

Service
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Service Manual



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3139 785 22720



PHILIPS

SPECIFICATIONS

GENERAL:

Mains voltage : 110-127V/220-240V Switchable for /21/21M
 220-230V for /22
 120V for /37
 Mains frequency : 50/60Hz
 Power consumption : < 15W at Standby (Demo off)
 < 1W at Eco Power Standby /22
 < 80W 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 Ω coaxial
 300 Ω click fit for /37
 Sensitivity at 26dB S/N : < 7 μ V
 Selectivity at 600kHz bandwidth : > 25dB
 Image rejection : > 25dB
 Distortion at RF=1mV, dev. 75kHz : < 3%
 -3dB Limiting point : < 8 μ V
 Crosstalk at RF=1mV, dev. 40kHz : > 18dB

MW

Tuning range : 531-1602kHz
 530-1700kHz for /21/37
 Grid : 9kHz
 10kHz for /21/37
 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 50W RMS ¹⁾ /22
 2 x 40W FTC ²⁾ /37
 Frequency response within -3dB : 50Hz-16kHz
 Treble control : 12.5kHz \pm 3 steps ³⁾
 Bass control : 55Hz \pm 3 steps ³⁾
 Incredible Sound : ON/OFF ³⁾
 wOOx Level control : 3, 2, 1, OFF ³⁾
 Headphone output at 32 Ω : 680mV \pm 1dB
 Sub-woofer output : 1.5V \pm 3dB at 22k Ω
 Digital output (IEC958, 44.1kHz) : 0.5Vp-p
 Aux / CDR input : 500mV / 1V \pm 2dB at 600 Ω

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 : > 47dBA
 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_{out} = 100 Ω
 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

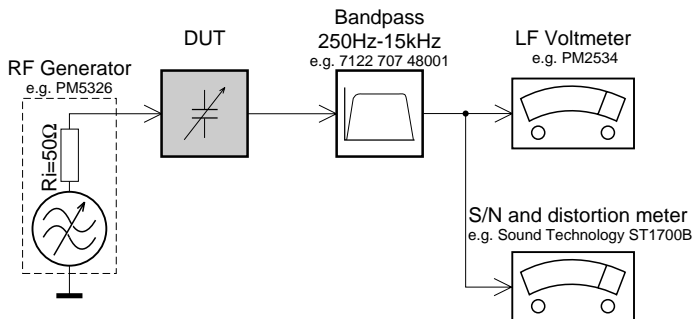
¹⁾ 6 Ω , 1kHz, 10% THD

²⁾ 6 Ω , 60Hz - 12,5kHz, 10% THD

³⁾ Frequency response in each setting is software controlled.

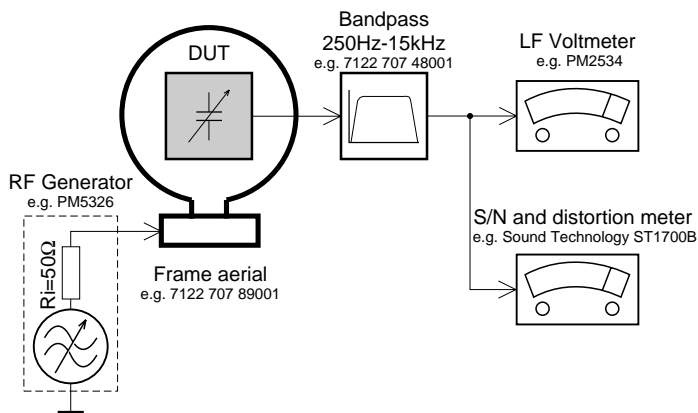
MEASUREMENT SETUP

Tuner FM



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

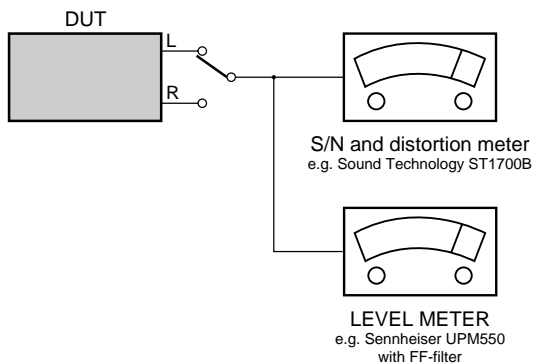
Tuner AM (MW,LW)



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).

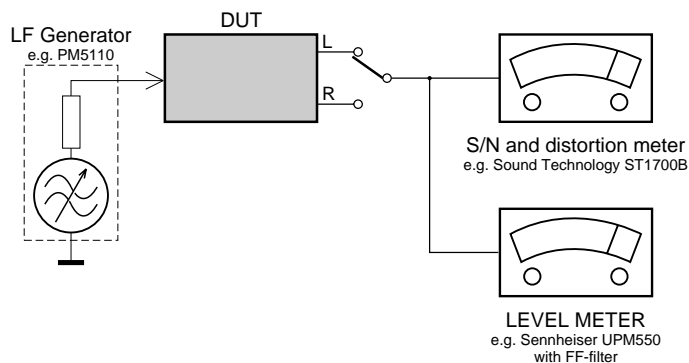
CD

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

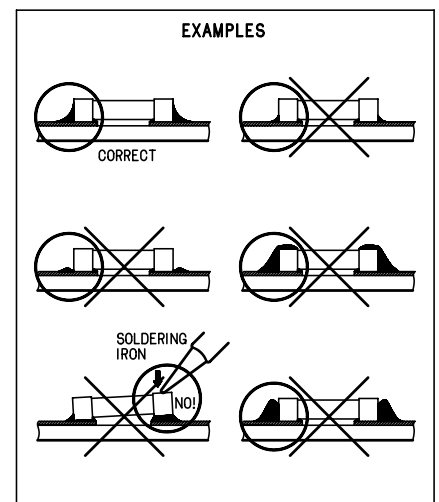
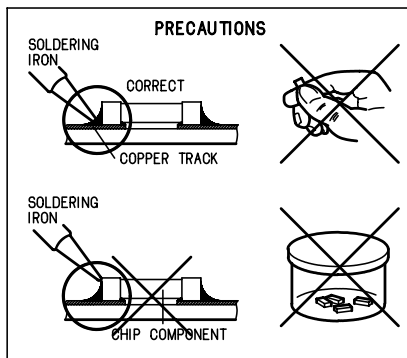
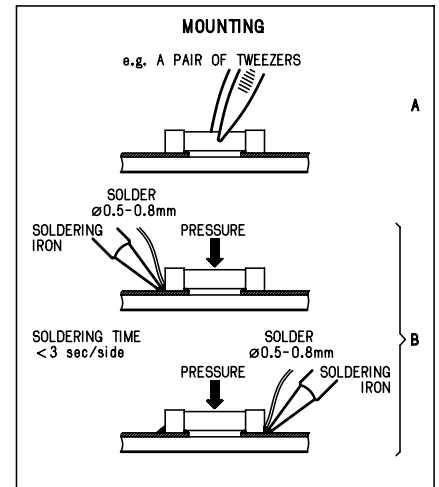
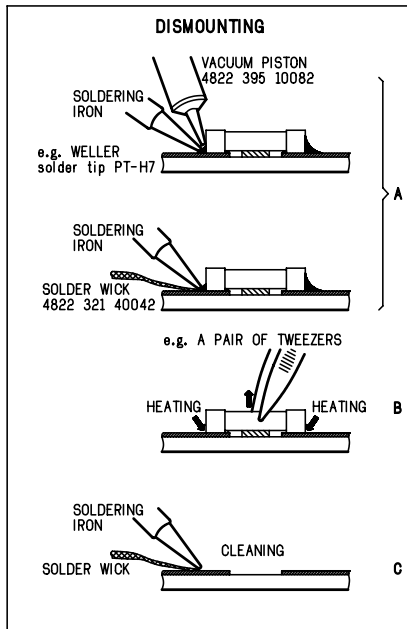
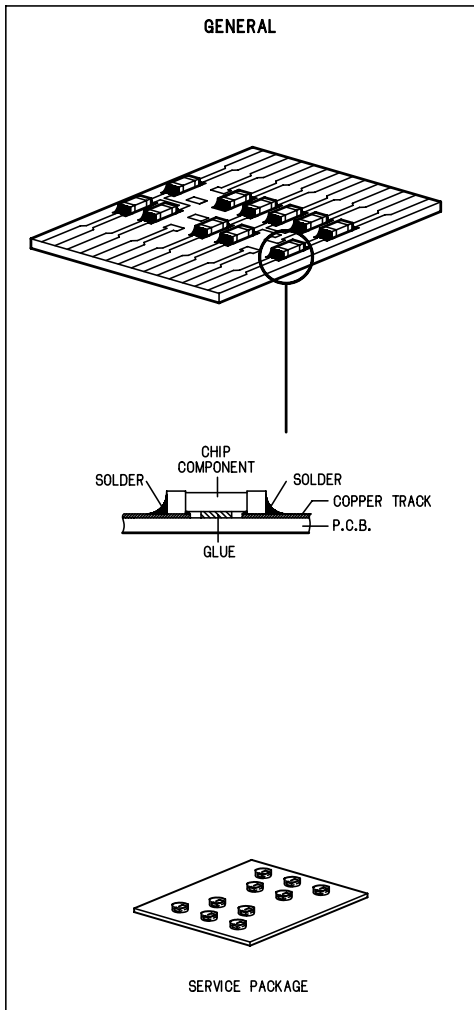
Compact Disc:

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 suojauslaitteiden ohitettaessa olet alltiina näkymättömälle laserisäteilylle. Älä katso säteeseen!

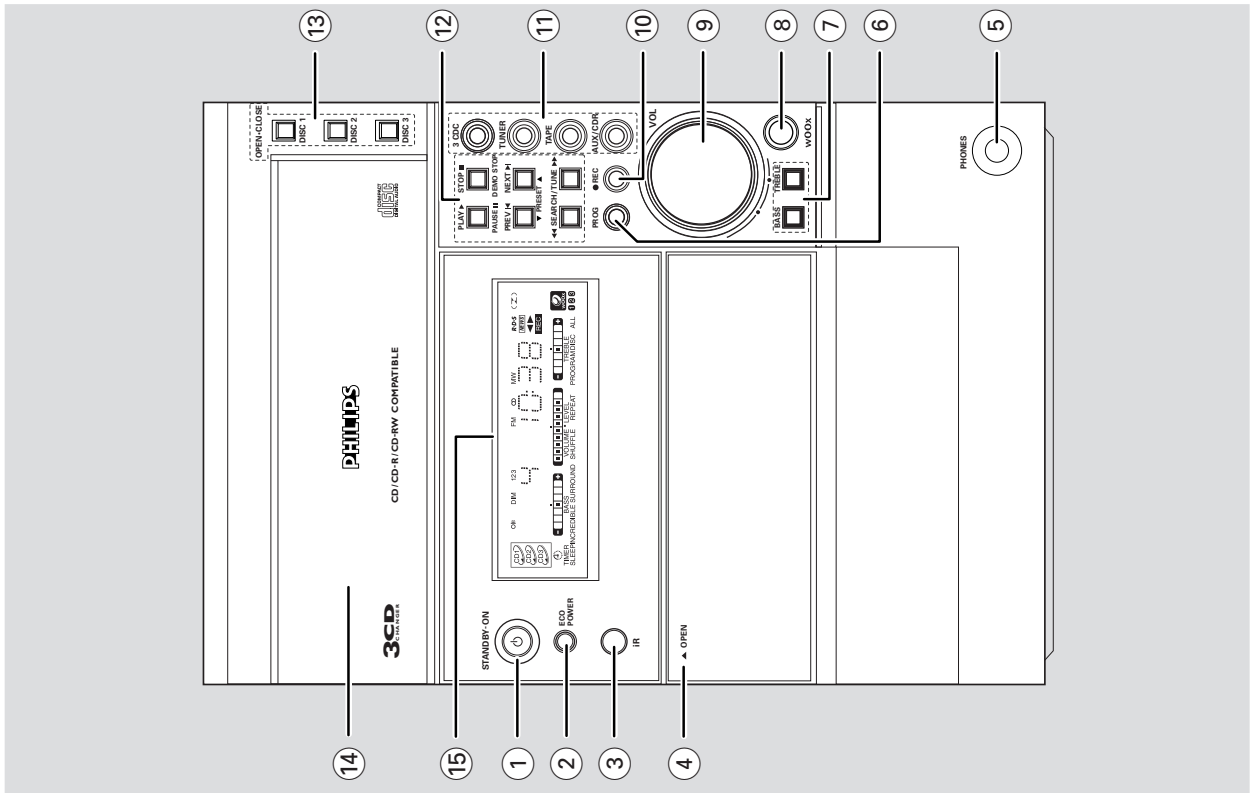
(DK) Advarse !

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

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NEWS 21	



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

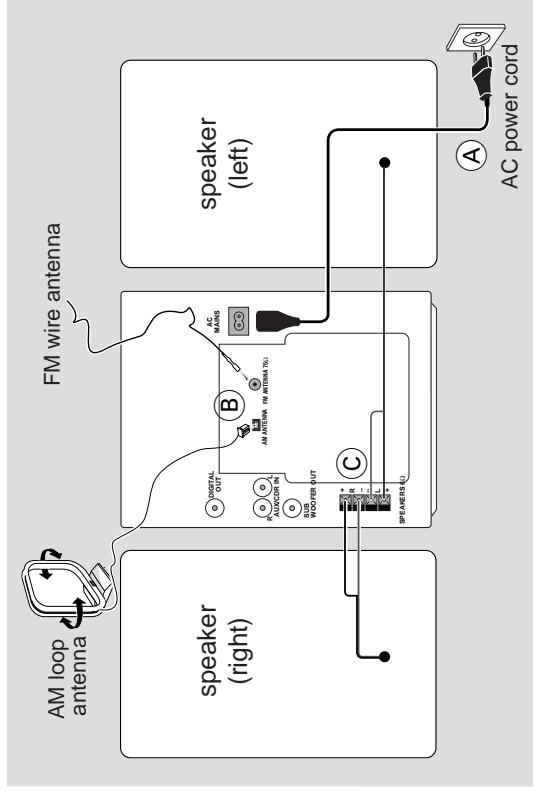
English

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!

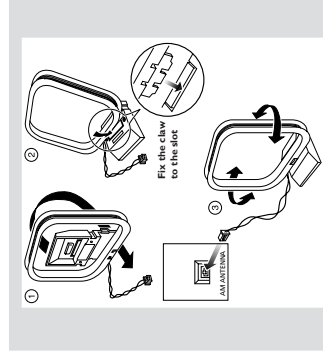
- For optimal performance, use only the original power cable.
- Never make or change connections with the power switched on.

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

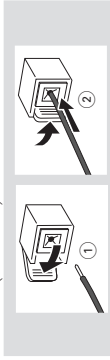


- For better FM stereo reception, connect an outdoor FM antenna to the FM ANTENNA terminal.

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** ○
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.
for CLOCK to select 12- or 24-hour clock mode.
- 7 **BASS/TREBLE**
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 WOXX level or switch off WOXX sound effect.
(on the remote control only) to switch on or off the WOXX sound effect.
- WOXX LEVEL**
(on the remote control only) to select desired WOXX level : WOXX 1, WOXX 2 or WOXX 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.
- 12 **Mode Selection**
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.
- PREV / NEXT** ◀ ▶ (PRESET ▼▲)
for CD to skip to the beginning of the current, previous, or next track.
for TUNER to select a preset radio station.
for TAPE to select tape side (back or front).
- for CLOCK to set the minute.
- SEARCH / TUNE** ◀▶
for CD to search backward/forward.
for TUNER to tune to a lower or higher radio frequency.
- for TAPE to rewind or fast forward.
- for CLOCK to set the hour.
- 13 **OPEN•CLOSE (DISC 1/DISC 2/DISC 3)**
to open or close the individual disc tray : DISC 1, DISC 2 or DISC 3
- 14 **DISC TRAYS**
- 15 **DISPLAY SCREEN**
to view the current status of the system.
- 16 **MUTE**
to interrupt or resume sound reproduction.
- 17 **CD DIRECT 1/2/3**
to select a disc tray for playback.
- 18 **IS (INCREDIBLE SURROUND)**
to activate or deactivate the surround sound effect.

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:

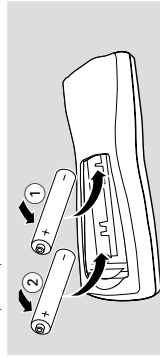
- If you are connecting equipment with a monoaural output (a single audio out terminal), connect it to the **AUX/CDR IN** left terminal. Alternatively, you can use a "single to double" cinch cable (still be mono sound).

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.

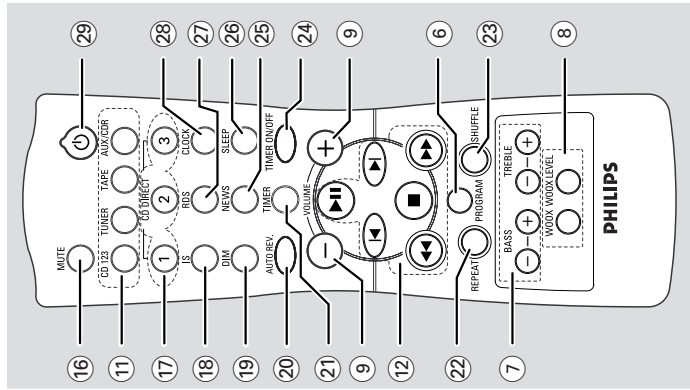


CAUTION!

- 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

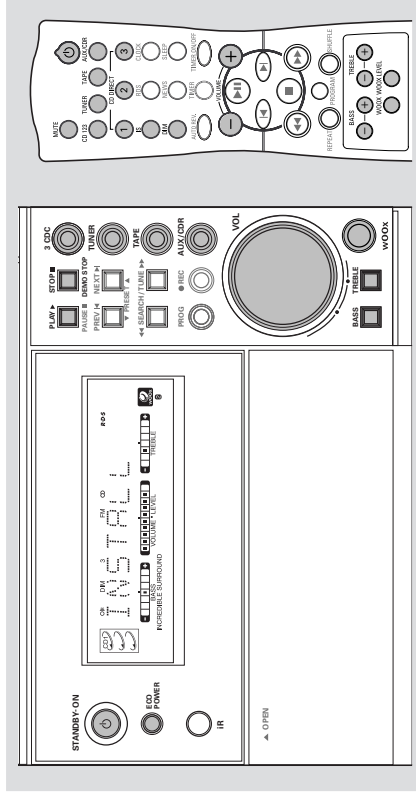


- 19 **DIM**
to select various dim mode : DIM 1, DIM 2, DIM 3 or DIM OFF.
- 20 **AUTO REV. (AUTO REVERSE)**
to select the desired tape playback modes.
- 21 **TIMER**
to display timer or set the timer.
- 22 **REPEAT**
to playback track(s)/disc(s)/programme repeatedly.
- 23 **SHUFFLE**
to playback all 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.

- 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.

Plug and Play

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

If Plug and Play has not been installed

- 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.

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 OFFAll available LEDs light up, display screen will have full brightness, music level bar active.

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

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

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



← music level bar

Volume Control

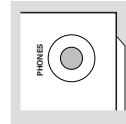
Adjust **VOL** to increase (turn knob clockwise or press **VOLUME +**) or decrease (turn knob anticlockwise or press **VOLUME -**) the sound level.

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

→ When reached the minimum volume level, "VOL 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

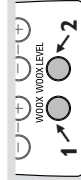
For optimal sound listening, you are only able to select BASS/TREBLE or WOOx at a time (for model MC-70 only).

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

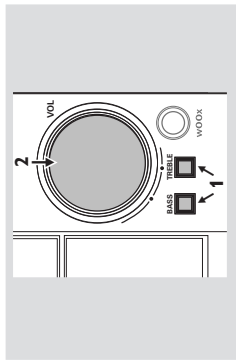
English

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.

OR

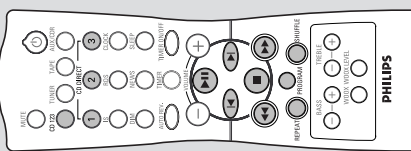
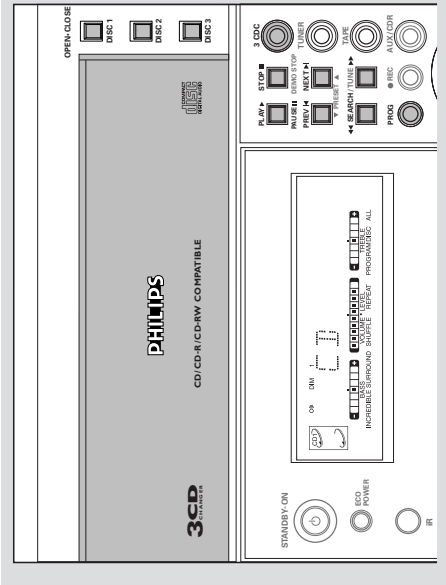


- 1 Press **BASS** or **TREBLE** on the system to select Bass or Treble sound feature.
- 2 Adjust the **VOL** on the system to select the desired Bass or Treble level.
→ "BASS XX" or "TREB XX" will be displayed. "XX" denotes the level as follows:
MIN → -2 ... 0 → 1 ... → +2 → MAX ...



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).

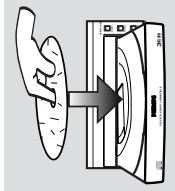


IMPORTANT!

- 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.

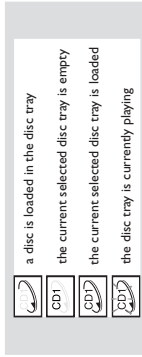
Notes:

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

To stop playback

- Press **■**.

To search for a particular passage during playback

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

To select a desired track

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

Note:

- In **Shuffle mode**, pressing **◀** 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 **◀** **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 **◀** or **▶** repeatedly.
- To exit review mode, press **■**.

To erase the entire programme

- Press **■** 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 **■**.

- 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 **■**.

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.

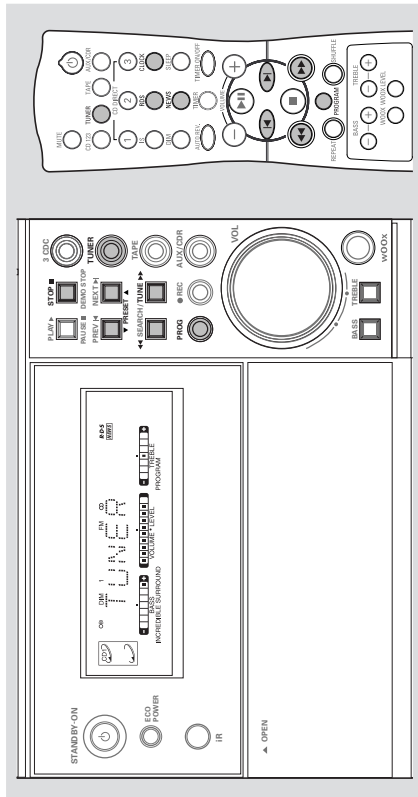
In programme shuffled playback

- → **"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.

To start NEWS function

- 1 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.
- 2 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).

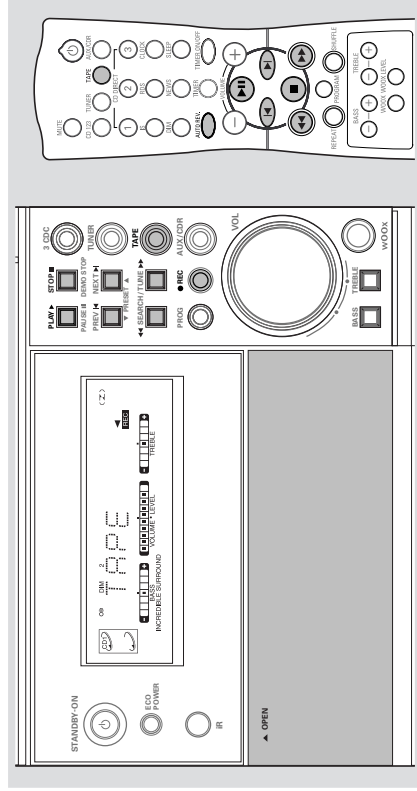
Notes:

- 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

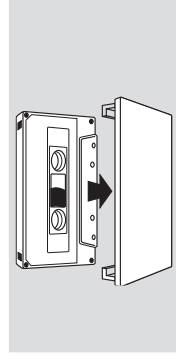


IMPORTANT!

- 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

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



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

To stop playback

- Press **■**.

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 **■**.

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

- 1 Press **◀◀** or **▶▶**.
- 2 Press **■** when you reached the desired passage.

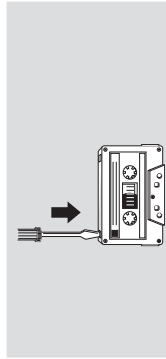
Tape Operation/Recording

English

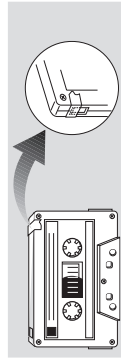
Note:
 – During rewinding or fast forwarding of a tape, it is also possible to select another source (CD, TUNER or AUX, for example).

General Information on Recording

- For recording, use only tape of IEC type I (normal tape) or IEC type II (CrO₂).
- 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 CrO₂ 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.

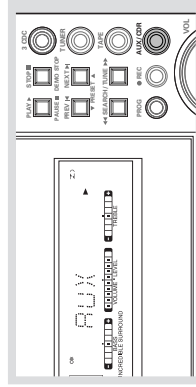
Note:
 – One Touch Recording is not possible in TAPE mode, “SELECT SOURCE” will be displayed.

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.
- To select another track during recording**
- 1 Press **PAUSE II (▶II)** to interrupt recording.
 - 2 Press **◀** or **▶** to select the desired track.
 - 3 Press **PLAY ▶ (▶II)** to resume recording.
- **To stop recording**
 Press **■**.
 → Recording and disc playback will stop simultaneously.

External Sources



Notes:

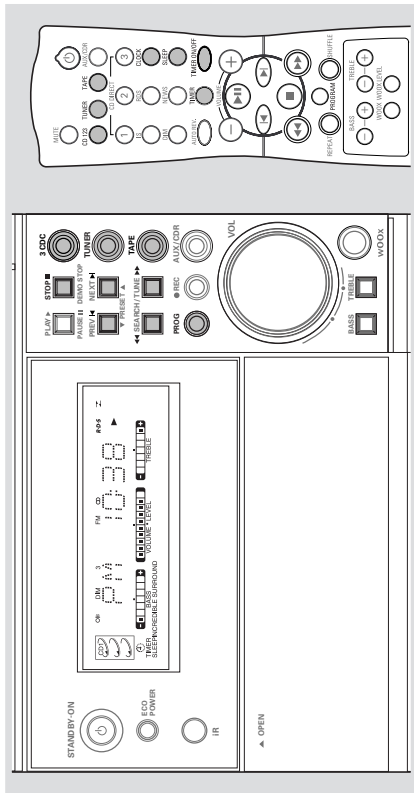
- You are advised not to listen to and record from the same source simultaneously.
- All the interactive sound control features (S or BASS/TREBLE, for example) are available for selection.
- Refer to the operating instructions for the connected equipment for details.

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/CDR IN terminals of your system.
- 2 Press **AUX/CDR** 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”.

English



English

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.

1 Press and hold **TIMER** on the remote control for more than **two seconds**.

→ "FM 12:00" or "00:00" or the last timer setting will start flashing.

→ **TIMER** will start flashing.

→ The selected source will be lighted while other available sources are flashing.

2 Press **3CDC, TUNER** or **TAPE** to select the desired source.

→ Before setting timer, make sure the music source has been prepared.

3CDC – Load the disc(s). To start from a specific track, make a programme (refer to "CD Operation - Programming the disc tracks").

TUNER – tune to the desired radio station.

TAPE – load a prerecorded tape.

3 Press **◀** or **▶** on the system repeatedly to set the hour for the timer to start.

Press **◀** or **▶** on the system repeatedly to set the minute for the timer to start.

5 Press **TIMER ON** to store the start time.
→ **TIMER ON** will be displayed and followed by the set timer "XX:XX" and then the selected source.

→ **TIMER** will remain on the display.
→ At the preset time, the selected source will play.

To exit without storing the setting
Press **■** on the system.

Notes:

- If the selected source (CD) is not available when preset timer is reached, TUNER will be selected automatically.
- During timer setting, if no key is pressed within 90 seconds, the system will exit timer setting mode automatically.

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:

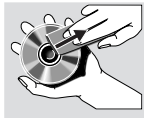
- If you pressed any keys during clock display mode, the display will briefly show the information related to the selected mode.

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.

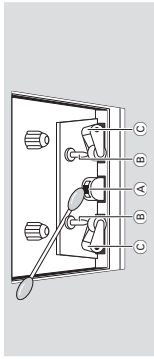
Cleaning Discs

- 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



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

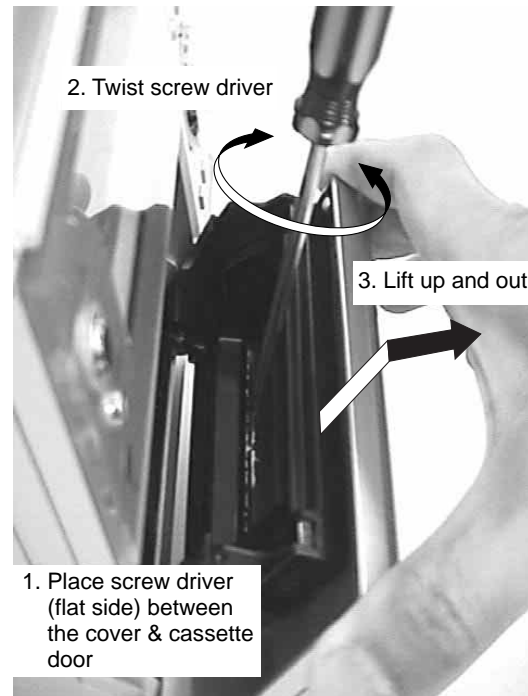
Dismantling of the Cassette Cover

Figure 1 Remove Cassette Cover

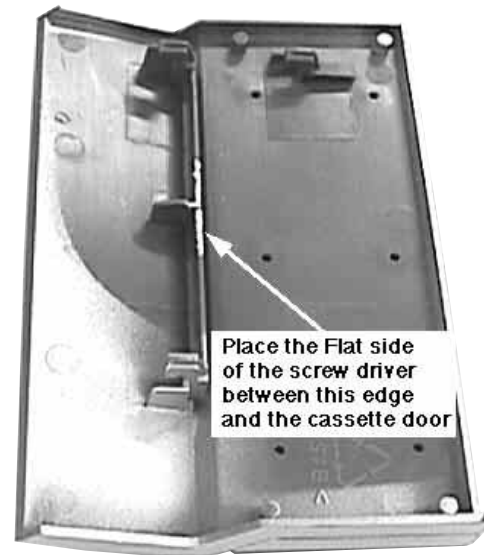


Figure 2 Cassette Cover

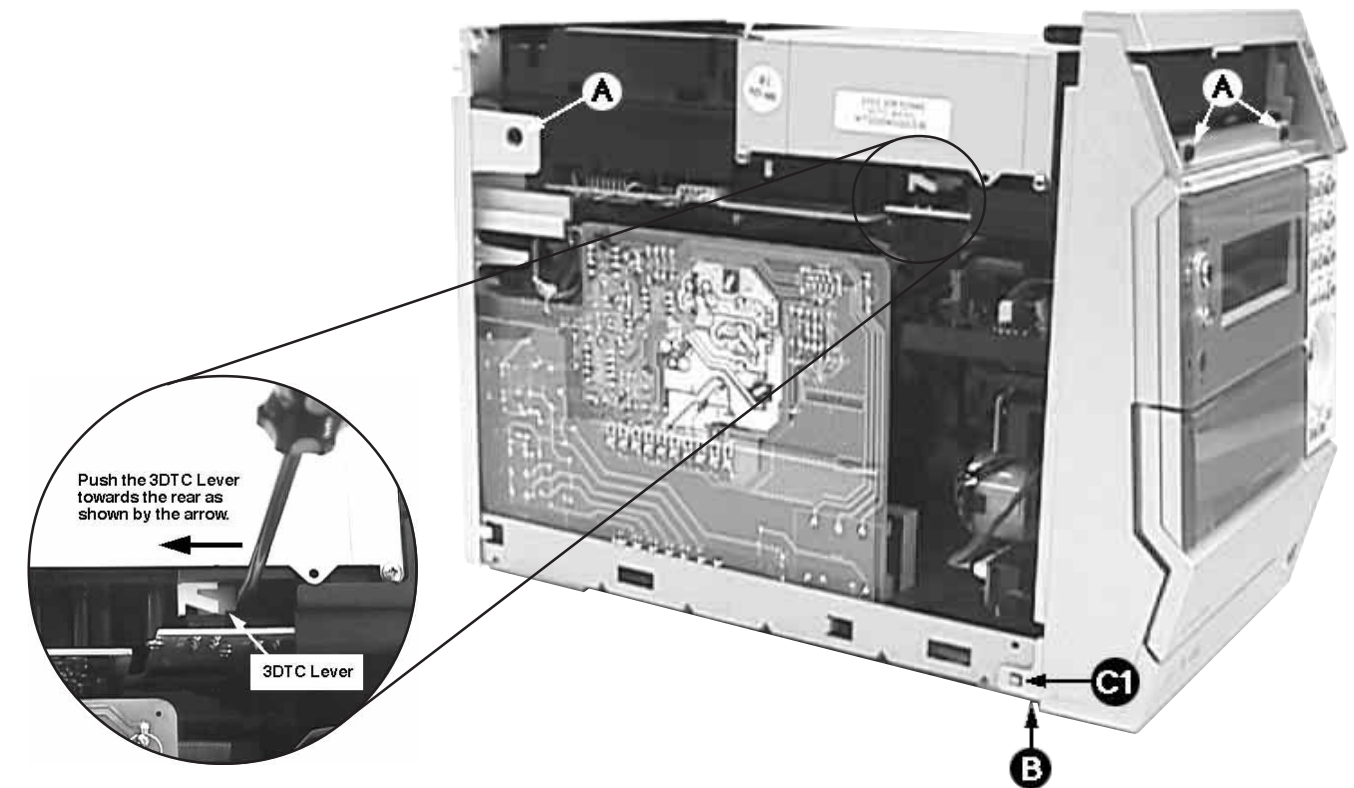


Figure 4

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 slide the Front Panel assembly out towards the front.

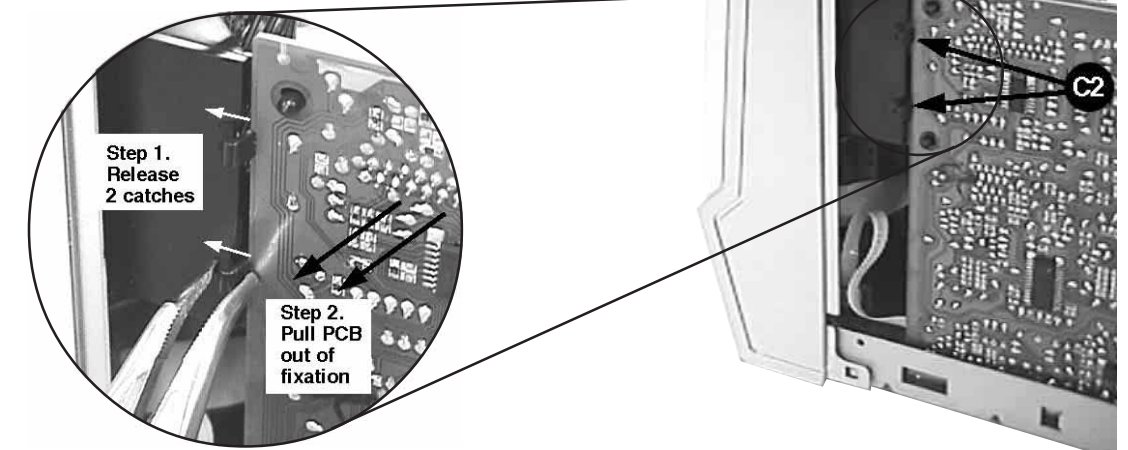


Figure 5

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.

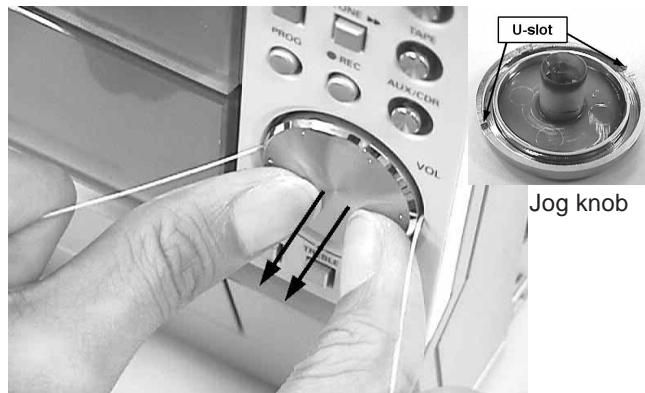


Figure 6

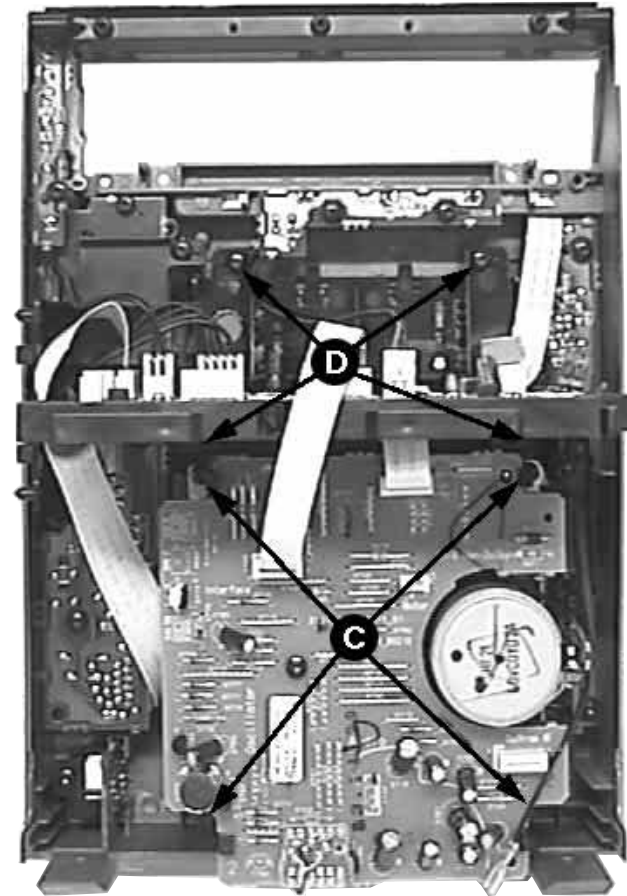


Figure 7

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.

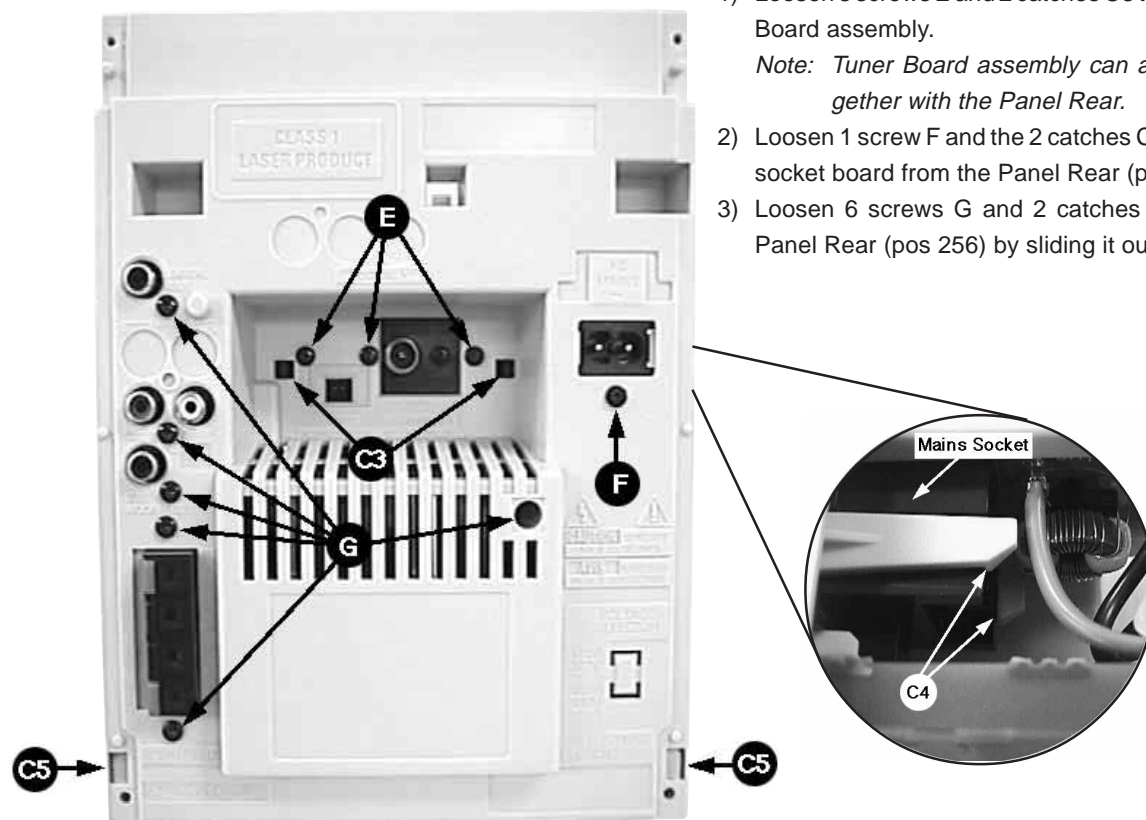


Figure 8

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 (pos 269) from the Bottom plate (pos 265) as shown in figure 11 to remove it.
- 3) Loosen 4 screws K mounting the Mains Transformer (pos 5001) 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

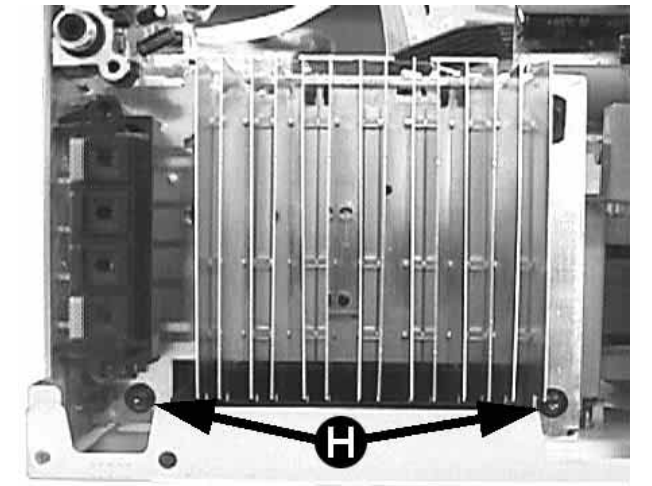


Figure 9

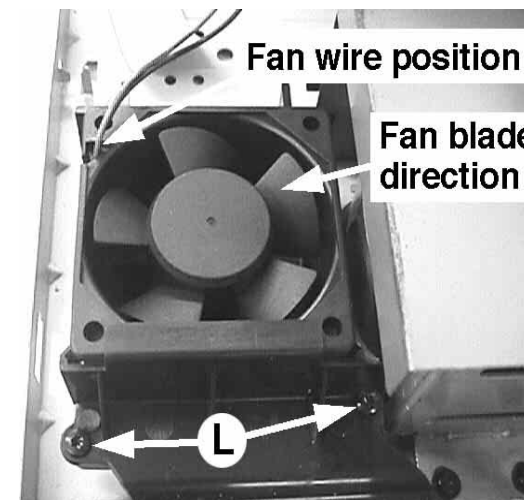


Figure 10

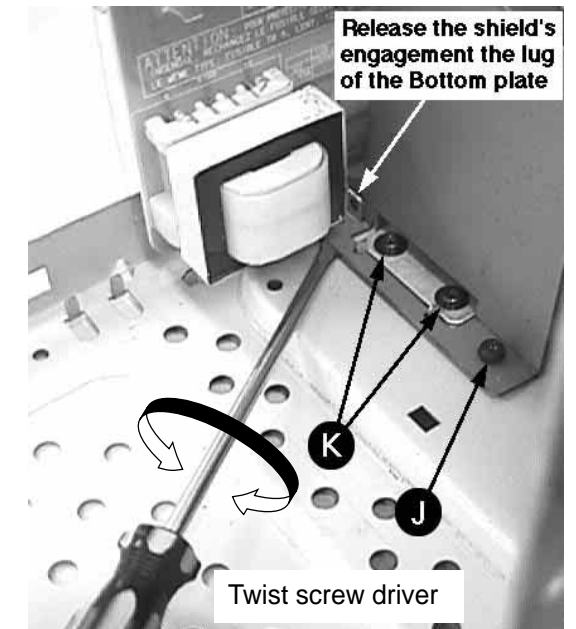


Figure 11

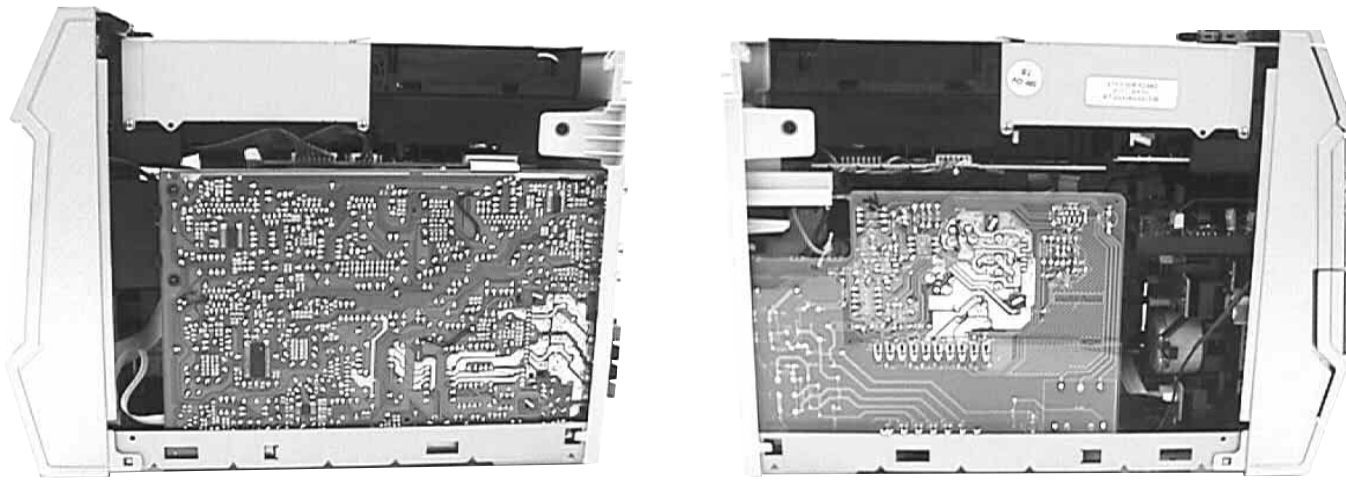
SERVICE POSITIONS & REPAIR HINTS

- 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-

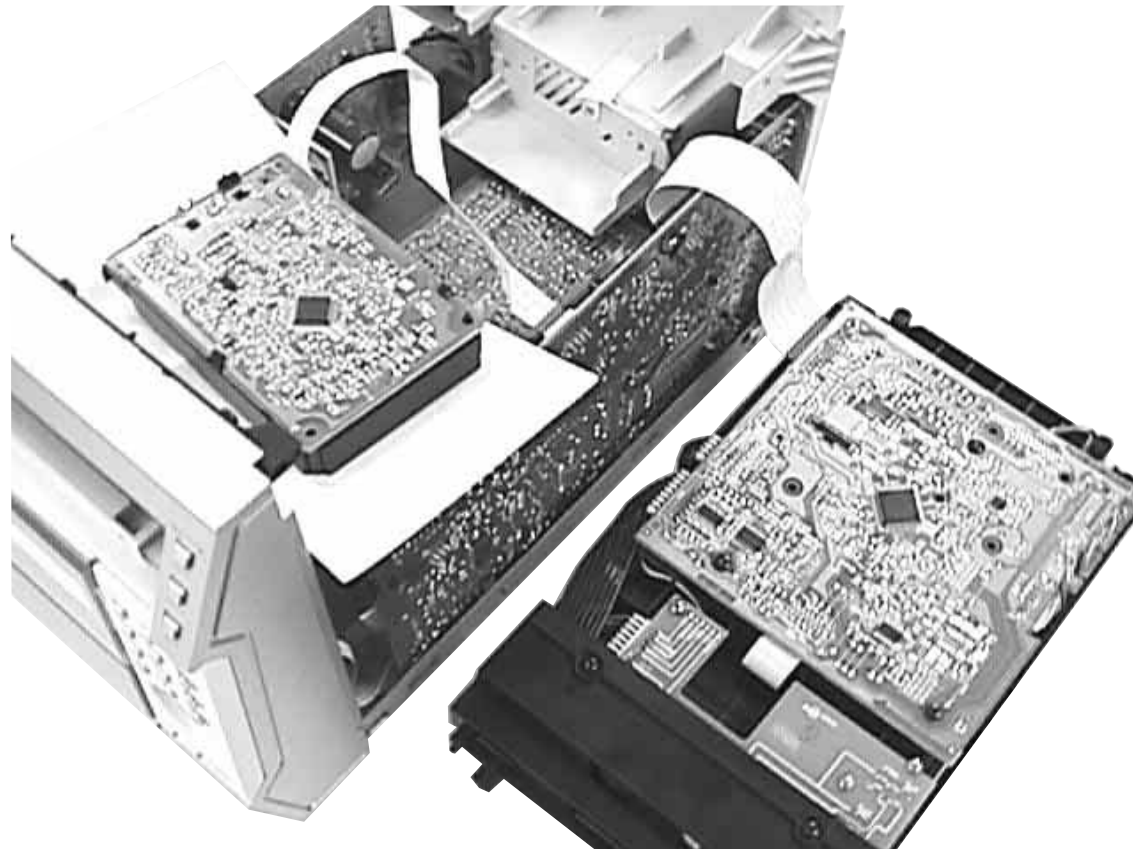
tor 1701 & 1706 because of wire length.

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.

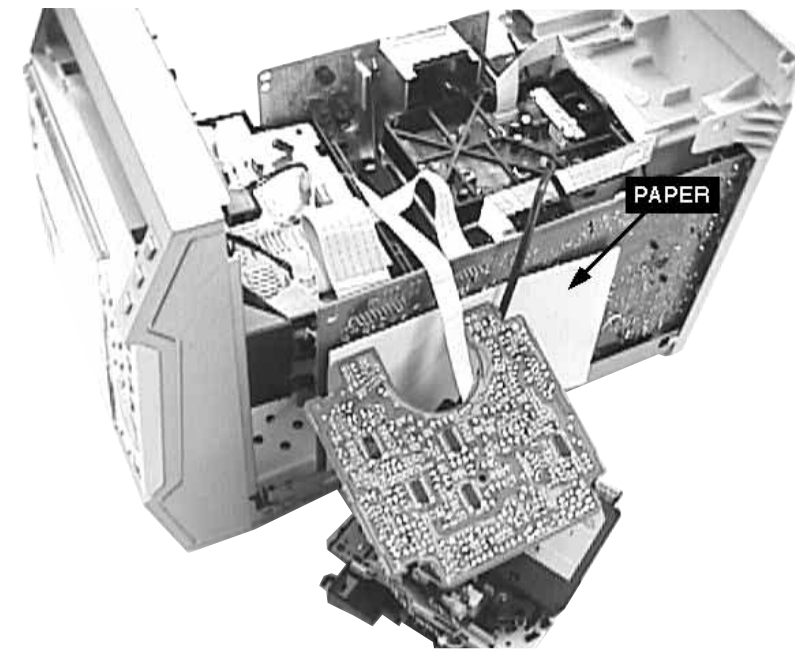
Service pos A



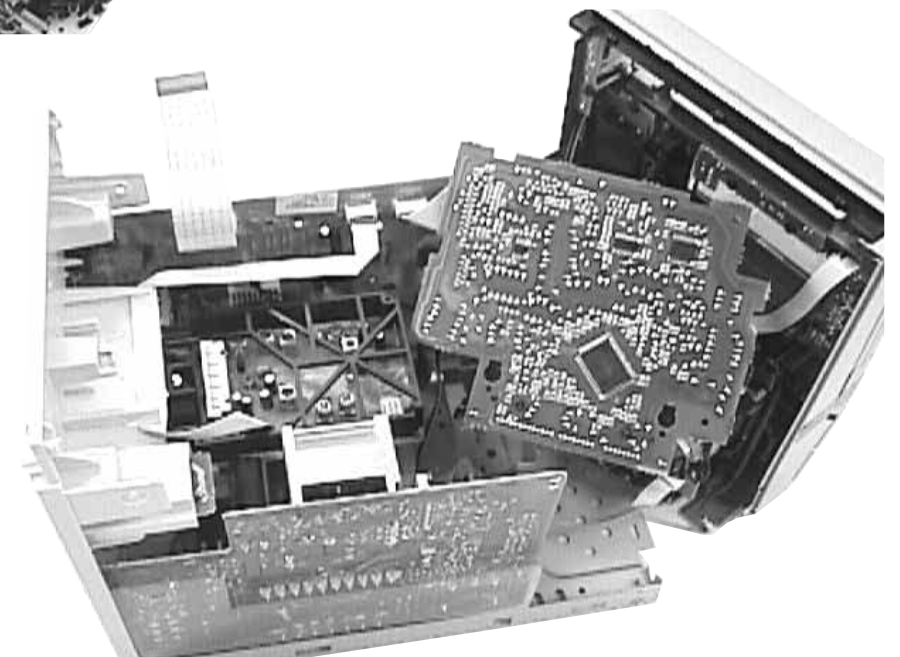
Service pos B



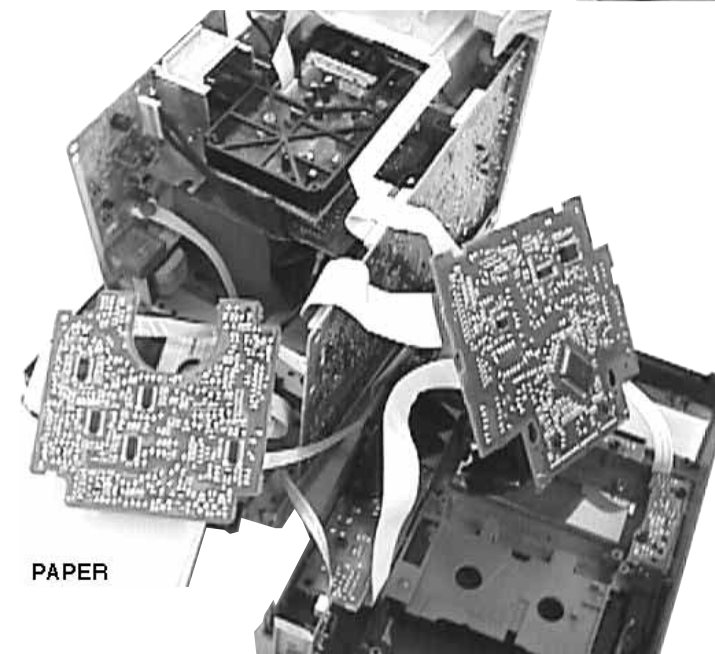
Service pos C



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)

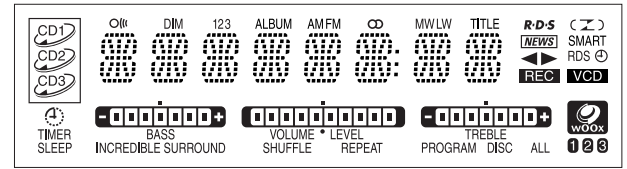
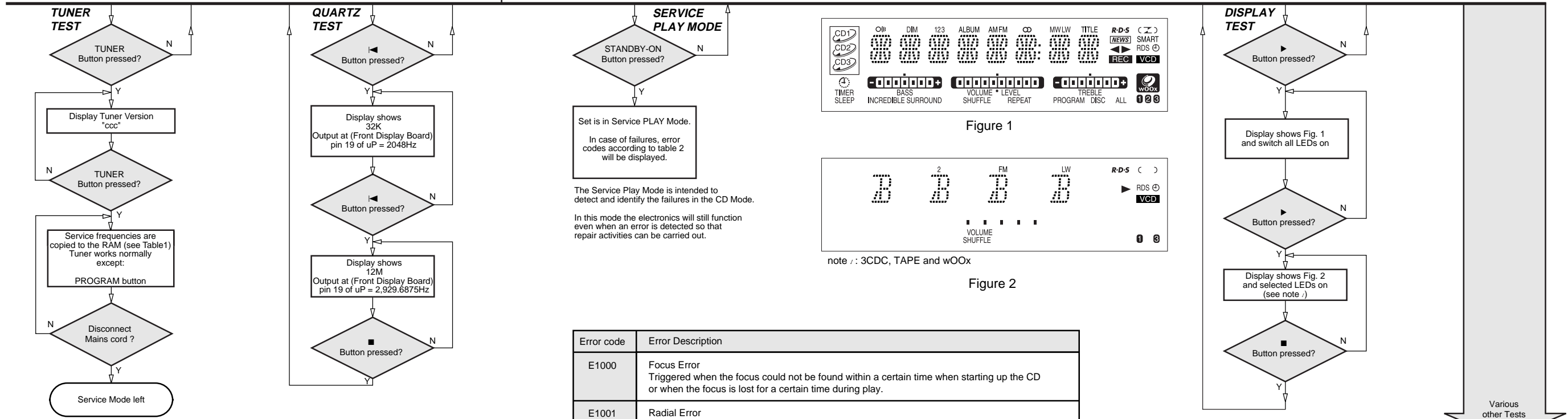


Figure 1

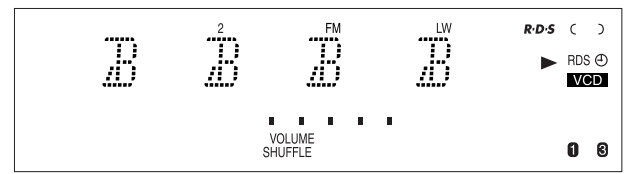


Figure 2

note : 3CDC, TAPE and WOODS

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.

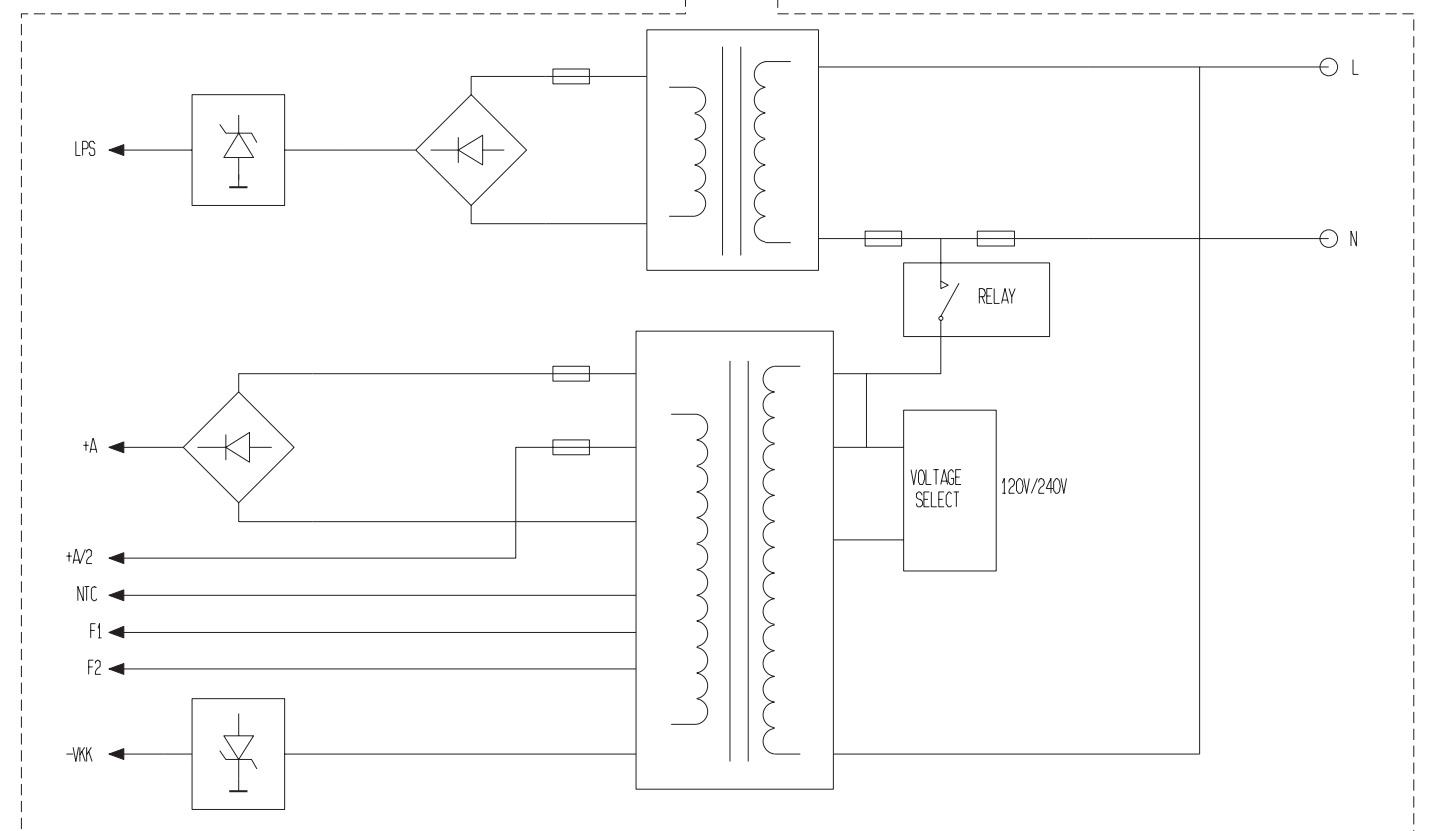
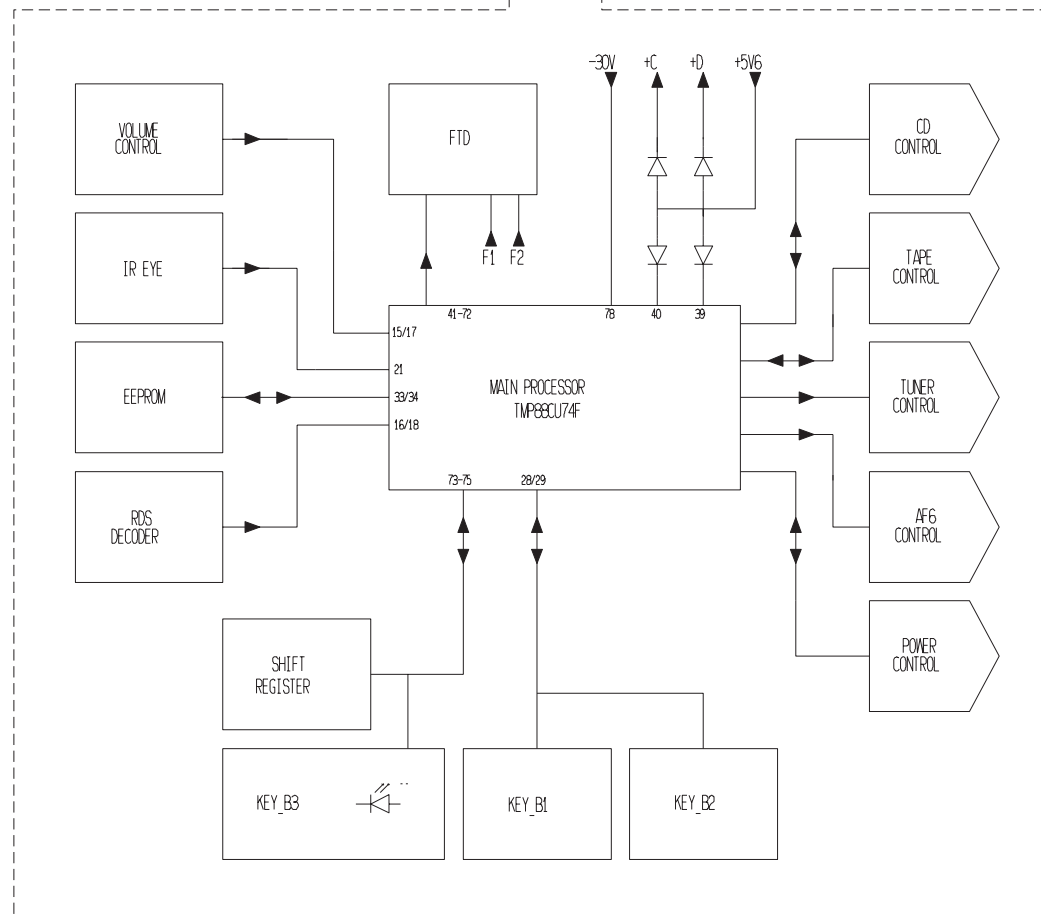
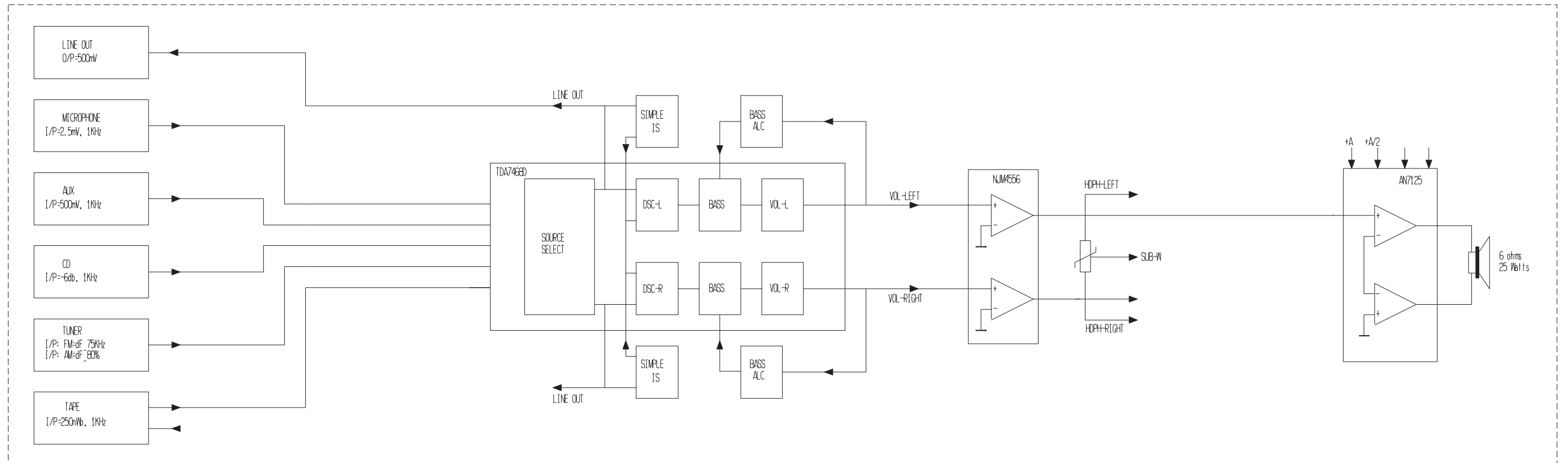
Error code	Error Description
E1000	Focus Error Triggered when the focus could not be found within a certain time when starting up the CD or when the focus is lost for a certain time during play.
E1001	Radial Error Triggered when the radial servo is off-track for a certain time during play.
E1002	Sledge 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

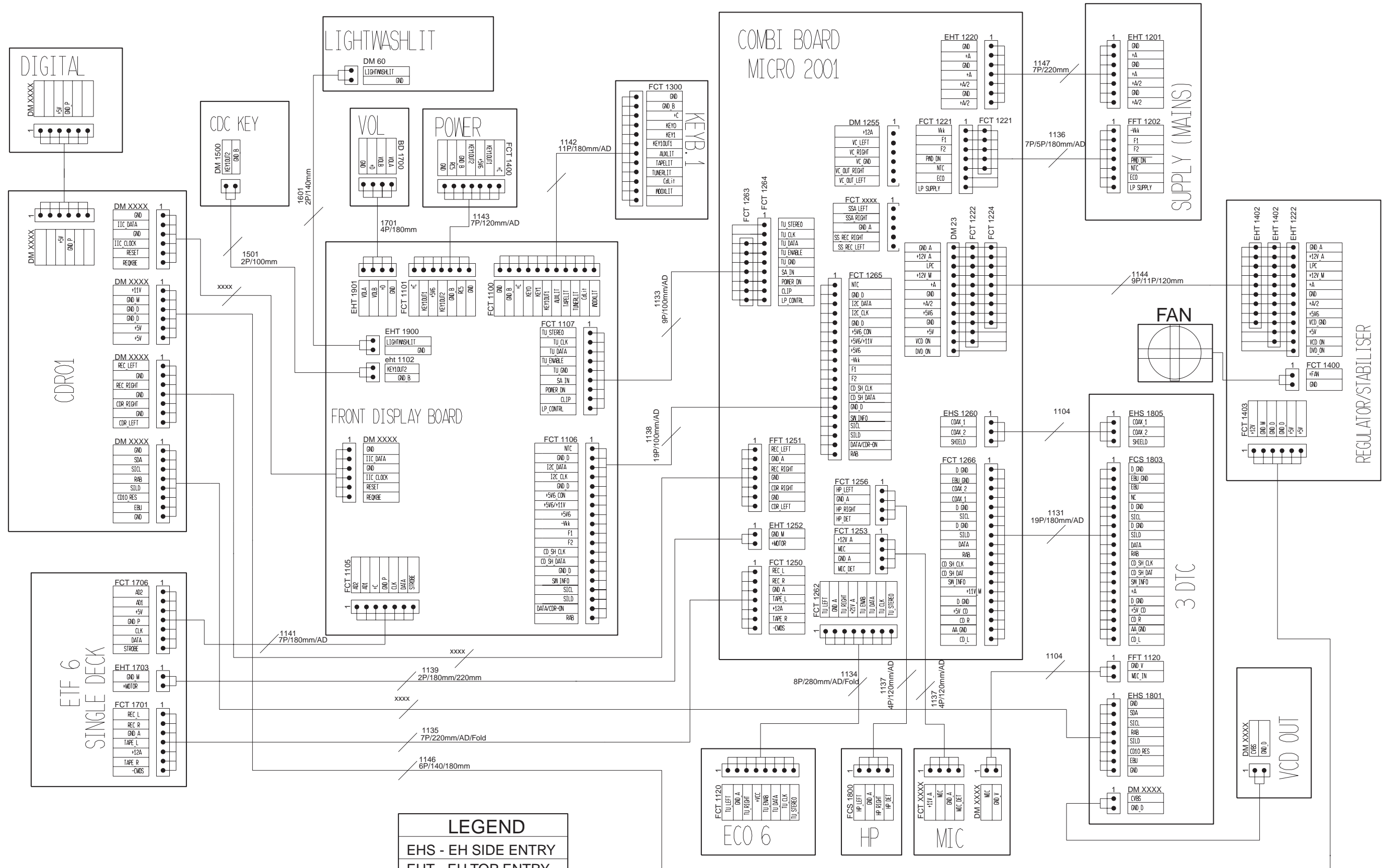
TEST	Activated with	ACTION
EEPROM TEST	▶▶	8 test patterns will be sent to the EEPROM. "PASS" is displayed if the uProcessor read back the test patterns correctly, otherwise "ERROR" will be displayed.
EEPROM FORMAT	◀◀	Load default data. Display shows "NEW" for 1 second. Caution! All presets from the customer will be lost!!
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

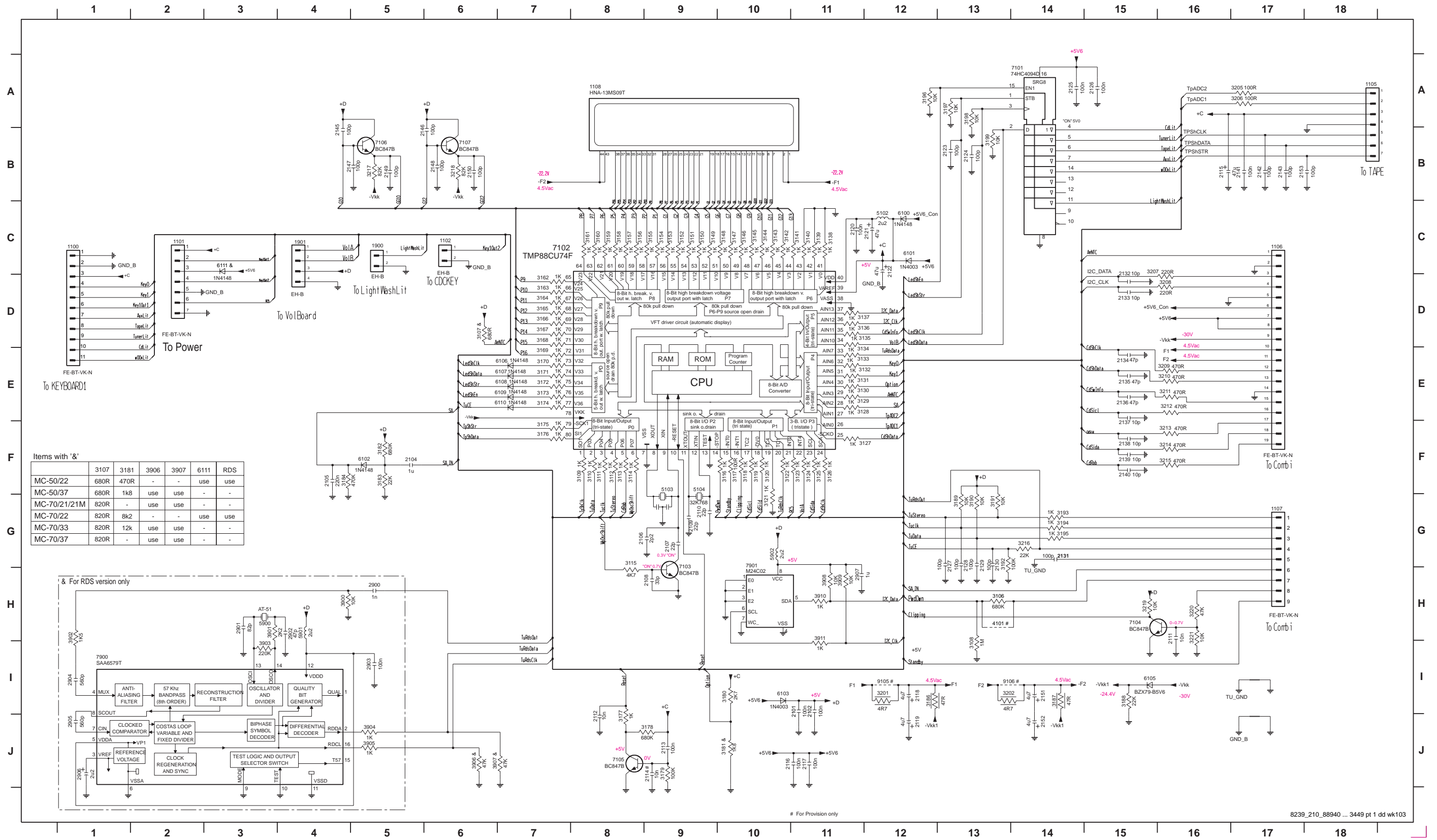


LEGEND

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	2104 F5	2109 G9	2114 J9	2119 J12	2124 B13	2129 G13	2134 E15	2139 F15	2144 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	3189 G13	3194 G14	3199 B13	3201 I12	3206 D16	3211 F16	3216 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	3115 G8	3120 F10	3125 F11	3130 E11	3135 D12	3140 C11	3145 C10	3150 C9	3155 C9	3160 C8	3165 D7	3170 E7	3175 E7	3180 H10	3185 H12	3190 G13	3195 G14	3200 E16	3205 E16	3210 F16	3215 H15	3902 H1	3907 J6	4101 H13	5901 H4	6103 I10	6109 E7	7103 H9	7901 H1		
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	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 H14	3192 G13	3197 A13	3202 A17	3207 C15	3212 E16	3217 H16	3904 J5	3909 H11	5103 F9	6100 C12	6106 E7	6111 C3	7105 J8	7901 G10		
1106 C17	2101 I11	2107 G9	2112 J8	2117 J11	2122 C12	2127 G13	2132 D15	2137 F15	2142 B17	2148 B6	2153 B17	2904 I1	3107 D6	3112 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 H15	3193 G14	3198 A13	3203 A17	3208 E16	3213 F16	3218 H16	3905 J5	3910 H11	5104 F9	6105 E7	6111 C3	7105 J8	7901 G10			

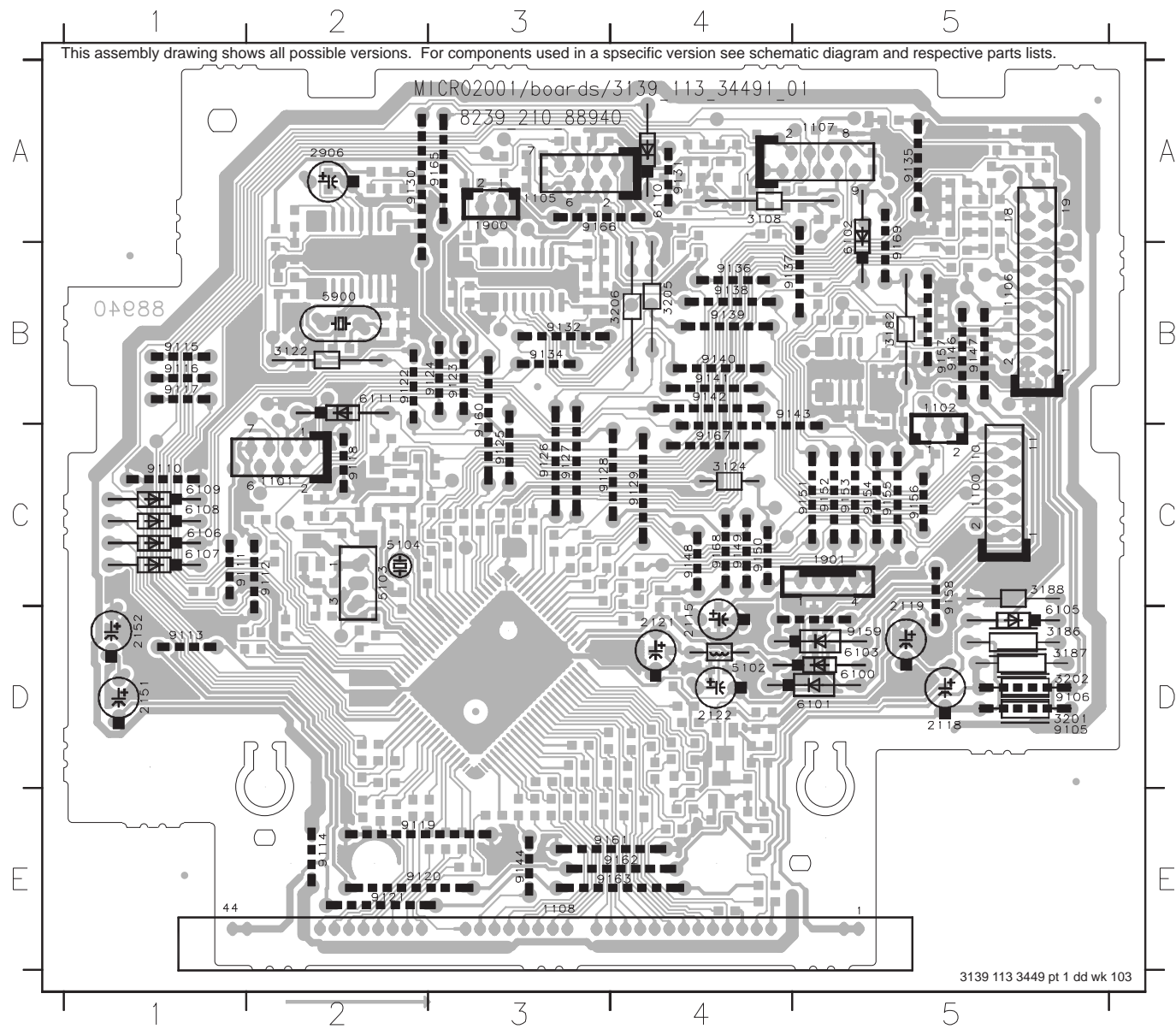


Items with '&'

	3107	3181	3906	3907	6111	RDS
MC-50/22	680R	470R	-	-	use	use
MC-50/37	680R	1k8	use	use	-	-
MC-70/21/21M	820R	-	use	use	-	-
MC-70/22	820R	8k2	-	-	use	use
MC-70/33	820R	12k	use	use	-	-
MC-70/37	820R	-	use	use	-	-

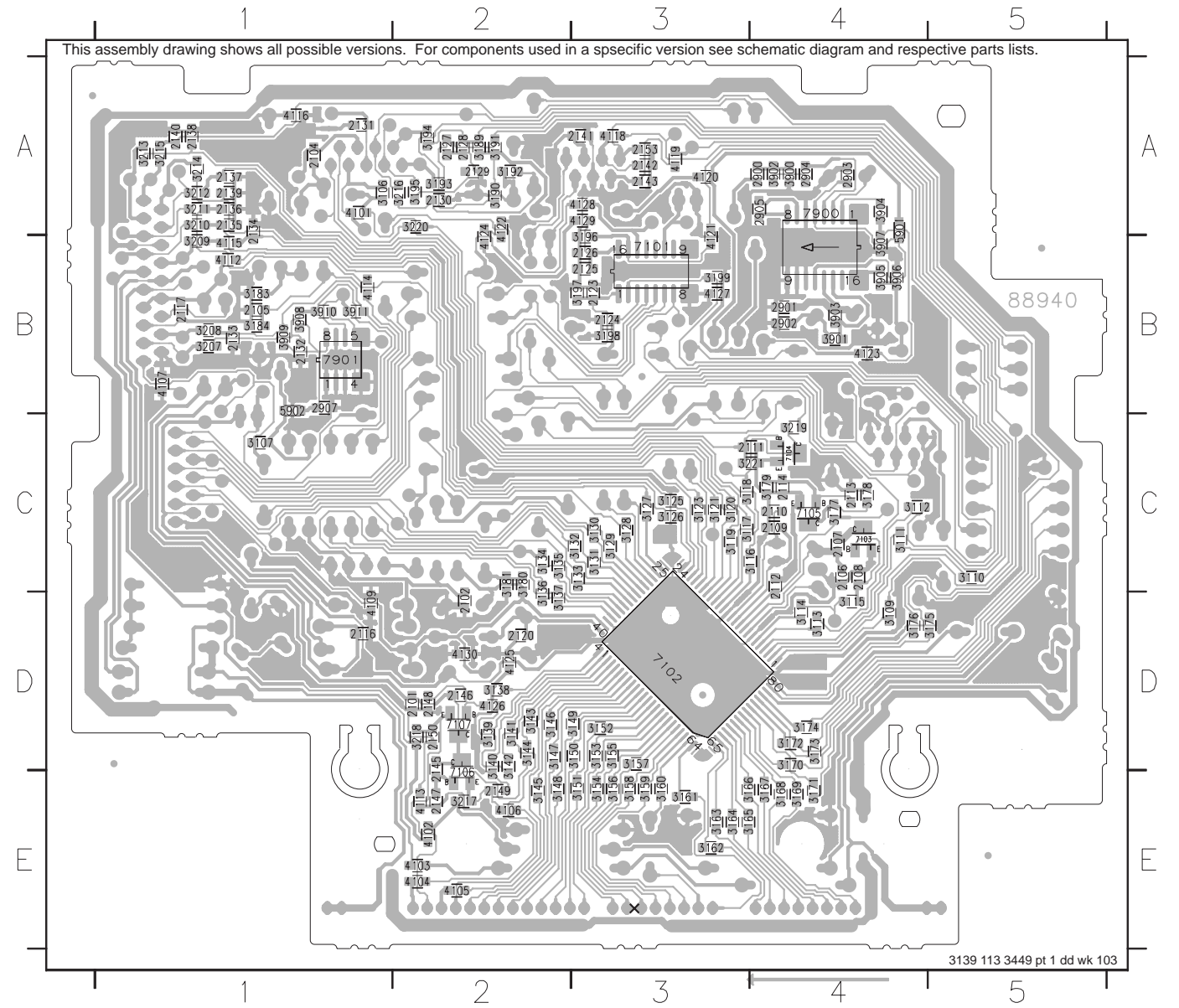
COMPONENT LAYOUT

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	F5	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	E4	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 1% 50V
2902	4822 122 33777	47pF 5% 63V
2903	4822 126 14305	100nF 10% 16V
2904	4822 126 14249	560pF 5% 25V
2905	4822 126 14249	560pF 5% 25V
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 117 12968	820R 5% 0,62W
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% 0,062W
3180	4822 051 30272	2k7 5% 0,062W
3181	4822 117 12902	8k2 5% 0,062W
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% 0,062W
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
4121	4822 051 30008	OR Jumper 0603

ELECTRICAL PARTS LIST - FRONT DISPLAY BOARD

RESISTORS

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 μ 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	2,2 μ H 10% 0805
5902	4822 157 10586	2,2 μ 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

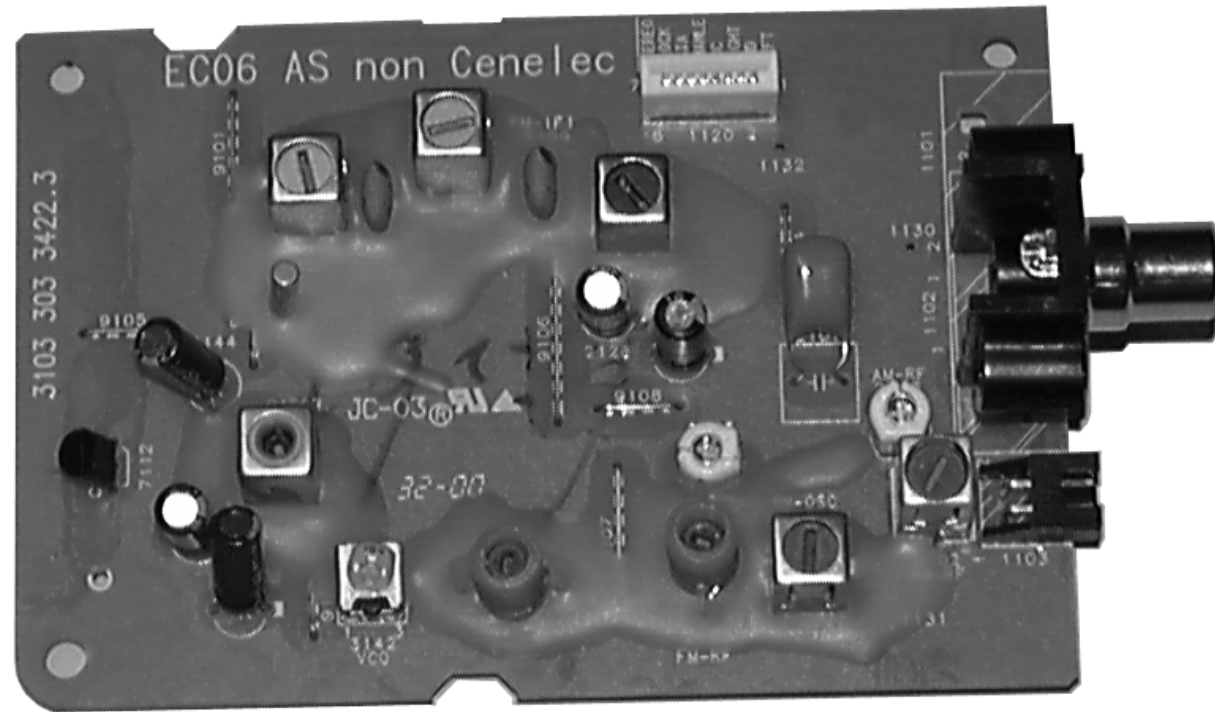
TRANSISTORS & INTEGRATED CIRCUITS

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

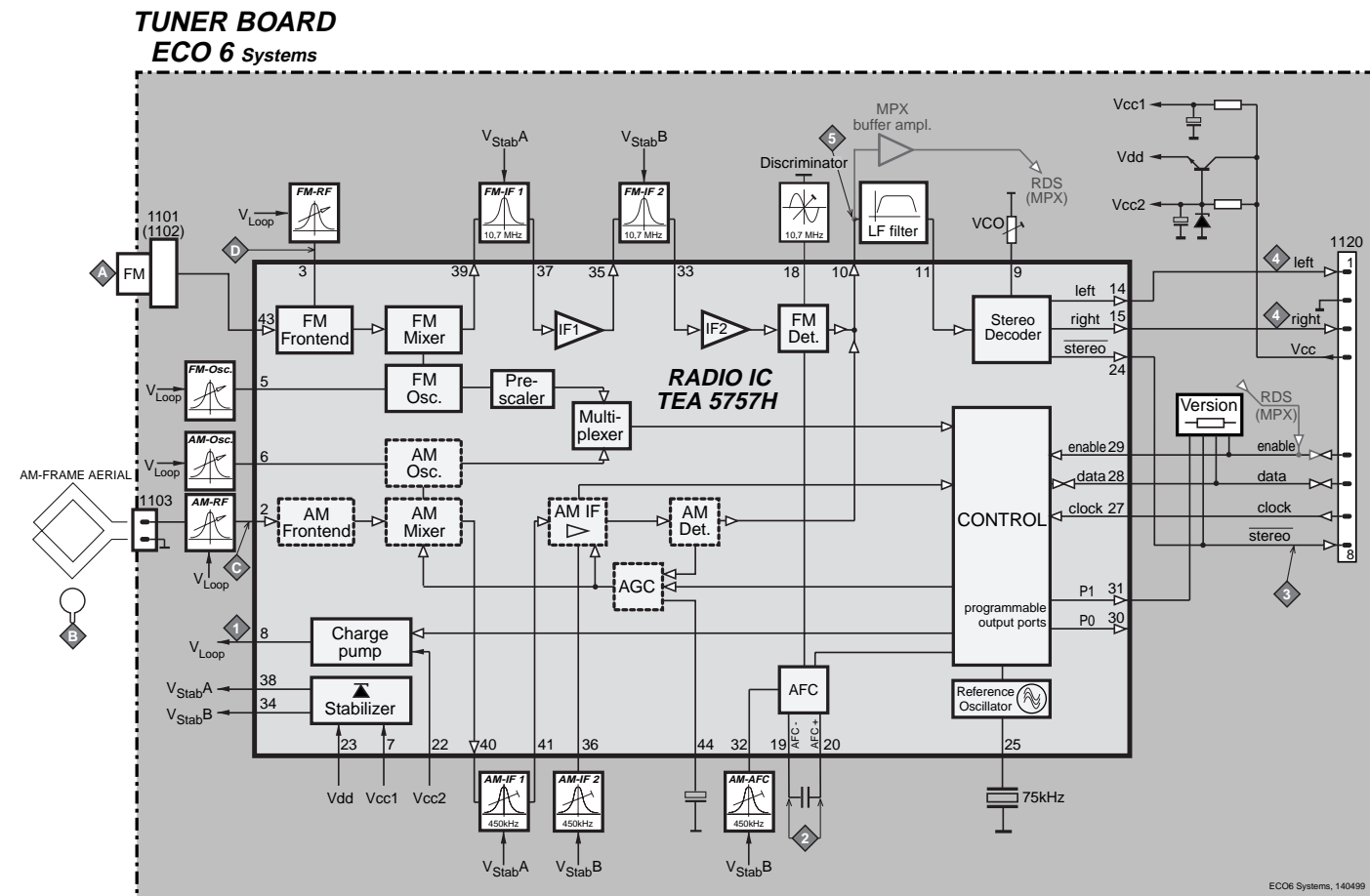
Note: Only the parts mentioned in this list are normal service spare parts.

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BLOCK DIAGRAM

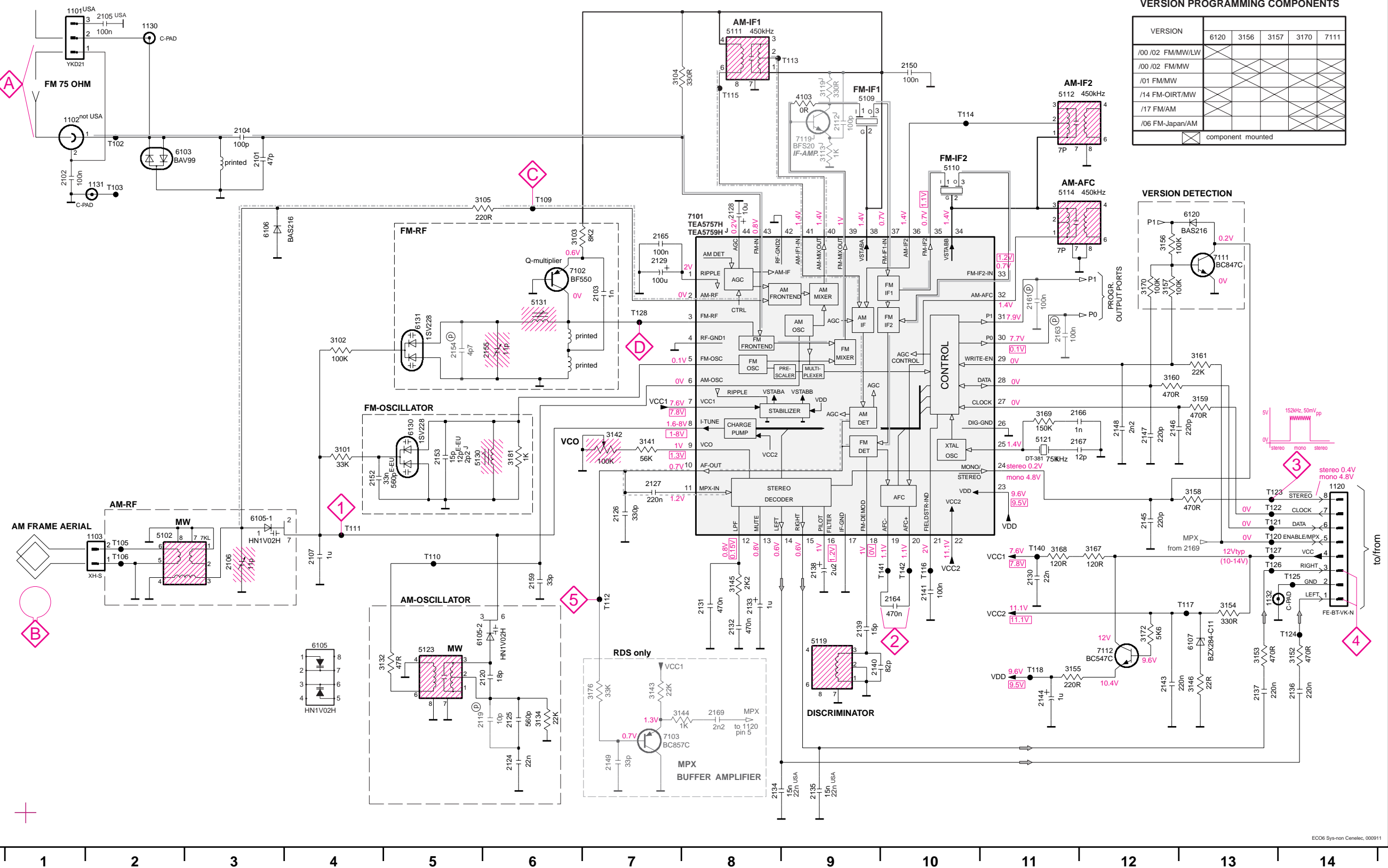


ECO6 Tuner Board
version: *SYSTEMS non-CENELEC*

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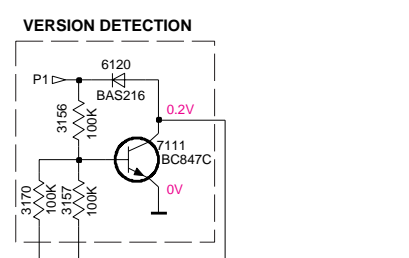
TUNER BOARD ECO6 / SYSTEMS NON CENELEC



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



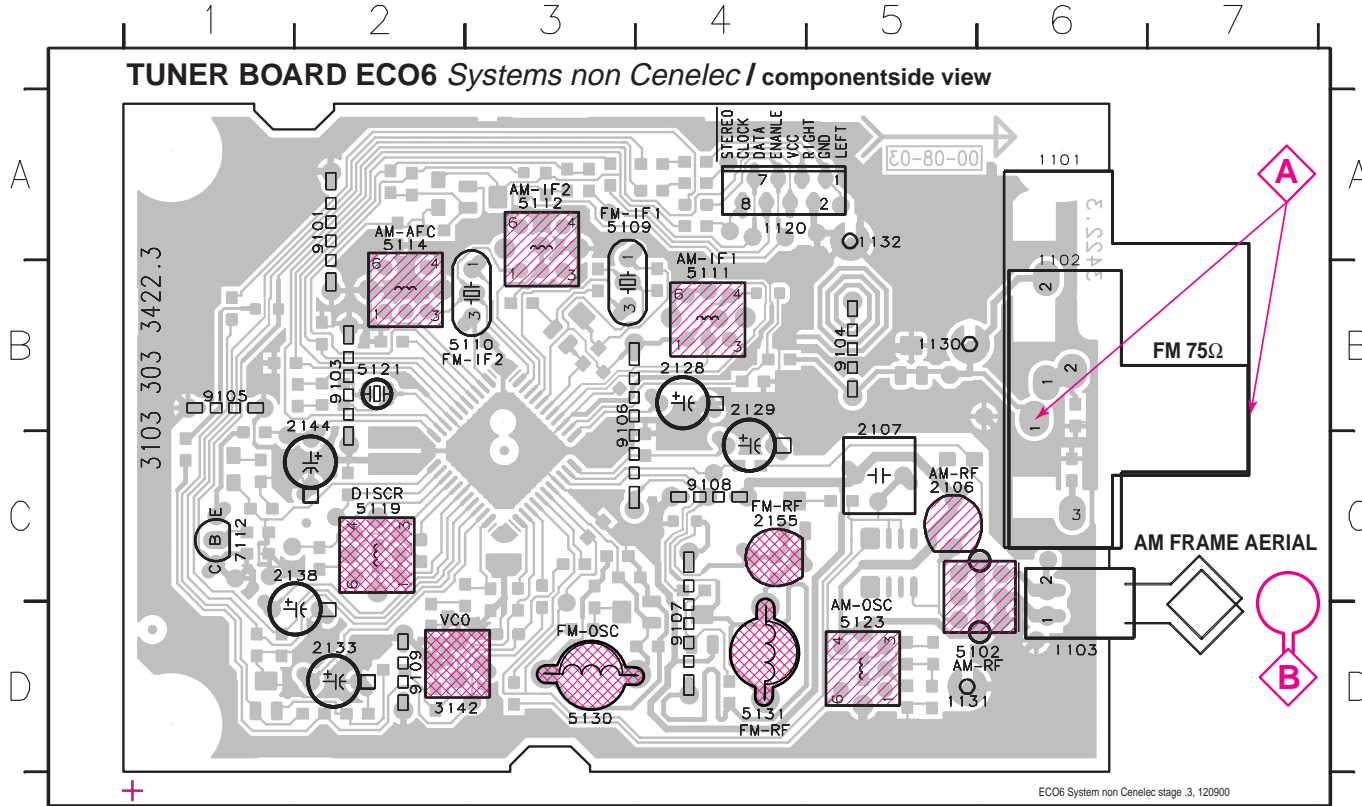
- 1101 A1
- 1102 B1
- 1103 F2
- 1120 E14
- 1130 A2
- 1131 B2
- 1132 G13
- 2101 B3
- 2102 B1
- 2103 C7
- 2104 B3
- 2105 A2
- 2106 F3
- 2107 F4
- 2119 H6
- 2120 G6
- 2124 H6
- 2125 H6
- 2126 F7
- 2127 E7
- 2128 C8
- 2129 C7
- 2130 F11
- 2131 G8
- 2132 G8
- 2133 G8
- 2134 H8
- 2135 H9
- 2136 G14
- 2137 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
- 6105-2 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
- T121 F13
- T122 F13
- T123 E13
- 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

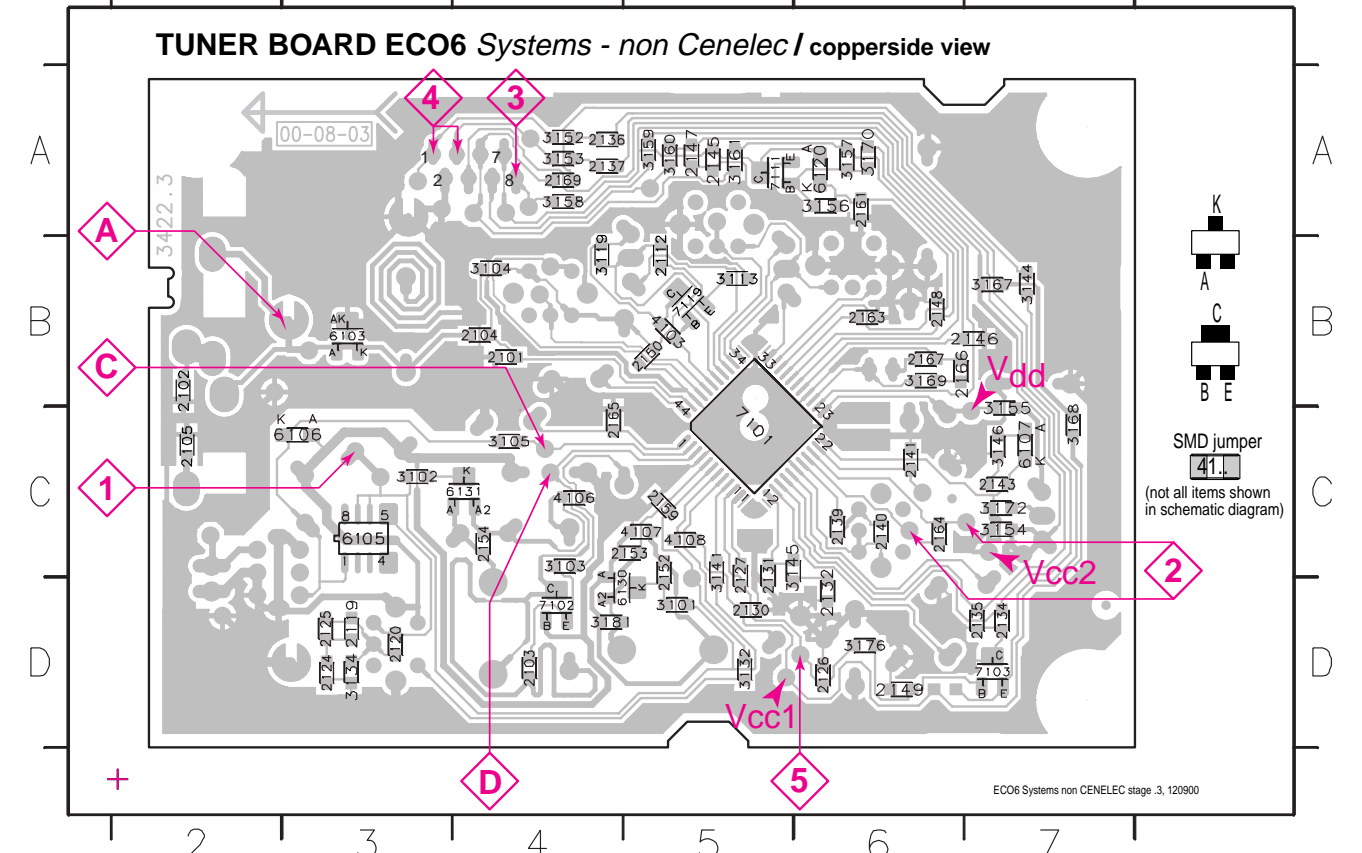
...V FM mode stereo
 ...V MW mode
 ...V LW mode
 voltages measured while set is tuned to a strong transmitter

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.

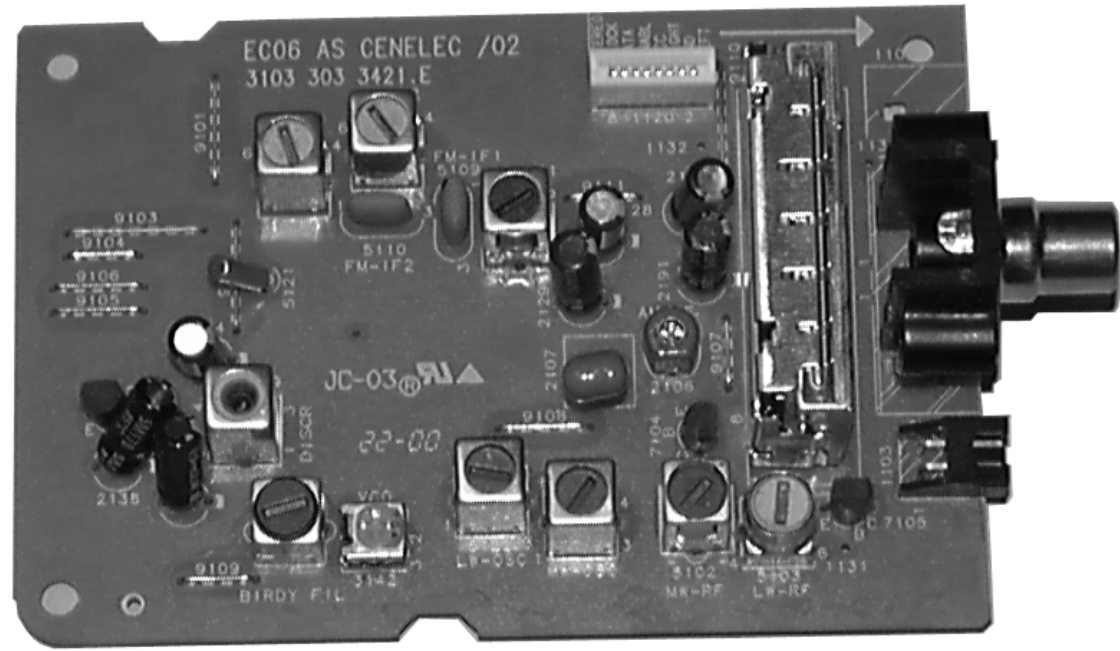
TUNER ADJUSTMENT TABLE (ECO6 FM/MW- and FM/MW/LW - versions with AM-frame aerial)

Waverange	Input frequency	Input	Tuned to	Adjust	Output	Scope/Voltmeter
VARICAP ALIGNMENT						
FM 87.5 - 108MHz (65.81 - 74, 87.5 - 108MHz)	108MHz		108MHz	5130		8V ±0.2V
	87.5MHz (65.81MHz)		87.5MHz (65.81MHz)	check		4.3V ±0.5V (1.2V ±0.5V)
MW FM/AM-version, 10kHz grid 530 - 1700kHz	1700kHz		1700kHz	5123		8V ±0.2V
	530kHz		530kHz	check		1.1V ±0.4V
FM/MW-version, 9kHz grid 531 - 1602kHz	1602kHz		1602kHz	5123	1	6.9V ±0.2V
	531kHz		531kHz	check		1.1V ±0.4V
LW 153 - 279kHz	279kHz		279kHz	5122		8V ±0.2V
	153kHz		153kHz	check		1.1V ±0.4V
MW FM/MW/LW- version, 9kHz grid 531 - 1602kHz	1602kHz		1602kHz	5123		8V ±0.2V
	531kHz		531kHz	check		1.1V ±0.4V
FM IF						
FM	10.7MHz, 45mV continuous wave	D		5119	2	0 ± 3 mV DC
FM RF						
FM 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		
VCO						
FM	98MHz, 1mV continuous wave	A	98MHz	3142	3	152kHz ±1kHz ¹⁾
AM IF						
MW	450kHz connect pin 6 of IC 7101 (AM Osc.) with 3.3kΩ to Vcc	C		5111	5	
		C		5112		
AM AFC MW		C	continuous wave V _{RF} = 2mV	5114	2	0 ± 2 mV DC
AM RF³⁾						
MW⁴⁾ FM/MW/LW- and FM/MW-version (9kHz grid)	1494kHz	B	1494kHz	2106	5	
	531 - 1602kHz		558kHz	5102		
LW	198kHz		198kHz	5103		
MW 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



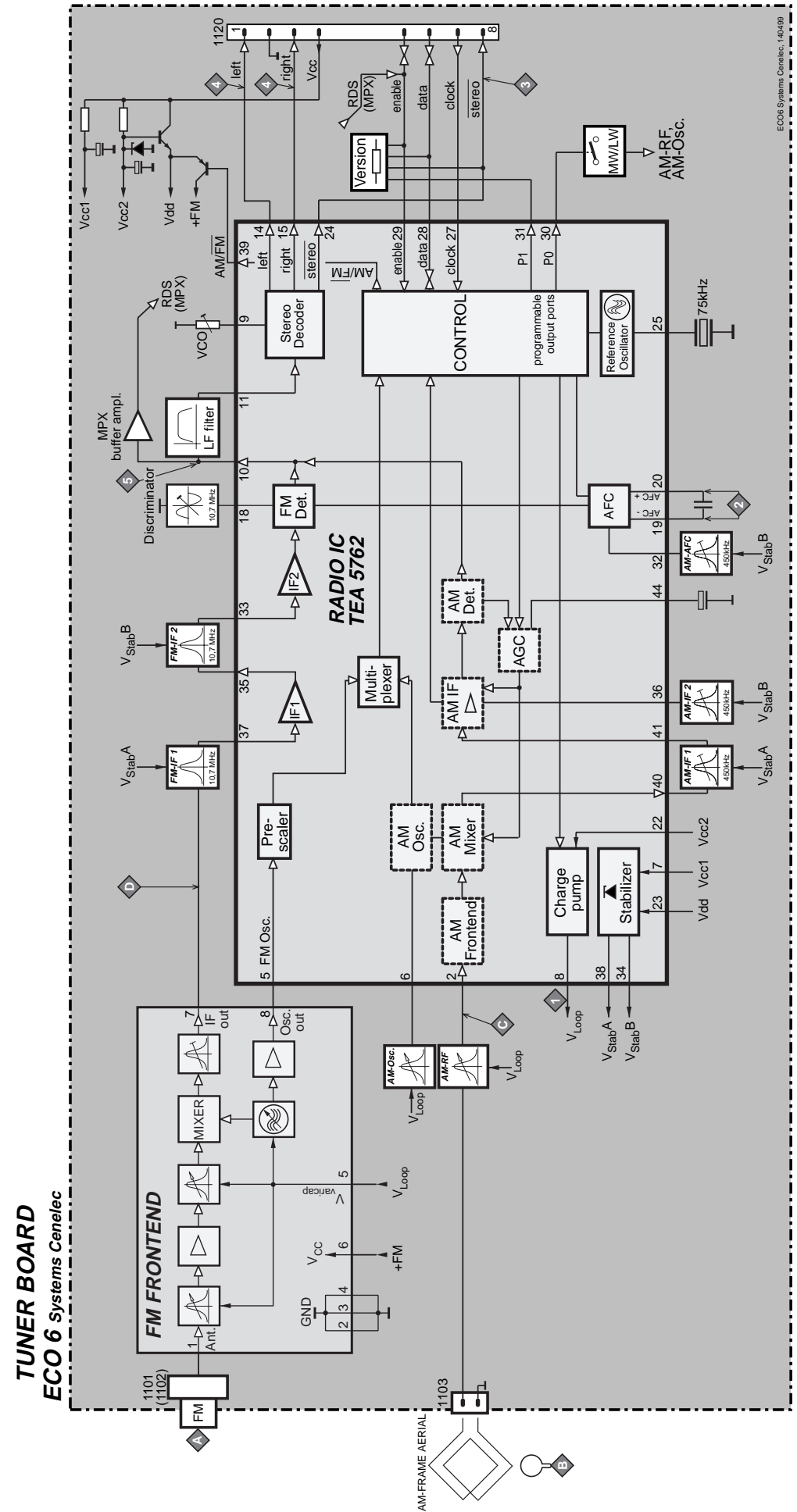
ECO6 Tuner Board

version: **SYSTEMS CENELEC**

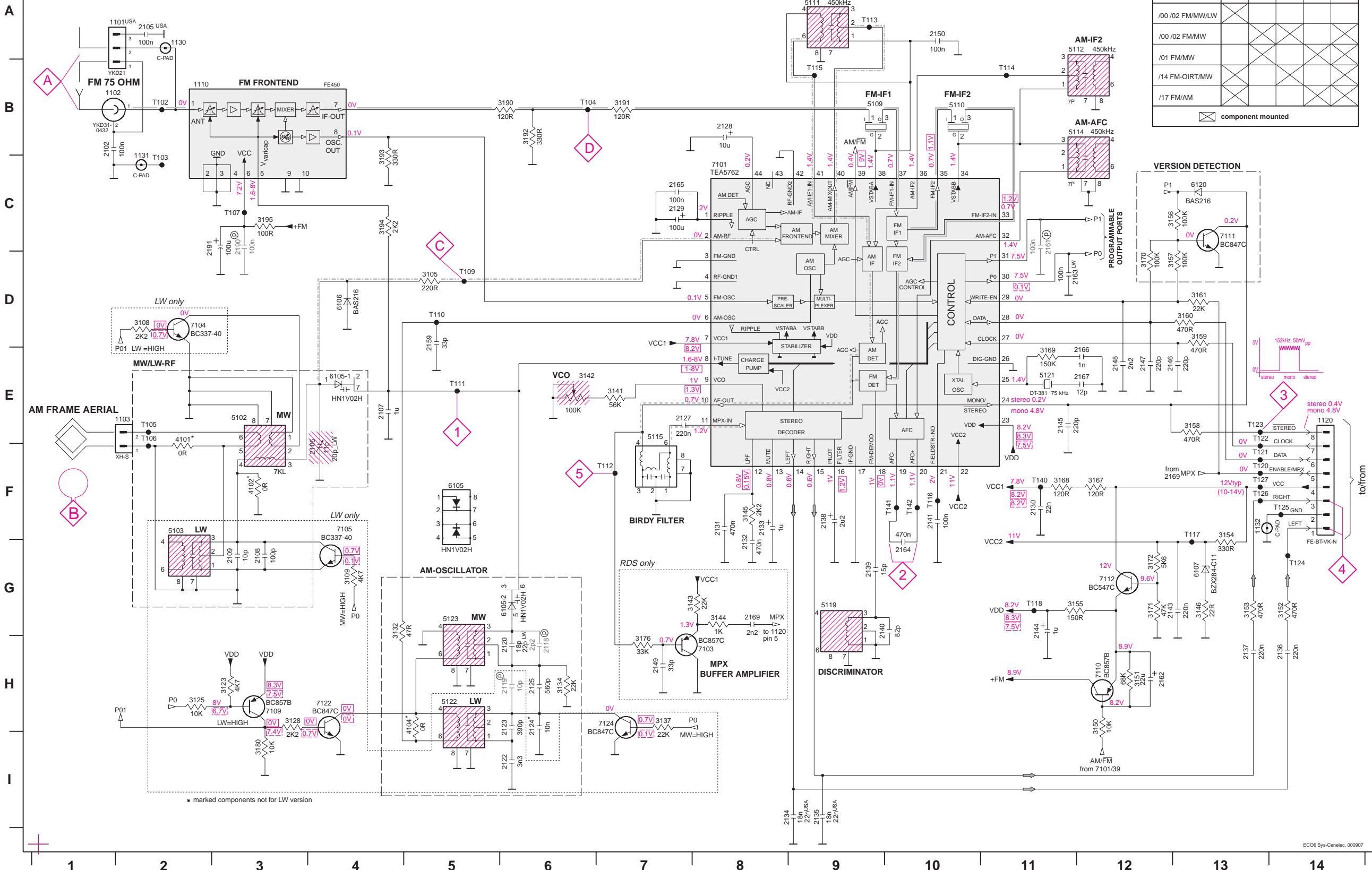
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- Schematic Diagram7B-2
- Component Layout7B-3
- Adjustment table7B-3
- Electrical Partslist7B-4

BLOCK DIAGRAM



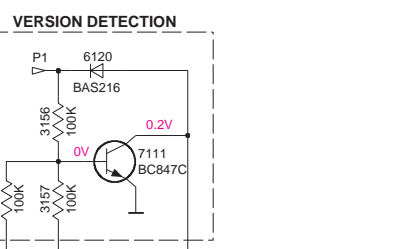
TUNER BOARD ECO6 / SYSTEMS-CENELEC



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



- A1102 A2
- A1102 B1
- A1102 E2
- 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
- A1419 G9
- 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

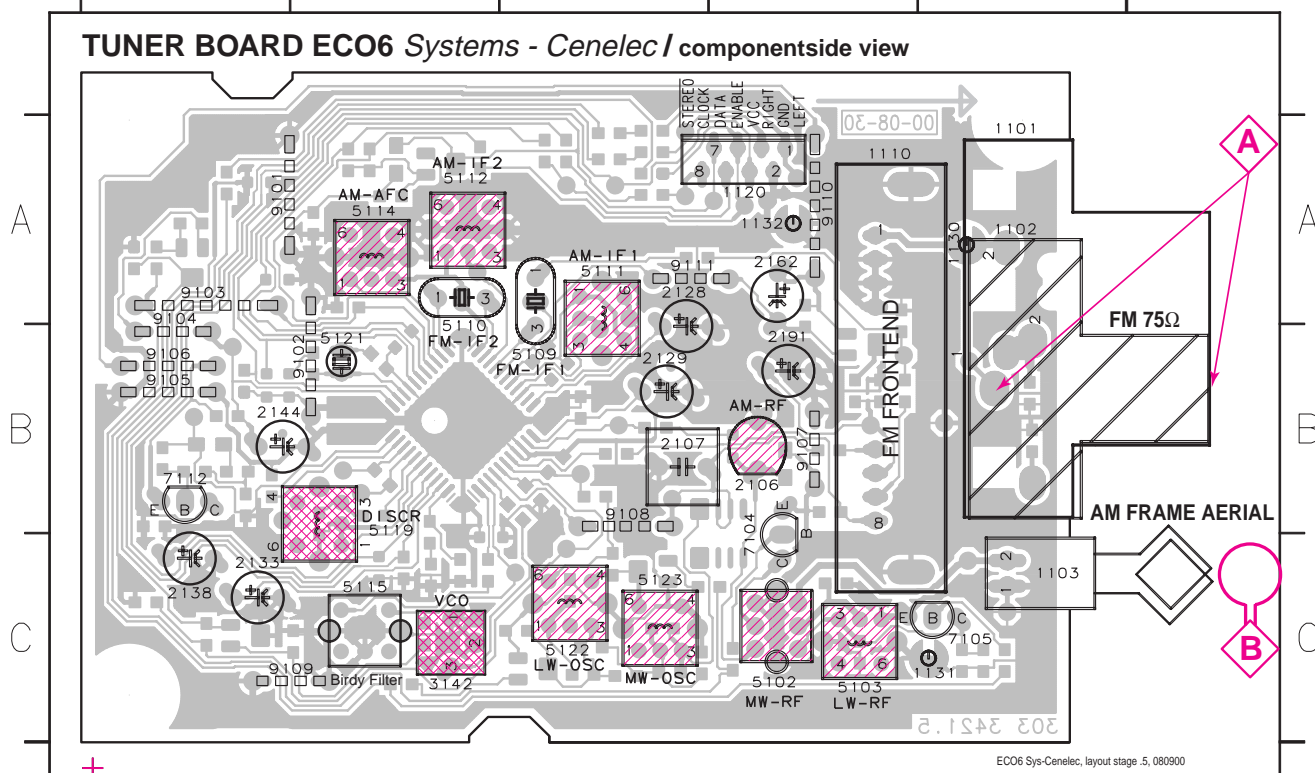


- ...V FM mode stereo
- ...V MW mode
- ...V LW mode
- voltages measured while set is tuned to a strong transmitter

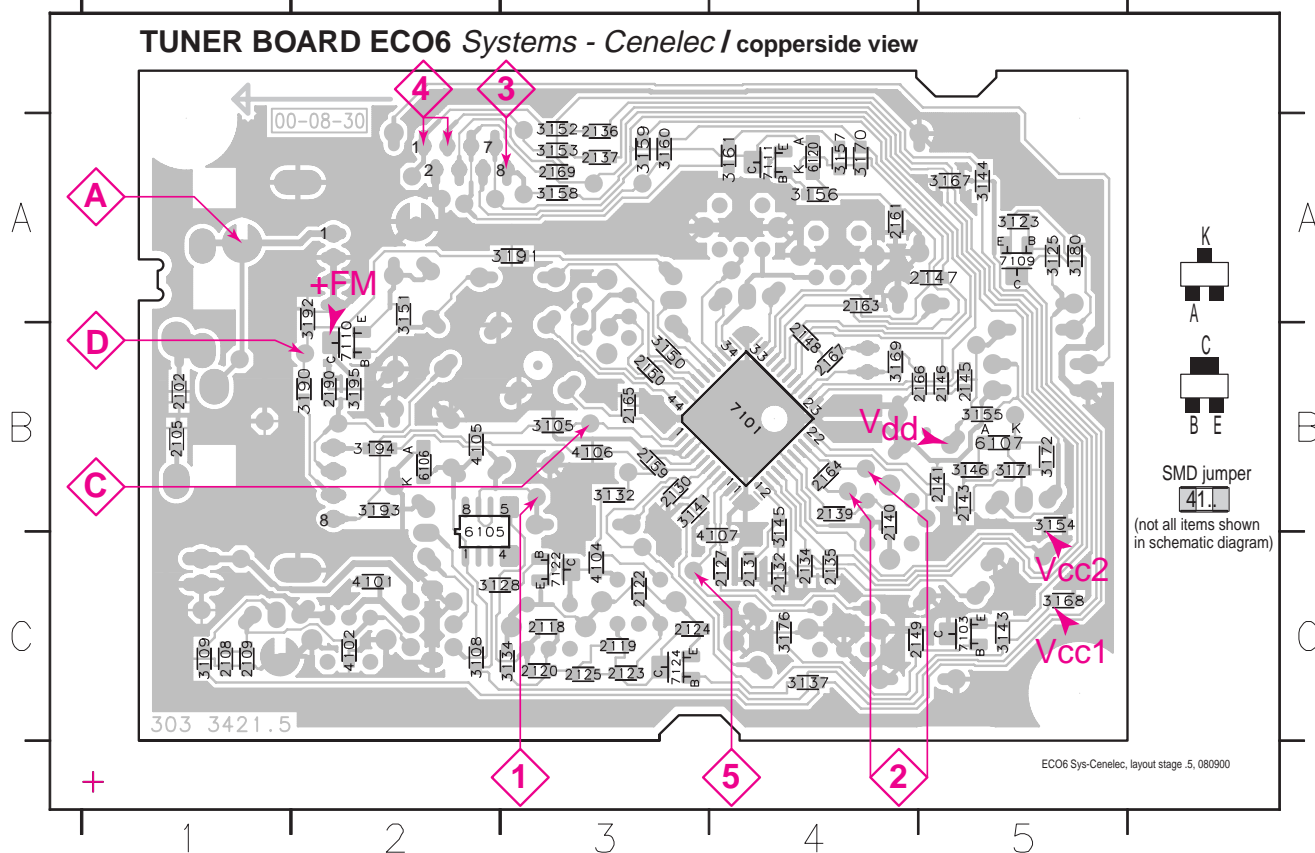
Signal path

- FM
- - - AM
- - - MPX (Audio Frequency)
- ⇒ AF - left/right

1101 B5 1110 B4 1131 C5 2107 B3 2133 C1 2162 A4 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
 1103 C5 1130 A5 2106 B4 2129 B3 2144 B1 3142 C2 5109 B3 5112 A2 5119 B2 5123 C3 7112 B1 9103 A1 9106 B1 9109 C2

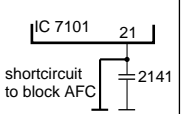
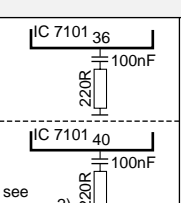
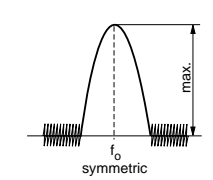

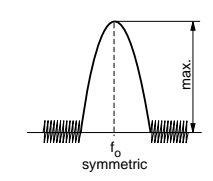


2102 B1 2120 C3 2130 B3 2137 A3 2146 B5 2161 A4 2169 A3 3125 A5 3143 C5 3152 A3 3158 A3 3169 B4 3190 B2 4101 C2 6105 B2 7109 A5
 2105 B1 2122 C3 2131 C4 2139 B4 2147 A5 2163 A4 2190 B2 3128 C2 3144 A5 3153 A3 3159 A3 3170 A4 3191 A3 4102 C2 6106 B2 7110 B2
 2108 C1 2123 C3 2132 C4 2140 B4 2148 B4 2164 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 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
VARICAP ALIGNMENT						
FM 87.5 - 108MHz (50kHz grid)			108MHz	check		8V ±1.2V
			87.5MHz	check		1.6V ±0.5V
MW 531 - 1602kHz (9kHz grid)			1602kHz	5123	1	8V ±0.2V 3-band 6.9V ±0.2V 2-band
			531kHz	check		1.1V ±0.4V
LW 153 - 279kHz (3kHz grid)			279kHz	5122		8V ±0.2V
			153kHz	check		1.1V ±0.4V
FM - IF						
FM	10.7MHz, 45mV continuous wave	D		5119	2	0mV ±3mV
FM - VCO						
FM	98MHz, 1mV continuous wave	A	98MHz	3142	3	152kHz ±1kHz ¹⁾
FM RF (channel separation) Note: The FM-frontend unit has already been adjusted by the factory and needs therefore no further adjustments for service purposes.						
FM	98MHz, 1mV 90% Left + 9% pilot mod=1kHz	A	98MHz	IF coil inside FM frontend 1110	4	right channel min.
AM IF						
MW	450kHz connect pin 6 of IC 7101 (AM Osc.) with 3.3kΩ to Vcc	C $\Delta f = \pm 10\text{kHz}$ $V_{RF} = 0.5\text{mV}$ (as low as possible)		5111	5	
				5112		
AM AFC MW		C continuous wave $V_{RF} = 2\text{mV}$		5114	2	0mV ±2mV
AM RF ³⁾						
MW	1494kHz	B 	1494kHz	2106	5	
	558kHz		558kHz	5102		
LW	198kHz	$\Delta f = \pm 30\text{kHz}$ V_{RF} as low as possible	198kHz	5103		

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

- 1) If sensitivity of frequency counter is too low adjust to max. channel separation (input signal: stereo left 90% + 9%, adjust output on right channel to minimum)
- 2) RC network serves for damping the IF-filter while adjusting the other one.
- 3) For AM RF adjustments the original frame antenna has to be used!
 MW has to be aligned before LW.

↑ Repeat

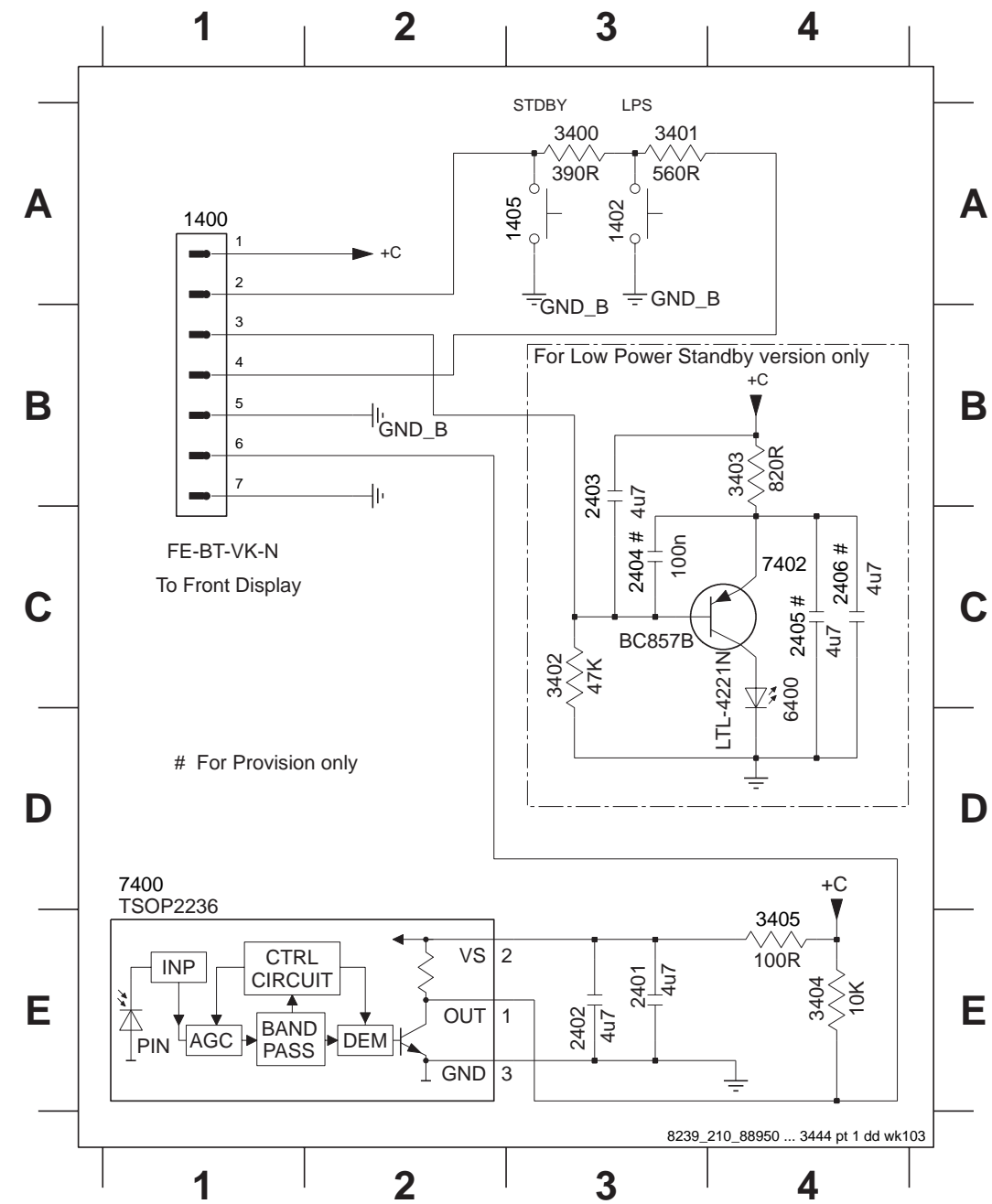
STANDBY (POWER) PART - CIRCUIT & LAYOUTS

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

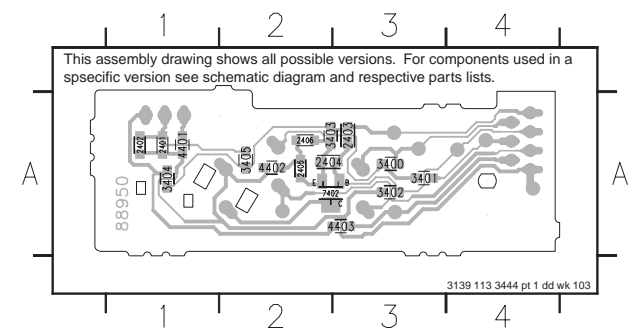
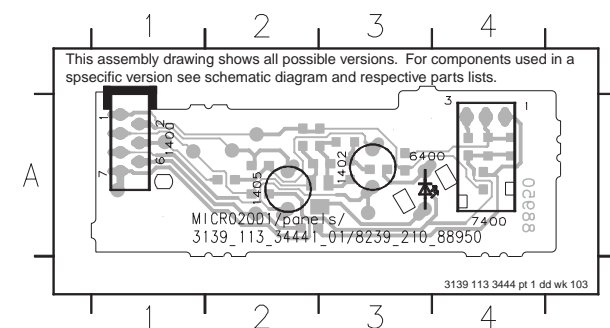
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Standby (Power) part.....	8-1
Key Control (KEYB. 1) & Lightwash parts.....	8-2
Headphone, Jog (Volume) and CDC Key parts.....	8-3
Electrical parts list.....	8-4



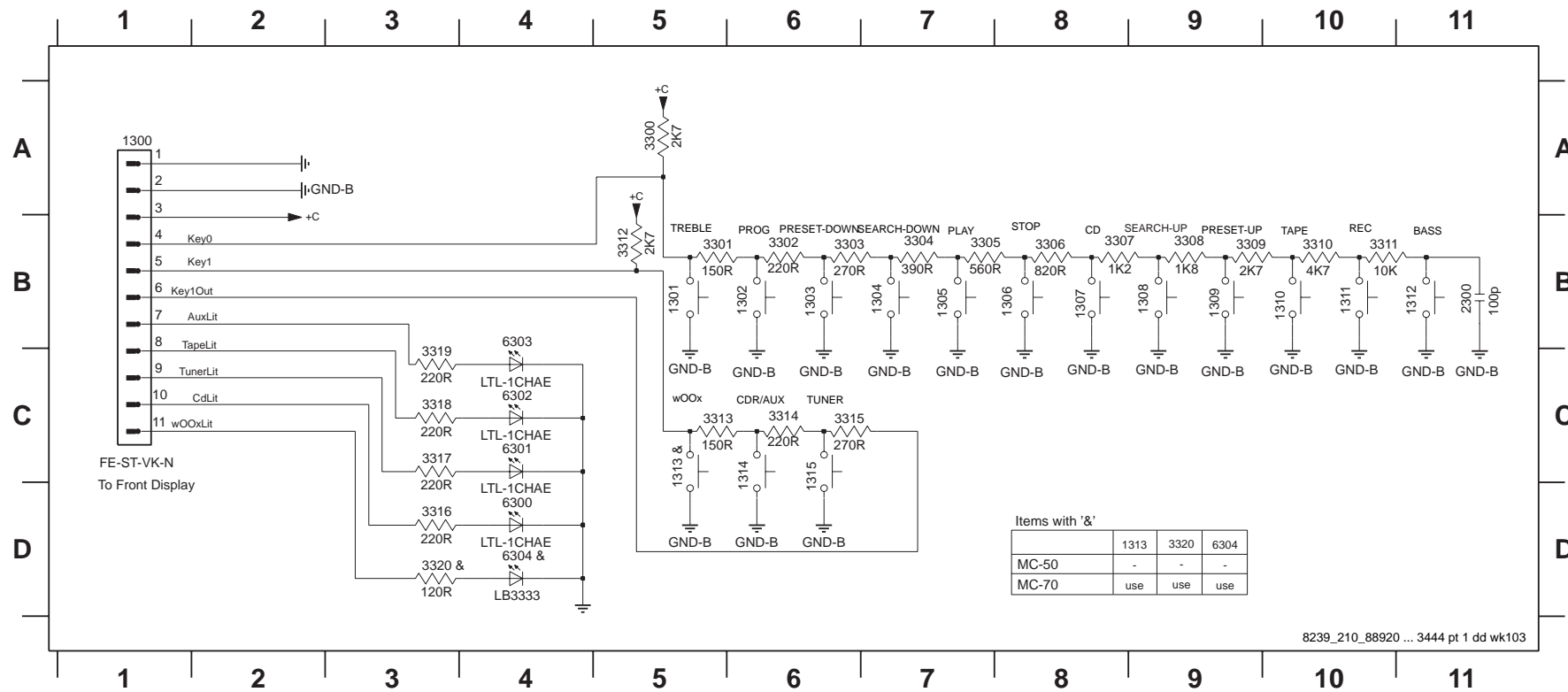
1400 A1 1402 A3 1405 A2 6400 A3 7400 A4

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



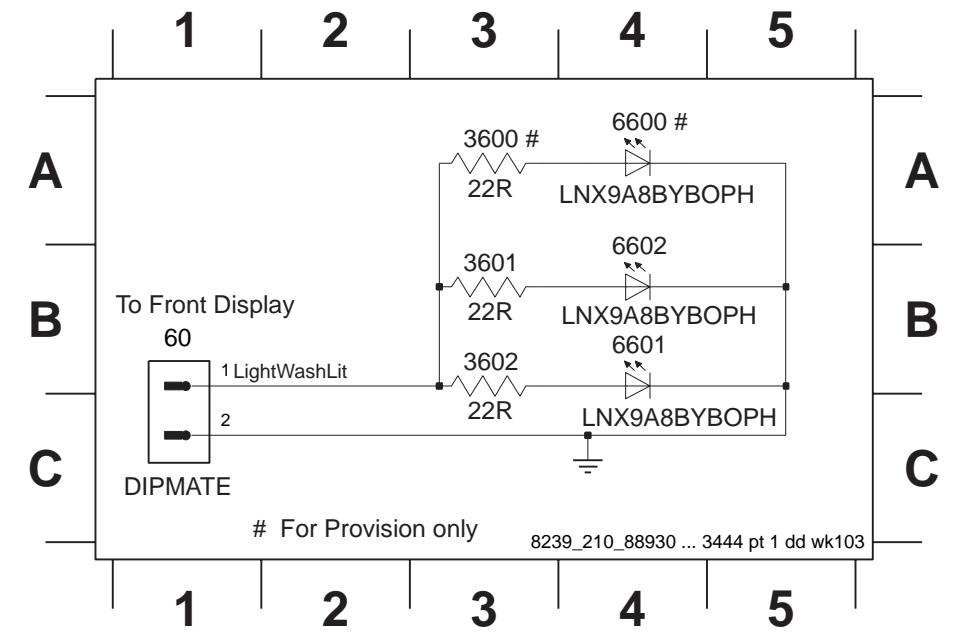
KEY CONTROL (KEYB. 1) PART - CIRCUIT & LAYOUT DIAGRAMS

- 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

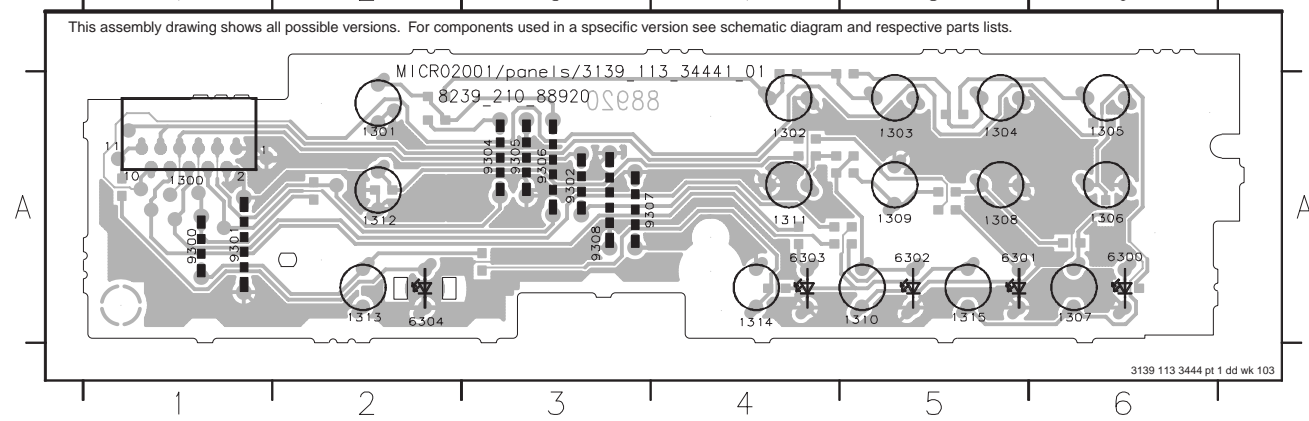


LIGHTWASH PART - CIRCUIT & LAYOUT DIAGRAMS

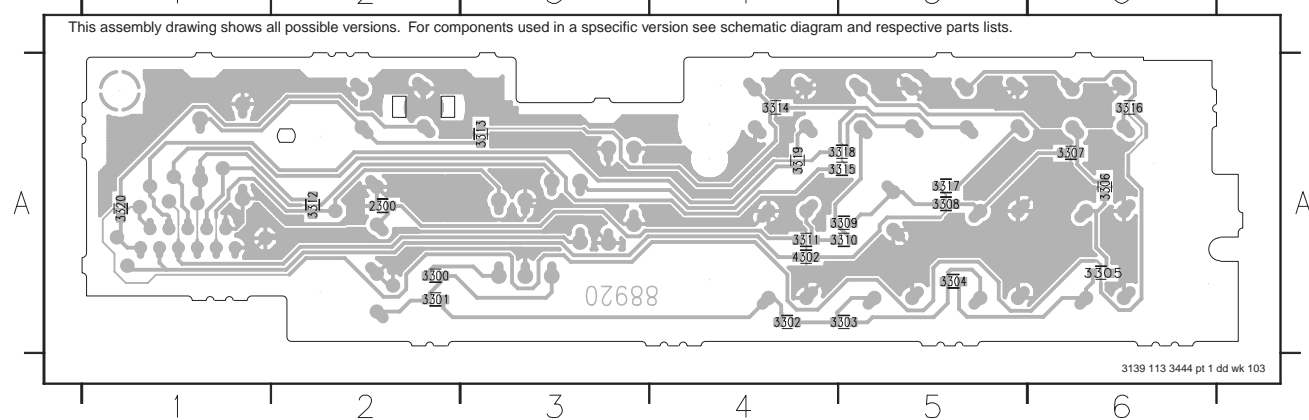
- 60 B1 3601 B3 6600 A4 6602 B4
- 3600 A3 3602 B3 6601 B4



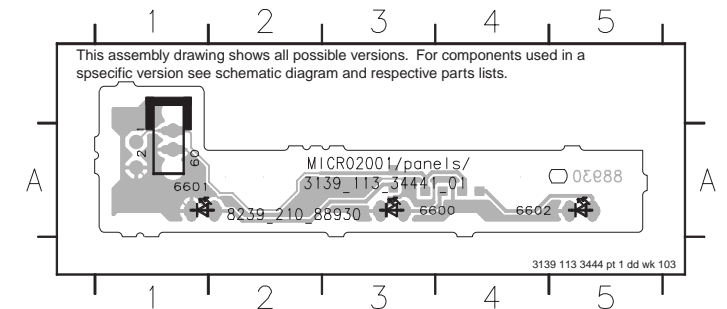
- 1300 A1 1302 A4 1304 A5 1306 A6 1308 A5 1310 A5 1312 A2 1314 A4 6300 A6 6302 A5 6304 A2 9301 A1 9304 A3 9306 A3 9308 A3
- 1301 A2 1303 A5 1305 A6 1307 A6 1309 A5 1311 A4 1313 A2 1315 A5 6301 A5 6303 A4 9300 A1 9302 A3 9305 A3 9307 A3



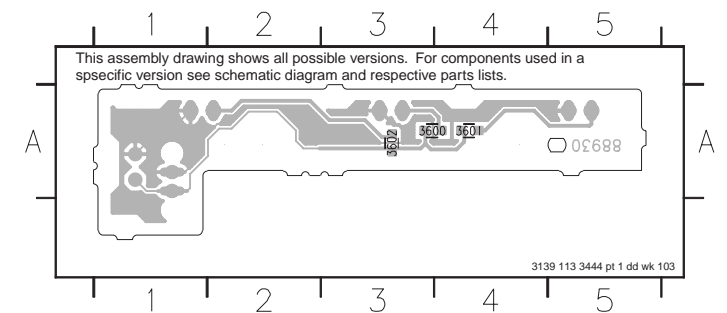
- 2300 A2 3301 A2 3303 A5 3305 A6 3307 A6 3309 A5 3311 A4 3313 A3 3315 A5 3317 A5 3319 A4 4302 A4
- 3300 A2 3302 A4 3304 A5 3306 A6 3308 A5 3310 A5 3312 A2 3314 A4 3316 A6 3318 A5 3320 A1



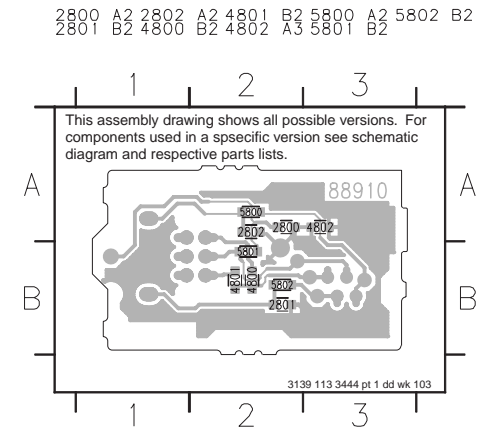
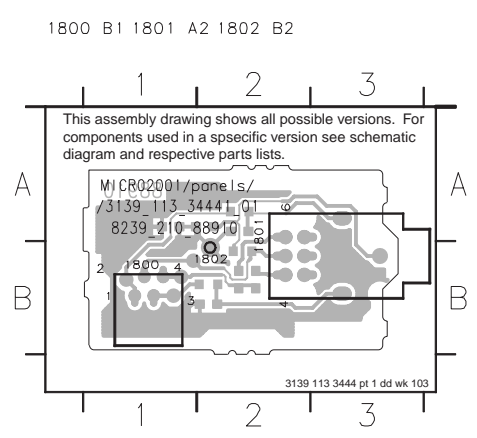
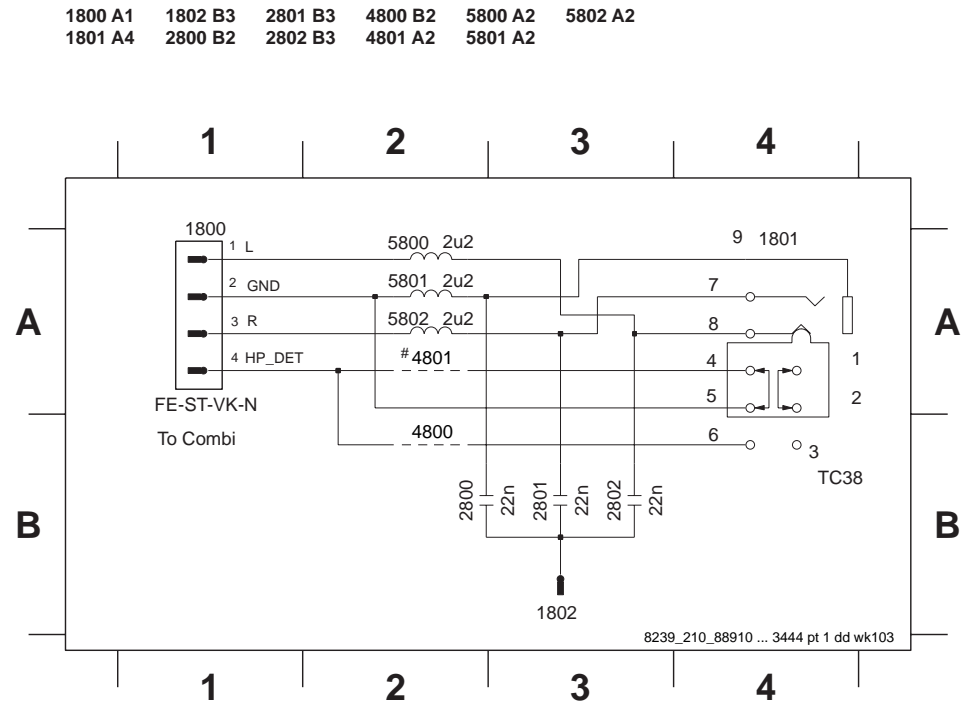
- 60 A1 6600 A4 6601 A1 6602 A4



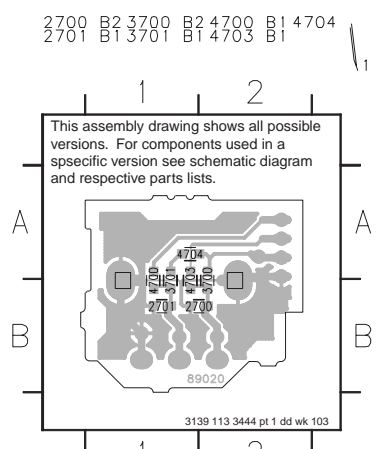
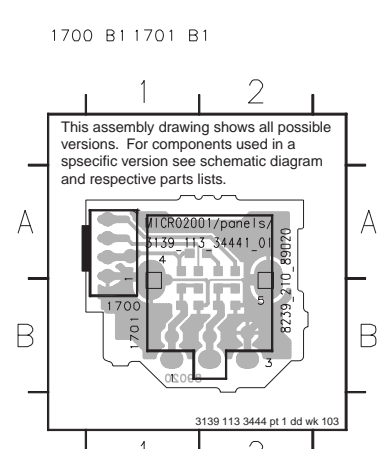
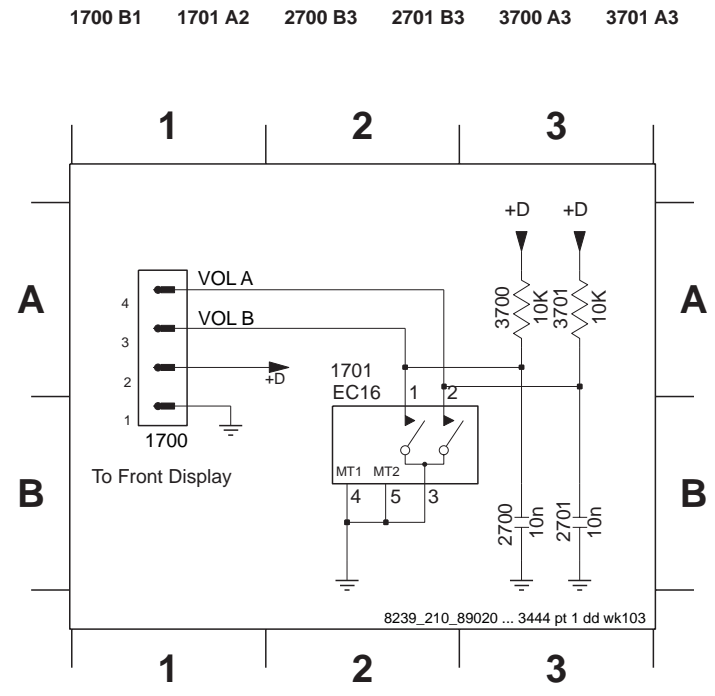
- 3600 A3 3601 A4 3602 A3



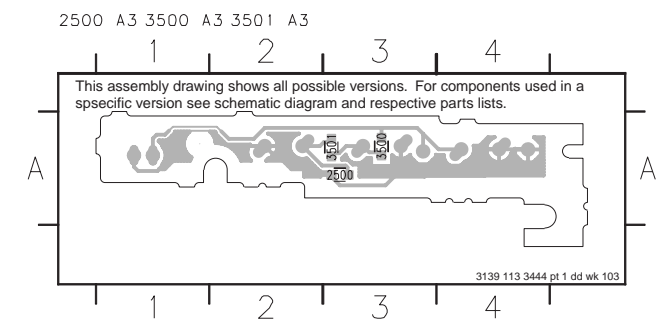
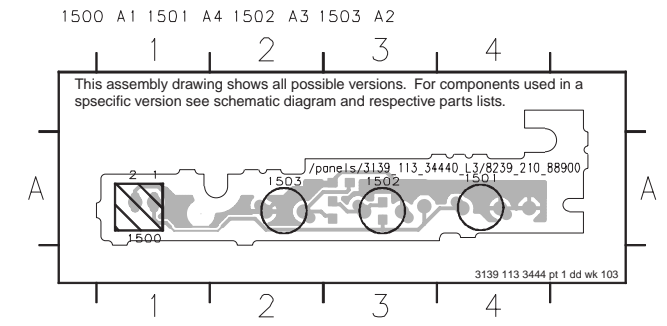
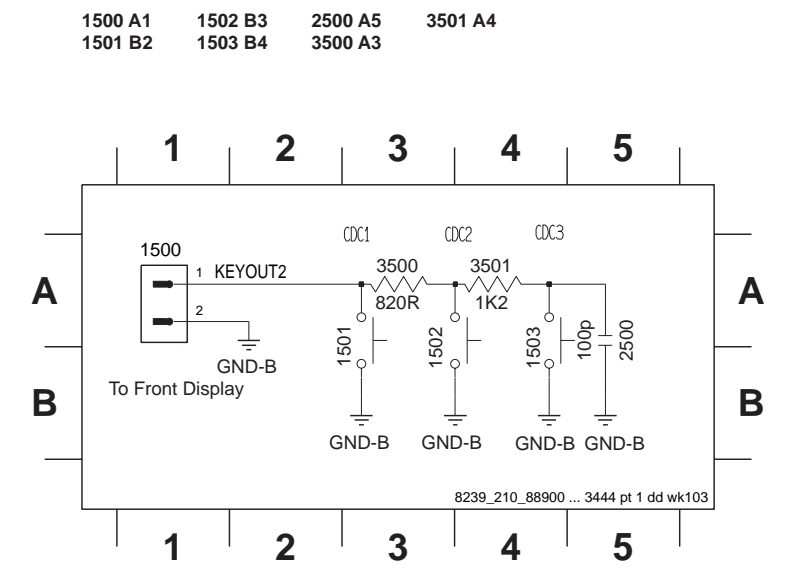
HEADPHONE PART - CIRCUIT & LAYOUT DIAGRAMS



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
1313	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
3320	4822 051 30121	120R 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	2,2μH 10% 0805
5801	4822 157 10586	2,2μH 10% 0805
5802	4822 157 10586	2,2μH 10% 0805

DIODES

6300	4822 130 11589	LTL-1CHAE
6301	4822 130 11589	LTL-1CHAE
6302	4822 130 11589	LTL-1CHAE
6303	4822 130 11589	LTL-1CHAE
6304	9322 153 37676	LB3333RT-E7898
6400	9322 160 65676	LTL-4221NLC-VA
6601	9322 147 33676	LNx9A8BYB0PH
6602	9322 147 33676	LNx9A8BYB0PH

TRANSISTORS & INTEGRATED CIRCUITS

7400	9322 164 67667	IR Receiver TSOP2236QJ1
7402	4822 130 60373	BC857B

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

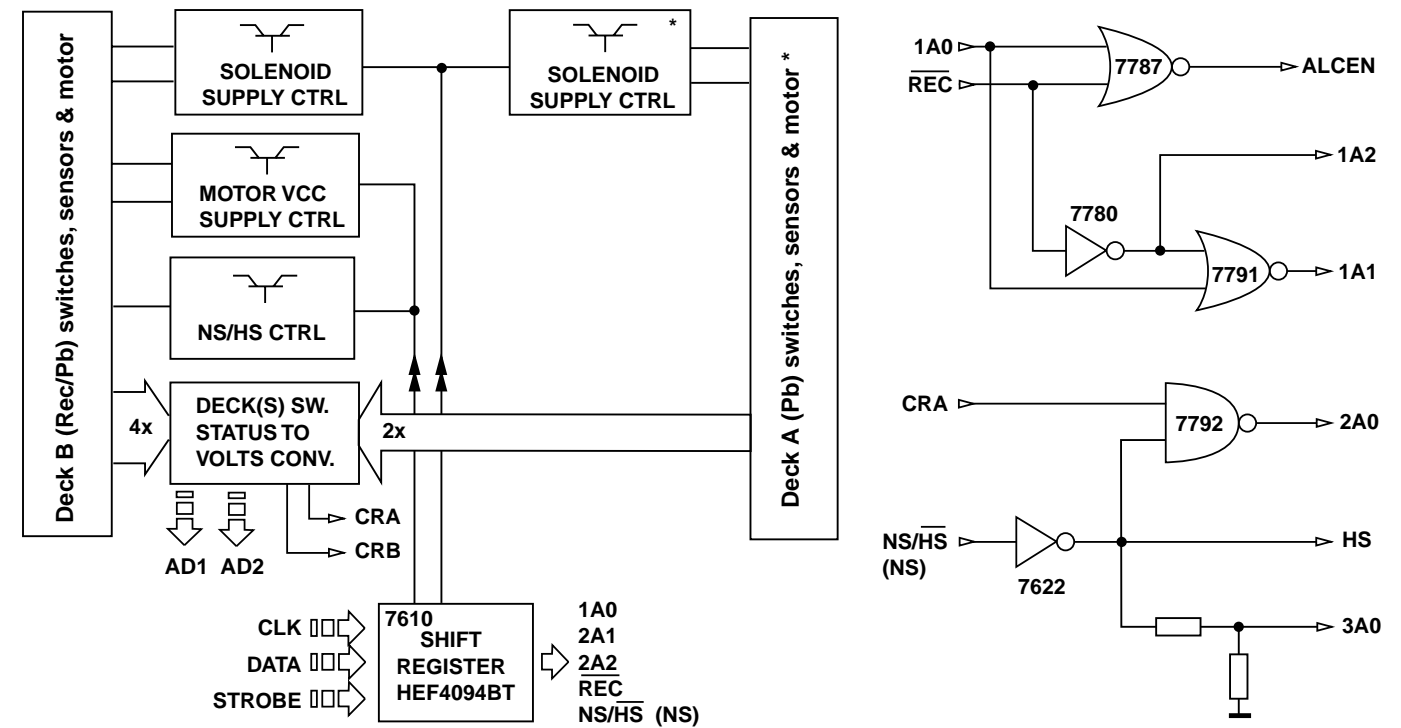
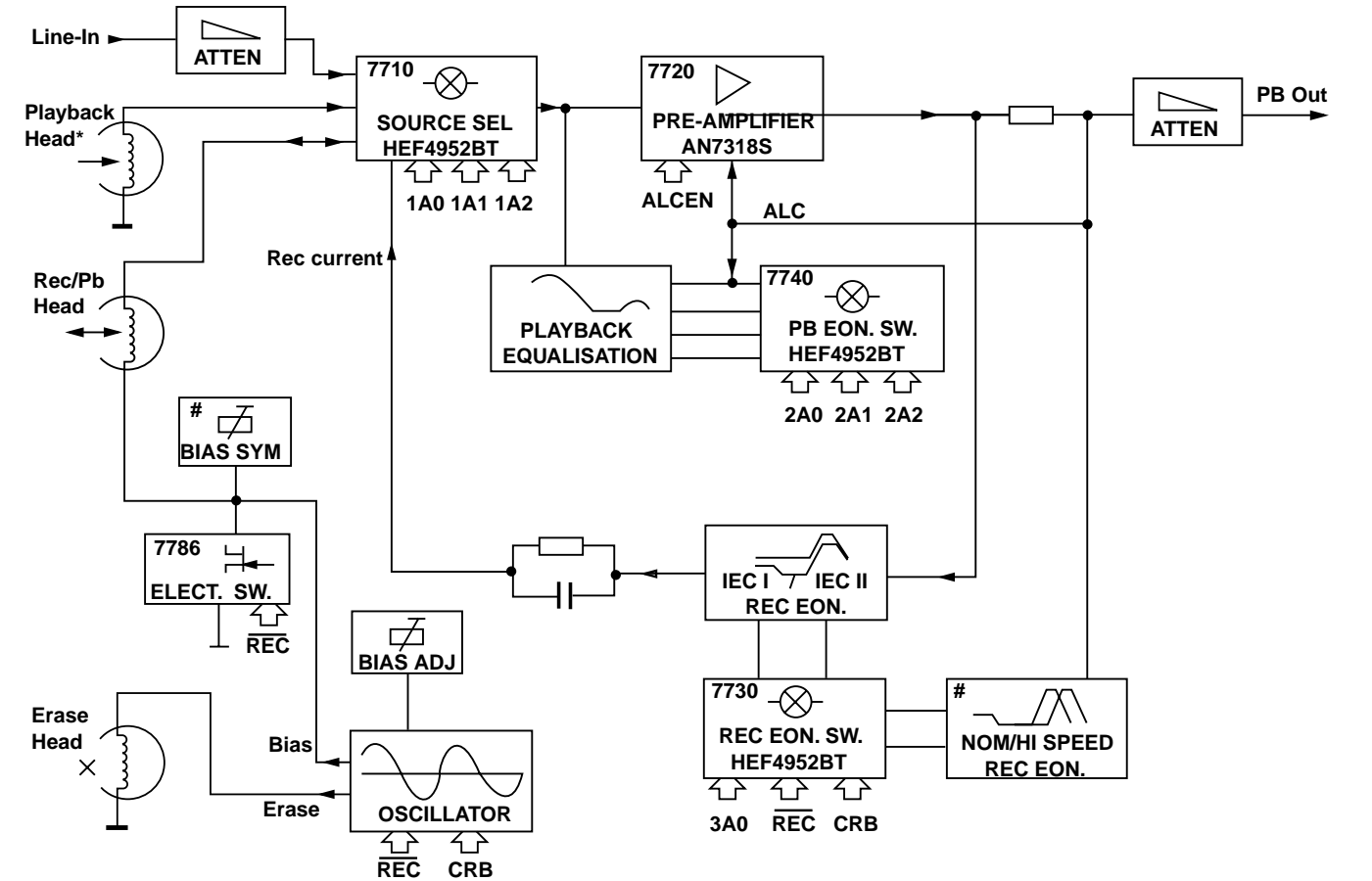
ETF6-LE TAPE MODULE

(Non-Dolby / Single Deck)

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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

Date: wk0050

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

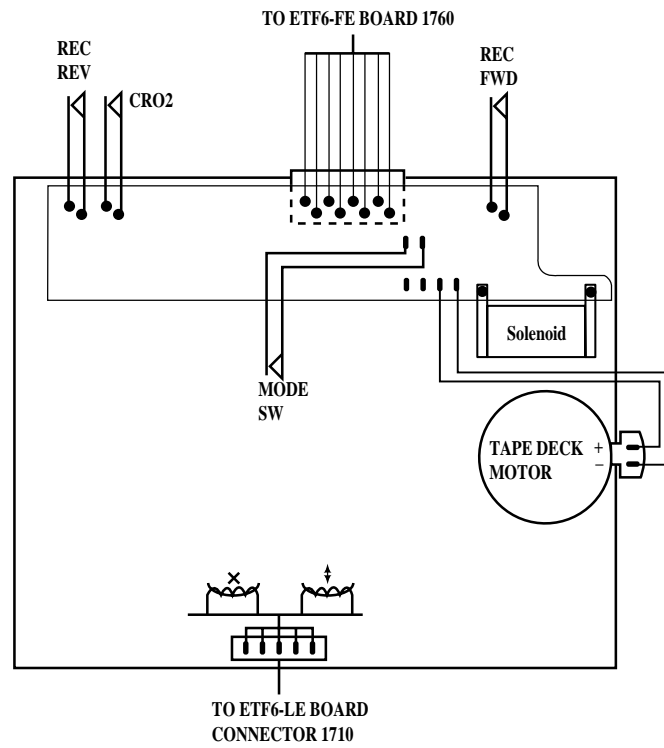
CONNECTOR 1740

○	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	

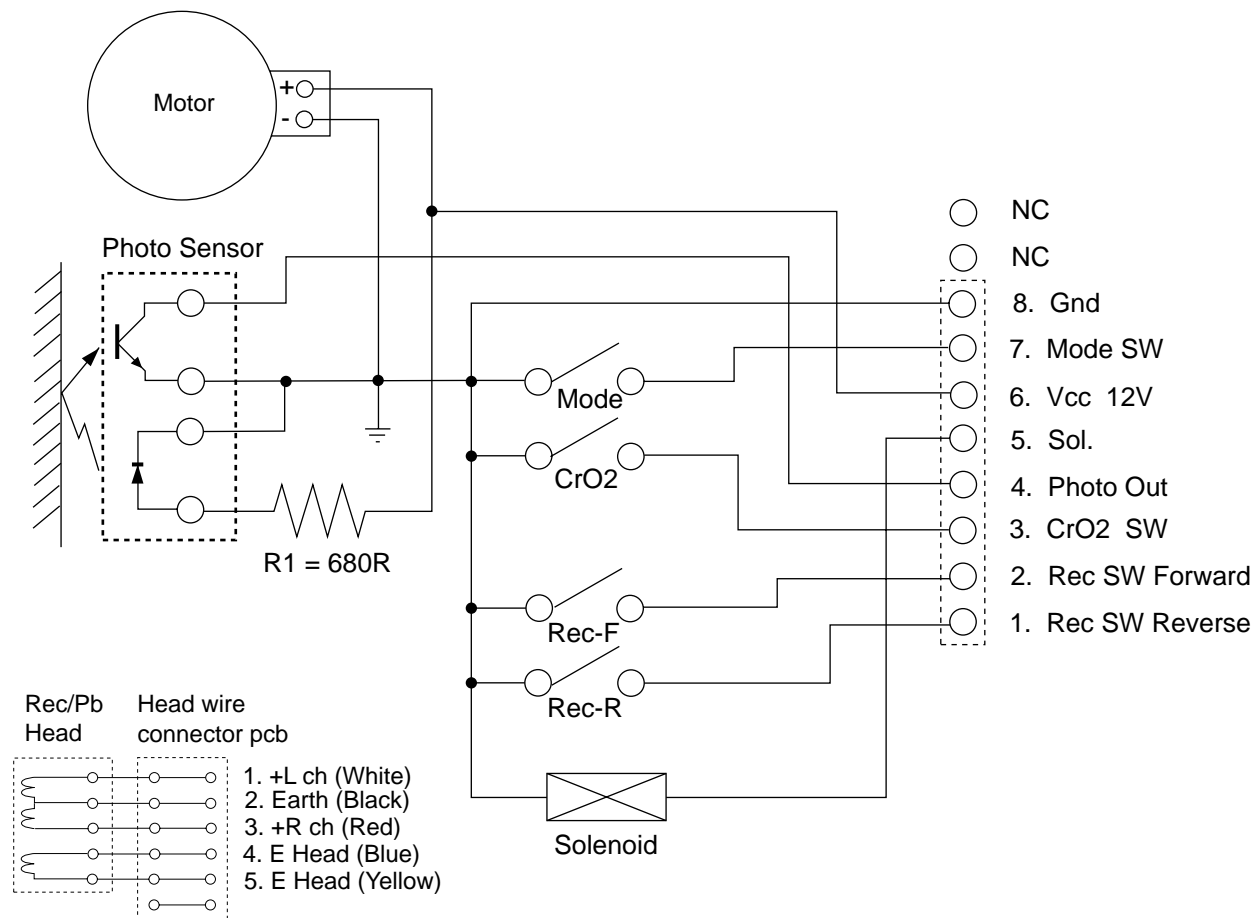
Tapedeck wiring (Single deck)



Variation table for Analog Circuit

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

TAPE MECHANISM ELECTRONICS



TAPE ADJUSTMENT & CHECK TABLE

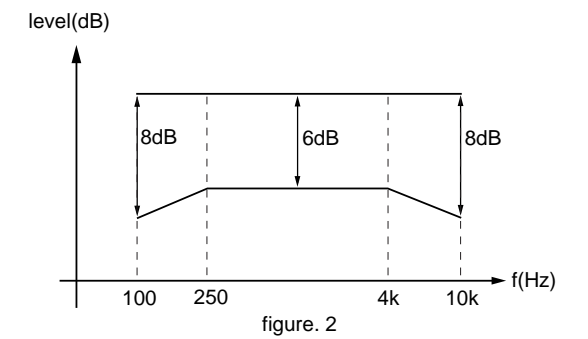
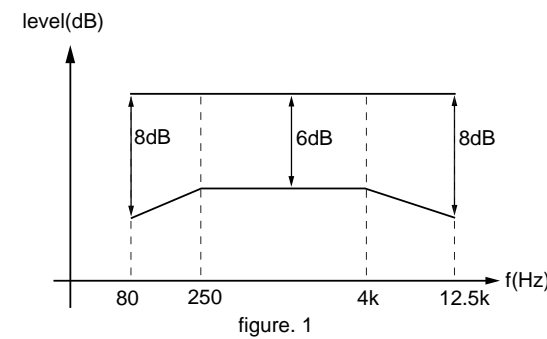
	TEST CASSETTE	RECORDER MODE	MEASURE ON	READ ON	ADJUST	
					with	to
MOTOR SPEED	SBC420 3150Hz	PLAY		frequency counter	check	3150Hz +/- 2%
WOW & FLUTTER	SBC420 3150Hz	PLAY		W&F-meter	check	< 0.4 % DIN
ADJUST AZIMUTH	SBC420 10kHz	PLAY FWD	1 or 2 LEFT RIGHT	mV-meter	left hand screw	max. output level & left=right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

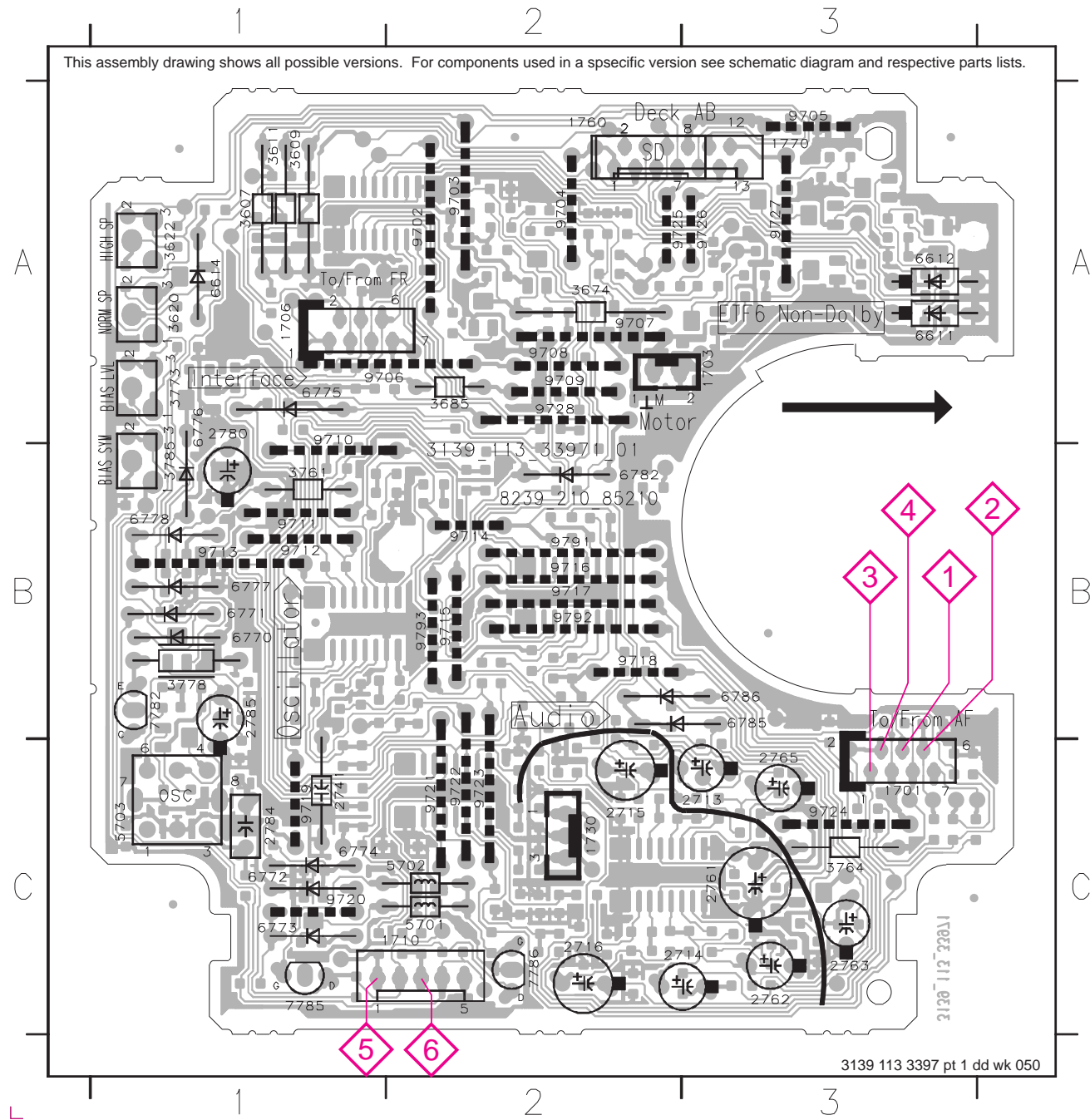
SBC419A : 4822 397 30069
SBC420 : 4822 397 30071

^ 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



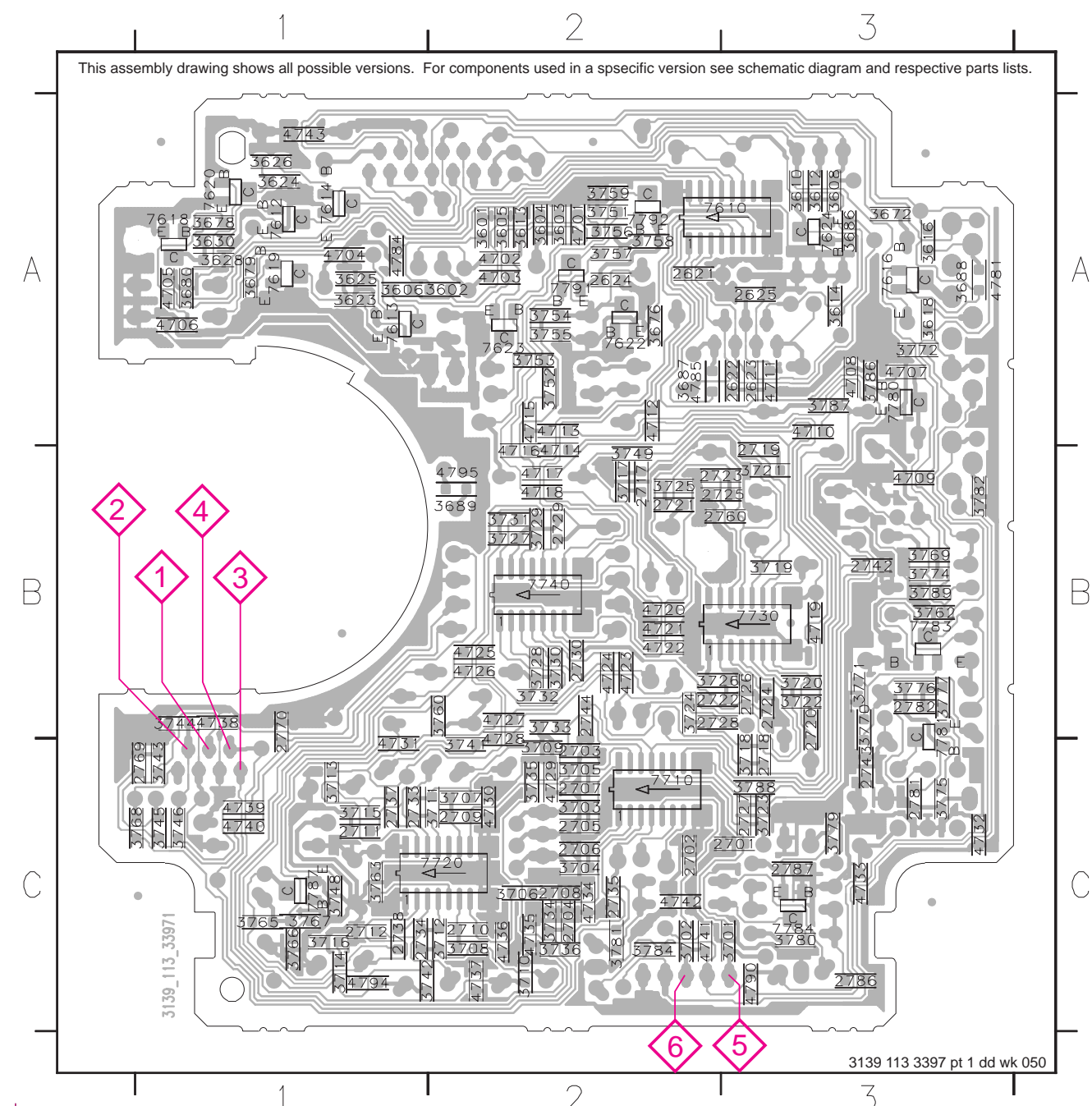
COMPONENT LAYOUT

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		

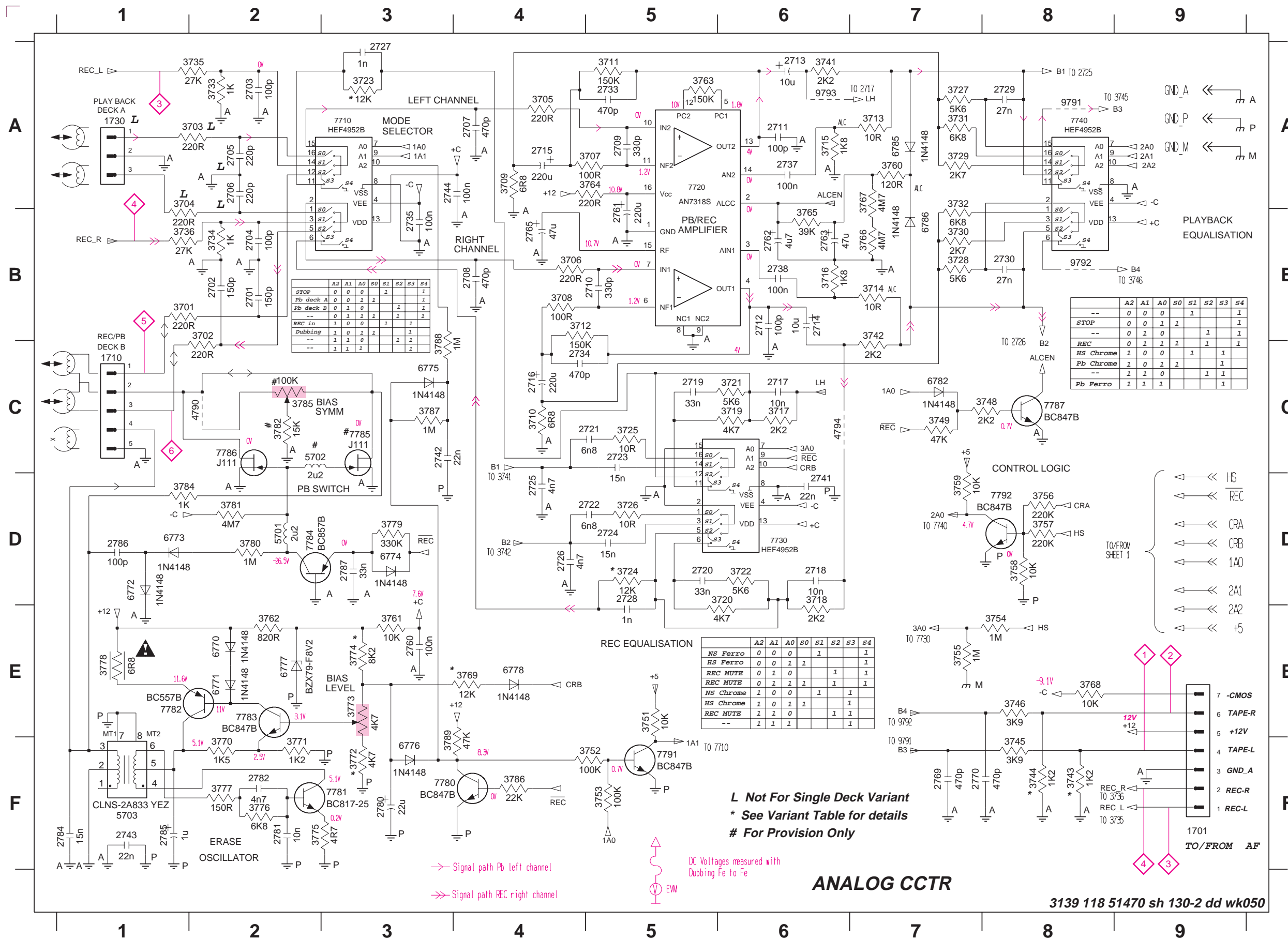


CHIP LAYOUT

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		



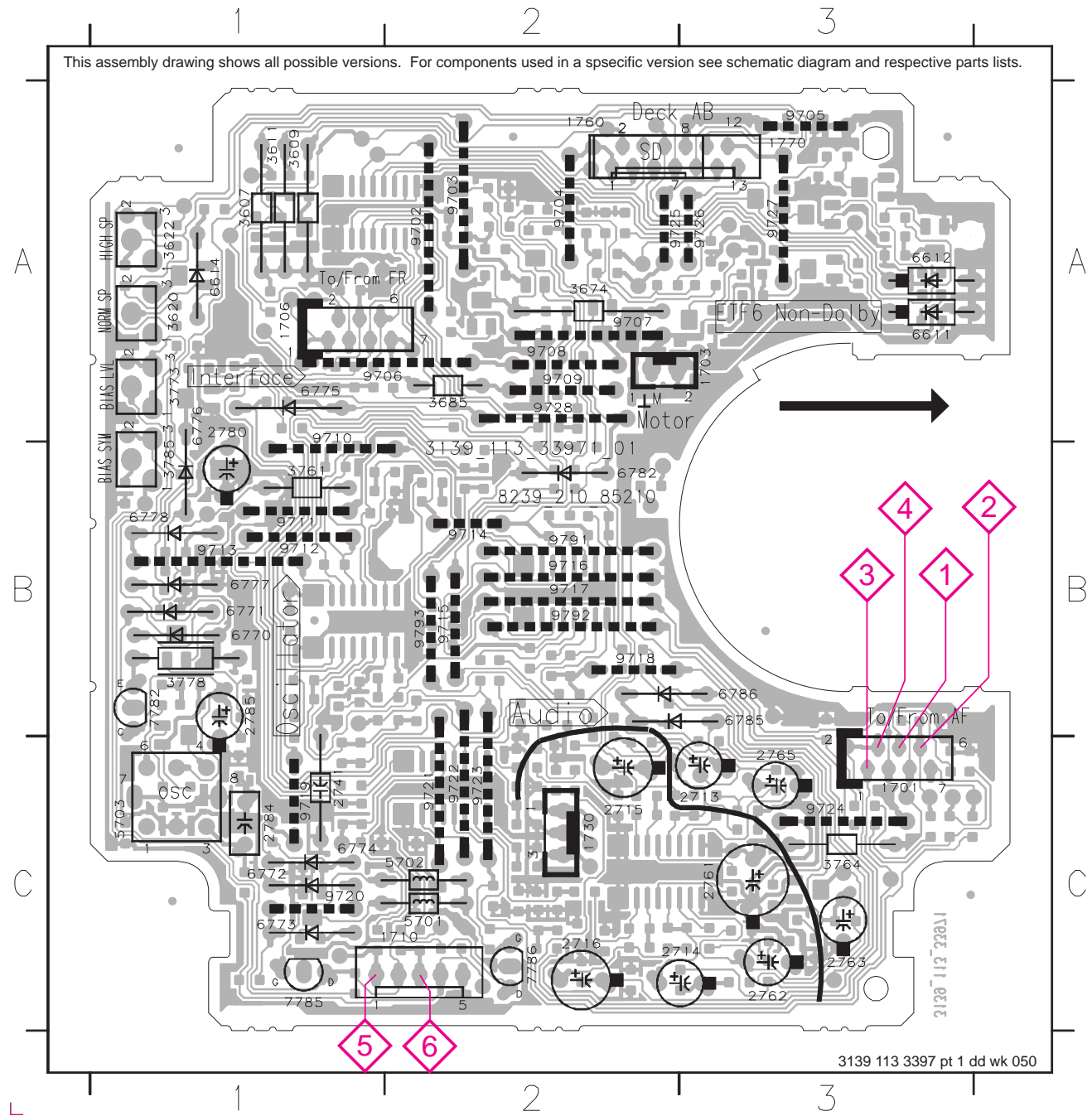
ANALOG CIRCUIT



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	

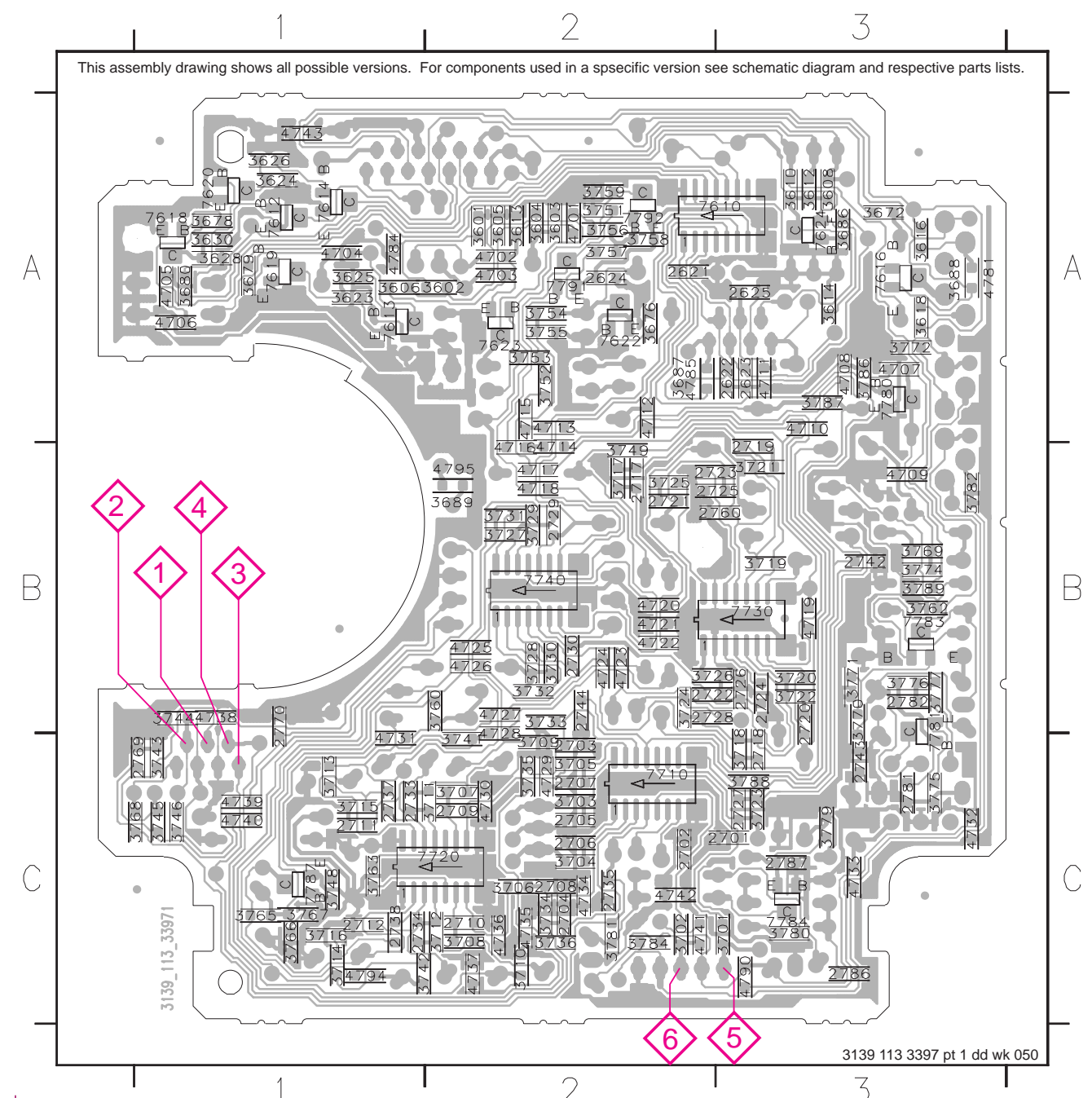
COMPONENT LAYOUT

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		



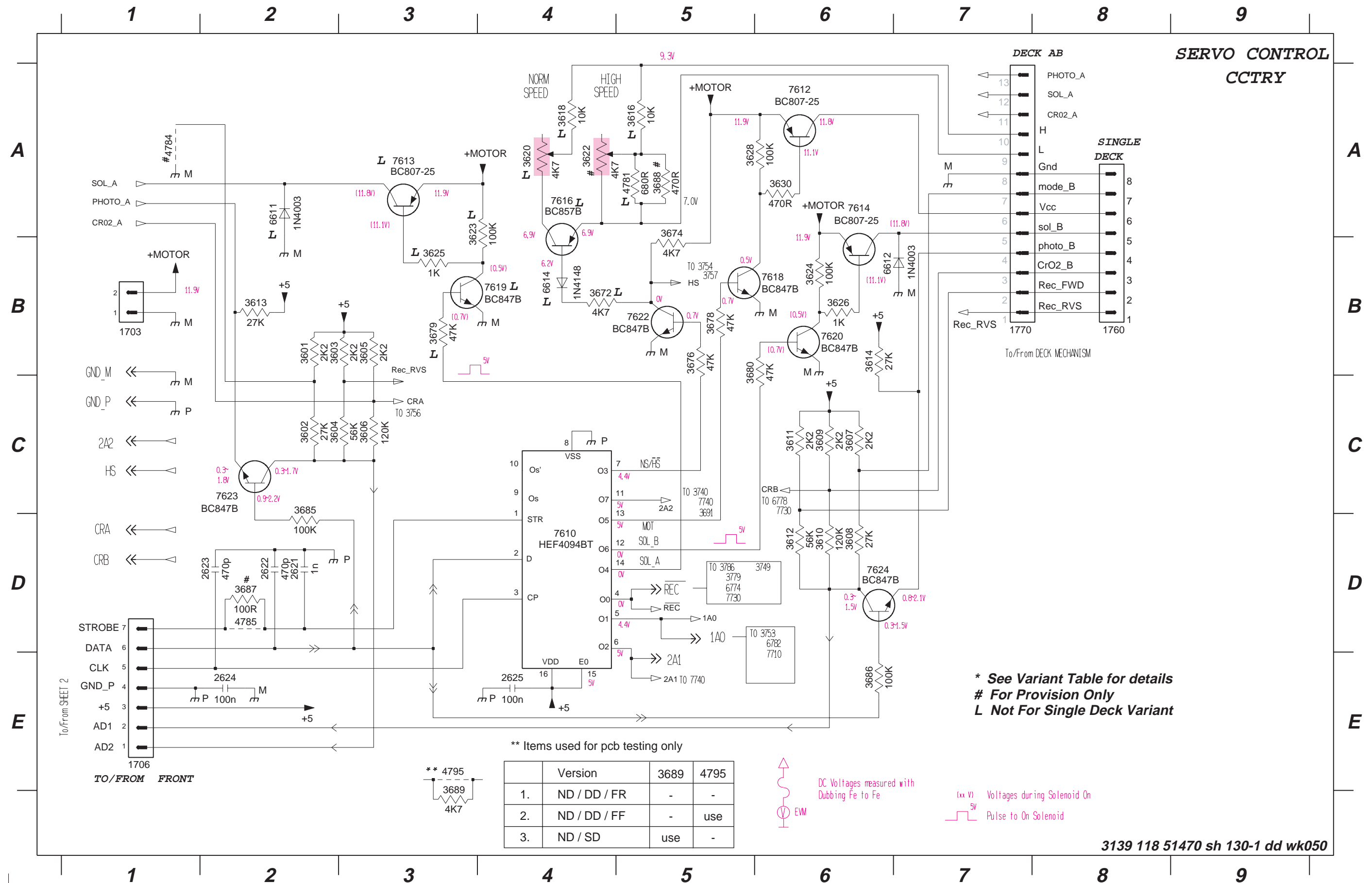
CHIP LAYOUT

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



** Items used for pcb testing only

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

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

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

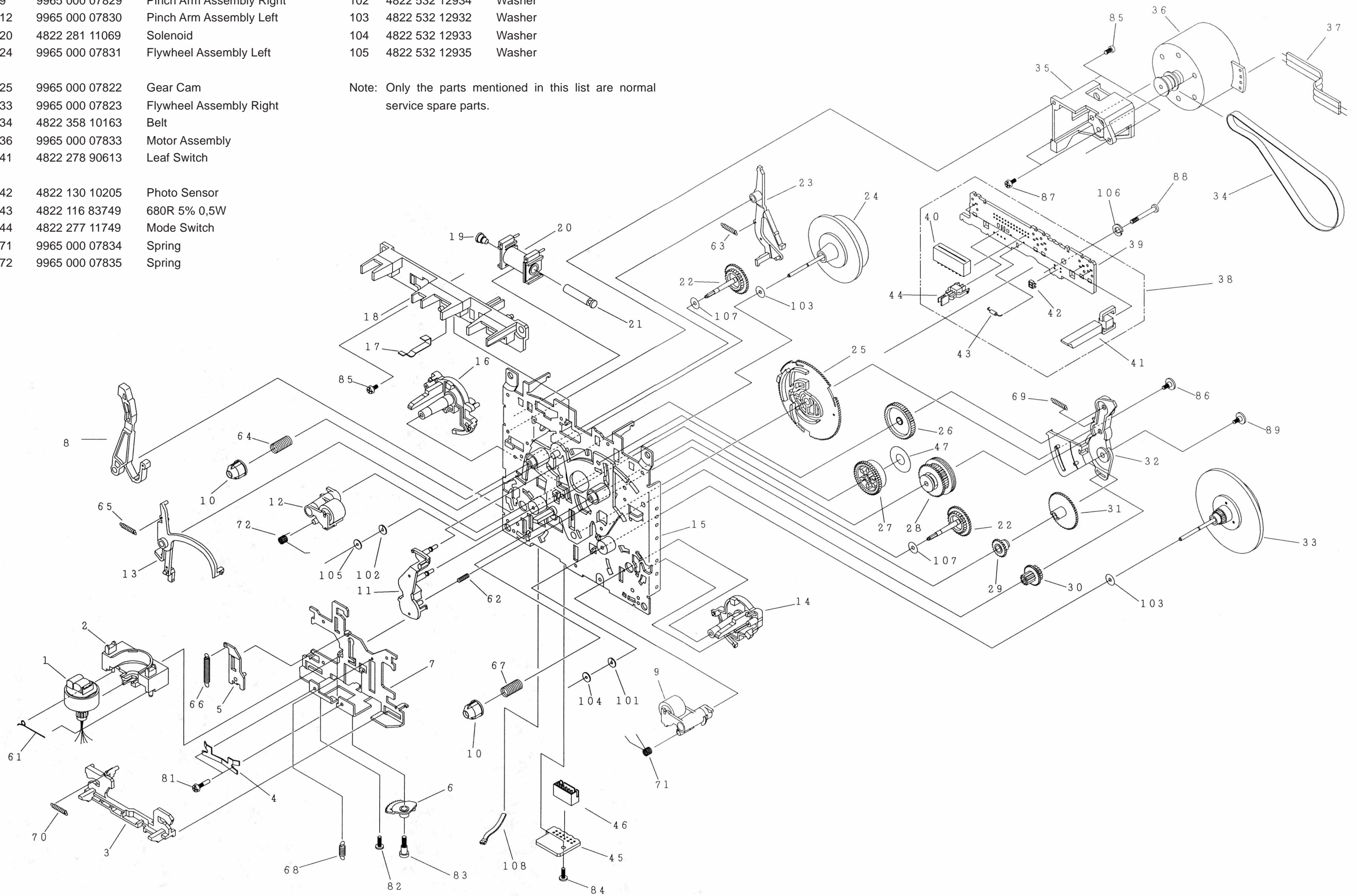
TAPE MECHANISM

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

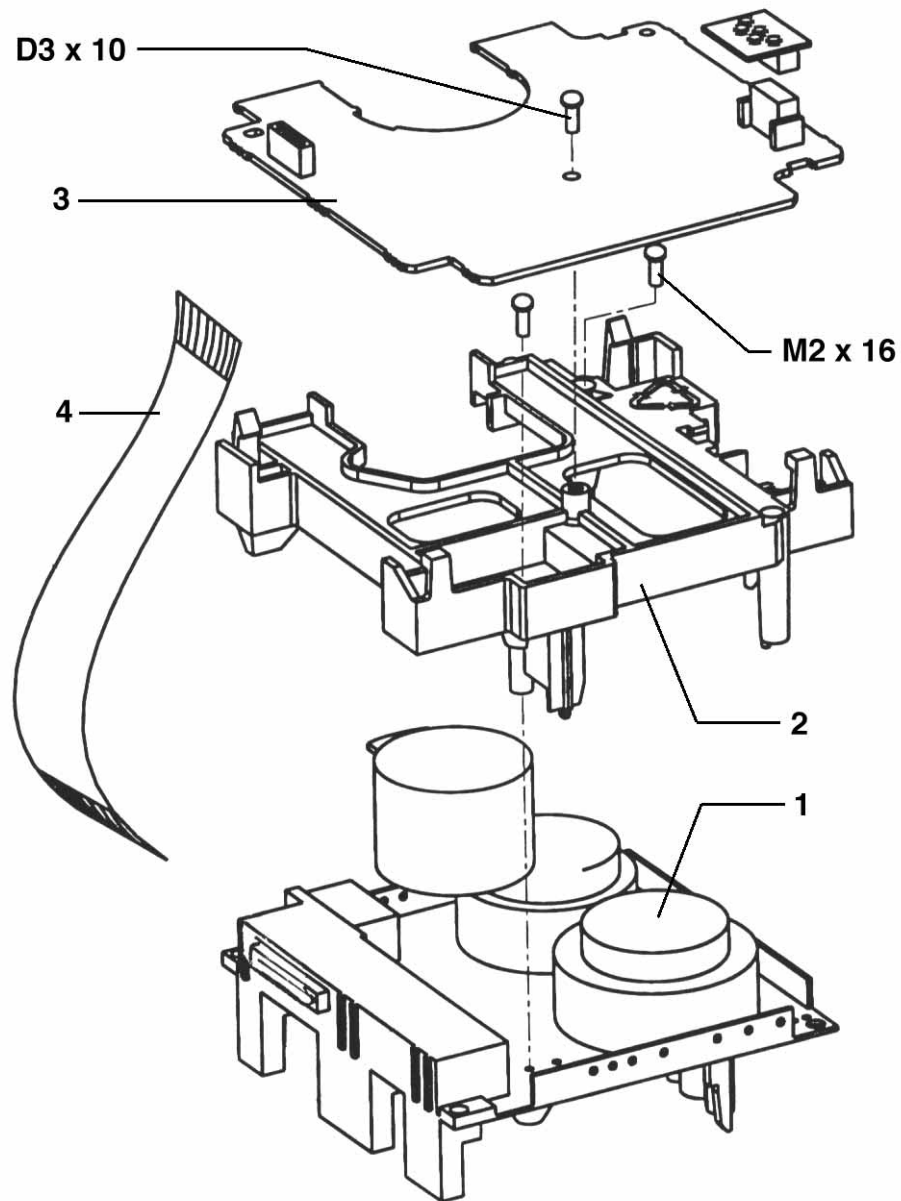
25	9965 000 07822	Gear Cam
33	9965 000 07823	Flywheel Assembly Right
34	4822 358 10163	Belt
36	9965 000 07833	Motor Assembly
41	4822 278 90613	Leaf Switch

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

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



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

RESISTORS

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

COILS & FILTERS

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

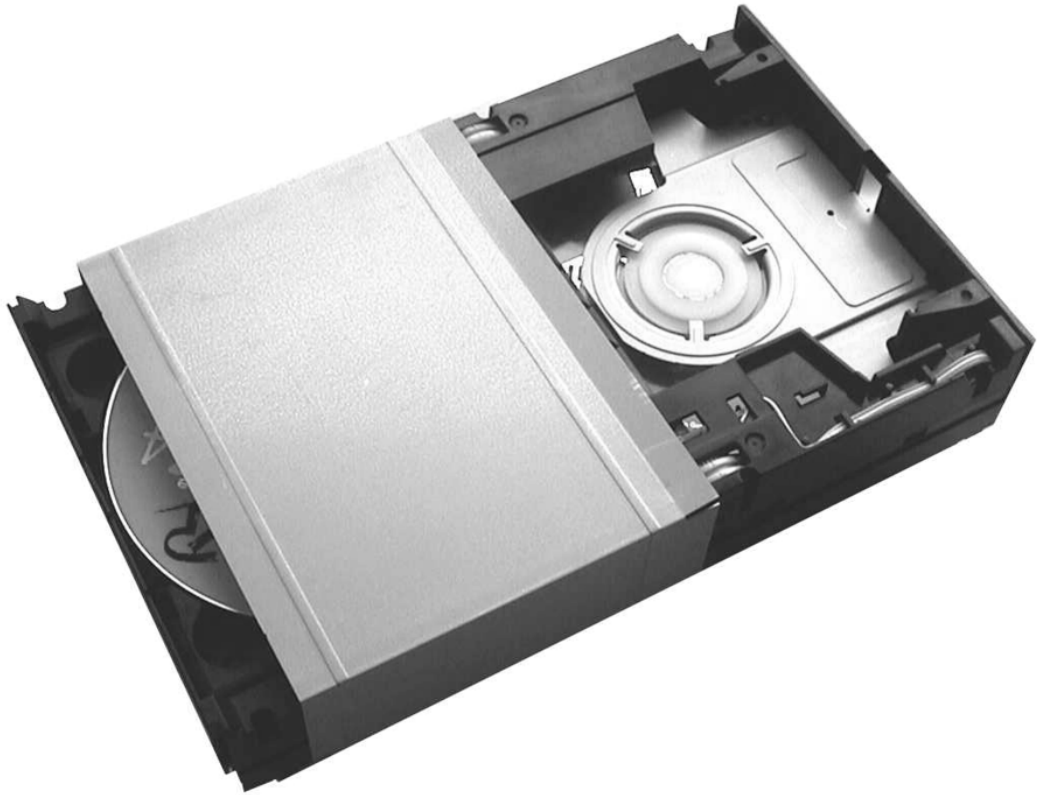
DIODES

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

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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Electrical Partslist	10-18

WARNING

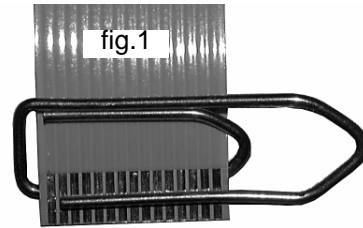
CHARGED CAPACITORS ON THE SERVO BOARD MAY DAMAGE THE CD DRIVE ELECTRONICS WHEN CONNECTING A NEW CDM MECHANISM. THAT'S WHY, BESIDES THE SAFETY MEASURES LIKE

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

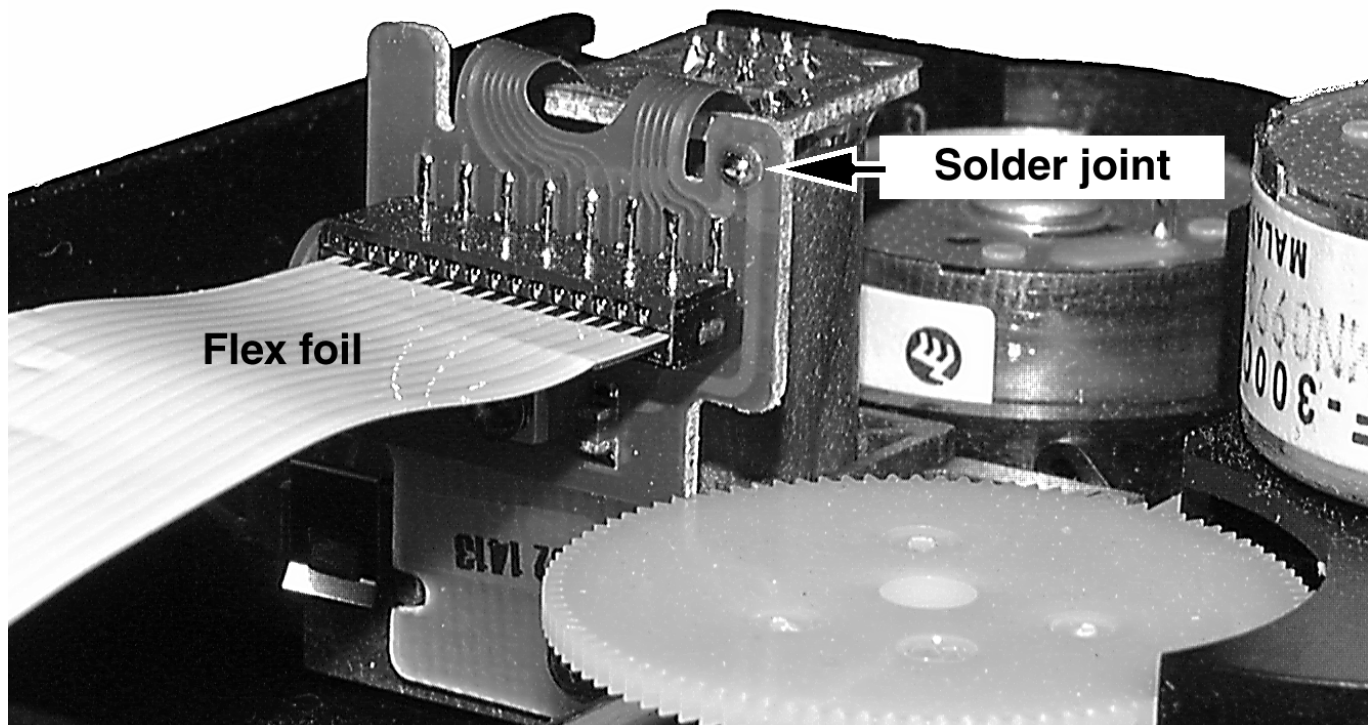
ADDITIONAL ACTIONS MUST BE TAKEN BY THE REPAIR TECHNICIAN.

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

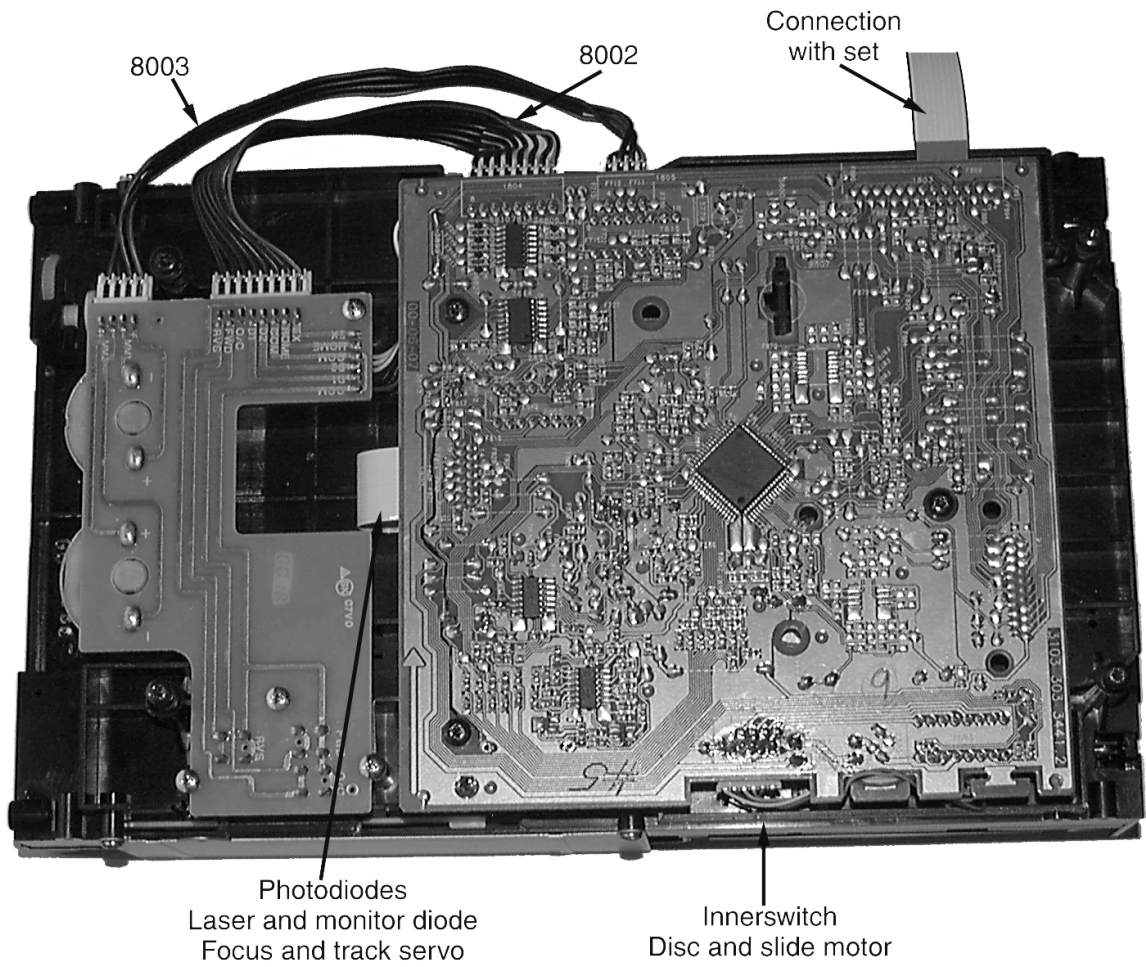
1. Disconnect CD drive flexfoil from old CD drive
2. Connect paperclip to CD drive flexfoil to short-circuit flexfoil (fig.1)
3. Remove old CD drive
4. Remove short-circuit from flexfoil of CD drive
5. Connect flexfoil to new CD drive
6. Position new CD drive in its studs
7. Remove short-circuit from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



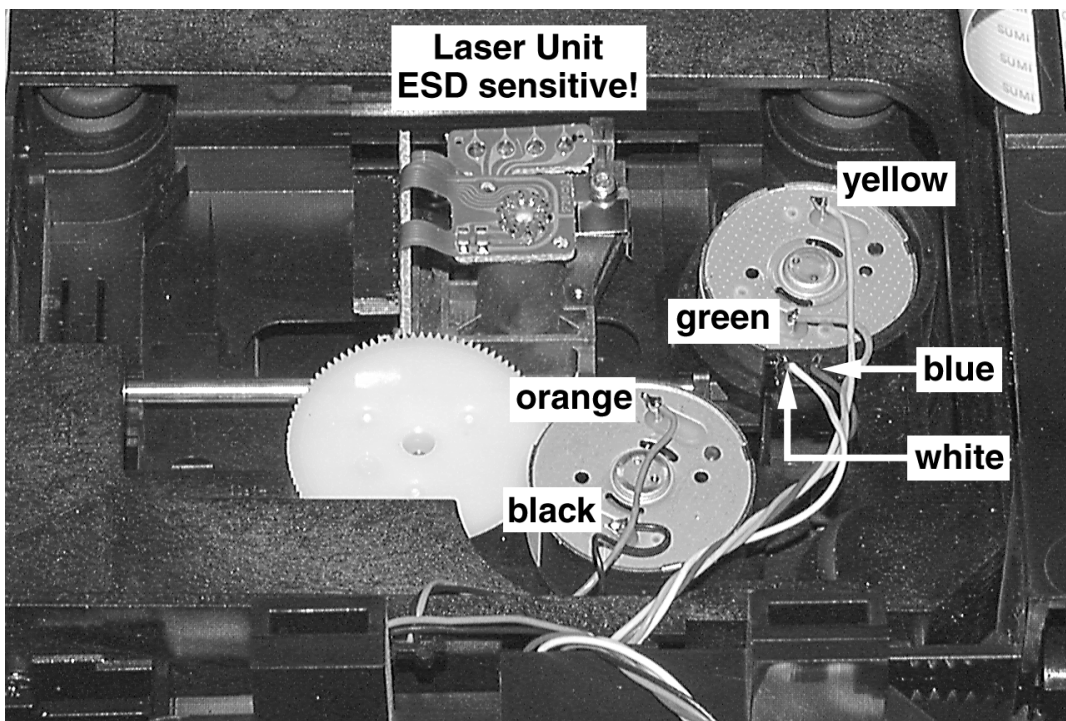
Attention: The laser diode of this CD drive is protected against ESD by a solder joint which shortcircuits the laserdiode to ground.
For proper functionality of the CD drive this solder joint must be removed **after** connection the drive to the set.



WIRING Module



WIRING CD Drive



Brief description

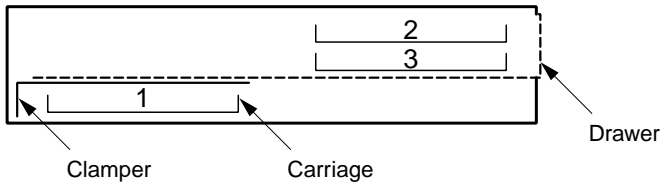
On the next pages various actions of the 3 Disc Tray Changer are described with simplified drawings.

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



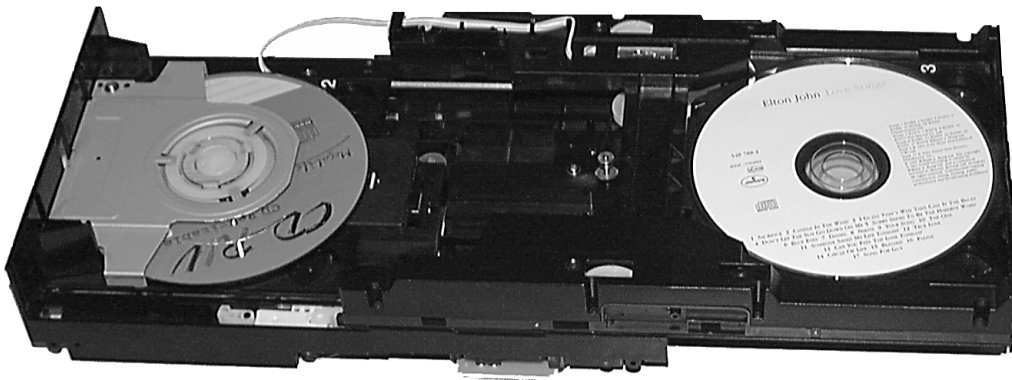
2. Tray open.

The Drawer is moved out

Carriage #2 and #3 remain in home position

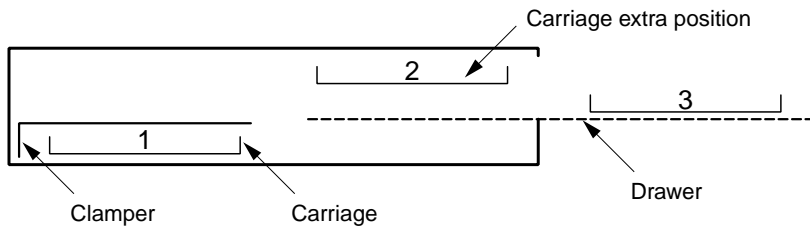


The Changer looks like

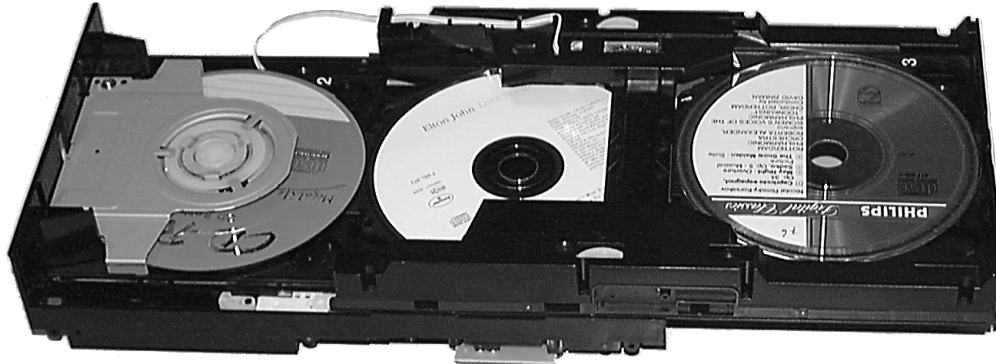


3. Carriage extra.

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



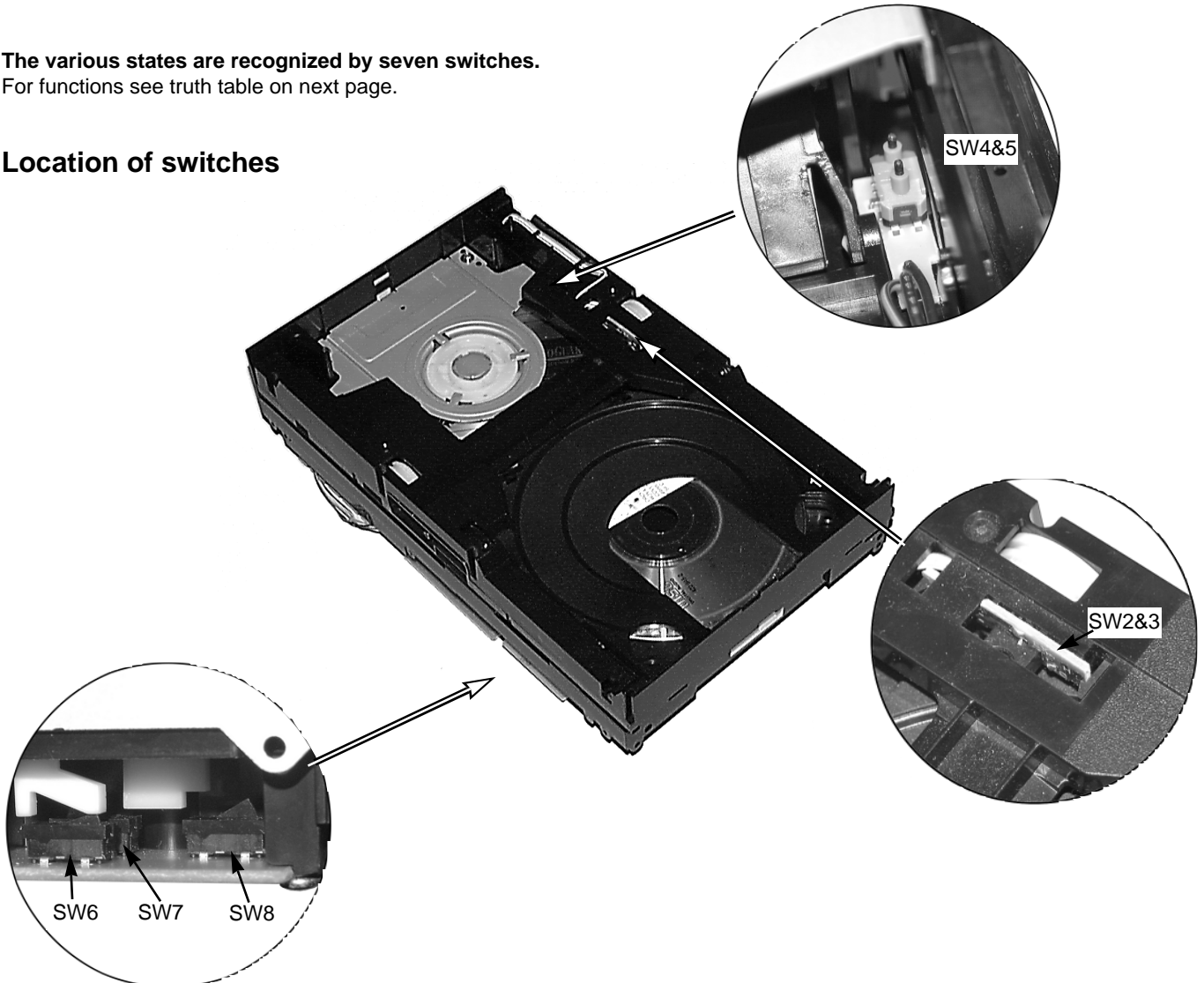
The changer looks like



The various states are recognized by seven switches.

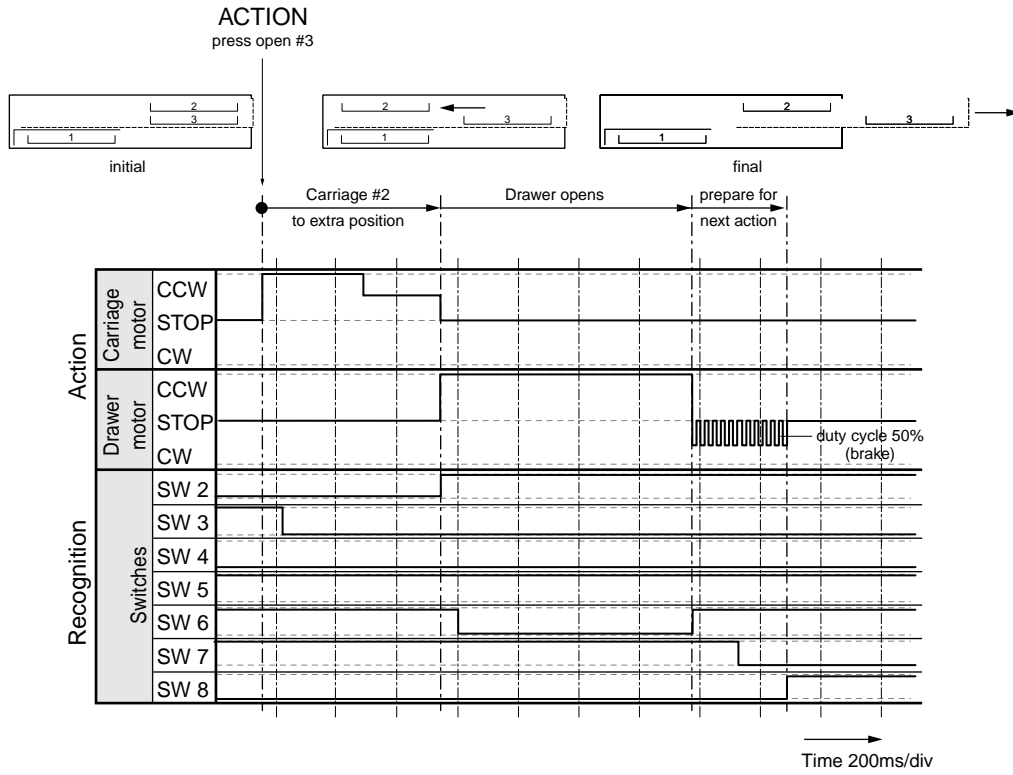
For functions see truth table on next page.

Location of switches

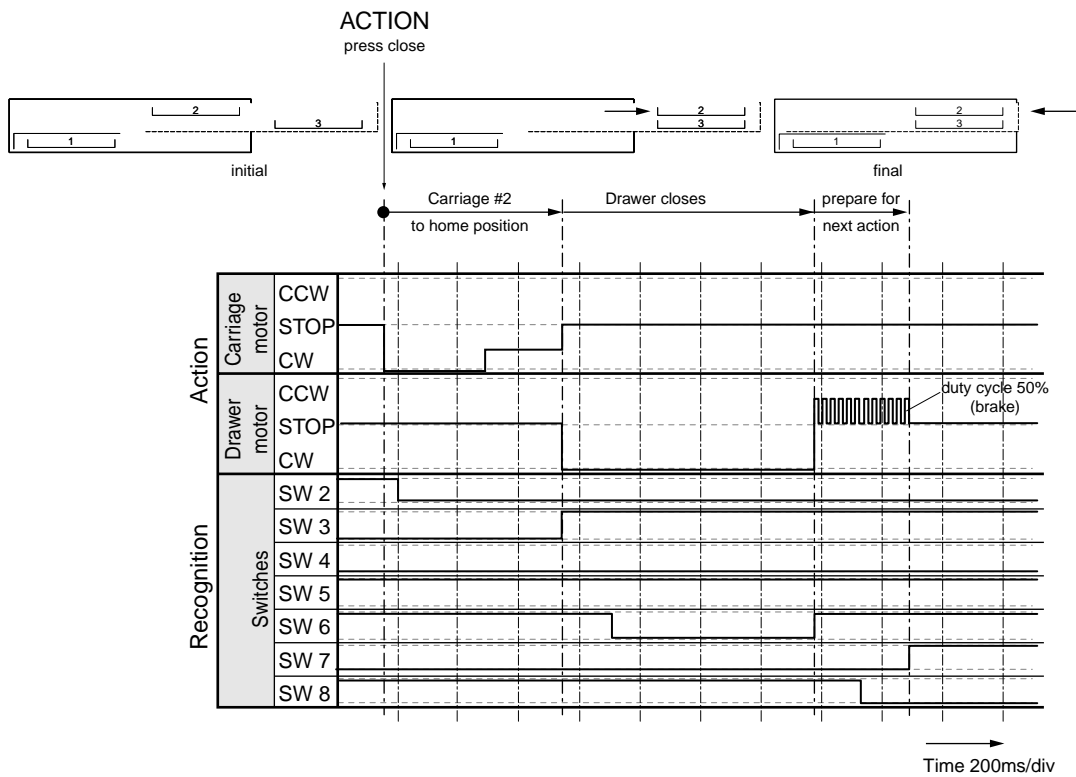


Timing Diagrams

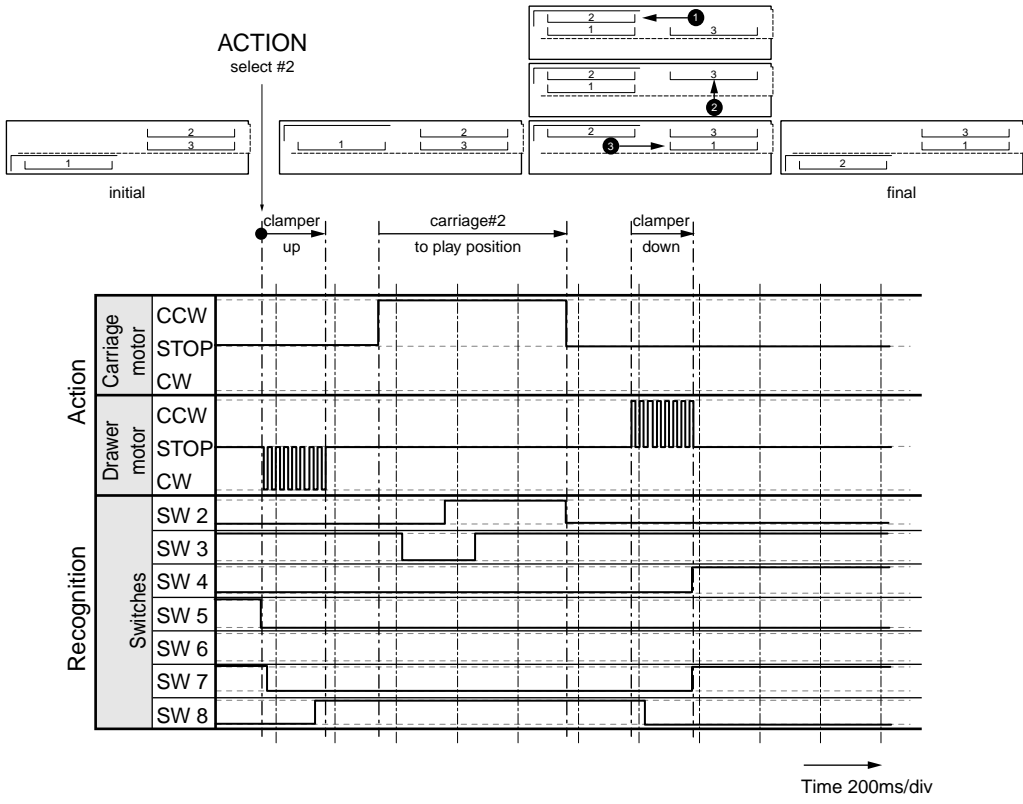
1. Open #3



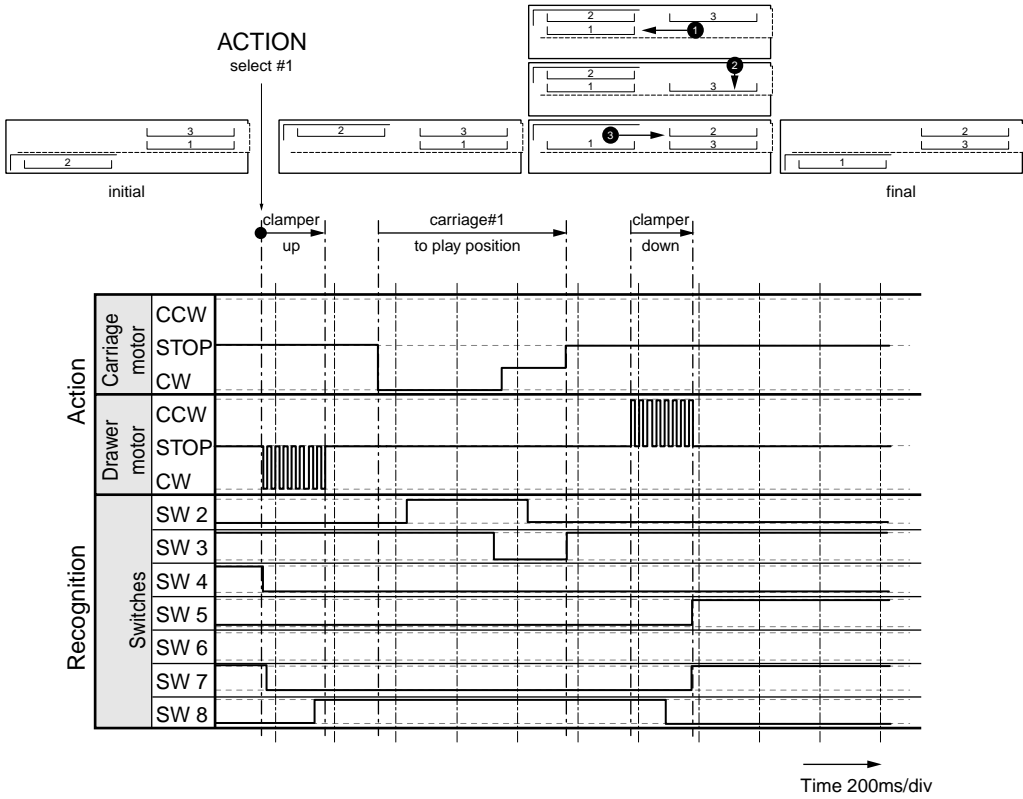
2. Close #3



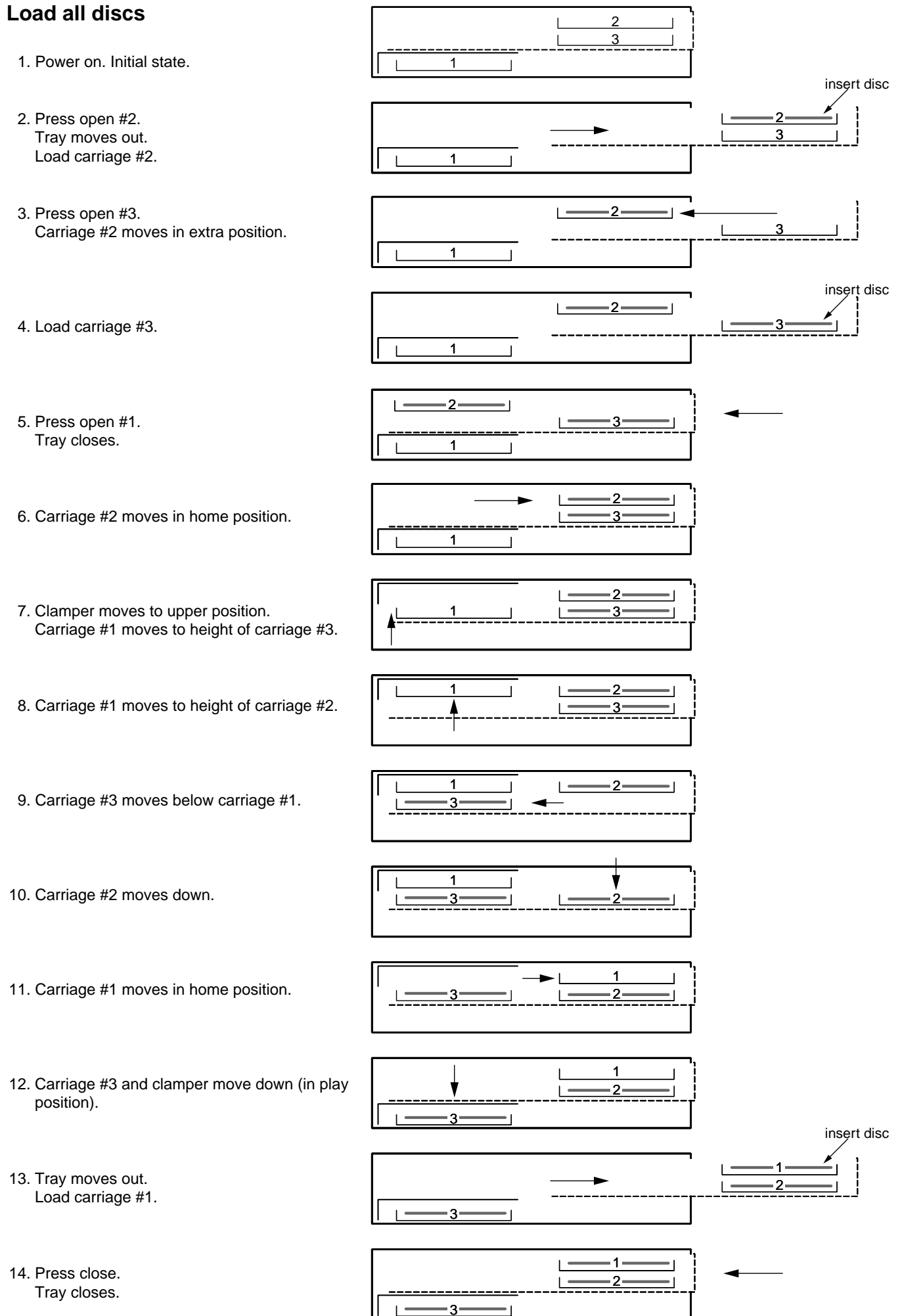
3. Select #2



4. Select #1



Load all discs

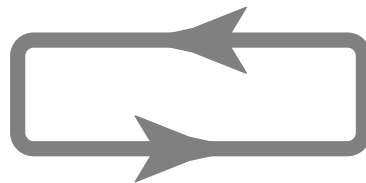
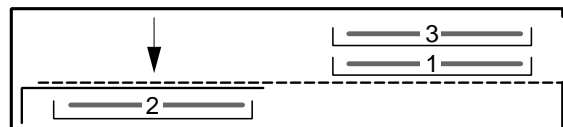
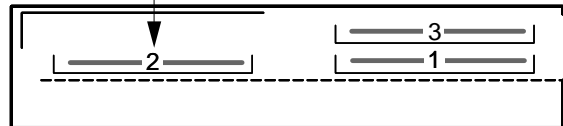
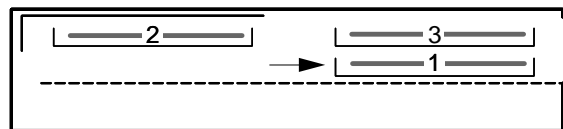
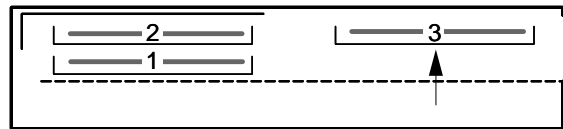
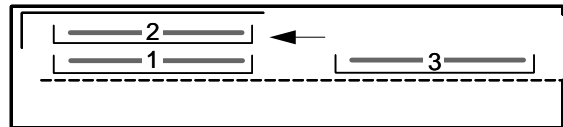
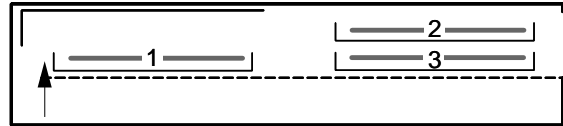
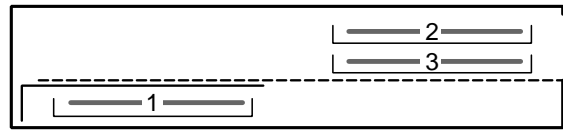
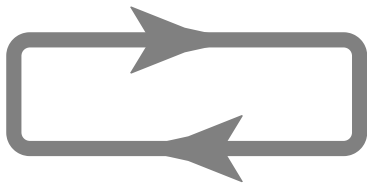
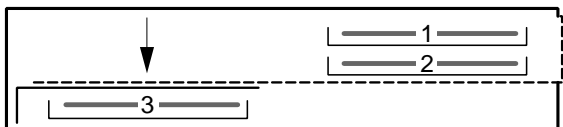
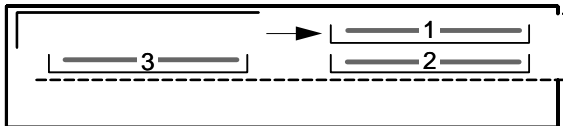
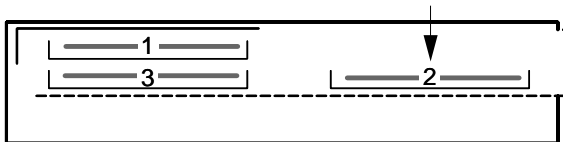
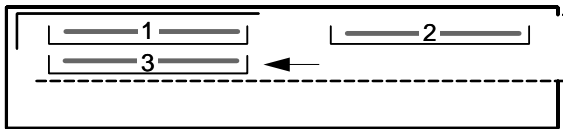
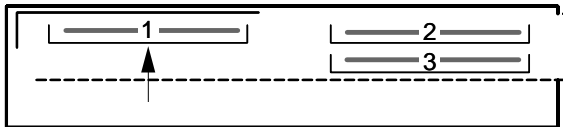
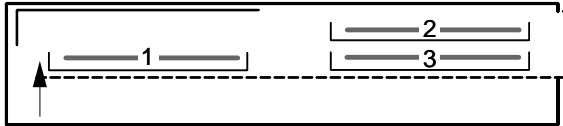
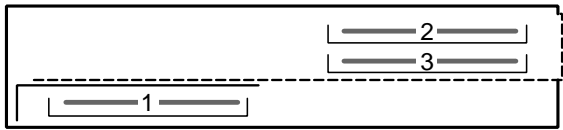


Change 'backwards'

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

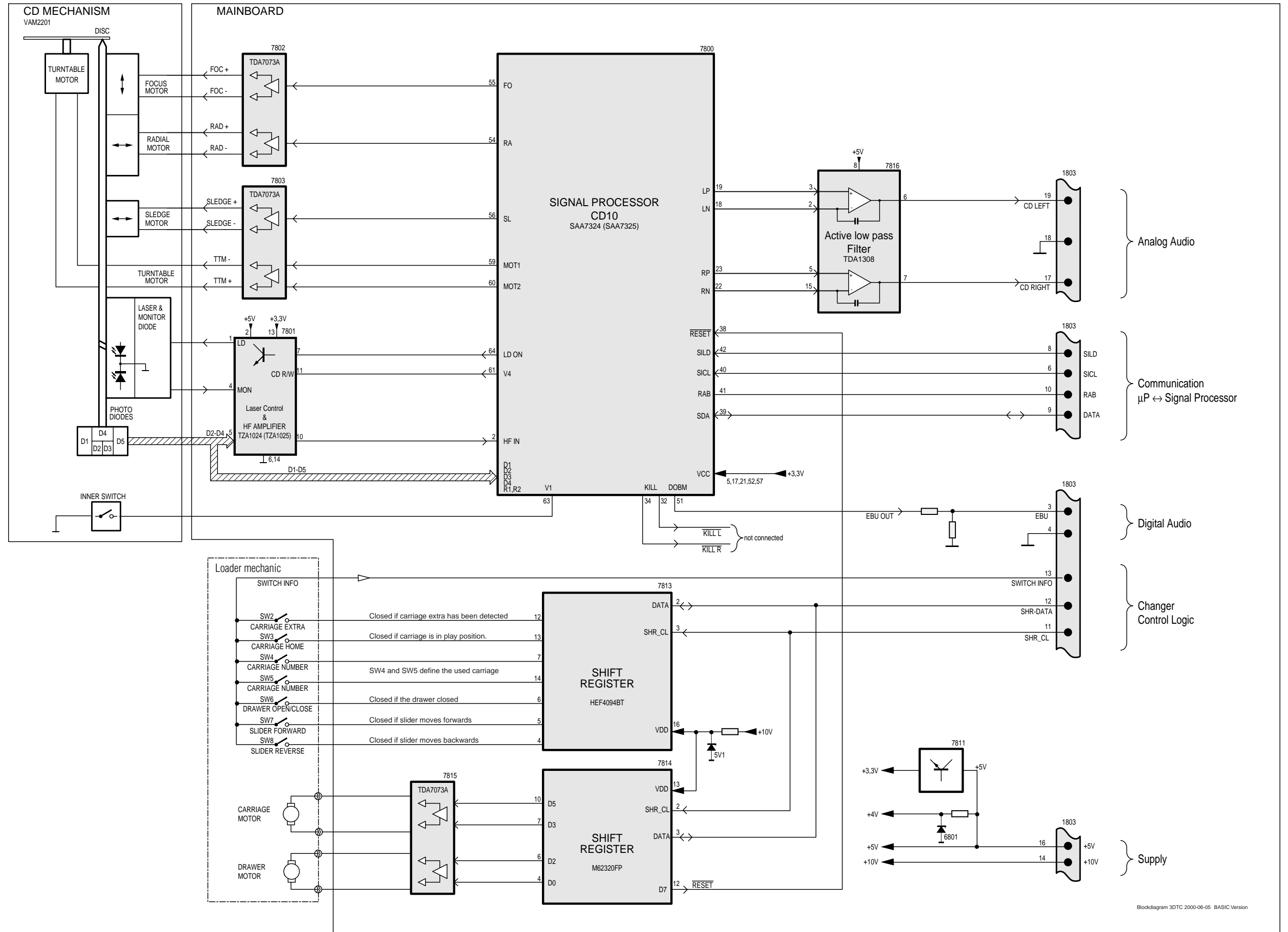
Change 'forwards'

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

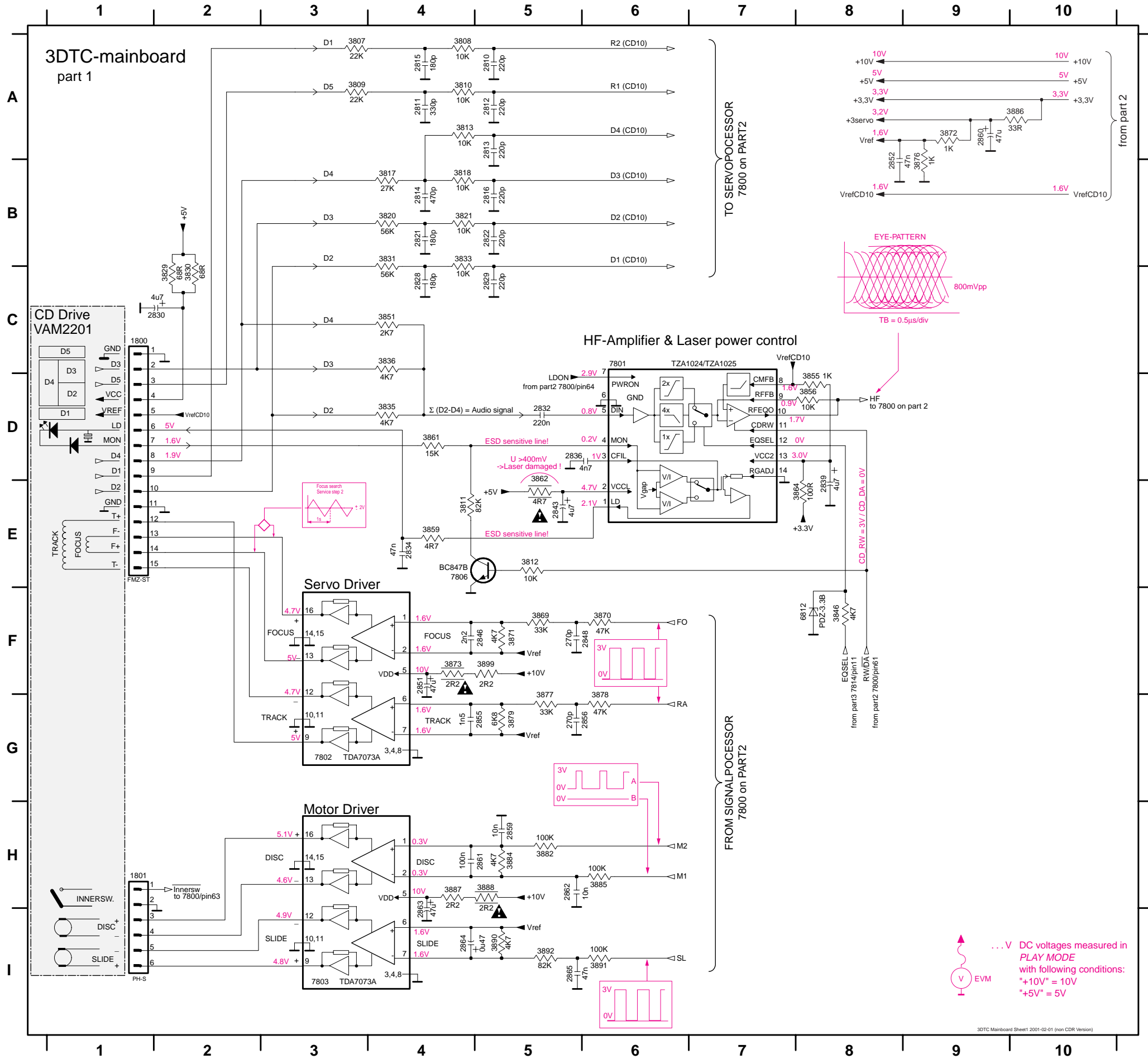


See also timing diagrams (page 10-8).

BLOCK DIAGRAM 3DTC

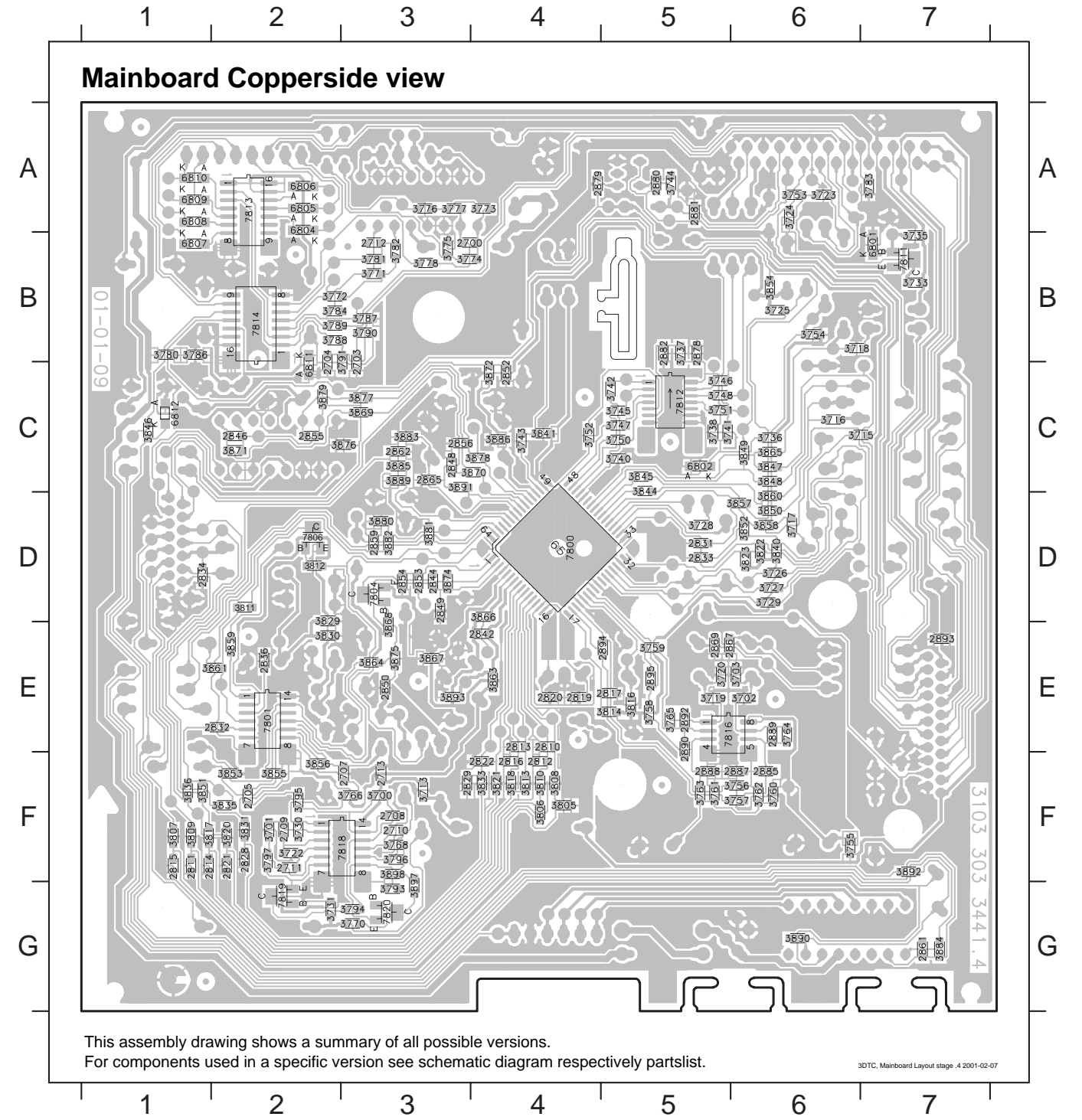
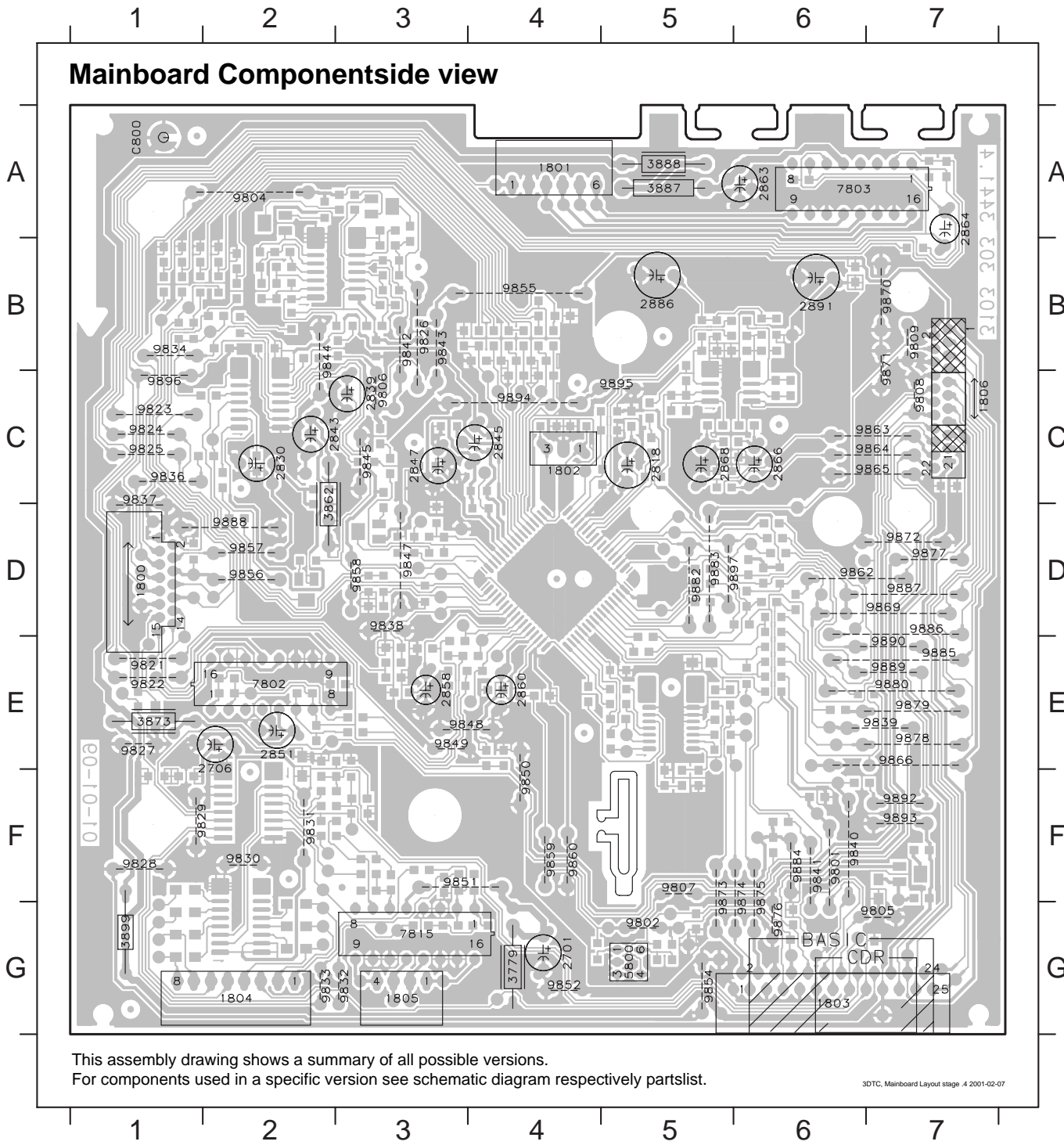


1800	C1	2813	A5	2822	B5	2834	E4	2848	F5	2859	H5	2864	I4	3810	A4	3821	B4	3835	D4	3856	D8	3869	F5	3876	B9	3884	H5	3890	I5	7801	D6
1801	I1	2814	B4	2828	C4	2836	D6	2851	F4	2860	B9	2865	I5	3813	A4	3829	C2	3836	C4	3859	E4	3870	F6	3877	G5	3885	H6	3891	I6	7802	G3
2810	A5	2815	A4	2829	C5	2839	E8	2852	B8	2861	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		

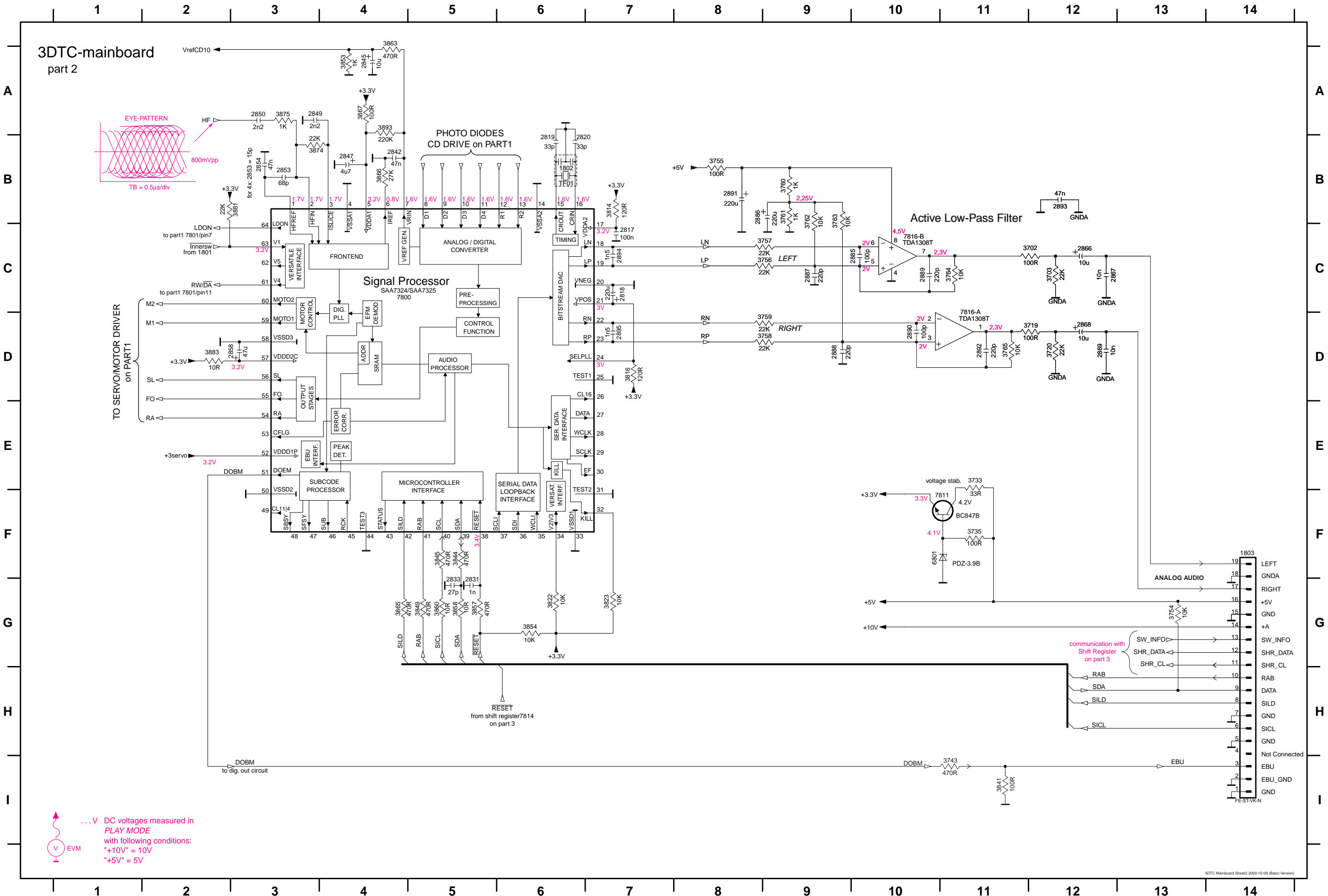


1800 D1	2706 E2	2858 E3	3779 G4	7803 A6	9808 C7	9827 E1	9836 C1	9844 B2	9854 G5	9863 C7	9873 F5	9882 D5	9890 E7
1801 A4	2818 C5	2860 E4	3862 D2	7815 G3	9809 B7	9828 F1	9837 C1	9845 C3	9855 B4	9864 C7	9874 F6	9883 D5	9892 F7
1802 C4	2830 C2	2863 A6	3873 E1	9801 F6	9821 E1	9829 F1	9838 D3	9847 D3	9856 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	3749 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	3745 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	

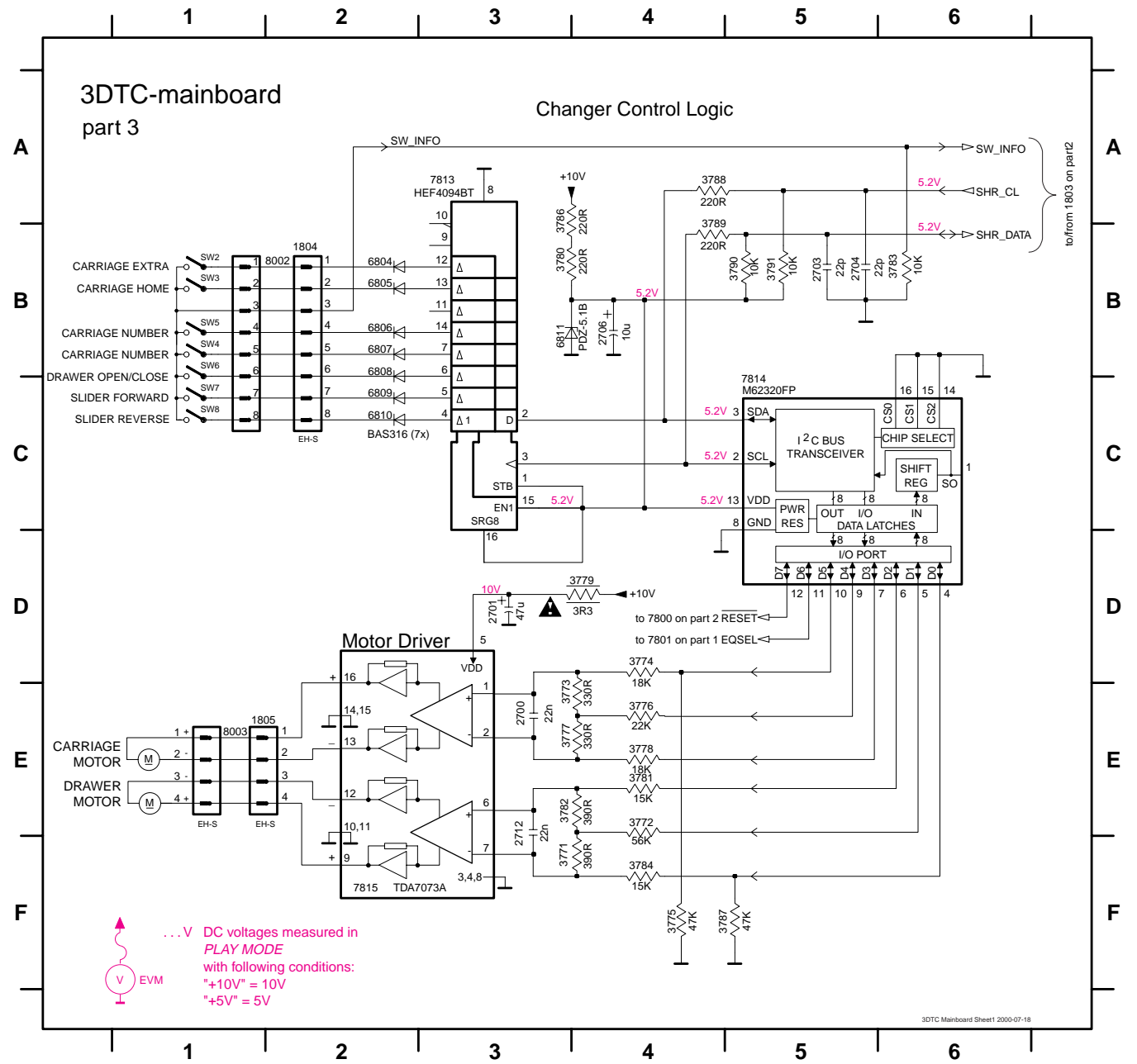


1802	B6	2819	B6	2842	B4	2850	A3	2866	C12	2885	C10	2889	C10	2893	B12	3703	C12	3735	F11	3756	C9	3760	B9	3764	C11	3822	G6	3845	F5	3857	G5	3865	G4	3875	A3	6801	F10	7816-B	C10
1803	F14	2820	B6	2845	A4	2853	B3	2867	C12	2886	B9	2890	D10	2894	C7	3719	D12	3743	I11	3757	C9	3761	B9	3765	D11	3823	G7	3849	G5	3858	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		

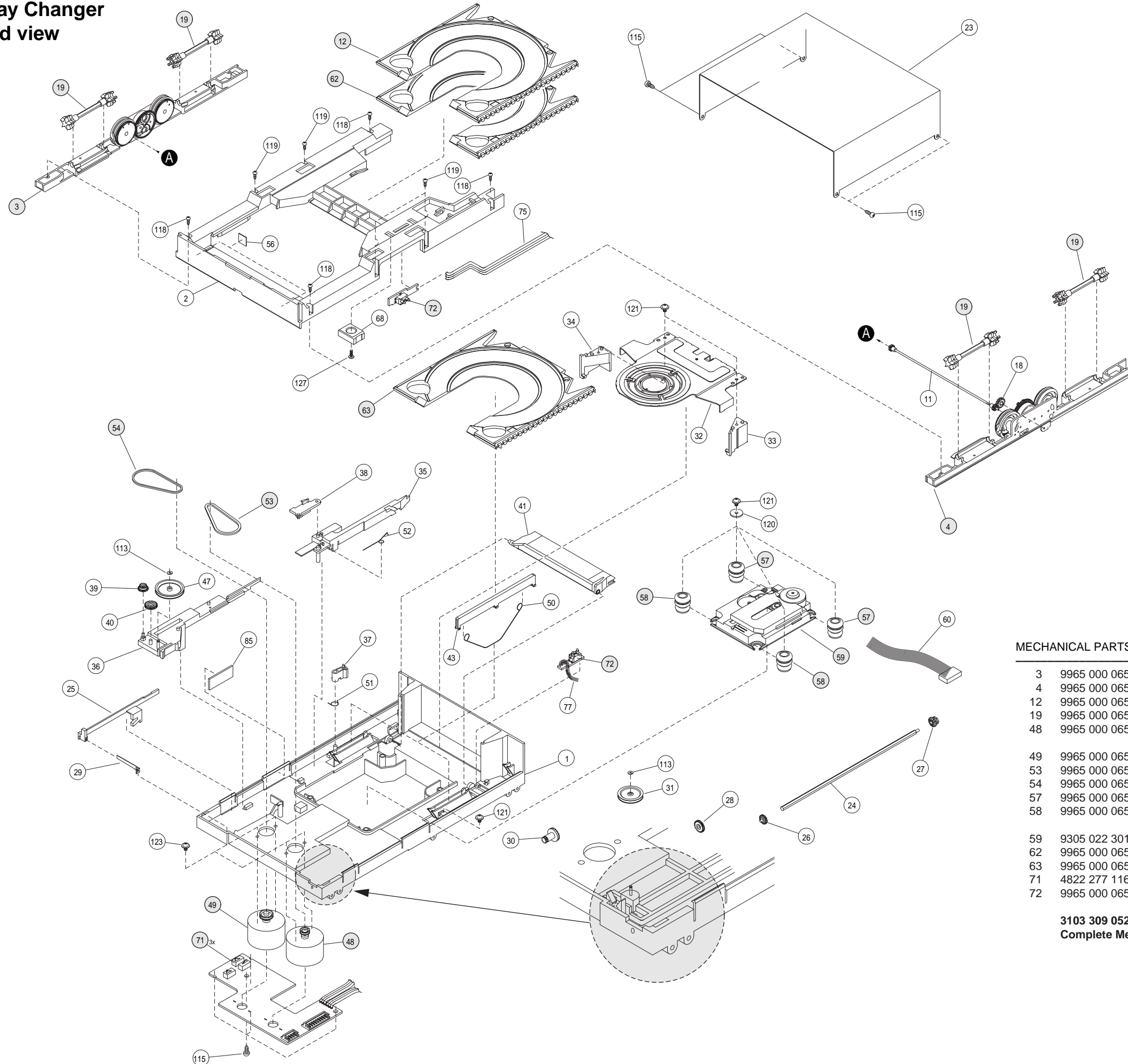


Technical remarks

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		



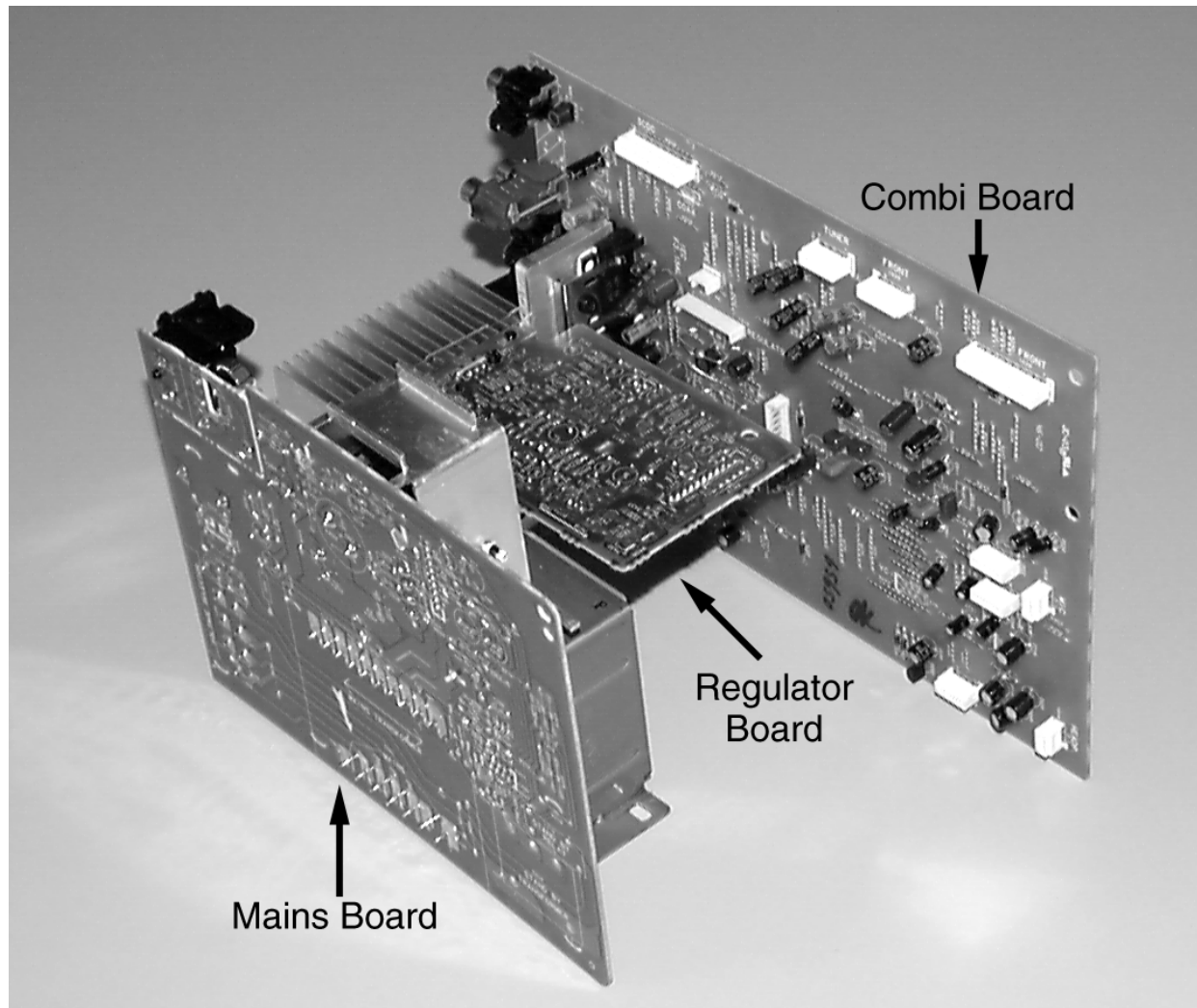
3Disc Tray Changer Exploded view



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**



Circuit details:

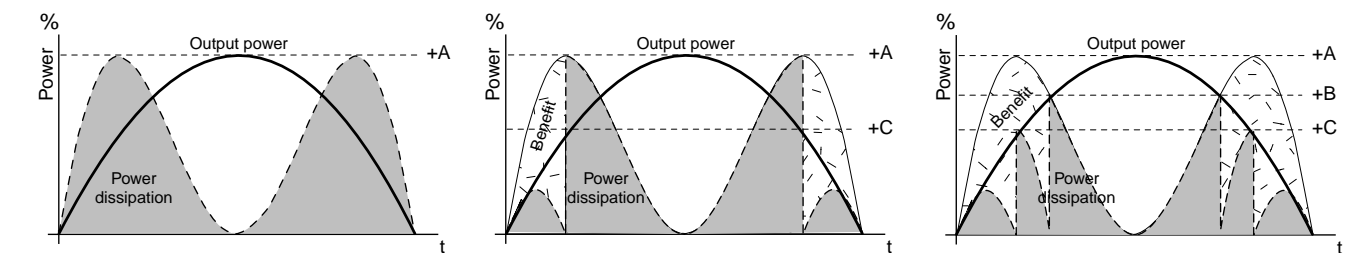
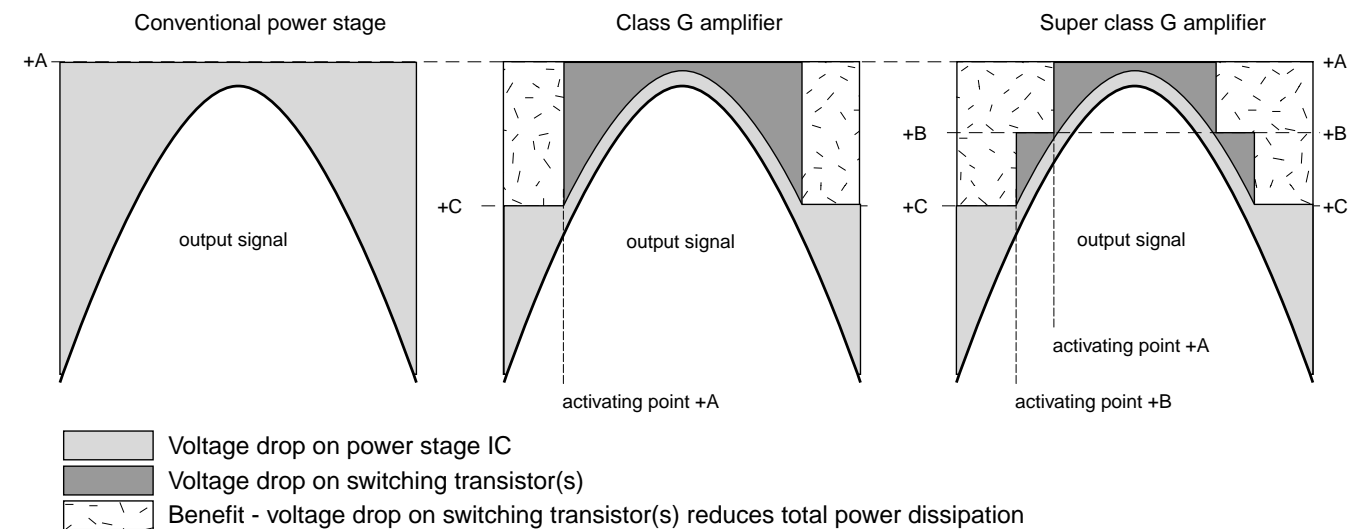
Amplifier:

Attention: In the POWER 2001 module the power amplifier IC AN7591 is used as a bridge-amplifier.
Any connection from output to ground will destroy the output stages!

- Via the AMP_ON control line, connected to pins 6 (Stby), the power amplifiers are switched on/off by the μ P.
High level (approx. 4,5V): power amplifiers switched on
Low level (approx. 0V): power amplifiers switched off
- Super class G - operation

The power amplifiers operate as so-called super class G - amplifiers:
The supply pins 12 (Vcc) are not just connected to one fixed DC-supply as in conventional amplifiers.
Dependent on the output power there are three different DC-voltages supplied to the power amplifiers:
⇒ +C (+17V) for low output power
⇒ +B (+23V) for medium output power
⇒ +A (+35V) for high output power

Principle / benefit of Super Class G



POWER 2001 Module
(40W Super G -Version)

stage .5

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Circuit details continued:

• **Low power standby feature**

An additional small standby transformer, reduces power consumption in standby-mode. In case power is switched on, the control line LOW_PWR_CTR is high → relay 1210 is activated → contacts 1 and 2 are closed → transformer 5001 is connected to mains. When the set is switched off (standby) the control line LOW_PWR_CTR is low → transistor 7203 blocks → relay 1210 is not activated → main transformer is disconnected. Via standby transformer and rectifiers 6210-6214 the supply voltage LOW_PWR_SUP is substituted. This voltage is always available and so the microprocessor is kept running.

• **DC voltages +A1, +B1, +C1**

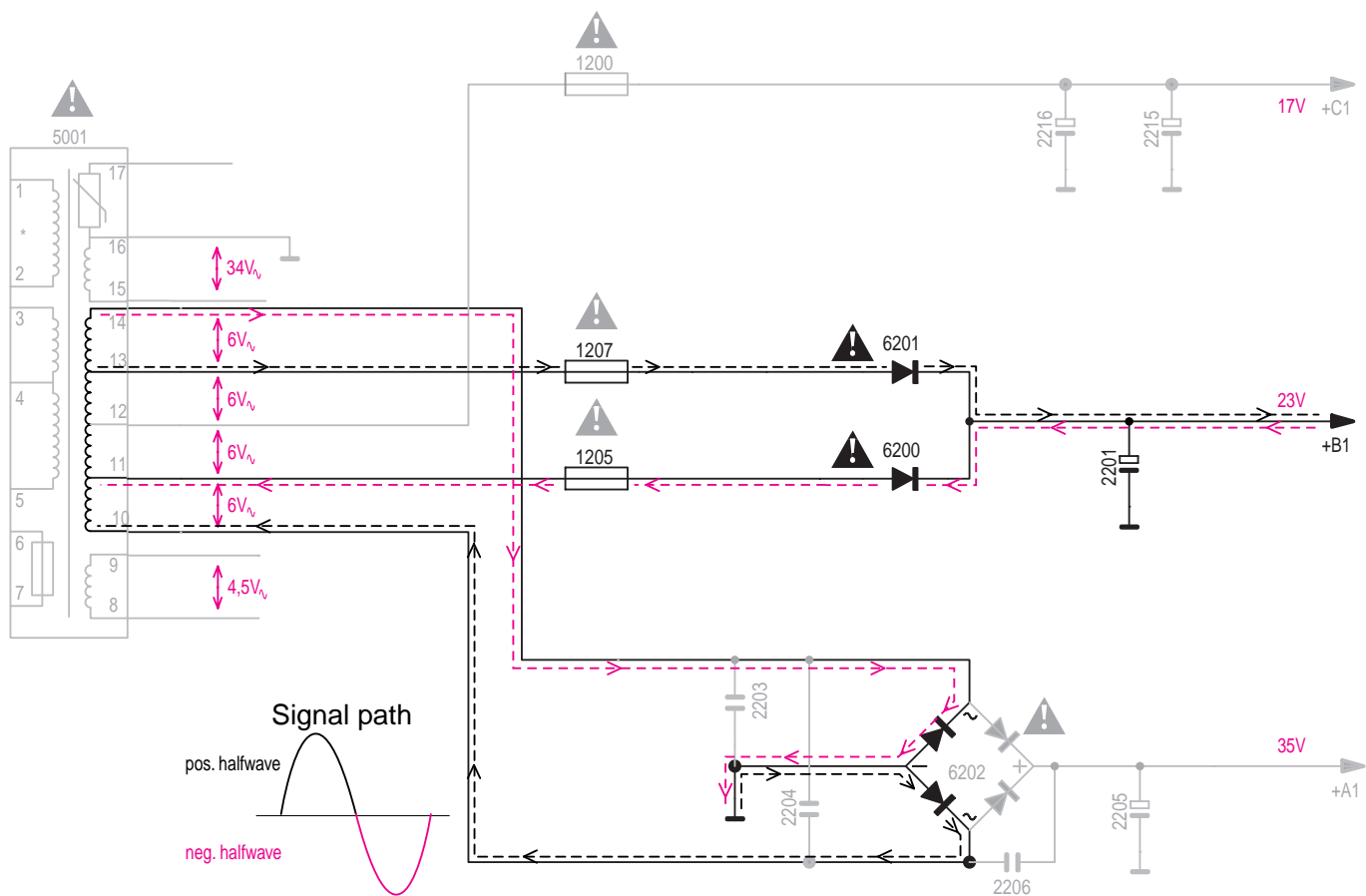
These voltages supply the Super Class G amplifier, described on previous page. The whole power supply is optimized for the special characteristic of this type of amplifier. For that reason several “tricky” details have been applied to ensure optimal efficiency and symmetrical load to the mains transformer.

Generation of +A1

Common full wave rectifying with bridge rectifier 6202, using 100% secondary winding of mains transformer (pin 10-14).

Generation of +B1

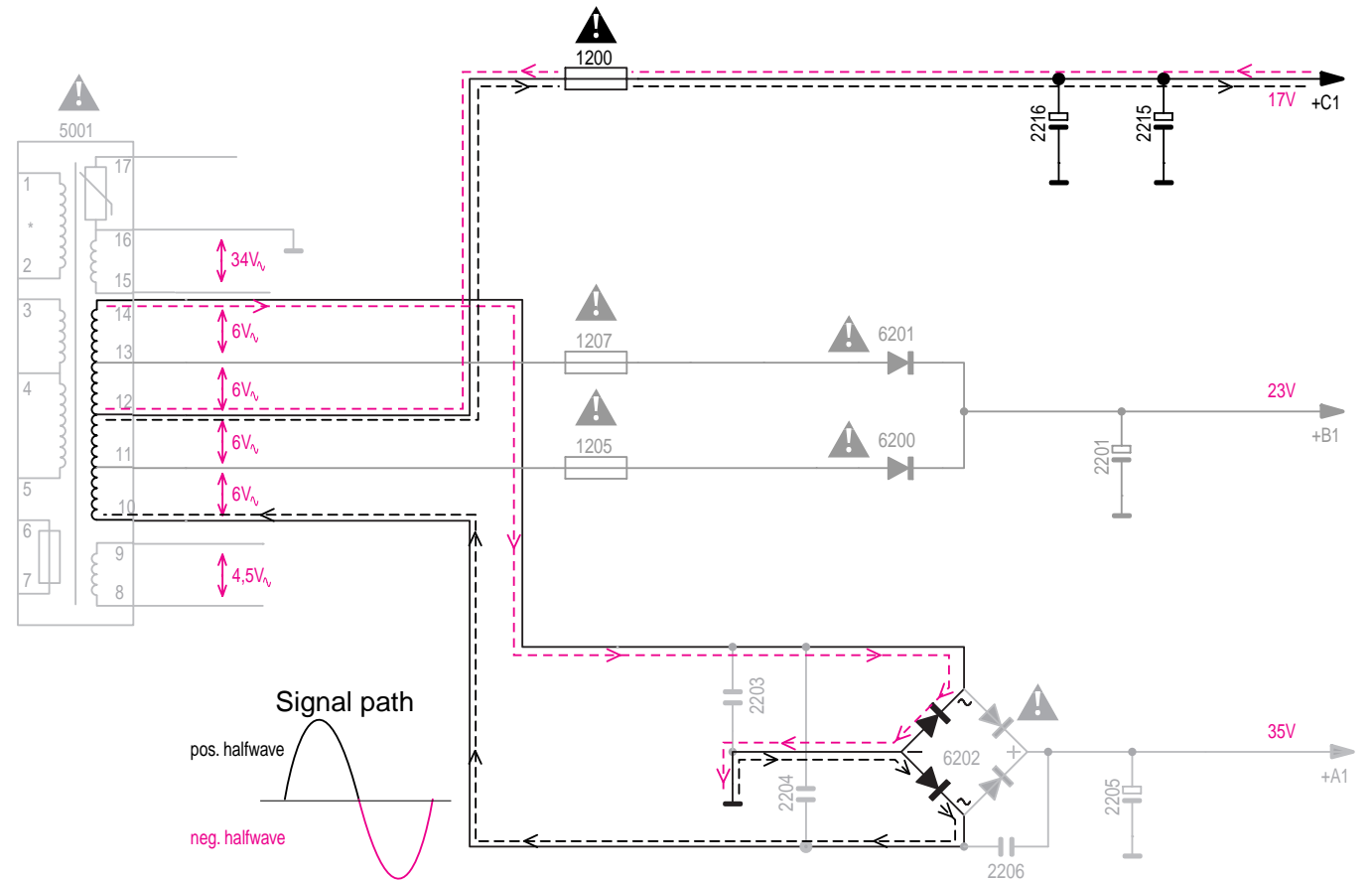
The supply for +B1 consists of one full wave rectifier: – 2 diodes of bridge rectifier 6202, with 6200, 6201 for generation of +B1 using approx. 70% secondary winding of mains transformer (pin 10-13 respectively pin 11-14). As example for generation of +B1 see picture 1.



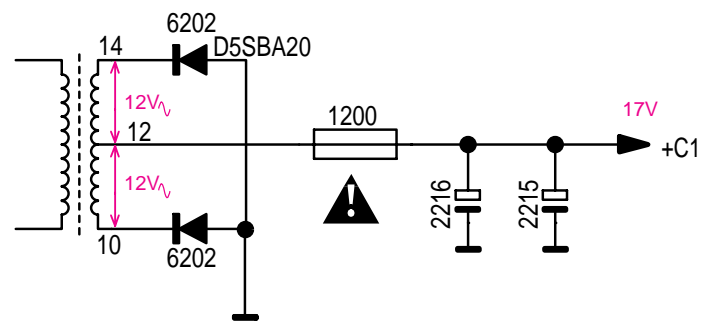
picture 1

Generation of +C1

Full wave rectifying with 2 diodes of bridge rectifier 6202, using 50% secondary winding of mains transformer (pin 12-14/12-10). See picture 2 below.

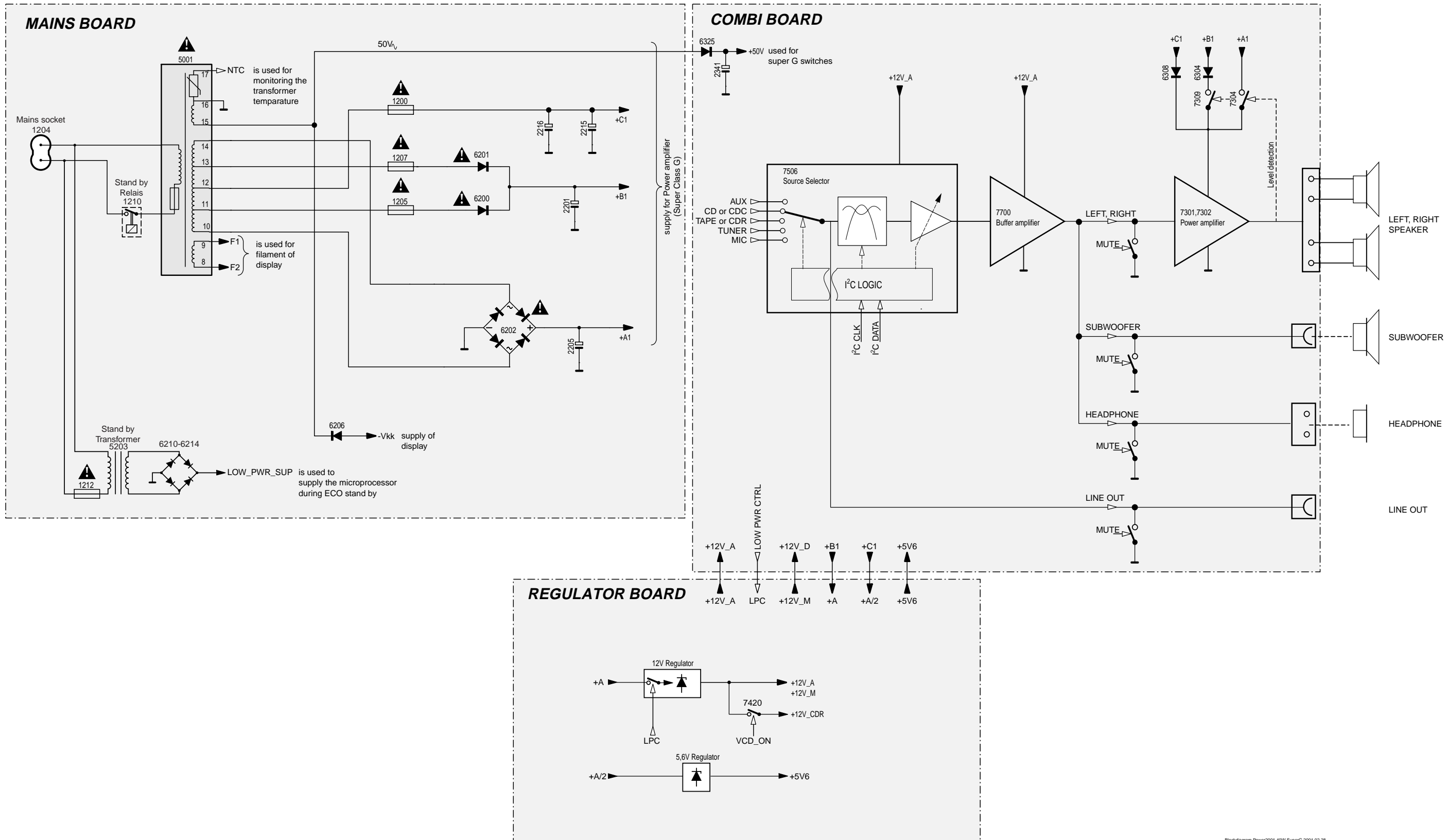


simplified:

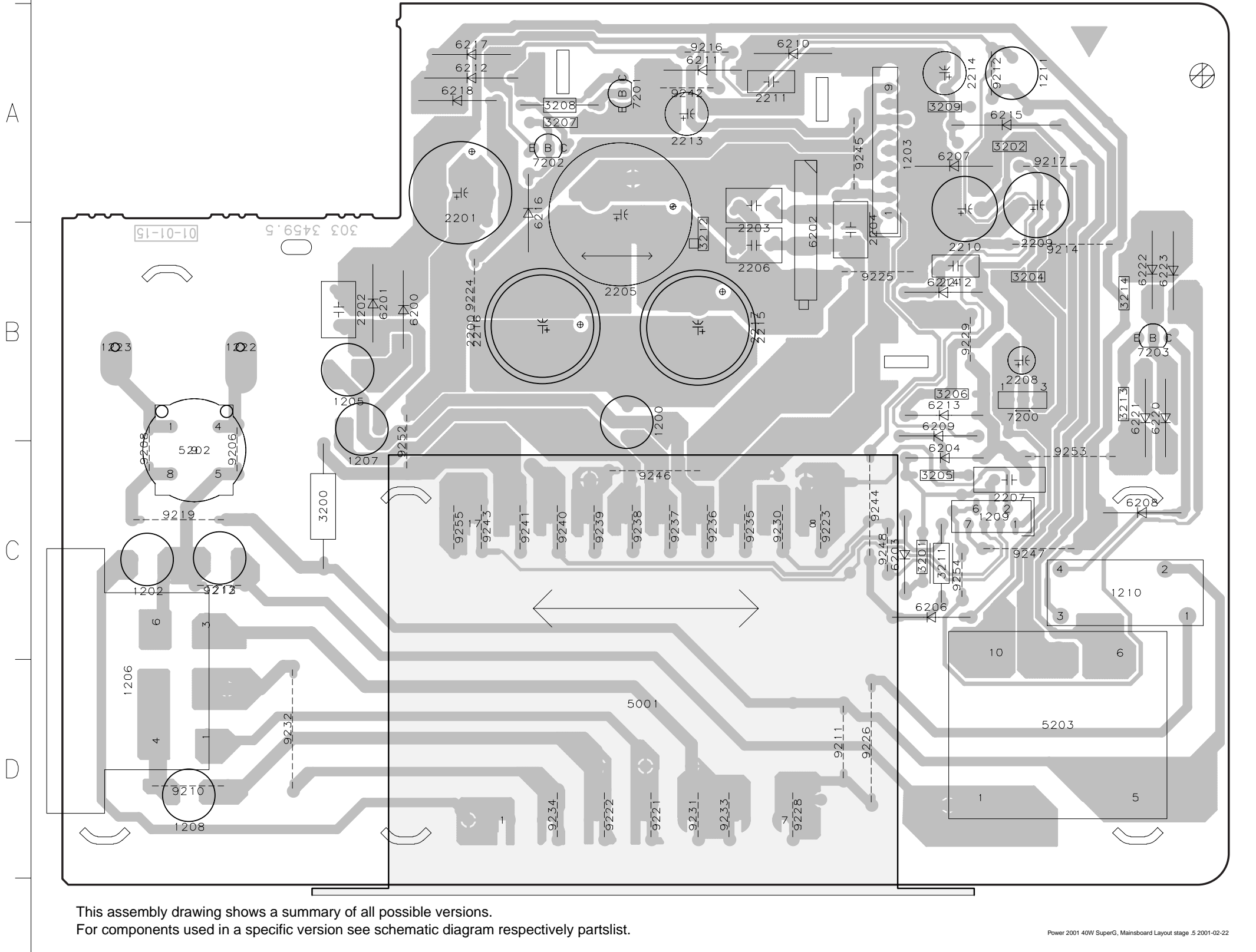


picture 2

Blockdiagram Power 2001 40W Super-G



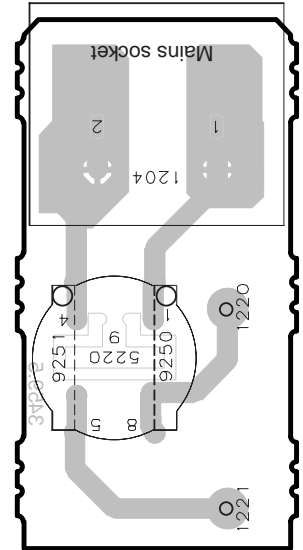
Mains Board Copperside view



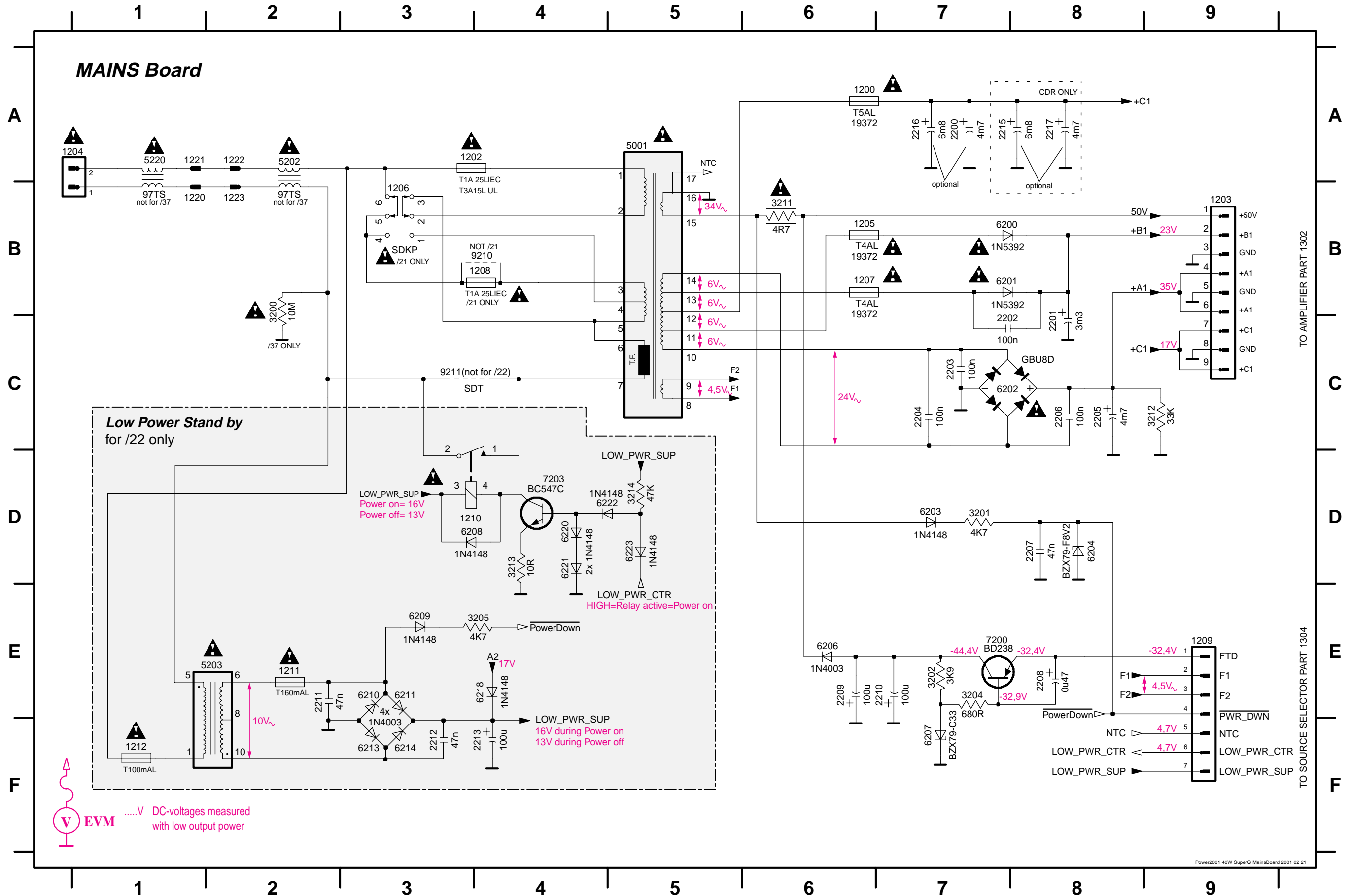
1200	B3	9217	A5
1202	C1	9219	C1
1203	A4	9221	D3
1205	B2	9222	D3
1206	D1	9223	C4
1207	C2	9224	B2
1208	D1	9225	B4
1209	C5	9226	D4
1210	C5	9228	D4
1211	A5	9229	B5
1212	C1	9230	C4
1222	B1	9231	D3
1223	B1	9232	D2
2200	B3	9233	D4
2201	A2	9234	D3
2202	B2	9235	C4
2203	A4	9236	C3
2204	B4	9237	C3
2205	A3	9238	C3
2206	B4	9239	C3
2207	C5	9240	C3
2208	B5	9241	C3
2209	A5	9242	A4
2210	B5	9243	C2
2211	A4	9244	C4
2212	B5	9245	A4
2213	A3	9246	C3
2214	A5	9247	C5
2215	B4	9248	C4
2216	B3	9252	B2
2217	B4	9253	C5
3200	C2	9254	C5
3201	C4	9255	C2
3202	A5		
3204	B5		
3205	C4		
3206	B5		
3207	A3		
3208	A3		
3209	A5		
3211	C5		
3212	B3		
3213	B5		
3214	B5		
5001	D3		
5202	B1		
5203	D5		
6200	B2		
6201	B2		
6202	A4		
6203	C4		
6204	C5		
6206	C4		
6207	A5		
6208	C5		
6209	B5		
6210	A4		
6211	A3		
6212	A2		
6213	B5		
6214	B5		
6215	A5		
6216	A3		
6217	A2		
6218	A2		
6220	B5		
6221	B5		
6222	B5		
6223	B5		
7200	B5		
7201	A3		
7202	A3		
7203	B5		
9206	C1		
9208	C1		
9210	D1		
9211	D4		
9212	A5		
9213	C1		
9214	B5		
9216	A3		

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

Mains Socket



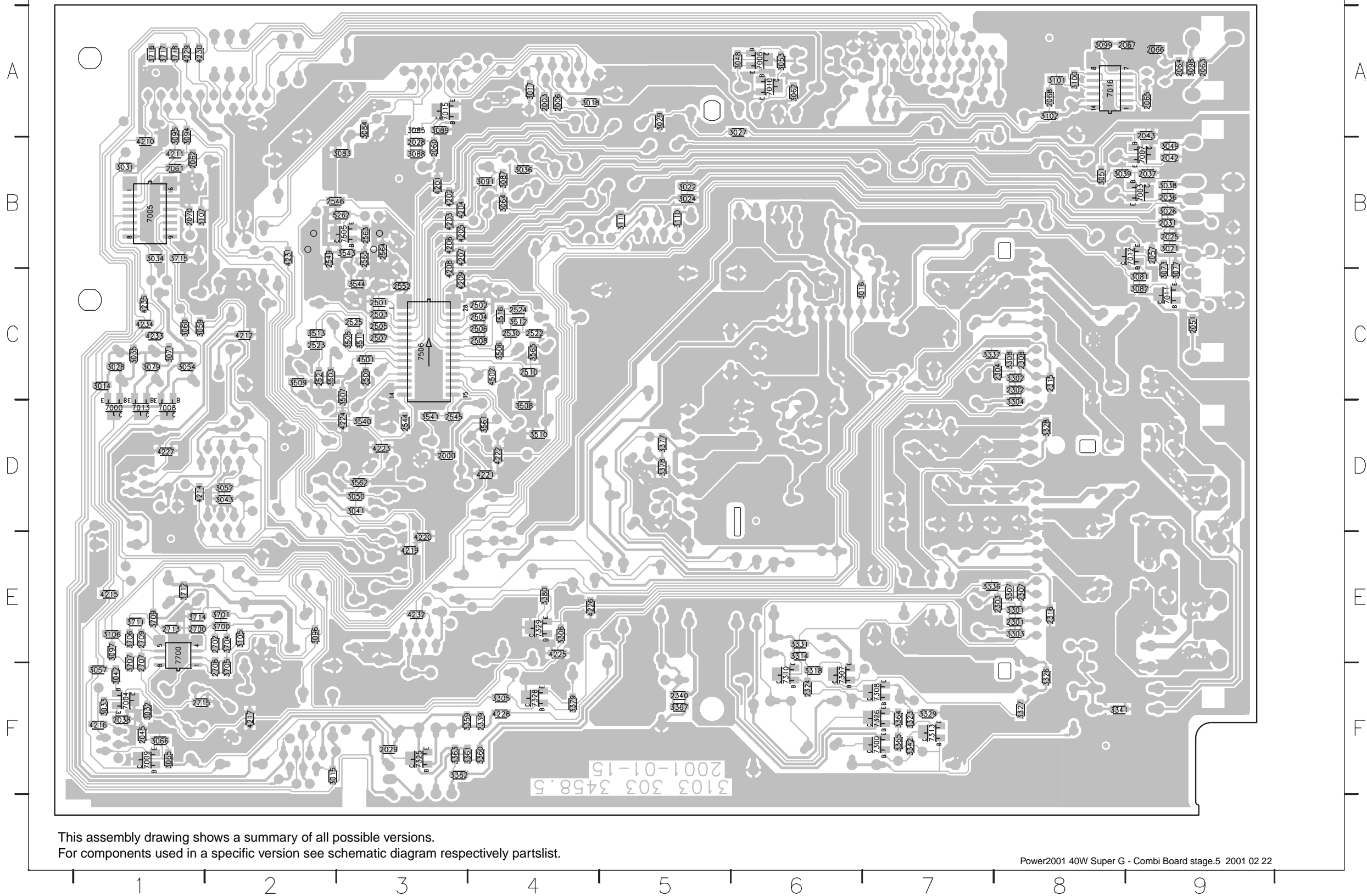
1200 A6	1208 B4	1223 B2	2205 D8	2211 E2	2217 A8	3206 E3	3213 D4	6201 B7	6208 D3	6214 E3	6221 D4	7203 D4	9213 E1
1202 A3	1209 E9	2200 A7	2206 D8	2212 E3	3200 C2	3207 E4	3214 C5	6202 C7	6209 E4	6215 F2	6222 C5	9206 A2	9214 E5
1203 B9	1210 D3	2201 C8	2207 D8	2213 E4	3201 D6	3208 F4	5001 C5	6203 D6	6210 E3	6216 F4	6223 D5	9208 B2	9242 E5
1205 B6	1211 E2	2202 C7	2208 E8	2214 F3	3202 E7	3209 F3	5202 A2	6204 D9	6211 E3	6217 F5	7200 D7	9210 B4	
1206 B3	1212 E1	2203 C7	2209 E6	2215 A7	3204 E7	3211 E6	5203 E1	6206 E6	6212 E5	6218 F5	7201 E4	9211 C3	
1207 B6	1222 A2	2204 D7	2210 E7	2216 A7	3205 E4	3212 D9	6200 B7	6207 E7	6213 E3	6220 D4	7202 F4	9212 D2	



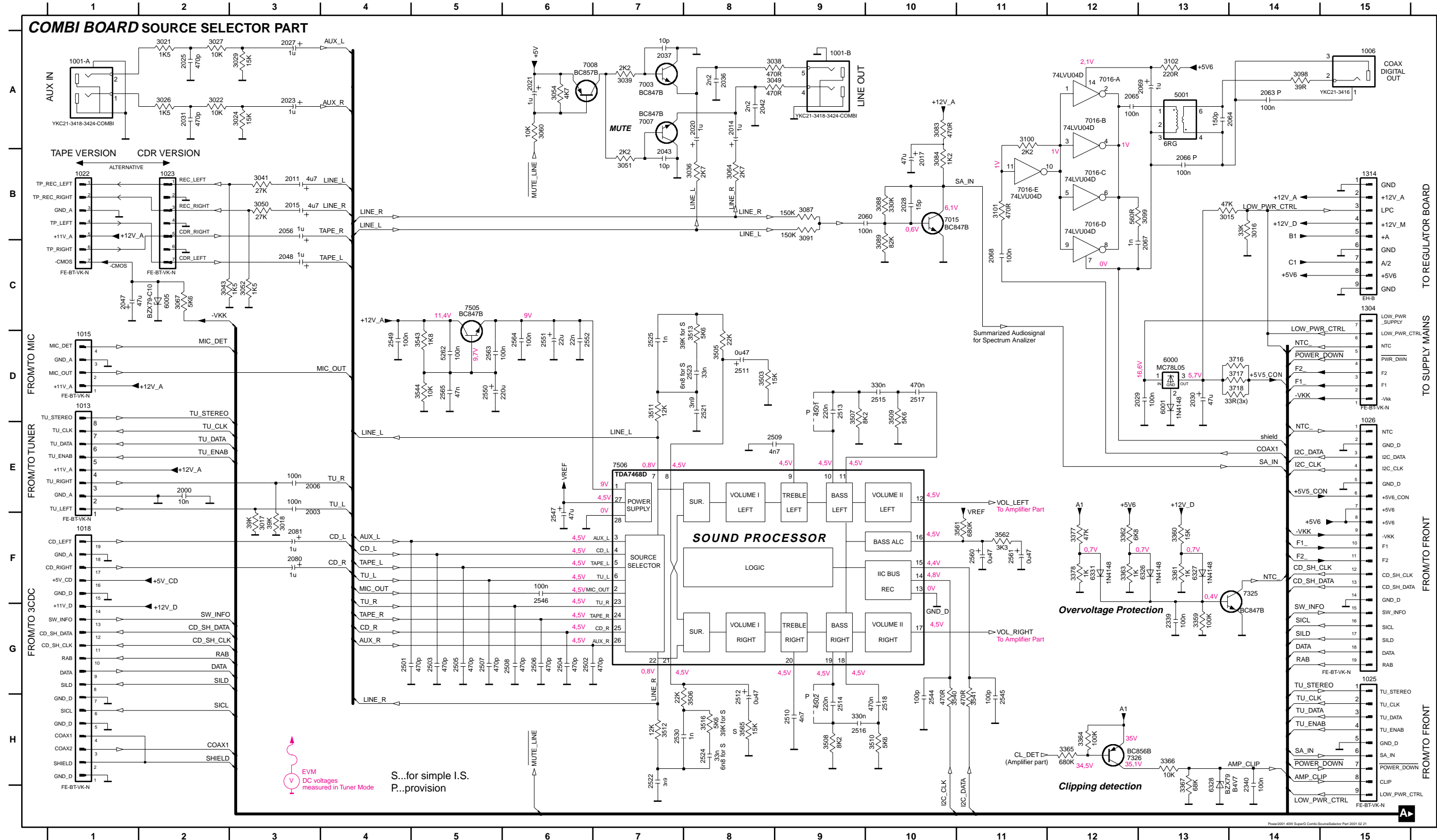
COMBI BOARD

2000 D3	2042 B9	2065 A9	2308 C8	2505 C3	2525 C3	2700 E1	3017 A4	3032 F1	3048 A6	3062 A6	3083 B3	3097 E1	3111 B5	3318 F6	3342 F7	3378 D5	3511 C3	3565 C4	3714 E1	4206 B3	4217 F2	4228 F4	5262 B3	7011 C9	7325 F3
2003 A4	2043 A9	2066 A9	2315 C8	2506 C4	2530 C4	2702 E2	3018 A4	3033 F1	3049 B9	3064 B4	3084 A3	3098 A9	3301 E8	3323 F7	3359 F3	3379 F4	3512 C4	3700 E2	3715 B1	4207 B3	4219 E3	4229 A1	7000 D1	7012 B9	7326 F7
2006 A4	2045 F1	2067 A9	2316 E8	2507 C3	2544 D3	2706 F2	3021 B9	3034 B1	3050 D3	3065 F1	3085 A3	3099 A8	3302 C8	3326 F8	3360 F4	3380 E4	3513 C2	3701 E2	3716 A1	4208 C3	4220 E3	4230 A1	7003 B9	7013 D1	7328 F4
2025 B9	2051 C9	2068 A8	2324 F6	2508 C4	2545 D3	2707 F1	3022 B5	3035 C1	3051 B8	3066 F1	3087 B4	3100 A8	3303 E8	3327 F8	3361 F3	3503 C2	3516 C4	3704 E2	3717 A1	4209 C3	4221 D4	4231 B2	7004 F1	7015 A3	7329 E4
2028 B3	2057 B9	2070 B1	2339 F4	2509 C3	2546 B2	2709 E1	3024 B5	3036 B4	3052 D2	3071 C1	3088 B3	3101 A8	3304 D8	3328 D8	3362 F3	3505 C3	3540 D3	3705 F2	3718 A1	4210 B1	4222 D4	4232 E3	7005 B1	7016 A8	7505 B3
2029 F3	2060 B3	2301 E8	2340 F5	2510 C4	2549 B2	2713 E1	3026 B9	3038 B9	3053 A6	3073 C9	3089 A3	3102 A8	3305 F4	3329 F7	3363 F3	3506 C4	3541 D3	3706 E1	4201 B3	4211 B1	4223 D3	4233 C1	7006 A6	7300 F7	7506 C3
2031 B9	2061 B1	2302 C8	2501 C3	2521 C2	2552 C3	2715 F1	3027 A6	3039 B8	3054 C1	3077 C9	3081 B4	3105 E2	3306 E4	3331 E6	3364 F7	3507 C3	3543 B3	3707 F1	4202 B3	4212 C2	4224 D3	4234 C1	7007 B9	7307 F6	7700 E1
2036 B9	2062 B1	2303 E8	2502 C4	2522 C4	2563 B3	3014 C1	3028 C1	3041 D3	3057 F1	3079 C1	3084 A1	3106 E1	3307 E8	3336 E7	3365 F7	3508 D4	3544 C3	3709 E1	4203 B3	4214 D1	4225 E4	4235 C1	7008 D1	7308 F7	
2037 B9	2063 A9	2304 C8	2503 C3	2523 C2	2564 B3	3015 F2	3029 A5	3042 F1	3059 C1	3081 C9	3085 A1	3107 B1	3308 C8	3337 C7	3367 F5	3509 C2	3561 D4	3711 E1	4204 B3	4215 F1	4226 E4	4501 C3	7009 F1	7310 F6	
2038 F1	2064 A9	2307 E8	2504 C4	2524 C4	2565 B3	3016 C6	3031 B1	3043 D2	3060 C1	3082 C9	3086 E2	3110 B5	3314 E6	3341 F8	3377 D5	3510 D4	3562 D3	3712 E1	4205 B3	4216 F1	4227 D1	4502 C4	7010 A6	7313 F7	

Copperside view



1001-A	A1	1314	B15	2027	A3	2063	A14	2503	G5	2516	H9	2549	D4	3021	A2	3051	B7	3098	A14	3365	H12	3512	H7	4501	D9	7008	A6
1001-B	A9	1316	A4	2028	B10	2064	A13	2504	G6	2517	D10	2550	D5	3022	A3	3052	B3	3099	B13	3366	H13	3513	D8	4502	H9	7015	B10
1002	A15	2000	E2	2029	D13	2065	A12	2505	G5	2518	H10	2551	D6	3024	A3	3054	A6	3100	A11	3367	H13	3516	H8	5001	A13	7016-A	A12
1006	A15	2003	E3	2030	D13	2066	B13	2506	G6	2521	D8	2552	D6	3026	A2	3060	A6	3101	B11	3377	G12	3540	H10	5262	D5	7016-B	A12
1013	D1	2006	E3	2031	A2	2067	C13	2507	G5	2522	H7	2560	D11	3027	A3	3064	B8	3102	A13	3378	G12	3541	H11	6000	D13	7016-C	B12
1015	D1	2011	B3	2036	A8	2068	C11	2508	G6	2523	D8	2561	D11	3029	A3	3067	C2	3110	A3	3503	D8	3543	D5	6001	D13	7016-D	B12
1018	F1	2014	A8	2037	A7	2069	A13	2509	E8	2524	H8	2563	D5	3036	B8	3083	B9	3111	A3	3505	D8	3544	D5	6005	C2	7016-E	B11
1020	H13	2015	B3	2042	A8	2080	F3	2510	H9	2525	D7	2564	D6	3038	A8	3084	B9	3359	G13	3506	H8	3561	D10	6326	G13	7016-F	A11
1022	B1	2017	B9	2043	B7	2081	F3	2511	D8	2530	H7	2565	D5	3039	A7	3085	B10	3360	F13	3507	D9	3562	D11	6327	G13	7325	G14
1023	B2	2020	A8	2047	C1	2339	G13	2512	H8	2544	H10	3015	D14	3041	B3	3087	B9	3361	G13	3508	H9	3565	H8	6328	H13	7326	H12
1025	G15	2021	A6	2048	C3	2340	H14	2513	D9	2545	H11	3016	D14	3043	A2	3088	B10	3362	F13	3509	D10	3716	D14	6331	G12	7505	C5
1026	E15	2023	A3	2056	B3	2501	G4	2514	H9	2546	F6	3017	E3	3049	A8	3089	C10	3363	G12	3510	H10	3717	E14	7003	A7	7506	E7
1304	C15	2025	A2	2060	B9	2502	G6	2515	D10	2547	E6	3018	E3	3050	B3	3091	C9	3364	H12	3511	D7	3718	E14	7007	A7		



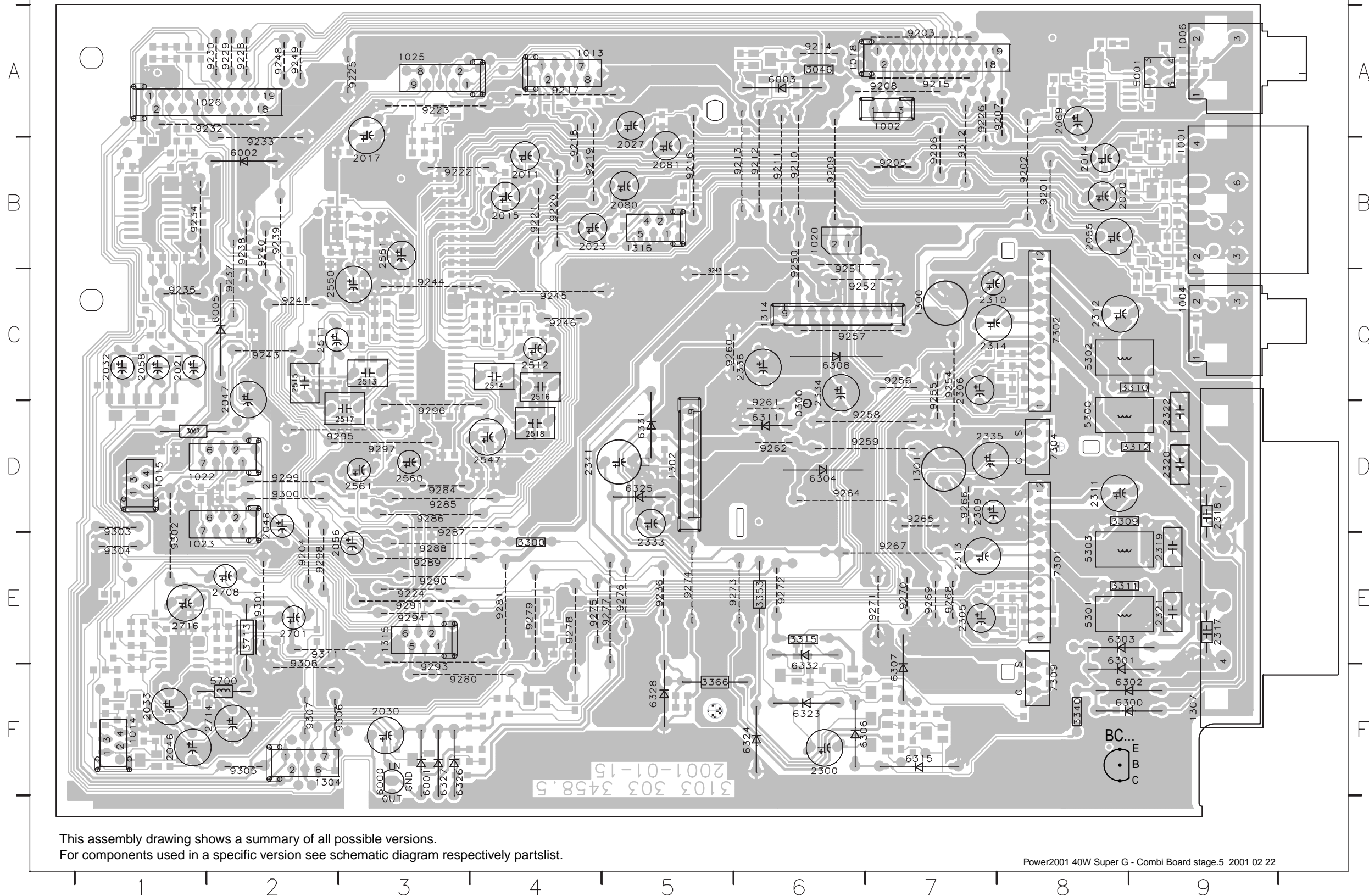
EVM
DC voltages
measured in Tuner Mode

S...for simple I.S.
P...provision

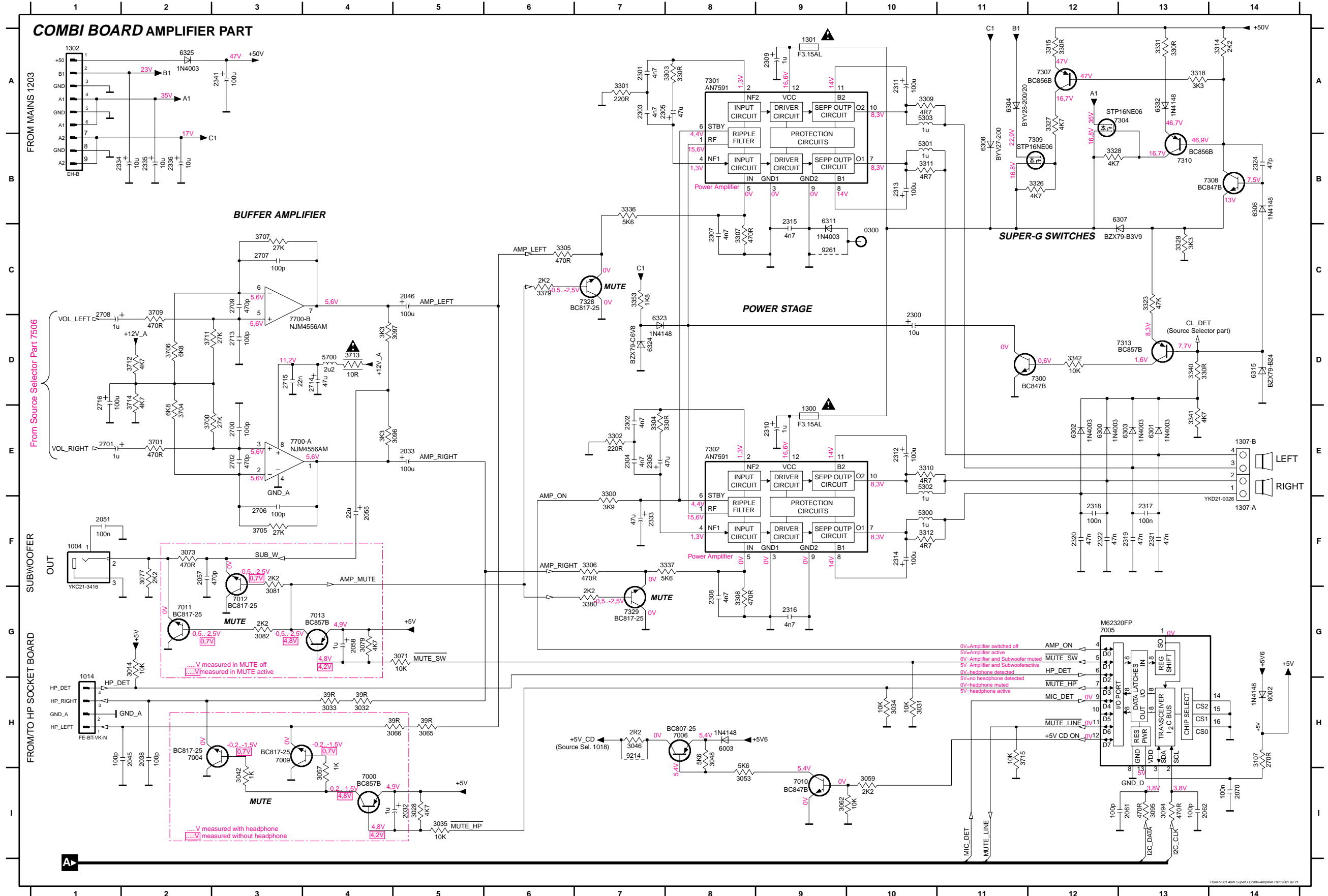
COMBI BOARD

0300 D6	1022 D1	1315 E3	2030 F3	2080 B5	2314 C7	2336 C6	2547 D4	3067 D1	3713 E2	6003 A6	6311 D6	7301 E8	9207 A8	9217 A4	9228 A2	9239 B2	9250 B6	9261 D6	9272 E6	9284 D3	9295 D3	9305 F2
1001 B9	1023 E1	1316 B5	2032 C1	2081 B5	2317 E9	2341 D4	2550 C2	3300 E4	5001 A9	6005 C2	6315 F7	7302 C8	9208 A7	9218 B4	9229 A2	9240 B2	9251 C6	9262 D6	9273 E5	9285 D3	9296 D3	9306 F3
1002 A7	1025 A3	2011 B4	2033 F1	2300 F6	2318 D9	2511 C2	2551 B3	3309 D8	5300 D8	6300 F9	6323 F6	7304 D8	9209 B6	9219 B4	9230 A2	9241 C2	9252 C6	9263 D6	9274 E5	9286 D3	9297 D3	9307 F2
1004 C9	1026 A2	2046 B8	2046 F1	2305 E7	2319 E9	2512 C4	2560 D3	3310 C9	5301 E8	6301 E8	6324 F6	7309 F8	9210 B6	9220 B4	9232 A2	9243 C2	9254 C7	9265 D7	9275 E4	9287 D3	9298 E2	9308 F2
1006 A9	1300 C7	2015 B4	2047 C2	2306 C7	2320 D9	2513 C3	2561 D3	3311 E8	5302 C8	6302 F9	6325 D5	7301 B8	9211 B6	9221 B4	9233 B2	9244 C3	9255 C7	9266 D7	9276 E5	9288 E3	9299 E2	9309 F2
1013 A4	1301 D7	2017 B3	2048 D2	2309 D7	2321 E9	2514 C4	2701 E2	3312 D9	5303 E8	6303 E8	6326 F3	7302 F8	9212 B6	9222 B3	9234 B1	9245 C4	9256 C7	9267 E7	9277 E5	9289 E3	9300 D2	9311 E2
1014 F1	1302 D5	2020 B8	2055 B8	2310 C7	2322 D9	2515 C2	2708 E2	3315 E6	5700 F2	6304 D6	6327 F3	7303 A7	9213 B6	9223 A3	9235 C1	9246 C4	9257 C6	9268 E7	9278 E4	9290 E3	9301 E2	9312 B7
1015 D1	1304 F2	2021 C1	2056 E2	2311 D8	2333 E5	2516 C4	2714 F2	3340 F8	6000 F3	6306 F6	6328 F5	7304 E2	9214 A6	9224 E3	9236 E5	9247 C5	9258 D7	9269 E7	9279 E4	9291 F3	9302 E1	
1018 A6	1307 F9	2023 B4	2058 C1	2312 C8	2334 C6	2517 D3	2716 E1	3353 E6	6001 F3	6307 F7	6331 D5	7305 B7	9215 A7	9225 A3	9237 C2	9248 A2	9259 D6	9270 E7	9280 F3	9293 F3	9303 D1	
1020 B6	1314 C6	2027 B5	2069 A8	2313 E7	2335 D7	2518 D4	3046 A6	3366 F5	6002 B2	6308 C6	6332 F6	7306 B7	9216 B5	9226 A7	9238 B2	9249 A2	9260 C5	9271 E7	9281 E4	9294 E3	9304 E1	

Hole mounted components seen from copperside

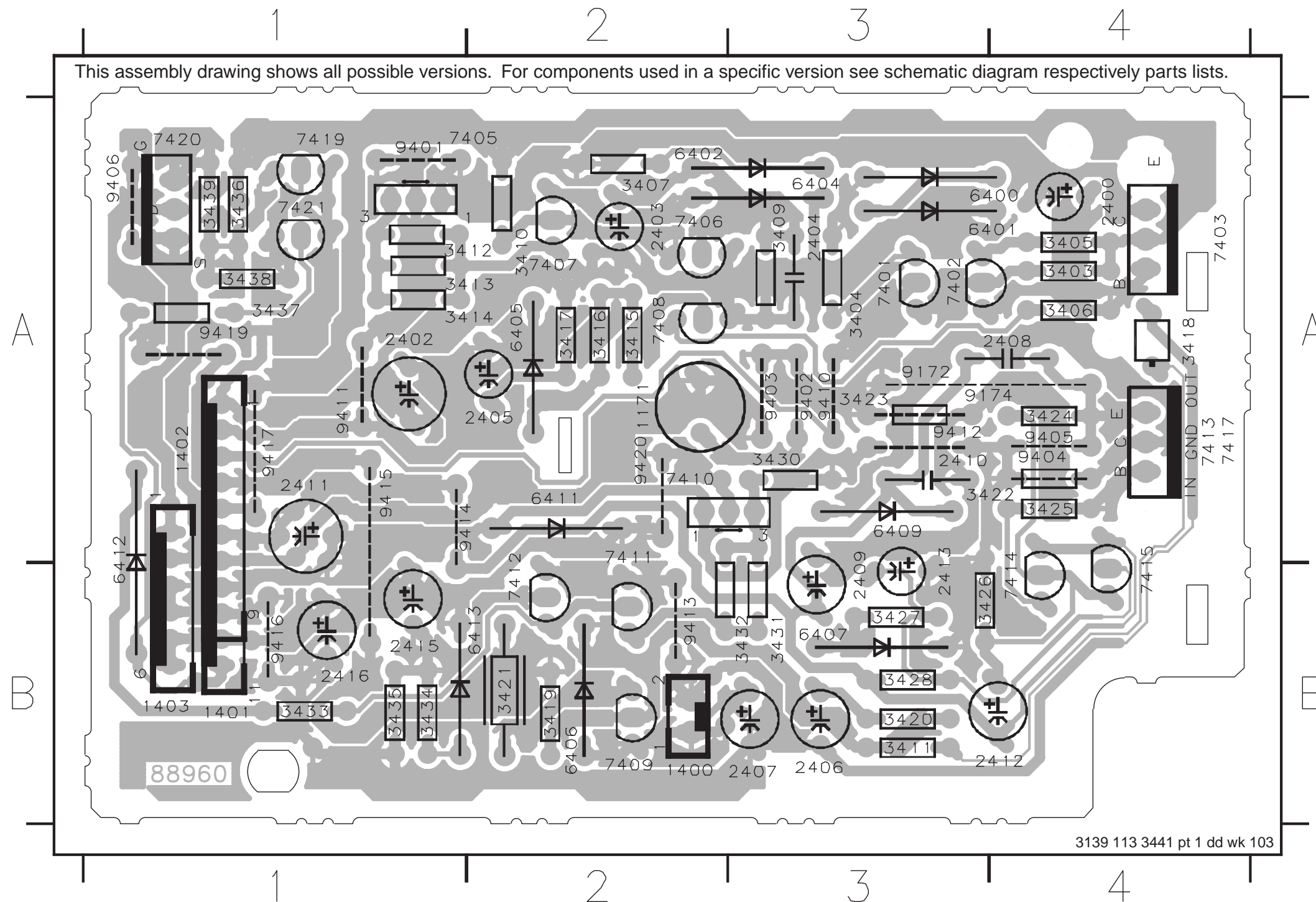


0300	C10	2033	E5	2070	I14	2309	A9	2319	F13	2341	A3	2715	D4	3046	H7	3077	F2	3107	H14	3309	A10	3328	B12	3365	D12	3707	C3	5303	A10	6307	B13	7004	H2	7302	E8	7700-A	E3
1004	F1	2038	H2	2300	D9	2310	E9	2320	F12	2700	E3	2716	D1	3048	I8	3079	G4	3300	F7	3310	E10	3329	C13	3366	C13	3709	D2	5700	D3	6308	B11	7005	G12	7304	A13	7700-B	D3
1014	G1	2045	H2	2301	A7	2311	A10	2321	F13	2701	E1	3014	G2	3053	I8	3081	G3	3301	A7	3311	B10	3331	A13	3367	C14	3711	D2	6002	H14	6311	B9	7006	I8	7307	A12	9214	I7
1300	E9	2046	C5	2302	E7	2312	E10	2322	F12	2702	E3	3028	I5	3057	H4	3082	G3	3302	E7	3312	F10	3336	B7	3379	C6	3712	D2	6003	H8	6315	D14	7009	H3	7308	B14	9261	C9
1301	A9	2051	F1	2303	A7	2313	B10	2324	B14	2706	F3	3031	H10	3059	I10	3094	I13	3303	A8	3314	A14	3337	F8	3380	G7	3713	D4	6300	E12	6323	D7	7010	I9	7309	B12		
1302	A1	2055	F4	2304	E7	2314	F10	2333	F7	2707	C3	3032	H4	3062	I9	3095	I13	3304	E7	3315	A12	3340	D13	3700	E2	3714	D2	6301	E13	6324	D7	7011	G2	7310	B13		
1307-A	F14	2057	F2	2305	A7	2315	B9	2334	B1	2708	D1	3033	H4	3065	H5	3096	E4	3305	C6	3318	A13	3341	E13	3701	E2	3715	H11	6302	E12	6325	A2	7012	G3	7313	D13		
1307-B	E14	2058	G4	2306	E7	2316	G9	2335	B2	2709	C3	3034	H10	3066	H5	3097	D4	3306	F7	3323	C13	3342	D12	3704	E2	5300	F10	6303	E13	6328	C13	7013	G4	7326	C12		
1315	B1	2061	I13	2307	C8	2317	F13	2336	B2	2713	D3	3035	I5	3071	G4	3105	C2	3307	C8	3326	B12	3353	C7	3705	F3	5301	B10	6304	A11	6332	A13	7300	D11	7328	C6		
2032	I5	2062	I13	2308	G8	2318	F12	2340	C14	2714	E3	3042	H3	3073	F2	3106	C2	3308	G8	3327	A12	3364	C12	3706	D2	5302	E10	6306	B14	7000	H4	7301	A8	7329	G7		



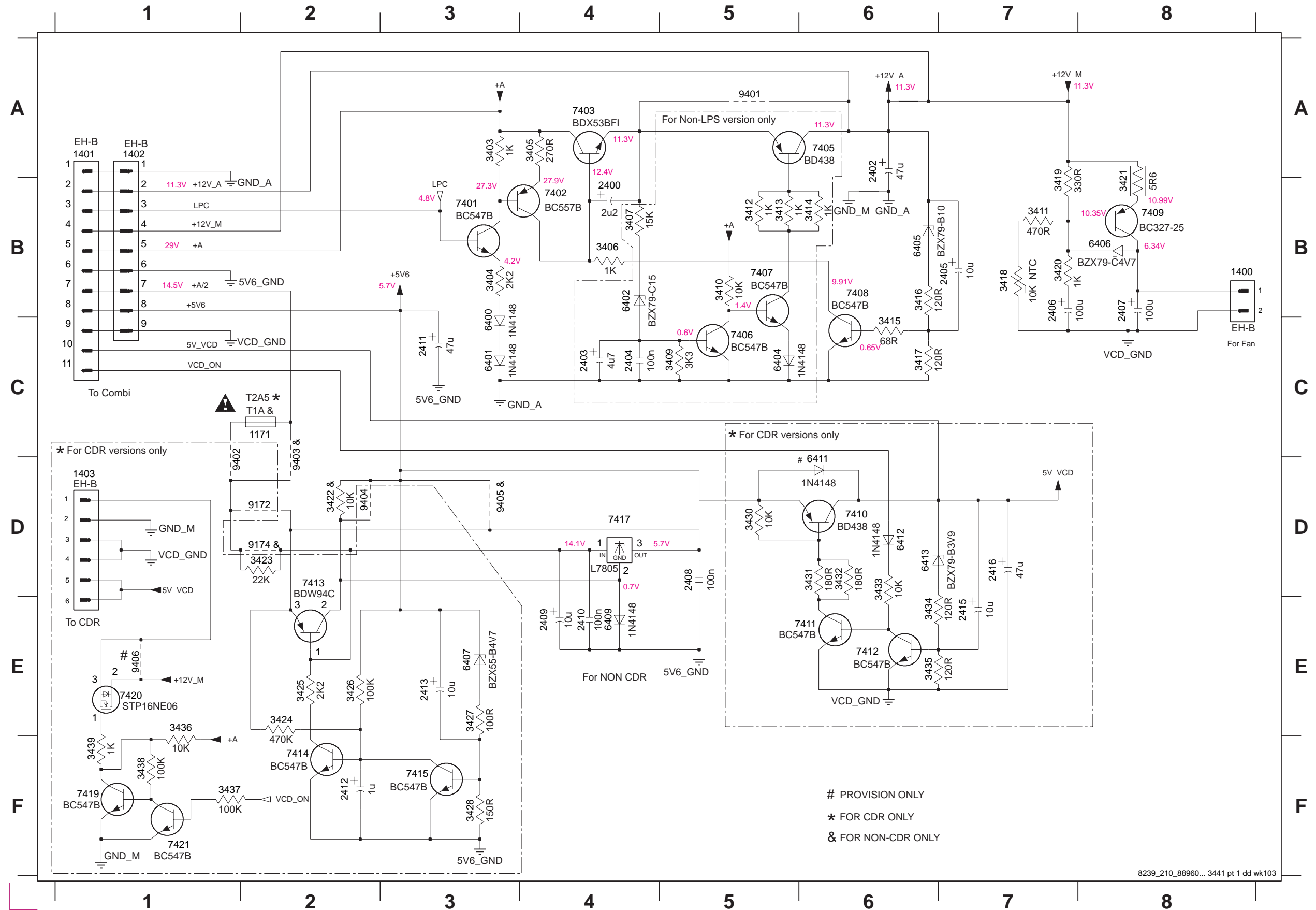
Regulator Board (Copperside view)

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		



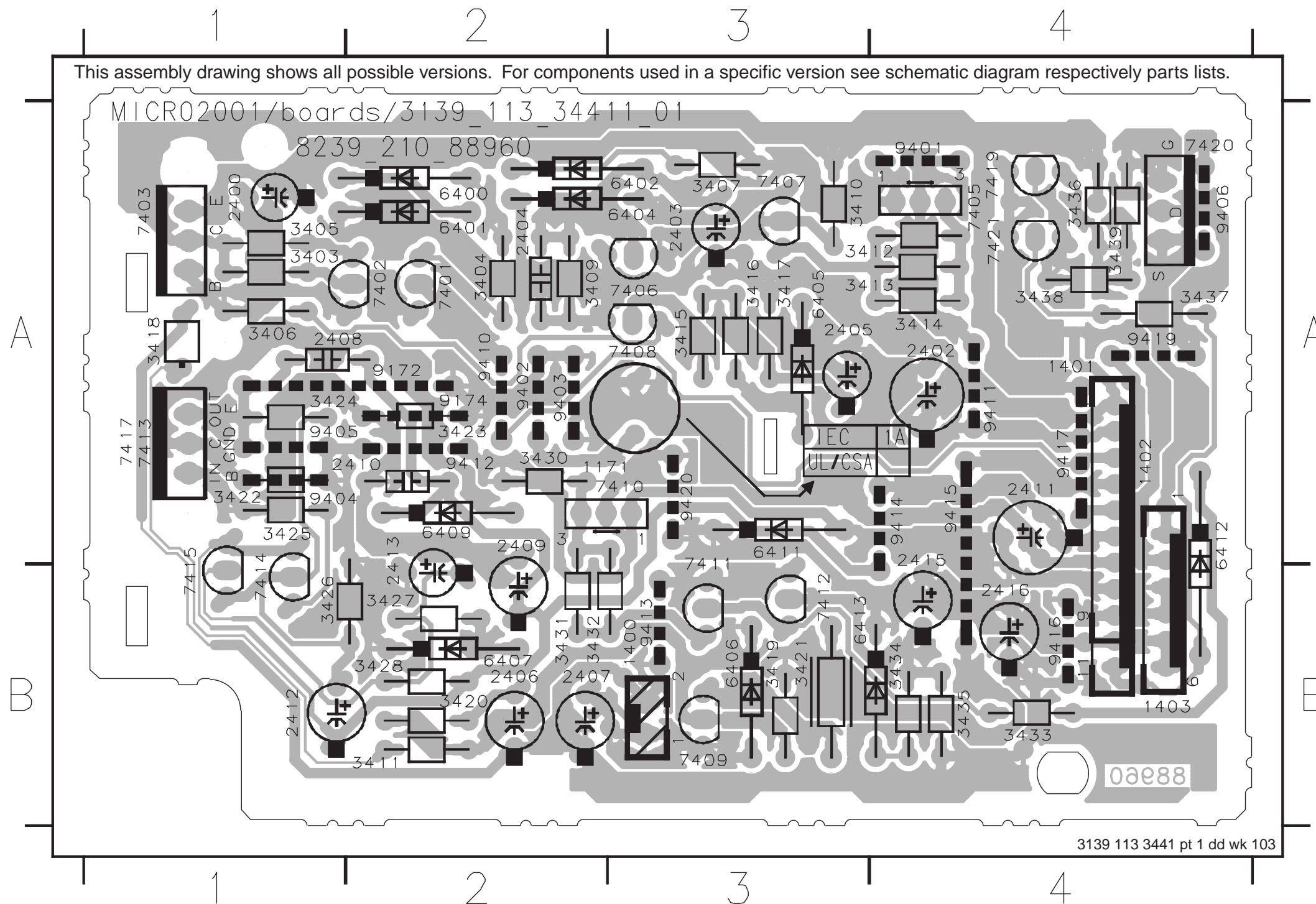
Circuit Diagram Regulator Board

1171 C2	1403 D1	2404 C4	2408 D5	2412 F2	3403 A3	3407 B4	3412 B5	3416 B6	3420 B7	3424 E2	3428 F3	3433 D6	3437 F1	6401 C3	6406 B8	6412 D6	7403 A4	7408 B6	7412 E6	7417 D4	9172 D2	9403 D2
1400 B8	2400 B4	2405 B7	2409 E4	2413 E3	3404 B3	3409 C5	3413 B5	3417 C6	3421 B8	3425 E2	3429 D5	3434 E6	3438 F1	6402 B4	6407 E3	6413 D6	7405 A6	7409 B8	7413 D2	7419 F1	9174 D2	9404 D2
1401 A1	2402 A6	2406 B7	2410 E4	2415 E7	3405 A4	3410 B5	3414 B6	3418 B7	3422 D2	3426 E2	3431 D6	3435 E6	3439 F1	6404 C5	6409 E4	7401 B3	7406 C5	7410 D6	7414 F2	7420 E1	9401 A5	9405 D3
1402 A1	2403 C4	2407 B8	2411 C3	2416 D7	3406 B4	3411 B7	3415 C6	3419 B7	3423 D2	3427 E3	3432 D6	3436 E1	6400 C3	6405 B6	6411 D6	7402 B4	7407 B5	7411 E6	7415 F3	7421 F1	9402 D1	9406 E1



Regulator Board (Componentside view)

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		



ELECTRICAL PARTSLIST POWER2001 40W Super-G Mains Board

MISCELLANEOUS

Table with 3 columns: Part Number, Description, and Value. Includes items like FUSE RAD 5A 250V IEC, RELAY 1P 12V, and MAINS TRANSFORMER /21.

CAPACITORS

Table with 5 columns: Part Number, Description, Value, Tolerance, and Voltage. Includes items like 4700µF 20% 25V, 3300µF 20% 35V, etc.

RESISTORS

Table with 5 columns: Part Number, Description, Value, Tolerance, and Voltage. Includes items like 10MΩ 5% 0,5W, 15kΩ 5% 0,5W, etc.

ELECTRICAL PARTSLIST POWER2001 40W Super-G Combi Board

MISCELLANEOUS

Table with 3 columns: Part Number, Description, and Value. Includes items like CINCH SOCKET, 2 POLE, FLEX FOIL CONNECTOR 19P, and FUSE F3.15A IEC 250V.

RESISTORS

Table with 6 columns: Part Number, Description, Value, Tolerance, and Voltage. Includes items like 4,7Ω 5% NFR, 33kΩ 1% 0,6W, etc.

COILS

Table with 4 columns: Part Number, Description, Value, and Voltage. Includes item 400µH.

DIODES

Table with 4 columns: Part Number, Description, Value, and Voltage. Includes items like 1N4003G, GBU8D, 1N4148, BZX79-B8V2, BZX79-B4V7, etc.

Table with 4 columns: Part Number, Description, Value, and Voltage. Includes items like 1N4003G, 1N4148, 1N4003G, etc.

Table with 4 columns: Part Number, Description, Value, and Voltage. Includes items like 1N4148, 1N4148, 1N4148.

DIODES

Table with 4 columns: Part Number, Description, Value, and Voltage. Includes item 1N4148.

TRANSISTORS

Table with 4 columns: Part Number, Description, Value, and Voltage. Includes items like BD238, BC547B.

CAPACITORS

Table with 6 columns: Part Number, Description, Value, Tolerance, and Voltage. Includes items like 10nF 10% 63V, 100nF 10% 16V, etc.

ELECTRICAL PARTSLIST POWER2001 40W Super-G Combi Board

CAPACITORS

Table with 6 columns: Part Number, Description, Value, Tolerance, and Voltage. Includes items like 100pF 5% 50V, 100pF 5% 50V, etc.

CAPACITORS

Table with 6 columns: Part Number, Description, Value, Tolerance, and Voltage. Includes items like 0,47µF 20% 50V, 0,47µF 20% 50V, etc.

RESISTORS

Table with 6 columns: Part Number, Description, Value, Tolerance, and Voltage. Includes items like 10kΩ 5% 0,06W, 47kΩ 1% 0,06W, etc.

ELECTRICAL PARTSLIST POWER2001 40W Super-G Regulator Board

MISCELLANEOUS

1171 ▲ 4822 071 51002 FUSE T1A

CAPACITORS

2400 4822 124 22652 2,2µF 20% 50V
2402 4822 124 40433 47µF 20% 25V
2403 4822 124 22726 4,7µF 20% 35V
2404 4822 126 12882 100nF 20% 50V
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 20% 50V
2409 4822 124 40248 10µF 20% 63V
2410 4822 126 12882 100nF 20% 50V

2411 4822 124 12233 47µF 20% 25V

RESISTORS

3403 4822 050 11002 1kΩ 5% 0,2W
3404 4822 116 52256 2,2kΩ 5% 0,16W
3405 4822 116 83876 270Ω 5% 0,16W
3406 4822 050 11002 1kΩ 5% 0,2W
3407 4822 116 52244 15kΩ 5% 0,5W

3409 4822 116 52269 3,3kΩ 5% 0,5W
3410 4822 050 21003 10kΩ 2% 0,25W
3411 4822 116 83883 470Ω 5% 0,16W
3412 4822 050 11002 1kΩ 5% 0,2W
3413 4822 050 11002 1kΩ 5% 0,2W

3414 4822 050 11002 1kΩ 5% 0,2W
3415 4822 116 52199 68Ω 5% 0,16W
3416 4822 116 52206 120Ω 5% 0,5W
3417 4822 116 52206 120Ω 5% 0,5W
3418 4822 117 12063 10kΩ NTC

3419 4822 116 52219 330Ω 5% 0,5W
3420 4822 050 11002 1kΩ 5% 0,2W
3421 4822 052 10568 5,6Ω 5% 0,33W
3422 4822 050 21003 10kΩ 2% 0,25W

DIODES

6400 4822 130 30621 1N4148
6401 4822 130 30621 1N4148
6402 4822 130 34281 BZX79-C15
6404 4822 130 30621 1N4148
6405 4822 130 61219 BZX79-C10

6406 4822 130 31981 BZX79-B3V9
6406 4822 130 34174 BZX79-B4V7
6409 4822 130 30621 1N4148

TRANSISTORS

7401 4822 130 40959 BC547B
7402 4822 130 44568 BC557B
7403 9322 139 23687 BDX53BFP
7405 4822 130 40995 BD438
7406 4822 130 40959 BC547B

7407 4822 130 40959 BC547B
7408 4822 130 40959 BC547B
7409 4822 130 41246 BC327-25

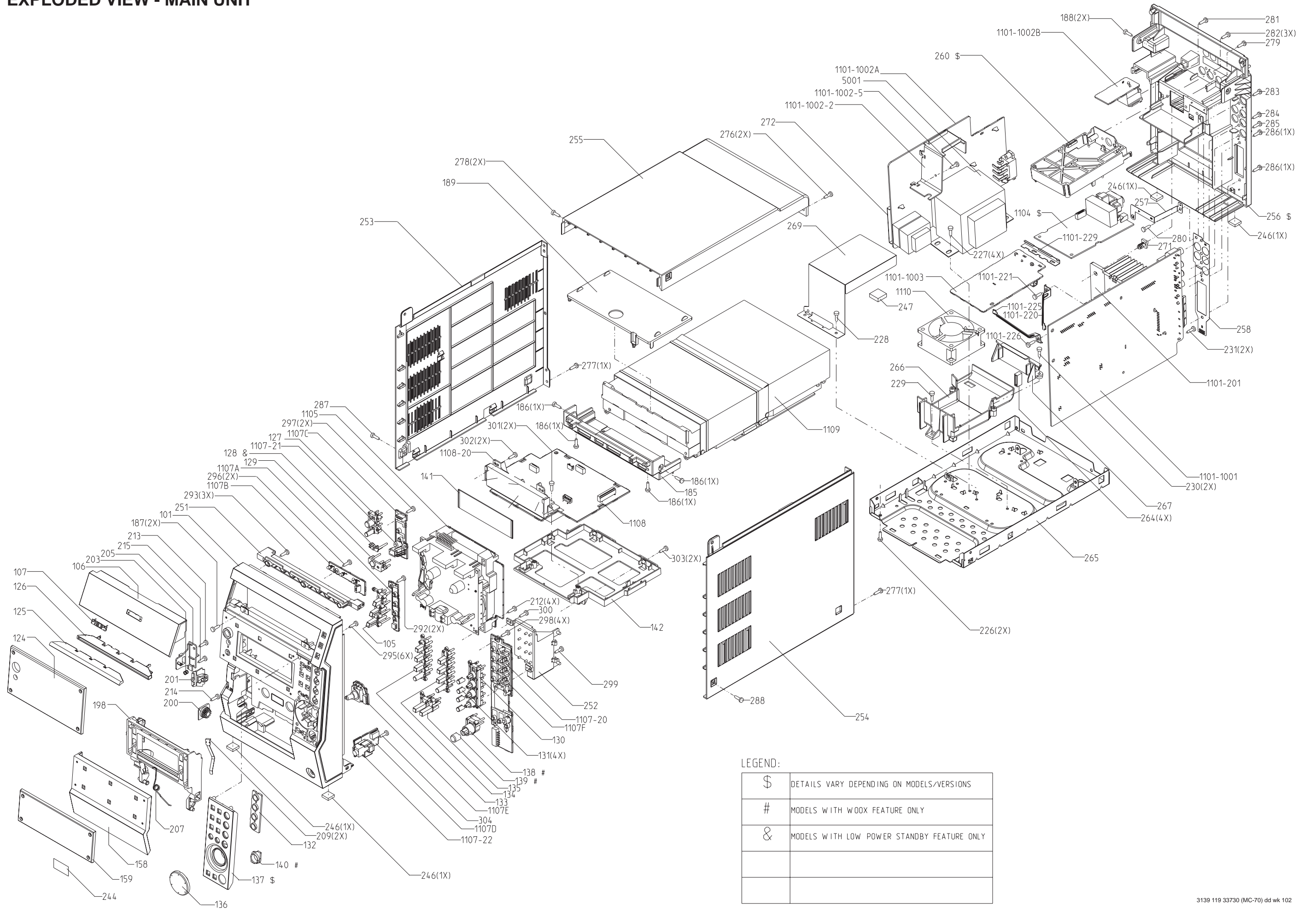
INTEGRATED CIRCUITS

7417 4822 209 31841 L7805CP, Voltage Regulator

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DO NOT PRINT

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

101	3139 118 15230	Cabinet Front /21/21M/37	385	2422 070 98151	△ Mains Cord /21/21M/22
101	3139 118 15220	Cabinet Front /22	385	2422 070 98152	△ Mains Cord /37
105	3139 118 14920	Button Set DTC Chrome	386	4822 263 21092	△ Adapter Plug 6A 250V /21
106	3139 118 15240	Cover Tray DTC	387	3139 115 20780	Instruction For Use /21/21M
107	4822 459 11086	Badge Name Philips	387	3139 115 20740	Instruction For Use /22
124	3139 118 15260	Window Display /21/21M/37	387	3139 115 20750	Instruction For Use /37
124	3139 118 15040	Window Display /22	1110	4822 361 11161	Cooling Fan KD1206PTS3
125	3139 114 71610	Lightguide Wash	1131	3139 110 34970	Flex Cable 19pin 18cm AD
126	3139 114 71620	Housing Lightguide Wash	1133	3139 110 35080	Flex Cable 9pin 18cm AD
127	3139 118 15010	Button Set Power Chrome	1134	3139 110 35240	Flex Cable 8pin 28cm AD
130	3139 114 71770	Button Set Source	1135	3139 110 35230	Flex Cable 7pin 22cm AD
131	3139 118 14990	Cap Source Chrome	1136	4822 320 12752	Flex Cable 7pin 18cm AD
133	3139 118 14960	Button Set Control Left	1137	3139 110 35250	Flex Cable 4pin 12cm AD
134	3139 118 14970	Button Set Control Right	1138	3139 110 34970	Flex Cable 19pin 18cm AD
135	3139 118 14980	Button Set Treble/Bass	1141	4822 320 12752	Flex Cable 7pin 18cm AD
136	3139 118 14950	Knob Jog Chrome	1142	3139 110 34610	Flex Cable 11pin 18cm AD
137	3139 118 14940	Cover Display	1143	3139 110 34950	Flex Cable 7pin 12cm AD
138	3139 114 71780	Button Set WOOX	5001	3103 308 30790	△ Mains Transformer /21/21M
139	3139 118 15000	Cap WOOX Chrome	5001	3103 308 30780	△ Mains Transformer /22
141	3139 113 27050	Cut Sheet Display	5001	3103 308 30770	△ Mains Transformer /37
158	3139 118 15250	Cover Cassette	9965 000 07824	Cloth Grille Assembly	283 D3 x 10
159	3139 118 15060	Window Cassette			284 D3 x 10
189 *	3139 118 15780	Plate Transport	Note:	Only the parts mentioned in this list are normal service spare parts.	285 D3 x 10
198	3139 114 68620	Door Cassette Left			286 D3 x 10
200	4822 529 10322	Damper Assembly			287 D3 x 10
201	3139 114 68640	Push Catch Left		* Pos 189 is used for transportation only, it must be removed before playing CD.	288 D3 x 10
203	4822 492 11344	Spring Compression			292 D3 x 10
205	4822 402 11245	Bracket Left			293 D3 x 20
207	3139 111 01390	Spring Torsion Left			295 D2 x 8
209	4822 492 42787	Spring Cassette			296 D3 x 10
246	3139 113 27140	Foot Rubber 4mm			297 D3 x 10
252	3139 114 71560	Bracket Combi			298 D3 x 10
253	3139 114 71510	Panel Left			299 D3 x 10
254	3139 114 71520	Panel Right			300 D3 x 10
255	3139 114 71530	Cover Top			301 D3 x 10
256	3139 114 71490	Panel Rear /21/22/37			302 D3 x 10
256	3139 114 73250	Panel Rear /21M			303 D3 x 10
271	3139 114 71010	Stopper Heatsink			304 D3 x 12
350	3139 118 78550	Loudspeaker Box /21/21M/22			
350	3139 118 78540	Loudspeaker Box /37			
351	4822 303 50063	FM Aerial /21/21M/22			
351	4822 320 11094	FM Antenna Wire /37			
356	3139 118 78640	Remote Control /21/21M/37			
356	3139 118 78630	Remote Control /22			
384	4822 303 50082	AM Frame Antenna			

SCREW LISTS - MAIN UNIT

186	D3 x 10
187	D3 x 10
188	D3 x 10
212	D3 x 12
213	D3 x 12
214	D3 x 12
215	D3 x 12
226	M3 x 6
227	M3 x 6
228	M3 x 6
229	M3 x 6
230	D3 x 10
231	M3 x 10
276	D3 x 12
277	M3 x 10
278	D3 x 10
279	D3 x 16
280	D3 x 8
281	D3 x 10
282	D3 x 10
283	D3 x 10
284	D3 x 10
285	D3 x 10
286	D3 x 10
287	D3 x 10
288	D3 x 10
292	D3 x 10
293	D3 x 20
295	D2 x 8
296	D3 x 10
297	D3 x 10
298	D3 x 10
299	D3 x 10
300	D3 x 10
301	D3 x 10
302	D3 x 10
303	D3 x 10
304	D3 x 12

SCREW LISTS - Power 2001 Module

D2 x 8	Regulator pcb / Heat shield to Heatsink
D2.5 x 8	Regulator Transistor / IC to Heatsink
D3 x 10	Brackets / IC Clamping Springs to Heatsink
M3 x 8	Rectifier diode to Heatsink