

Service  
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# Service Manual



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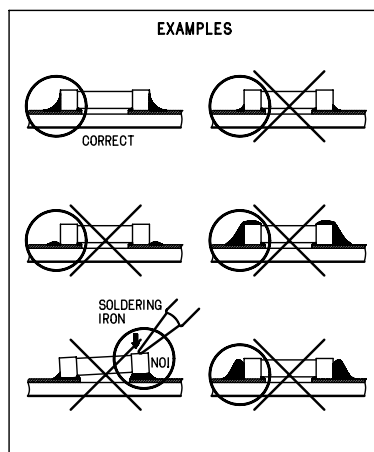
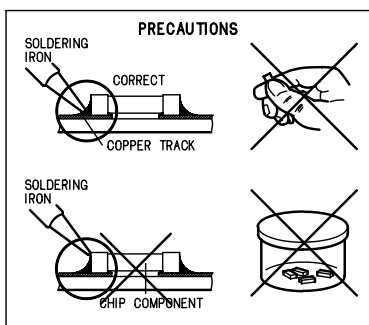
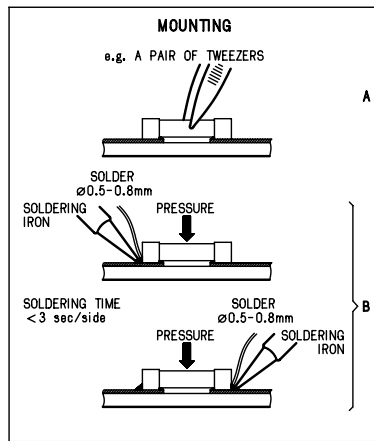
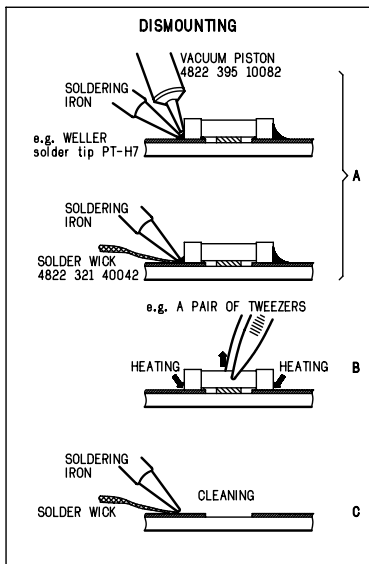
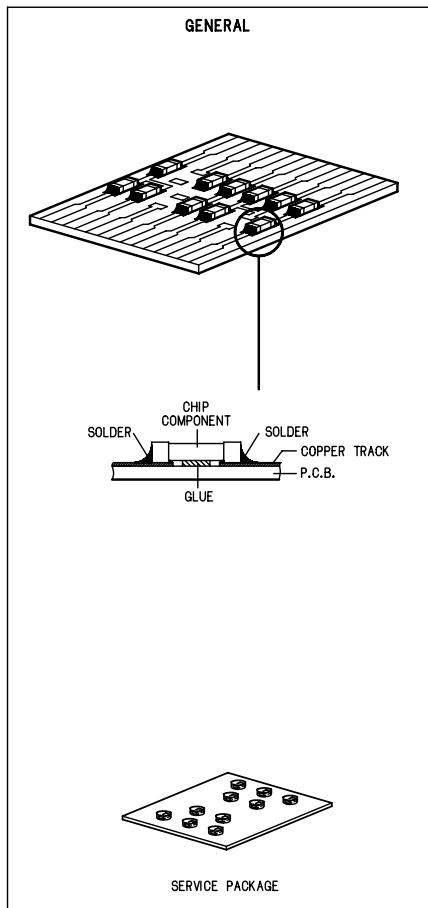
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Safety regulations require that the set be restored to its original condition and that parts which are identical with those specified be used.

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# HANDLING CHIP COMPONENTS



**© WARNING**

All ICs and many other semiconductors are susceptible to electrostatic discharges (ESD). Careless handling during repair can reduce life drastically. When repairing, make sure that you are connected with the same potential as the mass of the set via a wristband with resistance. Keep components and tools at this potential.

**ESD**



**ñ WAARSCHUWING**

Alle IC's en vele andere halfgeleiders zijn gevoelig voor electrostatische ontladingen (ESD). Onzorgvuldig behandelen tijdens reparatie kan de levensduur drastisch doen verminderen. Zorg ervoor dat u tijdens reparatie via een polsband met weerstand verbonden bent met hetzelfde potentiaal als de massa van het apparaat. Houd componenten en hulpmiddelen ook op ditzelfde potentiaal.

**f ATTENTION**

Tous les IC et beaucoup d'autres semi-conducteurs sont sensibles aux décharges statiques (ESD). Leur longévité pourrait être considérablement écourtée par le fait qu'aucune précaution n'est prise à leur manipulation. Lors de réparations, s'assurer de bien être relié au même potentiel que la masse de l'appareil et enfilier le bracelet serti d'une résistance de sécurité. Veiller à ce que les composants ainsi que les outils que l'on utilise soient également à ce potentiel.

**d WARNUNG**

Alle ICs und viele andere Halbleiter sind empfindlich gegenüber elektrostatischen Entladungen (ESD). Unvorsichtige Behandlung im Reparaturfall kann die Lebensdauer drastisch reduzieren. Sorgen Sie dafür, daß Sie im Reparaturfall über ein Pulsarmband mit Widerstand mit dem Massepotential des Gerätes verbunden sind. Halten Sie Bauteile und Hilfsmittel ebenfalls auf diesem Potential.

**i AVVERTIMENTO**

Tutti IC e parecchi semi-conduttori sono sensibili alle scariche statiche (ESD). La loro longevità potrebbe essere fortemente ridotta in caso di non osservazione della più grande cauzione alla loro manipolazione. Durante le riparazioni occorre quindi essere collegato allo stesso potenziale che quello della massa dell'apparecchio tramite un braccialetto a resistenza. Assicurarsi che i componenti e anche gli utensili con quali si lavora siano anche a questo potenziale.

**©**

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

**f**

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

**SAFETY**



**d**

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

**ñ**

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

**i**

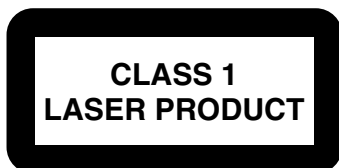
Le norme di sicurezza estigono che l'apparecchio venga rimesso nelle condizioni originali e che siano utilizzati i pezzi di ricambio identici a quelli specificati. Componenti di sicurezza sono marcati con ▲

**© DANGER:** Invisible laser radiation when open. AVOID DIRECT EXPOSURE TO BEAM.

**S Varning!** Ösynlig laserstrålning när apparaten är öppnad och spärren är urkopplad. Betrakta ej strålen.

**Advarsel!**

Ösynlig laserstrålning ved åbning når sikkerhedsafbrydere er ude af funktion. Undgå udsættelse for stråling.



**β Varoitus!**

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

**©**

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

**f**

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

## TECHNICAL SPECIFICATIONS

### GENERAL

Mains voltage	-/21/21M : 120 / 230 V
	-/22/25/30/33 : 230 V
Mains frequency	-/22/25/30/33 : 50 Hz
	-/21/21M : 50 / 60 Hz
Battery	remote : 3 V (R6 x 2)
Power consumption	normal : 60 W
	Standby : 3 W
Dimension (W x H x D)	: 223 x 140 x 247 mm
Weight	: 5.6 Kg

### AMPLIFIER

Output power	mains : 2 x 8 W
Speaker impedance	: 2 x 8 ohm
Frequency response	: 100 Hz - 10 kHz (±4dB)

### TUNER - FM SECTION

Tuning range	: 87.5 - 108 MHz
IF frequency	: 10.7 MHz ± 0.02 MHz
Sensitivity	: 16 dBf at 26dB S/N
Selectivity	300kHz : 55 dB
IF suppression	: 85 dB
Image suppression	: 40 dB
Channel separation	1kHz : 28 dB

### TUNER - AM SECTION

Tuning range	MW : 531 - 1602 kHz
Tuning range	LW : 153 - 279 kHz
IF frequency	: 450 kHz ± 1 kHz
Sensitivity	MW : 3.5 mV/m at 26dB S/N
	LW : 4.2 mV/m
Selectivity	MW : < 22 dB
	LW : < 35 dB
IF rejection	MW : < 64 dB
Spurious rejection ratio	MW : < 58 dB
	LW : < 51 dB
Image rejection ratio	MW : < 40 dB
	LW : < 47 dB

### AUDIO CASSETTE RECORDER

Frequency response	: 80 - 12500 Hz
Wow & flutter	: 0.4 % (DIN)
Tape speed	: 4.76 cm/s ± 2 %
Channel difference	1kHz : 0 dB
S/N ratio (unw.)	Ferro : 47 dB
	Chrome : 50 dB
S/N ratio (wght.)	Ferro : 52 dB
	Chrome : 56 dB

### COMPACT DISC

Frequency response	: 20Hz – 20kHz within 1.5dB
S/N ratio (unw.)	: > 85 dB
S/N ratio (A-wght.)	: > 90 dB
THD+N	1 kHz : > 72 dB
Channel crosstalk	: > 50 dB
Channel unbalance	: < ±1 dB

## SERVICE TOOLS

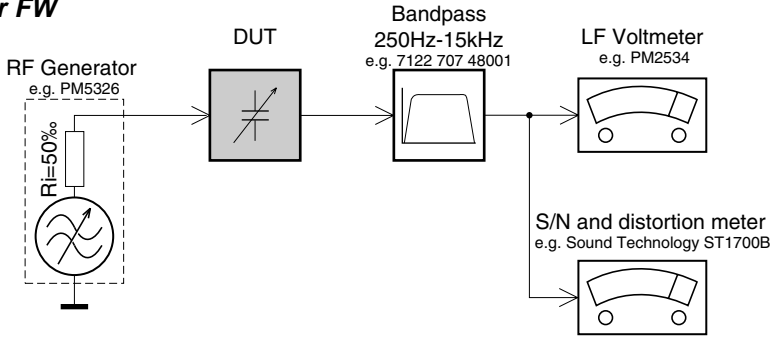
<b>TORX T10</b> screwdriver with shaftlength 150mm.....	4822 395 50423
<b>TORX screwdriver set</b> SBC 163.....	4822 295 50145
<b>Audio signal disc</b> SBC 429.....	4822 397 30184
<b>Playability test disc</b> SBC 444.....	4822 397 30245
<b>Test disc 5</b> (disc without errors) +	
<b>Test disc 5A</b> (disc with dropout errors, black spots and fingerprints)	
SBC 426/426A.....	4822 397 30096
<b>Burn in test disc</b> (65 min. 1kHz signal at -30 dB level without "pause").....	4822 397 30155
<b>Universal test cassette Fe</b> SBC 420.....	4822 397 30071

## AVAILABLE ESD PROTECTION EQUIPMENT

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

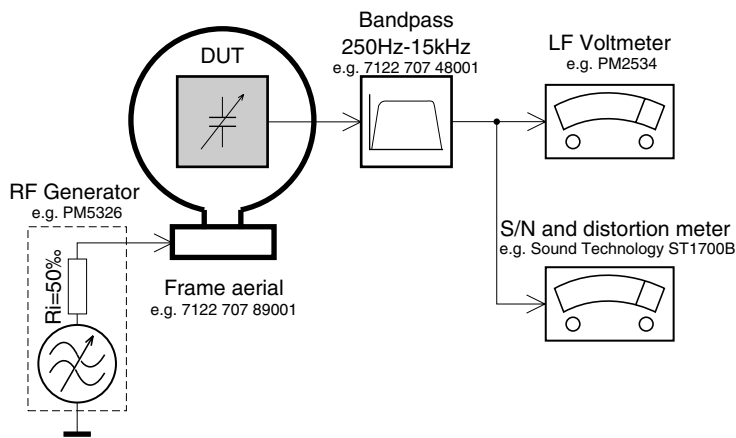
# SERVICE MEASUREMENT

## Tuner FW



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

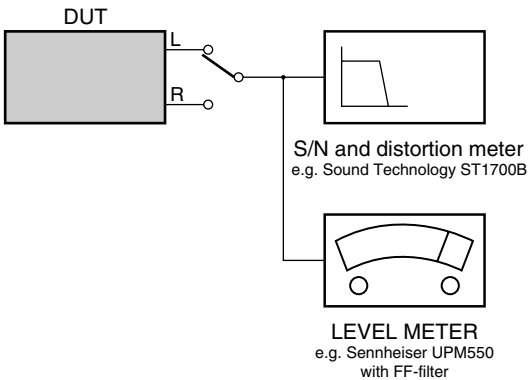
## Tuner AM (MW,LW)



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 250kHz) to eliminate hum (50Hz, 100Hz).

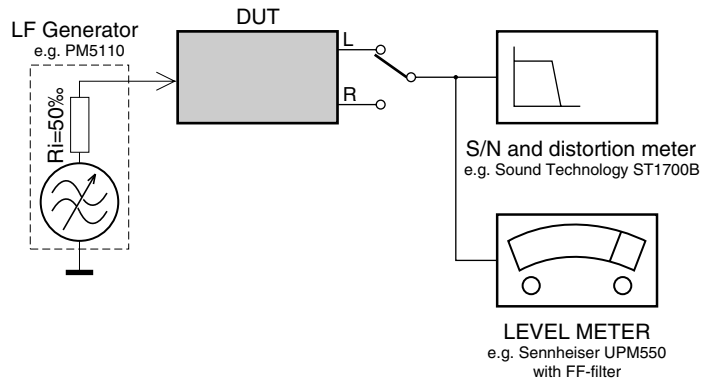
## CD

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



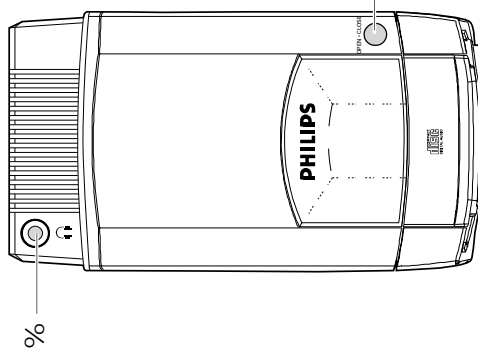
## RECORDER

Use Universal Test Cassette Fe SBC420 4822 397 30071



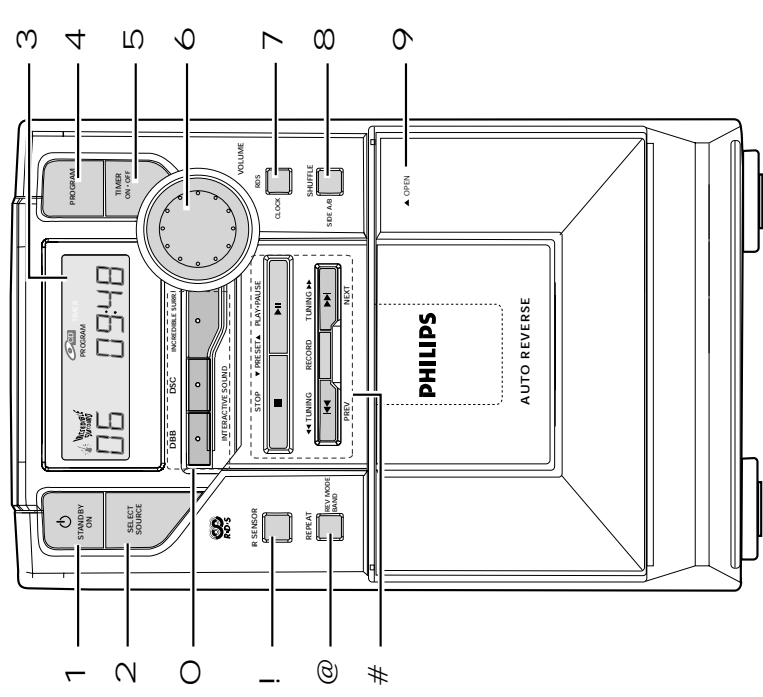
# CONNECTIONS AND CONTROLS

## Controls



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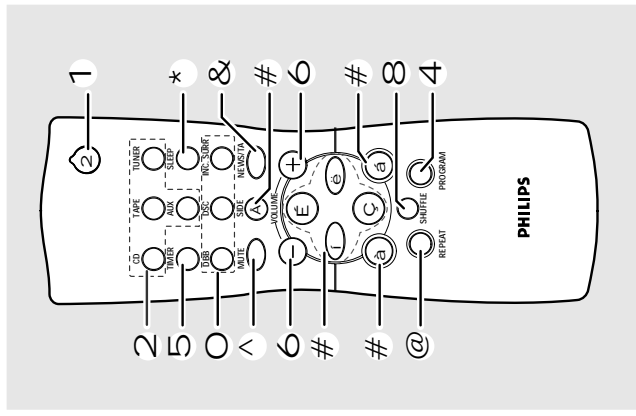
\$



### Controls on the system and remote control

- 1 **STANDBY ON y**  
switches the system to standby/on.
- 2 **SELECT SOURCE**  
on the remote control only - switches the system to standby.
- 3 **SELECT SOURCE**  
selects the respective sound source for CD/TUNER/TAPE/AUX.
- 3 **Display**  
switches on the system.
- 3 **Display**  
shows the status of the system.
- 4 **PROGRAM**  
for CD ..... programmes tracks and reviews the programme.
- 4 **PROGRAM**  
for Tuner ..... programmes tuner stations manually or automatically.
- 5 **TIMER ON-OFF**  
activates/deactivates or sets (on the system only) the timer function.
- 6 **VOLUME (- / + )**  
adjusts the volume level.
- 6 **VOLUME (- / + )**  
on the system only - adjusts the hour and minutes for the clock/timer functions.
- 7 **CLOCK/ RDS**  
for Clock ..... sets the clock function.
- 7 **CLOCK/ RDS**  
for Tuner ..... displays RDS information.
- 7 **CLOCK/ RDS**  
for Tape ..... shows tape counter in recording mode.
- 8 **SHUFFLE/ SIDE A/B**  
for CD ..... plays CD tracks in random order.
- 8 **SHUFFLE/ SIDE A/B**  
for Tape ..... switches tape direction.
- 9 **OPEN**  
opens tape compartment.
- ! **INTERACTIVE SOUND controls:**
- ! **DBB** ..... (Dynamic Bass Boost) enhances the bass.
- ! **DSC** ..... (Digital Sound Control) selects sound characteristics: OPTIMAL/ROCK/JAZZ/POP.
- ! **INCREDIBLE SURROUND**  
.....creates a super-enhanced stereo effect.
- ! **IR SENSOR**  
infrared sensor for remote control.

- @ **REPEAT/ REV MODE/ BAND**  
for CD ..... repeats a track/CD programme/entire CD.
- for Tape ..... selects tape reverse modes.
- for Tuner ..... selects waveband.
- # **Mode Selection**  
# **STOP 9** ..... stops CD playback or erase a CD programme.
- ..... stops tape playback/recording.
- PLAY-PAUSE E A**  
(E ) ..... starts CD/Tape playback (on the remote control only).
- ..... switches Tape direction during playback.
- (SIDE/A ) ..... interrupts CD playback (on the remote control only).
- ..... switches Tape direction.
- PRESET 43**  
(i , m) ..... selects a preset radio station.
- PREV i 1 / NEXT 2 m**  
(i , m) ..... skips to the beginning of a current track/previous/subsequent track.
- ( a , a ) ..... fast searches back and forward within a track/CD.
- ..... fast rewind/wind tape or during playback, review and cue passages.
- TUNING a á**  
( a , a ) ..... tunes to radio stations.
- RECORD** ..... starts recording.
- \$ **OPEN-CLOSE**  
% n ..... opens/closes the CD door.
- ^ ..... connect headphones.
- ^ **MUTE**  
..... interrupts and resumes sound reproduction.
- & **NEWS/TA**  
..... activates RDS news and Traffic Announcement (not for all versions).
- \* **SLEEP**  
..... activates/deactivates or selects the sleeper time.



**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 (E , i , a , etc.).

## Troubleshooting

### WARNING

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

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

### Symptom

#### CD PLAYER OPERATION

"NO DISC" is displayed.

- 1 Check if the disc is inserted upside down.
- 1 Wait until the moisture condensation at the lens has cleared.
- 1 Use a finalised CD-R(W).
- 1 Replace or clean the disc, see Maintenance.

#### RADIO RECEPTION

Poor radio reception.

- 1 The signal is too weak, adjust the antenna or connect an external antenna for better reception.
- 1 Increase the distance from TV or VCR.

#### TAPE DECK OPERATION

Recording or playback cannot be made.

"CHECK TAPE" is displayed.

Tape deck door cannot open.

### GENERAL

Does not react when any buttons is pressed.

No or poor sound.

Reversed left and right sound.

Remote control does not function properly

Timer is not working.

### Remedy

- 1 Check if the disc is inserted upside down.
- 1 Wait until the moisture condensation at the lens has cleared.
- 1 Use a finalised CD-R(W).
- 1 Replace or clean the disc, see Maintenance.

- 1 The signal is too weak, adjust the antenna or connect an external antenna for better reception.
- 1 Increase the distance from TV or VCR.

- 1 Clean deck parts, see Maintenance.
- 1 Use only NORMAL (IEC I) tape for recording.

- 1 Apply a piece of adhesive tape over the missing tab space.

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

- 1 Press STANDBY ON to switch off the system. Remove the AC power plug from the wall outlet, then reconnect the power plug and switch on the system again.

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

- 1 Select the source (CD TUNER, etc.) before pressing the function button (E, f, etc., etc.).

- 1 Reduce the distance to the system.
- 1 Insert the batteries with their polarities (+ / - signs) as indicated.
- 1 Replace the batteries.

- 1 Set the clock.
- 1 Press TIMER ON/OFF to switch on the timer.
- 1 If recording is in progress, stop recording.

## Basic Functions

### Adjusting volume and sound

Turn the **VOLUME** control anti-clockwise to decrease or clockwise to increase volume on the system (or press **VOLUME - / +** on the remote control).

- Display shows the volume level VOL and a number from 0-32.

Press the Interactive sound control, **DSC** on the system or remote control once or more to select the desired sound effect: **OPTIMAL** (no indication) / **ROCK** (🎸) / **JAZZ** (🎷) / **POP** (🎵).

Press **DBB** to switch bass enhancement on or off.

- Display shows: **DBB** if the DBB is activated.

Press **INCREDIBLE SURROUND (INC. SURR.)** on the remote control to switch the surround sound effect on or off.

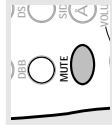
- Display shows: **INCREDIBLE SURROUND** if activated.

Note:

- The effect of **INCREDIBLE SURROUND** may vary with different types of music.

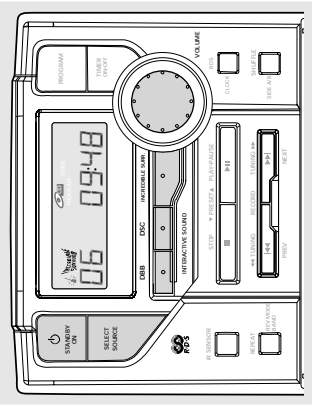
Press **MUTE** on the remote control to interrupt sound reproduction instantly.

- Playback will continue without sound and the display shows **MUTE**.



To activate sound reproduction you can:

- press **MUTE** again;
- adjust the volume controls;
- change source.



### IMPORTANT:

Before you operate the system, complete the preparation procedures.

### Switching on

There are 3 ways to switch the system on:

- 1 press **2 STANDBY ON** on the system and the last selected source switches on;
- 1 press **SELECT SOURCE** on the system and the last selected source switches on;
- 1 press **CD, TUNER, TAPE or AUX** on the remote control.

To switch the system to standby, press **2 STANDBY ON** once on the system (**2** on the remote control).

- 1 If in recording mode, press **STOP 9** (on the remote control **9**) first.

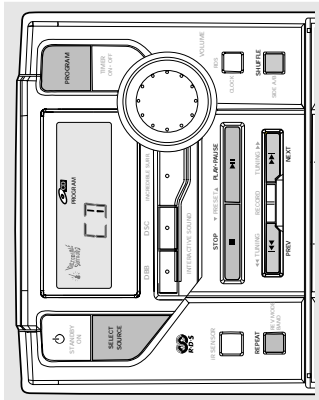
- The volume level, interactive sound settings, last selected source and tuner presets will be retained in the player's memory

### Power-saving automatic standby

As a power-saving feature, the system automatically switches to standby 15 minutes after a tape or CD has reached the end and no control is operated.

# INSTRUCTIONS FOR USE

## Compact Disc



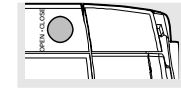
**IMPORTANT:**  
The lens of the CD player should never be touched.



### Playing a disc

This CD player plays Audio Discs including CD-Recordables and CD-Rewritables.

- 1 CD-ROM, CD-I, CD-V, VCD, DVD or computer CDs, however, are not possible.



- 1 Select CD source.
- 2 Press **OPEN•CLOSE** on the top of the system to open the CD compartment.
- **OPEN** is displayed when you open the CD compartment.

- 3 Insert a disc with the printed side facing up and press down on **OPEN•CLOSE** to close the CD door.
- **READ** is displayed as the CD player scans the contents of a disc, and then the total number of tracks and playing time are shown.

- 4 Press **PLAY•PAUSE 2**; (on the remote control **2**) to start playback.
- Current track number and elapsed playing time of the track are displayed during disc playback.
- 5 To interrupt playback press **PLAY•PAUSE 2**; (on the remote control **SIDE/;**), Press **PLAY•PAUSE 2**; (on the remote control **2**) again to resume play.

- The display freezes and the elapsed playing time flashes when playback is interrupted.

- 6 To stop disc playback, press **STOP 9**.

Note: CD play will also stop when:

- the CD door is opened.
- the disc has reached the end.
- you select another source: **TAPE, TUNER or AUX**.

### Selecting a different track

- 1 Press **PREV ; 1** or **NEXT 2™** on the system, (on the remote control **i** or **™**) once or repeatedly until the desired track number appears in the display.

- 1 If you have selected a track number shortly after loading a disc or in the **PAUSE** position, you will need to press **PLAY•PAUSE 2**; (on the remote control **2**) to start playback.

### Finding a passage within a track

- 1 Press and hold down on **PREV ; 1** or **NEXT 2™**.

- The disc is played at high speed and low volume.

- 2 When you recognise the passage you want, release **PREV ; 1** or **NEXT 2™**.

- Normal playback continues.

Note:

- During a disc programme or if **SHUFFLE/REPEAT** active, searching is only possible within the same track.

### Different play modes: SHUFFLE and REPEAT

You can select and change the various play modes before or during playback. The play modes can also be combined with PROGRAMME.

**SHUFFLE** ..... tracks of the entire disc/ programme are played in random order

**SHUFFLE and REPEAT ALL...** to repeat the entire disc/ programme continuously in random order

**REPEAT ALL ...** repeats the entire disc/ programme

**REPEAT .....** plays the current track continuously

## Compact Disc

- 1 To select your play mode, press the **SHUFFLE** or **REPEAT** button before or during playback until the display shows the desired function.

- 2 Press **PLAY•PAUSE 2**; (on the remote control **2**) to start playback if in the **STOP** position.
- If you have selected **SHUFFLE**, playback starts automatically.

- 3 To return to normal playback, press the respective **SHUFFLE** or **REPEAT** button until the various **SHUFFLE/ REPEAT** modes are no longer displayed.
- 1 You can also press **STOP 9** to cancel your play mode.

### Programming track numbers

Programme in the **STOP** position to select and store your disc tracks in the desired sequence. If you like, store any track more than once. Up to 20 tracks can be stored in the memory.

- 1 Press **PROGRAM** on the system or remote control to enter the programming mode.
- A track number is shown and **PROGRAM** flashes.

- 2 Use the **PREV ; 1** or **NEXT 2™** on the system, (on the remote control **i** or **™**) to select your desired track number.

- 3 Press **PROGRAM** to confirm the track number to be stored.

- The number of tracks programmed and total playing time of the programme is shown briefly then the selected track and **PROG**.

- 4 Repeat steps **2-3** to select and store all desired tracks.

- **FULL** is displayed if you attempt to programme more than 20 tracks.

- 5 To start playback of your disc programme, press **PLAY•PAUSE 2**; (on the remote control **2**).

### Reviewing the programme

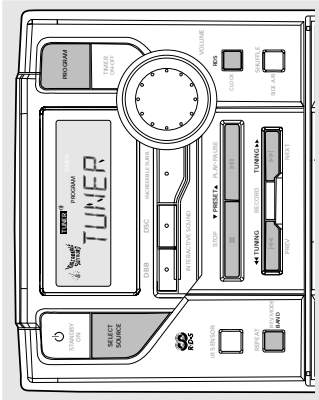
In **STOP** mode, press and hold down **PROGRAM** on the system or remote control for a while until the display shows all your stored track numbers in sequence.

### Erasing the programme

You can erase the programme by:

- 1 pressing **STOP 9** once in the **STOP** mode;
- 1 pressing **STOP 9** twice during playback;
- 1 opening the CD compartment;
- **PROGRAM** disappears from the display.

**Tuner**



- 2 Press **PROGRAM** on the system or remote control for more than 2 seconds to activate programming.  
→ **AUTO** is displayed and available stations are programmed in order of waveband reception strength: **FM** followed by **MW** and **LW**. The last preset automatically stored will then be played.


**Manual programming**

- 1 Tune to your desired station (see Tuning to radio stations).
  - 2 Press **PROGRAM** on the system or remote control to activate programming.  
→ **PROGRAM** flashes in the display.
  - 3 Press **PRESET 4** or **3** ( **i** or **m** on the remote control) to allocate a number from 1 to 40 to this station.
  - 4 Press **PROGRAM** again to confirm the setting.  
→ **PROGRAM** disappears, the preset number and the frequency of the preset station are shown.
  - 5 Repeat the above four steps to store other stations.
- 1 You can override a preset station by storing another frequency in its place.

**Tuning to preset stations**

- 1 Press **PRESET 4** or **3** ( **i** or **m** on the remote control) until the desired preset station is displayed.

**RDS (some versions only)**

**Radio Data System** is a service that allows FM stations to show additional information. If you are receiving a RDS station  and the station name are displayed. When automatic programming is used, RDS stations will be programmed first.

**Scrolling through different RDS information**

- Press **RDS** briefly and repeatedly to scroll through the following information (if available):
- Station name
  - Programme type such as **NEWS**, **SPORT**, **POP**, **M...**
  - Radio text messages
  - Frequency

**Automatic programming**

Automatic programming will start with a chosen preset number. From this preset number upwards, former programmed radio stations will be overridden. The system will only programme stations which are not in the memory already.

- 1 Press **PRESET 4** or **3** ( **i** or **m** on the remote control) to select the preset number where programming should start.
- Note:  
- If no preset number is selected, default is preset (1) and all your presets will be overridden.

**Tuner**

**RDS News and Traffic Announcement (TA)**

You may set up the tuner in such a way that listening to CD or tape is interrupted by the NEWS of a RDS station. This only works if the RDS station broadcasts a NEWS signal while sending the news.

- 1 Tune to the desired RDS station.
- 2 Press **NEWS/TA** once or more on the remote control to select the NEWS option.  
→ **NEWS ON**, **TA ON** or **OFF** is displayed briefly.



→ **NEWS** is displayed if you have activated the NEWS or TA option. Changing listening source will not disarm the function.

**Notes:**

- To avoid unwanted recordings, the NEWS announcement does not work while recording a cassette.
- When you receive RDS news or traffic announcements during CD playback, playback will pause and you will be able to hear the news/TA. Playback resumes after the broadcast has finished. In tape mode, the tape continues playing but you will hear the news/TA only until the broadcast has finished.
- If you are using the RDS NEWS announcement with an EON station, the whole network is searched for the respective news.

**Disarming RDS News and Traffic Announcement**

There are a number of ways to disarm the news feature:  
Press **NEWS/TA** on the remote control during reception of the news option.  
Press standby on the system or remote control.  
Tune to a non-RDS-station.

Note:  
- If you press RDS and the RDS signal is not available **NO RDS** is displayed.

**EON**

**Enhanced Other Network** allows you to search for an RDS station offering a certain programme type. If EON is available, **EON** is shown.

**Searching programme type (PTY)**

PTY helps you find a desired programme type. To enable PTY, first programme RDS stations into the tuner memory (see Programming radio stations).

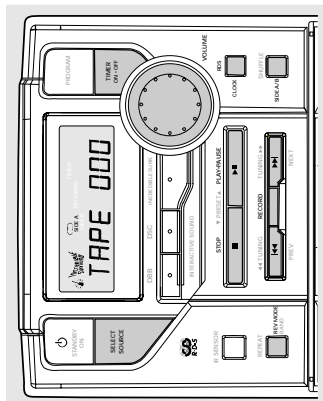
- 1 While receiving an RDS station, press **RDS** briefly until the programme type is displayed.
- 2 Press **PRESET 4** or **3** ( **i** or **m** on the remote control) until the desired programme type is displayed.
- 3 Press and hold down on **TUNING à** or **á** ( **à** or **á** on the remote control) to start searching.  
→ The radio tunes to a RDS station broadcasting this programme type. If the programme type is not available **TYPE NOT FOUND** is displayed.

**RDS Programme types**

- NO TYPE** ..... No RDS programme type
- NEWS** ..... News services
- AFFAIRS** ..... Politics and current affairs
- INFO** ..... Special Information programmes
- SPORT** ..... Sports
- EDUCATE** ..... Education and advanced training
- DRAMA** ..... Radio plays and literature
- CULTURE** ..... Culture, religion and society
- SCIENCE** ..... Science
- VARI ED** ..... Entertainment programmes
- POP M** ..... Pop music
- ROCK M** ..... Rock music
- MOR M** ..... Light music
- LIGHT M** ..... Light classical music
- CLASSICS** ..... Classical music
- OTHER M** ..... Special music programmes



# Tape Recorder



## Tape playback

- 1 Select **TAPE** source.  
→ The display shows TAPE briefly. The tape counter, TAPE 000 display with the **SIDE A** or **SIDE B** and reverse mode status are then shown during tape mode.
- 2 Press **OPEN** to open the tape door.
- 3 Insert a recorded tape and close the tape door.  
Load the tape with the open side downward and the full spool to the left.
- 4 Press **PLAY-PAUSE 2**; (on the remote control **2**) to start playback.
- 5 By pressing **⏮** or **⏪** on the remote control, fast winding of tape is possible in both directions.  
To review and cue at low volume, press **1** or **2** on the system.
- During fast winding or review/cue you can monitor the tape message with the tape counter. Release the fast wind/cue control at your desired passage.
- 6 To stop the tape, press **STOP 9** on the system or remote control.
- To reset the tape counter, press **STOP 9** again.

### Note:

- The sound source cannot be changed while recording a tape.

## Switching tape sides

The tape side can be switched manually or automatically before or during tape playback.

- 1 Press **SIDE A/B (SIDE)**; or during playback only **2** on the remote control).  
→ The display shows **SIDE A** or **SIDE B** and the tape counter resets to 000.

## Reverse mode options

- 1 Press **REV MODE** once or more to select your option:

- ⏮ : playback stops at the end of the tape.
- ⏮ : both sides are played once.
- ⏮ : both sides are played repeatedly, up to 5 times each side.

## General Information on Recording

- 1 Recording is permissible insofar as copyright or other rights of third parties are not infringed.
- For recording, use only **NORMAL** (IEC type I) cassette on which the tabs have not yet been broken. This deck is not suited for recording on **METAL** (IEC IV) type cassettes.
- The best recording level is set automatically. Altering the **VOLUME, INCREDIBLE SURROUND, DBB** or **INTERACTIVE SOUND** controls will not affect the recording in progress.
- At the very beginning and end of the tape, no recording will take place during the 7 seconds when the leader tape passes the recorder heads.
- To protect a tape from accidental erasure, have the tape in front of you and break out the left tab. Recording on this side is no longer possible. If, however, you wish to record over this side again, cover the tabs with a piece of adhesive tape.

# INSTRUCTIONS FOR USE

# Tape Recorder

## Recording Timer

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

- 1 Insert a suitable tape into the deck.  
→ If desired, select tape reverse mode option.
- 2 Select the preset radio station to record from.
- 3 Press **TIMER ON-OFF** for more than 2 seconds.  
→ **TIMER** flashes and a source is displayed.
- 4 Press **SELECT SOURCE** repeatedly, or turn **VOLUME** clockwise until **REC TUN** source is displayed.
- 5 Press **TIMER ON-OFF** to confirm the source.  
→ **SET ON TIME** is displayed, **TIMER** and the clock digits for the hours flash.
- 6 Turn **VOLUME** to set the hours; clockwise for hours up; anti-clockwise for hours down.
- 7 Press **TIMER ON-OFF** again.  
→ The clock digits for the minutes flash.
- 8 Turn **VOLUME** to set the minutes; clockwise for minutes up; anti-clockwise for minutes down.
- 9 Press **TIMER ON-OFF** to confirm the ON start time.  
→ **SET OFF TIME** is displayed, **TIMER** and the clock digits for the hours flash.
- 10 Repeat steps **6-8** to set the finish time.
- 11 Press **TIMER ON-OFF** to confirm the timer settings.  
→ **TIMER** is shown and the recording timer is now set.

## Synchro Start CD recording

- 1 Select **CD** source.
- 2 Insert a disc and if desired, programme track numbers.
- 3 Press **OPEN** to open the tape door.
- 4 Insert a suitable tape into the deck and close the tape door.
- 5 Press **RECORD** to start recording.  
→ **COPY** or **RECORD** is displayed briefly and **RECORD** is shown during recording.  
→ Playing of the disc programme starts automatically from the beginning of the disc/after 7 seconds. It is not necessary to start the CD player separately.  
If you wish, press **CLOCK** once to monitor the counter display.
- 6 To stop recording, press **STOP 9**.

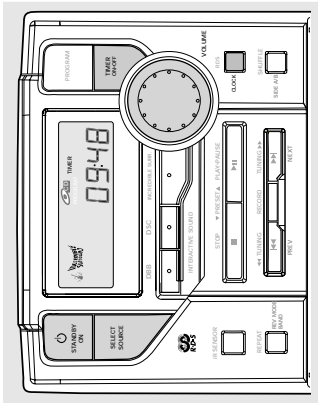
## Recording from the Radio

- 1 Tune to the desired radio station (see Tuning to radio stations).
- 2 Press **OPEN** to open the tape door.
- 3 Insert a suitable tape into the deck and close the tape door.
- 4 Press **RECORD** to start recording.  
→ **RECORD** is displayed briefly and **RECORD** is shown during recording.
- 1 If you wish, press **CLOCK** once to monitor the counter display.
- 5 To stop recording, press **STOP 9**.

## Recording from AUX

- 1 Select **AUX** source.
- 2 If necessary prepare the additional appliance for recording.
- 3 Press **RECORD** to start recording.  
→ **RECORD** is displayed briefly and **RECORD** is shown during recording.
- 1 If you wish, press **CLOCK** once to monitor the counter display.
- 4 To stop recording, press **STOP 9**.

## Clock/Timer



### Setting the clock

There are two possible methods for setting the clock: manually or automatically by using RDS.


#### Automatic clock setting (RDS versions only)

- 1 Tune to a RDS station (see TUNER).
- 2 Press **CLOCK** for more than 2 seconds.  
→ **SEARCH RDS TIME** is displayed for a maximum of 90 seconds; the time is then displayed.  
→ **NO RDS TIME** is displayed if no time signal has been received and you will have to set the clock manually.

#### Manual clock setting

- 1 In standby, press **CLOCK**.  
→ The clock digits for the hours flash.
- 2 Turn **VOLUME** to set the hours; clockwise for hours up; anti-clockwise for hours down.
- 3 Press **CLOCK** again.  
→ The clock digits for the minutes flash.
- 4 Turn **VOLUME** to set the minutes; clockwise for minutes up; anti-clockwise for minutes down.
- 5 Press **CLOCK** to confirm the time.

### Setting TIMER

- 1 The system can be used as an alarm clock, whereby the **CD, TUNER** or **TAPE** is switched on at a set time. The clock time needs to be set first before the timer can be used.
- 1 You can also use it to record a favourite tuner programme at a set period (**REC TUN**, see **TAPE RECORDER**).
- 1 During setting, if no button is pressed within 90 seconds, the system will exit timer setting mode automatically.
- 1 In any mode, press **TIMER ON-OFF** for more than 2 seconds.
- 2 Turn **VOLUME** clockwise to select sound source.  
→ Display sequence shows **CD, TUNER, TAPE** or **REC TUNER**.
- 3 Press **TIMER ON-OFF** to confirm your desired mode.  
→ The selected source  or **TUNER** is shown. Display sequence scrolls **SET ON TIME** and **TIMER** flashes. The clock digits for the hours flash.
- 4 Turn **VOLUME** to set the hours; clockwise for hours up; anti-clockwise for hours down.
- 5 Press **TIMER ON-OFF** again.  
→ The clock digits for the minutes flash.
- 6 Turn **VOLUME** to set the minutes; clockwise for minutes up; anti-clockwise for minutes down.
- 7 Press **TIMER ON-OFF** to confirm the time.  
→ The timer is now set and activated.

### Activating and deactivating TIMER

- 1 In standby or during playback, press **TIMER ON-OFF** on the system once (**TIMER** on the remote control).  
→ Display shows **TIMER** if activated, and disappears if deactivated.

## Clock/Timer

- 1 To deactivate, press **SLEEP** on the remote control once or more until **SLEEP OFF** is shown, or press **STANDBY ON** on the system or remote control.  
→ **SLEEP OFF** scrolls across the display.

### Activating and deactivating SLEEP

The sleep timer enables the system to switch off by itself after a set period of time. The clock time needs to be set first before the sleep timer can be used.

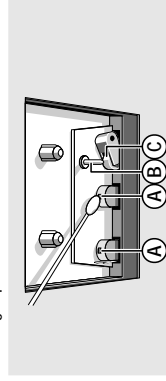


- 1 Press **SLEEP** on the remote control once or more.  
→ Display shows **SLEEP** and one of the sleep time options in sequence: 60, 45, 30, 15, **SLEEP OFF**, 60... if you have selected a time. Once **SLEEP** is activated, **SLEEP ON** scrolls across the display at repeated intervals.

## Maintenance

### Cleaning the Heads and the Tape Paths

- 1 To ensure good recording and playback quality, clean the heads **A**, the capstan(s) **B**, and pressure roller(s) **C** 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.



### Demagnetising the heads

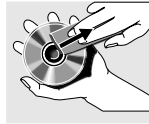
- 1 Use a demagnetising tape available at your dealer.

### Cleaning the Cabinet

- 1 Use a soft cloth slightly moistened with a mild detergent solution. Do not use a solution containing alcohol, spirits, ammonia or abrasives.

### Cleaning Discs

- 1 When a disc becomes dirty, clean it with a cleaning cloth. Wipe the disc from the centre out.  
Do not use solvents such as benzene, thinner, commercially available cleaners, or antistatic spray intended for analogue records.



### Cleaning the disc lens

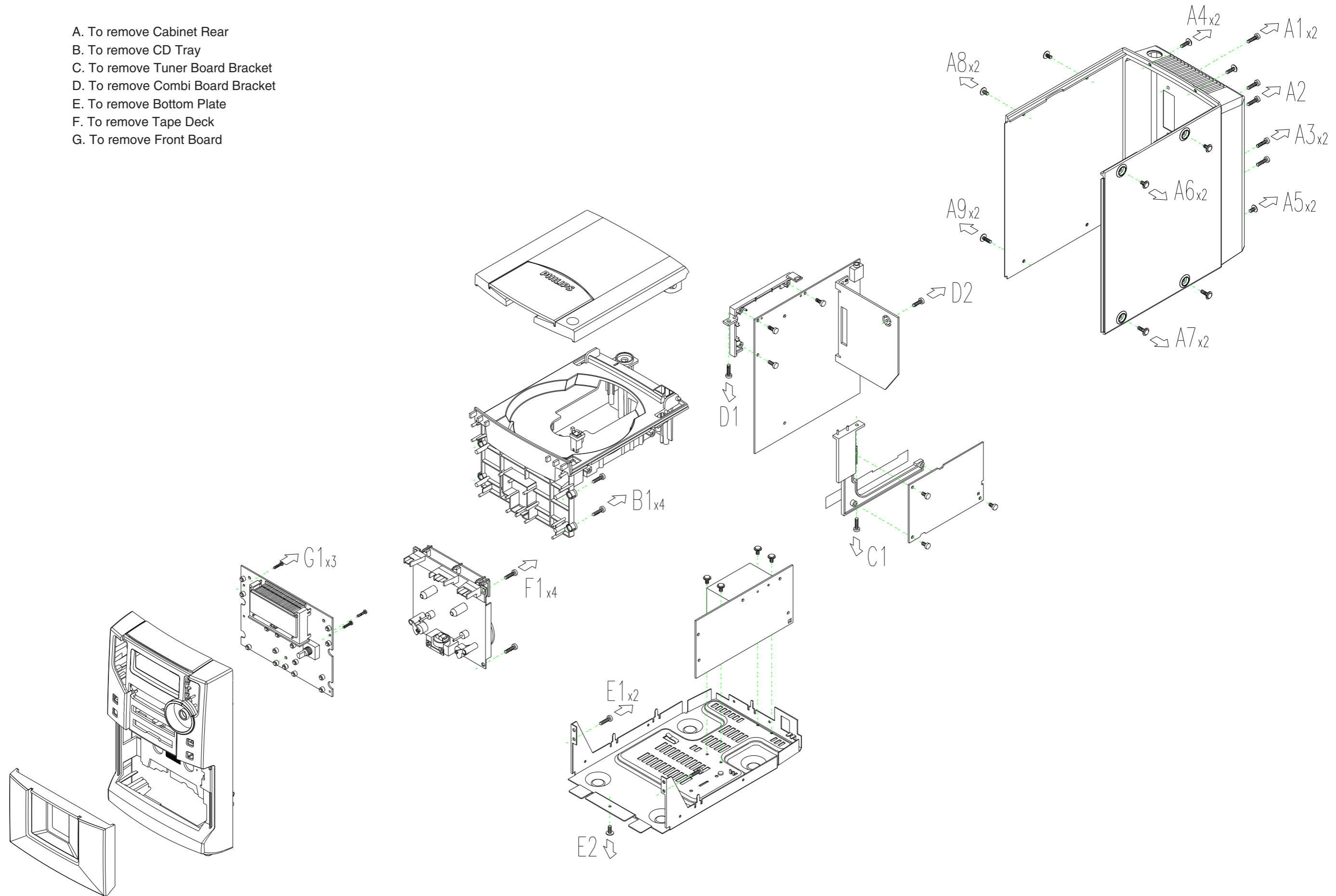
- 1 After prolonged use, dirt or dust may accumulate at the disc lens. To ensure good playback quality, clean the disc lens with Philips CD Lens Cleaner or any commercially available cleaner. Follow the instructions supplied with cleaner.

# DISASSEMBLY DIAGRAM

4-1

4-1

- A. To remove Cabinet Rear
- B. To remove CD Tray
- C. To remove Tuner Board Bracket
- D. To remove Combi Board Bracket
- E. To remove Bottom Plate
- F. To remove Tape Deck
- G. To remove Front Board



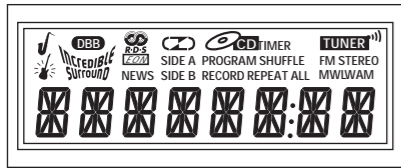
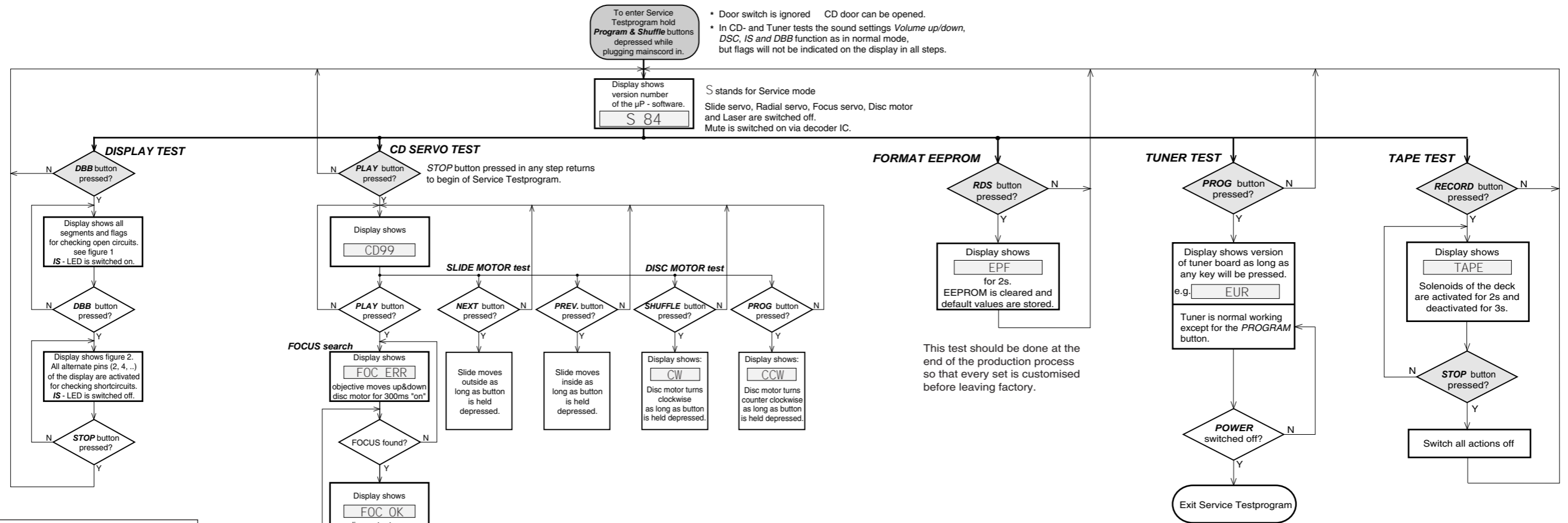


fig. 1

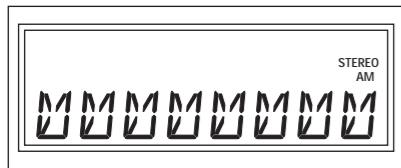


fig. 2

TUNER VERSIONS			
	EUR	USA	OSE
REGION & SET VERSIONS	EUROPE FM/MW /22/25	USA FM/MW /37	OVERSEAS FM/MW 1)Grid switchable 100/10kHz - 50/9kHz /21/21M/30

table 2

1) To toggle frequency grid press **SHUFFLE** button for more than 5s in normal tuner mode (**not** in service testmode).

Display will show either **GRID 9** or **GRID 10** for 2 s.

CD ERROR CODES		
Error number	Error description	Error type
E1000	<b>Focus error</b> Triggered when the focus is lost during playing the CD.	W
E1001	<b>Radial error</b> Triggered when the radial servo is not on track for a certain time during playing the CD.	W
E1002	<b>Slide-in error</b> The sledge did not reach its inner position (innerswitch is closed) before approximately 6 seconds have passed by - innerswitch or sledgemotor problem.	W
E1003	<b>Slide-out error</b> The sledge did not come out of its inner position (innerswitch is open) before approximately 300ms have passed by - innerswitch or sledgemotor problem.	W
E1005	<b>Jump error</b> Triggered when the jump destination could not be found within a certain time.	W
E1006	<b>Subcode error</b> No valid subcode for a certain time during play.	W
E1007	<b>PLL error</b> The Phase-Lock-Loop could not lock within a certain time.	W
E1008	<b>Turntable motor error</b> Generated when the CD could not reach 75% of speed during start-up within a certain time. Discmotor problem.	W
E1020	<b>Focus search error</b> The focus point has not been found within a certain time.	F

table 1

**Error type:** W = Warning set continues operation, message remains on the display until next error occurs or any key is pressed.  
F = Fatal Error set stops operation, message remains on the display.

## Abbreviations and Pin-description of CD Ics

## SERVO PROCESSOR SAA7325H

SYMBOL	PIN	DESCRIPTION
HFREF	1	comparator common mode input
HFIN	2	comparator signal input
ISLICE	3	current feedback output from data slicer
V <sub>SSA1</sub>	4 <sup>(1)</sup>	analog ground 1
V <sub>DDA1</sub>	5 <sup>(1)</sup>	analog supply voltage 1
I <sub>ref</sub>	6	reference current output pin
V <sub>RIN</sub>	7	reference voltage for servo ADC's
D1	8	unipolar current input (central diode signal input)
D2	9	unipolar current input (central diode signal input)
D3	10	unipolar current input (central diode signal input)
D4	11	unipolar current input (central diode signal input)
R1	12	unipolar current input (satellite diode signal input)
R2	13	unipolar current input (satellite diode signal input)
V <sub>SSA2</sub>	14 <sup>(1)</sup>	analog ground 2
CROUT	15	crystal/resonator output
CRIN	16	crystal/resonator input
V <sub>DDA2</sub>	17 <sup>(1)</sup>	analog supply voltage 2
LN	18	DAC left channel differential output - negative
LP	19	DAC left channel differential output - positive
V <sub>neg</sub>	20	DAC negative reference input
V <sub>pos</sub>	21	DAC positive reference input
RN	22	DAC right channel differential output - negative
RP	23	DAC right channel differential output - positive
SELPLL	24	selects whether internal clock multiplier PLL is used
TEST1	25	test control input 1; this pin should be tied LOW
CL16	26	16.9344 MHz system clock output
DATA	27	serial d4(1)ata output (3-state)
WCLK	28	word clock output (3-state)
SCLK	29	serial bit clock output (3-state)
EF	30	C2 error flag output (3-state)
TEST2	31	test control input 2; this pin should be tied LOW
KILL	32	kill output (programmable; open-drain)
V <sub>SSD1</sub>	33 <sup>(1)</sup>	digital ground 2
V2/V3	34	versatile I/O: input versatile pin 2 or output versatile pin 3 (open-drain)
WCLI	35	word clock input (for data loopback to DAC)
SDI	36	serial data input (for data loopback to DAC)
SCLI	37	serial bit clock input (for data loopback to DAC)
$\overline{\text{RESET}}$	38	power-on reset input (active LOW)
SDA	39	microcontroller interface data I/O line (open-drain output)
SCL	40	microcontroller interface clock line input

## Abbreviations and Pin-description of CD Ics

## SERVO PROCESSOR SAA7325H

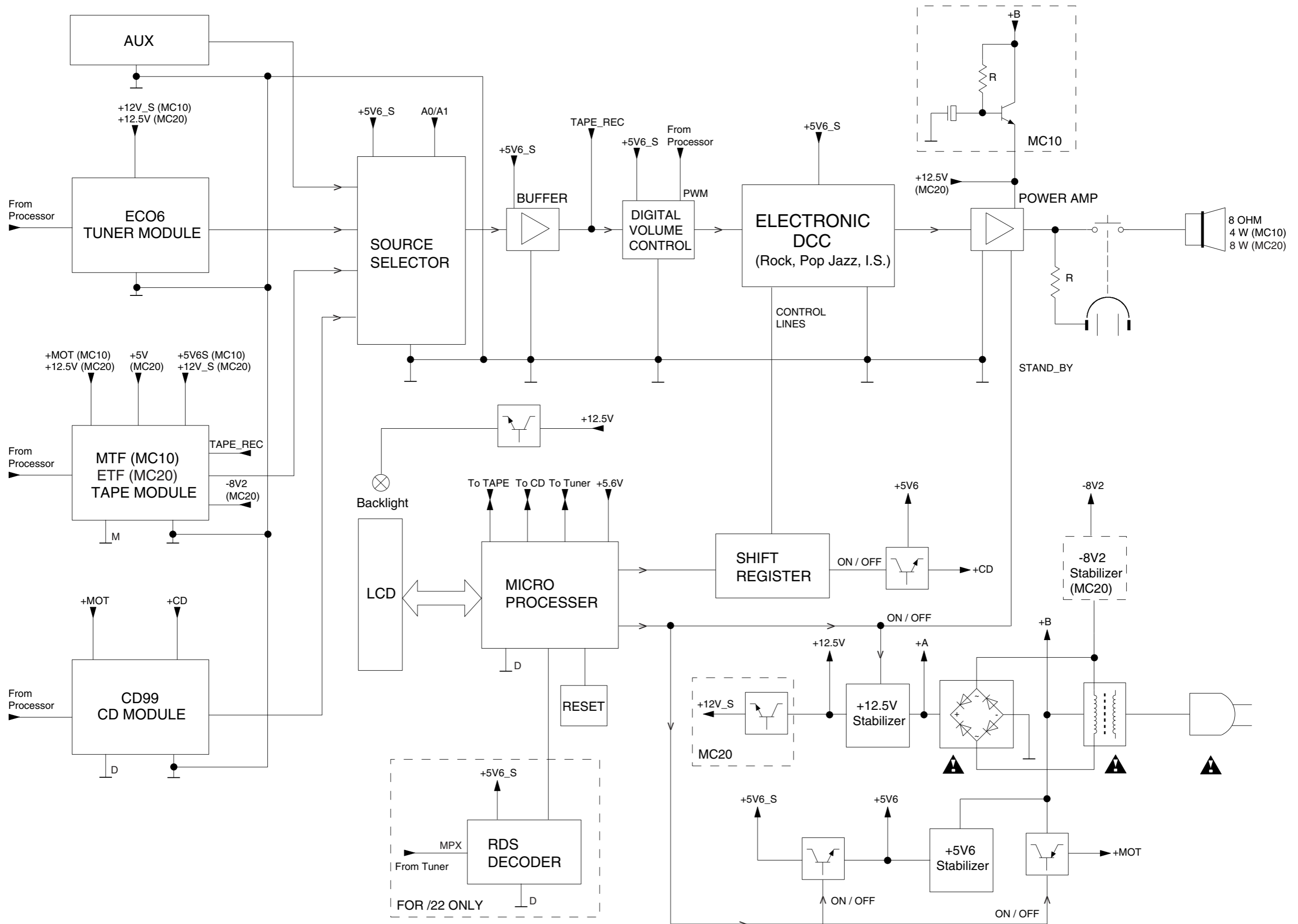
SYMBOL	PIN	DESCRIPTION
RAB	41	microcontroller interface R $\overline{\text{W}}$ and load control line input (4-wire bus mode)
SILD	42	microcontroller interface $\overline{\text{R}}$ /W and load control line input (4-wire bus mode)
STATUS	43	servo interrupt request line/decoder status register output (open-drain)
TEST3	44	test control input 3; this pin should be tied LOW
RCK	45	subcode clock input
SUB	46	P-to-W subcode bits output (3-state)
SFSY	47	subcode frame sync output (3-state)
SBSY	48	subcode block sync output (3-state)
CL11/4	49	11.2896 MHz or 4.2336 MHz (for microcontroller) clock output
V <sub>SSD2</sub>	50 <sup>(1)</sup>	digital ground 3
DOBM	51	bi-phase mark output (externally buffered; 3-state)
V <sub>DD1(P)</sub>	52 <sup>(1)</sup>	digital supply voltage 2 for periphery
CFLG	53	correction flag output (open-drain)
RA	54	radial actuator output
FO	55	focus actuator output
SL	56	sledge control output
V <sub>DD2(C)</sub>	57 <sup>(1)</sup>	digital supply voltage 3 for core
V <sub>SSD3</sub>	58 <sup>(1)</sup>	digital ground 4
MOTO1	59	motor output 1; versatile (3-state)
MOTO2	60	motor output 2; versatile (3-state)
V4	61	versatile output pin 4
V5	62	versatile output pin 5
V1	63	versatile input pin 1
LDON	64	laser drive on output (open-drain)

Note : All supply pins must be connected to the same external power supply voltage.

BLOCK DIAGRAM

5-1

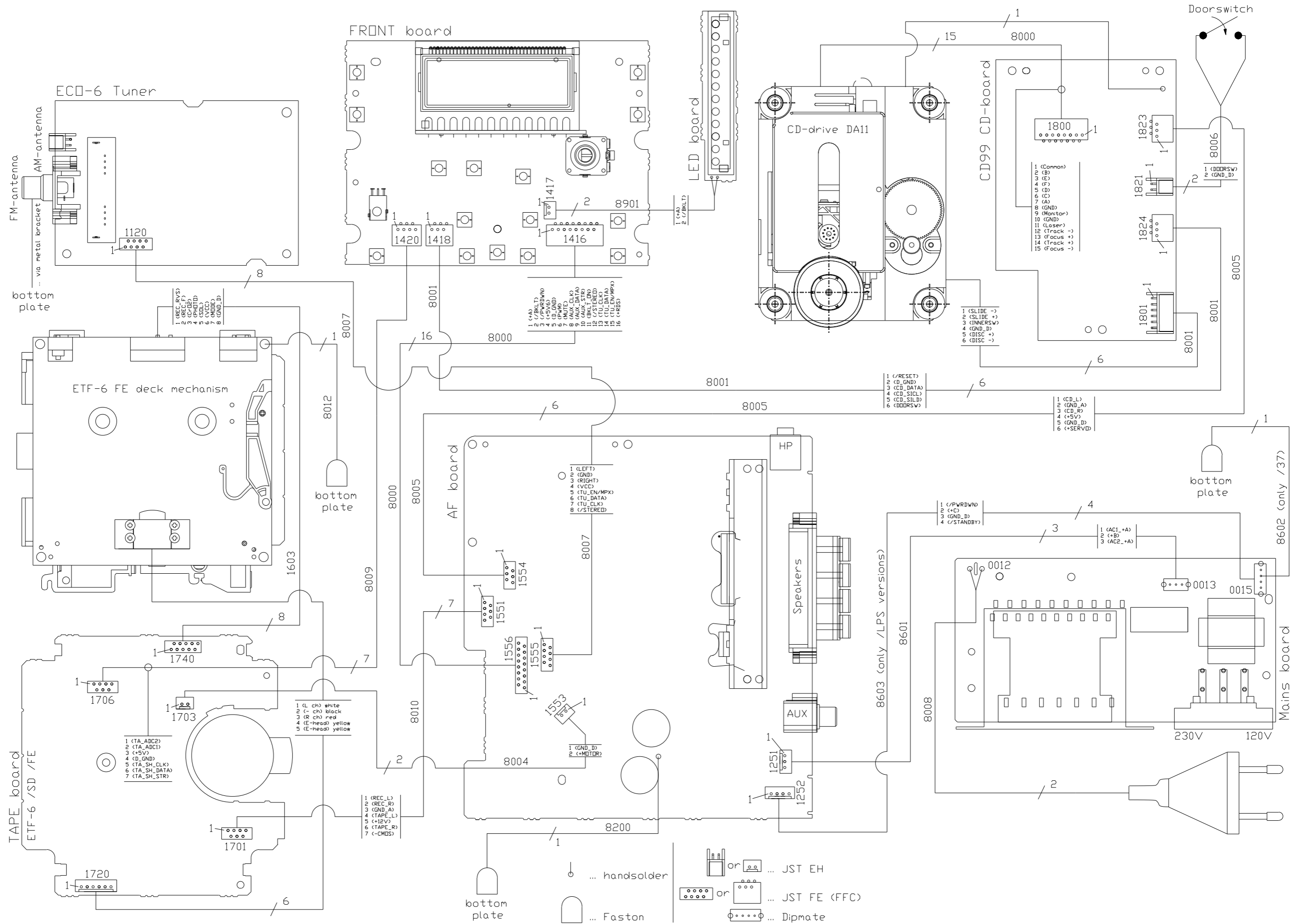
5-1



# WIRING DIAGRAM

5-2

5-2



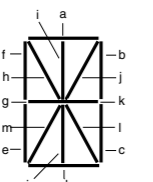
# FRONT BOARD - CIRCUIT DIAGRAM

0001 F15	1406 I8	1413 I5	1425 A5	2406 E5	2413 F6	2420 I11	2427 I2	2434 B13	2441 D13	2448 G13	3403 E5	3410 H4	3417 H10	3424 I10	3431 I7	3438 I12	3445 G1	3452 A13	3459 C13	3466 F9	3473 F9	3480 F14	3487 G14	3494 D11	4401 I9	6401 B14	9400 F1	T406 C14	T413 D14	T426 F14	T441 A11	T448 H5
1400 I11	1407 I8	1414 I4	2400 B11	2407 F5	2414 G6	2421 I7	2428 I3	2435 D12	2442 F12	2449 H13	3404 E5	3411 H5	3418 D11	3425 I9	3432 I6	3439 F9	3446 G1	3453 E11	3460 F8	3467 C13	3474 E14	3481 E11	3488 D11	3495 G13	5400 A10	7400 D8	9401 A11	T407 C14	T414 D14	T431 G14	T442 B11	T449 H10
1401 I10	1408 I7	1415 I2	2401 B11	2408 F4	2415 F6	2422 I12	2429 I3	2436 D12	2443 F13	2450 H13	3405 F4	3412 H5	3419 D11	3426 I9	3433 I6	3440 F7	3447 A14	3454 A14	3461 C14	3468 F9	3475 D11	3482 F14	3489 G14	3496 G13	5401 C11	7402 F5	T401 B14	T408 C14	T421 E14	T432 G14	T443 F6	T451 A10
1402 I10	1409 I6	1416 B15	2402 B9	2409 F4	2416 F6	2423 I12	2430 A14	2437 D13	2444 F13	2451 H13	3406 F4	3413 F7	3420 I11	3427 I8	3434 I5	3441 F7	3448 A14	3455 F8	3462 F9	3469 C14	3476 E14	3483 E13	3490 C11	3497 F8	5402 F5	7403 G6	T402 B14	T409 C14	T422 E14	T433 G14	T444 F6	T452 A10
1403 I9	1410 I6	1417 D15	2403 B10	2410 F5	2417 H4	2424 F11	2431 B12	2438 D13	2445 F13	3400 A11	3407 F5	3414 F9	3421 I11	3428 I8	3435 I5	3442 E3	3449 A14	3456 B13	3463 C13	3470 F7	3477 E11	3484 E11	3491 G11	3498 G8	5403 F6	7404 H5	T403 B14	T410 C14	T423 E14	T434 G14	T445 G4	T453 H4
1404 I9	1411 I6	1418 E15	2404 C11	2411 F5	2418 H5	2425 G1	2432 B13	2439 D13	2446 F13	3401 A10	3408 G6	3415 H8	3422 I11	3429 I7	3436 I5	3443 F3	3450 F8	3457 A13	3464 F9	3471 D14	3478 E14	3485 F14	3492 D11	3499 G3	5404 G1	7405 H9	T404 B14	T411 C14	T424 F14	T435 G14	T446 G4	T454 H4
1405 I8	1412 I5	1420 G15	2405 C11	2412 F6	2419 H5	2426 G1	2433 B13	2440 D13	2447 G12	3402 C11	3409 F7	3416 H9	3423 I10	3430 I7	3437 I12	3444 F1	3451 A13	3458 F8	3465 C14	3472 D13	3479 E11	3486 D11	3493 G14	4400 H9	6400 A11	7406 F2	T405 C14	T412 D14	T425 F14	T436 H14	T447 G4	T455 H4

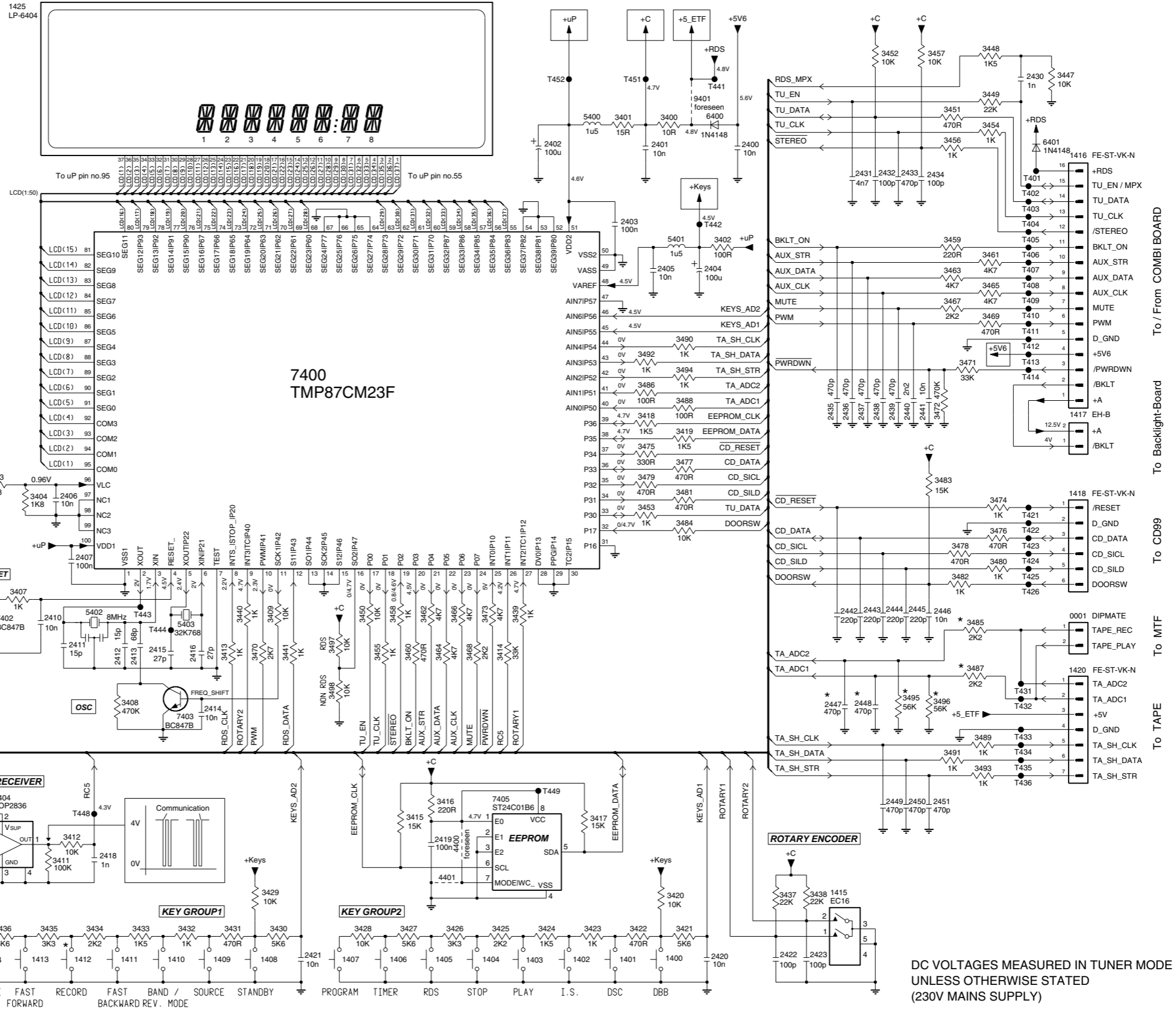
## FRONT BOARD

DISPLAY CONNECTION TABLE

Pin	COM0	COM1	COM2	COM3
1	1e	1g	1f	ROCK
2	1m	1i	1h	POP
3	1d	1l	1j	1a
4	1c	1k	1b	JAZZ
5	2e	2g	2f	I.S.
6	2m	2i	2h	DBB
7	2d	2l	2j	2a
8	2c	2k	2b	NEWS
9	3e	3g	3f	EON
10	3m	3i	3h	RDS
11	3d	3l	3j	3a
12	3c	3k	3b	SIDE B
13	4e	4g	4f	SIDE A
14	4m	4i	4h	Y3
15	4d	4l	4j	4a
16	4c	4k	4b	Y1
17	5e	5g	5f	Y2
18	5m	5i	5h	RECORD
19	5d	5l	5j	5a
20	5c	5k	5b	PROGRAM
21	6e	6g	6f	CD
22	6m	6i	6h	REPEAT
23	6d	6l	6j	6a
24	6c	6k	6b	SHUFFLE
25	7e	7g	7f	TIMER
26	7m	7i	7h	ALL
27	7d	7l	7j	7a
28	7c	7k	7b	DOT
29	8e	8g	8f	COLON
30	8m	8i	8h	FM
31	8d	8l	8j	8a
32	8c	8k	8b	MW
33	AM	LW	STEREO	TUNER
34	--	--	--	COM3
35	--	--	COM2	--
36	--	COM1	--	--
37	COM0	--	--	--



PIN 55 to 63 2.8V  
PIN 68 to 95 2.8V



DC VOLTAGES MEASURED IN TUNER MODE UNLESS OTHERWISE STATED (230V MAINS SUPPLY)

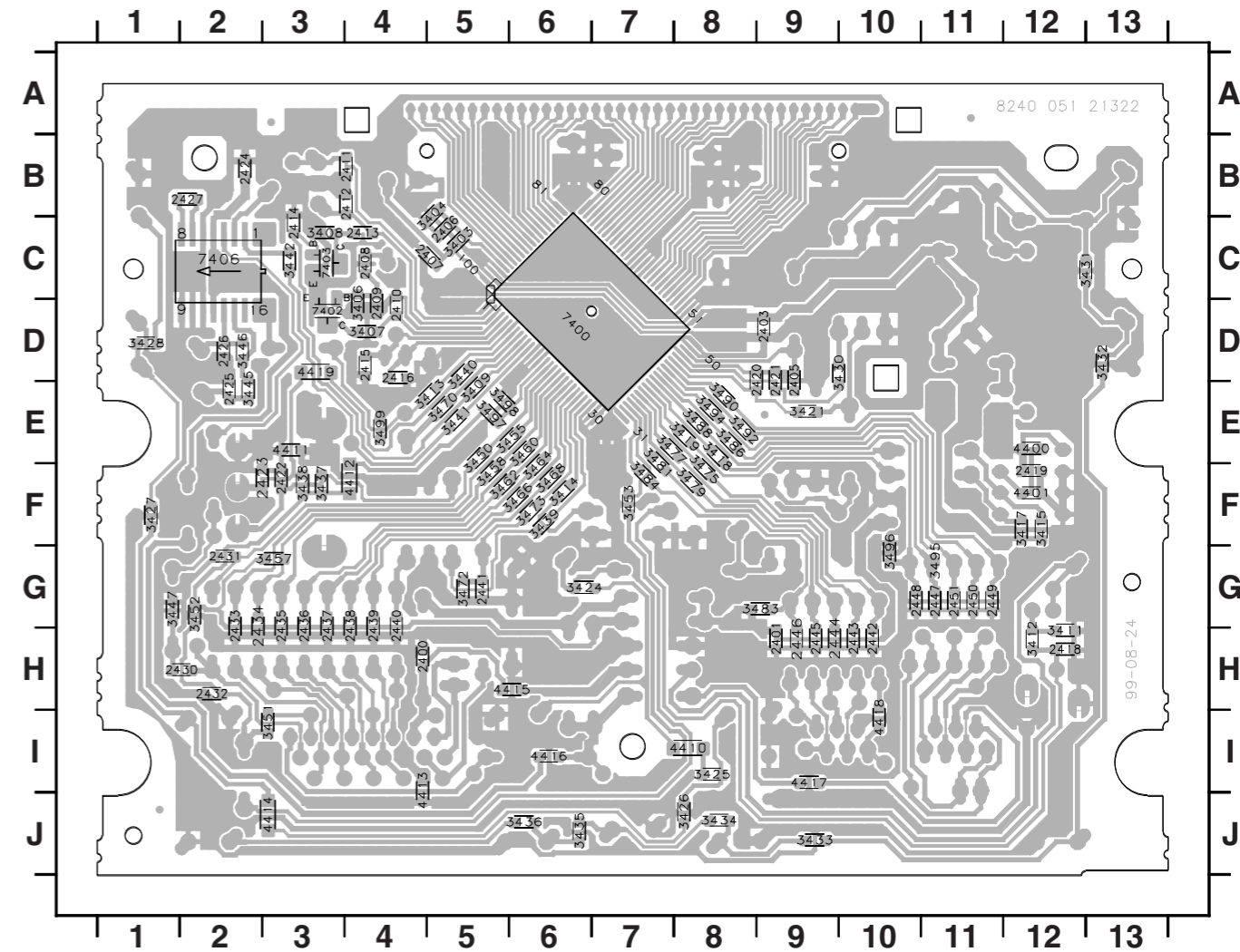
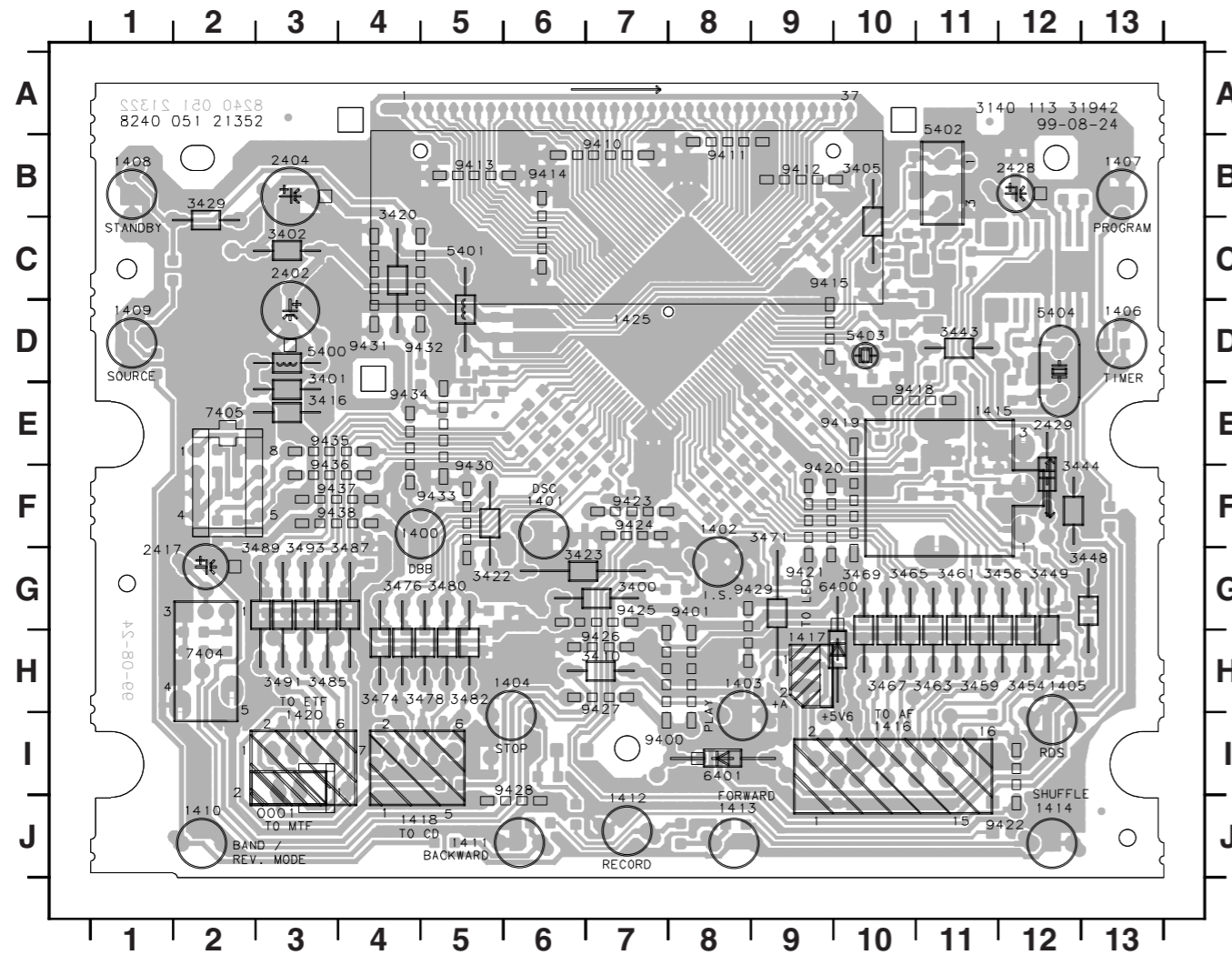
ITEM	1412	2447	2448	3485	3487	3495	3496
MODEL				2K2	2K2	56K	56K
MC10		470p	470p	3K9	3K9		150K



# FRONT BOARD - LAYOUT DIAGRAM

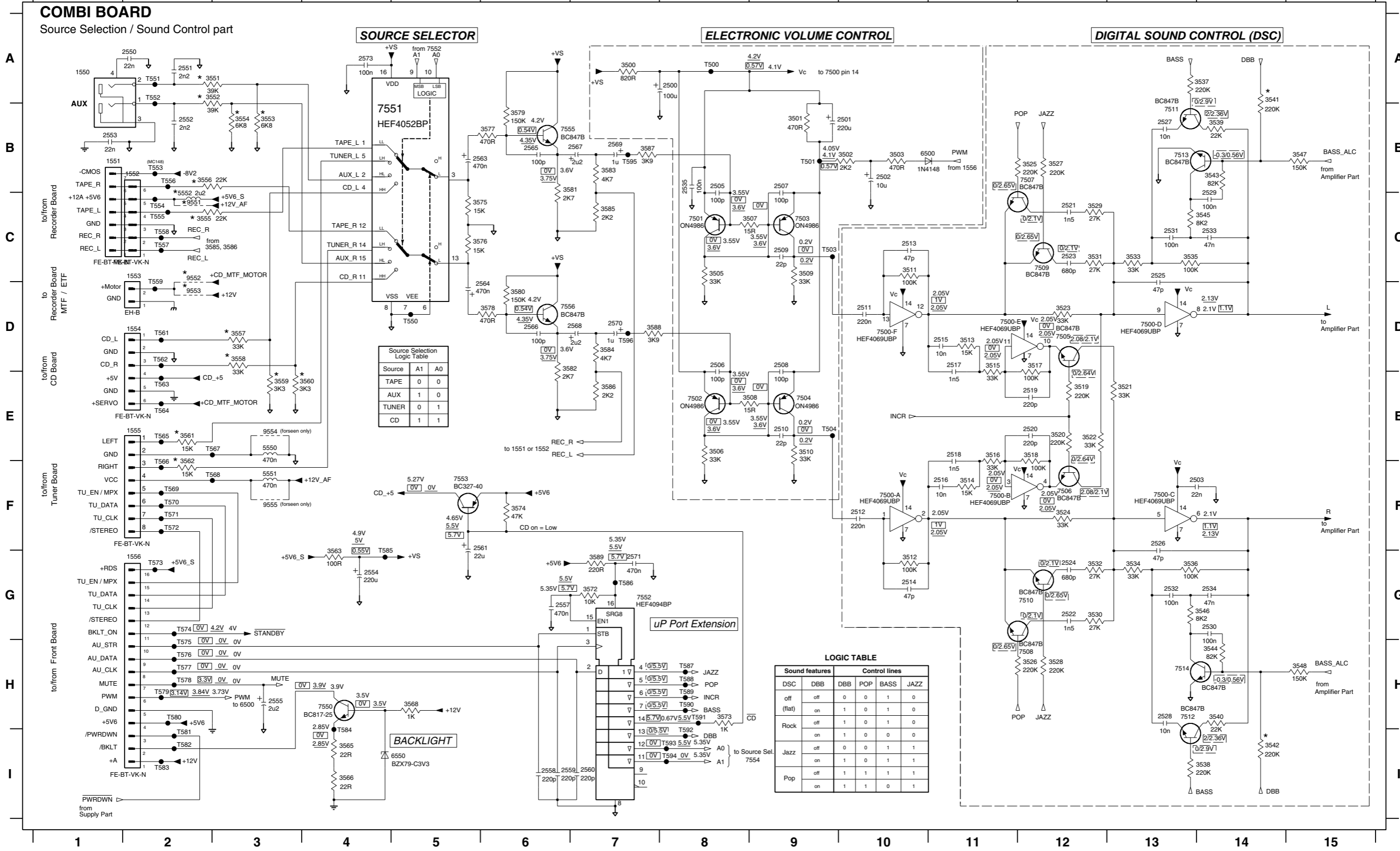
0001 J3	1408 B1	1417 H9	3400 G7	3429 B2	3463 H11	3482 H5	5403 D10	9411 B8	9422 J12	9431 D4
1400 F4	1409 D1	1418 J4	3401 D3	3443 D11	3465 G10	3485 H3	5404 D12	9412 B9	9423 F7	9432 D5
1401 F6	1410 J2	1420 I3	3402 C3	3444 F12	3467 H10	3487 G4	6400 G10	9413 B5	9424 F7	9433 D5
1402 F8	1411 J5	1425 D7	3405 B10	3448 G13	3469 G10	3489 G3	6401 I8	9414 B6	9425 G7	9434 D4
1403 H8	1412 J7	2402 C3	3410 H7	3449 G12	3471 F9	3491 H3	7404 H2	9415 C9	9426 H7	9435 D3
1404 H6	1413 J8	2404 B3	3416 E3	3454 H12	3474 H4	3493 G3	7405 E2	9418 E10	9427 H7	9436 D3
1405 H12	1414 J12	2417 G1	3420 B4	3456 G12	3476 G4	5400 D3	9400 I7	9419 E10	9428 I6	9437 F3
1406 D13	1415 E11	2428 B12	3422 G5	3459 H11	3478 H5	5401 C5	9401 G8	9420 F9	9429 G9	9438 F3
1407 B13	1416 I10	2429 E12	3423 G6	3461 G11	3480 G5	5402 A11	9410 B7	9421 G9	9430 F5	9439 F3

2400 H4	2414 C3	2427 B2	2441 G5	3404 B5	3419 E8	3435 J6	3451 I3	3472 G5	3494 E8	4414 J3
2401 H9	2415 D4	2430 H2	2442 H10	3406 D4	3421 E9	3436 J6	3452 G2	3473 F6	3495 G11	4415 H6
2403 D9	2416 D4	2431 G2	2443 H10	3407 D4	3424 G6	3437 F3	3453 F7	3475 F8	3496 G10	4416 I6
2405 D9	2418 H12	2432 H2	2444 H9	3408 C3	3425 I8	3438 F3	3455 F6	3477 E7	3497 E5	4417 I9
2406 C5	2419 F12	2433 G2	2445 H9	3409 E5	3426 J8	3439 F6	3457 G3	3479 F8	3498 E5	4418 I10
2407 C5	2420 D8	2434 G2	2446 H9	3411 H12	3427 F1	3440 D5	3458 F5	3481 E7	3499 E4	4419 D3
2408 C4	2421 D9	2435 G5	2447 G11	3412 H12	3428 D1	3441 E5	3460 F6	3483 G9	3499 E4	4419 D3
2409 D4	2422 F3	2436 G3	2448 G10	3413 E5	3430 D9	3442 E5	3462 F6	3484 F7	3499 E4	4419 D3
2410 D4	2423 F3	2437 C3	2449 G11	3414 F6	3431 C12	3445 E2	3464 F6	3486 F8	3499 E4	4419 D3
2411 B4	2424 B2	2438 G4	2450 G11	3415 F12	3432 D13	3446 D2	3466 F6	3488 F8	3499 E4	4419 D3
2412 B4	2425 E2	2439 G4	2451 G11	3417 F12	3433 J9	3447 G1	3468 F6	3490 F8	3499 E4	4419 D3
2413 C4	2426 D2	2440 G4	3403 C5	3418 E8	3434 J8	3450 E5	3470 E5	3492 E8	3499 E4	4419 D3



# COMBI BOARD (Part 1) - CIRCUIT DIAGRAM

1550 A1	2501 B10	2510 E9	2518 E11	2526 F13	2534 G14	2557 G6	2566 D6	3501 B9	3510 E9	3518 E12	3526 H12	3534 G13	3542 I14	3552 A3	3560 E4	3573 H8	3581 B7	3589 G7	7500-C F13	7505 D12	7513 B13	9551 C2	T504 E9	T557 C2	T566 F2	T574 G2	T582 I2	T590 H8
1551 B1	2502 B10	2511 D10	2519 E12	2527 B13	2535 B8	2558 I6	2567 B7	3502 B10	3511 C10	3519 E12	3527 B12	3535 C13	3543 B14	3553 B3	3561 E2	3574 F6	3582 D6	5550 E3	7500-D D13	7506 F12	7514 H13	9552 C2	T505 D5	T558 C2	T567 E3	T575 H2	T583 I2	T591 H8
1552 B2	2503 F14	2512 F10	2520 E12	2528 H13	2536 A2	2559 I6	2568 D7	3503 B10	3512 G10	3520 E12	3528 H12	3536 G13	3544 H14	3554 B3	3562 F2	3575 C5	3583 B7	5551 F3	7500-E D11	7507 B12	7515 H4	9553 D2	T506 D5	T559 D2	T568 F3	T576 H2	T584 I4	T592 I8
1553 C2	2505 B8	2513 C10	2521 C12	2529 C14	2537 A1	2560 I7	2569 B7	3505 C8	3513 D11	3521 E13	3529 C12	3537 A14	3545 C14	3555 C2	3563 G4	3576 C5	3584 D7	5552 C2	7500-F D10	7508 H12	7516 B4	9554 E3	T507 A2	T560 F2	T569 F2	T577 H2	T585 G4	T593 I8
1554 D2	2506 D8	2514 G10	2522 G12	2530 G14	2538 B2	2561 F6	2570 D7	3506 E8	3514 F11	3522 E12	3530 G12	3538 I14	3546 G14	3556 B2	3565 I4	3577 B6	3585 C7	6500 B10	7501 C8	7509 C12	7517 G2	9555 F3	T508 B2	T562 D2	T570 F2	T578 H2	T586 G7	T594 I8
1555 E2	2507 B9	2515 D11	2523 C12	2531 C14	2539 B1	2563 B5	2571 G7	3507 C9	3515 D11	3523 D12	3531 C12	3539 B14	3547 B15	3557 D3	3566 I4	3578 D6	3586 E7	6550 I5	7502 E8	7510 G12	7518 F5	9556 A8	T509 A8	T563 E2	T571 F2	T579 H2	T587 H7	T595 B7
1556 G2	2508 D9	2516 F11	2524 G12	2532 G13	2540 G4	2564 C6	2573 A4	3508 E9	3516 E11	3524 F12	3532 G12	3540 H14	3548 H15	3558 D3	3568 H5	3579 B6	3587 B7	7500-A F10	7503 C9	7511 B13	7519 B6	T501 B9	T555 C2	T564 E2	T572 G2	T580 H2	T588 H8	T596 D7
2500 A8	2509 C9	2517 D11	2525 C13	2533 C14	2541 H3	2565 B6	3500 A7	3509 C9	3517 D12	3525 B12	3533 C13	3541 A14	3549 A3	3559 E3	3572 G7	3580 D6	3588 D7	7500-B F11	7504 E9	7512 H13	7520 B6	T503 C9	T556 B2	T565 E2	T573 G2	T581 I2	T589 H8	



Source Selection Logic Table

Source	A1	A0
TAPE	0	0
AUX	1	0
TUNER	0	1
CD	1	1

LOGIC TABLE

Sound features	Control lines					
	DSC	DBB	POP	BASS	JAZZ	
(flat)	off	off	0	0	1	0
Rock	off	on	1	0	1	0
Jazz	off	on	0	0	1	1
Pop	off	on	1	1	1	1

\* Item Model

3541	3551	3553	3555	3557	3559	3561	5552	9551	9552	9553
MC10	220K	39K	6K8	22K	33K	3K3	15K	2.2uH		
MC20	150K	33K	8K2	6K8	18K	2K7	10K			

(230V MAINS SUPPLY) DC VOLTAGES MEASURED IN :

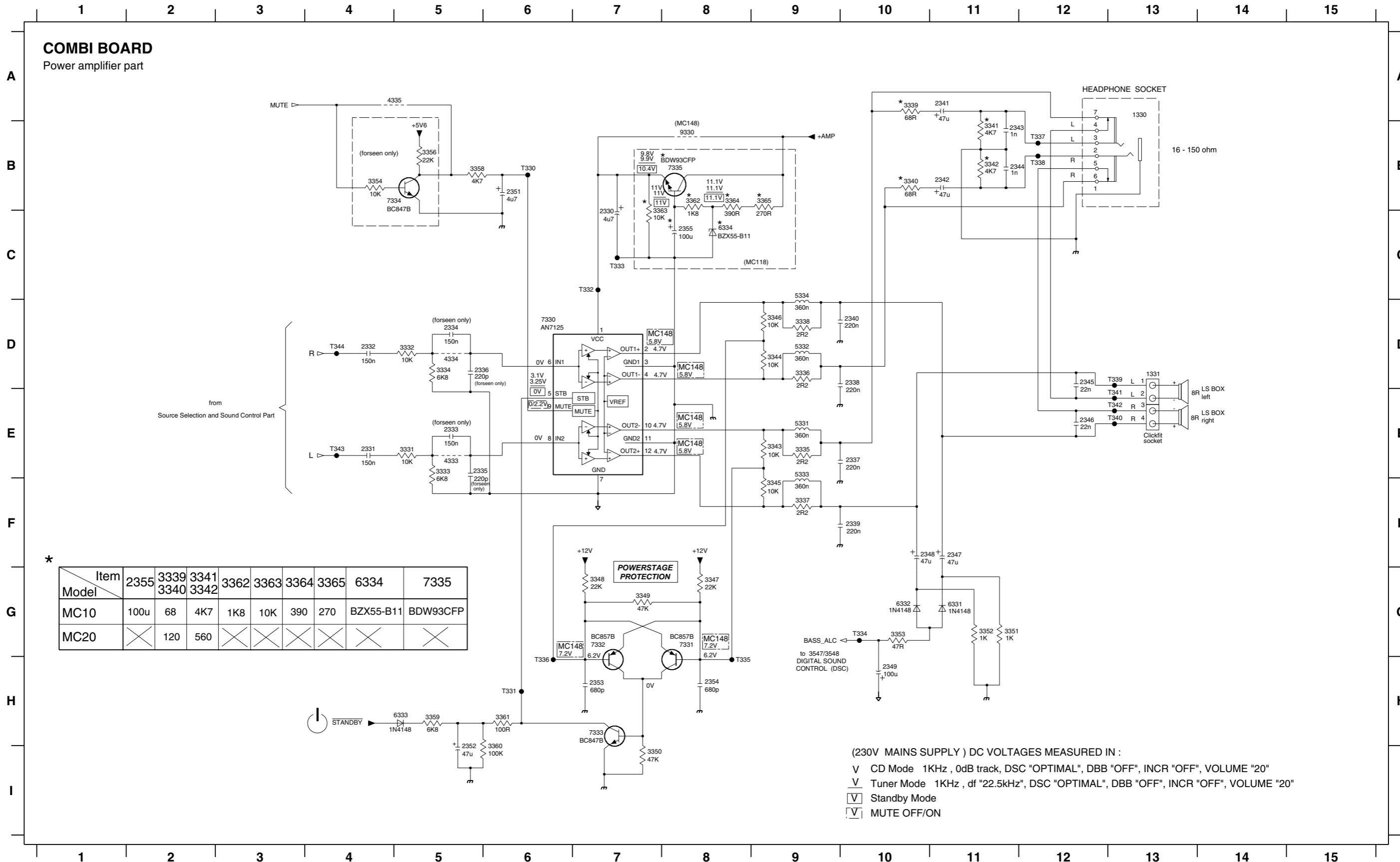
- V CD Mode 1KHz, 0dB track, DSC "OPTIMAL", DBB "OFF", INCR "OFF", VOLUME "20"
- V Tuner Mode 1KHz, df "22.5kHz", DSC "OPTIMAL", DBB "OFF", INCR "OFF", VOLUME "20"
- V Standby Mode
- V DSC OFF/ON at CD Mode 1KHz, 0dB track, VOLUME "20"

# COMBI BOARD (Part 2) - CIRCUIT DIAGRAM

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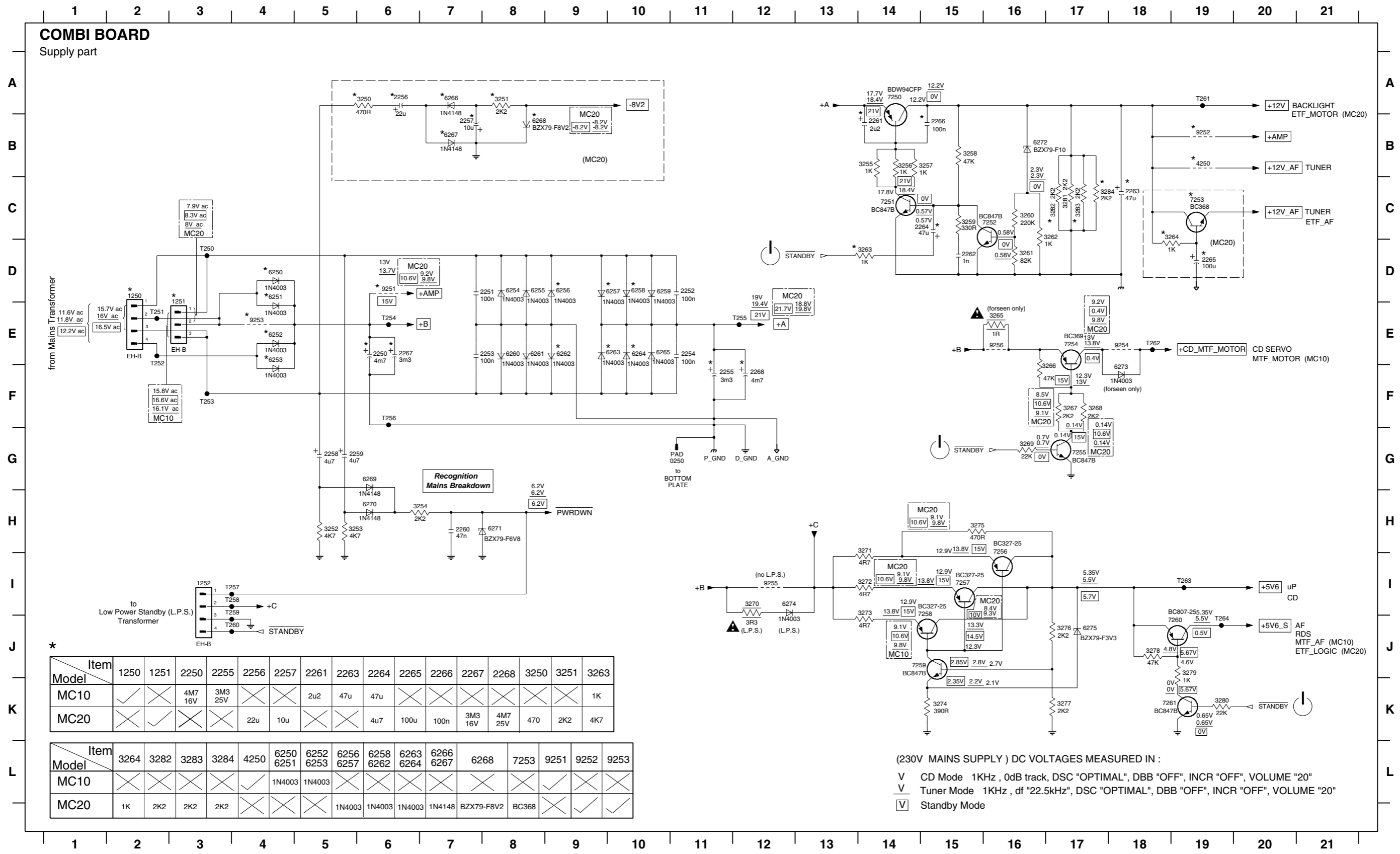
7-2

1330 A13 2331 E4 2334 D5 2337 E9 2340 D9 2343 B11 2346 E12 2349 H10 2353 H7 3331 E5 3334 D5 3337 F9 3340 B10 3343 E9 3346 D9 3349 G7 3352 G11 3356 B5 3360 I5 3363 C7 4333 E5 5331 E9 5334 C9 6333 H5 7331 G8 7334 B4 T330 B6 T333 C7 T336 H6 T339 D13 T342 E13  
 1331 D13 2332 D4 2335 E5 2338 D9 2341 A11 2344 B11 2347 F11 2351 B6 2354 H8 3332 D5 3335 E9 3338 D9 3341 B11 3344 D9 3347 G8 3350 I7 3353 G10 3358 B5 3361 H6 3364 B8 4334 D5 5332 D9 6331 G11 6334 C8 7332 G7 7335 B8 T331 H6 T334 G10 T337 B12 T340 E13 T343 E4  
 2330 C7 2333 E5 2336 D5 2339 F9 2342 B11 2345 D12 2348 F10 2352 I5 2355 C8 3333 E5 3336 D9 3339 A10 3342 B11 3345 F9 3348 G7 3351 G11 3354 B4 3359 H5 3362 B8 3365 B9 4335 A5 5333 E9 6332 G10 7330 D6 7333 H7 7335 B8 9330 B8 T332 C7 T335 H8 T338 B12 T341 E13 T344 D4



# COMBI BOARD (Part 3) - CIRCUIT DIAGRAM

0250 G11	2250 E6	2254 E11	2258 G5	2262 D15	2266 B15	3251 A8	3255 B14	3259 C15	3263 D14	3267 F17	3271 H14	3275 H15	3279 J19	3283 C17	6251 D4	6255 D8	6259 D10	6263 E10	6267 B7	6271 H8	6275 J17	7253 C19	7257 H5	7261 K19	9254 E18	T251 E2	T255 E12	T259 I4	T263 I19
1250 D2	2251 D8	2255 F11	2259 G5	2263 C18	2267 E6	3252 H5	3256 B14	3260 C16	3264 C19	3268 F17	3272 I14	3276 J17	3280 K19	3284 C17	6252 E4	6256 D9	6260 E8	6264 E10	6268 B8	6272 B16	7250 A14	7254 E17	7258 I14	9251 D6	9255 I12	T252 F2	T256 F6	T260 J4	T264 J19
1251 E3	2252 D11	2256 A6	2260 H7	2264 C15	2268 F12	3253 H5	3257 B15	3261 D16	3265 E16	3269 G16	3273 I14	3277 K17	3281 C17	4250 B19	6253 E4	6257 D10	6261 E8	6265 E10	6269 G6	6273 E18	7251 C14	7255 G17	7259 J15	9252 B19	9256 E16	T253 F3	T257 I4	T261 A19	T265 E18
1252 I3	2253 E8	2257 B7	2261 B14	2265 D19	3250 A6	3254 H7	3258 B15	3262 C17	3266 F17	3270 H2	3274 K15	3278 J18	3282 C17	6250 D4	6254 D8	6258 D10	6262 E9	6266 A7	6270 H6	6274 H2	7252 C16	7256 H16	7260 J18	9253 E4	T250 D3	T254 E6	T258 I4	T262 E18	



Item	1250	1251	2250	2255	2256	2257	2261	2263	2264	2265	2266	2267	2268	3250	3251	3263
MC10	✓	✗	4M7 16V	3M3 25V	✗	✗	2u2	47u	47u	✗	✗	✗	✗	✗	✗	1K
MC20	✗	✓	✗	✗	22u	10u	✗	✗	4u7	100u	100n	3M3 16V	4M7 25V	470	2K2	4K7

Item	3264	3282	3283	3284	4250	6250 6251	6252 6253	6256 6257	6258 6262	6263 6264	6266 6267	6268	7253	9251	9252	9253
MC10	✗	✗	✗	✗	✓	1N4003	1N4003	✗	✗	✗	✗	✗	✗	✓	✗	✗
MC20	1K	2K2	2K2	2K2	✗	✗	✗	1N4003	1N4003	1N4003	1N4148	BZX79-F8V2	BC368	✗	✓	✓

(230V MAINS SUPPLY) DC VOLTAGES MEASURED IN :

- V CD Mode 1KHz, 0dB track, DSC "OPTIMAL", DBB "OFF", INCR "OFF", VOLUME "20"
- V Tuner Mode 1KHz, df "22.5kHz", DSC "OPTIMAL", DBB "OFF", INCR "OFF", VOLUME "20"
- V Standby Mode

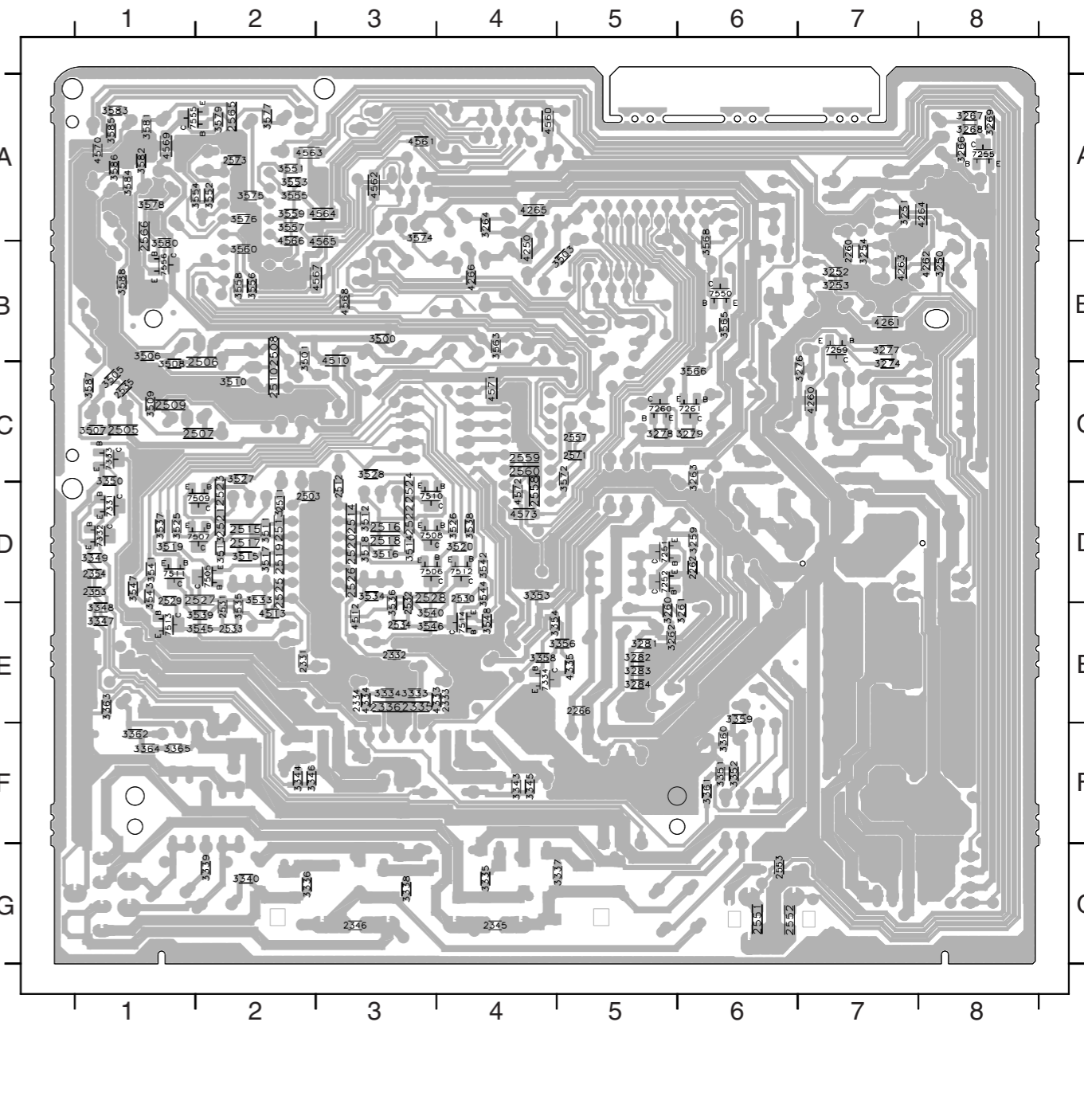
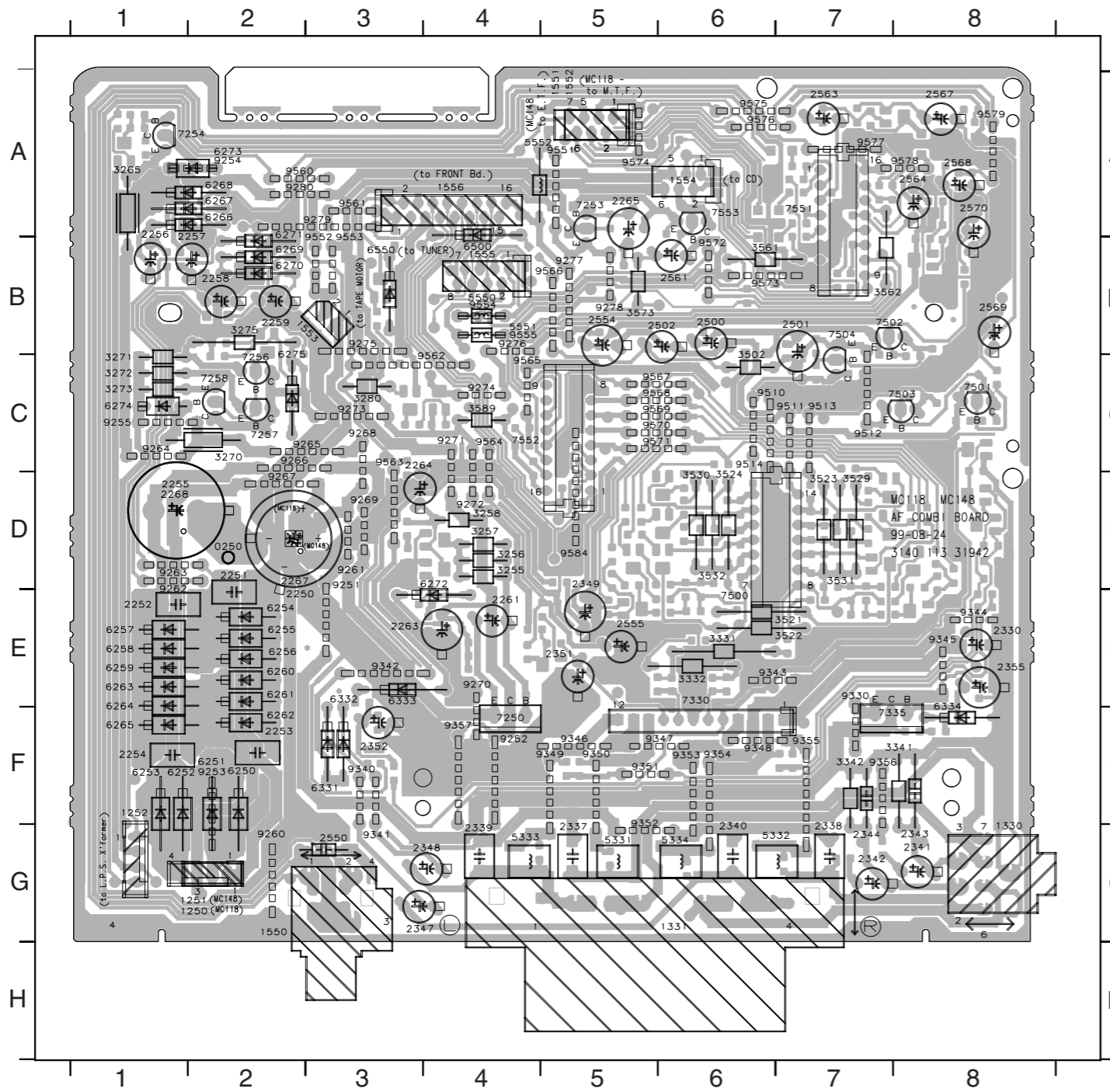
# COMBI BOARD - LAYOUT DIAGRAM

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0250 D2	2254 F1	2341 G8	2563 A7	3331 E6	5331 G5	6260 E2	6332 E3	7504 B7	9268 C3	9343 E6	9512 C7	9569 C5
1250 G2	2255 D1	2342 G7	2564 A8	3332 E6	5332 G7	6261 F2	6333 E3	7551 A7	9269 D3	9344 E8	9513 C7	9570 C5
1251 G2	2256 A1	2343 G8	2567 A8	3341 F8	5333 G4	6262 F4	6334 E8	7552 C4	9270 E4	9345 E8	9514 C6	9571 C5
1252 F1	2257 A2	2344 G7	2568 A8	3342 F7	5334 G6	6263 E1	6335 B4	7553 A6	9271 C4	9346 F5	9515 A5	9572 B6
1330 G8	2258 B2	2347 C3	2569 B8	3502 C6	5550 B4	6264 F1	6500 B3	7554 D3	9272 D4	9347 F6	9516 B3	9573 B6
1331 G6	2259 B2	2348 G4	2570 A8	3521 E7	5551 B4	6265 F1	6500 B4	7555 A6	9273 C3	9348 F6	9517 A5	9574 A5
1550 G2	2261 F4	2349 D5	2575 D4	3522 E7	5552 A4	6266 A2	7253 A5	9253 F2	9274 C4	9349 F5	9518 B4	9575 A6
1551 A5	2263 E3	2351 F3	2576 D4	3523 D7	6250 F2	6267 A2	7254 A2	9254 A2	9275 B3	9350 F5	9519 B4	9576 A6
1552 A5	2264 C3	2352 F5	2577 D4	3524 D6	6251 F2	6268 A2	7256 C2	9255 C1	9276 B4	9351 F5	9520 A2	9577 A7
1553 B3	2265 A5	2355 E8	2578 D4	3529 D7	6252 F1	6269 B2	7257 C2	9260 G2	9277 B5	9352 F5	9561 A3	9578 A8
1554 A6	2267 D2	2500 B6	2579 A1	3530 D6	6253 F1	6270 B2	7258 C2	9261 D3	9278 B5	9353 F6	9562 C4	9579 A8
1555 B4	2268 D1	2501 B7	2579 C2	3531 D7	6254 E2	6271 A2	7330 E6	9262 D1	9279 A3	9354 F6	9563 C3	9584 D5
1556 A4	2330 E8	2502 B6	2721 C1	3532 D6	6255 E2	6272 D4	7335 F7	9263 D1	9280 A2	9355 F7	9564 C4	
2250 E2	2337 G5	2550 G3	3272 C1	3561 B6	6256 E2	6273 A2	7500 E6	9264 C1	9330 E7	9356 F7	9565 C4	
2251 D2	2338 G7	2554 B5	3273 C1	3562 B7	6257 E1	6274 C1	7501 C8	9265 C3	9340 F3	9357 F4	9566 B5	
2252 E1	2339 G4	2555 E5	3275 C2	3573 B5	6258 E1	6275 C2	7502 B7	9266 C2	9341 G3	9510 C6	9567 C5	
2253 F2	2340 G6	2561 B6	3280 C3	3589 C4	6259 E1	6331 F3	7503 C8	9267 D2	9342 E3	9511 C7	9568 C5	

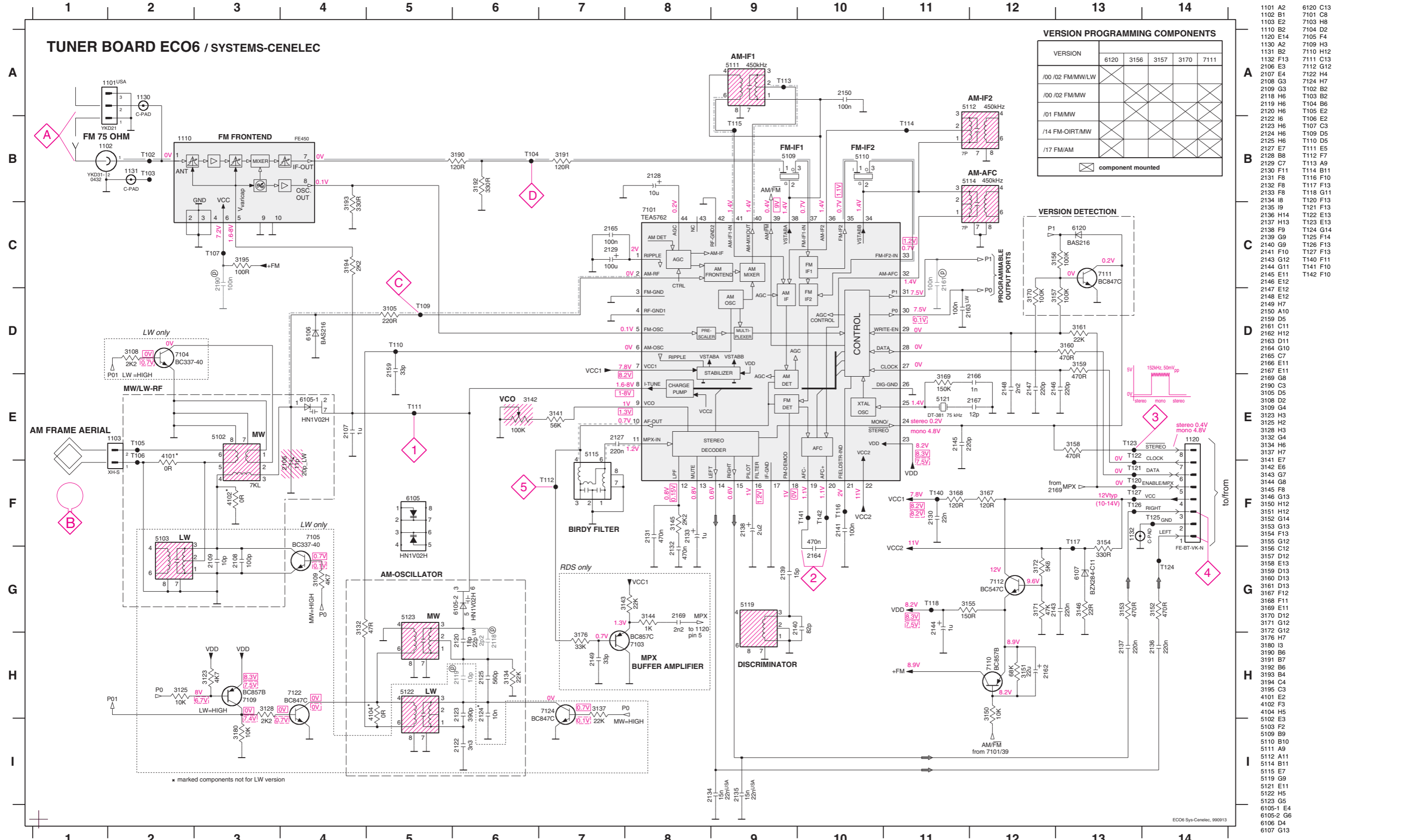
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2262 D6	2510 C2	2528 D3	2573 A2	3277 B7	3346 F2	3500 B3	3520 D4	3546 E3	3574 A3	4262 B8	4567 B3	7506 D3
2266 F5	2511 D2	2529 D1	3250 B8	3278 C5	3347 E1	3501 B2	3525 D1	3547 D1	3575 A2	4263 B7	4568 B3	7507 D2
2331 F2	2512 D3	2530 D4	3251 A7	3279 C6	3348 E1	3503 B5	3526 D4	3548 E4	3576 A2	4264 A8	4569 A1	7508 D3
2332 F3	2513 D2	2531 E2	3252 B7	3281 C5	3349 D1	3505 C1	3527 C2	3549 E1	3577 A2	4265 A4	4570 D1	7509 D2
2333 F4	2514 D3	2532 E3	3253 B7	3282 E5	3350 C1	3506 B1	3528 C3	3552 A2	3578 A1	4266 B4	4571 C4	7510 D3
2334 F3	2515 D2	2533 E2	3254 B7	3283 E5	3351 F6	3507 C1	3533 D2	3553 A2	3579 A2	4267 C4	4572 D4	7511 D1
2335 E3	2516 D3	2534 E3	3255 B9	3284 E5	3352 F6	3508 C1	3534 D3	3554 A2	3580 B1	4268 E3	4573 D4	7512 D4
2336 E3	2517 D2	2535 C1	3260 F5	3333 E3	3353 D4	3509 C1	3535 E2	3555 A2	3581 A1	4335 E5	4574 D5	7513 E4
2345 G4	2518 D3	2551 G6	3261 F5	3334 E3	3354 E4	3510 C2	3536 F3	3556 B2	3582 A1	4510 B3	4575 D5	7514 E4
2346 G3	2519 D2	2552 G6	3262 F5	3335 G4	3355 E5	3511 D2	3537 D1	3557 A2	3583 A1	4512 E3	4575 A8	7550 B6
2353 D1	2520 D3	2553 G6	3263 C6	3336 G2	3356 E4	3512 D3	3538 D4	3558 B2	3584 A1	4513 E2	4575 B7	7555 A1
2354 D1	2521 D2	2557 C5	3264 A4	3337 G5	3359 E6	3513 D2	3539 E2	3559 A2	3585 A1	4560 A4	4576 C5	7556 B1
2503 D2	2522 D3	2558 D4	3266 A8	3338 G3	3360 F6	3514 D3	3540 E3	3560 B2	3586 A1	4561 A3	4576 C6	
2505 C1	2523 D2	2559 C4	3267 A8	3339 G2	3361 F6	3515 D2	3541 D1	3563 B4	3587 C1	4562 A3	4577 D1	
2506 C2	2524 D3	2560 C4	3268 A8	3340 G2	3362 F1	3516 D3	3542 D4	3565 B6	3588 B1	4563 A2	4578 D1	
2507 C2	2525 D2	2565 A2	3269 A8	3343 F4	3363 F1	3517 D2	3543 D1	3566 C6	4250 B4	4564 A3	4579 C1	
2508 B2	2526 D3	2566 A1	3274 C7	3344 F2	3364 F1	3518 D3	3544 D4	3568 B6	4260 C7	4565 B3	4580 C4	



# TUNER BOARD ECO6 - CIRCUIT DIAGRAM

8-1

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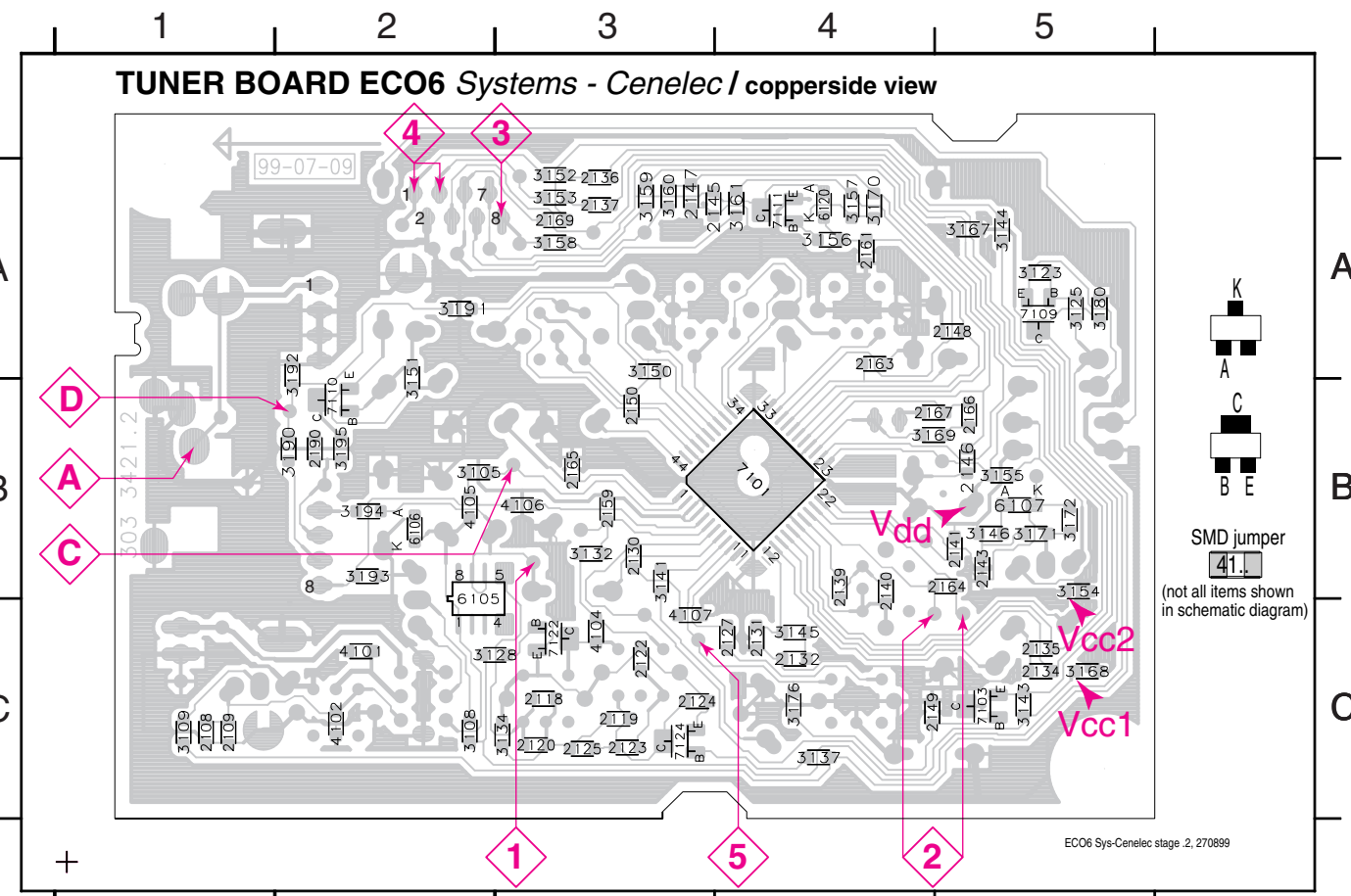
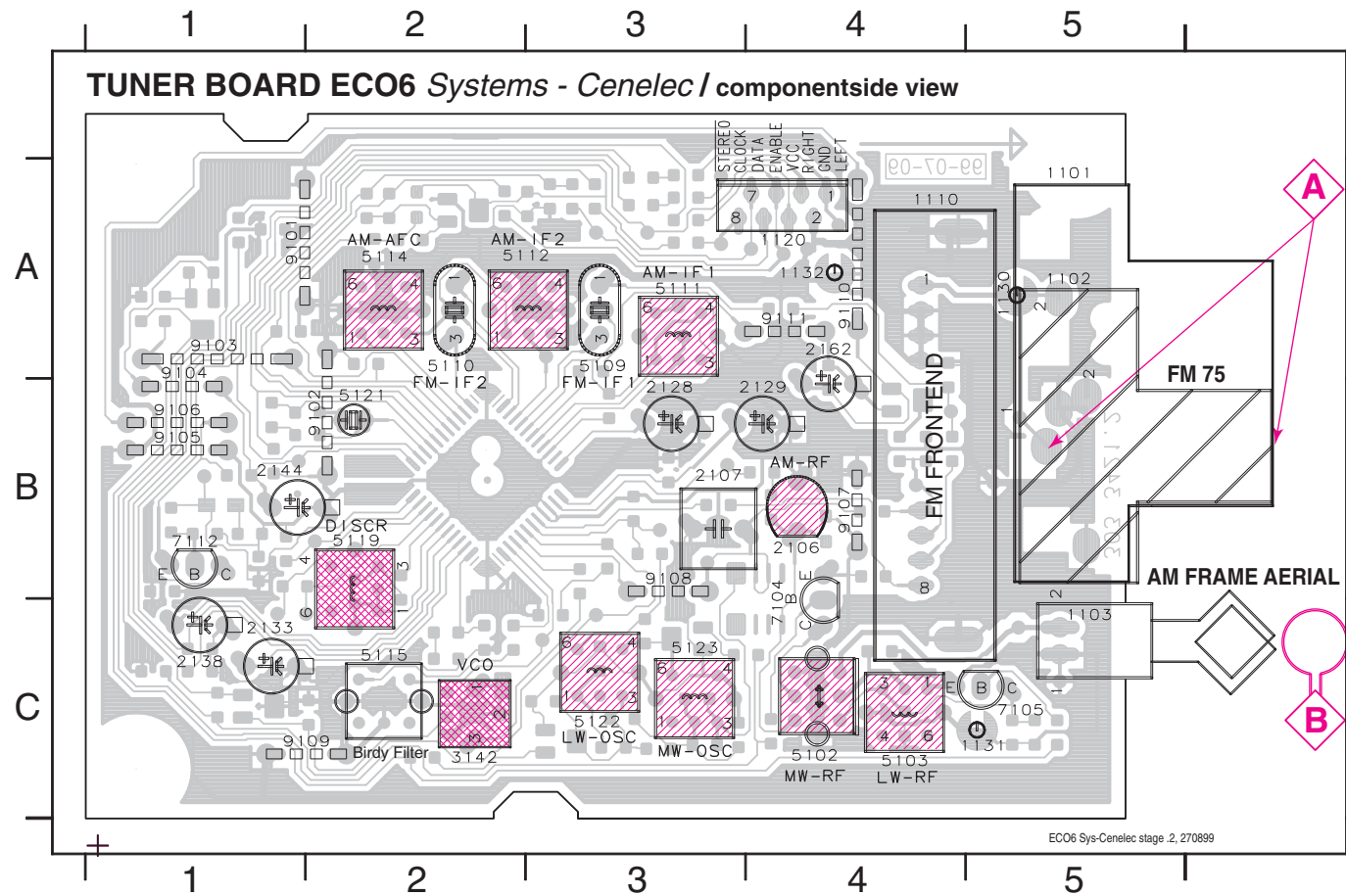
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- 1102 B1
- 1103 E2
- 1110 B2
- 1120 E14
- 1130 A2
- 1131 B2
- 1132 F13
- 2106 E3
- 2107 E4
- 2108 G3
- 2109 G3
- 2118 H6
- 2119 H6
- 2120 H6
- 2122 I6
- 2123 H6
- 2124 H6
- 2125 H6
- 2127 E7
- 2128 B8
- 2129 C7
- 2130 F11
- 2131 F8
- 2132 F8
- 2133 F8
- 2134 I8
- 2135 I9
- 2136 H14
- 2137 H13
- 2138 F9
- 2139 G9
- 2140 G9
- 2141 F10
- 2143 G12
- 2144 G11
- 2145 E11
- 2146 E12
- 2147 E12
- 2148 E12
- 2149 H7
- 2150 A10
- 2159 D5
- 2161 C11
- 2162 H12
- 2163 D11
- 2164 G10
- 2165 C7
- 2166 E11
- 2167 E11
- 2169 G8
- 2190 C3
- 3105 D5
- 3108 D2
- 3109 G4
- 3123 H3
- 3125 H2
- 3128 H3
- 3132 G4
- 3134 H6
- 3137 H7
- 3141 E7
- 3142 E6
- 3143 G7
- 3144 G8
- 3145 F8
- 3146 G13
- 3150 H12
- 3151 H12
- 3152 G14
- 3153 G13
- 3155 G13
- 3156 G12
- 3157 D12
- 3158 E13
- 3159 D13
- 3160 D13
- 3161 D13
- 3167 F12
- 3168 F11
- 3169 E11
- 3170 D12
- 3171 G12
- 3172 G12
- 3176 H7
- 3180 I3
- 3190 B6
- 3191 B7
- 3192 B6
- 3193 B4
- 3194 C4
- 3195 C3
- 4101 E2
- 4102 F3
- 4104 H5
- 5102 E3
- 5103 F2
- 5109 B9
- 5110 B10
- 5111 A9
- 5112 A11
- 5114 B11
- 5115 E7
- 5119 G9
- 5121 E11
- 5122 H5
- 5123 G5
- 6105-1 E4
- 6105-2 G6
- 6106 D4
- 6107 G13
- 6120 C13
- 7101 C8
- 7103 H8
- 7104 D2
- 7105 F4
- 7109 H3
- 7110 H2
- 7111 C13
- 7112 G12
- 7122 H4
- 7124 H7
- 7125 B2
- 7126 B2
- 7128 H2
- 7129 E2
- 7130 C3
- 7131 D5
- 7132 E5
- 7133 F3
- 7134 B11
- 7135 F10
- 7136 F13
- 7137 F13
- 7138 F13
- 7139 I3
- 7140 F11
- 7141 F10
- 7142 F10
- 7143 F10
- 7144 F10
- 7145 F10
- 7146 F10
- 7147 F10
- 7148 F10
- 7149 F10
- 7150 F10

**LEGEND**

- ... only assembled in FM/AM-version
- Ⓟ for provision only
- USA ... for USA version only
- LW ... for LW version only
- SMD jumper
- 41xx
- ...V FM mode stereo
- ...V MW mode
- ...V LW mode
- voltages measured while set is tuned to a strong transmitter
- Signal path
- FM
- - - AM
- MPX (Audio Frequency)
- ⇒ AF - left/right

1101 B5 1110 B4 1131 C5 2107 B3 2133 C1 2162 A4 5103 C4 5111 A3 5115 C2 5122 C3 7105 C5 9102 B2 9105 B1 9108 B3 9111 A4  
 1102 B5 1120 A4 1132 A4 2128 B3 2138 B1 3142 C2 5109 A3 5112 A3 5119 B2 5123 C3 7112 B1 9103 A1 9106 B1 9109 C2  
 1103 C5 1130 A5 2106 B4 2129 B4 2144 B1 5102 C4 5110 A2 5114 A2 5121 B2 7104 C4 9101 A2 9104 B1 9107 B4 9110 A4

2108 C1 2123 C3 2132 C4 2140 B4 2148 A5 2164 B5 3105 B2 3132 B3 3145 C4 3154 B5 3160 A3 3171 B5 3192 A2 4104 C3 6107 B5 7111 A4  
 2109 C1 2124 C3 2134 C5 2141 B5 2149 C4 2165 B3 3108 C2 3134 C3 3146 B5 3155 B5 3161 A4 3172 B5 3193 B2 4105 B2 6120 A4 7122 C3  
 2118 C3 2125 C3 2135 C5 2143 B5 2150 B3 2166 B5 3109 C1 3137 C4 3150 A3 3156 A4 3167 A5 3176 C4 3194 B2 4106 B3 7101 B4 7124 C3  
 2119 C3 2127 C4 2136 A3 2145 A3 2159 B3 2167 B4 3123 A5 3141 B3 3151 A2 3157 A4 3168 C5 3180 A5 3195 B2 4107 C3 7103 C5  
 2120 C3 2130 B3 2137 A3 2146 B5 2161 A4 2169 A3 3125 A5 3143 C5 3152 A3 3158 A3 3169 B4 3190 B2 4101 C2 6105 B2 7109 A5  
 2122 C3 2131 C4 2139 B4 2147 A3 2163 A4 2190 B2 3128 C2 3144 A5 3153 A3 3159 A3 3170 A4 3191 A2 4102 C2 6106 B2 7110 B2



These assembly drawings show a summary of all possible versions.  
 For components used in a specific version see schematic diagram respectively partslist.

Waverange	Input frequency	Input	Tuned to	Adjust	Output	Scope/Voltmeter
<b>VARICAP ALIGNMENT</b>						
<b>FM</b> 87.5 - 108MHz (50kHz grid)			108MHz	check		8V ±1.2V
			87.5MHz	check		1.6V ±0.5V
<b>MW</b> 531 - 1602kHz (9kHz grid)			1602kHz	5123	◇ 1	8V ±0.2V 3-band 6.9V ±0.2V 2-band
			531kHz	check		1.1V ±0.4V
<b>LW</b> 153 - 279kHz (3kHz grid)			279kHz	5122		8V ±0.2V
			153kHz	check		1.1V ±0.4V
<b>FM - IF</b>						
<b>FM</b>	10.7MHz, 45mV continuous wave	◇ D	IC 7101 21 shortcircuit to block AFC =2141	5119	◇ 2	0mV ±3mV
<b>FM - VCO</b>						
<b>FM</b>	98MHz, 1mV continuous wave	◇ A	98MHz	3142	◇ 3	152kHz ±1kHz <sup>1)</sup>
<b>FM RF (channel separation)</b> Note: The FM-frontend unit has already been adjusted by the factory and needs therefore no further adjustments for service purposes.						
<b>FM</b>	98MHz, 1mV 90% Left + 9% pilot mod=1kHz	◇ A	98MHz	IF coil inside FM frontend 1110	◇ 4	right channel min.
<b>AM IF</b>						
<b>MW</b>	450kHz  connect pin 6 of IC 7101 (AM Osc.) with 3.3k to Vcc	◇ C	IC 7101 36 100nF	5111	◇ 5	
			IC 7101 40 100nF see remark 2)	5112		
<b>AM AFC</b> <b>MW</b>	continuous wave V <sub>RF</sub> = 2mV	◇ C		5114	◇ 2	0mV ±2mV
<b>AM RF<sup>3)</sup></b>						
<b>MW</b>	1494kHz	◇ B	1494kHz	2106	◇ 5	
	558kHz		558kHz	5102		
<b>LW</b>	198kHz	f = ±30kHz V <sub>RF</sub> as low as possible	198kHz	5103		

Use Service Testprogram. By selecting the TUNER TEST test frequencies will be stored as preset frequencies automatically.

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

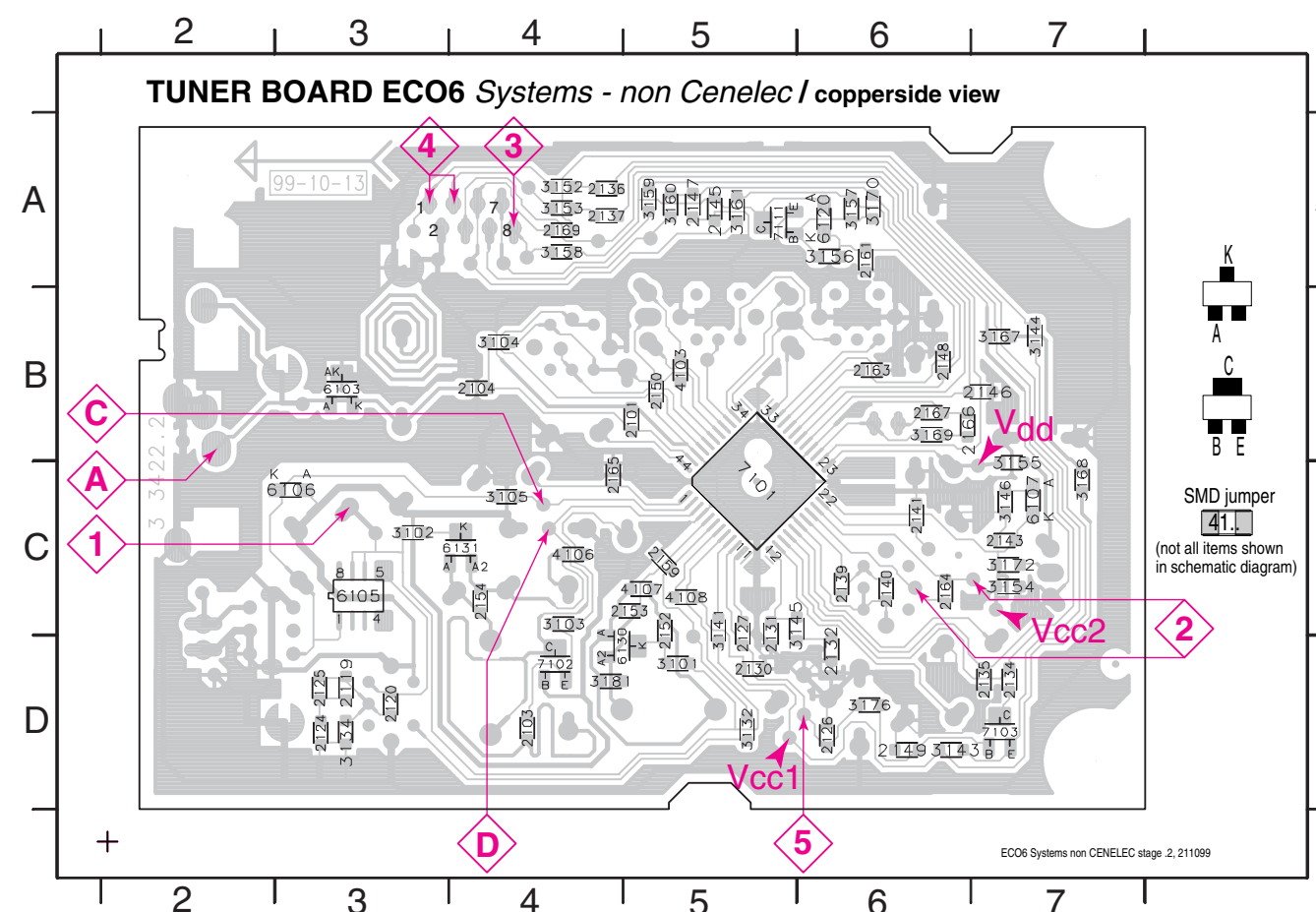
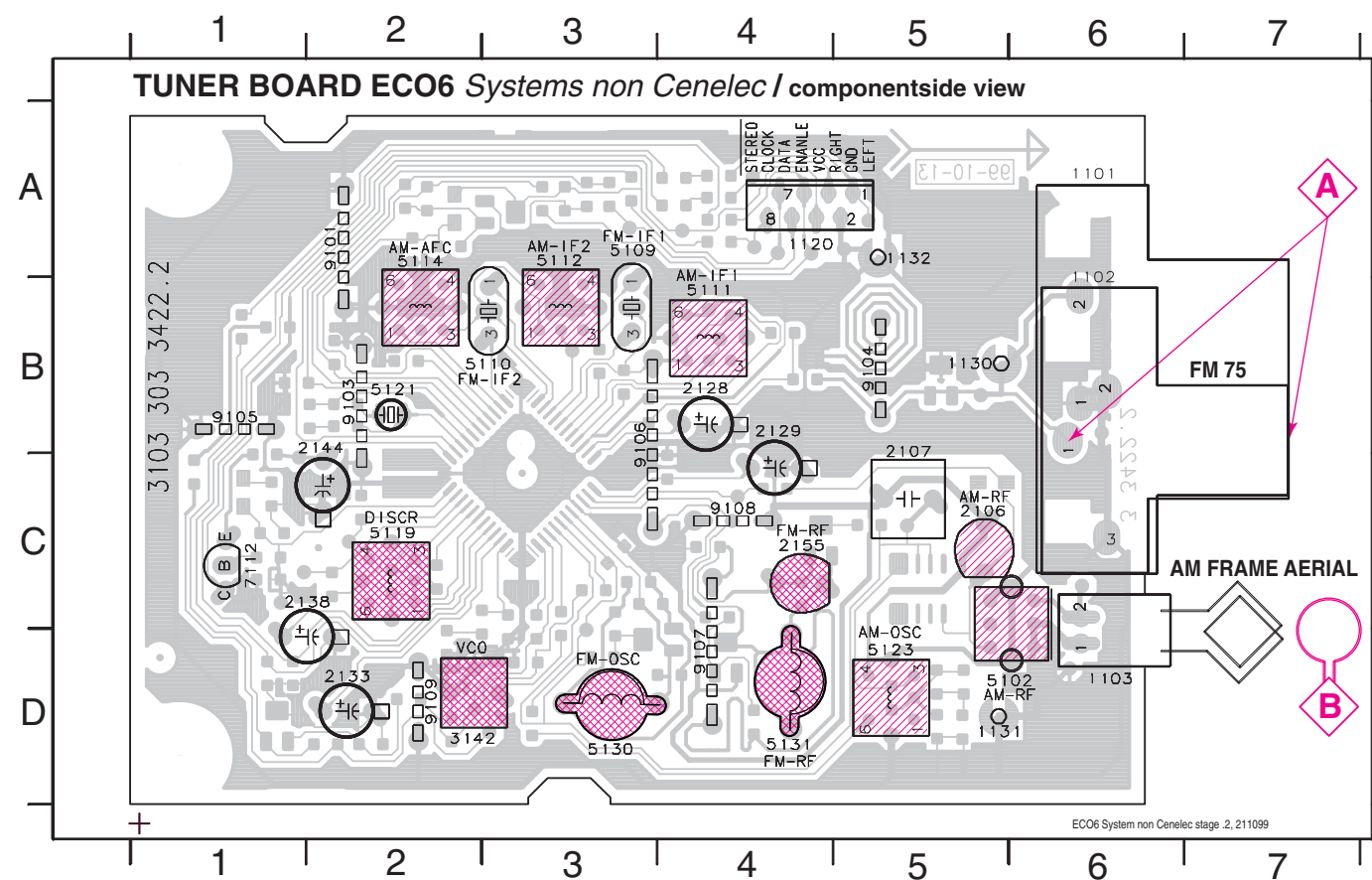
2) RC network serves for damping the IF-filter while adjusting the other one.

3) For AM RF adjustments the original frame antenna has to be used!  
 MW has to be aligned before LW.

↑ Repeat

1101 A6 1120 A4 1132 A5 2128 C4 2138 C2 3142 D2 5110 B3 5114 A2 5123 D5 7112 C1 9104 B5 9107 D4  
1102 B6 1130 B5 2106 C5 2129 B4 2144 B2 5102 D6 5111 B4 5119 C2 5130 D3 9101 A2 9105 B1 9108 C4  
1103 D6 1131 D5 2107 B5 2133 D2 2155 C4 5109 A3 5112 A3 5121 B2 5131 D4 9103 B2 9106 B3 9109 D2

2101 B5 2125 D3 2134 D7 2141 C6 2149 D6 2161 A6 2169 A4 3132 D5 3146 C7 3157 A6 3168 C7 4103 B5 6106 C3 7102 D4  
2103 D4 2126 D6 2135 D7 2143 C7 2150 B5 2163 B6 3101 D5 3134 D3 3152 A4 3158 A4 3169 B6 4106 C4 6107 C7 7103 D7  
2104 B4 2127 C5 2136 A4 2145 A5 2152 C5 2164 C6 3102 C3 3141 C5 3153 A4 3159 A5 3170 A6 4107 C5 6120 A6 7111 A5  
2119 D3 2130 D5 2137 A4 2146 B7 2153 C5 2165 C4 3103 C4 3143 D6 3154 C7 3160 A5 3172 C7 4108 C5 6130 D4  
2120 D3 2131 C5 2139 C6 2147 A5 2154 C4 2166 B6 3104 B4 3144 B7 3155 C7 3161 A5 3176 D6 6103 B3 6131 C4  
2124 D3 2132 D6 2140 C6 2148 B6 2159 C5 2167 B6 3105 C4 3145 C5 3156 A6 3167 B7 3181 D4 6105 C3 7101 C5



These assembly drawings show a summary of all possible versions.  
For components used in a specific version see schematic diagram respectively partslist.

Waverange	Input frequency	Input	Tuned to	Adjust	Output	Scope/Voltmeter
<b>VARICAP ALIGNMENT</b>						
<b>FM</b> 87.5 - 108MHz (65.81 - 74, 87.5 - 108MHz)			108MHz	5130		8V ±0.2V
			87.5MHz (65.81MHz)	check		4.3V ±0.5V (1.2V ±0.5V)
<b>MW</b> FM/AM-version, 10kHz grid 530 - 1700kHz			1700kHz	5123		8V ±0.2V
			530kHz	check		1.1V ±0.4V
FM/MW-version, 9kHz grid 531 - 1602kHz			1602kHz	5123	1	6.9V ±0.2V
			531kHz	check		1.1V ±0.4V
<b>LW</b> 153 - 279kHz			279kHz	5122		8V ±0.2V
			153kHz	check		1.1V ±0.4V
<b>MW</b> FM/MW/LW- version, 9kHz grid 531 - 1602kHz			1602kHz	5123		8V ±0.2V
			531kHz	check		1.1V ±0.4V
<b>FM IF</b>						
<b>FM</b>	10.7MHz, 45mV continuous wave	D	IC 7101 shortcircuit to block AFC =2141	5119	2	0 ± 3 mV DC
<b>FM RF</b>						
<b>FM</b> 87.5 - 108MHz (65.81 - 74, 87.5 - 108MHz)	108MHz	A	108MHz	2155	4	MAX
	87.5MHz (65.81MHz)	mod=1kHz f=±22.5kHz	87.5MHz (65.81MHz)	5131		
<b>VCO</b>						
<b>FM</b>	98MHz, 1mV continuous wave	A	98MHz	3142	3	152kHz ±1kHz <sup>1)</sup>
<b>AM IF</b>						
<b>MW</b>	450kHz  connect pin 6 of IC 7101 (AM Osc.) with 3.3k to Vcc	C	IC 7101 36 100nF	5111	5	symmetric max.
		C	IC 7101 40 100nF	5112		
<b>AM AFC</b>		C		5114	2	0 ± 2 mV DC
<b>AM RF<sup>3)</sup></b>						
<b>MW</b> <sup>4)</sup> FM/MW/LW- and FM/MW-version (9kHz grid) 531 - 1602kHz	1494kHz	B	1494kHz	2106	5	symmetric max.
	558kHz		558kHz	5102		
<b>LW</b>	198kHz		198kHz	5103		
<b>MW</b> FM/AM-version, 10kHz grid 530 - 1700kHz	1500kHz		1500kHz	2106		
	560kHz	f = ±30kHz V <sub>RF</sub> as low as possible	560kHz	5102		

Use Service Testprogram. By selecting the TUNER TEST test frequencies will be stored as preset frequencies automatically.

<sup>1)</sup> 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) <sup>2)</sup> RC network serves for damping the IF-filter while adjusting the other one.

<sup>3)</sup> For AM RF adjustments the original frame antenna has to be used ! <sup>4)</sup> MW has to be aligned before LW.

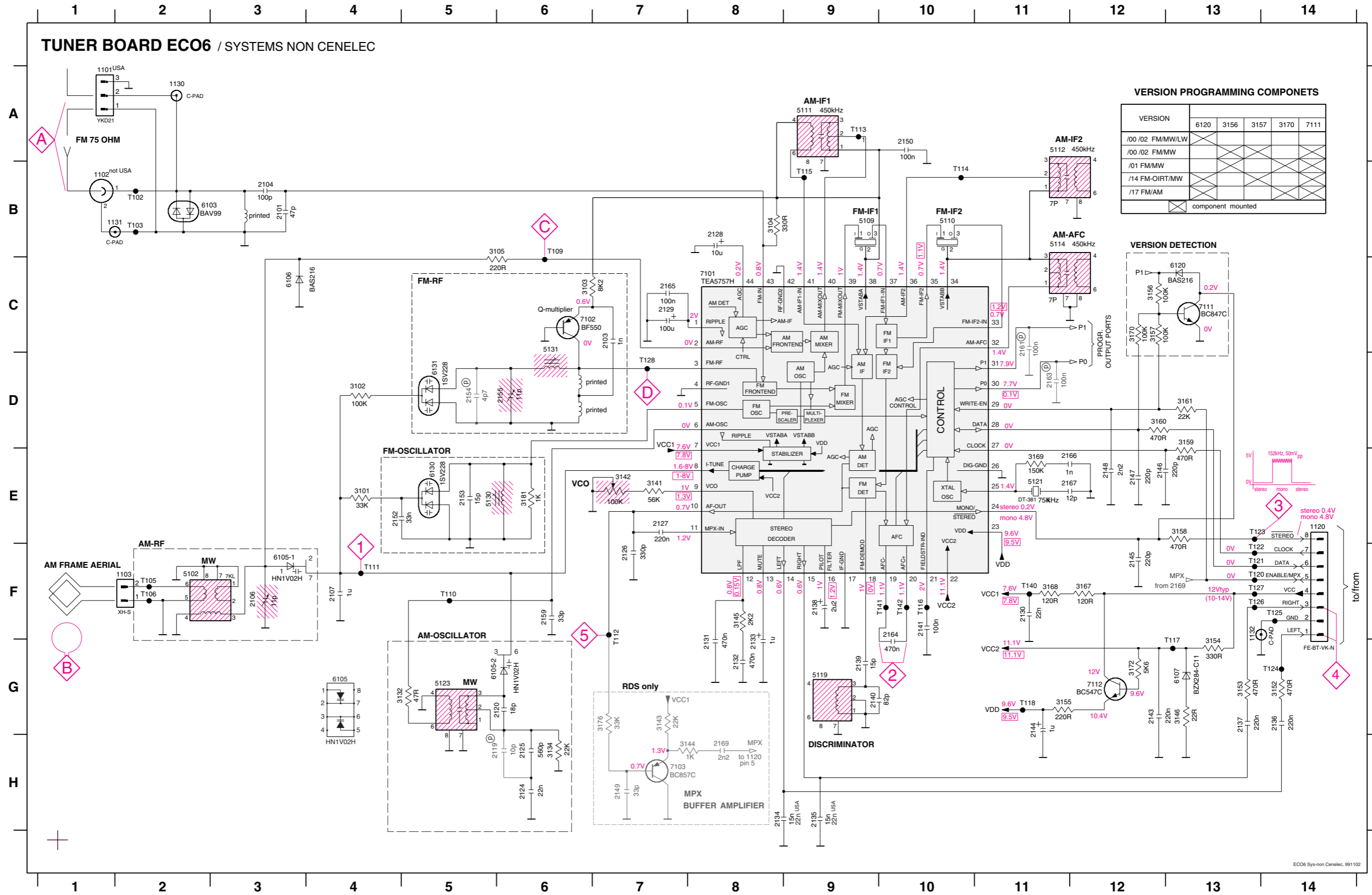
↑ Repeat



# TUNER BOARD ECO6 (Non Cenelec) - CIRCUIT DIAGRAM

8-4

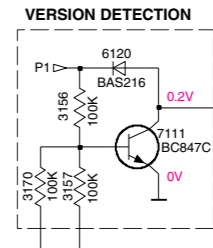
8-4



**VERSION PROGRAMMING COMPONENTS**

VERSION	6120	3156	3157	3170	7111
/00 /02 FM/MW/LW	X	X	X	X	X
/00 /02 FM/MW	X	X	X	X	X
/01 FM/MW	X	X	X	X	X
/14 FM-OIRT/MW	X	X	X	X	X
/17 FM/AM	X	X	X	X	X

*X* component mounted



**LEGEND**  
 Ⓞ...for provision only  
 USA ... for USA version only

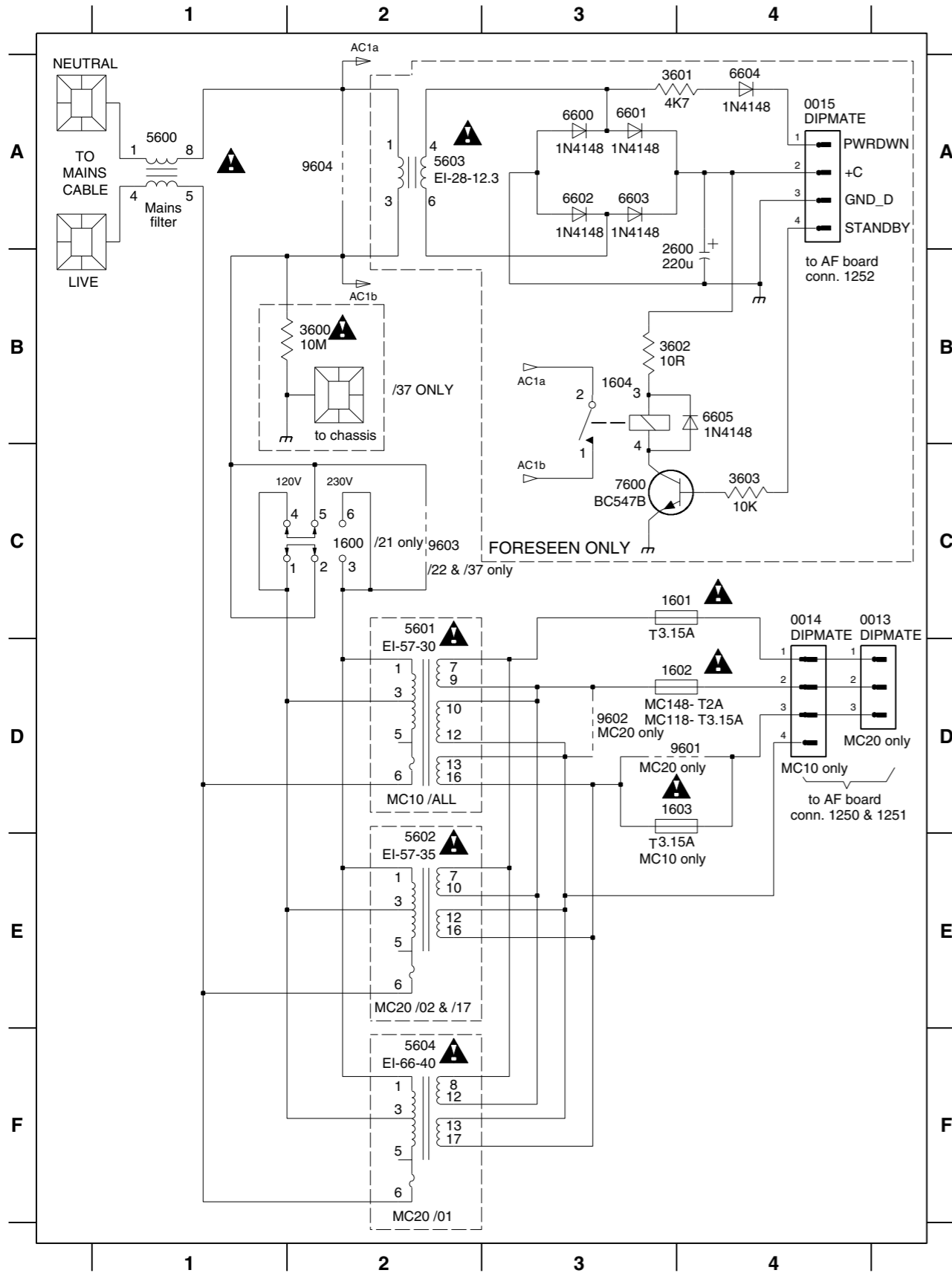
**Legend:**  
 ...V FM mode stereo  
 ...V MW mode  
 ...V LW mode  
 V EVM  
 voltages measured while set is tuned to a strong transmitter

1101 A1  
 1102 B1  
 1103 B2  
 1120 E14  
 1130 A2  
 1131 B1  
 1132 G13  
 2101 B3  
 2103 C7  
 2104 B3  
 2106 F3  
 2107 F4  
 2119 H6  
 2120 G6  
 2124 H6  
 2125 H6  
 2126 F7  
 2127 E7  
 2128 B8  
 2129 C7  
 2130 F11  
 2131 G8  
 2132 G8  
 2133 G8  
 2134 H8  
 2135 H9  
 2136 G14  
 2137 G13  
 2138 F9  
 2139 G9  
 2140 G9  
 2141 F10  
 2143 G12  
 2144 G11  
 2145 F12  
 2146 E12  
 2147 E12  
 2148 E12  
 2149 H7  
 2150 A10  
 2152 E4  
 2153 E5  
 2154 D5  
 2155 D5  
 2159 F6  
 2161 C11  
 2163 D11  
 2164 F10  
 2165 C7  
 2166 E11  
 2167 E11  
 2169 H8  
 3011 E4  
 3102 D4  
 3104 B8  
 3105 B6  
 3132 G5  
 3134 H6  
 3141 E7  
 3142 E7  
 3143 G7  
 3144 H7  
 3145 F8  
 3146 G13  
 3152 G14  
 3153 G13  
 3154 G13  
 3155 G11  
 3156 C12  
 3157 C12  
 3158 E13  
 3159 D13  
 3160 D12  
 3161 D13  
 3167 F13  
 3168 F11  
 3169 E11  
 3170 C12  
 3172 G2  
 3176 G7  
 3181 E6  
 5102 F2  
 5109 B9  
 5110 B10  
 5111 A9  
 5112 A11  
 5114 B11  
 5119 G9  
 5121 E11  
 5123 G5  
 6105-1 F3  
 6105-2 G5  
 6106 C3  
 6107 G13  
 6120 C13  
 6130 E5  
 6131 D5  
 7101 C8  
 7102 C6  
 7103 H7  
 7111 C13  
 7112 G12  
 T102 B2  
 T103 F2  
 T106 F2  
 T109 B6  
 T110 F5  
 T111 F4  
 T112 F7  
 T113 A9  
 T114 B9  
 T115 B9  
 T116 F10  
 T117 G13  
 T118 G11  
 T120 F13  
 T121 F13  
 T122 F13  
 T123 E13  
 T124 G14

# POWER BOARD - CIRCUIT DIAGRAM

9-1

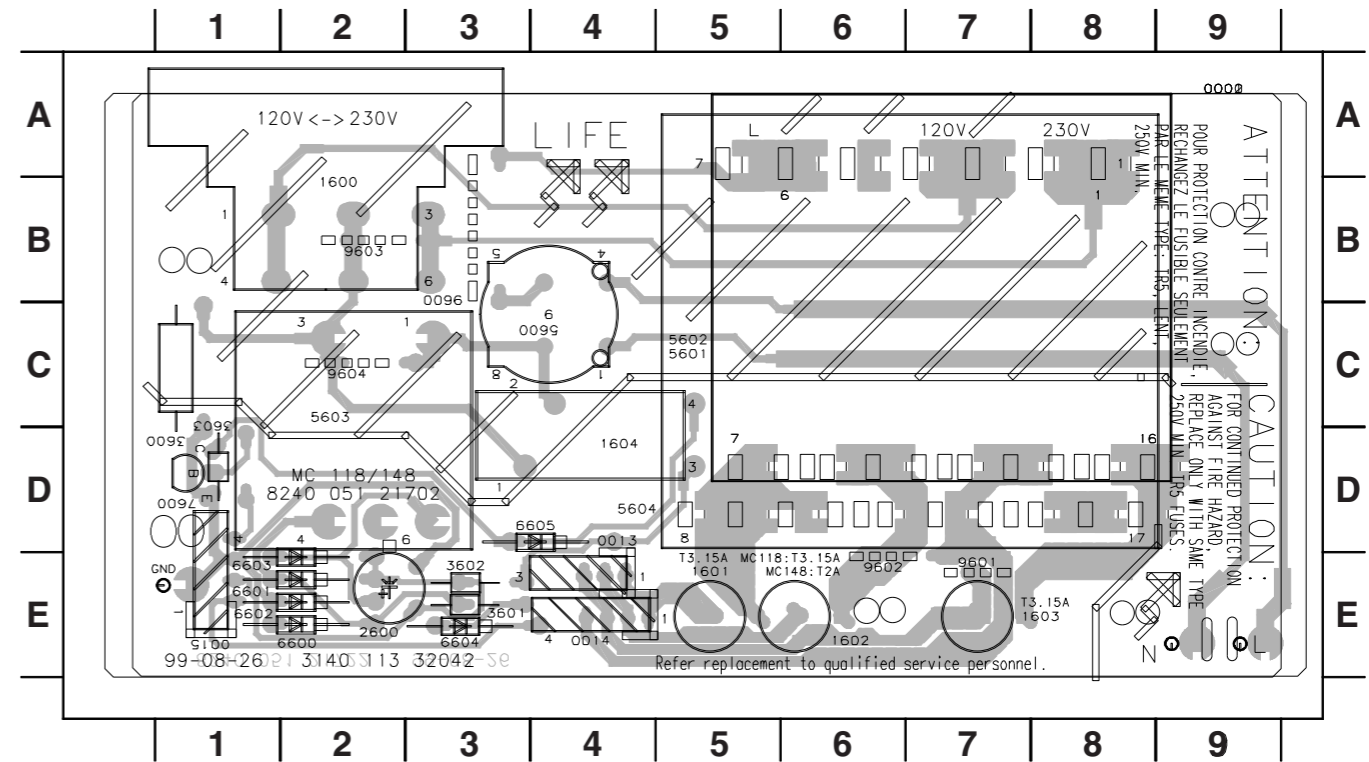
0013 C4	1600 C2	1603 D3	3600 B2	3603 C4	5602 E2	6600 A3	6603 A3	7600 C3	9603 C2
0014 C4	1601 C3	1604 B3	3601 A4	5600 A1	5603 A2	6601 A3	6604 A4	9601 D4	9604 A2
0015 A4	1602 D3	2600 B3	3602 B4	5601 C2	5604 F2	6602 A3	6605 B4	9602 D3	



# POWER BOARD - LAYOUT DIAGRAM

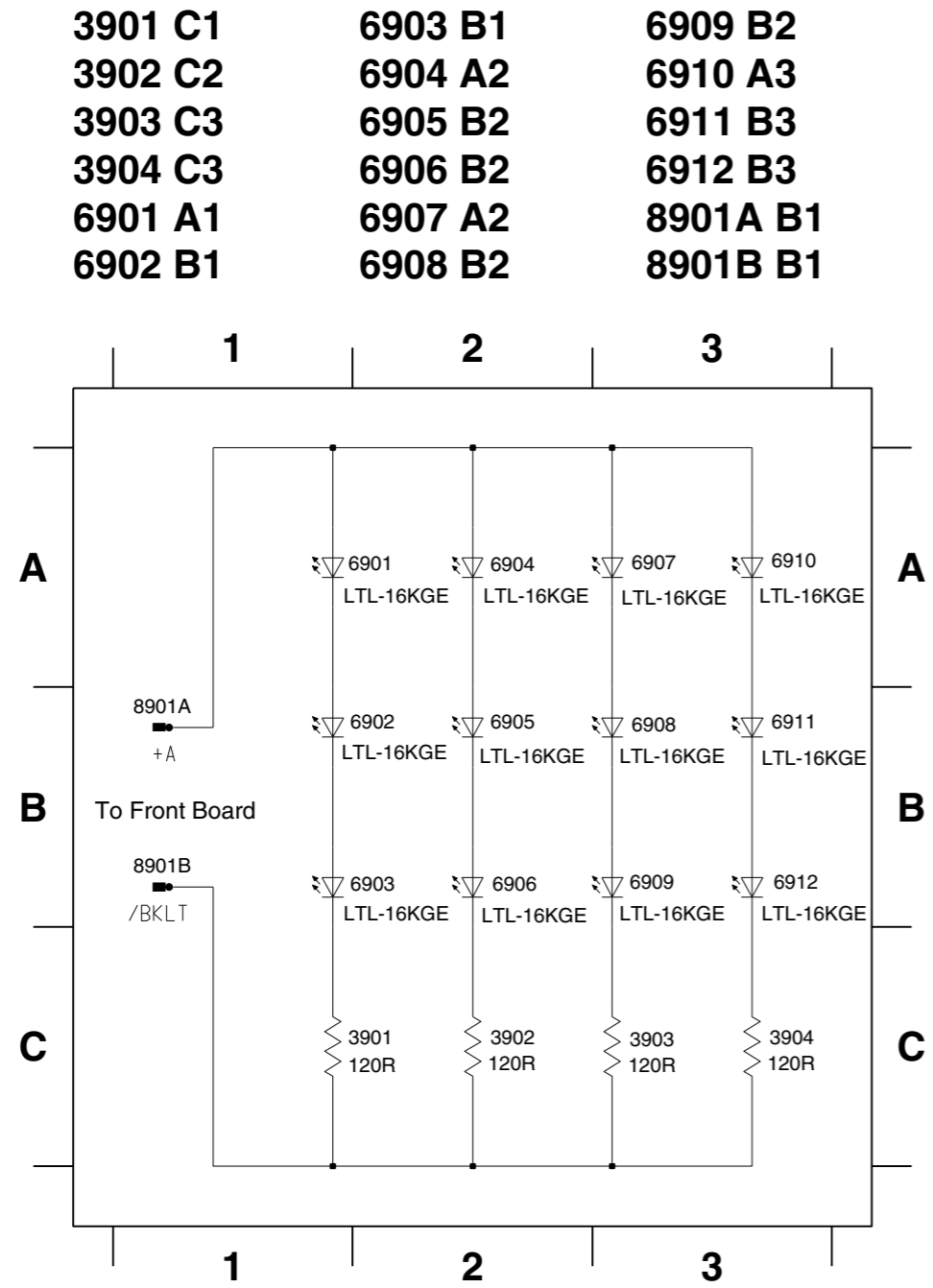
9-1

0000 A9	0015 E1	1604 D4	3603 C1	5604 D4	6604 E3	9602 E6
0001 A9	1600 B2	2600 E2	5600 C4	6600 E2	6605 D4	9603 B2
0002 A9	1601 E5	3600 D1	5601 C5	6601 E1	7600 D1	9604 C2
0013 D4	1602 E6	3601 E3	5602 C5	6602 E1	9600 B3	
0014 E4	1603 E8	3602 E3	5603 C2	6603 E1	9601 E7	



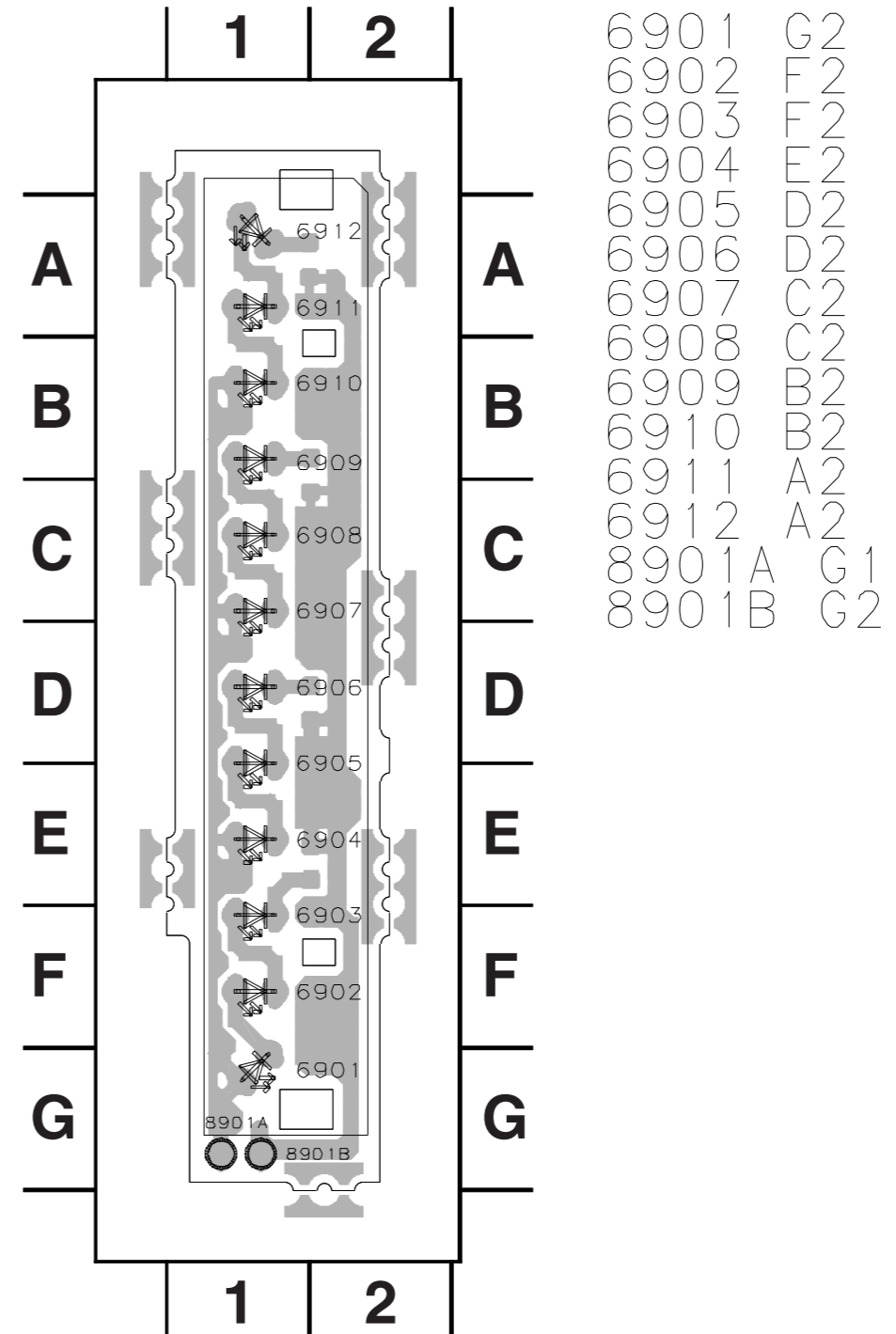
LED BOARD - CIRCUIT DIAGRAM

10-1



LED BOARD - LAYOUT DIAGRAM

10-1

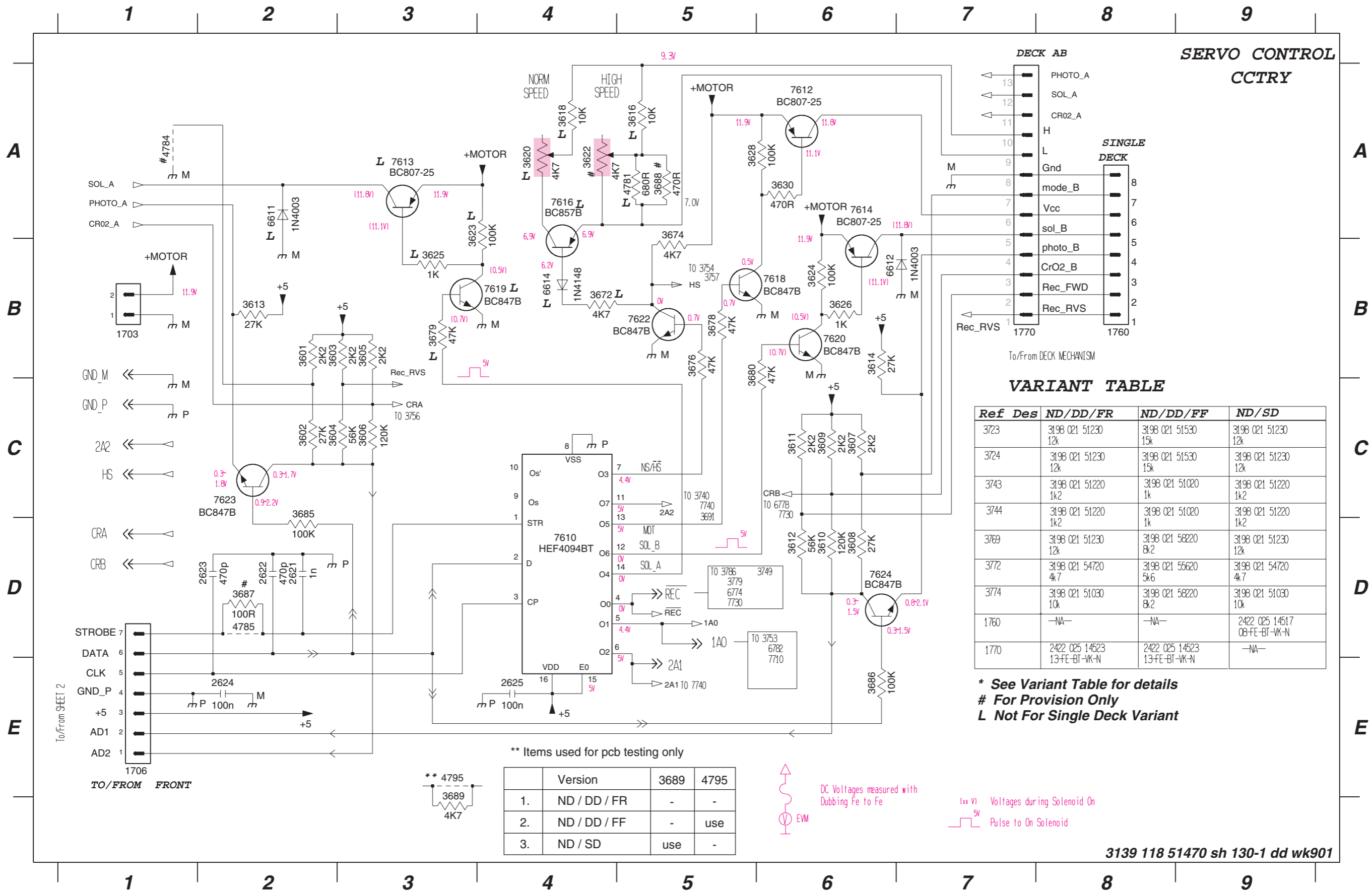


RECORDER BOARD ETF6 (Servo) - CIRCUIT DIAGRAM

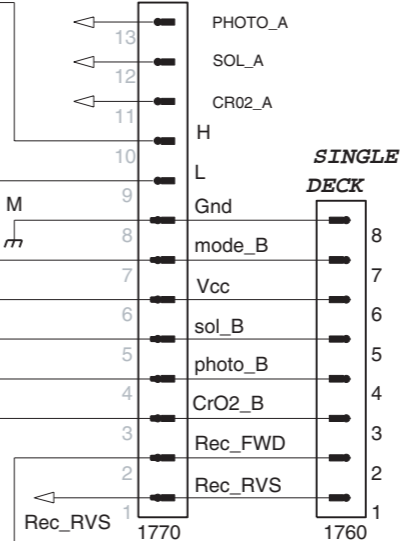
11-1

11-1

1703 B1 1770 B7 2623 D2 3601 B2 3604 C2 3607 C6 3610 D6 3613 B2 3618 A4 3623 A3 3626 B6 3672 B4 3678 B5 3685 C2 3688 A5 4784 A1 6611 A2 7610 D4 7614 A6 7619 B4 7623 C2  
 1706 E1 2621 D2 2624 E2 3602 C2 3605 B3 3608 D6 3611 C6 3614 B6 3620 A4 3624 B6 3628 A5 3674 A5 3679 B3 3686 E6 3689 E3 4785 D2 6612 B6 7612 A6 7616 A4 7620 B6 7624 D6  
 1760 B8 2622 D2 2625 E4 3603 B2 3606 C3 3609 C6 3612 D6 3616 A5 3622 A4 3625 B3 3630 A6 3676 B5 3680 B5 3687 D2 4781 A5 4795 E3 6614 B4 7613 A3 7618 B6 7622 B5



DECK AB SERVO CONTROL CTRY



VARIANT TABLE

Ref	Des	ND/DD/FR	ND/DD/FF	ND/SD
3723		3198 021 51230 12k	3198 021 51530 15k	3198 021 51230 12k
3724		3198 021 51230 12k	3198 021 51530 15k	3198 021 51230 12k
3743		3198 021 51220 1k2	3198 021 51020 1k	3198 021 51220 1k2
3744		3198 021 51220 1k2	3198 021 51020 1k	3198 021 51220 1k2
3769		3198 021 51230 12k	3198 021 58220 8k2	3198 021 51230 12k
3772		3198 021 54720 4k7	3198 021 55620 5k6	3198 021 54720 4k7
3774		3198 021 51030 10k	3198 021 58220 8k2	3198 021 51030 10k
1760		-NA-	-NA-	2422 025 14517 08-FE-BT-VK-N
1770		2422 025 14523 13-FE-BT-VK-N	2422 025 14523 13-FE-BT-VK-N	-NA-

\* See Variant Table for details  
 # For Provision Only  
 L Not For Single Deck Variant

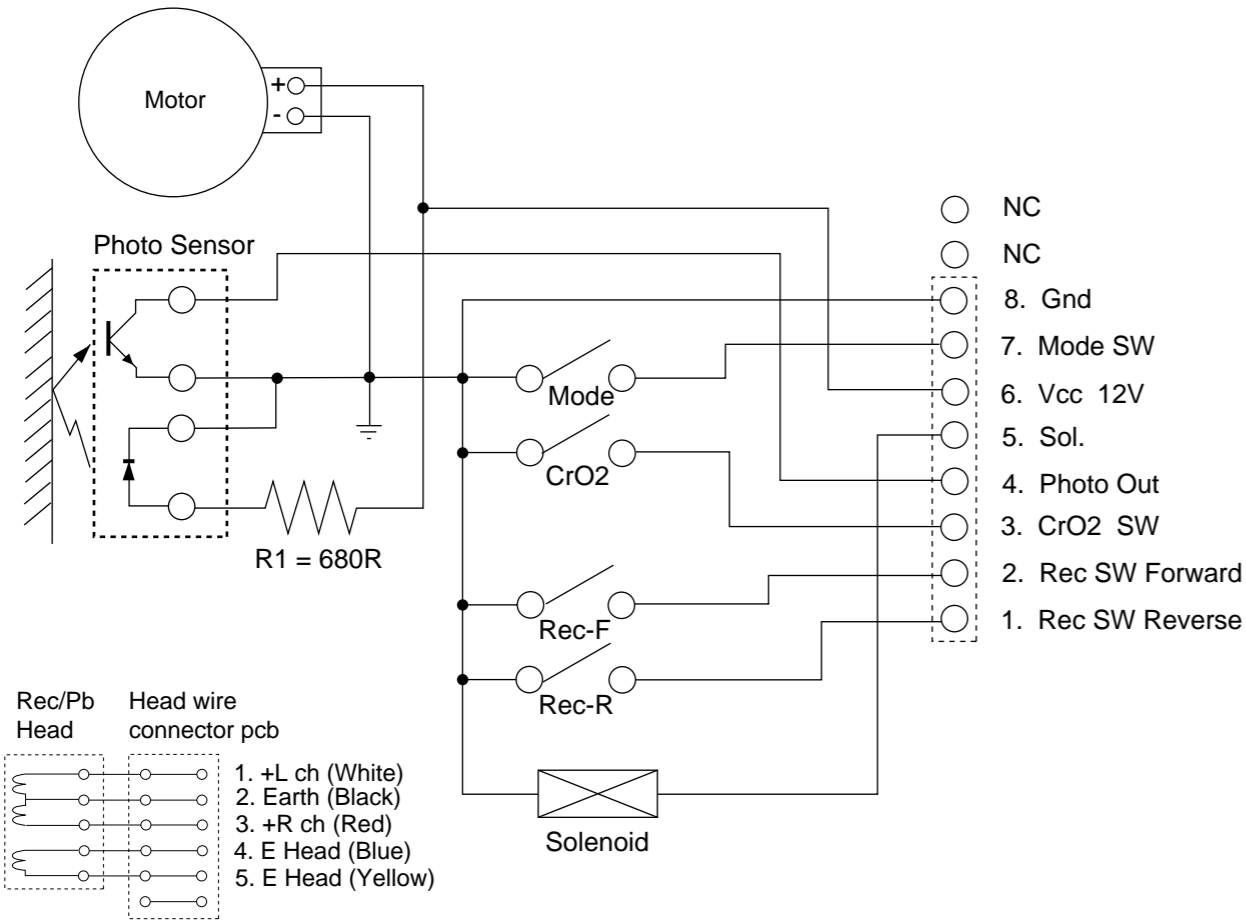
\*\* Items used for pcb testing only

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

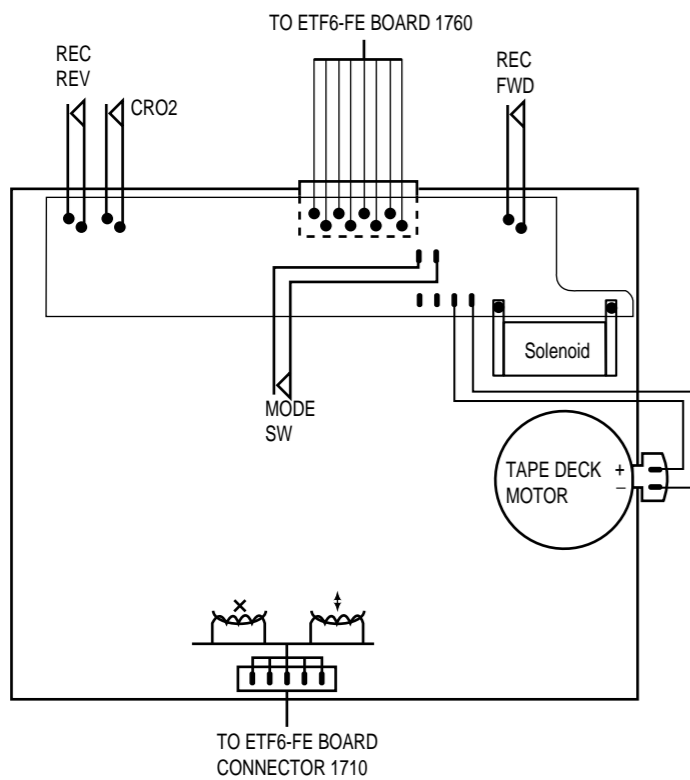


3139 118 51470 sh 130-1 dd wk901

### TAPE MECHANISM ELECTRONICS



### TAPE DECK WIRING



Variation table for Analog Circuit

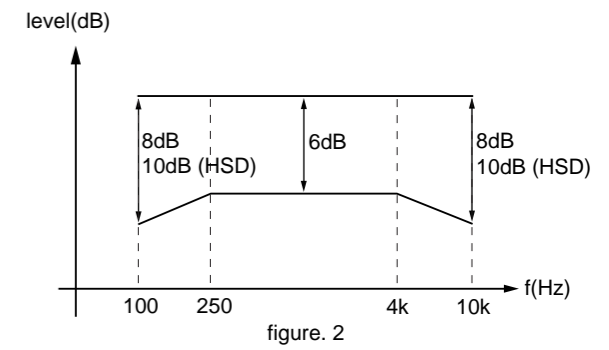
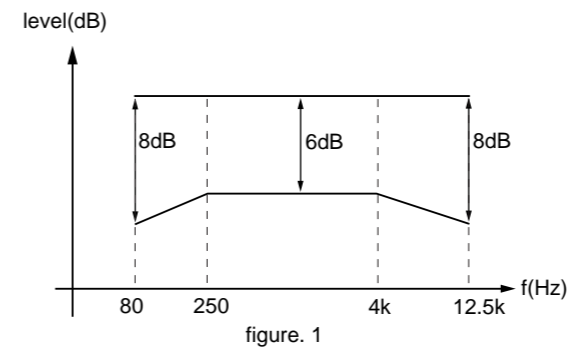
Item No.	Autoreverse (FR)	Non-Autoreverse (FF)
3723	12k	15k
3724	12k	15k
3743	1k2	1k
3744	1k2	1k
3769	12k	8k2
3772	4k7	5k6
3774	10k	8k2

### TAPE ADJUSTMENT & CHECK TABLE

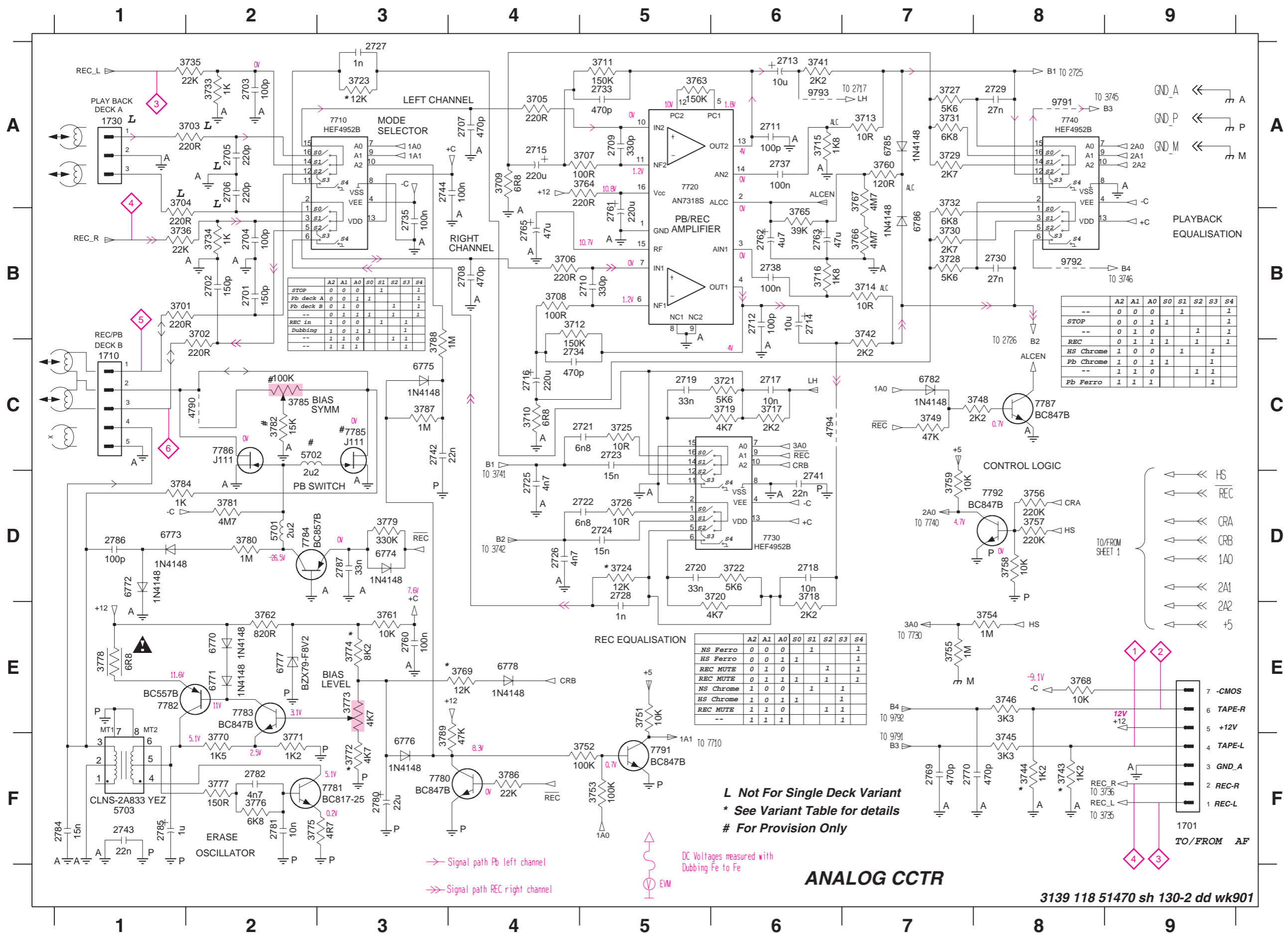
	TEST CASSETTE	RECORDER MODE	MEASURE ON	READ ON	ADJUST	
					with	to
<b>ADJUST MOTOR SPEED</b>						
NORMAL SPEED	SBC420 3150Hz	PLAY B	1 or 2 LEFT RIGHT	frequency counter	3620	3150Hz ± 0.5%
		PLAY A	1 or 2 LEFT RIGHT		check	3150Hz -0.8/+1.8%
<b>CHECK WOW &amp; FLUTTER</b>						
DECK A & B	SBC420 3150Hz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

SBC419A : 4822 397 30069  
SBC420 : 4822 397 30071

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



# RECORDER BOARD ETF6 (Analog) - CIRCUIT DIAGRAM



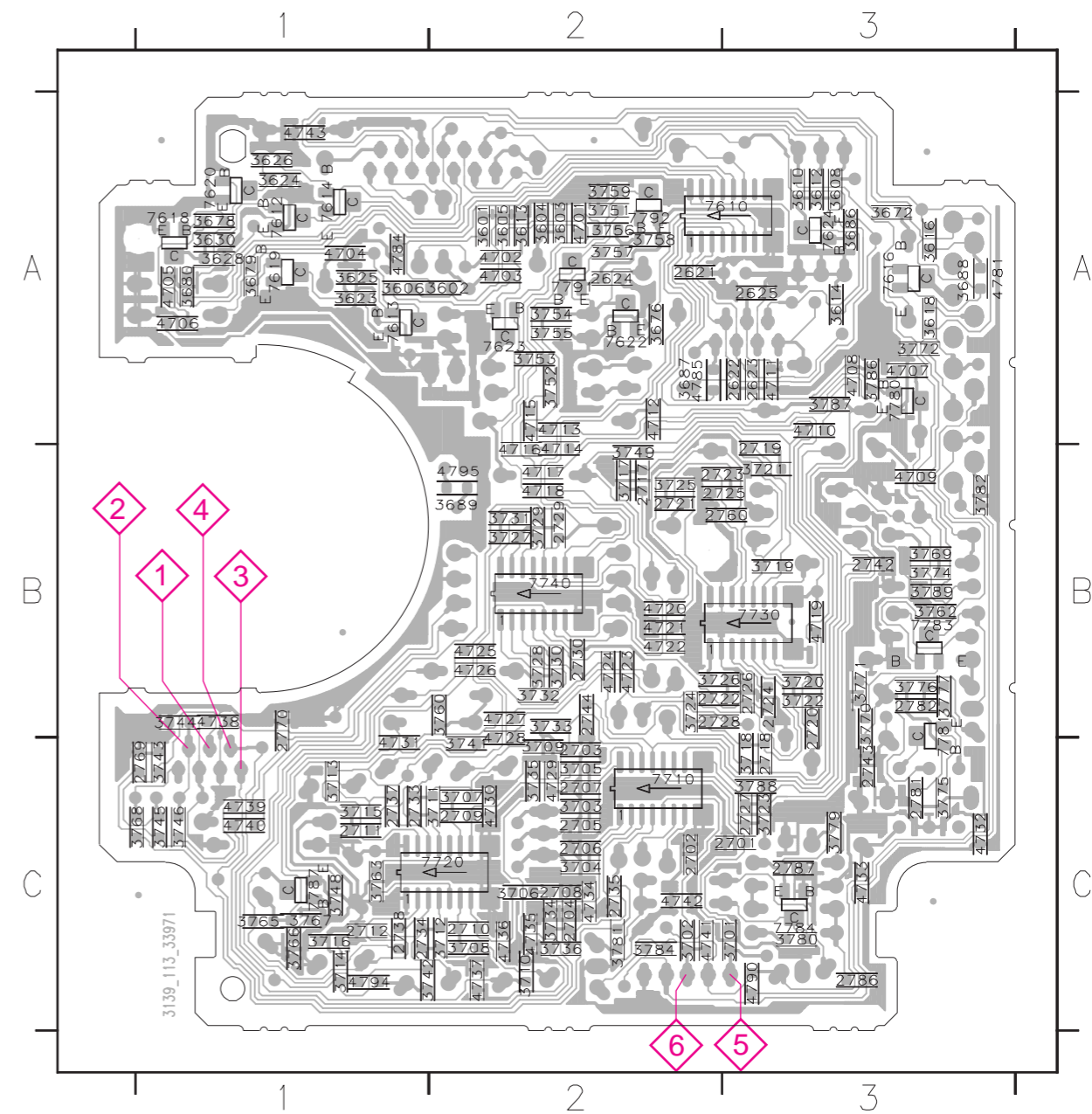
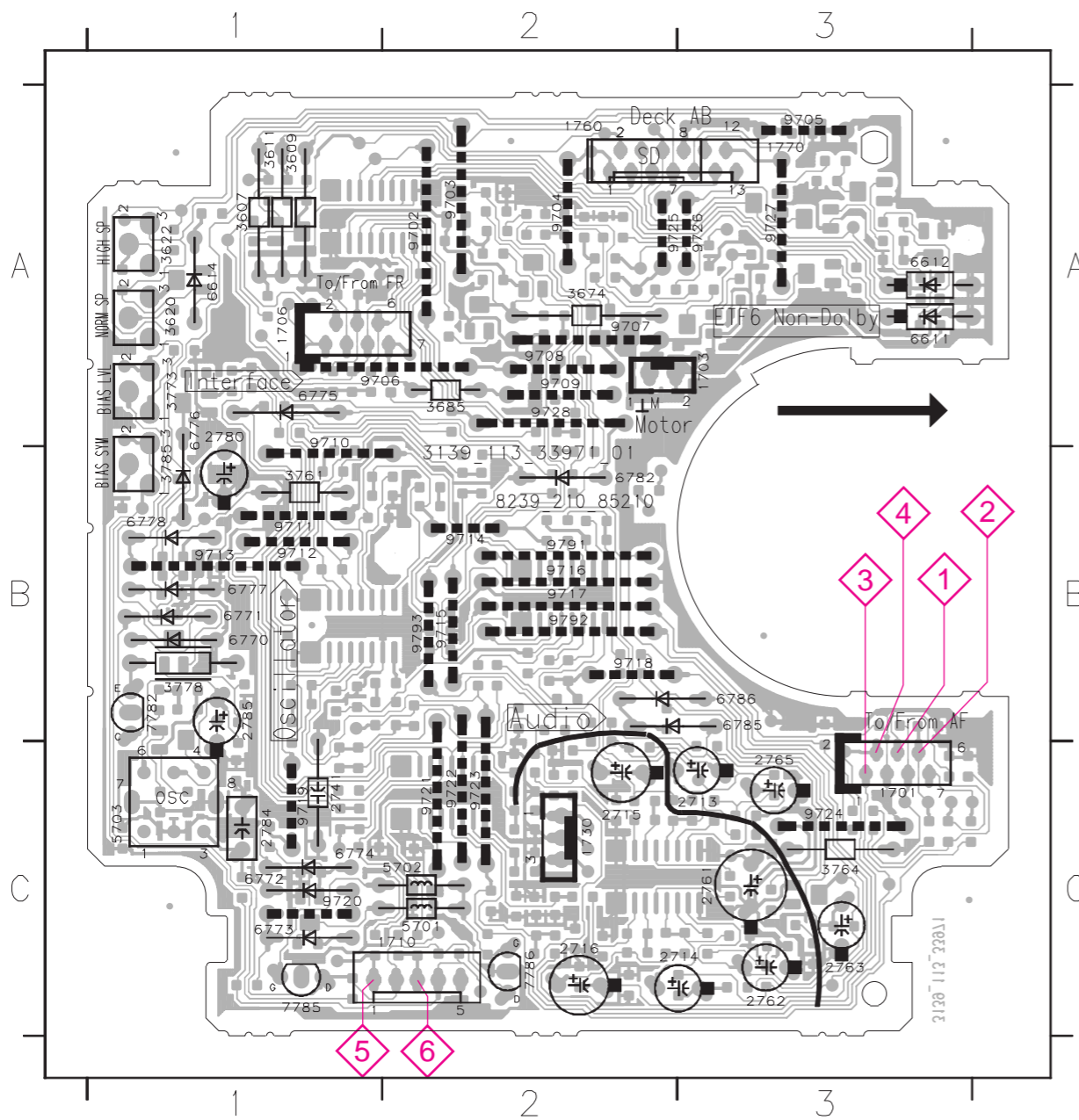
- 1701 F9
- 1710 C1
- 1730 A1
- 2701 B2
- 2702 B2
- 2703 A2
- 2704 B2
- 2705 A2
- 2706 A2
- 2707 A4
- 2708 B4
- 2709 A5
- 2710 B5
- 2711 A6
- 2712 B6
- 2713 A6
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- 2728 D5
- 2729 A8
- 2730 B8
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- 2734 C4
- 2735 B3
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- 2738 B6
- 2741 D6
- 2742 C3
- 2743 F1
- 2744 A3
- 2760 E3
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- 2780 F3
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- 2782 F2
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- 2786 D1
- 2787 D3
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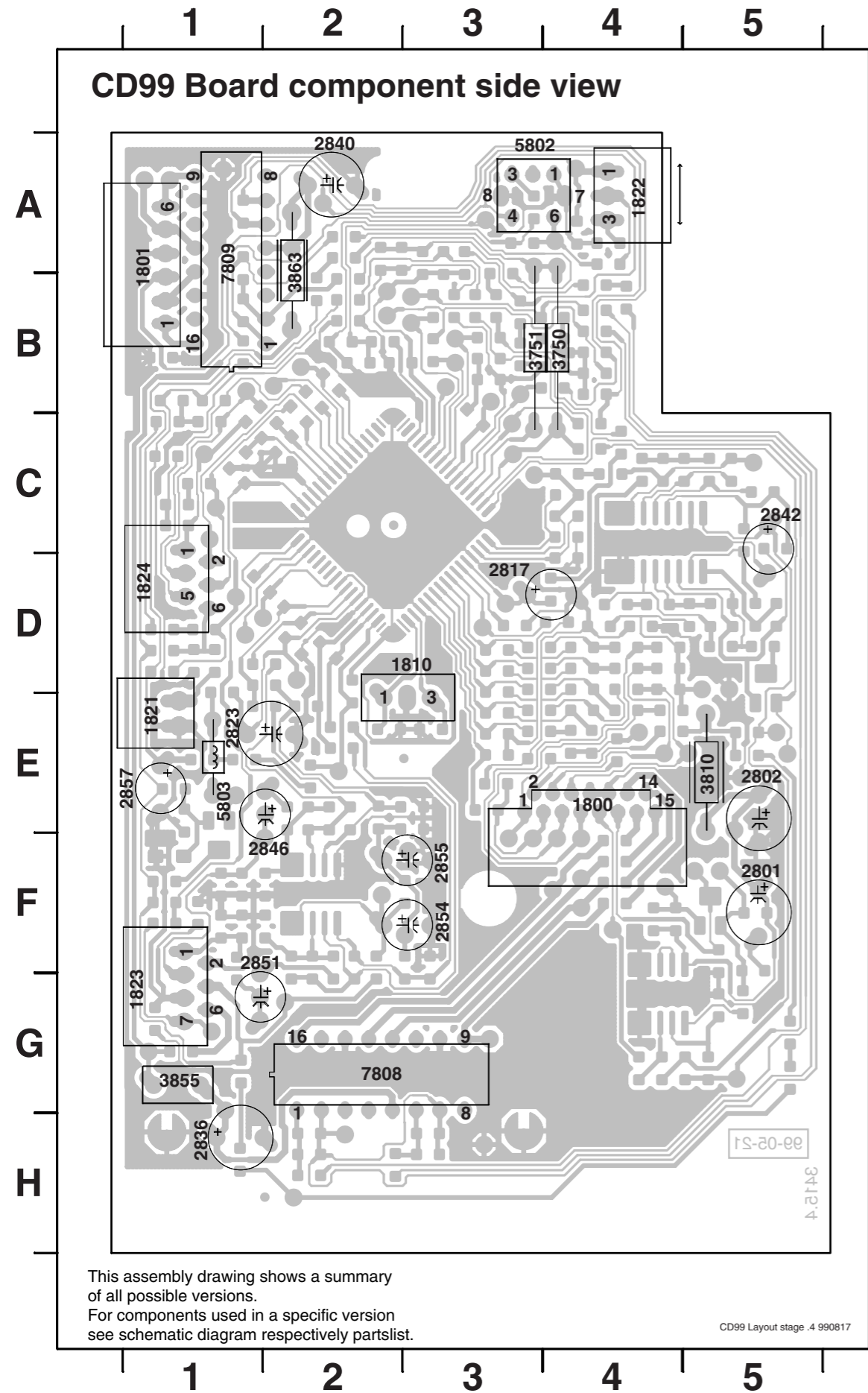
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**RECORDER BOARD ETF6 - LAYOUT DIAGRAM**

11-4

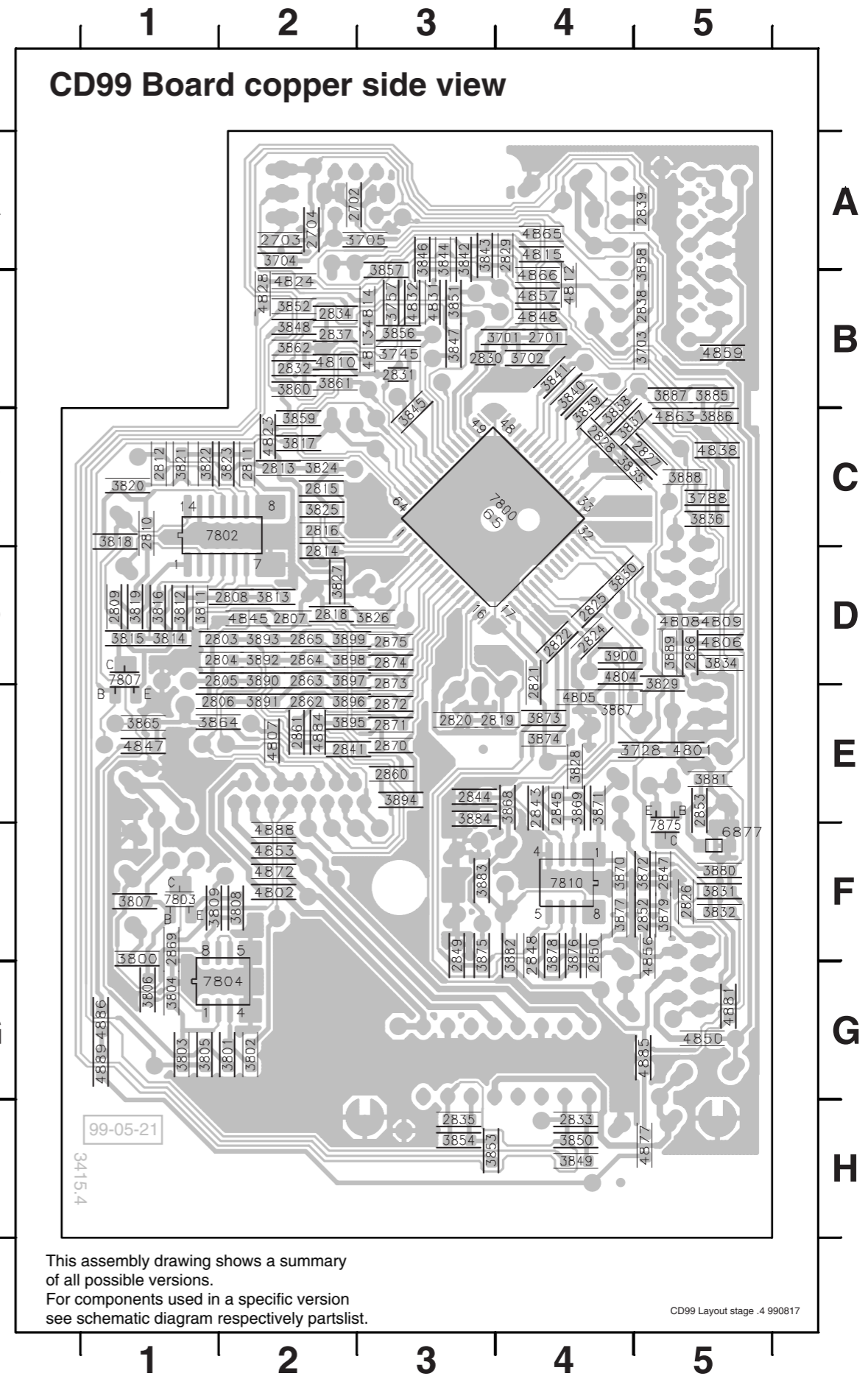
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1703	A3	2741	C1	3611	A1	5701	C2	6774	C1	7786	C2	9711	B1	9721	C2	9793	B2
1706	A1	2761	C3	3620	A1	5702	C2	6775	A1	7787	A1	9712	B1	9722	C2		
1710	C2	2762	C3	3622	A1	5703	C1	6776	A1	7788	A1	9713	B1	9723	C2		
1730	C2	2763	C3	3674	A2	6611	A3	6777	B1	9704	A2	9714	B2	9724	C3		
1760	A2	2765	C3	3685	A2	6612	A3	6778	B1	9705	A3	9715	B2	9725	A2		
1770	A3	2780	A1	3761	B1	6614	A1	6782	B2	9706	A1	9716	B2	9726	A3		
2713	C3	2784	C1	3764	C3	6770	B1	6785	B3	9707	A2	9717	B2	9727	A3		
2714	C3	2785	B1	3773	A1	6771	B1	6786	B3	9708	A2	9718	B2	9728	A2		
2715	C2	3607	A1	3778	B1	6772	C1	7782	B1	9709	A2	9719	C1	9791	B2		

2621	A2	2725	B3	3605	A2	3702	C2	3727	B2	3758	A2	3789	B3	4725	B2	7610	A3
2622	A3	2726	B3	3606	A1	3703	C2	3728	B2	3759	A2	4701	A2	4726	B2	7612	A1
2623	A3	2727	C3	3608	A3	3704	C2	3729	B2	3760	B2	4702	A2	4727	B2	7613	A1
2624	A2	2728	B2	3610	A3	3705	C2	3730	B2	3762	B3	4703	A2	4728	C2	7614	A1
2625	A3	2729	B2	3612	A3	3706	C2	3731	B2	3763	C1	4704	A1	4729	C2	7616	A3
2701	C3	2730	B2	3613	A2	3707	C2	3732	B2	3765	C1	4705	A1	4730	C2	7618	A1
2702	C2	2733	C1	3614	A3	3708	C2	3733	B2	3766	C1	4706	A1	4731	C1	7619	A1
2703	C2	2734	C1	3616	A3	3709	C2	3734	C2	3767	C1	4707	A3	4732	C3	7620	A1
2704	C2	2735	C2	3618	A3	3710	C2	3735	C2	3768	C1	4708	A3	4733	C3	7622	A2
2705	C2	2737	C1	3623	A1	3711	C2	3736	C2	3769	B3	4709	B3	4734	C2	7623	A2
2706	C2	2738	C1	3624	A1	3712	C2	3741	C2	3770	B3	4710	A3	4735	C2	7624	A3
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2708	C2	2743	C3	3626	A1	3714	C1	3743	C1	3772	A3	4712	A2	4737	C2	7720	C2
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2710	C2	2760	B3	3630	A1	3716	C1	3745	C1	3775	C3	4714	B2	4739	C1	7740	B2
2711	C1	2769	C1	3672	A3	3717	B2	3746	C1	3776	B3	4715	A2	4740	C1	7780	A3
2712	C1	2770	B1	3676	A2	3718	C3	3748	C1	3777	B3	4716	B2	4741	C2	7781	B3
2717	B2	2781	C3	3678	A1	3719	B3	3749	B2	3779	C3	4717	B2	4742	C2	7783	B3
2718	C3	2782	B3	3679	A1	3720	B3	3751	A2	3780	C3	4718	B2	4743	A1	7784	C3
2719	B3	2786	C3	3680	A1	3721	B3	3752	A2	3781	C2	4719	B3	4781	A3	7787	C1
2720	B3	2787	C3	3686	A3	3722	B3	3753	A2	3782	B3	4720	B3	4784	A1	7791	A2
2721	B2	3601	A2	3687	A2	3723	C3	3754	A2	3784	C2	4721	B2	4785	A2	7792	A2
2722	B2	3602	A2	3688	A3	3724	B2	3755	A2	3786	A3	4722	B2	4790	C3		
2723	B2	3603	A2	3689	B2	3725	B2	3756	A2	3787	A3	4723	B2	4794	C1		
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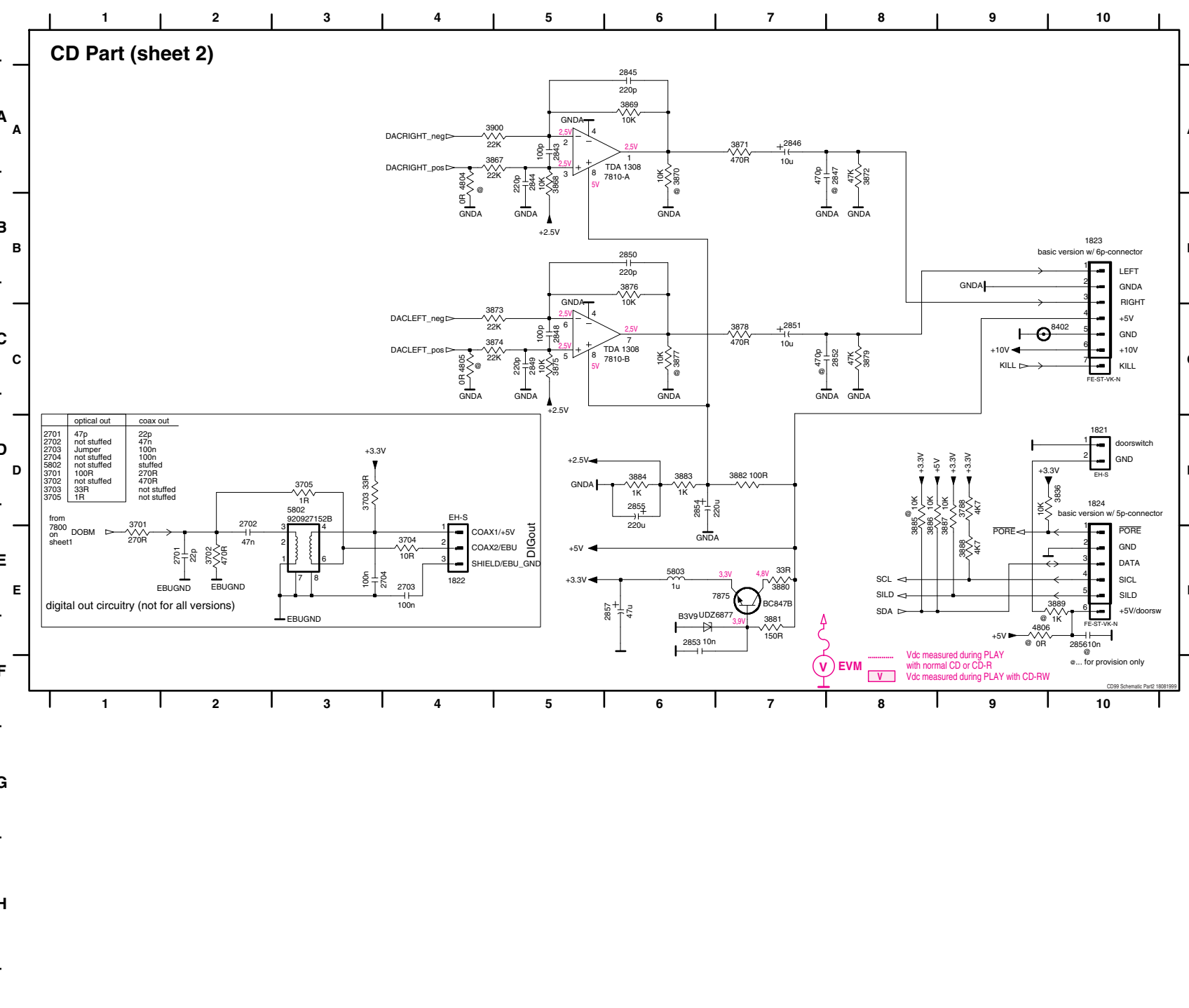
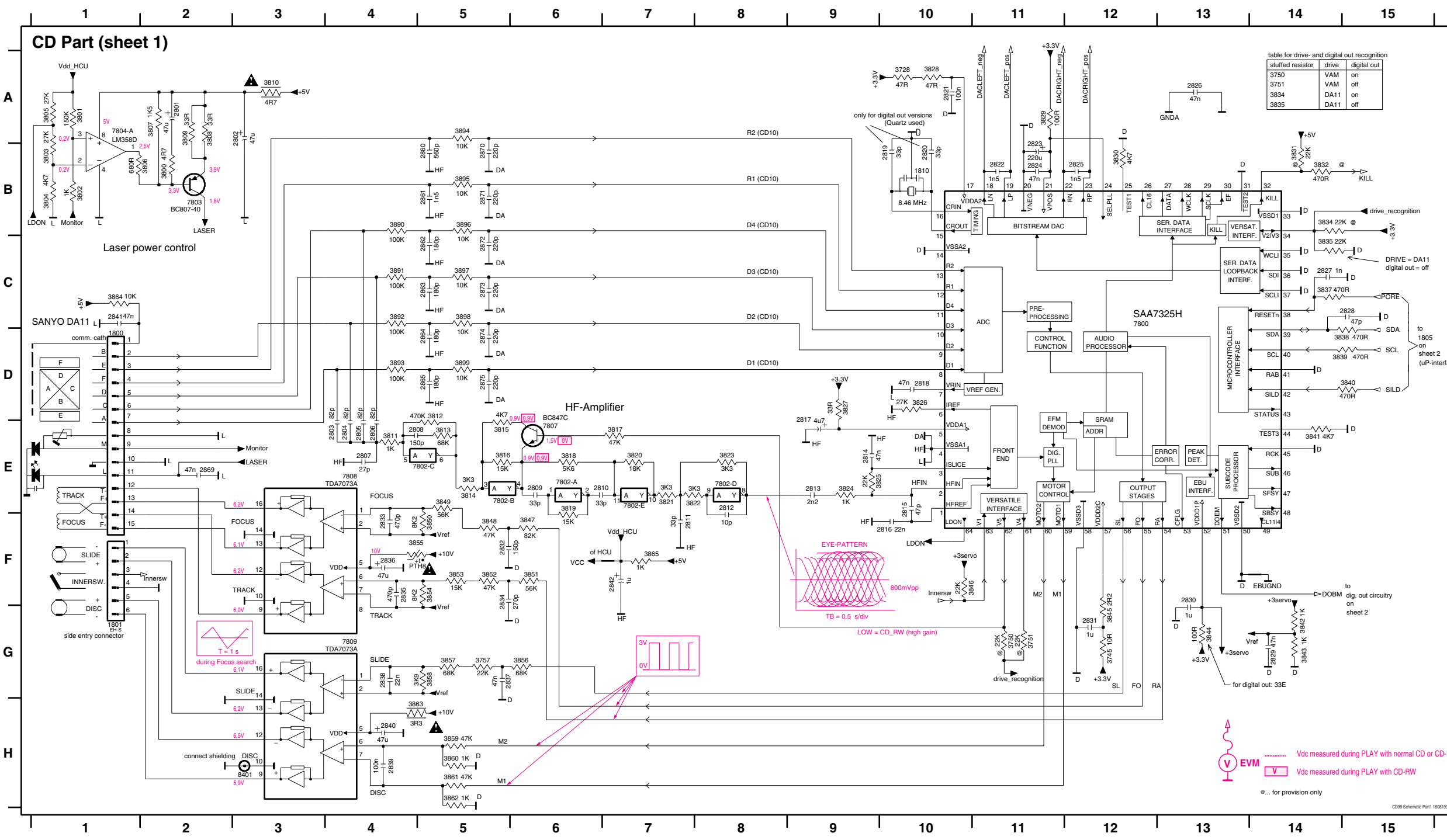
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1821	E5	3728	E5	3879	F5
1822	A2	3745	B3	3880	F5
1823	G5	3750	B2	3881	E5
1824	D5	3751	B2	3882	F4
2701	B4	3757	B3	3883	F3
2702	A2	3788	C5	3884	E3
2703	A2	3800	F1	3885	B5
2704	A2	3801	G2	3886	C5
2801	F1	3802	G2	3887	B5
2802	E1	3803	G1	3888	C5
2803	D2	3804	G1	3889	D5
2804	D2	3805	G1	3890	D2
2805	D2	3806	G1	3891	E2
2806	E1	3807	F1	3892	D2
2807	D2	3808	F2	3893	D2
2808	D2	3809	F1	3894	E3
2809	D1	3810	E1	3895	E2
2810	C1	3811	D1	3896	E2
2811	C2	3812	D1	3897	D2
2812	C1	3813	D2	3898	D2
2813	C2	3814	D1	3899	D2
2814	D2	3815	D1	3900	D4
2815	C2	3816	D1	4801	E5
2816	C2	3817	C2	4802	F2
2817	D2	3818	C1	4804	D4
2818	D2	3819	D1	4805	E4
2819	E4	3820	C1	4806	D5
2820	E3	3821	C1	4807	E2
2821	D4	3822	C1	4808	D5
2822	D4	3823	C2	4809	D5
2823	E4	3824	C2	4810	B2
2824	D4	3825	C2	4812	B4
2825	D4	3826	D3	4813	B3
2826	F5	3827	D2	4814	B3
2827	C5	3828	E4	4815	A4
2828	C4	3829	D5	4823	C2
2829	A4	3830	D4	4824	B2
2830	B3	3831	F5	4828	B2
2831	B3	3832	F5	4831	B3
2832	B2	3834	D5	4832	B3
2833	H4	3835	C4	4838	C5
2834	B2	3836	C5	4845	D2
2835	H3	3837	C4	4847	E1
2836	G5	3838	C4	4848	B4
2837	B2	3839	C4	4850	G5
2838	B5	3840	B4	4853	F2
2839	A5	3841	B4	4856	F5
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2860	E3	3860	B2	7803	F1
2861	E2	3861	B2	7804	G2
2862	E2	3862	B2	7807	D1
2863	D2	3863	A4	7808	G4
2864	D2	3864	E1	7809	A5
2865	D2	3865	E1	7810	F4
2869	F1	3867	E4	7875	F5
2870	E3	3868	E4	8401	H3
2871	E3	3869	E4	8402	H5
2872	E3	3870	F4		
2873	D3	3871	E4		
2874	D3	3872	F5		
2875	D3	3873	E4		
3701	B4	3874	E4		
3702	B4	3875	F3		





1800 D1	2806 E4	2813 E9	2820 B10	2827 C14	2834 F5	2841 C1	2848 D5	2855 D5	2875 D5	3801 A1	3808 A2	3815 E5	3822 E7	3829 A11	3836 D14	3843 G12	3852 F5	3859 H5	3866 B4	3873 C5	7802-D E8	7808 E4
1801 D1	2807 E4	2814 E9	2821 B11	2828 C14	2835 F4	2842 F7	2849 E2	2869 E2	3728 A10	3802 B1	3809 A2	3816 E5	3823 E8	3830 B12	3837 D14	3844 G12	3853 F5	3860 H5	3867 C4	3874 C5	7802-E E7	7809 G4
2801 A2	2808 E4	2815 E10	2822 B11	2829 G14	2836 F4	2843 B5	2850 B5	2870 B5	3745 G12	3803 B1	3810 A3	3817 E7	3824 E9	3831 B14	3838 D15	3845 F6	3854 F5	3861 H5	3868 C4	3875 D5	7802-F F8	8401 H3
2802 A3	2809 E6	2816 F10	2823 B11	2830 F13	2837 G5	2844 B5	2851 B5	2871 B5	3750 G11	3804 B1	3811 E4	3818 E6	3825 E9	3832 B14	3841 E14	3848 F5	3855 F4	3862 H5	3869 D4	7800 D12	7803 B2	
2803 E4	2810 E6	2817 D9	2824 B11	2831 G12	2838 G4	2845 C3	2852 C5	2872 C5	3751 G11	3805 A1	3812 D5	3819 E6	3826 D10	3834 B14	3843 G14	3850 F5	3856 G6	3863 H4	3870 A5	7802-A E6	7804-A A1	
2804 E4	2811 F7	2818 D9	2825 B12	2832 F5	2839 H4	2846 D5	2853 C5	2873 C5	3757 G5	3806 B2	3813 E5	3820 E7	3827 D9	3835 C14	3843 G14	3850 F5	3857 G5	3864 C1	3871 B5	7802-B E5	7804-B C3	
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1821 D10	2702 E2	2845 A6	2850 B6	2855 D6	3703 D3	3867 A5	3872 A8	3877 C6	3882 D7	3887 E9	4805 C4	7810-A A5
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1824 D10	2843 A5	2848 C5	2853 E8	3701 E1	3788 E9	3870 A5	3875 C5	3880 E7	3885 E8	3900 A5	5803 E6	8402 C9
2701 E2	2844 A5	2849 C5	2854 D6	3702 E2	3838 D10	3871 A7	3876 B6	3881 E7	3886 E8	4804 A4	6877 E7	





**MECHANICAL PARTSLIST - CABINET**

401	3140 117 60030	Cassette Door Assy	437	4822 462 40692	Rubber Stand
402	4822 443 10488	Door Cassette	438	3140 114 29310	Tuner Bracket
403	4822 492 42787	Spring Cassette	439	3140 114 34750	Rear Cabinet
404	3140 114 34880	Front Cabinet Cover	441	3140 113 21880	Mains Cord Relief
406	3140 117 60470	Front Window Assy	442	3140 118 50890	Packed Speaker Box Assy
407	3140 117 59350	Volume Knob Assy	443	4822 303 50082	AM Frame
408	3140 117 60000	Front Cab Assy (For -/21/21M/30/33)	444	3139 228 83200	Remote RC282424/01
408	3140 117 60010	Front Cab/RDS Assy (For -/22)	446	4822 466 93148	Spacer
409	4822 492 11344	Spring Compression		4822 303 50063	FM Antenna Wire
411	4822 529 10322	Damper Assy		3140 115 27770	Instructions Manual (For -/21/21M/30)
412	4822 492 11345	Spring Tension	3140 115 27780	Instructions Manual (For -/22)	
413	4822 402 11246	Bracket Cassette			
414	4822 402 10621	Push Catch			
416	3140 114 36200	Front Knobs Source			
417	3140 114 36210	Front Knobs Program			
418	3140 117 60480	Chrome Knobs Assy			
419	3140 114 34890	Front Knobs Preset			
421	3140 114 29180	LCD Holder			
422	4822 691 10775	Tape Deck CRH44-503			
423	4822 529 10387	Damper Rubber (40 DEG)			
424	4822 529 10386	Damper Rubber (30 DEG)			
426	4822 691 10747	CD DA11 Drive Assy			
427	4822 442 01096	CD Drive Cover			
428	3140 114 34770	CD Tray			
429	4822 529 10322	Damper Assy			
431	4822 535 60096	Disc			
432	4822 532 13153	Ring (CD Lid)			
433	4822 532 12798	Ring Pressure			
434	4822 492 11741	Spring CD			
436	3140 117 60020	CD Door Assy			

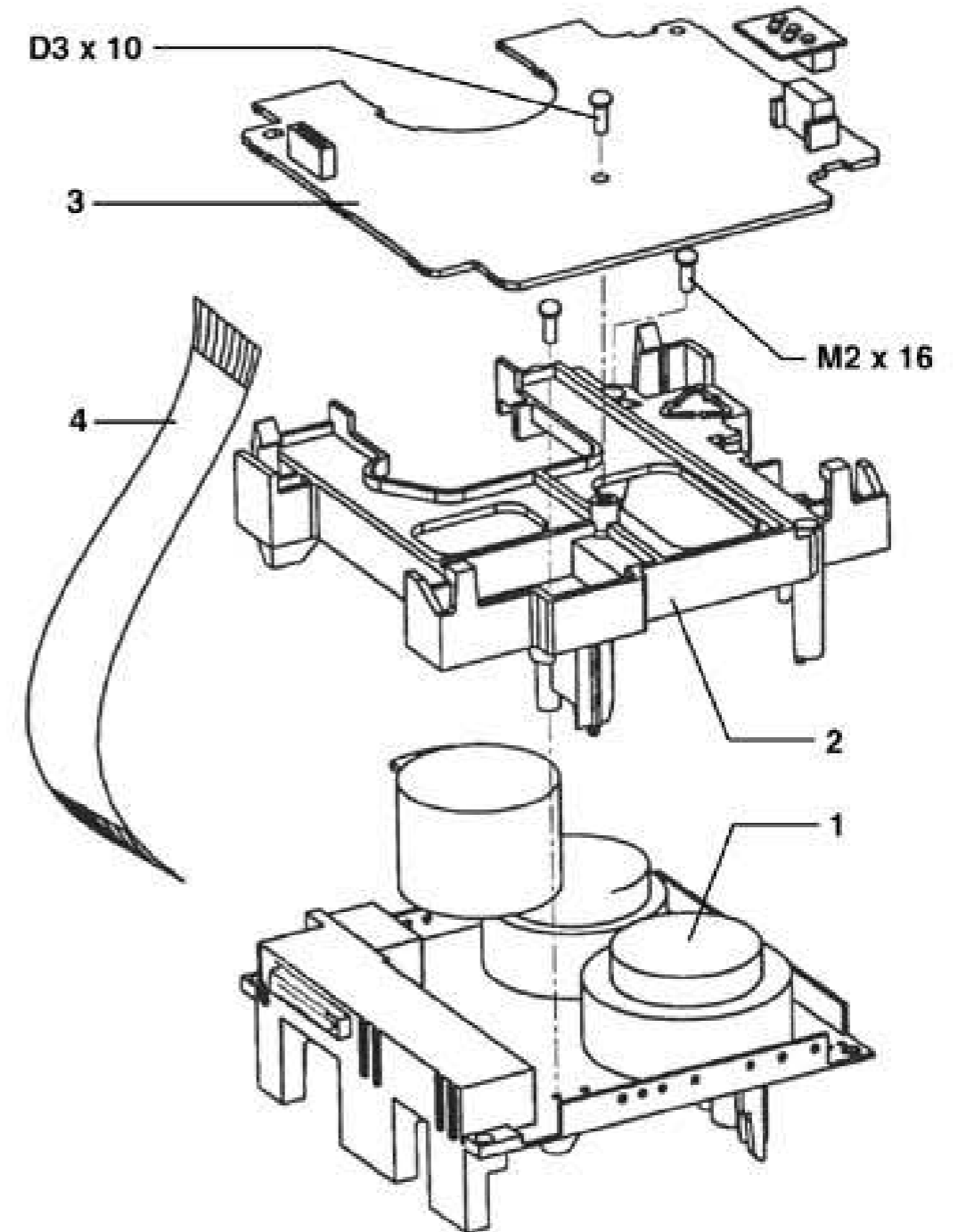
**Note: Only these parts mentioned in the list are normal service parts.**

**MECHANICAL PARTSLIST - RECORDER MODULE ETF6**

1	482269110775	Tape Deck CRH44-503
4	482232012605	Flexible Foil 8P

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

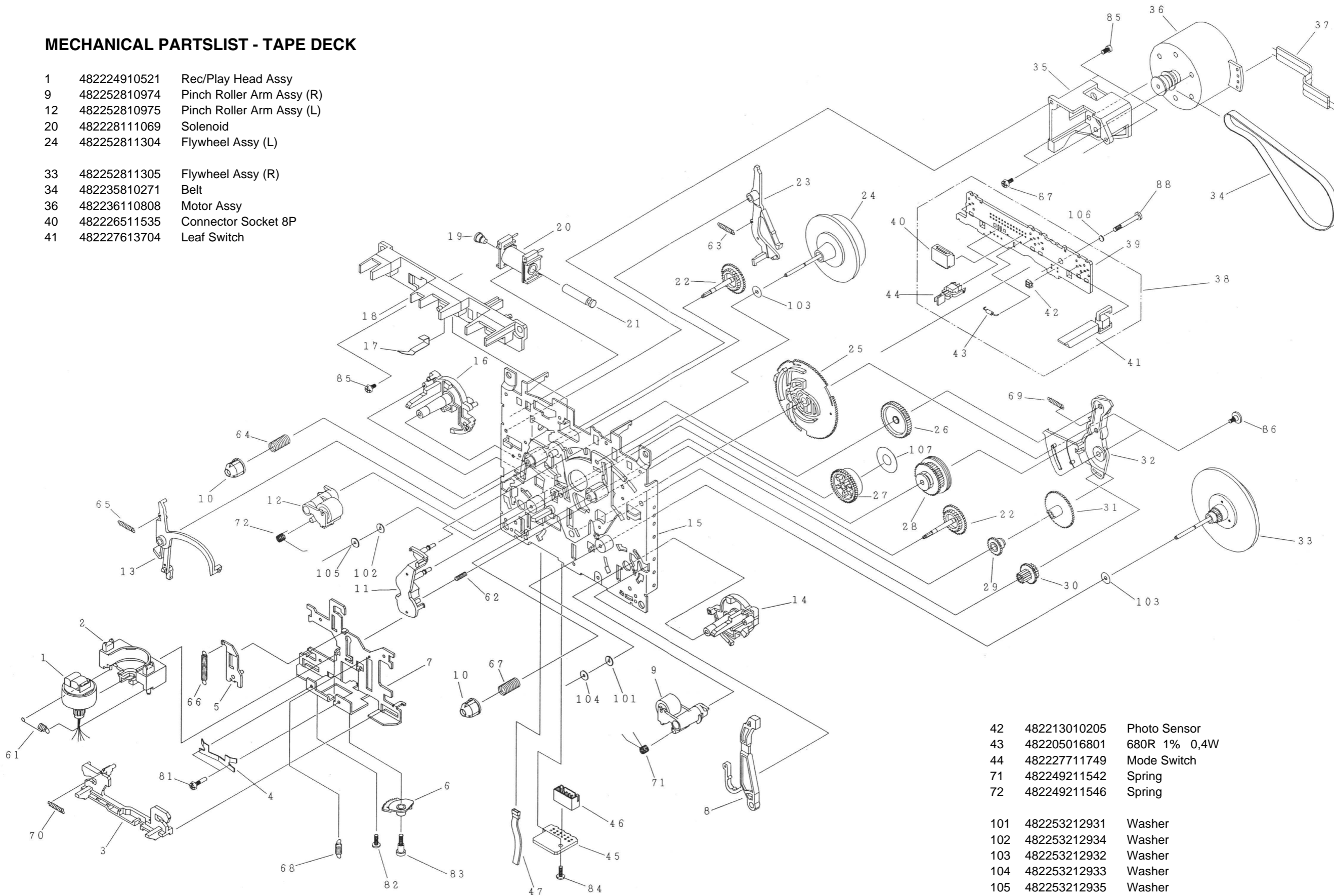
**EXPLODED VIEW DIAGRAM - RECORDER MODULE ETF6**



**EXPLODED VIEW DIAGRAM - TAPE DECK (CRH44-503)**

**MECHANICAL PARTSLIST - TAPE DECK**

- 1 482224910521 Rec/Play Head Assy
- 9 482252810974 Pinch Roller Arm Assy (R)
- 12 482252810975 Pinch Roller Arm Assy (L)
- 20 482228111069 Solenoid
- 24 482252811304 Flywheel Assy (L)
  
- 33 482252811305 Flywheel Assy (R)
- 34 482235810271 Belt
- 36 482236110808 Motor Assy
- 40 482226511535 Connector Socket 8P
- 41 482227613704 Leaf Switch



- 42 482213010205 Photo Sensor
- 43 482205016801 680R 1% 0,4W
- 44 482227711749 Mode Switch
- 71 482249211542 Spring
- 72 482249211546 Spring
  
- 101 482253212931 Washer
- 102 482253212934 Washer
- 103 482253212932 Washer
- 104 482253212933 Washer
- 105 482253212935 Washer

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

## ELECTRICAL PARTSLIST - COMBI BOARD

**- CAPACITORS -**

2251	532212142386	100nF 5% 63V
2252	532212142386	100nF 5% 63V
2253	532212142386	100nF 5% 63V
2254	532212142386	100nF 5% 63V
2256	482212481151	22µF 50V
2257	482212440248	10µF 20% 63V
2258	482212440769	4,7µF 20% 100V
2259	482212440769	4,7µF 20% 100V
2260	482212613751	47nF 10% X7R 63V
2262	532212610511	1nF 5% NP0 50V
2264	482212440769	4,7µF 20% 100V
2265	482212440207	100µF 20% 25V
2266	482212614585	100nF 10% X7R 50V
2267	482212440784	3300µF 20% 16V
2268	482212412012	4700µF 20% 25V
2330	482212440769	4,7µF 20% 100V
2331	223891019852	150nF ±80/20 25V
2332	223891019852	150nF ±80/20 25V
2337	482212142408	220nF 5% 63V
2338	482212142408	220nF 5% 63V
2339	482212142408	220nF 5% 63V
2340	482212142408	220nF 5% 63V
2341	482212440433	47µF 20% 25V
2342	482212440433	47µF 20% 25V
2343	482212233197	1nF 10% 50V
2344	482212233197	1nF 10% 50V
2345	532212232654	22nF 10% X7R 63V
2346	532212232654	22nF 10% X7R 63V
2347	482212440433	47µF 20% 25V
2348	482212440433	47µF 20% 25V
2349	482212440207	100µF 20% 25V
2351	482212440769	4,7µF 20% 100V
2352	482212440433	47µF 20% 25V
2353	532212610184	820pF 5% 50V
2354	532212610184	820pF 5% 50V
2500	482212441584	100µF 20% 10V
2501	482212440196	220µF 20% 16V
2502	482212440248	10µF 20% 63V
2503	532212232654	22nF 10% X7R 63V
2505	532212232531	100pF 5% NP0 50V
2506	532212232531	100pF 5% NP0 50V
2507	532212232531	100pF 5% NP0 50V
2508	532212232531	100pF 5% NP0 50V
2509	532212232658	22pF 5% 50V
2510	532212232658	22pF 5% 50V
2511	482212614076	220nF +80-20% 25V
2512	482212614076	220nF +80-20% 25V
2513	482212613692	47F 1% NP0 63V
2514	482212613692	47F 1% NP0 63V
2515	482212233177	10nF 20% X7R 50V

**- CAPACITORS -**

2516	482212233177	10nF 20% X7R 50V
2517	532212231865	1,5nF 10% X7R 63V
2518	532212231865	1,5nF 10% X7R 63V
2519	482212233575	220pF 5% NP0 63V
2520	482212233575	220pF 5% NP0 63V
2521	532212231865	1,5nF 10% X7R 63V
2522	532212231865	1,5nF 10% X7R 63V
2523	482212232535	680pF 10% X7R 63V
2524	482212232535	680pF 10% X7R 63V
2525	482212613692	47F 1% NP0 63V
2526	482212613692	47F 1% NP0 63V
2527	482212233177	10nF 20% X7R 50V
2528	482212233177	10nF 20% X7R 50V
2529	482212614585	100nF 10% X7R 50V
2530	482212614585	100nF 10% X7R 50V
2531	482212614585	100nF 10% X7R 50V
2532	482212614585	100nF 10% X7R 50V
2533	482212613751	47nF 10% X7R 63V
2534	482212613751	47nF 10% X7R 63V
2535	482212614585	100nF 10% X7R 50V
2550	482212611585	22nF +80-20% Y5V 25V
2551	482212233127	2,2nF 10% X7R 63V
2552	482212233127	2,2nF 10% X7R 63V
2553	532212232654	22nF 10% X7R 63V
2554	482212440196	220µF 20% 16V
2555	482212422652	2,2µF 20% 50V
2557	482212613482	470nF 80/20% 16V
2558	482212233575	220pF 5% NP0 63V
2559	482212233575	220pF 5% NP0 63V
2560	482212233575	220pF 5% NP0 63V
2561	482212481151	22µF 50V
2563	482212441407	0,47µF 20% 63V
2564	482212441407	0,47µF 20% 63V
2565	532212232531	100pF 5% NP0 50V
2566	532212232531	100pF 5% NP0 50V
2567	482212422652	2,2µF 20% 50V
2568	482212422652	2,2µF 20% 50V
2569	482212421913	1µF 20% 63V
2570	482212421913	1µF 20% 63V
2571	482212613482	470nF 80/20% 16V
2573	482212614585	100nF 10% X7R 50V

## ELECTRICAL PARTSLIST - COMBI BOARD

**- RESISTORS -**

3250	482205120471	470R 5% 0,1W
3251	482211711449	2K2 1% 0,1W
3252	482205120472	4K7 5% 0,1W
3253	482205120472	4K7 5% 0,1W
3254	482211711449	2K2 1% 0,1W
3255	482205011002	1K 1% 0,4W
3256	482205011002	1K 1% 0,4W
3257	482205011002	1K 1% 0,4W
3258	482211683884	47K 5% 0,5W
3259	482211713577	330R 1% 1,25W
3260	482211713579	220K 1% 0,1W
3261	482211711149	82K 1% 0,1W
3262	482205110102	1K 2% 0,25W
3263	482205120472	4K7 5% 0,1W
3264	482205110102	1K 2% 0,25W
3266	482211710834	47K 1% 0,1W
3267	482211711449	2K2 1% 0,1W
3268	482211711449	2K2 1% 0,1W
3269	482205120223	22K 5% 0,1W
3271	482205024708	4R7 1% 0,6W
3272	482205024708	4R7 1% 0,6W
3273	482205024708	4R7 1% 0,6W
3274	482205120391	390R 5% 0,1W
3275	482211683883	470R 5% 0,5W
3276	482211711449	2K2 1% 0,1W
3277	482211711449	2K2 1% 0,1W
3278	482211710834	47K 1% 0,1W
3279	482205110102	1K 2% 0,25W
3280	482211652257	22K 5% 0,5W
3281	482211711449	2K2 1% 0,1W
3282	482211711449	2K2 1% 0,1W
3283	482211711449	2K2 1% 0,1W
3284	482211711449	2K2 1% 0,1W
3331	482205021003	10K 1% 0,6W
3332	482205021003	10K 1% 0,6W
3333	482211711507	6K8 1% 0,1W
3334	482211711507	6K8 1% 0,1W
3335	482205120228	2R2 5% 0,1W
3336	482205120228	2R2 5% 0,1W
3337	482205120228	2R2 5% 0,1W
3338	482205120228	2R2 5% 0,1W
3339	482205120121	120R 5% 0,1W
3340	482205120121	120R 5% 0,1W
3341	482211652226	560R 5% 0,5W
3342	482211652226	560R 5% 0,5W
3343	482211710833	10K 1% 0,1W
3344	482211710833	10K 1% 0,1W
3345	482211710833	10K 1% 0,1W
3346	482211710833	10K 1% 0,1W
3347	482205120223	22K 5% 0,1W

**- RESISTORS -**

3348	482205120223	22K 5% 0,1W
3349	482211710834	47K 1% 0,1W
3350	482211710834	47K 1% 0,1W
3351	482205110102	1K 2% 0,25W
3352	482205110102	1K 2% 0,25W
3353	482205120479	47R 5% 0,1W
3358	482205120472	4K7 5% 0,1W
3359	482211711507	6K8 1% 0,1W
3360	482211710837	100K 1% 0,1W
3361	482205120101	100R 5% 0,1W
3500	482211711454	820R 1% 0,1W
3501	482205120471	470R 5% 0,1W
3502	482211652256	2K2 5% 0,5W
3503	482205120471	470R 5% 0,1W
3505	482205120333	33K 5% 0,1W
3506	482205120333	33K 5% 0,1W
3507	482205120159	15R 5% 0,1W
3508	482205120159	15R 5% 0,1W
3509	482205120333	33K 5% 0,1W
3510	482205120333	33K 5% 0,1W
3511	482211710837	100K 1% 0,1W
3512	482211710837	100K 1% 0,1W
3513	482211683933	15K 1% 0,1W
3514	482211683933	15K 1% 0,1W
3515	482205120333	33K 5% 0,1W
3516	482205120333	33K 5% 0,1W
3517	482211710837	100K 1% 0,1W
3518	482211710837	100K 1% 0,1W
3519	482211713579	220K 1% 0,1W
3520	482211713579	220K 1% 0,1W
3521	482205023303	33K 1% 0,6W
3522	482205023303	33K 1% 0,6W
3523	482205023303	33K 1% 0,6W
3524	482205023303	33K 1% 0,6W
3525	482211713579	220K 1% 0,1W
3526	482211713579	220K 1% 0,1W
3527	482211713579	220K 1% 0,1W
3528	482211713579	220K 1% 0,1W
3529	482211652264	27K 5% 0,5W
3530	482211652264	27K 5% 0,5W
3531	482211652264	27K 5% 0,5W
3532	482211652264	27K 5% 0,5W
3533	482205120333	33K 5% 0,1W
3534	482205120333	33K 5% 0,1W
3535	482211710837	100K 1% 0,1W
3536	482211710837	100K 1% 0,1W
3537	482211713579	220K 1% 0,1W
3538	482211713579	220K 1% 0,1W
3539	482205120223	22K 5% 0,1W
3540	482205120223	22K 5% 0,1W

## ELECTRICAL PARTSLIST - COMBI BOARD

**- RESISTORS -**

3541	482205120154	150K	5%	0,1W
3542	482205120154	150K	5%	0,1W
3543	482211711149	82K	1%	0,1W
3544	482211711149	82K	1%	0,1W
3545	482205120822	8K2	5%	0,1W
3546	482205120822	8K2	5%	0,1W
3547	482205120154	150K	5%	0,1W
3548	482205120154	150K	5%	0,1W
3551	482205120333	33K	5%	0,1W
3552	482205120333	33K	5%	0,1W
3553	482205120822	8K2	5%	0,1W
3554	482205120822	8K2	5%	0,1W
3555	482211711507	6K8	1%	0,1W
3556	482211711507	6K8	1%	0,1W
3557	482211710965	18K	1%	0,1W
3558	482211710965	18K	1%	0,1W
3559	482211712955	2K7	1%	0,1W
3560	482211712955	2K7	1%	0,1W
3561	482205021003	10K	1%	0,6W
3562	482205021003	10K	1%	0,6W
3563	482205120101	100R	5%	0,1W
3565	482205120229	22R	5%	0,1W
3566	482205120229	22R	5%	0,1W
3568	482205110102	1K	2%	0,25W
3572	482211710833	10K	1%	0,1W
3573	482205011002	1K	1%	0,4W
3574	482211710834	47K	1%	0,1W
3575	482211683933	15K	1%	0,1W
3576	482211683933	15K	1%	0,1W
3577	482205120471	470R	5%	0,1W
3578	482205120471	470R	5%	0,1W
3579	482205120154	150K	5%	0,1W
3580	482205120154	150K	5%	0,1W
3581	482211712955	2K7	1%	0,1W
3582	482211712955	2K7	1%	0,1W
3583	482205120472	4K7	5%	0,1W
3584	482205120472	4K7	5%	0,1W
3585	482211711449	2K2	1%	0,1W
3586	482211711449	2K2	1%	0,1W
3587	482205120392	3K9	5%	0,1W
3588	482205120392	3K9	5%	0,1W
3589	482211683872	220R	5%	0,5W
4260	482205120008	Jumper		
4261	482205120008	Jumper		
4262	482205120008	Jumper		
4263	482205120008	Jumper		
4264	482205120008	Jumper		
4265	482205120008	Jumper		
4266	482205120008	Jumper		
4333	482205120008	Jumper		

**- RESISTORS -**

4334	482205120008	Jumper		
4335	482205120008	Jumper		
4510	482205120008	Jumper		
4512	482205120008	Jumper		
4513	482205120008	Jumper		
4560	482205120008	Jumper		
4561	482205120008	Jumper		
4562	482205120008	Jumper		
4563	482205120008	Jumper		
4564	482205120008	Jumper		
4565	482205120008	Jumper		
4566	482205120008	Jumper		
4567	482205120008	Jumper		
4568	482205120008	Jumper		
4569	482205120008	Jumper		
4570	482205120008	Jumper		
4571	482205120008	Jumper		
4572	482205120008	Jumper		
4573	482205120008	Jumper		
<b>- COILS -</b>				
5331	482215711837	Coil 0,36µH	10%	
5332	482215711837	Coil 0,36µH	10%	
5333	482215711837	Coil 0,36µH	10%	
5334	482215711837	Coil 0,36µH	10%	
5550	319801814770	Coil 470nH	10%	
5551	319801814770	Coil 470nH	10%	
<b>- DIODES -</b>				
6254	482213031878	Diode 1N4003G		
6255	482213031878	Diode 1N4003G		
6256	482213031878	Diode 1N4003G		
6257	482213031878	Diode 1N4003G		
6258	482213031878	Diode 1N4003G		
6259	482213031878	Diode 1N4003G		
6260	482213031878	Diode 1N4003G		
6261	482213031878	Diode 1N4003G		
6262	482213031878	Diode 1N4003G		
6263	482213031878	Diode 1N4003G		
6264	482213031878	Diode 1N4003G		
6265	482213031878	Diode 1N4003G		
6266	482213030621	Diode 1N4148		
6267	482213030621	Diode 1N4148		
6268	319801058280	Diode BZX79-B8V2		
6269	482213030621	Diode 1N4148		
6270	482213030621	Diode 1N4148		
6271	482213034278	Diode BZX79-B6V8		
6272	482213061219	Diode BZX79-B10		
6275	319801053380	Diode BZX79-B3V3		

## ELECTRICAL PARTSLIST - COMBI BOARD

**- DIODES -**

6331	482213030621	Diode 1N4148		
6332	482213030621	Diode 1N4148		
6333	482213030621	Diode 1N4148		
6500	482213030621	Diode 1N4148		
6550	319801053380	Diode BZX79-B3V3		
<b>- IC &amp; TRANSISTORS -</b>				
7250	932213924687	Trans BDW94CFP		
7251	482213060511	Trans BC847B		
7252	482213060511	Trans BC847B		
7253	532213044647	Trans BC368		
7254	482213063353	Trans BC369G		
7255	482213060511	Trans BC847B		
7256	482213041246	Trans BC327-25		
7257	482213041246	Trans BC327-25		
7258	482213041246	Trans BC327-25		
7259	482213060511	Trans BC847B		
7260	532213060845	Trans BC807-25		
7261	482213060511	Trans BC847B		
7330	482220916224	IC AN7125		
7331	482213060373	Trans BC856B		
7332	482213060373	Trans BC856B		
7333	482213060511	Trans BC847B		
7500	482220910264	IC HEF4069UBD		
7501	482213044568	Trans BC557B		
7502	482213044568	Trans BC557B		
7503	482213044568	Trans BC557B		
7504	482213044568	Trans BC557B		
7505	482213060511	Trans BC847B		
7506	482213060511	Trans BC847B		
7507	482213060511	Trans BC847B		
7508	482213060511	Trans BC847B		
7509	482213060511	Trans BC847B		
7510	482213060511	Trans BC847B		
7511	482213060511	Trans BC847B		
7512	482213060511	Trans BC847B		
7513	482213060511	Trans BC847B		
7514	482213060511	Trans BC847B		
7550	482213042804	Trans BC817-25		
7551	482220910263	IC HEF4052BP		
7552	532220910421	HEF4094BP		
7553	932200363676	Trans TBC327-40		
7555	482213060511	Trans BC847B		
7556	482213060511	Trans BC847B		

**- MISCELLANEOUS -**

1330	824099024940	Socket Headphone		
1331	482226731176	Connector Terminal		
1550	482226520553	RCA Connector		
1551	482226710953	Connector 7P		
1554	482226710731	Connector 6P		
1555	482226511515	Connector 8P		
	482249271733	Clamp Steel (For Item 7330)		
	482225540179	Clip Steel (For Item 7250)		

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

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ELECTRICAL PARTSLIST - FRONT BOARD

- CAPACITORS -

2400	482212233177	10nF 20% X7R 50V
2401	482212233177	10nF 20% X7R 50V
2402	482212423432	100µF 20% 10V
2403	482212614585	100nF 10% X7R 50V
2404	482212423432	100µF 20% 10V

2405	482212233177	10nF 20% X7R 50V
2406	482212233177	10nF 20% X7R 50V
2407	482212614585	100nF 10% X7R 50V
2408	482212614585	100nF 10% X7R 50V
2409	482212233177	10nF 20% X7R 50V

2410	482212233177	10nF 20% X7R 50V
2411	482212613486	15pF 2% NPO 63V
2412	482212613486	15pF 2% NPO 63V
2413	482212613694	68pF 1% NPO 63V
2414	482212233177	10nF 20% X7R 50V

2415	482212613691	27pF 1% NPO 63V
2416	482212613691	27pF 1% NPO 63V
2417	482212440433	47µF 20% 25V
2418	532212231647	1nF 10% X7R 63V
2419	482212614585	100nF 10% X7R 50V

2420	482212233177	10nF 20% X7R 50V
2421	482212233177	10nF 20% X7R 50V
2422	532212232531	100pF 5% NP0 50V
2423	532212232531	100pF 5% NP0 50V
2424	482212614585	100nF 10% X7R 50V

2425	532212232659	33pF 5% 50V
2426	532212232658	22pF 5% 50V
2427	532211680853	560pF 5% NP0 63V
2428	482212422652	2,2µF20% 50V
2429	482212612787	330pF10% Y5V 50V

2430	532212231647	1nF10%X7R 63V
2431	532212610223	4,7nF 10% X7R 63V
2432	532212232531	100pF 5% NP0 50V
2433	532212232268	470pF 10% 50V
2434	532212232531	100pF 5% NP0 50V

2435	532212232268	470pF 10% 50V
2436	532212232268	470pF 10% 50V
2437	532212232268	470pF 10% 50V
2438	532212232268	470pF 10% 50V
2439	532212232268	470pF 10% 50V

2440	482212233127	2,2nF 10% X7R 63V
2441	482212233177	10nF 20% X7R 50V
2442	482212233575	220pF 5% NP0 63V
2443	482212233575	220pF 5% NP0 63V
2444	482212233575	220pF 5% NP0 63V

2445	482212233575	220pF 5% NP0 63V
2446	482212233177	10nF 20% X7R 50V
2447	532212234099	470pF 10% X7R 63V
2448	532212234099	470pF 10% X7R 63V
2449	532212234099	470pF 10% X7R 63V

14-3  
ELECTRICAL PARTSLIST - FRONT BOARD

- CAPACITORS -

2450	532212234099	470pF 10% X7R 63V
2451	532212234099	470pF 10% X7R 63V

- RESISTORS -

3400	482211652176	10R 5% 0,5W
3401	482211652182	10R 5% 0,5W
3402	482211652175	100R 5% 0,5W
3403	482211711507	6K8 1% 0,1W
3404	482205120182	1K8 5% 0,1W

3405	482205011002	1K 1% 0,4W
3406	482211710837	100K 1% 0,1W
3407	482205110102	1K 2% 0,25W
3408	482205120474	470K 5% 0,1W
3409	482211710833	10K 1% 0,1W

3410	482211652175	100R 5% 0,5W
3411	482211710837	100K 1% 0,1W
3412	482211710833	10K 1% 0,1W
3413	482205110102	1K 2% 0,25W
3414	482205120333	33K 5% 0,1W

3415	482211683933	15K 1% 0,1W
3416	482211683872	220R 5% 0,5W
3417	482211683933	15K 1% 0,1W
3418	482211711139	1K5 1% 0,1W
3419	482211711139	1K5 1% 0,1W

3420	482205021003	10K 1% 0,6W
3421	482205120562	5K6 5% 0,1W
3422	482211683883	470R 5% 0,5W
3423	482205011002	1K 1% 0,4W
3424	482211711139	1K5 1% 0,1W

3425	482211711449	2K2 1% 0,1W
3426	482205120332	3K3 5% 0,1W
3427	482205120562	5K6 5% 0,1W
3428	482211710833	10K 1% 0,1W
3429	482205021003	10K 1% 0,6W

3430	482205120562	5K6 5% 0,1W
3431	482205120471	470R 5% 0,1W
3432	482205110102	1K 2% 0,25W
3433	482211711139	1K5 1% 0,1W
3434	482211711449	2K2 1% 0,1W

3435	482205120332	3K3 5% 0,1W
3436	482205120562	5K6 5% 0,1W
3437	482205120223	22K 5% 0,1W
3438	482205120223	22K 5% 0,1W
3439	482205110102	1K 2% 0,25W

3440	482205110102	1K 2% 0,25W
3441	482205110102	1K 2% 0,25W
3442	482205120333	33K 5% 0,1W
3443	482205023303	33K 5% 0,1W
3444	482211652175	100R 5% 0,5W

14-3  
ELECTRICAL PARTSLIST - FRONT BOARD

- RESISTORS -

3445	482211711449	2K2 1% 0,1W
3446	482211713579	220K 1% 0,1W
3447	482211710833	10K 1% 0,1W
3448	482211652243	1K5 5% 0,5W
3449	482211652257	22K 5% 0,5W

3450	482211710833	10K 1% 0,1W
3451	482205120471	470R 5% 0,1W
3452	482211710833	10K 1% 0,1W
3453	482205110102	1K 2% 0,25W
3454	482205011002	1K 1% 0,4W

3455	482205110102	1K 2% 0,25W
3456	482205011002	1K 1% 0,4W
3457	482211710833	10K 1% 0,1W
3458	482205110102	1K 2% 0,25W
3459	482211683872	220R 5% 0,5W

3460	482205120471	470R 5% 0,1W
3461	482211652283	4K7 5% 0,5W
3462	482205120472	4K7 5% 0,1W
3463	482211652283	4K7 5% 0,5W
3464	482205120472	4K7 5% 0,1W

3465	482211652283	4K7 5% 0,5W
3466	482205120472	4K7 5% 0,1W
3467	482211652256	2K2 5% 0,5W
3468	482211711449	2K2 1% 0,1W
3469	482211683883	470R 5% 0,5W

3470	482211712955	2K7 1% 0,1W
3471	482205023303	33K 1% 0,6W
3472	482205120474	470K 5% 0,1W
3473	482205120472	4K7 5% 0,1W
3474	482205011002	1K 1% 0,4W

3475	482211713577	330R 1% 1,25W
3476	482211683883	470R 5% 0,5W
3477	482205120471	470R 5% 0,1W
3478	482211683883	470R 5% 0,5W
3479	482205120471	470R 5% 0,1W

3480	482205011002	1K 1% 0,4W
3481	482205120471	470R 5% 0,1W
3482	482205011002	1K 1% 0,4W
3483	482211683933	15K 1% 0,1W
3484	482211710833	10K 1% 0,1W

3485	482211652276	3K9 5% 0,5W
3486	482205120101	100R 5% 0,1W
3487	482211652276	3K9 5% 0,5W
3488	482205120101	100R 5% 0,1W
3489	482205011002	1K 1% 0,4W

3490	482205110102	1K 2% 0,25W
3491	482205011002	1K 1% 0,4W
3492	482205110102	1K 2% 0,25W
3493	482205011002	1K 1% 0,4W
3494	482205110102	1K 2% 0,25W

14-3  
ELECTRICAL PARTSLIST - FRONT BOARD

- RESISTORS -

3496	482205120154	150K 5% 0,1W
3497	482211710833	10K 1% 0,1W
3498	482211710833	10K 1% 0,1W
3499	482205120223	22K 5% 0,1W
4401	482205120008	Jumper

4410	482205120008	Jumper
4411	482205120008	Jumper
4412	482205120008	Jumper
4413	482205120008	Jumper
4414	482205120008	Jumper

4415	482205120008	Jumper
4416	482205120008	Jumper
4417	482205120008	Jumper
4418	482205120008	Jumper
4419	482205120008	Jumper

- COILS, CRYSTAL & FILTERS -

5400	319801811580	Coil 1,5µH 5%
5401	319801811580	Coil 1,5µH 5%
5402	482224272066	Filter CST8,00MT
5403	242254301069	Crystal 32.768kHz
5404	482224272195	Crystal 4.332MHz

- DIODES -

6400	482213030621	Diode 1N4148
6401	482213030621	Diode 1N4148

- IC & TRANSISTORS -

7400	314011050760	IC TMP87CP23F
7402	482213060511	Trans BC847B
7403	482213060511	Trans BC847B
7404	932213714667	Remote Receiver
7405	932214083682	IC M24C01-BN6

7406	482220931981	IC SAA6579T
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14-3  
ELECTRICAL PARTSLIST - FRONT BOARD

- MISCELLANEOUS -

1400	482227613775	Push Switch
1401	482227613775	Push Switch
1402	482227613775	Push Switch
1403	482227613775	Push Switch
1404	482227613775	Push Switch

1405	482227613775	Push Switch
1406	482227613775	Push Switch
1407	482227613775	Push Switch
1408	482227613775	Push Switch
1409	482227613775	Push Switch

1410	482227613775	Push Switch
1411	482227613775	Push Switch
1412	482227613775	Push Switch
1413	482227613775	Push Switch
1414	482227613775	Push Switch

1415	242212916349	Rotary Switch
1416	242202514546	Connector 16P
1418	482226511207	Connector 6P
1420	482226710956	Connector 7P
1425	936028030112	LCD Display

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

**ELECTRICAL PARTSLIST - CD99 DA11**<sup>14-4</sup>

**- CAPACITORS -**

2801	482212441751	47µF 20% 50V
2802	482212441751	47µF 20% 50V
2803	482212613695	82pF 1% NP0 63V
2804	482212613695	82pF 1% NP0 63V
2805	482212613695	82pF 1% NP0 63V
2806	482212613695	82pF 1% NP0 63V
2807	482212613691	27pF 1% NP0 63V
2808	532212233538	150pF 2% NP0 63V
2809	482212613691	27pF 1% NP0 63V
2810	482212613691	27pF 1% NP0 63V
2811	532212232659	33pF 5% 50V
2812	532212232448	10pF 5% NP0 63V
2813	482212233127	2,2nF 10% X7R 63V
2814	482212613751	47nF 10% X7R 63V
2815	482212613692	47pF 1% NP0 63V
2816	532212232654	22nF 10% X7R 63V
2817	482212440769	4,7µF 20% 100V
2818	482212613751	47nF 10% X7R 63V
2821	482212614585	100nF 10% X7R 50V
2822	482212613344	1,5nF 5% 63V
2823	482212442383	220µF 20% 4V
2824	482212613751	47nF 10% X7R 63V
2825	482212613344	1,5nF 5% 63V
2826	482212613751	47nF 10% X7R 63V
2827	532212231647	1nF 10% X7R 63V
2828	482212613692	47pF 1% NP0 63V
2829	482212613751	47nF 10% X7R 63V
2830	482212614043	1µF +80-20% Y5V 16V
2831	482212614043	1µF +80-20% Y5V 16V
2832	532212233538	150pF 2% NP0 63V
2833	532212232268	470pF 10% 50V
2834	482212233216	270pF 5% NP0 50V
2835	532212232268	470pF 10% 50V
2836	482212441751	47µF 20% 50V
2837	482212613751	47nF 10% X7R 63V
2838	532212232654	22nF 10% X7R 63V
2839	482212614585	100nF 10% X7R 50V
2840	482212441751	47µF 20% 50V
2841	482212613751	47nF 10% X7R 63V
2842	482212421913	1µF 20% 63V
2843	532212232531	100pF 5% NP0 50V
2844	482212233575	220pF 5% NP0 63V
2845	482212233575	220pF 5% NP0 63V
2846	482212440248	10µF 20% 63V
2848	532212232531	100pF 5% NP0 50V
2849	482212233575	220pF 5% NP0 63V
2850	482212233575	220pF 5% NP0 63V
2851	482212440248	10µF 20% 63V
2853	482212233177	10nF 20% X7R 50V
2854	482212411912	220µF 20% 6,3V

**- CAPACITORS -**

2855	482212411912	220µF 20% 6,3V
2857	482212412362	47µF 4V 20%
2860	532211680853	560pF 5% NP0 63V
2861	532212231865	1,5nF 10% X7R 63V
2862	482212610326	180pF 5%NP0 63V
2863	482212610326	180pF 5%NP0 63V
2864	482212610326	180pF 5%NP0 63V
2865	482212610326	180pF 5%NP0 63V
2869	482212613751	47nF 10% X7R 63V
2870	482212233575	220pF 5% NP0 63V
2871	482212233575	220pF 5% NP0 63V
2872	482212233575	220pF 5% NP0 63V
2873	482212233575	220pF 5% NP0 63V
2874	482212233575	220pF 5% NP0 63V
2875	482212233575	220pF 5% NP0 63V
3728	482205120479	47R 5% 0,1W
3745	482205120109	10R 5% 0,1W
3757	482205120223	22K 5% 0,1W
3788	482205120472	4K7 5% 0,1W
3800	482205120478	4R70 5% 0,1W
3801	482205120154	150K 5% 0,1W
3802	482205110102	1K 2% 0,25W
3803	482205120273	27K 5% 0,1W
3804	482205120472	4K7 5% 0,1W
3805	482205120273	27K 5% 0,1W
3806	482211710361	680R 1% 0,1W
3807	482211711139	1K5 1% 0,1W
3808	482205120339	33R 5% 0,1W
3809	482205120339	33R 5% 0,1W
3810	482205210478	4R7 5% 0,33W
3811	482205110102	1K 2% 0,25W
3812	482205120474	470K 5% 0,1W
3813	482205120683	68K 5% 0,1W
3814	482205120332	3K3 5% 0,1W
3815	482205120472	4K7 5% 0,1W
3816	482211683933	15K 1% 0,1W
3817	482211710834	47K 1% 0,1W
3818	482205120562	5K6 5% 0,1W
3819	482211683933	15K 1% 0,1W
3820	482211710965	18K 1% 0,1W
3821	482205120332	3K3 5% 0,1W
3822	482205120332	3K3 5% 0,1W
3823	482205120332	3K3 5% 0,1W
3824	482205110102	1K 2% 0,25W
3825	482205120223	22K 5% 0,1W

**- RESISTORS -**

**ELECTRICAL PARTSLIST - CD99 DA11**<sup>14-4</sup>

**- RESISTORS -**

3826	482205120273	27K 5% 0,1W
3827	482205120339	33R 5% 0,1W
3828	482205120479	47R 5% 0,1W
3829	482205120101	100R 5% 0,1W
3830	482205120472	4K7 5% 0,1W
3835	482205120223	22K 5% 0,1W
3836	482211710833	10K 1% 0,1W
3837	482205120471	470R 5% 0,1W
3838	482205120471	470R 5% 0,1W
3839	482205120471	470R 5% 0,1W
3840	482205120471	470R 5% 0,1W
3841	482205120472	4K7 5% 0,1W
3842	482205110102	1K 2% 0,25W
3843	482205110102	1K 2% 0,25W
3844	482205120101	100R 5% 0,1W
3845	482205120228	2R2 5% 0,1W
3846	482205120223	22K 5% 0,1W
3847	482211711149	82K 1% 0,1W
3848	482211710834	47K 1% 0,1W
3849	482211711148	56K 1% 0,1W
3850	482205120822	8K2 5% 0,1W
3851	482211711148	56K 1% 0,1W
3852	482211710834	47K 1% 0,1W
3853	482211683933	15K 1% 0,1W
3854	482205120822	8K2 5% 0,1W
3855	482211640227	4R6 25% 12V
3856	482205120683	68K 5% 0,1W
3857	482205120683	68K 5% 0,1W
3858	482205120392	3K9 5% 0,1W
3859	482211710834	47K 1% 0,1W
3860	482205110102	1K 2% 0,25W
3861	482211710834	47K 1% 0,1W
3862	482205110102	1K 2% 0,25W
3863	482205210338	3R3 5% 0,33W
3864	482211710833	10K 1% 0,1W
3865	482205110102	1K 2% 0,25W
3867	482205120223	22K 5% 0,1W
3868	482211710833	10K 1% 0,1W
3869	482211710833	10K 1% 0,1W
3871	482205120471	470R 5% 0,1W
3872	482211710834	47K 1% 0,1W
3873	482205120223	22K 5% 0,1W
3874	482205120223	22K 5% 0,1W
3875	482211710833	10K 1% 0,1W
3876	482211710833	10K 1% 0,1W
3878	482205120471	470R 5% 0,1W
3879	482211710834	47K 1% 0,1W
3880	482205120339	33R 5% 0,1W
3881	482211710353	150R 1% 0,1W
3882	482205120101	100R 5% 0,1W

**- RESISTORS -**

3883	482205110102	1K 2% 0,25W
3884	482205110102	1K 2% 0,25W
3886	482211710833	10K 1% 0,1W
3887	482211710833	10K 1% 0,1W
3888	482205120472	4K7 5% 0,1W
3889	482205110102	1K 2% 0,25W
3890	482211710837	100K 1% 0,1W
3891	482211710837	100K 1% 0,1W
3892	482211710837	100K 1% 0,1W
3893	482211710837	100K 1% 0,1W
3894	482211710833	10K 1% 0,1W
3895	482211710833	10K 1% 0,1W
3896	482211710833	10K 1% 0,1W
3897	482211710833	10K 1% 0,1W
3898	482211710833	10K 1% 0,1W
3899	482211710833	10K 1% 0,1W
3900	482205120223	22K 5% 0,1W
4801	482205120008	Jumper
4802	482205120008	Jumper
4807	482205120008	Jumper
4808	482205120008	Jumper
4809	482205120008	Jumper
4810	482205120008	Jumper
4812	482205120008	Jumper
4813	482205120008	Jumper
4814	482205120008	Jumper
4815	482205120008	Jumper
4823	482205120008	Jumper
4824	482205120008	Jumper
4828	482205120008	Jumper
4831	482205120008	Jumper
4832	482205120008	Jumper
4838	482205120008	Jumper
4845	482205120008	Jumper
4847	482205120008	Jumper
4848	482205120008	Jumper
4850	482205120008	Jumper
4853	482205120008	Jumper
4856	482205120008	Jumper
4857	482205120008	Jumper
4859	482205120008	Jumper
4863	482205120008	Jumper
4865	482205120008	Jumper
4866	482205120008	Jumper
4872	482205120008	Jumper
4877	482205120008	Jumper
4881	482205120008	Jumper
4884	482205120008	Jumper
4885	482205120008	Jumper
4886	482205120008	Jumper

**ELECTRICAL PARTSLIST - CD99 DA11**<sup>14-4</sup>

**- RESISTORS -**

4888	482205120008	Jumper
4889	482205120008	Jumper
1810	482224273557	Filter CST8,46MTW-TF01
5803	482215711231	Coil LAN02TB1R0J
6877	482213011564	Diode UDZ3.9B
7800	482220917324	IC SAA7325H
7802	532220911517	IC PC74HCU04T
7803	532213060123	Trans BC807-40
7804	532220982941	IC LM358D
7807	532213042755	Trans BC847C
7808	482220932852	IC TDA7073A/N2
7809	482220932852	IC TDA7073A/N2
7810	482220933165	IC TDA1308T/N1
7875	482213060511	Trans BC847B
1800	482226510925	Connector 15P
1823	482226511207	Connector 6P
1824	482226511207	Connector 6P
8000	482232012178	Flexible Foil 15P

**- COILS & FILTERS -**

**- DIODES -**

**- IC & TRANSISTORS -**

**- MISCELLANEOUS -**

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



## ELECTRICAL PARTSLIST - TUNER BOARD ECO6 (Cenelec)

**- CAPACITORS -**

2106	202080000204	Var Cap 4,2pF-20pF 100V
2107	482212151319	1µF 10% 63V
2108	532212232531	100pF 5% NP0 50V
2109	532212232448	10pF 5% NP0 63V
2120	532212232658	22pF 5% 50V
2122	482212233891	3,3nF 10% X7R 63V
2123	202055293494	Ceramic 390pF 50V
2125	202055296199	Ceramic 560pF 50V
2127	482212614076	220nF 25V P8020
2128	482212440248	10µF 20% 63V
2129	482212441584	100µF 20% 10V
2130	532212232654	22nF 10% X7R 63V
2131	482212613482	470nF 80/20% 16V
2132	482212613482	470nF 80/20% 16V
2133	482212421913	1µF 20% 63V
2134	482212613188	15nF 5% X7R 63V
2135	482212613188	15nF 5% X7R 63V
2136	482212614076	220nF 25V P8020
2137	482212614076	220nF 25V P8020
2138	482212422652	2,2µF 20% 50V
2139	482212614236	15pF 5% 50V
2140	482212613695	82pF 1% NP0 63V
2141	482212613838	100nF Y5V 50V P80M20
2143	482212614076	220nF 25V P8020
2144	482212421913	1µF 20% 63V
2145	482212233575	220pF 5% NP0 63V
2146	482212233575	220pF 5% NP0 63V
2147	482212233575	220pF 5% NP0 63V
2148	482212233127	2,2nF 10% X7R 63V
2149	532212232659	33pF 5% 50V
2150	482212613838	100nF Y5V 50V P80M20
2159	532212232659	33pF 5% 50V
2162	482212481151	22µF 50V
2163	482212613838	100nF Y5V 50V P80M20
2164	482212613482	470nF 80/20% 16V
2165	482212613838	100nF Y5V 50V P80M20
2166	532212231647	1nF 10% X7R 63V
2167	482212233926	12pF 50V
2169	482212233127	2,2nF 10% X7R 63V

**- RESISTORS -**

3105	482211711503	220R 1% 0,1W
3108	482211711449	2K2 1% 0,1W
3109	482205120472	4K7 5% 0,1W
3123	482205120472	4K7 5% 0,1W
3125	482211710833	10K 1% 0,1W

**- RESISTORS -**

3128	482211711449	2K2 1% 0,1W
3132	482205120479	47R 5% 0,1W
3134	482205120223	22K 5% 0,1W
3137	482205120223	22K 5% 0,1W
3141	482211711148	56K 1% 0,1W
3142	482210012159	100K 30%
3143	482205120223	22K 5% 0,1W
3144	482205110102	1K 2% 0,25W
3145	482211711449	2K2 1% 0,1W
3146	482205120229	22R 5% 0,1W
3150	482211710833	10K 1% 0,1W
3151	482205120683	68K 5% 0,1W
3152	482205120471	470R 5% 0,1W
3153	482205120471	470R 5% 0,1W
3154	482211713577	330R 1% 1,25W
3155	482211710353	150R 1% 0,1W
3158	482205120471	470R 5% 0,1W
3159	482205120471	470R 5% 0,1W
3160	482205120471	470R 5% 0,1W
3161	482205120223	22K 5% 0,1W
3167	482205120121	120R 5% 0,1W
3168	482205120121	120R 5% 0,1W
3169	482205120154	150K 5% 0,1W
3171	482211710834	47K 1% 0,1W
3172	482205120562	5K6 5% 0,1W
3176	482205120333	33K 5% 0,1W
3180	482211710833	10K 1% 0,1W
3190	482205120121	120R 5% 0,1W
3191	482205120121	120R 5% 0,1W
3192	482211713577	330R 1% 1,25W
3193	482211713577	330R 1% 1,25W
3194	482211711449	2K2 1% 0,1W
3195	482205120101	100R 5% 0,1W
4105	482205120008	Jumper
4106	482205120008	Jumper
4107	482205120008	Jumper

**- COILS, CRYSTAL & FILTERS -**

5102	482215771634	MW Aerial
5103	242254944107	Coil 252kHz
5109	482215771639	Filter SFE10,7MJA10H-A-TF21
5110	482224270665	Filter SFE10,7MS3-A
5111	242254944023	Coil 450kHz
5112	482215770302	Coil F7MCS-12216N
5114	482215770302	Coil F7MCS-12216N
5115	482215771636	Birdie Coil
5119	482215711443	Coil 2,4µH
5121	482224210261	Crystal T6252F00 75kHz

## ELECTRICAL PARTSLIST - TUNER BOARD ECO6 (Cenelec)

**- COILS & FILTERS -**

5122	242254944108	Coil 796kHz
5123	242254944108	Coil 796kHz

**- DIODES -**

6105	482213083075	Diode HN1V02H-B
6106	482213083757	Diode BAS216
6107	934038690115	Diode BZX284-C11
6120	482213083757	Diode BAS216

**- IC & TRANSISTORS -**

7101	482220990315	IC TEA5762H/V1
7103	532213042756	Trans BC857C
7104	932200364676	Trans TBC337-40
7105	932200364676	Trans TBC337-40
7109	482213060373	Trans BC856B
7110	482213060373	Trans BC856B
7112	482213044503	Trans BC547C
7122	532213042755	Trans BC847C
7124	532213042755	Trans BC847C

**- MISCELLANEOUS -**

1102	482226710283	Connector YKD31-0432
1103	482226531184	Connector S2B-XH-A-BK
1110	242254290071	FM Frontend FE450-G01
1120	482226511515	Connector 8P

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

**ELECTRICAL PARTSLIST - TUNER BOARD ECO6 (Non Cenelec)****- CAPACTORS -**

2101	482212613692	47pF 1% NP0 63V
2103	532212231647	1nF 10% X7R 63V
2104	532212232531	100pF 5% NP0 50V
2106	202080000191	Var Cap 3pF-11pF 100V
2107	482212151319	1µF 10% 63V
2120	482212613689	18pF 1% NP0 63V
2124	532212232654	22nF 10% X7R 63V
2125	202055296199	Ceramic 390pF 50V
2126	532212231863	Ceramic 330pF 63V
2127	482212614076	220nF 25V P8020
2128	482212440248	10µF 20% 63V
2129	482212441584	100µF 20% 10V
2130	532212232654	22nF 10% X7R 63V
2131	482212613482	470nF 80/20% 16V
2132	482212613482	470nF 80/20% 16V
2133	482212421913	1µF 20% 63V
2134	482212613188	15nF 5% X7R 63V
2135	482212613188	15nF 5% X7R 63V
2136	482212614076	220nF 25V P8020
2137	482212614076	220nF 25V P8020
2138	482212422652	2,2µF 20% 50V
2139	482212614236	15pF 5% 50V
2140	482212613695	82pF 1% NP0 63V
2141	482212613838	100nF Y5V 50V P80M20
2143	482212614076	220nF 25V P8020
2144	482212421913	1µF 20% 63V
2145	482212233575	220pF 5% NP0 63V
2146	482212233575	220pF 5% NP0 63V
2147	482212233575	220pF 5% NP0 63V
2148	482212233127	2,2nF 10% X7R 63V
2150	482212613838	100nF Y5V 50V P80M20
2152	482212612105	Ceramic 33nF 50V
2153	482212613486	15pF 2% NP0 63V
2155	202080000191	Var Cap 3pF-11pF 100V
2159	532212232659	33pF 5% 50V
2164	482212613482	470nF 80/20% 16V
2165	482212613838	100nF Y5V 50V P80M20
2166	532212231647	1nF 10% X7R 63V
2167	482212233926	12pF 50V

**- RESISTORS -**

3101	482205120333	33K 5% 0,1W
3102	482211710837	100K 1% 0,1W
3103	482205120822	8K20 5% 0,1W
3104	482211713577	330R 1% 1,25W
3105	482211711503	220R 1% 0,1W

**- RESISTORS -**

3132	482205120479	47R 5% 0,1W
3134	482205120223	22K 5% 0,1W
3141	482211711148	56K 1% 0,1W
3142	482210012159	100K 30%
3145	482211711449	2K2 1% 0,1W
3146	482205120229	22R 5% 0,1W
3152	482205120471	470R 5% 0,1W
3153	482205120471	470R 5% 0,1W
3154	482211713577	330R 1% 1,25W
3155	482211711503	220R 1% 0,1W
3156	482211710837	100K 1% 0,1W
3158	482205120471	470R 5% 0,1W
3159	482205120471	470R 5% 0,1W
3160	482205120471	470R 5% 0,1W
3161	482205120223	22K 5% 0,1W
3167	482205120121	120R 5% 0,1W
3168	482205120121	120R 5% 0,1W
3169	482205120154	150K 5% 0,1W
3170	482211710837	100K 1% 0,1W
3172	482205120562	5K6 5% 0,1W
3181	482205110102	1K 2% 0,25W
4103	482205120008	Jumper
4106	482205120008	Jumper
4107	482205120008	Jumper
4108	482205120008	Jumper

**- COILS & FILTERS -**

5102	482215771634	MW Aerial
5109	482224270665	Filter SFE10,7MS3-A
5110	482224270665	Filter SFE10,7MS3-A
5111	242254944023	Coil 450kHz
5112	482215770302	Coil F7MCS-12216N
5114	482215770302	Coil F7MCS-12216N
5119	482215711443	Coil 2,4µH
5121	482224210261	Crystal T6252F00 75kHz
5123	242254944108	Coil 796kHz
5130	482215711843	Coil MD7B-01F
5131	482215711843	Coil MD7B-01F

**- DIODES -**

6103	532213034337	Diode BAV99
6105	482213083075	Diode HN1V02H-B
6106	482213083757	Diode BAS216
6107	934038690115	Diode BZX284-C11
6130	482213082833	Diode 1SV228
6131	482213082833	Diode 1SV228

**ELECTRICAL PARTSLIST - TUNER BOARD ECO6 (Non Cenelec)****- IC & TRANSISTORS -**

7101	935174080557	IC TEA5757H/V1
7102	482213042131	Trans BF550
7111	532213042755	Trans BC847C
7112	482213044503	Trans BC547C

**- MISCELLANEOUS -**

1102	482226710283	Connector YKD31-0432
1103	482226531184	Connector S2B-XH-A-BK
1120	482226511515	Connector 8P

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

## ELECTRICAL PARTSLIST - RECORDER BOARD ETF6

**- CAPACITORS -**

2621	532212231647	1nF 10% X7R 63V
2622	532212234099	470pF 10% X7R 63V
2623	532212234099	470pF 10% X7R 63V
2624	482212614585	100nF 10% X7R 50V
2625	482212614585	100nF 10% X7R 50V
2701	532212233538	150pF 2% NP0 63V
2702	532212233538	150pF 2% NP0 63V
2703	532212232531	100pF 5% NP0 50V
2704	532212232531	100pF 5% NP0 50V
2707	532212234099	470pF 10% X7R 63V
2708	532212234099	470pF 10% X7R 63V
2709	532212231863	330pF 5% 63V
2710	532212231863	330pF 5% 63V
2711	532212232531	100pF 5% NP0 50V
2712	532212232531	100pF 5% NP0 50V
2713	482212440248	10µF 20% 63V
2714	482212440248	10µF 20% 63V
2715	482212440196	220µF 20% 16V
2716	482212440196	220µF 20% 16V
2717	482212233177	10nF 20% X7R 50V
2718	482212233177	10nF 20% X7R 50V
2719	482212612105	33nF 5% 50V
2720	482212612105	33nF 5% 50V
2721	532212231866	6,8nF 10%X7R 63V
2722	532212231866	6,8nF 10%X7R 63V
2723	482212613188	15nF 5% X7R 63V
2724	482212613188	15nF 5% X7R 63V
2725	532212610223	4,7nF 10% X7R 63V
2726	532212610223	4,7nF 10% X7R 63V
2727	532212231647	1nF 10% X7R 63V
2728	532212231647	1nF 10% X7R 63V
2729	482212233735	27nF 10% X7R 63V
2730	482212233735	27nF 10% X7R 63V
2733	532212234099	470pF 10% X7R 63V
2734	532212234099	470pF 10% X7R 63V
2735	482212614585	100nF 10% X7R 50V
2737	482212614585	100nF 10% X7R 50V
2738	482212614585	100nF 10% X7R 50V
2741	482212611585	22nF +80-20% Y5V 25V
2742	532212232654	22nF 10% X7R 63V
2743	532212232654	22nF 10% X7R 63V
2744	482212614585	100nF 10% X7R 50V
2760	482212614585	100nF 10% X7R 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% X7R 63V
2770	532212234099	470pF 10% X7R 63V
2780	482212481151	22µF 50V

**- CAPACITORS -**

2781	482212233177	10nF 20% X7R 50V
2782	532212610223	4,7nF 10% X7R 63V
2784	482212151305	15nF 10% 50V
2785	482212421913	1µF 20% 63V
2786	532212232531	100pF 5% NP0 50V
2787	482212612105	33nF 5% 50V
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
3624	482211710837	100K 1% 0,1W
3626	482205110102	1K 2% 0,25W
3628	482211710837	100K 1% 0,1W
3630	482205120471	470R 5% 0,1W
3674	482211652283	4K7 5% 0,5W
3676	482211710834	47K 1% 0,1W
3678	482211710834	47K 1% 0,1W
3680	482211710834	47K 1% 0,1W
3685	482211652234	100K 5% 0,5W
3686	482211710837	100K 1% 0,1W
3689	482205120472	4K7 5% 0,1W
3701	482211711503	220R 1% 0,1W
3702	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	482205120688	6R8 5% 0,1W
3710	482205120688	6R8 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

**- RESISTORS -**

## ELECTRICAL PARTSLIST - RECORDER BOARD ETF6

**- RESISTORS -**

3718	482211711449	2K2 1% 0,1W
3719	482205120472	4K7 5% 0,1W
3720	482205120472	4K7 5% 0,1W
3721	482205120562	5K6 5% 0,1W
3722	482205120562	5K6 5% 0,1W
3723	482211711383	12K 1% 0,1W
3724	482211711383	12K 1% 0,1W
3725	482205120109	10R 5% 0,1W
3726	482205120109	10R 5% 0,1W
3727	482205120562	5K6 5% 0,1W
3728	482205120562	5K6 5% 0,1W
3729	482211712955	2K7 1% 0,1W
3730	482211712955	2K7 1% 0,1W
3731	482211711507	6K8 1% 0,1W
3732	482211711507	6K8 1% 0,1W
3733	482205110102	1K 2% 0,25W
3734	482205110102	1K 2% 0,25W
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	482205120122	1K2 5% 0,1W
3744	482205120122	1K2 5% 0,1W
3745	482205120332	3K3 5% 0,1W
3746	482205120332	3K3 5% 0,1W
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
3755	482205120105	1M 5% 0,1W
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
3770	482211711139	1K5 1% 0,1W
3771	482205120122	1K2 5% 0,1W
3772	482205120472	4K7 5% 0,1W
3773	482210012227	4K7 30% 1W

**- RESISTORS -**

3774	482211710833	10K 1% 0,1W
3775	482205120478	4R7 5% 0,1W
3776	482211711507	6K8 1% 0,1W
3777	482211710353	150R 1% 0,1W
3778	482205210688	6R80 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	Jumper
4702	482205120008	Jumper
4703	482205120008	Jumper
4704	482205120008	Jumper
4705	482205120008	Jumper
4706	482205120008	Jumper
4707	482205120008	Jumper
4708	482205120008	Jumper
4709	482205120008	Jumper
4710	482205120008	Jumper
4711	482205120008	Jumper
4712	482205120008	Jumper
4713	482205120008	Jumper
4714	482205120008	Jumper
4715	482205120008	Jumper
4716	482205120008	Jumper
4717	482205120008	Jumper
4718	482205120008	Jumper
4719	482205120008	Jumper
4720	482205120008	Jumper
4721	482205120008	Jumper
4722	482205120008	Jumper
4723	482205120008	Jumper
4724	482205120008	Jumper
4725	482205120008	Jumper
4726	482205120008	Jumper
4727	482205120008	Jumper
4728	482205120008	Jumper
4729	482205120008	Jumper
4730	482205120008	Jumper
4731	482205120008	Jumper
4732	482205120008	Jumper
4733	482205120008	Jumper
4734	482205120008	Jumper
4735	482205120008	Jumper
4736	482205120008	Jumper
4737	482205120008	Jumper

**ELECTRICAL PARTSLIST - RECORDER BOARD ETF6****- RESISTORS -**

4738	482205120008	Jumper
4739	482205120008	Jumper
4740	482205120008	Jumper
4741	482205120008	Jumper
4742	482205120008	Jumper
4785	482205120008	Jumper
4790	482205120008	Jumper
4794	482205120008	Jumper

**- COILS -**

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

**- DIODES -**

6612	482213031878	Diode 1N4003G
6770	482213030621	Diode 1N4148
6771	482213030621	Diode 1N4148
6772	482213030621	Diode 1N4148
6773	482213030621	Diode 1N4148
6774	482213030621	Diode 1N4148
6775	482213030621	Diode 1N4148
6776	482213030621	Diode 1N4148
6777	482213034382	Diode BZX79-B8V2
6778	482213030621	Diode 1N4148
6782	482213030621	Diode 1N4148
6785	482213030621	Diode 1N4148
6786	482213030621	Diode 1N4148

**- IC & TRANSISTORS -**

7610	532220911306	IC HEF4094BT
7612	532213060845	Trans BC807-25
7614	532213060845	Trans BC807-25
7618	482213060511	Trans BC847B
7620	482213060511	Trans BC847B
7622	482213060511	Trans BC847B
7623	482213060511	Trans BC847B
7624	482213060511	Trans BC847B
7710	482220932919	IC HEF4952BT
7720	482220932918	IC AN7318S
7730	482220932919	IC HEF4952BT
7740	482220932919	IC HEF4952BT
7780	482213060511	Trans BC847B
7781	482213042804	Trans BC817-25
7782	482213044568	Trans BC557B
7783	482213060511	Trans BC847B
7784	482213060373	Trans BC856B
7786	482213063494	Trans J111
7787	482213060511	Trans BC847B
7791	482213060511	Trans BC847B

**- IC & TRANSISTORS -**

7792	482213060511	Trans BC847B
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**- MISCELLANEOUS -**

1003	482232012605	Flexible Foil 8P
1701	482226710953	Connector 7P
1706	482226710953	Connector 7P
1760	482226511515	Connector 8P

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

**ELECTRICAL PARTSLIST - LED BOARD****- RESISTORS -**

3901	482205120121	120R	5%	0,1W
3902	482205120121	120R	5%	0,1W
3903	482205120121	120R	5%	0,1W
3904	482205120121	120R	5%	0,1W

**- DIODES -**

6901	932203320682	LED TLHG4405
6902	932203320682	LED TLHG4405
6903	932203320682	LED TLHG4405
6904	932203320682	LED TLHG4405
6905	932203320682	LED TLHG4405
6906	932203320682	LED TLHG4405
6907	932203320682	LED TLHG4405
6908	932203320682	LED TLHG4405
6909	932203320682	LED TLHG4405
6910	932203320682	LED TLHG4405
6911	932203320682	LED TLHG4405
6912	932203320682	LED TLHG4405

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

**ELECTRICAL PARTSLIST - MISCELLANEOUS****- MISCELLANEOUS -**

1025	482227613963	CD Door Switch
8000	314011021250	FFC Foil 16P
8001	314011021220	FFC Foil 6P
8005	314011021210	FFC Foil 6P
8007	314011021240	FFC Foil 8P
8008	482232110781	Mains Cord (For -/21/21M/22/25)
8008	482232110971	Mains Cord (For -/30)
8008	482232110814	Mains Cord (For -/33)
8009	314011021230	FFC Foil 7P
8010	314011021200	FFC Foil 7P

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

**ELECTRICAL PARTSLIST - POWER BOARD****- MISCELLANEOUS -**

1600	△ 482227210269	Voltage Selector (For -/21/21M)
1601	△ 482207153152	Fuse 3.15A
1602	△ 482207152002	Fuse 2A
3600	482205321106	10M 5% 0,5W (For -/37)
5600	482215711832	Filter 400μH 3A
5601	△ 314011832440	Transf 120/230V (For -/21/21M)
5601	△ 314011832430	Transf 230V (For -/22/25/30/33)

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