

Service
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Service



Service Manual



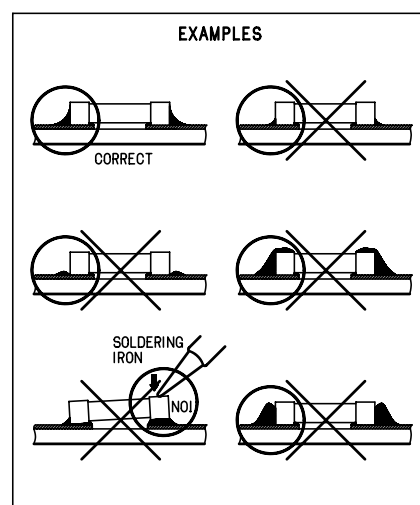
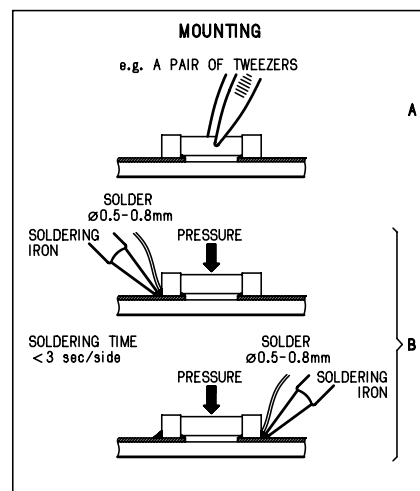
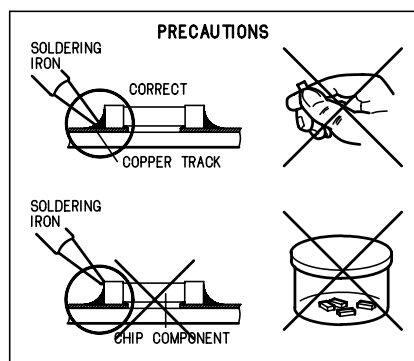
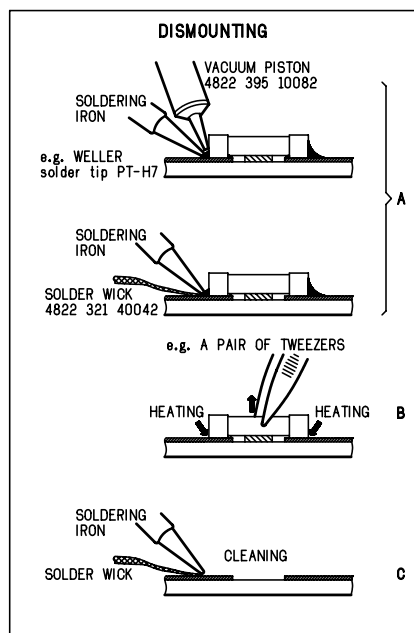
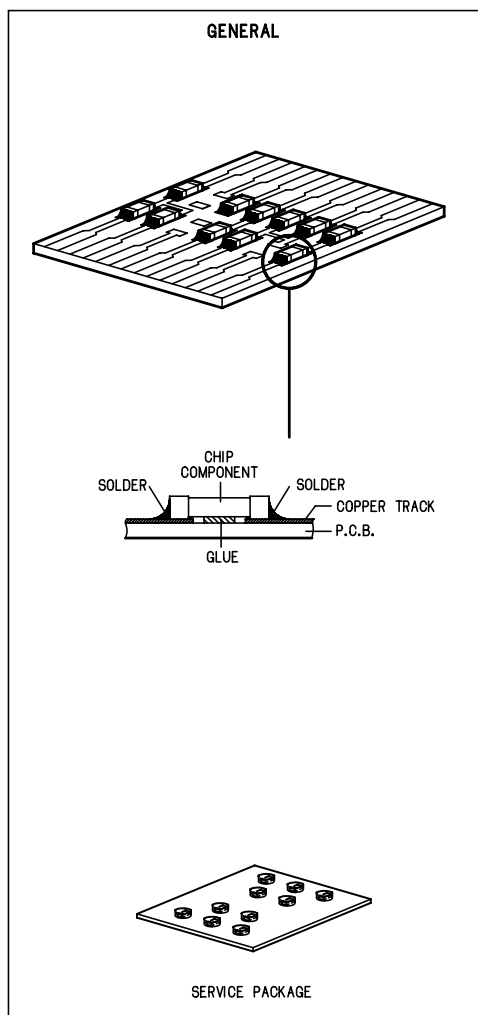
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HANDLING CHIP COMPONENTS



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

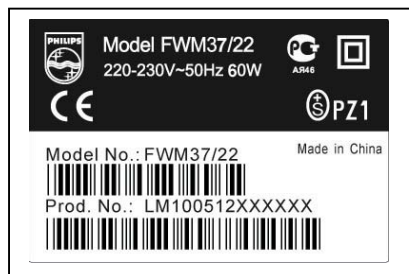
Philips CE is producing lead-free sets from 1.1.2005 onwards.

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 (leaded/ 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.

SPECIFICATIONS

GENERAL:

Mains voltage	: 110-127/220-240V Switchable
Mains frequency	: 50/60 Hz
Power consumption	: < 40W max. < 7W at standby
Clock accuracy	: 4 seconds per day
Dimension center unit	: 267 x 298 x 254 mm

TUNER:

FM

Tuning range	: 87.9 - 107.9 MHz
IF Frequency	: 10.7 MHz \pm 20kHz
Aerial input	: 300 Ω dipole wire
Sensitivity at 26sb S/N	: < 18 μ V
Selectivity at 600 kHz	
Bandwidth	: > 46 dB
IF rejection	: > 50 dB
Image rejection	: > 25 dB
Distortion	: < 2%
Crosstalk	: > 18 dB

MW

Tuning range	: 520 - 1710 kHz
Grid	: 10 kHz
IF Frequency	: 450 kHz \pm 1kHz
Aerial input	: Loop antenna
Sensitivity at 26sb S/N	: < 4.4 mV/M
Selectivity at 18 kHz	
Bandwidth	: > 18 dB
IF rejection	: > 28 dB
Image rejection	: > 32 dB
Distortion	: < 5%

AMPLIFIER:

Output power	: 2 x 10 W RMS
Speaker impedance	: 6 ohm
Frequency response	
Within \pm 3dB	: 50Hz - 15 kHz
Hyper bass sound ON	: 10dB \pm 3dB at 100Hz
Digital sound control	: Flat /Rock/Jazz/Pop/ Classic
Headphone output	: 32 mW \pm 2dB at 32 Ω

CASSETTE RECORDER:

Number of tracks	: 2 x 2 stereo
Tape speed	: 4.76 cm/sec +2.5/-1.5%
Wow and flutter	: < 0.35% DIN
Fast-wind/rewind time	: < 160 sec. With C-60
Bias frequency	: 65 \pm 5 kHz
R/P frequency response	: 50 - 10 kHz (8 dB)
Signal to noise ratio	: > 35 dB with type 1 tape

COMPACT DISC:

Number of programming track	: 16
Frequency response	
Within \pm 1.5 dB	: 20 Hz - 10 kHz
Signal/Noise ratio	: 50 dB/A-weighted
Distortion at 1 kHz	: < 3%
Channel separation at 1 kHz	: > 25 dB

SERVICE TOOLS

TORX T10 screwdriver with shaftlength 150mm.....	4822 395 50423
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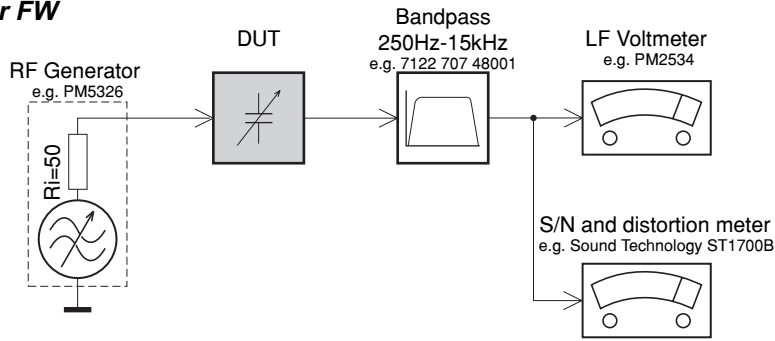
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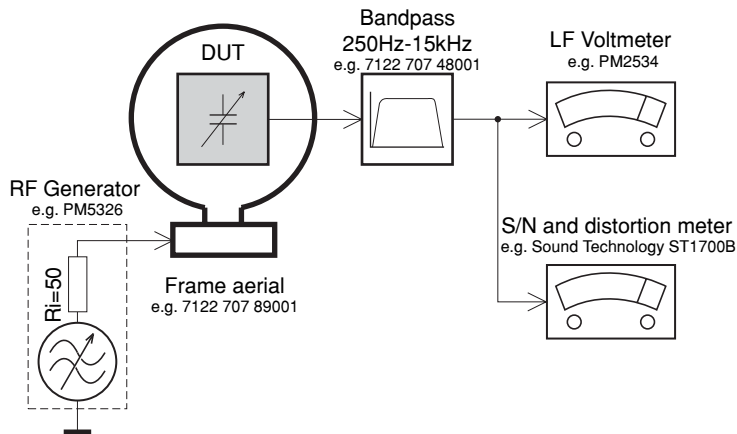
SERVICE MEASUREMENT

Tuner FW



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

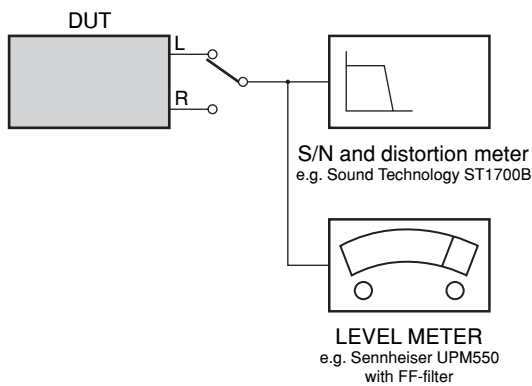
Tuner AM (MW, LW)



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

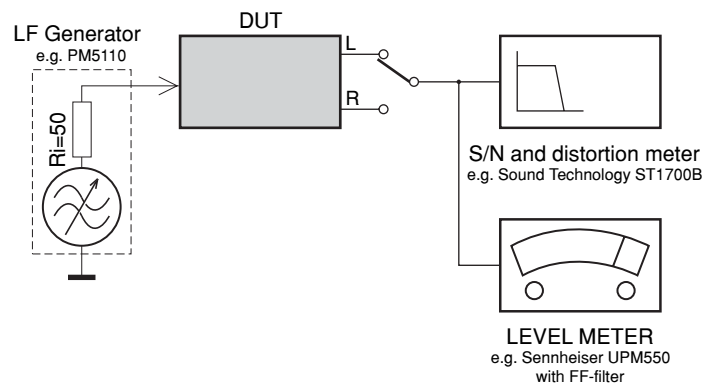
CD

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



RECORDER

Use Universal Test Cassette Fe SBC420 4822 397 30071

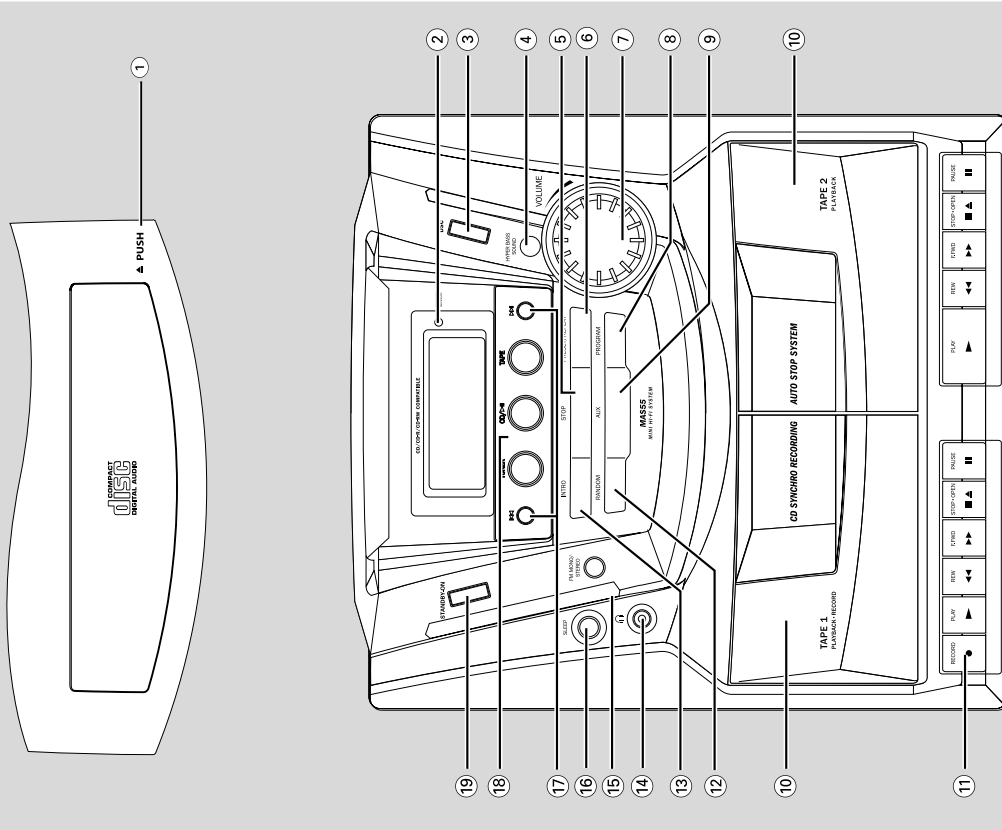


Controls

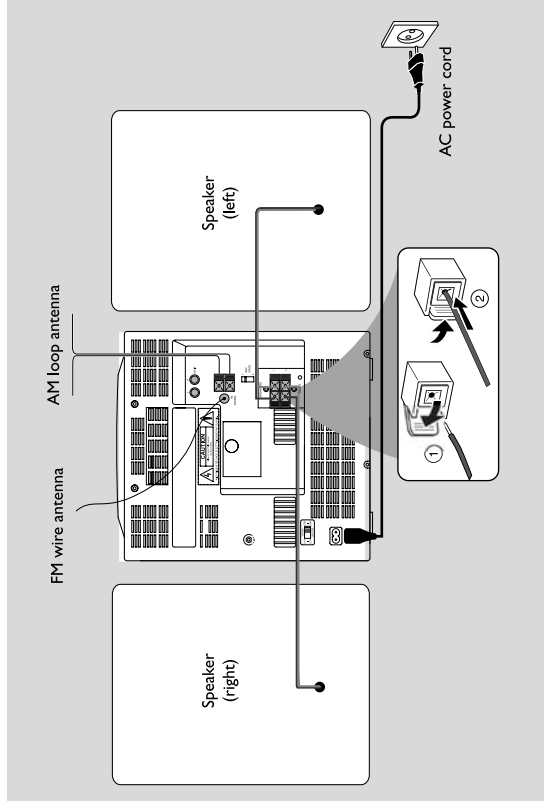
Controls on the system (Top and front panels)

- ① **▲ PUSH**
 - push to open the disc door.
- ② **REMOTE SENSOR**
 - sensor for the infrared remote control

Helpful hints: Always point the remote control towards this sensor.
- ③ **DSC (DIGITAL SOUND CONTROL)**
 - selects predefined sound settings: FLAT, ROCK, JAZZ, POP, CLASSIC.
- ④ **HYPER BASS SOUND**
 - switches the bass enhancement on/off
- ⑤ **STOP ■**
 - stops CD playback; erase a CD program
- ⑥ **PRESET/REPEAT**
 - CD: repeats a track, a disc or programmed track(s)
 - Tuner: selects a preset radio station
- ⑦ **VOLUME rotary**
 - adjusts the volume
- ⑧ **PROGRAM**
 - CD: programs tracks and reviews the program
 - Tuner: programs preset radio stations
 - Clock: sets the clock time
- ⑨ **AUX**
 - selects the input from an additional connected appliance
- ⑩ **Tape deck 1/2**
- ⑪ **Tape deck keys**
 - **RECORD ●** starts recording (for TAPE 1 only)
 - **PLAY ►** starts playback
 - **REW◀◀ / F.FWD ▶▶** fast rewinds/ winds a tape
 - **STOP • OPEN ■▲** stops playback; opens the tape holder
- ⑫ **TAPE 1:** interrupts playback or recording
- ⑬ **TAPE 2:** interrupts playback
- ⑭ **RANDOM**
 - plays a disc in random order
- ⑮ **INTRO**
 - plays each track 10 seconds
- ⑯ **3.5 mm headphone socket**
 - **Helpful hints:**
 - Adjust the volume to a moderate level before you plug in the headphones.
 - Connecting headphones will switch off the speakers.
- ⑰ **FM MONO/STEREO**
 - selects mono or stereo FM reception
- ⑱ **SLEEP**
 - displays/adjusts/switches off the sleep timer
- ⑲ **◀◀ / ▶▶**
 - CD: skips or searches CD tracks backwards/ forwards
 - Tuner: tunes to radio stations
 - Clock: sets the hour/minute
- ⑳ **Source buttons**
 - select tuner source and toggles between the wavebands : FM or AM(MW).
- ㉑ **CD / ▶ II**
 - select CD source; starts or pauses CD playback
- ㉒ **TAPE**
 - selects tape source.
- ㉓ **STANDBY-ON**
 - switches the system on or to standby mode.
 - switches off the sleep timer.



Installation



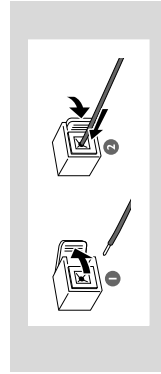
Rear connections

Warning:
Never make or change connections with the mains supply switched on.

(A) Speakers connection

Use the supplied speakers only. Using other speakers can damage the set or the sound quality will be negatively affected.

Connect the cables of the left speaker to L (red and black) and the cables of the right speaker to R (red and black) as follows:

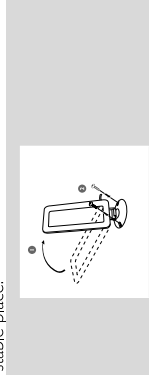


Open the clip of the red terminal and fully insert the stripped portion of the coloured (or marked) speaker cable into the socket, then close the clip.

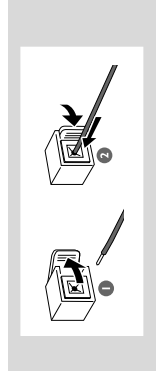
(B) Antennas Connection

AM (MW) antenna

1 Unfold the loop antenna and if necessary, use screws (not supplied) to fix it to a flat, hard and stable place:



2 Fit the plug of the loop antenna to AM ANTENNA as shown below.

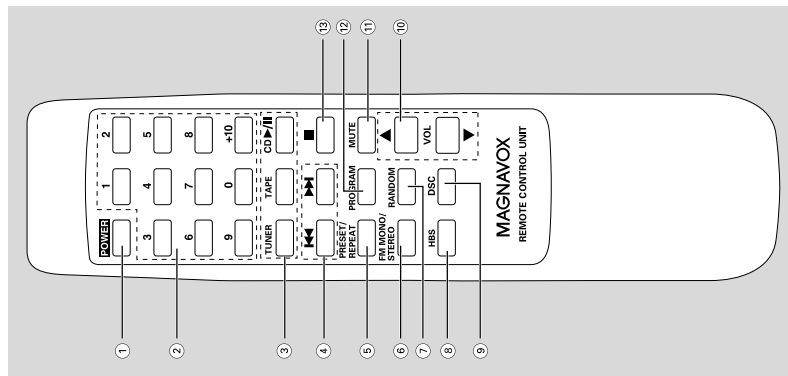


3 Adjust the antenna for optimal reception (as far as possible from a TV/PCR or radiation sources)

Controls

- ④ **◀ / ▶** / **▶▶** / **▶▶▶**
- CD: skips or searches CD tracks backwards/ forwards
- Tuner: tunes to radio stations
- ⑤ **PRESET/REPEAT**
- CD: repeats a track, a disc or programmed track(s)
- Tuner: selects a preset radio station
- ⑥ **FM MODE / STEREO**
- selects mono or stereo FM reception
- ⑦ **RANDOM**
- plays a disc in random order
- ⑧ **HBS**
- switches the bass enhancement on/off
- ⑨ **DSC**
- selects predefined sound settings: **FLAT, ROCK, JAZZ, POP, CLASSIC**
- ⑩ **VOL ▲ / ▼**
- adjusts the volume
- ⑪ **MUTE**
- switches the sound off temporarily
- ⑫ **PROGRAM**
- CD: programs tracks and reviews the program
- Tuner: programs preset radio stations
- ⑬ **■**
- stops CD playback; erase a CD program

Remote control



- ① **STANDBYON**
- switches the system on or to standby mode.
- ② **DIGITS 0 - +10**
- CD: selects a track number.
- TUNER: selects a preset station.
- ③ **Source buttons**
TUNER (FM•AM/MW)
- select tuner source and toggles between the wavebands : FM or AM(MW).
TAPE
- selects tape source.
CD / ▶ II
- select CD source; starts or pauses CD playback

Installation

FM antenna

- Extend the wire antenna and move the antenna in different positions for optimal reception (as far away as possible from the TV/VCR or other radiation sources).
- Fix the antenna's end to the wall.

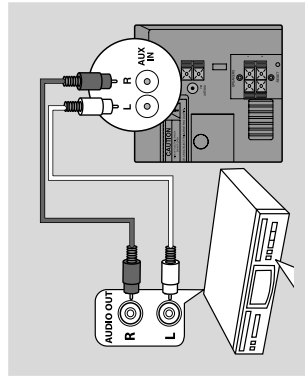
Connecting an additional appliance

It is possible to use an additional appliance, e.g. TV/VCR, Laser Disc player, DVD player or CD recorder, with the system.

- Insert the red plug of the red/white audio cables (not supplied) to the red socket AUX IN R and the white plug to the white socket AUX IN L.
- Connect the other end of the audio cables to the AUDIO OUT terminals of the additional appliance.

Helpful hints:

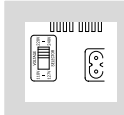
- If the connected device has only a single audio out terminal, connect it to the AUX IN left terminal. Alternatively, you can use a "single to double" cinch cable, but the output sound still remain mono.
- Always refer to the owner's manual of other equipment for complete connection.



Installation

Using AC power (illustration on Page 10)

- If your system is equipped with a VOLTAGE SELECTOR, set this selector to your local power voltage if necessary.
- Make sure all connections have been made before switching on the power supply.
- Connect the power cable supplied to **AC MAINS ~** and to the wall socket. This switches on the power supply.



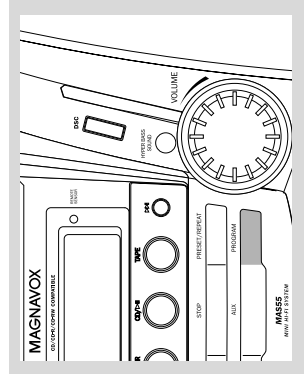
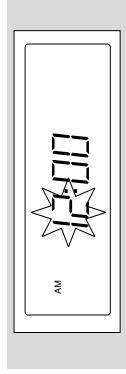
When the system is switched to standby, it is still consuming some power. **To disconnect the system from the power supply completely, remove the power plug from the wall socket.**

The type plate is located on the rear of the set.

Setting the clock

The time is displayed using the 12-hour clock.

- Check the system is switched to standby mode. (see Basic Functions, Switch on/to standby) **AM** flashes by default if the clock is not set.
- On the system, press and hold **PROGRAM** for more than 2 seconds. The hour digit starts flashing.
- Hold down or press **◀** or **▶** repeatedly to set the hour. Release **▶** or **▶** when you have reached the correct setting.
- Press **PROGRAM** to confirm the setting. The minute digit starts flashing.
- Repeat step 3 to set the minute.
- Press **PROGRAM** to confirm the setting. The clock shows the set time.



Helpful hints:

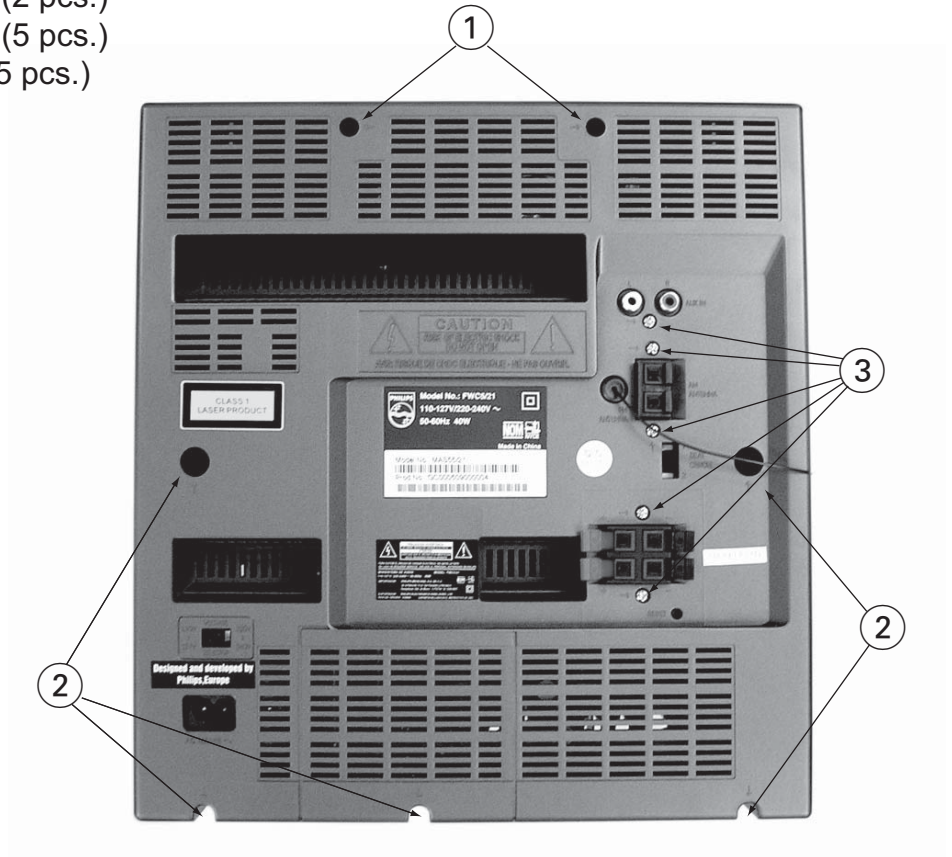
- You may lose your clock setting when the power cord is disconnected or power failure occurs.

For more information on operation instruction please visit Philips Audio internet site : <http://www.audio.philips.com>

DISASSEMBLY DIADRAMS

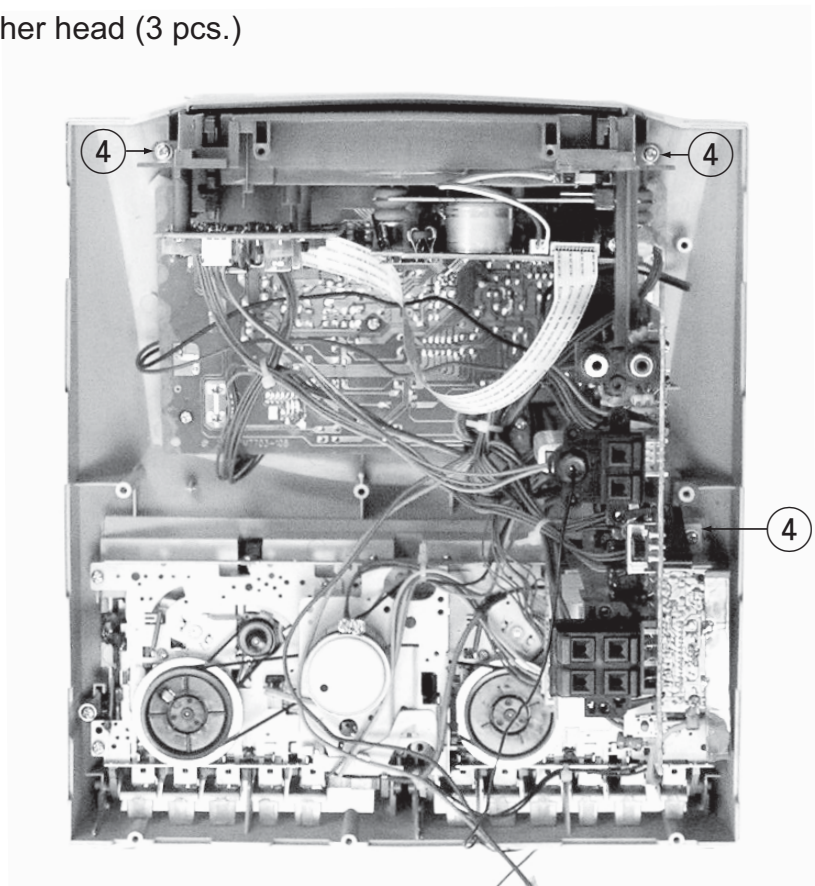
A. Remove Back Cabinet

- ① Screws SP3x10 (2 pcs.)
- ② Screws SP3x25 (5 pcs.)
- ③ Screws SP3x8 (5 pcs.)

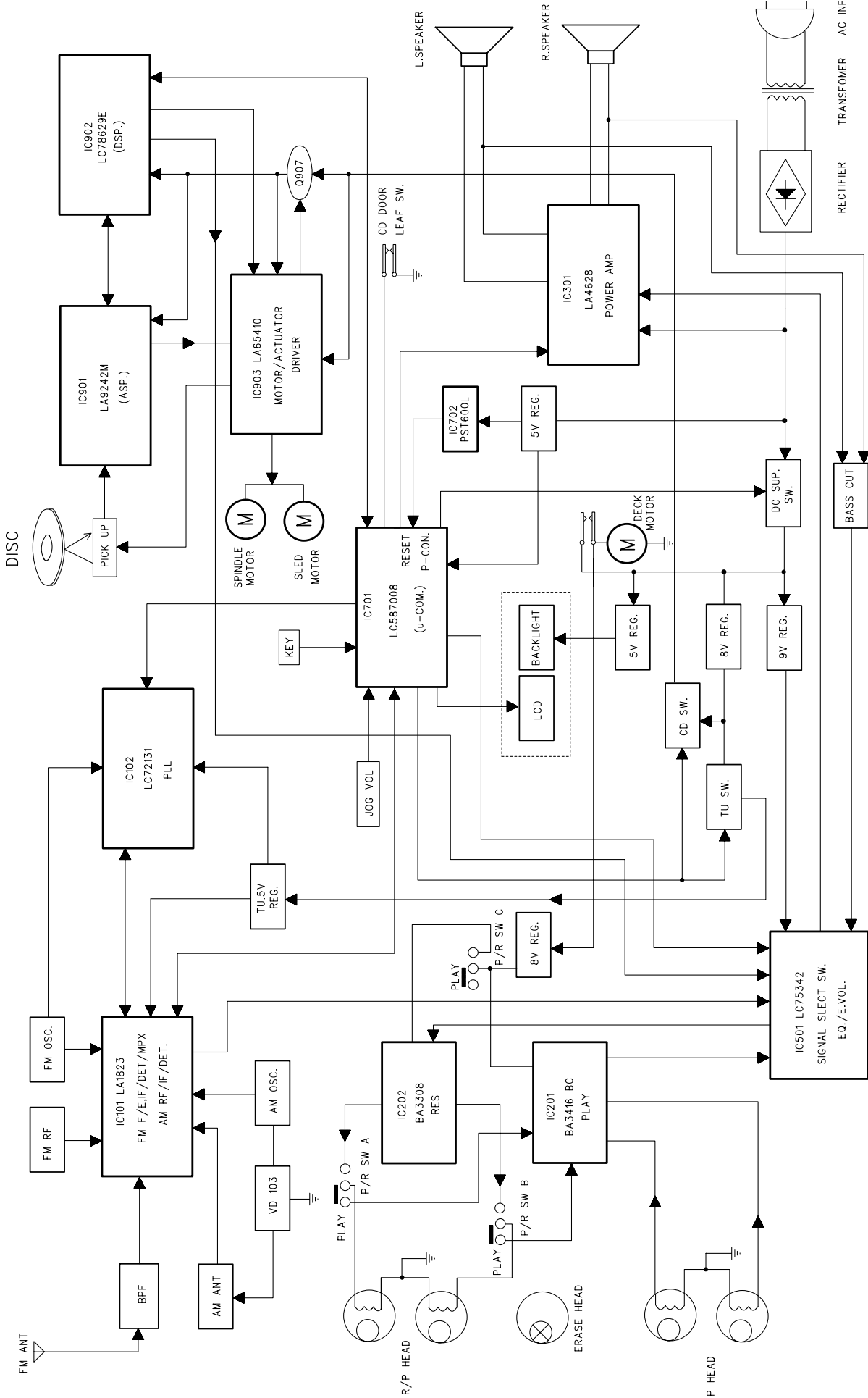


B. Remove Top Cabinet and Main PCB Assembly

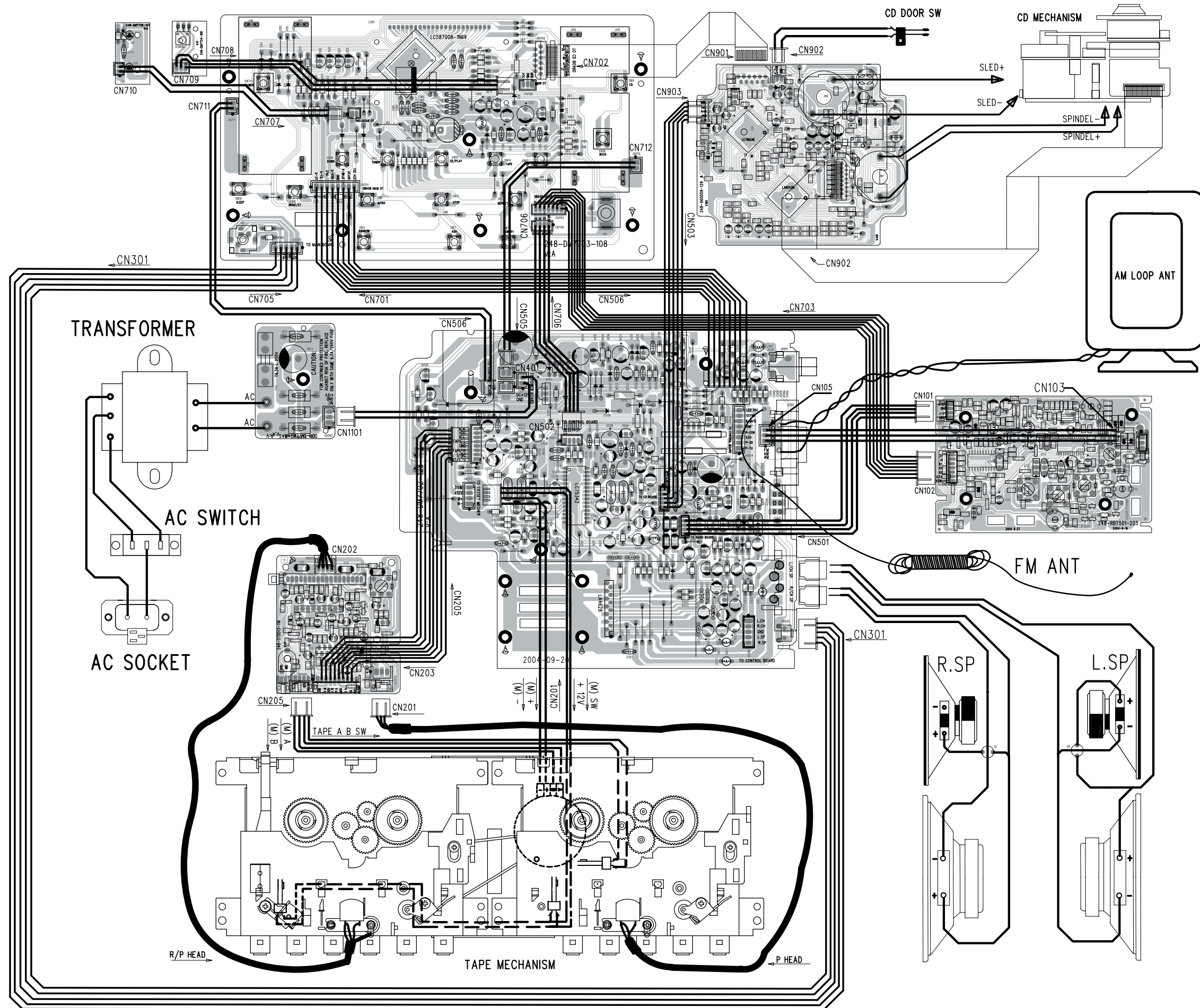
- ④ Screws SP3x10 Washer head (3 pcs.)



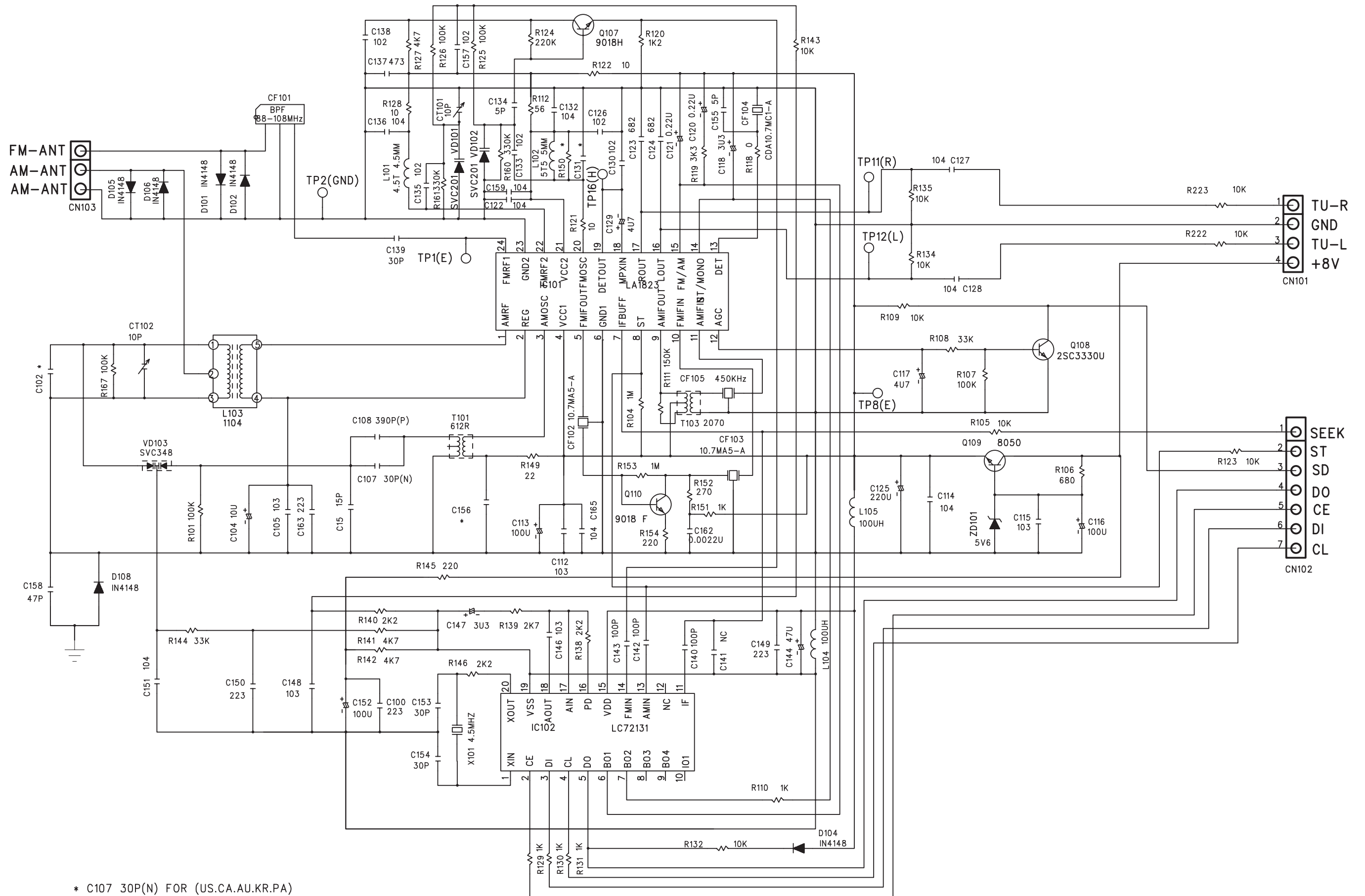
BLOCK DIAGRAMS



SET WIRING DIAGRAM



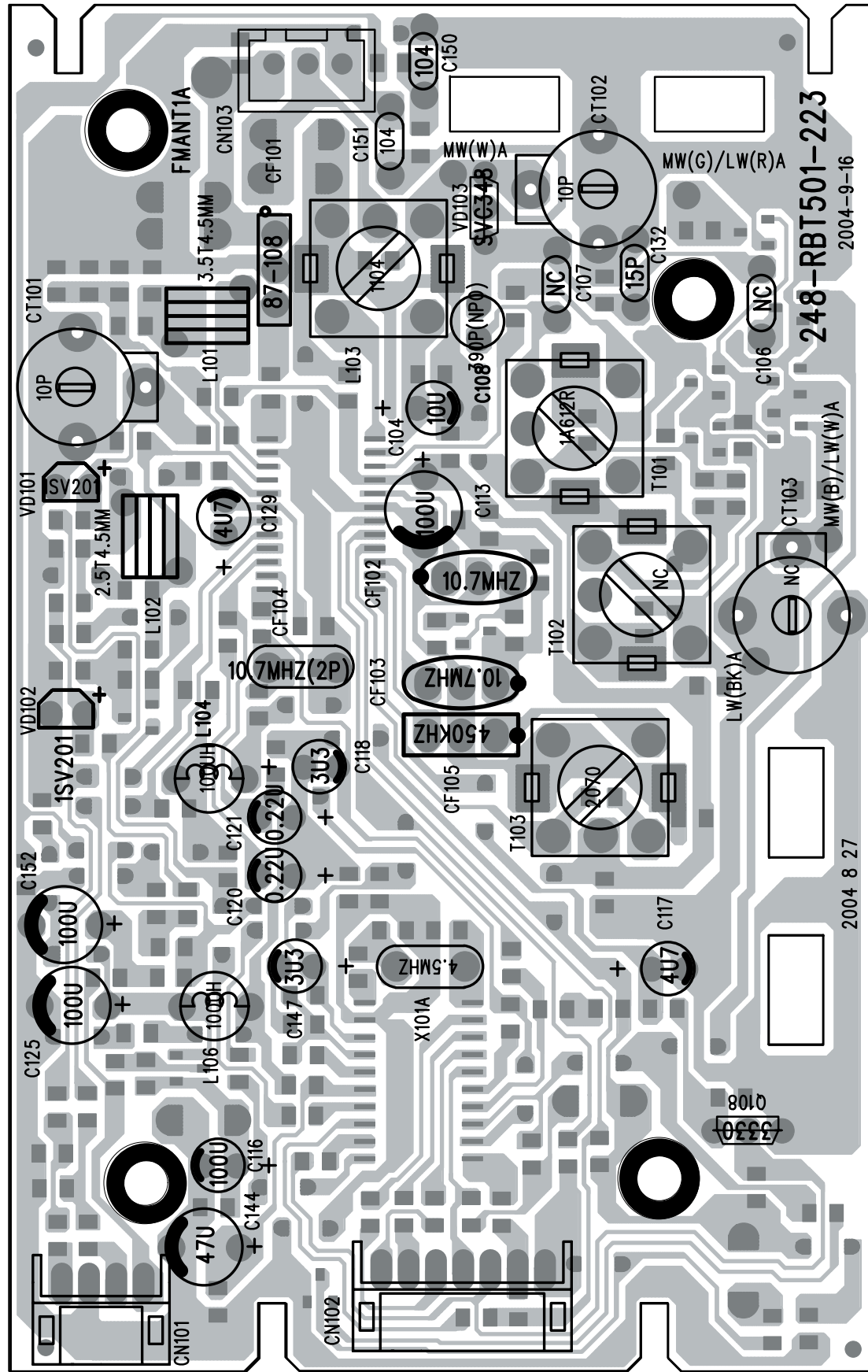
CIRCUIT DIAGRAM - RADIO BOARD



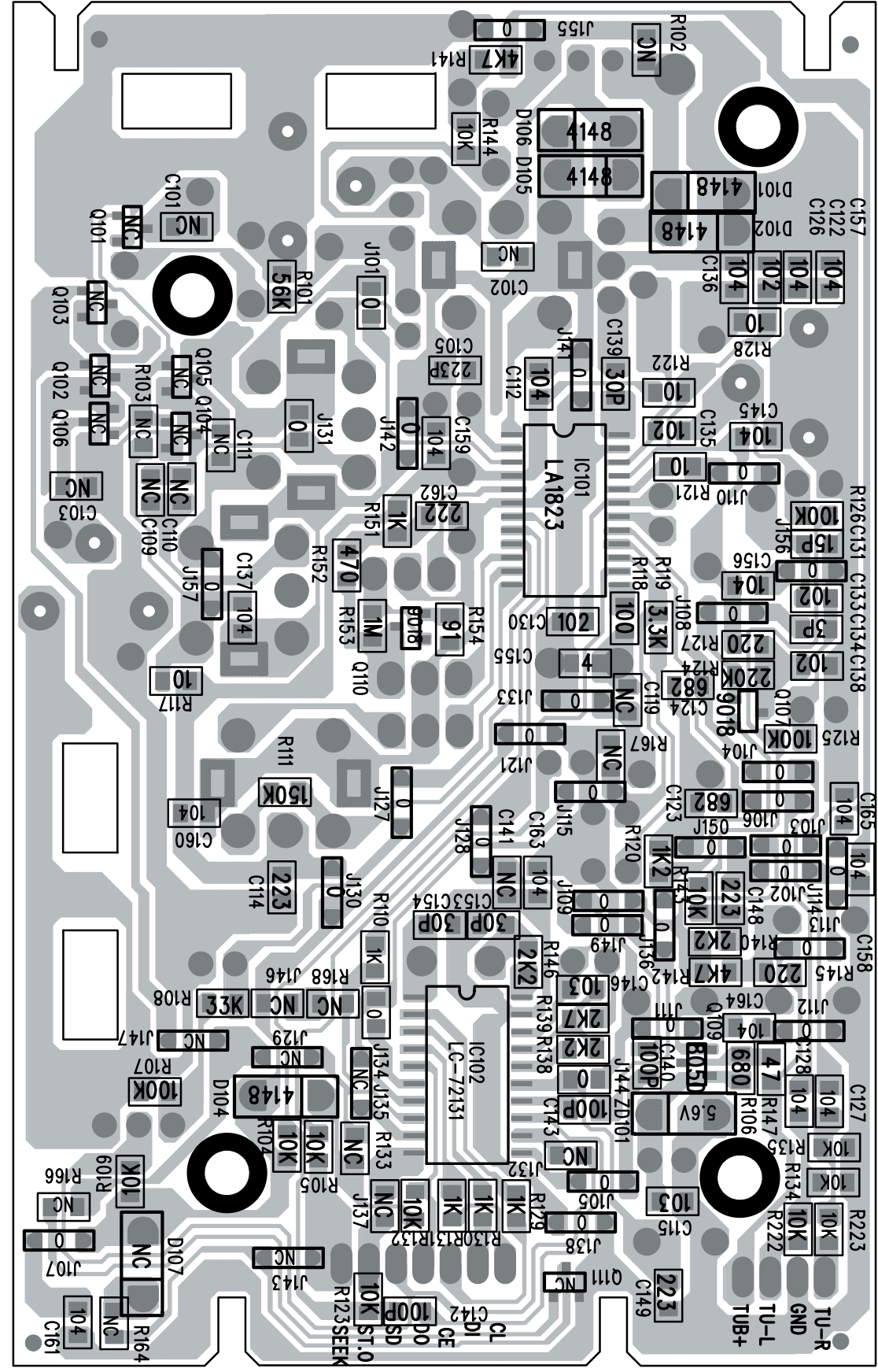
* C107 30P(N) FOR (US.CA.AU.KR.PA)
 * C160.C161(0.022U) AND R150(4.7K OHM) FOR FCC(US.CA)

LAYOUT DIAGRAM - RADIO BOARD

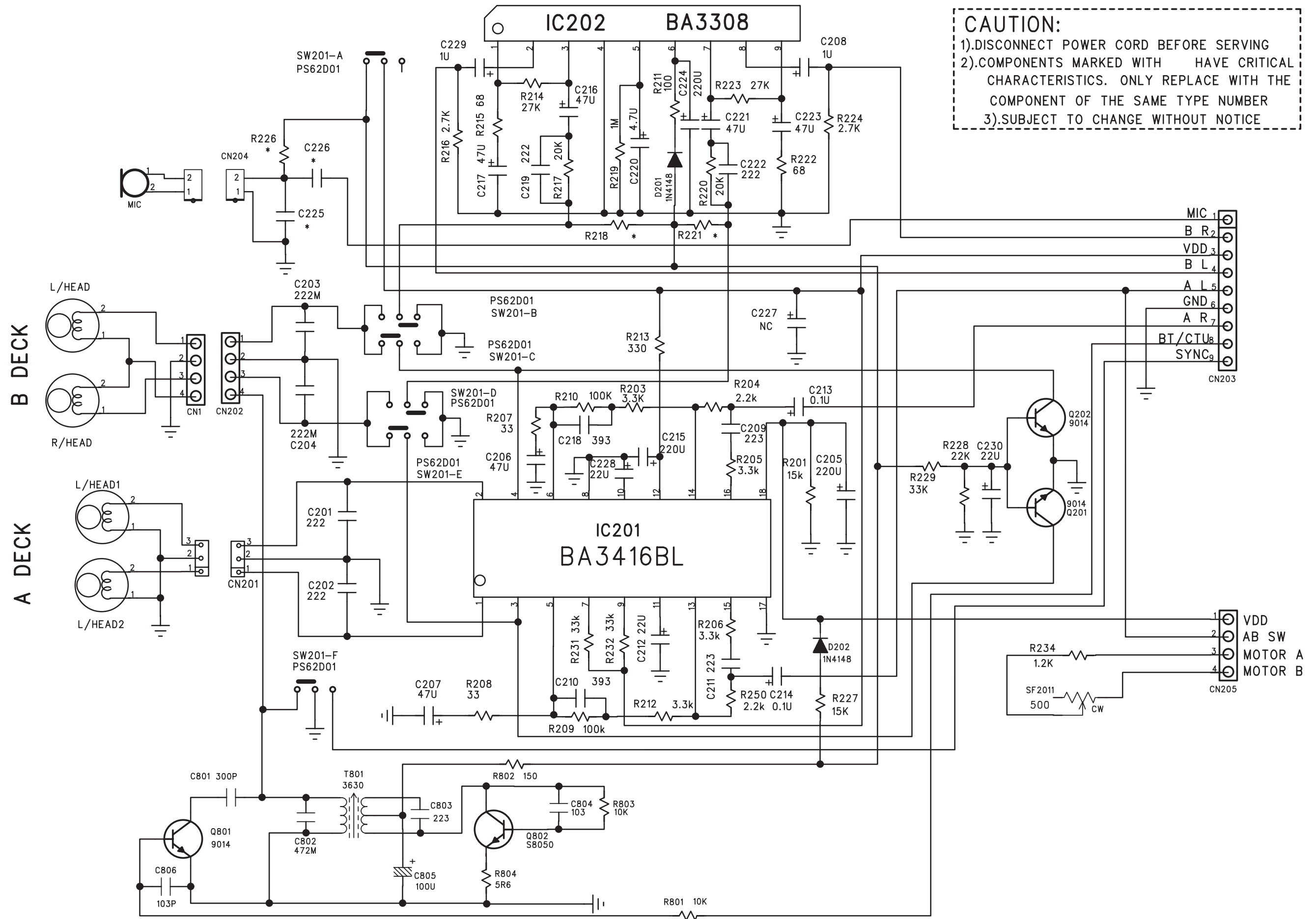
COMPONENT SIDE



COPPER SIDE



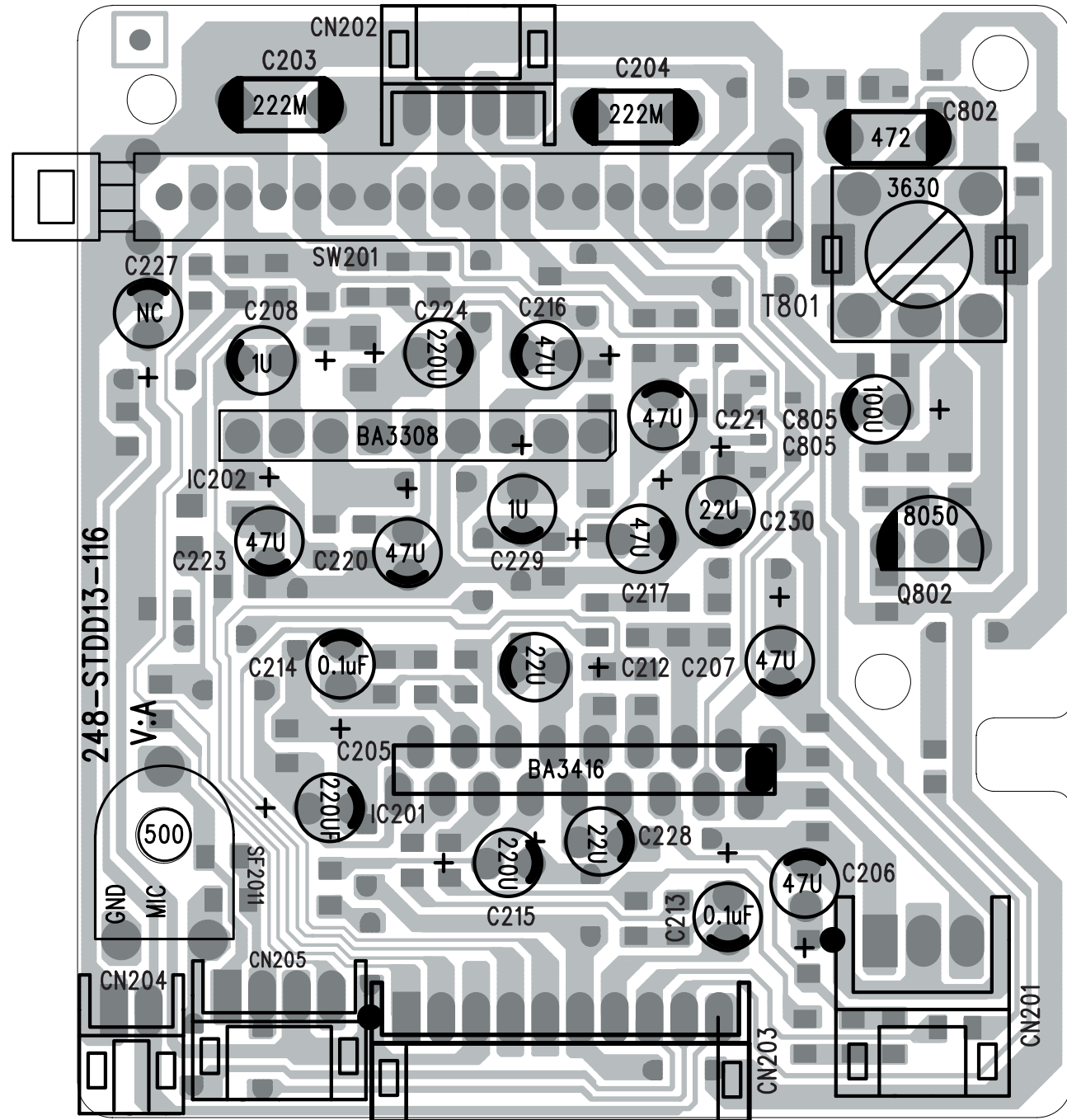
CIRCUIT DIAGRAM - CASSETTE BOARD



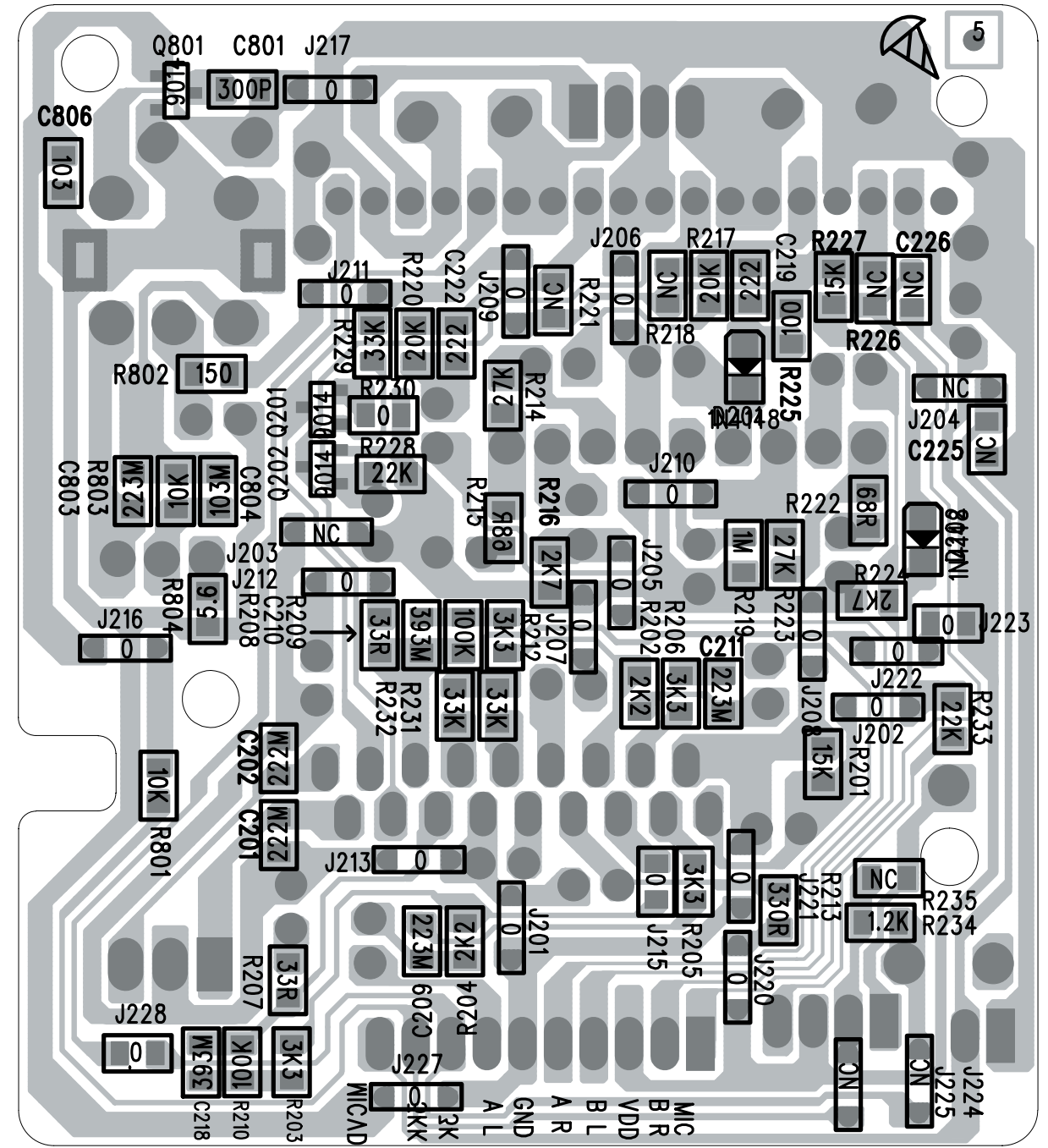
CAUTION:
 1).DISCONNECT POWER CORD BEFORE SERVING
 2).COMPONENTS MARKED WITH * HAVE CRITICAL CHARACTERISTICS. ONLY REPLACE WITH THE COMPONENT OF THE SAME TYPE NUMBER
 3).SUBJECT TO CHANGE WITHOUT NOTICE

LAYOUT DIAGRAM - CASSETTE BOARD

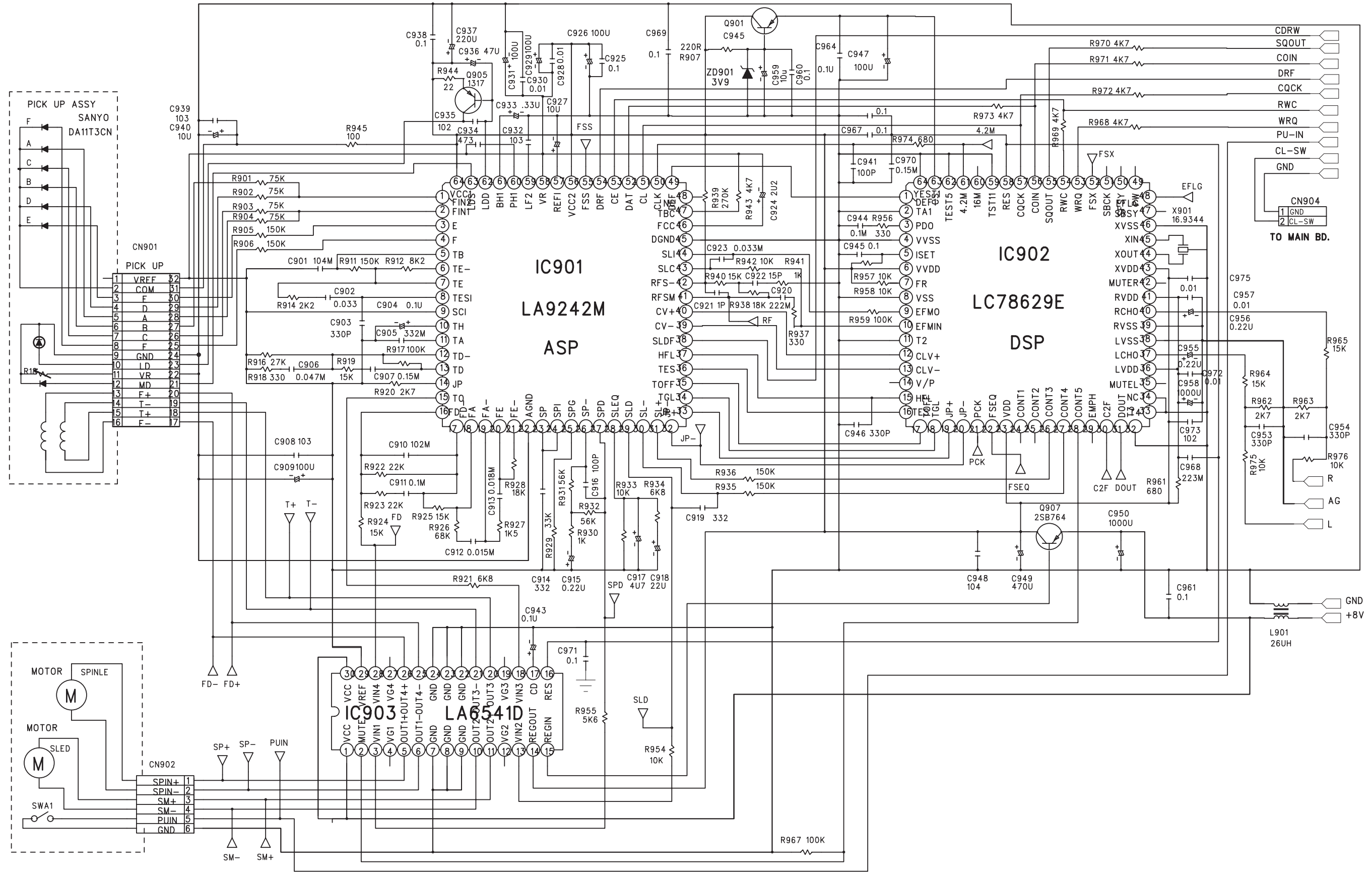
COMPONENT SIDE



COPPER SIDE

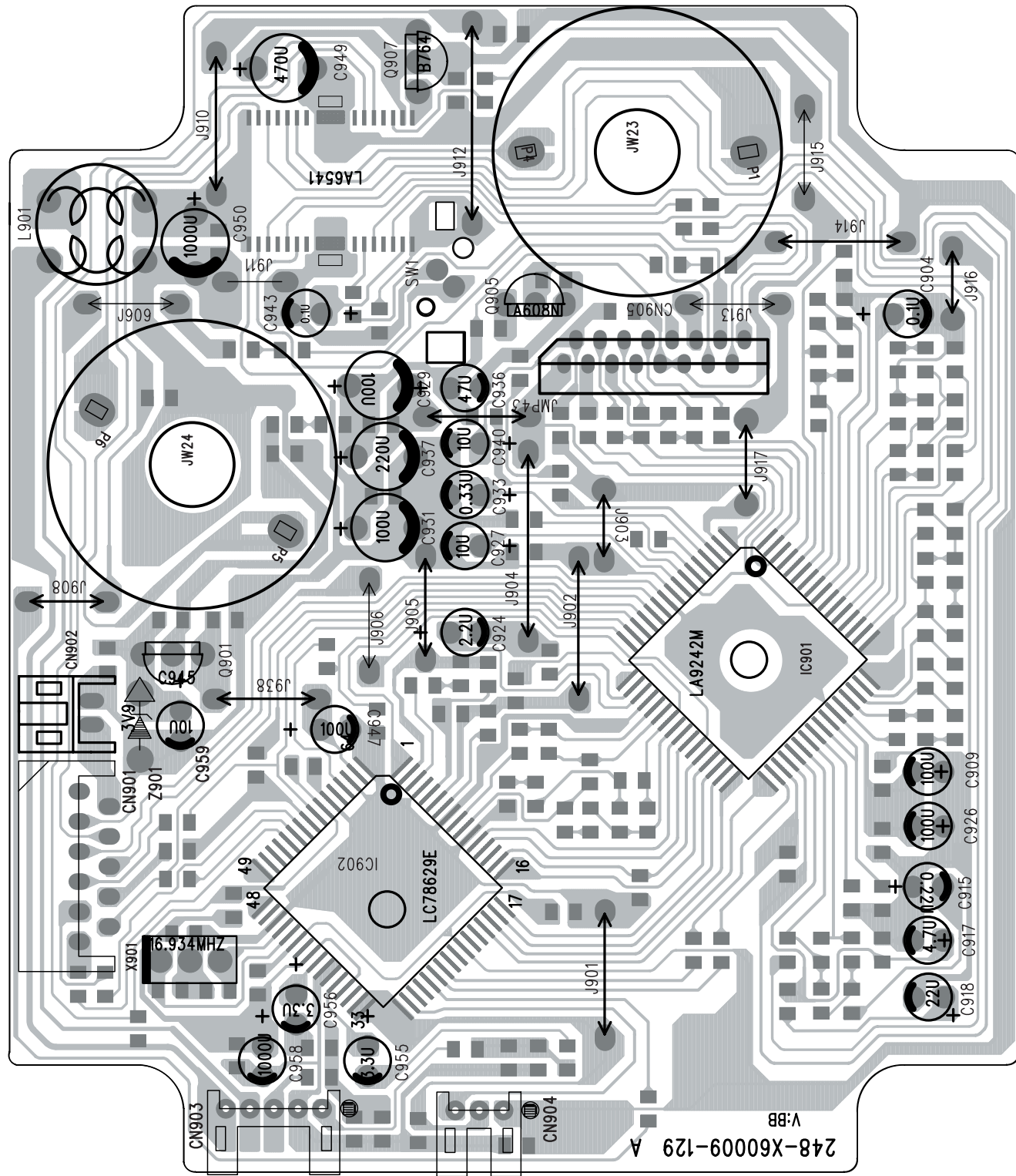


CIRCUIT DIAGRAM - CD BOARD

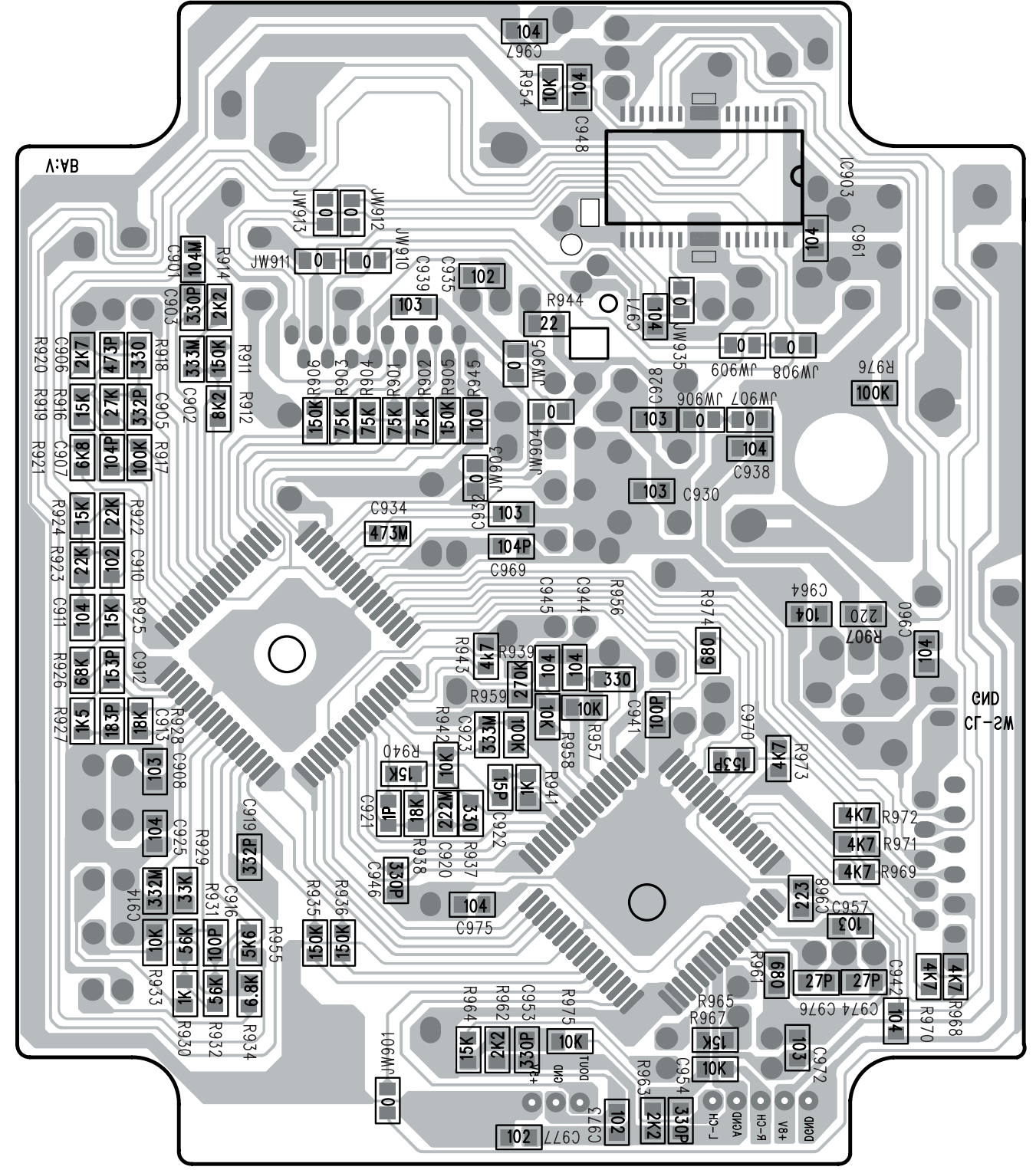


LAYOUT DIAGRAM - CASSETTE BOARD

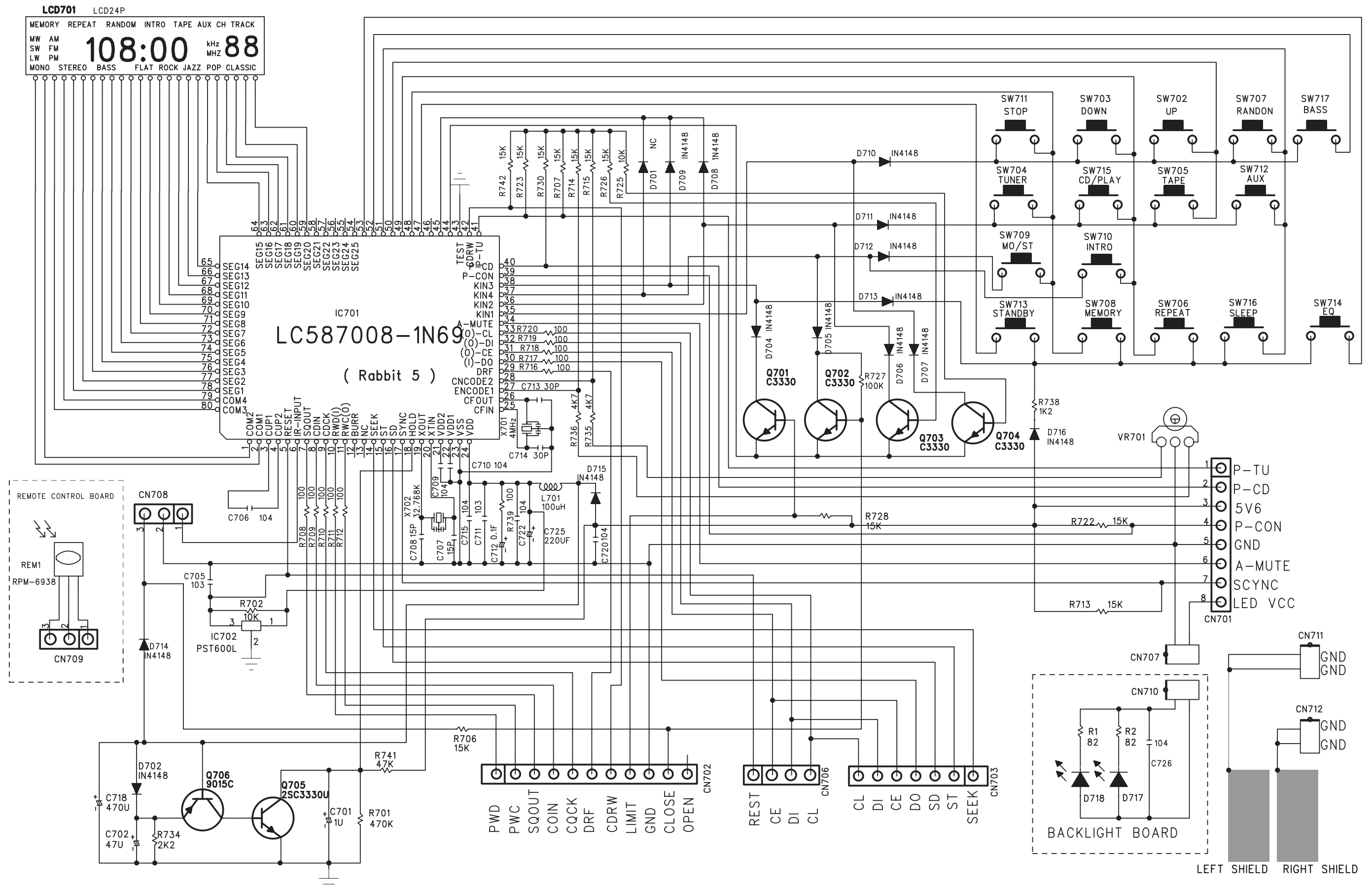
COMPONENT SIDE



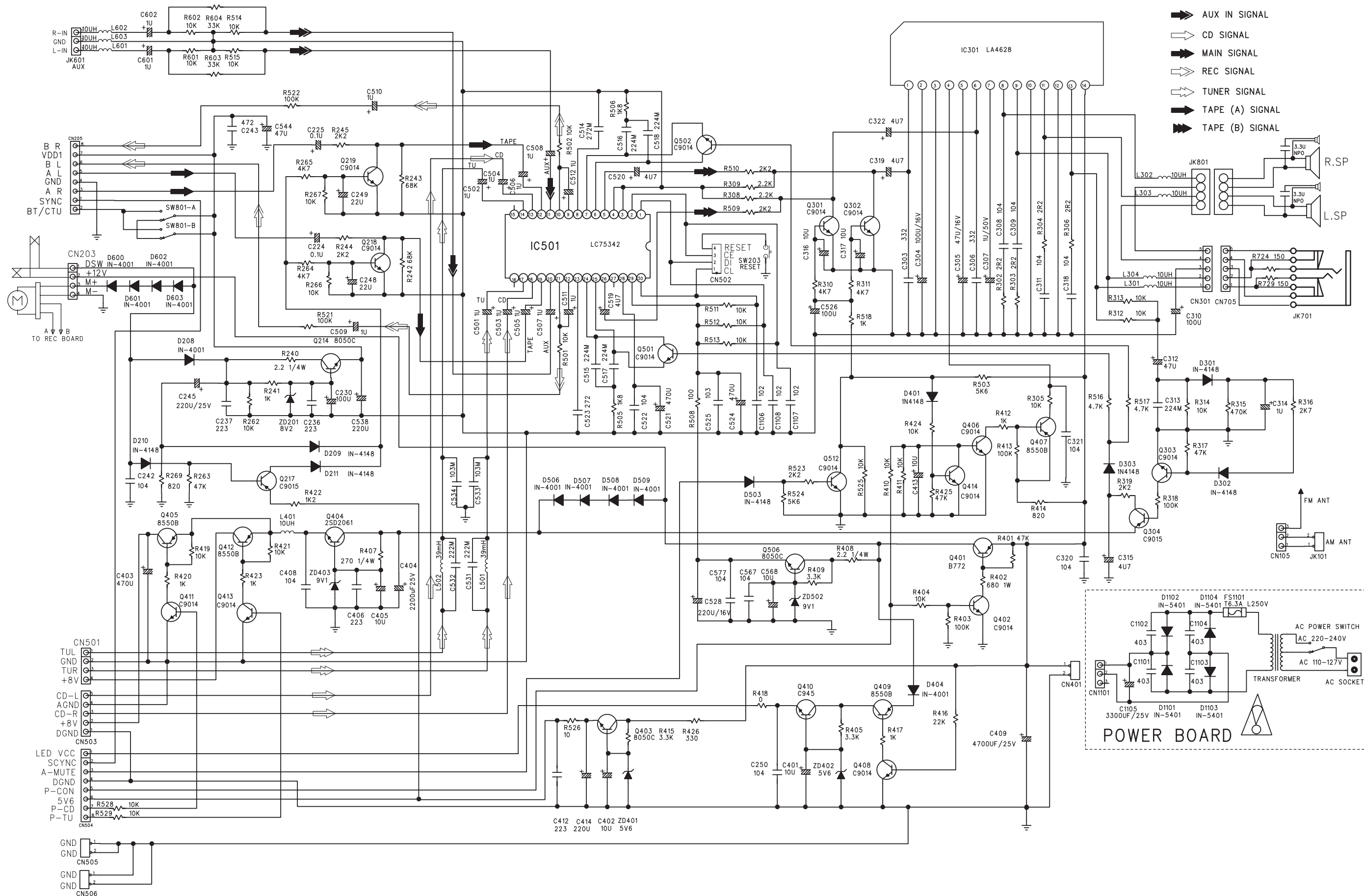
COPPER SIDE



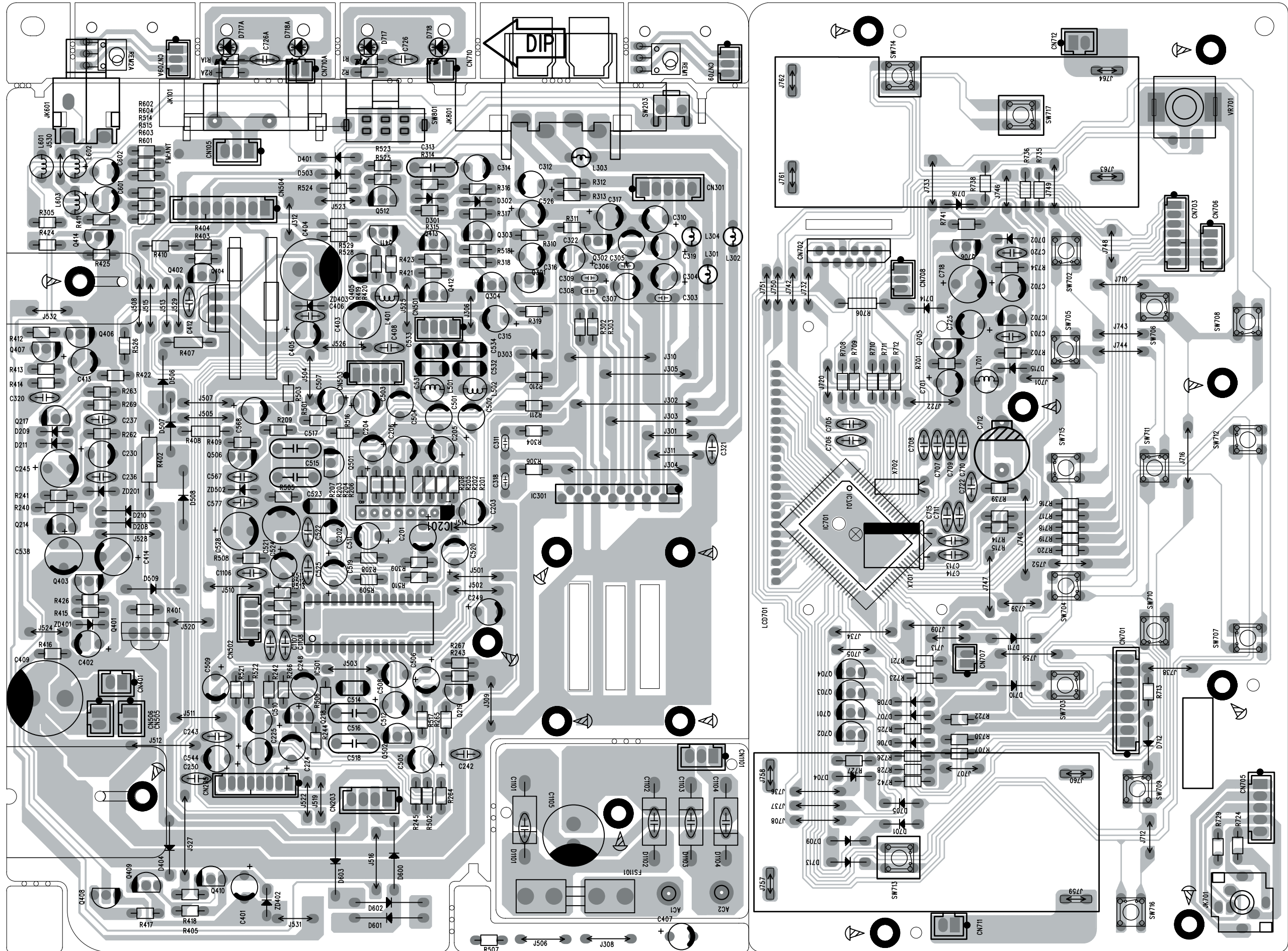
CIRCUIT DIAGRAM - CONTROL BOARD



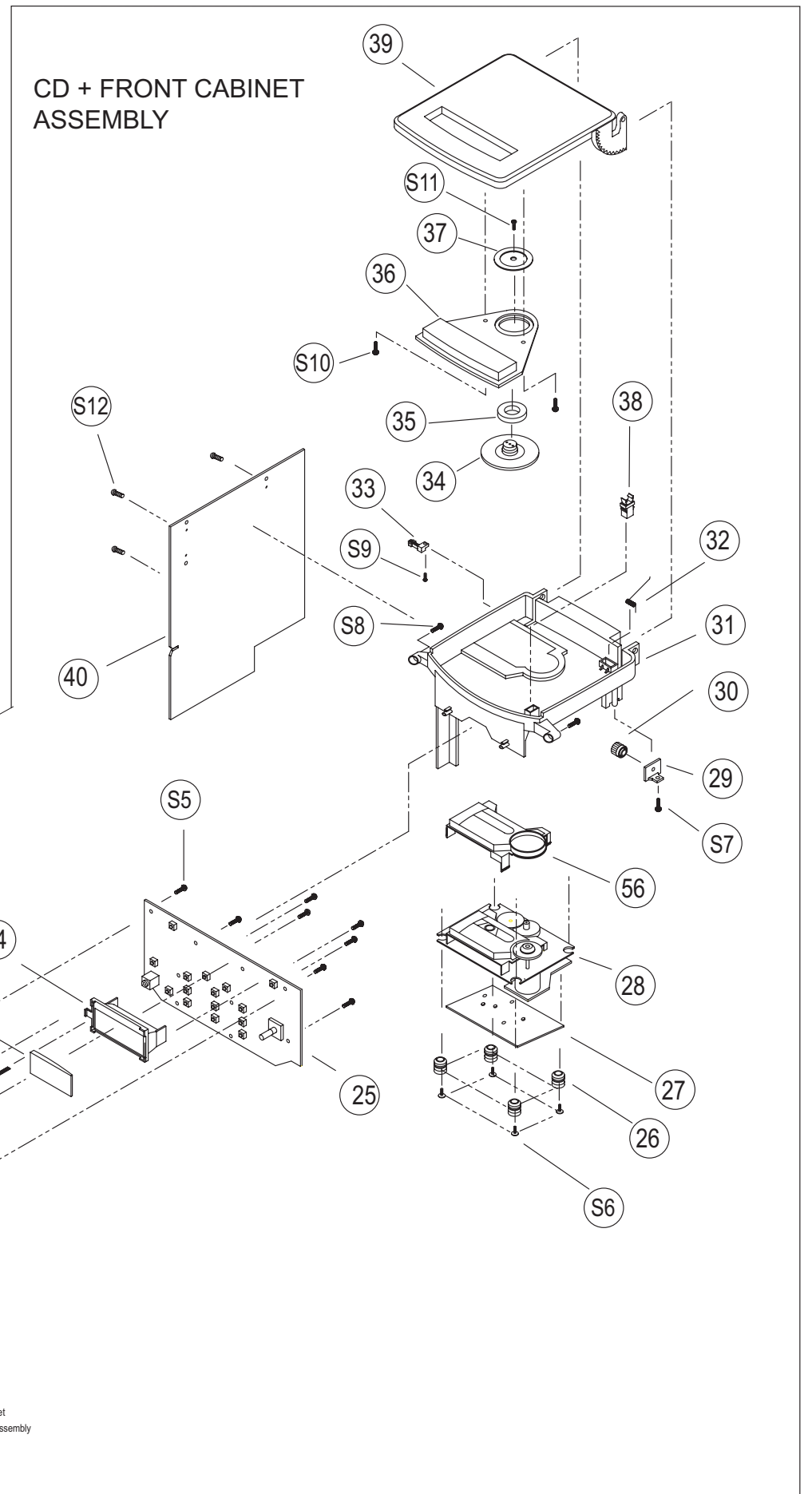
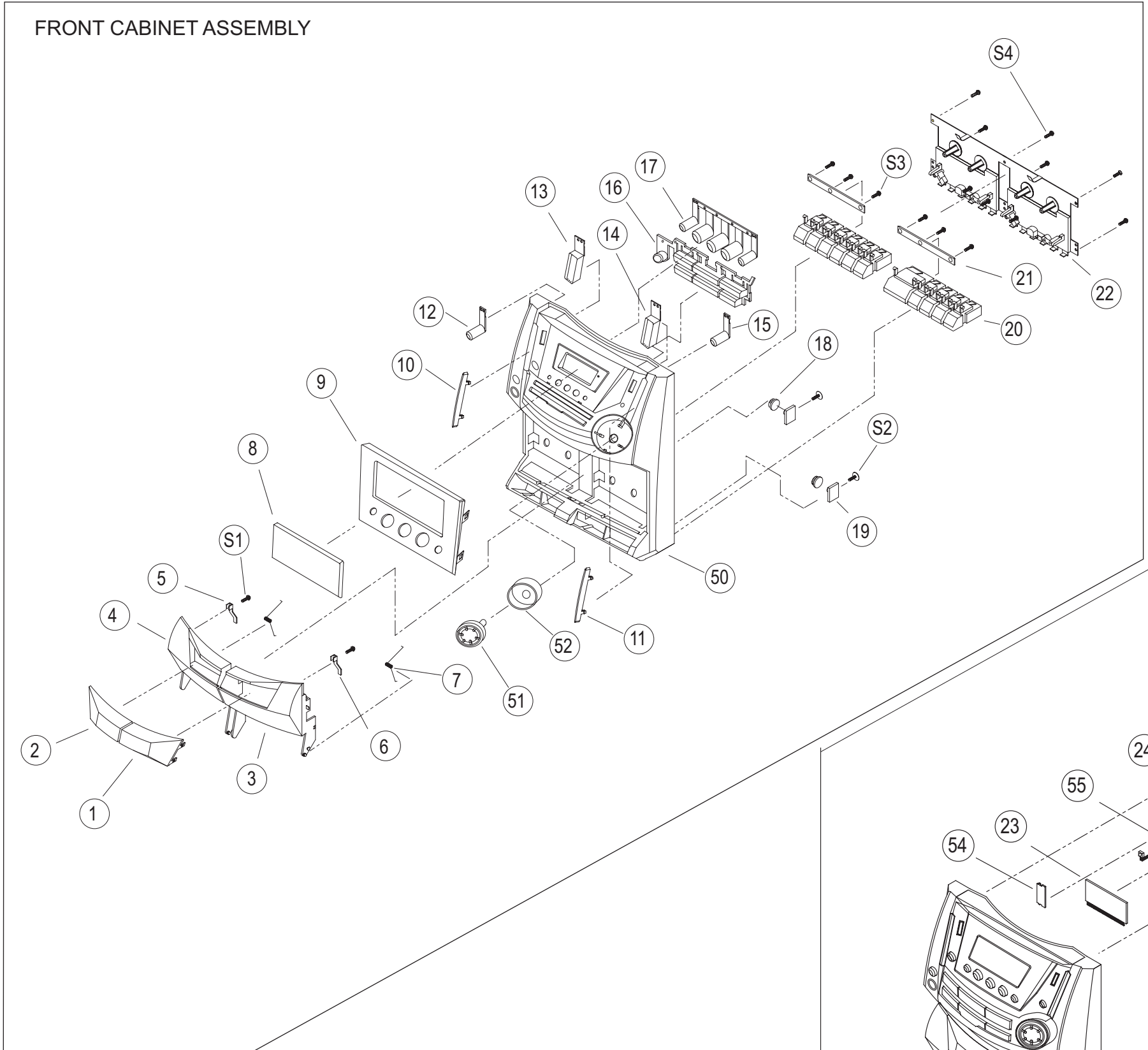
CIRCUIT DIAGRAM - MAIN BOARD



LAYOUT DIAGRAM - CONTROL AND MAIN BOARD

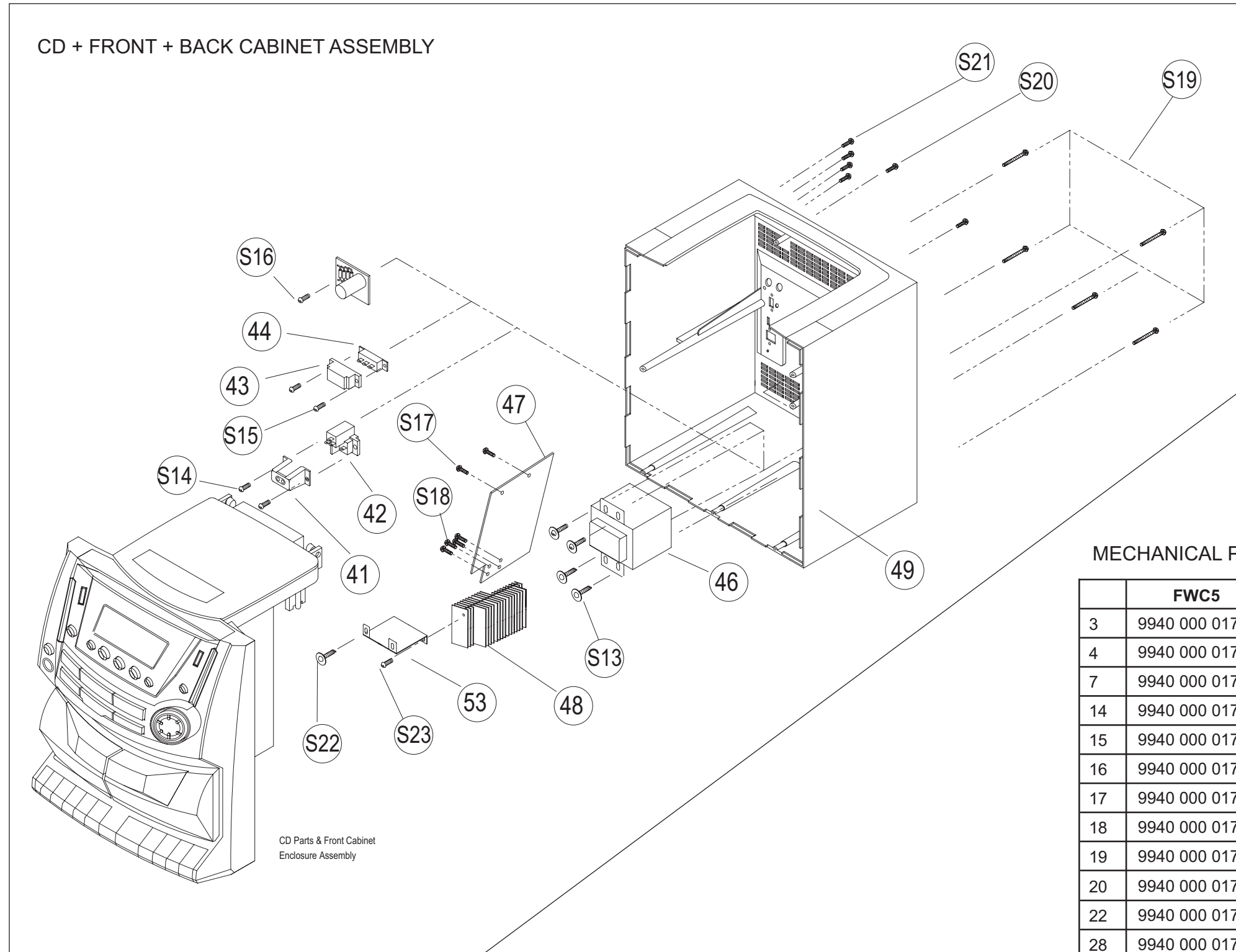


EXPLODED VIEW DIAGRAM



Front Cabinet Enclosure Assembly

EXPLODED VIEW DIAGRAM



MECHANICAL PARTS LIST

	FWC5	MAS55	DESCRIPTION
3	9940 000 01753	9940 000 01776	RIGHT CASS DOOR
4	9940 000 01752	9940 000 01775	LEFT CASS DOOR
7	9940 000 01743	9940 000 01743	CASS DOOR SPPING
14	9940 000 01756	9940 000 01779	EQ KNOB
15	9940 000 01754	9940 000 01777	BASS KNOB
16	9940 000 01765	9940 000 01785	FUNCTION KNOB
17	9940 000 01764	9940 000 01784	CONTROL KNOB
18	9940 000 01759	9940 000 01759	CASS DOOR GEAR
19	9940 000 01761	9940 000 01761	CASS DOOR GEAR HOLDER
20	9940 000 01758	9940 000 01782	RIGHT CASS KNOB
22	9940 000 01738	9940 000 01738	CASS DECK HY-21SW-718
28	9940 000 01734	9940 000 01734	CD DECK MECHANISM DA11MM
31	9940 000 01762	9940 000 01762	CD TRAY
32	9940 000 01742	9940 000 01742	SPRING FOR CD DOOR
33	9940 000 01741	9940 000 01741	LEAF SWITCH LS-N35
38	9940 000 01744	9940 000 01744	CD DOOR LOCK
39	9940 000 01763	9940 000 01783	CD DOOR
49	9940 000 01751	9940 000 01774	BACK CABINET
50	9940 000 01749	9940 000 01773	FRONT CABINET
51	9940 000 01755	9940 000 01778	VOLUME KNOB

ACCESSORIES

	9940 000 01739	AM EXTERNAL ANT. LOOP	
	9940 000 01766	REMOTE CONTROL FWC5	(FWC5)
	9940 000 01772	REMOTE CONTROL MAS55	(MAS55)
	9940 000 01927	COMPLETE SPEAKER BOX	(FWC5)
	9940 000 01928	COMPLETE SPEAKER BOX	(MAS55)
△	9940 000 01745	POWER CORD SET VDE	/21
△	9940 000 02061	POWER CORD SET (ARG)	/77

ELECTRICAL PARTS LIST**TUNER BOARD**

IC101	9940 000 01707	I.C. LA1823-ESIA
IC102	9940 000 01708	I.C. LC72131
L103	9940 000 01713	I.F.T. ANT OSC RED
T101	9940 000 01712	I.F.T OSC RED 10MM MW
T103	9940 000 01714	I.F.T YELLOW 10MM

VD101	9940 000 01709	DIODE VCD/SVC201
VD102	9940 000 01709	DIODE VCD/SVC201
VD103	9940 000 01711	DIODE VCD/SVC348

CASSETTE BOARD

IC201	9940 000 01736	I.C. BA3416BL
IC202	9940 000 01735	I.C. B-3308 DUAL MODEL
SW201	9940 000 01737	RECORDING SW. PS-62D01-S

CD BOARD

IC901	9940 000 01732	I.C. LA9242M
IC902	9940 000 01733	I.C. LC78629E
IC903	9940 000 01731	I.C. LA6541D
M3	9940 000 01771	LEAF SW. LS-053-02
	9940 000 01734	CD MECHANISM DA11MM

MAIN BOARD

IC301	9940 000 01715	I.C. LA4628	
IC501	9940 000 01716	I.C. LC75342	
JK101	9940 000 01719	ANTENNA JACK 75 OHM	
JK601	9940 000 01721	RCA JACK RED/WHITE	
JK801	9940 000 01722	SPEAKER TERMINAL WP-408	
SW203	9940 000 01717	TACT SWITCH	(FWC5)
SW203	9940 000 01767	TACT SWITCH V-TYPE	(MAS55)
SW801	9940 000 01718	SLIDE SW. SK22F03G12	(FWC5)
SW801	9940 000 01768	SLIDE SW. SK22F03G6 0306	(MAS55)

MISCELLANEOUS

△	9940 000 01746	POWER TRANSFORMER
	9940 000 01747	SPEAKER 2" 4 OHM 12.5W
	9940 000 01748	SPEAKER 5" 6 OHM 15W

CONTROL BOARD

D717	9940 000 01729	LED 5MM 53B3SC08
D718	9940 000 01729	LED 5MM 53B3SC08
IC701	9940 000 01723	I.C. LC-587008-IN69
IC702	9940 000 01724	I.C. PST600L
JK701	9940 000 01769	HEAD PHONE JACK

LCD701	9940 000 01726	LCD DISPLAY
SW702	9940 000 01725	TACT SWITCH
SW703	9940 000 01725	TACT SWITCH
SW704	9940 000 01725	TACT SWITCH
SW705	9940 000 01725	TACT SWITCH

SW706	9940 000 01725	TACT SWITCH
SW707	9940 000 01725	TACT SWITCH
SW708	9940 000 01725	TACT SWITCH
SW709	9940 000 01725	TACT SWITCH
SW710	9940 000 01725	TACT SWITCH

SW711	9940 000 01725	TACT SWITCH
SW712	9940 000 01725	TACT SWITCH
SW713	9940 000 01725	TACT SWITCH
SW714	9940 000 01725	TACT SWITCH
SW715	9940 000 01725	TACT SWITCH

SW716	9940 000 01725	TACT SWITCH
SW717	9940 000 01725	TACT SWITCH
VR701	9940 000 01728	ROTARY ENCODER