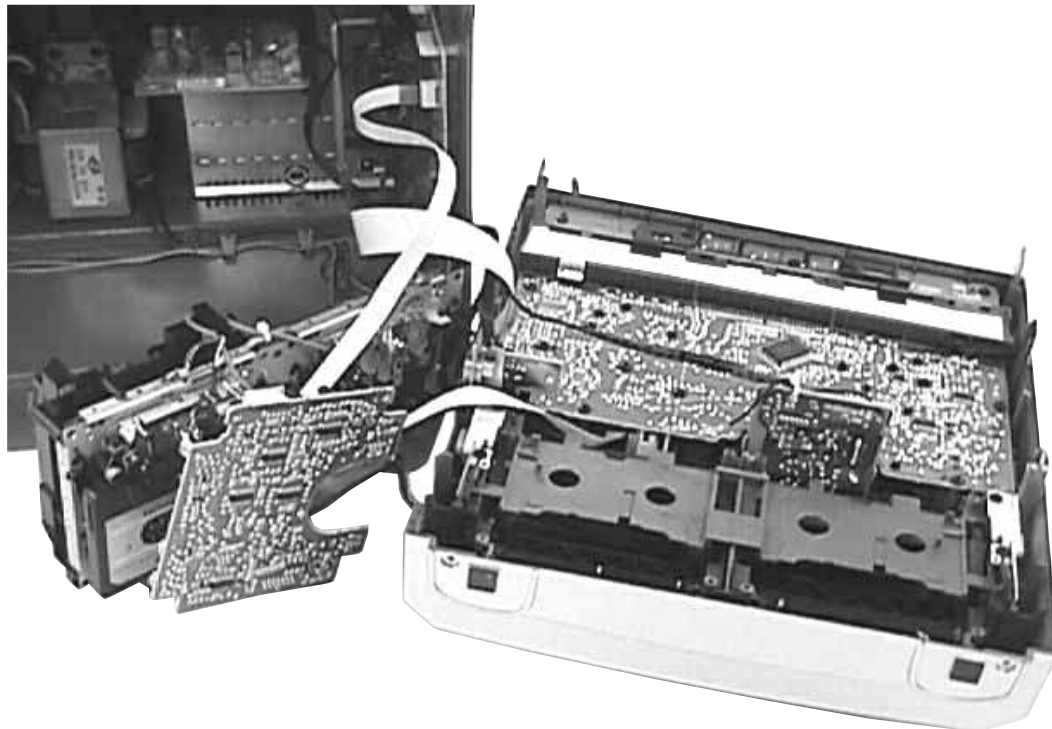
Note:

- 1 During repair it is possible to disconnect the following assemblies or modules while working on other areas:
 - Tuner Board
 - 3CDC Module
- 2 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 occurs.

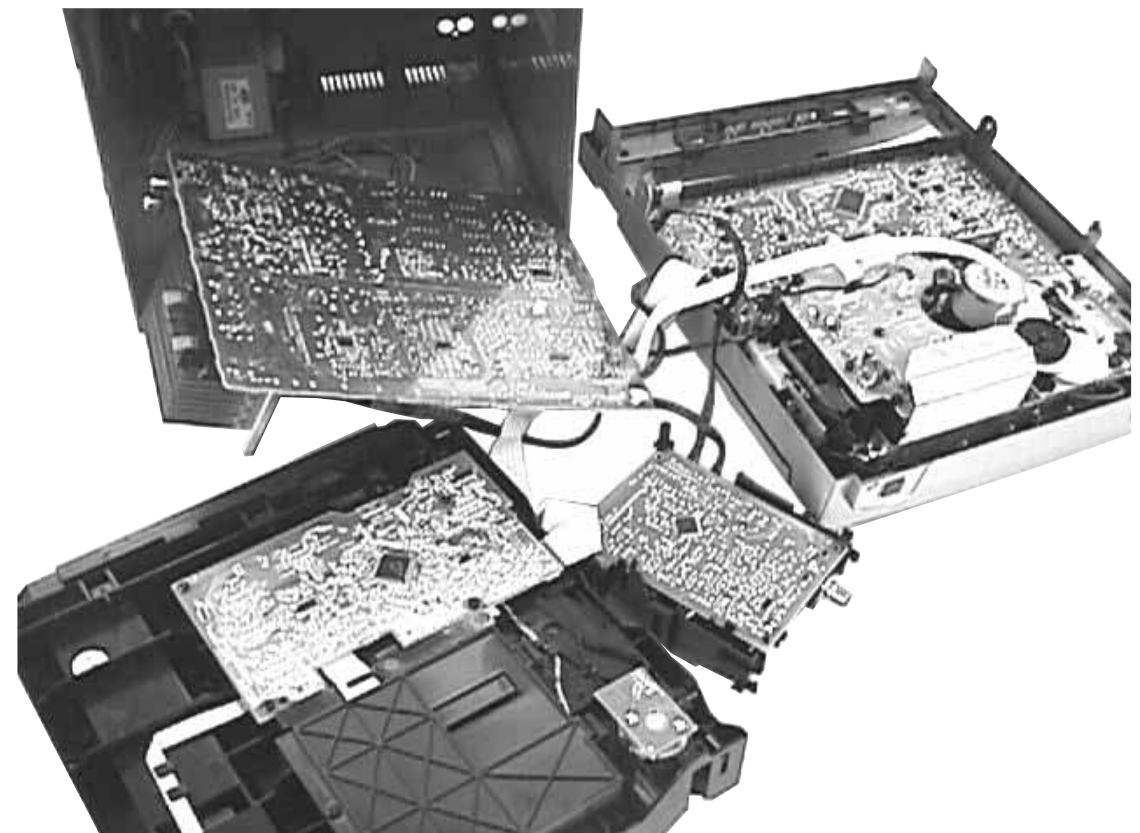
Service pos C



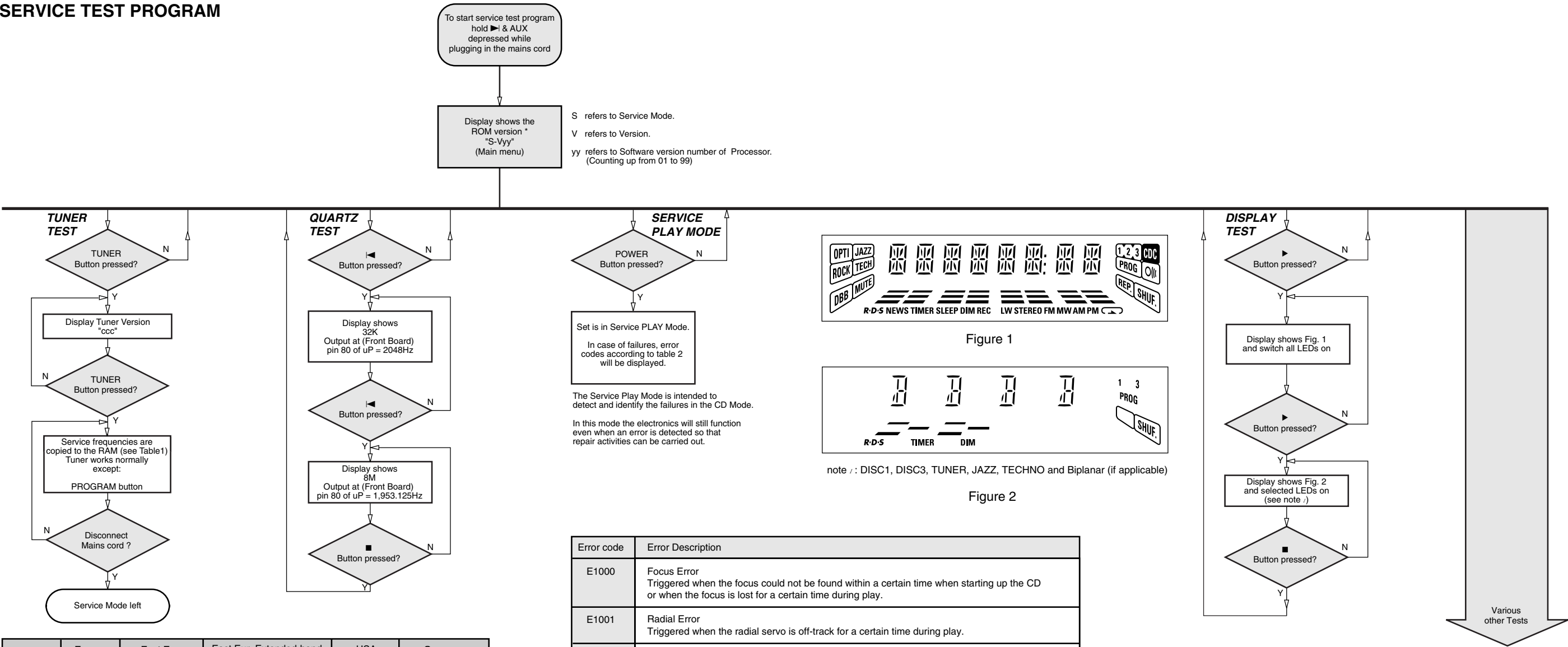
Service pos B



Service pos D



SERVICE TEST PROGRAM



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*

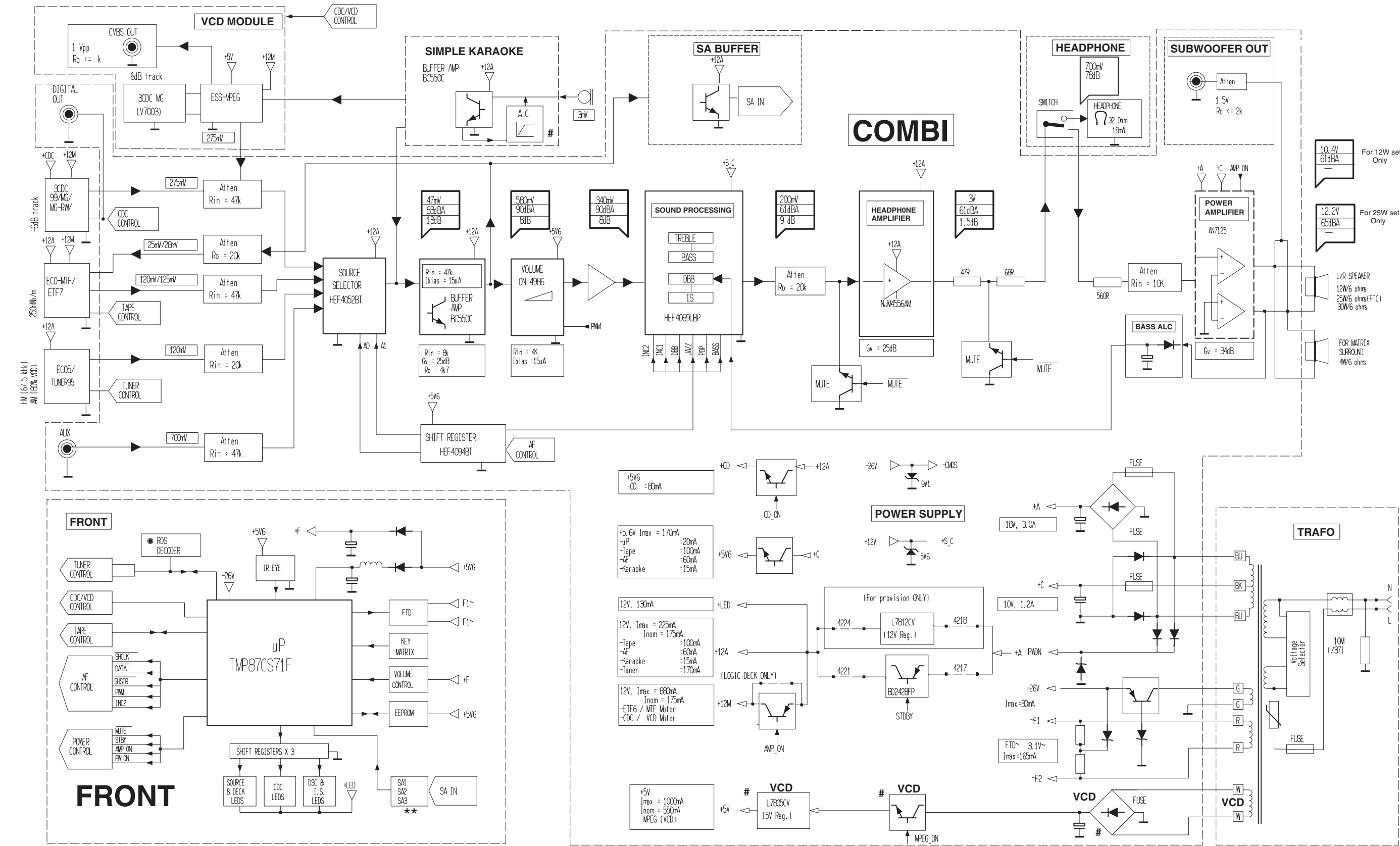
Note: * Depending on the selected grid frequency (9 or 10kHz)
By holding the TUNER and >>> buttons depressed while switching on the Mains supply, one of the undermentioned features will be activated:
- the tuning grid frequency is toggled between 9kHz and 10kHz for the Oversea (/21) version.
- the extended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

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.

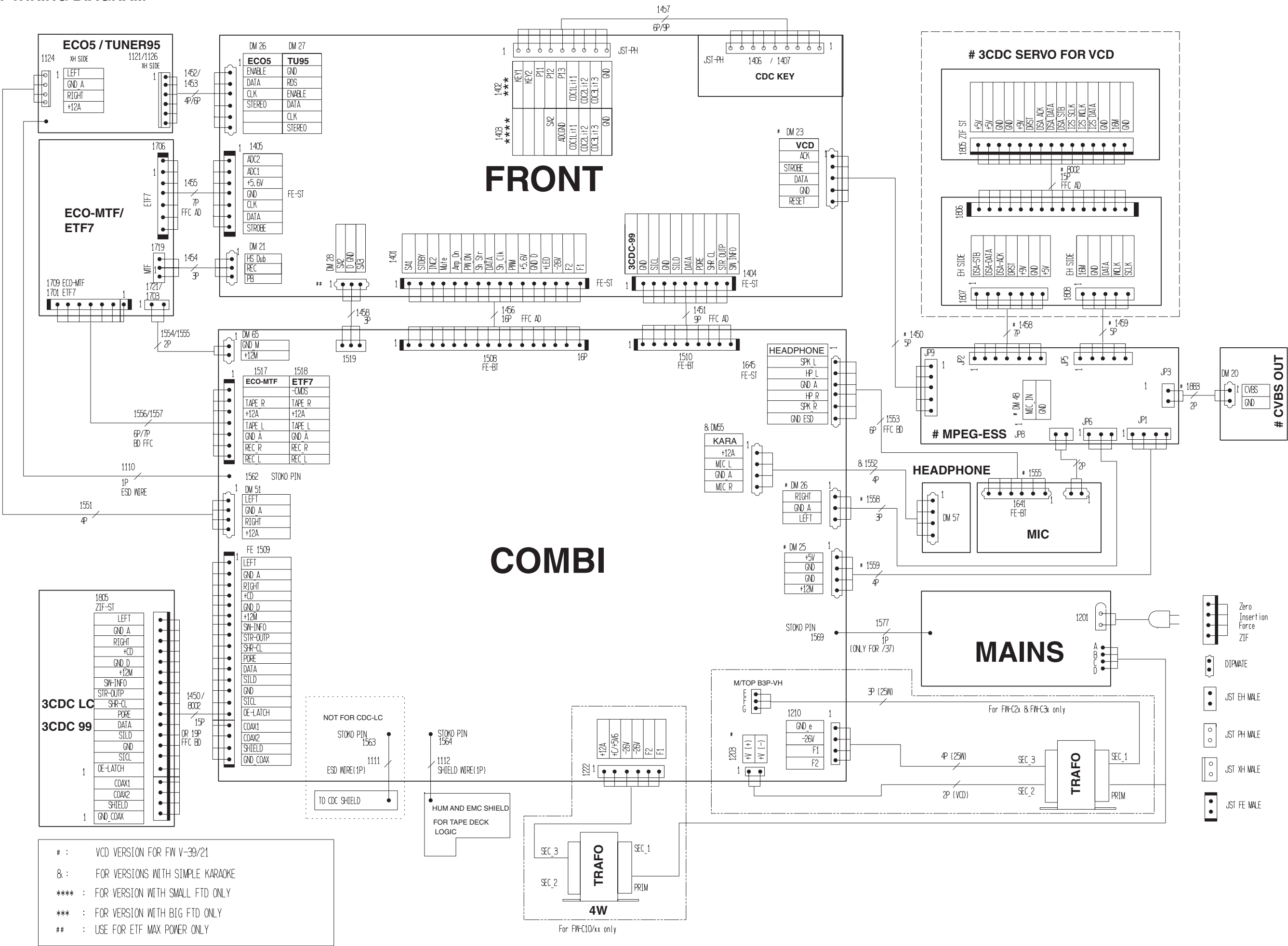
Table 2

TEST	Activated with	ACTION
EEPROM TEST	>>> ■ to Exit	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	<<<	Load default data. Display shows "NEW" for 1 second. Caution! All presets from the customer will be lost!!
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	

SET BLOCK DIAGRAM



SET WIRING DIAGRAM

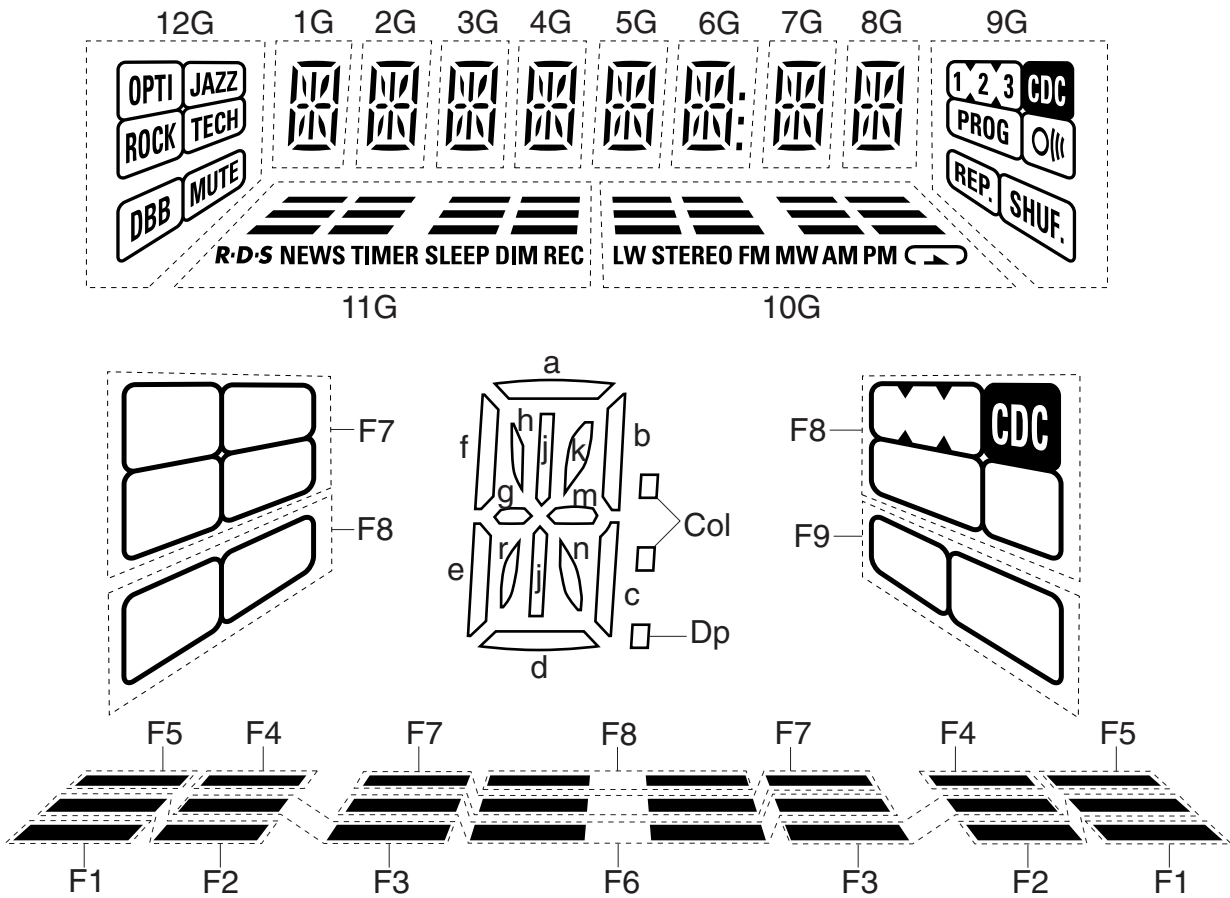


FRONT BOARD

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FTD DISPLAY PIN CONNECTIONS



	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	O	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-C200/21/21M, FW-C220/21K
A53930	FW-C220/22/34
A53940	FW-C200/33
A53950	FW-C100/21/21M/22/30/33/34/37, FW-C105/21
A53970	FW-C250/37
A53980	FW-C250/21
A53990	FW-C280/22/34
A54000	FW-C290/21
A54340	FW-C200/30
A54450	FW-C150/37

FEATURES:	A53920	A53930	A53940	A53950	A53970	A53980	A53990	A54000	A54340	A54450
RDS	-	x	-	-	-	-	x	-	-	-
Rotary Encoder	x	x	x	-	x	x	x	x	x	-
Jog Encoder	-	-	-	-	x	x	x	x	-	-
Spectrum Analyzer	-	-	-	-	-	-	x	x	-	-
Biplaner LED	-	-	-	-	-	-	x	x	-	-
Small FTD	x	x	x	x	x	x	-	-	x	x
Large FTD	-	-	-	-	-	-	x	x	-	-
NTC	-	-	-	-	-	x	-	x	-	-
LED Control	x	x	x	-	x	x	x	x	x	-

Variations table for Front Board

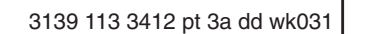
ITEM NO.	A53920	A53930	A53940	A53950	A53970	A53980	A53990	A54000	A54340	A54450
DM21	-	-	-	x	x	x	-	-	-	x
DM23	-	-	-	-	-	-	-	-	-	-
DM26	x	-	x	x	x	x	-	x	x	x
DM27	-	x	-	-	-	-	x	-	-	-
DM29	-	-	-	-	-	x	-	x	-	-
1402	-	-	-	-	-	-	x	x	-	-
1403	x	x	x	x	x	x	-	-	x	x
1404	x	x	x	x	x	x	x	x	x	x
1405	x	x	x	-	-	-	x	x	x	-
1418	-	-	-	-	-	-	x	x	-	-
1419	-	-	-	-	-	-	x	x	-	-
1420	-	-	-	-	-	-	x	x	-	-
1421	x	x	x	-	-	-	x	x	x	-
1423	x	x	x	-	-	-	x	x	x	-
1425	-	x	-	-	-	-	x	-	-	-
1426	x	x	x	-	-	-	x	x	x	-
1427	-	x	-	-	-	-	x	-	-	-
1428	-	-	-	x	-	-	-	-	-	x
1429	-	-	-	x	-	-	-	-	-	x
1430	x	x	x	x	-	-	-	-	x	x
2417	220μF	220μF	220μF	-	220μF	220μF	220μF	220μF	220μF	-
2421	22μF	22μF	22μF	2,2μF	22μF	22μF	22μF	22μF	22μF	2,2μF
2432	-	100pF	-	-	-	-	100pF	-	-	-
2433	-	47pF	-	-	-	-	47pF	-	-	-
2462	220nF	220nF	220nF	-	220nF	220nF	220nF	220nF	220nF	-
3407	-	-	-	-	-	-	1k	1k	-	-
3417	820R	820R	820R	-	820R	820R	820R	820R	820R	-
3419	820R	820R	820R	-	820R	820R	820R	820R	820R	-
3433	820R	820R	820R	-	820R	820R	820R	820R	820R	-

ITEM NO.	A53920	A53930	A53940	A53950	A53970	A53980	A53990	A54000	A54340	A54450
3448	820R	820R	820R	-	820R	820R	820R	820R	820R	-
3449	820R	820R	820R	-	820R	820R	820R	820R	820R	-
3451	820R	820R	820R	-	820R	820R	820R	820R	820R	-
3452	820R	820R	820R	-	820R	820R	820R	820R	820R	-
3457	820R	820R	820R	-	820R	820R	820R	820R	820R	-
3458	-	-	-	-	-	-	1k	1k	-	-
3460	-	-	-	-	-	-	1k	1k	-	-
3465	1k	1k	1k	-	1k	1k	1k	1k	1k	-
3471	4R7	4R7	4R7	4R7	4R7	4R7	1R	4R7	4R7	4R7
3475	820R	820R	820R	-	820R	820R	820R	820R	820R	-
3479	1k	1k	1k	-	1k	1k	1k	1k	1k	-
3483	4R7	4R7	4R7	4R7	4R7	4R7	1R	4R7	4R7	4R7
3516	-	-	-	330R	-	-	-	-	-	330R
3518	-	-	-	-	-	-	330R	330R	-	-
3524	1k	1k	1k	-	-	-	1k	1k	1k	-
3539	10k	-	10k	10k	10k	10k	-	10k	10k	10k
3541	-	1k	-	-	-	-	1k	-	-	-
3546	10k	-	10k	10k	10k	10k	-	10k	10k	10k
3555	10k	10k	10k	10k	10k	10k	-	-	10k	10k
3575	10k	10k	10k	10k	10k	10k	-	-	10k	10k
3576	10k	10k	10k	10k	10k	10k	-	-	10k	10k
3577	-	-	-	-	-	-	12k	12k	-	-
3578	-	-	-	-	-	-	5k6	5k6	-	-
3586	-	-	-	-	-	-	1k	1k	-	-
3588	-	-	-	10k	-	-	-	-	-	10k
3600	5k6	5k6	5k6	5k6	5k6	5k6	-	-	5k6	5k6
3602	-	-	-	10k	10k	10k	-	-	-	10k
3603	10k	10k	10k	6k8	10k	10k	10k	10k	10k	10k
3613	12k	12k	12k	47k	12k	12k	12k	12k	12k	12k
3614	-	-	-	-	-	-	820R	820R	-	-
3615	-	-	-	-	-	-	820R	820R	-	-
3616	-	-	-	-	-	-	1k	-	1k	-
3617	10k	10k	10k	10k	10k	-	10k	-	10k	10k
4400	x	x	x	x	-	-	-	-	x	x
4407	x	x	x	-	x	x	-	-	x	-
4410	x	x	x	x	x	-	x	-	x	x
4412	-	-	-	-	-	-	x	x	-	-
4413	-	-	-	x	-	-	-	-	-	x
4417	x	x	x	-	-	-	-	-	x	-
4436	x	x	x	-	-	-	-	-	x	-
4588	-	-	-	x	-	-	-	-	-	x
6401	-	-	-	-	x	x	x	x	-	-
6402	-	-	-	-	-	-	x	x	-	-
6404	-	-	-	-	x	x	x	x	-	-
6405	-	-	-	-	-	-	x	x	-	-
6420	-	-	-	-	-	-	x	x	-	-
6422	-	-	-	x	-	-	-	-	-	x
6423	x	-	x	-	-	x	-	x	-	-
6424	-	-	-	-	x	x	-	-	-	-
6428	x	x	x	-	x	x	x	x	x	-
6433	-	-	-	-	x	x	-	-	-	-
6445	x	x	x	-	-	-	-	-	x	-
6446	x	x	x	-	-	-	-	-	x	-
6447	x	x	x	-	x	x	-	-	x	-
9475	x	x	x	x	x	x	-	-	x	x
9488	-	-	-	-	x	x	x	x	-	-
9520	-	-	-	-	x	x	x	x	-	-
9523	x	x	x	x	x	x	-	-	x	x

x = Item in use.

A	21116	3446	010	4417	E16
	23118	3447	010	4436	C16
	26102	3448	016	4448	D4
	27102	3449	016	4588	E18
	31103	3451	016	4589	B2
	39102	3452	016	4590	B3
	40105	3453	016	5000	B8
	40114	3454	013	5001	G9
	40203	3455	016	5402	E5
	40205	3456	016	5403	H10
B	40418	3457	016	5404	E3
	40416	3458	016	5405	E3
	40511	3459	016	6411	D14
	40513	3460	016	5410	H10
	40614	3461	011	6400	C16
	40613	3462	013	6401	C16
	40615	3463	016	6402	D15
	41113	3464	011	6403	D15
	41112	3465	016	6404	E15
	41114	3466	011	6405	E16
C	41413	3467	013	6406	F16
	41415	3469	016	6407	F16
	41416	3471	013	6408	E16
	41713	3472	016	6409	F16
	41718	3474	013	6410	D13
	41719	3475	016	6411	D14
	42013	3476	016	6412	E12
	42113	3477	011	6413	E12
	42214	3478	016	6414	F12
	42215	3479	011	6415	F12
D	42413	3480	013	6416	F12
	42414	3481	016	6417	G12
	42515	3482	015	6418	G12
	42713	3483	013	6419	G12
	42813	3484	016	6420	H12
	42815	3485	015	6421	H12
	43014	3486	016	6422	H12
	43112	3488	013	6423	E14
	43113	3489	016	6424	E14
	43317	3490	011	6425	D4
E	43418	3493	013	6426	E4
	438112	3494	013	6428	F5
	438113	3495	013	6433	F14
	438149	3496	014	6445	E15
	438168	3497	047	6446	E15
	438169	3498	047	6447	E15
	200188	3499	077	7400	L6
	200188	3500	078	7401	G6
	200188	3501	098	7402	J2
	211119	3502	015	7403	D14
F	214117	3503	010	7404	F17
	214118	3504	010	7405	F17
	215110	3505	013	7408	J13
	215165	3506	017	7409	M14
	215167	3507	017	7410	M14
	215118	3508	017	7411	E15
	219105	3509	017	7412	B13
	220103	3510	018	7413	B15
	221111	3511	016	7414	B8
	222123	3512	018	7415	B8
G	222138	3513	010	7418	D11
	222143	3514	014	7419	D11
	222163	3516	013	9468	D11
	222163	3517	015	9469	B8
	222163	3518	013	9470	B8
	222163	3519	013	9471	B8
	222163	3520	018	9488	E16
	222163	3521	018	9489	E16
	230132	3522	015	9520	D16
	233134	3524	015	9521	D3
H	234114	3525	015	9522	D3
	234115	3526	015	9523	D4
	234115	3527	015	9524	D4
	234115	3528	013		
	237135	3529	013		
	240106	3531	018		
	244111	3532	015		
	244119	3533	015		
	244119	3534	015		
	244119	3535	015		
I	244119	3536	013		
	244119	3537	014		
	244116	3539	010		
	244117	3540	014		
	244117	3541	014		
	244117	3542	014		
	244117	3543	014		

6-4



[illegible]

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
1425	4822 276 13775	Tact Switch
1426	4822 276 13775	Tact Switch
1427	4822 276 13775	Tact Switch
1430	4822 276 13775	Tact Switch
1432	4822 276 13775	Tact Switch
1433	4822 242 72195	Quartz 4,332MHz
1437	4822 273 10365	Rotary Encoder 24pin

CAPACITORS

2406	5322 122 32659	33pF 5% 50V
2407	5322 122 32659	33pF 5% 50V
2410	4822 126 13692	47pF 1% 63V
2411	4822 126 13692	47pF 1% 63V
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% 16V
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
2430	5322 116 80853	560pF 5% 63V
2431	4822 126 14585	100nF 10% 50V
2432	5322 122 32531	100pF 5% 50V

2433	4822 126 13692	47pF 1% 63V
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
2439	4822 126 14585	100nF 10% 50V
2440	4822 124 22652	2,2µF 20% 50V
2441	4822 122 33177	10nF 20% 50V
2442	4822 122 33177	10nF 20% 50V
2443	4822 122 33177	10nF 20% 50V
2445	5322 116 80853	560pF 5% 63V
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 5% 63V
2482	4822 126 12882	100nF +80/-20% 50V
2483	5322 122 32268	470pF 5% 63V
2484	5322 122 32268	470pF 5% 63V
2485	5322 122 32268	470pF 5% 63V
2486	5322 122 32268	470pF 5% 63V
2488	4822 126 14585	100nF 10% 50V
2489	4822 122 33891	3,3nF 10% 63V
2493	4822 126 14585	100nF 10% 50V

RESISTORS

3400	4822 117 13579	220k 1% 0,1W
3401	4822 117 11449	2k2 5% 0,1W
3402	4822 117 10833	10k 1% 0,1W
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 11454	820R 1% 0,1W
3419	4822 116 52231	820R 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 11454	820R 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

ELECTRICAL PARTS LIST - FRONT BOARD

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 11454	820R 1% 0,1W
3449	4822 116 52231	820R 5% 0,5W
3451	4822 116 52231	820R 5% 0,5W
3452	4822 117 11454	820R 1% 0,1W
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 11454	820R 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
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 52231	820R 5% 0,5W
3476	4822 051 10102	1k 2% 0,25W
3477	4822 051 10102	1k 2% 0,25W
3478	4822 117 11373	100R 1% 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
3524	4822 050 11002	1k 1% 0,4W
3525	4822 050 11002	1k 1% 0,4W
3527	4822 050 11002	1k 1% 0,4W
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
3541	4822 050 11002	1k 1% 0,4W
3543	4822 051 10102	1k 2% 0,25W
3544	4822 117 10833	10k 1% 0,1W
3545	4822 051 10102	1k 2% 0,25W
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

ELECTRICAL PARTS LIST - FRONT BOARD**RESISTORS**

3570	4822 051 20223	22k 5% 0,1W	4437	4822 051 20008	0R Jumper 0805
3571	4822 117 11383	12k 1% 0,1W	4438	4822 051 20008	0R Jumper 0805
3572	4822 117 10833	10k 1% 0,1W	4439	4822 051 20008	0R Jumper 0805
3573	4822 051 20223	22k 5% 0,1W	4440	4822 051 20008	0R Jumper 0805
3574	4822 051 20223	22k 5% 0,1W	4441	4822 051 20008	0R Jumper 0805
3575	4822 117 10833	10k 1% 0,1W	4442	4822 051 20008	0R Jumper 0805
3576	4822 117 10833	10k 1% 0,1W	4443	4822 051 20008	0R Jumper 0805
3581	4822 117 10833	10k 1% 0,1W	4444	4822 051 20008	0R Jumper 0805
3584	4822 051 10102	1k 2% 0,25W	4445	4822 051 20008	0R Jumper 0805
3585	4822 051 10102	1k 2% 0,25W	4446	4822 051 20008	0R Jumper 0805
3587	4822 050 21003	10k 1% 0,6W	4447	4822 051 20008	0R Jumper 0805
3600	4822 051 20562	5k6 5% 0,1W	4448	4822 051 20008	0R Jumper 0805
3601	4822 117 10833	10k 1% 0,1W	4449	4822 051 20008	0R Jumper 0805
3603	4822 117 10833	10k 1% 0,1W	4450	4822 051 20008	0R Jumper 0805
3607	4822 051 20182	1k8 5% 0,1W	4451	4822 051 20008	0R Jumper 0805
3608	4822 051 20182	1k8 5% 0,1W	4452	4822 051 20008	0R Jumper 0805
3609	4822 051 20182	1k8 5% 0,1W	4453	4822 051 20008	0R Jumper 0805
3610	4822 051 20182	1k8 5% 0,1W	4454	4822 051 20008	0R Jumper 0805
3611	4822 051 20474	470k 5% 0,1W	4455	4822 051 20008	0R Jumper 0805
3612	4822 117 10833	10k 1% 0,1W	4456	4822 051 20008	0R Jumper 0805
3613	4822 117 11383	12k 1% 0,1W	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

ELECTRICAL PARTS LIST - FRONT BOARD**RESISTORS**

4489	4822 051 20008	OR Jumper 0805
4490	4822 051 20008	OR Jumper 0805
4491	4822 051 20008	OR Jumper 0805
4492	4822 051 20008	OR Jumper 0805
4493	4822 051 20008	OR Jumper 0805
4494	4822 051 20008	OR Jumper 0805
4495	4822 051 20008	OR Jumper 0805
4496	4822 051 20008	OR Jumper 0805
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
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
4549	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 2,2μH 5%
5403	4822 157 62552	Coil 2,2μH 5%
5404	4822 157 62552	Coil 2,2μH 5%
5405	4822 157 62552	Coil 2,2μH 5%

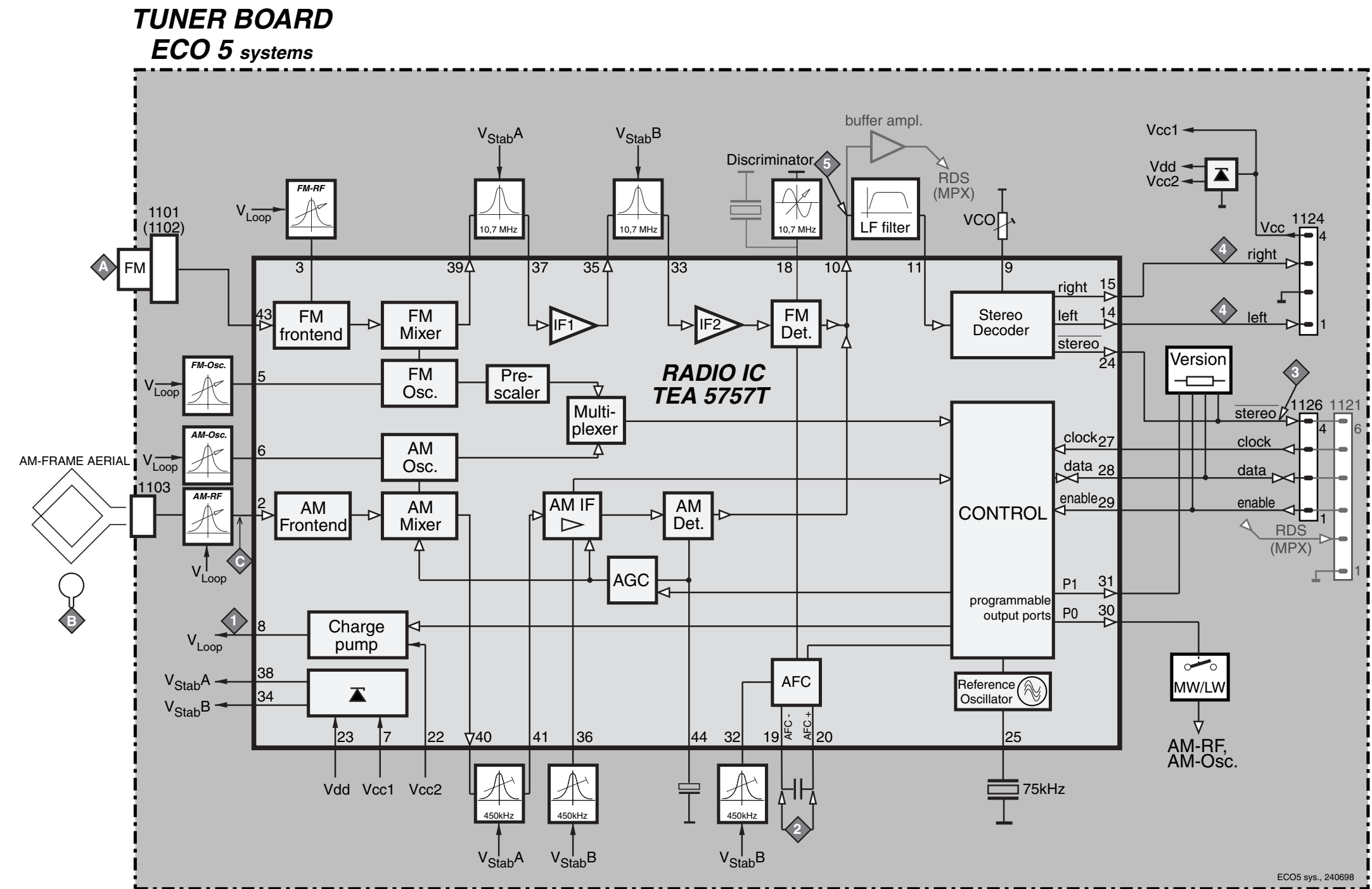
DIODES

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
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
6425	4822 130 31878	1N4003G
6426	4822 130 31878	1N4003G
6445	4822 130 11589	LTL-1CHAE
6446	4822 130 11589	LTL-1CHAE
6447	4822 130 11589	LTL-1CHAE

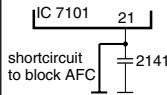
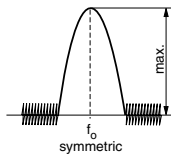
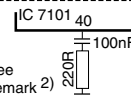
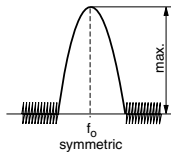
TRANSISTORS & INTEGRATED CIRCUITS

7400	4822 209 31981	SAA6579T
7401	3139 110 52510	TMP87CS71F "C200S52511"
7402	9965 000 04931	M24C01-WMN6
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 ADJUSTMENT TABLE (ECO5 FM/MW- and FM/MW/LW - versions with AM-frame aerial)

Waverange	Input frequency	Input	Tuned to	Adjust	Output	Scope/Voltmeter
VARICAP ALIGNMENT						
FM 87.5 - 108MHz (65.81 - 74, 87.5 - 108MHz)			108MHz	5130	1	8V ±0.2V
			87.5MHz (65.81MHz)	check		4.3V ±0.5V (1.2V ±0.5V)
MW FM/AM-version, 10kHz grid 530 - 1700kHz			1700kHz	5123		8V ±0.2V
			530kHz	check		1.1V ±0.4V
FM/MW-version, 9kHz grid 531 - 1602kHz			1602kHz	5123		6.9V ±0.2V
			531kHz	check		1.1V ±0.4V
LW 153 - 279kHz			279kHz	5122		8V ±0.2V
			153kHz	check		1.1V ±0.4V
MW FM/MW/LW- version, 9kHz grid 531 - 1602kHz			1602kHz	5123	8V ±0.2V	
			531kHz	check	1.1V ±0.4V	
FM IF						
FM	10.7MHz, 50mV continuous wave	F		5119	2	0 ± 3 mV DC
FM RF						
FM 87.5 - 108MHz (65.81 - 74, 87.5 - 108MHz)	108MHz	A mod=1kHz Δf=±22.5kHz	108MHz	2155	4	MAX
	87.5MHz (65.81MHz)		87.5MHz (65.81MHz)	5131		
VCO						
FM	98MHz, 1mV continuous wave	A	98MHz	3142	3	152kHz ±1kHz ¹⁾
AM IF						
MW	450kHz connect pin 6 of IC 7101 (AM Osc.) with short wire to ground (pin 4)	C Δf=±15kHz V _{RF} = 3mV		5111	4	
		 see remark 2)	5112			
AM AFC MW		C continuous wave V _{RF} = 10mV		5114	2	0 ± 2 mV DC
AM RF ³⁾						
MW ⁴⁾ FM/MW/LW- and FM/MW-version (9kHz grid) 531 - 1602kHz	1494kHz	B 	1494kHz	2106	4	
	558kHz		558kHz	5102		
LW	198kHz		198kHz	5103		
MW FM/AM-version, 10kHz grid 530 - 1700kHz	1500kHz		Δf = ±30kHz V _{RF} as low as possible	1500kHz		
	560kHz		560kHz	5102		

Use service test program. By selecting the TUNER TEST test frequencies will be stored as preset frequencies automatically.

¹⁾ If sensitivity of frequency counter is too low adjust to max. channel separation (input signal: stereo left 90% + 9%, adjust output on right channel to minimum)

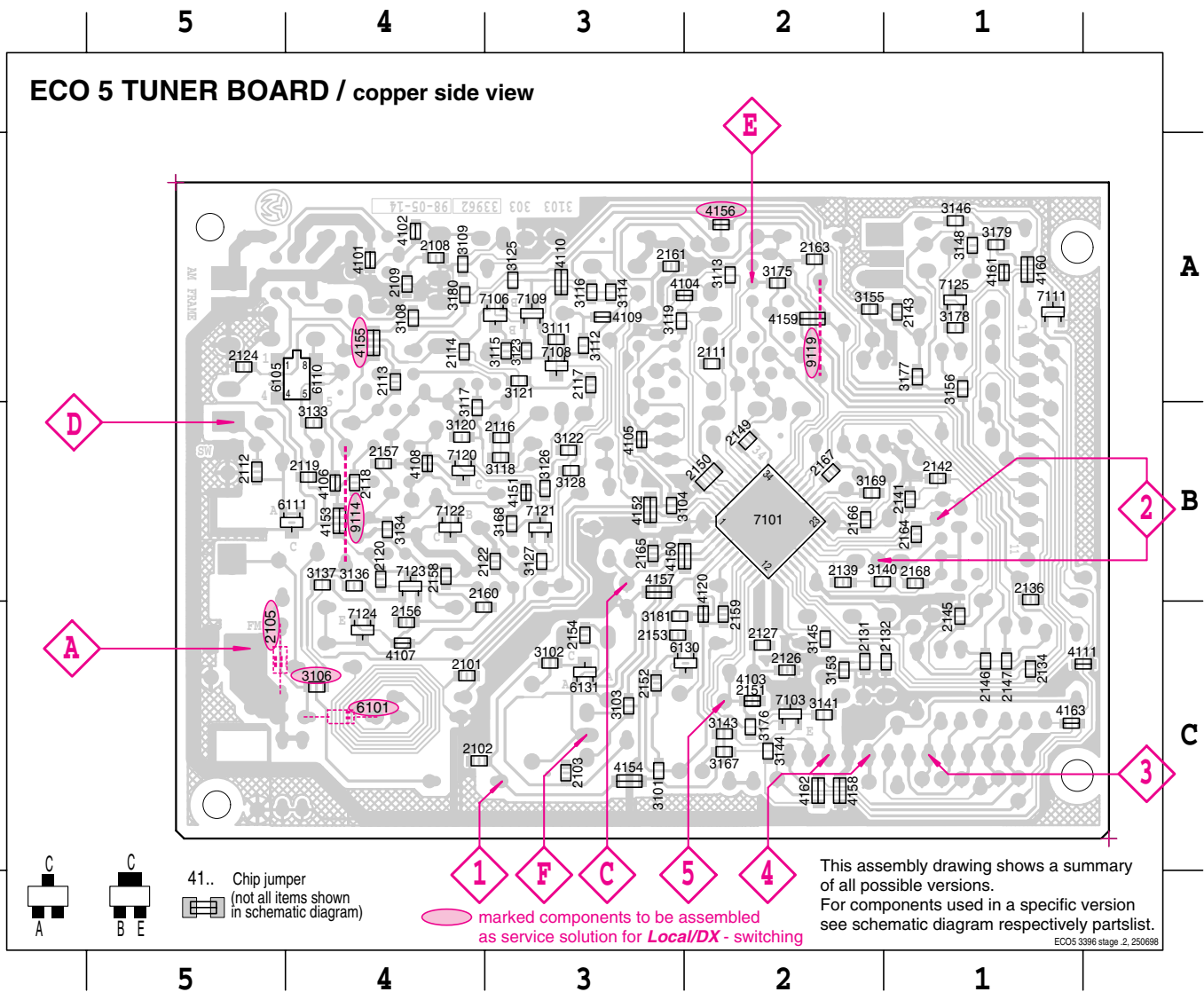
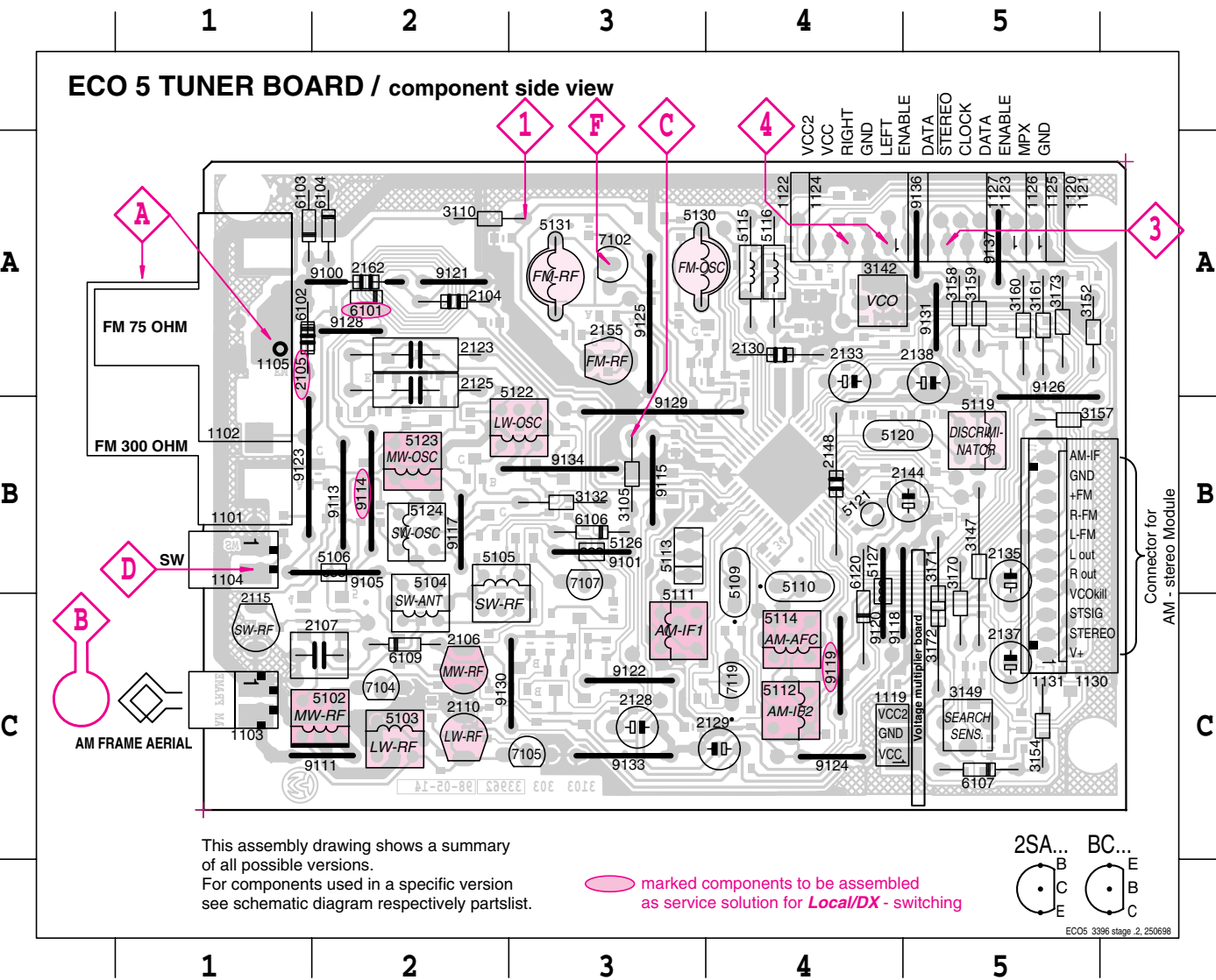
³⁾ For AM RF adjustments the original frame antenna has to be used !

⁴⁾ MW has to be aligned before LW.

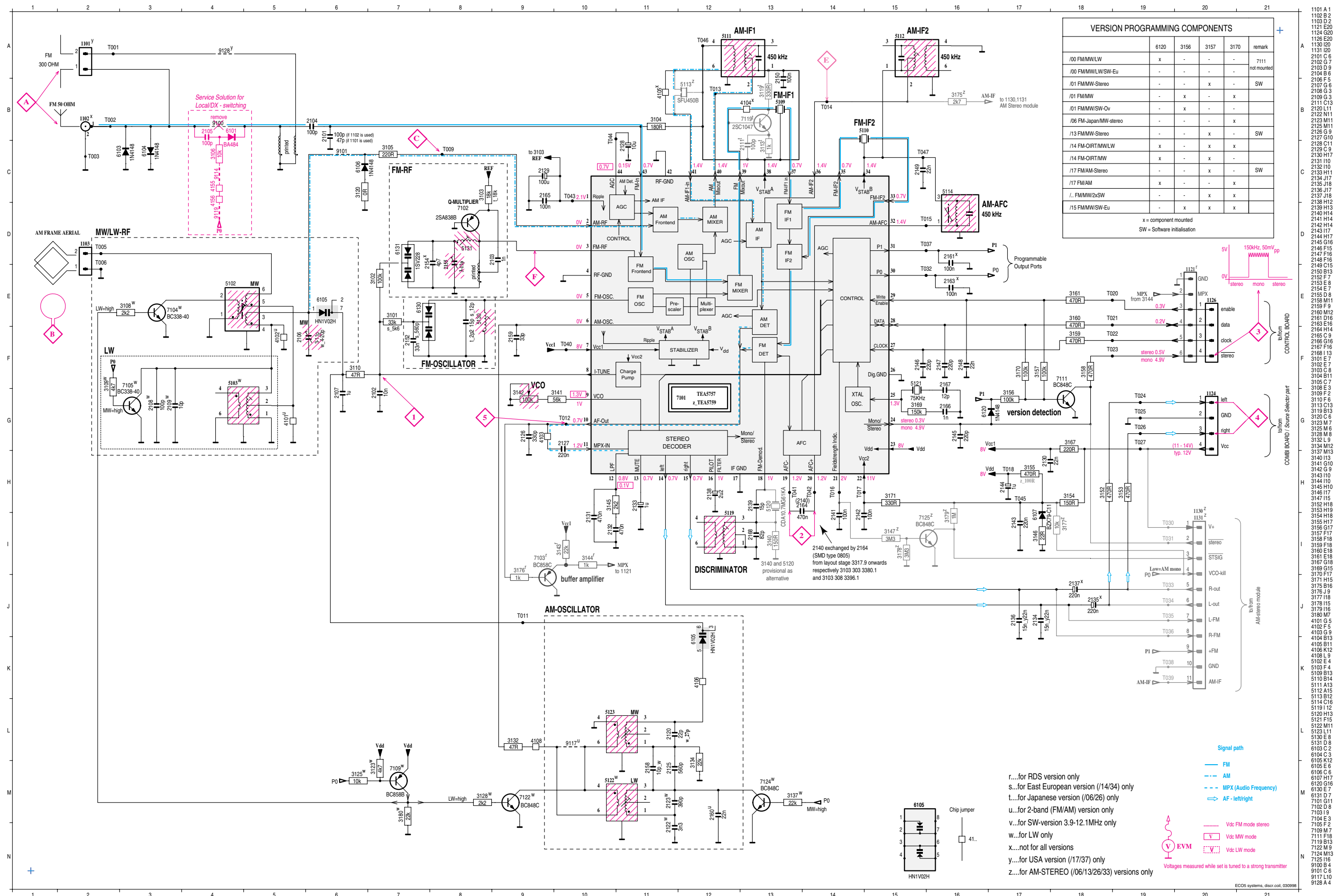
Repeat

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 BOARD ECO5 / Systems



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	
		5120=CDA10.7MG40K	
3140	4822 117 10353	150R 1% 0,1W	
		5120=CDA10.7MG61KA	
3141	4822 051 20563	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 & 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 & 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

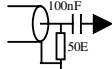
Note: Only the parts mentioned in this list are normal service spare parts.



Blockdiagram	7D-1
Adjustmant table	7D-2
Component layout	7D-2
Circuit diagram	7D-3
Partslist	7D-4

[illegible]

TUNER 95 bis Adjustment Table (FM, MW, LW with Frame antenna)

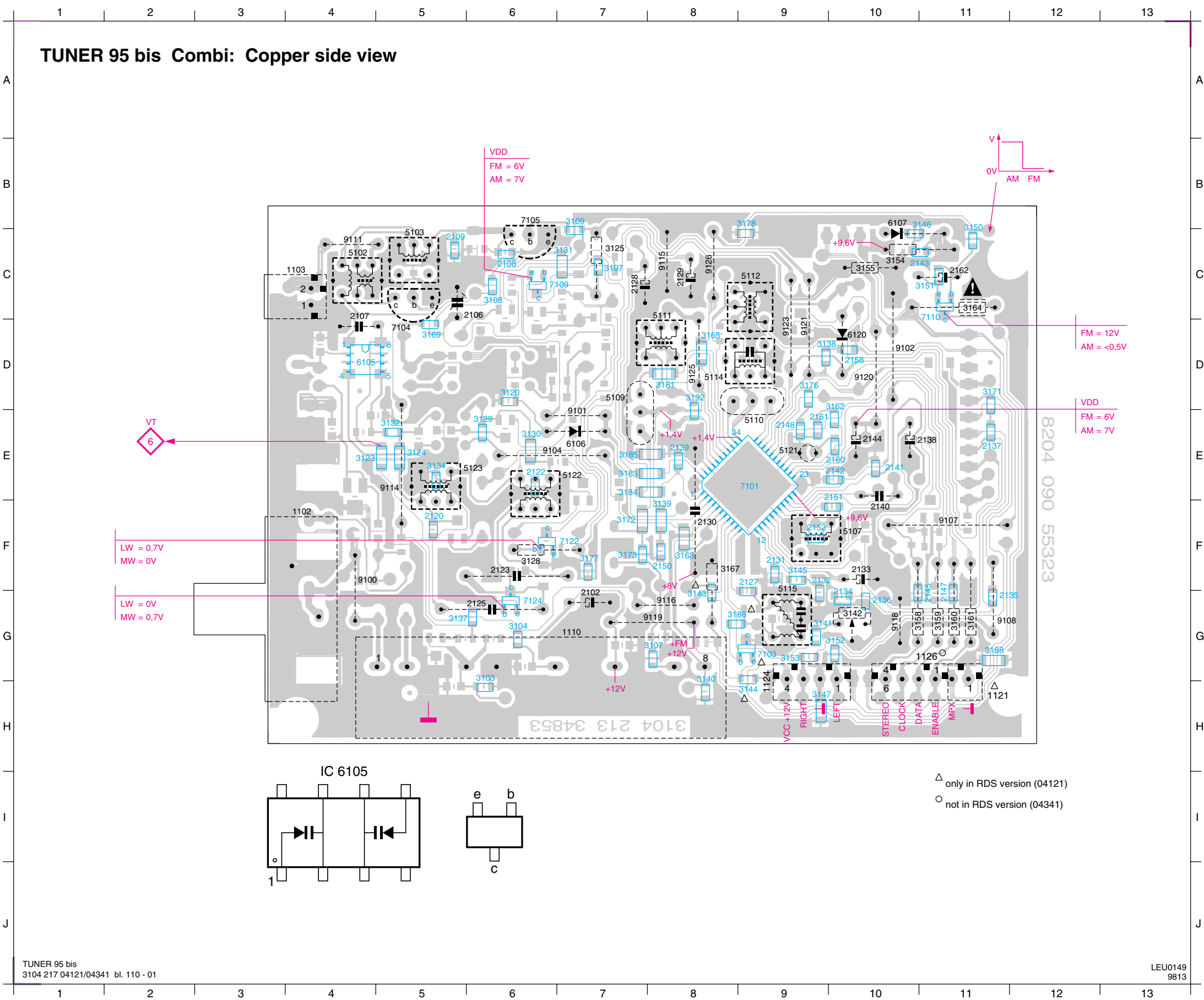
Waverange	Input frequency	Input	Set tuned to	Adjust	Output	Scope / Voltmeter
VARICAP ALIGNMENT						
FM (50) 87.5 - 108 MHz			108 MHz	check	6	7 ... 9V
			87.5 MHz	check		1.3 ... 2V
MW (9) 531 - 1602 kHz			1602 kHz	5123		8.3V ± 0.2V
			531 kHz	check		1V ± 0.4V
LW (3) 153 - 279 kHz			279 kHz	5122		8.3V ± 0.2V
			153 kHz	check		1V ± 0.4V
FM – DETECTION						
FM	98 MHz 1mV continuous wave	A	98 MHz	5107	1	0mV ± 3mV
	short pin 21 (IC7101) to ground				2	
FM – VCO						
FM	98 MHz 1 mV continuous wave	A	98 MHz	3142	3	152kHz ± 1 kHz
DISTORTION						
FM	98 MHz 1 mV 90 % L + 9 % pilot mod = 1kHz	A	98MHz	mixcoil inside Tuner 1110	4	Distortion minimum
AM – IF						
MW	450kHz Δf = 10kHz Low as possible Swept signal		MW	5111	7	symmetrical and max. height
				5112		
		450kHz continuous wave		C	5114	1 2
AM - RF						
MW	558kHz Mod = 1kHz 30 % AM 1494 kHz	B	558kHz	5102	7	MAX
			1494kHz	2106		
LW	198kHz mod = 1kHz 30 % AM	*	198kHz	5103		MAX

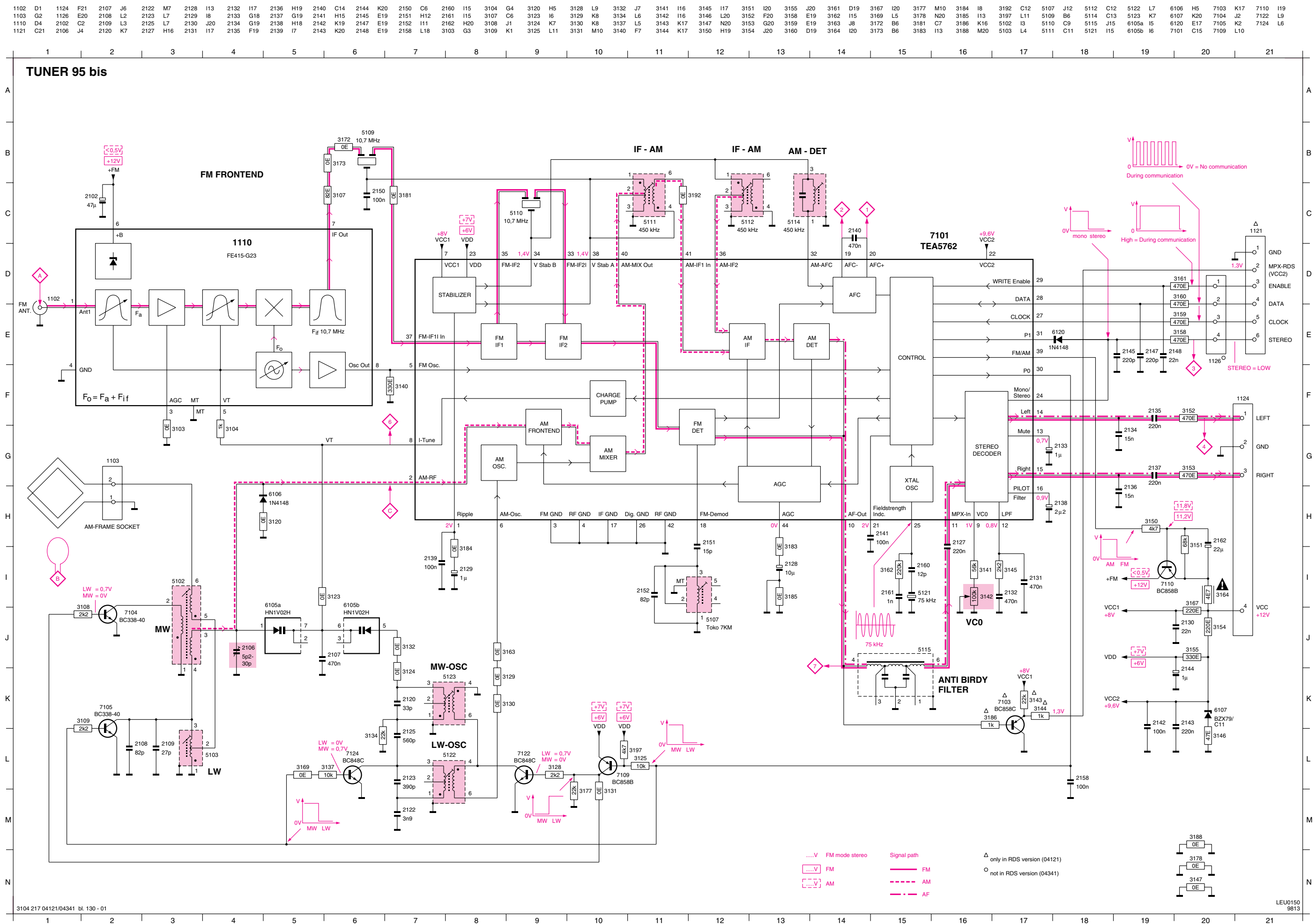
* Signal send via a frame antenna
(..) = tuning grid in kHz

repeat

adjtable for 3104 217 04121/04341

1102	F4	2107	C4	2128	C7	2136	G10	2144	E10	2160	E9	3120	D6	3132	E5	3143	G8	3153	G9	3163	F8	3176	D9	3188	G11	5111	C8	6106	E7	7110	D11	9108	G11	9121	D9
1103	C4	2108	C6	2129	C8	2137	E11	2145	G11	2161	E9	3123	E4	3134	E5	3144	H9	3154	C10	3164	C11	3177	F7	3192	D8	5112	C9	6107	B10	7122	F7	9111	C4	9123	D9
1110	G7	2109	C5	2130	F8	2138	E10	2147	G11	2162	C11	3124	E5	3137	G5	3145	F9	3155	C10	3165	D8	3178	B8	3197	C7	5114	D8	6120	D10	7124	G6	9114	E5	9125	D8
1121	H11	2120	F5	2131	F9	2139	E8	2148	E9	3103	H6	3125	C7	3138	D9	3146	B10	3158	G11	3167	F8	3181	D8	5102	C4	5115	G9	7101	E9	9100	F4	9115	C8	9126	C8
1124	H9	2122	E6	2132	F9	2140	F10	2150	F8	3104	G6	3128	F6	3139	F8	3147	H9	3159	G11	3169	D5	3183	E7	5103	C5	5121	E9	7103	G9	9101	E7	9116	G8		
1126	G10	2123	F6	2133	F10	2141	E10	2151	F9	3107	G7	3129	E6	3140	H8	3150	C11	3160	G11	3171	D11	3184	E7	5107	F10	5122	E7	7104	D5	9102	D10	9118	G10		
2102	G7	2125	G6	2134	G10	2142	E9	2152	F9	3108	C6	3130	E6	3141	G9	3151	C10	3161	G11	3172	F7	3185	E7	5109	D7	5123	E5	7105	B6	9104	E6	9119	G7		
2106	C5	2127	F9	2135	G11	2143	C10	2158	D10	3109	B7	3131	C6	3142	G10	3152	G9	3162	D9	3173	F7	3186	G8	5110	E9	6105	D4	7109	C6	9107	F11	9120	D10		





ELECTRICAL PARTS LIST - TUNER 95 BOARD**MISCELLANEOUS**

1102	4822 267 10283	Socket Coaxial IEC 75R
1103	4822 265 31184	JST Connector 2 pin
1110	4822 210 10739	Frontend Assembly FE415-G23

CAPACITORS

2102	4822 124 40433	47μF 20% 25V
2106	4822 125 60102	Trimmer 5,2-30pF 100V
2107	4822 121 51252	470nF 5% 63V
2108	4822 126 13695	82pF 1% 63V
2109	4822 126 13691	27pF 1% 63V
2120	5322 122 32659	33pF 5% 50V
2122	5322 126 10465	3,9nF 10% 50V
2123	4822 121 10766	390pF 1% 630V
2125	4822 121 10578	560pF 1% 630V
2127	4822 122 32927	220nF +80/-20% 50V
2128	4822 124 41579	10μF 20% 50V
2129	4822 124 40242	1μF 20% 63V
2130	4822 126 11585	22nF +80/-20% 25V
2131	4822 122 33325	470nF 16V
2132	4822 122 33325	470nF 16V
2133	4822 124 40242	1μF 20% 63V
2134	4822 126 13188	15nF 5% 63V
2135	4822 122 32927	220nF +80/-20% 50V
2136	4822 126 13188	15nF 5% 63V
2137	4822 122 32927	220nF +80/-20% 50V
2138	4822 124 41576	2,2μF 20% 50V
2139	4822 126 10002	100nF 20% 25V
2140	4822 121 51252	470nF 5% 63V
2141	4822 122 31947	100nF 20% 63V
2142	4822 122 31947	100nF 20% 63V
2143	4822 122 32927	220nF +80/-20% 50V
2144	4822 124 40242	1μF 20% 63V
2145	4822 122 33575	220pF 5% 50V
2147	4822 122 33575	220pF 5% 50V
2148	4822 122 33809	22nF 20% 50V
2150	4822 122 31947	100nF 20% 63V
2151	4822 126 14236	15pF 5% 50V
2152	4822 126 13695	82pF 1% 63V
2158	4822 122 31947	100nF 20% 63V
2160	4822 122 32139	12pF 2% 63V
2161	5322 122 34123	1nF 10% 50V
2162	4822 124 81151	22μF 50V

RESISTORS

3103	4822 051 20008	0R Jumper 0805
3104	4822 051 10102	1k 2% 0,25W
3107	4822 051 20829	82R 5% 0,1W
3108	4822 117 11449	2k2 1% 0,1W
3109	4822 117 11449	2k2 1% 0,1W
3120	4822 051 20008	0R Jumper 0805
3123	4822 051 10008	0R Jumper 1206
3124	4822 051 10008	0R Jumper 1206

3125	4822 116 83864	10k 5% 0,5W
3128	4822 116 52256	2k2 5% 0,5W
3129	4822 051 20008	0R Jumper 0805
3130	4822 051 10008	0R Jumper 1206
3131	4822 051 10008	0R Jumper 1206
3132	4822 051 20008	0R Jumper 0805
3134	4822 051 20223	22k 5% 0,1W
3137	4822 117 10833	10k 1% 0,1W
3138	4822 051 20008	0R Jumper 0805
3139	4822 051 10008	0R Jumper 1206
3140	4822 051 20331	330R 5% 0,1W
3141	4822 117 11148	56k 1% 0,1W
3142	4822 100 11163	Trimmer 100k 30% 0,1W
3143	4822 051 20223	22k 5% 0,1W
3144	4822 051 10102	1k 2% 0,25W
3145	4822 117 11449	2k2 1% 0,1W
3146	4822 051 20479	47R 5% 0,1W
3147	4822 051 10008	0R Jumper 1206
3150	4822 051 20472	4k7 5% 0,1W
3151	4822 051 20683	68k 5% 0,1W
3152	4822 051 20471	470R 5% 0,1W
3153	4822 051 20471	470R 5% 0,1W
3154	4822 116 83872	220R 5% 0,5W
3155	4822 116 52219	330R 5% 0,5W
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
3162	4822 117 13579	220k 1% 0,1W
3163	4822 051 10008	0R Jumper 1206
3164	4822 052 10478 Δ	4R7 5% 0,33W
3165	4822 051 10008	0R Jumper 1206
3167	4822 116 83872	220R 5% 0,5W
3169	4822 051 20008	0R Jumper 0805
3171	4822 051 20008	0R Jumper 0805
3172	4822 051 10008	0R Jumper 1206
3173	4822 051 20008	0R Jumper 0805
3176	4822 051 20008	0R Jumper 0805
3177	4822 051 20223	22k 5% 0,1W
3178	4822 051 10008	0R Jumper 1206
3181	4822 051 10008	0R Jumper 1206
3183	4822 051 10008	0R Jumper 1206
3184	4822 051 10008	0R Jumper 1206
3185	4822 051 10008	0R Jumper 1206
3186	4822 051 10102	1k 2% 0,25W
3188	4822 051 10008	0R Jumper 1206
3192	4822 051 20008	0R Jumper 0805
3197	4822 051 20472	4k7 5% 0,1W

COILS & FILTERS

5102	4822 157 71634	MW Aerial
5103	4822 157 71635	LW Aerial

ELECTRICAL PARTS LIST - TUNER 95 BOARD

5107	4822 157 11443	FM Discriminator 10,7MHz
5109	4822 157 71639	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
5115	4822 157 71636	Anti-Birdy Filter
5121	4822 242 10261	X'tal Resonator 75kHz
5122	4822 157 60517	RF Coil AM
5123	4822 157 60517	RF Coil AM

DIODES

6105	4822 130 83075	HN1V02H-B
6106	4822 130 30621	1N4148
6107	4822 130 34488	BZX79-C11
6120	4822 130 30621	1N4148

TRANSISTORS & INTEGRATED CIRCUITS

7101	4822 209 90315	TEA5762H/V1
7103	4822 130 42513	BC858C
7104	5322 130 44779	BC338-40
7105	5322 130 44779	BC338-40
7109	5322 130 41983	BC858B
7110	5322 130 41983	BC858B
7122	5322 130 42136	BC848C
7124	5322 130 42136	BC848C

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

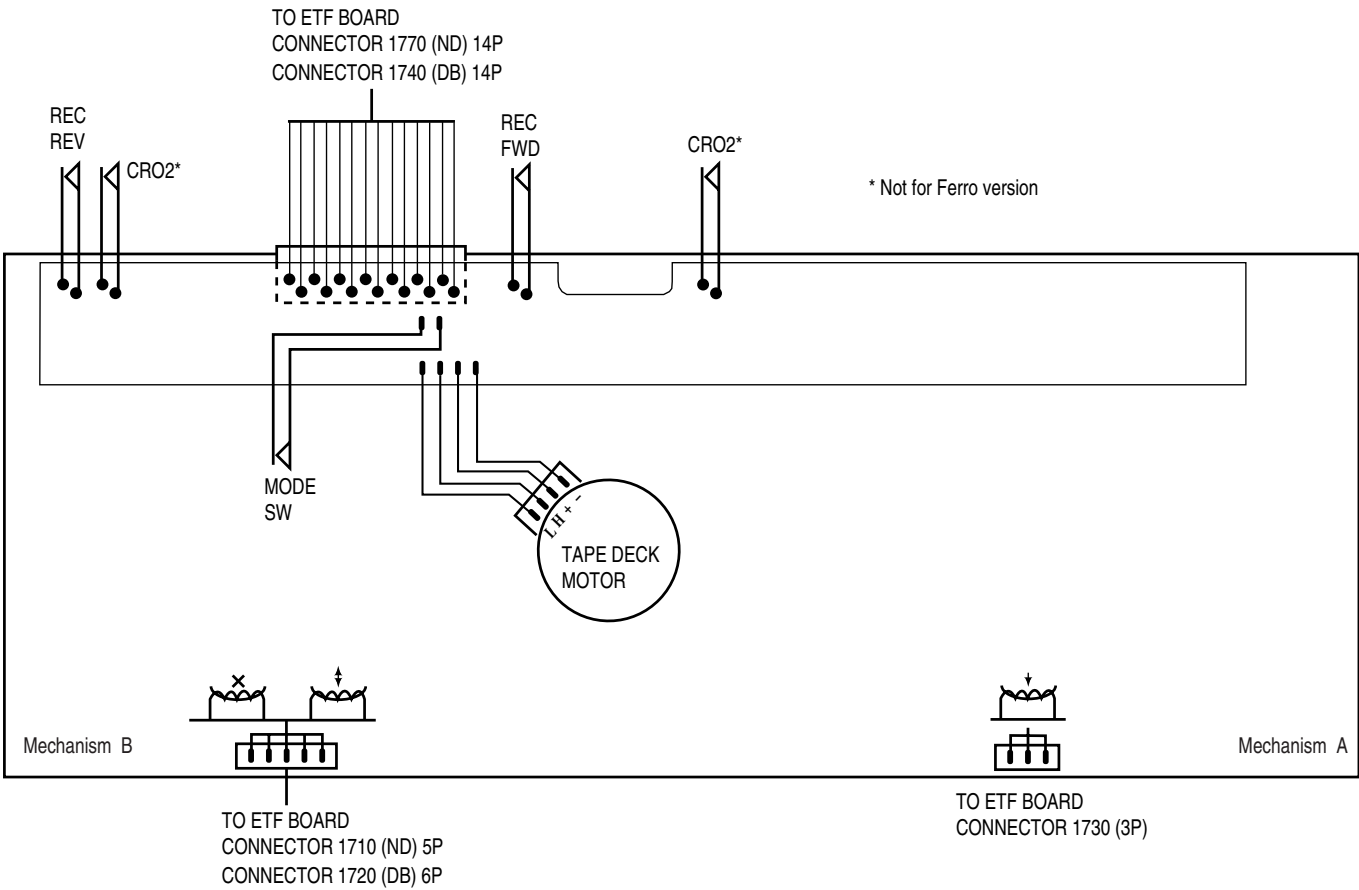
ETF7 TAPE MODULE

(Non-Dolby Version)

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Tapedeck wiring (Double deck)

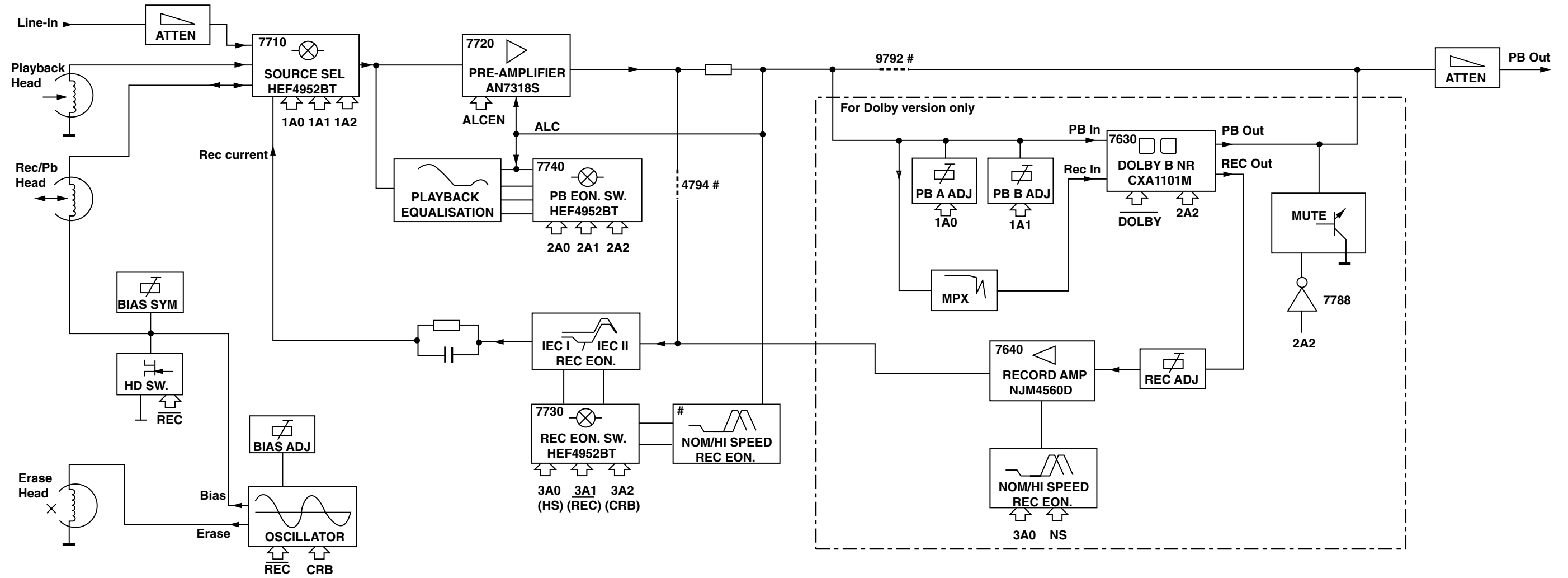


Variations table for Analog Circuit

	Autoreverse	Non-autoreverse	
	ND/DD/FR	ND/DD/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	
	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	-	-

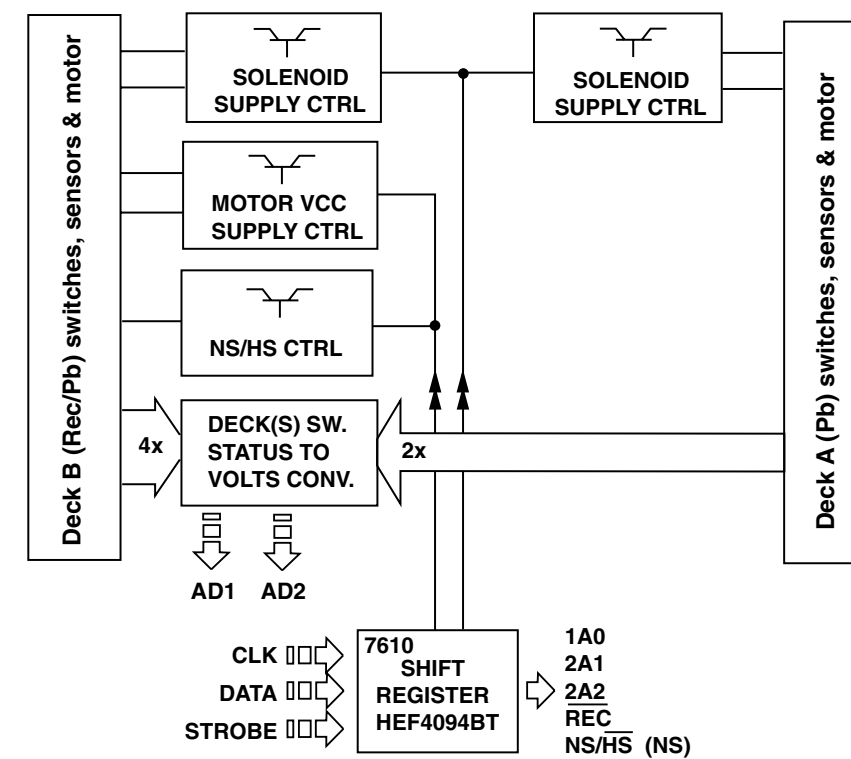
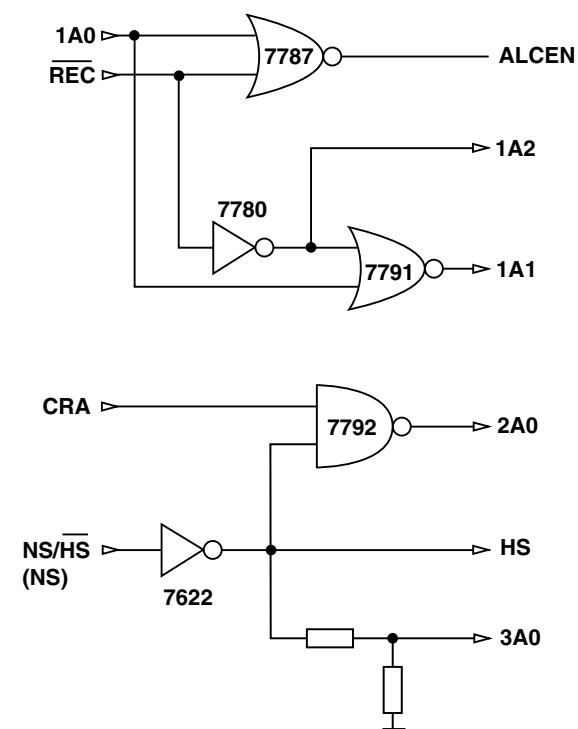
BLOCK DIAGRAM



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

CONNECTOR 1703		INTERCONNECTION TO AF BOARD	
	1 2	GND M +MOTOR	Motor Ground D.C. supply (+12V) for tape deck motor & solenoid

CONNECTOR 1706		INTERCONNECTION TO FRONT BOARD	
	1 2 3 4 5 6 7	AD2 AD1 +5V GND P CLK DATA STROBE	Deck sensing switches output voltage / Deck A EOT Deck sensing switches output voltage / Deck B EOT DC supply +5V for ADC network Control & Oscillator Ground HEF4094BT shift register Clock line HEF4094BT shift register Data line HEF4094BT shift register Strobe line

CONNECTOR 1710		DECK B HEADS CONNECTON <i>(For Non-Dolby version only)</i>	
	1 2 3 4 5	B R/P HD L+ GND A B R/P HD R+ ERASE HEAD GND A	R/P Head left channel positive R/P Head return ground R/P Head right channel positive Erase Head Erase Head ground

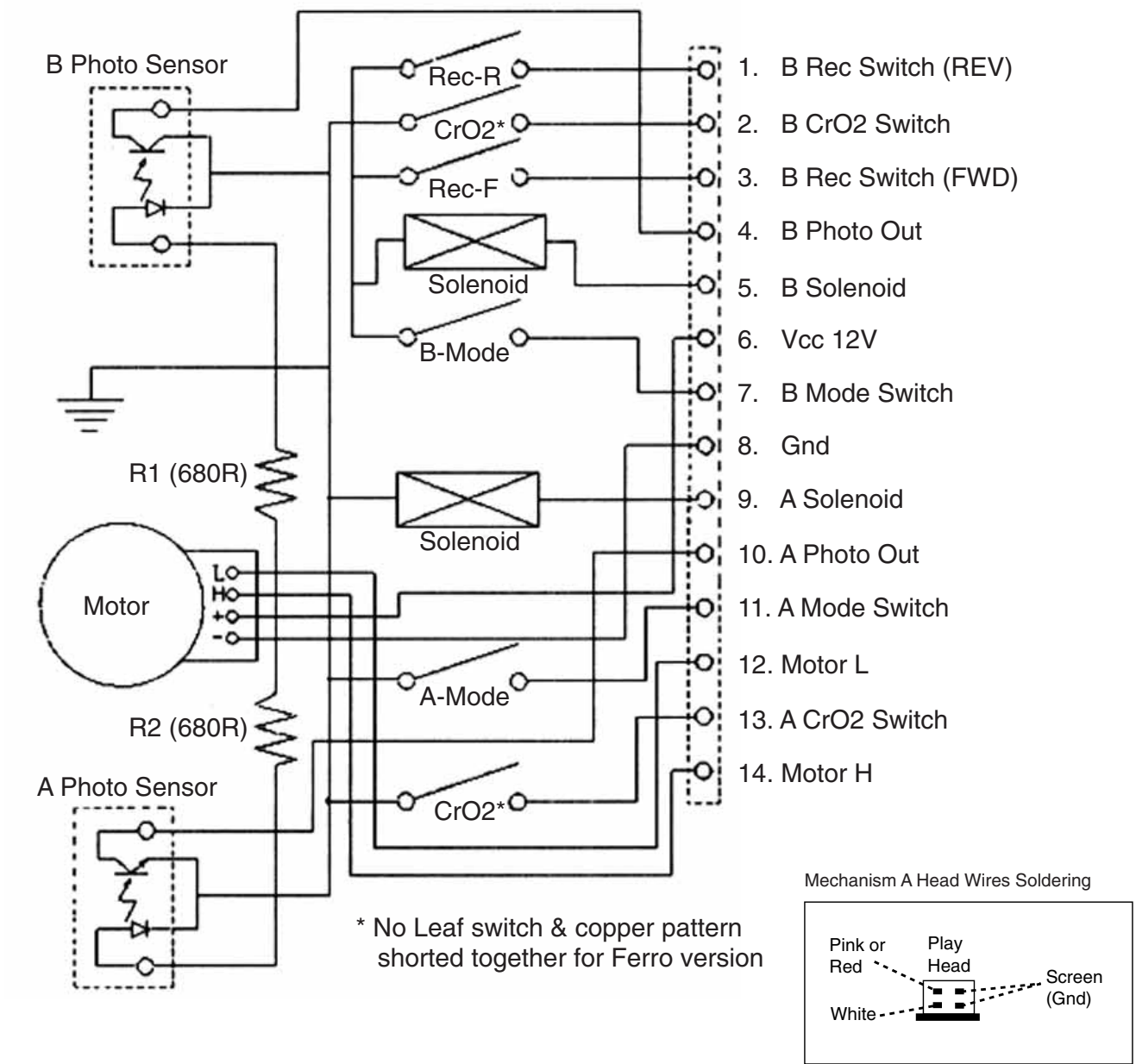
CONNECTOR 1720		DECK B HEADS CONNECTON <i>(For Dolby B NR version only)</i>	
	1 2 3 4 5 6	B R/P HD L+ B R/P HD L- B R/P HD R+ B R/P HD R- ERASE HEAD GND A	R/P Head left channel positive R/P Head left channel negative R/P Head right channel positive R/P Head right channel negative Erase Head Erase Head ground

CONNECTOR 1730		DECK A HEAD CONNECTIONS <i>(For Double Deck versions only)</i>	
	1 2 3	A PB HD L+ GND A A PB HD R+	Pb Head left channel positive Pb Head return ground shield Pb Head right channel positive

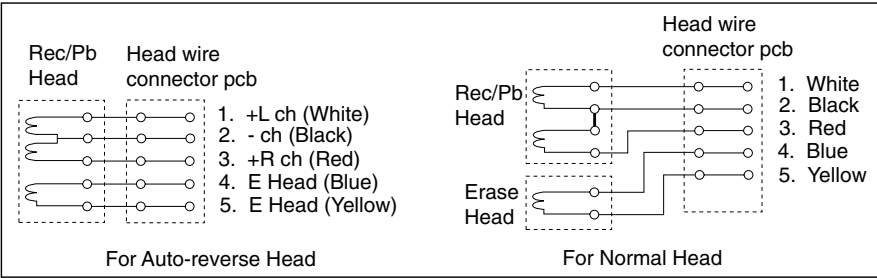
CONNECTOR 1740		DECK A & B CONTROL INTERFACE <i>(For Dolby B NR version only)</i>	
	1 2 3 4 5 6 7 8 9 10 11 12 13 14	REC REW CrO2 B REC FWD PHOTO B SOL B Vcc MODE B GND M SOL A PHOTO A MODE A L CrO2 A H	Record tab protection status switch (reverse) Chrome tape detection switch deck B Record tab protection status switch (forward) Photo sensor output (tape movement indication) Solenoid supply for deck B Deck / Motor supply Mode switch (head engagement) Deck / Motor ground Solenoid supply for deck A Photo sensor output (tape movement indication) Mode switch (head engagement) L pin for motor Chrome tape detection switch deck A H pin for motor [open=on: close=off] [open=Cr: close=Fe] [open=on: close=off] [open=off: close=engaged] [open=off: close=engaged] [open=Cr: close=Fe]

CONNECTOR 1770		DECK A & B CONTROL INTERFACE <i>(For Non-Dolby version only)</i>	
	1 2 3 4 5 6 7 8 9 10 11 12 13 14	REC REW CrO2 B REC FWD PHOTO B SOL B Vcc MODE B GND M SOL A PHOTO A MODE A L CrO2 A H	Record tab protection status switch (reverse) Chrome tape detection switch deck B Record tab protection status switch (forward) Photo sensor output (tape movement indication) Solenoid supply for deck B Deck / Motor supply Mode switch (head engagement) Deck / Motor ground Solenoid supply for deck A Photo sensor output (tape movement indication) Mode switch (head engagement) L pin for motor Chrome tape detection switch deck A H pin for motor [open=on: close=off] [open=Cr: close=Fe] [open=on: close=off] [open=off: close=engaged] [open=off: close=engaged] [open=Cr: close=Fe]

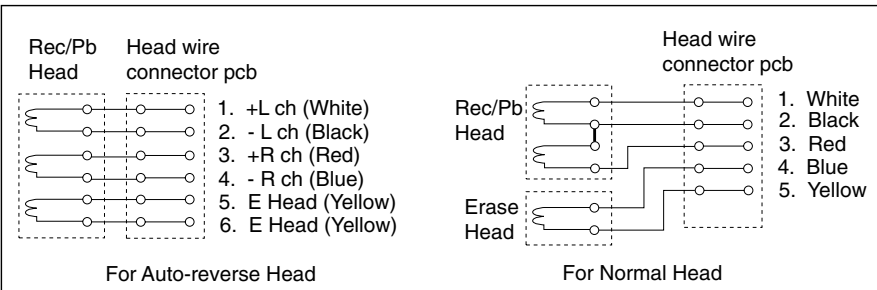
TAPE MECHANISM ELECTRONICS



Mechanism B Head Wires Soldering (Non-Dolby version)



Mechanism B Head Wires Soldering (Dolby B NR version)

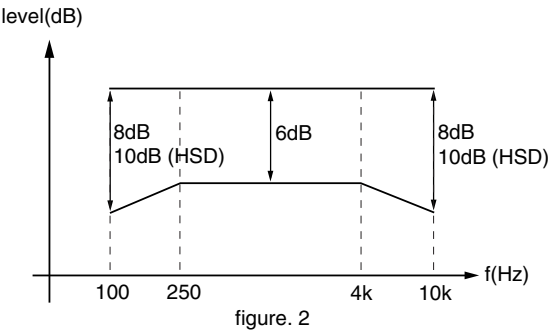
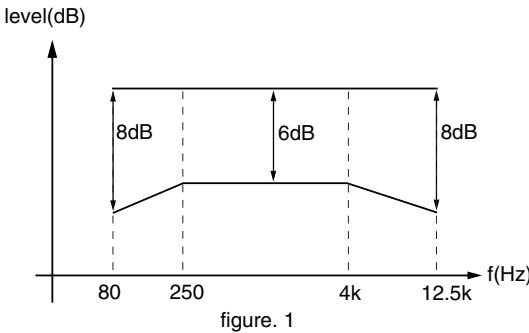


TAPE ADJUSTMENT & CHECK TABLE

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

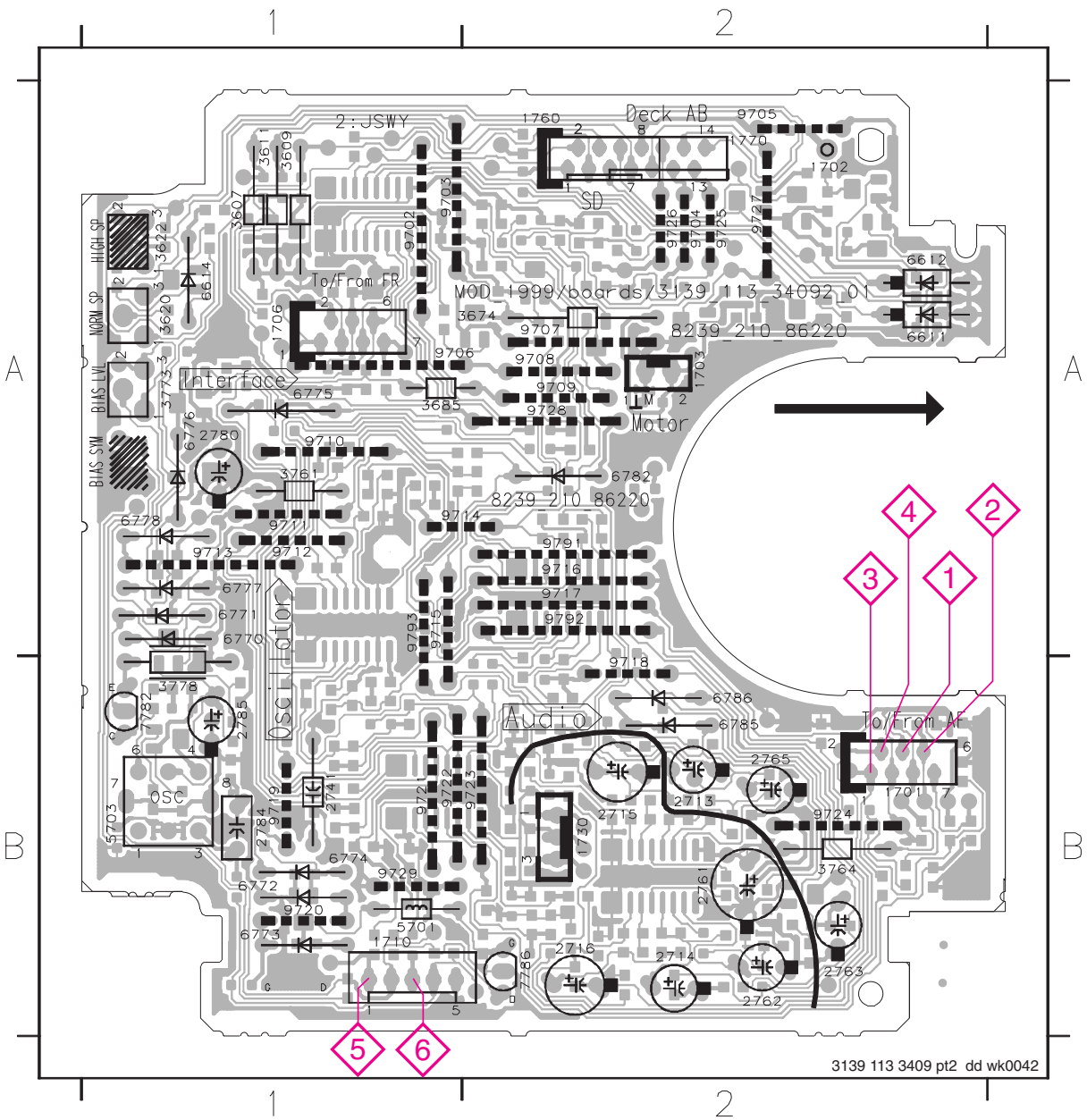
SBC419A^: 4822 397 30069
SBC420 : 4822 397 30071

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

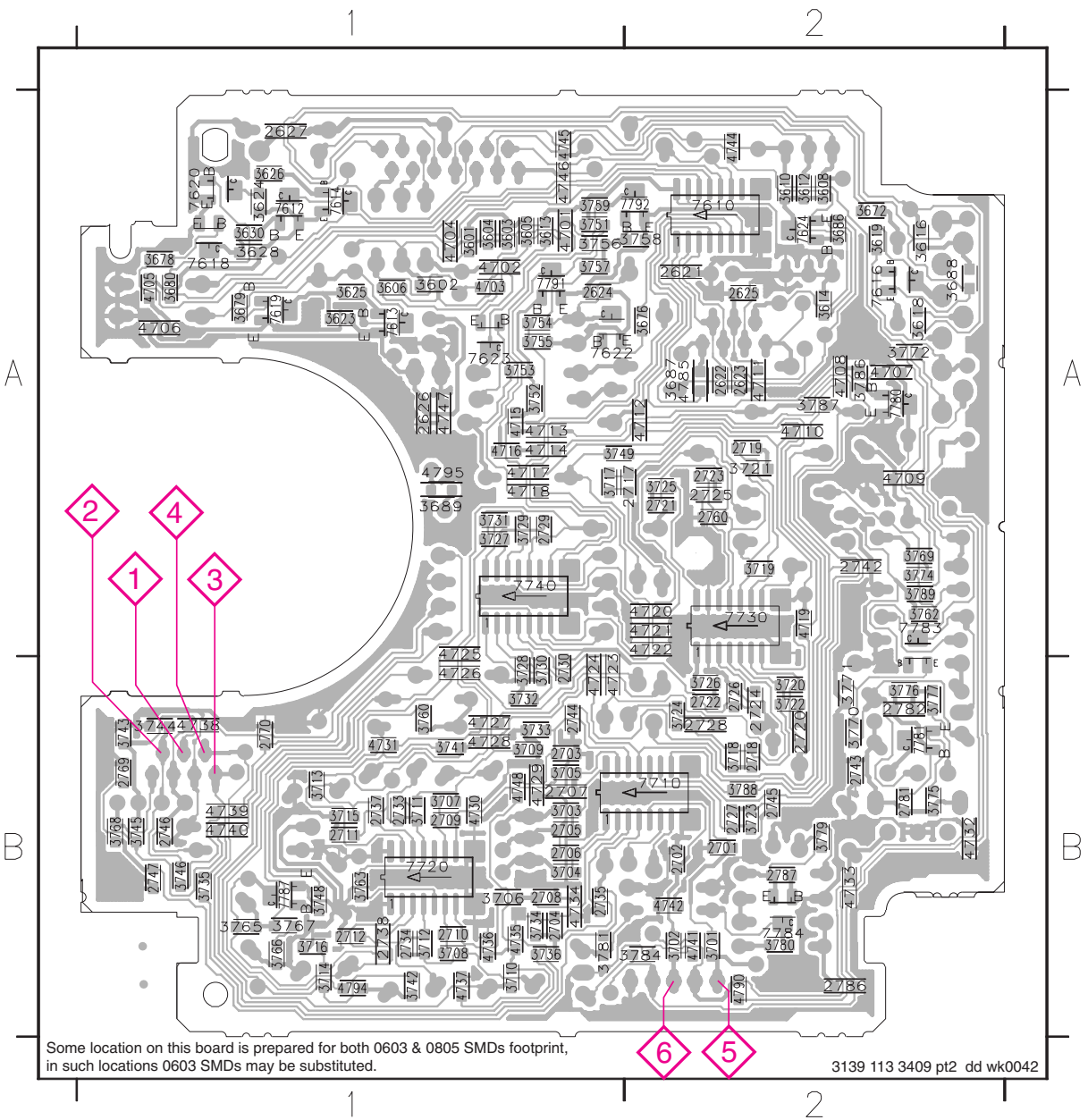
1701	B2	2714	B2	2784	B1	3761	A1	6770	A1	6782	A2	9706	A1	9715	A1	9724	B2
1702	A2	2715	B2	2785	B1	3764	B2	6771	A1	6785	B2	9707	A2	9716	A2	9725	A2
1703	A2	2716	B2	3607	A1	3773	A1	6772	B1	6786	B2	9708	A2	9717	A2	9726	A2
1706	A1	2741	B1	3609	A1	3778	B1	6773	B1	7782	B1	9709	A2	9718	B2	9727	A2
1710	B1	2761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



3139 113 3409 pt2 dd wk0042

CHIP LAYOUT

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

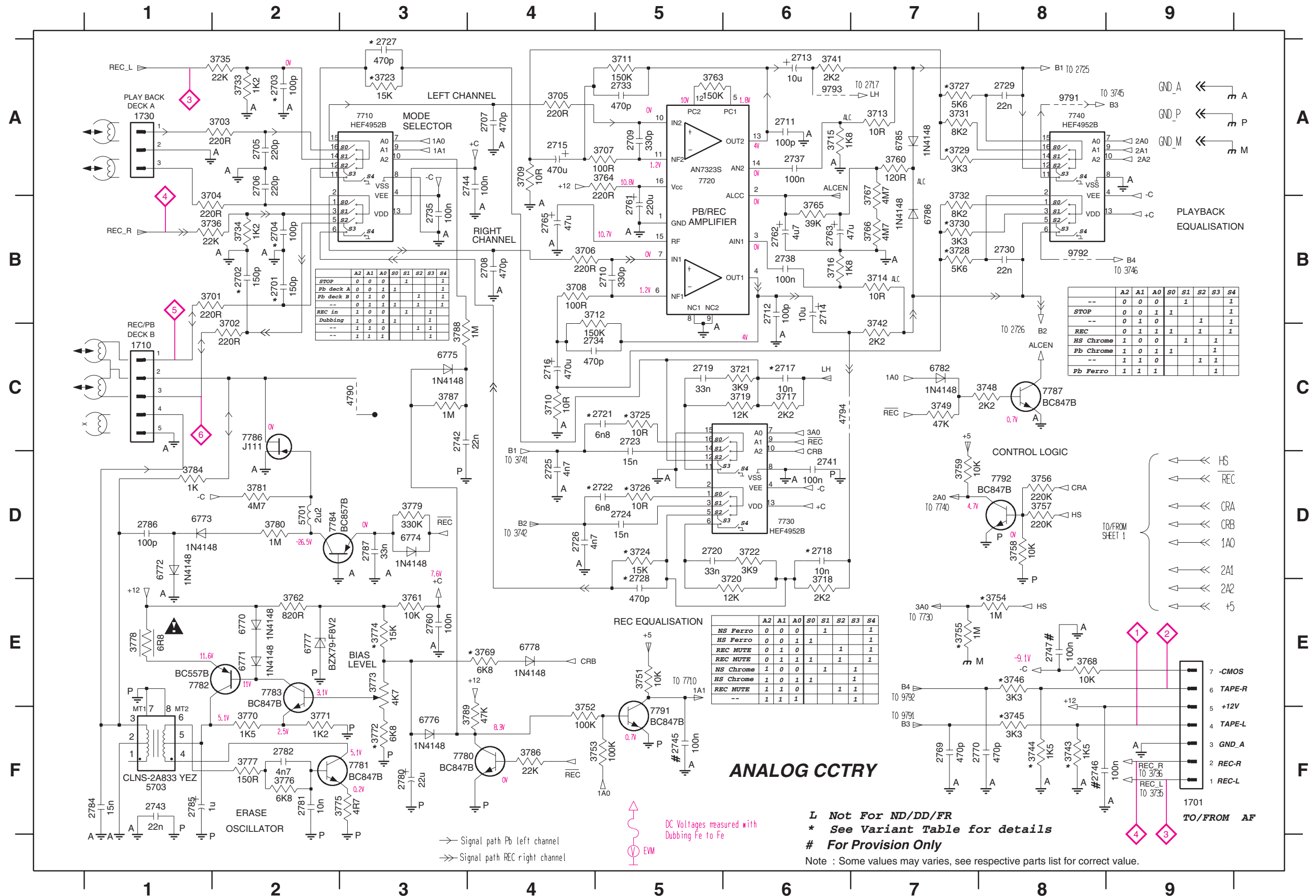


Some location on this board is prepared for both 0603 & 0805 SMDs footprint, in such locations 0603 SMDs may be substituted.

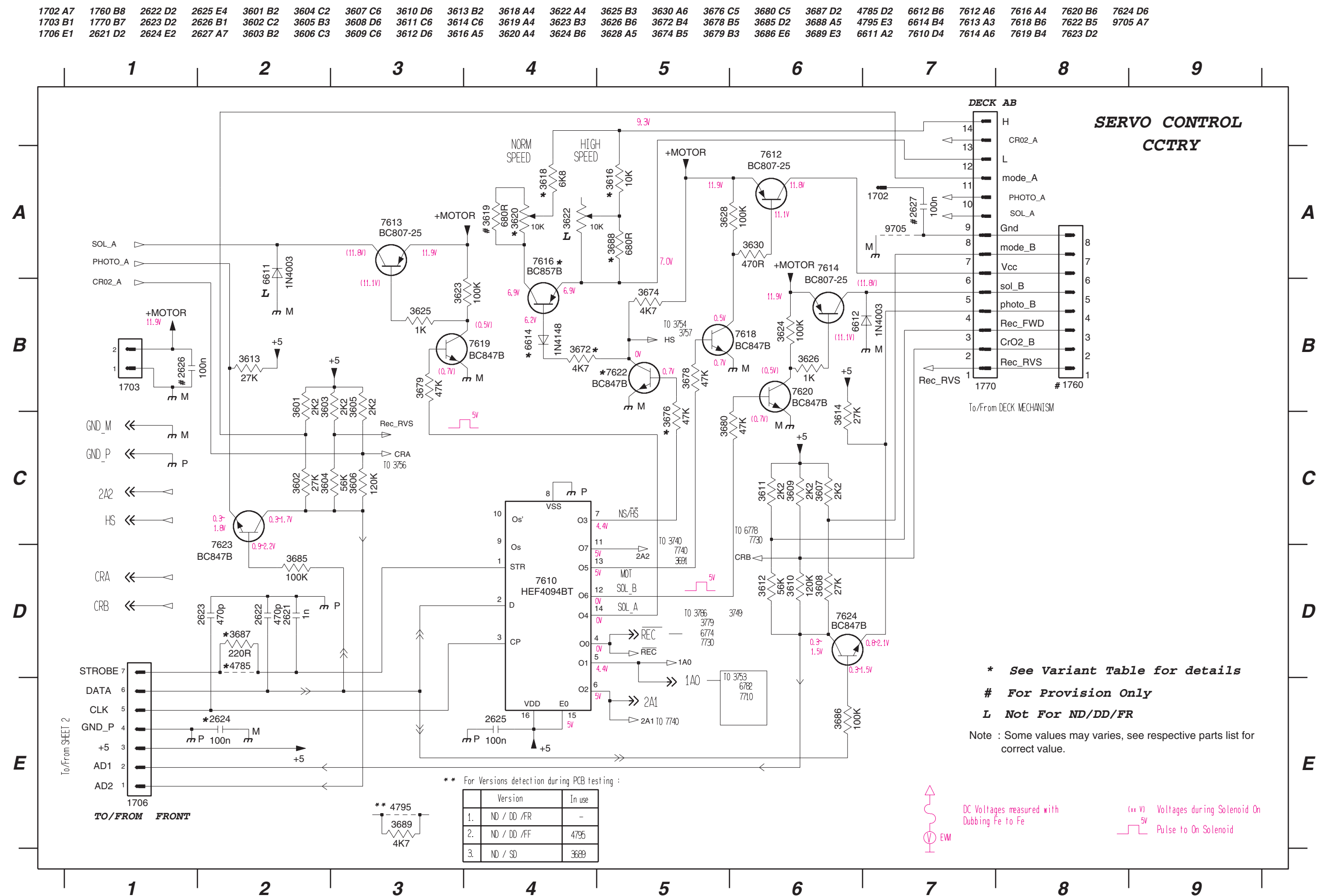
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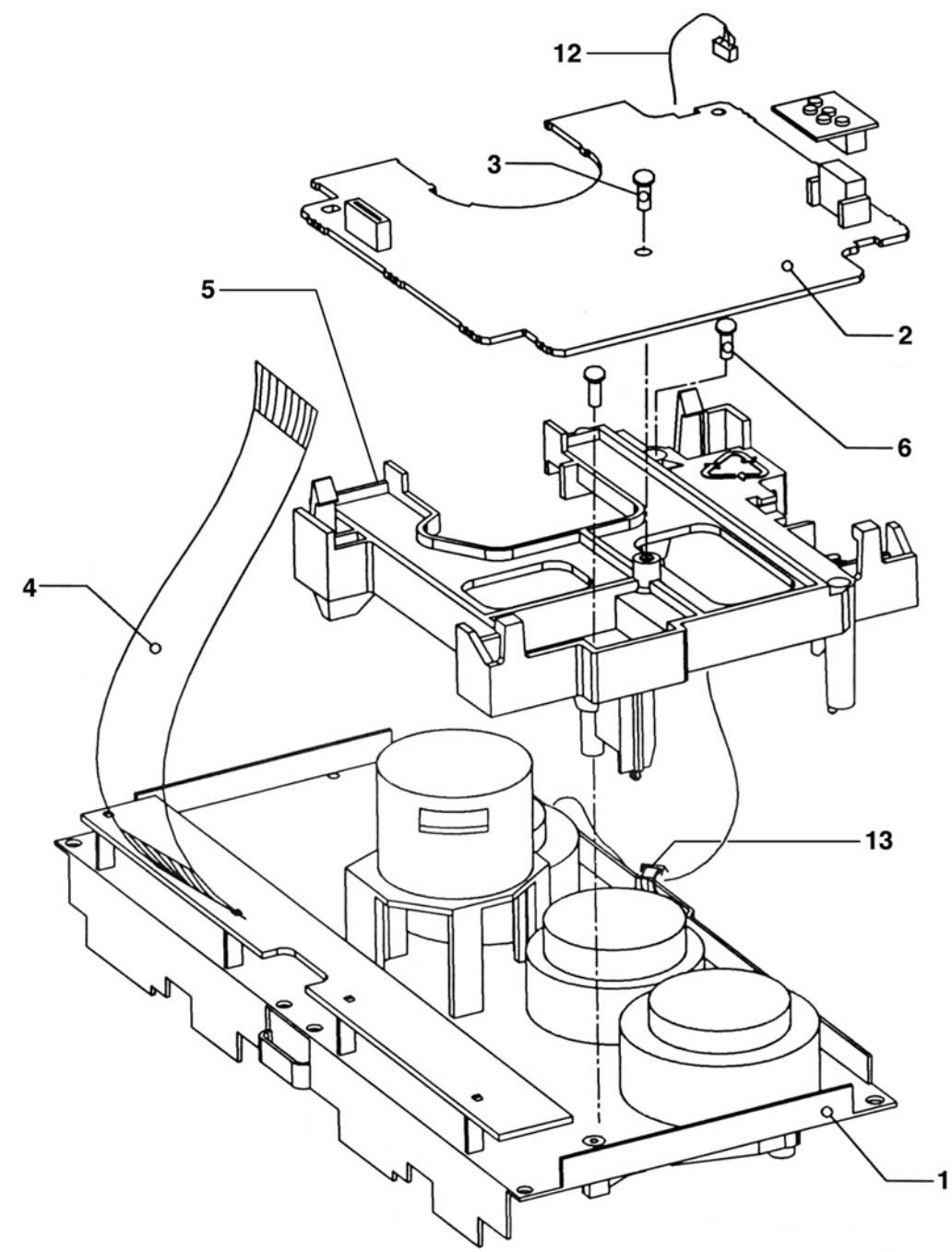
ANALOG CIRCUIT

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	



SERVO CONTROL
CCTRY



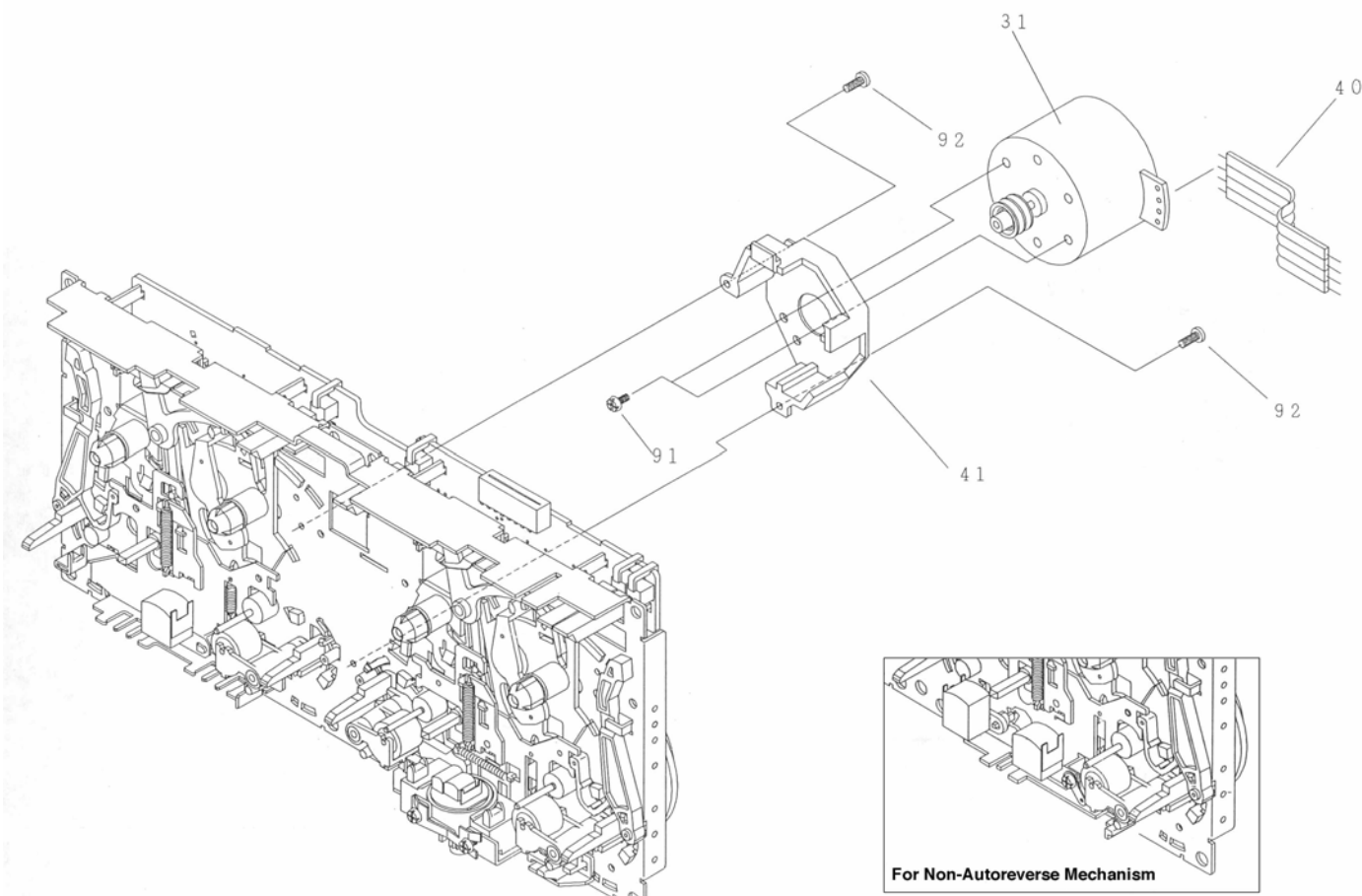


3139 118 77070 (Incl. ...77080) dd wk926

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 |
| 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.



TAPE MECHANISM - MOTOR EXPLODED VIEW

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

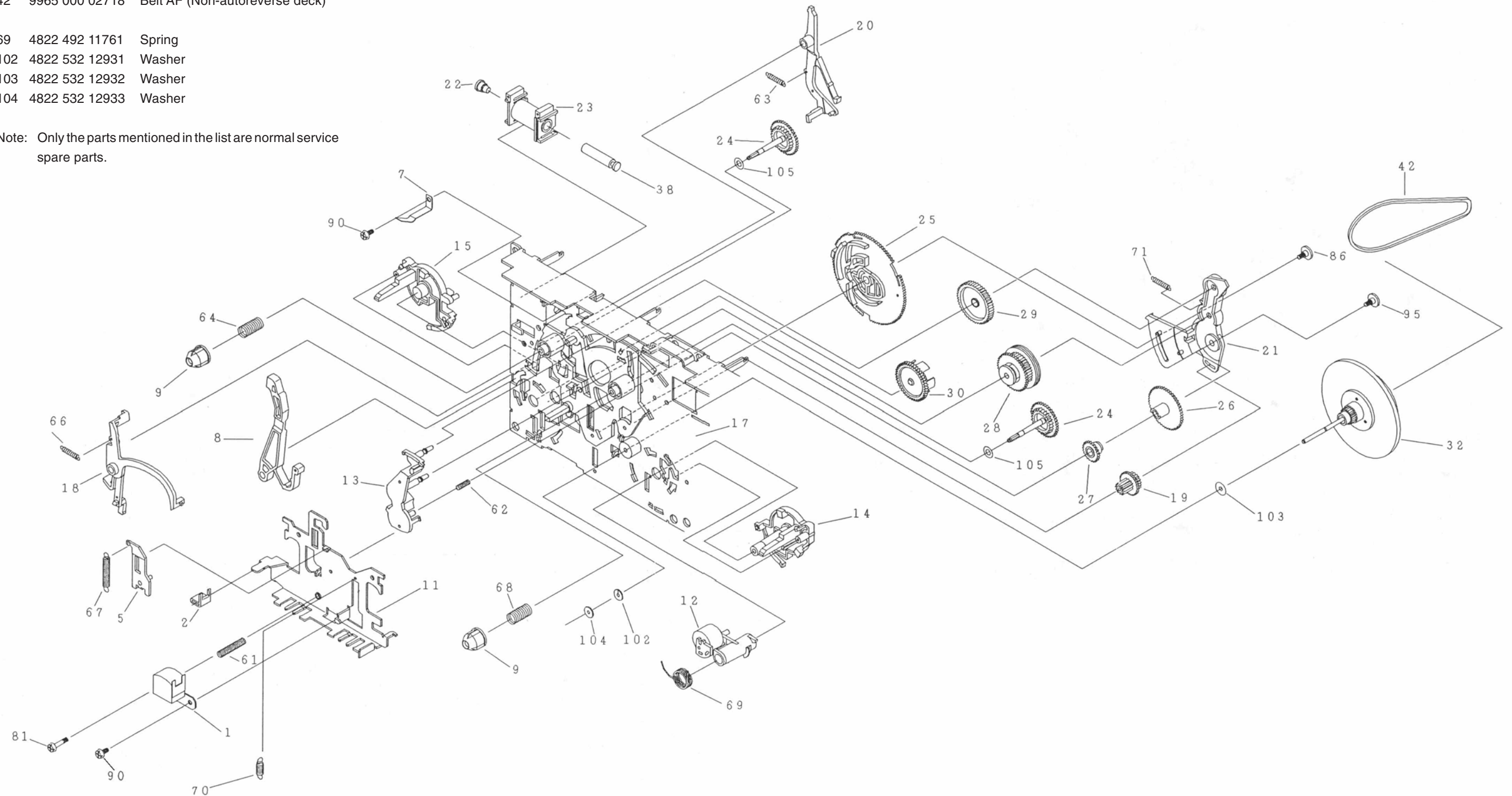
Note: Only the parts mentioned in this list are normal service spare parts.

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.

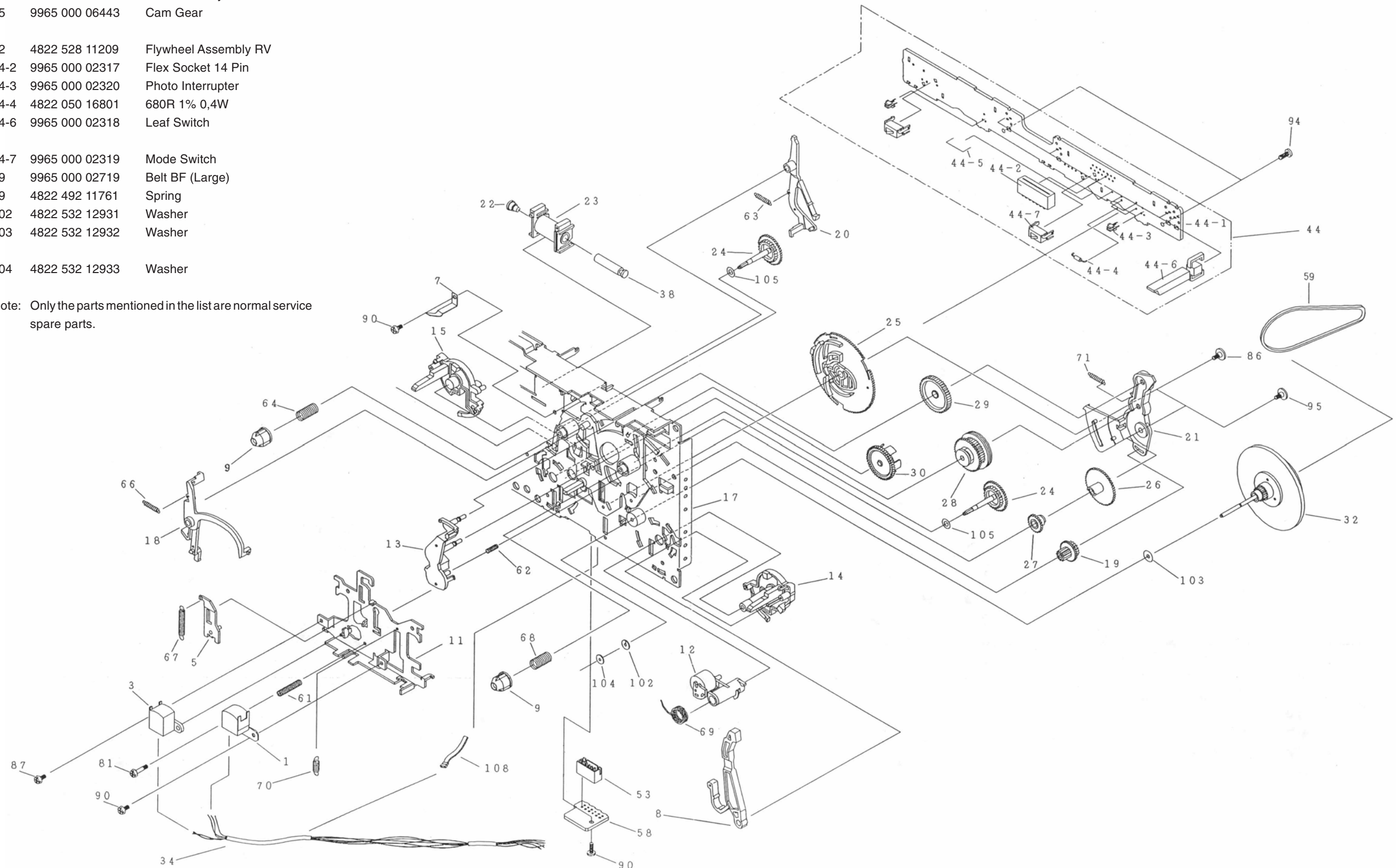


TAPE MECHANISM B - RECORD/PLAYBACK (Non-Autoreverse version)

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

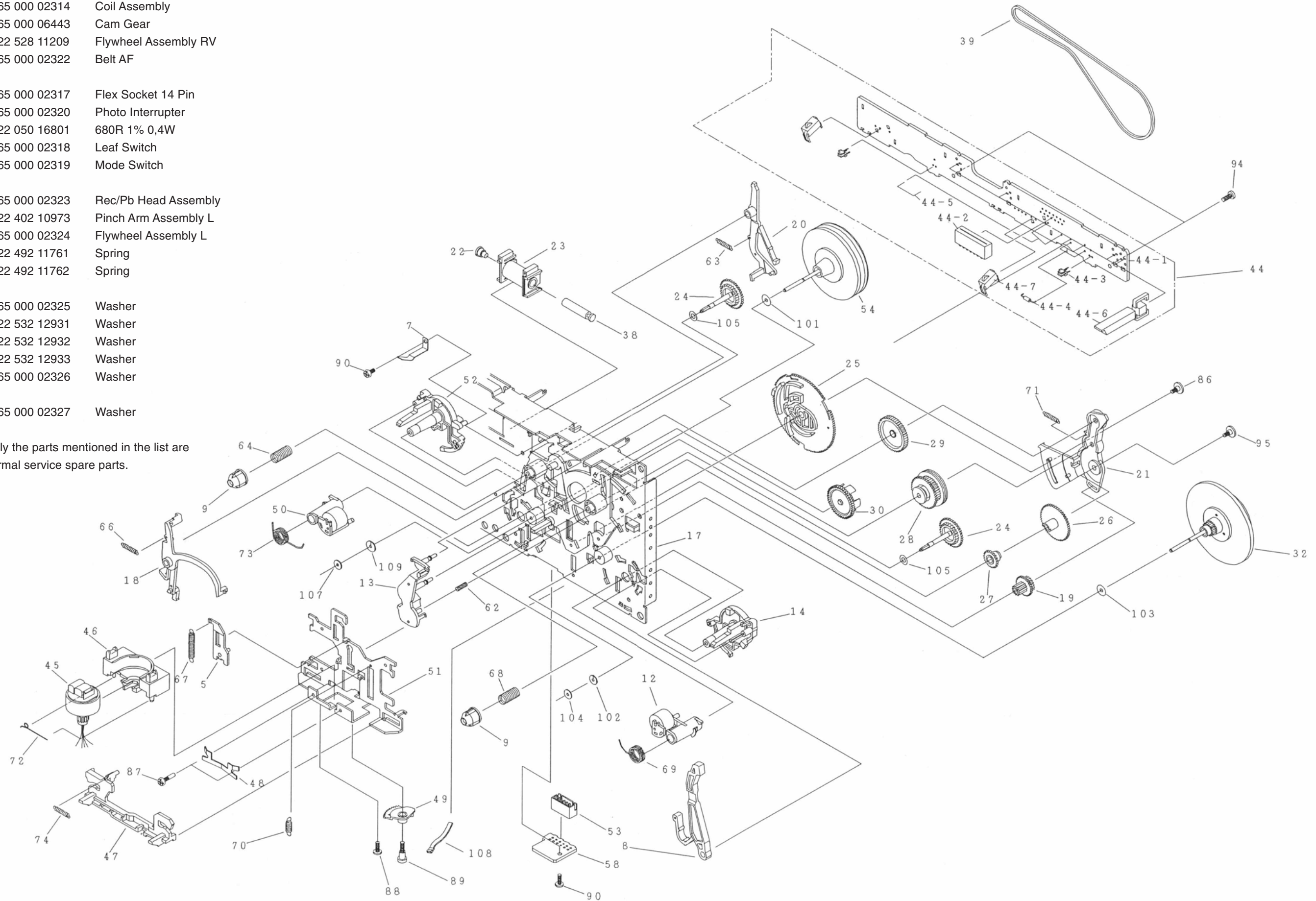
44-2	9965 000 02317	Flex Socket 14 Pin
44-3	9965 000 02320	Photo Interrupter
44-4	4822 050 16801	680R 1% 0,4W
44-6	9965 000 02318	Leaf Switch
44-7	9965 000 02319	Mode Switch

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
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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	

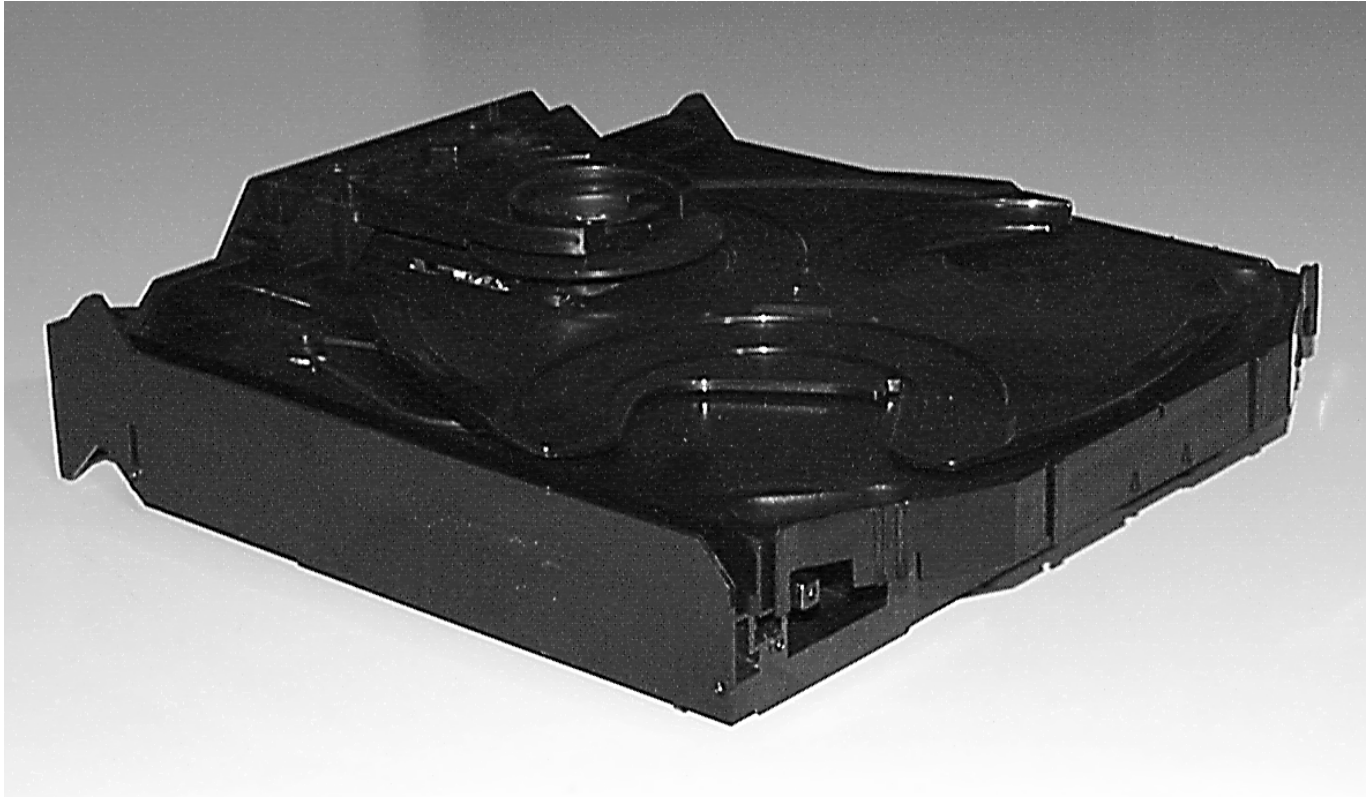
Note: Only the parts mentioned in this list are normal service spare parts.

COILS & FILTERS

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

DIODES

6611	482213031878	1N4003G
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3CDC-LC-MB Module

(3 Disc Carousel Changer)

Layout stage .2

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WARNING

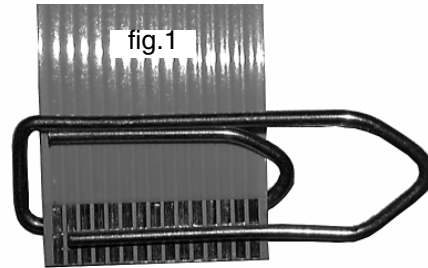
CHARGED CAPACITORS ON THE SERVO BOARD MAY DAMAGE THE CD DRIVE ELECTRONICS WHEN CONNECTING A NEW CDM MECHANISM. THAT'S WHY, BESIDES THE SAFETY MEASURES LIKE

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

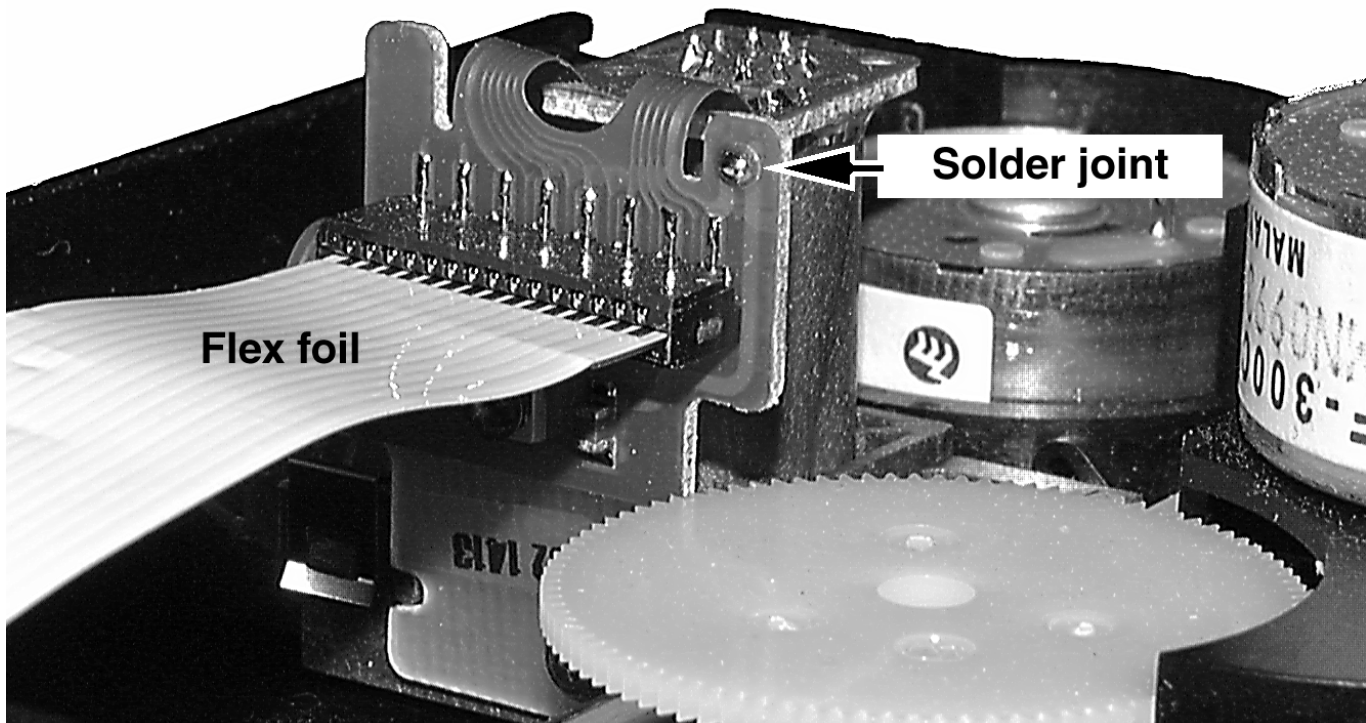
ADDITIONAL ACTIONS MUST BE TAKEN BY THE REPAIR TECHNICIAN.

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

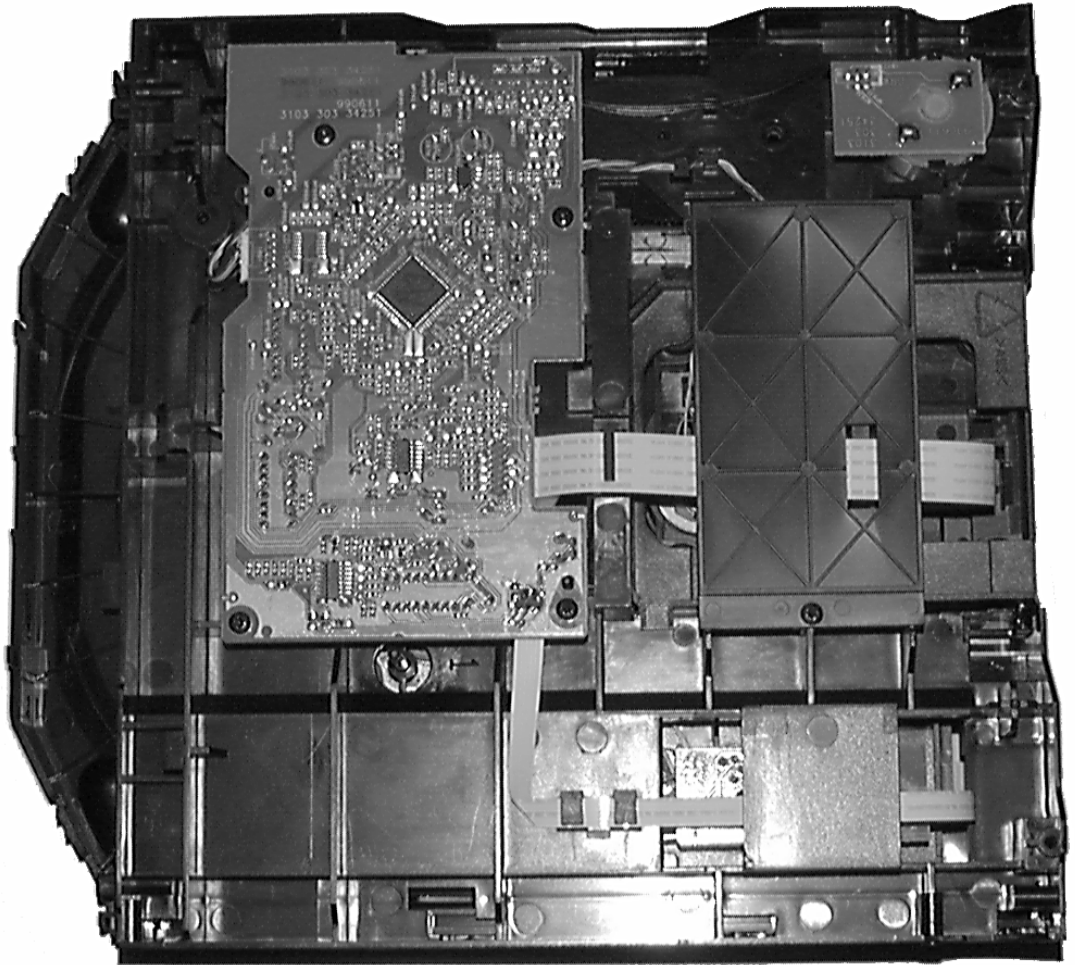
1. Disconnect CD drive flexfoil from old CD drive
2. Connect paperclip to CD drive flexfoil to short-circuit flexfoil (fig.1)
3. Remove old CD drive
4. Remove short-circuit from flexfoil of CD drive
5. Connect flexfoil to new CD drive
6. Position new CD drive in its studs
7. Remove short-circuit from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

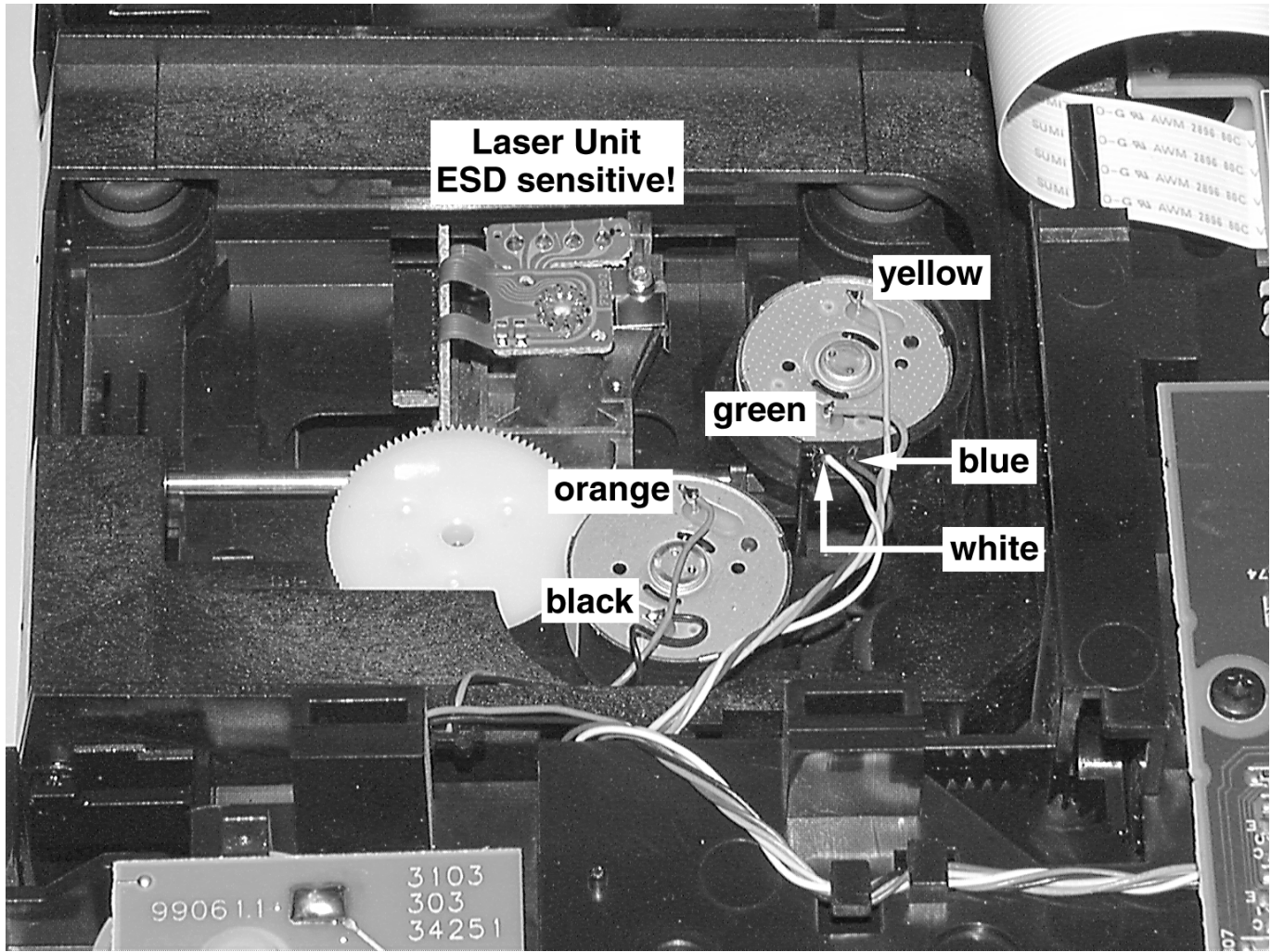


Attention: The laser diode of this CD drive is protected against ESD by a solder joint which shortcircuits the laserdiode to ground.
For proper functionality of the CD drive this solder joint must be removed **after** connection the drive to the set.



Service Position



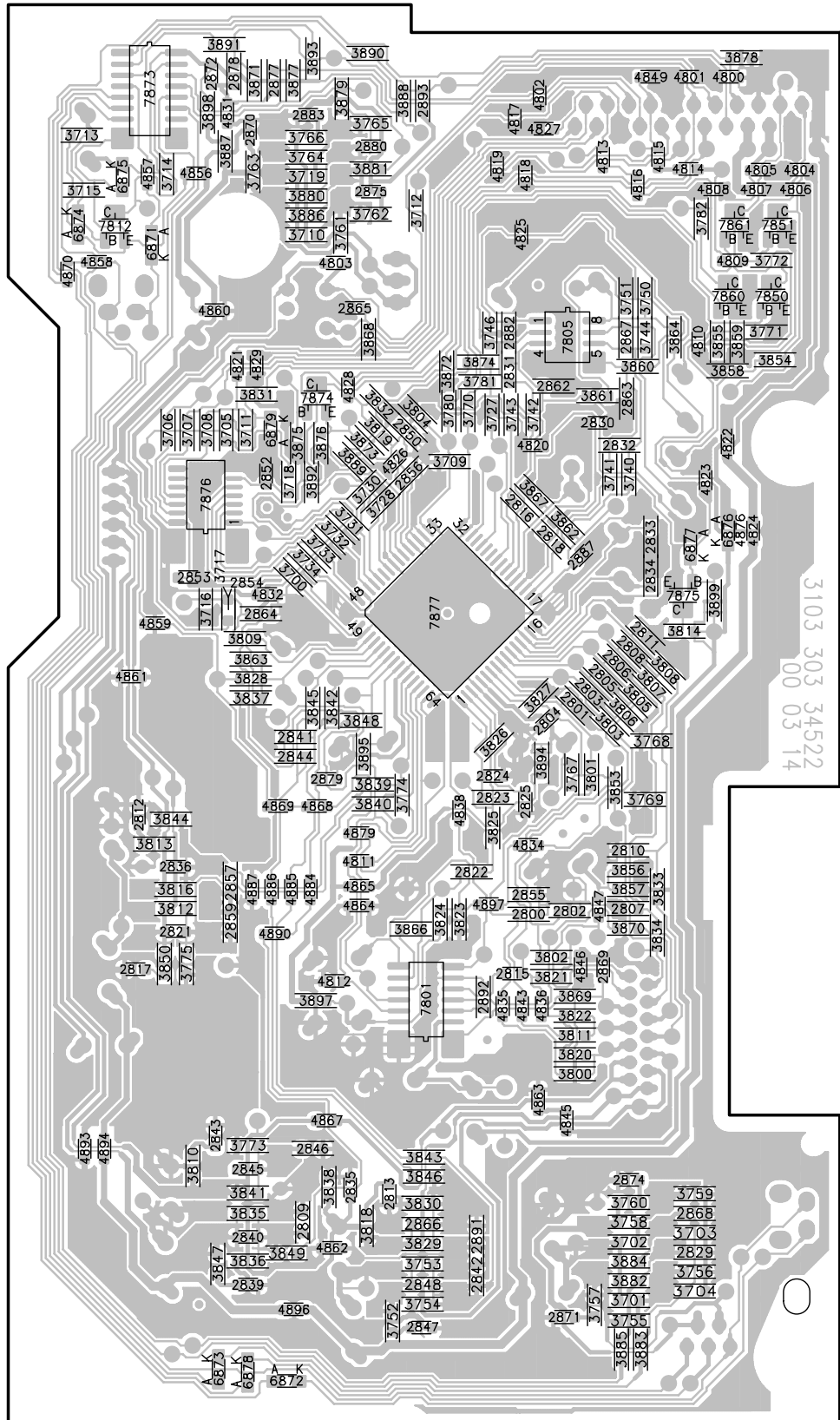
Wiring

The diagram illustrates the control system for a CD player, divided into three main sections:

- CD MECHANISM:** This section shows the mechanical components and their electrical connections. It includes a **TURNABLE MOTOR**, **FOCUS MOTOR**, **RADIAL MOTOR**, **SLEDGE MOTOR**, and **TURNABLE MOTOR** (repeated). The **DISC** is connected to the **TURNABLE MOTOR**. The **FOCUS MOTOR** is connected to the **FOC -** and **FOC +** lines. The **RADIAL MOTOR** is connected to the **TRACK -** and **TRACK +** lines. The **SLEDGE MOTOR** is connected to the **SLIDE -** and **SLIDE +** lines. The **TURNABLE MOTOR** is connected to the **DISC -** and **DISC +** lines. The **LASER & MONITOR DIODE** is connected to the **LD** and **MON** lines. The **PHOTO DIODES** are connected to the **D1-D5** lines. The **INNER SWITCH** is connected to the **LD** line.
- PHOTODIODE & HF AMPLIFIER - LOADER CONTROL PCB:** This section contains the **SERVO - DECODER CD10** (SAA7324 (SAA7325)) and the **Laser Control & HF AMPLIFIER** (TZA1024 (TZA1025)). The **SERVO - DECODER** is connected to the **FO**, **RA**, **SL**, **MOT1**, **MOT2**, **LD ON**, **V4**, **HF IN**, and **V1** lines. The **Laser Control & HF AMPLIFIER** is connected to the **LD**, **MON**, **CD R/W**, and **HF IN** lines. The **ACTIVE LOW PASS FILTER** (TDA1308) is connected to the **LP**, **LN**, **RP**, **RN**, and **CD LEFT** and **CD RIGHT** lines. The **ACTIVE LOW PASS FILTER** is also connected to the **CD LEFT** and **CD RIGHT** lines. The **ACTIVE LOW PASS FILTER** is connected to the **CD LEFT** and **CD RIGHT** lines.
- SWITCH INFO:** This section contains the **SHIFT REGISTER** (HEF4094BT) and the **CD DRIVE UP/DOWN SWITCH**. The **SHIFT REGISTER** is connected to the **DATA**, **SHR_CL**, **STB**, **VDD**, and **EN1** lines. The **CD DRIVE UP/DOWN SWITCH** is connected to the **CD POS.1 SWITCH**, **TRAY SWITCH**, and **CD DRIVE UP/DOWN SWITCH** lines. The **CD POS.1 SWITCH** is connected to the **CD POS.1 SWITCH** line. The **TRAY SWITCH** is connected to the **TRAY SWITCH** line. The **CD DRIVE UP/DOWN SWITCH** is connected to the **CD DRIVE UP/DOWN SWITCH** line.

Mapping

3CDC-LC-MB 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-MB Layout stage 2 2000-05-02

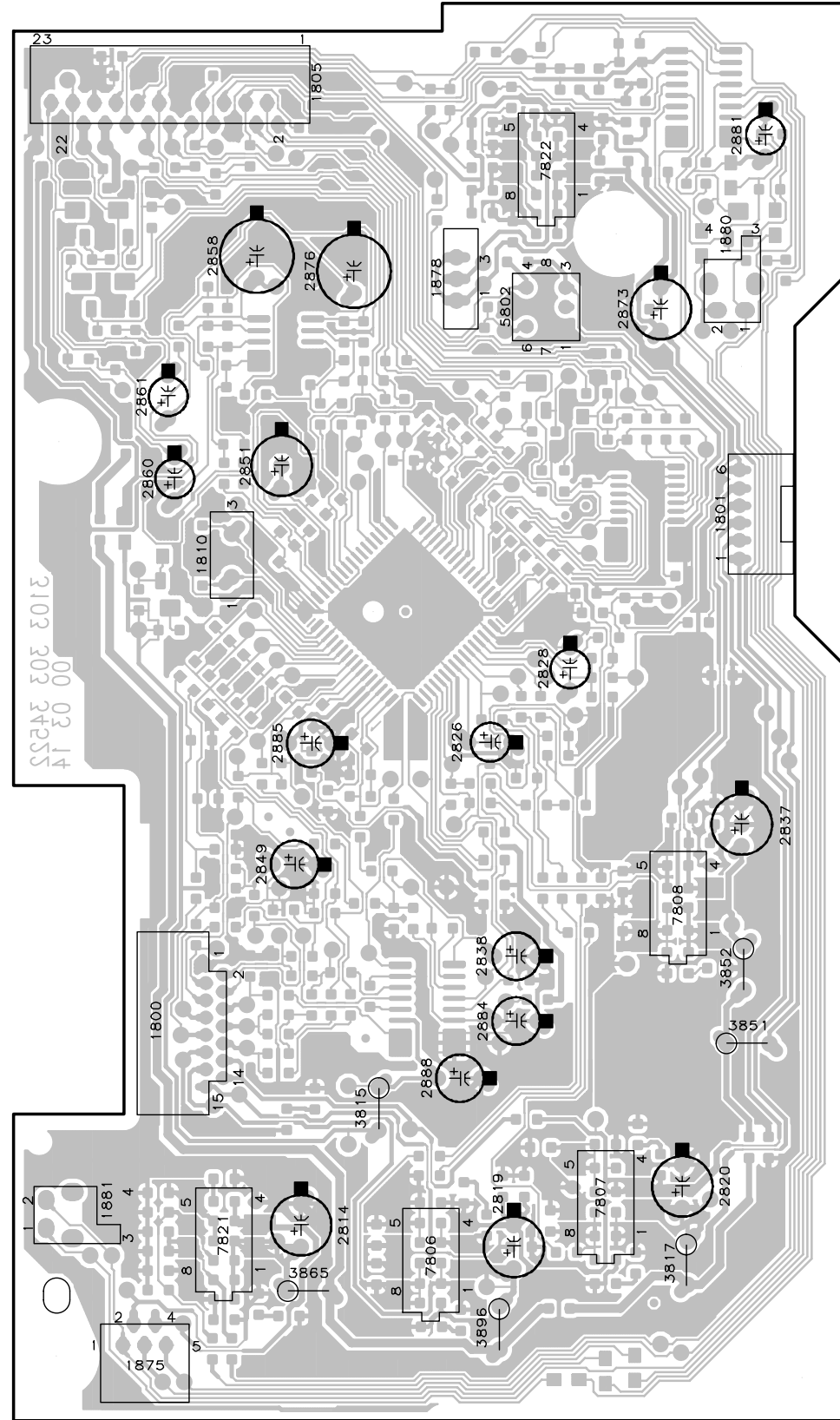
Copperside

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

Componentside

1800 F1	2851 C2	2858 B2	2860 C1	2861 C1	2873 B4	2876 B2	2881 A5	2884 F3	2885 E2	2888 G3	2888 G3	2889 G3	3817 H4	3851 F5	3852 F5	3855 H2	3896 H3	5802 B4	7806 H3	7807 G4	7808 E4	7821 G2	7822 A3
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3CDC-LC-MB Componentside view

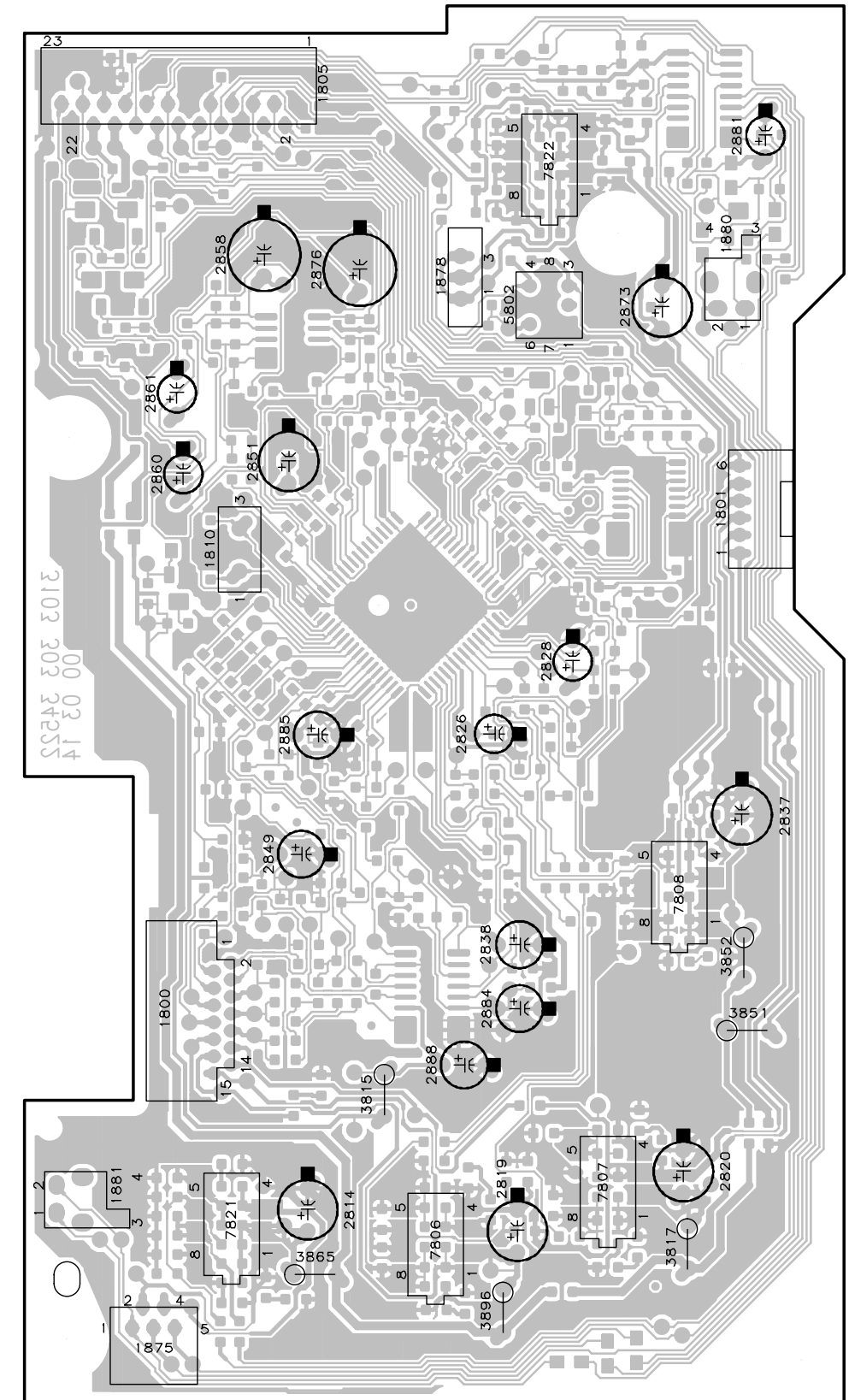


This assembly drawing shows a summary of all possible versions.
For components used in a specific version see schematic diagram respectively partslist.

3CDC-LC-MB Layout stage 2 2000-05-02

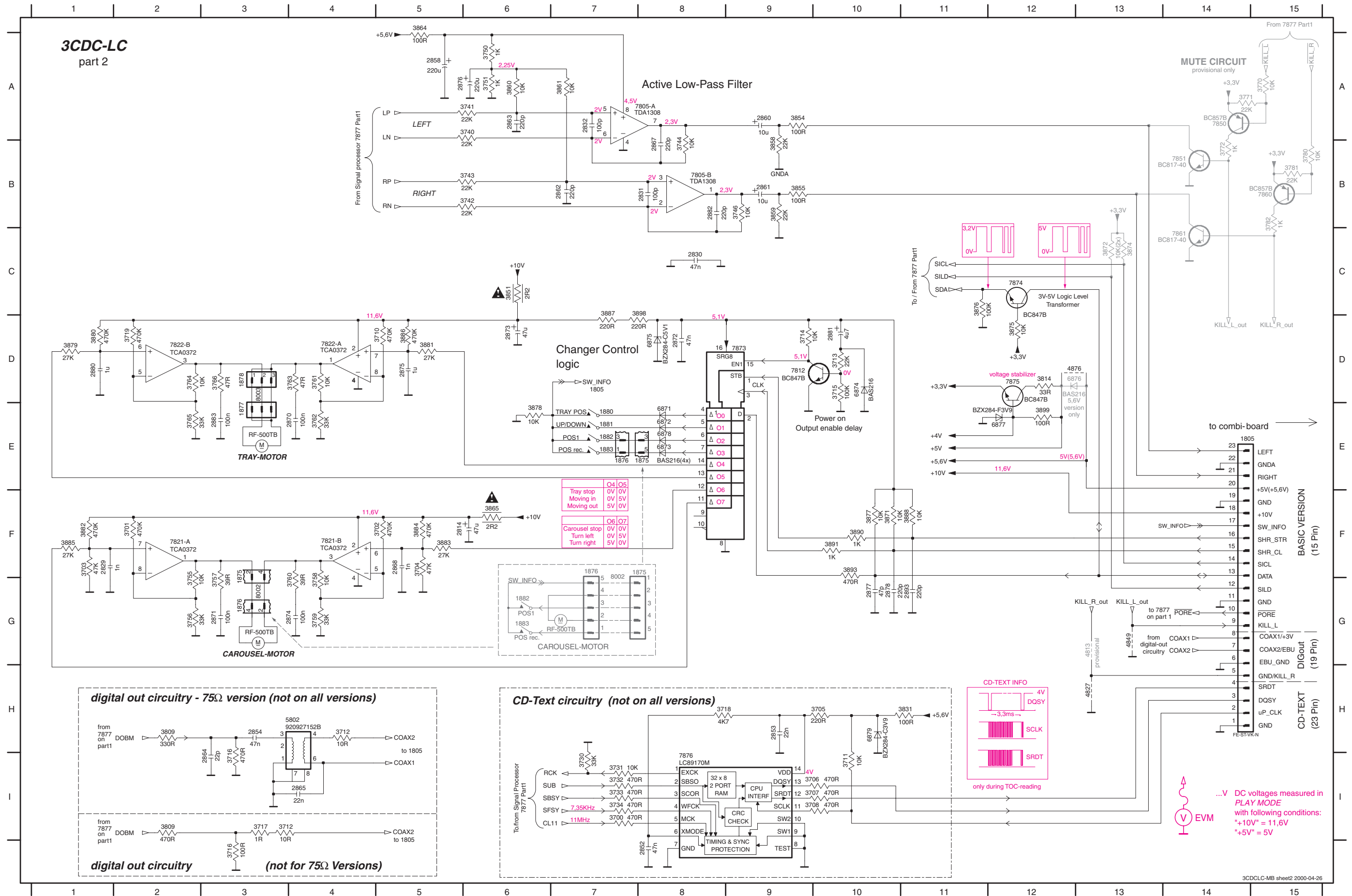


3CDC-LC-MB Componentside view



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

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	E2	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	D8	7812	D9	7860	B15		
1875	E8	1882	E7	2852	I8	2863	A6	2872	D8	2880	D11	3700	I7	3707	I10	3715	D10	3733	I7	3746	B9	3759	G4	3766	D3	3809	H2	3859	B9	3876	C11	3883	F5	3891	F10	4876	D12	7821-A	F2	7861	C14		
1876	E7	1883	E7	2853	H9	2864	I3	2873	D6	2881	D10	3701	F2	3708	I10	3716	I3	3734	I7	3750	A6	3760	G4	3770	A15	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	3740	A6	3751	A6	3761	D4	3771	A14	3831	H11	3861	A7	3878	E6	3885	F1	3898	D7	6871	E8	6878	E5	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



EXPLODED VIEW (3CDC-LC MODULE)

MECHANICAL PARTS *Loader* → *this page*

- 20

3103 304 66500

DRAWER BLACK
- 21

3140 117 58650

CLAMPER ASSY-VAM
- 30

3103 304 66560

SUPPORT
- 31

4822 529 10431

DAMPER - RUBBER (25DEG)
- 32

4822 529 10431

DAMPER - RUBBER (25DEG)
- 33

3103 304 06970

WASHER
- 35

4822 691 10772

VAM2201/01 CD Drive
- 41

3103 304 66480

FRAME
- 42

3103 304 66540

BRACKET-GUIDING
- 43

3103 301 06460

SPRING-GUIDING
- 44

3103 304 06890

GEAR-3
- 45

3103 304 06980

NAIL FIXATION
- 46

3103 304 06880

GEAR-2
- 47

3103 304 66530

BRACKET-LOAD
- 48

3103 304 06910

CAM
- 49

3103 304 66510

GUIDING
- 51

3103 304 06900

GEAR-4
- 52

3103 304 06870

GEAR-1
- 53

3103 304 06960

PULLEY-FRAME
- 54

3103 304 66910

DRIVING-BELT-DRAWER
- 55

4822 361 10753

TRAY MOTOR
- 56

4822 502 12548

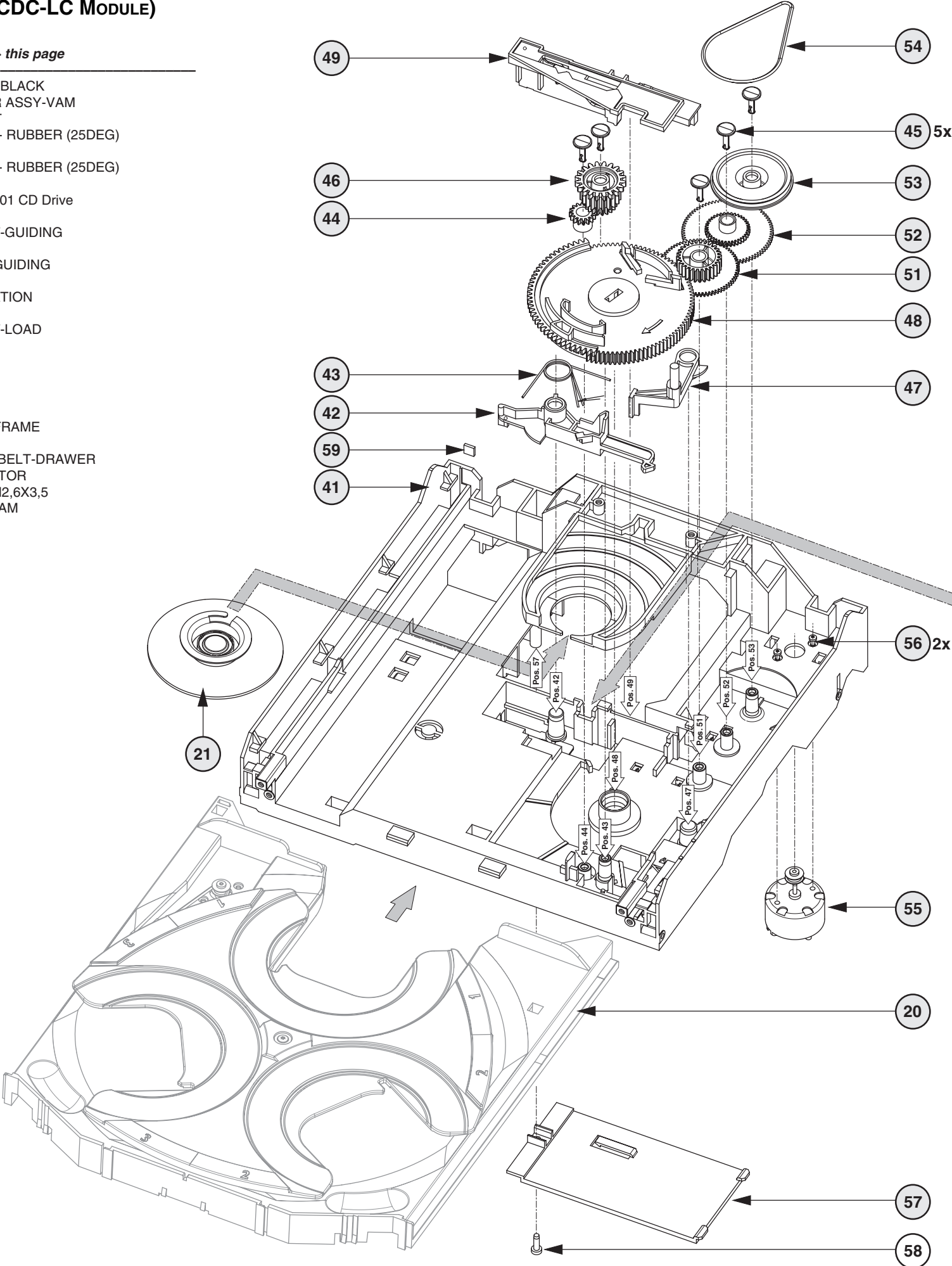
SCREW M2,6X3,5
- 57

3103 304 68890

COVER-VAM
- 59

4822 466 12146

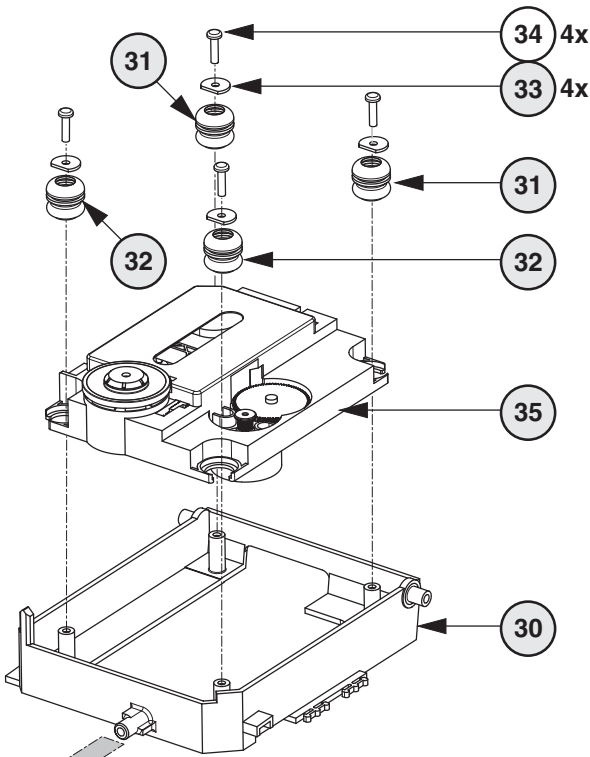
RUBBER



- X

spare part
- Y

non spare part



MECHANICAL PARTS *Drawer* → *Chapter 10A-11*

- 20

3103 304 66500

DRAWER BLACK
- 21

3103 304 66490

CAROUSEL BLACK
- 22

3103 304 06860

PULLEY-DRAWER
- 23

3103 304 06850

ECCENTRIC GEAR WHEEL
- 24

3103 304 06980

NAIL FIXATION
- 25

3103 304 66850

DRIVING BELT CAROUSEL
- 27

3103 304 07100

BUSH DRAWER (height=8,5mm,d=16mm)
- 27

4822 532 12365

BUSH DRAWER (height=5,5mm,d=9,4mm)
- 29

3103 304 66550

BRACKET-DISC
- 30

3103 304 66520

TUMBLER
- 31

3103 301 06470

SPRING-DISC
- 32

3103 304 06920

CONTROL-DISC
- 34

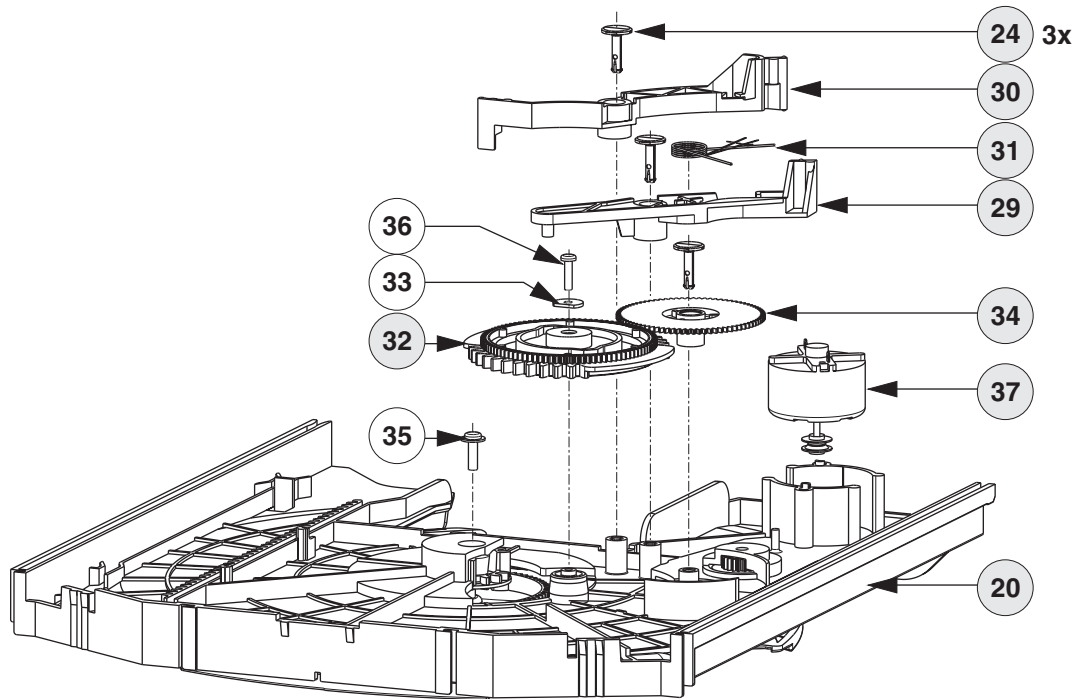
3103 304 06870

GEAR-1
- 37

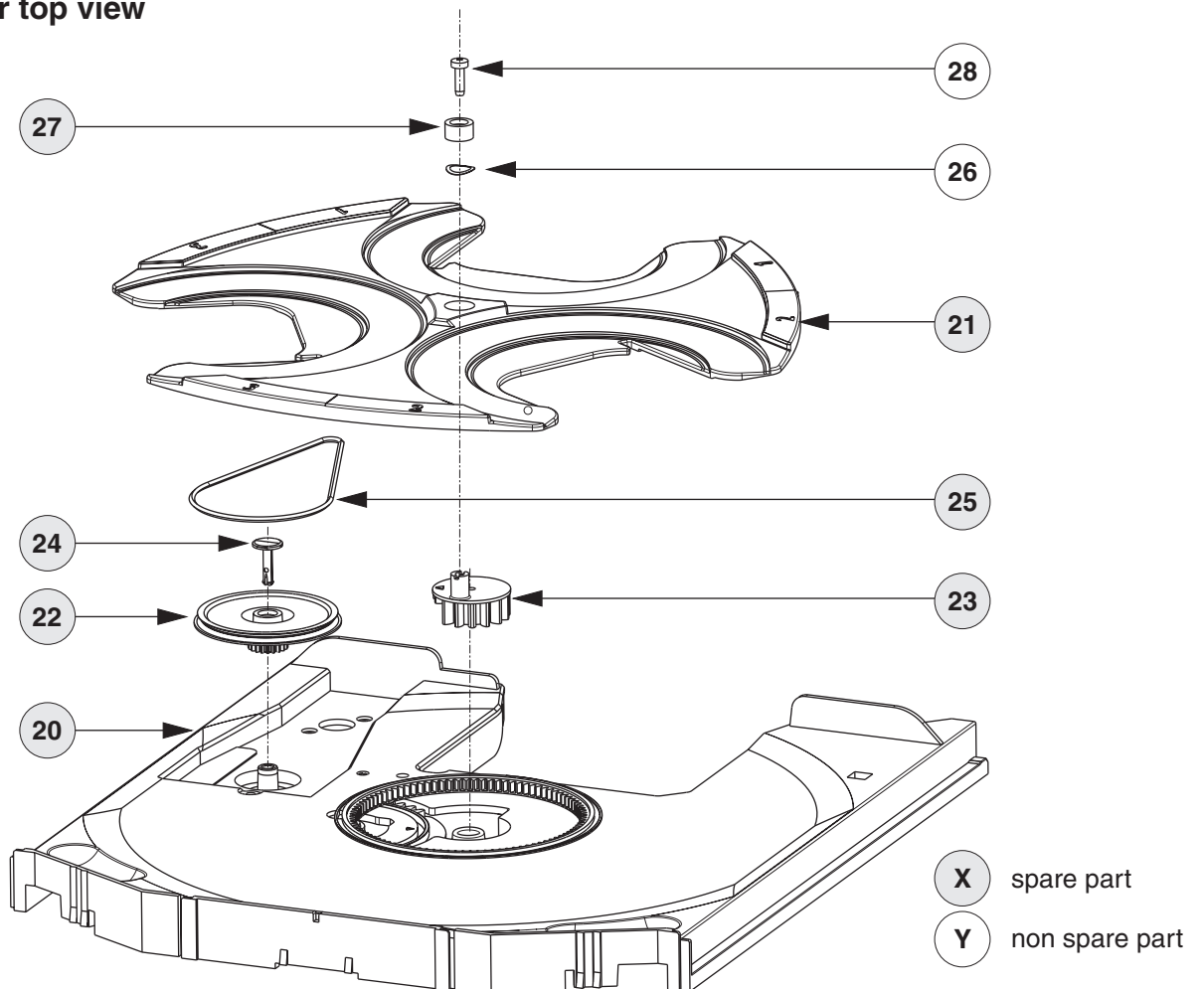
4822 361 10753

CAROUSEL MOTOR

Drawer bottom view



Drawer top view



ELECTRICAL PARTSLIST 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 recogniced
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 PARTSLIST 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%	0,1W
3850	4822 051 20399	39Ω	5%	0,1W
3851	4822 052 10228	2,2Ω	5%	0,33W
3852	4822 052 10228	2,2Ω	5%	0,33W
3853	4822 051 20471	470Ω	5%	0,1W
3854	4822 051 20101	100Ω	5%	0,1W
3855	4822 051 20101	100Ω	5%	0,1W
3856	4822 117 12521	68Ω	1%	0,1W
3857	4822 117 12521	68Ω	1%	0,1W
3858	4822 051 20223	22kΩ	5%	0,1W
3859	4822 051 20223	22kΩ	5%	0,1W
3860	4822 117 10833	10kΩ	1%	0,1W
3861	4822 117 10833	10kΩ	1%	0,1W
3862	4822 051 20121	120Ω	5%	0,1W
3863	4822 051 20101	100Ω	5%	0,1W
3863	4822 051 20339	33Ω	5%	0,1W
3864	4822 051 20101	100Ω	5%	0,1W
3865	4822 052 10228	2,2Ω	5%	0,33W
3866	4822 117 10833	10kΩ	1%	0,1W
3867	4822 051 20121	120Ω	5%	0,1W
3869	4822 051 20478	4,7Ω	5%	0,1W
3870	4822 051 20101	100Ω	5%	0,1W
3871	4822 117 10833	10kΩ	1%	0,1W
3873	4822 051 20471	470Ω	5%	0,1W
3875	4822 117 10833	10kΩ	1%	0,1W
3876	4822 117 10837	100kΩ	1%	0,1W
3877	4822 117 10833	10kΩ	1%	0,1W
3878	4822 117 10833	10kΩ	1%	0,1W
3879	4822 051 20273	27kΩ	5%	0,1W
3880	4822 051 20474	470kΩ	5%	0,1W
3881	4822 051 20273	27kΩ	5%	0,1W
3882	4822 051 20474	470kΩ	5%	0,1W
3883	4822 051 20273	27kΩ	5%	0,1W
3884	4822 051 20474	470kΩ	5%	0,1W
3885	4822 051 20273	27kΩ	5%	0,1W
3886	4822 051 20474	470kΩ	5%	0,1W
3887	4822 117 11503	220Ω	5%	0,1W
3888	4822 117 10833	10kΩ	1%	0,1W
3889	4822 051 20471	470Ω	5%	0,1W
3890	4822 051 10102	1kΩ	2%	0,25W
3891	4822 051 10102	1kΩ	2%	0,25W
3892	4822 051 20471	470Ω	5%	0,1W
3893	4822 051 20471	470Ω	5%	0,1W
3894	4822 051 20101	100Ω	5%	0,1W
3895	4822 051 20159	15Ω	5%	0,1W
3896	4822 052 10228	2,2Ω	5%	0,33W
3897	4822 051 20101	100Ω	5%	0,1W
3898	4822 117 11503	220Ω	5%	0,1W
3899	4822 051 20101	100Ω	5%	0,1W
4800	4822 051 20008	CHIP JUMPER 0805		
4801	4822 051 20008	CHIP JUMPER 0805		
4802	4822 051 20008	CHIP JUMPER 0805		
4804	4822 051 20008	CHIP JUMPER 0805		
4805	4822 051 20008	CHIP JUMPER 0805		
4806	4822 051 20008	CHIP JUMPER 0805		

ELECTRICAL PARTSLIST 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

COMBI BOARD

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Brief introduction of the Combi Board

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 μ 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 μ 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 the 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 μ 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.

Combi Board application

A54050	FW-C200/21/21M, FW-C220/21K
A54060	FW-C220/22/34
A54090	FW-C250/37
A54100	FW-C250/21
A54110	FW-C280/22/34
A54120	FW-C290/21
A54330	FW-C200/30
A54350	FW-C200/33
A54440	FW-C150/37

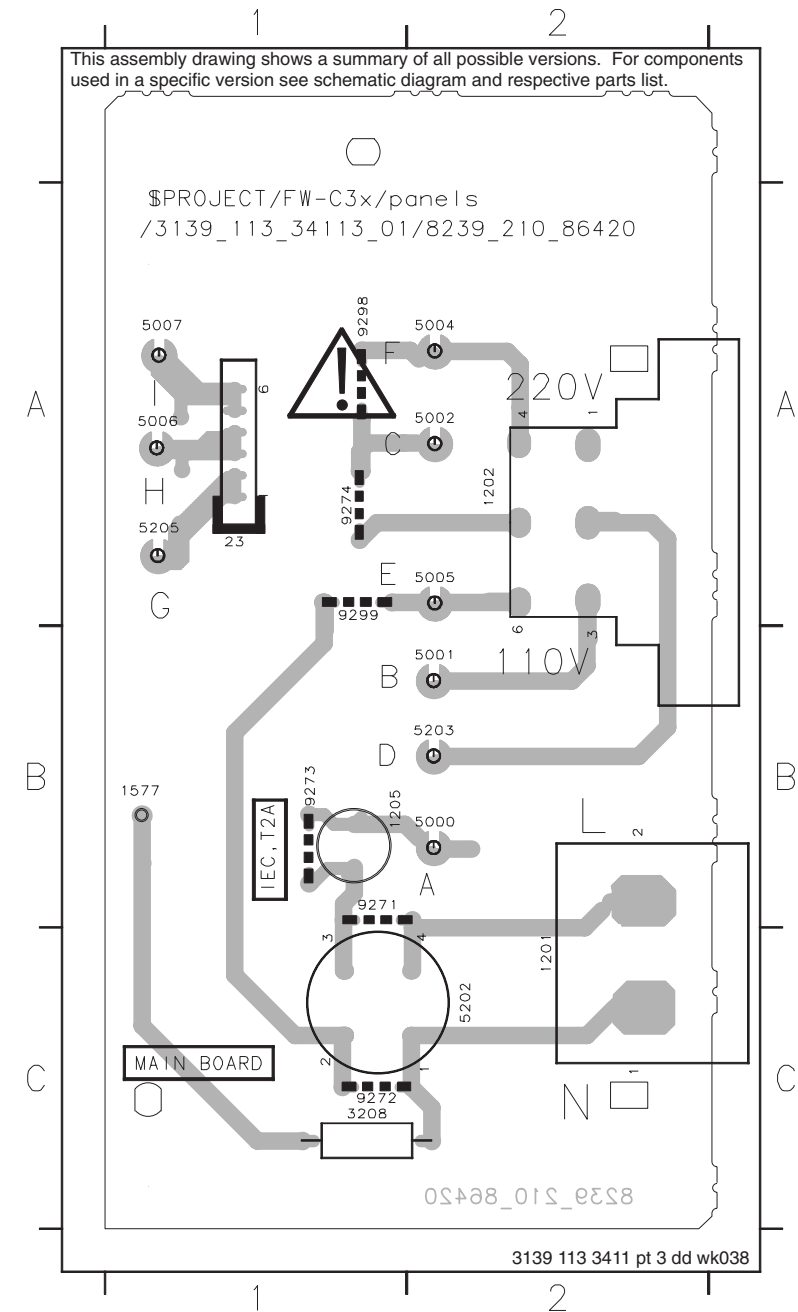
NOTES:

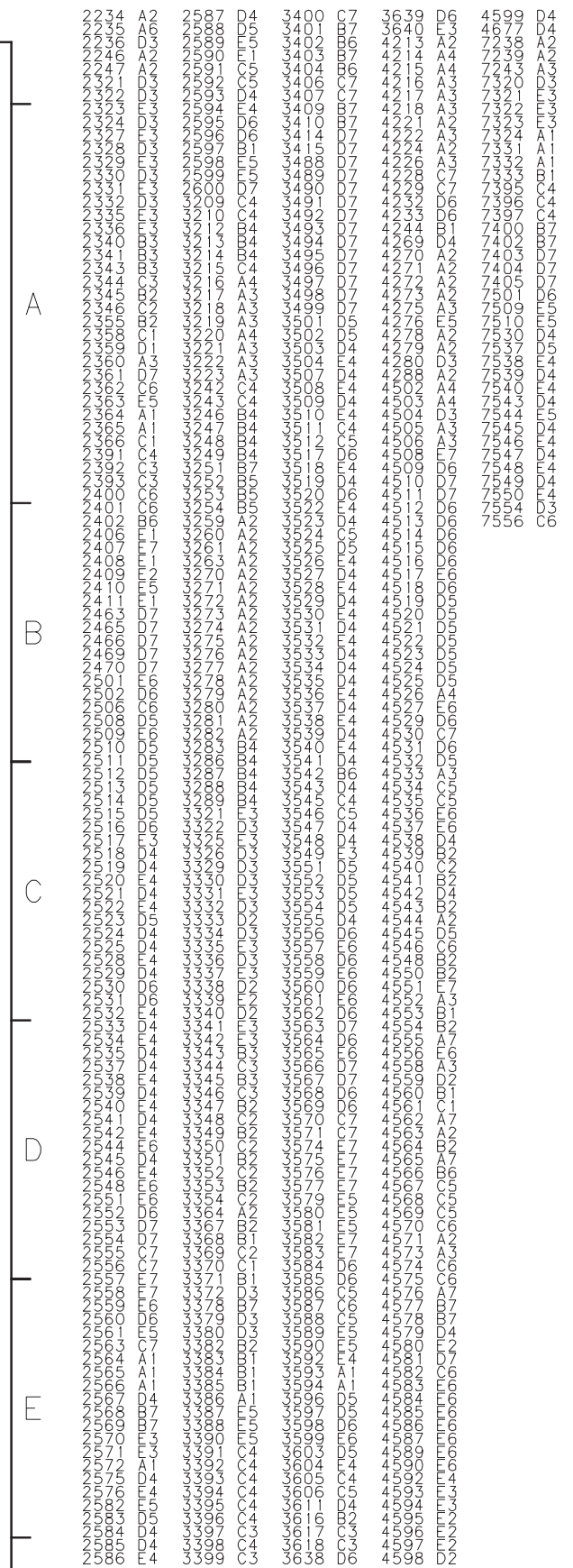
Features/Configuration:	A54050	A54060	A54090	A54100	A54110	A54120	A54330	A54350	A54440		
Aux-In	x	x	x	x	x	x	x	x	x		
Sub-woofer Out	-	-	-	-	-	-	-	-	-		
Digital Out	-	-	-	-	-	-	-	-	-		
I.S.	-	-	-	-	x	x	-	-	-		
Voltage Selector	x	-	-	x	-	x	-	-	-		
Karaoke	x	-	-	x	-	x	-	x	-		
DBB	x	x	x	x	x	x	x	x	x		
DSC	x	x	x	x	x	x	x	x	x		
Matrix Surroud	-	-	-	-	-	-	-	-	-		
1-band Spectrum Analyser	x	x	x	x	x	x	x	x	-		
3-band Spectrum Analyser	-	-	-	-	-	-	-	-	-		
12W	-	-	-	-	-	-	-	-	x		
18W	x	x	-	-	-	-	x	x	-		
25W	-	-	x	x	x	x	-	-	-		
VCD	-	-	-	-	-	-	-	-	-		
NTC	-	-	-	x	-	x	-	-	-		
ECO-MTF	-	-	x	x	-	-	-	-	x		
ETF7	x	x	-	-	x	x	x	x	-		

COMPONENT LAYOUT - TRANSFORMER PRIMARY

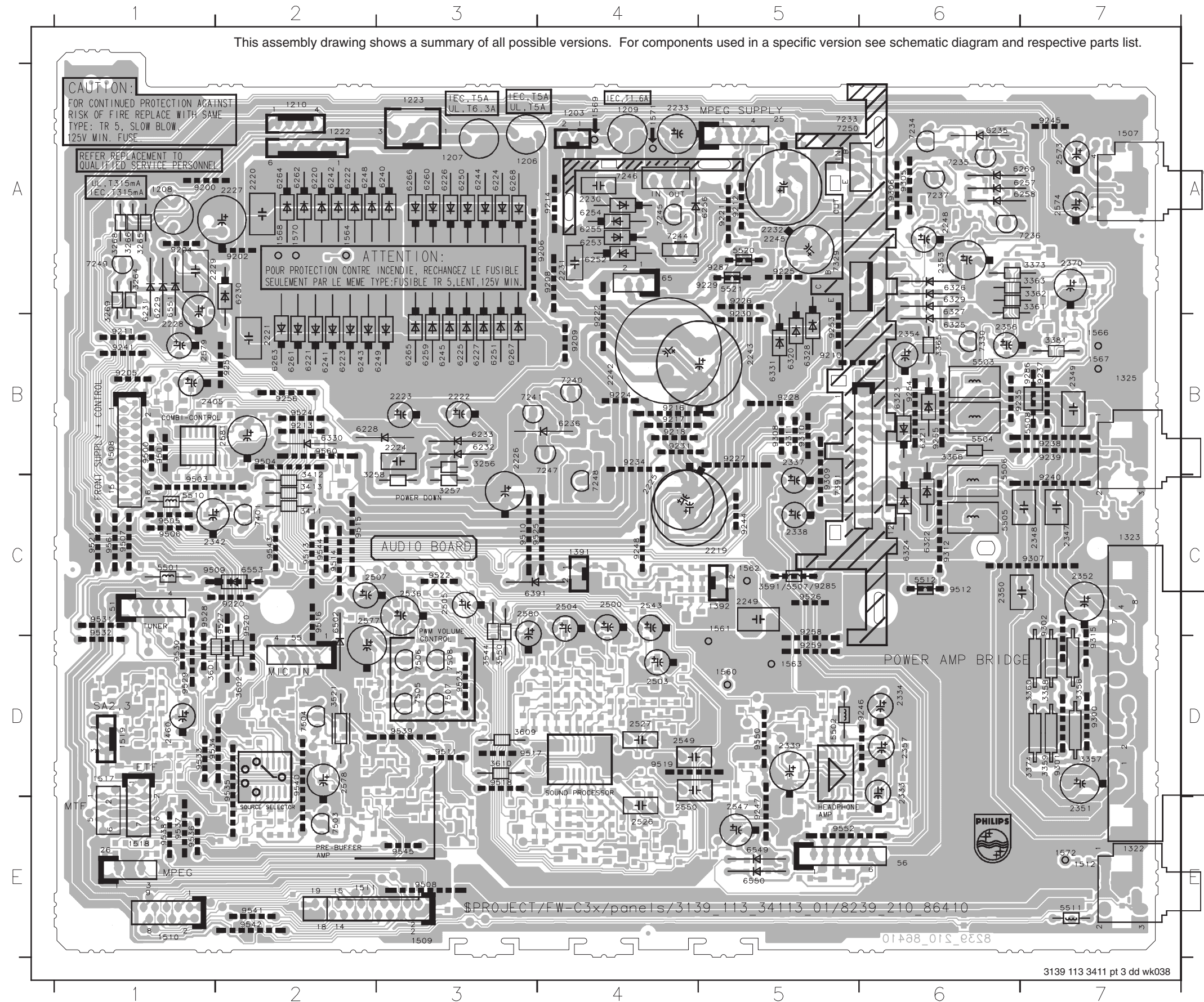
1201	23 A1	1577 B1	5002 A2	5007 A1	9271 B1	9298 A1
1202	C2	3208 C1	5004 A2	5202 C2	9272 C1	9299 A1
1205	A2	5000 B2	5005 A2	5203 B2	9273 B1	
	B1	5001 B2	5006 A1	5205 A1	9274 A1	

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





COMPONENT LAYOUT - MAIN PART

[illegible]

Legend:

- ^ For /37 only
- & Fro /22 digital version only
- # Provision on Layout
- @ For VCD version only
- Refer to parts list for usage

% VALUE FOR FW-V28 only			
ITEM	3279	3280	3281
VALUE	1K	1K	1K

3139 118 52620 ...86410 ... 3411 pt 3 dd wk038

25 E7	3261 D8	6258 D7
1203 E1	3263 C9	6259 C5
1206 A1	3264 C3	6260 B5
1207 B1	3265 D4	6261 C3
1208 C2	3266 D4	6262 B3
1209 E1	3268 D4	6263 C3
1210 C1	3269 D3	6264 B3
1222 B1	3270 E8	6265 C4
1223 B1	3271 D8	6266 B4
1391 A9	3272 D7	6267 C5
1392 A7	3273 D7	6268 B5
1560 E9	3274 D6	6269 C7
1561 E9	3275 C6	6391 A9
1563 E9	3276 D8	7233 B7
1564 E9	3277 C8	7234 B8
1566 F9	3278 C7	7235 C8
1567 F9	3279 C7	7236 C7
1568 F9	3280 C7	7237 D7
1569 D1	3281 C6	7238 D8
1570 F9	3282 C6	7239 E8
1571 F5	3283 B6	7240 A5
2219 A2	3286 A3	7241 A5
2220 B1	3287 A3	7243 F3
2221 C1	3288 A4	7244 E3
2222 C5	3289 A4	7245 E4
2223 C5	3391 A9	7246 E5
2224 D5	3392 B9	7247 A4
2225 A1	3393 A9	7248 A3
2226 A6	3394 B8	7249 C3
2227 C3	3395 A8	7250 B7
2228 D3	3396 A8	7395 A9
2229 D2	3397 A7	7396 A8
2230 E2	3398 A7	7397 A8
2231 E2	3399 A7	
2232 E3	4215 F7	
2233 F5	4216 F8	
2234 D9	4217 C6	
2235 E9	4218 B6	
2236 E9	4221 C7	
2242 B6	4222 C7	
2243 B5	4224 B7	
2245 C8	4226 B9	
2246 D7	4502 D1	
2247 C8	4503 D1	
2248 C6	6220 B2	
2391 B8	6221 C2	
2392 B7	6222 B3	
2393 B7	6223 C3	
3209 A3	6224 B4	
3210 A4	6225 C4	
3212 A6	6226 B4	
3213 A6	6227 C4	
3214 A3	6228 D5	
3215 A3	6229 D3	
3216 E5	6230 C2	
3217 F4	6231 C4	
3218 F4	6232 C5	
3219 E3	6233 D5	
3220 E3	6235 C9	
3221 E4	6236 A6	
3222 E4	6240 B2	
3223 E3	6241 C2	
3242 A4	6242 B3	
3243 A4	6243 C2	
3246 A4	6244 B4	
3247 A3	6245 C4	
3248 B3	6248 B2	
3249 A4	6249 C2	
3252 A5	6250 B4	
3253 A6	6251 C4	
3254 A6	6252 E2	
3256 C5	6253 E2	
3257 D5	6254 E2	
3258 D5	6255 E2	
3259 C8	6256 E5	
3260 D8	6257 C7	

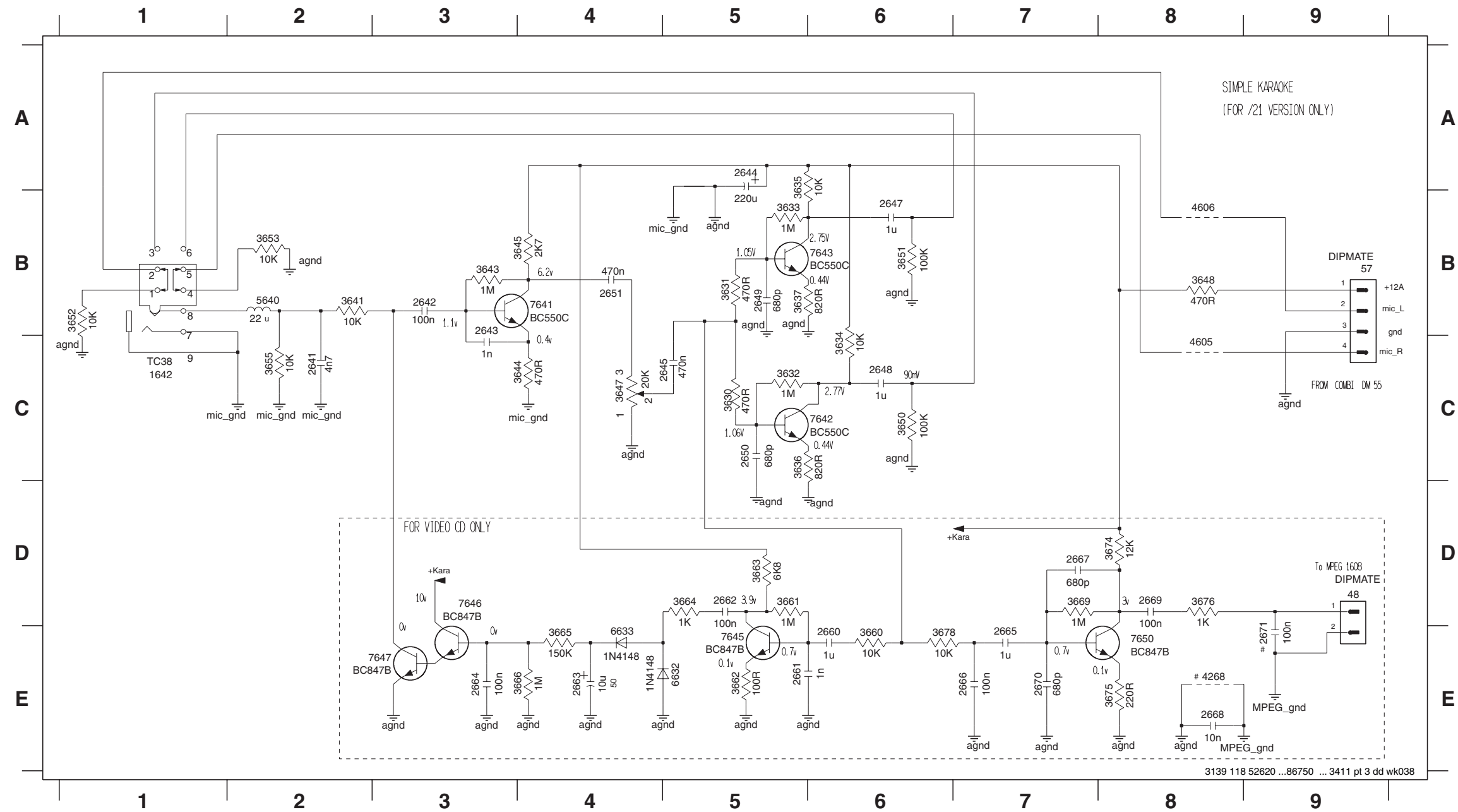
Remark : +A AND +C SUPPLY SWITCH AT VOL 32

* VALUE FOR 12W & 18W VERSIONS

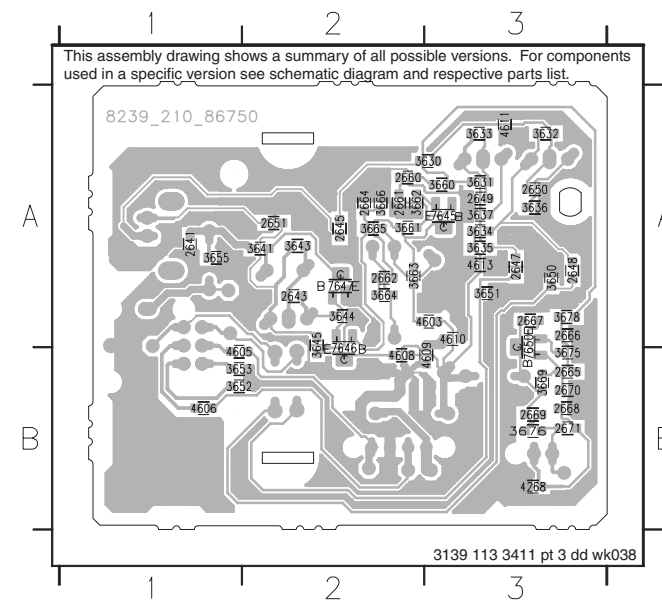
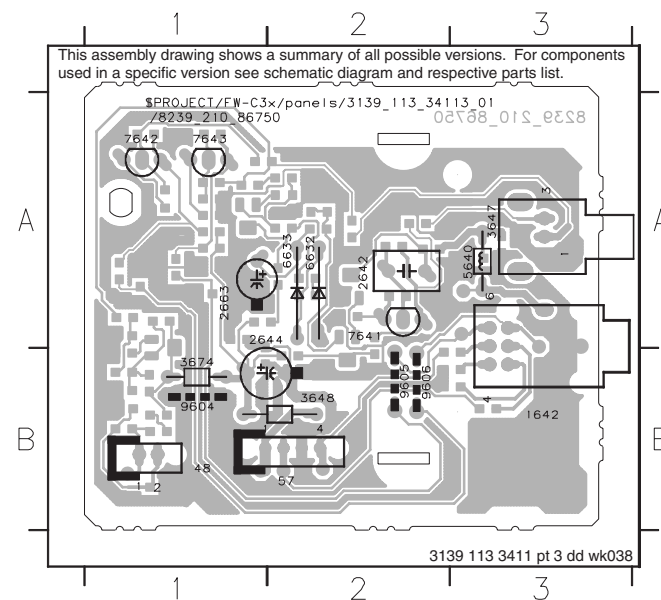
ITEM	3345	3346	6325	6326	6327
12W	6K8	6K8	BZX79-F15	BZX79-C18	BZX79-B3V3
18W	10K	10K	BZX79-F15	BZX79-C18	BZX79-B3V3

3139 118 52620 ...86410 ... 3411 pt 3 dd wk047

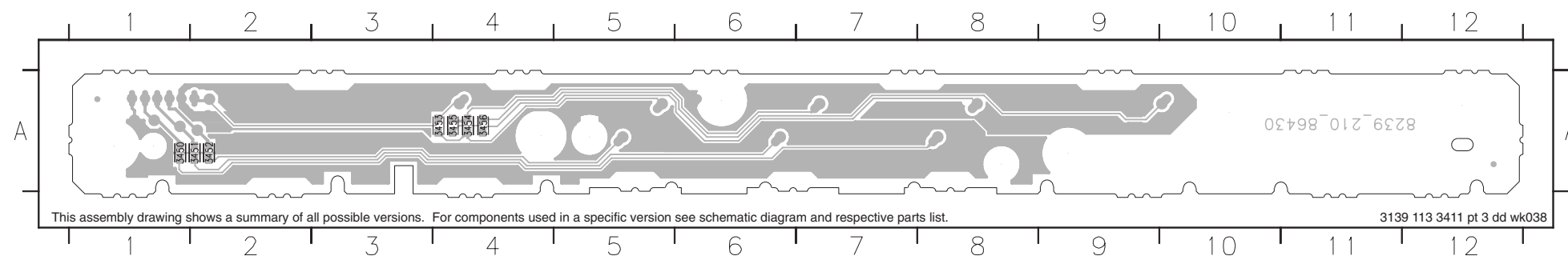
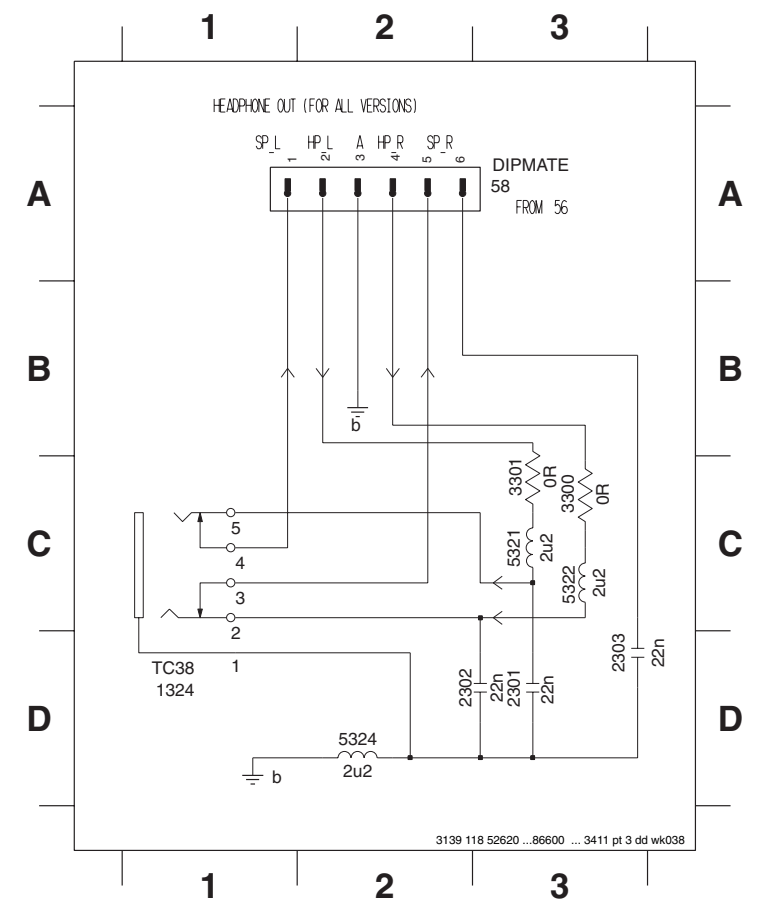
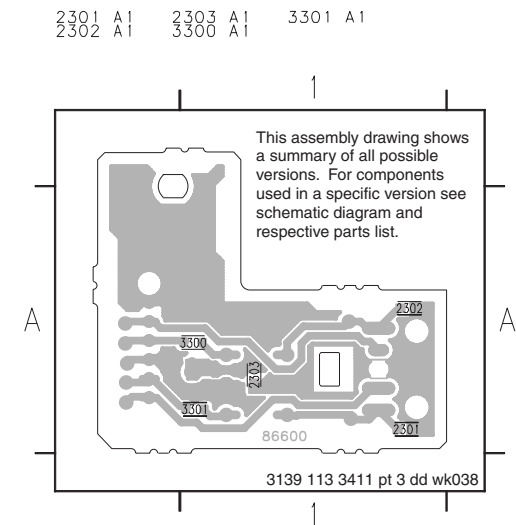
KARAOKE PART - CIRCUIT & COMPONENT LAYOUT



48 D9	7641 B4
57 B9	7642 C6
1642 C1	7643 B6
2641 C2	7645 E5
2642 B3	7646 D3
2643 B3	7647 E3
2644 A5	7650 E8
2645 C5	
2647 B6	
2648 C6	
2649 B5	
2650 C5	
2651 B4	
2660 E6	
2661 E5	
2662 D5	
2663 E4	
2664 E3	
2665 E7	
2666 E7	
2667 D7	
2668 E8	
2669 D8	
2670 E7	
2671 E9	
3630 C5	
3631 B5	
3632 C5	
3633 B5	
3634 C6	
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 E6	
3661 D5	
3662 E5	
3663 D5	
3664 D5	
3665 E4	
3666 E4	
3669 D7	
3674 D8	
3675 E8	
3676 D8	
3678 E6	
4268 E8	
4605 C8	
4606 B8	
5640 B2	
6632 E5	
6633 E4	



2641	A	3666	A
2642	A	3669	A
2643	A	3670	A
2644	A	3675	A
2645	A	3676	A
2646	A	3678	A
2647	A	3679	A
2648	A	3680	A
2649	A	3681	A
2650	A	3683	A
2651	A	3685	A
2652	A	3686	A
2653	A	3687	A
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2655	A	3689	A
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2658	A	3692	A
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2663	A	3697	A
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2665	A	3699	A
2666	A	3700	A
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2701	A	3735	A
2702	A	3736	A
2703	A	3737	A
2704	A	3738	A
2705	A	3739	A
2706	A	3740	A
2707	A	3741	A
2708	A	3742	A
2709	A	3743	A
2710	A	3744	A
2711	A	3745	A
2712	A	3746	A
2713	A	3747	A
2714	A	3748	A
2715	A	3749	A
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2718	A	3752	A
2719	A	3753	A
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2722	A	3756	A
2723	A	3757	A
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2756	A	3790	A
2757	A	3791	A
2758	A	3792	A
2759	A	3793	A
2760	A	3794	A
2761	A	3795	A
2762	A	3796	A
2763	A	3797	A
2764	A	3798	A</



ELECTRICAL PARTS LIST - COMBI BOARD

MISCELLANEOUS

1201	4822 265 31015	Δ	Mains Socket
1206	4822 071 55002	Δ	Fuse T5A 250V
1207	4822 071 55002	Δ	Fuse T5A 250V
1208	4822 071 53151	Δ	Fuse T315mA 250V
1322	4822 267 31176		Loudspeaker Socket
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.

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		1000U 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
2460	4822 124 40207		100μF 20% 25V
2469	4822 126 14585		100nF 10% 50V
2501	5322 122 32268		470pF 5% 63V
2502	5322 122 32268		470pF 5% 63V
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 20% 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
2524	5322 122 32659		33pF 5% 50V
2525	5322 122 32659		33pF 5% 50V
2526	4822 121 41856		22nF 5% 250V
2527	4822 121 41856		22nF 5% 250V

ELECTRICAL PARTS LIST - COMBI BOARD

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	4822 122 33891		3,3nF 10% 63V
2556	4822 122 33891		3,3nF 10% 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

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
3286	4822 117 13577		330R 1% 0,1W
3287	4822 117 13577		330R 1% 0,1W
3288	4822 117 13577		330R 1% 0,1W
3289	4822 117 13577		330R 1% 0,1W
3300	4822 051 20008		0R Jumper 0805
3301	4822 051 20008		0R Jumper 0805
3321	4822 051 20392		3k9 5% 0,1W
3322	4822 051 20392		3k9 5% 0,1W

ELECTRICAL PARTS LIST - COMBI BOARD**RESISTORS**

3325	4822 117 10837	100k 1% 0,1W	3407	4822 117 11449	2k2 5% 0,1W
3326	4822 117 10837	100k 1% 0,1W	3409	4822 051 20562	5k6 5% 0,1W
3329	4822 051 20472	4k7 5% 0,1W	3410	4822 051 20562	5k6 5% 0,1W
3330	4822 051 20472	4k7 5% 0,1W	3411	4822 116 52175	100R 5% 0,5W
3331	4822 117 11383	12k 1% 0,1W	3412	4822 116 52175	100R 5% 0,5W
3332	4822 117 11383	12k 1% 0,1W	3413	4822 116 52175	100R 5% 0,5W
3333	4822 117 11449	2k2 5% 0,1W	3414	4822 117 11507	6k8 1% 0,1W
3334	4822 117 11449	2k2 5% 0,1W	3415	4822 117 11507	6k8 1% 0,1W
3335	4822 051 20273	27k 5% 0,1W	3450	4822 117 11139	1k5 1% 0,1W
3336	4822 051 20273	27k 5% 0,1W	3451	4822 117 11139	1k5 1% 0,1W
3337	4822 051 20479	47R 5% 0,1W	3452	4822 117 11139	1k5 1% 0,1W
3338	4822 051 20479	47R 5% 0,1W	3453	4822 051 20122	1k2 5% 0,1W
3339	4822 051 20479	47R 5% 0,1W	3454	4822 117 11449	2k2 5% 0,1W
3340	4822 051 20479	47R 5% 0,1W	3455	4822 051 20392	3k9 5% 0,1W
3341	4822 051 10102	1k 2% 0,25W	3456	4822 051 20822	8k2 5% 0,1W
3342	4822 051 10102	1k 2% 0,25W	3496	4822 117 11139	1k5 1% 0,1W
3343	4822 051 20154	150k 5% 0,1W	3497	4822 051 20154	150k 5% 0,1W
3344	4822 051 20154	150k 5% 0,1W	3498	4822 117 11148	56k 1% 0,1W
3345	4822 117 10833	10k 1% 0,1W	3499	4822 117 13579	220k 1% 0,1W
3346	4822 117 10833	10k 1% 0,1W	3501	4822 051 20683	68k 5% 0,1W
3347	4822 117 10833	10k 1% 0,1W	3502	4822 051 20683	68k 5% 0,1W
3348	4822 117 10833	10k 1% 0,1W	3509	4822 117 11149	82k 1% 0,1W
3349	4822 117 10833	10k 1% 0,1W	3510	4822 117 11149	82k 1% 0,1W
3350	4822 117 10833	10k 1% 0,1W	3517	4822 117 10833	10k 1% 0,1W
3351	4822 051 20228	2R2 5% 0,1W	3518	4822 051 20333	33k 5% 0,1W
3352	4822 051 20228	2R2 5% 0,1W	3519	4822 051 20333	33k 5% 0,1W
3353	4822 051 20228	2R2 5% 0,1W	3520	4822 116 83933	15k 1% 0,1W
3354	4822 051 20228	2R2 5% 0,1W	3521	4822 052 10339 Δ	33R 5% 0,33W
3361	4822 116 52249	1k8 5% 0,5W	3522	4822 051 20105	1M 5% 0,1W
3362	4822 116 52249	1k8 5% 0,5W	3523	4822 051 20105	1M 5% 0,1W
3363	4822 116 52249	1k8 5% 0,5W	3524	4822 051 20683	68k 5% 0,1W
3364	4822 051 20471	470R 5% 0,1W	3525	4822 051 20683	68k 5% 0,1W
3365	4822 116 83872	220R 5% 0,5W	3526	4822 051 20273	27k 5% 0,1W
3366	4822 116 52283	4k7 5% 0,5W	3527	4822 051 20273	27k 5% 0,1W
3372	4822 051 20109	10R 5% 0,1W	3528	4822 117 10833	10k 1% 0,1W
3373	4822 116 52219	330R 5% 0,5W	3529	4822 117 10833	10k 1% 0,1W
3379	4822 051 20472	4k7 5% 0,1W	3530	4822 051 20333	33k 5% 0,1W
3380	4822 051 20392	3k9 5% 0,1W	3531	4822 051 20333	33k 5% 0,1W
3381	4822 116 52175	100R 5% 0,5W	3534	4822 117 10837	100k 1% 0,1W
3382	4822 116 83933	15k 1% 0,1W	3535	4822 117 10837	100k 1% 0,1W
3383	4822 051 20223	22k 5% 0,1W	3536	4822 051 20332	3k3 5% 0,1W
3384	4822 051 20223	22k 5% 0,1W	3537	4822 051 20332	3k3 5% 0,1W
3385	4822 117 10834	47k 1% 0,1W	3538	4822 117 11149	82k 1% 0,1W
3386	4822 117 10834	47k 1% 0,1W	3539	4822 117 11149	82k 1% 0,1W
3387	4822 117 11149	82k 1% 0,1W	3540	4822 051 20472	4k7 5% 0,1W
3388	4822 051 20334	330k 5% 0,1W	3541	4822 051 20472	4k7 5% 0,1W
3390	4822 051 20154	150k 5% 0,1W	3542	4822 051 20109	10R 5% 0,1W
3401	4822 117 11449	2k2 5% 0,1W	3543	4822 051 20683	68k 5% 0,1W
3402	4822 117 11449	2k2 5% 0,1W	3544	4822 116 52297	68k 5% 0,5W
3403	4822 117 11449	2k2 5% 0,1W	3545	4822 117 10834	47k 1% 0,1W
3404	4822 117 11449	2k2 5% 0,1W	3546	4822 117 10834	47k 1% 0,1W
3406	4822 117 11449	2k2 5% 0,1W	3547	4822 051 20471	470R 5% 0,1W

ELECTRICAL PARTS LIST - COMBI BOARD

3548	4822 051 20471	470R 5% 0,1W	3610	4822 116 83883	470R 5% 0,5W
3549	4822 051 20472	4k7 5% 0,1W	3616	4822 117 10837	100k 1% 0,1W
3551	4822 051 20228	2R2 5% 0,1W	3617	4822 051 20182	1k8 5% 0,1W
3552	4822 051 20228	2R2 5% 0,1W	3618	4822 051 20182	1k8 5% 0,1W
3553	4822 051 20393	39k 5% 0,1W	3640	4822 117 10833	10k 1% 0,1W
3554	4822 051 20393	39k 5% 0,1W	4214	4822 051 20008	0R Jumper 0805
3556	4822 051 20332	3k3 5% 0,1W	4217	4822 051 20008	0R Jumper 0805
3557	4822 051 20332	3k3 5% 0,1W	4221	4822 051 20008	0R Jumper 0805
3558	4822 051 20184	180k 5% 0,1W	4226	4822 051 20008	0R Jumper 0805
3559	4822 051 20184	180k 5% 0,1W	4229	4822 051 20008	0R Jumper 0805
3560	4822 051 20471	470R 5% 0,1W	4244	4822 051 20008	0R Jumper 0805
3561	4822 051 20471	470R 5% 0,1W	4269	4822 051 20008	0R Jumper 0805
3562	4822 051 20822	8k2 5% 0,1W	4270	4822 051 20008	0R Jumper 0805
3563	4822 051 20822	8k2 5% 0,1W	4271	4822 051 20008	0R Jumper 0805
3564	4822 117 11448	180R 1% 0,1W	4272	4822 051 20008	0R Jumper 0805
3565	4822 117 11448	180R 1% 0,1W	4273	4822 051 20008	0R Jumper 0805
3566	4822 117 10833	10k 1% 0,1W	4275	4822 051 20008	0R Jumper 0805
3567	4822 117 10833	10k 1% 0,1W	4276	4822 051 20008	0R Jumper 0805
3568	4822 117 11383	12k 1% 0,1W	4278	4822 051 20008	0R Jumper 0805
3569	4822 117 11383	12k 1% 0,1W	4279	4822 051 20008	0R Jumper 0805
3570	4822 117 10833	10k 1% 0,1W	4280	4822 051 20008	0R Jumper 0805
3571	4822 117 10833	10k 1% 0,1W	4288	4822 051 20008	0R Jumper 0805
3574	4822 051 20223	22k 5% 0,1W	4502	4822 051 20008	0R Jumper 0805
3575	4822 051 20223	22k 5% 0,1W	4503	4822 051 20008	0R Jumper 0805
3576	4822 117 11507	6k8 1% 0,1W	4504	4822 051 20008	0R Jumper 0805
3577	4822 117 11507	6k8 1% 0,1W	4505	4822 051 20008	0R Jumper 0805
3579	4822 051 20154	150k 5% 0,1W	4506	4822 051 20008	0R Jumper 0805
3580	4822 051 20223	22k 5% 0,1W	4508	4822 051 20008	0R Jumper 0805
3581	4822 051 20223	22k 5% 0,1W	4509	4822 051 20008	0R Jumper 0805
3582	4822 051 20122	1k2 5% 0,1W	4510	4822 051 20008	0R Jumper 0805
3583	4822 051 20122	1k2 5% 0,1W	4511	4822 051 20008	0R Jumper 0805
3584	4822 117 10361	680R 1% 0,1W	4512	4822 051 20008	0R Jumper 0805
3585	4822 051 20228	2R2 5% 0,1W	4513	4822 051 20008	0R Jumper 0805
3586	4822 117 11449	2k2 5% 0,1W	4514	4822 051 20008	0R Jumper 0805
3587	4822 117 11507	6k8 1% 0,1W	4515	4822 051 20008	0R Jumper 0805
3588	4822 051 20471	470R 5% 0,1W	4516	4822 051 20008	0R Jumper 0805
3589	4822 051 20391	390R 5% 0,1W	4517	4822 051 20008	0R Jumper 0805
3590	4822 117 11449	2k2 5% 0,1W	4518	4822 051 20008	0R Jumper 0805
3591	4822 116 83872	220R 5% 0,5W	4519	4822 051 20008	0R Jumper 0805
3593	4822 051 10102	1k 2% 0,25W	4520	4822 051 20008	0R Jumper 0805
3594	4822 051 10102	1k 2% 0,25W	4521	4822 051 20008	0R Jumper 0805
3596	4822 051 20683	68k 5% 0,1W	4522	4822 051 20008	0R Jumper 0805
3597	4822 051 20683	68k 5% 0,1W	4523	4822 051 20008	0R Jumper 0805
3598	4822 117 10837	100k 1% 0,1W	4524	4822 051 20008	0R Jumper 0805
3599	4822 117 10837	100k 1% 0,1W	4525	4822 051 20008	0R Jumper 0805
3601	4822 116 83884	47k 5% 0,5W	4526	4822 051 20008	0R Jumper 0805
3602	4822 116 83884	47k 5% 0,5W	4527	4822 051 20008	0R Jumper 0805
3603	4822 051 20105	1M 5% 0,1W	4529	4822 051 20008	0R Jumper 0805
3604	4822 051 20105	1M 5% 0,1W	4530	4822 051 20008	0R Jumper 0805
3605	4822 117 10834	47k 1% 0,1W	4531	4822 051 20008	0R Jumper 0805
3606	4822 117 10834	47k 1% 0,1W	4532	4822 051 20008	0R Jumper 0805
3609	4822 116 83883	470R 5% 0,5W	4533	4822 051 20008	0R Jumper 0805

ELECTRICAL PARTS LIST - COMBI BOARD**RESISTORS**

4534	4822 051 20008	0R Jumper 0805
4535	4822 051 20008	0R Jumper 0805
4536	4822 051 20008	0R Jumper 0805
4537	4822 051 20008	0R Jumper 0805
4538	4822 051 20008	0R Jumper 0805
4539	4822 051 20008	0R Jumper 0805
4540	4822 051 20008	0R Jumper 0805
4541	4822 051 20008	0R Jumper 0805
4542	4822 051 20008	0R Jumper 0805
4543	4822 051 20008	0R Jumper 0805
4544	4822 051 20008	0R Jumper 0805
4545	4822 051 20008	0R Jumper 0805
4546	4822 051 20008	0R Jumper 0805
4548	4822 051 20008	0R Jumper 0805
4550	4822 051 20008	0R Jumper 0805
4551	4822 051 20008	0R Jumper 0805
4552	4822 051 20008	0R Jumper 0805
4553	4822 051 20008	0R Jumper 0805
4554	4822 051 20008	0R Jumper 0805
4555	4822 051 20008	0R Jumper 0805
4556	4822 051 20008	0R Jumper 0805
4558	4822 051 20008	0R Jumper 0805
4559	4822 051 20008	0R Jumper 0805
4560	4822 051 20008	0R Jumper 0805
4561	4822 051 20008	0R Jumper 0805
4562	4822 051 20008	0R Jumper 0805
4563	4822 051 20008	0R Jumper 0805
4564	4822 051 20008	0R Jumper 0805
4565	4822 051 20008	0R Jumper 0805
4566	4822 051 20008	0R Jumper 0805
4567	4822 051 20008	0R Jumper 0805
4568	4822 051 20008	0R Jumper 0805
4569	4822 051 20008	0R Jumper 0805
4570	4822 051 20008	0R Jumper 0805
4571	4822 051 20008	0R Jumper 0805
4573	4822 051 20008	0R Jumper 0805
4574	4822 051 20008	0R Jumper 0805
4575	4822 051 20008	0R Jumper 0805
4576	4822 051 20008	0R Jumper 0805
4577	4822 051 20008	0R Jumper 0805
4578	4822 051 20008	0R Jumper 0805
4579	4822 051 20008	0R Jumper 0805
4580	4822 051 20008	0R Jumper 0805
4581	4822 051 20008	0R Jumper 0805
4582	4822 051 20008	0R Jumper 0805
4583	4822 051 20008	0R Jumper 0805
4584	4822 051 20008	0R Jumper 0805
4585	4822 051 20008	0R Jumper 0805
4586	4822 051 20008	0R Jumper 0805
4587	4822 051 20008	0R Jumper 0805
4589	4822 051 20008	0R Jumper 0805
4590	4822 051 20008	0R Jumper 0805

4592	4822 051 20008	0R Jumper 0805
4593	4822 051 20008	0R Jumper 0805
4594	4822 051 20008	0R Jumper 0805
4595	4822 051 20008	0R Jumper 0805
4596	4822 051 20008	0R Jumper 0805
4597	4822 051 20008	0R Jumper 0805
4598	4822 051 20008	0R Jumper 0805
4599	4822 051 20008	0R Jumper 0805
4677	4822 051 20008	0R Jumper 0805

COILS & FILTERS

5202	4822 157 11832	Mains Filter 400μH
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%

DIODES

6220	4822 130 31878	1N4003G
6221	4822 130 31878	1N4003G
6222	4822 130 31878	1N4003G
6223	4822 130 31878	1N4003G
6224	4822 130 31878	1N4003G
6225	4822 130 31878	1N4003G
6227	4822 130 31878	1N4003G
6228	4822 130 34173	BZX79-B5V6
6229	4822 130 34142	BZX79-B33
6230	4822 130 31878	1N4003G
6231	4822 130 34174	BZX79-B4V7
6232	4822 130 30621	1N4148
6233	4822 130 30621	1N4148
6236	4822 130 34174	BZX79-B4V7
6240	4822 130 31878	1N4003G
6241	4822 130 31878	1N4003G
6242	4822 130 31878	1N4003G
6243	4822 130 31878	1N4003G
6244	4822 130 31878	1N4003G
6248	4822 130 31878	1N4003G
6249	4822 130 31878	1N4003G
6250	4822 130 31878	1N4003G
6251	4822 130 31878	1N4003G
6257	4822 130 30621	1N4148
6258	4822 130 34173	BZX79-B5V6

ELECTRICAL PARTS LIST - COMBI BOARD

6267	4822 130 31878	1N4003G
6268	4822 130 31878	1N4003G
6269	4822 130 30621	1N4148
6320	4822 130 31878	1N4003G
6321	4822 130 31878	1N4003G
6322	4822 130 31878	1N4003G
6323	4822 130 31878	1N4003G
6324	4822 130 31878	1N4003G
6325	4822 130 34281	BZX79-B15
6326	4822 130 31024	BZX79-B18
6327	5322 130 31504	BZX79-B3V3
6328	4822 130 31878	1N4003G
6329	4822 130 30621	1N4148
6330	4822 130 30621	1N4148
6442	4822 130 11589	LTL-1CHAE
6443	4822 130 11589	LTL-1CHAE
6444	4822 130 11589	LTL-1CHAE
6502	4822 130 34173	BZX79-B5V6
6549	4822 130 30621	1N4148
6550	4822 130 30621	1N4148
6551	4822 130 30862	BZX79-B9V1
6553	4822 130 31878	1N4003G

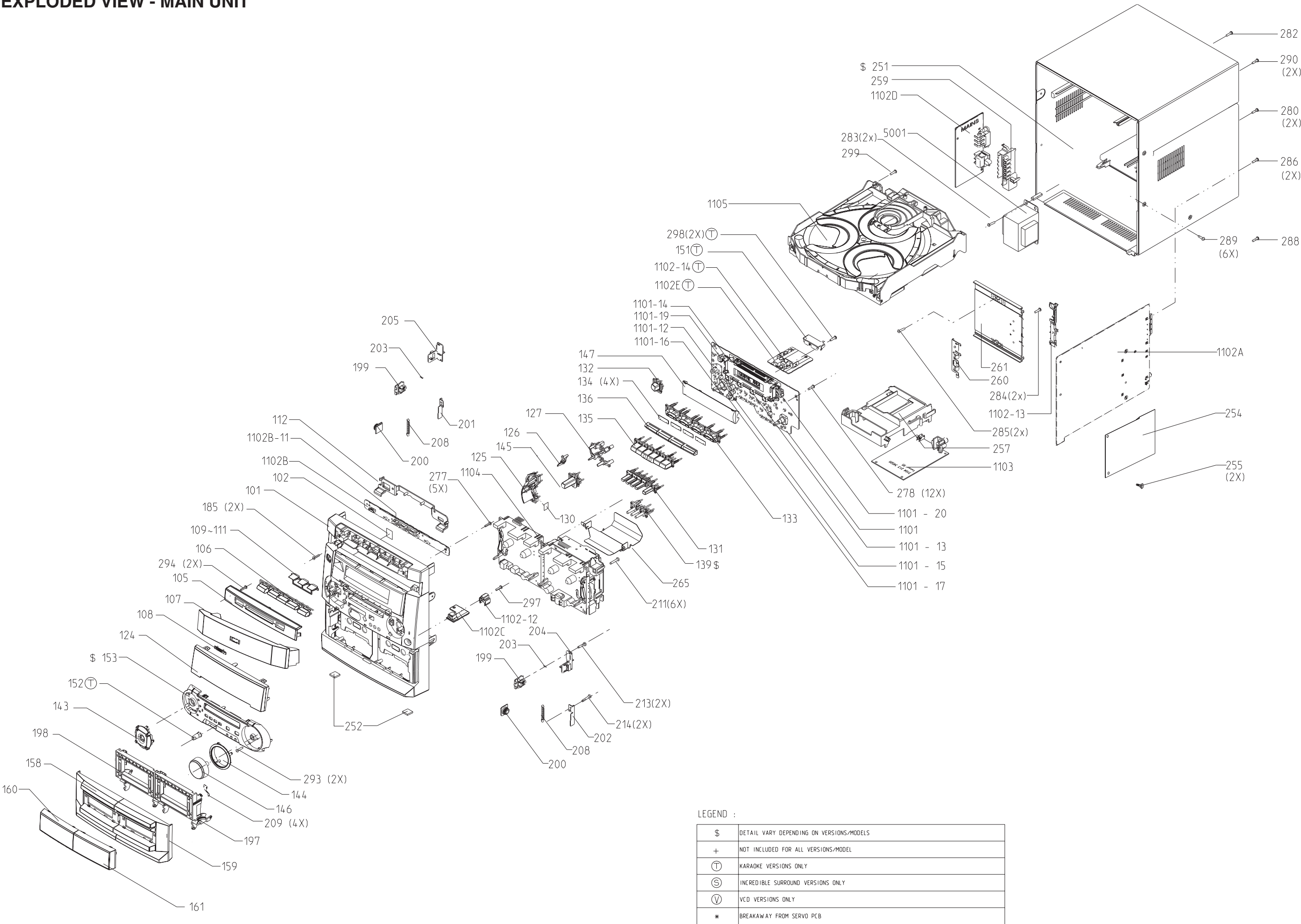
TRANSISTOR & INTEGRATED CIRCUITS

7233	9322 139 22687	BD242BFP
7236	4822 130 41246	BC327-25
7237	4822 130 40981	BC337-25
7238	5322 130 60159	BC847B
7239	4822 130 42804	BC817-25
7240	4822 130 40981	BC337-25
7241	4822 130 40981	BC337-25
7247	4822 130 40981	BC337-25
7248	4822 130 40981	BC337-25
7249	4822 130 41246	BC327-25
7320	4822 130 42804	BC817-25
7321	4822 130 42804	BC817-25
7322	4822 130 42804	BC817-25
7323	4822 130 42804	BC817-25
7324	4822 130 60373	BC857B
7329	4822 130 10847	BDW94C
7330	4822 130 40981	BC337-25
7331	4822 130 60373	BC857B
7332	4822 130 60373	BC857B
7333	4822 130 42804	BC817-25
7391	4822 209 16224	AN7125
7400	4822 130 60373	BC857B
7401	4822 130 40981	BC337-25
7402	5322 209 11306	HEF4094BT
7405	4822 130 60373	BC857B
7501	5322 209 11102	HEF4052BT
7503	4822 130 41096	BC550C
7504	4822 130 41096	BC550C

7505	4822 130 44568	ON4986
7506	4822 130 44568	ON4986
7507	4822 130 44568	ON4986
7508	4822 130 44568	ON4986
7509	5322 130 60159	BC847B
7510	4822 130 60373	BC857B
7530	5322 209 14482	HEF4069UBT
7537	5322 130 60159	BC847B
7538	5322 130 60159	BC847B
7543	5322 130 60159	BC847B
7544	5322 130 60159	BC847B
7545	5322 130 60159	BC847B
7546	5322 130 60159	BC847B
7547	5322 130 60159	BC847B
7548	5322 130 60159	BC847B
7554	4822 209 31378	NJM4556MB
7556	3198 010 44010	PDTA114ET

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

EXPLODED VIEW - MAIN UNIT



LEGEND :

\$	DETAIL VARY DEPENDING ON VERSIONS/MODELS
+	NOT INCLUDED FOR ALL VERSIONS/MODEL
⊕	KARAOKE VERSIONS ONLY
Ⓢ	INCREDIBLE SURROUND VERSIONS ONLY
Ⓥ	VCD VERSIONS ONLY
*	BREAKAWAY FROM SERVO PCB

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

0101	3139 118 13630	Cabinet Front	1451	4822 320 12604	Flex Cable 9pin 22cm AD	185	D3 x 25
0105	3139 118 10440	Window CDC Control	1455	4822 320 12752	Flex Cable 7pin 18cm AD	211	D3 x 12
0106	3139 118 13430	Button Set CDC Select	1456	3139 110 34180	Flex Cable 16pin 22cm AD	213	D3 x 12
0107	3139 118 13210	Cover Tray CDC-LC	1557	4822 320 12663	Flex Cable 7pin 34cm BD	214	D3 x 12
0108	4822 454 13408	Badge Philips	5001	3139 118 32320	△ Mains Transformer	277	D3 x 12
0124	3139 118 14610	Window Display	Note:	Only the parts mentioned in this list are normal service spare parts.			
0125	3139 118 13450	Button DBB					
0127	3139 114 67670	Lightguide DSC					
0131	3139 118 13460	Button Set Program					
0132	3139 118 13550	Button Power On/Off					
0133	3139 114 69720	Button Set Source Sel. Blue				283	D3 x 16
0135	3139 118 13560	Button Set Controls				284	M3 x 15
0136	3139 118 10310	Lightcap Source Select Blue				285	D3 x 16
0139	3139 114 73120	Button Set RDS/News/Clock				286	D3 x 12
0143	3139 118 13470	Cover Ring DSC				288	D3 x 12
						289	D3 x 12
						290	D3 x 12
0144	3139 118 13570	Cover Ring Volume				293	D3 x 12
0145	3139 118 13480	Button DSC					
0146	3139 118 13490	Knob Volume Rotary				294	D2 x 8
0153	3139 118 14620	Cover Control				297	D3 x 12
0158	3139 118 13500	Cover Cassette Left				299	D3 x 12
0159	3139 118 13510	Cover Cassette Right					
0160	3139 114 71840	Lens Cassette Left					
0161	3139 114 71850	Lens Cassette Right					
0197	4822 443 10488	Door Cassette Right					
0198	4822 443 10487	Door Cassette Left					
0199	4822 402 10621	Push-Catch					
0200	4822 529 10322	Damper Assembly					
0203	4822 492 11344	Spring Compression					
0204	4822 402 11246	Bracket Right					
0205	4822 402 11245	Bracket Left					
0208	4822 492 11345	Spring Tension					
0209	4822 492 42787	Spring Cassette					
0251	3139 114 69820	Cabinet Rear MIH /22					
0251	3139 114 69840	Cabinet Rear NMI /34					
0252	4822 462 40683	Foot Rubber SQ					
0255	4822 466 93148	Spacer 5mm					
0260	4822 492 11734	Spring IC					
0350	3139 118 78380	LS Box FWB-C220/01					
0351	4822 303 50063	FM Aerial 75R					
0356	3139 228 83610	Rem Control RC282425/01					
0384	4822 303 50082	AM Frame Aerial					
0385	4822 321 10249	△ Mains Cord					
0387	3139 115 20670	Instruction For Use /22					
0387	3139 115 20680	Instruction For Use /34					
1450	3139 110 34770	Flex Cable 15pin 22cm BD					