

Service
Service
Service



Service Manual

TABLE OF CONTENTS

	Page
Location of pc boards & Version variations	1-2
Technical Specifications	1-3
Measurement setup	1-4
Service Aids, Safety Instruction, etc	1-5 to 1-6
Preparations & Controls	1-7
Disassembly Instructions & Service positions	2
Service Test Program & DEMO Mode	3
Set Block diagram	4
Set Wiring diagram	5
Front Board	6
ECO6 Tuner Board : Systems Non-Cenelec	7A
ECO6 Tuner Board : Systems Cenelec	7B
ETF7 Tape Module	9
3CDC-LC-MP3CD2002 Module	10
Power 2001 Module (30-70W Version)	11
AF9 Board	12
Set Mechanical Exploded view & parts list	13
Revision List	14



© Copyright 2004 Philips Consumer Electronics B.V. Eindhoven, The Netherlands
All rights reserved. No part of this publication may be reproduced, stored in a retrieval system or transmitted, in any form or by any means, electronic, mechanical, photocopying, or otherwise without the prior permission of Philips.

Published by SL 0443 Service Audio Printed in The Netherlands Subject to modification



3140 785 32811

Version 1.1



PHILIPS

SPECIFICATIONS**GENERAL:**

Mains voltage : 110-127V/220-240V Switchable for /21
230V for /22//25/30
Mains frequency : 50/60Hz
Power consumption : < 0.5W at ECO Standby /22/25
< 15W Standby w/Clock on
< 80W Active
Clock accuracy : < 4 seconds per day
Dimension centre unit : 265 x 310 x 365mm

TUNER:**FM**

Tuning range : 87.5-108MHz
Grid : 50kHz
IF frequency : 10.7MHz \pm 20kHz
Aerial input : 75 Ω coaxial
Sensitivity at 26dB S/N : < 7 μ V
Selectivity at 600kHz bandwidth : > 25dB
IF rejection : > 60dB [80dB]
Image rejection : > 25dB [75dB]
Distortion at RF=1mV, dev. 75kHz : < 3%
-3dB Limiting point : < 8 μ V
Crosstalk at RF=1mV, dev. 40kHz : > 18dB

MW

Tuning range : 531-1602kHz
530-1700kHz for /21
Grid : 9kHz
10kHz for /21
IF frequency : 450kHz \pm 1kHz
Aerial input : Frame aerial
Sensitivity at 26dB S/N : < 4.4mV/M[4.0mv/m]
Selectivity at 18kHz bandwidth : > 18dB
IF rejection : > 45dB
Image rejection : > 28dB
Distortion at RF=50mV, m=80% : < 5%

AMPLIFIER:

Output power (6 Ω , 1 kHz, 10% THD) : 2 x 40W RMS
Frequency response within -3dB : 50Hz-15kHz
Dynamic Bass Boost : DBB OFF, DBB 1, DBB 2, DBB 3²⁾
Digital Sound Control : Jazz, Rock, Techno, Optimal²⁾
Headphone output at 32 Ω : 15mW \pm 2dB
5mW \pm 2dB (CD mode)
Input sensitivity
Aux / CDR : 500mV / 1.0V at 600 Ω

CASSETTE RECORDER:

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

COMPACT DISC:

Measurement done at output conn. of the CDC module.
Frequency response within \pm 1.5dB: 20Hz - 20kHz
Output level (in Vrms) : 550mV \pm 1dB, R_{out} = 100 Ω
Signal/Noise ratio (A-weighted) : > 80dBA
Distortion at 1kHz : < 0.003%
Channel unbalance at 1kHz : \pm 1dB
Channel separation at 1kHz : > 60dB
De-emphasis : 0 or 15/50 mS (Switched by subcode
on the disc)
MPEG 1 Layer 3 (MP3-CD) : MPEG AUDIO
MP3-CD Bit Rate : 56-256 kbps
MP3-CD Sampling Frequencies : 32 kHz, 44.1kHz,
48kHz
Recording Format : ISO 9660
UDF format not
supported

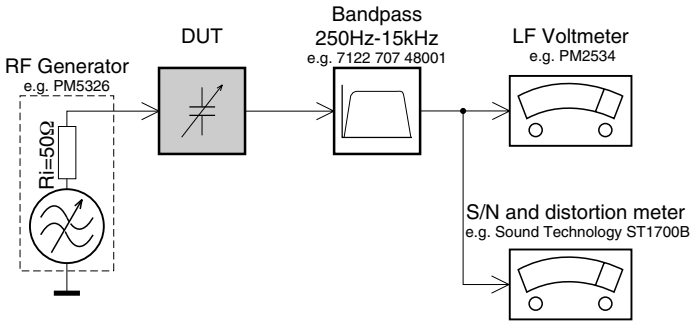
[...] Values indicated are strictly for "Cenelec version" only

¹⁾ Default setting is OFF, to switch on please refer page 3-1.

²⁾ Frequency response in each setting is software controlled.

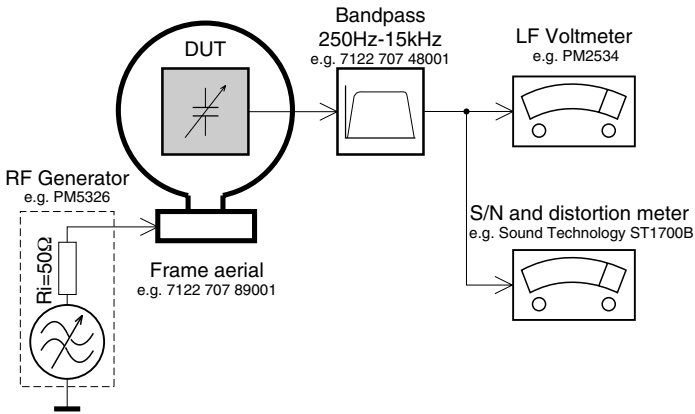
MEASUREMENT SETUP

Tuner FM



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

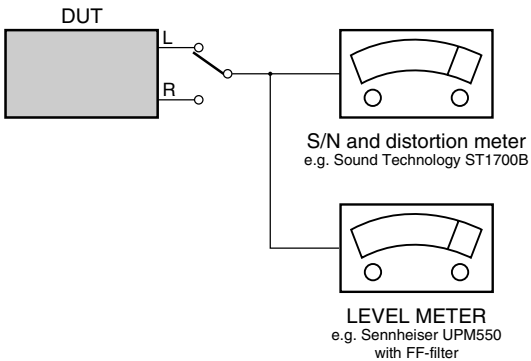
Tuner AM (MW,LW)



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

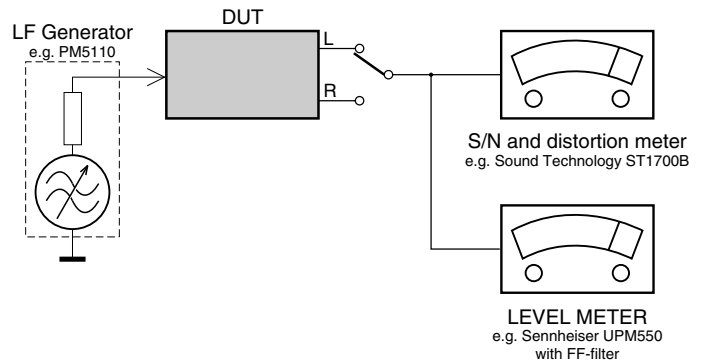
CD

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



Recorder

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



SERVICE AIDS

Service Tools:

- Universal Torx driver holder4822 395 91019
- Torx bit T10 150mm4822 395 50456
- Torx driver set T6 - T204822 395 50145
- Torx driver T10 extended4822 395 50423

Cassette:

- SBC419 Test cassette CrO24822 397 30069
- SBC420 Test cassette Fe4822 397 30071
- MTT150 Dolby level 200nWb/M4822 397 30271

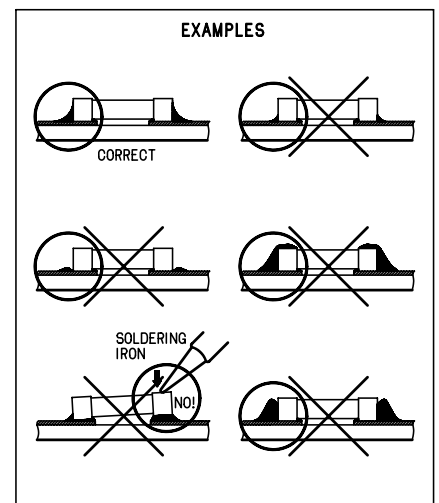
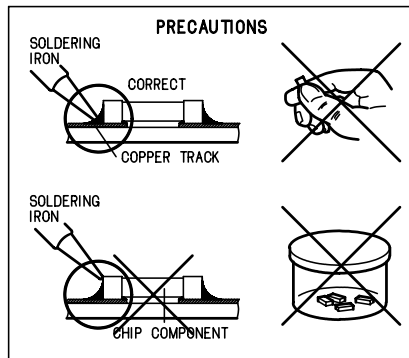
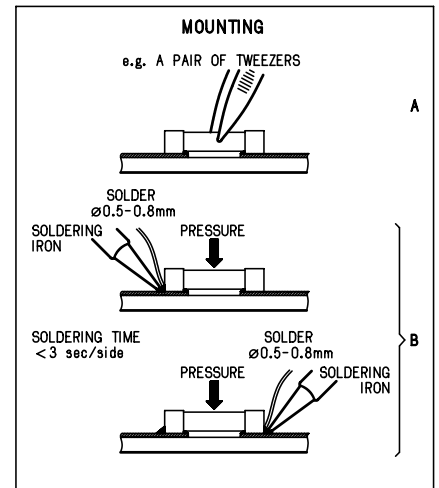
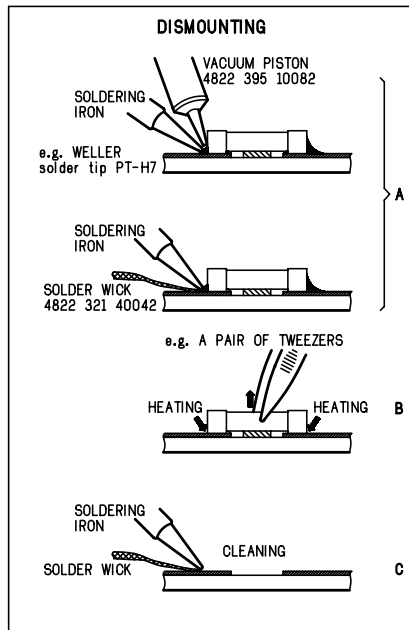
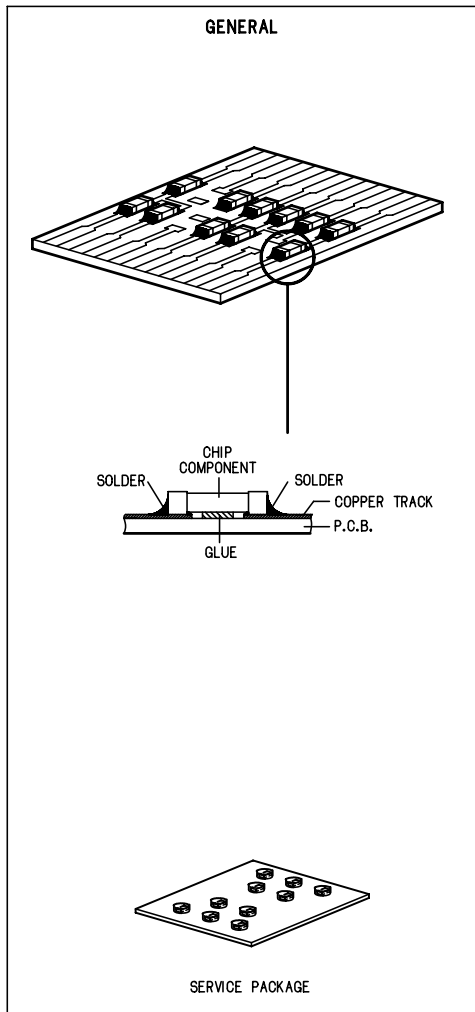
Compact Disc:

- SBC426/426A Test disc 5 + 5A4822 397 30096
- SBC442 Audio Burn-in Test disc 1kHz4822 397 30155
- SBC429 Audio Signals disc4822 397 30184
- Dolby Pro-logic Test Disc4822 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 wristband4822 395 10223
- Connector box (1M Ω) 4822 320 11307
- Extension cable
(to connect wristband to conn. box) 4822 320 11305
- Connecting cable
(to connect table mat to conn. box) 4822 320 11306
- Earth cable (to connect product to mat or box) 4822 320 11308
- Complete kit ESD3
(combining all above products) 4822 320 10671
- Wristband tester4822 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).

Unvorsorgfältige 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 ridotta in caso di non osservazione della più grande cauzione alla loro manipolazione.

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

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

(GB)

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

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

(NL)

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

(F)

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

(D)

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

(I)

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

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

**(GB) Warning !**

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

(S) Varning !

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

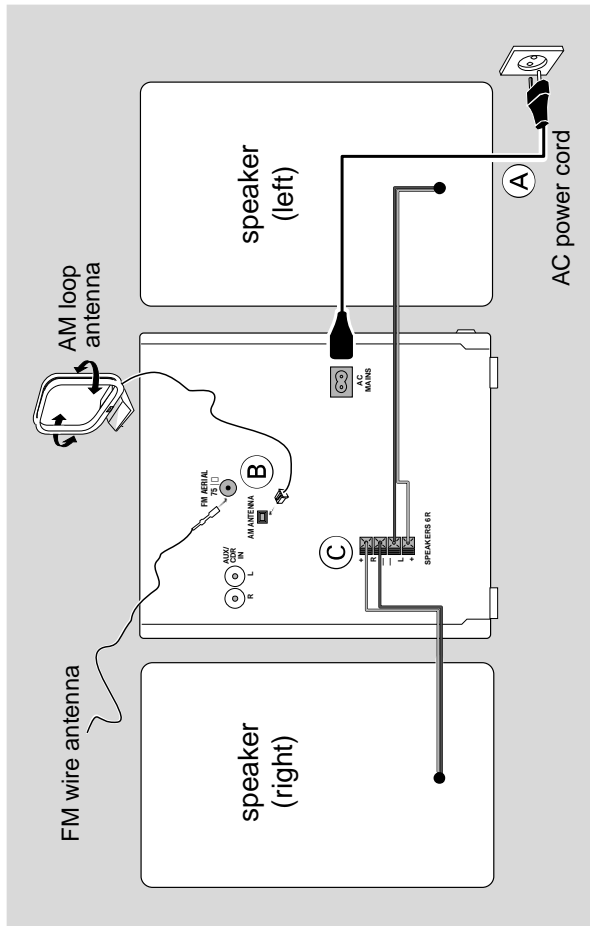
(SF) Varoitus !

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

(DK) Advarse !

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

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 1-9.

(A) Power

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

WARNING!

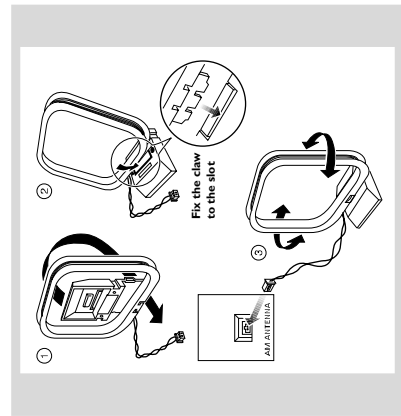
- For optimal performance, use only the original power cable.
- Never make or change any connections with the power switched on.

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).

(B) Antennas Connection

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

AM Antenna



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

Preparations

FM Antenna

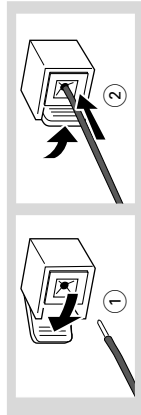


For better FM stereo reception, connect an outdoor FM antenna to the FM ANTENNA terminal.

(C) Speakers Connection

Front Speakers

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



Fully insert the stripped portion of the speaker wire into the terminal as shown.

Notes:

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

Optional connection

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

Connecting other equipment to your system

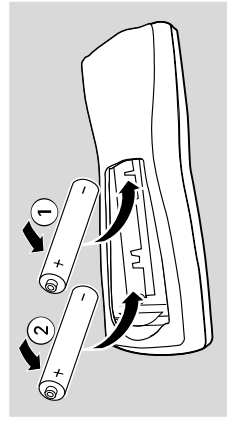
Use a cinch cable to connect **AUX/CDR IN** to the analogue audio out terminals of an external equipment (TV, VCR, Laser Disc player, DVD player or CD Recorder).

Note:

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

Inserting batteries into the remote control

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



CAUTION!

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

PREPARATIONS AND CONTROLS

Controls

Controls on the system and remote control

- 1 **STANDBY ON** ϕ
to switch the system on or to standby mode.
- 2 **ECO POWER**
to switch the system on or to Eco Power standby mode.

- 3 **DISC 1/2/3 (CD DIRECT 1/2/3)**
to select a disc tray for playback.

- 4 **Source selection** – to select the following :

- CD (CD 1•2•3)
- to select disc tray 1, 2 or 3.

- TUNER (BAND)**

- to select waveband : FM, MW or LW.

- TAPE (TAPE 1•2)**

- to select tape deck 1 or 2.

- AUX (VIDEO/CDR)**

- to select the input for an additional appliance : AUX or CDR.

- 5 **Mode Selection**

- ◀▶ **SEARCH•TUNING**

- (▼ **ALBUM** ▲)

- for MP3-CD to select previous/next album.

- for CD to search backward/forward.

- for Tuner to tune to a lower or higher radio frequency.

- for Tape to rewind or fast forward.

- for Clock (on the system only) to set the hour.

- **STOP-CLEAR (DEMO STOP)**

- for CD/MP3-CD .. to stop playback or to clear a programme.

- for Tuner (on the system only) to stop programming.

- for Tape to stop playback or recording.

- for Demo (on the system only) to activate/deactivate the demonstration.

- for Clock (on the system only) to exit clock setting or cancel timer.

- for Plug & Play (on the system only) to exit plug & play mode.

- ▶ **II PLAY•PAUSE**

- for CD/MP3-CD .. to start or interrupt playback.

- for Tape to start playback.
- for Plug & Play (on the system only) to initiate and start plug & play mode.

- ◀ **PREV / ▶ NEXT (– TITLE +)**

- for MP3-CD to select previous/next title.
- for CD to skip to the beginning of the current, previous, or next track.

- for Tuner to select a preset radio station.

- for Clock (on the system only) to set the minute.

- 6 **SOUND NAVIGATION**

- to select and activate the JOG control for the desired sound feature : DBB, DSC or VEC.

- 7 **JOG**

- to select the desired sound effect for the selected sound feature.

- DBB DBB 1, DBB 2 or DBB 3.

- DSC OPTIMAL, JAZZ, ROCK or TECHNO.

- VEC CINEMA, HALL or CONCERT.

- 8 **INCREDIBLE SURROUND (INC. SURR.)**

- to activate or deactivate the surround sound effect.

- 9 **CLOCK•TIMER (CLK/TIMER)**

- to view the clock.
- to set the clock or set the timer (on the set only).

- 10 **Tape Deck Operation**

- RECORD**

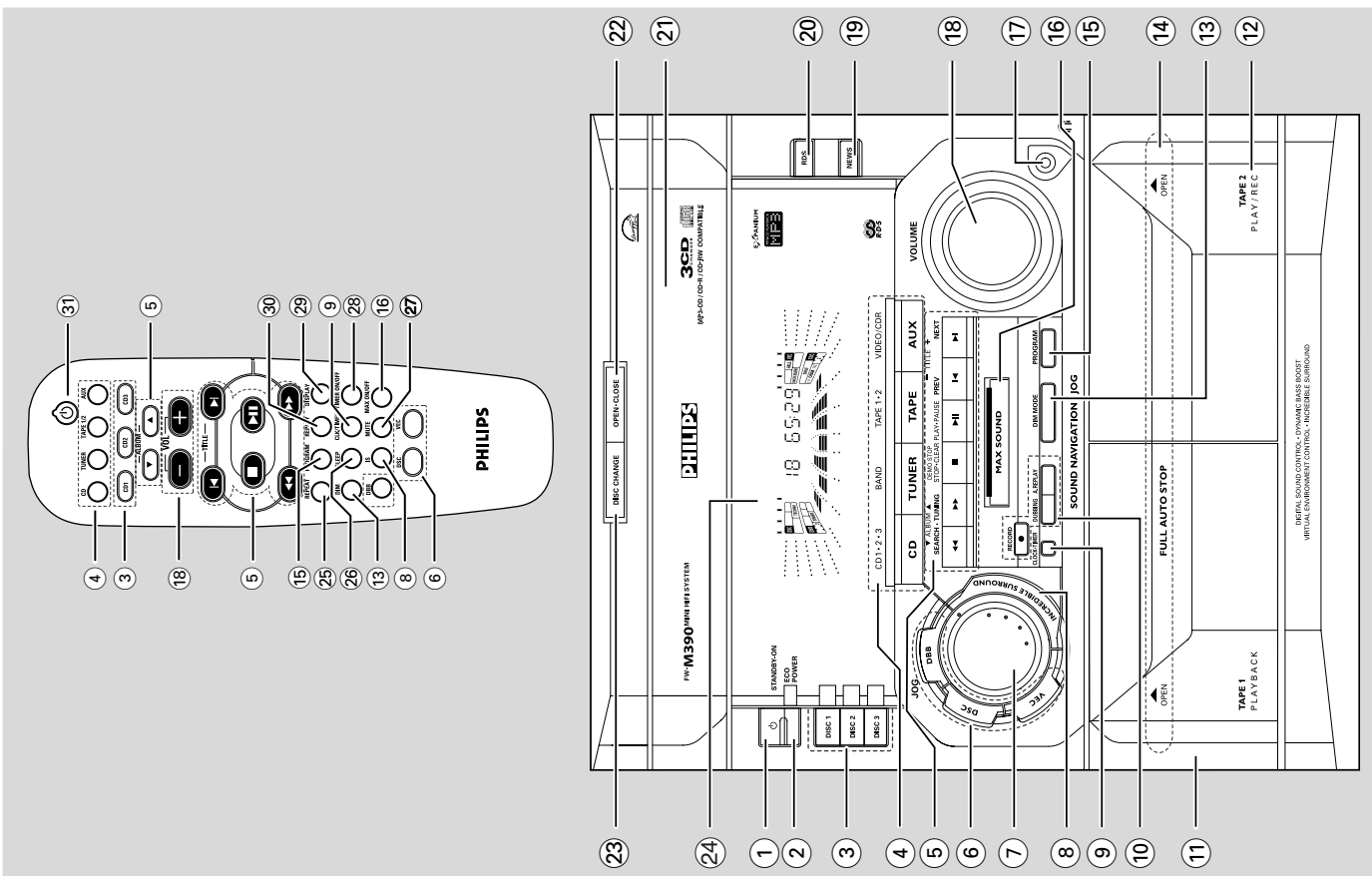
- to start recording on tape deck 2.

- DUBBING**

- to dub a tape.

- 11 **Tape deck 1**

- 12 **Tape deck 2**



PHILIPS SOUND CONTROL SYSTEMS ARE SHOWN WITH THE SURROUND SYSTEMS AVAILABLE STANDARD

Controls

- 13 DIM MODE**
to select different brightness for the display screen : DIM 1, DIM 2, DIM 3 or DIM OFF.
- 14** ▲ **OPEN**
to open the tape deck door.
- 15 PROGRAM**
for CD to programme disc tracks.
for Tuner to programme preset radio stations.
for Clock to select 12- or 24-hour clock mode.
- 16 MAX SOUND (MAX)**
to activate or deactivate the optimal mix of various sound features.
- 17** **H**
to connect headphones.
- 18 VOLUME (VOLUME + / -)**
to increase or decrease the volume.
- 19 NEWS**
to hear News automatically.
- 20 RDS**
to select RDS information.
- 21 Disc tray**
- 22 OPEN•CLOSE**
to open or close the disc tray.
- 23 DISC CHANGE**
to change disc(s).
- 24 Display screen**
to view the current status of the system.
- 25 REPEAT**
to playback track(s)/disc(s)/programme repeatedly.
- 26 SLEEP**
to activate/deactivate or set the sleep timer.
- 27 SHUFFLE**
to playback all available discs and their tracks/programme in random order.
- 28** **P**
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 or TUNER, for example).**
– **Then select the desired function (▶, ◀, ↵, for example).**

Important notes for users in the U.K.

Mains plug

This apparatus is fitted with an approved 13 Amp plug. To change a fuse in this type of plug proceed as follows:

- 1** Remove fuse cover and fuse.
- 2** Fix new fuse which should be a BS1362 5 Amp, A.S.T.A. or BSI approved type.
- 3** Refit the fuse cover.

If the fitted plug is not suitable for your socket outlets, it should be cut off and an appropriate plug fitted in its place.

If the mains plug contains a fuse, this should have a value of 5 Amp. If a plug without a fuse is used, the fuse at the distribution board should not be greater than 5 Amp.

Note: These varied plug must be disposed of to avoid a possible shock hazard should it be inserted into a 13 Amp socket else where.

How to connect a plug

The wires in the mains lead are coloured with the following code: blue = neutral (N), brown = live (L).

- As these colours may not correspond with the colour markings identifying the terminals in your plug, proceed as follows:
 - Connect the blue wire to the terminal marked N or coloured black.
 - Connect the brown wire to the terminal marked L or coloured red.
 - Do not connect either wire to the earth terminal in the plug, marked E (or ⚡) or coloured green (or green and yellow).

Before replacing the plug cover, make certain that the cord grip is clamped over the sheath of the lead - not simply over the two wires.

Copyright in the U.K.

Recording and playback of material may require consent. See Copyright Act 1956 and The Performer's Protection Acts 1958 to 1972.

Italia

DICHIARAZIONE DI CONFORMITA'

Si dichiara che l'apparecchio FVW-C717 Philips risponde alle prescrizioni dell'art. 2 comma 1 del D.M. 28 Agosto 1995 n. 548.

Fatto a Eindhoven

Philips Consumer Electronics
Philips, Glaslaan 2
5616 JB Eindhoven, The Netherlands

Norge

Typeskilt finnes på apparatens underside.

Observed: Netthøyteren er sekundært innkoplet. Den innebygde nettdelen er derfor ikke frakoplet nettet så lenge apparatet er tilsluttet nettkontaktene.

For å redusere faren for brann eller elektrisk støt, skal apparatet ikke utsettes for regn eller fuktighet.

CAUTION

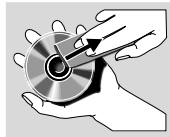
Use of controls or adjustments or performance of procedures other than herein may result in hazardous radiation exposure or other unsafe operation.

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 use solvents such as benzene, thinner, commercially available cleaners, or antistatic spray intended for analogue records.

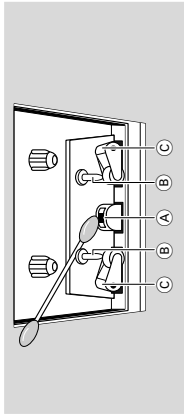
Cleaning the disc lens

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

Cleaning the Heads and the Tape Paths

To ensure good recording and playback quality, clean the heads (A), the capstan(s) (B), and pressure roller(s) (C) after every 50 hours of tape operation.

Use a cotton swab slightly moistened with cleaning fluid or alcohol. You can also clean the heads by playing a cleaning tape once.



Demagnetising the heads

Use a demagnetising tape available at your dealer.

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) 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.
- Check the speaker connections and location.

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 1/2/3 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 directly towards the IR sensor.

The timer is not working.

- Set the clock correctly.
- Press and hold CLOCK•TIMER to switch on the timer.
- If recording or tape dubbing is in progress, stop recording.

Not all lighted buttons are showing light.

- Press DIM to select DIM OFF display mode.

The Clock/Timer setting is erased.

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

The system displays features automatically

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

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 solve a problem by following these hints, consult your dealer or service centre.



Problem

"NO DISC" is displayed.

"DISC NOT FINALIZED" is displayed.

Solution

- 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-RW or CD-R.

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 solve a problem by following these hints, consult your dealer or service centre.

Problem

CD OPERATION

"NO DISC" is displayed.

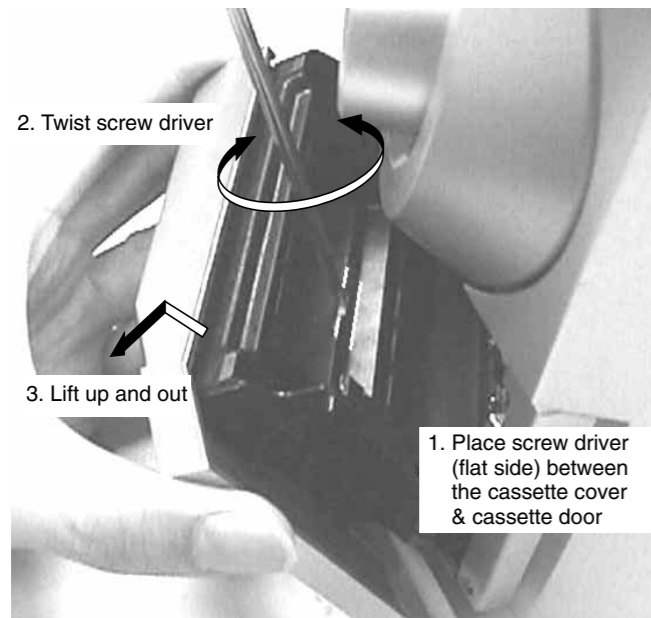
- Insert a disc.
- Check if the disc is inserted upside down.
- Wait until the moisture condensation at the lens has cleared.
- Replace or clean the disc, see "Maintenance".
- Use a finalised CD-RW or CD-R.

"DISC NOT FINALIZED" is displayed.

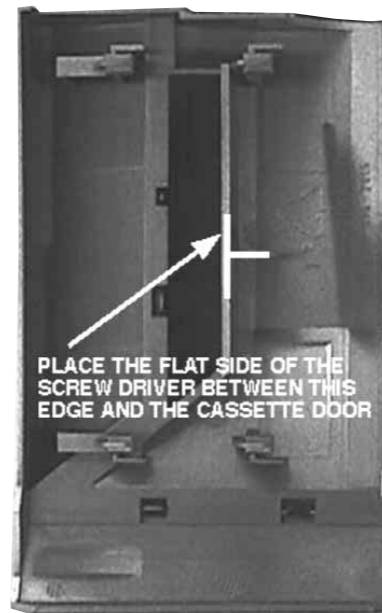
- Use a finalised CD-RW or CD-R.

DISMANTLING INSTRUCTIONS

Dismantling of the Cassette Cover



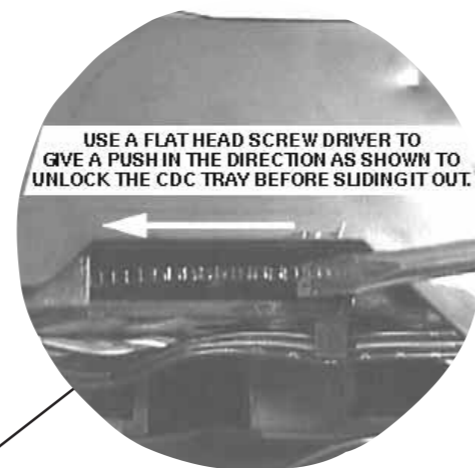
Remove Cassette Cover



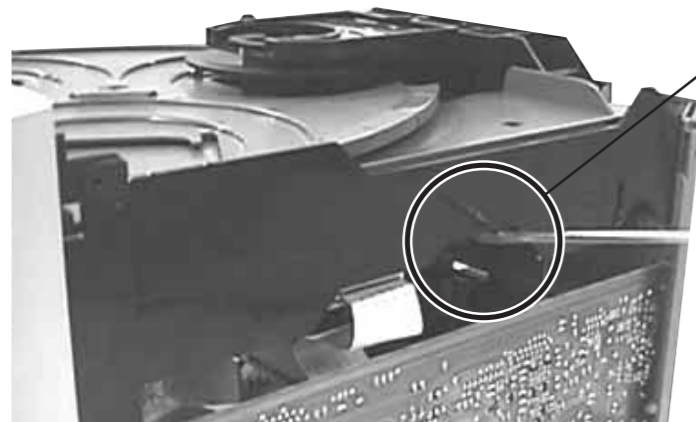
Cassette Cover

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.

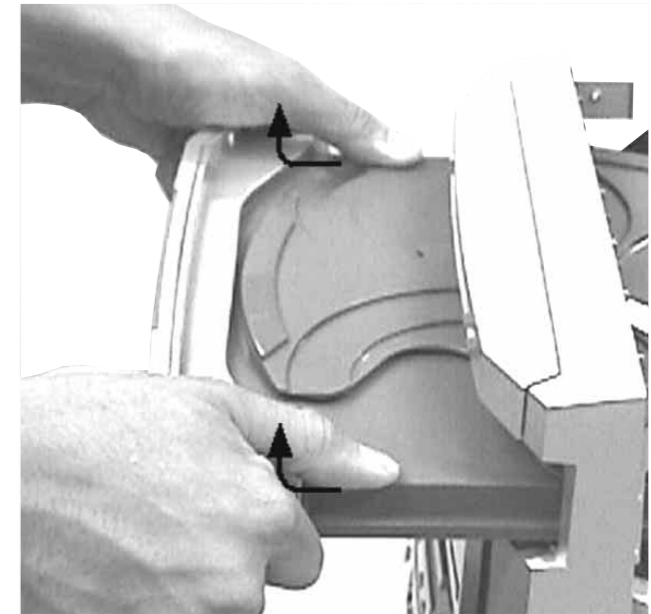


Sliding Out The CDC Tray



Dismantling of the CDC Module and Front Panel

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



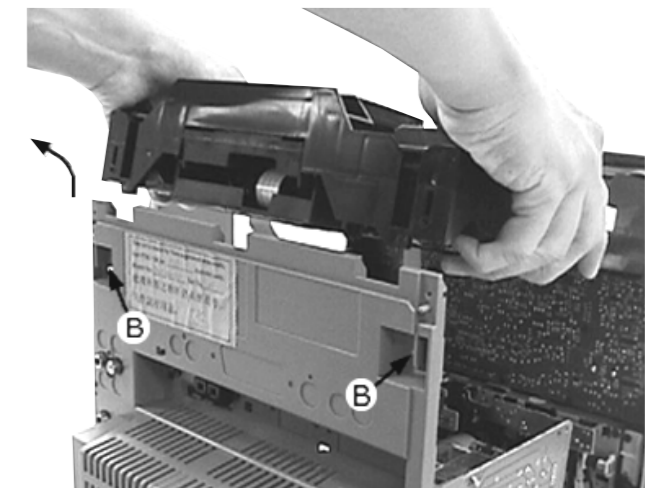
Remove Cover Tray CDC

- 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).



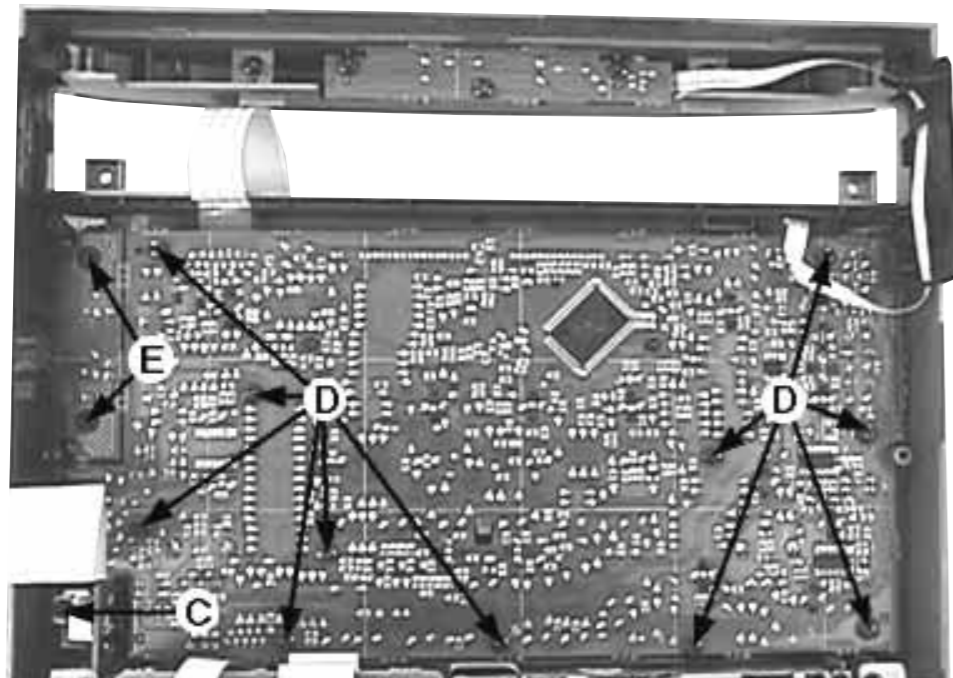
Front View CDC



Remove CDC Module

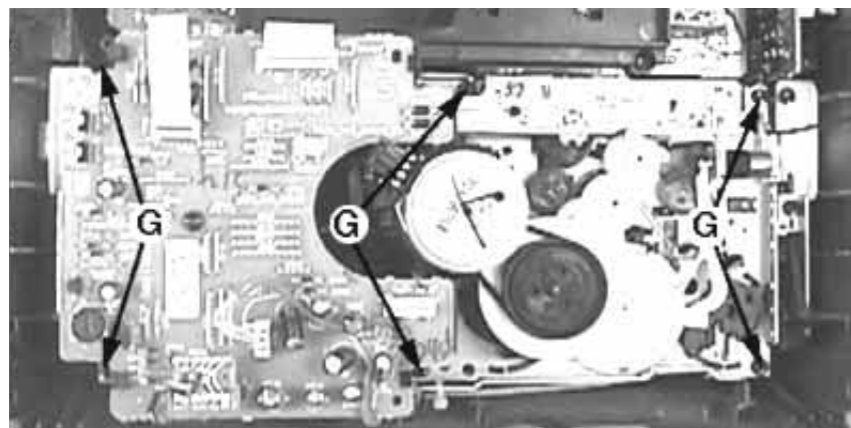
Dismantling of the Front Board

- 1) Remove 1 screw C as indicated to loosen the Headphone Board (pos 1101-C).
- 2) For set without Karaoke :
Remove 11 screws D and 2 screws E as indicated to loosen the Front Board (pos 1101-A).
- For set with Karaoke :
Remove 11 screws D as indicated to loosen the Front Board (pos 1101-A) and 2 screws E as indicated to loosen the Karaoke Board (pos 1101-D).



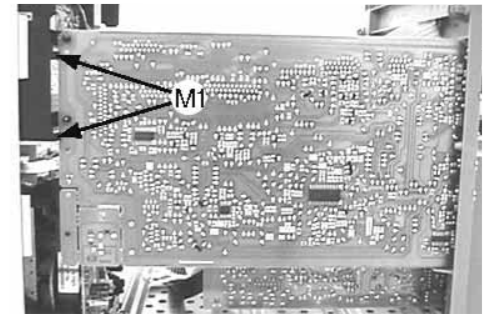
Dismantling of the ETF Tape Module

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

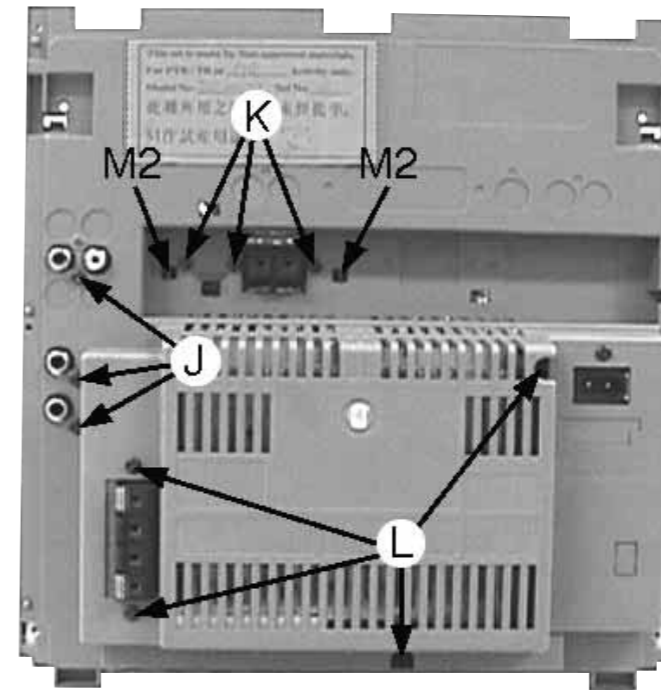


Dismantling of Rear Portion

- 1) Remove 3 screws J and uncatch M1 as indicated to loosen the AF Board (pos 1102).
- 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).



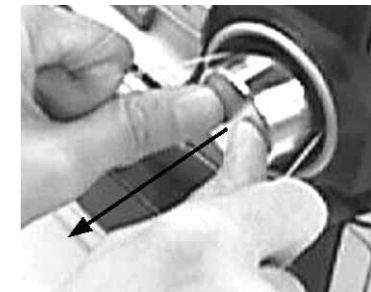
Remove AF Board



Repair Hints

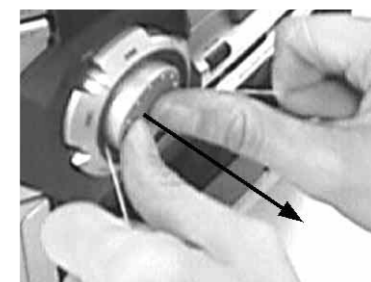
- 1) The Knob Volume (pos 139) can be remove by inserting a strong string into the slot and pull it out in the direction as indicated. See picture 1.

Picture 1



- 2) The Knob Rotary (pos 138) can be remove by inserting a strong string into the slot and pull it out in the direction as indicated. See picture 2.

Picture 2

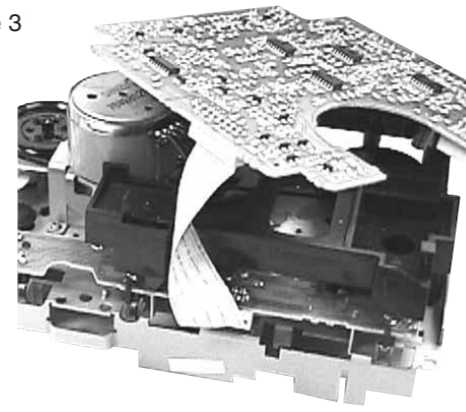


Repair Hints

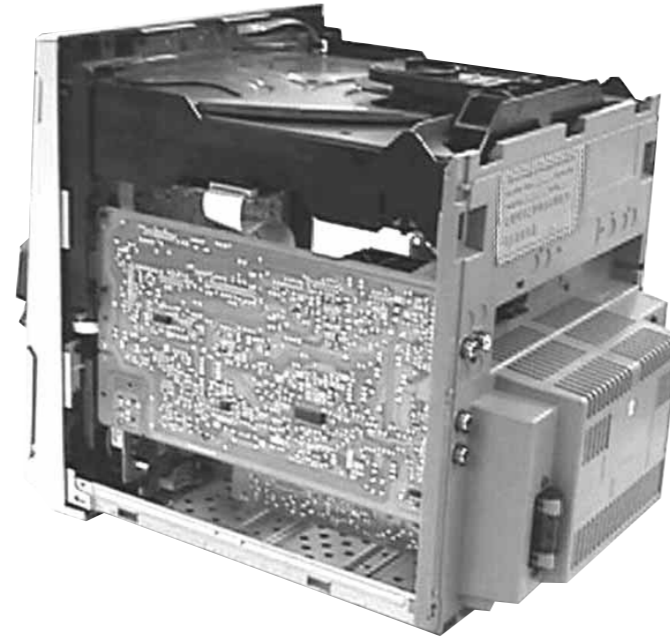
- 3) During repair it is possible to disconnect the Tuner board and CDC Module completely unless the fault is suspected to be in that area. This will not affect the performance of the rest of the set.
- 4) Due to the short flex cable wires in the ETF Module, the pc board should be disconnected and reconnected 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.

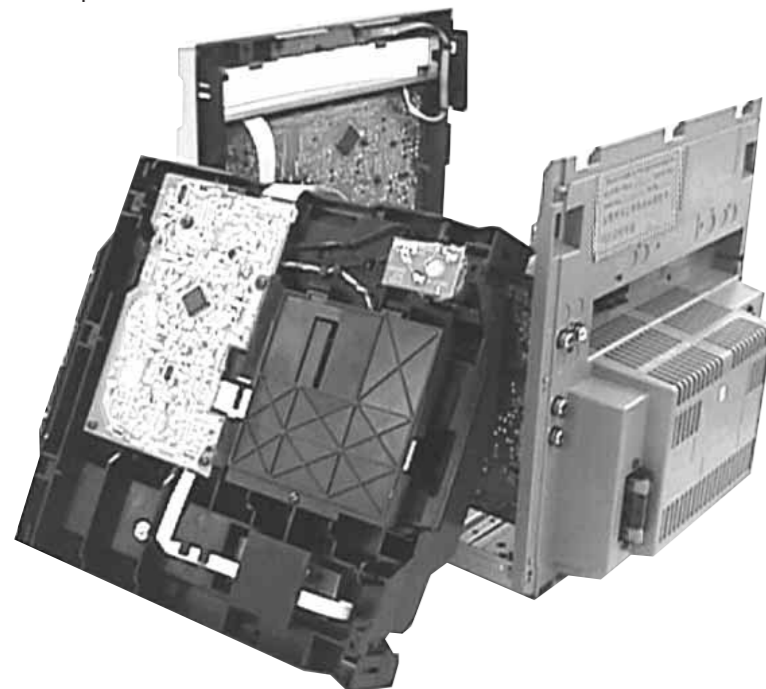
Picture 3



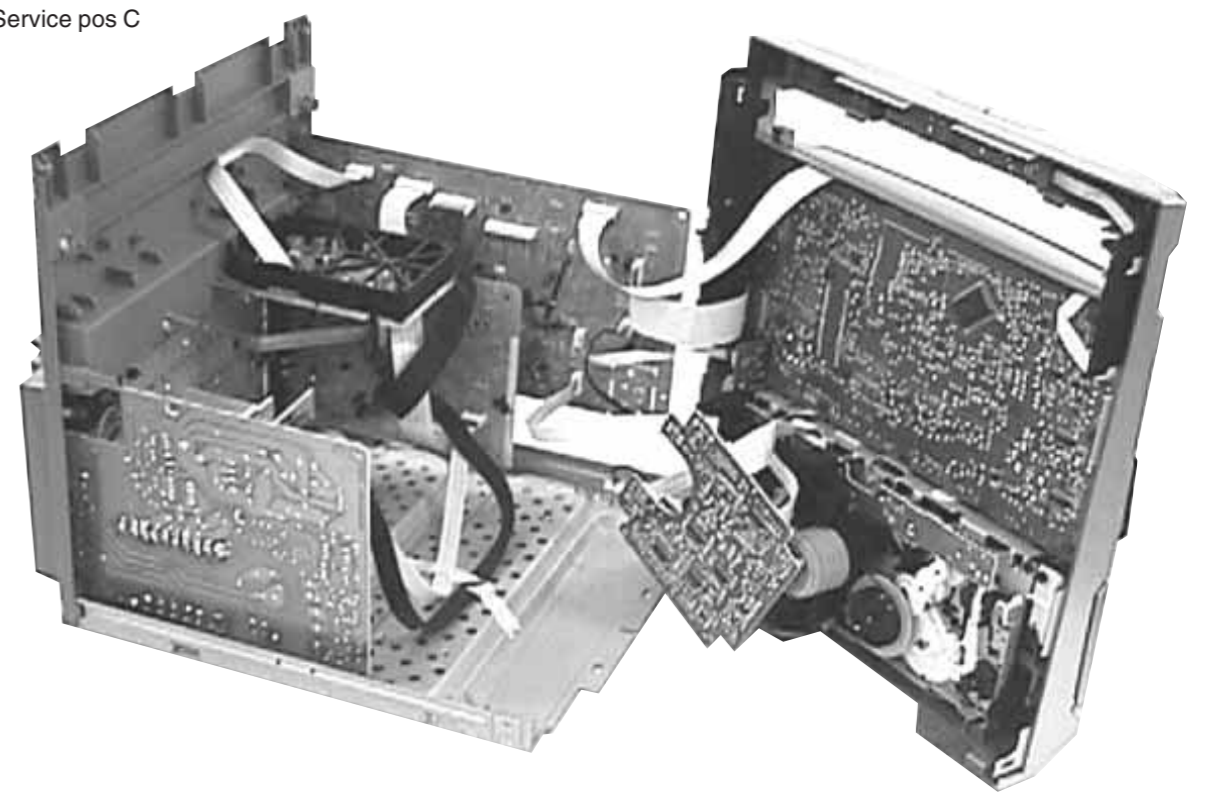
Service pos A



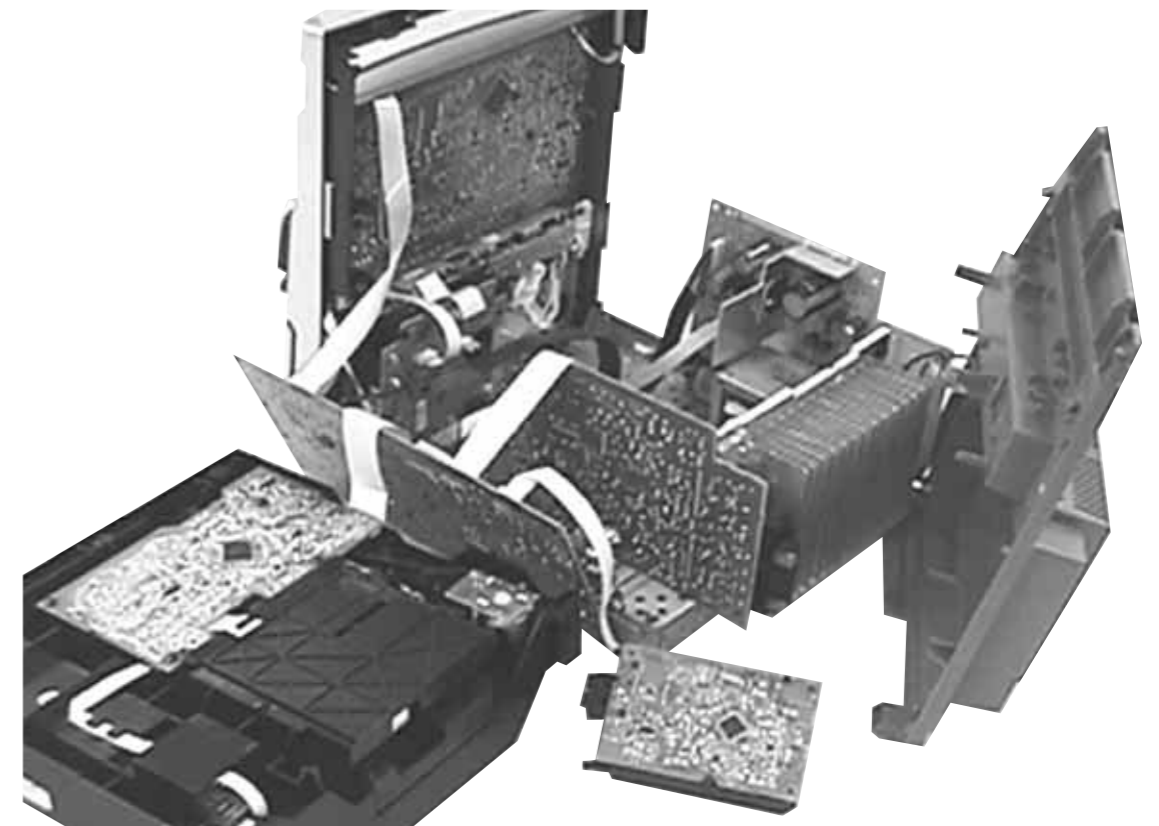
Service pos B



Service pos C



Service pos D

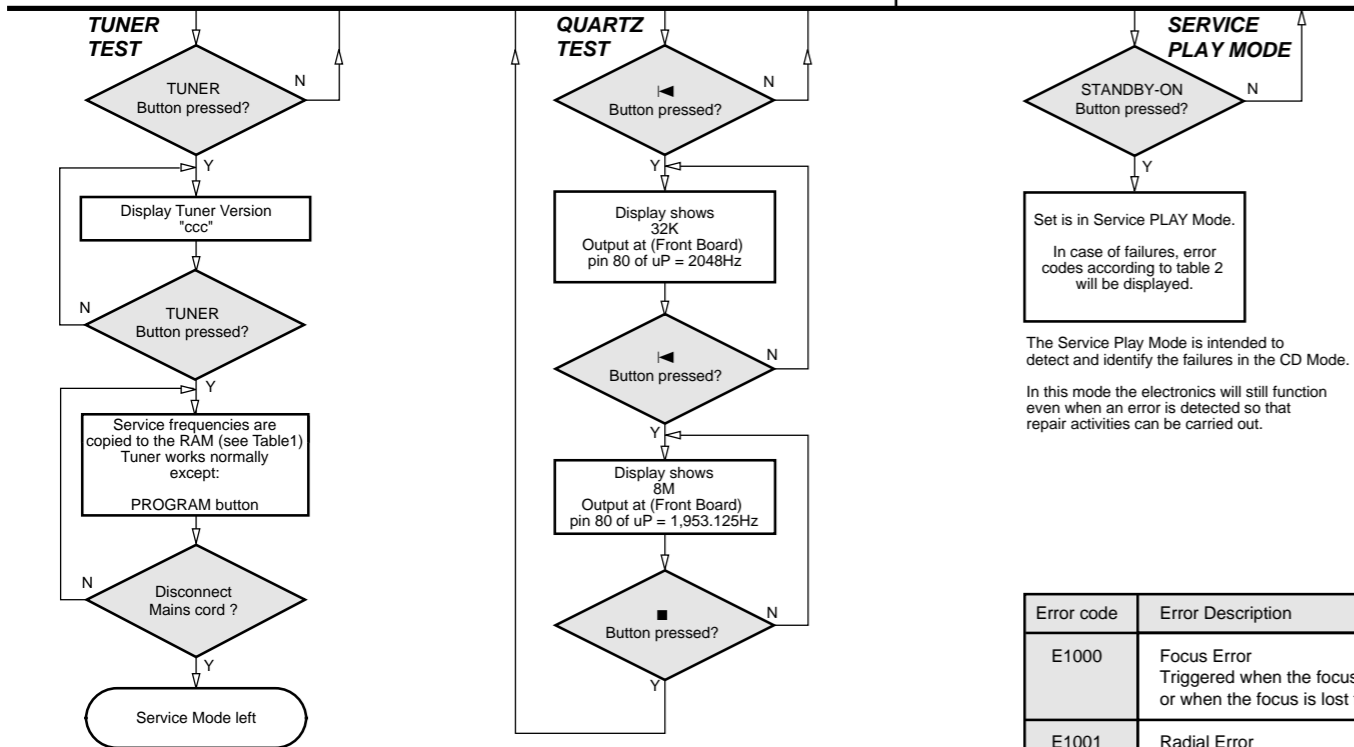


SERVICE TEST PROGRAM

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

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

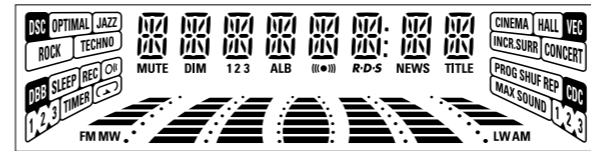
S refers to Service Mode.
V refers to Version.
yy refers to Software version number of Processor. (Counting up from 01 to 99)



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

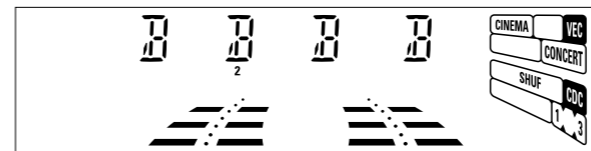
Table 1

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.



note 1: All LEDs are on except ECO POWER.

Figure 1



note 2: Only DISC 2, TUNER, AUX, DSC, VEC & MAX SOUND are on.

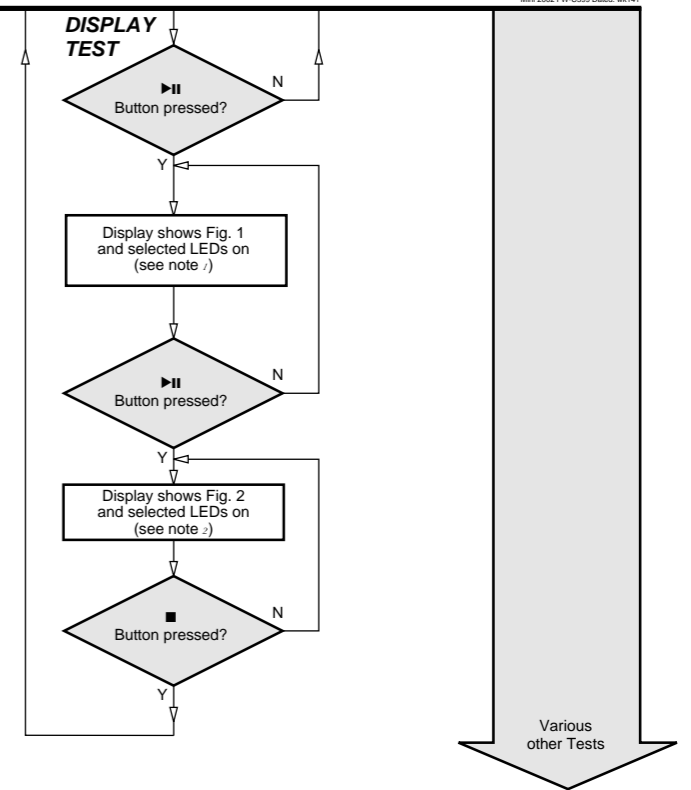
Figure 2

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	This happens when the carousel switch is defective and closed all the time, or when the carousel is blocked when it is located exactly at a disc position.
E1071	This happens when the carousel switch is defective and does not closed electrically, or when the carousel is blocked in between two disc positions. The time-out is approximately 5 Sec.
E1079	The drawer could not open or enter the inside position and is opening again. This happen when the drawer is blocked and cannot go fully inside or when the drawer switch is defective and does not close.

Table 2

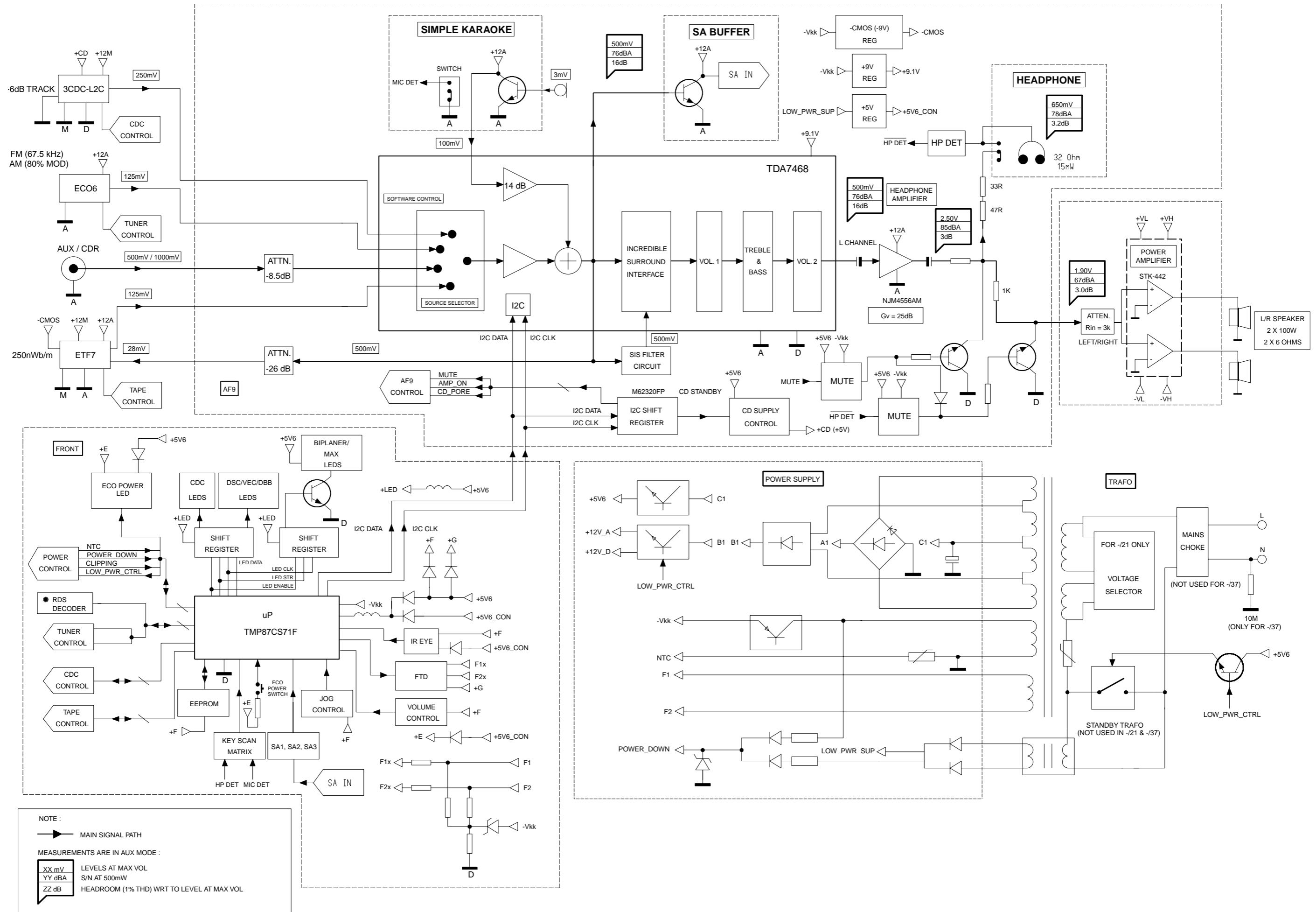
DEMO Mode

	ACTION
To Switch off	Hold the ■ button down for 5 seconds during the DEMO display, the set will confirm with "DEMO OFF" and switch to Standby.
To Switch on	Hold the ■ button down for 5 seconds during Standby, DEMO will begin.



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 "FAIL" will be displayed.
EEPROM FORMAT	◄◄	Load default data. Display shows "NEW" for 1 second. Caution! All presets from the customer will be lost!!
ROTARY ENCODER TEST	Volume Knob or Jog Shuttle knob	Display shows value for 2 seconds. Values increases or decreases in steps of 1 until 0 (Min.) or 40 (Max.) is reached.
LEAVE SERVICE TESTPROGRAM	Disconnect mains cord	

SET BLOCK DIAGRAM



NOTE :

➔ MAIN SIGNAL PATH

MEASUREMENTS ARE IN AUX MODE :

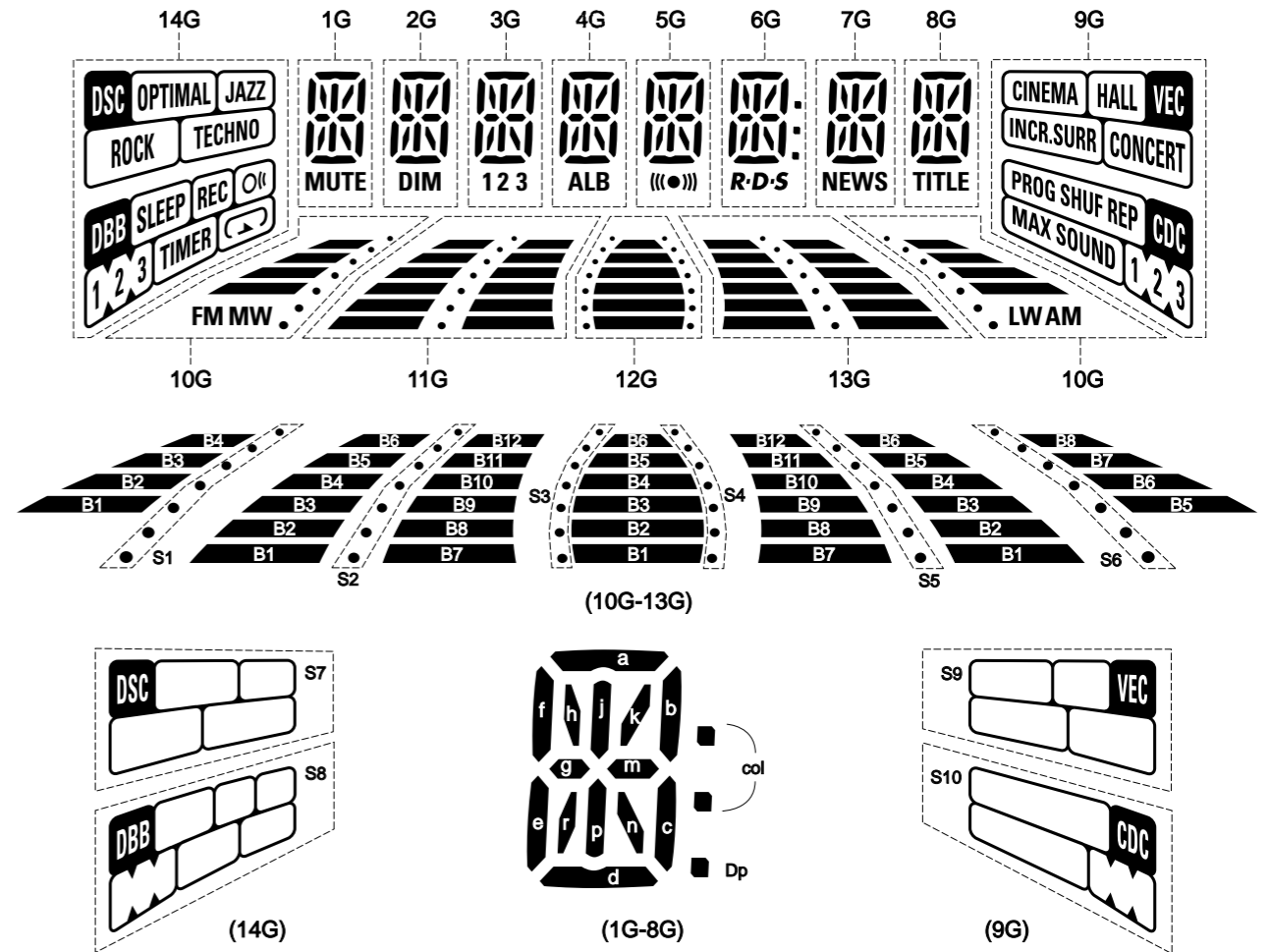
XX mV	LEVELS AT MAX VOL
YY dBA	S/N AT 500mV
ZZ dB	HEADROOM (1% THD) WRT TO LEVEL AT MAX VOL

FRONT BOARD

TABLE OF CONTENTS

FTD pin connection 6-1
 Variation Table 6-2
 Key-CDC part - Layout & Circuit diagram 6-2
 Front part - Circuit diagram 6-3
 Front part - Component layout 6-4
 Front part - Chip layout 6-5
 Headphone part - Layout & Circuit diagram 6-6
 Karaoke part - Component & Chip layout 6-6
 Karaoke part - Circuit diagram 6-7
 Electrical parts list 6-8

FTD DISPLAY PIN CONNECTIONS



	1G	2G	3G	4G	5G	6G	7G	8G	9G	10G	11G	12G	13G	14G
P1	a	a	a	a	a	a	a	a	CINEMA	B1	B1	B1	B1	S7
P2	h	h	h	h	h	h	h	h	HALL	B2	B2	B2	B2	OPTIMAL
P3	j . p	j . p	j . p	j . p	j . p	j . p	j . p	j . p	S9	B3	B3	B3	B3	JAZZ
P4	k	k	k	k	k	k	k	k	INCR.SURR	B4	B4	B4	B4	ROCK
P5	b	b	b	b	b	b	b	b	CONCERT	S1	B5	B5	B5	TECHNO
P6	f	f	f	f	f	f	f	f	PROG	-	B6	B6	B6	S8
P7	m	m	m	m	m	m	m	m	SHUF	FM	S2	-	S5	SLEEP
P8	g	g	g	g	g	g	g	g	REP	MW	-	-	-	REC
P9	c	c	c	c	c	c	c	c	S10	B5	B7	-	B7	OK
P10	e	e	e	e	e	e	e	e	MAX SOUND	B6	B8	-	B8	1
P11	r	r	r	r	r	r	r	r	1	B7	B9	S3	B9	2
P12	n	n	n	n	n	n	n	n	2	B8	B10	S4	B10	3
P13	d	d	d	d	d	d	d	d	3	S6	B11	-	B11	TIMER
P14	MUTE	DIM	1	ALB	((●))	R-D-S	NEWS	TITLE	-	-	B12	-	B12	↶
P15	-	-	2	-	-	col	-	-	-	LW	-	-	-	➤
P16	-	-	3	-	-	Dp	-	-	-	AM	-	-	-	-

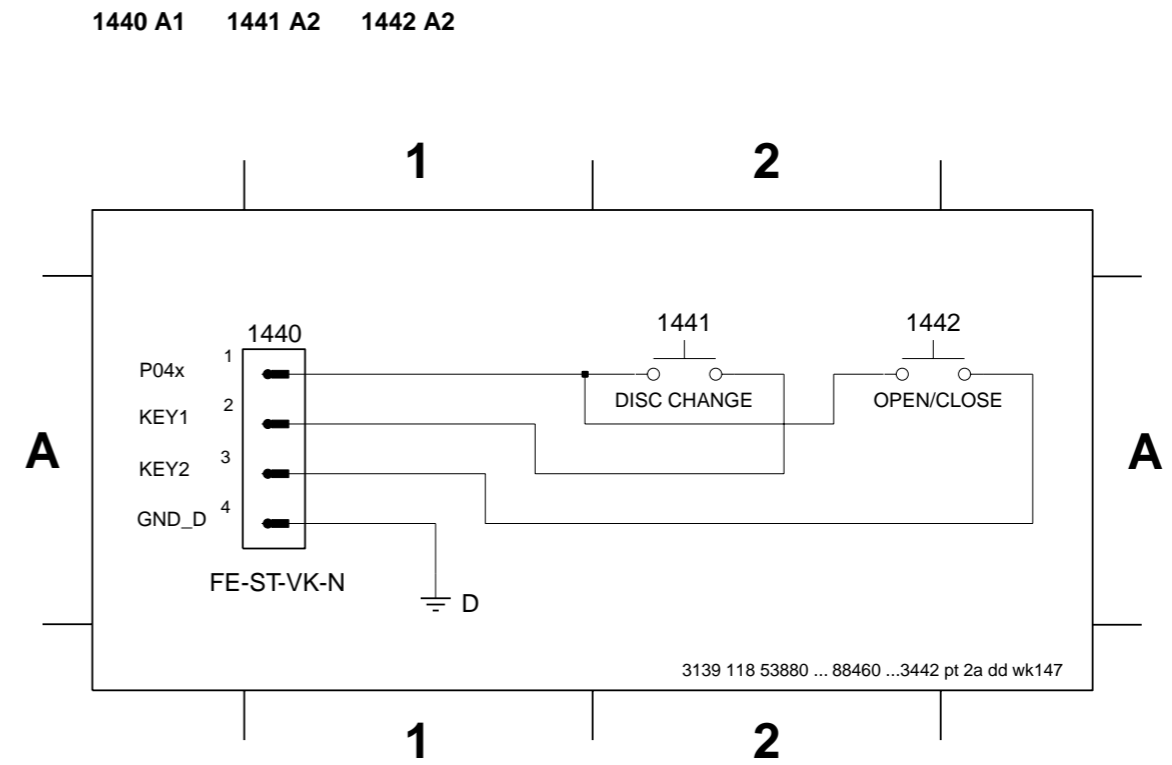
FTD DISPLAY PIN NO.	4	4	4	4	4	3	3	3	3	3	3	3	3	3	2	2	2	2	2	2	2	2	2	1	1	1	1	1	1	1	1	1	1	9	8	7	6	5	4	3	2	1			
FUNCTION	F	F	-	-	1	2	3	4	5	6	7	8	9	10	11	12	13	14	-	-	-	-	-	-	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	-	-	F	F	1
	2	2			G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16			1	1		

VARIATION TABLE

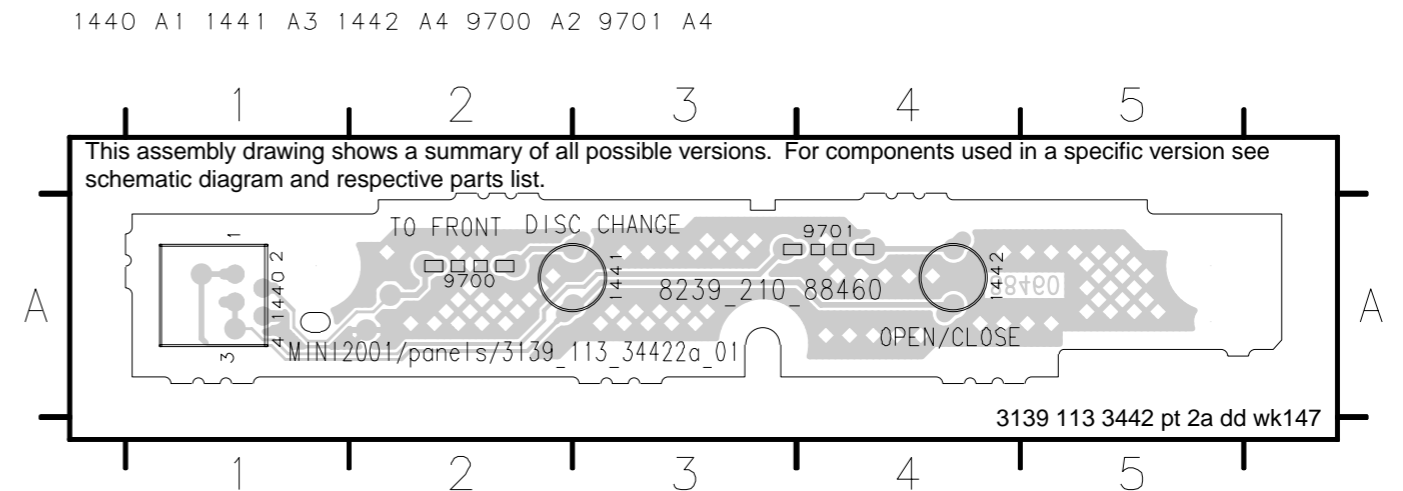
Item No / Features	FWM390/30	FWM390/21	FWM390/22/25
RDS / News	-	-	x
Simple Karaoke	-	x	-
Mic Detect	-	x	-
1409	x	x	x
1424	-	-	-
1425	-	-	x
1427	-	-	x
1437	-	-	-
3486	1k	1k	1k
3511	10k	10k	-
3530	-	-	330R
3531	10k	10k	10k
3581	10k	10k	-
3595	-	-	-
3808	-	-	820R
4402	-	-	-
4404	-	-	-
6400	x	x	x
6403	x	x	x
6426	-	-	x
6440	-	x	-
6441	x	x	x
6447	x	x	x
6448	x	x	x
9402	-	-	x
9404	-	-	x
9405	-	-	x
9406	-	-	x
9407	-	-	-
9408	x	x	x
9409	-	-	-
9410	x	x	x
9411	-	-	-
9462	-	-	-
9488	x	x	x
9505	-	-	-
9508	-	-	x
9509	-	-	x

x - item in use

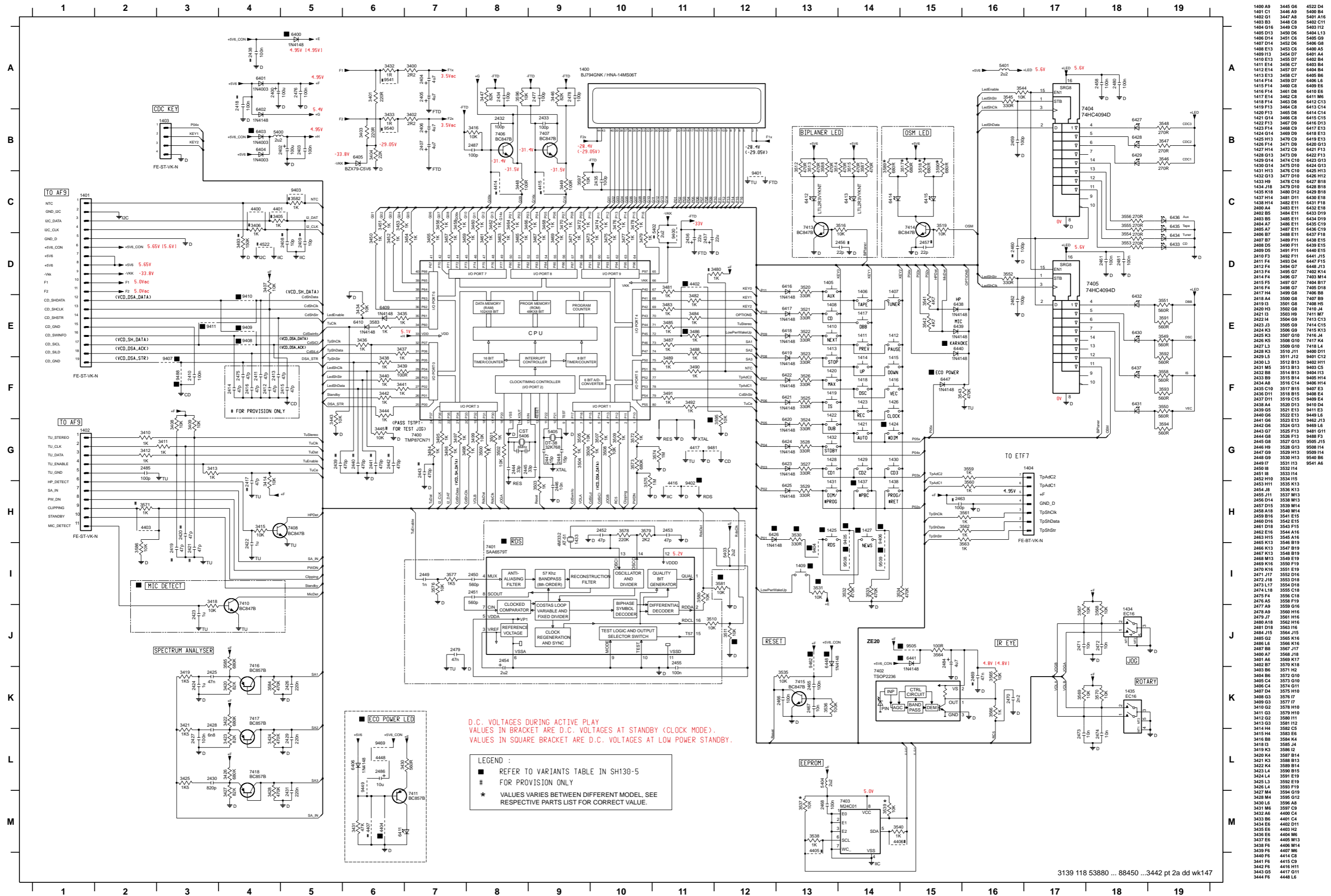
KEY-CDC PART - CIRCUIT DIAGRAM



KEY-CDC PART - COMPONENT LAYOUT



FRONT PART - CIRCUIT DIAGRAM



FRONT PART - COMPONENT LAYOUT

1400	A3	1401	A4	1402	A5	1403	A6	1404	A7	1405	A8	1406	A9	1407	A10	1408	A11	1409	A12	1410	A13	1411	A14	1412	A15	1413	A16	1414	A17	1415	A18	1416	A19	1417	A20	1418	A21	1419	A22	1420	A23	1421	A24	1422	A25	1423	A26	1424	A27	1425	A28	1426	A29	1427	A30	1428	A31	1429	A32	1430	A33	1431	A34	1432	A35	1433	A36	1434	A37	1435	A38	1436	A39	1437	A40	1438	A41	1439	A42	1440	A43	1441	A44	1442	A45	1443	A46	1444	A47	1445	A48	1446	A49	1447	A50	1448	A51	1449	A52	1450	A53	1451	A54	1452	A55	1453	A56	1454	A57	1455	A58	1456	A59	1457	A60	1458	A61	1459	A62	1460	A63	1461	A64	1462	A65	1463	A66	1464	A67	1465	A68	1466	A69	1467	A70	1468	A71	1469	A72	1470	A73	1471	A74	1472	A75	1473	A76	1474	A77	1475	A78	1476	A79	1477	A80	1478	A81	1479	A82	1480	A83	1481	A84	1482	A85	1483	A86	1484	A87	1485	A88	1486	A89	1487	A90	1488	A91	1489	A92	1490	A93	1491	A94	1492	A95	1493	A96	1494	A97	1495	A98	1496	A99	1497	A100	1498	A101	1499	A102	1500	A103	1501	A104	1502	A105	1503	A106	1504	A107	1505	A108	1506	1507	A109	1508	A110	1509	A111	1510	A112	1511	A113	1512	A114	1513	A115	1514	A116	1515	A117	1516	A118	1517	A119	1518	A120	1519	A121	1520	A122	1521	A123	1522	A124	1523	A125	1524	A126	1525	A127	1526	A128	1527	A129	1528	A130	1529	A131	1530	A132	1531	A133	1532	A134	1533	A135	1534	A136	1535	A137	1536	A138	1537	A139	1538	A140	1539	A141	1540	A142	1541	A143	1542	A144	1543	A145	1544	A146	1545	A147	1546	A148	1547	A149	1548	A150	1549	A151	1550	A152	1551	A153	1552	A154	1553	A155	1554	A156	1555	A157	1556	A158	1557	A159	1558	A160	1559	A161	1560	A162	1561	A163	1562	A164	1563	A165	1564	A166	1565	A167	1566	A168	1567	A169	1568	A170	1569	A171	1570	A172	1571	A173	1572	A174	1573	A175	1574	A176	1575	A177	1576	A178	1577	A179	1578	A180	1579	A181	1580	A182	1581	A183	1582	A184	1583	A185	1584	A186	1585	A187	1586	A188	1587	A189	1588	A190	1589	A191	1590	A192	1591	A193	1592	A194	1593	A195	1594	A196	1595	A197	1596	A198	1597	A199	1598	A200	1599	A201	1600	A202	1601	A203	1602	A204	1603	A205	1604	A206	1605	A207	1606	A208	1607	A209	1608	A210	1609	A211	1610	A212	1611	A213	1612	A214	1613	A215	1614	A216	1615	A217	1616	A218	1617	A219	1618	A220	1619	A221	1620	A222	1621	A223	1622	A224	1623	A225	1624	A226	1625	A227	1626	A228	1627	A229	1628	A230	1629	A231	1630	A232	1631	A233	1632	A234	1633	A235	1634	A236	1635	A237	1636	A238	1637	A239	1638	A240	1639	A241	1640	A242	1641	A243	1642	A244	1643	A245	1644	A246	1645	A247	1646	A248	1647	A249	1648	A250	1649	A251	1650	A252	1651	A253	1652	A254	1653	A255	1654	A256	1655	A257	1656	A258	1657	A259	1658	A260	1659	A261	1660	A262	1661	A263	1662	A264	1663	A265	1664	A266	1665	A267	1666	A268	1667	A269	1668	A270	1669	A271	1670	A272	1671	A273	1672	A274	1673	A275	1674	A276	1675	A277	1676	A278	1677	A279	1678	A280	1679	A281	1680	A282	1681	A283	1682	A284	1683	A285	1684	A286	1685	A287	1686	A288	1687	A289	1688	A290	1689	A291	1690	A292	1691	A293	1692	A294	1693	A295	1694	A296	1695	A297	1696	A298	1697	A299	1698	A300	1699	A301	1700	A302	1701	A303	1702	A304	1703	A305	1704	A306	1705	A307	1706	A308	1707	A309	1708	A310	1709	A311	1710	A312	1711	A313	1712	A314	1713	A315	1714	A316	1715	A317	1716	A318	1717	A319	1718	A320	1719	A321	1720	A322	1721	A323	1722	A324	1723	A325	1724	A326	1725	A327	1726	A328	1727	A329	1728	A330	1729	A331	1730	A332	1731	A333	1732	A334	1733	A335	1734	A336	1735	A337	1736	A338	1737	A339	1738	A340	1739	A341	1740	A342	1741	A343	1742	A344	1743	A345	1744	A346	1745	A347	1746	A348	1747	A349	1748	A350	1749	A351	1750	A352	1751	A353	1752	A354	1753	A355	1754	A356	1755	A357	1756	A358	1757	A359	1758	A360	1759	A361	1760	A362	1761	A363	1762	A364	1763	A365	1764	A366	1765	A367	1766	A368	1767	A369	1768	A370	1769	A371	1770	A372	1771	A373	1772	A374	1773	A375	1774	A376	1775	A377	1776	A378	1777	A379	1778	A380	1779	A381	1780	A382	1781	A383	1782	A384	1783	A385	1784	A386	1785	A387	1786	A388	1787	A389	1788	A390	1789	A391	1790	A392	1791	A393	1792	A394	1793	A395	1794	A396	1795	A397	1796	A398	1797	A399	1798	A400	1799	A401	1800	A402	1801	A403	1802	A404	1803	A405	1804	A406	1805	A407	1806	A408	1807	A409	1808	A410	1809	A411	1810	A412	1811	A413	1812	A414	1813	A415	1814	A416	1815	A417	1816	A418	1817	A419	1818	A420	1819	A421	1820	A422	1821	A423	1822	A424	1823	A425	1824	A426	1825	A427	1826	A428	1827	A429	1828	A430	1829	A431	1830	A432	1831	A433	1832	A434	1833	A435	1834	A436	1835	A437	1836	A438	1837	A439	1838	A440	1839	A441	1840	A442	1841	A443	1842	A444	1843	A445	1844	A446	1845	A447	1846	A448	1847	A449	1848	A450	1849	A451	1850	A452	1851	A453	1852	A454	1853	A455	1854	A456	1855	A457	1856	A458	1857	A459	1858	A460	1859	A461	1860	A462	1861	A463	1862	A464	1863	A465	1864	A466	1865	A467	1866	A468	1867	A469	1868	A470	1869	A471	1870	A472	1871	A473	1872	A474	1873	A475	1874	A476	1875	A477	1876	A478	1877	A479	1878	A480	1879	A481	1880	A482	1881	A483	1882	A484	1883	A485	1884	A486	1885	A487	1886	A488	1887	A489	1888	A490	1889	A491	1890	A492	1891	A493	1892	A494	1893	A495	1894	A496	1895	A497	1896	A498	1897	A499	1898	A500	1899	A501	1900	A502	1901	A503	1902	A504	1903	A505	1904	A506	1905	A507	1906	A508	1907	A509	1908	A510	1909	A511	1910	A512	1911	A513	1912	A514	1913	A515	1914	A516	1915	A517	1916	A518	1917	A519	1918	A520	1919	A521	1920	A522	1921	A523	1922	A524	1923	A525	1924	A526	1925	A527	1926	A528	1927	A529	1928	A530	1929	A531	1930	A532	1931	A533	1932	A534	1933	A535	1934	A536	1935	A537	1936	A538	1937	A539	1938	A540	1939	A541	1940	A542	1941	A543	1942	A544	1943	A545	1944	A546	1945	A547	1946	A548	1947	A549	1948	A550	1949	A551	1950	A552	1951	A553	1952	A554	1953	A555	1954	A556	1955	A557	1956	A558	1957	A559	1958	A560	1959	A561	1960	A562	1961	A563	1962	A564	1963	A565	1964	A566	1965	A567	1966	A568	1967	A569	1968	A570	1969	A571	1970	A572	1971	A573	1972	A574	1973	A575	1974	A576	1975	A577	1976	A578	1977	A579	1978	A580	1979	A581	1980	A582	1981	A583	1982	A584	1983	A585	1984	A586	1985	A587	1986	A588	1987	A589	1988	A590	1989	A591	1990	A592	1991	A593	1992	A594	1993	A595	1994	A596	1995	A597	1996	A598	1997	A599	1998	A600	1999	A601	2000	A602	2001	A603	2002	A604	2003	A605	2004	A606	2005	A607	2006	A608	2007	A609	2008	A610	2009	A611	2010	A612	2011	A613	2012	A614	2013	A615	2014	A616	2015	A617	2016	A618	2017	A619	2018	A620	2019	A621	2020	A622	2021	A623	2022	A624	2023	A625	2024	A626	2025	A627	2026	A628	2027	A629	2028	A630	2029	A631	2030	A632	2031	A633	2032	A634	2033	A635	2034	A636	2035	A637	2036	A638	2037	A639	2038	A640	2039	A641	2040	A642	2041	A643	2042	A644	2043	A645	2044	A646	2045	A647	2046	A648	2047	A649	2048	A650	2049	A651	2050	A652	2051	A653	2052	A654	2053	A655	2054	A656	2055	A657	2056	A658	2057	A659	2058	A660	2059	A661	2060	A662	2061	A663	2062	A664	2063	A665	2064	A666	2065	A667	2066	A668	2067	A669	2068	A670	2069	A671	2070	A672	2071	A673	2072	A674	2073	A675	2074	A676	2075	A677	2076	A678	2077	A679	2078	A680	2079	A681	2080	A682	2081	A683	2082	A684	2083	A685	2084	A686	2085	A687	2086	A688	2087	A689	2088	A690	2089	A691	2090	A692	2091	A693	2092	A694	2093	A695	2094	A696	2095	A697	2096	A698	2097	A699	2098	A700	2099	A701	2100	A702	2101	A703	2102	A704	2103	A705	2104	A706	2105	A707	2106	A708	2107	A709	2108	A710	2109	A711	2110	A712	2111	A713	2112	A714	2113	A715	2114	A716	2115	A717	2116	A718	2117	A719	2118	A720	2119	A721	2120	A722	2121	A723	2122	A724	2123	A725	2124	A726	2125	A727
------	----	------	----	------	----	------	----	------	----	------	----	------	----	------	-----	------	-----	------	-----	------	-----	------	-----	------	-----	------	-----	------	-----	------	-----	------	-----	------	-----	------	-----	------	-----	------	-----	------	-----	------	-----	------	-----	------	-----	------	-----	------	-----	------	-----	------	-----	------	-----	------	-----	------	-----	------	-----	------	-----	------	-----	------	-----	------	-----	------	-----	------	-----	------	-----	------	-----	------	-----	------	-----	------	-----	------	-----	------	-----	------	-----	------	-----	------	-----	------	-----	------	-----	------	-----	------	-----	------	-----	------	-----	------	-----	------	-----	------	-----	------	-----	------	-----	------	-----	------	-----	------	-----	------	-----	------	-----	------	-----	------	-----	------	-----	------	-----	------	-----	------	-----	------	-----	------	-----	------	-----	------	-----	------	-----	------	-----	------	-----	------	-----	------	-----	------	-----	------	-----	------	-----	------	-----	------	-----	------	-----	------	-----	------	-----	------	-----	------	-----	------	-----	------	-----	------	-----	------	-----	------	-----	------	-----	------	-----	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------

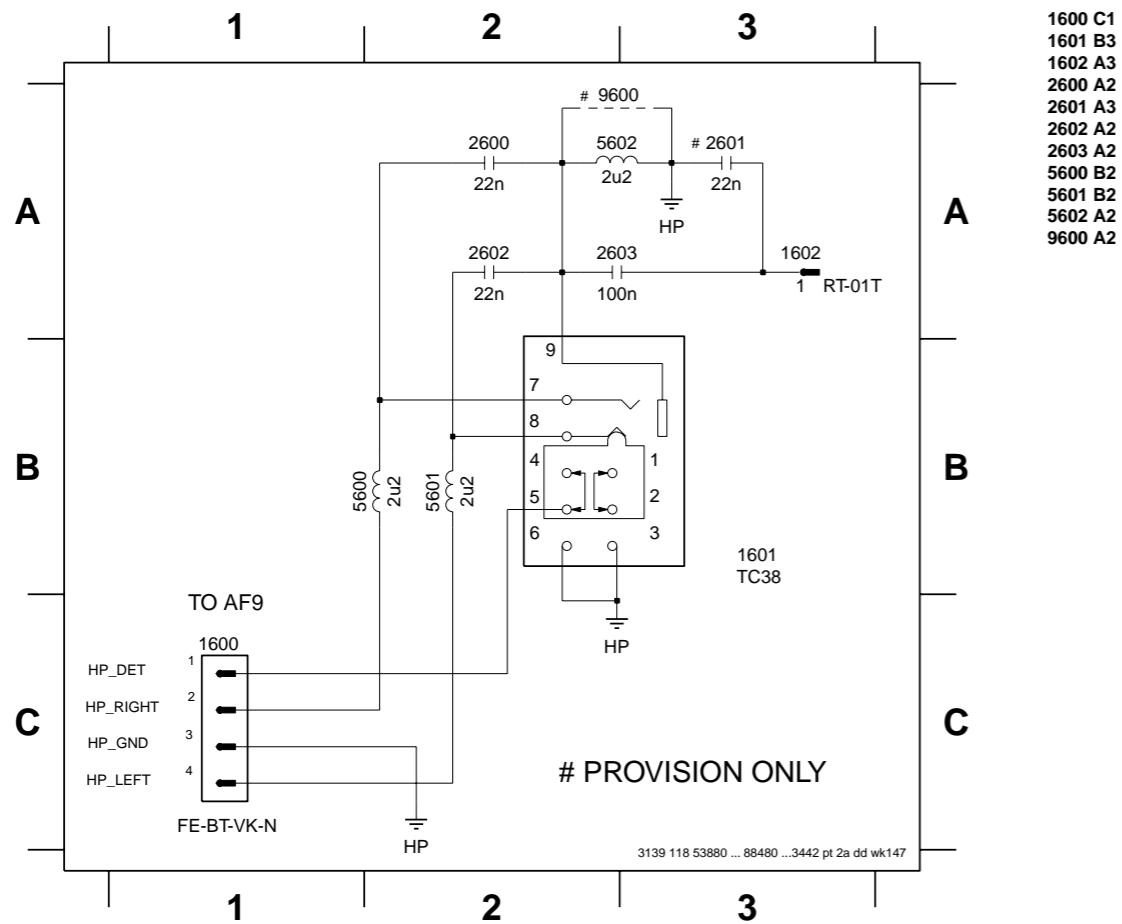
FRONT PART - CHIP LAYOUT

2440003
 2440111
 2440112
 2440113
 2440114
 2440115
 2440116
 2440117
 2440118
 2440119
 2440120
 2440121
 2440122
 2440123
 2440124
 2440125
 2440126
 2440127
 2440128
 2440129
 2440130
 2440131
 2440132
 2440133
 2440134
 2440135
 2440136
 2440137
 2440138
 2440139
 2440140
 2440141
 2440142
 2440143
 2440144
 2440145
 2440146
 2440147
 2440148
 2440149
 2440150
 2440151
 2440152
 2440153
 2440154
 2440155
 2440156
 2440157
 2440158
 2440159
 2440160
 2440161
 2440162
 2440163
 2440164
 2440165
 2440166
 2440167
 2440168
 2440169
 2440170
 2440171
 2440172
 2440173
 2440174
 2440175
 2440176
 2440177
 2440178
 2440179
 2440180
 2440181
 2440182
 2440183
 2440184
 2440185
 2440186
 2440187
 2440188
 2440189
 2440190
 2440191
 2440192
 2440193
 2440194
 2440195
 2440196
 2440197
 2440198
 2440199
 2440200
 2440201
 2440202
 2440203
 2440204
 2440205
 2440206
 2440207
 2440208
 2440209
 2440210
 2440211
 2440212
 2440213
 2440214
 2440215
 2440216
 2440217
 2440218
 2440219
 2440220
 2440221
 2440222
 2440223
 2440224
 2440225
 2440226
 2440227
 2440228
 2440229
 2440230
 2440231
 2440232
 2440233
 2440234
 2440235
 2440236
 2440237
 2440238
 2440239
 2440240
 2440241
 2440242
 2440243
 2440244
 2440245
 2440246
 2440247
 2440248
 2440249
 2440250
 2440251
 2440252
 2440253
 2440254
 2440255
 2440256
 2440257
 2440258
 2440259
 2440260
 2440261
 2440262
 2440263
 2440264
 2440265
 2440266
 2440267
 2440268
 2440269
 2440270
 2440271
 2440272
 2440273
 2440274
 2440275
 2440276
 2440277
 2440278
 2440279
 2440280
 2440281
 2440282
 2440283
 2440284
 2440285
 2440286
 2440287
 2440288
 2440289
 2440290
 2440291
 2440292
 2440293
 2440294
 2440295
 2440296
 2440297
 2440298
 2440299
 2440300
 2440301
 2440302
 2440303
 2440304
 2440305
 2440306
 2440307
 2440308
 2440309
 2440310
 2440311
 2440312
 2440313
 2440314
 2440315
 2440316
 2440317
 2440318
 2440319
 2440320
 2440321
 2440322
 2440323
 2440324
 2440325
 2440326
 2440327
 2440328
 2440329
 2440330
 2440331
 2440332
 2440333
 2440334
 2440335
 2440336
 2440337
 2440338
 2440339
 2440340
 2440341
 2440342
 2440343
 2440344
 2440345
 2440346
 2440347
 2440348
 2440349
 2440350
 2440351
 2440352
 2440353
 2440354
 2440355
 2440356
 2440357
 2440358
 2440359
 2440360
 2440361
 2440362
 2440363
 2440364
 2440365
 2440366
 2440367
 2440368
 2440369
 2440370
 2440371
 2440372
 2440373
 2440374
 2440375
 2440376
 2440377
 2440378
 2440379
 2440380
 2440381
 2440382
 2440383
 2440384
 2440385
 2440386
 2440387
 2440388
 2440389
 2440390
 2440391
 2440392
 2440393
 2440394
 2440395
 2440396
 2440397
 2440398
 2440399
 2440400
 2440401
 2440402
 2440403
 2440404
 2440405
 2440406
 2440407
 2440408
 2440409
 2440410
 2440411
 2440412
 2440413
 2440414
 2440415
 2440416
 2440417
 2440418
 2440419
 2440420
 2440421
 2440422
 2440423
 2440424
 2440425
 2440426
 2440427
 2440428
 2440429
 2440430
 2440431
 2440432
 2440433
 2440434
 2440435
 2440436
 2440437
 2440438
 2440439
 2440440
 2440441
 2440442
 2440443
 2440444
 2440445
 2440446
 2440447
 2440448
 2440449
 2440450
 2440451
 2440452
 2440453
 2440454
 2440455
 2440456
 2440457
 2440458
 2440459
 2440460
 2440461
 2440462
 2440463
 2440464
 2440465
 2440466
 2440467
 2440468
 2440469
 2440470
 2440471
 2440472
 2440473
 2440474
 2440475
 2440476
 2440477
 2440478
 2440479
 2440480
 2440481
 2440482
 2440483
 2440484
 2440485
 2440486
 2440487
 2440488
 2440489
 2440490
 2440491
 2440492
 2440493
 2440494
 2440495
 2440496
 2440497
 2440498
 2440499
 2440500
 2440501
 2440502
 2440503
 2440504
 2440505
 2440506
 2440507
 2440508
 2440509
 2440510
 2440511
 2440512
 2440513
 2440514
 2440515
 2440516
 2440517
 2440518
 2440519
 2440520
 2440521
 2440522
 2440523
 2440524
 2440525
 2440526
 2440527
 2440528
 2440529
 2440530
 2440531
 2440532
 2440533
 2440534
 2440535
 2440536
 2440537
 2440538
 2440539
 2440540
 2440541
 2440542
 2440543
 2440544
 2440545
 2440546
 2440547
 2440548
 2440549
 2440550
 2440551
 2440552
 2440553
 2440554
 2440555
 2440556
 2440557
 2440558
 2440559
 2440560
 2440561
 2440562
 2440563
 2440564
 2440565
 2440566
 2440567
 2440568
 2440569
 2440570
 2440571
 2440572
 2440573
 2440574
 2440575
 2440576
 2440577
 2440578
 2440579
 2440580
 2440581
 2440582
 2440583
 2440584
 2440585
 2440586
 2440587
 2440588
 2440589
 2440590
 2440591
 2440592
 2440593
 2440594
 2440595
 2440596
 2440597
 2440598
 2440599
 2440600
 2440601
 2440602
 2440603
 2440604
 2440605
 2440606
 2440607
 2440608
 2440609
 2440610
 2440611
 2440612
 2440613
 2440614
 2440615
 2440616
 2440617
 2440618
 2440619
 2440620
 2440621
 2440622
 2440623
 2440624
 2440625
 2440626
 2440627
 2440628
 2440629
 2440630
 2440631
 2440632
 2440633
 2440634
 2440635
 2440636
 2440637
 2440638
 2440639
 2440640
 2440641
 2440642
 2440643
 2440644
 2440645
 2440646
 2440647
 2440648
 2440649
 2440650
 2440651
 2440652
 2440653
 2440654
 2440655
 2440656
 2440657
 2440658
 2440659
 2440660
 2440661
 2440662
 2440663
 2440664
 2440665
 2440666
 2440667
 2440668
 2440669
 2440670
 2440671
 2440672
 2440673
 2440674
 2440675
 2440676
 2440677
 2440678
 2440679
 2440680
 2440681
 2440682
 2440683
 2440684
 2440685
 2440686
 2440687
 2440688
 2440689
 2440690
 2440691
 2440692
 2440693
 2440694
 2440695
 2440696
 2440697
 2440698
 2440699
 2440700

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

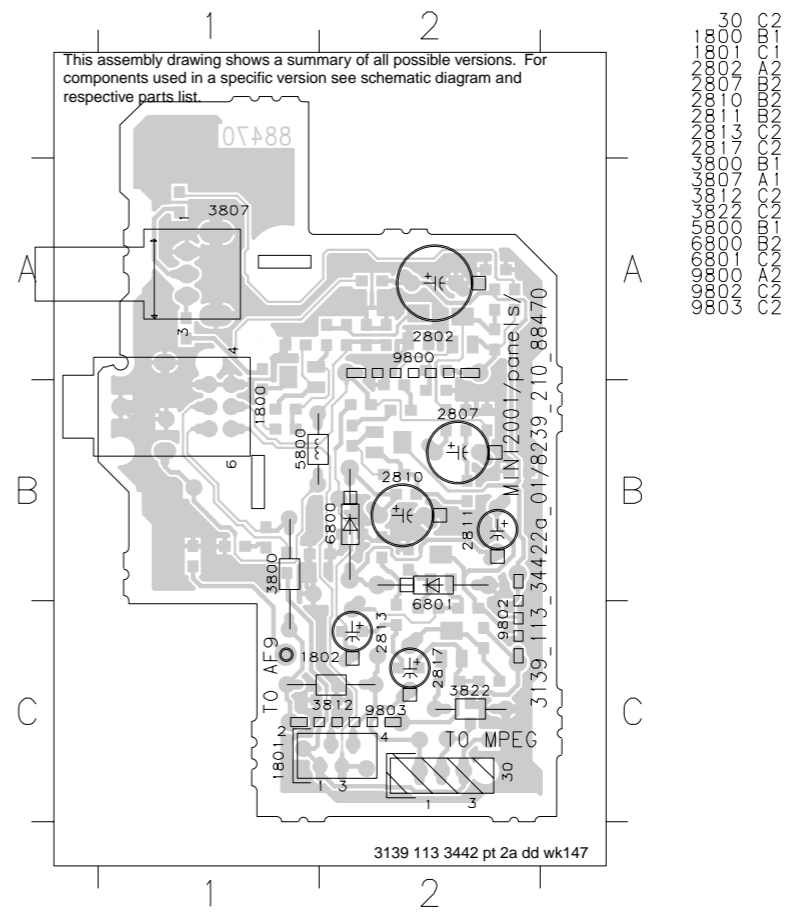


HEADPHONE PART - CIRCUIT DIAGRAM



- 1600 C1
- 1601 B3
- 1602 A3
- 2600 A2
- 2601 A3
- 2602 A2
- 2603 A2
- 5600 B2
- 5601 B2
- 5602 A2
- 9600 A2

KARAOKE PART - COMPONENT & CHIP LAYOUTS

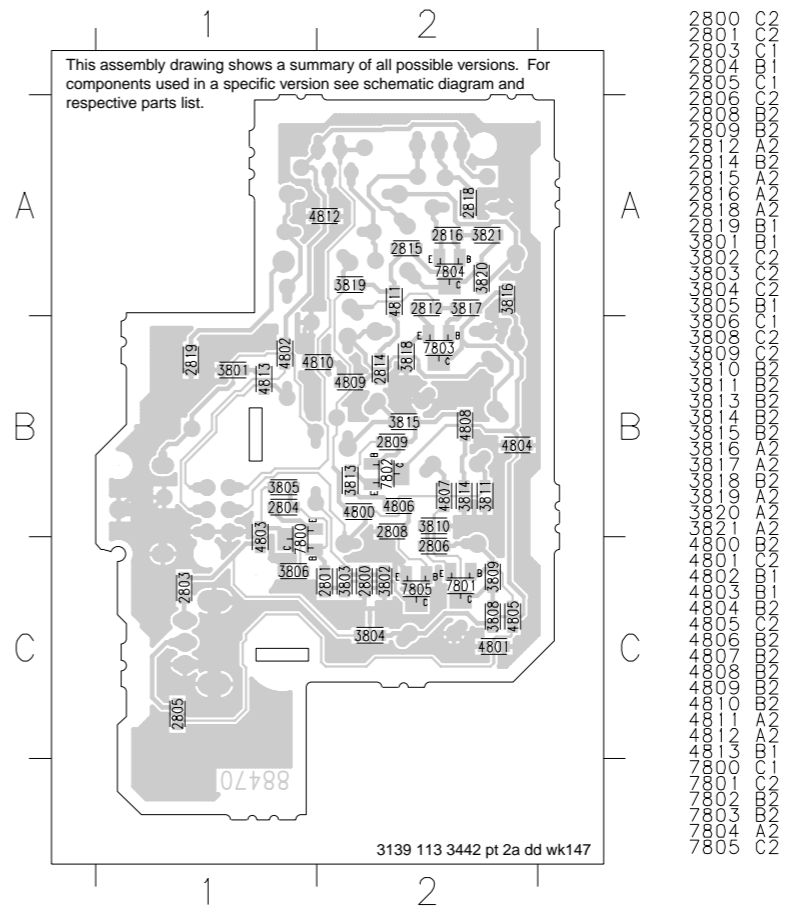
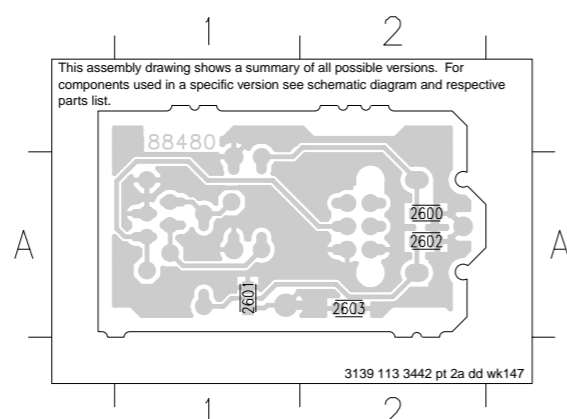
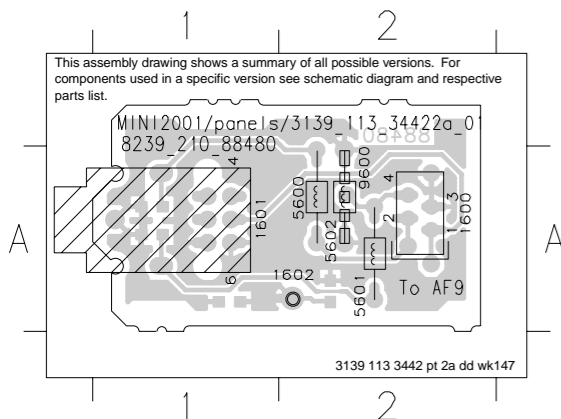


- 1600 C1
- 1601 B3
- 1602 A3
- 2600 A2
- 2601 A3
- 2602 A2
- 2603 A2
- 5600 B2
- 5601 B2
- 5602 A2
- 9600 A2

HEADPHONE PART - COMPONENT & CHIP LAYOUTS

- 1600 A2
- 1601 A1
- 1602 A2
- 5600 A2
- 5601 A2
- 5602 A2
- 9600 A2

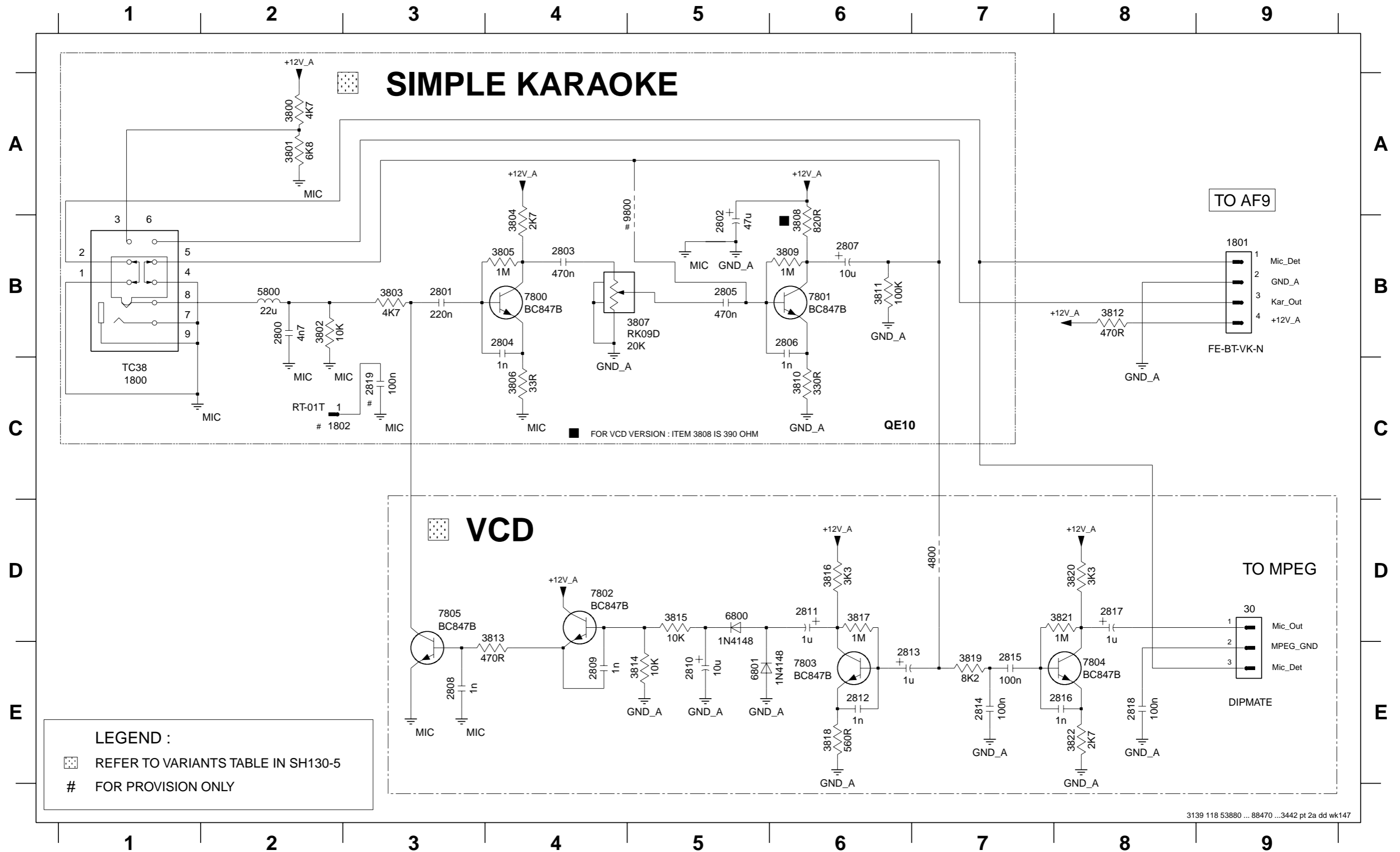
- 2600 A2
- 2601 A1
- 2602 A2
- 2603 A2



- 1600 C1
- 1601 B3
- 1602 A3
- 2600 A2
- 2601 A3
- 2602 A2
- 2603 A2
- 5600 B2
- 5601 B2
- 5602 A2
- 9600 A2

KARAOKE PART - CIRCUIT DIAGRAM

30 D9	1802 C2	2802 B5	2805 B5	2808 E3	2811 D6	2814 E7	2817 D8	3800 A2	3803 B3	3806 C4	3809 B6	3812 B8	3815 D5	3818 E6	3821 D8	5800 B2	7800 B4	7803 E6	9800 A5
1800 C1	2800 B2	2803 B4	2806 B6	2809 E4	2812 E6	2815 E7	2818 E8	3801 A2	3804 B4	3807 B4	3810 C6	3813 D4	3816 D6	3819 E7	3822 E8	6800 D5	7801 B6	7804 E8	
1801 B9	2801 B3	2804 B4	2807 B6	2810 E5	2813 E6	2816 E8	2819 C3	3802 B2	3805 B4	3808 B6	3811 B6	3814 E5	3817 D6	3820 D8	4800 D7	6801 E5	7802 D4	7805 D3	



ELECTRICAL PARTS LIST - FRONT BOARD**MISCELLANEOUS**

1400	3139 110 52900	FTD Display HNA-14MS06T	2410	4822 126 14305	100nF 10% 16V
1401	4822 265 11545	Flex Socket 19 Pin Hort.	2422	3198 017 41050	1µF 10V
1402	2422 025 14541	Flex Socket 11 Pin Hort.	2423	3198 017 41050	1µF 10V
1403	4822 265 11183	Flex Socket 4 Pin Hort.	2424	3198 017 41050	1µF 10V
1404	4822 267 10953	Flex Socket 7 Pin Vert.	2425	3198 017 34730	47nF 16V
1405	4822 276 13775	Tact Switch	2426	4822 126 13879	220nF +80/-20% 16V
1406	4822 276 13775	Tact Switch	2427	4822 126 14305	100nF 10% 16V
1407	4822 276 13775	Tact Switch	2428	5322 126 11582	6,8nF 10% 63V
1408	4822 276 13775	Tact Switch	2429	4822 126 13879	220nF +80/-20% 16V
1409	4822 276 13775	Tact Switch	2430	3198 016 38210	820pF 25V
1410	4822 276 13775	Tact Switch	2431	4822 126 13879	220nF +80/-20% 16V
1411	4822 276 13775	Tact Switch	2432	4822 122 31765	100pF 2% 63V
1412	4822 276 13775	Tact Switch	2433	4822 122 31765	100pF 2% 63V
1413	4822 276 13775	Tact Switch	2434	4822 122 31765	100pF 2% 63V
1414	4822 276 13775	Tact Switch	2435	4822 122 31765	100pF 2% 63V
1415	4822 276 13775	Tact Switch	2436	3198 028 52290	22µF 20% 50V
1416	4822 276 13775	Tact Switch	2437	3198 028 52290	22µF 20% 50V
1417	4822 276 13775	Tact Switch	2444	2222 867 15339	33pF 5% 50V
1418	4822 276 13775	Tact Switch	2445	2222 867 15339	33pF 5% 50V
1419	4822 276 13775	Tact Switch	2446	5322 126 11583	10nF 10% 50V
1420	4822 276 13775	Tact Switch	2447	4822 122 33752	15pF 5% 50V
1421	4822 276 13775	Tact Switch	2448	4822 122 33752	15pF 5% 50V
1422	4822 276 13775	Tact Switch	2449	4822 122 33197	1nF 10% 50V
1423	4822 276 13775	Tact Switch	2450	4822 126 14249	560pF 10% 50V
1425	4822 276 13775	Tact Switch	2451	4822 126 14249	560pF 10% 50V
1426	4822 276 13775	Tact Switch	2452	4822 122 33777	47pF 5% 63V
1427	4822 276 13775	Tact Switch	2453	4822 122 33777	47pF 5% 63V
1428	4822 276 13775	Tact Switch	2454	4822 124 22652	2,2µF 20% 50V
1429	4822 276 13775	Tact Switch	2455	4822 126 14305	100nF 10% 16V
1430	4822 276 13775	Tact Switch	2458	4822 126 14305	100nF 10% 16V
1431	4822 276 13775	Tact Switch	2459	4822 122 31765	100pF 2% 63V
1432	4822 276 13775	Tact Switch	2461	4822 126 14305	100nF 10% 16V
1433	4822 242 11033	X'tal Resonator 4,332MHz	2462	4822 122 31765	100pF 2% 63V
1434	2422 129 16385	Rotary Encoder 12P	2465	4822 126 14305	100nF 10% 16V
1435	4822 273 10365	Rotary Encoder 24P	2466	4822 126 14305	100nF 10% 16V
1438	4822 276 13775	Tact Switch	2467	5322 126 11583	10nF 10% 50V
1440	4822 265 11183	Flex Socket 4 Pin Hort.	2468	4822 126 14305	100nF 10% 16V
1441	4822 276 13775	Tact Switch	2470	4822 126 14238	2,2nF 50V
1442	4822 276 13775	Tact Switch	2471	5322 126 11583	10nF 10% 50V
1600	4822 267 10733	Flex Socket 4 Pin Vert.	2472	5322 126 11583	10nF 10% 50V
1601	4822 265 11529	Headphone Socket	2473	5322 126 11583	10nF 10% 50V
1800	4822 265 11529	Karaoke Mic Socket	2474	5322 126 11583	10nF 10% 50V
1801	4822 267 10733	Flex Socket 4 Pin Vert.	2476	4822 126 14305	100nF 10% 16V

CAPACITORS

2400	4822 124 23432	100µF 20% 10V	2477	4822 122 31765	100pF 2% 63V
2402	4822 124 23432	100µF 20% 10V	2478	4822 122 31765	100pF 2% 63V
2403	4822 126 14305	100nF 10% 16V	2479	4822 126 12785	47nF 50V
2404	4822 124 12032	4,7µF 20% 50V	2480	4822 126 14305	100nF 10% 16V
2405	4822 124 12032	4,7µF 20% 50V	2481	4822 126 14305	100nF 10% 16V
2406	4822 124 12032	4,7µF 20% 50V	2484	4822 124 40769	4,7µF 20% 100V
2407	4822 124 12032	4,7µF 20% 50V	2485	4822 122 31765	100pF 2% 63V
			2486	4822 124 40248	10µF 20% 63V
			2487	4822 122 31765	100pF 2% 63V

ELECTRICAL PARTS LIST - FRONT BOARD

2600	4822 126 14494	22nF 10% 25V	3443	4822 051 30103	10k 5% 0,062W
2602	4822 126 14494	22nF 10% 25V	3444	4822 051 30102	1k 5% 0,062W
2603	4822 126 14305	100nF 10% 16V	3446	4822 117 12864	82k 5% 0,6W
2800	4822 126 13193	4,7nF 10% 63V	3447	4822 116 52304	82k 5% 0,5W
2801	4822 126 13879	220nF +80/-20% 16V	3448	4822 051 30101	100R 5% 0,062W
2802	3198 028 44790	47µF 20% 35V	3449	4822 051 30101	100R 5% 0,062W
2803	4822 126 13482	470nF 80/20% 16V	3450	4822 051 30102	1k 5% 0,062W
2804	5322 126 11578	1nF 10% 50V	3451	4822 051 30102	1k 5% 0,062W
2805	4822 126 13482	470nF 80/20% 16V	3452	4822 051 30102	1k 5% 0,062W
2806	5322 126 11578	1nF 10% 50V	3453	4822 051 30102	1k 5% 0,062W
2807	4822 124 12255	10µF 20% 50V	3454	4822 051 30102	1k 5% 0,062W

RESISTORS

3400	4822 116 81154	2R2 5% 0,5W	3456	4822 051 30102	1k 5% 0,062W
3401	4822 116 83872	220R 5% 0,5W	3457	4822 051 30102	1k 5% 0,062W
3402	4822 116 81154	2R2 5% 0,5W	3458	4822 051 30102	1k 5% 0,062W
3403	4822 116 83872	220R 5% 0,5W	3459	4822 051 30102	1k 5% 0,062W
3404	4822 116 52257	22k 5% 0,5W	3460	4822 051 30102	1k 5% 0,062W
3407	4822 050 21003	10k 1% 0,6W	3461	4822 051 30102	1k 5% 0,062W
3408	4822 050 21003	10k 1% 0,6W	3462	4822 051 30102	1k 5% 0,062W
3409	4822 051 30103	10k 5% 0,062W	3463	4822 051 30102	1k 5% 0,062W
3410	4822 050 11002	1k 1% 0,4W	3464	4822 051 30102	1k 5% 0,062W
3411	4822 051 30102	1k 5% 0,062W	3465	4822 051 30102	1k 5% 0,062W
3412	4822 051 30102	1k 5% 0,062W	3466	4822 051 30102	1k 5% 0,062W
3413	4822 051 30102	1k 5% 0,062W	3467	4822 051 30102	1k 5% 0,062W
3414	4822 051 30103	10k 5% 0,062W	3468	4822 051 30102	1k 5% 0,062W
3415	4822 051 30103	10k 5% 0,062W	3469	4822 051 30102	1k 5% 0,062W
3416	4822 051 30103	10k 5% 0,062W	3470	4822 051 30102	1k 5% 0,062W
3418	4822 051 30103	10k 5% 0,062W	3471	4822 051 30102	1k 5% 0,062W
3419	4822 116 52243	1k5 5% 0,5W	3472	4822 051 30102	1k 5% 0,062W
3420	4822 117 12864	82k 5% 0,6W	3473	4822 051 30102	1k 5% 0,062W
3421	4822 116 52243	1k5 5% 0,5W	3474	4822 051 30102	1k 5% 0,062W
3422	4822 051 30684	680k 5% 0,062W	3475	4822 051 30102	1k 5% 0,062W
3423	4822 117 12864	82k 5% 0,6W	3476	4822 051 30102	1k 5% 0,062W
3424	4822 051 30474	470k 5% 0,062W	3477	4822 051 30102	1k 5% 0,062W
3425	4822 116 52243	1k5 5% 0,5W	3478	4822 051 30102	1k 5% 0,062W
3426	4822 051 30684	680k 5% 0,062W	3479	4822 051 30102	1k 5% 0,062W
3427	4822 117 12864	82k 5% 0,6W	3481	4822 050 11002	1k 1% 0,4W
3428	4822 051 30474	470k 5% 0,062W	3482	4822 050 11002	1k 1% 0,4W
3430	4822 051 30561	560R 5% 0,062W	3483	4822 050 11002	1k 1% 0,4W
3431	4822 117 12925	47k 1% 0,063W	3484	4822 051 30102	1k 5% 0,062W
3432	4822 116 80176	1R 5% 0,5W	3485	4822 051 30102	1k 5% 0,062W
3433	4822 116 80176	1R 5% 0,5W	3486	4822 051 30102	1k 5% 0,062W
3434	4822 051 30103	10k 5% 0,062W	3487	4822 051 30102	1k 5% 0,062W
3435	4822 051 30102	1k 5% 0,062W	3488	4822 051 30102	1k 5% 0,062W
3436	4822 051 30102	1k 5% 0,062W	3489	4822 051 30102	1k 5% 0,062W
3437	4822 051 30102	1k 5% 0,062W	3490	4822 051 30102	1k 5% 0,062W
3438	4822 051 30102	1k 5% 0,062W	3491	4822 051 30102	1k 5% 0,062W
3439	4822 051 30101	100R 5% 0,062W	3492	4822 051 30102	1k 5% 0,062W
3440	4822 051 30102	1k 5% 0,062W	3494	4822 051 30102	1k 5% 0,062W
3441	4822 051 30102	1k 5% 0,062W	3495	4822 051 30102	1k 5% 0,062W
3442	4822 051 30102	1k 5% 0,062W	3496	4822 051 30102	1k 5% 0,062W
			3497	4822 051 30102	1k 5% 0,062W

ELECTRICAL PARTS LIST - FRONT BOARD

RESISTORS

3498	4822 051 30102	1k 5% 0,062W	3550	4822 051 30561	560R 5% 0,062W
3499	4822 050 21003	10k 1% 0,6W	3551	4822 051 30561	560R 5% 0,062W
3500	4822 051 30102	1k 5% 0,062W	3552	4822 051 30331	330R 5% 0,062W
3501	4822 051 30102	1k 5% 0,062W	3553	4822 116 83876	270R 5% 0,5W
3502	4822 050 21003	10k 1% 0,6W	3554	4822 116 83876	270R 5% 0,5W
3503	4822 050 11002	1k 1% 0,4W	3555	4822 116 83876	270R 5% 0,5W
3504	4822 051 30102	1k 5% 0,062W	3556	4822 116 83876	270R 5% 0,5W
3505	4822 050 21003	10k 1% 0,6W	3558	4822 051 30561	560R 5% 0,062W
3506	4822 051 30102	1k 5% 0,062W	3559	4822 051 30102	1k 5% 0,062W
3507	4822 051 30102	1k 5% 0,062W	3560	4822 051 30102	1k 5% 0,062W
3508	4822 051 30103	10k 5% 0,062W	3561	4822 050 11002	1k 1% 0,4W
3509	4822 050 11002	1k 1% 0,4W	3562	4822 051 30102	1k 5% 0,062W
3510	4822 050 21003	10k 1% 0,6W	3563	4822 050 11002	1k 1% 0,4W
3511	4822 051 30103	10k 5% 0,062W	3564	4822 051 30101	100R 5% 0,062W
3512	4822 051 30471	470R 5% 0,062W	3565	4822 051 30103	10k 5% 0,062W
3513	4822 051 30471	470R 5% 0,062W	3566	4822 050 11002	1k 1% 0,4W
3514	4822 051 30471	470R 5% 0,062W	3567	4822 051 30103	10k 5% 0,062W
3515	4822 051 30471	470R 5% 0,062W	3568	4822 051 30103	10k 5% 0,062W
3516	4822 051 30103	10k 5% 0,062W	3569	4822 051 30103	10k 5% 0,062W
3517	4822 117 11817	1k2 1% 1/16W	3570	4822 051 30103	10k 5% 0,062W
3518	4822 117 11817	1k2 1% 1/16W	3572	4822 051 30102	1k 5% 0,062W
3519	4822 051 30103	10k 5% 0,062W	3573	4822 051 30684	680k 5% 0,062W
3520	4822 051 30331	330R 5% 0,062W	3574	4822 051 30105	1M 5% 0,062W
3521	4822 051 30331	330R 5% 0,062W	3575	4822 051 30105	1M 5% 0,062W
3522	4822 051 30331	330R 5% 0,062W	3576	4822 051 30103	10k 5% 0,062W
3523	4822 051 30331	330R 5% 0,062W	3577	4822 051 30152	1k5 5% 0,062W
3524	4822 051 30331	330R 5% 0,062W	3578	4822 117 12891	220k 1% 0,062W
3525	4822 051 30331	330R 5% 0,062W	3579	4822 051 30222	2k2 5% 0,062W
3526	4822 051 30331	330R 5% 0,062W	3580	4822 050 21003	10k 1% 0,6W
3527	4822 051 30331	330R 5% 0,062W	3581	4822 051 30103	10k 5% 0,062W
3528	4822 051 30331	330R 5% 0,062W	3583	4822 051 30102	1k 5% 0,062W
3529	4822 116 52219	330R 5% 0,5W	3584	4822 051 30474	470k 5% 0,062W
3530	4822 051 30331	330R 5% 0,062W	3585	4822 051 30684	680k 5% 0,062W
3531	4822 051 30103	10k 5% 0,062W	3586	4822 051 30103	10k 5% 0,062W
3532	4822 051 30474	470k 5% 0,062W	3587	4822 051 30471	470R 5% 0,062W
3533	4822 051 30474	470k 5% 0,062W	3588	4822 051 30471	470R 5% 0,062W
3534	4822 051 30474	470k 5% 0,062W	3589	4822 117 11817	1k2 1% 1/16W
3535	4822 051 30103	10k 5% 0,062W	3590	4822 117 11817	1k2 1% 1/16W
3536	4822 117 13632	100k 1% 0603 0,62W	3591	4822 051 30561	560R 5% 0,062W
3537	4822 051 30682	6k8 5% 0,062W	3592	4822 051 30561	560R 5% 0,062W
3538	4822 051 30102	1k 5% 0,062W	3593	4822 051 30561	560R 5% 0,062W
3539	4822 051 30682	6k8 5% 0,062W	3594	4822 051 30561	560R 5% 0,062W
3540	4822 051 30102	1k 5% 0,062W	3596	4822 051 30103	10k 5% 0,062W
3541	4822 051 30472	4k7 5% 0,062W	3597	4822 051 30103	10k 5% 0,062W
3542	4822 051 30472	4k7 5% 0,062W	3800	4822 116 52283	4k7 5% 0,5W
3543	4822 051 30474	470k 5% 0,062W	3801	4822 051 30682	6k8 5% 0,062W
3544	4822 050 21003	10k 1% 0,6W	3802	4822 051 30103	10k 5% 0,062W
3545	4822 051 30331	330R 5% 0,062W	3803	4822 051 30472	4k7 5% 0,062W
3546	4822 051 30271	270R 5% 0,062W	3804	4822 051 30272	2k7 5% 0,062W
3547	4822 051 30271	270R 5% 0,062W	3805	4822 051 30105	1M 5% 0,062W
3548	4822 051 30271	270R 5% 0,062W	3806	4822 051 30339	33R 5% 0,062W
3549	4822 051 30561	560R 5% 0,062W	3807	2120 366 90291	Potm Rotary 20K

ELECTRICAL PARTS LIST - FRONT BOARD

3808	4822 117 12968	820R 5% 0,62W	4462	4822 051 30008	OR Jumper 0603
3809	4822 051 30105	1M 5% 0,062W	4463	4822 051 30008	OR Jumper 0603
3810	4822 051 30331	330R 5% 0,062W	4464	4822 051 30008	OR Jumper 0603
3811	4822 117 13632	100k 1% 0,062W	4465	4822 051 30008	OR Jumper 0603
3812	4822 116 83883	470R 5% 0,5W	4466	4822 051 30008	OR Jumper 0603
4400	4822 051 30008	OR Jumper 0603	4467	4822 051 30008	OR Jumper 0603
4401	4822 051 30008	OR Jumper 0603	4468	4822 051 30008	OR Jumper 0603
4403	4822 051 30008	OR Jumper 0603	4469	4822 051 30008	OR Jumper 0603
4416	4822 051 30008	OR Jumper 0603	4470	4822 051 30008	OR Jumper 0603
4417	4822 051 30008	OR Jumper 0603	4471	4822 051 30008	OR Jumper 0603
4420	4822 051 30008	OR Jumper 0603	4472	4822 051 30008	OR Jumper 0603
4421	4822 051 30008	OR Jumper 0603	4473	4822 051 30008	OR Jumper 0603
4422	4822 051 30008	OR Jumper 0603	4474	4822 051 30008	OR Jumper 0603
4423	4822 051 30008	OR Jumper 0603	4475	4822 051 30008	OR Jumper 0603
4424	4822 051 30008	OR Jumper 0603	4476	4822 051 30008	OR Jumper 0603
4425	4822 051 30008	OR Jumper 0603	4477	4822 051 30008	OR Jumper 0603
4426	4822 051 30008	OR Jumper 0603	4478	4822 051 30008	OR Jumper 0603
4427	4822 051 30008	OR Jumper 0603	4479	4822 051 30008	OR Jumper 0603
4428	4822 051 30008	OR Jumper 0603	4480	4822 051 30008	OR Jumper 0603
4429	4822 051 30008	OR Jumper 0603	4481	4822 051 30008	OR Jumper 0603
4430	4822 051 30008	OR Jumper 0603	4482	4822 051 30008	OR Jumper 0603
4431	4822 051 30008	OR Jumper 0603	4483	4822 051 30008	OR Jumper 0603
4432	4822 051 30008	OR Jumper 0603	4484	4822 051 30008	OR Jumper 0603
4433	4822 051 30008	OR Jumper 0603	4485	4822 051 30008	OR Jumper 0603
4434	4822 051 30008	OR Jumper 0603	4486	4822 051 30008	OR Jumper 0603
4435	4822 051 30008	OR Jumper 0603	4487	4822 051 30008	OR Jumper 0603
4436	4822 051 30008	OR Jumper 0603	4488	4822 051 30008	OR Jumper 0603
4437	4822 051 30008	OR Jumper 0603	4489	4822 051 30008	OR Jumper 0603
4438	4822 051 30008	OR Jumper 0603	4490	4822 051 30008	OR Jumper 0603
4439	4822 051 30008	OR Jumper 0603	4492	4822 051 30008	OR Jumper 0603
4440	4822 051 30008	OR Jumper 0603	4494	4822 051 30008	OR Jumper 0603
4441	4822 051 30008	OR Jumper 0603	4495	4822 051 30008	OR Jumper 0603
4442	4822 051 30008	OR Jumper 0603	4496	4822 051 30008	OR Jumper 0603
4443	4822 051 30008	OR Jumper 0603	4498	4822 051 30008	OR Jumper 0603
4444	4822 051 30008	OR Jumper 0603	4499	4822 051 30008	OR Jumper 0603
4445	4822 051 30008	OR Jumper 0603	4500	4822 051 30008	OR Jumper 0603
4446	4822 051 30008	OR Jumper 0603	4502	4822 051 30008	OR Jumper 0603
4447	4822 051 30008	OR Jumper 0603	4503	4822 051 30008	OR Jumper 0603
4448	4822 051 30008	OR Jumper 0603	4504	4822 051 30008	OR Jumper 0603
4449	4822 051 30008	OR Jumper 0603	4505	4822 051 30008	OR Jumper 0603
4450	4822 051 30008	OR Jumper 0603	4506	4822 051 30008	OR Jumper 0603
4451	4822 051 30008	OR Jumper 0603	4507	4822 051 30008	OR Jumper 0603
4452	4822 051 30008	OR Jumper 0603	4508	4822 051 30008	OR Jumper 0603
4453	4822 051 30008	OR Jumper 0603	4509	4822 051 30008	OR Jumper 0603
4454	4822 051 30008	OR Jumper 0603	4510	4822 051 30008	OR Jumper 0603
4455	4822 051 30008	OR Jumper 0603	4511	4822 051 30008	OR Jumper 0603
4456	4822 051 30008	OR Jumper 0603	4512	4822 051 30008	OR Jumper 0603
4457	4822 051 30008	OR Jumper 0603	4513	4822 051 30008	OR Jumper 0603
4458	4822 051 30008	OR Jumper 0603	4514	4822 051 30008	OR Jumper 0603
4459	4822 051 30008	OR Jumper 0603	4515	4822 051 30008	OR Jumper 0603
4460	4822 051 30008	OR Jumper 0603	4516	4822 051 30008	OR Jumper 0603
4461	4822 051 30008	OR Jumper 0603	4517	4822 051 30008	OR Jumper 0603

ELECTRICAL PARTS LIST - FRONT BOARD**RESISTORS**

4518	4822 051 30008	OR Jumper 0603	6401	4822 130 31878	1N4003G
4519	4822 051 30008	OR Jumper 0603	6402	4822 130 30621	1N4148
4520	4822 051 30008	OR Jumper 0603	6403	4822 130 31878	1N4003G
4521	4822 051 30008	OR Jumper 0603	6404	4822 130 31878	1N4003G
4523	4822 051 30008	OR Jumper 0603	6405	4822 130 34173	BZX79-B5V6
4524	4822 051 30008	OR Jumper 0603	6406	4822 130 30621	1N4148
4525	4822 051 30008	OR Jumper 0603	6409	4822 130 30621	1N4148
4526	4822 051 30008	OR Jumper 0603	6410	4822 130 30621	1N4148
4527	4822 051 30008	OR Jumper 0603	6411	9322 167 73676	LTL-4221NLC-KA
4528	4822 051 30008	OR Jumper 0603	6412	9322 161 99676	LTL-2R3VYKNT
4529	4822 051 30008	OR Jumper 0603	6413	9322 161 99676	LTL-2R3VYKNT
4530	4822 051 30008	OR Jumper 0603	6414	9322 172 75676	LTL-1CHKFK
4531	4822 051 30008	OR Jumper 0603	6415	9322 172 75676	LTL-1CHKFK
4532	4822 051 30008	OR Jumper 0603	6416	4822 130 30621	1N4148
4533	4822 051 30008	OR Jumper 0603	6417	4822 130 30621	1N4148
4534	4822 051 30008	OR Jumper 0603	6418	4822 130 30621	1N4148
4535	4822 051 30008	OR Jumper 0603	6419	4822 130 30621	1N4148
4536	4822 051 30008	OR Jumper 0603	6420	4822 130 30621	1N4148
4537	4822 051 30008	OR Jumper 0603	6421	4822 130 30621	1N4148
4538	4822 051 30008	OR Jumper 0603	6422	4822 130 30621	1N4148
4539	4822 051 30008	OR Jumper 0603	6423	4822 130 30621	1N4148
4540	4822 051 30008	OR Jumper 0603	6424	4822 130 30621	1N4148
4541	4822 051 30008	OR Jumper 0603	6425	4822 130 30621	1N4148
4542	4822 051 30008	OR Jumper 0603	6426	4822 130 30621	1N4148
4801	4822 051 30008	OR Jumper 0603	6427	4822 130 11589	LTL-1CHAE
4802	4822 051 30008	OR Jumper 0603	6428	4822 130 11589	LTL-1CHAE
4803	4822 051 30008	OR Jumper 0603	6429	4822 130 11589	LTL-1CHAE
4804	4822 051 30008	OR Jumper 0603	6430	4822 130 11589	LTL-1CHAE
4805	4822 051 30008	OR Jumper 0603	6431	4822 130 11589	LTL-1CHAE
4806	4822 051 30008	OR Jumper 0603	6432	4822 130 11589	LTL-1CHAE
4807	4822 051 30008	OR Jumper 0603	6433	4822 130 10791	LTL-1CHGE
4808	4822 051 30008	OR Jumper 0603	6434	4822 130 10791	LTL-1CHGE
4809	4822 051 30008	OR Jumper 0603	6435	4822 130 10791	LTL-1CHGE
4810	4822 051 30008	OR Jumper 0603	6436	4822 130 10791	LTL-1CHGE
4811	4822 051 30008	OR Jumper 0603	6437	4822 130 10791	LTL-1CHGE
4812	4822 051 30008	OR Jumper 0603	6438	4822 130 30621	1N4148
4813	4822 051 30008	OR Jumper 0603	6439	4822 130 30621	1N4148

COILS & FILTERS

5400	4822 157 62552	Coil 2,2μH 5%
5401	4822 157 62552	Coil 2,2μH 5%
5403	4822 157 62552	Coil 2,2μH 5%
5404	4822 157 62552	Coil 2,2μH 5%
5405	2422 543 01069	X'tal Resonator 32,768kHz
5406	4822 242 72066	Ceram Resonator 8MHz
5600	4822 157 62552	Coil 2,2μH 5%
5601	4822 157 62552	Coil 2,2μH 5%
5602	4822 157 62552	Coil 2,2μH 5%
5800	4822 157 11235	Coil 22μH 5%

DIODES

6400	4822 130 30621	1N4148
------	----------------	--------

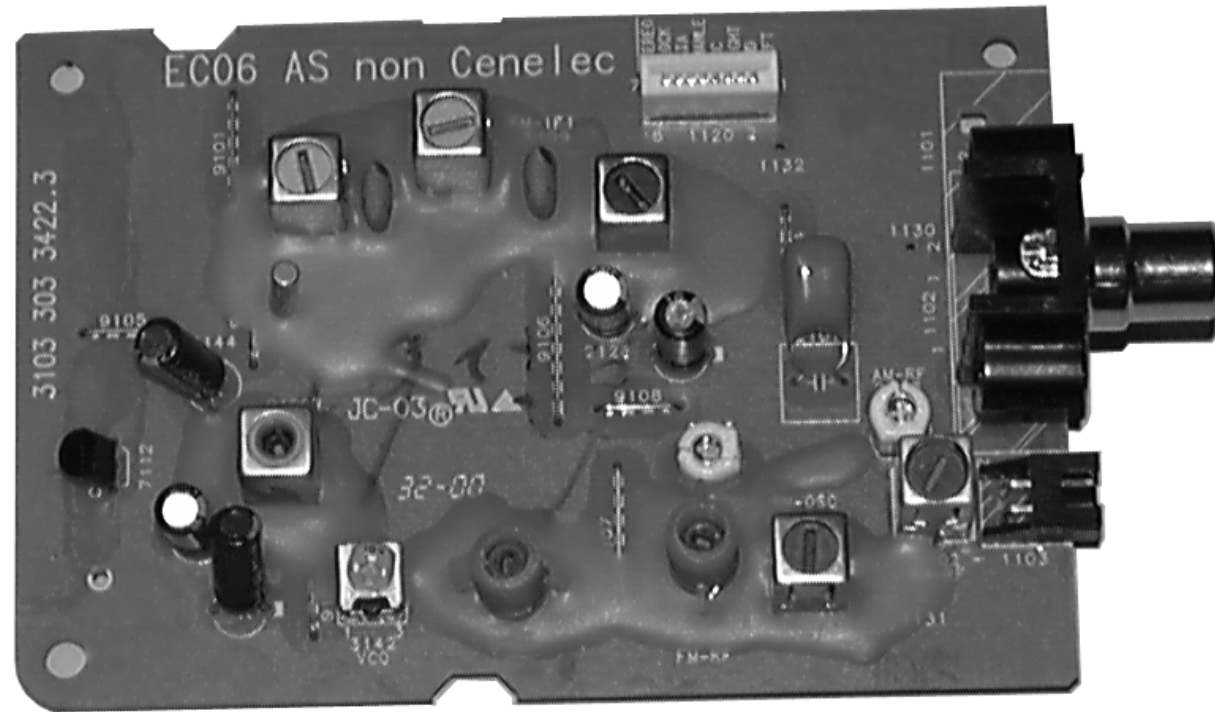
ELECTRICAL PARTS LIST - FRONT BOARD

7410	4822 130 60511	BC847B
7411	4822 130 60373	BC856B
7413	5322 130 60159	BC846B
7414	5322 130 60159	BC846B
7415	5322 130 60159	BC846B
7416	4822 130 60373	BC856B
7417	4822 130 60373	BC857B
7418	4822 130 60373	BC857B
7800	4822 130 60511	BC847B
7801	4822 130 60511	BC847B

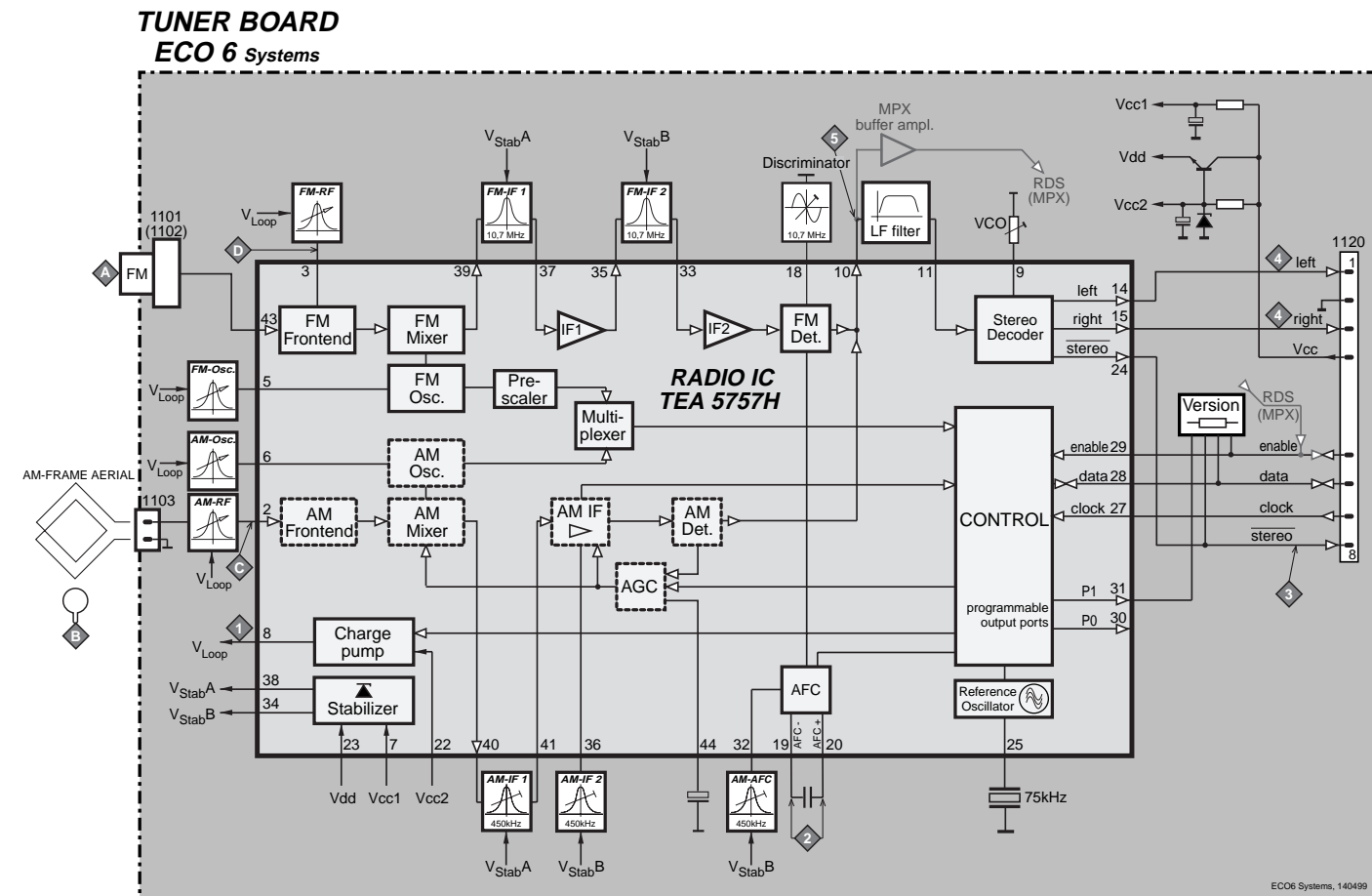
Note: Only the parts mentioned in this list are normal service spare parts.

TRANSISTORS & INTEGRATED CIRCUITS

7401	9352 679 67118	SAA6579T/V1/M4
7400	3140 110 52151	TMP87CS71BF
7402	9322 155 82667	IR Receiver TSOP2236ZC1
7403	9965 000 04931	M24C01-WMN6
7404	4822 209 15449	74HC4094D
7405	4822 209 15449	74HC4094D
7406	5322 130 60159	BC846B
7407	5322 130 60159	BC846B
7408	5322 130 60159	BC846B



BLOCK DIAGRAM



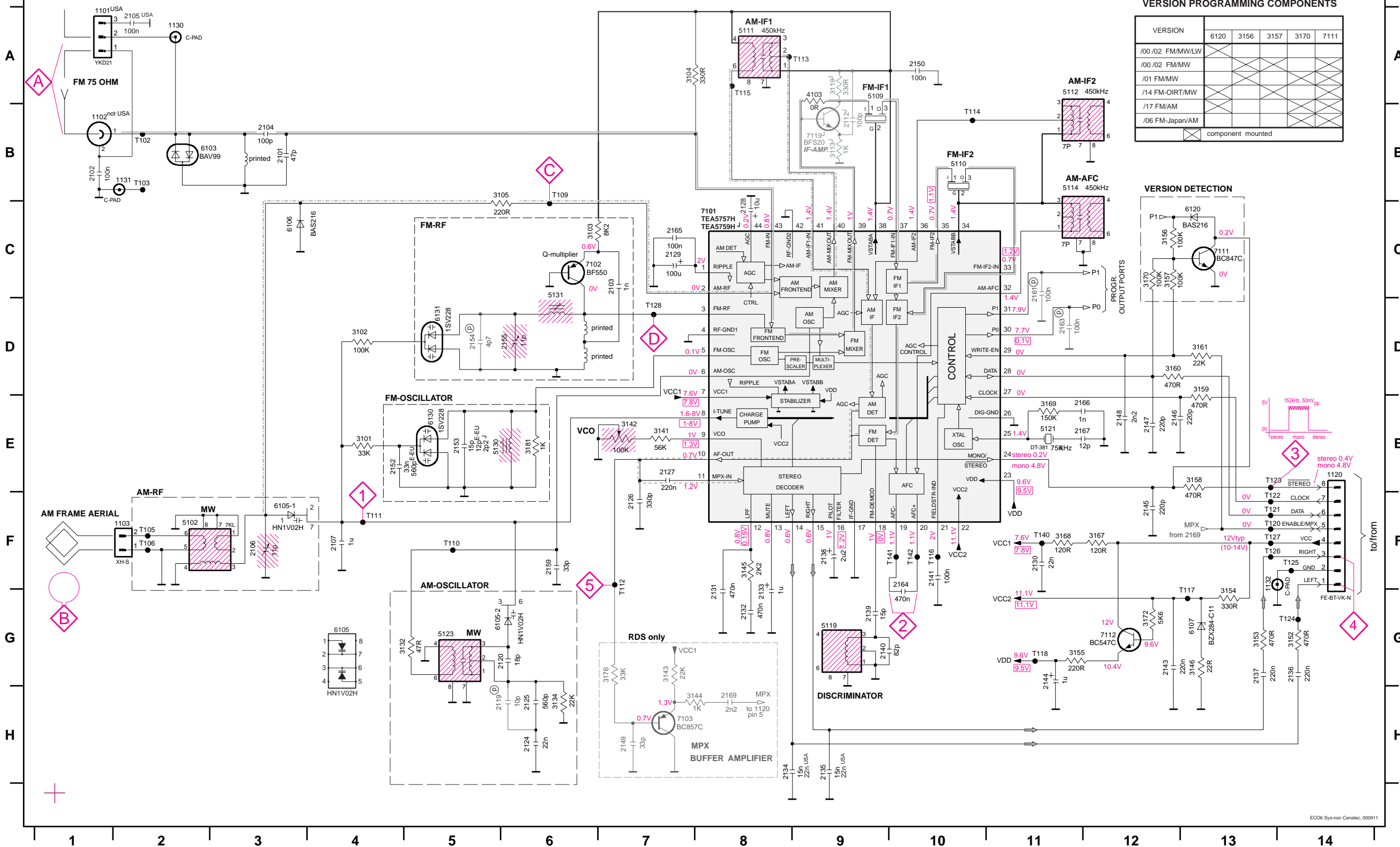
ECO6 Tuner Board

version: **SYSTEMS non-CENELEC**

TABLE OF CONTENTS

Blockdiagram7A-1
 Schematic Diagram7A-2
 Component Layout.....7A-3
 Adjustment table7A-3
 Electrical Partslist.....7A-4

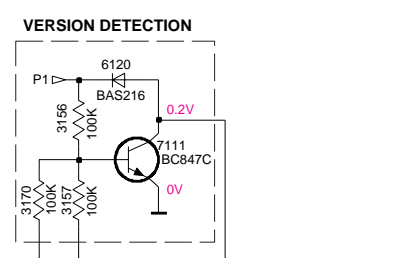
TUNER BOARD ECO6 / SYSTEMS NON CENELEC



VERSION PROGRAMMING COMPONENTS

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

component mounted



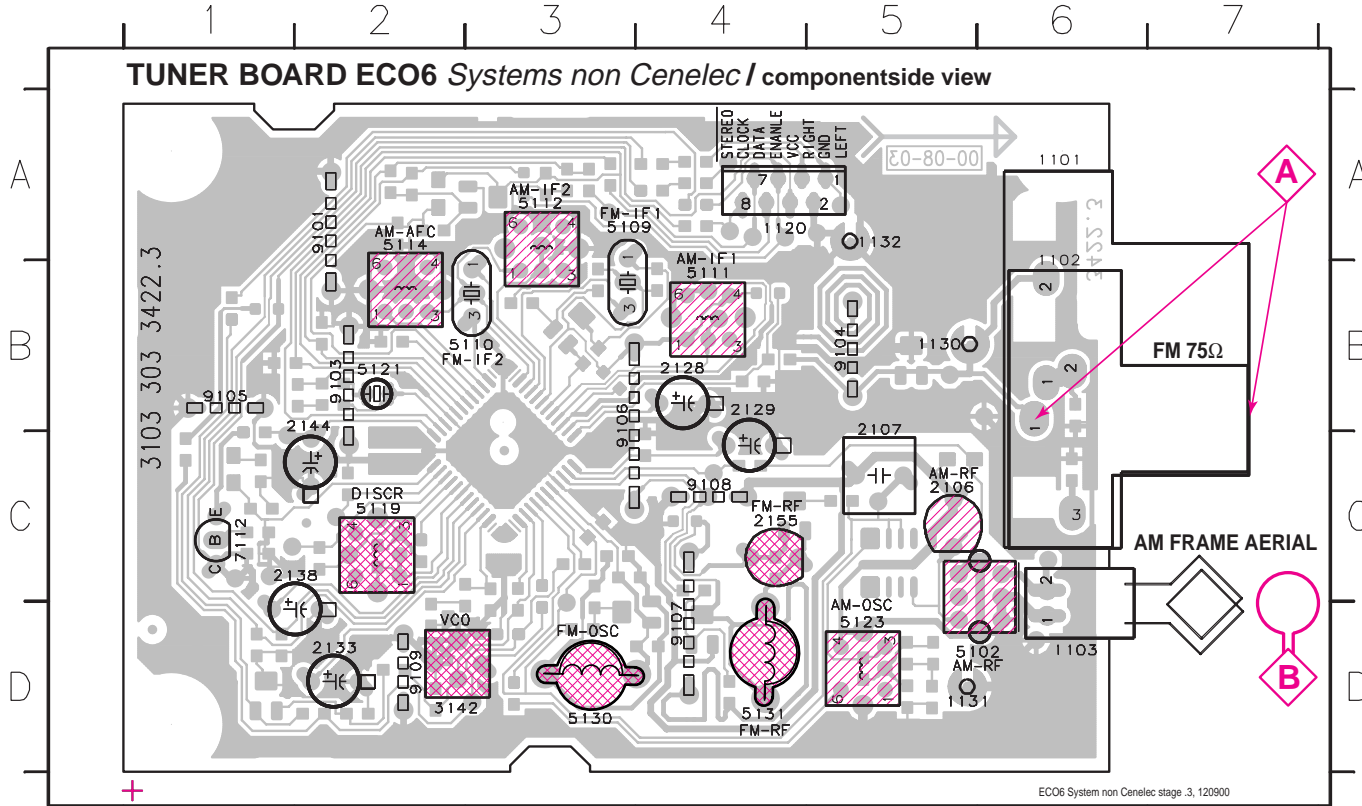
- 1101 A1
- 1102 B1
- 1103 F2
- 1120 E14
- 1130 A2
- 1131 B2
- 1132 G13
- 2101 B3
- 2102 B1
- 2103 C7
- 2104 B3
- 2105 A2
- 2106 F3
- 2107 F4
- 2119 H6
- 2120 G6
- 2124 H6
- 2125 H6
- 2126 F7
- 2127 E7
- 2128 C8
- 2129 C7
- 2130 F11
- 2131 G8
- 2132 G8
- 2133 G8
- 2134 H8
- 2135 H9
- 2136 G14
- 2137 G13
- 2138 F9
- 2139 G9
- 2140 G9
- 2141 F10
- 2143 G12
- 2144 G11
- 2145 F12
- 2146 E12
- 2147 E12
- 2148 E12
- 2149 H7
- 2150 A10
- 2152 A4
- 2153 E5
- 2154 D5
- 2155 D5
- 2159 F6
- 2161 C11
- 2163 D11
- 2164 F10
- 2165 C7
- 2166 E11
- 2167 E11
- 2169 H8
- 3101 E4
- 3102 D4
- 3103 C6
- 3104 A7
- 3105 B6
- 3132 G5
- 3134 H6
- 3141 E7
- 3142 E7
- 3143 G7
- 3144 H7
- 3145 F8
- 3146 G13
- 3152 G14
- 3153 G13
- 3154 G13
- 3155 G11
- 3156 C12
- 3157 C12
- 3158 E13
- 3159 D13
- 3160 D12
- 3161 D13
- 3167 F12
- 3168 F11
- 3169 E11
- 3170 C12
- 3172 G12
- 3176 G7
- 3181 E6
- 5102 F2
- 5109 B9
- 5110 B10
- 5111 A8
- 5112 A11
- 5114 B11
- 5119 G9
- 5121 E11
- 5123 G5
- 5130 E5
- 5131 C6
- 5132 E2
- 6105 F3
- 6105-2 G5
- 6106 C3
- 6107 G13
- 6120 G13
- 6130 E5
- 6131 D5
- 7101 C8
- 7102 C6
- 7103 H7
- 7111 C13
- 7112 G12
- T102 B2
- T103 B2
- T105 F2
- T106 F2
- T109 B6
- T110 F5
- T111 F4
- T112 F7
- T113 A8
- T114 B10
- T115 A8
- T116 B10
- T117 G13
- T118 G13
- T120 F13
- T121 F13
- T122 F13
- T123 E13
- T124 G14
- T125 F14
- T126 F13
- T127 F13
- T128 D7
- T140 F11
- T141 F10
- T142 F10

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

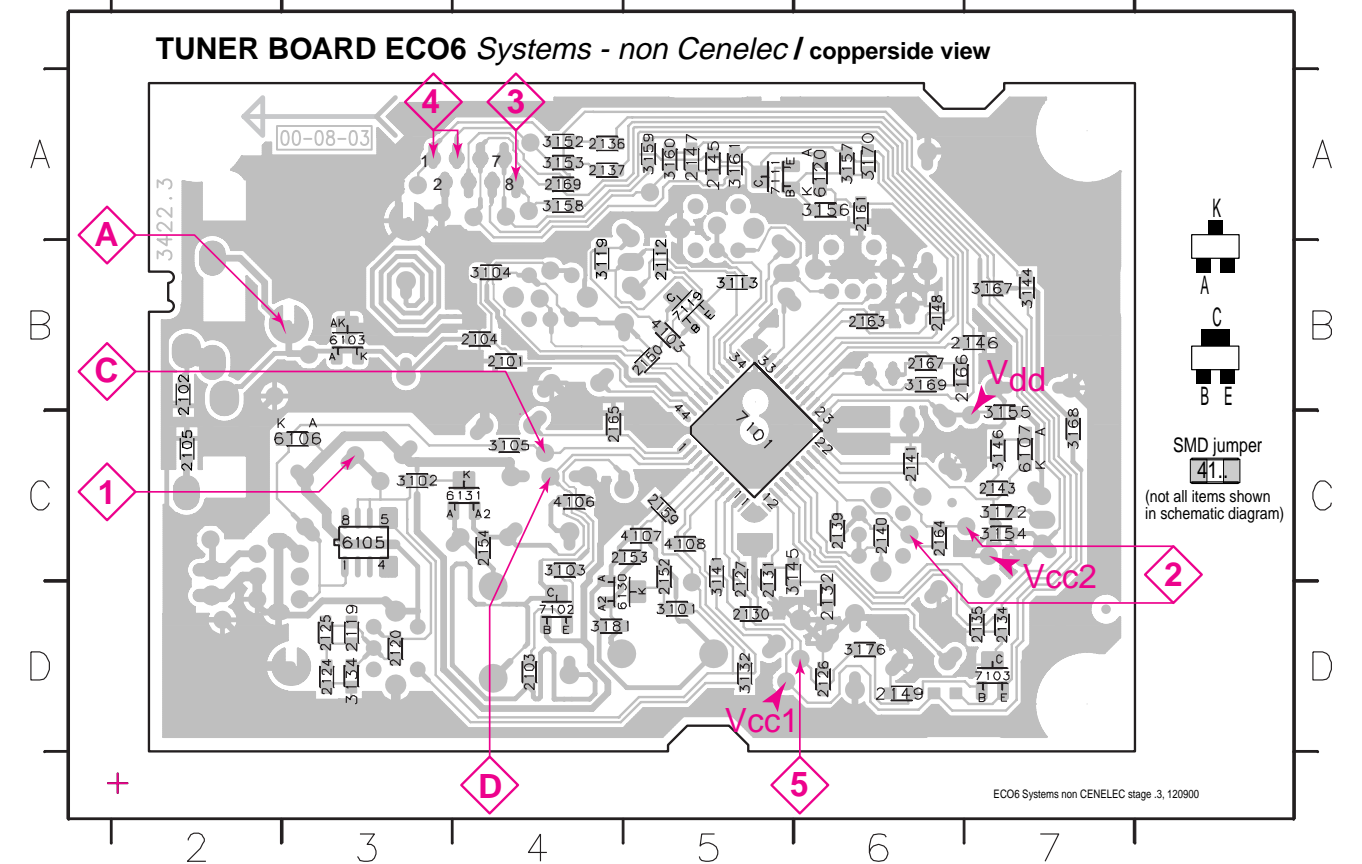
...V FM mode stereo
 ...V MW mode
 ...V LW mode
 voltages measured while set is tuned to a strong transmitter

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

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



2101 B4 2119 D3 2130 D5 2137 A4 2146 B7 2153 C5 2165 C4 3103 C4 3134 D3 3152 A4 3158 A4 3169 B6 4106 C4 6107 C7 7103 D7
 2102 B1 2120 D3 2131 C5 2139 C6 2147 A5 2154 C4 2166 B6 3104 B4 3141 C5 3153 A4 3159 A5 3170 A6 4107 C5 6120 A6 7111 A5
 2103 D4 2124 D3 2132 D6 2140 C6 2148 B6 2159 C5 2167 B6 3105 C4 3143 D6 3154 C7 3160 A5 3172 C7 4108 C5 6130 D4 7119 B5
 2104 B4 2125 D3 2134 D7 2141 C6 2149 D6 2161 A6 2169 A4 3113 B5 3144 B7 3155 C7 3161 A5 3176 D6 6103 B3 6131 C4
 2105 C1 2126 D6 2135 D7 2143 C7 2150 B5 2163 B6 3101 D5 3119 B5 3145 C5 3156 A6 3167 B7 3181 D4 6105 C3 7101 C5
 2112 B5 2127 C5 2136 A4 2145 A5 2152 C5 3102 C3 3132 D5 3146 C7 3157 A6 3168 C7 4103 B5 6106 C3 7102 D4



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

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

Waverange	Input frequency	Input	Tuned to	Adjust	Output	Scope/Voltmeter
VARICAP ALIGNMENT						
FM 87.5 - 108MHz (65.81 - 74, 87.5 - 108MHz)	108MHz		108MHz	5130		8V ±0.2V
	87.5MHz (65.81MHz)		87.5MHz (65.81MHz)	check		4.3V ±0.5V (1.2V ±0.5V)
MW FM/AM-version, 10kHz grid 530 - 1700kHz	1700kHz		1700kHz	5123		8V ±0.2V
	530kHz		530kHz	check		1.1V ±0.4V
FM/MW-version, 9kHz grid 531 - 1602kHz	1602kHz		1602kHz	5123	1	6.9V ±0.2V
	531kHz		531kHz	check		1.1V ±0.4V
LW 153 - 279kHz	279kHz		279kHz	5122		8V ±0.2V
	153kHz		153kHz	check		1.1V ±0.4V
MW FM/MW/LW- version, 9kHz grid 531 - 1602kHz	1602kHz		1602kHz	5123		8V ±0.2V
	531kHz		531kHz	check		1.1V ±0.4V
FM IF						
FM	10.7MHz, 45mV continuous wave	D		5119	2	0 ± 3 mV DC
FM RF						
FM 87.5 - 108MHz (65.81 - 74, 87.5 - 108MHz)	108MHz	A	108MHz	2155	4	MAX
	87.5MHz (65.81MHz)	mod=1kHz Δf=±22.5kHz	87.5MHz (65.81MHz)	5131		
VCO						
FM	98MHz, 1mV continuous wave	A	98MHz	3142	3	152kHz ±1kHz ¹⁾
AM IF						
MW	450kHz connect pin 6 of IC 7101 (AM Osc.) with 3.3kΩ to Vcc	C		5111	5	
		C		5112		
AM AFC MW		C		5114	2	0 ± 2 mV DC
AM RF³⁾						
MW⁴⁾ FM/MW/LW- and FM/MW-version (9kHz grid)	1494kHz	B	1494kHz	2106	5	
	558kHz		558kHz	5102		
LW	198kHz		198kHz	5103		
MW FM/AM-version, 10kHz grid 530 - 1700kHz	1500kHz	B	1500kHz	2106	5	
	560kHz		560kHz	5102		

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

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

↑ Repeat

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

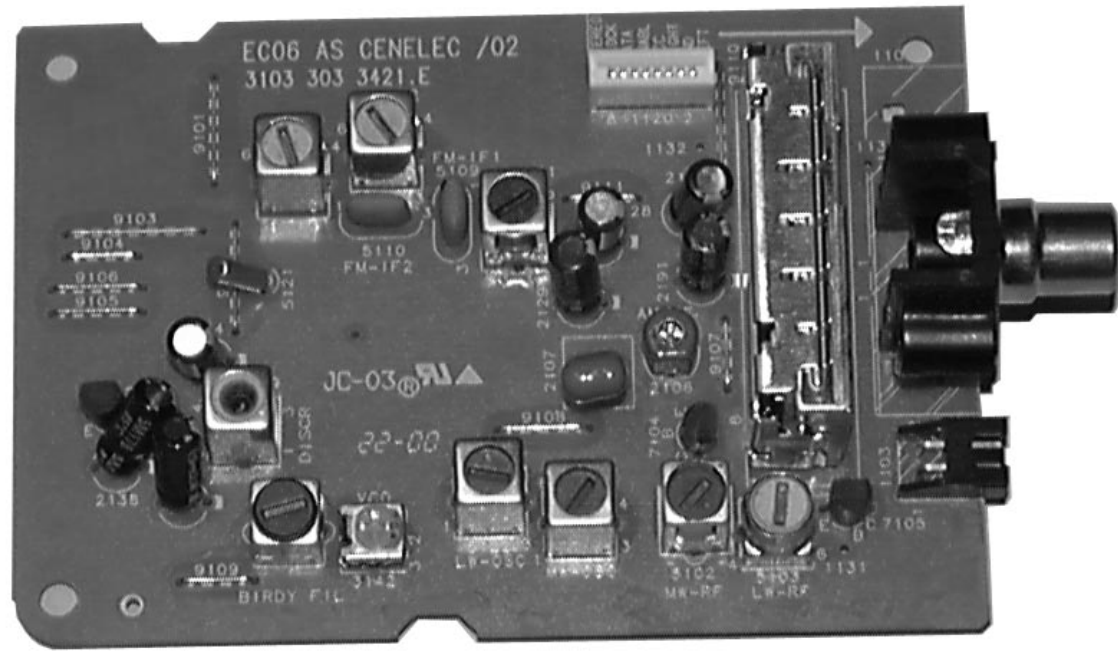
6103	5322 130 34337	BAV99
6105	4822 130 83075	HN1V02H
6106	4822 130 83757	BAS216
6107	9340 386 90115	BZX284-C11
6120	4822 130 83757	BAS216
6130	4822 130 82833	1SV228
6131	4822 130 82833	1SV228

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
------	----------------	-----------------------



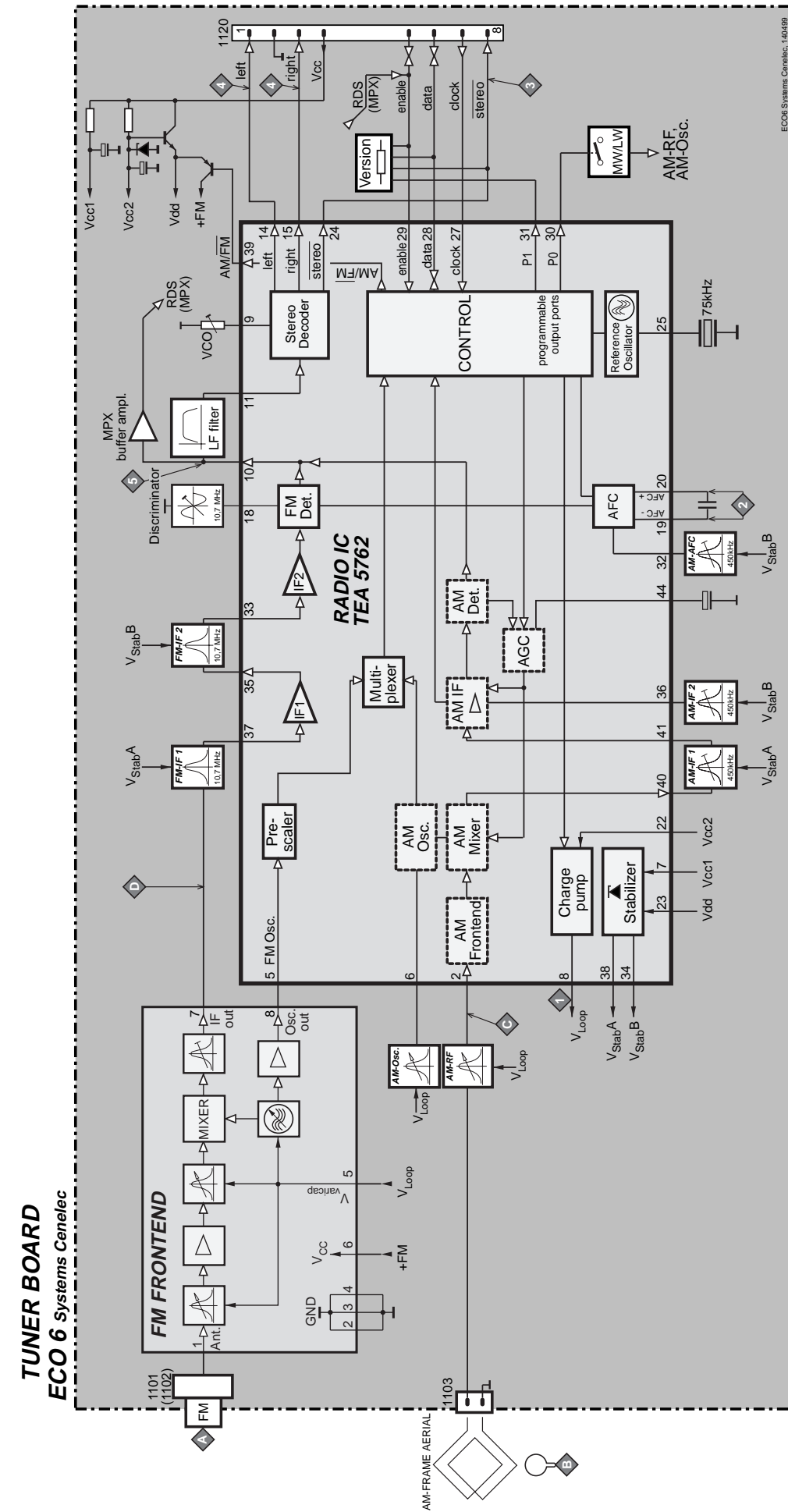
ECO6 Tuner Board

version: **SYSTEMS CENELEC**

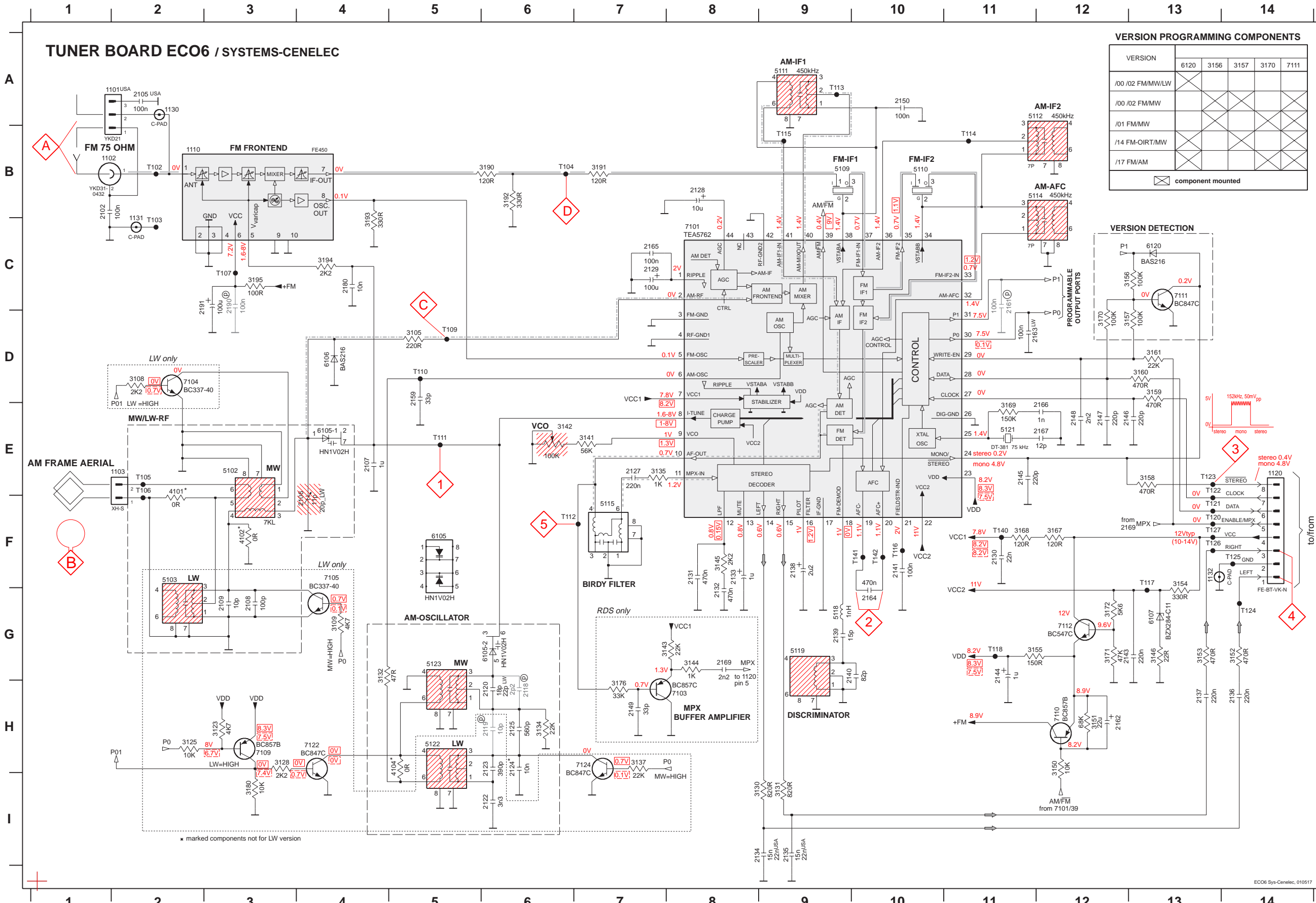
TABLE OF CONTENTS

- Blockdiagram.....7B-1
- Schematic Diagram.....7B-2
- Component Layout.....7B-3
- Adjustment table7B-3
- Electrical Partslist.....7B-4

BLOCK DIAGRAM

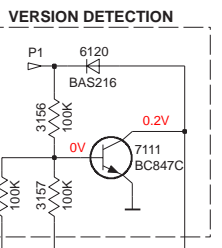


TUNER BOARD ECO6 / SYSTEMS-CENELEC



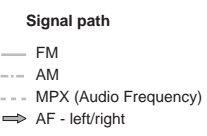
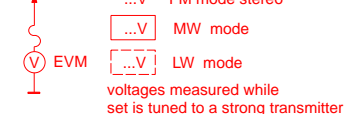
VERSION	6120	3156	3157	3170	7111
/00 /02 FM/MW/LW					
/00 /02 FM/MW					
/01 FM/MW					
/14 FM-OIRT/MW					
/17 FM/AM					

☒ component mounted

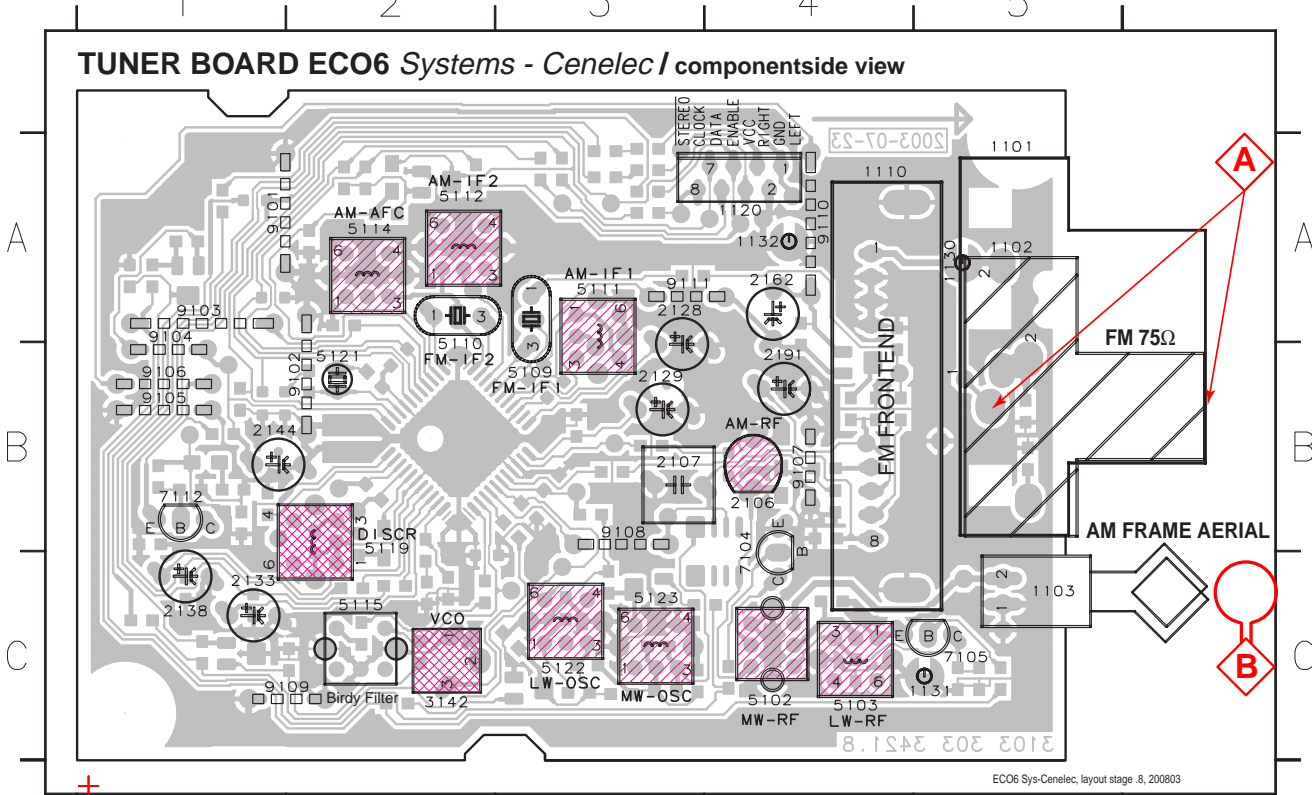


- 1101 A2
- 1102 B1
- 1103 E2
- 1110 B2
- 1120 E4
- 1130 A2
- 1131 C2
- 1132 F13
- 1132 B1
- 2105 A2
- 2106 E3
- 2107 E4
- 2108 G3
- 2109 G3
- 2118 H6
- 2119 H6
- 2120 H6
- 2122 I6
- 2123 H6
- 2124 H6
- 2125 H6
- 2127 E7
- 2128 B8
- 2129 C7
- 2130 F11
- 2131 F8
- 2132 F8
- 2133 F8
- 2134 I8
- 2135 I9
- 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
- 2180 C4
- 2190 C3
- 2191 C3
- 3105 D5
- 3108 D2
- 3109 G4
- 3123 H3
- 3125 H2
- 3128 H3
- 3130 I9
- 3131 I9
- 3132 G4
- 3134 H6
- 3135 E7
- 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 F13
- 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
- 5118 G9
- 5119 G9
- 5121 E11
- 5122 H5
- 5123 G5
- 6105-1 E4
- 6105-2 G6
- 6106 D4
- 6107 G13
- 6120 C13
- 7101 C8
- 7103 H8
- 7104 D2
- 7105 F4
- 7109 H3
- 7110 H12
- 7111 C13
- 7112 H4
- 7124 H7
- T102 B2
- T103 B2
- T104 B6
- T105 B6
- T106 B6
- T107 B6
- T109 B6
- T110 B6
- T111 B6
- T112 B6
- T113 B6
- T114 B6
- T115 B6
- T120 B6
- T121 B6
- T122 B6
- T123 B6
- T124 B6
- T125 B6
- T126 B6
- T127 B6
- T128 B6
- T129 B6
- T130 B6
- T131 B6
- T132 B6
- T133 B6
- T134 B6
- T135 B6
- T136 B6
- T137 B6
- T138 B6
- T139 B6
- T140 B6
- T141 B6
- T142 B6
- T143 B6
- T144 B6
- T145 B6
- T146 B6
- T147 B6
- T148 B6
- T149 B6
- T150 B6

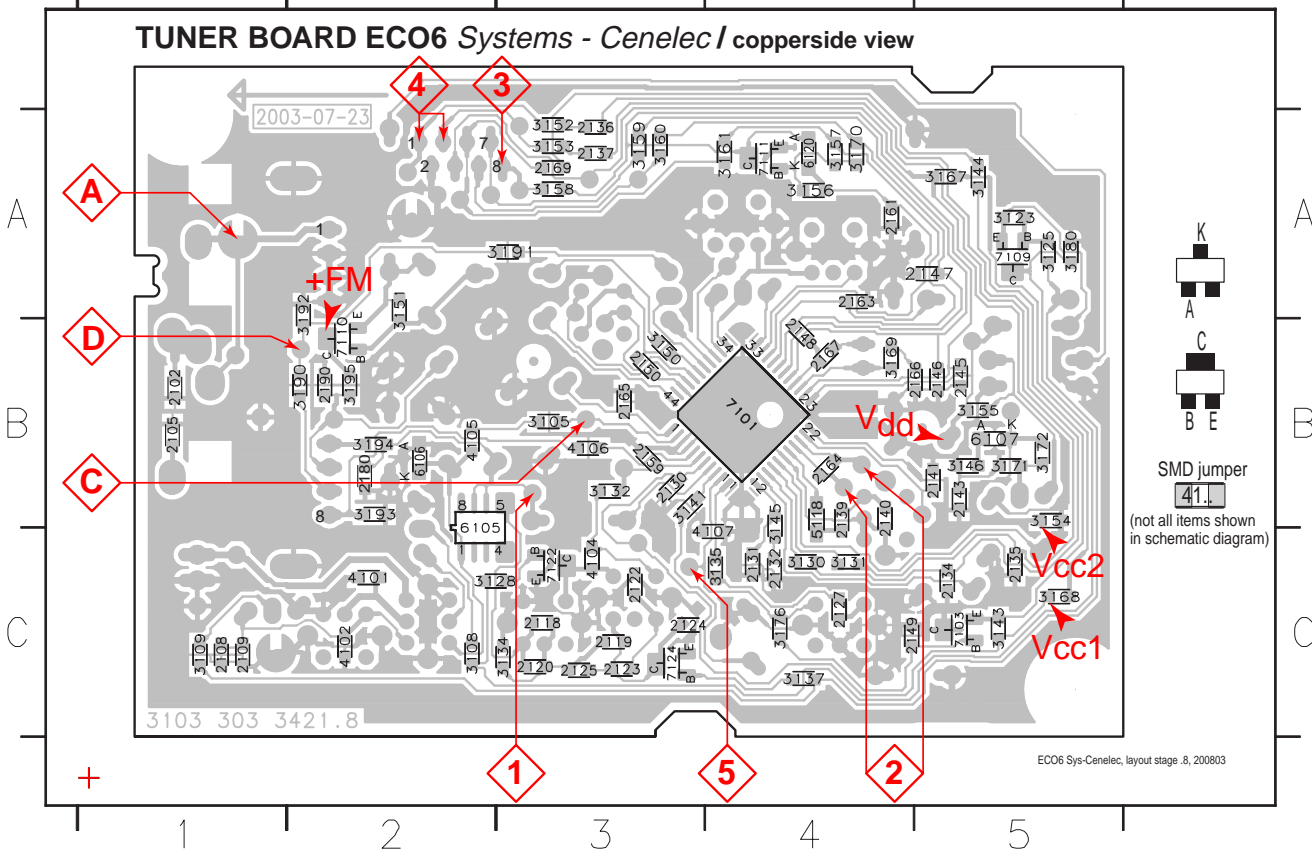
LEGEND
 *... only assembled in FM/AM-version
 (D)... for provision only
 USA ... for USA version only
 LW ... for LW version only



1101 B5 1110 B4 1131 C5 2107 B3 2133 C1 2162 A4 5102 C4 5110 A2 5114 A2 5121 B2 7104 C4 9101 A2 9104 B1 9107 B4 9110 A4
 1102 B5 1120 A4 1132 A4 2128 A3 2138 B1 2191 B4 5103 C4 5111 A3 5115 C2 5122 C3 7105 C5 9102 B2 9105 B1 9108 B3 9111 A3
 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 3123 A5 3134 C3 3145 C4 3154 B5 3160 A3 3171 B5 3192 A2 4104 C3 6106 B2 7110 B2
 2105 B1 2122 C3 2131 C4 2139 B4 2147 A5 2163 A4 2180 B2 3125 A5 3135 C4 3146 B5 3155 B5 3161 A4 3172 B5 3193 B2 4105 B2 6107 B5 7111 A4
 2108 C1 2123 C3 2132 C4 2140 B4 2148 B4 2164 B4 2190 B2 3128 C2 3137 C4 3150 B3 3156 A4 3167 A5 3176 C4 3194 B2 4106 B3 6120 A4 7122 C3
 2109 C1 2124 C3 2134 C5 2141 B5 2149 C4 2165 B3 3105 B3 3130 C4 3141 B3 3151 A2 3157 A4 3168 C5 3180 A5 3195 B2 4107 C4 7101 B4 7124 C3
 2118 C3 2125 C3 2135 C5 2143 B5 2150 B3 2166 B5 3108 C2 3131 C4 3143 C5 3152 A3 3158 A3 3169 B4 3190 B2 4101 C2 5118 C4 7103 C5
 2119 C3 2127 C4 2136 A3 2145 B5 2159 B3 2167 B4 3109 C1 3132 B3 3144 A5 3153 A3 3159 A3 3170 A4 3191 A3 4102 C2 6105 B2 7109 A5



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

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

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

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

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

↑ Repeat

MISCELLANEOUS

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

CAPACITORS

2102	4822 126 13838	100nF 10% 50V	not USA
2105	4822 126 13838	100nF 10% 50V	USA only
2106	2020 800 00204	TRIMCAP. 4,2 - 20pF, N750	LW only
2106	2020 800 00191	TRIMCAP. 3 - 11pF, N450	FM/AM only
2107	4822 121 51319	1μF 20% 50V	
2108	5322 122 32531	100pF 5% 50V	LW only
2109	5322 122 32448	10pF 5% 50V	LW only
2120	4822 126 13689	18pF 1% 63V	FM/AM only
2120	5322 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	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	3198 017 31530	15nF 10% 50V	not USA
2134	5322 122 32654	22nF 10% 63V	USA only
2135	3198 017 31530	15nF 10% 50V	not USA
2135	3198 017 32230	22nF 10% 25V	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	
2159	5322 122 31151	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	5322 122 31647	1nF 10% 63V	
2167	4822 122 33926	12pF 5% 50V	
2169	4822 122 33127	2,2nF 10% 63V	RDS only
2180	3198 017 31030	10nF 10% 50V	
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

RESISTORS

3128	4822 117 11449	2,2kΩ 1% 0,1W	LW only
3130	3198 021 38210	820Ω 5% 0,06W	
3131	3198 021 38210	820Ω 5% 0,06W	
3132	4822 051 20479	47Ω 5% 0,1W	
3134	4822 051 20223	22kΩ 5% 0,1W	
3135	3198 021 31020	1kΩ 5% 0,06W	
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	
5118	2422 535 95881	100nH	
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	5322 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	5322 130 42755	BC847C	
7112	4822 130 44503	BC547C	
7122	5322 130 42755	BC847C	LW only
7124	5322 130 42755	BC847C	LW only

INTEGRATED CIRCUITS

7101	4822 209 90315	TEA5762H/V1, RADIO IC	
------	----------------	-----------------------	--

ETF7 TAPE MODULE

(Non-Dolby Version)

Tapedeck wiring (Double deck)

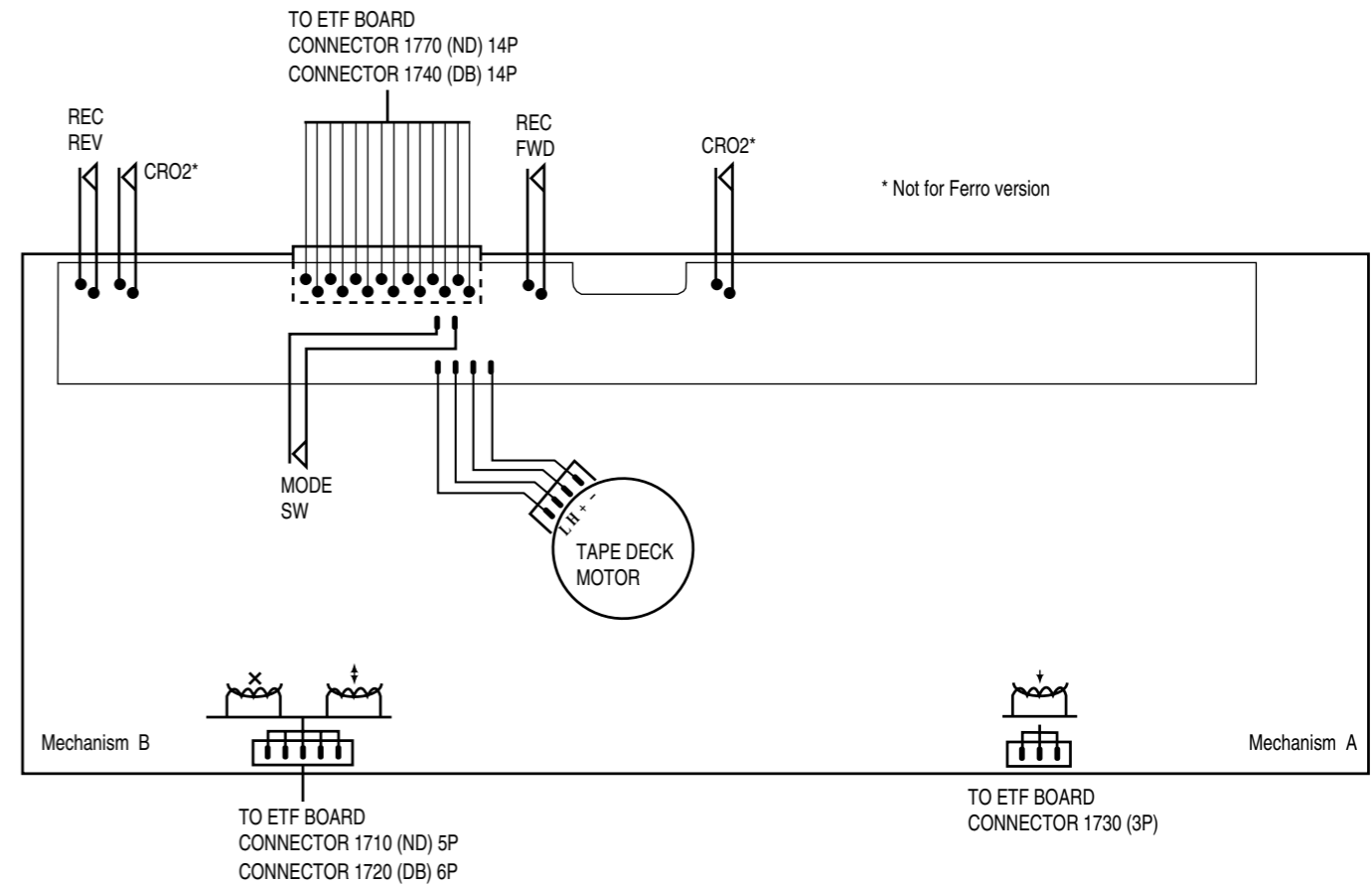


TABLE OF CONTENTS

Tape Module Wiring & variation table 9-1

Block diagram 9-2

Brief Introduction 9-3

Connector assignment 9-4

Tape deck electronics & Tape adjustments 9-5

ETF7 Non-Dolby board layouts 9-6

Analog Circuit diagram 9-7

Servo Circuit diagram 9-8

Exploded views & parts list 9-9

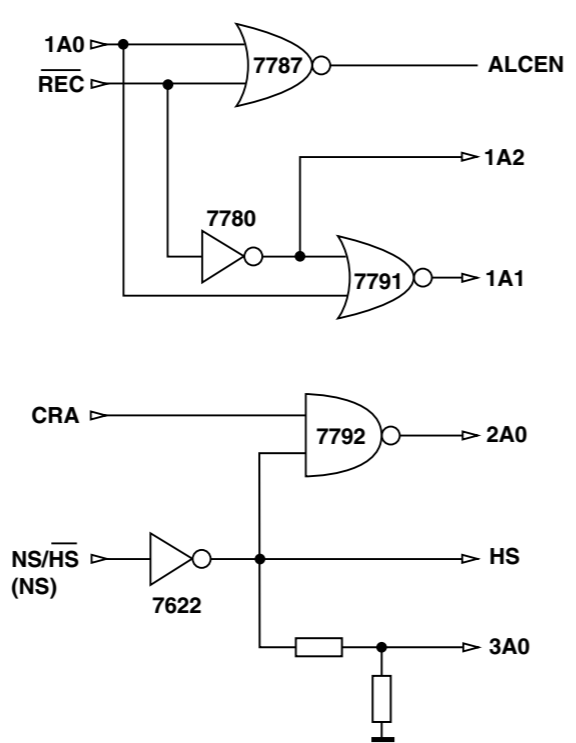
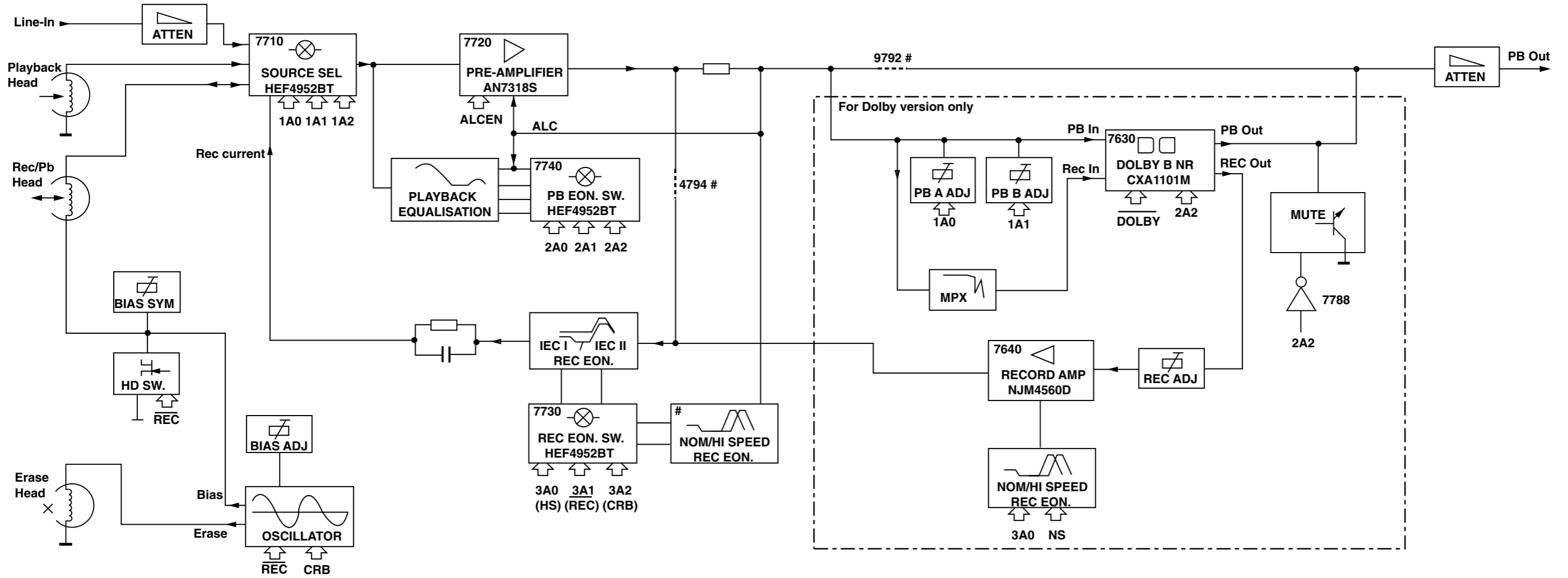
Electrical parts list 9-13

Variations table for Analog Circuit

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

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

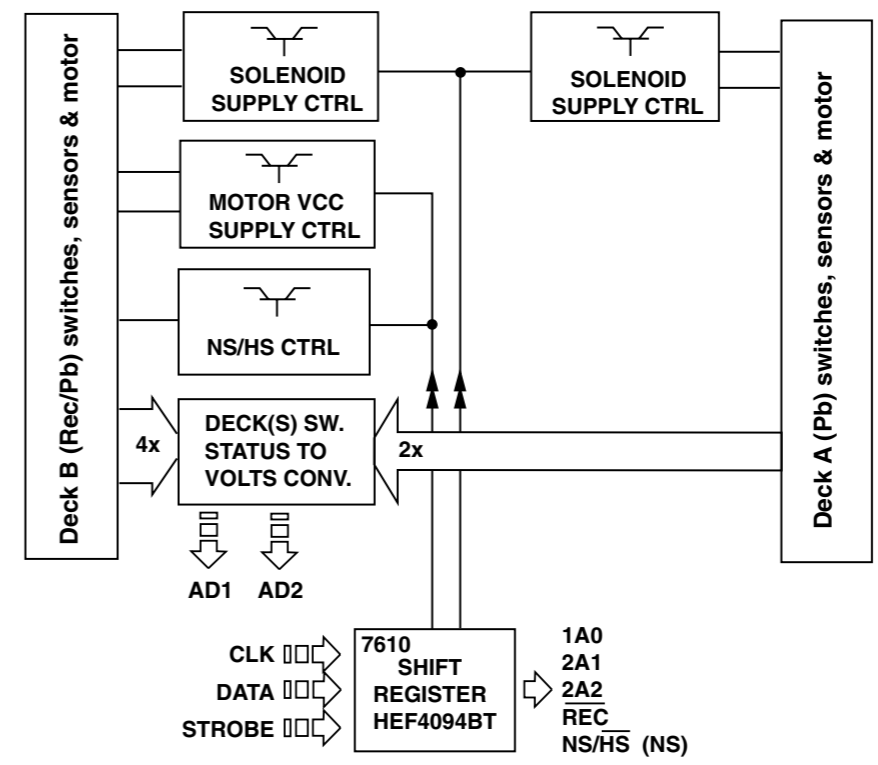
BLOCK DIAGRAM



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{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 CONNECTON (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 CONNECTON (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

○	1	REC REW
○	2	CrO2 B
○	3	REC FWD
○	4	PHOTO B
○	5	SOL B
○	6	Vcc
○	7	MODE B
○	8	GND M
○	9	SOL A
○	10	PHOTO A
○	11	MODE A
○	12	L
○	13	CrO2 A
○	14	H

CONNECTOR 1770

○	1	REC REW
○	2	CrO2 B
○	3	REC FWD
○	4	PHOTO B
○	5	SOL B
○	6	Vcc
○	7	MODE B
○	8	GND M
○	9	SOL A
○	10	PHOTO A
○	11	MODE A
○	12	L
○	13	CrO2 A
○	14	H

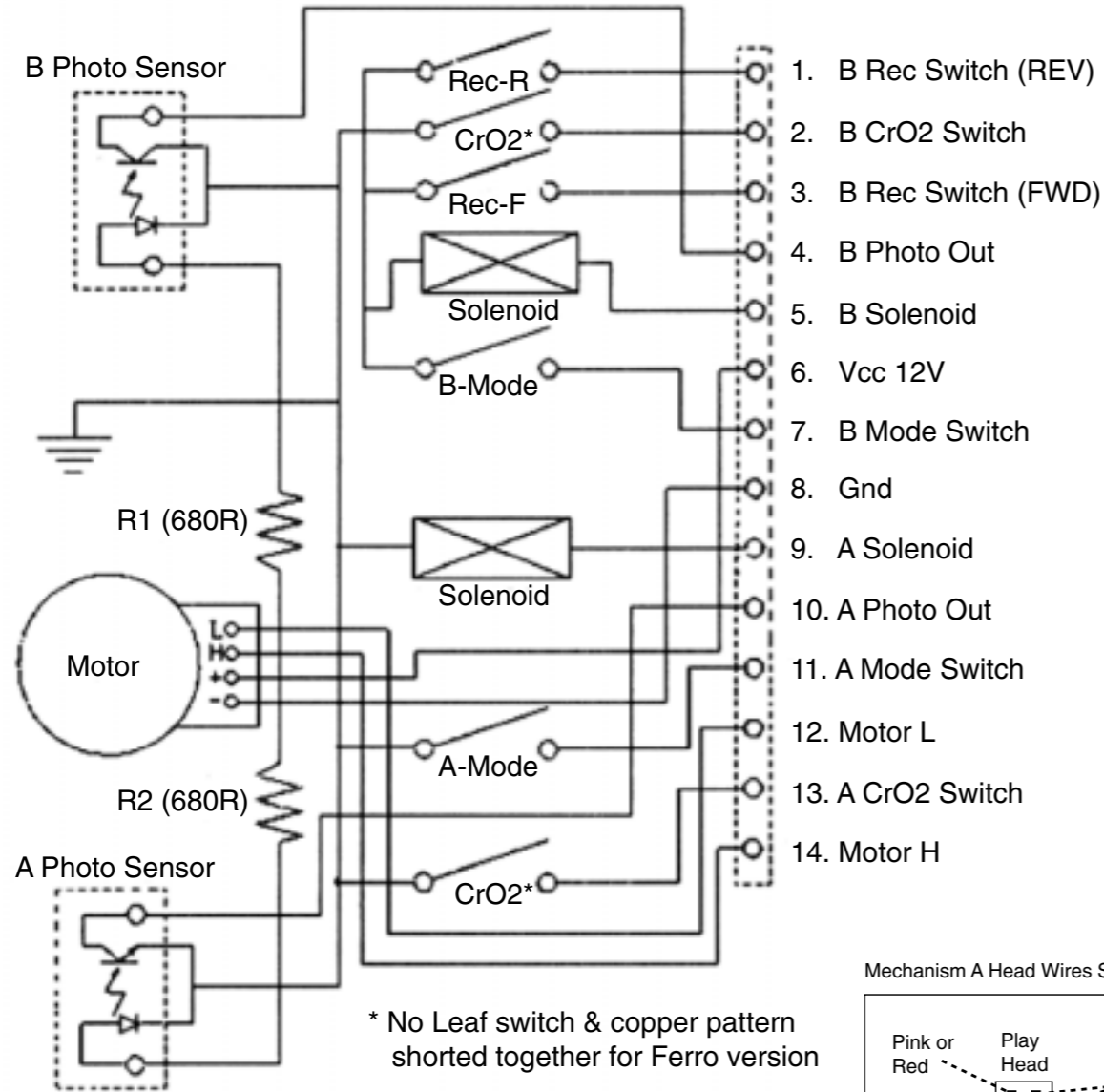
DECK A & B CONTROL INTERFACE (For Dolby B NR version only)

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

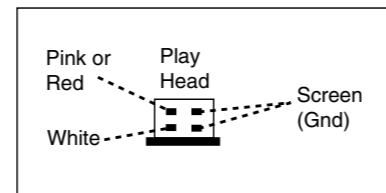
DECK A & B CONTROL INTERFACE (For Non-Dolby version only)

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

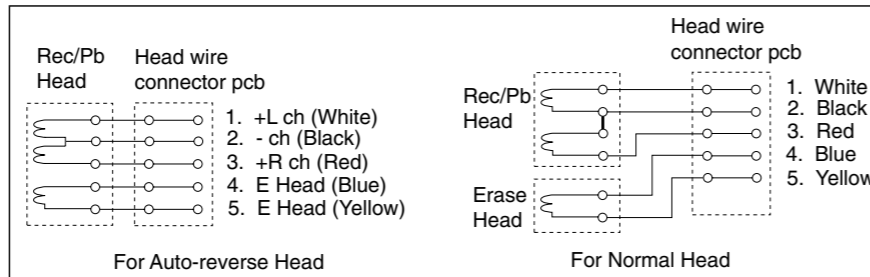
TAPE MECHANISM ELECTRONICS



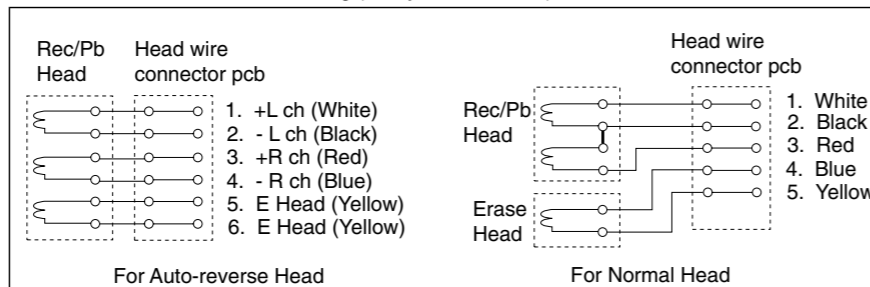
Mechanism A Head Wires Soldering



Mechanism B Head Wires Soldering (Non-Dolby version)



Mechanism B Head Wires Soldering (Dolby B NR version)

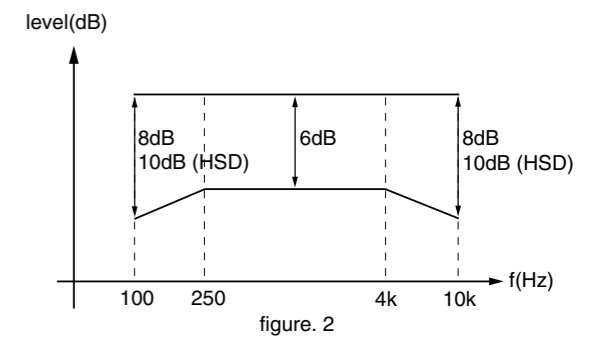
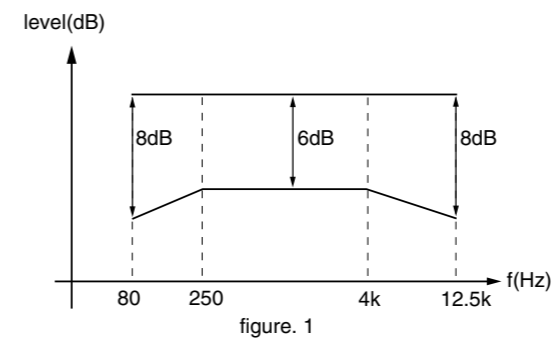


TAPE ADJUSTMENT & CHECK TABLE

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

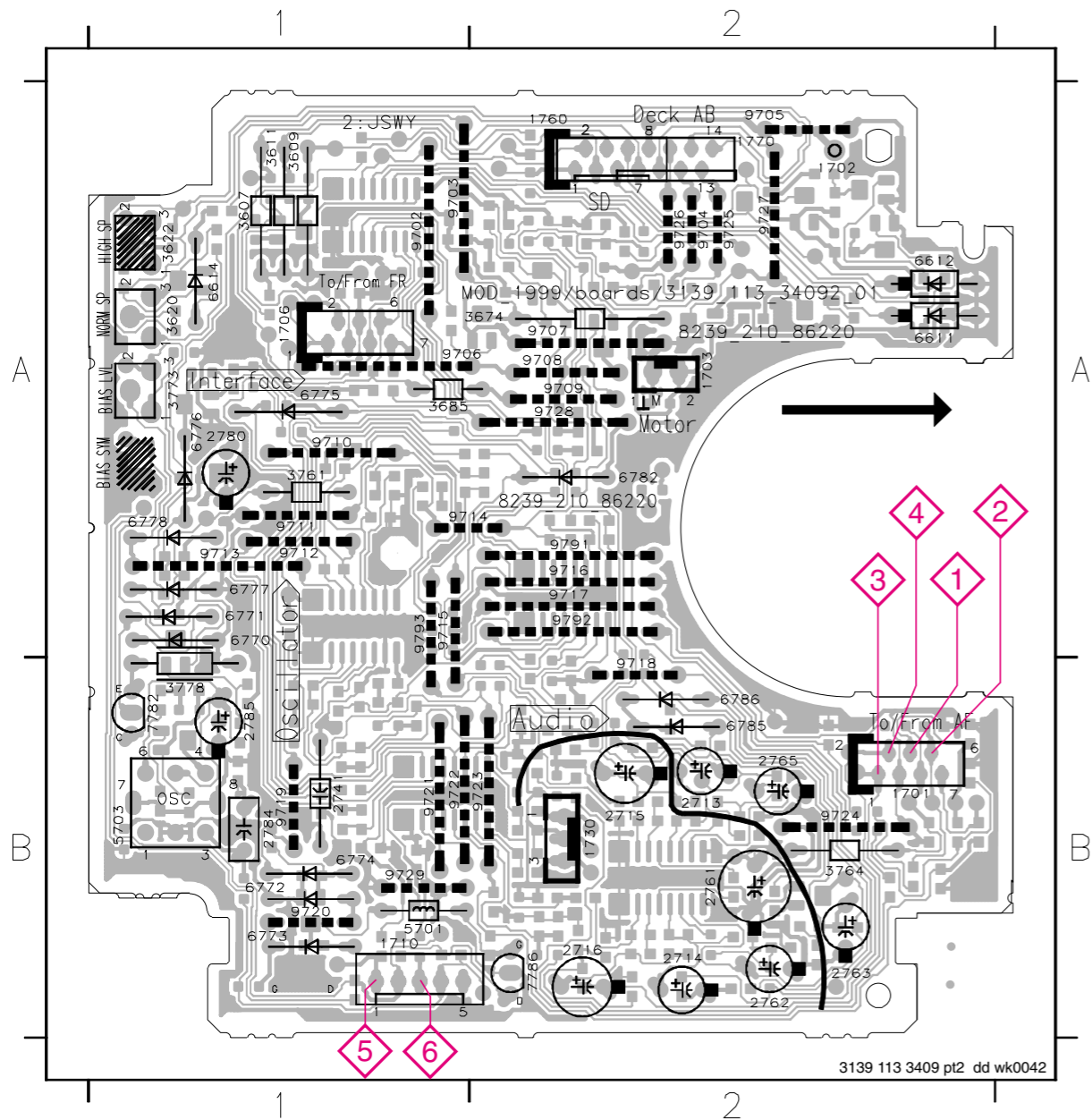
SBC419A^ : 4822 397 30069
 SBC420 : 4822 397 30071

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



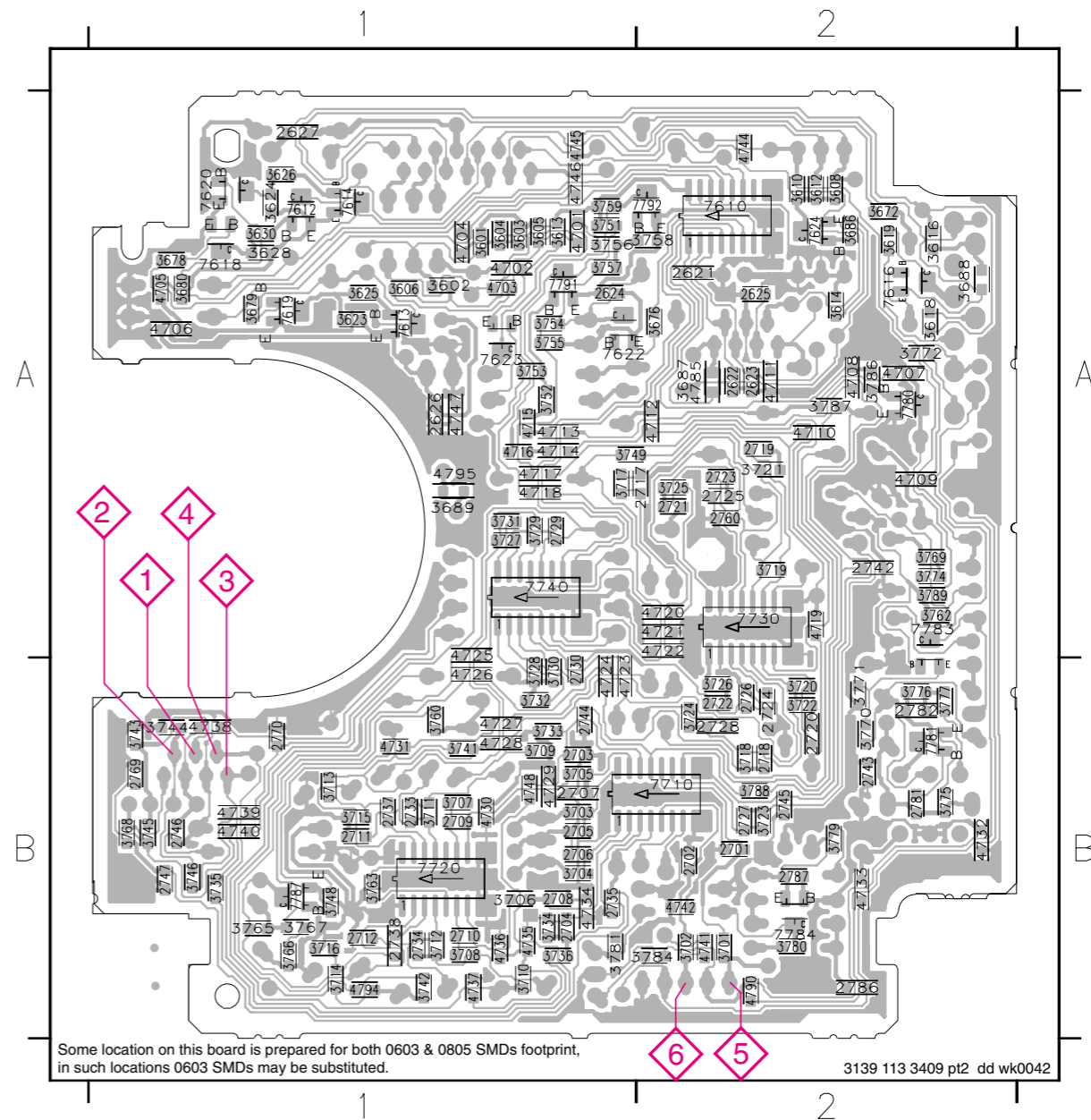
COMPONENT LAYOUT

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



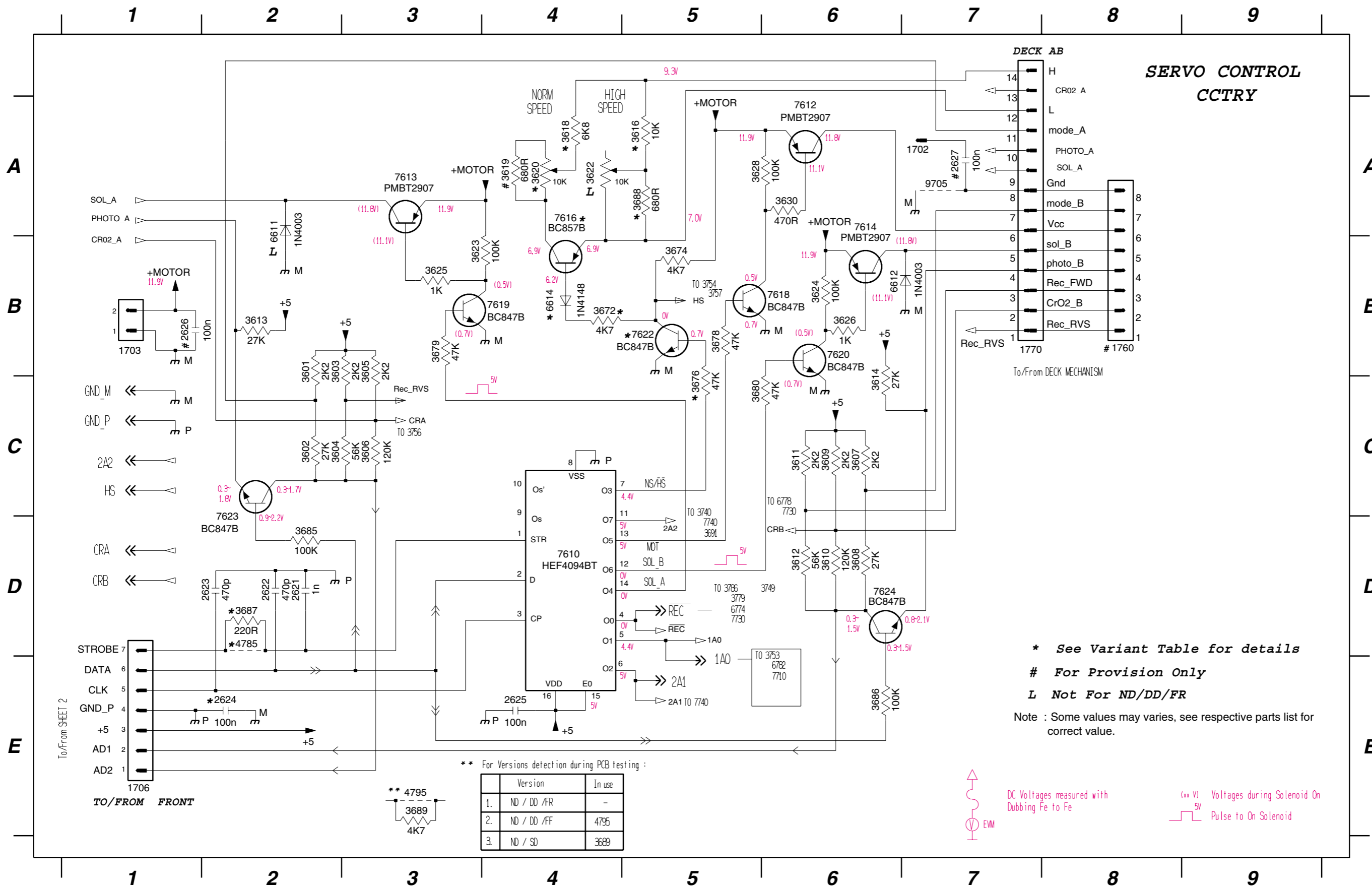
CHIP LAYOUT

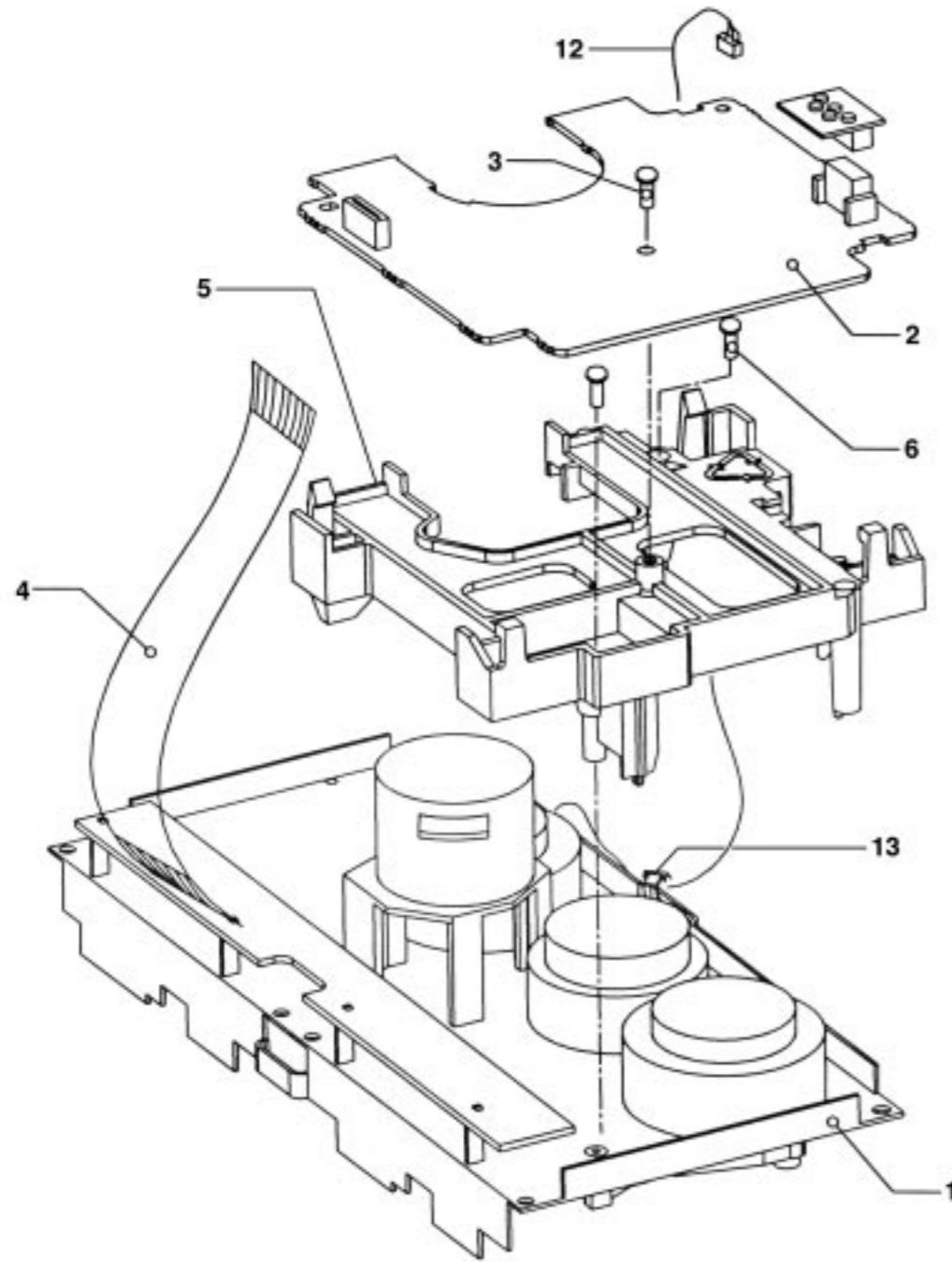
2621 A2	2724 B2	3602 A1	3688 A2	3725 A2	3757 A1	4701 A1	4727 B1	7612 A1
2622 A2	2725 A2	3603 A1	3689 A1	3726 B2	3758 A2	4702 A1	4728 B1	7613 A1
2623 A2	2726 B2	3604 A1	3701 B2	3727 B1	3759 A1	4703 A1	4729 B1	7614 A1
2624 A1	2727 B2	3605 A1	3702 B2	3728 B1	3760 B1	4704 A1	4730 B1	7616 A2
2625 A2	2728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



SERVO CONTROL CIRCUIT

1702 A7	1760 B8	2622 D2	2625 E4	3601 B2	3604 C2	3607 C6	3610 D6	3613 B2	3618 A4	3622 A4	3625 B3	3630 A6	3676 C5	3680 C5	3687 D2	4785 D2	6612 B6	7612 A6	7616 A4	7620 B6	7624 D6
1703 B1	1770 B7	2623 D2	2626 B1	3602 C2	3605 B3	3608 D6	3611 C6	3614 C6	3619 A4	3623 B3	3626 B6	3672 B4	3678 B5	3685 D2	3688 A5	4795 E3	6614 B6	7613 A3	7618 B6	7622 B5	9705 A7
1706 E1	2621 D2	2624 E2	2627 A7	3603 B2	3606 C3	3609 C6	3612 D6	3616 A5	3620 A4	3624 B6	3628 A5	3674 B5	3679 B3	3686 E6	3689 E3	6611 A2	7610 D4	7614 A6	7619 B4	7623 D2	



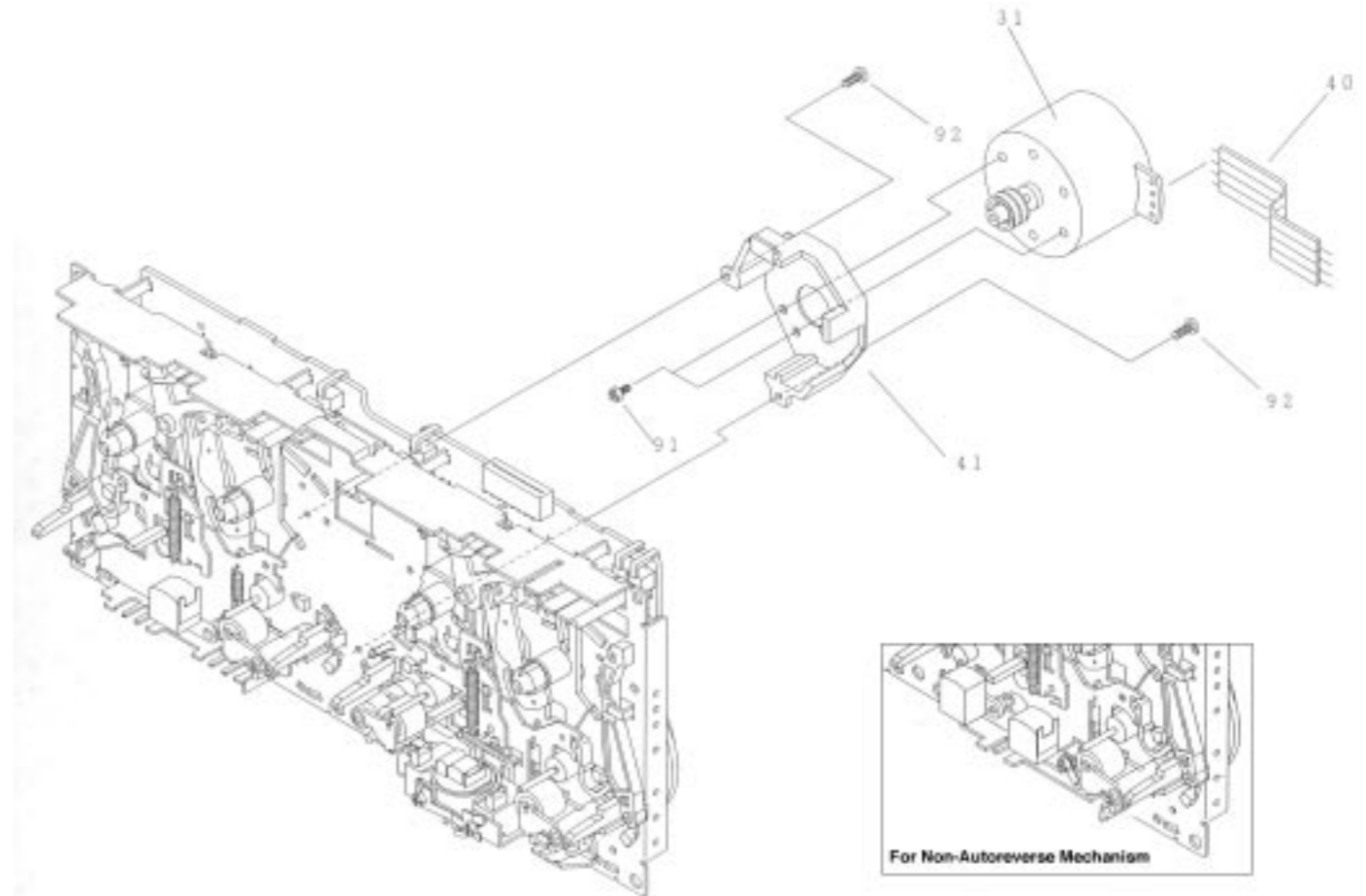


3139 118 77070 (incl. ...77080) dd wk926

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

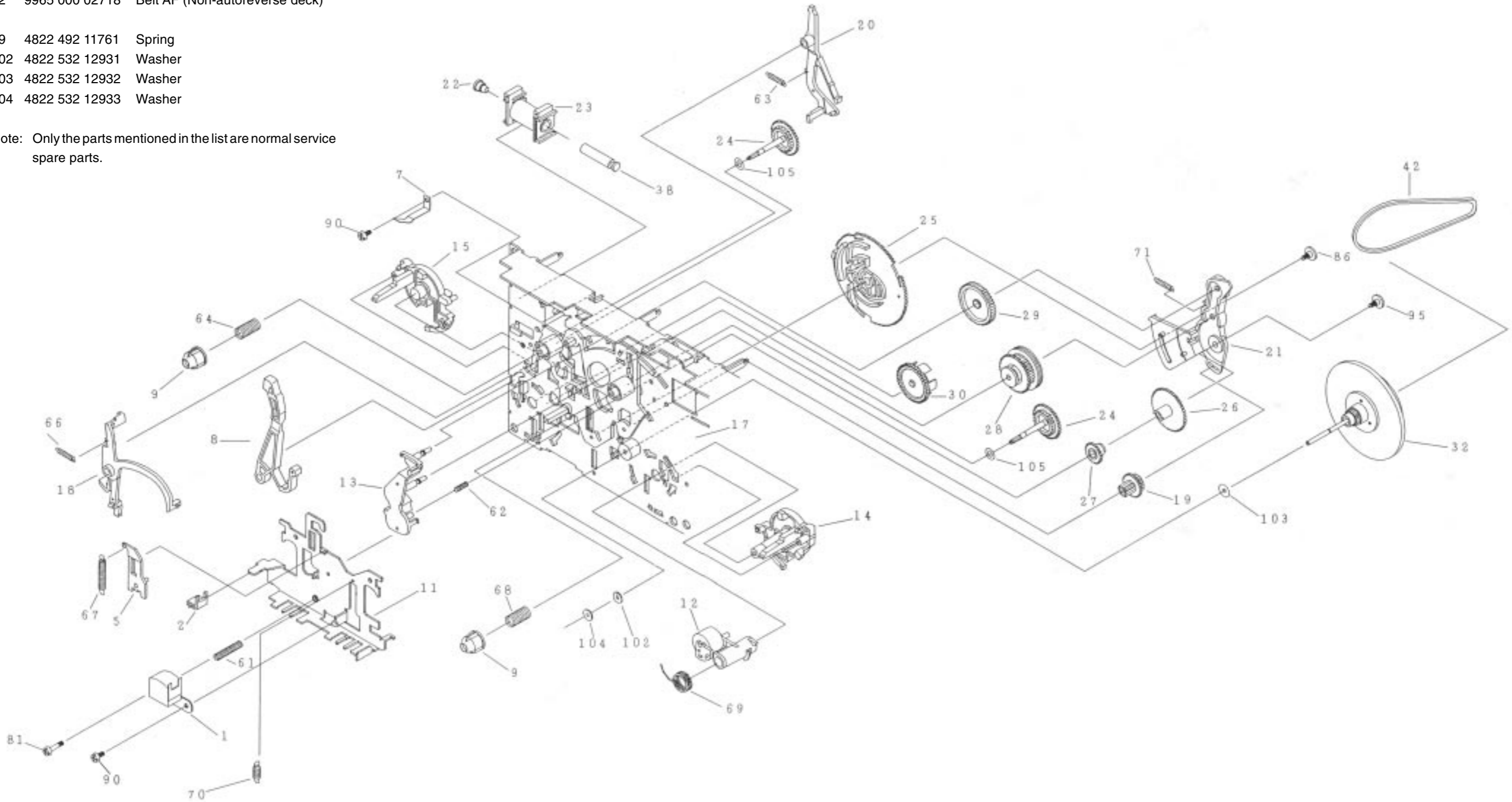
MECHANICAL PARTS - PLAY MECHANISM

- 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.

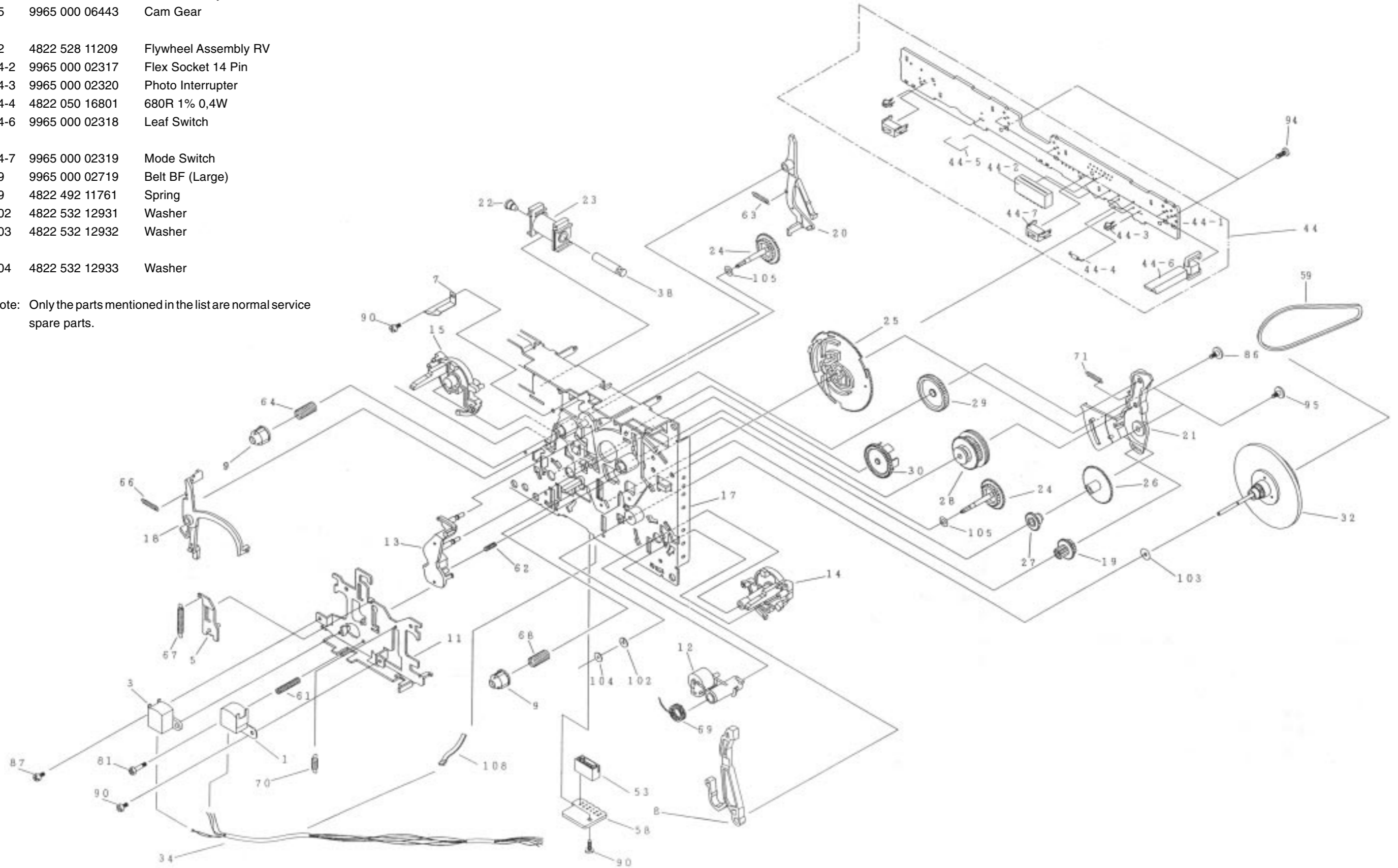


TAPE MECHANISM B - RECORD/PLAYBACK (Non-Autoreverse version)

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.

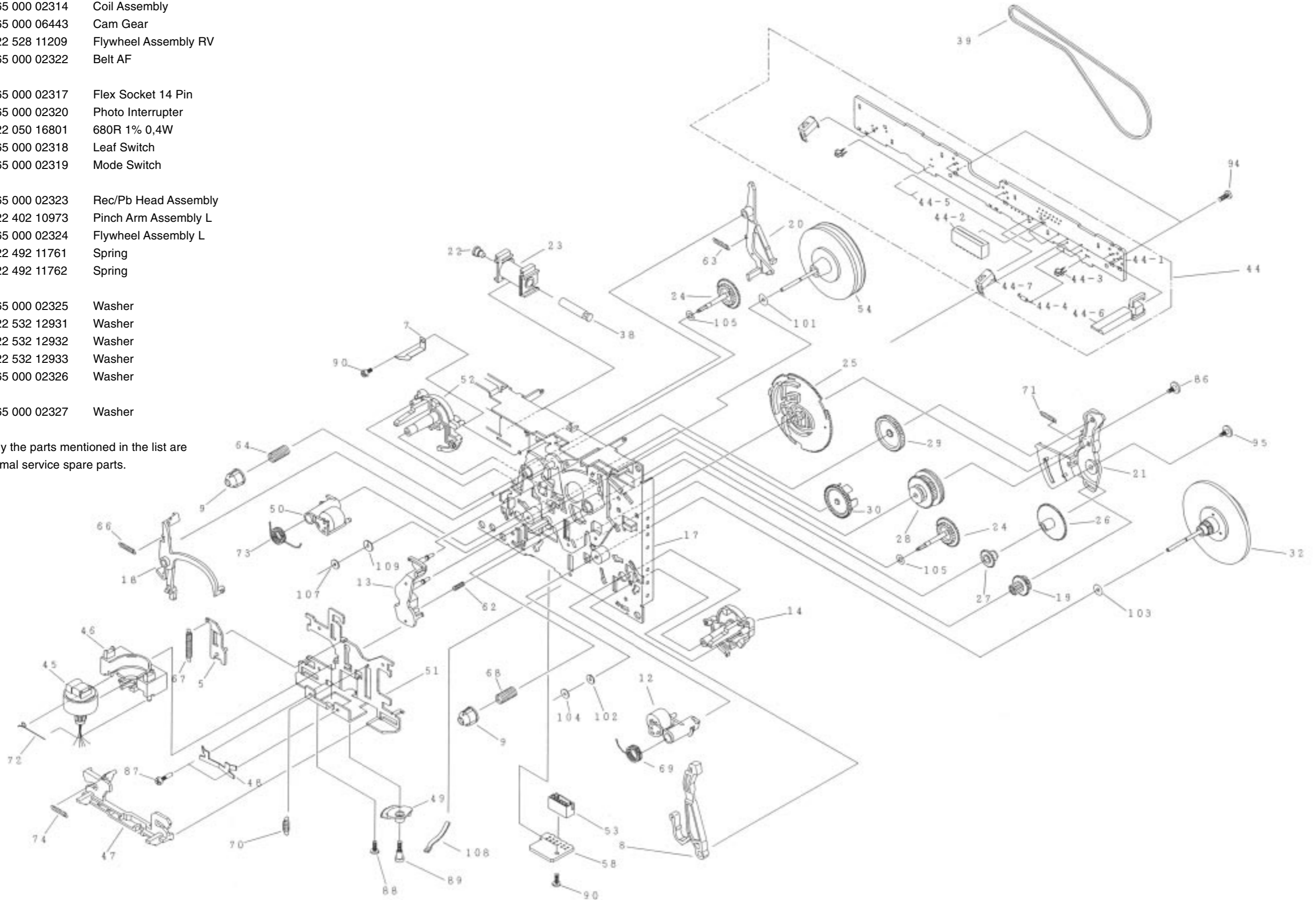


TAPE MECHANISM B - RECORD/PLAYBACK (Autoreverse version)

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	482205210688	△ 6R8 5% 0,33W
3779	482205120334	330k 5% 0,1W
3780	482205120105	1M 5% 0,1W
3781	482205120475	4M7 5% 0,1W
3784	482205110102	1k 2% 0,25W
3786	482205120223	22k 5% 0,1W
3787	482205120105	1M 5% 0,1W
3788	482205120105	1M 5% 0,1W
3789	482211710834	47k 1% 0,1W
4701	482205120008	0R Jumper 0805
4702	482205120008	0R Jumper 0805
4703	482205120008	0R Jumper 0805
4704	482205120008	0R Jumper 0805
4705	482205120008	0R Jumper 0805

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

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

TRANSISTORS & INTEGRATED CIRCUITS

7610	532220911306	HEF4094BT			
7612	482213011201	PMBT2907			
7613	482213011201	PMBT2907			
7614	482213011201	PMBT2907			
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
------	--------------	---------



3CDC-LC-MP3CD2002

(3 Disc Carousel Changer+MP3 Board) Layout stage .2

TABLE OF CONTENTS

Service Hints	10-2
Wiring Diagram	10-4
Blockdiagram	10-5

CD PART

Component Layout Main Board	10-6
Circuit Diagram	10-7

MP3 PART

Component Layout Main Board	10-8
Circuit Diagram	10-9

Exploded View	10-10
Partslist	10-12



Service hints

CAUTION

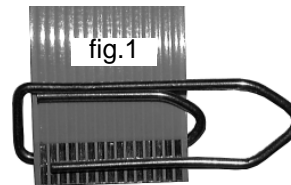
CHARGED CAPACITORS ON THE SERVO BOARD MAY DAMAGE THE CD DRIVE ELECTRONICS WHEN CONNECTING A NEW CD MECHANISM. THAT'S WHY, BESIDES THE SAFETY MEASURES LIKE

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

ADDITIONAL ACTIONS MUST BE TAKEN BY THE REPAIR TECHNICIAN.

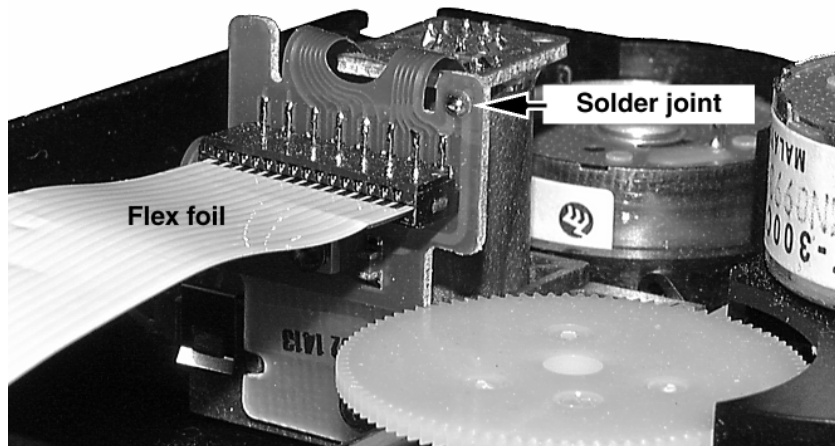
The following steps have to be done when replacing the CD mechanism:

1. Disconnect flexfoil cable from the old CD drive
2. Put a paperclip on the flexfoil to short-circuit the contacts (fig.1)
3. Remove the old CD drive
4. Remove paperclip from the flexfoil and connect it to the new drive
5. Position the new CD drive in its studs
6. Remove solder joint from the Laserunit



Attention: The laser diode of this CD drive is protected against ESD by a solder joint which shortcircuits the laserdiode to ground.

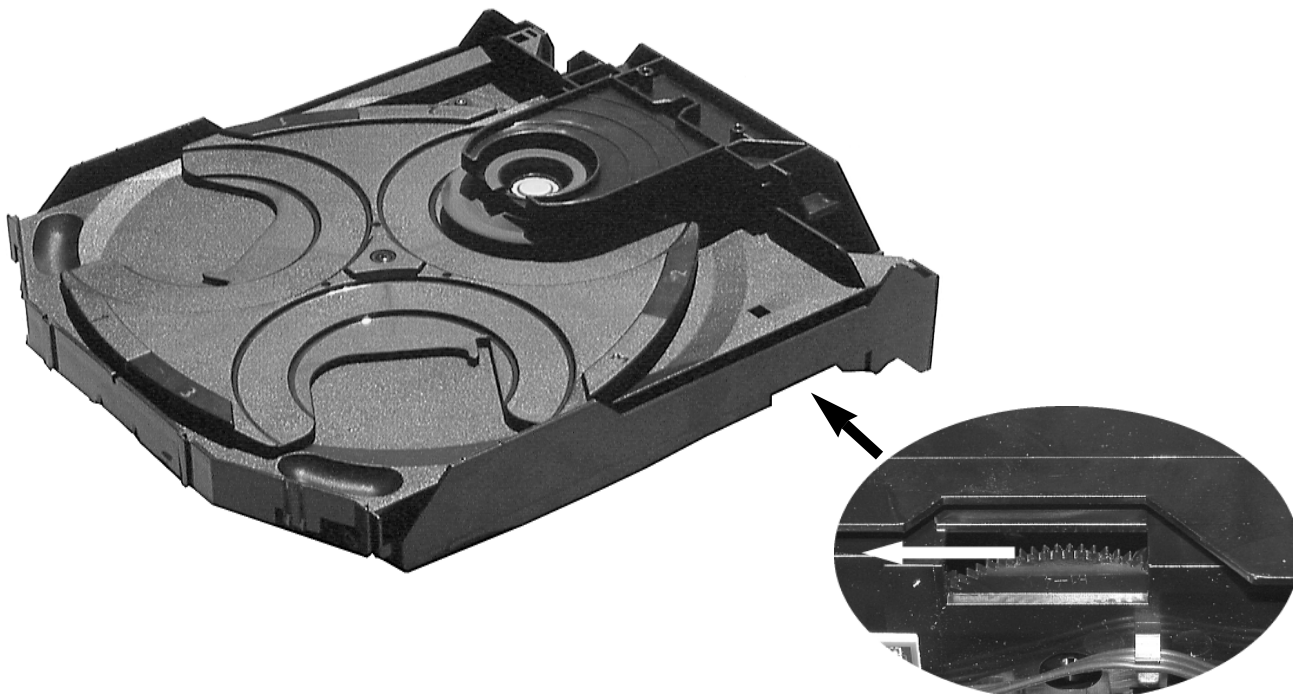
For proper functionality of the CD drive this solder joint must be removed **after** connection the drive to the set.



Emergency open

In case of a Supply fault, the tray can be opened manually.

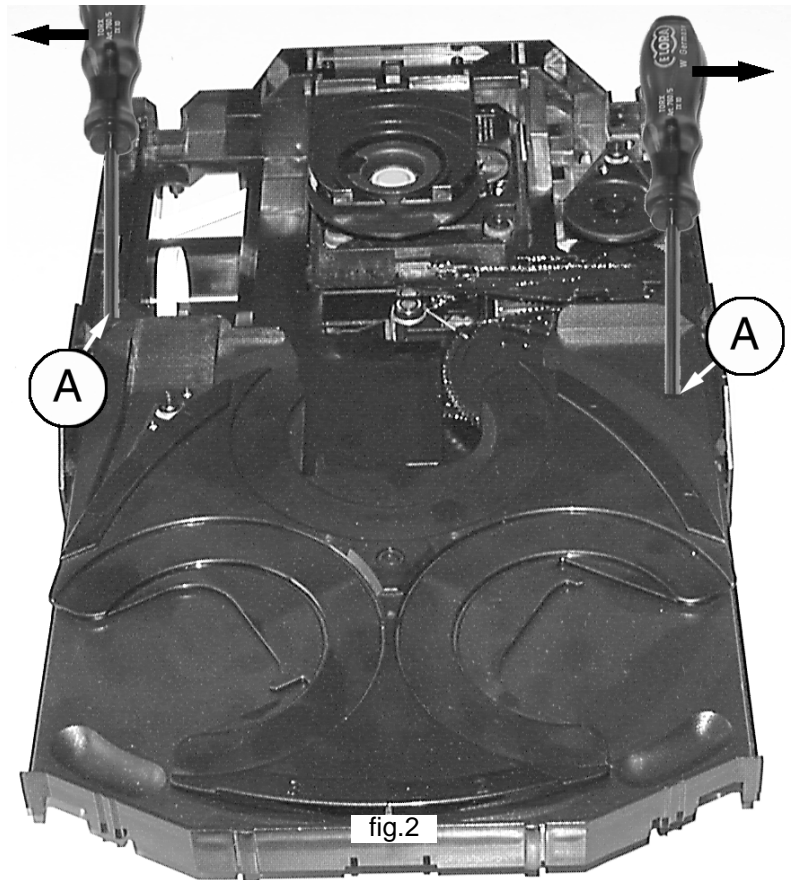
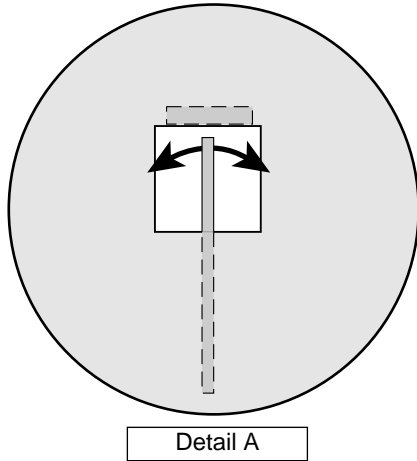
1. Remove the top cover of the set to get access to the Changer Module.
2. Turn gearwheel clockwise (as shown in picture below).



Service hints

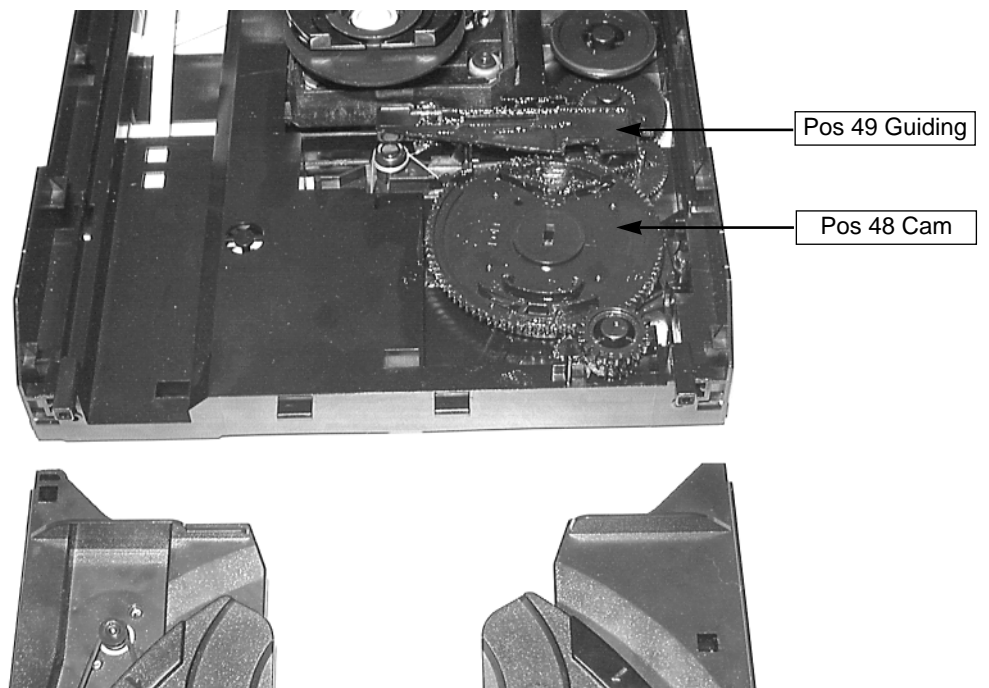
Dismantling of Tray

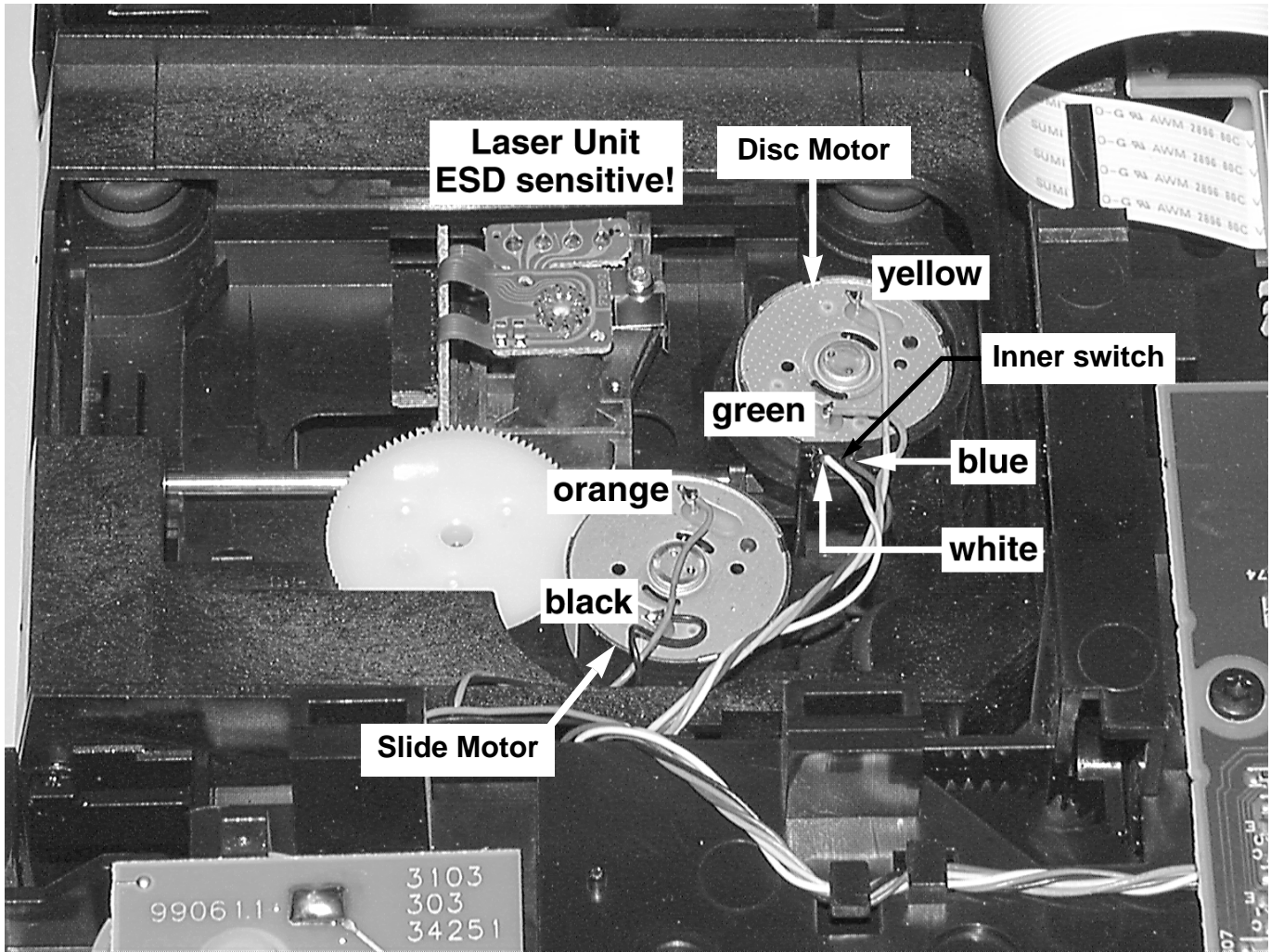
1. Open the tray.
2. Release 2x catch as shown in fig. 2 and Detail A
3. Pull tray out.



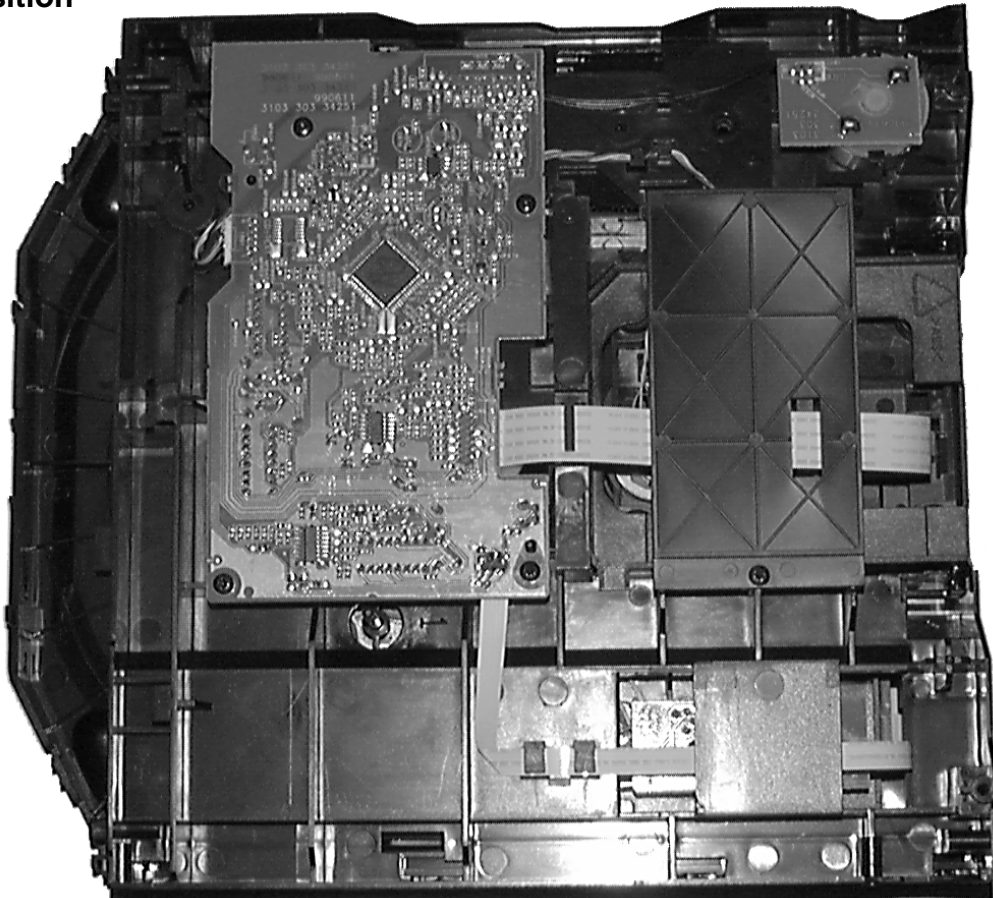
Assembling of Tray

1. Turn Cam (pos. 48) clockwise to end position.
2. If necessary - move Guiding (pos. 49) to the right end position.
3. Insert the Tray.

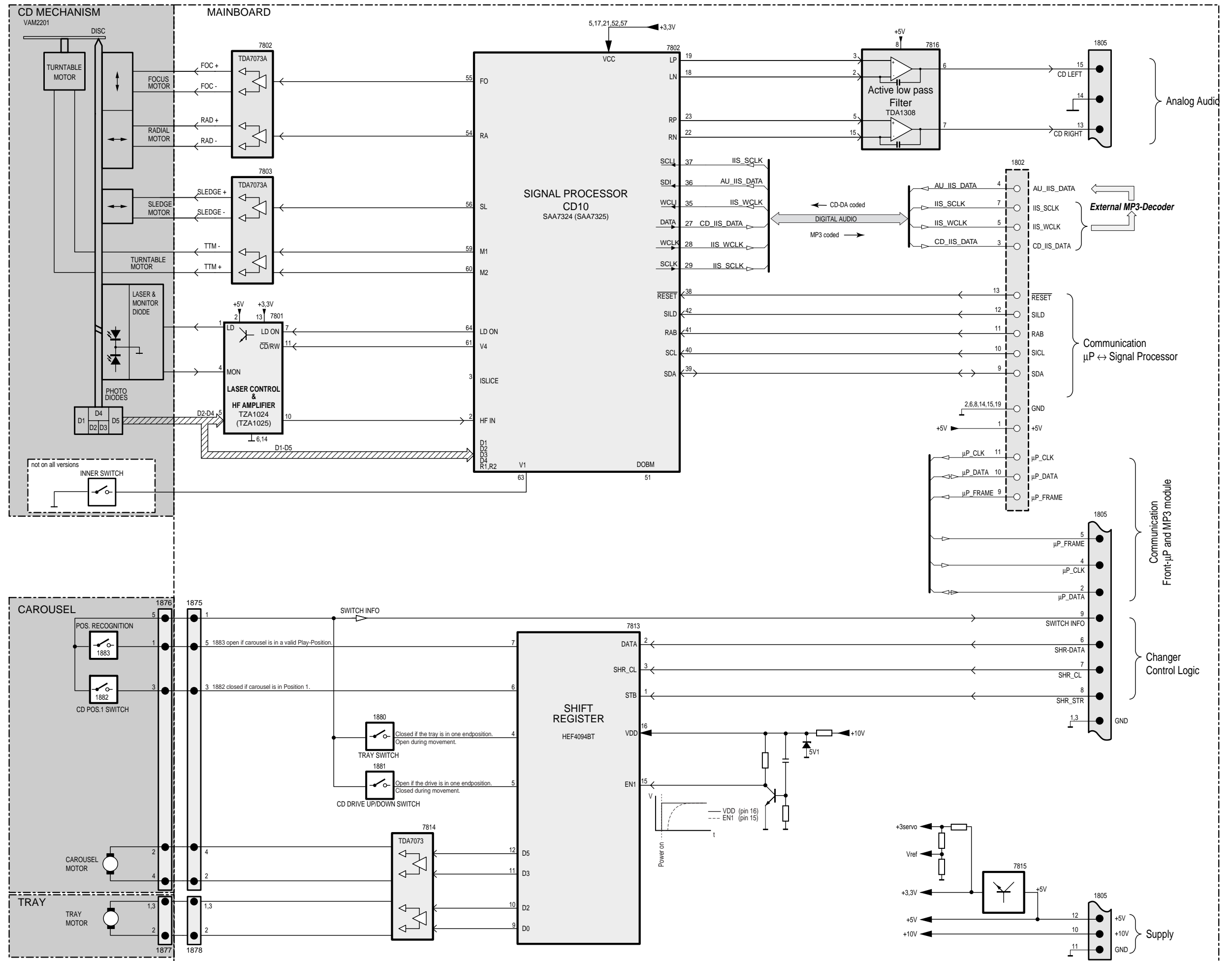




Service Position

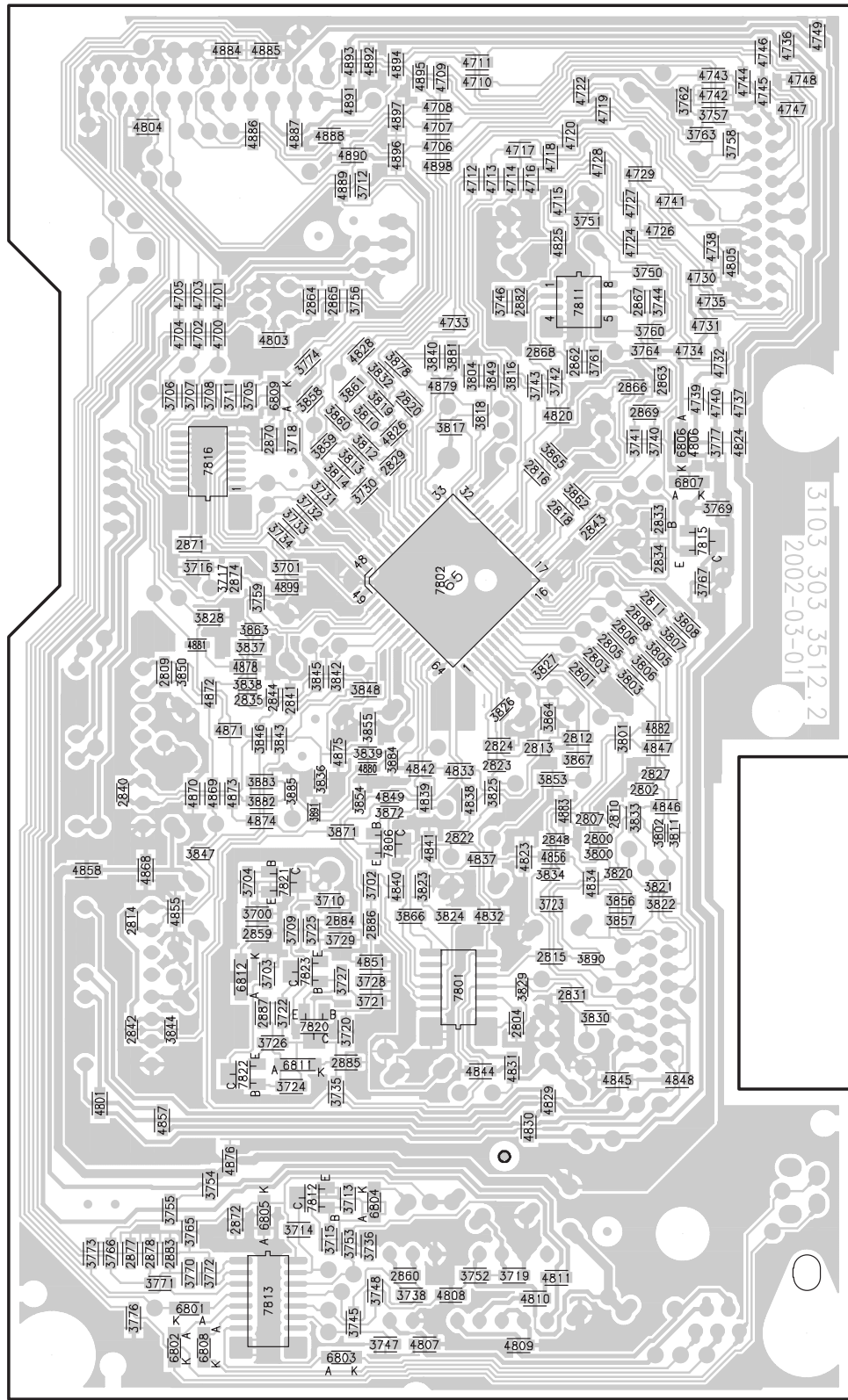


BLOCK DIAGRAM 3CDC-LC MP3 Version



Mapping

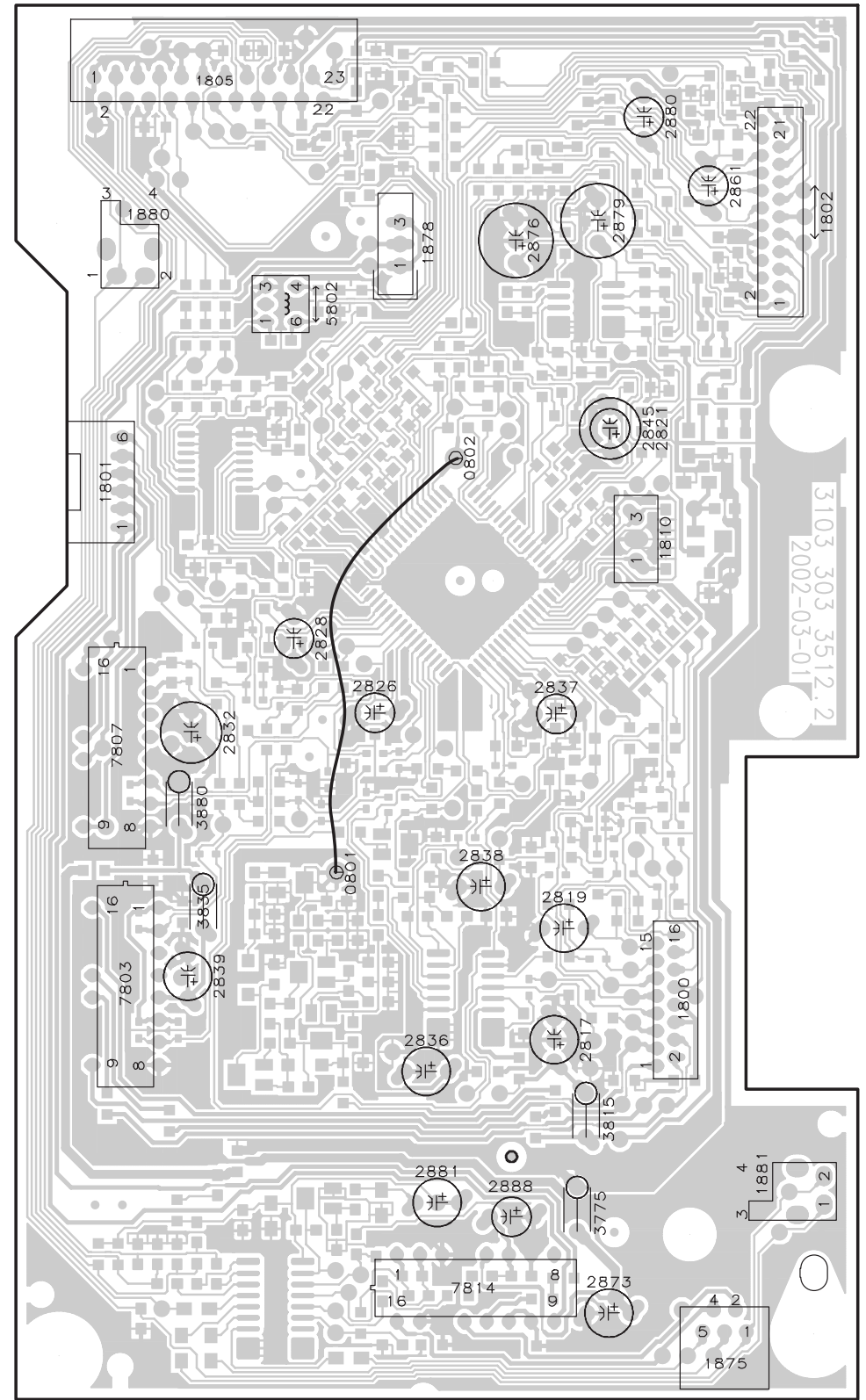
3CDC-LC-MP3CD2002 Copperside view



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

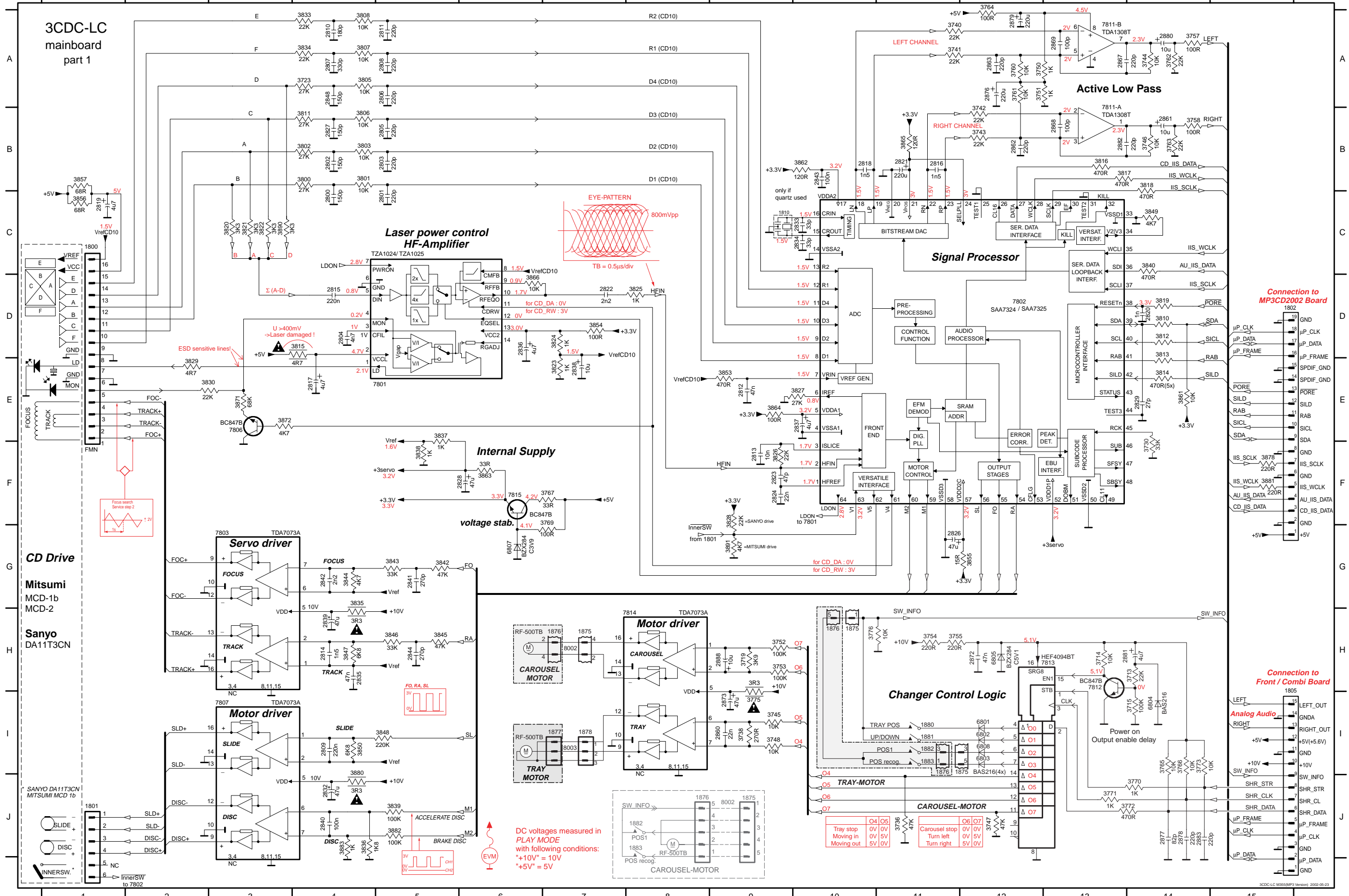
	Copperside	Componentside
2800 E4	3730 C3	3848 D3
2801 D4	3731 C2	3849 C3
2802 E4	3732 C2	3850 D1
2803 D4	3733 C2	3853 F4
2804 F3	3734 D2	3854 E3
2805 D4	3735 G2	3855 E3
2806 D4	3736 H3	3856 F4
2807 E4	3738 H3	3857 F4
2808 D4	3740 C4	3858 C2
2809 D1	3741 C4	3859 C2
2810 E4	3742 C4	3860 C2
2811 D4	3743 C4	3861 C2
2812 E4	3744 B4	3862 C4
2813 E4	3745 H2	3863 D2
2814 F1	3746 B3	3864 E4
2815 F4	3747 H3	3865 C4
2816 C4	3748 H3	3866 F3
2818 C4	3750 B4	3867 E4
2820 C3	3751 B4	3871 E2
2822 E3	3752 H3	3872 E3
2823 E3	3753 H2	3878 C3
2824 E3	3754 G2	3881 C3
2827 E4	3755 G1	3882 E2
2829 C3	3756 B2	3883 E2
2831 F4	3757 A5	3884 E3
2833 C4	3758 A5	3885 E2
2834 D4	3759 D2	3890 F4
2835 D2	3760 B4	3891 E2
2840 E1	3761 C4	4700 B2
2841 D2	3762 A4	4701 B2
2842 F1	3763 A4	4702 B2
2843 D4	3764 C4	4703 B2
2844 D2	3765 H2	4704 B1
2848 E4	3766 H1	4705 B1
2859 F2	3767 D4	4706 A3
2860 H3	3769 C5	4707 A3
2862 C4	3770 H2	4708 A3
2863 C4	3771 H1	4709 A3
2864 B2	3772 H2	4710 A3
2865 B2	3773 H1	4711 A3
2866 C4	3774 C2	4712 B3
2867 B4	3776 H1	4713 B3
2868 C4	3777 C5	4714 B3
2869 C4	3800 E4	4715 B4
2870 C2	3801 E4	4716 B3
2871 D2	3802 E4	4717 A3
2872 G2	3803 D4	4718 A4
2874 D2	3804 C3	4719 A4
2877 H1	3805 D4	4720 A4
2878 H1	3806 D4	4722 A4
2882 B3	3807 D4	4724 B4
2883 H1	3808 D4	4726 B4
2884 F2	3810 C3	4727 B4
2885 G2	3811 E4	4728 A4
2886 F3	3812 C3	4729 A4
2887 F2	3813 C2	4730 B4
3700 F2	3814 C2	4731 B4
3701 D2	3816 C3	4732 C5
3702 F3	3817 C3	4733 B3
3703 F2	3818 C3	4734 C4
3704 F2	3819 C3	4735 B5
3705 C2	3820 E4	4736 A5
3706 C1	3821 F4	4737 C5
3707 C2	3822 F4	4738 B5
3708 C2	3823 F3	4739 C4
3709 F2	3824 F3	4740 C5
3710 F2	3825 E3	4741 B4
3711 C2	3826 E3	4742 A5
3712 B3	3827 D4	4743 A5
3713 G2	3828 D2	4744 A5
3714 H2	3829 F3	4745 A5
3715 H2	3830 F4	4746 A5
3716 D2	3832 C3	4747 A5
3717 D2	3833 E4	4748 A5
3718 C2	3834 E4	4749 A5
3719 H3	3836 E2	4801 G1
3720 F2	3837 D2	4803 B2
3721 F3	3838 D2	4804 A1
3722 F2	3839 E3	4805 B5
3723 F4	3840 C3	4806 C4
3724 G2	3842 D2	4807 H3
3725 F2	3843 E2	4808 H3
3726 F2	3844 F1	4809 H3
3727 F2	3845 D2	4810 H4
3728 F3	3846 E2	4811 H4
3729 F2	3847 E2	4820 C4

3CDC-LC-MP3CD2002 Components seen from Copperside



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

1800	C1	1876	H10	1883	I11	2807	A4	2815	D4	2823	F9	2834	C10	2842	G4	2867	A13	2879	A12	3715	I14	3742	B12	3751	A12	3761	A12	3770	J14	3802	B4	3812	D14	3820	C3	3828	F9	3837	E5	3846	H5	3856	C1	3871	E3	3891	G9	7801	D5	7813	H13
1801	J1	1876	H7	1880	C4	2808	A5	2816	B11	2824	F9	2835	H4	2843	B10	2868	B13	2880	A14	3719	H9	3743	B12	3752	H9	3762	A14	3771	J13	3803	B4	3813	E14	3821	C3	3829	E2	3838	F5	3847	H4	3857	B1	3872	E3	3891	I12	7802	D12	7814	H8
1802	D15	1876	H11	1880	C5	2809	I4	2817	E4	2826	G11	2836	D6	2844	H5	2869	A13	2881	H14	3723	A4	3744	A14	3753	B14	3763	B14	3772	J14	3805	A4	3814	E14	3822	C3	3830	E2	3839	J5	3848	I5	3858	F15	3873	F15	3892	G3	7803	G3	7815	F8
1805	I15	1877	I7	1880	B4	2810	A4	2818	B10	2827	B4	2837	E10	2848	A4	2872	H12	2882	B13	3730	F14	3745	I9	3754	H11	3764	A12	3773	I14	3806	B4	3815	D4	3823	E7	3832	E14	3840	C14	3849	C14	3859	J4	3878	J4	3897	I12	7806	E3		
1810	C9	1878	I7	1883	B5	2811	A5	2819	C1	2828	F6	2838	E7	2850	I9	2873	I9	2883	J14	3736	J11	3746	B14	3755	H11	3765	I14	3775	I9	3807	A4	3816	B13	3824	D7	3833	A4	3842	G5	3850	I4	3863	F6	3881	F15	3890	I14	7807	I3		
1875	H10	1880	I11	1880	D4	2812	E9	2820	D14	2829	F14	2839	H4	2846	B10	2876	I12	2888	H8	3747	J12	3757	A14	3766	I14	3776	H11	3808	A4	3817	B13	3825	D8	3834	A4	3843	G5	3852	E9	3864	B9	3882	J5	3893	H12	7811	A	B13			
1875	H12	1882	I11	1880	A5	2814	H4	2822	D7	2832	C10	2841	G5	2849	J4	2878	J14	2887	H14	3740	A11	3748	I9	3757	F7	3767	F7	3800	B4	3810	D14	3819	D14	3827	E10	3836	J4	3845	H5	3855	G12	3866	D6	3880	C3	3890	G6	7812	H13		



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

Connection to MP3CD2002 Board

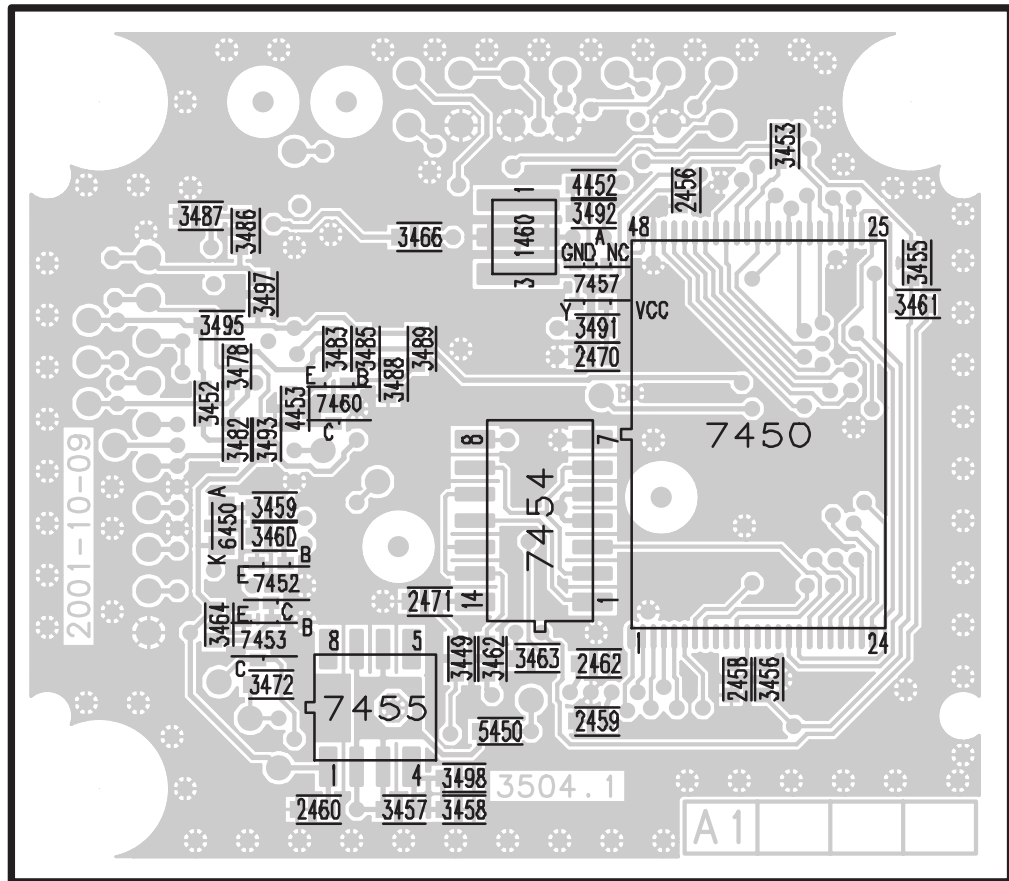
Connection to Front / Combi Board

1460 A3	3449 C3	3460 C2	3482 B2	3492 A3	6450 C2
2456 A4	3452 B2	3461 B5	3483 B2	3493 B2	7450 B4
2458 D4	3453 A4	3462 C3	3485 B2	3495 B2	7452 C2
2459 D4	3455 B5	3463 C3	3486 A2	3497 B2	7453 C2
2460 D2	3456 D4	3464 C2	3487 A2	3498 D3	7454 C3
2462 C4	3457 D3	3466 A3	3488 B3	4452 A3	7455 D2
2470 B4	3458 D3	3472 D2	3489 B3	4453 B2	7457 B4
2471 C3	3459 C2	3478 B2	3491 B4	5450 D3	7460 B2

1451 B5	2457 A2	2469 B4	3469 C4	3479 A2	4450 A4
1455 A4	2461 D4	2472 D3	3470 D3	3480 C4	6451 D4
2450 C1	2463 A3	3450 C1	3471 C4	3481 C4	7451 B3
2451 B1	2464 D4	3451 B1	3473 C4	3484 B4	7456 D4
2452 C2	2465 D4	3454 D2	3474 A3	3490 A4	7458 D1
2453 B1	2466 A3	3465 C1	3475 C4	3494 A2	
2454 B1	2467 B4	3467 A3	3476 C4	3496 A4	
2455 D2	2468 B4	3468 A3	3477 B4	3499 C1	

1 2 3 4 5

Side A

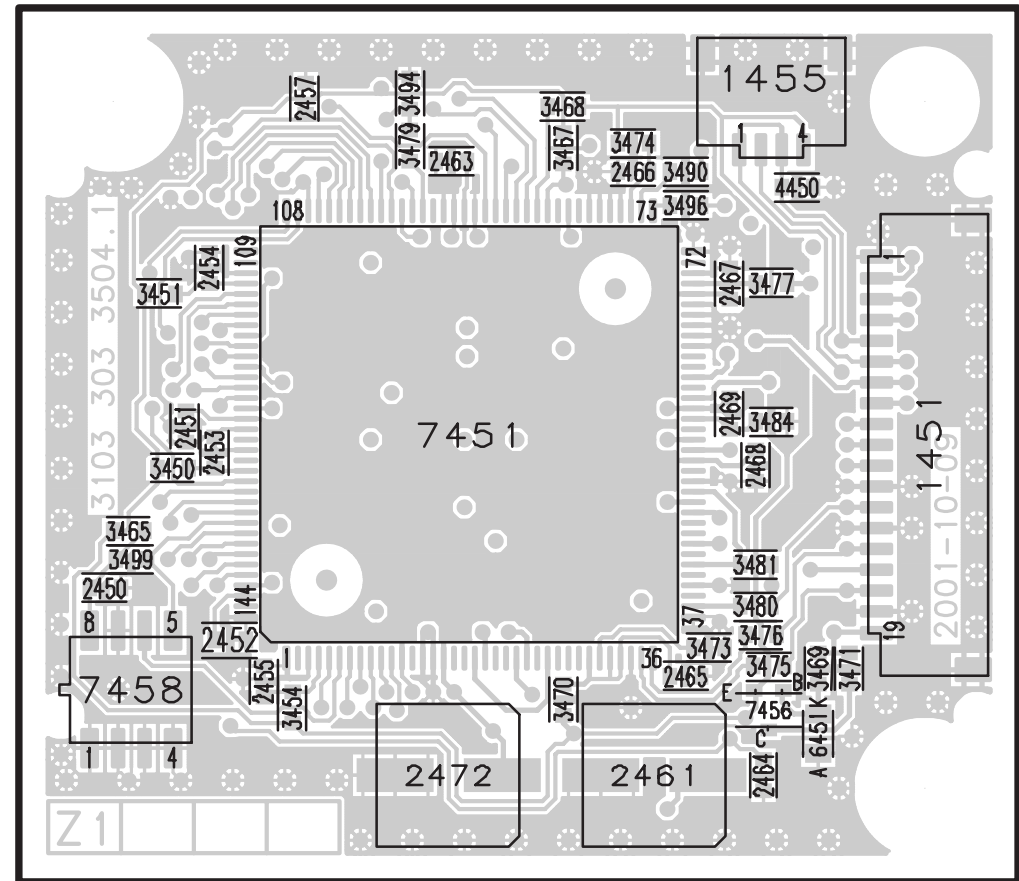


This assembly drawing shows a summary of all possible versions. For components used in a specific version see schematic diagram respectively partlist.

1 2 3 4 5

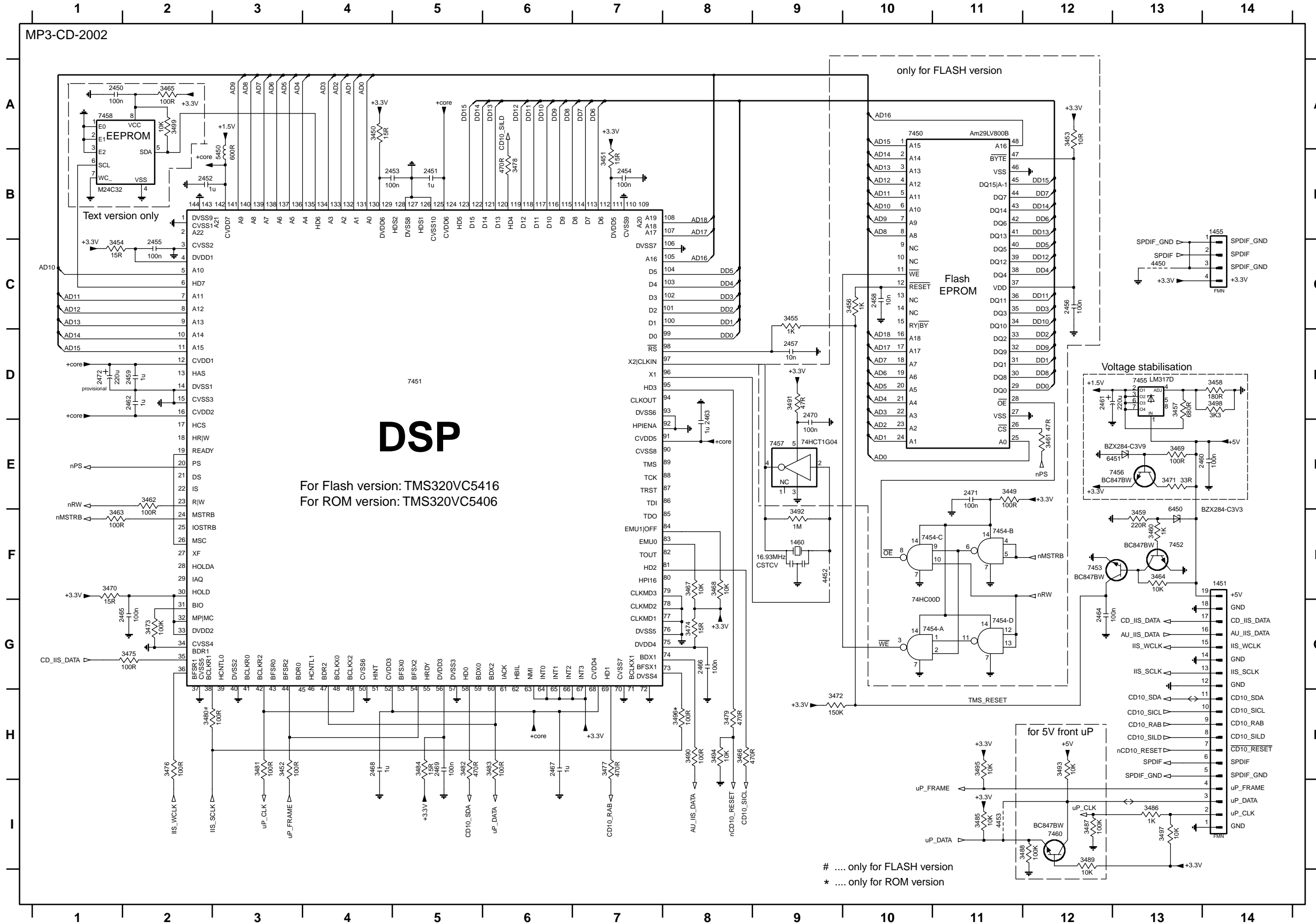
1 2 3 4 5

Side B



1 2 3 4 5

MP3-CD-2002



DSP

For Flash version: TMS320VC5416
For ROM version: TMS320VC5406

only for FLASH version

Flash EPROM

Voltage stabilisation

for 5V front uP

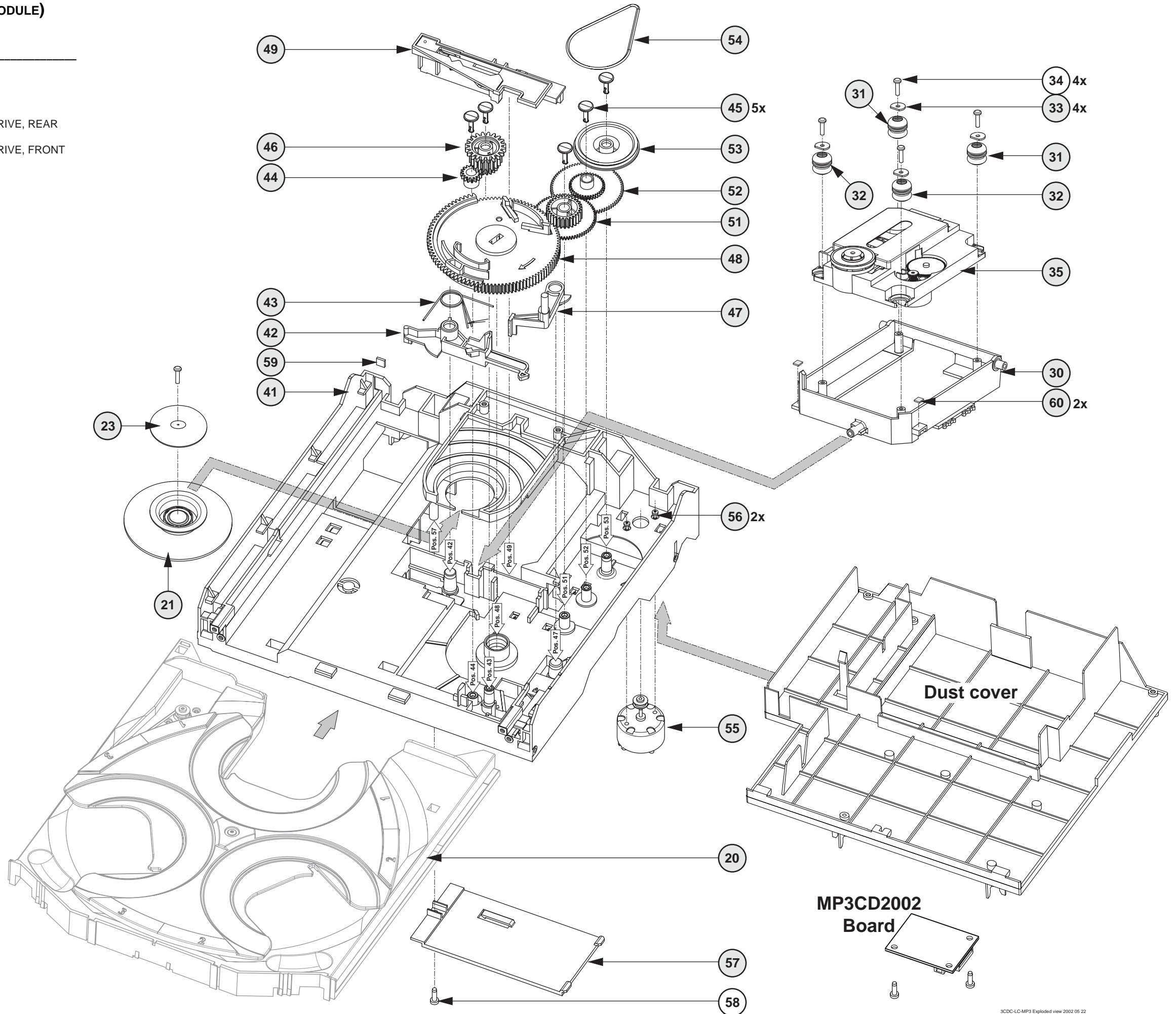
.... only for FLASH version
* only for ROM version

- 2451 B5
- 2452 B2
- 2453 B4
- 2454 B7
- 2455 C2
- 2456 C12
- 2457 D9
- 2458 C10
- 2459 D2
- 2460 E13
- 2461 D12
- 2462 D2
- 2463 D8
- 2464 G12
- 2465 G2
- 2466 G8
- 2467 H6
- 2468 H4
- 2469 H5
- 2470 D9
- 2471 E11
- 2472 D1
- 3449 E11
- 3450 A4
- 3451 B7
- 3452 H3
- 3453 A12
- 3454 C1
- 3455 C9
- 3456 C10
- 3457 D13
- 3458 D14
- 3459 F13
- 3460 F12
- 3461 E12
- 3462 E2
- 3463 F1
- 3464 F13
- 3465 A2
- 3466 H8
- 3467 F8
- 3468 F8
- 3469 E13
- 3470 F1
- 3471 E13
- 3472 H9
- 3473 G2
- 3474 G8
- 3475 G2
- 3476 H2
- 3477 H1
- 3478 B6
- 3479 H8
- 3480 H2
- 3481 H3
- 3482 H5
- 3483 H6
- 3484 H5
- 3485 H11
- 3486 H13
- 3487 I2
- 3488 I2
- 3489 I2
- 3490 H8
- 3491 D9
- 3492 F9
- 3493 H12
- 3494 H8
- 3495 H11
- 3496 H8
- 3497 I3
- 3498 D14
- 3499 A2
- 4450 C13
- 4452 F9
- 4453 I11
- 4454 B3
- 4455 I1
- 4456 E13
- 4457 D5
- 4458 F13
- 4459 F12
- 4460 I2
- 4461 A G11
- 4462 B F11
- 4463 C F11
- 4464 D G11
- 4465 D13
- 4466 E12
- 4467 E9
- 4468 A1
- 4469 I2

EXPLODED VIEW (3CDC-LC MODULE)

MECHANICAL PARTS *Loader*

20	3103 304 66500	DRAWER BLACK
21	3140 114 29070	PRESSURE RING-DA11
23	3140 111 21270	METAL RING-DA11
30	3103 304 66560	SUPPORT
31	4822 529 10386	RUBBER DAMPER CD DRIVE, REAR
32	4822 529 10387	RUBBER DAMPER CD DRIVE, FRONT
33	3103 304 06970	WASHER
35	3103 309 05350	CD DRIVE MCD1B
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

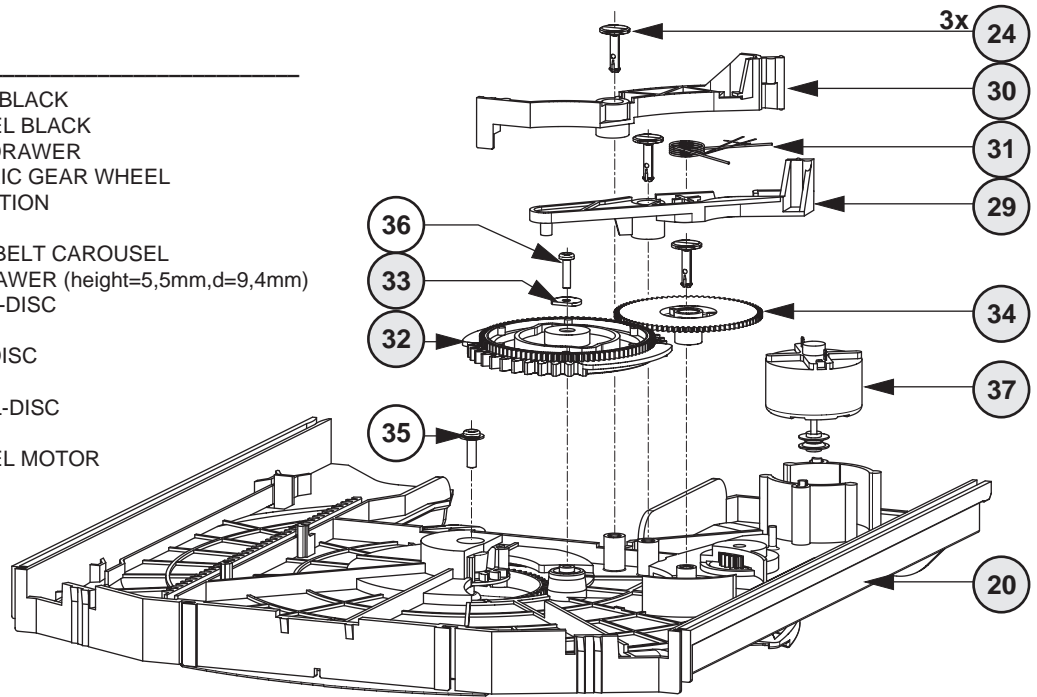


- X** spare part
- Y** non spare part

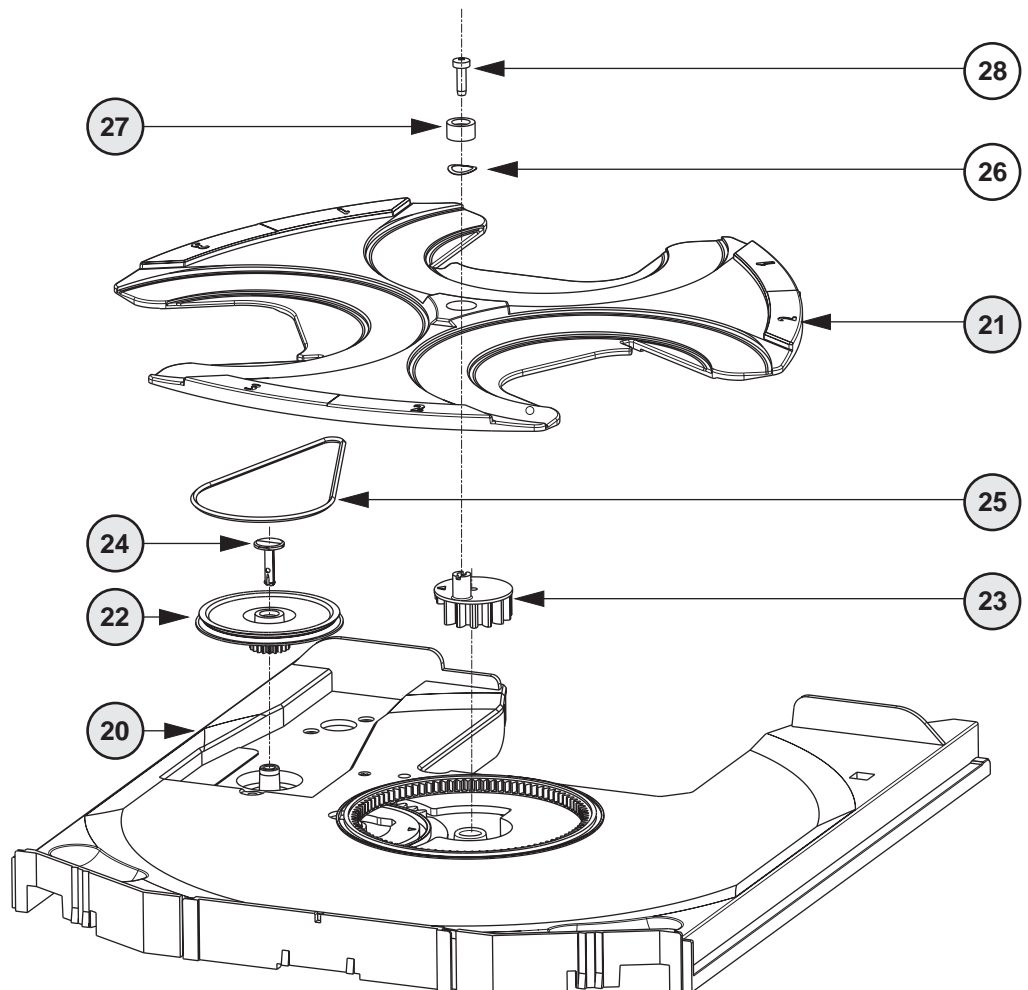
Drawer bottom view

MECHANICAL PARTS *Drawer*

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



Drawer top view



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

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

37	4822 361 10753	CAROUSEL MOTOR
55	4822 361 10753	TRAY MOTOR
1800	2422 025 17389	FFC-CONNECTOR 16Pin
1805	4822 265 10979	FFC-CONNECTOR 15Pin
1875	4822 267 10958	FFC-CONNECTOR 5Pin
1876	2422 025 08332	FFC-CONNECTOR 5Pin
1880	4822 276 13503	SWITCH
1881	4822 276 13503	SWITCH
1882	4822 276 13503	SWITCH
1883	4822 276 13503	SWITCH
8001	3103 308 93070	FLEX FOIL CABLE 19P, 170mm BD
8002	3103 308 91990	FLEXFOIL CABLE, 5P, 200mm AD
8005	3103 308 92930	FLEX FOIL CABLE 16P 170mm 1:n

CAPACITORS

2800©	4822 122 33753	150pF	5%	50V
2801©	4822 126 13883	220pF	5%	50V
2802©	4822 122 33753	150pF	5%	50V
2803©	4822 126 13883	220pF	5%	50V
2804©	4822 126 13193	4,7nF	10%	63V
2805©	4822 126 13883	220pF	5%	50V
2806©	4822 126 13883	220pF	5%	50V
2807©	4822 126 14241	330pF		50V
2808©	4822 126 13883	220pF	5%	50V
2809©	4822 126 13879	220nF	20%	16V
2810©	4822 126 14508	180pF	5%	50V
2811©	4822 126 13883	220pF	5%	50V
2812©	3198 024 44730	47nF	5%	50V
2813©	4822 122 33177	10nF	20%	50V
2814©	4822 126 14247	1,5nF	10%	50V
2815©	4822 126 14076	220nF	20%	25V
2816©	4822 126 13344	1,5nF	5%	63V
2817	4822 124 40769	4,7µF	20%	100V
2818©	4822 126 13344	1,5nF	5%	63V
2819	4822 124 40769	4,7µF	20%	100V
2820©	5322 126 11578	1nF	10%	63V
2821	4822 124 42383	220µF	20%	4V
2822©	4822 126 14238	2,2nF	10%	50V
2823©	4822 126 11785	47pF	5%	50V
2824©	5322 122 32654	22nF	10%	63V
2826	4822 124 12362	47µF	20%	4V
2827©	4822 122 33753	150pF	5%	50V
2828	4822 124 12362	47µF	20%	4V
2829©	4822 126 11669	27pF	10%	50V
2832	4822 124 40433	47µF	20%	25V
2833©	2222 867 15339	33pF	5%	50V
2835©	3198 024 44730	47nF	5%	50V
2836	4822 124 40769	4,7µF	20%	100V
2837	4822 124 22726	4,7µF	20%	35V
2838	4822 124 40248	10µF	20%	63V
2839	4822 124 40433	47µF	20%	25V
2840©	4822 126 14585	100nF	10%	50V
2841©	4822 122 33216	270pF	5%	50V
2842©	4822 126 14238	2,2nF	10%	50V
2843©	4822 126 14585	100nF	10%	50V
2844©	4822 122 33216	270pF	5%	50V
2848©	4822 122 33753	150pF	5%	50V
2860©	4822 126 14494	22nF	10%	25V
2861	4822 124 11947	10µF	20%	16V
2862©	4822 126 13883	220pF	5%	50V
2863©	4822 126 13883	220pF	5%	50V
2865©	5322 122 32654	22nF	10%	63V
2866©	4822 126 13751	47nF	10%	50V

CAPACITORS

2867©	4822 126 13883	220pF	5%	50V
2868©	2020 552 94427	100pF	5%	50V
2869©	2020 552 94427	100pF	5%	50V
2872©	3198 024 44730	47nF	5%	50V
2873	4822 124 80231	47µF	20%	16V
2876	4822 124 12245	220µF	20%	16V
2877©	4822 126 14226	82pF		50V
2878©	4822 126 13883	220pF	5%	50V
2879	4822 124 12245	220µF	20%	16V
2880	4822 124 11947	10µF	20%	16V
2881	4822 124 40769	4,7µF	20%	100V
2882©	4822 126 13883	220pF	5%	50V
2888	4822 124 11947	10µF	20%	16V

RESISTORS

3713©	4822 051 30223	22kΩ	5%	0,06W
3714©	4822 051 30103	10kΩ	5%	0,06W
3715©	4822 117 13632	100kΩ	1%	0,06W
3719©	4822 051 30392	3,9kΩ	5%	0,06W
3723©	4822 051 20273	27kΩ	5%	0,1W
3730©	4822 051 20333	33kΩ	5%	0,1W
3736©	4822 117 12925	47kΩ	1%	0,06W
3738©	4822 051 30271	270Ω	5%	0,06W
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
3745©	4822 117 10833	10kΩ	1%	0,1W
3746©	4822 051 30103	10kΩ	5%	0,06W
3747©	4822 117 12925	47kΩ	1%	0,06W
3748©	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 117 13632	100kΩ	1%	0,06W
3753©	4822 117 13632	100kΩ	1%	0,06W
3754©	4822 051 30221	220Ω	5%	0,06W
3755©	4822 117 11503	220Ω	5%	0,1W
3757©	4822 117 11373	100Ω	1%	0,1W
3758©	4822 051 30101	100Ω	5%	0,06W
3760©	4822 117 10833	10kΩ	1%	0,1W
3761©	4822 051 30103	10kΩ	5%	0,06W
3762©	4822 051 30223	22kΩ	5%	0,06W
3763©	4822 051 30223	22kΩ	5%	0,06W
3764©	4822 117 11373	100Ω	1%	0,1W
3765©	4822 051 30103	10kΩ	5%	0,06W
3766©	4822 117 10833	10kΩ	1%	0,1W
3767©	4822 051 30339	33Ω	5%	0,06W
3769©	4822 051 30101	100Ω	5%	0,06W
3770©	4822 051 30102	1kΩ	5%	0,06W
3771©	4822 051 30102	1kΩ	5%	0,06W
3772©	4822 051 30471	470Ω	5%	0,06W
3773©	4822 117 10833	10kΩ	1%	0,1W
3774©	4822 117 11373	100Ω	1%	0,1W
3775▲	4822 052 10338	3,3Ω	5%	NFR25
3776©	4822 051 30103	10kΩ	5%	0,06W
3800©	4822 051 30273	27kΩ	5%	0,06W
3801©	4822 117 10833	10kΩ	1%	0,1W
3802©	4822 051 30273	27kΩ	5%	0,06W
3803©	4822 117 10833	10kΩ	1%	0,1W
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

ELECTRICAL PARTSLIST 3CDC-LC MODULE

RESISTORS

3810	©	4822 051 30471	470Ω	5%	0,06W
3811	©	4822 051 30273	27kΩ	5%	0,06W
3812	©	4822 051 20471	470Ω	5%	0,1W
3813	©	4822 051 20471	470Ω	5%	0,1W
3814	©	4822 051 20471	470Ω	5%	0,1W
3815	▲	4822 052 10478	4,7Ω	5%	NFR25
3816	©	4822 051 20471	470Ω	5%	0,1W
3817	©	4822 051 30471	470Ω	5%	0,06W
3818	©	4822 051 30471	470Ω	5%	0,06W
3819	©	4822 051 20471	470Ω	5%	0,1W
3820	©	4822 051 30332	3,3kΩ	5%	0,06W
3821	©	4822 051 30332	3,3kΩ	5%	0,06W
3822	©	4822 051 20332	3,3kΩ	5%	0,1W
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
3829	©	4822 117 13608	4,7Ω	5%	0,06W
3830	©	4822 051 20223	22kΩ	5%	0,1W
3833	©	4822 051 30223	22kΩ	5%	0,06W
3834	©	4822 051 30223	22kΩ	5%	0,06W
3835	▲	4822 052 10338	3,3Ω	5%	NFR25
3836	©	4822 117 12903	1,8kΩ	1%	0,06W
3837	©	4822 051 10102	1kΩ	2%	0,25W
3838	©	4822 051 30102	1kΩ	5%	0,06W
3839	©	4822 117 13632	100kΩ	1%	0,06W
3840	©	4822 051 20471	470Ω	5%	0,1W
3842	©	4822 117 10834	47kΩ	1%	0,1W
3843	©	4822 051 20333	33kΩ	5%	0,1W
3844	©	4822 051 30472	4,7kΩ	5%	0,06W
3845	©	4822 117 10834	47kΩ	1%	0,1W
3846	©	4822 051 20333	33kΩ	5%	0,1W
3847	©	4822 051 30682	6,8kΩ	5%	0,06W
3848	©	3198 021 52240	220kΩ	5%	0,1W
3849	©	4822 051 30472	4,7kΩ	5%	0,06W
3850	©	4822 051 30682	6,8kΩ	5%	0,06W
3853	©	4822 051 20471	470Ω	5%	0,1W
3854	©	4822 117 11373	100Ω	1%	0,1W
3855	©	4822 117 12971	15Ω	5%	0,06W
3856	©	4822 117 12521	68Ω	1%	0,1W
3857	©	4822 117 12521	68Ω	1%	0,1W
3861	©	4822 051 30103	10kΩ	5%	0,06W
3862	©	4822 051 20121	120Ω	5%	0,1W
3863	©	4822 051 30339	33Ω	5%	0,06W
3864	©	4822 051 30101	100Ω	5%	0,06W
3865	©	4822 051 30121	120Ω	5%	0,06W
3866	©	4822 051 30103	10kΩ	5%	0,06W
3871	©	4822 051 20683	68kΩ	5%	0,1W
3872	©	4822 051 30472	4,7kΩ	5%	0,06W
3878	©	4822 117 11503	220Ω	5%	0,1W
3880	▲	4822 052 10338	3,3Ω	5%	NFR25
3881	©	4822 117 11503	220Ω	5%	0,1W
3882	©	4822 117 10837	100kΩ	1%	0,1W
3883	©	4822 051 10102	1kΩ	2%	0,25W
3890	©	4822 051 30332	3,3kΩ	5%	0,06W
3891	©	4822 051 30472	4,7kΩ	5%	0,06W
4700	©	4822 051 20008	CHIP JUMPER		0805
4701	©	4822 051 20008	CHIP JUMPER		0805
4702	©	4822 051 20008	CHIP JUMPER		0805
4703	©	4822 051 20008	CHIP JUMPER		0805
4704	©	4822 051 20008	CHIP JUMPER		0805
4705	©	4822 051 20008	CHIP JUMPER		0805
4706	©	4822 051 20008	CHIP JUMPER		0805

RESISTORS

4707	©	4822 051 20008	CHIP JUMPER		0805
4708	©	4822 051 20008	CHIP JUMPER		0805
4709	©	4822 051 20008	CHIP JUMPER		0805
4710	©	4822 051 20008	CHIP JUMPER		0805
4711	©	4822 051 20008	CHIP JUMPER		0805
4712	©	4822 051 20008	CHIP JUMPER		0805
4713	©	4822 051 20008	CHIP JUMPER		0805
4714	©	4822 051 20008	CHIP JUMPER		0805
4715	©	4822 051 20008	CHIP JUMPER		0805
4716	©	4822 051 20008	CHIP JUMPER		0805
4717	©	4822 051 30008	CHIP JUMPER		0603
4718	©	4822 051 20008	CHIP JUMPER		0805
4719	©	4822 051 20008	CHIP JUMPER		0805
4720	©	4822 051 20008	CHIP JUMPER		0805
4722	©	4822 051 20008	CHIP JUMPER		0805
4724	©	4822 051 20008	CHIP JUMPER		0805
4726	©	4822 051 20008	CHIP JUMPER		0805
4727	©	4822 051 20008	CHIP JUMPER		0805
4728	©	4822 051 20008	CHIP JUMPER		0805
4729	©	4822 051 20008	CHIP JUMPER		0805
4730	©	4822 051 20008	CHIP JUMPER		0805
4731	©	4822 051 30008	CHIP JUMPER		0603
4732	©	4822 051 20008	CHIP JUMPER		0805
4733	©	4822 051 30008	CHIP JUMPER		0603
4734	©	4822 051 20008	CHIP JUMPER		0805
4735	©	4822 051 20008	CHIP JUMPER		0805
4736	©	4822 051 30008	CHIP JUMPER		0603
4737	©	4822 051 30008	CHIP JUMPER		0603
4738	©	4822 051 30008	CHIP JUMPER		0603
4739	©	4822 051 30008	CHIP JUMPER		0603
4740	©	4822 051 30008	CHIP JUMPER		0603
4741	©	4822 051 20008	CHIP JUMPER		0805
4742	©	4822 051 20008	CHIP JUMPER		0805
4743	©	4822 051 20008	CHIP JUMPER		0805
4744	©	4822 051 30008	CHIP JUMPER		0603
4745	©	4822 051 20008	CHIP JUMPER		0805
4746	©	4822 051 20008	CHIP JUMPER		0805
4747	©	4822 051 20008	CHIP JUMPER		0805
4748	©	4822 051 20008	CHIP JUMPER		0805
4749	©	4822 051 30008	CHIP JUMPER		0603
4801	©	4822 051 20008	CHIP JUMPER		0805
4804	©	4822 051 20008	CHIP JUMPER		0805
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
4811	©	4822 051 20008	CHIP JUMPER		0805
4820	©	4822 051 20008	CHIP JUMPER		0805
4823	©	4822 051 30008	CHIP JUMPER		0603
4824	©	4822 051 30008	CHIP JUMPER		0603
4825	©	4822 051 20008	CHIP JUMPER		0805
4826	©	4822 051 20008	CHIP JUMPER		0805
4828	©	4822 051 30008	CHIP JUMPER		0603
4829	©	4822 051 20008	CHIP JUMPER		0805
4830	©	4822 051 20008	CHIP JUMPER		0805
4831	©	4822 051 20008	CHIP JUMPER		0805
4832	©	4822 051 30008	CHIP JUMPER		0603
4833	©	4822 051 20008	CHIP JUMPER		0805
4834	©	4822 051 20008	CHIP JUMPER		0805
4837	©	4822 051 20008	CHIP JUMPER		0805
4838	©	4822 051 30008	CHIP JUMPER		0603
4839	©	4822 051 20008	CHIP JUMPER		0805
4840	©	4822 051 20008	CHIP JUMPER		0805

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

4841 ©	4822 051 20008	CHIP JUMPER 0805
4842 ©	4822 051 20008	CHIP JUMPER 0805
4844 ©	4822 051 20008	CHIP JUMPER 0805
4845 ©	4822 051 20008	CHIP JUMPER 0805
4846 ©	4822 051 20008	CHIP JUMPER 0805
4847 ©	4822 051 20008	CHIP JUMPER 0805
4848 ©	4822 051 20008	CHIP JUMPER 0805
4849 ©	4822 051 30008	CHIP JUMPER 0603
4851 ©	4822 051 30008	CHIP JUMPER 0603
4855 ©	4822 051 20008	CHIP JUMPER 0805
4856 ©	4822 051 20008	CHIP JUMPER 0805
4857 ©	4822 051 20008	CHIP JUMPER 0805
4858 ©	4822 051 20008	CHIP JUMPER 0805
4868 ©	4822 051 20008	CHIP JUMPER 0805
4869 ©	4822 051 20008	CHIP JUMPER 0805
4870 ©	4822 051 20008	CHIP JUMPER 0805
4871 ©	4822 051 20008	CHIP JUMPER 0805
4872 ©	4822 051 20008	CHIP JUMPER 0805
4873 ©	4822 051 20008	CHIP JUMPER 0805
4874 ©	4822 051 20008	CHIP JUMPER 0805
4875 ©	4822 051 20008	CHIP JUMPER 0805
4876 ©	4822 051 20008	CHIP JUMPER 0805
4878 ©	4822 051 20008	CHIP JUMPER 0805
4879 ©	4822 051 20008	CHIP JUMPER 0805
4880 ©	4822 051 20008	CHIP JUMPER 0805
4882 ©	4822 051 20008	CHIP JUMPER 0805
4883 ©	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 30008	CHIP JUMPER 0603
4888 ©	4822 051 20008	CHIP JUMPER 0805
4889 ©	4822 051 20008	CHIP JUMPER 0805
4890 ©	4822 051 20008	CHIP JUMPER 0805
4891 ©	4822 051 30008	CHIP JUMPER 0603

RESISTORS

4892 ©	4822 051 20008	CHIP JUMPER 0805
4893 ©	4822 051 20008	CHIP JUMPER 0805
4894 ©	4822 051 20008	CHIP JUMPER 0805
4895 ©	4822 051 20008	CHIP JUMPER 0805
4896 ©	4822 051 20008	CHIP JUMPER 0805
4897 ©	4822 051 20008	CHIP JUMPER 0805
4898 ©	4822 051 20008	CHIP JUMPER 0805
4899 ©	4822 051 20008	CHIP JUMPER 0805

COILS

1810	2422 540 98519	RESONATOR 8,467MHz
------	----------------	--------------------

DIODES

6801 ©	4822 130 11397	BAS316
6802 ©	4822 130 11397	BAS316
6803 ©	4822 130 11397	BAS316
6804 ©	4822 130 11397	BAS316
6805 ©	9340 548 52115	BZX284-C5V1
6807 ©	9322 129 34685	BZX284-C3V9
6808 ©	4822 130 11397	BAS316
6809 ©	9322 129 34685	BZX284-C3V9

TRANSISTORS

7806 ©	5322 130 60159	BC846B
7812 ©	5322 130 60159	BC846B
7815 ©	5322 130 60159	BC846B

INTEGRATED CIRCUITS

7801 ©	9352 622 36118	TZA1025T/V2 HF-Amplifier
7802 ©	9352 641 80557	SAA7324H/M2B, "CD10" SIGN.PROC.
7803	4822 209 32852	TDA7073A/N2
7807	4822 209 32852	TDA7073A/N2
7811 ©	4822 209 33165	TDA1308T/N1
7813 ©	5322 209 11306	HEF4094BT, SHIFT REGISTER
7814	4822 209 32852	TDA7073A/N2

ELECTRICAL PARTSLIST MP3CD2002 MODULE**MISCELLANEOUS**

	3103 308 67020	complete MP3CD2002 Module
1451	2422 025 17303	FLEX FOIL CONNECTOR 19P

CAPACITORS

2450©	2238 586 59812	100nF	10%	50V
2451©	3198 017 41050	1µF	20%	10V
2452©	3198 017 41050	1µF	20%	10V
2453©	2238 586 59812	100nF	10%	50V
2454©	2238 586 59812	100nF	10%	50V
2455©	2238 586 59812	100nF	10%	50V
2456©	2238 586 59812	100nF	10%	50V
2457©	5322 126 11583	10nF	10%	63V
2458©	5322 126 11583	10nF	10%	63V
2459©	3198 017 41050	1µF	20%	10V
2460©	2238 586 59812	100nF	10%	50V
2461©	4822 124 81059	220µF	20%	4V
2462©	3198 017 41050	1µF	20%	10V
2463©	3198 017 41050	1µF	20%	10V
2464©	2238 586 59812	100nF	10%	50V
2465©	2238 586 59812	100nF	10%	50V
2466©	2238 586 59812	100nF	10%	50V
2467©	3198 017 41050	1µF	20%	10V
2468©	3198 017 41050	1µF	20%	10V
2469©	2238 586 59812	100nF	10%	50V
2470©	2238 586 59812	100nF	10%	50V
2471©	2238 586 59812	100nF	10%	50V

RESISTORS

3449©	4822 051 30101	100Ω	5%	0,06W
3450©	4822 117 12971	15Ω	5%	0,06W
3451©	4822 117 12971	15Ω	5%	0,06W
3452©	4822 051 30101	100Ω	5%	0,06W
3453©	4822 051 30109	10Ω	5%	0,06W
3454©	4822 117 12971	15Ω	5%	0,06W
3455©	4822 051 30102	1kΩ	5%	0,06W
3456©	4822 051 30102	1kΩ	5%	0,06W
3457©	5322 117 13051	680Ω	1%	0,063W
3458©	5322 117 13061	180Ω	1%	0,063W
3459©	4822 051 30221	220Ω	5%	0,06W
3460©	4822 051 30102	1kΩ	5%	0,06W
3461©	4822 051 30479	47Ω	5%	0,06W
3462©	4822 051 30101	100Ω	5%	0,06W
3463©	4822 051 30101	100Ω	5%	0,06W
3464©	4822 051 30103	10kΩ	5%	0,06W
3465©	4822 051 30101	100Ω	5%	0,06W
3466©	4822 051 30471	470Ω	5%	0,06W
3467©	4822 051 30103	10kΩ	5%	0,06W
3468©	4822 051 30103	10kΩ	5%	0,06W
3469©	4822 051 30101	100Ω	5%	0,06W
3470©	4822 117 12971	15Ω	5%	0,06W
3471©	4822 051 30339	33Ω	5%	0,06W
3472©	4822 051 30154	150kΩ	5%	0,06W
3473©	4822 117 13632	100kΩ	1%	0,06W

RESISTORS

3474©	4822 117 12971	15Ω	5%	0,06W
3475©	4822 051 30101	100Ω	5%	0,06W
3476©	4822 051 30101	100Ω	5%	0,06W
3477©	4822 051 30471	470Ω	5%	0,06W
3478©	4822 051 30471	470Ω	5%	0,06W
3479©	4822 051 30471	470Ω	5%	0,06W
3480©	4822 051 30101	100Ω	5%	0,06W
3481©	4822 051 30101	100Ω	5%	0,06W
3482©	4822 051 30471	470Ω	5%	0,06W
3483©	4822 051 30101	100Ω	5%	0,06W
3484©	4822 117 12971	15Ω	5%	0,06W
3486©	4822 051 30101	100Ω	5%	0,06W
3488©	4822 117 13632	100kΩ	1%	0,06W
3489©	4822 051 30103	10kΩ	5%	0,06W
3490©	4822 051 30101	100Ω	5%	0,06W
3491©	4822 051 30479	47Ω	5%	0,06W
3492©	4822 051 30105	1MΩ	5%	0,06W
3493©	4822 051 30103	10kΩ	5%	0,06W
3494©	4822 051 30103	10kΩ	5%	0,06W
3495©	4822 051 30103	10kΩ	5%	0,06W
3497©	4822 051 30103	10kΩ	5%	0,06W
3498©	4822 051 30332	3,3kΩ	5%	0,06W
3499©	4822 051 30103	10kΩ	5%	0,06W
4450©	4822 051 30008	CHIP JUMPER	0603	

COILS

1460	4822 242 10989	CER.RES. 16,9MHz
5450©	4822 157 11074	100µH

DIODES

6450©	4822 130 11411	BZX284-C3V3
6451©	4822 130 11366	BZX284-C3V9
7454	4822 130 34174	BZX79-B4V7

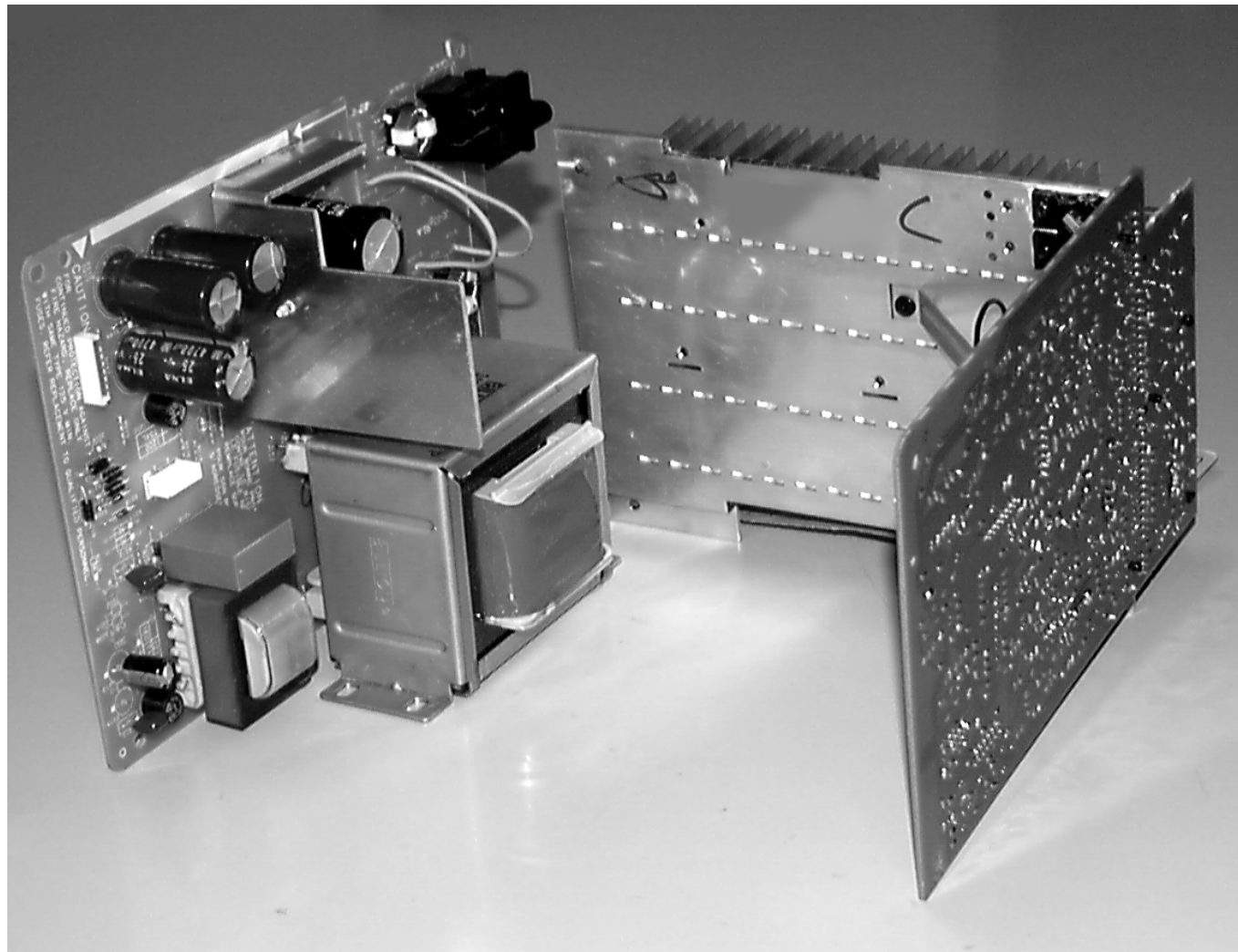
TRANSISTORS

7452©	3198 010 42310	BC847BW
7453©	3198 010 42310	BC847BW
7456©	3198 010 42310	BC847BW
7460©	3198 010 42310	BC847BW

INTEGRATED CIRCUITS

7450©	not available	please order complete MP3 module
7451©	not available	please order complete MP3 module
7455©	4822 209 17108	LM317LD Voltage Regulator
7457©	9352 456 50115	HC1G04, Inverter
7458©	9322 130 41668	M24C64, EEPROM

3103 308 67020 complete MP3CD2002 Module



POWER 2001 Module

(30 - 70W Version)

stage .9

TABLE OF CONTENTS

Brief Circuit Description.....	11-1
Block Diagram.....	11-3
Component Layout <i>Mains part</i>	11-4
Circuit Diagram <i>Mains part</i>	11-5
Component Layout <i>Power part</i>	11-6
Circuit Diagram <i>Power part</i>	11-7
Partslst	11-8

Circuit details:

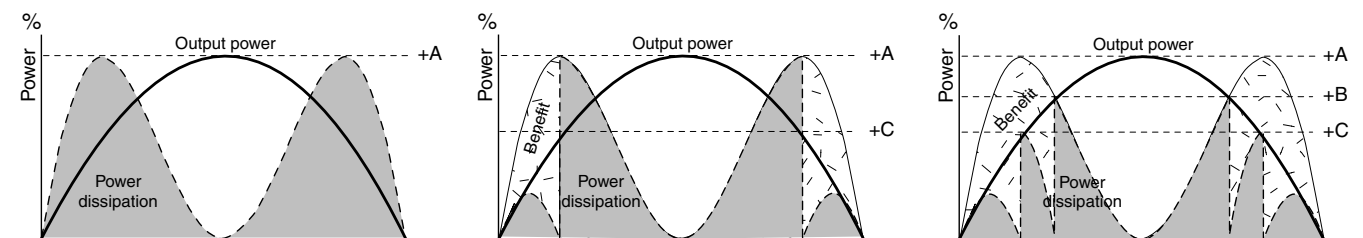
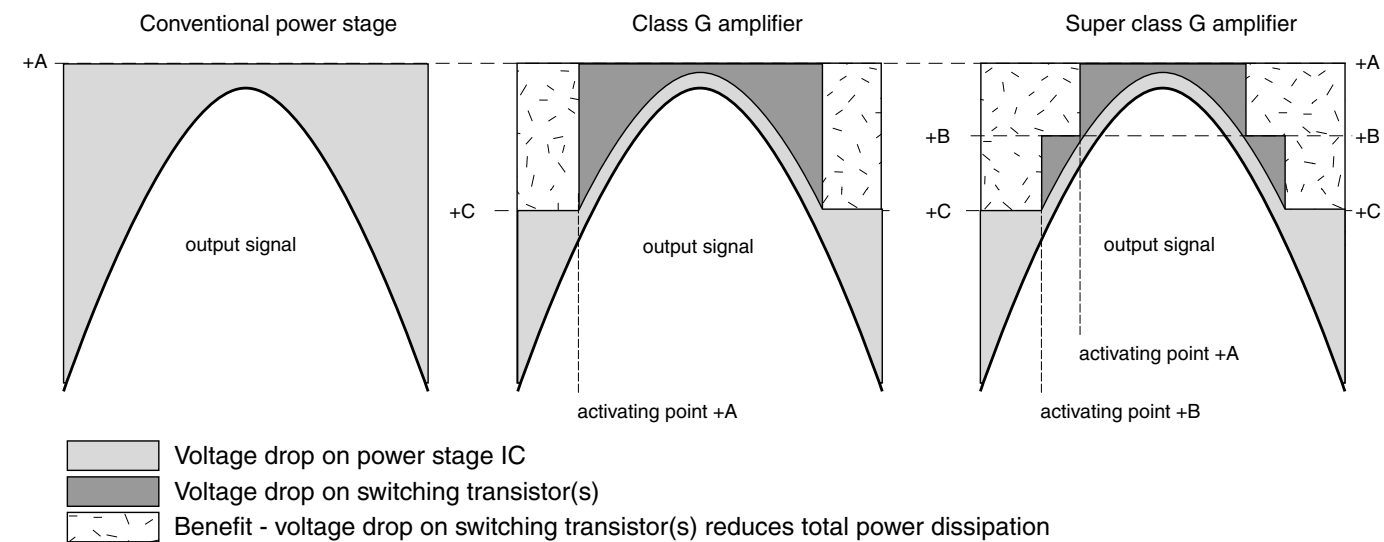
Amplifier:

Attention: In the POWER 2001 module the power amplifier IC AN17850A is used as a bridge-amplifier.
Any connection from output to ground will destroy the output stages!

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

The power amplifiers operate as so-called super class G - amplifiers:
The supply pins 12 (Vcc) are not just connected to one fixed DC-supply as in conventional amplifiers.
Dependent on the output power there are three different DC-voltages supplied to the power amplifiers:
⇒ +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 → mainstransformer 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**

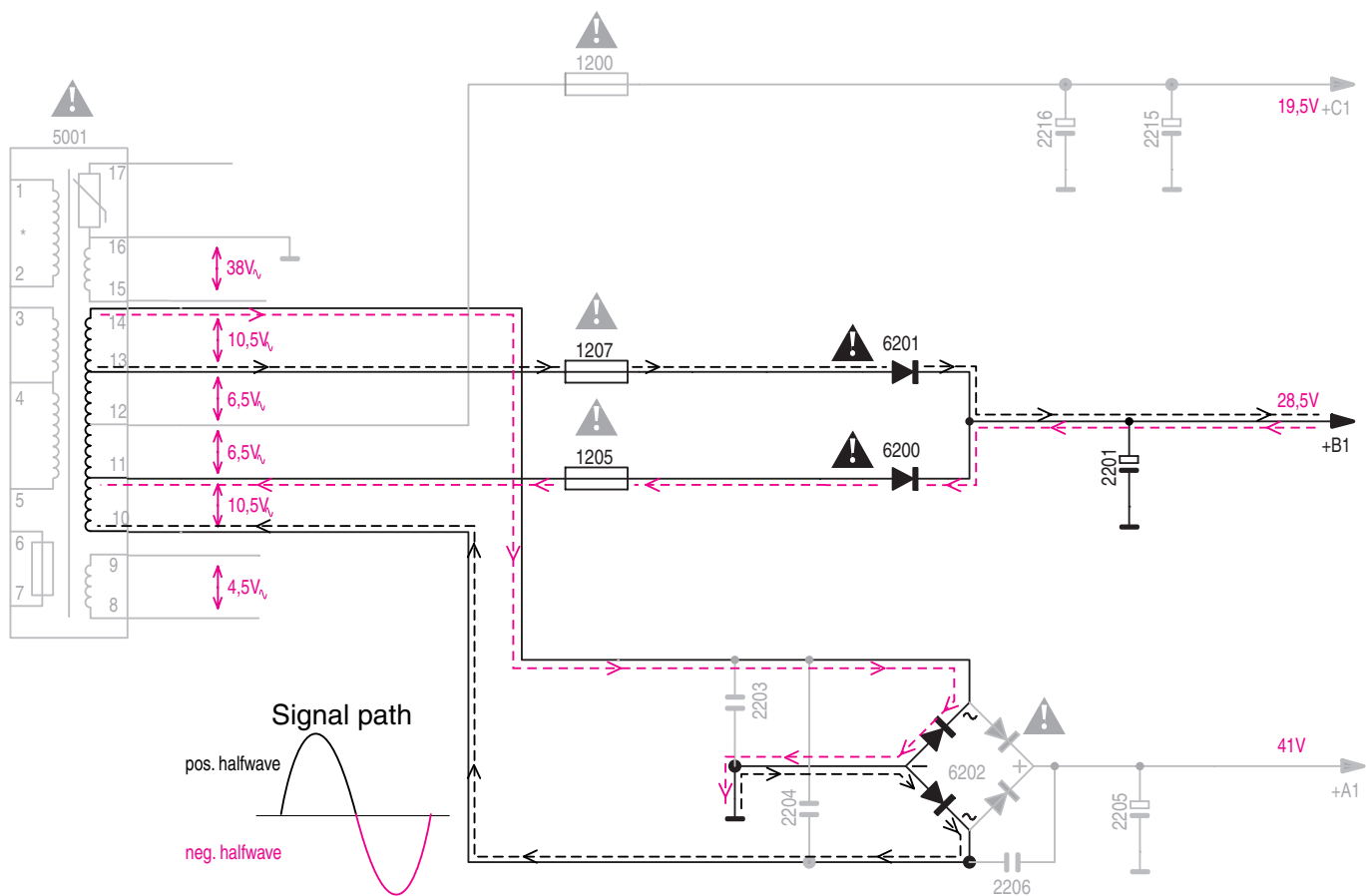
These voltages supply the Super Class G amplifier, described on previous page. The whole power supply is optimized for the special characteristic of this type of amplifier. For that reason several “tricky” details have been applied to ensure optimal efficiency and symmetrical load to the mains transformer.

Generation of +A1

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

Generation of +B1

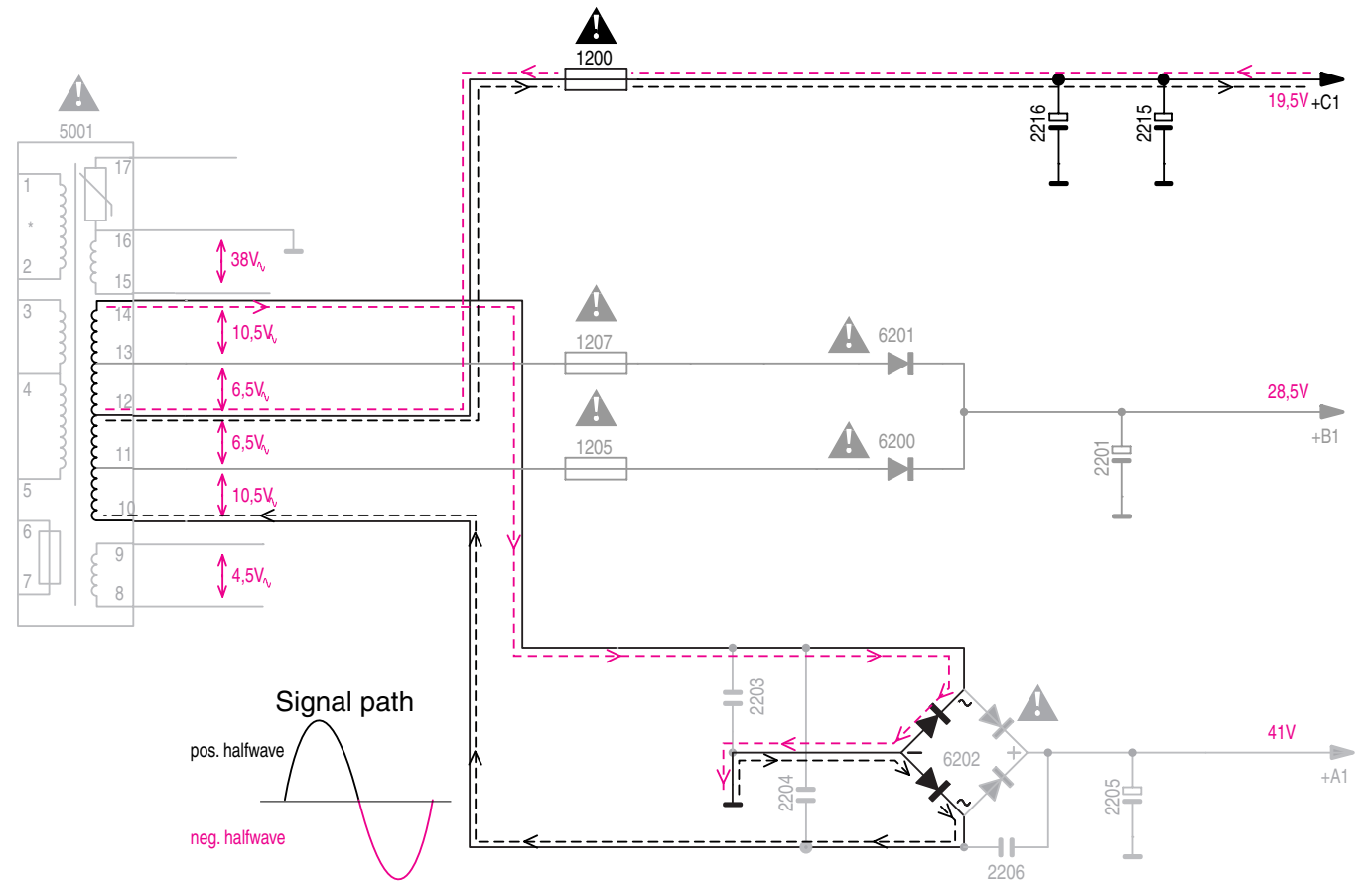
The supply for +B1 consists of one full wave rectifier: – 2 diodes of bridge rectifier 6202, with 6200(6220 in parallel) 6201(6221 in parallel) for generation of +B1 using approx. 70% secondary winding of mains transformer (pin 10-13 respectively pin 11-14). As example for generation of +B1 see picture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



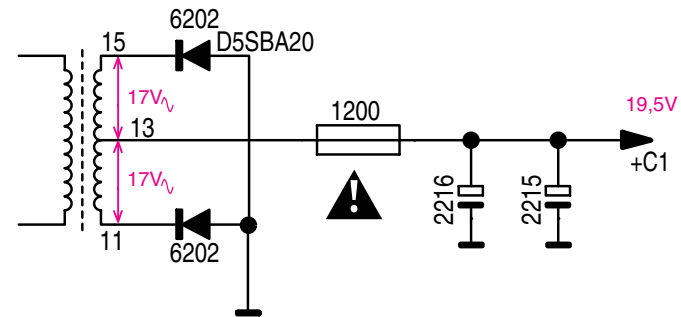
picture 1

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.

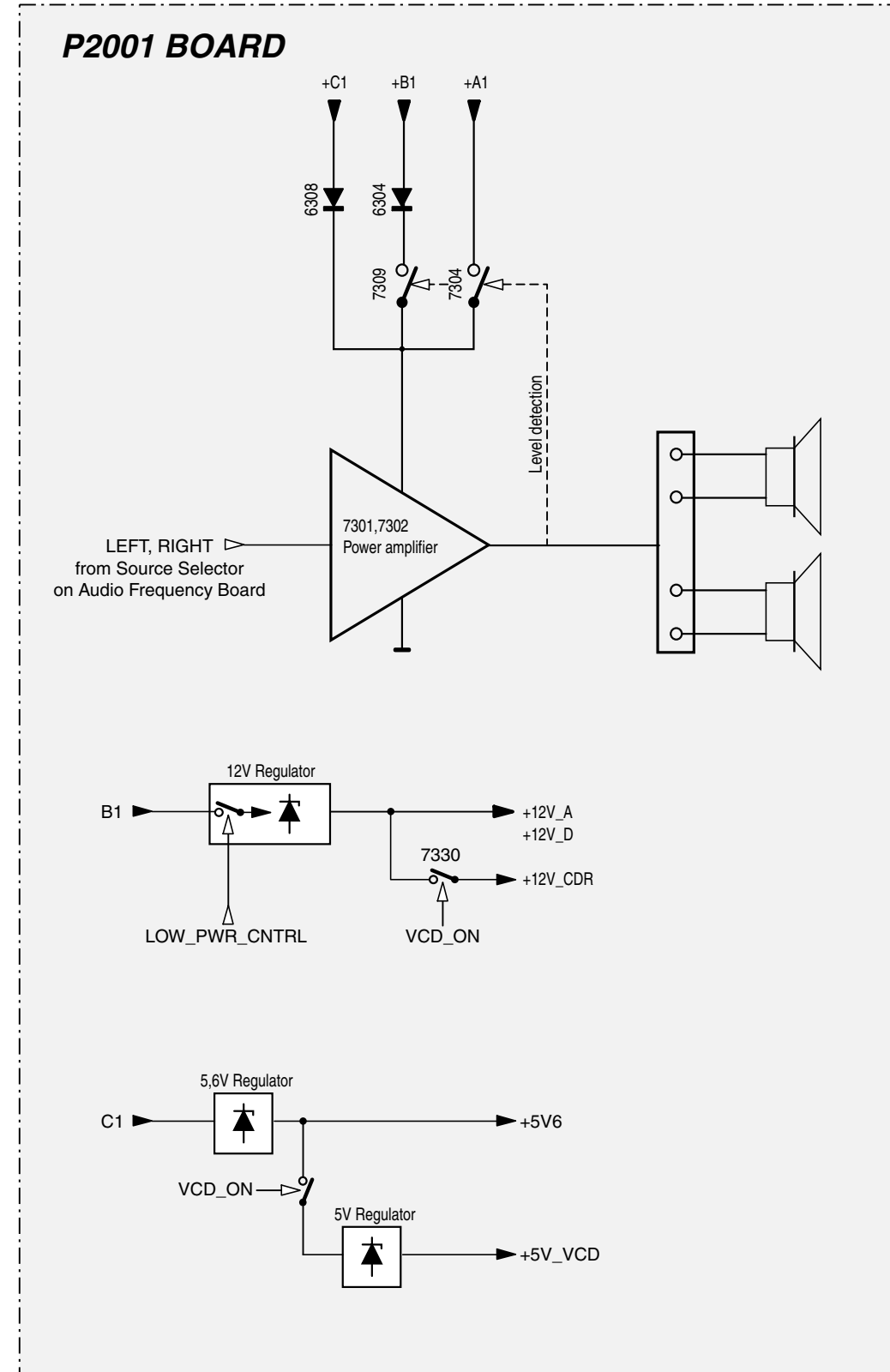
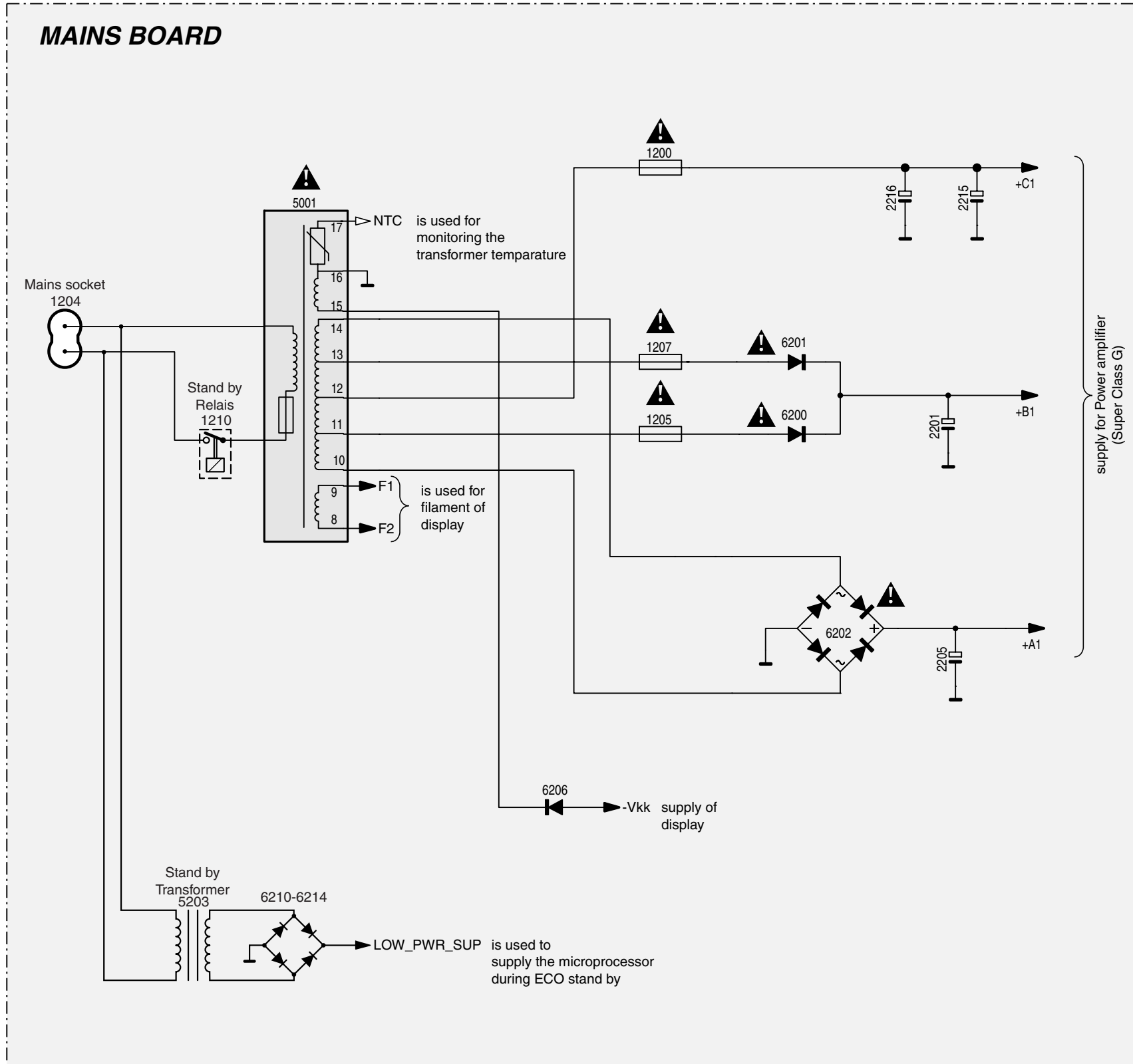


simplified:

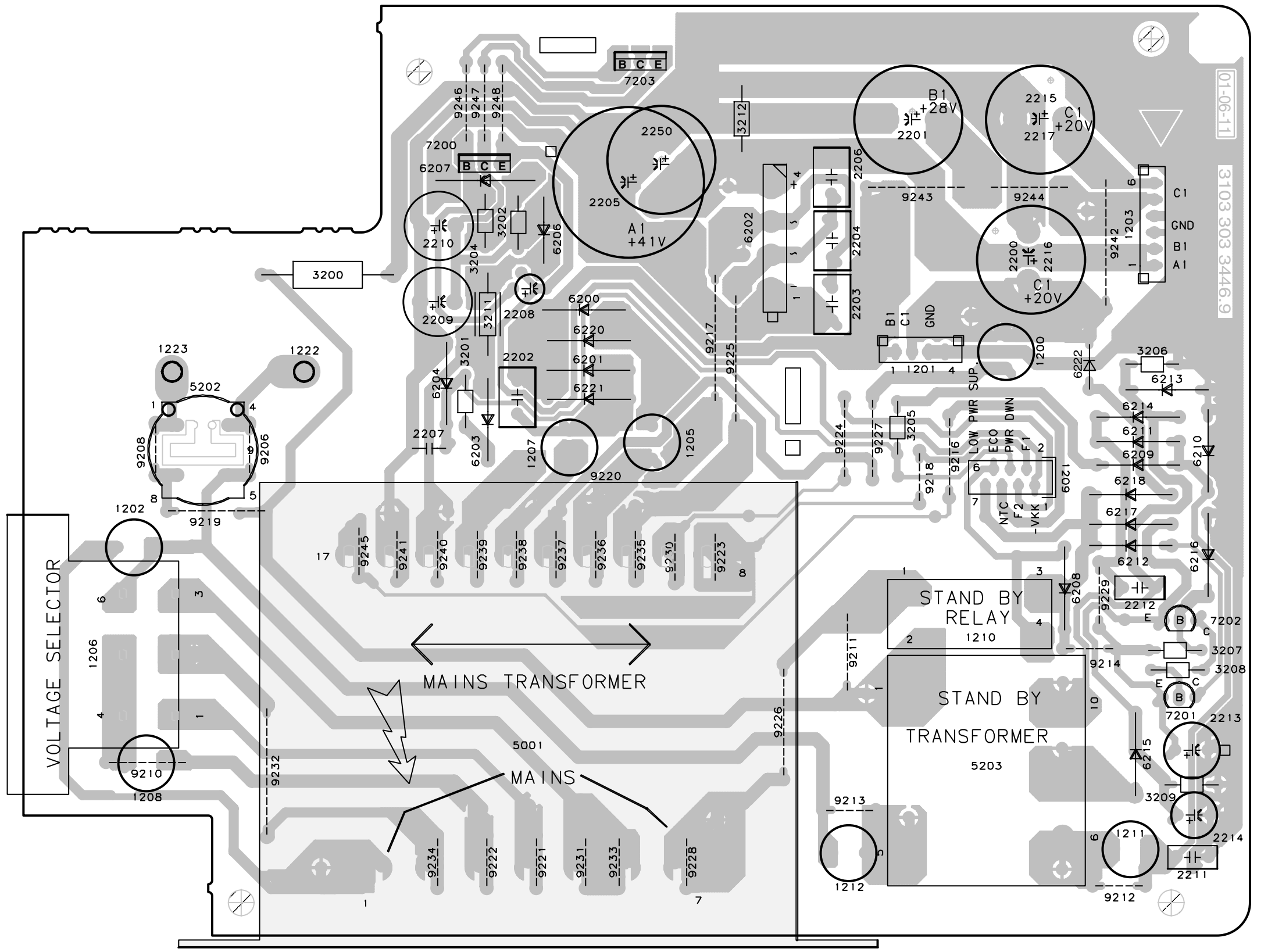


picture 2

Block Diagram

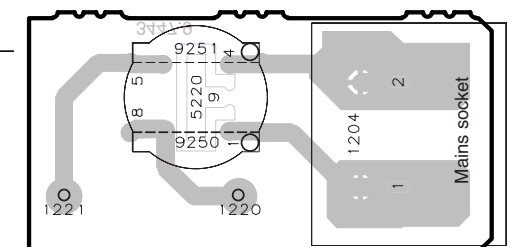


Mains Board Copperside view



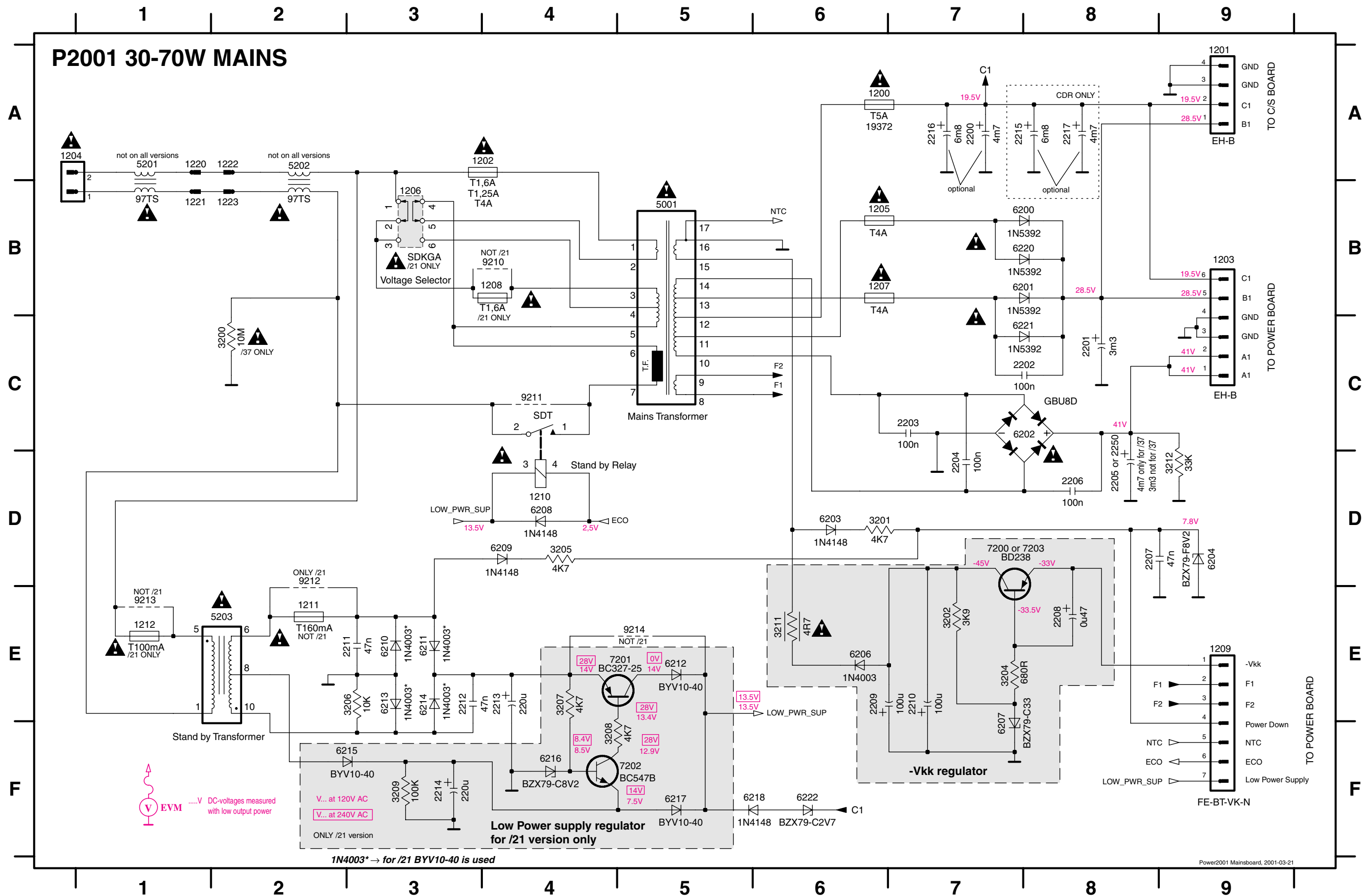
1200	B5	6210	C5
1201	B4	6211	B5
1202	C1	6212	C5
1203	A5	6213	B5
1205	B3	6214	B5
1206	C1	6215	D5
1207	C3	6216	C5
1208	D1	6217	C5
1209	C5	6218	C5
1210	C5	6220	B3
1211	D5	6221	B3
1212	D4	6222	B5
1222	B2	7200	A2
1223	B1	7201	D5
2200	B5	7202	C5
2201	A4	7203	A3
2202	B3	9206	B2
2203	B4	9208	B1
2204	B4	9210	D1
2205	B3	9211	D4
2206	A4	9212	D5
2207	B2	9213	D4
2208	B3	9214	C5
2209	B2	9216	B4
2210	B2	9217	B3
2211	D5	9218	C4
2212	C5	9219	C1
2213	D5	9220	C3
2214	D5	9221	D3
2215	A5	9222	D3
2216	B5	9223	C4
2217	A5	9224	B4
2250	A3	9225	B4
3200	B2	9226	D4
3201	B2	9227	B4
3202	B3	9228	D3
3204	A3	9229	C5
3205	B4	9230	C3
3206	B5	9231	D3
3207	C5	9232	D2
3208	C5	9233	D3
3209	D5	9234	D2
3211	B3	9235	C3
3212	A4	9236	C3
5001	C2	9237	C3
5202	B1	9238	C3
5203	D5	9239	C3
6200	B3	9240	C2
6201	B3	9241	C2
6202	B4	9242	B5
6203	B2	9243	A4
6204	B2	9244	A5
6206	B3	9245	C2
6207	A2	9246	A2
6208	C5	9247	A2
6209	C5	9248	A3

Mains Socket

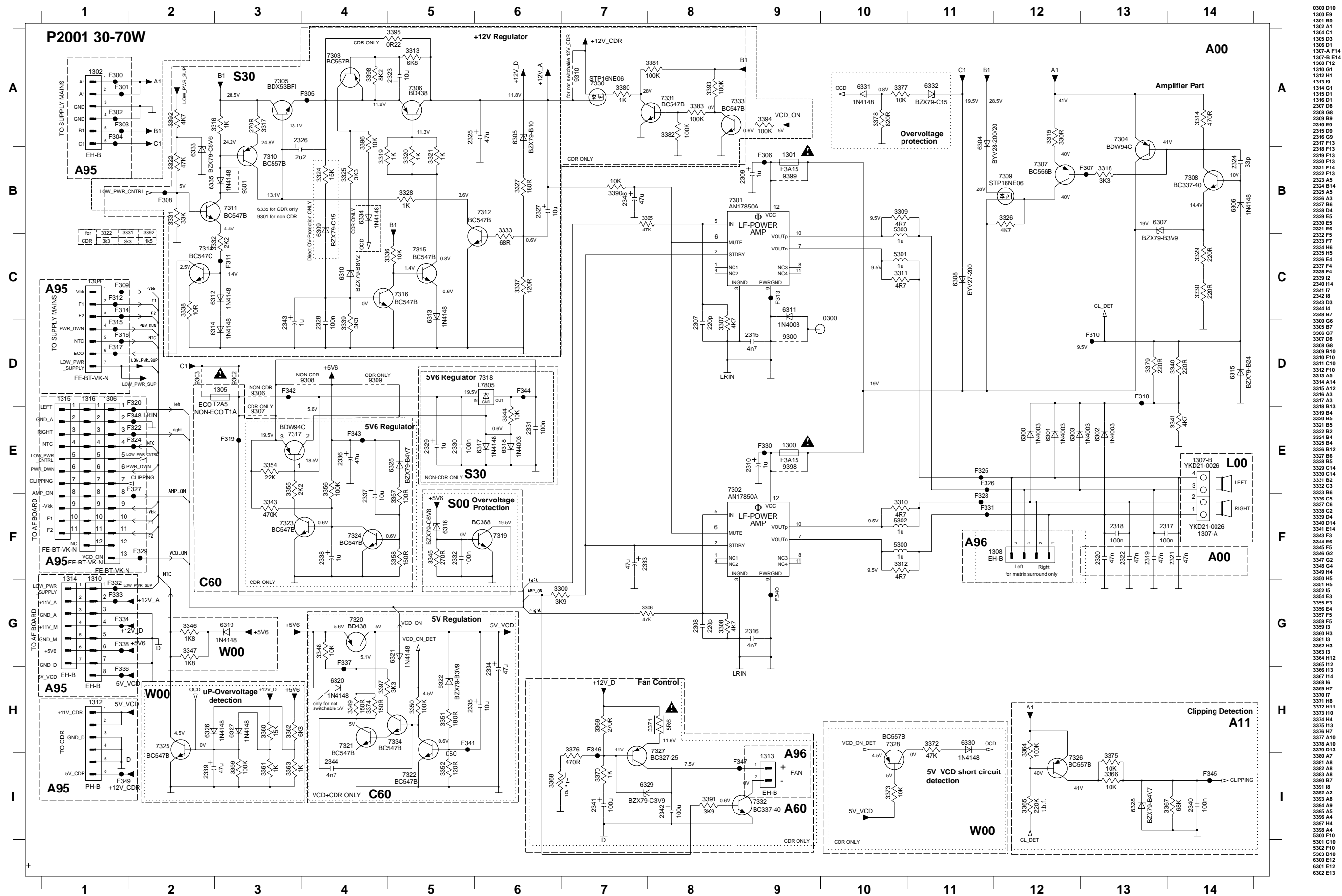


This assembly drawing shows a summary of all possible versions.
For components used in a specific version see schematic diagram respectively partslist.

1200 A6	1207 B6	1222 A2	2204 D7	2210 E7	2216 A7	3204 E7	3211 E6	6201 B8	6208 D4	6214 E3	6221 C8	9208 B2	9215 F6
1201 A9	1208 B4	1223 B2	2205 D8	2211 E3	2217 A8	3205 E4	3212 D9	6202 C8	6209 E4	6215 F3	7200 D7	9210 B4	
1202 A4	1209 E9	2200 A7	2206 D8	2212 E3	2250 D8	3206 E3	5001 C5	6203 D6	6210 E3	6216 F4	7201 E4	9211 C4	
1203 B9	1210 D4	2201 C8	2207 D8	2213 E4	3200 C2	3207 E4	5202 A2	6204 D9	6211 E3	6217 F5	7202 F5	9212 D2	
1205 B6	1211 E2	2202 C8	2208 E8	2214 F3	3201 D6	3208 F4	5203 E1	6206 E6	6212 E5	6218 F6	7203 D7	9213 E1	
1206 B3	1212 E1	2203 C7	2209 E6	2215 A7	3202 E7	3209 F3	6200 B8	6207 F7	6213 E3	6220 B8	9206 A2	9214 E5	



POWER BOARD CIRCUIT DIAGRAM - P2001 30-70W AN17850 (PWR313)



0300 D10	6303 E12
1300 E9	6304 A11
1301 B9	6305 A6
1302 A1	6306 B14
1304 C1	6307 B13
1305 D3	6308 C11
1306 D1	6309 B4
1307-A F14	6310 C4
1307-B E14	6311 C9
1308 F12	6312 C3
1310 G1	6313 C5
1312 H1	6314 D3
1313 I9	6315 D14
1314 G1	6316 F5
1315 D1	6317 E6
1316 D1	6318 E6
2307 D8	6319 G3
2308 G8	6320 H4
2309 B9	6321 G5
2310 E9	6322 H5
2315 D9	6323 E5
2316 G9	6326 H2
2317 F13	6327 H3
2318 F13	6328 H3
2319 F13	6329 F7
2320 F13	6330 H11
2321 F14	6331 A10
2322 F13	6332 A11
2323 A5	6333 B2
2324 B14	6334 B4
2325 A5	6335 B2
2326 A3	7301 B8
2327 B6	7302 E8
2328 D4	7303 A4
2329 E5	7304 A13
2330 E5	7305 A3
2331 E6	7306 A5
2332 F5	7307 B12
2333 F7	7308 B14
2334 H6	7309 B12
2335 H5	7310 B3
2336 E4	7311 B3
2337 F4	7312 B6
2338 F4	7314 C2
2339 I2	7315 C5
2340 I4	7316 C5
2341 I7	7317 E4
2342 I8	7318 D6
2343 D3	7319 F6
2344 I4	7320 G4
2348 B7	7321 H4
3300 G6	7322 H5
3305 B7	7323 F3
3306 G7	7324 F4
3307 D8	7325 H2
3308 G8	7326 H2
3309 B10	7327 H6
3310 F10	7328 H10
3311 C10	7330 A7
3312 F10	7331 A8
3313 A5	7332 B9
3314 A14	7333 A9
3315 A12	7334 H5
3316 A3	9300 D9
3317 A3	9301 B3
3318 B13	9302 D3
3319 B4	9303 D2
3320 B5	9306 D3
3321 B5	9307 E3
3322 B2	9308 D4
3323 B4	9309 D4
3324 B4	9310 A7
3325 B4	9311 A7
3326 B12	9312 B12
3327 B6	9313 A5
3328 B5	9314 A1
3329 C14	9315 A1
3330 C14	9316 D1
3331 B2	9317 D1
3332 C3	9318 D13
3333 B6	9319 C1
3334 D4	9320 D1
3335 A4	9321 C9
3336 B9	9322 E2
3337 C6	9323 E2
3338 C2	9324 E2
3339 D4	9325 E11
3340 D14	9326 E11
3341 E14	9327 E2
3342 F3	9328 F11
3343 E6	9329 F2
3344 E6	9330 E9
3345 F5	9331 F11
3346 G2	9332 G1
3347 G2	9333 G1
3348 G4	9334 G1
3349 H4	9335 H12
3350 H5	9336 H1
3351 H5	9337 G4
3352 I5	9338 G1
3353 E3	9339 E2
3354 E3	9340 G9
3355 E3	9341 H5
3356 E4	9342 D3
3357 F5	9343 E4
3358 F5	9344 D6
3359 I3	9345 H4
3360 H3	9346 H7
3361 I3	9347 H9
3362 H3	9348 E2
3363 I3	9349 H1
3364 H12	9350 E12
3365 H12	6301 E12
3366 H13	6302 E13
3367 I4	
3368 I6	
3369 H7	
3370 I7	
3371 H8	
3372 H11	
3373 I10	
3374 H4	
3375 I13	
3376 H7	
3377 A10	
3378 A10	
3379 D13	
3380 A7	
3381 A8	
3382 A8	
3383 A8	
3384 A8	
3385 A8	
3386 A4	
3387 H4	
3388 A4	
5300 F10	
5301 C10	
5302 F10	
5303 B10	
6300 E12	
6301 E12	

ELECTRICAL PARTSLIST P2001 30-70W AN17850 (PWR313)

Table with columns for part numbers, descriptions, and electrical specifications. Includes sections for MISCELLANEOUS, CAPACITORS, and RESISTORS.

ELECTRICAL PARTSLIST POWER2001 MODULE

Table with columns for part numbers, descriptions, and electrical specifications. Includes sections for RESISTORS, DIODES, and TRANSISTORS.

AF9 BOARD

TABLE OF CONTENTS

Brief Introduction of the AF9 Board 12-1
 Variation Table 12-1
 Chip layout Main part 12-2
 Component Main part 12-3
 Source Selection and Sound Processing Circuit 12-4
 Headphone Amplifier & I²C Expander Circuit 12-5
 Digital Out and Interconnection Circuit 12-6
 Video Out Part - Layouts & Circuit diagram 12-7
 Electrical parts list 12-7

BRIEF INTRODUCTION OF THE AF9 BOARD

The AF9 Board consists of the following features :

- a. TDA7468D
 TDA7468D (7501) provides the basic sound processing - loudness, bass, treble, volume & mute controls and source selection - TUNER, TAPE, CD & AUX including Mic mixing for the set.
 Sound features such as ALC, DBB, DSC and IS are controlled by the microprocessor IC on the Front Board via I²C Bus.
 Undesirable noise during source switching are muted off by via the software of the microprocessor IC on the Front Board.
- b. MIC MIXING
 Simple Mic mixing is provided by pin 2 of TDA7468D. During Mic mixed a 1nF capacitor is connected across this pin to ground instead of a chip connector(0R).
- c. DOLBY PRO LOGIC (DPL) INTERFACE
 The AF9 Board has provisions to cater for DPL. External DPL Board would be required.
- d. LINE OUT
 Line out cinch socket (1504) is catered including transistors muting circuitry.
- e. SUB-WOOFER OUT
 Sub-woofer out cinch socket (691) for connection to active sub-woofer speaker is catered.
- f. INCREDIBLE SURROUND (IS)
 The AF9 provides 2 possible IS namely:
 - a) Simple IS using TDA7468D with addition of passive network.
 - b) Full IS using transistor circuitry to create phase shifting and spatial effect.
- g. HEADPHONE AMPLIFIER
 Headphone amplifier NJM4556AM (7601) is provided after the Sound processor (7501) to drive 32 ohm to 1kohm headphone.
- h. M62320FP
 The M62320FP (7403) I²C Expander provides additional controls required.
- i. CD STANDBY CONTROL
 Transistors 7401 & 7402 ensures the +5V_CD supply is switched only during CD mode.
- j. CD DIGITAL OUT
 CD Digital out cinch socket (1801) for connection to external digital audio decoders.

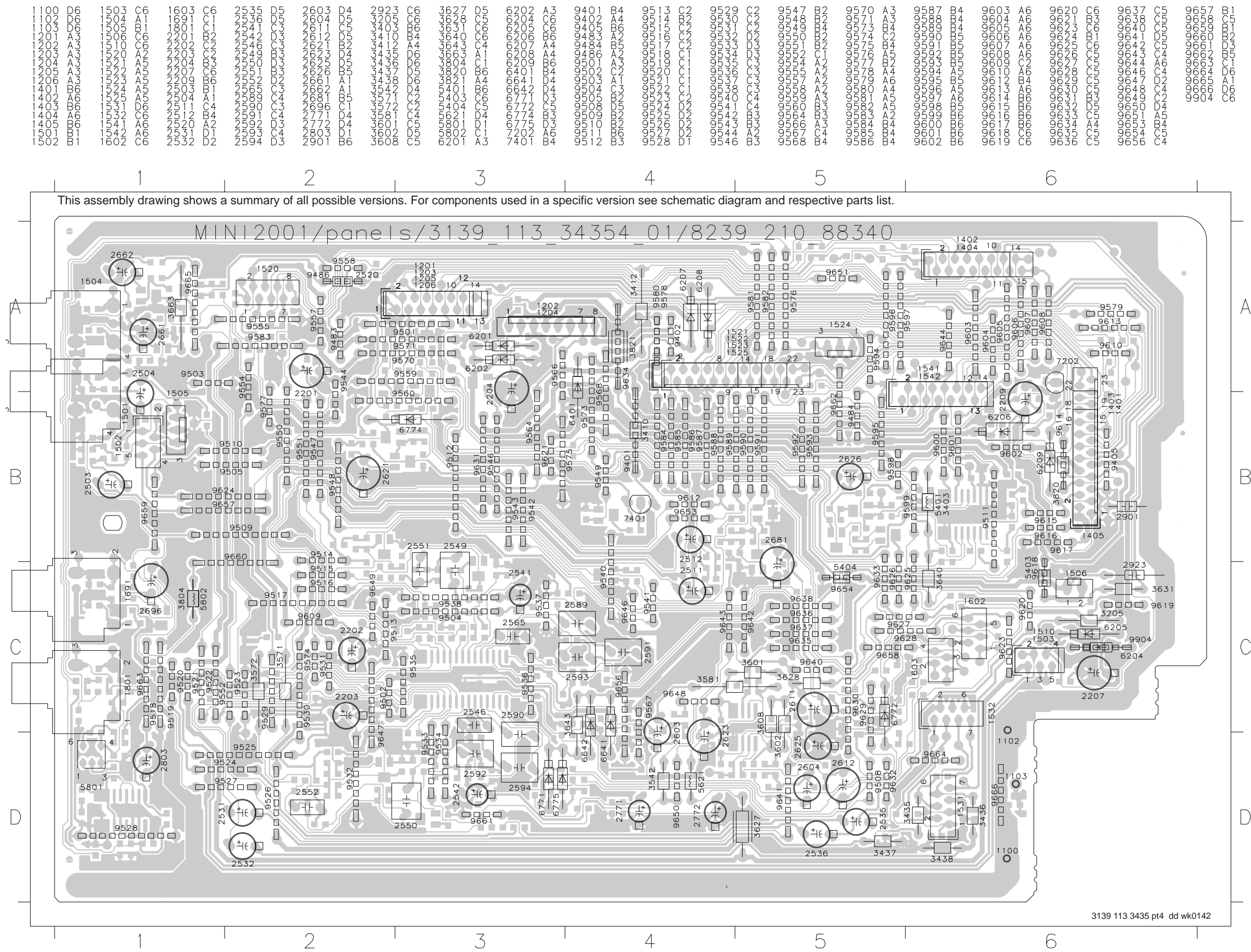
VARIATION TABLE:

Type /Versions:	FWM390							
	/21	/22	/25	/30				
Features:								
Line In	x	x	x	x				
Line Out	-	-	-	-				
Sub-woofer Out	-	-	-	-				
Digital Out	-	-	-	-				
Video Out	-	-	-	-				
Mic mix / Mic Detect	-	-	-	-				
Simple IS	x	x	x	x				
Full IS	-	-	-	-				
Dolby ProLogic (DPL)	-	-	-	-				
Voice Control (VC)	-	-	-	-				

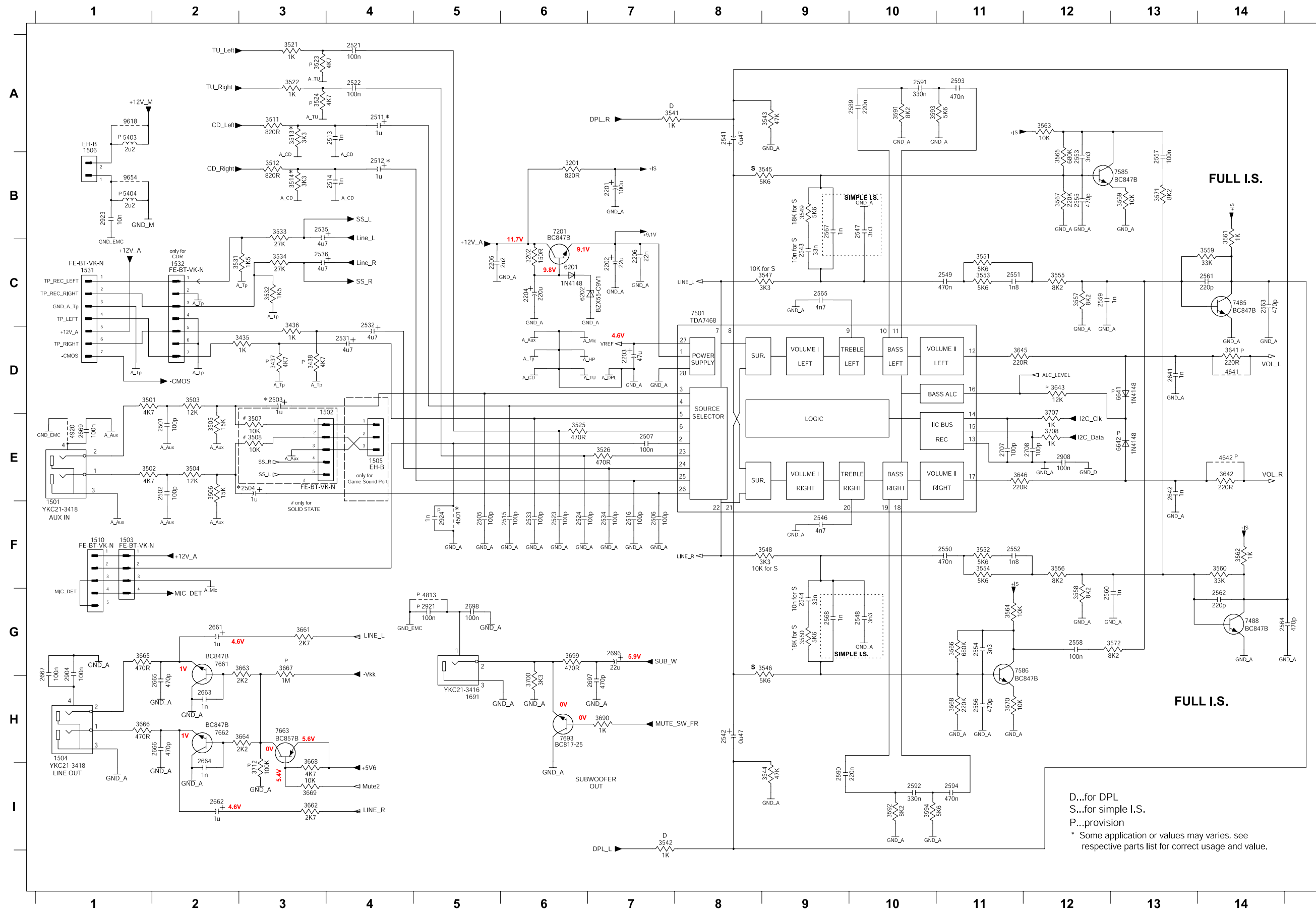
COMPONENT LAYOUT

12-3

12-3



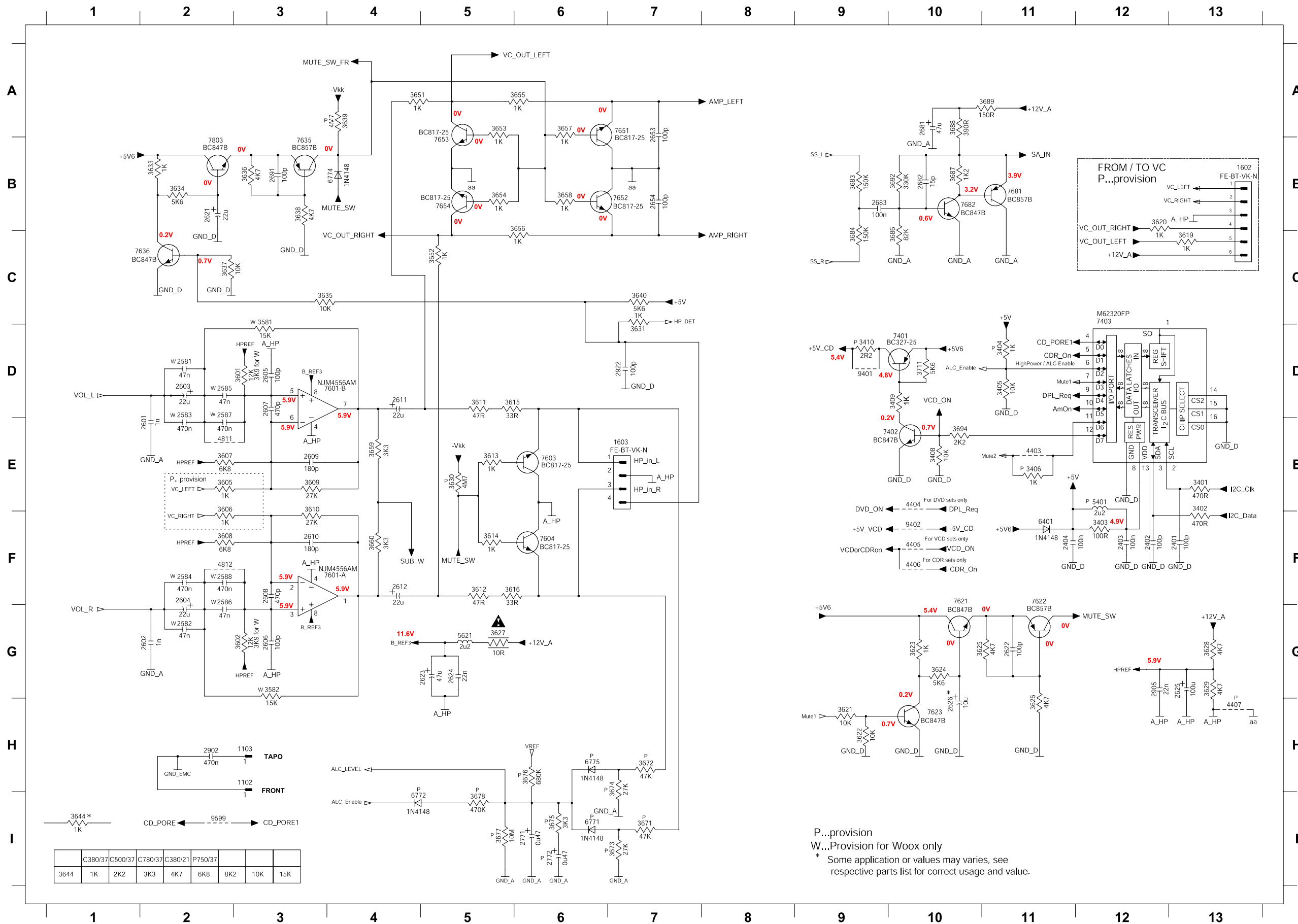
SOURCE SELECTION & SOUND PROCESSING CIRCUIT



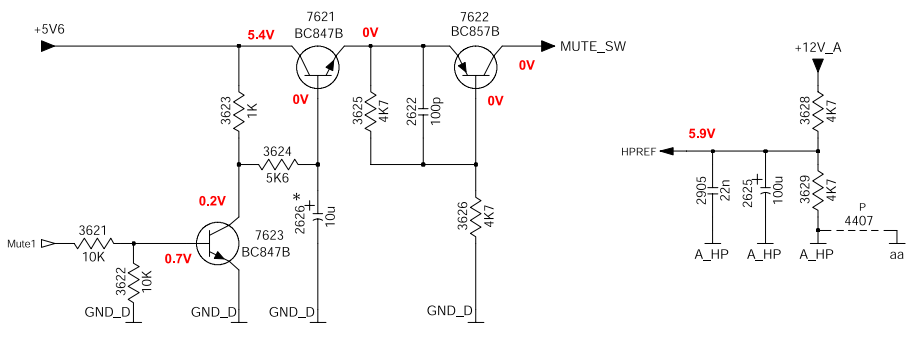
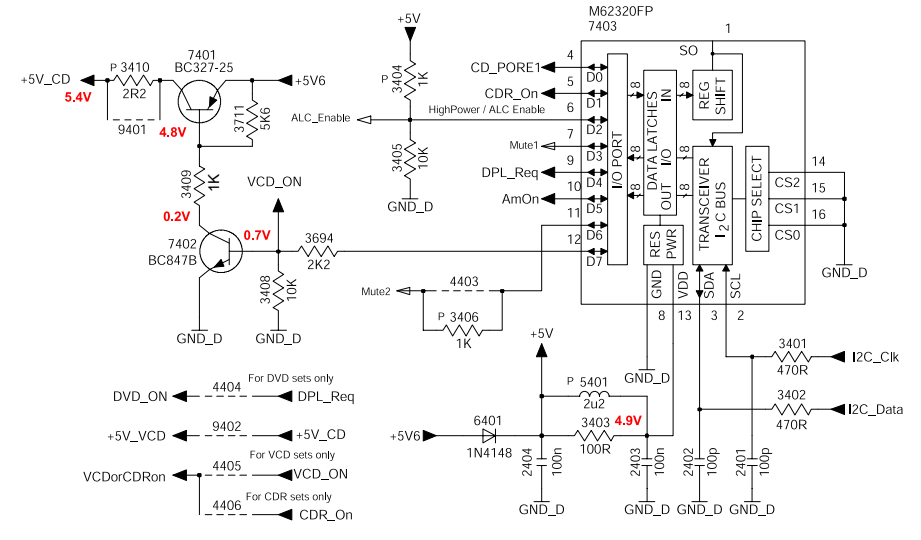
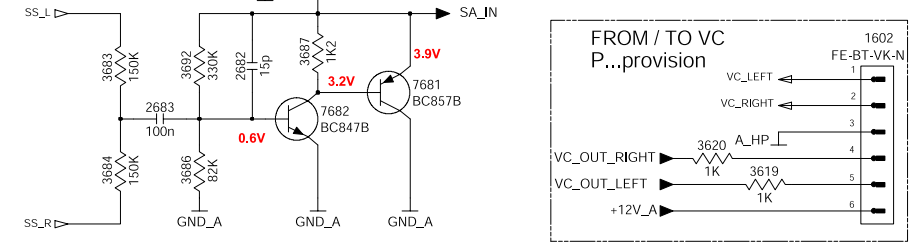
- 1501 E1
- 1502 E3
- 1503 F1
- 1504 H1
- 1505 E4
- 1506 A1
- 1510 F1
- 1532 C1
- 1691 H5
- 2201 B7
- 2202 C7
- 2203 D7
- 2204 C6
- 2205 C5
- 2206 C7
- 2501 E2
- 2502 E2
- 2503 D3
- 2504 E3
- 2505 F5
- 2506 F7
- 2507 E7
- 2511 A4
- 2512 B4
- 2513 A4
- 2514 B4
- 2515 F6
- 2516 F7
- 2521 A4
- 2522 A4
- 2523 F6
- 2524 F6
- 2531 D4
- 2532 C4
- 2533 F6
- 2534 F7
- 2535 B3
- 2536 C3
- 2541 A8
- 2542 H8
- 2543 C9
- 2544 F9
- 2545 F9
- 2546 G10
- 2549 C11
- 2550 F11
- 2551 C11
- 2552 F11
- 2553 B12
- 2554 G11
- 2555 B12
- 2556 H11
- 2557 B13
- 2558 G12
- 2559 C12
- 2560 G12
- 2561 C14
- 2562 G14
- 2563 C14
- 2564 G14
- 2565 C9
- 2567 B9
- 2568 G9
- 2569 A10
- 2591 A10
- 2592 H10
- 2593 A11
- 2594 H11
- 2641 D13
- 2642 E13
- 2661 G2
- 2662 I2
- 2663 H2
- 2664 I2
- 2665 H2
- 2666 H2
- 2667 G1
- 2669 E1
- 2696 G7
- 2697 H7
- 2698 G5
- 2707 E11
- 2708 E12
- 2904 G1
- 2908 E12
- 2921 G5
- 2923 B1
- 2924 F5
- 3201 B6
- 3202 C6
- 3435 D3
- 3436 D3
- 3437 D3
- 3501 D1
- 3502 E1
- 3503 D2
- 3504 E2
- 3505 E2
- 3506 E2
- 3507 E3
- 3508 E3
- 3511 A3
- 3512 B3
- 3513 A3
- 3514 B3
- 3521 A3
- 3522 A3
- 3523 A3
- 3524 A3
- 3525 E6
- 3526 E7
- 3531 C2
- 3532 C3
- 3533 B3
- 3534 C3
- 3541 A7
- 3542 I7
- 3543 A9
- 3544 B9
- 3545 B9
- 3546 G9
- 3547 C9
- 3548 F9
- 3549 B9
- 3550 G9
- 3551 C11
- 3552 F11
- 3553 C11
- 3554 F11
- 3555 C12
- 3556 F12
- 3557 C12
- 3558 G12
- 3559 C14
- 3560 F14
- 3561 B14
- 3562 F14
- 3563 A12
- 3564 G11
- 3565 B12
- 3566 G11
- 3567 B12
- 3568 H11
- 3569 B13
- 3570 H11
- 3571 B13
- 3572 G13
- 3591 A10
- 3592 H10
- 3593 A10
- 3594 H10
- 3641 D14
- 3642 E14
- 3643 D12
- 3644 G11
- 3645 E11
- 3646 G11
- 3647 G3
- 3648 G3
- 3649 H7
- 3699 G6
- 3700 H6
- 3707 E12
- 3708 E12
- 3712 I3
- 4501 F5
- 4641 D14
- 4642 E14
- 4813 G5
- 4920 E1
- 5403 A1
- 5404 B1
- 6201 C6
- 6641 D13
- 7201 B6
- 7485 C14
- 7488 G14
- 7501 C8
- 7585 B13
- 7661 G2
- 7662 H2
- 7663 H3
- 7693 H6
- 7918 A1
- 9654 B1

D...for DPL
 S...for simple I.S.
 P...provision
 * Some application or values may varies, see respective parts list for correct usage and value.

HEADPHONE AMPLIFIER & I²C EXPANDER CIRCUIT

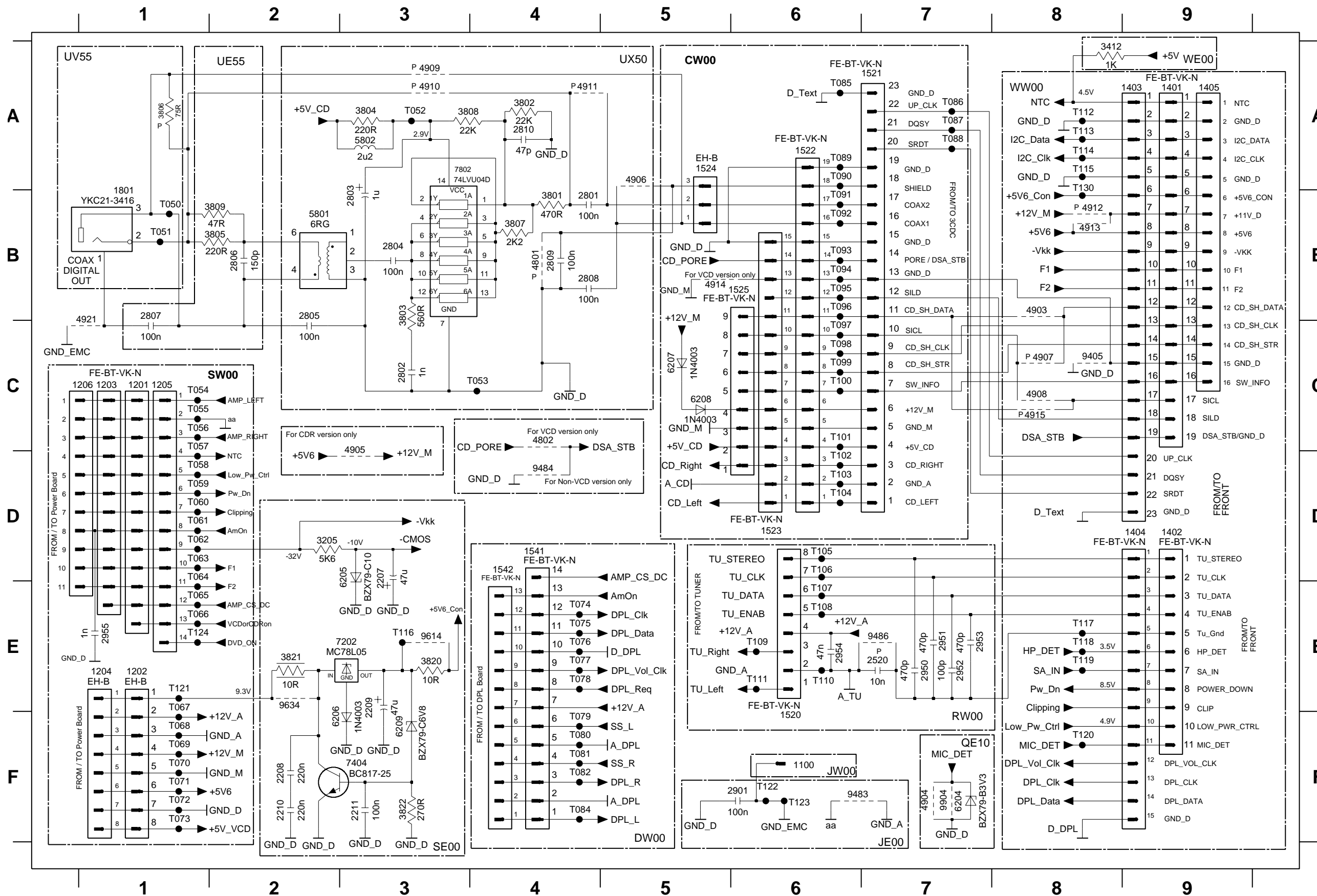


- 1102 H3
- 1103 H3
- 1602 B13
- 1603 E7
- 2401 F13
- 2402 F12
- 2403 F12
- 2404 F11
- 2581 D2
- 2582 G2
- 2583 D2
- 2584 F2
- 2585 D2
- 2586 F2
- 2587 D2
- 2588 F2
- 2601 E2
- 2602 G2
- 2603 D2
- 2604 F2
- 2605 D3
- 2606 G3
- 2607 D3
- 2608 F3
- 2609 E3
- 2610 F3
- 2611 D4
- 2612 F4
- 2621 B2
- 2622 G11
- 2623 G5
- 2624 G5
- 2625 G13
- 2626 H10
- 2653 A7
- 2654 B7
- 2681 A10
- 2682 B10
- 2683 B9
- 2691 B3
- 2771 I6
- 2772 I6
- 2902 H2
- 2905 G12
- 2922 D7
- 3401 E13
- 3402 E13
- 3403 F12
- 3404 D11
- 3405 D11
- 3406 E11
- 3408 E10
- 3409 D10
- 3410 D9
- 3581 D3
- 3582 G3
- 3601 D3
- 3602 G3
- 3605 E2
- 3606 F2
- 3607 E2
- 3608 F2
- 3609 E3
- 3610 F3
- 3611 D5
- 3612 F5
- 3613 E5
- 3614 F5
- 3615 D5
- 3616 F5
- 3619 C13
- 3620 B12
- 3621 H9
- 3622 H9
- 3623 G10
- 3624 G10
- 3625 G10
- 3626 H11
- 3627 G5
- 3628 G13
- 3629 G13
- 3630 E5
- 3631 D7
- 3633 B2
- 3634 B2
- 3635 C3
- 3636 B3
- 3637 C2
- 3638 B3
- 3639 A4
- 3640 C7
- 3644 I1
- 3651 A4
- 3652 C5
- 3653 A5
- 3654 B5
- 3655 A6
- 3656 C6
- 3657 A6
- 3658 B6
- 3659 E4
- 3660 F4
- 3671 I7
- 3672 H7
- 3673 I7
- 3674 H7
- 3675 I6
- 3676 H6
- 3677 I5
- 3678 I5
- 3683 B9
- 3684 C9
- 3686 C10
- 3687 B10
- 3688 A10
- 3689 A11
- 3692 B10
- 3694 E10
- 3711 D10
- 4403 E11
- 4404 E10
- 4405 F10
- 4406 F10
- 4407 H13
- 4811 E2
- 4812 F2
- 5401 E12
- 5621 G5
- 6401 F11
- 6771 I6
- 6772 I4
- 6774 B4
- 6775 H6
- 7401 D10
- 7402 E10
- 7403 C12
- 7601-A G3
- 7601-B D3
- 7603 E6
- 7604 F6
- 7621 F10
- 7622 F11
- 7623 H10
- 7635 B3
- 7636 C2
- 7651 A7
- 7652 B7
- 7653 B5
- 7654 B5
- 7681 B11
- 7682 B10
- 7803 B2
- 9401 D9
- 9402 F10
- 9599 I2



P...provision
W...Provision for Woox only
* Some application or values may varies, see respective parts list for correct usage and value.

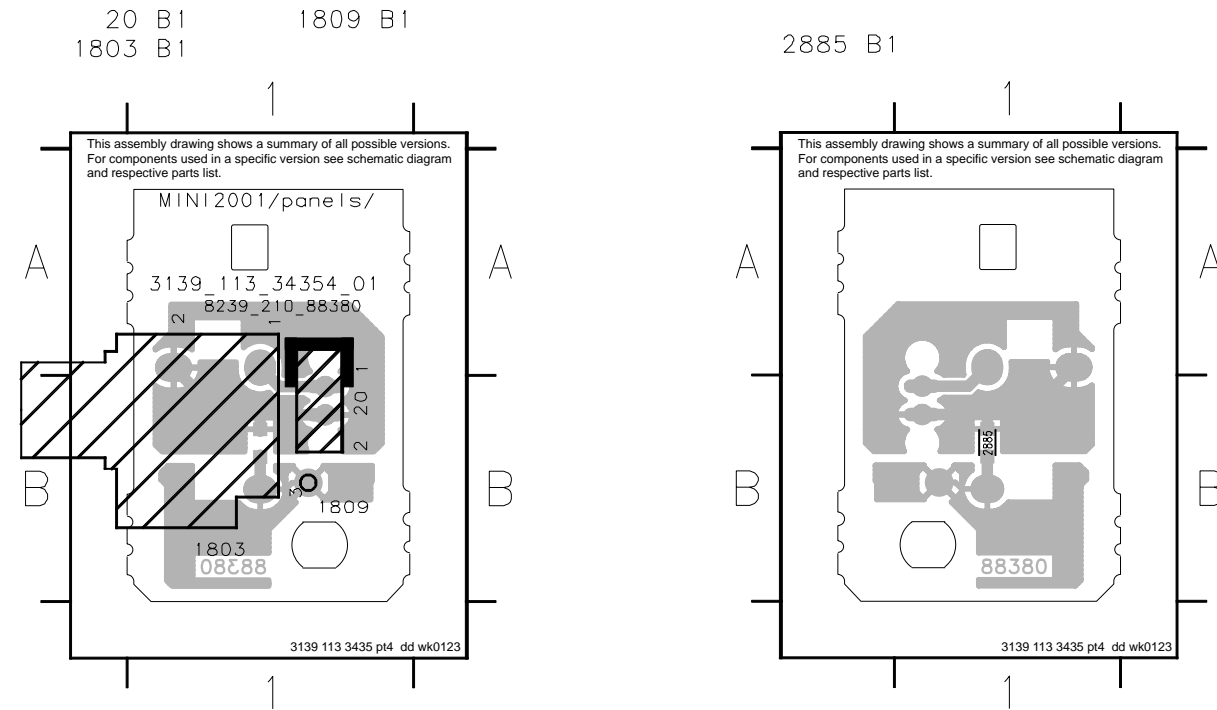
DIGITAL OUT & INTERCONNECTION CIRCUIT



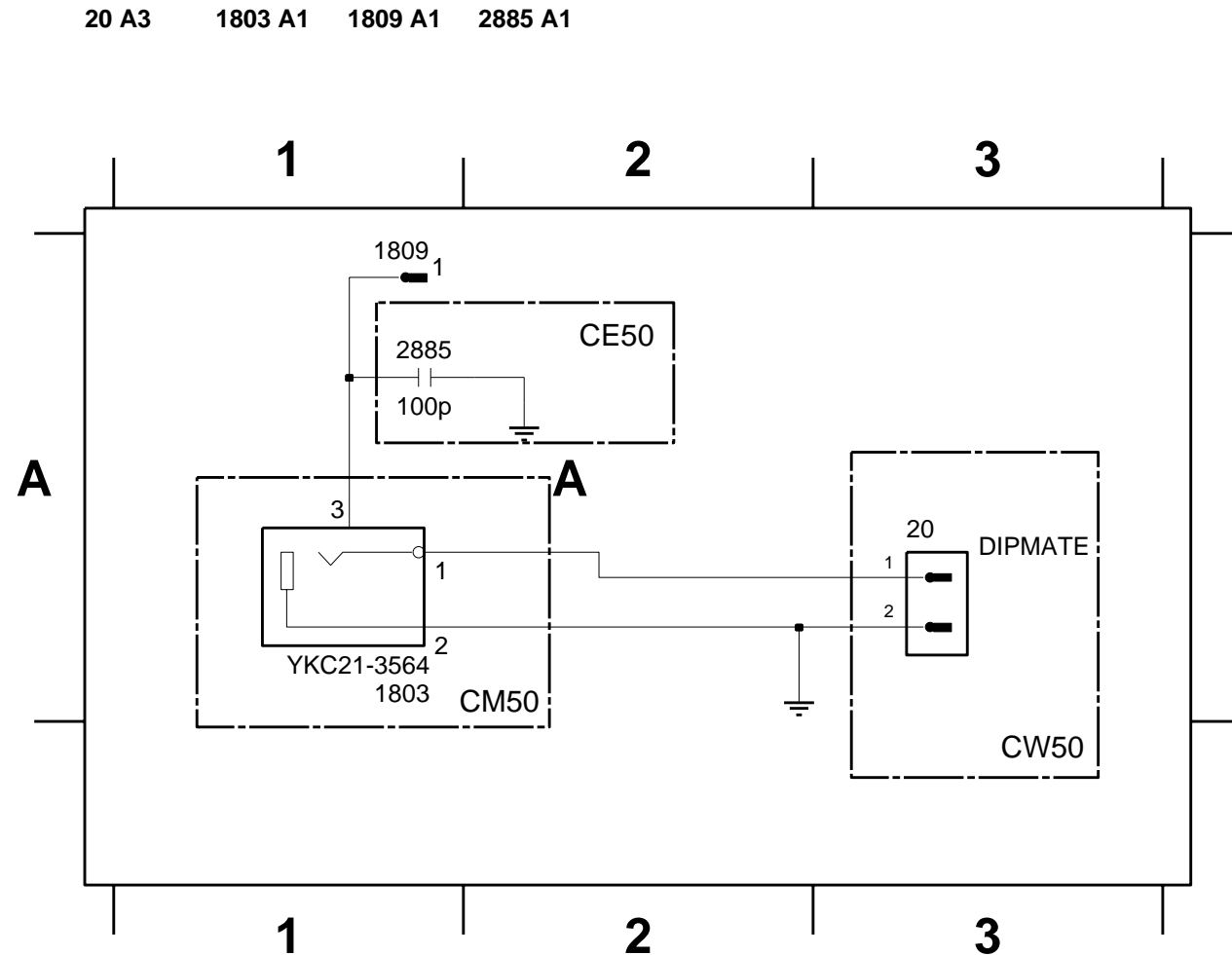
- 1100 F6
- 1201 C1
- 1202 E1
- 1203 C1
- 1204 E1
- 1205 C1
- 1206 C1
- 1401 A9
- 1402 D9
- 1403 A9
- 1404 D9
- 1405 A9
- 1520 E6
- 1521 A7
- 1522 A6
- 1523 D6
- 1524 A5
- 1525 B5
- 1541 D4
- 1542 D4
- 1801 B1
- 2207 D3
- 2208 F2
- 2209 E3
- 2210 F2
- 2211 F3
- 2520 E7
- 2801 B4
- 2802 C3
- 2803 B3
- 2804 B3
- 2805 B2
- 2806 B2
- 2807 B1
- 2808 B4
- 2809 B4
- 2810 A4
- 2901 F6
- 2950 E7
- 2951 E7
- 2952 E7
- 2953 E7
- 2954 E6
- 2955 E1
- 3205 D2
- 3412 A8
- 3801 B4
- 3802 A4
- 3803 B3
- 3804 A3
- 3805 B2
- 3806 A1
- 3807 B4
- 3808 A3
- 3809 B2
- 3820 E3
- 3821 E2
- 3822 F3
- 4801 B4
- 4802 C4
- 4903 B8
- 4904 F7
- 4905 D3
- 4906 A5
- 4907 C8
- 4908 C8
- 4909 A3
- 4910 A3
- 4911 B8
- 4912 B8
- 4913 B8
- 4914 B5
- 4915 C8
- 4921 C1
- 5801 B2
- 5802 A3
- 6204 F7
- 6205 D3
- 6206 F2
- 6207 C5
- 6208 C5
- 6209 F3
- 7202 E3
- 7404 F3
- 7802 A3
- 9405 C8
- 9483 F6
- 9484 D4
- 9486 E7
- 9614 E3
- 9634 E2
- 9904 F7
- T050 B1
- T051 B1
- T052 A3
- T053 C4
- T054 C1
- T055 C1
- T056 C1
- T057 C1
- T058 D1
- T059 D1
- T060 D1
- T061 D1
- T062 D1
- T063 D1
- T064 D1
- T065 E1
- T066 E1
- T067 E1
- T068 F1
- T069 F1
- T070 F1
- T071 F1
- T072 F1
- T073 F1
- T074 E4
- T075 E4
- T076 E4
- T077 E4
- T078 E4
- T079 F4
- T080 F4
- T081 F4
- T082 F4
- T083 F4
- T084 F4
- T085 A6
- T086 A7
- T087 A7
- T088 A7
- T089 A6
- T090 A6
- T091 B6
- T092 B6
- T093 B6
- T094 B6
- T095 B6
- T096 B6
- T097 C6
- T098 C6
- T099 C6
- T100 C6
- T101 C6
- T102 C6
- T103 C6
- T104 C6
- T105 D6
- T106 D6
- T107 E6
- T108 E6
- T109 E6
- T110 E6
- T111 E6
- T112 A8
- T113 A8
- T114 A8
- T115 A8
- T116 E3
- T117 E8
- T118 E8
- T119 E8
- T120 F8
- T121 E1
- T122 F6
- T123 F6
- T124 E1
- T130 B8

Updated on 15 SEPT 2003

VIDEO OUT PART - COMPONENT & CHIP LAYOUTS



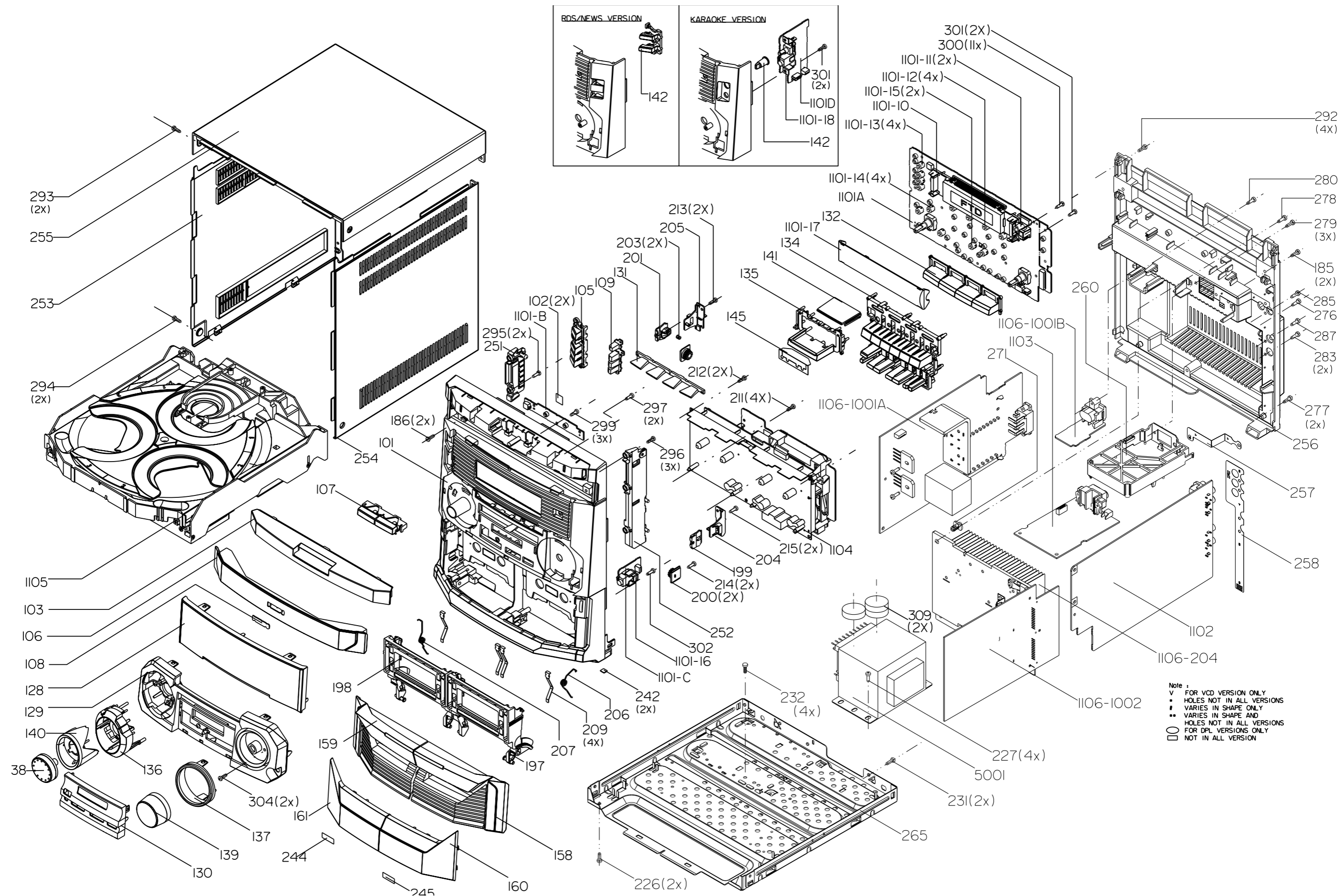
CIRCUIT DIAGRAM - VIDEO OUT PART



ELECTRICAL PARTSLIST - AF-9 BOARD

- MISCELLANEOUS -			- CAPACITORS -		
1100	4822 267 10676	CONNECTOR	2535	4822 124 40769	4,7µF 20% 100V
1102	4822 267 10676	CONNECTOR	2536	4822 124 40769	4,7µF 20% 100V
1103	4822 267 10676	CONNECTOR	2541	4822 124 41407	0,47µF 20% 63V
1204	2422 025 17467	CONNECTOR V 8P	2542	4822 124 41407	0,47µF 20% 63V
1206	4822 267 11039	CONNECTOR	2543	5322 126 11583	10nF 10% X7R 50V
1401	4822 265 11553	CONNECTOR 19P	2544	5322 126 11583	10nF 10% X7R 50V
1402	4822 267 11039	CONNECTOR 11P	2546	4822 121 43856	4,7nF 5% 250V
1501	4822 265 20553	CONNECTOR	2547	5322 126 11579	3,3nF 10% X7R 63V
1506	2412 020 00724	CONNECTOR V 2P	2548	5322 126 11579	3,3nF 10% X7R 63V
1520	4822 265 11515	CONNECTOR V 8P	2565	4822 121 43856	4,7nF 5% 250V
1523	4822 265 10981	CONNECTOR	2567	3198 016 31020	1nF NP0 25V
1531	4822 267 10953	CONNECTOR	2568	3198 016 31020	1nF NP0 25V
1603	4822 267 10733	CONNECTOR	2589	4822 121 42408	220nF 5% 63V
			2590	4822 121 42408	220nF 5% 63V
			2591	5322 121 42661	330nF 5% 63V
2201	4822 124 40207	100µF 20% 25V	2592	5322 121 42661	330nF 5% 63V
2202	4822 124 81151	22µF 50V	2593	4822 121 51252	470nF 5% 63V
2203	4822 124 40433	47µF 20% 25V	2594	4822 121 51252	470nF 5% 63V
2204	4822 124 40196	220µF 20% 16V	2601	3198 016 31020	1nF NP0 25V
2205	4822 126 14238	2,2nF X7R 50V	2602	3198 016 31020	1nF NP0 25V
2206	2238 916 15641	22nF 10% X7R 25V	2603	4822 124 81151	22µF 50V
2207	4822 124 40433	47µF 20% 25V	2604	4822 124 81151	22µF 50V
2208	4822 126 13879	220nF +80-20% 16V	2605	2020 552 94427	100pF 5% NP0 50V
2209	4822 124 41751	47µF 20% 50V	2606	2020 552 94427	100pF 5% NP0 50V
2210	4822 126 13879	220nF +80-20% 16V	2607	4822 126 13881	470pF 5% 50V
2401	2020 552 94427	100pF 5% NP0 50V	2608	4822 126 13881	470pF 5% 50V
2402	2020 552 94427	100pF 5% NP0 50V	2609	4822 126 14508	180pF 5% 50V NP0
2403	2238 586 59812	100nF +80-20% Y5V 50V	2610	4822 126 14508	180pF 5% 50V NP0
2404	2238 586 59812	100nF +80-20% Y5V 50V	2611	4822 124 81151	22µF 50V
2501	2020 552 94427	100pF 5% NP0 50V	2612	4822 124 81151	22µF 50V
2502	2020 552 94427	100pF 5% NP0 50V	2621	4822 124 81151	22µF 50V
2503	2022 020 00734	1µF 20% 50V	2622	4822 126 13881	100pF 5% NP0 50V
2504	2022 020 00734	1µF 20% 50V	2623	4822 124 40433	47µF 20% 25V
2505	2020 552 94427	100pF 5% NP0 50V	2624	3198 017 42230	22nF Y5V 50V
2506	2020 552 94427	100pF 5% NP0 50V	2625	4822 124 40207	100µF 20% 25V
2507	2238 586 59812	100nF +80-20% Y5V 50V	2626	4822 124 40769	4,7µF 20% 100V
2511	2022 020 00734	1µF 20% 50V	2641	3198 016 31020	1nF NP0 25V
2512	2022 020 00734	1µF 20% 50V	2642	3198 016 31020	1nF NP0 25V
2513	3198 016 31020	1nF NP0 25V	2653	2020 552 94427	100pF 5% NP0 50V
2514	3198 016 31020	1nF NP0 25V	2654	2020 552 94427	100pF 5% NP0 50V
2515	2020 552 94427	100pF 5% NP0 50V	2669	2238 586 59812	100nF +80-20% Y5V 50V
2516	2020 552 94427	100pF 5% NP0 50V	2681	4822 124 40433	47µF 20% 25V
2521	2238 586 59812	100nF +80-20% Y5V 50V	2682	4822 122 33752	15pF 5% NP0 50V
2522	2238 586 59812	100nF +80-20% Y5V 50V	2683	2238 586 59812	100nF +80-20% Y5V 50V
2523	2020 552 94427	100pF 5% NP0 50V	2691	2020 552 94427	100pF 5% NP0 50V
2524	2020 552 94427	100pF 5% NP0 50V	2707	2020 552 94427	100pF 5% NP0 50V
2531	4822 124 40769	4,7µF 20% 100V	2708	2020 552 94427	100pF 5% NP0 50V
2532	4822 124 40769	4,7µF 20% 100V	2771	4822 124 41407	0,47µF 20% 63V
2533	2020 552 94427	100pF 5% NP0 50V	2902	3198 017 44740	470nF Y5V 10V
2534	2020 552 94427	100pF 5% NP0 50V	2905	3198 017 42230	22nF Y5V 50V

EXPLODED VIEW - MAIN UNIT



Note:
 V FOR VCD VERSION ONLY
 • HOLES NOT IN ALL VERSIONS
 * VARIES IN SHAPE ONLY
 ** VARIES IN SHAPE AND SIZE
 ○ HOLES NOT IN ALL VERSIONS
 □ FOR DPL VERSIONS ONLY
 □ NOT IN ALL VERSION

MECHANICAL PARTSLIST

101	3140 117 71061	CAB FRONT /21/30
101	3140 117 71051	CAB FRONT /22/25
103	3140 117 69751	COVER FRONT CDC /21/30
103	3140 117 71831	COVER FRONT CDC /22/25
105	3140 117 64710	BTN SET C/CDC SEL /21/30
105	3140 117 64540	BTN SET CDC LPS C390 /22/25
106	3140 117 71021	COVER TRAY CDC
107	3140 117 69761	BUTTON SET OPEN/CLOSE
108	4822 454 13408	BADGE PHILIPS
128	3140 117 69771	WINDOW DISPLAY /21/30
128	3140 117 69891	WINDOW DISPLAY /22/25
129	3140 117 69781	COVER FRONT DISPLAY
130	3140 117 69791	COVER FRONT ORNA.
131	3139 114 71350	LIGHTGUIDE SOURCE SELECT
132	3140 117 69801	BUTTON SET SOURCE
134	3140 117 71031	BTN SET C/PROG N VCD
135	3140 117 69811	BUTTON MAX
136	3140 117 69822	BUTTON DSC/DBB/VEC/IS
137	3140 117 71071	RING VOLUME
138	3139 118 16230	KNOB ROTARY
139	3139 118 13190	KNOB VOLUME CHROME
140	3139 114 71330	LIGHTGUIDE DSC/DBB/VEC/IS
142	3140 117 64750	BUT SET RDS/NEWS /22/25
158	3140 117 69851	COVER CASS RIGHT
159	3140 117 69861	COVER CASS LEFT
160	3140 117 69871	LENS CASS RIGHT
161	3140 117 69881	LENS CASS LEFT
197	3139 114 68630	DOOR CASSETTE RIGHT ETF
198	3139 114 68620	DOOR CASSETTE LEFT ETF
199	4822 402 10621	PUSH-CATCH
200	4822 529 10322	DAMPER ASSY
201	3139 114 68640	PUSH CATCH LEFT
203	4822 492 11344	SPRING COMPRESSION
204	4822 402 11246	BRACKET RIGHT
205	4822 402 11245	BRACKET LEFT
206	3139 111 01380	SPRING TORSION RIGHT
207	3139 111 01390	SPRING TORSION LEFT
209	4822 492 42787	SPRING CASSETTE
242	4822 462 40683	RUBBER FOOT
251	3139 114 70970	BRACKET CDC LEFT
252	3139 114 70980	BRACKET CDC RIGHT
253	3139 114 73570	PANEL LEFT
254	3139 114 73580	PANEL RIGHT
255	3139 114 73590	COVER TOP
256	3140 114 63231	PANEL REAR /21/30
256	3140 114 63241	PANEL REAR /22/25
271	3139 114 71010	STOPPER HEATSINK

ACCESSORIES

350	3140 118 51711	BOX SPK ASSY
351	4822 303 50063	FM ANTENNA
356	3139 238 06131	REMOTE CONTROL
384	2422 549 45067	ANT AM LOOP LAN-006 B
385	△ 2422 070 98151	MAINSCORD /21/22
385	△ 2422 070 98147	MAINSCORD /25
385	△ 2422 070 98248	MAINSCORD /30
386	△ 4822 263 21092	ADAPTER PLUG /21
1201	3139 110 34600	FFC FOIL /21/22/30
1300	3139 110 35350	FFC FOIL 11P/220/11P AD
1400	3139 110 35110	FFC FOIL 04P/220/04P AD
1401	4822 320 12703	7P - 140MM
1402	3139 110 35100	FFC FOIL 19P/140/19P AD
1403	3139 110 34610	FFC FOIL 11P/180/11P AD
1500	3139 110 33960	FFC FOIL 04P/120/04P BD
1501	3139 110 33960	FFC FOIL 04P/120/04P BD /21
1600	3139 110 35050	FFC FOIL 08P/220/08P AD
1700	4822 320 12752	7P - 180MM
1800	3139 110 35880	FFC FOIL 15P/180/15P BD
5001	△ 3103 308 30640	TRANSF. MAINS /21
5001	△ 3103 308 30630	TRANSF. MAINS /22/25/30

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

SCREW LISTS - MAIN UNIT

185	D3 x 12
186	D3 x 12
211	D3 x 12
212	D3 x 12
213	D3 x 12
214	D3 x 12
215	D3 x 12
226	M3 x 6
227	M3 x 10
229	M3 x 10
230	D3 x 10
231	M3 x 10
232	M3 x 6
276	M3 x 6
277	M3 x 10
278	D3 x 16
279	D3 x 12
280	D3 x 12
283	D3 x 12
287	D3 x 12
292	D3 x 12
293	D3 x 12
294	M3 x 10
295	D3 x 12
296	D3 x 12
297	D3 x 12
299	D3 x 12
300	D3 x 12
301	D3 x 12
302	D3 x 12
304	D3 x 12

REVISION LIST**1.1 Manual 3140 785 32811**

Chapter 11, the power board and the parts list of the Power 2001 Module have been updated. Refer to page 11-6 to 11-8.