

Service  
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# Service Manual



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3139 785 22710



**PHILIPS**



## SPECIFICATIONS

### GENERAL:

Mains voltage : 120V for /37  
 220-230V for /22  
 Mains frequency : 50/60Hz  
 Power consumption : < 15W at Standby (Demo off)  
 < 1W at Eco Power Standby /22  
 < 66W Active  
 Clock accuracy : < 4 seconds per day  
 Dimension centre unit : 175 x 244 x 322mm

### TUNER:

#### FM

Tuning range : 87.5-108MHz  
 Grid : 50kHz  
 100kHz for /37  
 IF frequency : 10.7MHz  $\pm$  25kHz  
 Aerial input : 75 $\Omega$  coaxial  
 300 $\Omega$  click fit for /37  
 Sensitivity at 26dB S/N : < 7 $\mu$ V  
 Selectivity at 600kHz bandwidth : > 25dB  
 Image rejection : > 25dB  
 Distortion at RF=1mV, dev. 75kHz : < 3%  
 -3dB Limiting point : < 8 $\mu$ V  
 Crosstalk at RF=1mV, dev. 40kHz : > 18dB

#### MW

Tuning range : 531-1602kHz  
 530-1700kHz for /37  
 Grid : 9kHz  
 10kHz for /37  
 IF frequency : 450kHz  $\pm$  1kHz  
 Aerial input : Frame aerial  
 Sensitivity at 26dB S/N : < 4.0mV/M  
 Selectivity at 18kHz bandwidth : > 18dB  
 IF rejection : > 45dB  
 Image rejection : > 28dB  
 Distortion at RF=50mV, m=80% : < 5%

#### LW

Tuning range : 153-279kHz for /22  
 Grid : 3kHz  
 IF frequency : 450kHz  $\pm$  1kHz  
 Aerial input : Frame aerial  
 Sensitivity at 26dB S/N : [< 6.0mV/M]  
 Selectivity at 18kHz bandwidth : [> 24dB]  
 IF rejection : [> 45dB]  
 Image rejection : [> 30dB]  
 Distortion at RF=50mV, m=80% : [< 5%]

### AMPLIFIER:

Output power : 2 x 25W RMS <sup>1)</sup> /22  
 2 x 20W FTC <sup>2)</sup> /37  
 Frequency response within -3dB : 50Hz-16kHz  
 Treble control : 12.5kHz  $\pm$  3 steps <sup>3)</sup>  
 Bass control : 55Hz  $\pm$  3 steps <sup>3)</sup>  
 Incredible Sound : ON/OFF <sup>3)</sup>  
 Headphone output at 32 $\Omega$  : 680mV  $\pm$  1dB  
 Sub-woofer output : 1.5V  $\pm$  3dB at 22k $\Omega$   
 Digital output (IEC958, 44.1kHz) : 0.5Vp-p  
 Aux / CDR input : 500mV / 1V  $\pm$  2dB at 600 $\Omega$

### CASSETTE RECORDER:

Number of track : 2 x 2 stereo  
 Tape speed : 4.76 cm/sec  $\pm$  2%  
 Wow and flutter : < 0.4% DIN  
 Fast-wind/rewind time C60 : 130 sec  
 Bias system : 75kHz  $\pm$  10kHz  
 Rec/Pb frequency response within 8dB : 80Hz - 12.5kHz  
 Signal to noise ratio Type I : > 48dBA  
 Type II : > 52dBA

### COMPACT DISC:

Measurement done at output conn. of the 3DTC module.  
 Frequency response within +0/-2dB: 20Hz - 20kHz  
 Output level (in Vrms) : 550mV, Z<sub>out</sub> = 100 $\Omega$   
 Signal/Noise ratio (A-weighted) : > 76dBA  
 Distortion at 1kHz : < 0.02%  
 Channel unbalance at 1kHz :  $\pm$ 1dB  
 Channel separation at 1kHz : > 79dB  
 De-emphasis : Switched by subcode on the disc

[...] Values indicated are for "Cenelec version" only

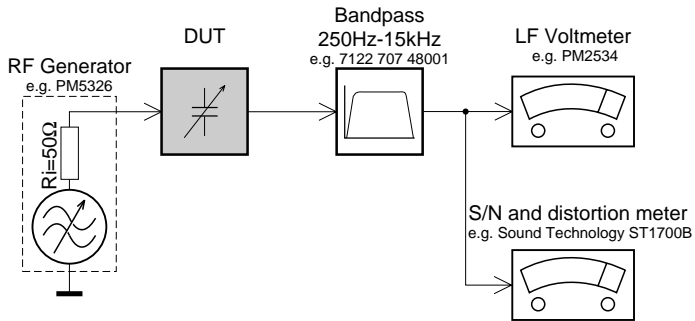
<sup>1)</sup> 6 $\Omega$ , 1kHz, 10% THD

<sup>2)</sup> 6 $\Omega$ , 60Hz - 12,5kHz, 10% THD

<sup>3)</sup> Frequency response in each setting is software controlled.

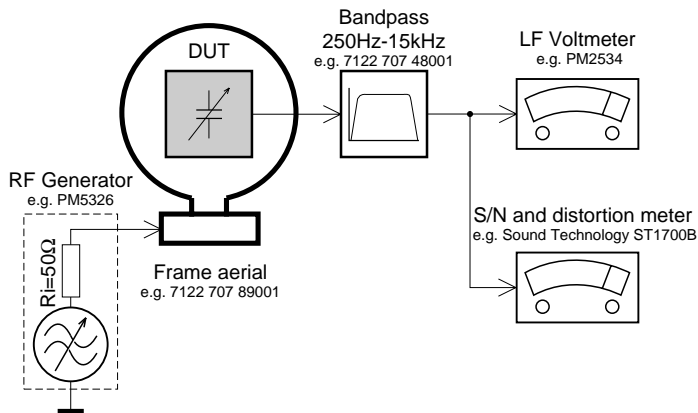
## MEASUREMENT SETUP

### Tuner FM



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

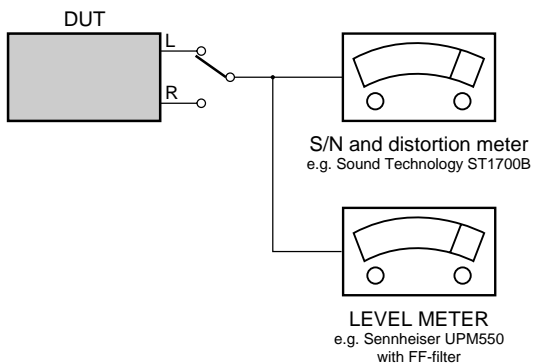
### Tuner AM (MW,LW)



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

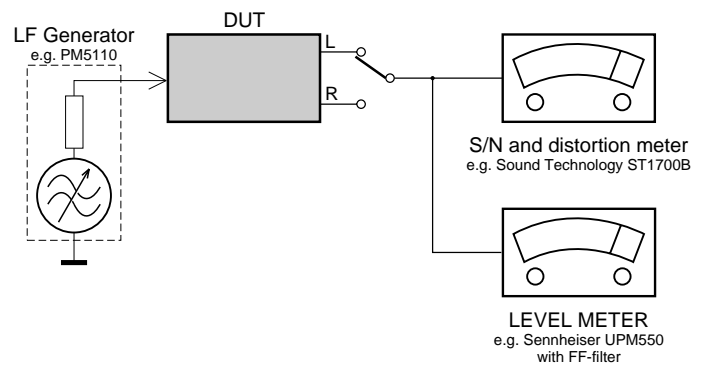
### CD

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



### Recorder

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



## SERVICE AIDS

### Service Tools:

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

### Cassette:

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

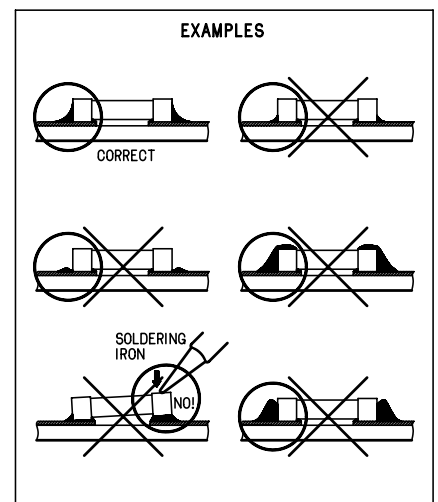
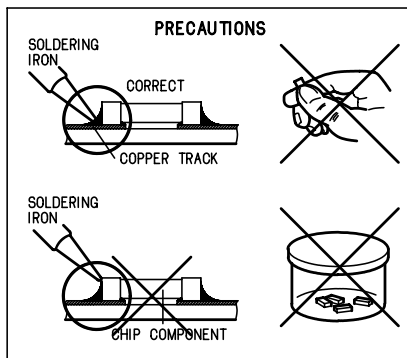
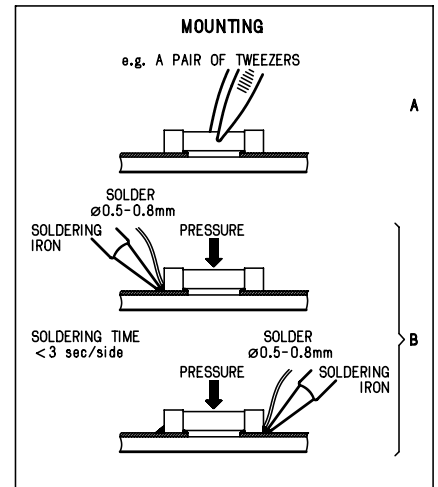
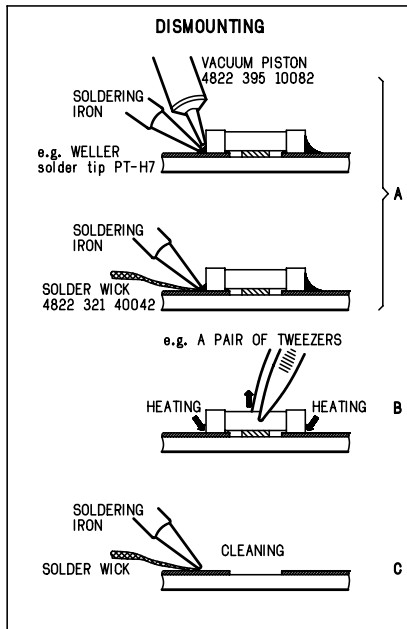
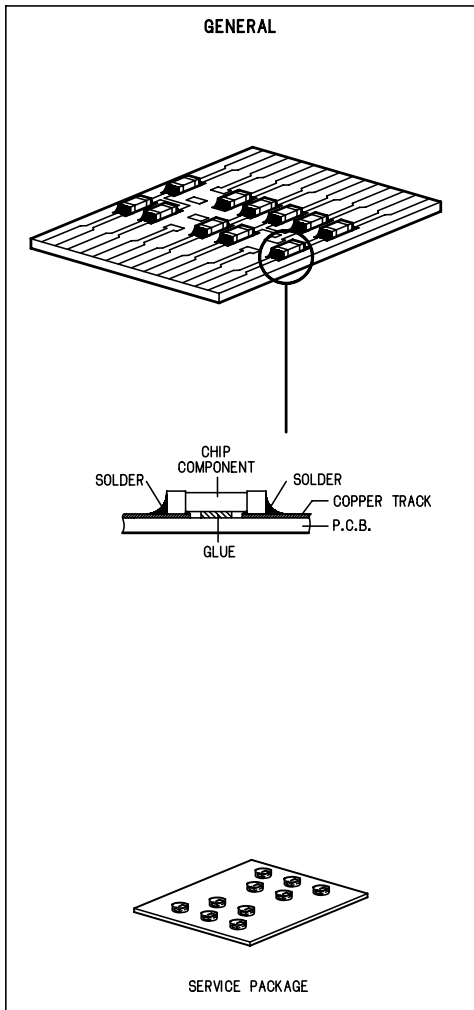
### Compact Disc:

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

### ESD Equipment:

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

## HANDLING CHIP COMPONENTS



**(GB) WARNING**

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

When repairing, make sure that you are connected with the same potential as the mass of the set via a wrist wrap with resistance. Keep components and tools also at this potential.

**(F) ATTENTION**

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

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

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

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

**(D) WARNUNG**

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

Unvorsichtige Behandlung im Reparaturfall kann die Lebensdauer drastisch reduzieren.

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

Bauteile und Hilfsmittel auch auf dieses gleiche Potential halten.

**(NL) WAARSCHUWING**

Alle IC's en vele andere halfgeleiders zijn gevoelig voor electrostatistische 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.

**(I) AVVERTIMENTO**

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

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

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

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

**(GB)**

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

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

**(NL)**

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

**(F)**

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

**(D)**

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

**(I)**

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

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

**ESD****(GB) Warning !**

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

**(S) Varning !**

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

**(SF) Varoitus !**

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

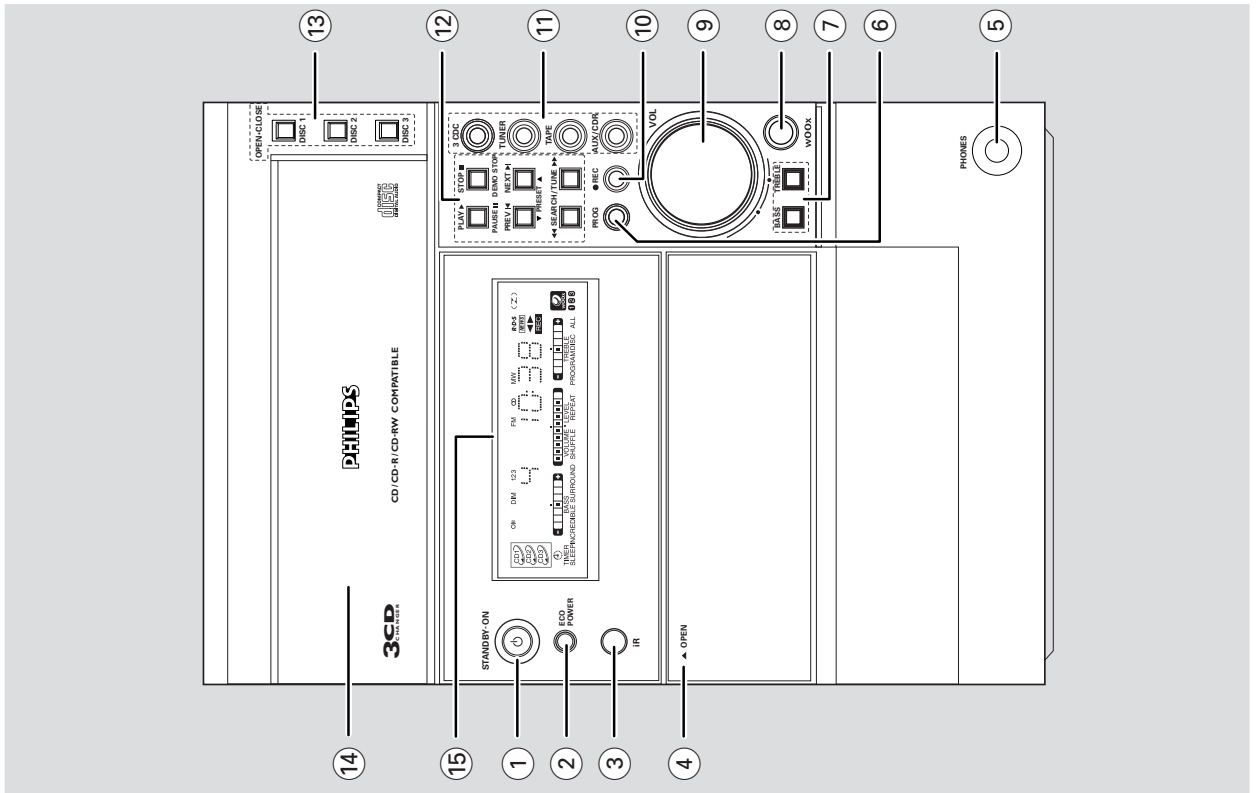
**(DK) Advarse !**

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

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## General Information

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

### Environmental Information

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

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

### Acknowledgement

#### Energy Star

As an ENERGY STAR® Partner, Philips has determined that this product meets the ENERGY STAR® guidelines for energy efficiency.



### Supplied accessories

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

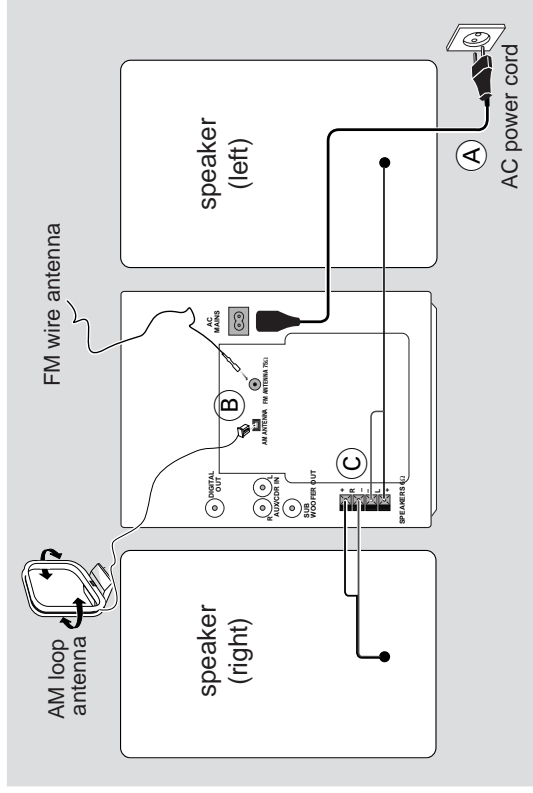
English

### Safety Information

- Before operating the system, check that the operating voltage indicated on the typeplate (or the voltage indication beside the voltage selector) of your system is identical with the voltage of your local power supply. If not, please consult your dealer.
- Place the system on a flat, hard and stable surface.
- Place the system in a location with adequate ventilation to prevent internal heat build-up in your system. Allow at least 10 cm (4 inches) clearance from the rear and the top of the unit and 5 cm (2 inches) from each side.
- Do not expose the system, batteries or discs to excessive moisture, rain, sand or heat sources caused by heating equipment or direct sunlight.
- If the system is brought directly from a cold to a warm location, or is placed in a very damp room, moisture may condense on the lens of the disc unit inside the system. Should this occur, the CD player would not operate normally. Leave the system on for about one hour with no disc in the system until normal playback is possible.
- The mechanical parts of the set contain self-lubricating bearings and must not be oiled or lubricated.
- **When the system is switched to Standby mode, it is still consuming some power. To disconnect the system from the AC power supply completely, remove the AC power plug from the wall socket.**

English

## Preparations



### Rear Connections

The type plate is located at the rear of the system.  
For users in the U.K.: please follow the instructions on page 2.

#### A Power

Before connecting the AC power cord to the wall outlet, ensure that all other connections have been made.

#### WARNING!

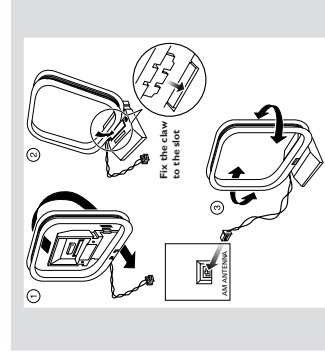
- For optimal performance, use only the original power cable.
- Never make or change connections with the power switched on.

To avoid overheating of the system, a safety circuit has been built in. Therefore, your system may switch to Standby mode automatically under extreme conditions. If this happens, let the system cool down before reusing it (not available for all versions).

### Antennas Connection

Connect the supplied AM loop antenna and FM antenna to the respective terminals. Adjust the position of the antenna for optimal reception.

#### AM Antenna



Position the antenna as far as possible from a TV, VCR or other radiation source.



## Preparations

### FM Antenna

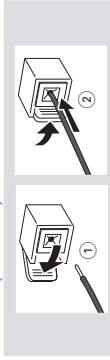


- For better FM stereo reception, connect an outdoor FM antenna to the FM ANTENNA terminal.

### Speakers Connection

#### Front Speakers

Connect the speaker wires to the SPEAKERS (FRONT) terminals, right speaker to "R" and left speaker to "L", coloured (marked) wire to "+" and black (unmarked) wire to "-".



- Clip the stripped portion of the speaker wire as shown.

#### Notes:

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

### Optional Connections

The optional equipment and connecting cords are not supplied. Refer to the operating instructions of the connected equipment for details.

#### Subwoofer Out Connection

Connect the subwoofer to the SUBWOOFER OUT terminal. The subwoofer reproduces just the low bass sound effect (explosions or the rumble of spaceships, for example).

English

## Controls (main system's illustration on page 3)

### Controls on the system and remote control

- 1 **STANDBY ON/OFF** – to switch the system on or to Standby mode.
- 2 **ECO POWER** – to switch the system on or to Eco Power Standby mode.
- 3 **IR** – infrared sensor for remote control.
- 4 **OPEN** – to open the tape deck door.
- 5 **PHONES** – to connect headphones.
- 6 **PROG (PROGRAM)** for CD ..... to programme disc tracks, for TUNER ..... to programme preset radio stations.
- 7 **BASS/TREBLE** – for CLOCK ..... to select 12- or 24-hour clock mode.  
– to select BASS or TREBLE sound feature.  
**BASS/TREBLE + / -** (on the remote control) to increase or decrease the low or high tone level for the respective BASS or TREBLE sound feature selected.
- 8 **WOOX** (for model MC-70 only) – (on the system only) to select the next WOOX level or switch off WOOX sound effect.  
– (on the remote control only) to switch on or off the WOOX sound effect.  
**WOOX LEVEL** – (on the remote control only) to select desired WOOX level : WOOX 1, WOOX 2 or WOOX 3.
- 9 **VOL (VOLUME + / -)** – to increase or decrease the volume.  
– (on the system only) to increase or decrease the low or high tone level for the respective BASS or TREBLE sound feature selected.
- 10 **REC** – to start recording on a tape.
- 11 **SOURCE** – to select the following:  
**3CDC (CD 123)** to select disc tray 1, 2, or 3.  
**TUNER** to select waveband : FM, MW or LW.  
**TAPE** to select tape mode.

### AUX / CDR

- to select a connected external source : CDR or AUX (auxiliary) mode.

### Mode Selection

- 12 **PLAY PAUSE II** for CD ..... to start or interrupt playback, for TAPE ..... to start playback, for PLUG & PLAY ... (on the system only) to initiate and start plug & play mode.

### STOP/DEMO STOP ■

- for CD ..... to stop playback or to clear a programme.
- for TUNER ..... to stop programming, ..... (on the system only) to delete the preset radio station.
- for TAPE ..... to stop playback or recording.
- for DEMO ..... (on the system only) to activate/deactivate the demonstration.
- for CLOCK ..... to exit clock setting or cancel timer.
- for PLUG & PLAY ... (on the system only) to exit plug & play mode.

English

### Connecting other equipment to your system

Connect the audio left and right OUT terminals of a TV/VCR, Laser Disc player, DVD player or CD Recorder to the AUX/CDR IN terminals.

#### Note:

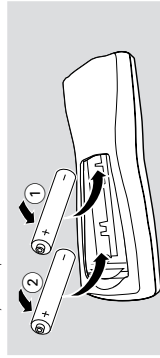
- If you are connecting equipment with a monoaural output (a single audio out terminal), connect it to the AUX/CDR IN left terminal. Alternatively, you can use a "single to double" cinch cable (still be mono sound).

### Digital Out Connection

Connect this digital output when recording on any audio equipment with digital input (CD Recorder, Digital Audio Tape [DAT] deck, Digital to Analogue Converter and Digital Signal Processor, for example). Use a cinch cable to connect the DIGITAL OUT terminal to the digital input terminal of the equipment.

### Inserting batteries into the Remote Control

Insert two batteries (Type R06 or AA) into the remote control with the correct polarity as indicated by the + and - symbols inside the battery compartment.

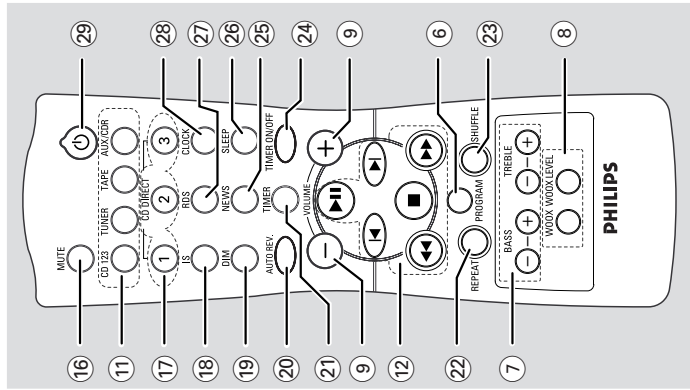


#### CAUTION!

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

## Controls

English

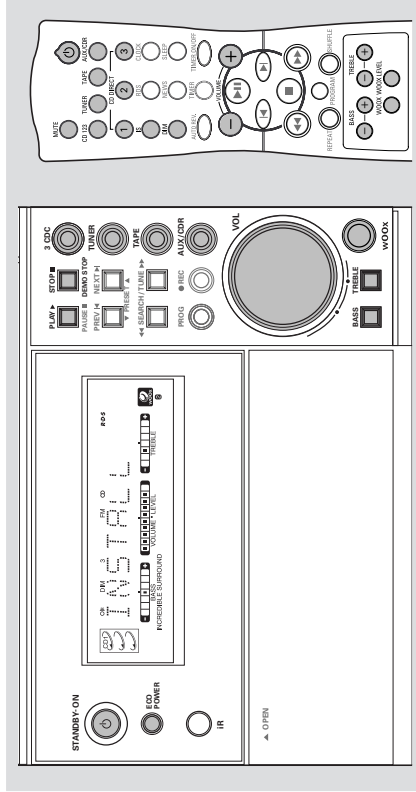


- 19 **DIM**  
to select various dim mode : DIM 1, DIM 2, DIM 3 or DIM OFF.
- 20 **AUTO REV. (AUTO REVERSE)**  
to select the desired tape playback modes.
- 21 **TIMER**  
to display timer or set the timer.
- 22 **REPEAT**  
to playback track(s)/disc(s)/programme repeatedly.
- 23 **SHUFFLE**  
to playback all available discs and their tracks/programme in random order.
- 24 **TIMER ON/OFF**  
to activate or deactivate the timer function.
- 25 **NEWS**  
to hear News automatically.
- 26 **SLEEP**  
to activate, deactivate or set the sleep timer function.
- 27 **RDS**  
to select RDS information.
- 28 **CLOCK**  
to display clock or set the clock.
- 29   
to switch the system to Standby mode or Eco Power Standby mode.

**Notes for remote control:**  
 – First, select the source you wish to control by pressing one of the source select keys on the remote control (CD 123 or TUNER, for example).  
 – Then select the desired function (▶, ◀, ⏪, ⏩, for example).

## Basic Functions

English



### IMPORTANT! Before operating the system, complete the preparation procedures.

#### Plug and Play

Plug and Play allows you to store all available RDS stations and radio stations automatically.

- 1 When you turn on the system, "AUTO INSTALL - PRESS PLAY" will be displayed.
- 2 Press **PLAY ▶ (▶ II)** on the system to start installation.

→ "INSTALL" will be displayed and followed by "TUNER" and then "AUTO".

→ PROGRAM will start flashing.

→ The system will search for all RDS stations and then continue with radio stations on FM, MW and LW band respectively. Weak RDS stations may be stored in later presets.

→ All available RDS and radio stations with sufficient signal strength will be stored automatically.

→ The system will stop searching when all the available radio stations are stored or when the memory for 40 preset radio stations is used.

→ The last preset radio station or the first available RDS station will play when Plug and Play is completed.

- 3 The system will proceed to set the RDS time automatically with the stored RDS preset station. If no RDS station is found in the first preset station:

→ The programme will exit automatically.

→ If RDS radio station is found:

→ "INSTALL" will be displayed and followed by "TIME".

→ When searching RDS time:

→ "SEARCH RDS TIME" will be displayed.

→ When RDS time is read, "RDS TIME" will be displayed. The current time will be displayed for 2 seconds and stored automatically.

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

#### To reinstall Plug and Play

- 1 In Standby or Demonstration mode, press and hold **PLAY ▶ (▶ II)** on the system until "AUTO INSTALL - PRESS PLAY" is displayed.
- 2 Press **PLAY ▶ (▶ II)** again to start installation.

→ All previously stored radio stations will be replaced.

#### To exit without storing the Plug and Play

- Press on the system.

## Basic Functions

### Notes:

- When the power is turned on, the disc tray may open and close to initialise the system.
- If you do not complete Plug and Play installation, Plug and Play will be reinitiated the next time you turn on the power.

– If no stereo frequency is detected during Plug and Play, "CHECK ANTENNA" will be displayed.

– During Plug and Play, if no button is pressed within 15 seconds, the system will exit Plug and Play mode automatically.

### Demonstration mode

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

### To activate the demonstration

- In Standby mode, press and hold **DEMO STOP** on the system until "DEMO ON" is displayed.

→ The demonstration will begin.

### To deactivate the demonstration

- Press and hold **DEMO STOP** on the system until "DEMO OFF" is displayed.

→ The system will switch to Standby mode.

### Note:

- Even if you remove the AC power cord and reconnect it to the wall socket, the demonstration will remain off until you activate it again.

### Switching the system on

#### In Standby/Demonstration mode

- Press **STANDBY ON**.

→ The system will switch to the last selected source.

- Press **3CDC (CD 123), TUNER, TAPE, AUX/CDR**.

→ The system will switch to the selected source.

- Press any one of the disc **OPEN•CLOSE (DISC 1 / DISC2 / DISC 3)** button.

→ The system will switch to CD mode.

## English

## English

### Dim mode

You can select the desired brightness for the display.

- Press **DIM** on the remote control repeatedly to select DIM 1, DIM 2, DIM 3 or DIM OFF display mode.

→ **DIM** and the corresponding mode number will appear on the display, except for DIM OFF mode.

**DIM OFF** .....All available LEDs light up, display screen will have full brightness, music level bar active.

**DIM 1** .....Some LEDs light up, display screen will have full brightness, music level bar inactive.

**DIM 2** .....All lightings turn off, display screen will have full brightness, music level bar inactive.

**DIM 3** .....All lightings turn off, display screen will be at half brightness, music level bar inactive.



← music level bar

### Volume Control

Adjust **VOL** to increase (turn knob clockwise or press **VOLUME +**) or decrease (turn knob anticlockwise or press **VOLUME -**) the sound level.

→ "XX dB" will be displayed. "XX" denotes the volume level.

→ When reached the minimum volume level,

"**OL MUTE**" will be displayed.

### To listen through the headphones

- Connect the headphones plug

to the **PHONES** socket at the

front of the system.

→ The speakers will be muted.

### To switch off the volume temporarily

- Press **MUTE** on the remote control.

→ Playback will continue without sound and

"**MUTE**" will be displayed.

- To restore the volume, press **MUTE** again or increase the volume level.

## Basic Functions

### Interactive Sound Control

**For optimal sound listening, you are only able to select BASS/TREBLE or WOOx at a time (for model MC-70 only).**

### WOOx (for model MC-70 only)

There are three WOOx settings to enhance the bass response.

- Press **WOOx** on the system repeatedly to select the next WOOx level or switch off the WOOx effect.

### OR



- 1 Press **WOOx** on the remote control to switch ON (enhanced) or OFF (normal) the WOOx sound effect.

- 2 When WOOx is switched on, press **WOOx LEVEL** on the remote control repeatedly to select the desired WOOx level: WOOX 1, WOOX 2, WOOX 3 or WOOX OFF.

→ If "**WOOx 1, 2**" or "**3**" is selected,

**WOOx** and the corresponding level

number will appear on the display.

→ If "**WOOx OFF**" is selected, the

WOOx sound effect will be switched off.

### Notes:

- When switched off the WOOx effect, the last Bass/Treble will resume automatically.
- Some discs or tapes might be recorded in high modulation, which causes a distortion at high volume. If this occurs, deactivate WOOx or reduce the volume.



# CD Operation

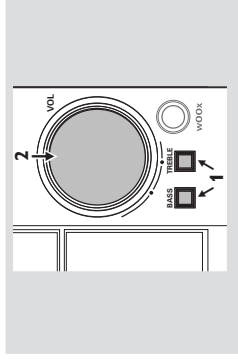
English

English

## Basic Functions

**Bass/Treble**  
The BASS (low tone) and TREBLE (high tone) feature enables you to define the sound-processor settings.

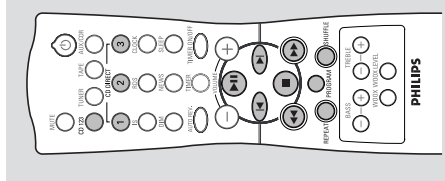
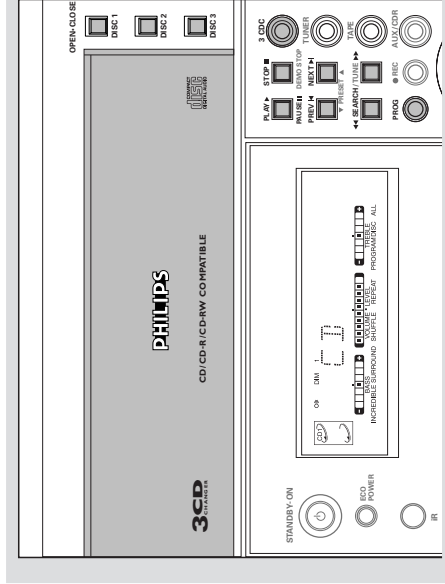
- Press **BASS** +/- or **TREBLE** +/- on the remote control repeatedly to select the next Bass or Treble level.



- 1 Press **BASS** or **TREBLE** on the system to select Bass or Treble sound feature.
- 2 Adjust the **VOL** on the system to select the desired Bass or Treble level.  
→ **BASS XX** or **TREB XX** will be displayed. "XX" denotes the level as follows:  
MIN → -2 ... 0 → 1 ... → +2 → MAX ...



**Notes:**  
- The volume knob can be used to adjust Bass/Treble level immediately after you have selected the respective Bass/Treble sound feature. If the volume knob is not used within 5 seconds, it will become normal volume control function.  
- The Bass/Treble mode will exit automatically if wOOx feature selected (for model MC-70 only).

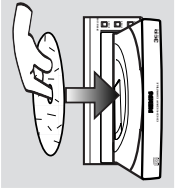


### IMPORTANT!

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

### Loading Disc

- 1 Press **3CDC** (CD 123) to select CD mode.
- 2 Press one of the disc **OPEN-CLOSE** button (**DISC 1**, **DISC 2** or **DISC 3**) to open the desired disc tray.



- The selected disc tray slides out.
- 3 Load a disc with the label side facing up.
- 4 Press again the corresponding button to close the disc tray.
- **'READING'** will be displayed. The selected disc tray, total number of tracks and the playing time will appear on the display.

### Discs for Playback

This system can playback all digital audio CD; finalised digital audio CD-Recordable (CDR) discs and finalised digital audio CD-Rewritable (CDRW) discs.



### To select a desired disc tray

- Press **3CDC** (or **CD 123** on the remote control) repeatedly.
- **'DISC 1'**, **'DISC 2'** or **'DISC 3'** will be displayed.

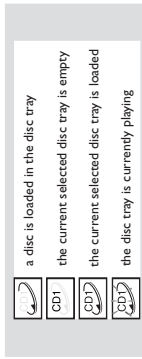
### Notes:

- To ensure good system performance, wait until the disc trays completely read the disc(s) before proceeding.
- The CD changer is only able to read the status of the current selected disc tray.

## CD Operation

English

### Disc Playback



#### To playback all discs on the disc trays

- Press **PLAY**  $\blacktriangleright$  ( $\blacktriangleright$  II).
- All the available discs will playback once, then stop.
- During playback, the selected disc tray, track number and elapsed playing time of the current track will appear on the display.

#### To playback one disc only

- Press one of the **CD DIRECT 1/2/3** buttons on the remote control.
- The selected disc will playback once, then stop.

#### To interrupt playback

- Press **PAUSE III** ( $\blacktriangleright$  III).
- The current track time flashing.
- To resume playback, press **PLAY**  $\blacktriangleright$  ( $\blacktriangleright$  II) again.

#### To stop playback

- Press  $\blacksquare$ .

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

- Press and hold  $\blacktriangleleft$  or  $\blacktriangleright$  and release it when the desired passage is located.
- During searching, the volume will be reduced.

#### To select a desired track

- Press  $\blacktriangleleft$  or  $\blacktriangleright$  repeatedly until the desired track appears on the display.
- If playback is stopped, press **PLAY**  $\blacktriangleright$  ( $\blacktriangleright$  II) to start playback.

#### Note:

- In **Shuffle mode**, pressing  $\blacktriangleleft$  will cause the player to skip only to the beginning of the current track.

#### To skip to the beginning of the current track during playback

- Press  $\blacktriangleleft$  once.

English

## CD Operation

- During programming, if no key is pressed within 20 seconds, the system will exit the Programme mode automatically.

#### To review the programme

- Stop playback and press  $\blacktriangleleft$  or  $\blacktriangleright$  repeatedly.
- To exit review mode, press  $\blacksquare$ .

#### To erase the entire programme

- Press  $\blacksquare$  once when playback is stopped or twice during playback.
- **"PROGRAM CLEARED"** will be displayed.
- **PROGRAM** will disappear from the display.

#### Note:

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

#### Repeat

The current track, a disc, all available discs or all programmed tracks can be played repeatedly.

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

#### In normal playback

- → **"TRACK"** – to repeat the current track, **REPEAT** will appear on the display.
- **"DISC"** – to repeat the entire disc, **REPEAT** and **DISC** will appear on the display.
- **"ALL DISC"** – to repeat all available discs, **REPEAT**, **DISC** and **ALL** will appear on the display.

#### In programme playback

- → **"TRACK"** – to repeat the current programmed track, **REPEAT** and **PROGRAM** will appear on the display.
- **"PROGRAM"** – to repeat all programmed tracks, **REPEAT**, **PROGRAM**, **DISC** and **ALL** will appear on the display.

- The selected track/disc(s)/programme will now be played repeatedly until you press  $\blacksquare$ .

#### To resume normal playback, press REPEAT

- 2 To resume normal playback, press **REPEAT** until the **"OFF"** mode is displayed.
- **REPEAT** will disappear from the display.

#### Notes:

- Selecting **SHUFFLE** during repeat playback will cancel all repeat modes.
- Pressing any disc **OPEN**•**CLOSE** button will cancel all repeat modes.

### Shuffle

All the available discs and their tracks or all the programmed tracks can be played in random order.

- 1 Press **SHUFFLE** on the remote control. → **SHUFFLE** will appear on the display.
- The discs and the tracks will be played in random order until you press  $\blacksquare$ .
- 2 To resume normal playback, press **SHUFFLE** again. → **SHUFFLE** will disappear from the display.

#### When select REPEAT mode during shuffling

- In normal shuffled playback → **"TRACK"** – to repeat shuffling the current track.

- **"ALL DISC"** – to repeat shuffling all available discs.

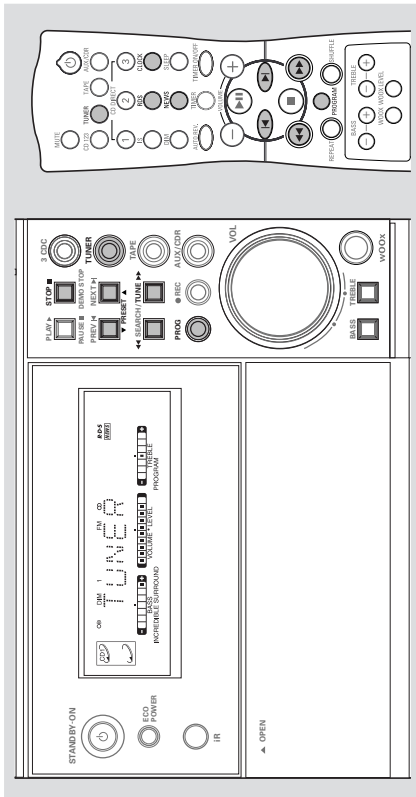
#### In programme shuffled playback

- → **"TRACK"** – to repeat shuffling the current programmed track.
- **"PROGRAM"** – to repeat shuffling all programmed tracks.

#### Note:

- Pressing any disc **OPEN**•**CLOSE** button will cancel shuffle mode.

#### For Recording, please refer to "Tape Operation/Recording".



**Storing Preset Radio Stations**

You can store up to 40 preset radio stations in the memory.

**Automatic Preset Programming**

- Plug and Play setting (refer to "Basic Functions - Plug and Play").

- OR
  - 1 Press **TUNER** to select TUNER mode.
- "TUNER" will be displayed. A few seconds later, the current radio frequency will appear on the display.

- If a FM station is received in stereo, **st** will appear on the display.

**To begin automatic preset from a desired preset number**

- Press **◀** or **▶** to select the desired preset number.
- For those radio stations that had been stored in one of the preset will not be restored again to another preset number.

- 2 Press and hold **PROG** until "AUTO" appears on the display.

- **PROGRAM** will start flashing.
- The system will search for all RDS stations and then continue with radio stations on FM, MW and LW band respectively.
- All available radio stations with sufficient signal strength will be stored automatically.
- The system will stop searching when all the available radio stations are stored or when the memory for 40 preset radio stations is used.

- The last preset radio station or the first available RDS station will then be played when completed.

**To stop storing the automatic preset**

- Press **PROG** or **■** on the system.

**Note:**

- If no preset number is selected, automatic preset will begin from preset (1) and all your former presets will be overridden.

**Manual Preset Programming**

- 1 Press **TUNER** repeatedly to select the desired waveband : FM, MW or LW.

- 2 Press **PROG**

- **PROGRAM** will start flashing.

- The next available preset number will be displayed for selection.

- 3 Press and hold **◀◀** or **▶▶** until the frequency indication starts to change, then release.

- The display will show "SEARCH" until a radio station with sufficient signal strength is found.

**To store the radio station to another preset number**

- Press **◀** or **▶** to select the desired preset number.

- 4 Press **PROG** again to store the radio station.

- **PROGRAM** will disappear from the display
- Repeat **steps 2-4** to store other preset radio stations.

**Tuning to a weak radio station**

- Press **◀◀** or **▶▶** briefly and repeatedly until the optimal reception is found.

**To stop storing the manual preset**

- Press **■** on the system.

**Notes:**

- If you attempt to store more than 40 preset radio stations, "PROGRAM FULL" will be displayed.
- During programming, if no key is pressed within 20 seconds, the system will exit the Programme mode automatically.

**Tuning to Preset Radio Stations**

- Once you've preset the radio stations, press **◀** or **▶** to select the desired preset number.
- The preset number, radio frequency, and waveband will appear on the display.

**Erasing a Preset Radio Station**

- 1 Press **◀** or **▶** to select the preset radio station to be erased.

- 2 Press and hold **■** on the system until "PRESET DELETED" appears on the display.

- The radio frequency remain on the display.
- The preset numbers of all other preset radio stations in the band with higher numbers are also decreased by one.

- Repeat **steps 1-2** to erase other preset radio stations.

**For Recording, please refer to "Tape Operation/Recording".**

**RDS**

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

**STATION NAME:** The radio station name is displayed.

**PROGRAMME TYPE:** The following programme types exist and can be received by your tuner: News, Affairs, Info, Sport, Educate, Drama, Culture, Science, Varied, Pop M, Rock M, MOR (middle of the road music), Light M, Classics, Other M, No type.

**RADIO TEXT (RT):** text messages appear on the display.

**Receiving RDS Radio Station**

- Tuned to a radio station from FM band.
- If the radio station transmitting RDS signal, the RDS logo (**RDS**) and the radio station name will appear on the display.

**To check the RDS information**

- Press **RDS** on the remote control repeatedly to scroll through the following information (if available) : STATION NAME → PROGRAMME TYPE → RADIO TEXT → TUNED FREQUENCY → STATION NAME ...

**Notes:**

- If the tuned radio station does not transmit RDS signal or is a non RDS station, "NO RDS" will be displayed.

- If the RDS text message is not available at the RDS station, "NO RDS TEXT" will be displayed.

**RDS Time**

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

**Setting the RDS time**

- 1 Press and hold **CLOCK** on the remote control.
- "00:00" or current time starts flashing.
- 2 Press **RDS** on the remote control.
- "SEARCH RDS TIME" will be displayed.
- When RDS time is read, "RDS TIME" will be displayed. The current time will be displayed for 2 seconds and stored automatically.
- If the RDS station does not transmit RDS time within 90 seconds, "NO RDS TIME" will be displayed.

## Radio Reception

### Note:

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

### NEWS (only available in RDS radio station)

Once the News PTY (Programme Type) is detected in a RDS station, it will switch to TUNER mode automatically.

### IMPORTANT!

**You can activate NEWS function in Standby, Demonstration or any source mode except Tuner and Eco Power Standby mode.**

#### 1 To start NEWS function

- Press **NEWS** on the remote control.  
→ **"NEWS"** and **NEWS** logo (**NEWS**) will appear on the display.  
→ It will scan the radio stations stored in the first 5 preset and wait for the News Programme Type data to be available in any of these RDS radio stations.
- If no RDS station is detected in the first 5 presets, the system will exit NEWS function.  
→ **"NO RDS NEWS"** will be displayed and **NEWS** will disappear from the display.
- When NEWS transmission is detected, the system will switch to Tuner mode automatically.  
→ **NEWS** will start flashing.
- At the end of news bulletin, the system will switch to the last selected source and resume its last operation (for example, before detecting the transmission, the system is playing track 5 of disc 1, it will resume playback from the same position).

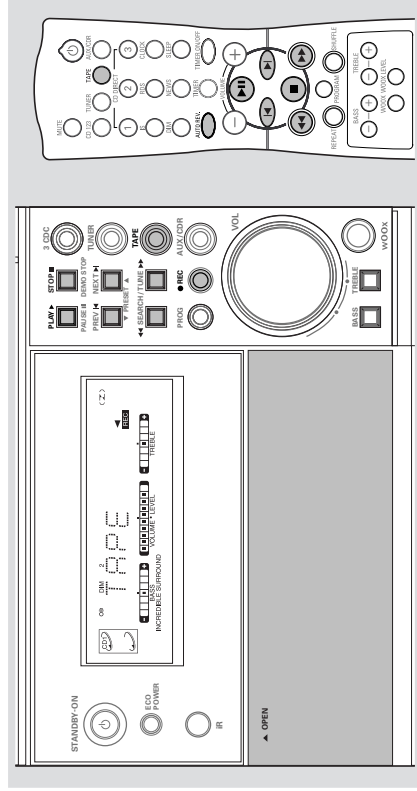
### Notes:

- You have to exit Tuner mode before selecting NEWS function.
- While searching NEWS in progress, the current source activity will remain uninterrupted.
- Before you activate the NEWS feature, ensure that the first 5 presets have RDS stations.
- The NEWS works only once for each activation.
- The NEWS will not start if a recording is in progress.

English

English

## Tape Operation/Recording

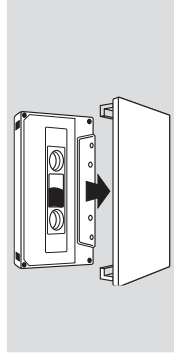


### IMPORTANT!

- Before playing a tape, check and tighten slack tape with a pencil. Slack tape may get jammed or may burst in the mechanism.
- C-120 tape is extremely thin and is easily deformed or damaged. It is not recommended for use in this system.
- Store the tapes at room temperature and do not put them too close to a magnetic field (for example, a transformer, TV or speaker).

### Tape Playback

- Press **TAPE** to select tape mode.
- Press **OPEN** to open the tape deck door.
- Insert a recorded tape and close the tape door.  
Load the tape with the open side down and the full spool to the left.



- Press **PLAY** (▶||) to start playback.  
→ "TAPE" with playback direction indicator will appear on the display.

#### To stop playback

- Press **STOP**.

#### To change the playback side

- Press **◀** or **▶**.  
→ The **◀** (BACK) or **▶** (FRONT) appear on the display, depending on the tape side selected.

#### To change the playback mode

- Press **AUTO REV.** on the remote control repeatedly to select the different playback modes.

- **▶**: playback on one side of the tape only.
- **◀▶**: both sides are played once.
- **◀▶**: both sides are played repeatedly, up to 10 times each side unless you press **STOP**.

#### To rewind or fast forward during playback

- Press and hold **◀◀** or **▶▶** until the desired passage is reached, then release.  
→ The tape continues playing.
- The tape will stop automatically at the end of the rewinding or fast forwarding.  
→ During searching, the sound is reduced to a low volume.

#### To rewind or fast forward when playback is stopped

- Press **◀◀** or **▶▶**.
- Press **STOP** when you reached the desired passage.

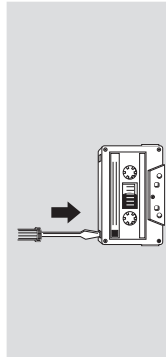
## Tape Operation/Recording

English

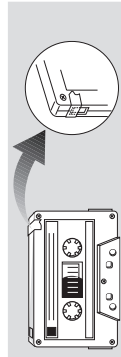
**Note:**  
 – During rewinding or fast forwarding of a tape, it is also possible to select another source (CD, TUNER or AUX, for example).

### General Information on Recording

- For recording, use only tape of IEC type I (normal tape) or IEC type II (CrO<sub>2</sub>).
- The recording level is set automatically regardless of the position of the Volume, Incredible Surround, BASS/TREBLE, and so forth.
- The tape is secured at both ends with leader tape. At the beginning and end of the tape, nothing will be recorded for six to seven seconds.
- To prevent accidental recording, break out the tab on the left shoulder of the tape side you want to protect.



- If “CHECK TAPE” is displayed, the protection tab has been broken. Put a piece of clear adhesive tape over the opening. Do not cover the CrO<sub>2</sub> tape detection hole when covering the tab opening.



English

**IMPORTANT!**  
 Recording is permissible if copyright or other rights of third parties are not infringed upon.

### Preparation for Recording

- 1 Press **TAPE** to select tape mode.
- 2 Load a recordable tape into the tape deck.
- 3 Press **◀** or **▶** to select the recording tape side.  
 → **◀** appears on the display for the reverse side.  
 → **▶** appears on the display for the forward side.
- 4 Press **AUTO REV.** on the remote control repeatedly to select a recording mode.  
 → **↔** for recording on one side only.  
 → **↔↔** for recording on both sides.  
 Prepare the source to be recorded.
- 5 Press **3CDC** – load the disc(s).  
**TUNER** – tune to the desired radio station.  
**AUX** – connect external equipment.

### When recording is in progress

- **REC** starts flashing.
- It is not possible to change tape side.
- It is not possible to listen to another source.
- It is not possible to activate the timer function.

### One Touch Recording

- 1 Press **3CDC**, **TUNER** or **AUX** to select the source.
  - 2 Start playback of the selected source.
  - 3 Press **REC** to start recording.
- To stop recording  
 Press **■** on the system.

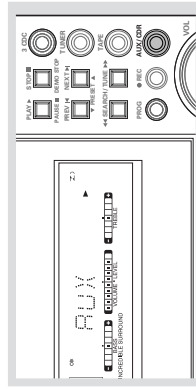
**Note:**  
 – One Touch Recording is not possible in TAPE mode, “SELECT SOURCE” will be displayed.

## Tape Operation/Recording

### CD Synchro Recording

- 1 Press **3CDC** to select the disc.
- Press **◀** or **▶** to select the desired track to start recording.
- You can programme the tracks in the order you want them to be recorded (refer to “CD Operation - Programming the disc tracks”).
- 2 Press **REC** to start recording.  
 → The disc will start playback automatically.
- 3 To select another track during recording  
 Press **PAUSE II (▶II)** to interrupt recording.  
 Press **◀** or **▶** to select the desired track.  
 Press **PLAY ▶ (▶II)** to resume recording.
- To stop recording  
 Press **■**.  
 → Recording and disc playback will stop simultaneously.

### External Sources



**Notes:**

- You are advised not to listen to and record from the same source simultaneously.
- All the interactive sound control features (S or BASS/TREBLE, for example) are available for selection.
- Refer to the operating instructions for the connected equipment for details.

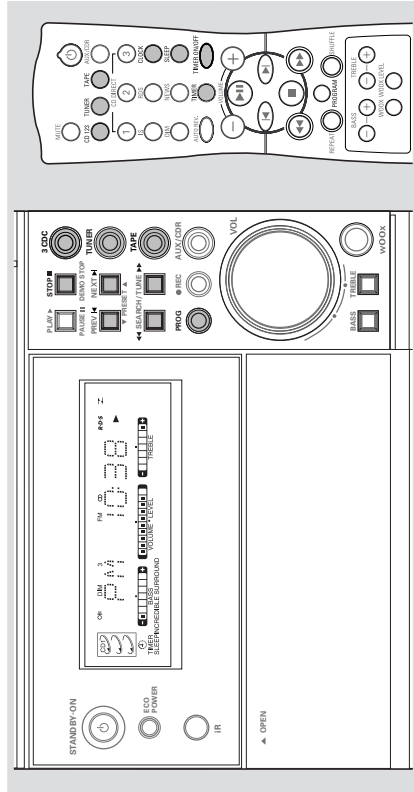
### Listening to External Sources

- 1 Connect the audio out terminals of the external equipment (TV/VCR, Laser Disc player, DVD player or CD Recorder) to the AUX/CD IN terminals of your system.
- 2 Press **AUX/CD** repeatedly to select CDR mode or normal AUX mode.  
 → “CDR” or “AUX” will be displayed.  
 If the sound from the external source is distorted, select CDR mode for listening.

**For Recording, please refer to “Tape Operation/Recording”.**



## Clock/Timer



English

English

### IMPORTANT!

**When in Eco Power Standby mode, it is not possible to operate clock or timer function.**

### Clock Setting

The clock can be set in either 12-hour or 24-hour mode ("FM 12:00" or "00:00" for example)

- 1 Press and hold **CLOCK** on the remote control until the time flashing on the display.
- 2 Press **PROG** on the system repeatedly to select clock mode.
  - If 12-hour mode is selected, "FM XX:XX" will start flashing.
  - If 24-hour mode is selected, "XX:XX" will start flashing.
- 3 Press **◀** or **▶** on the system repeatedly to set the hour.
- 4 Press **⏪** or **⏩** on the system repeatedly to set the minute.
- 5 Press **CLOCK** again to store the setting.
  - The clock will start working.

**To exit without storing the setting**

- Press **■** on the system.

### Notes:

- The clock setting will be cancelled when the power cord is disconnected or if a power failure occurs.
- During clock setting, if no key is pressed within 90 seconds, the system will exit clock setting mode automatically.
- To set the clock automatically through the time information in the RDS signal, refer to "Radio Reception - RDS Time".

### Display Clock

The system allows you to select clock display or normal display in any source mode (except Eco Power Standby mode). When in Standby mode, the clock will automatically be displayed.

- Press **CLOCK** on the remote control repeatedly to select clock display or normal display mode.
    - When in clock display mode, clock will be displayed. If the clock has not been set, "----" will appear on the display.
- Note:
- If you pressed any keys during clock display mode, the display will briefly show the information related to the selected mode.

## Clock/Timer

### Timer Setting

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

#### IMPORTANT!

- Before setting the timer, ensure that the clock is set correctly.
- The timer will always be switched on after it has been set.
- The timer will not start if a recording is in progress.
- The volume of the timer will increase gradually from the minimum level until it reaches the last tuned volume level.

### To check the TIMER

- Press **TIMER** on the remote control.
  - If the timer has been activated, the set timer information will be displayed.
  - If the timer has been deactivated, "OFF" will be displayed.

### To activate/deactivate the TIMER

- Press **TIMER ON/OFF** repeatedly on the remote control.
  - If activated, the last set timer information will be shown for a few seconds and **TIMER** will appear on the display.
  - If deactivated, "OFF" will be displayed.

### Sleep Timer Setting

The sleep timer enables the system to switch to Standby mode automatically at a preset time.

- 1 Press **SLEEP** on the remote control repeatedly to select a preset time.
  - The selections are as follows (time in minutes):
    - 15 → 30 → 45 → 60 → OFF → 15 ...
    - "SLEEP XX" or "OFF" will be displayed.
    - "XX" is the time in minutes.
- 2 When you reach the desired length of time, stop pressing the **SLEEP** button.
  - **SLEEP** will appear on the display, except for "OFF" mode.
  - The Sleep Timer is now set. Before the system switches to standby mode, a countdown of 10 seconds will be displayed.
  - "SLEEP 10" → "SLEEP 9" ... → "SLEEP 1" → "SLEEP"

#### While SLEEP mode is activated

**To check the remaining length of time**

- Press **SLEEP** once.

**To change the preset sleep timer**

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

**To deactivate the Sleep Timer**

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

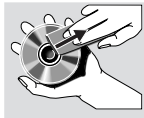
- During timer setting, if no key is pressed within 90 seconds, the system will exit timer setting mode automatically.

**Cleaning the Cabinet**

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

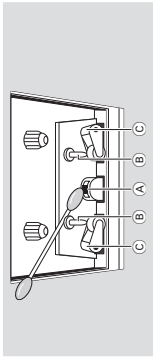
**Cleaning Discs**

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



**Cleaning the Heads and the Tape Paths**

- 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 also can clean the heads by playing a cleaning tape once.



**Cleaning the disc lens**

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

**Demagnetising the heads**

- Use a demagnetising tape available at your dealer.

Troubleshooting

**WARNING**

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

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

**Problem**

**CD OPERATION**

"NO DISC" is displayed.

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

**Solution**

Troubleshooting

**RADIO RECEPTION**

**Radio reception is poor:**

- If the signal is too weak, adjust the antenna or connect an external antenna for better reception.
- Increase the distance between the Mini HiFi System and your TV or VCR.

**TAPE OPERATION/RECORDING**

**Recording or playback cannot be made.**

- Clean deck parts, see "Maintenance".
- Use only NORMAL (IEC I) or IEC type II (C02) tape.
- Apply a piece of adhesive tape over the missing tab space.

**The tape deck door cannot open.**

- Remove and reconnect the AC power plug and switch on the system again.

**GENERAL**

**The system does not react when buttons are pressed.**

- Remove and reconnect the AC power plug and switch on the system again.

**Sound cannot be heard or is of poor quality.**

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

**The left and right sound outputs are reversed.**

- Check the speaker connections and location.

**The remote control does not function properly.**

- Select the source (CD or TUNER, for example) before pressing the function button (▶◀▶▶).
- Reduce the distance between the remote control and the system.
- Insert the batteries with their polarities (+/- signs) aligned as indicated.
- Replace the batteries.
- Point the remote control in the direction of the system's IR sensor.

**The timer is not working.**

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

**Not all lighted buttons are showing light.**

- Press DIM to select DIM OFF display mode.

**The Clock/Timer setting is erased.**

- Power has been interrupted or the power cord has been disconnected. Reset the clock/timer.

**The system displays features automatically and buttons start flashing.**

- Press and hold DEMO STOP on the system to switch off the demonstration.

## Additional Features for other versions

### Preparations

#### A Power

- Before connecting the AC power cord to the wall outlet, ensure that the following are done:
  - If your system is equipped with a Voltage Selector, set the VOLTAGE SELECTOR to the local power line voltage.
  - All other connections have been made.

### Controls (except /22 version)

- 19 AUTO REV. (AUTO REVERSE)**
  - to select the desired tape playback modes.
- 20 TIMER**
  - to display timer or set the timer.
- 21 REPEAT**
  - to playback track(s)/disc(s)/program repeatedly.
- 22 SHUFFLE**
  - to playback all available discs and their tracks/program in random order.
- 23 TIMER ON/OFF**
  - to activate or deactivate the timer function.
- 24 SLEEP**
  - to activate, deactivate or set the sleep timer function.
- 25 SNOOZE**
  - to temporarily deactivate the wake up timer.
- 26 CD RESUME**
  - to continue playback from the last selected track after an interruption (only when the CD source is still in the active mode).
- 27 CLOCK**
  - to resume the last selected CD mode.
- 28**
  - to display clock or set the clock.
  - to switch the system to Standby mode.

#### Notes for remote control:

- First, select the source you wish to control by pressing one of the source select keys on the remote control (CD 123 or TUNER, for example).
- Then select the desired function (▶, ◀, ◀▶, ▶▶, for example).

### CD Operation

#### Disc Playback



- a disc is loaded in the disc tray
- the current selected disc tray is empty
- the current selected disc tray is loaded
- the disc tray is currently playing

#### To resume playback from the last selected track

- In CD stop or pause mode, press **CD RESUME** on the remote control to start playback again from where you have stopped.
- Notes:
- Resume will not be available if you have changed the disc, opened the disc tray or disconnected the system the power supply.
  - Select **CD RESUME** in any other source mode will only able to resume the last selected CD active mode (for example, CD stop or playback).

### Radio Reception

#### Changing Tuning Grid (available for /21/21M versions)

In North and South America, the frequency step between adjacent channels in the MW band is 10 kHz (9 kHz in some areas). The preset frequency step in the factory is 9 kHz.

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

- 1 Disconnect the system from the AC power supply (pull out the AC power cord).
  - 2 While holding down **TUNER** and **▶▶** on the system, reconnect the system to the AC power supply.
    - The display will show "GRID 9" or "GRID 10".
- Notes:
- GRID 9 and GRID 10 indicate that the tuning grid is in step of 9 kHz and 10 kHz respectively.
  - The FM tuning grid also will be changed from 50 kHz to 100 kHz or vice versa.

### Clock/Timer

#### To activate/deactivate the TIMER

- Press **TIMER ON/OFF** repeatedly on the remote control.
    - If activated, the last set timer information will be shown for a few seconds and **TIMER** will appear on the display.
    - If deactivated, "OFF" will be displayed.
  - **To deactivate the wake up timer (five minutes interval)**
    - After timer wake up, press **SNOOZE** on the remote control.
    - The system will switch to standby mode for five minutes. After then, it resumes the timer last selected source again.
  - To cancel the snooze function, press **SNOOZE** again.
- Note:
- To enable the snooze function, it should be done within 30 minutes after timer wake up.

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## DISMANTLING INSTRUCTIONS

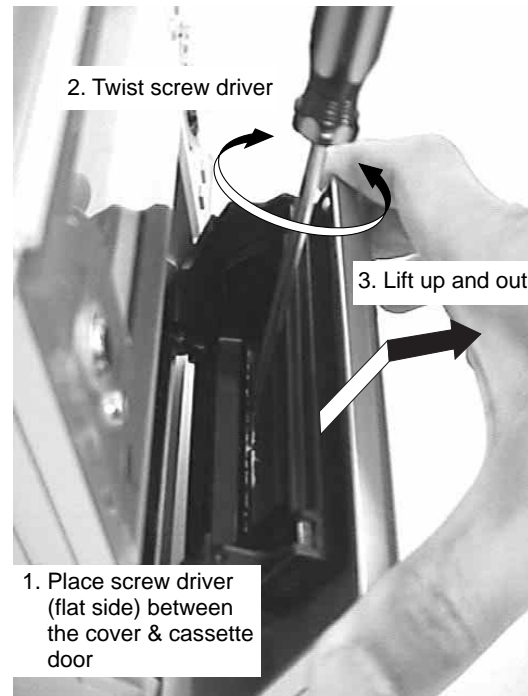
*Dismantling of the Cassette Cover*

Figure 1 Remove Cassette Cover

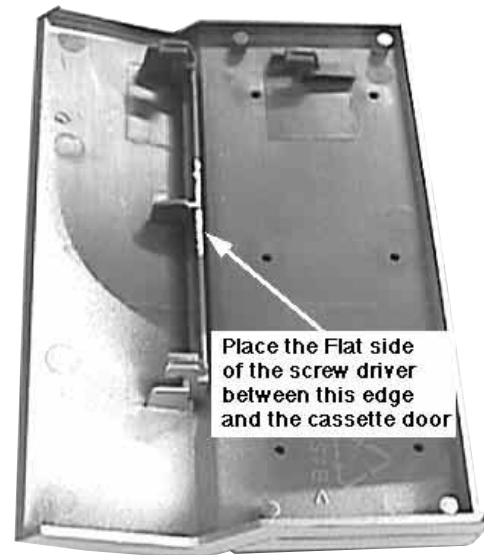


Figure 2 Cassette Cover

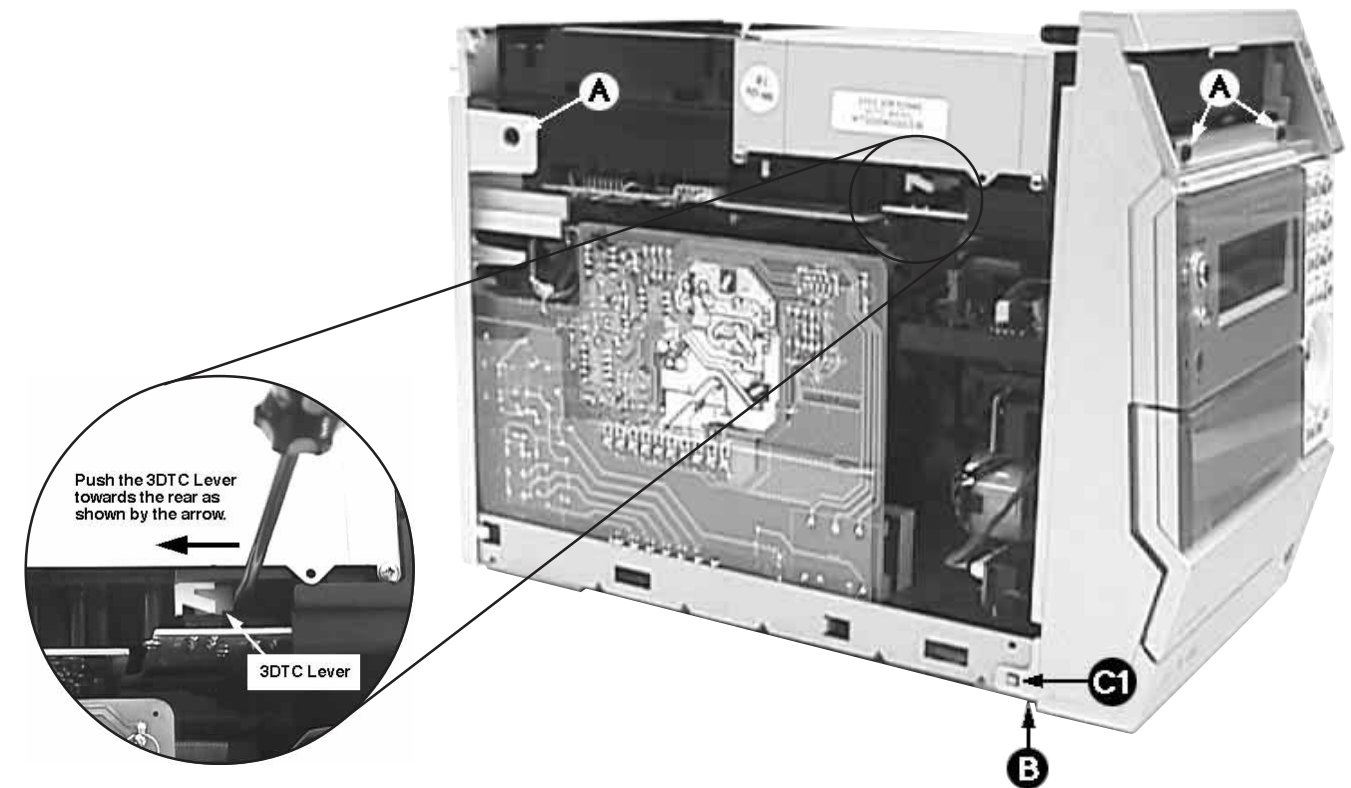


Figure 4

*Dismantling of the 3DTC Module and Tuner Board*

- 1) Loosen 4 screws and remove the Cover Top (pos 255) by sliding it out towards the rear before lifting up.
  - 2 screws on the rear
  - 1 screw each on the left & right side
- 2) Loosen 2 screws each to remove the Panel Left and Right (pos 253 & 254). The Panels are removed by sliding it towards the rear and outwards.
  - 1 screw on the side
  - 1 screw on the rear
- 3) Open the 3DTC Tray by sliding the lever (pos 36) as shown in figure 4 with the help of a flat head screw driver.
- 4) Remove the Cover Tray (pos 106) as shown in figure 3.
- 5) Loosen 4 screws A (see figure 4) to remove the 3DTC Module.
  - 2 screws on the front
  - 1 screw each on the left & right side
- 6) Loosen 3 screws E (see figure 8) on the Panel Rear (pos 256) & uncatch 2 catches C3 to remove the Tuner Board.



Figure 3

*Detaching the Front Panel assembly from the Bottom/Rear assembly*

- 1) Remove 2 screws B (see figure 4) from the bottom of the Cabinet Front (pos 101).
- 2) Release the fixation of the Combi Board to Bracket Combi (pos 252) by releasing 2 catches C2 and pulling the board outwards as shown in figure 5.
- 3) Uncatch 2 catches C1 (see figure 4) on the left & right sides of Cabinet Front (pos 101) and slides the Front Panel assembly out towards the front.

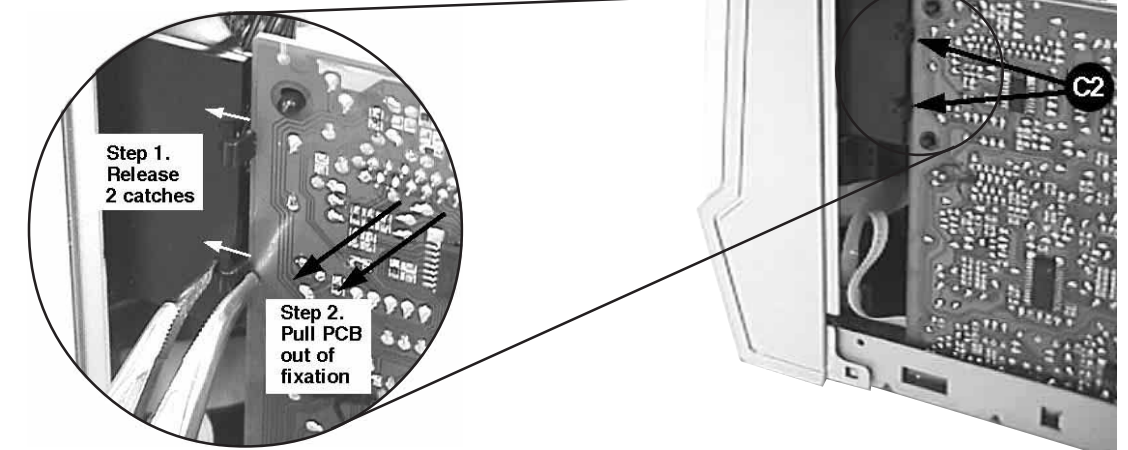


Figure 5

**Dismantling of the Front Panel assembly**

- 1) Loosen 4 screws C in figure 7 to remove the ETF6-LE Module.
- 2) Insert a strong string into the slot between the Jog knob (pos 136) and Cover control (pos 137), looped it until it engage into both the U-slot of the Jog knob and pulled it out as shown in figure 6.
- 3) Loosen 4 screws D to remove the Display Board assembly.

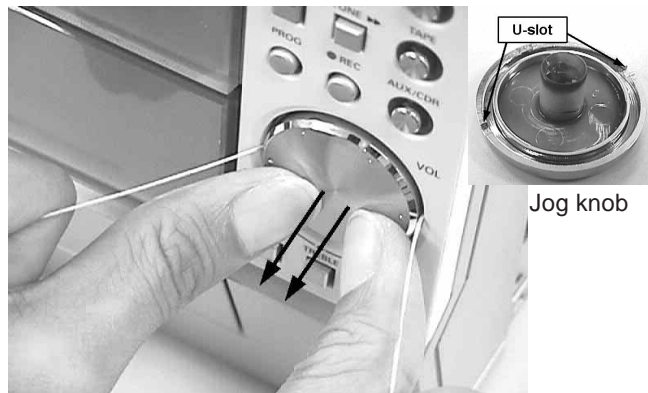


Figure 6

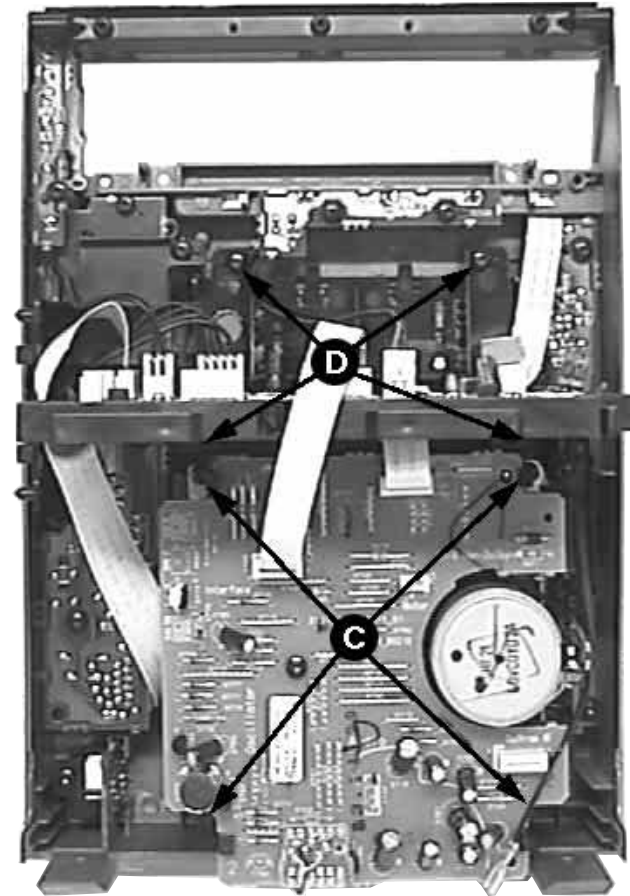


Figure 7

**Dismantling of Rear Panel**

- 1) Loosen 3 screws E and 2 catches C3 to remove the Tuner Board assembly.  
*Note: Tuner Board assembly can also be remove together with the Panel Rear.*
- 2) Loosen 1 screw F and the 2 catches C4 to free the Mains socket board from the Panel Rear (pos 256).
- 3) Loosen 6 screws G and 2 catches C5 to remove the Panel Rear (pos 256) by sliding it out towards the rear.

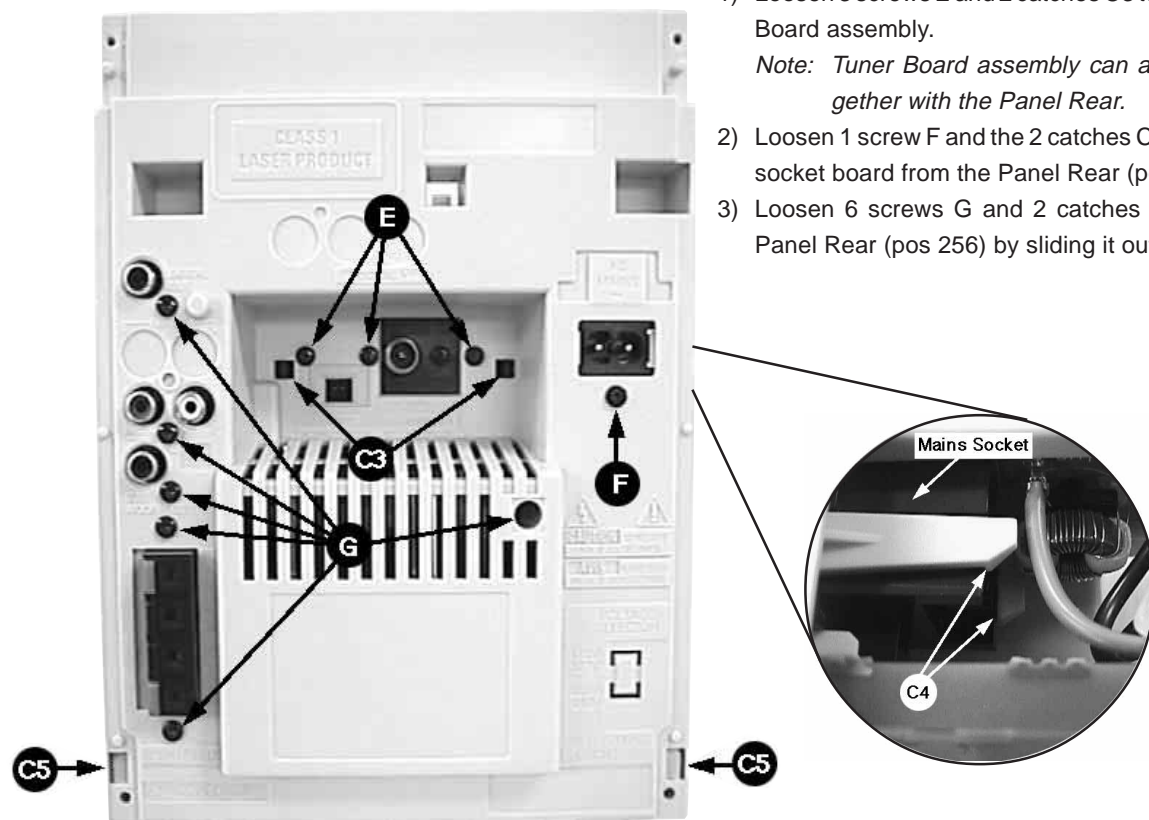


Figure 8

**Dismantling of the Bottom assembly**

- 1) Loosen 2 screws H as shown in figure 9 to remove the Combi / Regulator boards assembly.
- 2) Loosen 1 screws J and uncatch Shield Transformer from the Bottom plate (pos 265) as shown in figure 11 to remove it.
- 3) Loosen 4 screws K mounting the Mains Transformer to remove the Mains Board & Transformer assembly.
- 4) Loosen 2 screws L to remove the Housing Fan top (pos 267).

*Note: During Fan replacement care should be taken to ensure that the following are correct:*

- fan blades direction
- fan wire position
- fan is properly supported by the rubber damper

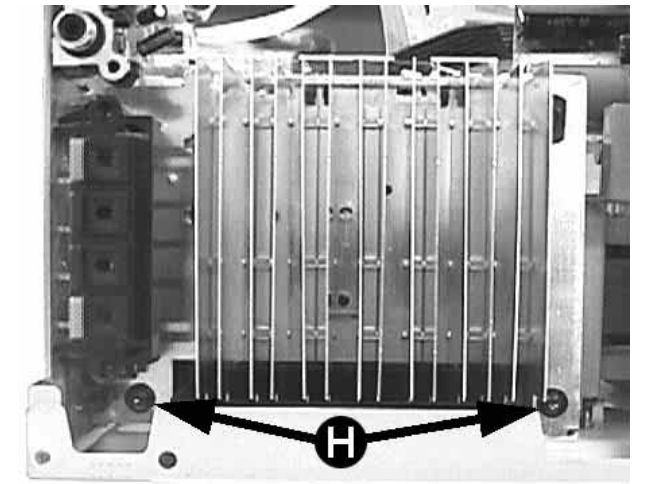


Figure 9

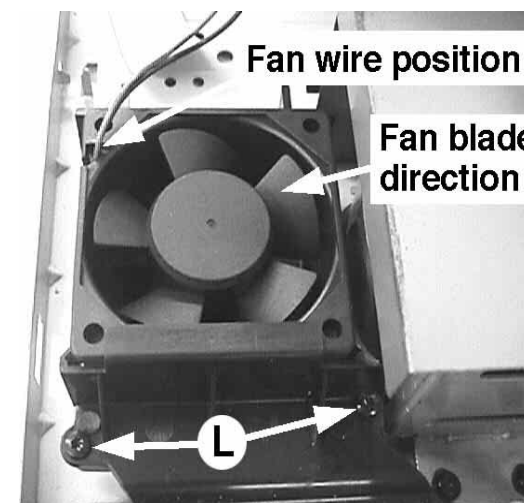


Figure 10

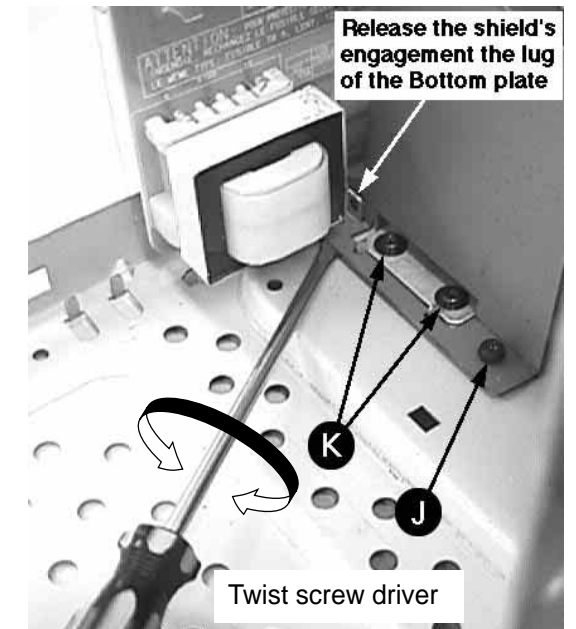


Figure 11

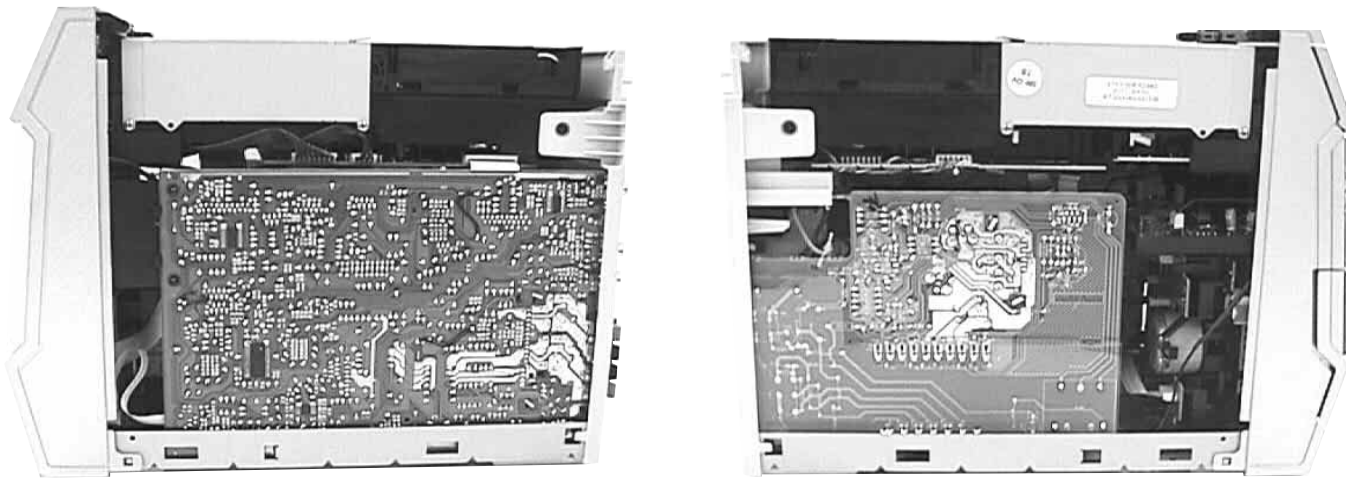
**SERVICE POSITIONS & REPAIR HINTS**

- 1) During repair it is possible to disconnect the ECO6 Tuner board, ETF6 Tape Module and/or CDC Module completely unless the fault is suspected to be in that area. This will not affect the performance of the rest of the set.
- 2) For Service position C (repair on the ETF6 Tape module), it is necessary to inter-change the flex wires for connec-

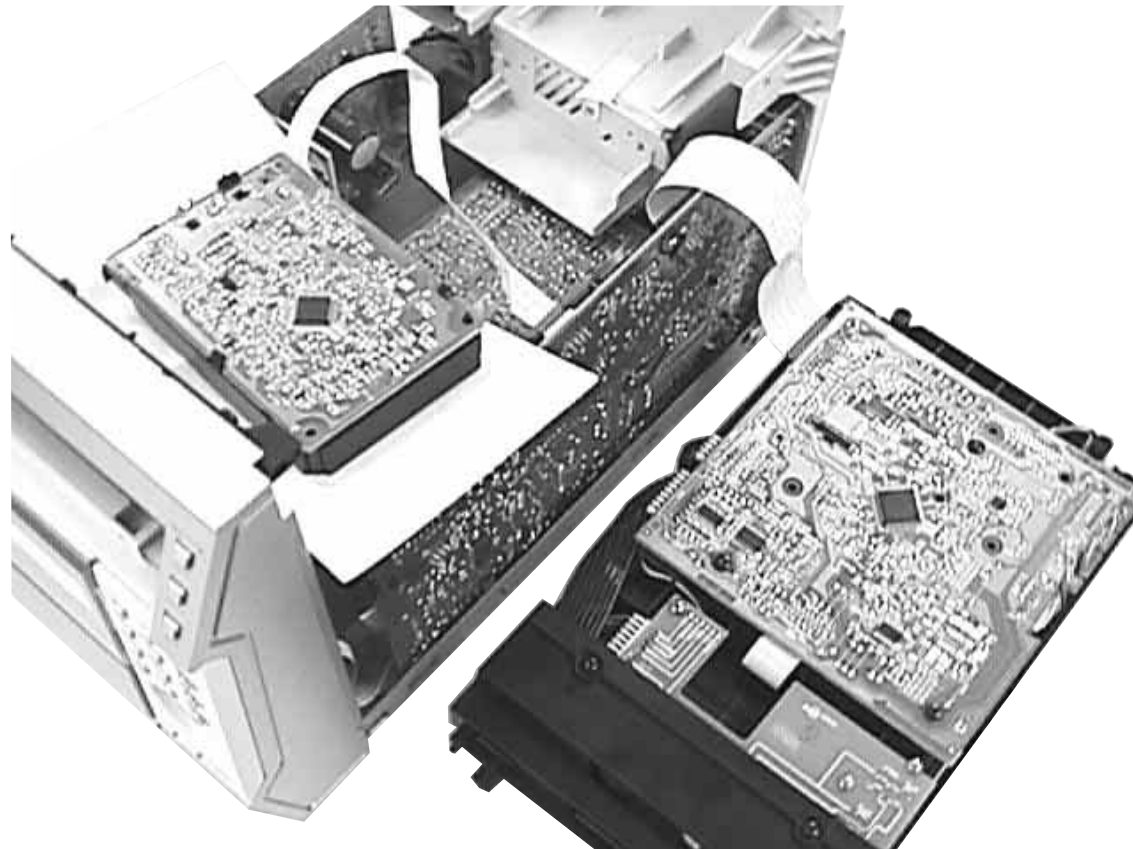
tor 1701 & 1706 because of wire length.

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

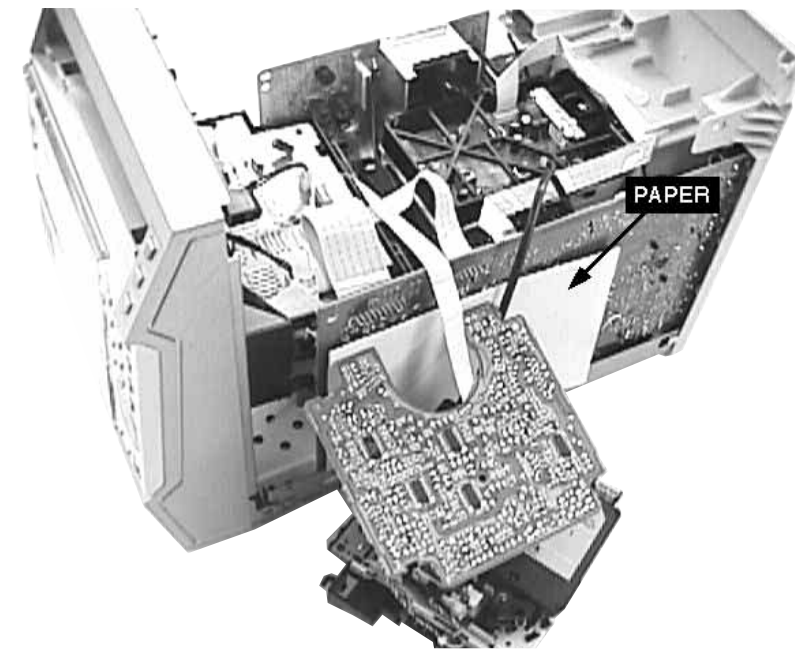
Service pos A



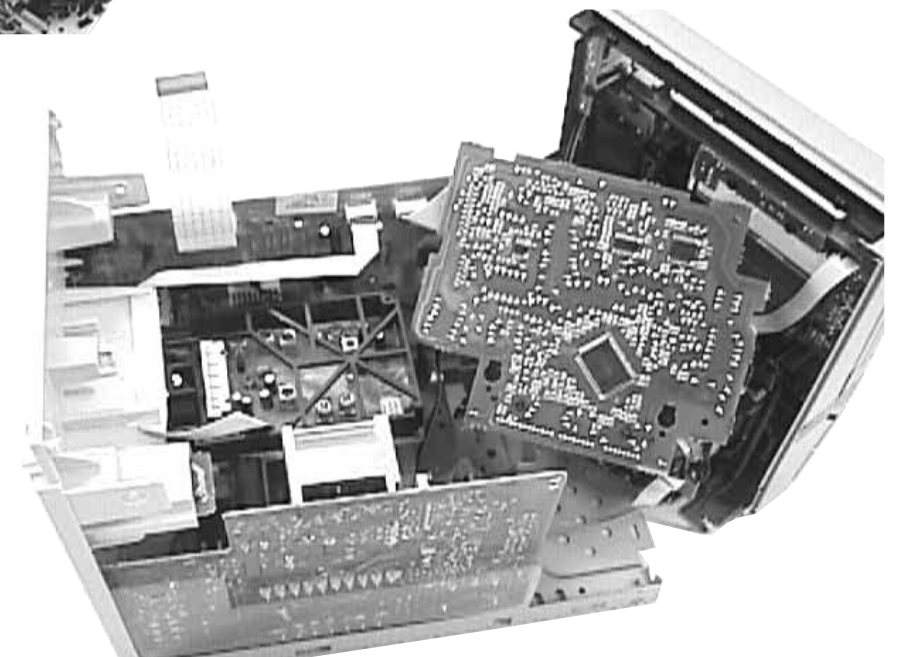
Service pos B



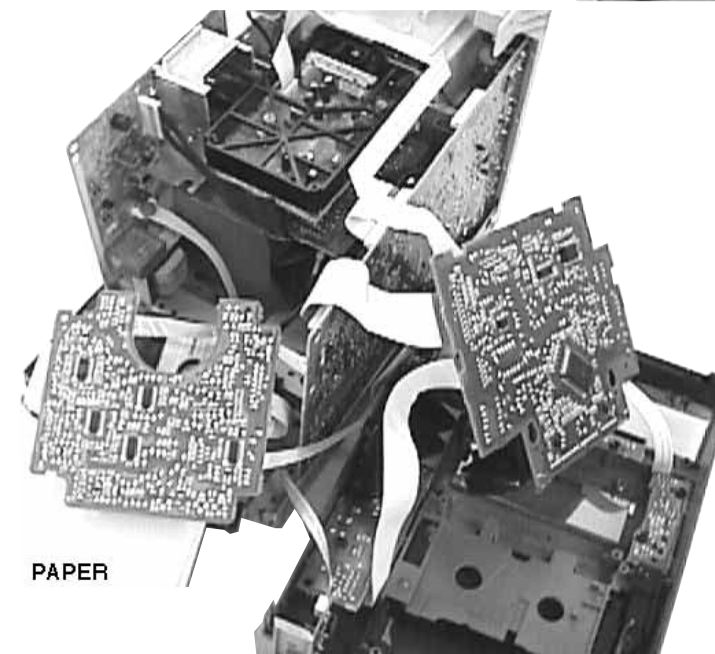
Service pos C



Service pos D



Service pos D



**SERVICE TEST PROGRAM**

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

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

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

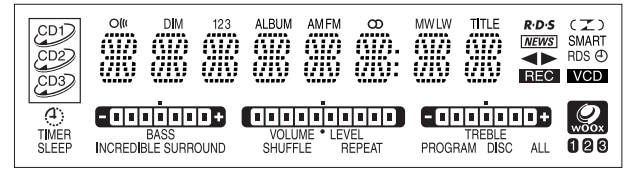
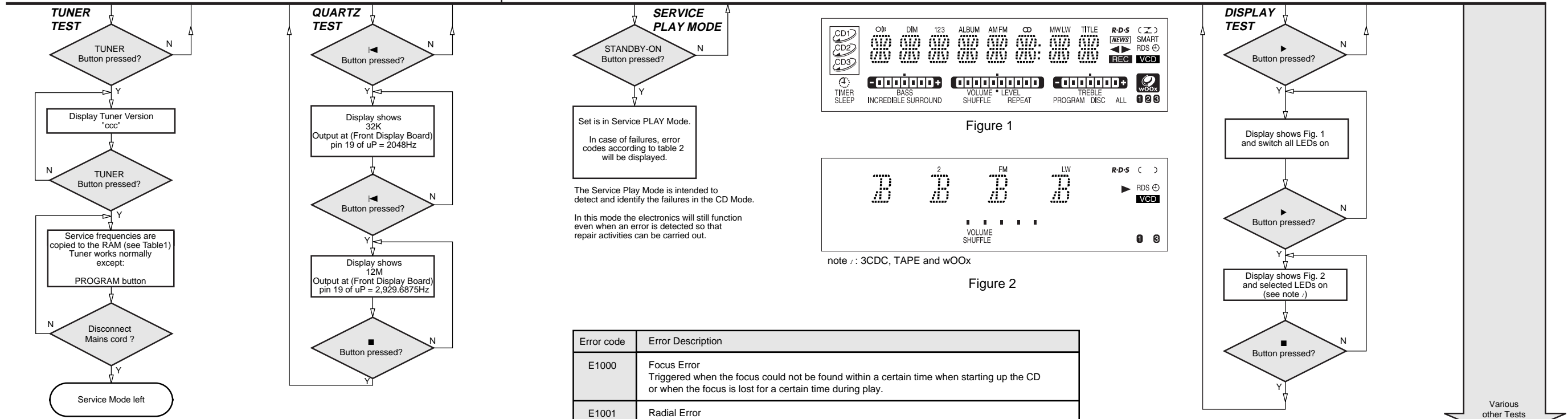
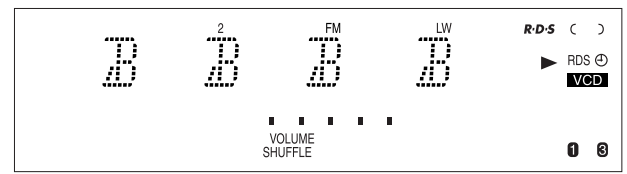


Figure 1



note : 3CDC, TAPE and WOODS

Figure 2

PRESET	Europe "EUR"		USA "USA"	Oversea "OSE"
1	87.5MHz		87.5MHz	87.5MHz
2	108MHz		108MHz	108MHz
3	531kHz		530kHz	531/530kHz*
4	1602kHz		1700kHz	1602/1700kHz*
5	558kHz		560kHz	558/560kHz*
6	1494kHz		1500kHz	1494/1500kHz*
7	153kHz		98MHz	98MHz
8	279kHz		87.5MHz	87.5MHz
9	198kHz		87.5MHz	87.5MHz
10	98MHz		87.5MHz	87.5MHz
11	87.5MHz		87.5MHz	87.5MHz

Table 1

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

Error code	Error Description
E1000	Focus Error Triggered when the focus could not be found within a certain time when starting up the CD or when the focus is lost for a certain time during play.
E1001	Radial Error Triggered when the radial servo is off-track for a certain time during play.
E1002	Sledge In Error The sledge did not reach its inner position (inner-switch is still close) before approximately 6 Sec. have passed by. Inner-switch or sledge motor problem.
E1003	Sledge Out Error The sledge did not come out of its inner position (inner-switch is still open) before approximately 250 mSec. have passed by. Inner-switch or sledge motor problem.
E1005	Jump-offtrack error Triggered in normal play when the jump destination could not be found within a certain time.
E1006	Subcode Error Triggered when a new subcode was missing for a certain time during play.
E1007	PLL Error The Phase Lock Loop could not lock within a certain time.
E1008	Turntable Motor Error Generated when the CD could not reached 75% of speed during startup within a certain time. Disc motor problem.
E1020	Focus Search Error The focus point has not been found within a certain time.
E1031	The active lower carriage does not come to the end position within a certain time. This can happen when the switches are defective, or when the carriage is blocked in between two end positions (example: 2 disc in one carriage). The time-out is approximately 5 seconds.
E1061	The drawer could not enter the inside position and is opening again. This can happen if the drawer is blocked such that it cannot go fully inside, or if the drawer switch is defective and never closes.
E1071	The active upper carriage does not come to the end position within a certain time. This happen when the switches are defective, or when the carriage is blocked in between two end positions (example: 2 disc in one carriage)/ The time-out is approximately 5 Sec.
E1079	The drawer could not enter the outside position and is stopped at its blocked position. This can happen if the drawer is blocked such that it cannot go fully outside, or if the drawer switch is defective and never opens.

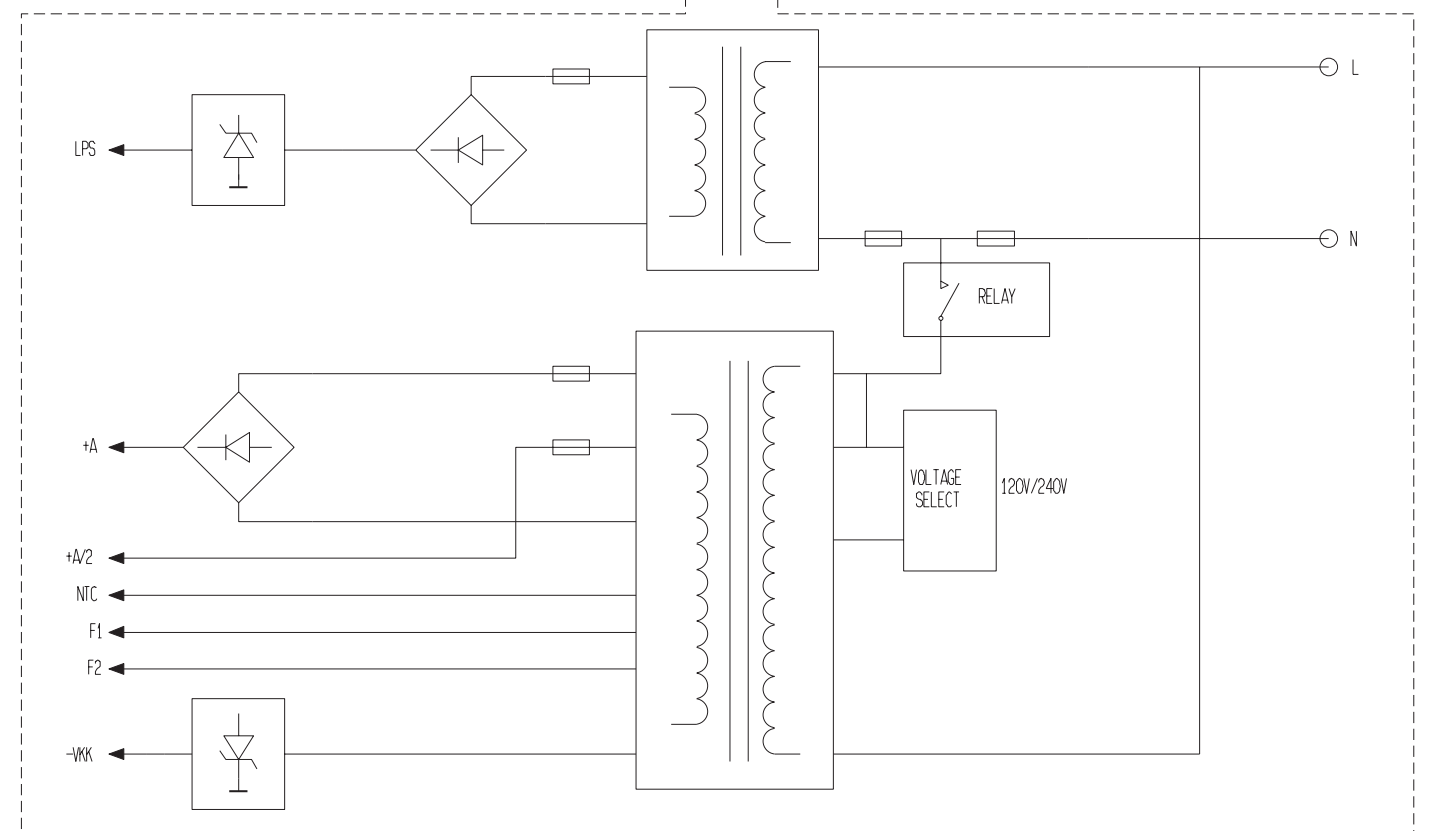
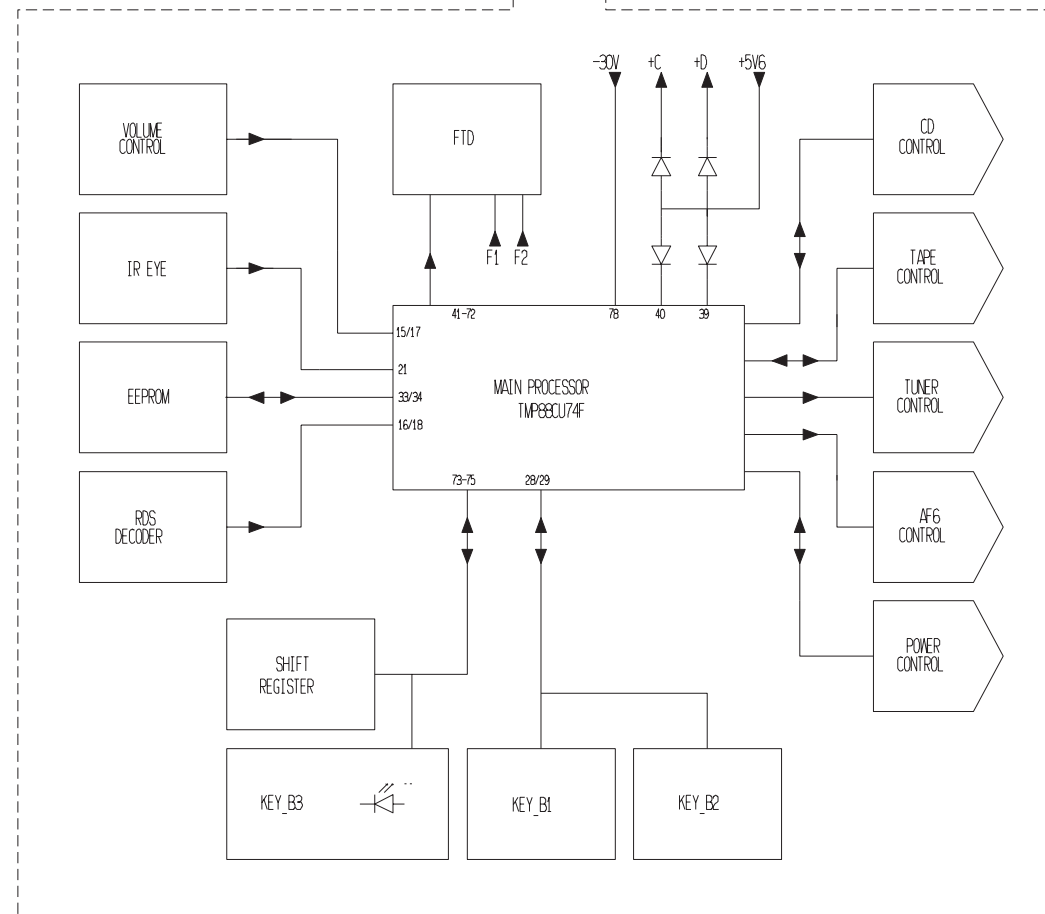
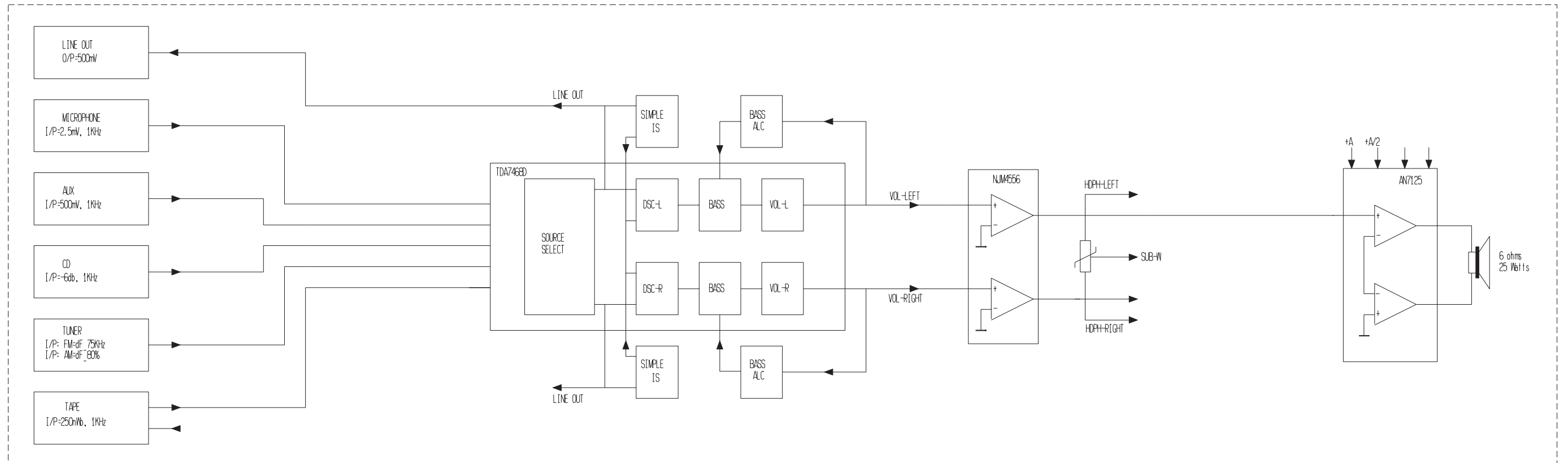
Table 2

TEST	Activated with	ACTION
EEPROM TEST	<b>▶▶</b>	8 test patterns will be sent to the EEPROM. "PASS" is displayed if the uProcessor read back the test patterns correctly, otherwise "ERROR" will be displayed.
EEPROM FORMAT	<b>◀◀</b>	Load default data. Display shows "NEW" for 1 second. <b>Caution!</b> <b>All presets from the customer will be lost!!</b>
ENCODER TEST	Volume Knob	Display shows value for 2 seconds. Values increases or decreases in steps of 1 dB until VOL MUTE (Min.) or 0dB (Max.) is reached.
DEMO MODE	Treble	Pressing this button will toggle between DEMO ON and DEMO OFF. The DEMO status will scroll once on the Display.
LEAVE SERVICE TESTPROGRAM	Disconnect mains cord	

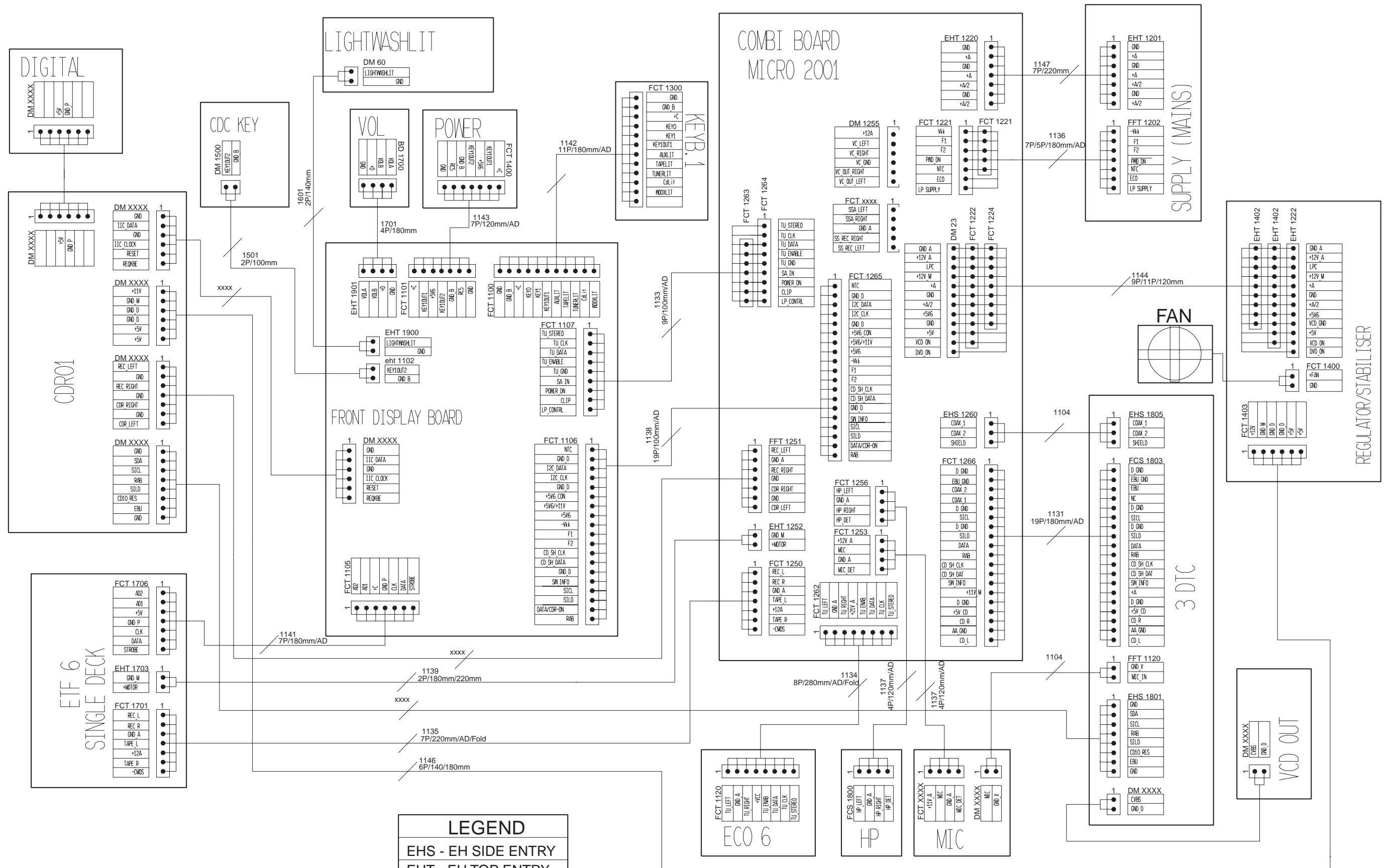
Various other Tests



### SET BLOCK DIAGRAM



# SET WIRING DIAGRAM

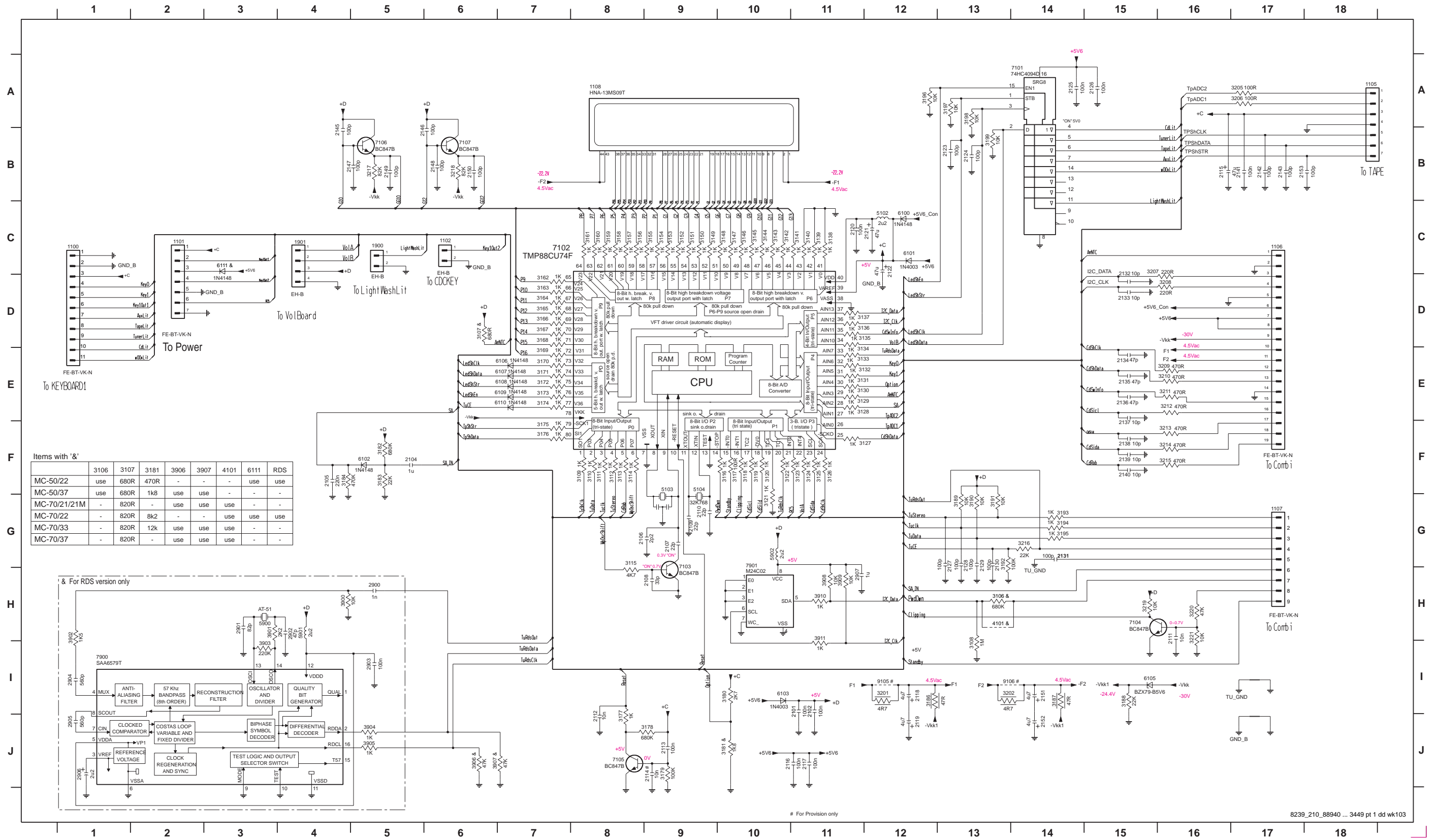


LEGEND	
EHS	- EH SIDE ENTRY
EHT	- EH TOP ENTRY
FCS	- FFC SIDE ENTRY
FCT	- FFC TOP ENTRY
DM	- DIPMATE



# CIRCUIT DIAGRAM

1100 C1 1107 G17 2102 I11 2108 H9 2113 J9 2118 I12 2123 B13 2128 G13 2133 D15 2138 F15 2143 B17 2149 B5 2900 H5 2905 J1 3108 I13 3113 F8 3118 F10 3123 F11 3128 E11 3133 E11 3138 C11 3143 C10 3148 C10 3153 C9 3158 C8 3163 D7 3168 D7 3173 E7 3178 J9 3183 F5 3189 G13 3194 G14 3199 B13 3207 C15 3212 E16 3217 B5 3900 H4 3905 J5 3910 H11 5104 F9 6101 C12 6107 E7 7101 A14 7106 B5 9106 I13  
 1101 C2 1108 A8 2106 F5 2109 G9 2114 J9 2119 J12 2124 B13 2129 G13 2134 E15 2139 F15 2146 B4 2150 B6 2901 H3 2906 J1 3109 F8 3114 F8 3119 F10 3124 F11 3129 E11 3134 E11 3139 C11 3144 C10 3149 C9 3154 C9 3159 C8 3164 D7 3169 E7 3174 E7 3179 J9 3184 F4 3190 G13 3195 G14 3201 I12 3206 D16 3213 F16 3218 B6 3901 H3 3906 J6 3911 H11 5900 H3 6102 F5 6108 E7 7102 C7 7107 B6  
 1102 C6 1900 C5 2105 F4 2110 G9 2115 B16 2120 C11 2125 A14 2130 G13 2135 E15 2140 F15 2146 B6 2151 I14 2902 H4 2907 H11 3110 F8 3116 F10 3121 G10 3126 F11 3131 E11 3136 D11 3141 C11 3146 C10 3151 C9 3156 C8 3161 C8 3166 D7 3171 E7 3176 F7 3181 J10 3187 I14 3192 G13 3197 A13 3205 A17 3210 E16 3215 F16 3220 H16 3903 I3 3908 H1 3908 H1 5102 C12 5902 G10 6105 H5 6109 E7 7103 H9 7901 H1 7901 G10  
 1105 A18 1901 C4 2106 G8 2111 H16 2116 J10 2121 C12 2126 A15 2131 G14 2136 E15 2141 B17 2147 B5 2152 J14 2903 I5 3106 H13 3111 F8 3117 F10 3122 F10 3127 F12 3132 E12 3137 D11 3142 C10 3147 C10 3152 C9 3157 C8 3162 D7 3167 D7 3172 E7 3177 J8 3182 F5 3188 I5 3193 G14 3198 A13 3206 A17 3211 E16 3216 G14 3221 H16 3904 J5 3909 H11 5103 F9 6100 C12 6106 E7 6111 C3 7105 J8 9105 I12

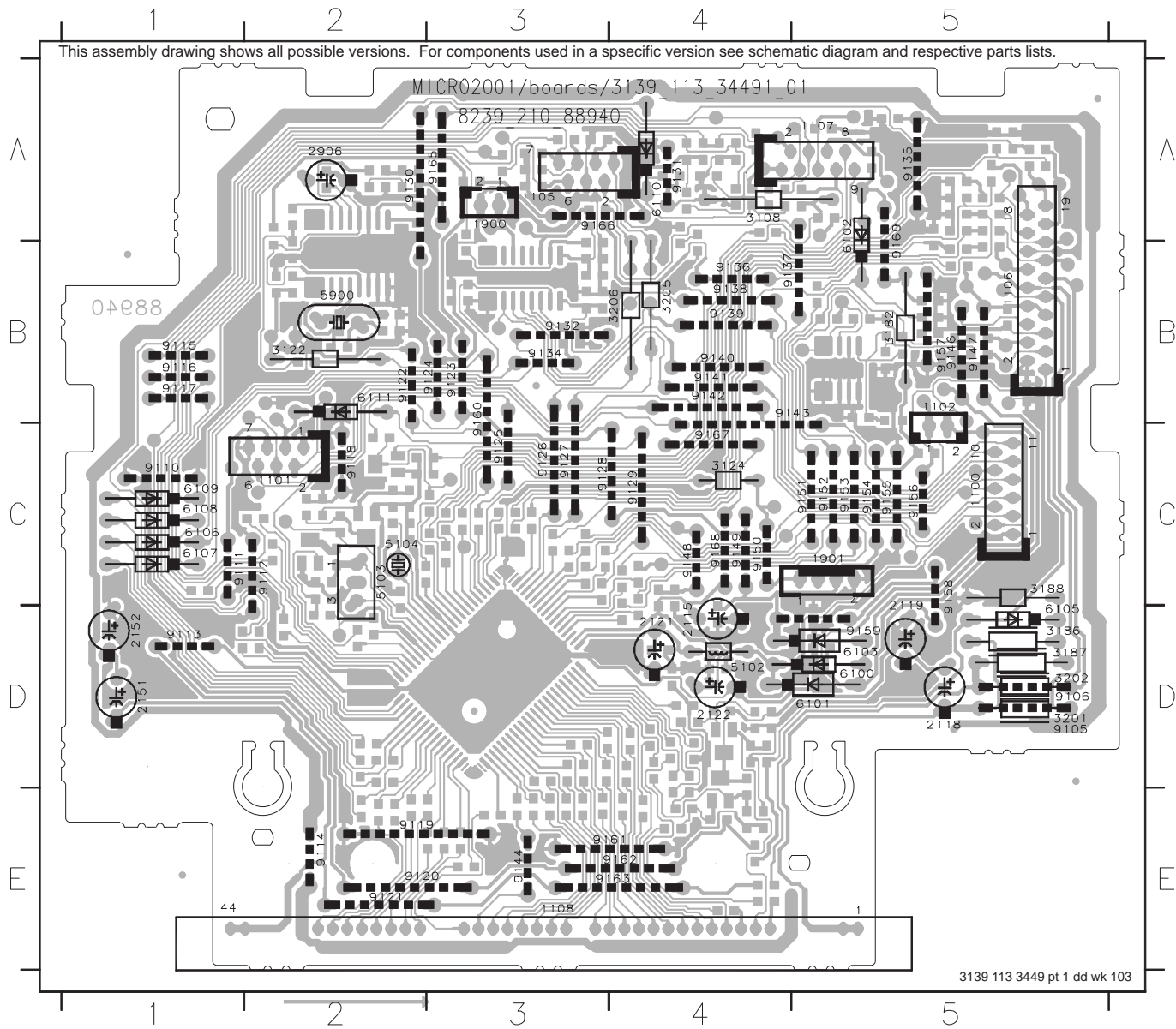


Items with '&'

	3106	3107	3181	3906	3907	4101	6111	RDS
MC-50/22	use	680R	470R	-	-	-	use	use
MC-50/37	use	680R	1k	use	use	-	-	-
MC-70/21/21M	-	820R	-	use	use	use	-	-
MC-70/22	-	820R	8k2	-	-	use	use	use
MC-70/33	-	820R	12k	use	use	use	-	-
MC-70/37	-	820R	-	use	use	use	-	-

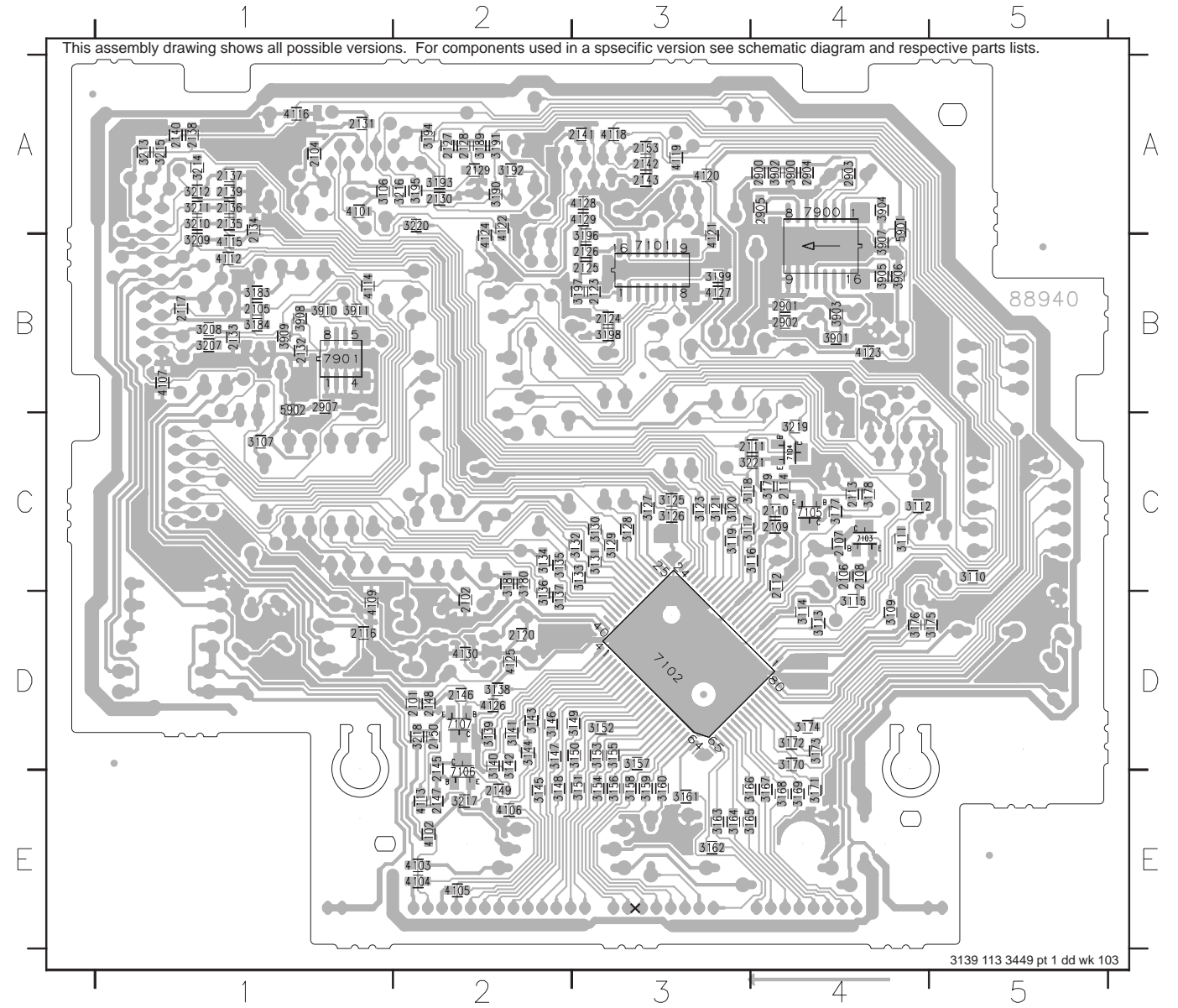
COMPONENT LAYOUT

1100	C5	1901	C5	2906	A2	3201	D5	6100	D5	6109	C1	9113	D1	9121	E2	9129	C4	9138	B4	9147	B5	9155	C5	9163	E4
1101	C2	2115	D4	3108	A4	3202	D5	6101	D5	6110	A4	9114	F2	9122	B2	9130	A2	9139	B4	9148	C4	9156	C5	9165	A3
1102	B5	2118	D5	3122	B2	3205	B4	6102	A5	6111	B2	9115	B1	9123	B3	9131	A4	9140	B4	9149	C4	9157	B5	9166	A3
1105	A3	2119	C5	3124	C4	3206	B4	6103	D5	9105	D5	9116	B1	9124	C3	9132	B3	9141	B4	9150	C4	9158	C5	9167	C4
1106	B5	2121	D4	3182	B5	5102	D4	6105	D5	9106	D5	9117	B1	9125	C3	9134	B3	9142	B4	9151	C5	9159	D5	9168	C4
1107	A5	2122	D4	3186	D5	5103	C2	6106	C1	9110	C1	9118	C2	9126	C3	9135	A5	9143	B5	9152	C5	9160	B5	9169	B5
1108	E3	2151	D1	3187	D5	5104	C2	6107	C1	9111	C1	9119	E2	9127	C3	9136	B4	9144	F3	9153	C5	9161	F4		
1900	A3	2152	D1	3188	C5	5900	B2	6108	C1	9112	C2	9120	E2	9128	C3	9137	B4	9146	B5	9154	C5	9162	F4		



CHIP LAYOUT

2101	D2	2120	D2	2137	A1	2901	B4	3116	C4	3133	C3	3148	E2	3163	E3	3178	C4	3198	B3	3220	A2	4102	E2	4121	B3	7104	C4
2102	D2	2123	B3	2138	A1	2902	B4	3117	C3	3134	C2	3149	D3	3164	E3	3179	C4	3199	B3	3221	C4	4103	E2	4122	A2	7105	C4
2104	A1	2124	B3	2139	A1	2903	A4	3118	C3	3135	C2	3150	D3	3165	E3	3180	C2	3207	B1	3900	A4	4104	E2	4123	B4	7106	E2
2105	B1	2125	B3	2140	A1	2904	A4	3119	C3	3136	D2	3151	D3	3166	E3	3181	C2	3208	B1	3901	A4	4105	E2	4124	B2	7107	D2
2106	C4	2126	B3	2141	A3	2905	A4	3120	C3	3137	D2	3152	D3	3167	E4	3183	B1	3209	B1	3902	A4	4106	E2	4125	D2	7900	A4
2107	C4	2127	A2	2142	A3	2907	B1	3121	C3	3138	D2	3153	D3	3168	E4	3184	B1	3210	A1	3903	B4	4107	B1	4126	D2	7901	B1
2108	C4	2128	A2	2143	A3	3106	A1	3123	C3	3139	D2	3154	E3	3169	E4	3189	A2	3211	A1	3904	A4	4109	D1	4127	B3		
2109	C4	2129	A2	2145	D2	3107	C1	3125	C3	3140	D2	3155	D3	3170	D4	3190	A2	3212	A1	3905	B4	4112	B1	4128	A3		
2110	C4	2130	A2	2146	D2	3109	D4	3126	C3	3141	D2	3156	E3	3171	E4	3191	A2	3213	A1	3906	B4	4113	E2	4129	A3		
2111	C4	2131	A1	2147	E2	3110	C5	3127	C3	3142	D2	3157	D3	3172	D4	3192	A2	3214	A1	3907	B4	4114	B1	4130	D2		
2112	C4	2132	B1	2148	D2	3111	C4	3128	C3	3143	D2	3158	E3	3173	D4	3193	A2	3215	A1	3908	B1	4115	B1	5901	A4		
2113	C4	2133	B1	2149	E2	3112	C4	3129	C3	3144	D2	3159	E3	3174	D4	3194	A2	3216	A2	3909	B1	4116	A1	5902	B1		
2114	C4	2134	A1	2150	D2	3113	D4	3130	C3	3145	D2	3160	E3	3175	D5	3195	A2	3217	E2	3910	B1	4118	A3	7101	B3		
2116	D1	2135	A1	2153	A3	3114	D4	3131	C3	3146	D2	3161	E3	3176	D4	3196	B3	3218	D2	3911	B1	4119	A3	7102	D3		
2117	B1	2136	A1	2900	A4	3115	D4	3132	C3	3147	D2	3162	E3	3177	C4	3197	B3	3219	C4	4101	A1	4120	A3	7103	C4		



## ELECTRICAL PARTS LIST - FRONT DISPLAY BOARD

## MISCELLANEOUS

1100	4822 267 11039	Flex Socket 11pin Vert.
1101	4822 267 10953	Flex Socket 7pin Vert.
1105	4822 267 10953	Flex Socket 7pin Vert.
1106	4822 265 11553	Flex Socket 19pin Vert.
1107	2422 025 14518	Flex Socket 9pin Vert.
1108	3139 110 52680	FTD Display HNA-13MS09T

## CAPACITORS

2101	4822 126 14305	100nF 10% 16V
2102	4822 126 14305	100nF 10% 16V
2104	3198 017 41050	1μF +80/-20% 10V
2105	4822 126 13879	220nF +80/-20% 16V
2106	4822 126 14223	2,2pF +/-0,25pF 50V
2107	4822 122 33761	22pF 5% 50V
2108	4822 126 11671	33pF 5% 50V
2109	4822 122 33761	22pF 5% 50V
2110	4822 122 33761	22pF 5% 50V
2111	5322 126 11583	10nF 10% 50V
2112	5322 126 11583	10nF 10% 50V
2113	4822 126 14305	100nF 10% 16V
2115	4822 124 40433	47μF 20% 25V
2116	4822 126 14305	100nF 10% 16V
2117	4822 126 14305	100nF 10% 16V
2118	4822 124 40769	4,7μF 20% 100V
2119	4822 124 40769	4,7μF 20% 100V
2120	4822 126 14305	100nF 10% 16V
2121	4822 124 40433	47μF 20% 25V
2122	4822 124 40433	47μF 20% 25V
2123	4822 122 31765	100pF 2% 63V
2124	4822 122 31765	100pF 2% 63V
2125	4822 126 14305	100nF 10% 16V
2126	4822 126 14305	100nF 10% 16V
2127	4822 122 31765	100pF 2% 63V
2128	4822 122 31765	100pF 2% 63V
2129	4822 122 31765	100pF 2% 63V
2130	4822 122 31765	100pF 2% 63V
2131	4822 122 31765	100pF 2% 63V
2132	4822 122 33741	10pF 10% 50V
2133	4822 122 33741	10pF 10% 50V
2134	4822 122 33777	47pF 5% 63V
2135	4822 122 33777	47pF 5% 63V
2136	4822 122 33777	47pF 5% 63V
2137	4822 122 33741	10pF 10% 50V
2138	4822 122 33741	10pF 10% 50V
2139	4822 122 33741	10pF 10% 50V
2140	4822 122 33741	10pF 10% 50V
2141	4822 126 14305	100nF 10% 16V
2142	4822 122 31765	100pF 2% 63V
2143	4822 122 31765	100pF 2% 63V
2145	4822 122 31765	100pF 2% 63V
2146	4822 122 31765	100pF 2% 63V
2147	4822 122 31765	100pF 2% 63V

2148	4822 122 31765	100pF 2% 63V
2149	4822 122 31765	100pF 2% 63V
2150	4822 122 31765	100pF 2% 63V
2151	4822 124 40769	4,7μF 20% 100V
2152	4822 124 40769	4,7μF 20% 100V
2153	4822 122 31765	100pF 2% 63V
2900	3198 016 31020	1nF 5% 25V
2901	4822 126 14226	82pF 5% 50V
2902	4822 122 33777	47pF 5% 63V
2903	4822 126 14305	100nF 10% 16V
2904	4822 126 14249	560pF 10% 50V
2905	4822 126 14249	560pF 10% 50V
2906	4822 124 22652	2,2μF 20% 50V
2907	3198 017 41050	1μF +80/-20% 10V

## RESISTORS

3106	4822 051 30684	680k 5% 0,062W
3107	4822 051 30681	680R 5% 0,062W
3108	4822 116 83866	1M 5% 0,5W
3109	4822 051 30102	1k 5% 0,062W
3110	4822 051 30102	1k 5% 0,062W
3111	4822 051 30102	1k 5% 0,062W
3112	4822 051 30102	1k 5% 0,062W
3113	4822 051 30102	1k 5% 0,062W
3114	4822 051 30102	1k 5% 0,062W
3115	4822 051 30472	4k7 5% 0,062W
3116	4822 051 30102	1k 5% 0,062W
3117	4822 051 30101	100R 5% 0,062W
3118	4822 051 30102	1k 5% 0,062W
3119	4822 051 30102	1k 5% 0,062W
3120	4822 051 30102	1k 5% 0,062W
3121	4822 051 30102	1k 5% 0,062W
3122	4822 050 11002	1k 1% 0,4W
3123	4822 051 30102	1k 5% 0,062W
3124	4822 050 11002	1k 1% 0,4W
3125	4822 051 30102	1k 5% 0,062W
3126	4822 051 30102	1k 5% 0,062W
3127	4822 051 30102	1k 5% 0,062W
3128	4822 051 30102	1k 5% 0,062W
3129	4822 051 30102	1k 5% 0,062W
3130	4822 051 30102	1k 5% 0,062W
3131	4822 051 30102	1k 5% 0,062W
3132	4822 051 30102	1k 5% 0,062W
3133	4822 051 30102	1k 5% 0,062W
3134	4822 051 30102	1k 5% 0,062W
3135	4822 051 30102	1k 5% 0,062W
3136	4822 051 30102	1k 5% 0,062W
3137	4822 051 30102	1k 5% 0,062W
3138	4822 051 30102	1k 5% 0,062W
3139	4822 051 30102	1k 5% 0,062W
3140	4822 051 30102	1k 5% 0,062W
3141	4822 051 30102	1k 5% 0,062W

## ELECTRICAL PARTS LIST - FRONT DISPLAY BOARD

3142	4822 051 30102	1k 5% 0,062W
3143	4822 051 30102	1k 5% 0,062W
3144	4822 051 30102	1k 5% 0,062W
3145	4822 051 30102	1k 5% 0,062W
3146	4822 051 30102	1k 5% 0,062W
3147	4822 051 30102	1k 5% 0,062W
3148	4822 051 30102	1k 5% 0,062W
3149	4822 051 30102	1k 5% 0,062W
3150	4822 051 30102	1k 5% 0,062W
3151	4822 051 30102	1k 5% 0,062W
3152	4822 051 30102	1k 5% 0,062W
3153	4822 051 30102	1k 5% 0,062W
3154	4822 051 30102	1k 5% 0,062W
3155	4822 051 30102	1k 5% 0,062W
3156	4822 051 30102	1k 5% 0,062W
3157	4822 051 30102	1k 5% 0,062W
3158	4822 051 30102	1k 5% 0,062W
3159	4822 051 30102	1k 5% 0,062W
3160	4822 051 30102	1k 5% 0,062W
3161	4822 051 30102	1k 5% 0,062W
3162	4822 051 30102	1k 5% 0,062W
3163	4822 051 30102	1k 5% 0,062W
3164	4822 051 30102	1k 5% 0,062W
3165	4822 051 30102	1k 5% 0,062W
3166	4822 051 30102	1k 5% 0,062W
3167	4822 051 30102	1k 5% 0,062W
3168	4822 051 30102	1k 5% 0,062W
3169	4822 051 30102	1k 5% 0,062W
3170	4822 051 30102	1k 5% 0,062W
3171	4822 051 30102	1k 5% 0,062W
3172	4822 051 30102	1k 5% 0,062W
3173	4822 051 30102	1k 5% 0,062W
3174	4822 051 30102	1k 5% 0,062W
3175	4822 051 30102	1k 5% 0,062W
3176	4822 051 30102	1k 5% 0,062W
3177	4822 051 30102	1k 5% 0,062W
3178	4822 051 30684	680k 5% 0,062W
3179	4822 117 13632	100k 1% 0.62W
3180	4822 051 30272	2k7 5% 0,062W
3181	4822 051 30471	470R 5% 0,062W /22
3181	4822 117 12903	1k8 5% 0,062W /37
3182	4822 116 52298	680k 5% 0,5W
3183	4822 051 30223	22k 5% 0,062W
3184	4822 051 30474	470k 5% 0,062W
3186	4822 052 10479	47R 5% 0,33W
3187	4822 052 10479	47R 5% 0,33W
3188	4822 116 52257	22k 5% 0,5W
3189	4822 051 30103	10k 5% 0,062W
3190	4822 051 30103	10k 5% 0,062W
3191	4822 051 30103	10k 5% 0,062W
3192	4822 117 13632	100k 1% 0.62W
3193	4822 051 30102	1k 5% 0,062W

3194	4822 051 30102	1k 5% 0,062W
3195	4822 051 30102	1k 5% 0,062W
3196	4822 051 30103	10k 5% 0,062W
3197	4822 051 30103	10k 5% 0,062W
3198	4822 051 30103	10k 5% 0,062W
3199	4822 051 30103	10k 5% 0,062W
3201	4822 052 10478	4R7 5% 0,33W
3202	4822 052 10478	4R7 5% 0,33W
3205	4822 116 52175	100R 5% 0,5W
3206	4822 116 52175	100R 5% 0,5W
3207	4822 051 30221	220R 5% 0,062W
3208	4822 051 30221	220R 5% 0,062W
3209	4822 051 30471	470R 5% 0,062W
3210	4822 051 30471	470R 5% 0,062W
3211	4822 051 30471	470R 5% 0,062W
3212	4822 051 30471	470R 5% 0,062W
3213	4822 051 30471	470R 5% 0,062W
3214	4822 051 30471	470R 5% 0,062W
3215	4822 051 30471	470R 5% 0,062W
3216	4822 051 30223	22k 5% 0,062W
3217	4822 117 12864	82k 5% 0,6W
3218	4822 117 12864	82k 5% 0,6W
3219	4822 051 30103	10k 5% 0,062W
3220	4822 117 12925	47k 1% 0.063W
3221	4822 051 30103	10k 5% 0,062W
3900	4822 051 30103	10k 5% 0,062W
3901	4822 051 30222	2k2 5% 0,062W
3902	4822 051 30152	1k5 5% 0,062W
3903	4822 117 12891	220k 5% 0,062W
3904	4822 051 30102	1k 5% 0,062W
3905	4822 051 30102	1k 5% 0,062W
3906	4822 117 12925	47k 1% 0.063W
3907	4822 117 12925	47k 1% 0.063W
3908	4822 051 30103	10k 5% 0,062W
3909	4822 051 30103	10k 5% 0,062W
3910	4822 051 30102	1k 5% 0,062W
3911	4822 051 30102	1k 5% 0,062W
4102	4822 051 30008	OR Jumper 0603
4103	4822 051 30008	OR Jumper 0603
4104	4822 051 30008	OR Jumper 0603
4105	4822 051 30008	OR Jumper 0603
4106	4822 051 30008	OR Jumper 0603
4107	4822 051 30008	OR Jumper 0603
4109	4822 051 30008	OR Jumper 0603
4112	4822 051 30008	OR Jumper 0603
4113	4822 051 30008	OR Jumper 0603
4114	4822 051 30008	OR Jumper 0603
4115	4822 051 30008	OR Jumper 0603
4116	4822 051 30008	OR Jumper 0603
4118	4822 051 30008	OR Jumper 0603
4119	4822 051 30008	OR Jumper 0603
4120	4822 051 30008	OR Jumper 0603

**ELECTRICAL PARTS LIST - FRONT DISPLAY BOARD**

---

**RESISTORS**

---

4121	4822 051 30008	0R Jumper 0603
4122	4822 051 30008	0R Jumper 0603
4123	4822 051 30008	0R Jumper 0603
4124	4822 051 30008	0R Jumper 0603
4125	4822 051 30008	0R Jumper 0603
4126	4822 051 30008	0R Jumper 0603
4127	4822 051 30008	0R Jumper 0603
4128	4822 051 30008	0R Jumper 0603
4129	4822 051 30008	0R Jumper 0603
4130	4822 051 30008	0R Jumper 0603

**COILS & FILTERS**

---

5102	4822 157 62552	Coil 2,2 $\mu$ H 5%
5103	5322 242 73686	Ceram Resonator 12MHz
5104	4822 242 70938	X'tal Resonator 32,768kHz
5900	4822 242 72195	Quartz 4,332MHz
5901	4822 157 10586	Coil 2,2 $\mu$ H 10% 0805
5902	4822 157 10586	Coil 2,2 $\mu$ H 10% 0805

**DIODES**

---

6100	4822 130 30621	1N4148
6101	4822 130 31878	1N4003G
6102	4822 130 30621	1N4148
6103	4822 130 31878	1N4003G
6105	4822 130 34173	BZX79-B5V6
6106	4822 130 30621	1N4148
6107	4822 130 30621	1N4148
6108	4822 130 30621	1N4148
6109	4822 130 30621	1N4148
6110	4822 130 30621	1N4148
6111	4822 130 30621	1N4148

**TRANSISTORS & INTEGRATED CIRCUITS**

---

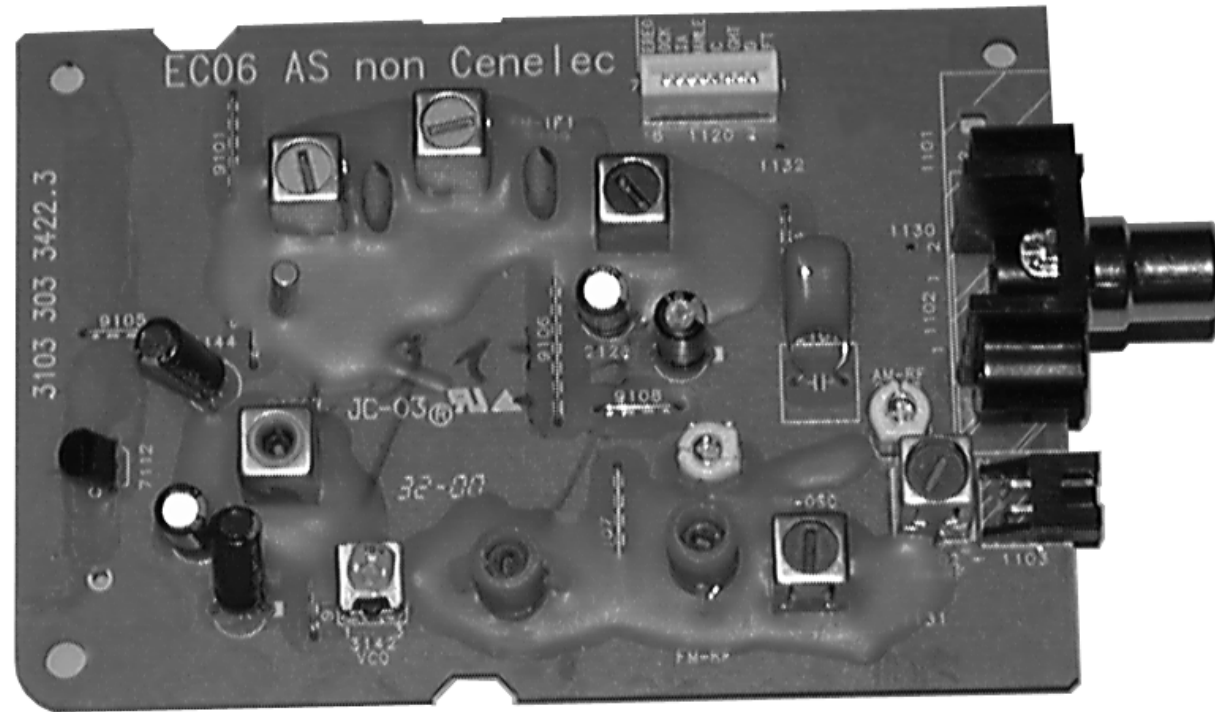
7101	4822 209 15449	74HC4094D
7102	3139 110 52810	TMP88CU74YF "MC50S52811"
7103	4822 130 60511	BC847B
7104	4822 130 60511	BC847B
7105	4822 130 60511	BC847B
7106	4822 130 60511	BC847B
7107	4822 130 60511	BC847B
7900	9352 679 67118	SAA6579T/V1/M4
7901	9322 145 26668	M24C02-WMN6

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

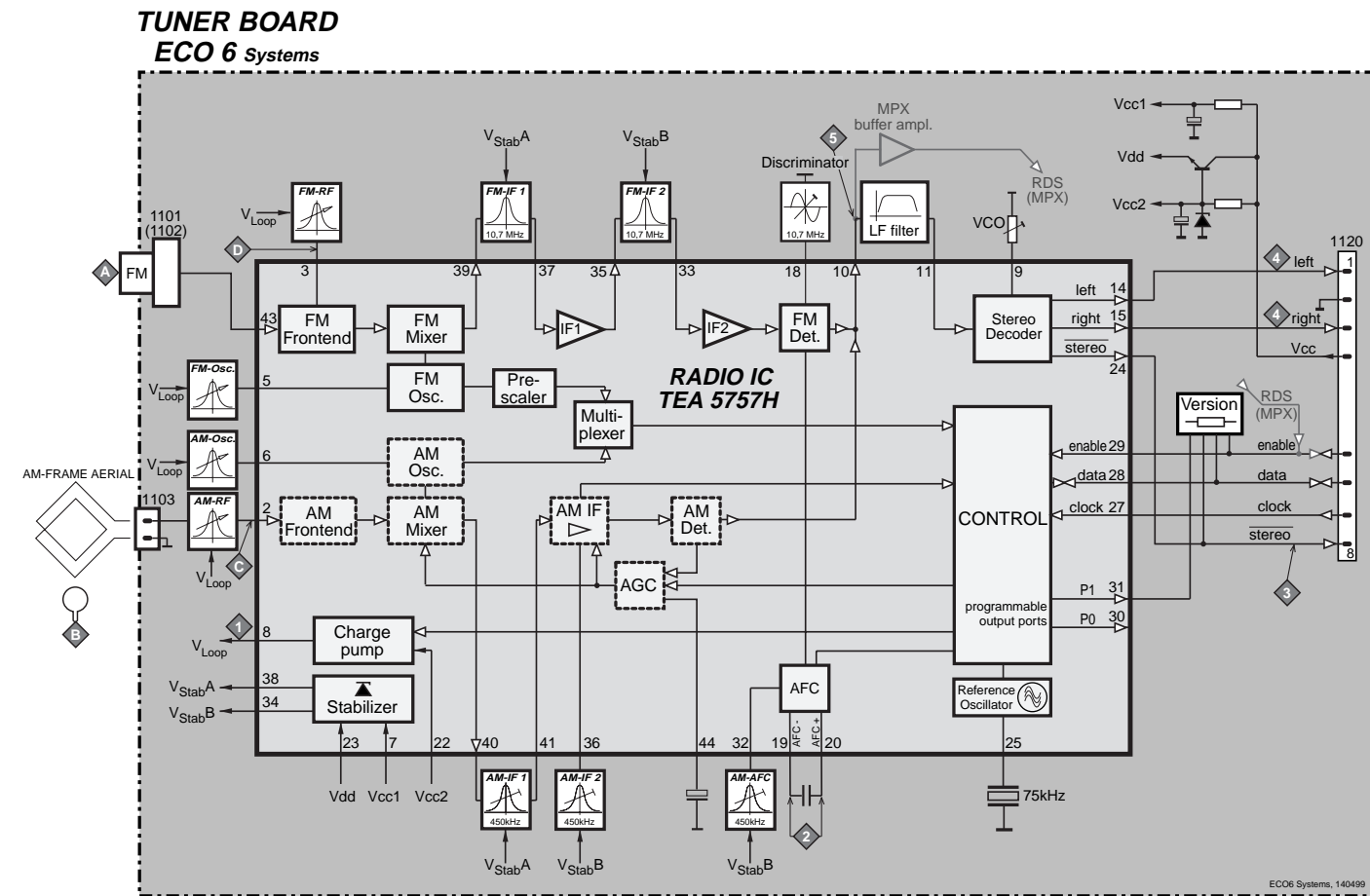
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BLOCK DIAGRAM

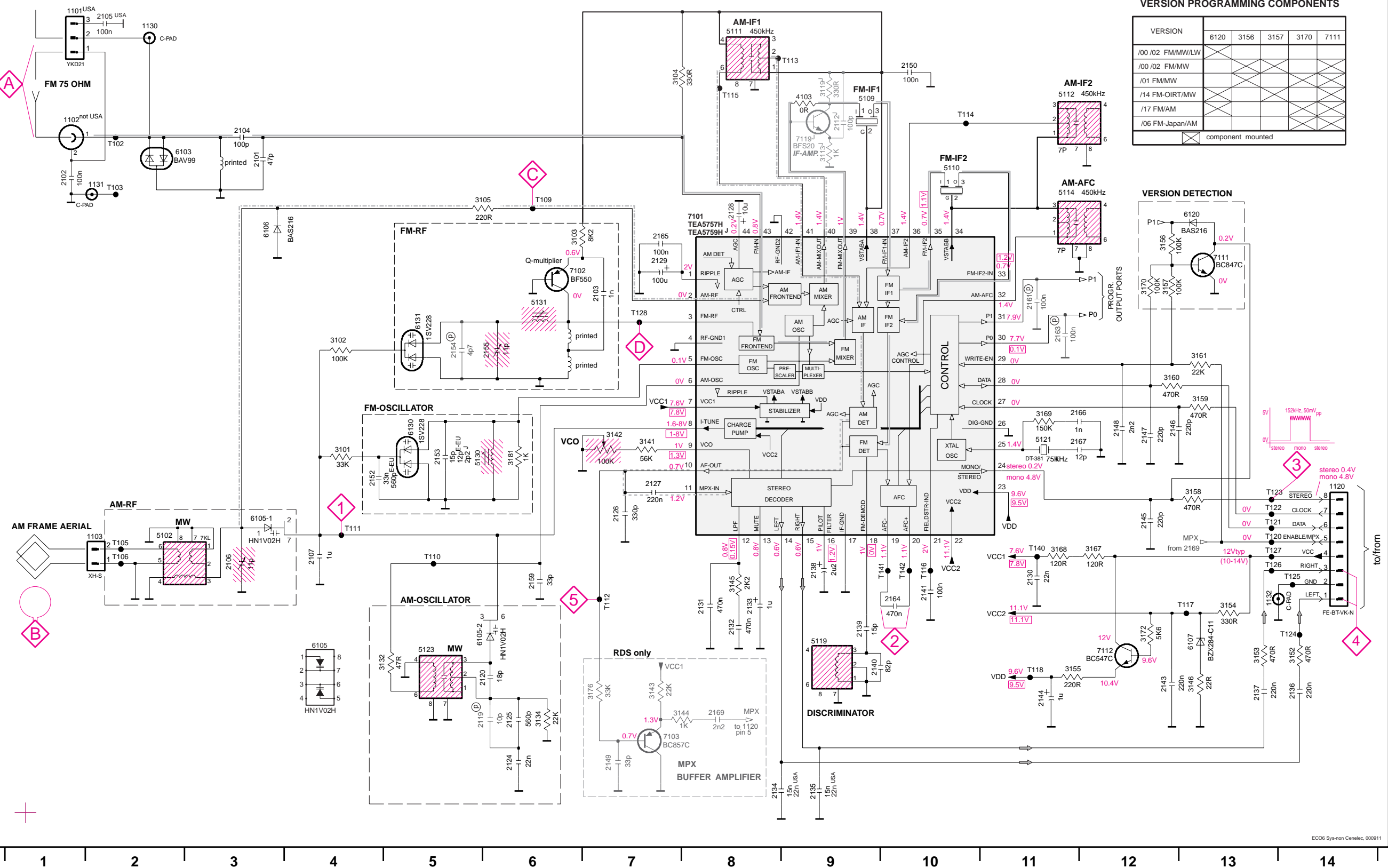


**ECO6 Tuner Board**  
version: **SYSTEMS non-CENELEC**

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 Adjustment table .....7A-3  
 Electrical Partslist.....7A-4

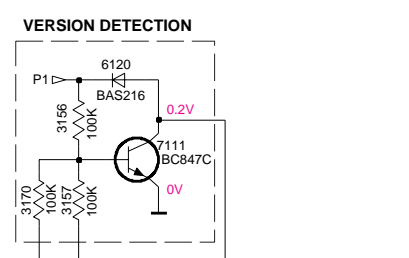
# TUNER BOARD ECO6 / SYSTEMS NON CENELEC



**VERSION PROGRAMMING COMPONENTS**

VERSION	6120	3156	3157	3170	7111
/00 /02 FM/MW/LW					
/00 /02 FM/MW					
/01 FM/MW					
/14 FM-OIRT/MW					
/17 FM/AM					
/06 FM-Japan/AM					

component mounted



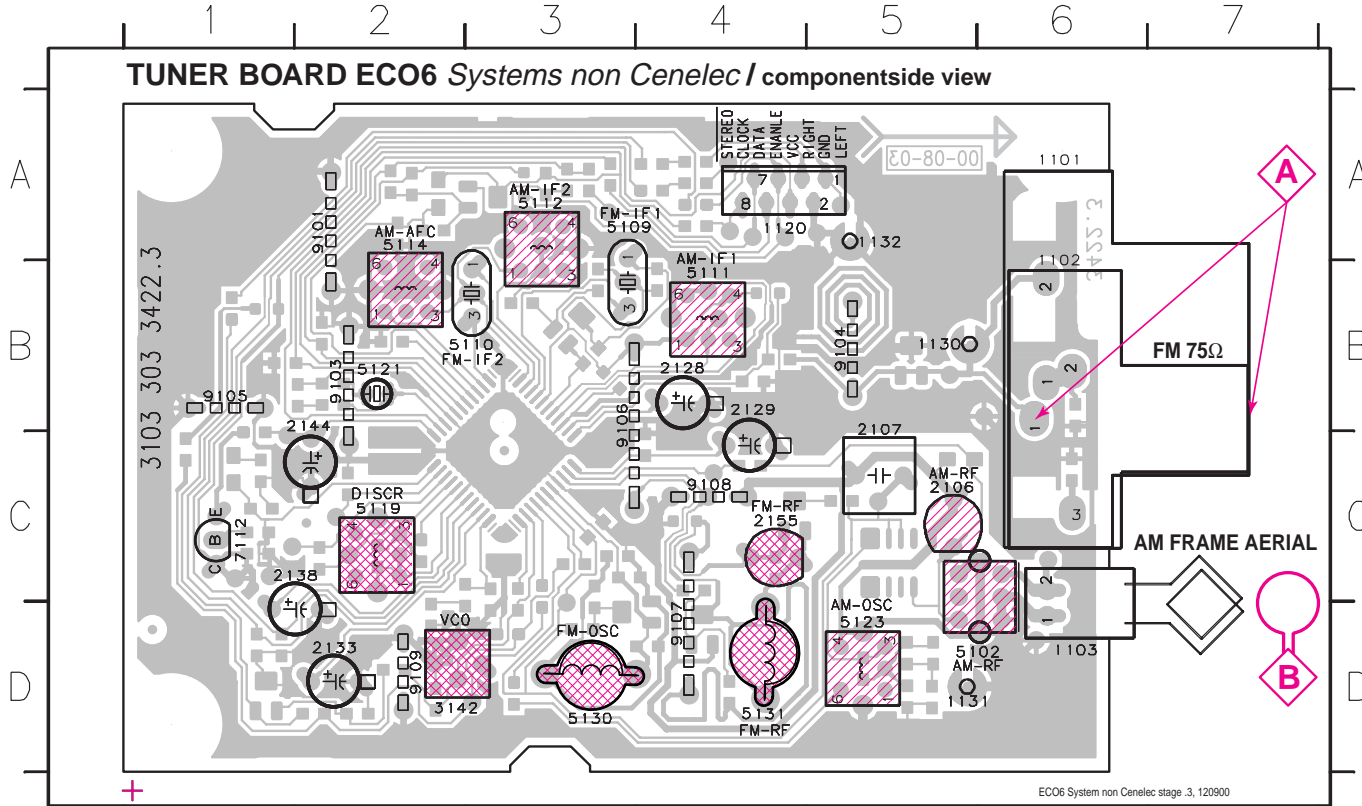
- 1101 A1
- 1102 B1
- 1103 F2
- 1120 E14
- 1130 A2
- 1131 B2
- 1132 G13
- 2101 B3
- 2102 B1
- 2103 C7
- 2104 B3
- 2105 A2
- 2106 F3
- 2107 F4
- 2119 H6
- 2120 G6
- 2124 H6
- 2125 H6
- 2126 F7
- 2127 E7
- 2128 C8
- 2129 C7
- 2130 F11
- 2131 G8
- 2132 G8
- 2133 G8
- 2134 H8
- 2135 H9
- 2136 G14
- 2137 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
- 3101 E4
- 3102 D4
- 3103 C6
- 3104 A7
- 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 F12
- 3168 F11
- 3169 E11
- 3170 C12
- 3172 G12
- 3176 G7
- 3181 E6
- 5102 F2
- 5109 B9
- 5110 B10
- 5111 A8
- 5112 A11
- 5114 B11
- 5119 G9
- 5121 E11
- 5123 G5
- 5130 E5
- 5131 C6
- 5132 E2
- 6105 F3
- 6105-2 G5
- 6106 C3
- 6107 G13
- 6120 G13
- 6130 E5
- 6131 D5
- 7101 C8
- 7102 C6
- 7103 H7
- 7111 C13
- 7112 G12
- T102 B2
- T103 B2
- T105 F2
- T106 F2
- T109 B6
- T110 F5
- T111 F4
- T112 F7
- T113 A8
- T114 B10
- T115 A8
- T116 B10
- T117 G13
- T118 G13
- T120 F13
- T122 F13
- T123 F13
- T124 G14
- T125 F14
- T126 F13
- T127 F13
- T128 D7
- T140 F11
- T141 F10
- T142 F10

**LEGEND**  
 (P)...for provision only  
 USA ... for USA version only  
 E-EU ... for East European version only  
 J ... for Japanese version only

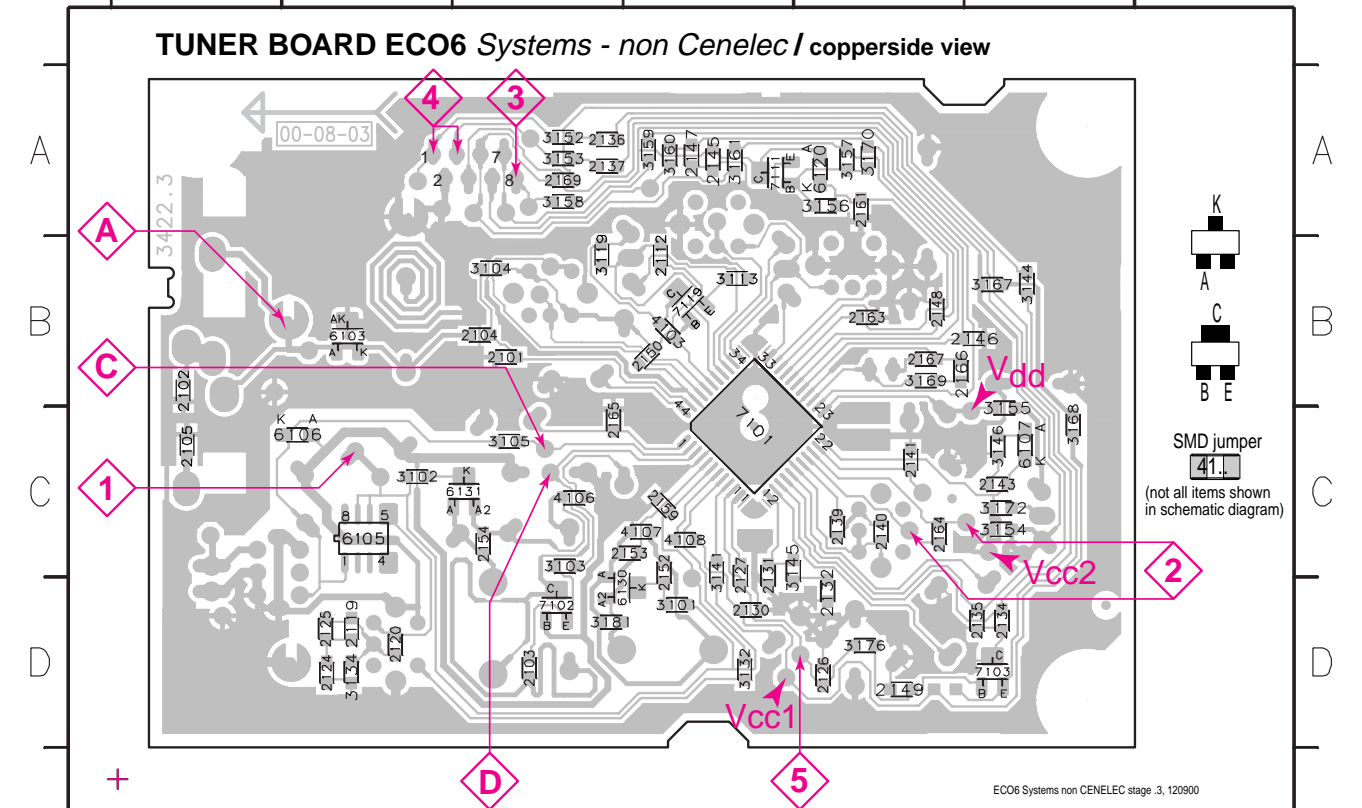
...V FM mode stereo  
 ...V MW mode  
 ...V LW mode  
 voltages measured while set is tuned to a strong transmitter

**Signal path**  
 — FM  
 - - - AM  
 - · - · MPX (Audio Frequency)  
 ⇨ AF - left/right

1101 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 B4 2119 D3 2130 D5 2137 A4 2146 B7 2153 C5 2165 C4 3103 C4 3134 D3 3152 A4 3158 A4 3169 B6 4106 C4 6107 C7 7103 D7  
 2102 B1 2120 D3 2131 C5 2139 C6 2147 A5 2154 C4 2166 B6 3104 B4 3141 C5 3153 A4 3159 A5 3170 A6 4107 C5 6120 A6 7111 A5  
 2103 D4 2124 D3 2132 D6 2140 C6 2148 B6 2159 C5 2167 B6 3105 C4 3143 D6 3154 C7 3160 A5 3172 C7 4108 C5 6130 D4 7119 B5  
 2104 B4 2125 D3 2134 D7 2141 C6 2149 D6 2161 A6 2169 A4 3113 B5 3144 B7 3155 C7 3161 A5 3176 D6 6103 B3 6131 C4  
 2105 C1 2126 D6 2135 D7 2143 C7 2150 B5 2163 B6 3101 D5 3119 B5 3145 C5 3156 A6 3167 B7 3181 D4 6105 C3 7101 C5  
 2112 B5 2127 C5 2136 A4 2145 A5 2152 C5 3102 C3 3132 D5 3146 C7 3157 A6 3168 C7 4103 B5 6106 C3 7102 D4



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

TUNER ADJUSTMENT TABLE ( ECO6 FM/MW- and FM/MW/LW - versions with AM-frame aerial )

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

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!
- 4) MW has to be aligned before LW.

↑ Repeat

MISCELLANEOUS

1101	2422 015 19376	SOCKET 2P CLICKFIT	USA only
1102	4822 267 10283	SOCKET COAX, IEC 75Ω	not USA
1103	4822 265 31184	JST CONNECTOR 2 POLE	
1120	4822 265 11515	FFC SOCKET, 8P	

CAPACITORS

2101	4822 126 13692	47pF	1%	63V	
2102	4822 126 13838	100nF	10%	50V	not USA
2103	5322 122 31647	1nF	10%	63V	
2104	5322 122 32531	100pF	5%	50V	
2105	4822 126 13838	100nF	10%	50V	USA only
2106	2020 800 00191	3-11pF TRIMCAP.,N450			
2107	4822 121 51319	1μF	20%	50V	
2120	4822 126 13689	18pF	1%	63V	
2124	5322 122 32654	22nF	10%	63V	
2125	2020 552 96199	560pF	1%	50V	
2126	5322 122 31863	330pF	5%	50V	
2127	4822 126 14076	220nF	20%	25V	
2128	4822 124 40248	10μF	20%	63V	
2129	4822 124 41584	100μF	20%	10V	
2130	5322 122 32654	22nF	10%	63V	
2131	4822 126 13482	470nF	20%	16V	
2132	4822 126 13482	470nF	20%	16V	
2133	4822 124 21913	1μF	20%	63V	
2134	4822 126 13188	15nF	5%	63V	not USA
2134	5322 122 32654	22nF	10%	63V	USA only
2135	4822 126 13188	15nF	5%	63V	not USA
2135	5322 122 32654	22nF	10%	63V	USA only
2136	4822 126 14076	220nF	20%	25V	
2137	4822 126 14076	220nF	20%	25V	
2138	4822 124 22652	2,2μF	20%	50V	
2139	4822 126 14236	15pF	5%	50V	
2140	4822 126 13695	82pF	1%	63V	
2141	4822 126 13838	100nF	10%	50V	
2143	4822 126 14076	220nF	20%	25V	
2144	4822 124 21913	1μF	20%	63V	
2145	4822 122 33575	220pF	5%	50V	
2146	4822 122 33575	220pF	5%	50V	
2147	4822 122 33575	220pF	5%	50V	
2148	4822 122 33127	2,2nF	10%	63V	
2149	5322 122 32659	33pF	5%	50V	RDS only
2150	4822 126 13838	100nF	10%	50V	
2152	4822 126 12105	33nF	5%	63V	not for East Europe
2152	5322 116 80853	560pF	5%	63V	for East Europe only
2153	4822 126 13486	15pF	2%	63V	not for East Europe
2153	4822 122 33926	12pF	2%	50V	for East Europe only
2155	2020 800 00191	3-11pF TRIMCAP.,N450			
2159	5322 122 32659	33pF	5%	50V	
2164	4822 126 13482	470nF	20%	16V	
2165	4822 126 13838	100nF	10%	50V	
2166	5322 122 31647	1nF	10%	63V	
2167	4822 122 33926	12pF	5%	50V	
2169	4822 122 33127	2,2nF	10%	63V	RDS only

RESISTORS

3101	4822 051 20333	33kΩ	5%	0,1W
3102	4822 117 10837	100kΩ	1%	0,1W
3103	4822 051 20822	8,2kΩ	5%	0,1W
3104	4822 117 13577	330Ω	1%	0,1W
3105	4822 117 11503	220Ω	5%	0,1W
3132	4822 051 20479	47Ω	5%	0,1W
3134	4822 051 20223	22kΩ	5%	0,1W
3141	4822 117 11148	56kΩ	1%	0,1W
3142	4822 100 12159	TRIMPOT. 100kΩ		

RESISTORS

3143	4822 051 20223	22kΩ	5%	0,1W	RDS only
3144	4822 051 10102	1kΩ	2%	0,25W	RDS only
3145	4822 117 11449	2,2kΩ	1%	0,1W	
3146	4822 051 20229	22Ω	5%	0,1W	
3152	4822 051 20471	470Ω	5%	0,1W	
3153	4822 051 20471	470Ω	5%	0,1W	
3154	4822 117 13577	330Ω	1%	0,1W	
3155	4822 117 11503	220Ω	5%	0,1W	
3156	4822 117 10837	100kΩ	1%	0,1W	
3157	4822 117 10837	100kΩ	1%	0,1W	
3158	4822 051 20471	470Ω	5%	0,1W	
3159	4822 051 20471	470Ω	5%	0,1W	
3160	4822 051 20471	470Ω	5%	0,1W	
3161	4822 051 20223	22kΩ	5%	0,1W	
3167	4822 051 20121	120Ω	5%	0,1W	
3168	4822 051 20121	120Ω	5%	0,1W	
3169	4822 051 20154	150kΩ	5%	0,1W	
3170	4822 117 10837	100kΩ	1%	0,1W	
3172	4822 051 20562	5,6kΩ	5%	0,1W	
3176	4822 051 20333	33kΩ	5%	0,1W	RDS only
3181	4822 051 10102	1kΩ	2%	0,25W	
4103	4822 051 20008	CHIP JUMPER 0805			
4106	4822 051 20008	CHIP JUMPER 0805			
4107	4822 051 20008	CHIP JUMPER 0805			
4108	4822 051 20008	CHIP JUMPER 0805			

COILS

5102	4822 157 71634	RF-COIL MW
5109	4822 242 70665	FM-IF FILTER 10,7MHz
5110	4822 242 70665	FM-IF FILTER 10,7MHz
5111	2422 549 44023	AM-IF FILTER 450kHz
5112	4822 157 70302	AM-IF FILTER 450kHz
5114	4822 157 70302	AM-IF FILTER 450kHz
5119	4822 157 11443	DISCRIMINATOR COIL
5121	4822 242 10261	QUARTZ 75kHz
5123	2422 549 44108	RF-COIL, AM-OSCILLATOR
5130	4822 157 11843	RF COIL 1,5 TURNS
5131	4822 157 11843	RF COIL 1,5 TURNS

DIODES

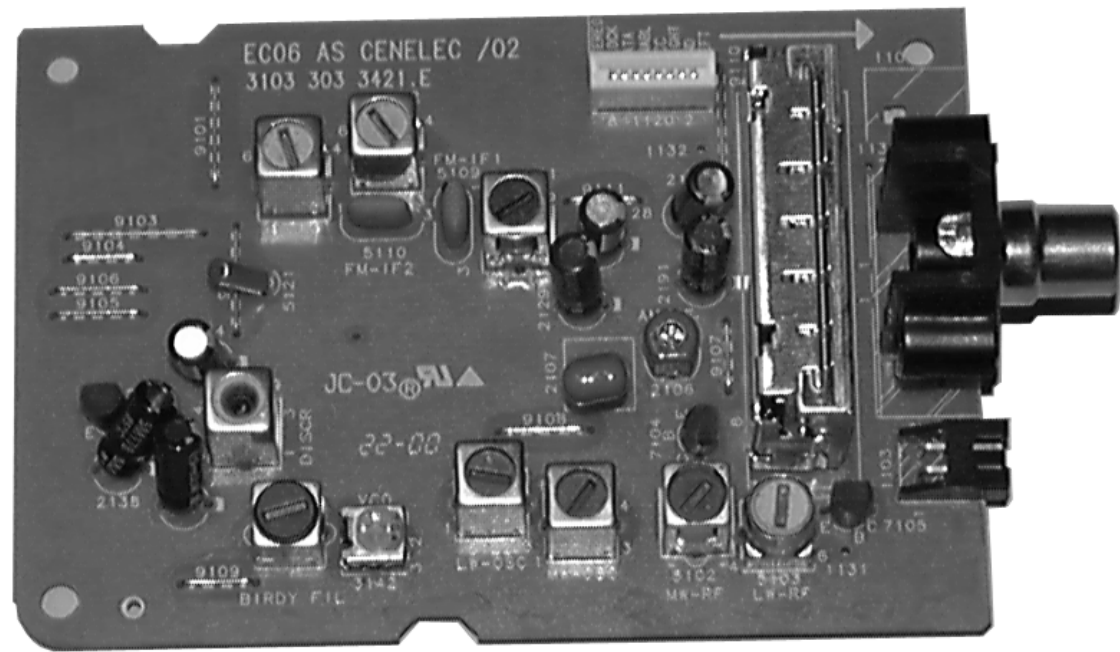
6103	5322 130 34337	BAV99
6105	4822 130 83075	HN1V02H
6106	4822 130 83757	BAS216
6107	9340 386 90115	BZX284-C11
6120	4822 130 83757	BAS216
6130	4822 130 82833	1SV228
6131	4822 130 82833	1SV228

TRANSISTORS

7102	4822 130 42131	BF550
7103	5322 130 42756	BC857C
7111	5322 130 42755	BC847C
7112	4822 130 44503	BC547C

INTEGRATED CIRCUITS

7101	9351 740 80557	TEA5757H/V1, RADIO IC
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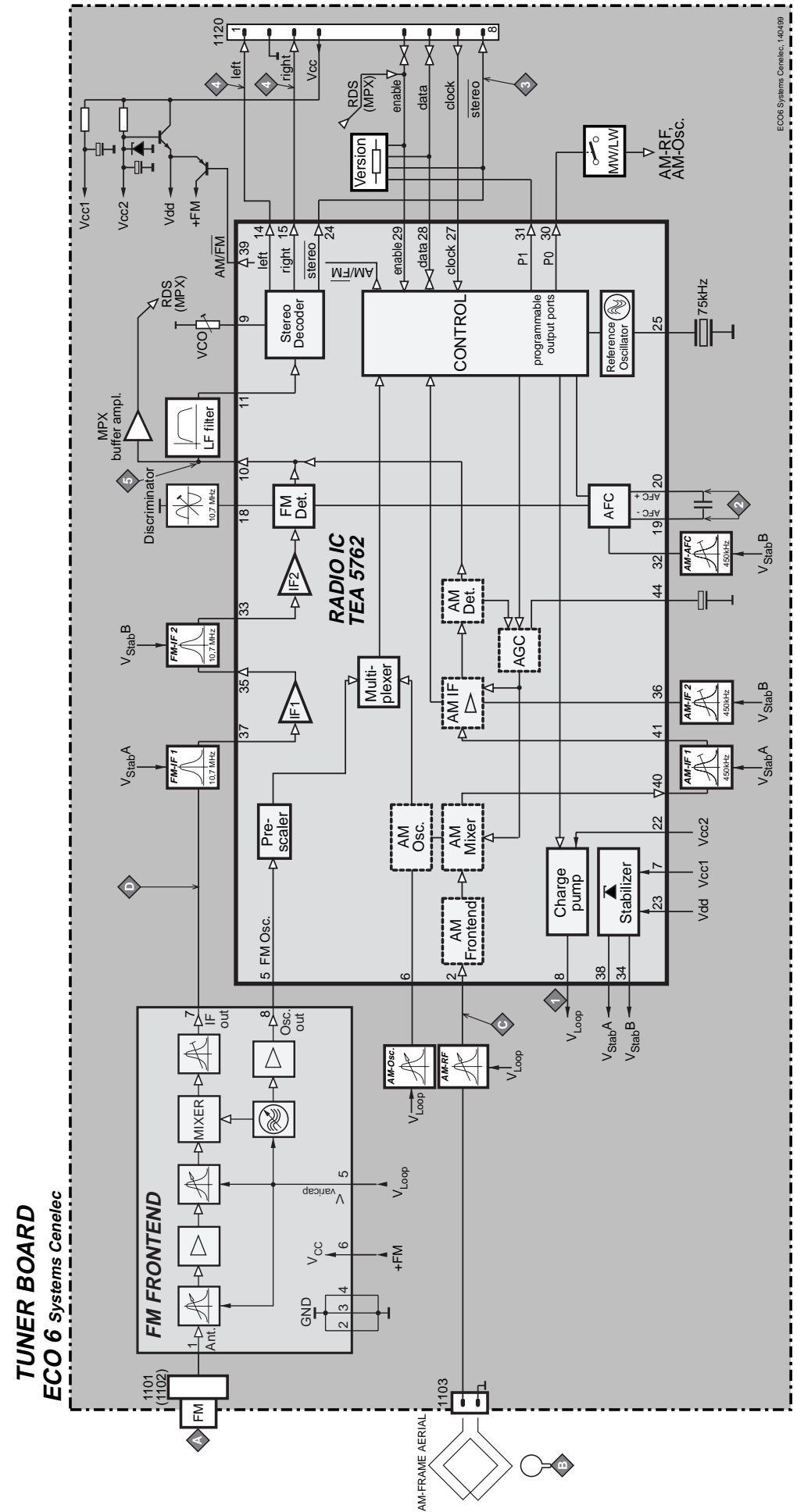
# ECO6 Tuner Board

version: **SYSTEMS CENELEC**

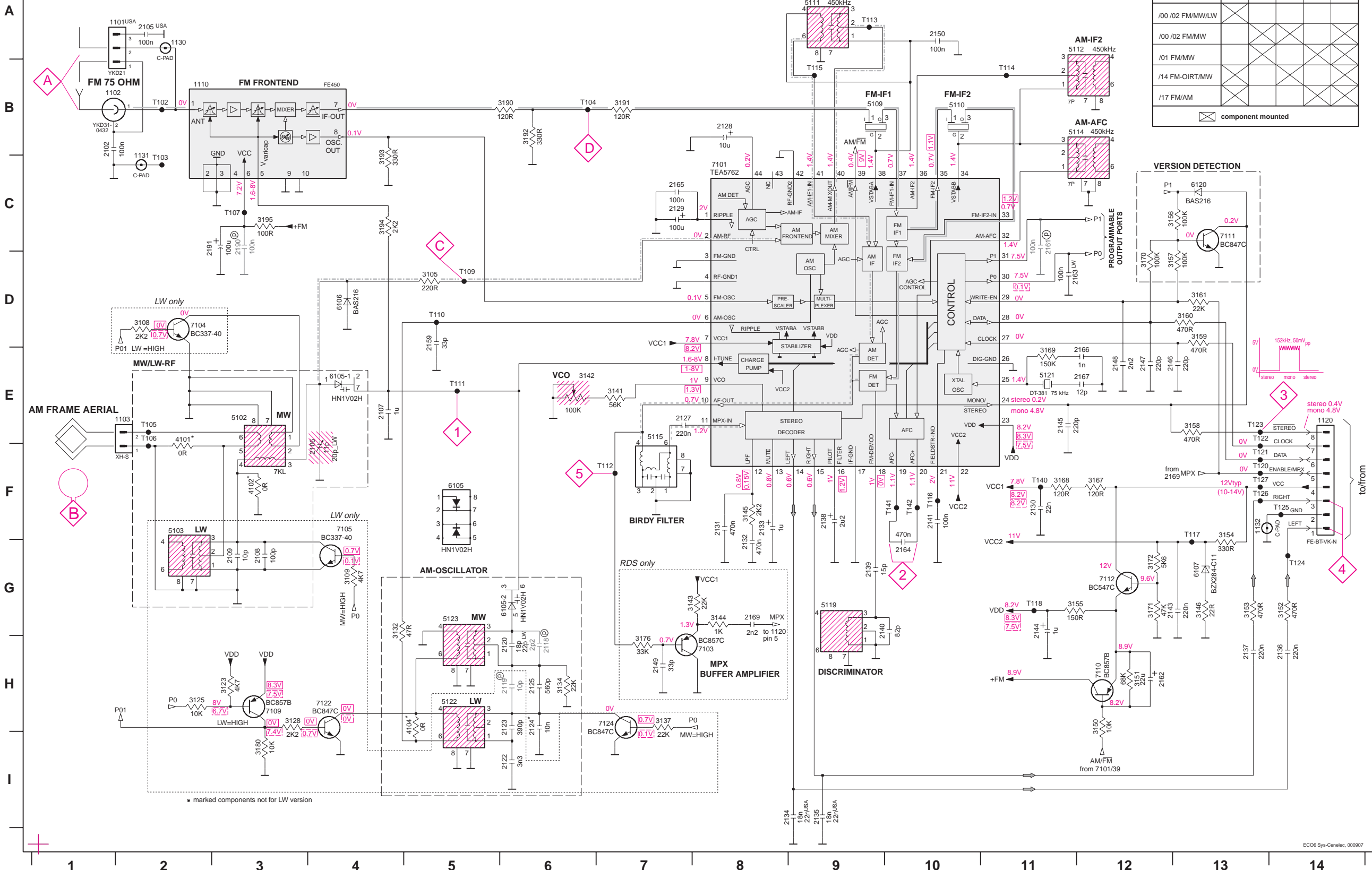
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- Schematic Diagram .....7B-2
- Component Layout.....7B-3
- Adjustment table .....7B-3
- Electrical Partslist.....7B-4

### BLOCK DIAGRAM



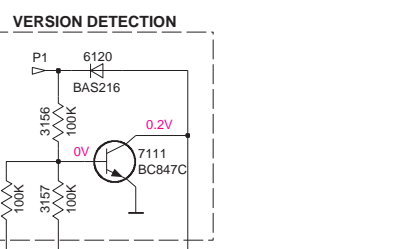
# TUNER BOARD ECO6 / SYSTEMS-CENELEC



### VERSION PROGRAMMING COMPONENTS

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

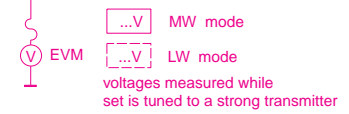
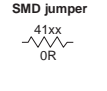
☒ component mounted



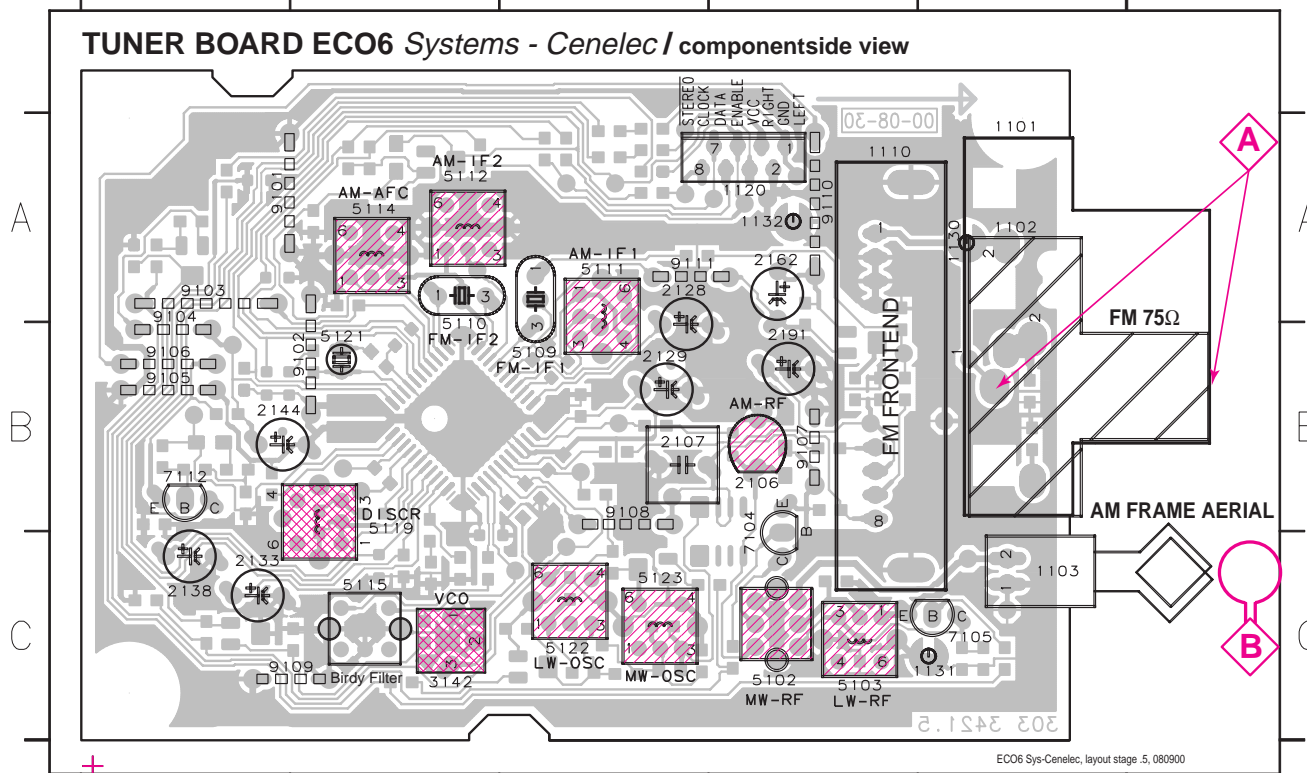
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- A1102 E3
- A1102 E4
- A1130 A2
- A1131 C2
- A1132 F13
- A1202 B1
- A1205 A2
- A1206 E3
- A1207 E4
- A1208 G3
- A1209 G3
- A1218 H6
- A1219 H6
- A1220 H6
- A1222 I6
- A1223 H6
- A1224 H6
- A1225 H6
- A1227 E7
- A1228 B8
- A1229 C7
- A1230 F11
- A1231 F8
- A1232 F8
- A1233 F8
- A1234 I8
- A1235 I8
- A1236 H14
- A1237 H13
- A1238 F9
- A1239 G9
- A1240 G9
- A1241 F10
- A1243 G12
- A1244 G11
- A1245 E11
- A1246 E12
- A1247 E12
- A1248 E12
- A1249 H7
- A1250 A10
- A1259 D6
- A1261 C11
- A1262 H12
- A1263 D11
- A1264 G10
- A1265 C7
- A1266 E11
- A1267 E11
- A1269 G8
- A1290 C3
- A1291 C3
- A1305 D5
- A1308 D2
- A1309 G4
- A1312 H3
- A1325 H2
- A1328 H3
- A1332 G4
- A1334 H6
- A1337 H7
- A1341 E7
- A1342 E6
- A1343 G7
- A1344 G8
- A1345 F8
- A1346 G13
- A1350 H12
- A1351 H12
- A1352 G14
- A1353 G13
- A1354 F13
- A1355 G12
- A1356 C12
- A1357 D12
- A1358 E13
- A1359 D13
- A1360 D13
- A1361 D13
- A1367 F12
- A1368 F11
- A1369 E11
- A1370 D12
- A1371 G12
- A1372 G12
- A1376 H7
- A1380 I3
- A1390 B6
- A1391 B7
- A1392 B6
- A1393 B4
- A1394 C4
- A1395 C3
- A1401 E2
- A1402 F3
- A1404 H5
- A1402 E3
- A1403 F2
- A1409 B9
- A1410 B10
- A1411 A9
- A1412 A11
- A1414 B11
- A1415 E7
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- A1421 E11
- A1422 H5
- A1423 G5
- A1405-1 E4
- A1405-2 G6

### LEGEND

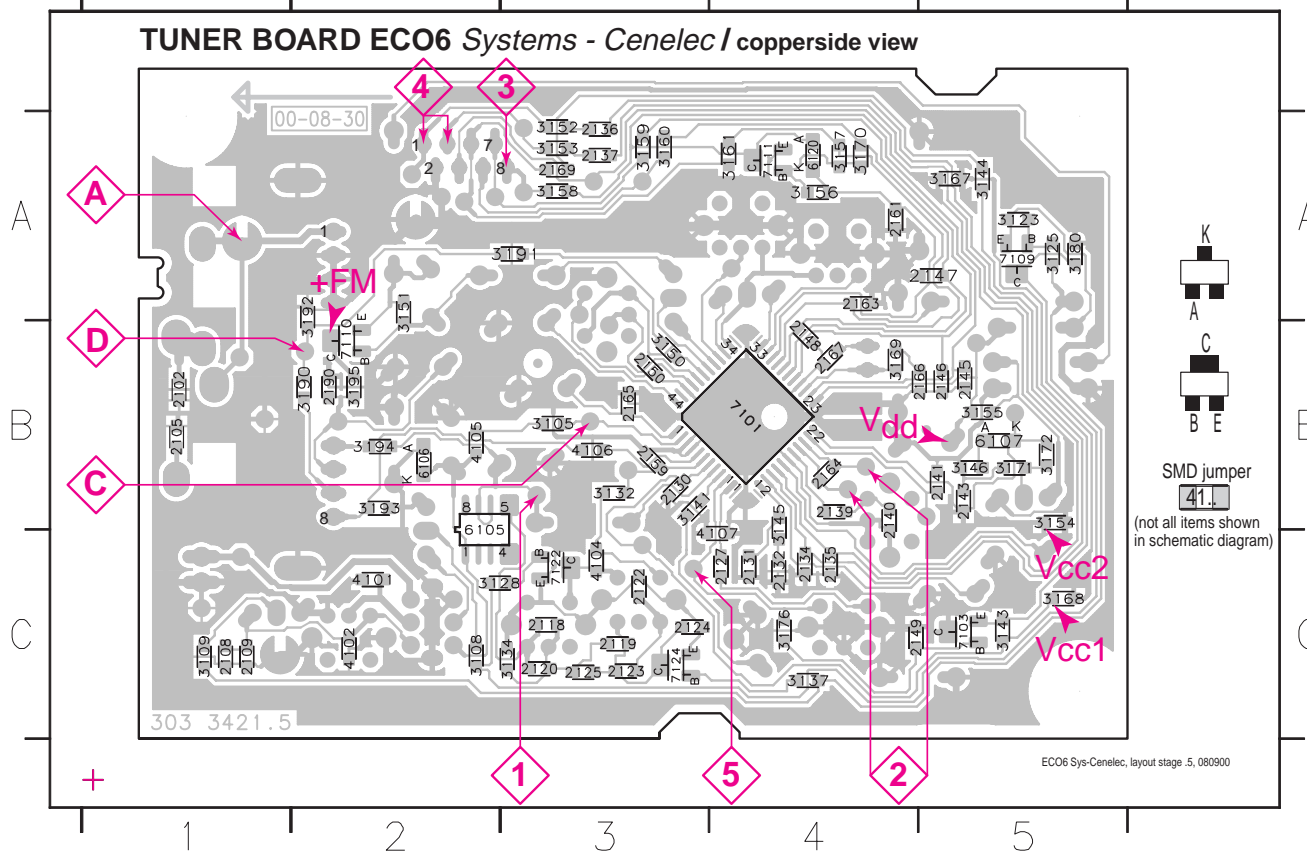
- \* ... only assembled in FM/AM-version
- Ⓧ ... for provision only
- USA ... for USA version only
- LW ... for LW version only



1101 B5 1110 B4 1131 C5 2107 B3 2133 C1 2162 A4 5102 C4 5110 A2 5114 A2 5121 B2 7104 C4 9101 A2 9104 B1 9107 B4 9110 A4  
 1102 B5 1120 A4 1132 A4 2128 A3 2138 B1 2191 B4 5103 C4 5111 A3 5115 C2 5122 C3 7105 C5 9102 B2 9105 B1 9108 B3 9111 A3  
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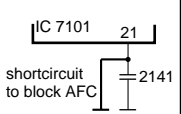
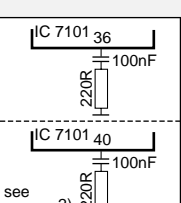
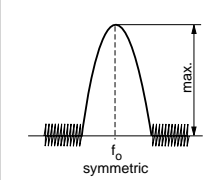
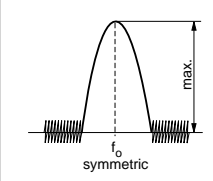


2102 B1 2120 C3 2130 B3 2137 A3 2146 B5 2161 A4 2169 A3 3125 A5 3143 C5 3152 A3 3158 A3 3169 B4 3190 B2 4101 C2 6105 B2 7109 A5  
 2105 B1 2122 C3 2131 C4 2139 B4 2147 A5 2163 A4 2190 B2 3128 C2 3144 A5 3153 A3 3159 A3 3170 A4 3191 A3 4102 C2 6106 B2 7110 B2  
 2108 C1 2123 C3 2132 C4 2140 B4 2148 B4 2164 B4 3105 B3 3132 B3 3145 C4 3154 B5 3160 A3 3171 B5 3192 A2 4104 C3 6107 B5 7111 A4  
 2109 C1 2124 C3 2134 C4 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 B3 3156 A4 3167 A5 3176 C4 3194 B2 4106 B3 7101 B4 7124 C3  
 2119 C3 2127 C4 2136 A3 2145 B5 2159 B3 2167 B4 3123 A5 3141 B3 3151 A2 3157 A4 3168 C5 3180 A5 3195 B2 4107 C4 7103 C5



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

**TUNER ADJUSTMENT TABLE ( ECO6 Cenelec FM/MW - and FM/MW/LW - versions with AM-frame aerial )**

Waverange	Input frequency	Input	Tuned to	Adjust	Output	Scope/Voltmeter
<i>VARICAP ALIGNMENT</i>						
<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
<i>FM - IF</i>						
<b>FM</b>	10.7MHz, 45mV continuous wave	D		5119	2	0mV ±3mV
<i>FM - VCO</i>						
<b>FM</b>	98MHz, 1mV continuous wave	A	98MHz	3142	3	152kHz ±1kHz <sup>1)</sup>
<i>FM RF (channel separation)</i> <span style="float:right">Note: The FM-frontend unit has already been adjusted by the factory and needs therefore no further adjustments for service purposes.</span>						
<b>FM</b>	98MHz, 1mV 90% Left + 9% pilot mod=1kHz	A	98MHz	IF coil inside FM frontend 1110	4	right channel min.
<i>AM IF</i>						
<b>MW</b>	450kHz  connect pin 6 of IC 7101 (AM Osc.) with 3.3kΩ to Vcc	C		5111	5	
				5112		
<b>AM AFC</b> <b>MW</b>		C		5114	2	0mV ±2mV
<i>AM RF <sup>3)</sup></i>						
<b>MW</b>	1494kHz	B		1494kHz	2106	
	558kHz			5102		
<b>LW</b>	198kHz			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

MISCELLANEOUS

1101	2422 015 19376	SOCKET CLICKFIT 2P	USA only
1102	4822 267 10283	SOCKET COAX, IEC 75Ω	not USA
1103	4822 265 31184	JST CONNECTOR, 2 POLE	
1110	2422 542 90071	FM FRONTEND	
1120	4822 265 11515	FFC SOCKET, 8P	

CAPACITORS

2102	4822 126 13838	100nF 10% 50V	not USA
2105	4822 126 13838	100nF 10% 50V	USA only
2106	2020 800 00204	TRIMCAP. 4.2 - 20pF, N750	LW only
2106	2020 800 00191	TRIMCAP. 3 - 11pF, N450	FM/AM only
2107	4822 121 51319	1μF 20% 50V	
2108	4822 122 32531	100pF 5% 50V	LW only
2109	4822 122 32448	10pF 5% 50V	LW only
2120	4822 126 13689	18pF 1% 63V	FM/AM only
2120	4822 122 32658	22pF 5% 50V	LW only
2122	4822 122 33891	3,3nF 10% 63V	LW only
2123	2020 552 93494	390pF 1% 50V	LW only
2124	4822 122 33177	10nF 20% 50V	FM/AM only
2125	2020 552 96199	560pF 1% 50V	
2127	4822 126 14076	220nF 20% 25V	
2128	4822 124 40248	10μF 20% 63V	
2129	4822 124 41584	100μF 20% 10V	
2130	4822 122 32654	22nF 10% 63V	
2131	4822 126 13482	470nF 20% 16V	
2132	4822 126 13482	470nF 20% 16V	
2133	4822 124 21913	1μF 20% 63V	
2134	4822 122 33893	18nF 5% 63V	not USA
2134	4822 122 32654	22nF 10% 63V	USA only
2135	4822 122 33893	18nF 5% 63V	not USA
2135	4822 122 32654	22nF 10% 63V	USA only
2136	4822 126 14076	220nF 20% 25V	
2137	4822 126 14076	220nF 20% 25V	
2138	4822 124 22652	2,2μF 20% 50V	
2139	4822 126 14236	15pF 5% 50V	
2140	4822 126 13695	82pF 1% 63V	
2141	4822 126 13838	100nF 10% 50V	
2143	4822 126 14076	220nF 20% 25V	
2144	4822 124 21913	1μF 20% 63V	
2145	4822 122 33575	220pF 5% 50V	
2146	4822 122 33575	220pF 5% 50V	
2147	4822 122 33575	220pF 5% 50V	
2148	4822 122 33127	2,2nF 10% 63V	
2149	4822 122 32659	33pF 5% 50V	RDS only
2150	4822 126 13838	100nF 10% 50V	
2159	4822 122 32659	33pF 5% 50V	
2162	4822 124 81151	22μF 20% 50V	
2163	4822 126 13838	100nF 10% 50V	LW only
2164	4822 126 13482	470nF 20% 16V	
2165	4822 126 13838	100nF 10% 50V	
2166	4822 122 31647	1nF 10% 63V	
2167	4822 122 33926	12pF 5% 50V	
2169	4822 122 33127	2,2nF 10% 63V	RDS only
2190	4822 126 13838	100nF 10% 50V	
2191	4822 124 40178	100μF 20% 10V	

RESISTORS

3105	4822 117 11503	220Ω 5% 0,1W	
3108	4822 117 11449	2,2kΩ 1% 0,1W	LW only
3109	4822 051 20472	4,7kΩ 5% 0,1W	LW only
3123	4822 051 20472	4,7kΩ 5% 0,1W	LW only
3125	4822 117 10833	10kΩ 1% 0,1W	LW only
3128	4822 117 11449	2,2kΩ 1% 0,1W	LW only

RESISTORS

3132	4822 051 20479	47Ω 5% 0,1W	
3134	4822 051 20223	22kΩ 5% 0,1W	
3137	4822 051 20223	22kΩ 5% 0,1W	LW only
3141	4822 117 11148	56kΩ 1% 0,1W	
3142	4822 100 12159	TRIMPOT. 100kΩ	
3143	4822 051 20223	22kΩ 5% 0,1W	RDS only
3144	4822 051 10102	1kΩ 2% 0,25W	RDS only
3145	4822 117 11449	2,2kΩ 1% 0,1W	
3146	4822 051 20229	22Ω 5% 0,1W	
3150	4822 117 10833	10kΩ 1% 0,1W	
3151	4822 051 20683	68kΩ 5% 0,1W	
3152	4822 051 20471	470Ω 5% 0,1W	
3153	4822 051 20471	470Ω 5% 0,1W	
3154	4822 117 13577	330Ω 1% 0,1W	
3155	4822 117 10353	150Ω 5% 0,1W	
3156	4822 117 10837	100kΩ 1% 0,1W	
3157	4822 117 10837	100kΩ 1% 0,1W	
3158	4822 051 20471	470Ω 5% 0,1W	
3159	4822 051 20471	470Ω 5% 0,1W	
3160	4822 051 20471	470Ω 5% 0,1W	
3161	4822 051 20223	22kΩ 5% 0,1W	
3167	4822 051 20121	120Ω 5% 0,1W	
3168	4822 051 20121	120Ω 5% 0,1W	
3169	4822 051 20154	150kΩ 5% 0,1W	
3170	4822 117 10837	100kΩ 1% 0,1W	
3171	4822 117 10834	47kΩ 1% 0,1W	
3172	4822 051 20562	5,6kΩ 5% 0,1W	
3176	4822 051 20333	33kΩ 5% 0,1W	RDS only
3180	4822 117 10833	10kΩ 1% 0,1W	LW only
3190	4822 051 20121	120Ω 5% 0,1W	
3191	4822 051 20121	120Ω 5% 0,1W	
3192	4822 117 13577	330Ω 1% 0,1W	
3193	4822 117 13577	330Ω 1% 0,1W	
3194	4822 117 11449	2,2kΩ 1% 0,1W	
3195	4822 051 20101	100Ω 5% 0,1W	
4101	4822 051 20008	CHIP JUMPER 0805	FM/AM only
4102	4822 051 20008	CHIP JUMPER 0805	FM/AM only
4104	4822 051 20008	CHIP JUMPER 0805	FM/AM only
4105	4822 051 20008	CHIP JUMPER 0805	
4106	4822 051 20008	CHIP JUMPER 0805	
4107	4822 051 20008	CHIP JUMPER 0805	

COILS

5102	4822 157 71634	RF-COIL MW	
5103	2422 549 44107	RF-COIL LW	LW only
5109	4822 157 71639	FM-IF FILTER 10,7MHz	
5110	4822 242 70665	FM-IF FILTER 10,7MHz	
5111	2422 549 44023	AM-IF FILTER 450kHz	
5112	4822 157 70302	AM-IF FILTER 450kHz	
5114	4822 157 70302	AM-IF FILTER 450kHz	
5115	4822 157 71636	ANTI BIRDY FILTER	
5119	4822 157 11443	DISCRIMINATOR COIL	
5121	4822 242 10261	QUARTZ 75kHz	
5122	2422 549 44108	RF-COIL, LW-OSCILLATOR	LW only
5123	2422 549 44108	RF-COIL, MW-OSCILLATOR	

DIODES

6105	4822 130 83075	HN1V02H	
6106	4822 130 83757	BAS216	
6107	9340 386 90115	BZX284-C11	
6120	4822 130 83757	BAS216	

TRANSISTORS

7103	4822 130 42756	BC857C	RDS only
7104	9322 003 64676	TBC337-40	LW only
7105	9322 003 64676	TBC337-40	LW only
7109	4822 130 60373	BC856B	LW only
7110	4822 130 60373	BC856B	
7111	4822 130 42755	BC847C	
7112	4822 130 44503	BC547C	
7122	4822 130 42755	BC847C	LW only
7124	4822 130 42755	BC847C	LW only

INTEGRATED CIRCUITS

7101	4822 209 90315	TEA5762H/V1, RADIO IC	
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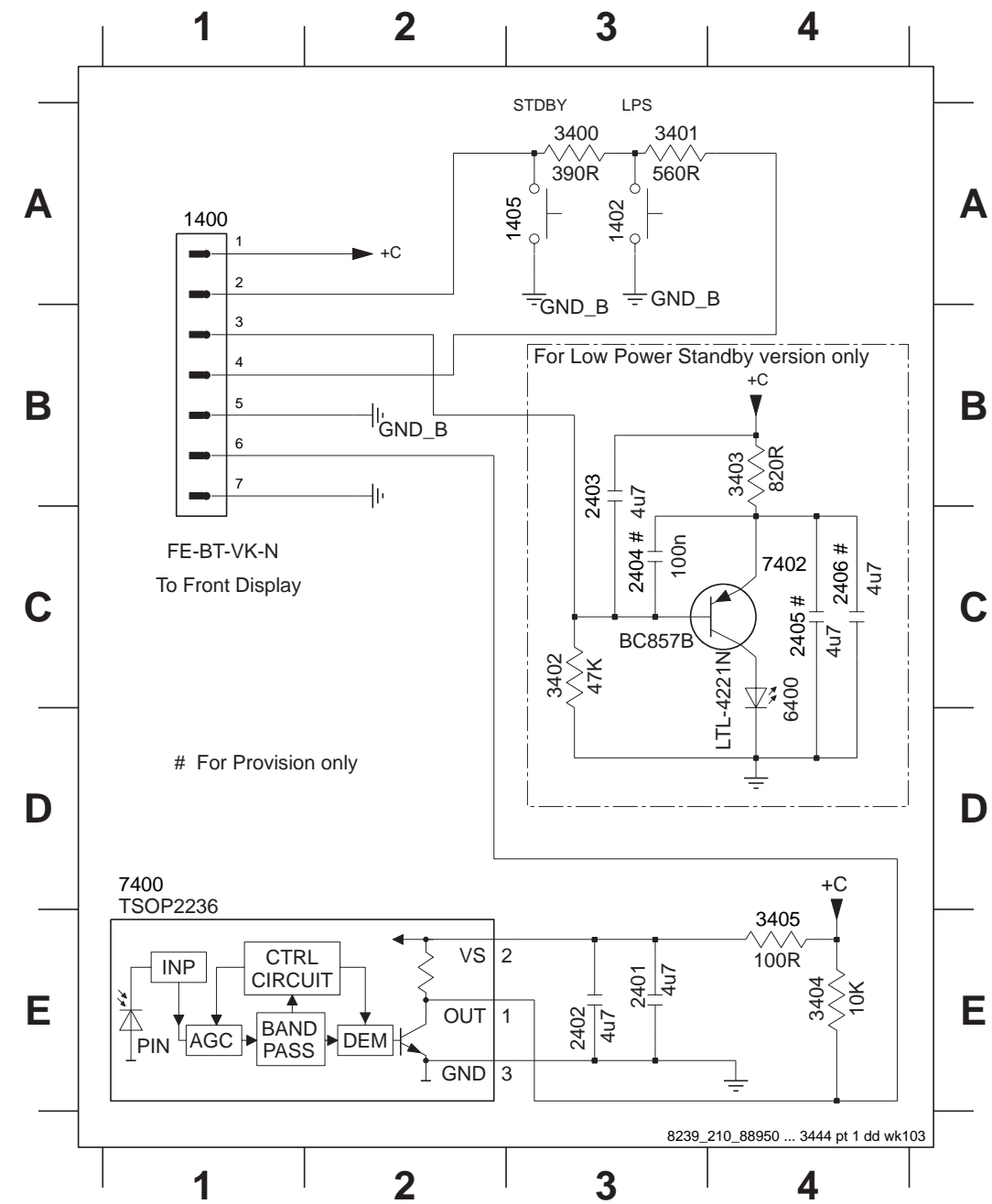
STANDBY (POWER) PART - CIRCUIT & LAYOUTS

1400 A1	2401 E3	2404 C3	3400 A3	3403 B4	6400 C4
1402 A3	2402 E3	2405 C4	3401 A3	3404 E4	7400 D1
1405 A2	2403 B3	2406 C4	3402 C3	3405 E4	7402 C4

# FRONT CONTROL BOARD

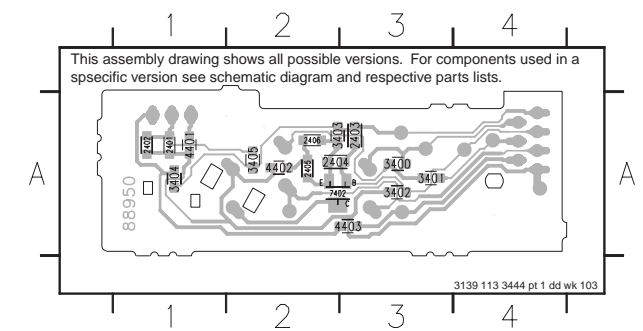
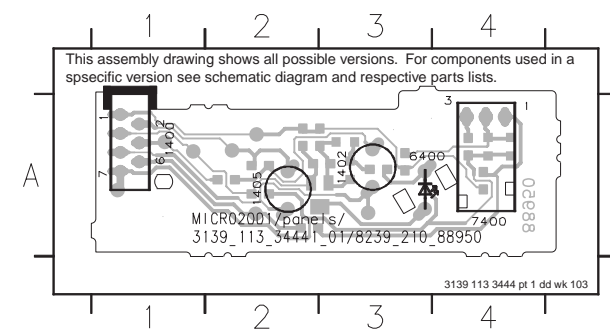
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Standby (Power) part.....	8-1
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Headphone, Jog (Volume) and CDC Key parts.....	8-3
Electrical parts list.....	8-4



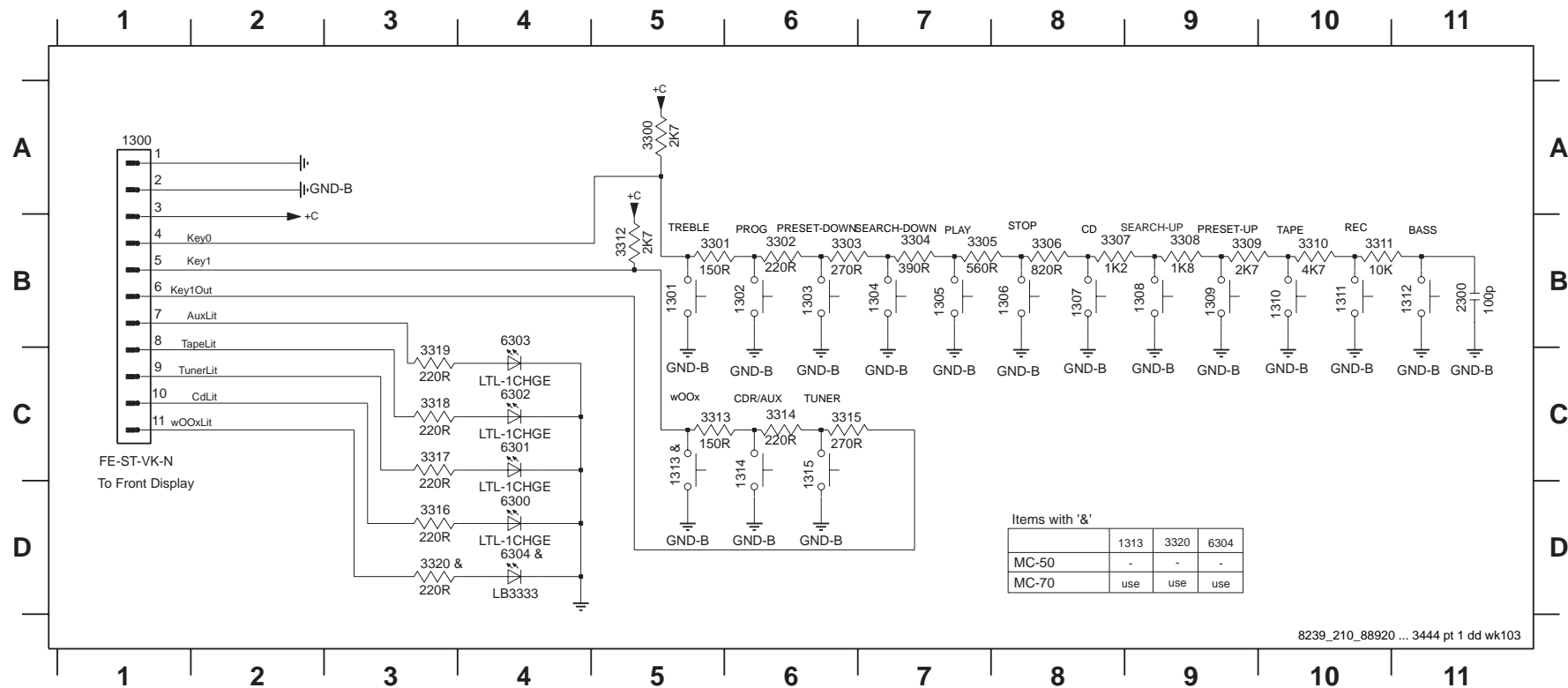
1400 A1 1402 A3 1405 A2 6400 A3 7400 A4

2401 A1 2405 A2 3402 A3 4401 A1  
 2402 A1 2406 A2 3403 A3 4402 A2  
 2403 A3 3400 A3 3404 A1 4403 A3  
 2404 A2 3401 A3 3405 A2 7402 A2



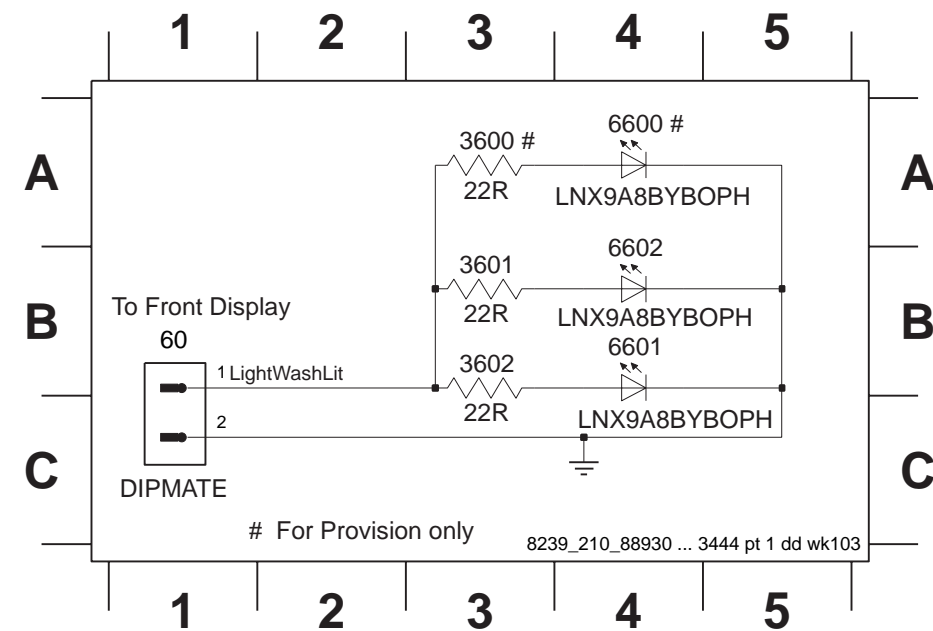
KEY CONTROL (KEYB. 1) PART - CIRCUIT & LAYOUT DIAGRAMS

- 1300 A1 1303 B6 1306 B8 1309 B9 1312 B11 1315 D6 3301 B5 3304 B7 3307 B8 3310 B10 3313 C5 3316 D3 3319 C3 6301 C4 6304 D4
- 1301 B5 1304 B7 1307 B8 1310 B10 1313 C5 2300 B11 3302 B6 3305 B7 3308 B9 3311 B10 3314 C6 3317 C3 3320 D3 6302 C4
- 1302 B6 1305 B7 1308 B9 1311 B10 1314 D6 3300 A5 3303 B6 3306 B8 3309 B9 3312 B5 3315 C6 3318 C3 6300 D4 6303 B4

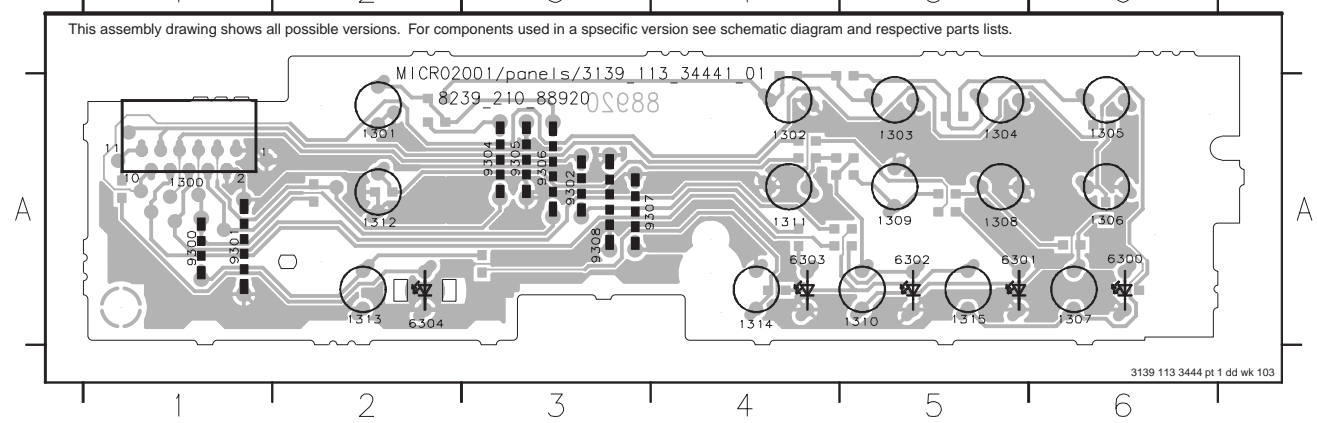


LIGHTWASH PART - CIRCUIT & LAYOUT DIAGRAMS

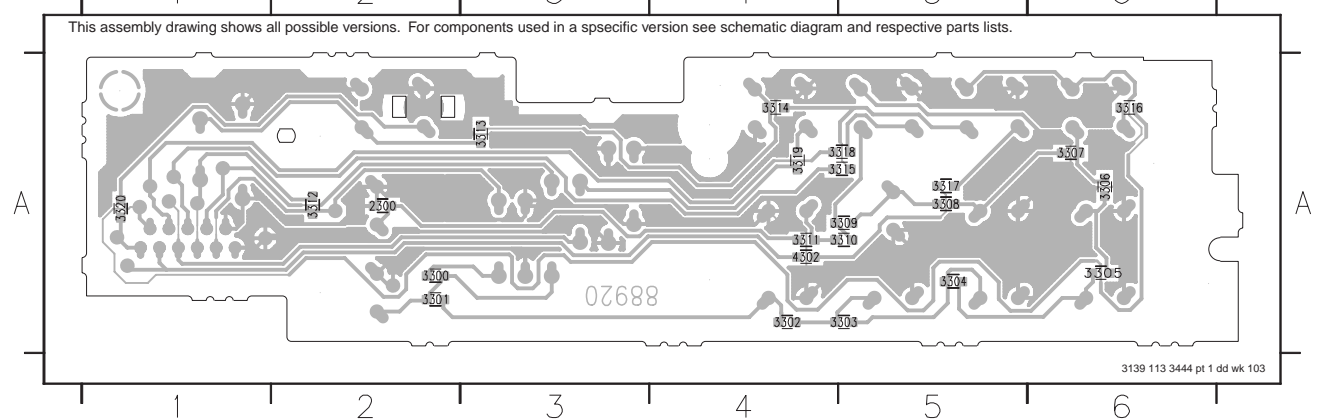
- 60 B1 3601 B3 6600 A4 6602 B4
- 3600 A3 3602 B3 6601 B4



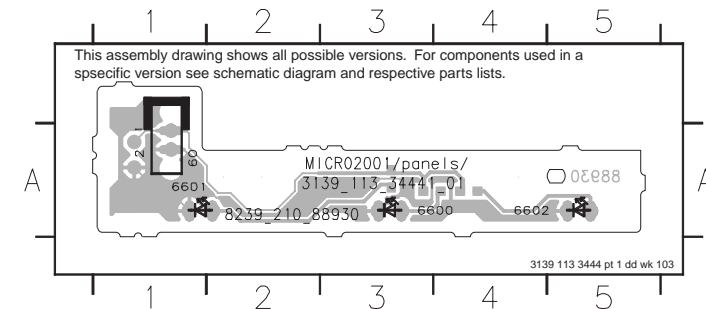
- 1300 A1 1302 A4 1304 A5 1306 A6 1308 A5 1310 A5 1312 A2 1314 A4 6300 A6 6302 A5 6304 A2 9301 A1 9304 A3 9306 A3 9308 A3
- 1301 A2 1303 A5 1305 A6 1307 A6 1309 A5 1311 A4 1313 A2 1315 A5 6301 A5 6303 A4 9300 A1 9302 A3 9305 A3 9307 A3



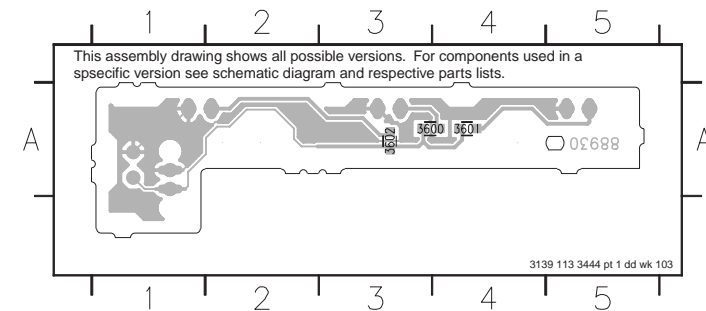
- 2300 A2 3301 A2 3303 A5 3305 A6 3307 A6 3309 A5 3311 A4 3313 A3 3315 A5 3317 A5 3319 A4 4302 A4
- 3300 A2 3302 A4 3304 A5 3306 A6 3308 A5 3310 A5 3312 A2 3314 A4 3316 A6 3318 A5 3320 A1



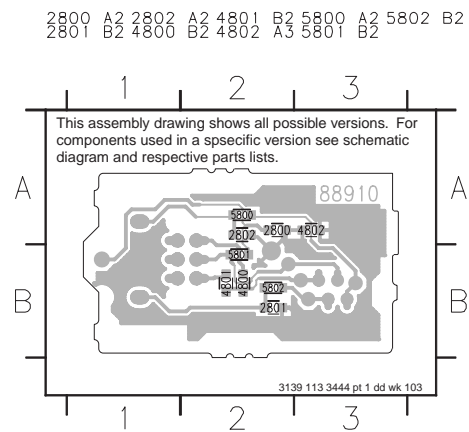
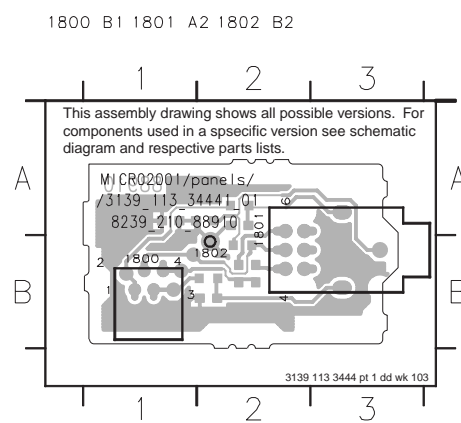
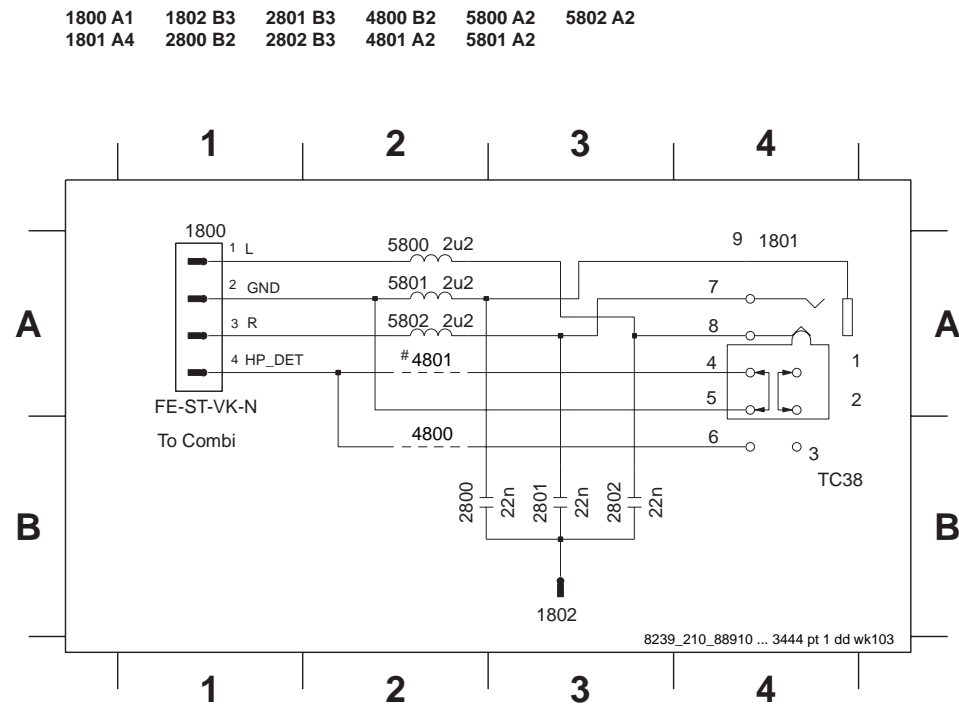
- 60 A1 6600 A4 6601 A1 6602 A4



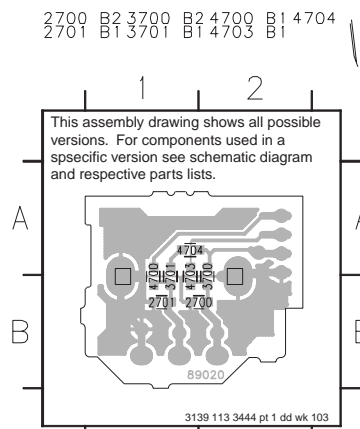
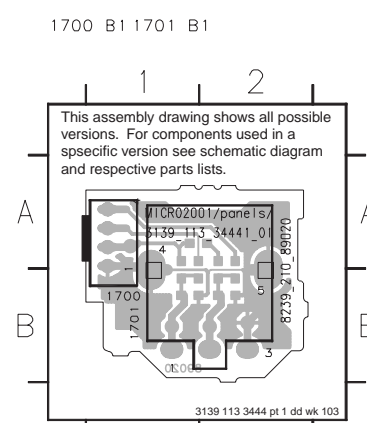
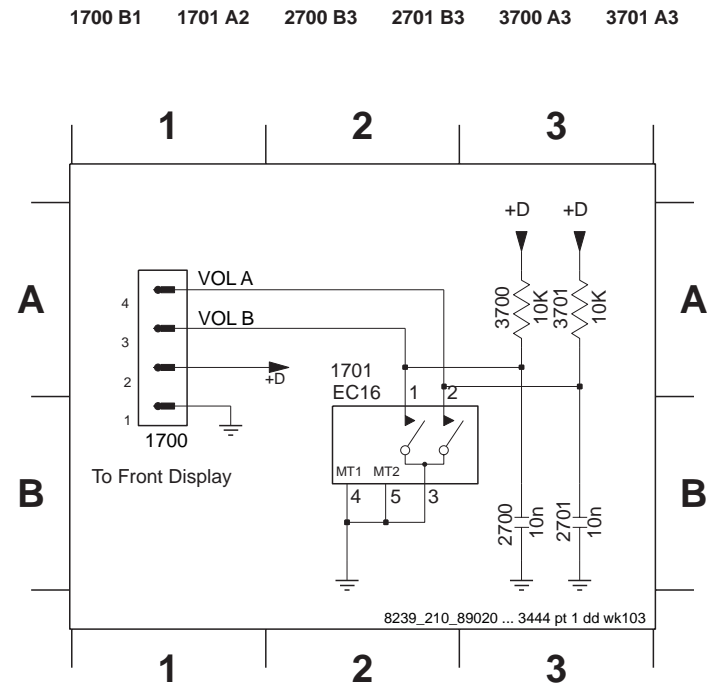
- 3600 A3 3601 A4 3602 A3



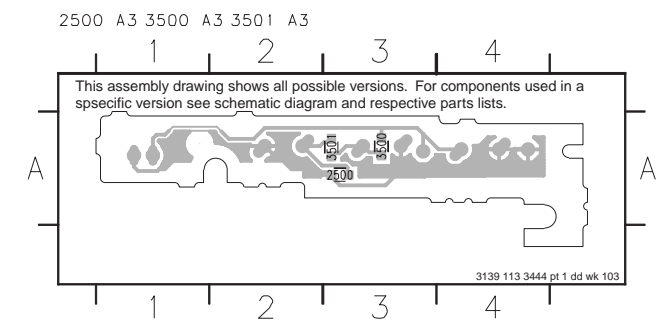
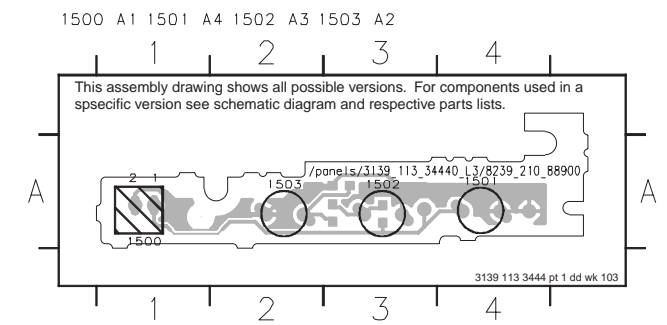
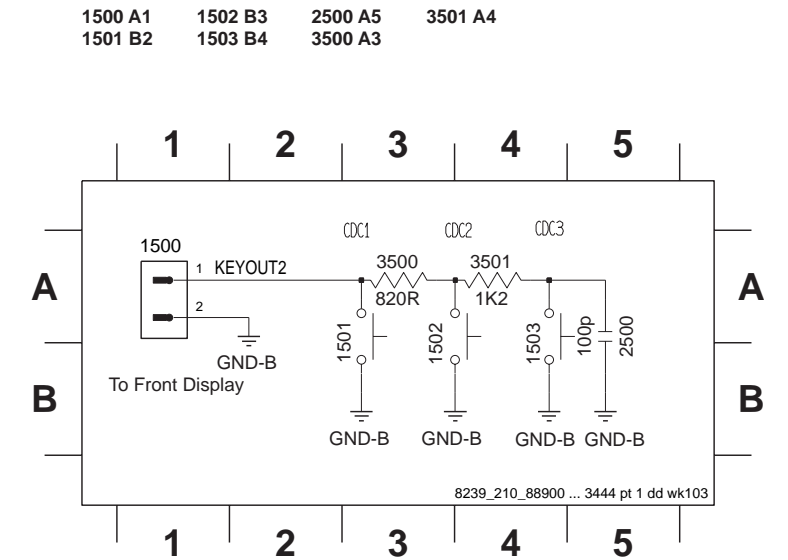
HEADPHONE PART - CIRCUIT & LAYOUT DIAGRAMS



JOG (VOLUME) PART - CIRCUIT & LAYOUT DIAGRAMS



CDC KEY PART - CIRCUIT & LAYOUT DIAGRAMS



**ELECTRICAL PARTS LIST - FRONT CONTROL BOARD****MISCELLANEOUS**

1300	2422 025 14541	Flex Socket 11pin Hort.
1301	4822 276 13775	Tact Switch
1302	4822 276 13775	Tact Switch
1303	4822 276 13775	Tact Switch
1304	4822 276 13775	Tact Switch
1305	4822 276 13775	Tact Switch
1306	4822 276 13775	Tact Switch
1307	4822 276 13775	Tact Switch
1308	4822 276 13775	Tact Switch
1309	4822 276 13775	Tact Switch
1310	4822 276 13775	Tact Switch
1311	4822 276 13775	Tact Switch
1312	4822 276 13775	Tact Switch
1314	4822 276 13775	Tact Switch
1315	4822 276 13775	Tact Switch
1400	4822 267 10953	Flex Socket 7pin Vert.
1402	4822 276 13775	Tact Switch
1405	4822 276 13775	Tact Switch
1501	4822 276 13775	Tact Switch
1502	4822 276 13775	Tact Switch
1503	4822 276 13775	Tact Switch
1701	2422 129 16501	Rotary Encoder 12P
1800	4822 265 11183	Flex Socket 4pin Hort.
1801	4822 265 11529	Headphone Socket

**CAPACITORS**

2300	4822 122 31765	100pF 2% 63V
2401	2020 552 96305	4,7μF +80/-20% 10V
2402	2020 552 96305	4,7μF +80/-20% 10V
2403	2020 552 96305	4,7μF +80/-20% 10V
2500	4822 122 31765	100pF 2% 63V
2700	5322 126 11583	10nF 10% 50V
2701	5322 126 11583	10nF 10% 50V
2800	4822 126 14494	22nF 10% 25V
2801	4822 126 14494	22nF 10% 25V
2802	4822 126 14494	22nF 10% 25V

**RESISTORS**

3300	4822 051 30272	2k7 5% 0,062W
3301	4822 051 30151	150R 5% 0,062W
3302	4822 051 30221	220R 5% 0,062W
3303	4822 051 30271	270R 5% 0,062W
3304	4822 051 30391	390R 5% 0,062W
3305	4822 051 30561	560R 5% 0,062W
3306	4822 117 12968	820R 5% 0,62W
3307	4822 117 11817	1k2 1% 1/16W
3308	4822 117 12903	1k8 1% 0.063W
3309	4822 051 30272	2k7 5% 0,062W
3310	4822 051 30472	4k7 5% 0,062W
3311	4822 051 30103	10k 5% 0,062W
3312	4822 051 30272	2k7 5% 0,062W
3313	4822 051 30151	150R 5% 0,062W

3314	4822 051 30221	220R 5% 0,062W
3315	4822 051 30271	270R 5% 0,062W
3316	4822 051 30221	220R 5% 0,062W
3317	4822 051 30221	220R 5% 0,062W
3318	4822 051 30221	220R 5% 0,062W
3319	4822 051 30221	220R 5% 0,062W
3400	4822 051 30391	390R 5% 0,062W
3401	4822 051 30561	560R 5% 0,062W
3402	4822 117 12925	47k 1% 0.063W
3403	4822 117 12968	820R 5% 0,62W
3404	4822 051 30103	10k 5% 0,062W
3405	4822 051 30101	100R 5% 0,062W
3500	4822 117 12968	820R 5% 0,62W
3501	4822 117 11817	1k2 1% 1/16W
3601	4822 117 12139	22R 5% 0,062W
3602	4822 117 12139	22R 5% 0,062W
3700	4822 051 30103	10k 5% 0,062W
3701	4822 051 30103	10k 5% 0,062W
4302	4822 051 30008	0R Jumper 0603
4401	4822 051 30008	0R Jumper 0603
4402	4822 051 30008	0R Jumper 0603
4403	4822 051 30008	0R Jumper 0603
4700	4822 051 30008	0R Jumper 0603
4703	4822 051 30008	0R Jumper 0603
4704	4822 051 30008	0R Jumper 0603
4800	4822 051 30008	0R Jumper 0603
4802	4822 051 30008	0R Jumper 0603

**COILS & FILTERS**

5800	4822 157 10586	Coil 2,2μH 10% 0805
5801	4822 157 10586	Coil 2,2μH 10% 0805
5802	4822 157 10586	Coil 2,2μH 10% 0805

**DIODES**

6300	4822 130 11589	LTL-1CHGE
6301	4822 130 11589	LTL-1CHGE
6302	4822 130 11589	LTL-1CHGE
6303	4822 130 11589	LTL-1CHGE
6400	9322 160 65676	LTL-4221NLC-VA
6601	9322 147 33676	LNx9A8BYB0PH
6602	9322 147 33676	LNx9A8BYB0PH

**TRANSISTORS & INTEGRATED CIRCUITS**

7400	9322 155 22667	IR Receiver TSOP2236ZC1
7402	4822 130 60373	BC857B

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

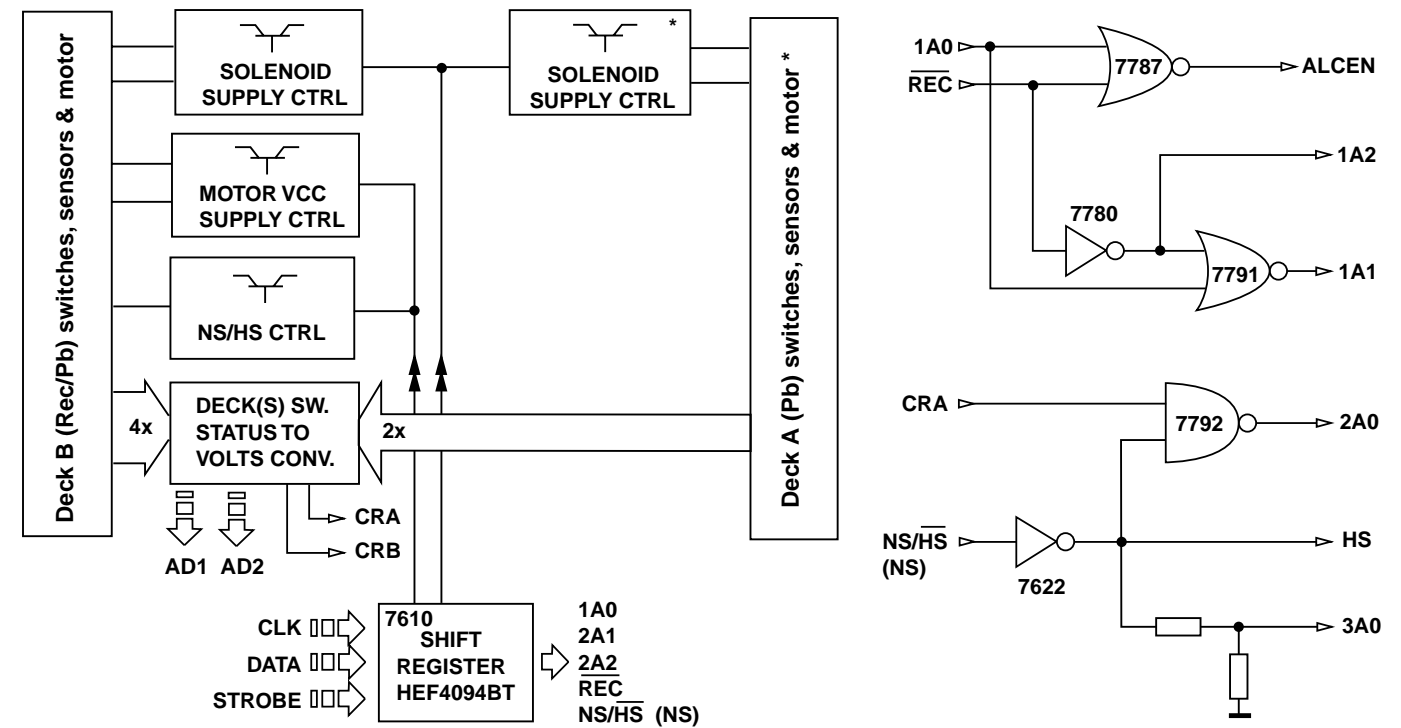
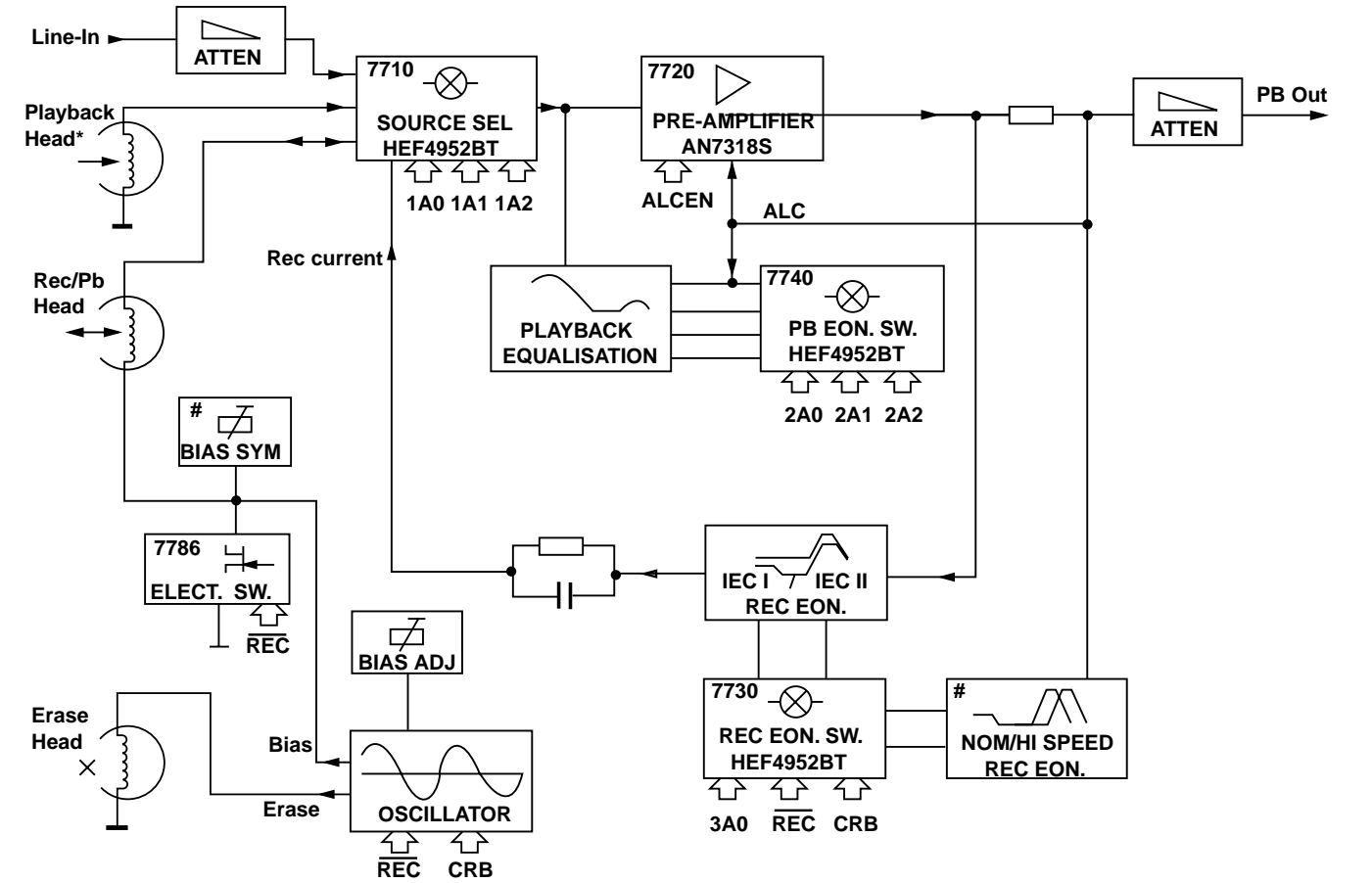
# ETF6-LE TAPE MODULE

(Non-Dolby / Single Deck)

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 Electrical parts list ..... 9-10

BLOCK DIAGRAM



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

NOTE: # For Non-dolby version only  
 Only 1 channel is presented.  
 \* Not for Single deck  
 & Provision only

## Brief introduction

### General

- Playback Mode**  
Signal from the playback head (Deck B) is selected and fed through by the Mode Selector IC7710 (HEF4952BT). The signal is amplified by amplifier IC7720 (AN7318S) before feeding to the IC7740 (HEF4952BT) and out to the AF Board via connector 1701.
- Recording Mode**  
Recording Signal is selected and fed through by the Mode Selector IC7710 (HEF4952BT) which is then amplified by the amplifier IC7720 (AN7318S). The amplified output signal will pass through IC7730 (HEF4952BT) for record equalization and back to IC7710 (HEF4952BT) before registered into the Rec/PB Head (Deck B).
- Mode Selector**  
The Mode Selector IC7710 (HEF4952BT) handles 2 inputs signal, Playback Signal from Deck B and Recording Signal.
- Amplifier PB/REC**  
Amplifier IC7720 (AN7318S) is for the purpose of amplifying the Playback and Recording signal from the Mode Selector.
- Automatic Level Control (ALC)**  
ALC circuit consists of resistors (3760, 3765, 3766, 3767), capacitors (2762, 2763) and control by transistor 7787 (BC847B). ALC limits the amplifier output to a constant value when input signal becomes too large, thus limiting recording current to below saturation level, to prevent recording distortion.
- Muting Circuit**  
Switch S4 of the IC7740 (HEF4952BT) is for the purpose of muting the output during Recording mode. During Recording mode, S4 is closed and shorted to the ground.
- IC7740 (HEF4952BT)**  
The function of the IC7740 (HEF4952BT) is to change time constant between 120us Ferro (IEC I) and 70us Chrome (IEC II) during playback mode. It will automatically determined whether the tape type is 120us Ferro (IEC I) or 70us Chrome (IEC II). This IC will switch to Flat Gain during the Recording mode.
- IC7730 (HEF4952BT)**  
The function of the IC7730 (HEF4952BT) is to change gain and time constant according to tape type and recording speed to boost recording current at higher frequency during recording to compensate for head loss. It will automatically determined whether the tape type is 120us Ferro (IEC I) or 70us Chrome (IEC II).
- Bias Level**  
Bias Level making use of the Variable resistor (3773) for adjusting the optimal level of the bias current for Ferro or Chrome.
- PB Switch**  
FET 7786 (J111) acting like an electronic playback switch provides a virtual ground for the Rec/PB Head (Deck B). During the Playback mode, the FET is turn on shorting pin 2 of connector 1710 to the ground. During Recording mode, the FET is turn off to allow the oscillator signal to be superposition onto the Recording signal for recording.
- IC7610 (HEF4094BT)**  
IC7610 (HEF4094BT) is a Shift Register use for issues the logic for cmos switch ICs (HEF4952BT) via 1A0, 2A1 and 2A2. It also issues logic to On/Off SOL\_B and MOT. Recording speed is controlled via NS/HS.

### ABBREVIATIONS USED IN THIS DOCUMENT

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

## CONNECTORS ASSIGNMENTS:

### CONNECTOR 1701

○	1	REC-L
○	2	REC-R
○	3	GND A
○	4	TAPE-L
○	5	+12V
○	6	TAPE-R
○	7	-CMOS

### INTERCONNECTION TO AF BOARD

Record input left
Record input right
AF Ground
Playback output left
D.C. supply (+12V) for AF electronics
Playback output right
Negative d.c. supply (-9V) for CMOS ICs

### CONNECTOR 1703

○	1	GND M
○	2	+MOTOR

### INTERCONNECTION TO AF BOARD

Motor Ground
D.C. supply (+12V) for tape deck motor & solenoid

### CONNECTOR 1706

○	1	AD2
○	2	AD1
○	3	+5V
○	4	GND P
○	5	CLK
○	6	DATA
○	7	STROBE

### INTERCONNECTION TO FRONT BOARD

Deck sensing switches output voltage / Deck A EOT
Deck sensing switches output voltage / Deck B EOT
DC supply +5V for ADC network
Control & Oscillator Ground
HEF4094BT shift register Clock line
HEF4094BT shift register Data line
HEF4094BT shift register Strobe line

### CONNECTOR 1710

○	1	B R/P HD L+
○	2	GND A
○	3	B R/P HD R+
○	4	ERASE HEAD
○	5	GND A

### DECK B HEADS CONNECTON

R/P Head left channel positive
R/P Head return ground
R/P Head right channel positive
Erase Head
Erase Head ground

### CONNECTOR 1730

○	1	A PB HD L+
○	2	GND A
○	3	A PB HD R+

### DECK A HEAD CONNECTIONS (Not For Single deck)

Pb Head left channel positive
Pb Head return ground shield
Pb Head right channel positive

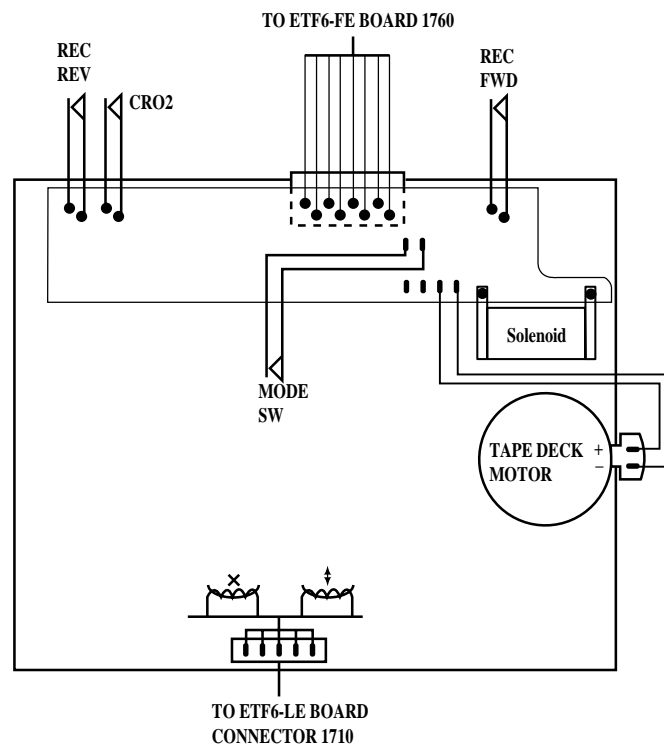
### CONNECTOR 1740

○	1	REC REW
○	2	REC FWD
○	3	CrO2 B
○	4	PHOTO B
○	5	SOL B
○	6	Vcc
○	7	MODE B
○	8	GND M

### DECK A & B CONTROL INTERFACE

Record tab protection status switch (reverse)	[open=on: close=off]
Record tab protection status switch (forward)	[open=on: close=off]
Chrome tape detection switch deck B	[open=Cr: close=Fe]
Photo sensor output (tape movement indication)	
Solenoid supply for deck B	
Deck / Motor supply	
Mode switch (head engagement)	[open=off: close=engaged]
Deck / Motor ground	

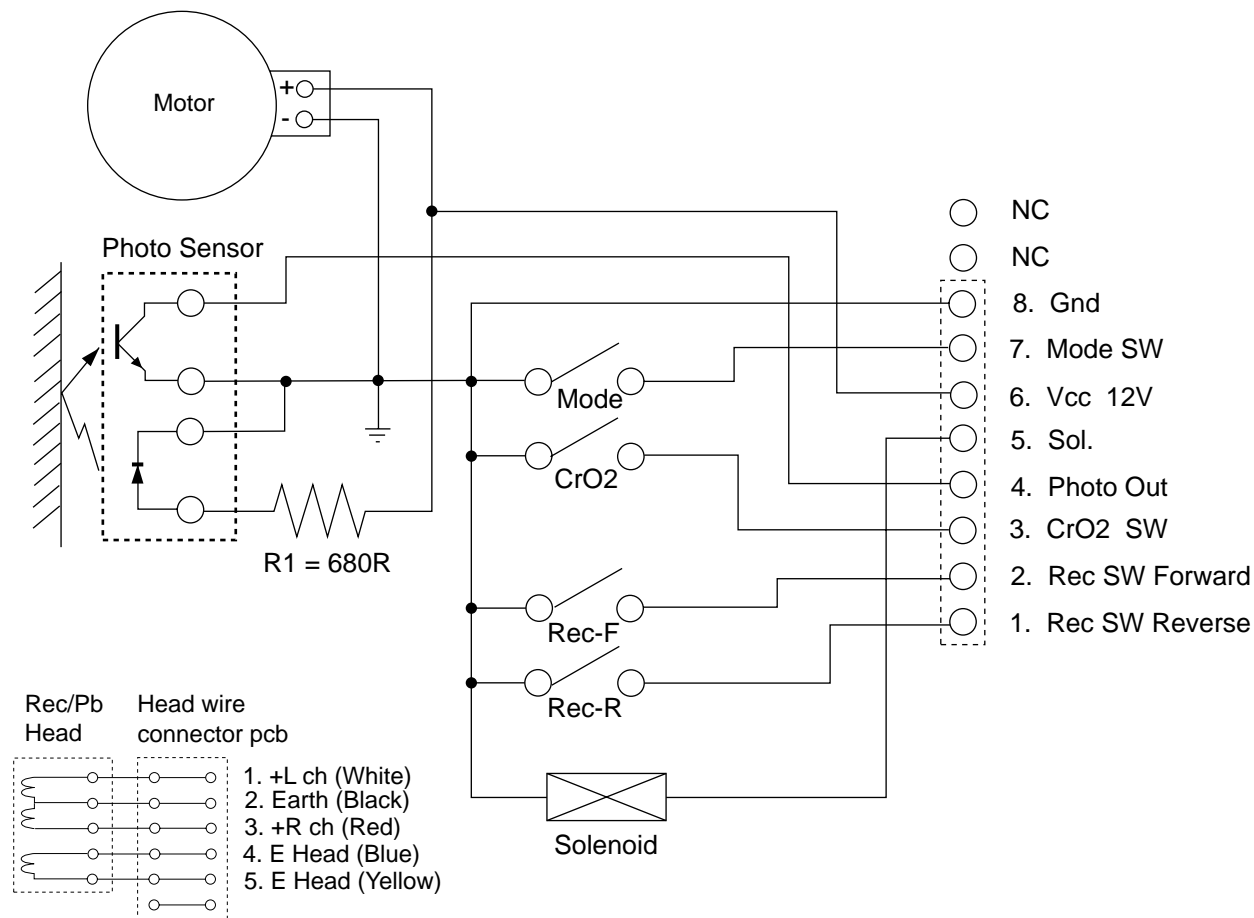
**Tapedeck wiring (Single deck)**



**Variation table for Analog Circuit**

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

**TAPE MECHANISM ELECTRONICS**



**TAPE ADJUSTMENT & CHECK TABLE**

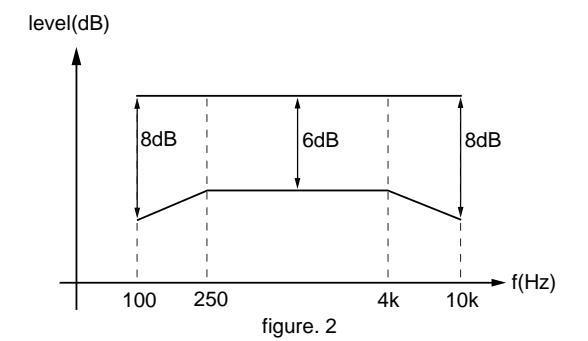
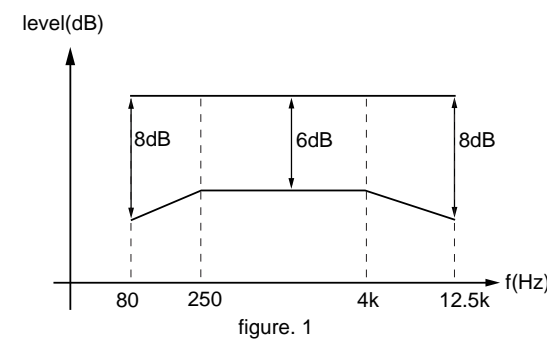
	TEST CASSETTE	RECORDER MODE	MEASURE ON	READ ON	ADJUST	
					with	to
<b>MOTOR SPEED</b>	SBC420 3150Hz	PLAY		frequency counter	check	3150Hz +/- 2%
<b>WOW &amp; FLUTTER</b>	SBC420 3150Hz	PLAY		W&F-meter	check	< 0.4 % DIN
<b>ADJUST AZIMUTH</b>	SBC420 10kHz	PLAY FWD	1 or 2 LEFT RIGHT	mV-meter	left hand screw	max. output level & left=right
		PLAY REV ^			right hand screw	
<b>PLAYBACK LEVEL &amp; FREQ. RESPONSE</b>	SBC420 315Hz	PLAY		mV-meter	check	125mV +/- 3dB (see fig.1 for freq. response)
<b>ADJUST BIAS CURRENT</b>	SBC419A	RECORD	5 or 6 LEFT RIGHT	mV-meter	3773	995mV
	SBC420				check	750mV +/- 1.5dB

**CHECK RECORD/PLAYBACK FREQUENCY AND DISTORTION**

Inject 3mV signals 100Hz, 250Hz, 1kHz, 10kHz, 12.5kHz via 3 or 4	SBC419A or SBC420	RECORD B				
	RECORDED CASSETTE	PLAY B	1 or 2 LEFT RIGHT	mV-meter	check	limits see fig. 2 *
Inject 1kHz 8.85mV via 3 or 4	SBC419A or SBC420	RECORD B				
	RECORDED CASSETTE	PLAY B	1 or 2 LEFT RIGHT	THD-meter	check	< 3% *

SBC419A : 4822 397 30069  
SBC420 : 4822 397 30071

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

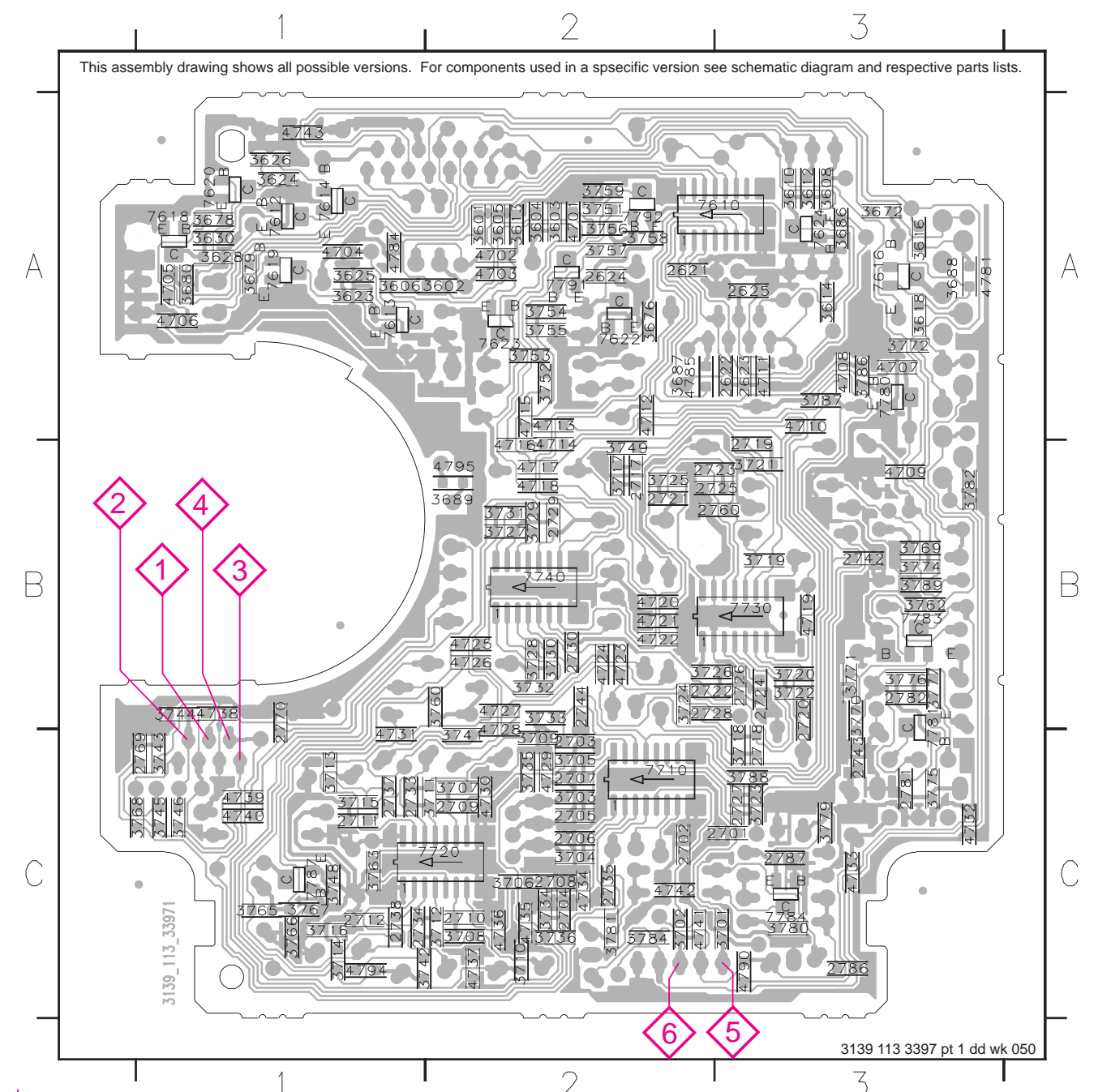
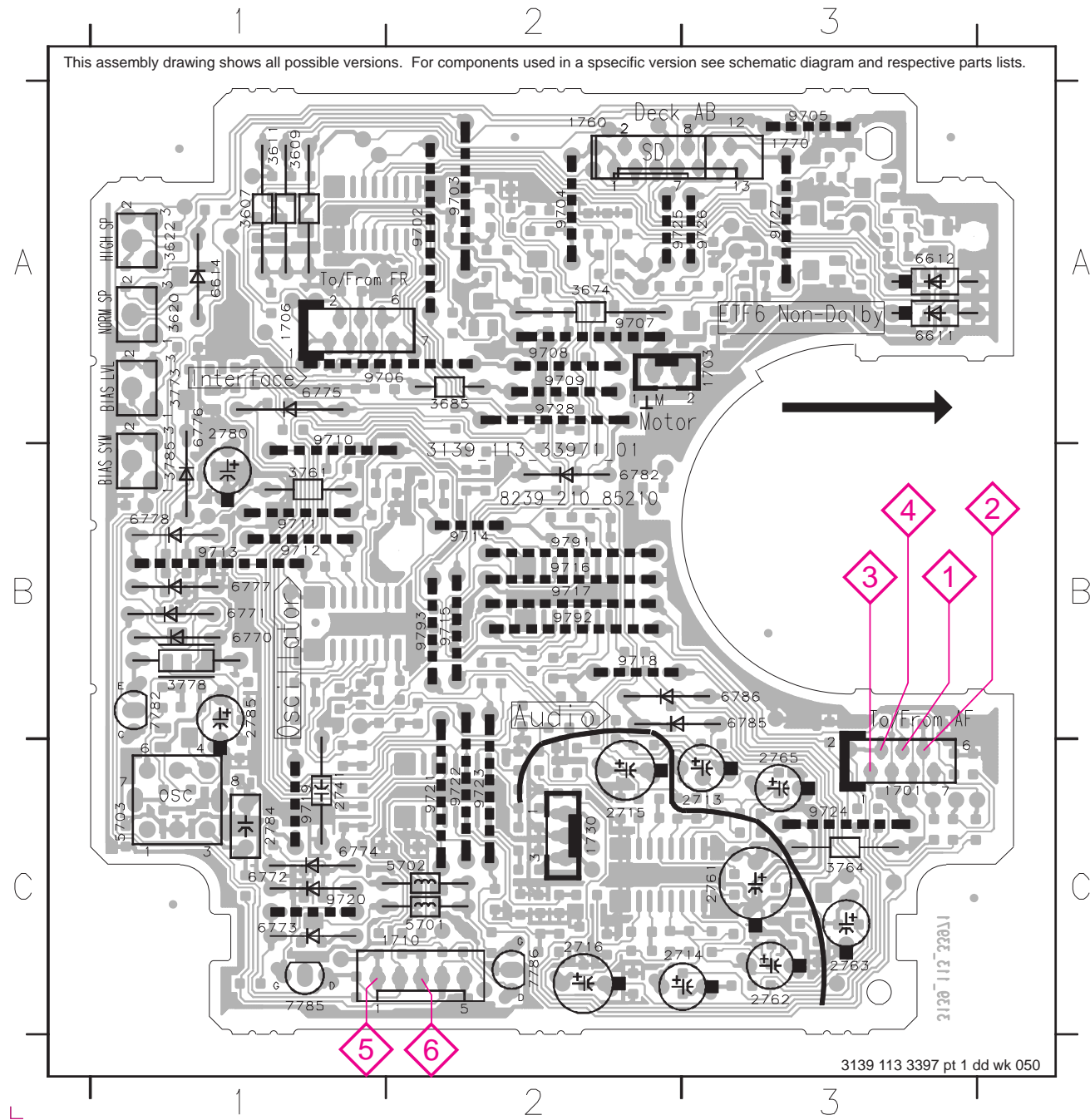


### COMPONENT LAYOUT

1701	C3	2716	C2	3609	A1	3785	B1	6773	C1	7785	C1	9710	A1	9720	C1	9792	B2
1703	A3	2741	C1	3611	A1	5701	C2	6774	C1	7786	C2	9711	B1	9721	C1	9793	B2
1706	A1	2761	C3	3620	A1	5702	C2	6775	A1	9702	A2	9712	B1	9722	C2		
1710	C2	2762	C3	3622	A1	5703	C1	6776	A1	9703	A2	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		

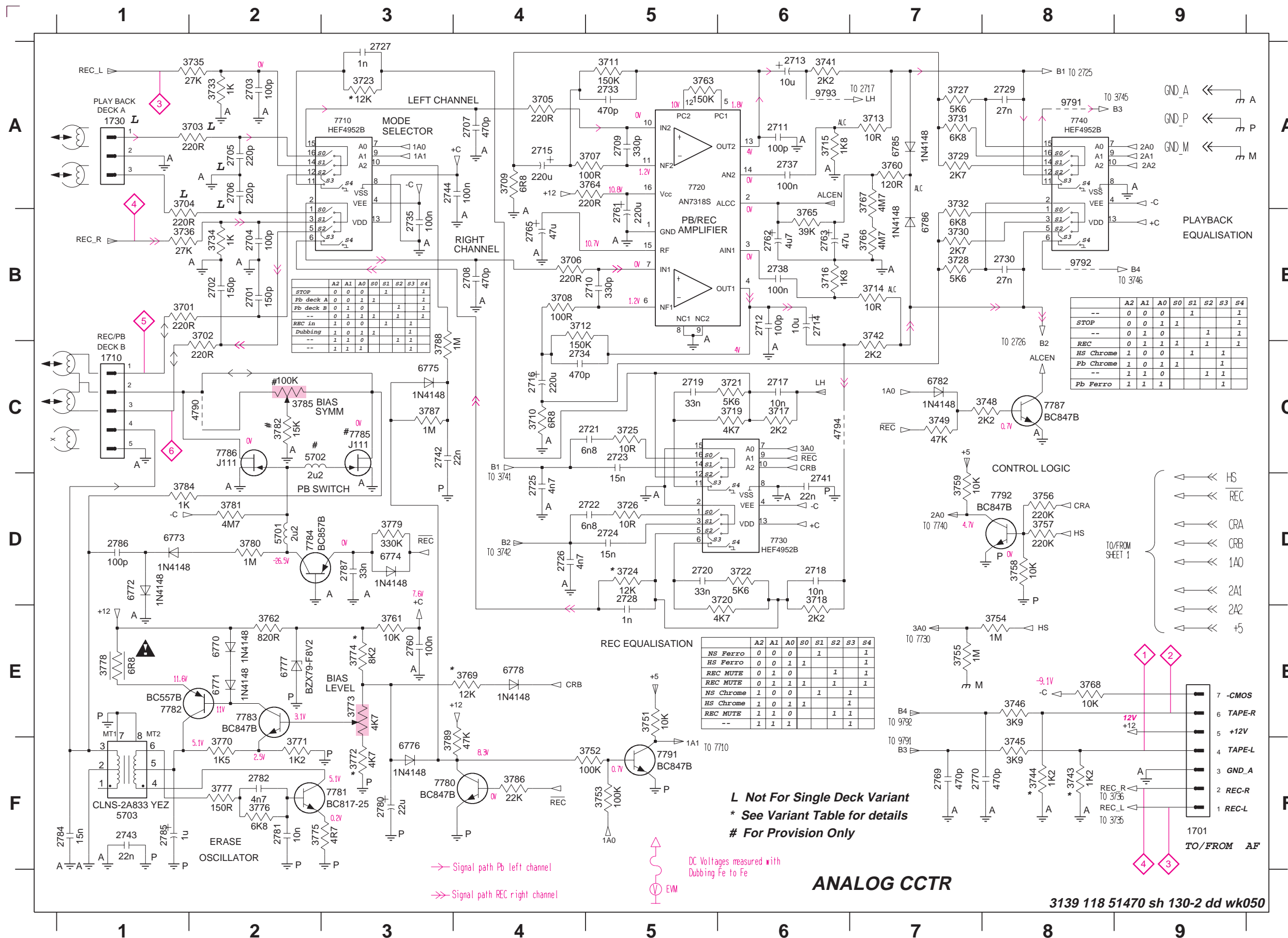
### CHIP LAYOUT

2621	A2	2725	B3	3605	A2	3702	C2	3727	B2	3758	A2	3789	B3	4725	B2	7610	A3
2622	A3	2726	B3	3606	A2	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
2707	C2	2742	B3	3625	A1	3713	C1	3742	C1	3771	B3	4711	A3	4736	C2	7710	C2
2708	C2	2743	C3	3626	A1	3714	C1	3743	C1	3772	A3	4712	A2	4737	C2	7720	C2
2709	C2	2744	B2	3628	A1	3715	C1	3744	B1	3774	B3	4713	A2	4738	B1	7730	B3
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	C3	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	4744	A3	7787	C1
2720	B3	2787	C3	3686	A3	3722	B3	3753	A2	3782	B3	4720	B2	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		
2724	B3	3604	A2	3701	C3	3726	B2	3757	A2	3788	C3	4724	B2	4795	B2		





ANALOG CIRCUIT



1701 F9	3716 B6	5703 F1
1710 C1	3717 C6	6770 E2
1730 A1	3718 D6	6771 E2
2701 B2	3719 C6	6772 D1
2702 B2	3720 D6	6773 D1
2703 A2	3721 C6	6774 D3
2704 B2	3722 D6	6775 C3
2705 A2	3723 A3	6776 F3
2706 A2	3724 D5	6777 E2
2707 A4	3725 C5	6778 E4
2708 B4	3726 D5	6782 C7
2709 A5	3727 A7	6785 A7
2710 B5	3728 B7	6786 B7
2711 A6	3729 A7	7710 A3
2712 B6	3730 B7	7720 A5
2713 A6	3731 A7	7730 D6
2714 B6	3732 A7	7740 A8
2715 A4	3733 A2	7780 F4
2716 C4	3734 B2	7781 F3
2717 C6	3735 A2	7782 E1
2718 D6	3736 B1	7783 E2
2719 C5	3741 A6	7784 D2
2720 D5	3742 B7	7785 C3
2721 C5	3743 F8	7786 C2
2722 D5	3744 F8	7787 C8
2723 C5	3745 F8	7791 F5
2724 D5	3746 E8	7792 D8
2725 D4	3748 C8	9791 A8
2726 D4	3749 C7	9792 B8
2727 A3	3751 E5	9793 A6
2728 D5	3752 F5	
2729 A8	3753 F5	
2730 B8	3754 E8	
2733 A5	3755 E7	
2734 C4	3756 D8	
2735 B3	3757 D8	
2737 A6	3758 D8	
2738 B6	3759 D7	
2741 D6	3760 A7	
2742 C3	3761 E3	
2743 F1	3762 E2	
2744 A3	3763 A5	
2760 E3	3764 A5	
2761 B5	3765 B6	
2762 B6	3766 B7	
2763 B6	3767 A7	
2765 B4	3768 E8	
2769 F7	3769 E4	
2770 F7	3770 F2	
2780 F3	3771 F2	
2781 F2	3772 F3	
2782 F2	3773 E3	
2784 F1	3774 E3	
2785 F1	3775 F2	
2786 D1	3776 F2	
2787 D3	3777 F2	
3701 B1	3778 E1	
3702 B2	3779 D3	
3703 A2	3780 D2	
3704 A1	3781 D2	
3705 A4	3782 C2	
3706 B4	3784 D1	
3707 A5	3785 C2	
3708 B4	3786 F4	
3709 A4	3787 C3	
3710 C4	3788 C3	
3711 A5	3789 F3	
3712 B4	4790 C2	
3713 A7	4794 C6	
3714 B7	5701 D2	
3715 A6	5702 C2	

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

ANALOG CCTR

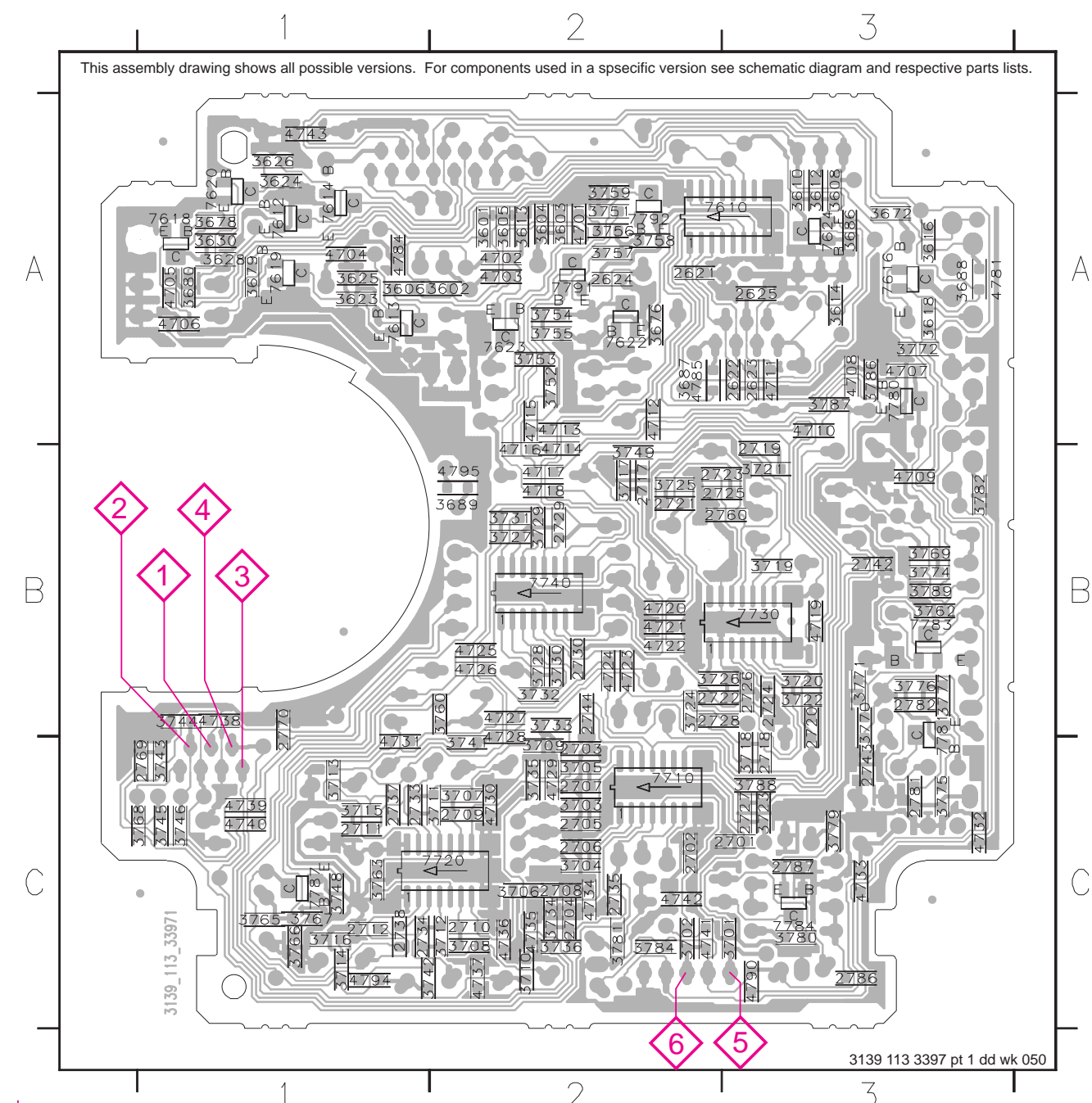
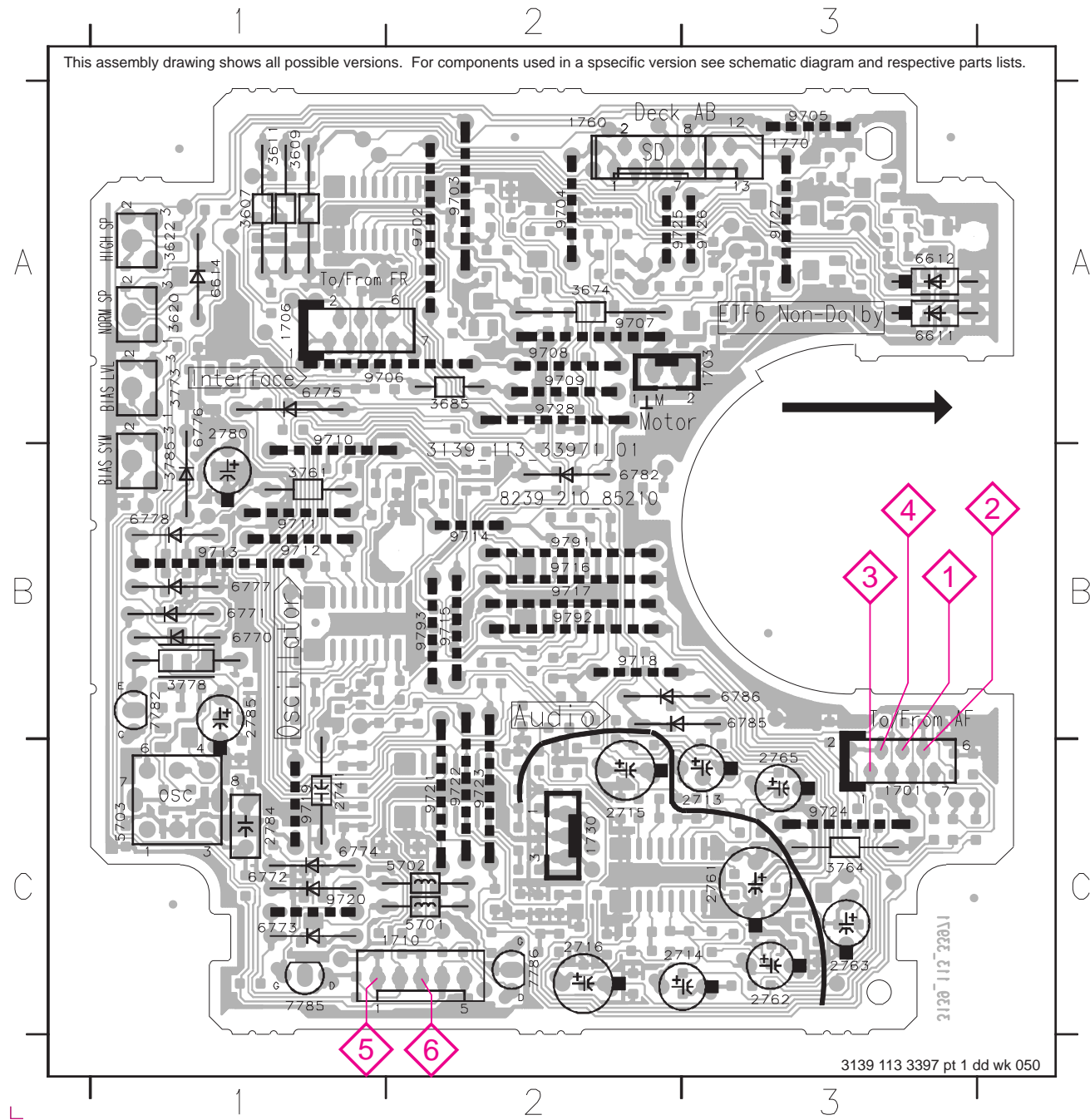
3139 118 51470 sh 130-2 dd wk050

### COMPONENT LAYOUT

1701	C3	2716	C2	3609	A1	3785	B1	6773	C1	7785	C1	9710	A1	9720	C1	9792	B2
1703	A3	2741	C1	3611	A1	5701	C2	6774	C1	7786	C2	9711	B1	9721	C1	9793	B2
1706	A1	2761	C3	3620	A1	5702	C2	6775	A1	9702	A2	9712	B1	9722	C2		
1710	C2	2762	C3	3622	A1	5703	C1	6776	A1	9703	A2	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		

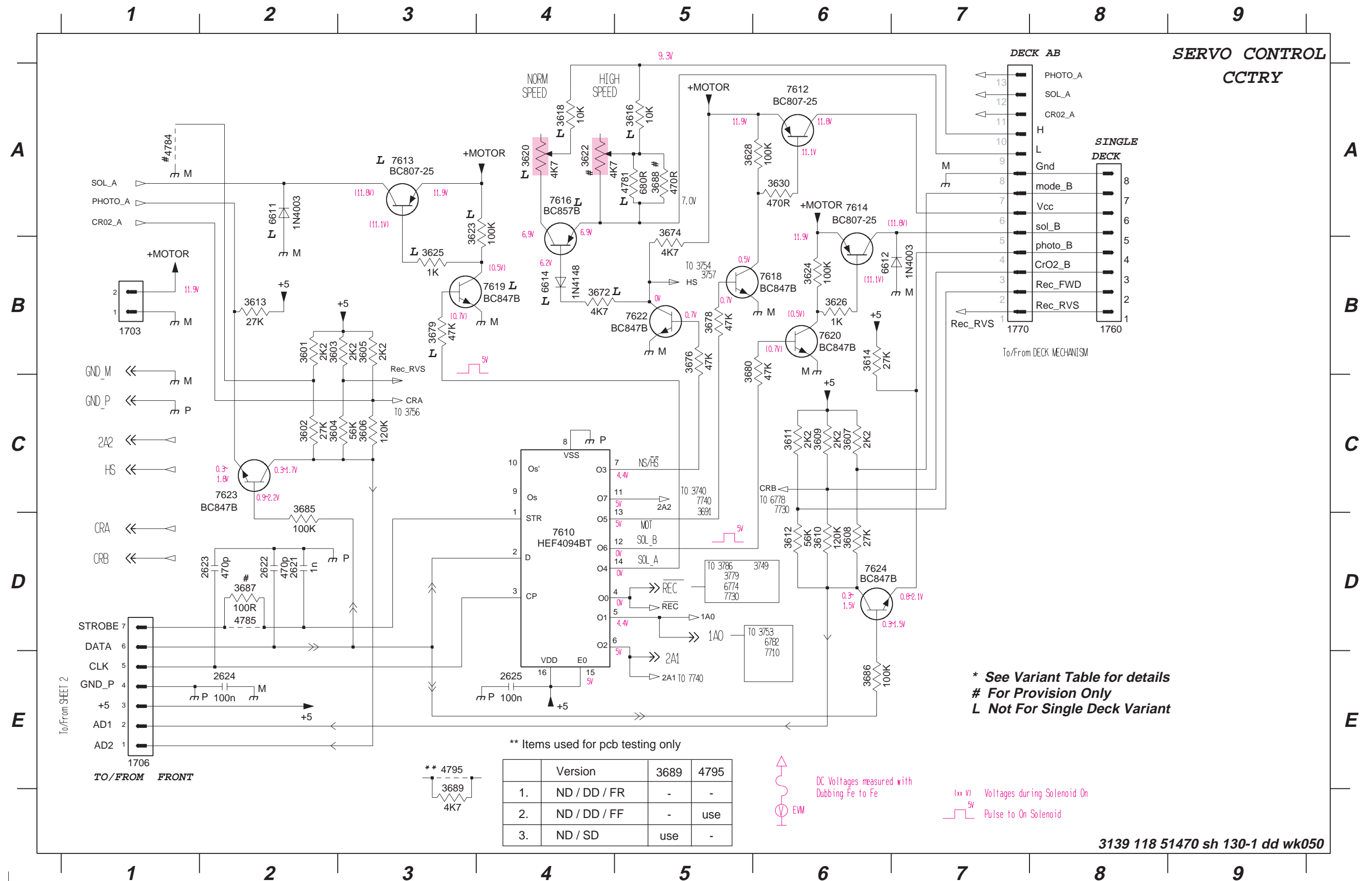
### CHIP LAYOUT

2621	A2	2725	B3	3605	A2	3702	C2	3727	B2	3758	A2	3789	B3	4725	B2	7610	A3
2622	A3	2726	B3	3606	A2	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
2707	C2	2742	B3	3625	A1	3713	C1	3742	C1	3771	B3	4711	A3	4736	C2	7710	C2
2708	C2	2743	C3	3626	A1	3714	C1	3743	C1	3772	A3	4712	A2	4737	C2	7720	C2
2709	C2	2744	B2	3628	A1	3715	C1	3744	B1	3774	B3	4713	A2	4738	B1	7730	B3
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	C3	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	4744	A3	7787	C1
2720	B3	2787	C3	3686	A3	3722	B3	3753	A2	3782	B3	4720	B2	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		
2724	B3	3604	A2	3701	C3	3726	B2	3757	A2	3788	C3	4724	B2	4795	B2		



SERVO CONTROL CIRCUIT

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



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

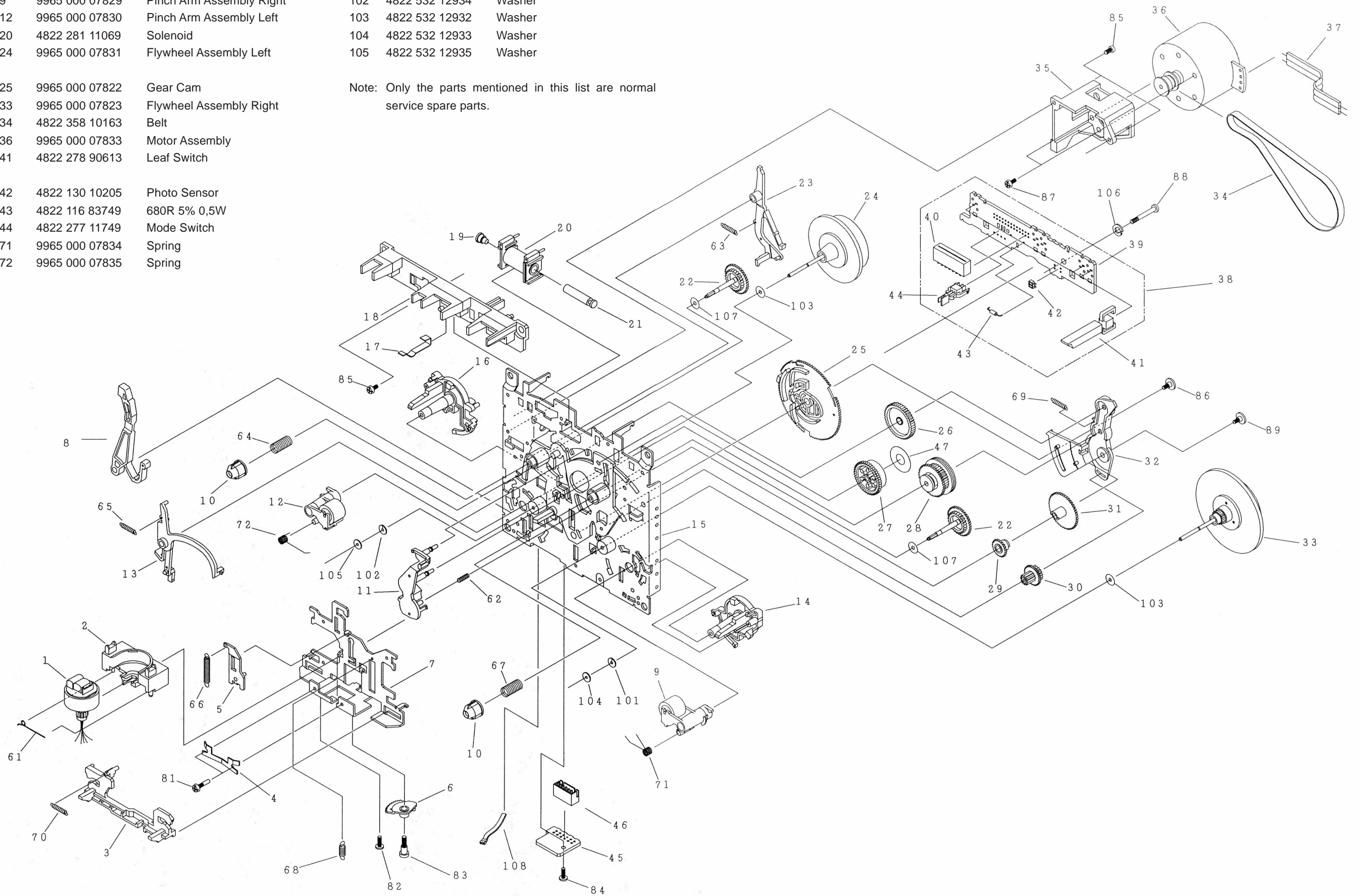
\*\* Items used for pcb testing only

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

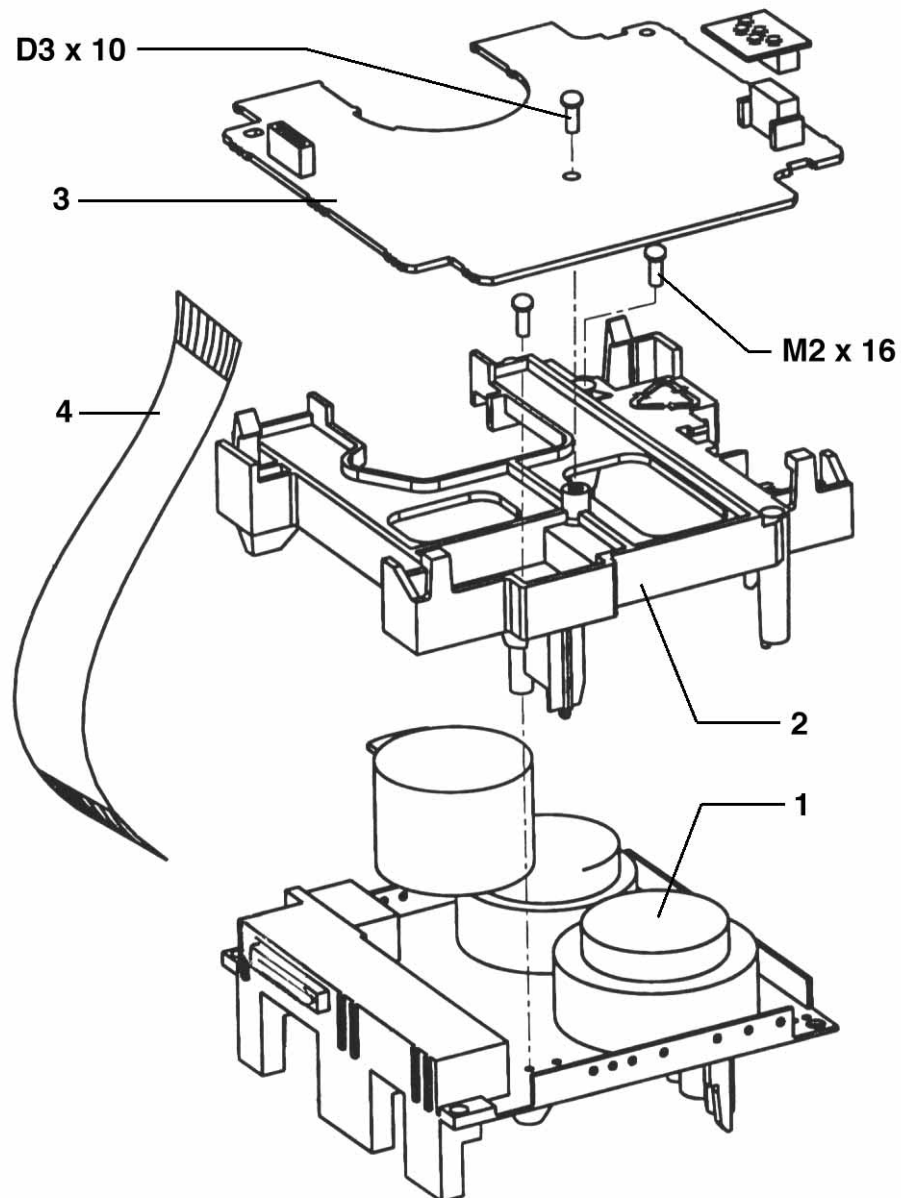
⚡ DC Voltages measured with  
 Dubbing Fe to Fe  
 EVM  
 (xx V) Voltages during Solenoid On  
 5V Pulse to On Solenoid

**TAPE MECHANISM**

- |    |                |                          |  |                |        |
|----|----------------|--------------------------|--|----------------|--------|
| 1  | 9965 000 07828 | Rec/Pb Head Assembly     | 101  | 4822 532 12931 | Washer |
| 9  | 9965 000 07829 | Pinch Arm Assembly Right | 102  | 4822 532 12934 | Washer |
| 12 | 9965 000 07830 | Pinch Arm Assembly Left  | 103  | 4822 532 12932 | Washer |
| 20 | 4822 281 11069 | Solenoid                 | 104  | 4822 532 12933 | Washer |
| 24 | 9965 000 07831 | Flywheel Assembly Left   | 105  | 4822 532 12935 | Washer |
|    |                |                          |  |                |        |
| 25 | 9965 000 07822 | Gear Cam                 | <p>Note: Only the parts mentioned in this list are normal service spare parts.</p> |                |        |
| 33 | 9965 000 07823 | Flywheel Assembly Right  |  |                |        |
| 34 | 4822 358 10163 | Belt                     |  |                |        |
| 36 | 9965 000 07833 | Motor Assembly           |  |                |        |
| 41 | 4822 278 90613 | Leaf Switch              |  |                |        |
| 42 | 4822 130 10205 | Photo Sensor             |  |                |        |
| 43 | 4822 116 83749 | 680R 5% 0,5W             |  |                |        |
| 44 | 4822 277 11749 | Mode Switch              |  |                |        |
| 71 | 9965 000 07834 | Spring                   |  |                |        |
| 72 | 9965 000 07835 | Spring                   |  |                |        |



## EXPLODED VIEW - TAPE MODULE



- |   |                |                        |
|---|----------------|------------------------|
| 1 | 3139 118 77920 | Tape Mechanism CRH4434 |
| 4 | 4822 320 12605 | Flex Cable 8P 7,5cm    |

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

**ELECTRICAL PARTS LIST - ETF6 BOARD****MISCELLANEOUS**

1701	4822 267 10953	Flex Socket 7pin Vert.
1706	4822 267 10953	Flex Socket 7pin Vert.
1760	4822 265 11515	Flex Socket 8pin Vert.

**CAPACITORS**

2621	5322 122 31647	1nF 10% 63V
2622	5322 122 34099	470pF 10% 63V
2623	5322 122 34099	470pF 10% 63V
2624	4822 126 14585	100nF 10% 50V
2625	4822 126 14585	100nF 10% 50V
2701	5322 122 33538	150pF 2% 63V
2702	5322 122 33538	150pF 2% 63V
2703	5322 122 32531	100pF 5% 50V
2704	5322 122 32531	100pF 5% 50V
2707	5322 122 34099	470pF 10% 63V
2708	5322 122 34099	470pF 10% 63V
2709	5322 122 31863	330pF 5% 63V
2710	5322 122 31863	330pF 5% 63V
2711	5322 122 32531	100pF 5% 50V
2712	5322 122 32531	100pF 5% 50V
2713	4822 124 40248	10µF 20% 63V
2714	4822 124 40248	10µF 20% 63V
2715	4822 124 40196	220µF 20% 16V
2716	4822 124 40196	220µF 20% 16V
2717	4822 122 33177	10nF 20% 50V
2718	4822 122 33177	10nF 20% 50V
2719	4822 126 12105	33nF 5% 50V
2720	4822 126 12105	33nF 5% 50V
2721	5322 122 31866	6,8nF 10% 63V
2722	5322 122 31866	6,8nF 10% 63V
2723	4822 126 13188	15nF 5% 63V
2724	4822 126 13188	15nF 5% 63V
2725	5322 126 10223	4,7nF 10% 63V
2726	5322 126 10223	4,7nF 10% 63V
2727	5322 122 31647	1nF 10% 63V
2728	5322 122 31647	1nF 10% 63V
2729	4822 122 33735	27nF 10% 63V
2730	4822 122 33735	27nF 10% 63V
2733	5322 122 34099	470pF 10% 63V
2734	5322 122 34099	470pF 10% 63V
2735	4822 126 14585	100nF 10% 50V
2737	4822 126 14585	100nF 10% 50V
2738	4822 126 14585	100nF 10% 50V
2741	4822 126 11585	22nF +80/-20% 25V
2742	5322 122 32654	22nF 10% 63V
2743	5322 122 32654	22nF 10% 63V
2744	4822 126 14585	100nF 10% 50V
2760	4822 126 14585	100nF 10% 50V
2761	4822 124 80144	220µF 20% 25V
2762	4822 124 40769	4,7µF 20% 100V
2763	4822 124 40433	47µF 20% 25V
2765	4822 124 40433	47µF 20% 25V

2769	5322 122 34099	470pF 10% 63V
2770	5322 122 34099	470pF 10% 63V
2780	4822 124 81151	22µF 20% 50V
2781	4822 122 33177	10nF 20% 50V
2782	5322 126 10223	4,7nF 10% 63V
2784	4822 121 51305	15nF 10% 50V
2785	4822 124 21913	1µF 20% 63V
2786	5322 122 32531	100pF 5% 50V
2787	4822 126 12105	33nF 5% 50V

**RESISTORS**

3601	4822 117 11449	2k2 5% 0,1W
3602	4822 051 20273	27k 5% 0,1W
3603	4822 117 11449	2k2 5% 0,1W
3604	4822 117 11148	56k 1% 0,1W
3605	4822 117 11449	2k2 5% 0,1W
3606	4822 051 20124	120k 5% 0,1W
3607	4822 116 52256	2k2 5% 0,5W
3608	4822 051 20273	27k 5% 0,1W
3609	4822 116 52256	2k2 5% 0,5W
3610	4822 051 20124	120k 5% 0,1W
3611	4822 116 52256	2k2 5% 0,5W
3612	4822 117 11148	56k 1% 0,1W
3613	4822 051 20273	27k 5% 0,1W
3614	4822 051 20273	27k 5% 0,1W
3624	4822 117 10837	100k 1% 0.1W
3626	4822 051 10102	1k 2% 0,25W
3628	4822 117 10837	100k 1% 0.1W
3630	4822 051 20471	470R 5% 0,1W
3674	4822 116 52283	4k7 5% 0,5W
3676	4822 117 10834	47k 1% 0,1W
3678	4822 117 10834	47k 1% 0,1W
3680	4822 117 10834	47k 1% 0,1W
3685	4822 116 52234	100k 5% 0,5W
3686	4822 117 10837	100k 1% 0.1W
3689	4822 051 20472	4k7 5% 0,1W
3701	4822 117 11503	220R 1% 0.1W
3702	4822 117 11503	220R 1% 0.1W
3705	4822 117 11503	220R 1% 0.1W
3706	4822 117 11503	220R 1% 0.1W
3707	4822 117 11373	100R 1% 0,1W
3708	4822 117 11373	100R 1% 0,1W
3709	4822 051 20688	6R8 5% 0,1W
3710	4822 051 20688	6R8 5% 0,1W
3711	4822 051 20154	150k 5% 0,1W
3712	4822 051 20154	150k 5% 0,1W
3713	4822 051 20109	10R 5% 0,1W
3714	4822 051 20109	10R 5% 0,1W
3715	4822 051 20182	1k8 5% 0,1W
3716	4822 051 20182	1k8 5% 0,1W
3717	4822 117 11449	2k2 5% 0,1W
3718	4822 117 11449	2k2 5% 0,1W

**ELECTRICAL PARTS LIST - ETF6 BOARD****RESISTORS**

3719	4822 051 20472	4k7 5% 0,1W	3777	4822 117 10353	150R 1% 0,1W
3720	4822 051 20472	4k7 5% 0,1W	3778	4822 052 10688	△ 6R8 5% 0,33W
3721	4822 051 20562	5k6 5% 0,1W	3779	4822 051 20334	330k 5% 0,1W
3722	4822 051 20562	5k6 5% 0,1W	3780	4822 051 20105	1M 5% 0,1W
3723	4822 117 11383	12k 1% 0,1W	3781	4822 051 20475	4M7 5% 0,1W
3724	4822 117 11383	12k 1% 0,1W	3784	4822 051 10102	1k 2% 0,25W
3725	4822 051 20109	10R 5% 0,1W	3786	4822 051 20223	22k 5% 0,1W
3726	4822 051 20109	10R 5% 0,1W	3787	4822 051 20105	1M 5% 0,1W
3727	4822 051 20562	5k6 5% 0,1W	3788	4822 051 20105	1M 5% 0,1W
3728	4822 051 20562	5k6 5% 0,1W	3789	4822 117 10834	47k 1% 0,1W
3729	4822 117 12955	2k7 1% 0,1W	4701	4822 051 20008	0R Jumper 0805
3730	4822 117 12955	2k7 1% 0,1W	4702	4822 051 20008	0R Jumper 0805
3731	4822 117 11507	6k8 1% 0,1W	4703	4822 051 20008	0R Jumper 0805
3732	4822 117 11507	6k8 1% 0,1W	4704	4822 051 20008	0R Jumper 0805
3733	4822 051 10102	1k 2% 0,25W	4705	4822 051 20008	0R Jumper 0805
3734	4822 051 10102	1k 2% 0,25W	4706	4822 051 20008	0R Jumper 0805
3735	4822 051 20273	27k 5% 0,1W	4707	4822 051 20008	0R Jumper 0805
3736	4822 051 20273	27k 5% 0,1W	4708	4822 051 20008	0R Jumper 0805
3741	4822 117 11449	2k2 5% 0,1W	4709	4822 051 20008	0R Jumper 0805
3742	4822 117 11449	2k2 5% 0,1W	4710	4822 051 20008	0R Jumper 0805
3743	4822 051 20122	1k2 5% 0,1W	4711	4822 051 20008	0R Jumper 0805
3744	4822 051 20122	1k2 5% 0,1W	4712	4822 051 20008	0R Jumper 0805
3745	4822 051 20392	3k9 5% 0,1W	4713	4822 051 20008	0R Jumper 0805
3746	4822 051 20392	3k9 5% 0,1W	4714	4822 051 20008	0R Jumper 0805
3748	4822 117 11449	2k2 5% 0,1W	4715	4822 051 20008	0R Jumper 0805
3749	4822 117 10834	47k 1% 0,1W	4716	4822 051 20008	0R Jumper 0805
3751	4822 117 10833	10k 1% 0,1W	4717	4822 051 20008	0R Jumper 0805
3752	4822 117 10837	100k 1% 0,1W	4718	4822 051 20008	0R Jumper 0805
3753	4822 117 10837	100k 1% 0,1W	4719	4822 051 20008	0R Jumper 0805
3754	4822 051 20105	1M 5% 0,1W	4720	4822 051 20008	0R Jumper 0805
3755	4822 051 20105	1M 5% 0,1W	4721	4822 051 20008	0R Jumper 0805
3756	4822 117 13579	220k 1% 0,1W	4722	4822 051 20008	0R Jumper 0805
3757	4822 117 13579	220k 1% 0,1W	4723	4822 051 20008	0R Jumper 0805
3758	4822 117 10833	10k 1% 0,1W	4724	4822 051 20008	0R Jumper 0805
3759	4822 117 10833	10k 1% 0,1W	4725	4822 051 20008	0R Jumper 0805
3760	4822 051 20121	120R 5% 0,1W	4726	4822 051 20008	0R Jumper 0805
3761	4822 050 21003	10k 1% 0,6W	4727	4822 051 20008	0R Jumper 0805
3762	4822 117 11454	820R 1% 0,1W	4728	4822 051 20008	0R Jumper 0805
3763	4822 051 20154	150k 5% 0,1W	4729	4822 051 20008	0R Jumper 0805
3764	4822 116 83872	220R 5% 0,5W	4730	4822 051 20008	0R Jumper 0805
3765	4822 051 20393	39k 5% 0,1W	4731	4822 051 20008	0R Jumper 0805
3766	4822 051 20475	4M7 5% 0,1W	4732	4822 051 20008	0R Jumper 0805
3767	4822 051 20475	4M7 5% 0,1W	4733	4822 051 20008	0R Jumper 0805
3768	4822 117 10833	10k 1% 0,1W	4734	4822 051 20008	0R Jumper 0805
3769	4822 117 11383	12k 1% 0,1W	4735	4822 051 20008	0R Jumper 0805
3770	4822 117 11139	1k5 1% 0,1W	4736	4822 051 20008	0R Jumper 0805
3771	4822 051 20122	1k2 5% 0,1W	4737	4822 051 20008	0R Jumper 0805
3772	4822 051 20472	4k7 5% 0,1W	4738	4822 051 20008	0R Jumper 0805
3773	4822 100 12227	Trimmer 4k7 30% 0,1W	4739	4822 051 20008	0R Jumper 0805
3774	4822 117 10833	10k 1% 0,1W	4740	4822 051 20008	0R Jumper 0805
3775	4822 051 20478	4R7 5% 0,1W	4741	4822 051 20008	0R Jumper 0805
3776	4822 117 11507	6k8 1% 0,1W	4742	4822 051 20008	0R Jumper 0805

**ELECTRICAL PARTS LIST - ETF6 BOARD**

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**RESISTORS**

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4785	4822 051 20008	OR Jumper 0805
4790	4822 051 20008	OR Jumper 0805
4794	4822 051 20008	OR Jumper 0805

**COILS & FILTERS**

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5701	4822 157 11477	Coil 2,2 $\mu$ H 5%
5703	4822 156 20946	Osc Coil 100kHz

**DIODES**

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6612	4822 130 31878	1N4003G
6770	4822 130 30621	1N4148
6771	4822 130 30621	1N4148
6772	4822 130 30621	1N4148
6773	4822 130 30621	1N4148
6774	4822 130 30621	1N4148
6775	4822 130 30621	1N4148
6776	4822 130 30621	1N4148
6777	4822 130 34382	BZX79-B8V2
6778	4822 130 30621	1N4148
6782	4822 130 30621	1N4148
6785	4822 130 30621	1N4148
6786	4822 130 30621	1N4148

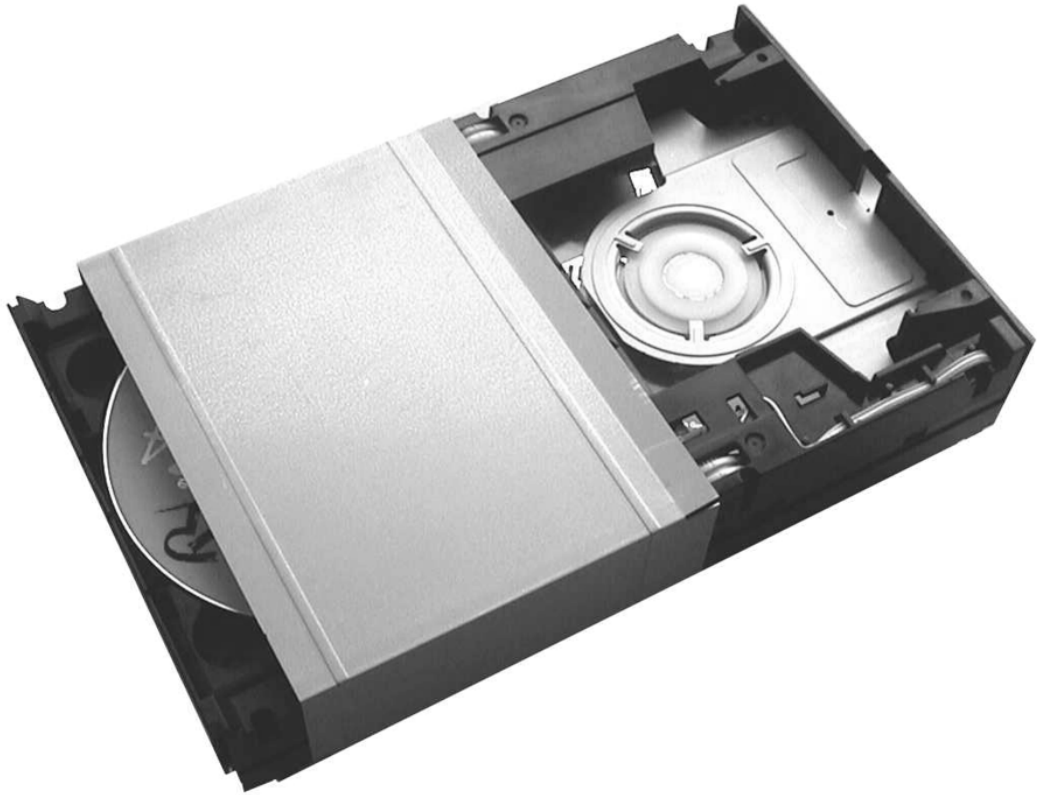
**TRANSISTORS & INTEGRATED CIRCUITS**

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7610	5322 209 11306	HEF4094BT
7612	5322 130 60845	BC807-25
7614	5322 130 60845	BC807-25
7618	5322 130 60159	BC847B
7620	5322 130 60159	BC847B
7622	5322 130 60159	BC847B
7623	5322 130 60159	BC847B
7624	5322 130 60159	BC847B
7710	4822 209 32919	HEF4952BT
7720	4822 209 32918	AN7318S
7730	4822 209 32919	HEF4952BT
7740	4822 209 32919	HEF4952BT
7780	5322 130 60159	BC847B
7781	4822 130 42804	BC817-25
7782	4822 130 44568	BC557B
7783	5322 130 60159	BC847B
7784	4822 130 60373	BC857B
7786	4822 130 63494	J111
7787	5322 130 60159	BC847B
7791	5322 130 60159	BC847B
7792	5322 130 60159	BC847B

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





# **3DTC Module**

## **(Basic version)**

Layout stage .4

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**WARNING**

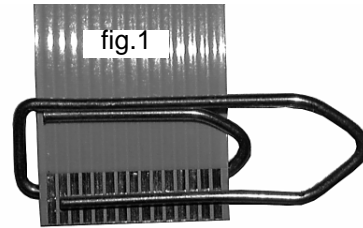
**CHARGED CAPACITORS ON THE SERVO BOARD MAY DAMAGE THE CD DRIVE ELECTRONICS WHEN CONNECTING A NEW CDM MECHANISM. THAT'S WHY, BESIDES THE SAFETY MEASURES LIKE**

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

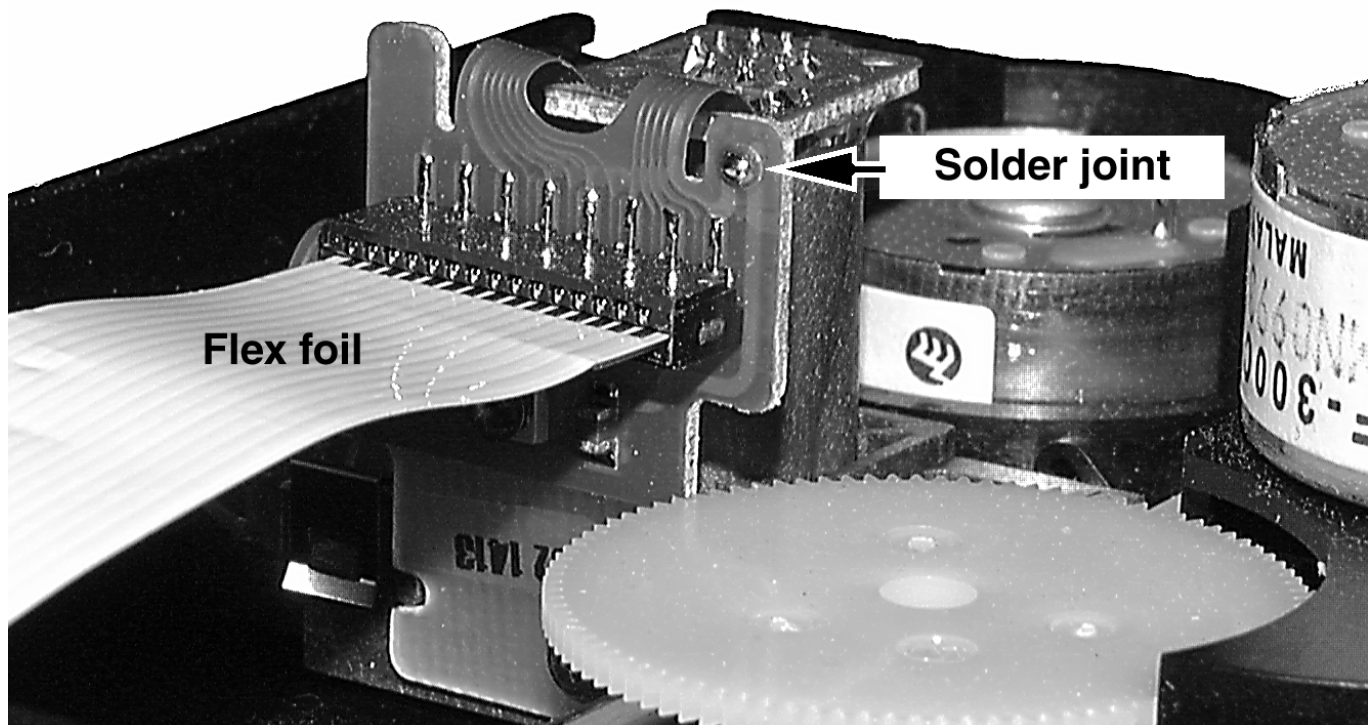
**ADDITIONAL ACTIONS MUST BE TAKEN BY THE REPAIR TECHNICIAN.**

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

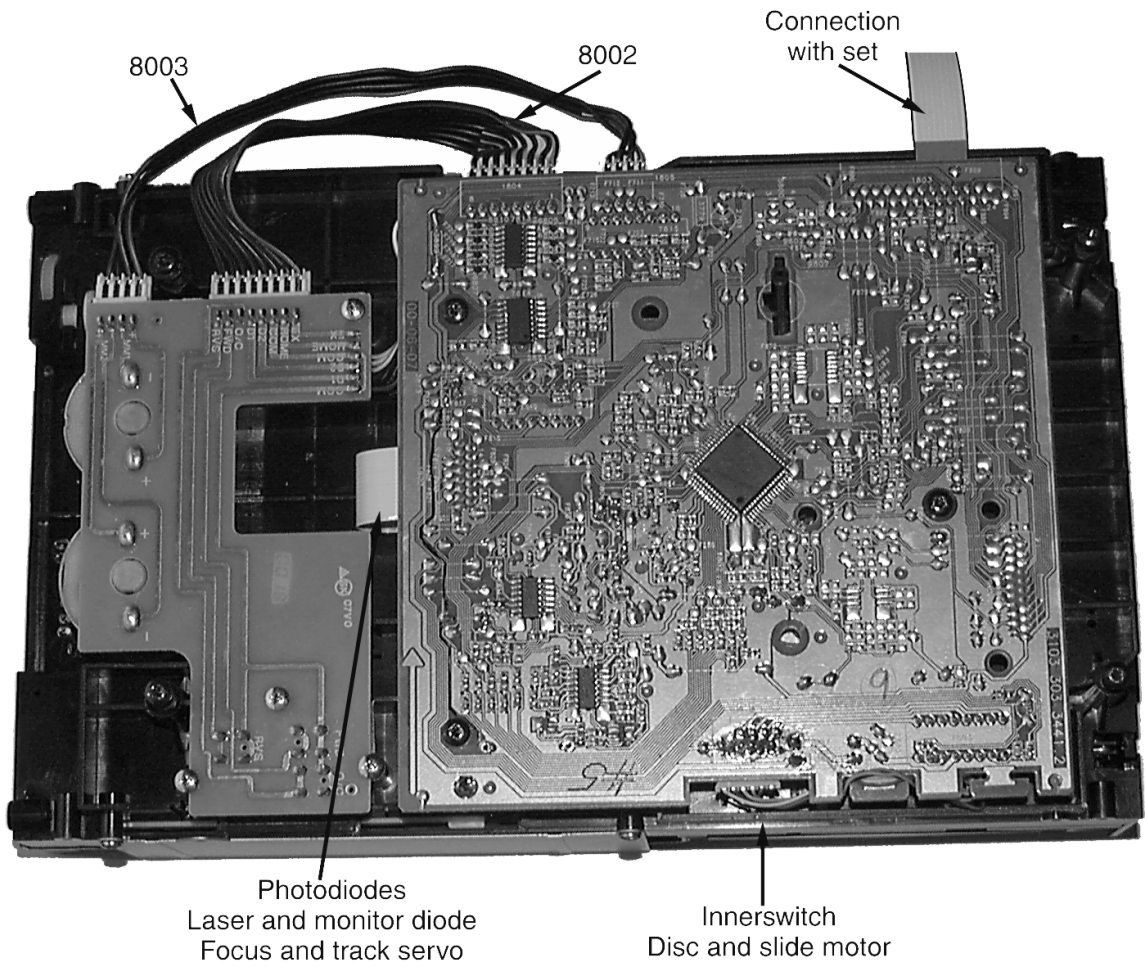
1. Disconnect CD drive flexfoil from old CD drive
2. Connect paperclip to CD drive flexfoil to short-circuit flexfoil (fig.1)
3. Remove old CD drive
4. Remove short-circuit from flexfoil of CD drive
5. Connect flexfoil to new CD drive
6. Position new CD drive in its studs
7. Remove short-circuit from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



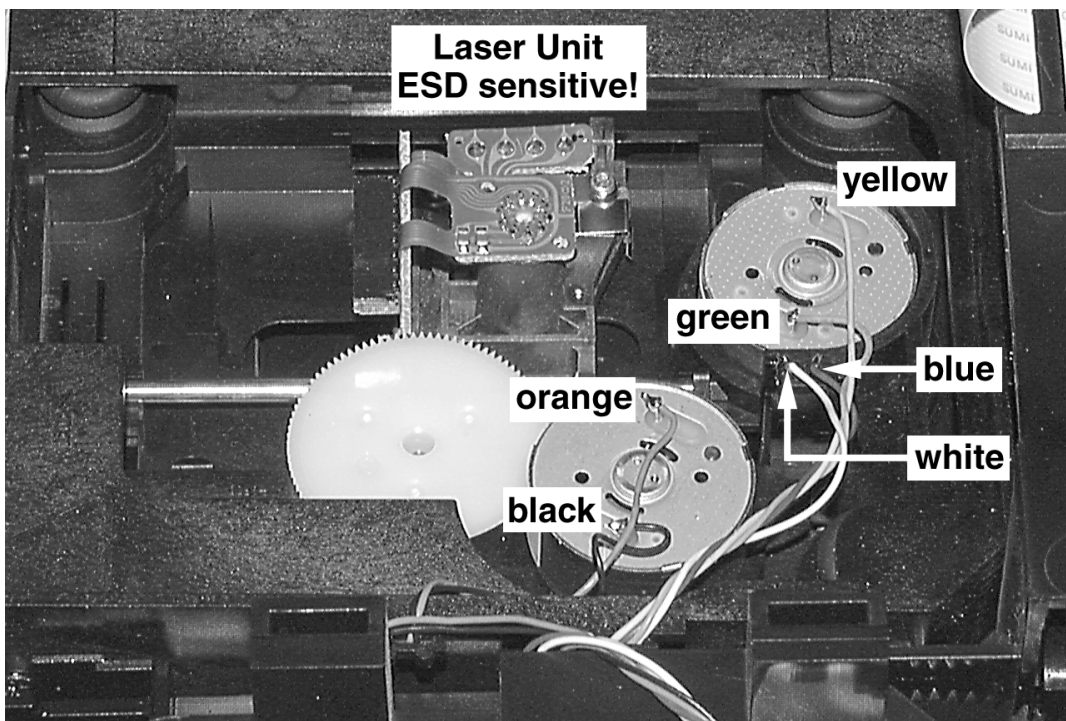
**Attention:** The laser diode of this CD drive is protected against ESD by a solder joint which shortcircuits the laserdiode to ground.  
For proper functionality of the CD drive this solder joint must be removed **after** connection the drive to the set.



### WIRING Module



### WIRING CD Drive



## Brief description

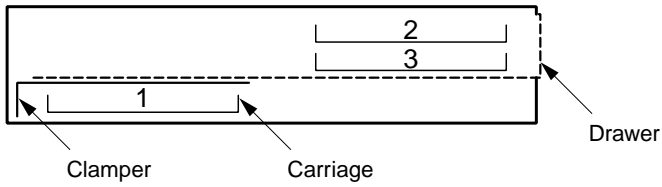
On the next pages various actions of the 3 Disc Tray Changer are described with simplified drawings.

### 1. Initial state. After Power on the changer is in this position.

The drawer closed

Carriage #1 is in Play position

Carriage #2 and #3 are in home position



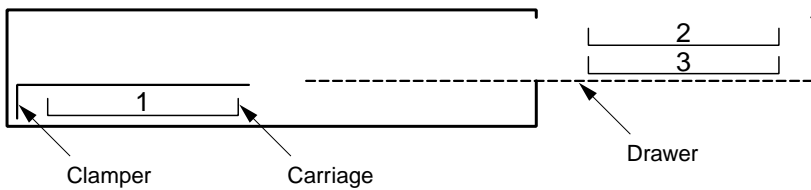
The Changer looks like



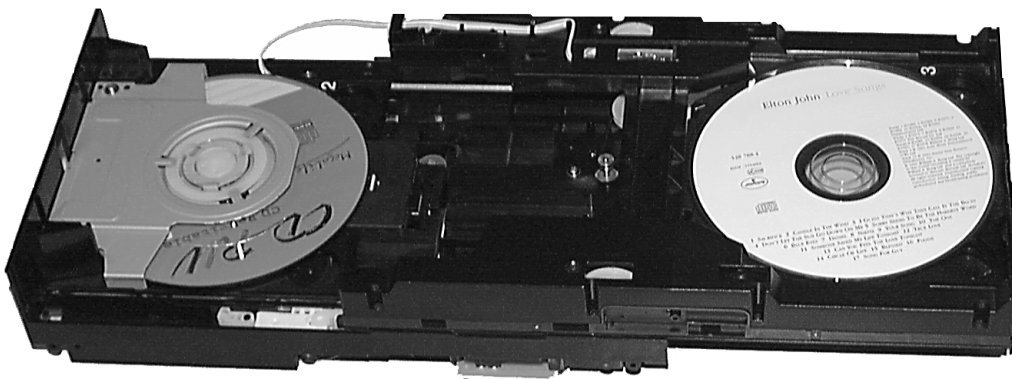
### 2. Tray open.

The Drawer is moved out

Carriage #2 and #3 remain in home position

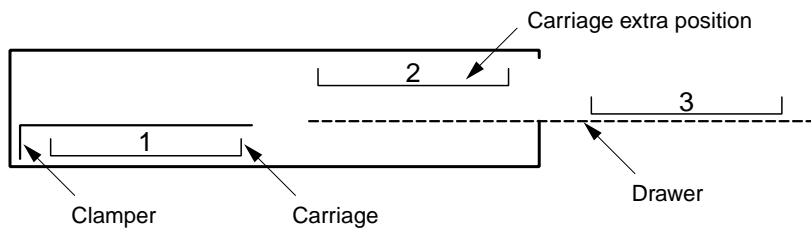


The Changer looks like

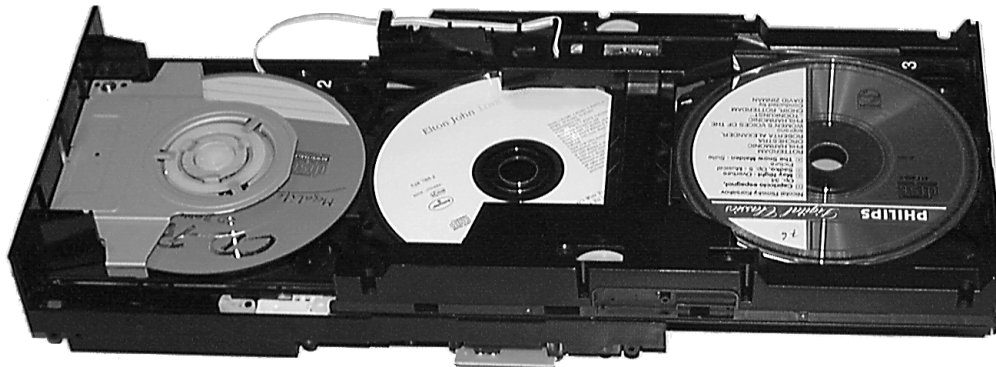


**3. Carriage extra.**

This position is necessary to get access to the lower carriage. It is also used during disc change.



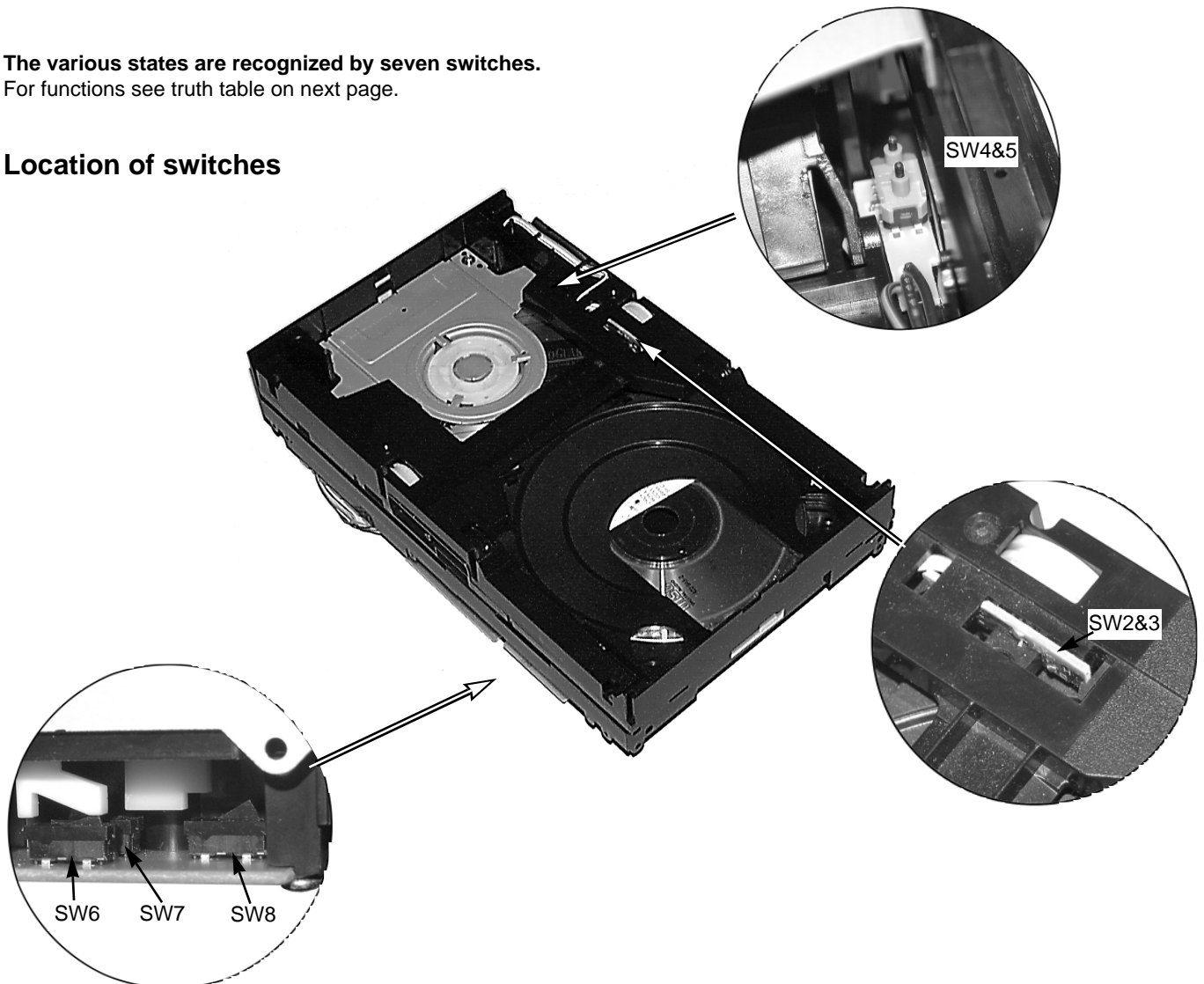
The changer looks like



The various states are recognized by seven switches.

For functions see truth table on next page.

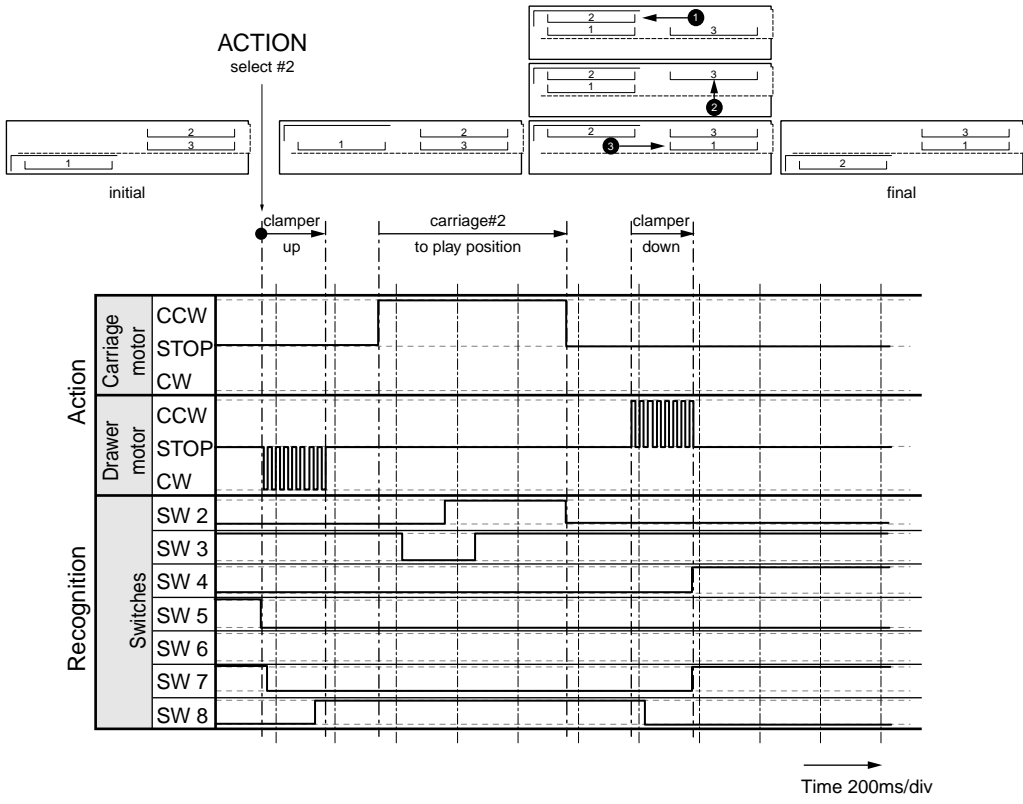
**Location of switches**



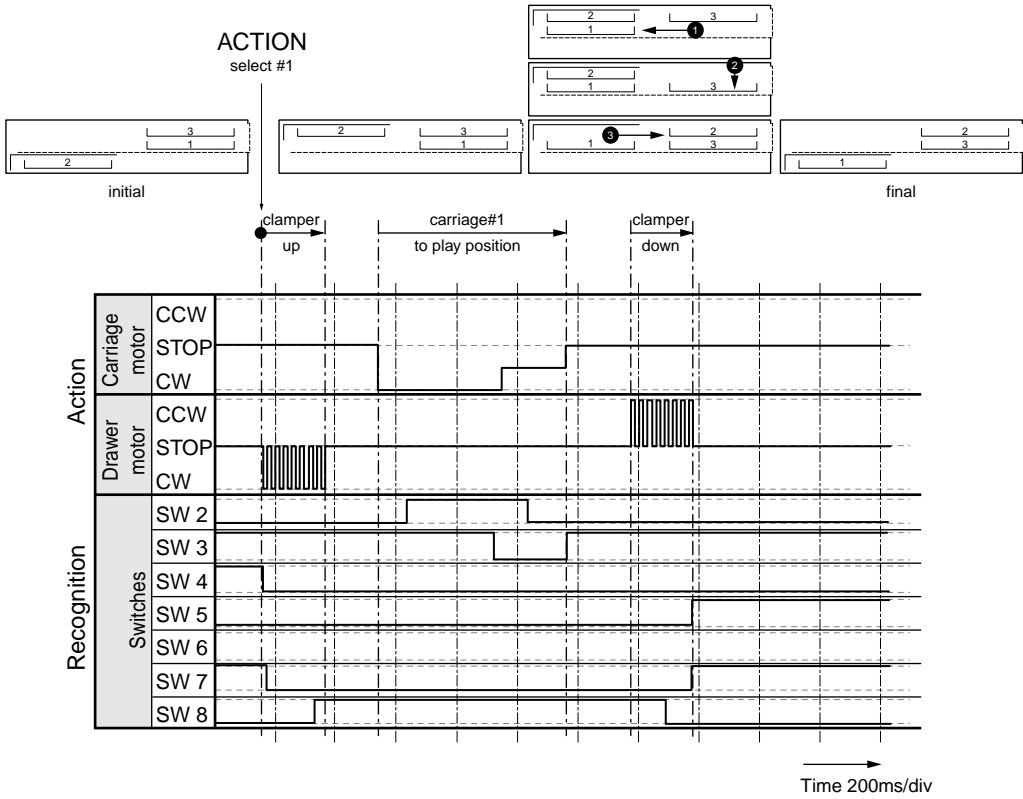




3. Select #2

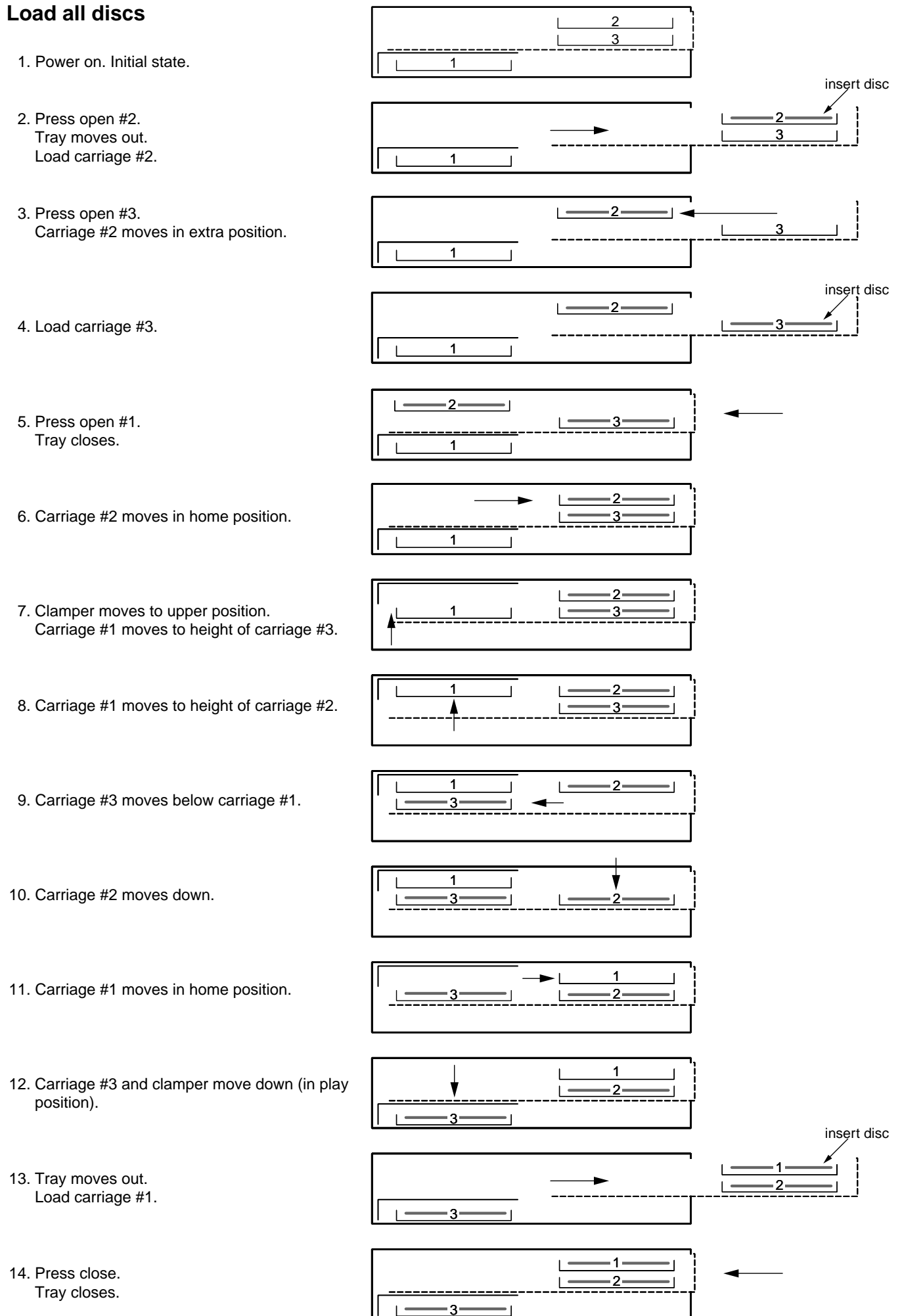


4. Select #1





### Load all discs

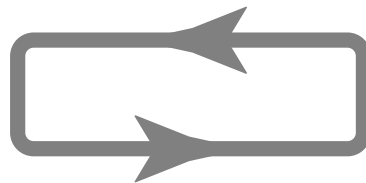
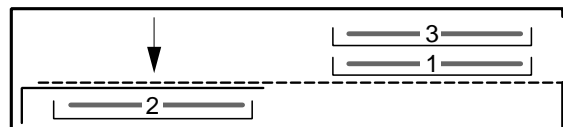
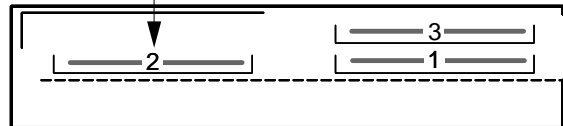
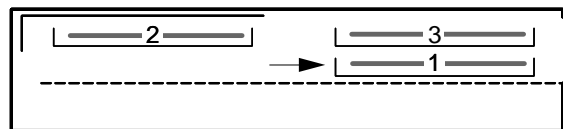
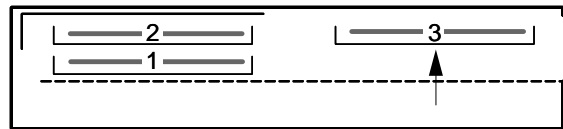
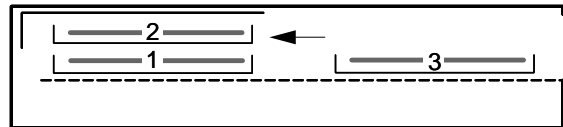
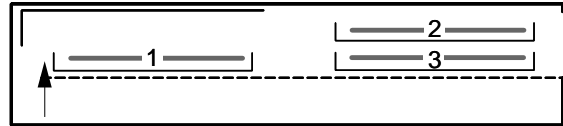
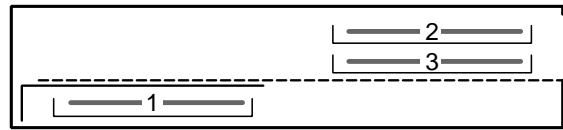
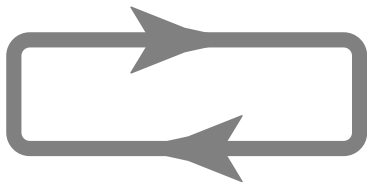
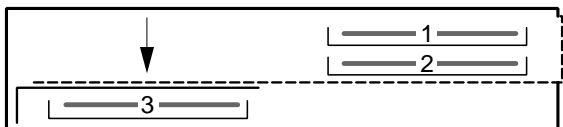
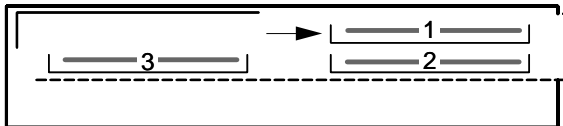
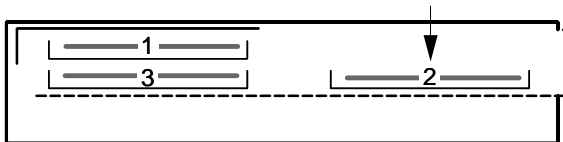
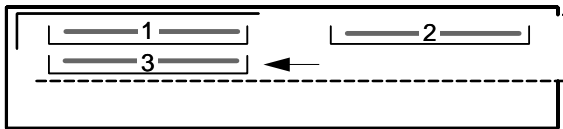
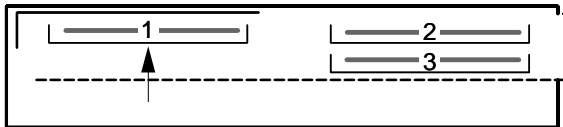
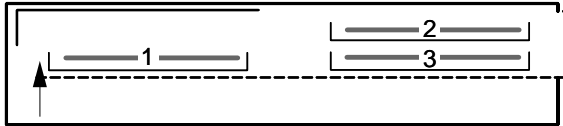
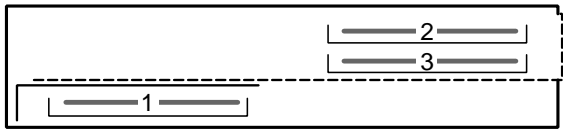


### Change 'backwards'

E.g. select #3 while playing #1.

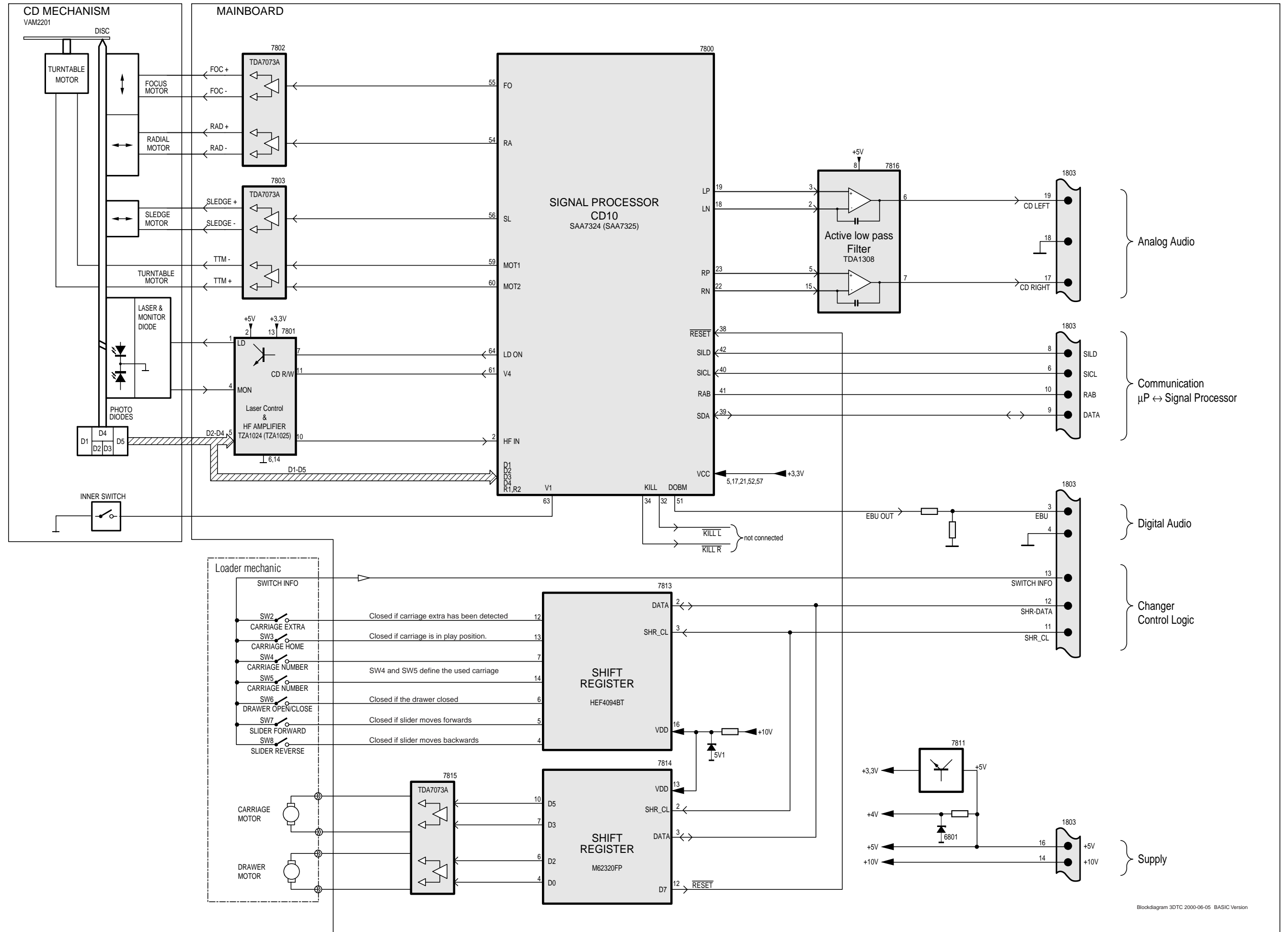
### Change 'forwards'

E.g. select #2 while playing #1.



See also timing diagrams (page 10-8).

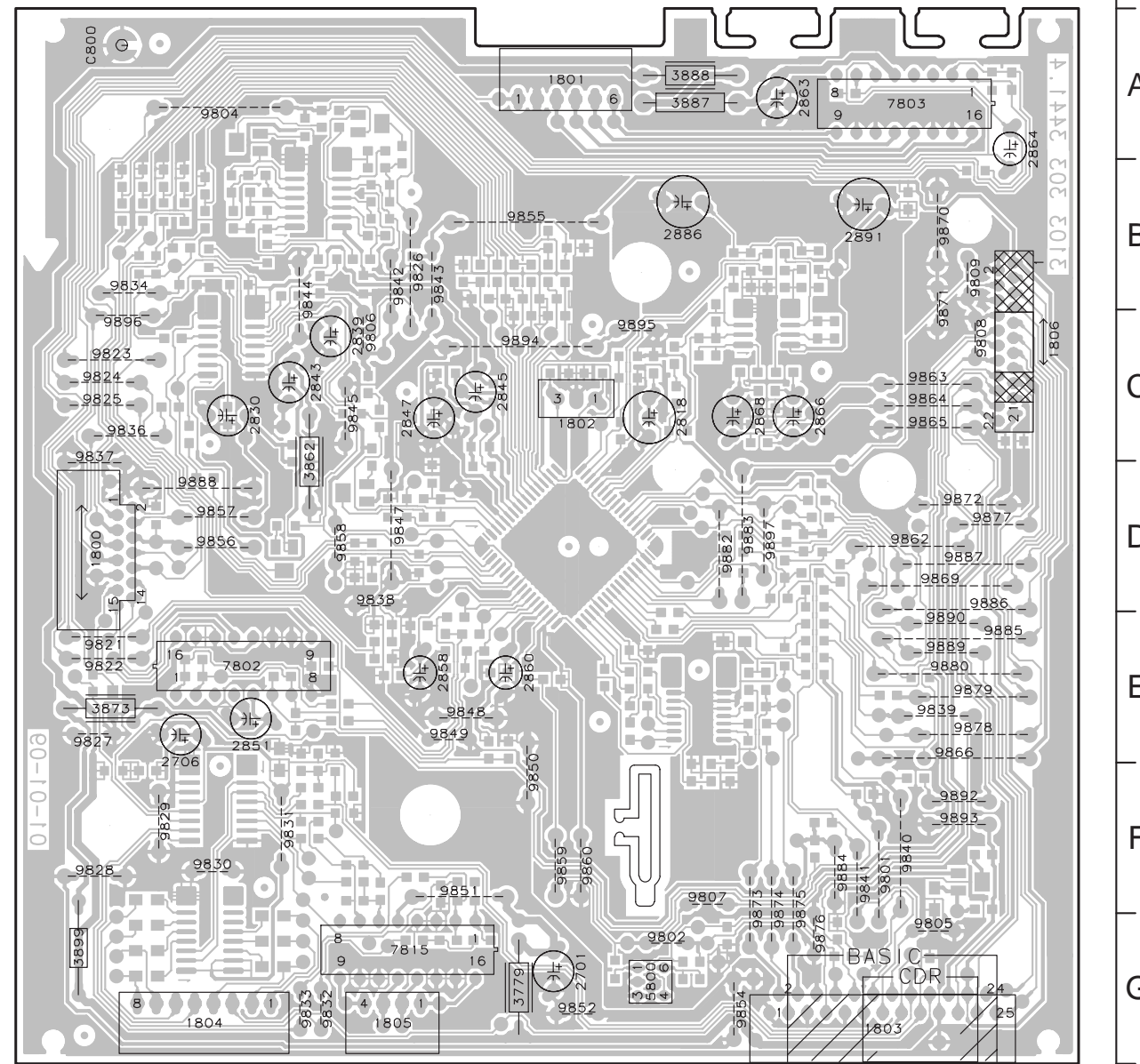
# BLOCK DIAGRAM 3DTC



1800 D1	2706 E2	2858 E3	3779 G4	7803 A6	9808 C7	9827 E1	9836 C1	9844 B2	9854 G5	9863 C7	9873 F5	9882 D5	9890 E7
1801 A4	2818 C5	2860 E4	3862 D2	7815 G3	9809 B7	9828 F1	9837 C1	9845 C3	9855 B4	9864 C7	9874 F6	9883 D5	9892 F7
1802 C4	2830 C2	2863 A6	3873 E1	9801 F6	9821 E1	9829 F1	9838 D3	9847 D3	9856 D2	9865 C7	9875 F6	9884 F6	9893 F7
1803 G6	2839 C3	2864 A7	3887 A5	9802 G5	9822 E1	9830 F2	9839 E7	9848 E3	9857 D2	9866 E7	9876 G6	9885 E7	9894 C4
1804 G2	2843 C2	2866 C6	3888 A5	9804 A2	9823 C1	9831 F2	9840 F6	9849 E3	9858 D3	9869 D7	9877 D7	9886 D7	9895 C5
1805 G3	2845 C4	2868 C5	3899 G1	9805 G7	9824 C1	9832 G3	9841 F6	9850 F4	9859 F4	9870 B7	9878 E7	9887 D7	9896 C1
1806 C7	2847 C3	2886 B5	5800 G5	9806 C3	9825 C1	9833 G2	9842 B3	9851 F3	9860 F4	9871 B7	9879 E7	9888 D2	9897 D6
2701 G4	2851 E2	2891 B6	7802 E2	9807 F5	9826 B3	9834 B1	9843 B3	9852 G4	9862 D6	9872 D7	9880 E7	9889 E7	C800 A1

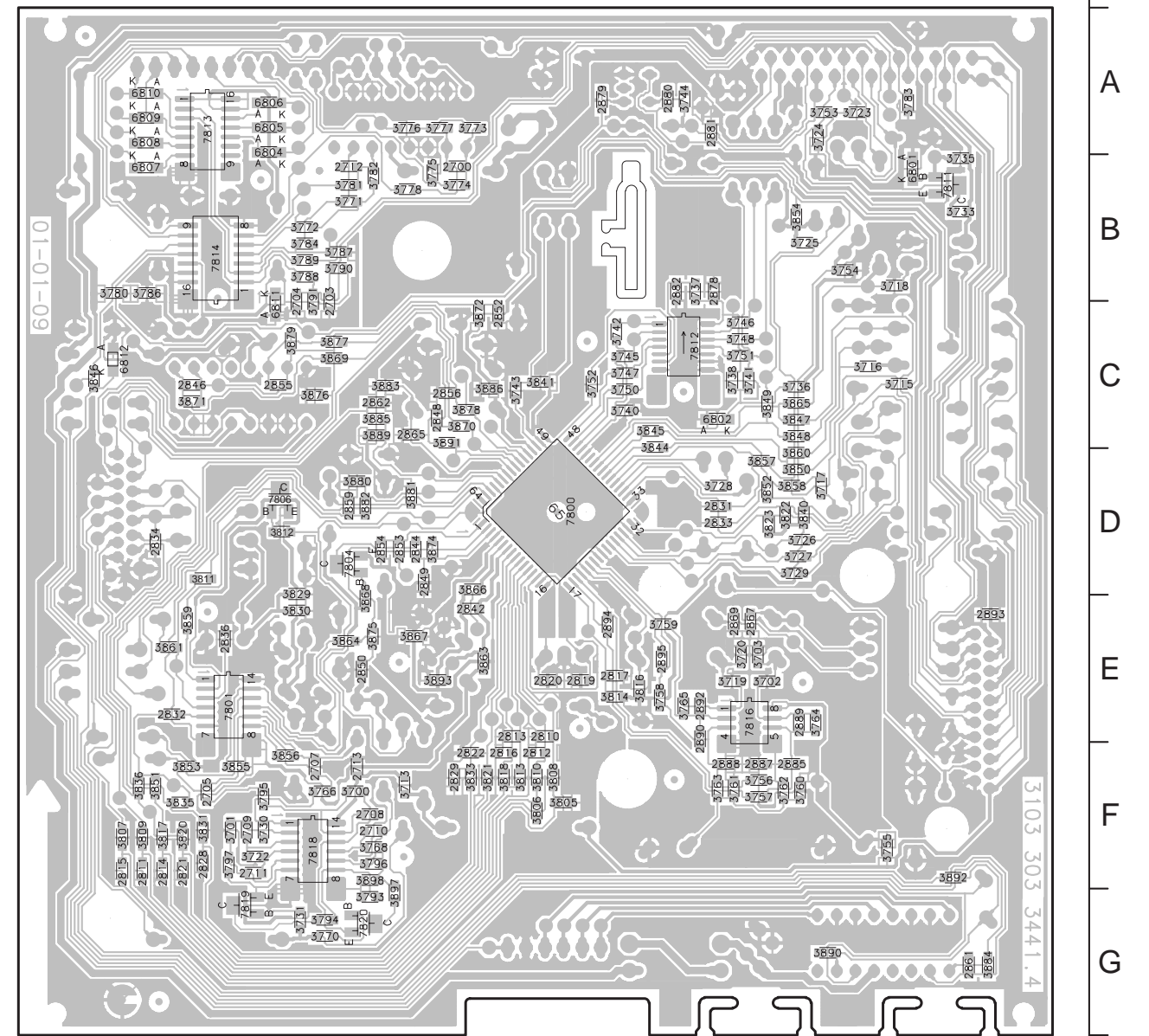
2700 B3	2814 F1	2842 E4	2867 E5	2895 E5	3725 B6	3743 C4	3759 E5	3776 A3	3794 G3	3817 F1	3845 C5	3860 D6	3877 C3	3897 G3	7804 D3
2703 B3	2815 F1	2844 D3	2869 E5	3700 F3	3726 D6	3744 A5	3760 F6	3777 A3	3795 F2	3818 F4	3846 C1	3861 E2	3878 C4	3898 F3	7806 D2
2704 B2	2816 F4	2846 C2	2878 B5	3701 F2	3727 D6	3745 C5	3761 F5	3778 B3	3796 F3	3820 F2	3847 C6	3862 E4	3879 C2	3899 C2	7811 B7
2705 F2	2817 E5	2848 C3	2879 A4	3702 E6	3728 D5	3746 C5	3762 F6	3780 B1	3797 F2	3821 F4	3848 C6	3864 C3	3880 D3	3892 C5	7812 C5
2707 F3	2819 E4	2849 D3	2880 A5	3703 E6	3729 D6	3747 C5	3763 F5	3781 B3	3805 F4	3822 D6	3849 C6	3865 C6	3882 D3	3895 A2	7813 A2
2708 F3	2820 E4	2850 E3	2881 A5	3713 F3	3730 F2	3748 C5	3764 E6	3782 B3	3806 F4	3823 D6	3850 D6	3866 D4	3882 D3	3895 A2	7814 B2
2709 F2	2821 F2	2852 C4	2882 B5	3715 C6	3731 G2	3750 C5	3765 F5	3783 A7	3807 F1	3829 D2	3851 F1	3867 E3	3883 D3	3896 A2	7816 E5
2710 F3	2822 F4	2853 D3	2885 F6	3716 C6	3733 B7	3751 C5	3766 F3	3784 B2	3808 F4	3830 E2	3852 D6	3868 C3	3884 G7	3897 B1	7818 F3
2711 F2	2828 F2	2854 D3	2887 F6	3717 D6	3735 B7	3752 C4	3768 F3	3786 B1	3809 F1	3831 F2	3853 F2	3869 C3	3885 C3	3898 A1	7819 G2
2712 B3	2829 F3	2855 C2	2888 F5	3718 B6	3736 C6	3753 A6	3770 G3	3787 B3	3810 F4	3833 F4	3854 B6	3870 C4	3886 C4	3899 A1	7820 G3
2713 F3	2831 D5	2856 C3	2889 E6	3719 E5	3737 B5	3754 B6	3771 B3	3788 B2	3811 D2	3835 F2	3855 F2	3871 C2	3889 C3	3900 A1	
2810 E4	2832 E2	2859 D3	2890 E5	3720 E5	3738 C5	3755 F6	3772 B2	3789 B2	3812 D2	3836 F1	3856 F2	3872 C4	3890 G6	6811 C2	
2811 F1	2833 D5	2861 G7	2892 E5	3722 F2	3740 C5	3756 F6	3773 A4	3790 B3	3813 F4	3840 D6	3857 D6	3874 D3	3891 C3	6812 C1	
2812 F4	2834 D1	2862 C3	2893 E7	3723 A6	3741 C5	3757 F6	3774 B3	3791 B3	3814 E5	3841 C4	3858 D6	3875 E3	3892 F7	7800 D4	
2813 E4	2836 E2	2865 C3	2894 E5	3724 A6	3742 C5	3758 E5	3775 B3	3793 G3	3816 E5	3844 C5	3859 E2	3876 C3	3893 E3	7801 E2	

### Mainboard Componentside view



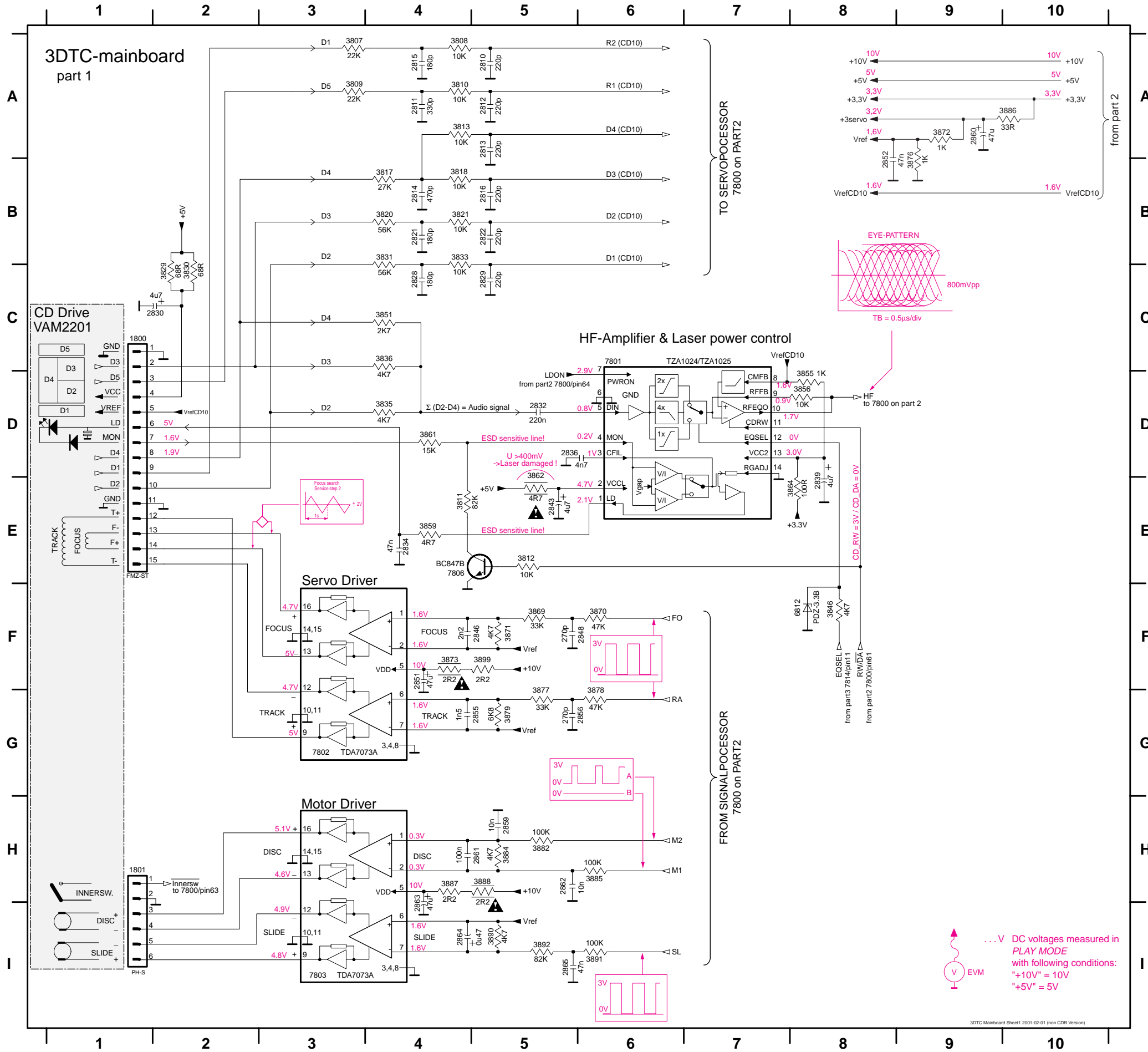
This assembly drawing shows a summary of all possible versions.  
For components used in a specific version see schematic diagram respectively partslist.

### Mainboard Copperside view



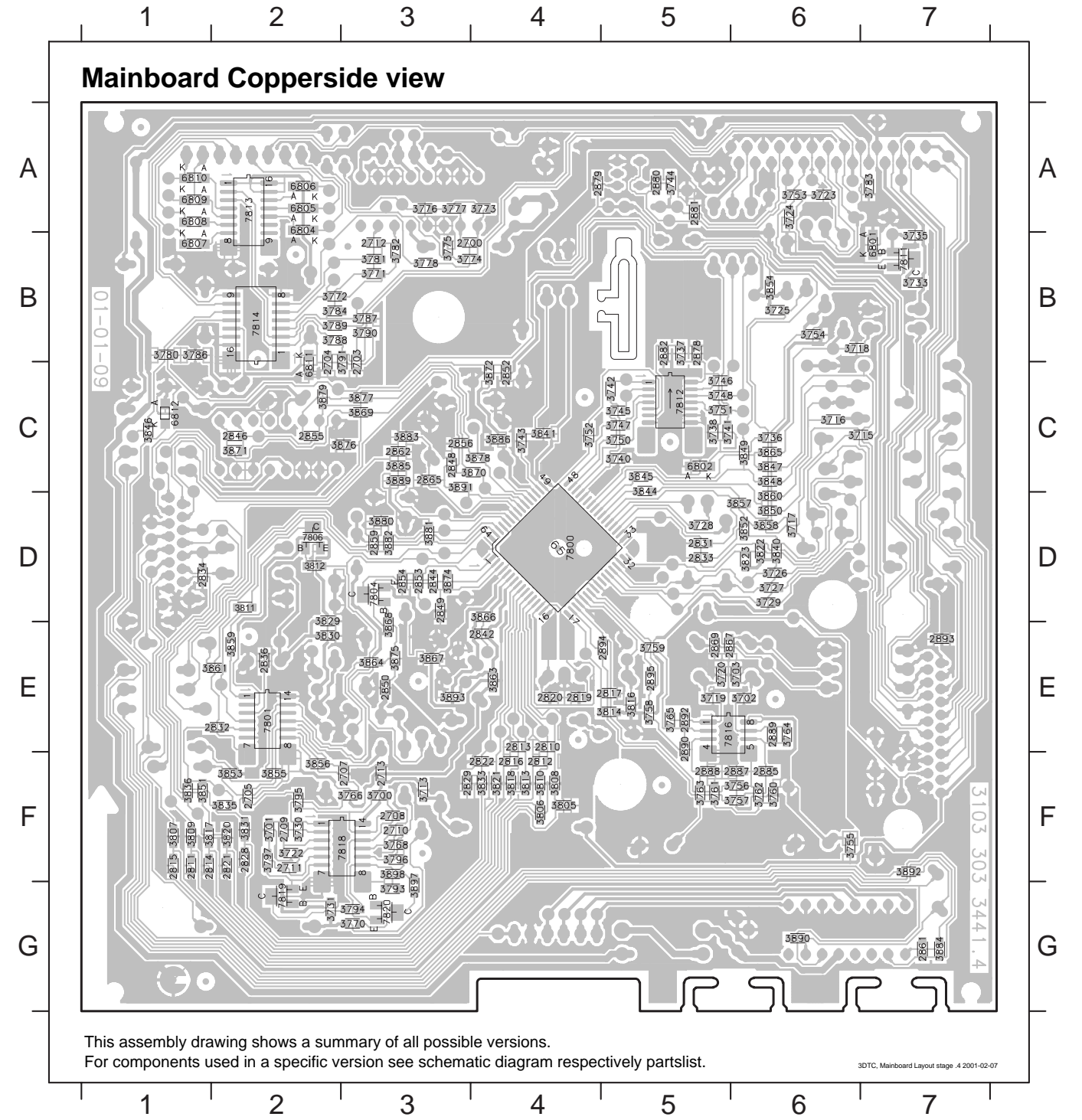
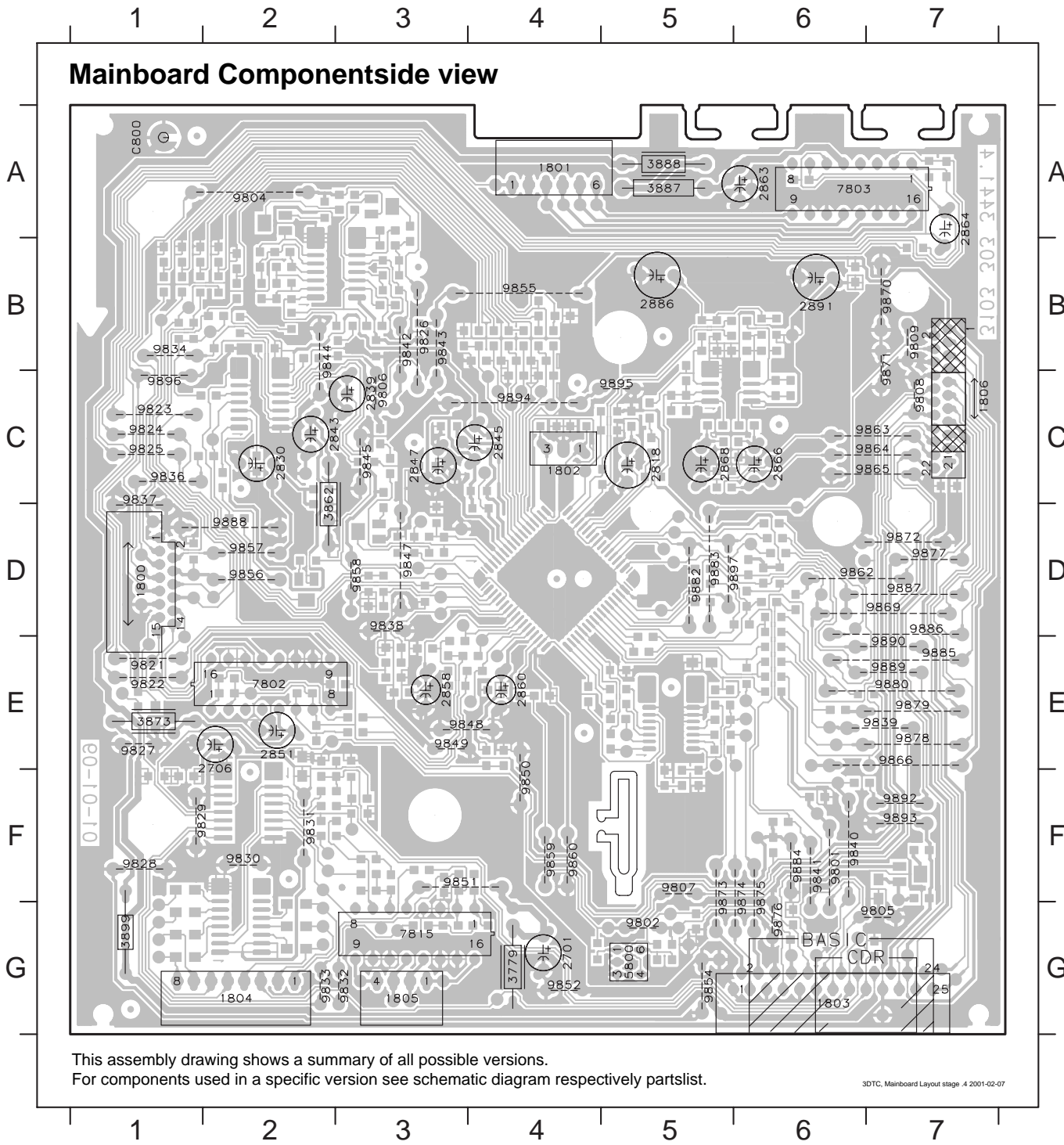
This assembly drawing shows a summary of all possible versions.  
For components used in a specific version see schematic diagram respectively partslist.

1800	C1	2813	A5	2822	B5	2834	E4	2848	F5	2859	H5	2864	I4	3810	A4	3821	B4	3835	D4	3856	D8	3869	F5	3876	B9	3884	H5	3890	I5	7801	D6
1801	I1	2814	B4	2828	C4	2836	D6	2851	F4	2860	B9	2865	I5	3813	A4	3829	C2	3836	C4	3859	E4	3870	F6	3877	G5	3885	H6	3891	I6	7802	G3
2810	A5	2815	A4	2829	C5	2839	E8	2852	B8	2861	H4	3807	A3	3817	B4	3830	C2	3846	F8	3861	D4	3871	F5	3878	G6	3886	A10	3892	I5	7803	I3
2811	A4	2816	B5	2830	C2	2843	E5	2855	G4	2862	H5	3808	A4	3818	B4	3831	B4	3851	C4	3862	E5	3872	B9	3879	G5	3887	H4	3899	F5		
2812	A4	2821	B4	2832	D5	2846	F4	2856	G5	2863	H4	3809	A3	3820	B4	3833	B4	3855	D8	3864	E8	3873	F4	3882	H5	3888	H5	6812	F8		

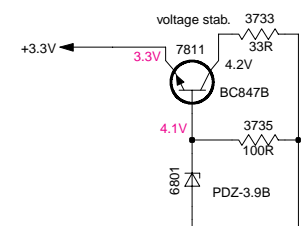
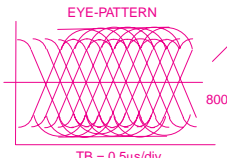
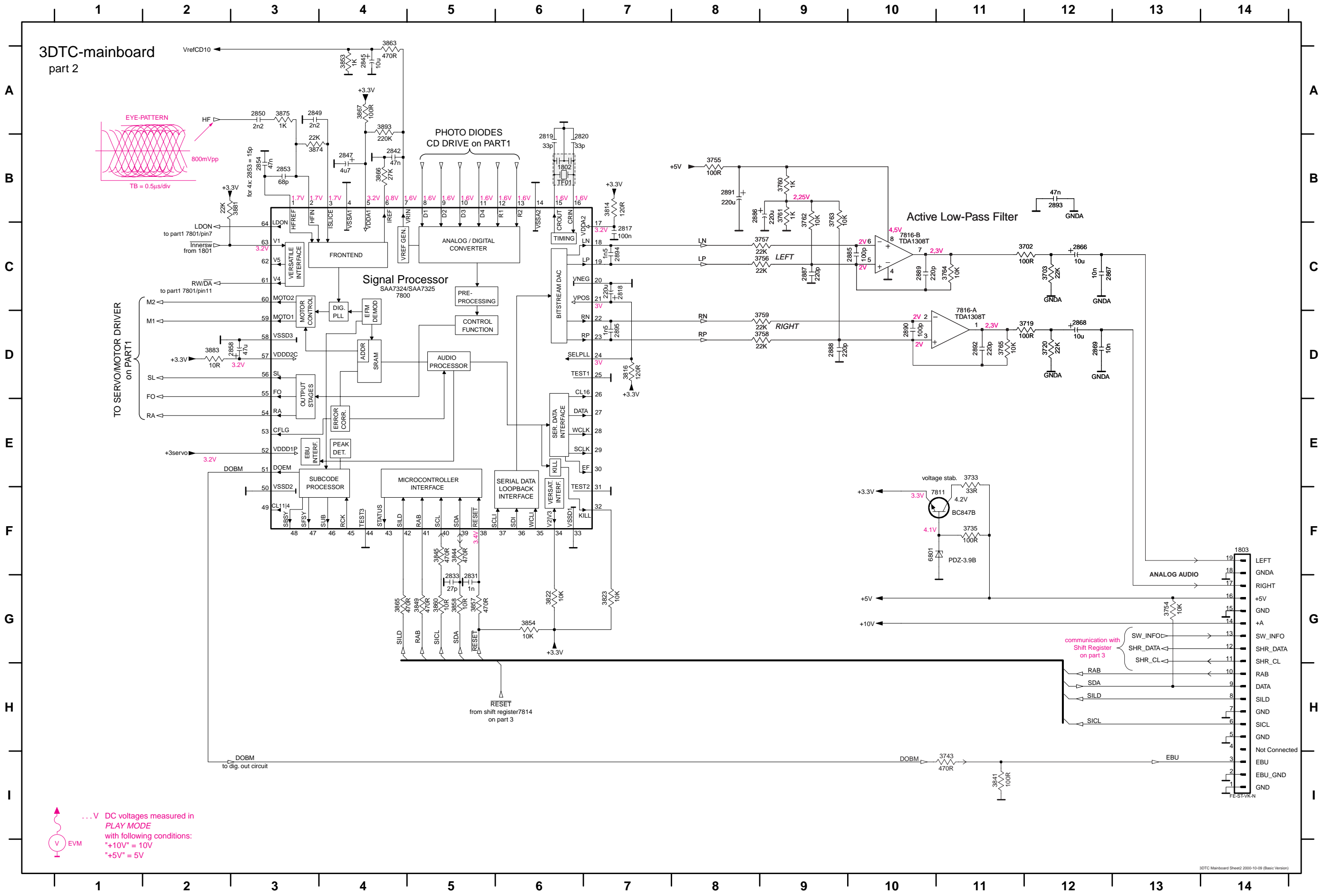


1800 D1	2706 E2	2858 E3	3779 G4	7803 A6	9808 C7	9827 E1	9836 C1	9844 B2	9854 G5	9863 C7	9873 F5	9882 D5	9890 E7
1801 A4	2818 C5	2860 E4	3862 D2	7815 G3	9809 B7	9828 F1	9837 C1	9845 C3	9855 B4	9864 C7	9874 F6	9883 D5	9892 F7
1802 C4	2830 C2	2863 A6	3873 E1	9801 F6	9821 E1	9829 F1	9838 D3	9847 D3	9856 D2	9865 C7	9875 F6	9884 F6	9893 F7
1803 G6	2839 C3	2864 A7	3887 A5	9802 G5	9822 E1	9830 F2	9839 E7	9848 E3	9857 D2	9866 E7	9876 G6	9885 E7	9894 C4
1804 G2	2843 C2	2866 C6	3888 A5	9804 A2	9823 C1	9831 F2	9840 F6	9849 E3	9858 D3	9869 D7	9877 D7	9886 D7	9895 C5
1805 G3	2845 C4	2868 C5	3899 G1	9805 G7	9824 C1	9832 G3	9841 F6	9850 F4	9859 F4	9870 B7	9878 E7	9887 D7	9896 C1
1806 C7	2847 C3	2886 B5	5800 G5	9806 C3	9825 C1	9833 G2	9842 B3	9851 F3	9860 F4	9871 B7	9879 E7	9888 D2	9897 D6
2701 G4	2851 E2	2891 B6	7802 E2	9807 F5	9826 B3	9834 B1	9843 B3	9852 G4	9862 D6	9872 D7	9880 E7	9889 E7	C800 A1

2700 B3	2814 F1	2842 E4	2867 E5	2895 E5	3725 B6	3743 C4	3759 E5	3776 A3	3794 G3	3817 F1	3845 C5	3860 D6	3877 C3	3897 G3	7804 D3
2703 B3	2815 F1	2844 D3	2869 E5	3700 F3	3726 D6	3744 A5	3760 F6	3777 A3	3795 F2	3818 F4	3846 C1	3861 E2	3878 C4	3898 F3	7806 D2
2704 B2	2816 F4	2846 C2	2878 B5	3701 F2	3727 D6	3745 C5	3761 F5	3778 B3	3796 F3	3820 F2	3847 C6	3863 E4	3879 C2	3891 B7	7811 B7
2705 F2	2817 E5	2848 C3	2879 A4	3702 E6	3728 D5	3746 C5	3762 F6	3780 B1	3797 F2	3821 F4	3848 C6	3864 C3	3880 D3	6802 C5	7812 C5
2707 F3	2819 E4	2849 D3	2880 A5	3703 E6	3729 D6	3747 C5	3763 F5	3781 B3	3805 F4	3822 D6	3849 C6	3865 C6	3881 D3	6804 A2	7813 A2
2708 F3	2820 E4	2850 E3	2881 A5	3713 F3	3730 F2	3748 C5	3764 E6	3782 B3	3806 F4	3823 D6	3850 D6	3866 D4	3882 D3	6805 A2	7814 B2
2709 F2	2821 F2	2852 C4	2882 B5	3715 C6	3731 G2	3750 C5	3765 E5	3783 A7	3807 F1	3829 D2	3851 F1	3867 E3	3883 C3	6806 A2	7816 E5
2710 F3	2822 F4	2853 D3	2885 F6	3716 C6	3733 B7	3751 C5	3766 F3	3784 B2	3808 F4	3830 E2	3852 D6	3868 E3	3884 G7	6807 B1	7818 F3
2711 F2	2828 F2	2854 D3	2887 F6	3717 D6	3735 B7	3752 C4	3768 F3	3786 B1	3809 F1	3831 F2	3853 F2	3869 C3	3885 C3	6808 A1	7819 G2
2712 B3	2829 F3	2855 C2	2888 F5	3718 B6	3736 C6	3753 A6	3770 G3	3787 B3	3810 F4	3833 F4	3854 B6	3870 C4	3886 C4	6809 A1	7820 G3
2713 F3	2831 D5	2856 C3	2889 E6	3719 E5	3737 B5	3754 B6	3771 B3	3788 B2	3811 D2	3835 F2	3855 F2	3871 C2	3889 C3	6810 A1	
2810 E4	2832 E2	2859 D3	2890 E5	3720 E5	3738 C5	3755 F6	3772 B2	3789 B2	3812 D2	3836 F1	3856 F2	3872 C4	3890 G6	6811 C2	
2811 F1	2833 D5	2861 G7	2892 E5	3722 F2	3740 C5	3756 F6	3773 A4	3790 B3	3813 F4	3840 D6	3857 D6	3874 D3	3891 C3	6812 C1	
2812 F4	2834 D1	2862 C3	2893 E7	3723 A6	3741 C5	3757 F6	3774 B3	3791 B3	3814 F5	3841 C4	3858 D6	3875 E3	3892 F7	7800 D4	
2813 E4	2836 E2	2865 C3	2894 E5	3724 A6	3742 C5	3758 E5	3775 B3	3793 G3	3816 E5	3844 C5	3859 E2	3876 C3	3893 E3	7801 E2	



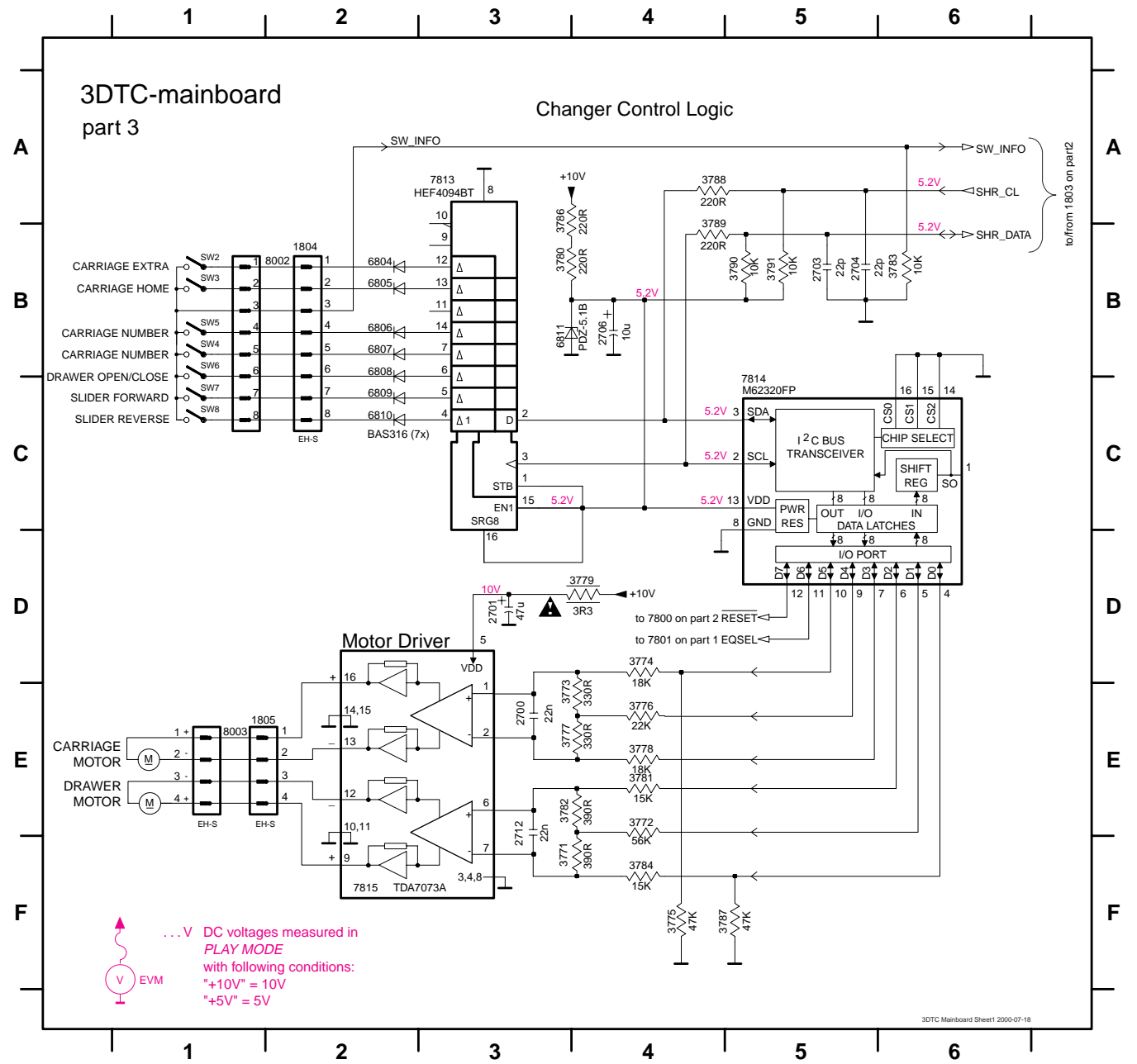
1802	B6	2819	B6	2842	B4	2850	A3	2866	C12	2885	C10	2889	C10	2893	B12	3703	C12	3735	F11	3756	C9	3760	B9	3764	C11	3822	G6	3845	F5	3857	G5	3865	G4	3875	A3	6801	F10	7816-B	C10
1803	F14	2820	B6	2845	A4	2853	B3	2867	C12	2886	B9	2890	D10	2894	C7	3719	D12	3743	I11	3757	C9	3761	B9	3765	D11	3823	G7	3849	G5	3858	G5	3866	B4	3881	B3	7800	C4		
2817	C7	2831	G5	2847	B4	2854	B3	2868	D12	2887	C9	2891	B8	2895	D7	3720	D12	3754	G13	3758	D9	3762	B9	3814	B7	3841	I11	3853	A4	3860	G5	3867	A4	3883	D2	7811	F10		
2818	C7	2833	G5	2849	A3	2858	D3	2869	D12	2888	D9	2892	D11	3702	C12	3733	F11	3755	B8	3759	D9	3763	B9	3816	D7	3844	F5	3854	G6	3863	A4	3874	B3	3893	A4	7816-A	D11		



...V DC voltages measured in PLAY MODE with following conditions:  
 "+10V" = 10V  
 "+5V" = 5V

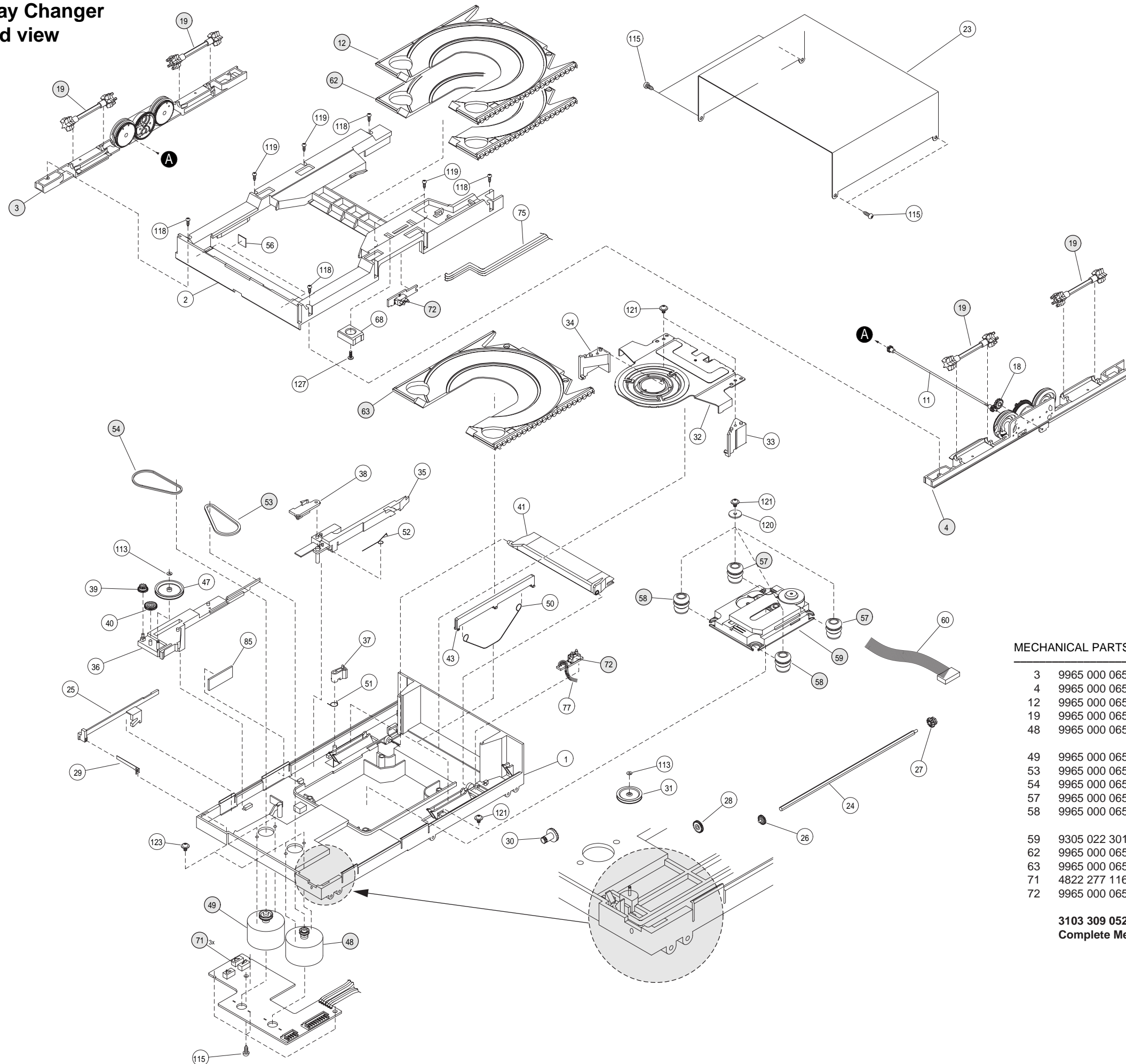
Technical remarks

1804	B2	2703	B5	3771	F4	3775	F4	3779	D4	3783	B6	3788	A4	6804	B2	6808	B2	7813	A3
1805	E1	2704	B5	3772	E4	3776	E4	3780	B3	3784	F4	3789	B4	6805	B2	6809	C2	7814	C5
2700	E3	2706	B4	3773	E4	3777	E4	3781	E4	3786	B3	3790	B5	6806	B2	6810	C2	7815	F2
2701	D3	2712	E3	3774	D4	3778	E4	3782	E4	3787	F5	3791	B5	6807	B2	6811	B3		





### 3Disc Tray Changer Exploded view



#### MECHANICAL PARTS

3	9965 000 06538	ASSY HOLDER LEFT
4	9965 000 06539	ASSY HOLDER RIGHT
12	9965 000 06540	ASSY CARRIAGE 1 (TOP)
19	9965 000 06541	ASSY GEAR STAR
48	9965 000 06542	ASSY MOTOR CARRIAGE
49	9965 000 06543	ASSY MOTOR DRAWER
53	9965 000 06544	BELT DRAWER
54	9965 000 06545	BELT CARRIAGE
57	9965 000 06546	DAMPER RUBBER REAR
58	9965 000 06547	DAMPER RUBBER FRONT
59	9305 022 30103	CD DRIVE VAM2201/03
62	9965 000 06548	ASSY CARRIAGE 2 (MIDDLE)
63	9965 000 06549	ASSY CARRIAGE 3 (BOTTOM)
71	4822 277 11652	SWITCH (SW6-SW8)
72	9965 000 06550	SWITCH (SW2-SW5)

**3103 309 05250 3DTC CMCJ-01-13 (1xSPEED)  
Complete Mechanic - CD Drive already included**

## ELECTRICAL PARTSLIST 3DTC MODULE Basic Version

MISCELLANEOUS					CAPACITORS				
1800	4822 265 10925	FLEX FOIL CONNECTOR 15PIN			2865©	3198 024 44730	47nF	5%	50V
1803	4822 265 11545	FLEX FOIL CONNECTOR 19PIN			2866	3198 028 41090	10µF	20%	35V
8003	3103 308 92560	FLEX FOIL CABLE 15P, 80mm			2867©	4822 122 33177	10nF	20%	50V
59	9305 022 30103	CD DRIVE VAM2201/03			2868	3198 028 41090	10µF	20%	35V
					2869©	4822 122 33177	10nF	20%	50V
CAPACITORS					RESISTORS				
2504	4822 124 40248	10µF	20%	63V	2885©	4822 122 31765	100pF	5%	50V
2506	4822 124 40433	47µF	20%	25V	2886	4822 124 42383	220µF	20%	4V
2507	4822 124 40248	10µF	20%	63V	2887©	4822 126 13883	220pF	5%	50V
2508	4822 124 40248	10µF	20%	63V	2888©	4822 126 13883	220pF	5%	50V
2510	4822 124 40248	10µF	20%	63V	2889©	4822 126 13883	220pF	5%	50V
2513	4822 124 40248	10µF	20%	63V	2890©	4822 122 31765	100pF	5%	50V
2530	4822 124 40433	47µF	20%	25V	2891	4822 124 42383	220µF	20%	4V
2532	4822 124 40433	47µF	20%	25V	2892©	4822 126 13883	220pF	5%	50V
2700©	4822 126 14494	22nF	10%	25V	2893©	4822 126 13751	47nF	10%	50V
2701	4822 124 40433	47µF	20%	25V	2894©	4822 126 13344	1,5nF	5%	63V
2703©	5322 122 32658	22pF	5%	50V	2895©	4822 126 13344	1,5nF	5%	63V
2704©	4822 122 33761	22pF	5%	50V	RESISTORS				
2706	4822 124 22833	10µF	20%	50V	3502©	4822 051 20102	1kΩ	5%	0,1W
2712©	4822 126 14494	22nF	10%	25V	3505©	4822 051 20223	22kΩ	5%	0,1W
2810©	4822 126 13883	220pF	5%	50V	3512©	4822 117 10833	10kΩ	1%	0,1W
2811©	4822 126 14241	330pF		50V	3515©	4822 117 10833	10kΩ	1%	0,1W
2812©	4822 126 13883	220pF	5%	50V	3517©	4822 117 10833	10kΩ	1%	0,1W
2813©	4822 126 13883	220pF	5%	50V	3534©	4822 117 12955	2,7kΩ	1%	0,1W
2814©	4822 126 13881	470pF	5%	50V	3535©	4822 051 20472	4,7kΩ	5%	0,1W
2815©	4822 126 14508	180pF	5%	50V	3536©	4822 117 12955	2,7kΩ	1%	0,1W
2816©	4822 126 13883	220pF	5%	50V	3537©	4822 051 20472	4,7kΩ	5%	0,1W
2817©	4822 126 14585	100nF	10%	50V	3702©	4822 051 30101	100Ω	5%	0,06W
2818	4822 124 42383	220µF	20%	4V	3703©	4822 051 30223	22kΩ	5%	0,06W
2819©	5322 122 32659	33pF	5%	50V	3719©	4822 051 30101	100Ω	5%	0,06W
2820©	5322 122 32659	33pF	5%	50V	3720©	4822 051 30223	22kΩ	5%	0,06W
2821©	4822 126 14508	180pF	5%	50V	3733©	4822 051 30339	33Ω	5%	0,06W
2822©	4822 126 13883	220pF	5%	50V	3735©	4822 051 30101	100Ω	5%	0,06W
2828©	4822 126 14508	180pF	5%	50V	3743©	4822 051 30471	470Ω	5%	0,06W
2829©	4822 126 13883	220pF	5%	50V	3754©	4822 051 30103	10kΩ	5%	0,06W
2830	4822 124 40769	4,7µF	20%	100V	3755©	4822 051 30101	100Ω	5%	0,06W
2831©	5322 126 11578	1nF	10%	63V	3756©	4822 051 30223	22kΩ	5%	0,06W
2832©	4822 126 13879	220nF	20%	16V	3757©	4822 051 30223	22kΩ	5%	0,06W
2833©	4822 126 11669	27pF	10%	50V	3758©	4822 051 30223	22kΩ	5%	0,06W
2834©	4822 126 13751	47nF	10%	50V	3759©	4822 051 20223	22kΩ	5%	0,1W
2836©	4822 126 13193	4,7nF	10%	63V	3760©	4822 051 10102	1kΩ	2%	0,25W
2839	4822 124 40769	4,7µF	20%	100V	3761©	4822 051 10102	1kΩ	2%	0,25W
2842©	4822 126 13751	47nF	10%	50V	3762©	4822 117 10833	10kΩ	1%	0,1W
2843	4822 124 40769	4,7µF	20%	100V	3763©	4822 117 10833	10kΩ	1%	0,1W
2845	4822 124 40248	10µF	20%	63V	3764©	4822 051 30103	10kΩ	5%	0,06W
2846©	4822 126 14238	2,2nF	10%	50V	3765©	4822 051 30103	10kΩ	5%	0,06W
2847	4822 124 40769	4,7µF	20%	100V	3771©	4822 051 30391	390Ω	5%	0,062W
2848©	4822 126 14506	270pF	5%	50V	3772©	4822 051 30563	56kΩ	5%	0,06W
2849©	4822 122 33177	10nF	20%	50V	3773©	4822 051 30331	330Ω	5%	0,06W
2850©	2238 786 11554	2,2nF	5%	16V	3774©	4822 051 30183	18kΩ	5%	0,06W
2851	4822 124 40433	47µF	20%	25V	3775©	4822 117 12925	47kΩ	1%	0,06W
2852©	3198 024 44730	47nF	5%	50V	3776©	4822 051 30223	22kΩ	5%	0,06W
2853©	4822 126 13694	68pF	1%	63V	3777©	4822 051 30331	330Ω	5%	0,06W
2854©	4822 126 13751	47nF	10%	50V	3778©	4822 051 30183	18kΩ	5%	0,06W
2855©	4822 126 14247	1,5nF	10%	50V	3779▲	4822 052 10338	3,3Ω		NFR25
2856©	4822 122 33216	270pF	5%	50V	3780©	4822 117 11503	220Ω	5%	0,1W
2858	4822 124 12362	47µF	20%	4V	3781©	4822 051 30153	15kΩ	5%	0,06W
2859©	4822 122 33177	10nF	20%	50V	3782©	4822 051 30391	390Ω	5%	0,062W
2860	4822 124 12362	47µF	20%	4V	3783©	4822 051 30103	10kΩ	5%	0,06W
2861©	4822 126 14585	100nF	10%	50V	3784©	4822 051 30153	15kΩ	5%	0,06W
2862©	5322 126 11583	10nF	10%	63V	3786©	4822 051 30221	220Ω	5%	0,06W
2863	4822 124 40433	47µF	20%	25V	3787©	4822 117 10834	47kΩ	1%	0,1W
2864	5322 124 41948	0,47µF	20%	50V	3788©	4822 051 30221	220Ω	5%	0,06W

## ELECTRICAL PARTSLIST 3DTC MODULE Basic Version

RESISTORS					RESISTORS				
3789©	4822 051 30221	220Ω	5%	0,06W	3890©	4822 051 30472	4,7kΩ	5%	0,06W
3790©	4822 051 30103	10kΩ	5%	0,06W	3891©	4822 117 13632	100kΩ	1%	0,06W
3791©	4822 051 30103	10kΩ	5%	0,06W	3892©	4822 117 11149	82kΩ	1%	0,1W
3805	4822 111 50499	3,3MΩ	5%	0,2W	3893©	4822 117 13579	220kΩ	1%	0,1W
3806	4822 111 50499	3,3MΩ	5%	0,2W	3899	4822 116 81154	2,2Ω	5%	0,5W
3807©	4822 051 30223	22kΩ	5%	0,06W	COILS				
3808©	4822 051 30103	10kΩ	5%	0,06W	1802	2422 543 01068	RESONATOR 8MHZ		
3809©	4822 051 30223	22kΩ	5%	0,06W	DIODES				
3810©	4822 051 30103	10kΩ	5%	0,06W	6801©	9322 129 34685	BZX284-C3V9		
3813©	4822 051 30103	10kΩ	5%	0,06W	6804©	4822 130 11397	BAS316		
3814©	4822 051 20121	120Ω	5%	0,1W	6805©	4822 130 11397	BAS316		
3816©	4822 051 30121	120Ω	5%	0,06W	6806©	4822 130 11397	BAS316		
3817©	4822 051 20273	27kΩ	5%	0,1W	6807©	4822 130 11397	BAS316		
3818©	4822 051 30103	10kΩ	5%	0,06W	6808©	4822 130 11397	BAS316		
3820©	4822 117 11148	56kΩ	1%	0,1W	6809©	4822 130 11397	BAS316		
3821©	4822 051 30103	10kΩ	5%	0,06W	6810©	4822 130 11397	BAS316		
3822©	4822 051 30103	10kΩ	5%	0,06W	6811©	9340 548 52115	BZX284-C5V1		
3823©	4822 051 30103	10kΩ	5%	0,06W	6812©	9340 548 47115	PDZ3.3B		
3829©	4822 051 30689	68Ω	5%	0,06W	TRANSISTORS				
3830©	4822 051 30689	68Ω	5%	0,06W	7811©	5322 130 60159	BC846B		
3831©	4822 051 30563	56kΩ	5%	0,06W	INTEGRATED CIRCUITS				
3833©	4822 051 30103	10kΩ	5%	0,06W	7800©	9352 642 17557	SAA7325H/M2B CD10/M2		
3835©	4822 051 30472	4,7kΩ	5%	0,06W	7801©	9352 622 36118	TZA1025T/V2 HF-Amplifier		
3836©	4822 051 20472	4,7kΩ	5%	0,1W	7802	4822 209 32852	TDA7073A/N2		
3841©	4822 051 30101	100Ω	5%	0,06W	7803	4822 209 32852	TDA7073A/N2		
3844©	4822 051 30471	470Ω	5%	0,06W	7813	5322 209 11306	HEF4094BT		
3845©	4822 051 30471	470Ω	5%	0,06W	7814©	4822 209 17345	M62320FP, I2C SHIFT REGISTER		
3846©	4822 051 30472	4,7kΩ	5%	0,06W	7815	4822 209 32852	TDA7073A/N2		
3849©	4822 051 20471	470Ω	5%	0,1W	7816©	4822 209 33165	TDA1308T/N1		
3851©	4822 117 12955	2,7kΩ	1%	0,1W					
3853©	4822 051 30102	1kΩ	5%	0,06W					
3854©	4822 051 30103	10kΩ	5%	0,06W					
3855©	4822 051 10102	1kΩ	2%	0,25W					
3856©	4822 051 30103	10kΩ	5%	0,06W					
3857©	4822 051 30471	470Ω	5%	0,06W					
3858©	4822 051 30109	10Ω	5%	0,06W					
3859©	4822 117 13608	4,7Ω	5%	0,06W					
3860©	4822 051 20109	10Ω	5%	0,1W					
3861©	4822 051 30101	100Ω	5%	0,06W					
3862▲	4822 052 10478	4,7Ω	5%	NFR					
3863©	4822 051 20471	470Ω	5%	0,1W					
3864©	4822 051 20101	100Ω	5%	0,1W					
3865©	4822 051 20471	470Ω	5%	0,1W					
3866©	4822 051 20273	27kΩ	5%	0,1W					
3867©	4822 051 20101	100Ω	5%	0,1W					
3869©	4822 051 30333	33kΩ	5%	0,06W					
3870©	4822 117 12925	47kΩ	1%	0,06W					
3871©	4822 051 30472	4,7kΩ	5%	0,06W					
3872©	4822 051 30102	1kΩ	5%	0,06W					
3873▲	4822 052 10228	2,2Ω	5%	0,33W					
3874©	4822 051 30223	22kΩ	5%	0,06W					
3875©	4822 117 11817	1,2kΩ	1%	0,					

**Brief introduction of the Mains Board**

ECO Power

Standby Transformer 5100 provides the LPS supply to control the relay 1102, cutting of the Mains supply to the Mains transformer during the ECO Power (standby) mode.

The Mains transformer provides the following:

- AC supply (across F1 & F2) and -Vkk supply for the FTD display
- +A and +A/2 to the Main amplifier area and Regulator board

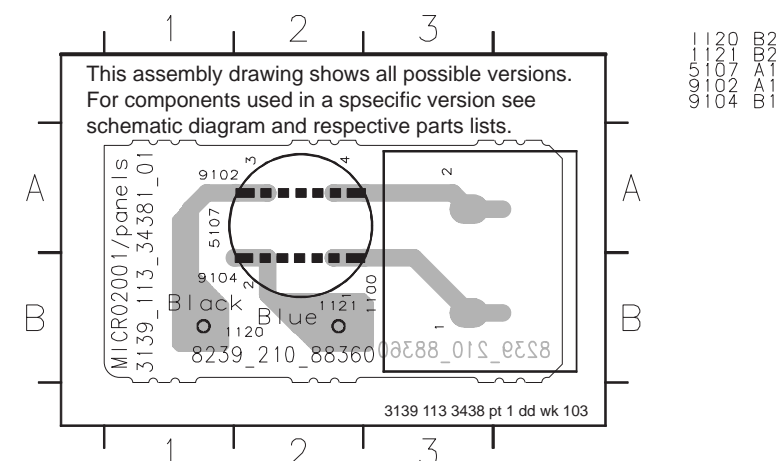
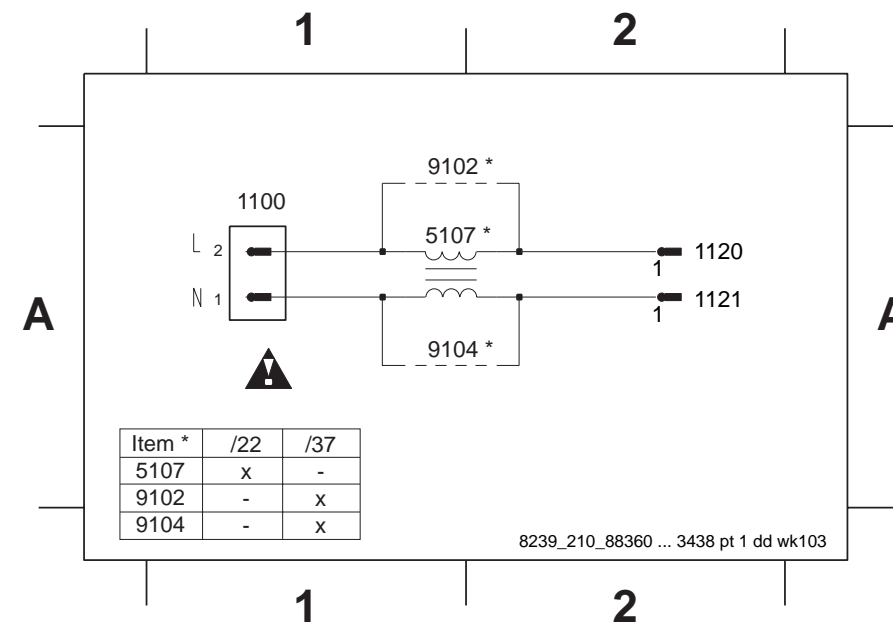
# MAINS BOARD

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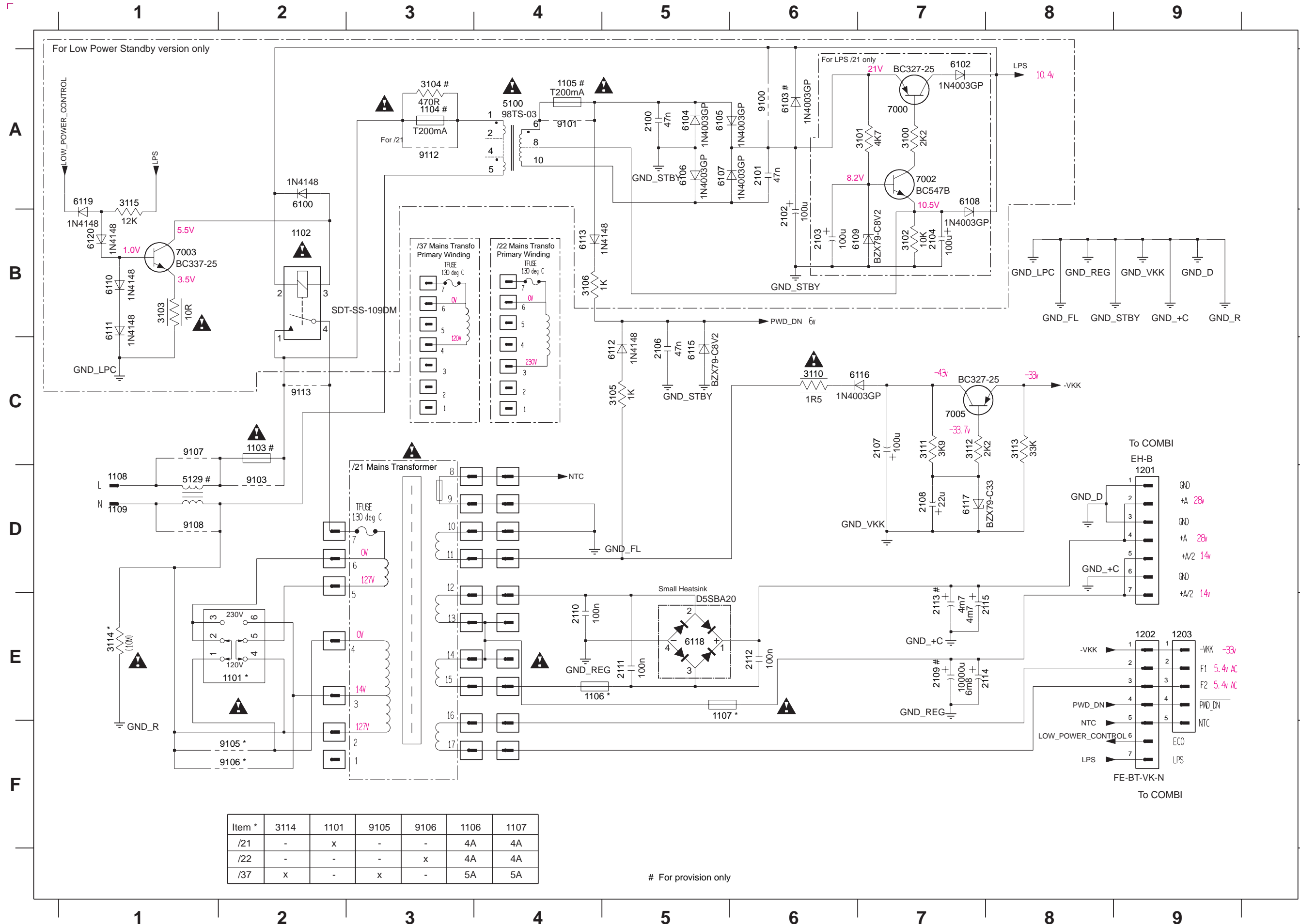
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**SOCKET PART - CIRCUIT DIAGRAM & COMPONENT LAYOUT**

- |         |         |         |         |
|---------|---------|---------|---------|
| 1100 A1 | 1121 A2 | 9102 A1 | T341 A1 |
| 1120 A2 | 5107 A1 | 9104 A1 | T342 A1 |



CIRCUIT DIAGRAM - MAINS PART



- 1101 E2
- 1102 B2
- 1103 C2
- 1104 A3
- 1105 A4
- 1106 E4
- 1107 E5
- 1108 D1
- 1109 D1
- 1201 D9
- 1202 E9
- 1203 E9
- 2100 A5
- 2101 A6
- 2102 B6
- 2103 B6
- 2104 B7
- 2106 C5
- 2107 C7
- 2108 D7
- 2109 E7
- 2110 E4
- 2111 E5
- 2112 E6
- 2113 E7
- 2114 E8
- 2115 E8
- 3100 A7
- 3101 A7
- 3102 B7
- 3103 B1
- 3104 A3
- 3105 C5
- 3106 B4
- 3110 C6
- 3111 C7
- 3112 C7
- 3113 C8
- 3114 E1
- 5100 A4
- 5129 D1
- 6100 A2
- 6102 A7
- 6103 A6
- 6104 A5
- 6105 A5
- 6106 A5
- 6107 A5
- 6108 A7
- 6109 B6
- 6110 B1
- 6111 B1
- 6112 C5
- 6113 B4
- 6115 C5
- 6116 C7
- 6117 D7
- 6118 E5
- 6119 A1
- 6120 B1
- 7000 A7
- 7002 B7
- 7003 B1
- 7005 C7
- 9100 A6
- 9101 A4
- 9103 D2
- 9105 F2
- 9106 F2
- 9107 C1
- 9108 D1
- 9112 A3
- 9113 C2





**ELECTRICAL PARTS LIST - MAINS BOARD****MISCELLANEOUS**

1100	4822 265 31015	△	Mains Socket /22
1100	2422 030 00328	△	Mains Socket /37
1102	4822 280 10382	△	Relay 1P 9V
1106	4822 071 54002	△	Fuse T4A 250V /22
1106	4822 071 55002	△	Fuse T5A 250V /37
1107	4822 071 54002	△	Fuse T4A 250V /22
1107	4822 071 55002	△	Fuse T5A 250V /37
1202	4822 267 10953		Flex Socket 7pin Vert.

6120 4822 130 30621 1N4148

**TRANSISTORS**

7003	4822 130 40981	BC337-25
7005	4822 130 41246	BC327-25

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

**CAPACITORS**

2100	4822 122 33449	47nF 30% 50V
2101	4822 122 33449	47nF 30% 50V
2102	4822 124 40255	100µF 20% 63V
2106	4822 121 43526	47nF 5% 250V
2107	4822 124 40255	100µF 20% 63V
2108	4822 124 81151	22µF 20% 50V
2110	5322 121 42386	100nF 5% 63V
2111	5322 121 42386	100nF 5% 63V
2112	5322 121 42386	100nF 5% 63V
2114	4822 124 12328	6800µF 20% 16V
2115	4822 124 80563	4700µF 20% 35V

**RESISTORS**

3103	4822 052 10109	△	10R 5% 0,33W
3105	4822 050 11002		1k 1% 0,4W
3106	4822 050 11002		1k 1% 0,4W
3110	4822 117 12148	△	1R5 5% 0,33W
3111	4822 116 52276		3k9 5% 0,5W
3112	4822 116 52256		2k2 5% 0,5W
3113	4822 050 23303		33k 1% 0,6W
3114	4822 053 21106	△	10M 5% 0,5W
3115	4822 116 52238		12k 5% 0,5W

**COILS & FILTERS**

5100	3103 308 30610	△	Standby Transformer /22
5107	4822 157 11832		Mains Filter 400µH 3A

**DIODES**

6100	4822 130 30621	1N4148
6104	4822 130 31878	1N4003G
6105	4822 130 31878	1N4003G
6106	4822 130 31878	1N4003G
6107	4822 130 31878	1N4003G
6110	4822 130 30621	1N4148
6111	4822 130 30621	1N4148
6112	4822 130 30621	1N4148
6113	4822 130 30621	1N4148
6115	4822 130 34382	BZX79-B8V2
6116	4822 130 31878	1N4003G
6117	4822 130 34142	BZX79-B33
6118	4822 130 82078	D5SBA20
6119	4822 130 30621	1N4148

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# COMBI & REGULATOR BOARDS

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### **Brief introduction of the Regulator Board**

---

The regulator board provides the following:

- a) 12V supply: +12V\_A and +12V\_M derived from the +A supply
- b) 5,6V and 5V supply: +5V6 and 5V\_VCD derived from the +A/2 supply

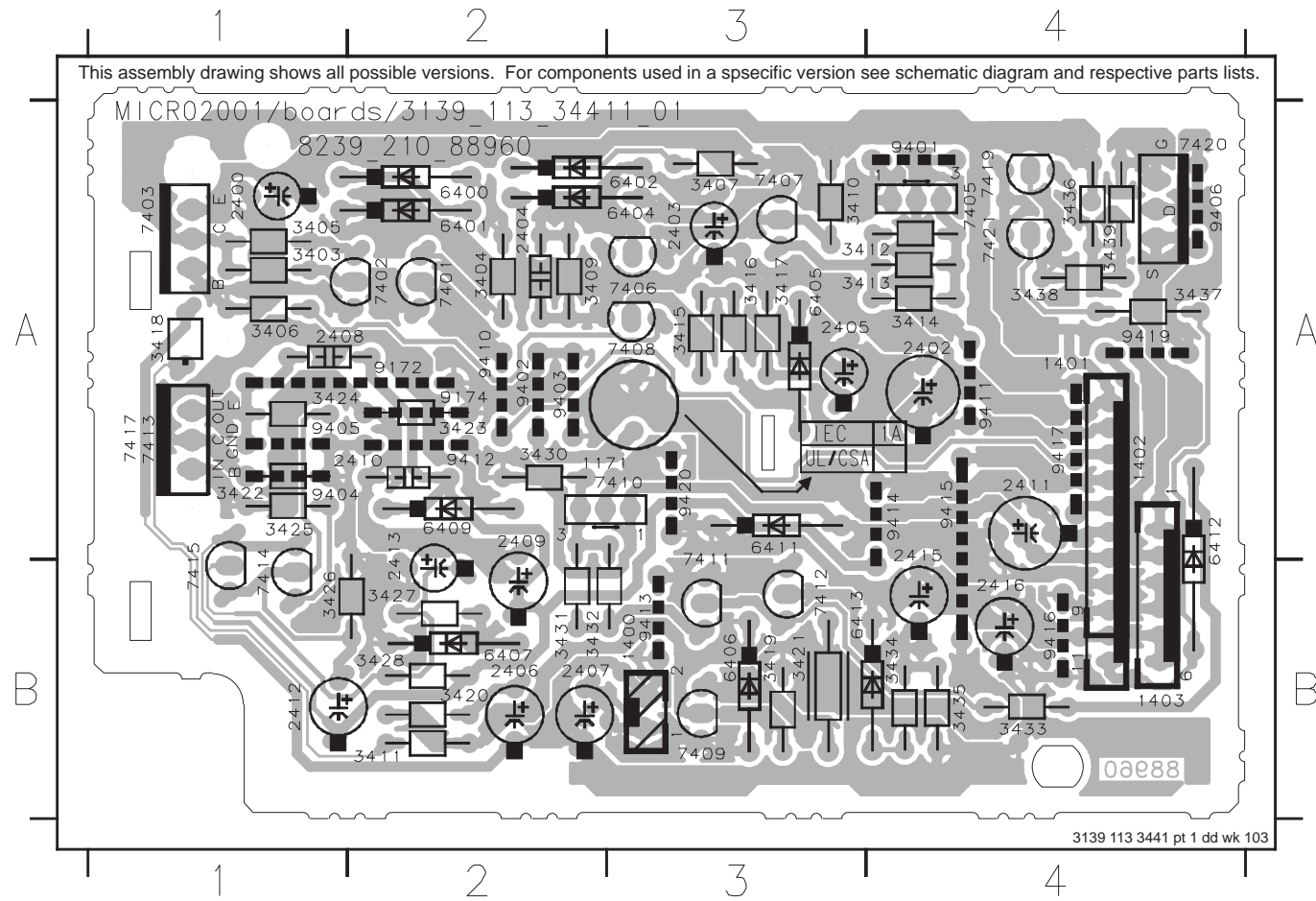
### **Brief introduction of the Combi Board**

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1. Source selection & Sound control  
Audio Processor IC 7550 (TDA7468D) provides the source selection and sound control features via the I2C bus (I2C\_CLK and I2C\_DATA lines).
2. Line out  
Line out is taken directly from the Audio Processor IC 7550. Muting is done via Transistors 7500, 7501 and 7508.
3. Pre-amplifier  
IC7510 (NJM4556AM) provides pre-amplification of the output signals from the Audio Processor IC 7550. Muting of audio signals to Power Amplifier IC 7200 during Headphone application and Source switching is done via transistors 7514, 7515, 7540 and 7541
4. Headphone and Sub-woofer outputs  
The headphone and Sub-woofer output is taken from the pre-amplifier out. Muting of these outputs are done via transistors 7511, 7512, 7522 and 7523.
5. Power Amplifier  
IC 7200 (AN7125) is used as Power amplifier. It function as Class G amplifier together with transistor 7204 (BDW94C) which switches the supply between supply source +A and +A/2.
6. Protection Circuit  
Transistors 7201, 7202 and 7203 provides protection against:
  - short-circuit of speaker terminals
  - short-circuit of speaker terminals to ground
7. Digital out buffer  
IC 7525 (74VUD40) act as buffer to boost the digital output level
8. I/O Expander  
I/O Expander IC 7526 (M62320FP) converts the I2C bus (I2C\_CLK and I2C\_DATA lines) into additional control lines.
9. +5V6\_CON supply  
IC 7529 (MC78L05) provides the necessary supply to power  $\mu$ Processor IC 7102 (TMP88CU74F) during ECO Power mode.

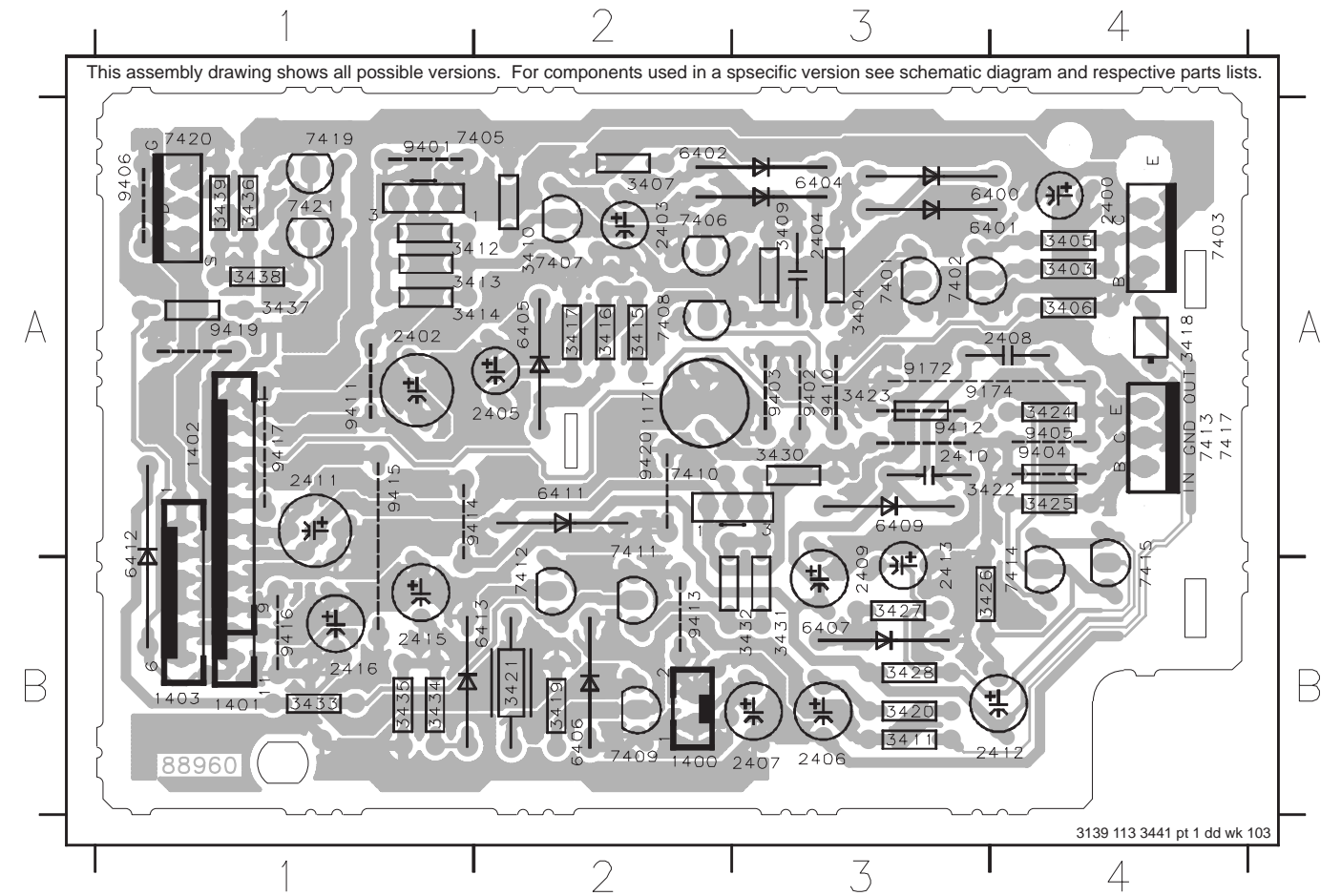
COMPONENT SIDE VIEW - REGULATOR BOARD

1171 A2	2408 A1	3407 A3	3420 B2	3433 B4	6406 B3	7408 A3	9172 A2	9414 A4
1400 B3	2409 A2	3409 A2	3421 B3	3434 B4	6407 B2	7409 B3	9174 A2	9415 A4
1401 A4	2410 A2	3410 A3	3422 A1	3435 B4	6409 A2	7410 A3	9401 A4	9416 B4
1402 A4	2411 A4	3411 B2	3423 A2	3436 A4	6411 A3	7411 A3	9402 A2	9417 A4
1403 B4	2412 B1	3412 A3	3424 A1	3437 A4	6412 A4	7412 B3	9403 A2	9419 A4
2400 A1	2413 A2	3413 A3	3425 A1	3438 A4	6413 B3	7413 A1	9404 A1	9420 A3
2402 A4	2415 A4	3414 A4	3426 B1	3439 A4	7401 A2	7414 B1	9405 A1	
2403 A3	2416 B4	3415 A3	3427 B2	6400 A2	7402 A2	7415 B1	9406 A4	
2404 A2	3403 A1	3416 A3	3428 B2	6401 A2	7403 A1	7417 A1	9410 A2	
2405 A3	3404 A2	3417 A3	3430 A2	6402 A3	7405 A4	7419 A4	9411 A4	
2406 B2	3405 A1	3418 A1	3431 B2	6404 A3	7406 A3	7420 A4	9412 A2	
2407 B2	3406 A1	3419 B3	3432 B2	6405 A3	7407 A3	7421 A4	9413 B3	



COPPER SIDE VIEW - REGULATOR BOARD

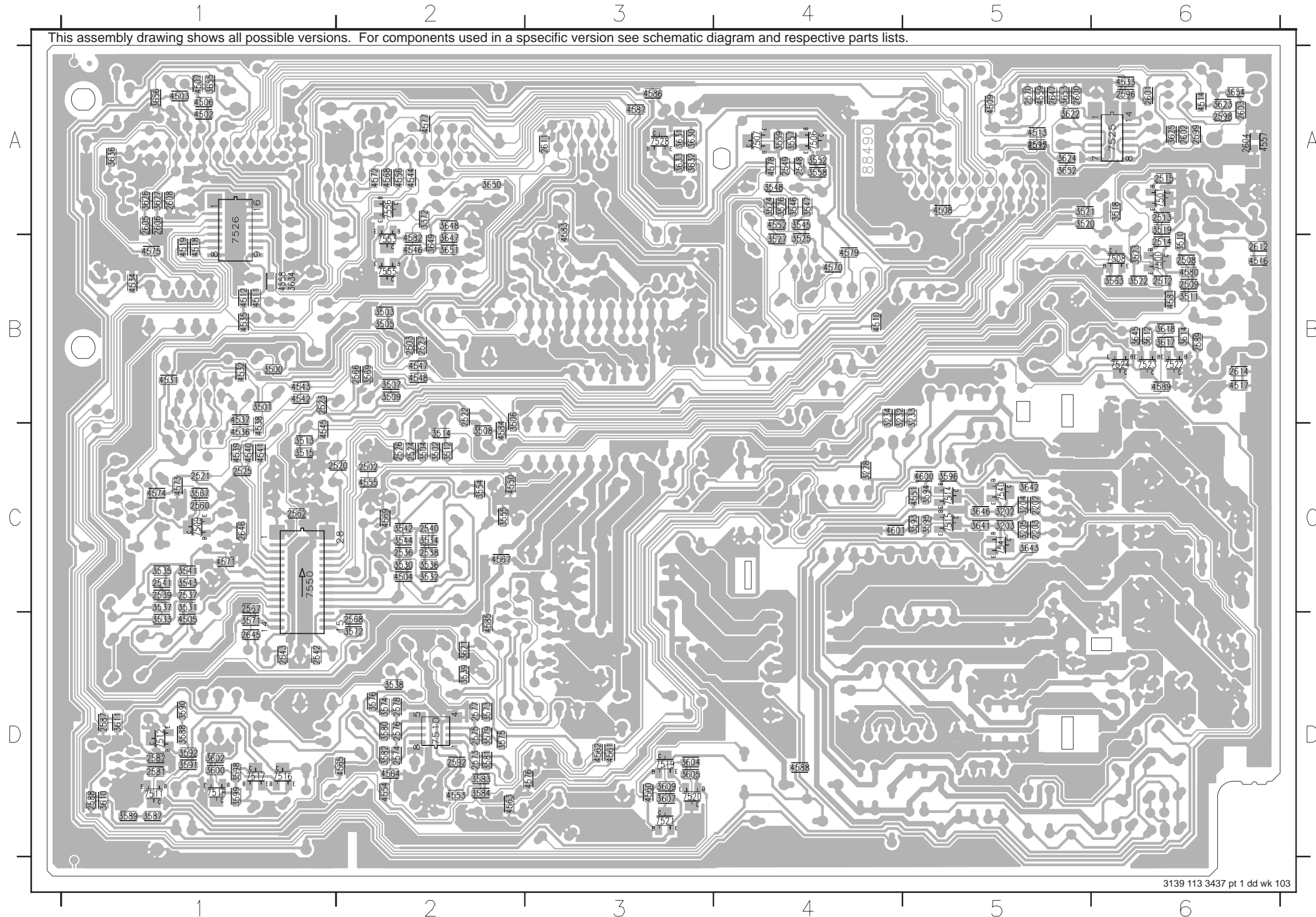
1171 A2	2408 A4	3407 A2	3420 B3	3433 B1	6406 B2	7408 A2	9172 A3	9414 A1
1400 B2	2409 B3	3409 A3	3421 B2	3434 B1	6407 B3	7409 B2	9174 A3	9415 A1
1401 B1	2410 A3	3410 A2	3422 A4	3435 B1	6409 A3	7410 A2	9401 A1	9416 B1
1402 A1	2411 A1	3411 B3	3423 A3	3436 A1	6411 A2	7411 A2	9402 A3	9417 A1
1403 B1	2412 B4	3412 A2	3424 A4	3437 A1	6412 A1	7412 B2	9403 A3	9419 A1
2400 A4	2413 B3	3413 A2	3425 A4	3438 A1	6413 B2	7413 A4	9404 A4	9420 A2
2402 A1	2415 B1	3414 A2	3426 B3	3439 A1	7401 A3	7414 B4	9405 A4	
2403 A2	2416 B1	3415 A2	3427 B3	6400 A4	7402 A3	7415 B4	9406 A1	
2404 A3	3403 A4	3416 A2	3428 B3	6401 A4	7403 A4	7417 A4	9410 A3	
2405 A2	3404 A3	3417 A2	3430 A3	6402 A2	7405 A2	7419 A1	9411 A1	
2406 B3	3405 A4	3418 A4	3431 B3	6404 A3	7406 A2	7420 A1	9412 A3	
2407 B3	3406 A4	3419 B2	3432 B3	6405 A2	7407 A2	7421 A1	9413 B2	





# CHIP LAYOUT - COMBI BOARD

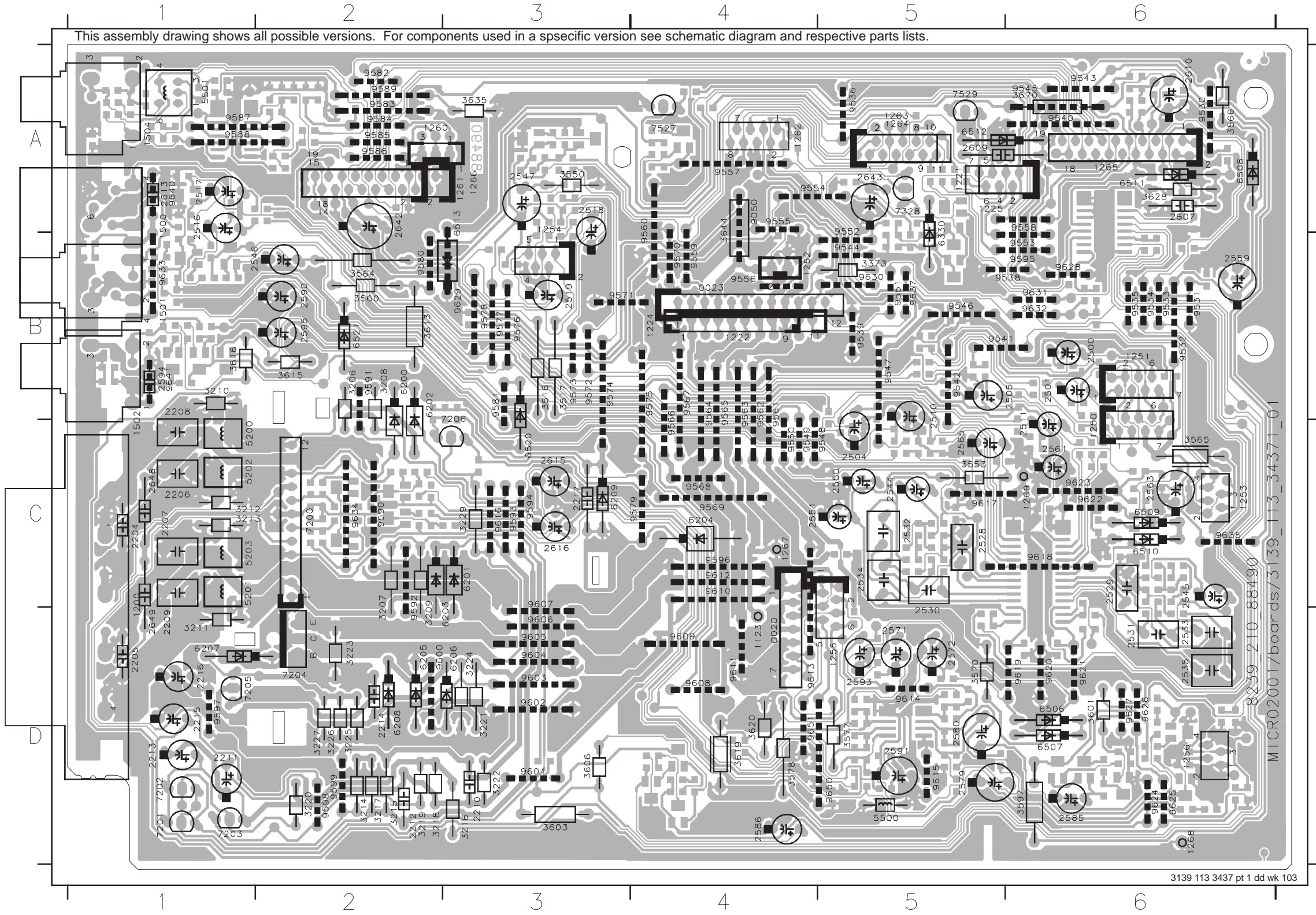
This assembly drawing shows all possible versions. For components used in a specific version see schematic diagram and respective parts lists.



2202	C5	3505	B2	3610	D1	4558	B1
2203	C5	3506	B2	3611	D1	4559	A5
2502	C2	3507	B2	3612	B6	4560	D3
2503	B2	3508	C2	3614	B6	4561	D3
2508	B6	3509	B2	3617	B6	4562	D3
2509	B6	3510	B6	3618	B6	4563	D2
2512	B6	3511	B6	3621	D2	4564	D2
2513	A6	3512	C2	3622	A5	4565	D2
2514	B6	3513	C1	3623	A6	4567	C2
2515	A6	3514	C2	3624	A5	4568	A2
2520	C2	3515	C1	3625	A6	4569	C2
2521	C1	3518	A6	3626	A1	4570	B4
2522	B2	3519	A6	3627	A1	4571	C1
2523	B1	3520	A5	3630	A3	4572	A2
2524	C2	3521	A5	3631	A3	4573	C1
2525	C1	3522	B6	3632	A3	4574	C1
2526	C2	3523	B6	3633	A3	4575	B1
2527	B2	3524	A4	3634	B1	4576	D3
2536	C2	3525	B4	3636	A1	4577	A2
2537	C1	3526	A4	3641	C5	4578	A4
2538	C2	3527	B4	3642	C5	4579	B4
2539	C1	3530	C2	3643	C5	4580	B6
2540	C2	3531	C1	3645	B6	4581	B6
2541	C1	3532	C2	3646	C5	4582	B2
2542	D1	3533	D1	3647	B2	4583	A3
2543	D1	3534	C2	3648	A2	4584	C2
2548	A4	3535	C1	3649	B2	4585	D2
2549	A4	3536	C2	3650	A2	4586	A3
2560	C1	3537	C1	3651	B2	4587	A3
2562	C1	3538	D2	3652	A5	4588	D4
2566	B2	3539	D2	3653	A5	4589	B6
2567	C1	3541	C1	3654	A6	4600	C5
2568	D2	3542	C2	3655	A1	4601	C4
2570	A5	3543	C1	3656	A1	7500	B6
2573	D2	3544	C2	4502	A1	7501	A6
2574	D2	3545	A4	4503	A1	7506	A4
2575	D2	3546	A4	4504	C2	7507	A4
2576	D2	3547	A4	4505	D1	7508	B6
2577	D2	3548	A4	4506	A1	7509	C1
2578	D2	3552	A4	4507	A1	7510	D2
2581	D1	3554	C2	4508	A5	7511	D1
2582	D1	3555	C2	4509	A5	7512	D1
2587	D1	3557	A4	4510	B4	7514	C5
2588	D1	3558	A4	4511	B1	7515	C5
2589	B6	3559	A4	4512	B1	7516	D1
2592	D2	3563	B6	4513	A5	7517	D1
2596	A6	3567	C1	4514	A6	7518	D1
2597	A5	3569	B2	4515	A5	7519	D3
2598	A6	3571	D1	4516	B6	7520	D3
2599	A6	3572	D2	4517	B6	7521	D3
2600	A5	3573	D2	4518	B1	7522	B6
2601	A6	3574	D2	4519	B1	7523	B6
2602	A6	3575	D2	4531	B1	7524	B6
2603	A6	3576	D2	4532	B1	7525	A6
2604	A6	3579	D2	4533	A6	7526	A1
2605	A1	3580	D2	4534	B1	7528	A3
2606	A1	3581	D2	4535	B1	7540	C5
2608	A1	3582	D2	4536	C1	7541	C5
2611	A3	3583	D2	4537	B1	7550	C1
2612	B6	3584	D2	4538	C1	7553	B2
2614	B6	3587	D1	4539	C1	7555	B2
2645	D1	3588	D1	4540	C1	7556	A2
2646	C1	3589	D1	4541	C1		
2647	A5	3590	D1	4542	B1		
3202	C5	3591	D1	4543	B1		
3203	C5	3592	D1	4544	A2		
3204	C5	3593	C5	4545	C1		
3205	C5	3594	C5	4546	B2		
3228	C4	3595	C5	4547	B2		
3232	B4	3596	C5	4548	B2		
3233	B5	3598	D1	4550	C2		
3234	B4	3599	D1	4551	C5		
3372	A2	3600	D1	4552	A4		
3500	B1	3602	D1	4553	D2		
3501	B1	3604	D3	4554	D2		
3502	C2	3605	D3	4555	C2		
3503	B2	3607	D3	4556	A2		
3504	C2	3609	D3	4557	A6		

# COMPONENT LAYOUT - COMBI BOARD

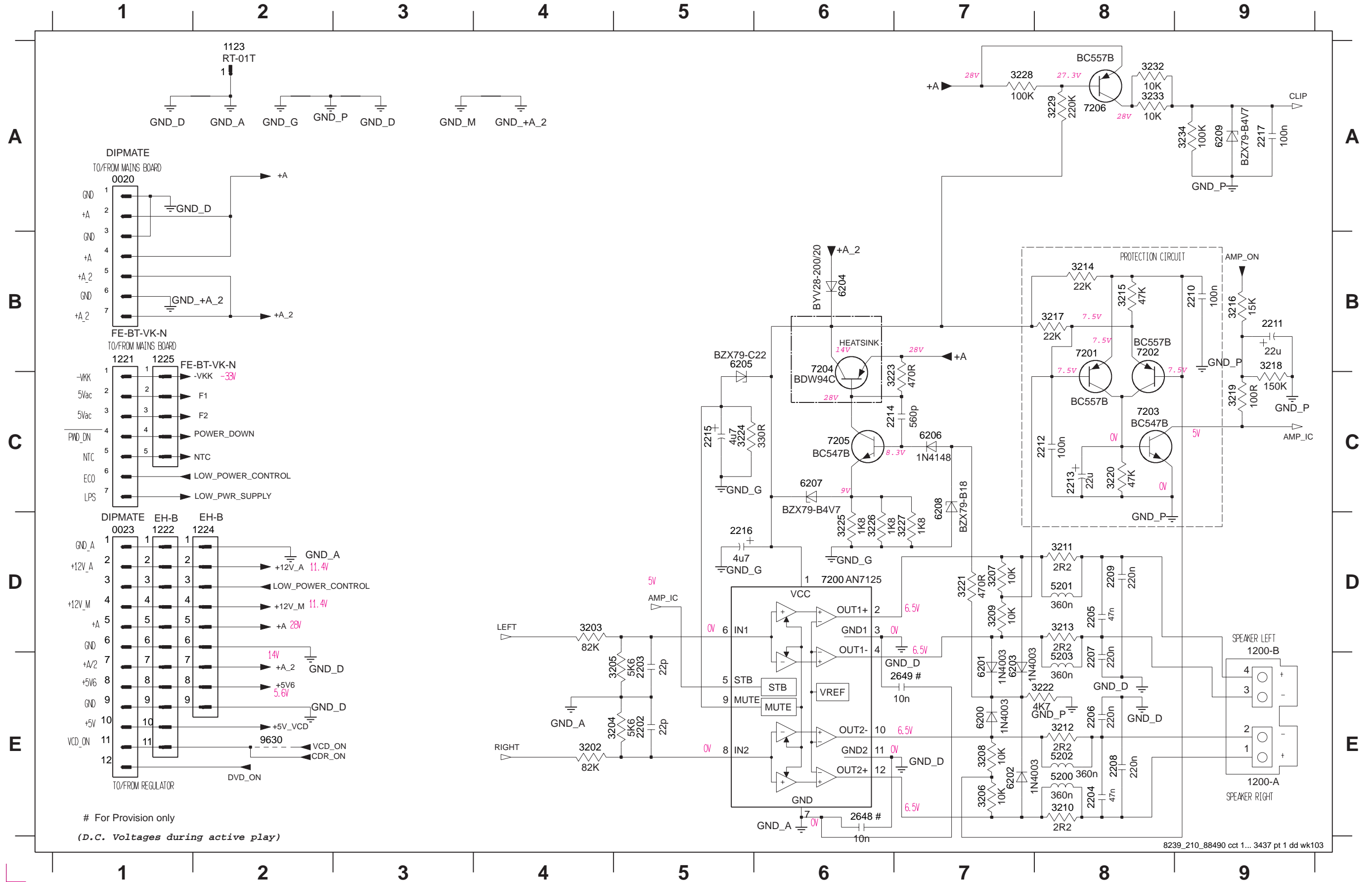
This assembly drawing shows all possible versions. For components used in a specific version see schematic diagram and respective parts lists.



0020	D4	2591	D5	6330	B5	9586	A2
0023	B4	2593	D5	6506	D6	9587	A1
1123	D4	2594	B1	6507	D6	9588	A1
1200	C1	2595	B2	6508	A6	9589	A2
1221	A5	2607	A6	6509	C6	9590	C2
1222	B4	2609	A5	6510	C6	9591	B2
1224	B4	2610	A6	6511	A6	9592	D2
1225	A5	2613	A1	6512	A5	9593	C3
1250	C6	2615	C3	6513	A3	9594	C3
1251	B6	2616	C3	6520	C3	9595	B6
1252	B4	2642	A2	6521	B2	9596	C4
1253	C6	2643	A5	7200	C2	9597	D1
1254	A3	2648	C1	7201	D1	9598	D2
1255	D5	2649	D1	7202	D1	9599	D2
1256	D6	3206	B2	7203	D1	9600	D2
1260	A2	3207	D2	7204	D2	9601	D3
1261	A3	3208	B2	7205	D1	9602	D3
1262	A4	3209	D2	7206	B3	9603	D3
1263	A5	3210	B1	7328	A5	9604	D3
1264	A5	3211	D1	7527	A4	9605	D3
1265	A6	3212	C1	7529	A5	9606	D3
1266	A3	3213	C1	9050	A4	9607	C3
1267	C4	3214	D2	9530	A6	9608	D4
1268	D6	3215	D2	9531	B6	9609	D4
1269	C6	3216	D3	9532	B6	9610	C4
1500	A1	3217	D2	9533	B6	9611	D4
1501	B1	3218	D2	9534	B6	9612	C4
1502	C1	3219	D2	9535	B6	9613	D4
1504	A1	3220	D2	9536	A5	9614	D5
2204	C1	3221	D3	9537	B5	9615	D5
2205	D1	3222	D3	9538	B6	9616	C3
2206	C1	3223	D2	9539	B5	9617	C5
2207	C1	3224	D3	9540	A6	9618	C6
2208	B1	3225	D2	9541	B5	9619	D6
2209	D1	3226	D2	9542	B5	9620	D6
2210	D3	3227	D2	9543	A6	9621	C6
2211	D1	3229	C3	9544	B5	9622	C6
2212	D2	3573	B5	9545	A6	9623	C6
2213	D1	3516	B3	9546	B5	9624	D6
2214	D2	3517	B3	9547	B5	9625	D6
2215	D1	3550	A3	9548	C5	9626	D6
2216	D1	3553	C5	9549	C4	9627	D6
2217	C3	3560	B2	9550	C4	9628	B6
2500	B6	3564	B2	9551	B5	9629	B3
2501	B6	3565	C6	9552	A5	9630	B5
2504	C5	3566	A6	9553	B6	9631	B6
2505	B6	3570	D5	9554	A4	9632	B6
2510	B5	3577	D5	9555	A4	9633	B1
2511	C6	3578	D4	9556	B4	9634	C2
2516	A1	3597	D6	9557	A4	9635	C6
2517	A1	3601	D6	9558	A6	9640	A1
2518	A3	3603	D3	9559	B4	9641	B1
2519	B3	3606	D3	9560	A4	9650	D5
2528	C5	3613	B2	9561	B4	9651	D4
2529	C6	3615	B2	9562	B4		
2530	D5	3616	B1	9563	B4		
2531	D6	3619	D4	9564	B4		
2532	C5	3620	D4	9565	B4		
2533	D6	3628	A6	9566	C4		
2534	C5	3635	A3	9567	B4		
2535	D6	3644	A4	9568	C4		
2544	C5	3670	A6	9569	C4		
2545	C6	5200	C1	9570	B4		
2546	B1	5201	C1	9571	B3		
2547	A3	5202	C1	9572	B3		
2550	C5	5203	C1	9573	B3		
2551	C4	5500	D5	9574	B3		
2559	B6	5501	A1	9575	B4		
2561	C6	6200	B2	9576	B3		
2563	C6	6201	C3	9577	B3		
2565	C5	6202	B2	9578	B3		
2571	D5	6203	D5	9579	C4		
2572	D5	6204	C4	9580	B2		
2579	D5	6205	D2	9581	B3		
2580	D5	6206	D3	9582	A2		
2585	D6	6207	D1	9583	A2		
2586	D4	6208	D2	9584	A2		
2590	B2	6209	C3	9585	A2		

# COMBICIRCUIT - POWER AMPLIFIER PART

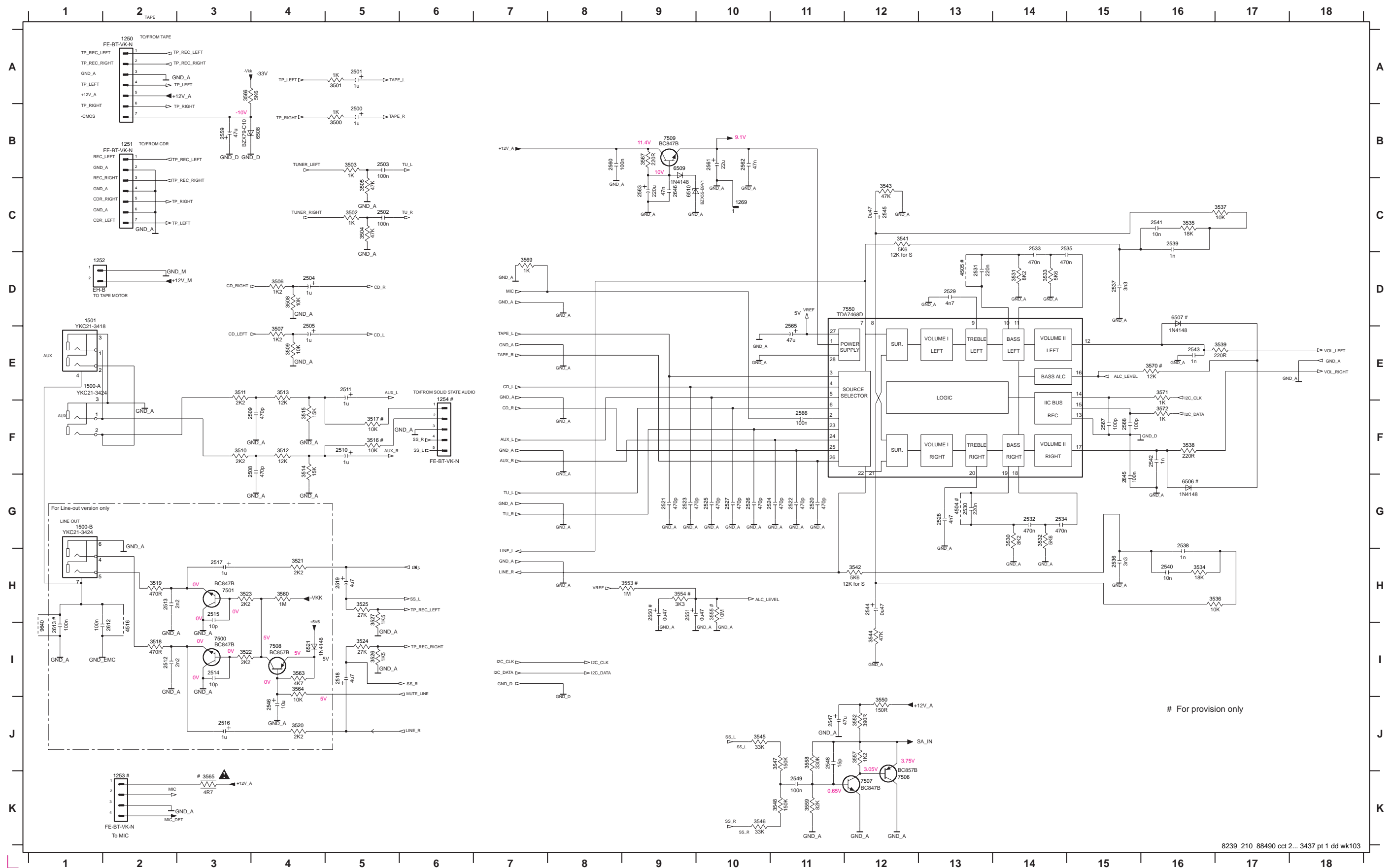
0020 A1	1221 B1	2203 E5	2208 E8	2213 C8	2648 E6	3205 E5	3210 E8	3215 B8	3220 C8	3225 D6	3232 A8	5202 E8	6203 E7	6208 C7	7203 C8
0023 D1	1222 D1	2204 E8	2209 D8	2214 C6	2649 E7	3206 E7	3211 D8	3216 B9	3221 D7	3226 D6	3233 A8	5203 E8	6204 B6	6209 A9	7204 C6
1123 A2	1224 D1	2205 D8	2210 B9	2215 C5	3202 E4	3207 D7	3212 E8	3217 B8	3222 E8	3227 D7	3234 A9	6200 E7	6205 B5	7200 D6	7205 C6
1200-A E9	1225 B1	2206 E8	2211 B9	2216 D5	3203 D4	3208 E7	3213 D8	3218 B9	3223 C7	3228 A7	5200 E8	6201 E7	6206 C7	7201 B8	7206 A8
1200-B E9	2202 E5	2207 E8	2212 C8	2217 A9	3204 E4	3209 D7	3214 B8	3219 C9	3224 C5	3229 A8	5201 D8	6202 E7	6207 C6	7202 B8	9630 E2



# For Provision only  
 (D.C. Voltages during active play)

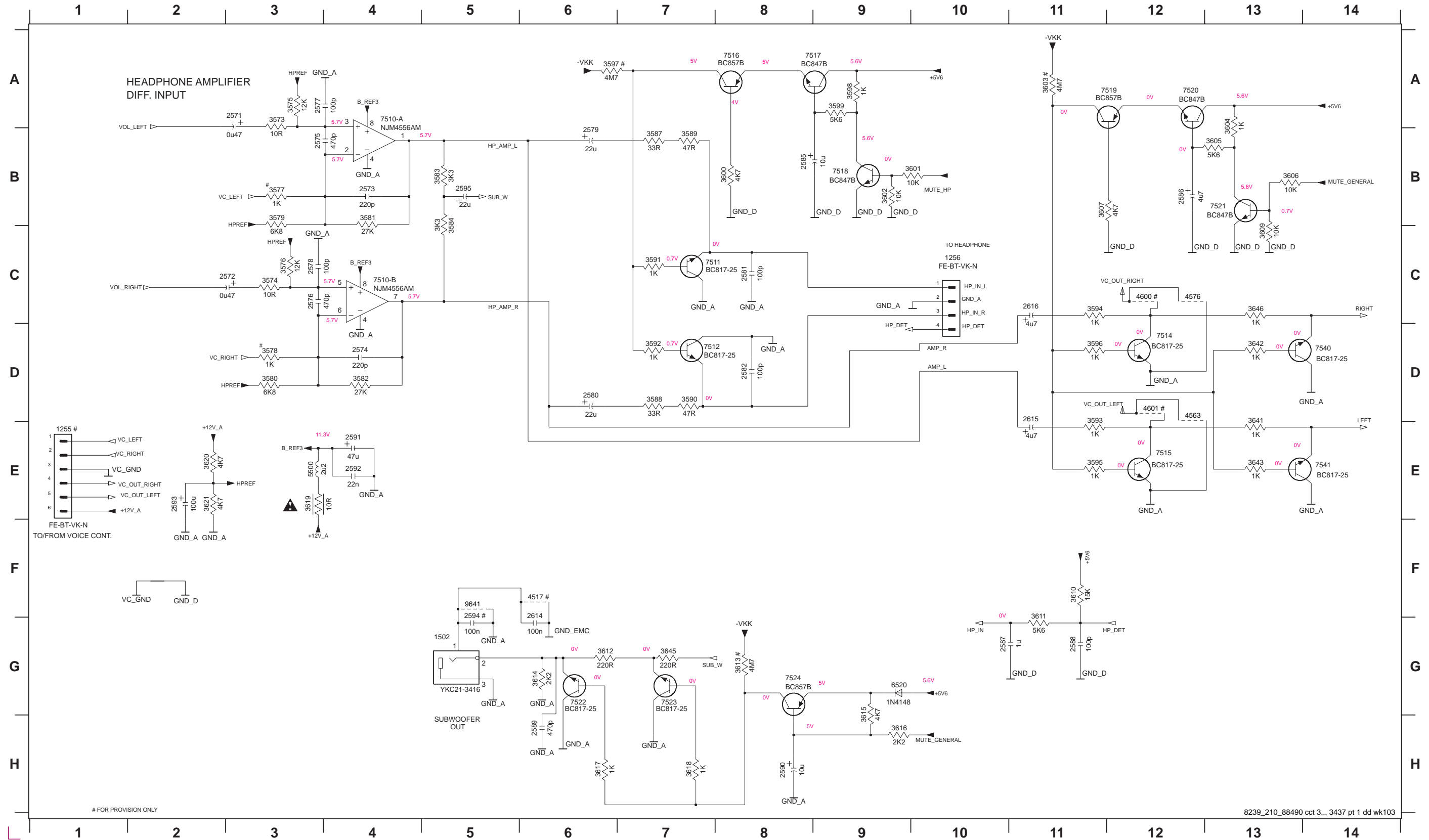
# COMBI CIRCUIT - SOURCE SELECT & SOUND CONTROL PART

1250 A2	1269 C10	2501 A5	2508 F4	2513 H2	2518 I5	2523 G9	2528 G13	2533 C14	2538 G16	2543 E16	2548 J11	2560 B8	2566 F11	2645 G15	3503 B5	3508 D4	3513 E4	3518 I2	3523 H3	3530 G14	3535 C16	3541 C12	3546 K10	3553 H9	3559 K11	3566 A3	3572 F16	6507 D16	7500 I3	7509 B9	
1251 B2	1500-A E1	2502 C5	2509 F4	2514 I3	2519 H5	2524 G11	2529 D13	2534 G14	2539 C16	2544 H12	2549 K11	2561 B10	2567 F15	2646 C9	3504 C5	3509 E4	3514 F4	3519 H2	3524 I5	3531 D14	3536 H17	3542 H12	3547 J11	3554 H9	3560 H4	3567 B9	4504 G13	6508 B4	7501 H3	7506 K12	9640 H1
1252 D1	1500-B G1	2503 B5	2510 F5	2515 H3	2520 G11	2525 G10	2530 G13	2535 C14	2540 H12	2545 C12	2550 H9	2562 B10	2568 F15	3500 B5	3505 C5	3510 F3	3515 F4	3520 J4	3525 H5	3532 G14	3537 C17	3543 C12	3548 K11	3555 H10	3563 I4	3568 D7	4505 D13	6509 B9	7506 K12	9640 H1	
1253 K2	1501 D1	2504 D4	2511 E5	2516 J3	2521 G9	2526 G10	2531 D13	2536 H15	2541 C16	2546 J4	2551 H9	2563 C9	2612 I2	3501 A5	3506 D4	3511 E3	3516 F5	3521 H4	3526 I5	3533 D14	3538 F16	3544 H12	3550 J12	3557 J12	3564 I4	3570 E16	4516 I2	6510 C9	7507 K12	9640 H1	
1254 F6	2500 B5	2505 E4	2512 I2	2517 H3	2522 G11	2527 G10	2532 G14	2537 D15	2542 F16	2547 J11	2559 B3	2565 E11	2613 I1	3502 C5	3507 E4	3512 F4	3517 F5	3522 I3	3527 H5	3534 H16	3539 E17	3545 J10	3552 J12	3558 J11	3565 K3	3571 E16	6506 G16	6521 I4	7508 I4	9640 H1	



# COMBI CIRCUIT - HEADPHONE AMPLIFIER & SUB-WOOFER OUT PART

1255 E1	2573 B4	2578 C3	2585 B8	2590 H8	2595 B5	3574 C3	3579 B3	3584 B5	3591 C7	3596 D11	3601 B10	3606 B13	3612 G6	3617 H6	3641 E13	4517 F6	5500 E3	7512 D7	7518 B9	7523 G7
1256 C10	2574 D4	2579 B6	2586 B12	2591 E4	2614 G6	3575 A3	3580 D3	3587 B7	3592 D7	3597 A6	3602 B9	3607 B11	3613 G8	3618 H7	3642 D13	4563 D12	6520 G9	7514 D12	7519 A12	7524 G8
1502 G5	2575 B3	2580 D6	2587 G10	2592 E4	2615 D11	3576 C3	3581 B4	3588 D7	3593 E11	3598 A9	3603 A11	3609 C13	3614 G6	3619 E3	3643 E13	4576 C12	7510-A A4	7515 E12	7520 A12	7540 D14
2571 A3	2576 C3	2581 C8	2588 G11	2593 E2	2616 C11	3577 B3	3582 D4	3589 B7	3594 C11	3599 A9	3604 A13	3610 F11	3615 G9	3620 E2	3645 G7	4600 C12	7510-B C4	7516 A8	7521 B13	7541 E14
2572 C3	2577 A3	2582 D8	2589 H6	2594 G5	3573 A3	3578 D3	3583 B5	3590 D7	3595 E11	3600 B8	3605 B13	3611 G11	3616 H9	3621 E2	3646 C13	4601 D12	7511 C7	7517 A9	7522 G6	9641 F5

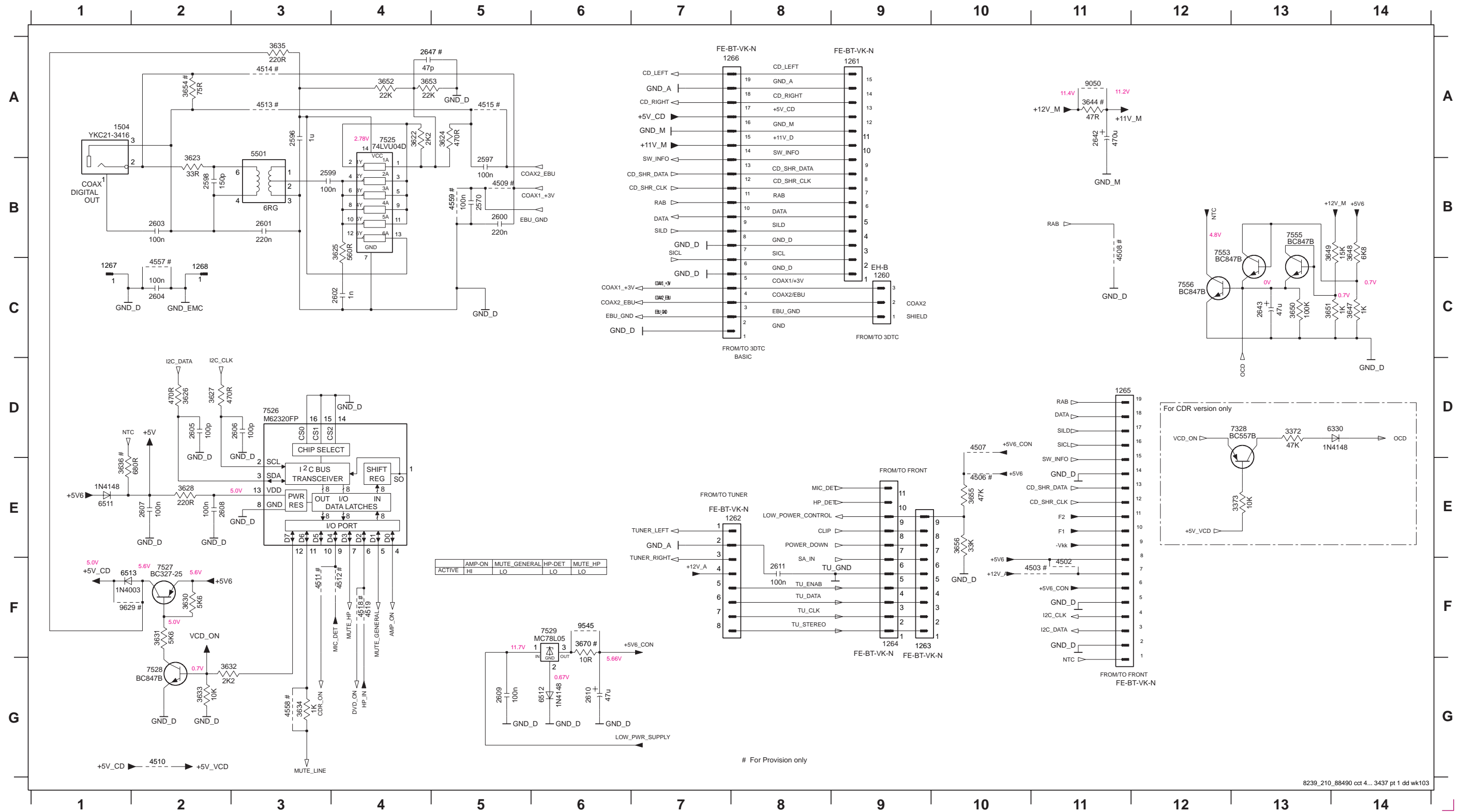


# FOR PROVISION ONLY



# COMBI CIRCUIT - CONNECTOR & DIGITAL OUT PART

- 1260 C9, 1261 A9, 1262 E7, 1263 F9, 1264 F9, 1265 D11, 1266 A8, 1267 C1, 1268 C2, 1504 A1, 2570 B5, 2596 A3, 2597 B5, 2598 B2, 2599 B3, 2600 B5, 2601 B3, 2602 C4, 2603 B2, 2604 C2, 2605 D2, 2606 D3, 2607 E2, 2608 E2, 2609 G5, 2610 G6, 2611 F8, 2642 A11, 2643 C13, 2647 A4, 3372 D13, 3373 E13, 3622 A4, 3623 B2, 3624 A5, 3625 B4, 3626 D2, 3627 D2, 3628 E2, 3630 F2, 3631 F2, 3632 G2, 3633 G2, 3634 G3, 3635 A3, 3636 E1, 3647 C14, 3648 B14, 3649 B13, 3650 C13, 3651 C13, 3652 A4, 3653 A4, 3654 A2, 3655 E10, 3656 E10, 3670 F6, 4502 F11, 4503 F11, 4506 E10, 4507 D10, 4508 B11, 4509 B5, 4510 G2, 4511 F3, 4512 F4, 4513 A3, 4514 A3, 4515 A5, 4518 F4, 4519 F4, 4557 C2, 4558 G3, 4559 B5, 5501 A3, 6330 D14, 6511 E1, 6512 G6, 6513 F1, 7328 D13, 7525 A4, 7526 D3, 7527 F2, 7528 G2, 7529 F6, 7553 B12, 7555 B13, 9545 F6, 9629 F1



	AMP-ON	MUTE GENERAL	HP-DET	MUTE HP
ACTIVE	HI	LO	LO	LO

**ELECTRICAL PARTS LIST - REGULATOR BOARD****MISCELLANEOUS**

32	3139 111 01430	Spring Clip I/C
1171	4822 071 51002 Δ	Fuse T1A 250V

**CAPACITORS**

2400	4822 124 22652	2,2μF 20% 50V
2402	4822 124 40433	47μF 20% 25V
2405	4822 124 11947	10μF 20% 16V
2406	4822 124 41643	100μF 20% 16V
2407	4822 124 41643	100μF 20% 16V
2408	4822 126 12882	100nF +80/-20% 50V
2409	4822 124 40248	10μF 20% 63V
2410	4822 126 12882	100nF +80/-20% 50V
2411	4822 124 12233	47μF 20% 25V

**RESISTORS**

3403	4822 050 11002	1k 1% 0,4W
3404	4822 116 52256	2k2 5% 0,5W
3405	4822 116 83876	270R 5% 0,5W
3406	4822 050 11002	1k 1% 0,4W
3411	4822 116 83883	470R 5% 0,5W
3415	4822 116 52199	68R 5% 0,5W
3416	4822 116 52206	120R 5% 0,5W
3417	4822 116 52206	120R 5% 0,5W
3418	4822 117 12063	10k 5% NTC DC 0,5W
3419	4822 116 52219	330R 5% 0,5W
3420	4822 050 11002	1k 1% 0,4W
3421	4822 052 10568	5R6 5% 0,33W
3422	4822 050 21003	10k 1% 0,6W

**DIODES**

6400	4822 130 30621	1N4148
6401	4822 130 30621	1N4148
6405	4822 130 61219	BZX79-B10
6406	4822 130 34174	BZX79-B4V7
6409	4822 130 30621	1N4148

**TRANSISTORS & INTEGRATED CIRCUITS**

7401	4822 130 40959	BC547B
7402	4822 130 44568	BC557B
7403	9322 139 23687	BDX53BFP
7408	4822 130 40959	BC547B
7409	4822 130 41246	BC327-25
7417	4822 209 31841	L7805CP

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

**ELECTRICAL PARTS LIST - COMBI BOARD****MISCELLANEOUS**

33	3139 111 01430	Spring Clip I/C
1200	4822 267 31176	Loudspeaker Socket
1221	4822 267 10953	Flex Socket 7pin Vert.
1250	4822 267 10953	Flex Socket 7pin Vert.
1256	4822 267 10733	Flex Socket 4pin Vert.
1262	4822 265 11515	Flex Socket 8pin Vert.
1263	2422 025 14518	Flex Socket 9pin Vert.
1265	4822 265 11553	Flex Socket 19pin Vert.
1266	4822 265 11553	Flex Socket 19pin Vert.
1501	4822 265 20553	Aux-in Socket
1502	4822 267 31729	Sub-woofer Socket
1504	4822 267 31729	Digital Out Socket

**CAPACITORS**

2202	4822 122 33761	22pF 5% 50V
2203	4822 122 33761	22pF 5% 50V
2204	4822 126 12785	47nF +80/-20% 50V
2205	4822 126 12785	47nF +80/-20% 50V
2206	4822 121 42408	220nF 5% 63V
2207	4822 121 42408	220nF 5% 63V
2208	4822 121 42408	220nF 5% 63V
2209	4822 121 42408	220nF 5% 63V
2210	4822 126 12882	100nF +80/-20% 50V
2211	4822 124 81151	22μF 20% 50V
2212	4822 126 12882	100nF +80/-20% 50V
2213	4822 124 81151	22μF 20% 50V
2214	4822 122 10459	560pF 10% 50V
2215	4822 124 40769	4,7μF 20% 100V
2216	4822 124 40769	4,7μF 20% 100V
2217	4822 126 12882	100nF +80/-20% 50V
2500	4822 124 21913	1μF 20% 63V
2501	4822 124 21913	1μF 20% 63V
2502	4822 126 14305	100nF 10% 16V
2503	4822 126 14305	100nF 10% 16V
2504	4822 124 21913	1μF 20% 63V
2505	4822 124 21913	1μF 20% 63V
2508	4822 126 13881	470pF 5% 50V
2509	4822 126 13881	470pF 5% 50V
2510	4822 124 21913	1μF 20% 63V
2511	4822 124 21913	1μF 20% 63V
2518	4822 124 40769	4,7μF 20% 100V
2519	4822 124 40769	4,7μF 20% 100V
2520	4822 126 13881	470pF 5% 50V
2521	4822 126 13881	470pF 5% 50V
2522	4822 126 13881	470pF 5% 50V
2523	4822 126 13881	470pF 5% 50V
2524	4822 126 13881	470pF 5% 50V
2525	4822 126 13881	470pF 5% 50V
2526	4822 126 13881	470pF 5% 50V
2527	4822 126 13881	470pF 5% 50V
2528	5322 122 32261	4,7nF 10% 100V
2529	5322 122 32261	4,7nF 10% 100V

2530	4822 121 42408	220nF 5% 63V
2531	4822 121 42408	220nF 5% 63V
2532	4822 121 51252	470nF 5% 63V
2533	4822 121 51252	470nF 5% 63V
2534	4822 121 51252	470nF 5% 63V
2535	4822 121 51252	470nF 5% 63V
2536	5322 126 11579	3,3nF 10% 63V
2537	5322 126 11579	3,3nF 10% 63V
2538	3198 016 31020	1nF 5% 25V
2539	3198 016 31020	1nF 5% 25V
2540	5322 126 11583	10nF 10% 50V
2541	5322 126 11583	10nF 10% 50V
2542	3198 016 31020	1nF 5% 25V
2543	3198 016 31020	1nF 5% 25V
2544	5322 124 41948	470nF 20% 50V
2545	5322 124 41948	470nF 20% 50V
2547	4822 124 81286	47μF 20% 16V
2548	4822 122 33752	15pF 5% 50V
2549	4822 126 14305	100nF 10% 16V
2551	5322 124 41948	470nF 20% 50V
2559	4822 124 81286	47μF 20% 16V
2560	4822 126 14305	100nF 10% 16V
2561	4822 124 81151	22μF 20% 50V
2562	3198 017 34730	47nF 10% 16V
2563	4822 124 40196	220μF 20% 16V
2565	4822 124 80231	47μF 20% 16V
2566	4822 126 14305	100nF 10% 16V
2567	4822 122 31765	100pF 2% 63V
2568	4822 122 31765	100pF 2% 63V
2570	4822 126 14305	100nF 10% 16V
2571	5322 124 41948	470nF 20% 50V
2572	5322 124 41948	470nF 20% 50V
2573	4822 126 13883	220pF 5% 50V
2574	4822 126 13883	220pF 5% 50V
2575	4822 126 13881	470pF 5% 50V
2576	4822 126 13881	470pF 5% 50V
2577	4822 122 31765	100pF 2% 63V
2578	4822 122 31765	100pF 2% 63V
2579	4822 124 81151	22μF 20% 50V
2580	4822 124 81151	22μF 20% 50V
2581	4822 122 31765	100pF 2% 63V
2582	4822 122 31765	100pF 2% 63V
2585	4822 124 40769	4,7μF 20% 100V
2586	4822 124 40769	4,7μF 20% 100V
2587	3198 017 41050	1μF +80/-20% 10V
2588	4822 122 31765	100pF 2% 63V
2589	4822 126 13881	470pF 5% 50V
2590	4822 124 22833	10μF 20% 50V
2591	4822 124 81286	47μF 20% 16V
2592	4822 126 14494	22nF 10% 25V
2593	4822 124 40207	100μF 20% 25V
2595	4822 124 41796	22μF 20% 16V

## ELECTRICAL PARTS LIST - COMBI BOARD

## CAPACITORS

2596	3198 017 41050	1µF +80/-20% 10V
2597	4822 126 14305	100nF 10% 16V
2598	4822 122 33753	150pF 5% 50V
2599	4822 126 14305	100nF 10% 16V
2600	4822 126 13879	220nF +80/-20% 16V
2601	4822 126 13879	220nF +80/-20% 16V
2602	3198 016 31020	1nF 5% 25V
2603	4822 126 14305	100nF 10% 16V
2604	4822 126 14305	100nF 10% 16V
2605	4822 122 31765	100pF 2% 63V
2606	4822 122 31765	100pF 2% 63V
2607	4822 126 12882	100nF +80/-20% 50V
2608	4822 126 14305	100nF 10% 16V
2609	4822 126 12882	100nF +80/-20% 50V
2610	4822 124 81286	47µF 20% 16V
2611	4822 126 14305	100nF 10% 16V
2614	4822 126 14305	100nF 10% 16V
2615	4822 124 40769	4,7µF 20% 100V
2616	4822 124 40769	4,7µF 20% 100V
2642	4822 124 80791	470µF 20% 16V
2643	4822 124 81286	47µF 20% 16V
2645	4822 126 14305	100nF 10% 16V
2646	3198 017 34730	47nF 10% 16V

## RESISTORS

3202	4822 117 12864	82k 5% 0,6W
3203	4822 117 12864	82k 5% 0,6W
3204	4822 051 30562	5k6 5% 0,063W
3205	4822 051 30562	5k6 5% 0,063W
3206	4822 050 21003	10k 1% 0,6W
3207	4822 050 21003	10k 1% 0,6W
3208	4822 050 21003	10k 1% 0,6W
3209	4822 050 21003	10k 1% 0,6W
3210	4822 116 81154	2R2 5% 0,5W
3211	4822 116 81154	2R2 5% 0,5W
3212	4822 116 81154	2R2 5% 0,5W
3213	4822 116 81154	2R2 5% 0,5W
3214	4822 116 52257	22k 5% 0,5W
3215	4822 116 83884	47k 5% 0,5W
3216	4822 116 52244	15k 5% 0,5W
3217	4822 116 52257	22k 5% 0,5W
3218	4822 116 52245	150k 5% 0,5W
3219	4822 116 52175	100R 5% 0,5W
3220	4822 116 83884	47k 5% 0,5W
3221	4822 116 83883	470R 5% 0,5W
3222	4822 116 52283	4k7 5% 0,5W
3223	4822 116 83883	470R 5% 0,5W
3224	4822 116 52219	330R 5% 0,5W
3225	4822 116 52249	1k8 5% 0,5W
3226	4822 116 52249	1k8 5% 0,5W
3227	4822 116 52249	1k8 5% 0,5W
3228	4822 117 13632	100k 1% 0.62W

3229	4822 116 83874	220k 5% 0,5W
3232	4822 051 30103	10k 5% 0,062W
3233	4822 051 30103	10k 5% 0,062W
3234	4822 117 13632	100k 1% 0.62W
3500	4822 051 30102	1k 5% 0,062W
3501	4822 051 30102	1k 5% 0,062W
3502	4822 051 30102	1k 5% 0,062W
3503	4822 051 30102	1k 5% 0,062W
3504	4822 117 12925	47k 1% 0.063W
3505	4822 117 12925	47k 1% 0.063W
3506	4822 117 11817	1k2 1% 1/16W
3507	4822 117 11817	1k2 1% 1/16W
3508	4822 051 30103	10k 5% 0,062W
3509	4822 051 30103	10k 5% 0,062W
3510	4822 051 30222	2k2 5% 0,062W
3511	4822 051 30222	2k2 5% 0,062W
3512	4822 051 30123	12k 5% 0,062W
3513	4822 051 30123	12k 5% 0,062W
3514	4822 051 30153	15k 5% 0,062W
3515	4822 051 30153	15k 5% 0,062W
3524	4822 051 30273	27k 5% 0,062W
3525	4822 051 30273	27k 5% 0,062W
3526	4822 051 30152	1k5 5% 0,062W
3527	4822 051 30152	1k5 5% 0,062W
3530	4822 117 12902	8k2 1% 0.063W
3531	4822 117 12902	8k2 1% 0.063W
3532	4822 051 30562	5k6 5% 0,063W
3533	4822 051 30562	5k6 5% 0,063W
3534	4822 051 30183	18k 5% 0,062W
3535	4822 051 30183	18k 5% 0,062W
3536	4822 051 30103	10k 5% 0,062W
3537	4822 051 30103	10k 5% 0,062W
3538	4822 051 30221	220R 5% 0,062W
3539	4822 051 30221	220R 5% 0,062W
3541	4822 051 30562	5k6 5% 0,063W
3542	4822 051 30562	5k6 5% 0,063W
3543	4822 117 12925	47k 1% 0.063W
3544	4822 117 12925	47k 1% 0.063W
3545	4822 051 30333	33k 5% 0,062W
3546	4822 051 30333	33k 5% 0,062W
3547	4822 051 30154	150k 5% 0,062W
3548	4822 051 30154	150k 5% 0,062W
3550	4822 116 83868	150R 5% 0,5W
3552	4822 051 30391	390R 5% 0,062W
3557	4822 117 11817	1k2 1% 1/16W
3558	4822 051 30334	330k 5% 0,062W
3559	4822 117 12864	82k 5% 0,6W
3566	4822 116 52289	5k6 5% 0,5W
3567	4822 051 30221	220R 5% 0,062W
3569	4822 051 30102	1k 5% 0,062W
3571	4822 051 30102	1k 5% 0,062W
3572	4822 051 30102	1k 5% 0,062W

## ELECTRICAL PARTS LIST - COMBI BOARD

3573	4822 051 30109	10R 5% 0,062W
3574	4822 051 30109	10R 5% 0,062W
3575	4822 051 30123	12k 5% 0,062W
3576	4822 051 30123	12k 5% 0,062W
3579	4822 051 30682	6k8 5% 0,062W
3580	4822 051 30682	6k8 5% 0,062W
3581	4822 051 30273	27k 5% 0,062W
3582	4822 051 30273	27k 5% 0,062W
3583	4822 051 30332	3k3 5% 0,062W
3584	4822 051 30332	3k3 5% 0,062W
3587	4822 051 30339	33R 5% 0,062W
3588	4822 051 30339	33R 5% 0,062W
3589	4822 051 30479	47R 5% 0,062W
3590	4822 051 30479	47R 5% 0,062W
3591	4822 051 30102	1k 5% 0,062W
3592	4822 051 30102	1k 5% 0,062W
3593	4822 051 30102	1k 5% 0,062W
3594	4822 051 30102	1k 5% 0,062W
3595	4822 051 30102	1k 5% 0,062W
3596	4822 051 30102	1k 5% 0,062W
3598	4822 051 30102	1k 5% 0,062W
3599	4822 051 30562	5k6 5% 0,063W
3600	4822 051 30472	4k7 5% 0,062W
3601	4822 050 21003	10k 1% 0,6W
3602	4822 051 30103	10k 5% 0,062W
3604	4822 051 30102	1k 5% 0,062W
3605	4822 051 30562	5k6 5% 0,063W
3606	4822 050 21003	10k 1% 0,6W
3607	4822 051 30472	4k7 5% 0,062W
3609	4822 051 30103	10k 5% 0,062W
3610	4822 051 30153	15k 5% 0,062W
3611	4822 051 30562	5k6 5% 0,063W
3612	4822 051 30221	220R 5% 0,062W
3614	4822 051 30222	2k2 5% 0,062W
3615	4822 116 52283	4k7 5% 0,5W
3616	4822 116 52256	2k2 5% 0,5W
3617	4822 051 30102	1k 5% 0,062W
3618	4822 051 30102	1k 5% 0,062W
3619	4822 052 10109 Δ	10R 5% 0,33W
3620	4822 116 52283	4k7 5% 0,5W
3621	4822 051 30472	4k7 5% 0,062W
3622	4822 051 30222	2k2 5% 0,062W
3623	4822 051 30339	33R 5% 0,062W
3624	4822 051 30471	470R 5% 0,062W
3625	4822 051 30561	560R 5% 0,062W
3626	4822 051 30471	470R 5% 0,062W
3627	4822 051 30471	470R 5% 0,062W
3628	4822 116 83872	220R 5% 0,5W
3630	4822 051 30562	5k6 5% 0,063W
3631	4822 051 30562	5k6 5% 0,063W
3632	4822 051 30222	2k2 5% 0,062W
3633	4822 051 30103	10k 5% 0,062W

3634	4822 051 30102	1k 5% 0,062W
3635	4822 116 83872	220R 5% 0,5W
3641	4822 051 30102	1k 5% 0,062W
3642	4822 051 30102	1k 5% 0,062W
3643	4822 051 30102	1k 5% 0,062W
3645	4822 051 30221	220R 5% 0,062W
3646	4822 051 30102	1k 5% 0,062W
3647	4822 051 30102	1k 5% 0,062W
3648	4822 051 30682	6k8 5% 0,062W
3649	4822 051 30153	15k 5% 0,062W
3650	4822 117 13632	100k 1% 0.62W
3651	4822 051 30102	1k 5% 0,062W
3652	4822 051 30223	22k 5% 0,062W
3653	4822 051 30223	22k 5% 0,062W
3655	4822 117 12925	47k 1% 0.063W
3656	4822 051 30333	33k 5% 0,062W
4502	4822 051 20008	OR Jumper 0805
4507	4822 051 20008	OR Jumper 0805
4510	4822 051 20008	OR Jumper 0805
4519	4822 051 20008	OR Jumper 0805
4531	4822 051 20008	OR Jumper 0805
4532	4822 051 20008	OR Jumper 0805
4533	4822 051 20008	OR Jumper 0805
4534	4822 051 20008	OR Jumper 0805
4536	4822 051 20008	OR Jumper 0805
4537	4822 051 20008	OR Jumper 0805
4538	4822 051 20008	OR Jumper 0805
4539	4822 051 20008	OR Jumper 0805
4540	4822 051 20008	OR Jumper 0805
4541	4822 051 20008	OR Jumper 0805
4542	4822 051 20008	OR Jumper 0805
4543	4822 051 20008	OR Jumper 0805
4545	4822 051 20008	OR Jumper 0805
4546	4822 051 20008	OR Jumper 0805
4547	4822 051 20008	OR Jumper 0805
4548	4822 051 20008	OR Jumper 0805
4550	4822 051 20008	OR Jumper 0805
4551	4822 051 20008	OR Jumper 0805
4552	4822 051 20008	OR Jumper 0805
4553	4822 051 20008	OR Jumper 0805
4554	4822 051 20008	OR Jumper 0805
4555	4822 051 20008	OR Jumper 0805
4560	4822 051 20008	OR Jumper 0805
4561	4822 051 20008	OR Jumper 0805
4562	4822 051 20008	OR Jumper 0805
4563	4822 051 20008	OR Jumper 0805
4564	4822 051 20008	OR Jumper 0805
4565	4822 051 20008	OR Jumper 0805
4567	4822 051 20008	OR Jumper 0805
4568	4822 051 20008	OR Jumper 0805
4569	4822 051 20008	OR Jumper 0805
4570	4822 051 20008	OR Jumper 0805

**ELECTRICAL PARTS LIST - COMBI BOARD****RESISTORS**

4571	4822 051 20008	OR Jumper 0805	7205	4822 130 40959	BC547B
4572	4822 051 20008	OR Jumper 0805	7206	4822 130 44568	BC557B
4573	4822 051 20008	OR Jumper 0805	7506	4822 130 60373	BC857B
4575	4822 051 20008	OR Jumper 0805	7507	4822 130 60511	BC847B
4576	4822 051 20008	OR Jumper 0805	7509	4822 130 60511	BC847B
4577	4822 051 20008	OR Jumper 0805	7510	4822 209 31378	NJM4556MB
4578	4822 051 20008	OR Jumper 0805	7511	4822 130 42804	BC817-25
4579	4822 051 20008	OR Jumper 0805	7512	4822 130 42804	BC817-25
4580	4822 051 20008	OR Jumper 0805	7514	4822 130 42804	BC817-25
4581	4822 051 20008	OR Jumper 0805	7515	4822 130 42804	BC817-25
4582	4822 051 20008	OR Jumper 0805	7516	4822 130 60373	BC857B
4583	4822 051 20008	OR Jumper 0805	7517	4822 130 60511	BC847B
4584	4822 051 20008	OR Jumper 0805	7518	4822 130 60511	BC847B
4585	4822 051 20008	OR Jumper 0805	7519	4822 130 60373	BC857B
4586	4822 051 20008	OR Jumper 0805	7520	4822 130 60511	BC847B
4587	4822 051 20008	OR Jumper 0805	7521	4822 130 60511	BC847B
4588	4822 051 20008	OR Jumper 0805	7522	4822 130 42804	BC817-25
4589	4822 051 20008	OR Jumper 0805	7523	4822 130 42804	BC817-25

**COILS & FILTERS**

5200	4822 157 11837	Coil 8,5 Turn 0,36μH 10%	7524	4822 130 60373	BC857B
5201	4822 157 11837	Coil 8,5 Turn 0,36μH 10%	7525	4822 209 17235	74LVU04D
5202	4822 157 11837	Coil 8,5 Turn 0,36μH 10%	7526	4822 209 17345	M62320FP
5203	4822 157 11837	Coil 8,5 Turn 0,36μH 10%	7527	4822 130 41246	BC327-25
5500	4822 157 62552	Coil 2,2μH 5%	7528	4822 130 60511	BC847B
5501	2422 536 00019	Transformer 6RG	7529	4822 209 72042	MC78L05ACP
			7540	4822 130 42804	BC817-25
			7541	4822 130 42804	BC817-25
			7550	9322 150 74668	TDA7468D
			7553	4822 130 60511	BC847B
			7555	4822 130 60511	BC847B
			7556	4822 130 60511	BC847B

**DIODES**

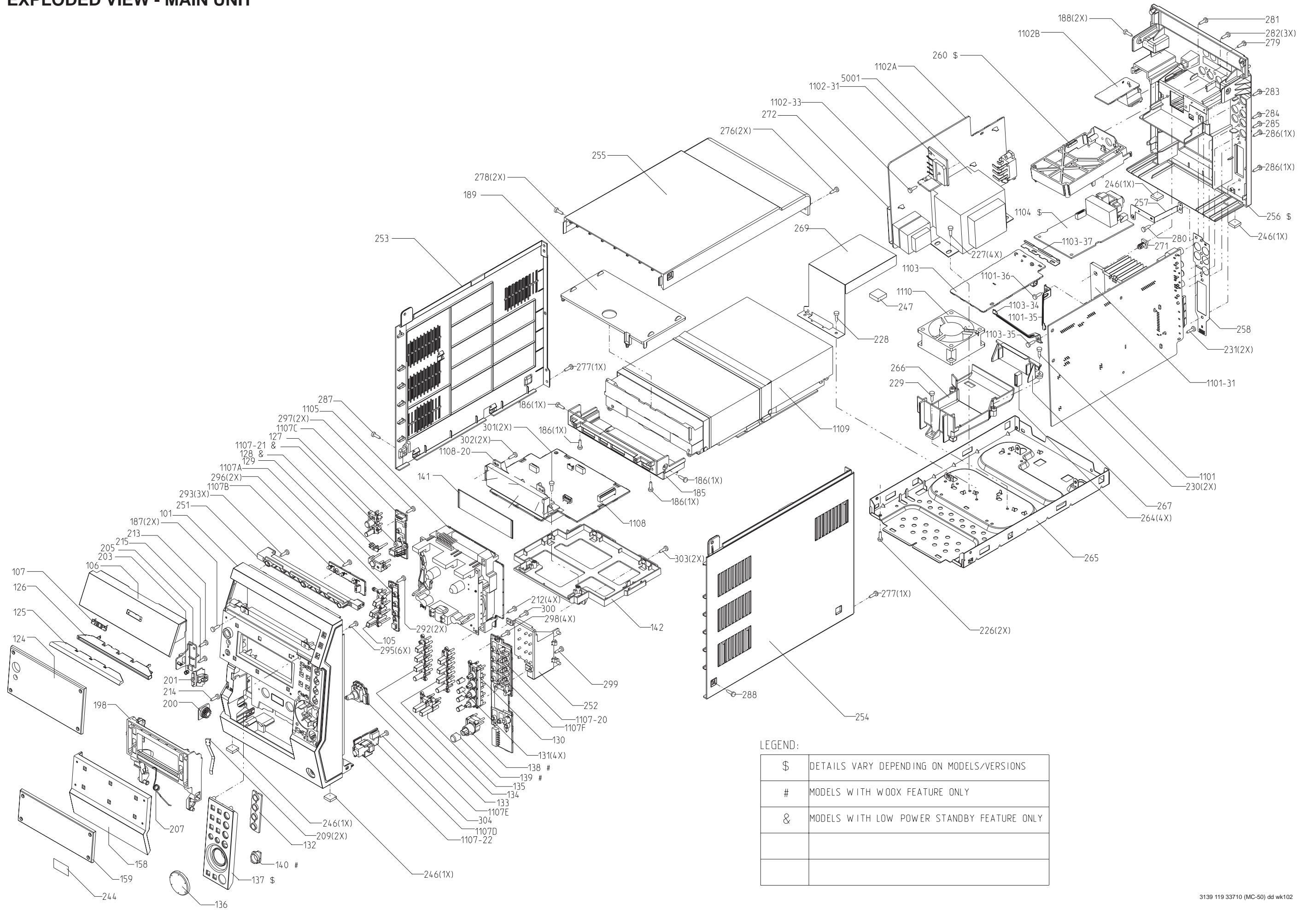
6200	4822 130 31878	1N4003G
6201	4822 130 31878	1N4003G
6202	4822 130 31878	1N4003G
6203	4822 130 31878	1N4003G
6204	9340 550 66112	BYV28-200/24
6205	4822 130 34441	BZX79-B22
6206	4822 130 30621	1N4148
6207	4822 130 34174	BZX79-B4V7
6208	4822 130 31024	BZX79-B18
6209	4822 130 34174	BZX79-B4V7
6508	4822 130 61219	BZX79-B10
6509	4822 130 30621	1N4148
6510	4822 130 30862	BZX79-B9V1
6511	4822 130 30621	1N4148
6512	4822 130 30621	1N4148
6513	4822 130 31878	1N4003G
6520	4822 130 30621	1N4148

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

**TRANSISTORS & INTEGRATED CIRCUITS**

7200	9322 133 18682	AN7125P
7201	4822 130 44568	BC557B
7202	4822 130 44568	BC557B
7203	4822 130 40959	BC547B
7204	4822 130 10847	BDW94C

EXPLODED VIEW - MAIN UNIT



LEGEND:

\$	DETAILS VARY DEPENDING ON MODELS/VERSIONS
#	MODELS WITH WOOX FEATURE ONLY
&	MODELS WITH LOW POWER STANDBY FEATURE ONLY

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

101	3139 118 14890	Cabinet Front /22	387	3139 115 20740	Instruction For Use /22	186	D3 x 10
101	3139 118 15150	Cabinet Front /37	387	3139 115 20750	Instruction For Use /37	187	D3 x 10
105	3139 118 14920	Button Set DTC Chrome	1110	4822 361 11161	Cooling Fan KD1206PTS3	188	D3 x 10
106	3139 118 14910	Cover Tray DTC	1131	3139 110 35560	Flex Cable 19pin 18cm AD	212	D3 x 12
107	4822 459 11086	Badge Assembly Philips	1133	3139 110 35570	Flex Cable 9pin 10cm AD	213	D3 x 12
124	3139 118 15030	Window Display /22	1134	3139 110 35240	Flex Cable 8pin 28cm AD	214	D3 x 12
124	3139 118 15160	Window Display /37	1135	3139 110 35230	Flex Cable 7pin 22cm AD	215	D3 x 12
125	3139 114 71610	Lightguide Wash	1136	4822 320 12752	Flex Cable 7pin 18cm AD	226	M3 x 6
126	3139 114 71620	Housing Lightguide Wash	1137	3139 110 35250	Flex Cable 4pin 12cm AD	227	M3 x 6
127	3139 118 15010	Button Set Power Chrome	1138	3139 110 35520	Flex Cable 19pin 10cm AD	228	M3 x 6
130	3139 114 71770	Button Set Source	1141	4822 320 12752	Flex Cable 7pin 18cm AD	229	M3 x 6
131	3139 118 14990	Cap Source Micro Chrome	1142	3139 110 34610	Flex Cable 11pin 18cm AD	230	D3 x 10
133	3139 118 14960	Button Set Control Left	1143	3139 110 34950	Flex Cable 07p/120/07p Ad	231	M3 x 10
134	3139 118 14970	Button Set Control Right	5001	3139 118 32340	△ Mains Transformer /22	276	D3 x 12
135	3139 118 14980	Button Set Treble/Bass	5001	3139 118 32330	△ Mains Transformer /37	277	M3 x 10
136	3139 118 14950	Knob Jog Chrome	Note: Only the parts mentioned in this list are normal service spare parts.			278	D3 x 10
137	3139 118 14930	Cover Display				279	D3 x 16
141	3139 113 27010	Filter Blue				280	D3 x 8
158	3139 118 15020	Cover Cassette	* Pos 189 is used for transportation only, it must be removed before playing CD.			281	D3 x 10
159	3139 118 15050	Window Cassette				282	D3 x 10
189 *	3139 118 15780	Plate Transport DTC				283	D3 x 10
198	3139 114 68620	Door Cassette Left				284	D3 x 10
200	4822 529 10322	Damper Assembly				285	D3 x 10
201	3139 114 68640	Push Catch Left				286	D3 x 10
203	4822 492 11344	Spring Compression				287	D3 x 10
205	4822 402 11245	Bracket Left				288	D3 x 10
207	3139 111 01390	Spring Torsion Left				292	D3 x 10
209	4822 492 42787	Spring Cassette				293	D3 x 20
246	3139 113 27140	Foot Rubber (SQ) 4mm				295	D2 x 8
252	3139 114 71560	Bracket Combi				296	D3 x 10
253	3139 114 71510	Panel Left Micro				297	D3 x 10
254	3139 114 71520	Panel Right Micro				298	D3 x 10
255	3139 114 71530	Cover Top Micro				299	D3 x 10
256	3139 114 71490	Panel Rear Micro				300	D3 x 10
271	3139 114 71010	Stopper Heatsink				301	D3 x 10
350	3139 118 78510	Loudspeaker Box /22				302	D3 x 10
350	3139 118 78500	Loudspeaker Box /37				303	D3 x 10
	9965 000 07825	Loud. Cloth Frame assembly				304	D3 x 12
351	4822 303 50063	FM Aerial /22				1101-34	D3 x 10
351	4822 303 11094	FM Antenna Wire /37				1101-36	D3 x 10
356	3139 118 78610	Remote Control /22				1102-33	D3 x 10
356	3139 118 78620	Remote Control /37				1103-33	D3 x 10
384	4822 303 50082	AM Frame				1103-35	D3 x 10
385	4822 321 10249	△ Mains Cord /22					
385	4822 321 11466	△ Mains Cord /37					