Service
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Service Manual

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CLASS 1
LASER PRODUCT

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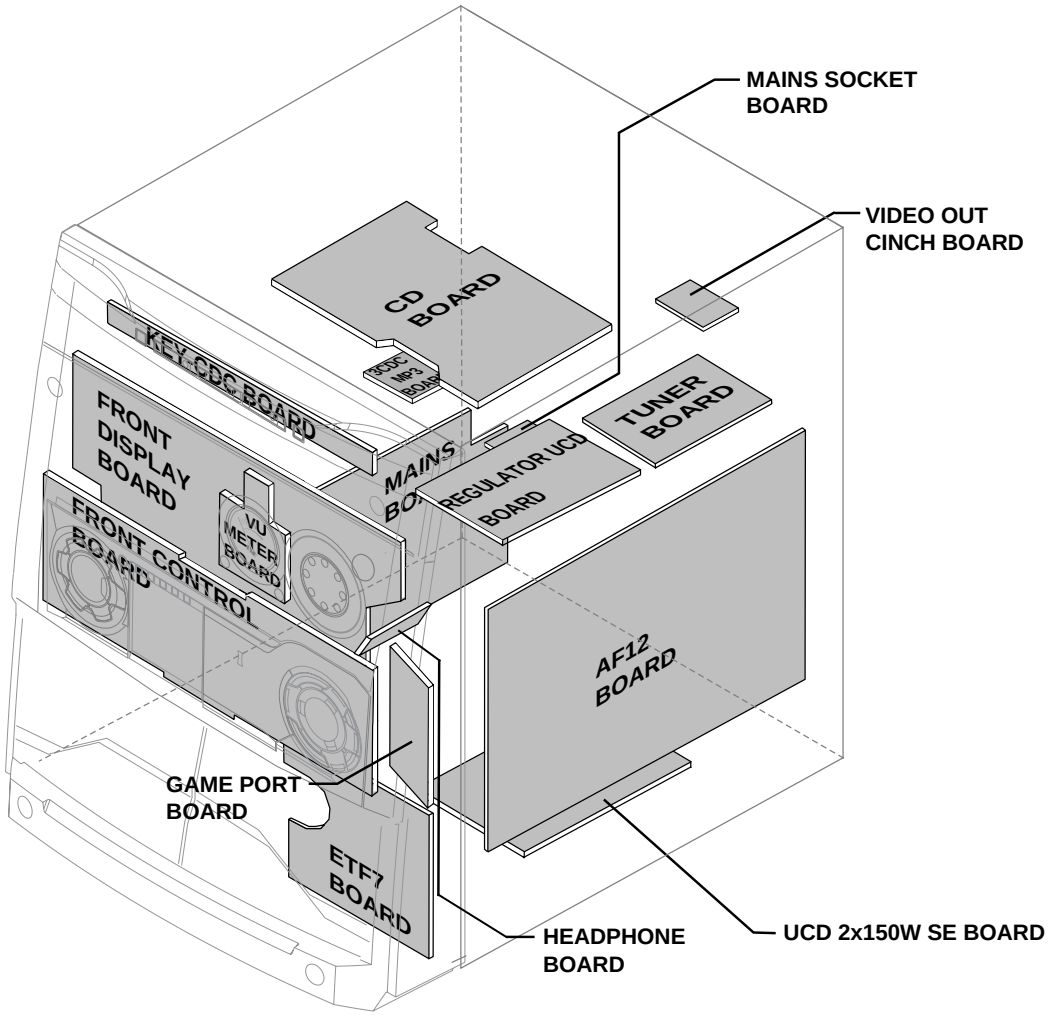
GB 3140 785 32972

Version 1.2

PHILIPS

LOCATION OF PRINTED CIRCUIT BOARDS



VERSION VARIATIONS:

Type /Versions: / Features & Board in used:	FWM570									
	/21	/22	/30							
Aux in /CDR in	x	x	x							
Line Out										
Surround Out										
Subwoofer Out										
Video Out	x	x	x							
Matrix Surround										
CD Text										
Dolby B										
RDS		x								
Game Port (Video/Audio L/Audio R)	x	x	x							
Dolby Pro Logic (DPL)										
Incredible Surround										
Karaoke Features										
Voltage Selector	x									
ECO Power Standby (Clock Display Off)	x	x	x							
ECO6 Tuner Board - Systems Non-Cenelec	x		x							
ECO6 Tuner Board - Systems Cenelec		x								
Center/Surround Channel										
ETF7 ND/DD/FR - Chapter 9	x	x	x							
ETF7 DB/DD/FR - Chapter 9A										

SPECIFICATIONS

GENERAL:

Mains voltage : 110-127V/220-240V Switchable for /21
230V ± 10% for /22/30
Mains frequency : 50/60Hz
Power consumption : < 1W at ECO Power Standby
: 25W at Standby
: 110W at Active
Clock accuracy : < 4 seconds per day
Dimension centre unit : 265W x 322H x 390Dmm

TUNER:

FM

Tuning range : 87.5-108MHz
Grid : 50kHz
IF frequency : 10.7MHz ± 25kHz
Aerial input : 75Ω coaxial
300Ω click fit for /37
Sensitivity at 26dB S/N : < 22 µV
Selectivity at 300kHz bandwidth : > 25dB
Image rejection : > 25dB [>75dB]
Distortion at RF=1mV, dev. 75kHz : < 3%
-3dB Limiting point : < 23.5µV
Crosstalk at RF=1mV, dev. 40kHz : > 18dB

MW

Tuning range : 531-1602kHz
530-1700kHz for /21
Grid : 9kHz
10kHz for /21
IF frequency : 450kHz ± 1kHz
Aerial input : Frame aerial
Sensitivity at 26dB S/N : < 4.0mV/M
Selectivity at 300kHz bandwidth : > 18dB
IF rejection : > 45dB
Image rejection : > 28dB
Distortion at RF=50mV, m=80% : < 5%

AMPLIFIER:

Output power (4Ω, 1kHz, 10% THD)
L & R : 2 x 110W RMS
Frequency response within -3dB : 50Hz-15kHz
DBB : Level 1, 2, 3 & OFF
MAX Sound : ON & OFF
Digital Sound Control (DSC) : Digital, Rock, Pop, Newage, Classic, Electric
Virtual Ambience Control (VAC) : Hall, Concert, Cinema, Disco, Arcade, Cyber
Game Sound : Speed /Punch /Blast /Off
Input sensitivity
Aux in : 640mV ± 2dB at 1kHz
CDR in : 1V ± 3dB at 1kHz
Game Port (at 1kHz) : 310mV ± 2dB
Output sensitivity
Headphone output at 32Ω : 700mW ± 2dB (Max. vol.)

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 : 78kHz ± 10kHz
Rec/Pb frequency response within 10dB : 125Hz - 8kHz
Signal to Noise Ratio (Type I) : > 48dBA

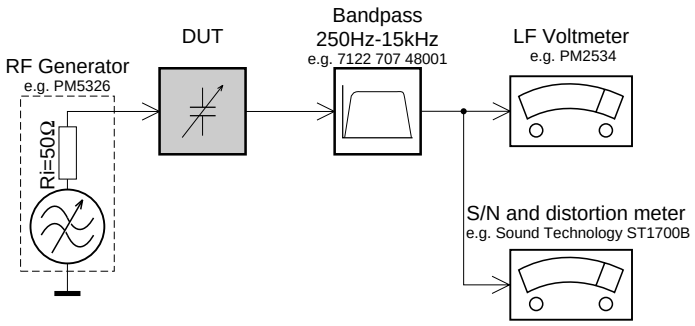
COMPACT DISC:

Measurement done at output conn. of the CDC module.
Frequency response : < ±1.5dB for 20Hz-20kHz
Output Voltage (in Vrms) : 0.5Vrms ± 1dB 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)
MPEG 1 Layer 3 (MP3-CD) : MPEG AUDIO
MP3-CD Bit Rate : 56-256 kbps
MP3-CD Sampling Frequencies : 32 kHz, 44.1 kHz, 48kHz
Recording Format : ISO 9660
UDF format not supported

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

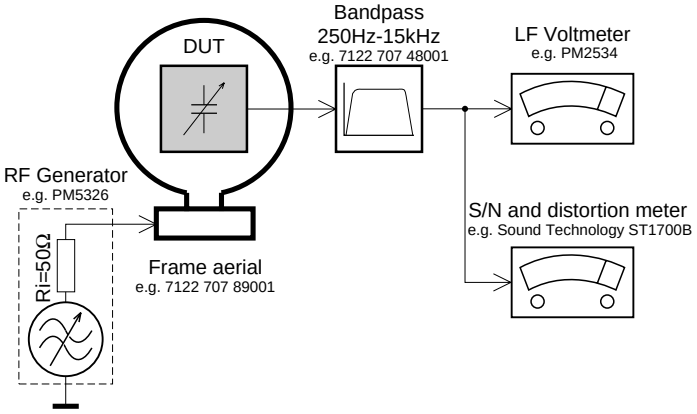
MEASUREMENT SETUP

Tuner FM



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

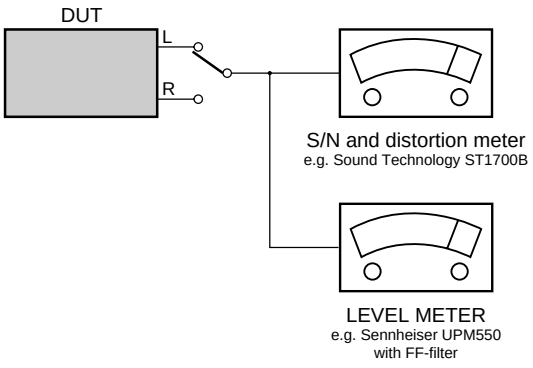
Tuner AM (MW,LW)



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).

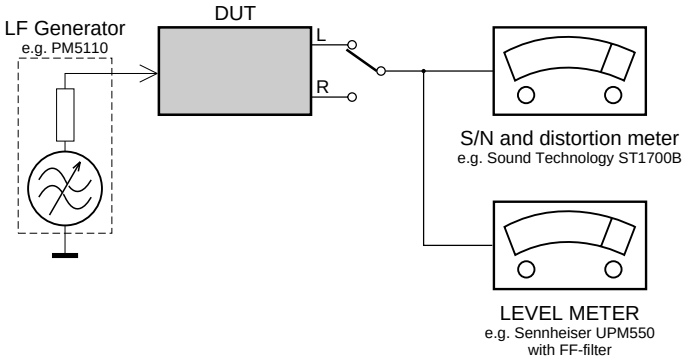
CD

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

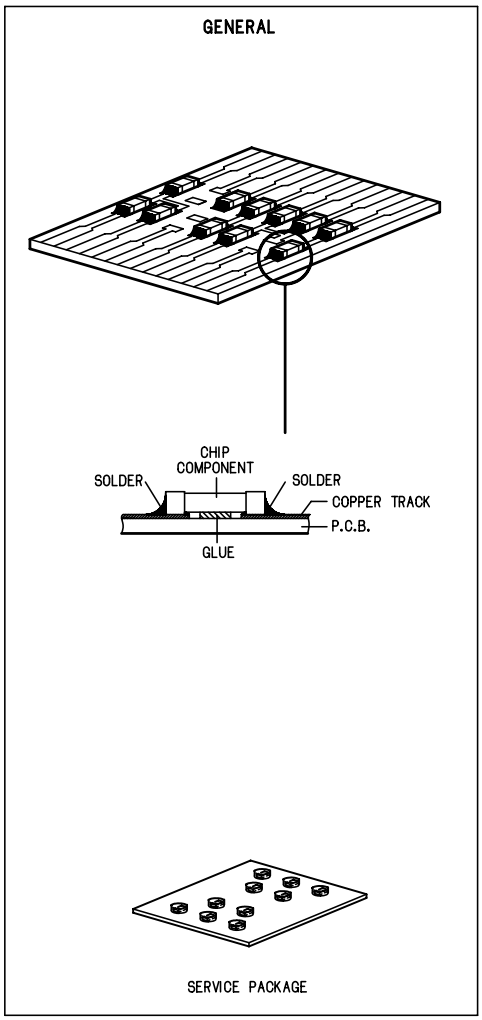
Compact Disc:

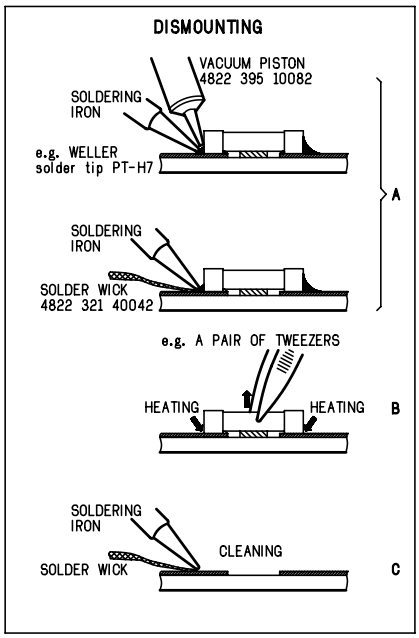
SBC426/426A Test disc 5 + 5A 4822 397 30096
SBC442 Audio Burn-in Test disc 1kHz 4822 397 30155
SBC429 Audio Signals disc 4822 397 30184
Dolby Pro-logic Test Disc 4822 395 10216

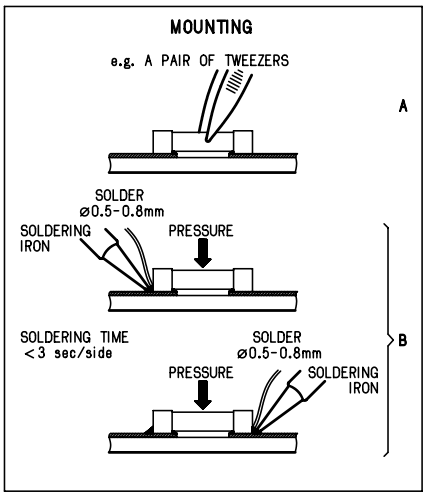
ESD Equipment:

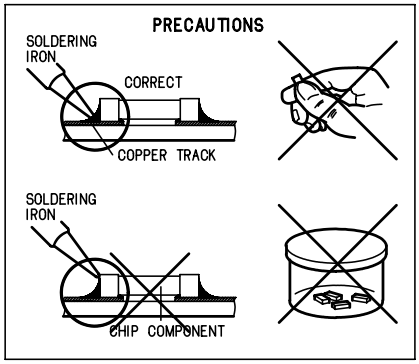
Anti-static table mat - large 1200x650x1.25mm ... 4822 466 10953
Anti-static table mat - small 600x650x1.25mm 4822 466 10958
Anti-static wristband 4822 395 10223
Connector box (1MΩ) 4822 320 11307
Extension cable
(to connect wristband to conn. box) 4822 320 11305
Connecting cable
(to connect table mat 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

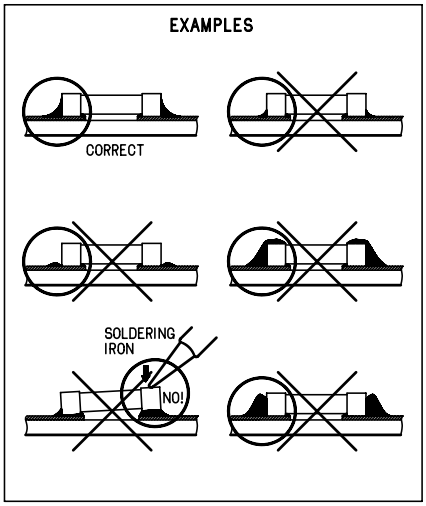
HANDLING CHIP COMPONENTS











GB WARNING

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

ESD

NL WAARSCHUWING

Alle IC's en vele andere halfgeleiders zijn gevoelig voor electrostatische ontladingen (ESD).
Onzorgvuldig behandelen tijdens reparatie kan de levensduur drastisch doen verminderen.
Zorg ervoor dat u tijdens reparatie via een polsband met weerstand verbonden bent met hetzelfde potentiaal als de massa van het apparaat.
Houd componenten en hulpmiddelen ook op ditzelfde potentiaal.

F ATTENTION

Tous les IC et beaucoup d'autres semi-conducteurs sont sensibles aux décharges statiques (ESD).
Leur longévité pourrait être considérablement écourtée par le fait qu'aucune précaution n'est prise à leur manipulation.
Lors de réparations, s'assurer de bien être relié au même potentiel que la masse de l'appareil et 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.

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

Safety components are marked by the symbol ⚠ .

NL

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

De Veiligheidsonderdelen zijn aangeduid met het symbool ⚠

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.

Less composants de sécurité sont marqués ⚠

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.

Sicherheitsbauteile sind durch das Symbol ⚠ markiert.

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.

Componenty di sicurezza sono marcati con ⚠

GB

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.

CLASS 1
LASER PRODUCT

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 !

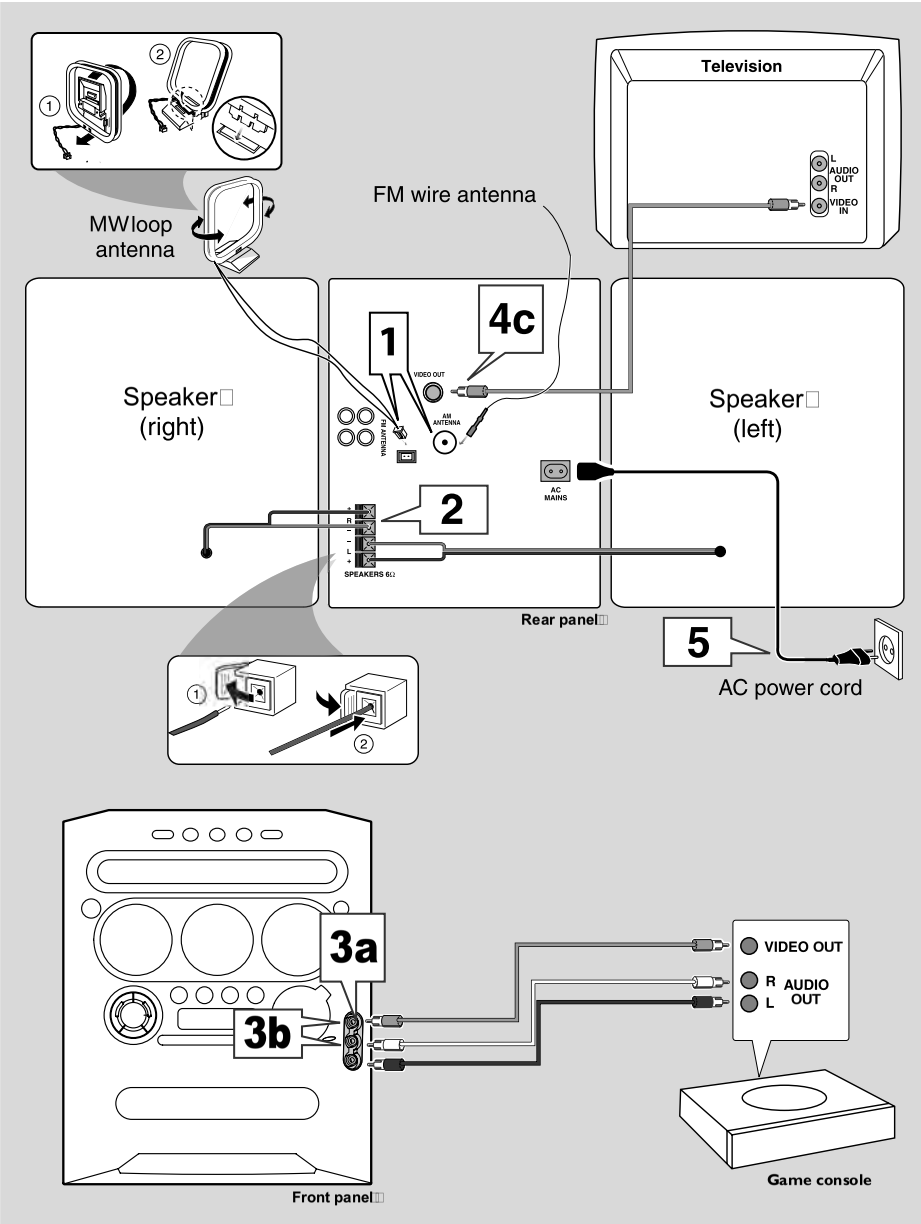
Avatussa laitteessa ja suojalukituksen ohitettaessa olet alttiina näkymättömälle laserisäteilylle. Älä katso säteeseen!

DK Advarse !

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

F

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



Warning!

– Use only the supplied speakers. The combination of the main unit and speakers provides the best sound. Using other speakers can damage the unit and sound quality will be negatively affected.

– Never make or change connections with the power switched on.

– Connect the AC power cord to the power outlet only after you have finished hooking up everything.

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

Step 1: Connecting FM/MW antennas

– Place the MW loop antenna on a shelf or attach it to a stand or wall.

– Extend the FM antenna and fix its ends to the wall.

– Adjust the position of the antennas for optimal reception.

– Position the antennas as far as possible from a TV, VCR or other radiation source to prevent unwanted noise.

– For better FM stereo reception, connect the external FM antenna.

Step 2: Connecting the speakers

Connect the speaker wires to the SPEAKERS terminals, right speaker to "**R**" and left speaker to "**L**", coloured (marked) wire to "**+**" and black (unmarked) wire to "**–**". Fully insert the stripped portion of the speaker wire into the terminal as shown on page 10.

Notes:

– Ensure that the speaker cables are correctly connected. Improper connections may damage the system due to short-circuit.

– Do not connect more than one speaker to any one pair of +/- speaker terminals.

Step 3: Connecting to the game console

IMPORTANT!

Gameport inputs are for the game console only.

a. Use the game console's video cable (not supplied) to connect its video output to the GAMEPORT-**VIDEO** terminal.

b. Use the game console's audio cables (not supplied) to connect its audio outputs to the GAMEPORT-**AUDIO L. / AUDIO R.** terminals.

c. Use the video cable (yellow) to connect the **VIDEO OUT** terminal to the video input on the TV for viewing.

Notes:

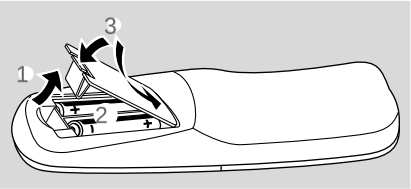
– On the TV, the Video Input jack is usually yellow and might be labeled A/V In, CVBS, Composite or Baseband.

– To avoid magnetic interference, do not position the front speakers too close to your TV.

Step 4: Connecting the AC power cord

"AUTO INSTALL -PRESS PLAY" may appear on the display panel when the AC power cord is plugged into the power outlet for the first time. Press ▶II on the main unit to store all available radio stations *(page 3 - P3)* or press ■ to exit (refer to "Tuner Operations").

Step 5: Inserting batteries into the remote control



1 Open the battery compartment cover.

2 Insert two batteries type R06 or AA, following the indications (+/–) inside the compartment.

3 Close the cover.

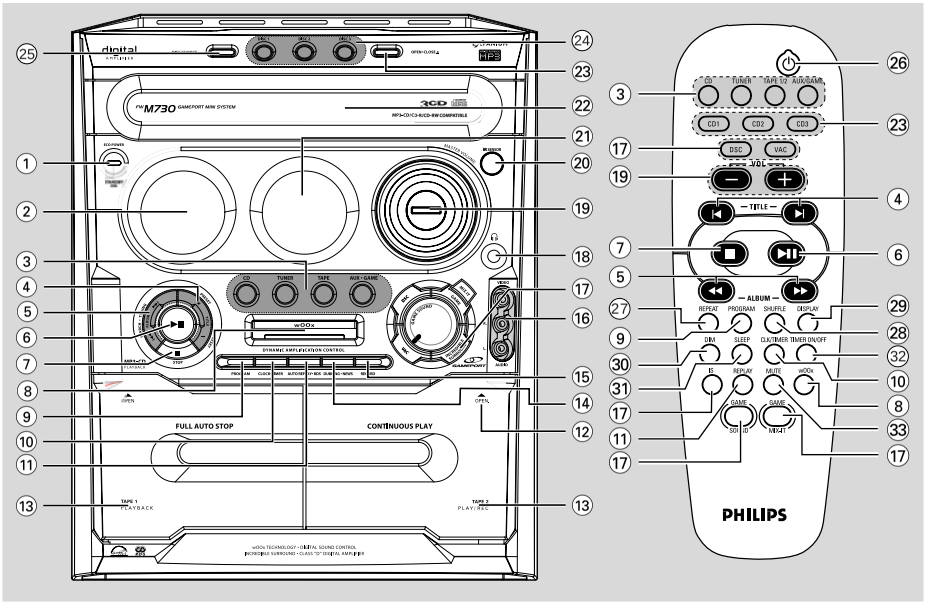
Using the remote control to operate the system

1 Aim the remote control directly at the remote sensor (iR) on the main unit.

2 Select the source you wish to control by pressing one of the source select keys on the remote control (for example CD,TUNER).

3 Then select the desired function (for example ▶II, I◀◀, ▶▶I).

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



Main unit and remote control

① **STANDBY ON ⏻ / ECO POWER**
– Switches to the Eco Power standby mode or turns on the system.
– *Switches to the standby mode.

② **Display screen**

③ **CD / TUNER / TAPE(TAPE1/2) / AUX•GAME**
– Selects the relevant active mode.
– **CD:** toggles between DISC 1~3.
– **TUNER:** toggles between FM and MW band.
– **AUX•GAME:** toggles between AUX and GAMEPORT mode.
– **TAPE**: toggles between Tape Deck 1 and Tape Deck 2.

④ **PRESET (–) (⏮) PRESET (+) (⏭)**
– **CD:** selects a track or selects a title from MP3 disc.
– **TUNER:** selects a preset radio station.
– **CLOCK:** sets the minutes.

⑤ **SEARCH•TUNING•ALBUM ⏮◀◀ / ▶▶⏭ (◀◀ / ▶▶)**
– **CD:** *searches backward/forward.
– **MP3-CD:** select an album
– **TUNER:** tunes the radio frequency up/down.
– **CLOCK:** sets the hours.
– **TAPE:** searches backward/forward.

⑥ **PLAY•PAUSE ▶II**
– **CD:** starts/pauses playback.
– **TAPE:** starts playback.
(only on the main unit)
– **TUNER:** *enters Plug & Play mode and/or starts preset radio station installation.

⑦ **STOP ■**
– Exits an operation.
– **CD:** stops playback or clears a programme.
– **TUNER:** *erases a preset radio station.
(only on the main unit)
– *Turns on/off the demonstration mode.

⑧ **wOOx**
– Selects the enhanced or normal wOOx sound effect.

⑨ **PROGRAM**
– **CD:** starts or confirms tracks programming.
– **TUNER:** starts *automatic/manual preset

*** = *Press and hold the button for more than two seconds.***

⑩ **CLOCK•TIMER (CLK/TIMER)**
– *Enters clock or timer setting mode.

⑪ **AUTO REPLAY•RDS**
– Selects continuous playback in either AUTO PLAY or ONCE mode only.
– Selects RDS information in the TUNER mode.

⑫ **OPEN ▲**
– Opens the tape deck

⑬ **TAPE1 / TAPE2**
– Tape deck 1 and tape deck 2.

⑭ **DUBBING•NEWS**
– Dubs a tape
– *Turns on/off news.

⑮ **RECORD**
– Starts recording on tape deck 2

⑯ **VIDEO**
– Use a video cable to connect to your game console's video output.

AUDIO L. / AUDIO R.
– Use an audio cable to connect to your game console's left/right audio output.

⑰ **INCREDIBLE SURROUND**
– Creates a super-enhanced stereo effect.

DSC
– Selects different type of preset sound equaliser settings (NEW AGE, ELECTRIC, DIGITAL, POP, CLASSIC or ROCK.).

VAC
– Selects different type of ambience-based equaliser settings (CINEMA, ARCADE, CONCERT, DISCO, CYBER or HALL).

MIX IT (GAME MIX IT)
– Mixes the game sound with your favourite music from one of these music sources (CD, TUNER or AUX).

GAME SOUND
– Adjusts the game's output volume level.
– Selects different type of equaliser setting for Gameport (SPEED, PUNCH or BLAST).

⑱ 🎧
– Plugs in the headphones jack. The speakers output will be cancelled.

⑲ **MASTER VOLUME (VOL + –)**
– Adjusts the volume level.

⑳ **iR SENSOR**
– Points the remote control towards this sensor.

㉑ **VU meters**
– Indicates signal strength of left/right channel.

㉒ **DISC TRAY**

㉓ **OPEN•CLOSE ⏏ (DISC 1~3)**
– Opens/closes the respective disc tray.

㉔ **DISC 1, 2 and 3**
– Selects a disc tray to playback

㉕ **DISC CHANGE**
– Changes discs

Control buttons available on the remote control only

㉖ ⏻
– Switches to the Eco Power standby mode.
– *Switches to the standby mode.

㉗ **REPEAT**
– Repeats a track/disc/all programmed tracks.

㉘ **SHUFFLE**
– Turns on/off the random play mode.

㉙ **DISPLAY**
– Displays the album and title name for MP3 disc.

㉚ **DIM**
– Turns on/off the dim mode.

㉛ **SLEEP**
– Sets the sleep timer function.

㉜ **TIMER ON/OFF**
– Turns on/off the timer function.

㉝ **MUTE**
– Mutes or restores the volume

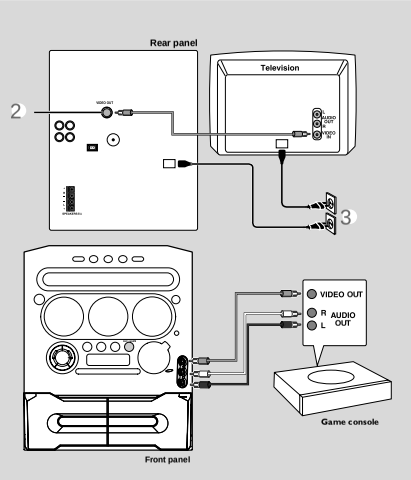
*** = *Press and hold the button for more than two seconds.***

Gameport Operations

About Gameport

Gameport allows you to connect your game console to this audio system which enables you to enjoy a total game immersion experience through powerful sound output.

Preparation before use



1 Connect your game console's video and audio output to the GAMEPORT video and audio inputs respectively (refer to "**Connections - Connecting to game console**).

2 Connect your TV's video input to the **VIDEO OUT** (**CVBS**) on the rear panel.

3 Connect all the AC power cord to the power outlet.

Starting operation

4 Turn on the TV and set to the correct video-in channel.
The TV's video input channel may be called AUX(iliary) IN, AUDIO/VIDEO (A/V) IN, EXT 1, etc. These channels are often near channel 00 on your TV. Or, your TV remote control may have a button or switch that chooses different video modes. See your TV manual for details.

5 Press **AUX•GAME** until "GAMEPORT" is display.

6 Press **GAME** to select the type of sound setting that best suit the game : SPEED, PUNCH, BLAST or OFF.

7 If you like to mix your game sound to your favourite music, press **MIX-IT** to select the desired music source : CD, TUNER, AUX, TAPE or OFF.
CD → "MIX-CD"
TUNER → "MIX-TU"
AUX → "MIX-AUX"
TAPE → "MIX-TA 1" / "MIX-TA2"
OFF → "MIX-OFF"

Note:
– To change the disc tray, you have to press CD, then press CD 1~3 to select the desired disc tray.

8 If necessary, start playback of your chosen mixer source.

9 Start playing your favourite game.

To adjust the game console's volume level
Adjust **GAME VOLUME**.

Notes:
– You can only activate GAME VOLUME and MIX-IT while in the game source mode.
– If your game console is switched on, the video image will always appear on the TV even though you are not in the gameport mode.

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 Philips for help.

Problem	Solution
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 system and your TV or VCR.
"NO DISC" is displayed or the disc cannot be played.	Insert a disc. Load in the disc with the labeled side facing up. Replace or clean the disc, see "Care and safety information". Use a finalised CD-R(W) or a correct format disc.
The system does not react when buttons are pressed.	Remove and reconnect the AC power cord 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 that the AC power cord is connected properly.
The remote control does not function properly.	Select the source (CD or TUNER, for example) before pressing the function button (▶II, I◀◀ , ▶▶I). Reduce the distance between the remote control and the system. Replace the battery. Point the remote control directly toward the IR sensor.
The timer is not working.	Set the clock correctly. Press TIMER ON/OFF to switch on the timer.
The system displays features automatically and buttons start flashing.	Press and hold DEMO STOP on the main unit to switch off the demonstration mode.

Refer to the FAQ (Frequently Asked Questions) on the supplied CD-ROM or visit our website "www.audio.philips.com" for latest update on FAQ.

DISMANTLING INSTRUCTIONS

Dismantling of the Cassette Cover

Lift up and out

Figure 1

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.

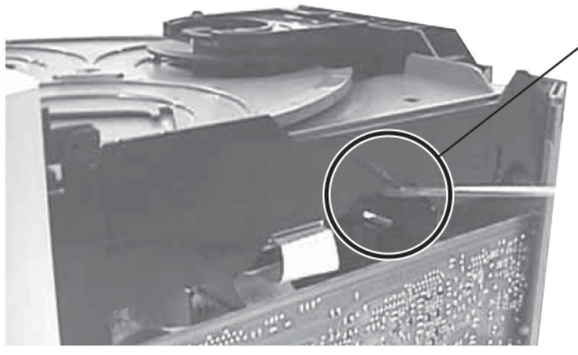
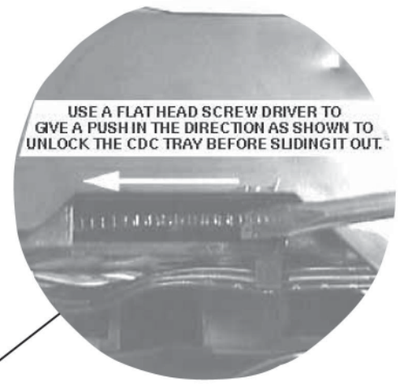


Figure 2



Sliding out the CDC Tray

Figure 3

Dismantling of the CDC Module and Front Panel

4) Remove the Cover Tray CDC as indicated.

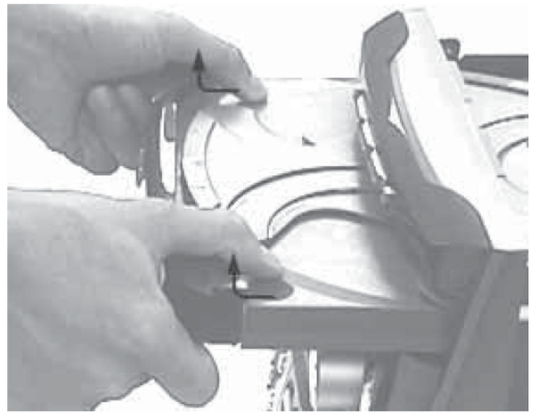


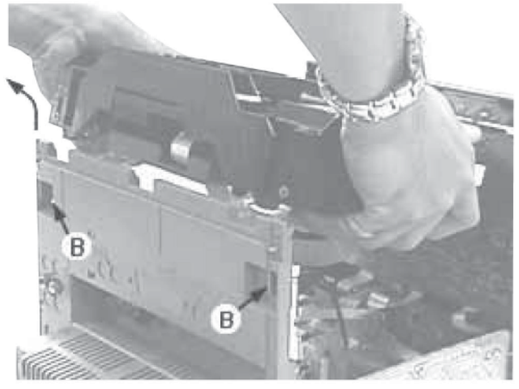
Figure 4

Remove Cover Tray CDC

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

Front View CDC

Figure 5



Remove CDC Module

Figure 6

DISMANTLING INSTRUCTIONS

Detaching the Front Panel assembly from the Bottom/Rear assembly

1) Remove 2 screws B as shown in Figure 8 from the bottom of the Cabinet Front .

2) Release the fixation of the AF Board to Bracket CDC Right by releasing the 2 catches C1 (see Figure 9) and pulling the AF Board outwards as shown in Figure 8.

3) Uncatch 2 catches C2 (see Figure 9) on the left & right sides of the Cabinet Front and slides the Front Panel assembly out towards the front.

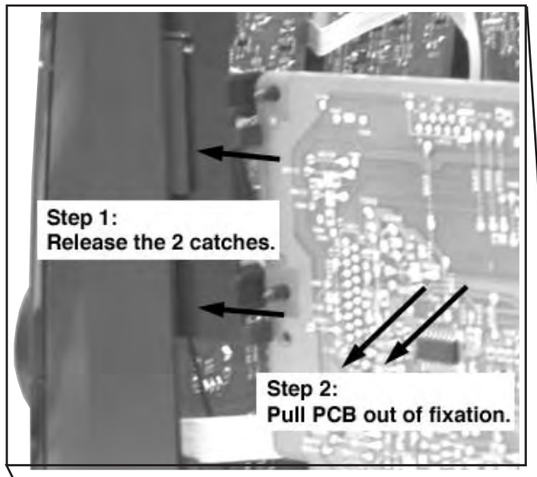


Figure 8

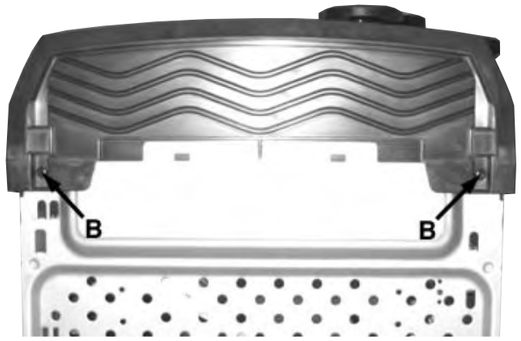


Figure 7

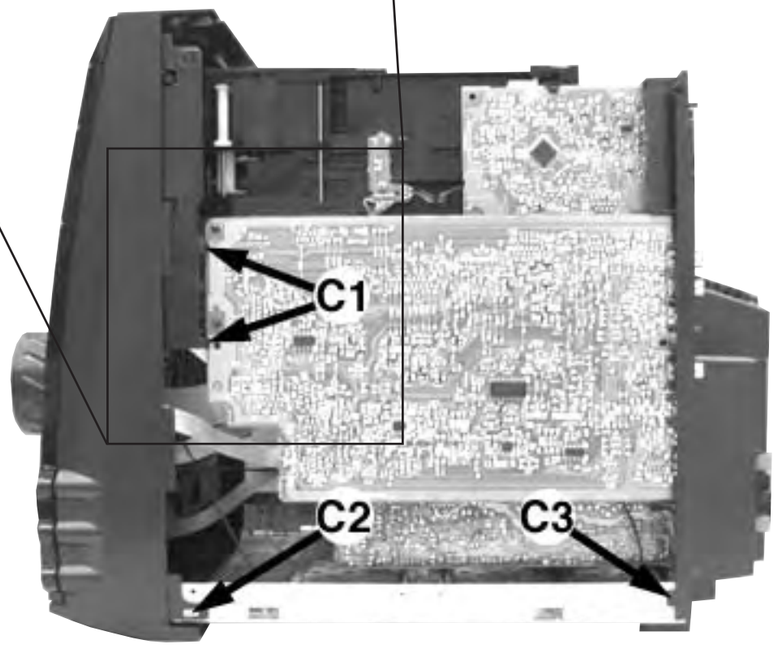


Figure 9

Dismantling of the Front Control Board and Front Display Board

1) The Knob Volume Rotary can be remove by pulling it out in the direction as shown in Figure 10.

2) The Knob Jog Rotary can be remove by inserting a strong string into the slot and pull it in the direction as shown in Figure 11.

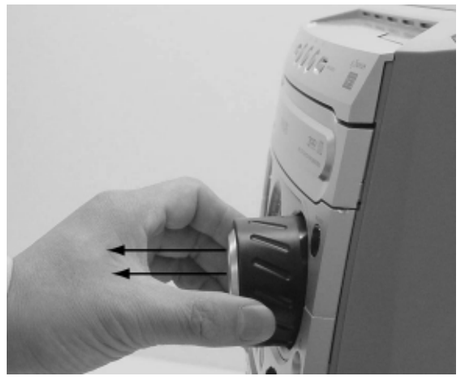


Figure 10

Figure 11

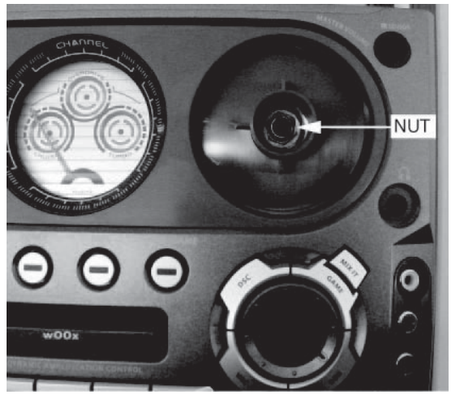


Figure 12

3) Loosen 2 nuts (see Figure 12) to remove the Front Display Board.

4) Loosen 8 screws D (see Figure 13) to remove the Front Display Board.

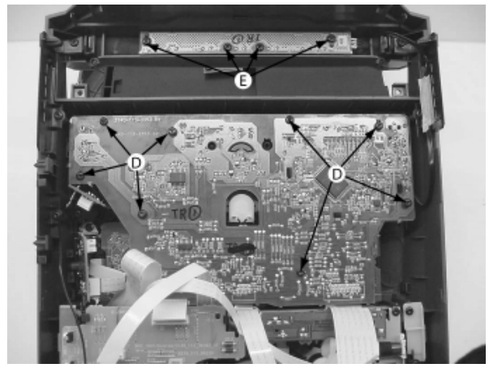


Figure 13

5) Loosen 4 screws E (see Figure 13) to remove the CDC Key Board.

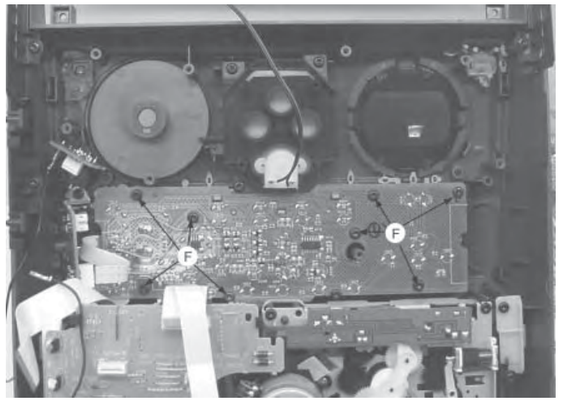


Figure 14

6) Loosen 8 screws F (see Figure 14) to remove the Front Control Board .

7) Loosen 3 screws G (see Figure 15) to remove the Headphone Board and Game Port Board.

DISMANTLING INSTRUCTIONS

Dismantling of the Game Port Board and Headphone Board

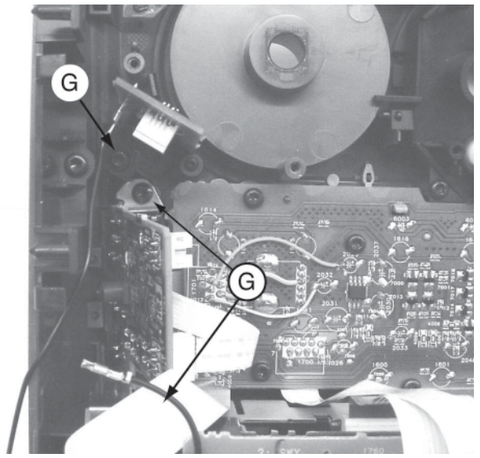


Figure 15

Dismantling of the ETF Tape Module

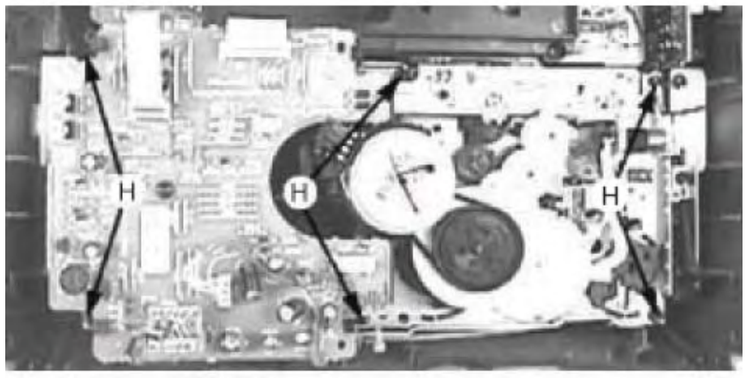


Figure 16

1) Loosen 6 screws H (see Figure 16) to remove the ETF Tape Module.

2-3

Dismantling of Rear Portion

1) Remove 2 screws I (see Figure 17) to loose the AF12 Board.

2) Loosen 3 screws J and uncatch N (see Figure 17) to remove the Tuner Board.

3) Loosen 1 screws K (see Figure 17) to remove the Video Board.

4) Loosen 4 screws L (see Figure 17) and uncatch C5 (see Figure 18) to remove the Fan.

5) Loosen3 screws M (see Figure 17) and uncatch C3 (see Figure 9) to remove the Panel Rear by sliding it out towards the rear.

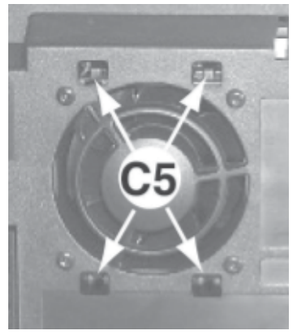


Figure 18

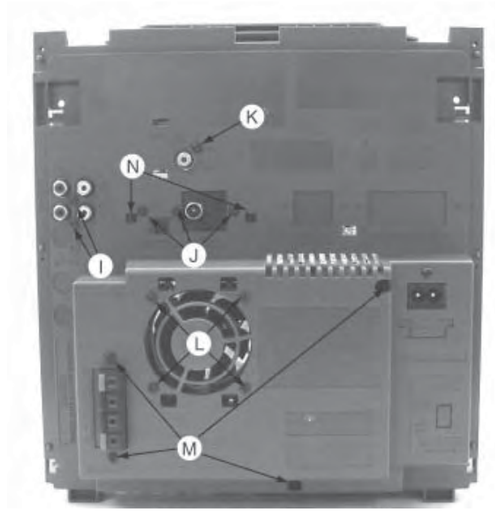


Figure 17

Repair Hint

1) 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.

2) Due to the short flex cable wires in the ETF Module, the PCB should be disconnected and reconnected on the reverse side of the tape mechanism to keep it electrically connected during repair. see Figure 19.

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.

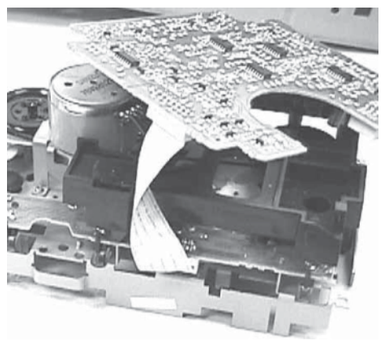
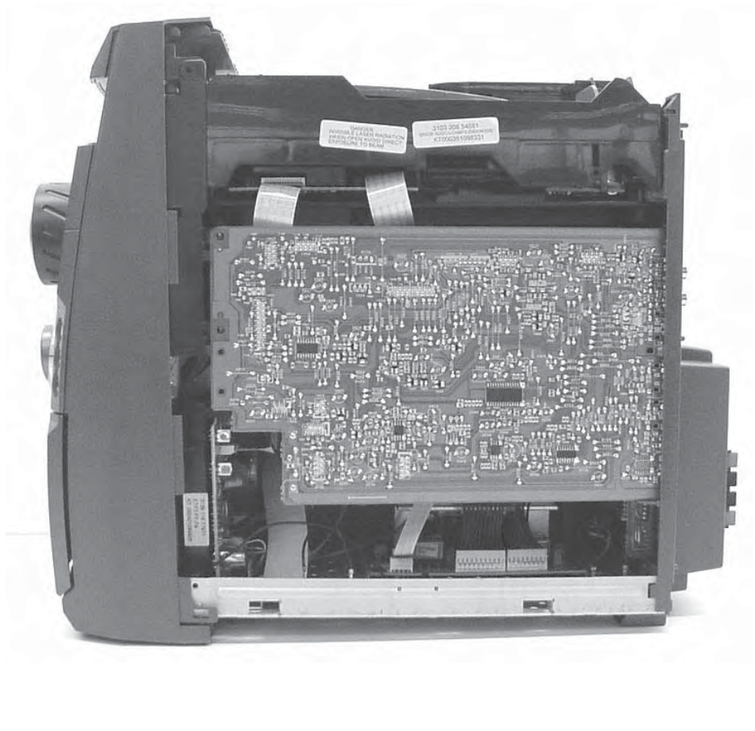


Figure 19

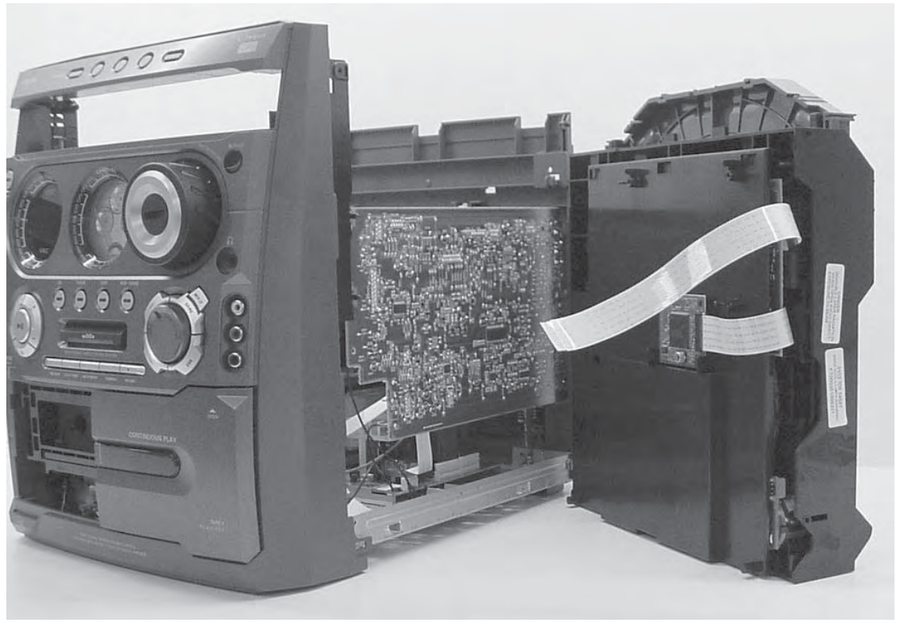
2-4

DISMANTLING INSTRUCTIONS

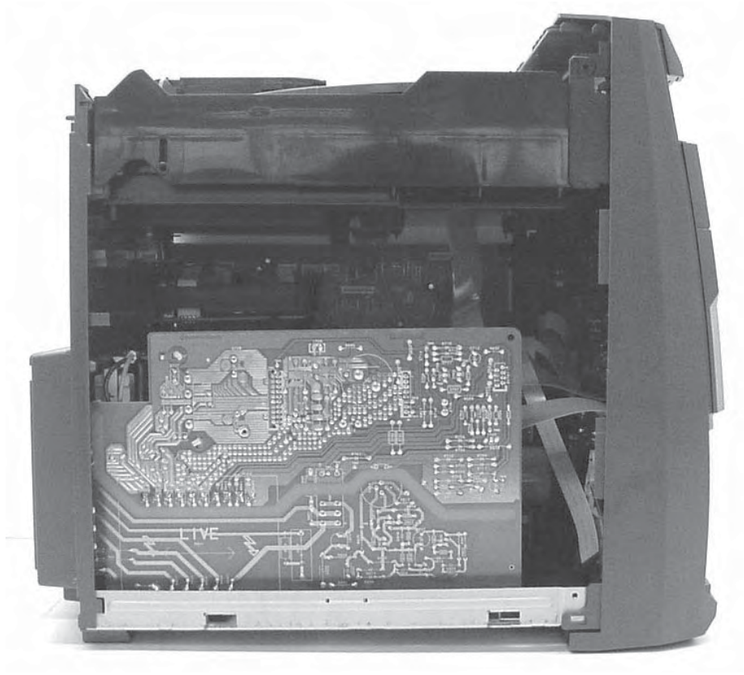
Service position A

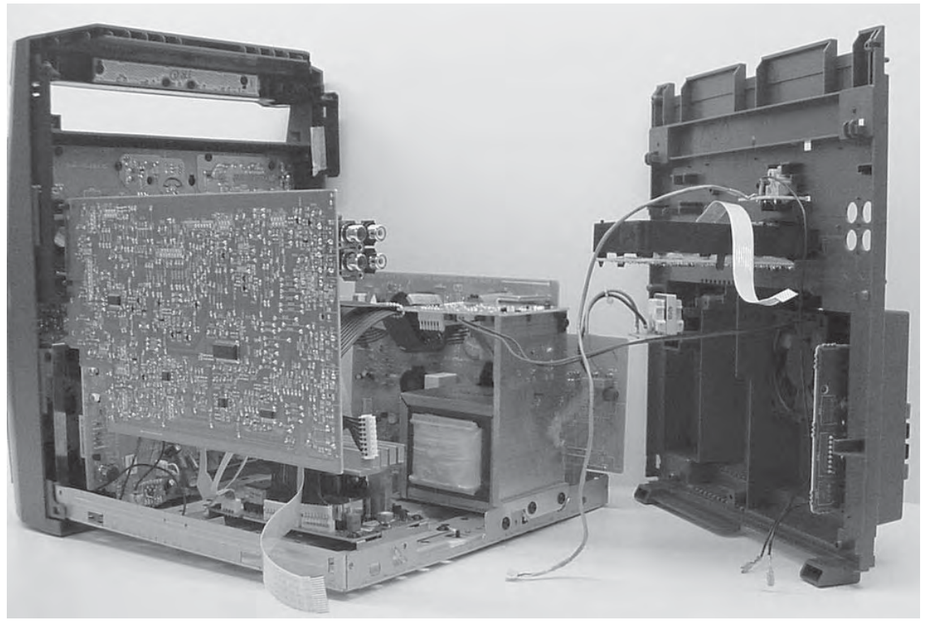


Service position B



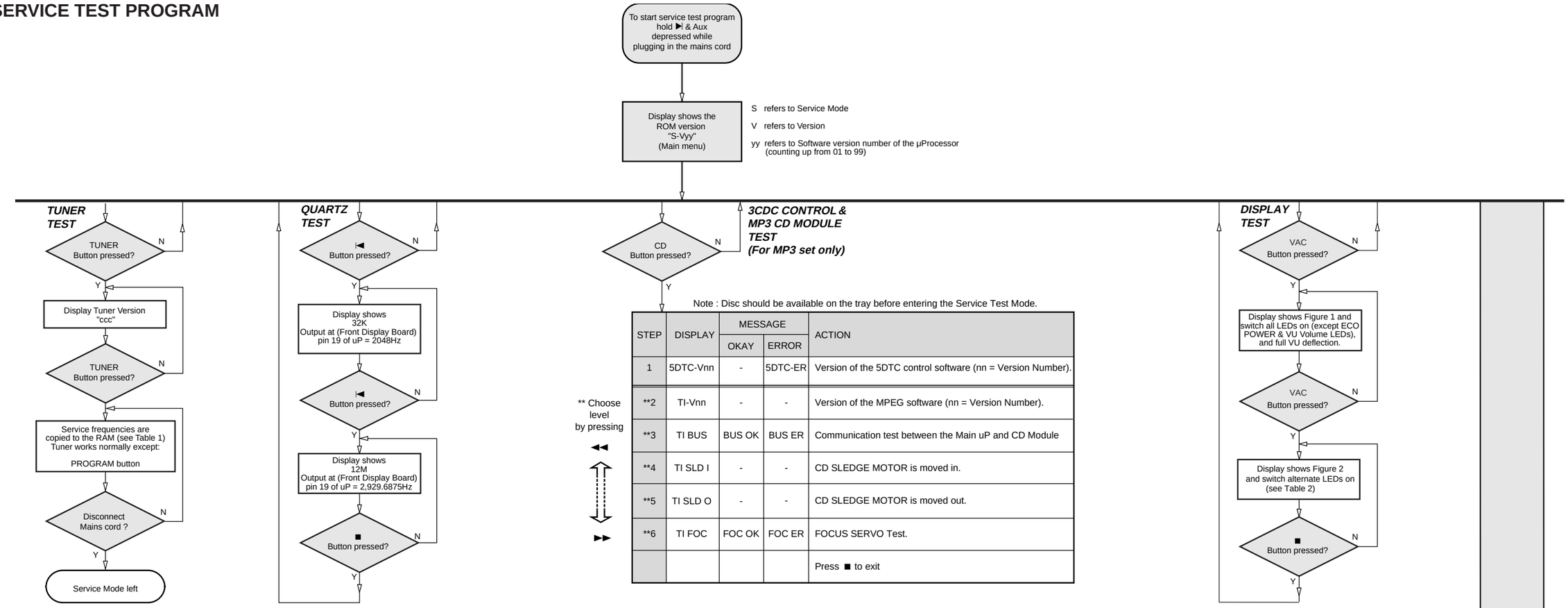
Service position C





3-1

SERVICE TEST PROGRAM



STEP	DISPLAY	MESSAGE		ACTION
		OKAY	ERROR	
1	5DTC-Vnn	-	5DTC-ER	Version of the 5DTC control software (nn = Version Number).
**2	TI-Vnn	-	-	Version of the MPEG software (nn = Version Number).
**3	TI BUS	BUS OK	BUS ER	Communication test between the Main uP and CD Module
**4	TI SLD I	-	-	CD SLEDGE MOTOR is moved in.
**5	TI SLD O	-	-	CD SLEDGE MOTOR is moved out.
**6	TI FOC	FOC OK	FOC ER	FOCUS SERVO Test.
				Press ■ to exit

LEDs	FWM730	FWM570	
CD	ON	-	
TUNER	OFF	-	
TAPE	ON	-	
AUX / GAME	OFF	-	
^^ MAX (WOOX)	OFF	OFF	

To test Standby LED, put the set into ECO mode.
Table 2

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.

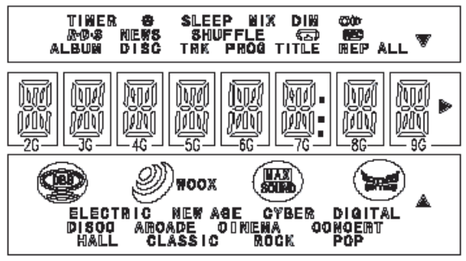


Figure 1

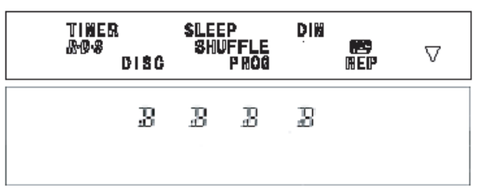


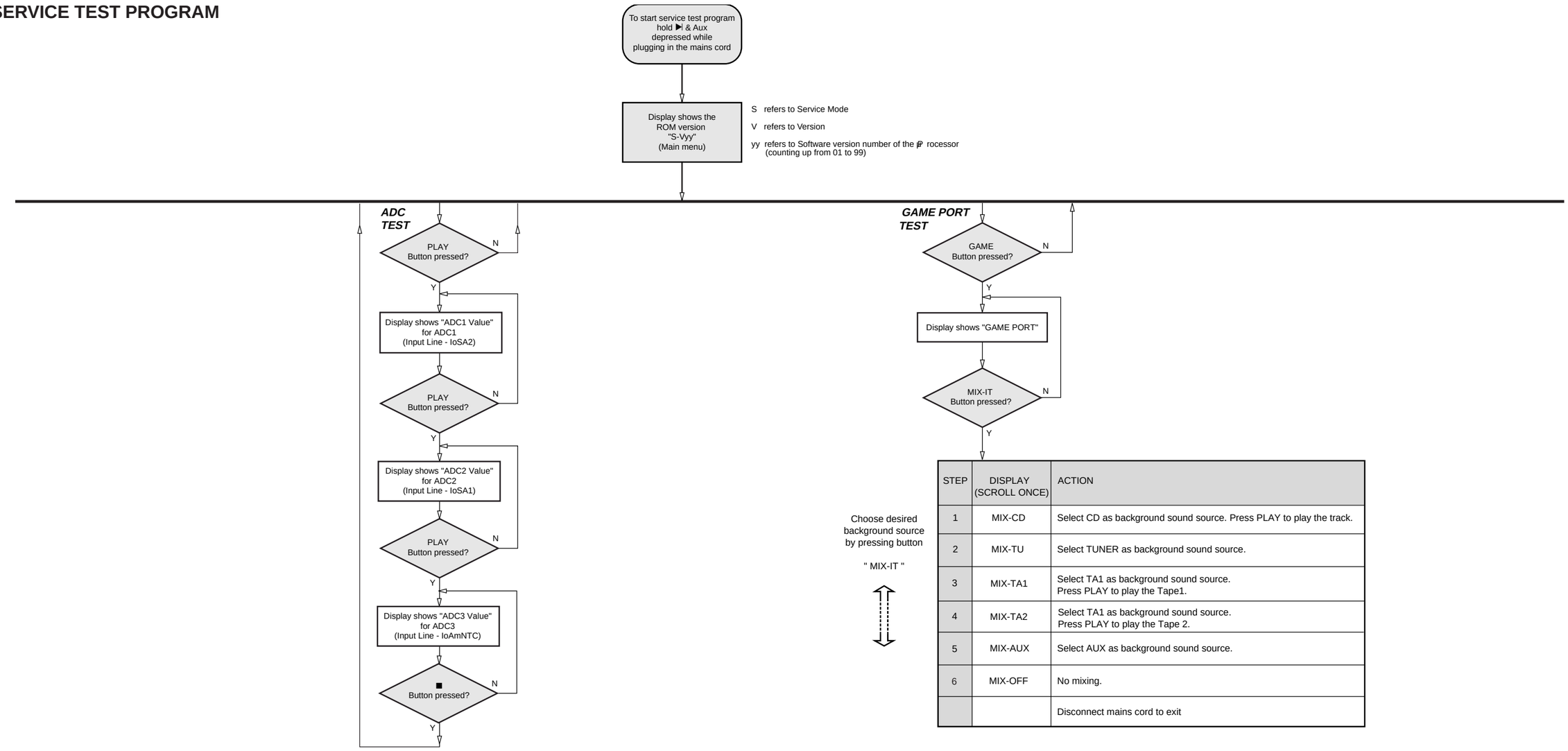
Figure 2

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	Display shows value for 2 seconds. Values increases or decreases in steps of 1 until 0 (Min.) or 40 (Max.) is reached.
DEMO	^^ MAX/WOOX 2	DEMO will toggle on or off. The message: "DEMO ON" or "DEMO OFF" will scroll across the display to show the new status of the set.
LEAVE SERVICE TESTPROGRAM	Disconnect mains cord	

^^ MAX - FWM570, WOOX - FWM730

3-2

SERVICE TEST PROGRAM



ADC Test is used for checking the ADC inputs to the microprocessor.

The display shows an ADC value between 0 and 255 for an input signal between 0 and 5V.

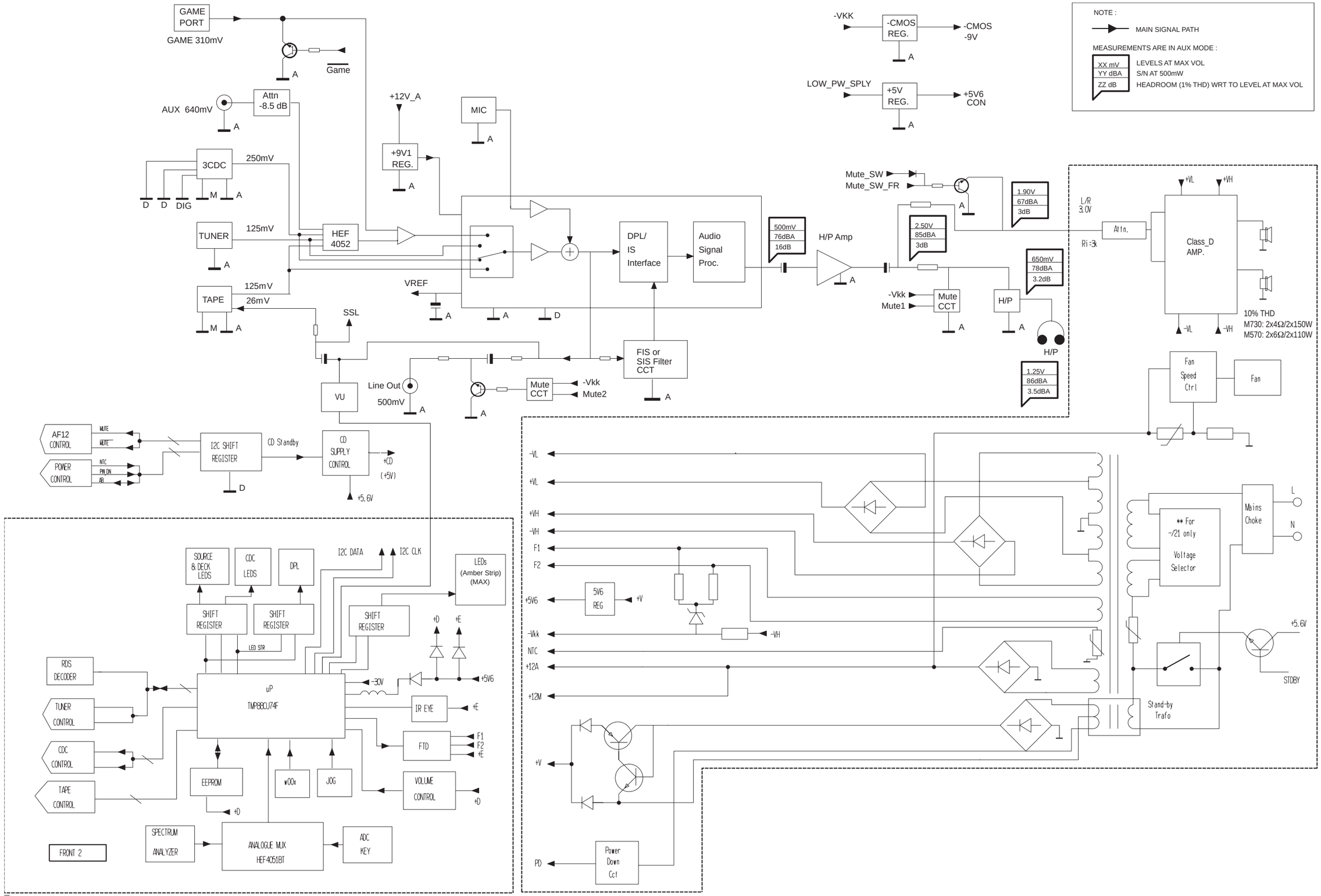
Choose desired background source by pressing button

" MIX-IT "

STEP	DISPLAY (SCROLL ONCE)	ACTION
1	MIX-CD	Select CD as background sound source. Press PLAY to play the track.
2	MIX-TU	Select TUNER as background sound source.
3	MIX-TA1	Select TA1 as background sound source. Press PLAY to play the Tape1.
4	MIX-TA2	Select TA1 as background sound source. Press PLAY to play the Tape 2.
5	MIX-AUX	Select AUX as background sound source.
6	MIX-OFF	No mixing.
		Disconnect mains cord to exit

4-1

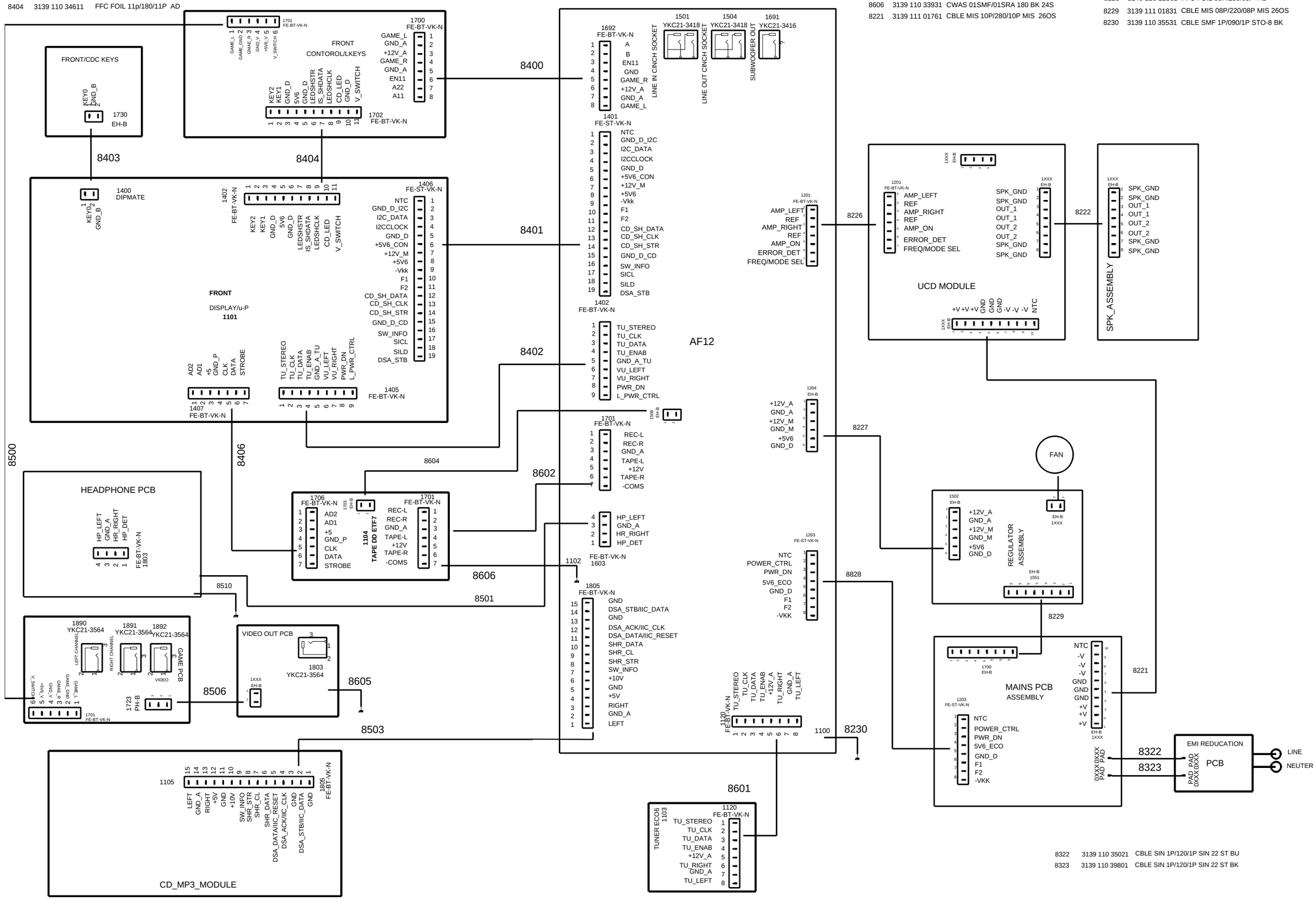
SERVICE BLOCK DIAGRAM



4-2

SERVICE WIRING DIAGRAM

8400	3139 110 34921	FFC FOIL 08P/280/08P BD
8401	3139 111 02491	FFC FOIL 19P/280/19P AD
8402	3140 110 22471	FFC FOIL 09P/280/09P AD
8403	3139 110 37171	CBLE HR 02P/220/02P OE 26OS BK
8404	3139 110 34611	FFC FOIL 11p/180/11P AD
8406	3140 110 22481	FFC FOIL 07P/280/07P BD
8500	3139 110 35211	FFC FOIL 06P/80/06P AD
8501	3139 110 33941	FFC FOIL 04P/180/04P BD
8503	3139 110 35881	FFC FOIL 15P/180/15P BD
8506	3140 110 22451	CBLE PH 3P/340/3P OE SCR WIRE
8510	3139 111 02641	CWAS SMF 1P/22O/1P STO-8 BK
8601	3139 110 35050	FFC FOIL 08P/220/08P AD
8602	3139 110 34131	FFC FOIL 07P/180/07P AD
8604	3139 110 38381	CBLE HR 02P/180/02P HR 26 OS BK
8605	3139 111 02621	CWAS SMF 1P/280/1P STO-8 BK
8606	3139 110 33931	CWAS 01SMF/01SRA 180 BK 24S
8221	3139 111 01761	CBLE MIS 10P/280/10P MIS 26OS
8222	3139 111 02131	CBLE MIS 08P/120/08P MIS 26OS
8226	3139 110 35901	FFC FOIL 07P/220/07P AD
8227	3139 111 03201	CBLE MIS 06P/220/06P MIS 26OS
8228	3140 110 22501	FFC FOIL 08P/280/08P AD
8229	3139 111 01831	CBLE MIS 08P/220/08P MIS 26OS
8230	3139 110 35531	CBLE SMF 1P/090/1P STO-8 BK

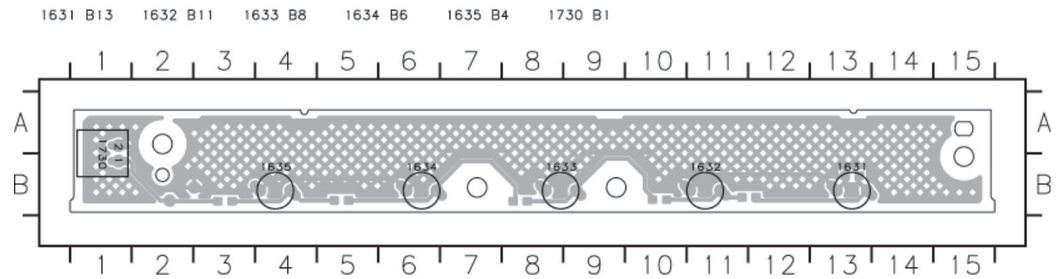


8322	3139 110 35021	CBLE SIN 1P/120/1P SIN 22 ST BU
8323	3139 110 39801	CBLE SIN 1P/120/1P SIN 22 ST BK

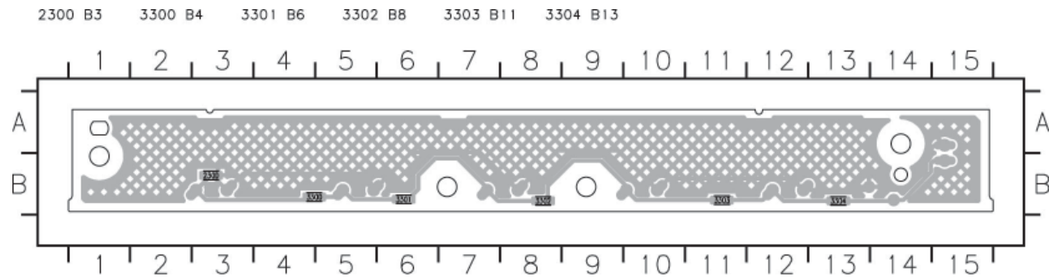
FRONT CONTROL BOARD

TABLE OF CONTENTS

CDC KEY BOARD - COMPONENT LAYOUT

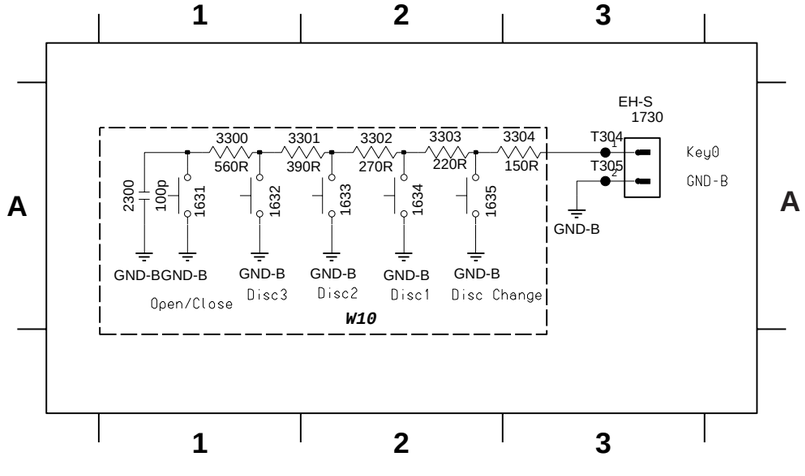


CDC KEY BOARD - CHIP LAYOUT



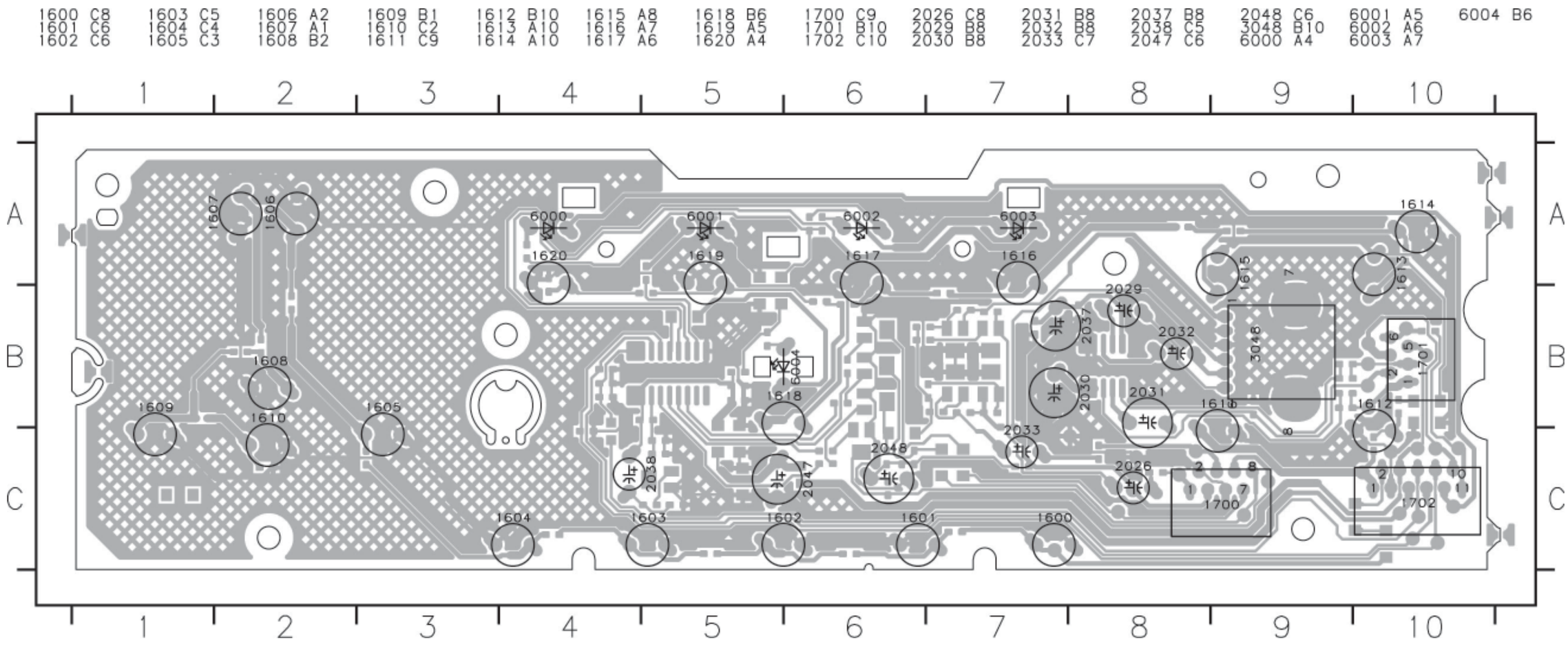
CDC KEY BOARD - CIRCUIT DIAGRAM

1631 A1 1633 A2 1635 A2 2300 A1 3301 A2 3303 A2 T304 A3
1632 A1 1634 A2 1730 A3 3300 A1 3302 A2 3304 A3 T305 A3



5-2

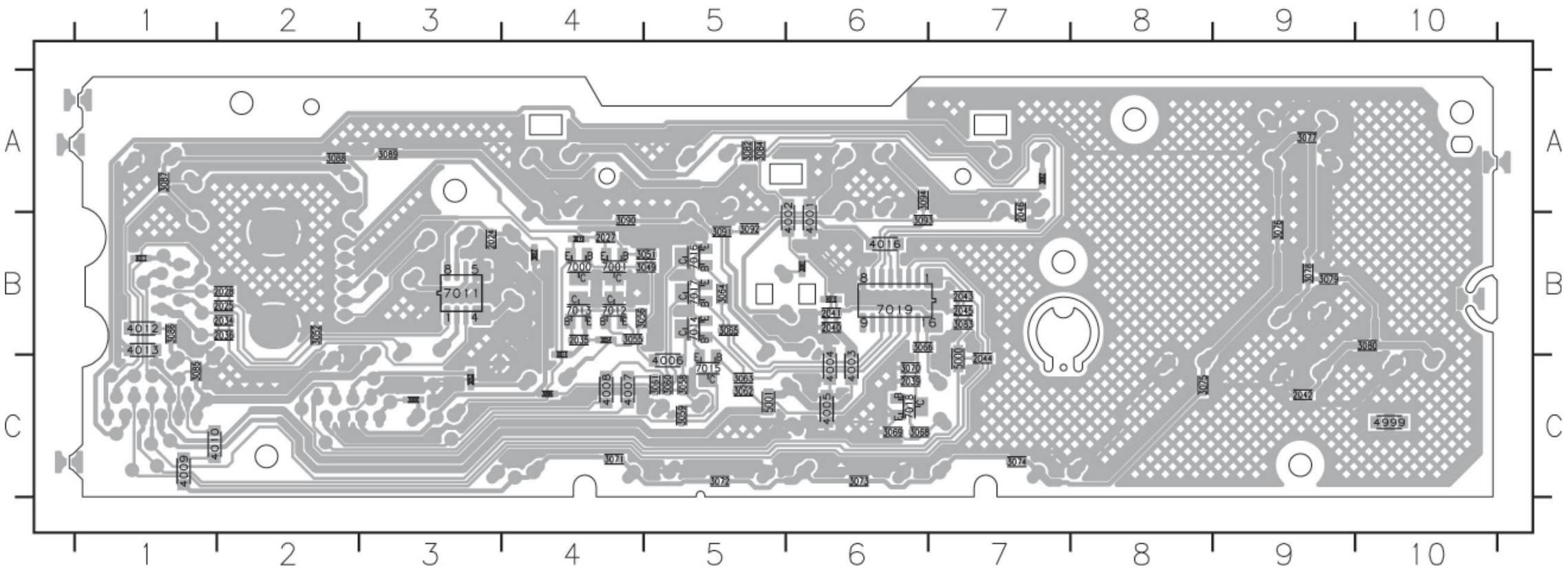
CONTROL BOARD - COMPONENT LAYOUT



5-3

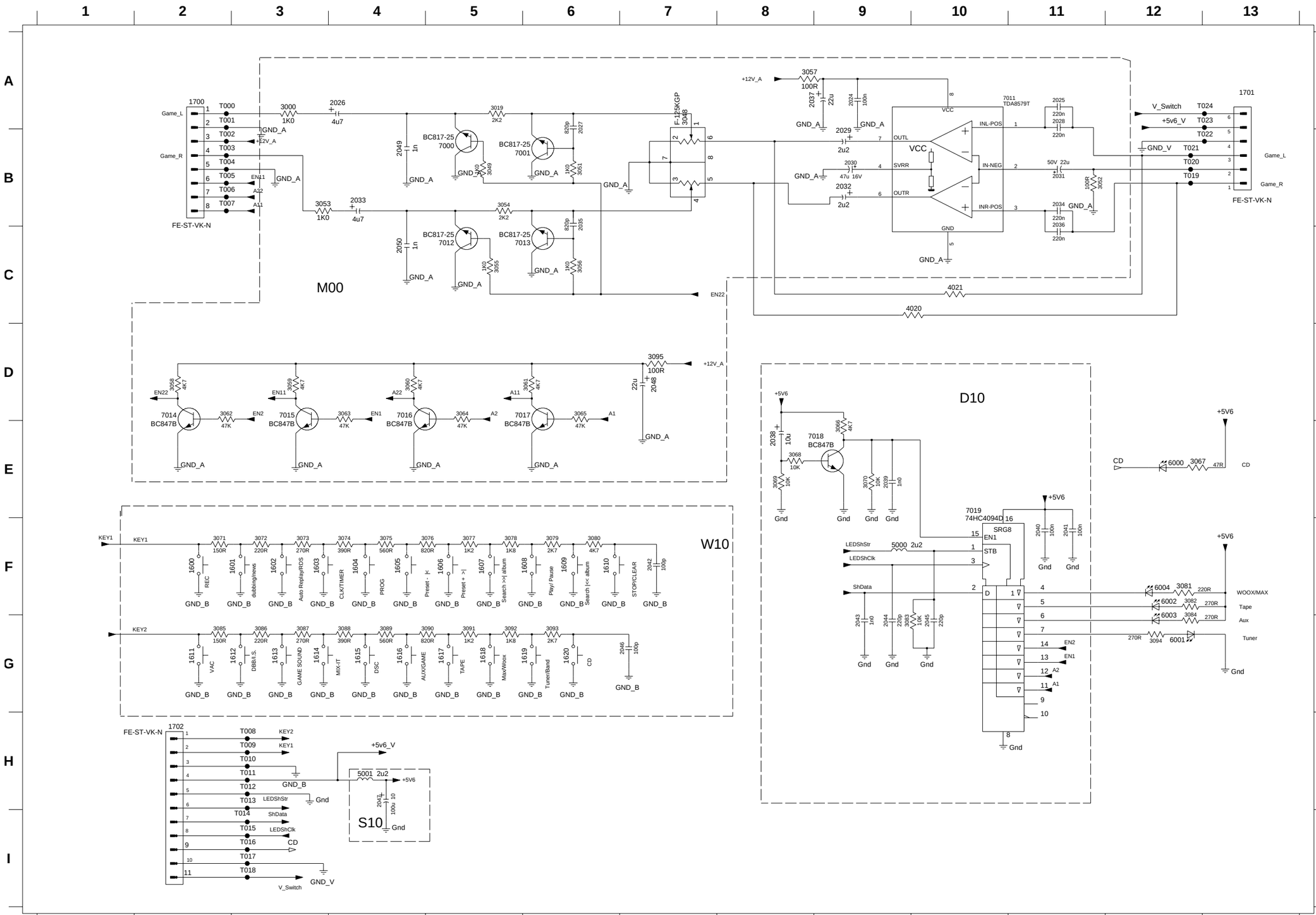
CONTROL BOARD - CHIP LAYOUT

2024 B3	2039 C6	2046 B7	3054 B4	3061 C5	3068 C6	3075 C8	3082 A5	3089 A3	4001 B6	4008 C4	4015 B6	7011 B3	7018 C6
2025 B2	2040 B6	3000 C3	3055 B4	3062 C5	3069 C6	3076 B9	3083 B7	3090 B4	4002 B5	4009 C1	4016 B6	7012 B5	7019 B7
2027 B4	2041 B6	3019 B4	3056 B4	3063 C5	3070 C6	3077 A9	3084 A5	3091 B5	4003 C6	4010 C2	4999 C10	7013 B4	
2028 B2	2042 C9	3049 B5	3057 B4	3064 B5	3071 C4	3078 B9	3085 C1	3092 B5	4004 C6	4011 B1	5000 C7	7014 B5	
2034 B2	2043 B7	3051 B5	3058 C5	3065 B5	3072 C5	3079 B9	3086 B1	3093 B6	4005 C6	4012 B1	5001 C5	7015 C5	
2035 B4	2044 C7	3052 B2	3059 C5	3066 B6	3073 C6	3080 B10	3087 A1	3094 A6	4006 C4	4013 B1	7000 B4	7016 B5	
2036 B2	2045 B7	3053 C3	3060 C5	3067 A7	3074 C7	3081 B6	3088 A2	3095 C4	4007 C4	4014 B4	7001 B5	7017 B5	



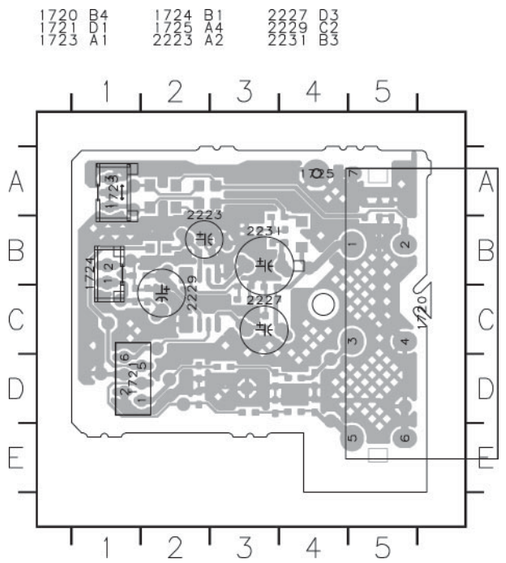
5-4

CONTROL BOARD - CIRCUIT DIAGRAM

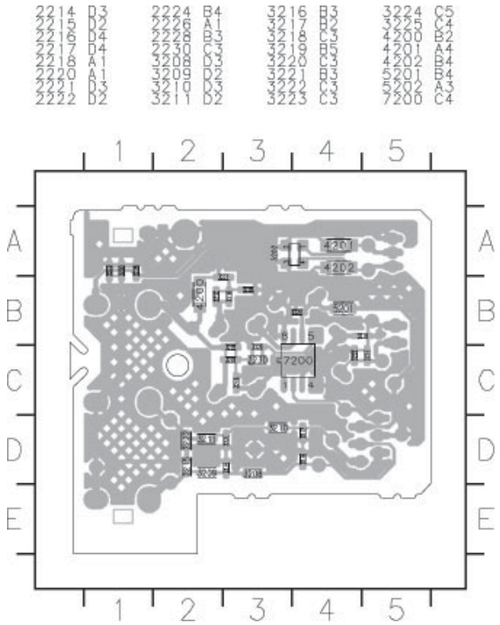


1600 F2	6003 G12
1601 F2	6004 F12
1602 F3	7000 B5
1603 F3	7001 B6
1604 F4	7011 A10
1605 F4	7012 C5
1606 F5	7013 C6
1607 F5	7014 D2
1608 F5	7015 D3
1609 F6	7016 D4
1610 F6	7017 D6
1611 G2	7018 E8
1612 G2	7019 E10
1613 G3	T000 A2
1614 G3	T001 A2
1615 G4	T002 B2
1616 G4	T003 B2
1617 G5	T004 B2
1618 G5	T005 B2
1619 G5	T006 B2
1620 G6	T007 B2
1700 A2	T008 H3
1701 A13	T009 H3
1702 H2	T010 H3
2024 A9	T011 H3
2025 A11	T012 H3
2026 A4	T013 H3
2027 A6	T014 I3
2028 A11	T015 I3
2029 B9	T016 I3
2030 B9	T017 I3
2031 B11	T018 I3
2032 B9	T019 B12
2033 B4	T020 B12
2034 B11	T021 B12
2035 B6	T022 B13
2036 C11	T023 A13
2037 A9	T024 A13
2038 E8	
2039 E9	
2040 F11	
2041 F11	
2042 F7	
2043 G9	
2044 G9	
2045 G10	
2046 G7	
2047 H4	
2048 D7	
2049 B4	
2050 C4	
3000 A3	
3019 A5	
3048 A7	
3049 B5	
3051 B6	
3052 B11	
3053 B3	
3054 B5	
3055 C5	
3056 C6	
3057 A8	
3058 D2	
3059 D3	
3060 D4	
3061 D6	
3062 D2	
3063 D4	
3064 D5	
3065 D6	
3066 E9	
3067 E12	
3068 E8	
3069 E8	
3070 E9	
3071 F2	
3072 F3	
3073 F3	
3074 F4	
3075 F4	
3076 F5	
3077 F5	
3078 F5	
3079 F6	
3080 F6	
3081 F12	
3082 F12	
3083 G9	
3084 G12	
3085 G2	
3086 G3	
3087 G3	
3088 G4	
3089 G4	
3090 G5	
3091 G5	
3092 G5	
3093 G6	
3094 G12	
3095 D7	
3096 B4	
3097 C4	
4020 C10	
4021 C10	
5000 F9	
5001 H4	
6000 E12	
6001 G12	
6002 F12	

GAME PORT BOARD - COMPONENT LAYOUT

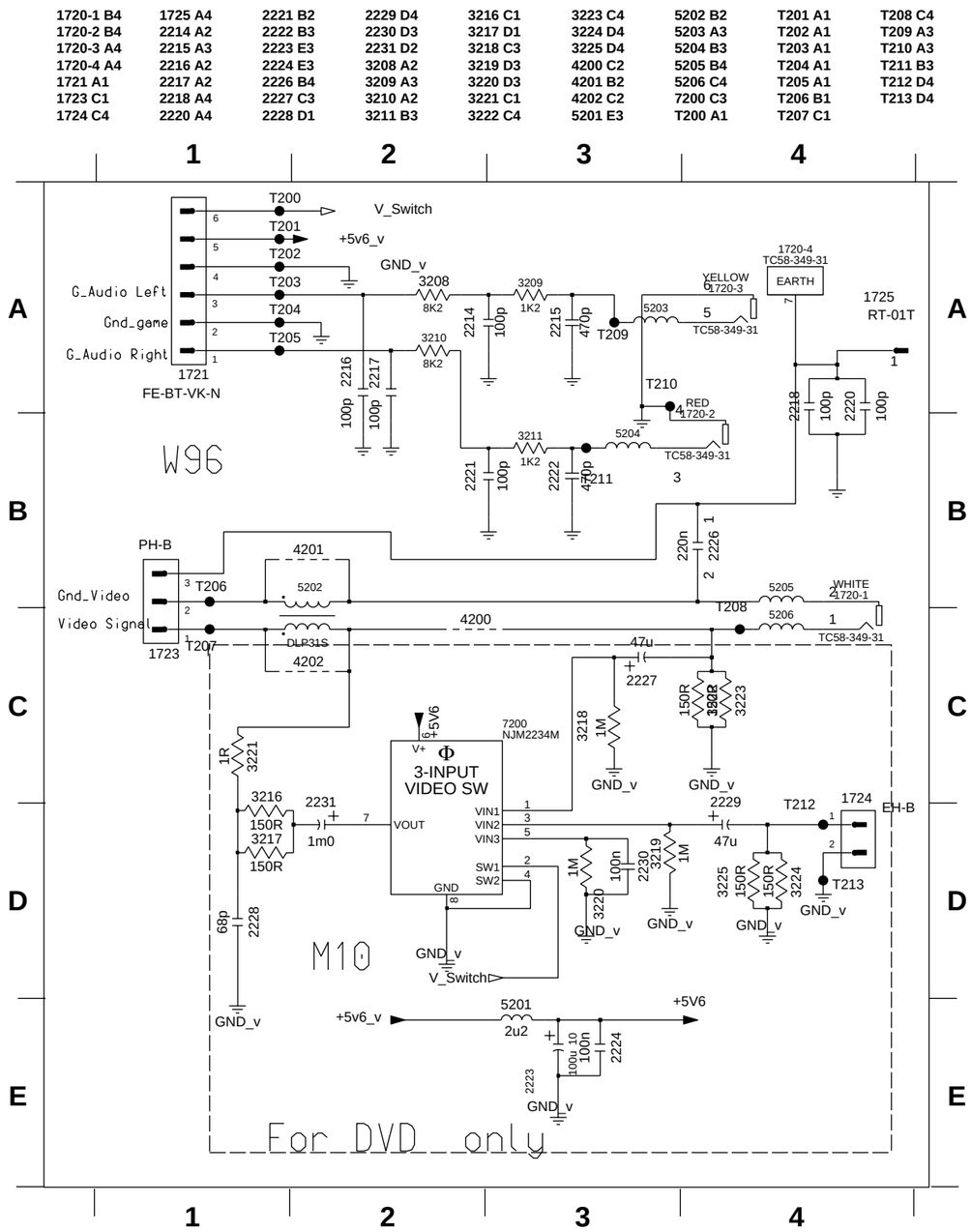


GAME PORT BOARD - CHIP LAYOUT



GAME PORT BOARD - CIRCUIT DIAGRAM

1720-1 B4	1725 A4	2221 B2	2229 D4	3216 C1	3223 C4	5202 B2	T201 A1	T208 C4
1720-2 B4	2214 A2	2222 B3	2230 D3	3217 D1	3224 D4	5203 A3	T202 A1	T209 A3
1720-3 A4	2215 A3	2223 E3	2231 D2	3218 C3	3225 D4	5204 B3	T203 A1	T210 A3
1720-4 A4	2216 A2	2224 E3	3208 A2	3219 D3	4200 C2	5205 B4	T204 A1	T211 B3
1721 A1	2217 A2	2226 B4	3209 A3	3220 D3	4201 B2	5206 C4	T205 A1	T212 D4
1723 C1	2218 A4	2227 C3	3210 A2	3221 C1	4202 C2	7200 C3	T206 B1	T213 D4
1724 C4	2220 A4	2228 D1	3211 B3	3222 C4	5201 E3	T200 A1	T207 C1	



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ELECTRICAL PARTSLIST - FRONT CONTROL BOARD

1600	4822 276 13775	SWITCH
1601	4822 276 13775	SWITCH
1602	4822 276 13775	SWITCH
1603	4822 276 13775	SWITCH
1604	4822 276 13775	SWITCH
1605	4822 276 13775	SWITCH
1606	4822 276 13775	SWITCH
1607	4822 276 13775	SWITCH
1608	4822 276 13775	SWITCH
1609	4822 276 13775	SWITCH
1610	4822 276 13775	SWITCH
1611	4822 276 13775	SWITCH
1612	4822 276 13775	SWITCH
1613	4822 276 13775	SWITCH
1614	4822 276 13775	SWITCH
1615	4822 276 13775	SWITCH
1616	4822 276 13775	SWITCH
1617	4822 276 13775	SWITCH
1618	4822 276 13775	SWITCH
1619	4822 276 13775	SWITCH
1620	4822 276 13775	SWITCH
1631	4822 276 13775	SWITCH
1632	4822 276 13775	SWITCH
1633	4822 276 13775	SWITCH
1634	4822 276 13775	SWITCH
1635	4822 276 13775	SWITCH
1720	2422 026 05625	SOC CINCH H 3P
3048	2122 400 00002	POTM CAR LIN 20KX2
6004	9322 172 75676	LED
7019	4822 209 15449	IC 74HC4094D

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

FRONT DISPLAY BOARD

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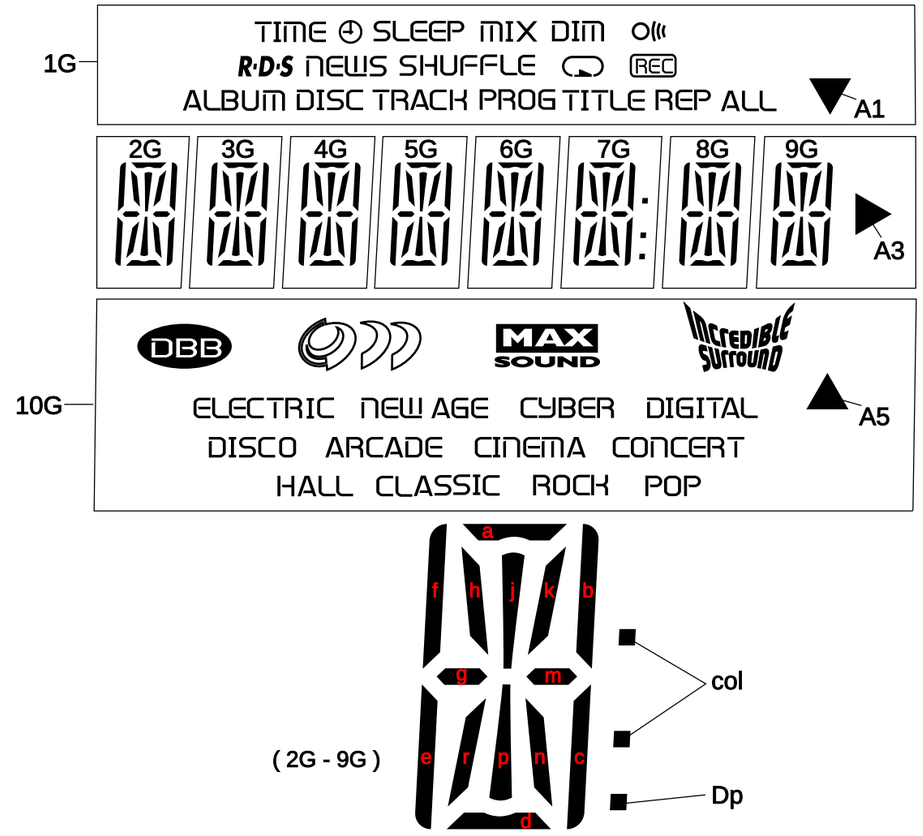
FTD DISPLAY PIN CONNECTION



	1G	2G	3G	4G	5G	6G	7G	8G	9G	10G
P1	TIME	a	a	a	a	a	a	a	a	DBB
P2	◷	h	h	h	h	h	h	h	h	
P3	SLEEP	j , p	j , p	j , p	j , p	j , p	j , p	j , p	j , p	(Left)
P4	MIX	k	k	k	k	k	k	k	k	(Right)
P5	DIM	b	b	b	b	b	b	b	b	MAX SOUND
P6		f	f	f	f	f	f	f	f	INCREDIBLE SURROUND
P7	R·D·S	m	m	m	m	m	m	m	m	ELECTRIC
P8	NEWS	g	g	g	g	g	g	g	g	NEW AGE
P9	SHUFFLE	c	c	c	c	c	c	c	c	CYBER
P10		e	e	e	e	e	e	e	e	DIGITAL
P11	REC	r	r	r	r	r	r	r	r	DISCO
P12	ALBUM	n	n	n	n	n	n	n	n	ARCADE
P13	DISC	d	d	d	d	d	d	d	d	CINEMA
P14	TRACK	-	-	-	-	-	col	-	-	CONCERT
P15	PROG	-	-	-	-	-	Dp	-	-	HALL
P16	TITLE	-	-	-	-	-	-	-	-	CLASSIC
P17	REP	-	-	-	-	-	-	-	-	ROCK
P18	ALL	-	-	-	-	-	-	-	-	POP
P19	▼	-	-	-	-	-	-	-	-	▲

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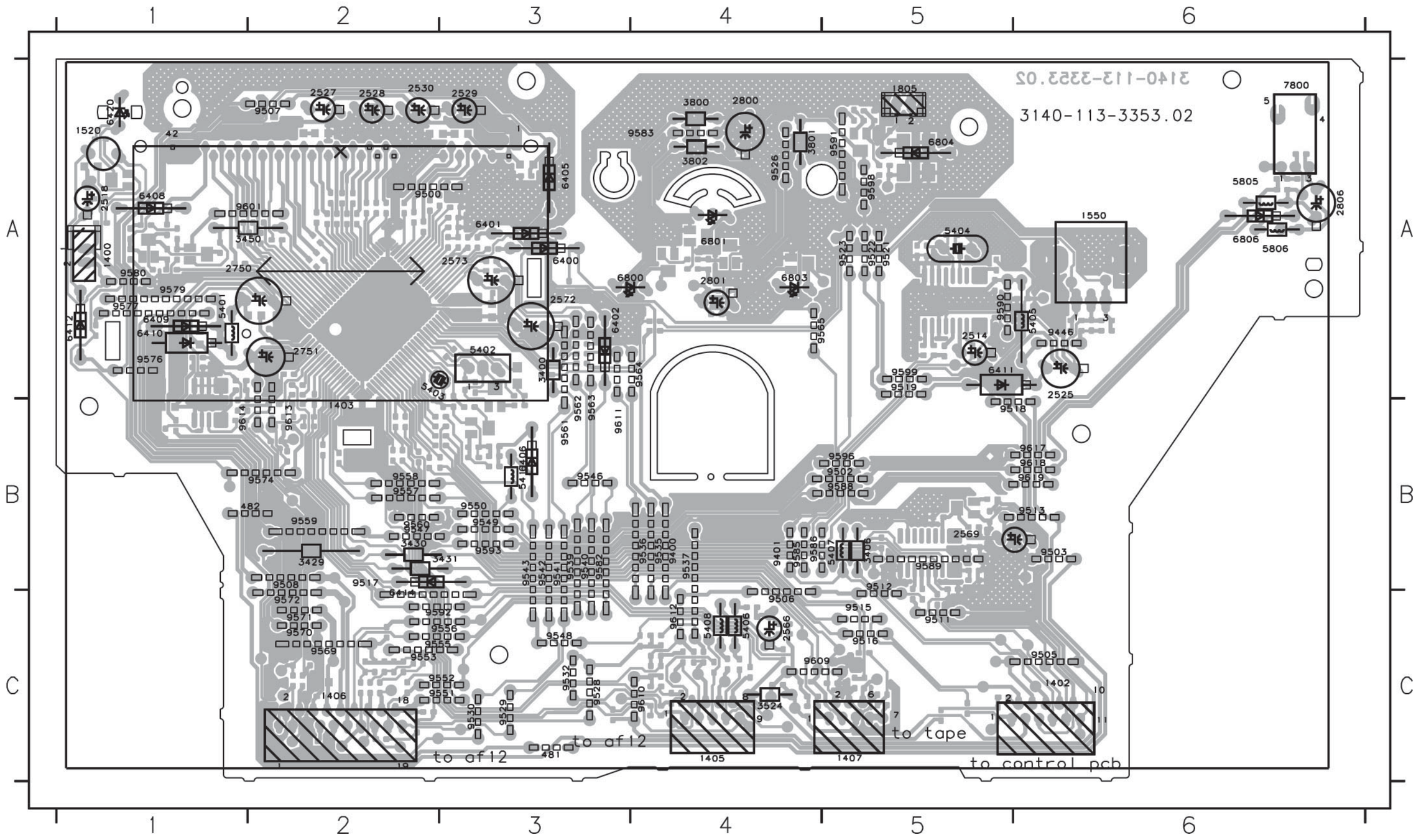
DISPLAY BOARD - COMPONENT LAYOUT

1400 A1	2514 A5	2572 A3	3429 B2	5402 A3	6400 A3	6412 A1	9400 B4	9508 B2	9522 A5	9537 B4	9549 B3	9559 B2	9571 C2	9585 B4	9598 A5	9617 B6
1402 C6	2518 A1	2573 A3	3430 B2	5403 A2	6401 A3	6414 C2	9401 B4	9511 C5	9523 A5	9539 B3	9550 B3	9560 B2	9572 C2	9586 B4	9599 A5	
1403 B2	2525 A6	2750 A1	3431 B3	5404 A5	6402 A3	6420 A1	9446 A6	9512 B5	9526 A4	9540 B3	9551 C3	9561 B3	9574 B2	9588 B5	9601 A2	
1405 C4	2527 A2	2751 A2	3450 A2	5405 A6	6405 A3	6800 A3	9500 A2	9513 B6	9528 C3	9541 B3	9552 C3	9562 B3	9576 A1	9589 B5	9609 C4	
1406 C2	2528 A2	2800 A4	3524 C4	5406 C4	6406 B3	6801 A4	9502 B5	9515 C5	9529 C3	9542 B3	9553 C2	9563 B3	9577 A1	9590 A5	9610 C4	
1407 C5	2529 A3	2801 A4	3800 A4	5407 B5	6408 A1	6803 A4	9503 B6	9516 C5	9530 C3	9543 B3	9555 C2	9564 A4	9579 A1	9591 A5	9611 B3	
1520 A1	2530 A2	2806 A6	3801 A4	5408 C4	6409 A1	6804 A5	9505 C6	9518 B5	9532 C3	9546 B3	9556 C3	9565 A4	9580 A1	9592 C2	9612 C4	
1550 A6	2566 C4	3400 A3	3802 A4	5805 A6	6410 A1	6806 A6	9506 C4	9519 A5	9535 B4	9547 B2	9557 B2	9569 C2	9582 B3	9593 B3	9613 B2	
1805 A5	2569 B5	3406 B5	5401 A1	5806 A6	6411 A5	7800 A6	9507 A2	9521 A5	9536 B4	9548 C3	9558 B2	9570 C2	9583 A4	9596 B5	9614 B1	



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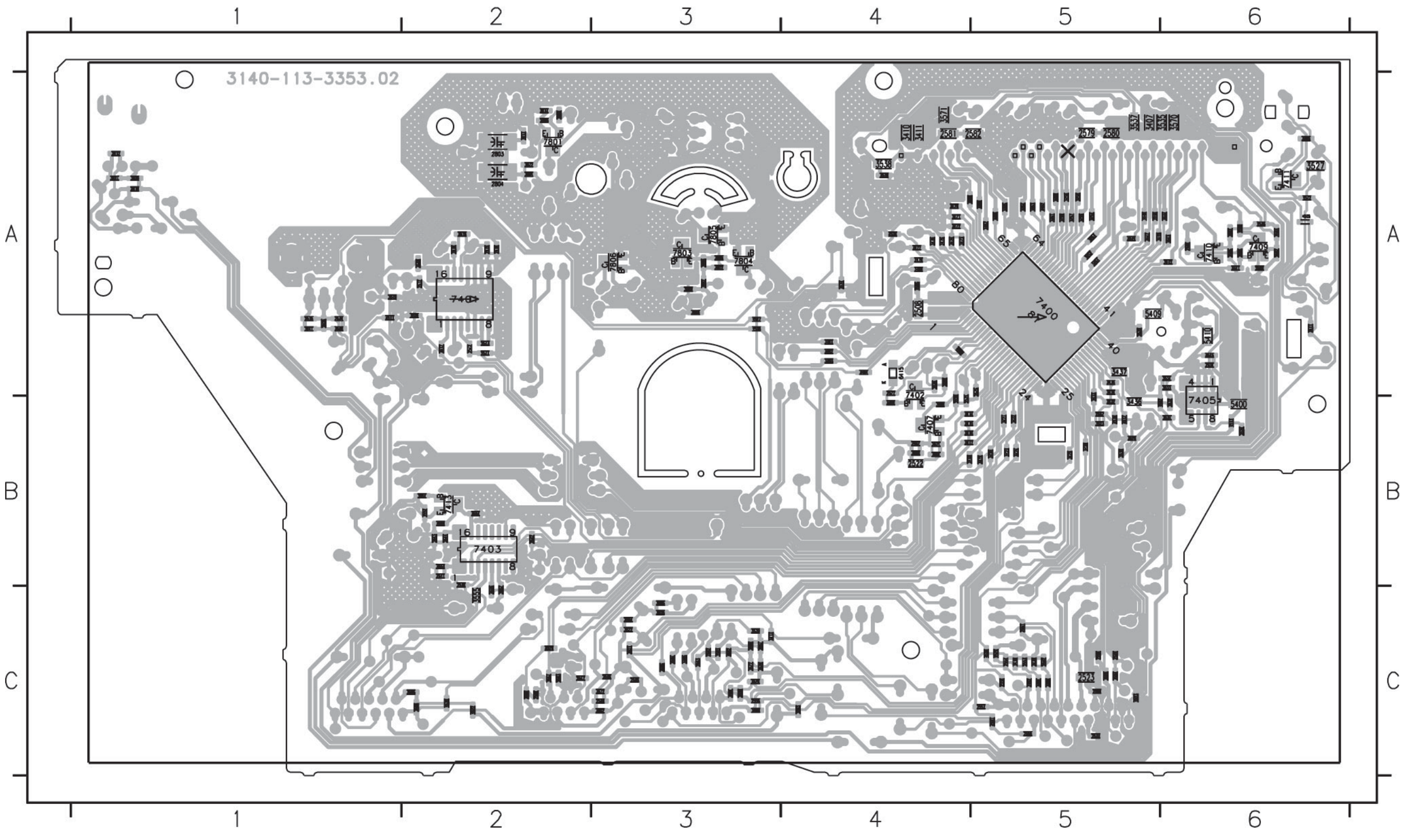
DISPLAY BOARD - CHIP LAYOUT

2504 A6	2524 B6	2550 C5	2567 B5	2589 A6	3413 C3	3433 B5	3449 A5	3465 A5	3485 A6	3522 C3	3541 A1	3570 A6	3590 B4	3821 A1	4520 C5	7401 A2
2505 A6	2526 A1	2551 C5	2568 A4	2803 A2	3414 B4	3434 A5	3451 A5	3466 A5	3490 C5	3523 B5	3550 B2	3571 A4	3591 B4	3822 A3	4522 C2	7402 A4
2506 A6	2531 A6	2552 C5	2574 B4	2804 A2	3415 B4	3435 A5	3452 A5	3467 A5	3491 C5	3526 C3	3551 B2	3572 C3	3595 C2	4500 A4	4523 C5	7403 B2
2507 A6	2534 A1	2553 C5	2575 A5	2808 A2	3416 B4	3436 B5	3453 A5	3468 A5	3492 C5	3527 A6	3552 B2	3574 A4	3596 C2	4501 C5	4525 A6	7405 B6
2508 A4	2535 A1	2554 C5	2576 A4	2810 A1	3417 B4	3437 A5	3454 A5	3469 A4	3502 A6	3529 B5	3553 B2	3576 C3	3804 A2	4502 B6	4526 A4	7407 B4
2511 A2	2536 B2	2555 C5	2577 A4	2812 A1	3418 B4	3438 C5	3455 A5	3470 A4	3503 A6	3530 B5	3554 B2	3577 C3	3805 A3	4505 A4	4527 A3	7409 A6
2512 A2	2541 B2	2556 C5	2578 A5	3401 A4	3419 B5	3439 C5	3456 A5	3471 A4	3505 C3	3531 A6	3555 C2	3578 C3	3806 A3	4509 A6	4528 A3	7410 A6
2513 A2	2542 B2	2557 C5	2579 A5	3402 A4	3420 B5	3441 A6	3457 A5	3472 A4	3511 A6	3532 B6	3556 C2	3579 C3	3807 A3	4511 A1	4529 C2	7411 A6
2515 A2	2543 B2	2558 C3	2580 A5	3403 A4	3421 B5	3442 A6	3458 A5	3473 A4	3515 A2	3533 A6	3557 C2	3580 C3	3808 A3	4512 A6	4530 C2	7413 B2
2516 A2	2544 B2	2559 C3	2581 A4	3404 A4	3422 B5	3443 A6	3459 A5	3474 A4	3516 A2	3534 B6	3560 C2	3581 C3	3809 A3	4513 B6	5400 B6	7801 A2
2517 A2	2545 C3	2560 C3	2582 A5	3405 C3	3423 B5	3444 A6	3460 A5	3475 A4	3517 A2	3535 A6	3561 C2	3582 C3	3810 A2	4515 A6	5409 A5	7803 A3
2520 B4	2546 C3	2561 C3	2583 C2	3407 A5	3424 B5	3445 A5	3461 A5	3476 A4	3518 A2	3537 A5	3562 C3	3583 C3	3812 A2	4516 A6	5410 A6	7804 A3
2521 B4	2547 C2	2562 C3	2584 C2	3409 B4	3425 B5	3446 A5	3462 A5	3477 A4	3519 A1	3538 A4	3563 C4	3584 C3	3813 A2	4517 B5	5411 B4	7805 A3
2522 B4	2548 C3	2563 C3	2587 B4	3410 A4	3428 B5	3447 A5	3463 A5	3479 A4	3520 A2	3539 A4	3564 C5	3585 C3	3814 A2	4518 B5	6415 A4	7806 A3
2523 C5	2549 C5	2564 C3	2588 C5	3411 A4	3432 B5	3448 A5	3464 A5	3480 A4	3521 C3	3540 A1	3565 C5	3589 B4	3820 A1	4519 C5	7400 A5	



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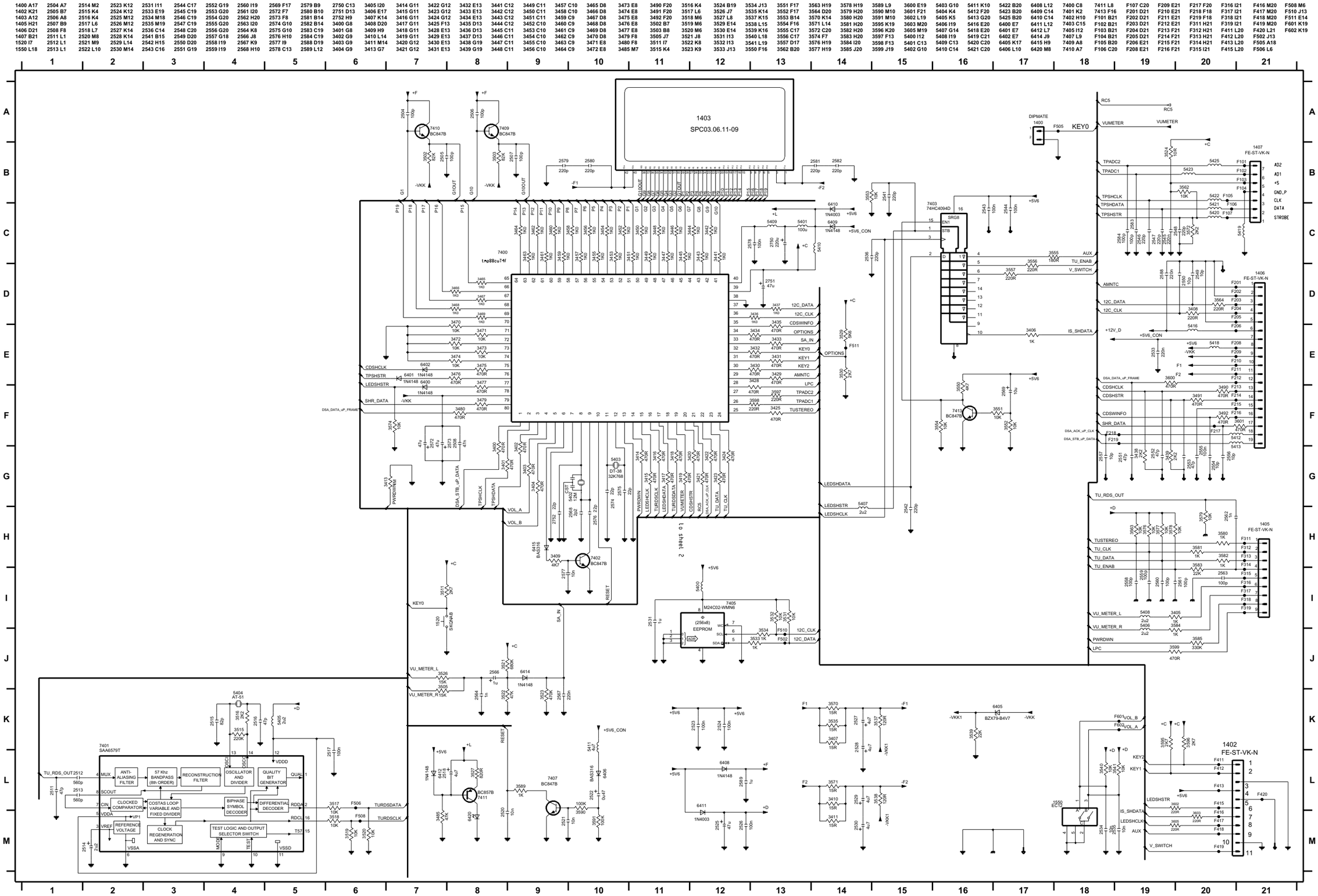
DISPLAY BOARD - CIRCUIT DIAGRAM 1



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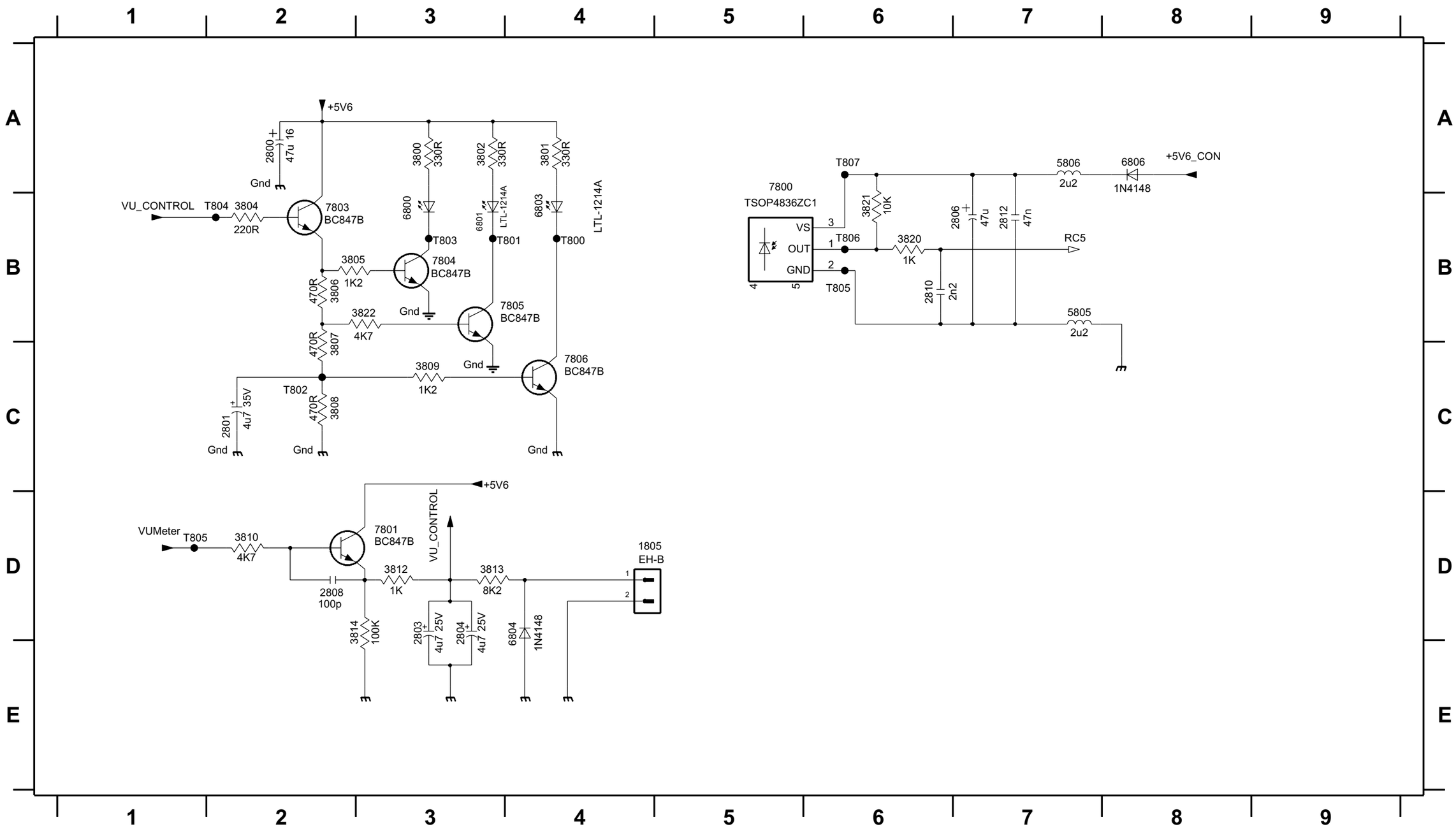
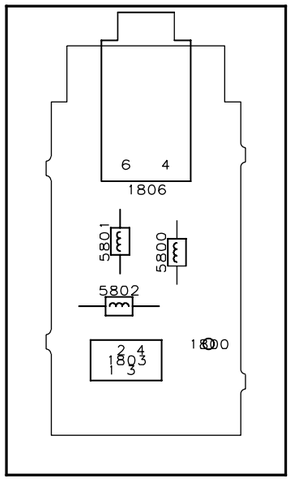
DISPLAY BOARD - CIRCUIT DIAGRAM 2

1805 D4	2803 D3	2808 D2	3800 A3	3804 B2	3807 C2	3810 D2	3814 D3	3822 B3	6800 B3	6804 D4	7801 D3	7805 B3	T801 B4	T804 B2	T806 B6
2800 A2	2804 D3	2810 B6	3801 A4	3805 B2	3808 C2	3812 D3	3820 B6	5805 B7	6801 B3	6806 A8	7803 B2	7806 C4	T802 C2	T805 D1	T807 A6
2801 C2	2806 B7	2812 B7	3802 A3	3806 B2	3809 C3	3813 D3	3821 B6	5806 A7	6803 B4	7800 A5	7804 B3	T800 B4	T803 B3	T805 B6	



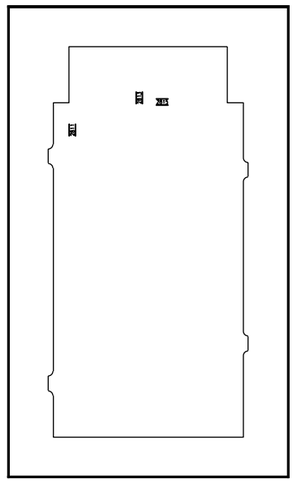
HEADPHONE BOARD - COMPONENT LAYOUT

1800 --
1803 --
1806 --
5800 --
5801 --
5802 --



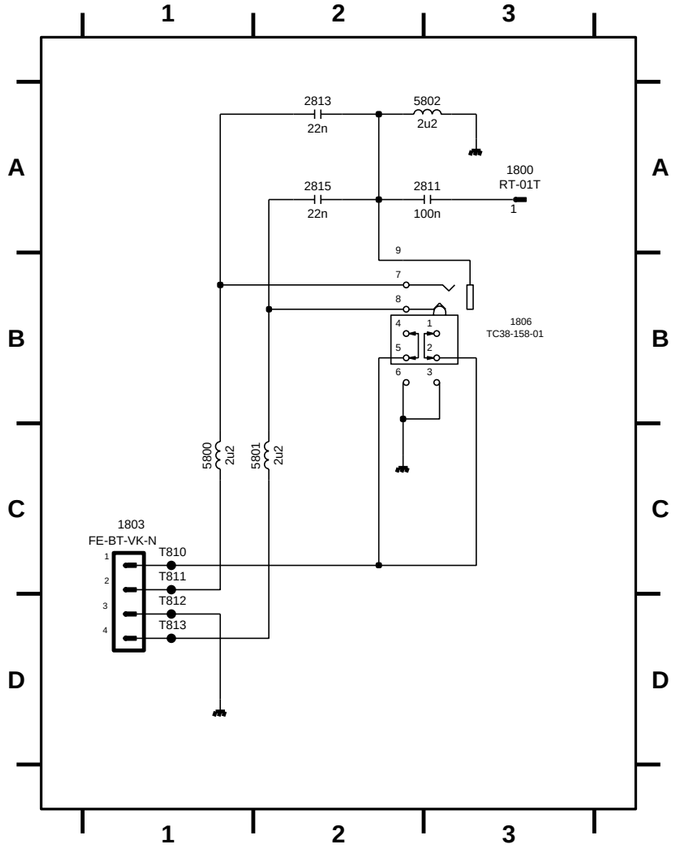
HEADPHONE BOARD - CHIP LAYOUT

2811 --
2813 --
2815 --



HEADPHONE BOARD - CIRCUIT DIAGRAM

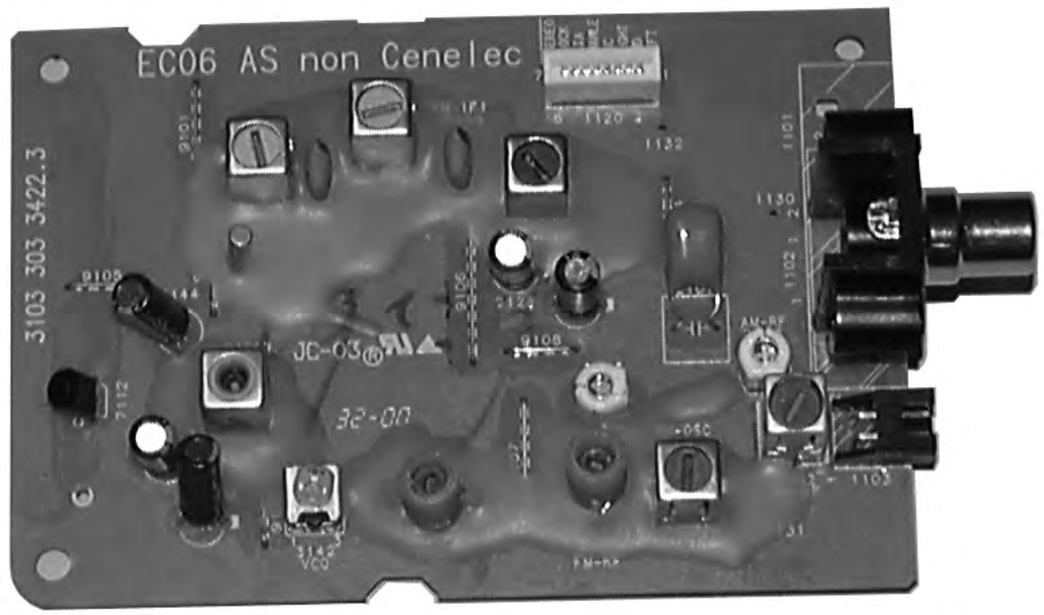
1800 A3 1806 B3 2813 A2 5800 C1 5802 A3 T811 C1 T813 D1
1803 C1 2811 A3 2815 A2 5801 C2 T810 C1 T812 D1



ELECTRICAL PARTSLIST - FRONT DISPLAY BOARD

1403	3140 118 51831	FTD (MINI 404)
1520	4822 276 13775	SWITCH
1550	2422 129 16708	ROT ENCODER 24P
6420	9322 167 73676	LED LTL-4221NLC-KA
6800	9322 172 75676	LED VS LTL-1CHKFK
6801	9322 172 75676	LED VS LTL-1CHKFK
6803	9322 167 73676	LED LTL-4221NLC-KA
7400	3141 070 50141	IC SM TMP88PU74YF
7401	4822 209 31981	IC SAA6579T
7403	4822 209 15449	IC 74HC4094D
7405	9322 145 26668	EEPROM M24C02-WMN6
7800	9322 185 95667	IR RECEIVER TSOP4836

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



ECO6 Tuner Board

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

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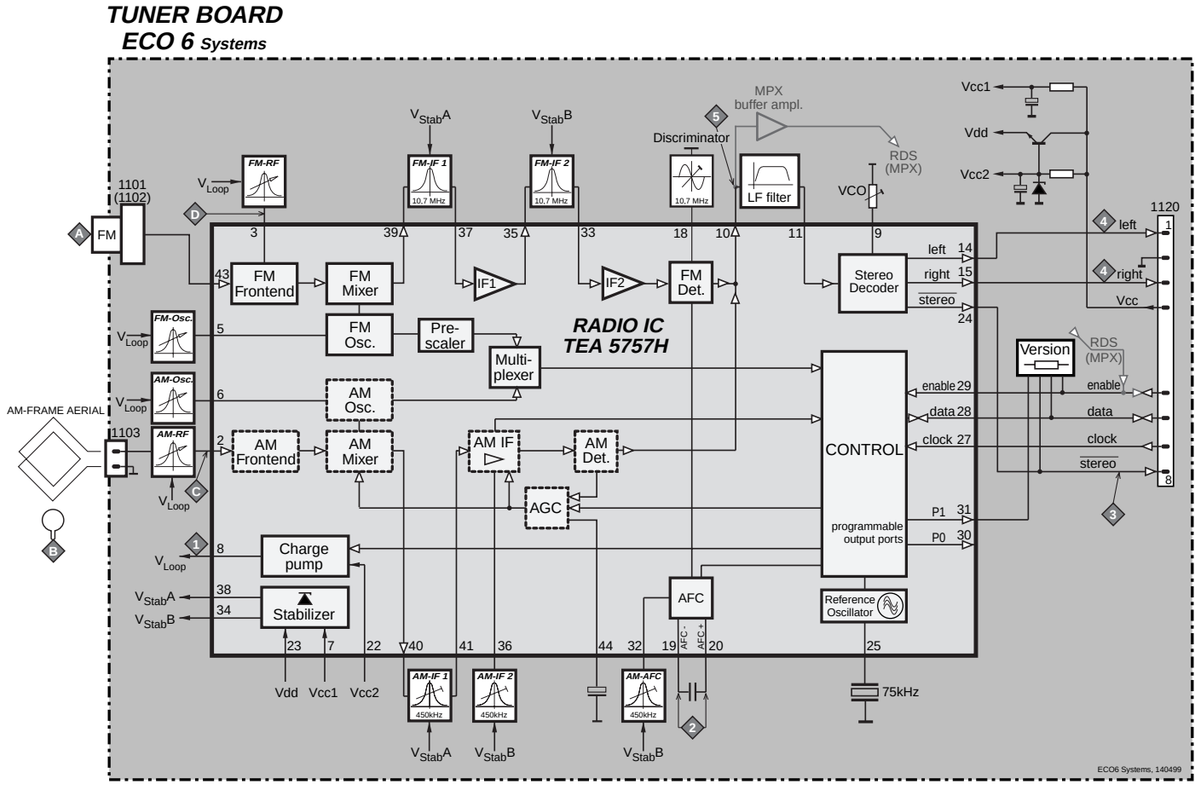
BLOCK DIAGRAM



7A-2

TUNER BOARD ECO6 / SYSTEMS NON 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	X	X	X
/17 FM/AM	X				
/06 FM-Japan/AM				X	

X component mounted

VERSION DETECTION

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

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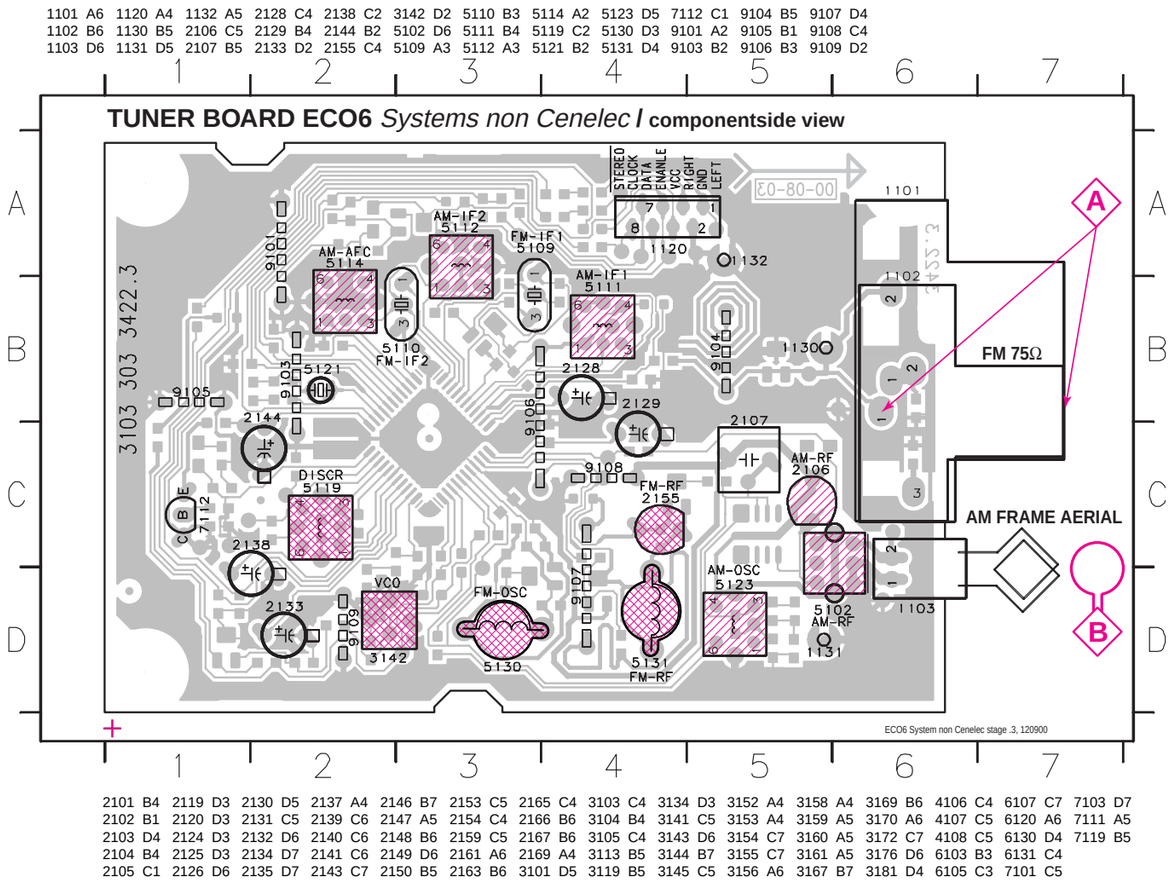
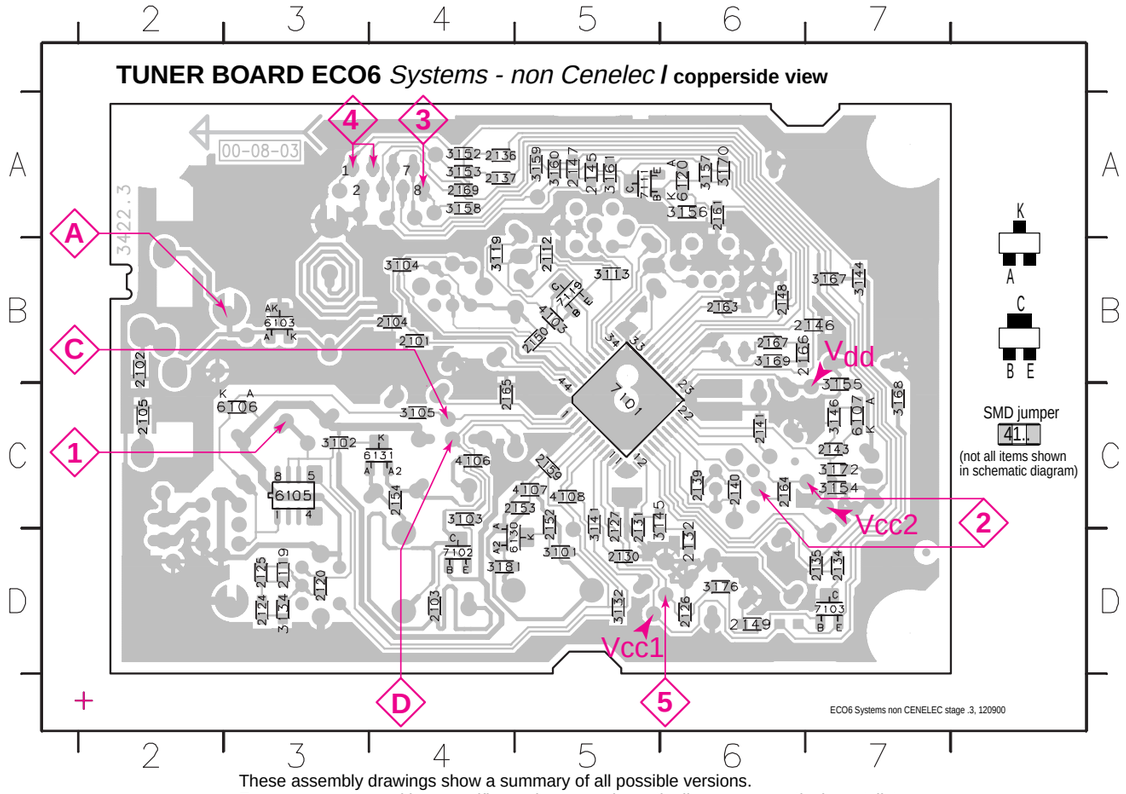




These assembly drawings show a summary of all possible versions.
For components used in a specific version see schematic diagram respectively partslist.

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	fo symmetric max.
			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	fo symmetric max.
	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

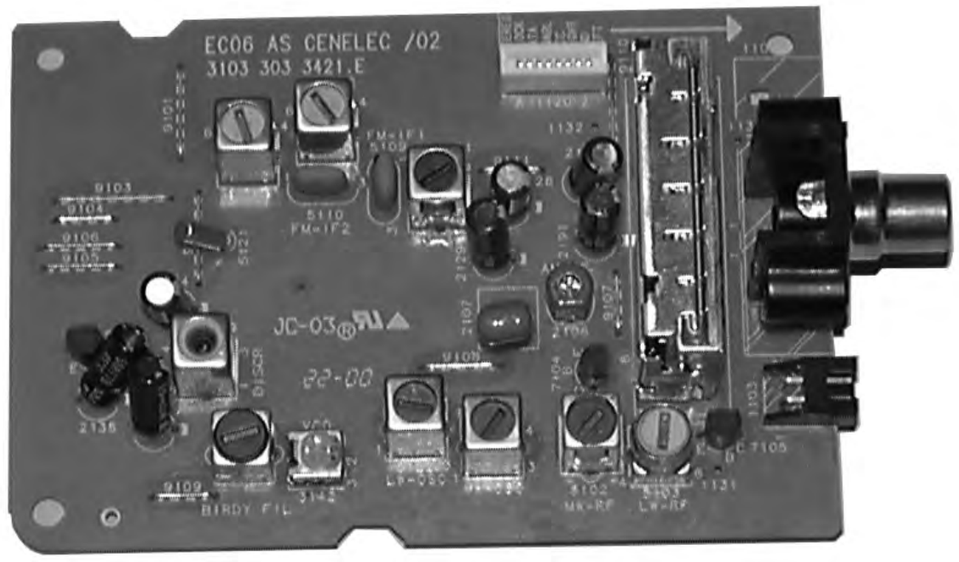
6103 ©	5322 130 34337	BAV99
6105 ©	4822 130 83075	HN1V02H
6106 ©	4822 130 83757	BAS216
6107 ©	9340 386 90115	BZX284-C11
6120 ©	4822 130 83757	BAS216
6130 ©	4822 130 82833	1SV228
6131 ©	4822 130 82833	1SV228

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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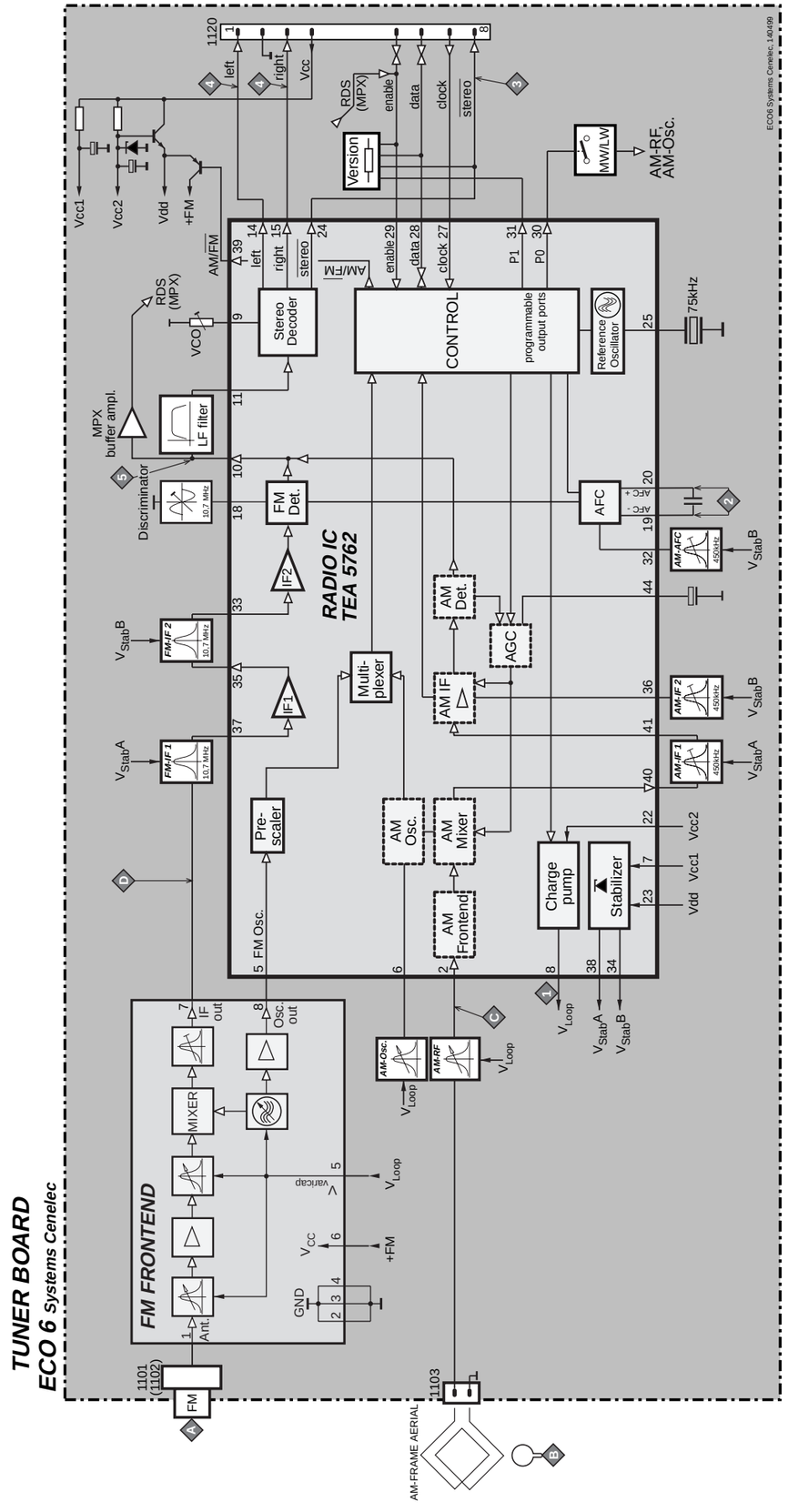
BLOCK DIAGRAM



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TUNER BOARD ECO6 / SYSTEMS-CENELEC

VERSION PROGRAMMING COMPONENTS

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

☒ component mounted

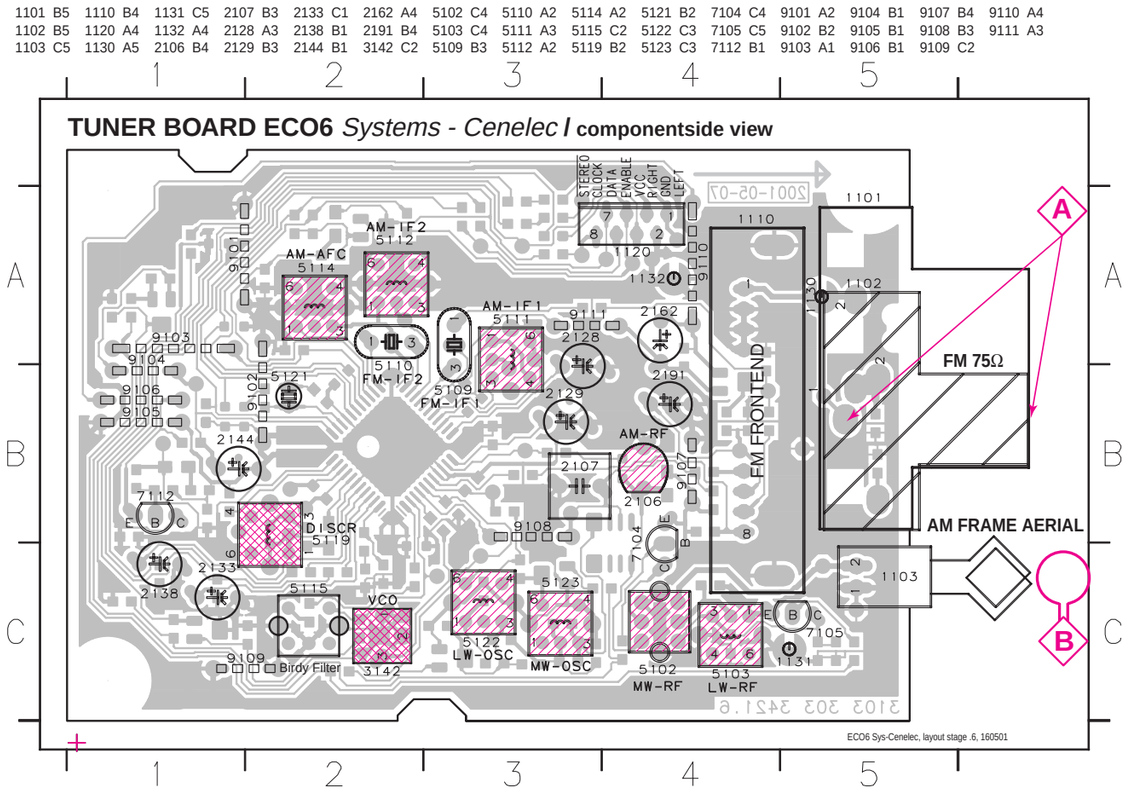
LEGEND

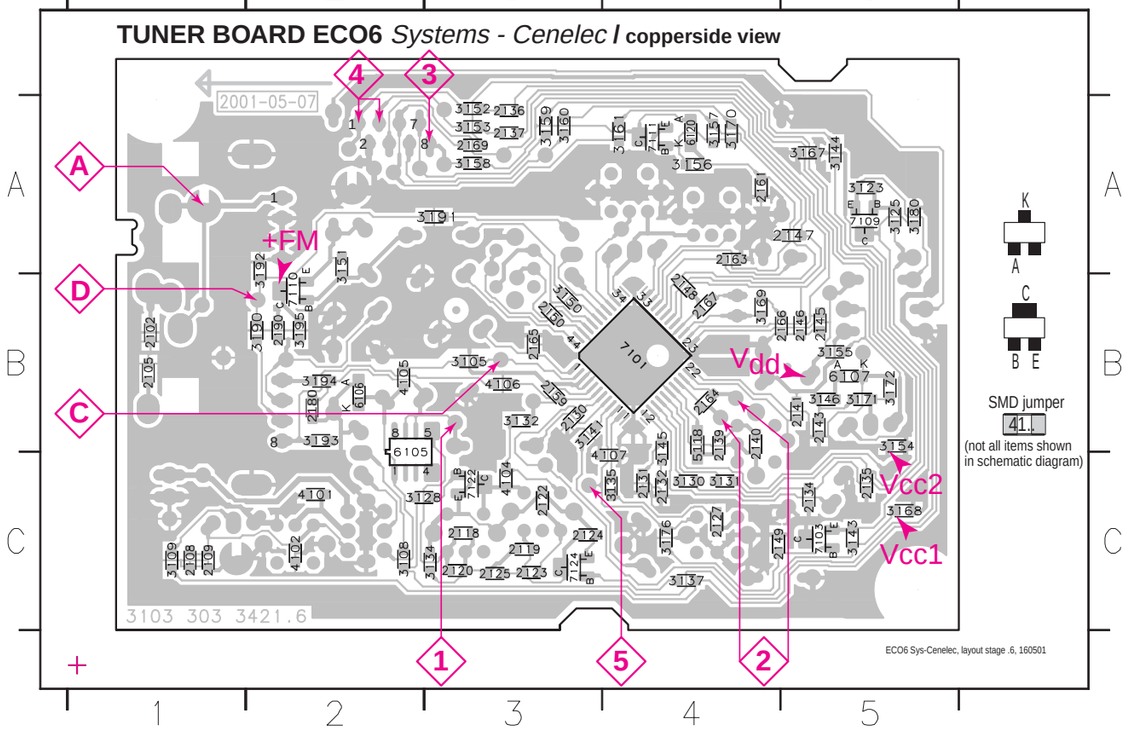
* ... only assembled in FM/AM-version
(p)...for provision only
USA ... for USA version only
LW ... for LW version only

SMD jumper 41xx 0R

...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 pin 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 pin 36 — 100nF — 220R	5111	5	max. symmetric f_o
			IC 7101 pin 40 — 100nF — 220R 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. symmetric f_o
	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

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MISCELLANEOUS

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

CAPACITORS

2102 ©	4822 126 13838	100nF	10%	50V	not USA
2105 ©	4822 126 13838	100nF	10%	50V	USA only
2106	2020 800 00204	TRIMCAP. 4,2 - 20pF, N750			LW only
2106	2020 800 00191	TRIMCAP. 3 - 11pF, N450			FM/AM only
2107	4822 121 51319	1µF	20%	50V	
2108 ©	5322 122 32531	100pF	5%	50V	LW only
2109 ©	5322 122 32448	10pF	5%	50V	LW only
2120 ©	4822 126 13689	18pF	1%	63V	FM/AM only
2120 ©	5322 122 32658	22pF	5%	50V	LW only
2122 ©	4822 122 33891	3,3nF	10%	63V	LW only
2123 ©	2020 552 93494	390pF	1%	50V	LW only
2124 ©	4822 122 33177	10nF	20%	50V	FM/AM only
2125 ©	2020 552 96199	560pF	1%	50V	
2127 ©	4822 126 14076	220nF	20%	25V	
2128	4822 124 40248	10µF	20%	63V	
2129	4822 124 41584	100µF	20%	10V	
2130 ©	5322 122 32654	22nF	10%	63V	
2131 ©	4822 126 13482	470nF	20%	16V	
2132 ©	4822 126 13482	470nF	20%	16V	
2133	4822 124 21913	1µF	20%	63V	
2134 ©	3198 017 31530	15nF	10%	50V	not USA
2134 ©	5322 122 32654	22nF	10%	63V	USA only
2135 ©	3198 017 31530	15nF	10%	50V	not USA
2135 ©	3198 017 32230	22nF	10%	25V	USA only
2136 ©	4822 126 14076	220nF	20%	25V	
2137 ©	4822 126 14076	220nF	20%	25V	
2138	4822 124 22652	2,2µF	20%	50V	
2139 ©	4822 126 14236	15pF	5%	50V	
2140 ©	4822 126 13695	82pF	1%	63V	
2141 ©	4822 126 13838	100nF	10%	50V	
2143 ©	4822 126 14076	220nF	20%	25V	
2144	4822 124 21913	1µF	20%	63V	
2145 ©	4822 122 33575	220pF	5%	50V	
2146 ©	4822 122 33575	220pF	5%	50V	
2147 ©	4822 122 33575	220pF	5%	50V	
2148 ©	4822 122 33127	2,2nF	10%	63V	
2149 ©	5322 122 32659	33pF	5%	50V	RDS only
2150 ©	4822 126 13838	100nF	10%	50V	
2159 ©	5322 122 31151	22µF	20%	50V	
2163 ©	4822 126 13838	100nF	10%	50V	LW only
2164 ©	4822 126 13482	470nF	20%	16V	
2165 ©	4822 126 13838	100nF	10%	50V	
2166 ©	5322 122 31647	1nF	10%	63V	
2167 ©	4822 122 33926	12pF	5%	50V	
2169 ©	4822 122 33127	2,2nF	10%	63V	RDS only
2180 ©	3198 017 31030	10nF	10%	50V	
2190 ©	4822 126 13838	100nF	10%	50V	
2191	4822 124 40178	100µF	20%	10V	

RESISTORS

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

RESISTORS

3128 ©	4822 117 11449	2,2kΩ	1%	0,1W	LW only
3130 ©	3198 021 38210	820Ω	5%	0,06W	
3131 ©	3198 021 38210	820Ω	5%	0,06W	
3132 ©	4822 051 20479	47Ω	5%	0,1W	
3134 ©	4822 051 20223	22kΩ	5%	0,1W	
3135 ©	3198 021 31020	1kΩ	5%	0,06W	
3137 ©	4822 051 20223	22kΩ	5%	0,1W	LW only
3141 ©	4822 117 11148	56kΩ	1%	0,1W	
3142	4822 100 12159	TRIMPOT. 100kΩ			
3143 ©	4822 051 20223	22kΩ	5%	0,1W	RDS only
3144 ©	4822 051 10102	1kΩ	2%	0,25W	RDS only
3145 ©	4822 117 11449	2,2kΩ	1%	0,1W	
3146 ©	4822 051 20229	22Ω	5%	0,1W	
3150 ©	4822 117 10833	10kΩ	1%	0,1W	
3151 ©	4822 051 20683	68kΩ	5%	0,1W	
3152 ©	4822 051 20471	470Ω	5%	0,1W	
3153 ©	4822 051 20471	470Ω	5%	0,1W	
3154 ©	4822 117 13577	330Ω	1%	0,1W	
3155 ©	4822 117 10353	150Ω	5%	0,1W	
3156 ©	4822 117 10837	100kΩ	1%	0,1W	
3157 ©	4822 117 10837	100kΩ	1%	0,1W	
3158 ©	4822 051 20471	470Ω	5%	0,1W	
3159 ©	4822 051 20471	470Ω	5%	0,1W	
3160 ©	4822 051 20471	470Ω	5%	0,1W	
3161 ©	4822 051 20223	22kΩ	5%	0,1W	
3167 ©	4822 051 20121	120Ω	5%	0,1W	
3168 ©	4822 051 20121	120Ω	5%	0,1W	
3169 ©	4822 051 20154	150kΩ	5%	0,1W	
3170 ©	4822 117 10837	100kΩ	1%	0,1W	
3171 ©	4822 117 10834	47kΩ	1%	0,1W	
3172 ©	4822 051 20562	5,6kΩ	5%	0,1W	
3176 ©	4822 051 20333	33kΩ	5%	0,1W	RDS only
3180 ©	4822 117 10833	10kΩ	1%	0,1W	LW only
3190 ©	4822 051 20121	120Ω	5%	0,1W	
3191 ©	4822 051 20121	120Ω	5%	0,1W	
3192 ©	4822 117 13577	330Ω	1%	0,1W	
3193 ©	4822 117 13577	330Ω	1%	0,1W	
3194 ©	4822 117 11449	2,2kΩ	1%	0,1W	
3195 ©	4822 051 20101	100Ω	5%	0,1W	
4101 ©	4822 051 20008	CHIP JUMPER 0805			FM/AM only
4102 ©	4822 051 20008	CHIP JUMPER 0805			FM/AM only
4104 ©	4822 051 20008	CHIP JUMPER 0805			FM/AM only
4105 ©	4822 051 20008	CHIP JUMPER 0805			
4106 ©	4822 051 20008	CHIP JUMPER 0805			
4107 ©	4822 051 20008	CHIP JUMPER 0805			

COILS

5102	4822 157 71634	RF-COIL MW	
5103	2422 549 44107	RF-COIL LW	LW only
5109	4822 157 71639	FM-IF FILTER 10,7MHz	
5110	4822 242 70665	FM-IF FILTER 10,7MHz	
5111	2422 549 44023	AM-IF FILTER 450kHz	
5112	4822 157 70302	AM-IF FILTER 450kHz	
5114	4822 157 70302	AM-IF FILTER 450kHz	
5115	4822 157 71636	ANTI BIRDY FILTER	
5118 ©	2422 535 95881	100nH	
5119	4822 157 11443	DISCRIMINATOR COIL	
5121	4822 242 10261	QUARTZ 75kHz	
5122	2422 549 44108	RF-COIL, LW-OSCILLATOR	LW only
5123	2422 549 44108	RF-COIL, MW-OSCILLATOR	

DIODES

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

TRANSISTORS

7103 ©	5322 130 42756	BC857C	RDS only
7104	9322 003 64676	TBC337-40	LW only
7105	9322 003 64676	TBC337-40	LW only
7109 ©	4822 130 60373	BC856B	LW only
7110 ©	4822 130 60373	BC856B	
7111 ©	5322 130 42755	BC847C	
7112	4822 130 44503	BC547C	
7122 ©	5322 130 42755	BC847C	LW only
7124 ©	5322 130 42755	BC847C	LW only

INTEGRATED CIRCUITS

7101	4822 209 90315	TEA5762H/V1, RADIO IC

PWR303
MODULE UCD 100-150W

Mains pt5 / Reg pt3 / Amp pt2 / Spk pt5 - 17 Nov 03

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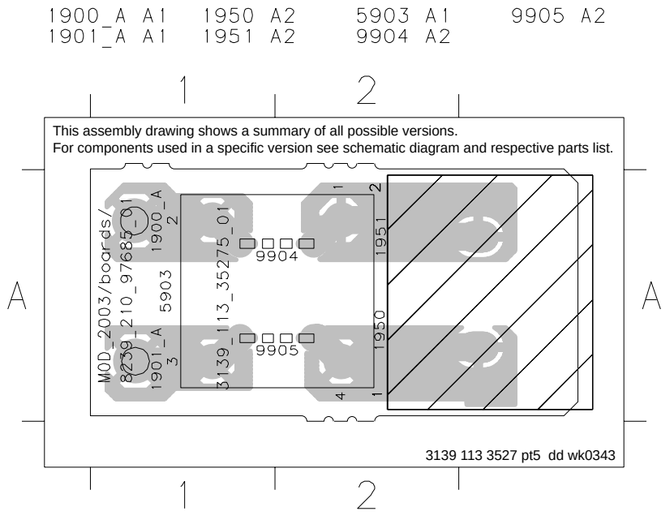
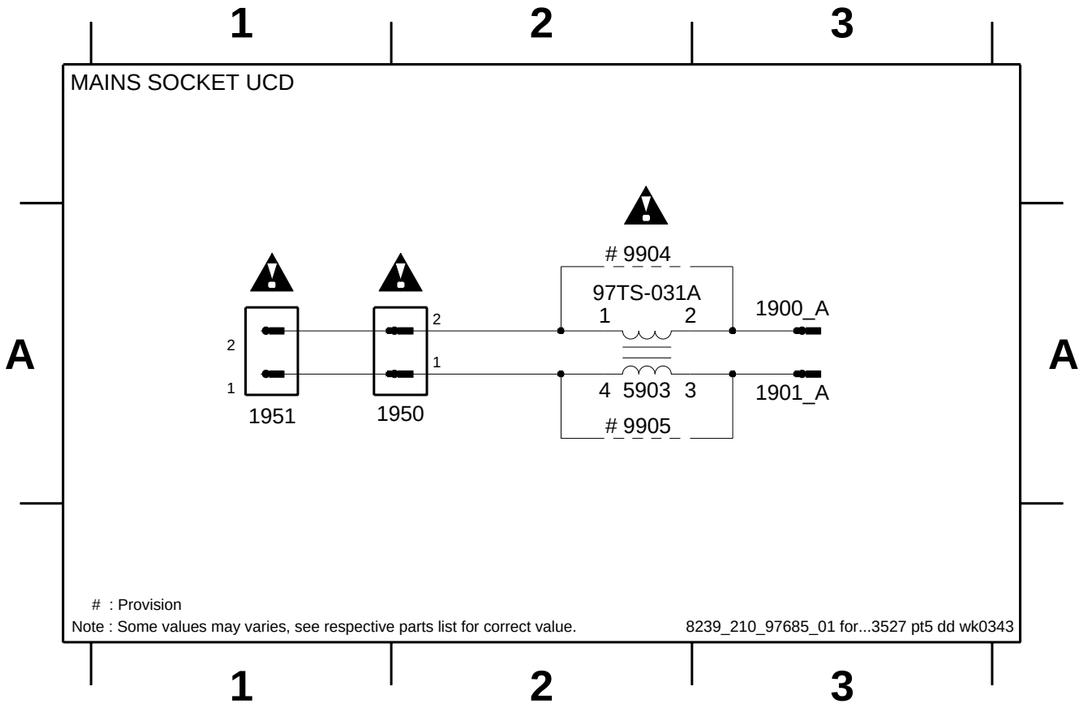
MAINS SOCKET UCD BOARD - COMPONENT LAYOUT



MAINS SOCKET UCD BOARD - CIRCUIT DIAGRAM

1900_A A3 1901_A A3 1950 A1 1951 A1 5903 A2 9904 A2 9905 A2



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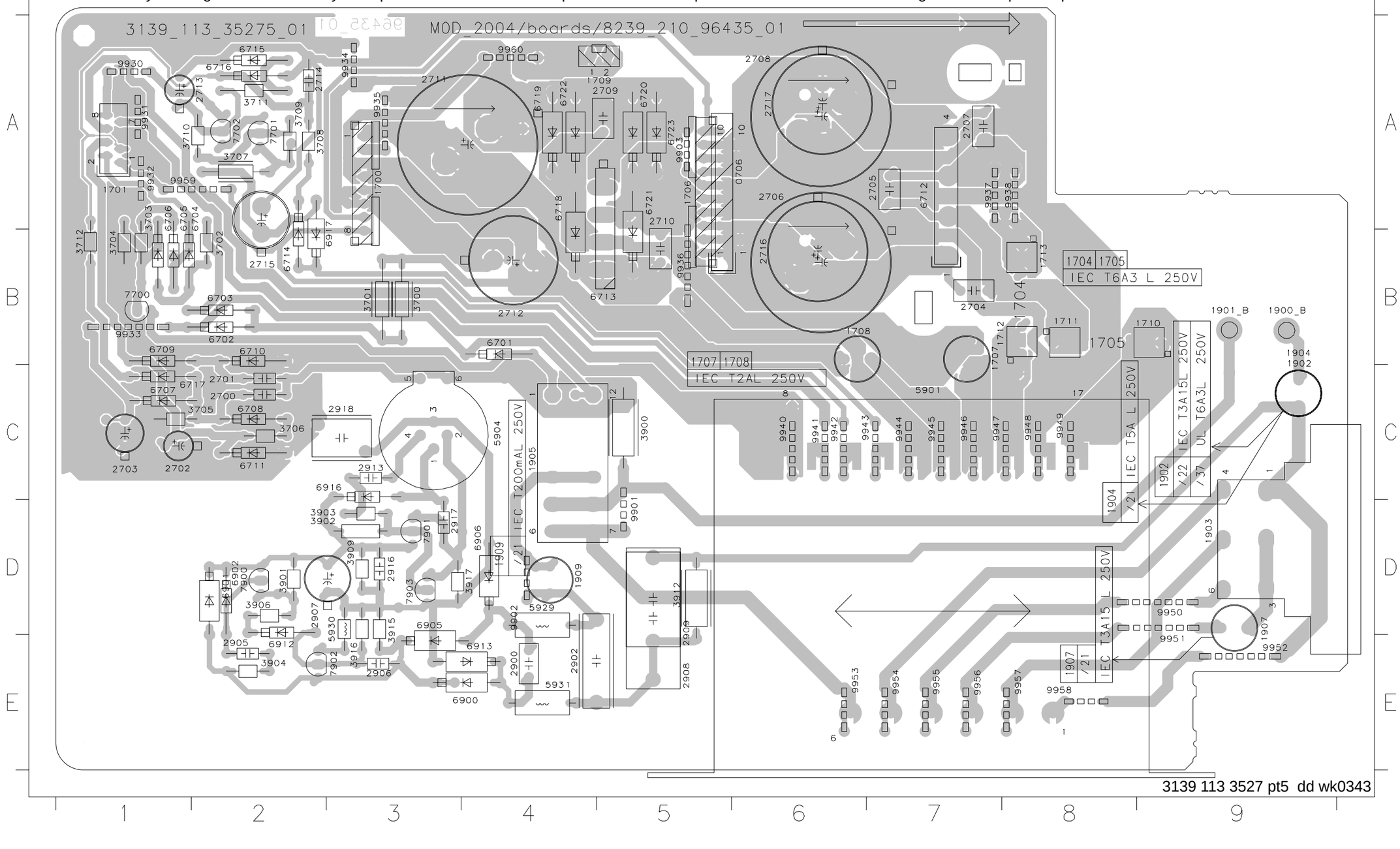
MAINS UCD BOARD - COMPONENT LAYOUT

0706 A6	1713 B8	2701 C2	2711 A3	2906 E3	3702 B2	3712 B1	3916 E3	6704 A2	6714 B2	6900 E4	7701 A2	9931 A1	9942 C6	9952 E9
1700 A3	1900_B B9	2702 C1	2712 B4	2907 D2	3703 A1	3900 C5	3917 D4	6705 A1	6715 A2	6901 D2	7702 A2	9932 A1	9943 C6	9953 E6
1701 A1	1901_B B9	2703 C1	2713 A2	2908 E5	3704 B1	3901 D2	5901 C7	6706 A1	6716 A2	6902 D2	7900 D2	9933 B1	9944 C7	9954 E7
1706 A5	1902_B9	2704 B7	2714 A2	2909 D5	3705 C2	3902 D2	5904 C4	6707 C1	6717 C2	6905 D3	7901 D3	9934 A3	9945 C7	9955 E7
1707 B7	1903 D9	2705 A7	2715 B2	2913 C3	3706 C2	3903 D2	5929 D4	6708 C2	6718 A4	6906 D4	7902 E3	9935 A3	9946 C7	9956 E7
1708 B6	1904 B9	2706 A6	2716 B6	2916 D3	3707 A2	3904 E2	5930 D3	6709 B1	6719 A4	6912 E2	7903 D3	9936 B5	9947 C7	9957 E8
1709 A5	1905 C4	2707 A7	2717 A6	2917 D3	3708 A2	3906 D2	5931 E4	6710 B2	6720 A5	6913 E4	9901 D5	9937 A7	9948 C8	9958 E8
1710 B9	1907 D9	2708 A6	2900 E4	2918 C3	3709 A2	3909 D3	6701 B4	6711 C2	6721 A5	6916 C3	9902 D4	9938 A8	9949 C8	9959 A1
1711 B8	1909 D4	2709 A5	2902 E4	3700 B3	3710 A1	3912 D5	6702 B2	6712 A7	6722 A4	6917 B3	9903 A5	9940 C6	9950 D9	9960 A4
1712 B7	2700 C2	2710 A5	2905 E2	3701 B3	3711 A2	3915 D3	6703 B2	6713 B5	6723 A5	7700 B1	9930 A1	9941 C6	9951 E9	

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 3527 pt5 dd wk0343

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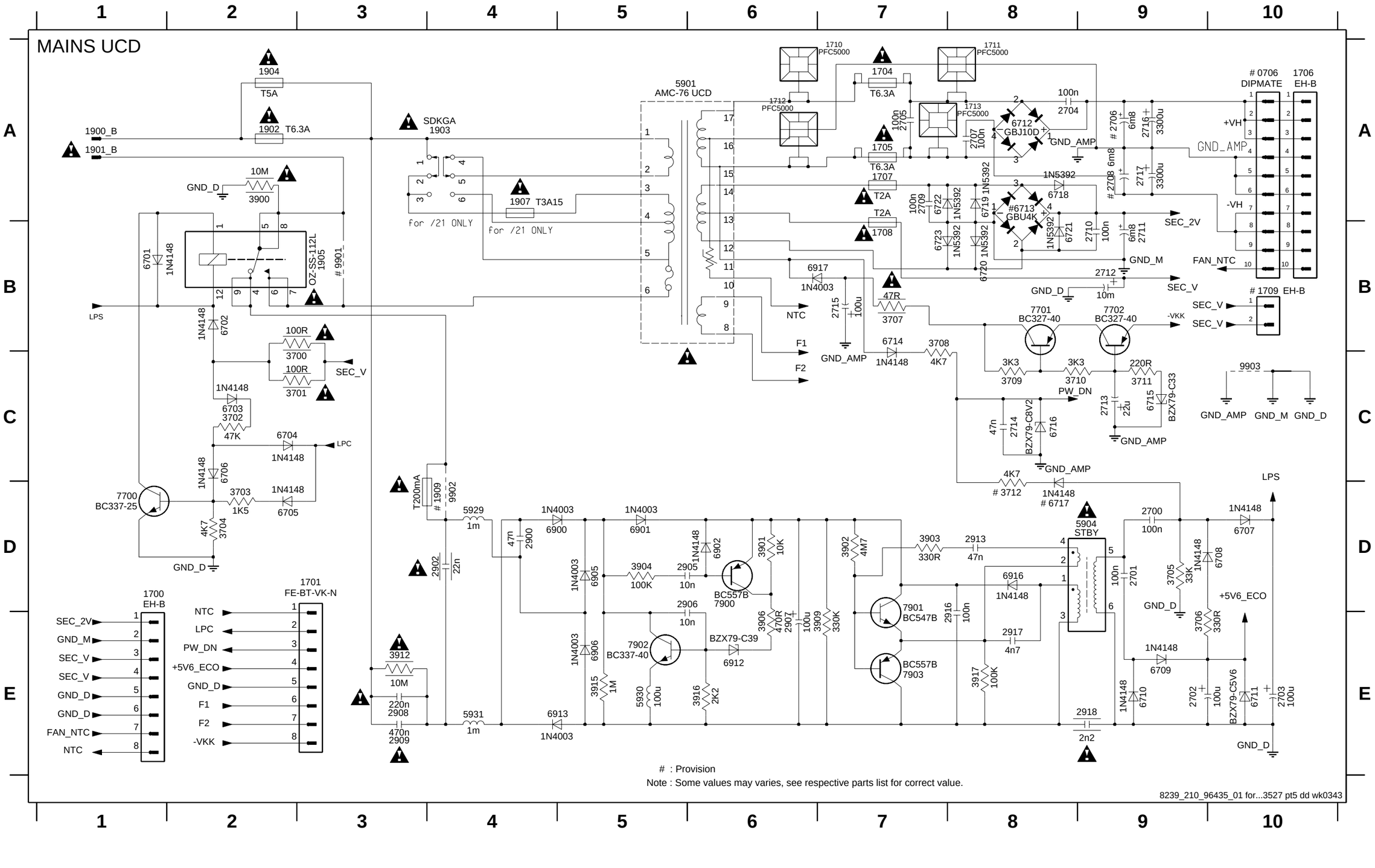
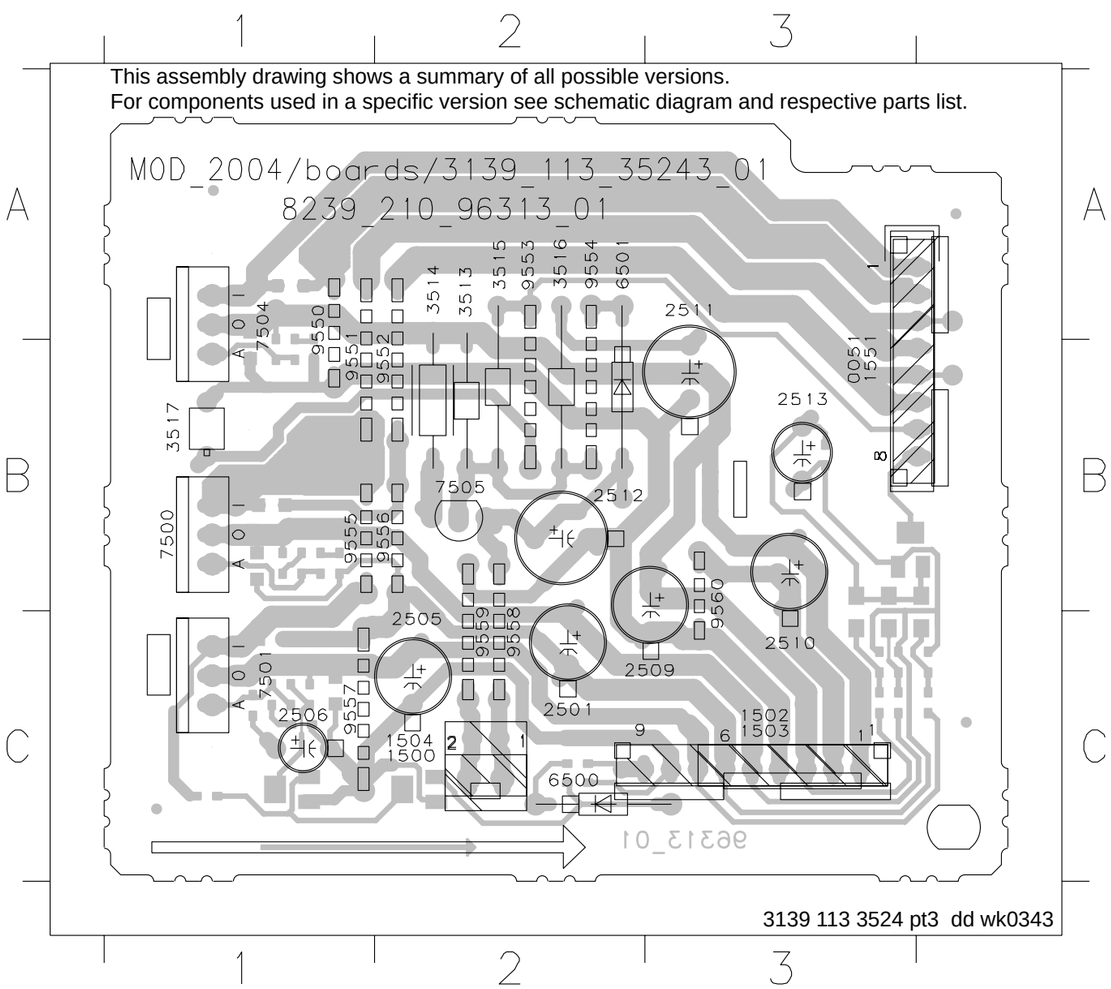
MAINS UCD BOARD - CIRCUIT DIAGRAM

0706 A10	1708 B7	1901_B A1	2700 D9	2707 A8	2714 C8	2906 D5	2918 E9	3706 E9	3900 A2	3912 E3	5930 E5	6706 C2	6713 A8	6720 B8	6905 D5	7701 B8	9902 D4
1700 D1	1709 B10	1902 A2	2701 D9	2708 A9	2715 B7	2907 E6	3700 C2	3707 B7	3901 D6	3915 E5	5931 E4	6707 D10	6714 B7	6721 B8	6906 E5	7702 B9	9903 C10
1701 D3	1710 A7	1903 A4	2702 E9	2709 A7	2716 A9	2908 E3	3701 C2	3708 B7	3902 D7	3916 E6	6701 B1	6708 D10	6715 C9	6722 A8	6912 E6	7900 D6	
1704 A7	1711 A8	1904 A2	2703 E10	2710 B9	2717 A9	2909 E3	3702 C2	3709 C8	3903 D7	3917 E8	6702 B2	6709 E9	6716 C8	6723 B7	6913 E5	7901 D7	
1705 A7	1712 A6	1905 B3	2704 A8	2711 B9	2900 D4	2913 D8	3703 D2	3710 C8	3904 D5	5901 A6	6703 C2	6710 E9	6717 D8	6900 D4	6916 D8	7902 E5	
1706 A10	1713 A7	1907 A4	2705 A7	2712 B9	2902 D4	2916 E8	3704 D2	3711 C9	3906 E6	5904 D8	6704 C2	6711 E10	6718 A8	6901 D5	6917 B7	7903 E7	
1707 A7	1900_B A1	1909 D4	2706 A9	2713 C9	2905 D5	2917 E8	3705 D9	3712 D8	3909 E7	5929 D4	6705 D2	6712 A8	6719 A8	6902 D6	7700 D1	9901 B3	



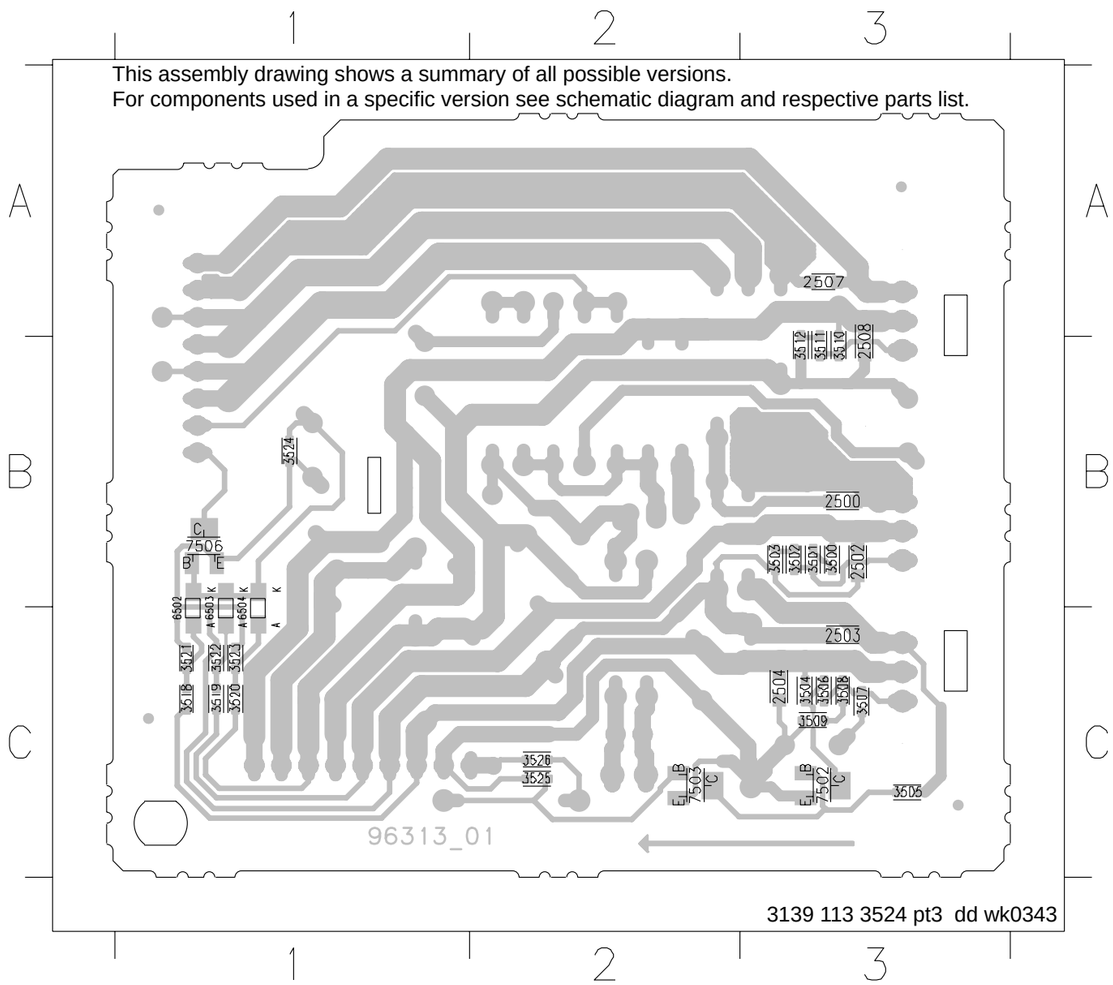
REGULATOR UCD BOARD - COMPONENT LAYOUT

0051 B3	2501 C2	2512 B2	3517 B1	7505 B2	9555 B1
1500 C2	2505 C2	2513 B3	6500 C2	9550 A1	9556 B2
1502 C3	2506 C1	3513 A2	6501 A2	9551 B1	9557 C1
1503 C3	2509 C3	3514 A2	7500 B1	9552 B2	9558 C2
1504 C2	2510 C3	3515 A2	7501 C1	9553 A2	9559 C2
1551 B3	2511 A3	3516 A2	7504 A1	9554 A2	9560 B3



REGULATOR UCD BOARD - CHIP LAYOUT

2500 B3	2508 B3	3504 C3	3509 C3	3519 C1	3524 B1	6504 C1
2502 B3	3500 B3	3505 C3	3510 B3	3520 C1	3525 C2	7502 C3
2503 C3	3501 B3	3506 C3	3511 B3	3521 C1	3526 C2	7503 C2
2504 C3	3502 B3	3507 C3	3512 B3	3522 C1	6502 C1	7506 B1
2507 A3	3503 B3	3508 C3	3518 C1	3523 C1	6503 C1	



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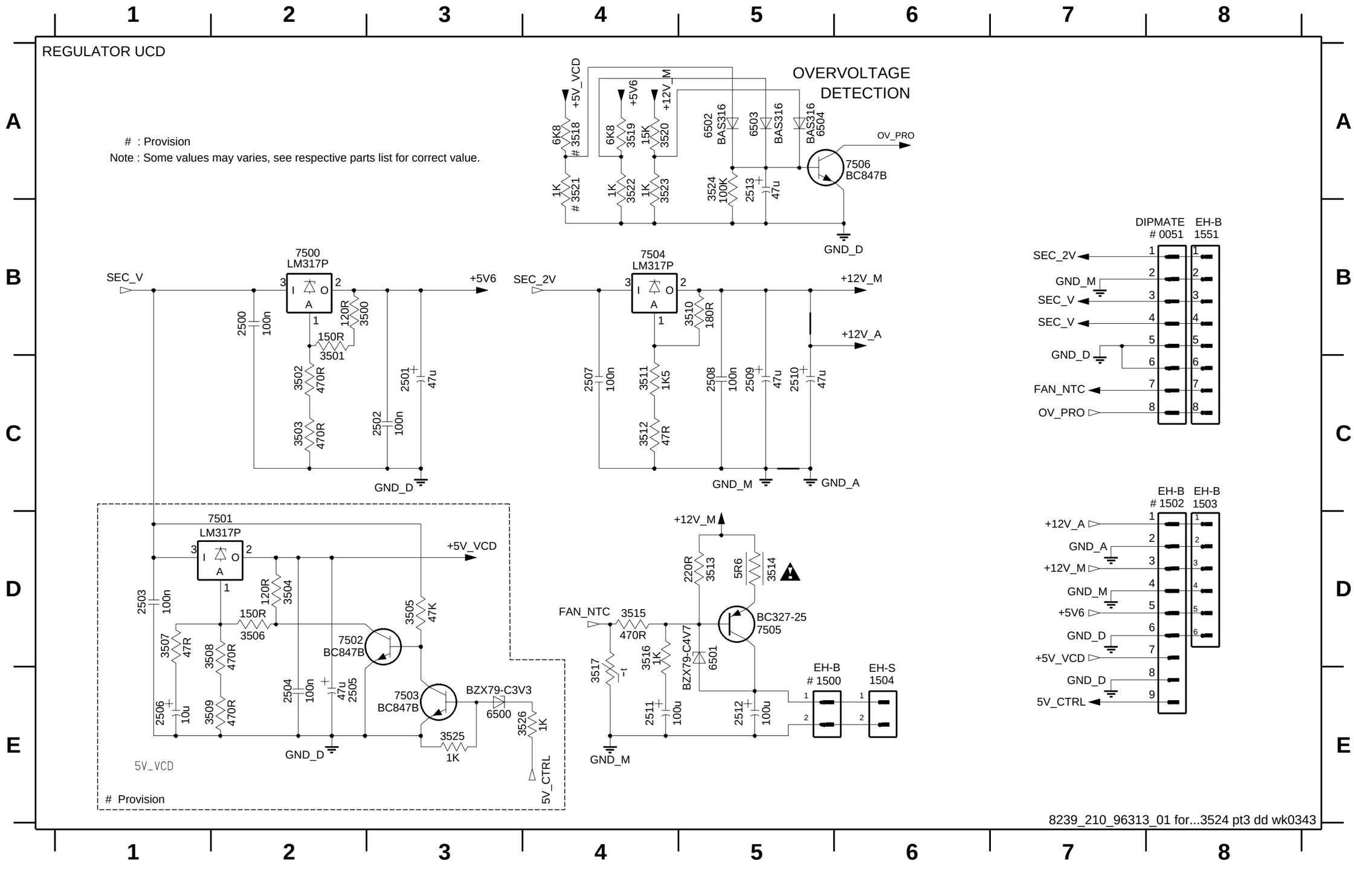
REGULATOR UCD BOARD - CIRCUIT DIAGRAM

0051 B8	1503 C8	2500 B2	2503 D1	2506 E1	2509 C5	2512 E5	3501 B2	3504 D2	3507 D1	3510 B5	3513 D5	3516 D4	3519 A4	3522 A4	3525 E3	6501 D5	6504 A5	7502 D2	7505 D5
1500 E5	1504 E6	2501 C3	2504 E2	2507 C4	2510 C5	2513 A5	3502 C2	3505 D3	3508 D2	3511 C4	3514 D5	3517 E4	3520 A4	3523 A4	3526 E4	6502 A5	7500 B2	7503 E3	7506 A6
1502 C8	1551 B8	2502 C3	2505 E2	2508 C5	2511 E4	3500 B2	3503 C2	3506 D2	3509 E2	3512 C4	3515 D4	3518 A4	3521 A4	3524 A5	6500 E3	6503 A5	7501 D1	7504 B4	



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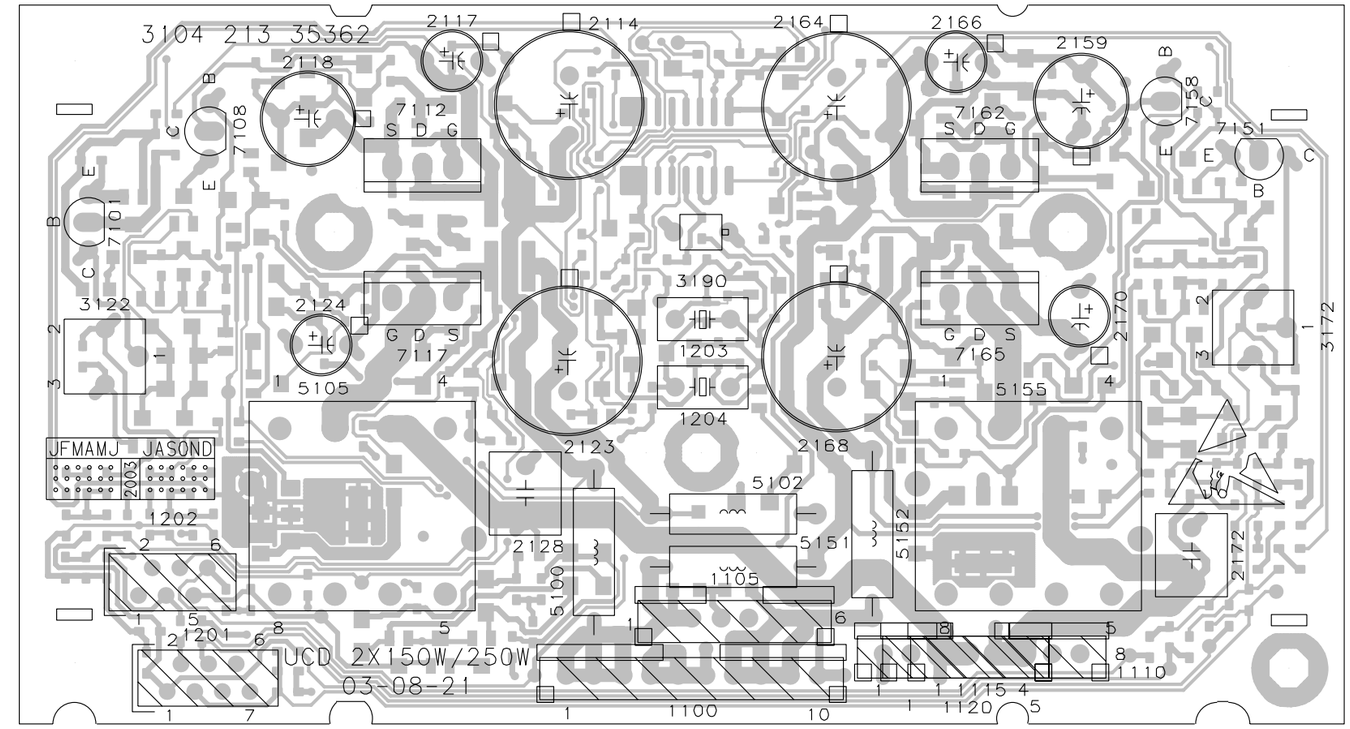
AMPLIFIER UCD BOARD (SE) - COMPONENT LAYOUT

1100 B3	1201 B1	2117 A2	2159 A4	2172 B5	5102 B3	7101 A1	7158 A5
1105 B3	1202 B1	2118 A2	2164 A3	3122 A1	5105 B2	7108 A1	7162 A4
1110 B4	1203 A3	2123 A2	2166 A4	3172 A5	5151 B3	7112 A2	7165 A4
1115 B4	1204 A3	2124 A2	2168 A3	3190 A3	5152 B4	7117 A2	
1120 B4	2114 A2	2128 B2	2170 A4	5100 B3	5155 B4	7151 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.



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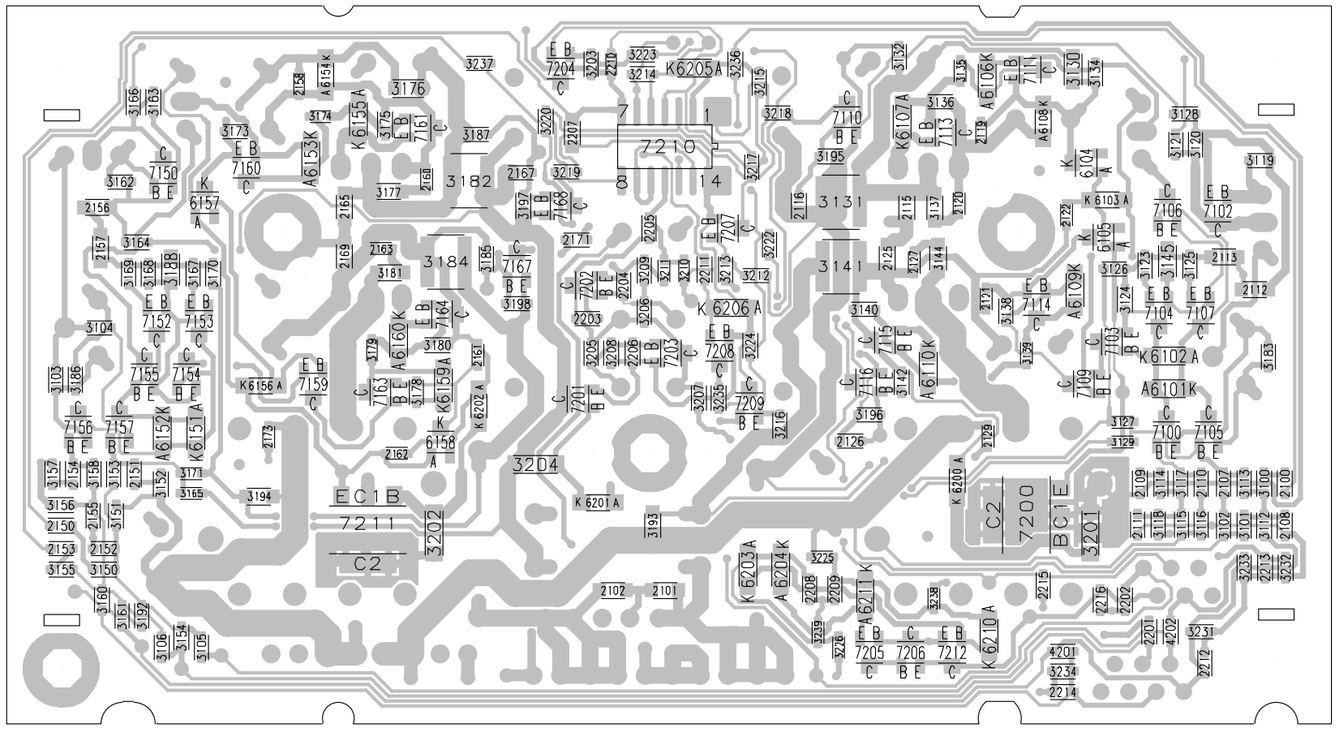
AMPLIFIER UCD BOARD (SE) - CHIP LAYOUT

2100 B5	2122 A5	2161 A2	2208 B4	3106 B1	3127 A5	3144 A4	3164 A1	3180 A2	3198 A3
2101 B3	2125 A4	2162 B2	2209 B4	3112 B5	3128 A5	3145 A5	3165 B1	3181 A2	3201 B5
2102 B3	2126 A4	2163 A2	2210 A3	3113 B5	3129 A5	3150 B1	3166 A1	3182 A2	3202 B2
2107 B5	2127 A4	2165 A2	2211 A3	3114 B5	3130 A5	3151 B1	3167 A1	3183 A5	3203 A3
2108 B5	2129 A4	2167 A3	2212 B5	3115 B5	3131 A4	3152 B1	3168 A1	3184 A2	3204 B3
2109 B5	2150 B1	2169 A2	2213 B5	3116 B5	3132 A4	3153 B1	3169 A1	3185 A2	3205 A3
2110 B5	2151 B1	2171 A3	2214 B5	3117 B5	3134 A5	3154 B1	3170 A1	3186 A1	3206 A3
2111 B5	2152 B1	2173 A2	2215 B4	3118 B5	3135 A4	3155 B1	3171 B1	3187 A2	3207 A3
2112 A5	2153 B1	2201 B5	2216 B5	3119 A5	3136 A4	3156 B1	3173 A2	3188 A1	3208 A3
2113 A5	2154 B1	2202 B5	3100 B5	3120 A5	3137 A4	3157 B1	3174 A2	3192 B1	3209 A3
2115 A4	2155 B1	2203 A3	3101 B5	3121 A5	3138 A4	3158 B1	3175 A2	3193 B3	3210 A3
2116 A4	2156 A1	2204 A3	3102 B5	3123 A5	3139 A4	3160 B1	3176 A2	3194 B2	3211 A3
2119 A4	2157 A1	2205 A3	3103 A1	3124 A5	3140 A4	3161 B1	3177 A2	3195 A4	3212 A3
2120 A4	2158 A2	2206 A3	3104 A1	3125 A5	3141 A4	3162 A1	3178 A2	3196 A4	3213 A3
2121 A4	2160 A2	2207 A3	3105 B1	3126 A5	3142 A4	3163 A1	3179 A2	3197 A3	3214 A3
									3215 A3
									3216 A4
									3217 A3
									3218 A3
									3219 A3
									3220 A3
									3222 A3
									3223 A3
									3224 A3
									3225 B4
									3226 B4
									3231 B5
									3232 B5
									3233 B5
									3234 B5
									3235 A3
									3236 A3
									3237 A2
									3238 B4
									3239 B4
									4201 B5
									4202 B5
									6101 A5
									6102 A5
									6103 A5
									6104 A5
									6105 A5
									6106 A4
									6107 A4
									6108 A4
									6109 A5
									6110 A4
									6151 A1
									6152 A1
									6153 A2
									6154 A2
									6155 A2
									6156 A2
									6157 A1

6158 A2	F101 B3	
6159 A2	F102 B3	
6160 A2	F103 B2	
6200 B4	F104 B2	
6201 B3	F105 B2	
6202 A2	F106 B3	
6203 B3	F107 A4	
6204 B4	F108 A4	
6205 A3	F109 A2	
6206 A3	F110 A3	
6210 B4	F111 A5	
6211 B4	F112 B2	
7100 A5	F113 A3	
7102 A5	F114 B1	
7103 A5	F115 B1	
7104 A5	F116 B1	
7105 A5	F117 B1	
7106 A5	F118 B4	
7107 A5	F119 B4	
7109 A5	F120 B4	
7110 A4	F121 A3	
7111 A4	F122 A3	
7113 A4		
7114 A4		
7115 A4		
7116 A4		
7150 A1		
7152 A1		
7153 A1		
7154 A1		
7155 A1		
7156 A1		
7157 A1		
7159 A2		
7160 A2		
7161 A2		
7163 A2		
7164 A2		
7167 A3		
7168 A3		
7200 B4		
7201 A3		
7202 A3		
7203 A3		
7204 A3		
7205 B4		
7206 B4		
7207 A3		
7208 A3		
7209 A3		
7210 A3		
7211 B2		
7212 B4		
F100 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.



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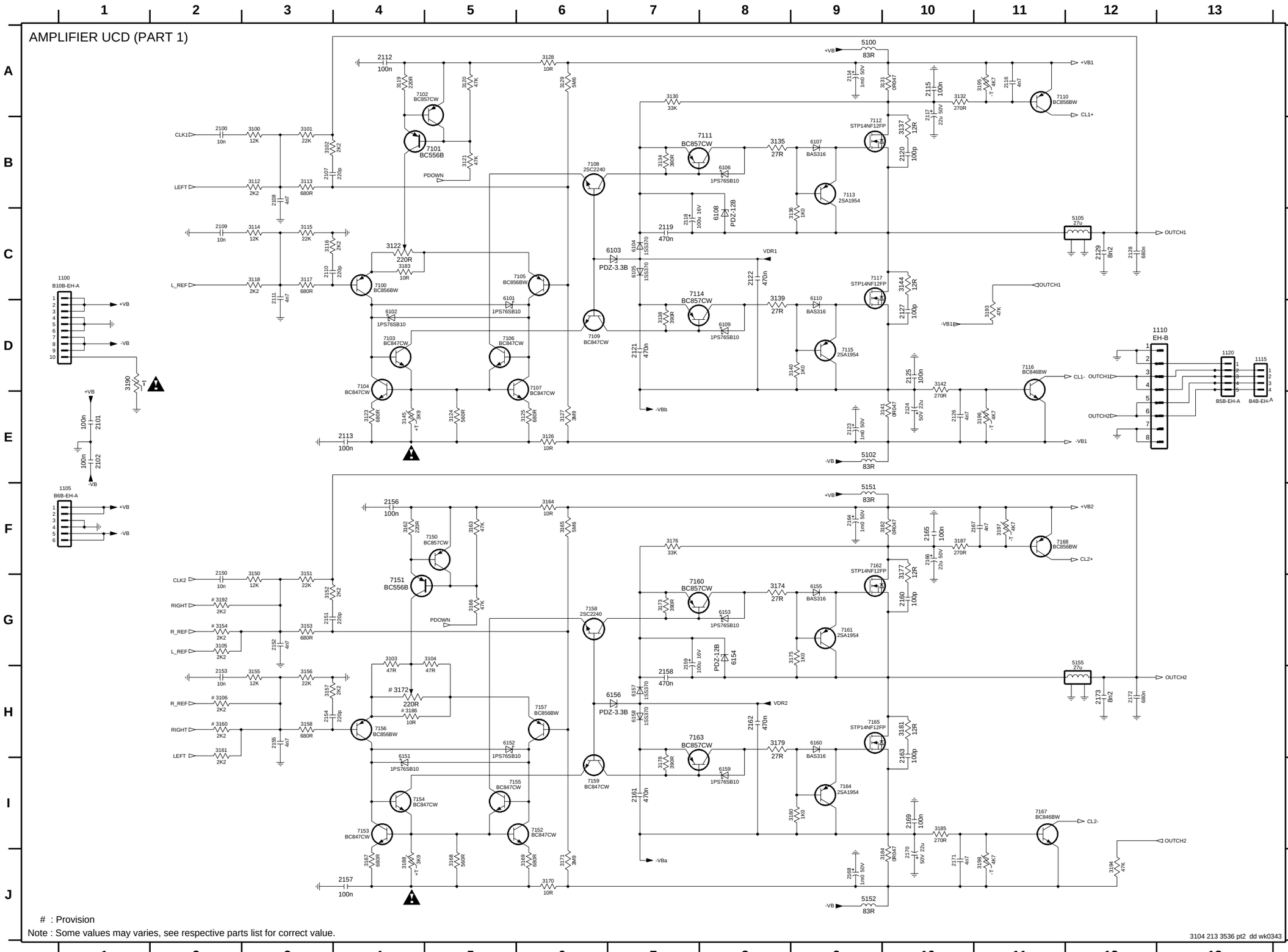
AMPLIFIER UCD BOARD (SE) - CIRCUIT DIAGRAM PART 1



1100	C1	3187	F10
1105	F1	3188	J4
1110	D12	3190	D1
1115	D13	3192	G2
1120	D13	3193	D11
2100	B2	3194	J12
2101	E1	3195	A11
2102	E1	3196	E11
2107	B3	3197	F11
2108	B3	3198	J11
2109	C2	5100	A9
2110	C3	5102	E9
2111	C3	5105	C12
2112	A4	5151	F9
2113	E4	5152	J9
2114	A9	5155	G12
2115	A10	6101	D5
2116	A11	6102	D4
2117	A10	6103	C7
2118	C7	6104	C7
2119	C7	6105	C7
2120	B10	6106	B8
2121	D7	6107	B9
2122	C8	6108	C8
2123	E9	6109	D8
2124	E10	6110	D9
2125	D10	6151	I4
2126	E10	6152	H5
2127	D10	6153	G8
2128	C12	6154	G8
2129	C12	6155	G9
2150	G2	6156	H7
2151	G3	6157	H7
2152	G3	6158	H7
2153	H2	6159	I8
2154	H3	6160	H9
2155	H3	7100	C4
2156	F4	7101	B5
2157	J4	7102	A4
2158	H7	7103	D4
2159	G7	7104	D4
2160	G10	7105	C6
2161	I7	7106	D5
2162	H8	7107	D6
2163	H10	7108	B6
2164	F9	7109	D6
2165	F10	7110	A11
2166	F10	7111	B8
2167	F11	7112	B9
2168	J9	7113	B9
2169	I10	7114	C8
2170	J10	7115	D9
2171	J10	7116	D11
2172	H12	7117	C9
2173	H12	7150	F5
3100	B3	7151	F4
3101	B3	7152	I6
3102	B3	7153	I4
3103	G4	7154	I4
3104	G5	7155	I6
3105	G2	7156	H4
3106	H2	7157	H6
3112	B3	7158	G6
3113	B3	7159	I6
3114	C3	7160	G8
3115	C3	7161	G9
3116	C3	7162	F9
3117	C3	7163	H8
3118	C3	7164	I9
3119	A4	7165	H9
3120	A5	7167	I11
3121	B5	7168	F11
3122	C4		
3123	E4		
3124	E5		
3125	E6		
3126	E6		
3127	E6		
3128	A6		
3129	A6		
3130	A7		
3131	A10		
3132	A10		
3134	B7		
3135	B8		
3136	C9		
3137	B10		
3138	D7		
3139	D8		
3140	D9		
3141	E10		
3142	D10		
3144	C10		
3145	E4		
3150	G3		
3151	G3		
3152	G3		
3153	G3		
3154	G2		
3155	H3		
3156	H3		
3157	H3		
3158	H3		
3160	H2		
3161	H2		
3162	F4		
3163	F5		
3164	F6		
3165	F6		
3166	G5		
3167	J4		
3168	J5		
3169	J6		
3170	J6		
3171	J6		
3172	H4		
3173	G7		
3174	G8		
3175	G9		
3176	F7		
3177	F10		
3178	I7		
3179	H8		
3180	I9		
3181	H10		
3182	F10		
3183	C4		
3184	J10		
3185	I10		
3186	H4		

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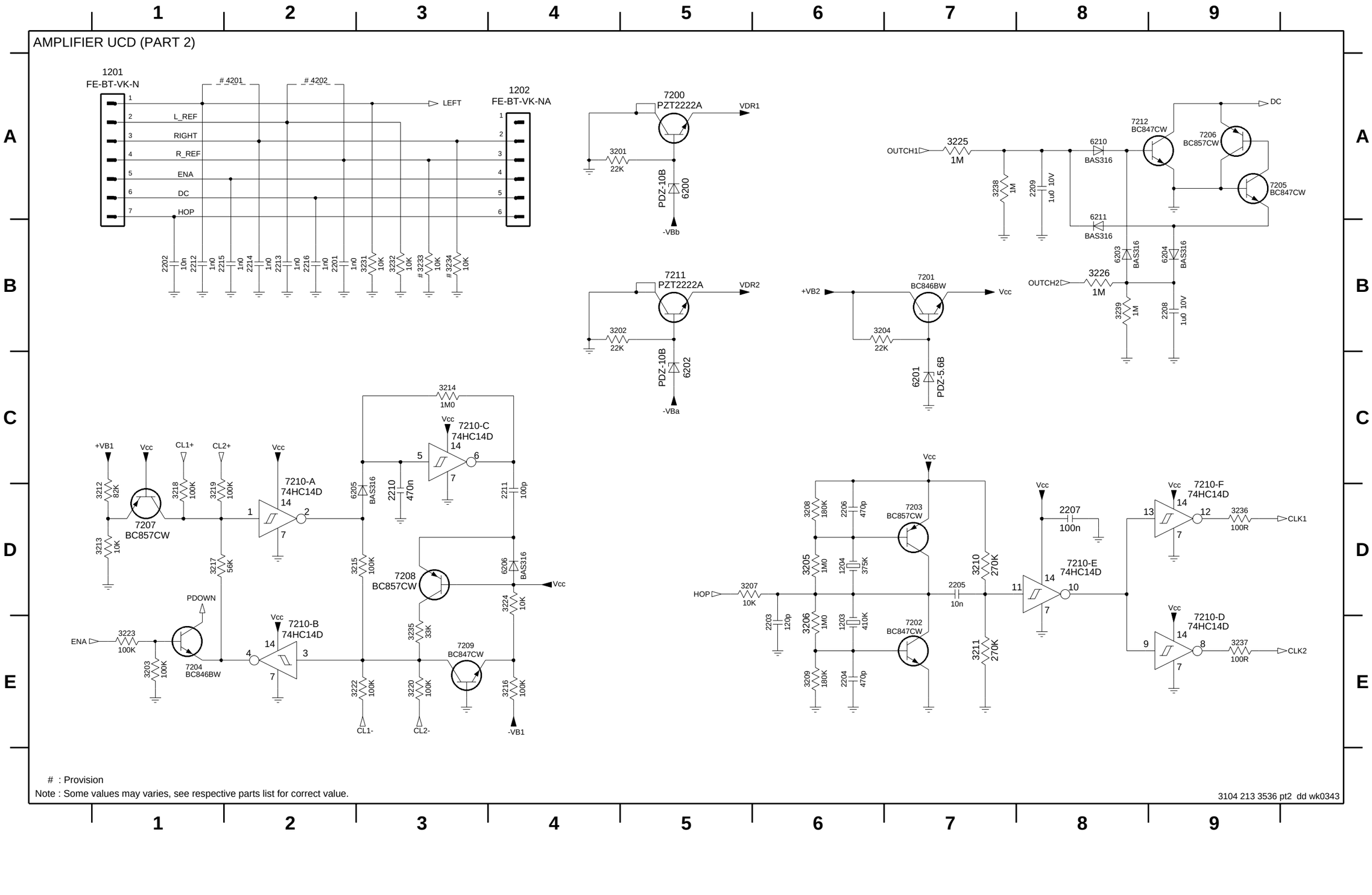
AMPLIFIER UCD BOARD (SE) - CIRCUIT DIAGRAM PART 2

1201 A1	2201 B2	2205 D7	2209 A8	2213 B2	3201 A4	3205 D6	3209 E6	3213 D1	3217 D1	3222 E3	3226 B8	3234 B3	3238 A7	6200 A5	6204 B9	6211 B8	7203 D7	7207 D1	7210-B E2	7210-F D9
1202 A4	2202 B1	2206 D6	2210 D3	2214 B2	3202 B4	3206 E6	3210 D7	3214 C3	3218 D1	3223 E1	3231 B3	3235 E3	3239 B8	6201 C7	6205 D2	7200 A5	7204 E1	7208 D3	7210-C C3	7211 B5
1203 E6	2203 E6	2207 D8	2211 D4	2215 B1	3203 E1	3207 D5	3211 E7	3215 D3	3219 D1	3224 D4	3232 B3	3236 D9	4201 A2	6202 C5	6206 D4	7201 B7	7205 A9	7209 E3	7210-D E9	7212 A8
1204 D6	2204 E6	2208 B9	2212 B1	2216 B2	3204 B6	3208 D6	3212 D1	3216 E4	3220 E3	3225 A7	3233 B3	3237 E9	4202 A2	6203 B8	6210 A8	7202 E7	7206 A9	7210-A D2	7210-E D8	

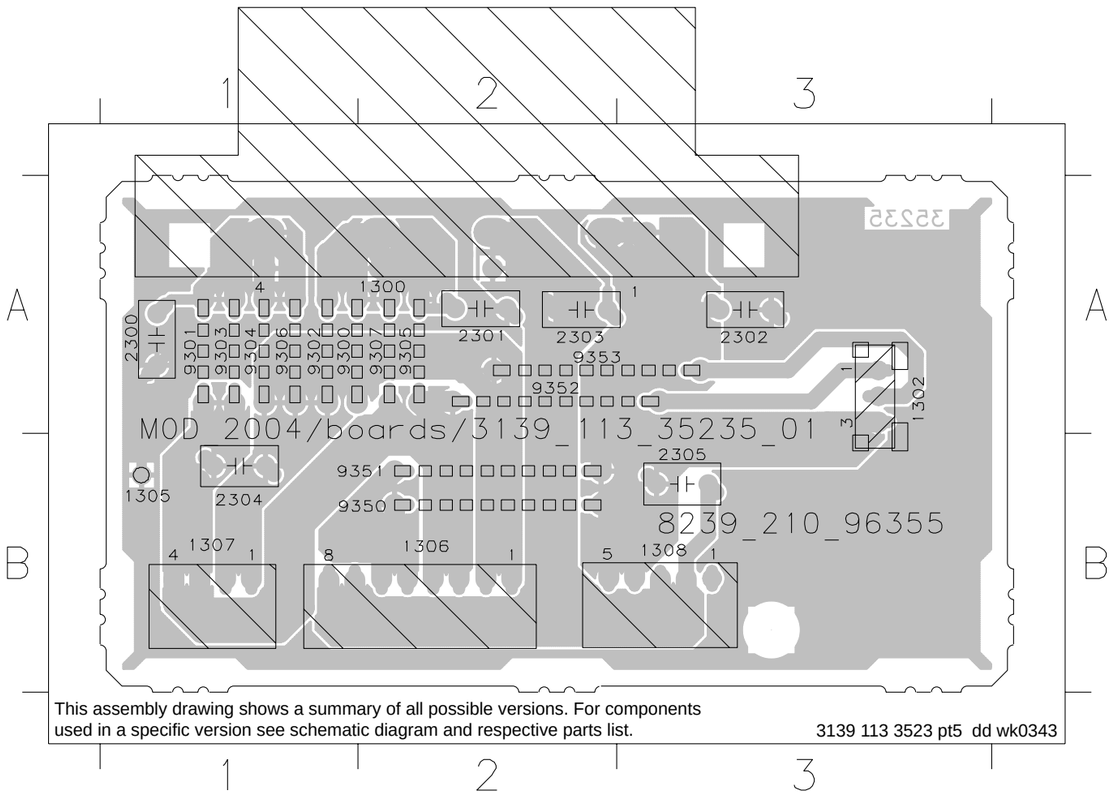


: Provision

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

SPEAKER UCD BOARD - COMPONENT LAYOUT

1300 A2	1307 B1	2302 A3	9300 A1	9304 A1	9350 B2
1302 A3	1308 B3	2303 A2	9301 A1	9305 A2	9351 B2
1305 B1	2300 A1	2304 B1	9302 A1	9306 A1	9352 A2
1306 B2	2301 A2	2305 B3	9303 A1	9307 A2	9353 A2



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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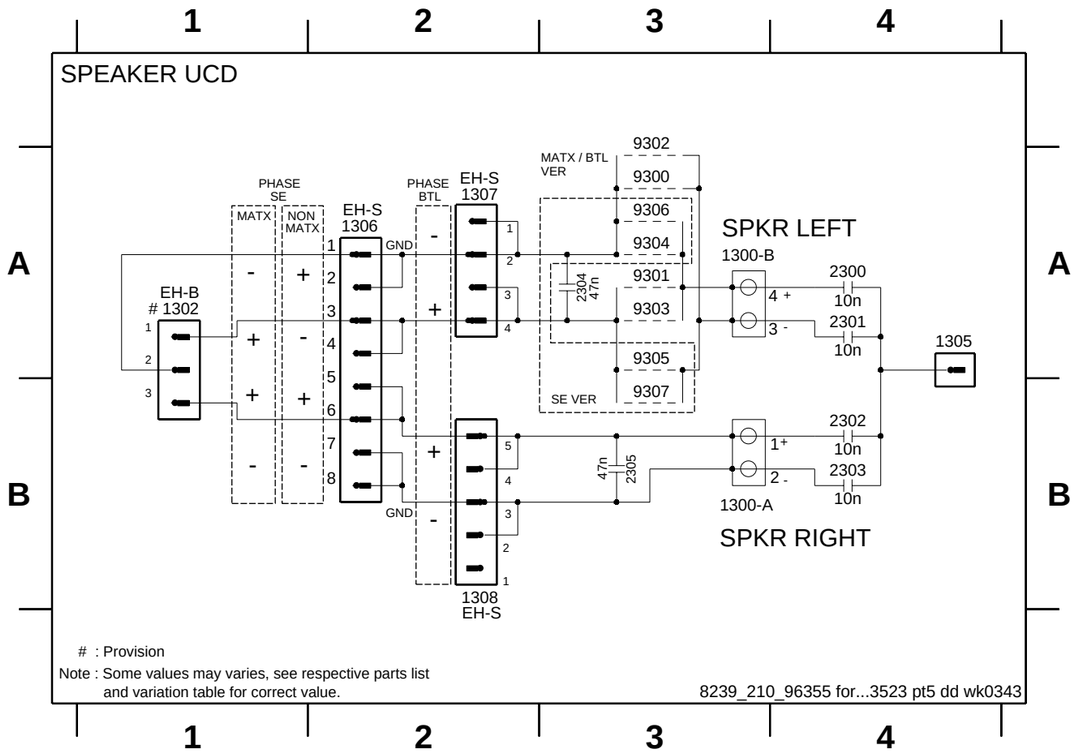
SPEAKER UCD BOARD - CIRCUIT DIAGRAM

1300-A B3	1302 A1	1306 A2	1308 B2	2301 A4	2303 B4	2305 B3	9301 A3	9303 A3	9305 A3	9307 B3
1300-B A3	1305 A4	1307 A2	2300 A4	2302 B4	2304 A3	9300 A3	9302 A3	9304 A3	9306 A3	



SPEAKER UCD BOARD - VARIATION TABLE

	SPEAKER UCD BOARD	
Item No.	100-150W (Non Matrix Version)	200-250W
1302	-	-
1306	X	-
1307 , 1308	-	X
2304 , 2305	-	X
9300 , 9301	-	X
9302 , 9303	-	X
9304 , 9305	X	-
9306 , 9307	X	-

X - item in use.

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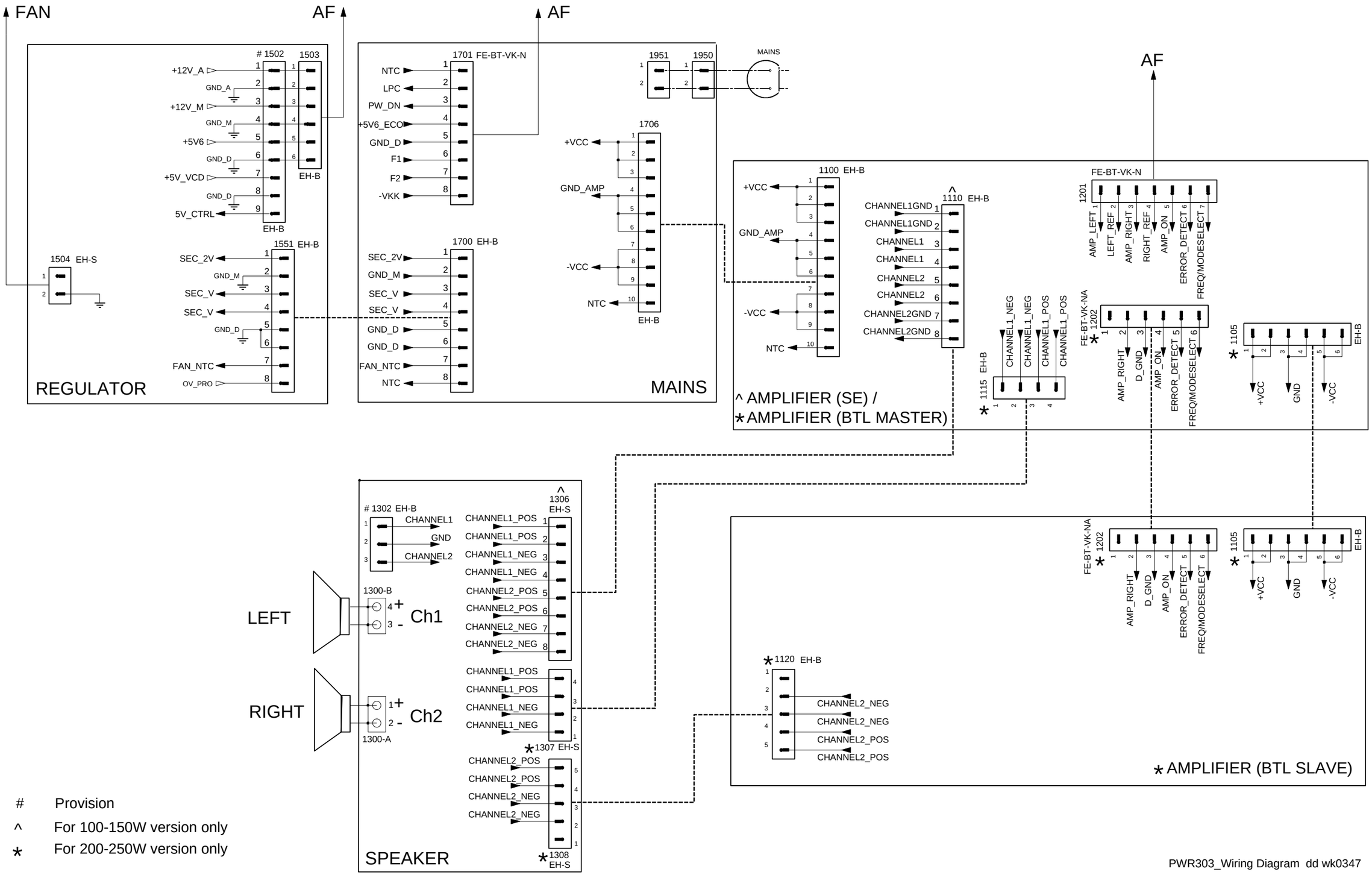
WIRING DIAGRAM



\# Provision

^ For 100-150W version only

* For 200-250W version only

PWR303_Wiring Diagram dd wk0347

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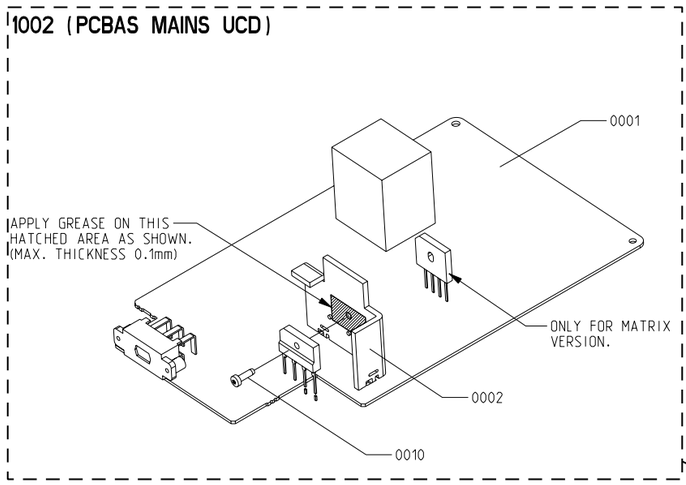
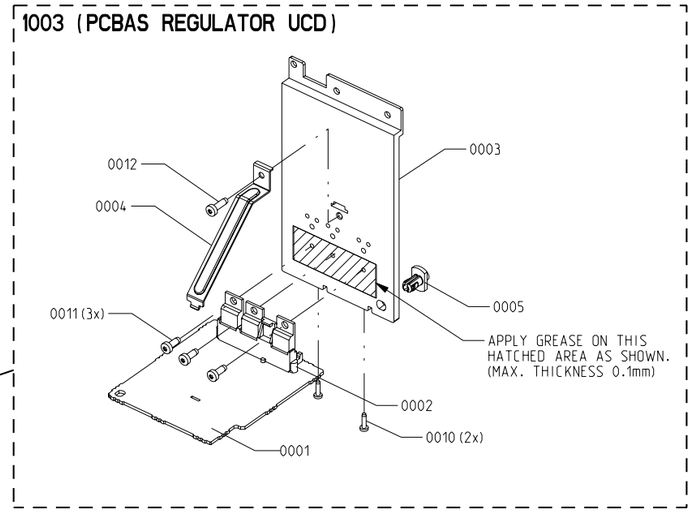
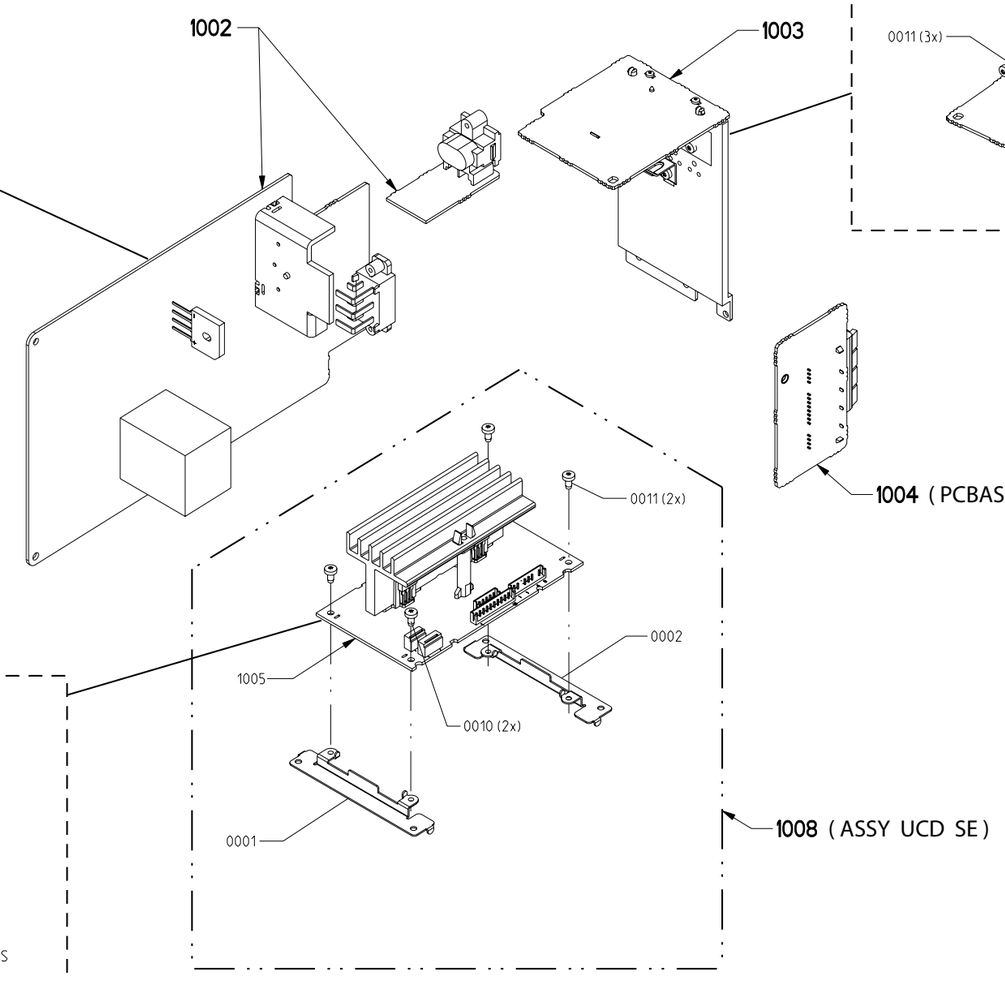
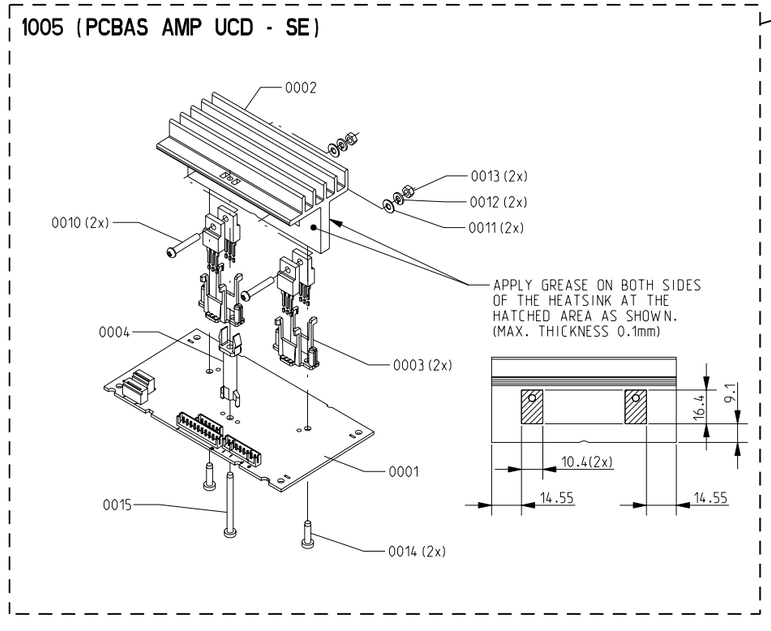
EXPLODED VIEW









SCREW LISTS

ASSY UCD SE

0010	M3 x 6
0011	M3 x 6

PCBAS MAINS UCD

0010	D3 x 10

PCBAS REGULATOR UCD

0010	D2 x 8
0011	D2.5 x 8
0012	D3 x 10

PCBAS AMP UCD - SE

0010	M3 x 18
0014	D3 x 12
0015	D3 x 35

ELECTRICAL PARTS LIST - MAINS UCD BOARD

MISCELLANEOUS

1701	4822 265 11515	FLEX CONNECTOR 8P	
1704	4822 070 36302	⚠ FUSE 5X20 T 6,3A 250V	
1705	4822 070 36302	⚠ FUSE 5X20 T 6,3A 250V	
1707	9965 000 07788	⚠ FUSE RAD LT 2A 250V	
1708	9965 000 07788	⚠ FUSE RAD LT 2A 250V	
1710	2422 090 01101	SOC FUSE V 1P F	
1711	2422 090 01101	SOC FUSE V 1P F	
1712	2422 090 01101	SOC FUSE V 1P F	
1713	2422 090 01101	SOC FUSE V 1P F	
1902	4822 071 53152	⚠ FUSE RAD LT 3,15A 250V	/22
1902	4822 252 51123	⚠ FUSE RAD LT 6,3A 250V	/37
1903	9965 000 07789	⚠ VOLTAGE SELECTOR	/21
1904	4822 071 55002	⚠ FUSE RAD LT 5A 250V	/21
1905	2422 132 07519	⚠ RELAY 1P 12V 16A OZ-SS L	
1907	4822 071 53152	⚠ FUSE RAD LT 3,15A 250V	/21
1950	4822 265 31015	⚠ MAINS SOCKET	/21/22
1951	2422 030 00328	⚠ MAINS SOCKET	/37

CAPACITORS

2700	2020 561 90365	100nF +80/-20% 50V	
2701	2020 561 90365	100nF +80/-20% 50V	
2702	4822 124 41584	100uF 20% 10V	
2703	4822 124 40207	100uF 20% 25V	
2704	5322 121 42578	100nF 5% 250V	
2705	5322 121 42578	100nF 5% 250V	
2707	5322 121 42578	100nF 5% 250V	
2709	5322 121 42578	100nF 5% 250V	
2710	5322 121 42578	100nF 5% 250V	
2711	2022 020 00782	6800uF 20% 35V	
2712	2020 012 93745	10000uF 20% 16V	
2713	4822 124 81151	22uF 50V	
2714	4822 126 12785	47nF 50V	
2715	2020 012 93741	100uF 20% 100V	
2716	2022 020 00644	3300uF 20% 50V	
2717	2022 020 00644	3300uF 20% 50V	
2900	4822 121 43526	47nF 5% 250V	
2902	2222 336 19106	⚠ 22nF 20% 275V	
2905	4822 121 51387	10nF 20% 16V	
2906	4822 121 51387	10nF 20% 16V	
2907	4822 124 40255	100uF 20% 63V	
2908	4822 121 10512	⚠ 220nF 20% 275V	/22
2909	4822 126 13589	⚠ 470nF 20% 275V	/21/37
2913	4822 126 12785	47nF 50V	
2916	2020 561 90365	100nF +80/-20% 50V	
2917	4822 126 11714	4,7nF 20%	
2918	4822 126 14088	⚠ 2,2nF 20% 250V	

RESISTORS

3700	4822 052 10101	⚠ 100R 5% 0,33W	
3701	4822 052 10101	⚠ 100R 5% 0,33W	
3702	4822 116 83884	47k 5% 0,5W	
3703	4822 116 52243	1k5 5% 0,5W	
3704	4822 116 52283	4k7 5% 0,5W	
3705	4822 050 23303	33k 1% 0,6W	
3706	4822 116 52219	330R 5% 0,5W	
3707	4822 052 10479	⚠ 47R 5% 0,33W	
3708	4822 116 52283	4k7 5% 0,5W	
3709	4822 116 52269	3k3 5% 0,5W	
3710	4822 116 52269	3k3 5% 0,5W	
3711	4822 116 83872	220R 5% 0,5W	
3900	4822 053 21106	⚠ 10M 5% 0,5W	/37
3901	4822 050 21003	10k 1% 0,6W	
3902	4822 050 24705	4M7 1% 0,6W	
3903	4822 116 52219	330R 5% 0,5W	
3904	4822 116 52234	100k 5% 0,5W	
3906	4822 116 83883	470R 5% 0,5W	
3909	4822 116 52272	330k 5% 0,5W	
3912	4822 053 21106	⚠ 10M 5% 0,5W	
3915	4822 116 83866	1M 5% 0,5W	
3916	4822 116 52256	2k2 5% 0,5W	
3917	4822 116 52234	100k 5% 0,5W	

COILS & FILTERS

5903	4822 157 11628	⚠ FIL MAINS	
5904	2422 549 45157	⚠ TRAFO STANDBY 3A1631N	
5929	4822 157 53473	IND FXD 1000uH 10%	
5930	4822 157 52333	IND FXD 100uH 5%	
5931	4822 157 53473	IND FXD 1000uH 10%	

DIODES

6701	4822 130 30621	1N4148	
6702	4822 130 30621	1N4148	
6703	4822 130 30621	1N4148	
6704	4822 130 30621	1N4148	
6705	4822 130 30621	1N4148	
6706	4822 130 30621	1N4148	
6707	4822 130 30621	1N4148	
6708	4822 130 30621	1N4148	
6709	4822 130 30621	1N4148	
6710	4822 130 30621	1N4148	
6711	4822 130 34173	BZX79-C5V6	
6712	9322 197 92682	BRIDGE GBJ10D	
6714	4822 130 30621	1N4148	
6715	4822 130 34142	BZX79-C33	
6716	4822 130 34382	BZX79-C8V2	
6718	4822 130 31878	1N5392	
6719	4822 130 31878	1N5392	
6720	4822 130 31878	1N5392	
6721	4822 130 31878	1N5392	
6722	4822 130 31878	1N5392	/21
6723	4822 130 31878	1N5392	/21
6900	4822 130 31878	1N4003G	
6901	4822 130 31878	1N4003G	
6902	4822 130 30621	1N4148	

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ELECTRICAL PARTS LIST - MAINS UCD BOARD

6905	4822 130 31878	1N4003G	
6906	4822 130 31878	1N4003G	
6912	4822 130 34145	BZX79-C39	
6913	4822 130 31878	1N4003G	
6916	4822 130 30621	1N4148	
6917	4822 130 31878	1N4003G	

TRANSISTORS & INTEGRATED CIRCUITS

7700	4822 130 40981	BC337-25	
7701	4822 130 41327	BC327-40	
7702	4822 130 41327	BC327-40	
7900	4822 130 44568	BC557B	
7901	4822 130 40959	BC547B	
7902	4822 130 40855	BC337-40	
7903	4822 130 44568	BC557B	

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

ELECTRICAL PARTS LIST - REGULATOR UCD BOARD

MISCELLANEOUS

0002	3139 114 75361	HOLDER IC	
0005	3139 114 71010	STOPPER HEATSINK	

CAPACITORS

2500	4822 126 14585	100nF 10% 50V	
2501	4822 124 81286	47uF 20% 16V	
2502	4822 126 14585	100nF 10% 50V	
2507	2222 580 15649	100nF 10% 50V	
2508	4822 126 14585	100nF 10% 50V	
2509	4822 124 81286	47uF 20% 16V	
2510	4822 124 81286	47uF 20% 16V	
2511	4822 124 41643	100uF 20% 16V	
2512	4822 124 41643	100uF 20% 16V	
2513	4822 124 80231	47uF 20% 16V	

RESISTORS

3500	4822 051 30121	120R 5% 0,062W	
3501	4822 051 30151	150R 5% 0,062W	
3502	4822 051 30471	470R 5% 0,062W	
3503	4822 051 30471	470R 5% 0,062W	
3510	4822 051 30181	180R 5% 0,062W	
3511	4822 051 30152	1k5 5% 0,062W	
3512	4822 051 30479	47R 5% 0,062W	
3513	4822 116 83872	220R 5% 0,5W	
3514	4822 052 10568	⚠ 5R6 5% 0,33W	
3515	4822 116 83883	470R 5% 0,5W	
3516	4822 050 11002	1k 1% 0,4W	
3517	4822 117 12063	NTC DC 5W 10k 5%	
3519	4822 051 30682	6k8 5% 0,062W	
3520	4822 051 30153	15k 5% 0,062W	
3522	4822 051 30102	1k 5% 0,062W	
3523	4822 051 30102	1k 5% 0,062W	
3524	4822 117 13632	100k 1% 0,62W	

DIODES

6501	4822 130 34174	BZX79-C4V7
6502	4822 130 11397	BAS316
6503	4822 130 11397	BAS316
6504	4822 130 11397	BAS316

TRANSISTORS & INTEGRATED CIRCUITS

7500	4822 209 81351	IC LM317P
7504	4822 209 81351	IC LM317P
7505	4822 130 41246	BC327-25
7506	5322 130 60159	BC847B

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

ELECTRICAL PARTS LIST - SPEAKER UCD BOARD

MISCELLANEOUS

1300	4822 267 31176	SOC CLICK 4P

CAPACITORS

2300	4822 121 41857	10nF 5% 250V	
2301	4822 121 41857	10nF 5% 250V	
2302	4822 121 41857	10nF 5% 250V	
2303	4822 121 41857	10nF 5% 250V	

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

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ELECTRICAL PARTS LIST - AMPLIFIER UCD BOARD (SE)

ELECTRICAL PARTS LIST - AMPLIFIER UCD BOARD (SE)

MISCELLANEOUS

0003	3104 214 39321	TO-220 HOLDER
0004	3104 214 39331	SPACER
1201	4822 267 10953	FLEX CONNECTOR 7P
1203	2422 540 98578	RES CER 410kHz
1204	2422 540 98552	RES CER 375kHz

CAPACITORS

2100	5322 126 11583	10nF 10% 50V
2101	2222 580 15649	100nF 10% 50V
2102	2222 580 15649	100nF 10% 50V
2107	4822 126 13883	220pF 5% 50V
2108	4822 126 13193	4,7nF 10% 63V
2109	5322 126 11583	10nF 10% 50V
2110	4822 126 13883	220pF 5% 50V
2111	4822 126 13193	4,7nF 10% 63V
2112	2222 580 15649	100nF 10% 50V
2113	2222 580 15649	100nF 10% 50V
2114	3198 026 51020	1000uF 20% 50V
2115	2222 580 15649	100nF 10% 50V
2116	4822 126 13193	4,7nF 10% 63V
2117	4822 124 81151	22uF 50V
2118	4822 124 41643	100uF 20% 16V
2119	3198 017 44740	470nF 10V
2120	2020 557 90726	100pF 5% 100V
2121	3198 017 44740	470nF 10V
2122	3198 017 44740	470nF 10V
2123	3198 026 51020	1000uF 20% 50V
2124	4822 124 81151	22uF 50V
2125	2222 580 15649	100nF 10% 50V
2126	4822 126 13193	4,7nF 10% 63V
2127	2020 557 90726	100pF 5% 100V
2128	5322 121 42498	680nF 5% 63V
2129	2238 586 15635	8,2nF 10% 50V
2150	5322 126 11583	10nF 10% 50V
2151	4822 126 13883	220pF 5% 50V
2152	4822 126 13193	4,7nF 10% 63V
2153	5322 126 11583	10nF 10% 50V
2154	4822 126 13883	220pF 5% 50V
2155	4822 126 13193	4,7nF 10% 63V
2156	2222 580 15649	100nF 10% 50V
2157	2222 580 15649	100nF 10% 50V
2158	3198 017 44740	470nF 10V
2159	4822 124 41643	100uF 20% 16V
2160	2020 557 90726	100pF 5% 100V
2161	3198 017 44740	470nF 10V
2162	3198 017 44740	470nF 10V
2163	2020 557 90726	100pF 5% 100V
2164	3198 026 51020	1000uF 20% 50V
2165	2222 580 15649	100nF 10% 50V
2166	4822 124 81151	22uF 50V
2167	4822 126 13193	4,7nF 10% 63V
2168	3198 026 51020	1000uF 20% 50V
2169	2222 580 15649	100nF 10% 50V
2170	4822 124 81151	22uF 50V
2171	4822 126 13193	4,7nF 10% 63V
2172	5322 121 42498	680nF 5% 63V
2173	2238 586 15635	8,2nF 10% 50V
2201	5322 126 11578	1nF 10% 50V
2202	5322 126 11583	10nF 10% 50V
2203	5322 122 33861	120pF 10% 50V
2204	4822 126 13881	470pF 5% 50V
2205	5322 126 11583	10nF 10% 50V
2206	4822 126 13881	470pF 5% 50V
2207	2222 580 15649	100nF 10% 50V
2208	3198 017 41050	1uF 10V
2209	3198 017 41050	1uF 10V
2210	3198 017 44740	470nF 10V
2211	2020 552 94427	100pF 5% 50V
2212	5322 126 11578	1nF 10% 50V
2213	5322 126 11578	1nF 10% 50V
2214	5322 126 11578	1nF 10% 50V
2215	5322 126 11578	1nF 10% 50V
2216	5322 126 11578	1nF 10% 50V

RESISTORS

3100	4822 051 30123	12k 5% 0,062W
3101	4822 051 30223	22k 5% 0,062W
3102	4822 051 30222	2k2 5% 0,062W
3112	4822 051 30222	2k2 5% 0,062W
3113	4822 051 30681	680R 5% 0,062W
3114	4822 051 30123	12k 5% 0,062W
3115	4822 051 30223	22k 5% 0,062W
3116	4822 051 30222	2k2 5% 0,062W
3117	4822 051 30681	680R 5% 0,062W
3118	4822 051 30222	2k2 5% 0,062W
3119	4822 051 30221	220R 5% 0,062W
3120	4822 117 12925	47k 1% 0,063W
3121	4822 117 12925	47k 1% 0,063W
3122	4822 101 11382	220R 30% 1W
3123	4822 051 30681	680R 5% 0,062W
3124	4822 051 30561	560R 5% 0,062W
3125	4822 051 30681	680R 5% 0,062W
3126	4822 051 30109	10R 5% 0,062W
3127	2322 702 60395	RST SM 0603 3M9 5%
3128	4822 051 30109	10R 5% 0,062W
3129	2322 702 60565	RST SM 0603 5M6 5%
3130	4822 051 20333	33k 5% 0,1W
3131	2122 118 06384	RST SM 1218 R047 5%
3132	4822 051 30271	270R 5% 0,062W
3134	4822 051 30391	390R 5% 0,062W
3135	2322 702 60279	RST SM 0603 27R 5%
3136	4822 051 30102	1k 5% 0,062W
3137	4822 051 20129	12R 5% 0,1W
3138	4822 051 30391	390R 5% 0,062W
3139	2322 702 60279	RST SM 0603 27R 5%
3140	4822 051 30102	1k 5% 0,062W
3141	2122 118 06384	RST SM 1218 R047 5%
3142	4822 051 30271	270R 5% 0,062W
3144	4822 051 20129	12R 5% 0,1W
3145	2122 663 00025	⚠ PTC SM 0805 40V 3k9 10%
3150	4822 051 30123	12k 5% 0,062W
3151	4822 051 30223	22k 5% 0,062W
3152	4822 051 30222	2k2 5% 0,062W
3153	4822 051 30681	680R 5% 0,062W
3154	4822 051 30222	2k2 5% 0,062W
3155	4822 051 30123	12k 5% 0,062W
3156	4822 051 30223	22k 5% 0,062W
3157	4822 051 30222	2k2 5% 0,062W
3158	4822 051 30681	680R 5% 0,062W
3160	4822 051 30222	2k2 5% 0,062W
3162	4822 051 30221	220R 5% 0,062W
3163	4822 117 12925	47k 1% 0,063W
3164	4822 051 30109	10R 5% 0,062W
3165	2322 702 60565	RST SM 0603 5M6 5%
3166	4822 117 12925	47k 1% 0,063W
3167	4822 051 30681	680R 5% 0,062W
3168	4822 051 30561	560R 5% 0,062W
3169	4822 051 30681	680R 5% 0,062W
3170	4822 051 30109	10R 5% 0,062W
3171	2322 702 60395	RST SM 0603 3M9 5%
3172	4822 101 11382	220R 30% 1W
3173	4822 051 30391	390R 5% 0,062W
3174	2322 702 60279	RST SM 0603 27R 5%
3175	4822 051 30102	1k 5% 0,062W
3176	4822 051 20333	33k 5% 0,1W
3177	4822 051 20129	12R 5% 0,1W
3178	4822 051 30391	390R 5% 0,062W
3179	2322 702 60279	RST SM 0603 27R 5%
3180	4822 051 30102	1k 5% 0,062W
3181	4822 051 20129	12R 5% 0,1W
3182	2122 118 06384	RST SM 1218 R047 5%
3183	4822 051 30109	10R 5% 0,062W
3184	2122 118 06384	RST SM 1218 R047 5%
3185	4822 051 30271	270R 5% 0,062W
3186	4822 051 30109	10R 5% 0,062W
3187	4822 051 30271	270R 5% 0,062W
3188	2122 663 00025	⚠ PTC SM 0805 40V 3k9 10%
3190	4822 117 12063	⚠ NTC DC 5W 10k 5%
3193	4822 117 10834	47k 1% 0,1W
3194	4822 117 10834	47k 1% 0,1W
3195	2322 615 33472	NTC SM 0603 0W125 4k7 5%
3196	2322 615 33472	NTC SM 0603 0W125 4k7 5%
3197	2322 615 33472	NTC SM 0603 0W125 4k7 5%
3198	2322 615 33472	NTC SM 0603 0W125 4k7 5%
3201	4822 051 10223	22k 2% 0,25W
3202	4822 051 10223	22k 2% 0,25W
3203	4822 117 13632	100k 1% 0,62W
3204	4822 051 10223	22k 2% 0,25W
3205	4822 051 30105	1M 5% 0,062W
3206	4822 051 30105	1M 5% 0,062W
3207	4822 051 30103	10k 5% 0,062W
3208	2322 702 60184	RST SM 0603 180k 5%
3209	2322 702 60184	RST SM 0603 180k 5%
3210	4822 117 12889	270k 1% 0,063W
3211	4822 117 12889	270k 1% 0,063W
3212	4822 117 12864	82k 5% 0,6W
3213	4822 051 30103	10k 5% 0,062W
3214	4822 051 30105	1M 5% 0,062W
3215	4822 117 13632	100k 1% 0,62W
3216	4822 117 13632	100k 1% 0,62W
3217	4822 051 30563	56k 5% 0,062W
3218	4822 117 13632	100k 1% 0,62W
3219	4822 117 13632	100k 1% 0,62W
3220	4822 117 13632	100k 1% 0,62W
3222	4822 117 13632	100k 1% 0,62W
3223	4822 117 13632	100k 1% 0,62W
3224	4822 051 30103	10k 5% 0,062W
3225	4822 051 30105	1M 5% 0,062W
3226	4822 051 30105	1M 5% 0,062W
3231	4822 051 30103	10k 5% 0,062W
3232	4822 051 30103	10k 5% 0,062W
3233	4822 051 30103	10k 5% 0,062W
3234	4822 051 30103	10k 5% 0,062W
3235	4822 051 30333	33k 5% 0,062W
3236	4822 051 30101	100R 5% 0,062W
3237	4822 051 30101	100R 5% 0,062W
3238	4822 051 30105	1M 5% 0,062W
3239	4822 051 30105	1M 5% 0,062W

COILS & FILTERS

5100	4822 157 11411	IND FXD BEAD 100MHz 83R
5102	4822 157 11411	IND FXD BEAD 100MHz 83R
5105	3104 218 15671	IND FXD SC4684-145 PM1
5151	4822 157 11411	IND FXD BEAD 100MHz 83R
5152	4822 157 11411	IND FXD BEAD 100MHz 83R
5155	3104 218 15671	IND FXD SC4684-145 PM1

DIODES

6101	4822 130 11528	1PS76SB10
6102	4822 130 11528	1PS76SB10
6103	9340 548 47115	PDZ3.3B
6104	9322 198 95685	DIO SIG SM 1SS370
6105	9322 198 95685	DIO SIG SM 1SS370
6106	4822 130 11528	1PS76SB10
6107	4822 130 11397	BAS316
6108	9340 548 61115	DIO REG SM PDZ12B
6109	4822 130 11528	1PS76SB10
6110	4822 130 11397	BAS316

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ELECTRICAL PARTS LIST - AMPLIFIER UCD BOARD (SE)

DIODES

6151	4822 130 11528	1PS76SB10
6152	4822 130 11528	1PS76SB10
6153	4822 130 11528	1PS76SB10
6154	9340 548 61115	DIO REG SM PDZ12B
6155	4822 130 11397	BAS316
6156	9340 548 47115	PDZ3.3B
6157	9322 198 95685	DIO SIG SM 1SS370
6158	9322 198 95685	DIO SIG SM 1SS370
6159	4822 130 11528	1PS76SB10
6160	4822 130 11397	BAS316
6200	4822 130 11551	PDZ10B
6201	3198 020 55680	DIO REG SM PDZ5.6B
6202	4822 130 11551	PDZ10B
6203	4822 130 11397	BAS316
6204	4822 130 11397	BAS316
6205	4822 130 11397	BAS316
6206	4822 130 11397	BAS316
6210	4822 130 11397	BAS316
6211	4822 130 11397	BAS316

TRANSISTORS & INTEGRATED CIRCUITS

7100	9340 218 20135	TRA SIG SM BC856BW
7101	4822 130 41691	TRA SIG BC556B
7102	9340 218 60115	TRA SIG SM BC857CW
7103	9340 217 80115	TRA SIG SM BC847CW
7104	9340 217 80115	TRA SIG SM BC847CW
7105	9340 218 20135	TRA SIG SM BC856BW
7106	9340 217 80115	TRA SIG SM BC847CW
7107	9340 217 80115	TRA SIG SM BC847CW
7108	4822 130 43233	TRA SIF 2SC2240
7109	9340 217 80115	TRA SIG SM BC847CW
7110	9340 218 20135	TRA SIG SM BC856BW
7111	9340 218 60115	TRA SIG SM BC857CW
7112	9322 173 29687	FET POW STP14NF12FP
7113	9322 198 96685	TRA SIG SM 2SA1954B
7114	9340 218 60115	TRA SIG SM BC857CW
7115	9322 198 96685	TRA SIG SM 2SA1954B
7116	9340 217 40135	TRA SIG SM BC846BW
7117	9322 173 29687	FET POW STP14NF12FP
7150	9340 218 60115	TRA SIG SM BC857CW
7151	4822 130 41691	TRA SIG BC556B
7152	9340 217 80115	TRA SIG SM BC847CW
7153	9340 217 80115	TRA SIG SM BC847CW
7154	9340 217 80115	TRA SIG SM BC847CW
7155	9340 217 80115	TRA SIG SM BC847CW
7156	9340 218 20135	TRA SIG SM BC856BW
7157	9340 218 20135	TRA SIG SM BC856BW
7158	4822 130 43233	TRA SIG 2SC2240
7159	9340 217 80115	TRA SIG SM BC847CW
7160	9340 218 60115	TRA SIG SM BC857CW
7161	9322 198 96685	TRA SIG SM 2SA1954B
7162	9322 173 29687	FET POW STP14NF12FP
7163	9340 218 60115	TRA SIG SM BC857CW
7164	9322 198 96685	TRA SIG SM 2SA1954B
7165	9322 173 29687	FET POW STP14NF12FP
7167	9340 217 40135	TRA SIG SM BC846BW
7168	9340 218 20135	TRA SIG SM BC856BW
7200	9339 753 30135	TRA POW SM PZT2222A
7201	9340 217 40135	TRA SIG SM BC846BW
7202	3198 010 42310	TRA SIG SM BC847BW
7203	3198 010 42320	TRA SIG SM BC857BW
7204	9340 217 40135	TRA SIG SM BC846BW
7205	9340 217 80115	TRA SIG SM BC847CW
7206	9340 218 60115	TRA SIG SM BC857CW
7207	9340 218 60115	TRA SIG SM BC857CW
7208	9340 218 60115	TRA SIG SM BC857CW
7209	9340 217 80115	TRA SIG SM BC847CW
7210	5322 209 11548	IC SM 74HC14D
7211	9339 753 30135	TRA POW SM PZT2222A
7212	9340 217 80115	TRA SIG SM BC847CW

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

ETF7 TAPE MODULE

(Non-Dolby Version)

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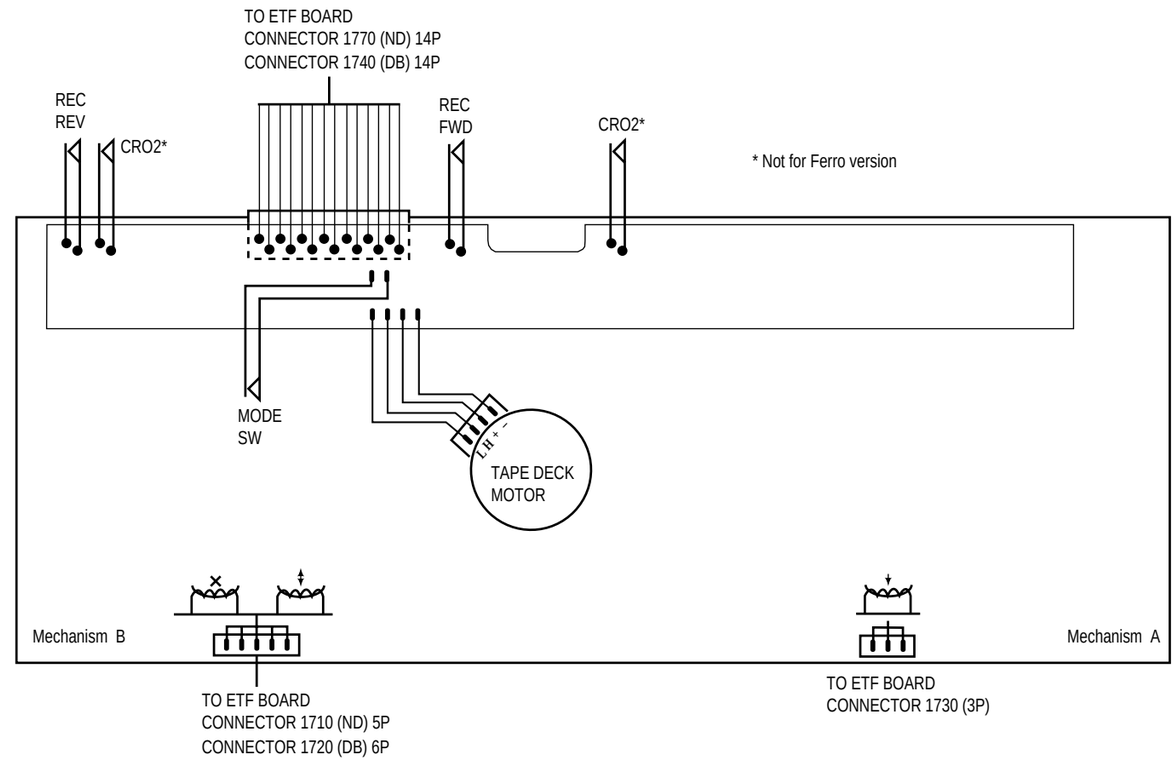
Tapedeck wiring (Double deck)



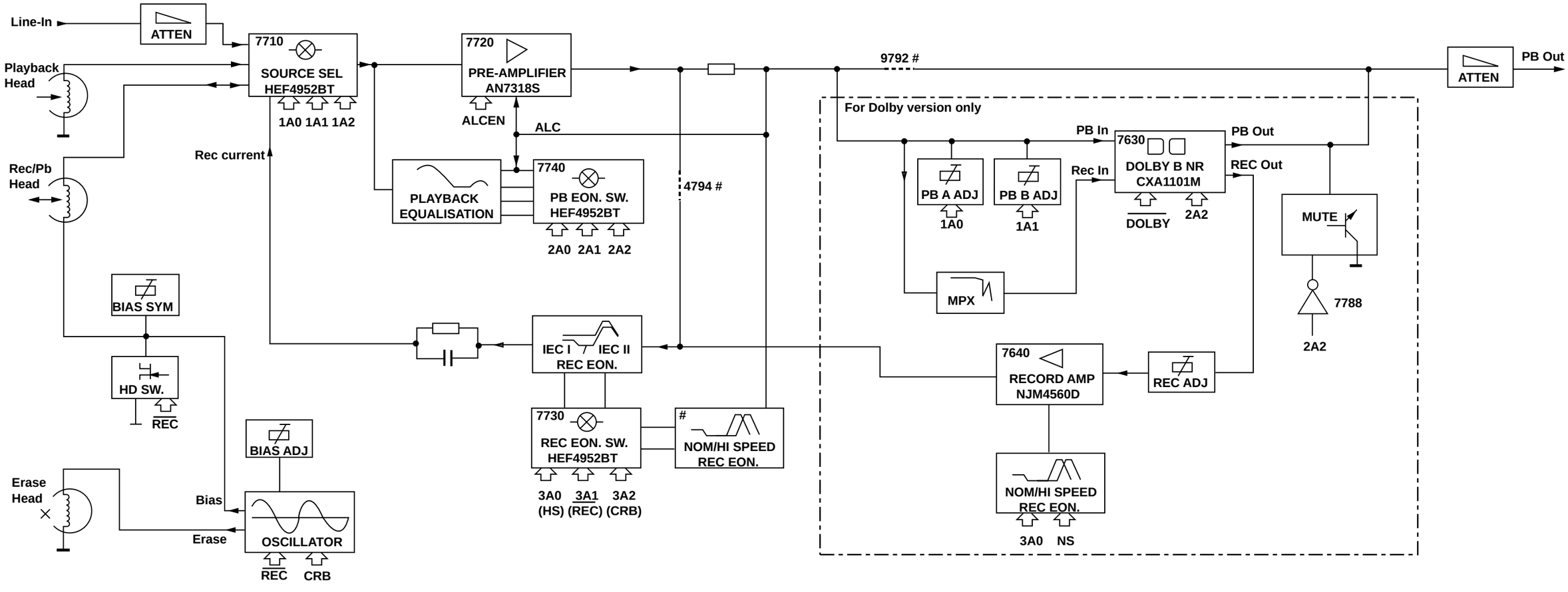
Variations table for Analog Circuit

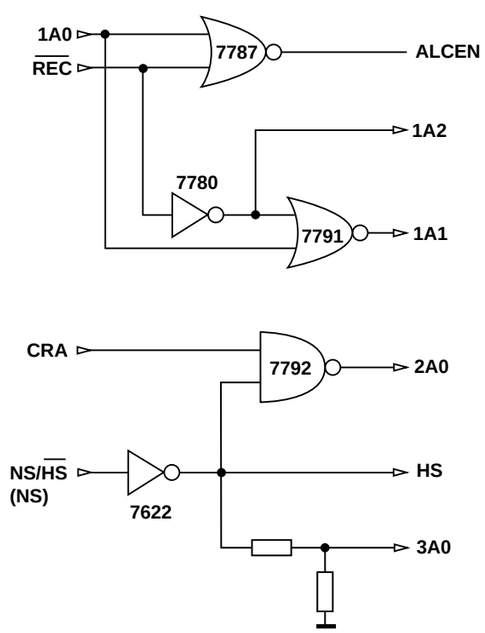
	Autoreverse ND/DD/FR	Non-autoreverse ND/DD/FF	
	Chrome/Ferro	Chrome/Ferro	Ferro
2624	-	-	100nF
2701 , 2702	150pF	270pF	270pF
2703 , 2704	100pF	220pF	220pF
2717 , 2718	10nF	15nF	15nF
2721 , 2722	6,8nF	6,8nF	-
2727 , 2728	470pF	1nF	1nF
3616	10k	1k	1k
3618	6k8	-	-
3620	10k trimmer	-	-
3622	-	10k trimmer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

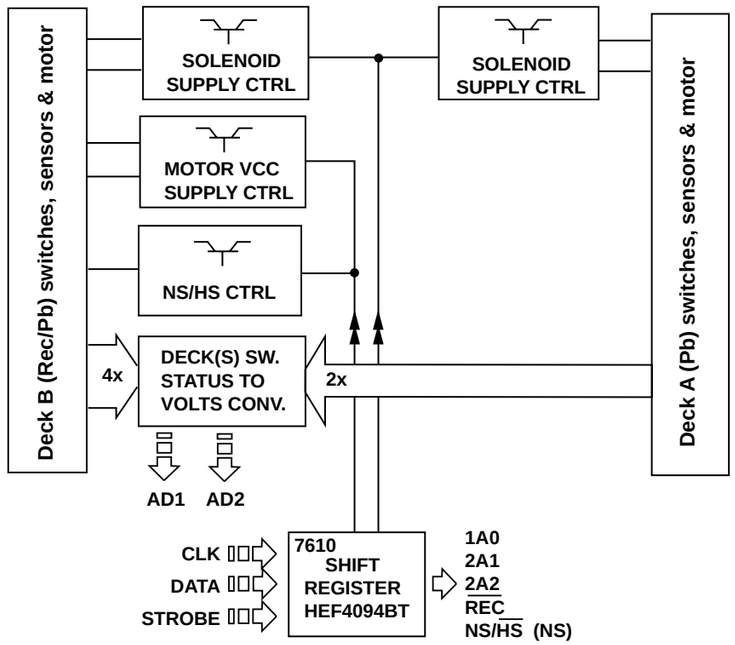
	Autoreverse ND/DD/FR	Non-autoreverse ND/DD/FF	
	Chrome/Ferro	Chrome/Ferro	Ferro
3769	12k	8k2	8k2
3772	6k8	5k6	5k6
4785	-	-	0R jumper
3774	15k	8k2	8k2
6614	1N4148	-	-
7616	BC857B	-	-
7622	BC847B	-	-

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

9-4

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

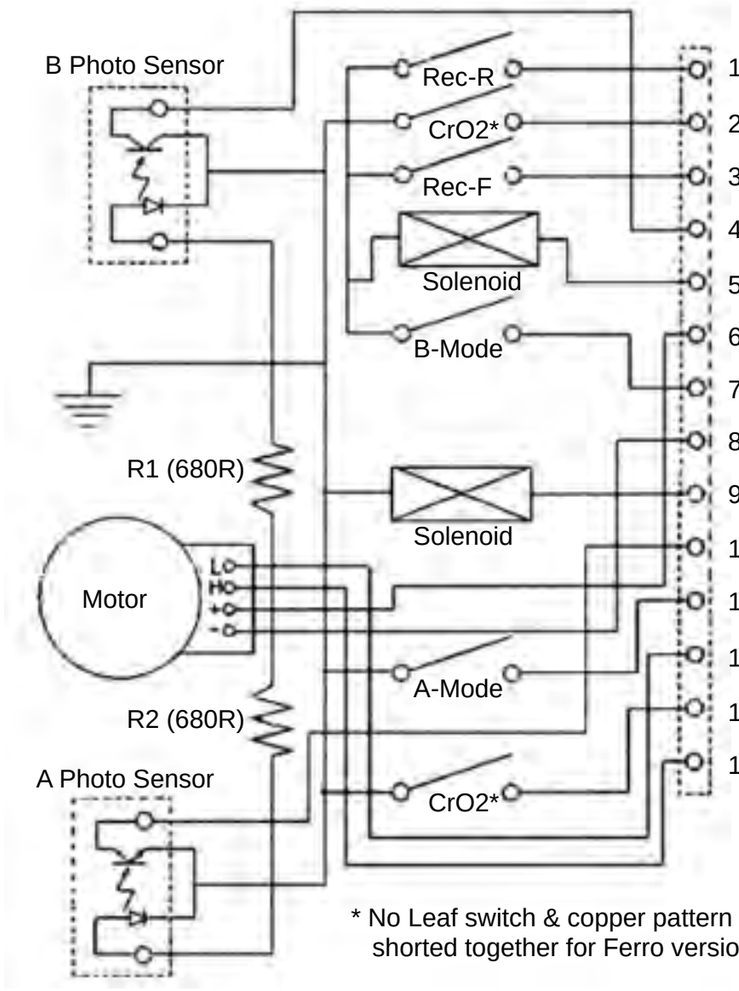
CONNECTOR 1740 — DECK A & B CONTROL INTERFACE ***(For Dolby B NR version only)***

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)***

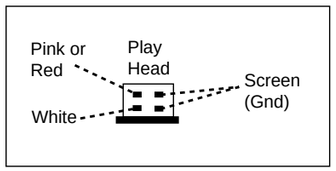
1	REC REW	Record tab protection status switch (reverse)	[open=on: close=off]
2	CrO2 B	Chrome tape detection switch deck B	[open=Cr: close=Fe]
3	REC FWD	Record tab protection status switch (forward)	[open=on: close=off]
4	PHOTO B	Photo sensor output (tape movement indication)	
5	SOL B	Solenoid supply 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	

TAPE MECHANISM ELECTRONICS

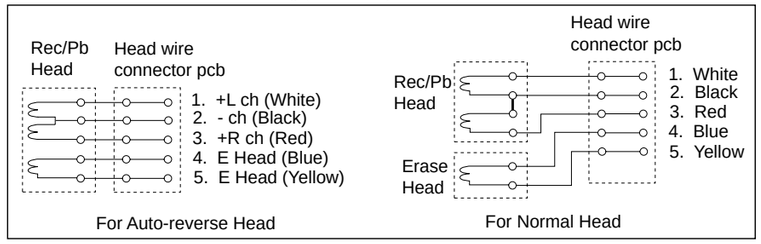


* No Leaf switch & copper pattern shorted together for Ferro version

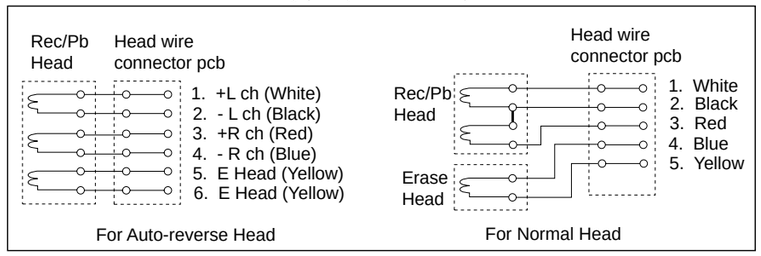
Mechanism A Head Wires Soldering



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

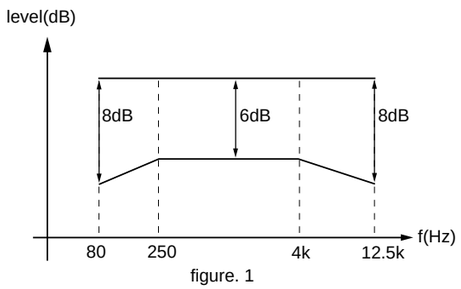


figure. 1

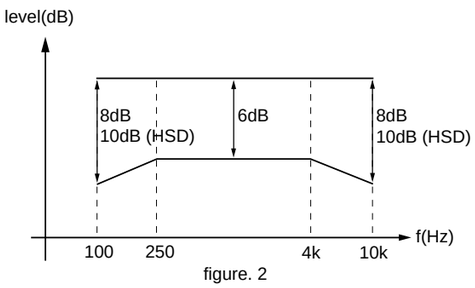
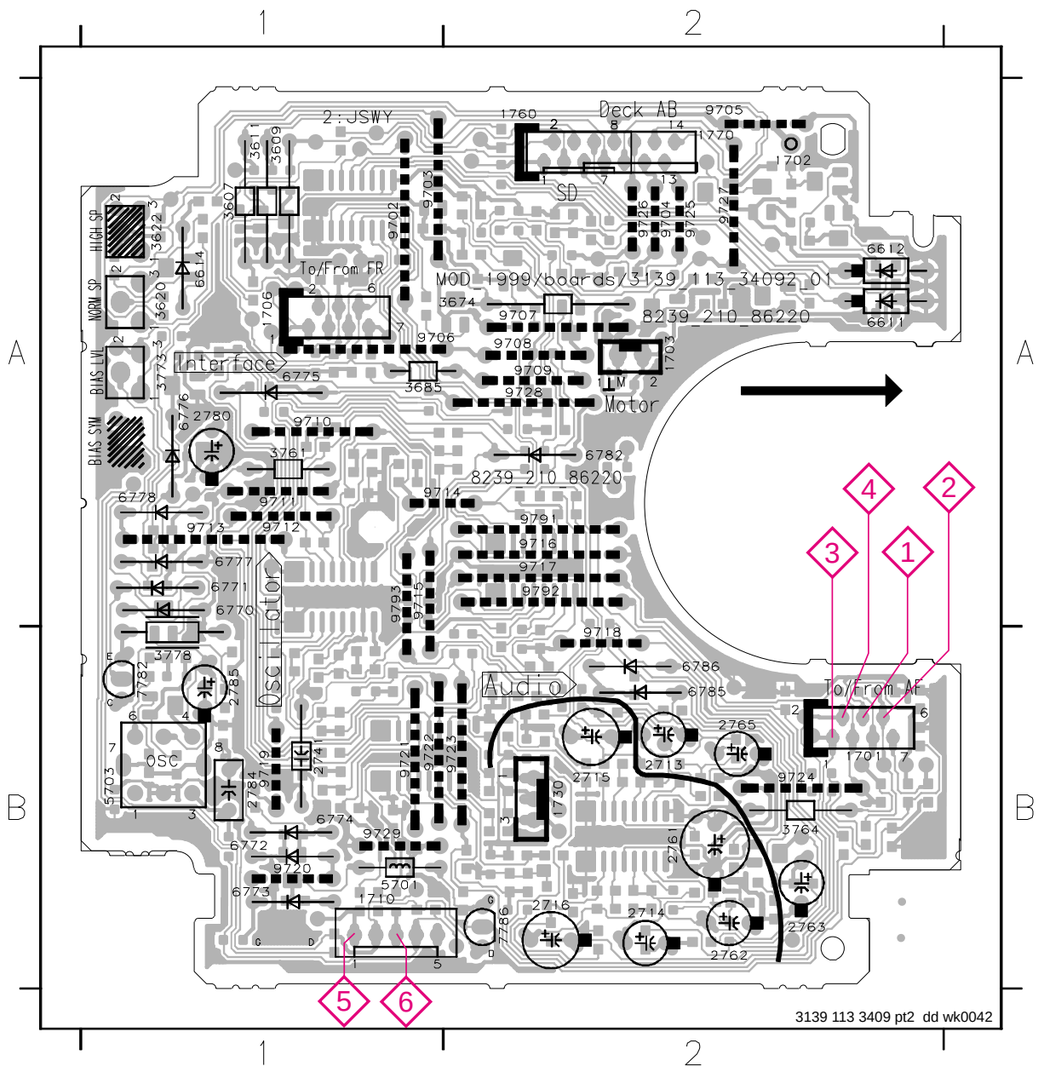


figure. 2

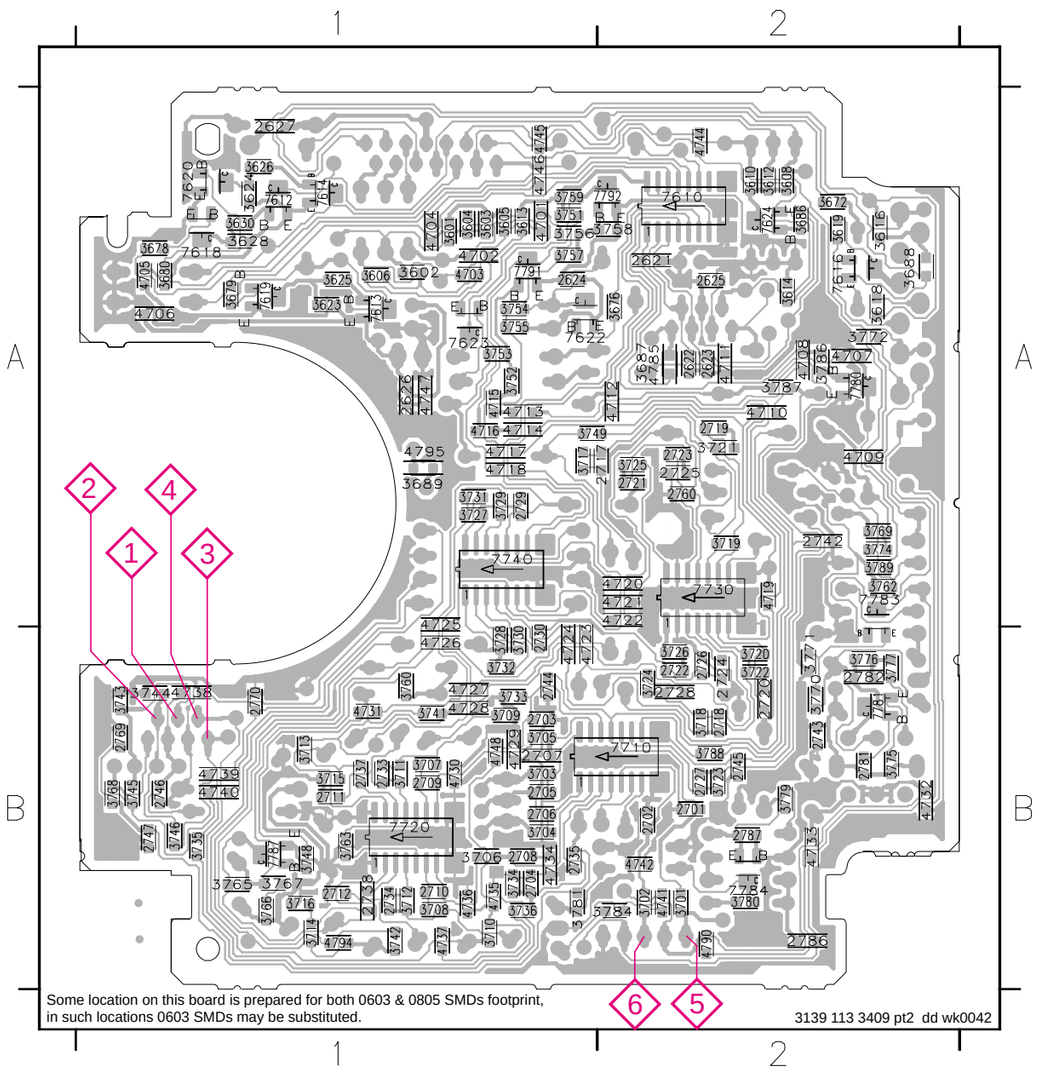
COMPONENT LAYOUT

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



CHIP LAYOUT

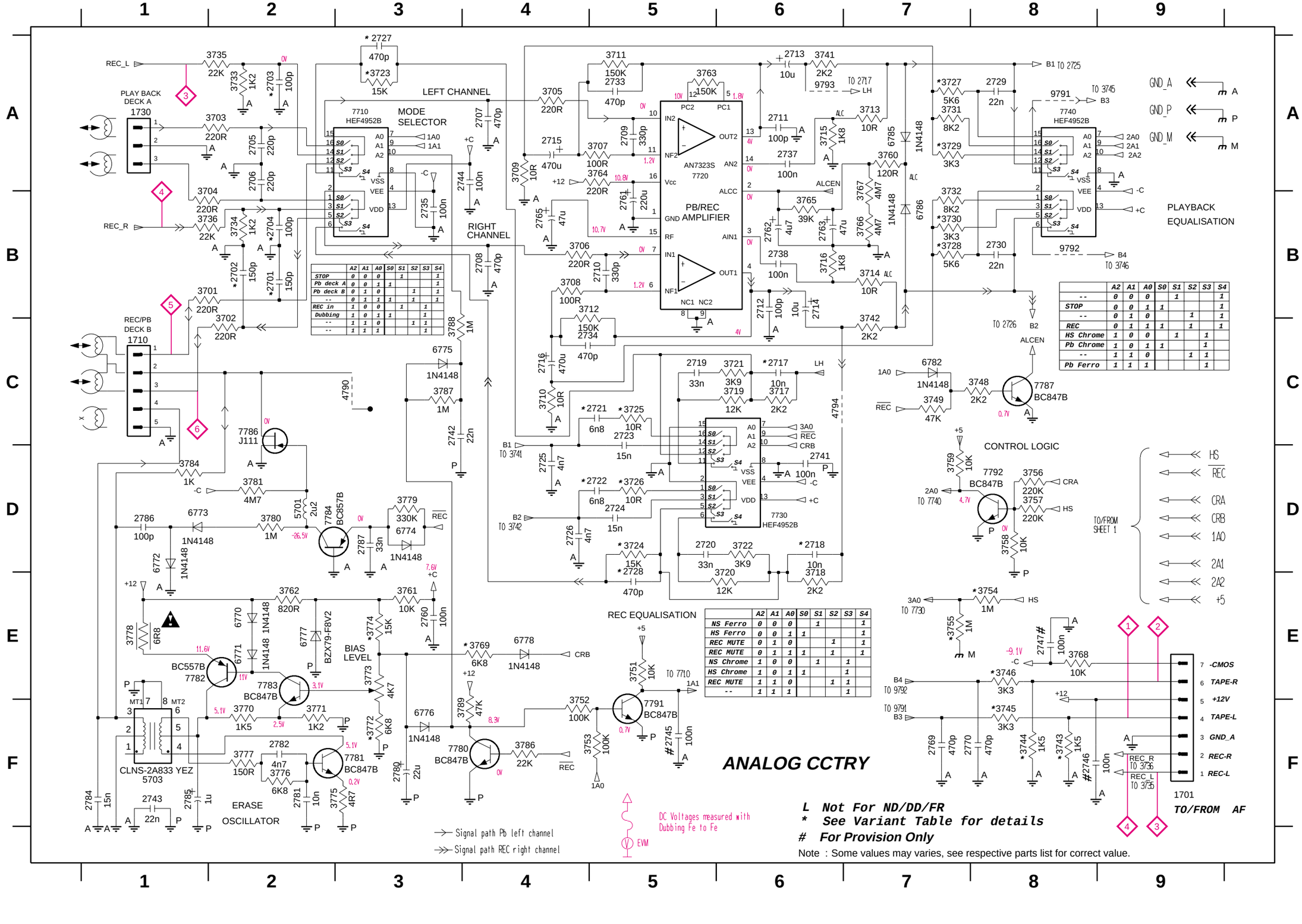
2621 A2	2724 B2	3602 A1	3688 A2	3725 A2	3757 A1	4701 A1	4727 B1	7612 A1
2622 A2	2725 A2	3603 A1	3689 A1	3726 B2	3758 A2	4702 A1	4728 B1	7613 A1
2623 A2	2726 B2	3604 A1	3701 B2	3727 A1	3759 A1	4703 A1	4729 B1	7614 A1
2624 A1	2727 B2	3605 A1	3702 B2	3728 B1	3760 B1	4704 A1	4730 B1	7616 A2
2625 A2	2728 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	



9-7

ANALOG CIRCUIT

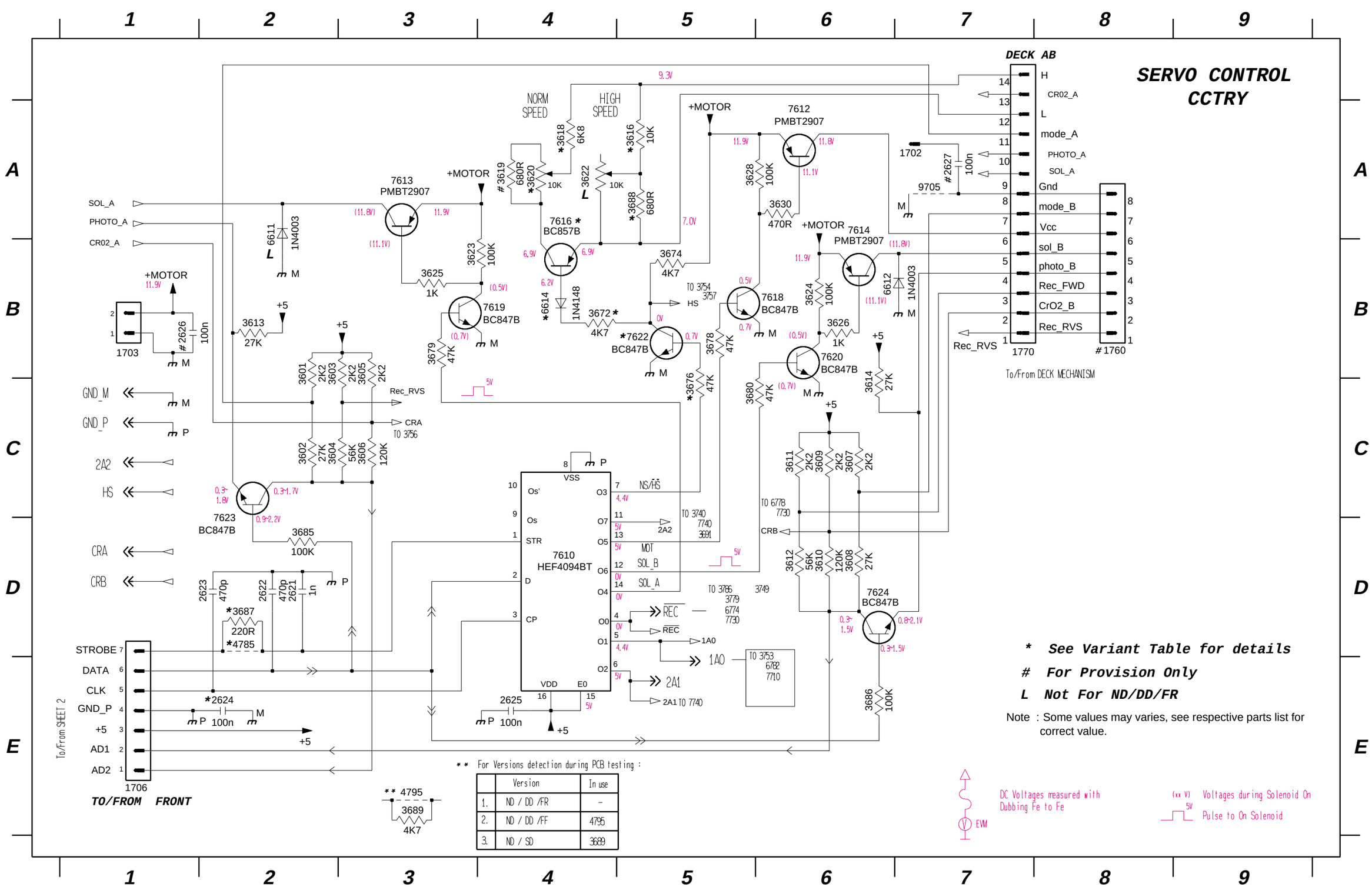
1701 F9	2705 A2	2712 B6	2719 C5	2726 D4	2735 B3	2745 F5	2765 B4	2785 F1	3705 A4	3712 B4	3719 C6	3726 D5	3733 A2	3744 F8	3753 F5	3760 A7	3767 A7	3774 E3	3781 D2	4794 C6	6774 D3	6786 B7	7782 E1	9791 A8
1710 C1	2706 A2	2713 A6	2720 D5	2727 A3	2737 A6	2746 F8	2769 F7	2786 D1	3706 B4	3713 A7	3720 E6	3727 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	

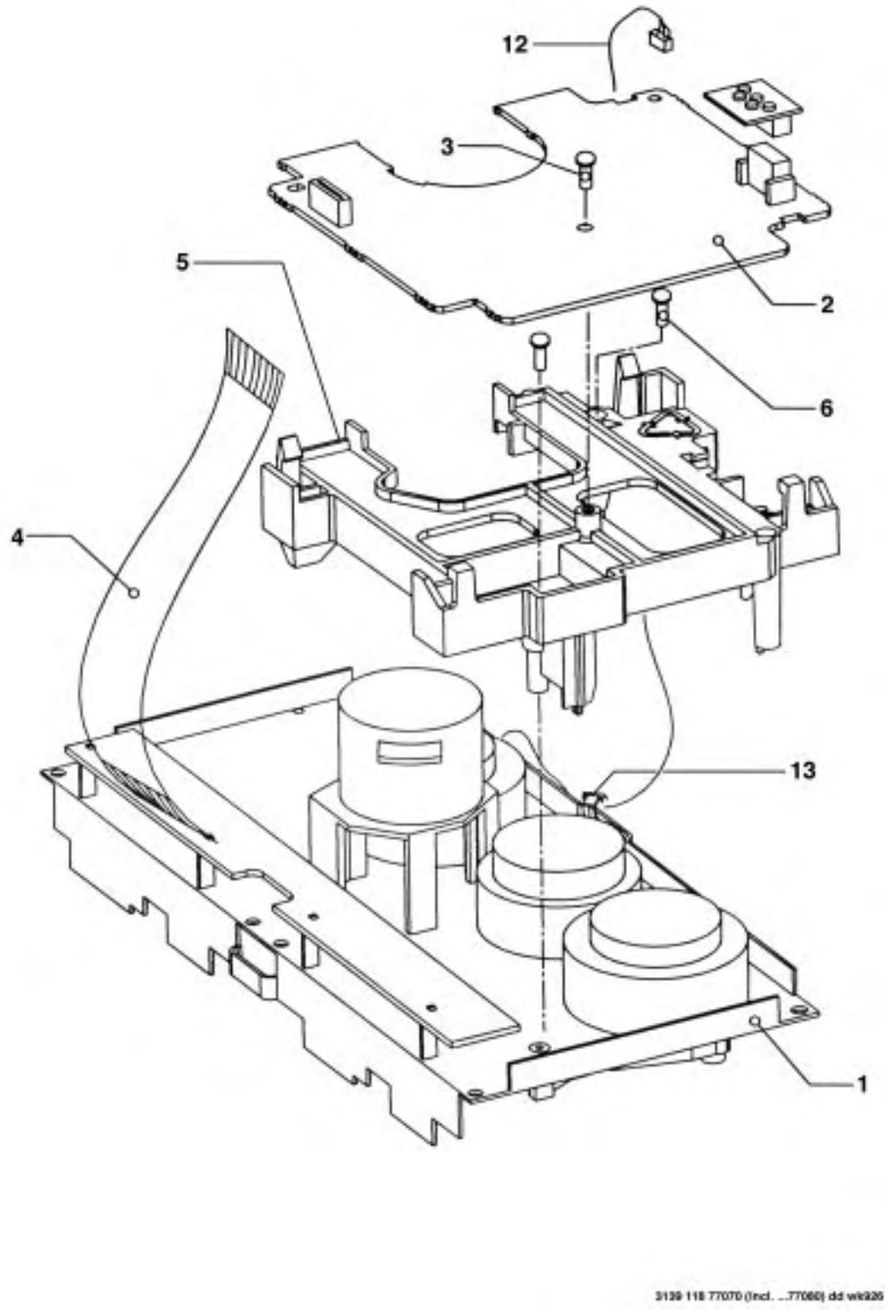


9-8

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 4795 E3 6614 B4 7613 A3 7618 B6 7622 B5 9705 A7
1706 E1 2621 D2 2624 E2 2627 A7 3603 B2 3606 C3 3609 C6 3612 D6 3616 A5 3620 A4 3624 B6 3628 A5 3674 B5 3679 B3 3686 E6 3689 E3 6611 A2 7610 D4 7614 A6 7619 B4 7623 D2



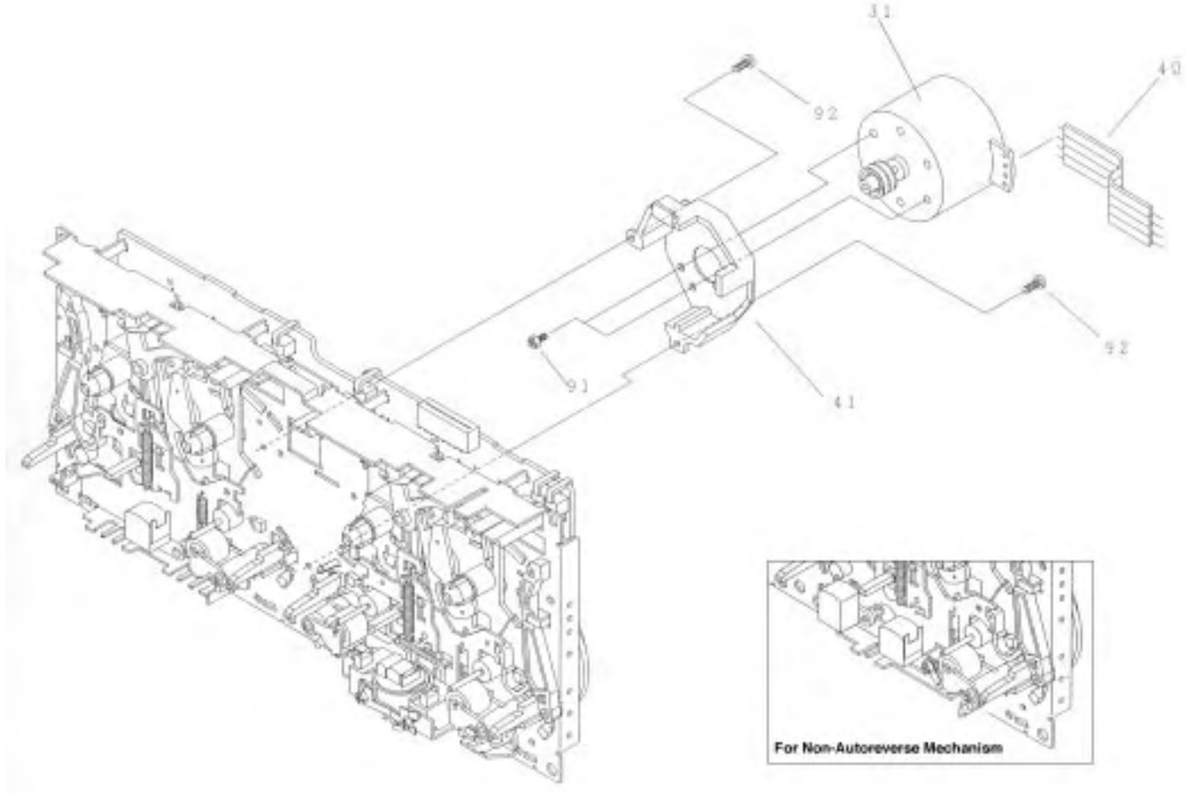


TAPE MODULE EXPLODED VIEW

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.

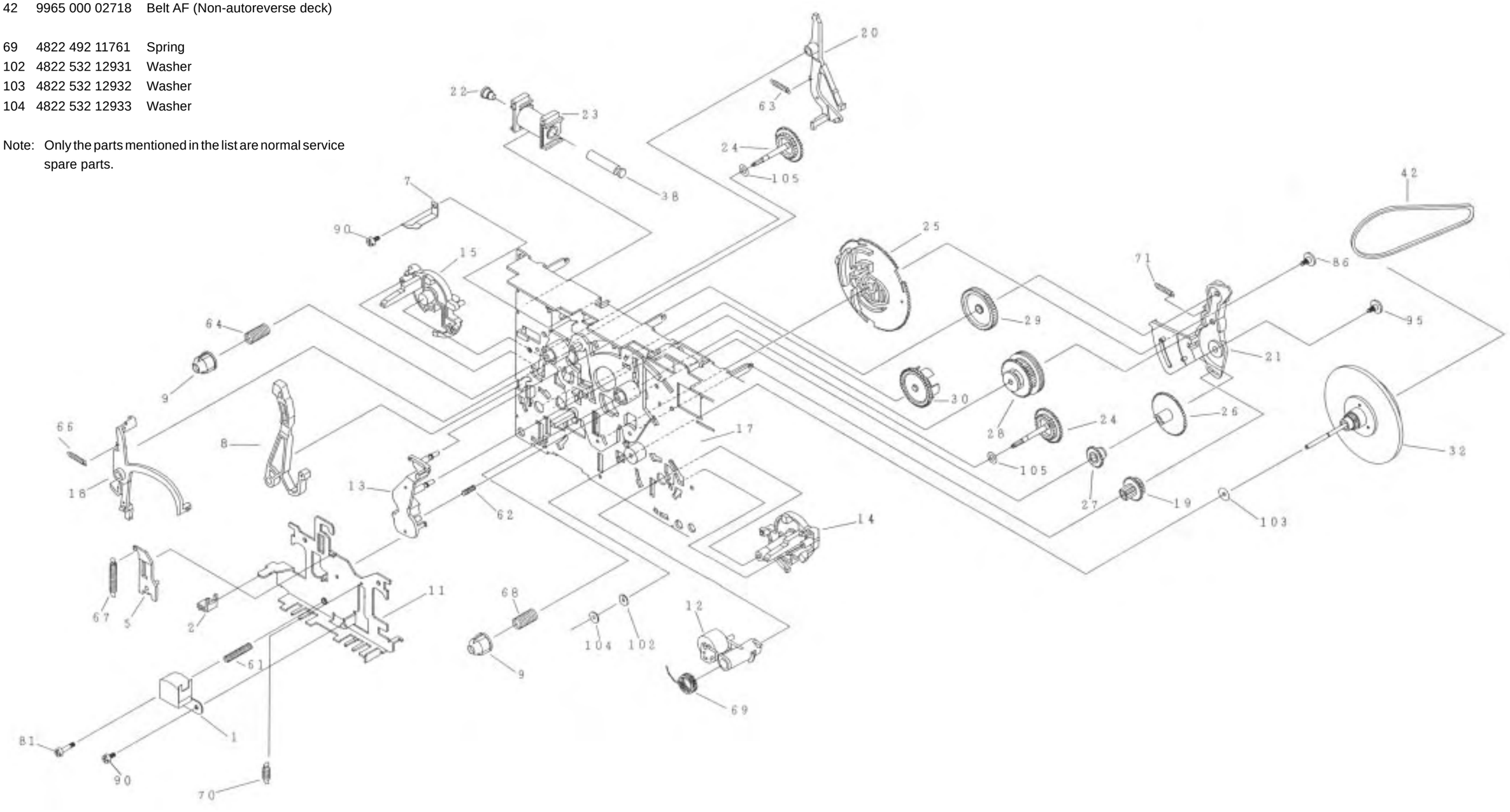
9-10

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.



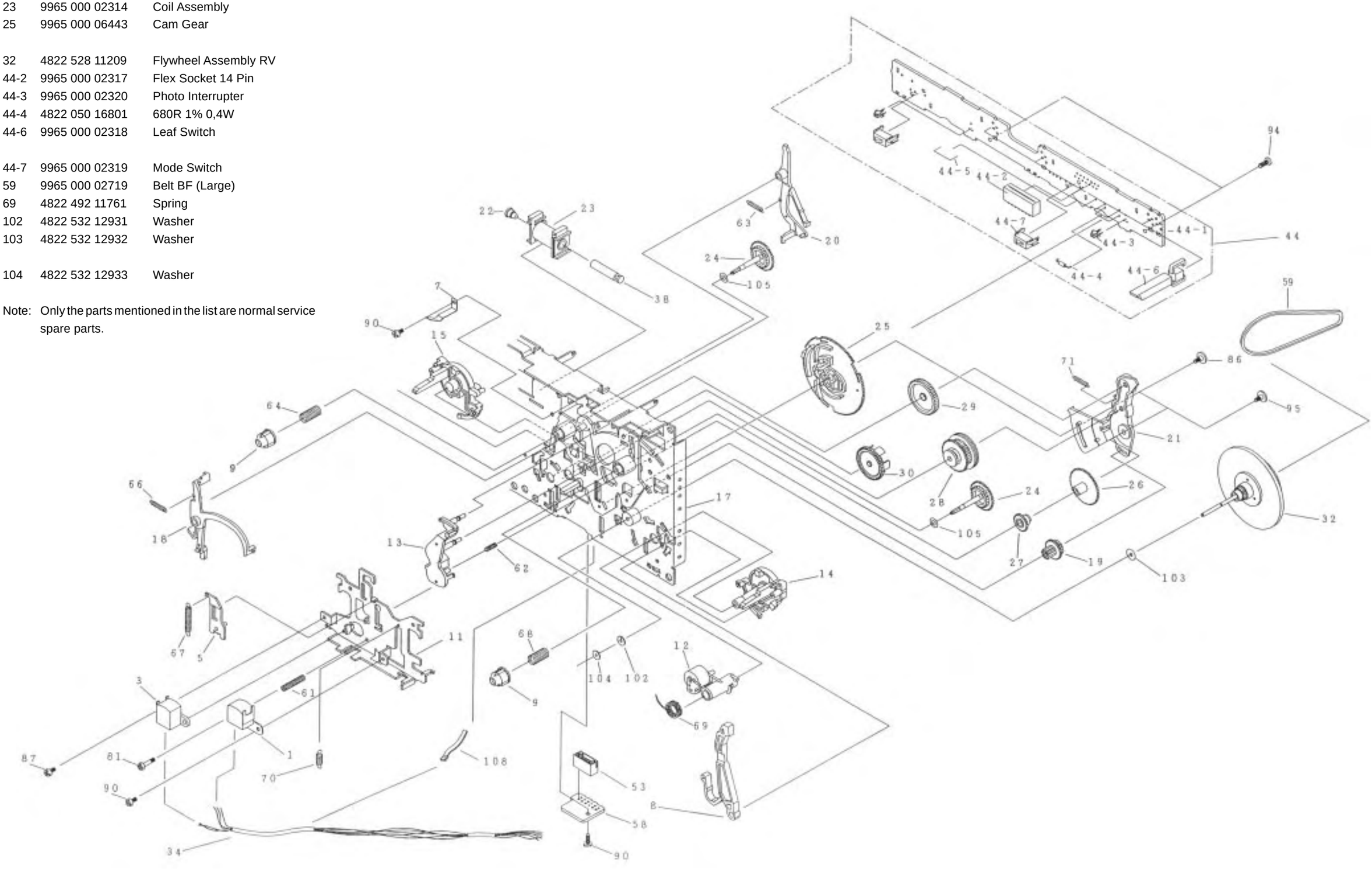
9-11

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.



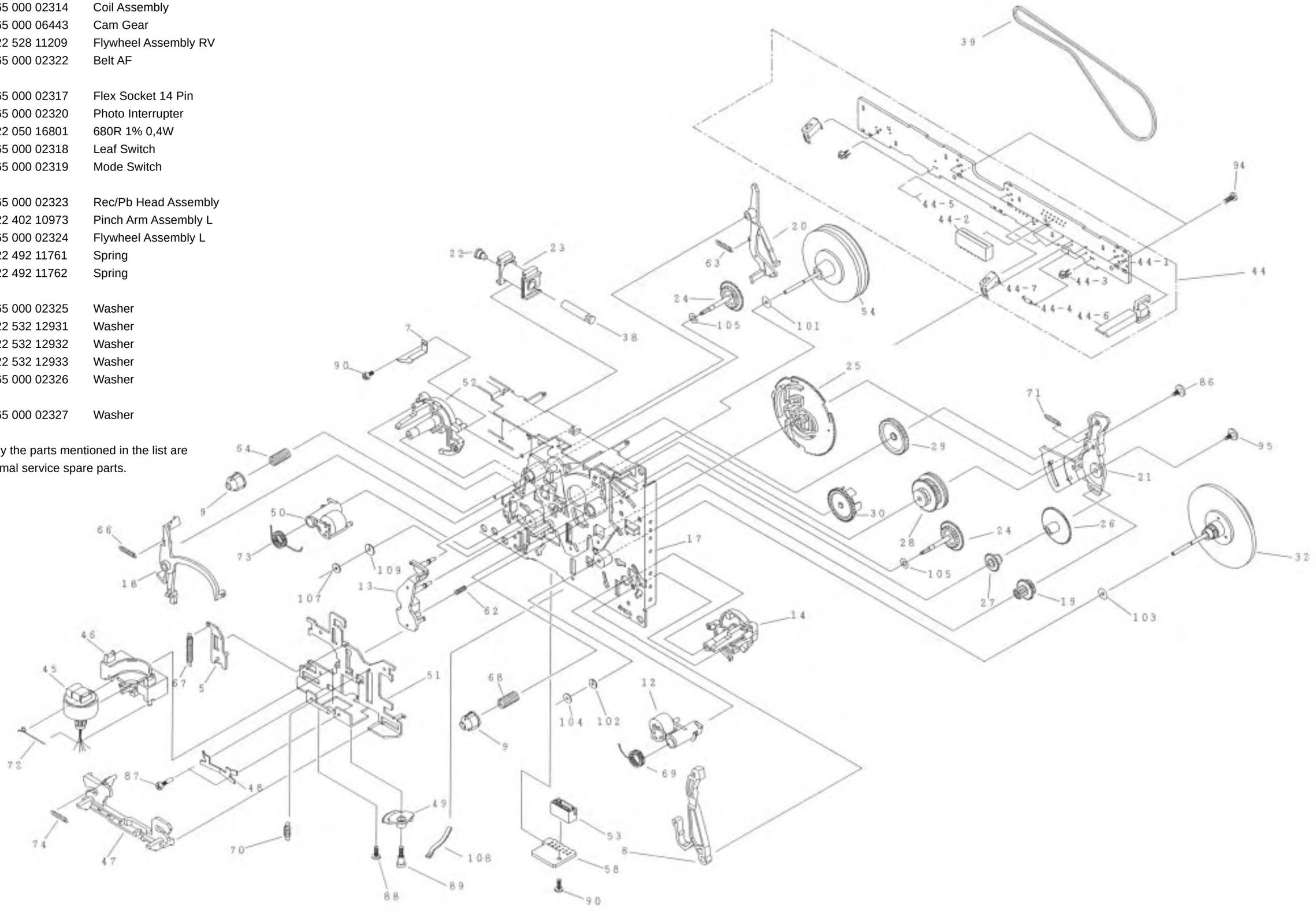
9-12

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.

3CDC-LC-MP3CD2002

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

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

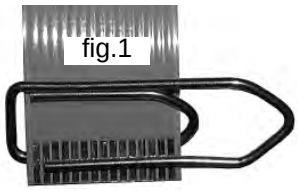
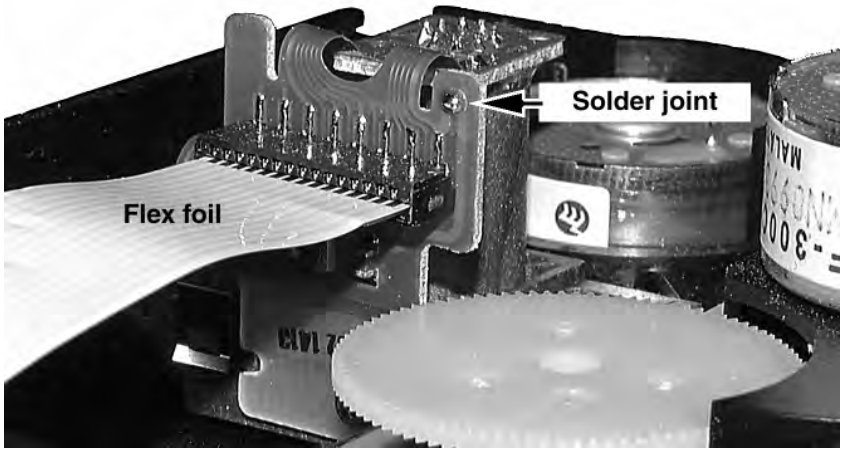


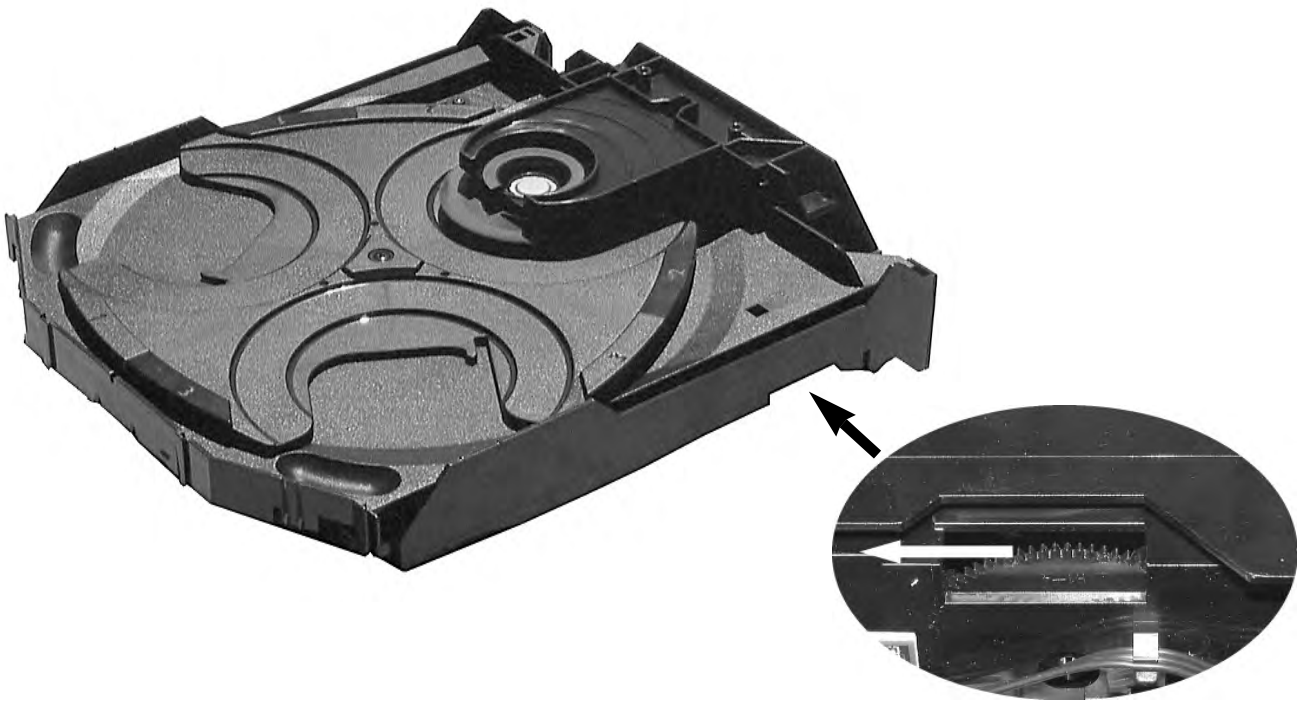
fig.1

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

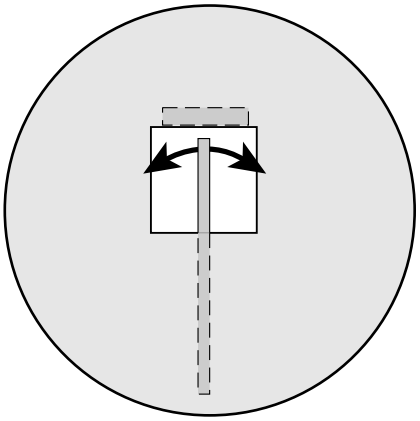
In case of a Supply fault, the tray can be opened manually.
1. Remove the top cover of the set to get access to the Changer Module.
2. Turn gearwheel clockwise (as shown in picture below).



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

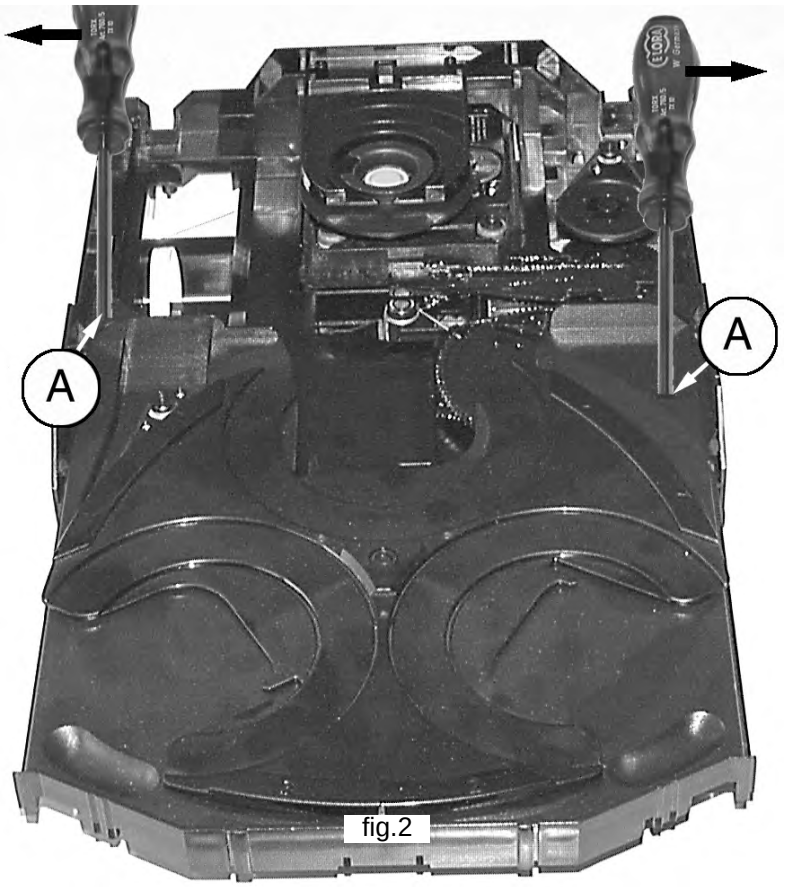
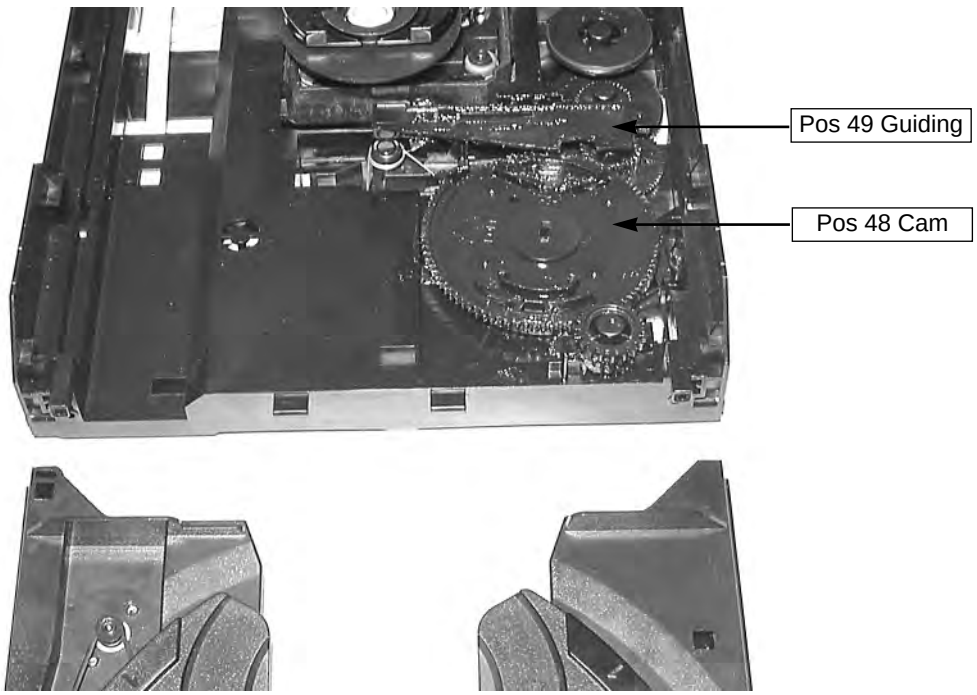


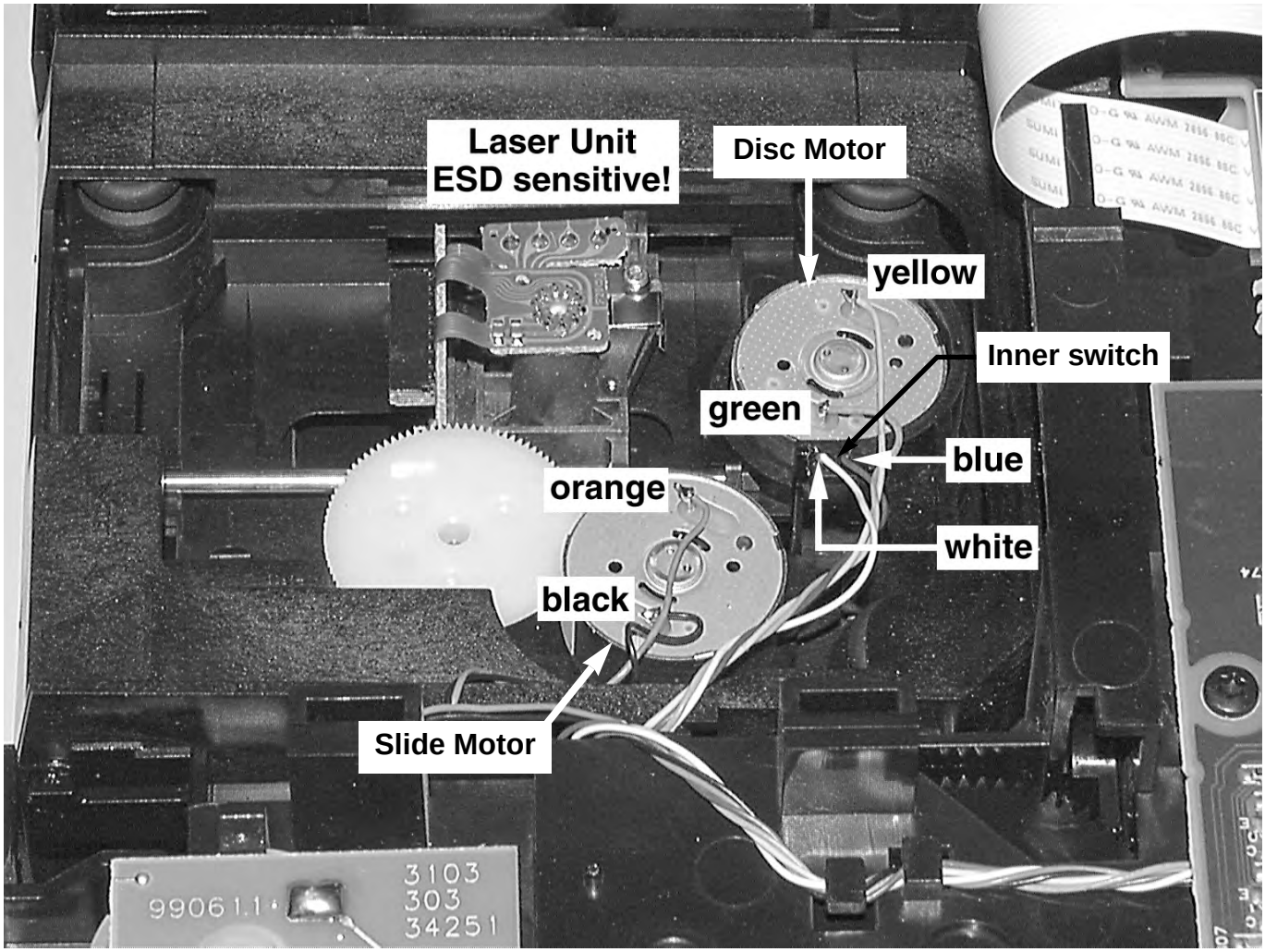
fig.2

Assembling of Tray

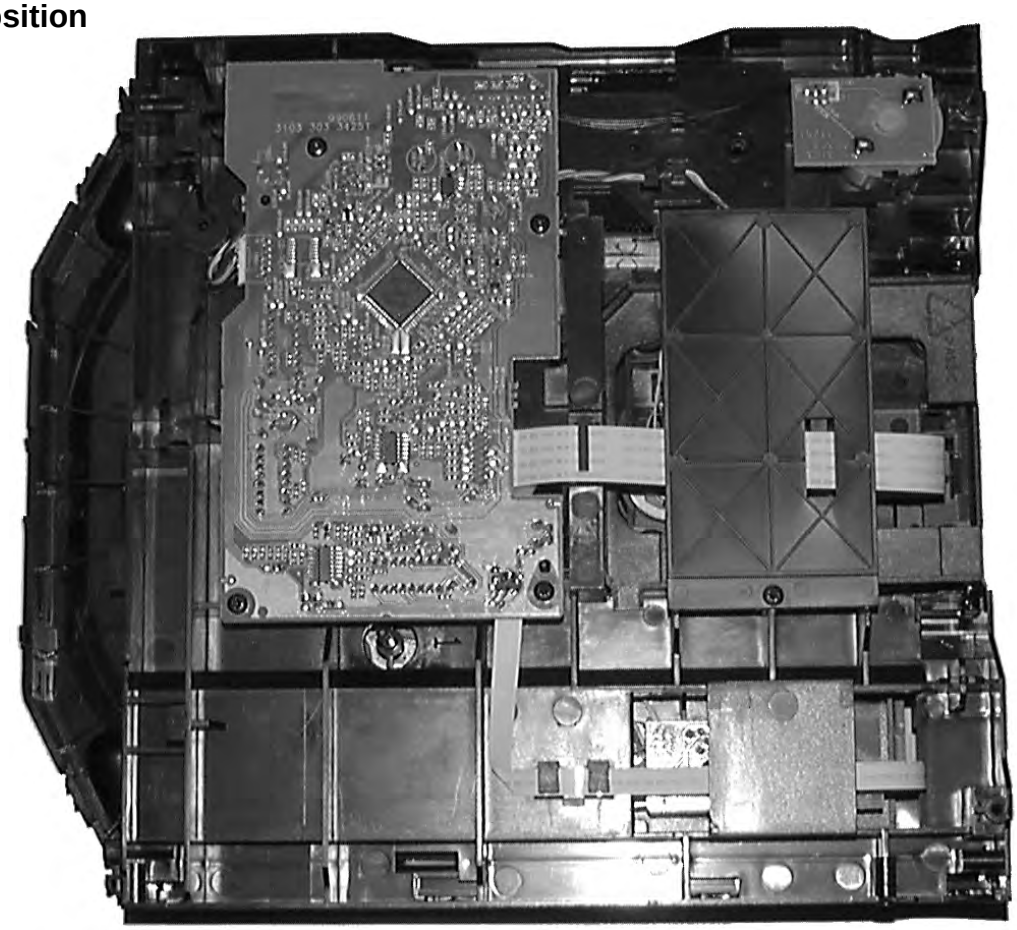
1. Turn Cam (pos. 48) clockwise to end position.
2. If necessary - move Guiding (pos. 49) to the right end position.
3. Insert the Tray.



Wiring



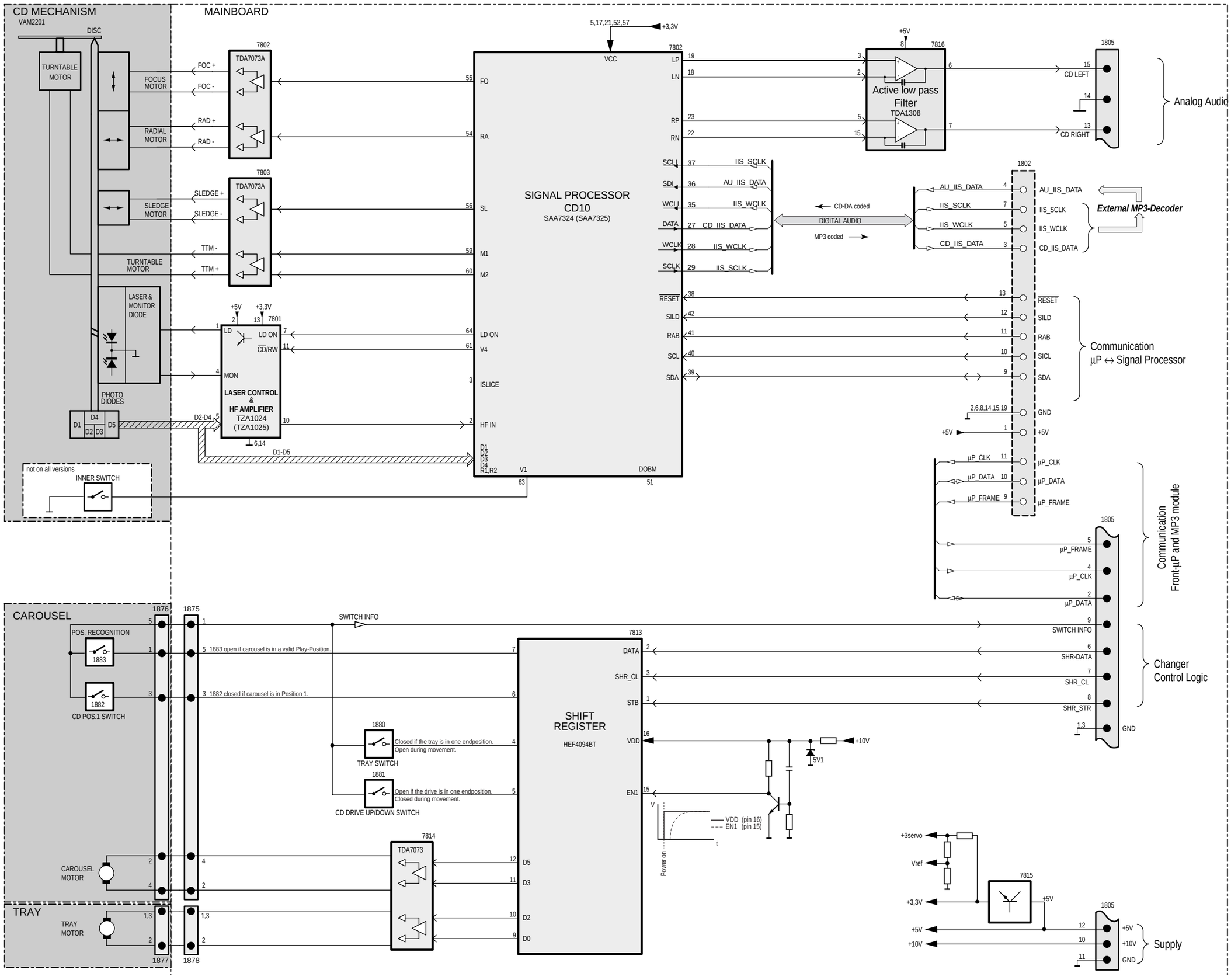
Service Position



10-5

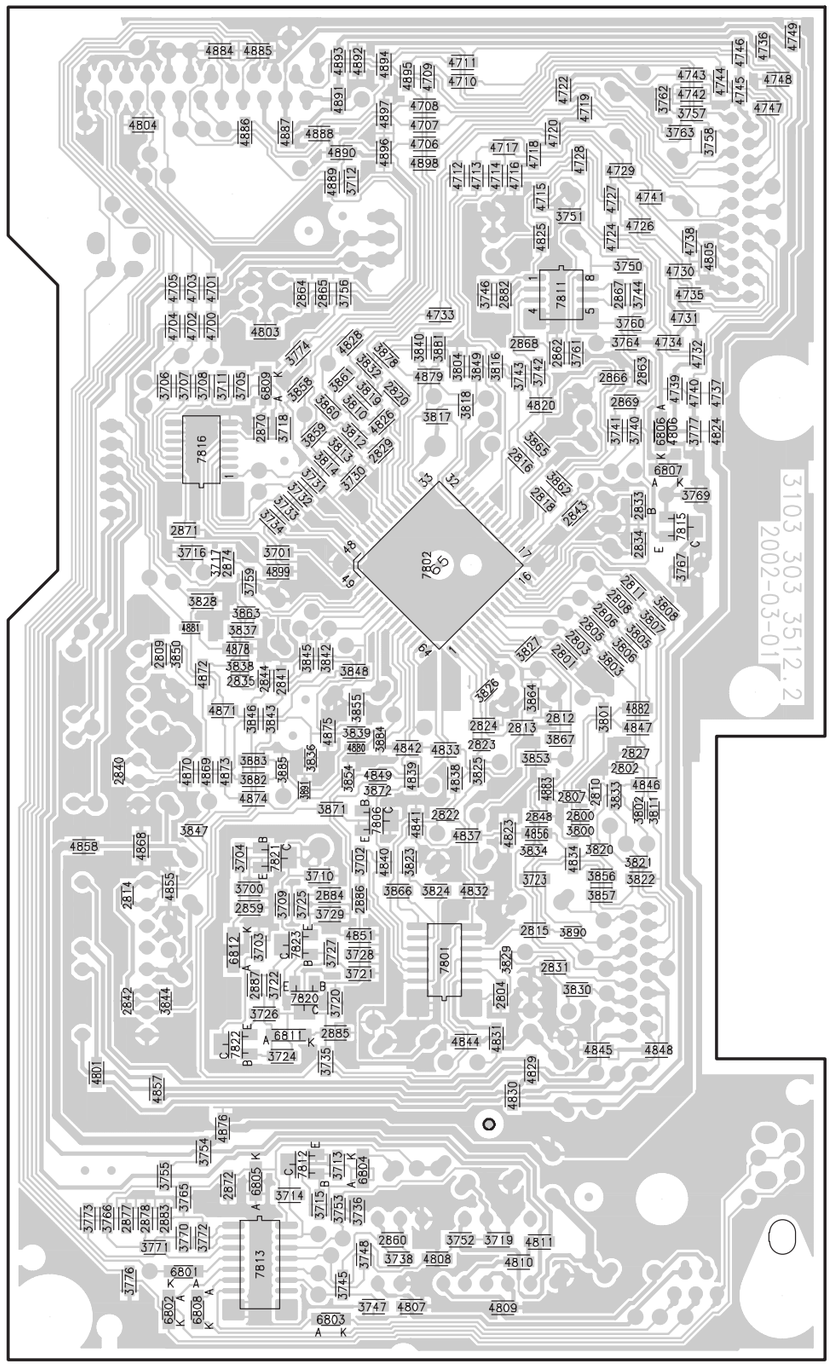
Blockdiagram

BLOCK DIAGRAM 3CDC-LC MP3 Version



10-6

3CDC-LC-MP3CD2002 Copperside view



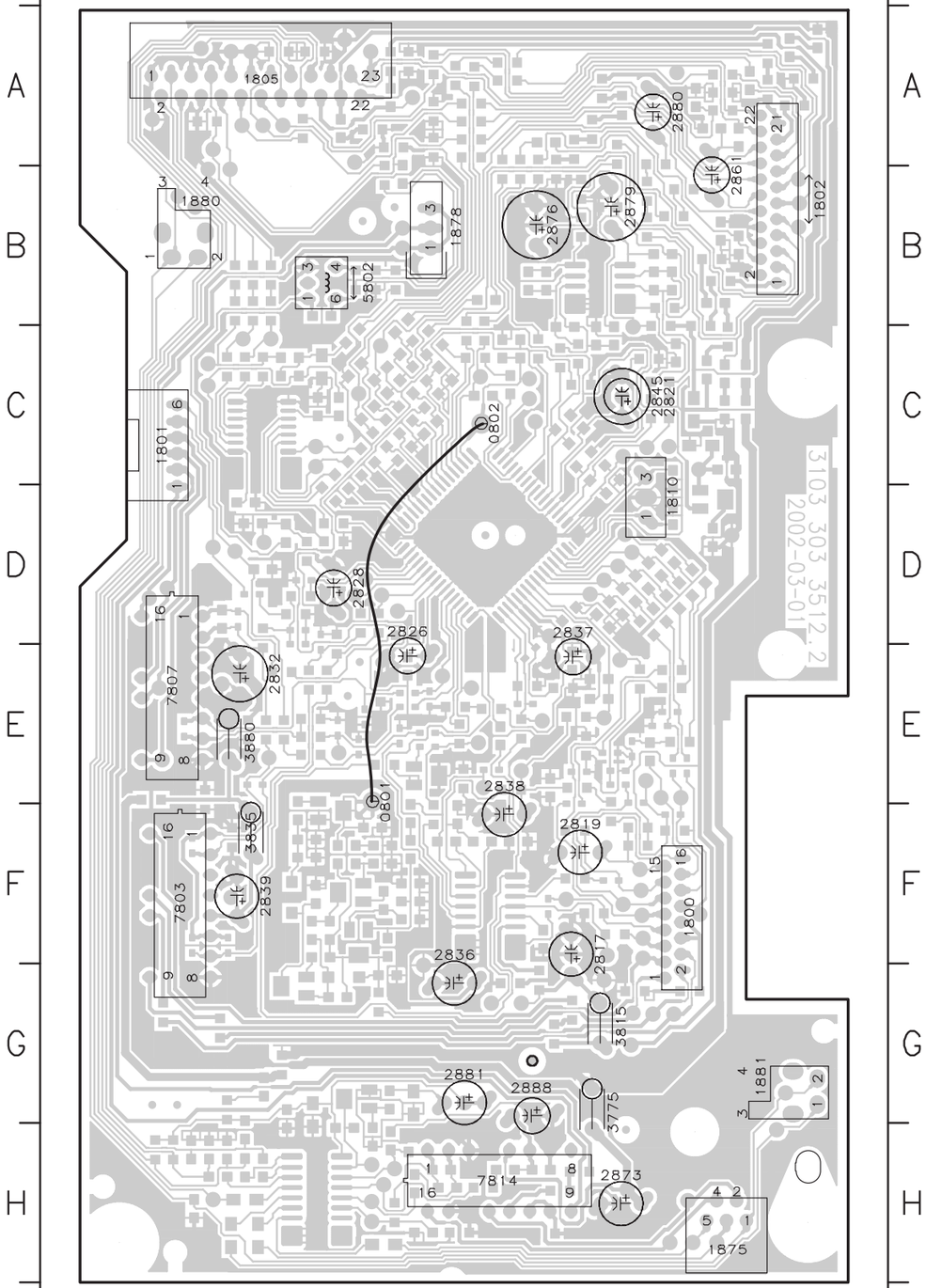
This assembly drawing shows a summary
of all possible versions.
For components used in a specific version
see schematic diagram respectively partslist.

3CDC-LC-MP3CD2002 Layout stage .2 2002-05-27

Mapping

Copperside								Componentside	
2800	E4	3730	C3	3848	D3	4823	E3	1451	B5
2801	D4	3731	C2	3849	C3	4824	C5	1455	A4
2802	E4	3732	C2	3850	D1	4825	B4	2450	C1
2803	D4	3733	C2	3853	E4	4826	C3	2451	B1
2804	F3	3734	D2	3854	E3	4828	C3	2452	C2
2805	D4	3735	G2	3855	E3	4829	G4	2453	B1
2806	D4	3736	H3	3856	F4	4830	G3	2454	B1
2807	E4	3738	H3	3857	F4	4831	G3	2455	D2
2808	D4	3740	C4	3858	C2	4832	F3	2457	A2
2809	D1	3741	C4	3859	C2	4833	E3	2461	D4
2810	E4	3742	C4	3860	C2	4834	F4	2463	A3
2811	D4	3743	C4	3861	C2	4837	E3	2464	D4
2812	E4	3744	B4	3862	C4	4838	E3	2465	D4
2813	E4	3745	H2	3863	D2	4839	E3	2466	A3
2814	F1	3746	B3	3864	E4	4840	F3	2467	B4
2815	F4	3747	H3	3865	C4	4841	E3	2468	B4
2816	C4	3748	H3	3866	F3	4842	E3	2469	B4
2818	C4	3750	B4	3867	E4	4844	G3	2472	D3
2820	C3	3751	B4	3871	E2	4845	G4	3450	C1
2822	E3	3752	H3	3872	E3	4846	E4	3451	B1
2823	E3	3753	H2	3878	C3	4847	E4	3454	D2
2824	E3	3754	G2	3881	C3	4848	G4	3465	C1
2827	E4	3755	G1	3882	E2	4849	E3	3467	A3
2829	C3	3756	B2	3883	E2	4851	F3	3468	A3
2831	F4	3757	A5	3884	E3	4855	F1	3469	C4
2833	C4	3758	A5	3885	E2	4856	E4	3470	D3
2834	D4	3759	D2	3890	F4	4857	G1	3471	C4
2835	D2	3760	B4	3891	E2	4858	E1	3473	C4
2840	E1	3761	C4	4700	B2	4868	E1	3474	A3
2841	D2	3762	A4	4701	B2	4869	E2	3475	C4
2842	F1	3763	A4	4702	B2	4870	E2	3476	C4
2843	D4	3764	C4	4703	B2	4871	E2	3477	B4
2844	D2	3765	H2	4704	B1	4872	D2	3479	A2
2848	E4	3766	H1	4705	B1	4873	E2	3480	C4
2859	F2	3767	D4	4706	A3	4874	E2	3481	C4
2860	H3	3769	C5	4707	A3	4875	E2	3484	B4
2862	C4	3770	H2	4708	A3	4876	G2	3490	A4
2863	C4	3771	H1	4709	A3	4878	D2	3494	A2
2864	B2	3772	H2	4710	A3	4879	C3	3496	A4
2865	B2	3773	H1	4711	A3	4880	E3	3499	C1
2866	C4	3774	C2	4712	B3	4881	D2	4450	A4
2867	B4	3776	H1	4713	B3	4882	E4	6451	D4
2868	C4	3777	C5	4714	B3	4883	E4	7451	B3
2869	C4	3800	E4	4715	B4	4884	A2	7456	D4
2870	C2	3801	E4	4716	B3	4885	A2	7458	D1
2871	D2	3802	E4	4717	A3	4886	A2		
2872	G2	3803	D4	4718	A4	4887	A2		
2874	D2	3804	C3	4719	A4	4888	A2		
2877	H1	3805	D4	4720	A4	4889	B2		
2878	H1	3806	D4	4722	A4	4890	A2		
2882	B3	3807	D4	4724	B4	4891	A2		
2883	H1	3808	D4	4726	B4	4892	A3		
2884	F2	3810	C3	4727	B4	4893	A2		
2885	G2	3811	E4	4728	A4	4894	A3		
2886	F3	3812	C3	4729	A4	4895	A3		
2887	F2	3813	C2	4730	B4	4896	A3		
3700	F2	3814	C2	4731	B4	4897	A3		
3701	D2	3816	C3	4732	C5	4898	A3		
3702	F3	3817	C3	4733	B3	4899	D2		
3703	F2	3818	C3	4734	C4	6801	H2		
3704	F2	3819	C3	4735	B5	6802	H1		
3705	C2	3820	E4	4736	A5	6803	H2		
3706	C1	3821	F4	4737	C5	6804	G3		
3707	C2	3822	F4	4738	B5	6805	G2		
3708	C2	3823	F3	4739	C4	6806	C4		
3709	F2	3824	F3	4740	C5	6807	C4		
3710	F2	3825	E3	4741	B4	6808	H2		
3711	C2	3826	E3	4742	A5	6809	C2		
3712	B3	3827	D4	4743	A5	6811	G2		
3713	G2	3828	D2	4744	A5	6812	F2		
3714	H2	3829	F3	4745	A5	7801	F3		
3715	H2	3830	F4	4746	A5	7802	D3		
3716	D2	3832	C3	4747	A5	7806	E3		
3717	D2	3833	E4	4748	A5	7811	B4		
3718	C2	3834	E4	4749	A5	7812	G2		
3719	H3	3836	E2	4801	G1	7813	H2		
3720	F2	3837	D2	4803	B2	7815	D4		
3721	F3	3838	D2	4804	A1	7816	C2		
3722	F2	3839	E3	4805	B5	7820	F2		
3723	F4	3840	C3	4806	C4	7821	F2		
3724	G2	3842	D2	4807	H3	7822	G2		
3725	F2	3843	E2	4808	H3	7823	F2		
3726	F2	3844	F1	4809	H3				
3727	F2	3845	D2	4810	H4				
3728	F3	3846	E2	4811	H4				
3729	F2	3847	E2	4820	C4				

3CDC-LC-MP3CD2002 Components seen from Copperside



This assembly drawing shows a summary
of all possible versions.
For components used in a specific version
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3CDC-LC-MP3CD2002 Layout stage .2 2002-05-27

10-7

3CDC-LC
mainboard
part 1

CD Drive

Mitsumi
MCD-1b
MCD-2

Sanyo
DA11T3CN

SANYO DA11T3CN
MITSUMI MCD 1b

Laser power control
HF-Amplifier

TZA1024/ TZA1025

EYE-PATTERN
800mVpp
TB = 0.5µs/div

U >400mV
->Laser damaged !

ESD sensitive lines!

Internal Supply

voltage stab.

Servo driver

TDA7073A

Motor driver

TDA7073A

Signal Processor

BITSTREAM DAC

ADC

PRE-PROCESSING

CONTROL FUNCTION

AUDIO PROCESSOR

SER. DATA INTERFACE

SER. DATA LOOPBACK INTERF.

VERSAT. INTERF.

MICROCONTROLLER INTERFACE

FRONT END

VERSATILE INTERFACE

DIG. PLL

EFM DEMOD

SRAM ADDR

MOTOR CONTROL

OUTPUT STAGES

ERROR CORR.

PEAK DET.

EBU INTERF.

SUBCODE PROCESSOR

VREF GEN.

7802
SAA7324 / SAA7325

Active Low Pass

7811-B
TDA1308T

7811-A
TDA1308T

LEFT CHANNEL

RIGHT CHANNEL

LEFT

RIGHT

CD_IIS_DATA

IIS_WCLK

IIS_SCLK

AU_IIS_DATA

Changer Control Logic

HEF4094BT
7813

BC847B
7812

Power on
Output enable delay

TRAY POS

UP/DOWN

POS1

POS recog.

BAS216(4x)

TRAY-MOTOR

CAROUSEL-MOTOR

	O4	O5
Tray stop	0V	0V
Moving in	0V	5V
Moving out	5V	0V

	O6	O7
Carousel stop	0V	0V
Turn left	0V	5V
Turn right	5V	0V

Connection to MP3CD2002 Board

Connection to Front / Combi Board

Analog Audio

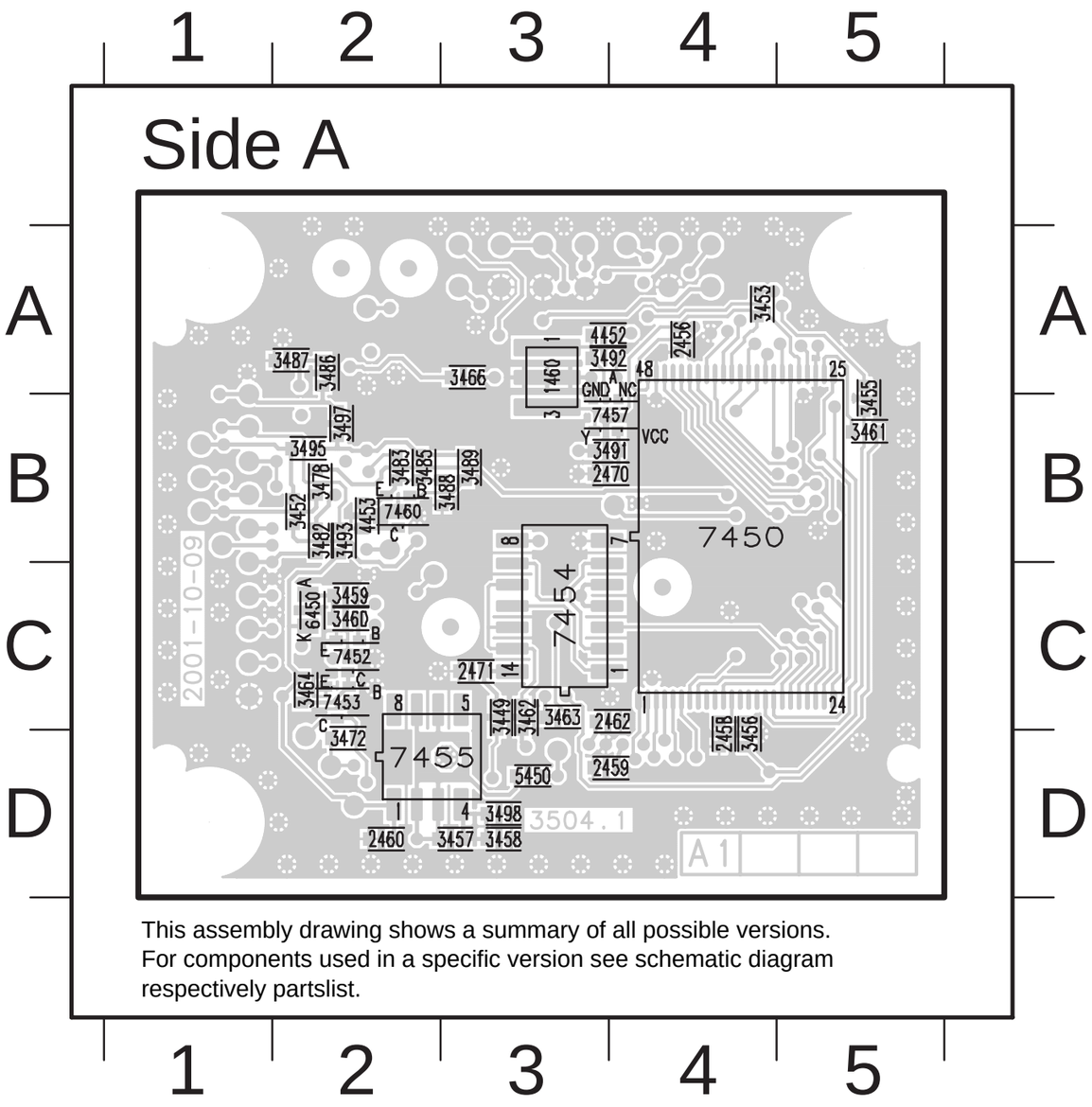
DC voltages measured in *PLAY MODE* with following conditions:
"+10V" = 10V
"+5V" = 5V

CAROUSEL-MOTOR

3CDC-LC M355(MP3 Version) 2002-05-23

10-8

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



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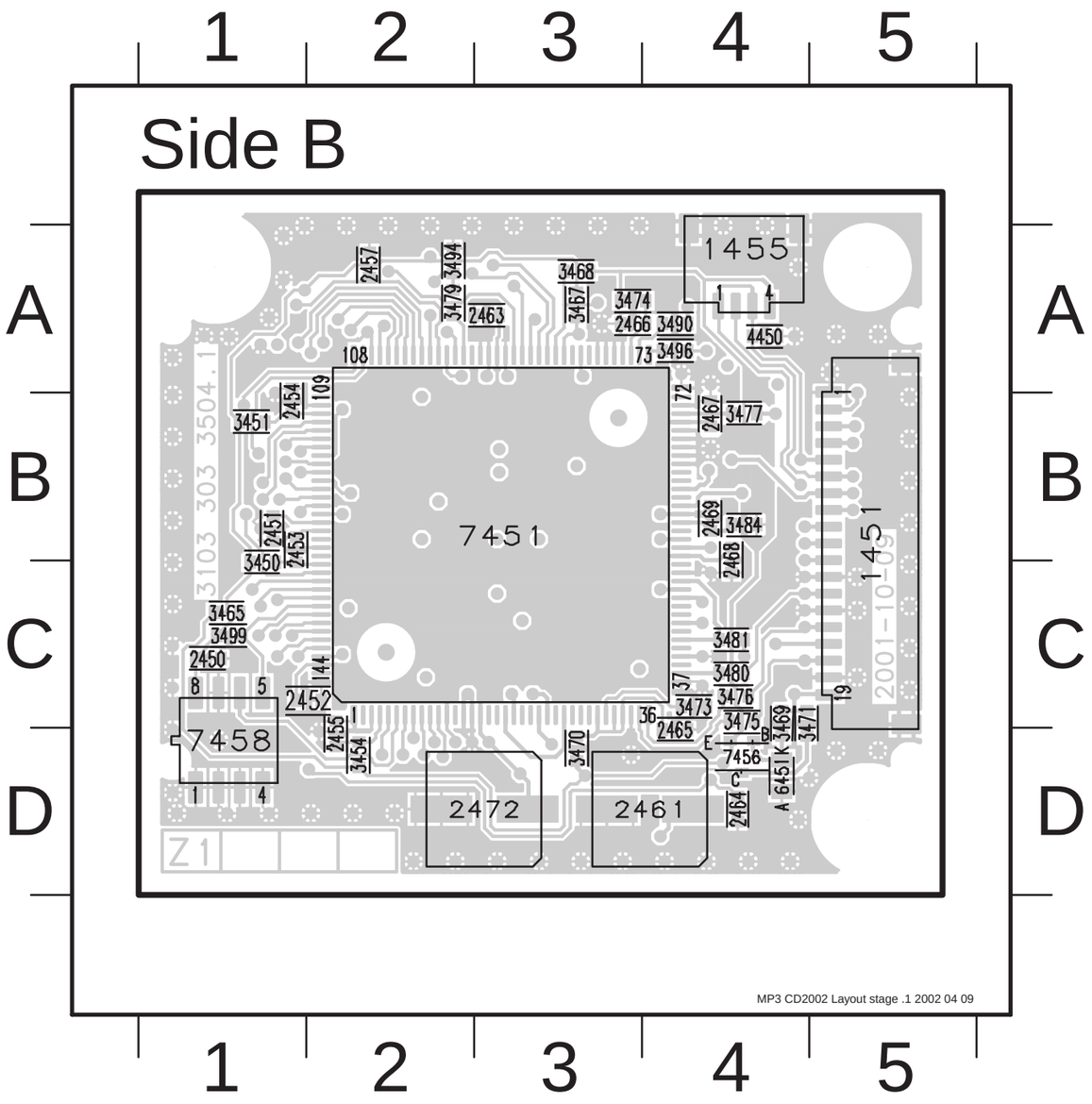
1451 B5	2457 A2	2469 B4	3469 C4	3479 A2	4450 A4
1455 A4	2461 D4	2472 D3	3470 D3	3480 C4	6451 D4
2450 C1	2463 A3	3450 C1	3471 C4	3481 C4	7451 B3
2451 B1	2464 D4	3451 B1	3473 C4	3484 B4	7456 D4
2452 C2	2465 D4	3454 D2	3474 A3	3490 A4	7458 D1
2453 B1	2466 A3	3465 C1	3475 C4	3494 A2	
2454 B1	2467 B4	3467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



10-9

MP3-CD-2002

DSP

For Flash version: TMS320VC5416
For ROM version: TMS320VC5406

Text version only

only for FLASH version

Flash EPROM

Voltage stabilisation

for 5V front uP

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

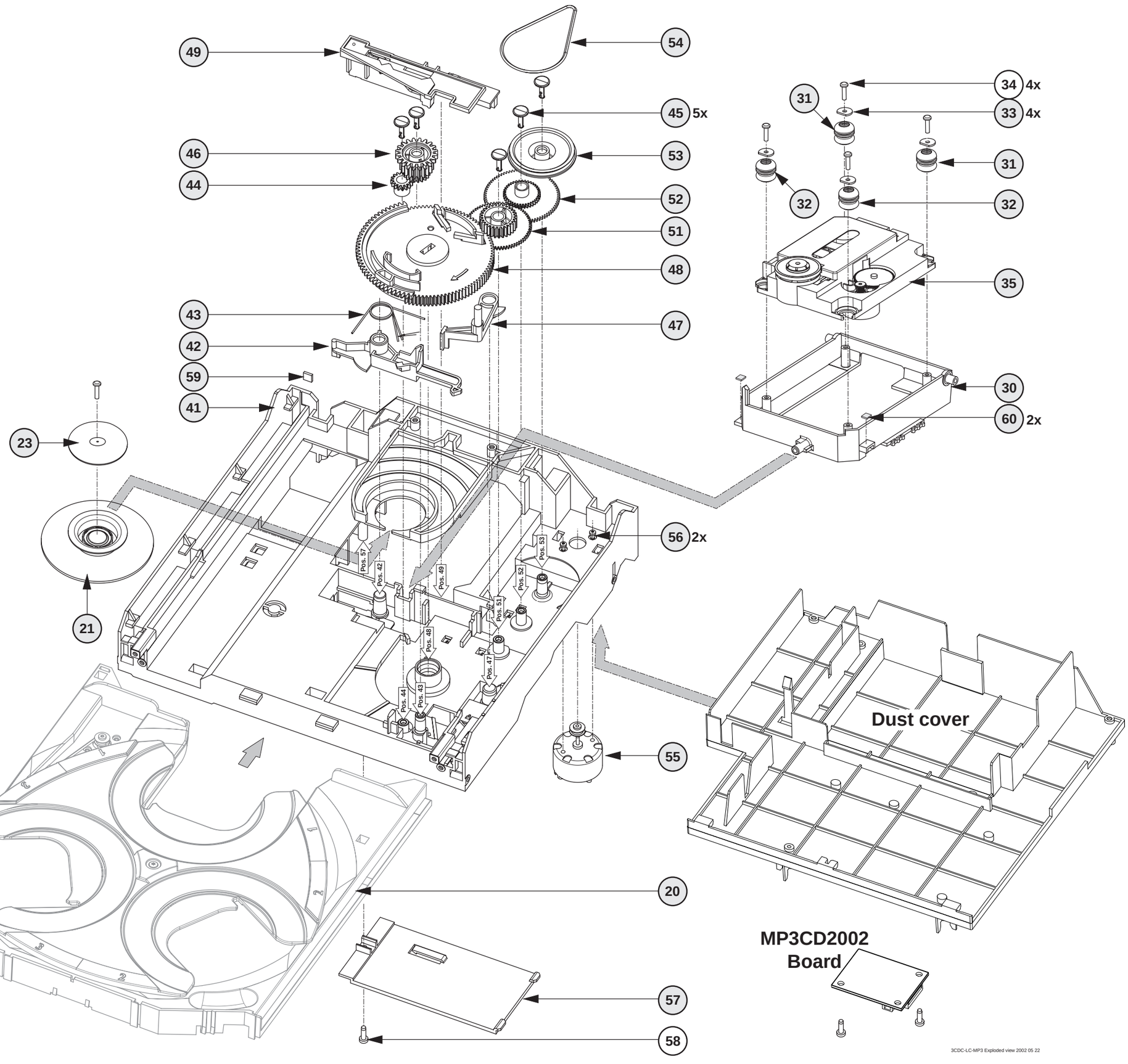
2451 B5
2452 B2
2453 B4
2454 B7
2455 C2
2456 C12
2457 D9
2458 C10
2459 D2
2460 E13
2461 D12
2462 D2
2463 D8
2464 G12
2465 G2
2466 G8
2467 H6
2468 H4
2469 H5
2470 D9
2471 E11
2472 D1
3449 E11
3450 A4
3451 B7
3452 H3
3453 A12
3454 C1
3455 C9
3456 C10
3457 D13
3458 D14
3459 F13
3460 F13
3461 E12
3462 E2
3463 F1
3464 F13
3465 A2
3466 H8
3467 F8
3468 F8
3469 E13
3470 F1
3471 E13
3472 H9
3473 G2
3474 G8
3475 G2
3476 H2
3477 H7
3478 B6
3479 H8
3480 H2
3481 H3
3482 H5
3483 H6
3484 H5
3485 I11
3486 I13
3487 I12
3488 I12
3489 I12
3490 H8
3491 D9
3492 F9
3493 H12
3494 H8
3495 H11
3496 H8
3497 I13
3498 D14
3499 A2
4450 C13
4452 F9
4453 I11
5450 B3
6450 E13
6451 E13
7450 A10
7451 D5
7452 F13
7453 F12
7454-A G11
7454-B F11
7454-C F11
7454-D G11
7455 D13
7456 E12
7457 E9
7458 A1
7460 I12

10-10

EXPLODED VIEW (3CDC-LC MODULE)

MECHANICAL PARTS ***Loader***

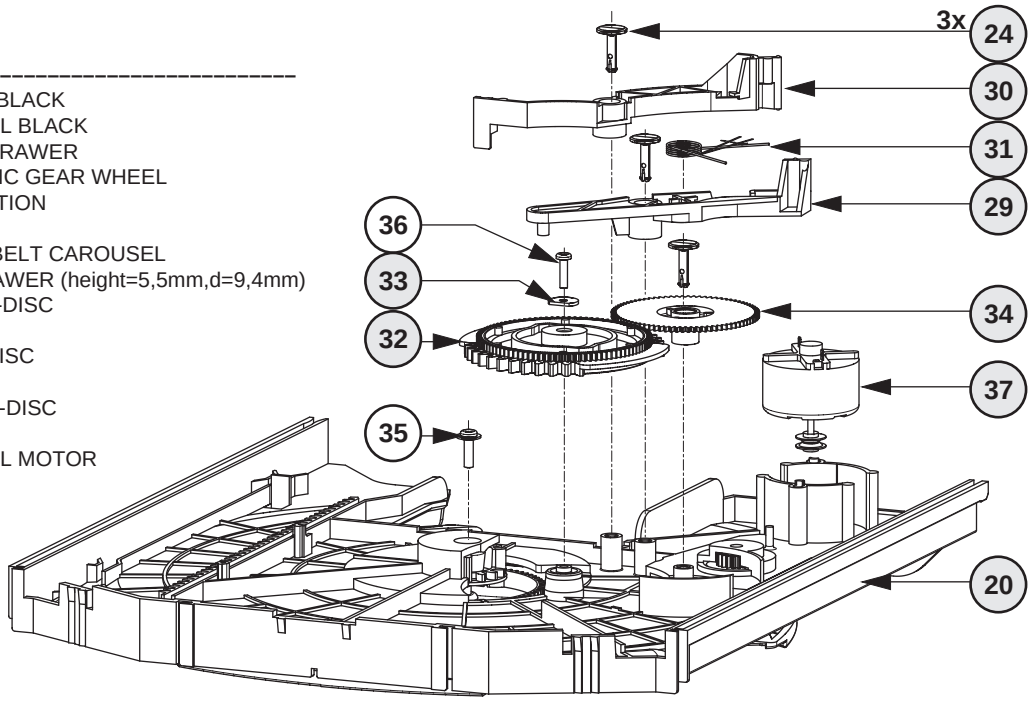
20	3103 304 66500	DRAWER BLACK
21	3140 114 29070	PRESSURE RING-DA11
23	3140 111 21270	METAL RING-DA11
30	3103 304 66560	SUPPORT
31	4822 529 10386	RUBBER DAMPER CD DRIVE, REAR
32	4822 529 10387	RUBBER DAMPER CD DRIVE, FRONT
33	3103 304 06970	WASHER
35	3103 309 05350	CD DRIVE MCD1B
41	3103 304 66480	FRAME
42	3103 304 66540	BRACKET-GUIDING
43	3103 301 06460	SPRING-GUIDING
44	3103 304 06890	GEAR-3
45	3103 304 06980	NAIL FIXATION
46	3103 304 06880	GEAR-2
47	3103 304 66530	BRACKET-LOAD
48	3103 304 06910	CAM
49	3103 304 66510	GUIDING
51	3103 304 06900	GEAR-4
52	3103 304 06870	GEAR-1
53	3103 304 06960	PULLEY-FRAME
54	3103 304 66910	DRIVING-BELT-DRAWER
55	4822 361 10753	TRAY MOTOR
56	4822 502 12548	SCREW M2,6X3,5
57	3103 304 69880	COVER-DA11
59	4822 466 12146	RUBBER



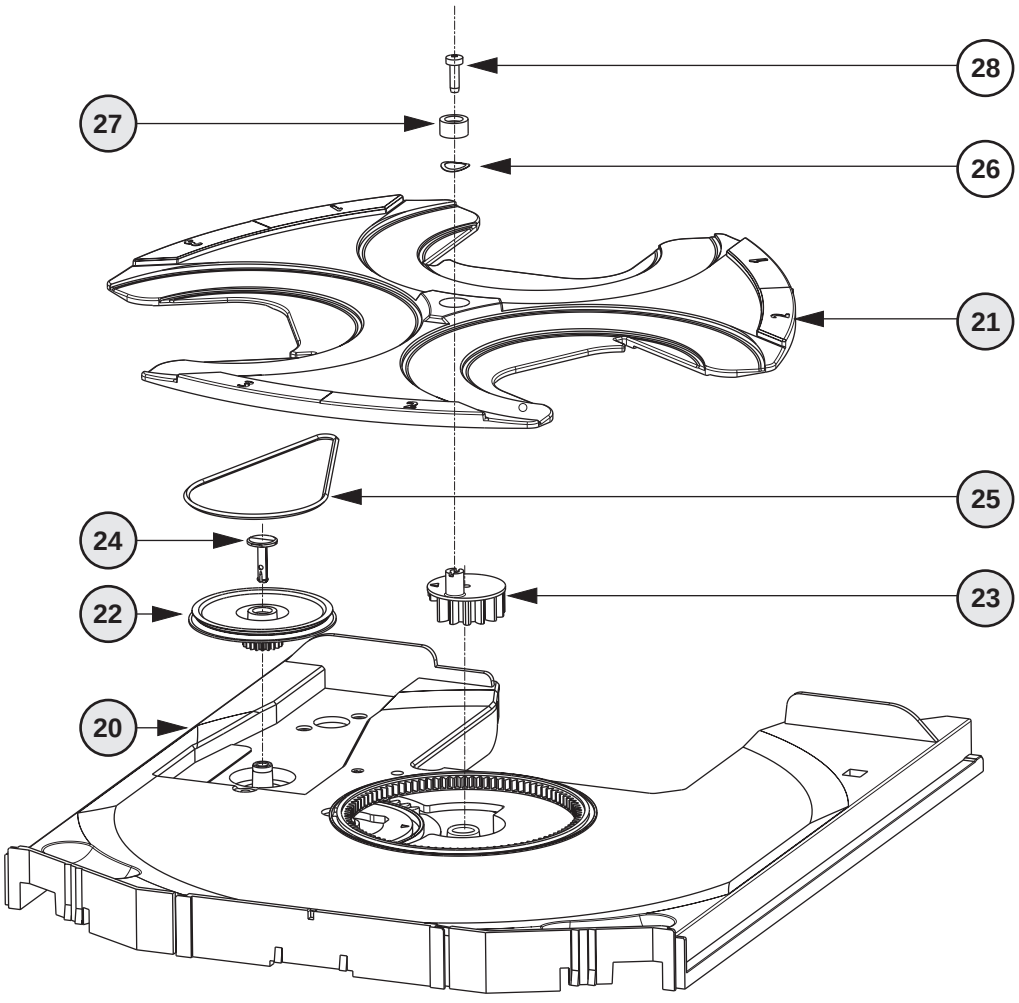
Drawer bottom view

MECHANICAL PARTS ***Drawer***

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



Drawer top view



X spare part

Y non spare part

3CDC-LC Drawer assy 1999 09 13

ELECTRICAL PARTSLIST 3CDC-LC MODULE

MISCELLANEOUS

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

CAPACITORS

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

CAPACITORS

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

RESISTORS

3713 ©	4822 051 30223	22kΩ	5%	0,06W
3714 ©	4822 051 30103	10kΩ	5%	0,06W
3715 ©	4822 117 13632	100kΩ	1%	0,06W
3719 ©	4822 051 30392	3,9kΩ	5%	0,06W
3723 ©	4822 051 20273	27kΩ	5%	0,1W
3730 ©	4822 051 20333	33kΩ	5%	0,1W
3736 ©	4822 117 12925	47kΩ	1%	0,06W
3738 ©	4822 051 30271	270Ω	5%	0,06W
3740 ©	4822 051 20223	22kΩ	5%	0,1W
3741 ©	4822 051 20223	22kΩ	5%	0,1W
3742 ©	4822 051 20223	22kΩ	5%	0,1W
3743 ©	4822 051 20223	22kΩ	5%	0,1W
3744 ©	4822 051 30103	10kΩ	5%	0,06W
3745 ©	4822 117 10833	10kΩ	1%	0,1W
3746 ©	4822 051 30103	10kΩ	5%	0,06W
3747 ©	4822 117 12925	47kΩ	1%	0,06W
3748 ©	4822 051 30103	10kΩ	5%	0,06W
3750 ©	4822 051 30102	1kΩ	5%	0,06W
3751 ©	4822 051 30102	1kΩ	5%	0,06W
3752 ©	4822 117 13632	100kΩ	1%	0,06W
3753 ©	4822 117 13632	100kΩ	1%	0,06W
3754 ©	4822 051 30221	220Ω	5%	0,06W
3755 ©	4822 117 11503	220Ω	5%	0,1W
3757 ©	4822 117 11373	100Ω	1%	0,1W
3758 ©	4822 051 30101	100Ω	5%	0,06W
3760 ©	4822 117 10833	10kΩ	1%	0,1W
3761 ©	4822 051 30103	10kΩ	5%	0,06W
3762 ©	4822 051 30223	22kΩ	5%	0,06W
3763 ©	4822 051 30223	22kΩ	5%	0,06W
3764 ©	4822 117 11373	100Ω	1%	0,1W
3765 ©	4822 051 30103	10kΩ	5%	0,06W
3766 ©	4822 117 10833	10kΩ	1%	0,1W
3767 ©	4822 051 30339	33Ω	5%	0,06W
3769 ©	4822 051 30101	100Ω	5%	0,06W
3770 ©	4822 051 30102	1kΩ	5%	0,06W
3771 ©	4822 051 30102	1kΩ	5%	0,06W
3772 ©	4822 051 30471	470Ω	5%	0,06W
3773 ©	4822 117 10833	10kΩ	1%	0,1W
3774 ©	4822 117 11373	100Ω	1%	0,1W
3775 ⚠	4822 052 10338	3,3Ω	5%	NFR25
3776 ©	4822 051 30103	10kΩ	5%	0,06W
3800 ©	4822 051 30273	27kΩ	5%	0,06W
3801 ©	4822 117 10833	10kΩ	1%	0,1W
3802 ©	4822 051 30273	27kΩ	5%	0,06W
3803 ©	4822 117 10833	10kΩ	1%	0,1W
3805 ©	4822 051 30103	10kΩ	5%	0,06W
3806 ©	4822 051 30103	10kΩ	5%	0,06W
3807 ©	4822 051 30103	10kΩ	5%	0,06W
3808 ©	4822 051 30103	10kΩ	5%	0,06W

ELECTRICAL PARTSLIST 3CDC-LC MODULE

RESISTORS

3810 ©	4822 051 30471	470Ω	5%	0,06W	
3811 ©	4822 051 30273	27kΩ	5%	0,06W	
3812 ©	4822 051 20471	470Ω	5%	0,1W	
3813 ©	4822 051 20471	470Ω	5%	0,1W	
3814 ©	4822 051 20471	470Ω	5%	0,1W	
3815 ▲	4822 052 10478	4,7Ω	5%	NFR25	
3816 ©	4822 051 20471	470Ω	5%	0,1W	
3817 ©	4822 051 30471	470Ω	5%	0,06W	
3818 ©	4822 051 30471	470Ω	5%	0,06W	
3819 ©	4822 051 20471	470Ω	5%	0,1W	
3820 ©	4822 051 30332	3,3kΩ	5%	0,06W	
3821 ©	4822 051 30332	3,3kΩ	5%	0,06W	
3822 ©	4822 051 20332	3,3kΩ	5%	0,1W	
3823 ©	4822 051 30102	1kΩ	5%	0,06W	
3824 ©	4822 051 30102	1kΩ	5%	0,06W	
3825 ©	4822 051 10102	1kΩ	2%	0,25W	
3826 ©	4822 051 30223	22kΩ	5%	0,06W	
3827 ©	4822 051 20273	27kΩ	5%	0,1W	
3829 ©	4822 117 13608	4,7Ω	5%	0,06W	
3830 ©	4822 051 20223	22kΩ	5%	0,1W	
3833 ©	4822 051 30223	22kΩ	5%	0,06W	
3834 ©	4822 051 30223	22kΩ	5%	0,06W	
3835 ▲	4822 052 10338	3,3Ω	5%	NFR25	
3836 ©	4822 117 12903	1,8kΩ	1%	0,06W	
3837 ©	4822 051 10102	1kΩ	2%	0,25W	
3838 ©	4822 051 30102	1kΩ	5%	0,06W	
3839 ©	4822 117 13632	100kΩ	1%	0,06W	
3840 ©	4822 051 20471	470Ω	5%	0,1W	
3842 ©	4822 117 10834	47kΩ	1%	0,1W	
3843 ©	4822 051 20333	33kΩ	5%	0,1W	
3844 ©	4822 051 30472	4,7kΩ	5%	0,06W	
3845 ©	4822 117 10834	47kΩ	1%	0,1W	
3846 ©	4822 051 20333	33kΩ	5%	0,1W	
3847 ©	4822 051 30682	6,8kΩ	5%	0,06W	
3848 ©	3198 021 52240	220kΩ	5%	0,1W	
3849 ©	4822 051 30472	4,7kΩ	5%	0,06W	
3850 ©	4822 051 30682	6,8kΩ	5%	0,06W	
3853 ©	4822 051 20471	470Ω	5%	0,1W	
3854 ©	4822 117 11373	100Ω	1%	0,1W	
3855 ©	4822 117 12971	15Ω	5%	0,06W	
3856 ©	4822 117 12521	68Ω	1%	0,1W	
3857 ©	4822 117 12521	68Ω	1%	0,1W	
3861 ©	4822 051 30103	10kΩ	5%	0,06W	
3862 ©	4822 051 20121	120Ω	5%	0,1W	
3863 ©	4822 051 30339	33Ω	5%	0,06W	
3864 ©	4822 051 30101	100Ω	5%	0,06W	
3865 ©	4822 051 30121	120Ω	5%	0,06W	
3866 ©	4822 051 30103	10kΩ	5%	0,06W	
3871 ©	4822 051 20683	68kΩ	5%	0,1W	
3872 ©	4822 051 30472	4,7kΩ	5%	0,06W	
3878 ©	4822 117 11503	220Ω	5%	0,1W	
3880 ▲	4822 052 10338	3,3Ω	5%	NFR25	
3881 ©	4822 117 11503	220Ω	5%	0,1W	
3882 ©	4822 117 10837	100kΩ	1%	0,1W	
3883 ©	4822 051 10102	1kΩ	2%	0,25W	
3890 ©	4822 051 30332	3,3kΩ	5%	0,06W	
3891 ©	4822 051 30472	4,7kΩ	5%	0,06W	
4700 ©	4822 051 20008	CHIP JUMPER 0805			
4701 ©	4822 051 20008	CHIP JUMPER 0805			
4702 ©	4822 051 20008	CHIP JUMPER 0805			
4703 ©	4822 051 20008	CHIP JUMPER 0805			
4704 ©	4822 051 20008	CHIP JUMPER 0805			
4705 ©	4822 051 20008	CHIP JUMPER 0805			
4706 ©	4822 051 20008	CHIP JUMPER 0805			

RESISTORS

4707 ©	4822 051 20008	CHIP JUMPER 0805
4708 ©	4822 051 20008	CHIP JUMPER 0805
4709 ©	4822 051 20008	CHIP JUMPER 0805
4710 ©	4822 051 20008	CHIP JUMPER 0805
4711 ©	4822 051 20008	CHIP JUMPER 0805
4712 ©	4822 051 20008	CHIP JUMPER 0805
4713 ©	4822 051 20008	CHIP JUMPER 0805
4714 ©	4822 051 20008	CHIP JUMPER 0805
4715 ©	4822 051 20008	CHIP JUMPER 0805
4716 ©	4822 051 20008	CHIP JUMPER 0805
4717 ©	4822 051 30008	CHIP JUMPER 0603
4718 ©	4822 051 20008	CHIP JUMPER 0805
4719 ©	4822 051 20008	CHIP JUMPER 0805
4720 ©	4822 051 20008	CHIP JUMPER 0805
4722 ©	4822 051 20008	CHIP JUMPER 0805
4724 ©	4822 051 20008	CHIP JUMPER 0805
4726 ©	4822 051 20008	CHIP JUMPER 0805
4727 ©	4822 051 20008	CHIP JUMPER 0805
4728 ©	4822 051 20008	CHIP JUMPER 0805
4729 ©	4822 051 20008	CHIP JUMPER 0805
4730 ©	4822 051 20008	CHIP JUMPER 0805
4731 ©	4822 051 30008	CHIP JUMPER 0603
4732 ©	4822 051 20008	CHIP JUMPER 0805
4733 ©	4822 051 30008	CHIP JUMPER 0603
4734 ©	4822 051 20008	CHIP JUMPER 0805
4735 ©	4822 051 20008	CHIP JUMPER 0805
4736 ©	4822 051 30008	CHIP JUMPER 0603
4737 ©	4822 051 30008	CHIP JUMPER 0603
4738 ©	4822 051 30008	CHIP JUMPER 0603
4739 ©	4822 051 30008	CHIP JUMPER 0603
4740 ©	4822 051 30008	CHIP JUMPER 0603
4741 ©	4822 051 20008	CHIP JUMPER 0805
4742 ©	4822 051 20008	CHIP JUMPER 0805
4743 ©	4822 051 20008	CHIP JUMPER 0805
4744 ©	4822 051 30008	CHIP JUMPER 0603
4745 ©	4822 051 20008	CHIP JUMPER 0805
4746 ©	4822 051 20008	CHIP JUMPER 0805
4747 ©	4822 051 20008	CHIP JUMPER 0805
4748 ©	4822 051 20008	CHIP JUMPER 0805
4749 ©	4822 051 30008	CHIP JUMPER 0603
4801 ©	4822 051 20008	CHIP JUMPER 0805
4804 ©	4822 051 20008	CHIP JUMPER 0805
4806 ©	4822 051 20008	CHIP JUMPER 0805
4807 ©	4822 051 20008	CHIP JUMPER 0805
4808 ©	4822 051 20008	CHIP JUMPER 0805
4809 ©	4822 051 20008	CHIP JUMPER 0805
4810 ©	4822 051 20008	CHIP JUMPER 0805
4811 ©	4822 051 20008	CHIP JUMPER 0805
4820 ©	4822 051 20008	CHIP JUMPER 0805
4823 ©	4822 051 30008	CHIP JUMPER 0603
4824 ©	4822 051 30008	CHIP JUMPER 0603
4825 ©	4822 051 20008	CHIP JUMPER 0805
4826 ©	4822 051 20008	CHIP JUMPER 0805
4828 ©	4822 051 30008	CHIP JUMPER 0603
4829 ©	4822 051 20008	CHIP JUMPER 0805
4830 ©	4822 051 20008	CHIP JUMPER 0805
4831 ©	4822 051 20008	CHIP JUMPER 0805
4832 ©	4822 051 30008	CHIP JUMPER 0603
4833 ©	4822 051 20008	CHIP JUMPER 0805
4834 ©	4822 051 20008	CHIP JUMPER 0805
4837 ©	4822 051 20008	CHIP JUMPER 0805
4838 ©	4822 051 30008	CHIP JUMPER 0603
4839 ©	4822 051 20008	CHIP JUMPER 0805
4840 ©	4822 051 20008	CHIP JUMPER 0805

ELECTRICAL PARTSLIST 3CDC-LC MODULE

RESISTORS

4841	©	4822 051 20008	CHIP JUMPER 0805
4842	©	4822 051 20008	CHIP JUMPER 0805
4844	©	4822 051 20008	CHIP JUMPER 0805
4845	©	4822 051 20008	CHIP JUMPER 0805
4846	©	4822 051 20008	CHIP JUMPER 0805
4847	©	4822 051 20008	CHIP JUMPER 0805
4848	©	4822 051 20008	CHIP JUMPER 0805
4849	©	4822 051 30008	CHIP JUMPER 0603
4851	©	4822 051 30008	CHIP JUMPER 0603
4855	©	4822 051 20008	CHIP JUMPER 0805
4856	©	4822 051 20008	CHIP JUMPER 0805
4857	©	4822 051 20008	CHIP JUMPER 0805
4858	©	4822 051 20008	CHIP JUMPER 0805
4868	©	4822 051 20008	CHIP JUMPER 0805
4869	©	4822 051 20008	CHIP JUMPER 0805
4870	©	4822 051 20008	CHIP JUMPER 0805
4871	©	4822 051 20008	CHIP JUMPER 0805
4872	©	4822 051 20008	CHIP JUMPER 0805
4873	©	4822 051 20008	CHIP JUMPER 0805
4874	©	4822 051 20008	CHIP JUMPER 0805
4875	©	4822 051 20008	CHIP JUMPER 0805
4876	©	4822 051 20008	CHIP JUMPER 0805
4878	©	4822 051 20008	CHIP JUMPER 0805
4879	©	4822 051 20008	CHIP JUMPER 0805
4880	©	4822 051 20008	CHIP JUMPER 0805
4882	©	4822 051 20008	CHIP JUMPER 0805
4883	©	4822 051 20008	CHIP JUMPER 0805
4884	©	4822 051 20008	CHIP JUMPER 0805
4885	©	4822 051 20008	CHIP JUMPER 0805
4886	©	4822 051 20008	CHIP JUMPER 0805
4887	©	4822 051 30008	CHIP JUMPER 0603
4888	©	4822 051 20008	CHIP JUMPER 0805
4889	©	4822 051 20008	CHIP JUMPER 0805
4890	©	4822 051 20008	CHIP JUMPER 0805
4891	©	4822 051 30008	CHIP JUMPER 0603

RESISTORS

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

COILS

1810	2422 540 98519	RESONATOR 8,467MHz

DIODES

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

TRANSISTORS

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

INTEGRATED CIRCUITS

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

ELECTRICAL PARTSLIST MP3CD2002 MODULE

MISCELLANEOUS

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

CAPACITORS

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

RESISTORS

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

RESISTORS

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

COILS

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

DIODES

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

TRANSISTORS

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

INTEGRATED CIRCUITS

7450 ©	not available	please order complete MP3 module
7451 ©	not available	please order complete MP3 module
7455 ©	4822 209 17108	LM317LD Voltage Regulator
7457 ©	9352 456 50115	HC1G04, Inverter
7458 ©	9322 130 41668	M24C64, EEPROM
	3103 308 67020	**complete MP3CD2002 Module**

AF12 BOARD

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11-1

BRIEF INTRODUCTION OF THE AF12 BOARD

The AF12 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, PC LINK, 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 sources 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 AF12 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. LINE OUT
Line out cinch socket for connection to external amplifier.

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

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

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

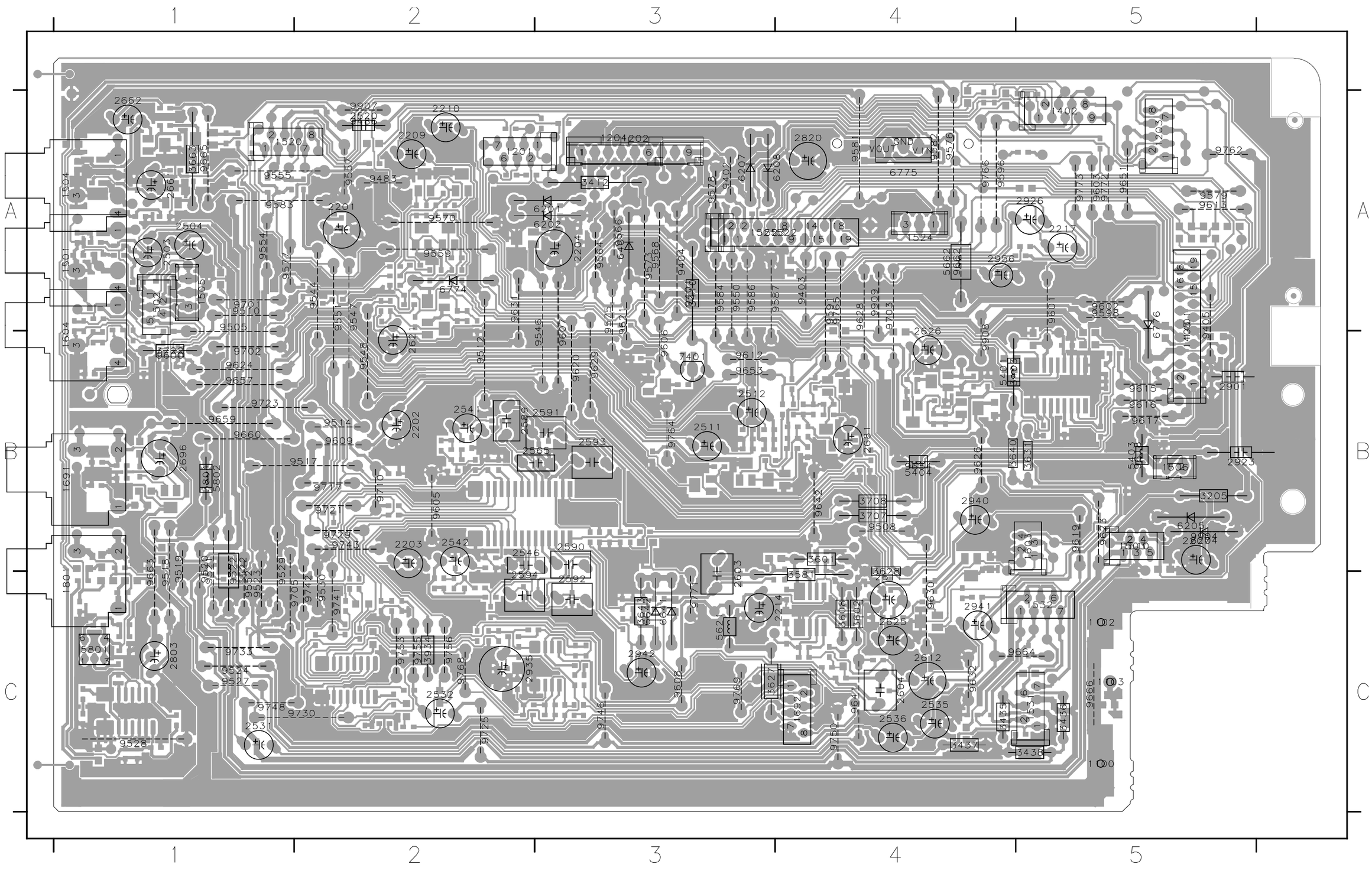
g. CD STANDBY CONTROL
CD Standby Control circuit which switches on the supply to CD servo control IC, digital out buffer IC, HF circuit and the laser light pen in CD mode only.

h. ATTENUATION NETWORK
Attenuation network is provided at the output of the AF12 Board for interfacing with power board of different output power.

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

11-2

AF12 BOARD - COMPONENT LAYOUT



AF12 BOARD - COMPONENT LAYOUT (MAPPING)

1100	C5	3581	C4	9587	A4		
1102	C5	3601	B4	9591	A4		
1103	C5	3602	C4	9596	A4		
1201	A2	3608	C4	9598	A5		
1202	A3	3627	C3	9600	B1		
1203	A5	3628	B4	9601	A5		
1204	A3	3631	B5	9602	A5		
1401	A5	3640	B4	9603	A5		
1402	A5	3643	C3	9605	B2		
1405	B5	3663	A1	9606	B3		
1501	A1	3707	B4	9607	B3		
1502	A1	3708	B4	9608	C3		
1503	B5	3722	B1	9609	B2		
1504	A1	3804	B1	9612	B3		
1505	A1	3934	C2	9613	A5		
1506	B5	5401	B4	9615	B5		
1510	B5	5403	B5	9616	B5		
1520	A1	5404	B4	9617	B5		
1522	A4	5522	B1	9618	B5		
1523	A3	5621	C3	9619	B5		
1524	A4	5662	A4	9620	B3		
1525	A3	5801	C1	9621	A3		
1531	C5	5802	B1	9623	B5		
1532	C5	6201	A3	9624	B1		
1603	B5	6202	A3	9626	B4		
1604	B1	6204	B5	9628	A4		
1691	B1	6205	B5	9629	B3		
1692	C4	6207	A3	9630	C4		
1801	C1	6208	A4	9631	A2		
2201	A2	6401	A3	9632	C4		
2202	B2	6641	C3	9641	C4		
2203	B2	6642	C3	9642	B4		
2204	A3	6774	A2	9651	A5		
2207	B5	6775	A4	9653	B3		
2209	A2	6776	A5	9654	B4		
2210	A2	7401	B3	9657	B1		
2214	C4	9401	A3	9659	B1		
2217	A5	9402	A3	9660	B1		
2503	A1	9403	A4	9662	A4		
2504	A1	9404	A3	9663	C1		
2511	B3	9405	A5	9664	C5		
2512	B3	9483	A2	9665	A1		
2520	A2	9486	A2	9666	C5		
2531	C1	9505	A1	9701	A1		
2532	C2	9508	B4	9702	B1		
2535	C4	9510	A1	9703	A4		
2536	C4	9512	B2	9705	C2		
2541	B2	9514	B2	9710	B2		
2542	B2	9517	B2	9717	B2		
2546	B2	9518	C1	9721	B2		
2565	B3	9519	B1	9723	B1		
2589	B2	9520	B1	9725	C2		
2590	B3	9521	B1	9729	B2		
2591	B3	9522	B1	9730	C2		
2592	C3	9523	C1	9733	C1		
2593	B3	9524	C1	9741	C2		
2594	C2	9527	C1	9742	C2		
2603	C3	9528	C1	9743	B2		
2604	C4	9529	B1	9746	C3		
2611	C4	9530	C2	9748	C1		
2612	C4	9544	A2	9750	C4		
2621	B2	9546	B3	9753	C2		
2625	C4	9547	A2	9755	C2		
2626	B4	9548	B2	9756	C2		
2661	A1	9550	A3	9762	A5		
2662	A1	9551	A2	9764	B3		
2681	B4	9552	C1	9765	A4		
2696	B1	9554	A1	9766	A4		
2803	C1	9555	A1	9768	C2		
2820	A4	9557	A2	9769	C3		
2901	B5	9559	A2	9771	C3		
2923	B5	9564	A3	9772	A5		
2926	A5	9566	A3	9773	A5		
2935	C2	9568	A3	9904	B5		
2940	B4	9570	A2	9907	A2		
2941	C4	9573	A3	9908	B4		
2942	C3	9575	A3	9909	A4		
2956	A4	9576	A4				
3205	B5	9577	A1				
3403	B4	9578	A3				
3410	A3	9579	A5				
3412	A3	9581	A4				
3435	C4	9582	A4				
3436	C5	9583	A1				
3437	C4	9584	A3				
3438	C5	9586	A3				

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AF12 BOARD - CHIP LAYOUT (MAPPING)

2205	A3	2928	C4	3641	C3	4130	B2	7604	C2
2206	B4	2929	C4	3642	C3	4133	B1	7621	B2
2208	A2	2930	C4	3644	A1	4137	C1	7622	B2
2212	B5	2933	C3	3645	B3	4138	C2	7623	B2
2213	B5	2934	C3	3646	C3	4139	B1	7635	A4
2215	B2	2936	C4	3651	A4	4141	B1	7636	B3
2216	B3	2937	C4	3652	A4	4142	A3	7651	A4
2401	B1	2938	C4	3653	A4	4145	A1	7652	A4
2402	B1	2939	C4	3654	A4	4146	A4	7653	A4
2403	B1	2950	A1	3655	A4	4148	A4	7654	A4
2404	B2	2951	A1	3656	A4	4149	B5	7661	A5
2501	A5	2952	A2	3657	A4	4150	C5	7662	A5
2502	A5	2953	A2	3658	A4	4151	A2	7663	A5
2505	C4	2954	A4	3659	C2	4152	A2	7681	B2
2506	C4	2955	B1	3660	C2	4153	B1	7682	B2
2507	C5	3201	A4	3661	A5	4202	B5	7693	B5
2513	B3	3202	A3	3662	A5	4203	A4	7694	C4
2514	B3	3203	B2	3664	A5	4206	B5	7695	C3
2515	B4	3204	B2	3665	A5	4207	A4	7802	C5
2516	B4	3206	B2	3666	A5	4208	A4	7803	A4
2521	A5	3207	B2	3667	A5	4209	A5		
2522	A4	3208	C4	3668	A5	4210	B5		
2523	B4	3401	B1	3669	A5	4211	A4		
2524	C4	3402	B1	3683	B2	4212	B5		
2533	B4	3406	B2	3684	B2	4301	A2		
2534	C4	3408	B3	3686	B2	4305	B3		
2543	B4	3409	B3	3687	B2	4319	C4		
2544	C4	3501	A5	3688	B2	4331	C4		
2547	B4	3502	A5	3689	B2	4332	C2		
2548	B4	3503	A5	3690	B5	4334	B1		
2567	B4	3504	A5	3692	B2	4336	B3		
2568	C4	3505	A5	3694	B2	4337	B4		
2581	C3	3506	A5	3699	B5	4338	B4		
2582	C2	3507	A5	3700	B5	4342	B2		
2583	C3	3508	A5	3711	B3	4403	B2		
2584	C2	3511	B3	3712	A5	4404	A2		
2585	C2	3512	B3	3721	A4	4405	A4		
2586	C2	3513	B3	3723	A5	4407	B3		
2587	B3	3514	B3	3724	B5	4408	B5		
2588	C2	3521	A5	3725	B5	4409	B3		
2601	C3	3522	A5	3726	A4	4410	B3		
2602	C3	3523	A5	3727	B5	4411	B3		
2605	C2	3524	A5	3728	A5	4501	B5		
2606	C2	3525	B4	3729	B5	4641	C3		
2607	B2	3526	B4	3730	A5	4642	C3		
2608	C2	3531	C1	3731	A3	4660	A4		
2609	B2	3532	C2	3732	B1	4661	A4		
2610	C2	3533	C2	3733	A3	4662	A4		
2620	B2	3534	C1	3734	A4	4663	A1		
2622	B2	3543	B4	3735	C4	4801	C5		
2624	C3	3544	B4	3736	C4	4802	A1		
2641	C3	3545	B4	3737	C4	4811	B2		
2642	C3	3546	C4	3801	C5	4812	C2		
2653	A4	3547	B4	3802	C5	4813	B5		
2654	A4	3548	C4	3803	C5	4814	A5		
2663	A5	3549	B4	3805	C5	4903	A1		
2664	A5	3550	C4	3806	B5	4904	B1		
2665	A5	3582	C2	3807	C5	4905	A3		
2666	A5	3591	B3	3808	C5	4906	A5		
2667	A5	3592	C3	3809	C5	4907	A1		
2669	A5	3593	B3	3810	A1	4908	A1		
2682	B2	3594	C4	3932	C4	4909	C5		
2683	B2	3607	B2	3933	C4	4910	B5		
2691	A4	3609	B2	3935	C4	4911	B5		
2697	B5	3610	C2	3936	C4	4912	B1		
2698	B5	3611	C2	3937	C4	4913	B1		
2707	B3	3612	C2	3938	C4	4914	A2		
2708	B3	3613	C2	3939	C4	4915	A1		
2801	C5	3614	C2	3940	C4	4920	B5		
2802	C5	3615	C2	3941	C4	4921	C5		
2804	C5	3616	C2	3942	C4	4922	A4		
2805	C5	3621	B2	3943	C4	4923	A4		
2806	C5	3622	B2	3944	C3	4924	A4		
2807	C5	3623	B2	3945	C3	4925	B2		
2808	C5	3624	B2	3946	C3	4926	A3		
2809	C5	3625	B2	3947	C3	4927	C4		
2810	C5	3626	B2	3948	C3	5907	A1		
2902	C1	3629	C2	3949	C4	5915	A1		
2904	A5	3630	A1	3950	C3	7201	A4		
2905	C2	3633	A4	3951	C3	7203	B3		
2908	A3	3634	A4	3952	C3	7204	B2		
2921	B5	3635	B2	3953	B4	7402	B3		
2922	B1	3636	A4	3954	C4	7403	B1		
2924	B5	3637	B3	4101	B5	7501	B3		
2925	A5	3638	A4	4102	A3	7601	C2		
2927	C4	3639	A4	4104	A5	7603	B2		

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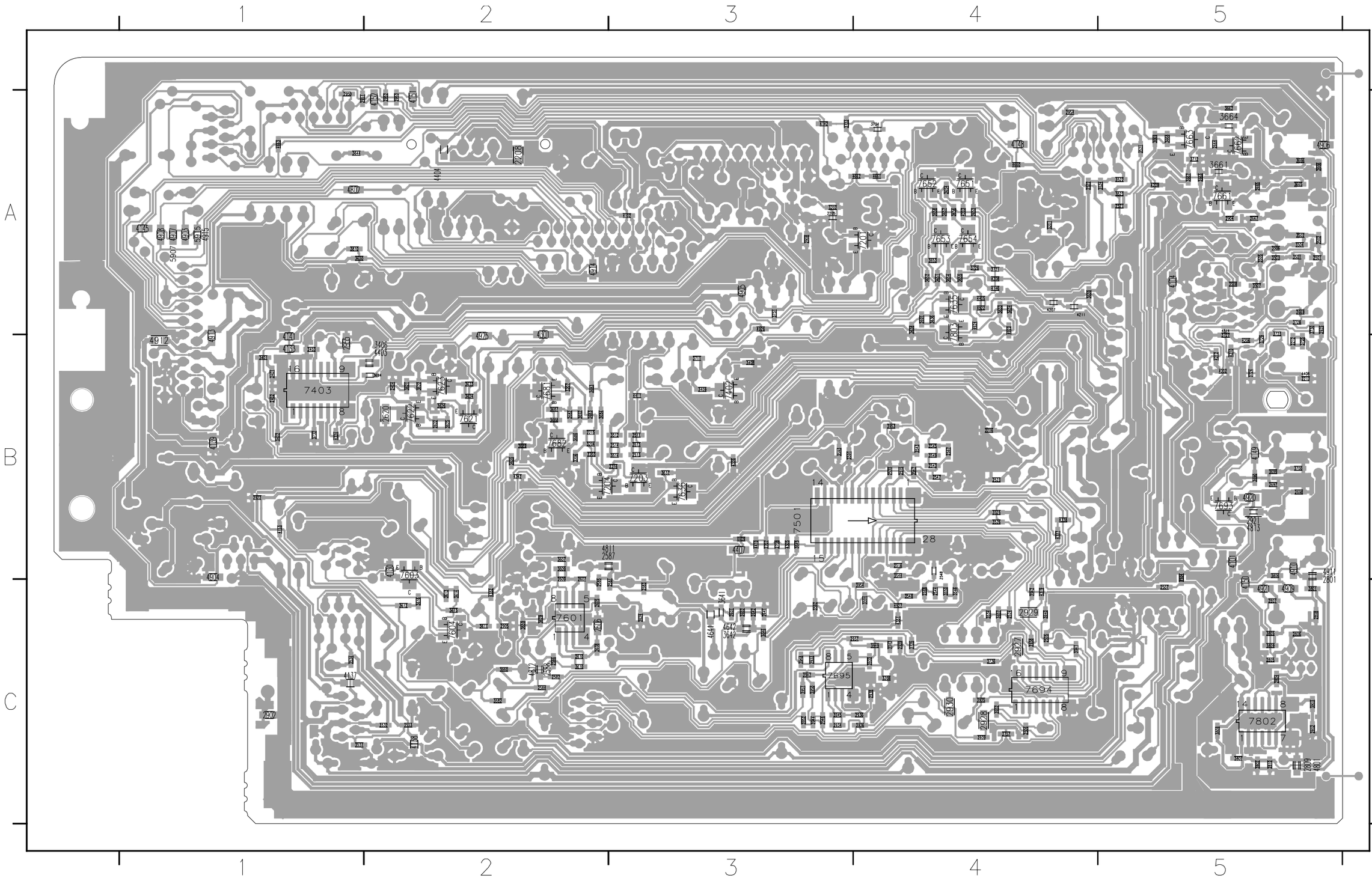
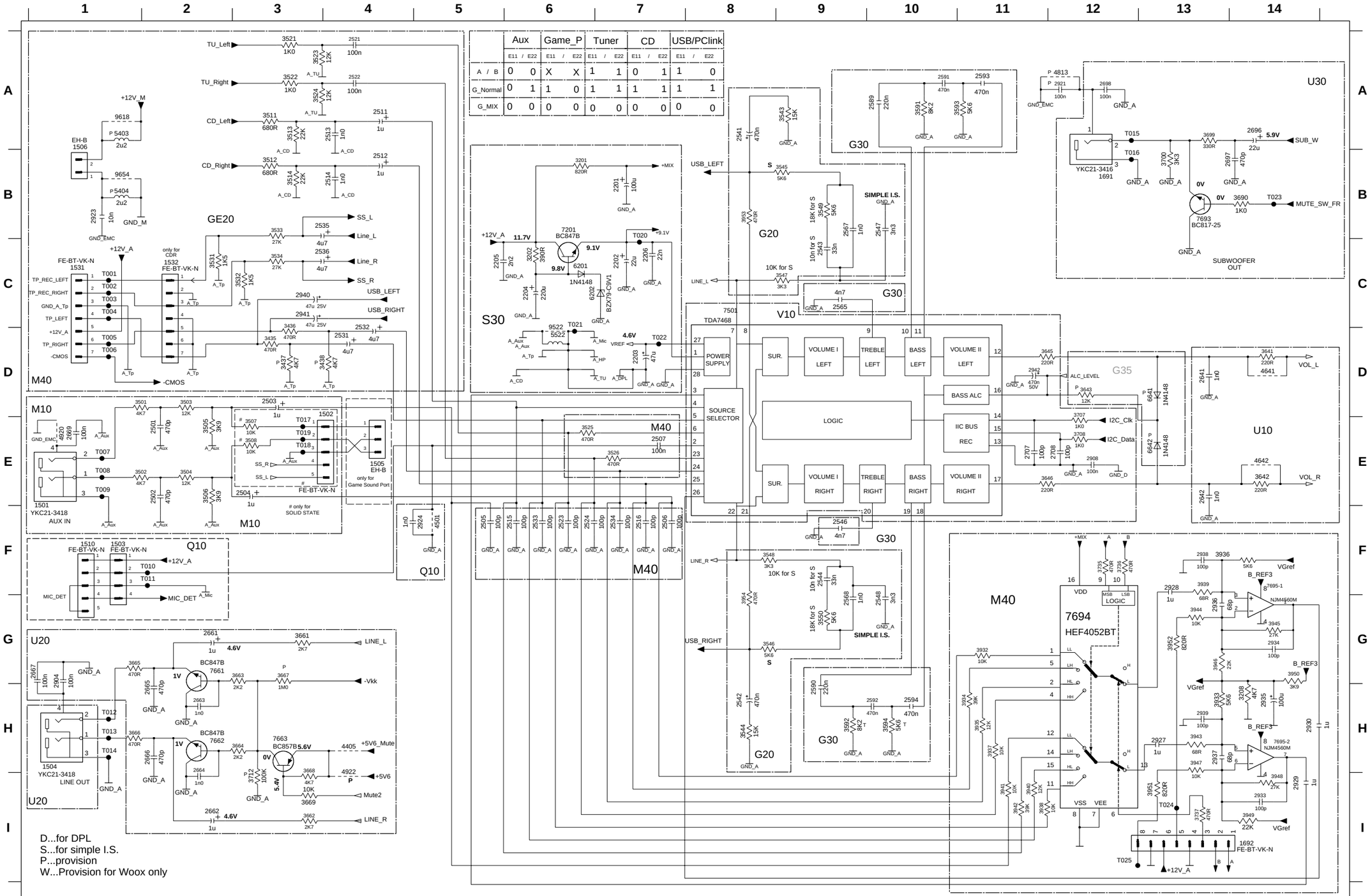
AF12 BOARD - CHIP LAYOUT



11-5

AF12 BOARD - CIRCUIT DIAGRAM (PART 1)



	Aux		Game_P		Tuner		CD		USB/PClink	
	E11	E22	E11	E22	E11	E22	E11	E22	E11	E22
A / B	0	0	X	X	1	1	0	1	1	0
G_Normal	0	1	1	0	1	1	1	1	1	1
G_MIX	0	0	0	0	0	0	0	0	0	0

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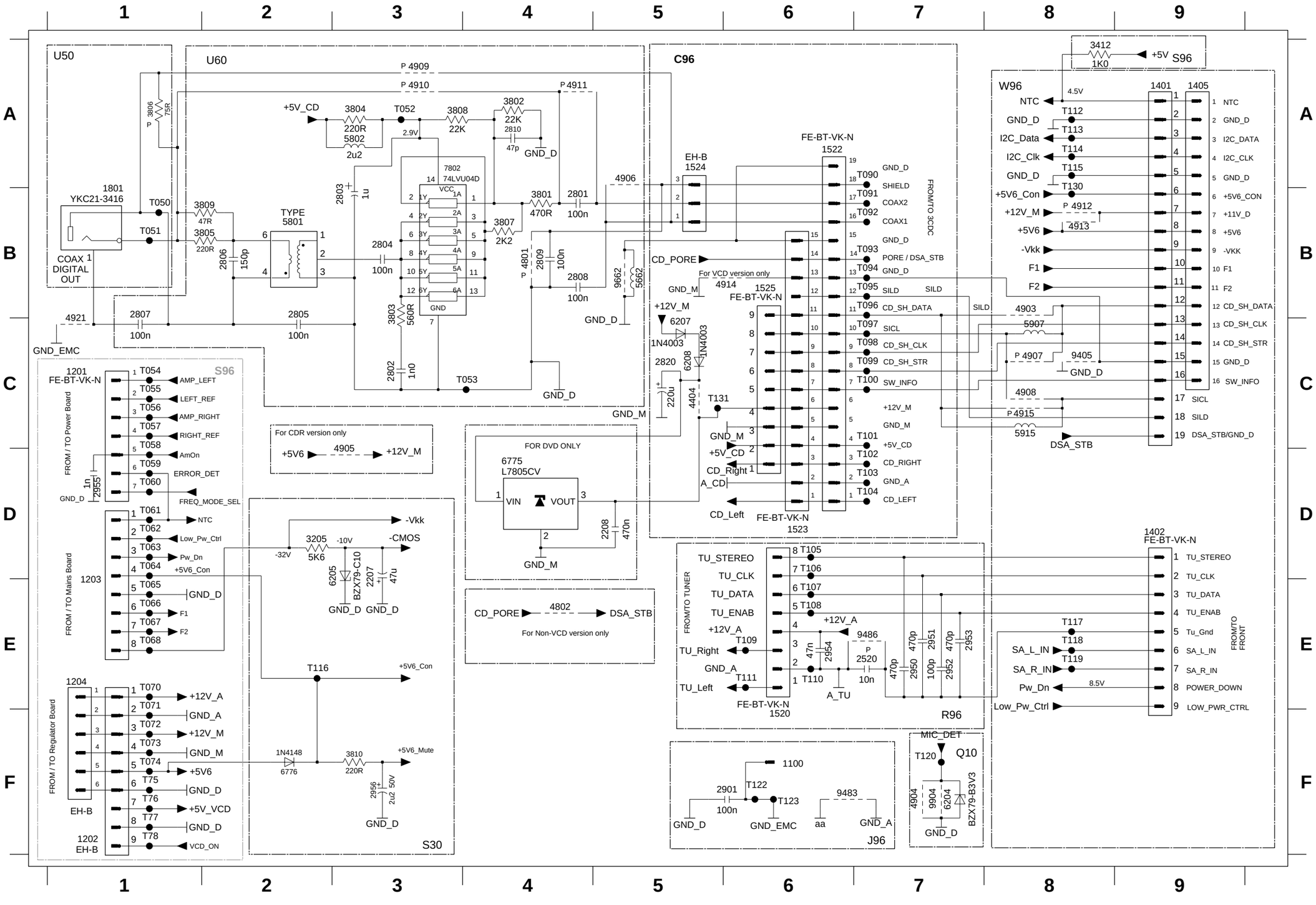
AF12 BOARD - CIRCUIT DIAGRAM (PART 2)



T75 F1	T060 D1
T76 F1	T061 D1
T77 F1	T062 D1
T78 F1	T063 D1
1100 F6	T064 D1
1201 C1	T065 E1
1202 F1	T066 E1
1203 E1	T067 E1
1204 E1	T068 E1
1401 A9	T070 E1
1402 D9	T071 E1
1405 A9	T072 F1
1520 F6	T073 F1
1522 A6	T074 F1
1523 D6	T090 A7
1524 A5	T091 B7
1525 B6	T092 B7
1801 B1	T093 B7
2207 D3	T094 B7
2208 D5	T095 B7
2520 E7	T096 B7
2801 B4	T097 C7
2802 C3	T098 C7
2803 B3	T099 C7
2804 B3	T100 C7
2805 B2	T101 C7
2806 B2	T102 D7
2807 B1	T103 D7
2808 B4	T104 D7
2809 B4	T105 D6
2810 A4	T106 D6
2820 C5	T107 E6
2901 F6	T108 E6
2950 E7	T109 E6
2951 E7	T110 E6
2952 E7	T111 E6
2953 E7	T112 A8
2954 E6	T113 A8
2955 D1	T114 A8
2956 F3	T115 A8
3205 D2	T116 E2
3412 A8	T117 E8
3801 B4	T118 E8
3802 A4	T119 E8
3803 B3	T120 F7
3804 A3	T122 F6
3805 B2	T123 F6
3806 A1	T130 B8
3807 B4	T131 C5
3808 A3	
3809 B2	
3810 F3	
4404 C5	
4801 B4	
4802 E4	
4903 B8	
4904 F7	
4905 D3	
4906 A5	
4907 C8	
4908 C8	
4909 A3	
4910 A3	
4911 A4	
4912 B8	
4913 B8	
4914 B6	
4915 C8	
4921 C1	
5662 B5	
5801 B2	
5802 A3	
5907 C8	
5915 C8	
6204 F7	
6205 D3	
6207 B5	
6208 C5	
6775 D4	
6776 F2	
7802 A3	
9405 C8	
9483 F6	
9486 E7	
9662 B5	
9904 F7	
T050 B1	
T051 B1	
T052 A3	
T053 C4	
T054 C1	
T055 C1	
T056 C1	
T057 C1	
T058 C1	
T059 D1	

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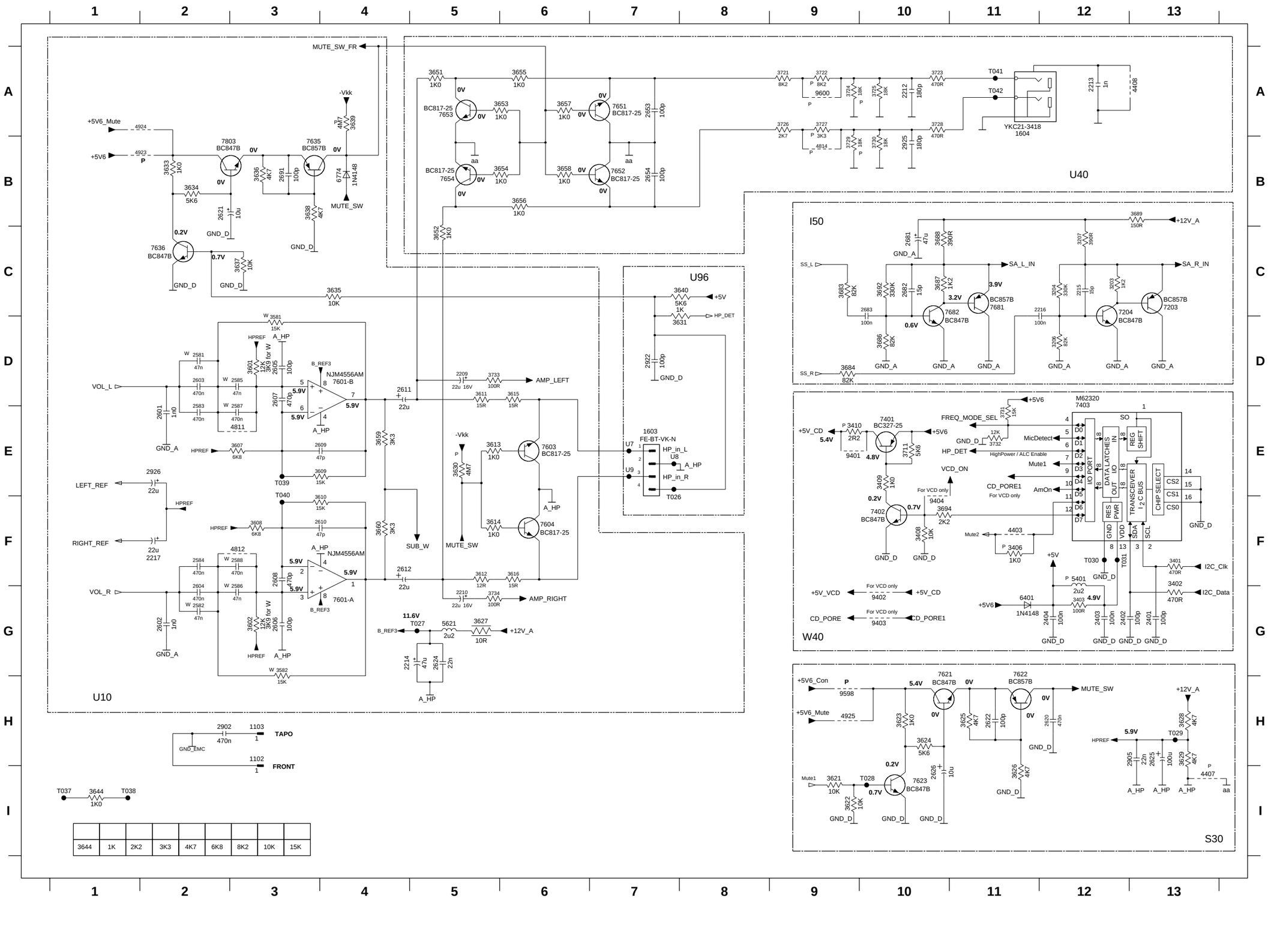
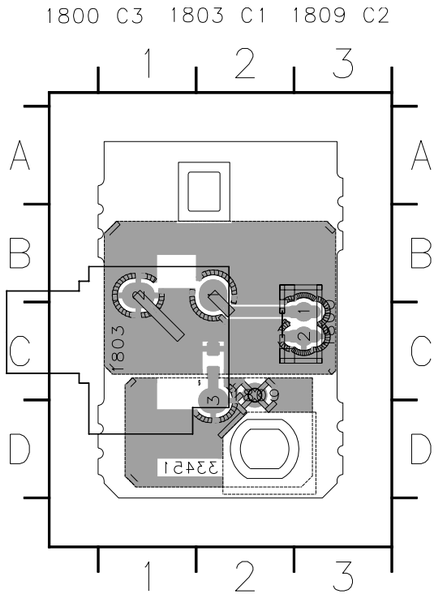
AF12 BOARD - CIRCUIT DIAGRAM (PART 3)



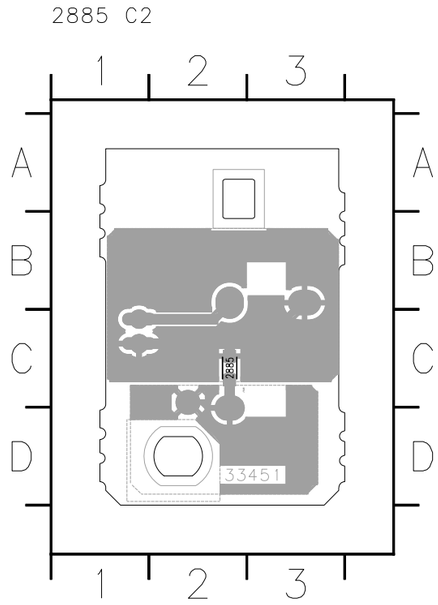
3644	1K	2K2	3K3	4K7	6K8	8K2	10K	15K

U7 E7
U8 E7
U9 E7
1102 H3
1103 H3
1603 E7
1604 A11
2209 D5
2210 G5
2212 A10
2213 A12
2214 G4
2215 C12
2216 C12
2217 F2
2401 G13
2402 G12
2403 G12
2404 G12
2581 D2
2582 G2
2583 E2
2584 F2
2585 D3
2586 G3
2587 E3
2588 F3
2601 E2
2602 G2
2603 D2
2604 G2
2605 D3
2606 G3
2607 D3
2608 F3
2609 E4
2610 F4
2611 D4
2612 F4
2620 H12
2621 B2
2622 H11
2624 G5
2625 H13
2626 I10
2653 A7
2654 B7
2681 C10
2682 C10
2683 C10
2691 B3
2902 H2
2905 H13
2922 D7
2925 B10
2926 E2
3203 C12
3204 C12
3206 D12
3207 C12
3401 F13
3402 F13
3403 G12
3406 F11
3408 F10
3409 E10
3410 E9
3581 D3
3582 G3
3601 D3
3602 G3
3607 E3
3608 F3
3609 E4
3610 F4
3611 D5
3612 F5
3613 E5
3614 F5
3615 D6
3616 F6
3621 I9
3622 I9
3623 H10
3624 H10
3625 H11
3626 I11
3627 G5
3628 H13
3629 H13
3630 E5
3631 D8
3633 B2
3634 B2
3635 C4
3636 B3
3637 C3
3638 B3
3639 A4
3640 C8
3644 I1
3651 A5
3652 C5
3653 A6
3654 B6
3655 A6
3656 B6
3657 A6
3658 B6
3659 E4
3660 F4
3683 C9
3684 D9
3686 D10
3687 C10
3688 C10
3689 B13
3692 C10
3694 F10
3711 E10
3721 A9
3722 A9
3723 A10
3724 A9
3725 A10
3726 A9
3727 A9
3728 A10
3729 B9
3730 B10
3731 E11
3732 E11
3733 D5
3734 G5
4403 F11
4407 I3
4408 A13
4811 E3
4812 F3
4814 B9
4923 B2
4924 A2
4925 H9
5401 F12
5621 G5
6401 G11
6774 B4
7203 C13
7204 C12
7401 E10
7402 F10
7403 D12
7601-A G4
7601-B D4
7603 E6
7604 F6
7621 H10
7622 G11
7623 I10
7635 B3
7636 C2
7651 A7
7652 B7
7653 A5
7654 B5
7681 C11
7682 C10
7803 B3
9401 E9
9402 G10
9403 G10
9404 F10
9598 H9
9600 A9
T026 F7
T027 G5
T028 I10
T029 H13
T030 F12
T031 I1
T038 I1
T039 E3
T040 F3
T041 A11
T042 A11

VIDEO OUT CINCH BOARD - COMPONENT LAYOUT

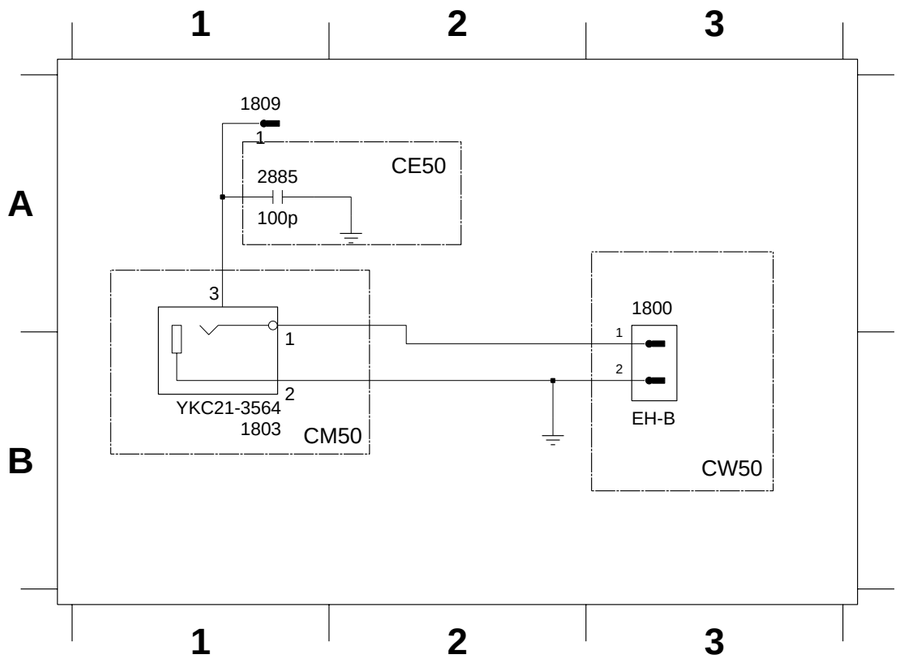


VIDEO OUT CINCH BOARD - CHIP LAYOUT



VIDEO OUT CINCH BOARD - CIRCUIT DIAGRAM

1800 A3 1803 B1 1809 A1 2885 A1



ELECTRICAL PARTSLIST - AF12 BOARD

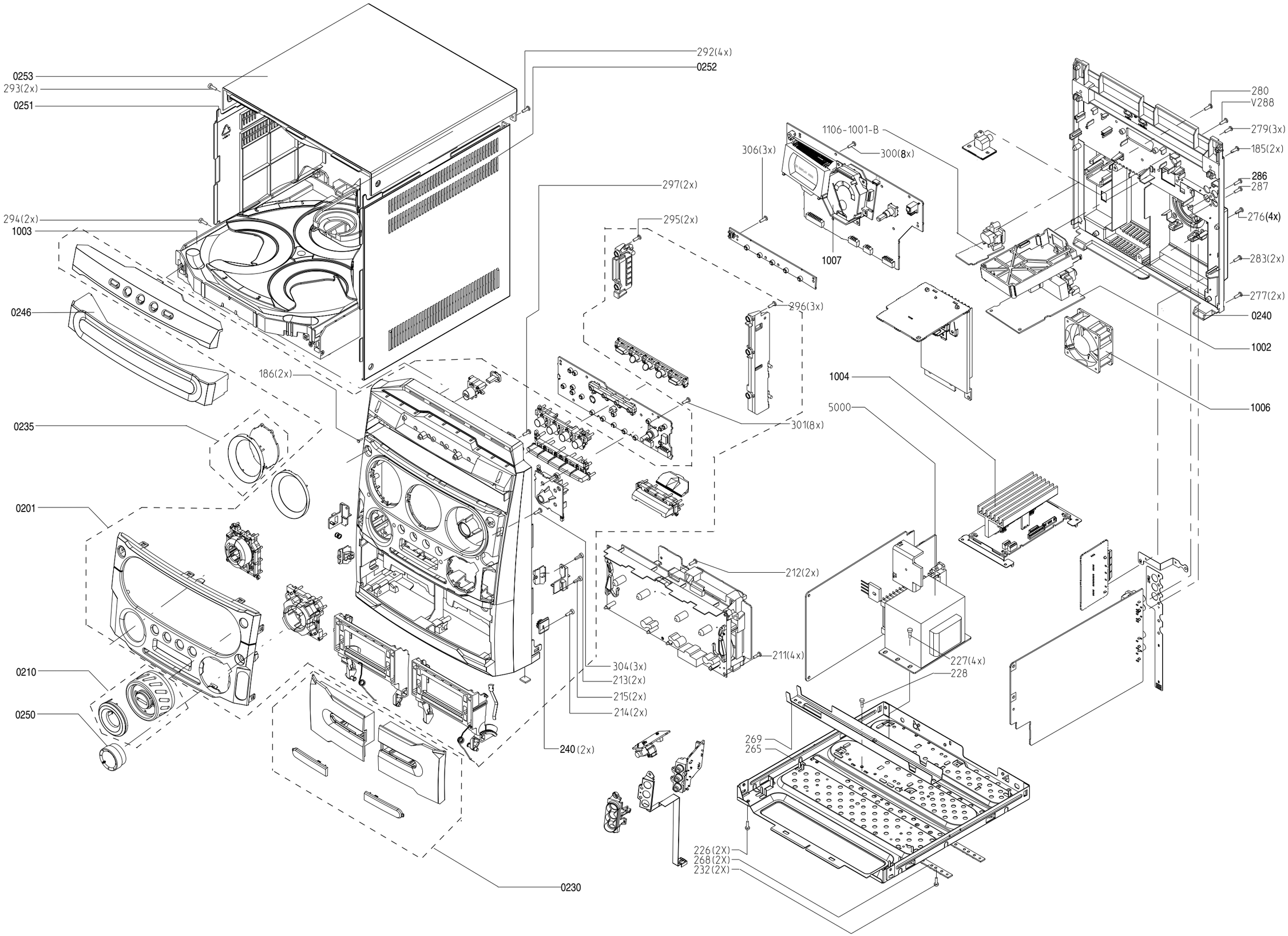
- IC & TRANSISTORS -

7201	5322 130 60159	BC846B
7204	5322 130 60159	BC846B
7402	5322 130 60159	BC846B
7621	5322 130 60159	BC846B
7623	5322 130 60159	BC846B
7636	5322 130 60159	BC846B
7682	5322 130 60159	BC846B
7803	5322 130 60159	BC846B
7203	4822 130 60373	BC856B
7622	4822 130 60373	BC856B
7635	4822 130 60373	BC856B
7681	4822 130 60373	BC856B
7603	4822 130 42804	BC817-25
7604	4822 130 42804	BC817-25
7401	4822 130 41246	BC327-25
7601	4822 209 31378	NJM4556MB
7403	4822 209 17345	M62320FP
7501	9322 150 74668	IC SM TDA7468D
7694	5322 209 11102	HEF4052BT
7695	4822 209 83357	NJM4560M

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

12-1

SET MECHANICAL EXPLODED VIEW



12-2

MECHANICAL & ACCESSORIES PARTSLIST

0201		3141 077 50011	CAB-FRONT PRE-ASSY /21/30
0201		3140 117 73071	CAB-FRONT PRE-ASSY /22
	240	4822 529 10322	DAMPER ASSY MODULE 0.8
0210		3140 117 73021	KNOB VOLUME PRE ASSY
0230		3140 117 74331	DOOR CASSETTE PRE ASSY
0235		3140 117 74321	WINDOW PRE ASSY
0240		3140 117 73081	PANEL REAR PRE-ASSY
0246		3140 114 64301	COVER TRAY CDC FWM570
0250		3140 114 62991	KNOB ROTARY FWM730
0251		3139 114 79081	PANEL LEFT M2003
0252		3139 114 79101	PANEL RIGHT M2003
0253		3139 114 78341	COVER TOP MINI2003
0298		3139 114 71012	STOPPER HEATSINK
0330		3140 118 51961	BOX SPK ASSY M570
0331		4822 320 11094	COAXIAL 300R
0333		2422 549 45067	ANT AM LOOP
0335		3139 238 06491	REMOTE CONTROL
0337	⚠	2422 070 98248	MAINSCORD AUS/NZ 1M5 BK
0338		4822 263 21206	P50 ADAPTOR
0340		3139 128 73011	MAINS PLUG ADAPTOR /21
1002		3103 308 64261	PBAS TUNER ECO6 AS/01 RDS /21/30
1002		3103 308 64251	PBAS TUNER ECO6 AS/02 RDS /22
1005		3139 118 77971	T/DECK BRICK ETF7-FERRO DD/FF
1006		2822 031 01494	FAN 12VDC 0.8W 3100RPM B
1007		3140 110 52141	METER VU FOR MINI404
1903		2422 129 15195	VOLTSEL 2P 5A /21
5000	⚠	3139 118 32991	TRAFO MAINS UCD 110W /21
5000	⚠	3139 118 33001	TRAFO MAINS UCD 110W /22/30
8226		3139 110 35900	FFC FOIL 07P/220/07P AD
8228		3140 110 22501	FFC FOIL 8P/280/8P AD
8400		3139 110 34920	FFC FOIL 08P/280/08P BD
8401		3139 111 02491	FFC FOIL 19P/280/19P AD
8402		3140 110 22471	FFC FOIL 09P/280/09P AD
8404		3139 110 34610	FFC FOIL 11P/180/11P AD
8406		3140 110 22481	FFC FOIL 07P/180/07P BD
8500		3139 110 35210	FFC FOIL 06P/080/06P AD
8501		3139 110 33940	CWAS FFC BD04P 180
8503		3139 110 35880	FFC FOIL 15P/180/15P BD
8601		3139 110 34740	FFC FOIL 08P/180/08P AD
8602		4822 320 12752	FFC 7P - 180MM

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

REVISION LIST

Version 1.0 (3140 785 32970)
* Initial Release FWM570/21/22/30

Version 1.1 (3140 785 32971)
* Page 8-2 : Power 303 Module (UCD 100-150W) - Update
  - a Jumper Wiring in Section C2 added
  - the track between pos.6717 and pos.6707 cut

* Page 6-6 : Partslist updated
  - pos. 7400 IC TMP88PU74YF, 12NC has been changed from 9322 189 17671 to 3141 070 50141. The reason is that the old 12NC is for blank IC and MCU with new 12NC (3141 070 50141) is with software.

Version 1.2 (3140 785 32972)
* Page 12-1 : Set Exploded View - Update
  - the numbering revised to match the partslist