

Service
Service
Service



Service Manual

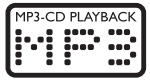


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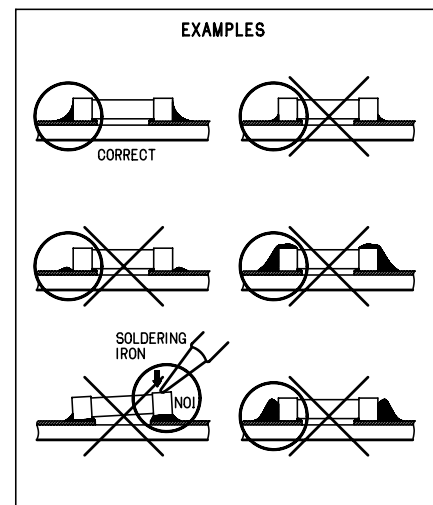
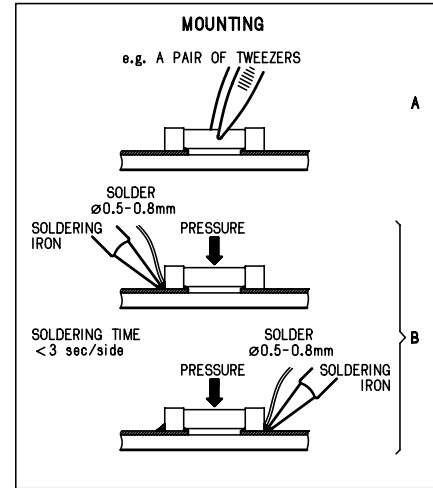
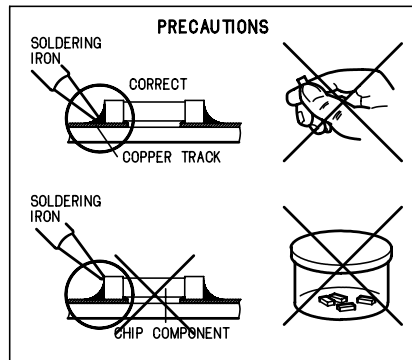
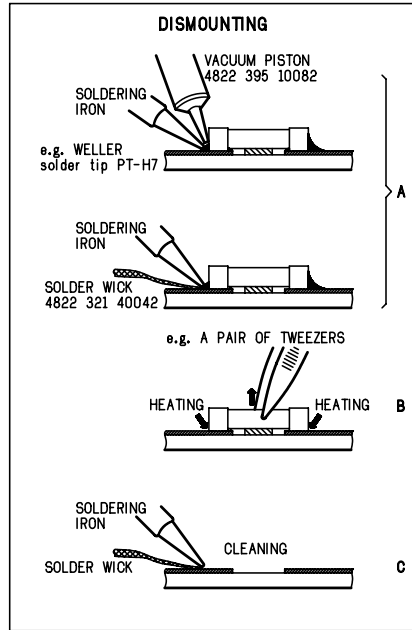
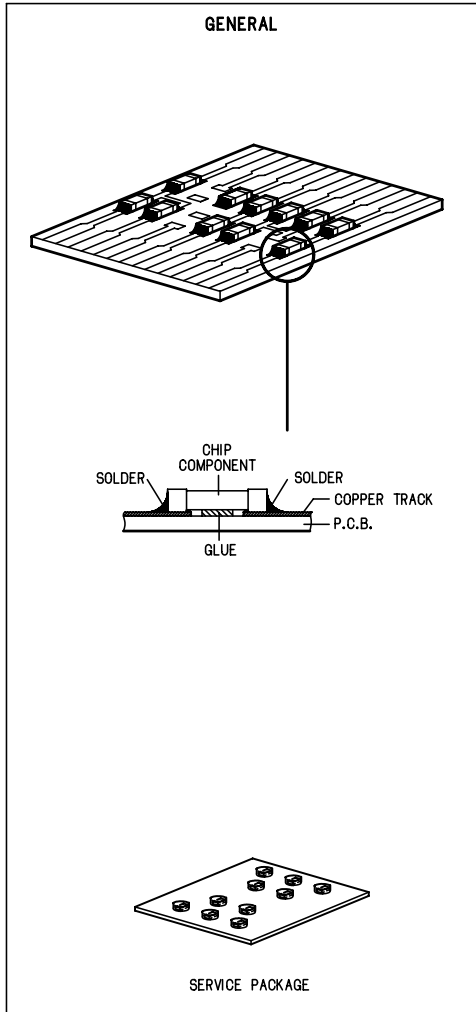


GB 3141 785 31050

Version 1.0



HANDLING CHIP COMPONENTS



SERVICE TOOLS

- TORX T10 screwdriver with shaftlength 150mm.....4822 395 50423
- TORX screwdriver set SBC 163.....4822 295 50145
- Audio signal disc SBC 429.....4822 397 30184
- Playability test disc SBC 444.....4822 397 30245
- Test disc 5 (disc without errors) +
- Test disc 5A (disc with dropout errors, black spots and fingerprints)
SBC 426/426A.....4822 397 30096
- Burn in test disc (65 min. 1kHz signal at -30 dB level without "pause").....4822 397 30155
- Universal test cassette Fe SBC 420.....4822 397 30071

AVAILABLE ESD PROTECTION EQUIPMENT

- anti-static table mat large 1200x650x1.25mm 4822 466 10953
- small 600x650x1.25mm 4822 466 10958
- anti-static wristband 4822 395 10223
- connection box (3 press stud connections, 1MΩ) 4822 320 11307
- extendible cable (2m, 2MΩ, to connect wristband to connection box) 4822 320 11305
- connecting cable (3m, 2MΩ, to connect table mat to connection box) 4822 320 11306
- earth cable (1MΩ, to connect any product to mat or to connection box) 4822 320 11308
- KIT ESD3 (combining all 6 prior products - small table mat) 4822 310 10671
- wristband tester 4822 344 13999

INFORMATION ABOUT LEAD-FREE SOLDERING

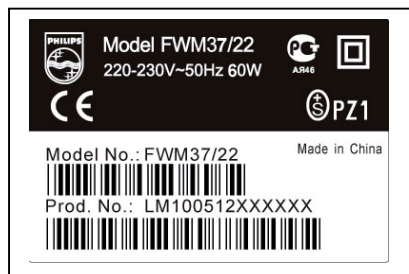
Philips CE is producing lead-free sets from 1.1.2005 onwards.

IDENTIFICATION:

Regardless of special logo (not always indicated) one must treat all sets from 1 Jan 2005 onwards, according next rules:



Example S/N:



Bottom line of typeplate gives a 14-digit S/N. Digit 5&6 is the year, digit 7&8 is the week number, so in this case 2005 wk12

So from 0501 onwards = from 1 Jan 2005 onwards

Important note: In fact also products of year 2004 must be treated in this way as long as you avoid mixing solder-alloys (lead/ lead-free). So best to always use SAC305 and the higher temperatures belong to this.

Due to lead-free technology some rules have to be respected by the workshop during a repair:

- Use only lead-free solder alloy Philips SAC305 with order code 0622 149 00106. If lead-free solder-paste is required, please contact the manufacturer of your solder-equipment. In general use of solder-paste within workshops should be avoided because paste is not easy to store and to handle.
- Use only adequate solder tools applicable for lead-free solder alloy. The solder tool must be able
 - To reach at least a solder-temperature of 400°C,
 - To stabilize the adjusted temperature at the solder-tip
 - To exchange solder-tips for different applications.
- Adjust your solder tool so that a temperature around 360°C – 380°C is reached and stabilized at the solder joint. Heating-time of the solder-joint should not exceed ~ 4 sec. Avoid temperatures above 400°C otherwise wear-out of tips will rise drastically and flux-fluid will be destroyed. To avoid wear-out of tips switch off un-used equipment, or reduce heat.
- Mix of lead-free solder alloy / parts with leaded solder alloy / parts is possible but PHILIPS recommends strongly to avoid mixed solder alloy types (leaded and lead-free).
If one cannot avoid or does not know whether product is lead-free, clean carefully the solder-joint from old solder alloy and re-solder with new solder alloy (SAC305).
- Use only original spare-parts listed in the Service-Manuals. Not listed standard-material (commodities) has to be purchased at external companies.
- **Special information for BGA-ICs:**
 - always use the 12nc-recognizable soldering temperature profile of the specific BGA (for de-soldering always use the lead-free temperature profile, in case of doubt)
 - lead free BGA-ICs will be delivered in so-called 'dry-packaging' (sealed pack including a silica gel pack) to protect the IC against moisture. After opening, dependent of MSL-level seen on indicator-label in the bag, the BGA-IC possibly still has to be baked dry. (MSL=Moisture Sensitivity Level). This will be communicated via AYS-website.
Do not re-use BGAs at all.
- For sets produced before 1.1.2005 (except products of 2004), containing leaded solder-alloy and components, all needed spare-parts will be available till the end of the service-period. For repair of such sets nothing changes.
- On our website www.atyourservice.ce.Philips.com you find more information to:
 - BGA-de-/soldering (+ baking instructions)
 - Heating-profiles of BGAs and other ICs used in Philips-sets

You will find this and more technical information within the "magazine", chapter "workshop news".

For additional questions please contact your local repair-helpdesk.

SERVICE INSTRUCTION

Safety regulations require that after a repair, the set must be returned in its original condition. Pay in particular attention to the following points:

- Route the wire trees correctly and fix them with the mounted cable clamps.
- Check the insulation of the AC Power lead for external damage.
- Check the strain relief of the AC Power cord for proper function.
- Check the electrical DC resistance between the AC Power Plug and the secondary side (only for sets which have a AC Power isolated power supply):
 1. Unplug the AC Power cord and connect a wire between the two pins of the AC Power plug.
 2. Set the AC Power switch to the "on" position (keep the AC Power cord unplugged!).
 3. Measure the resistance value between the pins of the AC Power plug and the metal shielding of the tuner or the aerial connection on the set. The reading should be larger than 4.5 Mohm (For U.S. it should be between 4.2 Mohm and 12 Mohm).
 4. Switch "off" the set, and remove the wire between the two pins of the AC Power plug.
- Check the cabinet for defects, to avoid touching of any inner parts by the customer.

SPECIFICATION

AMPLIFIER

Output power	30 W RMS (subwoofer)
.....	5x 10W (satellite boxes)
.....	1500 W PMPO
Signal-to-noise ratio	≥ 65 dBA
Impedance loudspeakers	6 Ω (subwoofer)
.....	5x 4 Ω (satellite boxes)

DVD PLAYER

Laser Type	Semiconductor
Disc Diameter	12cm / 8cm
Video Decoding	MPEG-2 / MPEG-1
Video DAC	10 Bits
Signal System	PAL / NTSC
Video S/N	56 dB (minimum)
Composite Video Output	1.0Vp-p, 75 Ω
S-Video Output	Y - 1.0Vp-p, 75 Ω
.....	C - 0.286Vp-p, 75 Ω
Audio DAC	24 Bits / 96 kHz
Frequency Response	4 Hz - 20 kHz (44.1kHz)
.....	4 Hz - 22 kHz (48kHz)
.....	4 Hz - 44 kHz (96kHz)
Digital Output	
.....	SPDIF (Sony Philips digital interface) Coaxial
Number of programmable tracks	20
Signal-to-noise ratio	≥ 50 dBA
Channel separation	≥ 40 dB (1 kHz)
Total harmonic distortion	$< 0.02\%$ (1 kHz)

TUNER

FM wave range	
.....	87.5 (± 0.5)– 108.5 (± 0.5) MHz
MW wave range	
.....	515 (± 8) – 1646 (± 30) kHz
Sensitivity at 75 Ω	
– mono, 26 dB signal-to-noise ratio	2.8 μ V
– stereo, 46 dB signal-to-noise ratio	61.4 μ V
Selectivity	≥ 28 dB
Total harmonic distortion	$\leq 5\%$
Signal-to-noise-ratio	≥ 50 dBA

TAPE DECK

Signal-to-noise ratio	
Normal tape (type I)	50 dBA
Wow and flutter	$\leq 0.4\%$ DIN

SPEAKERS

Front Speakers

System	1-way shielded
Impedance	4 Ω
Frequency response	
.....	90 Hz – 20 KHz
Speaker drivers	1x 3" woofer
Dimensions (w x h x d)	
.....	95mm x 141 mm x 103 mm
Weight	0.62 kg

Center Speaker

System	1-way shielded
Impedance	4 Ω
Frequency response	
.....	90 Hz – 20 KHz (within -6dB)
Speaker drivers	1 x 3" woofer
Dimensions (w x h x d) .	95mm x 141 mm x 103 mm
Weight	0.62 kg

Surround Speakers

System ..	1-way (not magnetically shielded design)
Impedance	6 Ω
Frequency response	
.....	90 Hz – 20 KHz
Speaker drivers	1 x 3" woofer
Dimensions (w x h x d)	
.....	95mm x 141 mm x 103 mm
Weight	0.385 kg

SUBWOOFER

Subwoofer	
.....	1-way (not magnetically shielded design)
Impedance	6 Ω
Frequency response	
.....	35 Hz – 7 KHz
Speaker drivers	1 x 4" woofer
Dimensions (w x h x d)	
.....	168 mm x 266 mm x 243 mm
Weight	2.63 kg

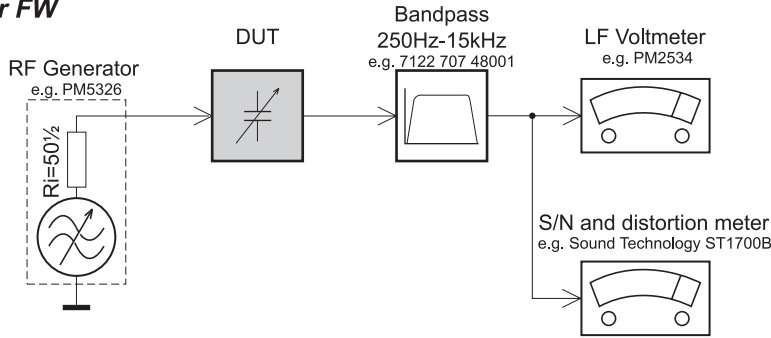
GENERAL INFORMATION

AC Power	220 – 240V; 50/60 Hz
Dimensions (w x h x d)	436 x 86 x 337 (mm)
Weight(with/without speakers)	11.0 / 5.8 kg
Standby power consumption	< 15 W

Specifications and external appearance are subject to change without notice.

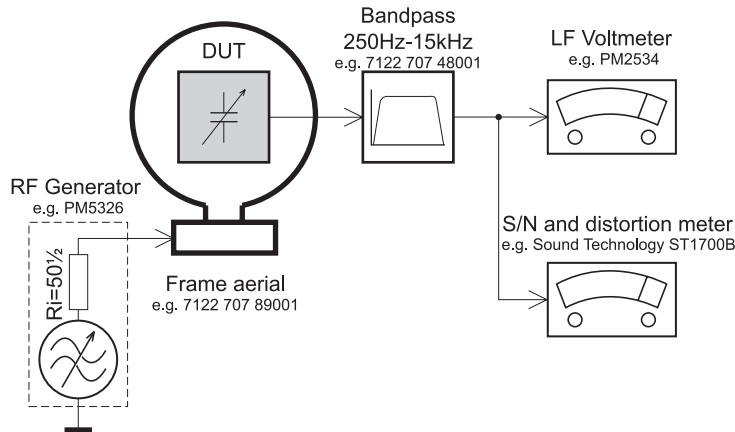
SERVICE MEASUREMENT

Tuner FW



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

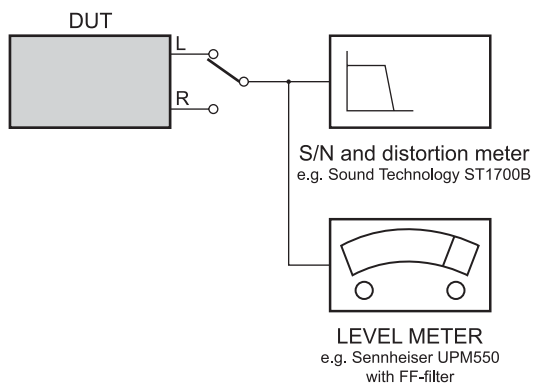
Tuner AM (MW,LW)



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

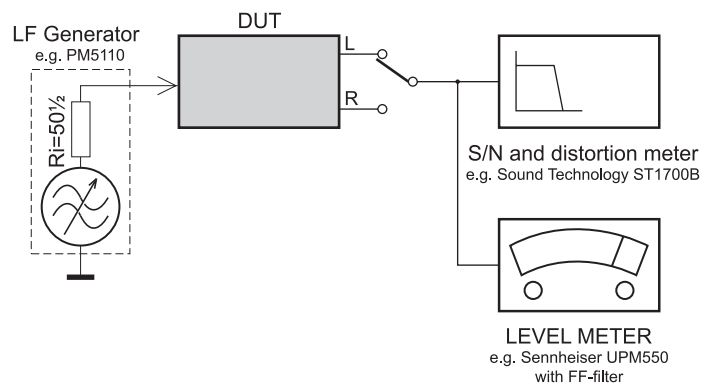
CD

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

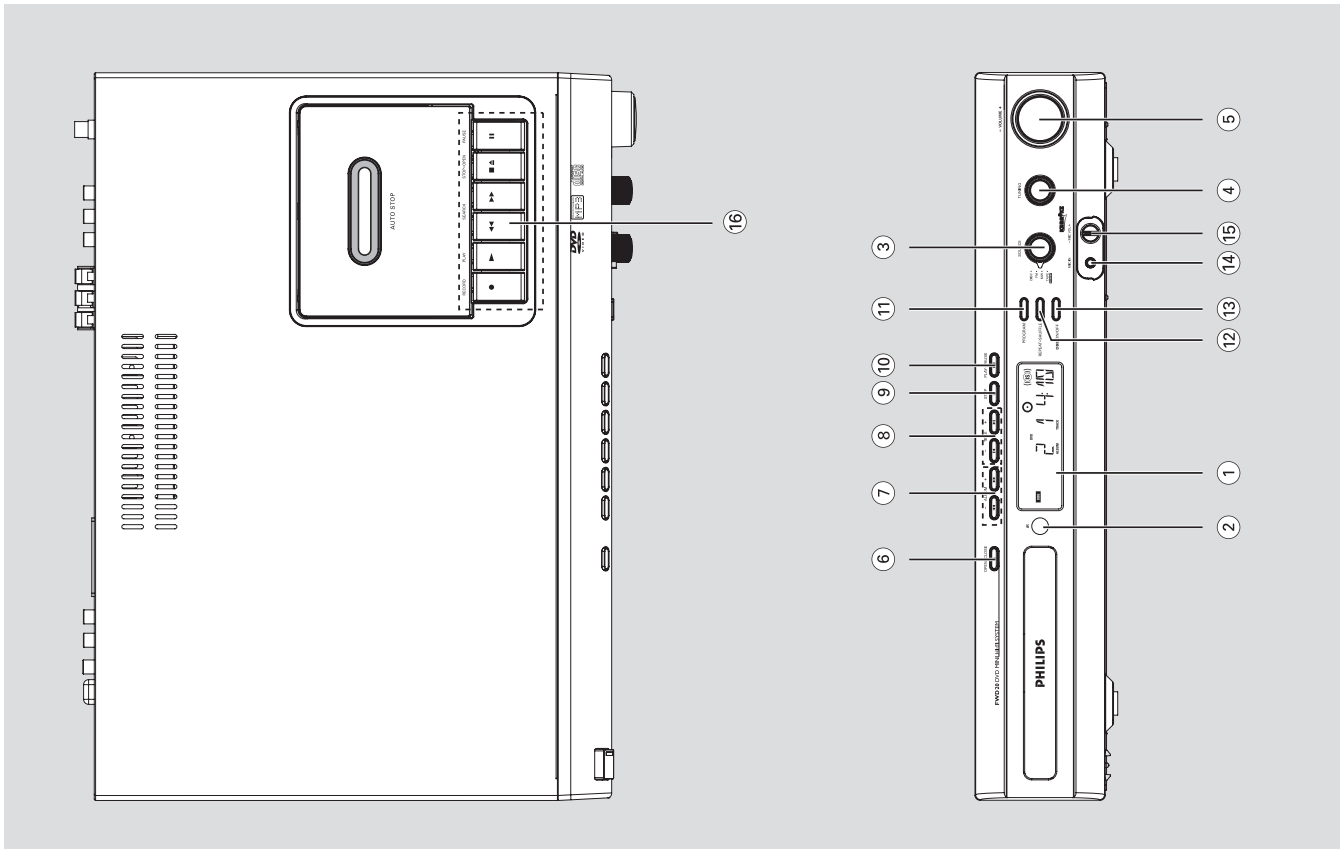
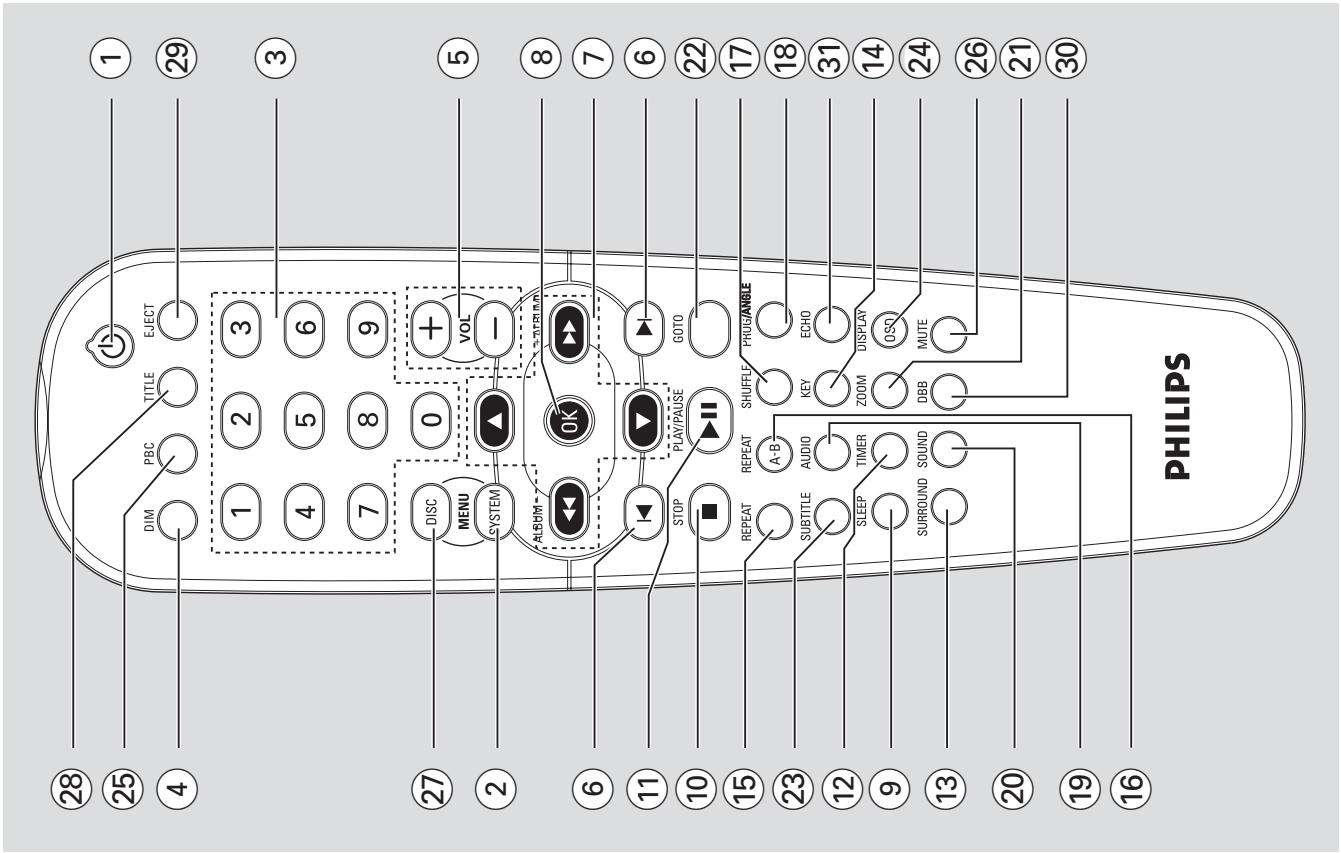


RECORDER

Use Universal Test Cassette Fe SBC420 4822 397 30071



CONNECTION AND CONTROLS



CONNECTION AND CONTROLS

Controls

Controls on the system

- ① **Display screen**
to view the current status of the system.
- ② **IR sensor**
infrared sensor for remote control.
- ③ **SOURCE**
to select the respective sound source : DISC (*AUX), FM, MW or TAPE (STANDBY).
- ④ **TUNING**
In FM or MW mode, to tune to a lower or higher radio frequency.
- ⑤ **VOLUME +/-**
to increase or decrease the volume.
- ⑥ **OPEN•CLOSE ▲**
to open or close the disc tray.
- ⑦ **ALBUM +/- ◀▶▶▶**
for MP3/Picture-CD
skips to the beginning of a current/previous/subsequent album.
- ⑧ **TITLE +/- ◀▶▶▶**
to fast reverse/forward the disc.
for MP3-CD (press and hold) to fast reverse/forward the disc.
- ⑨ **STOP ■**
In DISC mode, to stop playback or to clear a program.
- ⑩ **PLAY•PAUSE ▶▶**
to start or interrupt playback
- ⑪ **PROGRAM**
to program disc tracks (for VCD/CD/MP3-CD only).
- ⑫ **REPEAT•SHUFFLE**
to select different repeat or shuffle playback modes: Repeat Track, Repeat All, Shuffle On, Shuffle Repeat All and Shuffle Repeat Off.
- ⑬ **DBB ON/OFF**
enhances the bass

⑭ MIC IN

- Plug in the microphone jack here.

⑮ MICVOL +/-

- Adjusts the microphone volume level.

⑯ Tape Deck Operation

- RECORD ●** ... starts recording.
- PLAY ▶** starts playback.
- SEARCH ◀▶▶▶**rewinds/winds the tape.

STOP•OPEN ■ ▲

- stops the tape; opens the tape compartment.

Controls on the remote control

- ① **⏻**
to switch the system on or to standby mode (for the DISC mode only).
- ② **SYSTEM MENU**
to enter or exit the system menu bar.
- ③ **Numeric Keypad (0-9)**
to enter a track/title number of the disc.
- ④ **DIM (unavailable for this version)**
- ⑤ **VOL +/-**
to increase or decrease the volume.
- ⑥ **◀▶**
In DISC mode, to select the previous or next chapter or track.
- ⑦ **ALBUM/◀◀ ALBUM+/▶▶▲▼**
In DISC mode, to select movement direction in disc contents menu/system menu bar.
- ⑧ **(ALBUM-/◀◀ ALBUM+/▶▶)** for MP3, skips to the beginning of a current/previous/subsequent album.
- ⑨ **(ALBUM-/◀◀ ALBUM+/▶▶)** for DVD/VCD/CD, to fast reverse/forward the disc.
- ⑩ **(▲▼)** for DVD/VCD, to select a desired slow playback speed forward or backward.
- ⑪ **OK**
to exit or confirm the selection.
- ⑫ **SLEEP (unavailable for this version)**

Controls

⑩ STOP■

- In DISC mode, to stop playback or to clear a program.

⑪ PLAY/PAUSE▶▶

- to start or interrupt playback.

⑫ TIMER (unavailable for this version)

- to enter or exit the disc contents menu.
- to enter the title menu of the disc during DVD playback.

⑬ SURROUND

- (for DVD/VCD) to select 2.1 or 5.1 channel output or surround off.

⑭ KEY

- to change the DVD/VCD key tone level to suit your vocal range.
- to open or close the disc tray.

⑮ REPEAT

- to repeat a track/disc.

⑯ REPEAT A-B

- for CDto repeat a specific section within the same track.
- for DVD/VCD, to repeat a specific section in a disc.

⑰ SHUFFLE

- to play tracks in a random order

⑱ PROG/ANGLE

- to program disc tracks (for VCD/CD/MP3-CD only).
- selects a DVD camera angle.

⑲ AUDIO

- For DVDto select the preferred language.
- In karaoke mode....to select the preferred audio mode: Mono Left, Mono Right or Stereo.

⑳ SOUND (unavailable for this version)

㉑ ZOOM

- to zoom in picture.

㉒ GOTO

- to start playback at any chosen time on the disc (for VCD operation with PBC off and not for MP3-CD).

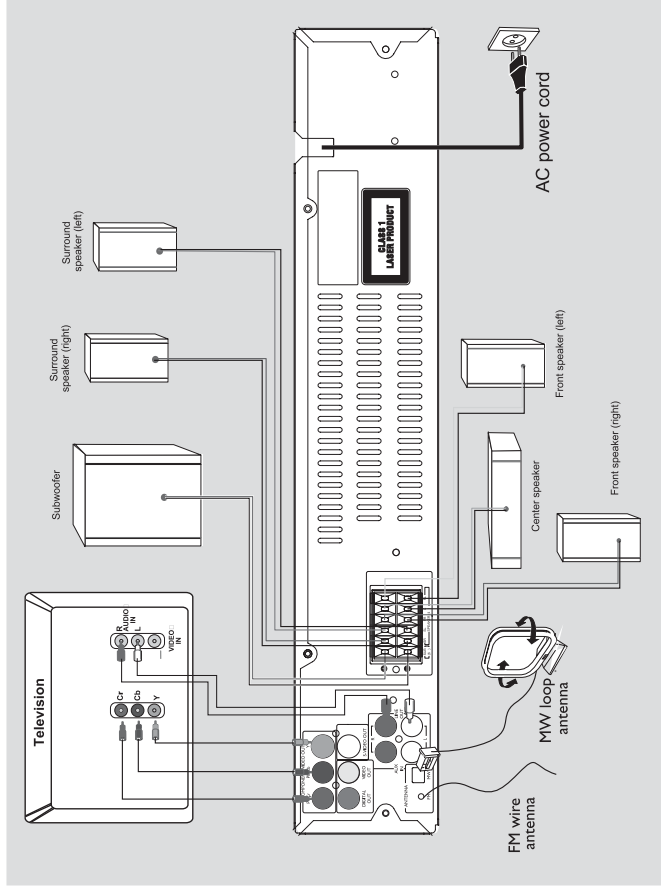
㉓ SUBTITLE

- to select the preferred language for subtitle.

㉔ DISPLAY (OSD)

- to display information on TV screen during playback.

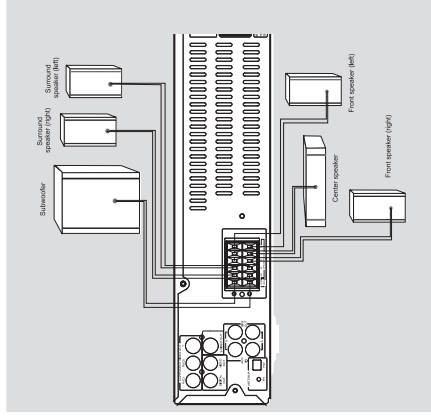
* To enter the AUX mode, turn the SOURCE control knob to the DISC position without inserting any disc into the disc compartment.



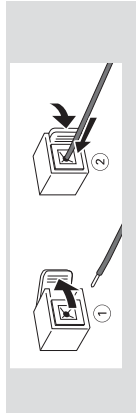
- 1 For best possible surround sound, all the speakers (except subwoofer) should be placed at the same distance from the listening position. Place the front left and right speakers at equal distances from the TV and at an angle of approximately 45 degrees from the listening position.
- 2 Place the center speaker above the TV or the DVD system so that the center channel's sound is localized.
- 3 Place the rear speakers at normal listening ear level facing each other or hang on the wall.
- 4 Place the subwoofer on the floor near the TV.

- Notes:**
- To avoid magnetic interference, do not position the front speakers too close to your TV.
 - Allow adequate ventilation around the DVD system.

Step 2: Connecting speakers

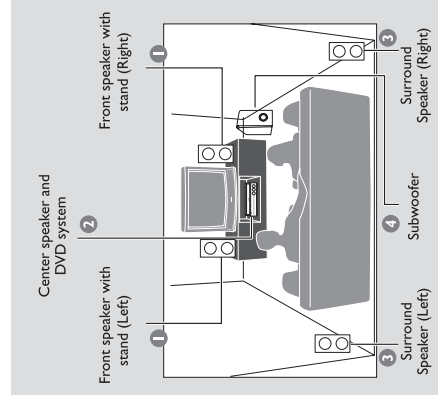


Connect the speaker wires to the **SPEAKER** terminals by matching the color and silkscreen, coloured (marked) wire to "+" and black (unmarked) wire to "-". Fully insert the stripped portion of the speaker wire into the terminal as shown.



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

Step 1: Placing the speakers and subwoofer



- IMPORTANT!**
- The type plate is located at the rear of the system.
 - Before connecting the AC power cord to the wall outlet, ensure that all other connections have been made.
 - Never make or change any connections with the power switched on.

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

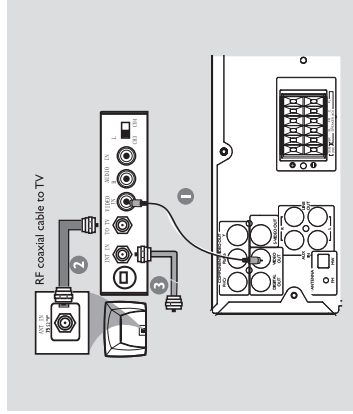
CONNECTION AND CONTROLS

Connections

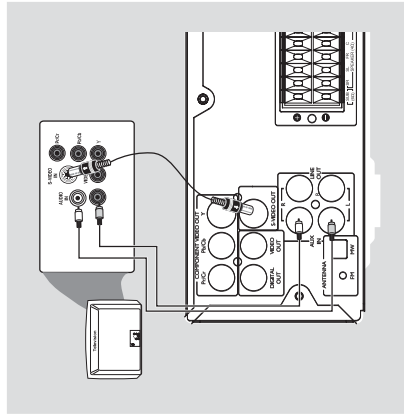
Using an accessory RF modulator

IMPORTANT!

- If your TV only has a single Antenna In jack (labeled as 75 ohm or RF In), you will need an RF modulator in order to view DVD playback on the TV. See your electronics retailer or contact Philips for details on RF modulator availability and operations.



- 1 Use the composite video cable (yellow) to connect the DVD system's **VIDEO OUT** jack to the video input jack on the RF modulator.
- 2 Use an RF coaxial cable (not supplied) to connect **ANTENNA OUT** or **TO TV** jack on the RF modulator to the **Antenna IN** jack on the TV.
- 3 Connect the **Antenna** or **Cable TV** service signal to the **ANTENNA IN** or **RF IN** jack on the RF modulator. (It may have been connected to your TV previously. Disconnect it from the TV.)



IMPORTANT!

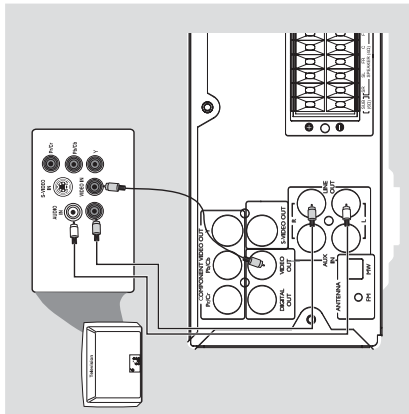
- If the picture is distorted, check the Video Output setting. Make sure it is set to 'S-Video'. (See Setting video preference).

Using S-Video In jack

- 1 Use the S-Video cable (not supplied) to connect the system's **S-VIDEO OUT** jack to the S-Video input jack (or labeled as Y/C or S-VHS) on the TV set.
- 2 To hear the sound of this DVD Player through your TV, use the audio cables (white/red) to connect **LINE OUT (L/R)** jacks of the DVD Player to the corresponding **AUDIO IN** jacks on the TV.

Connections

Step 3: Connecting TV set



IMPORTANT!

- You only need to make **one** video connection from the following options, according to the capabilities of your TV system.
- **Component Video** connection provides higher picture quality. These options must be available on your TV set.
- **Connect the system directly to the TV set.**

Using Video In jack (CVBS)

- 1 Use the composite video cable (yellow) to connect the system's **VIDEO OUT** jack to the video input jack (or labeled as AV In, Video In, Composite or Baseband) on the TV set.
- 2 To hear the sound of this DVD Player through your TV, use the audio cables (white/red) to connect **LINE OUT (L/R)** jacks of the DVD Player to the corresponding **AUDIO IN** jacks on the TV.

IMPORTANT!

- To set the **VIDEO OUT** (put) to 'Cr Cb Y', see Setting video preference.

Using component Video In jack (Cr Cb Y)

- 1 Use the component video cables (red/blue/green) to connect the system's **Cr Cb Y** jacks to the corresponding Component video input jacks on the TV set.
- 2 To hear the sound of this DVD Player through your TV, use the audio cables (white/red) to connect **LINE OUT (L/R)** jacks of the DVD Player to the corresponding **AUDIO IN** jacks on the TV.

CONNECTION AND CONTROLS

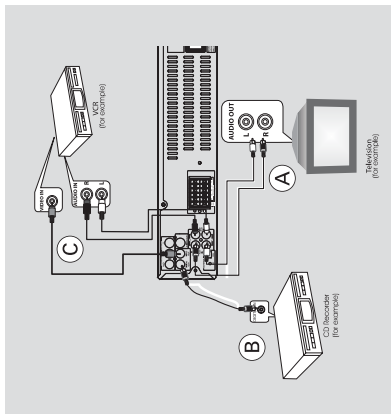
Connections

Additional: Connecting additional equipment

- **Recording (digital) (B)**
Connect the system's **DIGITAL OUT** jack to the DIGITAL IN jack on a digital recording device (such as DTS-Digital Theatre compatible, with Dolby Digital decoder).
Before starting operation, set the DIGITAL OUT according to the audio connection. (See "DIGITAL OUT".)
- **Using the VCR for recording DVDs (C)**
Connect one of the system's VIDEO jacks to the corresponding VIDEO IN jack and **LINE OUT (R/L)** jacks to the AUDIO IN jacks on the VCR. This will allow you to make analogue stereo (two channel, right and left) recordings.

IMPORTANT!

- Some discs are copy-protected. You cannot record the disc through a VCR or digital recording device.
- When making connections, make sure the colour of cables matches the colour of jacks.
- Always refer to the owner's manual of the other equipment for complete connection and usage details.

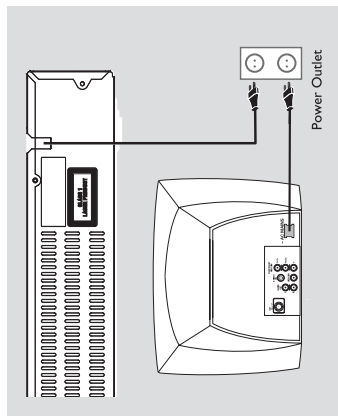


Viewing and listening to the playback of other equipment (A)

- Connect the system's **AUX IN (R/L)** jacks to the AUDIO OUT jacks on the other audio/visual device (such as a TV, VCR, Laser Disc player or cassette deck).
Before starting operation, turn the **SOURCE** control knob to the DISC position without inserting any disc into the disc compartment in order to activate the input source.

Connections

Step 5: Connecting the power cord



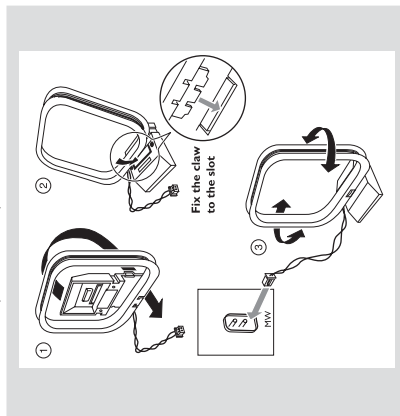
IMPORTANT! Never make or change any connection with the power switched on.

After everything is connected properly, plug in the AC power cord to the power outlet.

Step 4: Antenna Connection

MW Antenna

Connect the supplied MW loop antenna to the "MW" terminal. Adjust the position of the antenna for optimal reception.



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

FM Antenna

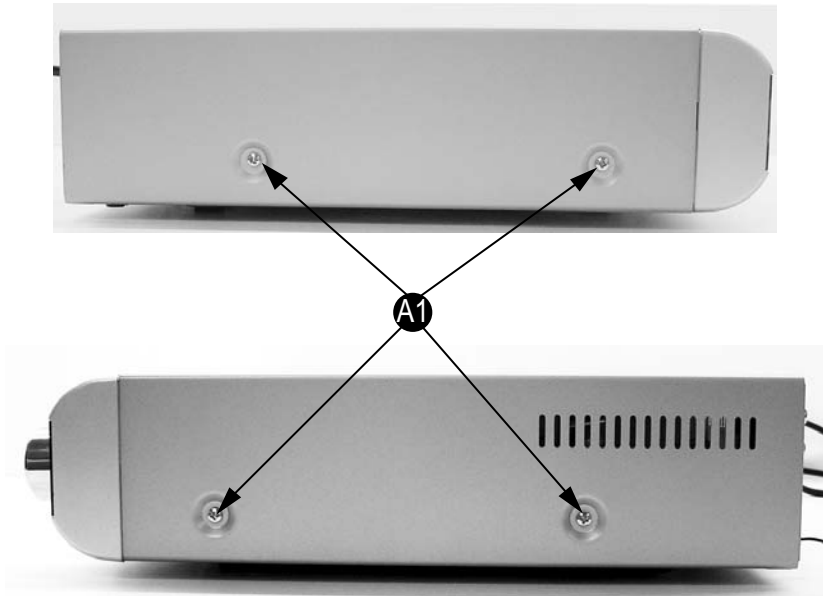
It is unnecessary to connect the FM pigtail antenna since it is fixed to the main unit.

- Adjust the FM antenna for optimal FM stereo reception.

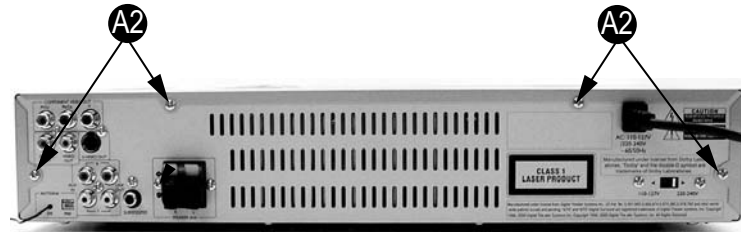
DISASSEMBLY INSTRUCTION

A. Remove Top Cover

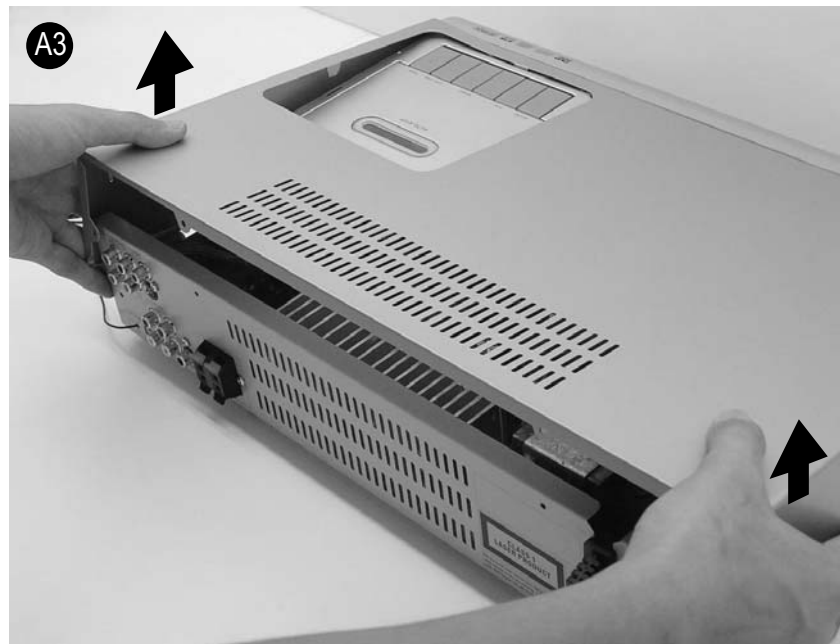
A1 remove screws M3x6 - 4 pcs.



A2 remove screws M3x6 - 4 pcs.

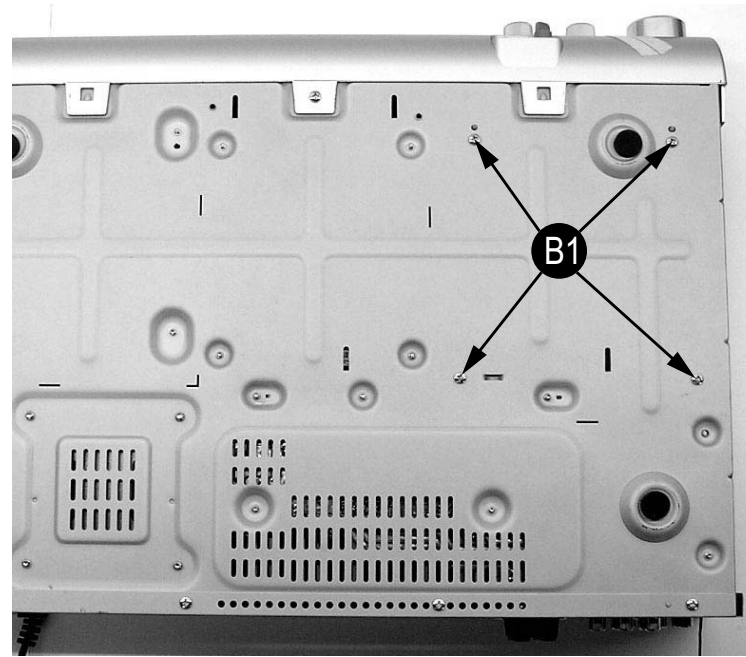


A3 lift up the top cover.



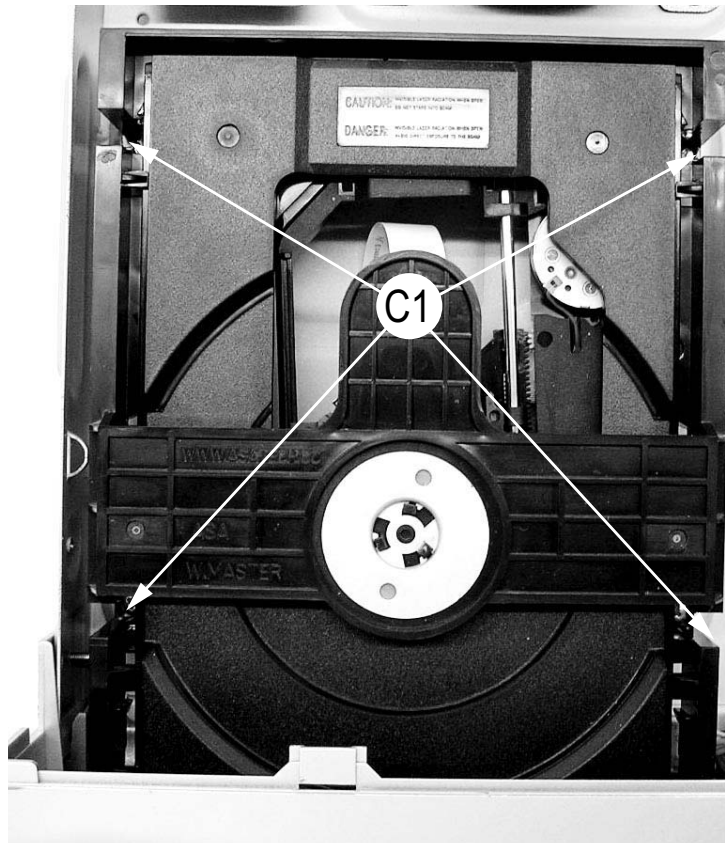
B. Remove Cassette mechanism

B1 remove screws T3x10 - 4 pcs.



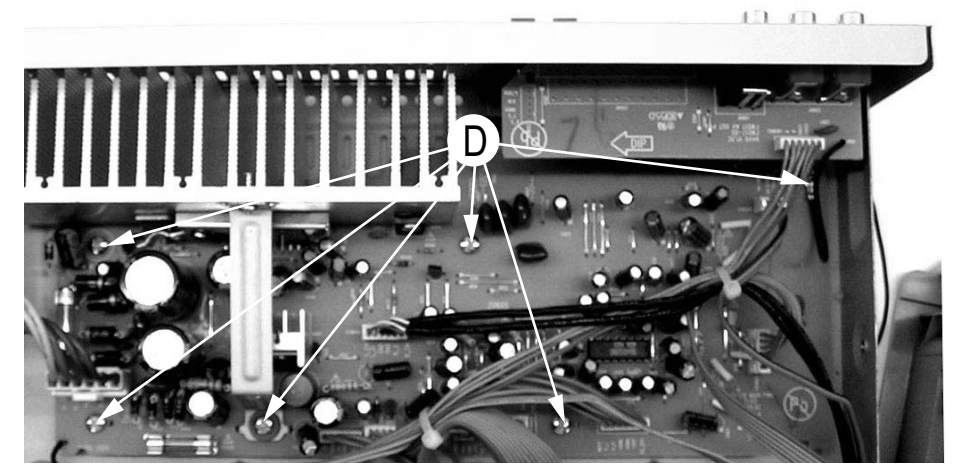
C. Remove DVD Loader

C1 remove screws M3x8 - 4 pcs.



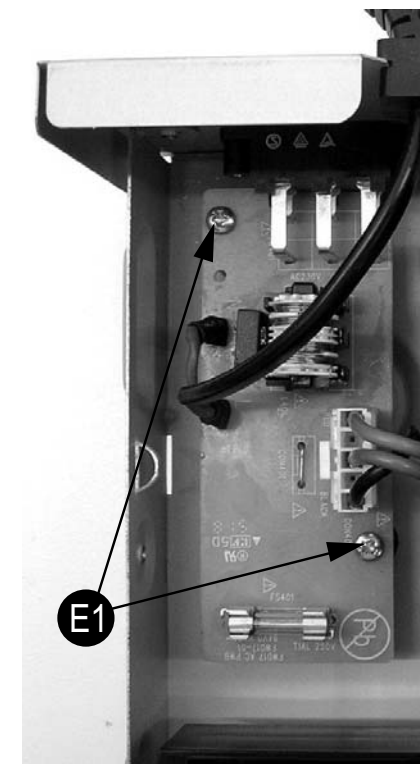
D. Remove Cassette mechanism

D1 remove screws M3x6 - 6 pcs.



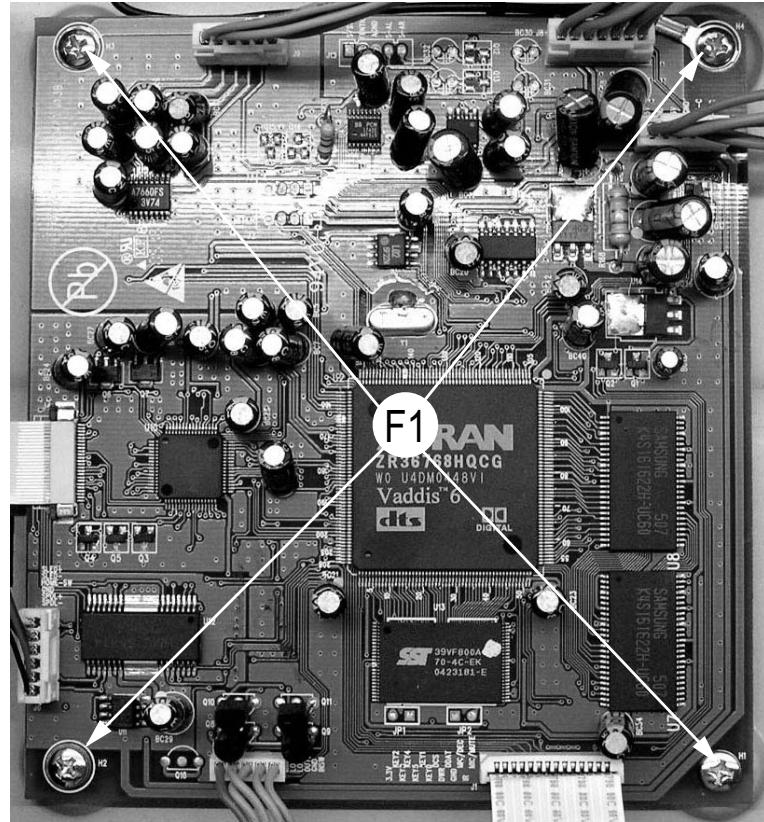
D. Remove Cassette mechanism

D1 remove screws M3x6 - 6 pcs.

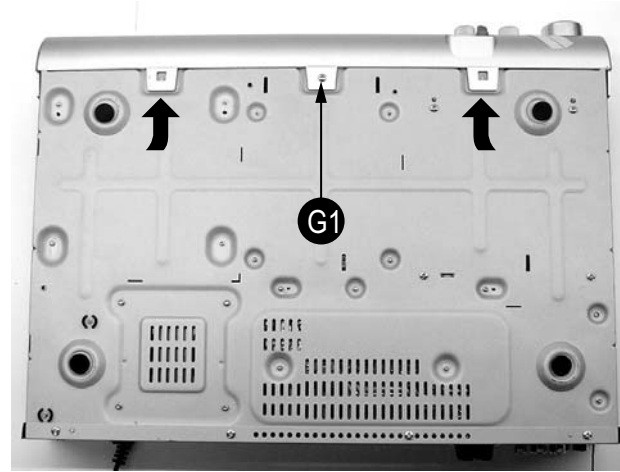


DISASSEMBLY INSTRUCTION

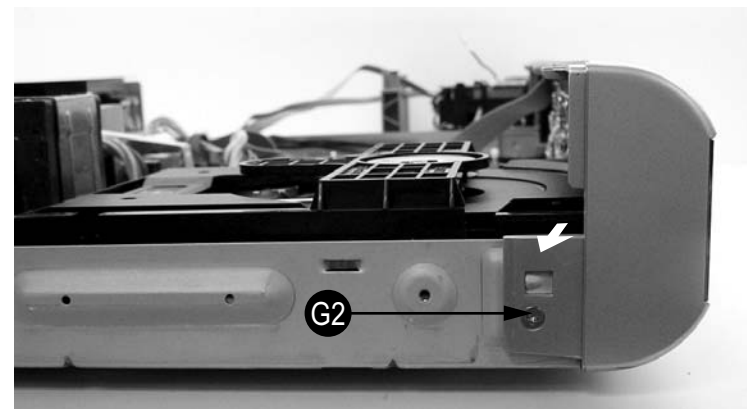
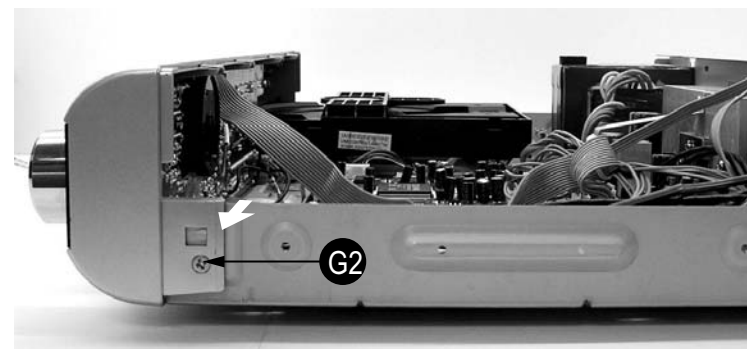
F. Remove DVD / MPEG board
F1 remove screws M3x6 - 4 pcs.



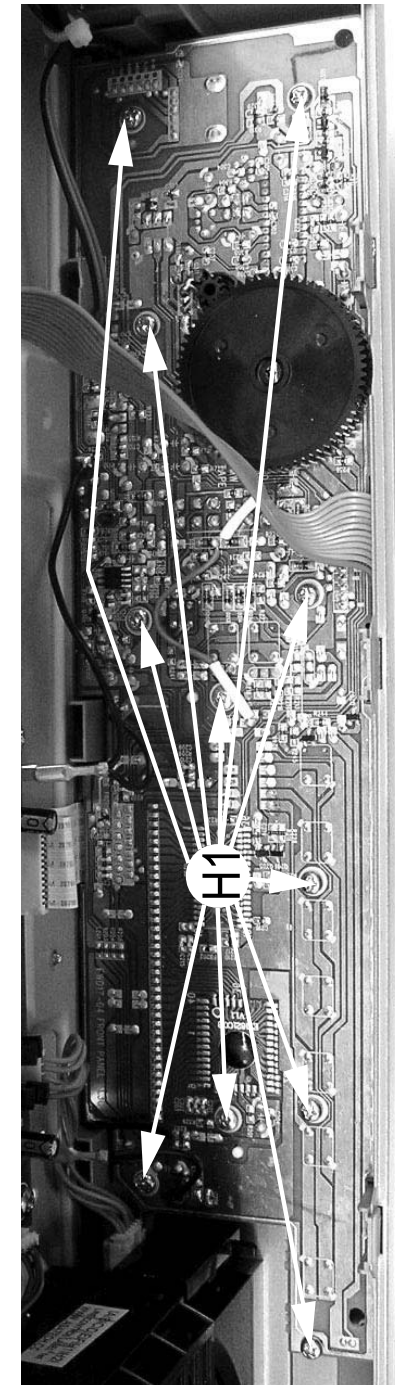
G. Remove Front Panel Assembly
G1 remove screws M3x6 - 1 pc.



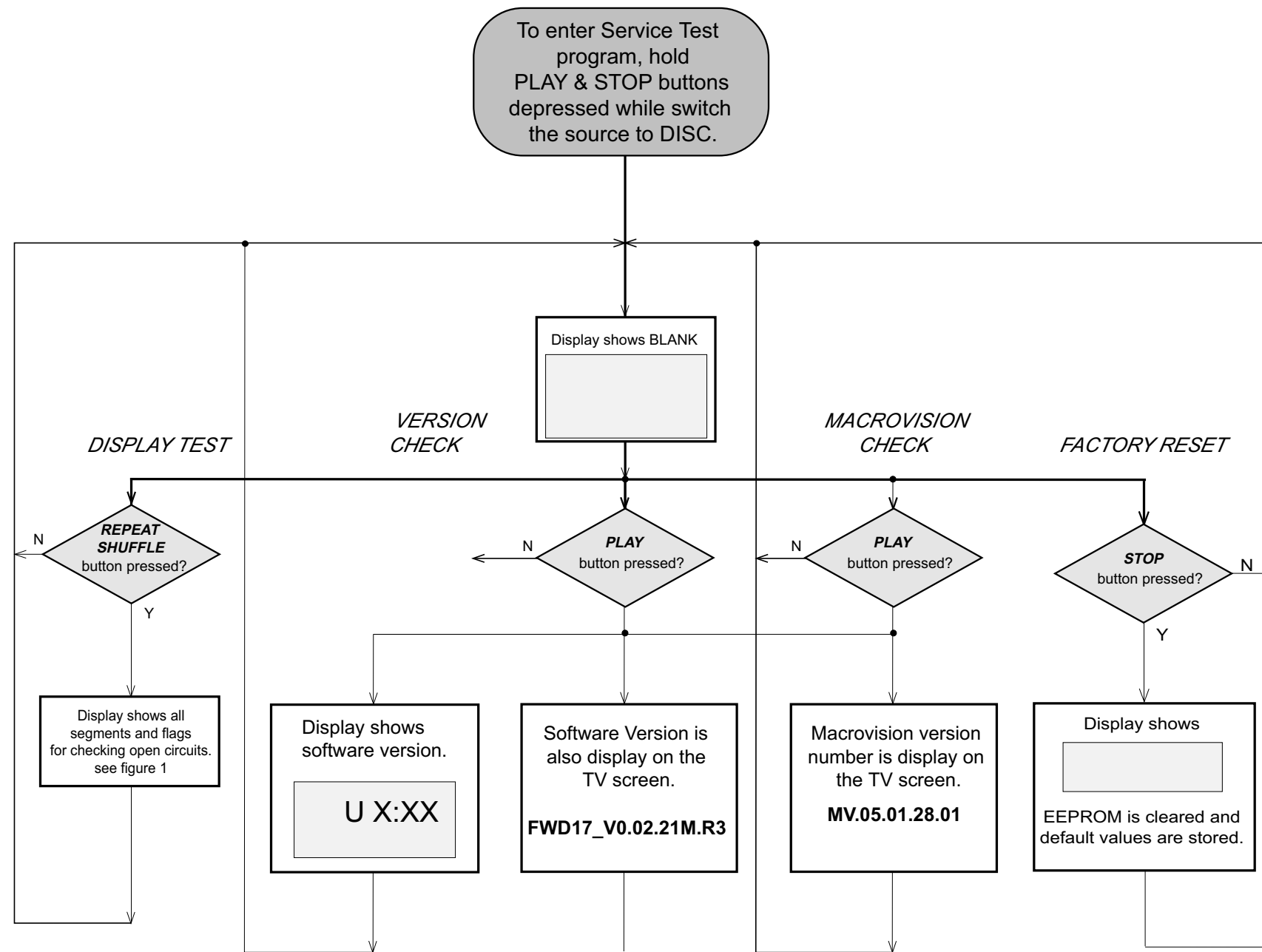
G2 remove screws M3x8 (C-head) - 2 pc.



H. Remove Front Panel Assembly
H1 remove screws M3x8 (+ fibre washers) - 9 pc.



SERVICE TEST PROGRAM



X:XX is the software version, eg. U 0:02

FWD17_V0.02.21M.R3 :
 The model number is FWD17.
 Software version is V0.02.
 Distination region is 21M.
 Region code for DVD disc is Region 3.

This test should be done at the end of the production process so that every set is customised before leaving factory.

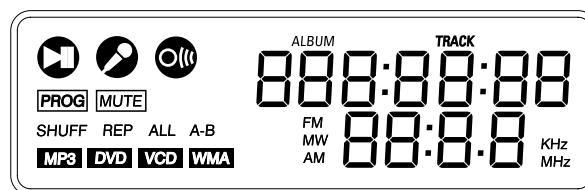
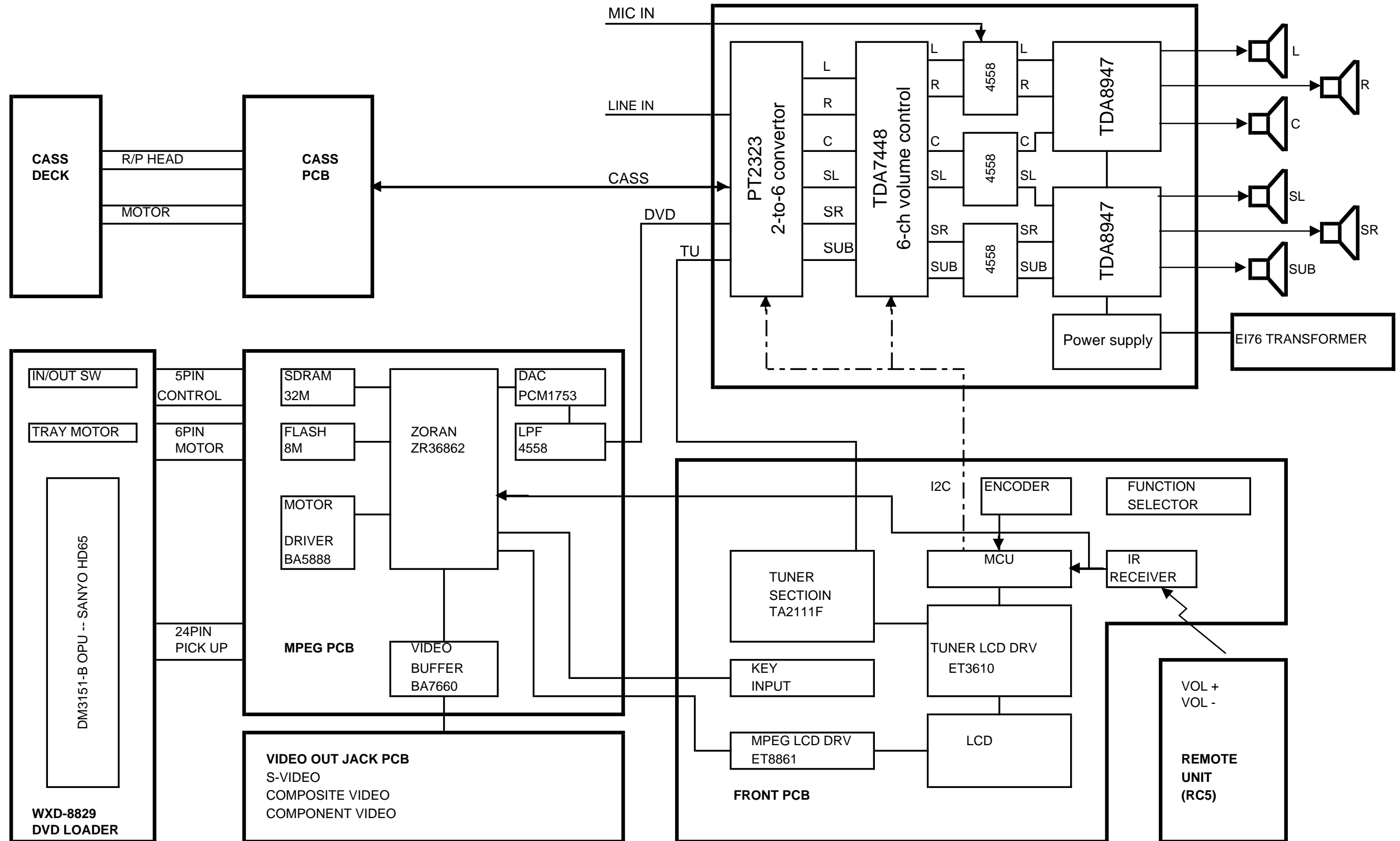
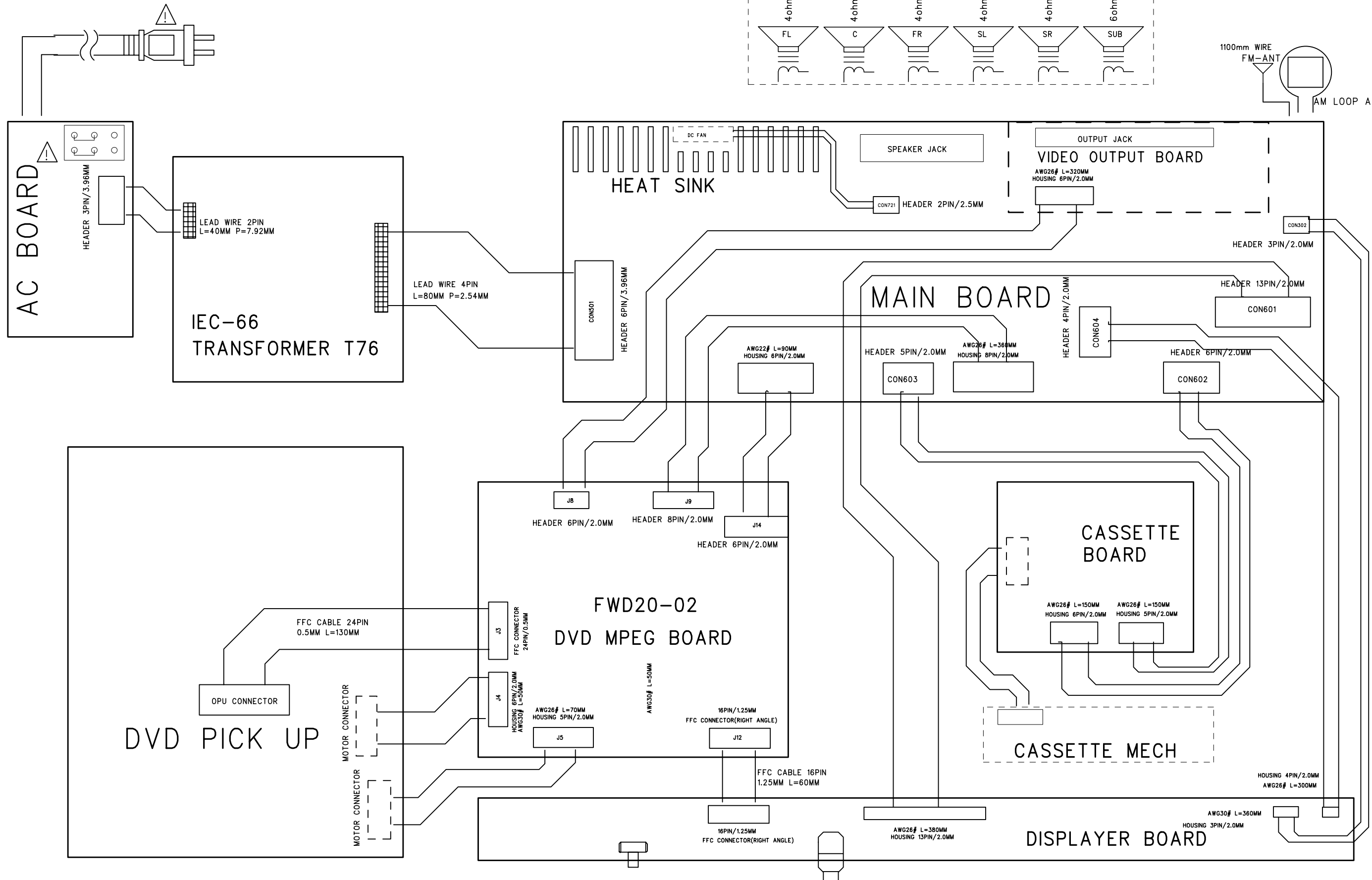
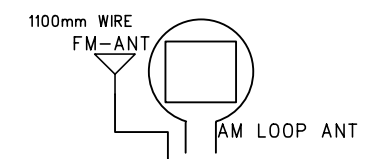
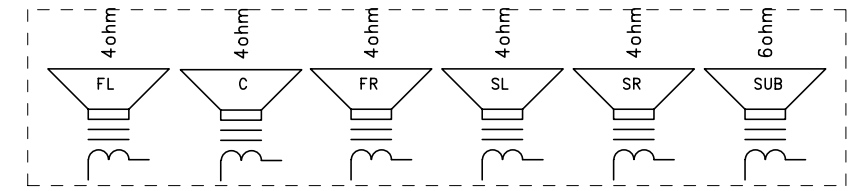


fig. 1

SET BLOCK DIAGRAM

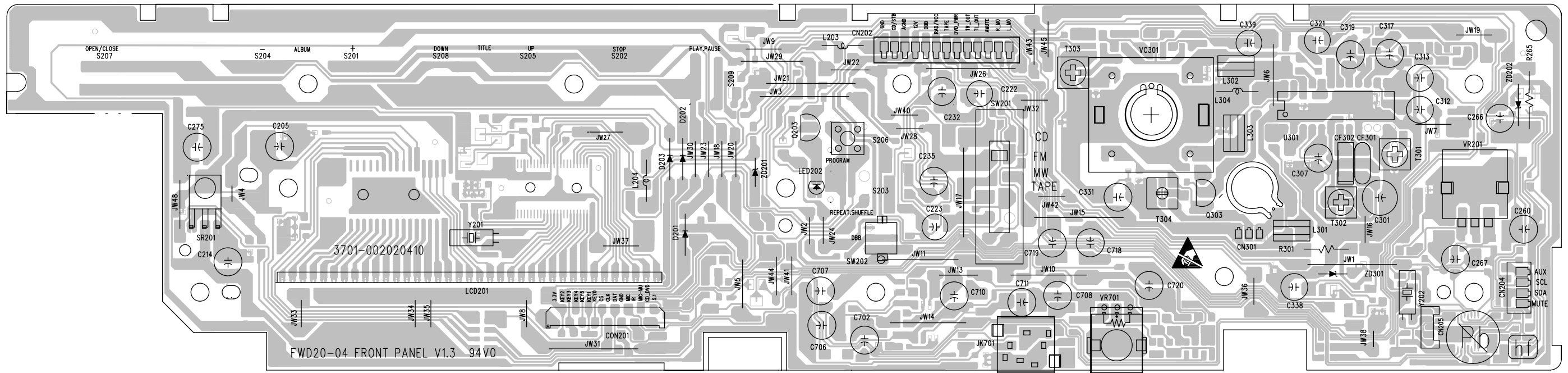


SET WIRING DIAGRAM

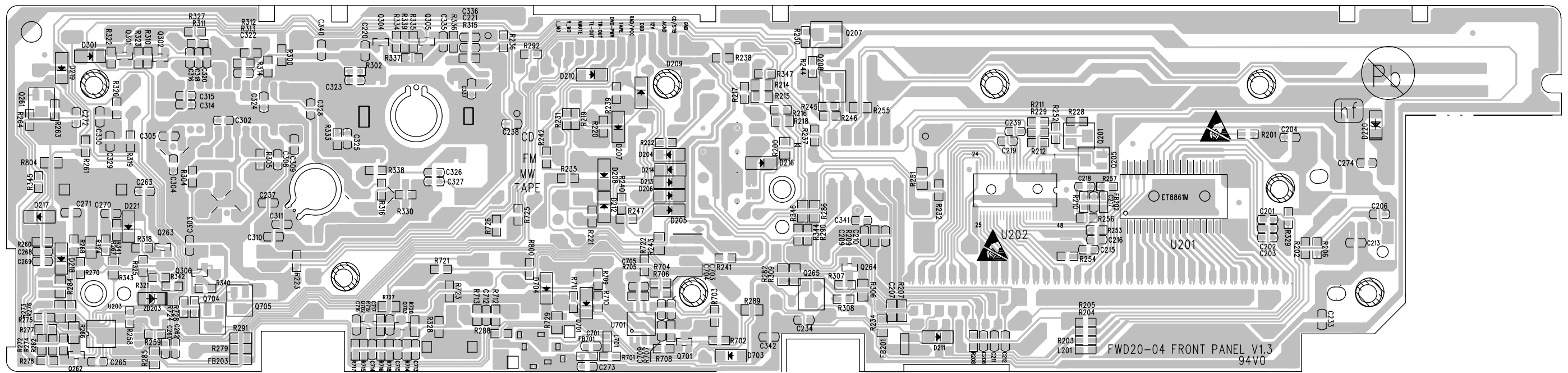


LAYOUT DIAGRAM - DISPLAY / TUNER BOARD

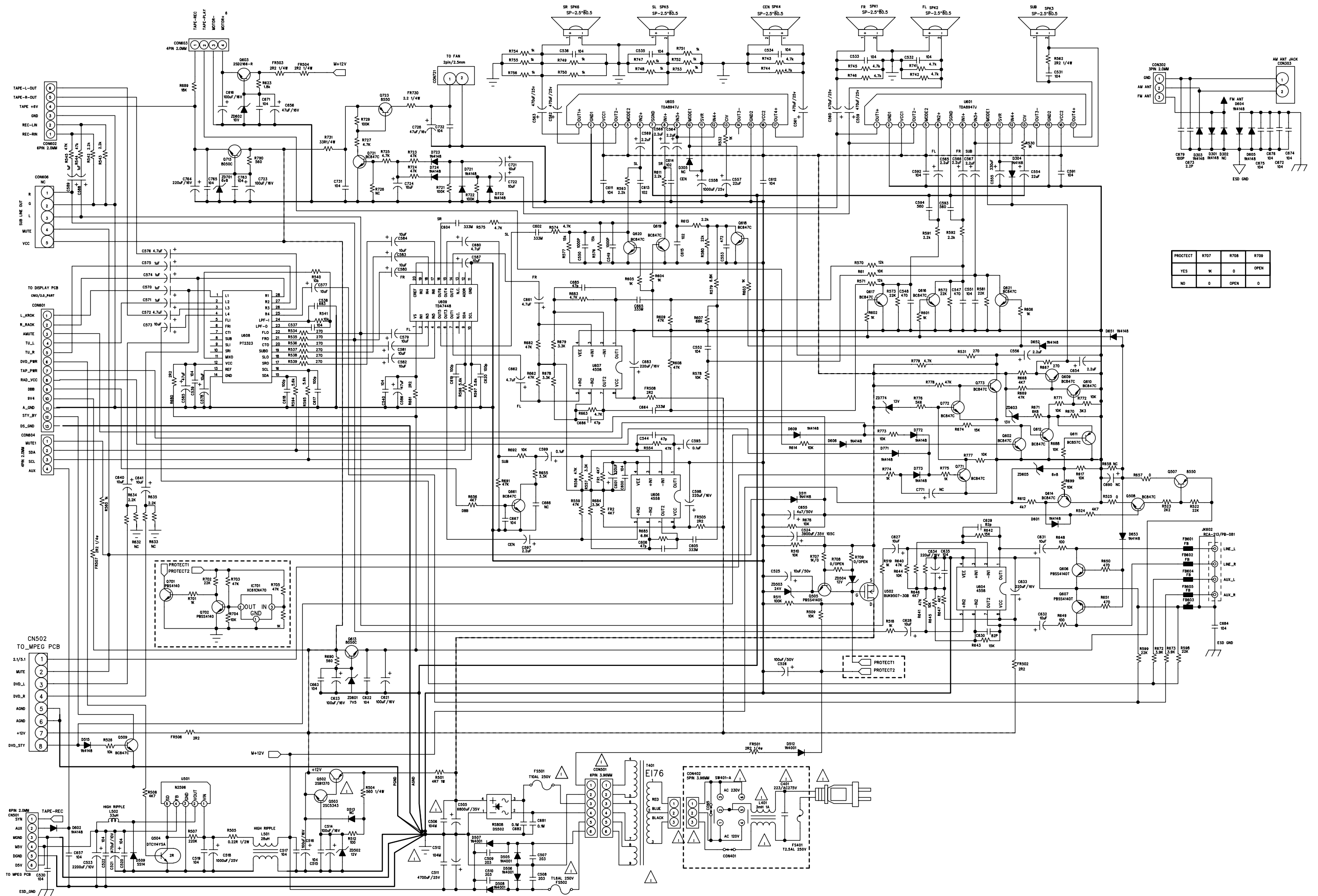
COMPONENT SIDE



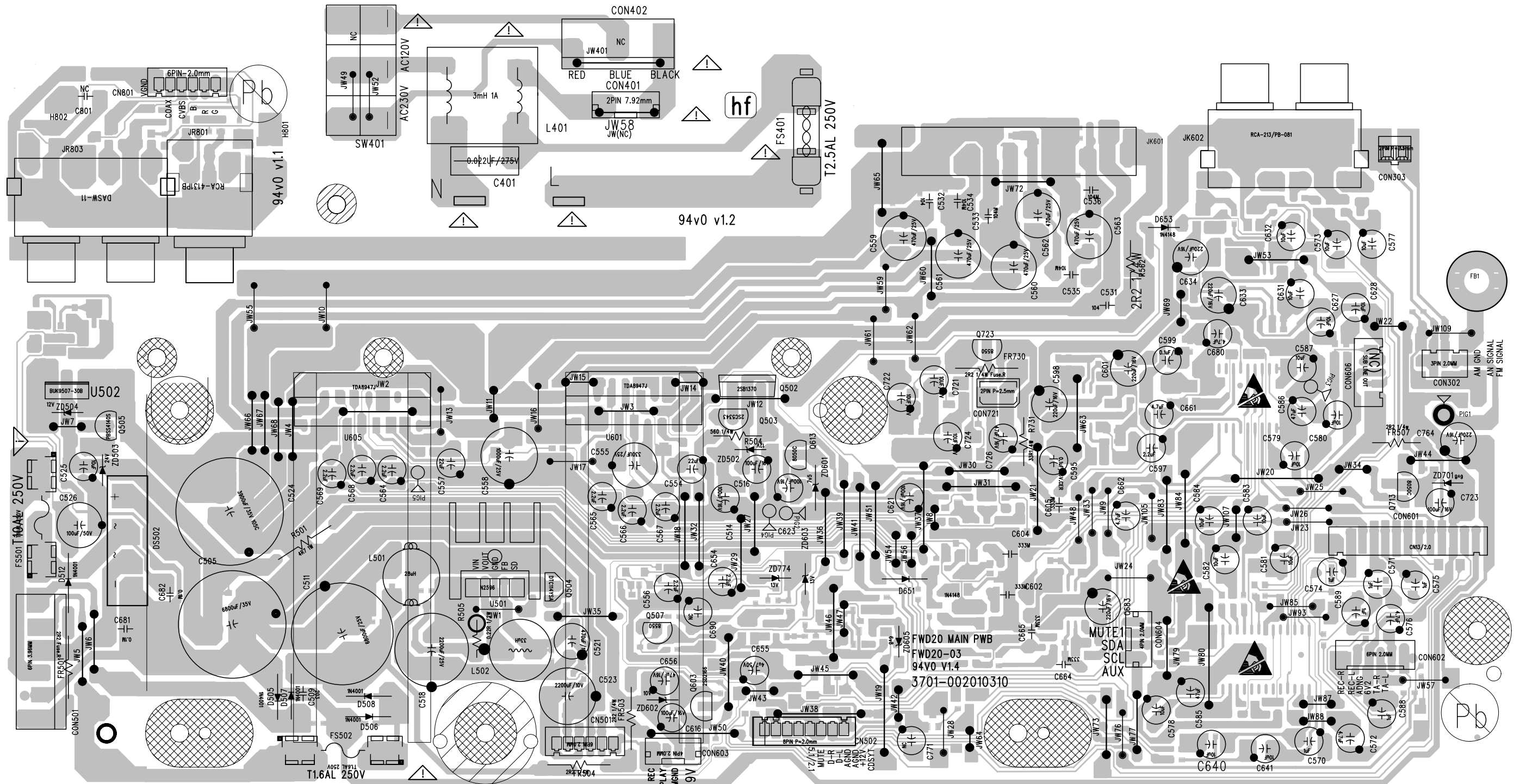
COPPER SIDE



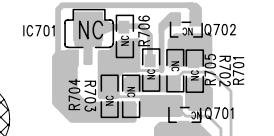
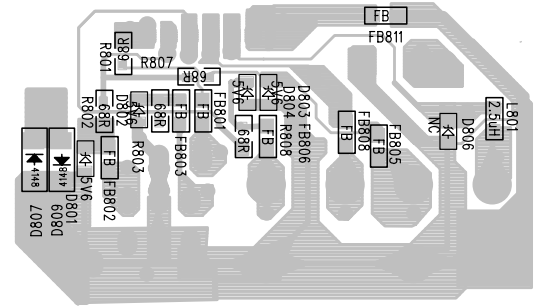
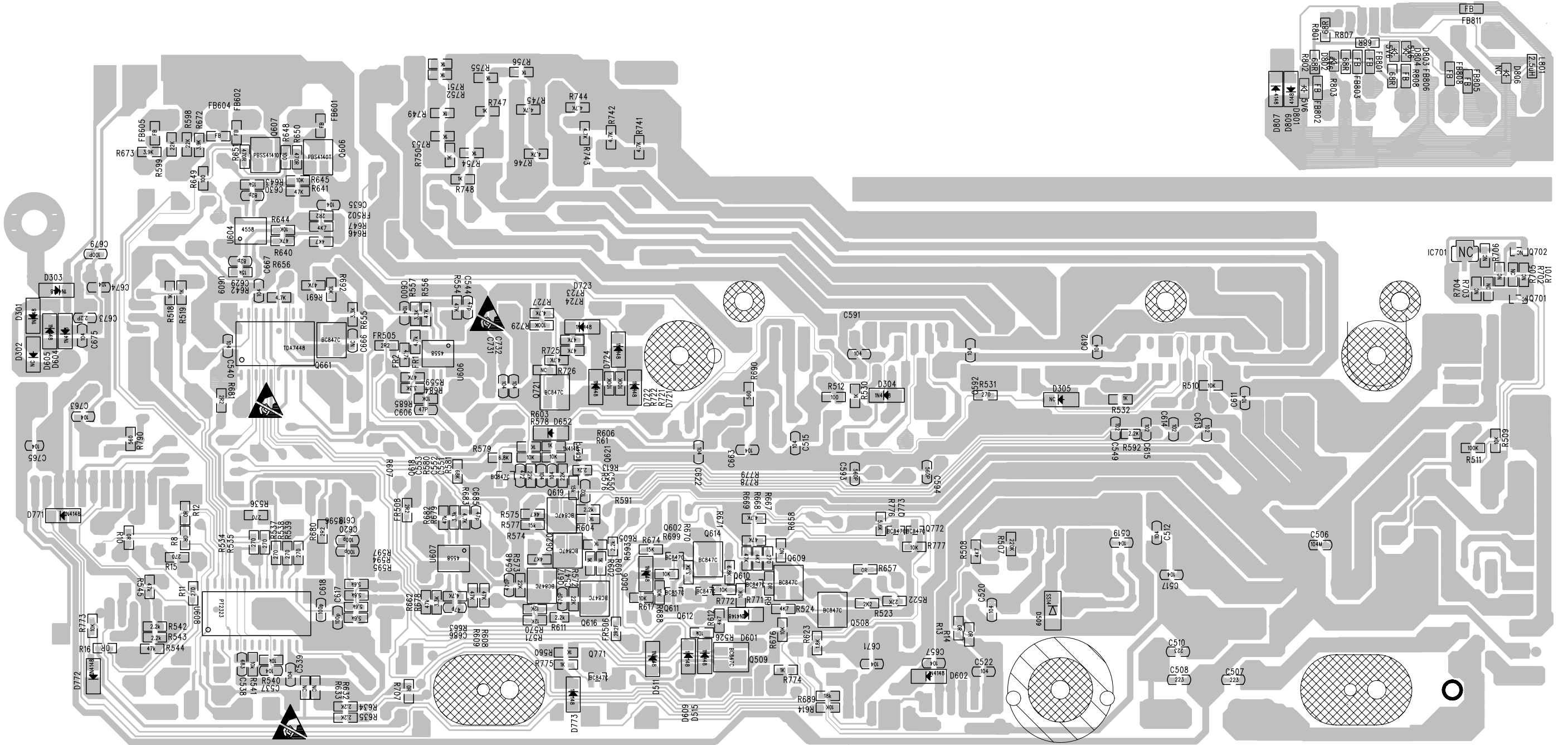
CIRCUIT DIAGRAM - MAIN BOARD



LAYOUT DIAGRAM - MAIN BOARD (SIDE A)

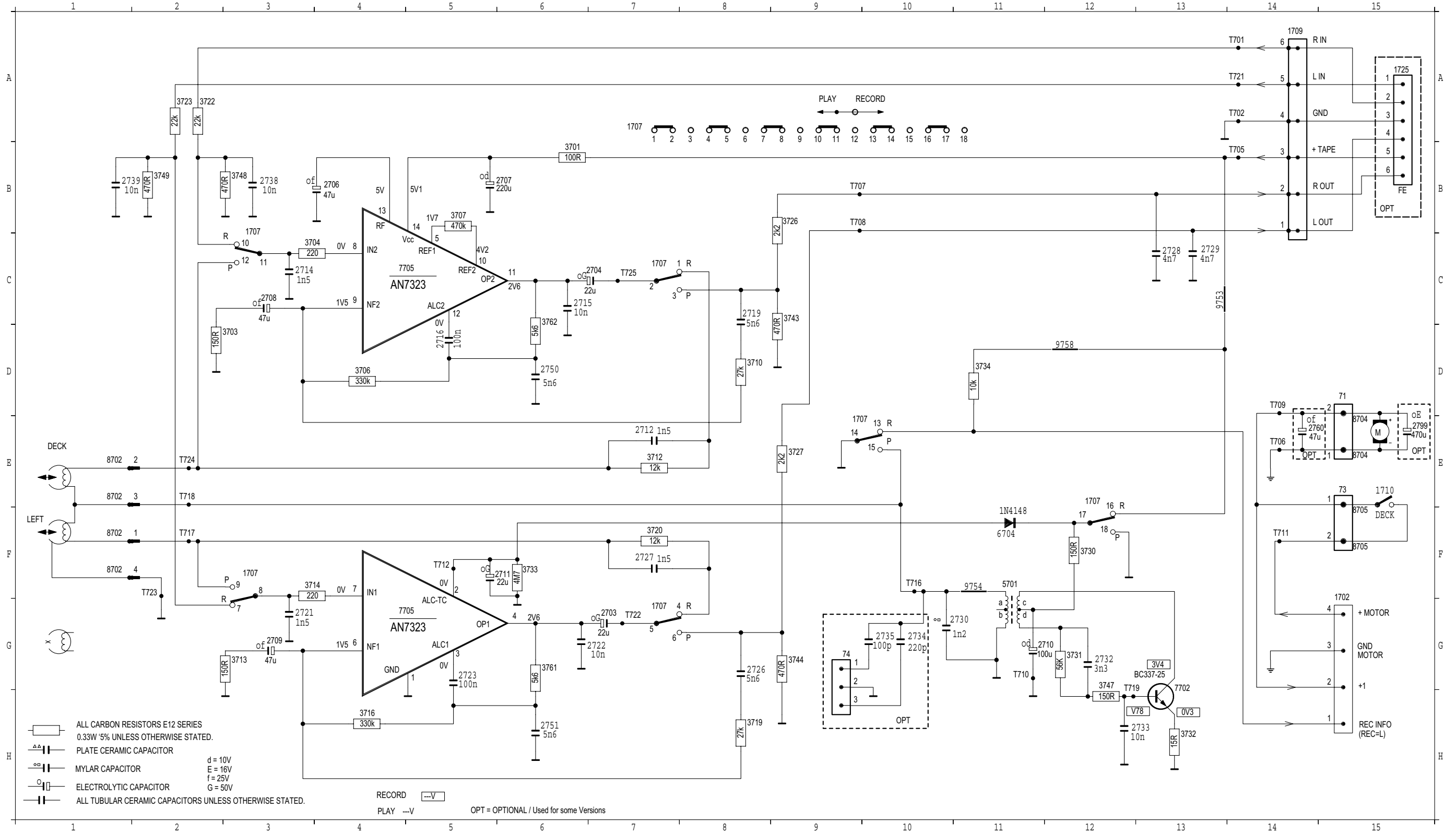


LAYOUT DIAGRAM - MAIN BOARD (SIDE B)

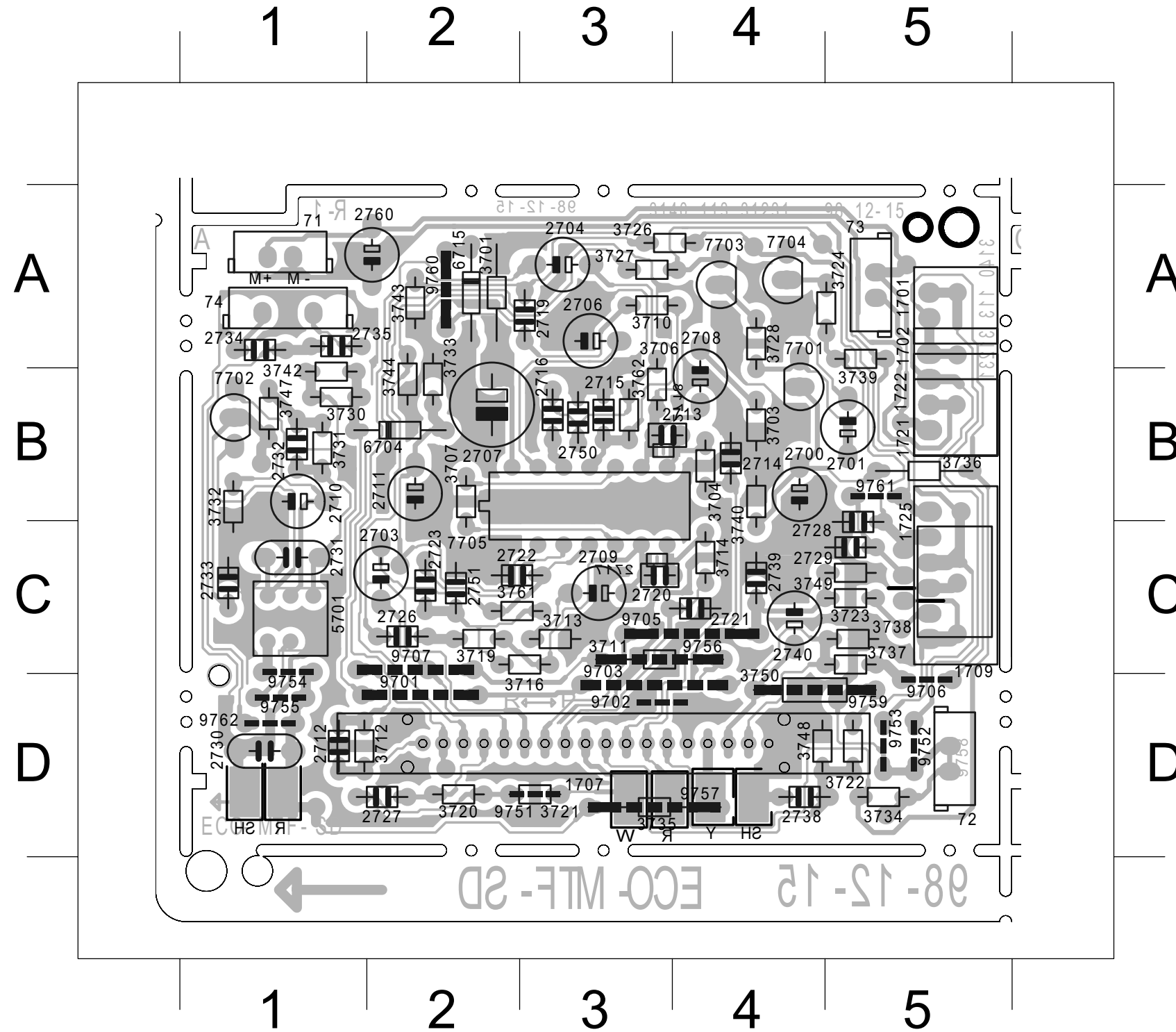


CIRCUIT DIAGRAM - CASSETTE BOARD

71	D15	1707	C 3	1709	A14	2706	B 4	2711	F 6	2719	C 8	2727	F 7	2733	H13	2750	D 6	3703	D 3	3712	E 7	3720	F 7	3730	F12	3743	C 9	3761	G 6	7705	G 4	8702	E 1	9753	C13	T705	B14	T710	G11	T718	E 2	T724	E 2
73	B15	1707	G 7	1710	B15	2707	B 6	2712	E 7	2721	G 3	2728	C13	2734	G10	2751	H 6	3704	C 3	3713	G 3	3722	A 2	3731	G12	3744	G 9	3762	D 6	7705	C 4	8704	E15	9754	F11	T706	E14	T711	F14	T719	H13	T725	C 7
74	G 9	1707	C 7	1725	A15	2708	C 3	2714	C 3	2722	G 7	2729	C13	2735	G10	2760	E14	3706	D 4	3714	F 3	3723	A 2	3732	H13	3747	G12	5701	F11	8702	F 1	8704	E15	9758	D12	T707	B10	T712	F 5	T721	A14		
1702	G15	1707	E 9	2703	G 7	2709	G 3	2715	C 6	2723	G 5	2730	G11	2738	B 3	2799	E15	3707	B 5	3716	H 4	3726	B 9	3733	F 6	3748	B 3	6704	F11	8702	F 1	8705	F15	T701	A14	T708	B10	T716	F10	T722	G 7		
1707	F 3	1707	E12	2704	C 7	2710	G12	2716	D 5	2726	G 8	2732	G12	2739	B 1	3701	B 6	3710	D 8	3719	H 8	3727	E 9	3734	D11	3749	B 2	7702	H13	8702	E 1	8705	F15	T702	A14	T709	D14	T717	F 2	T723	F 2		



LAYOUT DIAGRAM - CASSETTE BOARD



71 A 1	2729 C 5	3733 B 2	9756 C 3
72 D 5	2730 D 1	3734 D 5	9757 D 3
73 A 5	2731 C 1	3735 D 3	9759 D 4
74 A 1	2732 B 1	3736 B 5	9760 A 2
1701 A 5	2733 C 1	3737 C 5	9761 B 5
1702 B 5	2734 A 1	3738 C 5	9762 D 1
1707 D 3	2735 A 1	3739 A 5	T701 C 5
1709 C 5	2738 D 4	3740 B 4	T702 C 5
1721 B 5	2739 C 4	3742 B 1	T705 B 5
1722 B 5	2740 C 4	3743 A 2	T706 B 5
1725 C 5	2750 B 3	3744 B 2	T709 A 5
2700 B 4	2751 C 2	3747 B 1	T710 C 1
2701 B 5	2760 A 2	3748 D 4	T711 B 5
2703 C 2	3701 A 2	3749 C 5	T712 C 2
2704 A 3	3703 B 4	3750 D 4	T713 A 5
2706 A 3	3704 B 4	3761 C 2	T714 D 5
2707 B 2	3706 B 3	3762 B 3	T715 D 5
2708 B 4	3707 B 2	5701 C 1	T716 D 1
2709 C 3	3710 A 3	6704 B 2	T719 B 1
2710 B 1	3711 C 3	6715 A 2	T720 A 5
2711 B 2	3712 D 1	7701 B 4	T721 C 5
2712 D 1	3713 C 3	7702 B 1	T722 C 2
2713 B 3	3714 C 4	7703 A 4	T725 D 2
2714 B 4	3716 C 3	7704 A 4	T7707 A 4
2715 B 3	3719 C 2	7705 B 3	T7708 A 4
2716 B 3	3720 D 2	9701 D 2	
2717 C 3	3721 D 3	9702 D 3	
2718 B 3	3722 D 5	9703 D 3	
2719 A 3	3723 C 5	9705 C 4	
2720 C 3	3724 A 5	9706 D 5	
2721 C 4	3726 A 3	9707 C 2	
2722 C 2	3727 A 3	9751 D 3	
2723 C 2	3728 A 4	9752 D 5	
2726 C 2	3730 B 1	9753 D 5	
2727 D 2	3731 B 1	9754 C 1	
2728 C 5	3732 B 1	9755 D 1	

CASSETTE ADJUSTMENT

Adjustment	Cassette	SK	Deck 1	Measure on	Read on	Adjust with	Adjust to
Azimuth	10 kHz SBC420*	Tape	Play	H/P Jack	mV meter	Left hand Screw R/P head	max.
Motor Speed	3150 kHz SBC420*	Tape	Play	H/P Jack	Wow and flutter meter	Preset in motor	**a

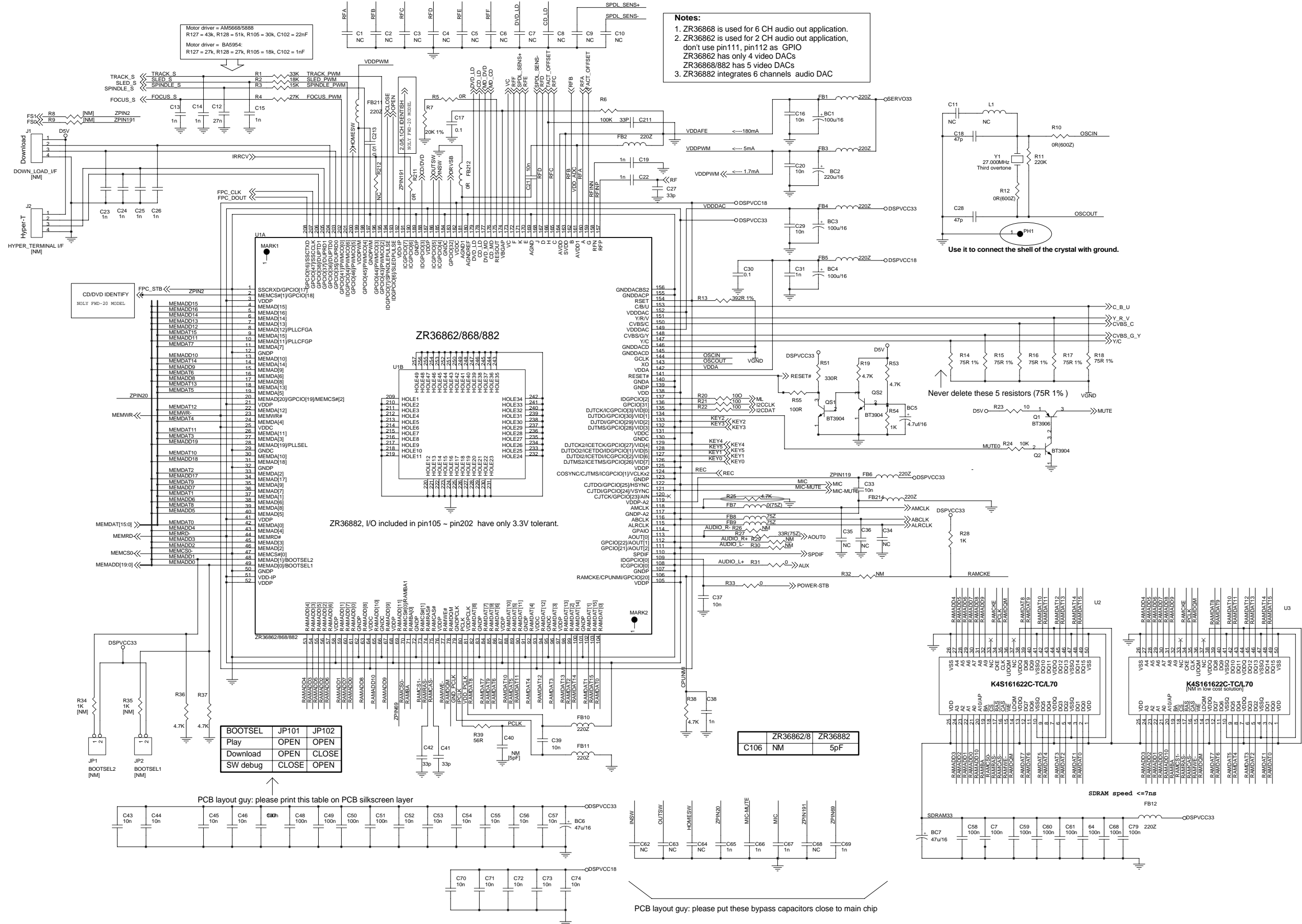
* SBC420 : 4822 397 30071

**a The maximum permissible speed deviation is ± 3%.
Moreover, the wow and flutter value can be read.

CIRCUIT DIAGRAM - DVD MPEG BOARD

PART 1

(MPEG board is not repaired. diagram for reference only)

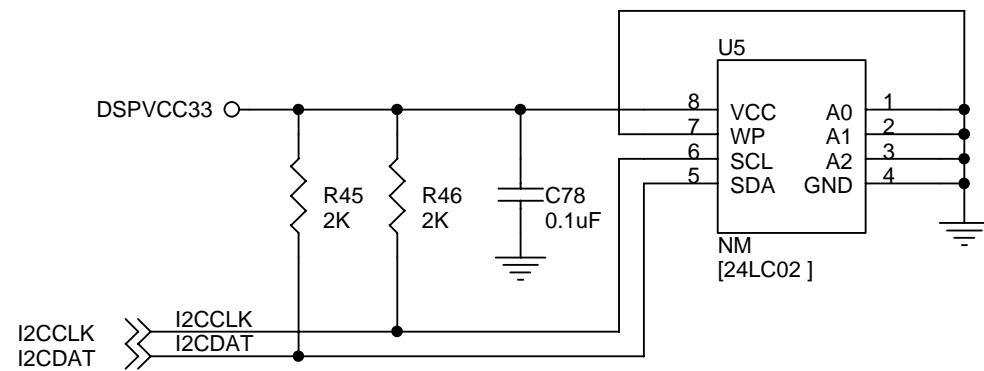
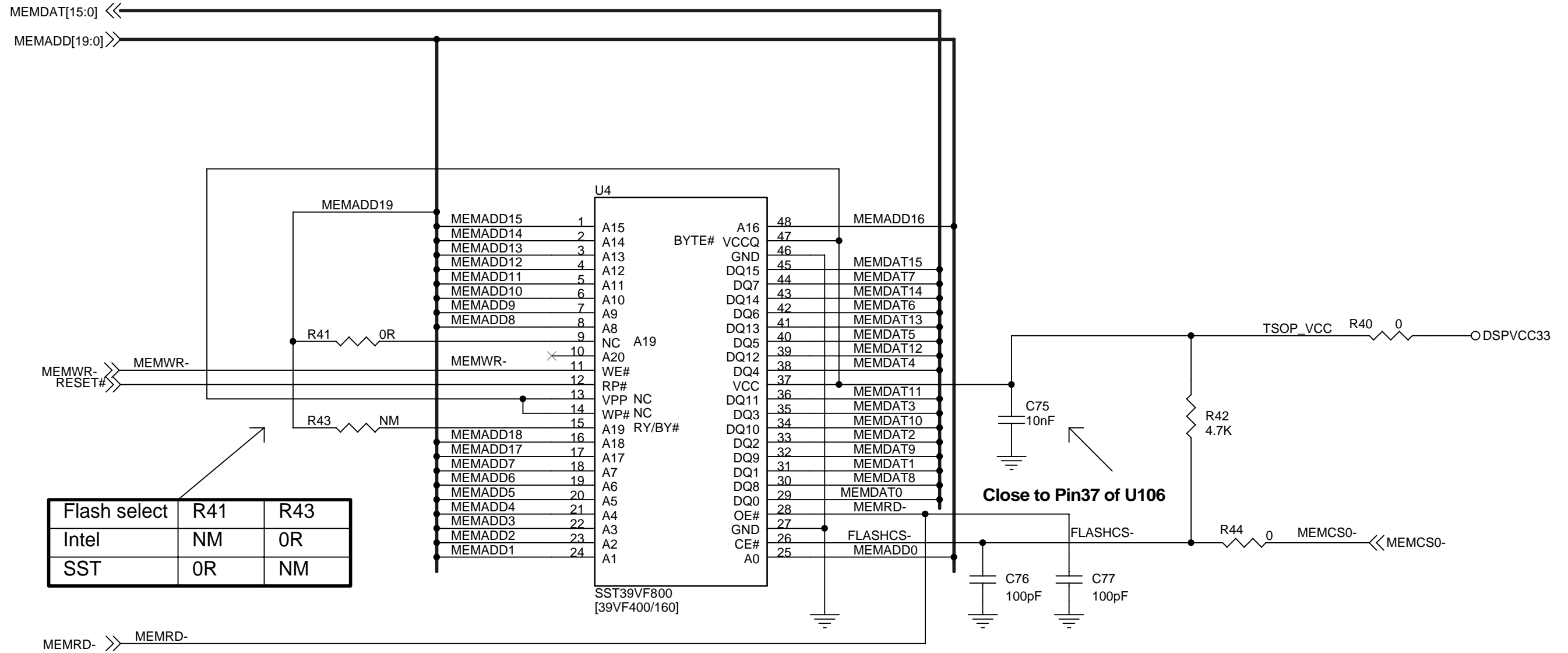


CIRCUIT DIAGRAM - DVD MPEG BOARD

PART2

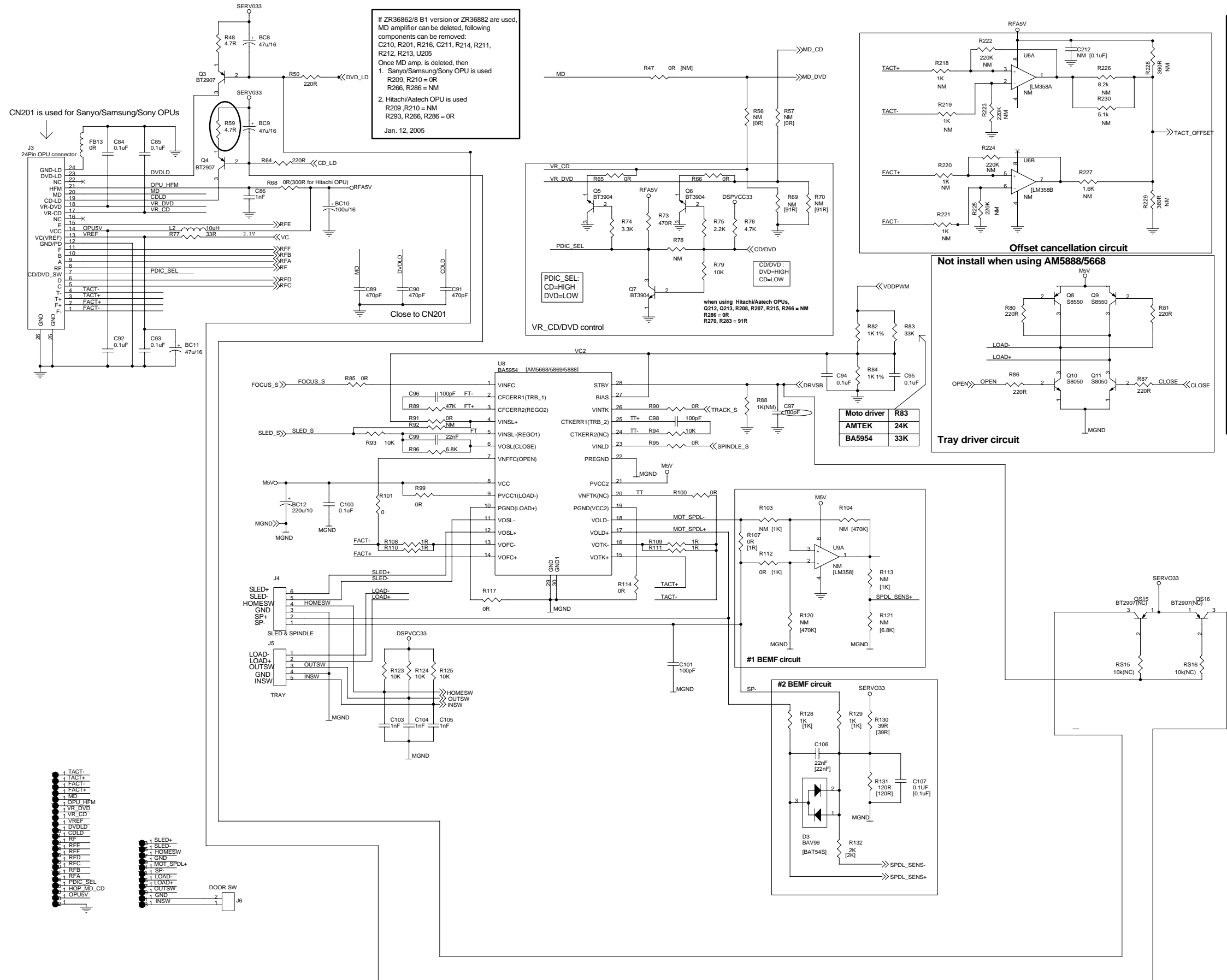
(MPEG board is not repaired. diagram for reference only)

Flash speed <= 70 ns.
If plan to use 90ns Flash, it needs to be verified by s/w.



CIRCUIT DIAGRAM - DVD MPEG BOARD PART3

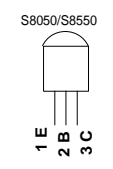
(MPEG board is not repaired. diagram for reference only)



If ZR3682/8 B1 version or ZR36882 are used, MD amplifier can be deleted, following components can be removed: C210, R201, R216, C211, R214, R211, R212, R213, U205
 Once MD amp. is deleted, then
 1. Sanyo/Samsung/Sony OPU is used
 R209, R210 = 0R
 R266, R286 = NM
 2. Hitachi/Aatech OPU is used
 R209, R210 = NM
 R293, R266, R286 = 0R
 Jan. 12, 2005

R, C values setting for variable moto driver

Item	Moto driver	BA5954	AM5668	AM5888	AM5889
1	C241	100pF	-	-	-
2	R244	47K	-	-	-
3	R245	0R	-	-	-
4	R246	-	0R	0R	0R
5	R247	10K	-	-	-
6	C243	22nF	-	-	-
7	R248	6.8K	-	-	-
8	R250	-	0R	0R	0R
9	R251	-	0R	0R	0R
10	R252	0R	-	-	-
11	R253	0R	-	-	-
12	R255	1R	0R	0R	0R
13	R256	1R	-	-	-
14	R257	-	0R	0R	0R
15	R258	-	0R	0R	0R
16	R259	0R	-	-	-
17	C247	100pF	-	-	-
18	R267	10K	-	-	-
19	R271	-	0R	0R	0R
20	R272	0R	-	-	-
21	R273	1R	0R	0R	0R
22	R274	1R	-	-	-
23	R275	0R	-	-	-
24	R282	-	-	0R	0R
25	R284	-	-	0R	0R
26	R285	-	-	0R	0R
27	R287	-	-	0R	0R
28	R278	33K	24K	24K	24K
29	R296	NM	-	-	0R
30	R297	NM	-	-	0R
31	U206	LM358 or NM	-	-	NM
32	R298	NM	-	-	4.7K



- 1 TACT-
- 2 TACT+
- 3 FACT-
- 4 FACT+
- 5 MD
- 6 OPU_HFM
- 7 VR-DVD
- 8 VR-CD
- 9 VREF
- 10 DVDLD
- 11 CDLD
- 12 RFF
- 13 RFFB
- 14 RFFC
- 15 RFFD
- 16 RFFE
- 17 RFF
- 18 PDIC_SEL
- 19 HOP_MD_CD
- 20 OPU_V
- 21 GND
- 22 INSW

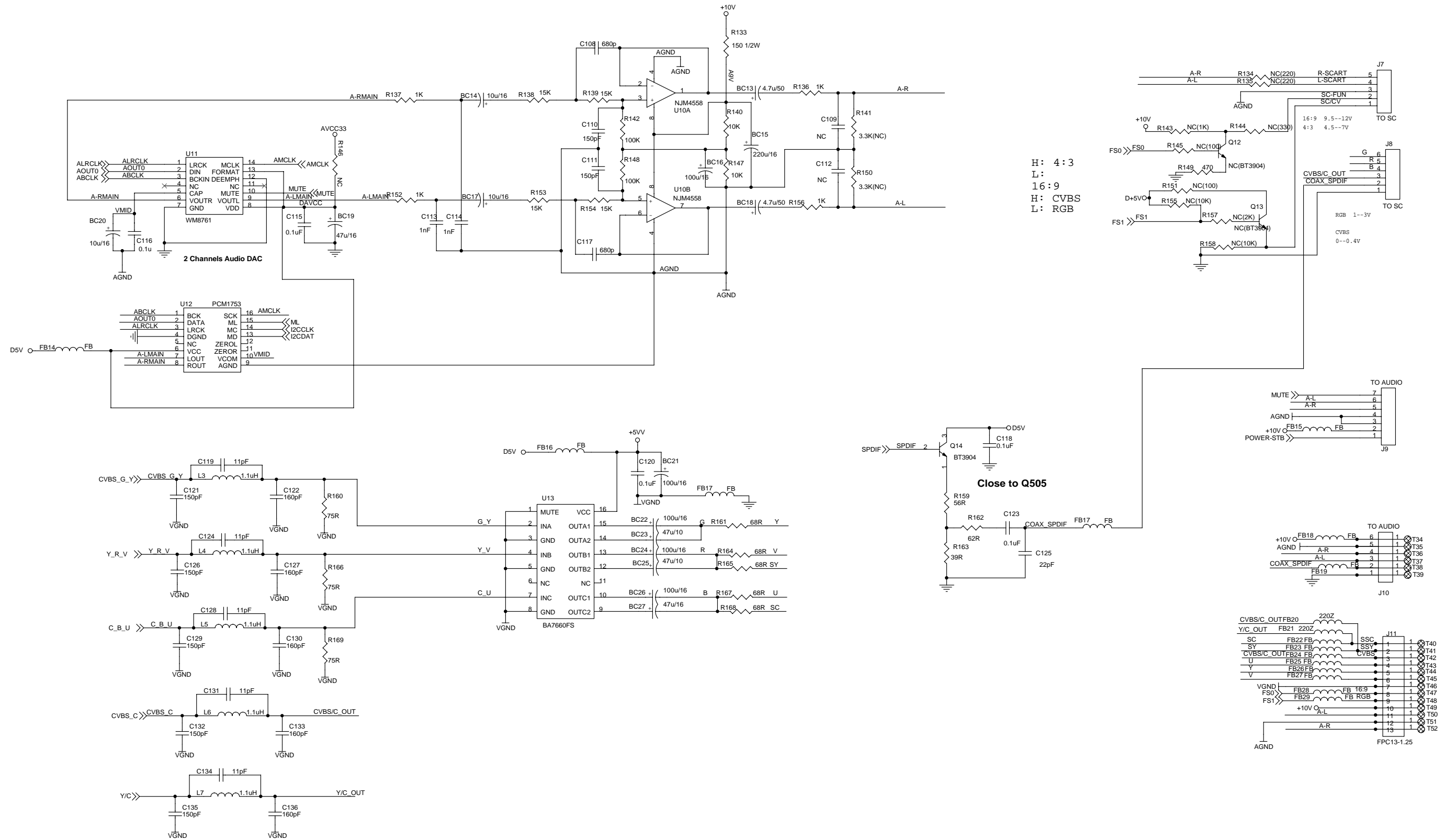
- 1 SLED+
- 2 SLED-
- 3 HOMESW
- 4 GND
- 5 MOT_SPDL+
- 6 GND
- 7 RFB
- 8 SP
- 9 LOAD
- 10 LOAD+
- 11 OUTSW
- 12 GND
- 13 INSW



CIRCUIT DIAGRAM - DVD MPEG BOARD

PART 4

(MPEG board is not repaired. diagram for reference only)



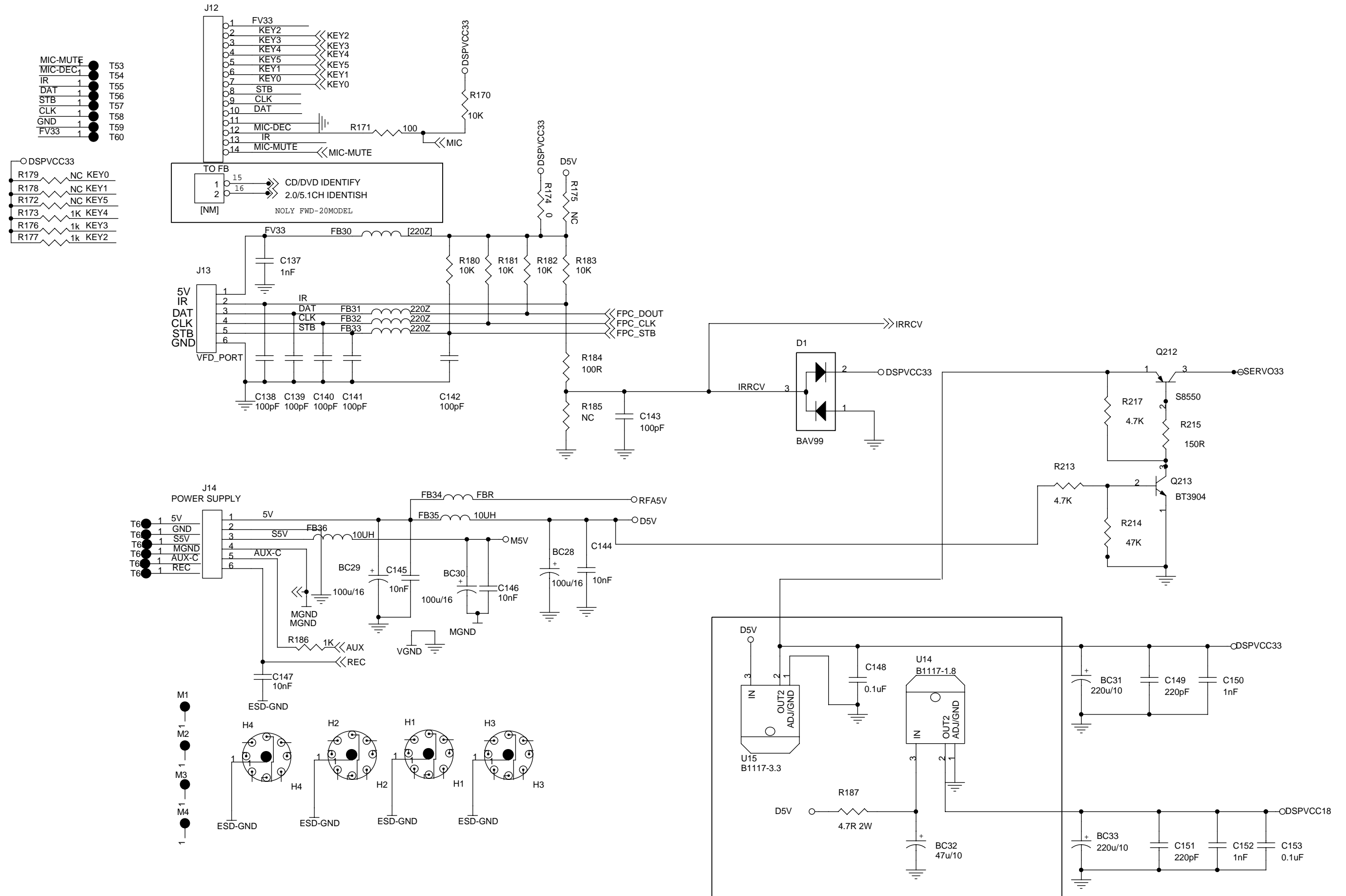
H: 4:3
 L:
 H: 16:9
 L: CVBS
 L: RGB

In case of enable 5th video DAC, Vaddis can output S-VIDEO and YUV signals at same time.

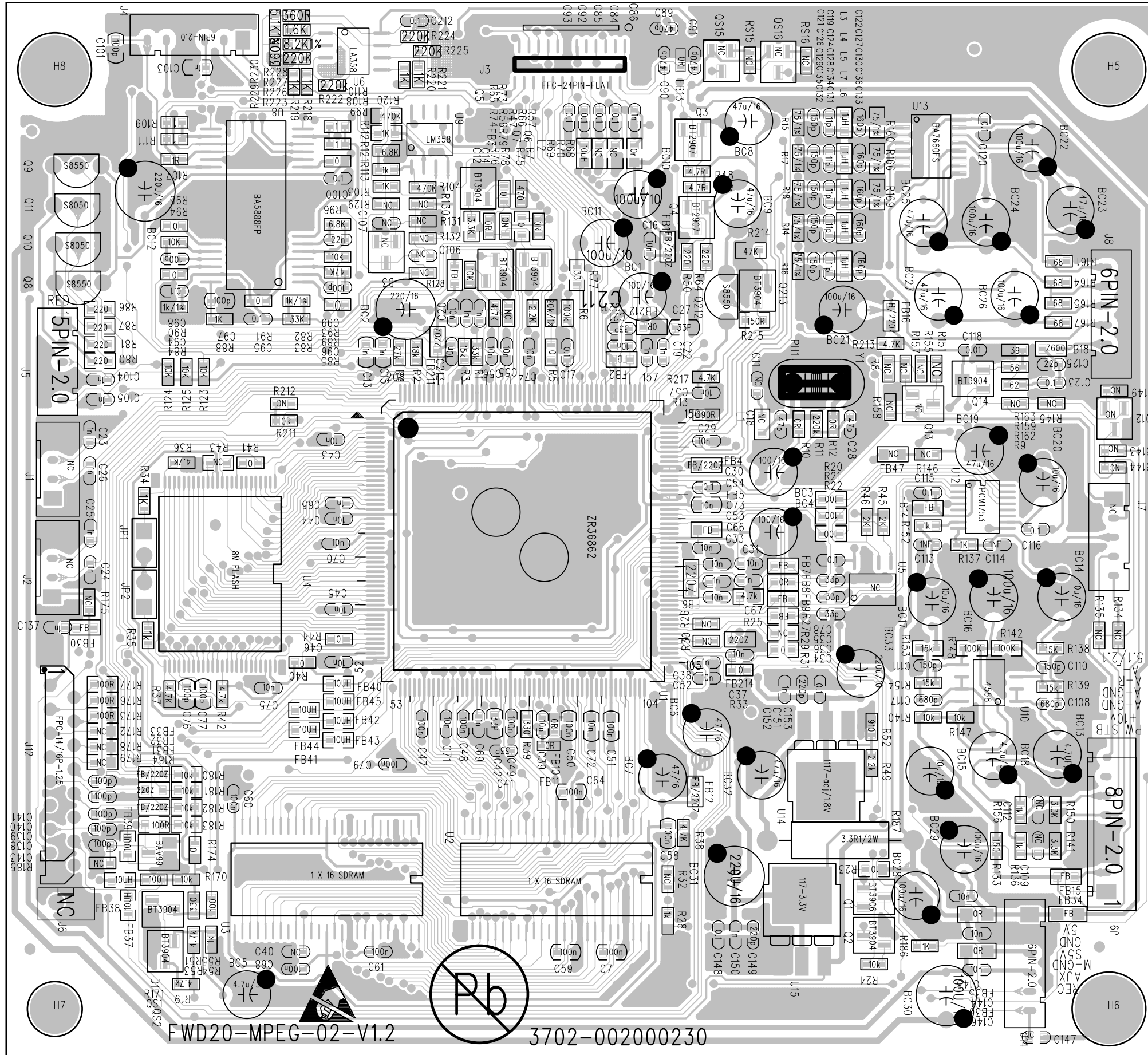
CIRCUIT DIAGRAM - DVD MPEG BOARD

PART 5

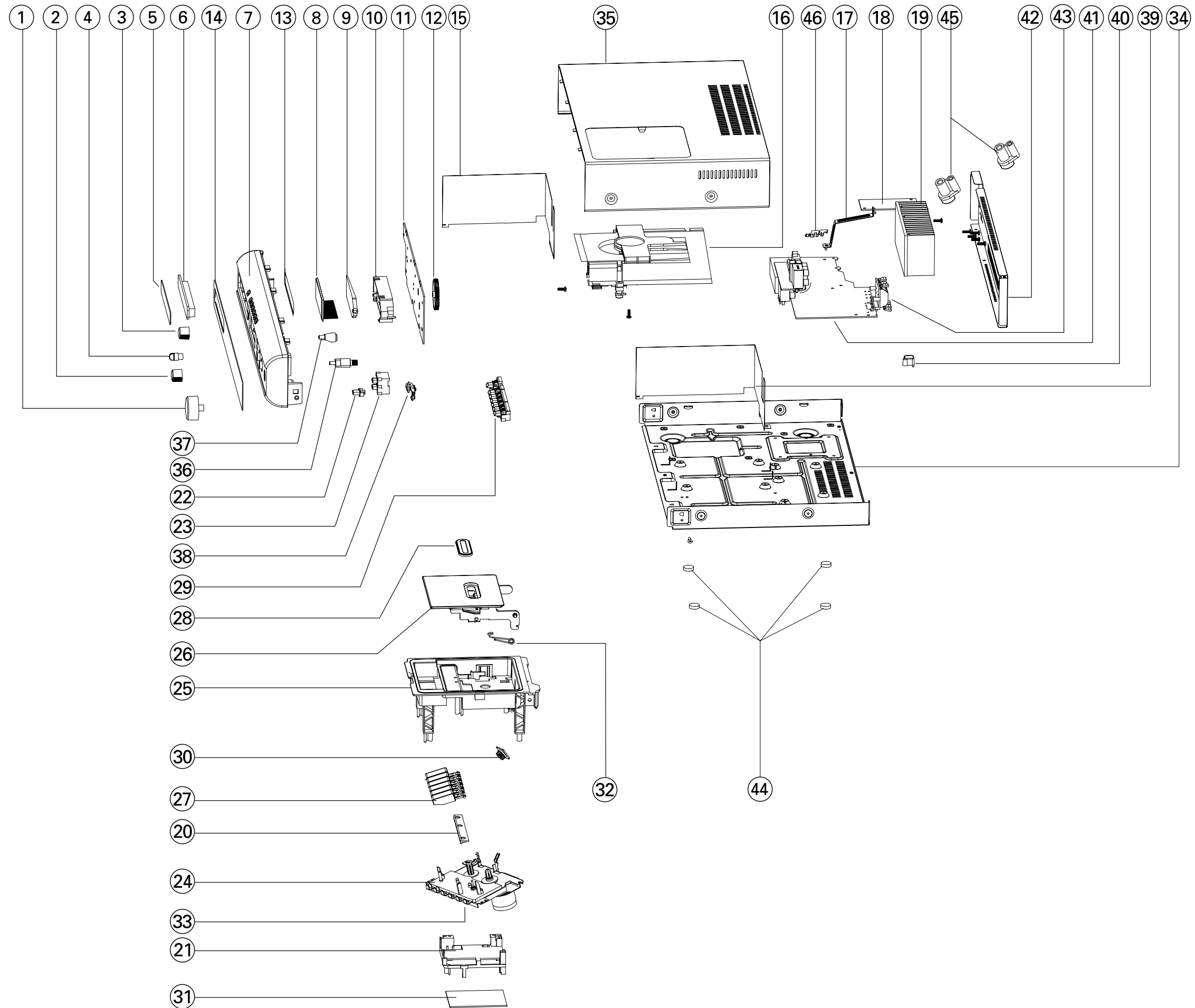
(MPEG board is not repaired. diagram for reference only)



LAYOUT DIAGRAM - DVD MPEG BOARD
(MPEG board is not repaired. diagram for reference only)



EXPLODED VIEW DIAGRAM



MECHANICAL PARTSLIST

1	9940 000 02619	KNOB VOLUME(CHROME PLATING)
2	9940 000 02618	KNOB TUNING
3	9940 000 02617	KNOB SOURCE
4	9940 000 02629	KNOB MIC VOLUME
5	9965 000 39833	DOOR CD
6	9965 000 39834	PANEL FRONT
9	9940 000 02626	LENS LIGHT GUIDE
10	9965 000 39835	BRACKET LCD DISPLAY
11	9965 000 39836	DISPLAY/TUNER/MIC PWB ASSY
12	9940 000 02623	GEAR PVC
16	9965 000 39837	CDM LOADER
18	9965 000 39838	AC INPUT PWB ASSY
20	9965 000 39839	BRACKET CASSETTE KEY
21	9940 000 02605	CASSETTE PWB BRACKET
22	9940 000 02628	KNOB DBB
23	9940 000 02616	BUTTON-FUNCTION B
24	9940 000 01493	CASS DECK CS-21SC-820S
25	9965 000 39840	BRACKET CASSETTE DECK
26	9940 000 02604	DOOR CASSETTE
27	9940 000 02607	KEY CASSETTE- PLAY
27	9940 000 02608	KEY CASSETTE- PAUSE
27	9940 000 02609	KEY CASSETTE- REC
27	9940 000 02611	KEY CASSETTE- F.F
27	9940 000 02612	KEY CASSETTE- REW
27	9940 000 02613	KEY CASSETTE- STOP
28	9940 000 02606	LENS CASSETTE DOOR
29	9940 000 02615	BUTTON-FUNCTION A
30	9940 000 01664	DAMPER GEAR ASSEMBLY
31	9965 000 39841	CASSETTE PWB ASSY
32	9940 000 02633	SPRING CASSETTE
33	9940 000 02635	RECORD ARM
36	9940 000 02622	GEAR SHAFT
37	9940 000 02621	LEVER SOURCE KNOB
38	9940 000 02624	BRACKET TUNING SHAFT
41	9965 000 39842	MAIN PWB ASSY
44	9940 000 02634	RUBBER FOOT DIA.14XTHK4MM
45	9940 000 02627	BRACKET PCB BOARD
47	9965 000 39843	DVD MPEG PWB ASSY

ACCESSORIES

9965 000 39844	REMOTE CONTROL UNIT
9940 000 02595	AM LOOP ANT
9940 000 02596	RCA CABLE COMP VIDEO (R/B/G)
9940 000 02597	RCA CABLE VIDEO (YELLOW)
9940 000 02598	RCA CABLE AUDIO (RED/WHITE)
9965 000 39845	SUBWOOFER(6OHM 30W)
9965 000 39846	SPEAKER BOX FRONT LEFT
9965 000 39847	SPEAKER BOX FRONT RIGHT
9965 000 39848	SPEAKER BOX CENTER
9965 000 39849	SPEAKER BOX SURROUND LEFT
9965 000 39850	SPEAKER BOX SURROUND RIGHT

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

ELECTRICAL PARTSLIST - MAIN BOARD**- IC & TRANSISTORS -**

Q502	9940 000 02647	TRANSISTOR,2SB1370PNP
Q507	9940 000 02642	TRANSISTOR, 3CA8550
Q723	9940 000 02642	TRANSISTOR, 3CA8550
Q505	9940 000 02636	TRANSISTOR, PBSS4140S NPN
Q504	9940 000 02648	TRANSISTOR, DTC114YSA
Q503	9940 000 02649	TRANSISTOR, 2SC5343 NPN
Q603	9965 000 39851	TRANSISTOR 2SD2166-R NPN
Q613	9965 000 39852	TRANSISTOR, 3DA8050CS NPN
Q713	9965 000 39852	TRANSISTOR, 3DA8050CS NPN
Q606	9940 000 03302	CH-TRANSISTOR PBSS4140T
Q607	9940 000 03302	CH-TRANSISTOR PBSS4140T
U502	9940 000 02653	MOSFET BUK9507-30B
U608	9965 000 39853	IC PT2323-S SOP 28P
U501	9965 000 39854	N2596TG-5 5V 3A 150KHZ
U607	9965 000 39855	AZ4558 OPERATIONALL AMP. CD
U606	9965 000 39855	AZ4558 OPERATIONALL AMP. CD
U604	9965 000 39855	AZ4558 OPERATIONALL AMP. CD
U609	9965 000 39856	IC TDA7448 SMT
U601	9940 000 02639	IC TDA8947J AMPLIFIER
U605	9940 000 02639	IC TDA8947J AMPLIFIER

- MISCELLANEOUS -

FR501	△ 9940 000 04221	FUSE RES 2.2R 1/4W /-5%
FR503	△ 9940 000 04221	FUSE RES 2.2R 1/4W /-5%
FR504	△ 9940 000 04221	FUSE RES 2.2R 1/4W /-5%
FR507	△ 9940 000 04221	FUSE RES 2.2R 1/4W /-5%
FR730	△ 9940 000 04221	FUSE RES 2.2R 1/4W /-5%
FR502	△ 9965 000 39857	CH-RES,2.2R1/10W /-5%0603
FR505	△ 9965 000 39857	CH-RES,2.2R1/10W /-5%0603
FR506	△ 9965 000 39857	CH-RES,2.2R1/10W /-5%0603
FR508	△ 9965 000 39857	CH-RES,2.2R1/10W /-5%0603
R680	△ 9965 000 39857	CH-RES,2.2R1/10W /-5%0603
R681	△ 9965 000 39857	CH-RES,2.2R1/10W /-5%0603
FS501	△ 9965 000 39858	FUSE T10A 250V(VDE)
FS502	△ 9940 000 02651	FUSE T1.6AL 250V 5X20 (T-LAG)
JR801	9940 000 02654	JACK DASW-11/PB-211 GREEN
JR803	9940 000 02655	JACK, RCA (RED/BLU/ORAYEL)
JK602	9940 000 02638	JACK RCA (RED/WHITE)
JK601	9965 000 39859	SPEAKER JACK

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

ELECTRICAL PARTSLIST - DISPLAY/TUNER BOARD**- IC & TRANSISTORS -**

Q303	9940 000 02685	MOSFET, KTK161Y
Q263	9940 000 03333	TRANSISTOR BT3904
Q264	9940 000 03333	TRANSISTOR BT3904
Q265	9940 000 03333	TRANSISTOR BT3904
Q304	9940 000 02686	TRANSISTOR 2SC5345SF RF
Q305	9940 000 02686	TRANSISTOR 2SC5345SF RF
U301	9940 000 02694	IC, TA2111N AM/FM TUNER
U701	9965 000 39855	AZ4558 OPERATIONALL AMP. CD
U203	9965 000 39861	UPD78F9212GR MCU 16PIN-SSOP
U202	9965 000 39862	ET3610S LCD DRIVER
U201	9940 000 03839	IC, ET8861M SOP32 LCD DRIVER

- MISCELLANEOUS -

Y201	9940 000 03344	CRYSTAL 32.768KHZ +/-20PPM
Y202	9965 000 39860	CRYSTAL 8.38MHZ +/-30PPM
VC301	9940 000 02695	PVC 126/82/20PF
VR701	9940 000 02697	VARIABLE RES B50K.
LED202	9940 000 02676	LED 5MM GR LA504G7CS-2C-01-P
SR201	9940 000 01622	IR RECEIVER GR-MF902V0
L302	9940 000 02688	FM OSC COIL 2.5TX0.4MM
L303	9965 000 39863	FM COIL DIA.5X3.5TSX0.7 CW
L301	9940 000 02687	FM COIL 4.5TX5X0.6MM
CF302	9965 000 39864	AM IF FILTER 455KHZ
LCD201	9940 000 02681	LCD A95000
T304	9940 000 02693	AM ANT IFT BLACK 7MM
T303	9965 000 39865	IFT AM OSC COIL RED 7MM
T302	9940 000 02692	AM IF IFT YELLOW 7MM
T301	9940 000 02689	FM DETECT IFT BLACK 7MM
JK701	9940 000 02696	MICROPHONE JACK PPJ 35G-01
VR201	9965 000 39866	ENCODER
S201	9965 000 39867	TACT SWITCH
S202	9965 000 39867	TACT SWITCH
S203	9965 000 39867	TACT SWITCH
S204	9965 000 39867	TACT SWITCH
S205	9965 000 39867	TACT SWITCH
S206	9965 000 39867	TACT SWITCH
S207	9965 000 39867	TACT SWITCH
S208	9965 000 39867	TACT SWITCH
S209	9965 000 39867	TACT SWITCH
SW201	9965 000 39868	SLIDE SWITCH
SW202	9965 000 39869	PUSH SWITCH

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

ELECTRICAL PARTSLIST

- MISCELLANEOUS -

FS401	△	9965 000 39870	FUSE UTE002 2.5A 250V
L401		9940 000 02657	AC LINE FILTER 3MH 1A
P401	△	9940 000 02658	AC POWER CORD
T401	△	9965 000 39871	POWER TRANSFORMER 230V
		9965 000 39872	FFC CABLE 24PIN
		9965 000 39873	FFC CABLE 16PIN
		9965 000 39874	DVD MECHANISM DM3151-B
		9940 000 02699	IC, AN7323 PREAMP
		9965 000 39875	REC SWITCH 18PIN 6P2T 50MM

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