Mini System

FW-C717/22/34

Service
Service
Service

Service Manual

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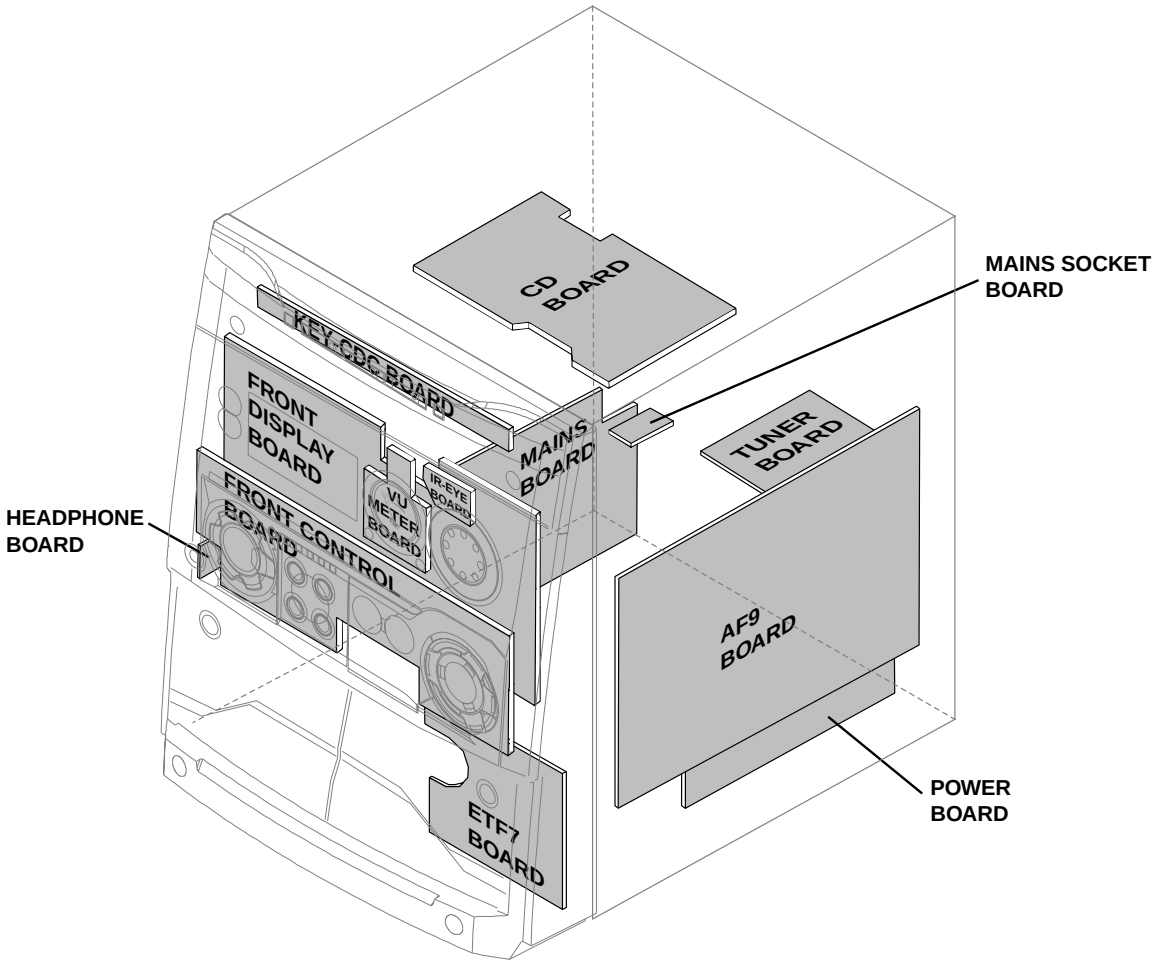
CLASS 1
LASER PRODUCT

Published by SL 0437 Service Audio Printed in The Netherlands Subject to modification

GB 3140 785 32302

PHILIPS

LOCATION OF PRINTED CIRCUIT BOARDS



VERSION VARIATIONS:

Type /Versions: / Features & Board in used:	FW-C717									
	/22	/34								
Aux in /CDR in	x	x								
Line Out	x	x								
Surround Out										
Subwoofer Out										
Digital Out	x	x								
Matrix Surround										
CD Text										
Dolby B		x								
RDS	x	x								
News	x	x								
Dolby Pro Logic (DPL)										
Incredible Surround	x	x								
Karaoke Features										
Voltage Selector										
ECO Power Standby (Clock Display Off)	x	x								
ECO6 Tuner Board - Systems Non-Cenelec		x								
ECO6 Tuner Board - Systems Cenelec	x									
Center/Surround Channel										
ETF7 ND/DD/FF - Chapter 9	x									
ETF7 DB/DD/FR - Chapter 9A		x								

SPECIFICATIONS

GENERAL:

Mains voltage : 220-230V for /22/34
Mains frequency : 50/60Hz
Power consumption : < 1W at ECO Power Standby
: 100W at Active

Clock accuracy : < 4 seconds per day
Dimension centre unit : 265 x 310 x 390mm

TUNER:

FM

Tuning range : 87.5-108MHz
65.81-74MHz for /34 [1)]
Grid : 50kHz (& 30kHz for /34)
IF frequency : 10.7MHz ± 25kHz
Aerial input : 75Ω coaxial
Sensitivity at 26dB S/N : < 7μV
Selectivity at 600kHz bandwidth : > 25dB
Image rejection : > 25dB
Distortion at RF=1mV, dev. 75kHz : < 3%
-3dB Limiting point : < 8μV
Crosstalk at RF=1mV, dev. 40kHz : > 18dB

MW

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

LW

Tuning range : 153-279kHz /22
Grid : 3kHz
IF frequency : 450kHz ± 1kHz
Aerial input : Frame aerial
Sensitivity at 26dB S/N : [< 7.0mV/M]
Selectivity at 18kHz bandwidth : [> 24dB]
IF rejection : [> 30dB]
Image rejection : [> 30dB]
Distortion at RF=50mV, m=80% : [< 5%]

AMPLIFIER:

Output power (6Ω, 1kHz, 10% THD)
L & R : 2 x 60W RMS
Frequency response within -3dB : 40Hz-20kHz
Incredible Surround : ON/OFF
WOOX : Level 1, 2, 3 & OFF
Digital Sound Control (DSC) : Digital, Rock, Pop, Newage, Classic, Electric
Virtual Ambience Control (VAC) : Hall, Concert, Cinema, Disco, Arcade, Cyber

Input sensitivity
Aux in : 500mV ± 3dB at 1kHz
CDR in : 1V ± 3dB at 1kHz
Output sensitivity
Line out (Left/Right) : 500mV ± 2dB at 22kΩ
Digital out : IEC 958, 44.1kHz
Headphone output at 32Ω : 15mW ± 1dB

CASSETTE RECORDER:

Number of track : 2 x 2 stereo
Tape speed : 4.76 cm/sec ± 2%
Wow and flutter : < 0.4% DIN
Fast-wind/Rewind time C60 : 130 sec
Bias system : 75kHz ± 10kHz
Rec/Pb frequency response within 8dB : 80Hz - 12.5kHz
Signal to Noise Ratio (Type I) : > 48dBA

COMPACT DISC:

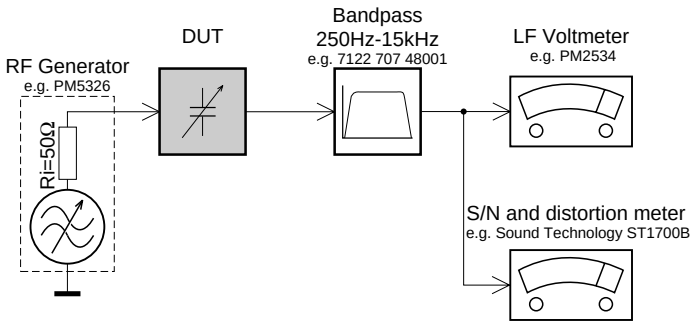
Measurement done at output conn. of the CDC module.
Frequency response : < ±1.5dB for 20Hz-20kHz
Output Voltage (in Vrms) : 550mV ± 2dB unloaded
Signal to Noise Ratio (A-weighted) : > 80dBA
Distortion at 1kHz : < 0.003%
Channel Unbalance : < ±1dB
Channel Separation (1kHz) : >60dB
De-emphasis : 0 or 15/50 mS (Switched by subcode on the disc)

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

[1)] Default setting is OFF, to switch on please refer page 3-4.

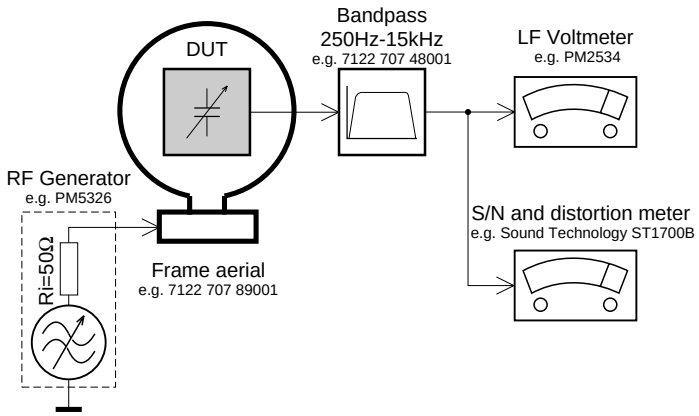
MEASUREMENT SETUP

Tuner FM



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

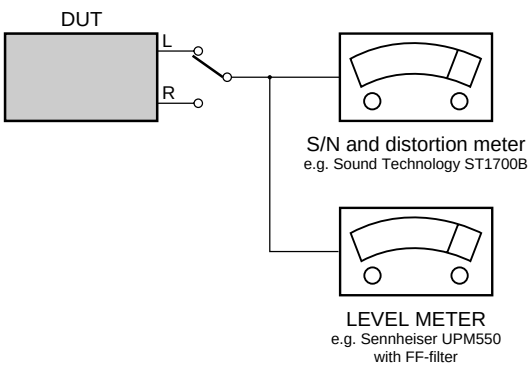
Tuner AM (MW,LW)



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

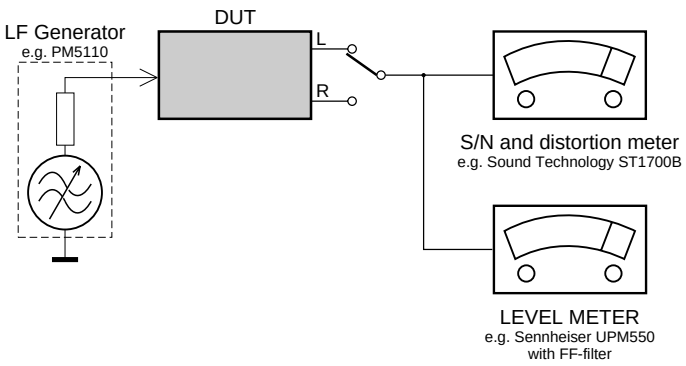
CD

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



Recorder

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



SERVICE AIDS

Service Tools:

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

Cassette:

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

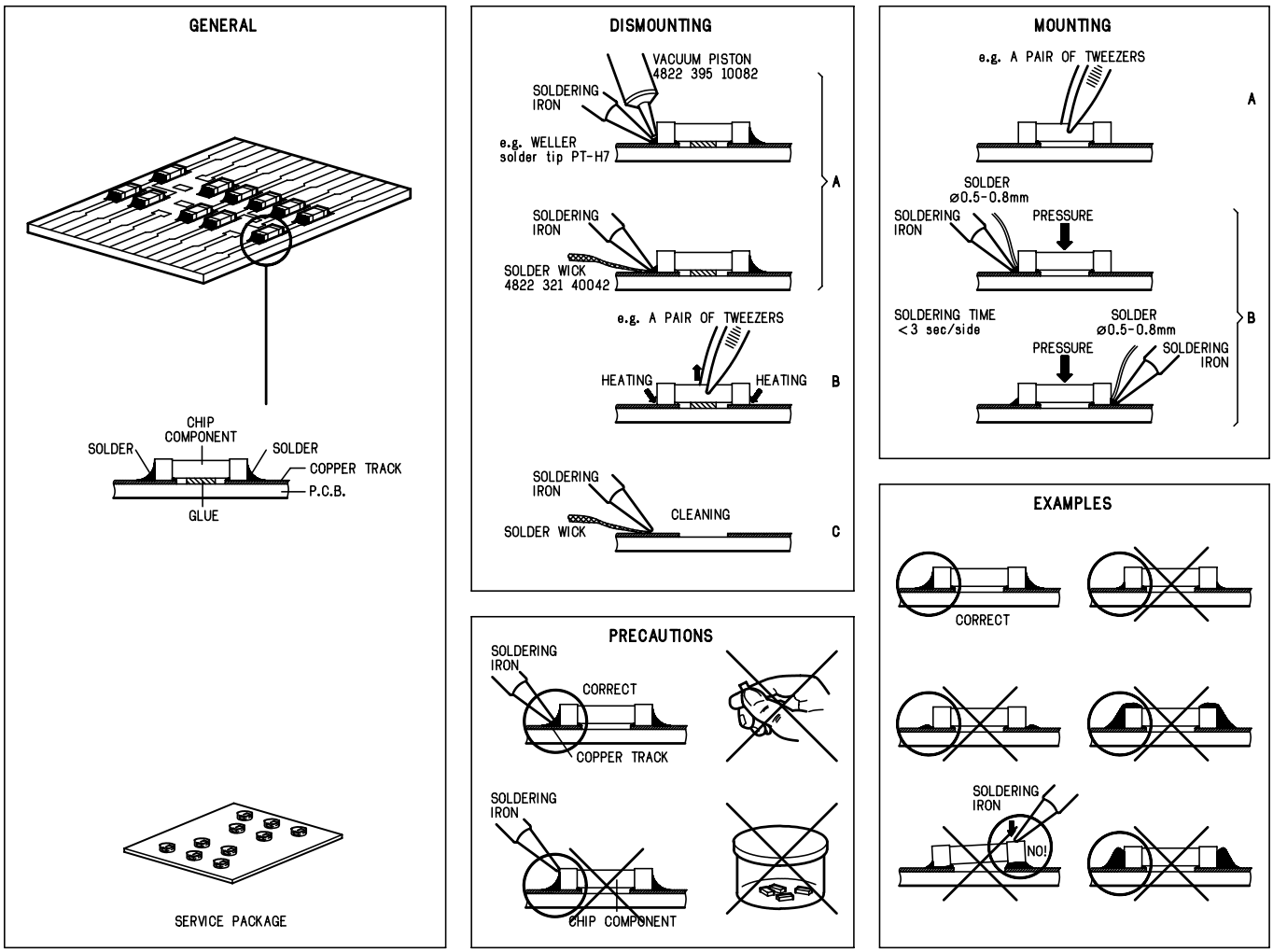
Compact Disc:

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

ESD Equipment:

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

HANDLING CHIP COMPONENTS



ESD

GB WARNING

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

F ATTENTION

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

D WARNUNG

Alle ICs und viele andere Halbleiter sind empfindlich gegenüber elektrostatischen Entladungen (ESD).
Unsorgfältige Behandlung im Reparaturfall kan die Lebensdauer drastisch reduzieren.
Veranlassen Sie, dass Sie im Reparaturfall über ein Pulsarmband mit Widerstand verbunden sind mit dem gleichen Potential wie die Masse des Gerätes.
Bauteile und Hilfsmittel auch auf dieses gleiche Potential halten.

NL WAARSCHUWING

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

I AVVERTIMENTO

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

GB

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

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 utiliséés les piéces de rechange identiques à celles spécifiées.

D

Bei jeder Reparatur sind die geltenden Sicherheitsvorschriften zu beachten. Der Original zustand 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."

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

GB Warning !

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

S Varning !

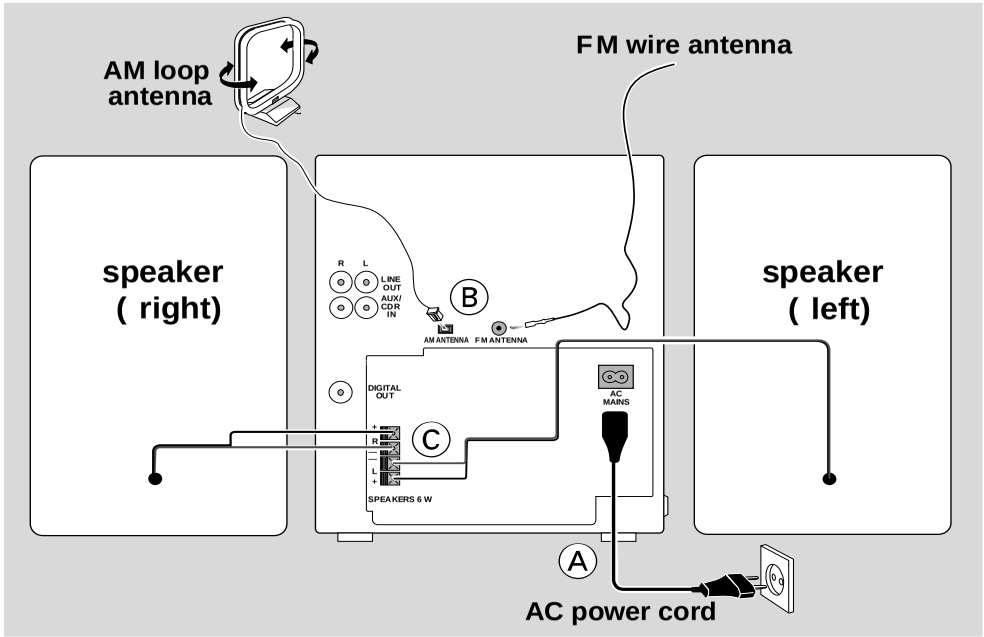
Osynlig laserstrålning när apparaten är öppnad och spärren är urkopplad. Betrakta ej strålen.

SF Varoitus !

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

DK Advarse !

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



Rear Connections

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

Ⓐ Power

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

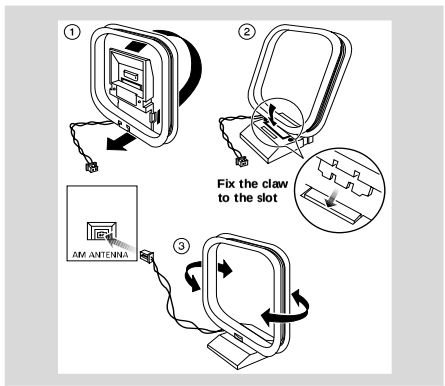
WARNING!
– For optimal performance, use only the original power cable.
– Never make or change connections with the power switched on.

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

Ⓑ Antennas Connection

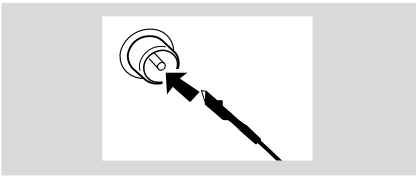
Connect the supplied AM loop antenna and FM antenna to the respective terminals. Adjust the position of the antenna for optimal reception.

AM Antenna



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

FM Antenna

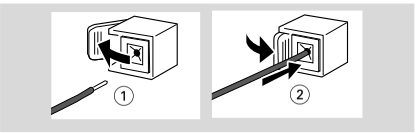


- For better FM stereo reception, connect an outdoor FM antenna to the FM ANTENNA terminal.

Ⓒ Speakers Connection

Front Speakers

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



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

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

Optional Connections

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

Line Out Connection

Connect this output to any analogue audio equipment for playback or recording (CD recorder, tape recorder or amplifier for example). Use a cinch cable to connect the **LINE OUT** terminals to the analogue audio in terminals of the equipment.

Connecting other equipment to your system

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

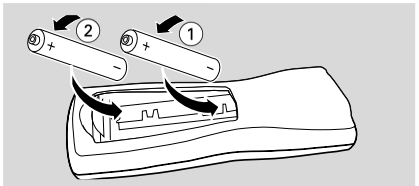
Notes:
– Do not connect equipment to both the LINE OUT and AUX/CDR IN terminals at the same time. Otherwise, noise will be generated and malfunction might occur.
– If you are connecting equipment with a mono output (a single audio out terminal), connect it to the AUX/CDR IN left terminal. Alternatively, you can use a "single to double" cinch cable (still be mono sound).

Digital Out Connection

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

Inserting batteries into the Remote Control

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



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

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 vered 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 ma y not cor respond with the colour mar kings identifying the ter minals 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 FW-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

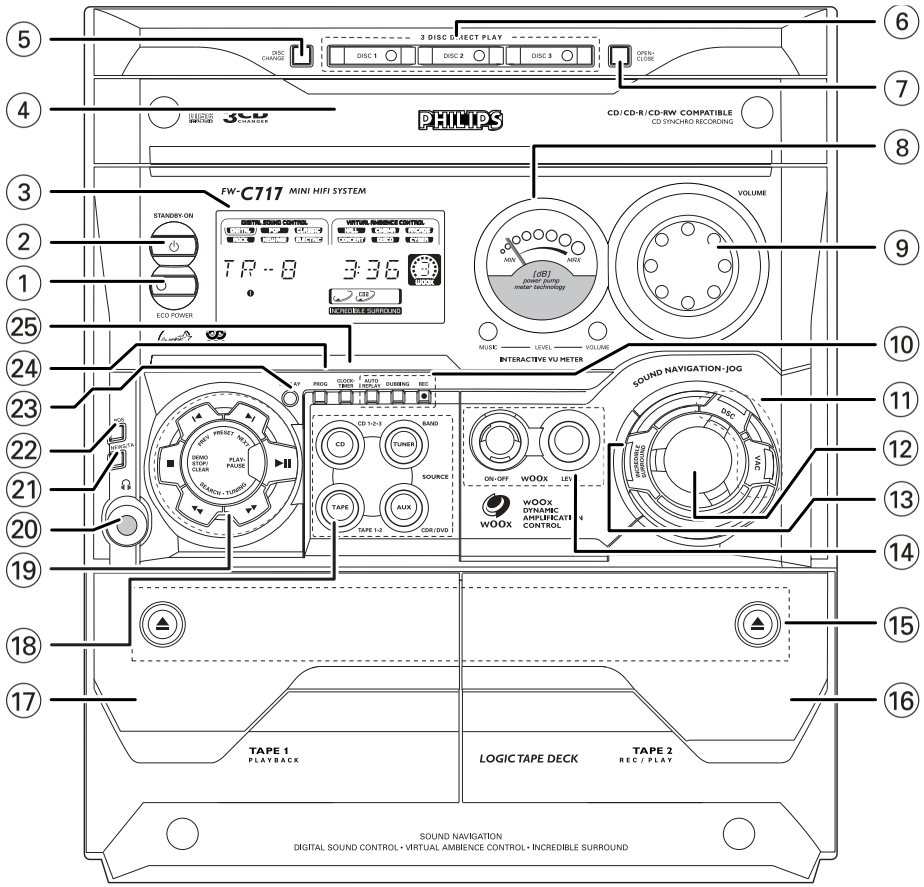
Typeskilt finnes på apparatens underside.

Observer: Nettbryteren er sekundert innkoplet. Den innebygde netdelen er derfor ikke frakoplet nettet så lenge apparatet er tilsluttet nettkontakten.

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.



Controls

Controls on the system and remote control

① **ECO POWER**
– to switch the system on or to Eco Power Standby mode.

② **STANDBY ON** ⏻
– to switch the system on or to Standby mode.

③ **DISPLAY SCREEN**
– to view the current status of the system.

④ **DISCTRAY**

⑤ **DISC CHANGE**
– to change disc(s).

⑥ **DISC 1 / DISC 2 / DISC 3 (CD DIRECT)**
– to select a disc tray for playback.

⑦ **OPEN•CLOSE**
– to open or close the disc tray.

⑧ **INTERACTIVE VU METER**
– to show the VU (volume unit) meter in music or volume mode depending on the display mode selected.

⑨ **VOLUME**
– to increase or decrease the volume.

⑩ **Tape Deck Operation**
AUTO REPLAY (AUTO RE.)
– to select continuous playback in either AUTO PLAY or ONCE mode only.
DUBBING
– to dub a tape.
REC
– to start recording on tape deck 2.

⑪ **SOUND NAVIGATION**
– to select the desired sound feature : DSC or VAC.

⑫ **JOG CONTROL**
– to select the desired sound effect for the selected sound feature.
DSC .....DIGITAL, ROCK, POP, NEWAGE, CLASSIC or ELECTRIC.
VAC .....HALL, CONCERT, CINEMA, DISCO, ARCADE or CYBER.

⑬ **INCREDIBLE SURROUND (IS)**
– to activate or deactivate the surround sound effect.

⑭ **wOOx ON•OFF**
– to select enhanced or normal wOOx sound effect.
wOOx LEVEL
– to select desired wOOx level : WOOX 1, WOOX 2 or WOOX 3.

⑮ ⏏
– to open the tape deck door.

⑯ **TAPE DECK 2**

⑰ **TAPE DECK 1**

⑱ **SOURCE** – 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 / (CDR/DVD)
– to select a connected external source : CDR/DVD or AUX (auxiliary) mode.

⑲ **Mode Selection**
PLAY PAUSE ▶II
for CD .....to start or interrupt playback.
for TAPE .....to start playback.
for PLUG & PLAY…*(on the system only)* to initiate and start plug & play mode.
SEARCH• TUNING ◀◀ ▶▶
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.
DEMO STOP/CLEAR ■
for CD .....to stop playback or to clear a programme.
for TUNER .....to stop programming.
.....*(on the system only)* to delete the preset radio station.
for TAPE .....to stop playback or recording.
.....to reset tape counter number.
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.
PREV / PRESET / NEXT ⏮ ⏭
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.

Controls on the system and remote control

① **ECO POWER**
– to switch the system on or to Eco Power Standby mode.
② **STANDBY ON** ⏻
– to switch the system on or to Standby mode.
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– to start recording on tape deck 2.
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– to select the desired sound feature : DSC or VAC.
⑫ **JOG CONTROL**
– to select the desired sound effect for the selected sound feature .
DSC .....DIGITAL, ROCK, POP, NEWAGE, CLASSIC or ELECTRIC.
VAC .....HALL, CONCERT, CINEMA, DISCO , ARCADE or CYBER.
⑬ **INCREDIBLE SURROUND (IS)**
– to activate or deactivate the surround sound effect.
⑭ **wOOx ON•OFF**
– to select enhanced or normal wOOx sound effect.
wOOx LEVEL
– to select desired wOOx level : WOOX 1, WOOX 2 or WOOX 3.
⑮ ⏏
– to open the tape deck door.
⑯ **TAPE DECK 2**
⑰ **TAPE DECK 1**
⑱ **SOURCE** – to select the following:
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– 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 / (CDR/DVD)
– to select a connected external source : CDR/DVD or AUX (auxiliary) mode .
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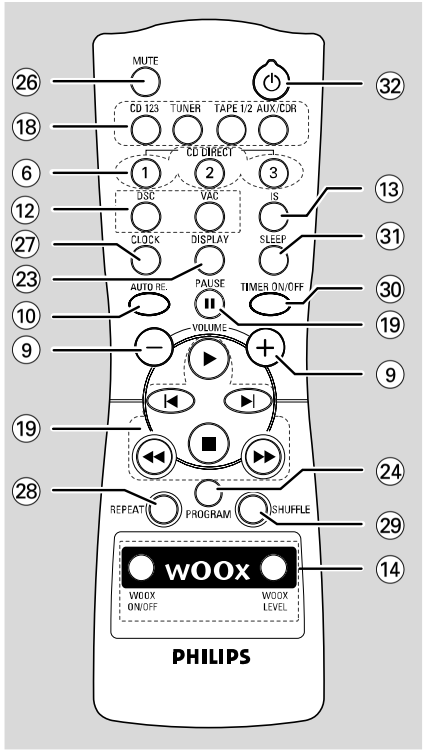
for PLUG & PLAY…*(on the system only)* to exit plug & play mode.
PREV / PRESET / NEXT |◄ ►|
for CD .....to skip to the beginning of the current, previous, or next track.
for TUNER .....to select a preset radio station.
for CLOCK .....*(on the system only)* to set the minute.

Controls

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



Notes for remote control:
– First, select the source you wish to control by pressing one of the source select keys on the remote control (CD 123 or TUNER, for example).
– Then select the desir ed function (►, |◄, ►|, for example).

Maintenance

Cleaning the Cabinet

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

Cleaning Discs

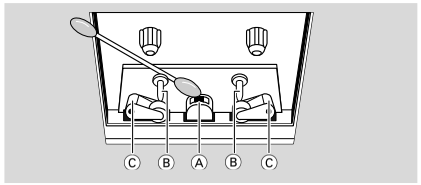
- When a disc becomes dirty, clean it with a cleaning cloth. Wipe the disc from the centre out. Do not wipe in a circular motion.
- Do not use solvents such as benzene, thinner, commercially available cleaners, or antistatic spray intended for analogue records.

Cleaning the disc lens

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

Cleaning the Heads and the Tape Paths

- To ensure good recording and playback quality, clean the heads (A), the capstan(s) (B), and pressure roller(s) (C) after every 50 hours of tape operation.
- Use a cotton swab slightly moistened with cleaning fluid or alcohol.
- You also can clean the heads by playing a cleaning tape once.



Demagnetising the heads

- Use a demagnetising tape available at your dealer.

Troubleshooting

WARNING

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

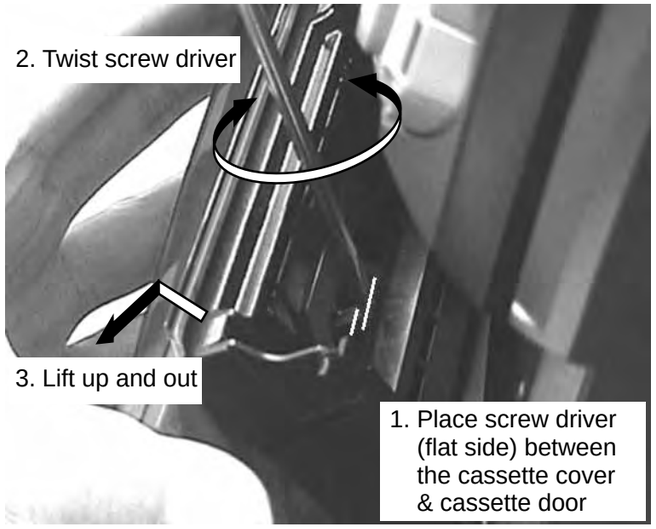
If a fault occurs, first check the points listed below before taking the system for repair. If you are unable to remedy a problem by following these hints, consult your dealer or service centre.

Problem	Solution
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".
"DISC NOT FINALIZED" **is displayed.**	– Use a finalised CD-R(W) or CD-R.

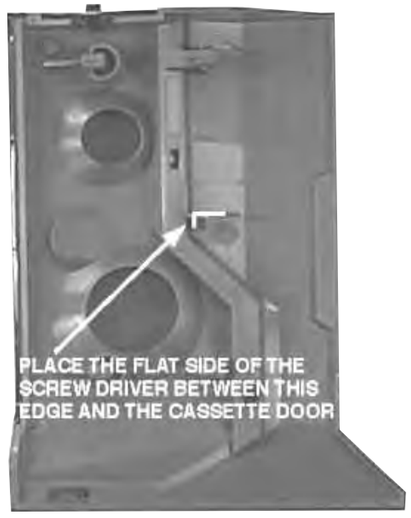
RADIO RECEPTION	
Radio reception is poor	– If the signal is too weak, adjust the antenna or connect an external antenna for better reception. – Increase the distance between the Mini HiFi System and your TV or VCR.
TAPE OPERATION/RECORDING	
Recording or playback cannot be made.	– Clean deck parts, see "Maintenance". – Use only NORMAL (IECI) tape. – Apply a piece of adhesive tape over the missing tab space.
The tape deck door cannot open.	– Remove and reconnect the AC power plug and switch on the system again.
GENERAL	
The system does not react when buttons are pressed.	– Remove and reconnect the AC power plug and switch on the system again.
Sound cannot be heard or is of poor quality.	– Adjust the volume. – Disconnect the headphones. – Check that the speakers are connected correctly. – Check if the stripped speaker wire is clamped.
The left and right sound outputs are reversed.	– Check the speaker connections and location.
The remote control does not function properly.	– Select the source (CD or TUNER, for example) before pressing the function button (▶, ⏮, ⏭). – Reduce the distance between the remote control and the system. – Insert the batteries with their polarities (+/– signs) aligned as indicated. – Replace the batteries. – Point the remote control in the direction of the system's IR sensor.
The timer is not working.	– Set the clock correctly. – Press TIMER ON/OFF to switch on the timer. – If recording is in progress, stop recording.
Not all lighted buttons are showing light.	– Press DISPLAY to select NORMAL or MODE 1 display mode.
The Clock/Timer setting is erased.	– Power has been interrupted or the power cord has been disconnected. Reset the clock/timer.
The system displays features automatically and buttons start flashing.	– Press and hold DEMO STOP ■ on the system to switch off the demonstration.

DISMANTLING INSTRUCTIONS

Dismantling of the Cassette Cover



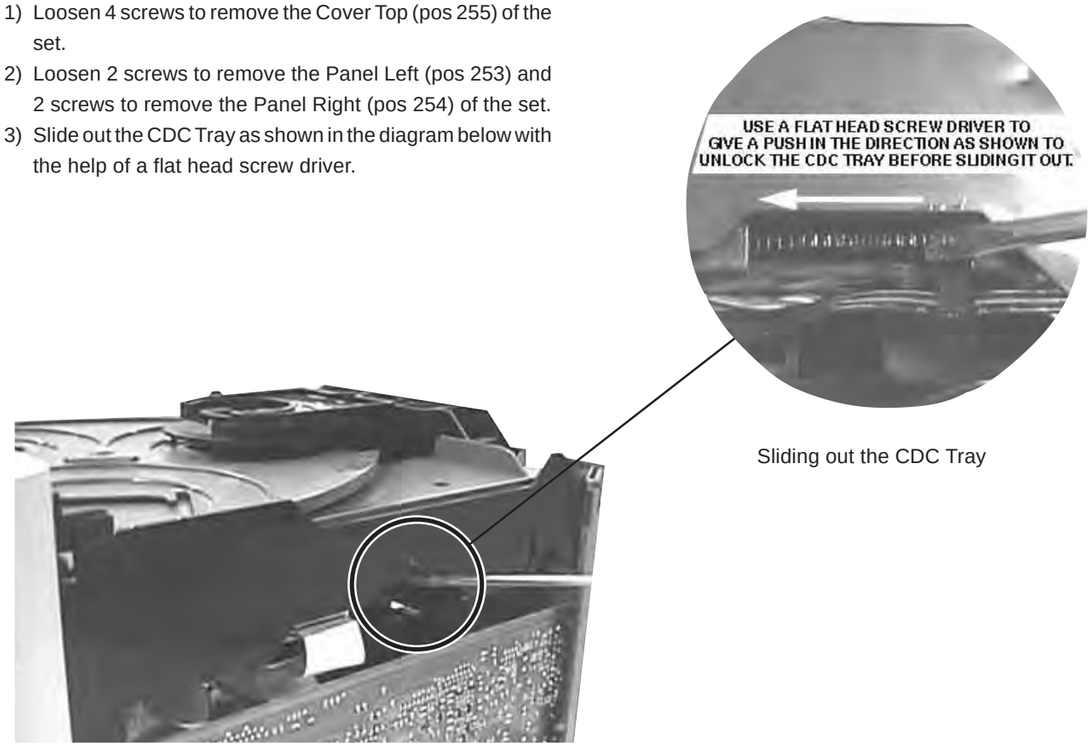
Remove Cassette Cover



Cassette Cover

Dismantling of the CDC Module and Front Panel

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



Sliding out the CDC Tray

3-1

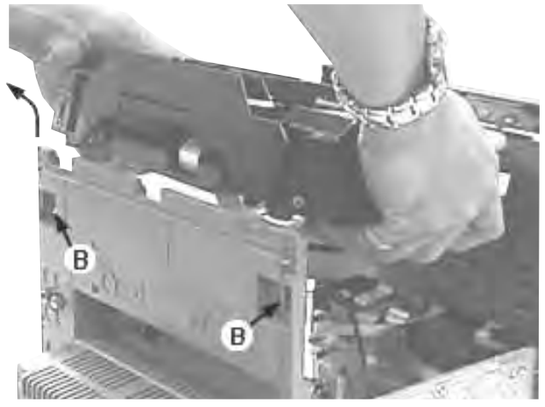
Dismantling of the CDC Module and Front Panel

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

Remove Cover Tray CDC

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

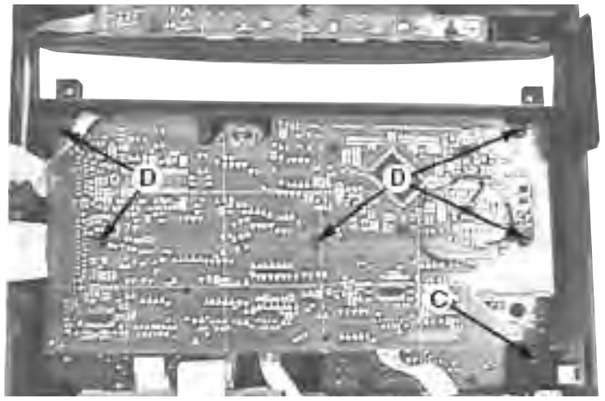
Front View CDC



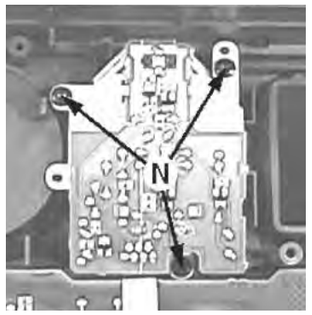
Remove CDC Module

Dismantling of the Front Display Board and Front Control Board

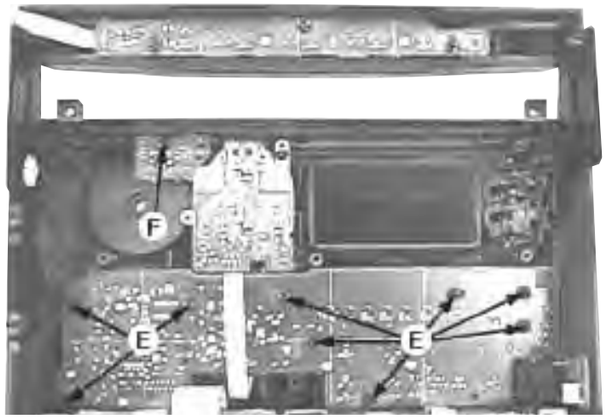
1) Remove 1 screw C as indicated to loosen the Headphone Board (pos 1101-B).
2) Remove 5 screws D as indicated to loosen the Front Display Board (pos 1101-A).
3) Remove 9 screws E as indicated to loosen the Front Control Board (pos 1107-A).
4) Remove 1 screw F as indicated to loosen the IR-Eye Board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



Remove Front Display Board and Headphone Board



Remove VU Meter Board



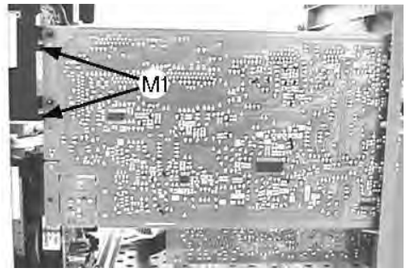
Remove Front Control Board and IR-Eye Board

Dismantling of the ETF Tape Module

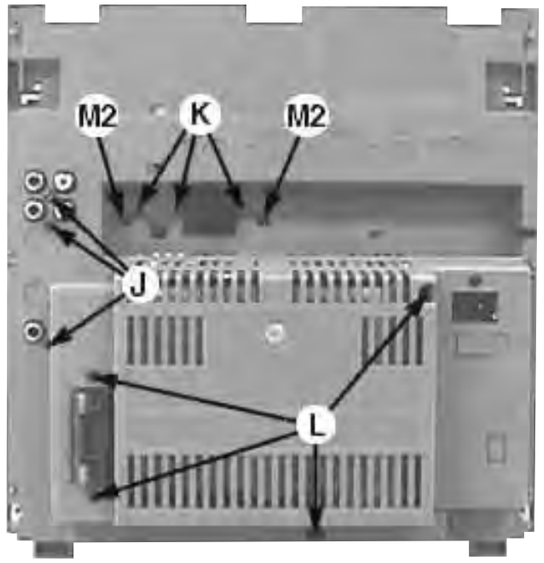
1) Remove 6 screws G as indicated to loosen the ETF Tape Module (pos 1104).

Dismantling of Rear Portion

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



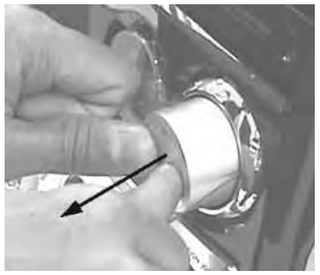
Remove AF Board



Repair Hints

1) The Knob Volume Rotary (pos 117) can be 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 Jog Rotary (pos 140) 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

3-3

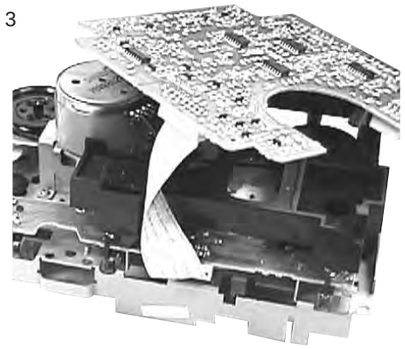
Repair Hints

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.

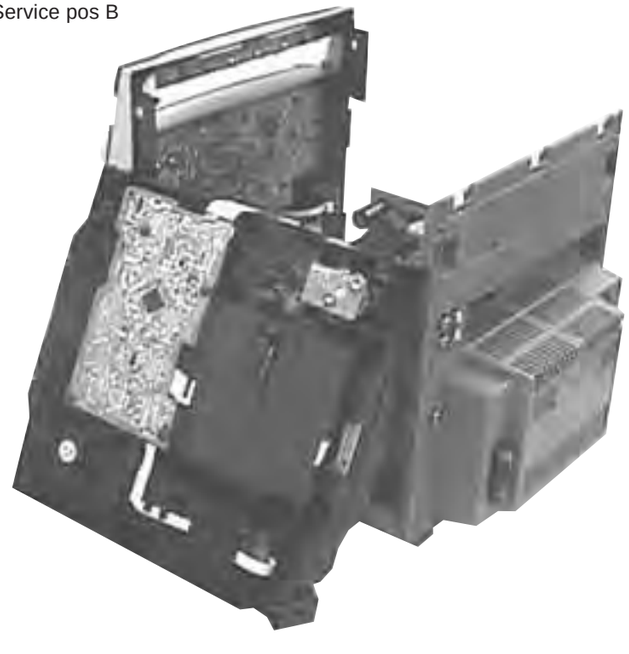
Note: The flex cables are very fragile, care should be taken not to damage them during repair. After repair, be very sure that the flex cables are inserted properly into the flex sockets before encasing, otherwise faults may occurs.

Picture 3

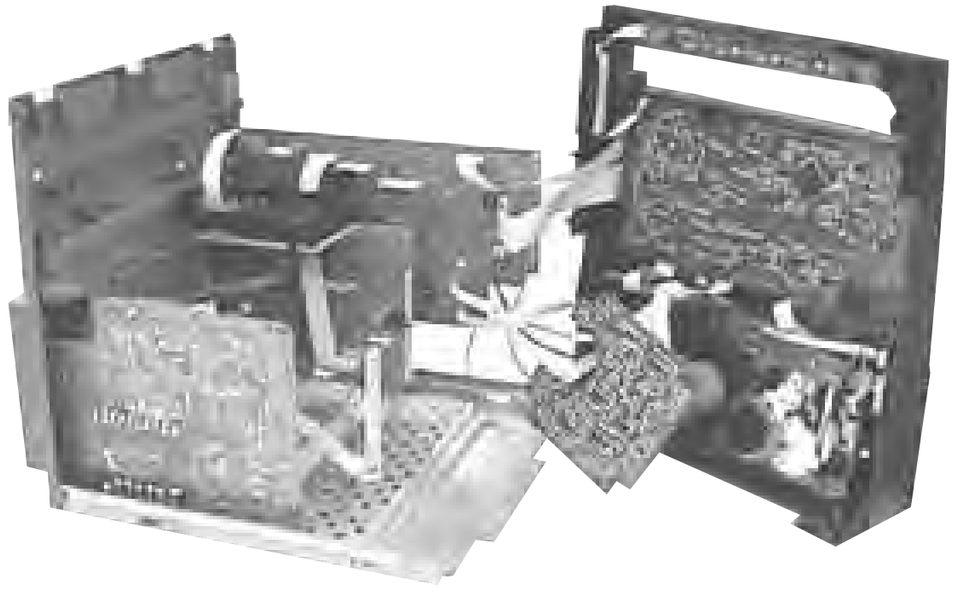


Service pos A

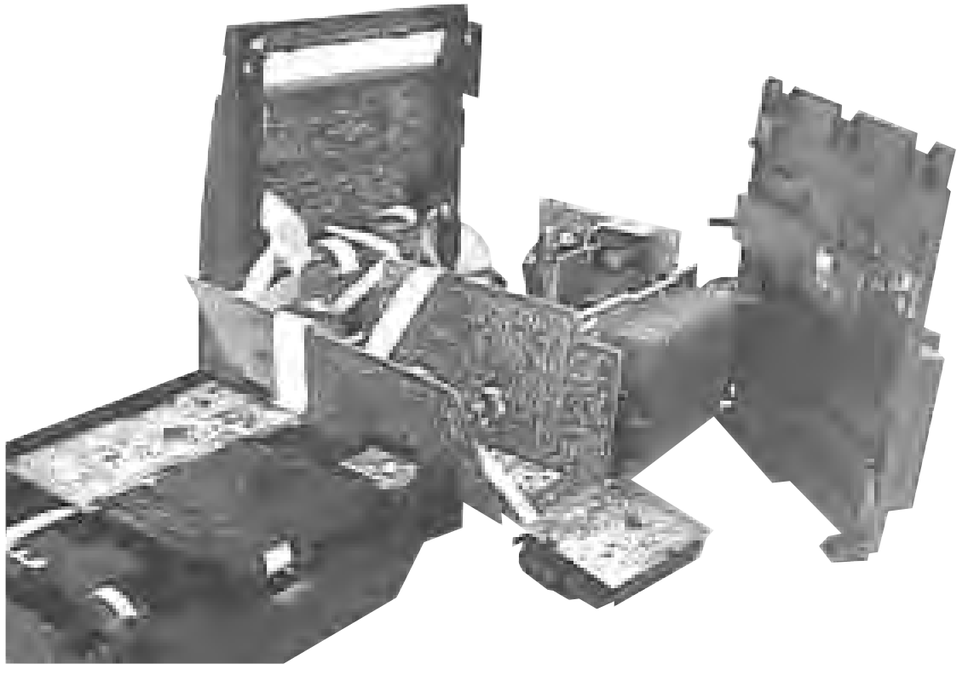
Service pos B



Service pos C

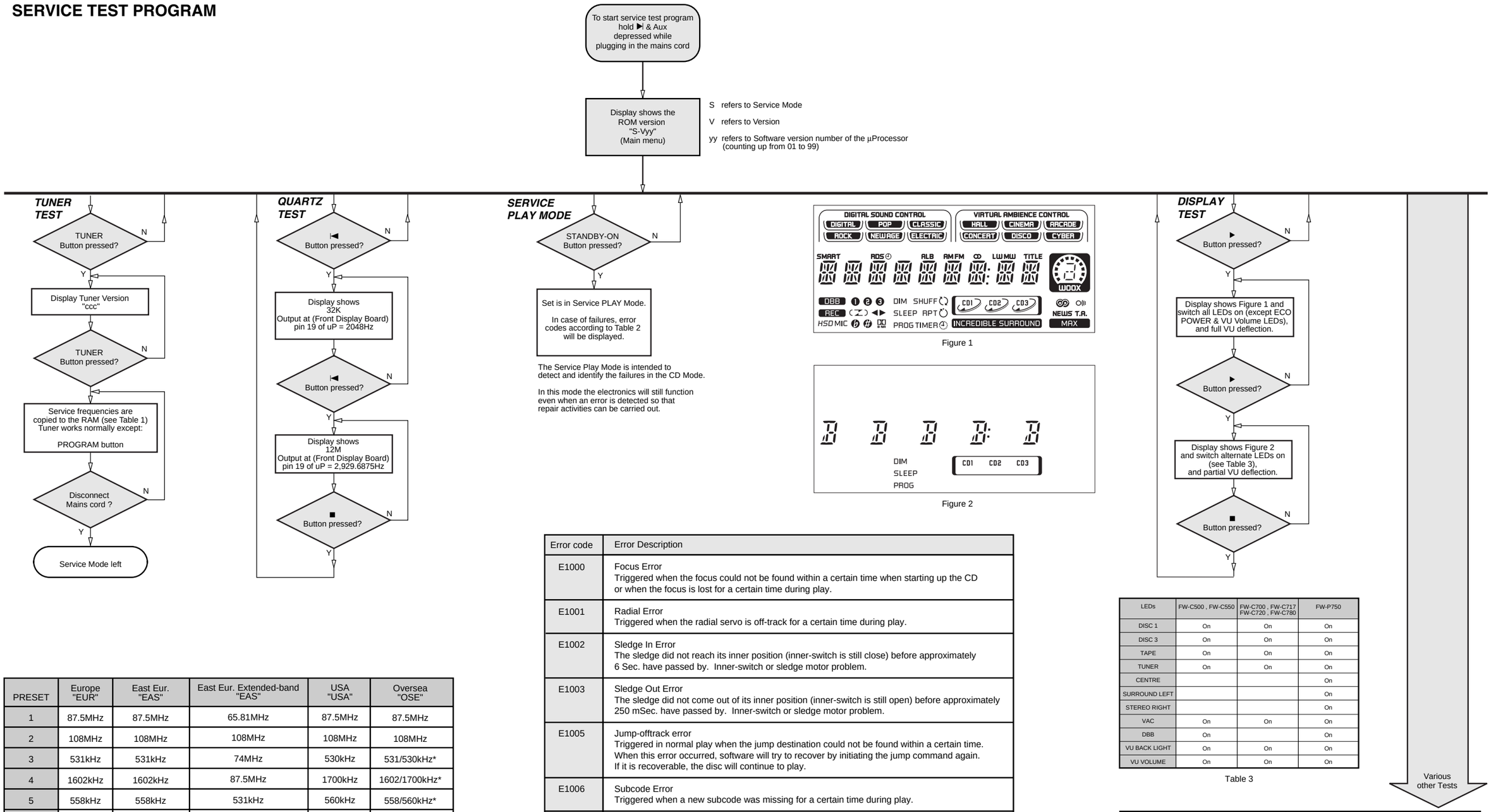


Service pos D



3-4

SERVICE TEST PROGRAM



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

Table 1

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

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

Table 2

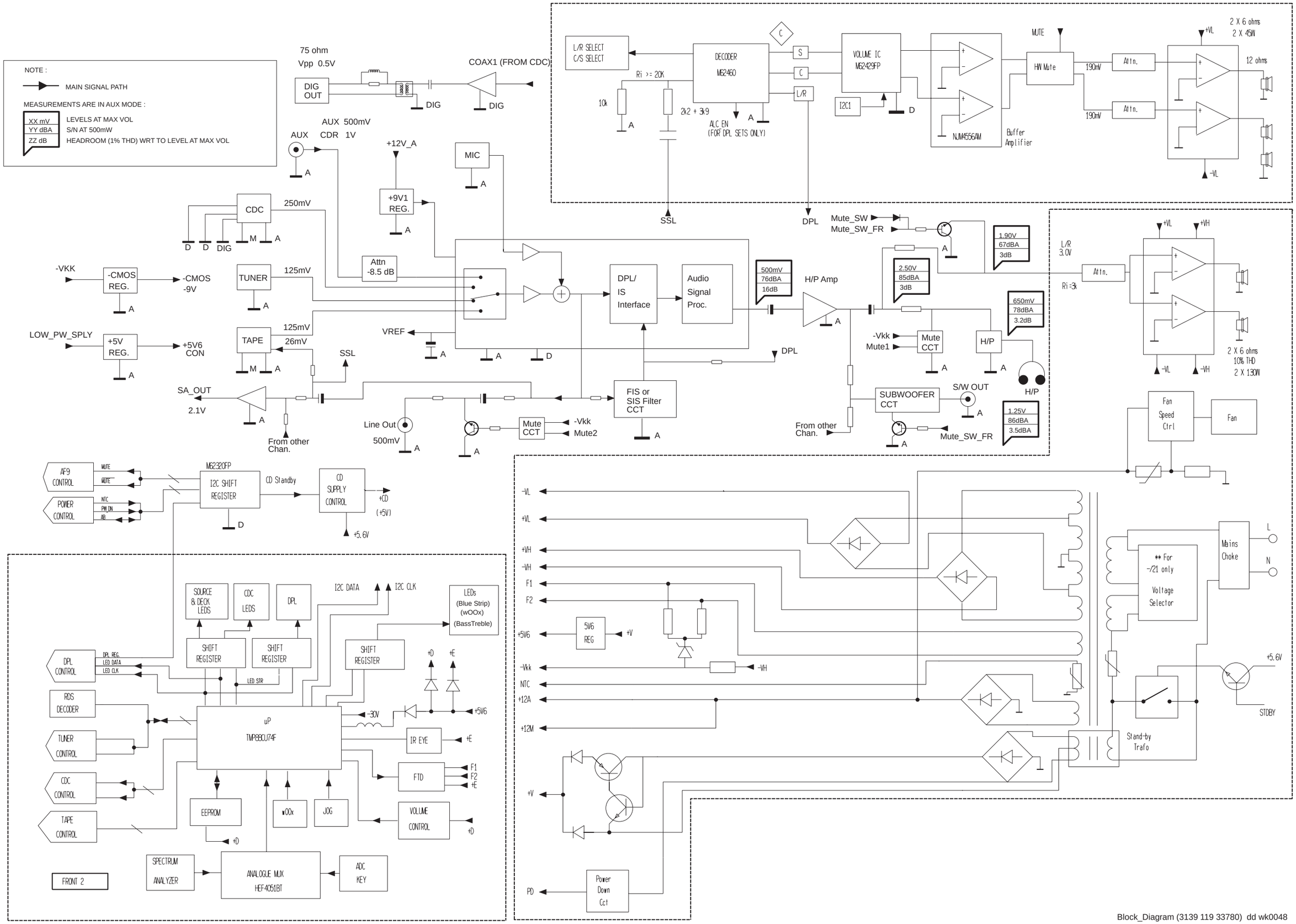
LEDs	FW-C500 , FW-C550	FW-C700 , FW-C717 FW-C720 , FW-C780	FW-P750
DISC 1	On	On	On
DISC 3	On	On	On
TAPE	On	On	On
TUNER	On	On	On
CENTRE			On
SURROUND LEFT			On
STEREO RIGHT			On
VAC	On	On	On
DBB	On		On
VU BACK LIGHT	On	On	On
VU VOLUME	On	On	On

Table 3

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

4-1

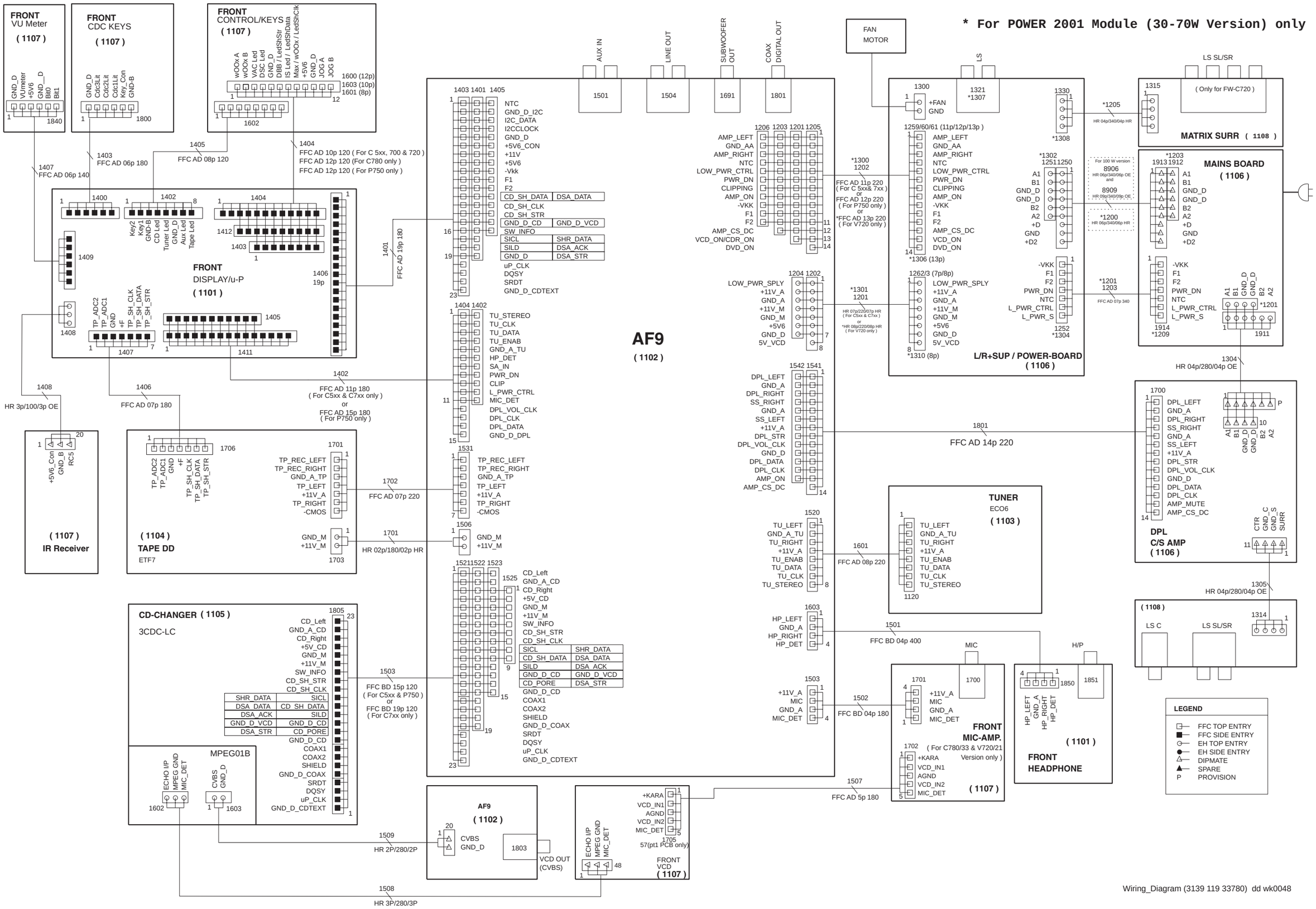
SET BLOCK DIAGRAM



Block_Diagram (3139 119 33780) dd wk0048

4-2

SET WIRING DIAGRAM



5-1

REMARKS :

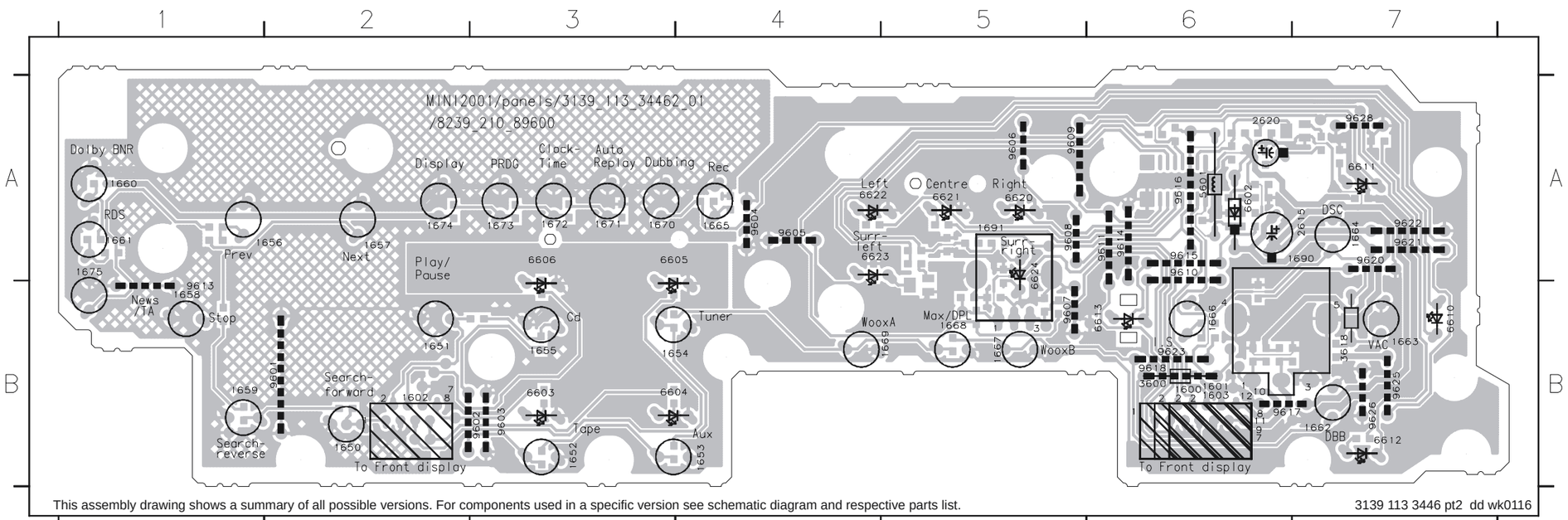
FRONT CONTROL BOARD

TABLE OF CONTENTS

5-2

FRONT CONTROL BOARD - COMPONENT LAYOUT

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

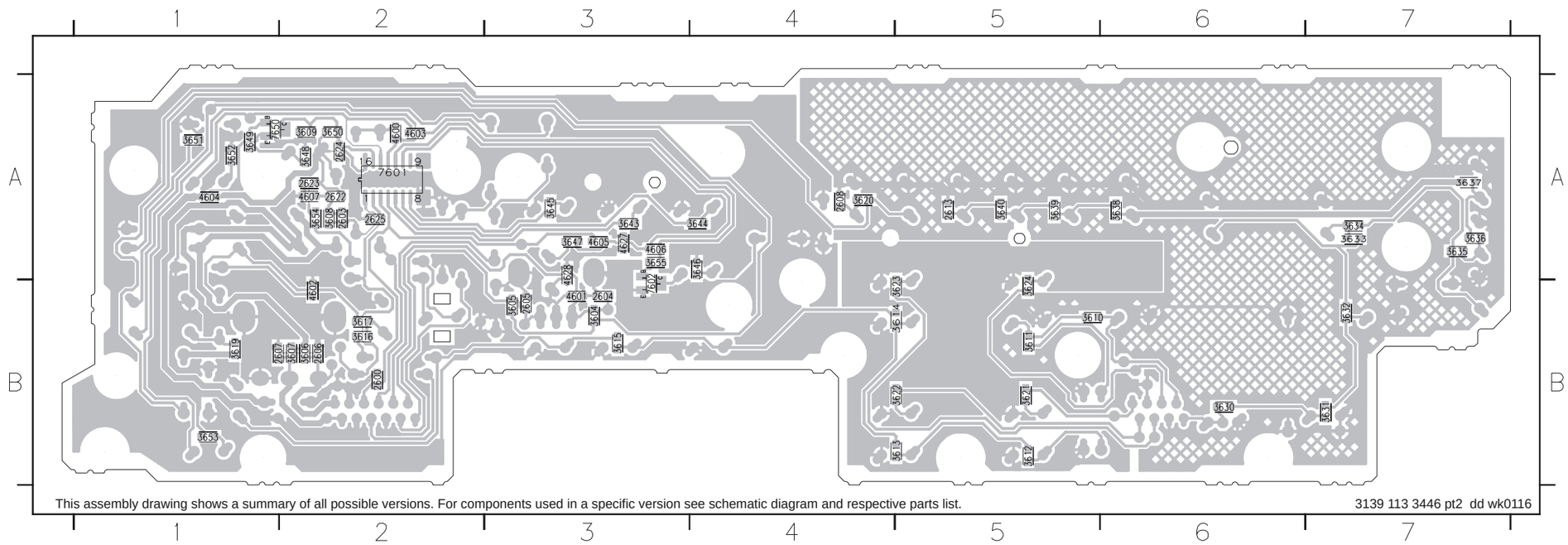


This assembly drawing shows a summary of all possible versions. For components used in a specific version see schematic diagram and respective parts list.

3139 113 3446 pt2 dd wk0116

FRONT CONTROL BOARD - CHIP LAYOUT

2600 B2 2606 B2 2622 A2 3604 B3 3608 A2 3612 B5 3616 B2 3621 B5 3630 B6 3634 A7 3638 A6 3644 A4 3648 A2 3652 A1 4600 A2 4604 A1 4627 A3 7650 A1
2603 A2 2607 B1 2623 A2 3605 B3 3609 A2 3613 B5 3617 B2 3622 B5 3631 B7 3635 A7 3639 A5 3645 A3 3649 A1 3653 B1 4601 B3 4605 A3 4628 A3
2604 B3 2608 A4 2624 A2 3606 B2 3610 B5 3614 B5 3619 B1 3623 B5 3632 B7 3636 A7 3640 A5 3646 A4 3650 A2 3654 A2 4602 B2 4606 A3 7601 A2
2605 B3 2613 A5 2625 A2 3607 B2 3611 B5 3615 B3 3620 A4 3624 B5 3633 A7 3637 A7 3643 A3 3647 A3 3651 A1 3655 A3 4603 A2 4607 A2 7602 B3

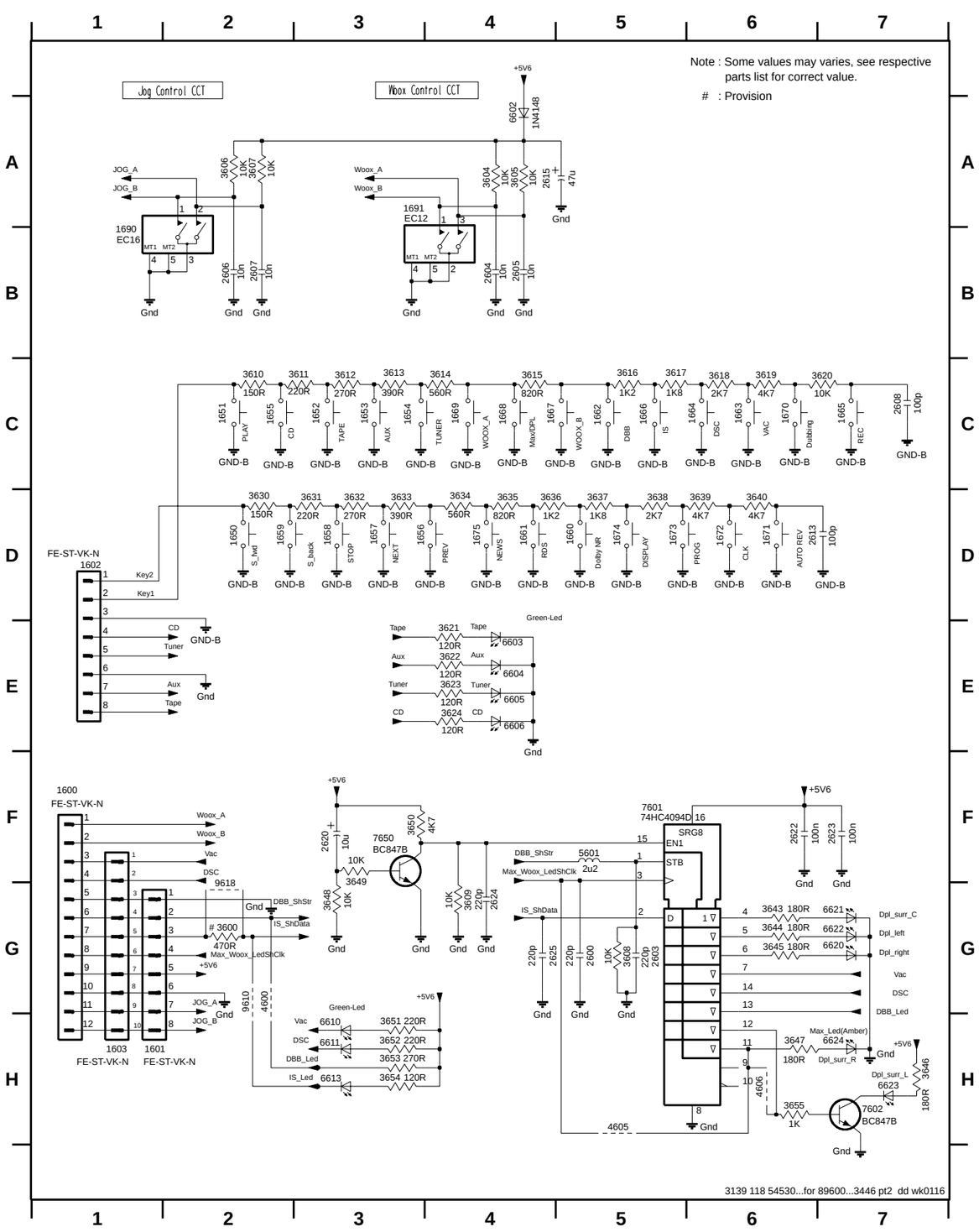


This assembly drawing shows a summary of all possible versions. For components used in a specific version see schematic diagram and respective parts list.

3139 113 3446 pt2 dd wk0116

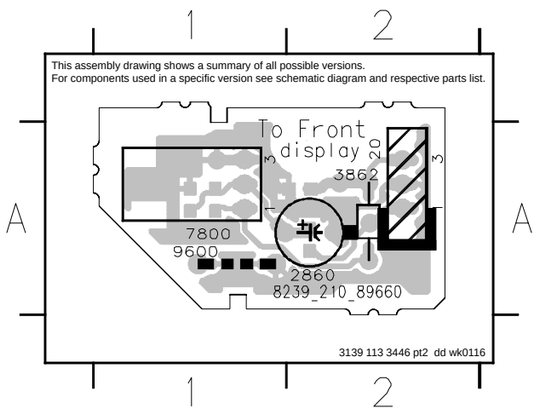
FRONT CONTROL BOARD - CIRCUIT DIAGRAM

1600 F1	1653 C3	1660 D5	1667 C4	1674 D5	2605 B4	2622 F6	3606 A2	3613 C3	3620 C7	3632 D3	3639 D6	3648 G3	3655 H6	6604 E4	6621 G7	9610 G2
1601 H2	1654 C3	1661 D4	1668 C4	1675 D4	2606 B2	2623 F7	3607 A2	3614 C4	3621 E4	3633 D3	3640 D6	3649 F3	4600 G2	6605 E4	6622 G7	9618 G2
1602 D1	1655 C2	1662 C5	1669 C4	1690 B1	2607 B2	2624 G4	3608 G5	3615 C4	3622 E4	3634 D4	3643 G6	3650 F3	4605 H5	6606 E4	6623 H7	
1603 H1	1656 D3	1663 C6	1670 C6	1691 A3	2608 C7	2625 G4	3609 G4	3616 C5	3623 E4	3635 D4	3644 G6	3651 H3	4606 H6	6610 H3	6624 H7	
1650 D2	1657 D3	1664 C6	1671 D6	2600 G5	2613 D6	3600 G2	3610 C2	3617 C5	3624 E4	3636 D4	3645 G6	3652 H3	5601 F5	6611 H3	7601 F5	
1651 C2	1658 D3	1665 C7	1672 D6	2603 G5	2615 A4	3604 A4	3611 C3	3618 C6	3630 D2	3637 D5	3646 H7	3653 H3	6602 A4	6613 H3	7602 H7	
1652 C3	1659 D2	1666 C5	1673 D5	2604 B4	2620 F3	3605 A4	3612 C3	3619 C6	3631 D3	3638 D5	3647 H6	3654 H3	6603 E4	6620 G7	7650 F3	



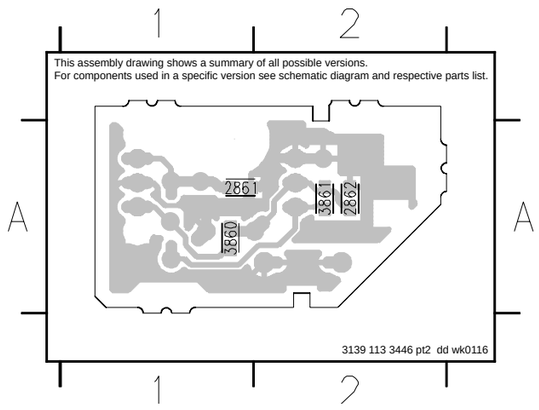
IR-EYE BOARD - COMPONENT LAYOUT

20 A2 3862 A2 9600 A1
2860 A2 7800 A1



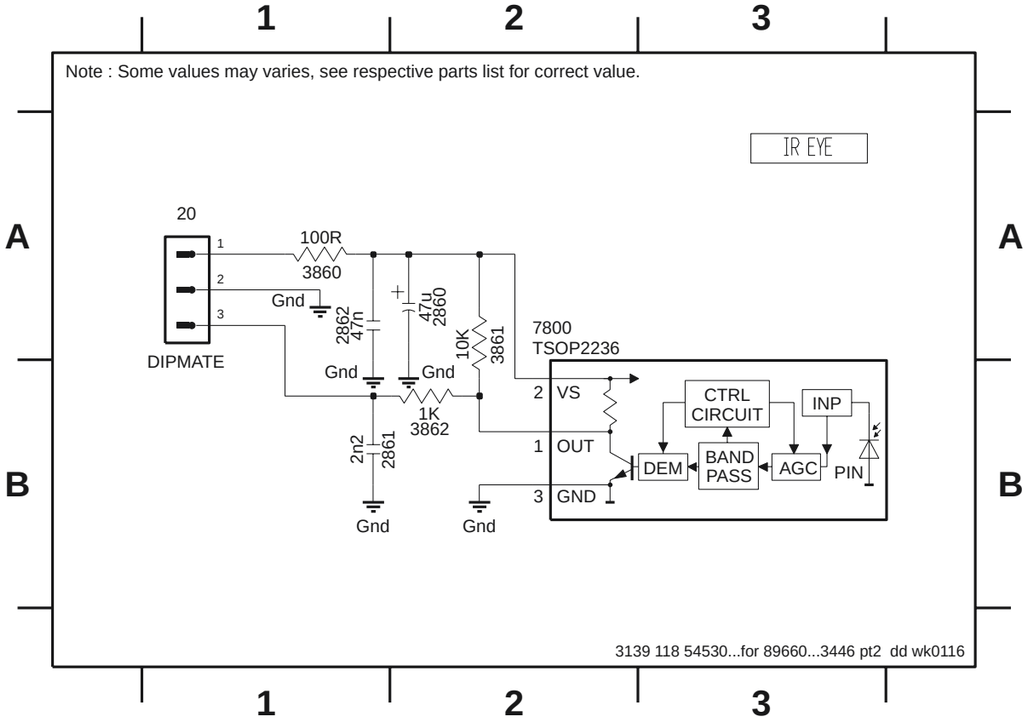
IR-EYE BOARD - CHIP LAYOUT

2861 A1 2862 A2 3860 A1 3861 A2



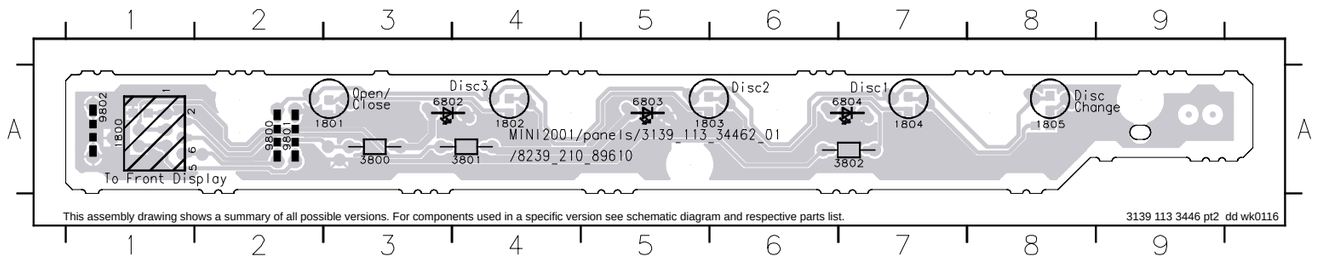
IR-EYE BOARD - CIRCUIT DIAGRAM

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



KEY-CDC BOARD - COMPONENT LAYOUT

1800 A1 1801 A3 1802 A4 1803 A5 1804 A7 1805 A8 3800 A3 3801 A4 3802 A7 6802 A3 6803 A5 6804 A7 9800 A2 9801 A2 9802 A1

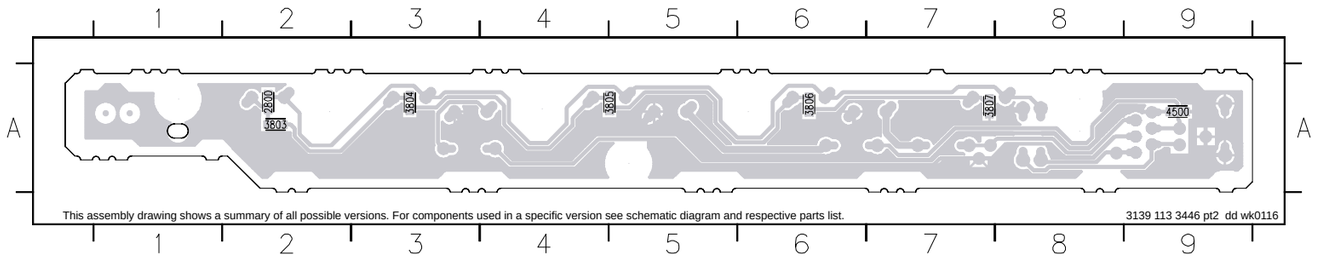


This assembly drawing shows a summary of all possible versions. For components used in a specific version see schematic diagram and respective parts list.

3139 113 3446 pt2 dd wk0116

KEY-CDC BOARD - CHIP LAYOUT

2800 A2 3803 A2 3804 A3 3805 A5 3806 A6 3807 A7 4500 A9

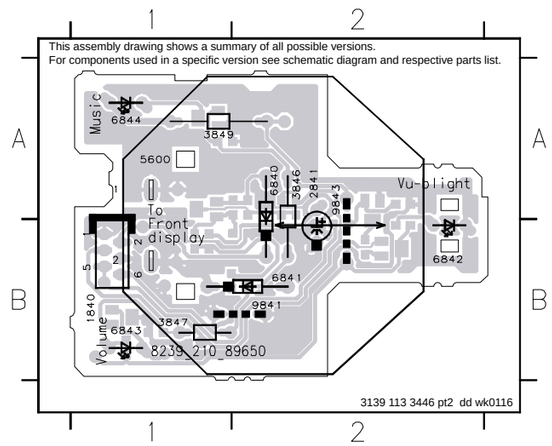


This assembly drawing shows a summary of all possible versions. For components used in a specific version see schematic diagram and respective parts list.

3139 113 3446 pt2 dd wk0116

VU METER BOARD - COMPONENT LAYOUT

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

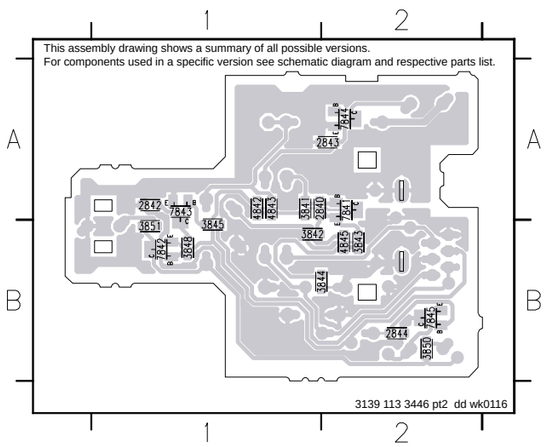


This assembly drawing shows a summary of all possible versions.
For components used in a specific version see schematic diagram and respective parts list.

3139 113 3446 pt2 dd wk0116

VU METER BOARD - CHIP LAYOUT

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

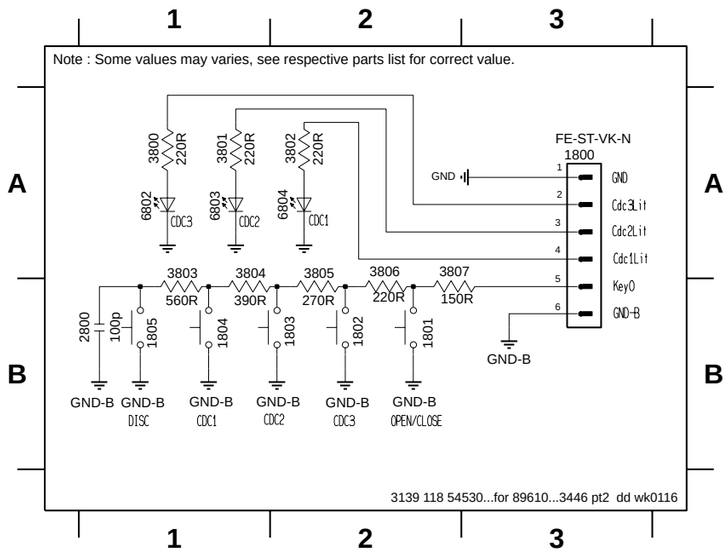


This assembly drawing shows a summary of all possible versions.
For components used in a specific version see schematic diagram and respective parts list.

3139 113 3446 pt2 dd wk0116

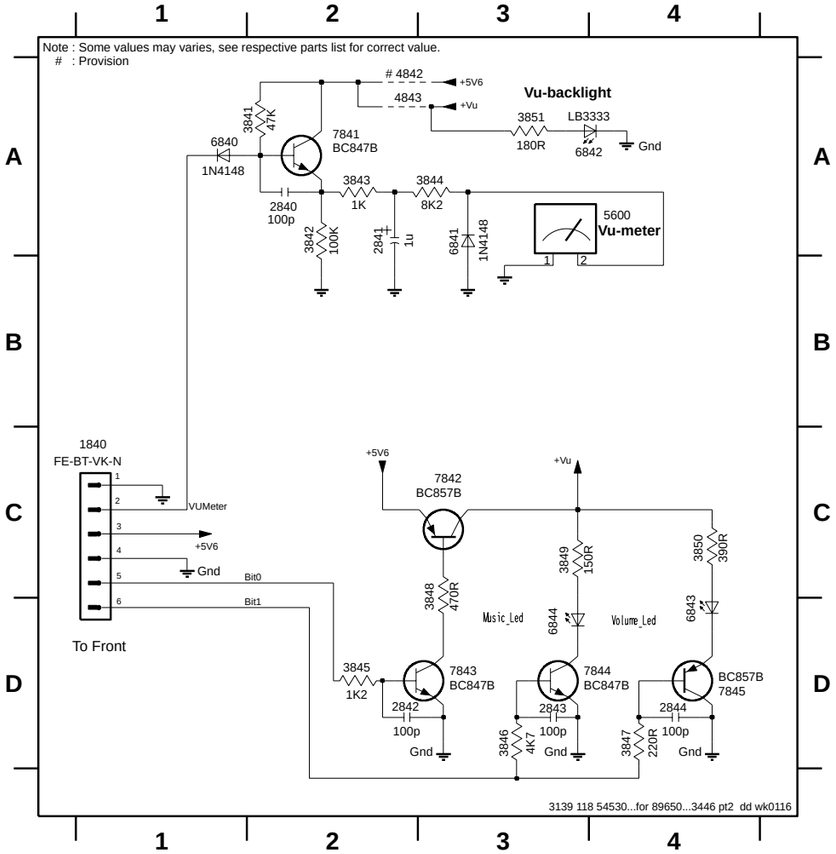
KEY-CDC BOARD - CIRCUIT DIAGRAM

1800 A3 1802 B2 1804 B1 2800 B1 3801 A1 3803 A1 3805 A2 3807 A2 6803 A1
1801 B2 1803 B2 1805 B1 3800 A1 3802 A2 3804 A1 3806 A2 6802 A1 6804 A2



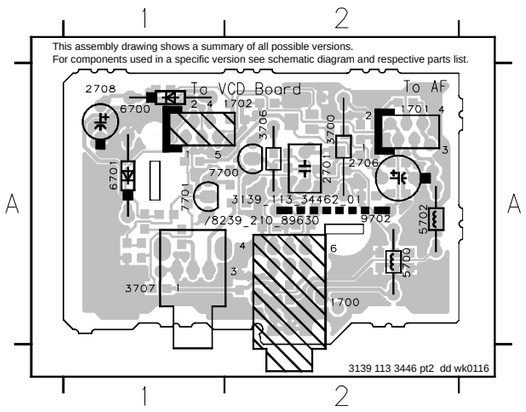
VU METER BOARD - CIRCUIT DIAGRAM

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



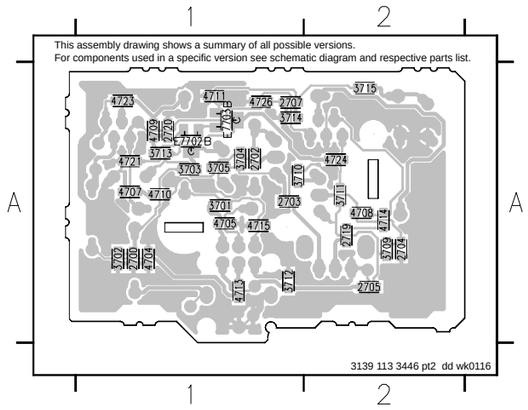
KARAOKE BOARD - COMPONENT LAYOUT

1700 A2 2701 A2 3700 A2 5700 A2 6701 A1 9702 A2
1701 A2 2706 A2 3706 A2 5702 A2 7700 A1
1702 A2 2708 A1 3707 A1 6700 A1 7701 A1



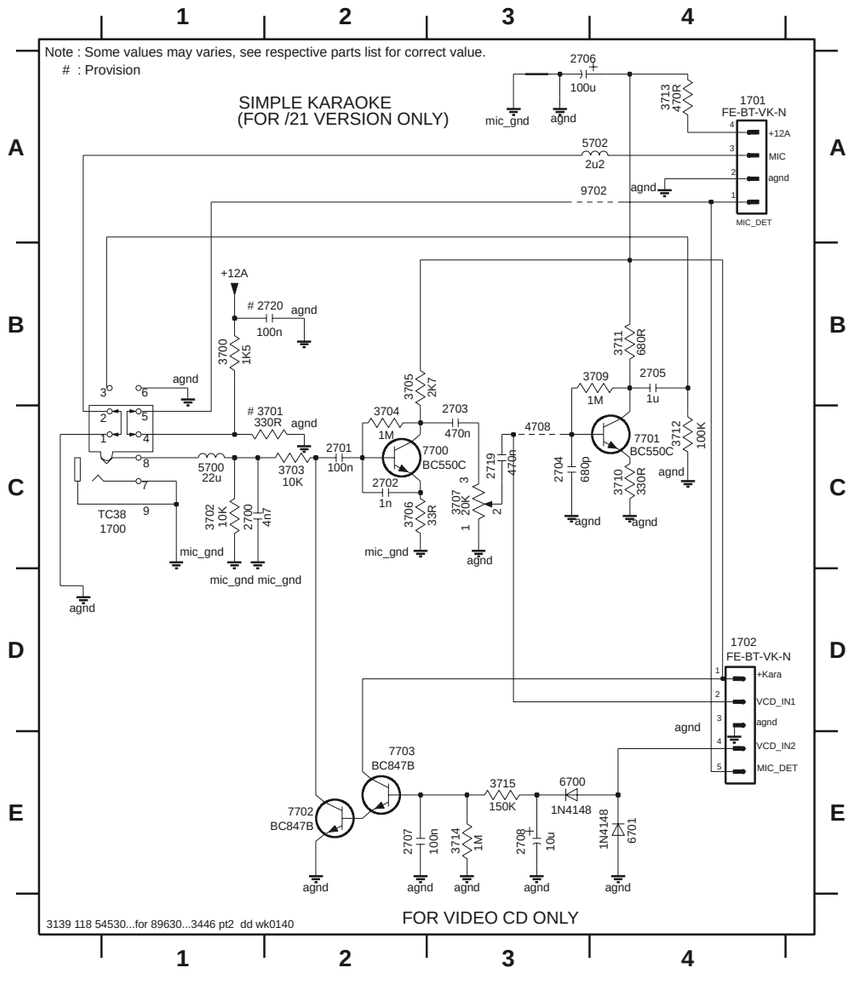
KARAOKE BOARD - CHIP LAYOUT

2700 A1 2719 A2 3705 A1 3714 A1 4709 A1 4721 A1
2702 A1 2720 A1 3709 A2 3715 A2 4710 A1 4723 A1
2703 A1 3701 A1 3710 A1 4704 A1 4711 A1 4724 A2
2704 A2 3702 A1 3711 A2 4705 A1 4713 A1 4726 A1
2705 A2 3703 A1 3712 A1 4707 A1 4714 A2 7702 A1
2707 A1 3704 A1 3713 A1 4708 A2 4715 A2 7703 A1



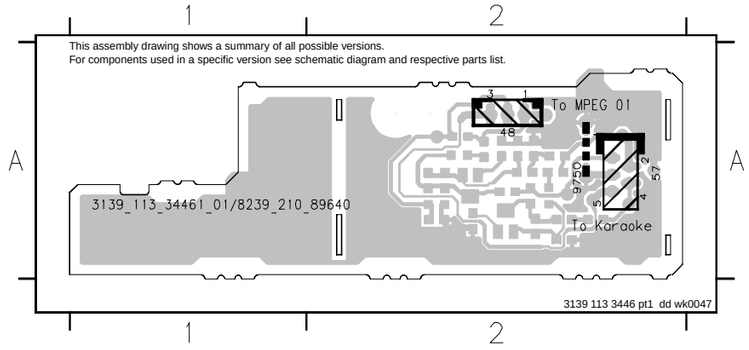
KARAOKE BOARD - CIRCUIT DIAGRAM

1700 C1	2700 C1	2703 C3	2706 A3	2719 C3	3701 C2	3704 C2	3707 C3	3711 B4	3714 E3	5700 C1	6701 E4	7702 E2
1701 A4	2701 C2	2704 C3	2707 E2	2720 B2	3702 C1	3705 B2	3709 B4	3712 C4	3715 E3	5702 A4	7700 C2	7703 E2
1702 D4	2702 C2	2705 B4	2708 E3	3700 B1	3703 C2	3706 C2	3710 C4	3713 A4	4708 C3	6700 E3	7701 C4	9702 A4



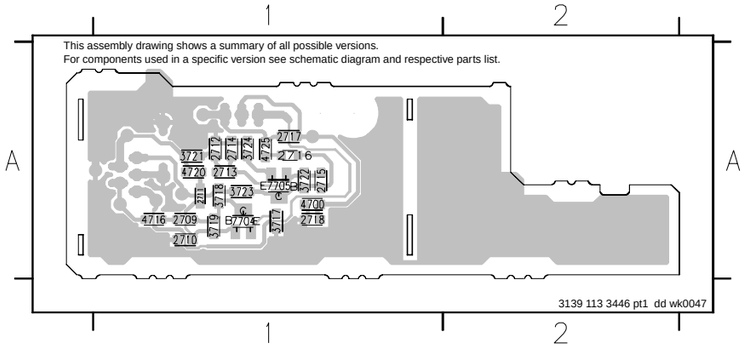
VCD INTERFACE BOARD - COMPONENT LAYOUT

48 A2 57 A2 9750 A2



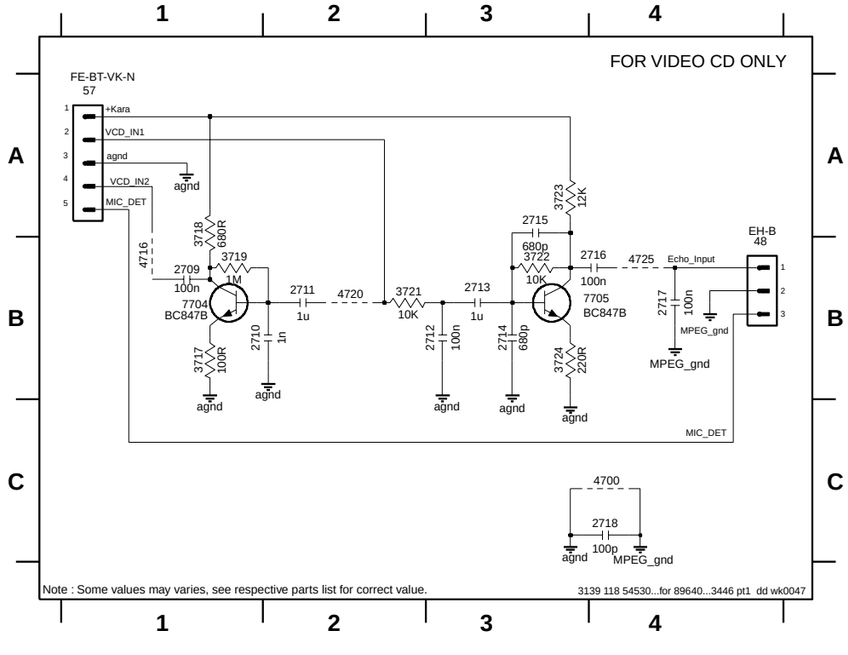
VCD INTERFACE BOARD - CHIP LAYOUT

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



VCD INTERFACE BOARD - CIRCUIT DIAGRAM

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



5-6

ELECTRICAL PARTS LIST - FRONT CONTROL BOARD

ELECTRICAL PARTS LIST - FRONT CONTROL BOARD

MISCELLANEOUS

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

CAPACITORS

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

RESISTORS

3606	4822 051 30103	10k 5% 0,062W
3607	4822 051 30103	10k 5% 0,062W
3610	4822 051 30151	150R 5% 0,062W
3611	4822 051 30221	220R 5% 0,062W
3612	4822 051 30271	270R 5% 0,062W
3613	4822 051 30391	390R 5% 0,062W
3614	4822 051 30561	560R 5% 0,062W
3615	4822 117 12968	820R 5% 0,62W
3616	4822 117 11817	1k2 1% 1/16W
3617	4822 117 12903	1k8 1% 0,063W
3618	4822 116 52263	2k7 5% 0,5W
3619	4822 051 30472	4k7 5% 0,062W
3620	4822 051 30103	10k 5% 0,062W
3621	4822 051 30121	120R 5% 0,062W
3622	4822 051 30121	120R 5% 0,062W
3623	4822 051 30121	120R 5% 0,062W
3624	4822 051 30121	120R 5% 0,062W
3630	4822 051 30151	150R 5% 0,062W
3631	4822 051 30221	220R 5% 0,062W
3632	4822 051 30271	270R 5% 0,062W
3633	4822 051 30391	390R 5% 0,062W
3634	4822 051 30561	560R 5% 0,062W
3635	4822 117 12968	820R 5% 0,62W
3636	4822 117 11817	1k2 1% 1/16W
3637	4822 117 12903	1k8 1% 0,063W
3638	4822 051 30272	2k7 5% 0,062W
3639	4822 051 30472	4k7 5% 0,062W
3640	4822 051 30103	10k 5% 0,062W
3646	4822 051 30181	180R 5% 0,062W
3651	4822 051 30221	220R 5% 0,062W
3652	4822 051 30221	220R 5% 0,062W
3653	4822 051 30271	270R 5% 0,062W
3654	4822 051 30121	120R 5% 0,062W
3655	4822 051 30102	1k 5% 0,062W
3800	4822 116 83872	220R 5% 0,5W
3801	4822 116 83872	220R 5% 0,5W
3802	4822 116 83872	220R 5% 0,5W
3803	4822 051 30561	560R 5% 0,062W
3804	4822 051 30391	390R 5% 0,062W
3805	4822 051 30271	270R 5% 0,062W
3806	4822 051 30221	220R 5% 0,062W
3807	4822 051 30151	150R 5% 0,062W
3841	4822 117 12925	47k 1% 0,063W
3842	4822 117 13632	100k 1% 0,62W
3843	4822 051 30102	1k 5% 0,062W
3844	4822 117 12902	8k2 1% 0,063W
3845	4822 117 11817	1k2 1% 1/16W
3846	4822 116 52283	4k7 5% 0,5W
3847	4822 116 83872	220R 5% 0,5W
3848	4822 051 30471	470R 5% 0,062W
3849	4822 116 83868	150R 5% 0,5W
3850	4822 051 30391	390R 5% 0,062W
3851	4822 051 30181	180R 5% 0,062W
3860	4822 051 30101	100R 5% 0,062W
3861	4822 051 30103	10k 5% 0,062W
3862	4822 050 11002	1k 1% 0,4W
4500	4822 051 30008	0R Jumper 0603
4600	4822 051 30008	0R Jumper 0603
4601	4822 051 30008	0R Jumper 0603
4602	4822 051 30008	0R Jumper 0603
4603	4822 051 30008	0R Jumper 0603
4604	4822 051 30008	0R Jumper 0603
4605	4822 051 30008	0R Jumper 0603
4606	4822 051 30008	0R Jumper 0603
4607	4822 051 30008	0R Jumper 0603
4627	4822 051 30008	0R Jumper 0603
4628	4822 051 30008	0R Jumper 0603
4843	4822 051 30008	0R Jumper 0603
4845	4822 051 30008	0R Jumper 0603

COILS & FILTERS

5600	3139 110 53000	METER VU P-47SI-W WHITE

DIODES

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

TRANSISTORS & INTEGRATED CIRCUITS

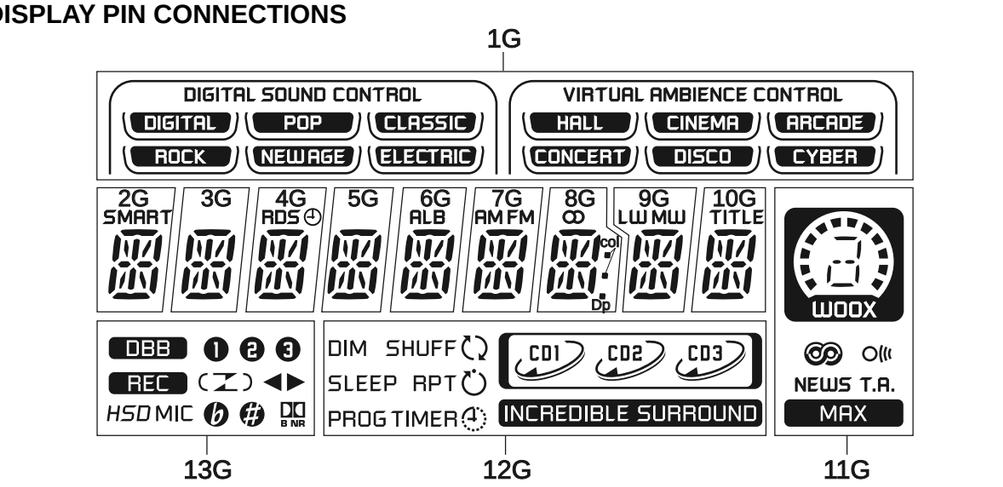
7602	5322 130 60159	BC847B
7800	9322 155 22667	TSOP2236ZC1
7841	5322 130 60159	BC847B
7842	4822 130 60373	BC857B
7843	5322 130 60159	BC847B
7844	5322 130 60159	BC847B
7845	4822 130 60373	BC857B

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

FRONT DISPLAY BOARD

TABLE OF CONTENTS

FTD DISPLAY PIN CONNECTIONS



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

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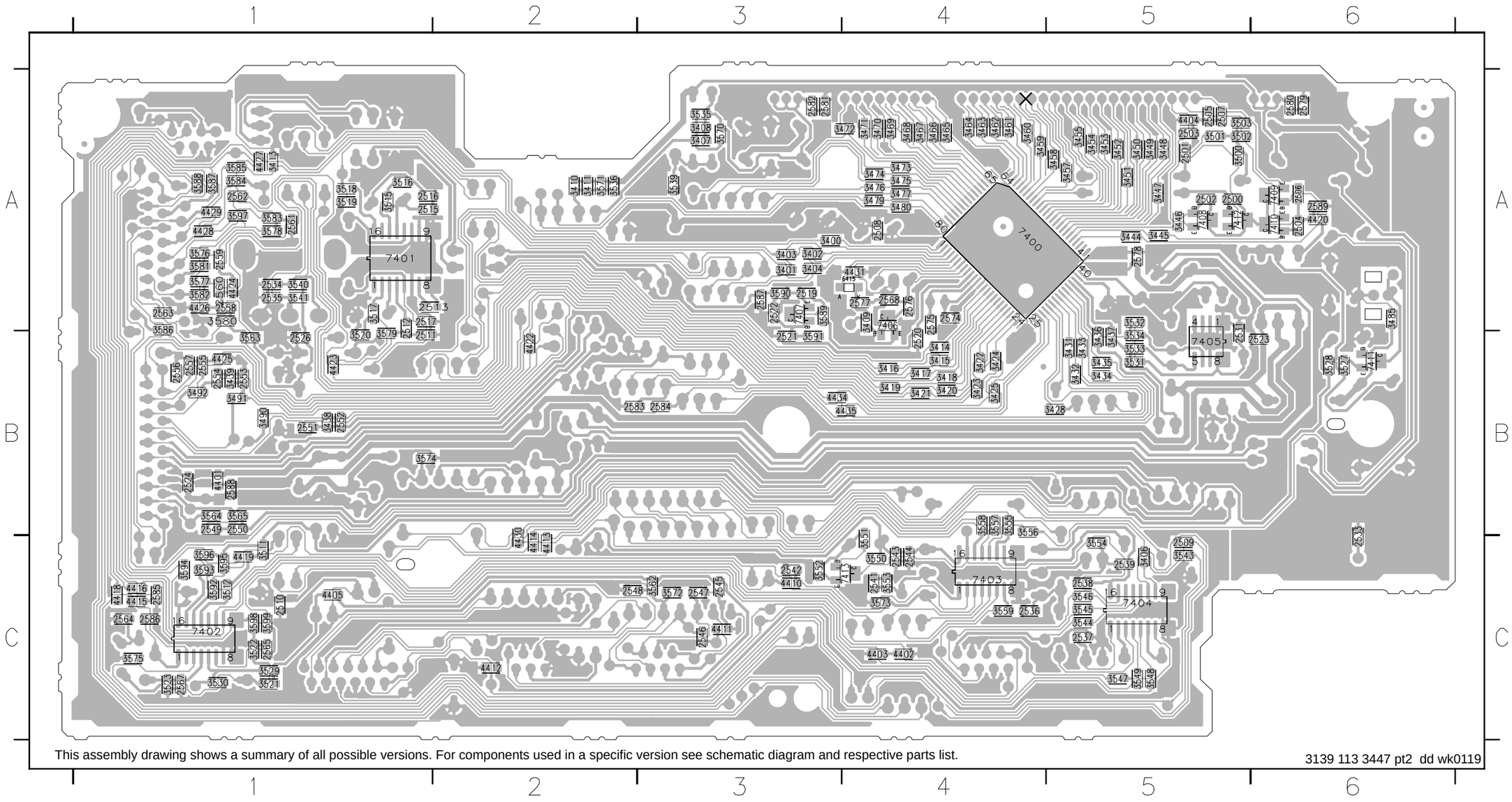
FRONT DISPLAY BOARD - CHIP LAYOUT

2500 A5 2512 A1 2531 B5 2545 C3 2557 B1 2575 A4 2587 A3 3410 A2 3423 B4 3439 B1 3455 A5 3468 A4 3485 A6 3517 A1 3532 A5 3547 C5 3559 C4 3577 A1 3589 A3 4402 C4 4419 C1 4434 B3 7409 A6
2501 A5 2513 A2 2533 C6 2546 C3 2558 A1 2576 A4 2588 B1 3411 A2 3424 B4 3444 A5 3457 A5 3469 A4 3490 B1 3518 A1 3533 B5 3548 C5 3562 C3 3578 A1 3590 A3 4403 C4 4420 A6 4435 B4 7410 A6
2502 A5 2515 A1 2534 A1 2547 C3 2559 A1 2577 A4 2589 A6 3413 A1 3425 B4 3445 A5 3458 A5 3470 A4 3491 B1 3519 A1 3534 B5 3549 C5 3563 B1 3579 B1 3591 B3 4404 A5 4422 B2 6415 A4 7411 B6
2503 A5 2516 A1 2535 A1 2548 C2 2560 A1 2578 A5 3400 A3 3414 B4 3428 B5 3446 A5 3459 A4 3471 A4 3492 B1 3520 B1 3535 A3 3550 C4 3564 B1 3580 A1 3592 C1 4405 C1 4423 B1 7400 A4 7412 A5
2504 A6 2517 A1 2536 C4 2549 B1 2561 A1 2579 A6 3401 A3 3415 B4 3431 B5 3447 A5 3460 A4 3472 A4 3500 A5 3521 C1 3536 A2 3551 C4 3565 B1 3581 A1 3593 C1 4410 C3 4424 A1 7401 A1 7413 C4
2505 A5 2519 A3 2537 C5 2550 B1 2562 A1 2580 A6 3402 A3 3416 B4 3432 B5 3448 A5 3461 A4 3473 A4 3501 A5 3522 C1 3539 A3 3552 C3 3570 A3 3582 A1 3594 C1 4411 C3 4425 B1 7402 C1
2506 A6 2520 B4 2538 C5 2551 B1 2563 A1 2581 A3 3403 A3 3417 B4 3433 B5 3449 A5 3462 A4 3474 A4 3502 A5 3523 C1 3540 A1 3553 C4 3571 A2 3583 A1 3595 C1 4412 C2 4426 A1 7403 C4
2507 A5 2521 B3 2539 C5 2552 B1 2564 C1 2582 A3 3404 A3 3418 B4 3434 B5 3450 A5 3463 A4 3475 A4 3503 A5 3527 B6 3541 A1 3554 C5 3572 C3 3584 A1 3596 C1 4413 C2 4427 A1 7404 C5
2508 A4 2522 A3 2541 C4 2553 B1 2565 C1 2583 B2 3406 C5 3419 B4 3435 B5 3451 A5 3464 A4 3476 A4 3511 C1 3528 B6 3543 C5 3555 B4 3573 C4 3585 A1 3597 A1 4414 C2 4428 A1 7405 B5
2509 C5 2523 B6 2542 C3 2554 B1 2567 C1 2584 B3 3407 A3 3420 B4 3436 B5 3452 A5 3465 A4 3477 A4 3512 C1 3529 C1 3544 C5 3556 B4 3574 B1 3586 A1 3598 C1 4415 C1 4429 A1 7406 A4
2510 C1 2524 B1 2543 C4 2555 B1 2568 A4 2585 C1 3408 A3 3421 B4 3437 B5 3453 A5 3466 A4 3479 A4 3515 A1 3530 C1 3545 C5 3557 B4 3575 C1 3587 A1 3599 C1 4416 C1 4430 C2 7407 A3
2511 B1 2526 B1 2544 C4 2556 B1 2574 A4 2586 C1 3409 A4 3422 B4 3438 B1 3454 A5 3467 A4 3480 A4 3516 A1 3531 B5 3546 C5 3558 B4 3576 A1 3588 A1 4401 B1 4418 C1 4431 A4 7408 A5



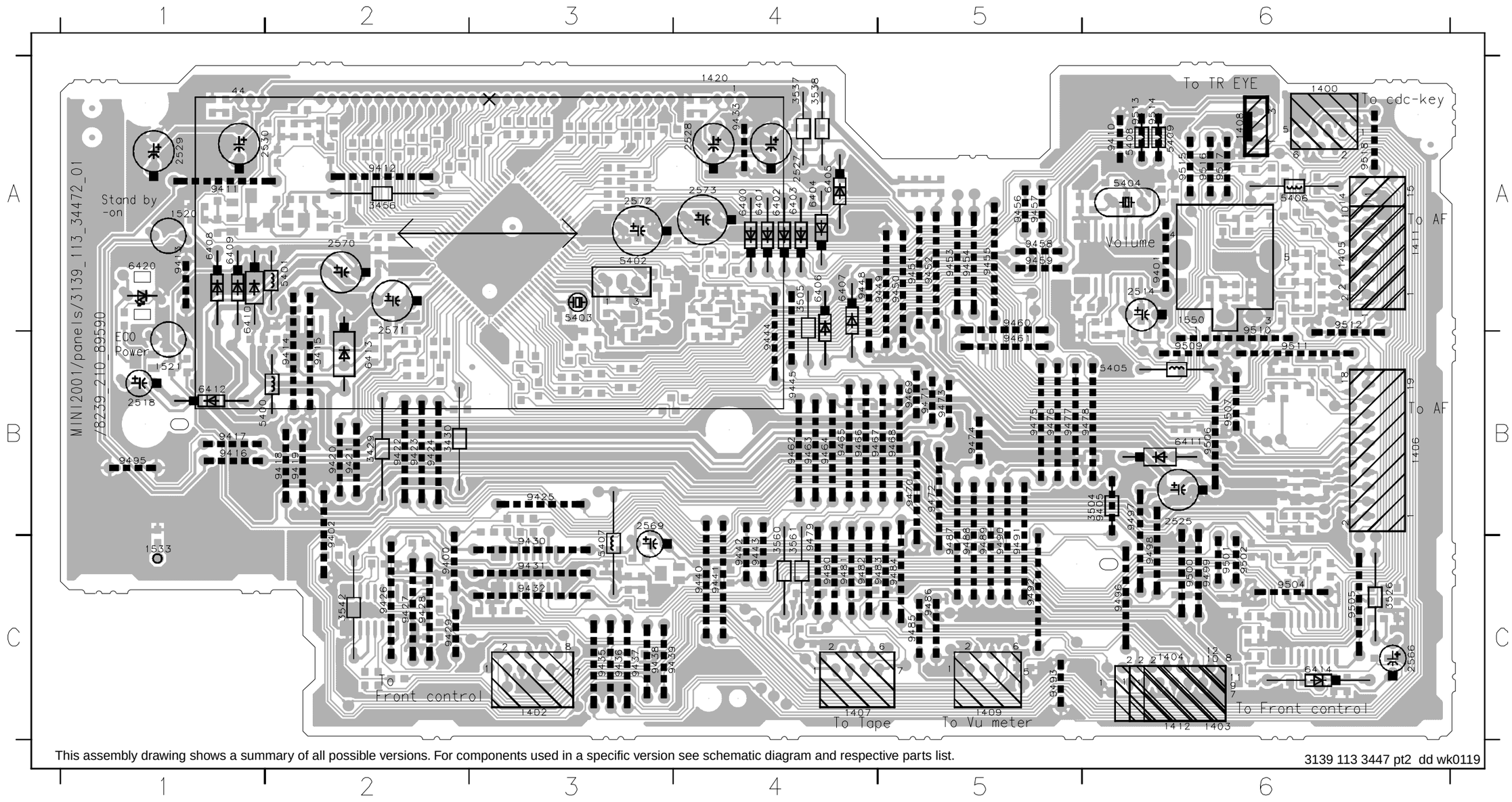
This assembly drawing shows a summary of all possible versions. For components used in a specific version see schematic diagram and respective parts list.

3139 113 3447 pt2 dd wk0119

6-3

FRONT DISPLAY BOARD - COMPONENT LAYOUT

1400 A6	1409 C5	2514 A6	2569 B3	3504 B6	5400 B1	5408 A6	6406 A4	6414 C6	9412 A2	9420 B2	9428 C2	9437 C3	9445 B4	9455 A5	9463 B4	9471 B5	9479 C4	9487 C5	9496 C6	9505 C6	9516 A6
1402 C3	1411 A6	2518 B1	2570 A2	3505 A4	5401 A2	5409 A6	6407 A4	6420 A1	9413 A1	9421 B2	9429 C2	9438 C3	9448 A4	9456 A5	9464 B4	9472 B5	9480 C4	9488 C5	9497 B6	9506 B6	9517 A6
1403 C6	1412 C6	2525 B6	2571 A2	3526 C6	5402 A3	6400 A4	6408 A1	9400 C2	9414 B2	9422 B2	9430 C3	9439 C3	9449 A5	9457 A5	9465 B4	9473 B5	9481 C4	9489 C5	9498 C6	9507 B6	9518 A6
1404 C6	1420 A4	2527 A4	2572 A3	3537 A4	5403 A3	6401 A4	6409 A1	9401 A6	9415 B2	9423 B2	9431 C3	9440 C4	9450 A5	9458 A5	9466 B4	9474 B5	9482 C4	9490 C5	9499 C6	9509 B6	
1405 A6	1520 A1	2528 A4	2573 A4	3538 A4	5404 A6	6402 A4	6410 A1	9402 B2	9416 B1	9424 B2	9432 C3	9441 C4	9451 A5	9459 A5	9467 B4	9475 B5	9483 C5	9491 C5	9500 C6	9510 A6	
1406 B6	1521 B1	2529 A1	3429 B2	3542 C2	5405 B6	6403 A4	6411 B6	9405 B6	9417 B1	9425 B3	9433 A4	9442 C4	9452 A5	9460 A5	9468 B5	9476 B5	9484 C5	9492 C5	9501 C6	9511 B6	
1407 C4	1533 C1	2530 A1	3430 B2	3560 C4	5406 A6	6404 A4	6412 B1	9410 A6	9418 B2	9426 C2	9435 C3	9443 C4	9453 A5	9461 B5	9469 B5	9477 B5	9485 C5	9493 C5	9502 C6	9512 A6	
1408 A6	1550 A6	2566 C6	3456 A2	3561 C4	5407 C3	6405 A4	6413 B2	9411 A1	9419 B2	9427 C2	9436 C3	9444 B4	9454 A5	9462 B4	9470 B5	9478 B6	9486 C5	9495 B1	9504 C6	9515 A6	



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

3139 113 3447 pt2 dd wk0119

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FRONT DISPLAY BOARD - CIRCUIT DIAGRAM

1400 D1	1408 F1	1533 J16	2505 B6	2512 I1	2519 J10	2526 J13	2534 J17	2542 C15	2549 C19	2556 E19	2563 G20	2570 C13	2577 H10	2584 A18	3401 F10	3409 G10	3417 F12	3424 F13	3433 D13	3444 C13	3451 C11	3458 C10	3465 C9	3472 D9	3480 F9	3502 B6	3516 H3	3523 H8	3532 H14	3539 I15	3546 H16	3553 D15	3560 A18	3571 J14	3578 F19	3585 H19	3592 E7	3599 G4	5404 H3	6401 E8	6408 I12	6415 F10	7405 H12	7412 B4
1402 I18	1409 G1	1550 J16	2506 A7	2513 I1	2520 I10	2527 J14	2535 J17	2543 B16	2550 C19	2557 E19	2564 H7	2571 C14	2578 C13	2585 G7	3402 F10	3410 J14	3418 F12	3425 F13	3434 D13	3445 C12	3452 C11	3459 C10	3466 D9	3473 E9	3485 J7	3503 B7	3517 I5	3526 H7	3533 H13	3540 I17	3547 G16	3554 D14	3561 A18	3572 B20	3579 F19	3586 H18	3593 E7	4401 D18	5405 H4	6402 E8	6409 C14	6420 J8	7406 G11	7413 E15
1403 J20	1411 F20	2500 A3	2507 B7	2514 J1	2521 J10	2528 I14	2536 G15	2544 B17	2551 D19	2558 G18	2565 G4	2572 F9	2579 B9	2586 G7	3403 F10	3411 J14	3419 F12	3428 E13	3435 D13	3446 C12	3453 C11	3460 C10	3467 D9	3474 E9	3490 D20	3504 E8	3518 J5	3527 I8	3534 H13	3541 I17	3548 G16	3555 D16	3562 A19	3573 E5	3580 F20	3587 H19	3594 E7	4430 K20	5406 G19	6403 E8	6410 B14	7400 C9	7407 J10	9400 K19
1404 I20	1412 K20	2501 B4	2508 F8	2515 H3	2522 J10	2529 K14	2537 G15	2545 B19	2552 D19	2559 G19	2566 H7	2573 F9	2580 B9	2587 I10	3404 F10	3413 F9	3420 F12	3429 E13	3436 D13	3447 C12	3454 C11	3461 C10	3468 D9	3475 E9	3491 E20	3505 E8	3519 J5	3528 I9	3535 I14	3542 G16	3549 G16	3556 D16	3563 F18	3574 F8	3581 G20	3588 I19	3595 D7	5400 G13	5407 F15	6404 E8	6411 I12	7401 H1	7408 B5	9405 E8
1405 F20	1420 A10	2502 A4	2509 H17	2516 H4	2523 J12	2530 J14	2538 F16	2546 B19	2553 E19	2560 G19	2567 H9	2574 G11	2581 B13	2588 C19	3406 H16	3414 F11	3421 F12	3430 E13	3437 D13	3448 C12	3455 C11	3462 C10	3469 D9	3476 E9	3492 E20	3511 D7	3520 J5	3529 I11	3536 J14	3543 H16	3550 E16	3557 C16	3564 C19	3575 G6	3582 G20	3589 I10	3596 D7	5401 C14	5408 E1	6405 I16	6412 I8	7402 D5	7409 B7	
1406 C20	1520 G7	2503 B5	2510 D5	2517 H5	2524 J12	2531 H14	2539 F16	2547 B19	2554 E19	2561 G19	2568 G10	2575 G11	2582 B13	2589 I13	3407 I14	3415 F11	3422 F12	3431 E13	3438 F18	3449 C12	3456 C11	3463 C10	3470 D9	3477 E9	3500 B4	3512 E7	3521 H7	3530 J11	3537 I14	3544 H16	3551 E16	3558 C16	3565 C20	3576 F18	3583 G19	3590 J10	3597 F18	5402 F11	5409 F1	6406 I10	6413 C14	7403 B15	7410 B6	
1407 A20	1521 J9	2504 A6	2511 I1	2518 J8	2525 J12	2533 J15	2541 D14	2548 B19	2555 E19	2562 F19	2569 E16	2576 G11	2583 A18	3400 F9	3408 I14	3416 F12	3423 F13	3432 E13	3439 F18	3450 C12	3457 C11	3464 C10	3471 D9	3479 E9	3501 B5	3515 H3	3522 H7	3531 H13	3538 J14	3545 H16	3552 E16	3559 C16	3570 I14	3577 F19	3584 G20	3591 J10	3598 F5	5403 F11	6400 E8	6407 F1	6414 H8	7404 F15	7411 J8	

Model	Option_R Ohms (3530)
FW-C500/37	180R
FW-C550/37	470R
FW-C700/37	820R
FW-C700_C717/34	1K2
FW-C700_C717/22	1K8
FW-C720/21	820R
FW-P750/37	2K7
FW-P750/22/34	3K9
FW-C780/21/22/30/37	5K6
FW-C780/34	8K2
FW-C780/33	12K

Model	Option_R Ohms (3530)
FW-C555/21/37	470R
FW-C700/21	820R
FW-C785/22	5K6
FW-C785/34	8K2
FW-C788/21/21M	5K6
FW-C788/30/37	5K6
FW-C788/33	12K
FW-V520/21M	5K6
FW-V780/21M	27K
FW-C798/21/37	5K6

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

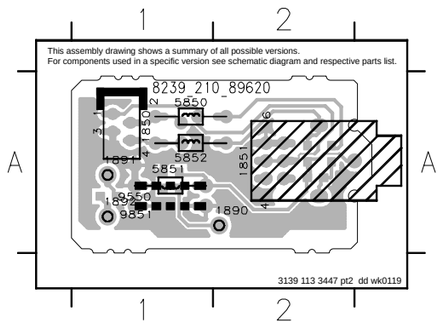
Items	For 30-70W Set	Others
3407 , 3408 , 3410 , 3411 , 3535 , 3536 , 3570 , 3571	4R7	10R

Items	VCD	Non-VCD
3479 , 3480 , 3422	100R	470R

VOL RE

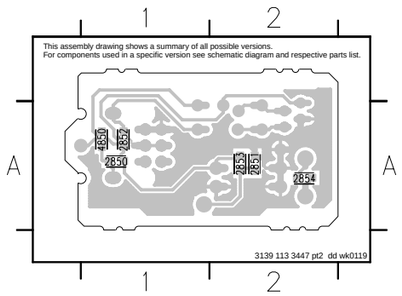
HEADPHONE BOARD - COMPONENT LAYOUT

1850 A1 1891 A1 5851 A1 9851 A1
1851 A2 1892 A1 5852 A1
1890 A2 5850 A1 9550 A1



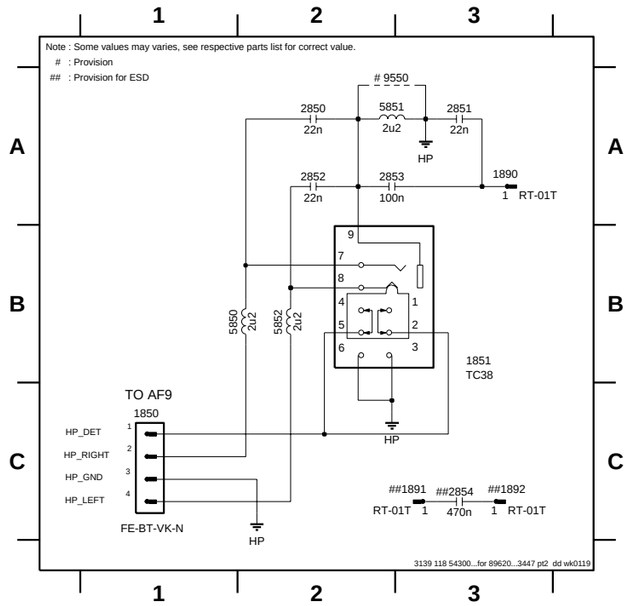
HEADPHONE BOARD - CHIP LAYOUT

2850 A1 2852 A1 2854 A2
2851 A2 2853 A2 4850 A1



HEADPHONE BOARD - CIRCUIT DIAGRAM

1850 C1 1890 A3 1892 C3 2851 A3 2853 A2 5850 B1 5852 B2
1851 B3 1891 C3 2850 A2 2852 A2 2854 C3 5851 A2 9550 A2



ELECTRICAL PARTS LIST - FRONT DISPLAY BOARD

MISCELLANEOUS

1400	4822 265 11207	Flex Connector 6P
1402	4822 265 11535	Flex Connector 8P
1405	2422 025 14541	Flex Connector 11P
1406	4822 265 11545	Flex Connector 19P
1407	4822 267 10956	Flex Connector 7P
1409	4822 265 11207	Flex Connector 6P
1412	4822 265 11208	Flex Connector 10P
1420	3139 110 52550	FTD Display
1520	4822 276 13775	Tact Switch
1521	4822 276 13775	Tact Switch
1550	4822 273 10365	Rotary Encoder 24P
1850	4822 267 10733	Flex Connector 4P
1851	4822 265 11529	Headphone Socket

CAPACITORS

2500	4822 122 31765	100pF 2% 63V
2501	4822 122 31765	100pF 2% 63V
2502	4822 122 31765	100pF 2% 63V
2503	4822 122 31765	100pF 2% 63V
2504	4822 122 31765	100pF 2% 63V
2505	4822 122 31765	100pF 2% 63V
2506	4822 122 31765	100pF 2% 63V
2507	4822 122 31765	100pF 2% 63V
2508	3198 024 44730	47nF Y5V 50V
2510	4822 126 14305	100nF 10% 16V

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ELECTRICAL PARTS LIST - FRONT DISPLAY BOARD

2511	4822 122 33777	47pF 5% 63V
2512	4822 126 14249	560pF 10% 50V
2513	4822 126 14249	560pF 10% 50V
2514	4822 124 22652	2,2µF 20% 50V
2515	4822 126 14226	82pF 5% 50V
2516	4822 122 33777	47pF 5% 63V
2517	4822 126 14305	100nF 10% 16V
2518	4822 124 11947	10µF 20% 16V /22
2519	5322 126 11583	10nF 10% 50V
2520	5322 126 11583	10nF 10% 50V
2521	5322 126 11583	10nF 10% 50V
2522	4822 126 14305	100nF 10% 16V
2523	4822 126 14305	100nF 10% 16V
2524	4822 126 14305	100nF 10% 16V
2525	4822 124 12233	47µF 20% 25V
2526	4822 126 14305	100nF 10% 16V
2527	4822 124 22726	4,7µF 35V
2528	4822 124 22726	4,7µF 35V
2529	4822 124 22726	4,7µF 35V
2530	4822 124 22726	4,7µF 35V
2531	3198 017 41050	1µF 10V
2533	4822 126 14305	100nF 10% 16V
2534	5322 126 11583	10nF 10% 50V
2535	5322 126 11583	10nF 10% 50V
2536	3198 016 36810	680pF 25V
2537	4822 126 13883	220pF 5% 50V
2538	4822 126 14305	100nF 10% 16V
2539	4822 126 14305	100nF 10% 16V
2541	4822 126 13883	220pF 5% 50V
2542	4822 126 13883	220pF 5% 50V
2543	4822 126 14305	100nF 10% 16V
2544	4822 126 14305	100nF 10% 16V
2545	4822 126 13879	220nF +80/-20% 16V
2546	4822 126 13883	220pF 5% 50V
2547	4822 126 13883	220pF 5% 50V
2548	4822 126 13883	220pF 5% 50V
2549	4822 122 33741	10pF 10% 50V
2550	4822 122 33741	10pF 10% 50V
2551	4822 122 33777	47pF 5% 63V
2552	4822 122 33777	47pF 5% 63V
2553	4822 122 33777	47pF 5% 63V
2554	4822 122 33741	10pF 10% 50V
2555	4822 126 14305	100nF 10% 16V
2556	4822 122 33741	10pF 10% 50V
2557	4822 122 33741	10pF 10% 50V
2558	4822 122 31765	100pF 2% 63V
2559	4822 122 31765	100pF 2% 63V
2560	4822 122 31765	100pF 2% 63V
2561	4822 122 31765	100pF 2% 63V
2562	3198 016 31020	1nF 25V
2563	5322 126 11583	10nF 10% 50V
2564	5322 126 11578	1nF 10% 50V
2565	4822 122 33777	47pF 5% 63V
2566	4822 124 22651	1µF 20% 50V
2567	4822 126 13879	220nF +80/-20% 16V
2568	4822 126 14223	2,2pF 50V
2569	4822 124 11947	10µF 20% 16V
2570	4822 124 12233	47µF 20% 25V
2571	4822 124 12233	47µF 20% 25V
2572	3198 028 44790	47µF 20% 35V
2573	3198 028 44790	47µF 20% 35V
2574	4822 122 33761	22pF 5% 50V
2575	4822 122 33761	22pF 5% 50V
2576	4822 122 33761	22pF 5% 50V
2577	4822 126 11671	33pF
2578	4822 126 14305	100nF 10% 16V
2579	4822 126 13883	220pF 5% 50V
2580	4822 126 13883	220pF 5% 50V
2581	4822 126 13883	220pF 5% 50V
2582	4822 126 13883	220pF 5% 50V
2583	4822 122 31765	100pF 2% 63V
2584	4822 122 31765	100pF 2% 63V
2585	4822 126 13883	220pF 5% 50V
2586	4822 126 13883	220pF 5% 50V
2587	3198 017 41050	1µF 10V
2588	4822 126 13879	220nF +80/-20% 16V
2589	3198 017 41050	1µF 10V
2850	4822 126 14494	22nF 10% 25V
2851	4822 126 14494	22nF 10% 25V
2852	4822 126 14494	22nF 10% 25V
2853	4822 126 14305	100nF 10% 16V

RESISTORS

3400	4822 051 30471	470R 5% 0,062W
3401	4822 051 30471	470R 5% 0,062W
3402	4822 051 30471	470R 5% 0,062W
3403	4822 051 30471	470R 5% 0,062W
3404	4822 051 30471	470R 5% 0,062W
3407	4822 051 20478	4R7 5% 0,1W
3408	4822 051 20478	4R7 5% 0,1W
3409	4822 117 12925	47k 1% 0,063W
3410	4822 051 20478	4R7 5% 0,1W
3411	4822 051 20478	4R7 5% 0,1W
3413	4822 051 30105	1M 5% 0,062W
3414	4822 051 30471	470R 5% 0,062W
3415	4822 051 30471	470R 5% 0,062W
3416	4822 051 30471	470R 5% 0,062W
3417	4822 051 30471	470R 5% 0,062W
3418	4822 051 30471	470R 5% 0,062W
3419	4822 051 30471	470R 5% 0,062W
3420	4822 051 30471	470R 5% 0,062W
3421	4822 051 30471	470R 5% 0,062W
3422	4822 051 30471	470R 5% 0,062W
3423	4822 051 30471	470R 5% 0,062W
3424	4822 051 30471	470R 5% 0,062W
3425	4822 051 30471	470R 5% 0,062W
3428	4822 051 30471	470R 5% 0,062W
3429	4822 116 83883	470R 5% 0,5W
3430	4822 116 83883	470R 5% 0,5W

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ELECTRICAL PARTS LIST - FRONT DISPLAY BOARD

ELECTRICAL PARTS LIST - FRONT DISPLAY BOARD

RESISTORS

3431	4822 051 30471	470R 5% 0,062W	3504	4822 116 83883	470R 5% 0,5W	3565	4822 051 30221	220R 5% 0,062W
3432	4822 051 30471	470R 5% 0,062W	3505	4822 116 83883	470R 5% 0,5W	3570	4822 051 20478	4R7 5% 0,1W
3433	4822 051 30471	470R 5% 0,062W	3511	4822 051 30272	2k7 5% 0,062W	3571	4822 051 20478	4R7 5% 0,1W
3434	4822 051 30102	1k 5% 0,062W	3512	4822 051 30102	1k 5% 0,062W	3572	4822 051 30222	2k2 5% 0,062W
3435	4822 051 30471	470R 5% 0,062W	3515	4822 117 12891	220k 1%	3573	4822 051 30103	10k 5% 0,062W
3436	4822 051 30471	470R 5% 0,062W	3516	4822 051 30222	2k2 5% 0,062W	3574	4822 051 30103	10k 5% 0,062W
3437	4822 051 30471	470R 5% 0,062W	3517	4822 051 30103	10k 5% 0,062W	3576	4822 051 30103	10k 5% 0,062W
3438	4822 051 30222	2k2 5% 0,062W	3518	4822 051 30103	10k 5% 0,062W	3577	4822 051 30103	10k 5% 0,062W
3439	4822 051 30222	2k2 5% 0,062W	3519	4822 051 30103	10k 5% 0,062W	3578	4822 051 30103	10k 5% 0,062W
3444	4822 051 30471	470R 5% 0,062W	3520	4822 051 30103	10k 5% 0,062W	3579	4822 051 30103	10k 5% 0,062W
3445	4822 051 30471	470R 5% 0,062W	3521	4822 051 30684	680k 5% 0,062W	3580	4822 051 30102	1k 5% 0,062W
3446	4822 051 30471	470R 5% 0,062W	3522	4822 117 12925	47k 1% 0,063W	3581	4822 051 30102	1k 5% 0,062W
3447	4822 051 30471	470R 5% 0,062W	3523	4822 051 30474	470k 5% 0,062W	3582	4822 051 30102	1k 5% 0,062W
3448	4822 051 30471	470R 5% 0,062W	3524	4822 051 30109	10R 5% 0,062W	3583	4822 051 30223	22k 5% 0,062W
3449	4822 051 30471	470R 5% 0,062W	3526	4822 116 52244	15k 5% 0,5W	3584	4822 051 30102	1k 5% 0,062W
3450	4822 051 30471	470R 5% 0,062W	3527	4822 117 12968	820R 5% 0,62W	3585	4822 051 30334	330k 5% 0,062W
3451	4822 051 30471	470R 5% 0,062W	3528	4822 051 30103	10k 5% 0,062W	3586	4822 051 30102	1k 5% 0,062W
3452	4822 051 30471	470R 5% 0,062W	3529	4822 051 30272	2k7 5% 0,062W	3589	4822 051 30102	1k 5% 0,062W
3453	4822 051 30471	470R 5% 0,062W	3530	4822 117 12903	1k8 1% 0,063W /22	3590	4822 117 13632	100k 1% 0,62W
3454	4822 051 30471	470R 5% 0,062W	3531	4822 051 30103	10k 5% 0,062W	3591	4822 117 13632	100k 1% 0,62W
3455	4822 051 30471	470R 5% 0,062W	3532	4822 051 30103	10k 5% 0,062W	3592	4822 051 30102	1k 5% 0,062W
3456	4822 116 83883	470R 5% 0,5W	3533	4822 051 30102	1k 5% 0,062W	3593	4822 051 30102	1k 5% 0,062W
3457	4822 051 30471	470R 5% 0,062W	3534	4822 051 30102	1k 5% 0,062W	3594	4822 051 30102	1k 5% 0,062W
3458	4822 051 30471	470R 5% 0,062W	3535	4822 051 20478	4R7 5% 0,1W	3595	4822 051 30272	2k7 5% 0,062W
3459	4822 051 30471	470R 5% 0,062W	3536	4822 051 20478	4R7 5% 0,1W	3596	4822 051 30272	2k7 5% 0,062W
3460	4822 051 30471	470R 5% 0,062W	3537	4822 116 52206	120R 5% 0,5W	3598	4822 051 30103	10k 5% 0,062W
3461	4822 051 30471	470R 5% 0,062W	3538	4822 116 52206	120R 5% 0,5W	3599	4822 051 30471	470R 5% 0,062W
3462	4822 051 30471	470R 5% 0,062W	3539	4822 051 30223	22k 5% 0,062W	4401	4822 051 30008	0R Jumper 0603
3463	4822 051 30471	470R 5% 0,062W	3540	4822 051 30103	10k 5% 0,062W	4402	4822 051 30008	0R Jumper 0603
3464	4822 051 30471	470R 5% 0,062W	3541	4822 051 30103	10k 5% 0,062W	4403	4822 051 30008	0R Jumper 0603
3465	4822 051 30471	470R 5% 0,062W	3542	4822 116 83872	220R 5% 0,5W	4404	4822 051 30008	0R Jumper 0603
3466	4822 051 30471	470R 5% 0,062W	3543	4822 051 30221	220R 5% 0,062W	4410	4822 051 30008	0R Jumper 0603
3467	4822 051 30471	470R 5% 0,062W	3544	4822 051 30121	120R 5% 0,062W	4411	4822 051 30008	0R Jumper 0603
3468	4822 051 30471	470R 5% 0,062W	3545	4822 051 30121	120R 5% 0,062W	4412	4822 051 30008	0R Jumper 0603
3469	4822 051 30471	470R 5% 0,062W	3546	4822 051 30121	120R 5% 0,062W	4413	4822 051 30008	0R Jumper 0603
3470	4822 051 30471	470R 5% 0,062W	3547	4822 051 30121	120R 5% 0,062W	4414	4822 051 30008	0R Jumper 0603
3471	4822 051 30471	470R 5% 0,062W	3548	4822 051 30221	220R 5% 0,062W	4415	4822 051 30008	0R Jumper 0603
3472	4822 051 30471	470R 5% 0,062W	3549	4822 051 30221	220R 5% 0,062W	4416	4822 051 30008	0R Jumper 0603
3473	4822 051 30471	470R 5% 0,062W	3550	4822 051 30472	4k7 5% 0,062W	4418	4822 051 30008	0R Jumper 0603
3474	4822 051 30221	220R 5% 0,062W	3551	4822 051 30103	10k 5% 0,062W	4419	4822 051 30008	0R Jumper 0603
3475	4822 051 30221	220R 5% 0,062W	3552	4822 051 30103	10k 5% 0,062W	4420	4822 051 30008	0R Jumper 0603
3476	4822 051 30471	470R 5% 0,062W	3553	4822 051 30103	10k 5% 0,062W	4422	4822 051 30008	0R Jumper 0603
3477	4822 051 30471	470R 5% 0,062W	3554	4822 051 30103	10k 5% 0,062W	4423	4822 051 30008	0R Jumper 0603
3479	4822 051 30471	470R 5% 0,062W	3555	4822 051 30221	220R 5% 0,062W	4424	4822 051 30008	0R Jumper 0603
3480	4822 051 30471	470R 5% 0,062W	3556	4822 051 30121	120R 5% 0,062W	4425	4822 051 30008	0R Jumper 0603
3485	4822 117 12925	47k 1% 0,063W	3557	4822 051 30271	270R 5% 0,062W	4426	4822 051 30008	0R Jumper 0603
3490	4822 051 30471	470R 5% 0,062W	3558	4822 051 30221	220R 5% 0,062W	4427	4822 051 30008	0R Jumper 0603
3491	4822 051 30471	470R 5% 0,062W	3559	4822 051 30221	220R 5% 0,062W	4428	4822 051 30008	0R Jumper 0603
3492	4822 051 30471	470R 5% 0,062W	3560	4822 116 52175	100R 5% 0,5W	4429	4822 051 30008	0R Jumper 0603
3500	4822 117 12864	82k 5% 0,6W	3561	4822 116 52175	100R 5% 0,5W	4431	4822 051 30008	0R Jumper 0603
3501	4822 117 12864	82k 5% 0,6W	3562	4822 051 30103	10k 5% 0,062W	4434	4822 051 30008	0R Jumper 0603
3502	4822 117 12864	82k 5% 0,6W	3563	4822 051 30103	10k 5% 0,062W	4435	4822 051 30008	0R Jumper 0603
3503	4822 117 12864	82k 5% 0,6W	3564	4822 051 30221	220R 5% 0,062W	4850	4822 051 30008	0R Jumper 0603

COILS & FILTERS

5400	4822 157 62552	Coil 2,2µH 5%
5401	4822 157 62552	Coil 2,2µH 5%
5402	5322 242 73686	RES CER 12MHz
5403	2422 543 01069	RES XTL 32,768kHz
5404	4822 242 11033	RES XTL 4,332MHz
5405	4822 157 62552	Coil 2,2µH 5%
5406	4822 157 62552	Coil 2,2µH 5%
5407	4822 157 62552	Coil 2,2µH 5%
5408	4822 157 62552	Coil 2,2µH 5%
5409	4822 157 62552	Coil 2,2µH 5%
5850	4822 157 62552	Coil 2,2µH 5%
5851	4822 157 62552	Coil 2,2µH 5%
5852	4822 157 62552	Coil 2,2µH 5%

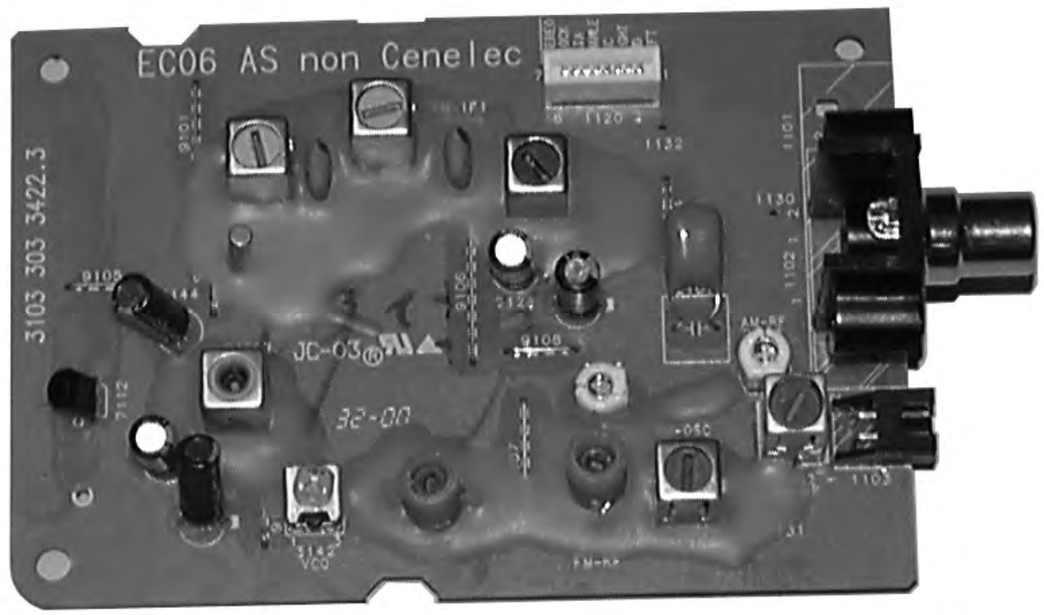
DIODES

6400	4822 130 30621	1N4148
6401	4822 130 30621	1N4148
6402	4822 130 30621	1N4148
6403	4822 130 30621	1N4148
6404	4822 130 30621	1N4148
6405	4822 130 34174	BZX79-B4V7
6406	4822 130 30621	1N4148
6407	4822 130 30621	1N4148
6408	4822 130 30621	1N4148
6409	4822 130 30621	1N4148
6410	4822 130 31878	1N4003G
6411	4822 130 31878	1N4003G
6412	4822 130 30621	1N4148
6413	4822 130 31878	1N4003G
6414	4822 130 30621	1N4148
6415	4822 130 11397	BAS316
6420	9322 167 73676	LTL-4221NLC-KA

TRANSISTORS & INTEGRATED CIRCUITS

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

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



ECO6 Tuner Board

version: ***SYSTEMS non-CENELEC***

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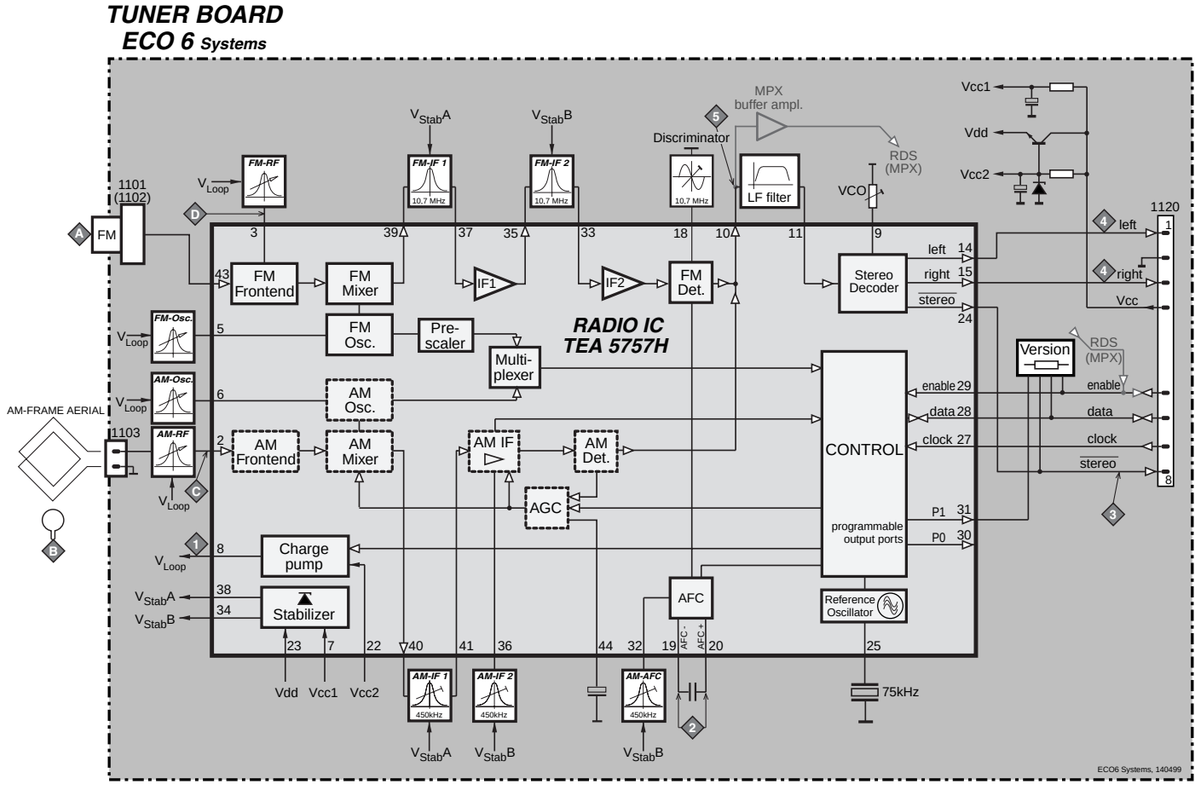
BLOCK DIAGRAM



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TUNER BOARD ECO6 / SYSTEMS NON CENELEC

VERSION PROGRAMMING COMPONENTS

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

☒ component mounted

VERSION DETECTION

DISCRIMINATOR

RDS only

MPX BUFFER AMPLIFIER

LEGEND

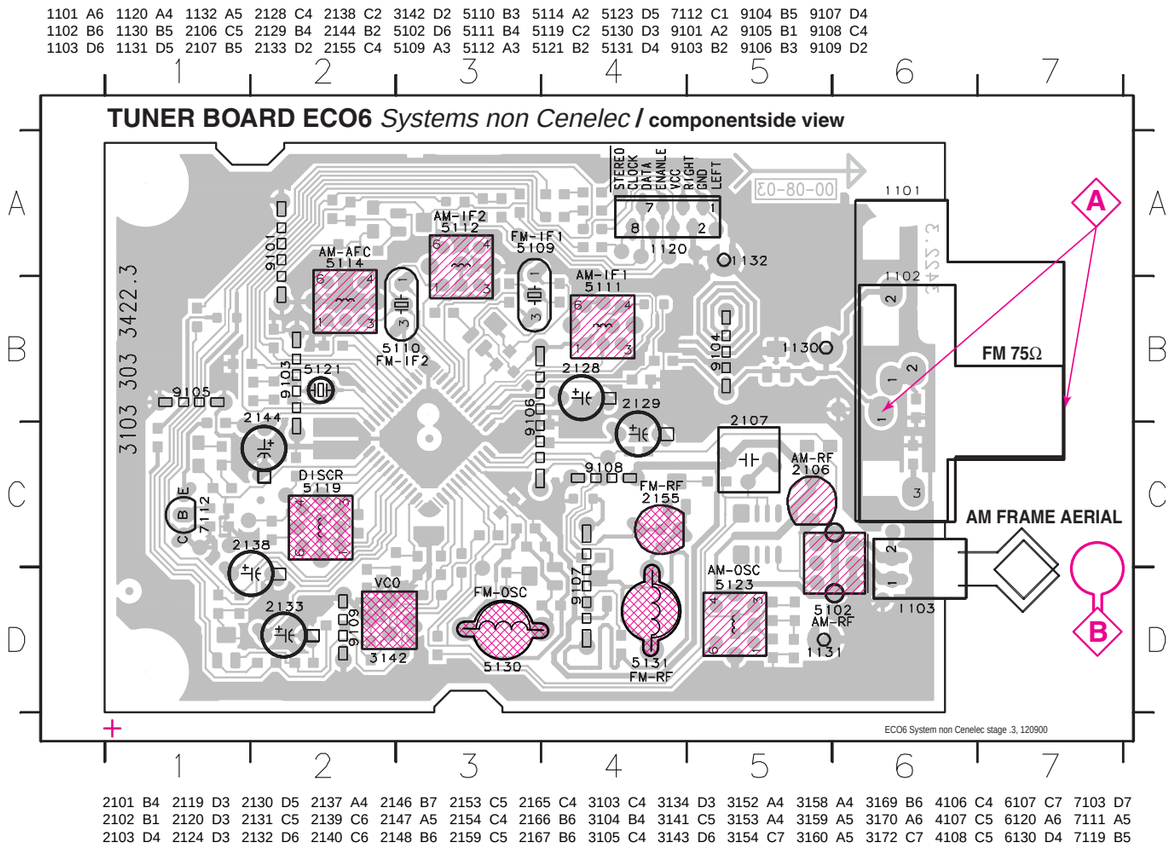
ⓟ...for provision only
USA ... for USA version only
E-EU ... for East European version only
J ... for Japanese version only

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

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

ECO6 Sys-non Cenelec, 000911

1101 A1
1102 B1
1103 F2
1120 E14
1130 A2
1131 B2
1132 G13
2101 B3
2102 B1
2103 C7
2104 B3
2105 A2
2106 F3
2107 F4
2119 H6
2120 G6
2124 H6
2125 H6
2126 F7
2127 E7
2128 C8
2129 C7
2130 F11
2131 G8
2132 G8
2133 G8
2134 H8
2135 H9
2136 G14
2137 G13
2138 F9
2139 G9
2140 G9
2141 F10
2143 G12
2144 G11
2145 F12
2146 E12
2147 E12
2148 E12
2149 H7
2150 A10
2152 E4
2153 E5
2154 D5
2155 D5
2159 F6
2161 C11
2163 D11
2164 F10
2165 C7
2166 E11
2167 E11
2169 H8
3101 E4
3102 D4
3103 C6
3104 A7
3105 B6
3132 G5
3134 H6
3141 E7
3142 E7
3143 G7
3144 H7
3145 F8
3146 G13
3152 G14
3153 G13
3154 G11
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
6103 B2
6105-1 F3
6105-2 G5
6106 C3
6107 G13
6120 C13
6130 E5
6131 D5
7101 C8
7102 C6
7103 H7
7111 C13
7112 G12
T102 B2
T103 B2
T105 F2
T106 F2
T109 B6
T110 F5
T111 F4
T112 F7
T113 A8
T114 B10
T115 A8
T116 F10
T117 G13
T118 G11
T120 F13
T121 F13
T122 F13
T123 E13
T124 G14
T125 F14
T126 F13
T127 F13
T128 D7
T140 F11
T141 F10
T142 F10



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 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	5130	◇1	8V ±0.2V
			87.5MHz (65.81MHz)	check		4.3V ±0.5V (1.2V ±0.5V)
MW FM/AM-version, 10kHz grid 530 - 1700kHz			1700kHz	5123		8V ±0.2V
			530kHz	check		1.1V ±0.4V
FM/MW-version, 9kHz grid 531 - 1602kHz			1602kHz	5123		6.9V ±0.2V
			531kHz	check		1.1V ±0.4V
LW 153 - 279kHz			279kHz	5122		8V ±0.2V
			153kHz	check		1.1V ±0.4V
MW FM/MW/LW- version, 9kHz grid 531 - 1602kHz			1602kHz	5123		8V ±0.2V
			531kHz	check		1.1V ±0.4V
FM IF						
FM	10.7MHz, 45mV continuous wave	◇D	IC 7101 21 shortcircuit to block AFC 2141	5119	◇2	0 ± 3 mV DC
FM RF						
FM 87.5 - 108MHz (65.81 - 74, 87.5 - 108MHz)	108MHz	◇A mod=1kHz Δf=±22.5kHz	108MHz	2155	◇4	MAX
	87.5MHz (65.81MHz)		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 Δf=±10kHz V_{RF} = 0.5mV (as low as possible)	IC 7101 36 220R 100nF	5111	◇5	max. f_o symmetric
			IC 7101 40 220R 100nF see remark 2)	5112		
AM AFC **MW**		◇C continuous wave V_{RF} = 2mV		5114	◇2	0 ± 2 mV DC
AM RF 3)						
MW 4) FM/MW/LW- and FM/MW-version (9kHz grid) 531 - 1602kHz	1494kHz	◇B Δf = ±30kHz V_{RF} as low as possible	1494kHz	2106	◇5	max. f_o symmetric
	558kHz		558kHz	5102		
LW	198kHz		198kHz	5103		
MW FM/AM-version, 10kHz grid 530 - 1700kHz	1500kHz		1500kHz	2106		
	560kHz		560kHz	5102		

ECO6, Sys + PA with frame aerial, 070799

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

Electrical Partslist *ECO6* *SYSTEMS NON-CENELEC*

7A-4

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

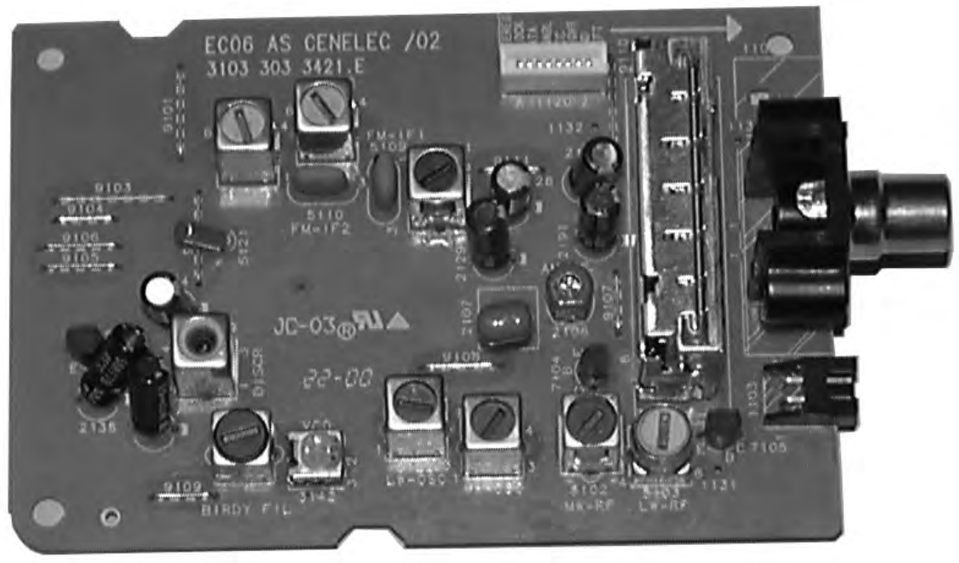
6103 ©	5322 130 34337	BAV99	
6105 ©	4822 130 83075	HN1V02H	
6106 ©	4822 130 83757	BAS216	
6107 ©	9340 386 90115	BZX284-C11	
6120 ©	4822 130 83757	BAS216	
6130 ©	4822 130 82833	1SV228	
6131 ©	4822 130 82833	1SV228	

TRANSISTORS

7102	4822 130 42131	BF550	
7103 ©	5322 130 42756	BC857C	RDS only
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***

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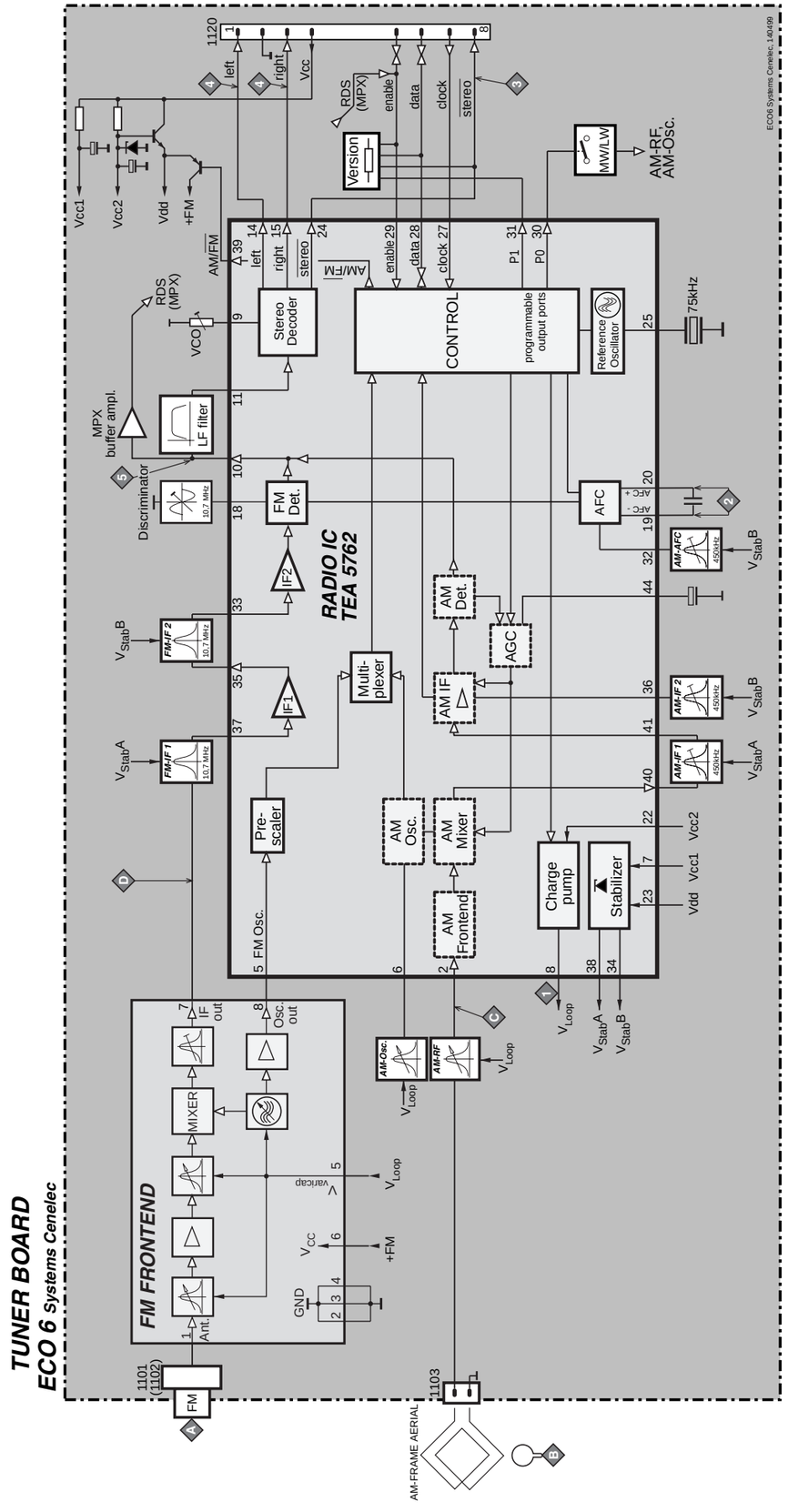
BLOCK DIAGRAM



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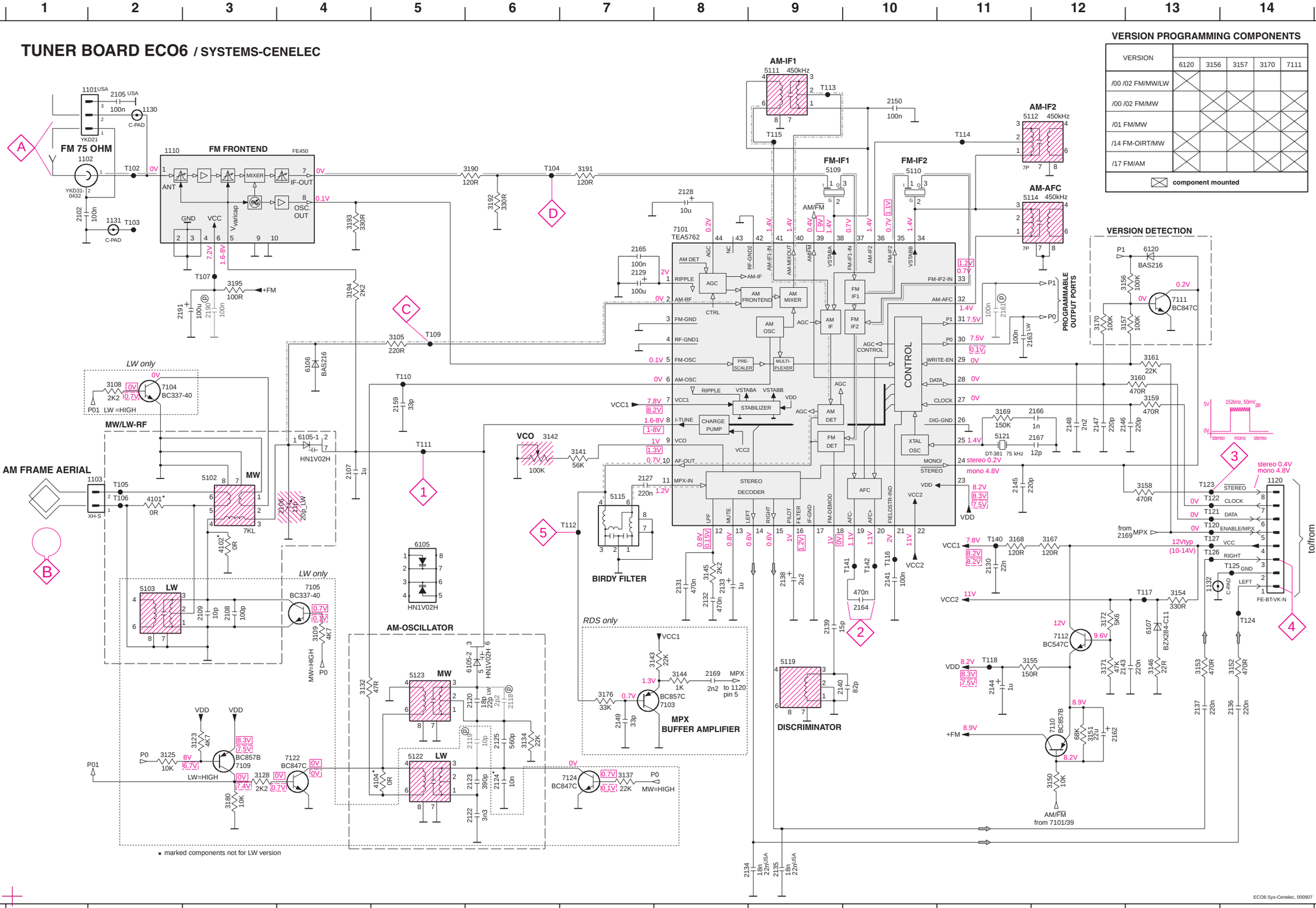
TUNER BOARD ECO6 / SYSTEMS-CENELEC

VERSION PROGRAMMING COMPONENTS

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

X component mounted



* marked components not for LW version

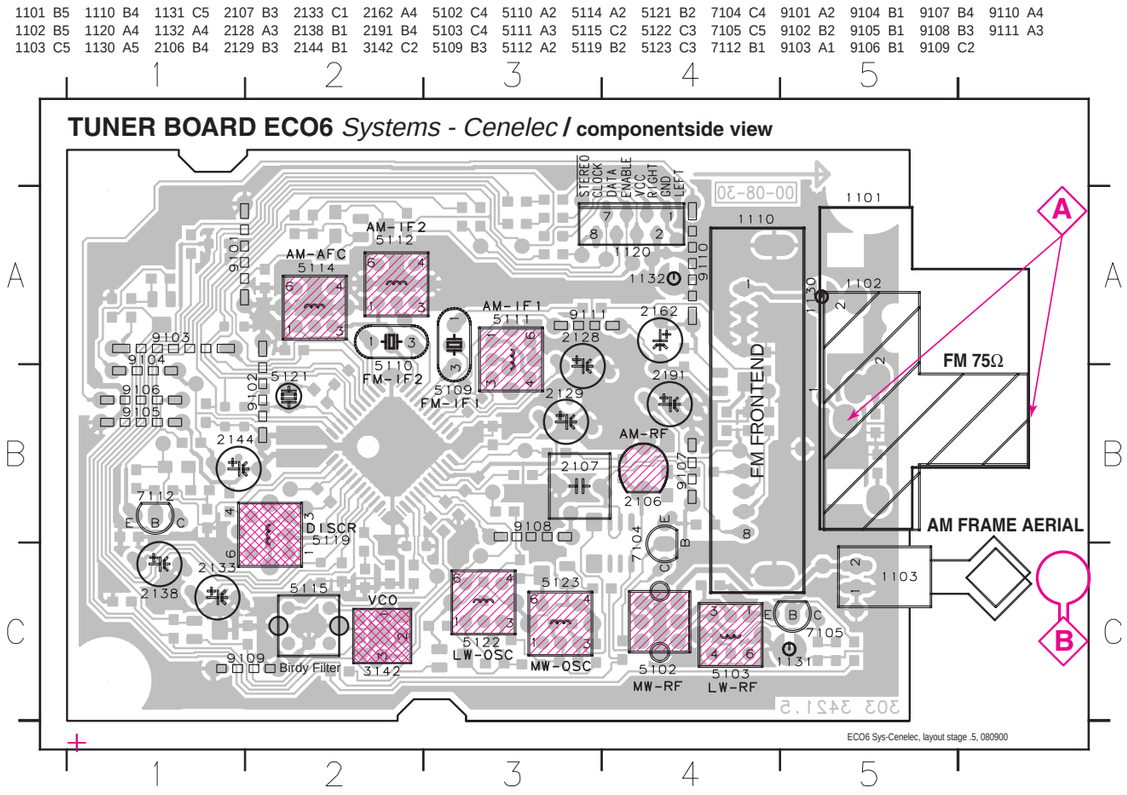
LEGEND

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

SMD jumper
41xx
0R

EVM
...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



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

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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	1	8V ±1.2V
			87.5MHz	check		1.6V ±0.5V
MW 531 - 1602kHz (9kHz grid)			1602kHz	5123		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	IC 7101 21 shortcircuit to block AFC 2141	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 Δf = ±10kHz V_{RF} = 0.5mV (as low as possible)	IC 7101 36 220R 100nF	5111	5	max. f_o symmetric
			IC 7101 40 220R 100nF see remark 2)	5112		
AM AFC **MW**		C continuous wave V_{RF} = 2mV		5114	2	0mV ±2mV
AM RF 3)						
MW	1494kHz	B Δf = ±30kHz V_{RF} as low as possible	1494kHz	2106	5	max. f_o symmetric
	558kHz		558kHz	5102		
LW	198kHz		198kHz	5103		

ECO6 Sys Cenelec, 190599

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

Electrical Partslist *ECO6* SYSTEMS-CENELEC

7B-4

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 ©	4822 122 33893	18nF	5%	63V	not USA
2134 ©	5322 122 32654	22nF	10%	63V	USA only
2135 ©	4822 122 33893	18nF	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	
2159 ©	5322 122 32659	33pF	5%	50V	
2162	4822 124 81151	22µF	20%	50V	
2163 ©	4822 126 13838	100nF	10%	50V	LW only
2164 ©	4822 126 13482	470nF	20%	16V	
2165 ©	4822 126 13838	100nF	10%	50V	
2166 ©	5322 122 31647	1nF	10%	63V	
2167 ©	4822 122 33926	12pF	5%	50V	
2169 ©	4822 122 33127	2,2nF	10%	63V	RDS only
2190 ©	4822 126 13838	100nF	10%	50V	
2191	4822 124 40178	100µF	20%	10V	

RESISTORS

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

RESISTORS

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

4101 ©	4822 051 20008	CHIP JUMPER 0805	FM/AM only
4102 ©	4822 051 20008	CHIP JUMPER 0805	FM/AM only
4104 ©	4822 051 20008	CHIP JUMPER 0805	FM/AM only
4105 ©	4822 051 20008	CHIP JUMPER 0805	
4106 ©	4822 051 20008	CHIP JUMPER 0805	
4107 ©	4822 051 20008	CHIP JUMPER 0805	

COILS

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

DIODES

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

TRANSISTORS

7103 ©	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)

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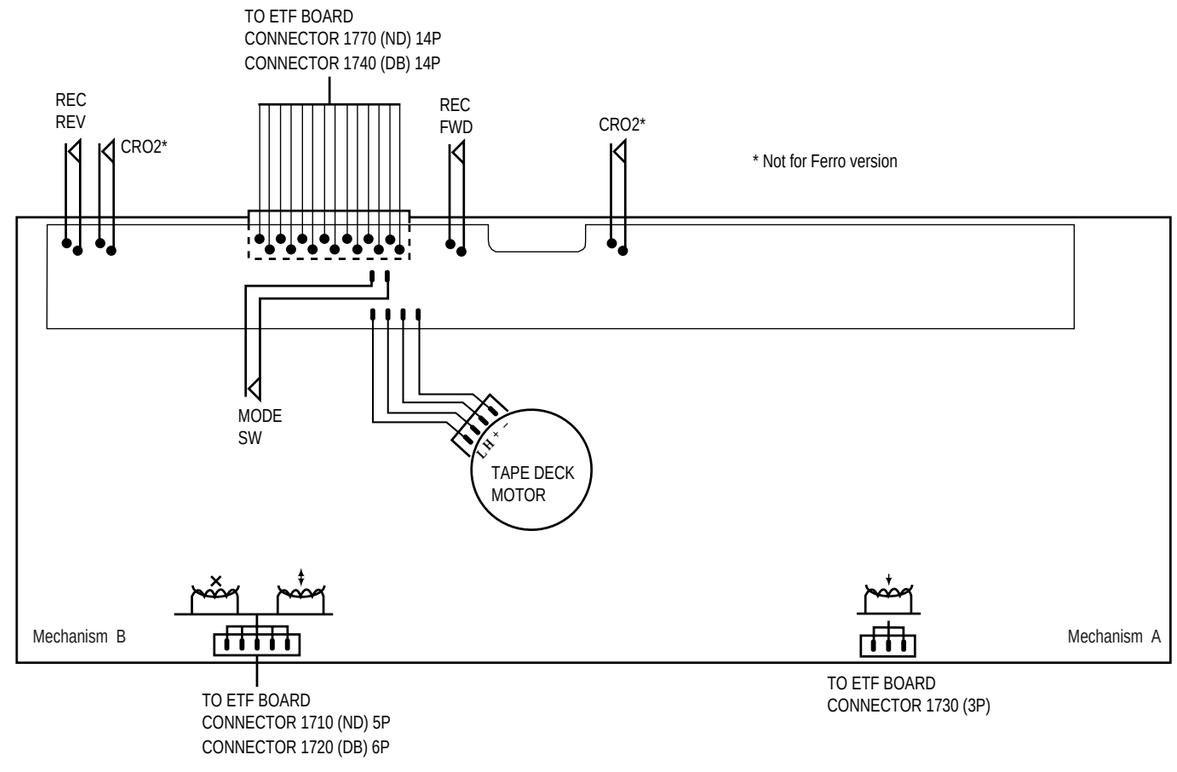
Tapedeck wiring (Double deck)



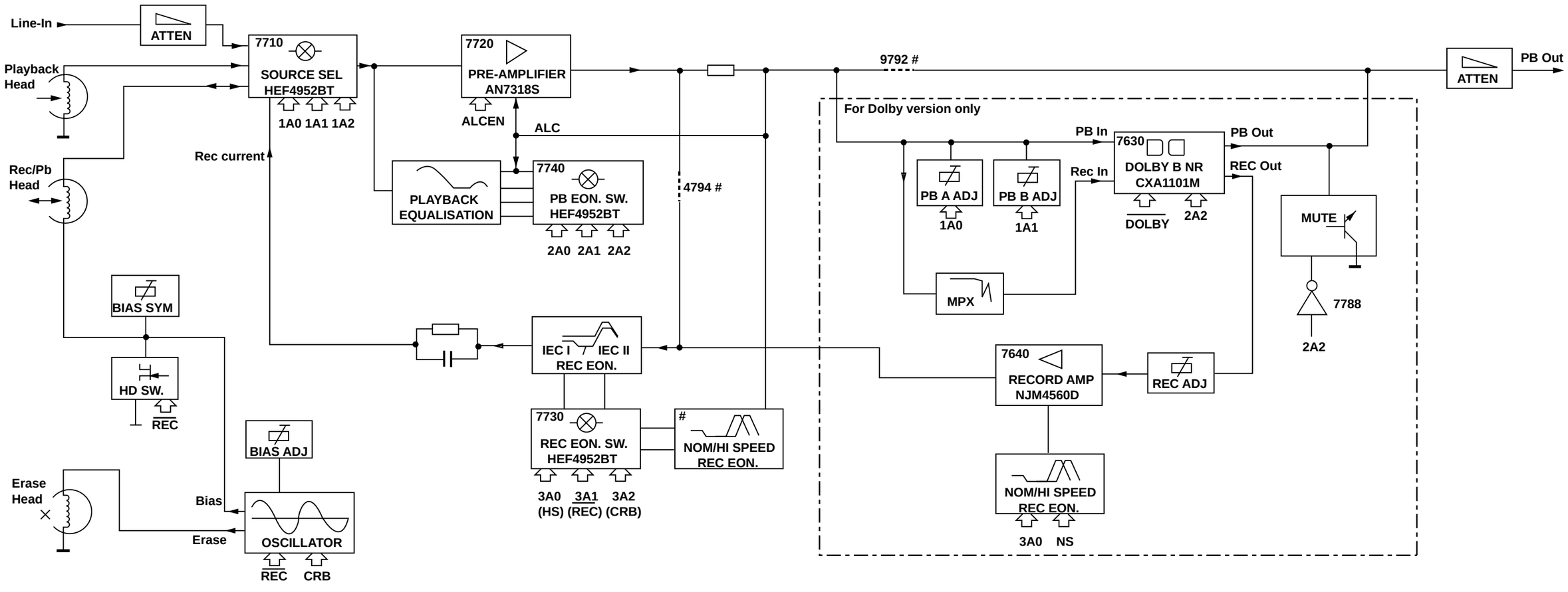
Variations table for Analog Circuit

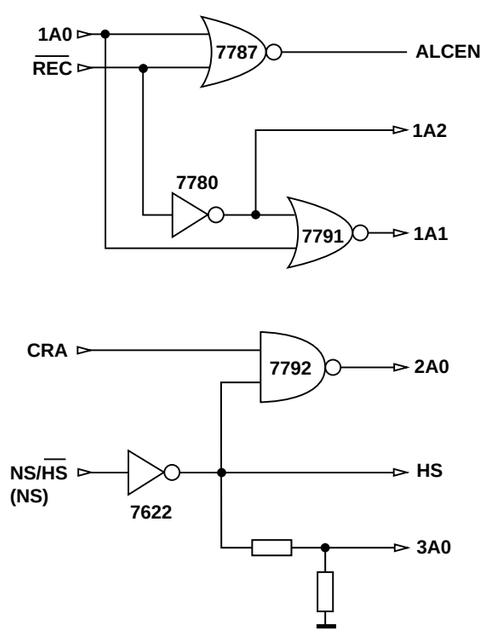
	Autoreverse ND/DD/FR	Non-autoreverse ND/DD/FF	
	Chrome/Ferro	Chrome/Ferro	Ferro
2624	-	-	100nF
2701 , 2702	150pF	270pF	270pF
2703 , 2704	100pF	220pF	220pF
2717 , 2718	10nF	15nF	15nF
2721 , 2722	6,8nF	6,8nF	-
2727 , 2728	470pF	1nF	1nF
3616	10k	1k	1k
3618	6k8	-	-
3620	10k trimmer	-	-
3622	-	10k trimmer	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

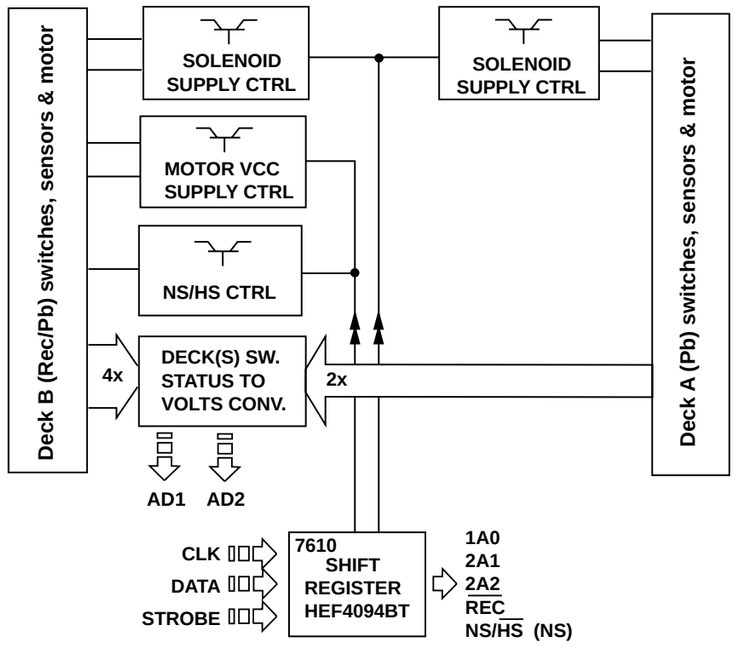
	Autoreverse ND/DD/FR	Non-autoreverse ND/DD/FF	
	Chrome/Ferro	Chrome/Ferro	Ferro
3769	12k	8k2	8k2
3772	6k8	5k6	5k6
4785	-	-	0R jumper
3774	15k	8k2	8k2
6614	1N4148	-	-
7616	BC857B	-	-
7622	BC847B	-	-

9-2

BLOCK DIAGRAM







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

MicroProcessor Control / Communication lines

Direct / Indirect Control lines from Shift Registers

9-3

Brief introduction

General

1. Playback Mode
   Signal from the playback head Deck A or Deck B is selected and fed through by the Mode Selector IC7710 (HEF4952BT). The signal is amplified by amplifier IC7720 (AN7323S) before feeding to the IC7740 (HEF4952BT) and out to the AF Board via connector 1701.

2. Recording Mode
   Recording Signal is selected and fed through by the Mode Selector IC7710 (HEF4952BT) which is then amplified by the amplifier IC7720 (AN7323S). The amplified output signal will pass through IC7730 (HEF4952BT) for record equalization and back to IC7710 (HEF4952BT) before registered into the Rec/PB Head of Deck B.

3. Dubbing Mode
   In Dubbing mode, signal from the playback head Deck A is selected and fed through by the Mode Selector IC7710 (HEF4952BT) which is then equalised for playback mode by the amplifier IC7720 (AN7323S) so that a flat response is obtained after the pre-amp. The equalised signal will then follow the same path as in the Recording mode.

4. Mode Selector
   The Mode Selector IC7710 (HEF4952BT) caters for 4 inputs signal, namely Playback Signal from Deck A, Playback Signal from Deck B, Recording Signal and Dubbing Signal.

5. Amplifier PB/REC
   Amplifier IC7720 (AN7323S) is for the purpose of amplifying the Playback and Recording signal from the Mode Selector.

6. Automatic Level Control (ALC)
   ALC circuit consists of resistors (3760, 3765, 3766, 3767), capacitors (2762 , 2763) and control by transistor 7787 (BC847B). ALC limits the amplifier output to a constant value when input signal becomes too large, thus limiting recording current to below saturation level, to prevent recording distortion.

7. Muting Circuit (For Non-Dolby version only)
   Switch S4 of the IC7740 (HEF4952BT) is for the purpose of muting the output during Recording mode. During Recording mode, S4 is closed and shorted to the ground.

8. IC7740 (HEF4952BT)
   The function of the IC7740 (HEF4952BT) is to change time constant between 120us Ferro (IEC I) and 70us Chrome (IEC II) during playback mode. It will automatically determined whether the tape type is 120us Ferro (IEC I) or 70us Chrome (IEC II). This IC will switch to Flat Gain during the Recording mode.

9. IC7730 (HEF4952BT)
   The function of the IC7730 (HEF4952BT) is to change gain and time constant according to tape type and recording speed to boost recording current at higher frequency during recording to compensate for head loss. It will automatically determined whether the tape type is 120us Ferro (IEC I) or 70us Chrome (IEC II).

10. Bias Level
    Bias Level making use of the Variable resistor (3773) for adjusting the optimal level of the bias current for Ferro or Chrome.

11. Bias Symm (For Dolby B NR version only)
    Bias Symm making use of the Variable resistor (3785) to adjust the bias current for the left and the right channel to be equal.

12. PB Switch
    Playback Switch which consists of the FETs 7785 (For Dolby B NR version only) & 7786 (J111) is for the purpose of providing a virtual ground for the Rec/PB Head (Deck B) during Playback mode. During the Playback mode, the FETs are turn on and shorted pin 2 and 4 of connector 1720 to the ground. During Recording mode, the FETs are turn off to allow the oscillator signal to be superposition onto the Recording signal for recording.

13. Motor Speed (For FR versions only)
    During High speed dubbing, a feedback signal from the uP through pin 03 of the IC7610 (HEF4094BT) will trigger the transistors 7622 (BC847B) and 7616 (BC857B) to cause a change in the voltage level between High and Low, thus changing the speed of the motor.

14. IC7610 (HEF4094BT)
    IC7610 (HEF4094BT) is a Shift Register use for issues the logic for cmos switch ICs (HEF4952BT) via 1A0, 2A1 and 2A2. It also issues logic to On/Off SOL_A, SOL_B and MOT. Recording speed is controlled via NS/HS.

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

15. IC7630 (CXA1551M)
    IC7630 (CXA1551M) in the Dolby circuit is a Dolby Noise Reduction Type B IC for the Playback and Recording signal. Noise Reduction ON/OFF are controlled by $\overline{\text{DOLBY}}$, which is from CLK, direct from uP. After clocking in DATA, CLK is set to HIGH/LOW for NR OFF/ON.

16. 19kHz Filter
    The 19kHz filters 5631 & 5632 (LXD-210) in the Dolby circuit is for the purpose of filtering the 19kHz Pilot Tone (for Tuner signal only) of the Recording signal.

17. Level Adjust
    The Variable resistor 3635, 3636,3641 and 3642 in the Dolby circuit is for adjusting the playback level of the Dolby reference (400Hz , 200nWb/m). Transistor 7631, 7632 are ON to enable adjustment of 3641, 3642 during Playback Deck A. Transistor 7633, 7634 and 3635, 3636 are active for Playback Deck B.

18. Amplifier IC7640 (NJM4560M)
    The Amplifiers 7640A & 7640B (NJM4560M) in the Dolby circuit is for the purpose of amplified the Recording signal.

19. Muting Circuit
    The muting circuit which consists of transistors 7788, 7789 and 7790 (BC847B) is for the purpose of muting the output during Recording mode.

NOTATIONS & ABBREVIATIONS USED IN THIS DOCUMENT

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

CONNECTORS ASSIGNMENTS:

CONNECTOR 1701 — INTERCONNECTION TO AF BOARD

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

CONNECTOR 1703 — INTERCONNECTION TO AF BOARD

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

CONNECTOR 1706 — INTERCONNECTION TO FRONT BOARD

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

CONNECTOR 1710 — DECK B HEADS 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

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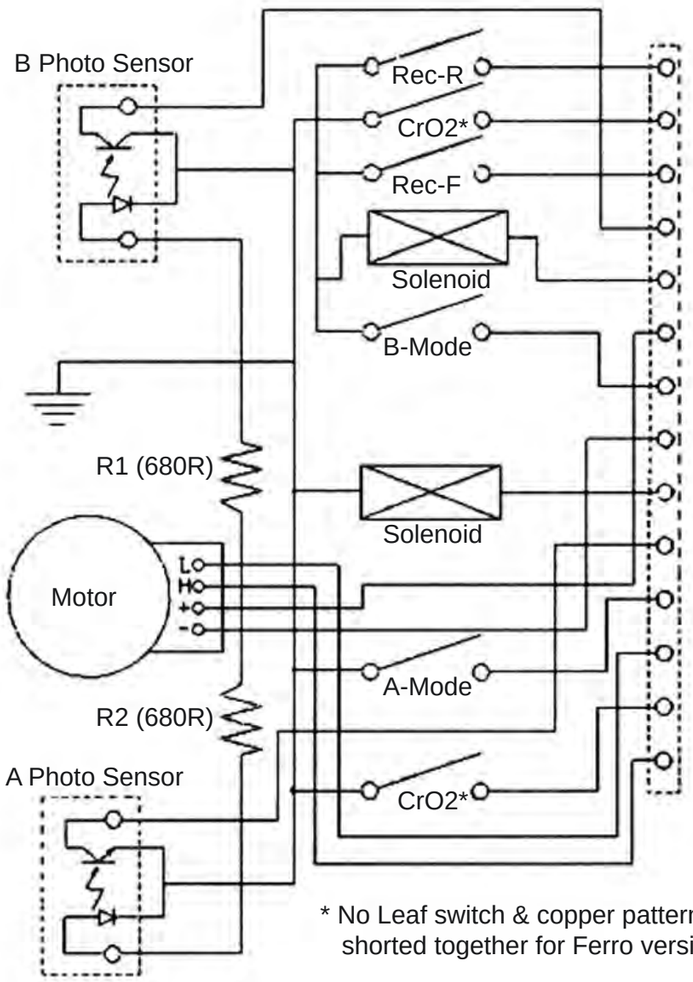
CONNECTOR 1740 — DECK A & B CONTROL INTERFACE ***(For Dolby B NR version only)***

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

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

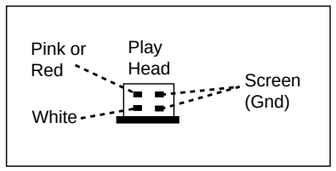
1	REC REW	Record tab protection status switch (reverse)	[open=on: close=off]
2	CrO2 B	Chrome tape detection switch deck B	[open=Cr: close=Fe]
3	REC FWD	Record tab protection status switch (forward)	[open=on: close=off]
4	PHOTO B	Photo sensor output (tape movement indication)	
5	SOL B	Solenoid supply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

TAPE MECHANISM ELECTRONICS

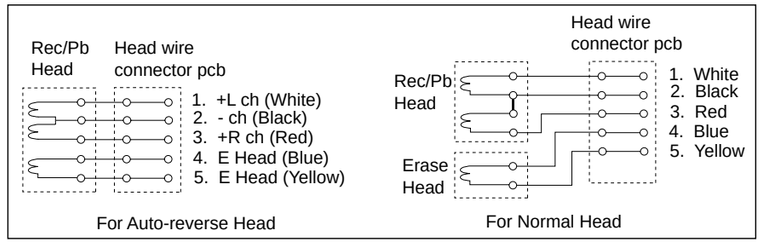


* No Leaf switch & copper pattern shorted together for Ferro version

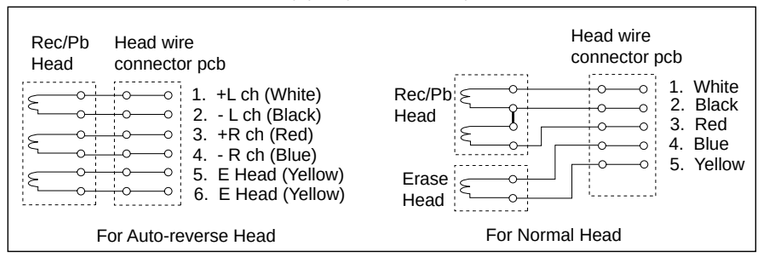
Mechanism A Head Wires Soldering



Mechanism B Head Wires Soldering (Non-Dolby version)



Mechanism B Head Wires Soldering (Dolby B NR version)



9-5

TAPE ADJUSTMENT & CHECK TABLE

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

SBC419A^□:□ 4822 397 30069
SBC420□ :□ 4822 397 30071

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

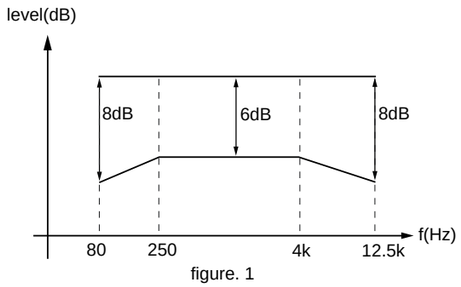


figure. 1

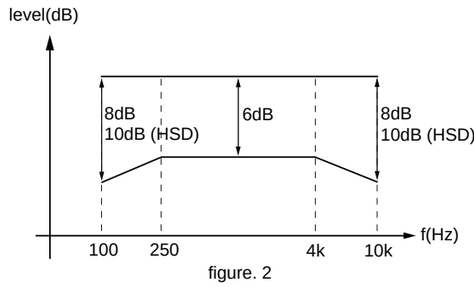
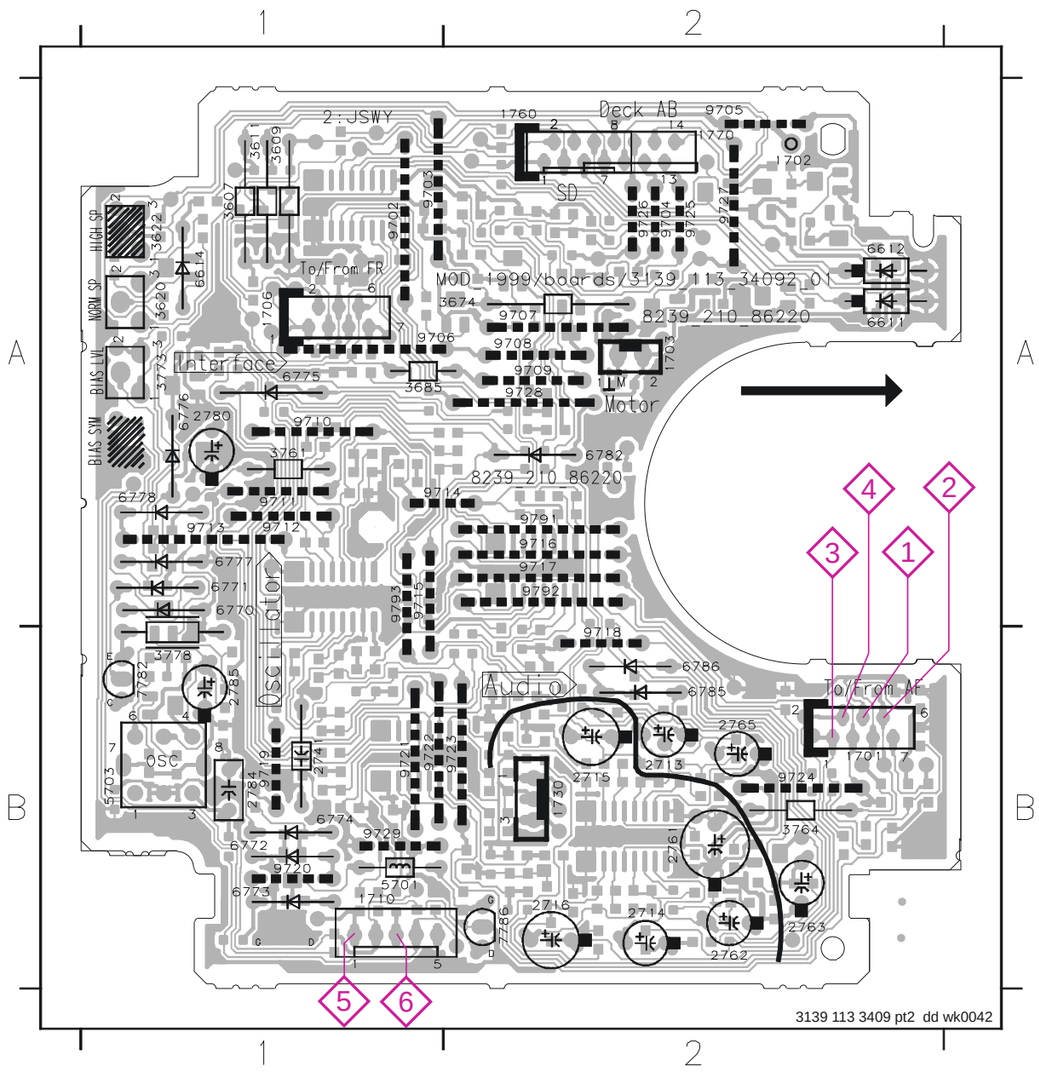


figure. 2

COMPONENT LAYOUT

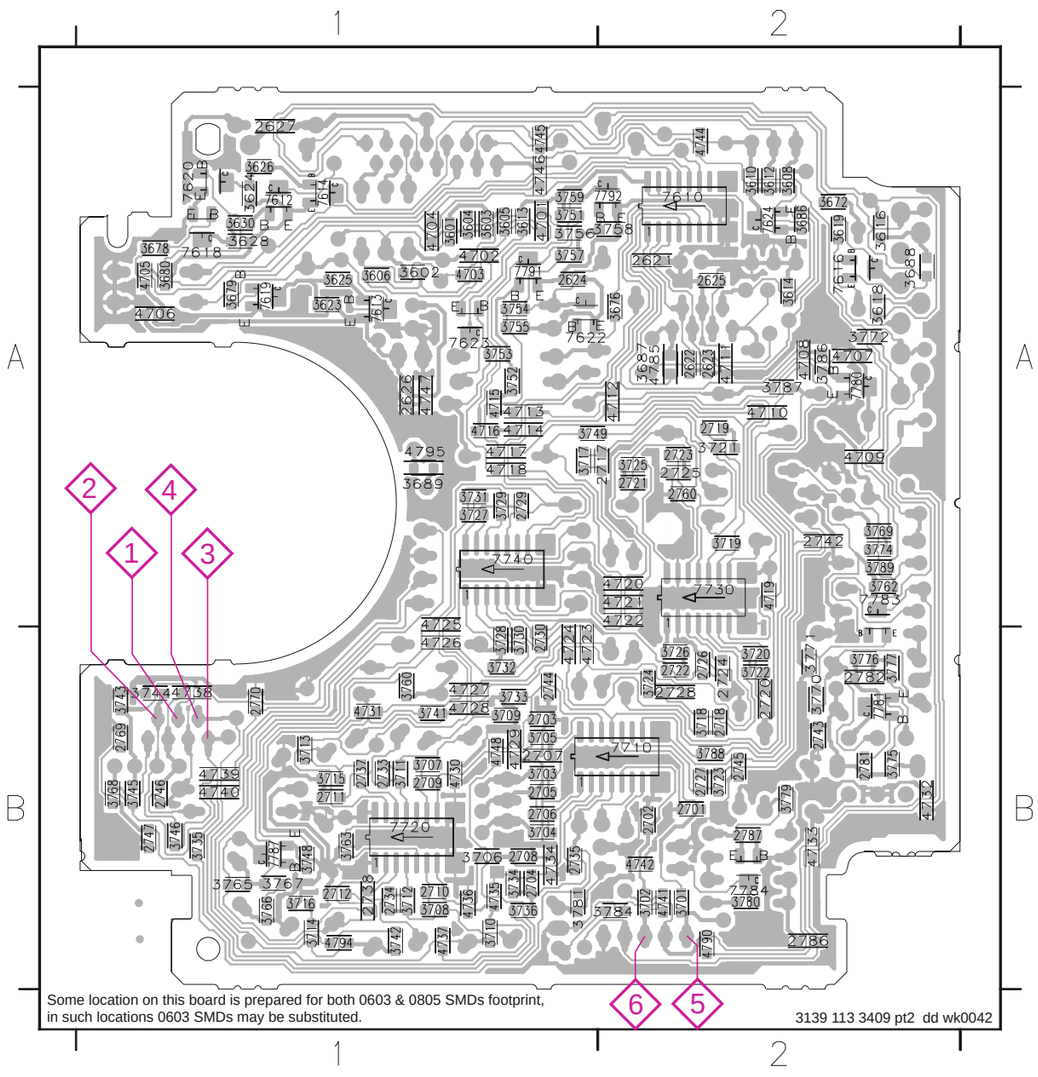
1701 B2	2714 B2	2784 B1	3761 A1	6770 A1	6782 A2	9706 A1	9715 A1	9724 B2
1702 A2	2715 B2	2785 B1	3764 B2	6771 A1	6785 B2	9707 A2	9716 A2	9725 A2
1703 A2	2716 B2	3607 A1	3773 A1	6772 B1	6786 B2	9708 A2	9717 A2	9726 A2
1706 A1	2741 B1	3609 A1	3778 B1	6773 B1	7782 B1	9709 A2	9718 B2	9727 A2
1710 B1	2761 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



3139 113 3409 pt2 dd wk0042

CHIP LAYOUT

2621 A2	2724 B2	3602 A1	3688 A2	3725 A2	3757 A1	4701 A1	4727 B1	7612 A1
2622 A2	2725 A2	3603 A1	3689 A1	3726 B2	3758 A2	4702 A1	4728 B1	7613 A1
2623 A2	2726 B2	3604 A1	3701 B2	3727 A1	3759 A1	4703 A1	4729 B1	7614 A1
2624 A1	2727 B2	3605 A1	3702 B2	3728 B1	3760 B1	4704 A1	4730 B1	7616 A2
2625 A2	2728 B2	3606 A1	3703 B1	3729 A1	3762 A2	4705 A1	4731 B1	7618 A1
2626 A1	2729 A1	3608 A2	3704 B1	3730 B1	3763 B1	4706 A1	4732 B2	7619 A1
2627 A1	2730 B1	3610 A2	3705 B1	3731 A1	3765 B1	4707 A2	4733 B2	7620 A1
2701 B2	2733 B1	3612 A2	3706 B1	3732 B1	3766 B1	4708 A2	4734 B1	7622 A1
2702 B2	2734 B1	3613 A1	3707 B1	3733 B1	3767 B1	4709 A2	4735 B1	7623 A1
2703 B1	2735 B1	3614 A2	3708 B1	3734 B1	3768 B1	4710 A2	4736 B1	7624 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 A1	3717 A1	3748 B1	3779 B2	4719 A2	4746 A1	7787 B1
2717 A2	2769 B1	3672 A2	3718 B2	3749 A1	3780 B2	4720 A2	4747 A1	7791 A1
2718 B2	2770 B1	3676 A2	3719 A2	3751 A1	3781 B1	4721 A2	4748 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	

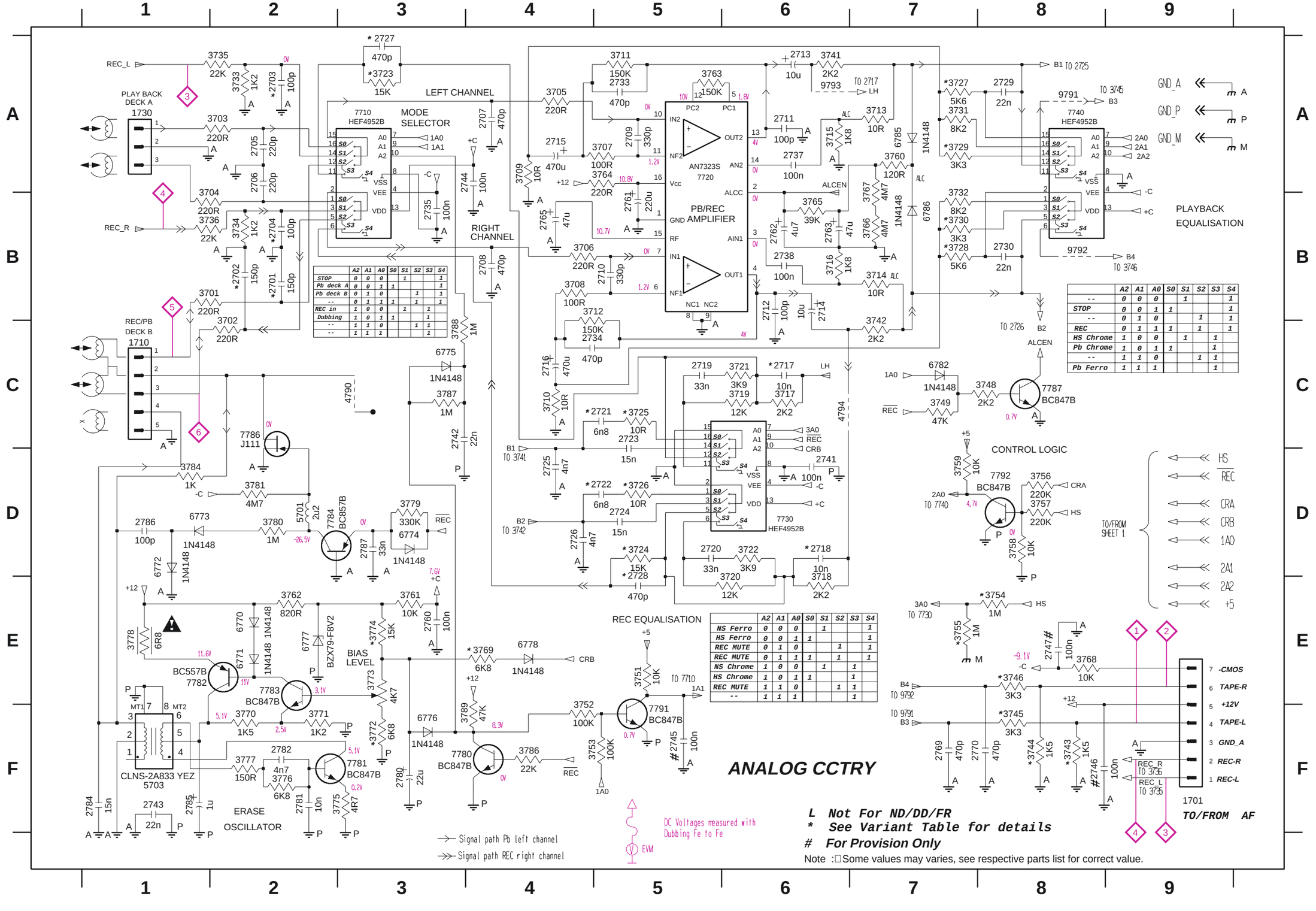


3139 113 3409 pt2 dd wk0042

9-7

ANALOG CIRCUIT

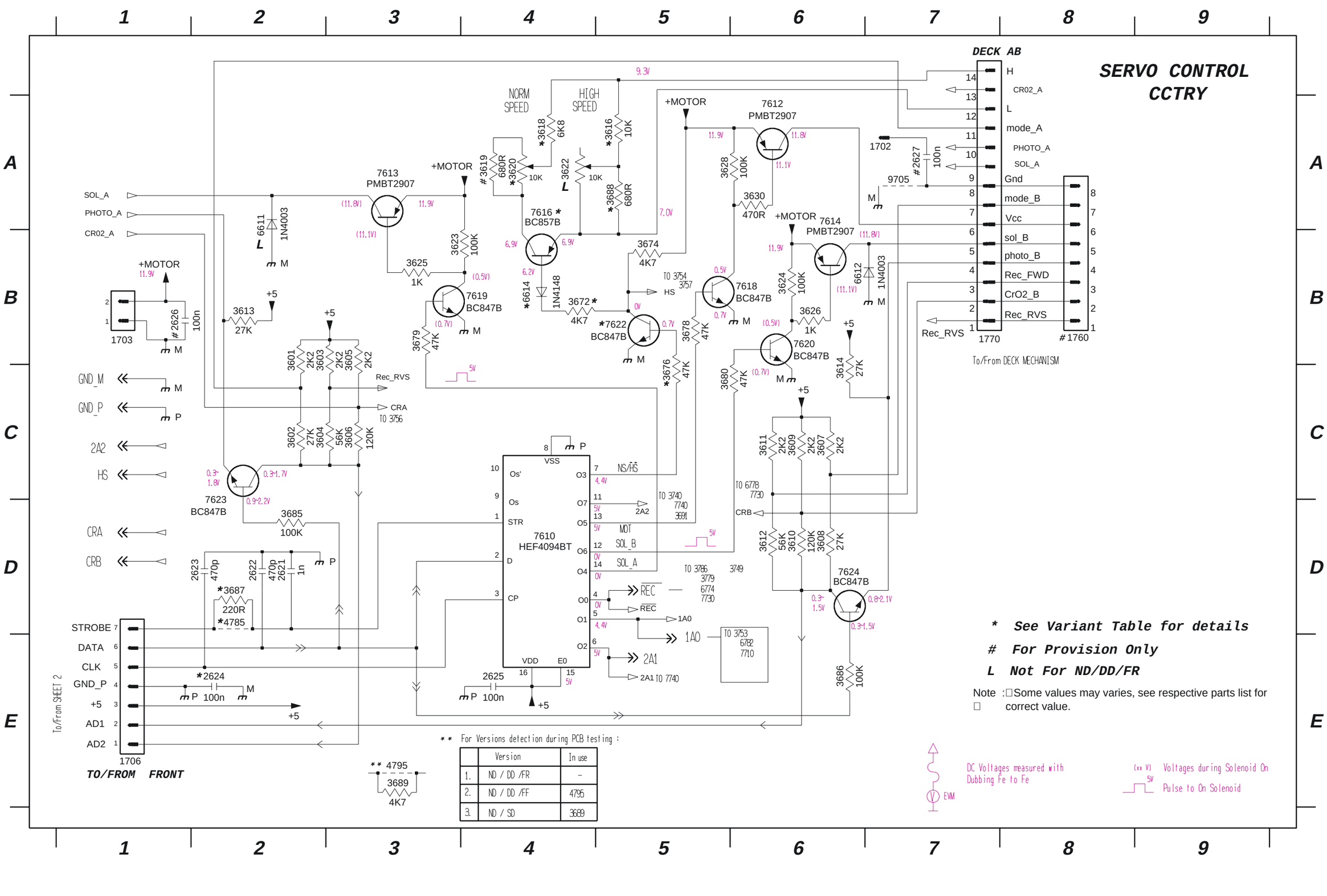
1701 F9	2705 A2	2712 B6	2719 C5	2726 D4	2735 B3	2745 F5	2765 B4	2785 F1	3705 A4	3712 B4	3719 C6	3726 D5	3733 A2	3744 F8	3753 F5	3760 A7	3767 A7	3774 E3	3781 D2	4794 C6	6774 D3	6786 B7	7782 E1	9791 A8
1710 C1	2706 A2	2713 A6	2720 D5	2727 A3	2737 A6	2746 F8	2769 F7	2786 D1	3706 B4	3713 A7	3720 E6	3727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

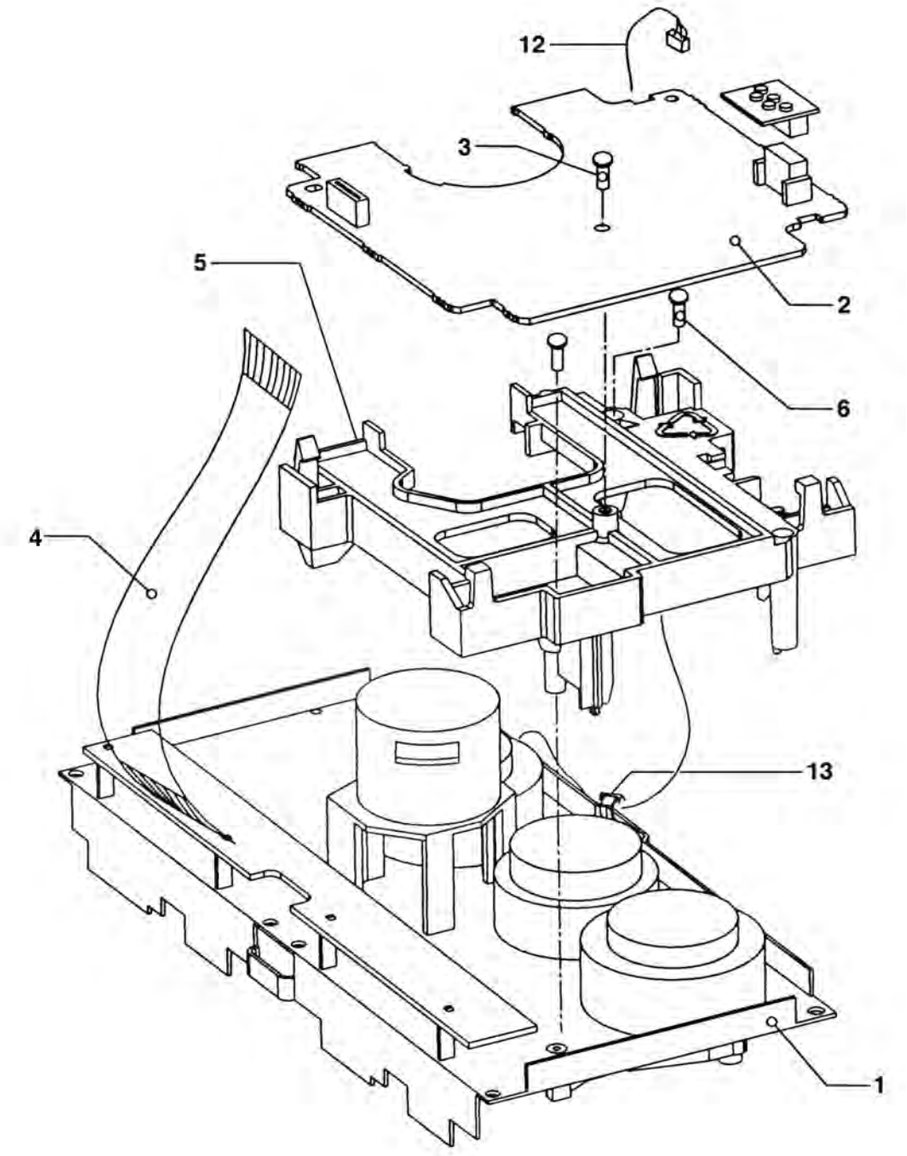


9-8

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 B4 7613 A5 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





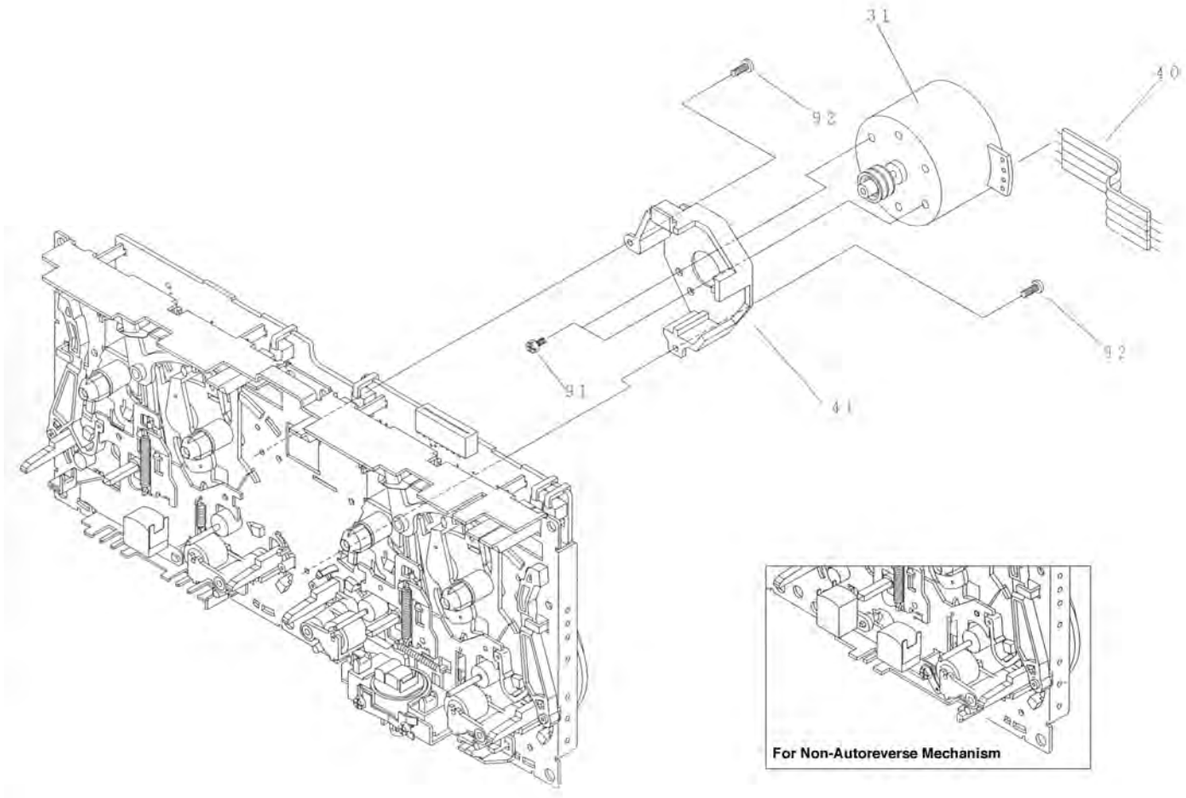
3139 118 77070 (Incl. ...77080) dd wk926

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.

9-9



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.

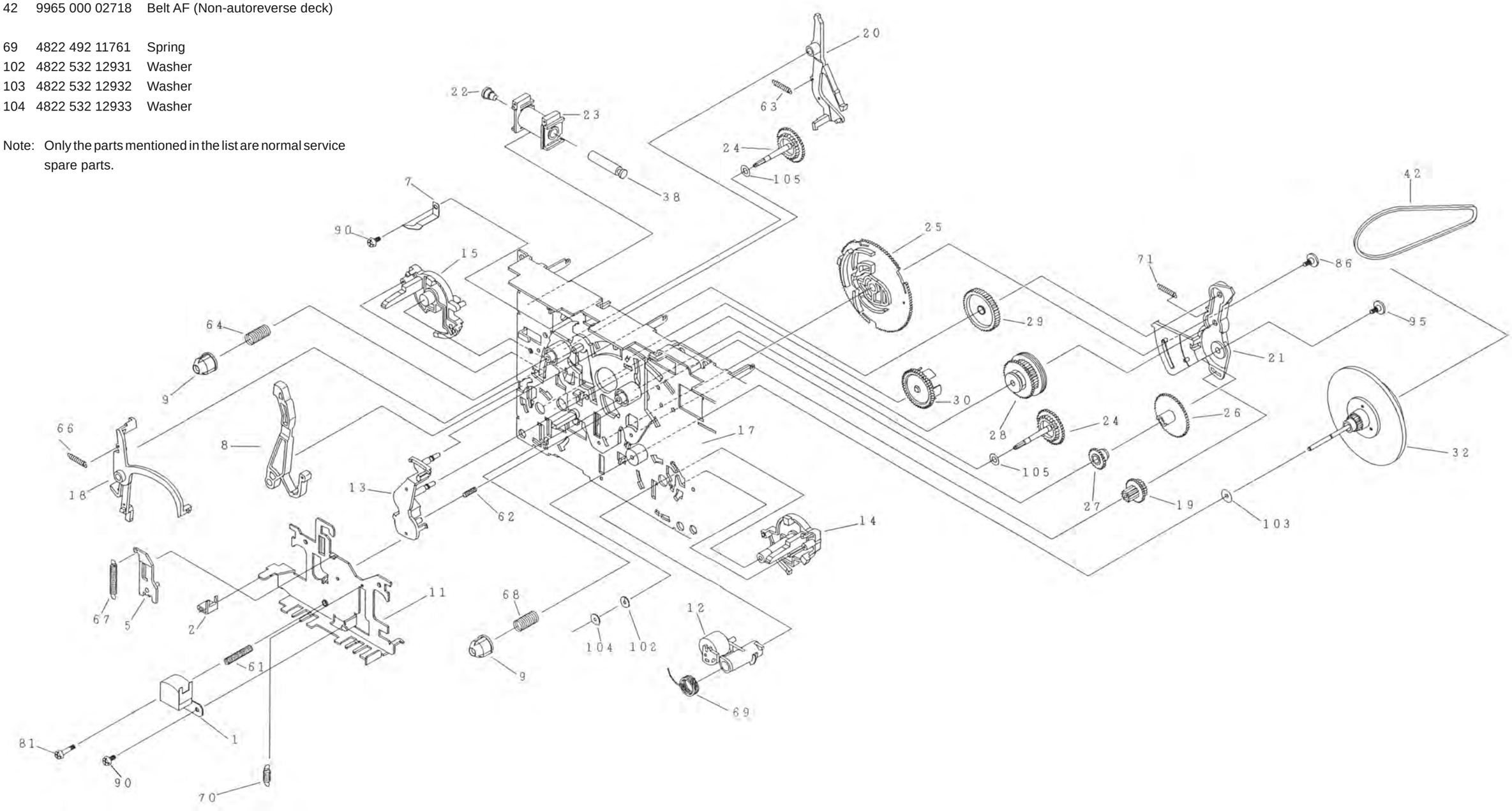
9-10

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.



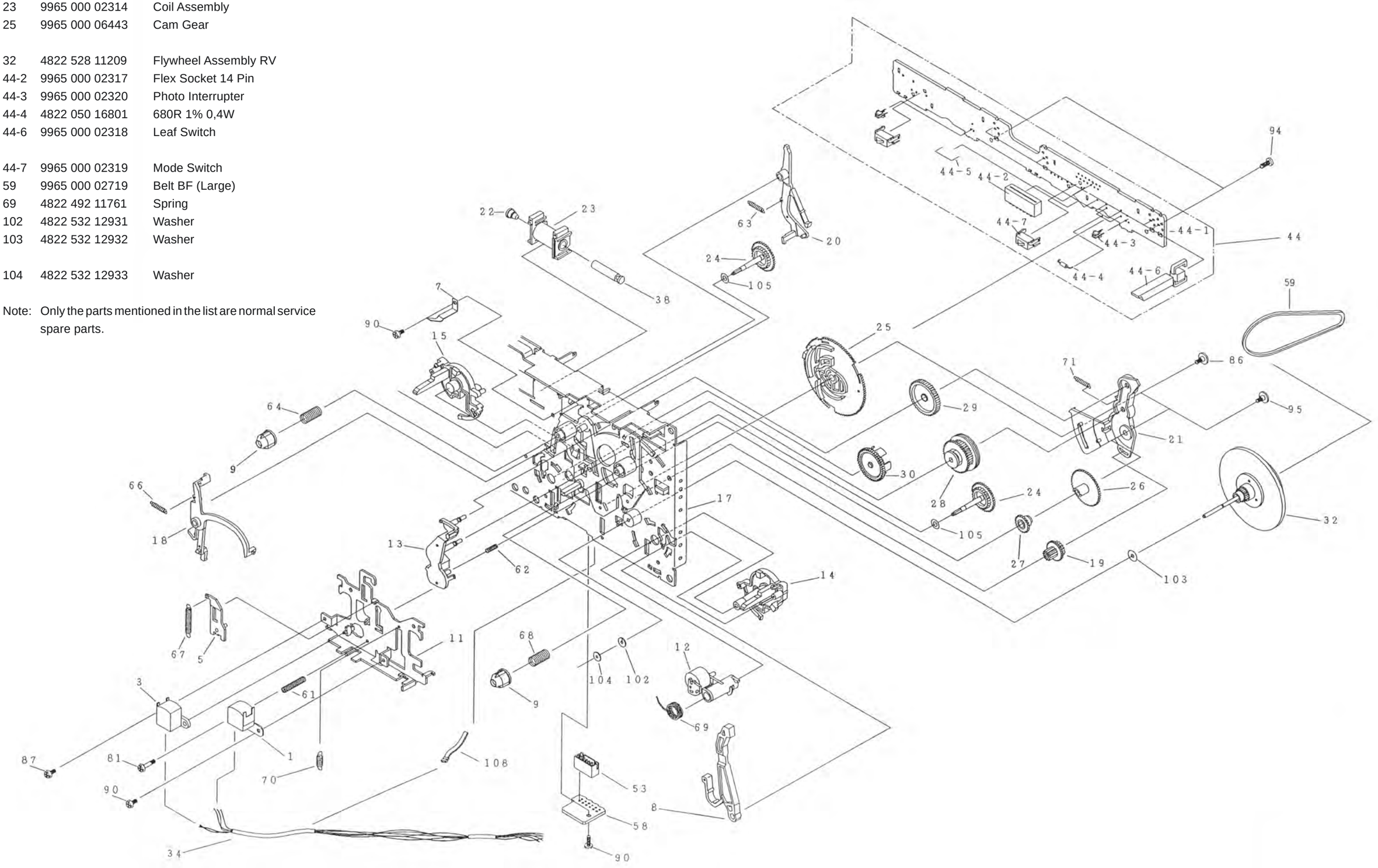
9-11

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.



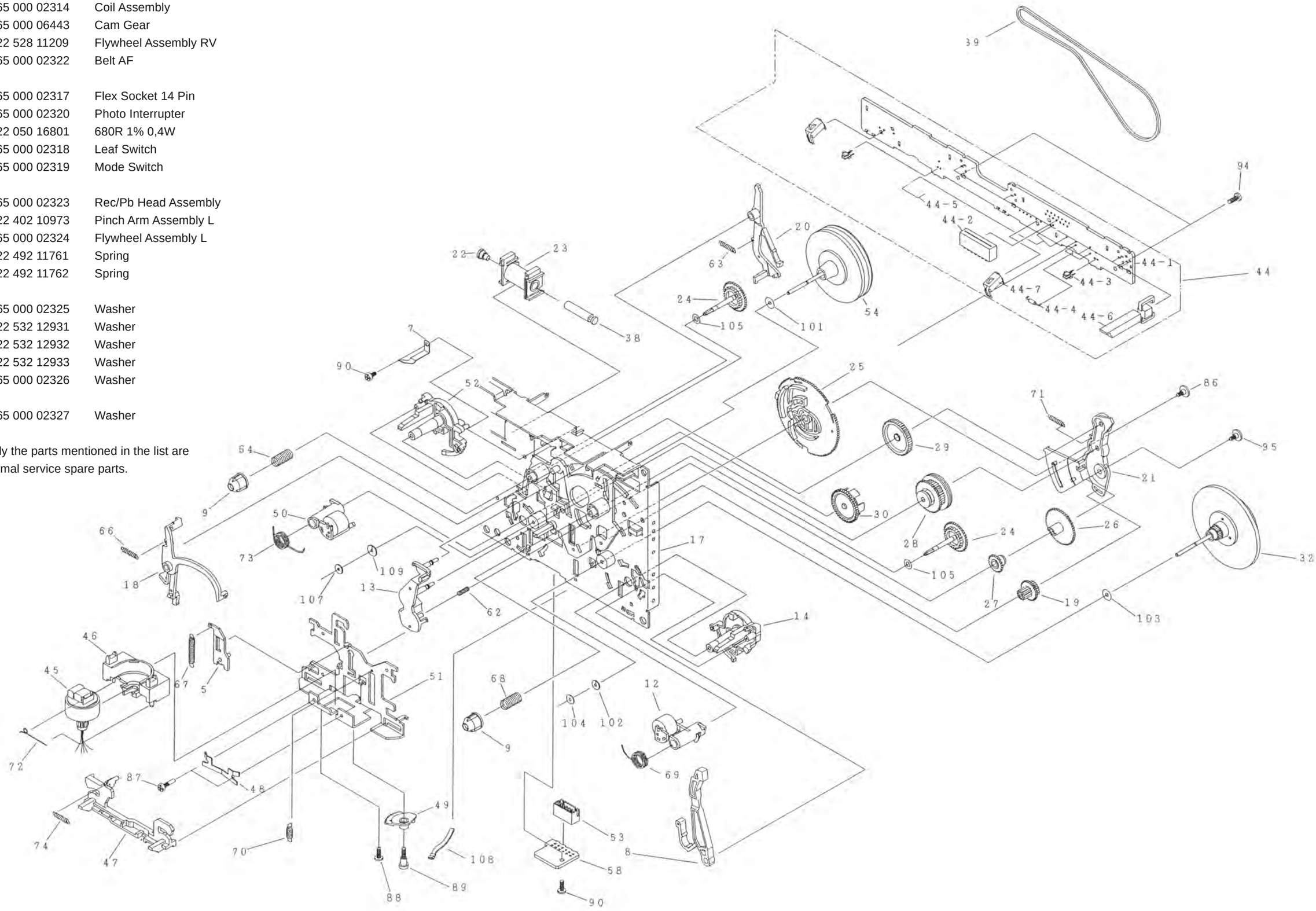
9-12

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.



9-13

ELECTRICAL PARTS LIST - ETF7 NON-DOLBY BOARD

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	
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	

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ELECTRICAL PARTS LIST - ETF7 NON-DOLBY BOARD

RESISTORS

4706	482205120008	0R Jumper 0805	
4707	482205120008	0R Jumper 0805	
4708	482205120008	0R Jumper 0805	
4709	482205120008	0R Jumper 0805	
4710	482205120008	0R Jumper 0805	
4711	482205120008	0R Jumper 0805	
4712	482205120008	0R Jumper 0805	
4713	482205120008	0R Jumper 0805	
4714	482205120008	0R Jumper 0805	
4715	482205120008	0R Jumper 0805	
4716	482205120008	0R Jumper 0805	
4717	482205120008	0R Jumper 0805	
4718	482205120008	0R Jumper 0805	
4719	482205120008	0R Jumper 0805	
4720	482205120008	0R Jumper 0805	
4721	482205120008	0R Jumper 0805	
4722	482205120008	0R Jumper 0805	
4723	482205120008	0R Jumper 0805	
4724	482205120008	0R Jumper 0805	
4725	482205120008	0R Jumper 0805	
4726	482205120008	0R Jumper 0805	
4727	482205120008	0R Jumper 0805	
4728	482205120008	0R Jumper 0805	
4729	482205120008	0R Jumper 0805	
4730	482205120008	0R Jumper 0805	
4731	482205120008	0R Jumper 0805	
4732	482205120008	0R Jumper 0805	
4733	482205120008	0R Jumper 0805	
4734	482205120008	0R Jumper 0805	
4735	482205120008	0R Jumper 0805	
4736	482205120008	0R Jumper 0805	
4737	482205120008	0R Jumper 0805	
4738	482205120008	0R Jumper 0805	
4739	482205120008	0R Jumper 0805	
4740	482205120008	0R Jumper 0805	
4741	482205120008	0R Jumper 0805	
4742	482205120008	0R Jumper 0805	
4744	482205120008	0R Jumper 0805	
4745	482205120008	0R Jumper 0805	
4746	482205120008	0R Jumper 0805	
4748	482205120008	0R Jumper 0805	
4785	482205120008	0R Jumper 0805	only for Ferro
4790	482205120008	0R Jumper 0805	
4794	482205120008	0R Jumper 0805	
4795	482205120008	0R Jumper 0805	

COILS & FILTERS

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

DIODES

6611	482213031878	1N4003G
6612	482213031878	1N4003G
6614	482213030621	1N4148 Autoreverse
6770	482213030621	1N4148
6771	482213030621	1N4148
6772	482213030621	1N4148
6773	482213030621	1N4148
6774	482213030621	1N4148
6775	482213030621	1N4148
6776	482213030621	1N4148
6777	482213034382	BZX79-F8V2
6778	482213030621	1N4148
6782	482213030621	1N4148
6785	482213030621	1N4148
6786	482213030621	1N4148

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.

ETF7 TAPE MODULE

(Dolby Version)

TABLE OF CONTENTS

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Tapedeck wiring (Double deck)

OPTIONS / VARIANTS TABLE

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

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

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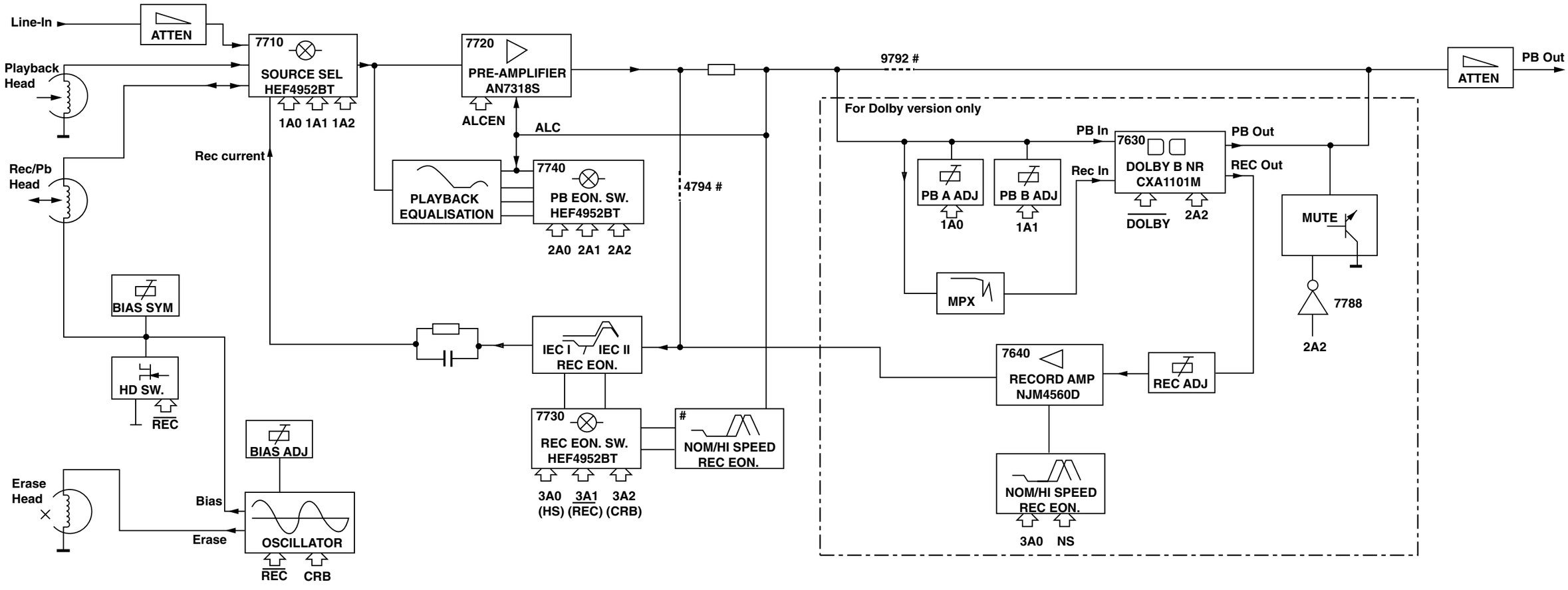
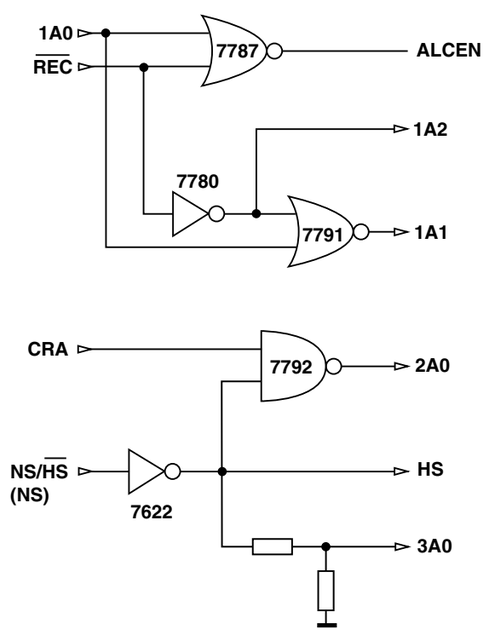
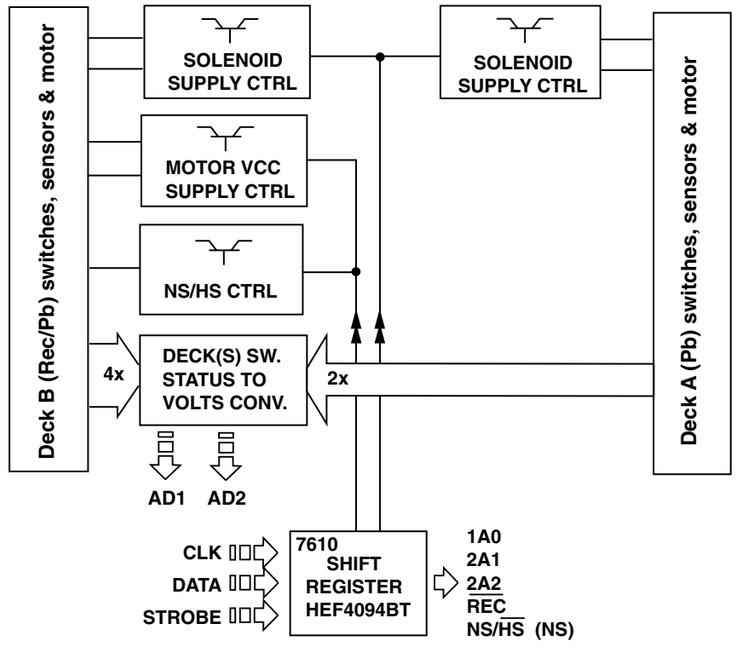
BLOCK DIAGRAM







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

MicroProcessor Control / Communication lines

Direct / Indirect Control lines from Shift Registers

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Brief introduction

General

1. Playback Mode
   Signal from the playback head Deck A or Deck B is selected and fed through by the Mode Selector IC7710 (HEF4952BT). The signal is amplified by amplifier IC7720 (AN7323S) before feeding to the IC7740 (HEF4952BT) and out to the AF Board via connector 1701.

2. Recording Mode
   Recording Signal is selected and fed through by the Mode Selector IC7710 (HEF4952BT) which is then amplified by the amplifier IC7720 (AN7323S). The amplified output signal will pass through IC7730 (HEF4952BT) for record equalization and back to IC7710 (HEF4952BT) before registered into the Rec/PB Head of Deck B.

3. Dubbing Mode
   In Dubbing mode, signal from the playback head Deck A is selected and fed through by the Mode Selector IC7710 (HEF4952BT) which is then equalised for playback mode by the amplifier IC7720 (AN7323S) so that a flat response is obtained after the pre-amp. The equalised signal will then follow the same path as in the Recording mode.

4. Mode Selector
   The Mode Selector IC7710 (HEF4952BT) caters for 4 inputs signal, namely Playback Signal from Deck A, Playback Signal from Deck B, Recording Signal and Dubbing Signal.

5. Amplifier PB/REC
   Amplifier IC7720 (AN7323S) is for the purpose of amplifying the Playback and Recording signal from the Mode Selector.

6. Automatic Level Control (ALC)
   ALC circuit consists of resistors (3760, 3765, 3766, 3767), capacitors (2762 , 2763) and control by transistor 7787 (BC847B). ALC limits the amplifier output to a constant value when input signal becomes too large, thus limiting recording current to below saturation level, to prevent recording distortion.

7. Muting Circuit (For Non-Dolby version only)
   Switch S4 of the IC7740 (HEF4952BT) is for the purpose of muting the output during Recording mode. During Recording mode, S4 is closed and shorted to the ground.

8. IC7740 (HEF4952BT)
   The function of the IC7740 (HEF4952BT) is to change time constant between 120us Ferro (IEC I) and 70us Chrome (IEC II) during playback mode. It will automatically determined whether the tape type is 120us Ferro (IEC I) or 70us Chrome (IEC II). This IC will switch to Flat Gain during the Recording mode.

9. IC7730 (HEF4952BT)
   The function of the IC7730 (HEF4952BT) is to change gain and time constant according to tape type and recording speed to boost recording current at higher frequency during recording to compensate for head loss. It will automatically determined whether the tape type is 120us Ferro (IEC I) or 70us Chrome (IEC II).

10. Bias Level
    Bias Level making use of the Variable resistor (3773) for adjusting the optimal level of the bias current for Ferro or Chrome.

11. Bias Symm (For Dolby B NR version only)
    Bias Symm making use of the Variable resistor (3785) to adjust the bias current for the left and the right channel to be equal.

12. PB Switch
    Playback Switch which consists of the FETs 7785 (For Dolby B NR version only) & 7786 (J111) is for the purpose of providing a virtual ground for the Rec/PB Head (Deck B) during Playback mode. During the Playback mode, the FETs are turn on and shorted pin 2 and 4 of connector 1720 to the ground. During Recording mode, the FETs are turn off to allow the oscillator signal to be superposition onto the Recording signal for recording.

13. Motor Speed (For FR versions only)
    During High speed dubbing, a feedback signal from the uP through pin 03 of the IC7610 (HEF4094BT) will trigger the transistors 7622 (BC847B) and 7616 (BC857B) to cause a change in the voltage level between High and Low, thus changing the speed of the motor.

14. IC7610 (HEF4094BT)
    IC7610 (HEF4094BT) is a Shift Register use for issues the logic for cmos switch ICs (HEF4952BT) via 1A0, 2A1 and 2A2. It also issues logic to On/Off SOL_A, SOL_B and MOT. Recording speed is controlled via NS/HS.

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

15. IC7630 (CXA1551M)
    IC7630 (CXA1551M) in the Dolby circuit is a Dolby Noise Reduction Type B IC for the Playback and Recording signal. Noise Reduction ON/OFF are controlled by $\overline{\text{DOLBY}}$, which is from CLK, direct from uP. After clocking in DATA, CLK is set to HIGH/LOW for NR OFF/ON.

16. 19kHz Filter
    The 19kHz filters 5631 & 5632 (LXD-210) in the Dolby circuit is for the purpose of filtering the 19kHz Pilot Tone (for Tuner signal only) of the Recording signal.

17. Level Adjust
    The Variable resistor 3635, 3636,3641 and 3642 in the Dolby circuit is for adjusting the playback level of the Dolby reference (400Hz , 200nWb/m). Transistor 7631, 7632 are ON to enable adjustment of 3641, 3642 during Playback Deck A. Transistor 7633, 7634 and 3635, 3636 are active for Playback Deck B.

18. Amplifier IC7640 (NJM4560M)
    The Amplifiers 7640A & 7640B (NJM4560M) in the Dolby circuit is for the purpose of amplified the Recording signal.

19. Muting Circuit
    The muting circuit which consists of transistors 7788, 7789 and 7790 (BC847B) is for the purpose of muting the output during Recording mode.

NOTATIONS & ABBREVIATIONS USED IN THIS DOCUMENT

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

9A-4

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

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

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

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

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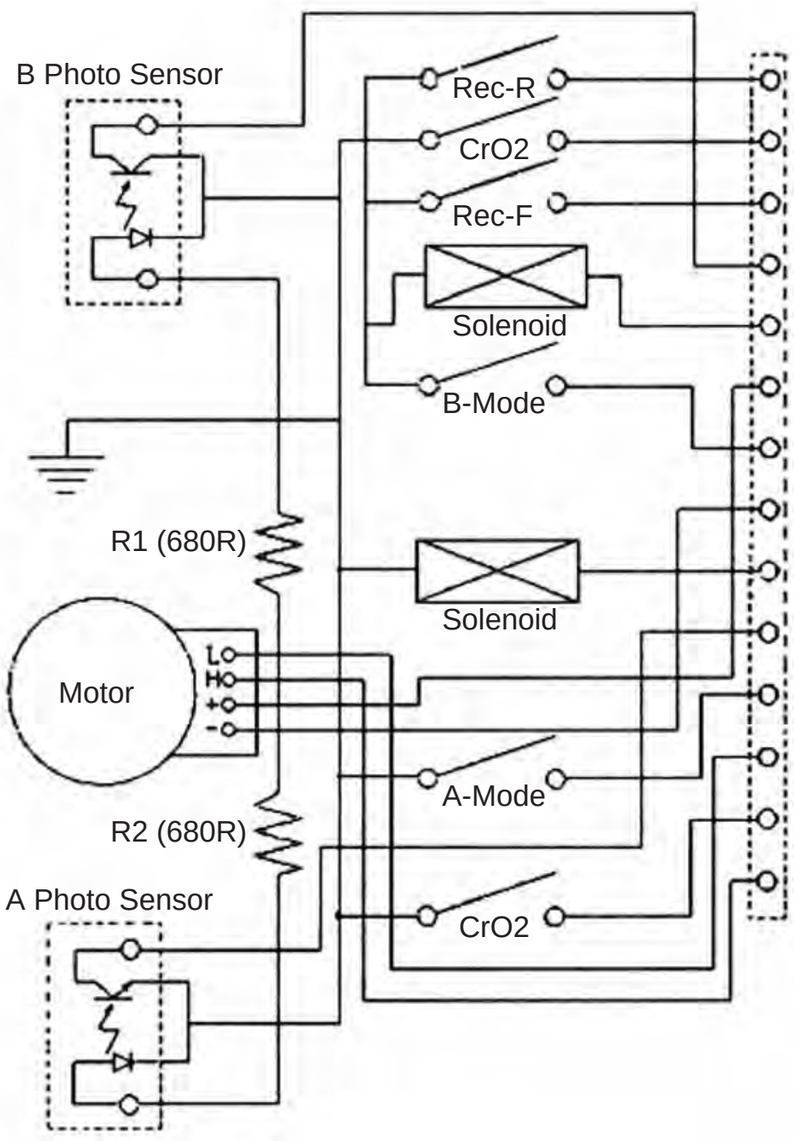
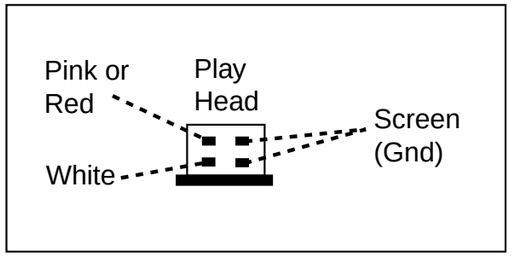
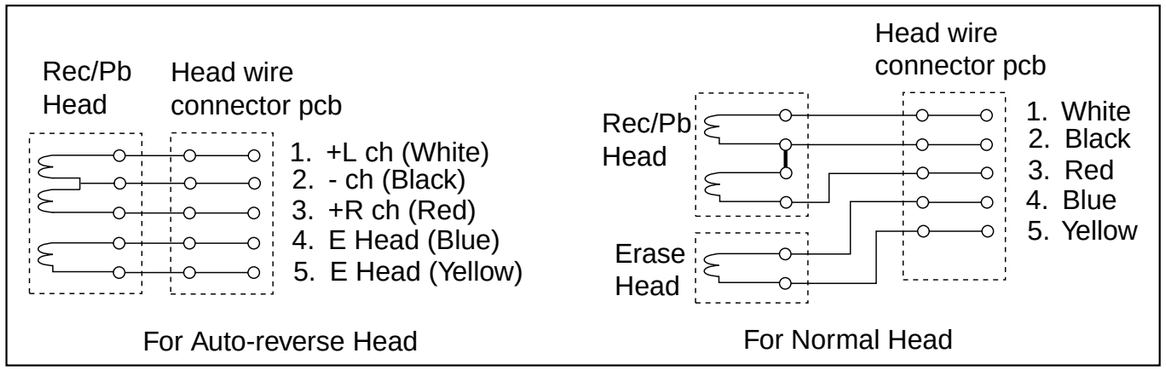
TAPE MECHANISM ELECTRONICS



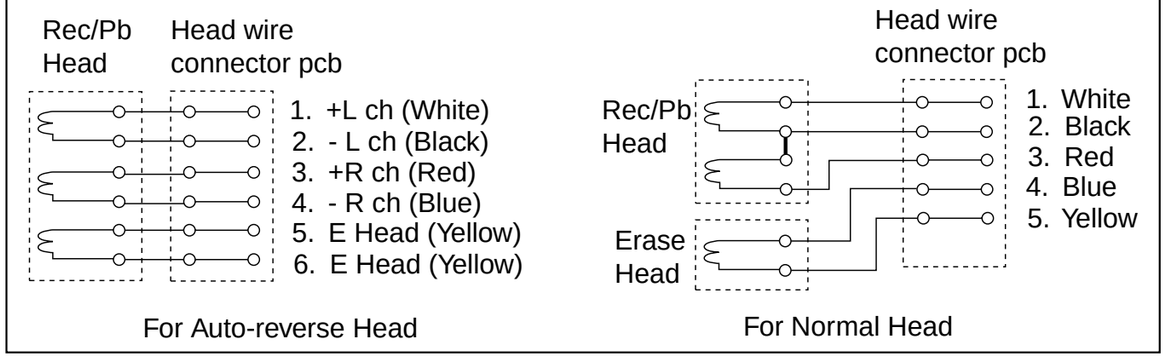
Mechanism A Head Wires Soldering



Mechanism B Head Wires Soldering (Non-Dolby version)



Mechanism B Head Wires Soldering (Dolby B NR version)



General

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

Playback

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

* For Dolby version only

\# For Auto-reverse version only

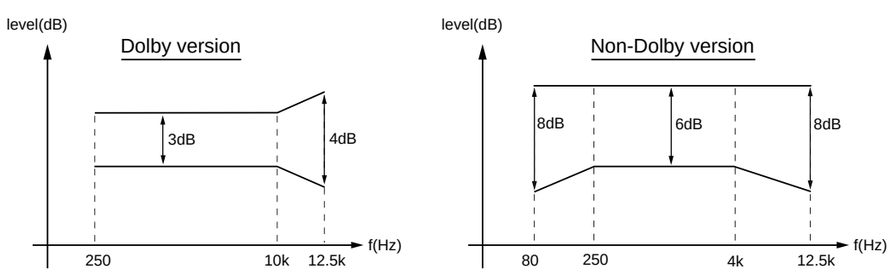


figure. 1

9A-6

Recording

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

* For Dolby version only

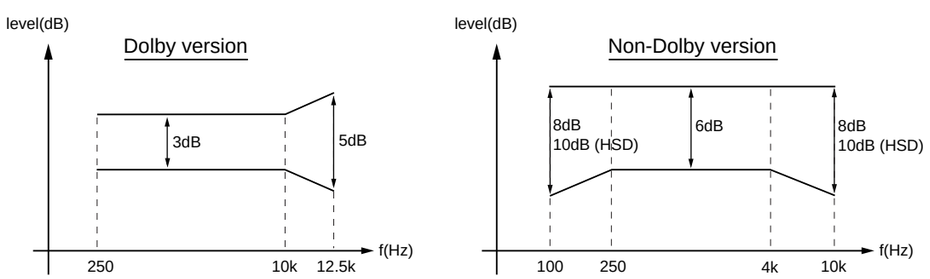
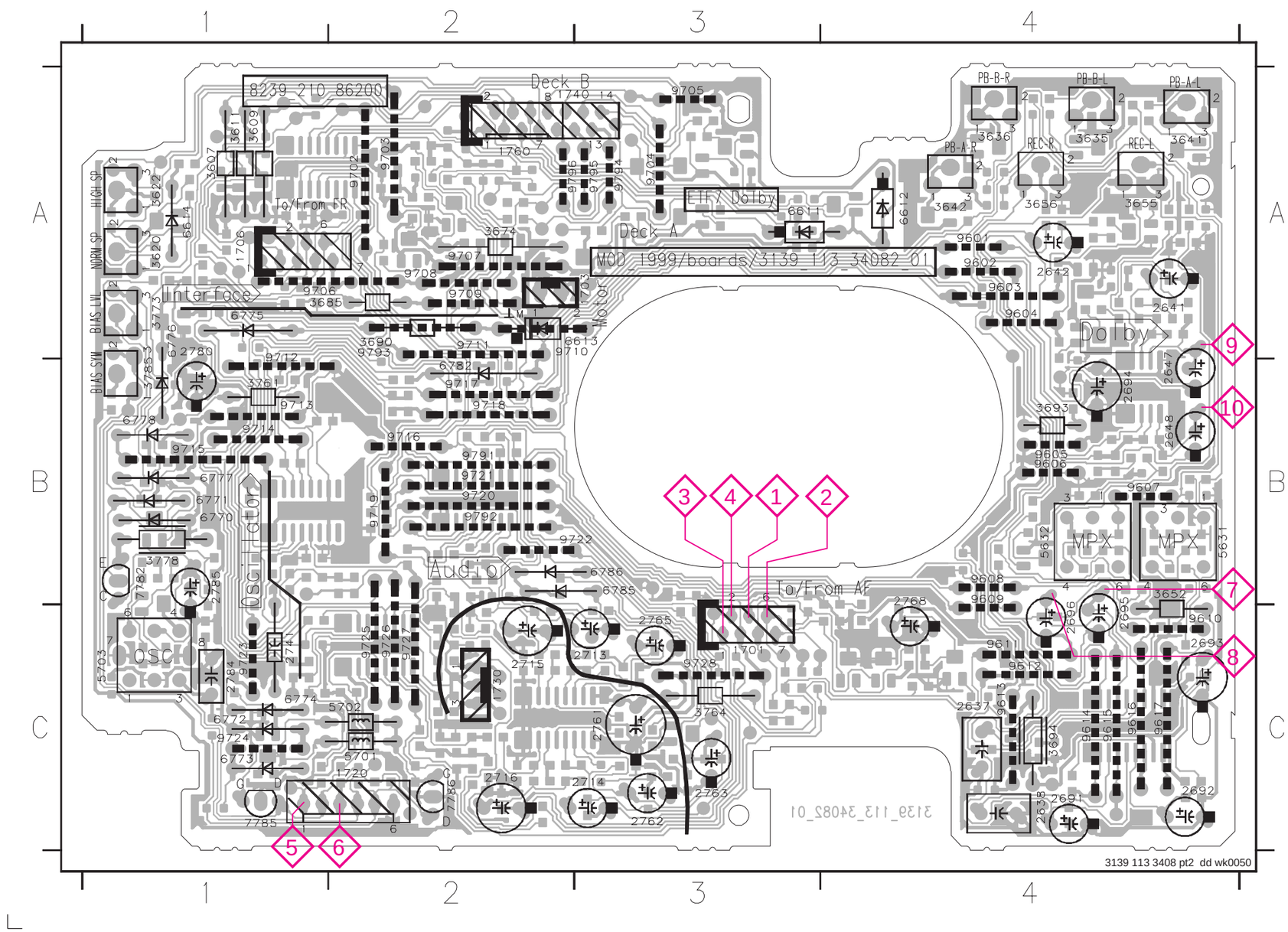


figure. 2

9A-7

COMPONENT LAYOUT



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

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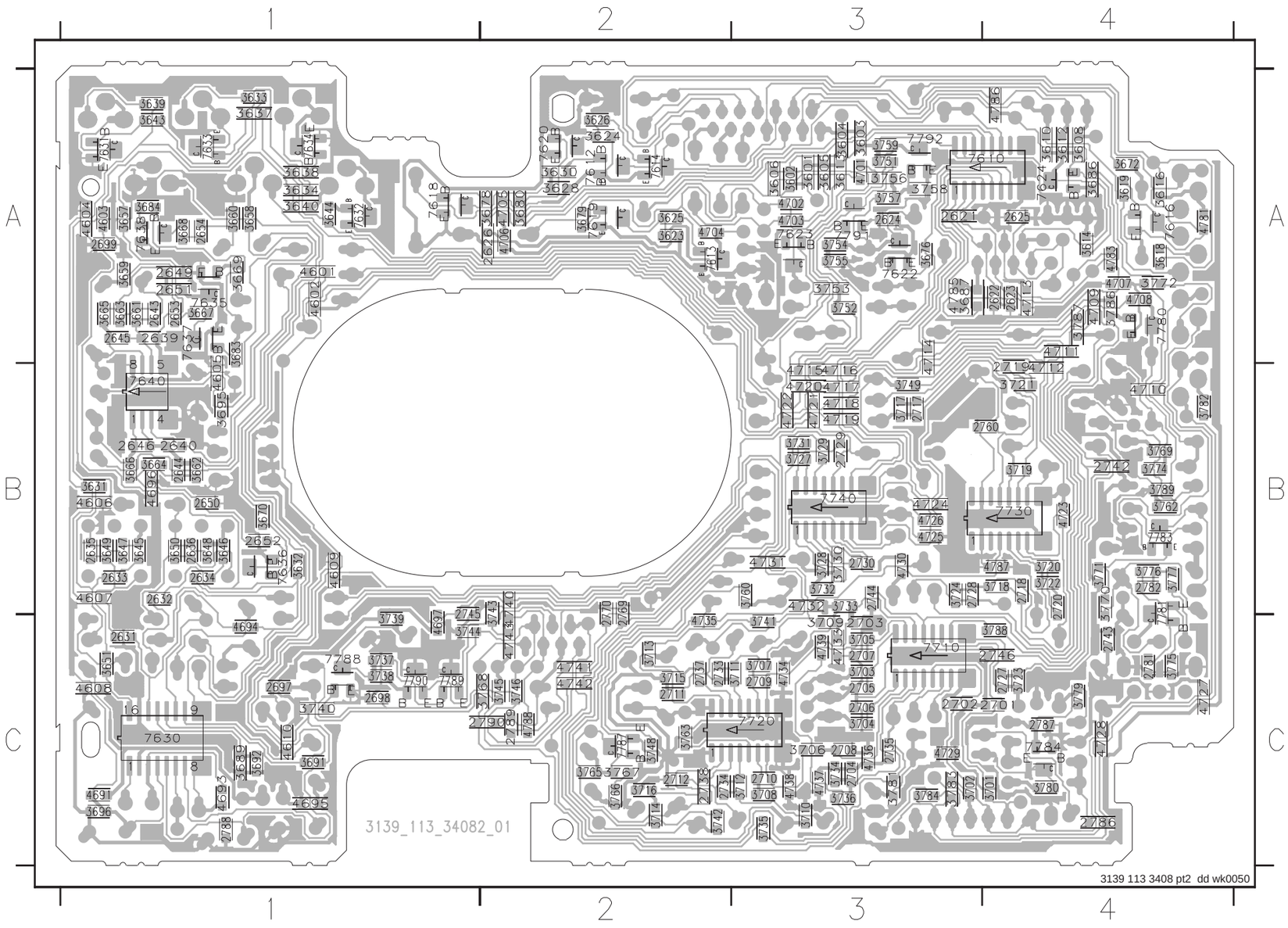
CHIP LAYOUT



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

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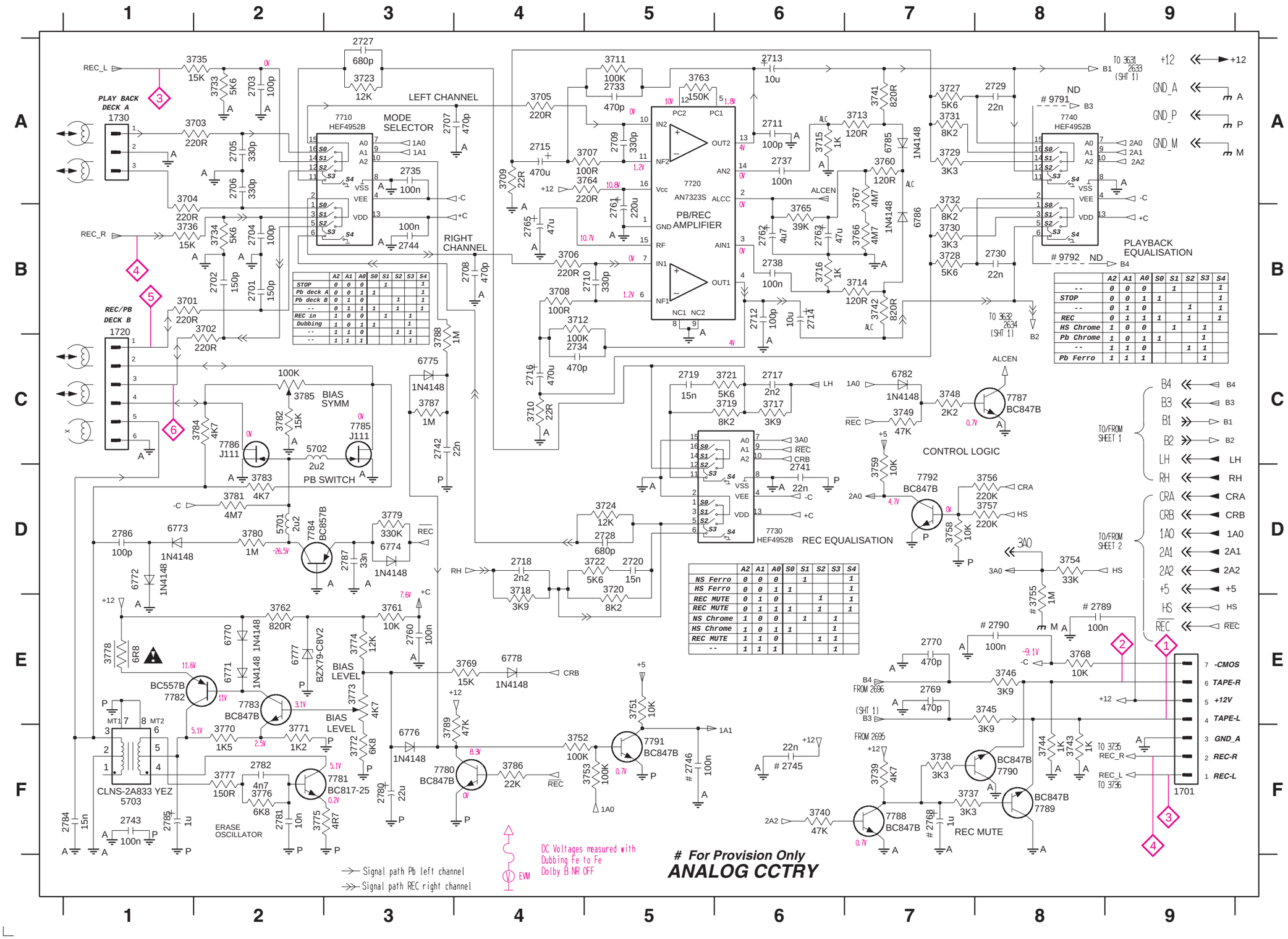
ANALOG CIRCUIT



1701 F9	3720 D5	6775 C3
1720 C1	3721 C6	6776 F3
1730 A1	3722 D5	6777 E2
2701 B2	3723 A3	6778 E4
2702 B2	3724 D5	6782 C7
2703 A2	3727 A7	6785 A7
2704 B2	3728 B7	6786 B7
2705 A2	3729 A7	7710 A3
2706 A2	3730 B7	7720 A5
2707 A3	3731 A7	7730 D6
2708 B4	3732 A7	7740 A8
2709 A5	3733 A2	7780 F4
2710 B5	3734 B2	7781 F3
2711 A6	3735 A2	7782 E1
2712 B6	3736 B1	7783 E2
2713 A6	3737 F7	7784 D2
2714 B6	3738 F7	7785 C3
2715 A4	3739 F7	7786 C2
2716 C4	3740 F6	7787 C8
2717 C6	3741 A7	7788 F7
2718 D4	3742 B7	7789 F8
2719 C5	3743 F8	7790 F8
2720 D5	3744 F8	7791 F5
2727 A3	3745 E8	7792 D7
2728 D5	3746 E8	9791 A8
2729 A8	3748 C7	9792 B8
2730 B8	3749 C7	
2733 A5	3751 E5	
2734 C4	3752 F4	
2735 A3	3753 F5	
2737 A6	3754 D8	
2738 B6	3755 E8	
2741 D6	3756 D8	
2742 C3	3757 D8	
2743 F1	3758 D7	
2744 B3	3759 D7	
2745 F6	3760 A7	
2746 F5	3761 E3	
2760 E3	3762 E2	
2761 B5	3763 A5	
2762 B6	3764 A5	
2763 B6	3765 B6	
2765 B4	3766 B7	
2768 F7	3767 A7	
2769 E7	3768 E8	
2770 E7	3769 E4	
2780 F3	3770 F2	
2781 F2	3771 F2	
2782 F2	3772 F3	
2784 F1	3773 E3	
2785 F1	3774 E3	
2786 D1	3775 F2	
2787 D3	3776 F2	
2789 E8	3777 F2	
2790 E8	3778 E1	
3701 B1	3779 D3	
3702 B2	3780 D2	
3703 A2	3781 D2	
3704 A1	3782 C2	
3705 A4	3783 D2	
3706 B4	3784 C2	
3707 A5	3785 C2	
3708 B4	3786 F4	
3709 A4	3787 C3	
3710 C4	3788 C3	
3711 A5	3789 F3	
3712 B4	5701 D2	
3713 A7	5702 C2	
3714 B7	5703 F1	
3715 A6	6770 E2	
3716 B6	6771 E2	
3717 C6	6772 D1	
3718 D4	6773 D1	
3719 C6	6774 D3	

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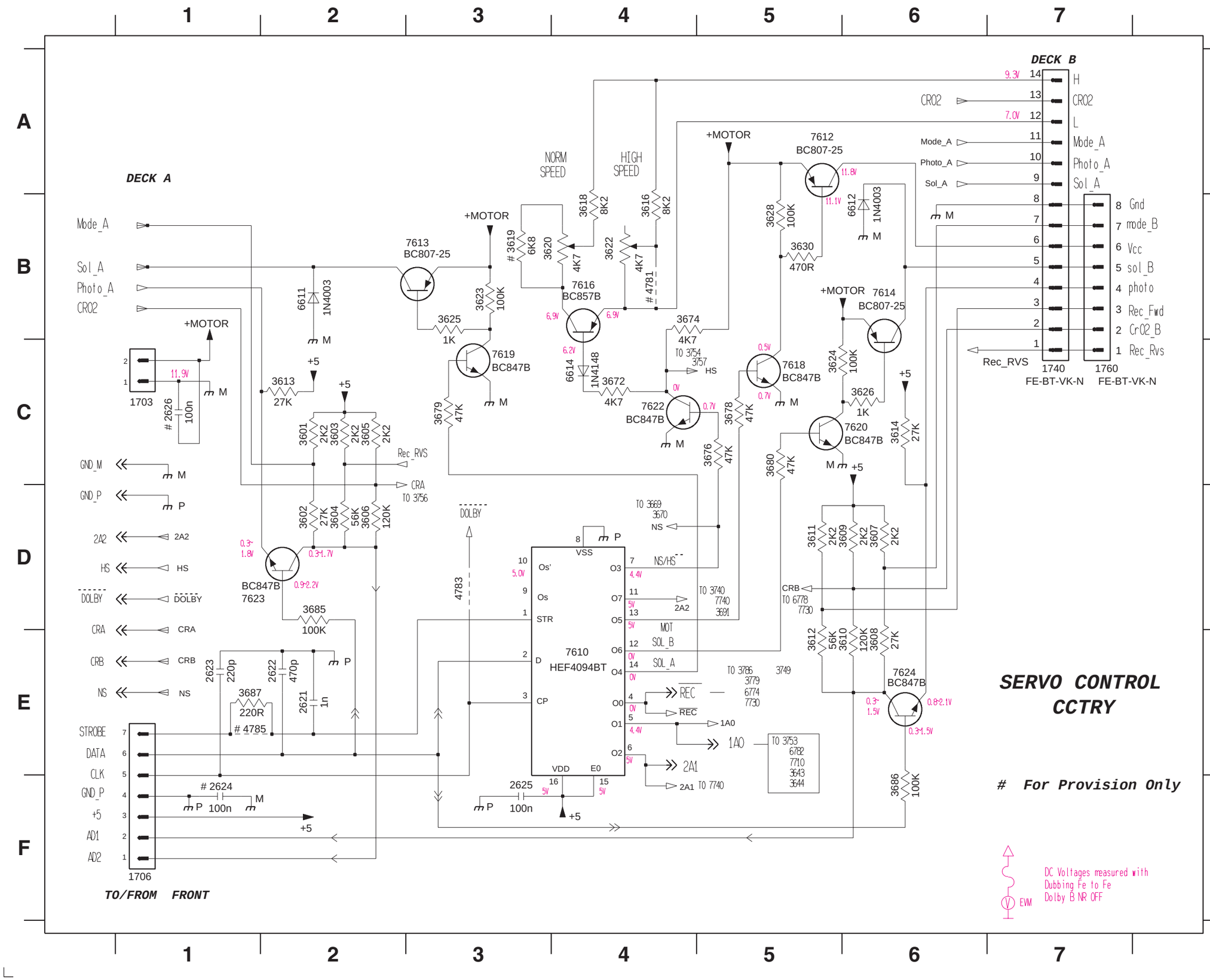
SERVO CONTROL CIRCUIT



1703 C1
1706 F1
1740 C7
1760 C7
2621 E2
2622 E2
2623 E1
2624 F1
2625 F3
2626 C1
3601 C2
3602 D2
3603 C2
3604 D2
3605 C2
3606 D2
3607 D6
3608 E6
3609 D6
3610 E6
3611 D5
3612 E5
3613 C2
3614 C6
3616 B4
3618 B4
3619 B3
3620 B3
3622 B4
3623 B3
3624 C5
3625 B3
3626 C6
3628 B5
3630 B5
3672 C4
3674 B4
3676 C5
3678 C5
3679 C3
3680 C5
3685 D2
3686 F6
3687 E1
4781 B4
4783 D3
4785 E1
6611 B2
6612 B6
6614 C4
7610 E4
7612 A5
7613 B2
7614 B6
7616 B4
7618 C5
7619 C3
7620 C6
7622 C4
7623 D1
7624 E6

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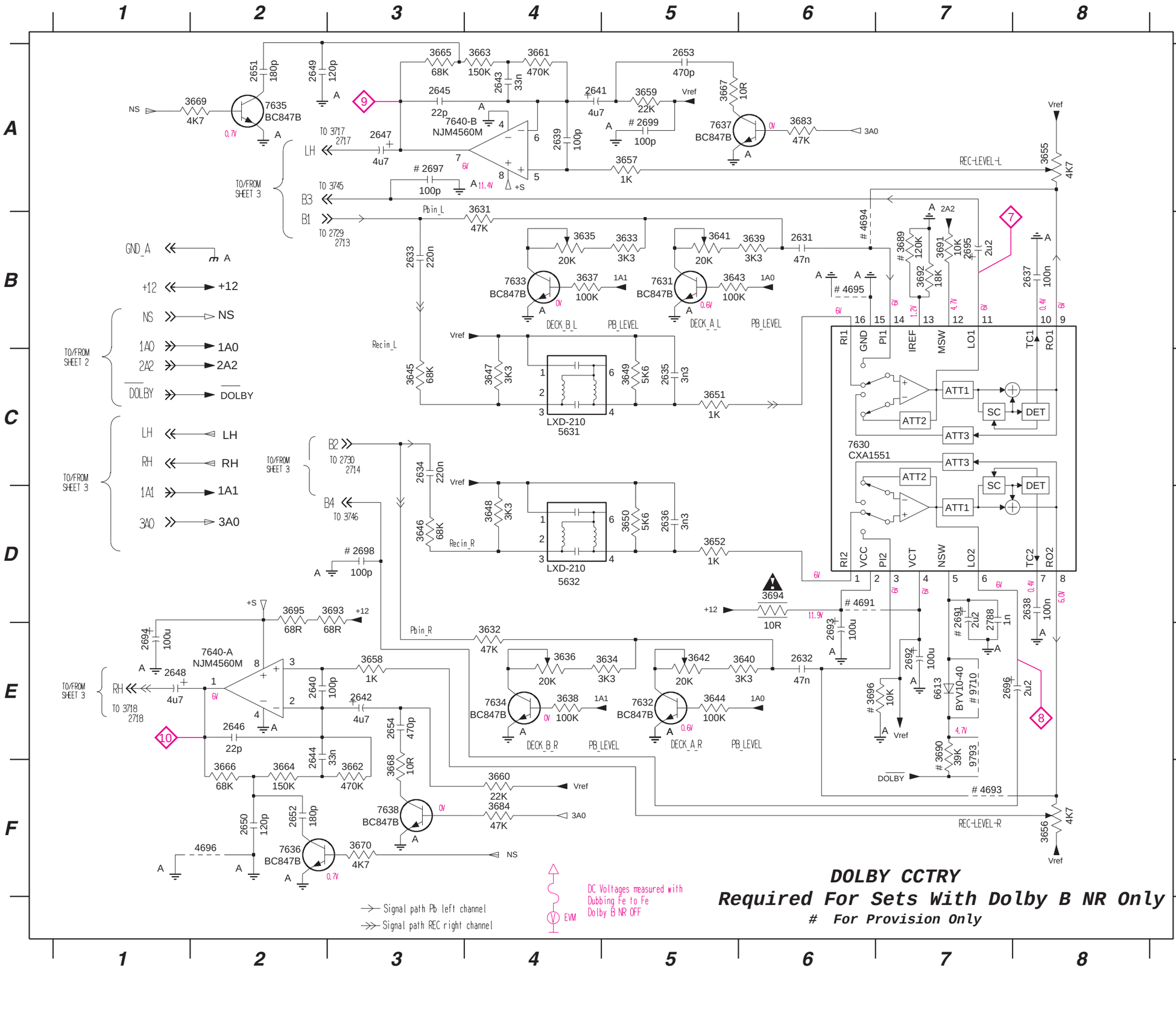
DOLBY CIRCUIT



2631 B6	3684 F4
2632 E6	3689 B7
2633 B3	3690 E7
2634 C3	3691 B7
2635 C5	3692 B7
2636 D5	3693 D3
2637 B8	3694 D6
2638 D8	3695 D2
2639 A4	3696 E6
2640 E2	4691 D6
2641 A4	4693 F7
2642 E3	4694 B6
2643 A4	4695 B6
2644 E2	4696 F2
2645 A3	5631 C4
2646 E2	5632 D4
2647 A3	6613 E7
2648 E1	7630 C6
2649 A2	7631 B5
2650 F2	7632 E5
2651 A2	7633 B4
2652 F2	7634 E4
2653 A5	7635 A2
2654 E3	7636 F2
2691 D7	7637 A5
2692 E7	7638 F3
2693 E6	7640-A E2
2694 E1	7640-B A4
2695 B7	9710 E7
2696 E7	9793 E7
2697 A3	
2698 D3	
2699 A5	
2788 D7	
3631 B4	
3632 E4	
3633 B5	
3634 E5	
3635 B4	
3636 E4	
3637 B4	
3638 E4	
3639 B6	
3640 E6	
3641 B5	
3642 E5	
3643 B5	
3644 E5	
3645 C3	
3646 D3	
3647 C4	
3648 D4	
3649 C5	
3650 D5	
3651 C5	
3652 D5	
3655 A8	
3656 F8	
3657 A5	
3658 E3	
3659 A5	
3660 F4	
3661 A4	
3662 F3	
3663 A4	
3664 F2	
3665 A3	
3666 F2	
3667 A5	
3668 F3	
3669 A2	
3670 F3	
3683 A6	

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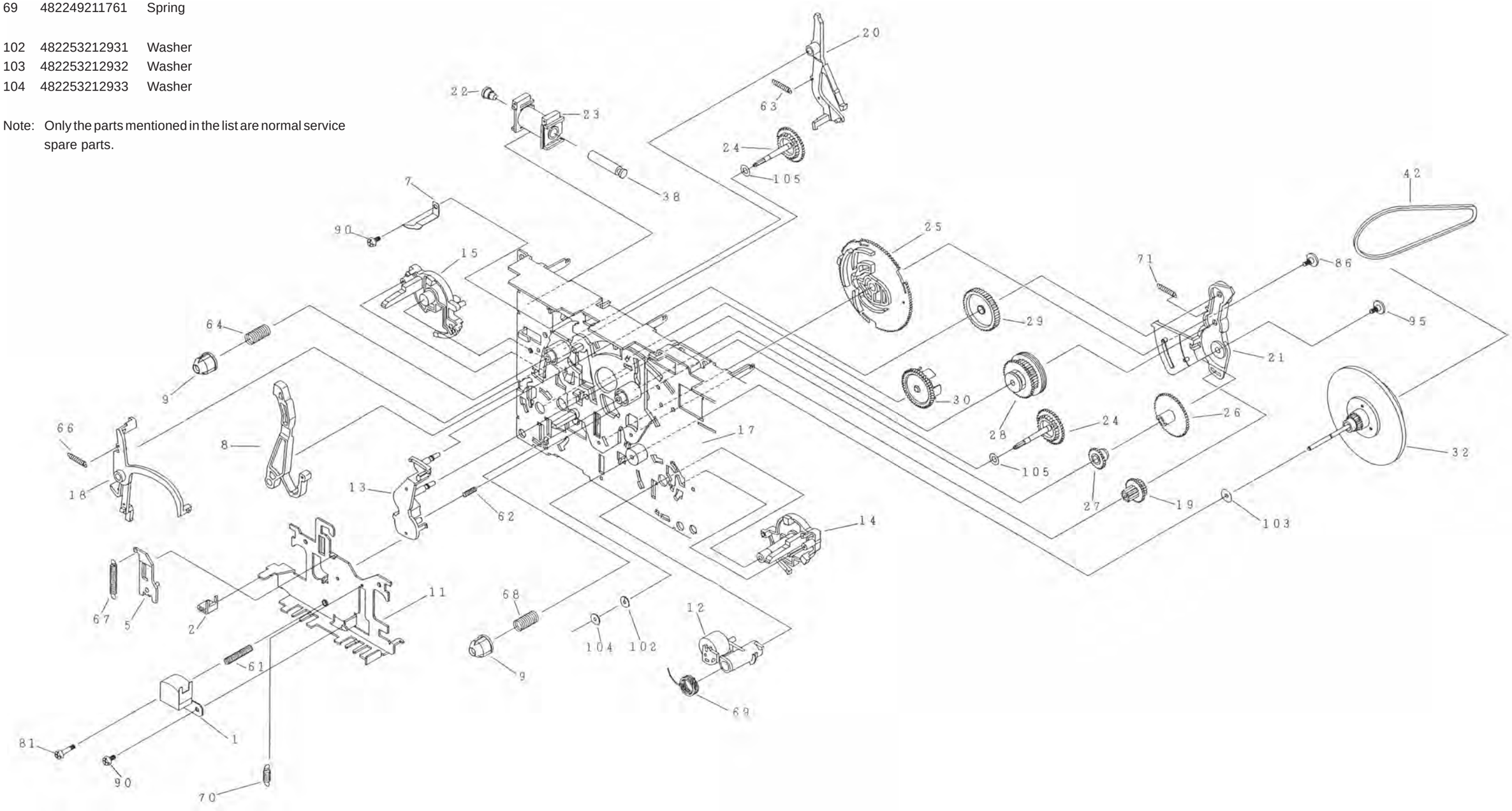
TAPE MECHANISM A - PLAY

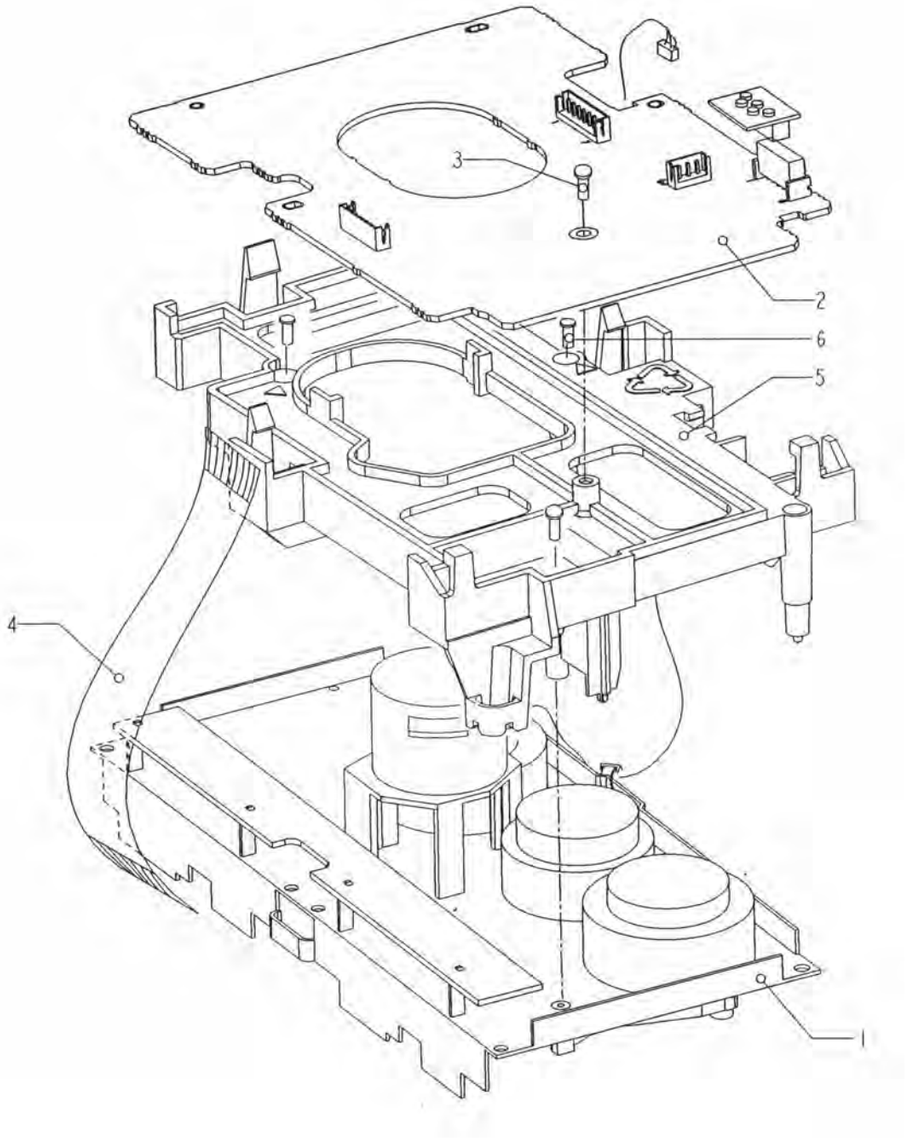
MECHANICAL PARTS - PLAY MECHANISM

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

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



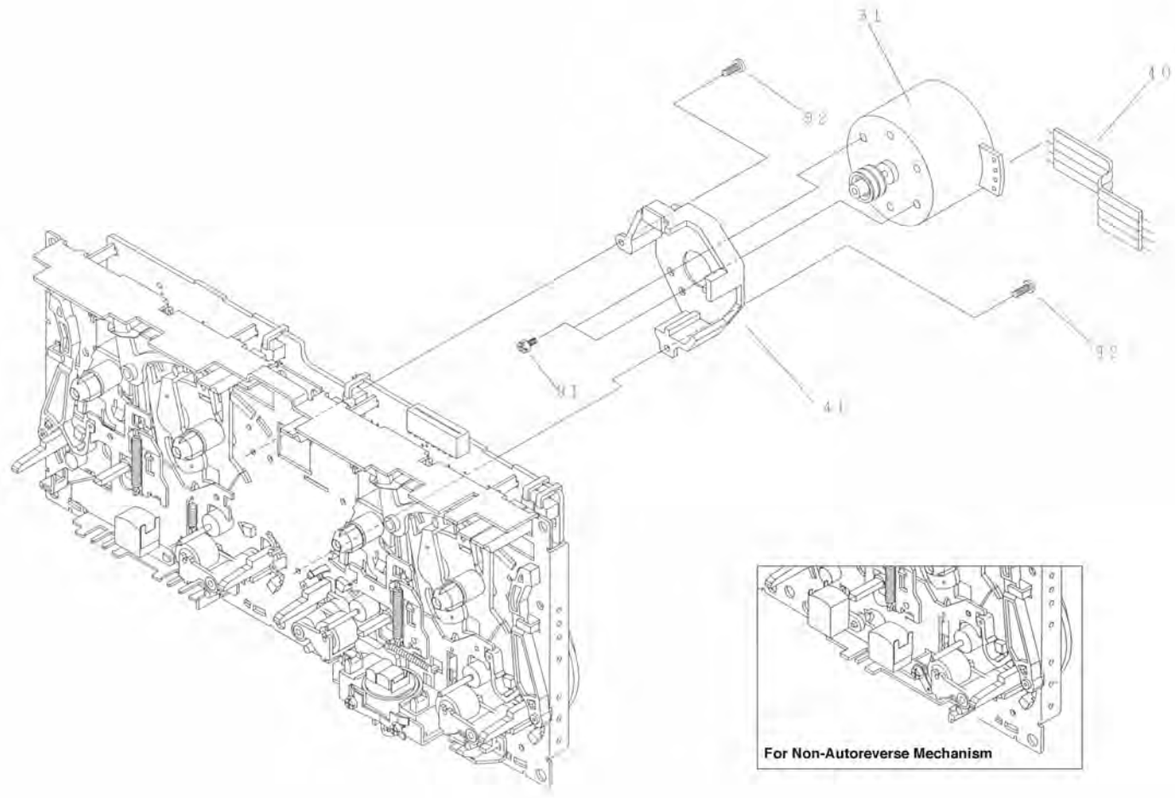
9A-13



TAPE MODULE EXPLODED VIEW

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

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



TAPE MECHANISM - MOTOR EXPLODED VIEW

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

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

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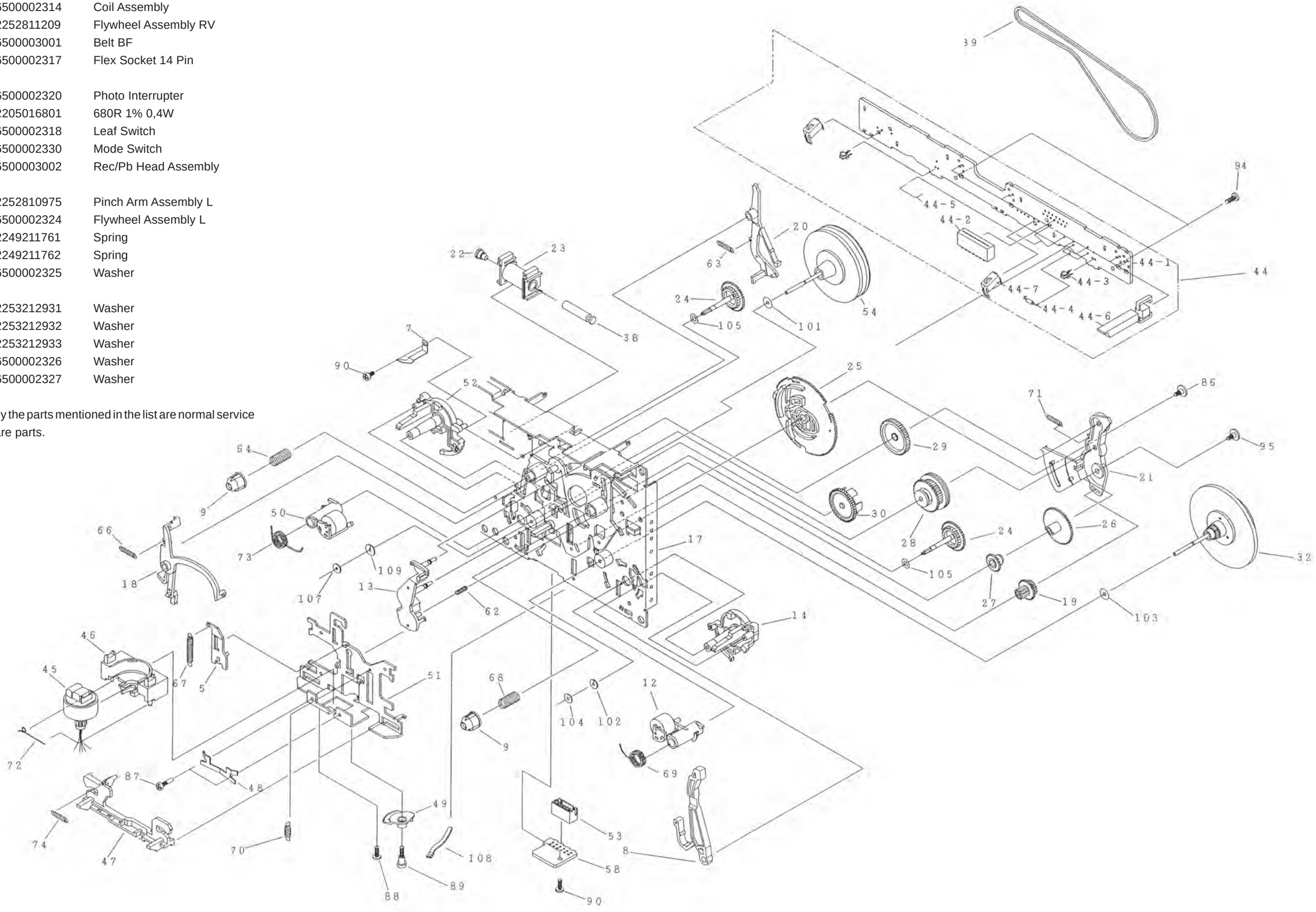
TAPE MECHANISM B - RECORD/PLAYBACK *(Autoreverse version)*

MECHANICAL PARTS - REC/PB MECHANISM

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

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



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ELECTRICAL PARTS LIST - ETF7 DOLBY BOARD

ELECTRICAL PARTS LIST - ETF7 DOLBY BOARD

MISCELLANEOUS

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

CAPACITORS

2621	532212231647	1nF 10% 63V
2622	532212234099	470pF 10% 63V
2623	482212233575	220pF 5% 63V
2625	482212614585	100nF 10% 50V
2631	482212613751	47nF 10% 63V
2632	482212613751	47nF 10% 63V
2633	482212613473	220nF +80/-20% 50V
2634	482212613473	220nF +80/-20% 50V
2635	482212233891	3,3nF 10% 63V
2636	482212233891	3,3nF 10% 63V
2637	532212142386	100nF 5% 63V
2638	532212142386	100nF 5% 63V
2639	532212232531	100pF 5% 50V
2640	532212232531	100pF 5% 50V
2641	482212440769	4,7µF 20% 100V
2642	482212440769	4,7µF 20% 100V
2643	482212612105	33nF 5% 50V
2644	482212612105	33nF 5% 50V
2645	532212232658	22pF 5% 50V
2646	532212232658	22pF 5% 50V
2647	482212440769	4,7µF 20% 100V
2648	482212440769	4,7µF 20% 100V
2649	532212233861	120pF 10% 50V
2650	532212233861	120pF 10% 50V
2651	482212610326	180pF 5% 63V
2652	482212610326	180pF 5% 63V
2653	532212234099	470pF 10% 63V
2654	532212234099	470pF 10% 63V
2692	482212441584	100µF 20% 10V
2693	482212440207	100µF 20% 25V
2694	482212440207	100µF 20% 25V
2695	482212422652	2,2µF 20% 50V
2696	482212422652	2,2µF 20% 50V
2701	532212233538	150pF 2% 63V
2702	532212233538	150pF 2% 63V
2703	532212232531	100pF 5% 50V
2704	532212232531	100pF 5% 50V
2705	532212231863	330pF 5% 63V
2706	532212231863	330pF 5% 63V
2707	532212234099	470pF 10% 63V
2708	532212234099	470pF 10% 63V
2709	532212231863	330pF 5% 63V
2710	532212231863	330pF 5% 63V
2711	532212232531	100pF 5% 50V
2712	532212232531	100pF 5% 50V
2713	482212440248	10µF 20% 63V
2714	482212440248	10µF 20% 63V
2715	482212480195	470µF 20% 10V
2716	482212480195	470µF 20% 10V
2717	482212233127	2,2nF 10% 63V
2718	482212233127	2,2nF 10% 63V
2719	482212613188	15nF 5% 63V
2720	482212613188	15nF 5% 63V
2727	482212232535	680pF 10% 63V
2728	482212232535	680pF 10% 63V
2729	532212232654	22nF 10% 63V
2730	532212232654	22nF 10% 63V
2733	532212234099	470pF 10% 63V
2734	532212234099	470pF 10% 63V
2735	482212614585	100nF 10% 50V
2737	482212614585	100nF 10% 50V
2738	482212614585	100nF 10% 50V
2741	482212611585	22nF +80/-20% 25V
2742	532212232654	22nF 10% 63V
2743	482212614585	100nF 10% 50V
2744	482212614585	100nF 10% 50V
2760	482212614585	100nF 10% 50V
2761	482212480144	220µF 20% 25V
2762	482212440769	4,7µF 20% 100V
2763	482212440433	47µF 20% 25V
2765	482212440433	47µF 20% 25V
2769	532212234099	470pF 10% 63V
2770	532212234099	470pF 10% 63V
2780	482212481151	22µF 50V
2781	482212233177	10nF 20% 50V
2782	532212610223	4,7nF 10% 63V
2784	482212151305	15nF 10% 50V
2785	482212421913	1µF 20% 63V
2786	532212232531	100pF 5% 50V
2787	482212612105	33nF 5% 50V
2788	532212231647	1nF 10% 63V

RESISTORS

3601	482211711449	2k2 1% 0,1W
3602	482205120273	27k 5% 0,1W
3603	482211711449	2k2 1% 0,1W
3604	482211711148	56k 1% 0,1W
3605	482211711449	2k2 1% 0,1W
3606	482205120124	120k 5% 0,1W
3607	482211652256	2k2 5% 0,5W
3608	482205120273	27k 5% 0,1W
3609	482211652256	2k2 5% 0,5W
3610	482205120124	120k 5% 0,1W
3611	482211652256	2k2 5% 0,5W
3612	482211711148	56k 1% 0,1W
3613	482205120273	27k 5% 0,1W
3614	482205120273	27k 5% 0,1W
3616	482205120822	8k2 5% 0,1W
3618	482205120822	8k2 5% 0,1W
3620	482210012227	4k7 30% 0,1W
3622	482210012227	4k7 30% 0,1W
3623	482211710837	100k 1% 0,1W
3624	482211710837	100k 1% 0,1W
3625	482205110102	1k 2% 0,25W
3626	482205110102	1k 2% 0,25W
3628	482211710837	100k 1% 0,1W
3630	482205120471	470R 5% 0,1W
3631	482211710834	47k 1% 0,1W
3632	482211710834	47k 1% 0,1W
3633	482205120332	3k3 5% 0,1W
3634	482205120332	3k3 5% 0,1W
3635	482210011771	20k 30% 0,1W
3636	482210011771	20k 30% 0,1W
3637	482211710837	100k 1% 0,1W
3638	482211710837	100k 1% 0,1W
3639	482205120332	3k3 5% 0,1W
3640	482205120332	3k3 5% 0,1W
3641	482210011771	20k 30% 0,1W
3642	482210011771	20k 30% 0,1W
3643	482211710837	100k 1% 0,1W
3644	482211710837	100k 1% 0,1W
3645	482205120683	68k 5% 0,1W
3646	482205120683	68k 5% 0,1W
3647	482205120332	3k3 5% 0,1W
3648	482205120332	3k3 5% 0,1W
3649	482205120562	5k6 5% 0,1W
3650	482205120562	5k6 5% 0,1W
3651	482205110102	1k 2% 0,25W
3652	482205011002	1k 1% 0,4W
3655	482210012227	4k7 30% 0,1W
3656	482210012227	4k7 30% 0,1W
3657	482205110102	1k 2% 0,25W
3658	482205110102	1k 2% 0,25W
3659	482205120223	22k 5% 0,1W
3660	482205120223	22k 5% 0,1W
3661	482205120474	470k 5% 0,1W
3662	482205120474	470k 5% 0,1W
3663	482205120154	150k 5% 0,1W
3664	482205120154	150k 5% 0,1W
3665	482205120683	68k 5% 0,1W
3666	482205120683	68k 5% 0,1W
3667	482205120109	10R 5% 0,1W
3668	482205120109	10R 5% 0,1W
3669	482205120472	4k7 5% 0,1W
3670	482205120472	4k7 5% 0,1W
3672	482205120472	4k7 5% 0,1W
3674	482211652283	4k7 5% 0,5W
3676	482211710834	47k 1% 0,1W
3678	482211710834	47k 1% 0,1W
3679	482211710834	47k 1% 0,1W
3680	482211710834	47k 1% 0,1W
3683	482211710834	47k 1% 0,1W
3684	482211710834	47k 1% 0,1W
3685	482211652234	100k 5% 0,5W
3686	482211710837	100k 1% 0,1W
3687	482211711503	220R 1% 0,1W
3691	482211710833	10k 1% 0,1W
3692	482211710965	18k 1% 0,1W
3693	482211652199	68R 5% 0,5W
3694	482205210109	⚠ 10R 5% 0,33W
3695	482211712521	68R 1% 0,1W
3701	482211711503	220R 1% 0,1W
3702	482211711503	220R 1% 0,1W
3703	482211711503	220R 1% 0,1W
3704	482211711503	220R 1% 0,1W
3705	482211711503	220R 1% 0,1W
3706	482211711503	220R 1% 0,1W
3707	482205120101	100R 5% 0,1W
3708	482205120101	100R 5% 0,1W
3709	482205120229	22R 5% 0,1W
3710	482205120229	22R 5% 0,1W
3711	482211710837	100k 1% 0,1W
3712	482211710837	100k 1% 0,1W
3713	482205120121	120R 5% 0,1W
3714	482205120121	120R 5% 0,1W
3715	482205110102	1k 2% 0,25W
3716	482205110102	1k 2% 0,25W
3717	482205120392	3k9 5% 0,1W
3718	482205120392	3k9 5% 0,1W
3719	482205120822	8k2 5% 0,1W
3720	482205120822	8k2 5% 0,1W
3721	482205120562	5k6 5% 0,1W
3722	482205120562	5k6 5% 0,1W
3723	482211711383	12k 1% 0,1W
3724	482211711383	12k 1% 0,1W
3727	482205120562	5k6 5% 0,1W
3728	482205120562	5k6 5% 0,1W
3729	482205120332	3k3 5% 0,1W
3730	482205120332	3k3 5% 0,1W
3731	482205120822	8k2 5% 0,1W
3732	482205120822	8k2 5% 0,1W
3733	482205120562	5k6 5% 0,1W
3734	482205120562	5k6 5% 0,1W
3735	482211683933	15k 1% 0,1W
3736	482211683933	15k 1% 0,1W
3737	482205120332	3k3 5% 0,1W
3738	482205120332	3k3 5% 0,1W
3739	482205120472	4k7 5% 0,1W
3740	482211710834	47k 1% 0,1W
3741	482211711454	820R 1% 0,1W
3742	482211711454	820R 1% 0,1W
3743	482205110102	1k 2% 0,25W
3744	482205110102	1k 2% 0,25W

9A-16

ELECTRICAL PARTS LIST - ETF7 DOLBY BOARD

ELECTRICAL PARTS LIST - ETF7 DOLBY BOARD

RESISTORS

3745	482205120392		3k9 5% 0,1W
3746	482205120392		3k9 5% 0,1W
3748	482211711449		2k2 1% 0,1W
3749	482211710834		47k 1% 0,1W
3751	482211710833		10k 1% 0,1W
3752	482211710837		100k 1% 0,1W
3753	482211710837		100k 1% 0,1W
3754	482205120333		33k 5% 0,1W
3756	482211713579		220k 1% 0,1W
3757	482211713579		220k 1% 0,1W
3758	482211710833		10k 1% 0,1W
3759	482211710833		10k 1% 0,1W
3760	482205120121		120R 5% 0,1W
3761	482205021003		10k 1% 0,6W
3762	482211711454		820R 1% 0,1W
3763	482205120154		150k 5% 0,1W
3764	482211683872		220R 5% 0,5W
3765	482205120393		39k 5% 0,1W
3766	482205120475		4M7 5% 0,1W
3767	482205120475		4M7 5% 0,1W
3768	482211710833		10k 1% 0,1W
3769	482211683933		15k 1% 0,1W
3770	482211711139		1k5 1% 0,1W
3771	482205120122		1k2 5% 0,1W
3772	482211711507		6k8 1% 0,1W
3773	482210012227		4k7 30% 0,1W
3774	482211711383		12k 1% 0,1W
3775	482205120478		4R7 5% 0,1W
3776	482211711507		6k8 1% 0,1W
3777	482211710353		150R 1% 0,1W
3778	482205210688	⚠	6R8 5% 0,33W
3779	482205120334		330k 5% 0,1W
3780	482205120105		1M 5% 0,1W
3781	482205120475		4M7 5% 0,1W
3782	482211683933		15k 1% 0,1W
3783	482205120472		4k7 5% 0,1W
3784	482205120472		4k7 5% 0,1W
3785	532210011539		100k 30% 0,1W
3786	482205120223		22k 5% 0,1W
3787	482205120105		1M 5% 0,1W
3788	482205120105		1M 5% 0,1W
3789	482211710834		47k 1% 0,1W
4601	482205120008		0R Jumper 0805
4602	482205120008		0R Jumper 0805
4603	482205120008		0R Jumper 0805
4604	482205120008		0R Jumper 0805
4605	482205120008		0R Jumper 0805
4606	482205120008		0R Jumper 0805
4607	482205120008		0R Jumper 0805
4608	482205120008		0R Jumper 0805
4610	482205120008		0R Jumper 0805
4696	482205120008		0R Jumper 0805
4697	482205120008		0R Jumper 0805
4701	482205120008		0R Jumper 0805
4702	482205120008		0R Jumper 0805
4703	482205120008		0R Jumper 0805
4704	482205120008		0R Jumper 0805
4705	482205120008		0R Jumper 0805
4706	482205120008		0R Jumper 0805
4707	482205120008		0R Jumper 0805
4708	482205120008		0R Jumper 0805
4709	482205120008		0R Jumper 0805
4710	482205120008		0R Jumper 0805
4711	482205120008		0R Jumper 0805
4712	482205120008		0R Jumper 0805
4713	482205120008		0R Jumper 0805
4714	482205120008		0R Jumper 0805
4715	482205120008		0R Jumper 0805
4716	482205120008		0R Jumper 0805
4717	482205120008		0R Jumper 0805
4718	482205120008		0R Jumper 0805
4719	482205120008		0R Jumper 0805
4720	482205120008		0R Jumper 0805
4721	482205120008		0R Jumper 0805
4722	482205120008		0R Jumper 0805
4723	482205120008		0R Jumper 0805
4724	482205120008		0R Jumper 0805
4725	482205120008		0R Jumper 0805
4726	482205120008		0R Jumper 0805
4727	482205120008		0R Jumper 0805
4728	482205120008		0R Jumper 0805
4729	482205120008		0R Jumper 0805
4730	482205120008		0R Jumper 0805
4731	482205120008		0R Jumper 0805
4732	482205120008		0R Jumper 0805
4733	482205120008		0R Jumper 0805
4734	482205120008		0R Jumper 0805
4735	482205120008		0R Jumper 0805
4736	482205120008		0R Jumper 0805
4737	482205120008		0R Jumper 0805
4738	482205120008		0R Jumper 0805
4739	482205120008		0R Jumper 0805
4740	482205120008		0R Jumper 0805
4741	482205120008		0R Jumper 0805
4742	482205120008		0R Jumper 0805
4743	482205120008		0R Jumper 0805
4783	482205120008		0R Jumper 0805
4786	482205120008		0R Jumper 0805
4787	482205120008		0R Jumper 0805
4788	482205120008		0R Jumper 0805

COILS & FILTERS

5631	482215711865	Filter MPX 20kHz
5632	482215711865	Filter MPX 20kHz
5701	482215711477	Coil 2,2µH 5%
5702	482215711477	Coil 2,2µH 5%
5703	482215620946	Osc. Coil 100kHz

DIODES

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

TRANSISTORS & INTEGRATED CIRCUITS

7610	532220911306	HEF4094BT
7612	532213060845	BC807-25
7613	532213060845	BC807-25
7614	532213060845	BC807-25
7616	482213060373	BC857B
7618	482213060511	BC847B
7619	482213060511	BC847B
7620	482213060511	BC847B
7622	482213060511	BC847B
7623	482213060511	BC847B
7624	482213060511	BC847B
7630	482220917322	CXA1551M
7631	482213060511	BC847B
7632	482213060511	BC847B
7633	482213060511	BC847B
7634	482213060511	BC847B
7635	482213060511	BC847B
7636	482213060511	BC847B
7637	482213060511	BC847B
7638	482213060511	BC847B
7640	482220983357	NJM4560M
7710	482220932919	HEF4952BT
7720	932214000668	AN7323S
7730	482220932919	HEF4952BT
7740	482220932919	HEF4952BT
7780	482213060511	BC847B
7781	482213042804	BC817-25
7782	482213044568	BC557B
7783	482213060511	BC847B
7784	482213060373	BC857B
7785	482213063494	J111
7786	482213063494	J111
7787	482213060511	BC847B
7788	482213060511	BC847B
7789	482213060511	BC847B
7790	482213060511	BC847B
7791	482213060511	BC847B
7792	482213060511	BC847B

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

3CDC-LLC-DA11

(3 Disc Carousel Changer)

Layout stage .3

TABLE OF CONTENTS

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

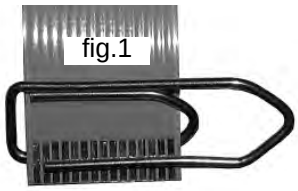
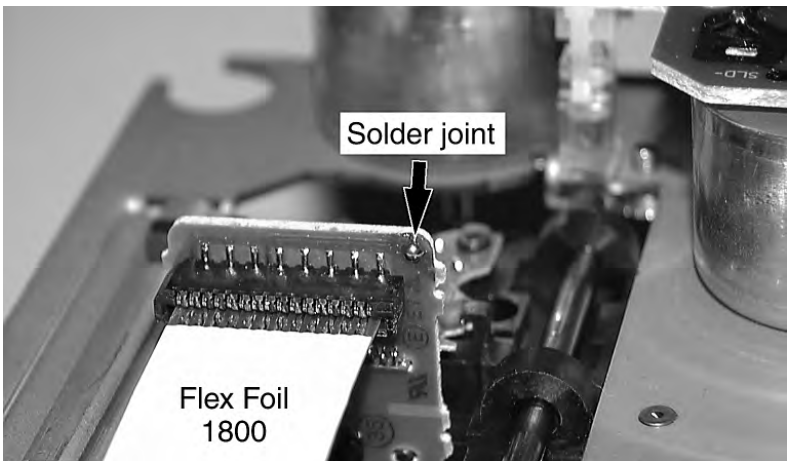


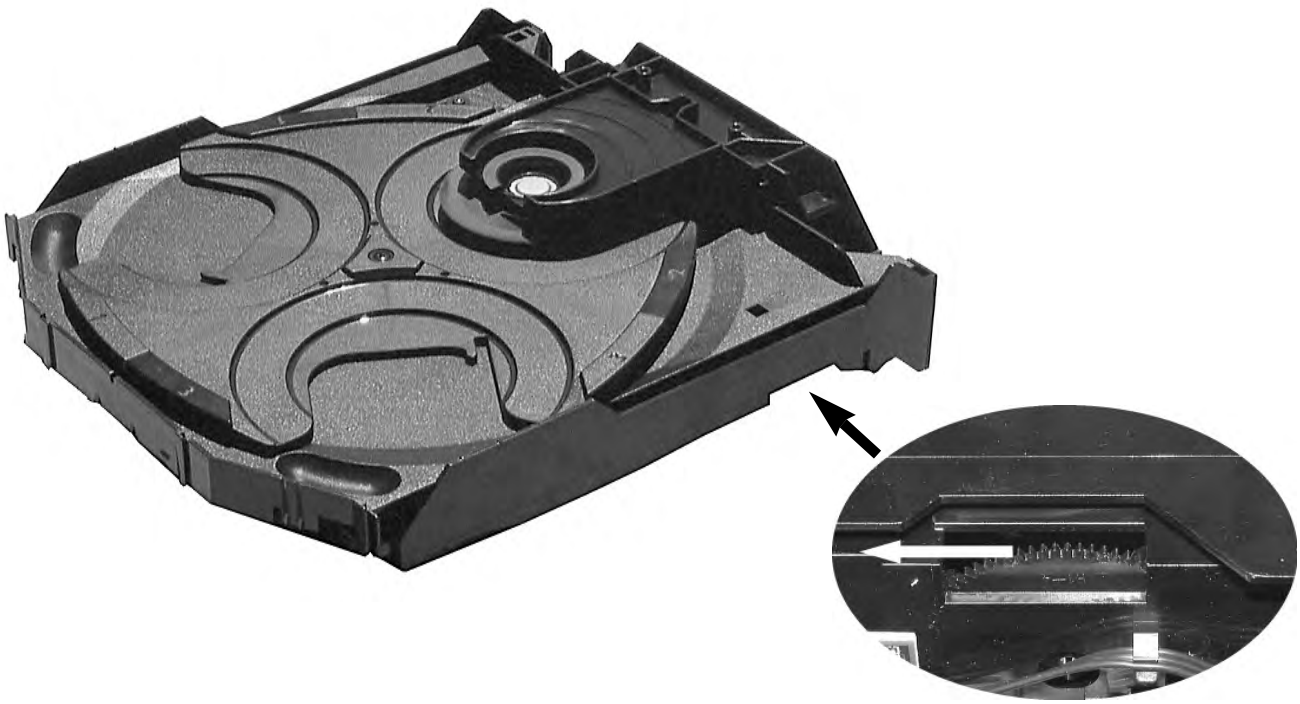
fig.1

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

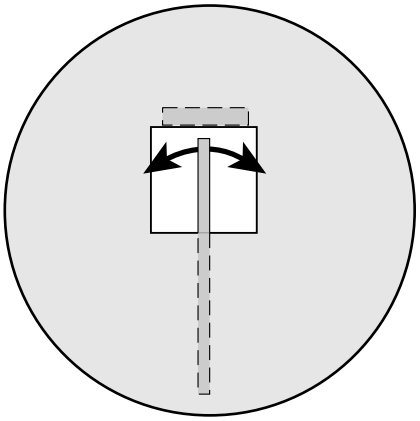
In case of a Supply fault, the tray can be opened manually.
1. Remove the top cover of the set to get access to the Changer Module.
2. Turn gearwheel clockwise (as shown in picture below).



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.



Detail A

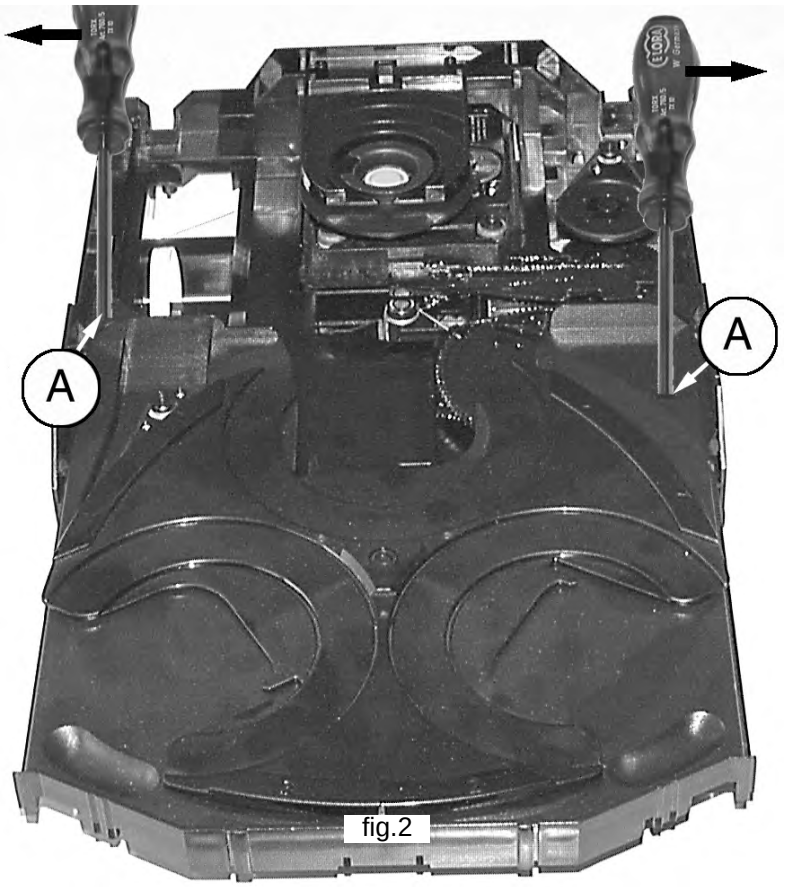
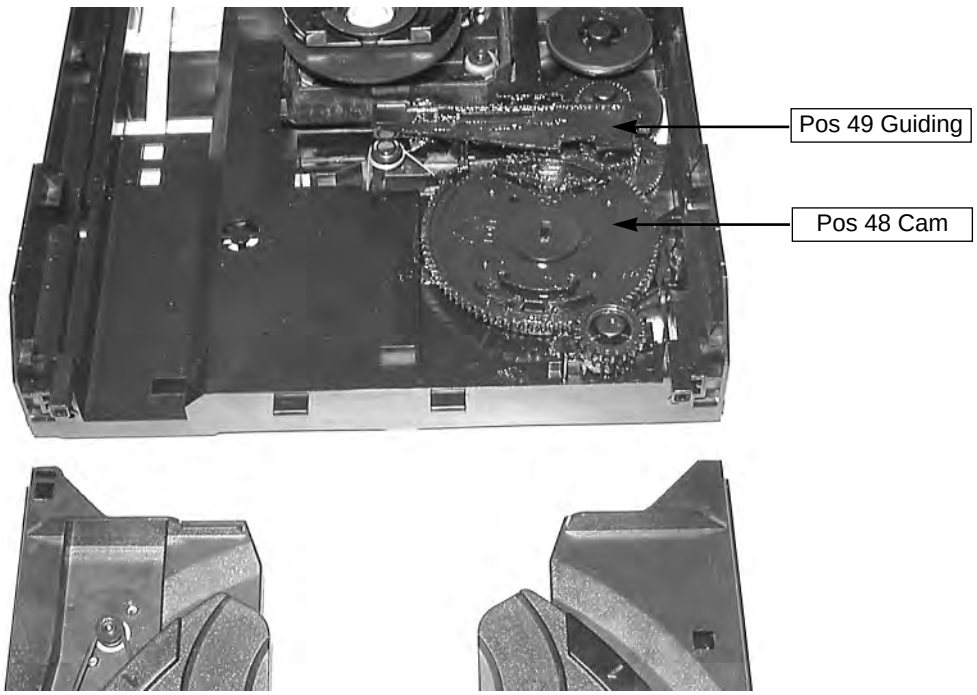


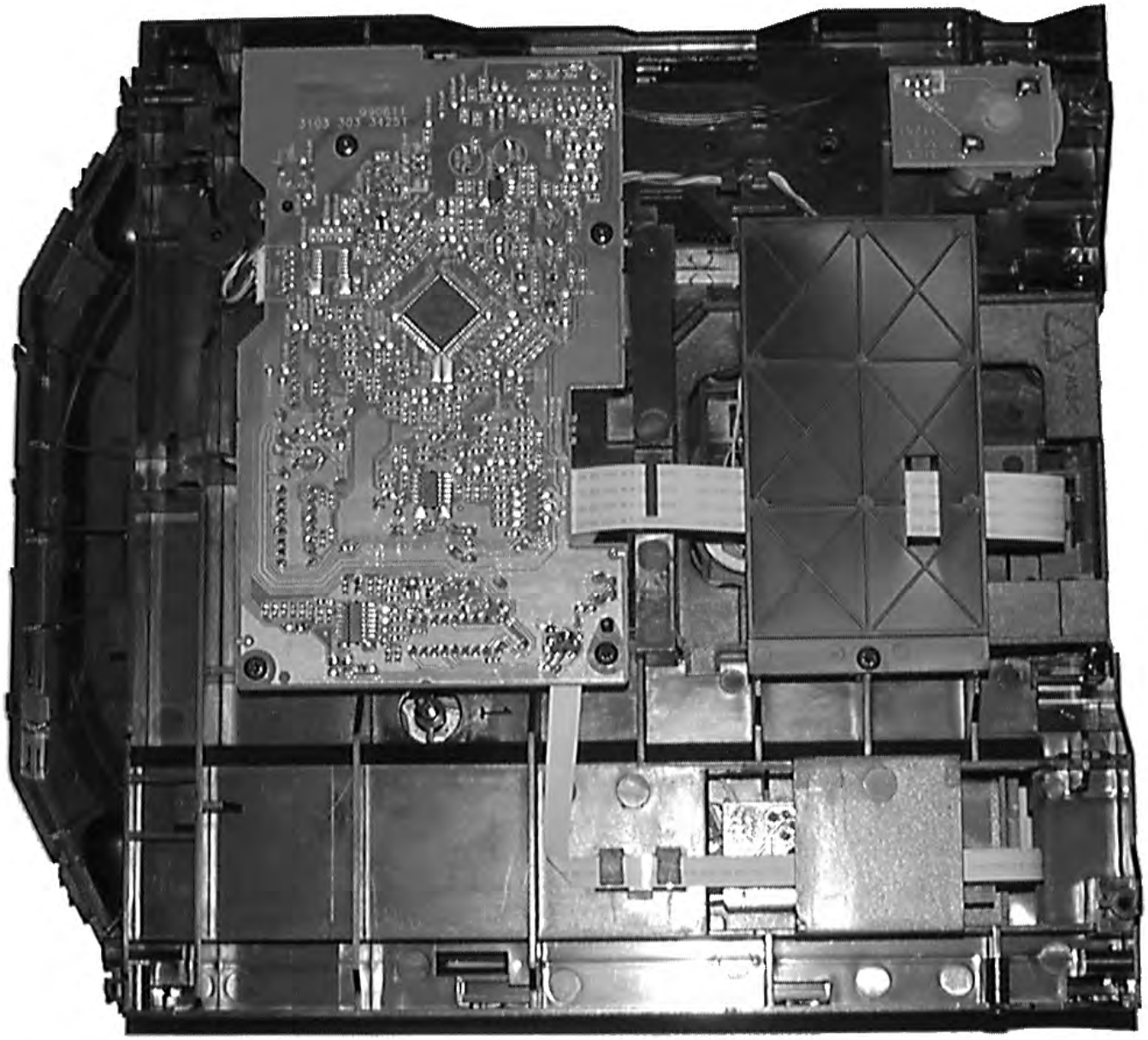
fig.2

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.

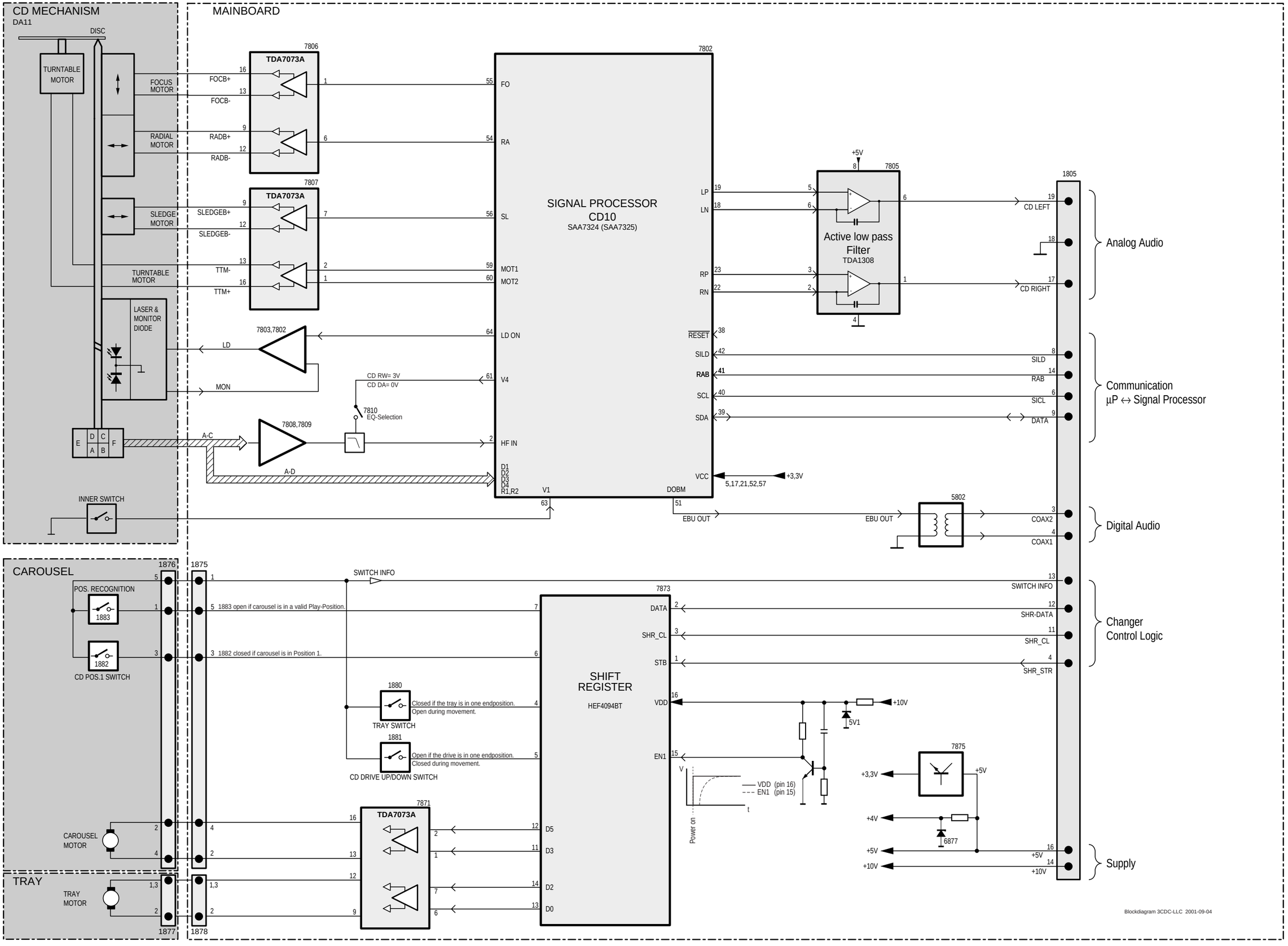


Service Position



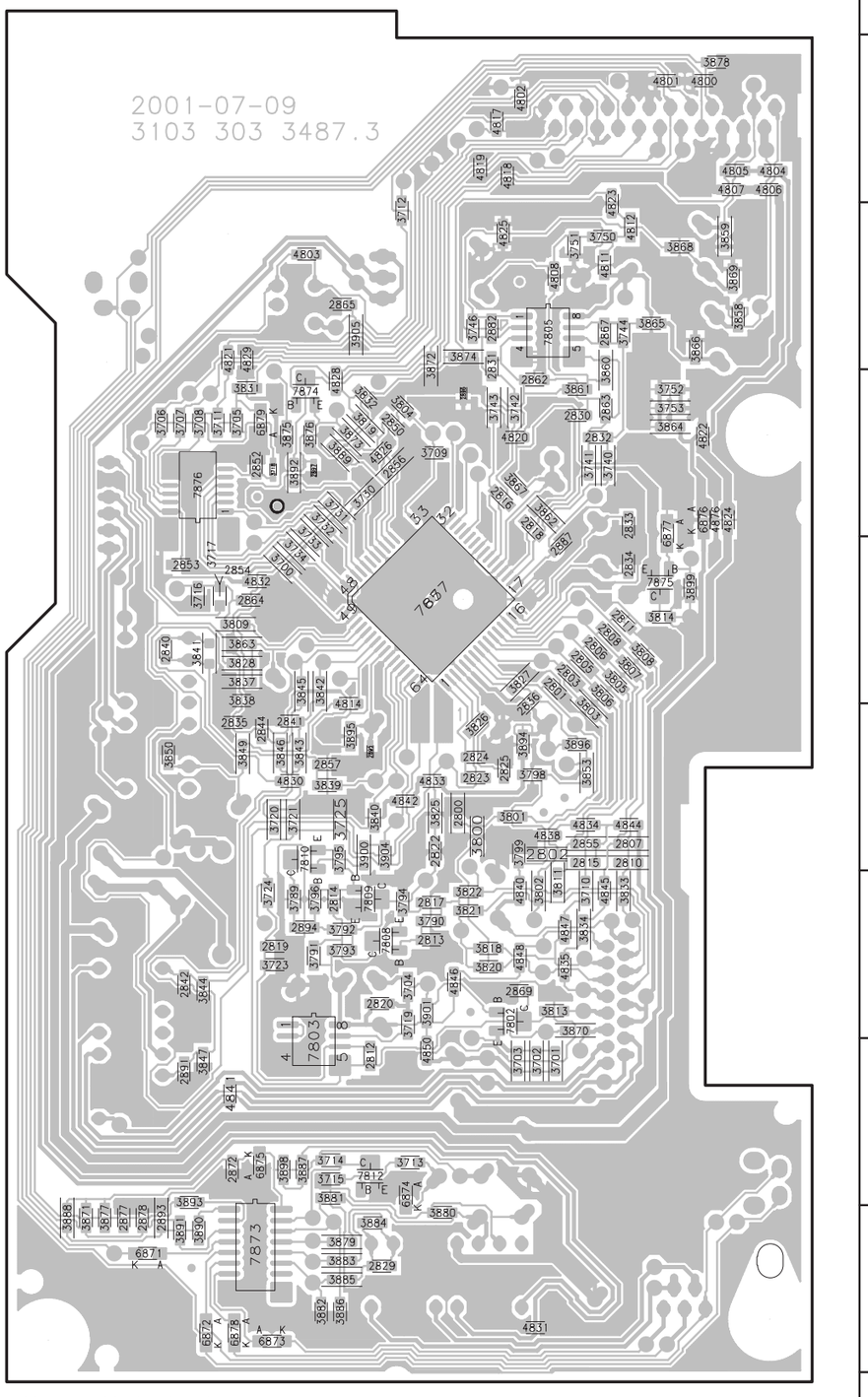
10-5

BLOCK DIAGRAM 3CDC-LLC-DA11



10-6

3CDC-LLC Copperside view



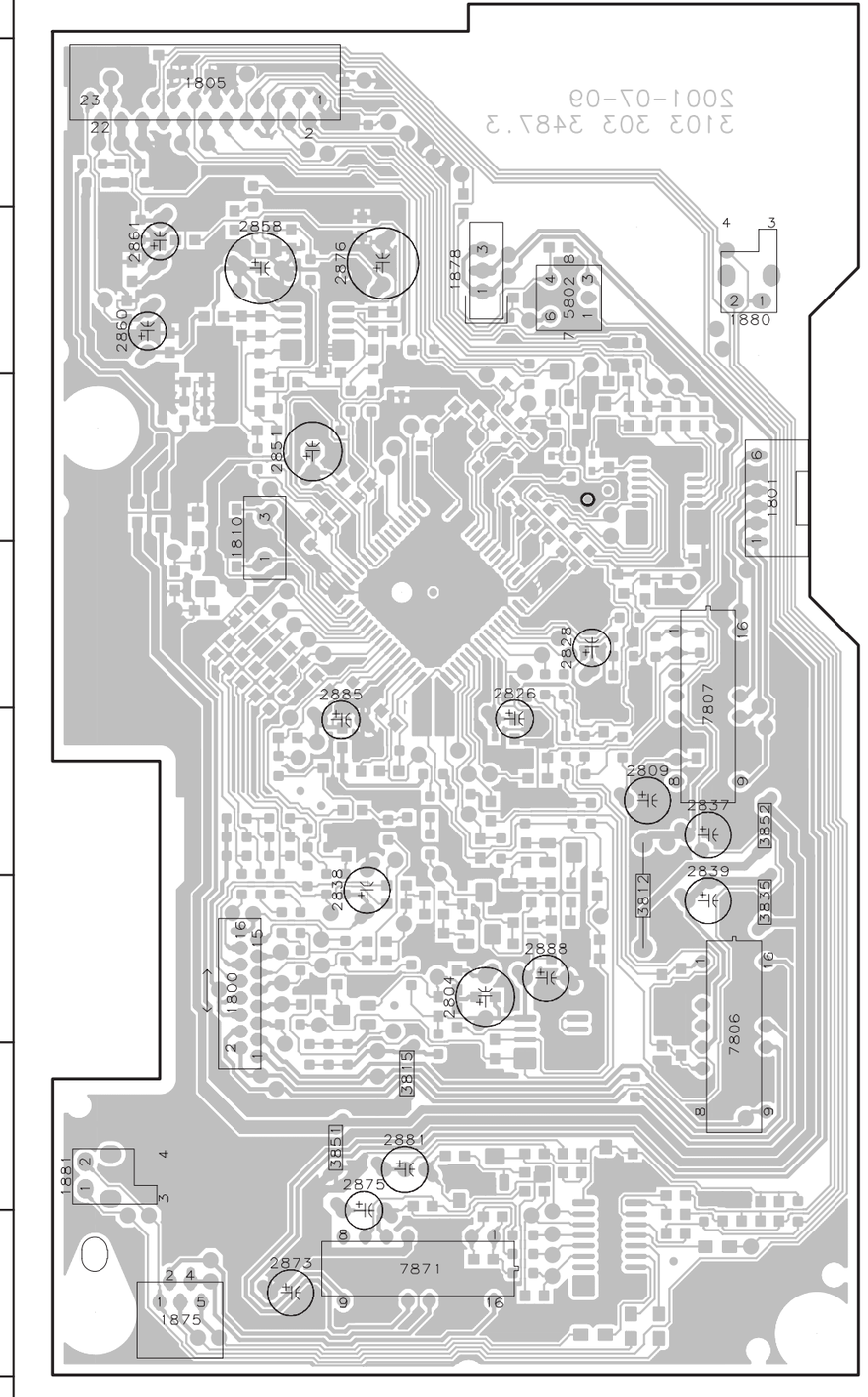
This assembly drawing shows a summary
of all possible versions.
For components used in a specific version
see schematic diagram respectively partslist.

3CDC-LIC Layout stage .3 2001-07-25

Mapping

Copperside						Componentside	
2800	E3	3741	C4	3889	C2	1800	F2
2801	D4	3742	C4	3890	H2	1801	C5
2802	E4	3743	C3	3891	H2	1805	A2
2803	D4	3744	B4	3892	C2	1810	C2
2805	D4	3746	B3	3893	G2	1875	H1
2806	D4	3750	B4	3894	E4	1878	B3
2807	E4	3751	B4	3895	E3	1880	B5
2808	D4	3752	C4	3896	E4	1881	G1
2810	E4	3753	C4	3898	G2	2804	F3
2811	D4	3789	F2	3899	D5	2809	E4
2812	G3	3790	F3	3900	E3	2826	D3
2813	F3	3791	F2	3901	F3	2828	D4
2814	F2	3792	F3	3904	E3	2837	E5
2815	E4	3793	F3	3905	B3	2838	F2
2816	C3	3794	F3	4800	A5	2839	E5
2817	F3	3795	E2	4801	A4	2851	C2
2818	C4	3796	F2	4802	A4	2858	B2
2819	F2	3798	E4	4803	B2	2860	B1
2820	F3	3799	E4	4804	A5	2861	B1
2822	E3	3800	E3	4805	A5	2873	H2
2823	E3	3801	E4	4806	A5	2875	G3
2824	E3	3802	F4	4807	A5	2876	B2
2825	E3	3803	D4	4808	B4	2881	G3
2829	H3	3804	C3	4811	B4	2885	D2
2830	C4	3805	D4	4812	B4	2888	F4
2831	B3	3806	D4	4814	D3	3812	F4
2832	C4	3807	D4	4817	A3	3815	G3
2833	C4	3808	D4	4818	A3	3835	F5
2834	D4	3809	D2	4819	A3	3851	G2
2835	E2	3811	F4	4820	C4	3852	E5
2836	D4	3813	F4	4821	B2	5802	B4
2840	D1	3814	D4	4822	C5	7806	F5
2841	E2	3818	F3	4823	A4	7807	D5
2842	F2	3819	C3	4824	C5	7871	H3
2844	E2	3820	F3	4825	B3		
2850	C3	3821	F3	4826	C3		
2852	C2	3822	F3	4828	C2		
2853	D2	3825	E3	4829	B2		
2854	D2	3826	E3	4830	E2		
2855	E4	3827	D4	4831	H4		
2856	C3	3828	D2	4832	D2		
2857	E2	3831	C2	4833	E3		
2862	C4	3832	C3	4834	E4		
2863	C4	3833	F4	4835	F4		
2864	D2	3834	F4	4838	E4		
2865	B3	3837	D2	4840	F4		
2867	B4	3838	D2	4841	G2		
2869	F4	3839	E2	4842	E3		
2872	G2	3840	E3	4844	E4		
2877	H1	3841	D2	4845	F4		
2878	H1	3842	D2	4846	F3		
2882	B3	3843	E2	4847	F4		
2887	C4	3844	F2	4848	F4		
2891	G2	3845	D2	4850	G3		
2893	H1	3846	E2	4876	C5		
2894	F2	3847	G2	6871	H1		
2895	E3	3849	E2	6872	H2		
2896	C3	3850	E1	6873	H2		
2897	C2	3853	E4	6874	G3		
3700	D2	3858	B5	6875	G2		
3701	G4	3859	B5	6876	C5		
3702	G4	3860	B4	6877	C4		
3703	G4	3861	C4	6878	H2		
3704	F3	3862	C4	6879	C2		
3705	C2	3863	D2	7802	F4		
3706	C1	3864	C4	7803	F2		
3707	C2	3865	B4	7805	B4		
3708	C2	3866	B5	7808	F3		
3709	C3	3867	C4	7809	F3		
3710	F4	3868	B5	7810	E2		
3711	C2	3869	B5	7812	G3		
3712	A3	3870	F4	7873	H2		
3713	G3	3871	H1	7874	C2		
3714	G2	3872	B3	7875	D4		
3715	G2	3873	C3	7876	C2		
3716	D2	3874	B3	7877	D3		
3717	D2	3875	C2				
3718	C2	3876	C2				
3719	F3	3877	H1				
3720	E2	3878	A5				
3721	E2	3879	H3				
3723	F2	3880	G3				
3724	F2	3881	G2				
3725	E2	3882	H2				
3730	C3	3883	H3				
3731	C2	3884	H3				
3732	C2	3885	H3				
3733	C2	3886	H2				
3734	D2	3887	G2				
3740	C4	3888	H1				

3CDC-LLC Componentside view



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

3CDC-LLC Layout stage .3 2001-07-25

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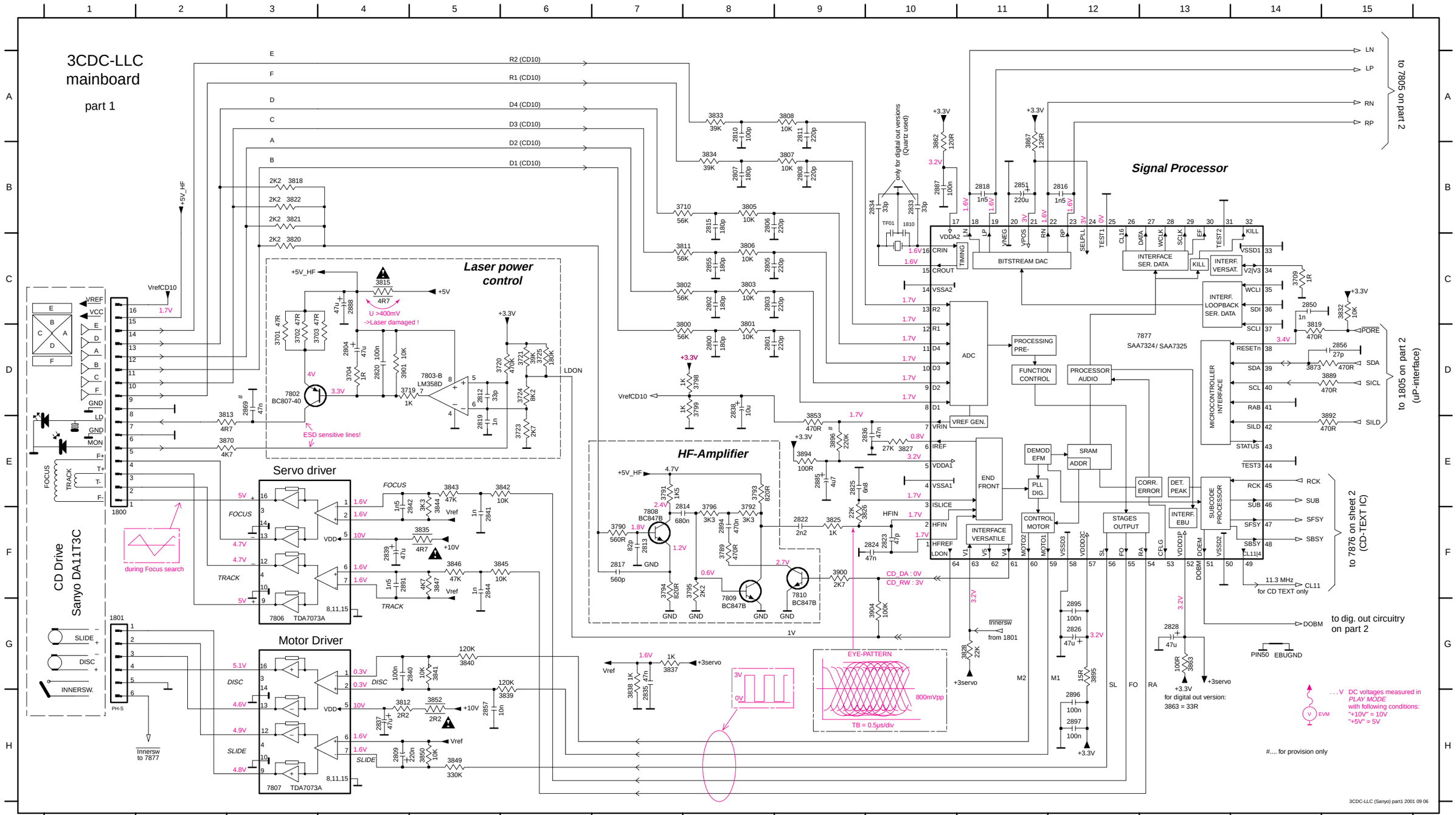
1800 F1 1801 G1 1810 B10 2800 D8 2801 D8 2802 C8 2803 C8 2804 D4 2805 C8 2806 B8 2807 B8 2808 B9 2809 H4 2810 A8 2811 A9 2812 D5 2813 F7 2814 F7 2815 B8 2816 B12 2817 F7 2818 B11 2819 E5 2820 D4 2822 F9 2823 F10 2824 F10 2825 E9 2826 G12 2828 G13 2833 B10 2834 B10 2835 H7 2836 E10 2837 H4 2838 D8 2839 F4 2840 G4 2841 F5 2842 E5 2844 F5 2850 C14 2851 B11 2855 C8 2856 D15 2857 H5 2869 D3 2885 E9 2887 B10 2888 C4 2891 F4 2894 F8 2895 G12 2896 H12 2897 H12 3701 D3 3702 D3 3703 D3 3704 D4 3709 C14 3710 B8 3719 D4 3720 D5 3721 D6 3723 E6 3724 D6 3725 D6 3789 F8 3790 F7 3791 E7 3792 F8 3793 E8 3794 F7 3795 F8 3796 F8 3798 D8 3799 D8 3800 D8 3801 D8 3802 C8 3803 C8 3804 C14 3805 B8 3806 C8 3807 B9 3808 A9 3811 C8 3812 H4 3813 E2 3815 C4 3818 B3 3819 D14 3820 C3 3821 B3 3822 B3 3825 F9 3826 F9 3827 E10 3828 G11 3832 C15 3833 A8 3834 B8 3835 F5 3837 G7 3838 H7 3839 H6 3840 G5 3841 G5 3843 E6 3844 E5 3845 F6 3846 F5 3847 F5 3849 H5 3850 H5 3852 H5 3853 E9 3862 A10 3863 G13 3867 A11 3870 E2 3873 D14 3889 D15 3892 E15 3894 E9 3895 G12 3896 E9 3900 F9 3901 D4 3904 G10 7802 D3 7803-A B5 7803-B D5 7806 G3 7807 H3 7808 F7 7809 G8 7810 F9 7877 D12 MP713 C9 MP715 D9 MP716 B9 MP717 A9 MP729 B9 MP730 C9 MP731 B13 MP743 D2 MP744 C2 MP745 E2 MP800 E2 MP802 B15 MP809 D10 MP812 G2 MP813 B3 MP814 G2 MP815 B3 MP816 A3 MP817 A3 MP818 C4 MP819 F10 MP820 F8 MP821 C15 MP827 B10 MP828 G11 MP829 A3 MP831 A4 MP836 D3 MP837 D4 MP838 G6 MP839 G6 MP840 E6 MP841 F6 MP842 H6 MP843 G7 MP844 E9 MP845 F4 MP846 H2 MP847 H2 MP848 E2 MP849 E2 MP850 E2 MP851 E2 MP852 G2 MP853 G2 MP858 G8 MP859 E10 MP860 C2 MP872 C15 MP873 H4 MP875 F13 MP876 E2 MP877 E3 MP878 B13 MP879 B11 MP883 C4 MP884 C5 MP893 F10



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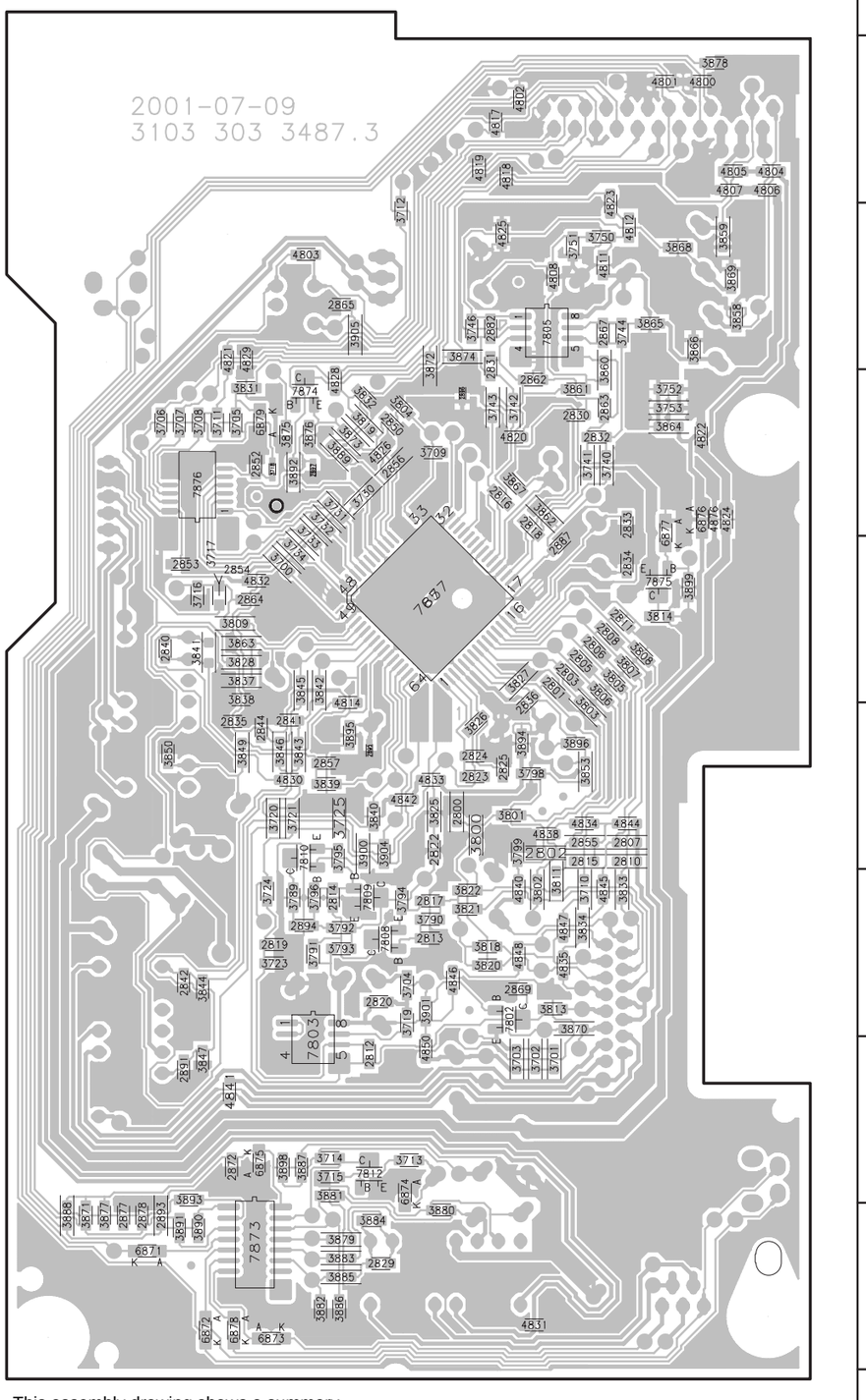
3CDC-LLC Copperside view



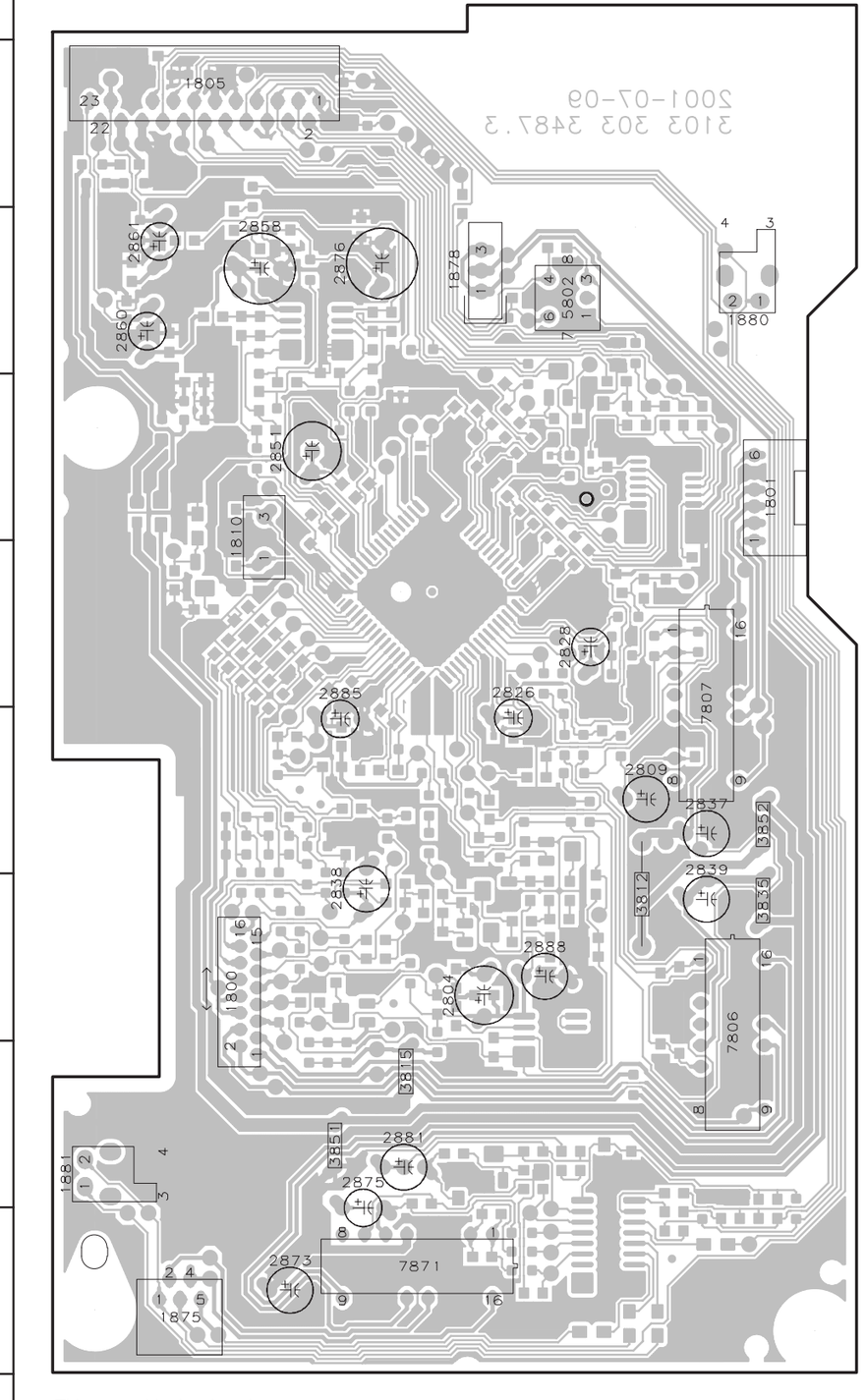
This assembly drawing shows a summary
of all possible versions.
For components used in a specific version
see schematic diagram respectively partslist.

3CDC-LIC Layout stage .3 2001-07-25

Mapping

Copperside						Componentside
2800	E3	3741	C4	3889	C2	1800 F2
2801	D4	3742	C4	3890	H2	1801 C5
2802	E4	3743	C3	3891	H2	1805 A2
2803	D4	3744	B4	3892	C2	1810 C2
2805	D4	3746	B3	3893	G2	1875 H1
2806	D4	3750	B4	3894	E4	1878 B3
2807	E4	3751	B4	3895	E3	1880 B5
2808	D4	3752	C4	3896	E4	1881 G1
2810	E4	3753	C4	3898	G2	2804 F3
2811	D4	3789	F2	3899	D5	2809 E4
2812	G3	3790	F3	3900	E3	2826 D3
2813	F3	3791	F2	3901	F3	2828 D4
2814	F2	3792	F3	3904	E3	2837 E5
2815	E4	3793	F3	3905	B3	2838 F2
2816	C3	3794	F3	4800	A5	2839 E5
2817	F3	3795	E2	4801	A4	2851 C2
2818	C4	3796	F2	4802	A4	2858 B2
2819	F2	3798	E4	4803	B2	2860 B1
2820	F3	3799	E4	4804	A5	2861 B1
2822	E3	3800	E3	4805	A5	2873 H2
2823	E3	3801	E4	4806	A5	2875 G3
2824	E3	3802	F4	4807	A5	2876 B2
2825	E3	3803	D4	4808	B4	2881 G3
2829	H3	3804	C3	4811	B4	2885 D2
2830	C4	3805	D4	4812	B4	2888 F4
2831	B3	3806	D4	4814	D3	3812 F4
2832	C4	3807	D4	4817	A3	3815 G3
2833	C4	3808	D4	4818	A3	3835 F5
2834	D4	3809	D2	4819	A3	3851 G2
2835	E2	3811	F4	4820	C4	3852 E5
2836	D4	3813	F4	4821	B2	5802 B4
2840	D1	3814	D4	4822	C5	7806 F5
2841	E2	3818	F3	4823	A4	7807 D5
2842	F2	3819	C3	4824	C5	7871 H3
2844	E2	3820	F3	4825	B3	
2850	C3	3821	F3	4826	C3	
2852	C2	3822	F3	4828	C2	
2853	D2	3825	E3	4829	B2	
2854	D2	3826	E3	4830	E2	
2855	E4	3827	D4	4831	H4	
2856	C3	3828	D2	4832	D2	
2857	E2	3831	C2	4833	E3	
2862	C4	3832	C3	4834	E4	
2863	C4	3833	F4	4835	F4	
2864	D2	3834	F4	4838	E4	
2865	B3	3837	D2	4840	F4	
2867	B4	3838	D2	4841	G2	
2869	F4	3839	E2	4842	E3	
2872	G2	3840	E3	4844	E4	
2877	H1	3841	D2	4845	F4	
2878	H1	3842	D2	4846	F3	
2882	B3	3843	E2	4847	F4	
2887	C4	3844	F2	4848	F4	
2891	G2	3845	D2	4850	G3	
2893	H1	3846	E2	4876	C5	
2894	F2	3847	G2	6871	H1	
2895	E3	3849	E2	6872	H2	
2896	C3	3850	E1	6873	H2	
2897	C2	3853	E4	6874	G3	
3700	D2	3858	B5	6875	G2	
3701	G4	3859	B5	6876	C5	
3702	G4	3860	B4	6877	C4	
3703	G4	3861	C4	6878	H2	
3704	F3	3862	C4	6879	C2	
3705	C2	3863	D2	7802	F4	
3706	C1	3864	C4	7803	F2	
3707	C2	3865	B4	7805	B4	
3708	C2	3866	B5	7808	F3	
3709	C3	3867	C4	7809	F3	
3710	F4	3868	B5	7810	E2	
3711	C2	3869	B5	7812	G3	
3712	A3	3870	F4	7873	H2	
3713	G3	3871	H1	7874	C2	
3714	G2	3872	B3	7875	D4	
3715	G2	3873	C3	7876	C2	
3716	D2	3874	B3	7877	D3	
3717	D2	3875	C2			
3718	C2	3876	C2			
3719	F3	3877	H1			
3720	E2	3878	A5			
3721	E2	3879	H3			
3723	F2	3880	G3			
3724	F2	3881	G2			
3725	E2	3882	H2			
3730	C3	3883	H3			
3731	C2	3884	H3			
3732	C2	3885	H3			
3733	C2	3886	H2			
3734	D2	3887	G2			
3740	C4	3888	H1			

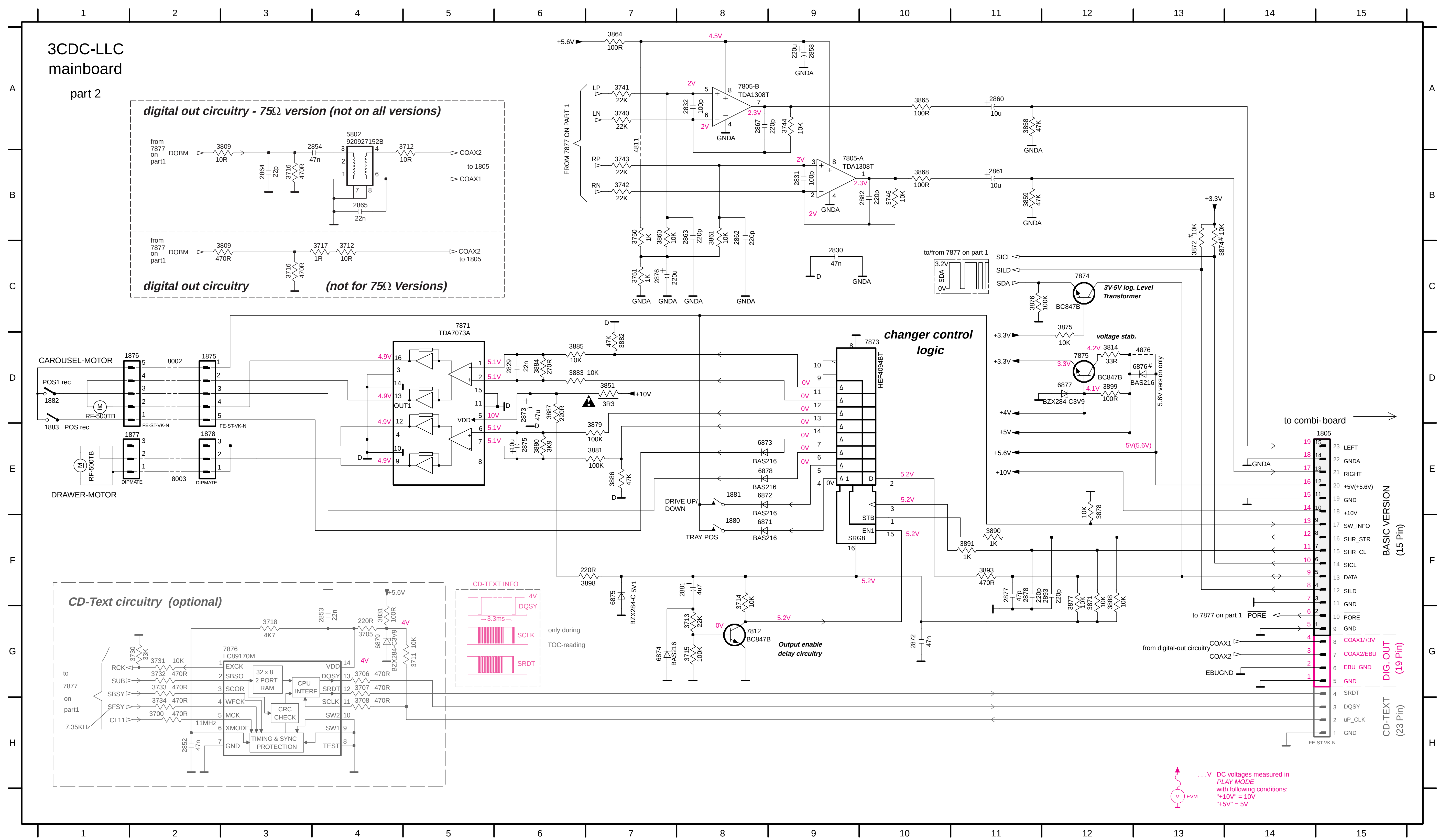
3CDC-LLC Componentside view



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

3CDC-LLC Layout stage .3 2001-07-25

1805 E15	2830 C9	2858 A9	2865 C4	2877 F11	3705 G4	3713 G8	3730 G2	3741 A7	3751 C7	3851 D7	3865 A10	3874 C13	3880 E6	3886 E7	3898 F7	4876 D13	6875 F7	7805-B A8	7876 G3	MP726 D8	MP804 G14	MP811 F14	MP832 G9	MP863 C11	MP871 D6	MP888 G5	MP898 E13
1875 D2	2831 B9	2860 A11	2867 A8	2878 F11	3706 G4	3714 F8	3731 G2	3742 B7	3752 A6	3858 A11	3866 A10	3875 C12	3881 E7	3887 D6	3899 D12	5802 B4	6876 D13	7812 G8	MP721 C8	MP740 H14	MP805 F13	MP822 E3	MP833 F14	MP865 D11	MP874 D12	MP889 G5	MP899 E14
1878 E2	2832 A8	2861 B11	2872 G10	2881 F8	3707 G4	3715 G8	3732 G2	3743 B7	3753 A6	3859 B11	3868 B10	3876 C11	3882 D7	3888 F12	3905 C5	6871 F8	6877 D12	7871 C5	MP722 E8	MP741 G14	MP806 F13	MP823 E3	MP835 F14	MP866 E8	MP881 G2	MP890 B3	
1880 F8	2852 H2	2862 B8	2873 D6	2882 B10	3708 H4	3716 B3	3733 G2	3744 A9	3809 B2	3860 B7	3869 B10	3877 F12	3883 D6	3890 F11	4803 B4	6872 E8	6878 E8	7873 D10	MP723 D8	MP742 G14	MP807 F14	MP824 D4	MP854 A13	MP867 E8	MP882 G2	MP891 B5	
1881 E8	2853 G4	2863 B8	2875 E6	2893 F12	3711 G5	3717 B3	3734 H2	3746 B10	3814 D12	3861 B8	3871 F12	3878 E12	3884 D6	3891 F11	4811 A7	6873 E8	6879 G4	7874 C12	MP724 D8	MP801 E12	MP808 F13	MP825 D4	MP856 E14	MP868 F8	MP886 G3	MP892 B5	
2829 D6	2854 B3	2864 B3	2876 C7	3700 H2	3712 B4	3718 G3	3740 A7	3750 B7	3831 G4	3864 A7	3872 C13	3879 D7	3885 D6	3893 F11	4812 B7	6874 G7	7805-A B9	7875 D12	MP725 D8	MP803 F10	MP810 F13	MP830 A7	MP857 B13	MP869 C12	MP887 H5	MP897 E13	



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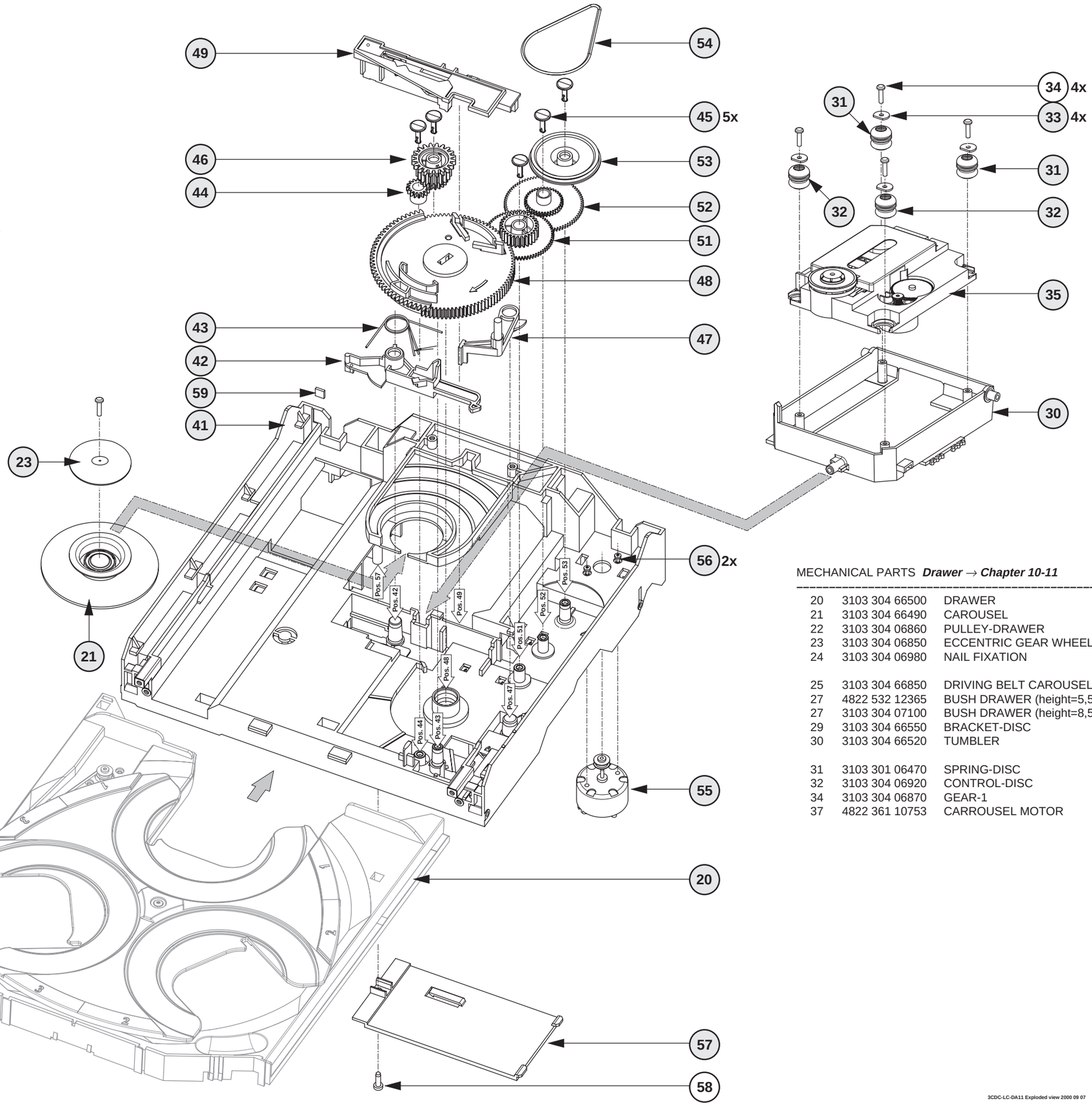
EXPLODED VIEW (3CDC-LC MODULE)

MECHANICAL PARTS ***Loader*** → ***this page***

20	3103 304 66500	DRAWER
21	3140 114 29070	PRESSURE RING-DA11
23	3140 111 21270	METAL RING-DA11
30	3103 304 66560	SUPPORT
31	4822 529 10386	RUBBER DAMPER CD DRIVE, REAR
32	4822 529 10387	RUBBER DAMPER CD DRIVE, FRONT
33	3103 304 06970	WASHER
35	3103 309 05310	CD DRIVE DA11T3CN
36	3104 119 40010	MOTOR MABUCHI RF-500TB-12560
37	4822 361 10753	CAROUSEL MOTOR
41	3103 304 66480	FRAME
42	3103 304 66540	BRACKET-GUIDING
43	3103 301 06460	SPRING-GUIDING
44	3103 304 06890	GEAR-3
45	3103 304 06980	NAIL FIXATION
46	3103 304 06880	GEAR-2
47	3103 304 66530	BRACKET-LOAD
48	3103 304 06910	CAM
49	3103 304 66510	GUIDING
51	3103 304 06900	GEAR-4
52	3103 304 06870	GEAR-1
53	3103 304 06960	PULLEY-FRAME
54	3103 304 66910	DRIVING-BELT-DRAWER
55	4822 361 10753	TRAY MOTOR
56	4822 502 12548	SCREW M2,6X3,5
57	3103 304 69880	COVER-DA11
59	4822 466 12146	RUBBER



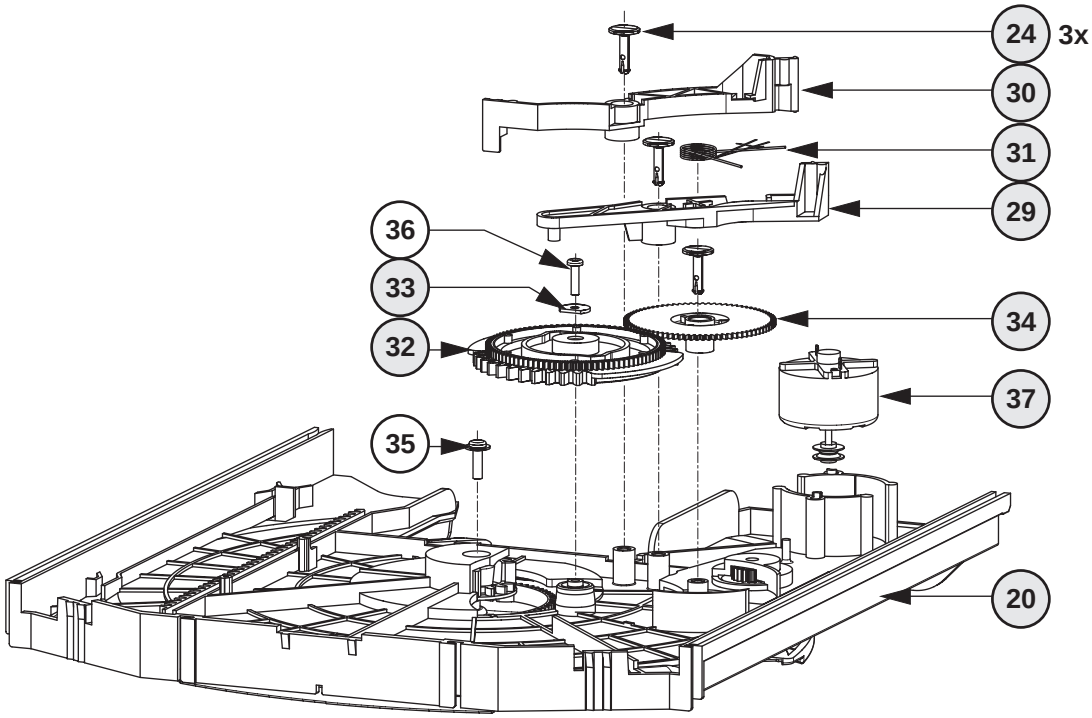
MECHANICAL PARTS ***Drawer*** → ***Chapter 10-11***

20	3103 304 66500	DRAWER
21	3103 304 66490	CAROUSEL
22	3103 304 06860	PULLEY-DRAWER
23	3103 304 06850	ECCENTRIC GEAR WHEEL
24	3103 304 06980	NAIL FIXATION
25	3103 304 66850	DRIVING BELT CAROUSEL
27	4822 532 12365	BUSH DRAWER (height=5,5mm,d=9,4mm)
27	3103 304 07100	BUSH DRAWER (height=8,5mm,d=16mm)
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	CARROUSEL MOTOR

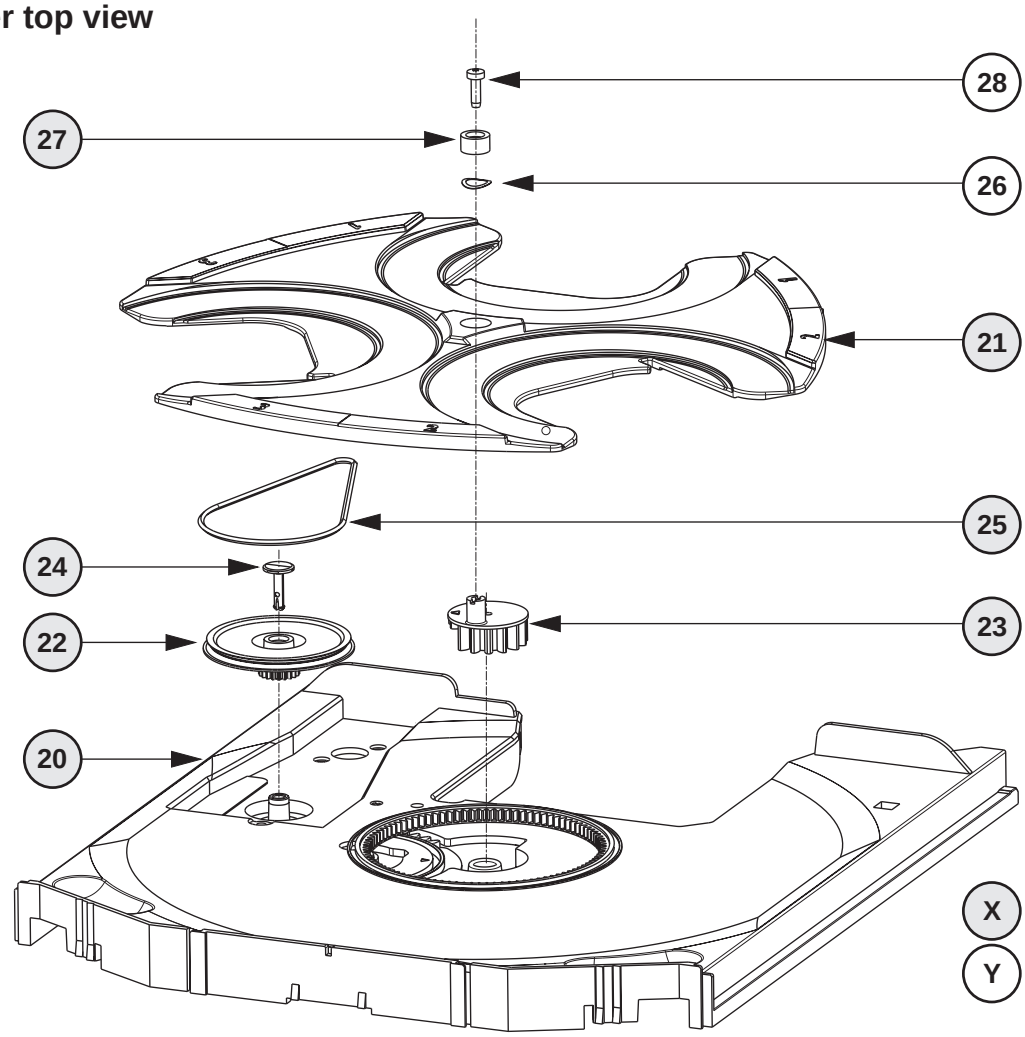
X spare part

Y non spare part

Drawer bottom view



Drawer top view



X spare part

Y non spare part

ELECTRICAL PARTSLIST 3CDC-LLC-DA11 MODULE

MISCELLANEOUS

35	3103 309 05310	CD DRIVE DA11T3CN
37	4822 361 10753	CAROUSEL MOTOR
55	4822 361 10753	TRAY MOTOR
1800	2422 025 17389	FLEX FOIL CONNECTOR 16Pin
1805	4822 265 10979	FLEX FOIL CONNECTOR 15Pin
1805	4822 265 11545	FLEX FOIL CONNECTOR 19Pin
1875	4822 267 10958	FLEX FOIL CONNECTOR 5Pin
1876	2422 025 08332	FLEX FOIL CONNECTOR 5Pin
1880	4822 276 13503	SWITCH, Tray switch
1881	4822 276 13503	SWITCH, Drive UP/DOWN
1882	4822 276 13503	SWITCH, CD Pos.1 recognized
1883	4822 276 13503	SWITCH, valid CD Play position
8002	3103 308 91990	FLEX FOIL CABLE 5P 200mm 1:n
8005	3103 308 92930	FLEX FOIL CABLE 16P 170mm 1:n

CAPACITORS

2800 ©	4822 126 10326	180pF	5%	
2801 ©	4822 126 13883	220pF	5%	50V
2802 ©	4822 126 10326	180pF	5%	
2803 ©	4822 126 13883	220pF	5%	50V
2804	4822 124 41751	47µF	20%	16V
2805 ©	4822 126 13883	220pF	5%	50V
2806 ©	4822 126 13883	220pF	5%	50V
2807 ©	4822 126 10326	180pF	5%	
2808 ©	4822 126 13883	220pF	5%	50V
2809	4822 124 40746	0,22µF	20%	63V
2810 ©	5322 122 32531	100pF	5%	50V
2811 ©	4822 126 13883	220pF	5%	50V
2812 ©	2222 867 15339	33pF	5%	50V
2813 ©	4822 126 14226	82pF		50V
2814 ©	2238 780 59861	680nF	10%	16V
2815 ©	4822 126 10326	180pF	5%	
2816 ©	4822 126 14247	1,5nF	10%	50V
2817 ©	4822 126 14249	560pF	10%	50V
2818 ©	4822 126 13344	1,5nF	5%	63V
2819 ©	5322 126 11578	1nF	10%	63V
2820 ©	4822 126 14305	100nF	10%	16V
2822 ©	4822 122 33127	2,2nF	10%	63V
2823 ©	4822 122 33777	47pF	5%	63V
2824 ©	4822 126 13751	47nF	10%	50V
2825 ©	5322 126 11582	6,8nF	10%	63V
2826	4822 124 12362	47µF	20%	4V
2828	4822 124 12362	47µF	20%	4V
2829 ©	3198 017 42230	22nF	10%	50V
2830 ©	4822 126 13751	47nF	10%	50V
2831 ©	4822 122 31765	100pF	5%	50V
2832 ©	4822 122 31765	100pF	5%	50V
2835 ©	3198 024 44730	47nF	5%	50V
2836 ©	3198 024 44730	47nF	5%	50V
2837	4822 124 40433	47µF	20%	25V
2838	4822 124 40248	10µF	20%	63V
2839	4822 124 40433	47µF	20%	25V
2840 ©	4822 126 14585	100nF	10%	50V
2841 ©	5322 126 10511	1nF	5%	50V
2842 ©	4822 126 14247	1,5nF	10%	50V
2844 ©	3198 016 31020	1nF	5%	25V
2850 ©	5322 126 11578	1nF	10%	63V
2851	4822 124 42383	220µF	20%	4V
2855 ©	4822 126 10326	180pF	5%	
2856 ©	4822 126 13691	27pF	1%	63V
2857 ©	5322 126 11583	10nF	10%	63V
2858	4822 124 12245	220µF	20%	16V
2860	4822 124 11947	10µF	20%	16V

CAPACITORS

2861	4822 124 11947	10µF	20%	16V
2862 ©	4822 126 13883	220pF	5%	50V
2863 ©	4822 126 13883	220pF	5%	50V
2865 ©	4822 126 14494	22nF	10%	25V
2867 ©	4822 126 13883	220pF	5%	50V
2872 ©	3198 024 44730	47nF	5%	50V
2873	4822 124 80231	47µF	20%	16V
2875	4822 124 11947	10µF	20%	16V
2876	4822 124 12245	220µF	20%	16V
2877 ©	4822 122 33777	47pF	5%	63V
2878 ©	4822 126 13883	220pF	5%	50V
2881	4822 124 40769	4,7µF	20%	100V
2882 ©	4822 126 13883	220pF	5%	50V
2885	4822 124 40769	4,7µF	20%	100V
2887 ©	4822 126 14585	100nF	10%	50V
2888	4822 124 80231	47µF	20%	16V
2891 ©	4822 126 14247	1,5nF	10%	50V
2893 ©	4822 122 33575	220pF	5%	50V
2894 ©	3198 017 44740	470nF	20%	10V
2895 ©	4822 126 14305	100nF	10%	16V
2896 ©	4822 126 14305	100nF	10%	16V
2897 ©	4822 126 14305	100nF	10%	16V

RESISTORS

3701 ©	4822 051 20479	47Ω	5%	0,1W
3702 ©	4822 051 20479	47Ω	5%	0,1W
3703 ©	4822 051 20479	47Ω	5%	0,1W
3704 ©	4822 117 12917	1Ω	5%	0,06W
3710 ©	4822 117 11148	56kΩ	1%	0,1W
3712 ©	4822 051 30109	10Ω	5%	0,06W
3713 ©	4822 051 30223	22kΩ	5%	0,06W
3714 ©	4822 051 30103	10kΩ	5%	0,06W
3715 ©	4822 117 13632	100kΩ	1%	0,06W
3716 ©	4822 051 30471	470Ω	5%	0,06W
3717 ©	4822 117 12917	1Ω	5%	0,06W
3719 ©	4822 051 30102	1kΩ	5%	0,06W
3720 ©	4822 051 20474	470kΩ	5%	0,1W
3721 ©	4822 051 20393	39kΩ	5%	0,1W
3723 ©	4822 051 30272	2,7kΩ	5%	0,06W
3724 ©	4822 117 12902	8,2kΩ	1%	0,06W
3725 ©	4822 051 30184	180kΩ	5%	0,06W
3730 ©	4822 051 20333	33kΩ	5%	0,1W
3740 ©	4822 051 20223	22kΩ	5%	0,1W
3741 ©	4822 051 20223	22kΩ	5%	0,1W
3742 ©	4822 051 20223	22kΩ	5%	0,1W
3743 ©	4822 051 20223	22kΩ	5%	0,1W
3744 ©	4822 051 30103	10kΩ	5%	0,06W
3746 ©	4822 051 30103	10kΩ	5%	0,06W
3750 ©	4822 051 30102	1kΩ	5%	0,06W
3751 ©	4822 051 30102	1kΩ	5%	0,06W
3789 ©	4822 051 30471	470Ω	5%	0,06W
3790 ©	4822 051 30561	560Ω	5%	0,06W
3791 ©	4822 051 30152	1,5kΩ	5%	0,06W
3792 ©	4822 051 30332	3,3kΩ	5%	0,06W
3793 ©	4822 117 12968	820Ω	5%	0,06W
3794 ©	4822 117 12968	820Ω	5%	0,06W
3795 ©	4822 051 30222	2,2kΩ	5%	0,06W
3796 ©	4822 051 30332	3,3kΩ	5%	0,06W
3798 ©	4822 051 30102	1kΩ	5%	0,06W
3799 ©	4822 051 30102	1kΩ	5%	0,06W
3800 ©	4822 117 11148	56kΩ	1%	0,1W
3801 ©	4822 051 30103	10kΩ	5%	0,06W
3802 ©	4822 117 11148	56kΩ	1%	0,1W

ELECTRICAL PARTSLIST 3CDC-LLC-DA11 MODULE

RESISTORS

3803 ©	4822 117 10833	10kΩ	1%	0,1W
3804 ©	4822 051 30103	10kΩ	5%	0,06W
3805 ©	4822 051 30103	10kΩ	5%	0,06W
3806 ©	4822 051 30103	10kΩ	5%	0,06W
3807 ©	4822 051 30103	10kΩ	5%	0,06W
3808 ©	4822 051 30103	10kΩ	5%	0,06W
3809 ©	4822 051 20471	470Ω	5%	0,1W
3811 ©	4822 117 11148	56kΩ	1%	0,1W
3812	4822 053 10228	2,2Ω	5%	1W
3813 ©	4822 117 13608	4,7Ω	5%	0,06W
3814 ©	4822 051 30339	33Ω	5%	0,06W
3815	4822 052 10478	4,7Ω	5%	NFR
3818 ©	4822 051 30222	2,2kΩ	5%	0,06W
3819 ©	4822 051 20471	470Ω	5%	0,1W
3820 ©	4822 051 30222	2,2kΩ	5%	0,06W
3821 ©	4822 051 30222	2,2kΩ	5%	0,06W
3822 ©	4822 051 30222	2,2kΩ	5%	0,06W
3825 ©	4822 051 10102	1kΩ	2%	0,25W
3826 ©	4822 051 30223	22kΩ	5%	0,06W
3827 ©	4822 051 20273	27kΩ	5%	0,1W
3828 ©	4822 051 20223	22kΩ	5%	0,1W
3831 ©	4822 051 30101	100Ω	5%	0,06W
3832 ©	4822 051 30103	10kΩ	5%	0,06W
3833 ©	4822 051 20393	39kΩ	5%	0,1W
3834 ©	4822 051 20393	39kΩ	5%	0,1W
3835	4822 052 10478	4,7Ω	5%	NFR
3837 ©	4822 051 10102	1kΩ	2%	0,25W
3838 ©	4822 051 30102	1kΩ	5%	0,06W
3839 ©	4822 051 20124	120kΩ	5%	0,1W
3840 ©	4822 051 30124	120kΩ	5%	0,06W
3841 ©	4822 117 10833	10kΩ	1%	0,1W
3842 ©	4822 117 10833	10kΩ	1%	0,1W
3843 ©	4822 117 10834	47kΩ	1%	0,1W
3844 ©	4822 051 30332	3,3kΩ	5%	0,06W
3845 ©	4822 117 10833	10kΩ	1%	0,1W
3846 ©	4822 117 10834	47kΩ	1%	0,1W
3847 ©	4822 051 30472	4,7kΩ	5%	0,06W
3849 ©	4822 051 20334	330kΩ	5%	0,1W
3850 ©	4822 051 30103	10kΩ	5%	0,06W
3851	4822 052 10338	3,3Ω		NFR25
3852	4822 052 10228	2,2Ω	5%	0,33W
3853 ©	4822 051 20471	470Ω	5%	0,1W
3858 ©	4822 117 12925	47kΩ	1%	0,06W
3859 ©	4822 117 10834	47kΩ	1%	0,1W
3860 ©	4822 117 10833	10kΩ	1%	0,1W
3861 ©	4822 051 30103	10kΩ	5%	0,06W
3862 ©	4822 051 20121	120Ω	5%	0,1W
3863 ©	4822 117 11373	100Ω	1%	0,1W
3864 ©	4822 117 11373	100Ω	1%	0,1W
3865 ©	4822 051 30101	100Ω	5%	0,06W
3867 ©	4822 051 30121	120Ω	5%	0,06W
3868 ©	4822 051 30101	100Ω	5%	0,06W
3870 ©	4822 051 20472	4,7kΩ	5%	0,1W
3871 ©	4822 051 30103	10kΩ	5%	0,06W
3873 ©	4822 051 20471	470Ω	5%	0,1W
3875 ©	4822 051 30103	10kΩ	5%	0,06W
3876 ©	4822 117 13632	100kΩ	1%	0,06W
3877 ©	4822 051 30103	10kΩ	5%	0,06W
3878 ©	4822 051 30103	10kΩ	5%	0,06W
3879 ©	4822 117 10837	100kΩ	1%	0,1W
3880 ©	4822 051 30392	3,9kΩ	5%	0,06W
3881 ©	4822 117 13632	100kΩ	1%	0,06W
3882 ©	4822 117 12925	47kΩ	1%	0,06W

RESISTORS

3883 ©	4822 117 10833	10kΩ	1%	0,1W
3884 ©	4822 051 30271	270Ω	5%	0,06W
3885 ©	4822 117 10833	10kΩ	1%	0,1W
3886 ©	4822 117 12925	47kΩ	1%	0,06W
3887 ©	4822 051 30221	220Ω	5%	0,06W
3888 ©	4822 117 10833	10kΩ	1%	0,1W
3889 ©	4822 051 20471	470Ω	5%	0,1W
3890 ©	4822 051 30102	1kΩ	5%	0,06W
3891 ©	4822 051 30102	1kΩ	5%	0,06W
3892 ©	4822 051 20471	470Ω	5%	0,1W
3893 ©	4822 051 30471	470Ω	5%	0,06W
3894 ©	4822 051 30101	100Ω	5%	0,06W
3895 ©	4822 117 12971	15Ω	5%	0,06W
3898 ©	4822 051 30221	220Ω	5%	0,06W
3899 ©	4822 051 30101	100Ω	5%	0,06W
3900 ©	4822 117 12955	2,7kΩ	1%	0,1W
3901 ©	4822 117 10833	10kΩ	1%	0,1W
3904 ©	4822 117 13632	100kΩ	1%	0,06W
4800 ©	4822 051 20008	CHIP JUMPER 0805		
4801 ©	4822 051 20008	CHIP JUMPER 0805		
4802 ©	4822 051 20008	CHIP JUMPER 0805		
4803 ©	4822 051 30008	CHIP JUMPER 0603		
4804 ©	4822 051 20008	CHIP JUMPER 0805		
4805 ©	4822 051 30008	CHIP JUMPER 0603		
4806 ©	4822 051 20008	CHIP JUMPER 0805		
4807 ©	4822 051 20008	CHIP JUMPER 0805		
4808 ©	4822 051 20008	CHIP JUMPER 0805		
4811 ©	4822 051 20008	CHIP JUMPER 0805		
4814 ©	4822 051 20008	CHIP JUMPER 0805		
4817 ©	4822 051 20008	CHIP JUMPER 0805		
4818 ©	4822 051 20008	CHIP JUMPER 0805		
4819 ©	4822 051 20008	CHIP JUMPER 0805		
4820 ©	4822 051 20008	CHIP JUMPER 0805		
4821 ©	4822 051 20008	CHIP JUMPER 0805		
4822 ©	4822 051 20008	CHIP JUMPER 0805		
4823 ©	4822 051 20008	CHIP JUMPER 0805		
4824 ©	4822 051 30008	CHIP JUMPER 0603		
4825 ©	4822 051 30008	CHIP JUMPER 0603		
4826 ©	4822 051 20008	CHIP JUMPER 0805		
4828 ©	4822 051 20008	CHIP JUMPER 0805		
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		
4835 ©	4822 051 20008	CHIP JUMPER 0805		
4838 ©	4822 051 30008	CHIP JUMPER 0603		
4840 ©	4822 051 20008	CHIP JUMPER 0805		
4841 ©	4822 051 30008	CHIP JUMPER 0603		
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		
4850 ©	4822 051 20008	CHIP JUMPER 0805		
4876 ©	4822 051 20008	CHIP JUMPER 0805		

ELECTRICAL PARTSLIST 3CDC-LLC-DA11 MODULE

COILS

1810	4822 242 73557	CERAMIC RES. 8,46MHz

DIODES

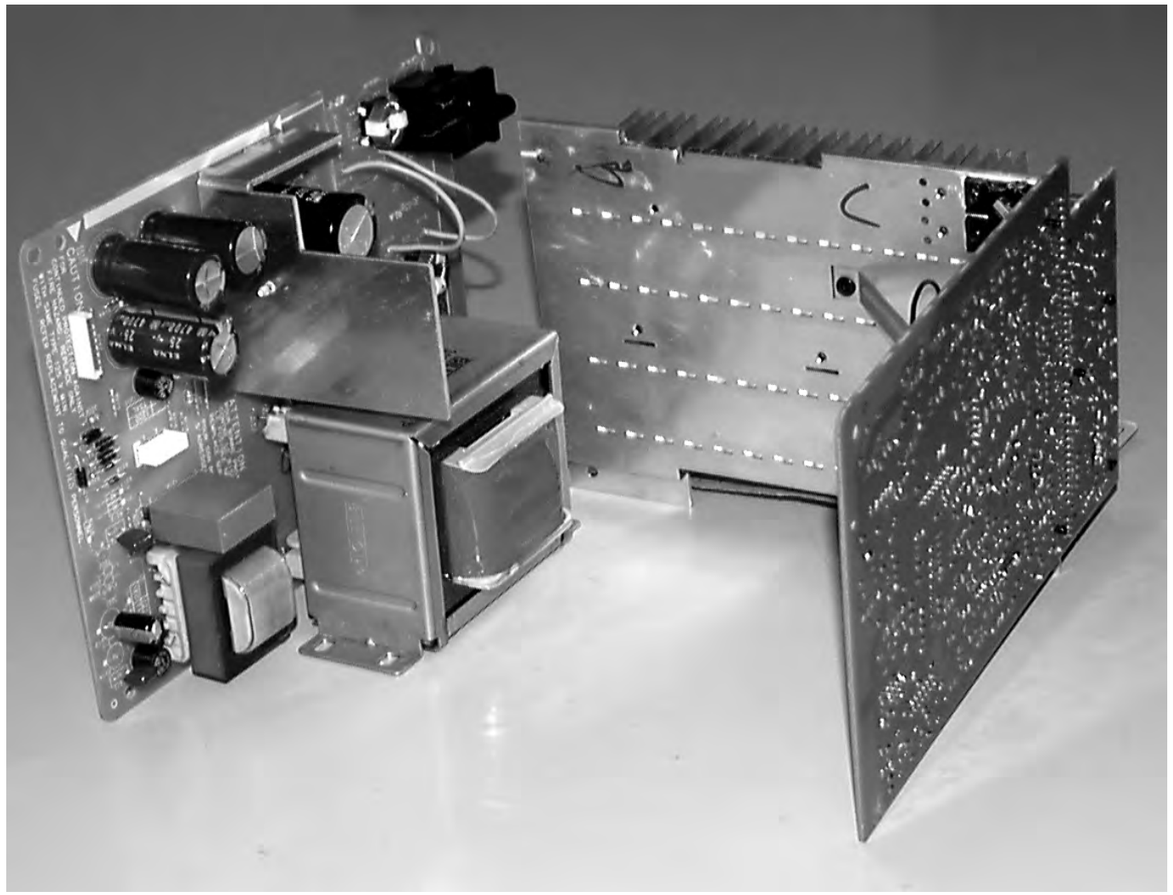
6871 ©	4822 130 11397	BAS316
6872 ©	4822 130 11397	BAS316
6873 ©	4822 130 11397	BAS316
6874 ©	4822 130 11397	BAS316
6875 ©	9340 548 52115	BZX284-C5V1
6877 ©	9322 129 34685	BZX284-C3V9
6878 ©	4822 130 11397	BAS316
6879 ©	9322 129 34685	BZX284-C3V9

TRANSISTORS

7802 ©	5322 130 60123	BC807-40
7808 ©	4822 130 60511	BC847B
7809 ©	4822 130 60511	BC847B
7810 ©	4822 130 60511	BC847B
7812 ©	4822 130 60511	BC847B
7874 ©	4822 130 60511	BC847B
7875 ©	4822 130 60511	BC847B

INTEGRATED CIRCUITS

7803 ©	5322 209 82941	LM358D, Dual Opamp
7805 ©	4822 209 33165	TDA1308T/N1
7806	4822 209 32852	TDA7073A/N2
7807	4822 209 32852	TDA7073A/N2
7871	4822 209 32852	TDA7073A/N2
7873 ©	5322 209 11306	HEF4094BT, SHIFT REGISTER
7877 ©	9352 641 80557	SAA7324H/M2B,“CD10“ SIGN.PROC.



POWER 2001 Module

(30 - 70W Version)

stage .7

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Circuit details:

Amplifier:

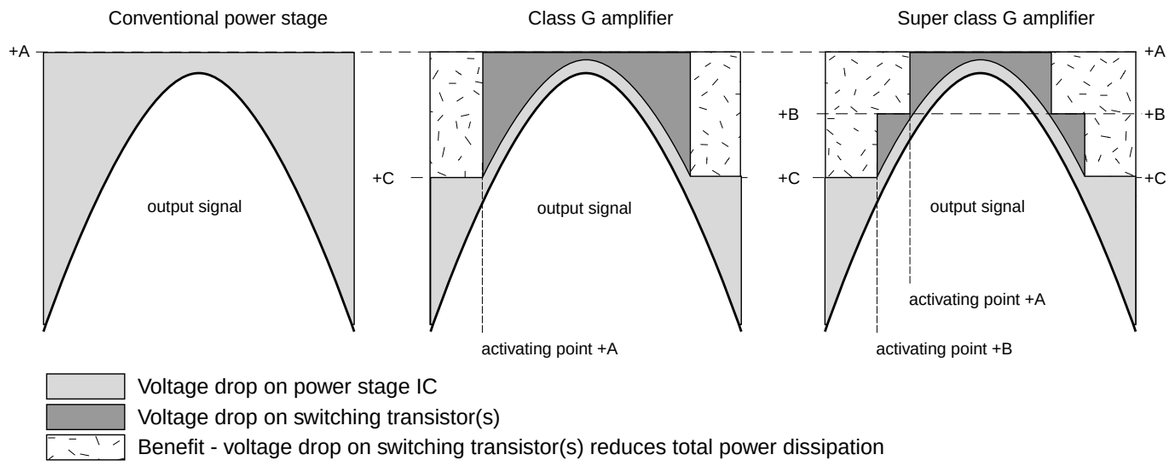
Attention: In the POWER 2001 module the power amplifier IC AN7591 is used as a bridge-amplifier.
Any connection from output to ground will destroy the outpout stages!

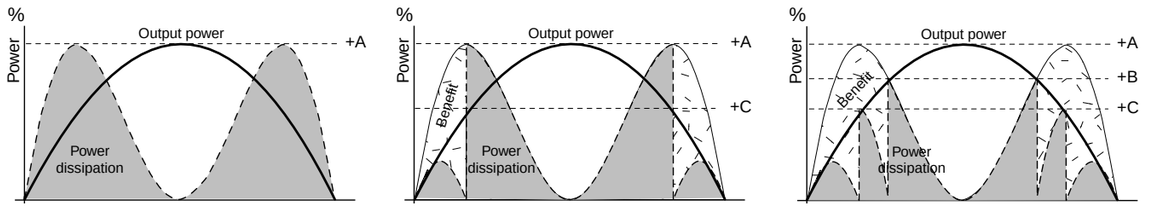
- Via the AMP_ON control line, connected to pins 6 (Stby), the power amplifiers are switched on/off by the µP.
  High level (approx. 4,5V): power amplifiers switched on
  Low level (approx. 0V): power amplifiers switched off

- 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 5001is 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**

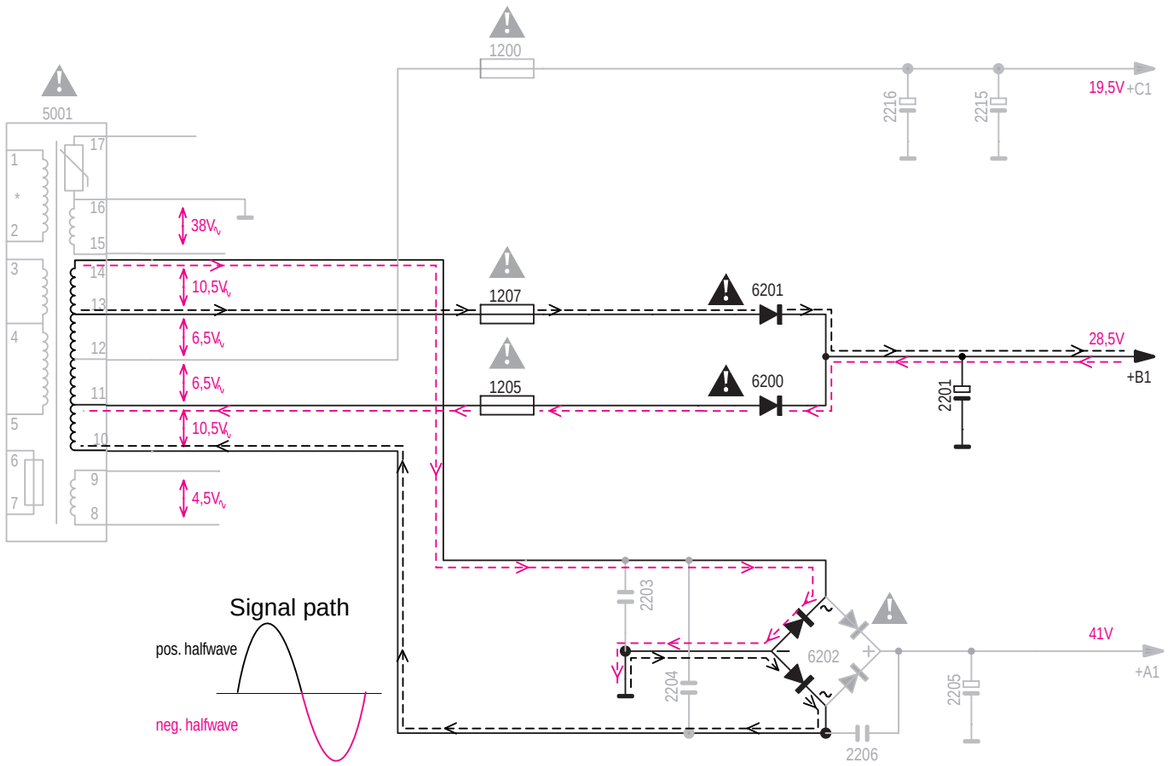
These voltages supply the Super Class G amplifier, described on previous page.
The whole power supply is optimized for the special characteristic of this type of amplifier. For that reason several “tricky” details have been applied to ensure optimal efficiency and symmetrical load to the mains transformer.

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 +B1using 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

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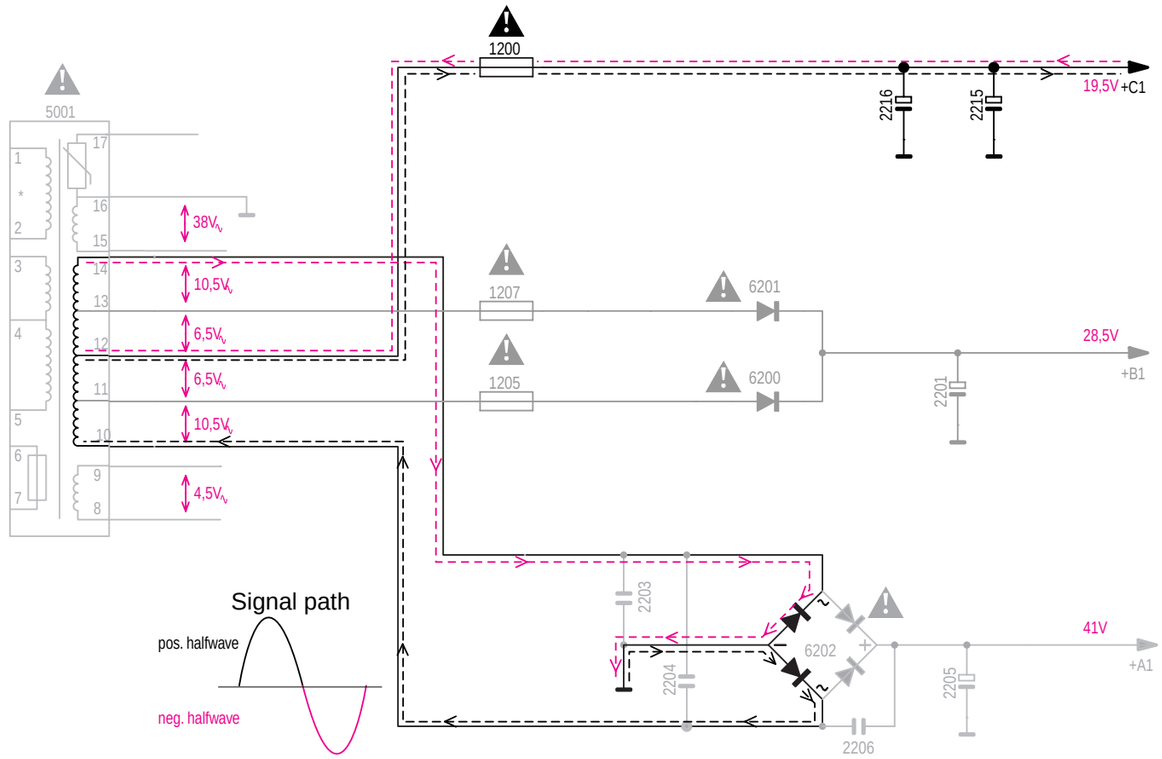
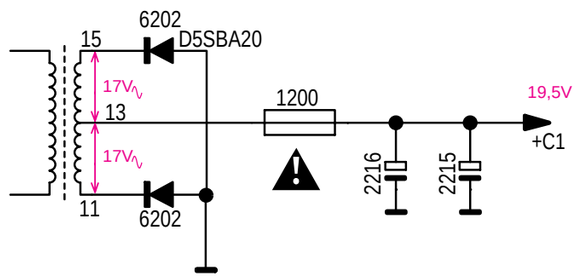
Generation of +C1
Full wave rectifying with 2 diodes of bridge rectifier 6202, using 50% secondary winding of mains transformer (pin 13-15/13-11).
See picture 2 below.



simplified:



picture 2

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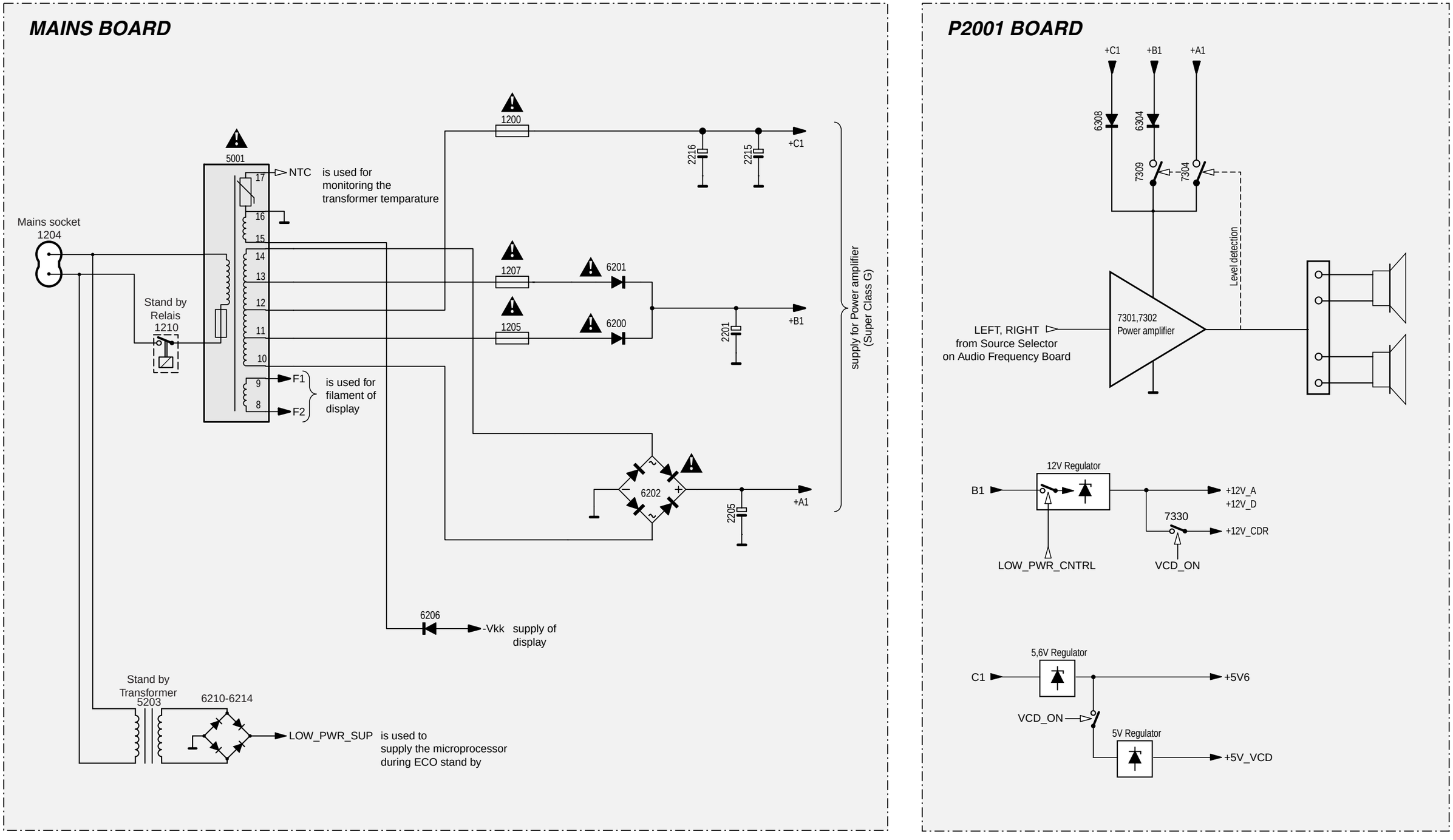
Block Diagram



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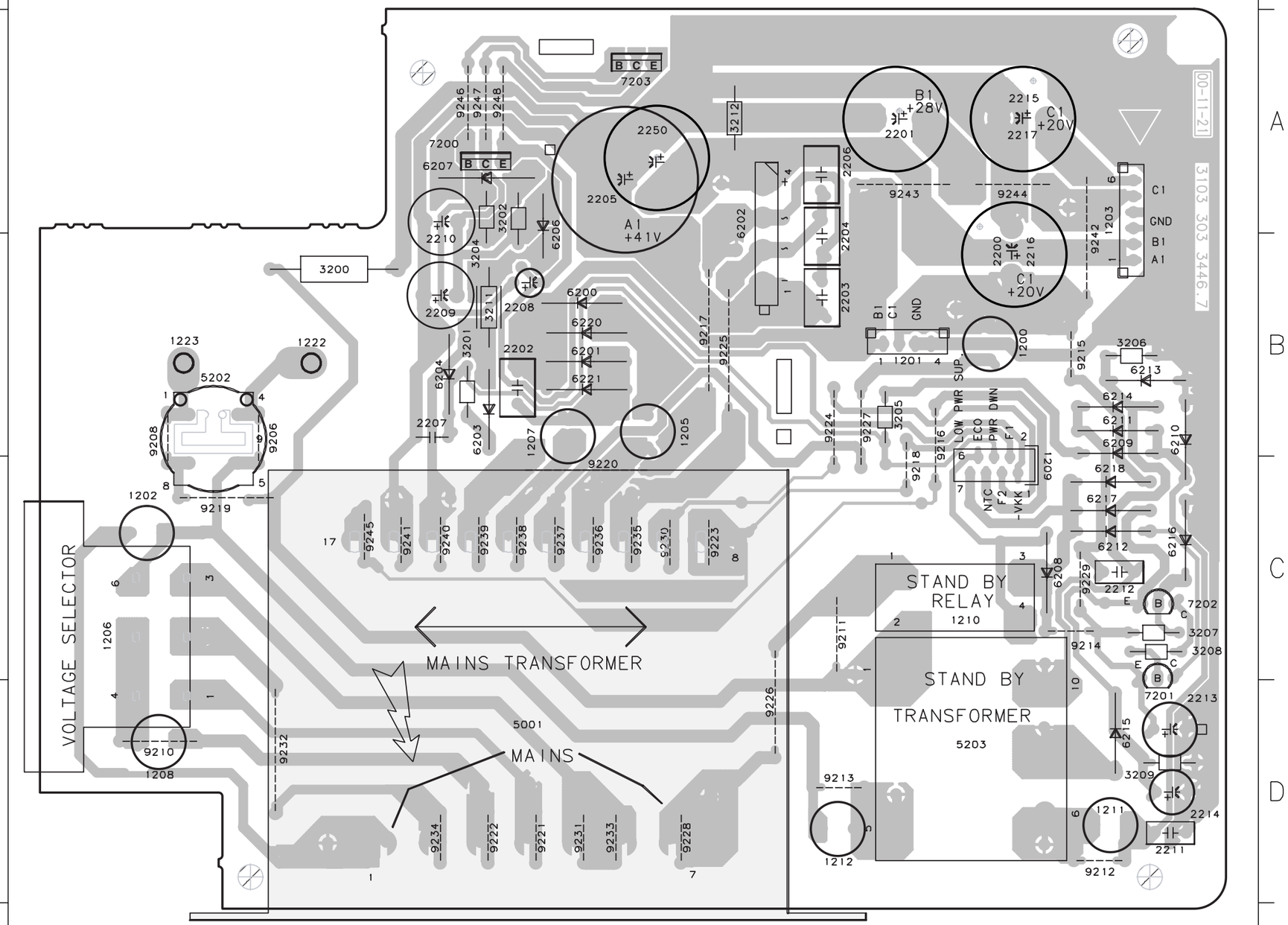
Mains Board Copperside view

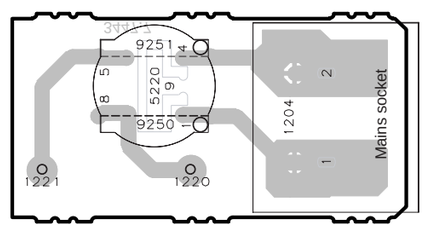


This assembly drawing shows a summary of all possible versions.
For components used in a specific version see schematic diagram respectively partslist.

Power 2001, Mainsboard Layout stage .7 2000-11-28

1200	B5	6213	B5
1201	B4	6214	B5
1202	C1	6215	D5
1203	A5	6216	C5
1205	B3	6217	C5
1206	C1	6218	C5
1207	C3	6220	B3
1208	D1	6221	B3
1209	C5	7200	A2
1210	C5	7201	D5
1211	D5	7202	C5
1212	D4	7203	A3
1222	B2	9206	B2
1223	B1	9208	B1
2200	B5	9210	D1
2201	A4	9211	D4
2202	B3	9212	D5
2203	B4	9213	D4
2204	B4	9214	C5
2205	B3	9215	B5
2206	A4	9216	B4
2207	B2	9217	B3
2208	B3	9218	C4
2209	B2	9219	C1
2210	B2	9220	C3
2211	D5	9221	D3
2212	C5	9222	D3
2213	D5	9223	C4
2214	D5	9224	B4
2215	A5	9225	B4
2216	B5	9226	D4
2217	A5	9227	B4
2250	A3	9228	D3
3200	B2	9229	C5
3201	B2	9230	C3
3202	B3	9231	D3
3204	A3	9232	D2
3205	B4	9233	D3
3206	B5	9234	D2
3207	C5	9235	C3
3208	C5	9236	C3
3209	D5	9237	C3
3211	B3	9238	C3
3212	A4	9239	C3
5001	C2	9240	C2
5202	B1	9241	C2
5203	D5	9242	B5
6200	B3	9243	A4
6201	B3	9244	A5
6202	B4	9245	C2
6203	B2	9246	A2
6204	B2	9247	A2
6206	B3	9248	A3
6207	A2		
6208	C5		
6209	C5		
6210	C5		
6211	B5		
6212	C5		

Mains Socket



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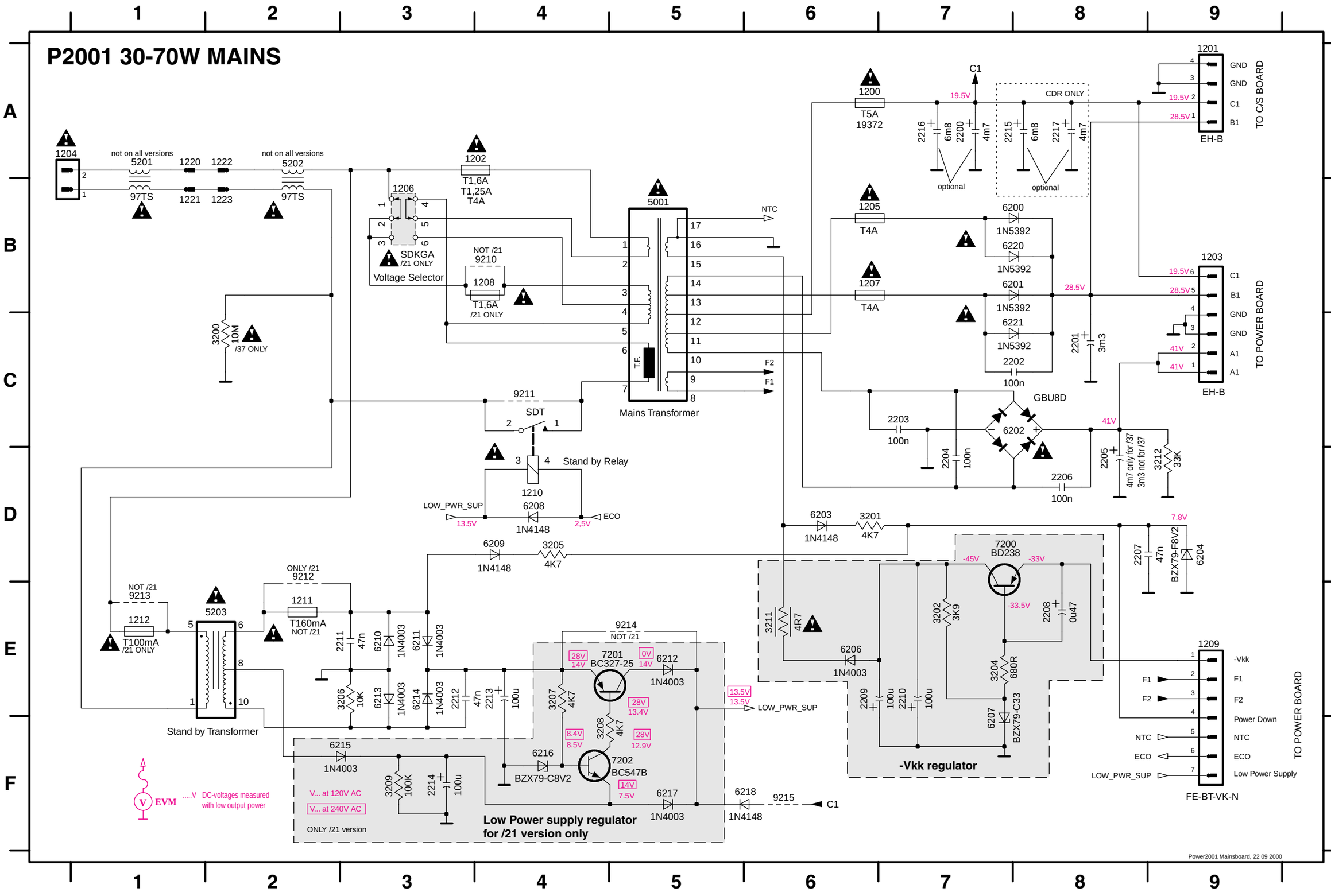
1200 A6	1207 B6	1222 A2	2204 D7	2210 E7	2216 A7	3205 E4	3212 D9	6202 C8	6209 E4	6215 F3	7200 D7	9211 C4
1201 A9	1208 B4	1223 B2	2205 D8	2211 E3	2217 A8	3206 E3	5001 C5	6203 D6	6210 E3	6216 F4	7201 E4	9212 D2
1202 A4	1209 E9	2200 A7	2206 D8	2212 E3	3200 C2	3207 E4	5202 A2	6204 D9	6211 E3	6217 F5	7202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



11-6

0300 B3
1300 A5
1301 B5
1302 A3
1304 C1
1305 A3
1306 C2
1307 B5
1308 A2
1310 A2
1312 B2
1313 B1
1314 A2
1315 C1
1316 C1
2300 B4
2301 C4
2302 B4
2303 C4
2304 B4
2305 C4
2306 A4
2307 C4
2308 A4
2309 B5
2310 A5
2311 B4
2312 A4
2313 B4
2314 A4
2315 C4
2316 A4
2317 C5
2318 B5
2319 B5
2320 A5
2321 C5
2322 A5
2323 A3
2324 B4
2325 B2
2326 C3
2327 B3
2328 A3
2329 A4
2330 A4
2331 A3
2332 A2
2333 B4
2334 C3
2335 C2
2336 A1
2337 A1
2338 A2
2339 A1
2340 C1
2341 B1
2342 B1
2343 A3
2344 C2
3300 C3
3301 C4
3302 B4
3303 C4
3304 B4
3305 C4
3306 A4
3307 C4
3308 A4
3309 B5
3310 A5
3311 C5
3312 B5
3313 B3
3314 B4
3315 C5
3316 C3
3317 C3
3318 C5
3319 B1
3320 B1
3321 B1
3322 C1
3323 B3
3324 A3
3325 A3
3326 C5
3327 B2
3328 A4
3329 C3
3330 C3
3331 C1
3332 B3
3333 B2
3336 A2
3337 B3
3338 B3
3339 A3
3340 C5
3341 B5
3342 A4
3343 A3
3344 A3
3345 A2
3346 A3
3347 A3
3348 C2
3349 C2
3350 B1
3351 C2
3352 C3
3353 C3
3354 A4
3355 A2
3356 A1
3357 A1
3358 A2
3359 A1
3360 B1
3361 A1
3362 A1
3363 A1
3364 C5
3365 C5
3366 C1
3367 C1
3368 A4
3369 B1
3370 A1
3371 B1
3372 A1
3373 B1
3374 C2
3375 C1
3376 A1
3377 B3
3378 A3
3379 C5
3380 B2
3381 B3
3382 C2
3383 C1
3391 C1
3392 B1
3393 C2
3394 C1
3395 C2
3396 A1
3397 C2
3398 A4
5300 A5
5301 B5
5302 A5
5303 B5
6300 B5
6301 C5
6302 B5
6303 C5
6304 C4
6305 C2
6306 B3
6307 B4
6308 B3
6309 A3
6310 A4
6311 B3
6312 B3
6313 A2
6314 B3
6315 C3
6316 A2
6317 A4
6318 A3
6319 A3
6320 B2
6321 B1
6322 C2
6323 C4
6324 C4
6325 A1
6326 A1
6327 A1
6328 C1
6329 B1
6330 A1
6331 A3
6332 A3
6333 C1
6334 A1
7300 A4
7301 C4
7302 A4
7303 A3
7304 B4
7305 A4
7306 C2
7307 C5
7308 B4
7309 C4
7310 C3
7311 C3
7312 B2
7313 B3
7314 B3
7315 B2
7316 B2
7317 A4
7318 A4
7319 A1
7320 C2
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7322 C2
7323 A2
7324 A1
7325 A1
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7328 B1
7330 B2
7331 C2
7332 B1
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9303 A2
9306 A3
9307 A3
9308 A3
9309 A3
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9320 A4
9321 A5
9322 B5
9323 B5
9324 B4
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9326 A1
9327 A2
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9335 B4
9336 C3
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9339 B3
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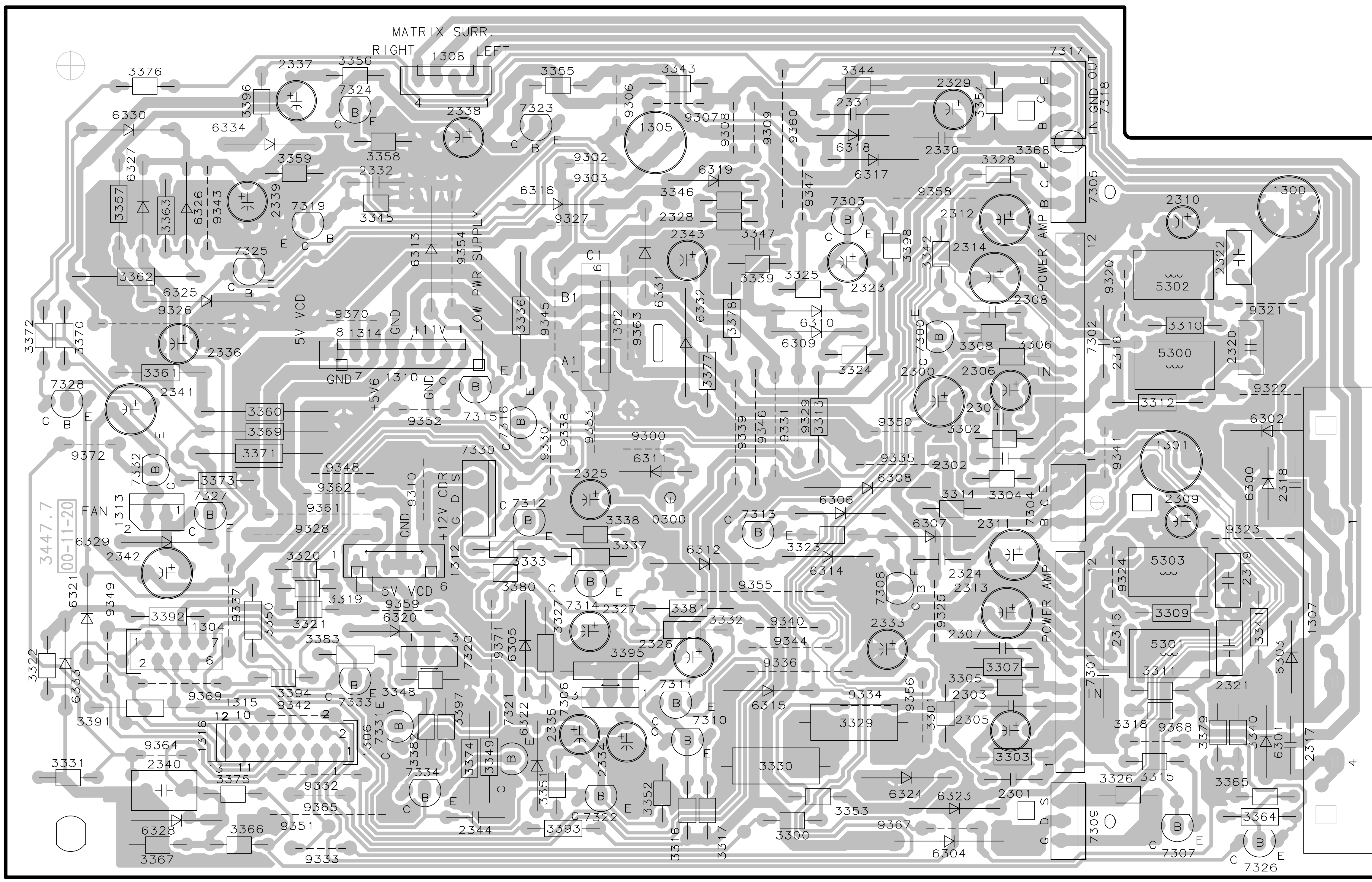
9341 B4
9342 C1
9343 A1
9344 C3
9345 A2
9346 B3
9347 A3
9348 B1
9349 C1
9350 B4
9351 C1
9352 B2
9353 B2
9354 A2
9355 B3
9356 C4
9358 A4
9359 B2
9360 A3
9361 B1
9362 B1
9363 A3
9364 C1
9365 C1
9367 C4
9368 C5
9369 C1
9370 A1
9371 C2
9372 B1

Power Board Copperside view



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

Power 2001, Powerboard Layout stage .7 2000-11-28

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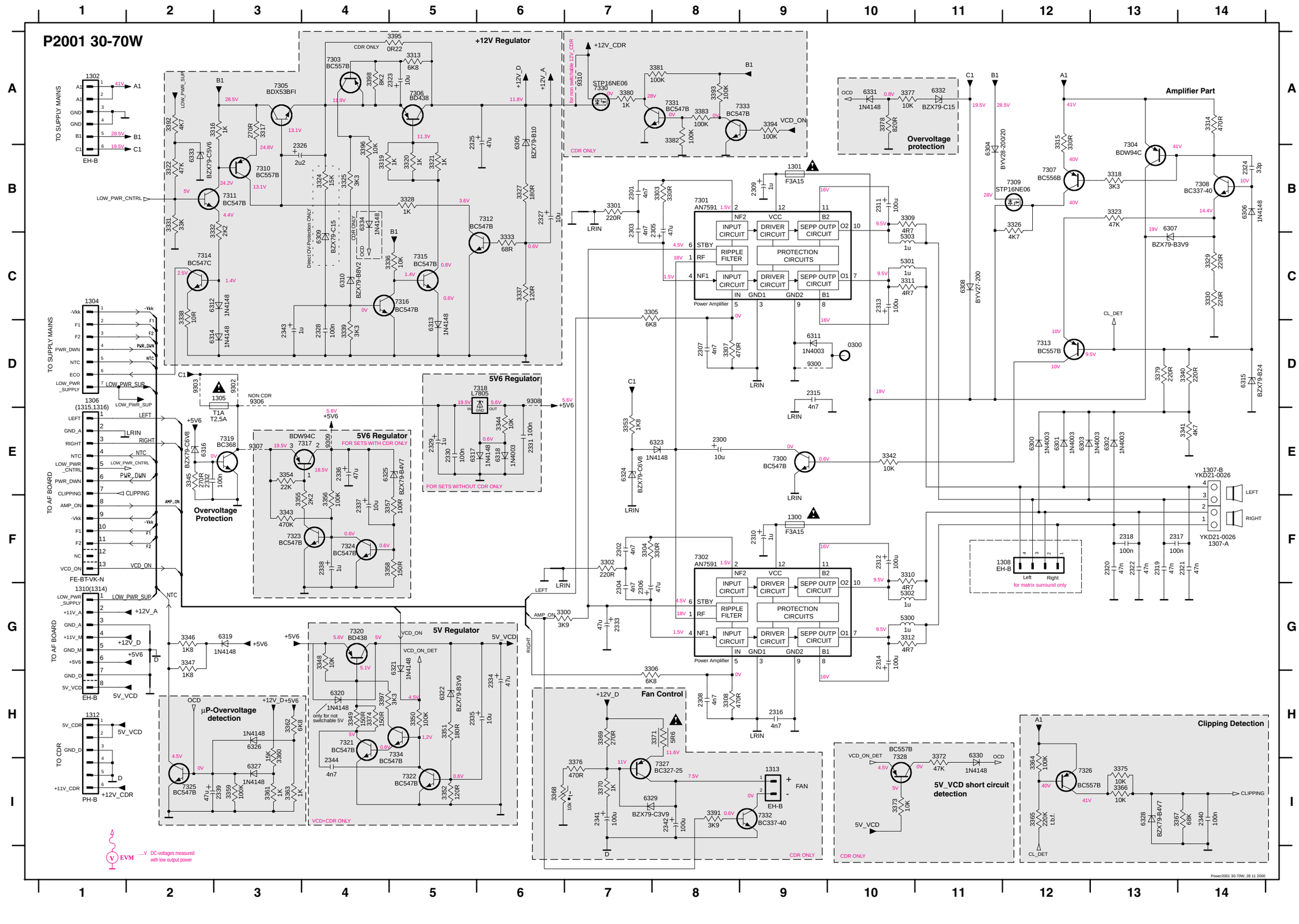

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ELECTRICAL PARTSLIST POWER2001 MODULE

MISCELLANEOUS

1200 ⚠	2422 086 10963	FUSE RAD 5A 250V IEC	
1202 ⚠	4822 071 51252	FUSE 1.25A	for sets without 5203
1202 ⚠	4822 071 51602	FUSE 1,6A	for sets with 5203
1202 ⚠	4822 253 10126	FUSE T4A	
1204 ⚠	2422 030 00328	MAINS SOCKET /37	
1204 ⚠	4822 265 31015	MAINS SOCKET /21, /22	
1205 ⚠	2422 086 10786	FUSE RAD 4A 250V IEC	
1206 ⚠	2422 129 16478	VOLTAGE SELECTOR	
1207 ⚠	2422 086 10786	FUSE RAD 4A 250V IEC	
1208 ⚠	4822 071 51252	FUSE 1.25A	for sets without 5203
1208 ⚠	4822 071 51602	FUSE 1,6A	for sets with 5203
1209	4822 267 10953	FLEX FOIL CONNECTOR 7P	
1210 ⚠	2422 132 07402	RELAY 1P 12V	
1211 ⚠	2422 086 10771	FUSE RAD 160mA 250V IEC	
1212 ⚠	4822 071 51001	FUSE 100mA	
1300 ⚠	4822 252 11225	FUSE F3.15A IEC 250V	
1301 ⚠	4822 252 11225	FUSE F3.15A IEC 250V	
1304	4822 267 10953	FLEX FOIL CONNECTOR 7P	
1305 ⚠	4822 071 51002	FUSE T1A	for sets without 5203
1305 ⚠	4822 071 52502	FUSE T 2,5A	for sets with 5203
1306	4822 267 10738	FFC-CONNECTOR 13P	
1307	4822 267 31176	SPEAKER TERMINAL	
5203 ⚠	3103 308 30600	STANDBY TRANSFORMER /21	
5203 ⚠	3103 308 30610	STANDBY TRANSFORMER /22	
5203 ⚠	3103 308 30800	STANDBY TRANSFORMER /37	
8010	3139 110 34600	FLEX FOIL CABLE 7Pin, 280mm	
	4822 492 11735	SPRING FIXATION TRANSISTOR	

CAPACITORS

2200	4822 124 12012	4700µF	20%	25V	
2201	4822 124 42367	3300µF	20%	35V	
2202	5322 121 42386	100nF	5%	63V	
2203	5322 121 42386	100nF	5%	63V	
2204	5322 121 42386	100nF	5%	63V	
2205	4822 124 80415	4700µF	20%	50V	only for /37
2205	8203 303 85640	3300µF	20%	50V	not for /37
2206	5322 121 42386	100nF	5%	63V	
2207	4822 122 33449	47nF	30%	50V	
2208	5322 124 41948	0,47µF	20%	50V	
2209	2020 012 93547	100µF	20%	63V	
2211	4822 121 43526	47nF	5%	100V	
2212	4822 121 43526	47nF	5%	100V	
2213	4822 124 40255	100µF	20%	50V	
2214	4822 124 40207	100µF	20%	25V	
2217	4822 124 12012	4700µF	20%	25V	
2300	4822 124 40248	10µF	20%	63V	
2301	4822 126 11714	4,7nF	20%	16V	
2302	4822 126 11714	4,7nF	20%	16V	
2303	4822 126 11714	4,7nF	20%	16V	
2304	4822 126 11714	4,7nF	20%	16V	
2305	4822 124 40433	47µF	20%	25V	
2306	4822 124 40433	47µF	20%	25V	
2307	4822 126 11714	4,7nF	20%	16V	
2308	4822 126 11714	4,7nF	20%	16V	
2309	4822 124 21913	1µF	20%	63V	
2310	4822 124 21913	1µF	20%	63V	
2311	4822 124 40207	100µF	20%	25V	
2312	4822 124 40207	100µF	20%	25V	
2313	4822 124 40207	100µF	20%	25V	
2314	4822 124 40207	100µF	20%	25V	
2315	4822 126 11714	4,7nF	20%	16V	
2316	4822 126 11714	4,7nF	20%	16V	
2317	4822 126 12882	100nF	20%	50V	
2318	4822 126 12882	100nF	20%	50V	
2319	4822 121 43526	47nF	5%	100V	
2320	4822 121 43526	47nF	5%	100V	
2321	4822 121 43526	47nF	5%	100V	
2322	4822 121 43526	47nF	5%	100V	
2323	4822 124 40248	10µF	20%	63V	
2324	4822 122 33069	33pF	5%	50V	
2325	4822 124 40433	47µF	20%	25V	

CAPACITORS

2326	4822 124 22652	2,2µF	20%	50V
2327	4822 124 40248	10µF	20%	63V
2328	4822 126 12882	100nF	20%	50V
2329	4822 124 21913	1µF	20%	63V
2330	4822 126 12882	100nF	20%	50V
2331	4822 126 12882	100nF	20%	50V
2332	4822 126 12882	100nF	20%	50V
2333	4822 124 40433	47µF	20%	25V
2334	4822 124 40433	47µF	20%	25V
2335	4822 124 40248	10µF	20%	63V
2336	4822 124 40433	47µF	20%	25V
2337	4822 124 40248	10µF	20%	63V
2338	4822 124 21913	1µF	20%	63V
2339	4822 124 40433	47µF	20%	25V
2341	4822 124 23052	100µF	20%	16V
2342	4822 124 23052	100µF	20%	16V
2343	4822 124 21913	1µF	20%	63V

RESISTORS

3200	4822 053 21106	10MΩ	5%	0,5W
3201	4822 116 52283	4,7kΩ	5%	0,5W
3202	4822 116 52276	3,9kΩ	5%	0,5W
3204	4822 116 52228	680Ω	5%	0,5W
3205	4822 116 52283	4,7kΩ	5%	0,5W
3206	4822 050 21003	10kΩ	2%	0,25W
3207	4822 116 52283	4,7kΩ	5%	0,5W
3208	4822 116 52283	4,7kΩ	5%	0,5W
3209	4822 116 52234	100kΩ	5%	0,5W
3211	4822 052 10478	4,7Ω	5%	NFR
3212	4822 050 23303	33kΩ	1%	0,6W
3300	4822 116 52276	3,9kΩ	5%	0,5W
3301	4822 116 83872	220Ω	5%	0,5W
3302	4822 116 83872	220Ω	5%	0,5W
3303	4822 116 52219	330Ω	5%	0,5W
3304	4822 116 52219	330Ω	5%	0,5W
3305	4822 116 83961	6,8kΩ	5%	0,16W
3306	4822 116 83961	6,8kΩ	5%	0,16W
3307	4822 116 83883	470Ω	5%	0,16W
3308	4822 116 83883	470Ω	5%	0,16W
3309	4822 050 24708	4,7Ω	1%	0,6W
3310	4822 050 24708	4,7Ω	1%	0,6W
3311	4822 050 24708	4,7Ω	1%	0,6W
3312	4822 050 24708	4,7Ω	1%	0,6W
3313	4822 116 83961	6,8kΩ	5%	0,16W
3314	4822 116 83883	470Ω	5%	0,16W
3315	4822 116 52219	330Ω	5%	0,5W
3316	4822 050 11002	1kΩ	5%	0,2W
3317	4822 116 83876	270Ω	5%	0,16W
3318	4822 116 52269	3,3kΩ	5%	0,5W
3319	4822 050 11002	1kΩ	5%	0,2W
3320	4822 050 11002	1kΩ	5%	0,2W
3321	4822 050 11002	1kΩ	5%	0,2W
3322	4822 116 83884	47kΩ	5%	0,16W
3323	4822 116 83884	47kΩ	5%	0,16W
3324	4822 116 52244	15kΩ	5%	0,5W
3325	4822 116 52269	3,3kΩ	5%	0,5W
3326	4822 116 52283	4,7kΩ	5%	0,5W
3327	4822 116 52213	180Ω	5%	0,5W
3328	4822 050 11002	1kΩ	5%	0,2W
3329	4822 053 11221	220Ω	5%	2W
3330	4822 053 11221	220Ω	5%	2W
3331	4822 050 23303	33kΩ	1%	0,6W
3332	4822 116 52256	2,2kΩ	5%	0,16W
3333	4822 116 52199	68Ω	5%	0,16W
3336	4822 050 21003	10kΩ	2%	0,25W
3337	4822 116 52206	120Ω	5%	0,5W
3338	4822 116 52176	10Ω	5%	0,5W
3339	4822 116 52269	3,3kΩ	5%	0,5W
3340	4822 116 83872	220Ω	5%	0,5W
3341	4822 116 52283	4,7kΩ	5%	0,5W
3342	4822 050 21003	10kΩ	2%	0,25W

ELECTRICAL PARTSLIST POWER2001 MODULE

RESISTORS

3343	4822 116 52285	470kΩ	5%	0,5W
3344	4822 050 21003	10kΩ	2%	0,25W
3345	4822 116 83876	270Ω	5%	0.16W
3346	4822 116 52249	1,8kΩ	5%	0,16W
3347	4822 116 52249	1,8kΩ	5%	0,16W
3348	4822 050 21003	10kΩ	2%	0,25W
3349	4822 116 52213	180Ω	5%	0,5W
3350	4822 050 21003	10kΩ	2%	0,25W
3351	4822 116 83868	150Ω	5%	0,5W
3352	4822 116 52206	120Ω	5%	0,5W
3353	4822 116 52249	1,8kΩ	5%	0,16W
3354	4822 116 52257	22kΩ	5%	0,5W
3355	4822 116 52256	2,2kΩ	5%	0,16W
3356	4822 116 52234	100kΩ	5%	0,5W
3357	4822 116 52175	100Ω	5%	0,5W
3358	4822 116 83868	150Ω	5%	0,5W
3359	4822 116 52234	100kΩ	5%	0,5W
3360	4822 116 52244	15kΩ	5%	0,5W
3361	4822 050 11002	1kΩ	5%	0,2W
3362	4822 116 83961	6,8kΩ	5%	0,16W
3363	4822 050 11002	1kΩ	5%	0,2W
3368	2322 640 63103	10kΩ	NTC	
3369	4822 116 83876	270Ω	5%	0.16W
3370	4822 050 11002	1kΩ	5%	0,2W
3371	4822 052 10568	5,6Ω	5%	0,33W
3372	4822 116 83884	47kΩ	5%	0,16W
3373	4822 050 21003	10kΩ	2%	0,25W
3374	4822 116 52213	180Ω	5%	0,5W
3376	4822 116 83883	470Ω	5%	0,16W
3377	4822 050 21003	10kΩ	2%	0,25W
3378	4822 116 52231	820Ω	5%	0,5W
3379	4822 116 83872	220Ω	5%	0,5W
3380	4822 050 11002	1kΩ	5%	0,2W
3381	4822 116 52234	100kΩ	5%	0,5W
3382	4822 116 52234	100kΩ	5%	0,5W
3383	4822 116 52234	100kΩ	5%	0,5W
3391	4822 116 52276	3,9kΩ	5%	0,5W
3392	4822 116 52283	4,7kΩ	5%	0,5W

COILS

5202	4822 157 11832	400µH
5220	4822 157 11832	400µH
5300	4822 157 62255	COIL 18,5 TURNS
5301	4822 157 62255	COIL 18,5 TURNS
5302	4822 157 62255	COIL 18,5 TURNS
5303	4822 157 62255	COIL 18,5 TURNS

DIODES

6200 ⚠	4822 130 31878	1N4003G
6201 ⚠	4822 130 31878	1N4003G
6202	4822 130 11139	GBU8D
6203	4822 130 30621	1N4148
6204	3198 010 58280	BZX79-B8V2
6206	4822 130 31878	1N4003G
6207	4822 130 34142	BZX79-B33
6208	4822 130 30621	1N4148
6209	4822 130 30621	1N4148
6210	4822 130 31878	1N4003G
6211	4822 130 31878	1N4003G
6212	4822 130 31878	1N4003G
6213	4822 130 31878	1N4003G
6214	4822 130 31878	1N4003G
6215	4822 130 31878	1N4003G
6216	4822 130 34382	BZX79-B8V2
6217	4822 130 31878	1N4003G
6218	4822 130 30621	1N4148
6220 ⚠	4822 130 31878	1N4003G
6221 ⚠	4822 130 31878	1N4003G
6300	4822 130 31878	1N4003G
6301	4822 130 31878	1N4003G
6302	4822 130 31878	1N4003G

DIODES

6303	4822 130 31878	1N4003G
6304	9340 550 66112	BYV28-200/24
6305	4822 130 61219	BZX79-C10
6306	4822 130 30621	1N4148
6307	3198 010 53980	BZX79-B3V9
6308	5322 130 31938	BYV27-200
6309	4822 130 34281	BZX79-C15
6310	3198 010 58280	BZX79-B8V2
6311	4822 130 31878	1N4003G
6312	4822 130 30621	1N4148
6313	4822 130 30621	1N4148
6314	4822 130 30621	1N4148
6315	4822 130 34398	BZX79-C24
6316	4822 130 34278	BZX79-C6V8
6317	4822 130 30621	1N4148
6318	4822 130 31878	1N4003G
6319	4822 130 30621	1N4148
6321	4822 130 30621	1N4148
6322	3198 010 53980	BZX79-B3V9
6323	4822 130 30621	1N4148
6324	4822 130 34278	BZX79-C6V8
6325	4822 130 34174	BZX79-B4V7
6326	4822 130 30621	1N4148
6327	4822 130 30621	1N4148
6329	4822 130 31981	BZX79-B3V9
6330	4822 130 30621	1N4148
6331	4822 130 30621	1N4148
6332	4822 130 34281	BZX79-C15
6333	4822 130 34173	BZX79-B5V6

TRANSISTORS

7200	4822 130 40917	BD238
7201	4822 130 41246	BC327-25
7202	4822 130 40959	BC547B
7303	4822 130 44568	BC557B
7304	4822 130 10847	BDW94C
7305	9322 139 23687	BDX53BFP
7306	4822 130 40995	BD438
7307	4822 130 41691	BC556B
7308	4822 130 40855	BC337-40
7309	4822 130 11336	STP16NE06FP
7310	4822 130 44568	BC557B
7311	4822 130 40959	BC547B
7312	4822 130 40959	BC547B
7313	4822 130 44568	BC557B
7314	4822 130 44503	BC547C
7315	4822 130 40959	BC547B
7316	4822 130 40959	BC547B
7317	4822 130 10847	BDW94C
7319	5322 130 44647	BC368
7320	4822 130 40995	BD438
7321	4822 130 40959	BC547B
7322	4822 130 40959	BC547B
7323	4822 130 40959	BC547B
7324	4822 130 40959	BC547B
7325	4822 130 40959	BC547B
7327	4822 130 41246	BC327-25
7328	4822 130 44568	BC557B
7330	4822 130 11336	STP16NE06FP
7331	4822 130 40959	BC547B
7332	4822 130 40855	BC337-40

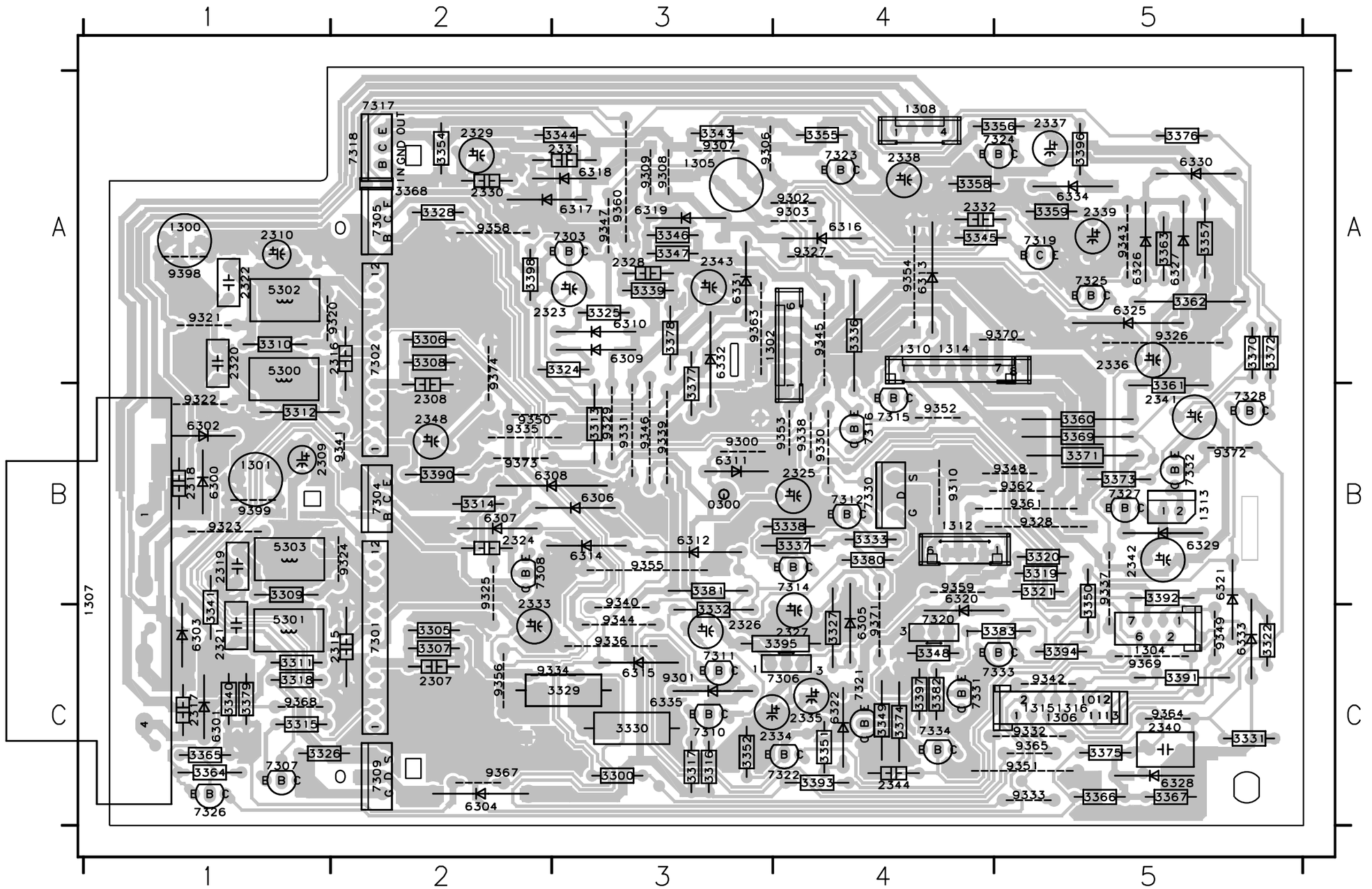
INTEGRATED CIRCUITS

7301	9322 161 89682	AN7591, Power amplifier
7302	9322 161 89682	AN7591, Power amplifier
7318	4822 209 31841	L7805CP, Stabilizer 5V

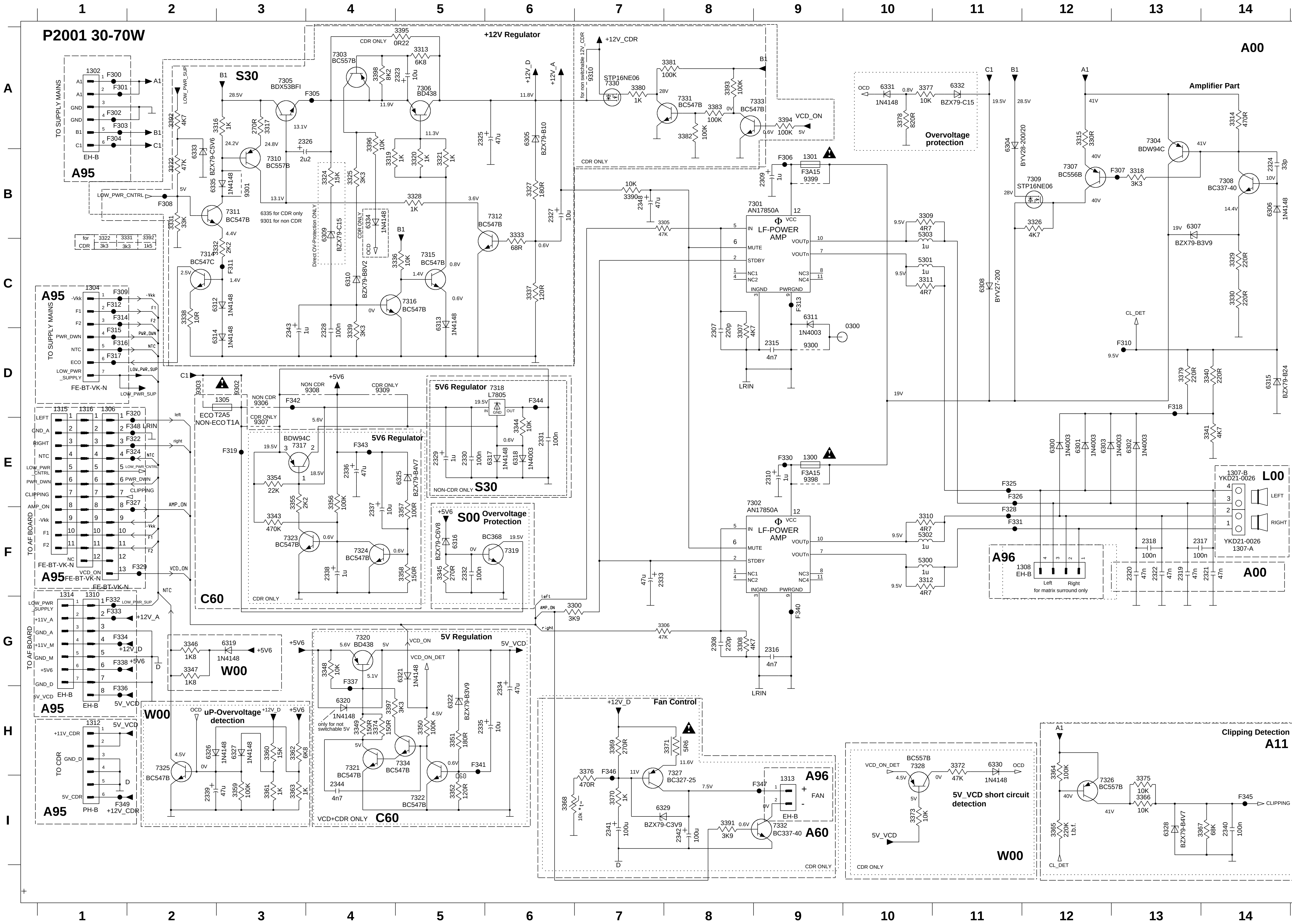
11-6B

POWER BOARD COPPERSIDE VIEW - P2001 30-70W AN17850 (PWR313)

0300	B3	2310	A1	2332	A4	3308	A2	3327	C4	3348	C4	3367	C5	3391	C5	6306	B3	6326	A5	7309	C2	7328	B5	9323	B1	9341	B2	9360	A3
1300	A1	2315	C2	2333	B2	3309	B1	3328	A2	3349	C4	3368	A2	3392	B5	6307	B2	6327	A5	7310	C3	7330	B4	9324	B2	9342	C5	9361	B5
1301	B1	2316	A2	2334	C4	3310	A1	3329	C3	3350	B5	3369	B5	3393	C4	6308	B2	6328	C5	7311	C3	7331	C4	9325	B2	9343	A5	9362	B5
1302	A3	2317	C1	2335	C4	3311	C1	3330	C3	3351	C4	3370	A5	3394	C5	6309	A3	6329	B5	7312	B4	7332	B5	9326	A5	9344	C3	9363	A3
1304	C5	2318	B1	2336	A5	3312	B1	3331	C5	3352	C3	3371	B5	3395	C4	6310	A3	6330	A5	7314	B4	7333	C5	9327	A4	9345	A4	9364	C5
1305	A3	2319	B1	2337	A5	3313	B3	3332	C3	3354	A2	3372	A5	3396	A5	6311	B3	6331	A3	7315	B4	7334	C4	9328	B5	9346	B3	9365	C5
1306	C5	2320	A1	2338	A4	3314	B2	3333	B4	3355	A4	3373	B5	3397	C4	6312	B3	6332	A3	7316	B4	9300	B3	9329	B3	9347	A3	9367	C2
1307	B1	2321	C1	2339	A5	3315	C1	3336	A4	3356	A5	3374	C4	3398	A2	6313	A4	6333	C5	7317	A2	9301	C3	9330	B4	9348	B5	9368	C1
1308	A4	2322	A1	2340	C5	3316	C3	3337	B4	3357	A5	3375	C5	5300	A1	6314	B3	6334	A5	7318	A2	9302	A4	9331	B3	9349	C5	9369	C5
1310	A4	2323	A2	2341	B5	3317	C3	3338	B4	3358	A4	3376	A5	5301	C1	6315	C3	6335	C3	7319	A5	9303	A4	9332	C5	9350	B2	9370	A5
1312	B4	2324	B2	2342	B5	3318	C1	3339	A3	3359	A5	3377	B3	5302	A1	6316	A4	7301	C2	7320	C4	9306	A3	9333	C5	9351	C5	9371	C4
1313	B5	2325	B4	2343	A3	3319	B5	3340	C1	3360	B5	3378	A3	5303	B1	6317	A3	7302	A2	7321	C4	9307	A3	9334	C3	9352	B4	9372	B5
1314	A4	2326	C3	2344	C4	3320	B5	3341	C1	3361	B5	3379	C1	6300	B1	6318	A3	7303	A3	7322	C4	9308	A3	9335	B2	9353	B4	9373	B2
1315	C5	2327	C4	2348	B2	3321	B5	3343	A3	3362	A5	3380	B4	6301	C1	6319	A3	7304	B2	7323	A4	9309	A3	9336	C3	9354	A4	9374	A2
1316	C5	2328	A3	3300	C3	3322	C5	3344	A3	3363	A5	3381	B3	6302	B1	6320	B4	7305	A2	7324	A5	9310	B4	9337	B5	9355	B3	9398	A1
2307	C2	2329	A2	3305	C2	3324	A3	3345	A4	3364	C1	3382	C4	6303	C1	6321	B5	7306	C4	7325	A5	9320	A2	9338	B4	9356	C2	9399	B1
2308	B2	2330	A2	3306	A2	3325	A3	3346	A3	3365	C1	3383	C5	6304	C2	6322	C4	7307	C1	7326	C1	9321	A1	9339	B3	9358	A2		
2309	B1	2331	A3	3307	C2	3326	C1	3347	A3	3366	C5	3390	B2	6305	C4	6325	A5	7308	B2	7327	B5	9322	B1	9340	B3	9359	B4		



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	6325 E5
2316 G9	6326 H2
2317 F13	6327 H3
2318 F13	6328 I13
2319 F13	6329 I7
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 I14	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 I5
3305 B7	7323 F3
3306 G7	7324 F4
3307 D8	7325 H2
3308 G8	7326 I12
3309 B10	7327 H8
3310 F10	7328 H10
3311 C10	7330 A7
3312 F10	7331 A8
3313 A5	7332 I9
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
3324 B4	9309 D4
3325 B4	9310 A7
3326 B12	9398 E9
3327 B6	9399 B9
3328 B5	F300 A1
3329 C14	F301 A1
3330 C14	F302 A1
3331 B2	F303 A1
3332 C3	F304 A1
3333 B6	F305 A4
3336 C5	F306 B9
3337 C6	F307 B13
3338 C2	F308 B2
3339 D4	F309 C1
3340 D14	F310 D13
3341 E14	F311 C3
3343 F3	F312 C1
3344 E6	F313 C9
3345 F5	F314 C1
3346 G2	F315 D1
3347 G2	F316 D1
3348 G4	F317 D1
3349 H4	F318 D13
3350 H5	F319 E3
3351 H5	F320 D2
3352 I5	F322 E2
3354 E3	F324 E2
3355 E3	F325 E11
3356 E4	F326 E11
3357 F5	F327 E2
3358 F5	F328 F11
3359 I3	F329 F2
3360 H3	F330 E9
3361 I3	F331 F11
3362 H3	F332 G1
3363 I3	F333 G1
3364 H12	F334 G1
3365 I12	F336 H1
3366 I13	F337 G4
3367 I14	F338 G1
3368 I6	F340 G9
3369 H7	F341 H5
3370 I7	F342 D3
3371 H8	F343 E4
3372 H11	F344 D6
3373 I10	F345 I14
3374 H4	F346 H7
3375 I13	F347 I9
3376 H7	F348 E2
3377 A10	F349 I1
3378 A10	
3379 D13	
3380 A7	
3381 A8	
3382 A8	
3383 A8	
3390 B7	
3391 I8	
3392 A2	
3393 A8	
3394 A9	
3395 A5	
3396 A4	
3397 H4	
3398 A4	
5300 F10	
5301 C10	
5302 F10	
5303 B10	
6300 E12	
6301 E12	
6302 E13	

ELECTRICAL PARTSLIST P2001 30-70W AN17850 (PWR313)

MISCELLANEOUS

1200⚠	2422 086 10963	FUSE RAD 5A 250V IEC	
1202⚠	4822 071 51252	FUSE 1.25A	for sets without 5203
1202⚠	4822 071 51602	FUSE 1,6A	for sets with 5203
1202⚠	4822 253 10126	FUSE T4A	
1204⚠	2422 030 00328	MAINS SOCKET /37	
1204⚠	4822 265 31015	MAINS SOCKET /21, /22	
1205⚠	2422 086 10786	FUSE RAD 4A 250V IEC	
1206⚠	2422 129 16478	VOLTAGE SELECTOR	
1207⚠	2422 086 10786	FUSE RAD 4A 250V IEC	
1208⚠	4822 071 51252	FUSE 1.25A	for sets without 5203
1208⚠	4822 071 51602	FUSE 1,6A	for sets with 5203
1209	4822 267 10953	FLEX FOIL CONNECTOR 7P	
1210⚠	2422 132 07402	RELAY 1P 12V	
1211⚠	2422 086 10771	FUSE RAD 160mA 250V IEC	
1212⚠	4822 071 51001	FUSE 100mA	
1304	4822 267 10953	FLEX FOIL CONNECTOR 7P	
1305⚠	4822 071 51002	FUSE T1A	for sets without 5203
1305⚠	4822 071 52502	FUSE T 2,5A	for sets with 5203
1306	4822 267 10738	FFC-CONNECTOR 13P	
1307	4822 267 31176	SPEAKER TERMINAL	
5203⚠	3103 308 30600	STANDBY TRANSFORMER /21	
5203⚠	3103 308 30610	STANDBY TRANSFORMER /22	
5203⚠	3103 308 30800	STANDBY TRANSFORMER /37	
8010	3139 110 34600	FLEX FOIL CABLE 7Pin, 280mm	
	4822 492 11735	SPRING FIXATION TRANSISTOR	

CAPACITORS

2200	4822 124 12012	4700µF	20%	25V	
2201	4822 124 42367	3300µF	20%	35V	
2202	5322 121 42386	100nF	5%	63V	
2203	5322 121 42386	100nF	5%	63V	
2204	5322 121 42386	100nF	5%	63V	
2205	4822 124 80415	4700µF	20%	50V	only for /37
2205	8203 303 85640	3300µF	20%	50V	not for /37
2206	5322 121 42386	100nF	5%	63V	
2207	4822 122 33449	47nF	30%	50V	
2208	5322 124 41948	0,47µF	20%	50V	
2209	2020 012 93547	100µF	20%	63V	
2211	4822 121 43526	47nF	5%	100V	
2212	4822 121 43526	47nF	5%	100V	
2213	4822 124 40255	100µF	20%	50V	
2214	4822 124 40207	100µF	20%	25V	
2217	4822 124 12012	4700µF	20%	25V	
2307	4822 122 10466	220pF	10%	50V	
2308	4822 122 10466	220pF	10%	50V	
2309	4822 124 21913	1µF	20%	63V	
2310	4822 124 21913	1µF	20%	63V	
2315	4822 126 11714	4,7nF	20%	16V	
2316	4822 126 11714	4,7nF	20%	16V	
2317	4822 126 12882	100nF	20%	50V	
2318	4822 126 12882	100nF	20%	50V	
2319	4822 121 43526	47nF	5%	100V	
2320	4822 121 43526	47nF	5%	100V	
2321	4822 121 43526	47nF	5%	100V	
2322	4822 121 43526	47nF	5%	100V	
2323	4822 124 40248	10µF	20%	63V	
2324	4822 122 33069	33pF	5%	50V	
2325	4822 124 40433	47µF	20%	25V	
2326	4822 124 22652	2,2µF	20%	50V	
2327	4822 124 40248	10µF	20%	63V	
2328	4822 126 12882	100nF	20%	50V	
2329	4822 124 21913	1µF	20%	63V	
2330	4822 126 12882	100nF	20%	50V	
2331	4822 126 12882	100nF	20%	50V	
2332	4822 126 12882	100nF	20%	50V	
2333	4822 124 40433	47µF	20%	25V	
2334	4822 124 40433	47µF	20%	25V	
2335	4822 124 40248	10µF	20%	63V	
2336	4822 124 40433	47µF	20%	25V	
2337	4822 124 40248	10µF	20%	63V	
2338	4822 124 21913	1µF	20%	63V	
2339	4822 124 40433	47µF	20%	25V	

CAPACITORS

2341	4822 124 23052	100µF	20%	16V	
2342	4822 124 23052	100µF	20%	16V	
2343	4822 124 21913	1µF	20%	63V	

RESISTORS

3200	4822 053 21106	10MΩ	5%	0,5W
3201	4822 116 52283	4,7kΩ	5%	0,5W
3202	4822 116 52276	3,9kΩ	5%	0,5W
3204	4822 116 52228	680Ω	5%	0,5W
3205	4822 116 52283	4,7kΩ	5%	0,5W
3206	4822 050 21003	10kΩ	2%	0,25W
3207	4822 116 52283	4,7kΩ	5%	0,5W
3208	4822 116 52283	4,7kΩ	5%	0,5W
3209	4822 116 52234	100kΩ	5%	0,5W
3211	4822 052 10478	4,7Ω	5%	NFR
3212	4822 050 23303	33kΩ	1%	0,6W
3300	4822 116 52276	3,9kΩ	5%	0,5W
3305	4822 116 83884	47kΩ	5%	0,16W
3306	4822 116 83884	47kΩ	5%	0,16W
3307	4822 116 52283	4k7Ω	5%	0,16W
3308	4822 116 52283	4k7Ω	5%	0,16W
3309	4822 050 24708	4,7Ω	1%	0,6W
3310	4822 050 24708	4,7Ω	1%	0,6W
3311	4822 050 24708	4,7Ω	1%	0,6W
3312	4822 050 24708	4,7Ω	1%	0,6W
3313	4822 116 83961	6,8kΩ	5%	0,16W
3314	4822 116 83883	470Ω	5%	0,16W
3315	4822 116 52219	330Ω	5%	0,5W
3316	4822 050 11002	1kΩ	5%	0,2W
3317	4822 116 83876	270Ω	5%	0.16W
3318	4822 116 52269	3,3kΩ	5%	0,5W
3319	4822 050 11002	1kΩ	5%	0,2W
3320	4822 050 11002	1kΩ	5%	0,2W
3321	4822 050 11002	1kΩ	5%	0,2W
3322	4822 116 83884	47kΩ	5%	0,16W
3324	4822 116 52244	15kΩ	5%	0,5W
3325	4822 116 52269	3,3kΩ	5%	0,5W
3326	4822 116 52283	4,7kΩ	5%	0,5W
3327	4822 116 52213	180Ω	5%	0,5W
3328	4822 050 11002	1kΩ	5%	0,2W
3329	4822 053 11221	220Ω	5%	2W
3330	4822 053 11221	220Ω	5%	2W
3331	4822 050 23303	33kΩ	1%	0,6W
3332	4822 116 52256	2,2kΩ	5%	0,16W
3333	4822 116 52199	68Ω	5%	0,16W
3336	4822 050 21003	10kΩ	2%	0,25W
3337	4822 116 52206	120Ω	5%	0,5W
3338	4822 116 52176	10Ω	5%	0,5W
3339	4822 116 52269	3,3kΩ	5%	0,5W
3340	4822 116 83872	220Ω	5%	0,5W
3341	4822 116 52283	4,7kΩ	5%	0,5W
3343	4822 116 52285	470kΩ	5%	0,5W
3344	4822 050 21003	10kΩ	2%	0,25W
3345	4822 116 83876	270Ω	5%	0.16W
3346	4822 116 52249	1,8kΩ	5%	0,16W
3347	4822 116 52249	1,8kΩ	5%	0,16W
3348	4822 050 21003	10kΩ	2%	0,25W
3349	4822 116 52213	180Ω	5%	0,5W
3350	4822 050 21003	10kΩ	2%	0,25W
3351	4822 116 83868	150Ω	5%	0,5W
3352	4822 116 52206	120Ω	5%	0,5W
3354	4822 116 52257	22kΩ	5%	0,5W
3355	4822 116 52256	2,2kΩ	5%	0,16W
3356	4822 116 52234	100kΩ	5%	0,5W
3357	4822 116 52175	100Ω	5%	0,5W
3358	4822 116 83868	150Ω	5%	0,5W
3359	4822 116 52234	100kΩ	5%	0,5W
3360	4822 116 52244	15kΩ	5%	0,5W
3361	4822 050 11002	1kΩ	5%	0,2W
3362	4822 116 83961	6,8kΩ	5%	0,16W
3363	4822 050 11002	1kΩ	5%	0,2W

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ELECTRICAL PARTSLIST POWER2001 MODULE

RESISTORS

3368	2322 640 63103	10kΩ	NTC	
3369	4822 116 83876	270Ω	5%	0.16W
3370	4822 050 11002	1kΩ	5%	0,2W
3371	4822 052 10568	5,6Ω	5%	0,33W
3372	4822 116 83884	47kΩ	5%	0,16W
3373	4822 050 21003	10kΩ	2%	0,25W
3374	4822 116 52213	180Ω	5%	0,5W
3376	4822 116 83883	470Ω	5%	0,16W
3377	4822 050 21003	10kΩ	2%	0,25W
3378	4822 116 52231	820Ω	5%	0,5W
3379	4822 116 83872	220Ω	5%	0,5W
3380	4822 050 11002	1kΩ	5%	0,2W
3381	4822 116 52234	100kΩ	5%	0,5W
3382	4822 116 52234	100kΩ	5%	0,5W
3383	4822 116 52234	100kΩ	5%	0,5W
3391	4822 116 52276	3,9kΩ	5%	0,5W
3392	4822 116 52283	4,7kΩ	5%	0,5W

COILS

5202	4822 157 11832	400µH
5220	4822 157 11832	400µH
5300	4822 157 62255	COIL 18,5 TURNS
5301	4822 157 62255	COIL 18,5 TURNS
5302	4822 157 62255	COIL 18,5 TURNS
5303	4822 157 62255	COIL 18,5 TURNS

DIODES

6200 !	4822 130 31878	1N4003G
6201 !	4822 130 31878	1N4003G
6202	4822 130 11139	GBU8D
6203	4822 130 30621	1N4148
6204	3198 010 58280	BZX79-B8V2
6206	4822 130 31878	1N4003G
6207	4822 130 34142	BZX79-B33
6208	4822 130 30621	1N4148
6209	4822 130 30621	1N4148
6210	4822 130 31878	1N4003G
6211	4822 130 31878	1N4003G
6212	4822 130 31878	1N4003G
6213	4822 130 31878	1N4003G
6214	4822 130 31878	1N4003G
6215	4822 130 31878	1N4003G
6216	4822 130 34382	BZX79-B8V2
6217	4822 130 31878	1N4003G
6218	4822 130 30621	1N4148
6220 !	4822 130 31878	1N4003G
6221 !	4822 130 31878	1N4003G
6300	4822 130 31878	1N4003G
6301	4822 130 31878	1N4003G
6302	4822 130 31878	1N4003G
6303	4822 130 31878	1N4003G
6304	9340 550 66112	BYV28-200/24
6305	4822 130 61219	BZX79-C10
6306	4822 130 30621	1N4148
6307	3198 010 53980	BZX79-B3V9
6308	5322 130 31938	BYV27-200
6309	4822 130 34281	BZX79-C15
6310	3198 010 58280	BZX79-B8V2
6311	4822 130 31878	1N4003G
6312	4822 130 30621	1N4148
6313	4822 130 30621	1N4148
6314	4822 130 30621	1N4148
6315	4822 130 34398	BZX79-C24
6316	4822 130 34278	BZX79-C6V8
6317	4822 130 30621	1N4148
6318	4822 130 31878	1N4003G
6319	4822 130 30621	1N4148
6321	4822 130 30621	1N4148
6322	3198 010 53980	BZX79-B3V9
6325	4822 130 34174	BZX79-B4V7
6326	4822 130 30621	1N4148

DIODES

6327	4822 130 30621	1N4148
6329	4822 130 31981	BZX79-B3V9
6330	4822 130 30621	1N4148
6331	4822 130 30621	1N4148
6332	4822 130 34281	BZX79-C15
6333	4822 130 34173	BZX79-B5V6

TRANSISTORS

7200	4822 130 40917	BD238
7201	4822 130 41246	BC327-25
7202	4822 130 40959	BC547B
7303	4822 130 44568	BC557B
7304	4822 130 10847	BDW94C
7305	9322 139 23687	BDX53BFP
7306	4822 130 40995	BD438
7307	4822 130 41691	BC556B
7308	4822 130 40855	BC337-40
7309	4822 130 11336	STP16NE06FP
7310	4822 130 44568	BC557B
7311	4822 130 40959	BC547B
7312	4822 130 40959	BC547B
7314	4822 130 44503	BC547C
7315	4822 130 40959	BC547B
7316	4822 130 40959	BC547B
7317	4822 130 10847	BDW94C
7319	5322 130 44647	BC368
7320	4822 130 40995	BD438
7321	4822 130 40959	BC547B
7322	4822 130 40959	BC547B
7323	4822 130 40959	BC547B
7324	4822 130 40959	BC547B
7325	4822 130 40959	BC547B
7327	4822 130 41246	BC327-25
7328	4822 130 44568	BC557B
7330	4822 130 11336	STP16NE06FP
7331	4822 130 40959	BC547B
7332	4822 130 40855	BC337-40

INTEGRATED CIRCUITS

7301	9322 203 61682	AN17850A, Power amplifier
7302	9322 203 61682	AN17850A, Power amplifier
7318	4822 209 31841	L7805CP, Stabilizer 5V

AF9 BOARD

TABLE OF CONTENTS

12-1

BRIEF INTRODUCTION OF THE AF9 BOARD

The AF9 Board consists of the following features :

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

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

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

b. SIMPLE MIC MIXING
The AF9 Board has provisions which can be configured to cater for one of the following:
MM : which caters for Mic mixing with additional Mic amplifier board.
NM : non Mic mixing.

c. DOLBY PRO LOGIC (DPL) INTERFACE
The AF9 Board has provisions which can be configured to cater for DPL.

d. LINE OUT
Line out cinch socket for connection to external amplifier.

e. SUB-WOOFER OUT
Sub-woofer out cinch socket for connection to active sub-woofer speaker.

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

g. HEADPHONE AMPLIFIER
Headphone amplifier to drive 32 ohm to 1kohm headphone.

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

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

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

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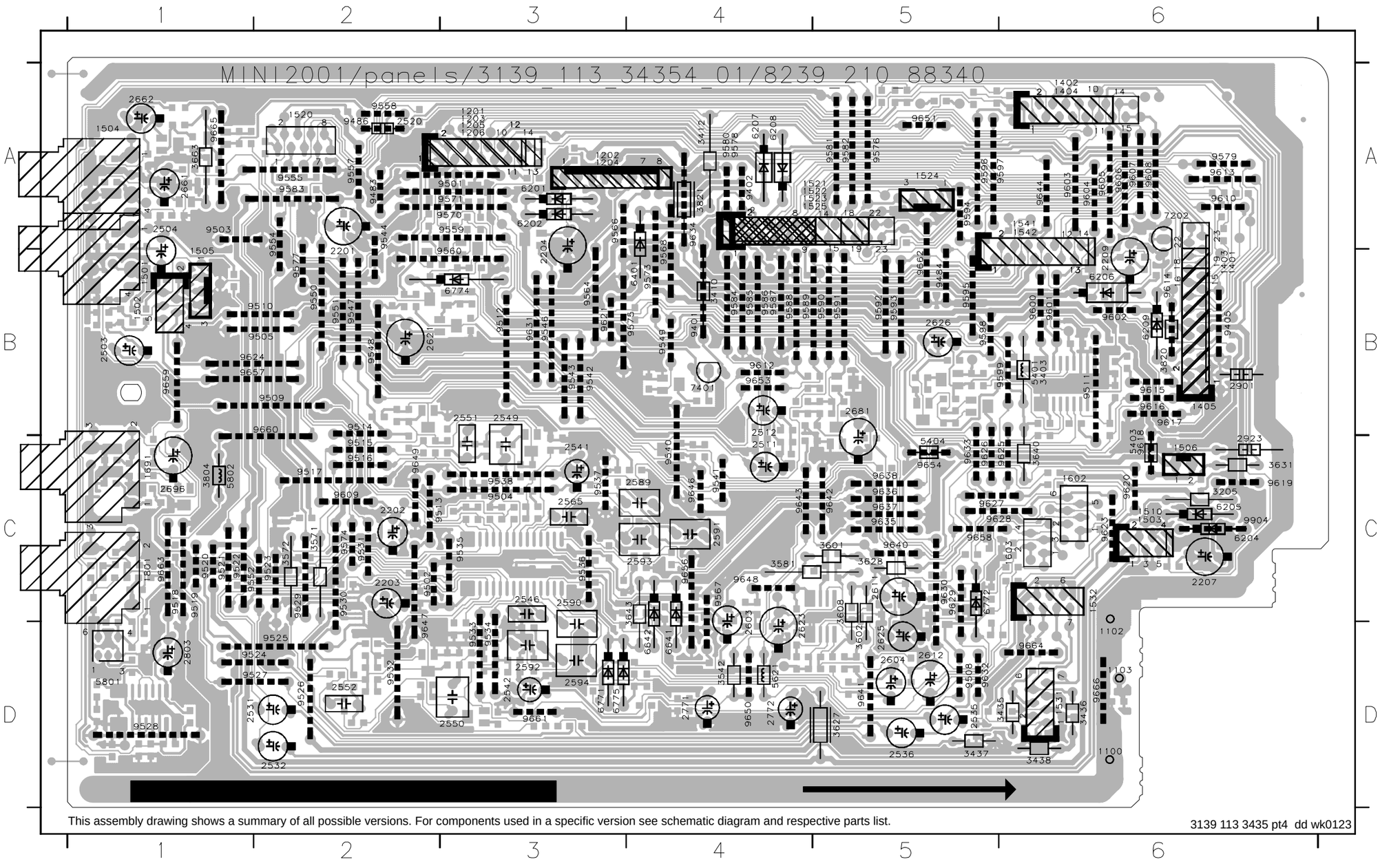
AF9 BOARD - COMPONENT LAYOUT

1100 D6	1503 C6	1603 C6	2535 D5	2603 D4	2923 C6	3627 D5	6202 A3	9401 B4	9513 C2	9529 C2	9547 B2	9570 A3	9587 B4	9603 A6	9620 C6	9637 C5	9657 B1
1102 D6	1504 A1	1691 C1	2536 D5	2604 D5	3205 C6	3628 C5	6204 C6	9402 A4	9514 B2	9530 C2	9548 B2	9571 A3	9588 B4	9604 A6	9621 B3	9638 C5	9658 C5
1103 D6	1505 B1	1801 C1	2541 C3	2611 C5	3403 B6	3631 C6	6205 C6	9405 B6	9515 C2	9531 C2	9549 B4	9573 B4	9589 B4	9605 A6	9623 C6	9640 C5	9659 B1
1201 A3	1506 C6	2201 B2	2542 D3	2612 D5	3410 B4	3640 C6	6206 B6	9483 A2	9516 C2	9532 D2	9550 B2	9574 C2	9590 B5	9606 A6	9624 B1	9641 D5	9660 B2
1202 A3	1510 C6	2202 C2	2546 C3	2621 B2	3412 A4	3643 C4	6207 A4	9484 B5	9517 C2	9533 D3	9551 B2	9575 B4	9591 B5	9607 A6	9625 C6	9642 C5	9661 D3
1203 A3	1520 A2	2203 C2	2549 B3	2623 D4	3435 D6	3663 A1	6208 A4	9486 A2	9518 C1	9534 D3	9552 C1	9576 A5	9592 B5	9608 A6	9626 C5	9643 C4	9662 B5
1204 A3	1521 A5	2204 B3	2550 D3	2625 D5	3436 D6	3804 C1	6209 B6	9501 A3	9519 C1	9535 C3	9554 A2	9577 B2	9593 B5	9609 C2	9627 C5	9644 A6	9663 C1
1205 A3	1522 A5	2207 C6	2551 B3	2626 B5	3437 D5	3820 B6	6401 B4	9502 C2	9520 C1	9536 C3	9555 A2	9578 A4	9594 A5	9610 A6	9628 C5	9646 C4	9664 D6
1206 A3	1523 A5	2209 B6	2552 D2	2661 A1	3438 D6	3821 A4	6641 D4	9503 A1	9521 C1	9537 C3	9557 A2	9579 A6	9595 B5	9612 B4	9629 C5	9647 D2	9665 A1
1401 B6	1524 A5	2503 B1	2565 C3	2662 A1	3542 D4	5401 B6	6642 D4	9504 C3	9522 C1	9538 C3	9558 A2	9580 A4	9596 A5	9613 A6	9630 C5	9648 C4	9666 D6
1402 A6	1525 A5	2504 A1	2589 C4	2681 B5	3571 C2	5403 C6	6771 D3	9505 B2	9523 C2	9540 C4	9559 A3	9581 A5	9597 A6	9614 B6	9631 B3	9649 C2	9904 C6
1403 B6	1531 D6	2511 C4	2590 C3	2696 C1	3572 C2	5404 C5	6772 C5	9508 D5	9524 D2	9541 C4	9560 B3	9582 A5	9598 B5	9615 B6	9632 D5	9650 D4	
1404 A6	1532 C6	2512 B4	2591 C4	2771 D4	3581 C4	5621 D4	6774 B3	9509 B2	9525 D2	9542 B3	9563 B3	9583 A2	9599 B6	9616 B6	9633 C5	9651 A5	
1405 B6	1541 A6	2520 A2	2592 D3	2772 D4	3601 C5	5801 D1	6775 D3	9510 B2	9526 D2	9543 B3	9566 A3	9584 B4	9600 B6	9617 B6	9634 A4	9653 B4	
1501 B1	1542 A6	2531 D1	2593 C4	2803 D1	3602 D5	5802 C1	7202 A6	9511 B6	9527 D2	9544 A2	9567 C4	9585 B4	9601 B6	9618 C6	9635 C5	9654 C5	
1502 B1	1602 C6	2532 D2	2594 D3	2901 B6	3608 C5	6201 A3	7401 B4	9512 B3	9528 D1	9546 B3	9568 B4	9586 B4	9602 B6	9619 C6	9636 C5	9656 C4	



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

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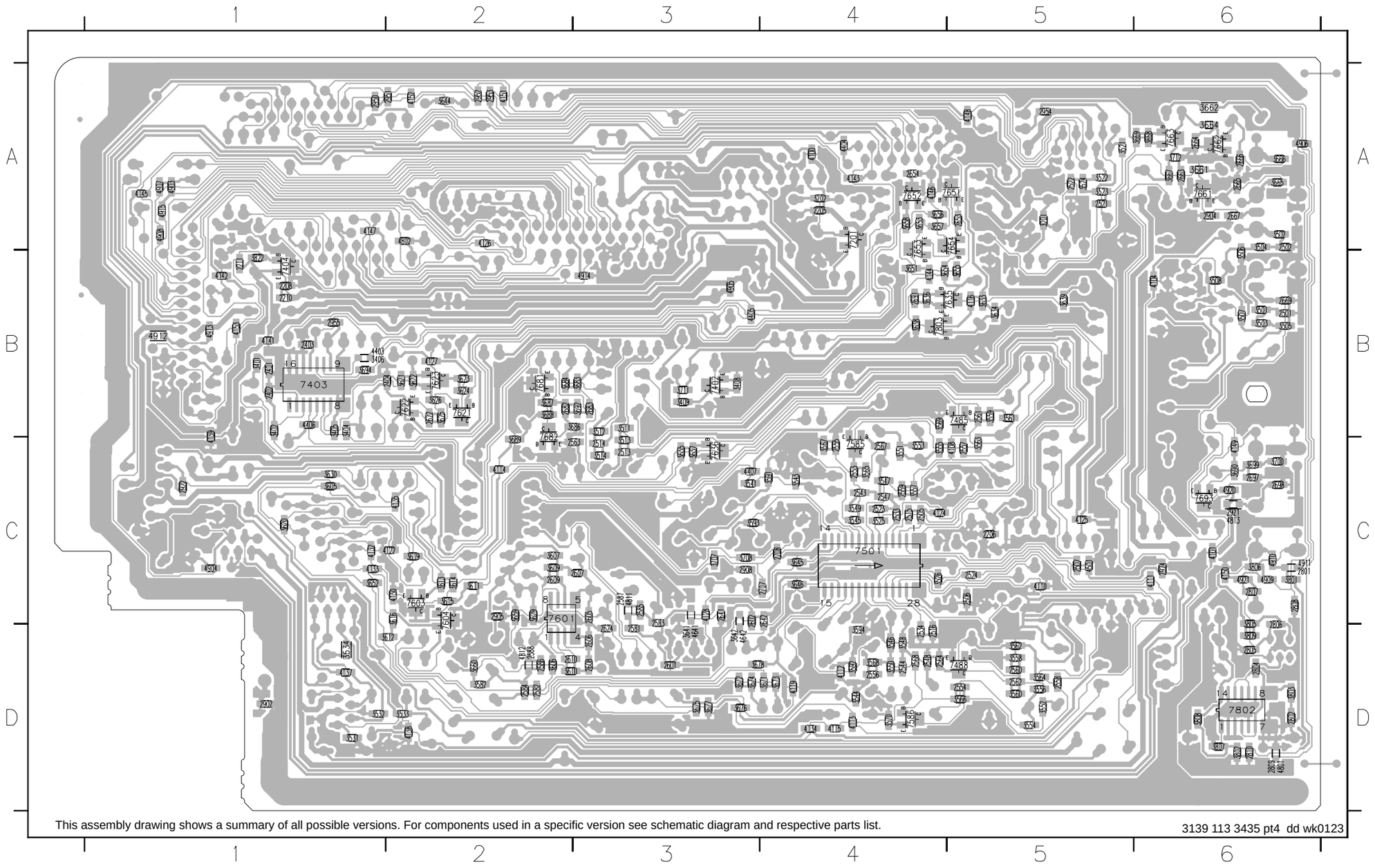
AF9 BOARD - CHIP LAYOUT

2205 A4	2523 C4	2567 C4	2641 C3	2805 D6	3202 A4	3521 A5	3552 D5	3591 C4	3624 B2	3654 B4	3676 D3	3803 D6	4124 C4	4148 A5	4904 C1	7501 C4	7693 C6
2206 C5	2524 C5	2568 D4	2642 C4	2806 D6	3401 B1	3522 A5	3553 C4	3592 D4	3625 B2	3655 B5	3677 D3	3805 C6	4125 C5	4149 C6	4905 B3	7585 C4	7802 D6
2208 B1	2533 C4	2581 D3	2653 A5	2807 C6	3402 B1	3523 A5	3554 D5	3593 C3	3626 B2	3656 A4	3678 D3	3806 C6	4126 A2	4150 C6	4906 A6	7586 D4	7803 B4
2210 B1	2534 D4	2582 D2	2654 A4	2808 C6	3404 B1	3524 A5	3555 C4	3594 D4	3629 C2	3657 A4	3683 B3	3807 D6	4127 B2	4151 A2	4907 A1	7601 C2	
2211 B1	2543 C4	2583 C3	2663 A6	2809 D6	3405 B1	3525 C4	3556 D5	3605 C1	3630 C1	3658 A4	3684 B2	3808 D6	4128 C3	4152 A2	4908 A1	7603 C2	
2401 B1	2544 D4	2584 D2	2664 A6	2810 D6	3406 B1	3526 C4	3557 C4	3606 D2	3633 B5	3659 C2	3686 B3	3809 D6	4130 C2	4153 B1	4909 C6	7604 C2	
2402 B1	2547 C4	2585 C3	2665 A6	2902 D1	3408 B3	3531 D1	3558 D5	3607 C2	3634 B5	3660 D2	3687 B2	3822 B1	4132 C1	4403 B1	4910 C6	7621 B2	
2403 B1	2548 D4	2586 D2	2666 A6	2904 A6	3409 B3	3532 D1	3559 B5	3609 C2	3635 C3	3661 A6	3688 B2	4100 A4	4133 C1	4404 A4	4911 C6	7622 B2	
2404 B2	2553 C4	2587 C3	2667 A6	2905 C2	3501 B6	3533 D2	3560 D5	3610 D2	3636 B4	3662 A6	3689 C2	4101 C6	4134 D4	4405 B3	4912 B1	7623 B2	
2501 B6	2554 D5	2588 D2	2669 B6	2908 C3	3502 A6	3534 D1	3561 B5	3611 C2	3637 C3	3664 A6	3690 C6	4104 B6	4135 C2	4406 B1	4913 B1	7635 B5	
2502 A6	2555 C4	2601 D3	2682 B2	2921 C6	3503 B6	3541 C3	3562 D5	3612 D2	3638 B4	3665 A6	3692 B3	4108 C5	4137 D1	4407 C3	4914 B3	7636 C3	
2505 C4	2556 D4	2602 C3	2683 B3	2922 C1	3504 A6	3543 C4	3563 C5	3613 C2	3639 B5	3666 A6	3694 B1	4110 C5	4138 D2	4501 C5	4915 A1	7651 A5	
2506 C5	2557 C5	2605 C3	2691 B4	2924 C6	3505 B6	3544 D4	3564 D5	3614 C2	3641 D3	3667 A6	3699 C6	4111 C6	4139 B1	4641 D3	4920 C6	7652 A4	
2507 C5	2558 D5	2606 D3	2697 C6	2950 A1	3506 B6	3545 C4	3565 C4	3615 C2	3642 D3	3668 A6	3700 C6	4112 D4	4141 B1	4642 D3	4921 C6	7653 A4	
2513 C3	2559 C4	2607 C3	2698 C6	2951 A2	3507 B6	3546 D4	3566 D5	3616 C2	3644 A2	3669 A6	3707 C3	4113 D4	4142 B1	4801 D6	7201 A4	7654 A5	
2514 C3	2560 D5	2608 D3	2707 C4	2952 A2	3508 B6	3547 C4	3619 C2	3645 C4	3671 D4	3708 C3	4114 C2	4143 A4	4802 A2	7402 B3	7661 A6		
2515 C4	2561 B5	2609 C2	2708 C4	2953 A2	3511 B3	3548 D4	3568 D4	3620 C1	3646 C4	3672 D3	3711 B3	4115 D4	4144 B4	4811 C3	7403 B1	7662 A6		
2516 D4	2562 D5	2610 D2	2801 C6	2954 A5	3512 B3	3549 C4	3569 B4	3621 B2	3651 B4	3673 D4	3712 A6	4116 B5	4145 A1	4812 D2	7404 B1	7663 A6		
2521 A5	2563 C3	2622 B2	2802 D6	2955 B1	3513 C3	3550 D4	3622 B2	3652 C1	3674 D3	3801 C6	4119 D4	4146 A4	4813 C6	7485 B5	7681 B2		
2522 A5	2564 D4	2624 D3	2804 D6	3201 A5	3514 C3	3551 C4	3582 D2	3623 B2	3653 A4	3675 D3	3802 D6	4122 C2	4147 A1	4903 A1	7488 D5	7682 B2		



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

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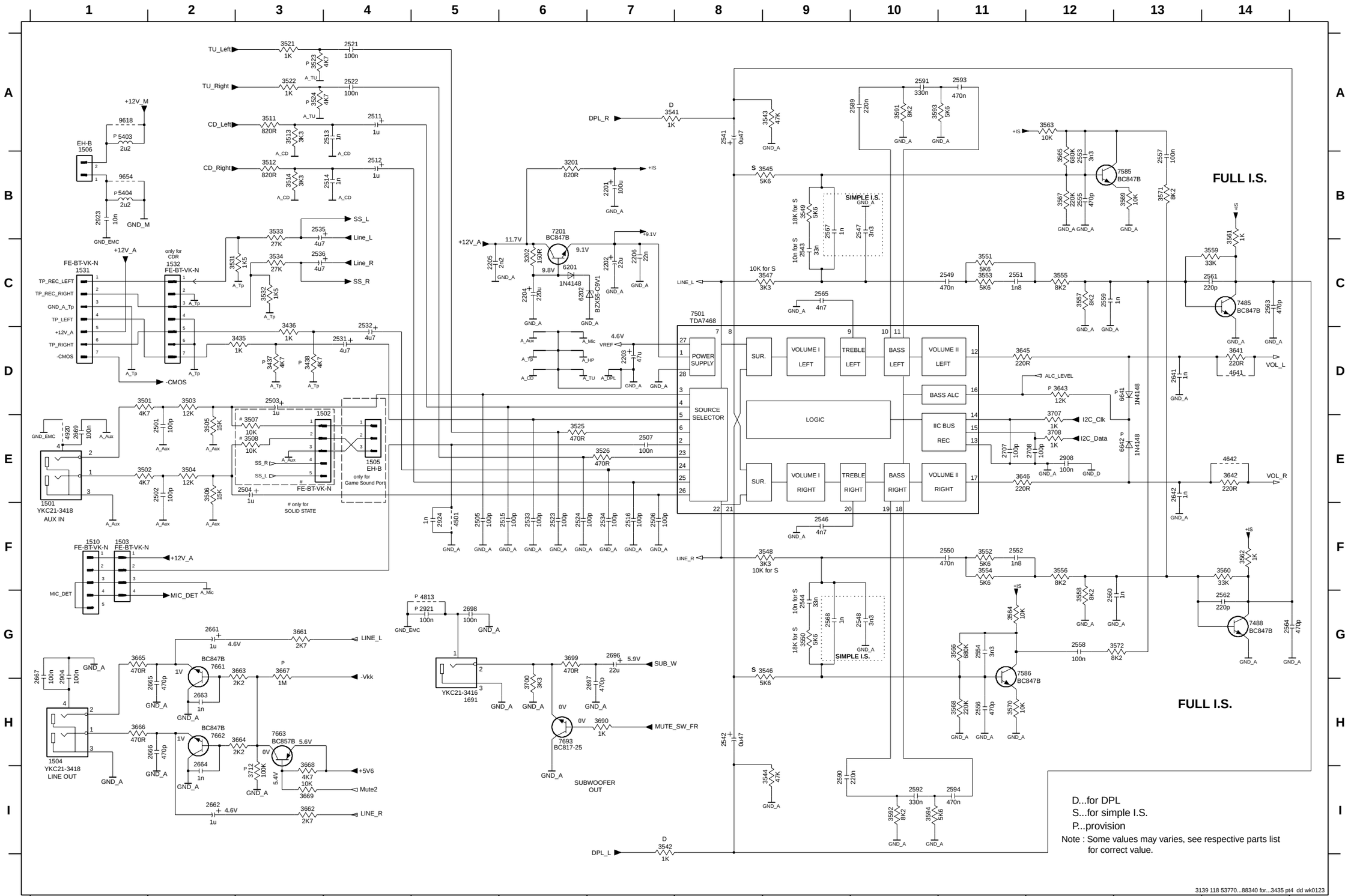
AF9 BOARD - CIRCUIT DIAGRAM (PART 1)



1501 E1	3511 A3
1502 E3	3512 B3
1503 F1	3513 A3
1504 H1	3514 B3
1505 E4	3521 A3
1506 A1	3522 A3
1510 F1	3523 A3
1531 C1	3524 A3
1532 C2	3525 E6
1691 H5	3526 E7
2201 B7	3531 C2
2202 C7	3532 C3
2203 D7	3533 B3
2204 C6	3534 C3
2205 C5	3541 A7
2206 C7	3542 I7
2501 E2	3543 A9
2502 E2	3544 I9
2503 D3	3545 B9
2504 E3	3546 G9
2505 F5	3547 C9
2506 F7	3548 F9
2507 E7	3549 B9
2511 A4	3550 G9
2512 B4	3551 C11
2513 A4	3552 F11
2514 B4	3553 C11
2515 F6	3554 F11
2516 F7	3555 C12
2521 A4	3556 F12
2522 A4	3557 C12
2523 F6	3558 G12
2524 F6	3559 C14
2531 D4	3560 F14
2532 C4	3561 B14
2533 F6	3562 F14
2534 F7	3563 A12
2535 B3	3564 G11
2536 C3	3565 B12
2541 A8	3566 G11
2542 H8	3567 B12
2543 C9	3568 H11
2544 G9	3569 B13
2546 F9	3570 H11
2547 B10	3571 B13
2548 G10	3572 G13
2549 C11	3591 A10
2550 F11	3592 I10
2551 C11	3593 A10
2552 F11	3594 I10
2553 B12	3641 D14
2554 G11	3642 E14
2555 B12	3643 D12
2556 H11	3645 D11
2557 B13	3646 E11
2558 G12	3661 G3
2559 C12	3662 I3
2560 G12	3663 G3
2561 C14	3664 H3
2562 G14	3665 G1
2563 C14	3666 H1
2564 G14	3667 G3
2565 C9	3668 I3
2567 B9	3669 I3
2568 G9	3690 H7
2589 A10	3699 G6
2590 I9	3700 H6
2591 A10	3707 E12
2592 I10	3708 E12
2593 A11	3712 I3
2594 I11	4501 F5
2641 D13	4641 D14
2642 E13	4642 E14
2661 G2	4813 G5
2662 I2	4920 E1
2663 H2	5403 A1
2664 I2	5404 B1
2665 H2	6201 C6
2666 H2	6202 C6
2667 G1	6641 D13
2669 E1	6642 E13
2696 G7	7201 B6
2697 H7	7485 C14
2698 G5	7488 G14
2707 E11	7501 C8
2708 E12	7585 B13
2904 G1	7586 G11
2908 E12	7661 G2
2921 G5	7662 H2
2923 B1	7663 H3
2924 F5	7693 H6
3201 B6	9618 A1
3202 C6	9654 B1
3435 D3	
3436 D3	
3437 D3	
3438 D3	
3501 D1	
3502 E1	
3503 D2	
3504 E2	
3505 E2	
3506 E2	
3507 E3	
3508 E3	

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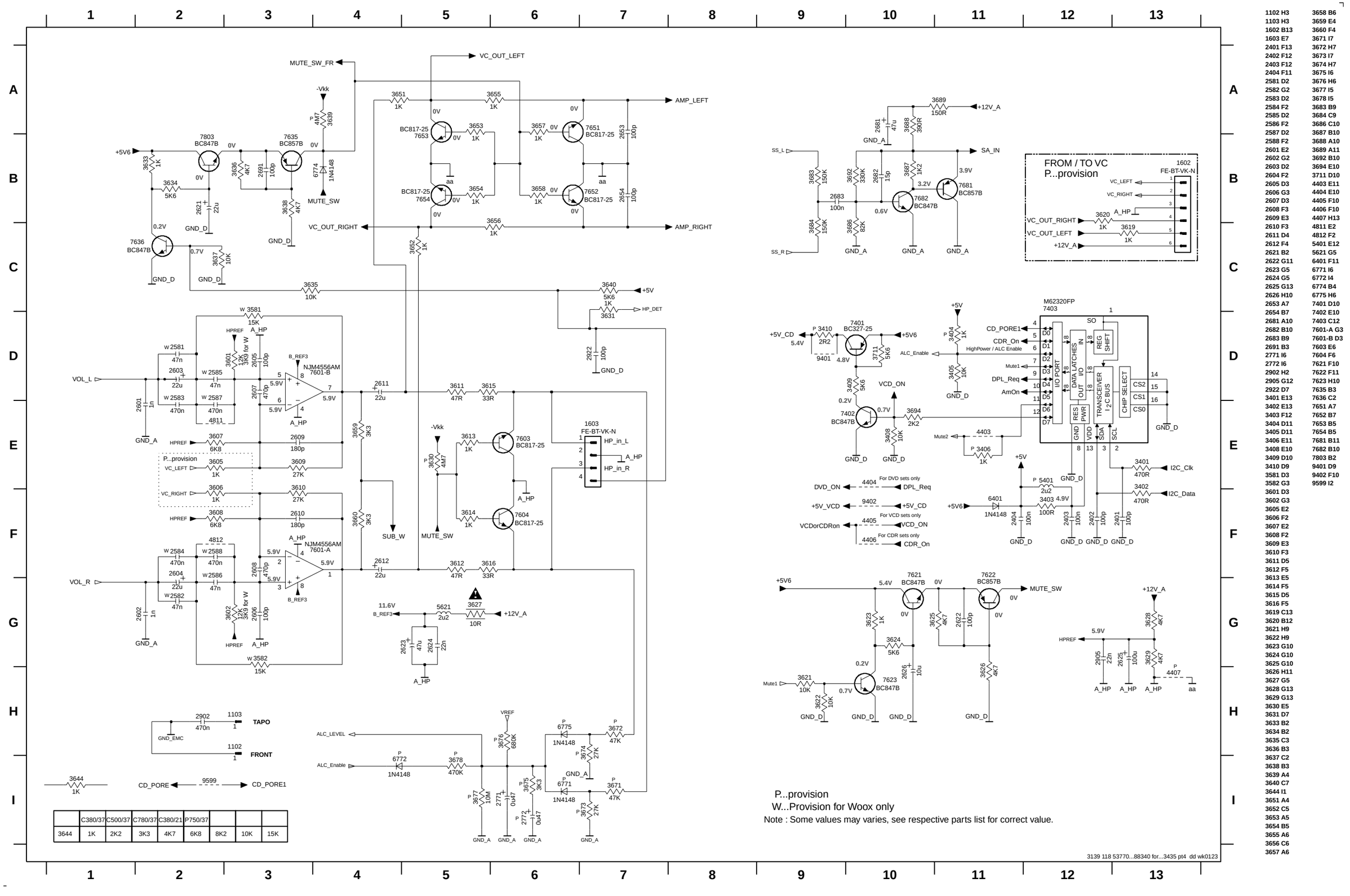
AF9 BOARD - CIRCUIT DIAGRAM (PART 2)

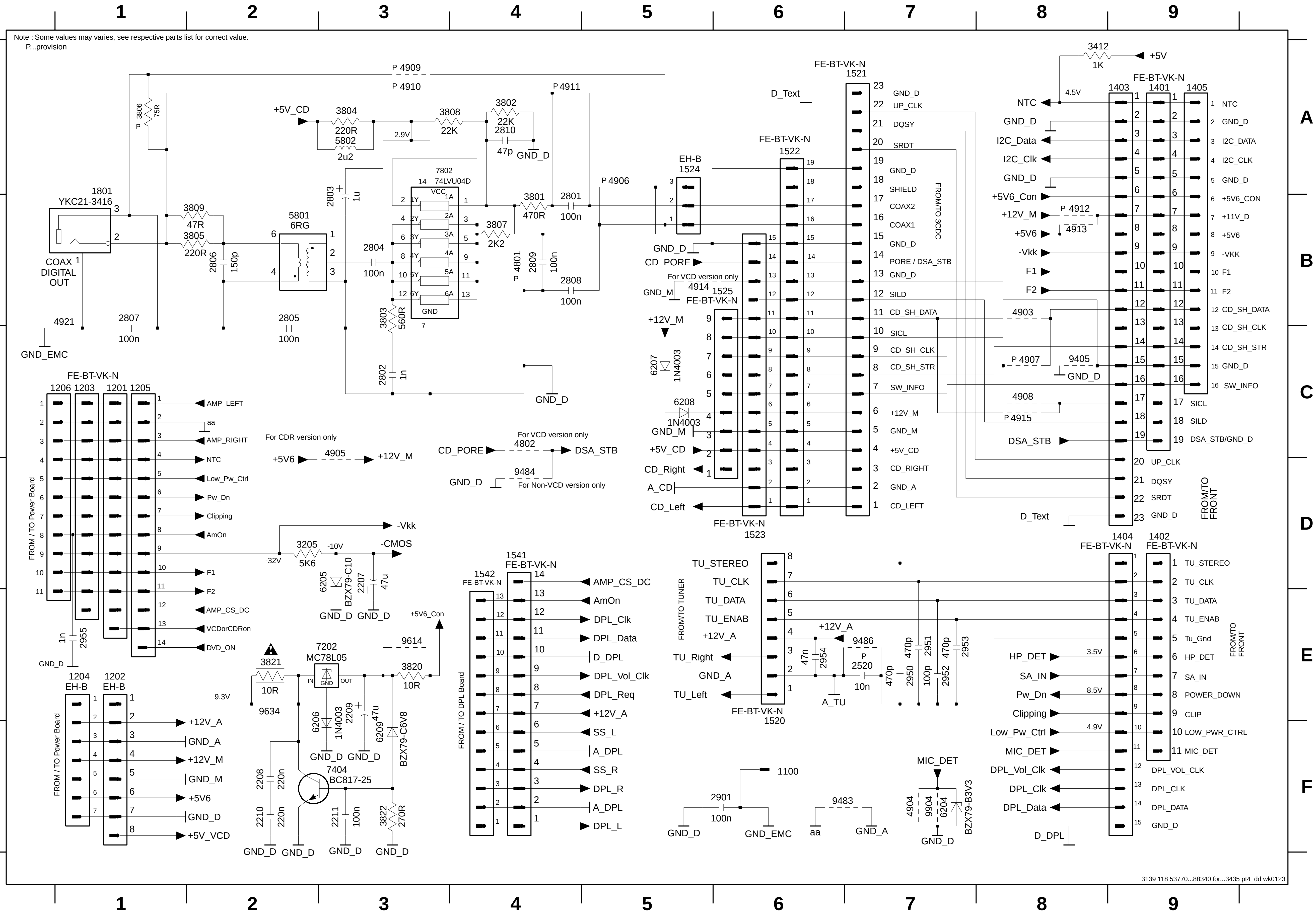


	C380/37	C500/37	C780/37	C380/21	P750/37			
3644	1K	2K2	3K3	4K7	6K8	8K2	10K	15K

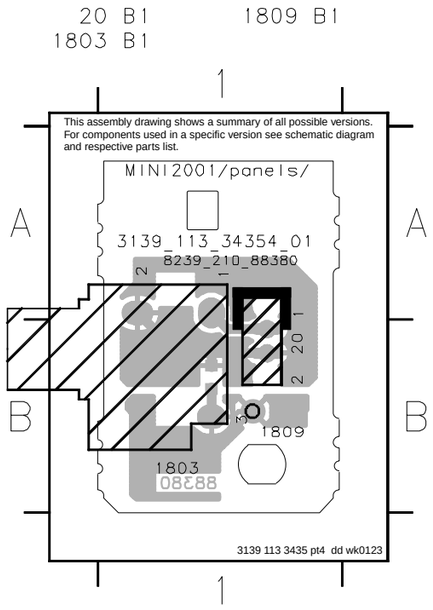
1102	H3
1103	H3
1602	B13
1603	E7
2401	F13
2402	F12
2403	F12
2404	F11
2581	D2
2582	G2
2583	D2
2584	F2
2585	D2
2586	F2
2587	D2
2588	F2
2601	E2
2602	G2
2603	D2
2604	F2
2605	D3
2606	G3
2607	D3
2608	F3
2609	E3
2610	F3
2611	D4
2612	F4
2621	B2
2622	G11
2623	G5
2624	G5
2625	G13
2626	H10
2653	A7
2654	B7
2681	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	F10
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	B6
7654	B5
7681	B11
7682	B10
7803	B2
9401	D9
9402	F10
9599	I2

AF9 BOARD - CIRCUIT DIAGRAM (PART 3)

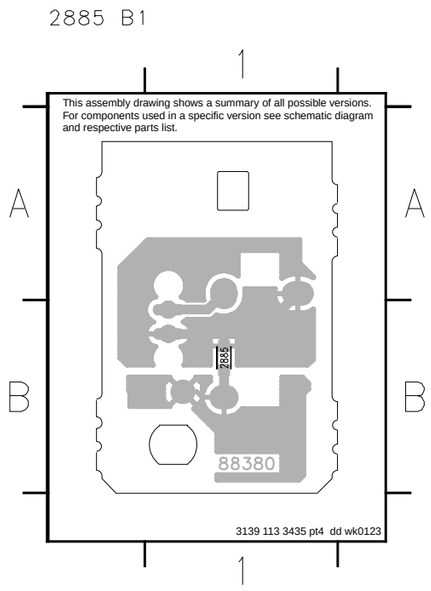
1100 F6	1203 C1	1206 C1	1403 A9	1520 E6	1523 D6	1541 D4	2207 D3	2210 F2	2801 B4	2804 B3	2807 B1	2810 A4	2951 E7	2954 E6	3412 A8	3803 B3	3806 A1	3809 B2	3822 F3	4903 B8	4906 A5	4909 A3	4912 B8	4915 C8	5802 A3	6206 F3	6209 F3	7802 A3	9484 D4	9634 E2
1201 C1	1204 E1	1401 A9	1404 D9	1521 A7	1524 A5	1542 D4	2208 F2	2211 F3	2802 C3	2805 B2	2808 B4	2901 F6	2952 E7	2955 E1	3801 B4	3804 A3	3807 B4	3820 E3	4801 B4	4904 F7	4907 C8	4910 A3	4913 B8	4921 B1	6204 F7	6207 C5	7202 E3	9405 C8	9486 E7	9904 F7
1202 E1	1205 C1	1402 D9	1405 A9	1522 A6	1525 B5	1801 A1	2209 E3	2520 E7	2803 B3	2806 B2	2809 B4	2950 E7	2953 E7	3205 D2	3802 A4	3805 B2	3808 A3	3821 E2	4802 C4	4905 C3	4908 C8	4911 A4	4914 B5	5801 B2	6205 D3	6208 C5	7404 F3	9483 F6	9614 E3	



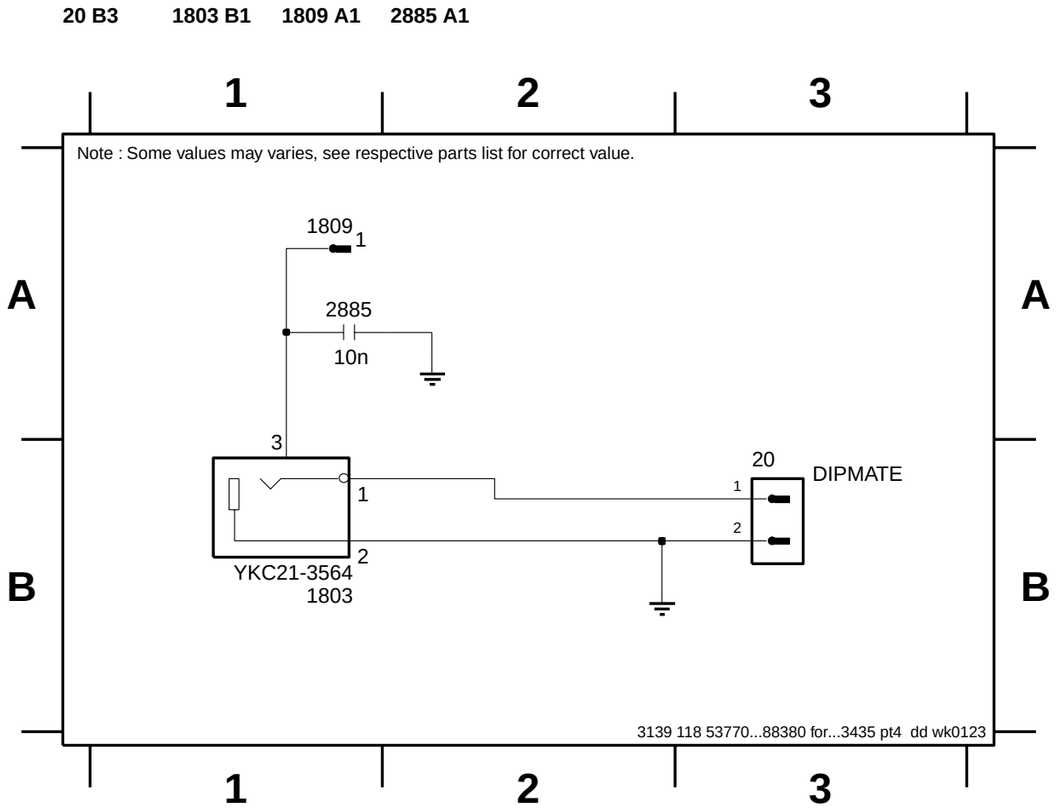
VIDEO OUT CINCH BOARD - COMPONENT LAYOUT



VIDEO OUT CINCH BOARD - CHIP LAYOUT



VIDEO OUT CINCH PART - CIRCUIT DIAGRAM



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ELECTRICAL PARTS LIST - AF9 BOARD

MISCELLANEOUS

1206	4822 267 11309	Flex Connector 11P
1401	4822 265 11553	Flex Connector 19P
1402	4822 267 11039	Flex Connector 11P
1501	4822 265 20553	Cinch Socket - Aux in
1504	4822 265 20553	Cinch Socket - Line out
1520	4822 265 11515	Flex Connector 8P
1522	4822 265 11553	Flex Connector 19P
1531	4822 267 10953	Flex Connector 7P
1603	4822 267 10733	Flex Connector 4P
1801	4822 267 31729	Cinch Socket - Digital out

CAPACITORS

2201	4822 124 40207	100µF 20% 25V
2202	4822 124 81151	22µF 50V
2203	4822 124 40433	47µF 20% 25V
2204	4822 124 40196	220µF 20% 16V
2205	4822 126 14238	2,2nF 50V
2206	4822 126 14494	22nF 10% 25V
2207	4822 124 40433	47µF 20% 25V
2208	4822 126 13879	220nF +80/-20% 16V
2209	4822 124 41751	47µF 20% 50V
2210	4822 126 13879	220nF +80/-20% 16V
2401	4822 122 31765	100pF 2% 63V
2402	4822 122 31765	100pF 2% 63V
2403	4822 126 14305	100nF 10% 16V
2404	4822 126 14305	100nF 10% 16V
2501	4822 122 31765	100pF 2% 63V
2502	4822 122 31765	100pF 2% 63V
2503	4822 124 22466	1µF 20% 50V
2504	4822 124 22466	1µF 20% 50V
2505	4822 122 31765	100pF 2% 63V
2506	4822 122 31765	100pF 2% 63V
2507	4822 126 14305	100nF 10% 16V
2511	4822 124 22466	1µF 20% 50V
2512	4822 124 22466	1µF 20% 50V
2513	3198 016 31020	1nF 25V
2514	3198 016 31020	1nF 25V
2515	4822 122 31765	100pF 2% 63V
2516	4822 122 31765	100pF 2% 63V
2521	4822 126 14305	100nF 10% 16V
2522	4822 126 14305	100nF 10% 16V
2523	4822 122 31765	100pF 2% 63V
2524	4822 122 31765	100pF 2% 63V
2531	4822 124 40769	4,7µF 20% 100V
2532	4822 124 40769	4,7µF 20% 100V
2533	4822 122 31765	100pF 2% 63V
2534	4822 122 31765	100pF 2% 63V
2535	4822 124 40769	4,7µF 20% 100V
2536	4822 124 40769	4,7µF 20% 100V
2541	4822 124 41407	0,47µF 20% 63V
2542	4822 124 41407	0,47µF 20% 63V
2543	5322 126 11583	10nF 10% 50V
2544	5322 126 11583	10nF 10% 50V
2546	4822 121 43856	4,7nF 5% 250V
2547	5322 126 11579	3,3nF 10% 63V
2548	5322 126 11579	3,3nF 10% 63V
2565	4822 121 43856	4,7nF 5% 250V
2567	3198 016 31020	1nF 25V
2568	3198 016 31020	1nF 25V
2589	4822 121 42408	220nF 5% 63V
2590	4822 121 42408	220nF 5% 63V
2591	5322 121 42661	330nF 5% 63V
2592	5322 121 42661	330nF 5% 63V
2593	4822 121 51252	470nF 5% 63V
2594	4822 121 51252	470nF 5% 63V
2601	3198 016 31020	1nF 25V
2602	3198 016 31020	1nF 25V
2603	4822 124 81151	22µF 50V
2604	4822 124 81151	22µF 50V
2605	4822 122 31765	100pF 2% 63V
2606	4822 122 31765	100pF 2% 63V
2607	4822 126 13881	470pF 5% 50V
2608	4822 126 13881	470pF 5% 50V
2609	4822 126 14508	180pF 5% 50V
2610	4822 126 14508	180pF 5% 50V
2611	4822 124 81151	22µF 50V
2612	4822 124 81151	22µF 50V
2621	4822 124 81151	22µF 50V
2622	4822 122 31765	100pF 2% 63V
2623	4822 124 40433	47µF 20% 25V
2624	3198 017 42230	22nF 50V
2625	4822 124 40207	100µF 20% 25V
2626	4822 124 40769	4,7µF 20% 100V
2641	3198 016 31020	1nF 25V
2642	3198 016 31020	1nF 25V
2653	4822 122 31765	100pF 2% 63V
2654	4822 122 31765	100pF 2% 63V
2661	4822 124 21913	1µF 20% 63V
2662	4822 124 21913	1µF 20% 63V
2663	3198 016 31020	1nF 25V
2664	3198 016 31020	1nF 25V
2665	4822 126 13881	470pF 5% 50V
2666	4822 126 13881	470pF 5% 50V
2667	4822 126 14305	100nF 10% 16V
2669	4822 126 14305	100nF 10% 16V
2681	4822 124 40433	47µF 20% 25V
2682	4822 122 33752	15pF 5% 50V
2683	4822 126 14305	100nF 10% 16V
2691	4822 122 31765	100pF 2% 63V
2707	4822 122 31765	100pF 2% 63V
2708	4822 122 31765	100pF 2% 63V
2771	4822 124 41407	0,47µF 20% 63V
2801	4822 126 14305	100nF 10% 16V
2802	3198 016 31020	1nF 25V

12-8

ELECTRICAL PARTS LIST - AF9 BOARD

ELECTRICAL PARTS LIST - AF9 BOARD

CAPACITORS

2803	4822 124 40756	1µF 20% 100V
2804	4822 126 14305	100nF 10% 16V
2805	4822 126 14305	100nF 10% 16V
2806	4822 122 33753	150pF 5% 50V
2807	4822 126 14305	100nF 10% 16V
2808	4822 126 14305	100nF 10% 16V
2809	4822 126 14305	100nF 10% 16V
2810	4822 122 33777	47pF 5% 63V
2902	3198 017 44740	470nF 10V
2905	3198 017 42230	22nF 50V
2908	4822 126 14305	100nF 10% 16V
2950	4822 126 13881	470pF 5% 50V
2951	4822 126 13881	470pF 5% 50V
2952	4822 122 31765	100pF 2% 63V
2953	4822 126 13881	470pF 5% 50V

RESISTORS

3201	4822 117 12968	820R 5% 0,62W
3202	4822 051 30151	150R 5% 0,062W
3205	4822 116 52289	5k6 5% 0,5W
3401	4822 051 30471	470R 5% 0,062W
3402	4822 051 30471	470R 5% 0,062W
3403	4822 116 52175	100R 5% 0,5W
3405	4822 051 30103	10k 5% 0,062W
3408	4822 051 30103	10k 5% 0,062W
3409	4822 051 30562	5k6 5% 0,063W
3412	4822 050 11002	1k 1% 0,4W
3435	4822 050 11002	1k 1% 0,4W
3436	4822 050 11002	1k 1% 0,4W
3501	4822 051 30472	4k7 5% 0,062W
3502	4822 051 30472	4k7 5% 0,062W
3503	4822 051 30123	12k 5% 0,062W
3504	4822 051 30123	12k 5% 0,062W
3505	4822 051 30153	15k 5% 0,062W
3506	4822 051 30153	15k 5% 0,062W
3511	4822 117 12968	820R 5% 0,62W
3512	4822 117 12968	820R 5% 0,62W
3513	4822 051 30332	3k3 5% 0,062W
3514	4822 051 30332	3k3 5% 0,062W
3521	4822 051 30102	1k 5% 0,062W
3522	4822 051 30102	1k 5% 0,062W
3525	4822 051 30471	470R 5% 0,062W
3526	4822 051 30471	470R 5% 0,062W
3531	4822 051 30152	1k5 5% 0,062W
3532	4822 051 30152	1k5 5% 0,062W
3533	4822 051 30273	27k 5% 0,062W
3534	4822 051 30273	27k 5% 0,062W
3543	4822 117 12925	47k 1% 0,063W
3544	4822 117 12925	47k 1% 0,063W
3545	4822 051 30562	5k6 5% 0,063W
3546	4822 051 30562	5k6 5% 0,063W
3547	4822 051 30103	10k 5% 0,062W
3548	4822 051 30103	10k 5% 0,062W
3549	4822 051 30183	18k 5% 0,062W
3550	4822 051 30183	18k 5% 0,062W
3591	4822 117 12902	8k2 1% 0,063W
3592	4822 117 12902	8k2 1% 0,063W
3593	4822 051 30562	5k6 5% 0,063W
3594	4822 051 30562	5k6 5% 0,063W
3601	4822 116 52238	12k 5% 0,5W
3602	4822 116 52238	12k 5% 0,5W
3607	4822 051 30682	6k8 5% 0,062W
3608	4822 116 83961	6k8 5%
3609	4822 051 30273	27k 5% 0,062W
3610	4822 051 30273	27k 5% 0,062W
3611	4822 051 30479	47R 5% 0,062W
3612	4822 051 30479	47R 5% 0,062W
3613	4822 051 30102	1k 5% 0,062W
3614	4822 051 30102	1k 5% 0,062W
3615	4822 051 30339	33R 5% 0,062W
3616	4822 051 30339	33R 5% 0,062W
3621	4822 051 30103	10k 5% 0,062W
3622	4822 051 30103	10k 5% 0,062W
3623	4822 051 30102	1k 5% 0,062W
3624	4822 051 30562	5k6 5% 0,063W
3625	4822 051 30472	4k7 5% 0,062W
3626	4822 051 30472	4k7 5% 0,062W
3627	4822 052 10109	⚠ 10R 5% 0,33W
3628	4822 116 52283	4k7 5% 0,5W
3629	4822 051 30472	4k7 5% 0,062W
3631	4822 050 11002	1k 1% 0,4W
3633	4822 051 30102	1k 5% 0,062W
3634	4822 051 30562	5k6 5% 0,063W
3635	4822 051 30103	10k 5% 0,062W
3636	4822 051 30472	4k7 5% 0,062W
3637	4822 051 30103	10k 5% 0,062W
3638	4822 051 30472	4k7 5% 0,062W
3640	4822 116 52289	5k6 5% 0,5W
3644	4822 117 12902	8k2 1% 0,063W
3645	4822 051 30221	220R 5% 0,062W
3646	4822 051 30221	220R 5% 0,062W
3651	4822 051 30102	1k 5% 0,062W
3652	4822 051 30102	1k 5% 0,062W
3653	4822 051 30102	1k 5% 0,062W
3654	4822 051 30102	1k 5% 0,062W
3655	4822 051 30102	1k 5% 0,062W
3656	4822 051 30102	1k 5% 0,062W
3657	4822 051 30102	1k 5% 0,062W
3658	4822 051 30102	1k 5% 0,062W
3661	4822 051 30272	2k7 5% 0,062W
3662	4822 051 30272	2k7 5% 0,062W
3663	4822 116 52256	2k2 5% 0,5W
3664	4822 051 30222	2k2 5% 0,062W
3665	4822 051 30471	470R 5% 0,062W

RESISTORS

3666	4822 051 30471	470R 5% 0,062W
3668	4822 051 30472	4k7 5% 0,062W
3669	4822 051 30103	10k 5% 0,062W
3683	4822 051 30154	150k 5% 0,062W
3684	4822 051 30154	150k 5% 0,062W
3686	4822 117 12864	82k 5% 0,6W
3687	4822 117 11817	1k2 1% 1/16W
3688	4822 051 30391	390R 5% 0,062W
3689	4822 051 30151	150R 5% 0,062W
3692	4822 051 30334	330k 5% 0,062W
3694	4822 051 30222	2k2 5% 0,062W
3707	4822 051 30102	1k 5% 0,062W
3708	4822 051 30102	1k 5% 0,062W
3711	4822 051 30562	5k6 5% 0,063W
3801	4822 051 30471	470R 5% 0,062W
3802	4822 051 30223	22k 5% 0,062W
3803	4822 051 30561	560R 5% 0,062W
3804	4822 116 83872	220R 5% 0,5W
3805	4822 051 30221	220R 5% 0,062W
3807	4822 051 30222	2k2 5% 0,062W
3808	4822 051 30223	22k 5% 0,062W
3809	4822 051 30479	47R 5% 0,062W
3820	4822 116 52176	10R 5% 0,5W
3821	4822 052 10109	⚠ 10R 5% 0,33W
4100	4822 051 30008	0R Jumper 0603
4101	4822 051 30008	0R Jumper 0603
4104	4822 051 30008	0R Jumper 0603
4108	4822 051 30008	0R Jumper 0603
4110	4822 051 30008	0R Jumper 0603
4111	4822 051 30008	0R Jumper 0603
4112	4822 051 30008	0R Jumper 0603
4113	4822 051 30008	0R Jumper 0603
4114	4822 051 30008	0R Jumper 0603
4115	4822 051 30008	0R Jumper 0603
4116	4822 051 30008	0R Jumper 0603
4119	4822 051 30008	0R Jumper 0603
4122	4822 051 30008	0R Jumper 0603
4124	4822 051 30008	0R Jumper 0603
4125	4822 051 30008	0R Jumper 0603
4126	4822 051 30008	0R Jumper 0603
4127	4822 051 30008	0R Jumper 0603
4128	4822 051 30008	0R Jumper 0603
4130	4822 051 30008	0R Jumper 0603
4132	4822 051 30008	0R Jumper 0603
4133	4822 051 30008	0R Jumper 0603
4134	4822 051 30008	0R Jumper 0603
4135	4822 051 30008	0R Jumper 0603
4137	4822 051 30008	0R Jumper 0603
4138	4822 051 30008	0R Jumper 0603
4139	4822 051 30008	0R Jumper 0603
4141	4822 051 30008	0R Jumper 0603
4142	4822 051 30008	0R Jumper 0603
4143	4822 051 30008	0R Jumper 0603
4144	4822 051 30008	0R Jumper 0603
4145	4822 051 30008	0R Jumper 0603
4146	4822 051 30008	0R Jumper 0603
4147	4822 051 30008	0R Jumper 0603
4148	4822 051 30008	0R Jumper 0603
4150	4822 051 30008	0R Jumper 0603
4151	4822 051 30008	0R Jumper 0603
4152	4822 051 30008	0R Jumper 0603
4153	4822 051 30008	0R Jumper 0603
4403	4822 051 30008	0R Jumper 0603
4501	4822 051 30008	0R Jumper 0603
4641	4822 051 30008	0R Jumper 0603
4642	4822 051 30008	0R Jumper 0603
4811	4822 051 30008	0R Jumper 0603
4812	4822 051 30008	0R Jumper 0603
4903	4822 051 30008	0R Jumper 0603
4904	4822 051 30008	0R Jumper 0603
4908	4822 051 30008	0R Jumper 0603
4913	4822 051 30008	0R Jumper 0603
4921	4822 051 30008	0R Jumper 0603

COILS & FILTERS

5621	4822 157 62552	Coil 2,2µH 5%
5801	2422 536 00019	Transformer 6RG

DIODES

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

TRANSISTORS & INTEGRATED CIRCUITS

7201	5322 130 60159	BC847B
7202	4822 209 72042	MC78L05ACP
7401	4822 130 41246	BC327-25
7402	5322 130 60159	BC847B
7403	4822 209 17345	M62320FP
7501	9322 150 74668	TDA7468D
7601	4822 209 31378	NJM4556AM
7603	4822 130 42804	BC817-25
7604	4822 130 42804	BC817-25
7621	5322 130 60159	BC847B
7622	4822 130 60373	BC857B
7623	5322 130 60159	BC847B
7635	4822 130 60373	BC857B
7636	5322 130 60159	BC847B
7651	4822 130 42804	BC817-25

ELECTRICAL PARTS LIST - AF9 BOARD

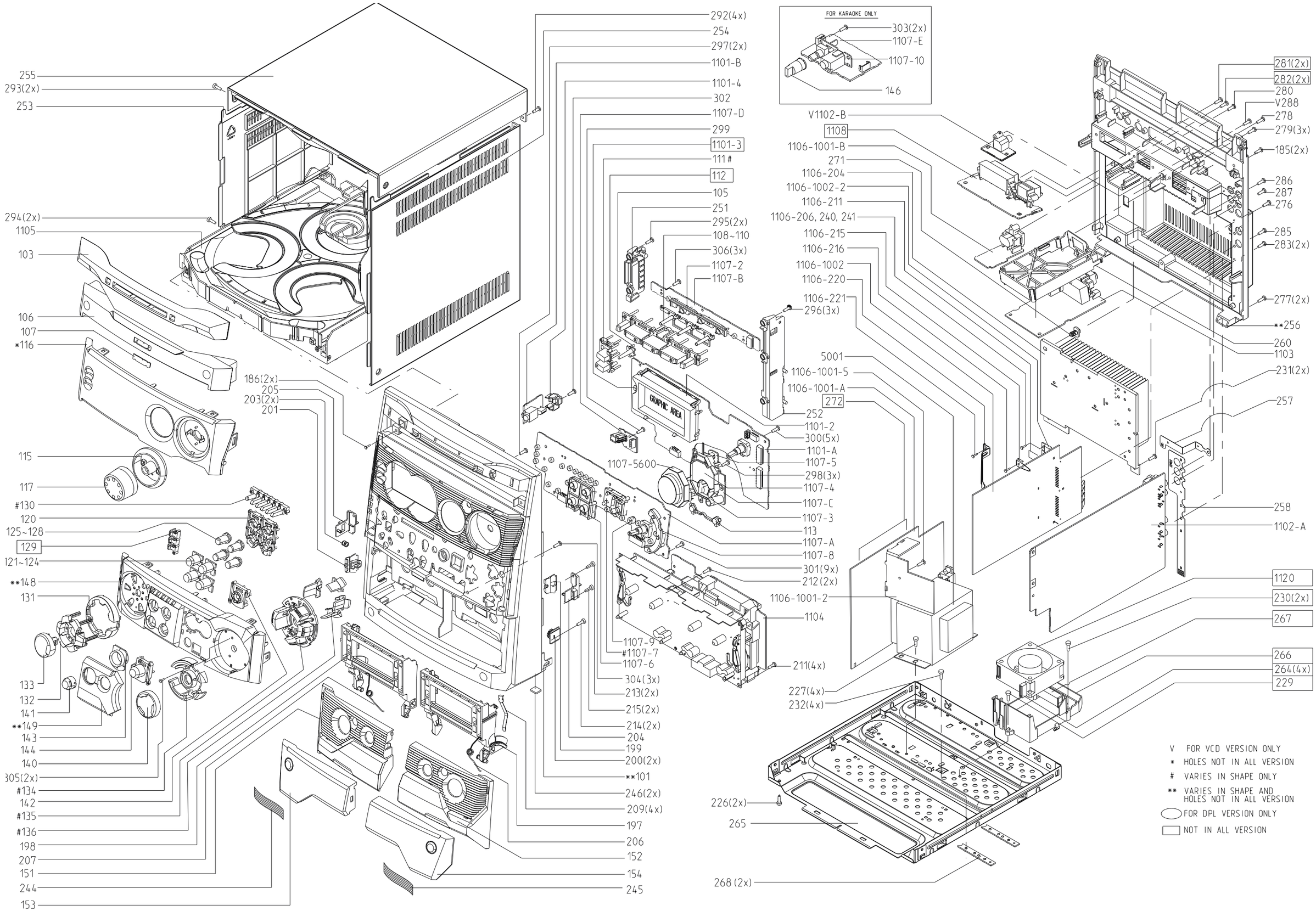
TRANSISTORS & INTEGRATED CIRCUITS

7652	4822 130 42804	BC817-25
7653	4822 130 42804	BC817-25
7654	4822 130 42804	BC817-25
7661	5322 130 60159	BC847B
7662	5322 130 60159	BC847B
7663	4822 130 60373	BC857B
7681	4822 130 60373	BC857B
7682	5322 130 60159	BC847B
7802	4822 209 17235	74LVU04D
7803	5322 130 60159	BC847B

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

13-1

SET MECHANICAL EXPLODED VIEW



13-2

MECHANICAL & ACCESSORIES PARTS LIST - MAIN UNIT

0101	3139 118 16980	Cabinet Front /22	0204	4822 402 11246	Bracket Right	185	D3 x 10
0101	3139 118 16990	Cabinet Front /34	0205	4822 402 11245	Bracket Left	186	D3 x 12
0103	3139 118 14320	Window CDC	0206	3139 111 01380	Spring Torsion Right	211	D3 x 12
0105	3139 118 16820	Button Set CDC Select	0207	3139 111 01390	Spring Torsion Left	212	D3 x 12
0106	3139 118 14340	Cover Tray CDC	0209	4822 492 42787	Spring Cassette	213	D3 x 12
0107	4822 454 13408	Badge Philips	0246	4822 462 40683	Foot Rubber (SQ)	214	M3 x 12
0111	3139 118 14350	Button Standby/Eco Power	0251	3139 114 72750	Bracket CDC Left	215	M3 x 12
0115	3139 118 14370	Cover Ring Volume/VU Chrome	0252	3139 114 72760	Bracket CDC Right	226	M3 x 6
0116	3140 117 64900	Window Display	0253	3139 114 73570	Panel Left	227	M3 x 6
0117	3139 118 16840	Knob Volume Rotary	0254	3139 114 73580	Panel Right	231	M3 x 6
0120	3139 114 72360	Frame Button Set Source Select	0255	3139 114 73590	Cover Top	232	M3 x 6
0121	3139 118 14390	Button Cap Source-CD	0256	3139 114 72790	Panel Rear /22	276	M3 x 6
0122	3139 118 14400	Button Cap Source-Tuner	0256	3139 114 73100	Panel Rear /34	277	M3 x 10
0123	3139 118 14410	Button Cap Source-Tape	0271	3139 114 71010	Stopper Heatsink	278	D3 x 12
0124	3139 118 14420	Button Cap Source-Aux	0350	3140 118 51360	L/R Loudspeaker Box	279	D3 x 12
0125	3139 114 72410	Lightguide Source-CD	0351	4822 303 50063	FM Aerial	280	D3 x 12
0126	3139 114 72420	Lightguide Source-Tuner	0356	3139 118 78260	Remote Control	283	D3 x 12
0127	3139 114 72430	Lightguide Source-Tape	0384	2422 549 45067	AM Frame Aerial	285	D3 x 12
0128	3139 114 72440	Lightguide Source-Aux	0385	2422 070 98151	⚠ Mains Cord	286	D3 x 12
0129	3139 118 14720	Button Set RDS/NEWS /22	0387	3140 115 29980	Instruction For Use /22	287	D3 x 12
0129	3139 118 15320	Button Set RDS/NEWS/DOLBY /34	0387	3140 115 29990	Instruction For Use /34	292	M3 x 12
0130	3139 118 14440	Button Prog/Time-Disp	1202	3139 110 35350	FFC Foil 11P/220/11P AD	293	M3 x 12
0131	3139 118 16850	Cover Ring Func Control	1204	3139 110 34600	FFC Foil 07P/280/07P AD	294	M3 x 6
0132	3139 118 15460	Button Set Func Control	1401	3139 110 34970	FFC Foil 19P/180/19P AD	295	D3 x 12
0133	3139 118 14470	Cap Function Control /22	1402	3139 110 34610	FFC Foil 11P/180/11P AD	296	D3 x 12
0133	3139 118 15350	Cap Function Control /34	1403	3139 110 35130	FFC Foil 06P/180/06P AD	297	D2 x 8
0134	3139 118 14820	Cover Ring DSC/VAC/IS	1404	3139 110 35280	FFC Foil 10P/120/10P AD	298	D3 x 10
0135	3139 118 16830	Button DSC/VAC/IS	1405	3139 110 35000	FFC Foil 08P/120/08P AD	299	D3 x 10
0140	3139 118 14500	Knob Jog Rotary	1406	4822 320 12752	FFC Foil 07P/180/07P AD	300	D3 x 12
0141	3139 118 14780	Button WOOX Plus	1407	3139 110 34010	FFC Foil 06P/140/06P AD	301	D3 x 12
0142	3139 114 72470	Frame Button Set WOOX	1501	3139 110 35120	FFC Foil 04P/400/04P BD	302	D3 x 12
0144	3140 117 64950	Button Plus WOOX Level	1503	3139 110 34800	FFC Foil 19P/120/19P BD	304	D3 x 12
0148	3139 118 17000	Cover Orn Control /22	1601	3139 110 35050	FFC Foil 08P/220/08P AD	305	D2 x 8
0148	3139 118 17010	Cover Orn Control /34	1702	4822 320 12654	FFC Foil 07P/220/07P AD	306	D3 x 12
0149	3139 118 16790	Cover Control WOOX	5001	3103 308 30630	⚠ Mains Transformer		
0151	3139 118 16800	Cover Cassette Left					
0152	3139 118 16810	Cover Cassette Right					
0153	3139 114 74910	Lens Cassette Left					
0154	3139 114 74920	Lens Cassette Right					
0197	3139 114 68630	Door Cassette Right					
0198	3139 114 68620	Door Cassette Left					
0199	4822 402 10621	Push-Catch					
0200	4822 529 10322	Damper Assembly					
0201	3139 114 68640	Push Catch Left					
0203	4822 492 11344	Spring Compression					

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

SCREW LISTS - MAIN UNIT

REVISION LIST

14.1 Manual 3140 785 32301

During production 3CDC module has been changed due to the CD play mute.
3CDC-LLC-DA11 module is introduced from week 247 onwards. In this service manual, the new 3CDC module and the belonging parts list are added.

14.2 Manual 3140 785 32302

During production power module has been changed from Power 2001 30-70W module to P2001 30-70W AN17850 (PWR313). In this service manual, the new Power Board and the parts list (from Page 11-6B to 11-8B) are added.