

Service  
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# Service Manual



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3139 785 22640



# PHILIPS



**SPECIFICATIONS****GENERAL:**

Mains voltage : 110-127V/220-240V Switchable for /21/21M  
 120V for /37  
 220V for /33  
 220-230V for /22/34  
 230-240V for /30

Mains frequency : 50/60Hz

Power consumption : < 1W at ECO Power Standby  
 : 15W at Standby  
 : 100W at Active

Clock accuracy : < 4 seconds per day

Dimension centre unit : 265 x 310 x 390mm

**TUNER:****FM**

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

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

IF frequency : 10.7MHz  $\pm$  25kHz

Aerial input : 75 $\Omega$  coaxial  
 300 $\Omega$  click fit for /37

Sensitivity at 26dB S/N : < 7 $\mu$ V

Selectivity at 600kHz bandwidth : > 25dB

Image rejection : > 25dB

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

-3dB Limiting point : < 8 $\mu$ V

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

**MW**

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

Grid : 9kHz  
 10kHz for /21/21M/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 /22

Grid : 3kHz

IF frequency : 450kHz  $\pm$  1kHz

Aerial input : Frame aerial

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

Selectivity at 18kHz bandwidth : [> 24dB]

IF rejection : [> 30dB]

Image rejection : [> 30dB]

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

**AMPLIFIER:**

Output power (6 $\Omega$ , 1kHz, 10% THD)  
 L & R : 2 x 60W RMS /22

Output power (6 $\Omega$ , 60Hz-12.5kHz, 10% THD)  
 L & R : 2 x 50W FTC /37

Frequency response within -3dB : 40Hz-20kHz

Incredible Surround : ON/OFF

WOOX : Level 1, 2, 3 & OFF

Digital Sound Control (DSC) : Digital, Rock, Pop,  
 Newage, Classic, Electric

Virtual Ambience Control (VAC) : Hall, Concert, Cinema,  
 Disco, Arcade, Cyber

**Input sensitivity**

Aux in : 500mV  $\pm$  3dB at 1kHz  
 CDR in : 1V  $\pm$  3dB at 1kHz

**Output sensitivity**

Line out (Left/Right) : 500mV  $\pm$  2dB at 22k $\Omega$   
 Digital out : IEC 958, 44.1kHz  
 Headphone output at 32 $\Omega$  : 15mW  $\pm$  1dB

**CASSETTE RECORDER:**

Number of track : 2 x 2 stereo

Tape speed : 4.76 cm/sec  $\pm$  2%

Wow and flutter : < 0.4% DIN

Fast-wind/Rewind time C60 : 130 sec

Bias system : 75kHz  $\pm$  10kHz

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

Signal to Noise Ratio (Type I) : > 48dBA

**COMPACT DISC:**

Measurement done at output conn. of the CDC module.

Frequency response : <  $\pm$ 1.5dB for 20Hz-20kHz

Output Voltage (in Vrms) : 550mV  $\pm$  2dB unloaded

Signal to Noise Ratio (A-weighted) : > 80dBA

Distortion at 1kHz : < 0.003%

Channel Unbalance : <  $\pm$ 1dB

Channel Separation (1kHz) : >60dB

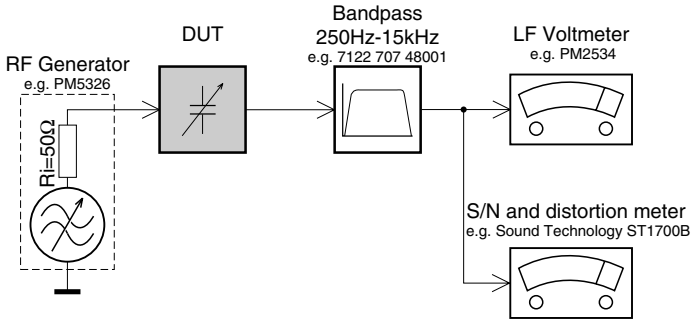
De-emphasis : 0 or 15/50 mS (Switched by subcode  
 on the disc)

[...] Values indicated are for "ECO6 Cenelec Board" only.

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

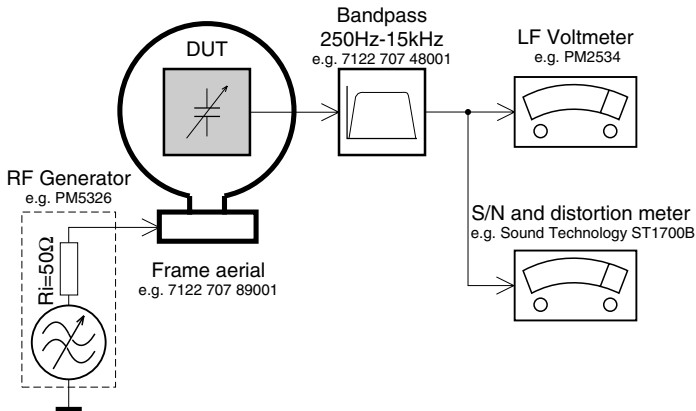
## MEASUREMENT SETUP

### Tuner FM



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

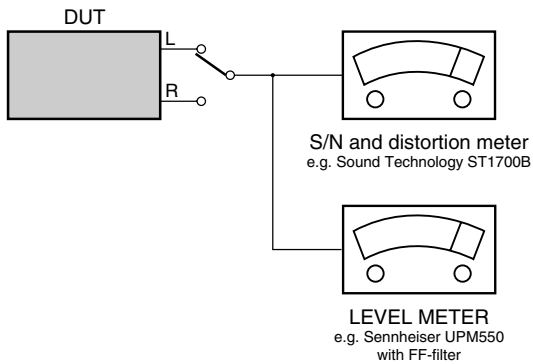
### Tuner AM (MW,LW)



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

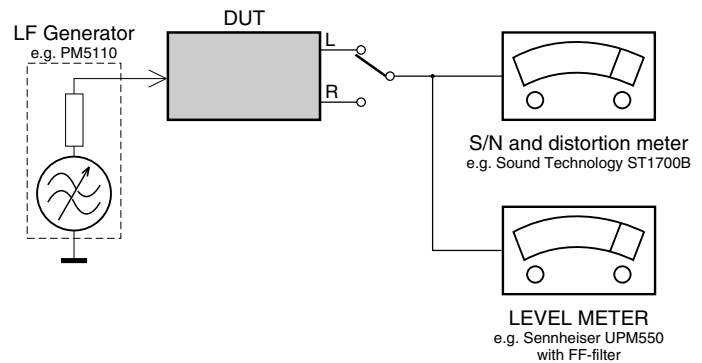
### CD

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



### Recorder

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





## SERVICE AIDS

### Service Tools:

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

### Cassette:

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

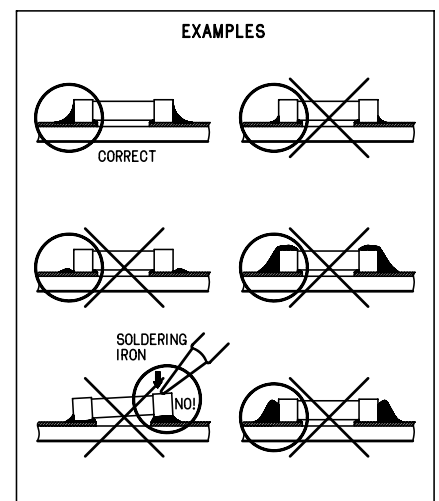
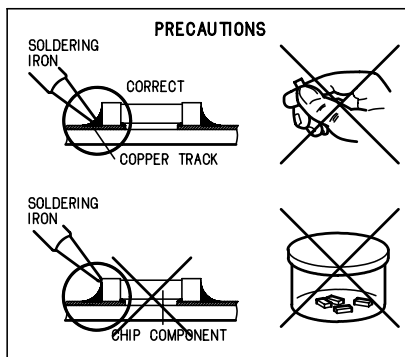
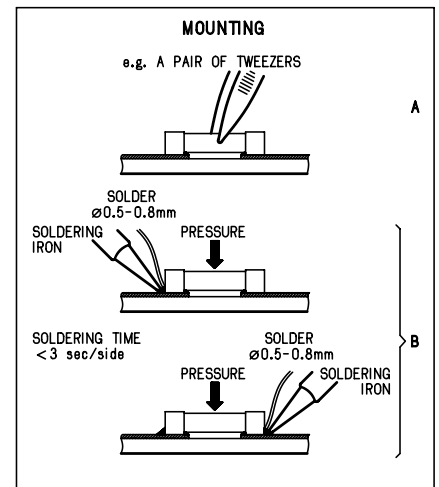
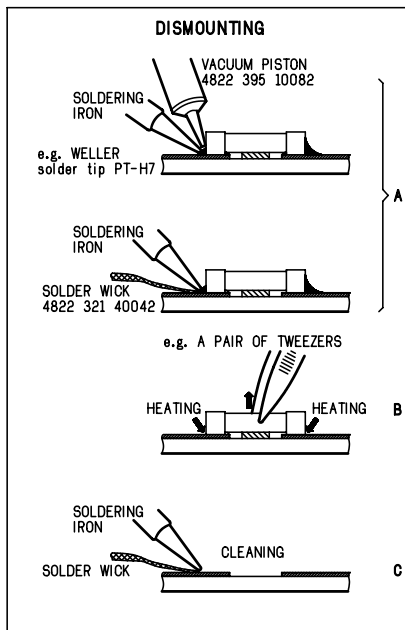
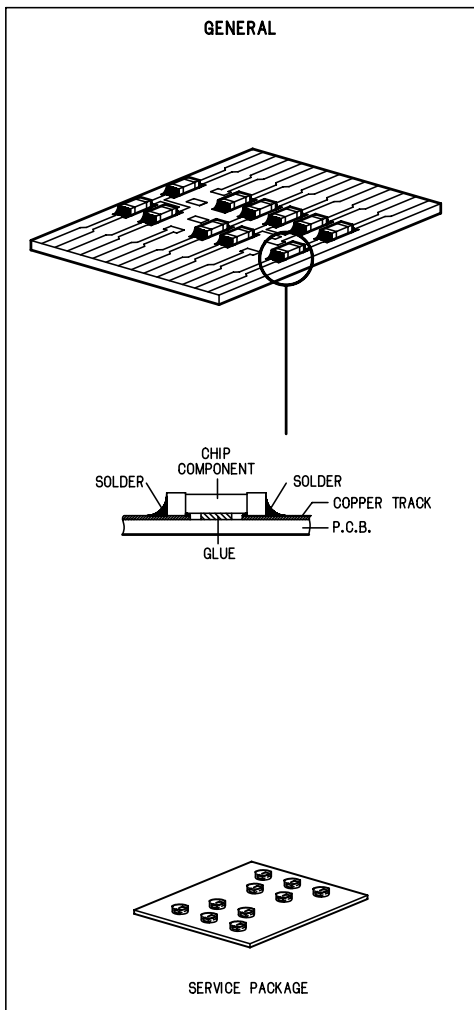
### Compact Disc:

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

### ESD Equipment:

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

## HANDLING CHIP COMPONENTS



**(GB) WARNING**

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

When repairing, make sure that you are connected with the same potential as the mass of the set via a wrist wrap with resistance.

Keep components and tools also at this potential.

**ESD****(NL) WAARSCHUWING**

Alle IC's en vele andere halfgeleiders zijn gevoelig voor electrostatische ontladingen (ESD).

Onzorgvuldig behandelen tijdens reparatie kan de levensduur drastisch doen verminderen.

Zorg ervoor dat u tijdens reparatie via een polsband met weerstand verbonden bent met hetzelfde potentiaal als de massa van het apparaat.

Houd componenten en hulpmiddelen ook op ditzelfde potentiaal.

**(F) ATTENTION**

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

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

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

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

**(D) WARNUNG**

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

Unvorsichtige Behandlung im Reparaturfall kann die Lebensdauer drastisch reduzieren.

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

Bauteile und Hilfsmittel auch auf dieses gleiche Potential halten.

**(I) AVVERTIMENTO**

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

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

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

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

**(GB)**

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

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

**(NL)**

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

**(F)**

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

**(D)**

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

**(I)**

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

**(GB) Warning !**

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

**(S) Varning !**

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

**(SF) Varoitus !**

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

**(DK) Advarse !**

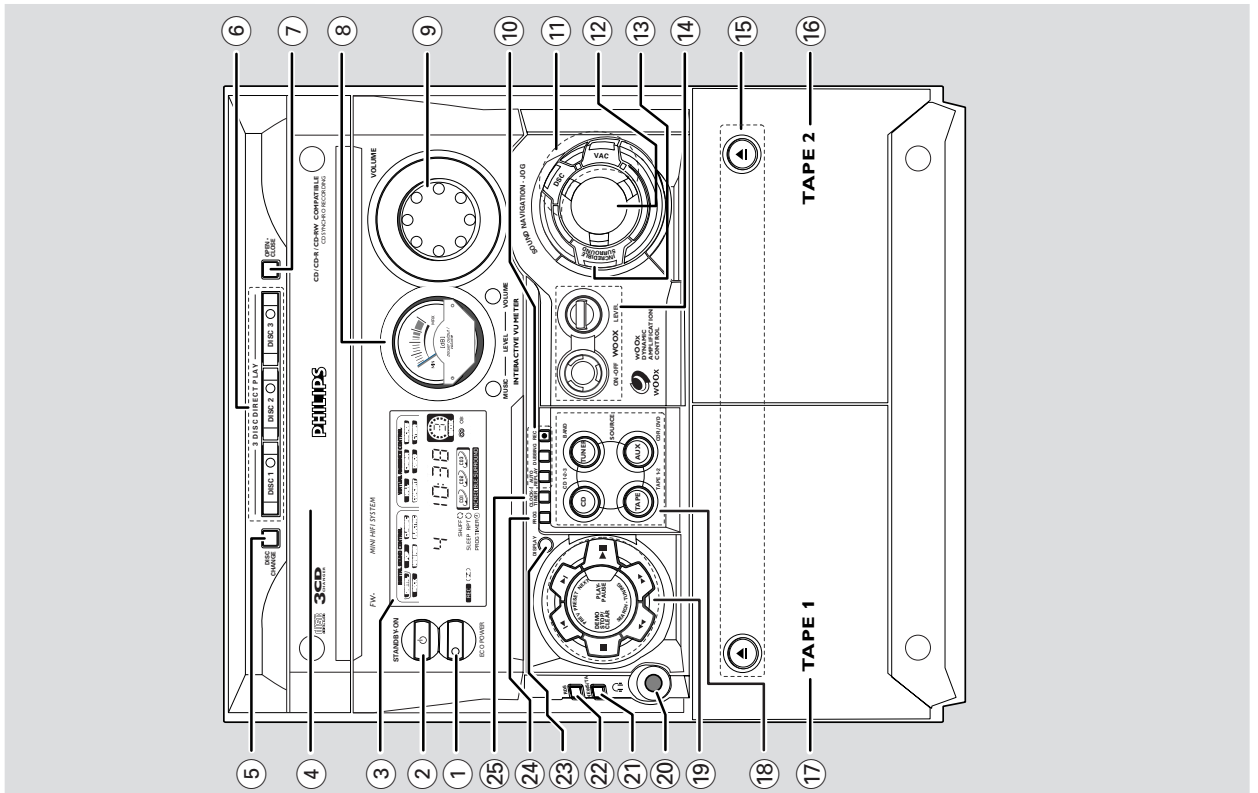
Usynlig laserstråling ved åbning når sikkerhedsafbrydere er ude af funktion. Undgå udsættelse for stråling.

"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."

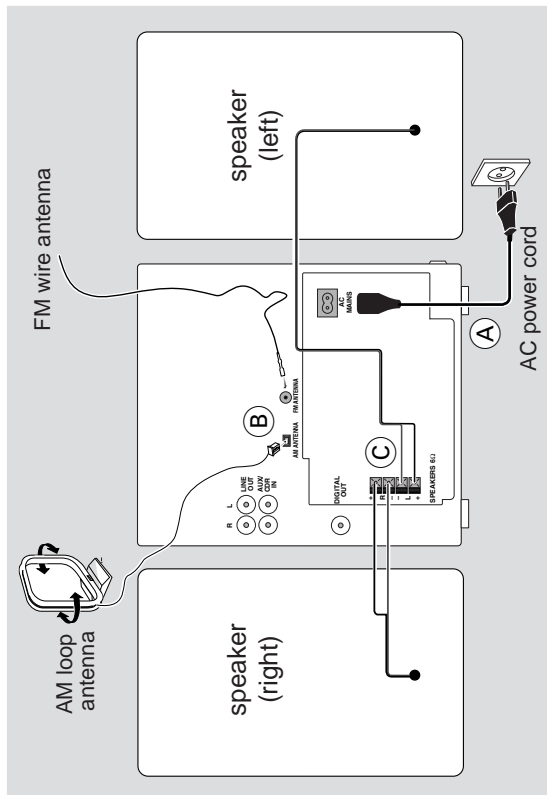
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## Preparations



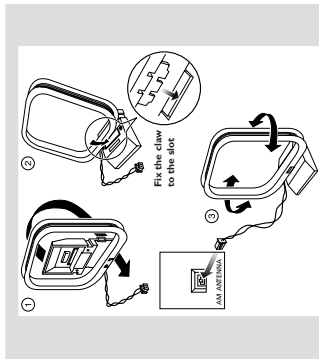
### Rear Connections

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

### 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.

### 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).

English

English

## General Information

### 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.

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.

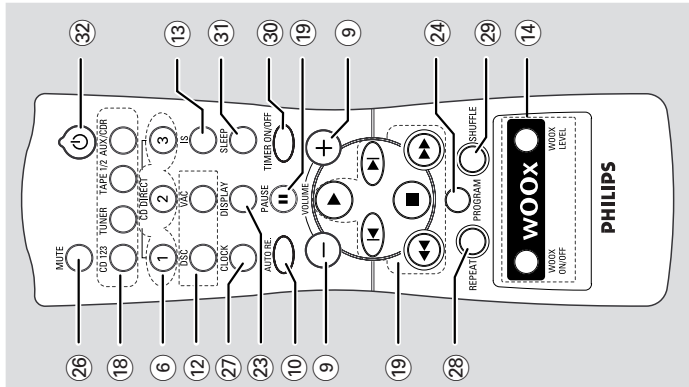


### Supplied accessories

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



## Controls

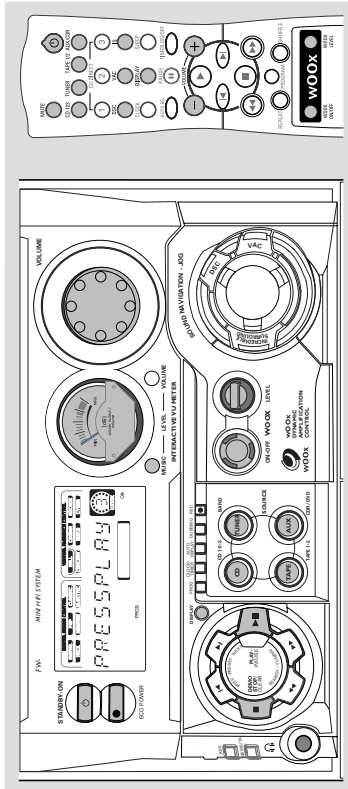


- 20 to connect headphones.
- 21 **NEWS/TA** to hear News or Traffic Announcement automatically.
- 22 **RDS** to select RDS information.
- 23 **DISPLAY** to select different screen display mode : NORMAL, MODE 1, MODE 2, or MODE 3.
- 24 **PROG (PROGRAM)** to programme disc tracks, for CD, ..... to programme preset radio stations.
- for CLOCK, ..... (on the system only) to select 12- or 24-hour clock mode.
- 25 **CLOCK-TIMER** to view the clock, set the clock or set the timer.
- 26 **MUTE** to interrupt or resume sound reproduction.
- 27 **CLOCK** to view the clock display.
- 28 **REPEAT** to playback track(s)/disc(s)/programme repeatedly.
- 29 **SHUFFLE** to playback all available discs and their tracks/ programme in random order.
- 30 **TIMER ON/OFF** to activate or deactivate the timer.
- 31 **SLEEP** to activate, deactivate or set the sleep timer.
- 32 to switch the system to Standby mode.  
to switch the system to 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 you operate the system, complete the preparation procedures.

### 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, "RADIO INSTALL - PRESET PLAY" will be displayed. Press **PLAY** on the system to start installation.
  - "INSTALL" will be displayed and followed by "TUNE" and then "RADIO".
  - PROG 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.
- 2 Press **PLAY** on the system to start installation.
  - "INSTALL" will be displayed and followed by "TUNE" and then "RADIO".
  - 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.

### To exit without storing the Plug and Play

Press on the system.

### 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 FREQUENCY" will be displayed.
- During Plug and Play, if no button is pressed within 15 seconds, the system will exit Plug and Play mode automatically.



## Basic Functions

English

### 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 OFF" 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 **CD, TUNER, TAPE, AUX** (or **CD 123, TUNER, TAPE 1/2** or **AUX/CDR**) on the remote control.
- The system will switch to the selected source.  
Press any one of the **DISC DIRECT PLAY** buttons or **OPEN-CLOSE**.  
→ The system will switch to CD mode.
- **In Eco Power Standby mode**  
Press **ECO POWER**.  
→ The system will switch to last selected source.  
Press **CD 123, TUNER, TAPE 1/2** or **AUX/CDR** on the remote control.  
→ The system will switch to the selected source.

English

## Basic Functions

### Display mode


There are four different display modes for selection.

- Press **DISPLAY** repeatedly to select **NORMAL, MODE 1, MODE 2, or MODE 3**.  
**NORMAL** ..... All available LEDs will light up and the display screen will have full brightness. The VU meter will be in music mode.
- **MODE 1** ..... All available LEDs will light up and the display screen will have full brightness. The VU meter will be in volume mode.
- **MODE 2** ..... All available LEDs will light up and the display screen will be at half brightness. The VU meter will be in music mode.
- **MODE 3** ..... The display screen will be at half brightness. The VU meter and all LEDs will be off.

### Volume Control

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

### To listen through the headphones

- Connect the headphones plug to the  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.

### Sound Navigation

For optimal sound listening, select only one of the following navigation sound controls at a time: **wOOx, DSC or VAC**.

#### wOOx

There are three wOOx settings to enhance the bass response.

- 1 Press **wOOx ON-OFF** to switch ON (enhanced) or OFF (normal) the wOOx sound effect.
  - When wOOx is switched on:  
→ **wOOx** and the last selected wOOx level will appear on the display.
  - When wOOx is switched off, **wOOx** will disappear from the display.
- 2 When wOOx is switched on, adjust **wOOx LEVEL** (or press **wOOx LEVEL** on the remote control) to select the desired wOOx level: **WOOX 1, WOOX 2** or **WOOX 3**.



#### Note:

- 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.

### Automatic DSC-wOOx / VAC-wOOx selection

The best wOOx setting is generated automatically for each DSC or VAC selection. You can manually select the wOOx setting that best suits your listening environment.

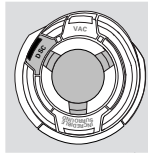
English

English

**DSC (Digital Sound Control)**

The DSC feature enables you to adjust the system to suit your type of music.

- 1 Press **DSC**.  
→ DSC button lights up
- 2 Adjust the **JOG CONTROL** (or press **DSC** on the remote control repeatedly) to select the desired Digital Sound Control effect: **DIGITAL**, **ROCK**, **POP**, **NEWAGE**, **CLASSIC** or **ELECTRIC**.



→ The selected DSC will be highlighted.



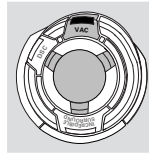
**Note:**

- For a neutral sound effect, select **CLASSIC**.

**VAC (Virtual Ambience Control)**

The VAC feature enables you to adjust the system to select a type of environment.

- 1 Press **VAC**.  
→ VAC button lights up.
  - 2 Adjust the **JOG CONTROL** (or press **VAC** on the remote control repeatedly) to select the desired Virtual Ambience Control effect: **HALL**, **CONCERT**, **CINEMA**, **DISCO**, **ARCADE** or **CYBER**.
- The selected VAC will be highlighted.



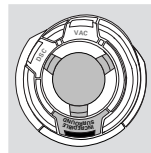
**Note:**

- When you select **VAC**, **Incredible Surround** will switch on automatically.

**Incredible Surround**

The Incredible Surround magnifies the virtual distance between the front speakers for an incredibly wide, enveloping, stereo effect.

- Press **INCREDIBLE SURROUND** (or **IS** on the remote control) repeatedly to activate/deactivate the surround sound effect.



→ If activated, **INCREDIBLE SURROUND** will appear on the display and the **INCREDIBLE SURROUND** button lights up.

- If deactivated, "I.S. OFF" will be displayed.

**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.

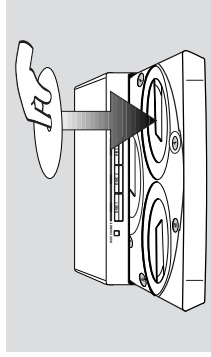
**Discs for Playback**

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



**Loading Discs**

- 1 Press **CD** to select CD mode.
- 2 Press **OPEN-CLOSE** to open the disc tray.
- 3 Load up to two discs on the individual disc trays.  
→ To load the third disc, press **DISC CHANGE**.  
→ The disc tray will rotate until the empty tray is ready for loading.



- 4 Press **OPEN-CLOSE** to close the disc tray.  
→ "PUSHING" will be displayed. The selected disc tray, total number of tracks and the playing time will appear on the display.  
→ A lighted button indicates that a disc is loaded in the disc tray.

**Notes:**

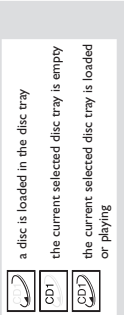
- Load the discs with the label side facing up.
- To ensure good system performance, wait until the disc tray completely reads the disc(s) before proceeding.



## CD Operation

English

### Disc Playback



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

- Press **PLAY** ▶
  - 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 the **DISC DIRECT PLAY** button : **DISC 1**, **DISC 2** or **DISC 3**.
  - The selected disc will playback once, then stop.

#### To interrupt playback

- Press **PAUSE II**
- To resume playback, press **PLAY** ▶ 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** ▶ 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**.

#### Replace discs during playback

Press **DISC CHANGE**

- To change the inner disc, press **DISC CHANGE** again.
  - "DISC CHANGE" will be displayed and the disc will stop playing.
  - The disc tray will close to retrieve the inner disc, then reopen with the inner disc accessible.

#### Programming the disc tracks

Programming tracks is possible when playback is stopped. Up to 40 tracks can be stored in the memory in any order.

- 1 Load the desired discs on the disc tray (refer to "Loading Discs").

Press **PROG** to start programming.

→ **PROG** will start flashing.

- 3 Press **CD** (CD 1•2•3) or **DISC 1/2/3** button to select a disc.

Press ◀ or ▶ repeatedly to select the desired track.

Press **PROG** to store the track.

- Repeat: **steps 3-5** to store other discs and tracks.

Press **PLAY** ▶ to start programme playback.

→ "PLAY PROGRAM" will be displayed.

- To end programming without starting playback, press ■ **once**.

→ The total number of tracks programmed and the total playing time will appear on the display.

#### Notes:

- If the total playing time is more than "99:59" or if one of the programmed tracks has a number greater than 30, then "----" will appear on the display instead of the total playing time.

– If you attempt to programme more than 40 tracks, "PROGRAM FULL" will be displayed.

– If you press any of the **DISC DIRECT PLAY** buttons, the system will playback the selected disc or track, and the stored programme will be ignored temporarily. The **PROG** symbol also will disappear temporarily from the display. It will reappear when playback of the selected disc ends.

– During programming, if no button 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 ■.

## CD Operation

English

#### To erase the entire programme

- Press ■ **once** when playback is stopped or twice during playback.
  - "PROGRAM CLEAR" will be displayed.
  - **PROG** 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.

→ "TRACK" – to repeat the entire disc.

→ "ALL DISC" – to repeat all available discs.

→ **RPT** ◯ appears on the display.

#### In programme playback

→ "TRACK" – to repeat the current programmed track.

→ "PROGRAM" – to repeat all programmed tracks.

→ **RPT** ◯ and **PROG** 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.

→ **RPT** ◯ will disappear from the display.

#### Note:

- Selecting **SHUFFLE** during repeat playback 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" and **SHUFF** ◯ 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.

→ **SHUFF** ◯ will disappear from the display.

#### When select REPEAT mode during shuffling

→ **SHUFF** ◯ will disappear from the display.

#### In normal shuffled playback

→ "TRACK" and "ALL DISC" repeat modes are available for selection.

→ **RPT** ◯ and **SHUFF** ◯ will appear on the display.

→ "PROGRAM" repeat modes are available for selection.

→ **RPT** ◯ and **SHUFF** ◯ will appear on the display.

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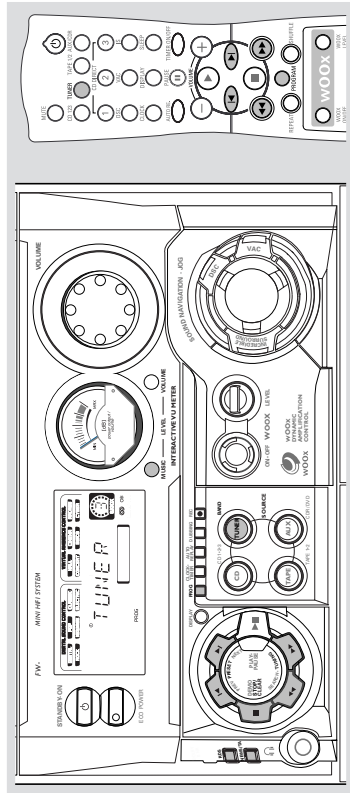
→ **RPT** ◯ and **SHUFF** ◯ will appear on the display.

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**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** (BAND) 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, **CD** 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.  
→ **PROG** 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** (BAND) repeatedly to select the desired waveband : FM, MW or LW.
- 2 Press **PROG**  
→ **PROG** will start flashing.  
→ The next available preset number will be displayed for selection.  
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.  
→ **PROG** 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 button 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 DELETE" 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, M.O.R. (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 (Ⓜ) and the radio station name will appear on the display.

**To check the RDS information**

- Press **RDS** 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, "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 **CLOCK-TIMER** twice.  
→ "00:00" or current time starts flashing.
- 2 Press **RDS**  
→ "SEARCH RDS TIME" will be displayed.  
→ When RDS time is read, "RDS TIME" and RDS time logo (Ⓜ) 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/TA (traffic announcement)

(only available in RDS radio station)  
Once the News PTY (Programme Type) or TA (Traffic Announcement) data is detected in a RDS station, it will switch to TUNER mode automatically.

### IMPORTANT!

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

#### 1 To start NEWS/TA function

- 1 Press **NEWS/TA** to select NEWS or TA function.
  - If NEWS is selected, "NEWS" and NEWS will appear on the display.
  - If TA is selected, "TA" and TA will appear on the display.
  - It will scan the radio stations stored in the first 5 preset and wait for the News Programme Type/Traffic Announcement 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/TA function.
  - "RD RDS NEWS" or "RD RDS TA" will be displayed and NEWS or TA will disappear from the display.

- 2 When NEWS or TA transmission is detected, the system will switch to Tuner mode automatically.
  - NEWS or TA will start flashing.

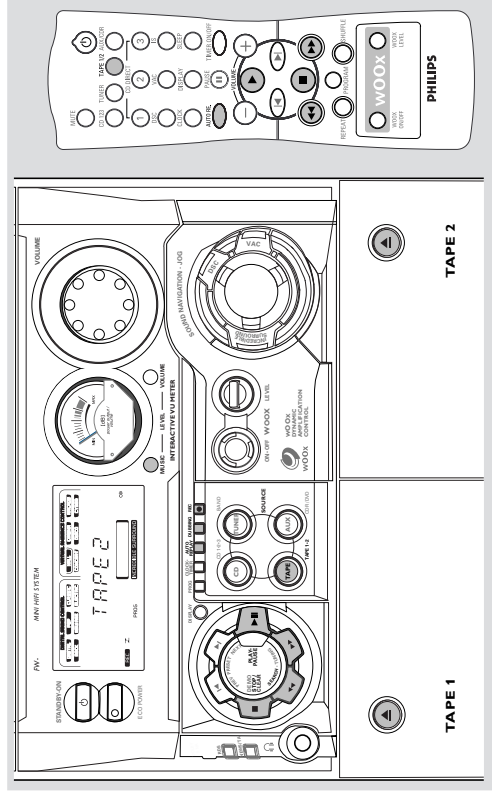
### Notes:

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

English

English

## Tape Operation/Recording

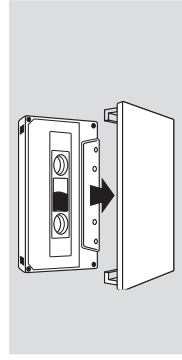


### IMPORTANT!

- 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 **▶** to open the tape deck door.
- 2 Insert a recorded tape and close the tape door. Load the tape with the open side down and the full spool to the left.



- 3 Press **TAPE (TAPE 1•2)** repeatedly to select tape deck 1 or tape deck 2.
  - The selected tape deck number is displayed.

- 4 Press **▶** to start playback.

### To stop playback

- Press **■**.

### To change the playback mode

- Press **AUTO REPLAY** repeatedly to select the different playback modes.
  - "AUTO REPLAY" ( ) or "CHANCE" will appear on the display.

**AUTO REPLAY** ...the tape will rewind automatically at the end of playback and replay again. It will replay up to a maximum of 20 times until you press **■**.

**ONCE**.....the tape will playback the selected side once and then stop.

### To rewind or fast forward during playback

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

## Tape Operation/Recording

English

English

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

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

### To reset tape counter number

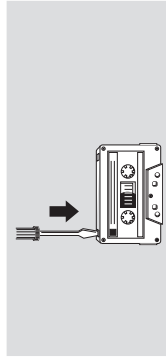
- When in stop mode, press ■.
- "TP 1 000" or "TP2 000" will be displayed.

### Notes:

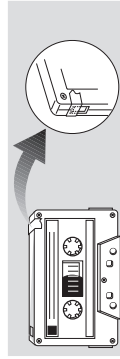
- During rewinding or fast forwarding of a tape, it is also possible to select another source (CD, TUNER or AUX, for example).
- The tape counter will automatically set to zero after detecting end of tape.

### General Information on Recording

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



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



### IMPORTANT!

- Recording is permissible if copyright or other rights of third parties are not infringed upon.
- Recording is possible only on tape deck 2.

### Preparation for Recording

- 1 Press TAPE (TAPE 1•2) to select TAPE 2.
  - 2 Load a recordable tape into tape deck 2 with full spool to the left.
  - 3 Prepare the source to be recorded.
- CD** – load the disc(s).
- TUNER** – tune to the desired radio station.
- TAPE** – load the prerecorded tape into tape deck 1 with the full spool to the left.
- AUX** – connect external equipment.

### When recording is in progress

- ■ starts flashing.
- It is not possible to listen to another source except for dubbing tapes.
- It is not possible to activate the timer function.

### One Touch Recording

- 1 Press CD, 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.

### CD Synchro Recording

- 1 Press CD 1•2•3 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 to interrupt recording.
- 2 Press ◀ or ▶ to select the desired track.
- 3 Press PLAY ▶ to resume recording.

### To stop recording

- Press ■.
- Recording and disc playback will stop simultaneously.

### Dubbing Tapes

- 1 Load the prerecorded tape in tape deck 1.
- You can set the tape to the desired passage where recording will start.

### Press DUBBING.

- Playing and recording will start simultaneously.
- "DUBB DUBB" will be displayed.
- Dubbing of tapes is possible on one side of the tape only. To continue record on the reverse side, at the end of side A, flip the tapes to side B and repeat the procedure.

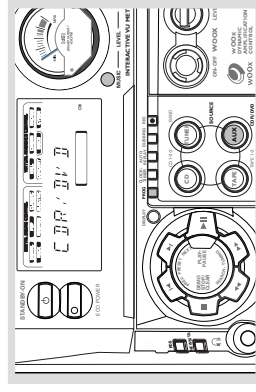
### To stop dubbing

- Press ■.
- Notes:
- Dubbing of tapes is possible only from tape deck 1 to tape deck 2.
  - To ensure good dubbing, use tapes of the same length.
  - You can listen to another source while dubbing.

### Digital Recording via Digital Out

For CD digital recording, please refer to the instruction manuals for the CD recorder, digital audio equipment and so forth.

## External Sources



### 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/DVD) repeatedly to select CDR/DVD mode or normal AUX mode.
- "CDR/DUB" or "FLU:" will be displayed.

- When CDR/DVD mode is selected, any audio equipment connected to the LINE OUT terminals of this mini system will be muted. You will not be able to record or listen to the sound from the LINE OUT source.
- If the sound from the external source is distorted, select CDR/DVD mode for listening.

### Notes:

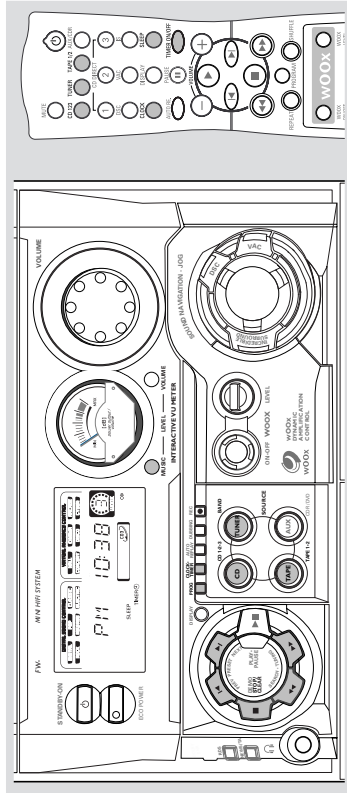
- You are advised not to listen to and record from the same source simultaneously.
- All the navigation sound control features (DSC or VAC for example) are available for selection.
- Refer to the operating instructions for the connected equipment for details.

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

## Clock/Timer

English

English



### IMPORTANT!

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

### View Clock

The clock (if it is set) will be shown in Standby mode.

### To view the clock in any source mode (CD or TUNER for example)

- Press **CLOCK-TIMER** (or **CLOCK** on the remote control).
  - The clock will be displayed for a few seconds.
  - If the clock has not been set, "----:--" will be displayed.

### Clock Setting

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

- Press **CLOCK-TIMER twice**.
- Press **PROG** on the system repeatedly to select clock mode.
  - If 12-hour mode is selected, "12:00" will start flashing.
  - If 24-hour mode is selected, "00:00" will start flashing.
- Press **◀** or **▶** on the system repeatedly to set the hour.
- Press **⏪** or **⏩** on the system repeatedly to set the minute.
- Press **CLOCK-TIMER** again to store the setting.
  - The clock will start working.

- Press **CD, TUNER** or **TAPE** to select the desired source.
  - Before setting timer, make sure the music source has been prepared.

**CD** - 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 the prerecorded tape into tape deck 2.

- 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.

- Press **CLOCK-TIMER** to store the start time.
  - "TIMER ON" will be displayed and followed by the set timer "H:M:S".
  - 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.
- If the source selected is TAPE, and if the preset time is reached during dubbing, TUNER will be selected automatically.
- During timer setting, if no button is pressed within 90 seconds, the system will exit timer setting mode automatically.

### To deactivate the TIMER

- Press **TIMER ON/OFF** on the remote control.
  - The display will show "TIMER OFF" and **TIMER** will disappear from the display.

### To activate the TIMER

- Press **TIMER ON/OFF** on the remote control.
  - The last set timer information will be shown for a few seconds and **TIMER** will appear on the display.

### Sleep Timer Setting

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

- 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 H:M" or "OFF" will be displayed. "H:M" is the time in minutes.

- 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 H:M" → "SLEEP 9:..." → "SLEEP H:M" → "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.



**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.

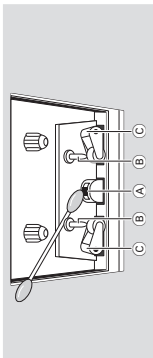
**Cleaning Discs**

- 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 DISPLAY to select NORMAL or MODE 1 display mode.

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

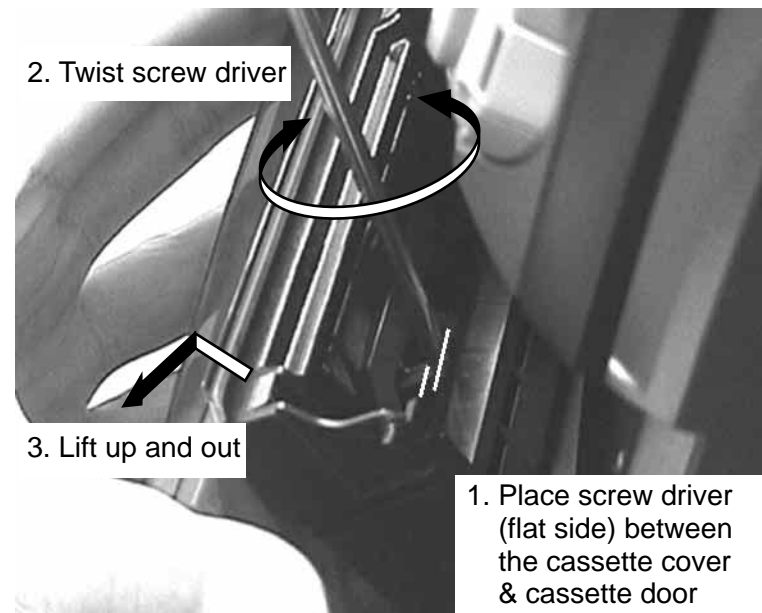
- Power has been interrupted or the power cord has been disconnected. Reset the clock/timer.

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

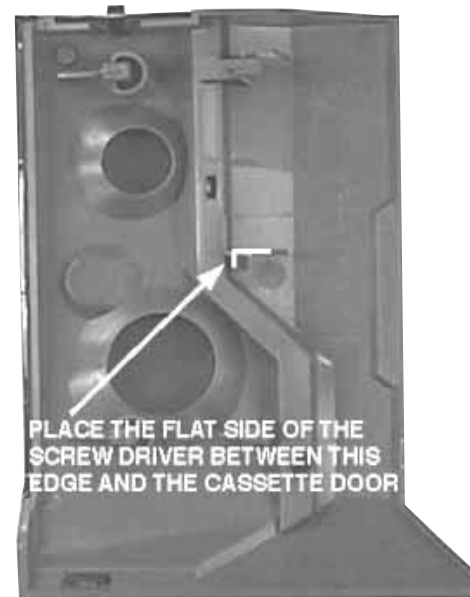
- Press and hold DEMO STOP ■ on the system to switch off the demonstration.

**DISMANTLING INSTRUCTIONS**

***Dismantling of the Cassette Cover***



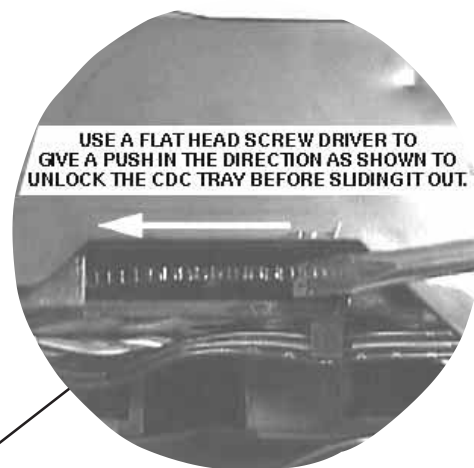
Remove Cassette Cover



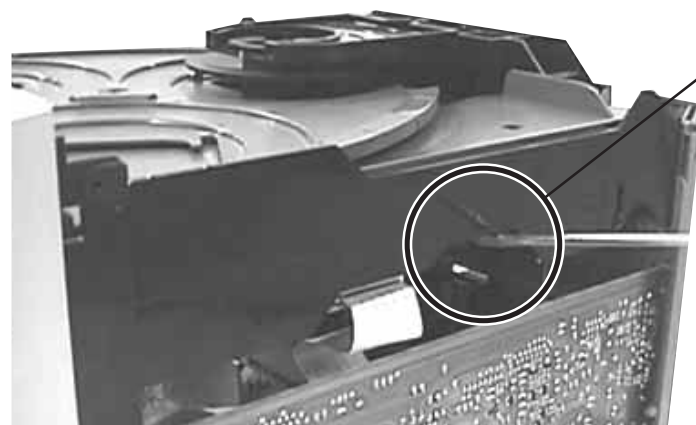
Cassette Cover

***Dismantling of the CDC Module and Front Panel***

- 1) Loosen 4 screws to remove the Cover Top (pos 255) of the set.
- 2) Loosen 2 screws to remove the Panel Left (pos 253) and 2 screws to remove the Panel Right (pos 254) of the set.
- 3) Slide out the CDC Tray as shown in the diagram below with the help of a flat head screw driver.

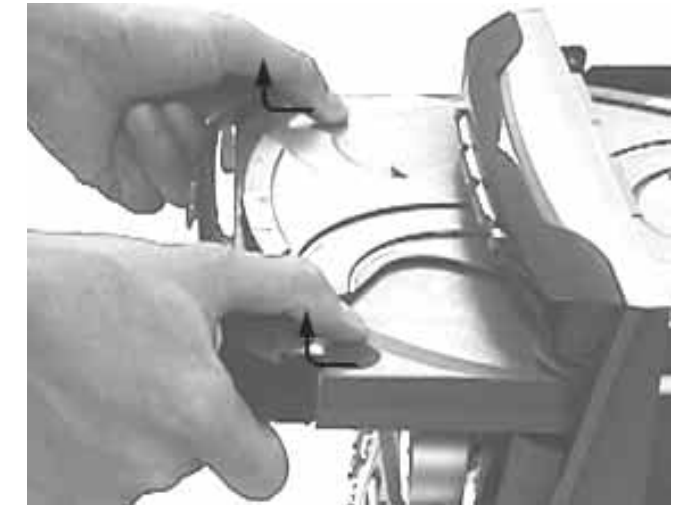


Sliding out the CDC Tray



***Dismantling of the CDC Module and Front Panel***

- 4) Remove the Cover Tray CDC (pos 106) as indicated.

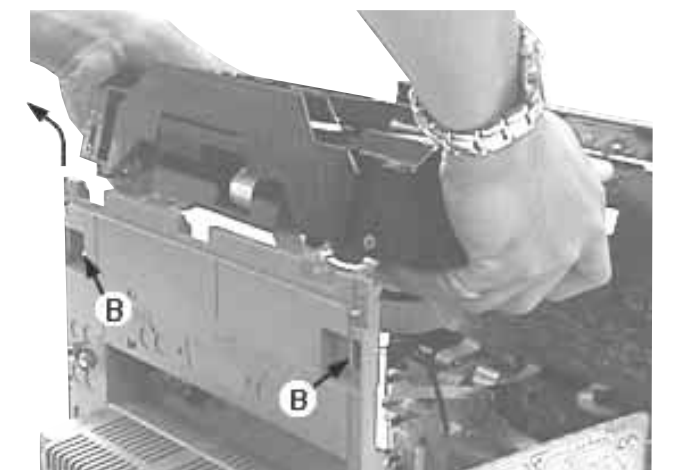


Remove Cover Tray CDC

- 5) Loosen 2 screws A and 2 screws B to remove the CDC Module (pos 1105) as indicated.
- 6) Remove 2 screws (pos 226) at the bottom to separate the Front Panel Assembly from the Plate Bottom (pos 265).



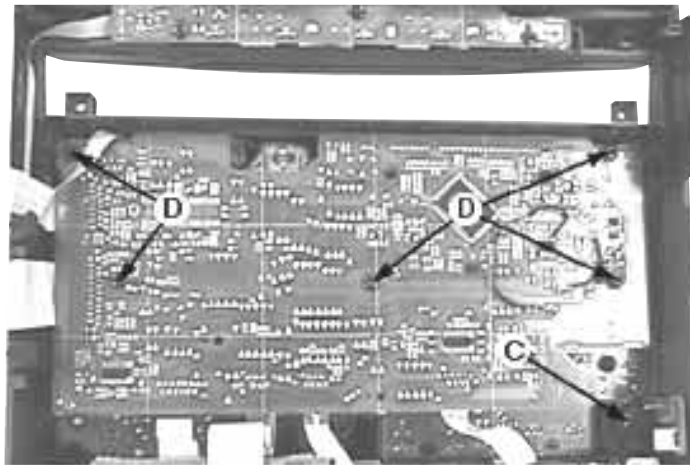
Front View CDC



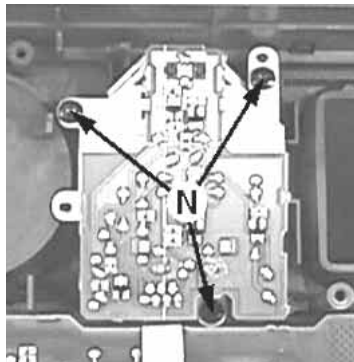
Remove CDC Module

**Dismantling of the Front Display Board and Front Control Board**

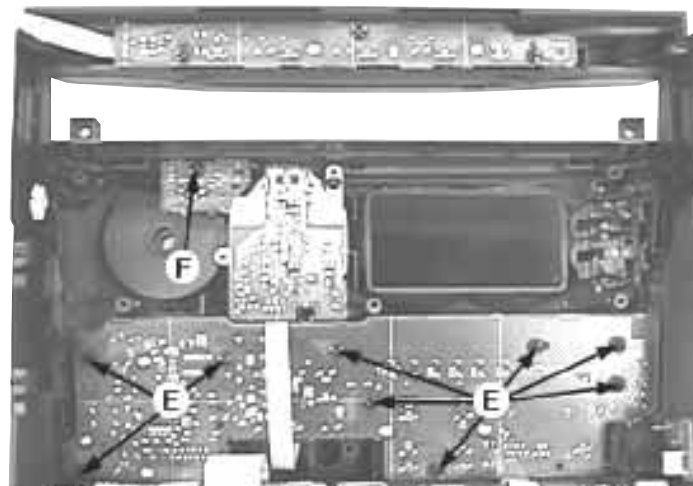
- 1) Remove 1 screw C as indicated to loosen the Headphone Board (pos 1101-B).
- 2) Remove 5 screws D as indicated to loosen the Front Display Board (pos 1101-A).
- 3) Remove 9 screws E as indicated to loosen the Front Control Board (pos 1107-A).
- 4) Remove 1 screw F as indicated to loosen the IR-Eye Board (pos 1107-D).
- 5) Remove 3 screws N as indicated to loosen the VU Meter Board (pos 1107-C).



Remove Front Display Board and Headphone Board



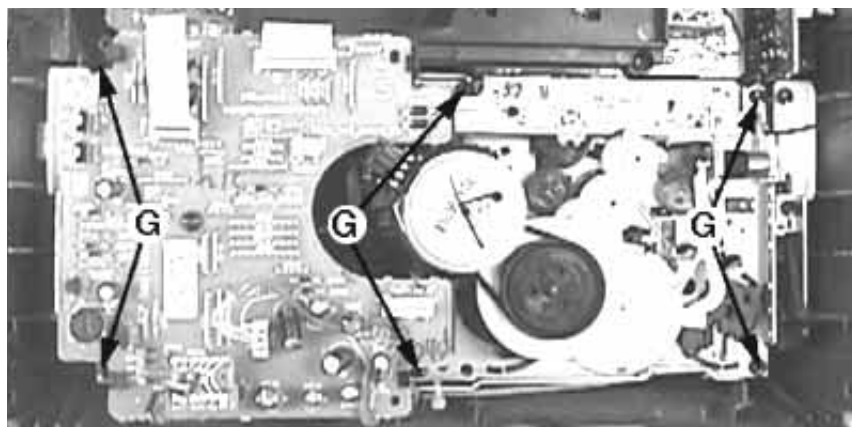
Remove VU Meter Board



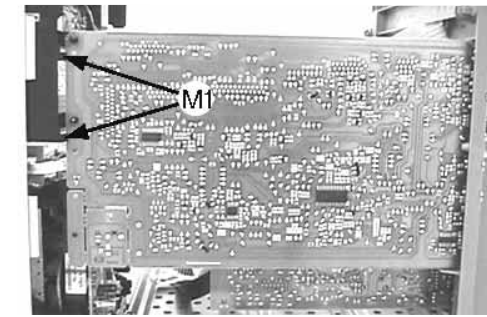
Remove Front Control Board and IR-Eye Board

**Dismantling of the ETF Tape Module**

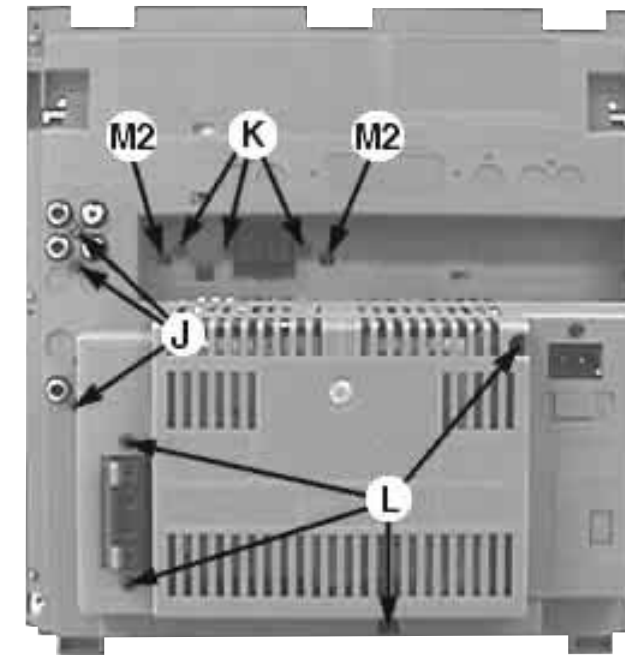
- 1) Remove 6 screws G as indicated to loosen the ETF Tape Module (pos 1104).

**Dismantling of Rear Portion**

- 1) Remove 3 screws J and uncatch M1 as indicated to loosen the AF Board (pos 1102-A).
- 2) Remove 3 screws K and uncatch M2 as indicated to loosen the Tuner Board (pos 1103).
- 3) Remove 4 screws L as indicated to loosen the Panel Rear (pos 256).

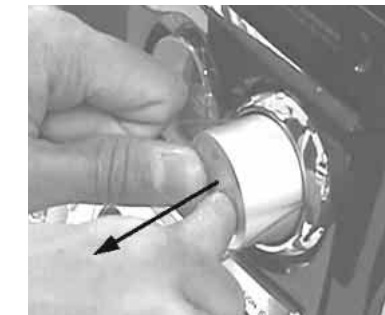


Remove AF Board

**Repair Hints**

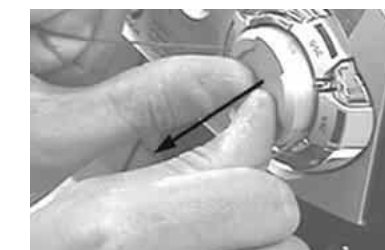
- 1) The Knob Volume Rotary (pos 117) can be removed by inserting a strong string into the slot and pulling it out in the direction as indicated. See picture 1.

Picture 1



- 2) The Knob Jog Rotary (pos 140) can be removed by inserting a strong string into the slot and pulling it out in the direction as indicated. See picture 2.

Picture 2



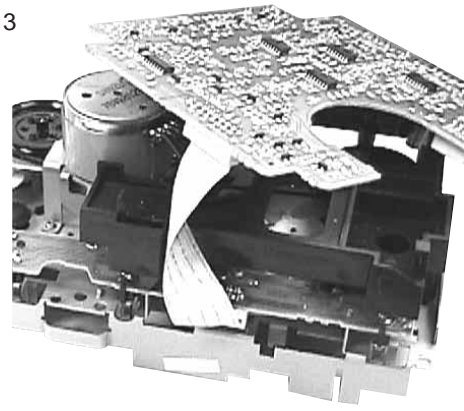


**Repair Hints**

- 3) During repair it is possible to disconnect the Tuner board and 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.
- 4) Due to the short flex cable wires in the ETF Module, the pc board should be disconnected and reconnected on the reverse side of the tape mechanism to keep it electrically connected during repair. See picture 3.

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.

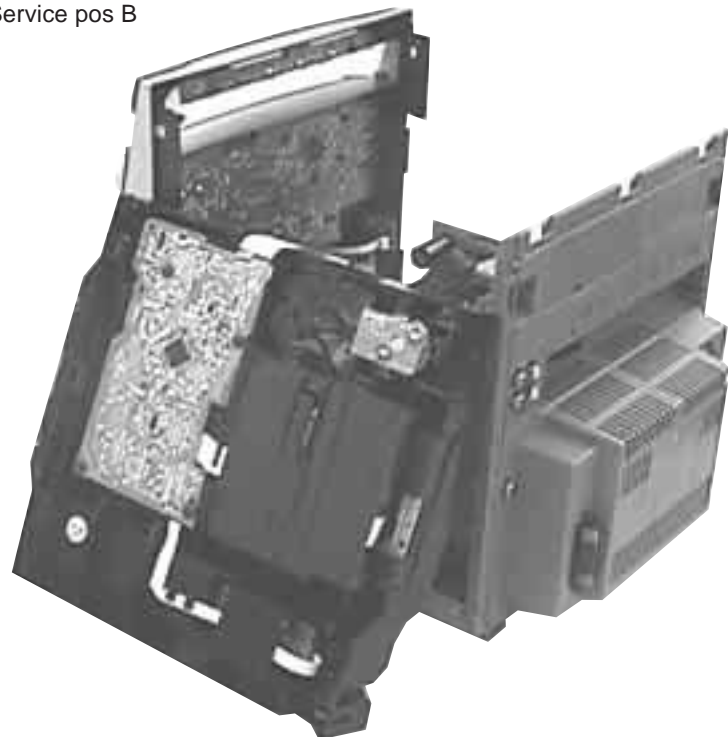
Picture 3



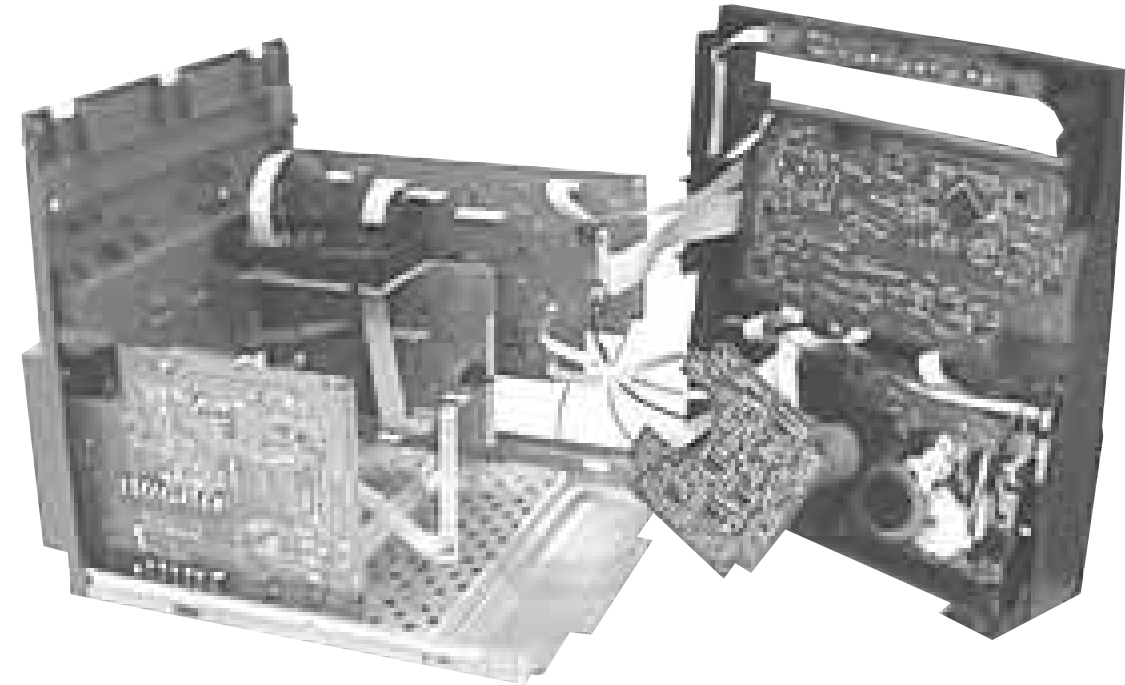
Service pos A



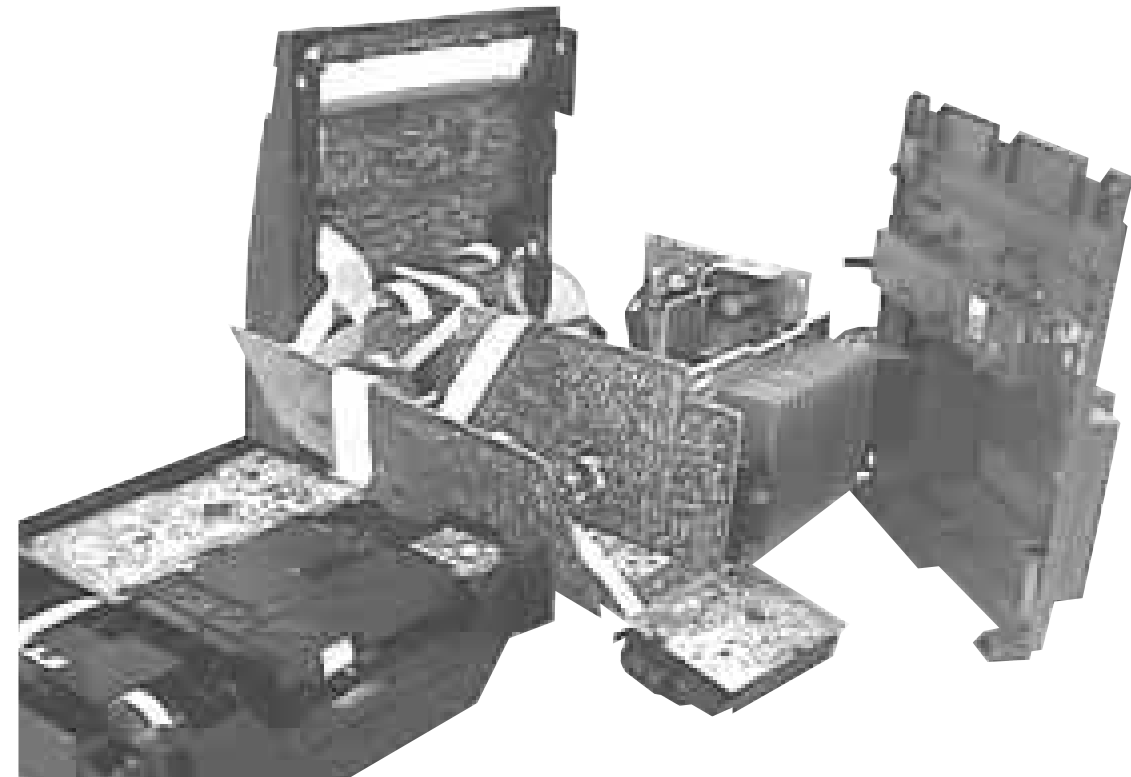
Service pos B



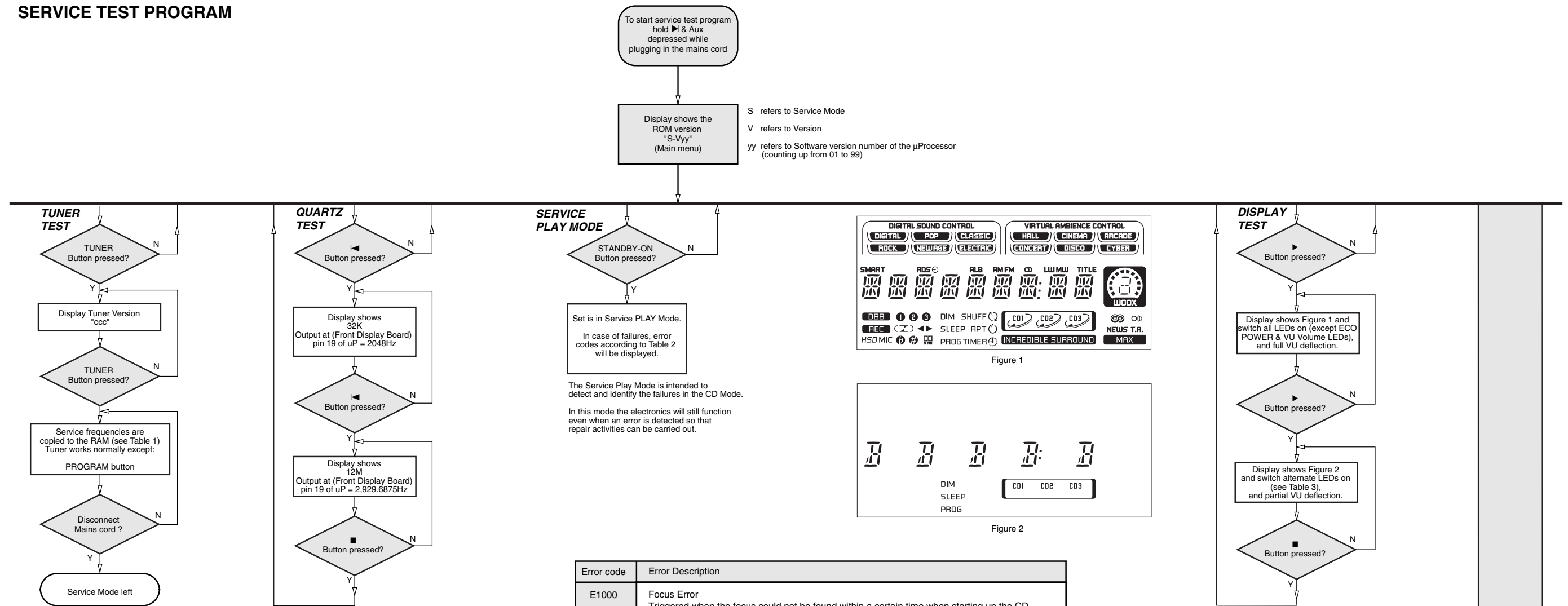
Service pos C



Service pos D



**SERVICE TEST PROGRAM**



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

Table 1

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

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

Table 2

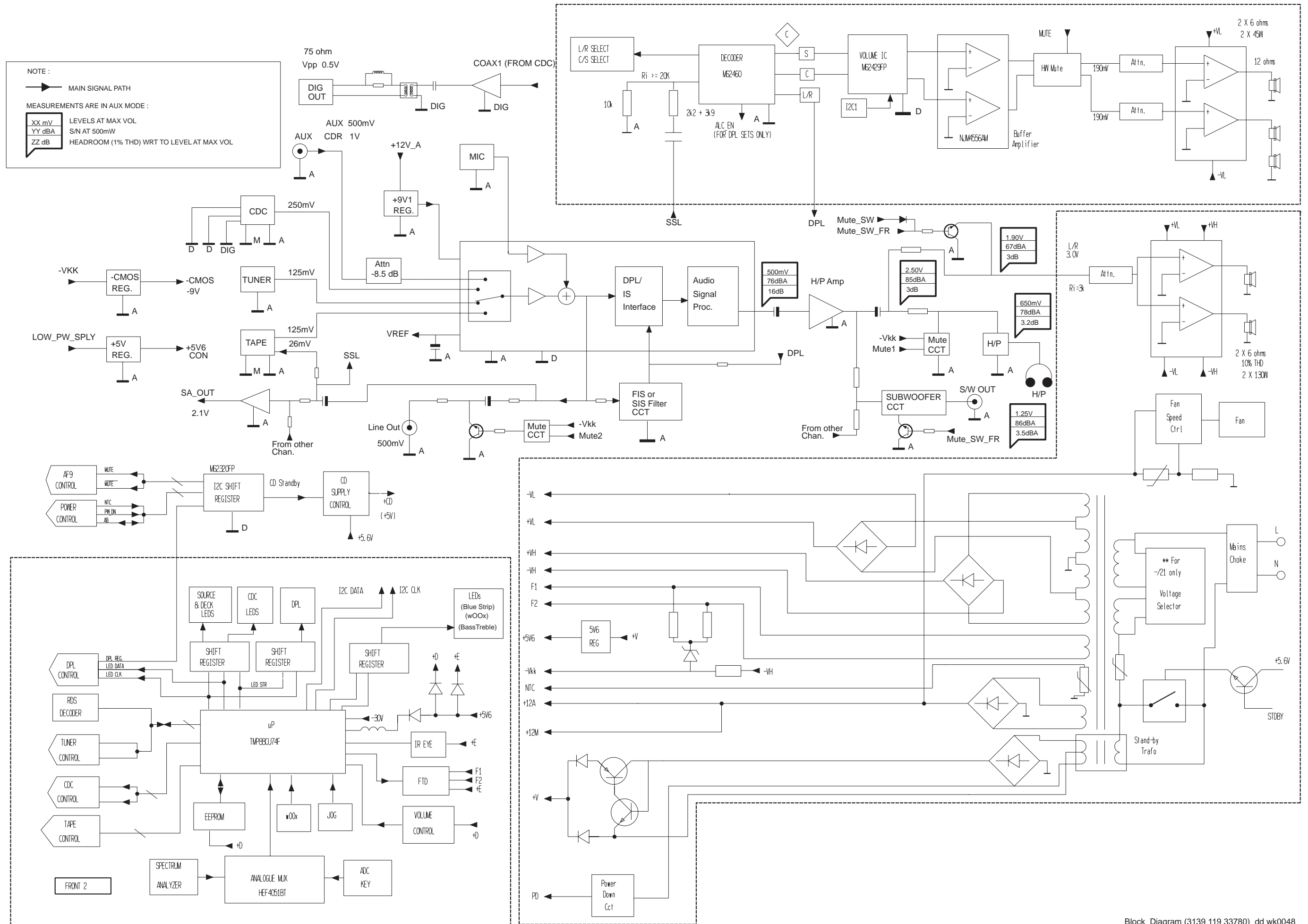
LEDs	FW-C500 , FW-C550	FW-C700 , FW-C720 , FW-C780	FW-P750
DISC 1	On	On	On
DISC 3	On	On	On
TAPE	On	On	On
TUNER	On	On	On
CENTRE			On
SURROUND LEFT			On
STEREO RIGHT			On
VAC	On	On	On
DBB	On		On
VU BACK LIGHT	On	On	On
VU VOLUME	On		On

Table 3

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

# SET BLOCK DIAGRAM

NOTE :  
 → MAIN SIGNAL PATH  
 MEASUREMENTS ARE IN AUX MODE :  
 XX mV LEVELS AT MAX VOL  
 YY dBA S/N AT 500mW  
 ZZ dB HEADROOM (1% THD) WRT TO LEVEL AT MAX VOL





REMARKS :

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# FRONT CONTROL BOARD

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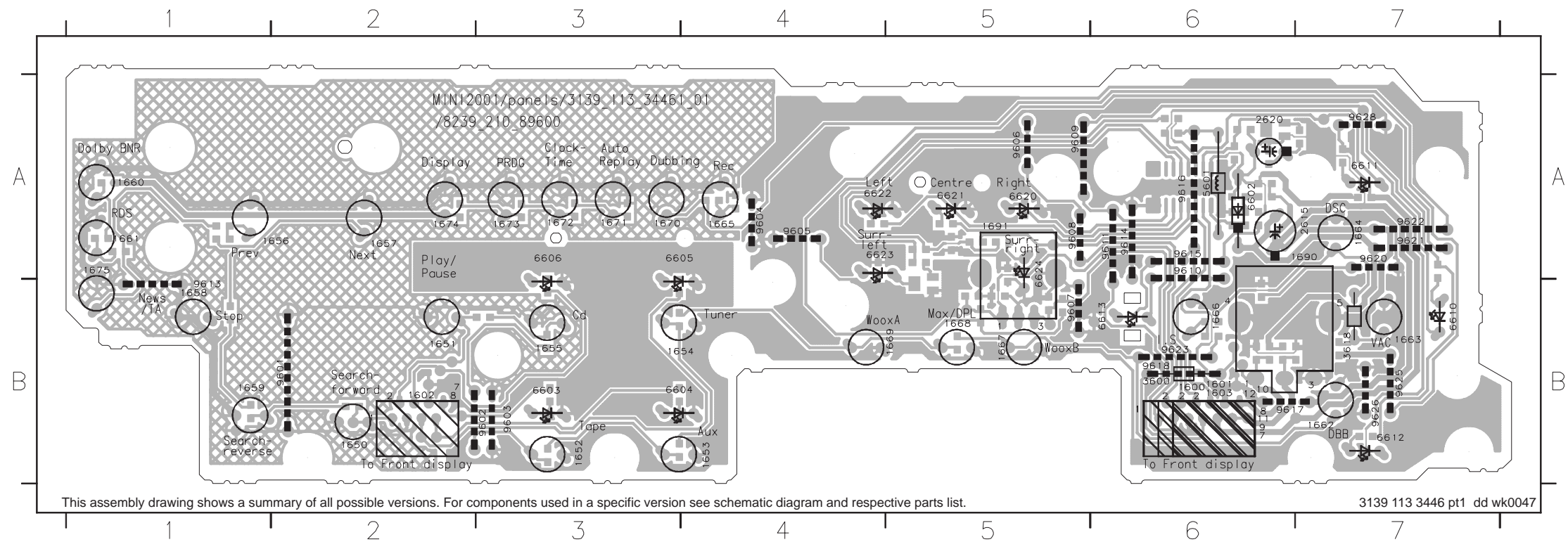
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VU Meter Part - Layout & Circuit diagram ..... 5-4  
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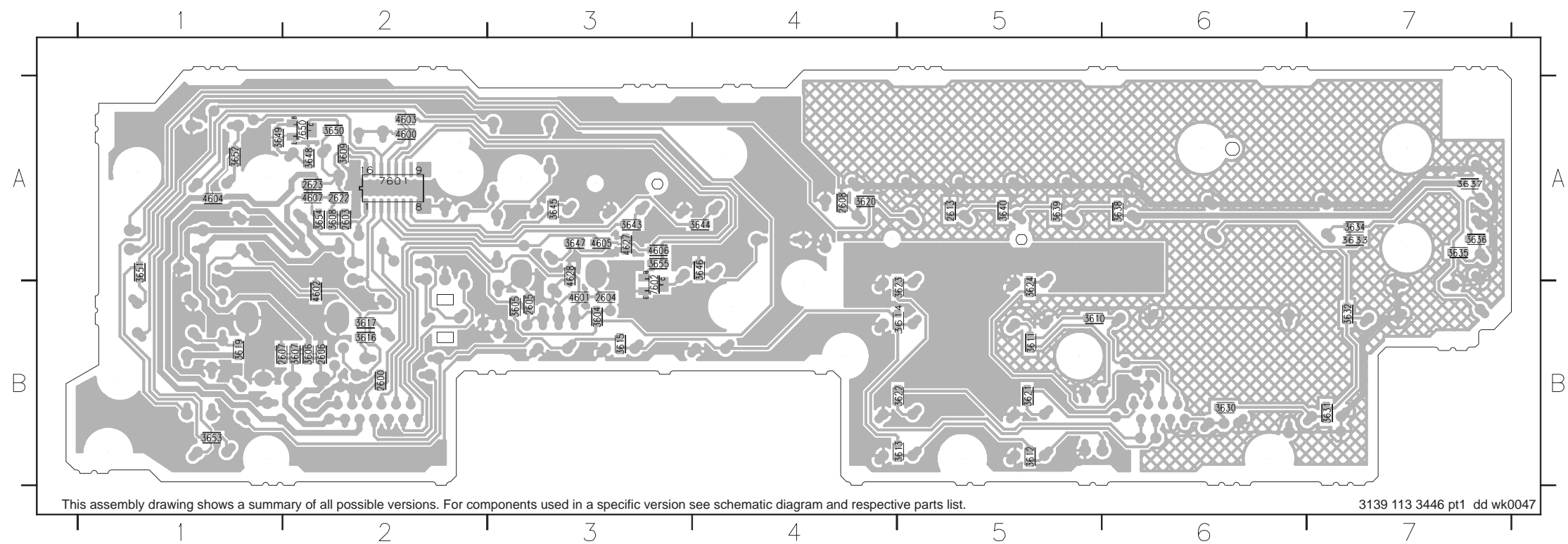
### FRONT CONTROL BOARD - COMPONENT LAYOUT

1600 B6 1650 B2 1654 B3 1658 B1 1662 B7 1666 B6 1670 A3 1674 A2 2615 A7 5601 A6 6605 A3 6612 B7 6622 A4 9602 B3 9606 A5 9610 A6 9615 A6 9620 A7 9625 B7  
 1601 B6 1651 B2 1655 B3 1659 B1 1663 B7 1667 B5 1671 A3 1675 A1 2620 A6 6602 A6 6606 A3 6613 B6 6623 A4 9603 B3 9607 B5 9611 A6 9616 A6 9621 A7 9626 B7  
 1602 B2 1652 B3 1656 A2 1660 A1 1664 A7 1668 B5 1672 A3 1690 A7 3600 B6 6603 B3 6610 B7 6620 A5 6624 A5 9604 A4 9608 A5 9613 B1 9617 B6 9622 A7 9628 A7  
 1603 B6 1653 B4 1657 A2 1661 A1 1665 A4 1669 B5 1673 A3 1691 A5 3618 B7 6604 B3 6611 A7 6621 A5 9601 B2 9605 A4 9609 A5 9614 A6 9618 B6 9623 B6



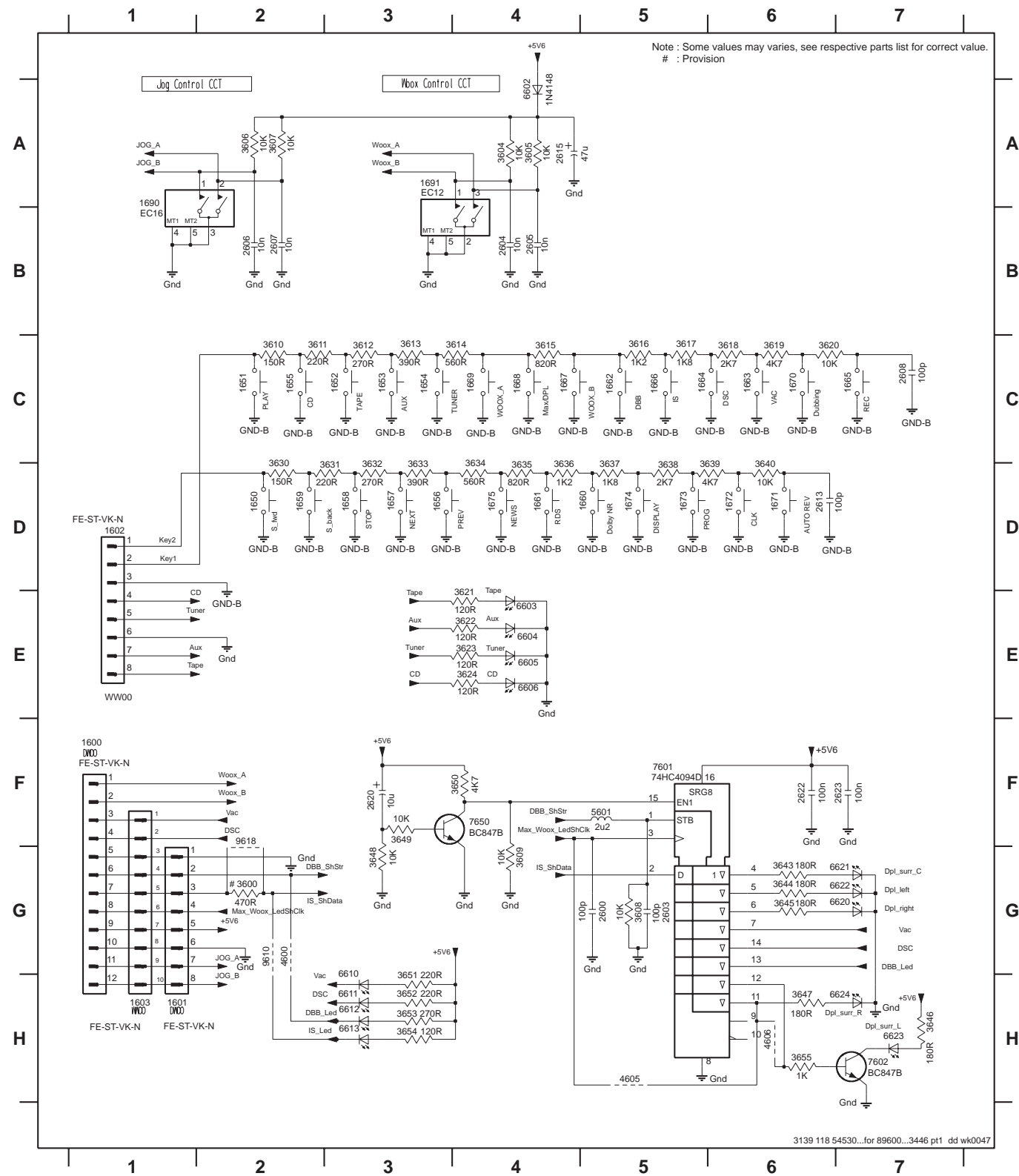
### FRONT CONTROL BOARD - CHIP LAYOUT

2600 B2 2605 B3 2608 A4 2623 A2 3606 B2 3609 A2 3612 B5 3615 B3 3619 B1 3622 B5 3630 B6 3633 A7 3636 A7 3639 A5 3644 A4 3647 A3 3650 A2 3653 B1 4600 A2 4603 A2 4606 A3 4628 A3 7650 A2  
 2603 A2 2606 B2 2613 A5 3604 B3 3607 B2 3610 B5 3613 B5 3616 B2 3620 A4 3623 B5 3631 B7 3634 A7 3637 A7 3640 A5 3645 A3 3648 A2 3651 A1 3654 A2 4601 B3 4604 A1 4607 A2 7601 A2  
 2604 B3 2607 B1 2622 A2 3605 B3 3608 A2 3611 B5 3614 B5 3617 B2 3621 B5 3624 B5 3632 B7 3635 A7 3638 A6 3643 A3 3646 A4 3649 A1 3652 A1 3655 A3 4602 B2 4605 A3 4627 A3 7602 B3



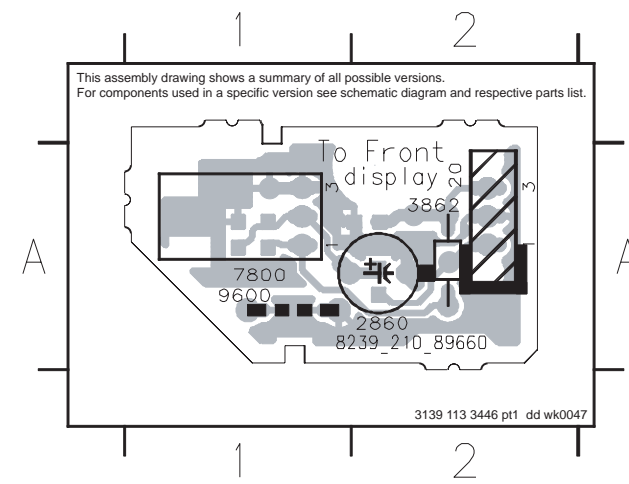
### FRONT CONTROL BOARD - CIRCUIT DIAGRAM

- 1600 F1 1652 C3 1658 D3 1664 C5 1670 C6 1690 A1 2606 B2 2622 F6 3607 A2 3613 C3 3619 C6 3630 C2 3636 D4 3644 G6 3650 F4 4600 G2 6604 E4 6613 H3 7601 F5
- 1601 H1 1653 C3 1659 D2 1665 C7 1671 D6 1691 A3 2607 B2 2623 F7 3608 G5 3614 C4 3620 C6 3631 D3 3637 D5 3645 G6 3651 G3 4605 H5 6605 E4 6620 G7 7602 H7
- 1602 D1 1654 C3 1660 D4 1666 C5 1672 D6 2600 G5 2608 C7 3600 G2 3609 G4 3615 C4 3621 E4 3632 D3 3638 D5 3646 H7 3652 H3 4606 H6 6606 E4 6621 G7 7650 F4
- 1603 H1 1655 C2 1661 D4 1667 C4 1673 D5 2603 G5 2613 D6 3604 A4 3610 C2 3616 C5 3622 E4 3633 D3 3639 D6 3647 H6 3653 H3 5601 F5 6610 G3 6622 G7 9610 G2
- 1650 D2 1656 D3 1662 C5 1668 C4 1674 D5 2604 B4 2615 A4 3605 A4 3611 C2 3617 C5 3623 E4 3634 C4 3640 D6 3648 C3 3654 H3 6602 A4 6611 H3 6623 H7 9618 F2
- 1651 C2 1657 D3 1663 C6 1669 C4 1675 D4 2605 B4 2620 F3 3606 A2 3612 C3 3618 C6 3624 E4 3635 D4 3643 G6 3649 F3 3655 H6 6603 E4 6612 H3 6624 H7



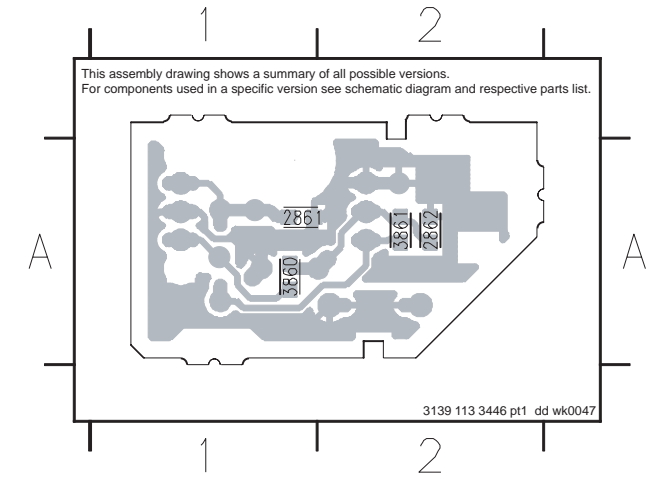
### IR-EYE BOARD - COMPONENT LAYOUT

- 20 A2 3862 A2 9600 A1
- 2860 A2 7800 A1



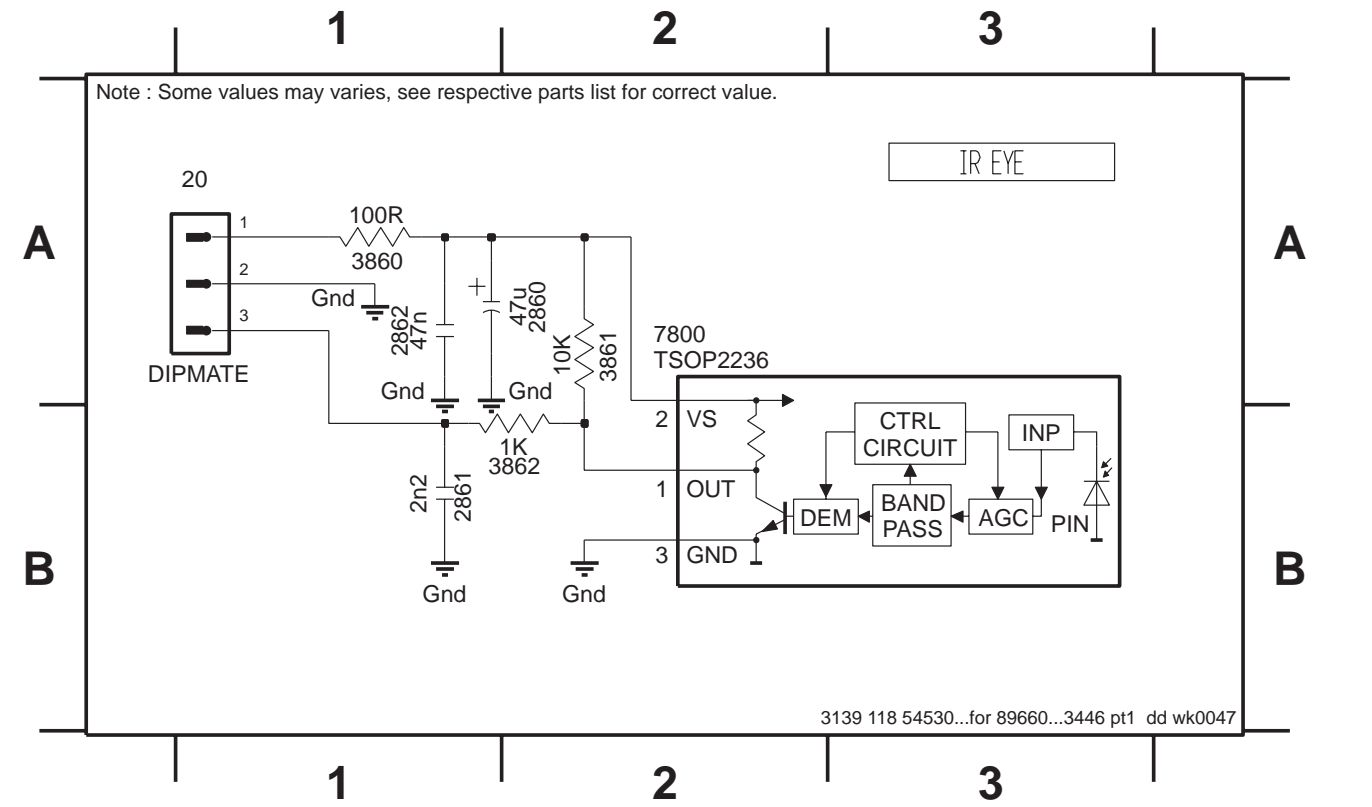
### IR-EYE BOARD - CHIP LAYOUT

- 2861 A1 2862 A2 3860 A1 3861 A2

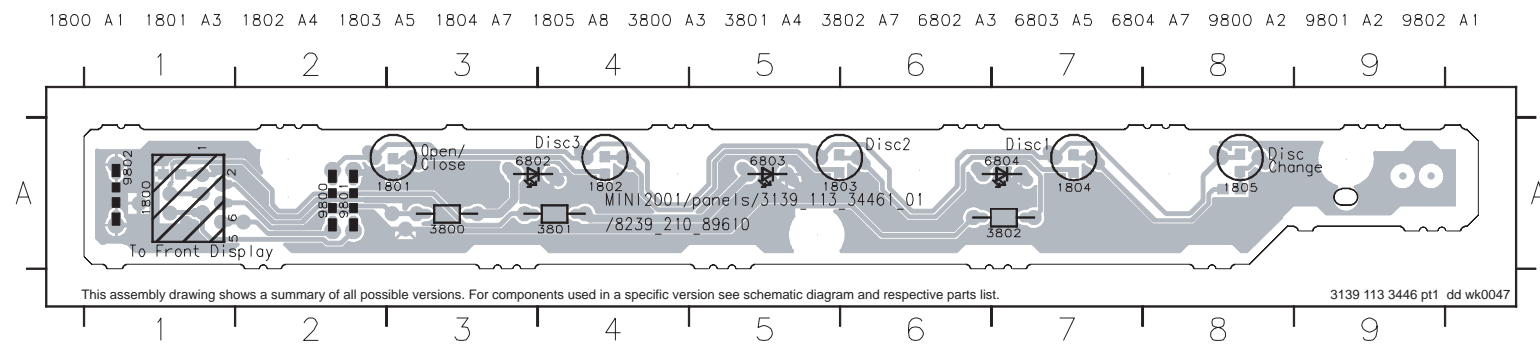


### IR-EYE BOARD - CIRCUIT DIAGRAM

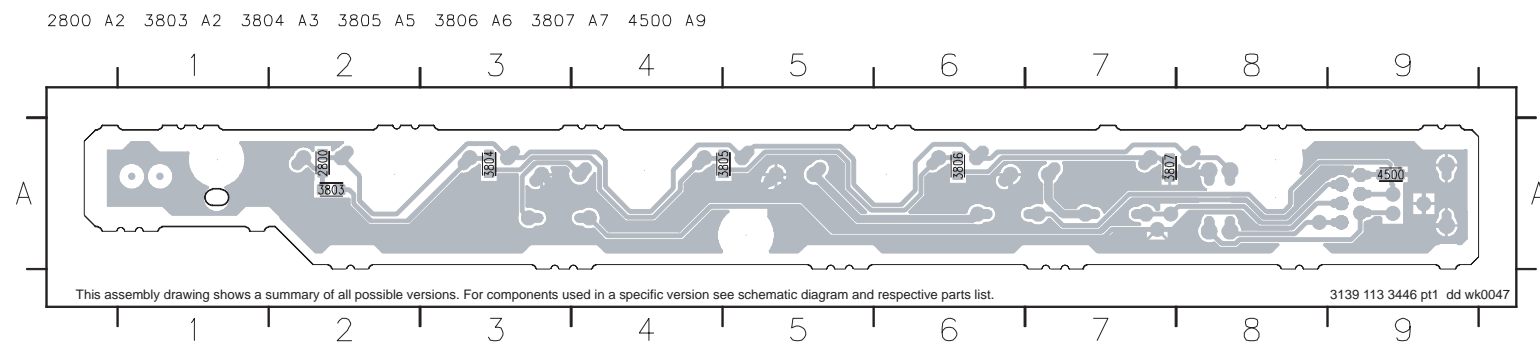
- 20 A1 2860 A2 2861 B1 2862 A1 3860 A1 3861 A2 3862 B2 7800 A2



### KEY-CDC BOARD - COMPONENT LAYOUT

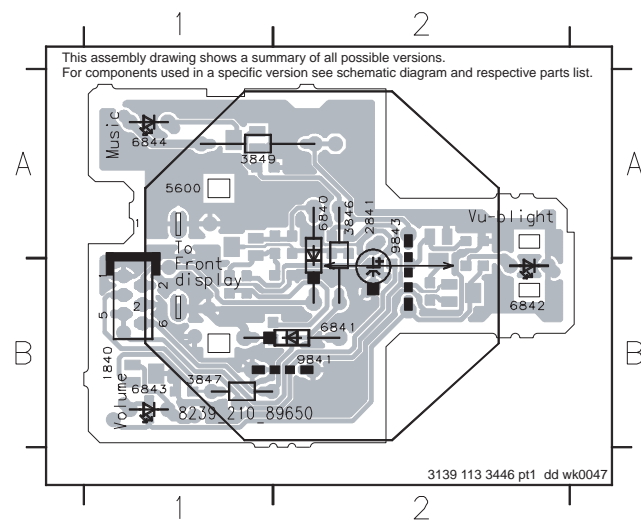


### KEY-CDC BOARD - CHIP LAYOUT



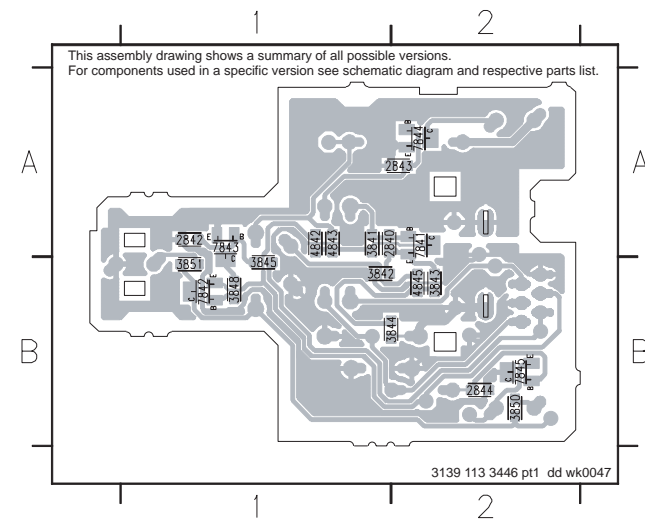
### VU METER BOARD - COMPONENT LAYOUT

1840 B1 3846 A2 3849 A1 6840 A2 6842 B2 6844 A1 9843 A2  
2841 A2 3847 B1 5600 A1 6841 B2 6843 B1 9841 B2

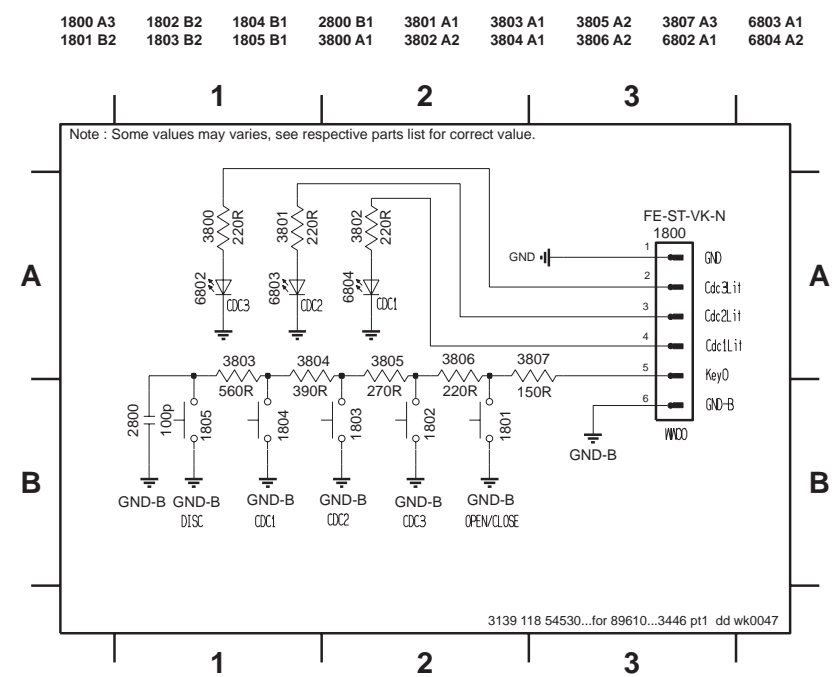


### VU METER BOARD - CHIP LAYOUT

2840 A1 2844 B2 3843 B2 3848 B1 4842 A1 7841 A2 7844 A2  
2842 A1 3841 A1 3844 B1 3850 B2 4843 A1 7842 B1 7845 B2  
2843 A2 3842 B1 3845 B1 3851 B1 4845 B2 7843 A1

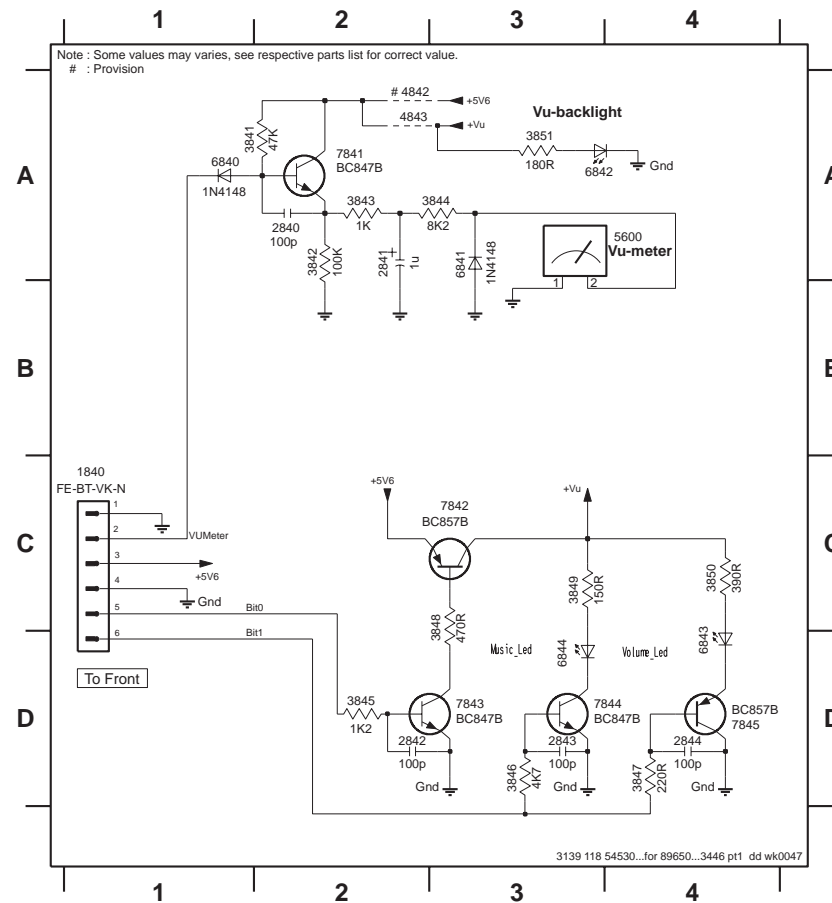


### KEY-CDC BOARD - CIRCUIT DIAGRAM



### VU METER BOARD - CIRCUIT DIAGRAM

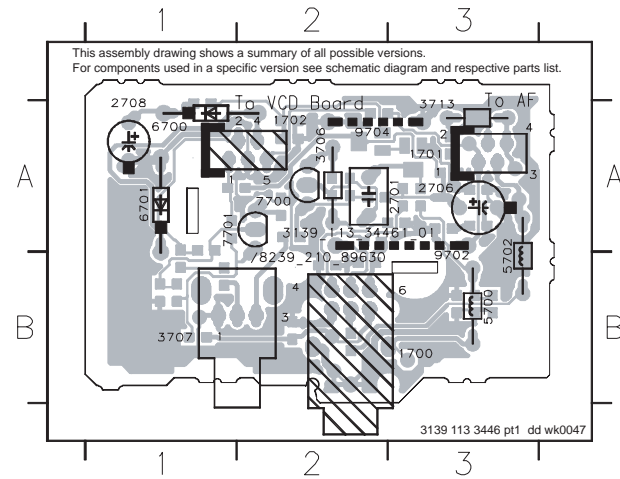
1840 C1 2842 D2 3841 A1 3844 A3 3847 D4 3850 C4 4843 A2 6841 A3 6844 D3 7843 D3  
2840 A2 2843 D3 3842 A2 3845 D2 3848 C3 3851 A3 5600 A4 6842 A3 7841 A2 7844 D3  
2841 A2 2844 D4 3843 A2 3846 D3 3849 C3 4842 A2 6840 A1 6843 D4 7842 C3 7845 D4





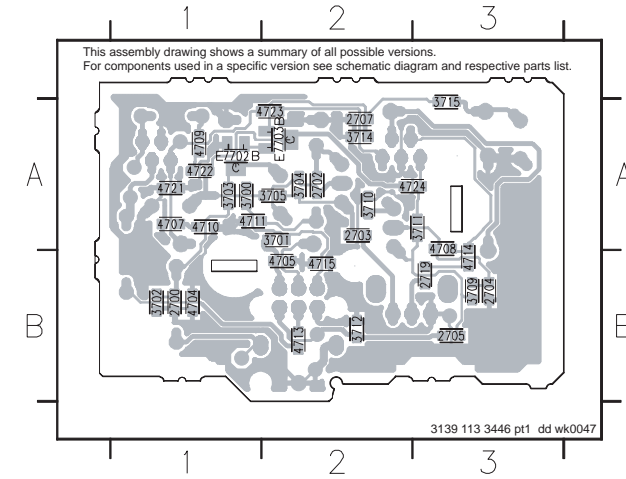
**KARAOKE BOARD - COMPONENT LAYOUT**

1700 B3 2701 A3 3706 A2 5700 B3 6701 A1 9702 B3  
 1701 A3 2706 A3 3707 B1 5702 B3 7700 A2 9704 A2  
 1702 A2 2708 A1 3713 A3 6700 A1 7701 A1



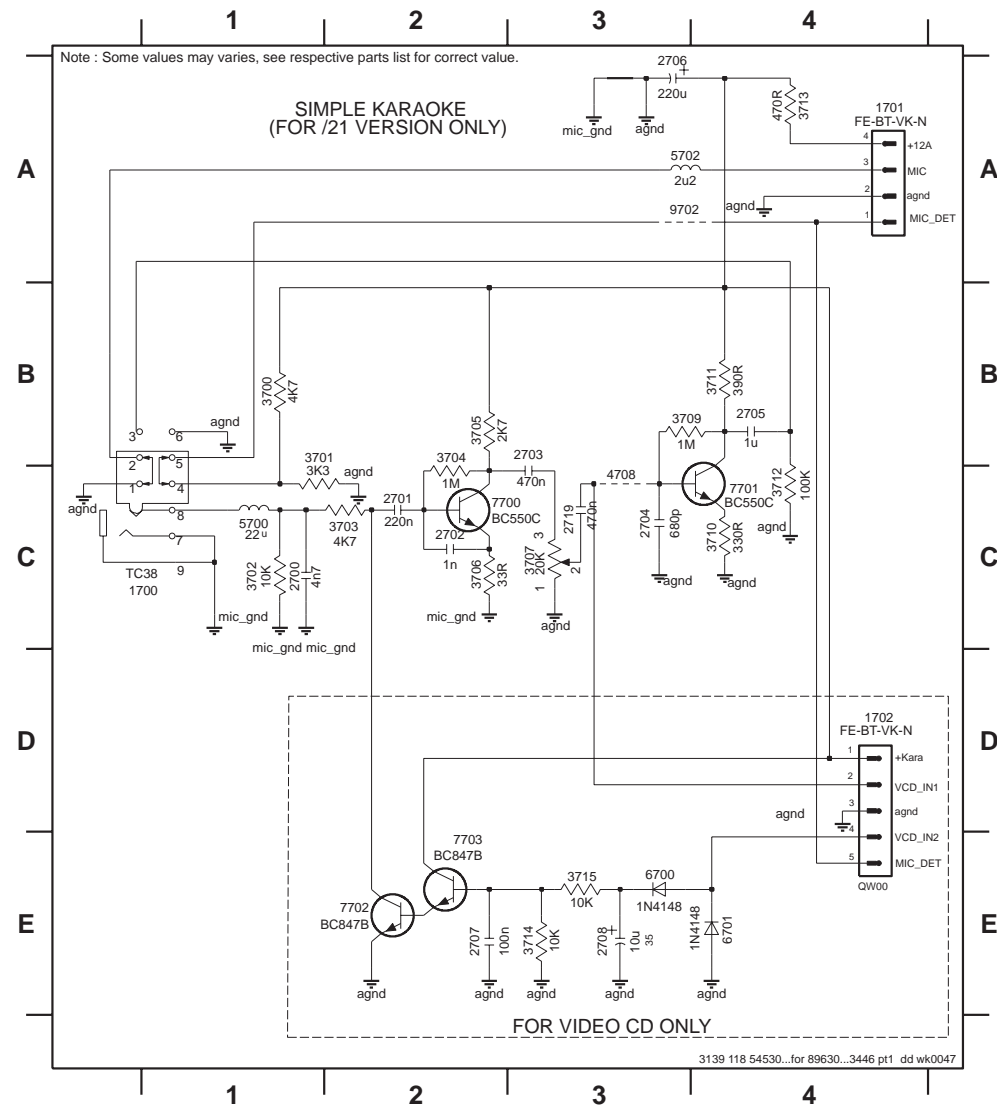
**KARAOKE BOARD - CHIP LAYOUT**

2700 B1 2707 A2 3703 A1 3711 A3 4705 B2 4711 A1 4722 A1  
 2702 A2 2719 B3 3704 A2 3712 B2 4707 A1 4713 B2 4723 A2  
 2703 A2 3700 A1 3705 A2 3714 A2 4708 A3 4714 B3 4724 A2  
 2704 B3 3701 A2 3709 B3 3715 A3 4709 A1 4715 B2 7702 A1  
 2705 B3 3702 B1 3710 A2 4704 B1 4710 A1 4721 A1 7703 A2



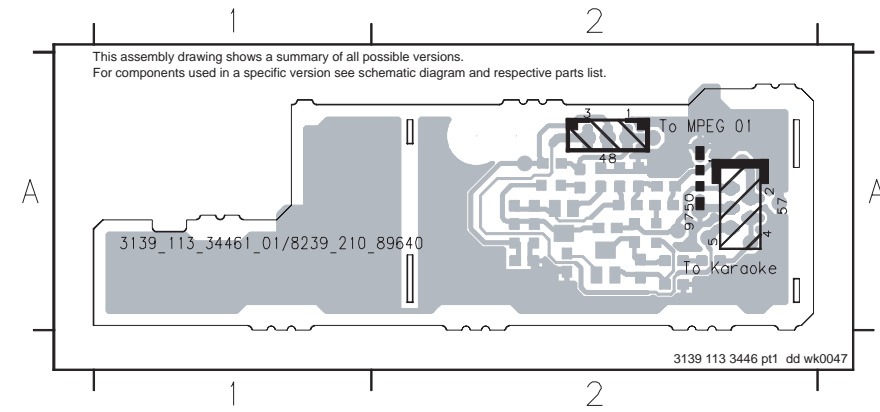
**KARAOKE BOARD - CIRCUIT DIAGRAM**

1700 C1 2700 C1 2703 B3 2706 A3 2719 C3 3702 C1 3705 B2 3709 B3 3712 C4 3715 E3 5702 A3 7700 C2 7703 E2  
 1701 A4 2701 C2 2704 C3 2707 E2 3700 B1 3703 C2 3706 C2 3710 C4 3713 A4 4708 C3 6700 E3 7701 C4 9702 A3  
 1702 D4 2702 C2 2705 B4 2708 E3 3701 B1 3704 B2 3707 C3 3711 B4 3714 E3 5700 C1 6701 E4 7702 E2



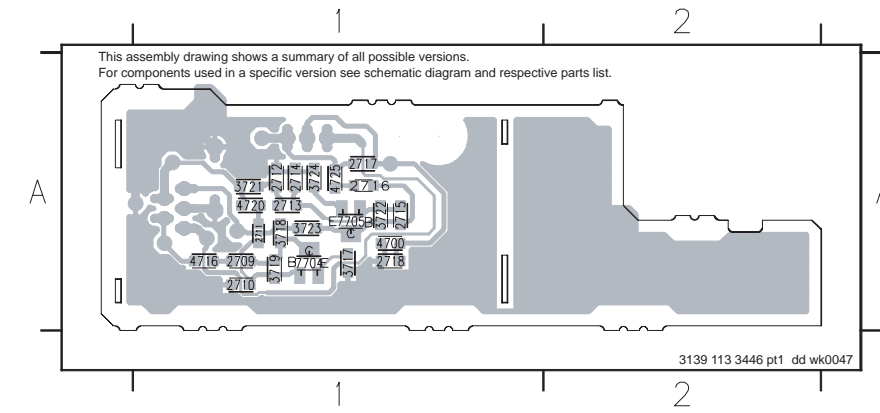
**VCD INTERFACE BOARD - COMPONENT LAYOUT**

48 A2 57 A2 9750 A2



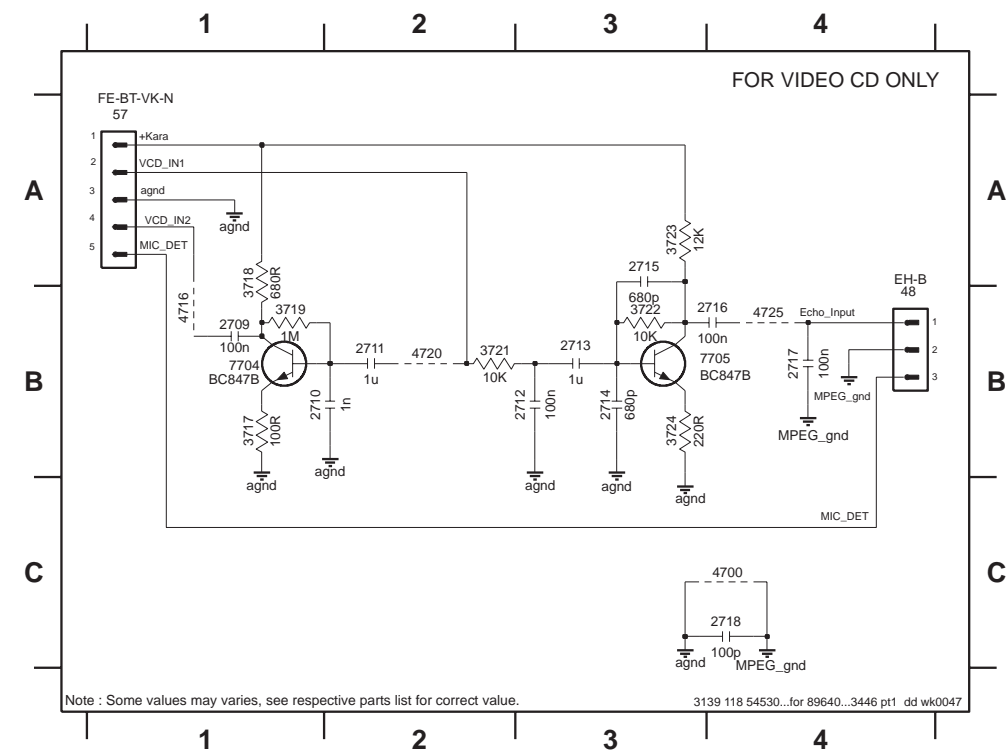
**VCD INTERFACE BOARD - CHIP LAYOUT**

2709 A1 2713 A1 2717 A1 3719 A1 3724 A1 4725 A1  
 2710 A1 2714 A1 2718 A1 3721 A1 4700 A1 7704 A1  
 2711 A1 2715 A1 3717 A1 3722 A1 4716 A1 7705 A1  
 2712 A1 2716 A1 3718 A1 3723 A1 4720 A1



**VCD INTERFACE BOARD - CIRCUIT DIAGRAM**

48 B4 2709 B1 2711 B2 2713 B3 2715 A3 2717 B4 3717 B1 3719 B1 3722 B3 3724 B3 4716 B1 4725 B4 7705 B3  
 57 A1 2710 B1 2712 B3 2714 B3 2716 B4 2718 C4 3718 A1 3721 B2 3723 A3 4700 C4 4720 B2 7704 B1



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

1602	4822 265 11535	Flex Connector 8P
1603	4822 265 11208	Flex Connector 10P
1650	4822 276 13775	Tact Switch
1651	4822 276 13775	Tact Switch
1652	4822 276 13775	Tact Switch
1653	4822 276 13775	Tact Switch
1654	4822 276 13775	Tact Switch
1655	4822 276 13775	Tact Switch
1656	4822 276 13775	Tact Switch
1657	4822 276 13775	Tact Switch
1658	4822 276 13775	Tact Switch
1659	4822 276 13775	Tact Switch
1661	4822 276 13775	Tact Switch /22
1663	4822 276 13775	Tact Switch
1664	4822 276 13775	Tact Switch
1665	4822 276 13775	Tact Switch
1666	4822 276 13775	Tact Switch
1667	4822 276 13775	Tact Switch
1669	4822 276 13775	Tact Switch
1670	4822 276 13775	Tact Switch
1671	4822 276 13775	Tact Switch
1672	4822 276 13775	Tact Switch
1673	4822 276 13775	Tact Switch
1674	4822 276 13775	Tact Switch
1675	4822 276 13775	Tact Switch /22
1690	2422 129 16385	Rotary Encoder 12P
1800	4822 265 11207	Flex Connector 6P
1801	4822 276 13775	Tact Switch
1802	4822 276 13775	Tact Switch
1803	4822 276 13775	Tact Switch
1804	4822 276 13775	Tact Switch
1805	4822 276 13775	Tact Switch
1840	4822 267 10731	Flex Connector 6P

**CAPACITORS**

2606	5322 126 11583	10nF 10% 50V
2607	5322 126 11583	10nF 10% 50V
2608	4822 122 31765	100pF 2% 63V
2613	4822 122 31765	100pF 2% 63V
2615	4822 124 12233	47µF 20% 25V
2622	4822 126 14305	100nF 10% 16V
2623	4822 126 14305	100nF 10% 16V
2800	4822 122 31765	100pF 2% 63V
2840	4822 122 31765	100pF 2% 63V
2841	4822 124 22651	1µF 20% 50V
2842	4822 122 31765	100pF 2% 63V
2843	4822 122 31765	100pF 2% 63V
2844	4822 122 31765	100pF 2% 63V
2860	4822 124 81286	47µF 20% 16V
2861	4822 126 14238	2,2nF 50V
2862	3198 017 34730	47nF 16V

**RESISTORS**

3606	4822 051 30103	10k 5% 0,062W
3607	4822 051 30103	10k 5% 0,062W
3610	4822 051 30151	150R 5% 0,062W
3611	4822 051 30221	220R 5% 0,062W
3612	4822 051 30271	270R 5% 0,062W
3613	4822 051 30391	390R 5% 0,062W
3614	4822 051 30561	560R 5% 0,062W
3615	4822 117 12968	820R 5% 0,62W
3616	4822 117 11817	1k2 1% 1/16W
3617	4822 117 12903	1k8 1% 0,063W
3618	4822 116 52263	2k7 5% 0,5W
3619	4822 051 30472	4k7 5% 0,062W
3620	4822 051 30103	10k 5% 0,062W
3621	4822 051 30121	120R 5% 0,062W
3622	4822 051 30121	120R 5% 0,062W
3623	4822 051 30121	120R 5% 0,062W
3624	4822 051 30121	120R 5% 0,062W
3630	4822 051 30151	150R 5% 0,062W
3631	4822 051 30221	220R 5% 0,062W
3632	4822 051 30271	270R 5% 0,062W
3633	4822 051 30391	390R 5% 0,062W
3634	4822 051 30561	560R 5% 0,062W
3635	4822 117 12968	820R 5% 0,62W
3636	4822 117 11817	1k2 1% 1/16W
3637	4822 117 12903	1k8 1% 0,063W
3638	4822 051 30272	2k7 5% 0,062W
3639	4822 051 30472	4k7 5% 0,062W
3640	4822 051 30103	10k 5% 0,062W
3646	4822 051 30181	180R 5% 0,062W
3651	4822 051 30221	220R 5% 0,062W
3652	4822 051 30221	220R 5% 0,062W
3653	4822 051 30271	270R 5% 0,062W
3654	4822 051 30121	120R 5% 0,062W
3655	4822 051 30102	1k 5% 0,062W
3800	4822 116 83872	220R 5% 0,5W
3801	4822 116 83872	220R 5% 0,5W
3802	4822 116 83872	220R 5% 0,5W
3803	4822 051 30561	560R 5% 0,062W
3804	4822 051 30391	390R 5% 0,062W
3805	4822 051 30271	270R 5% 0,062W
3806	4822 051 30221	220R 5% 0,062W
3807	4822 051 30151	150R 5% 0,062W
3841	4822 117 12925	47k 1% 0,063W
3842	4822 117 13632	100k 1% 0,62W
3843	4822 051 30102	1k 5% 0,062W
3844	4822 117 12902	8k2 1% 0,063W
3845	4822 117 11817	1k2 1% 1/16W
3846	4822 116 52283	4k7 5% 0,5W
3847	4822 116 83872	220R 5% 0,5W
3848	4822 051 30471	470R 5% 0,062W
3849	4822 116 83868	150R 5% 0,5W
3850	4822 051 30391	390R 5% 0,062W

**ELECTRICAL PARTS LIST - FRONT CONTROL BOARD**

3851	4822 051 30181	180R 5% 0,062W
3860	4822 051 30101	100R 5% 0,062W
3861	4822 051 30103	10k 5% 0,062W
3862	4822 050 11002	1k 1% 0,4W
4500	4822 051 30008	OR Jumper 0603
4600	4822 051 30008	OR Jumper 0603
4601	4822 051 30008	OR Jumper 0603
4602	4822 051 30008	OR Jumper 0603
4603	4822 051 30008	OR Jumper 0603
4604	4822 051 30008	OR Jumper 0603
4605	4822 051 30008	OR Jumper 0603
4606	4822 051 30008	OR Jumper 0603
4607	4822 051 30008	OR Jumper 0603
4627	4822 051 30008	OR Jumper 0603
4628	4822 051 30008	OR Jumper 0603
4843	4822 051 30008	OR Jumper 0603
4845	4822 051 30008	OR Jumper 0603

**COILS & FILTERS**

5600	3139 110 52720	METER VU P-47SI-B BLUE
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**DIODES**

6602	4822 130 30621	1N4148
6603	4822 130 10791	LTL-1CHGE
6604	4822 130 10791	LTL-1CHGE
6605	4822 130 10791	LTL-1CHGE
6606	4822 130 10791	LTL-1CHGE
6610	4822 130 10791	LTL-1CHGE
6611	4822 130 10791	LTL-1CHGE
6612	4822 130 82978	LTL-1CHPE
6613	4822 130 10791	LTL-1CHGE
6623	9322 153 37676	LB3333RT-E7898
6802	4822 130 10791	LTL-1CHGE
6803	4822 130 10791	LTL-1CHGE
6804	4822 130 10791	LTL-1CHGE
6840	4822 130 30621	1N4148
6841	4822 130 30621	1N4148
6842	9322 153 37676	LB3333RT-E7898
6843	4822 130 82978	LTL-1CHPE
6844	4822 130 11589	LTL-1CHAE

**TRANSISTORS & INTEGRATED CIRCUITS**

7602	5322 130 60159	BC847B
7800	9322 155 22667	TSOP2236ZC1
7841	5322 130 60159	BC847B
7842	4822 130 60373	BC857B
7843	5322 130 60159	BC847B
7844	5322 130 60159	BC847B
7845	4822 130 60373	BC857B

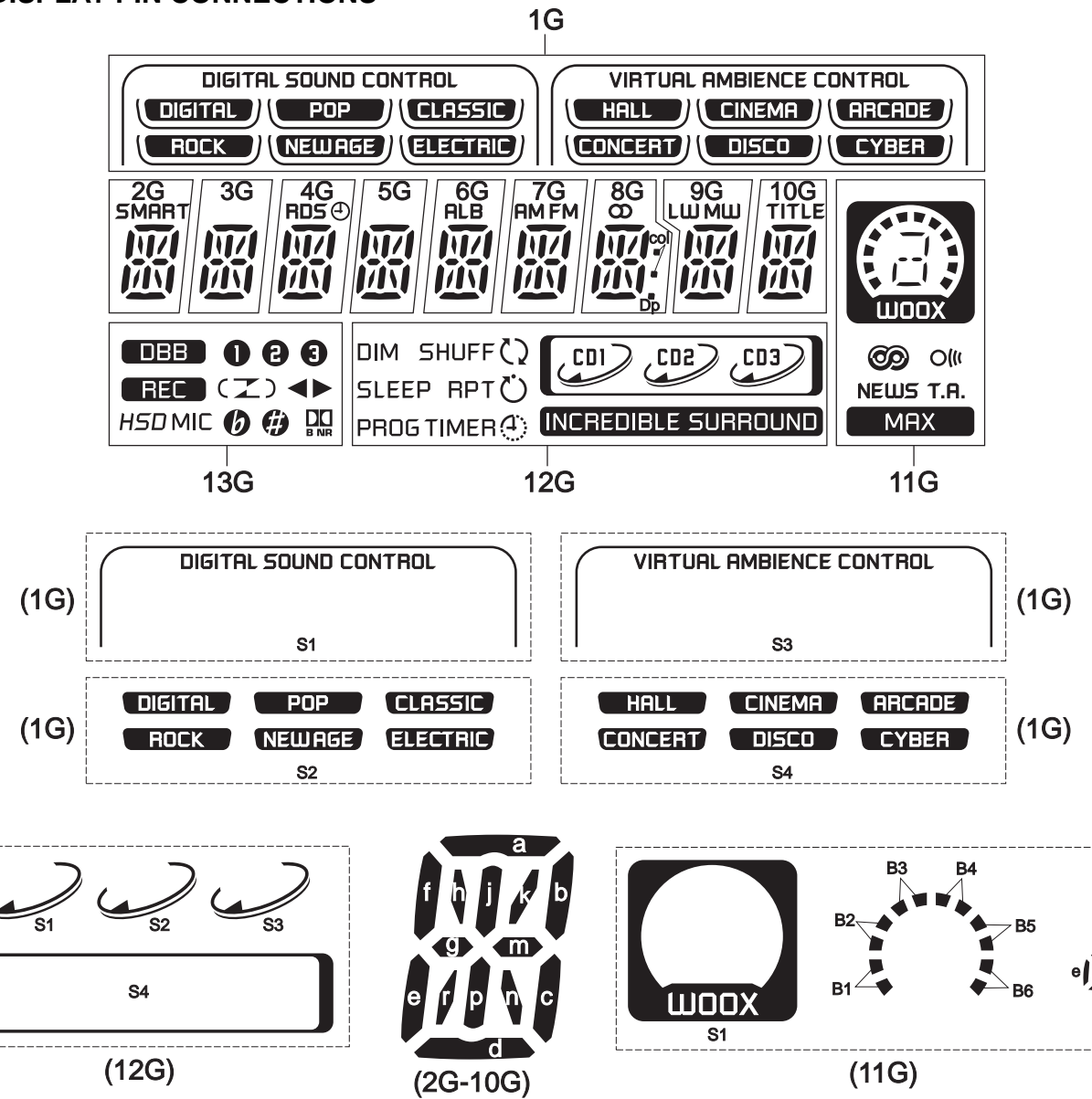
Note : Only the parts mentioned in this list are normal service spare parts.

# FRONT DISPLAY BOARD

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FTD pin connection ..... 6-1  
 Front Display Board - Chip layout ..... 6-2  
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 Front Display Board - Circuit diagram ..... 6-4  
 Headphone Part - Layout & Circuit diagram ..... 6-5  
 Electrical parts list ..... 6-5

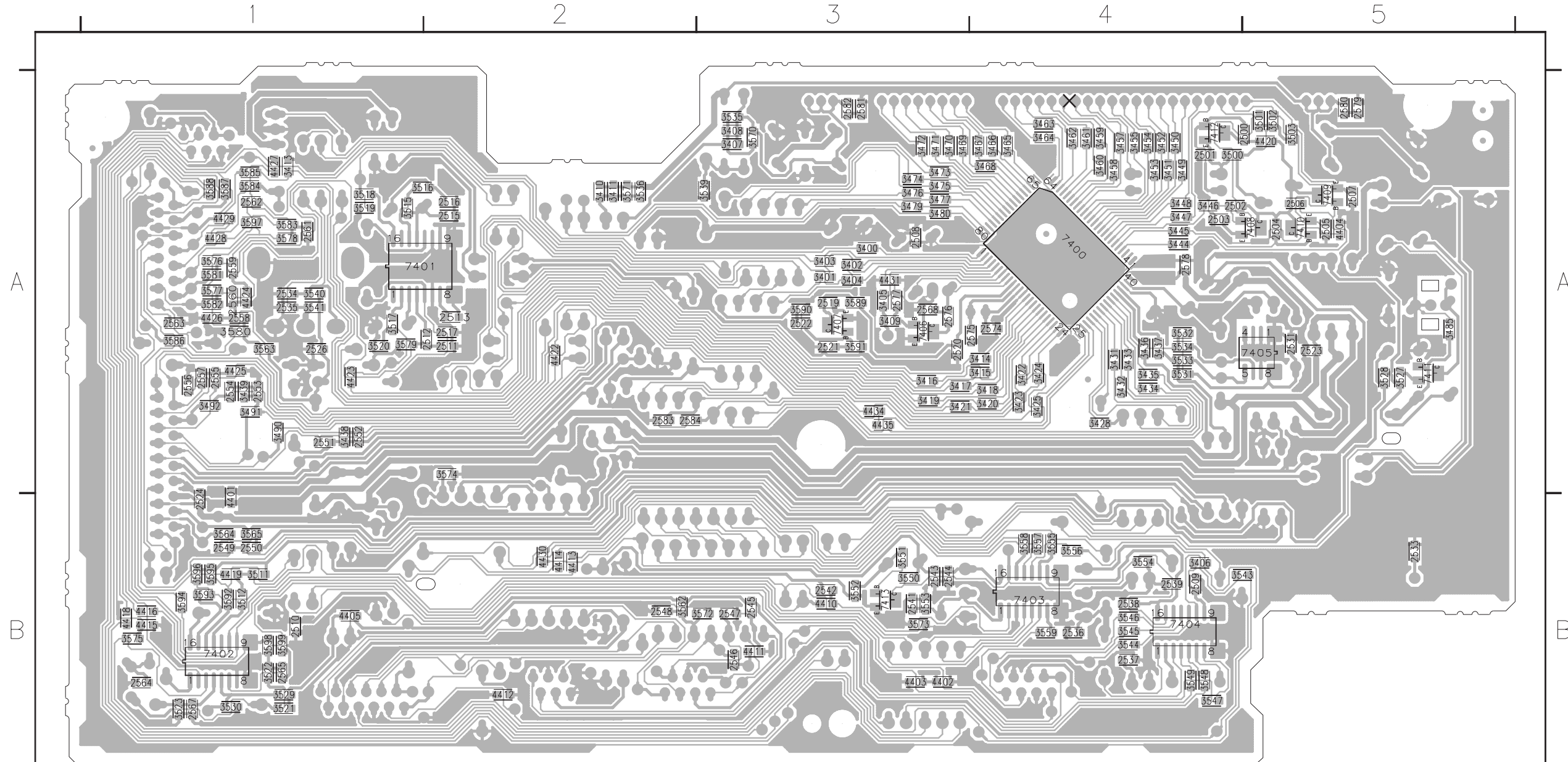
## FTD DISPLAY PIN CONNECTIONS



	1G	2G	3G	4G	5G	6G	7G	8G	9G	10G	11G	12G	13G
P1	S1	a	a	a	a	a	a	a	a	a	S1	DIM	DBB
P2	S2	h	h	h	h	h	h	h	h	h	B1	SHUFF	1
P3	(CLASSIC)	j, p	j, p	j, p	j, p	j, p	j, p	j, p	j, p	j, p	B2	SLEEP	2
P4	(POP)	k	k	k	k	k	k	k	k	k	B3	RPT	3
P5	(DIGITAL)	b	b	b	b	b	b	b	b	b	B4	PROG	REC
P6	(ELECTRIC)	f	f	f	f	f	f	f	f	f	B5	TIMER	C
P7	(NEWAGE)	m	m	m	m	m	m	m	m	m	B6	CD1	Z
P8	(ROCK)	g	g	g	g	g	g	g	g	g	a, g, m, d	S1	)
P9	S3	c	c	c	c	c	c	c	c	c	b	CD2	◀
P10	S4	e	e	e	e	e	e	e	e	e	c	S2	▶
P11	(ARCADE)	r	r	r	r	r	r	r	r	r	e	CD3	HSD
P12	(CINEMA)	n	n	n	n	n	n	n	n	n	⊞	S3	MIC
P13	(HALL)	d	d	d	d	d	d	d	d	d	O	S4	b
P14	(CYBER)	SMART	-	RDS	-	ALB	AM	∞	LW	TITLE	NEWS	INCREDIBLE SURROUND	#
P15	(DISCO)	-	-	-	-	-	FM	col	MW	-	T.A.	-	⊞
P16	(CONCERT)	-	-	-	-	-	-	Dp	-	-	MAX	-	-

# FRONT DISPLAY BOARD - CHIP LAYOUT

2500	A5	2512	A2	2531	A5	2545	B3	2557	A1	2575	A4	3402	A3	3415	A4	3431	A4	3447	A4	3460	A4	3472	A3	3500	A4	3521	B1	3536	A2	3551	B3	3565	B1	3581	A1	3593	B1	4410	B3	4424	A1	7402	B1
2501	A4	2513	A2	2533	B5	2546	B3	2558	A1	2576	A3	3403	A3	3416	A3	3432	A4	3448	A4	3461	A4	3473	A3	3501	A5	3522	B1	3539	A3	3552	B3	3570	A3	3582	A1	3594	B1	4411	B3	4425	A1	7403	B4
2502	A4	2515	A2	2534	A1	2547	B3	2559	A1	2577	A3	3404	A3	3417	A3	3433	A4	3449	A4	3462	A4	3474	A3	3502	A5	3523	B1	3540	A1	3553	B3	3571	A2	3583	A1	3595	B1	4412	B2	4426	A1	7404	B4
2503	A4	2516	A2	2535	A1	2548	B2	2560	A1	2578	A4	3405	A3	3418	A4	3434	A4	3450	A4	3463	A4	3475	A3	3503	A5	3527	A5	3541	A1	3554	B4	3572	B3	3584	A1	3596	B1	4413	B2	4427	A1	7405	A5
2504	A5	2517	A2	2536	B4	2549	B1	2561	A1	2579	A5	3406	B4	3419	A3	3435	A4	3451	A4	3464	A4	3476	A3	3511	B1	3528	A5	3543	B4	3555	B4	3573	B3	3585	A1	3597	A1	4414	B2	4428	A1	7406	A3
2505	A5	2519	A3	2537	B4	2550	B1	2562	A1	2580	A5	3407	A3	3420	A4	3436	A4	3452	A4	3465	A4	3477	A3	3512	B1	3529	B1	3544	B4	3556	B4	3574	A2	3586	A1	3598	B1	4415	B1	4429	A1	7407	A3
2506	A5	2520	A3	2538	B4	2551	A1	2563	A1	2581	A3	3408	A3	3421	A3	3437	A4	3453	A4	3466	A4	3479	A3	3515	A1	3530	B1	3545	B4	3557	B4	3575	B1	3587	A1	3599	B1	4416	B1	4430	B2	7408	A5
2507	A5	2521	A3	2539	B4	2552	A1	2564	B1	2582	A3	3409	A3	3422	A4	3438	A1	3454	A4	3467	A4	3480	A3	3516	A1	3531	A4	3546	B4	3558	B4	3576	A1	3588	A1	4401	B1	4418	B1	4431	A3	7409	A5
2508	A3	2522	A3	2541	B3	2553	A1	2565	B1	2583	A2	3410	A2	3423	A4	3439	A1	3455	A4	3468	A4	3485	A5	3517	A1	3532	A4	3547	B4	3559	B4	3577	A1	3589	A3	4402	B3	4419	B1	4434	A3	7410	A5
2509	B4	2523	A5	2542	B3	2554	A1	2567	B1	2584	A2	3411	A2	3424	A4	3444	A4	3457	A4	3469	A3	3490	A1	3518	A1	3533	A4	3548	B4	3562	B2	3578	A1	3590	A3	4403	B3	4420	A5	4435	A3	7411	A5
2510	B1	2524	B1	2543	B3	2555	A1	2568	A3	3400	A3	3413	A1	3425	A4	3445	A4	3458	A4	3470	A3	3491	A1	3519	A1	3534	A4	3549	B4	3563	A1	3579	A1	3591	A3	4404	A5	4422	A2	7400	A4	7412	A4
2511	A2	2526	A1	2544	B3	2556	A1	2574	A4	3401	A3	3414	A4	3428	A4	3446	A4	3459	A4	3471	A3	3492	A1	3520	A1	3535	A3	3550	B3	3564	B1	3580	A1	3592	B1	4405	B1	4423	A1	7401	A1	7413	B3



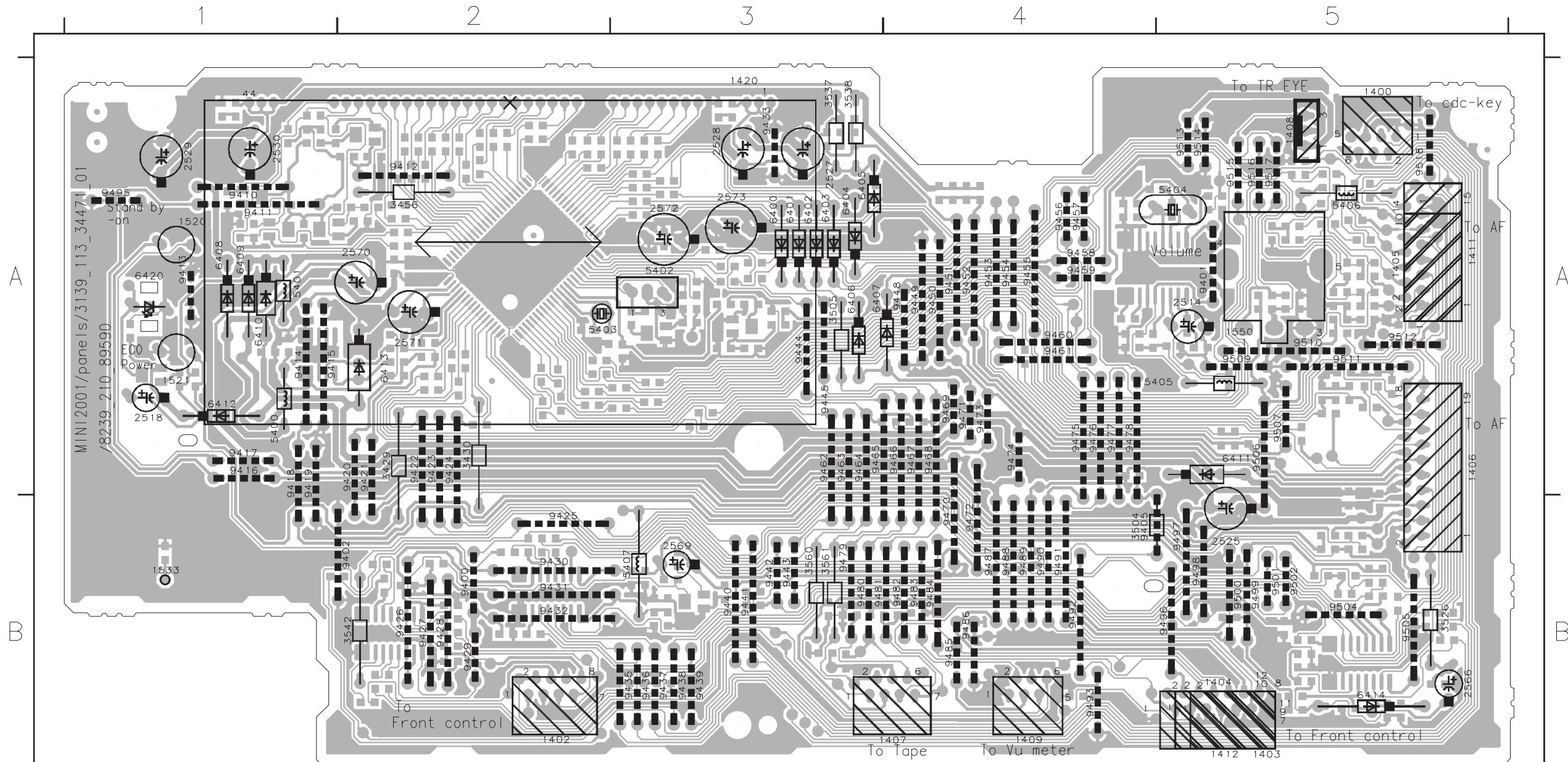
This assembly drawing shows a summary of all possible versions. For components used in a specific version see schematic diagram and respective parts list.

3139 113 3447 pt1 dd wk0047



FRONT DISPLAY BOARD - COMPONENT LAYOUT

1400 A5	1409 B4	2514 A5	2569 B3	3504 B4	5400 A1	6400 A3	6408 A1	9400 B2	9414 A1	9422 A2	9430 B2	9439 B3	9449 A4	9457 A4	9465 A3	9473 A4	9481 B3	9489 B4	9498 B5	9507 A5	9516 A5
1402 B2	1411 A5	2518 A1	2570 A2	3505 A3	5401 A1	6401 A3	6409 A1	9401 A5	9415 A1	9423 A2	9431 B2	9440 B3	9450 A4	9458 A4	9466 A4	9474 A4	9482 B4	9490 B4	9499 B5	9509 A5	9517 A5
1403 B5	1412 B5	2525 B5	2571 A2	3526 B5	5402 A3	6402 A3	6410 A1	9402 B2	9416 A1	9424 A2	9432 B2	9441 B3	9451 A4	9459 A4	9467 A4	9475 A4	9483 B4	9491 B4	9500 B5	9510 A5	9518 A5
1404 B5	1420 A3	2527 A3	2572 A3	3537 A3	5403 A2	6403 A3	6411 A5	9405 B4	9417 A1	9425 B2	9433 A3	9442 B3	9452 A4	9460 A4	9468 A4	9476 A4	9484 B4	9492 B4	9501 B5	9511 A5	
1405 A5	1520 A1	2528 A3	2573 A3	3538 A3	5404 A5	6404 A3	6412 A1	9410 A1	9418 A1	9426 B2	9435 B3	9443 B3	9453 A4	9461 A4	9469 A4	9477 A4	9485 B4	9493 B4	9502 B5	9512 A5	
1406 A5	1521 A1	2529 A1	3429 A2	3542 B2	5405 A5	6405 A3	6413 A2	9411 A1	9419 A1	9427 B2	9436 B3	9444 A3	9454 A4	9462 A3	9470 B4	9478 A4	9486 B4	9495 A1	9504 B5	9513 A5	
1407 B4	1533 B1	2530 A1	3430 A2	3560 B3	5406 A5	6406 A3	6414 B5	9412 A2	9420 A2	9428 B2	9437 B3	9445 A3	9455 A4	9463 A3	9471 A4	9479 B3	9487 B4	9496 B5	9505 B5	9514 A5	
1408 A5	1550 A5	2566 B5	3456 A2	3561 B3	5407 B3	6407 A3	6420 A1	9413 A1	9421 A2	9429 B2	9438 B3	9448 A4	9456 A4	9464 A3	9472 B4	9480 B3	9488 B4	9497 B5	9506 A5	9515 A5	



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

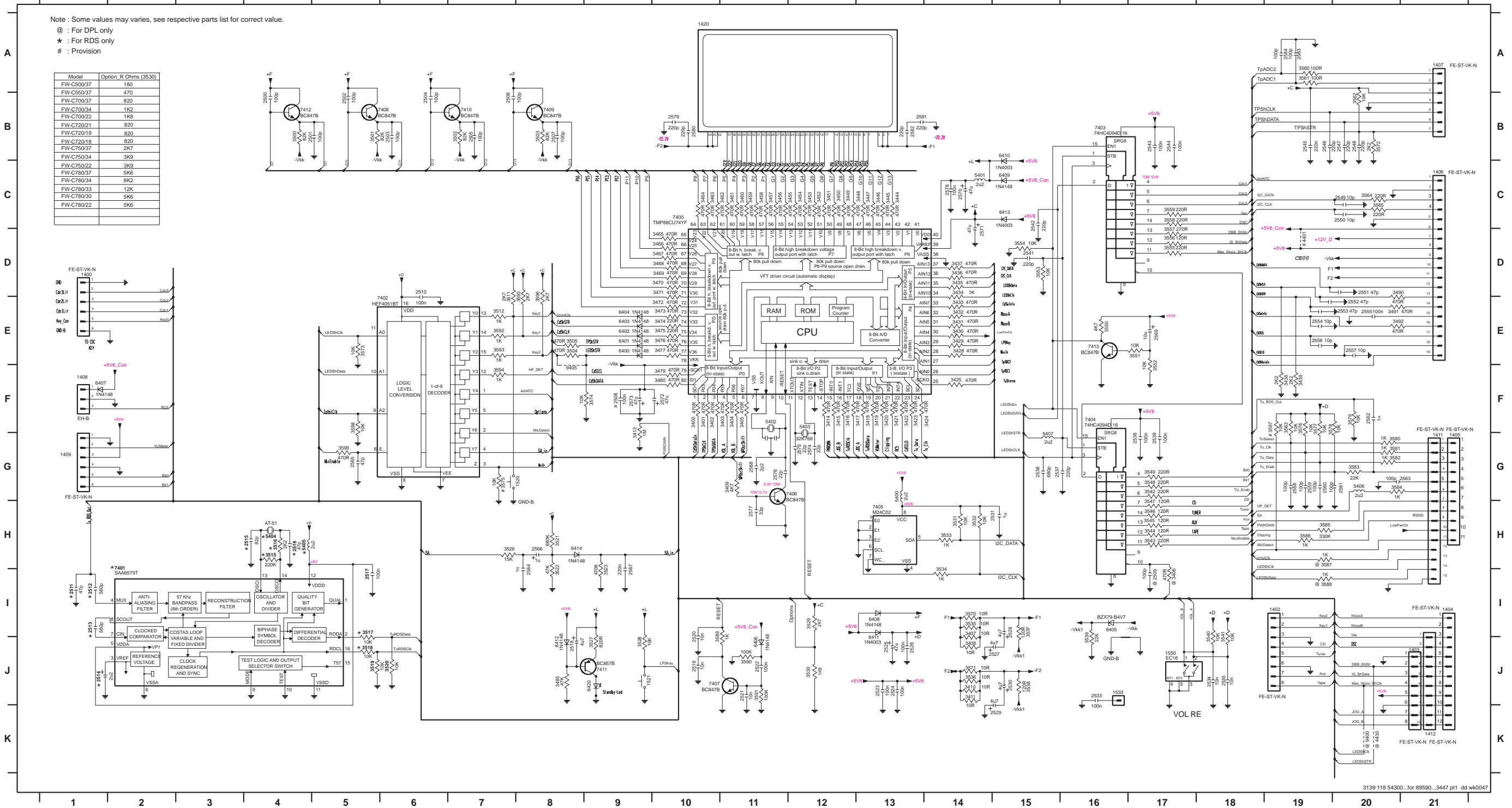
3139 113 3447 pt1 dd wk0047

# FRONT DISPLAY BOARD - CIRCUIT DIAGRAM

1400 D1	1407 A21	1520 G8	2502 B5	2508 F9	2514 J1	2520 J10	2526 J13	2533 J16	2539 G17	2546 B19	2552 E20	2558 G19	2564 I8	2570 C14	2576 G11	2582 B13	3403 F11	3409 G11	3416 F12	3422 F13	3430 E14	3436 D14	3446 C13	3452 C12	3458 C11	3464 C10	3470 D10	3476 E10	3482 E20	3504 E8	3517 I5	3523 I9	3531 H14	3537 H5	3543 H17	3549 G17	3555 D17	3561 A19	3571 J14	3577 F19	3583 G20	3589 J10	3595 E8	4430 K20	5405 H4	6403 E9	6409 C15	6420 J9	7405 H13	7411 J9	
1402 H9	1408 F1	1521 J9	2503 B6	2509 H7	2515 H4	2521 J11	2527 J15	2534 J18	2541 D15	2547 B20	2553 E20	2559 G19	2565 G5	2571 D14	2577 H11	2583 A19	3404 F11	3410 J14	3417 F13	3423 F13	3431 E14	3437 D14	3447 C13	3453 C12	3459 C11	3465 D10	3471 D10	3477 E10	3482 E20	3505 E8	3518 J5	3524 H7	3532 H14	3538 H5	3544 H17	3550 E16	3556 D17	3562 B20	3572 B20	3578 F19	3584 G20	3590 J11	3596 E8	5400 G13	5406 G20	6404 E9	6410 B15	7400 C10	7406 G11	7412 B4	
1403 J21	1409 G1	1533 J16	2506 B8	2510 D6	2516 H4	2522 J11	2528 H5	2535 J16	2542 C15	2548 B20	2554 E19	2560 G19	2566 H8	2572 F10	2578 C14	2584 A19	3405 F11	3411 J14	3418 F13	3424 F13	3432 E14	3438 F19	3448 C13	3454 C12	3460 C11	3466 D10	3472 E10	3478 F10	3500 B4	3511 E7	3516 J5	3522 J9	3530 H4	3536 H14	3542 H17	3548 H17	3554 F17	3560 C17	3566 C20	3572 F9	3578 F20	3584 H19	3590 F5	5401 C14	5407 D15	6405 H6	6411 H3	7401 D1	7407 J10	7413 E16	
1404 J21	1411 G21	1539 J17	2507 B7	2511 H1	2517 I5	2523 J13	2529 K15	2536 G15	2543 B17	2549 C20	2555 E20	2561 G20	2567 I9	2573 F9	2579 B10	2585 B10	3406 F11	3412 G19	3419 F13	3425 F14	3433 E14	3439 F19	3449 C13	3455 C12	3461 C11	3467 D10	3473 E10	3479 F10	3501 B5	3512 E7	3517 J5	3523 J9	3531 H14	3537 H5	3543 H17	3549 G17	3555 D17	3561 A19	3567 B20	3573 E5	3579 F20	3585 H19	3591 J11	3597 F19	5402 F11	5408 E9	6406 J11	6412 B1	7402 E5	7408 B5	9402 K9
1405 G21	1412 K21	1530 B4	2508 B4	2509 B7	2512 H1	2518 J8	2524 J13	2530 J15	2537 G15	2544 B17	2550 C20	2556 E19	2562 F20	2568 G11	2574 G12	2580 B10	3401 F10	3407 I14	3414 F12	3420 F13	3428 E14	3434 D14	3444 C13	3450 C12	3456 C11	3462 D10	3468 D10	3474 E10	3480 J8	3502 B7	3515 H4	3521 H8	3529 I2	3535 H14	3541 J18	3547 G17	3553 D15	3559 C17	3565 C20	3571 F9	3577 G20	3583 H19	3589 F7	3595 G5	5403 F12	5409 E9	6407 F1	6413 C15	7403 B16	7409 B8	9405 F8
1406 C21	1420 A10	1501 B5	2507 B8	2507 B8	2513 H1	2519 J10	2525 J13	2531 H15	2538 G17	2545 B19	2551 D20	2557 E20	2563 G21	2569 E17	2575 G12	2581 B13	3402 F10	3408 J14	3415 G12	3421 F13	3429 E14	3435 D14	3445 C13	3451 C12	3457 C11	3463 D10	3469 D10	3475 E10	3480 D20	3503 B8	3516 H4	3522 I8	3530 J2	3536 J14	3542 G17	3548 G17	3554 D15	3560 A19	3570 I14	3576 F19	3582 G20	3588 H19	3594 F7	4401 D19	5404 H4	6402 E9	6408 C15	7404 J9	7405 H13	7411 J9	

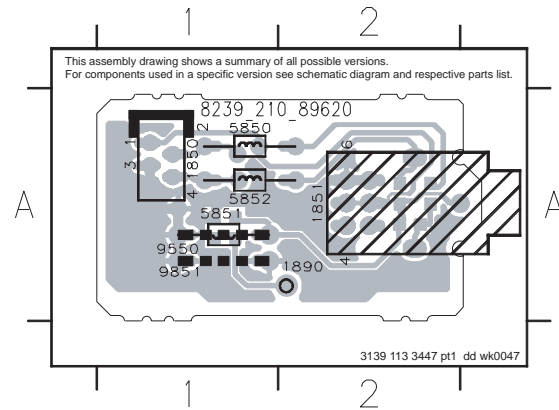
Note : Some values may varies, see respective parts list for correct value.  
 @ : For DPL only  
 \* : For RDS only  
 # : Provision

Model	Option_R	Ohms (3530)
FW-C50037	180	
FW-C50037	470	
FW-C70037	820	
FW-C70034	1K2	
FW-C70022	1K8	
FW-C72021	820	
FW-C72019	820	
FW-C72018	820	
FW-C75037	2K7	
FW-C75034	3K9	
FW-C75022	3K9	
FW-C78037	5K6	
FW-C78034	8K2	
FW-C78033	12K	
FW-C78030	5K6	
FW-C78022	5K6	



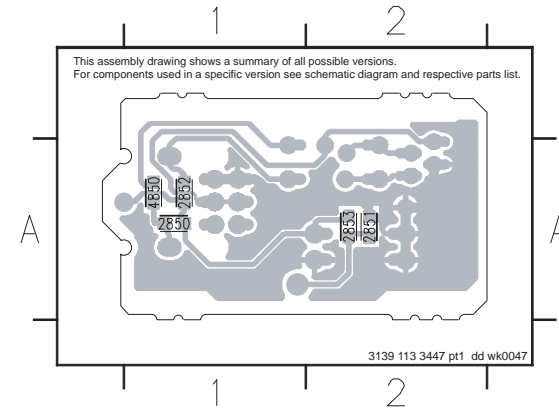
**HEADPHONE BOARD - COMPONENT LAYOUT**

1850 A1 1890 A2 5851 A1 9550 A1  
1851 A2 5850 A1 5852 A1 9851 A1



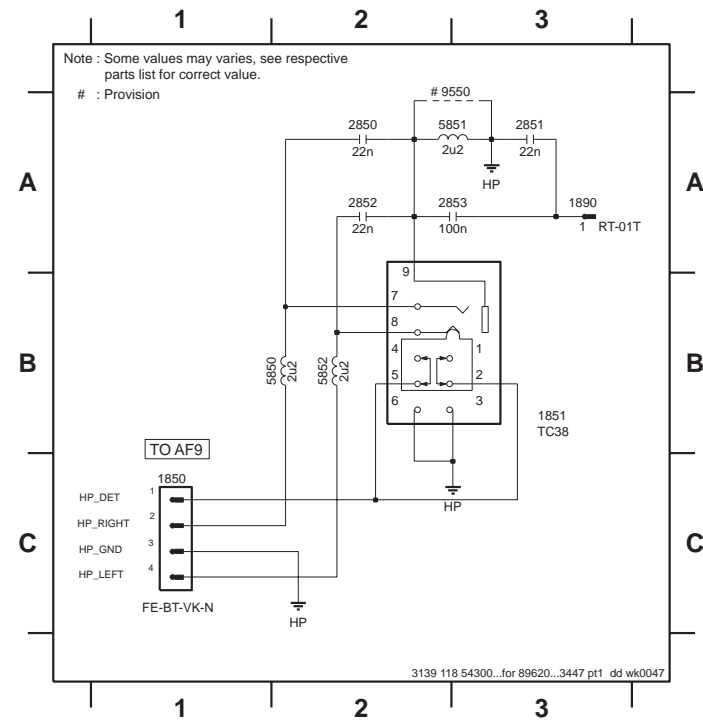
**HEADPHONE BOARD - CHIP LAYOUT**

2850 A1 2852 A1 4850 A1  
2851 A2 2853 A2



**HEADPHONE BOARD - CIRCUIT DIAGRAM**

1850 C1 1890 A3 2851 A3 2853 A3 5851 A3 9550 A3  
1851 B3 2850 A2 2852 A2 5850 B2 5852 B2



**ELECTRICAL PARTS LIST - FRONT DISPLAY BOARD**

**MISCELLANEOUS**

1400	4822 265 11207	Flex Connector 6P
1402	4822 265 11535	Flex Connector 8P
1405	2422 025 14541	Flex Connector 11P
1406	4822 265 11545	Flex Connector 19P
1407	4822 267 10956	Flex Connector 7P
1409	4822 265 11207	Flex Connector 6P
1412	4822 265 11208	Flex Connector 10P
1420	3139 110 52550	FTD Display
1520	4822 276 13775	Tact Switch
1521	4822 276 13775	Tact Switch
1550	4822 273 10365	Rotary Encoder 24P
1850	4822 267 10733	Flex Connector 4P

1851 4822 265 11529 Headphone Socket

**CAPACITORS**

2500	4822 122 31765	100pF 2% 63V
2501	4822 122 31765	100pF 2% 63V
2502	4822 122 31765	100pF 2% 63V
2503	4822 122 31765	100pF 2% 63V
2504	4822 122 31765	100pF 2% 63V
2505	4822 122 31765	100pF 2% 63V
2506	4822 122 31765	100pF 2% 63V
2507	4822 122 31765	100pF 2% 63V
2510	4822 126 14305	100nF 10% 16V

**ELECTRICAL PARTS LIST - FRONT DISPLAY BOARD**

2511	4822 122 33777	47pF 5% 63V	2566	4822 124 22651	1μF 20% 50V
2512	4822 126 14249	560pF 10% 50V	2567	4822 126 13879	220nF +80/-20% 16V
2513	4822 126 14249	560pF 10% 50V	2568	4822 126 14223	2,2pF 50V
2514	4822 124 22652	2,2μF 20% 50V	2569	4822 124 11947	10μF 20% 16V
2515	4822 126 14226	82pF 5% 50V	2570	4822 124 12233	47μF 20% 25V
2516	4822 122 33777	47pF 5% 63V	2571	4822 124 12233	47μF 20% 25V
2517	4822 126 14305	100nF 10% 16V	2572	3198 028 44790	47μF 20% 35V
2518	4822 124 22726	4,7μF 35V	2573	3198 028 44790	47μF 20% 35V
2519	5322 126 11583	10nF 10% 50V	2574	4822 122 33761	22pF 5% 50V
2520	5322 126 11583	10nF 10% 50V	2575	4822 122 33761	22pF 5% 50V
2521	5322 126 11583	10nF 10% 50V	2576	4822 122 33761	22pF 5% 50V
2522	4822 126 14305	100nF 10% 16V	2577	4822 126 11671	33pF
2523	4822 126 14305	100nF 10% 16V	2578	4822 126 14305	100nF 10% 16V
2524	4822 126 14305	100nF 10% 16V	2579	4822 126 13883	220pF 5% 50V
2525	4822 124 12233	47μF 20% 25V	2580	4822 126 13883	220pF 5% 50V
2526	4822 126 14305	100nF 10% 16V	2581	4822 126 13883	220pF 5% 50V
2527	4822 124 22726	4,7μF 35V	2582	4822 126 13883	220pF 5% 50V
2528	4822 124 22726	4,7μF 35V	2583	4822 122 31765	100pF 2% 63V
2529	4822 124 22726	4,7μF 35V	2584	4822 122 31765	100pF 2% 63V
2530	4822 124 22726	4,7μF 35V	2850	4822 126 14494	22nF 10% 25V
2531	3198 017 41050	1μF 10V	2851	4822 126 14494	22nF 10% 25V
2533	4822 126 14305	100nF 10% 16V	2852	4822 126 14494	22nF 10% 25V
2534	5322 126 11583	10nF 10% 50V	2853	4822 126 14305	100nF 10% 16V
2535	5322 126 11583	10nF 10% 50V			
2536	3198 016 36810	680pF 25V			
2537	4822 126 13883	220pF 5% 50V			
2538	4822 126 14305	100nF 10% 16V			
2539	4822 126 14305	100nF 10% 16V			
2541	4822 126 13883	220pF 5% 50V			
2542	4822 126 13883	220pF 5% 50V			
2543	4822 126 14305	100nF 10% 16V			
2544	4822 126 14305	100nF 10% 16V			
2545	4822 126 13879	220nF +80/-20% 16V			
2546	4822 126 13883	220pF 5% 50V			
2547	4822 126 13883	220pF 5% 50V			
2548	4822 126 13883	220pF 5% 50V			
2549	4822 122 33741	10pF 10% 50V			
2550	4822 122 33741	10pF 10% 50V			
2551	4822 122 33777	47pF 5% 63V			
2552	4822 122 33777	47pF 5% 63V			
2553	4822 122 33777	47pF 5% 63V			
2554	4822 122 33741	10pF 10% 50V			
2555	4822 126 14305	100nF 10% 16V			
2556	4822 122 33741	10pF 10% 50V			
2557	4822 122 33741	10pF 10% 50V			
2558	4822 122 31765	100pF 2% 63V			
2559	4822 122 31765	100pF 2% 63V			
2560	4822 122 31765	100pF 2% 63V			
2561	4822 122 31765	100pF 2% 63V			
2562	3198 016 31020	1nF 25V			
2563	4822 122 31765	100pF 2% 63V			
2564	5322 126 11578	1nF 10% 50V			
2565	4822 122 33777	47pF 5% 63V			

**RESISTORS**

3400	4822 051 30471	470R 5% 0,062W
3401	4822 051 30471	470R 5% 0,062W
3402	4822 051 30471	470R 5% 0,062W
3403	4822 051 30471	470R 5% 0,062W
3404	4822 051 30471	470R 5% 0,062W
3405	4822 051 30471	470R 5% 0,062W
3407	4822 051 20109	10R 5% 0,1W
3408	4822 051 20109	10R 5% 0,1W
3409	4822 051 30472	4k7 5% 0,062W
3410	4822 051 20109	10R 5% 0,1W
3411	4822 051 20109	10R 5% 0,1W
3413	4822 051 30105	1M 5% 0,062W
3414	4822 051 30471	470R 5% 0,062W
3415	4822 051 30471	470R 5% 0,062W
3416	4822 051 30471	470R 5% 0,062W
3417	4822 051 30471	470R 5% 0,062W
3418	4822 051 30471	470R 5% 0,062W
3419	4822 051 30471	470R 5% 0,062W
3420	4822 051 30471	470R 5% 0,062W
3421	4822 051 30471	470R 5% 0,062W
3422	4822 051 30471	470R 5% 0,062W
3423	4822 051 30471	470R 5% 0,062W
3424	4822 051 30471	470R 5% 0,062W
3425	4822 051 30471	470R 5% 0,062W
3428	4822 051 30471	470R 5% 0,062W
3429	4822 116 83883	470R 5% 0,5W
3430	4822 116 83883	470R 5% 0,5W
3431	4822 051 30471	470R 5% 0,062W



## ELECTRICAL PARTS LIST - FRONT DISPLAY BOARD

## RESISTORS

3432	4822 051 30471	470R 5% 0,062W	3505	4822 051 30471	470R 5% 0,062W
3433	4822 051 30471	470R 5% 0,062W	3511	4822 051 30272	2k7 5% 0,062W
3434	4822 051 30102	1k 5% 0,062W	3512	4822 051 30102	1k 5% 0,062W
3435	4822 051 30471	470R 5% 0,062W	3515	4822 117 12891	220k 1%
3436	4822 051 30471	470R 5% 0,062W	3516	4822 051 30222	2k2 5% 0,062W
3437	4822 051 30471	470R 5% 0,062W	3517	4822 051 30103	10k 5% 0,062W
3438	4822 051 30222	2k2 5% 0,062W	3518	4822 051 30103	10k 5% 0,062W
3439	4822 051 30222	2k2 5% 0,062W	3519	4822 051 30103	10k 5% 0,062W
3444	4822 051 30471	470R 5% 0,062W	3520	4822 051 30103	10k 5% 0,062W
3445	4822 051 30471	470R 5% 0,062W	3521	4822 051 30684	680k 5% 0,062W
3446	4822 051 30471	470R 5% 0,062W	3522	4822 117 12925	47k 1% 0,063W
3447	4822 051 30471	470R 5% 0,062W	3523	4822 051 30474	470k 5% 0,062W
3448	4822 051 30471	470R 5% 0,062W	3526	4822 116 52244	15k 5% 0,5W
3449	4822 051 30471	470R 5% 0,062W	3527	4822 117 12968	820R 5% 0,62W
3450	4822 051 30471	470R 5% 0,062W	3528	4822 051 30103	10k 5% 0,062W
3451	4822 051 30471	470R 5% 0,062W	3529	4822 051 30272	2k7 5% 0,062W
3452	4822 051 30471	470R 5% 0,062W	3530	4822 117 12903	1k8 1% 0,063W /22
3453	4822 051 30471	470R 5% 0,062W	3530	4822 117 12968	820R 5% 0,62W /37
3454	4822 051 30471	470R 5% 0,062W	3531	4822 051 30103	10k 5% 0,062W
3455	4822 051 30471	470R 5% 0,062W	3532	4822 051 30103	10k 5% 0,062W
3456	4822 116 83883	470R 5% 0,5W	3533	4822 051 30102	1k 5% 0,062W
3457	4822 051 30471	470R 5% 0,062W	3534	4822 051 30102	1k 5% 0,062W
3458	4822 051 30471	470R 5% 0,062W	3535	4822 051 20109	10R 5% 0,1W
3459	4822 051 30471	470R 5% 0,062W	3536	4822 051 20109	10R 5% 0,1W
3460	4822 051 30471	470R 5% 0,062W	3537	4822 116 52206	120R 5% 0,5W
3461	4822 051 30471	470R 5% 0,062W	3538	4822 116 52206	120R 5% 0,5W
3462	4822 051 30471	470R 5% 0,062W	3539	4822 051 30223	22k 5% 0,062W
3463	4822 051 30471	470R 5% 0,062W	3540	4822 051 30103	10k 5% 0,062W
3464	4822 051 30471	470R 5% 0,062W	3541	4822 051 30103	10k 5% 0,062W
3465	4822 051 30471	470R 5% 0,062W	3542	4822 116 83872	220R 5% 0,5W
3466	4822 051 30471	470R 5% 0,062W	3543	4822 051 30221	220R 5% 0,062W
3467	4822 051 30471	470R 5% 0,062W	3544	4822 051 30121	120R 5% 0,062W
3468	4822 051 30471	470R 5% 0,062W	3545	4822 051 30121	120R 5% 0,062W
3469	4822 051 30471	470R 5% 0,062W	3546	4822 051 30121	120R 5% 0,062W
3470	4822 051 30471	470R 5% 0,062W	3547	4822 051 30121	120R 5% 0,062W
3471	4822 051 30471	470R 5% 0,062W	3548	4822 051 30221	220R 5% 0,062W
3472	4822 051 30471	470R 5% 0,062W	3549	4822 051 30221	220R 5% 0,062W
3473	4822 051 30471	470R 5% 0,062W	3550	4822 051 30472	4k7 5% 0,062W
3474	4822 051 30221	220R 5% 0,062W	3551	4822 051 30103	10k 5% 0,062W
3475	4822 051 30221	220R 5% 0,062W	3552	4822 051 30103	10k 5% 0,062W
3476	4822 051 30471	470R 5% 0,062W	3553	4822 051 30103	10k 5% 0,062W
3477	4822 051 30471	470R 5% 0,062W	3554	4822 051 30103	10k 5% 0,062W
3479	4822 051 30471	470R 5% 0,062W	3555	4822 051 30221	220R 5% 0,062W
3480	4822 051 30471	470R 5% 0,062W	3556	4822 051 30121	120R 5% 0,062W
3485	4822 117 12925	47k 1% 0,063W	3557	4822 051 30271	270R 5% 0,062W
3490	4822 051 30471	470R 5% 0,062W	3558	4822 051 30221	220R 5% 0,062W
3491	4822 051 30471	470R 5% 0,062W	3559	4822 051 30221	220R 5% 0,062W
3492	4822 051 30471	470R 5% 0,062W	3560	4822 116 52175	100R 5% 0,5W
3500	4822 117 12864	82k 5% 0,6W	3561	4822 116 52175	100R 5% 0,5W
3501	4822 117 12864	82k 5% 0,6W	3562	4822 051 30103	10k 5% 0,062W
3502	4822 117 12864	82k 5% 0,6W	3563	4822 051 30103	10k 5% 0,062W
3503	4822 117 12864	82k 5% 0,6W	3564	4822 051 30221	220R 5% 0,062W
3504	4822 051 30471	470R 5% 0,062W	3565	4822 051 30221	220R 5% 0,062W

## ELECTRICAL PARTS LIST - FRONT DISPLAY BOARD

3570	4822 051 20109	10R 5% 0,1W
3571	4822 051 20109	10R 5% 0,1W
3572	4822 051 30222	2k2 5% 0,062W
3573	4822 051 30103	10k 5% 0,062W
3574	4822 051 30103	10k 5% 0,062W
3576	4822 051 30103	10k 5% 0,062W
3577	4822 051 30103	10k 5% 0,062W
3578	4822 051 30103	10k 5% 0,062W
3579	4822 051 30103	10k 5% 0,062W
3580	4822 051 30102	1k 5% 0,062W
3581	4822 051 30102	1k 5% 0,062W
3582	4822 051 30102	1k 5% 0,062W
3583	4822 051 30223	22k 5% 0,062W
3584	4822 051 30102	1k 5% 0,062W
3585	4822 051 30334	330k 5% 0,062W
3586	4822 051 30102	1k 5% 0,062W
3587	4822 051 30102	1k 5% 0,062W
3588	4822 051 30102	1k 5% 0,062W
3589	4822 051 30102	1k 5% 0,062W
3590	4822 117 13632	100k 1% 0,62W
3591	4822 117 13632	100k 1% 0,62W
3592	4822 051 30102	1k 5% 0,062W
3593	4822 051 30102	1k 5% 0,062W
3594	4822 051 30102	1k 5% 0,062W
3595	4822 051 30272	2k7 5% 0,062W
3596	4822 051 30272	2k7 5% 0,062W
3597	4822 051 30103	10k 5% 0,062W
3598	4822 051 30103	10k 5% 0,062W
3599	4822 051 30471	470R 5% 0,062W
4401	4822 051 30008	OR Jumper 0603
4402	4822 051 30008	OR Jumper 0603
4403	4822 051 30008	OR Jumper 0603
4404	4822 051 30008	OR Jumper 0603
4405	4822 051 30008	OR Jumper 0603
4410	4822 051 30008	OR Jumper 0603
4411	4822 051 30008	OR Jumper 0603
4412	4822 051 30008	OR Jumper 0603
4413	4822 051 30008	OR Jumper 0603
4414	4822 051 30008	OR Jumper 0603
4415	4822 051 30008	OR Jumper 0603
4416	4822 051 30008	OR Jumper 0603
4418	4822 051 30008	OR Jumper 0603
4419	4822 051 30008	OR Jumper 0603
4420	4822 051 30008	OR Jumper 0603
4422	4822 051 30008	OR Jumper 0603
4423	4822 051 30008	OR Jumper 0603
4424	4822 051 30008	OR Jumper 0603
4425	4822 051 30008	OR Jumper 0603
4426	4822 051 30008	OR Jumper 0603
4427	4822 051 30008	OR Jumper 0603
4428	4822 051 30008	OR Jumper 0603
4429	4822 051 30008	OR Jumper 0603
4431	4822 051 30008	OR Jumper 0603

4434	4822 051 30008	OR Jumper 0603
4435	4822 051 30008	OR Jumper 0603
4850	4822 051 30008	OR Jumper 0603

## COILS &amp; FILTERS

5400	4822 157 62552	Coil 2,2μH 5%
5401	4822 157 62552	Coil 2,2μH 5%
5402	5322 242 73686	RES CER 12MHz
5403	4822 242 70938	RES XTL 32,768kHz
5404	4822 242 72195	QUARZ 4,332 MHz
5405	4822 157 62552	Coil 2,2μH 5%
5406	4822 157 62552	Coil 2,2μH 5%
5407	4822 157 62552	Coil 2,2μH 5%
5850	4822 157 62552	Coil 2,2μH 5%
5851	4822 157 62552	Coil 2,2μH 5%
5852	4822 157 62552	Coil 2,2μH 5%

## DIODES

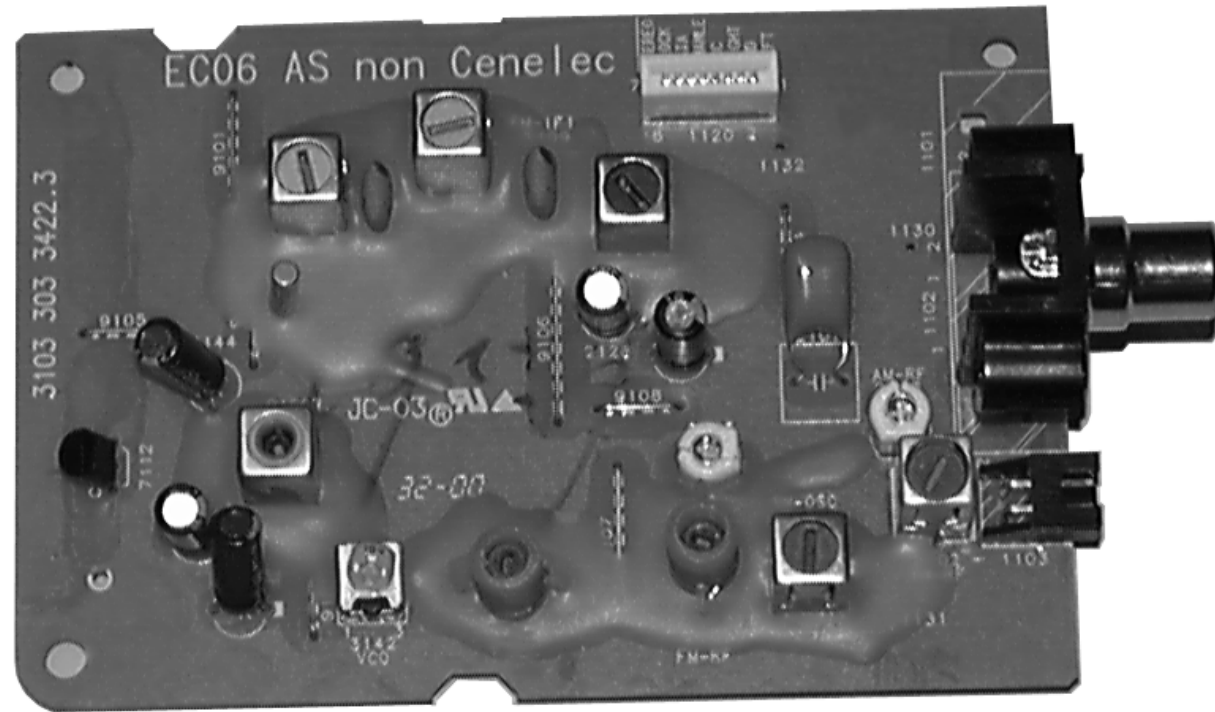
6400	4822 130 30621	1N4148
6401	4822 130 30621	1N4148
6402	4822 130 30621	1N4148
6403	4822 130 30621	1N4148
6404	4822 130 30621	1N4148
6405	4822 130 34174	BZX79-B4V7
6406	4822 130 30621	1N4148
6407	4822 130 30621	1N4148
6408	4822 130 30621	1N4148
6409	4822 130 30621	1N4148
6410	4822 130 31878	1N4003G
6411	4822 130 31878	1N4003G
6412	4822 130 30621	1N4148
6413	4822 130 31878	1N4003G
6414	4822 130 30621	1N4148
6420	9322 160 65676	LED VS LTL-4221NLC-VA

## TRANSISTORS &amp; INTEGRATED CIRCUITS

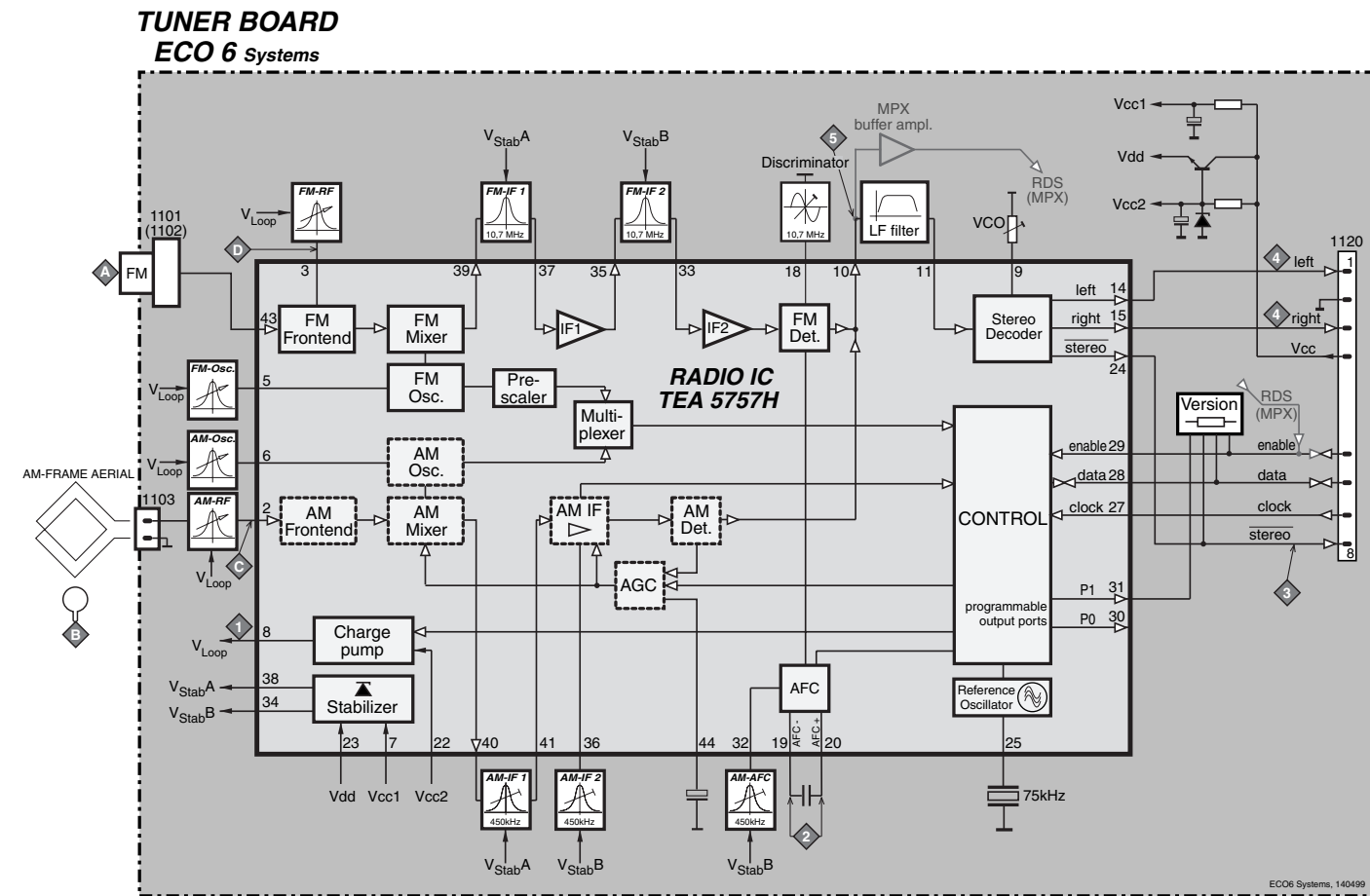
7400	3139 110 52600	TMP88CU74YF - 'C55S52601'
7401	4822 209 31981	SAA6579T/V1
7402	5322 209 11446	HEF4051BT
7403	4822 209 15449	74HC4094D
7404	4822 209 15449	74HC4094D
7405	9322 145 26668	M24C02-WMN6
7406	5322 130 60159	BC847B
7407	5322 130 60159	BC847B
7408	5322 130 60159	BC847B
7409	5322 130 60159	BC847B
7410	5322 130 60159	BC847B
7411	4822 130 60373	BC857B
7412	5322 130 60159	BC847B
7413	5322 130 60159	BC847B

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





**BLOCK DIAGRAM**

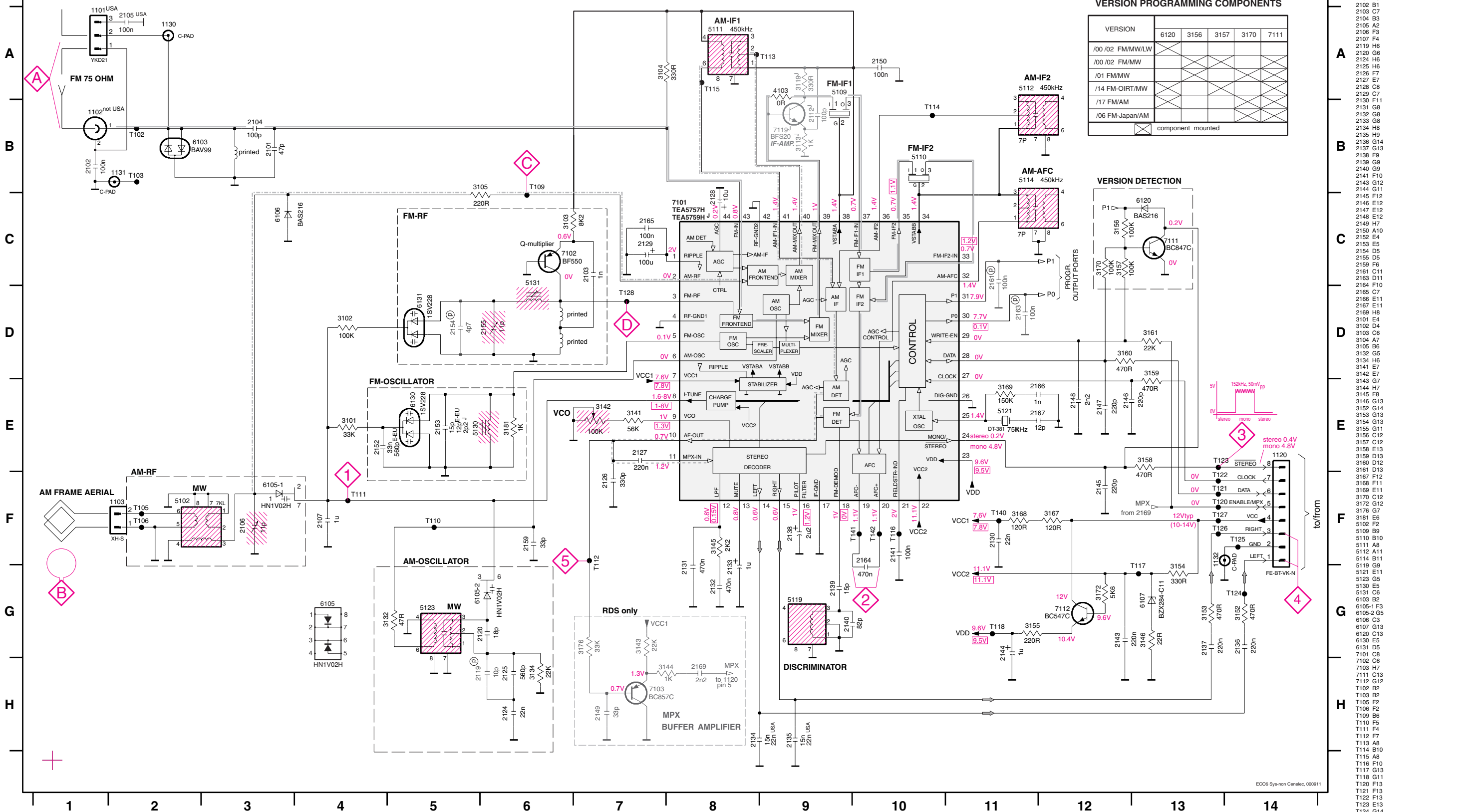


**ECO6 Tuner Board**  
version: *SYSTEMS non-CENELEC*

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

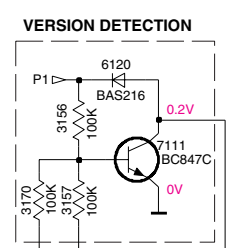
# TUNER BOARD ECO6 / SYSTEMS NON CENELEC



**VERSION PROGRAMMING COMPONENTS**

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

component mounted



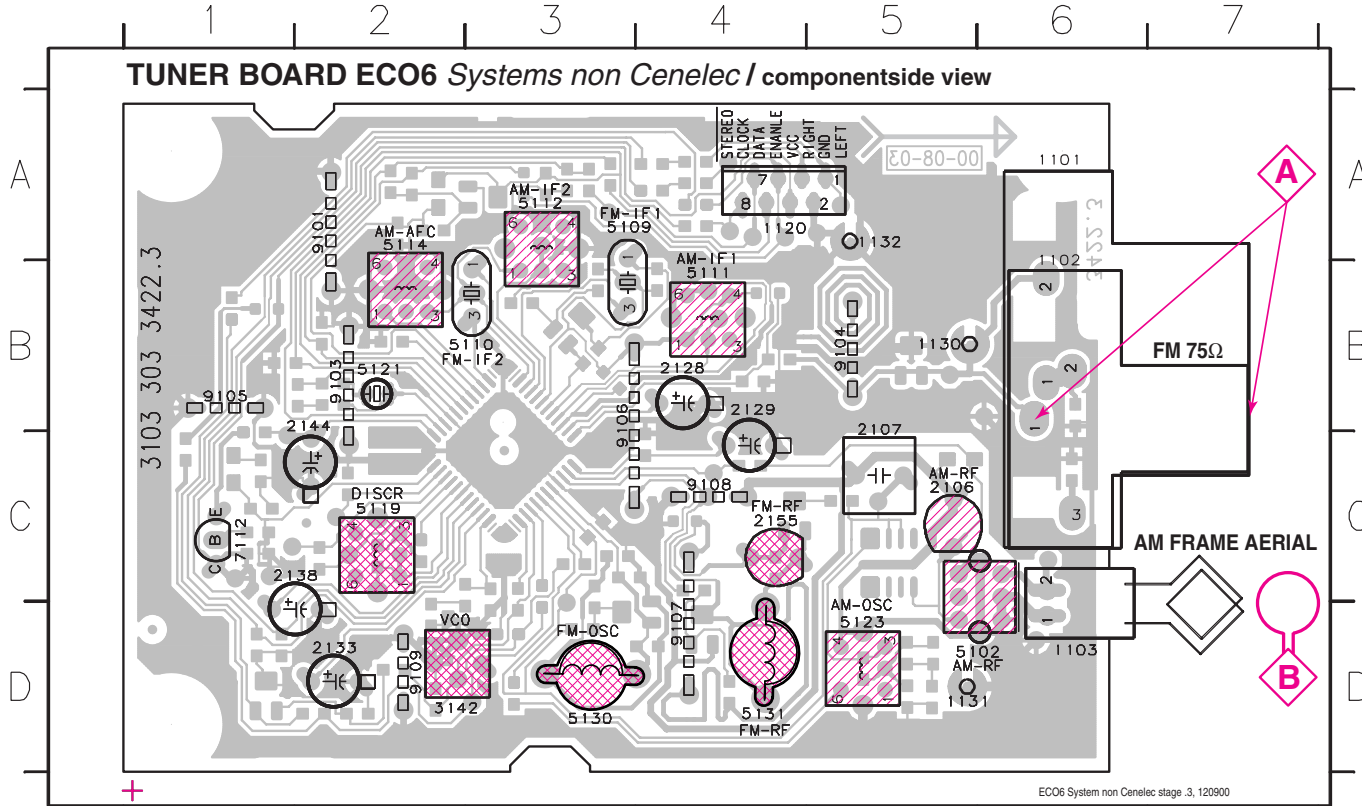
- 1101 A1
- 1102 B1
- 1103 F2
- 1120 E14
- 1130 A2
- 1131 B2
- 1132 G13
- 2101 B3
- 2102 B1
- 2103 C7
- 2104 B3
- 2105 A2
- 2106 F3
- 2107 F4
- 2119 H6
- 2120 G6
- 2124 H6
- 2125 H6
- 2126 F7
- 2127 E7
- 2128 C8
- 2129 C7
- 2130 F11
- 2131 G8
- 2132 G8
- 2133 G8
- 2134 H8
- 2135 H9
- 2136 G14
- 2137 G13
- 2138 F9
- 2139 G9
- 2140 G9
- 2141 F10
- 2143 G12
- 2144 G11
- 2145 F12
- 2146 E12
- 2147 E12
- 2148 H7
- 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 B2
- 6105-1 F3
- 6105-2 G5
- 6106 C3
- 6107 G13
- 6120 G13
- 6130 E5
- 6131 D5
- 7101 C8
- 7102 C6
- 7103 H7
- 7111 C13
- 7112 F13
- 7113 F13
- 7127 F13
- T102 B2
- T103 B2
- T105 F2
- T106 F2
- T109 B6
- T110 F5
- T111 F4
- T112 F7
- T113 A8
- T114 B10
- T115 A8
- T116 F10
- T117 G13
- T118 G11
- 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

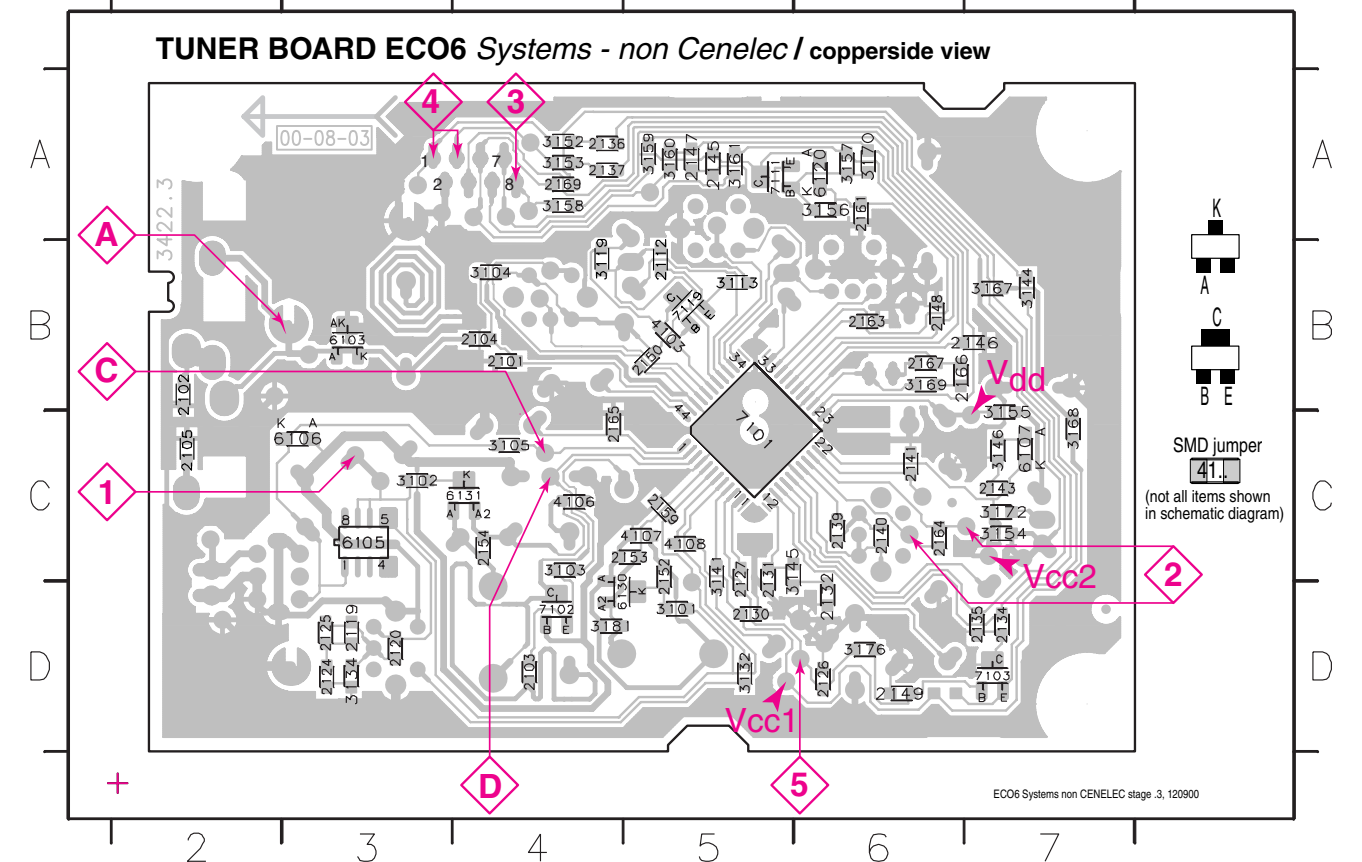
...V FM mode stereo  
 ...V MW mode  
 ...V LW mode  
 voltages measured while set is tuned to a strong transmitter

**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
<b>VARICAP ALIGNMENT</b>						
<b>FM</b> 87.5 - 108MHz (65.81 - 74, 87.5 - 108MHz)			108MHz	5130		8V ±0.2V
			87.5MHz (65.81MHz)	check		4.3V ±0.5V (1.2V ±0.5V)
<b>MW</b> FM/AM-version, 10kHz grid 530 - 1700kHz			1700kHz	5123		8V ±0.2V
			530kHz	check		1.1V ±0.4V
FM/MW-version, 9kHz grid 531 - 1602kHz			1602kHz	5123	1	6.9V ±0.2V
			531kHz	check		1.1V ±0.4V
<b>LW</b> 153 - 279kHz			279kHz	5122		8V ±0.2V
			153kHz	check		1.1V ±0.4V
<b>MW</b> FM/MW/LW- version, 9kHz grid 531 - 1602kHz			1602kHz	5123		8V ±0.2V
			531kHz	check		1.1V ±0.4V
<b>FM IF</b>						
<b>FM</b>	10.7MHz, 45mV continuous wave	D		5119	2	0 ± 3 mV DC
<b>FM RF</b>						
<b>FM</b> 87.5 - 108MHz (65.81 - 74, 87.5 - 108MHz)	108MHz	A	108MHz	2155	4	MAX
	87.5MHz (65.81MHz)	mod=1kHz Δf=±22.5kHz	87.5MHz (65.81MHz)	5131		
<b>VCO</b>						
<b>FM</b>	98MHz, 1mV continuous wave	A	98MHz	3142	3	152kHz ±1kHz <sup>1)</sup>
<b>AM IF</b>						
<b>MW</b>	450kHz connect pin 6 of IC 7101 (AM Osc.) with 3.3kΩ to Vcc	C		5111	5	
		C		5112		
<b>AM AFC</b> <b>MW</b>		C		5114	2	0 ± 2 mV DC
<b>AM RF<sup>3)</sup></b>						
<b>MW<sup>4)</sup></b> FM/MW/LW- and FM/MW-version (9kHz grid)	1494kHz	B	1494kHz	2106	5	
	531 - 1602kHz		558kHz	5102		
<b>LW</b>	198kHz		198kHz	5103		
<b>MW</b> FM/AM-version, 10kHz grid 530 - 1700kHz	1500kHz	B	1500kHz	2106	5	
	560kHz		560kHz	5102		

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

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

↑ Repeat

MISCELLANEOUS

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

CAPACITORS

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

RESISTORS

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

RESISTORS

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

COILS

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

DIODES

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

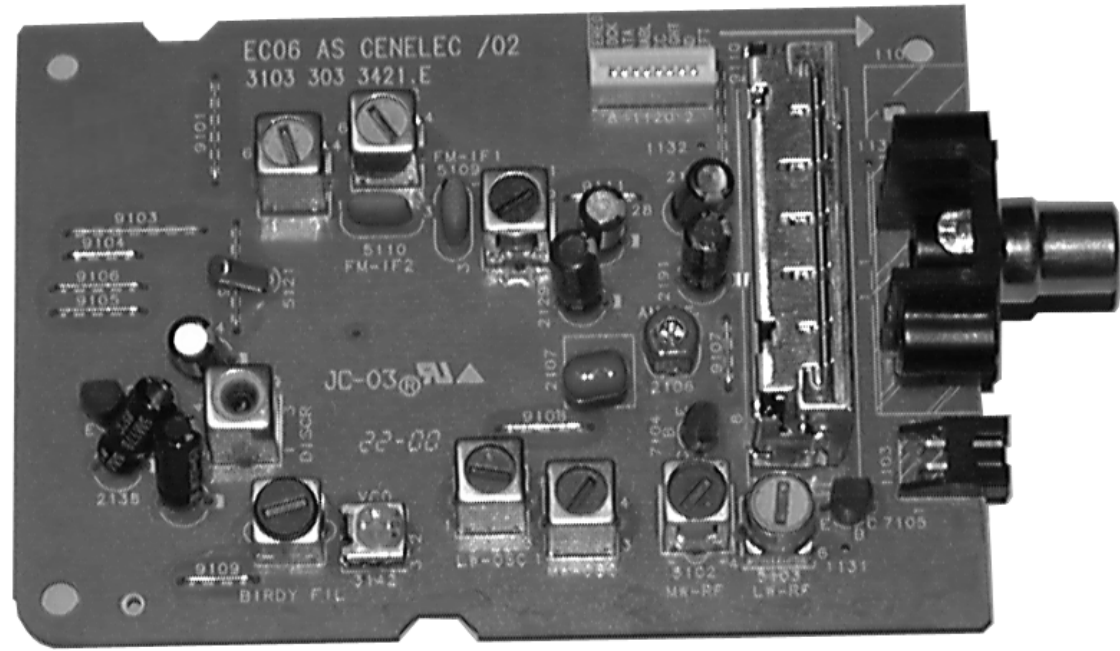
TRANSISTORS

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

INTEGRATED CIRCUITS

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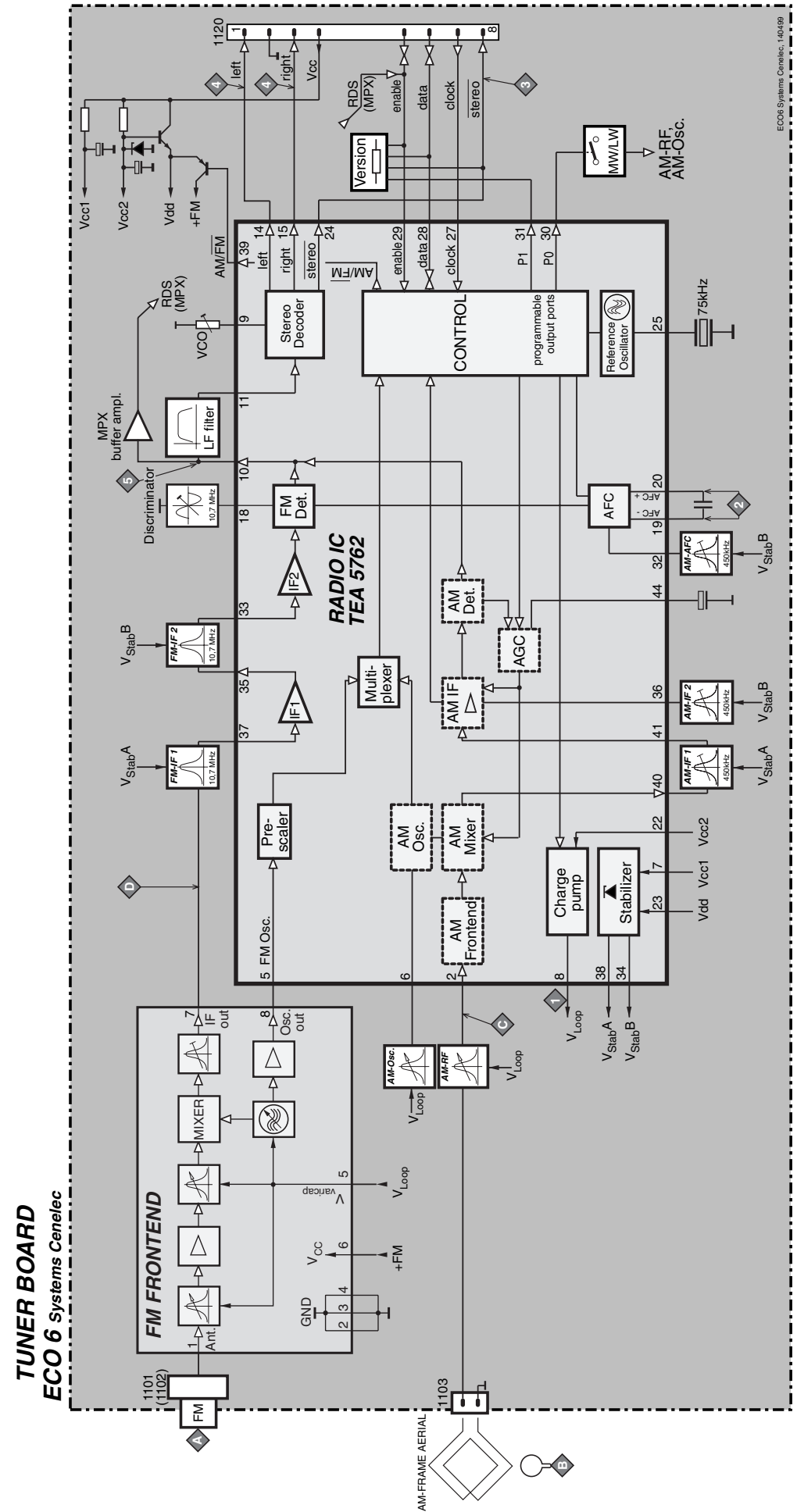
# ECO6 Tuner Board

version: **SYSTEMS CENELEC**

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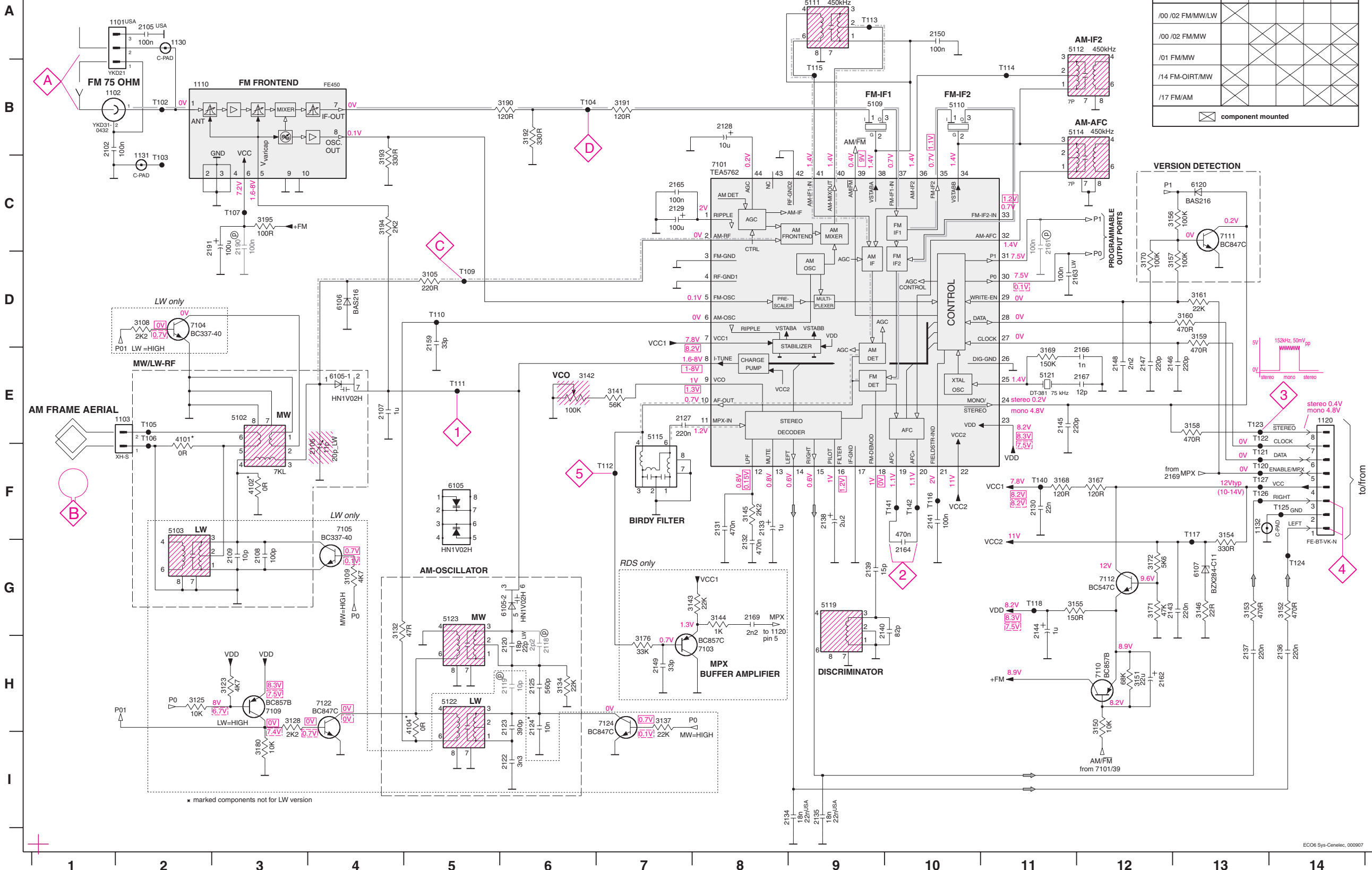
Blockdiagram .....	7B-1
Schematic Diagram .....	7B-2
Component Layout .....	7B-3
Adjustment table .....	7B-3
Electrical Partslist .....	7B-4

## BLOCK DIAGRAM





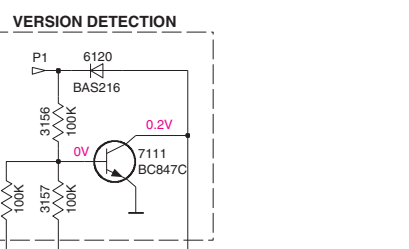
# TUNER BOARD ECO6 / SYSTEMS-CENELEC



### VERSION PROGRAMMING COMPONENTS

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

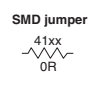
☒ component mounted



- 1101 A2
- 1102 B1
- 1103 E2
- 1110 B2
- 1120 E14
- 1130 A2
- 1131 C2
- 1132 F13
- 2102 B1
- 2105 A2
- 2106 E3
- 2107 E4
- 2108 G3
- 2109 G3
- 2118 H6
- 2119 H6
- 2120 H6
- 2122 I6
- 2123 H6
- 2124 H6
- 2125 H6
- 2127 E7
- 2128 B8
- 2129 C7
- 2130 F11
- 2131 F8
- 2132 F8
- 2133 F8
- 2134 I8
- 2135 I9
- 2136 H14
- 2137 H13
- 2138 F9
- 2139 G9
- 2140 G9
- 2141 F10
- 2143 G12
- 2144 G11
- 2145 E11
- 2146 E12
- 2147 E12
- 2148 E12
- 2149 H7
- 2150 A10
- 2159 D5
- 2161 C11
- 2162 H12
- 2163 D11
- 2164 G10
- 2165 C7
- 2166 E11
- 2167 E11
- 2169 G8
- 2190 C3
- 2191 C3
- 3105 D5
- 3108 D2
- 3109 G4
- 3125 H3
- 3125 H3
- 3128 H3
- 3132 G4
- 3134 H6
- 3137 H7
- 3141 E7
- 3142 E6
- 3143 G7
- 3144 G8
- 3145 F8
- 3146 G13
- 3150 H12
- 3151 H12
- 3152 G14
- 3153 G13
- 3154 F13
- 3155 G12
- 3156 C12
- 3157 D12
- 3158 E13
- 3159 D13
- 3160 D13
- 3161 D13
- 3167 F12
- 3168 F11
- 3169 E11
- 3170 D12
- 3171 G12
- 3172 G12
- 3176 H7
- 3180 I3
- 3190 B6
- 3191 B7
- 3192 B6
- 3193 B4
- 3194 C4
- 3195 C3
- 4101 E2
- 4102 F3
- 4104 H5
- 5102 E3
- 5103 F2
- 5109 B9
- 5110 B10
- 5111 A9
- 5112 A11
- 5114 B11
- 5115 E7
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- 5121 E11
- 5122 H5
- 5123 G5
- 6105-1 E4
- 6105-2 G6
- 6106 D4
- 6107 G13
- 6120 C13
- 7101 C8
- 7103 H8
- 7104 D2
- 7105 F4
- 7109 H3
- 7110 H12
- 7111 C13
- 7112 G12
- 7122 H4
- 7124 H7
- 7125 B2
- 7126 B2
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- 7131 H11
- 7132 F13
- 7133 H11
- 7134 I8
- 7135 I9
- 7136 H14
- 7137 H13
- 7138 F9
- 7139 G9
- 7140 G9
- 7142 F13
- 7143 G12
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- 7145 E11
- 7146 E12
- 7147 E12
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- 7150 A10
- 7159 D5
- 7161 C11
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- 7163 D11
- 7164 G10
- 7165 C7
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- 7169 G8
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- 7195 D5
- 7196 G5
- 7197 G5
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- 7200 G5
- 7201 G5
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- 7239 G5
- 7240 G5
- 7241 G5
- 7242 G5
- 7243 G5
- 7244 G5
- 7245 G5
- 7246 G5
- 7247 G5
- 7248 G5
- 7249 G5
- 7250 G5

### LEGEND

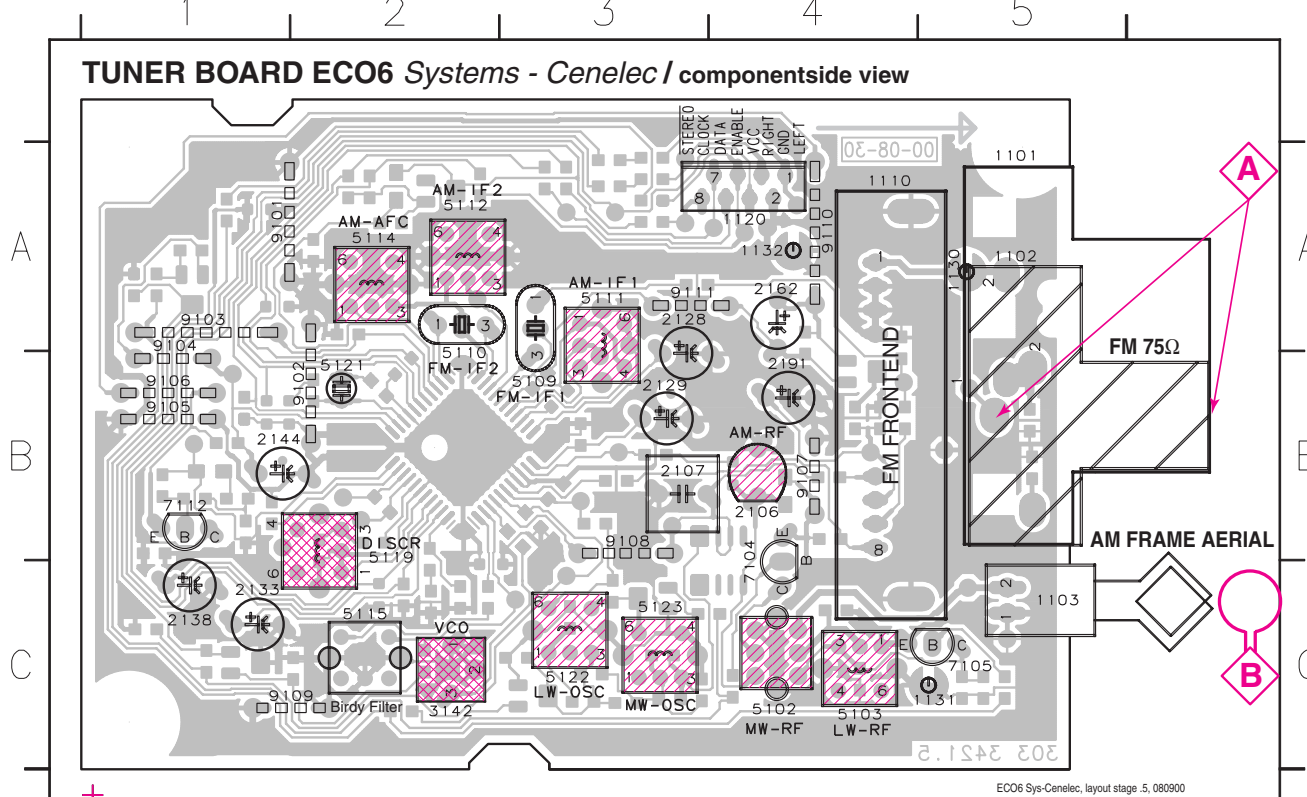
- \* ... only assembled in FM/AM-version
- Ⓧ ... for provision only
- USA ... for USA version only
- LW ... for LW version only



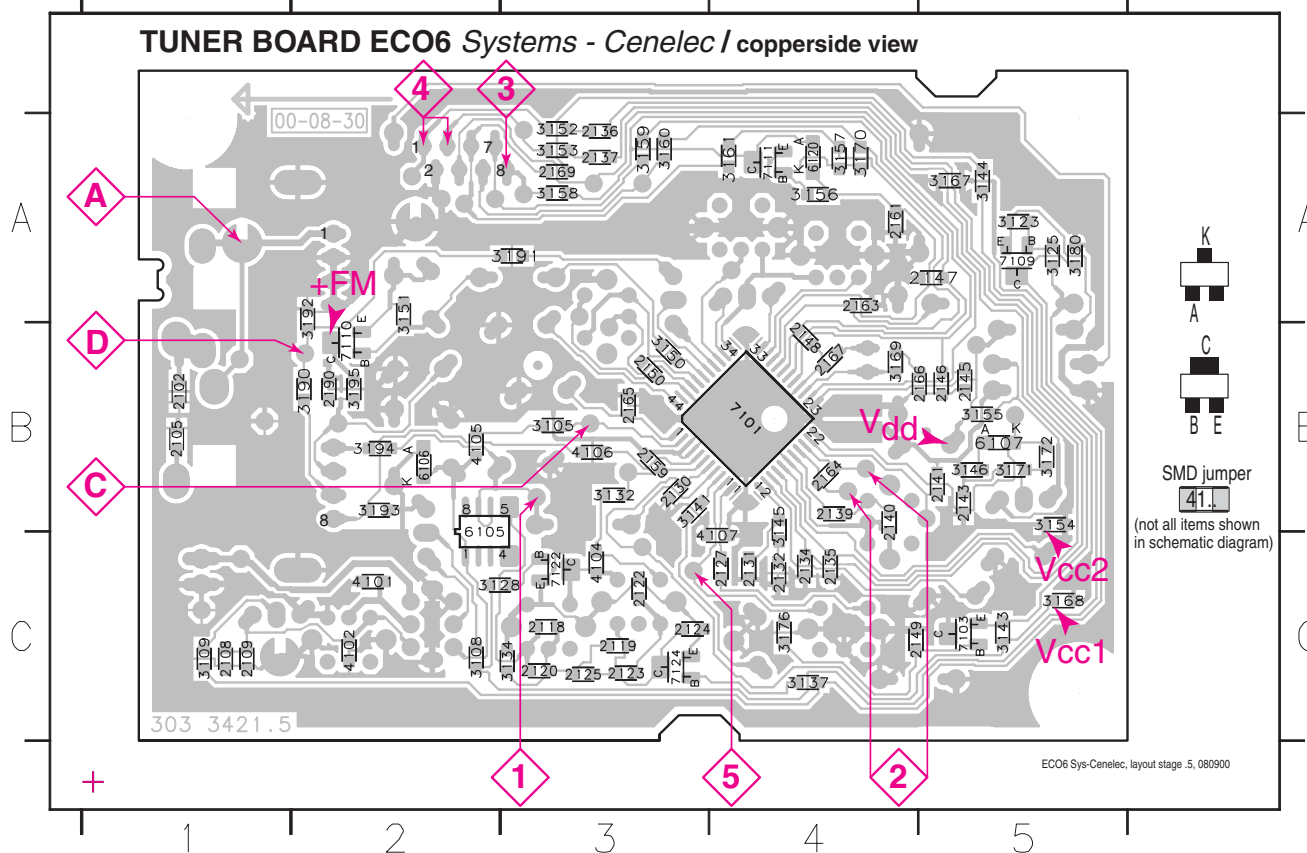
- ...V FM mode stereo
- ...V MW mode
- ...V LW mode
- voltages measured while set is tuned to a strong transmitter

- ### 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

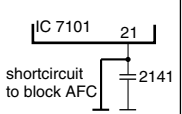
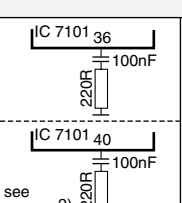
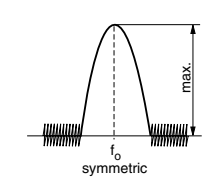
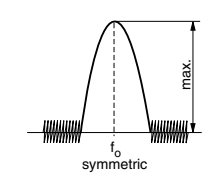


2102 B1 2120 C3 2130 B3 2137 A3 2146 B5 2161 A4 2169 A3 3125 A5 3143 C5 3152 A3 3158 A3 3169 B4 3190 B2 4101 C2 6105 B2 7109 A5  
 2105 B1 2122 C3 2131 C4 2139 B4 2147 A5 2163 A4 2190 B2 3128 C2 3144 A5 3153 A3 3159 A3 3170 A4 3191 A3 4102 C2 6106 B2 7110 B2  
 2108 C1 2123 C3 2132 C4 2140 B4 2148 B4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

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

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

↑ Repeat

MISCELLANEOUS

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

CAPACITORS

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

RESISTORS

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

RESISTORS

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

COILS

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

DIODES

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

TRANSISTORS

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

INTEGRATED CIRCUITS

7101	4822 209 90315	TEA5762H/V1, RADIO IC	
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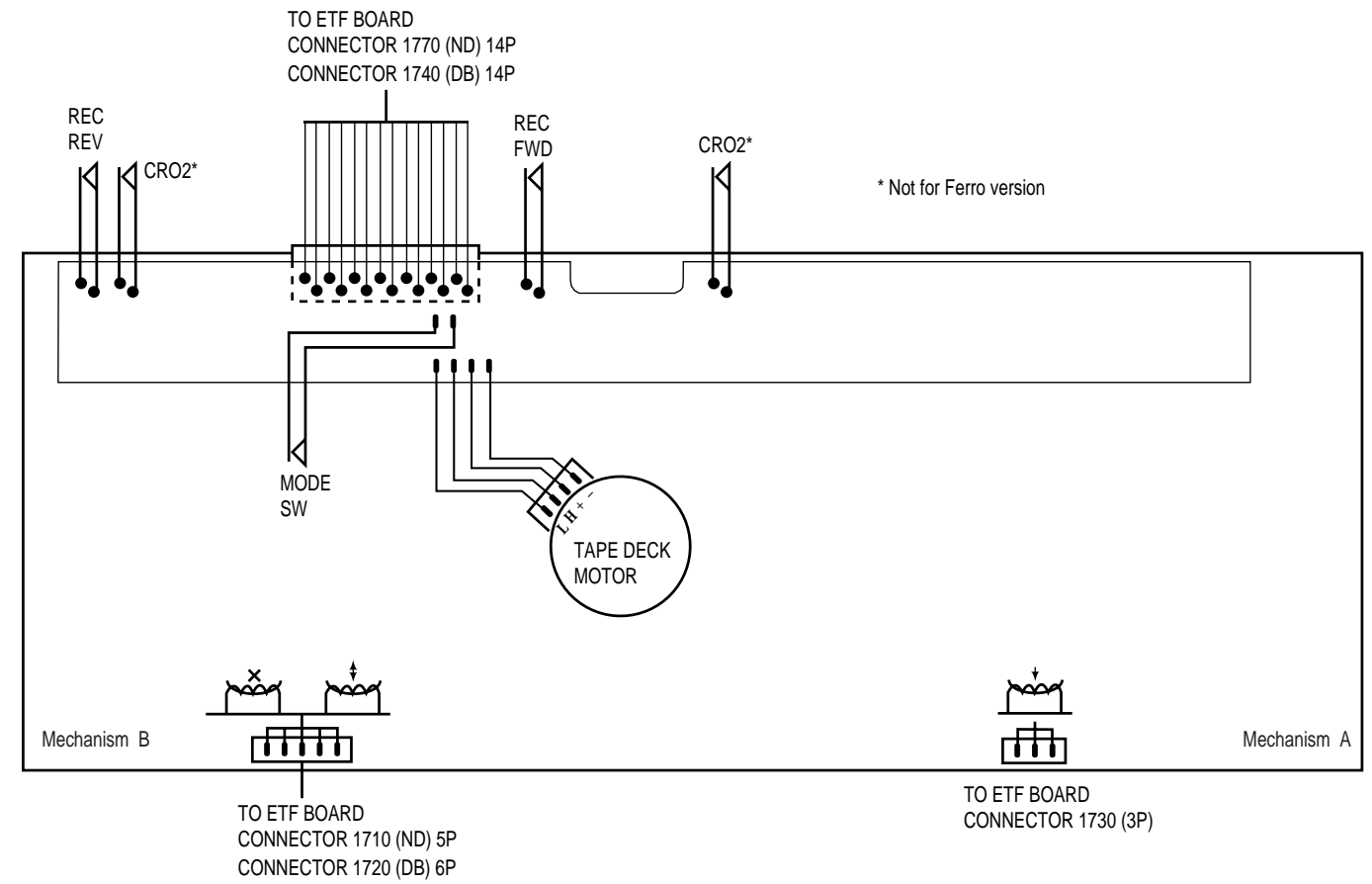
# ETF7 TAPE MODULE

## (Non-Dolby Version)

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 Electrical parts list ..... 9-13

**Tapedeck wiring (Double deck)**



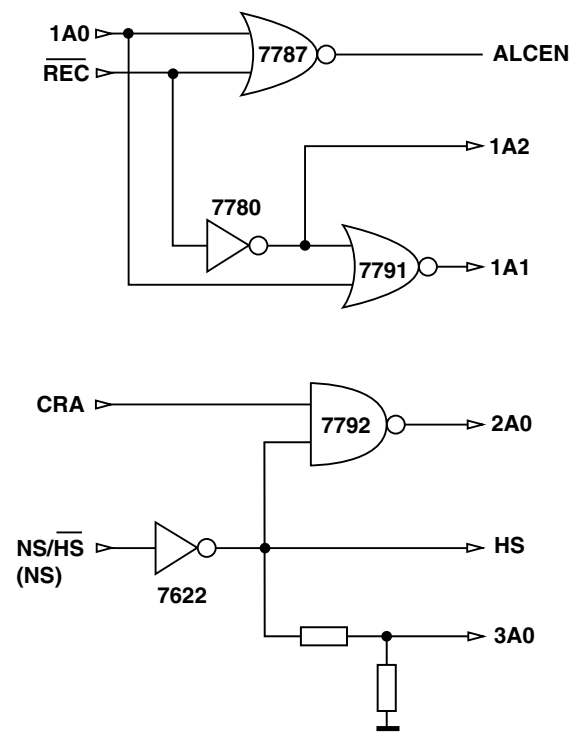
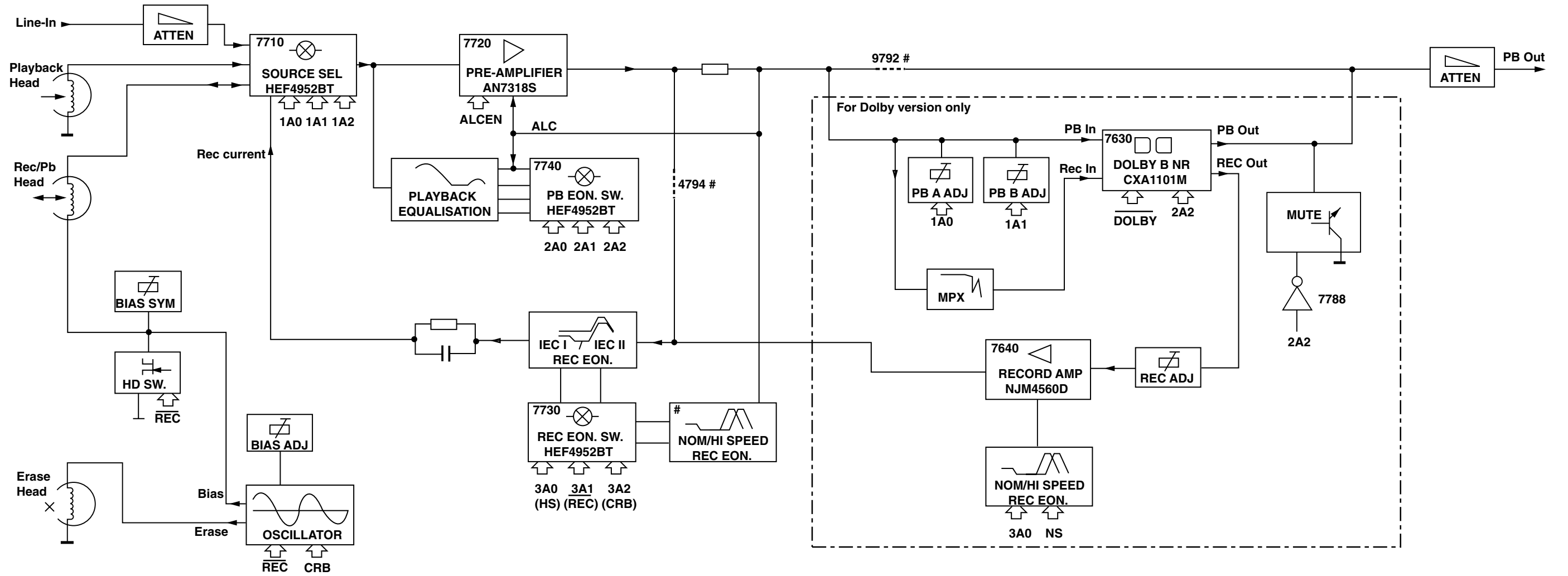
**Variations table for Analog Circuit**

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

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



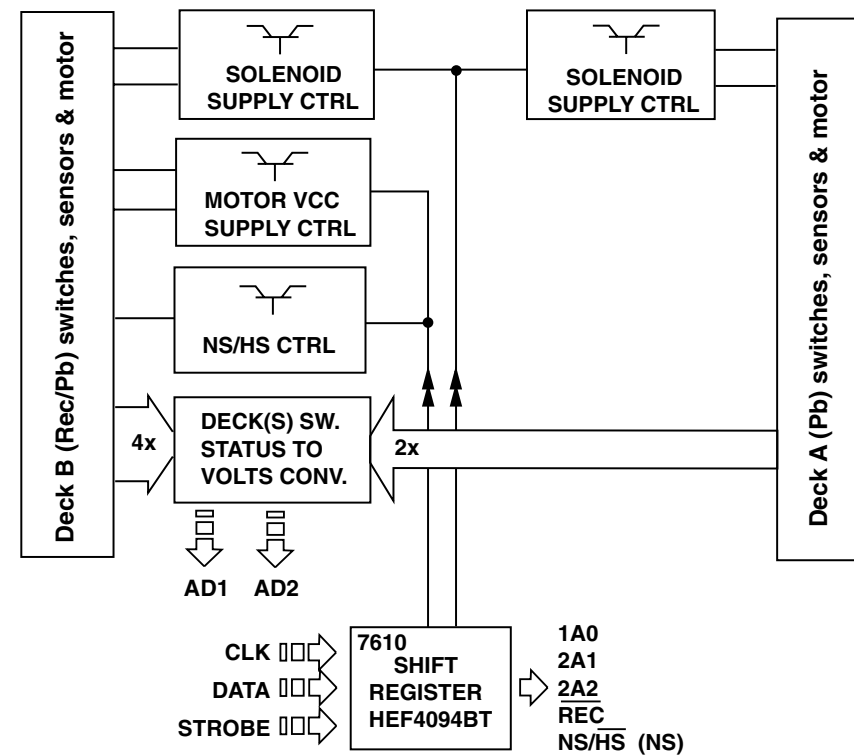
**BLOCK DIAGRAM**



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

MicroProcessor Control / Communication lines

Direct / Indirect Control lines from Shift Registers





## Brief introduction

### General

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

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

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

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

### NOTATIONS & ABBREVIATIONS USED IN THIS DOCUMENT

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

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

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

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

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

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

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

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

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

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

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

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

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

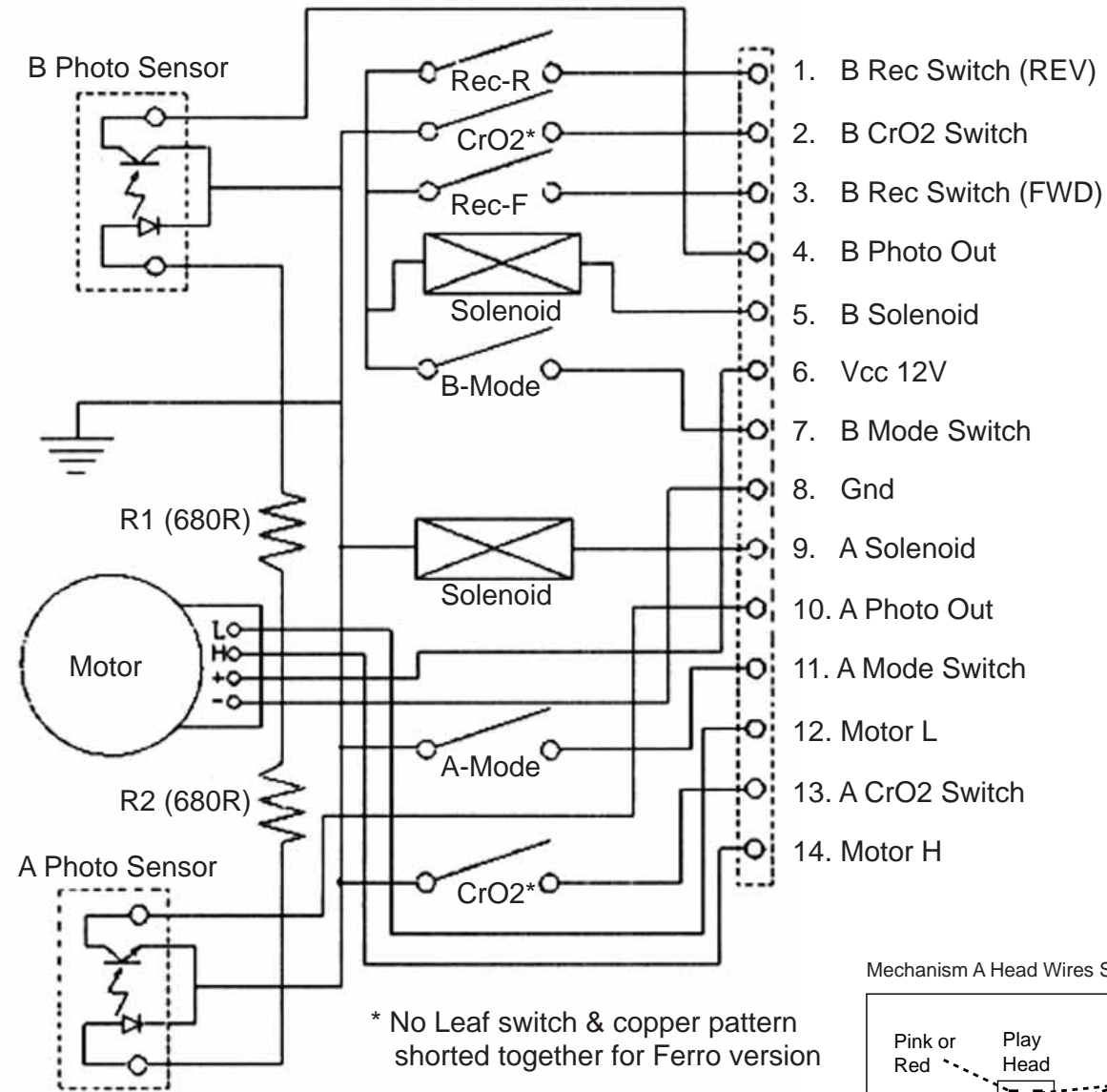
**CONNECTOR 1740****DECK A & B CONTROL INTERFACE (For Dolby B NR version only)**

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

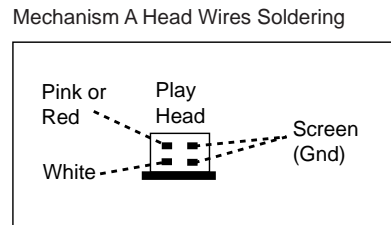
**CONNECTOR 1770****DECK A & B CONTROL INTERFACE (For Non-Dolby version only)**

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

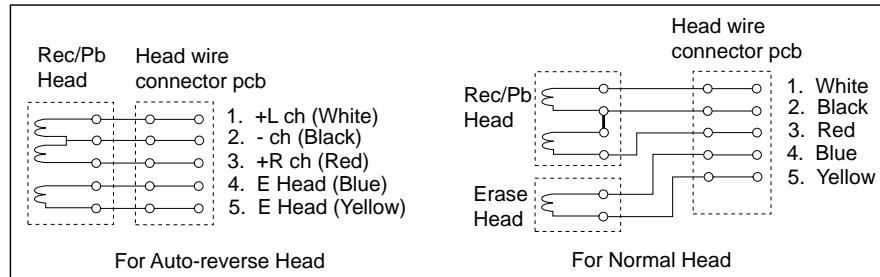
TAPE MECHANISM ELECTRONICS



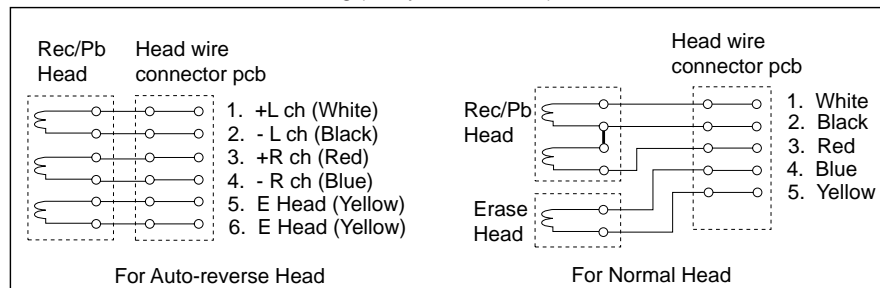
\* No Leaf switch & copper pattern shorted together for Ferro version



Mechanism B Head Wires Soldering (Non-Dolby version)



Mechanism B Head Wires Soldering (Dolby B NR version)

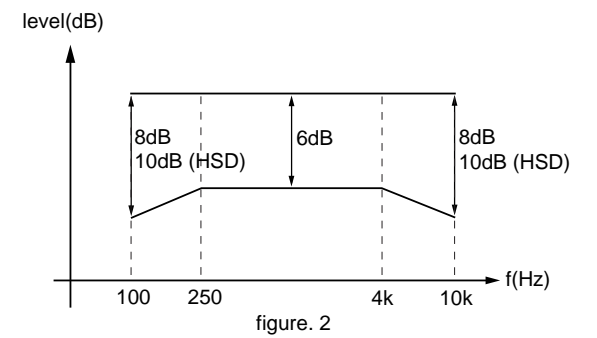
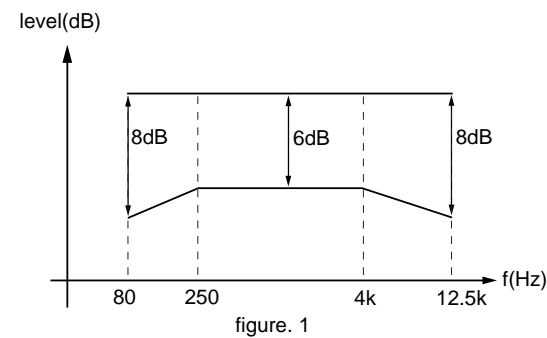


TAPE ADJUSTMENT & CHECK TABLE

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

SBC419A^ : 4822 397 30069  
SBC420 : 4822 397 30071

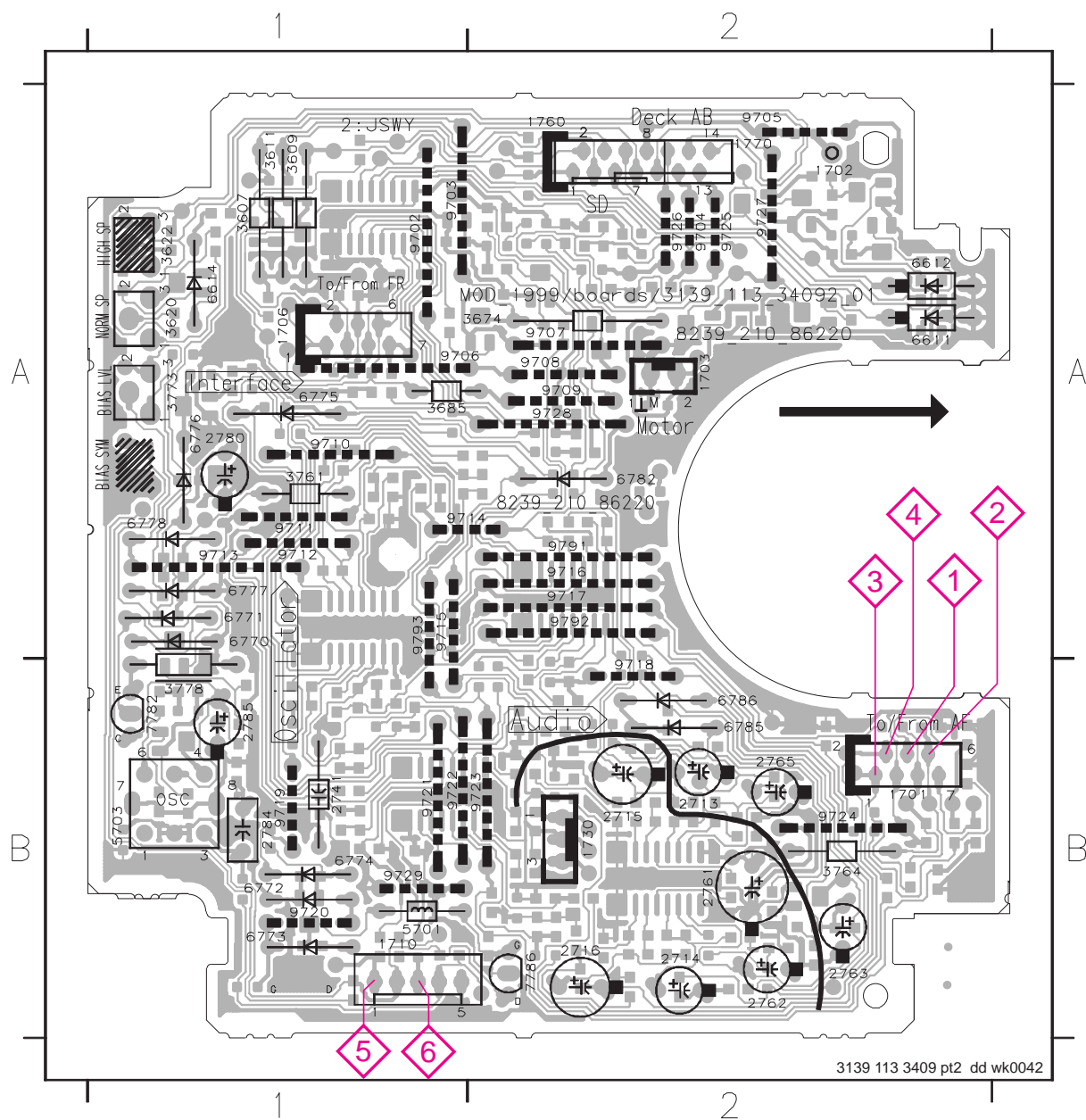
# For Auto-reverse version only  
\* If high frequencies are not within limits, decrease bias and re-measure. If distortion is too high, increase bias and re-measure  
^ Not applicable for Ferro version





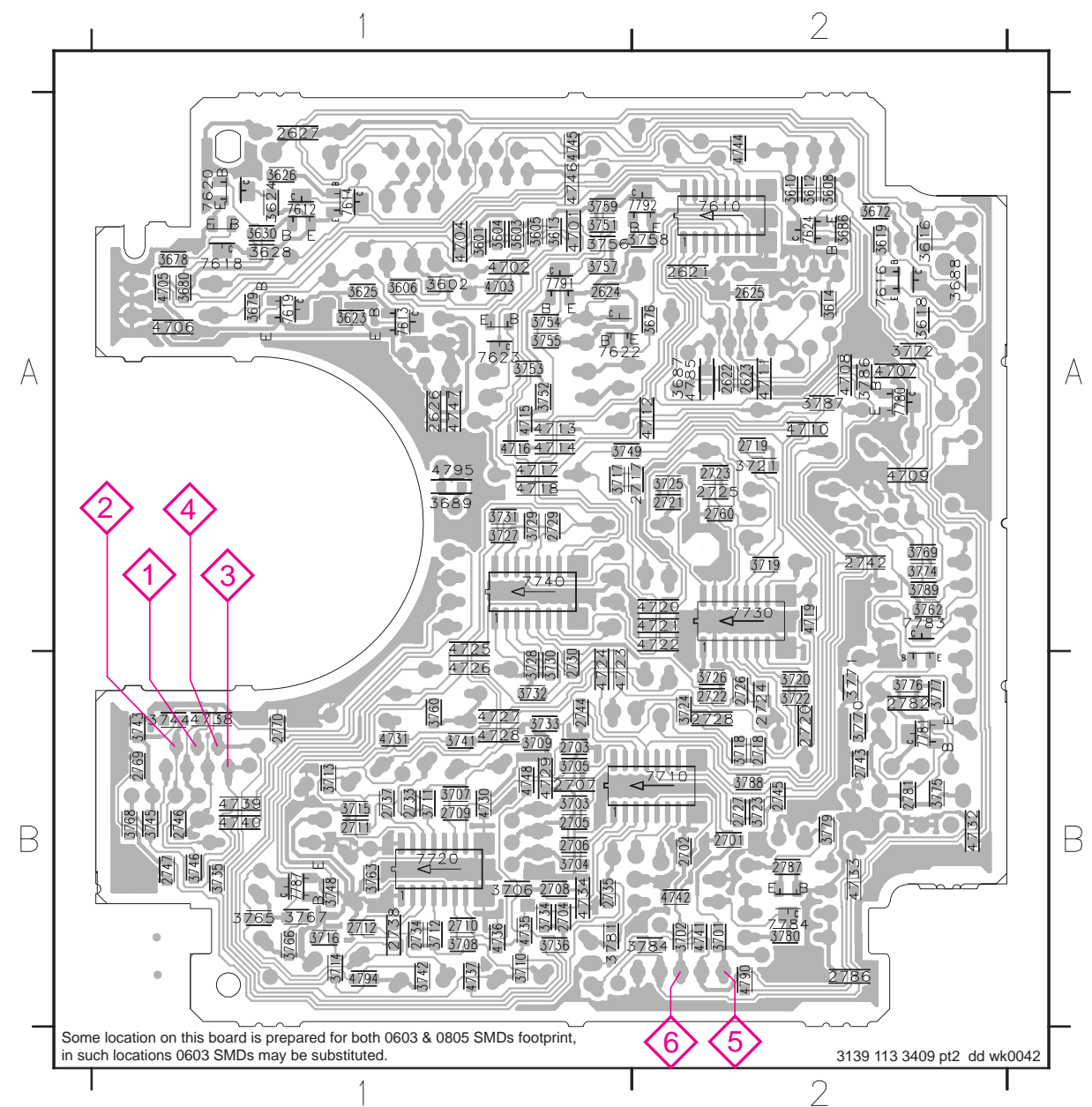
### COMPONENT LAYOUT

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



### CHIP LAYOUT

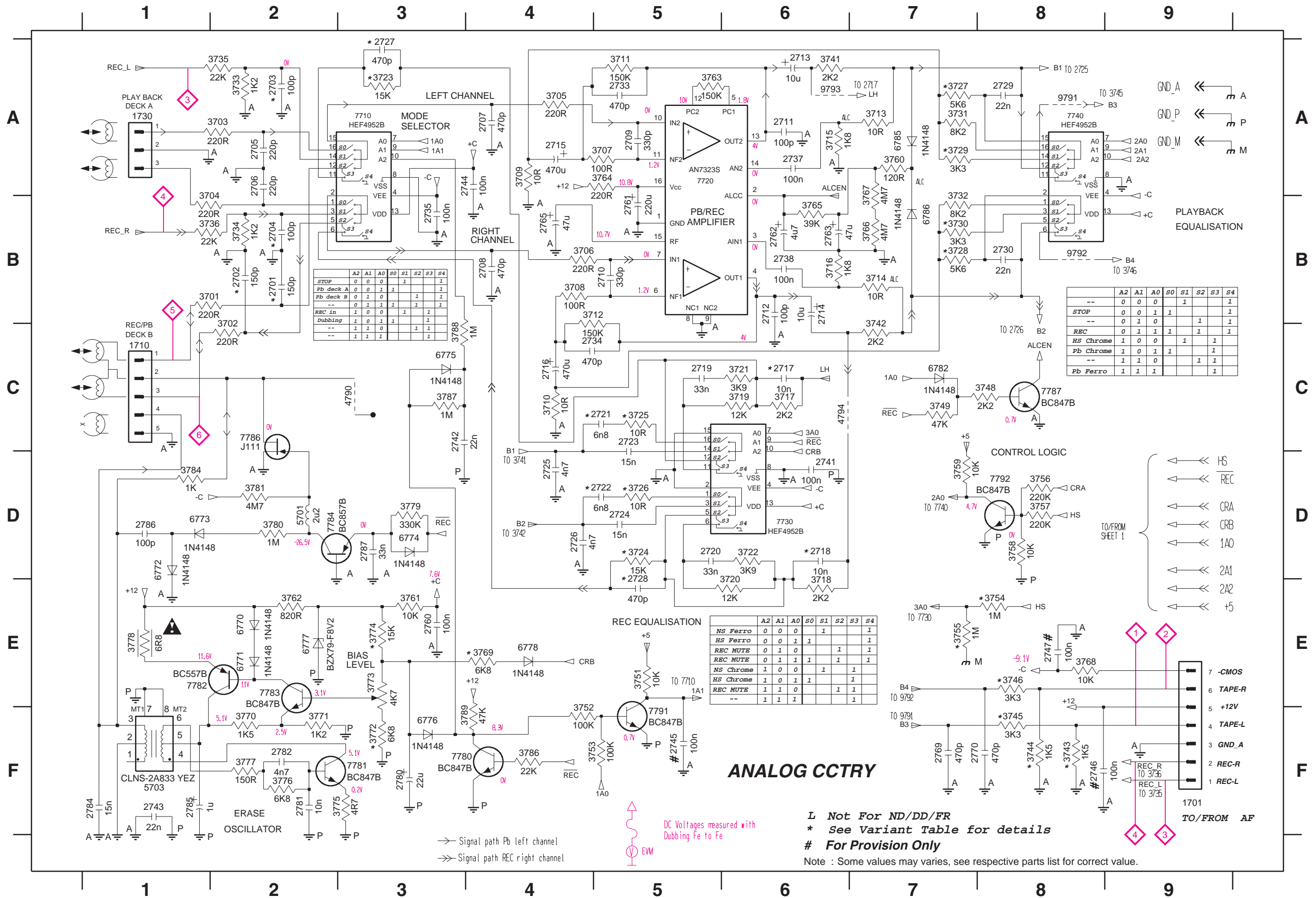
2621	A2	2724	B2	3602	A1	3688	A2	3725	A2	3757	A1	4701	A1	4727	B1	7612	A1
2622	A2	2725	A2	3603	A1	3689	A1	3726	B2	3758	A2	4702	A1	4728	B1	7613	A1
2623	A2	2726	B2	3604	A1	3701	B2	3727	A1	3759	A1	4703	A1	4729	B1	7614	A1
2624	A1	2727	B2	3605	A1	3702	B2	3728	B1	3760	B1	4704	A1	4730	B1	7616	A2
2625	A2	2728	B2	3606	A1	3703	B1	3729	A1	3762	A2	4705	A1	4731	B1	7618	A1
2626	A1	2729	A1	3608	A2	3704	B1	3730	B1	3763	B1	4706	A1	4732	B2	7619	A1
2627	A1	2730	B1	3610	A2	3705	B1	3731	A1	3765	B1	4707	A2	4733	B2	7620	A1
2701	B2	2733	B1	3612	A2	3706	B1	3732	B1	3766	B1	4708	A2	4734	B1	7622	A1
2702	B2	2734	B1	3613	A1	3707	B1	3733	B1	3767	B1	4709	A2	4735	B1	7623	A1
2703	B1	2735	B1	3614	A2	3708	B1	3734	B1	3768	B1	4710	A2	4736	B1	7624	A1
2704	B1	2737	B1	3616	A2	3709	B1	3735	B1	3769	A2	4711	A2	4737	B1	7710	B2
2705	B1	2738	B1	3618	A2	3710	B1	3736	B1	3770	B2	4712	A2	4738	B1	7720	B1
2706	B1	2742	A2	3619	A2	3711	B1	3737	B1	3771	B2	4713	A1	4739	B1	7730	A2
2707	B1	2743	B1	3623	A1	3712	B1	3742	B1	3772	A2	4714	A1	4740	B1	7740	A1
2708	B1	2744	B1	3624	A1	3713	B1	3743	B1	3774	A2	4715	A1	4741	B2	7780	A2
2709	B1	2745	B2	3625	A1	3714	B1	3744	B1	3775	B2	4716	A1	4742	B2	7781	B2
2710	B1	2746	B1	3626	A1	3715	B1	3745	B1	3776	B2	4717	A1	4744	A2	7783	A2
2711	B1	2747	B1	3628	A1	3716	B1	3746	B1	3777	B2	4718	A1	4745	A1	7784	B2
2712	B1	2760	A2	3630	A1	3717	A1	3748	B1	3779	B2	4719	A2	4746	A1	7787	B1
2717	A2	2769	B1	3672	A2	3718	B2	3749	A1	3780	B2	4720	A2	4747	A1	7791	A1
2718	B2	2770	B1	3676	A2	3719	A2	3751	A1	3781	B1	4721	A2	4748	A1	7792	A1
2719	A2	2781	B2	3678	A1	3720	B2	3752	A1	3784	B2	4722	A2	4785	A2		
2720	B2	2782	B2	3679	A1	3721	A2	3753	A1	3786	A2	4723	B1	4790	B2		
2721	A2	2786	B2	3680	A1	3722	A2	3754	A1	3787	A2	4724	B1	4794	B1		
2722	B2	2787	B2	3686	A2	3723	B2	3755	A1	3788	B2	4725	A1	4795	A1		
2723	A2	3601	A1	3687	A2	3724	B2	3756	A1	3789	A2	4726	B1	7610	A2		





# ANALOG CIRCUIT

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



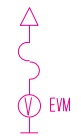
## ANALOG CCTRY

L Not For ND/DD/FR  
 \* See Variant Table for details  
 # For Provision Only

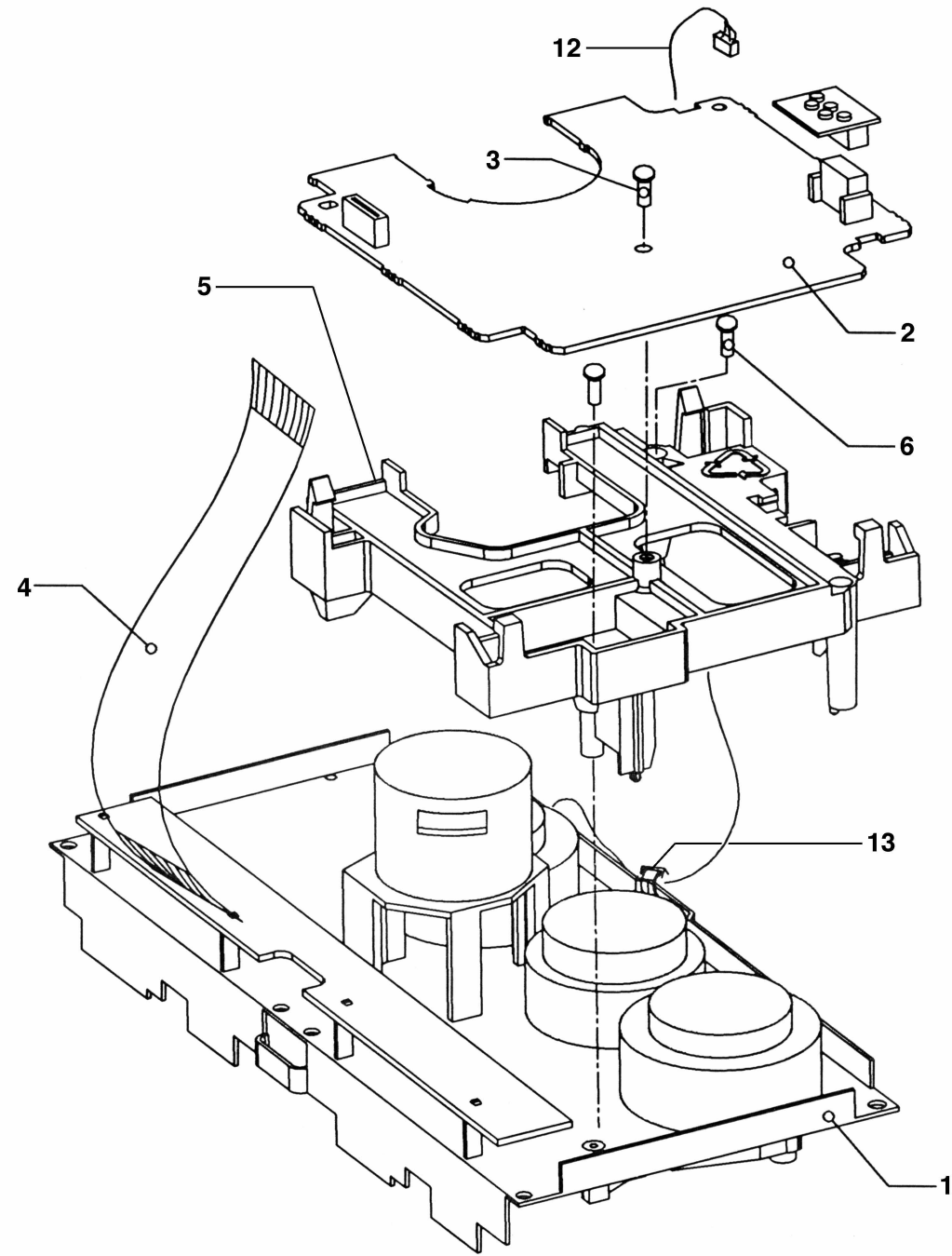
Note : Some values may varies, see respective parts list for correct value.

→ Signal path Pb left channel  
 ⇨ Signal path REC right channel

DC Voltages measured with Dubbing Fe to Fe





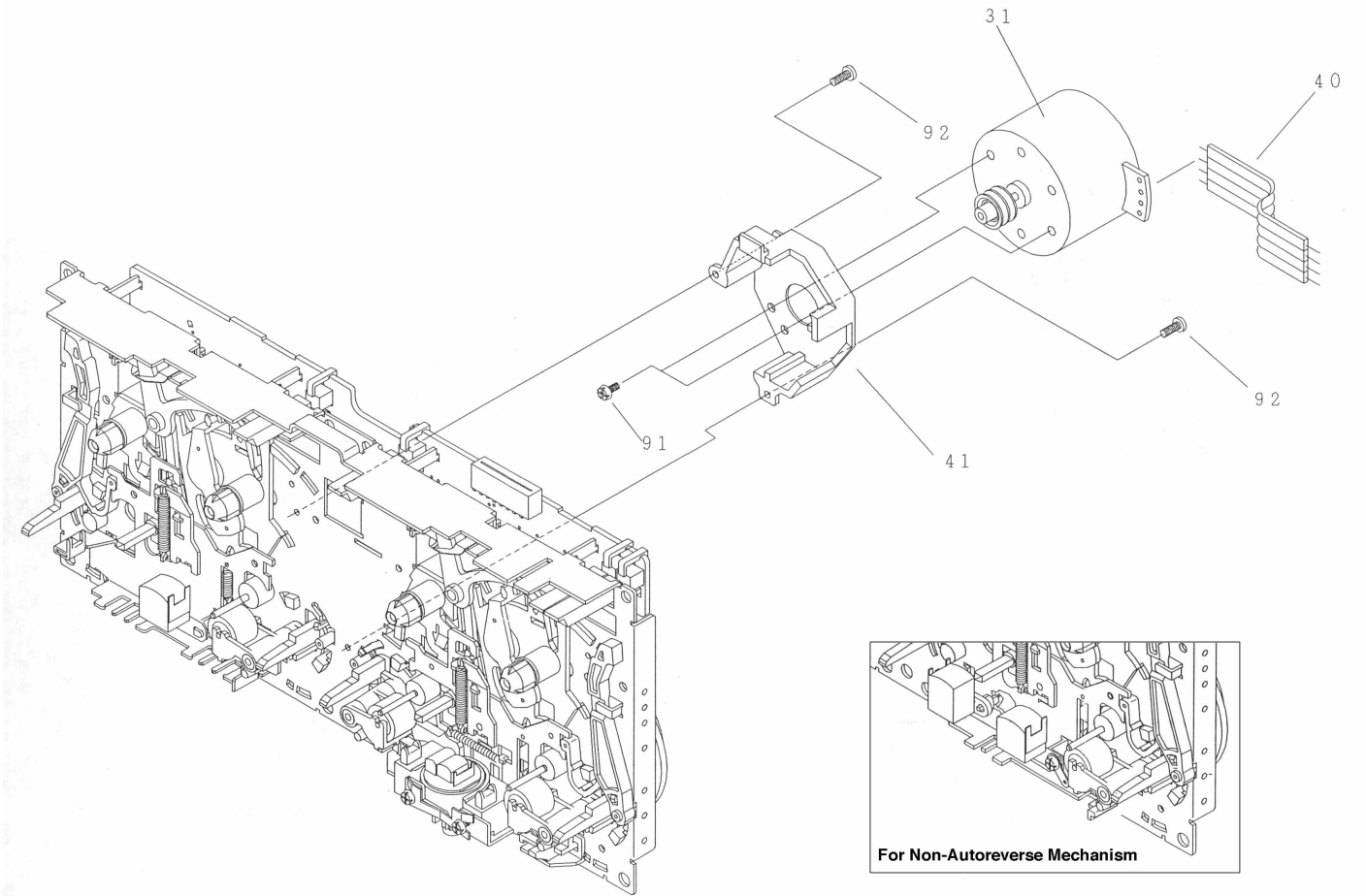


3139 118 77070 (Incl. ...77080) dd wk926

**TAPE MODULE EXPLODED VIEW**

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

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



**TAPE MECHANISM - MOTOR EXPLODED VIEW**

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

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

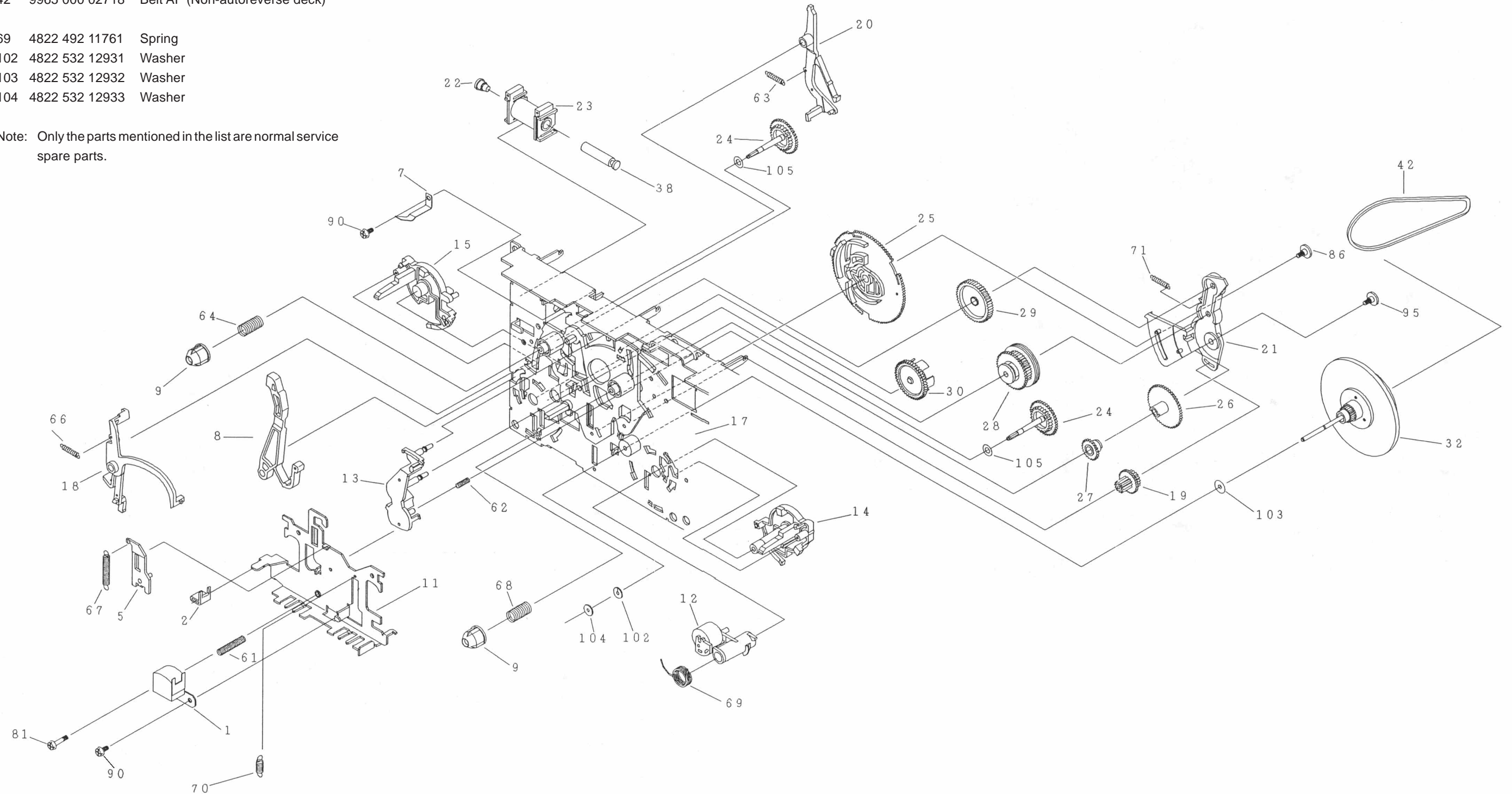


**TAPE MECHANISM A - PLAY**

**MECHANICAL PARTS - PLAY MECHANISM**

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

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



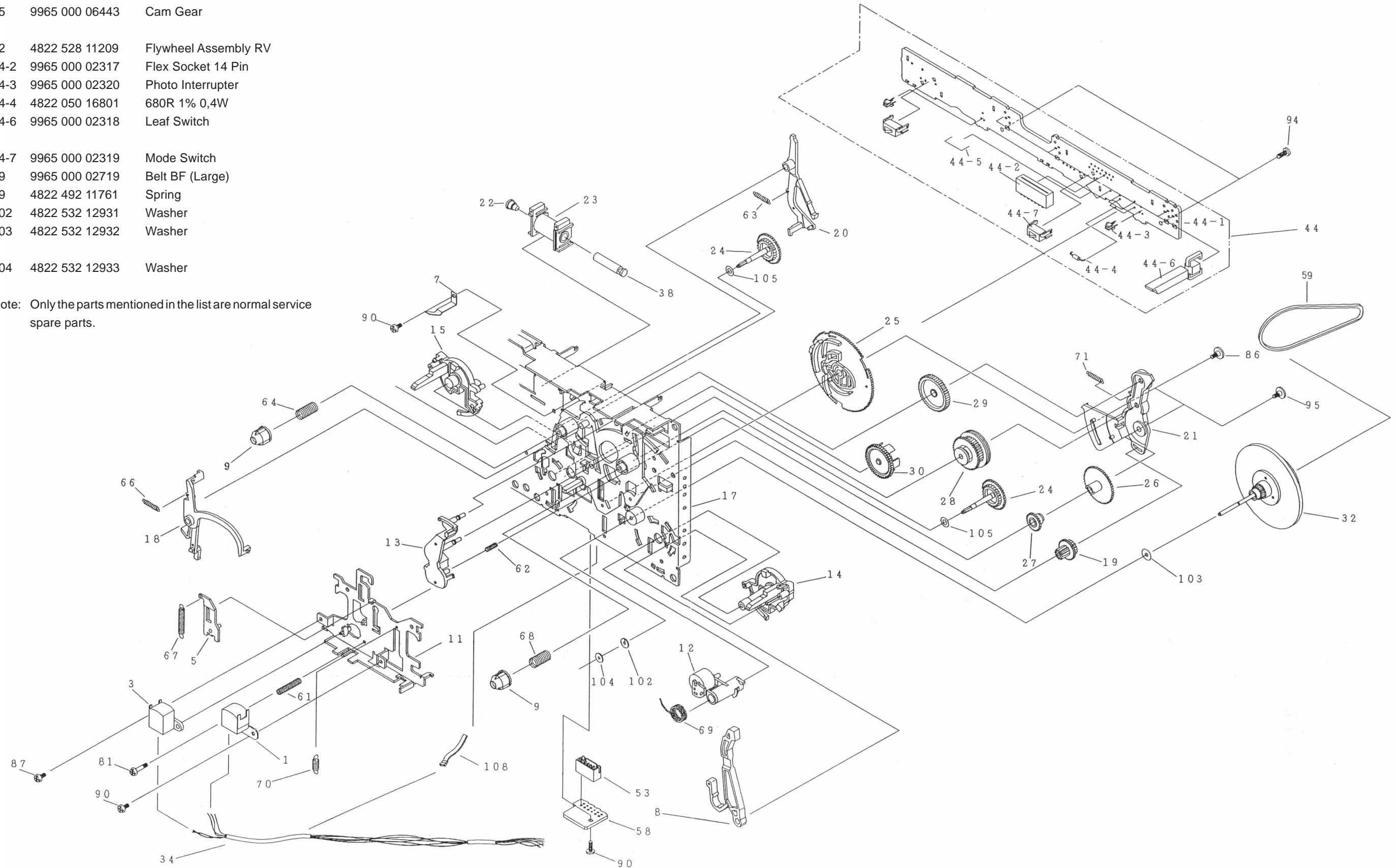


**TAPE MECHANISM B - RECORD/PLAYBACK (Non-Autoreverse version)**

**MECHANICAL PARTS - REC/PB MECHANISM**

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

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

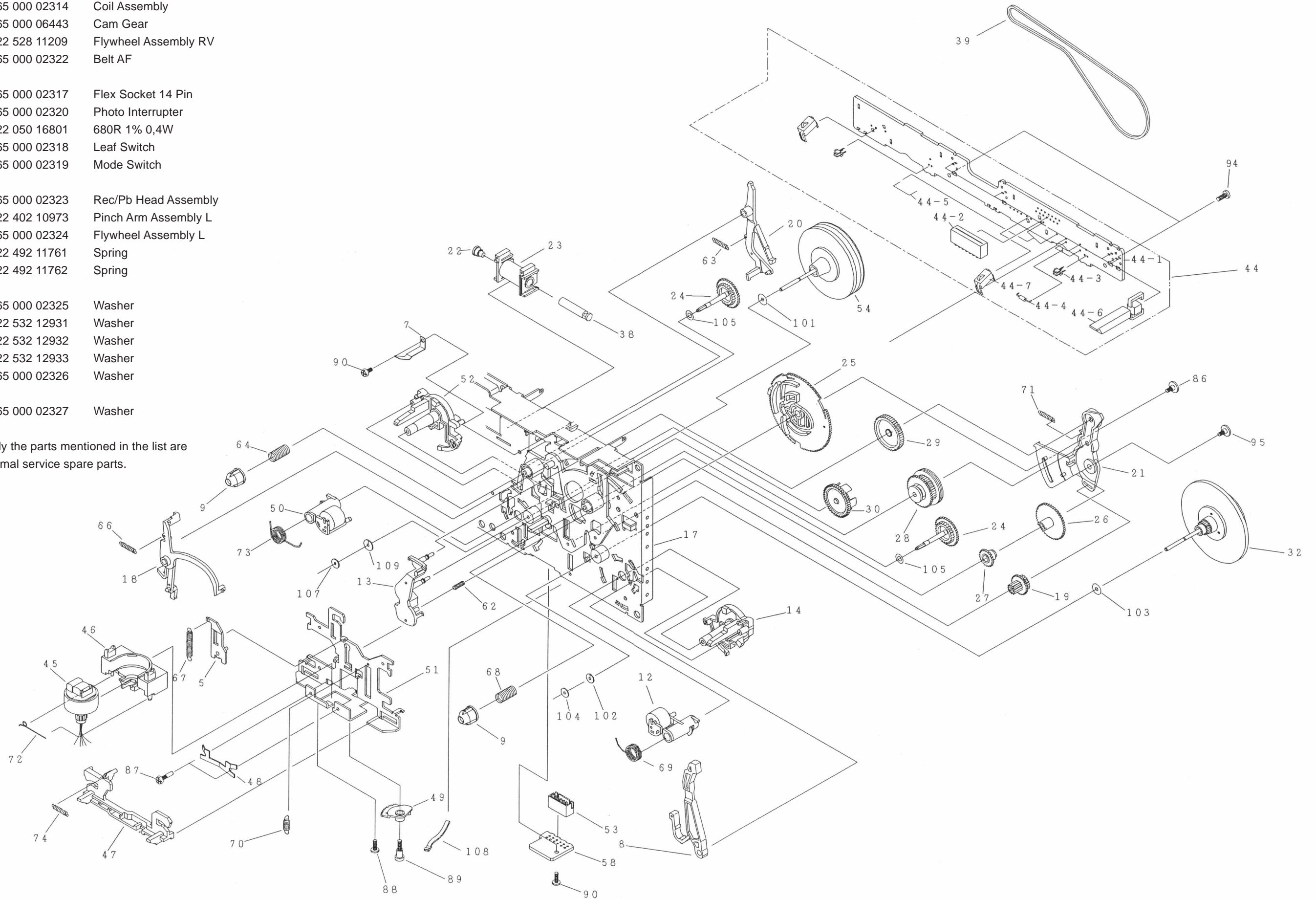


**TAPE MECHANISM B - RECORD/PLAYBACK (Autoreverse version)**

**MECHANICAL PARTS - REC/PB MECHANISM**

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

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





## ELECTRICAL PARTS LIST - ETF7 NON-DOLBY BOARD

## MISCELLANEOUS

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

## CAPACITORS

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

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

## RESISTORS

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

## ELECTRICAL PARTS LIST - ETF7 NON-DOLBY BOARD

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

3745	482205120332	3k3 5% 0,1W Autoreverse
3745	482205120562	5k6 5% 0,1W Non-autoreverse
3746	482205120332	3k3 5% 0,1W Autoreverse
3746	482205120562	5k6 5% 0,1W Non-autoreverse
3748	482211711449	2k2 1% 0,1W
3749	482211710834	47k 1% 0,1W
3751	482211710833	10k 1% 0,1W
3752	482211710837	100k 1% 0,1W
3753	482211710837	100k 1% 0,1W
3754	482205120105	1M 5% 0,1W Autoreverse
3754	482205120479	47R 5% 0,1W Non-autoreverse
3755	482205120105	1M 5% 0,1W Autoreverse
3755	482205120479	47R 5% 0,1W Non-autoreverse
3756	482211713579	220k 1% 0,1W
3757	482211713579	220k 1% 0,1W
3758	482211710833	10k 1% 0,1W
3759	482211710833	10k 1% 0,1W
3760	482205120121	120R 5% 0,1W
3761	482205021003	10k 1% 0,6W
3762	482211711454	820R 1% 0,1W
3763	482205120154	150k 5% 0,1W
3764	482211683872	220R 5% 0,5W
3765	482205120393	39k 5% 0,1W
3766	482205120475	4M7 5% 0,1W
3767	482205120475	4M7 5% 0,1W
3768	482211710833	10k 1% 0,1W
3769	482211711383	12k 1% 0,1W Autoreverse
3769	482205120822	8k2 5% 0,1W Non-autoreverse
3770	482211711139	1k5 1% 0,1W
3771	482205120122	1k2 5% 0,1W
3772	482211711507	6k8 1% 0,1W Autoreverse
3772	482205120562	5k6 5% 0,1W Non-autoreverse
3773	482210012227	Trimmer 4k7 30% 0,1W
3774	482211683933	15k 1% 0,1W Autoreverse
3774	482205120822	8k2 5% 0,1W Non-autoreverse
3775	482205120478	4R7 5% 0,1W
3776	482211711507	6k8 1% 0,1W
3777	482211710353	150R 1% 0,1W
3778	482205120688	△ 6R8 5% 0,33W
3779	482205120334	330k 5% 0,1W
3780	482205120105	1M 5% 0,1W
3781	482205120475	4M7 5% 0,1W
3784	482205110102	1k 2% 0,25W
3786	482205120223	22k 5% 0,1W
3787	482205120105	1M 5% 0,1W
3788	482205120105	1M 5% 0,1W
3789	482211710834	47k 1% 0,1W
4701	482205120008	0R Jumper 0805
4702	482205120008	0R Jumper 0805
4703	482205120008	0R Jumper 0805
4704	482205120008	0R Jumper 0805
4705	482205120008	0R Jumper 0805

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

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

**TRANSISTORS & INTEGRATED CIRCUITS**

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

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

**COILS & FILTERS**

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

**DIODES**

6611	482213031878	1N4003G
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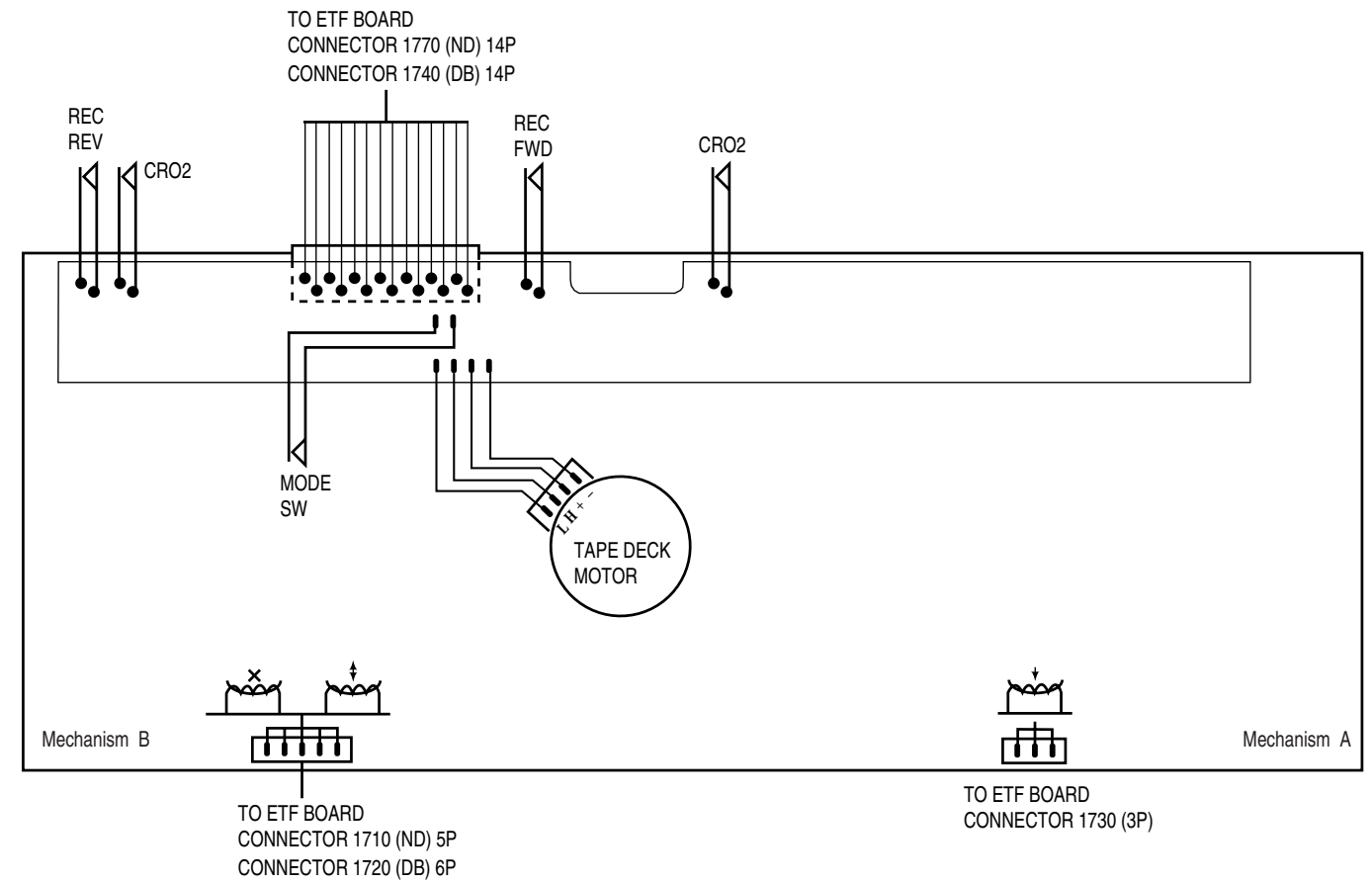
# ETF7 TAPE MODULE

*(Dolby Version)*

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**Tapedeck wiring (Double deck)**

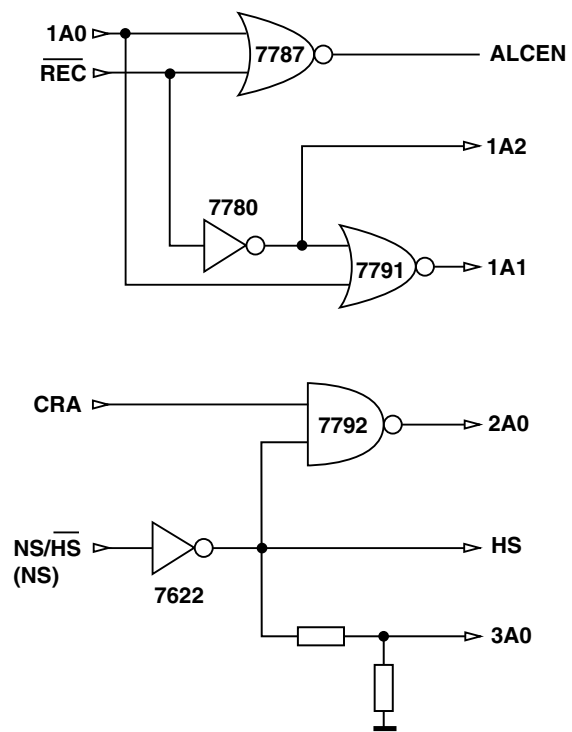
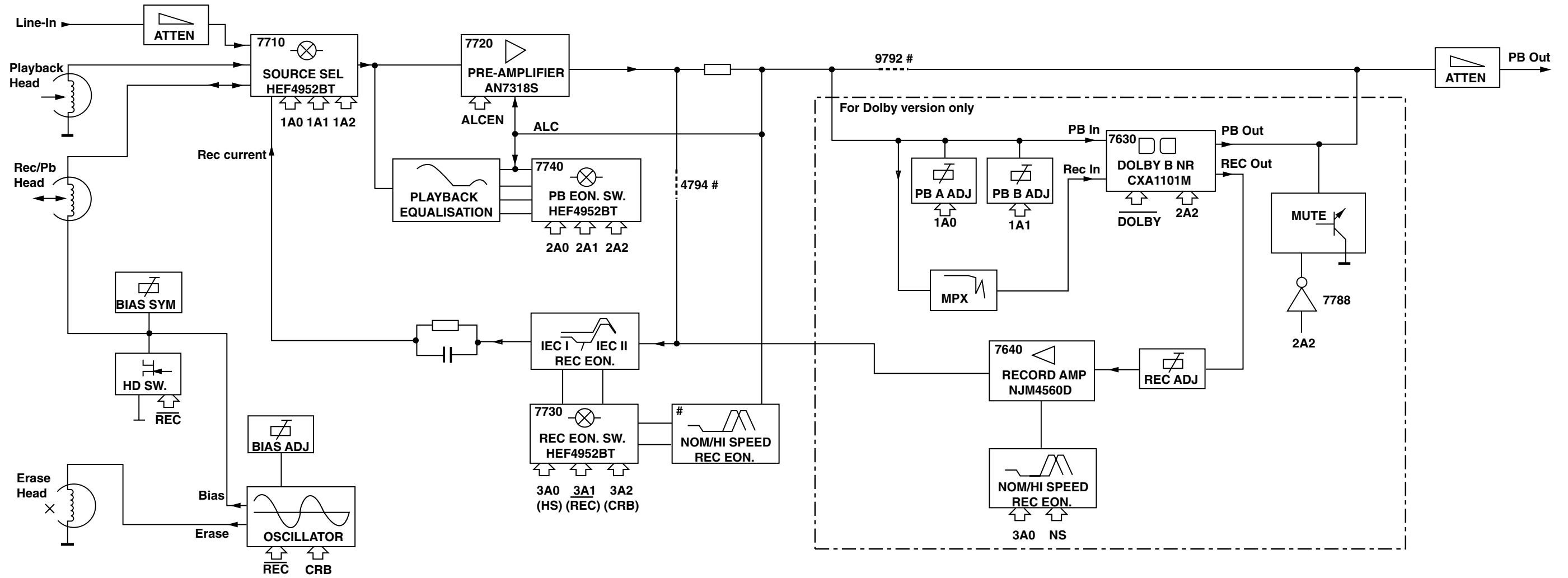


**OPTIONS / VARIANTS TABLE**

MODULE	ETF7		
	1	2	3
<b>VARIANT</b>			
<b>FEATURES</b>	<b>DB/DD/FR</b>	<b>ND/DD/FR</b>	<b>ND/DD/FF</b>
Deck configuration	double	double	double
Deck type (Tokyo Pigeon)	CWE	CWE	CWE
Autoreverse	yes (B)	yes (B)	no
Auto Replay	no	no	yes (A+B)
Motor configuration	single	single	single
Auto tape type selection	yes	yes	yes
Dolby type B Noise Reduction	yes	no	no
19 kHz pilot suppression	yes	no	no
Normal / High speed dubbing	yes	yes	no
Cue/Review & Fwd/Rewind	yes	yes	yes

- DB = Dolby B NR
- DD = Double Deck
- FF = Non-Autoreverse
- FR = Autoreverse Deck B
- ND = Non-Dolby
- SD = Single Deck

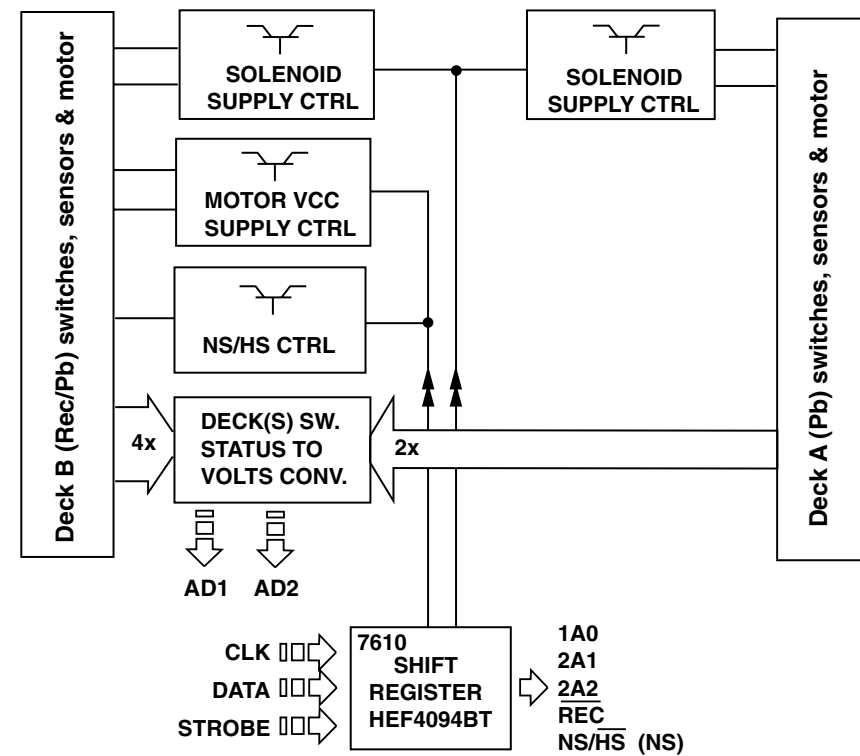
**BLOCK DIAGRAM**



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

MicroProcessor Control / Communication lines

Direct / Indirect Control lines from Shift Registers



## Brief introduction

### General

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

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

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

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

### NOTATIONS & ABBREVIATIONS USED IN THIS DOCUMENT

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

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

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

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

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

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

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

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

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

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

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

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

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

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

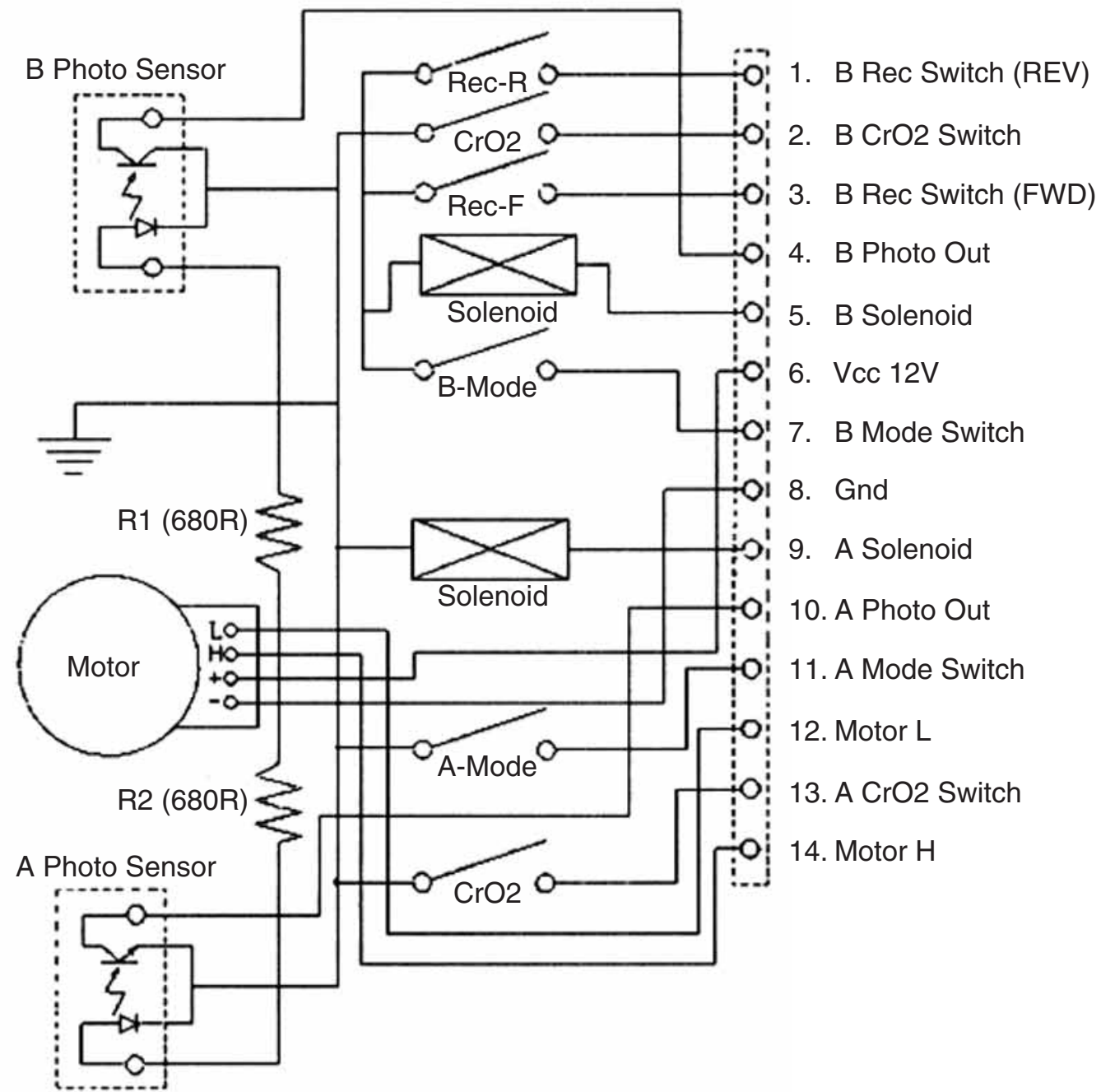
○ 1	REC REW	Record tab protection status switch (reverse)	[open=on: close=off]
○ 2	CrO2 B	Chrome tape detection switch deck B	[open=Cr: close=Fe]
○ 3	REC FWD	Record tab protection status switch (forward)	[open=on: close=off]
○ 4	PHOTO B	Photo sensor output (tape movement indication)	
○ 5	SOL B	Solenoid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

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

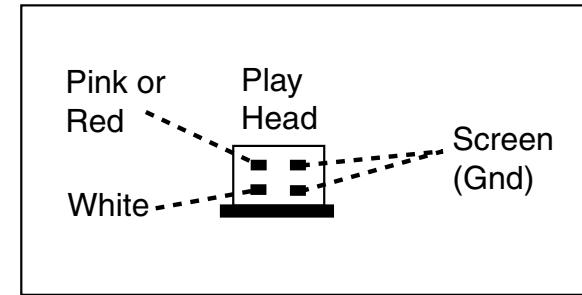
○ 1	REC REW	Record tab protection status switch (reverse)	[open=on: close=off]
○ 2	CrO2 B	Chrome tape detection switch deck B	[open=Cr: close=Fe]
○ 3	REC FWD	Record tab protection status switch (forward)	[open=on: close=off]
○ 4	PHOTO B	Photo sensor output (tape movement indication)	
○ 5	SOL B	Solenoid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



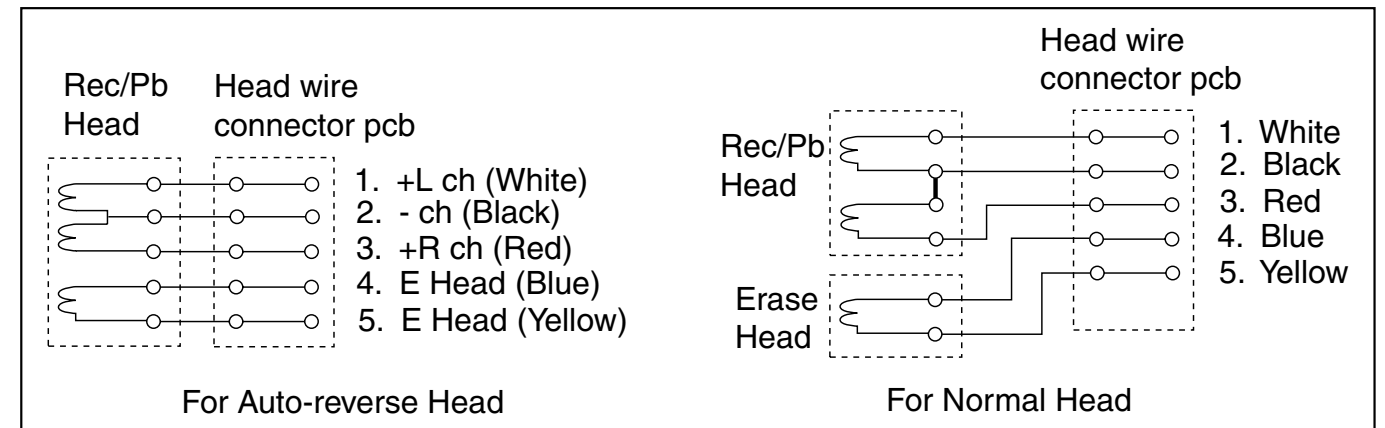
**TAPE MECHANISM ELECTRONICS**



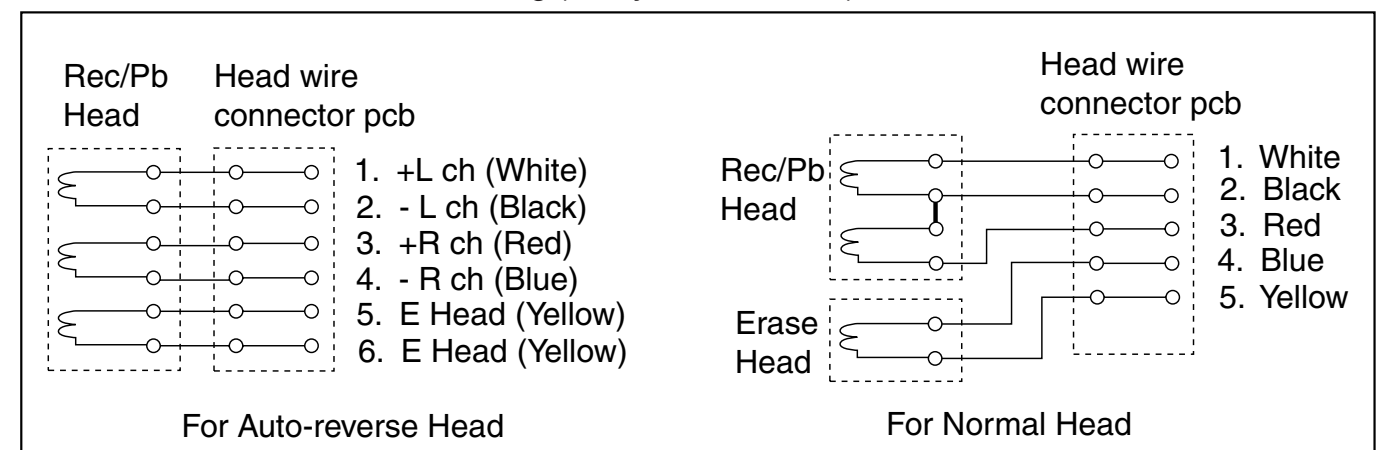
**Mechanism A Head Wires Soldering**



**Mechanism B Head Wires Soldering (Non-Dolby version)**



**Mechanism B Head Wires Soldering (Dolby B NR version)**



**General**

	TEST CASSETTE	RECORDER MODE	MEASURE ON	READ ON	ADJUST	
					with	to
<b>ADJUST MOTOR SPEED</b>						
HIGH SPEED	SBC420 (4822 397 30071) 3150Hz	DUBBING	1 or 2 LEFT RIGHT	frequency counter	3622 *	5040Hz ± 0.5%
NORMAL SPEED		PLAY B			3620	3150Hz ± 0.5%
		PLAY A			check	3150Hz -0.8/+1.8%
<b>CHECK WOW &amp; FLUTTER</b>						
DECK A & B	SBC420 (4822 397 30071) 3150Hz	PLAY	1 or 2 LEFT RIGHT	W&F-meter	check only	≤0.4 % DIN or ≤0.35 % CCIR *
<b>ADJUST AZIMUTH</b>						
DECK A & B	SBC420 (4822 397 30071) 10kHz	PLAY FWD PLAY REV #	1 or 2 LEFT RIGHT	mV-meter	left hand screw right hand screw	max. output level & left=right

**Playback**

	TEST CASSETTE	RECORDER MODE	MEASURE ON	READ ON	ADJUST	
					with	to
<b>ADJUST DOLBY PLAYBACK LEVEL *</b>						
DECK A	TCC-130 (4822 397 30269) 200nWb/m	PLAY	7 or 8 LEFT RIGHT	mV-meter	3641(L), 3642(R)	548mV ±0.5dB
DECK B		PLAY FWD			3635(L), 3636(R)	
		PLAY REV #			Check	548mV ±1dB
<b>CHECK PLAYBACK FREQUENCY RESPONSE</b>						
PB. FREQ. RESP.	SBC420 (4822 397 30071)	PLAY	1 or 2 LEFT RIGHT	mV-meter	Check	limits see fig.1

\* For Dolby version only

# For Auto-reverse version only

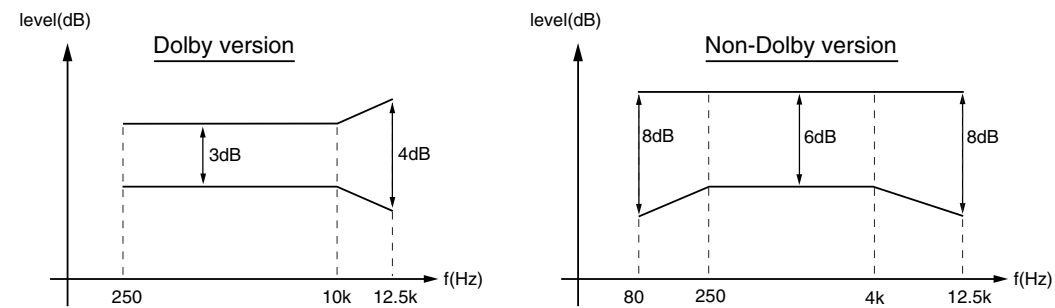


figure. 1

**Recording**

	TEST CASSETTE	RECORDER MODE	MEASURE ON	READ ON	ADJUST	
					with	to
<b>PRE-ADJUST BIAS AND BIAS-SYMMETRY</b>						
DECK B	CrO <sub>2</sub>	RECORD	5 or 6 LEFT RIGHT	mV-meter	3773	995mV
	FERRO				3785 *	left = right
					check only	750mV ± 1.5dB
<b>CHECK OVERALL FREQUENCY RESPONSE AND DISTORTION</b>						
Inject 3mV signals 100Hz, 250Hz, 1kHz, 10kHz, 12.5kHz via 3 or 4	CrO <sub>2</sub>	RECORD				
	RECORDED CASSETTE	PLAY	1 or 2 LEFT RIGHT	mV-meter	check only	limits see fig.2
Inject 1kHz 8.85mV via 3 or 4	CrO <sub>2</sub>	RECORD				
	RECORDED CASSETTE	PLAY	1 or 2 LEFT RIGHT	THD-meter	check only	≤3%
Remark: If high frequencies are not within limits, decrease bias and re-measure. If distortion is too high increase bias and re-measure.						
<b>ADJUST DOLBY RECORD LEVEL *</b>						
Inject 400Hz 8.85mV via 3 or 4	CrO <sub>2</sub>	RECORD	9 or 10 LEFT RIGHT	mV-meter	3655 & 3556	420mV
	RECORDED CASSETTE	PLAY	7 or 8 LEFT RIGHT	mV-meter	check	170mV ± 1dB
Remark: If measured value is out, re-adjust record level up or down slightly to attain play level.						

\* For Dolby version only

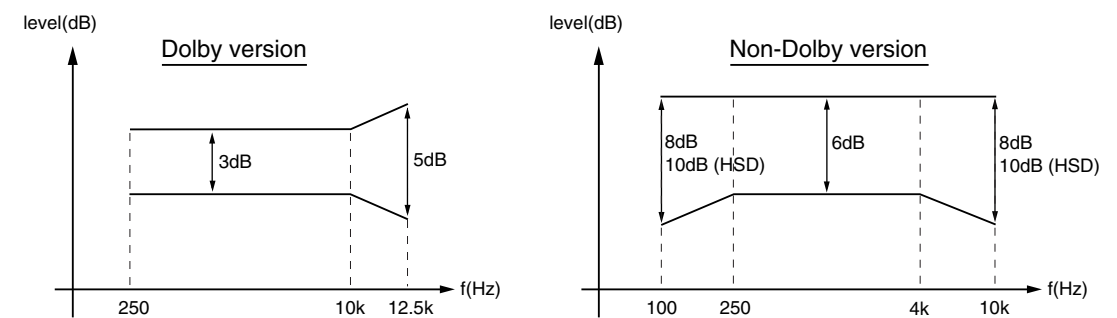
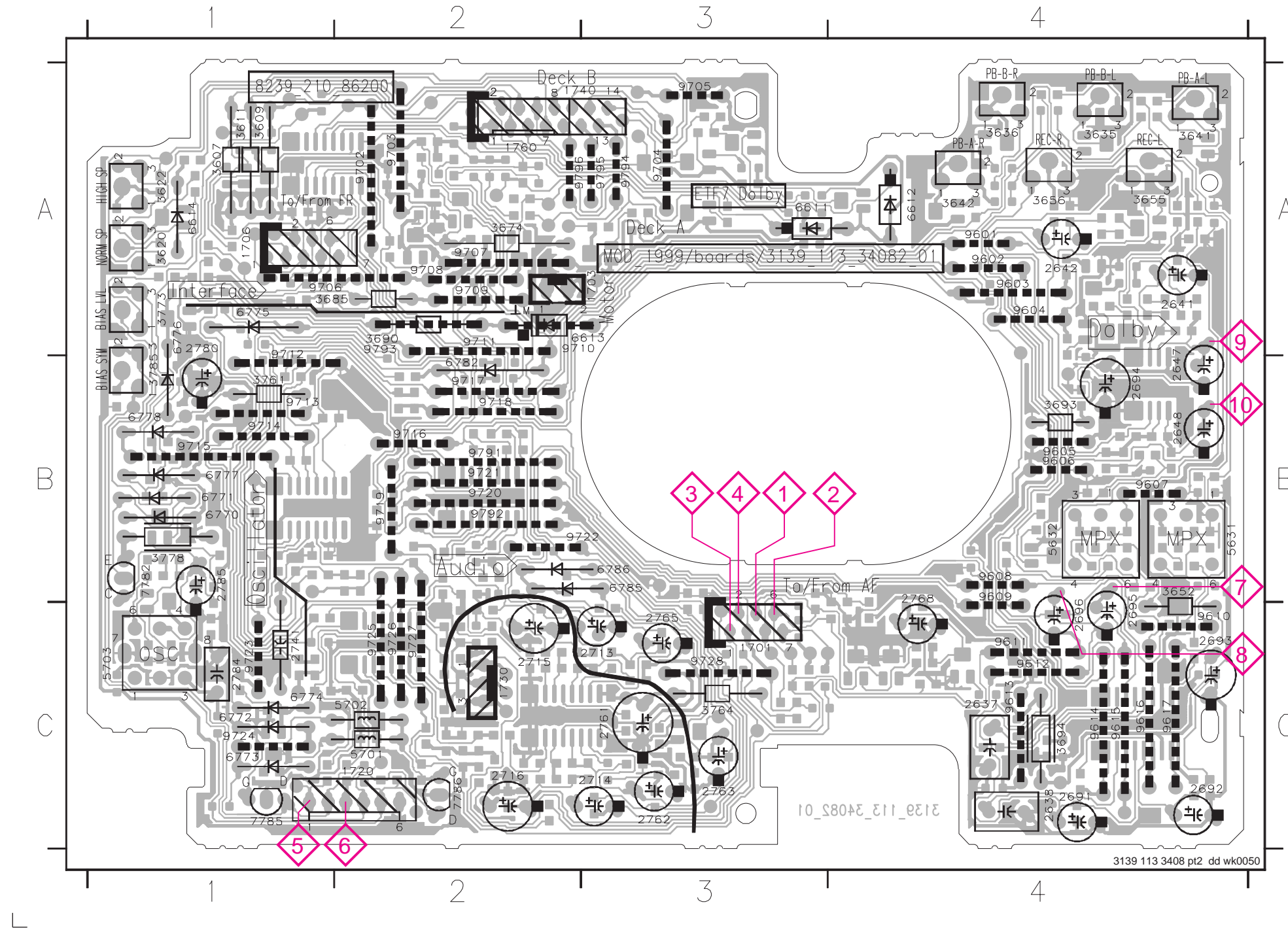


figure. 2

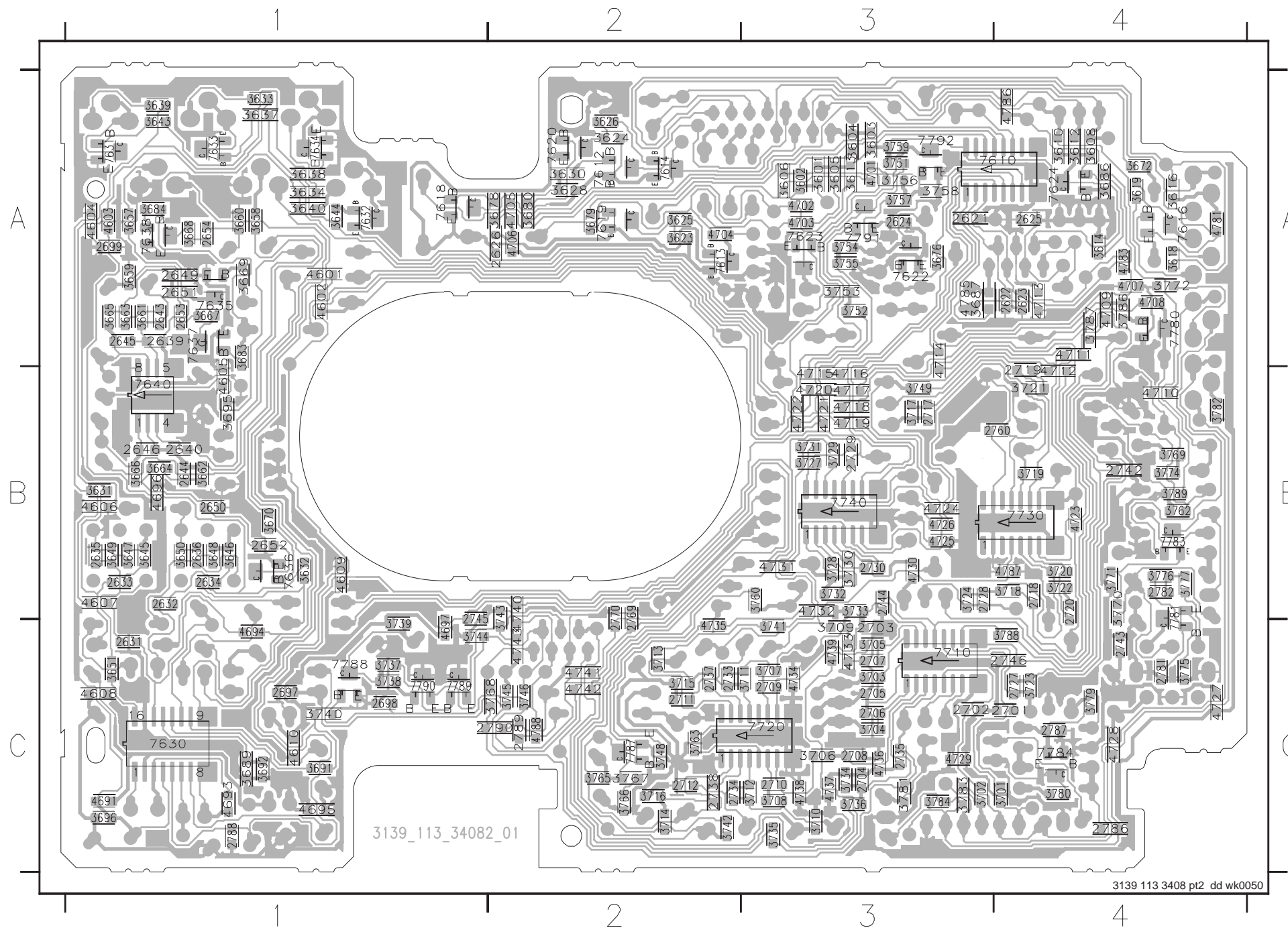
COMPONENT LAYOUT



1701	C3	5631	B4	9715	B1
1703	A3	5632	B4	9716	B2
1706	A1	5701	C2	9717	B2
1720	C2	5702	C2	9718	B2
1730	C2	5703	C1	9719	B2
1740	A2	6611	A3	9720	B2
1760	A2	6612	A4	9721	B2
2637	C4	6613	A3	9722	B3
2638	C4	6614	A1	9723	C1
2641	A4	6770	B1	9724	C1
2642	A4	6771	B1	9725	C2
2647	B4	6772	C1	9726	C2
2648	B4	6773	C1	9727	C2
2691	C4	6774	C1	9728	C3
2692	C4	6775	A1	9791	B2
2693	C4	6776	A1	9792	B2
2694	B4	6777	B1	9793	A2
2695	C4	6778	B1	9794	A3
2696	C4	6782	B2	9795	A3
2713	C3	6785	B3	9796	A2
2714	C3	6786	B3		
2715	C2	7782	B1		
2716	C2	7785	C1		
2741	C1	7786	C2		
2761	C3	9601	A4		
2762	C3	9602	A4		
2763	C3	9603	A4		
2765	C3	9604	A4		
2768	B4	9605	B4		
2780	A1	9606	B4		
2784	C1	9607	B4		
2785	B1	9608	B4		
3607	A1	9609	B4		
3609	A1	9610	C4		
3611	A1	9611	C4		
3620	A1	9612	C4		
3622	A1	9613	C4		
3635	A4	9614	C4		
3636	A4	9615	C4		
3641	A4	9616	C4		
3642	A4	9617	C4		
3652	B4	9702	A2		
3655	A4	9703	A2		
3656	A4	9704	A3		
3674	A2	9705	A3		
3685	A1	9706	A1		
3690	A2	9707	A2		
3693	B4	9708	A2		
3694	C4	9709	A2		
3761	B1	9710	A2		
3764	C3	9711	A2		
3773	A1	9712	A1		
3778	B1	9713	B1		
3785	B1	9714	B1		



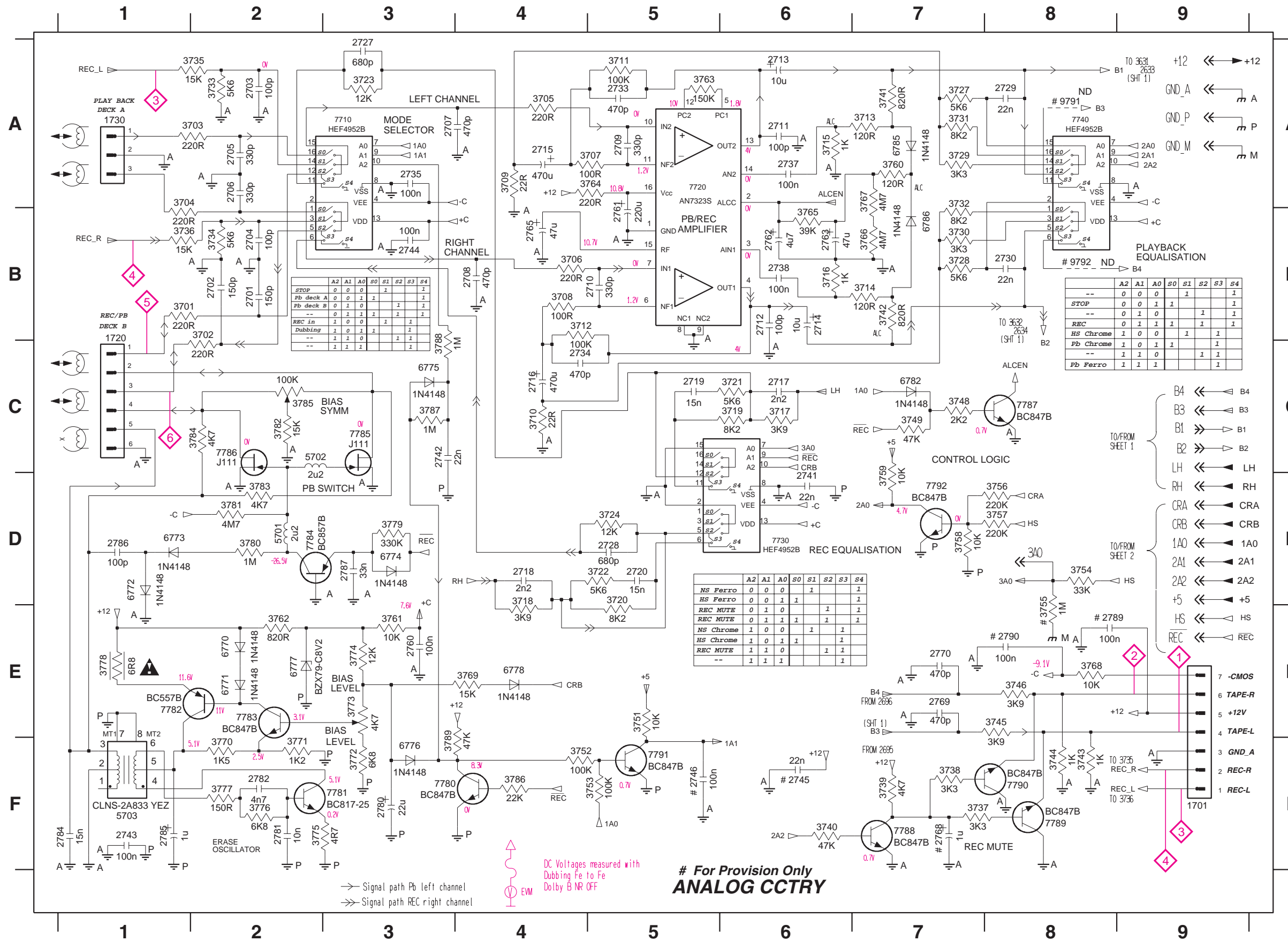
CHIP LAYOUT



2621	A3	2744	B3	3661	A1	3733	B3	4605	B1	4743	C2
2622	A4	2745	B1	3662	B1	3734	C3	4606	B1	4781	A4
2623	A4	2746	C4	3663	A1	3735	C3	4607	B1	4783	A4
2624	A3	2760	B4	3664	B1	3736	C3	4608	C1	4785	A3
2625	A4	2769	B2	3665	A1	3737	C1	4609	B1	4786	A4
2626	A2	2770	B2	3666	B1	3738	C1	4610	C1	4787	B4
2631	C1	2781	C4	3667	A1	3739	C1	4691	C1	4788	C2
2632	B1	2782	B4	3668	A1	3740	C1	4693	C1	7610	A4
2633	B1	2786	C4	3669	A1	3741	C3	4694	C1	7612	A2
2634	B1	2787	C4	3670	B1	3742	C2	4695	C1	7613	A2
2635	B1	2788	C1	3672	A4	3743	B2	4696	B1	7614	A2
2636	B1	2789	C2	3676	A3	3744	C1	4697	C1	7616	A4
2639	A1	2790	C2	3678	A2	3745	C2	4701	A3	7618	A1
2640	B1	3601	A3	3679	A2	3746	C2	4702	A3	7619	A2
2643	A1	3602	A3	3680	A2	3748	C2	4703	A3	7620	A2
2644	B1	3603	A3	3683	A1	3749	B3	4704	A2	7622	A3
2645	A1	3604	A3	3684	A1	3751	A3	4705	A2	7623	A3
2646	B1	3605	A3	3686	A4	3752	A3	4706	A2	7624	A4
2649	A1	3606	A3	3687	A3	3753	A3	4707	A4	7630	C1
2650	B1	3608	A4	3689	C1	3754	A3	4708	A4	7631	A1
2651	A1	3610	A4	3691	C1	3755	A3	4709	A4	7632	A1
2652	B1	3612	A4	3692	C1	3756	A3	4710	B4	7633	A1
2653	A1	3613	A3	3695	B1	3757	A3	4711	A4	7634	A1
2654	A1	3614	A4	3696	C1	3758	A3	4712	B4	7635	A1
2697	C1	3616	A4	3701	C4	3759	A3	4713	A4	7636	B1
2698	C1	3618	A4	3702	C3	3760	B3	4714	A3	7637	A1
2699	A1	3619	A4	3703	C3	3762	B4	4715	B3	7638	A1
2701	C4	3623	A2	3704	C3	3763	C2	4716	B3	7640	B1
2702	C3	3624	A2	3705	C3	3765	C2	4717	B3	7710	C3
2703	C3	3625	A2	3706	C3	3766	C2	4718	B3	7720	C3
2704	C3	3626	A2	3707	C3	3767	C2	4719	B3	7730	B4
2705	C3	3628	A2	3708	C3	3768	C2	4720	B3	7740	B3
2706	C3	3630	A2	3709	C3	3769	B4	4721	B3	7780	A4
2707	C3	3631	B1	3710	C3	3770	B4	4722	B3	7781	B4
2708	C3	3632	B1	3711	C3	3771	B4	4723	B4	7783	B4
2709	C3	3633	A1	3712	C3	3772	A4	4724	B3	7784	C4
2710	C3	3634	A1	3713	C2	3774	B4	4725	B3	7787	C2
2711	C2	3637	A1	3714	C2	3775	C4	4726	B3	7788	C1
2712	C2	3638	A1	3715	C2	3776	B4	4727	C4	7789	C1
2717	B3	3639	A1	3716	C2	3777	B4	4728	C4	7790	C1
2718	B4	3640	A1	3717	B3	3779	C4	4729	C3	7791	A3
2719	B4	3643	A1	3718	B4	3780	C4	4730	B3	7792	A3
2720	B4	3644	A1	3719	B4	3781	C3	4731	B3		
2727	C4	3645	B1	3720	B4	3782	B4	4732	B3		
2728	B3	3646	B1	3721	B4	3783	C3	4733	C3		
2729	B3	3647	B1	3722	B4	3784	C3	4734	C3		
2730	B3	3648	B1	3723	C4	3786	A4	4735	C2		
2733	C2	3649	B1	3724	B3	3787	A4	4736	C3		
2734	C2	3650	B1	3727	B3	3788	C4	4737	C3		
2735	C3	3651	C1	3728	B3	3789	B4	4738	C3		
2737	C2	3657	A1	3729	B3	4601	A1	4739	C3		
2738	C2	3658	A1	3730	B3	4602	A1	4740	B2		
2742	B4	3659	A1	3731	B3	4603	A1	4741	C2		
2743	C4	3660	A1	3732	B3	4604	A1	4742	C2		

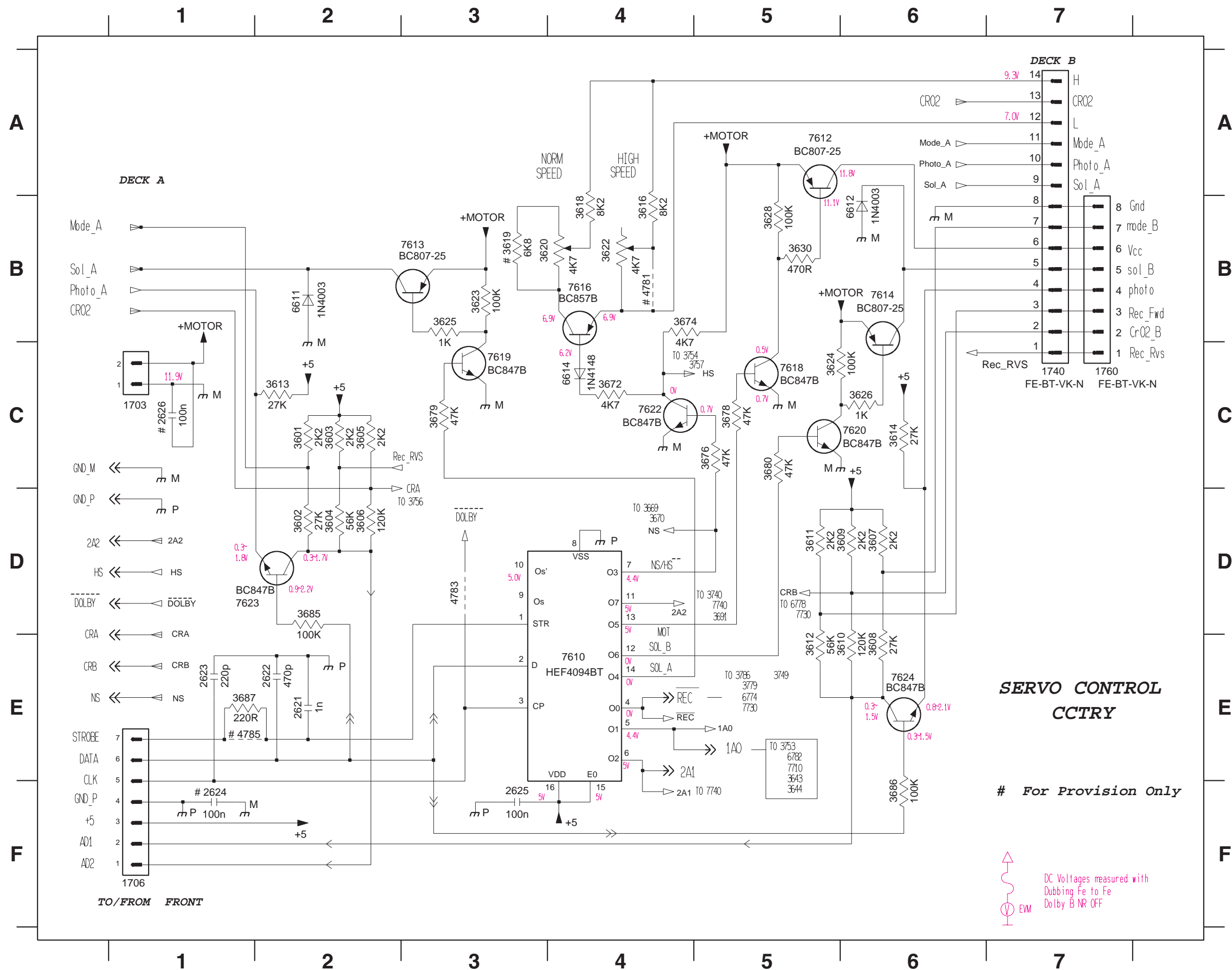


ANALOG CIRCUIT



- 1701 F9
- 1720 C1
- 1730 A1
- 2701 B2
- 2702 B2
- 2703 A2
- 2704 B2
- 2705 A2
- 2706 A2
- 2707 A3
- 2708 B4
- 2709 A5
- 2710 B5
- 2711 A6
- 2712 B6
- 2713 A6
- 2714 B6
- 2715 A4
- 2716 C4
- 2717 C6
- 2718 D4
- 2719 C5
- 2720 D5
- 2727 A3
- 2728 D5
- 2729 A8
- 2730 B8
- 2733 A5
- 2734 C4
- 2735 A3
- 2736 A6
- 2738 B6
- 2741 D6
- 2742 C3
- 2743 F1
- 2744 B3
- 2745 F6
- 2746 F5
- 2760 E3
- 2761 B5
- 2762 B6
- 2763 B6
- 2765 B4
- 2768 F7
- 2769 E7
- 2770 E7
- 2780 F3
- 2781 F2
- 2782 F2
- 2784 F1
- 2785 F1
- 2786 D1
- 2787 D3
- 2789 E8
- 2790 E8
- 3701 B1
- 3702 B2
- 3703 A2
- 3704 A1
- 3705 A4
- 3706 B4
- 3707 A5
- 3708 B4
- 3709 A4
- 3710 C4
- 3711 A5
- 3712 B4
- 3713 A7
- 3714 B7
- 3715 A6
- 3716 B6
- 3717 C6
- 3718 D4
- 3719 C6
- 3720 D5
- 3721 C6
- 3722 D5
- 3723 A3
- 3724 D5
- 3727 A7
- 3728 B7
- 3729 A7
- 3730 B7
- 3731 A7
- 3732 A7
- 3733 A2
- 3734 B2
- 3735 A2
- 3736 B1
- 3737 F7
- 3738 F7
- 3739 F7
- 3740 F6
- 3741 A7
- 3742 B7
- 3743 F8
- 3744 F8
- 3745 E8
- 3746 E8
- 3747 C7
- 3748 C7
- 3749 C7
- 3751 E5
- 3752 F4
- 3753 F5
- 3754 D8
- 3755 E8
- 3756 D8
- 3757 D8
- 3758 D7
- 3759 D7
- 3760 A7
- 3761 E3
- 3762 E2
- 3763 A5
- 3764 A5
- 3765 B6
- 3766 B7
- 3767 A7
- 3768 E8
- 3769 E4
- 3770 F2
- 3771 F2
- 3772 F3
- 3773 E3
- 3774 E3
- 3775 F2
- 3776 F2
- 3777 F2
- 3778 E1
- 3779 D3
- 3779 D3
- 3780 D2
- 3781 D2
- 3782 C2
- 3783 D2
- 3784 C2
- 3785 C2
- 3786 F4
- 3787 C3
- 3788 C3
- 3789 F3
- 5701 D2
- 5702 C1
- 5703 F1
- 5704 F1
- 5705 F1
- 5706 E2
- 5707 E2
- 5708 E2
- 5709 E2
- 5710 D1
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- 5790 D1
- 5791 D1
- 5792 D1
- 5793 D1
- 5794 D1
- 5795 D1
- 5796 D1
- 5797 D1
- 5798 D1
- 5799 D1
- 5800 D1

SERVO CONTROL CIRCUIT



- 1703 C1
- 1706 F1
- 1740 C7
- 1760 C7
- 2621 E2
- 2622 E2
- 2623 E1
- 2624 F1
- 2625 F3
- 2626 C1
- 3601 C2
- 3602 D2
- 3603 C2
- 3604 D2
- 3605 C2
- 3606 D2
- 3607 D6
- 3608 E6
- 3609 D6
- 3610 E6
- 3611 D5
- 3612 E5
- 3613 C2
- 3614 C6
- 3616 B4
- 3618 B4
- 3619 B3
- 3620 B3
- 3622 B4
- 3623 B3
- 3624 C5
- 3625 B3
- 3626 C6
- 3628 B5
- 3630 B5
- 3672 C4
- 3674 B4
- 3676 C5
- 3679 C3
- 3680 C5
- 3685 D2
- 3686 F6
- 3687 E1
- 4781 B4
- 4783 D3
- 4785 E1
- 6611 B2
- 6612 B6
- 6614 C4
- 7610 E4
- 7612 A5
- 7613 B2
- 7614 B6
- 7616 B4
- 7618 C5
- 7619 C3
- 7620 C6
- 7622 C4
- 7623 D1
- 7624 E6

SERVO CONTROL CCTRY

# For Provision Only

DC Voltages measured with  
 Dubbing Fe to Fe  
 Dolby B NR OFF



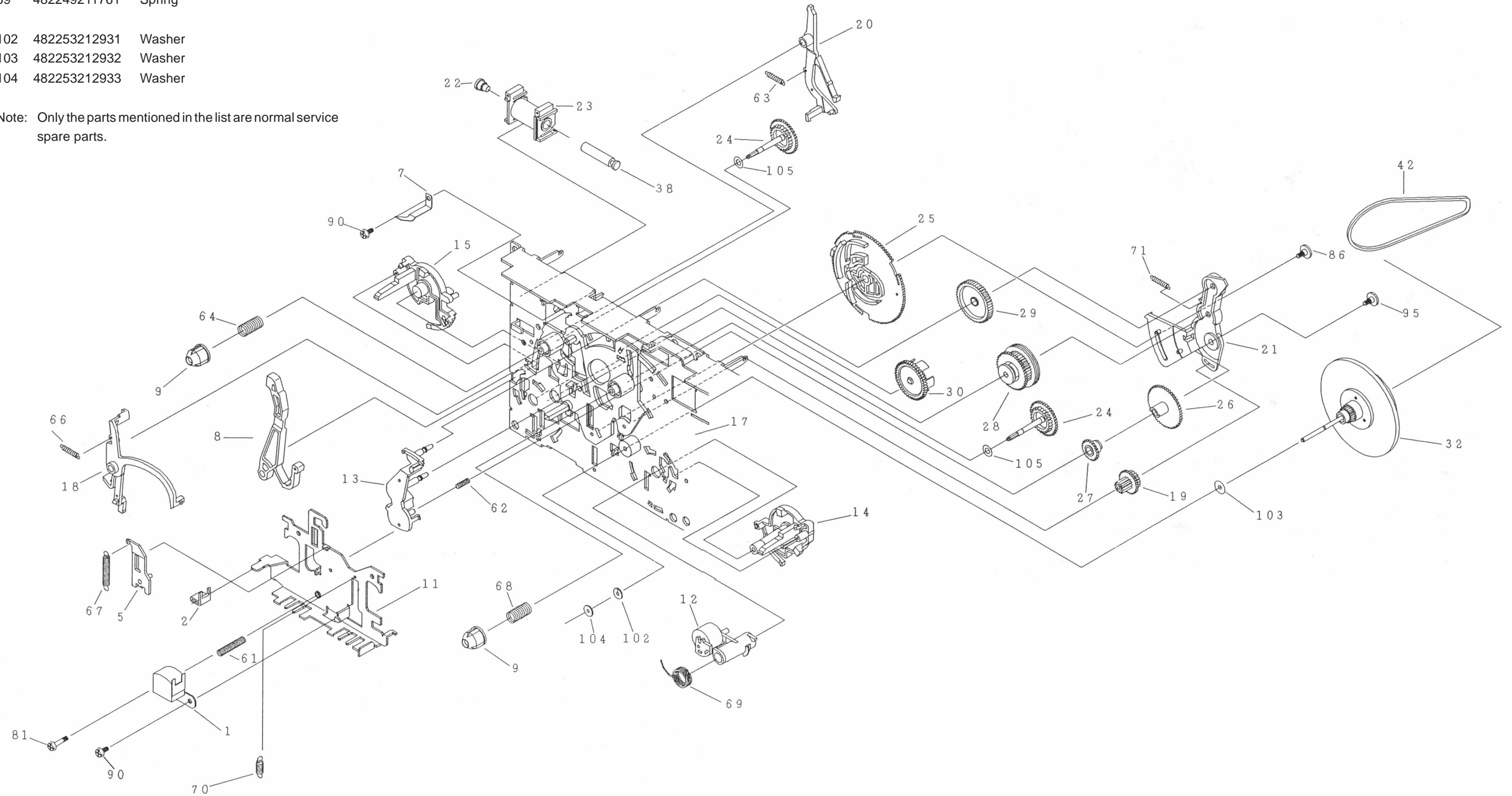


**TAPE MECHANISM A - PLAY**

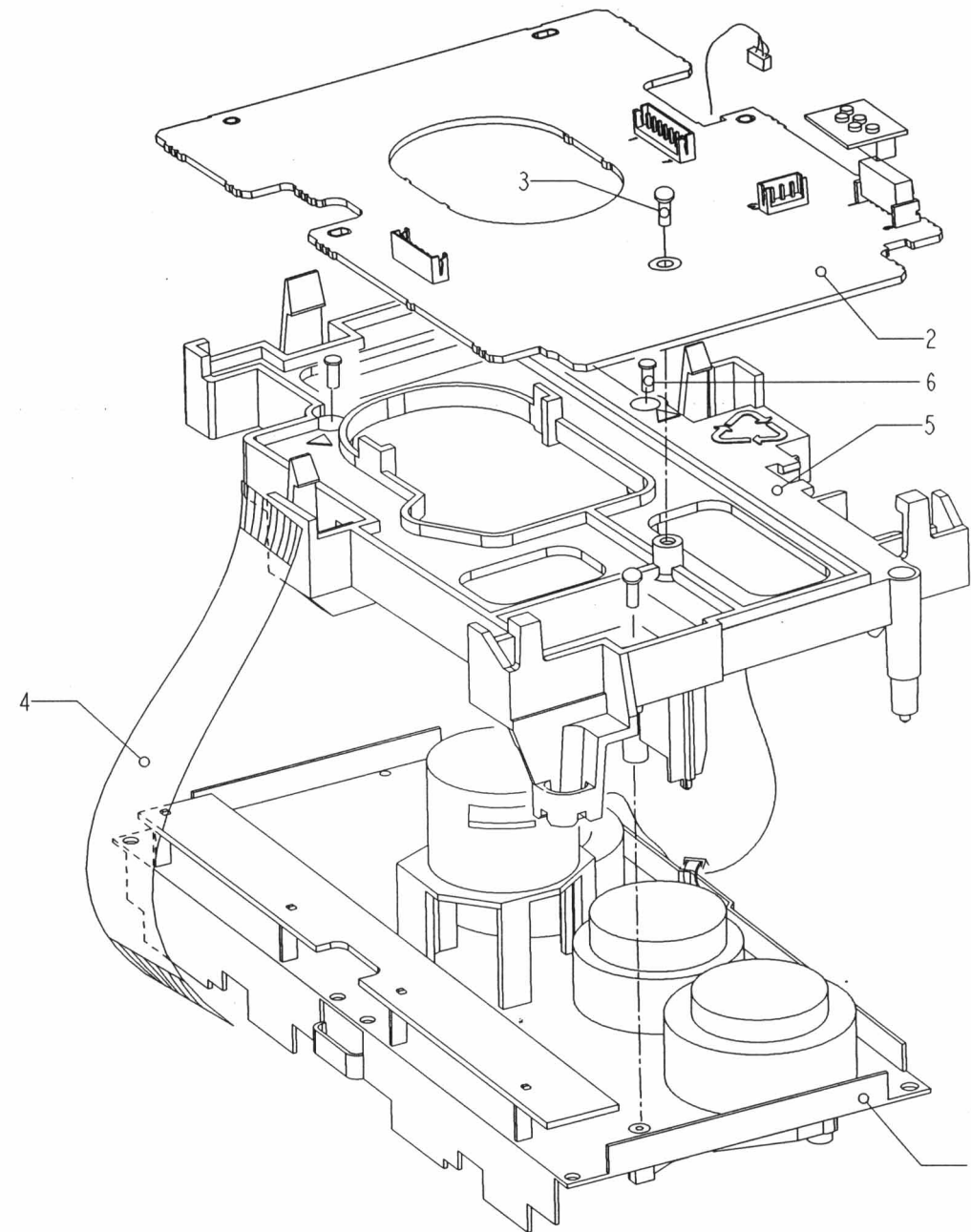
**MECHANICAL PARTS - PLAY MECHANISM**

1	996500002313	Play Head (Non-Autoreverse deck)
1	996500002321	Play Head (Autoreverse deck)
12	482240210972	Pinch Arm Assembly R
23	996500002314	Coil Assembly
32	482252811209	Flywheel Assembly RV
42	996500002315	Belt AF (Autoreverse deck)
42	996500002718	Belt AF (Non-autoreverse deck)
69	482249211761	Spring
102	482253212931	Washer
103	482253212932	Washer
104	482253212933	Washer

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



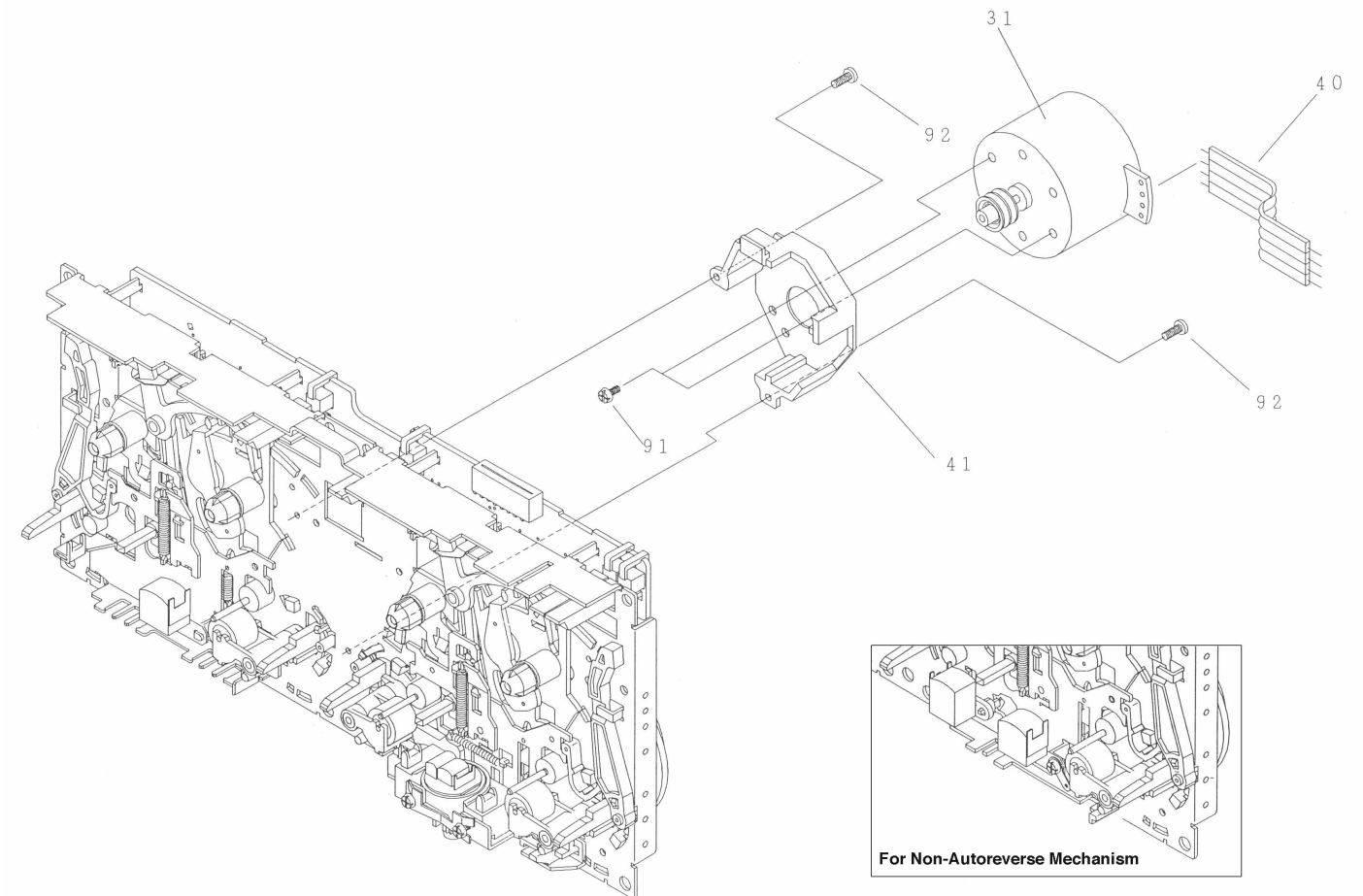




#### **TAPE MODULE EXPLODED VIEW**

1	313911877150	Autoreverse Mech. CWE44FR03
3	-	Screw D3 x 10
4	313911034080	Flex Cable 14 pin 7,5 cm
6	-	Screw M2 x 16

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



#### **TAPE MECHANISM - MOTOR EXPLODED VIEW**

31	996500003006	Motor Assembly
91	-	Screw M2,6 x 5
92	-	Screw M2 x 5

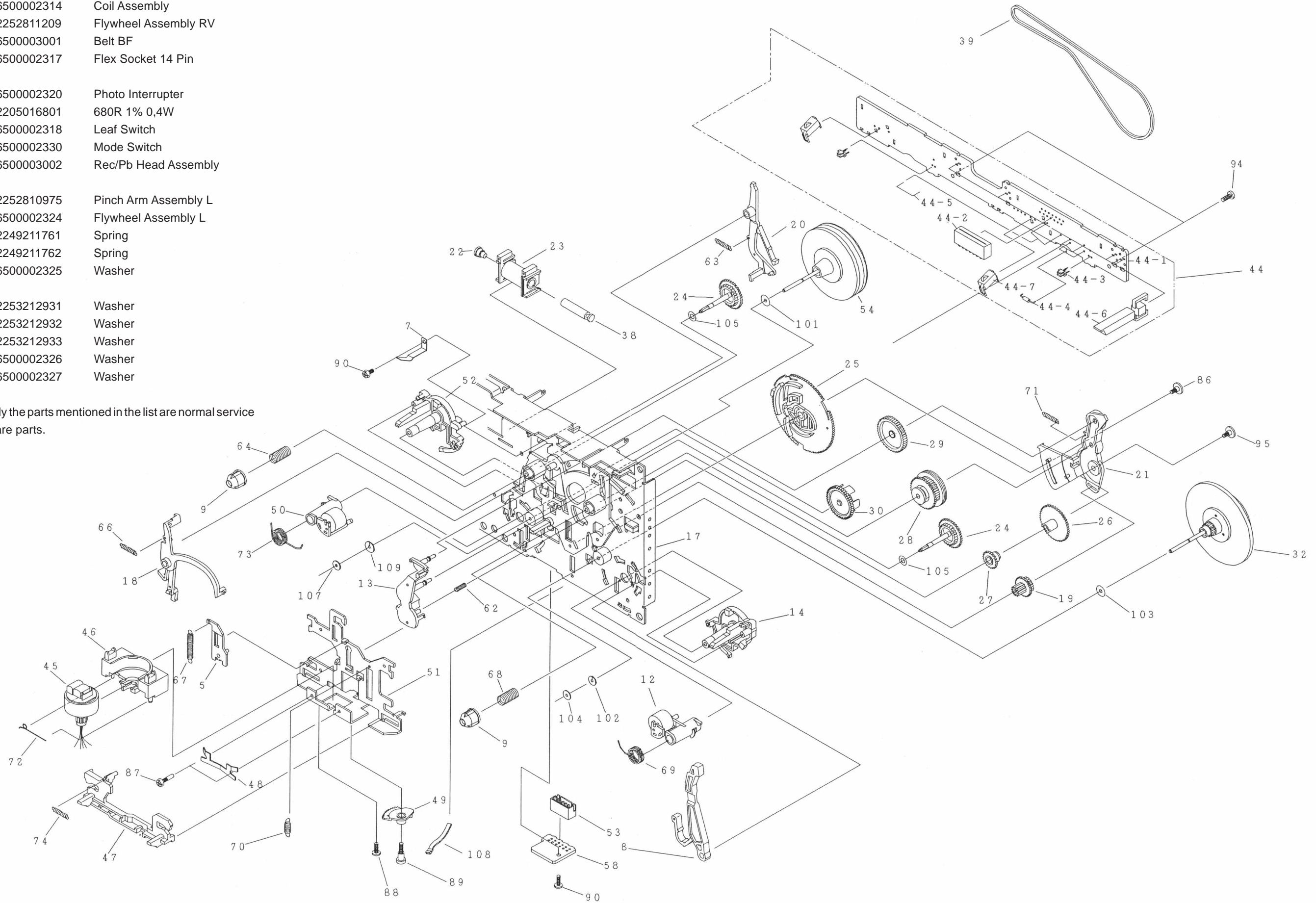
Note: Only the parts mentioned in this list are normal service spare parts.

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

**MECHANICAL PARTS - REC/PB MECHANISM**

12	482240210972	Pinch Arm Assembly R
23	996500002314	Coil Assembly
32	482252811209	Flywheel Assembly RV
39	996500003001	Belt BF
44-2	996500002317	Flex Socket 14 Pin
44-3	996500002320	Photo Interrupter
44-4	482205016801	680R 1% 0,4W
44-6	996500002318	Leaf Switch
44-7	996500002330	Mode Switch
45	996500003002	Rec/Pb Head Assembly
50	482252810975	Pinch Arm Assembly L
54	996500002324	Flywheel Assembly L
69	482249211761	Spring
73	482249211762	Spring
101	996500002325	Washer
102	482253212931	Washer
103	482253212932	Washer
104	482253212933	Washer
107	996500002326	Washer
109	996500002327	Washer

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





## ELECTRICAL PARTS LIST - ETF7 DOLBY BOARD

## MISCELLANEOUS

1701	482226710953	Flex Connector 7P
1706	482226710953	Flex Connector 7P
1740	482226751255	Flex Connector 14P

## CAPACITORS

2621	532212231647	1nF 10% 63V
2622	532212234099	470pF 10% 63V
2623	482212233575	220pF 5% 63V
2625	482212614585	100nF 10% 50V
2631	482212613751	47nF 10% 63V
2632	482212613751	47nF 10% 63V
2633	482212613473	220nF +80/-20% 50V
2634	482212613473	220nF +80/-20% 50V
2635	482212233891	3,3nF 10% 63V
2636	482212233891	3,3nF 10% 63V
2637	532212142386	100nF 5% 63V
2638	532212142386	100nF 5% 63V
2639	532212232531	100pF 5% 50V
2640	532212232531	100pF 5% 50V
2641	482212440769	4,7μF 20% 100V
2642	482212440769	4,7μF 20% 100V
2643	482212612105	33nF 5% 50V
2644	482212612105	33nF 5% 50V
2645	532212232658	22pF 5% 50V
2646	532212232658	22pF 5% 50V
2647	482212440769	4,7μF 20% 100V
2648	482212440769	4,7μF 20% 100V
2649	532212233861	120pF 10% 50V
2650	532212233861	120pF 10% 50V
2651	482212610326	180pF 5% 63V
2652	482212610326	180pF 5% 63V
2653	532212234099	470pF 10% 63V
2654	532212234099	470pF 10% 63V
2692	482212441584	100μF 20% 10V
2693	482212440207	100μF 20% 25V
2694	482212440207	100μF 20% 25V
2695	482212422652	2,2μF 20% 50V
2696	482212422652	2,2μF 20% 50V
2701	532212233538	150pF 2% 63V
2702	532212233538	150pF 2% 63V
2703	532212232531	100pF 5% 50V
2704	532212232531	100pF 5% 50V
2705	532212231863	330pF 5% 63V
2706	532212231863	330pF 5% 63V
2707	532212234099	470pF 10% 63V
2708	532212234099	470pF 10% 63V
2709	532212231863	330pF 5% 63V
2710	532212231863	330pF 5% 63V
2711	532212232531	100pF 5% 50V
2712	532212232531	100pF 5% 50V
2713	482212440248	10μF 20% 63V
2714	482212440248	10μF 20% 63V

2715	482212480195	470μF 20% 10V
2716	482212480195	470μF 20% 10V
2717	482212233127	2,2nF 10% 63V
2718	482212233127	2,2nF 10% 63V
2719	482212613188	15nF 5% 63V
2720	482212613188	15nF 5% 63V
2727	482212232535	680pF 10% 63V
2728	482212232535	680pF 10% 63V
2729	532212232654	22nF 10% 63V
2730	532212232654	22nF 10% 63V
2733	532212234099	470pF 10% 63V
2734	532212234099	470pF 10% 63V
2735	482212614585	100nF 10% 50V
2737	482212614585	100nF 10% 50V
2738	482212614585	100nF 10% 50V
2741	482212611585	22nF +80/-20% 25V
2742	532212232654	22nF 10% 63V
2743	482212614585	100nF 10% 50V
2744	482212614585	100nF 10% 50V
2760	482212614585	100nF 10% 50V
2761	482212480144	220μF 20% 25V
2762	482212440769	4,7μF 20% 100V
2763	482212440433	47μF 20% 25V
2765	482212440433	47μF 20% 25V
2769	532212234099	470pF 10% 63V
2770	532212234099	470pF 10% 63V
2780	482212481151	22μF 50V
2781	482212233177	10nF 20% 50V
2782	532212610223	4,7nF 10% 63V
2784	482212151305	15nF 10% 50V
2785	482212421913	1μF 20% 63V
2786	532212232531	100pF 5% 50V
2787	482212612105	33nF 5% 50V
2788	532212231647	1nF 10% 63V

## RESISTORS

3601	482211711449	2k2 1% 0,1W
3602	482205120273	27k 5% 0,1W
3603	482211711449	2k2 1% 0,1W
3604	482211711148	56k 1% 0,1W
3605	482211711449	2k2 1% 0,1W
3606	482205120124	120k 5% 0,1W
3607	482211652256	2k2 5% 0,5W
3608	482205120273	27k 5% 0,1W
3609	482211652256	2k2 5% 0,5W
3610	482205120124	120k 5% 0,1W
3611	482211652256	2k2 5% 0,5W
3612	482211711148	56k 1% 0,1W
3613	482205120273	27k 5% 0,1W
3614	482205120273	27k 5% 0,1W
3616	482205120822	8k2 5% 0,1W
3618	482205120822	8k2 5% 0,1W

## ELECTRICAL PARTS LIST - ETF7 DOLBY BOARD

3620	482210012227	4k7 30% 0,1W
3622	482210012227	4k7 30% 0,1W
3623	482211710837	100k 1% 0,1W
3624	482211710837	100k 1% 0,1W
3625	482205110102	1k 2% 0,25W
3626	482205110102	1k 2% 0,25W
3628	482211710837	100k 1% 0,1W
3630	482205120471	470R 5% 0,1W
3631	482211710834	47k 1% 0,1W
3632	482211710834	47k 1% 0,1W
3633	482205120332	3k3 5% 0,1W
3634	482205120332	3k3 5% 0,1W
3635	482210011771	20k 30% 0,1W
3636	482210011771	20k 30% 0,1W
3637	482211710837	100k 1% 0,1W
3638	482211710837	100k 1% 0,1W
3639	482205120332	3k3 5% 0,1W
3640	482205120332	3k3 5% 0,1W
3641	482210011771	20k 30% 0,1W
3642	482210011771	20k 30% 0,1W
3643	482211710837	100k 1% 0,1W
3644	482211710837	100k 1% 0,1W
3645	482205120683	68k 5% 0,1W
3646	482205120683	68k 5% 0,1W
3647	482205120332	3k3 5% 0,1W
3648	482205120332	3k3 5% 0,1W
3649	482205120562	5k6 5% 0,1W
3650	482205120562	5k6 5% 0,1W
3651	482205110102	1k 2% 0,25W
3652	482205011002	1k 1% 0,4W
3655	482210012227	4k7 30% 0,1W
3656	482210012227	4k7 30% 0,1W
3657	482205110102	1k 2% 0,25W
3658	482205110102	1k 2% 0,25W
3659	482205120223	22k 5% 0,1W
3660	482205120223	22k 5% 0,1W
3661	482205120474	470k 5% 0,1W
3662	482205120474	470k 5% 0,1W
3663	482205120154	150k 5% 0,1W
3664	482205120154	150k 5% 0,1W
3665	482205120683	68k 5% 0,1W
3666	482205120683	68k 5% 0,1W
3667	482205120109	10R 5% 0,1W
3668	482205120109	10R 5% 0,1W
3669	482205120472	4k7 5% 0,1W
3670	482205120472	4k7 5% 0,1W
3672	482205120472	4k7 5% 0,1W
3674	482211652283	4k7 5% 0,5W
3676	482211710834	47k 1% 0,1W
3678	482211710834	47k 1% 0,1W
3679	482211710834	47k 1% 0,1W
3680	482211710834	47k 1% 0,1W

3683	482211710834	47k 1% 0,1W
3684	482211710834	47k 1% 0,1W
3685	482211652234	100k 5% 0,5W
3686	482211710837	100k 1% 0,1W
3687	482211711503	220R 1% 0,1W
3691	482211710833	10k 1% 0,1W
3692	482211710965	18k 1% 0,1W
3693	482211652199	68R 5% 0,5W
3694	482205210109	△ 10R 5% 0,33W
3695	482211712521	68R 1% 0,1W
3701	482211711503	220R 1% 0,1W
3702	482211711503	220R 1% 0,1W
3703	482211711503	220R 1% 0,1W
3704	482211711503	220R 1% 0,1W
3705	482211711503	220R 1% 0,1W
3706	482211711503	220R 1% 0,1W
3707	482205120101	100R 5% 0,1W
3708	482205120101	100R 5% 0,1W
3709	482205120229	22R 5% 0,1W
3710	482205120229	22R 5% 0,1W
3711	482211710837	100k 1% 0,1W
3712	482211710837	100k 1% 0,1W
3713	482205120121	120R 5% 0,1W
3714	482205120121	120R 5% 0,1W
3715	482205110102	1k 2% 0,25W
3716	482205110102	1k 2% 0,25W
3717	482205120392	3k9 5% 0,1W
3718	482205120392	3k9 5% 0,1W
3719	482205120822	8k2 5% 0,1W
3720	482205120822	8k2 5% 0,1W
3721	482205120562	5k6 5% 0,1W
3722	482205120562	5k6 5% 0,1W
3723	482211711383	12k 1% 0,1W
3724	482211711383	12k 1% 0,1W
3727	482205120562	5k6 5% 0,1W
3728	482205120562	5k6 5% 0,1W
3729	482205120332	3k3 5% 0,1W
3730	482205120332	3k3 5% 0,1W
3731	482205120822	8k2 5% 0,1W
3732	482205120822	8k2 5% 0,1W
3733	482205120562	5k6 5% 0,1W
3734	482205120562	5k6 5% 0,1W
3735	482211683933	15k 1% 0,1W
3736	482211683933	15k 1% 0,1W
3737	482205120332	3k3 5% 0,1W
3738	482205120332	3k3 5% 0,1W
3739	482205120472	4k7 5% 0,1W
3740	482211710834	47k 1% 0,1W
3741	482211711454	820R 1% 0,1W
3742	482211711454	820R 1% 0,1W
3743	482205110102	1k 2% 0,25W
3744	482205110102	1k 2% 0,25W

## ELECTRICAL PARTS LIST - ETF7 DOLBY BOARD

## RESISTORS

3745	482205120392	3k9 5% 0,1W
3746	482205120392	3k9 5% 0,1W
3748	482211711449	2k2 1% 0,1W
3749	482211710834	47k 1% 0,1W
3751	482211710833	10k 1% 0,1W
3752	482211710837	100k 1% 0,1W
3753	482211710837	100k 1% 0,1W
3754	482205120333	33k 5% 0,1W
3756	482211713579	220k 1% 0,1W
3757	482211713579	220k 1% 0,1W
3758	482211710833	10k 1% 0,1W
3759	482211710833	10k 1% 0,1W
3760	482205120121	120R 5% 0,1W
3761	482205021003	10k 1% 0,6W
3762	482211711454	820R 1% 0,1W
3763	482205120154	150k 5% 0,1W
3764	482211683872	220R 5% 0,5W
3765	482205120393	39k 5% 0,1W
3766	482205120475	4M7 5% 0,1W
3767	482205120475	4M7 5% 0,1W
3768	482211710833	10k 1% 0,1W
3769	482211683933	15k 1% 0,1W
3770	482211711139	1k5 1% 0,1W
3771	482205120122	1k2 5% 0,1W
3772	482211711507	6k8 1% 0,1W
3773	482210012227	4k7 30% 0,1W
3774	482211711383	12k 1% 0,1W
3775	482205120478	4R7 5% 0,1W
3776	482211711507	6k8 1% 0,1W
3777	482211710353	150R 1% 0,1W
3778	482205210688	△ 6R8 5% 0,33W
3779	482205120334	330k 5% 0,1W
3780	482205120105	1M 5% 0,1W
3781	482205120475	4M7 5% 0,1W
3782	482211683933	15k 1% 0,1W
3783	482205120472	4k7 5% 0,1W
3784	482205120472	4k7 5% 0,1W
3785	532210011539	100k 30% 0,1W
3786	482205120223	22k 5% 0,1W
3787	482205120105	1M 5% 0,1W
3788	482205120105	1M 5% 0,1W
3789	482211710834	47k 1% 0,1W
4601	482205120008	0R Jumper 0805
4602	482205120008	0R Jumper 0805
4603	482205120008	0R Jumper 0805
4604	482205120008	0R Jumper 0805
4605	482205120008	0R Jumper 0805
4606	482205120008	0R Jumper 0805
4607	482205120008	0R Jumper 0805
4608	482205120008	0R Jumper 0805
4610	482205120008	0R Jumper 0805
4696	482205120008	0R Jumper 0805

4697	482205120008	0R Jumper 0805
4701	482205120008	0R Jumper 0805
4702	482205120008	0R Jumper 0805
4703	482205120008	0R Jumper 0805
4704	482205120008	0R Jumper 0805
4705	482205120008	0R Jumper 0805
4706	482205120008	0R Jumper 0805
4707	482205120008	0R Jumper 0805
4708	482205120008	0R Jumper 0805
4709	482205120008	0R Jumper 0805
4710	482205120008	0R Jumper 0805
4711	482205120008	0R Jumper 0805
4712	482205120008	0R Jumper 0805
4713	482205120008	0R Jumper 0805
4714	482205120008	0R Jumper 0805
4715	482205120008	0R Jumper 0805
4716	482205120008	0R Jumper 0805
4717	482205120008	0R Jumper 0805
4718	482205120008	0R Jumper 0805
4719	482205120008	0R Jumper 0805
4720	482205120008	0R Jumper 0805
4721	482205120008	0R Jumper 0805
4722	482205120008	0R Jumper 0805
4723	482205120008	0R Jumper 0805
4724	482205120008	0R Jumper 0805
4725	482205120008	0R Jumper 0805
4726	482205120008	0R Jumper 0805
4727	482205120008	0R Jumper 0805
4728	482205120008	0R Jumper 0805
4729	482205120008	0R Jumper 0805
4730	482205120008	0R Jumper 0805
4731	482205120008	0R Jumper 0805
4732	482205120008	0R Jumper 0805
4733	482205120008	0R Jumper 0805
4734	482205120008	0R Jumper 0805
4735	482205120008	0R Jumper 0805
4736	482205120008	0R Jumper 0805
4737	482205120008	0R Jumper 0805
4738	482205120008	0R Jumper 0805
4739	482205120008	0R Jumper 0805
4740	482205120008	0R Jumper 0805
4741	482205120008	0R Jumper 0805
4742	482205120008	0R Jumper 0805
4743	482205120008	0R Jumper 0805
4783	482205120008	0R Jumper 0805
4786	482205120008	0R Jumper 0805
4787	482205120008	0R Jumper 0805
4788	482205120008	0R Jumper 0805

## COILS &amp; FILTERS

5631	482215711865	Filter MPX 20kHz
5632	482215711865	Filter MPX 20kHz

## ELECTRICAL PARTS LIST - ETF7 DOLBY BOARD

5701	482215711477	Coil 2,2μH 5%
5702	482215711477	Coil 2,2μH 5%
5703	482215620946	Osc. Coil 100kHz

## DIODES

6611	482213031878	1N4003G
6612	482213031878	1N4003G
6613	482213032245	BYV10-40
6614	482213030621	1N4148
6770	482213030621	1N4148
6771	482213030621	1N4148
6772	482213030621	1N4148
6773	482213030621	1N4148
6774	482213030621	1N4148
6775	482213030621	1N4148
6776	482213030621	1N4148
6777	482213034382	BZX79-C8V2
6778	482213030621	1N4148
6782	482213030621	1N4148
6785	482213030621	1N4148
6786	482213030621	1N4148

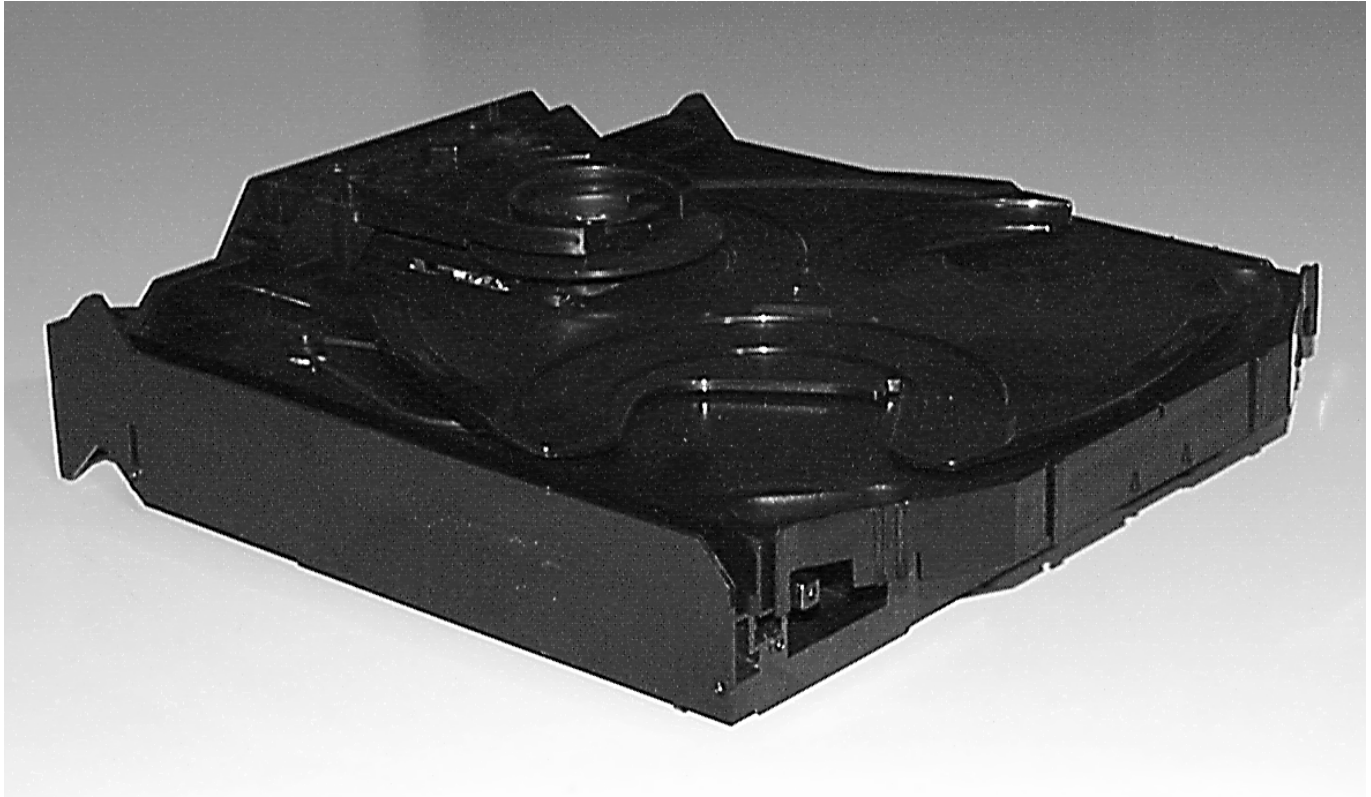
## TRANSISTORS &amp; INTEGRATED CIRCUITS

7610	532220911306	HEF4094BT
7612	532213060845	BC807-25
7613	532213060845	BC807-25
7614	532213060845	BC807-25
7616	482213060373	BC857B
7618	482213060511	BC847B
7619	482213060511	BC847B
7620	482213060511	BC847B
7622	482213060511	BC847B
7623	482213060511	BC847B
7624	482213060511	BC847B
7630	482220917322	CXA1551M
7631	482213060511	BC847B
7632	482213060511	BC847B
7633	482213060511	BC847B
7634	482213060511	BC847B
7635	482213060511	BC847B
7636	482213060511	BC847B
7637	482213060511	BC847B
7638	482213060511	BC847B
7640	482220983357	NJM4560M
7710	482220932919	HEF4952BT
7720	932214000668	AN7323S
7730	482220932919	HEF4952BT
7740	482220932919	HEF4952BT
7780	482213060511	BC847B
7781	482213042804	BC817-25
7782	482213044568	BC557B
7783	482213060511	BC847B

7784	482213060373	BC857B
7785	482213063494	J111
7786	482213063494	J111
7787	482213060511	BC847B
7788	482213060511	BC847B
7789	482213060511	BC847B
7790	482213060511	BC847B
7791	482213060511	BC847B
7792	482213060511	BC847B

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





# **3CDC-LC-MB-DA11 Module**

## **(3 Disc Carousel Changer)**

Layout stage .2

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**WARNING**

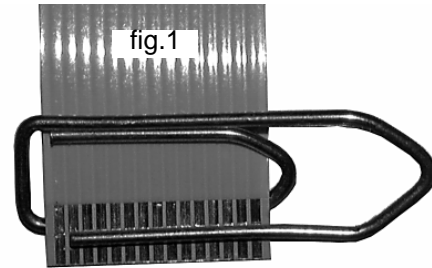
**CHARGED CAPACITORS ON THE SERVO BOARD MAY DAMAGE THE CD DRIVE ELECTRONICS WHEN CONNECTING A NEW CDM MECHANISM. THAT'S WHY, BESIDES THE SAFETY MEASURES LIKE**

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

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

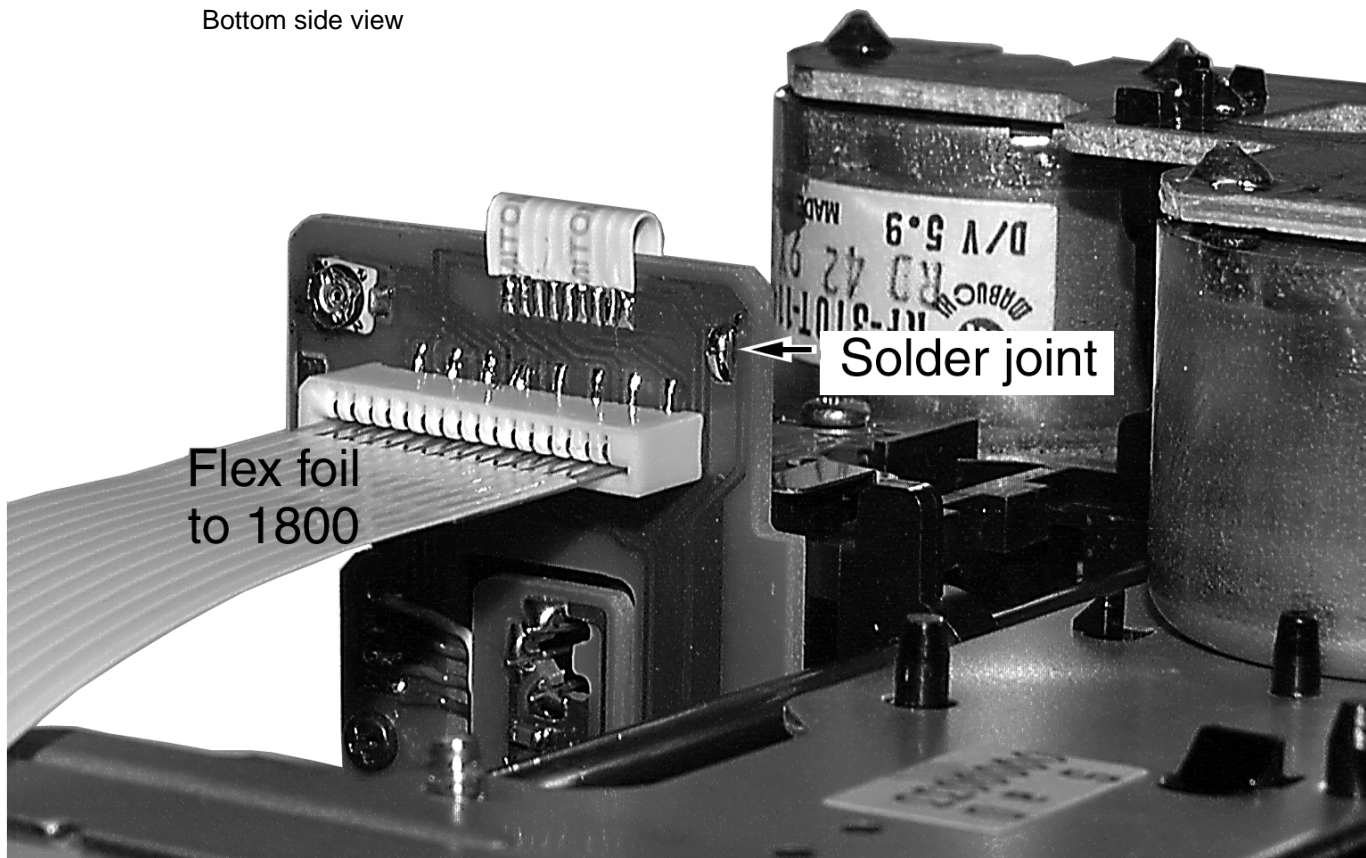
The following steps have to be done when replacing the CD mechanism:

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

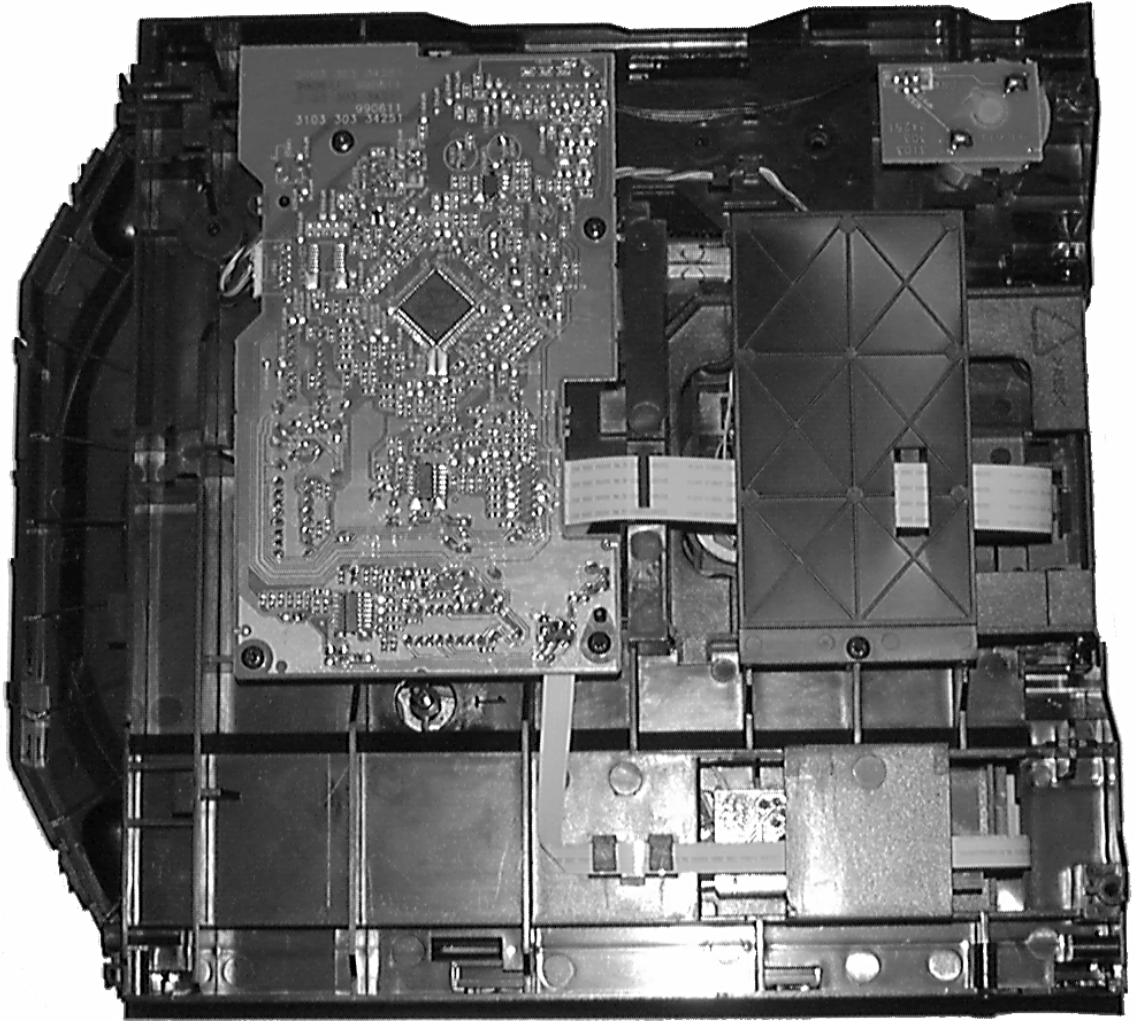


**Attention:** The laser diode of this CD drive is protected against ESD by a solder joint which shortcircuits the laserdiode to ground.  
For proper functionality of the CD drive this solder joint must be removed **after** connection the drive to the set.

CD Drive  
Bottom side view



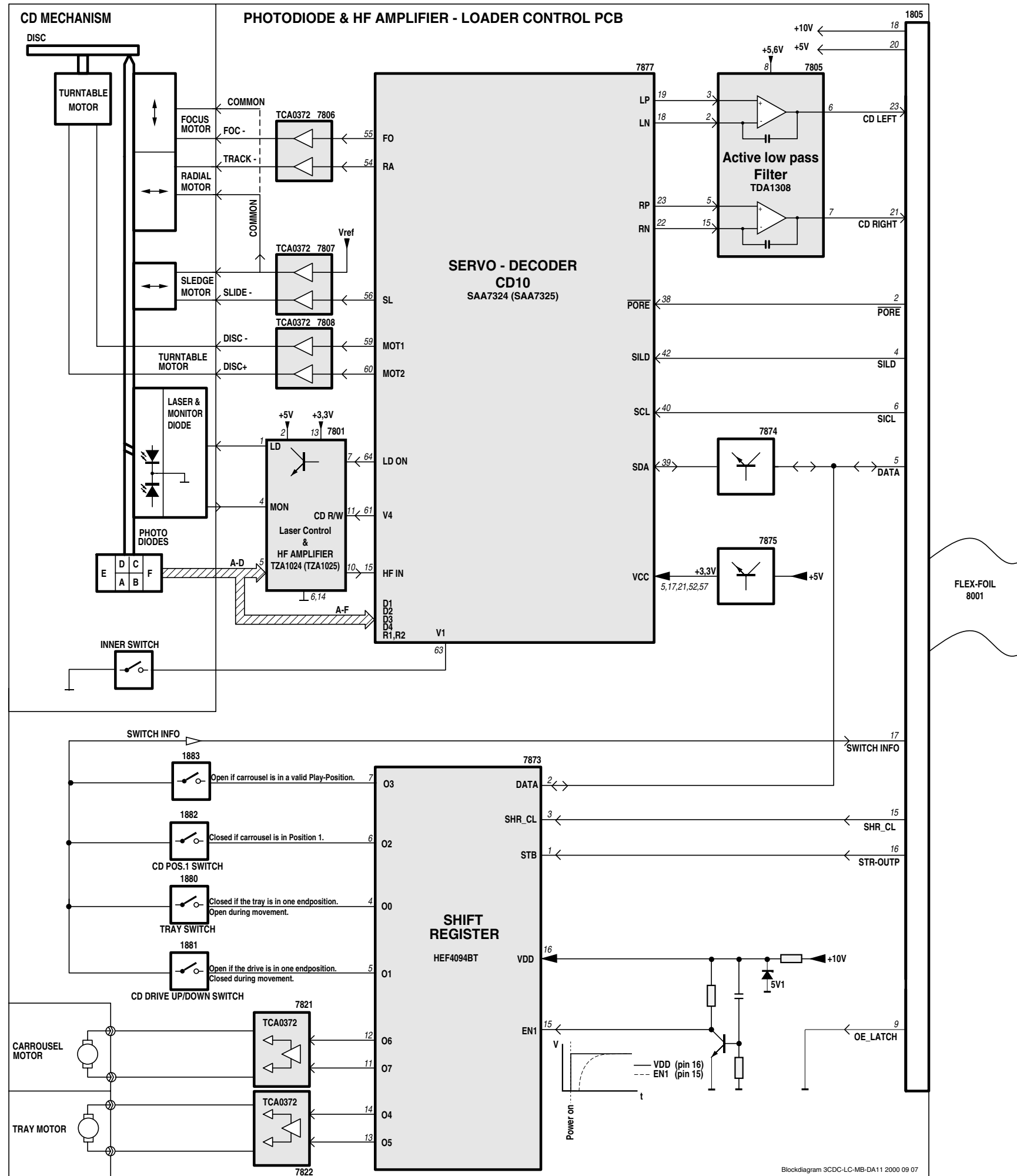
**Service Position**



**Technical Remarks**

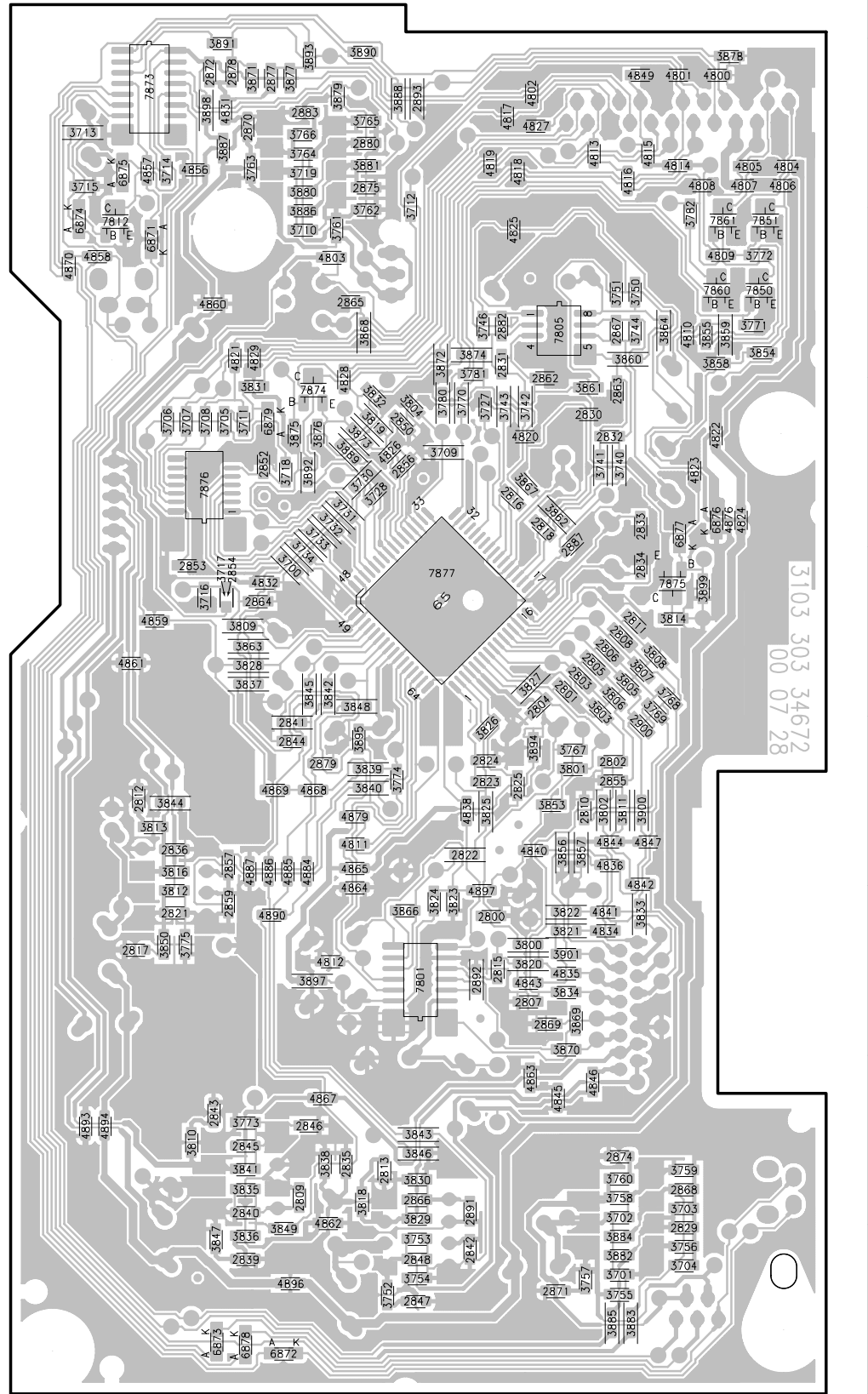
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Mapping

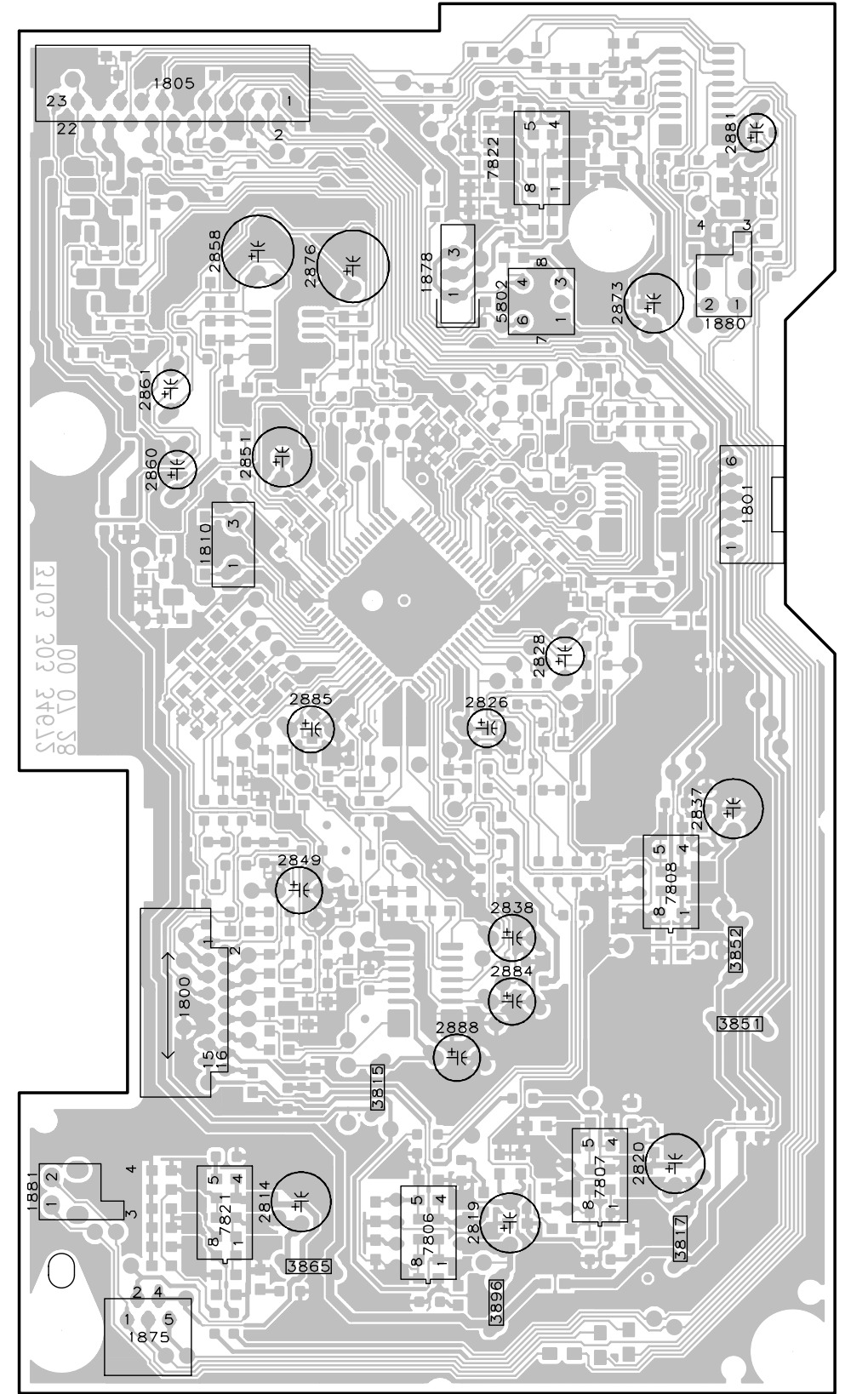
3CDC-LC-MB Copperside view



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

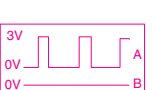
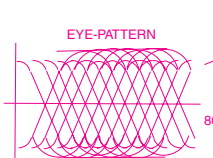
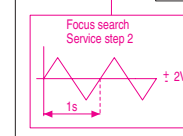
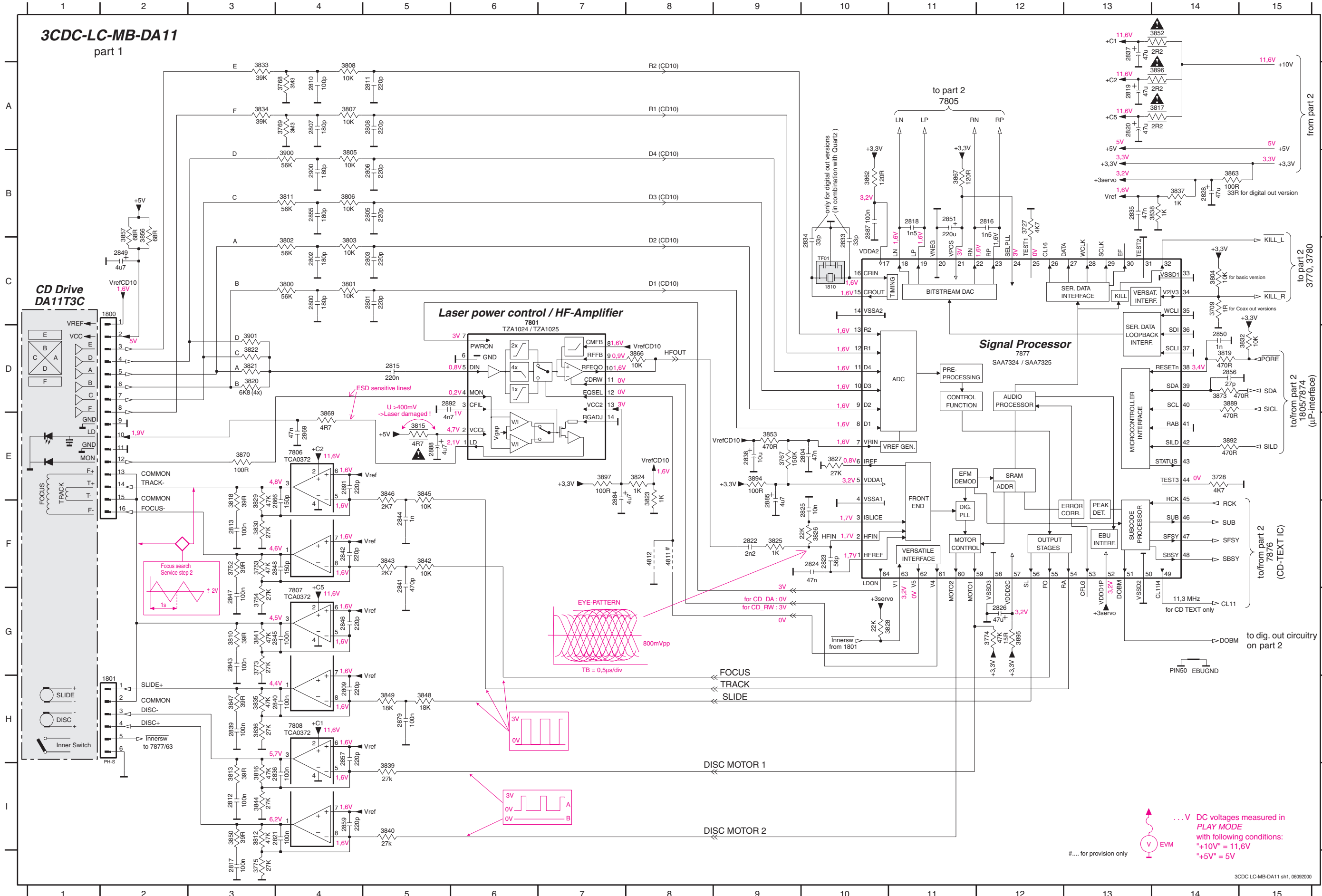
Copperside			Componentside		
2800 F3	3746 B3	3880 A2	7860 B5	1800 F2	
2801 D4	3750 B4	3881 A3	7861 B5	1801 C5	
2802 E4	3751 B4	3882 H4	7873 A1	1805 A2	
2803 D4	3752 H3	3883 H4	7874 C2	1810 C2	
2804 D4	3753 H3	3884 H4	7875 D4	1875 H1	
2805 D4	3754 H3	3885 H4	7876 C2	1878 B3	
2806 D4	3755 H4	3886 B2	7877 D3	1880 B5	
2807 F4	3756 H4	3887 A2		1881 G1	
2808 D4	3757 H4	3888 A3		2814 G2	
2809 G2	3758 G4	3889 C2		2819 G3	
2810 E4	3759 G4	3890 A3		2820 G4	
2811 D4	3760 G4	3891 A2		2826 D3	
2812 E1	3761 B2	3892 C2		2828 D4	
2813 G3	3762 B3	3893 A2		2837 E5	
2815 F3	3763 A2	3894 E4		2838 F4	
2816 C3	3764 A2	3895 E3		2849 E2	
2817 F1	3765 A3	3897 F2		2851 C2	
2818 C4	3766 A2	3898 A2		2858 B2	
2821 F1	3767 E4	3899 D5		2860 C1	
2822 E3	3768 D4	3900 E4		2861 C1	
2823 E3	3769 D4	3901 F4		2873 B4	
2824 E3	3770 C3	4800 A5		2876 B2	
2825 E3	3771 B5	4801 A4		2881 A5	
2829 H4	3772 B5	4802 A4		2884 F4	
2830 C4	3773 G2	4803 B2		2885 D2	
2831 B3	3774 E3	4804 A5		2888 F3	
2832 C4	3775 F2	4805 A5		3815 G3	
2833 C4	3780 C3	4806 A5		3817 H5	
2834 D4	3781 B3	4807 A5		3851 F5	
2835 G2	3782 B5	4808 A5		3852 F5	
2836 E1	3800 F4	4809 B5		3865 H2	
2839 H2	3801 E4	4810 B4		3896 H3	
2840 G2	3802 E4	4811 E3		5802 B4	
2841 E2	3803 D4	4812 F2		7806 H3	
2842 H3	3804 C3	4813 A4		7807 G4	
2843 G2	3805 D4	4814 A4		7808 F5	
2844 E2	3806 D4	4815 A4		7821 G2	
2845 G2	3807 D4	4816 A4		7822 A3	
2846 G2	3808 D4	4817 A3			
2847 H3	3809 D2	4818 A3			
2848 H3	3810 G2	4819 A3			
2850 C3	3811 F4	4820 C4			
2852 C2	3812 F1	4821 B2			
2853 D2	3813 E1	4822 C5			
2854 D2	3814 D4	4823 C5			
2855 E4	3816 E1	4824 C5			
2856 C3	3818 G3	4825 B3			
2857 E2	3819 C3	4826 C3			
2859 F2	3820 F4	4827 A4			
2862 C4	3821 F4	4828 C2			
2863 C4	3822 F4	4829 B2			
2864 D2	3823 F3	4831 A2			
2865 B3	3824 F3	4832 D2			
2866 G3	3825 E3	4834 F4			
2867 B4	3826 E3	4835 F4			
2868 G4	3827 D4	4836 E4			
2869 F4	3828 D2	4838 E3			
2870 A2	3829 G3	4840 E4			
2871 H4	3830 G3	4841 F4			
2872 A2	3831 C2	4842 E4			
2874 G4	3832 C3	4843 F4			
2875 A3	3833 F4	4844 E4			
2877 A2	3834 F4	4845 G4			
2878 A2	3835 G2	4846 G4			
2879 E2	3836 H2	4847 E4			
2880 A3	3837 D2	4849 A4			
2882 B3	3838 G2	4856 A2			
2883 A2	3839 E3	4857 A1			
2887 C4	3840 E3	4858 B1			
2891 G3	3841 G2	4859 D1			
2892 F3	3842 D2	4860 B2			
2893 A3	3843 G3	4861 D1			
2900 E4	3844 E1	4862 G2			
3700 D2	3845 D2	4863 G4			
3701 H4	3846 G3	4864 F3			
3702 G4	3847 H2	4865 E3			
3703 G4	3848 D3	4867 G2			
3704 H4	3849 H2	4868 E2			
3705 C2	3850 F1	4869 E2			
3706 C1	3853 E4	4870 B1			
3707 C2	3854 B5	4876 C5			
3708 C2	3855 B5	4879 E3			
3709 C3	3856 E4	4884 E2			
3710 B2	3857 E4	4885 E2			
3711 C2	3858 B5	4886 E2			
3712 A3	3859 B5	4887 E2			
3713 A1	3860 B4	4890 F2			
3714 A1	3861 C4	4893 G1			
3715 A1	3862 C4	4894 G1			
3716 D2	3863 D2	4896 H2			
3717 D2	3864 B4	4897 F3			
3718 C2	3866 F3	6871 B1			
3719 A2	3867 C4	6872 H2			
3727 C3	3868 B3	6873 H2			
3728 C3	3869 F4	6874 B1			
3730 C3	3870 F4	6875 A1			
3731 C2	3871 A2	6876 C5			
3732 C2	3872 B3	6877 C4			
3733 C2	3873 C3	6878 H2			
3734 D2	3874 B3	6879 C2			
3740 C4	3875 C2	7801 F3			
3741 C4	3876 C2	7805 B4			
3742 C4	3877 A2	7812 B1			
3743 C3	3878 A5	7850 B5			
3744 B4	3879 A2	7851 B5			

3CDC-LC-MB Componentside view



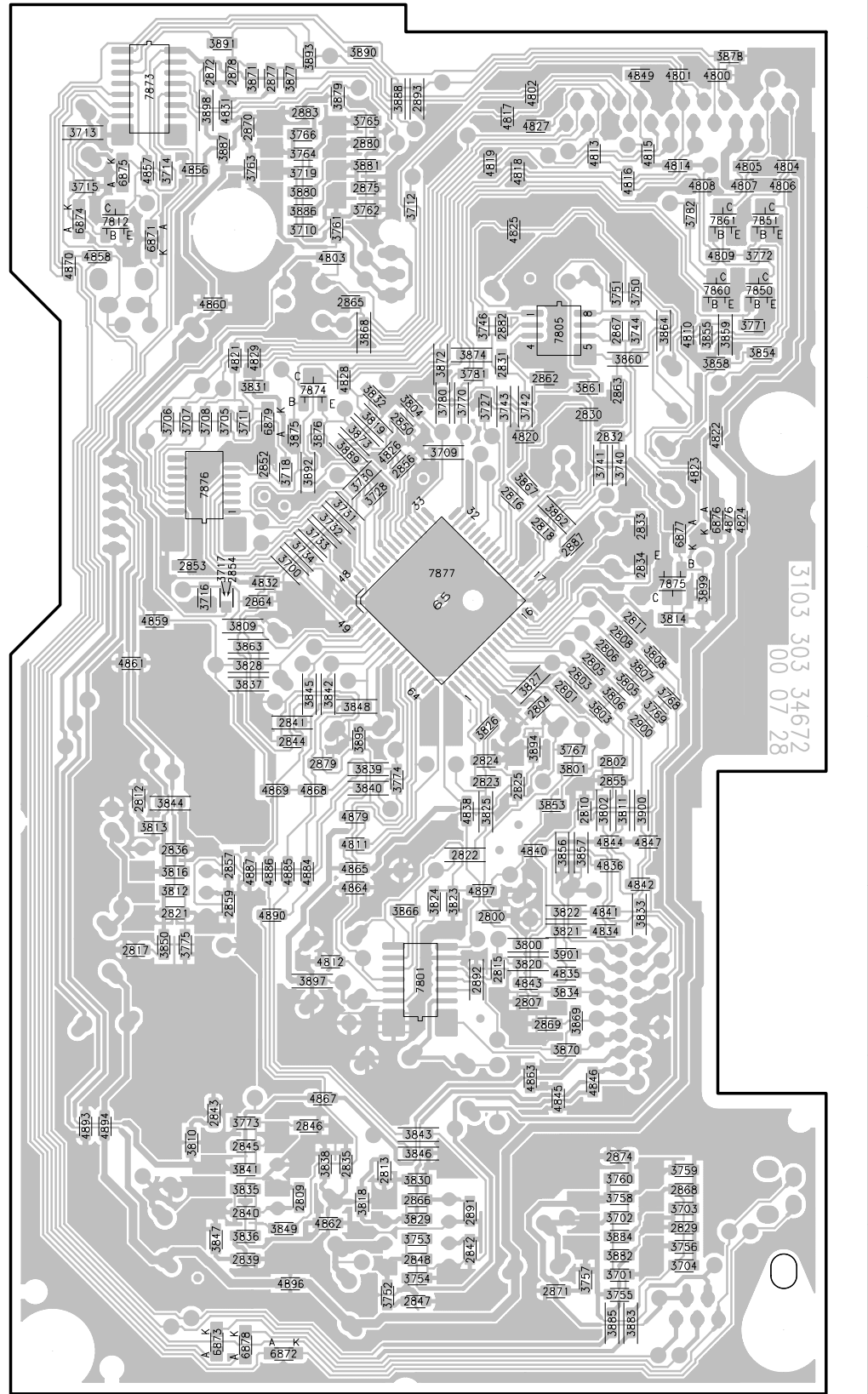
This assembly drawing shows a summary of all possible versions. For components used in a specific version see schematic diagram respectively partslist.

1800 D1 2801 C5 2805 B5 2809 H4 2813 F3 2818 B11 2822 F9 2826 G12 2835 B13 2839 H3 2843 G3 2847 G3 2851 B11 2859 I4 2864 E7 2891 E4 3727 B12 3754 G3 3773 G3 3801 C4 3805 B4 3810 G3 3815 E5 3819 D14 3823 E8 3827 E10 3832 D15 3836 H3 3840 I5 3844 I3 3848 H5 3853 E9 3863 B14 3870 E3 3894 E9 3900 B3 7801 E7 7877 D12  
 1801 G1 2802 C4 2806 B5 2810 A4 2815 D5 2819 A13 2823 F10 2828 B14 2836 I4 2840 H4 2844 F5 2848 F4 2855 B4 2866 F4 2868 F9 2892 D5 3728 E14 3754 G3 3774 G12 3802 C4 3806 B4 3811 B4 3816 I3 3819 D14 3823 E8 3827 E10 3832 D15 3836 H3 3840 I5 3844 I3 3848 H5 3853 E9 3863 B14 3870 E3 3894 E9 3900 B3 7801 E7 7877 D12  
 1810 C10 2803 C5 2807 A4 2811 A5 2816 B12 2820 A13 2824 F10 2833 C10 2837 A13 2841 G5 2845 G4 2849 C2 2856 D14 2869 E4 2887 B10 2900 B4 3752 F3 3768 A4 3775 I3 3803 C4 3807 A4 3812 I3 3817 F3 3821 D3 3825 F10 3829 F3 3834 A3 3838 B14 3842 F5 3846 E5 3850 I3 3852 A14 3857 C2 3867 B11 3889 D14 3896 A14 4811 F8 7807 G4 7808 H4  
 2800 C4 2804 E10 2808 A5 2812 I3 2817 I3 2821 I4 2825 F10 2834 C10 2838 E8 2842 F4 2846 G4 2850 D14 2857 H4 2879 H5 2888 E5 3709 C14 3753 F3 3769 A4 3800 C4 3804 C14 3808 A4 3813 I3 3818 F3 3822 D3 3826 F9 3830 F3 3835 H3 3839 I5 3843 F5 3847 H3 3852 A14 3856 C2 3866 D8 3873 D14 3895 G12 3901 D3 7806 E4 7807 G4 7808 H4



... V DC voltages measured in PLAY MODE with following conditions:  
 "+10V" = 11.6V  
 "+5V" = 5V

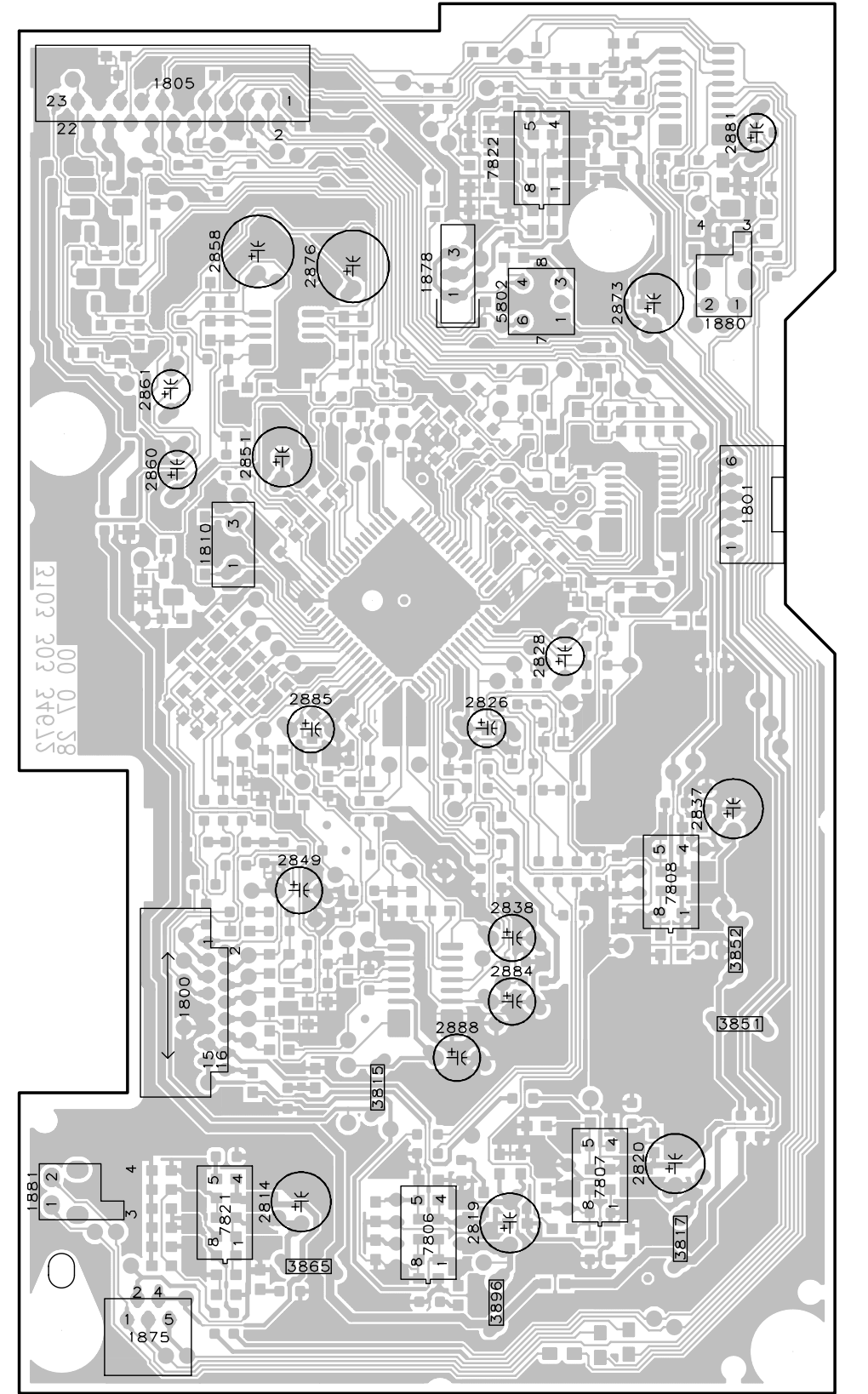
### 3CDC-LC-MB Copperside view



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

Copperside			Componentside		
2800 F3	3746 B3	3880 A2	7860 B5	1800 F2	
2801 D4	3750 B4	3881 A3	7861 B5	1801 C5	
2802 E4	3751 B4	3882 H4	7873 A1	1805 A2	
2803 D4	3752 H3	3883 H4	7874 C2	1810 C2	
2804 D4	3753 H3	3884 H4	7875 D4	1875 H1	
2805 D4	3754 H3	3885 H4	7876 C2	1878 B3	
2806 D4	3755 H4	3886 B2	7877 D3	1880 B5	
2807 F4	3756 H4	3887 A2		1881 G1	
2808 D4	3757 H4	3888 A3		2814 G2	
2809 G2	3758 G4	3889 C2		2819 G3	
2810 E4	3759 G4	3890 A3		2820 G4	
2811 D4	3760 G4	3891 A2		2826 D3	
2812 E1	3761 B2	3892 C2		2828 D4	
2813 G3	3762 B3	3893 A2		2837 E5	
2815 F3	3763 A2	3894 E4		2838 F4	
2816 C3	3764 A2	3895 E3		2849 E2	
2817 F1	3765 A3	3897 F2		2851 C2	
2818 C4	3766 A2	3898 A2		2858 B2	
2821 F1	3767 E4	3899 D5		2860 C1	
2822 E3	3768 D4	3900 E4		2861 C1	
2823 E3	3769 D4	3901 F4		2873 B4	
2824 E3	3770 C3	4800 A5		2876 B2	
2825 E3	3771 B5	4801 A4		2881 A5	
2829 H4	3772 B5	4802 A4		2884 F4	
2830 C4	3773 G2	4803 B2		2885 D2	
2831 B3	3774 E3	4804 A5		2888 F3	
2832 C4	3775 F2	4805 A5		3815 G3	
2833 C4	3780 C3	4806 A5		3817 H5	
2834 D4	3781 B3	4807 A5		3851 F5	
2835 G2	3782 B5	4808 A5		3852 F5	
2836 E1	3800 F4	4809 B5		3865 H2	
2839 H2	3801 E4	4810 B4		3896 H3	
2840 G2	3802 E4	4811 E3		5802 B4	
2841 E2	3803 D4	4812 F2		7806 H3	
2842 H3	3804 C3	4813 A4		7807 G4	
2843 G2	3805 D4	4814 A4		7808 E5	
2844 E2	3806 D4	4815 A4		7821 G2	
2845 G2	3807 D4	4816 A4		7822 A3	
2846 G2	3808 D4	4817 A3			
2847 H3	3809 D2	4818 A3			
2848 H3	3810 G2	4819 A3			
2850 C3	3811 E4	4820 C4			
2852 C2	3812 F1	4821 B2			
2853 D2	3813 E1	4822 C5			
2854 D2	3814 D4	4823 C5			
2855 E4	3816 E1	4824 C5			
2856 C3	3818 G3	4825 B3			
2857 E2	3819 C3	4826 C3			
2859 F2	3820 F4	4827 A4			
2862 C4	3821 F4	4828 C2			
2863 C4	3822 F4	4829 B2			
2864 D2	3823 F3	4831 A2			
2865 B3	3824 F3	4832 D2			
2866 G3	3825 E3	4834 F4			
2867 B4	3826 E3	4835 F4			
2868 G4	3827 D4	4836 E4			
2869 F4	3828 D2	4838 E3			
2870 A2	3829 G3	4840 F4			
2871 H4	3830 G3	4841 F4			
2872 A2	3831 C2	4842 E4			
2874 G4	3832 C3	4843 F4			
2875 A3	3833 F4	4844 E4			
2877 A2	3834 F4	4845 G4			
2878 A2	3835 G2	4846 G4			
2879 E2	3836 H2	4847 E4			
2880 A3	3837 D2	4849 A4			
2882 B3	3838 G2	4856 A2			
2883 A2	3839 E3	4857 A1			
2887 C4	3840 E3	4858 B1			
2891 G3	3841 G2	4859 D1			
2892 F3	3842 D2	4860 B2			
2893 A3	3843 G3	4861 D1			
2900 E4	3844 E1	4862 G2			
3700 D2	3845 D2	4863 G4			
3701 H4	3846 G3	4864 F3			
3702 G4	3847 H2	4865 E3			
3703 G4	3848 D3	4867 G2			
3704 H4	3849 H2	4868 E2			
3705 C2	3850 F1	4869 E2			
3706 C1	3853 F4	4870 B1			
3707 C2	3854 B5	4876 C5			
3708 C2	3855 B5	4879 E3			
3709 C3	3856 E4	4884 E2			
3710 B2	3857 E4	4885 E2			
3711 C2	3858 B5	4886 E2			
3712 A3	3859 B5	4887 E2			
3713 A1	3860 B4	4890 F2			
3714 A1	3861 C4	4893 G1			
3715 A1	3862 C4	4894 G1			
3716 D2	3863 D2	4896 H2			
3717 D2	3864 B4	4897 F3			
3718 C2	3866 F3	6871 B1			
3719 A2	3867 C4	6872 H2			
3727 C3	3868 B3	6873 H2			
3728 C3	3869 F4	6874 B1			
3730 C3	3870 F4	6875 A1			
3731 C2	3871 A2	6876 C5			
3732 C2	3872 B3	6877 C4			
3733 C2	3873 C3	6878 H2			
3734 D2	3874 B3	6879 C2			
3740 C4	3875 C2	7801 F3			
3741 C4	3876 C2	7805 B4			
3742 C4	3877 A2	7812 B1			
3743 C3	3878 A5	7850 B5			
3744 B4	3879 A2	7851 B5			

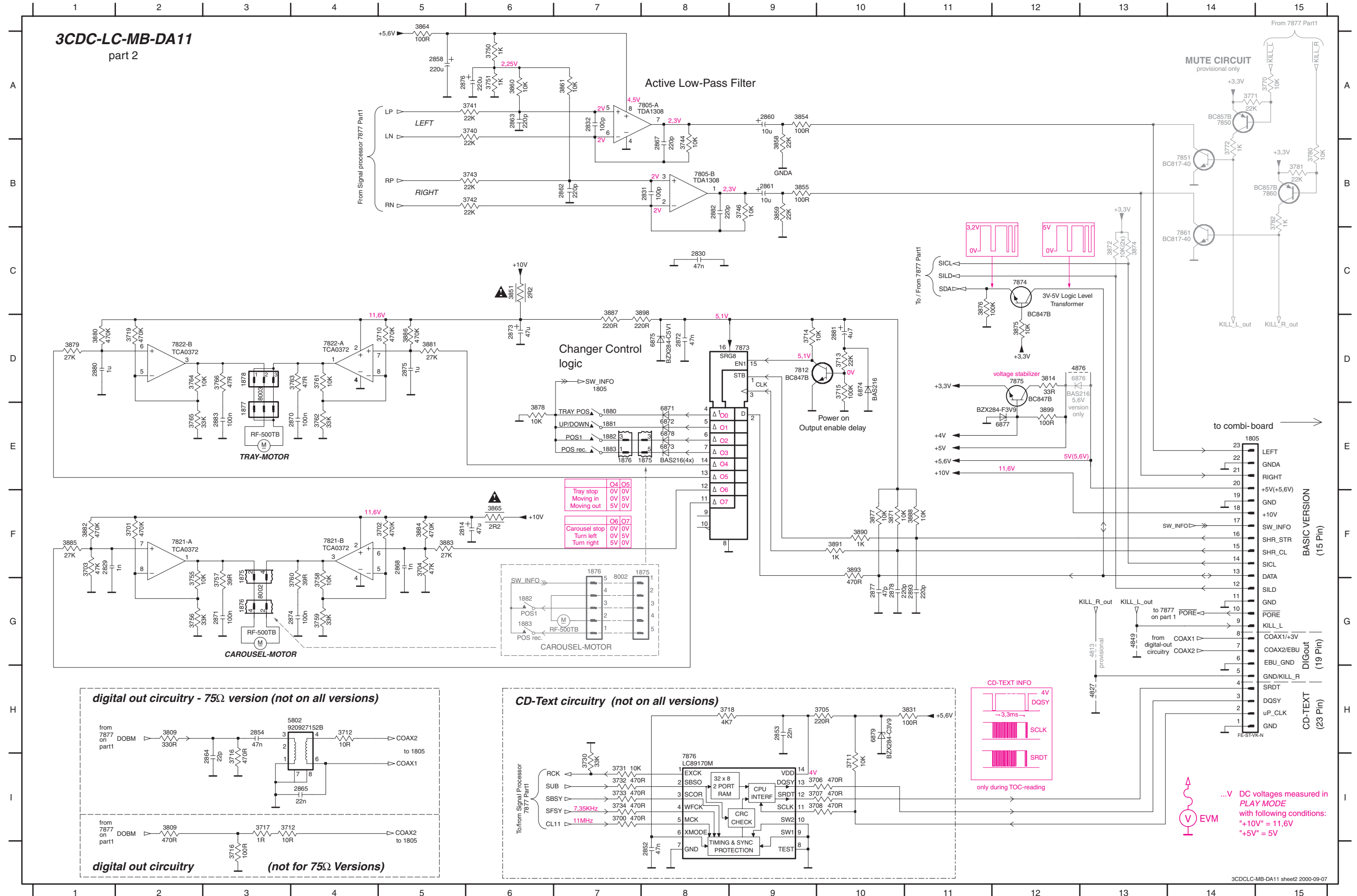
### 3CDC-LC-MB Componentside view



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



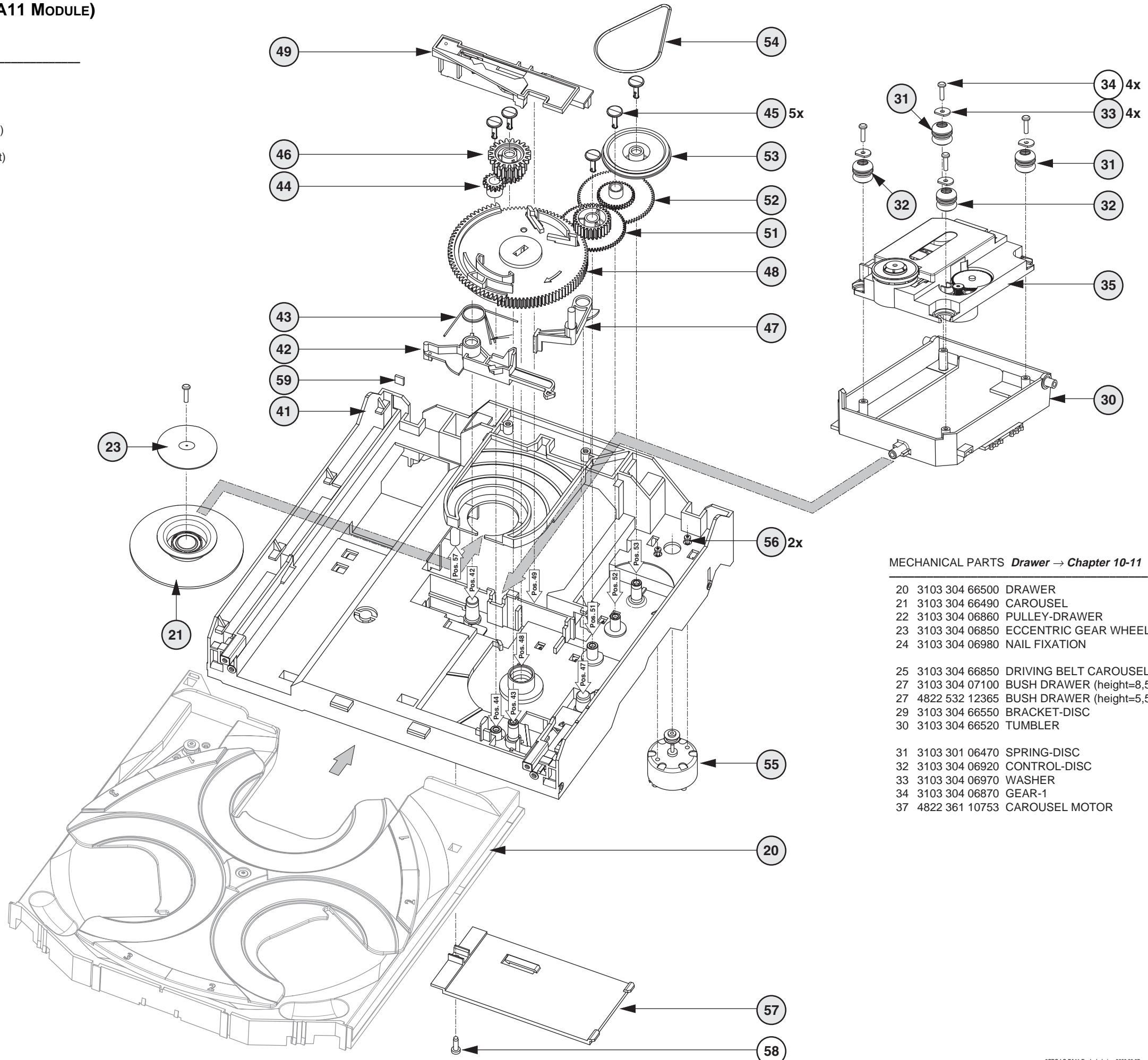
1805	E14	1880	E7	2831	B8	2861	B9	2870	E4	2877	G10	3372	C13	3705	H10	3713	D10	3730	I7	3743	B6	3757	G3	3764	D2	3781	B15	3855	B9	3871	F10	3881	D5	3888	F11	4827	H13	6874	D10	7805-B	B8	7851	B14
1850	G3	1881	E7	2832	A7	2862	B7	2871	G3	2878	G10	3374	C13	3706	I10	3714	D9	3732	I7	3744	B8	3758	G4	3765	E2	3782	B15	3858	B9	3875	D12	3882	F1	3890	F10	4849	G13	6875	D8	7812	D9	7860	B15
1875	E8	1882	E7	2852	I8	2863	A6	2872	D8	2880	D1	3700	I7	3707	I10	3715	D10	3733	I7	3746	B9	3759	G4	3766	D3	3809	H2	3859	B9	3876	C11	3883	F5	3891	F10	4876	D12	6876	D12	7821-A	F2	7861	C14
1876	E7	1883	E7	2853	H9	2864	I3	2873	D6	2881	D10	3701	F2	3708	I10	3716	I3	3734	I7	3750	A6	3760	G4	3770	A15	3814	D12	3860	A6	3877	F10	3884	F5	3893	F10	5802	H4	6877	E12	7821-B	F4	7873	D9
1877	E3	2814	F6	2854	H3	2865	I4	2874	G4	2882	B8	3702	F5	3710	D5	3718	H8	3740	A6	3751	A6	3761	D4	3771	A14	3831	H11	3861	A7	3878	E6	3885	F1	3898	D7	6871	E8	6878	E8	7822-A	D4	7874	C12
1878	D3	2829	F2	2858	A5	2867	B8	2875	D5	2883	E3	3703	F1	3711	I10	3719	D2	3741	A6	3755	G2	3762	E4	3772	B14	3851	C6	3864	A5	3879	D1	3886	D5	3899	E12	6872	E8	6879	H10	7822-B	D2	7875	D12
1878	G3	2830	C8	2860	A9	2868	F5	2876	A6	2893	G11	3704	F5	3712	H4	3730	I7	3742	B6	3756	G2	3763	D4	3780	B15	3854	A9	3865	F6	3880	D1	3887	D7	4813	G13	6873	E8	7805-A	A7	7850	A14	7876	I8



**EXPLODED VIEW (3CDC-LC-DA11 MODULE)**

**MECHANICAL PARTS Loader → this page**

- 20 3103 304 66500 DRAWER
- 21 3140 114 29070 PRESSURE RING-DA11
- 23 3140 111 21270 METAL RING-DA11
- 30 3103 304 66560 SUPPORT
- 31 4822 529 10386 DAMPER - RUBBER (Rear)
  
- 32 4822 529 10387 DAMPER - RUBBER (Front)
- 33 3103 304 06970 WASHER
- 35 3103 309 05310 CD DRIVE DA11T3C
- 41 3103 304 66480 FRAME
- 42 3103 304 66540 BRACKET-GUIDING
  
- 43 3103 301 06460 SPRING-GUIDING
- 44 3103 304 06890 GEAR-3
- 45 3103 304 06980 NAIL FIXATION
- 46 3103 304 06880 GEAR-2
- 47 3103 304 66530 BRACKET-LOAD
  
- 48 3103 304 06910 CAM
- 49 3103 304 66510 GUIDING
- 51 3103 304 06900 GEAR-4
- 52 3103 304 06870 GEAR-1
- 53 3103 304 06960 PULLEY-FRAME
  
- 54 3103 304 66910 DRIVING-BELT-DRAWER
- 55 4822 361 10753 TRAY MOTOR
- 56 4822 502 12548 SCREW M2,6X3,5
- 57 3103 304 69880 COVER-DA11
- 59 4822 466 12146 RUBBER

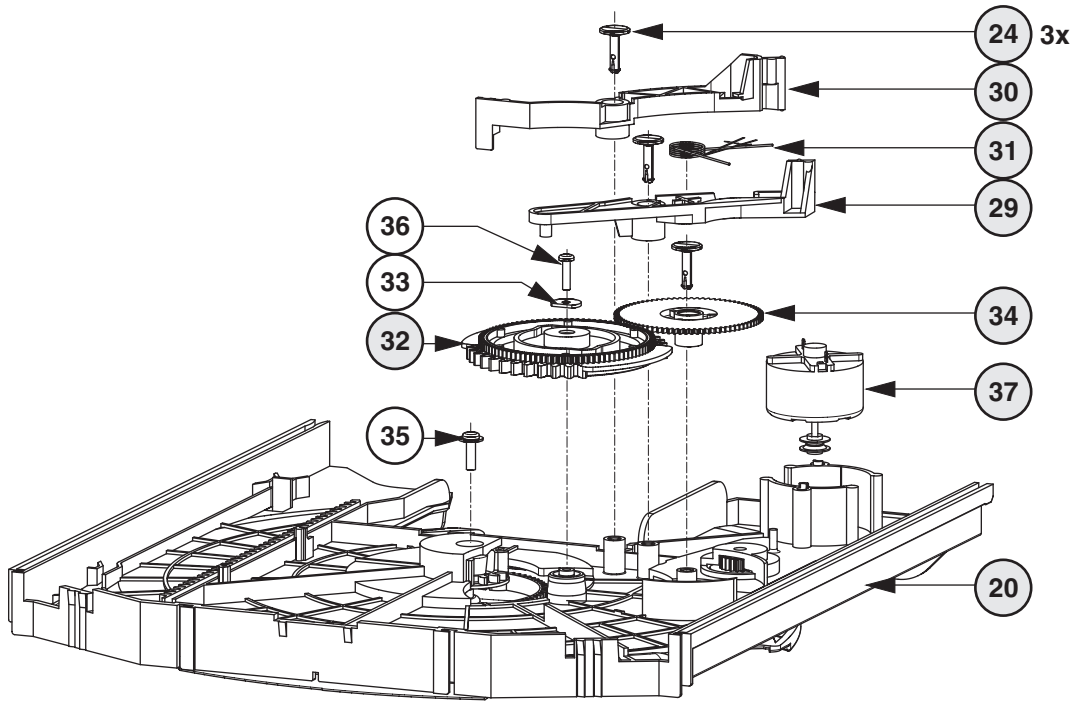


**MECHANICAL PARTS Drawer → Chapter 10-11**

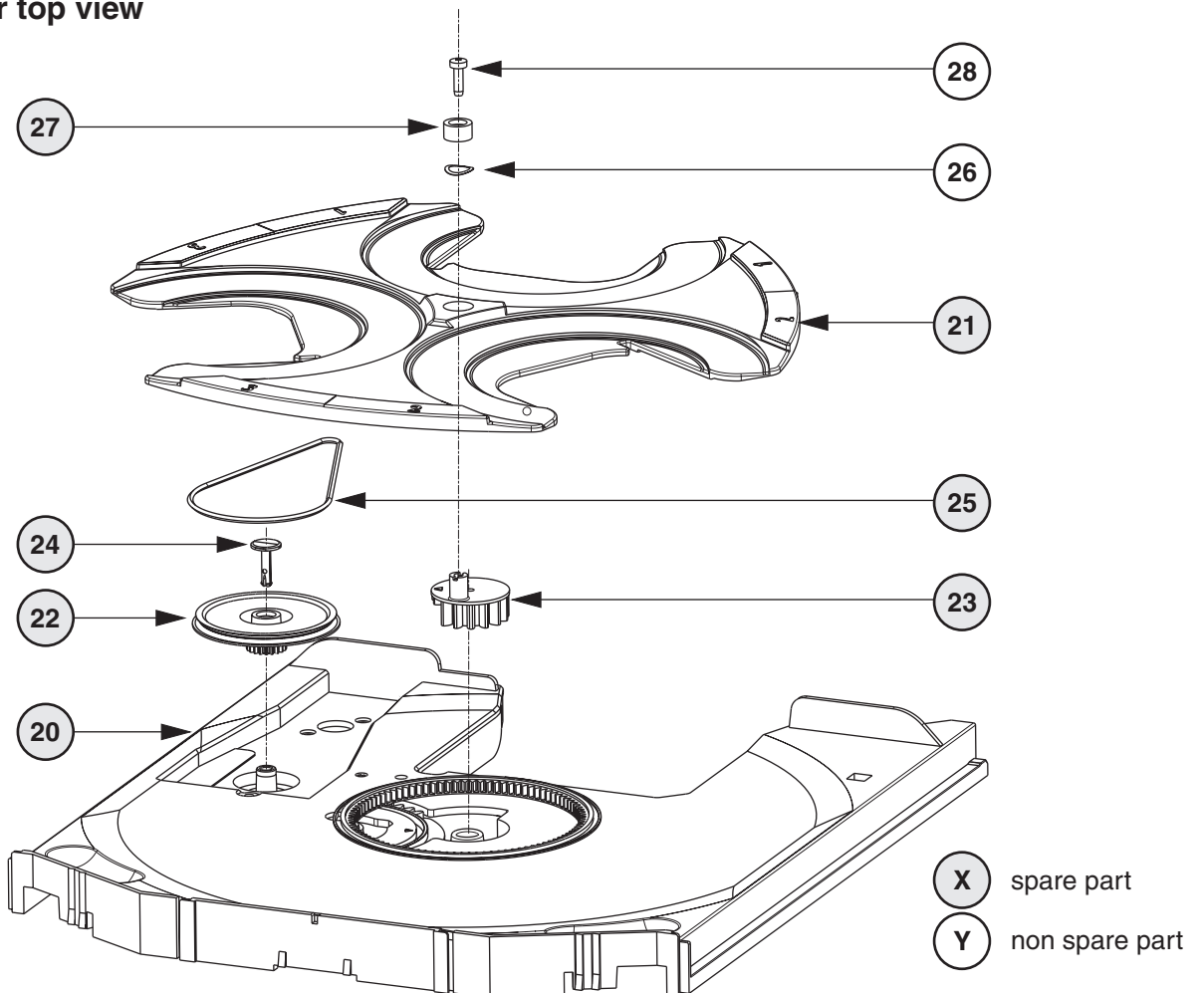
- 20 3103 304 66500 DRAWER
- 21 3103 304 66490 CAROUSEL
- 22 3103 304 06860 PULLEY-DRAWER
- 23 3103 304 06850 ECCENTRIC GEAR WHEEL
- 24 3103 304 06980 NAIL FIXATION
  
- 25 3103 304 66850 DRIVING BELT CAROUSEL
- 27 3103 304 07100 BUSH DRAWER (height=8,5mm,d=16mm)
- 27 4822 532 12365 BUSH DRAWER (height=5,5mm,d=9,4mm)
- 29 3103 304 66550 BRACKET-DISC
- 30 3103 304 66520 TUMBLER
  
- 31 3103 301 06470 SPRING-DISC
- 32 3103 304 06920 CONTROL-DISC
- 33 3103 304 06970 WASHER
- 34 3103 304 06870 GEAR-1
- 37 4822 361 10753 CAROUSEL MOTOR

- X** spare part
- Y** non spare part

Drawer bottom view



Drawer top view



**ELECTRICAL PARTSLIST 3CDC-LC-MB-DA11 MODULE****MISCELLANEOUS**

37	4822 361 10753	CARROUSEL MOTOR
55	4822 361 10753	CARROUSEL MOTOR
1800	2422 025 12133	FLEX FOIL CONNECTOR 16PIN
1805	4822 265 10979	FLEX FOIL CONNECTOR 15PIN
1805	4822 265 11545	FLEX FOIL CONNECTOR 19PIN
1875	4822 267 10958	FLEX FOIL CONNECTOR 5P
1876	2422 025 08332	FLEX FOIL CONNECTOR 5P
1880	4822 276 13503	SWITCH, Tray in endposition
1881	4822 276 13503	SWITCH, Drive up/down
1882	4822 276 13503	SWITCH, Position 1
1883	4822 276 13503	SWITCH, Position recogiced
8002	3103 308 91990	FLEX FOIL CABLE 5P, 200mm
8005	3103 308 92620	FLEX FOIL CABLE 16P, 170mm
8005	3103 308 91980	FLEX FOIL CABLE 15P, 170mm

**CAPACITORS**

2800©	4822 126 14508	180pF	5%	50V
2801©	4822 126 13883	220pF	5%	50V
2802©	4822 126 14508	180pF	5%	50V
2803©	4822 126 13883	220pF	5%	50V
2804©	3198 024 44730	47nF	5%	50V
2805©	4822 126 13883	220pF	5%	50V
2806©	4822 126 13883	220pF	5%	50V
2807©	4822 126 14508	180pF	5%	50V
2808©	4822 126 13883	220pF	5%	50V
2809©	4822 126 13883	220pF	5%	50V
2810©	4822 122 31765	100pF	5%	50V
2811©	4822 126 13883	220pF	5%	50V
2812©	4822 126 14585	100nF	10%	50V
2813©	4822 126 14585	100nF	10%	50V
2814	4822 124 40433	47µF	20%	25V
2815©	4822 126 13879	220nF	20%	16V
2816©	4822 126 13344	1,5nF	5%	63V
2817©	4822 126 14585	100nF	10%	50V
2818©	4822 126 13344	1,5nF	5%	63V
2819	4822 124 40433	47µF	20%	25V
2820	4822 124 40433	47µF	20%	25V
2821©	4822 126 14585	100nF	10%	50V
2822©	2222 861 15222	2,2nF	10%	50V
2823©	4822 126 14225	56pF	5%	50V
2824©	4822 126 13751	47nF	10%	50V
2825©	5322 126 11583	10nF	10%	63V
2826	4822 124 12362	47µF	20%	4V
2828	4822 124 12362	47µF	20%	4V
2829©	5322 126 11578	1nF	10%	63V
2830©	4822 126 13751	47nF	10%	50V
2831©	4822 122 31765	100pF	5%	50V
2832©	4822 122 31765	100pF	5%	50V
2833©	4822 126 11671	33pF	5%	50V
2834©	4822 126 11671	33pF	5%	50V
2835©	3198 024 44730	47nF	5%	50V
2836©	4822 126 14585	100nF	10%	50V
2837	4822 124 40433	47µF	20%	25V
2838	4822 124 40248	10µF	20%	63V
2839©	4822 126 14585	100nF	10%	50V
2840©	4822 126 14585	100nF	10%	50V
2841©	5322 122 31647	1nF	10%	63V
2842©	4822 126 13883	220pF	5%	50V
2843©	4822 126 14585	100nF	10%	50V
2844©	5322 122 34099	470pF	10%	63V
2845©	4822 126 14585	100nF	10%	50V

**CAPACITORS**

2846©	4822 126 13883	220pF	5%	50V
2847©	4822 126 14585	100nF	10%	50V
2848©	4822 122 33753	150pF	5%	50V
2849	4822 124 40769	4,7µF	20%	100V
2850©	5322 126 11578	1nF	10%	63V
2851	4822 124 42383	220µF	20%	4V
2854©	4822 126 13751	47nF	10%	50V
2855©	4822 126 14508	180pF	5%	50V
2856©	4822 126 11669	27pF	10%	50V
2857©	4822 126 13883	220pF	5%	50V
2858	4822 124 12245	220µF	20%	16V
2859©	4822 126 13883	220pF	5%	50V
2860	4822 124 11947	10µF	20%	16V
2861	4822 124 11947	10µF	20%	16V
2862©	4822 126 13883	220pF	5%	50V
2863©	4822 126 13883	220pF	5%	50V
2864©	4822 122 33761	22pF	5%	50V
2865©	4822 126 14494	22nF	10%	25V
2866©	4822 122 33753	150pF	5%	50V
2867©	4822 126 13883	220pF	5%	50V
2868©	5322 126 11578	1nF	10%	63V
2869©	3198 024 44730	47nF	5%	50V
2870©	4822 126 14585	100nF	10%	50V
2871©	4822 126 14585	100nF	10%	50V
2872©	3198 024 44730	47nF	5%	50V
2873	4822 124 40433	47µF	20%	25V
2874©	4822 126 14585	100nF	10%	50V
2875©	3198 017 41050	1µF	20%	10V
2876	4822 124 12245	220µF	20%	16V
2877©	4822 122 33777	47pF	5%	63V
2878©	4822 126 13883	220pF	5%	50V
2879©	4822 126 14585	100nF	10%	50V
2880©	3198 017 41050	1µF	20%	10V
2881	4822 124 40769	4,7µF	20%	100V
2882©	4822 126 13883	220pF	5%	50V
2883©	4822 126 14585	100nF	10%	50V
2884	4822 124 40769	4,7µF	20%	100V
2885	4822 124 40769	4,7µF	20%	100V
2887©	4822 126 14585	100nF	10%	50V
2888	4822 124 40769	4,7µF	20%	100V
2891©	4822 126 13883	220pF	5%	50V
2892©	5322 126 10223	4,7nF	10%	63V
2893©	4822 122 33575	220pF	5%	50V
2900©	4822 126 14508	180pF	5%	50V

**RESISTORS**

3701©	4822 051 30474	470kΩ	5%	0,06W
3702©	4822 051 30474	470kΩ	5%	0,06W
3703©	4822 117 12925	47kΩ	1%	0,06W
3704©	4822 117 12925	47kΩ	1%	0,06W
3709©	4822 117 10833	10kΩ	1%	0,1W
3710©	4822 051 30474	470kΩ	5%	0,06W
3712©	4822 051 30109	10Ω	5%	0,06W
3713©	4822 051 20223	22kΩ	5%	0,1W
3714©	4822 051 30103	10kΩ	5%	0,06W
3715©	4822 117 13632	100kΩ	1%	0,06W
3716©	4822 051 30471	470Ω	5%	0,06W
3719©	4822 051 30474	470kΩ	5%	0,06W
3727©	4822 051 30472	4,7kΩ	5%	0,06W
3728©	4822 051 30472	4,7kΩ	5%	0,06W
3730©	4822 051 20333	33kΩ	5%	0,1W



**ELECTRICAL PARTSLIST 3CDC-LC-MB-DA11 MODULE**

## RESISTORS

3740©	4822 051 20223	22kΩ	5%	0,1W
3741©	4822 051 20223	22kΩ	5%	0,1W
3742©	4822 051 20223	22kΩ	5%	0,1W
3743©	4822 051 20223	22kΩ	5%	0,1W
3744©	4822 051 30103	10kΩ	5%	0,06W
3746©	4822 051 30103	10kΩ	5%	0,06W
3750©	4822 051 30102	1kΩ	5%	0,06W
3751©	4822 051 30102	1kΩ	5%	0,06W
3752©	4822 051 20399	39Ω	5%	0,1W
3753©	4822 117 12925	47kΩ	1%	0,06W
3754©	4822 051 30273	27kΩ	5%	0,06W
3755©	4822 051 30103	10kΩ	5%	0,06W
3756©	4822 051 30333	33kΩ	5%	0,06W
3757©	4822 051 20399	39Ω	5%	0,1W
3758©	4822 051 30103	10kΩ	5%	0,06W
3759©	4822 051 30333	33kΩ	5%	0,06W
3760©	4822 051 20399	39Ω	5%	0,1W
3761©	4822 051 30103	10kΩ	5%	0,06W
3762©	4822 051 30333	33kΩ	5%	0,06W
3763©	4822 051 30479	47Ω	5%	0,06W
3764©	4822 051 30103	10kΩ	5%	0,06W
3765©	4822 051 30333	33kΩ	5%	0,06W
3766©	4822 051 30479	47Ω	5%	0,06W
3773©	4822 051 30273	27kΩ	5%	0,06W
3775©	4822 051 30273	27kΩ	5%	0,06W
3800©	4822 051 30563	56kΩ	5%	0,06W
3801©	4822 051 30103	10kΩ	5%	0,06W
3802©	4822 117 11148	56kΩ	1%	0,1W
3803©	4822 051 30103	10kΩ	5%	0,06W
3804©	4822 051 30103	10kΩ	5%	0,06W
3805©	4822 051 30103	10kΩ	5%	0,06W
3806©	4822 051 30103	10kΩ	5%	0,06W
3807©	4822 051 30103	10kΩ	5%	0,06W
3808©	4822 051 30103	10kΩ	5%	0,06W
3809©	4822 117 13577	330Ω	1%	0,1W
3810©	4822 051 20399	39Ω	5%	0,1W
3811©	4822 117 11148	56kΩ	1%	0,1W
3812©	4822 117 12925	47kΩ	1%	0,06W
3813©	4822 051 20399	39Ω	5%	0,1W
3814©	4822 051 30339	33Ω	5%	0,06W
3815	4822 052 10478	4,7Ω	5%	NFR
3816©	4822 117 12925	47kΩ	1%	0,06W
3817	4822 052 10228	2,2Ω	5%	0,33W
3818©	4822 051 20399	39Ω	5%	0,1W
3819©	4822 051 20471	470Ω	5%	0,1W
3820©	4822 051 30682	6,8kΩ	5%	0,06W
3821©	4822 117 11507	6,8kΩ	1%	0,1W
3822©	4822 051 30682	6,8kΩ	5%	0,06W
3823©	4822 051 30102	1kΩ	5%	0,06W
3824©	4822 051 30102	1kΩ	5%	0,06W
3825©	4822 051 10102	1kΩ	2%	0,25W
3826©	4822 051 30223	22kΩ	5%	0,06W
3827©	4822 051 20273	27kΩ	5%	0,1W
3828©	4822 051 20223	22kΩ	5%	0,1W
3829©	4822 117 12925	47kΩ	1%	0,06W
3830©	4822 051 30273	27kΩ	5%	0,06W
3831©	4822 051 30101	100Ω	5%	0,06W
3832©	4822 051 30103	10kΩ	5%	0,06W
3833©	4822 051 30393	39kΩ	5%	0,06W
3834©	4822 051 20393	39kΩ	5%	0,1W

## RESISTORS

3835©	4822 117 12925	47kΩ	1%	0,06W
3836©	4822 051 30273	27kΩ	5%	0,06W
3837©	4822 051 10102	1kΩ	2%	0,25W
3838©	4822 051 30102	1kΩ	5%	0,06W
3839©	4822 051 20273	27kΩ	5%	0,1W
3840©	4822 051 20273	27kΩ	5%	0,1W
3841©	4822 117 12925	47kΩ	1%	0,06W
3842©	4822 117 10833	10kΩ	1%	0,1W
3843©	4822 117 12955	2,7kΩ	1%	0,1W
3844©	4822 117 12024	27kΩ	1%	0,1W
3845©	4822 117 10833	10kΩ	1%	0,1W
3846©	4822 117 12955	2,7kΩ	1%	0,1W
3847©	4822 051 20399	39Ω	5%	0,1W
3848©	4822 117 10965	18kΩ	2%	0,1W
3849©	4822 051 30183	18kΩ	5%	0,06W
3850©	4822 051 20399	39Ω	5%	0,1W
3851	4822 052 10228	2,2Ω	5%	0,33W
3852	4822 052 10228	2,2Ω	5%	0,33W
3853©	4822 051 30471	470Ω	5%	0,06W
3854©	4822 051 30101	100Ω	5%	0,06W
3855©	4822 051 30101	100Ω	5%	0,06W
3856©	4822 117 12521	68Ω	1%	0,1W
3857©	4822 117 12521	68Ω	1%	0,1W
3858©	4822 051 30223	22kΩ	5%	0,06W
3859©	4822 051 20223	22kΩ	5%	0,1W
3860©	4822 117 10833	10kΩ	1%	0,1W
3861©	4822 051 30103	10kΩ	5%	0,06W
3862©	4822 051 20121	120Ω	5%	0,1W
3863©	4822 051 20101	100Ω	5%	0,1W
3863©	4822 051 20339	33Ω	5%	0,1W
3864©	4822 051 20101	100Ω	5%	0,1W
3865	4822 052 10228	2,2Ω	5%	0,33W
3866©	4822 051 30103	10kΩ	5%	0,06W
3867©	4822 051 30121	120Ω	5%	0,06W
3869©	4822 117 13608	4,7Ω	5%	0,06W
3870©	4822 051 30101	100Ω	5%	0,06W
3871©	4822 051 30103	10kΩ	5%	0,06W
3873©	4822 051 20471	470Ω	5%	0,1W
3875©	4822 051 30103	10kΩ	5%	0,06W
3876©	4822 117 13632	100kΩ	1%	0,06W
3877©	4822 051 30103	10kΩ	5%	0,06W
3878©	4822 051 30103	10kΩ	5%	0,06W
3879©	4822 051 30273	27kΩ	5%	0,06W
3880©	4822 051 30474	470kΩ	5%	0,06W
3881©	4822 051 30273	27kΩ	5%	0,06W
3882©	4822 051 30474	470kΩ	5%	0,06W
3883©	4822 051 20273	27kΩ	5%	0,1W
3884©	4822 051 30474	470kΩ	5%	0,06W
3885©	4822 051 20273	27kΩ	5%	0,1W
3886©	4822 051 30474	470kΩ	5%	0,06W
3887©	4822 051 30221	220Ω	5%	0,06W
3888©	4822 117 10833	10kΩ	1%	0,1W
3889©	4822 051 20471	470Ω	5%	0,1W
3890©	4822 051 30102	1kΩ	5%	0,06W
3891©	4822 051 30102	1kΩ	5%	0,06W
3892©	4822 051 20471	470Ω	5%	0,1W
3893©	4822 051 30471	470Ω	5%	0,06W
3894©	4822 051 30101	100Ω	5%	0,06W
3895©	4822 117 12971	15Ω	5%	0,06W
3896	4822 052 10228	2,2Ω	5%	0,33W

**ELECTRICAL PARTSLIST 3CDC-LC-MB-DA11 MODULE****RESISTORS**

3897	4822 051 20101	100Ω	5%	0,1W
3898	4822 117 11503	220Ω	5%	0,1W
3899	4822 051 30101	100Ω	5%	0,06W
3900	4822 117 11148	56kΩ	1%	0,1W
3901	4822 051 30682	6,8kΩ	5%	0,06W
4800	4822 051 20008	CHIP JUMPER 0805		
4801	4822 051 20008	CHIP JUMPER 0805		
4802	4822 051 20008	CHIP JUMPER 0805		
4804	4822 051 20008	CHIP JUMPER 0805		
4805	4822 051 30008	CHIP JUMPER 0603		
4806	4822 051 20008	CHIP JUMPER 0805		
4807	4822 051 20008	CHIP JUMPER 0805		
4808	4822 051 20008	CHIP JUMPER 0805		
4809	4822 051 20008	CHIP JUMPER 0805		
4810	4822 051 20008	CHIP JUMPER 0805		
4812	4822 051 20008	CHIP JUMPER 0805		
4814	4822 051 20008	CHIP JUMPER 0805		
4815	4822 051 20008	CHIP JUMPER 0805		
4816	4822 051 20008	CHIP JUMPER 0805		
4817	4822 051 30008	CHIP JUMPER 0603		
4818	4822 051 20008	CHIP JUMPER 0805		
4819	4822 051 20008	CHIP JUMPER 0805		
4820	4822 051 20008	CHIP JUMPER 0805		
4821	4822 051 20008	CHIP JUMPER 0805		
4822	4822 051 20008	CHIP JUMPER 0805		
4823	4822 051 20008	CHIP JUMPER 0805		
4824	4822 051 20008	CHIP JUMPER 0805		
4825	4822 051 30008	CHIP JUMPER 0603		
4826	4822 051 20008	CHIP JUMPER 0805		
4827	4822 051 30008	CHIP JUMPER 0603		
4828	4822 051 20008	CHIP JUMPER 0805		
4831	4822 051 20008	CHIP JUMPER 0805		
4832	4822 051 30008	CHIP JUMPER 0603		
4834	4822 051 30008	CHIP JUMPER 0603		
4835	4822 051 30008	CHIP JUMPER 0603		
4836	4822 051 20008	CHIP JUMPER 0805		
4838	4822 051 20008	CHIP JUMPER 0805		
4840	4822 051 20008	CHIP JUMPER 0805		
4841	4822 051 20008	CHIP JUMPER 0805		
4842	4822 051 20008	CHIP JUMPER 0805		
4843	4822 051 20008	CHIP JUMPER 0805		
4844	4822 051 20008	CHIP JUMPER 0805		
4845	4822 051 20008	CHIP JUMPER 0805		
4846	4822 051 30008	CHIP JUMPER 0603		
4847	4822 051 20008	CHIP JUMPER 0805		
4849	4822 051 30008	CHIP JUMPER 0603		
4856	4822 051 20008	CHIP JUMPER 0805		
4857	4822 051 20008	CHIP JUMPER 0805		
4858	4822 051 20008	CHIP JUMPER 0805		
4859	4822 051 30008	CHIP JUMPER 0603		
4860	4822 051 30008	CHIP JUMPER 0603		
4861	4822 051 20008	CHIP JUMPER 0805		
4862	4822 051 30008	CHIP JUMPER 0603		
4863	4822 051 30008	CHIP JUMPER 0603		
4864	4822 051 20008	CHIP JUMPER 0805		
4865	4822 051 20008	CHIP JUMPER 0805		
4867	4822 051 20008	CHIP JUMPER 0805		
4868	4822 051 20008	CHIP JUMPER 0805		
4869	4822 051 20008	CHIP JUMPER 0805		
4870	4822 051 20008	CHIP JUMPER 0805		

**RESISTORS**

4876	4822 051 20008	CHIP JUMPER 0805
4879	4822 051 20008	CHIP JUMPER 0805
4884	4822 051 20008	CHIP JUMPER 0805
4885	4822 051 20008	CHIP JUMPER 0805
4886	4822 051 20008	CHIP JUMPER 0805
4887	4822 051 20008	CHIP JUMPER 0805
4890	4822 051 20008	CHIP JUMPER 0805
4893	4822 051 20008	CHIP JUMPER 0805
4894	4822 051 20008	CHIP JUMPER 0805
4896	4822 051 30008	CHIP JUMPER 0603
4897	4822 051 20008	CHIP JUMPER 0805

**COILS**

1810	2422 543 01068	RESONATOR 8MHZ
1810	4822 242 73557	CERAMIC RES. 8,46MHZ
5802	4822 157 70601	100μH

**DIODES**

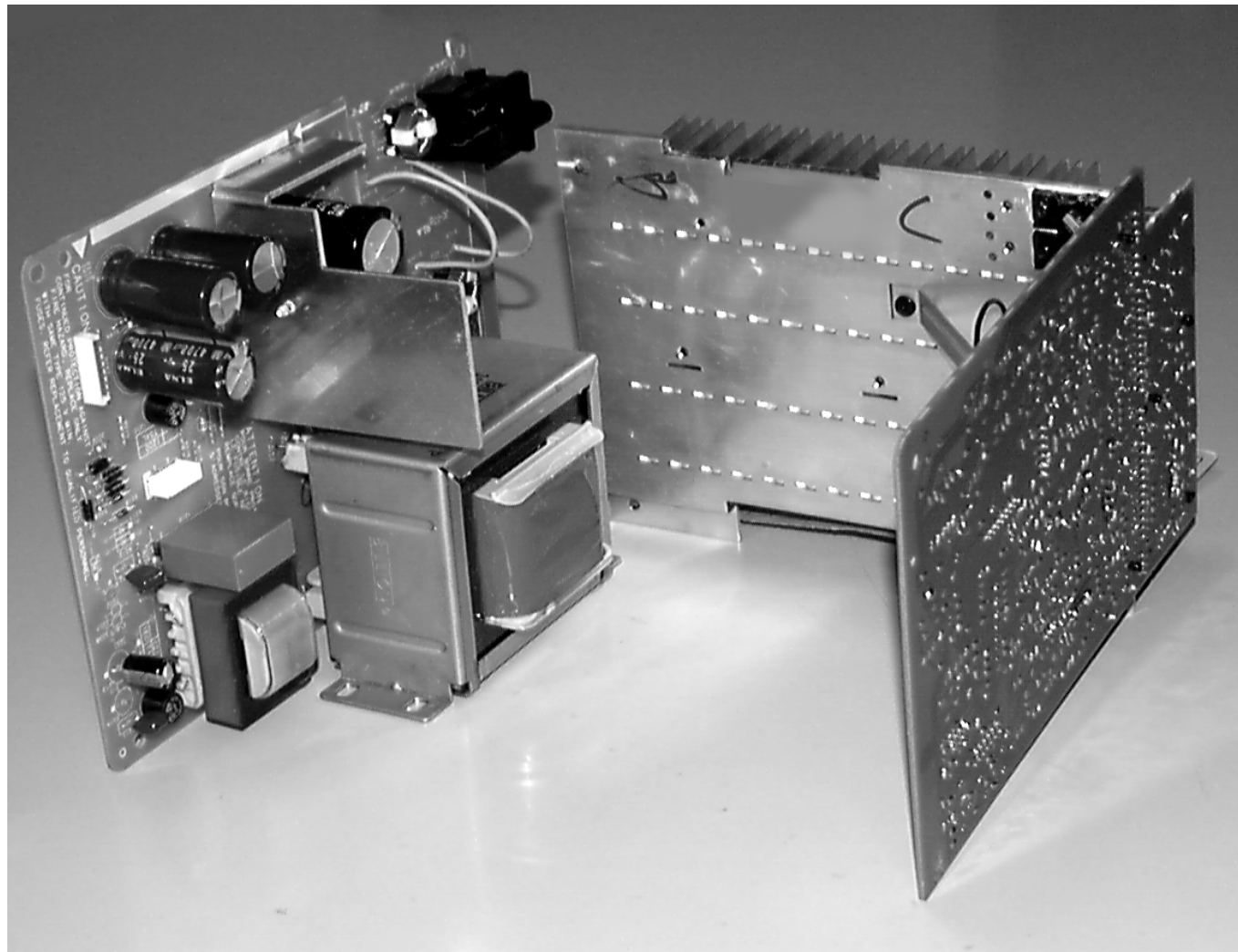
6871	4822 130 11397	BAS316
6872	4822 130 11397	BAS316
6873	4822 130 11397	BAS316
6874	4822 130 11397	BAS316
6875	9340 548 52115	BZX284-C5V1
6877	9322 129 34685	BZX284-C3V9
6878	4822 130 11397	BAS316
6879	9322 129 34685	BZX284-C3V9

**TRANSISTORS**

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

**INTEGRATED CIRCUITS**

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



# POWER 2001 Module

(30 - 70W Version)

stage .7

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### Circuit details:

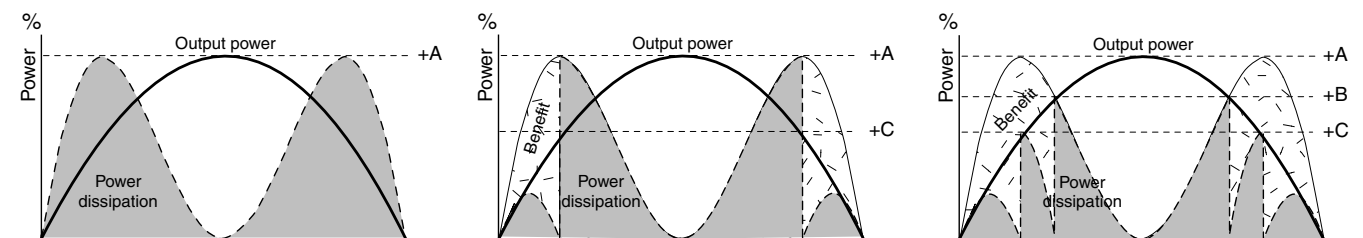
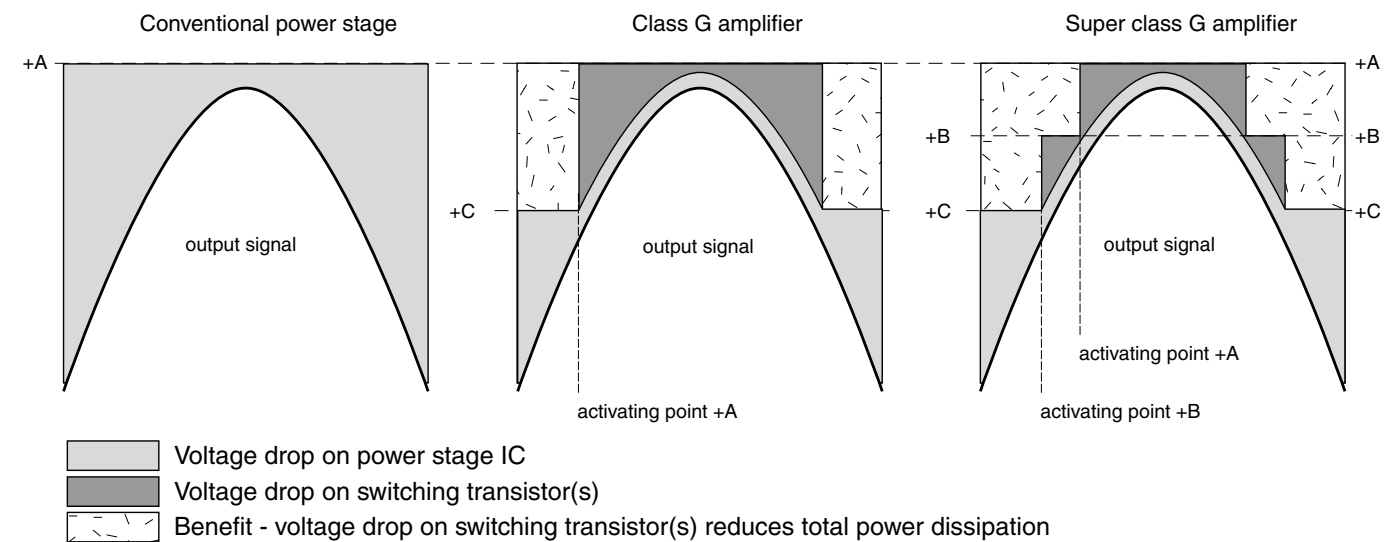
#### Amplifier:

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  $\mu$ 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:  
⇒ +C1 (+20V) for low output power  
⇒ +B1 (+29V) for medium output power  
⇒ +A1 (+41V for high output power

### Principle / benefit of Super Class G



**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 ECO is low → 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 ECO is high → 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**

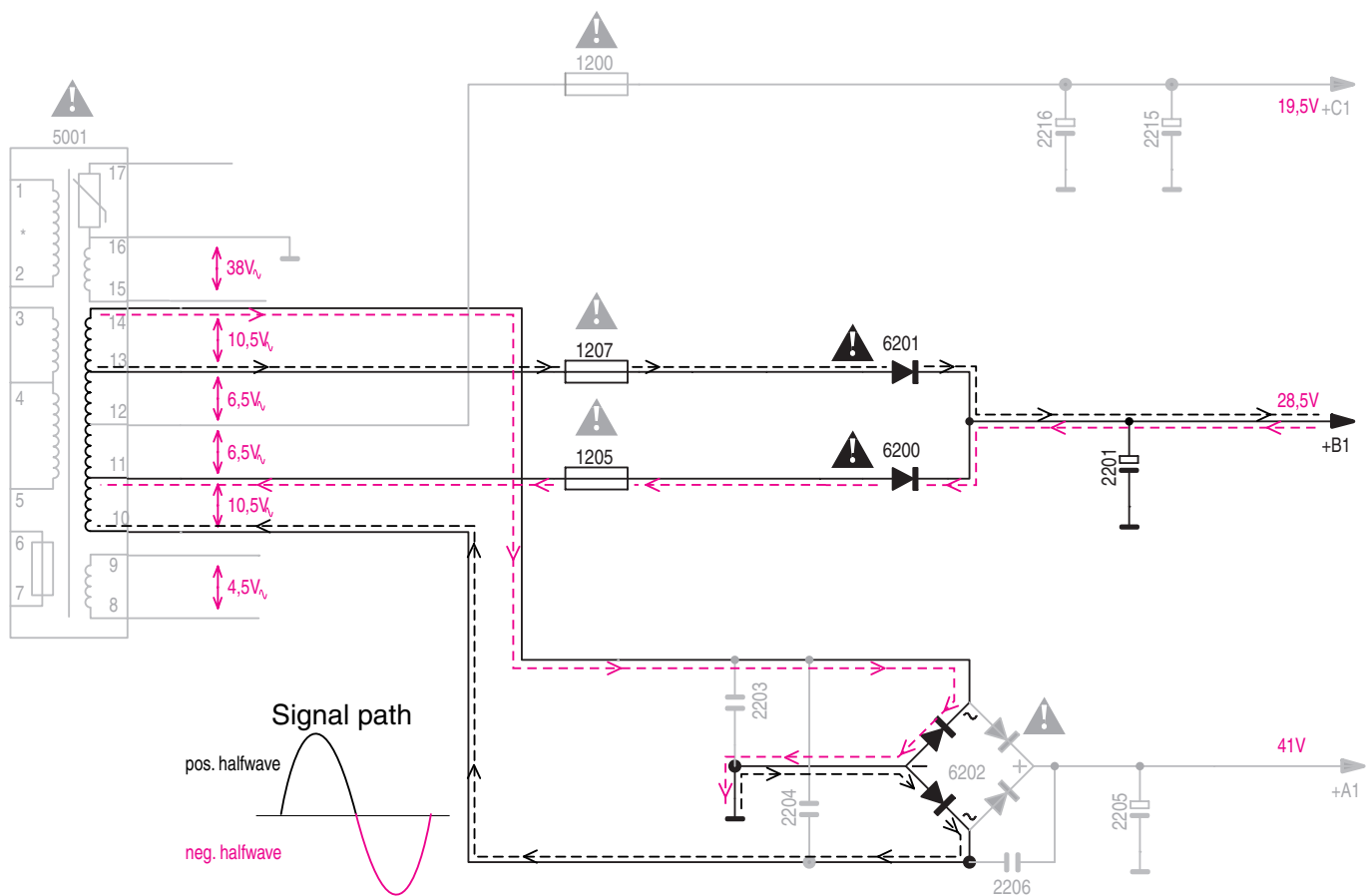
These voltages supply the Super Class G amplifier, described on previous page. The whole power supply is optimized for the special characteristic of this type of amplifier. For that reason several “tricky” details have been applied to ensure optimal efficiency and symmetrical load to the mains transformer.

**Generation of +A1**

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

**Generation of +B1**

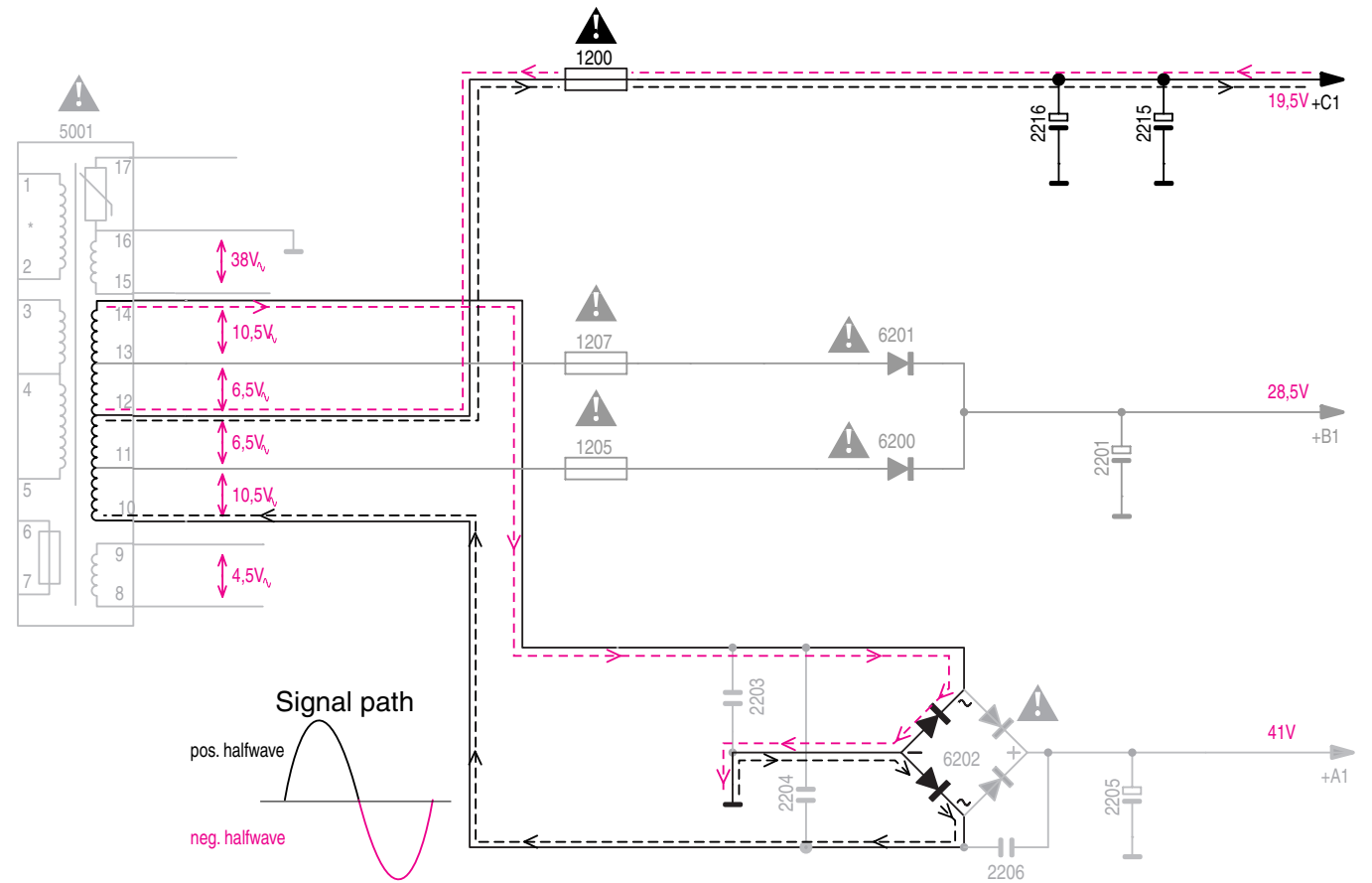
The supply for +B1 consists of one full wave rectifier: – 2 diodes of bridge rectifier 6202, with 6200(6220 in parallel) 6201(6221 in parallel) for generation of +B1 using approx. 70% secondary winding of mains transformer (pin 10-13 respectively pin 11-14). As example for generation of +B1 see picture 1.



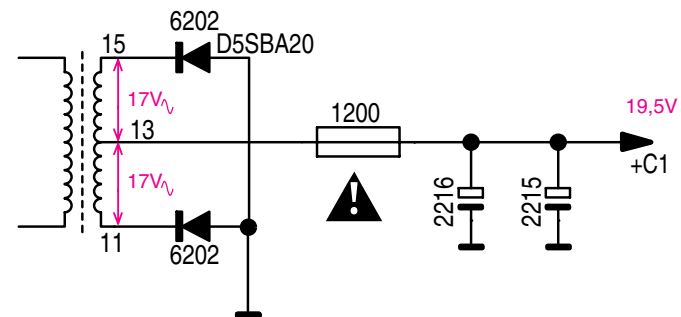
picture 1

**Generation of +C1**

Full wave rectifying with 2 diodes of bridge rectifier 6202, using 50% secondary winding of mains transformer (pin 13-15/13-11). See picture 2 below.



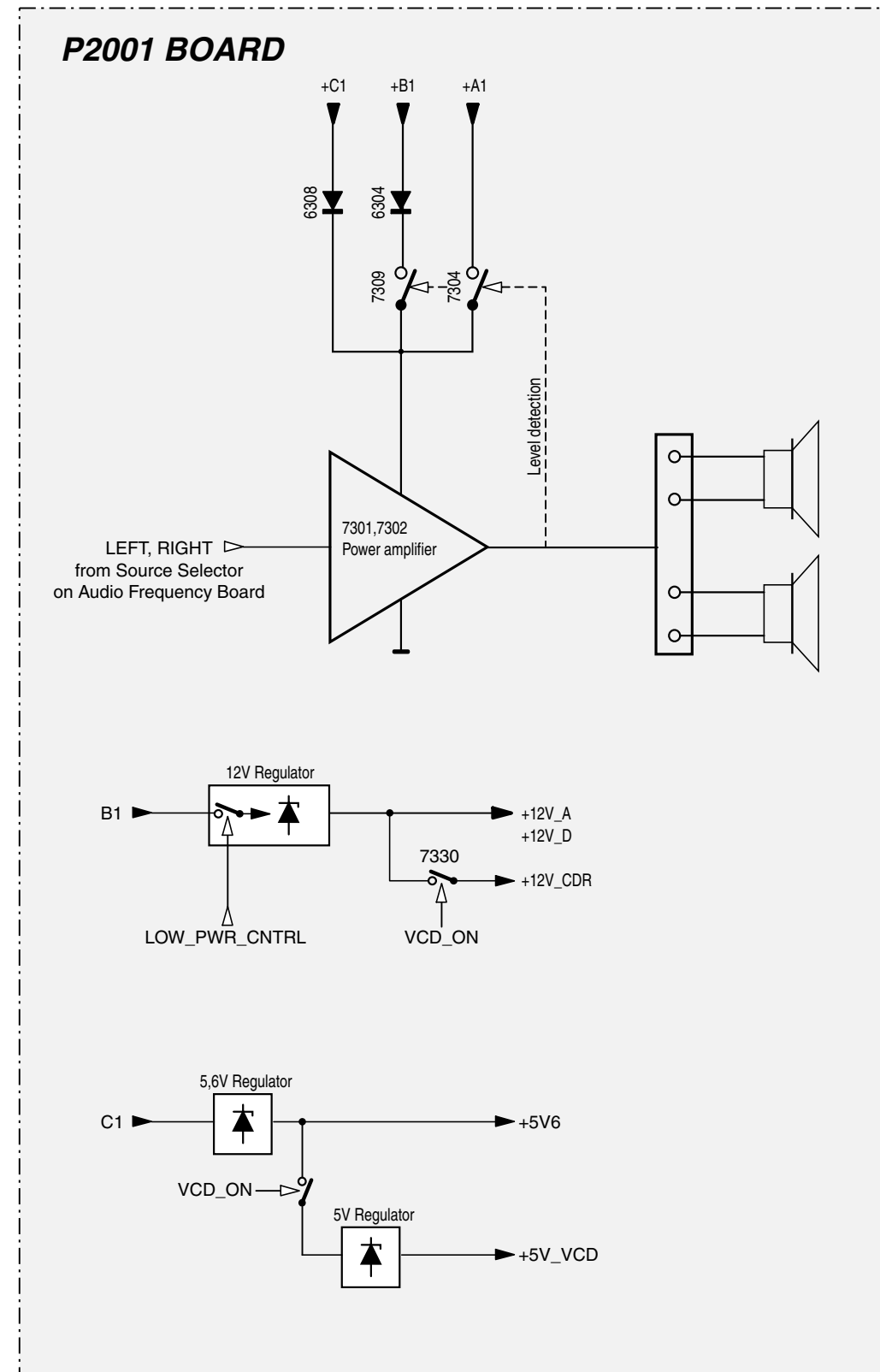
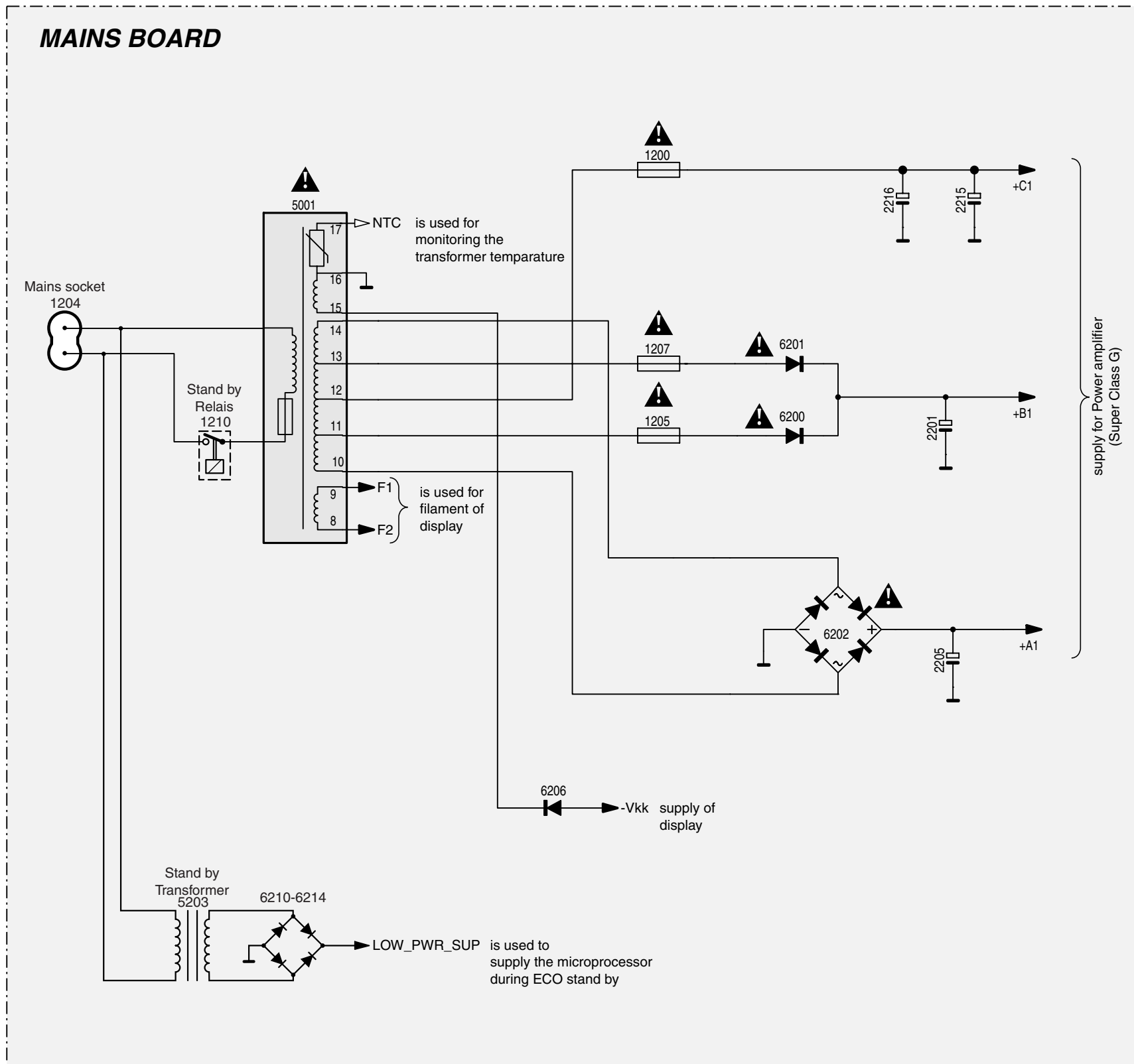
simplified:



picture 2

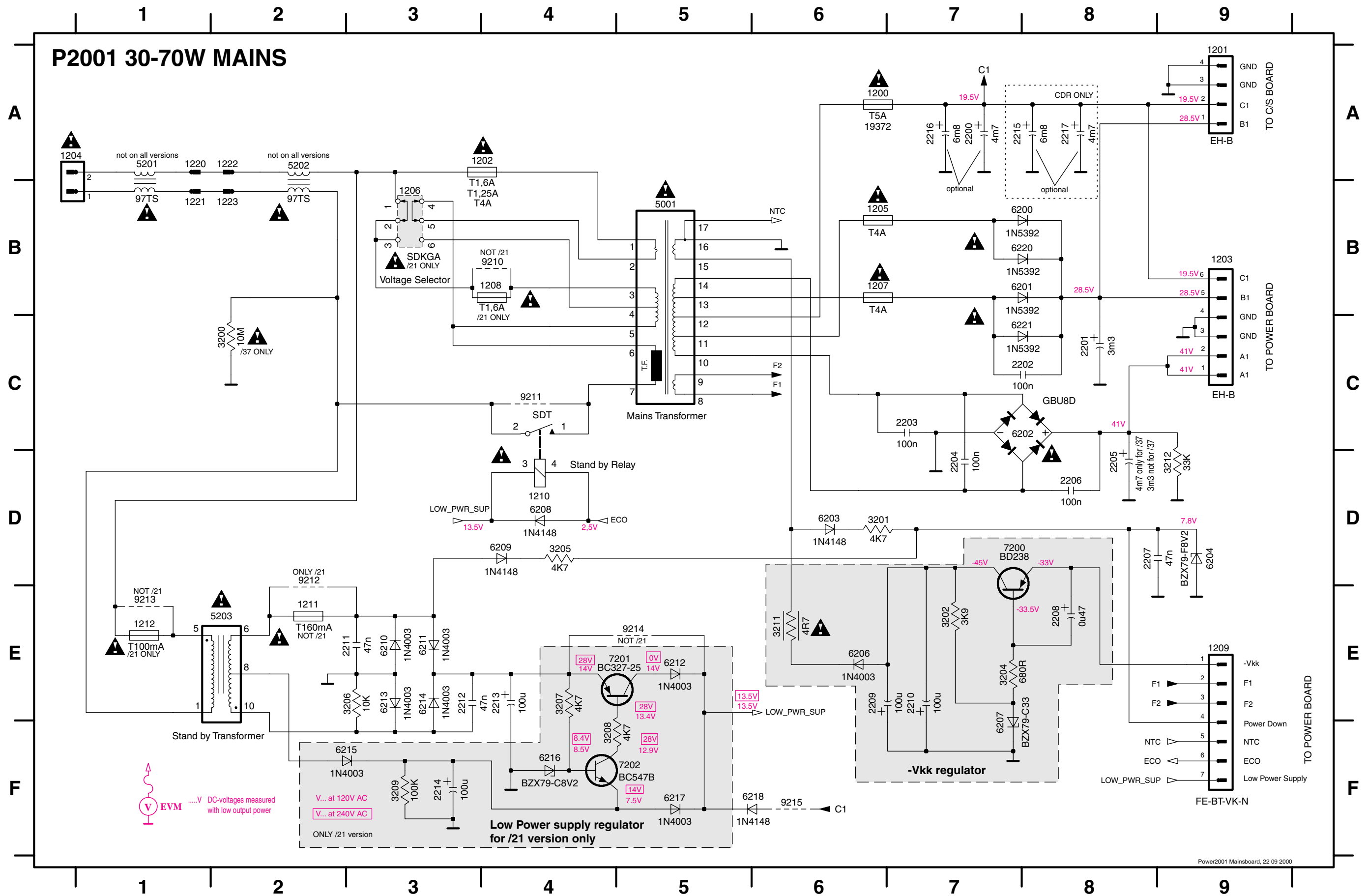


Block Diagram





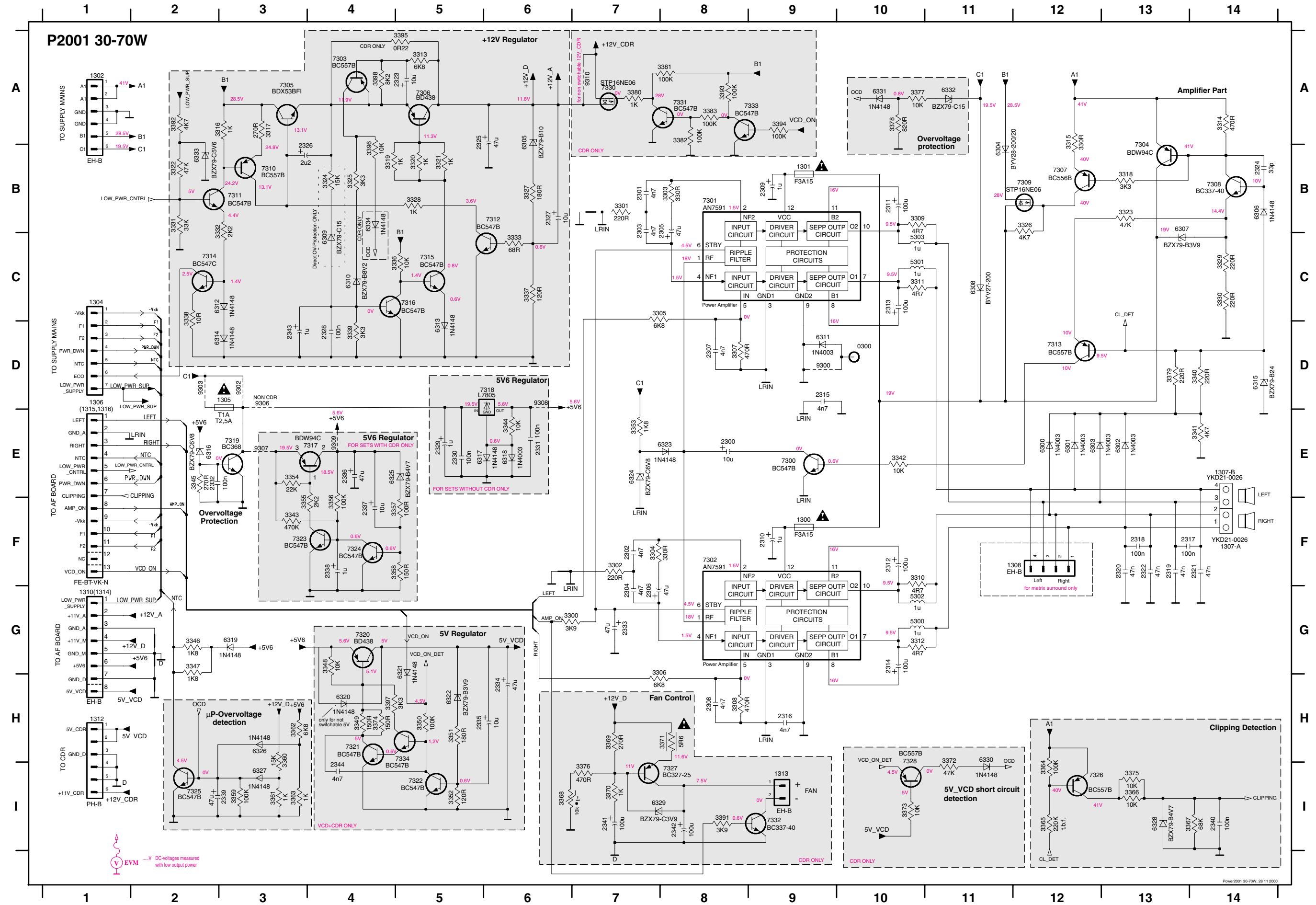
1200 A6	1207 B6	1222 A2	2204 D7	2210 E7	2216 A7	3205 E4	3212 D9	6202 C8	6209 E4	6215 F3	7200 D7	9211 C4
1201 A9	1208 B4	1223 B2	2205 D8	2211 E3	2217 A8	3206 E3	5001 C5	6203 D6	6210 E3	6216 F4	7201 E4	9212 D2
1202 A4	1209 E9	2200 A7	2206 D8	2212 E3	3200 C2	3207 E4	5202 A2	6204 D9	6211 E3	6217 F5	7202 F5	9213 E1
1203 B9	1210 D4	2201 C8	2207 D8	2213 E4	3201 D6	3208 F4	5203 E1	6206 E6	6212 E5	6218 F6	9206 A2	9214 E5
1205 B6	1211 E2	2202 C8	2208 E8	2214 F3	3202 E7	3209 F3	6200 B8	6207 F7	6213 E3	6220 B8	9208 B2	9215 F6
1206 B3	1212 E1	2203 C7	2209 E6	2215 A7	3204 E7	3211 E6	6201 B8	6208 D4	6214 E3	6221 C8	9210 B4	







0300	D10	1307-a	F14	1315	D1	2305	B8	2312	F10	2319	F13	2326	B3	2333	G7	2340	I14	3303	B8	3310	F10	3317	A3	3324	B4	3331	B2	3340	D14	3347	G2	3354	E3	3361	I3	3368	I6	3375	I13	3382	A8	6300	E12	6307	B13	6314	D2	6321	H5	6328	I13	7302	F8	7309	B12	7316	C5	7323	F3	7331	A8	9306	D4
1300	F9	1307-b	E14	1316	D1	2306	G7	2313	C10	2320	F13	2327	B6	2334	H6	2341	I7	3304	F7	3311	C10	3318	B13	3325	B4	3332	B3	3341	E10	3348	G4	3355	F3	3362	H3	3369	H7	3376	I7	3383	A8	6301	E12	6308	C11	6315	D14	6322	H5	6329	I7	7303	A4	7310	B3	7317	E3	7324	F4	7332	I9	9307	D4
1301	B9	1308	F12	2300	E8	2307	D8	2314	G10	2321	F14	2328	D4	2335	H5	2342	I8	3305	C7	3312	G10	3319	B4	3326	B12	3333	C6	3342	E10	3349	H4	3356	F4	3363	I3	3370	I7	3377	A10	3384	A8	6302	E13	6309	C4	6316	F5	6323	E8	6330	H11	7304	A13	7311	B3	7318	D6	7325	I2	9308	D9		
1302	A1	1310	G1	2301	B7	2308	H8	2315	D9	2322	F13	2329	E5	2336	E4	2343	D3	3306	H7	3313	A5	3320	B6	3327	C5	3334	F3	3343	F3	3350	H5	3357	H5	3364	I2	3371	H8	3378	A10	3385	G10	6303	E12	6310	C4	6317	E6	6324	E7	7305	A9	7312	B6	7319	F6	7326	I12	9309	D3				
1304	C1	1312	H1	2302	F7	2309	B9	2316	H9	2323	A4	2330	E5	2337	F4	2344	B14	3307	D8	3314	A14	3321	B5	3328	B3	3335	C6	3344	E5	3351	H5	3358	F5	3365	I12	3372	I11	3379	D13	3386	C10	6304	B11	6311	D9	6318	E6	6325	E5	6332	A11	7306	A5	7313	D12	7320	G4	7327	H4	9303	D2		
1305	D3	1313	I9	2303	B7	2310	F9	2317	F13	2324	A4	2331	E6	2338	F4	2345	B14	3308	H8	3315	A12	3322	B2	3329	C14	3336	C2	3345	F5	3352	I5	3359	H3	3366	I13	3373	I10	3380	A7	5301	G10	6305	A6	6312	C2	6319	G3	6326	H2	7307	B12	7314	C2	7321	H4	7328	H10	9306	D3				
1306	E1	1314	G1	2304	G7	2311	B10	2318	F13	2325	A5	2332	F5	2339	I2	2346	F7	3309	B10	3316	A3	3323	B13	3330	C14	3337	D4	3346	G2	3353	E7	3360	H3	3367	I14	3374	H4	3381	A8	5303	C10	6306	B14	6313	D5	6320	H4	6327	H3	7301	B8	7308	B14	7315	C5	7322	I5	7330	A7	9307	E3		



EVM — V DC-voltages measured with low output power

## ELECTRICAL PARTSLIST POWER2001 MODULE

## MISCELLANEOUS

1200 ▲	2422 086 10963	FUSE RAD 5A 250V IEC
1202 ▲	4822 071 51252	FUSE 1.25A for sets without 5203
1202 ▲	4822 071 51602	FUSE 1,6A for sets with 5203
1202 ▲	4822 253 10126	FUSE T4A
1204 ▲	2422 030 00328	MAINS SOCKET /37

1204 ▲	4822 265 31015	MAINS SOCKET /21, /22
1205 ▲	2422 086 10786	FUSE RAD 4A 250V IEC
1206 ▲	2422 129 16478	VOLTAGE SELECTOR
1207 ▲	2422 086 10786	FUSE RAD 4A 250V IEC
1208 ▲	4822 071 51252	FUSE 1.25A for sets without 5203

1208 ▲	4822 071 51602	FUSE 1,6A for sets with 5203
1209	4822 267 10953	FLEX FOIL CONNECTOR 7P
1210 ▲	2422 132 07402	RELAY 1P 12V
1211 ▲	2422 086 10771	FUSE RAD 160mA 250V IEC
1212 ▲	4822 071 51001	FUSE 100mA

1300 ▲	4822 252 11225	FUSE F3.15A IEC 250V
1301 ▲	4822 252 11225	FUSE F3.15A IEC 250V
1304	4822 267 10953	FLEX FOIL CONNECTOR 7P
1305 ▲	4822 071 51002	FUSE T1A for sets without 5203
1305 ▲	4822 071 52502	FUSE T 2,5A for sets with 5203

1306	4822 267 10738	FFC-CONNECTOR 13P
1307	4822 267 31176	SPEAKER TERMINAL
5203 ▲	3103 308 30600	STANDBY TRANSFORMER /21
5203 ▲	3103 308 30610	STANDBY TRANSFORMER /22
5203 ▲	3103 308 30800	STANDBY TRANSFORMER /37

8010	3139 110 34600	FLEX FOIL CABLE 7Pin, 280mm
	4822 492 11735	SPRING FIXATION TRANSISTOR

## CAPACITORS

2200	4822 124 12012	4700µF	20%	25V
2201	4822 124 42367	3300µF	20%	35V
2202	5322 121 42386	100nF	5%	63V
2203	5322 121 42386	100nF	5%	63V
2204	5322 121 42386	100nF	5%	63V

2205	4822 124 80415	4700µF	20%	50V	only for /37
2205	8203 303 85640	3300µF	20%	50V	not for /37
2206	5322 121 42386	100nF	5%	63V	
2207	4822 122 33449	47nF	30%	50V	
2208	5322 124 41948	0,47µF	20%	50V	

2209	2020 012 93547	100µF	20%	63V
2211	4822 121 43526	47nF	5%	100V
2212	4822 121 43526	47nF	5%	100V
2213	4822 124 40255	100µF	20%	50V
2214	4822 124 40207	100µF	20%	25V

2217	4822 124 12012	4700µF	20%	25V
2300	4822 124 40248	10µF	20%	63V
2301	4822 126 11714	4,7nF	20%	16V
2302	4822 126 11714	4,7nF	20%	16V
2303	4822 126 11714	4,7nF	20%	16V

2304	4822 126 11714	4,7nF	20%	16V
2305	4822 124 40433	47µF	20%	25V
2306	4822 124 40433	47µF	20%	25V
2307	4822 126 11714	4,7nF	20%	16V
2308	4822 126 11714	4,7nF	20%	16V

2309	4822 124 21913	1µF	20%	63V
2310	4822 124 21913	1µF	20%	63V
2311	4822 124 40207	100µF	20%	25V
2312	4822 124 40207	100µF	20%	25V
2313	4822 124 40207	100µF	20%	25V

2314	4822 124 40207	100µF	20%	25V
2315	4822 126 11714	4,7nF	20%	16V
2316	4822 126 11714	4,7nF	20%	16V
2317	4822 126 12882	100nF	20%	50V
2318	4822 126 12882	100nF	20%	50V

2319	4822 121 43526	47nF	5%	100V
2320	4822 121 43526	47nF	5%	100V
2321	4822 121 43526	47nF	5%	100V
2322	4822 121 43526	47nF	5%	100V
2323	4822 124 40248	10µF	20%	63V

2324	4822 122 33069	33pF	5%	50V
2325	4822 124 40433	47µF	20%	25V

## CAPACITORS

2326	4822 124 22652	2,2µF	20%	50V
2327	4822 124 40248	10µF	20%	63V
2328	4822 126 12882	100nF	20%	50V
2329	4822 124 21913	1µF	20%	63V
2330	4822 126 12882	100nF	20%	50V

2331	4822 126 12882	100nF	20%	50V
2332	4822 126 12882	100nF	20%	50V
2333	4822 124 40433	47µF	20%	25V
2334	4822 124 40433	47µF	20%	25V
2335	4822 124 40248	10µF	20%	63V

2336	4822 124 40433	47µF	20%	25V
2337	4822 124 40248	10µF	20%	63V
2338	4822 124 21913	1µF	20%	63V
2339	4822 124 40433	47µF	20%	25V
2341	4822 124 23052	100µF	20%	16V

2342	4822 124 23052	100µF	20%	16V
2343	4822 124 21913	1µF	20%	63V

## RESISTORS

3200	4822 053 21106	10MΩ	5%	0,5W
3201	4822 116 52283	4,7kΩ	5%	0,5W
3202	4822 116 52276	3,9kΩ	5%	0,5W
3204	4822 116 52228	680Ω	5%	0,5W
3205	4822 116 52283	4,7kΩ	5%	0,5W

3206	4822 050 21003	10kΩ	2%	0,25W
3207	4822 116 52283	4,7kΩ	5%	0,5W
3208	4822 116 52283	4,7kΩ	5%	0,5W
3209	4822 116 52234	100kΩ	5%	0,5W
3211	4822 052 10478	4,7Ω	5%	NFR

3212	4822 050 23303	33kΩ	1%	0,6W
3300	4822 116 52276	3,9kΩ	5%	0,5W
3301	4822 116 83872	220Ω	5%	0,5W
3302	4822 116 83872	220Ω	5%	0,5W
3303	4822 116 52219	330Ω	5%	0,5W

3304	4822 116 52219	330Ω	5%	0,5W
3305	4822 116 83961	6,8kΩ	5%	0,16W
3306	4822 116 83961	6,8kΩ	5%	0,16W
3307	4822 116 83883	470Ω	5%	0,16W
3308	4822 116 83883	470Ω	5%	0,16W

3309	4822 050 24708	4,7Ω	1%	0,6W
3310	4822 050 24708	4,7Ω	1%	0,6W
3311	4822 050 24708	4,7Ω	1%	0,6W
3312	4822 050 24708	4,7Ω	1%	0,6W
3313	4822 116 83961	6,8kΩ	5%	0,16W

3314	4822 116 83883	470Ω	5%	0,16W
3315	4822 116 52219	330Ω	5%	0,5W
3316	4822 050 11002	1kΩ	5%	0,2W
3317	4822 116 83876	270Ω	5%	0,16W
3318	4822 116 52269	3,3kΩ	5%	0,5W

3319	4822 050 11002	1kΩ	5%	0,2W
3320	4822 050 11002	1kΩ	5%	0,2W
3321	4822 050 11002	1kΩ	5%	0,2W
3322	4822 116 83884	47kΩ	5%	0,16W
3323	4822 116 83884	47kΩ	5%	0,16W

3324	4822 116 52244	15kΩ	5%	0,5W
3325	4822 116 52269	3,3kΩ	5%	0,5W
3326	4822 116 52283	4,7kΩ	5%	0,5W
3327	4822 116 52213	180Ω	5%	0,5W
3328	4822 050 11002	1kΩ	5%	0,2W

3329	4822 053 11221	220Ω	5%	2W
3330	4822 053 11221	220Ω	5%	2W
3331	4822 050 23303	33kΩ	1%	0,6W
3332	4822 116 52256	2,2kΩ	5%	0,16W
3333	4822 116 52199	68Ω	5%	0,16W

3336	4822 050 21003	10kΩ	2%	0,25W
3337	4822 116 52206	120Ω	5%	0,5W
3338	4822 116 52176	10Ω	5%	0,5W
3339	4822 116 52269	3,3kΩ	5%	0,5W
3340	4822 116 83872	220Ω	5%	0,5W

3341	4822 116 52283	4,7kΩ	5%	0,5W
3342	4822 050 21003	10kΩ	2%	0,25W

## ELECTRICAL PARTSLIST POWER2001 MODULE

## RESISTORS

3343	4822 116 52285	470kΩ	5%	0,5W
3344	4822 050 21003	10kΩ	2%	0,25W
3345	4822 116 83876	270Ω	5%	0,16W
3346	4822 116 52249	1,8kΩ	5%	0,16W
3347	4822 116 52249	1,8kΩ	5%	0,16W

3348	4822 050 21003	10kΩ	2%	0,25W
3349	4822 116 52213	180Ω	5%	0,5W
3350	4822 050 21003	10kΩ	2%	0,25W
3351	4822 116 83868	150Ω	5%	0,5W
3352	4822 116 52206	120Ω	5%	0,5W

3353	4822 116 52249	1,8kΩ	5%	0,16W
3354	4822 116 52257	22kΩ	5%	0,5W
3355	4822 116 52256	2,2kΩ	5%	0,16W
3356	4822 116 52234	100kΩ	5%	0,5W
3357	4822 116 52175	100Ω	5%	0,5W

3358	4822 116 83868	150Ω	5%	0,5W
3359	4822 116 52234	100kΩ	5%	0,5W
3360	4822 116 52244	15kΩ	5%	0,5W
3361	4822 050 11002	1kΩ	5%	0,2W
3362	4822 116 83961	6,8kΩ	5%	0,16W

3363	4822 050 11002	1kΩ	5%	0,2W
3368	2322 640 63103	10kΩ	NTC	
3369	4822 116 83876	270Ω	5%	0,16W
3370	4822 050 11002	1kΩ	5%	0,2W
3371	4822 052 10568	5,6Ω	5%	0,33W

3372	4822 116 83884	47kΩ	5%	0,16W
3373	4822 050 21003	10kΩ	2%	0,25W
3374	4822 116 52213	180Ω	5%	0,5W
3376	4822 116 83883	470Ω	5%	0,16W
3377	4822 050 21003	10kΩ	2%	0,25W

3378	4822 116 52231	820Ω	5%	0,5W
3379	4822 116 83872	220Ω	5%	0,5W
3380	4822 050 11002	1kΩ	5%	0,2W
3381	4822 116 52234	100kΩ	5%	0,5W
3382	4822 116 52234	100kΩ	5%	0,5W

3383	4822 116 52234	100kΩ	5%	0,5W
3391	4822 116 52276	3,9kΩ	5%	0,5W
3392	4822 116 52283	4,7kΩ	5%	0,5W

## COILS

5202	4822 157 11832	400µH
5220	4822 157 11832	400µH
5300	4822 157 62255	COIL 18,5 TURNS
5301	4822 157 62255	COIL 18,5 TURNS
5302	4822 157 62255	COIL 18,5 TURNS

5303	4822 157 62255	COIL 18,5 TURNS
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## DIODES

6200 ▲	4822 130 31878	1N4003G
6201 ▲	4822 130 31878	1N4003G
6202	4822 130 11139	GBU8D
6203	4822 130 30621	1N4148
6204	3198 010 5398	

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# AF9 BOARD

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## **BRIEF INTRODUCTION OF THE AF9 BOARD**

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The AF9 Board consists of the following features :

a. TDA7468D IC

TDA7468D IC (7501) which includes functions such as source selection, loudness control, dynamic bass control, treble control, volume control and muting function. Sound features such as ALC, DBB, DSC and IS are controllable via I<sup>2</sup>C Bus from the microprocessor.

The TDA7468D IC caters for 4 input sources namely TUNER, TAPE, CD and AUX. It also has a Mic mix input. In our application, software will switch the input source to previous source MUTE during STANDBY mode and some other occasions where noise from other input source is undesirable.

Note that the input to the TDA7468D IC must be ac coupled to prevent 'pop' noise. Input networks are included to provide appropriate attenuation for various sources.

b. SIMPLE MIC MIXING

The AF9 Board has provisions which can be configured to cater for one of the following:

MM : which caters for Mic mixing with additional Mic amplifier board.

NM : non Mic mixing.

c. DOLBY PRO LOGIC (DPL) INTERFACE

The AF9 Board has provisions which can be configured to cater for DPL.

d. LINE OUT

Line out cinch socket for connection to external amplifier.

e. SUB-WOOFER OUT

Sub-woofer out cinch socket for connection to active sub-woofer speaker.

f. INCREDIBLE SURROUND

Incredible surround effect using transistor circuit to create phase shifting and spatial effect.

g. HEADPHONE AMPLIFIER

Headphone amplifier to drive 32 ohm to 1kohm headphone.

h. CD STANDBY CONTROL

CD Standby Control circuit which switches on the supply to CD servo control IC, digital out buffer IC, HF circuit and the laser light pen in CD mode only.

i. ATTENUATION NETWORK

Attenuation network is provided at the output of the AF9 Board for interfacing with power board of different output power.

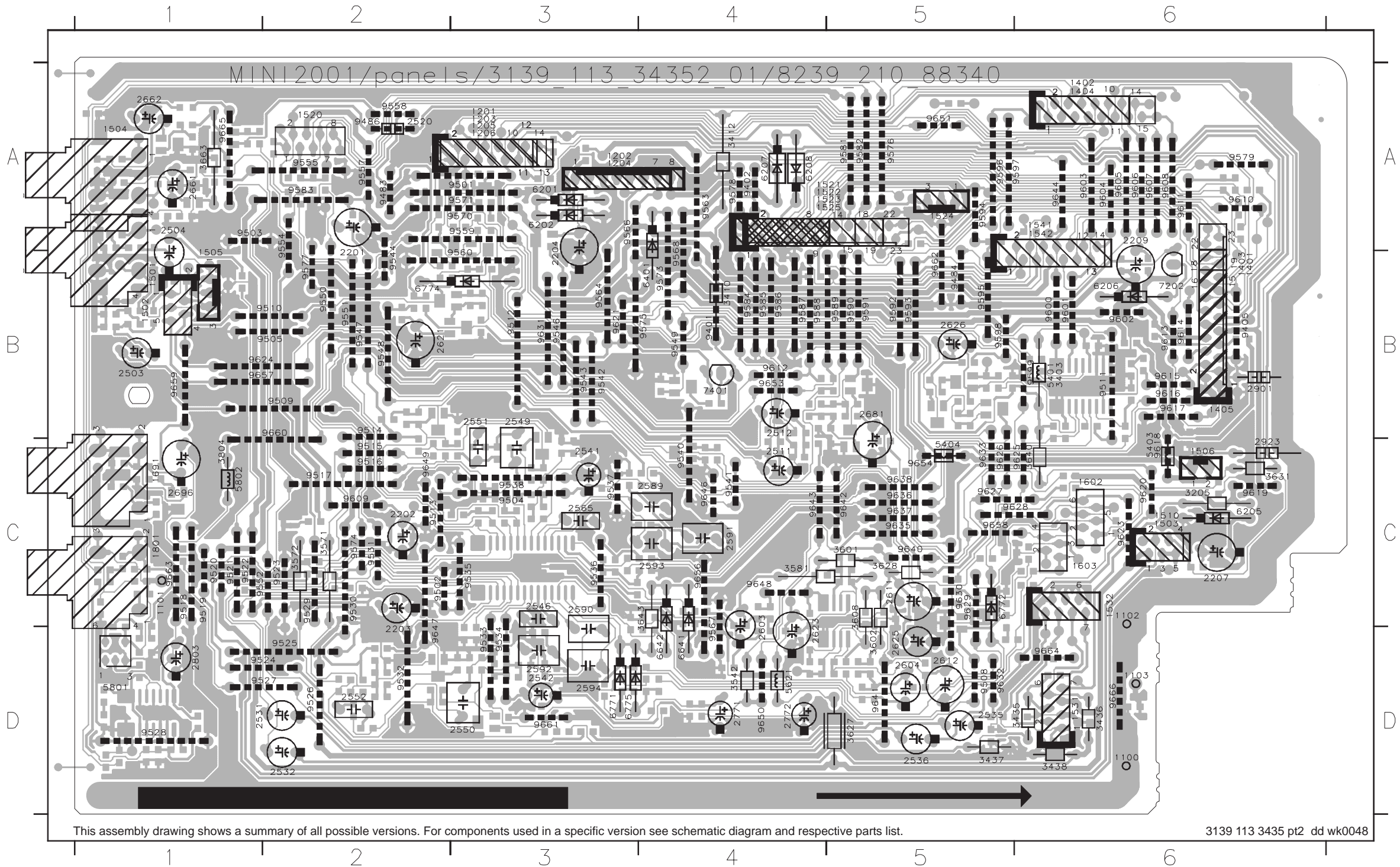
j. CD DIGITAL OUT

CD Digital out cinch socket for connection to external digital audio decoders.



AF9 BOARD - COMPONENT LAYOUT

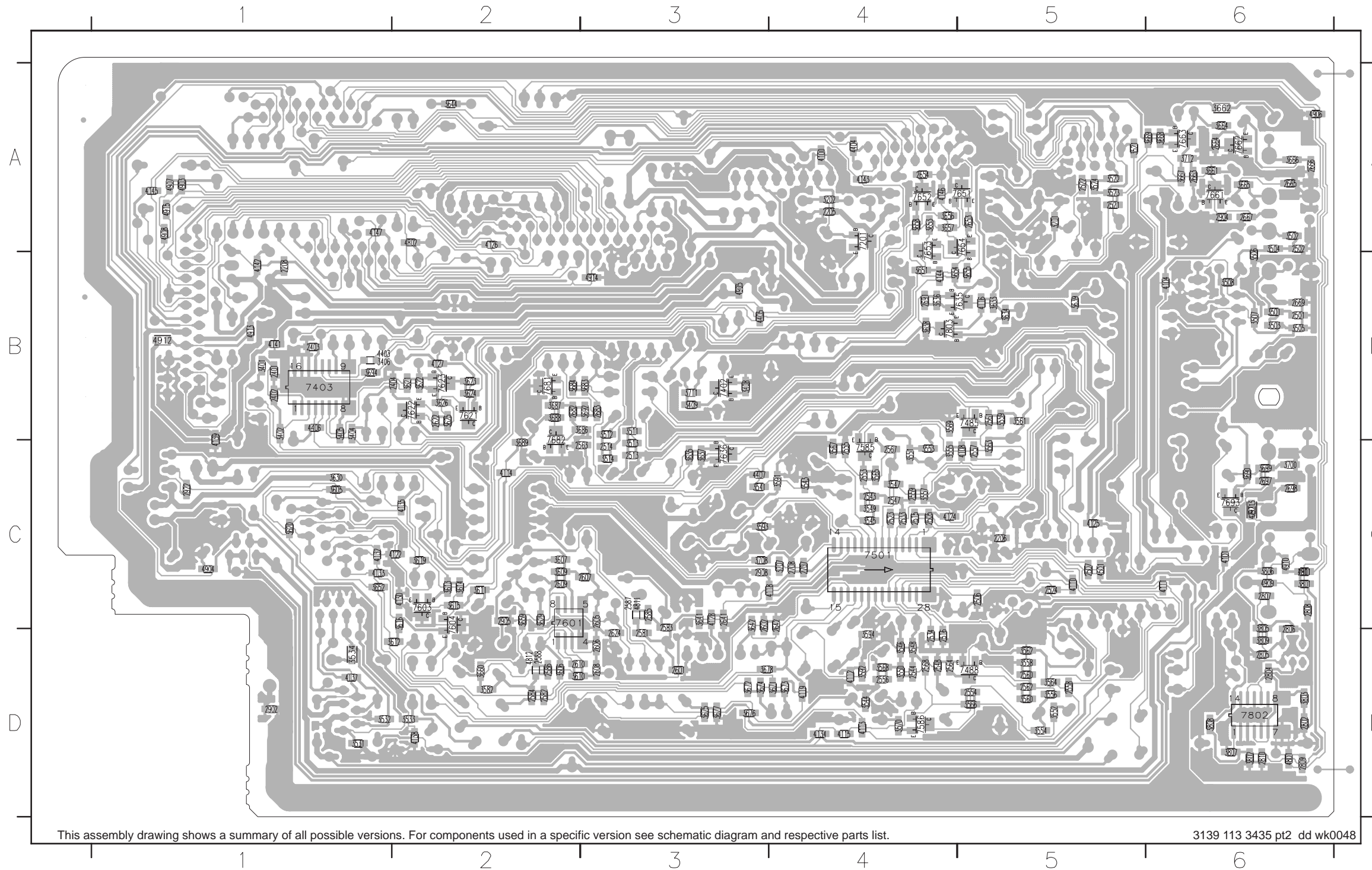
1100	D6	1502	B1	1602	C6	2532	D2	2594	D3	2901	B6	3608	C5	6205	C6	9483	A2	9516	C2	9532	D2	9550	B2	9573	B4	9590	B5	9606	A6	9623	C6	9641	D5	9660	B2
1101	C1	1503	C6	1603	C6	2533	D5	2603	D4	2923	C6	3627	D5	6206	B6	9484	A2	9517	C2	9533	D3	9551	B2	9574	B4	9591	B5	9607	A6	9624	B1	9642	C5	9661	B3
1102	C6	1504	A1	1691	C1	2536	D5	2604	D5	3203	C6	3628	C5	6207	A4	9486	A2	9518	C2	9534	D3	9552	C1	9575	B4	9592	B5	9608	A6	9625	C6	9643	C4	9662	B5
1103	D6	1505	B1	1801	C1	2541	C3	2611	C5	3403	B6	3631	C6	6208	A4	9501	A3	9519	C2	9535	C3	9554	A2	9576	A5	9593	B5	9609	C2	9626	C5	9644	A6	9663	C1
1201	A3	1506	C6	2201	B2	2542	D3	2612	D5	3410	B4	3640	C6	6401	B4	9502	C2	9520	C1	9536	C3	9555	A2	9577	B2	9594	A5	9610	A6	9627	C5	9646	C4	9664	D6
1202	A3	1510	C6	2202	C2	2546	C3	2621	C5	3412	A4	3643	C4	6641	D4	9503	A1	9521	C1	9537	C3	9557	A2	9578	A4	9595	B5	9611	A6	9628	C6	9647	D2	9665	A1
1203	A3	1520	A2	2203	D2	2549	B3	2623	D4	3435	D6	3663	A1	6642	D4	9504	C3	9522	C1	9538	C3	9558	A2	9579	A6	9596	A5	9612	B4	9629	C5	9648	C4	9666	D6
1204	A3	1521	A5	2204	B3	2550	D3	2625	D5	3436	D6	3804	C1	6771	D3	9505	B2	9523	C2	9539	C4	9559	A3	9581	A5	9597	A6	9613	B6	9630	C5	9649	C2		
1205	A3	1522	A5	2207	C6	2551	B3	2626	B5	3437	D5	5401	B6	6772	C5	9508	D5	9524	C4	9540	C4	9560	B3	9582	A5	9598	B5	9614	B6	9631	B3	9650	D4		
1206	A3	1523	A5	2209	A6	2552	D2	2661	A1	3438	D6	5403	C6	6774	D3	9509	B2	9525	D2	9541	B3	9563	A4	9583	A2	9599	B6	9615	B6	9632	D5	9651	A5		
1401	B6	1524	A5	2503	B1	2553	C3	2662	A1	3542	D4	5404	C5	6775	D2	9510	B2	9526	D2	9542	B2	9564	B4	9584	B4	9600	B6	9616	B6	9633	C5	9653	B4		
1402	A6	1525	A5	2504	A1	2558	C4	2681	B5	3571	C2	5621	D5	7202	B6	9511	B6	9527	D2	9543	B2	9566	A3	9585	B4	9601	B6	9617	B6	9634	C5	9654	C5		
1403	B6	1531	D6	2511	C4	2590	C3	2696	C1	3572	C2	5801	D1	7401	B4	9512	B3	9528	D1	9544	B2	9567	D4	9587	B4	9602	B6	9618	C6	9635	C5	9656	C4		
1404	A6	1532	C6	2512	B4	2591	C4	2771	D4	3581	C4	5802	C1	9401	B4	9513	C2	9529	C2	9545	B2	9568	B4	9588	B4	9603	A6	9619	C6	9637	C5	9657	B1		
1405	B6	1541	A6	2520	A2	2592	D3	2772	D4	3601	C5	6201	A3	9402	A4	9514	B2	9530	C2	9546	B2	9570	A3	9588	B4	9604	A6	9620	C6	9638	C5	9658	C5		
1501	B1	1542	A6	2531	D1	2593	C4	2803	D1	3602	D5	6202	A3	9405	B6	9515	C2	9531	C2	9548	B2	9571	A3	9589	B5	9605	A6	9621	B3	9640	C5	9659	B1		





# AF9 BOARD - CHIP LAYOUT

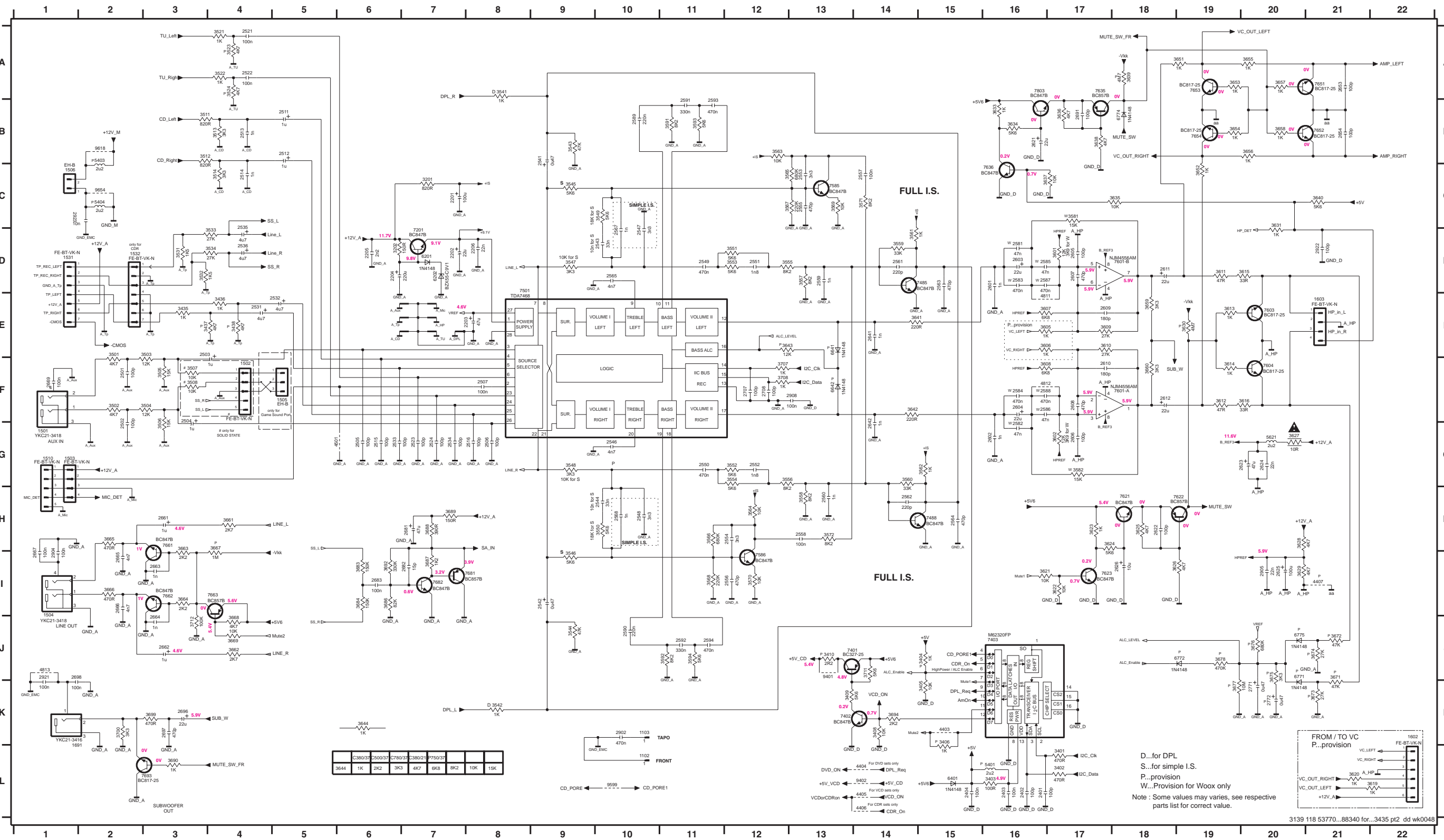
2205	A4	2523	C4	2563	C3	2609	C2	2698	C6	3201	A5	3512	B3	3549	C4	3567	C4	3615	C2	3639	B5	3666	A6	3690	C6	4101	C6	4130	C2	4406	B1	4913	B1	7636	C3
2206	C5	2524	C5	2564	D4	2610	D2	2707	C4	3202	A4	3513	C3	3550	D4	3568	D4	3616	C2	3641	C3	3667	A6	3692	B3	4104	B6	4132	C1	4407	C3	4914	B3	7651	A5
2208	B1	2533	C4	2567	C4	2622	B2	2708	C4	3401	B1	3514	C3	3551	C4	3569	B4	3619	C2	3642	C3	3668	A6	3694	B1	4108	C5	4133	C1	4501	C5	4915	A1	7652	A4
2401	B1	2534	D4	2568	D4	2624	D3	2801	C6	3402	B1	3521	A5	3552	D5	3570	D4	3620	C1	3644	A2	3669	A6	3699	C6	4110	C5	4134	D4	4801	D6	7201	A4	7653	A4
2402	B1	2543	C4	2581	D3	2641	C3	3404	D6	3404	B1	3522	A5	3553	C4	3582	D2	3621	B2	3645	B4	3670	D4	3700	C6	4111	C6	4135	C2	4802	A2	7402	B3	7654	A5
2403	B1	2544	D4	2582	D2	2642	C4	2804	D6	3405	B1	3523	A5	3554	D5	3591	C4	3622	B2	3646	C1	3672	D3	3707	C4	4112	D4	4137	D1	4811	C3	7403	B1	7661	A6
2404	B2	2547	C4	2583	C3	2643	A5	2805	D6	3406	B1	3524	A5	3555	C4	3592	D4	3623	B2	3647	A4	3673	D4	3708	C3	4113	D4	4138	D2	4812	D2	7485	B5	7662	A6
2501	B6	2548	D4	2584	D2	2654	A4	2806	D6	3408	B1	3531	D1	3556	D5	3593	C3	3624	B2	3648	B4	3674	D3	3711	B3	4114	C2	4139	B1	4813	C6	7488	D5	7663	A6
2502	A6	2553	C4	2585	C3	2663	A6	2807	C6	3409	B6	3532	D2	3557	C4	3594	D4	3625	B2	3649	B5	3675	D3	3712	A6	4115	D4	4141	B1	4903	A1	7501	C4	7681	B2
2505	C4	2554	D5	2586	D2	2664	A6	2808	C6	3501	B6	3533	D1	3558	D5	3605	C1	3626	B2	3650	A4	3676	D3	3801	C6	4116	B5	4142	B1	4904	C1	7585	C4	7682	B2
2506	C5	2555	C4	2587	C3	2665	A6	2809	D6	3502	A6	3534	D1	3559	B5	3606	D2	3629	C2	3657	A4	3677	D3	3802	D6	4118	C4	4143	A4	4905	B3	7586	D4	7693	C6
2507	C5	2556	D4	2588	D2	2666	A6	2810	D6	3503	B6	3541	C3	3560	D5	3607	C2	3629	C1	3658	A4	3678	D3	3803	D6	4119	D4	4144	B4	4906	A6	7601	C2	7802	D6
2513	C3	2557	C5	2601	D3	2667	A6	2902	D1	3504	A6	3543	C4	3561	B5	3609	C2	3633	B5	3659	D2	3683	B3	3805	C6	4122	C2	4145	A1	4907	A1	7603	C2	7803	B4
2514	C3	2558	D5	2602	C3	2669	B6	2904	A6	3505	B6	3544	D4	3562	D5	3610	D2	3634	B5	3660	C2	3684	B2	3806	C6	4124	C4	4146	A4	4908	A1	7604	C2		
2515	C4	2559	C4	2605	C3	2682	B2	2905	C2	3506	B6	3545	C4	3563	C5	3611	C2	3635	C3	3661	A6	3686	B3	3807	D6	4125	C5	4147	A1	4909	C6	7621	B2		
2516	D4	2560	D5	2606	D3	2683	B3	2908	C3	3507	B6	3546	D4	3564	D5	3612	D2	3636	B4	3662	A6	3687	B2	3808	D6	4126	A2	4403	B1	4910	C6	7622	B2		
2521	A5	2561	B5	2607	C3	2691	B4	2921	C6	3508	B6	3547	C4	3565	C4	3613	C2	3637	C3	3664	A6	3688	B2	3809	D6	4127	B2	4404	A4	4911	C6	7623	B2		
2522	A5	2562	D5	2608	D3	2697	C6	2922	C1	3511	B3	3548	D4	3566	D5	3614	C2	3638	B4	3665	A6	3689	C2	4100	A4	4128	C3	4405	B3	4912	B1	7635	B5		



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

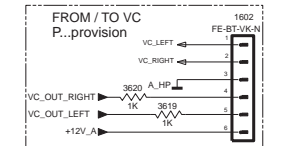
# AF9 BOARD - CIRCUIT DIAGRAM (PART 1)

1102 L10	1531 D1	2205 D6	2504 G3	2516 G8	2535 D4	2549 D11	2558 H13	2568 H10	2589 B10	2604 F16	2621 B16	2654 B21	2681 H7	2771 K20	3201 C7	3409 K13	3504 F3	3521 A4	3542 K8	3551 D12	3560 G14	3569 C13	3594 J11	3611 D19	3622 H7	3631 C20	3641 E14	3656 B20	3665 H2	3675 J20	3689 H7	3712 J3	4813 J1	6642 F13	7485 D14	7621 H18	7661 H3	9599 L10	
1103 K10	1532 O2	2206 D8	2505 G6	2517 A4	2536 D4	2550 D11	2559 D13	2561 D16	2590 J10	2605 D17	2622 H18	2661 H3	2682 T7	2772 K20	3202 D6	3410 J13	3505 F3	3522 A4	3543 B9	3552 G12	3561 D14	3570 H2	3601 D17	3612 F19	3623 H17	3633 B16	3642 F14	3657 A20	3666 G2	3676 J20	3690 L3	4403 K10	5401 L16	6771 J20	7486 H15	7622 H18	7662 G3	9618 B2	
1501 G1	1602 K22	2401 L16	2506 G8	2521 A4	2541 B8	2552 D12	2560 H13	2562 G16	2591 A11	2606 G17	2623 G20	2662 G3	2683 B6	2900 K10	3401 L17	3435 E3	3506 G3	3523 A4	3544 J9	3553 D12	3562 G15	3571 C14	3602 G17	3613 E19	3624 H17	3634 B16	3643 E12	3658 B20	3667 H4	3677 K19	3694 K14	4404 L14	5402 B2	6772 J19	7488 H15	7623 H18	7663 A3	9619 C2	
1502 F4	1603 E21	2402 L18	2507 F8	2522 G7	2542 B9	2553 D12	2561 D14	2563 D16	2592 J11	2607 D17	2624 G20	2663 D3	2684 B7	2901 H1	3402 L17	3436 E4	3507 F3	3524 A4	3545 C9	3554 G12	3563 B12	3572 H13	3605 E16	3614 F19	3625 H18	3635 C18	3644 K6	3659 E18	3668 J4	3678 J19	3694 K14	4405 L14	5404 C2	6774 B18	7489 H15	7624 H18	7663 A7	9620 A2	
1503 G1	1601 K2	2403 L18	2511 B5	2524 G7	2543 D10	2553 D12	2562 H14	2564 F16	2593 A11	2608 F17	2625 B20	2664 B3	2685 K3	2902 K0	3403 L18	3437 E3	3508 F3	3521 D3	3546 B9	3555 D12	3564 H12	3581 C17	3606 E16	3615 D30	3626 H18	3636 B17	3645 A19	3660 B16	3669 J4	3679 K19	3695 K3	4406 L14	5401 G20	6775 J20	7490 H15	7625 H18	7663 A7	9621 A2	
1504 I1	2201 C7	2404 L15	2512 B5	2521 E4	2544 H10	2554 H12	2563 D15	2565 D16	2594 J11	2609 E17	2626 H18	2665 D2	2686 K3	2903 F13	3404 J15	3438 E4	3511 B3	3523 D3	3547 D9	3556 G12	3565 C12	3582 G17	3607 E16	3616 F20	3627 G20	3637 C16	3646 C19	3661 H4	3671 J21	3688 B6	3700 K2	4407 I21	6201 D7	7201 C7	7601 A F18	7651 A21	9622 L3		
1505 F5	2202 O7	2501 F2	2513 B4	2526 E5	2546 G10	2555 C13	2564 H15	2566 F16	2601 D16	2610 F17	2641 E14	2666 I2	2687 J1	2921 J1	3405 K15	3401 E2	3496 K15	3501 E2	3512 B3	3523 D3	3548 G9	3557 D13	3566 H11	3591 B11	3608 F16	3619 L22	3628 H20	3638 B17	3653 A19	3662 J4	3672 J21	3689 B6	3707 F12	4401 G6	6202 O7	7401 J14	7601 B D18	7652 B21	9603 A16
1506 C1	2203 E8	2502 G2	2514 C4	2523 G6	2547 D10	2556 H12	2565 D10	2567 D16	2602 D16	2611 D18	2642 G14	2667 I1	2688 I1	2922 I21	3406 K15	3502 F2	3513 B4	3524 D4	3549 C10	3558 H13	3567 C12	3592 I11	3599 E17	3620 L21	3629 D20	3639 A18	3654 B19	3663 B3	3673 K21	3687 I7	3708 F12	4401 E16	6401 L15	7402 K13	7602 E20	7653 A19	9401 J13		
1510 G1	2204 D6	2503 E3	2515 G8	2524 G7	2548 H10	2557 C14	2567 D10	2568 F16	2603 D16	2612 F18	2653 A21	2669 F1	2708 F12	2923 C1	3408 K14	3503 E3	3514 C4	3541 A8	3550 H10	3559 D14	3568 H11	3593 B11	3610 E17	3621 I16	3630 E19	3640 C21	3655 A20	3664 D3	3674 J21	3688 H7	3711 J14	4412 F16	6441 E13	7403 J16	7604 F20	7654 B19	9402 L14		



3380/3	5000/3	780/3	330/21	775/37				
3644	1K	2K2	3K3	4K7	8K3	9K2	10K	15K

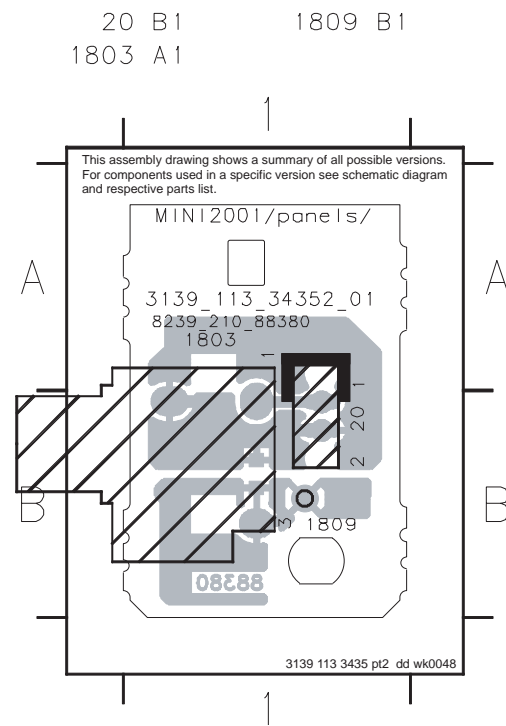
D...for DPL  
 S...for simple I.S.  
 P...provision  
 W...Provision for Woox only  
 Note : Some values may varies, see respective parts list for correct value.



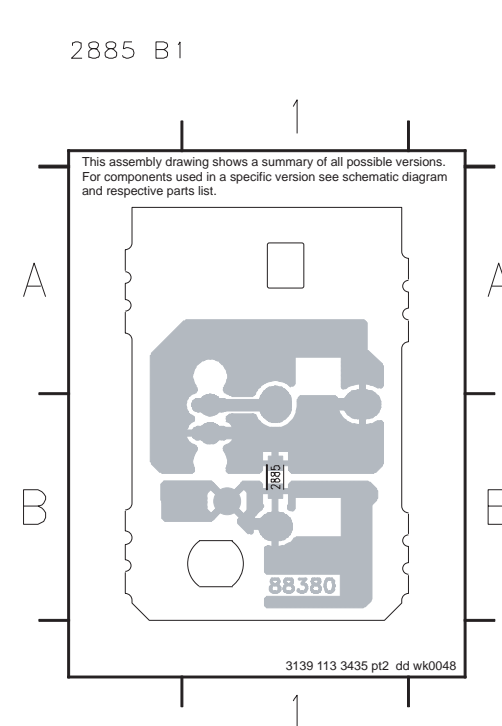




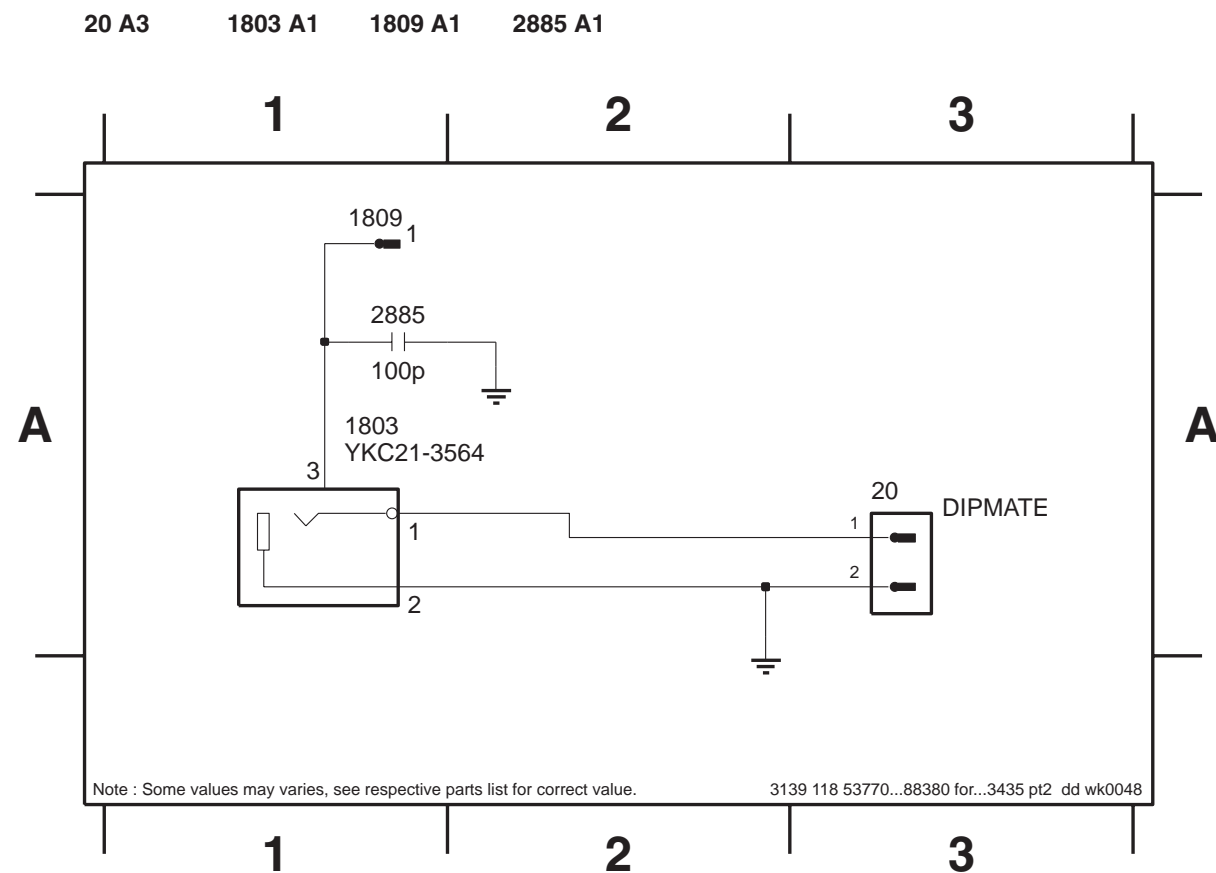
**VIDEO OUT CINCH BOARD - COMPONENT LAYOUT**



**VIDEO OUT CINCH BOARD - CHIP LAYOUT**



**VIDEO OUT CINCH PART - CIRCUIT DIAGRAM**



**ELECTRICAL PARTS LIST - AF9 BOARD**

**MISCELLANEOUS**

1201	4822 267 10738	Flex Connector 13P
1401	4822 265 11553	Flex Connector 19P
1402	4822 267 11039	Flex Connector 11P
1501	4822 265 20553	Cinch Socket - Aux in
1504	4822 265 20553	Cinch Socket - Line out
1520	4822 265 11515	Flex Connector 8P
1522	4822 265 11553	Flex Connector 19P
1531	4822 267 10953	Flex Connector 7P
1603	4822 267 10733	Flex Connector 4P
1801	4822 267 31729	Cinch Socket - Digital out

2544	5322 126 11583	10nF 10% 50V
2546	4822 121 43856	4,7nF 5% 250V
2547	5322 126 11579	3,3nF 10% 63V
2548	5322 126 11579	3,3nF 10% 63V
2565	4822 121 43856	4,7nF 5% 250V
2567	3198 016 31020	1nF 25V
2568	3198 016 31020	1nF 25V
2589	4822 121 42408	220nF 5% 63V
2590	4822 121 42408	220nF 5% 63V
2591	5322 121 42661	330nF 5% 63V
2592	5322 121 42661	330nF 5% 63V
2593	4822 121 51252	470nF 5% 63V
2594	4822 121 51252	470nF 5% 63V
2601	3198 016 31020	1nF 25V
2602	3198 016 31020	1nF 25V
2603	4822 124 81151	22μF 50V
2604	4822 124 81151	22μF 50V
2605	4822 122 31765	100pF 2% 63V
2606	4822 122 31765	100pF 2% 63V
2607	4822 126 13881	470pF 5% 50V
2608	4822 126 13881	470pF 5% 50V
2609	4822 126 14508	180pF 5% 50V
2610	4822 126 14508	180pF 5% 50V
2611	4822 124 81151	22μF 50V
2612	4822 124 81151	22μF 50V
2621	4822 124 81151	22μF 50V
2622	4822 122 31765	100pF 2% 63V
2623	4822 124 40433	47μF 20% 25V
2624	3198 017 42230	22nF 50V
2625	4822 124 40207	100μF 20% 25V
2626	4822 124 81151	22μF 50V
2641	3198 016 31020	1nF 25V
2642	3198 016 31020	1nF 25V
2653	4822 122 31765	100pF 2% 63V
2654	4822 122 31765	100pF 2% 63V
2661	4822 124 21913	1μF 20% 63V
2662	4822 124 21913	1μF 20% 63V
2663	3198 016 31020	1nF 25V
2664	3198 016 31020	1nF 25V
2665	4822 126 13193	4,7nF 10% 63V
2666	4822 126 13193	4,7nF 10% 63V
2667	4822 126 14305	100nF 10% 16V
2669	4822 126 14305	100nF 10% 16V
2681	4822 124 40433	47μF 20% 25V
2682	4822 122 33752	15pF 5% 50V
2683	4822 126 14305	100nF 10% 16V
2691	4822 122 31765	100pF 2% 63V
2707	4822 122 31765	100pF 2% 63V
2708	4822 122 31765	100pF 2% 63V
2771	4822 124 41407	0,47μF 20% 63V
2801	4822 126 14305	100nF 10% 16V
2802	3198 016 31020	1nF 25V

**CAPACITORS**

2201	4822 124 40207	100μF 20% 25V
2202	4822 124 81151	22μF 50V
2203	4822 124 40433	47μF 20% 25V
2204	4822 124 40196	220μF 20% 16V
2205	4822 126 14238	2,2nF 50V
2206	4822 126 14494	22nF 10% 25V
2207	4822 124 40433	47μF 20% 25V
2208	4822 126 14305	100nF 10% 16V
2209	4822 124 41751	47μF 20% 50V
2401	4822 122 31765	100pF 2% 63V
2402	4822 122 31765	100pF 2% 63V
2403	4822 126 14305	100nF 10% 16V
2404	4822 126 14305	100nF 10% 16V
2501	4822 122 31765	100pF 2% 63V
2502	4822 122 31765	100pF 2% 63V
2503	4822 124 21913	1μF 20% 63V
2504	4822 124 21913	1μF 20% 63V
2505	4822 122 31765	100pF 2% 63V
2506	4822 122 31765	100pF 2% 63V
2507	4822 126 14305	100nF 10% 16V
2511	4822 124 21913	1μF 20% 63V
2512	4822 124 21913	1μF 20% 63V
2513	3198 016 31020	1nF 25V
2514	3198 016 31020	1nF 25V
2515	4822 122 31765	100pF 2% 63V
2516	4822 122 31765	100pF 2% 63V
2520	4822 121 51387	10nF 20% 16V
2521	4822 126 14305	100nF 10% 16V
2522	4822 126 14305	100nF 10% 16V
2523	4822 122 31765	100pF 2% 63V
2524	4822 122 31765	100pF 2% 63V
2531	4822 124 40769	4,7μF 20% 100V
2532	4822 124 40769	4,7μF 20% 100V
2533	4822 122 31765	100pF 2% 63V
2534	4822 122 31765	100pF 2% 63V
2535	4822 124 40769	4,7μF 20% 100V
2536	4822 124 40769	4,7μF 20% 100V
2541	4822 124 41407	0,47μF 20% 63V
2542	4822 124 41407	0,47μF 20% 63V
2543	5322 126 11583	10nF 10% 50V



**ELECTRICAL PARTS LIST - AF9 BOARD****CAPACITORS**

2803	4822 124 40756	1µF 20% 100V	3593	4822 051 30562	5k6 5% 0,063W
2804	4822 126 14305	100nF 10% 16V	3594	4822 051 30562	5k6 5% 0,063W
2805	4822 126 14305	100nF 10% 16V	3601	4822 116 52238	12k 5% 0,5W
2806	4822 122 33753	150pF 5% 50V	3602	4822 116 52238	12k 5% 0,5W
2807	4822 126 14305	100nF 10% 16V	3607	4822 051 30682	6k8 5% 0,062W
2808	4822 126 14305	100nF 10% 16V	3608	4822 116 83961	6k8 5%
2809	4822 126 14305	100nF 10% 16V	3609	4822 051 30273	27k 5% 0,062W
2810	4822 122 33777	47pF 5% 63V	3610	4822 051 30273	27k 5% 0,062W
2901	4822 126 12882	100nF +80/-20% 50V	3611	4822 051 30479	47R 5% 0,062W
2902	3198 017 44740	470nF 10V	3612	4822 051 30479	47R 5% 0,062W
2905	3198 017 42230	22nF 50V	3613	4822 051 30102	1k 5% 0,062W
2908	4822 126 14305	100nF 10% 16V	3614	4822 051 30102	1k 5% 0,062W

**RESISTORS**

3201	4822 117 12968	820R 5% 0,62W	3615	4822 051 30339	33R 5% 0,062W
3202	4822 051 30151	150R 5% 0,062W	3616	4822 051 30339	33R 5% 0,062W
3205	4822 116 52289	5k6 5% 0,5W	3621	4822 051 30103	10k 5% 0,062W
3401	4822 051 30471	470R 5% 0,062W	3622	4822 051 30103	10k 5% 0,062W
3402	4822 051 30471	470R 5% 0,062W	3623	4822 051 30102	1k 5% 0,062W
3403	4822 116 52175	100R 5% 0,5W	3624	4822 051 30562	5k6 5% 0,063W
3405	4822 051 30103	10k 5% 0,062W	3625	4822 051 30472	4k7 5% 0,062W
3408	4822 051 30103	10k 5% 0,062W	3626	4822 051 30472	4k7 5% 0,062W
3409	4822 051 30562	5k6 5% 0,063W	3627	4822 052 10109	△ 10R 5% 0,33W
3412	4822 050 11002	1k 1% 0,4W	3628	4822 116 52283	4k7 5% 0,5W
3435	4822 050 11002	1k 1% 0,4W	3629	4822 051 30472	4k7 5% 0,062W
3436	4822 050 11002	1k 1% 0,4W	3631	4822 050 11002	1k 1% 0,4W
3501	4822 051 30472	4k7 5% 0,062W	3633	4822 051 30102	1k 5% 0,062W
3502	4822 051 30472	4k7 5% 0,062W	3634	4822 051 30562	5k6 5% 0,063W
3503	4822 051 30123	12k 5% 0,062W	3635	4822 051 30103	10k 5% 0,062W
3504	4822 051 30123	12k 5% 0,062W	3636	4822 051 30472	4k7 5% 0,062W
3505	4822 051 30153	15k 5% 0,062W	3637	4822 051 30103	10k 5% 0,062W
3506	4822 051 30153	15k 5% 0,062W	3638	4822 051 30472	4k7 5% 0,062W
3511	4822 117 12968	820R 5% 0,62W	3640	4822 116 52289	5k6 5% 0,5W
3512	4822 117 12968	820R 5% 0,62W	3641	4822 051 30221	220R 5% 0,062W
3513	4822 051 30102	1k 5% 0,062W	3642	4822 051 30221	220R 5% 0,062W
3514	4822 051 30102	1k 5% 0,062W	3644	4822 117 12902	8k2 1% 0,063W /22
3521	4822 051 30102	1k 5% 0,062W	3644	4822 051 30332	3k3 5% 0,062W /37
3522	4822 051 30102	1k 5% 0,062W	3651	4822 051 30102	1k 5% 0,062W
3531	4822 051 30152	1k5 5% 0,062W	3652	4822 051 30102	1k 5% 0,062W
3532	4822 051 30152	1k5 5% 0,062W	3653	4822 051 30102	1k 5% 0,062W
3533	4822 051 30273	27k 5% 0,062W	3654	4822 051 30102	1k 5% 0,062W
3534	4822 116 52264	27k 5% 0,5W	3655	4822 051 30102	1k 5% 0,062W
3543	4822 117 12925	47k 1% 0,063W	3656	4822 051 30102	1k 5% 0,062W
3544	4822 117 12925	47k 1% 0,063W	3657	4822 051 30102	1k 5% 0,062W
3545	4822 051 30562	5k6 5% 0,063W	3658	4822 051 30102	1k 5% 0,062W
3546	4822 051 30562	5k6 5% 0,063W	3661	4822 051 30272	2k7 5% 0,062W
3547	4822 051 30103	10k 5% 0,062W	3662	4822 051 30272	2k7 5% 0,062W
3548	4822 051 30103	10k 5% 0,062W	3663	4822 116 52256	2k2 5% 0,5W
3549	4822 051 30183	18k 5% 0,062W	3664	4822 051 30222	2k2 5% 0,062W
3550	4822 051 30183	18k 5% 0,062W	3665	4822 051 30471	470R 5% 0,062W
3591	4822 117 12902	8k2 1% 0,063W	3666	4822 051 30471	470R 5% 0,062W
3592	4822 117 12902	8k2 1% 0,063W	3668	4822 051 30472	4k7 5% 0,062W
			3669	4822 051 30103	10k 5% 0,062W
			3683	4822 051 30154	150k 5% 0,062W

**ELECTRICAL PARTS LIST - AF9 BOARD****RESISTORS**

3684	4822 051 30154	150k 5% 0,062W
3686	4822 117 12864	82k 5% 0,6W
3687	4822 117 11817	1k2 1% 1/16W
3688	4822 051 30391	390R 5% 0,062W
3689	4822 051 30151	150R 5% 0,062W
3692	4822 051 30334	330k 5% 0,062W
3694	4822 051 30222	2k2 5% 0,062W
3707	4822 051 30102	1k 5% 0,062W
3708	4822 051 30102	1k 5% 0,062W
3711	4822 051 30562	5k6 5% 0,063W
3801	4822 051 30471	470R 5% 0,062W
3802	4822 051 30223	22k 5% 0,062W
3803	4822 051 30561	560R 5% 0,062W
3804	4822 116 83872	220R 5% 0,5W
3805	4822 051 30221	220R 5% 0,062W
3807	4822 051 30222	2k2 5% 0,062W
3808	4822 051 30223	22k 5% 0,062W
3809	4822 051 30479	47R 5% 0,062W
4100	4822 051 30008	0R Jumper 0603
4101	4822 051 30008	0R Jumper 0603
4102	4822 051 30008	0R Jumper 0603
4104	4822 051 30008	0R Jumper 0603
4108	4822 051 30008	0R Jumper 0603
4110	4822 051 30008	0R Jumper 0603
4111	4822 051 30008	0R Jumper 0603
4112	4822 051 30008	0R Jumper 0603
4113	4822 051 30008	0R Jumper 0603
4114	4822 051 30008	0R Jumper 0603
4115	4822 051 30008	0R Jumper 0603
4116	4822 051 30008	0R Jumper 0603
4118	4822 051 30008	0R Jumper 0603
4119	4822 051 30008	0R Jumper 0603
4122	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
4130	4822 051 30008	0R Jumper 0603
4132	4822 051 30008	0R Jumper 0603
4133	4822 051 30008	0R Jumper 0603
4134	4822 051 30008	0R Jumper 0603
4135	4822 051 30008	0R Jumper 0603
4137	4822 051 30008	0R Jumper 0603
4138	4822 051 30008	0R Jumper 0603
4139	4822 051 30008	0R Jumper 0603
4141	4822 051 30008	0R Jumper 0603
4142	4822 051 30008	0R Jumper 0603
4143	4822 051 30008	0R Jumper 0603
4144	4822 051 30008	0R Jumper 0603
4145	4822 051 30008	0R Jumper 0603
4146	4822 051 30008	0R Jumper 0603

4147	4822 051 30008	0R Jumper 0603
4403	4822 051 30008	0R Jumper 0603
4501	4822 051 30008	0R Jumper 0603
4811	4822 051 30008	0R Jumper 0603
4812	4822 051 30008	0R Jumper 0603
4903	4822 051 30008	0R Jumper 0603
4904	4822 051 30008	0R Jumper 0603
4908	4822 051 30008	0R Jumper 0603
4913	4822 051 30008	0R Jumper 0603

**COILS & FILTERS**

5621	4822 157 62552	Coil 2,2 $\mu$ H 5%
5801	2422 536 00019	Transformer 6RG

**DIODES**

6201	4822 130 30621	1N4148
6202	4822 130 30862	BZX55-C9V1
6205	4822 130 61219	BZX79-C10
6206	4822 130 30621	1N4148
6207	4822 130 31878	1N4003G
6208	4822 130 31878	1N4003G
6401	4822 130 30621	1N4148
6774	4822 130 30621	1N4148

**TRANSISTORS & INTEGRATED CIRCUITS**

7201	5322 130 60159	BC847B
7202	4822 209 72042	MC78L05ACP
7401	4822 130 41246	BC327-25
7402	5322 130 60159	BC847B
7403	4822 209 17345	M62320FP
7501	9322 150 74668	TDA7468D
7601	4822 209 31378	NJM4556AM
7603	4822 130 42804	BC817-25
7604	4822 130 42804	BC817-25
7621	5322 130 60159	BC847B
7622	4822 130 60373	BC857B
7623	5322 130 60159	BC847B
7635	4822 130 60373	BC857B
7636	5322 130 60159	BC847B
7651	4822 130 42804	BC817-25
7652	4822 130 42804	BC817-25
7653	4822 130 42804	BC817-25
7654	4822 130 42804	BC817-25
7661	5322 130 60159	BC847B
7662	5322 130 60159	BC847B
7663	4822 130 60373	BC857B
7681	4822 130 60373	BC857B
7682	5322 130 60159	BC847B
7802	4822 209 17235	74LVU04D
7803	5322 130 60159	BC847B

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





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

0101	3139 118 15430	Cabinet Front /22	0204	4822 402 11246	Bracket Right	185	D3 x 10
0101	3139 118 15420	Cabinet Front /37	0205	4822 402 11245	Bracket Left	186	D3 x 12
0103	3139 118 14320	Window CDC	0206	3139 111 01380	Spring Torsion Right	211	D3 x 12
0105	3139 118 14330	Button Set CDC Select	0207	3139 111 01390	Spring Torsion Left	212	D3 x 12
0106	3139 118 14340	Cover Tray CDC	0209	4822 492 42787	Spring Cassette	213	D3 x 12
0107	4822 454 13408	Badge Philips	0246	4822 462 40683	Foot Rubber (SQ)	214	M3 x 12
0111	3139 118 14350	Button Standby/Eco Power /22	0251	3139 114 72750	Bracket CDC Left	215	M3 x 12
0111	3139 118 14870	Button Power /37	0252	3139 114 72760	Bracket CDC Right	226	M3 x 6
0115	3139 118 14370	Cover Ring Volume/VU Chrome	0253	3139 114 73570	Panel Left	227	M3 x 6
0116	3139 118 15210	Window Display /22	0254	3139 114 73580	Panel Right	231	M3 x 6
0116	3139 118 14830	Window Display /37	0255	3139 114 73590	Cover Top	232	M3 x 6
0117	3139 118 14380	Knob Volume Rotary	0256	3139 114 72790	Panel Rear	276	M3 x 6
0120	3139 114 72360	Frame Button Set Source Select	0271	3139 114 71010	Stopper Heatsink	277	M3 x 10
0121	3139 118 14390	Button Cap Source-CD	0309	4822 462 40683	Plate (Foot)	278	D3 x 12
0122	3139 118 14400	Button Cap Source-Tuner	0310	4822 462 40683	Plate (Foot)	279	D3 x 12
0123	3139 118 14410	Button Cap Source-Tape	0350	3139 118 78320	L/R Loudspeaker Box /22	280	D3 x 12
0124	3139 118 14420	Button Cap Source-Aux	0350	3139 118 78310	L/R Loudspeaker Box /37	283	D3 x 12
0125	3139 114 72410	Lightguide Source-CD	0351	4822 303 50063	FM Aerial /22	285	D3 x 12
0126	3139 114 72420	Lightguide Source-Tuner	0351	4822 320 11094	FM Antenna Wire /37	286	D3 x 12
0127	3139 114 72430	Lightguide Source-Tape	0356	3139 118 78260	Remote Control	287	D3 x 12
0128	3139 114 72440	Lightguide Source-Aux	0384	4822 303 50082	AM Frame Aerial	292	M3 x 12
0129	3139 118 14720	Button Set RDS/NEWS /22	0385	4822 321 10249	△ Mains Cord /22	293	M3 x 12
0130	3139 118 14440	Button Prog/Time-Disp	0385	4822 321 11466	△ Mains Cord /37	294	M3 x 6
0131	3139 118 15450	Cover Ring Func Control	0387	3139 115 20580	Instruction For Use /22	295	D3 x 12
0132	3139 118 15460	Button Set Func Control	0387	3139 115 20570	Instruction For Use /37	296	D3 x 12
0133	3139 118 14470	Cap Function Control	1202	3139 110 35350	FFC Foil 11P/220/11P AD	297	D2 x 8
0134	3139 118 15170	Cover Ring DSC/VAC/IS	1204	3139 110 34600	FFC Foil 07P/280/07P AD	298	D3 x 10
0135	3139 118 14770	Button DSC/VAC/IS	1401	3139 110 34970	FFC Foil 19P/180/19P AD	299	D3 x 10
0140	3139 118 14500	Knob Jog Rotary	1402	3139 110 34610	FFC Foil 11P/180/11P AD	300	D3 x 12
0141	3139 118 14850	Button WOOX Plus	1403	3139 110 35130	FFC Foil 06P/180/06P AD	301	D3 x 12
0142	3139 114 72470	Frame Button Set WOOX	1404	3139 110 35280	FFC Foil 10P/120/10P AD	302	D3 x 12
0144	3139 118 14840	Button Plus WOOX Level	1405	3139 110 35000	FFC Foil 08P/120/08P AD	304	D3 x 12
0148	3139 118 15700	Cover Orn Control /22	1406	4822 320 12752	FFC Foil 07P/180/07P AD	305	D2 x 8
0148	3139 118 15690	Cover Orn Control /37	1407	3139 110 34010	FFC Foil 06P/140/06P AD	306	D3 x 12
0149	3139 118 14810	Cover Control WOOX	1501	3139 110 35120	FFC Foil 04P/400/04P BD		
0151	3139 118 15480	Cover Cassette Left	1503	3139 110 34910	FFC Foil 19P/120/19P BD		
0152	3139 118 15490	Cover Cassette Right	1601	3139 110 35050	FFC Foil 08P/220/08P AD		
0153	3139 118 14560	Lens Cassette Left	1702	4822 320 12654	FFC Foil 07P/220/07P AD		
0154	3139 118 14570	Lens Cassette Right	5001	3103 308 30630	△ Mains Transformer /22		
0197	3139 114 68630	Door Cassette Right	5001	3103 308 30620	△ Mains Transformer /37		
0198	3139 114 68620	Door Cassette Left	Note : Only the parts mentioned in this list are normal				
0199	4822 402 10621	Push-Catch	service spare parts.				
0200	4822 529 10322	Damper Assembly					
0201	3139 114 68640	Push Catch Left					
0203	4822 492 11344	Spring Compression					