Micro Hi-Fi System

MCM1006

/51/55/93/77

Service
Service
Service

Service Manual

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CLASS 1
LASER PRODUCT

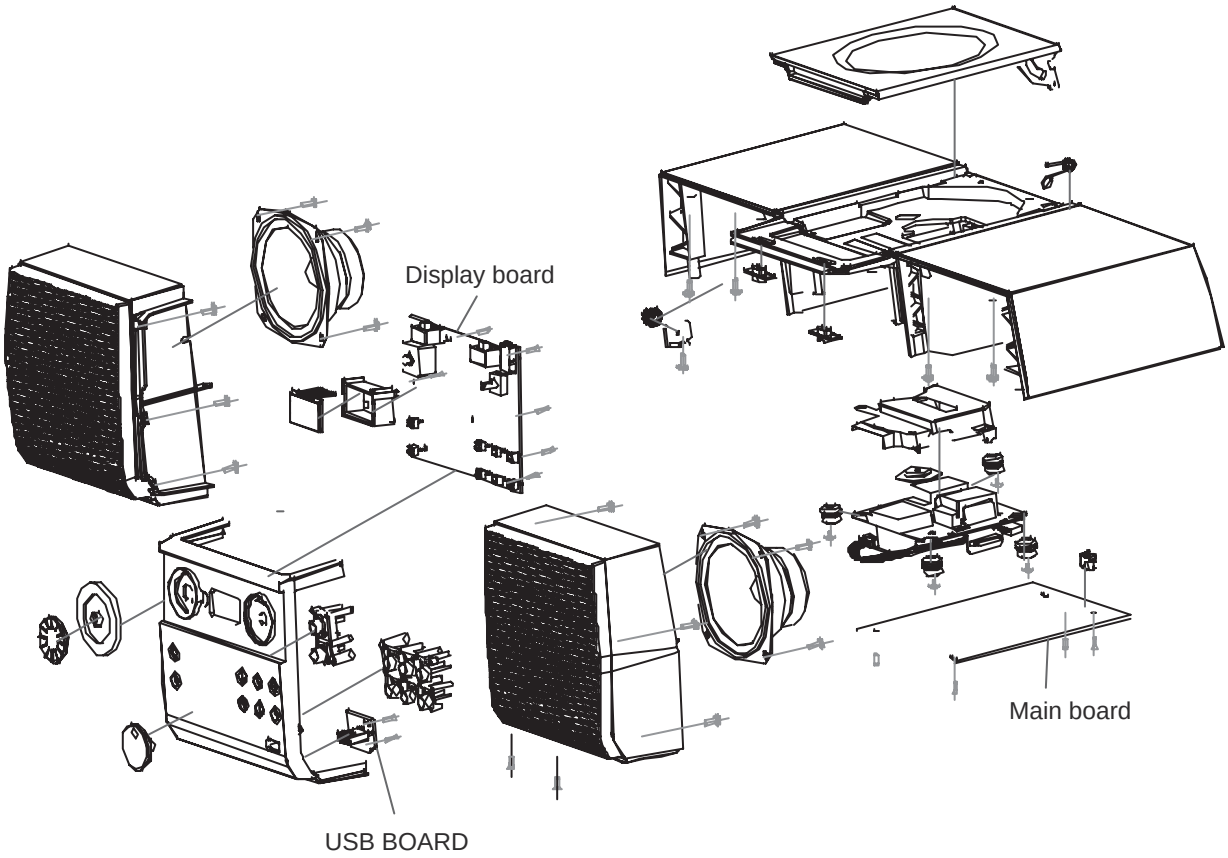
Published by GD 1201 Service Audio Subject to modification

3141 785 37183

Version 1.3

PHILIPS

PCBs location

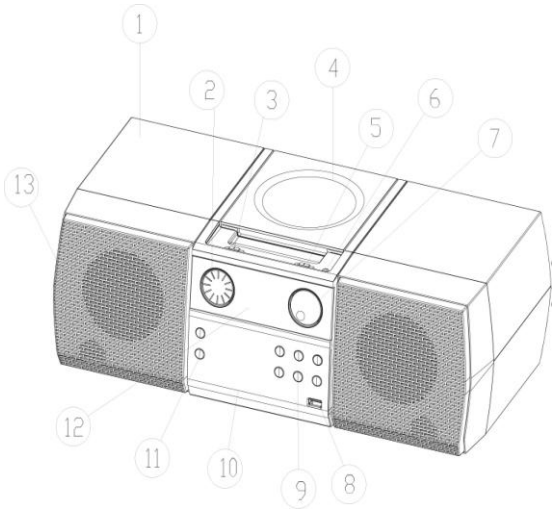


VERSION VARIATION

Type /Versions: / Service policy / Board in used:	MCM1006 /51/55/93/77 LATAM/APMEA
USB BOARD	M/C
DISPLAY BOARD	M/C
MAIN BOARD	M/C
Type /Versions: / Features / Feature diffrence	MCM1006 /51/55/93
RDS	
VOLTAGE SELECTOR	
ECO STANDBY - DARK	

* TIPS : C -- Component Lever Repair.
M -- Module Lever Repair
√ -- Used

DEPICTION



Battery location
NA

Pos	Description	Page
1	TOP CABINET	
2	TUNING KNOB	
3	POWER KNOB	
4	CD DOOR	
5	FUNCTION PUSH KNOB	
6	MP3 JACK	
7	KNOB VOLUME	
8	USB JACK	
9	CD FUNCTION CONTROL KNOB	
10	FRONT CABINET	
11	FUNCTION KNOB	
12	DISPLAY LENS	
13	SPEAKER NET	

CABINET

Dimensions with Boxes 532 x 242 x 200mm (LxWxH)

Dimensions without Boxes: 532x242x200

Weight (including packing): 2.35kg

Weight (excluding packing and batteries): 2.05 kg

Material: ABS/HIPS

Finishing:

Unit in Master carton: N/A

Units in Dealer carton: 1 set

Remark :

Description

Class No			Issued Date
	MCM1006		7/11/2011
			7/11/2011
2011-07-11			

NAME : Mo Lam Kei		8	SH 190 - 1			A4
KT	CHECK		CMT			

GENERAL DESCRIPTION
CDSM with Tuner , CD, USB
Aux In, Headphone

LIFETIME : 5 Years

Class	Tuner	Supply + Amplifier	Loudspeaker Boxes	Recorder	USB	CD
I	X	X			X	X
II						
III						

SAFETY requirements

Refer to the section of Version Overview

RADIATION / IMMUNITY requirments (EMC)

Refer to the section of Version Overview

CLIMATIC requirements
ALL climates : - 10 Dregree till + 50 Degree

PERFORMANCE CLASSES

POWER SUPPLY

MAINS (A.C.)	120/230Vac ±15%	230 Vac ±10 %	120V+/-15%	220V-10%,240+10%	99-146V, 196-264Vac
Version	97 / 98	/12	/96	/73	55 / 77 / 78
Voltage Selection	Yes	No	No	No	Yes
Frequency	60 / 50Hz	50 Hz	60 Hz	50 Hz	60 / 50Hz

DC operation / Backup Buffer

Battery type :	R20 (UM1 / D-cell) x 6 (9V normal, 6.3V limit)

POWER CONSUMER

	MAINS (DC ADAPTOR)	DC operation / Backup Buffer	
Standby :			
(DEMO mode " OFF ") , NOM. A, INPUT			
Maximum :			
@ 1/8 Prated , NOM. A, INPUT	8W		
ECO Power mode :	N/A		

Remarks :

GENERAL PART 1 - GENERAL SPECICFICATION

Class No			Issued Date
	MCM1006		7/11/2011
			7/11/2011
2011-07-11			

NAME : Mo Lam Kei		8	SH 190 - 4			A4
KT	CHECK		CMT			

TECHNIAL DESCRIPTION

2 x 2W matching LOUDSPEAKER of 2 x 4R. One INPUT SOURCE

GENERAL PART

OUTPUT stage Protection : Yes Temperature : YES Shorcircuit : Yes

.

INDICATORS

Standby Mode Indicator : LCD display off

ECO Mode Indiicator : NA

ELECTRICAL DATA

DSC :	NA			
DBB	Yes	Hum (Volume Minimun)	0.5	uW
SIS :	N/A	Residual Noise (Volume Minium)	0.06	uW
VAC :	N/A			
WOOX :	N/A			

INTERCONNECTS

Input Sensitity (± 3 B) rated ouput power at 1 kHz Line Output Voltage (*1)

Tuner	FM 67.5KHZ,AM80% Modulation(Limit :-6db)	Line Out (Left / Right)	N.A
CD	-6 dB track (Audio Disc 1 ,Trk 35	Subwoofer Out	N.A
USB	-6 dB track (Copy from Audio Disc 1 ,Trk 35)	Headphone	2.5 mW +/-0.3mW , at R Load = 32 ohm @ max volume, 0dB, 1kHz CD
AUX	500mV	Digital Coaxial Out	N.A
Microphone	-6 dB track (Audio Disc 1 ,Trk 35	Booster Out	N.A

OUTPUT POWER (* 1) At THD = 10% , 1KHz sinewave

Main Operation	: 2W, 1 Channels (Lim: -1dB)	(At Cold Condition with 10% THD)
DC Operation	: .2W, 1 Channels (Lim: -1dB)	
Frequency Response	: 125Hz - 14KHz	(At 500mW Output in flat Mode)

LOUDSPEAKER (BOXES)

Rated Impedance

Left / Right : 4 Ohms at 125Hz to 16KHz

Remarks

(*1) Electrical parameters are to be measuremend at specker terminals across 6 Ohm load (pure resistor) with rated input signal in AUX mode; with DBB OFF

GENERAL PART 1 - TECHNAICAL SPECICFICATION

Class No			Issued Date
	MCM1006		7/11/2011
			7/11/2011
2011-07-11			

NAME : Mo Lam Kei		8	SH 190 - 5			A4
KT	CHECK		CMT			

TECHNIAL DESCRIPTION

CLOCK PART

Timer Setting	:	NA
Timer Wakeup Mode	:	NA
Remarks Time Setting	:	NA
Volume at Wakeup	:	NA
No of Timer Settings	:	NA
Clock Accuracy	:	NA

INDICATORS		
Display Type	:	LCD

CD PART

Channel Unbalance (250 to 10k Hz)	:	<= 3dB
Frequency Response(±3dB) (@ volume max - 20dB and DBB off mode)	:	100Hz~10kHz
Signal to Noise Ratio(A-weighted)	:	62dBA(Lim 57 dBA)
THD (1kHz)	:	1.5%(Lim 2.0%)
THD (100 ~10kHz)	:	2%(Lim 3.0%)
Channel Separation(1K)	:	40dB (Lim. 26dB)
Channel Separation(10K)	:	30dB (Lim. 16dB)
CD Shock sens.	:	5kg

USB PART

- Refer to Philips USB direct user requirement spec.

DBB effect

DBB	8+/- 2 dB at AUX 500mV, 1kHz

CLOCK / CD SPECICFICATION

Class No			Issued Date
	MCM1006		7/11/2011
			7/11/2011
2011-07-11			

NAME : Mo Lam Kei		8	SH 190 - 6				A4
KT		CHECK		CMT			

TECHNIAL DESCRIPTION

GENERAL PART

WAVE RANGE		
FM	Refer to version overview	
AM	Refer to version overview	
MW	Refer to version overview	

AERIAL

FM : Telescope

AM/MW : Ferrite

INDICATORS : NA

ELECTRICAL DATA

A.M	Nom	Limit	Unit	F.M.	Nom	Limit	Unit
IF			kHz	IF	: 10.7	± 0.3	MHz
AGC figure of merit			dB	- 3 dB Limiting Point	: 17	25	dBf
Distortion (RF 50mV, m=80%)			%	Distortion (RF 1mV, Frq Dev.75 kHz)	3	5	%
				Stereo - 46 dB Quieting	48	51	dBf
				FM S/N Ratio(A weighted) Mono input 80dBf	55	50	dBA
Modulation Hum			dB	Modulation Hum	45	40	dB
				FM Channel Seprantion -400/1K/5K	21/25/18	18/20/15	dB
Search tuning sensitivity			dBuV/m	Search tuning sensitivity	24-32	19 - 35	dBf
Search tuning stop accuracy RF >= 1V/m RF >= a26 to 1V/m				Search Tuning Stop Accuracy RF: 91~120dBf R/F:31~91dBf		+/- 1 0	Step
Search Time			Sec.	Search Time		60	Sec.

Wave Range		Noise Limited Sensitivity 26 dB			Image Rejection	IF Rejection	Large Signal	
FM	Nom.	--	18	dBf	24	55	130dBf	
	Lim.	--	22	dBf	20	50	125dBf	
AM / MW	Nom.	--		dBuV/m			120 dBuV/m	
	Lim.	--		dBuV/m			114 dBuV/m	
					dB	dB		

Remarks

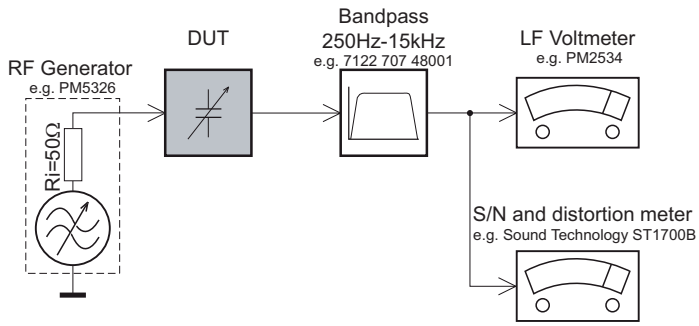
TUNER SPECICFICATION

Class No	MCM1006		Issued Date
			7/11/2011
			7/11/2011
2011-07-11			

NAME : Mo Lam Kei		8	SH 190 - 7			A4
KT	CHECK		CMT			

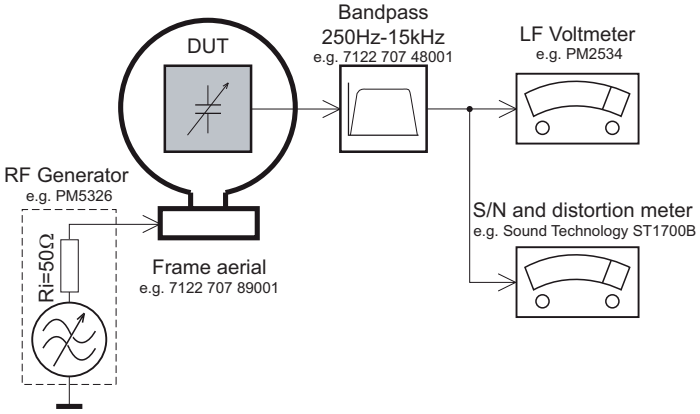
MEASUREMENT SETUP

Tuner FM



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

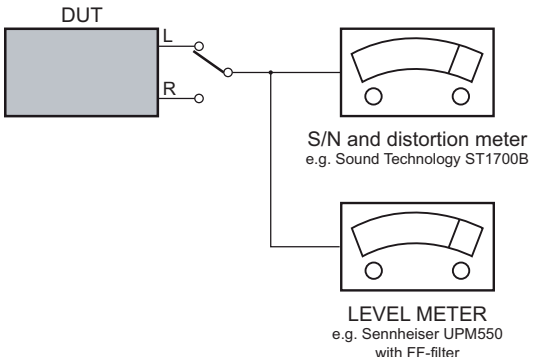
Tuner AM (MW,LW)



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).

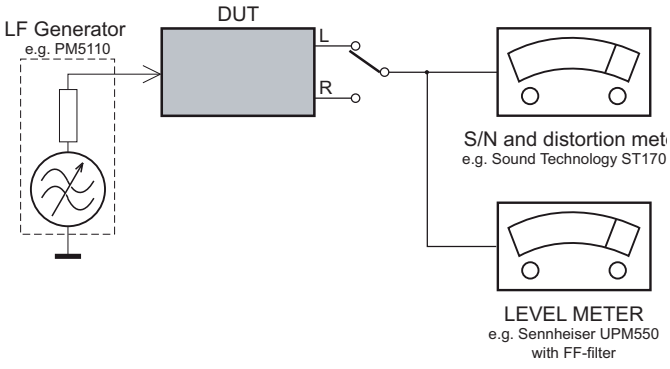
CD

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

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

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 ⚠.

CLASS 1
LASER PRODUCT

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:

- 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
  - Lead free

  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

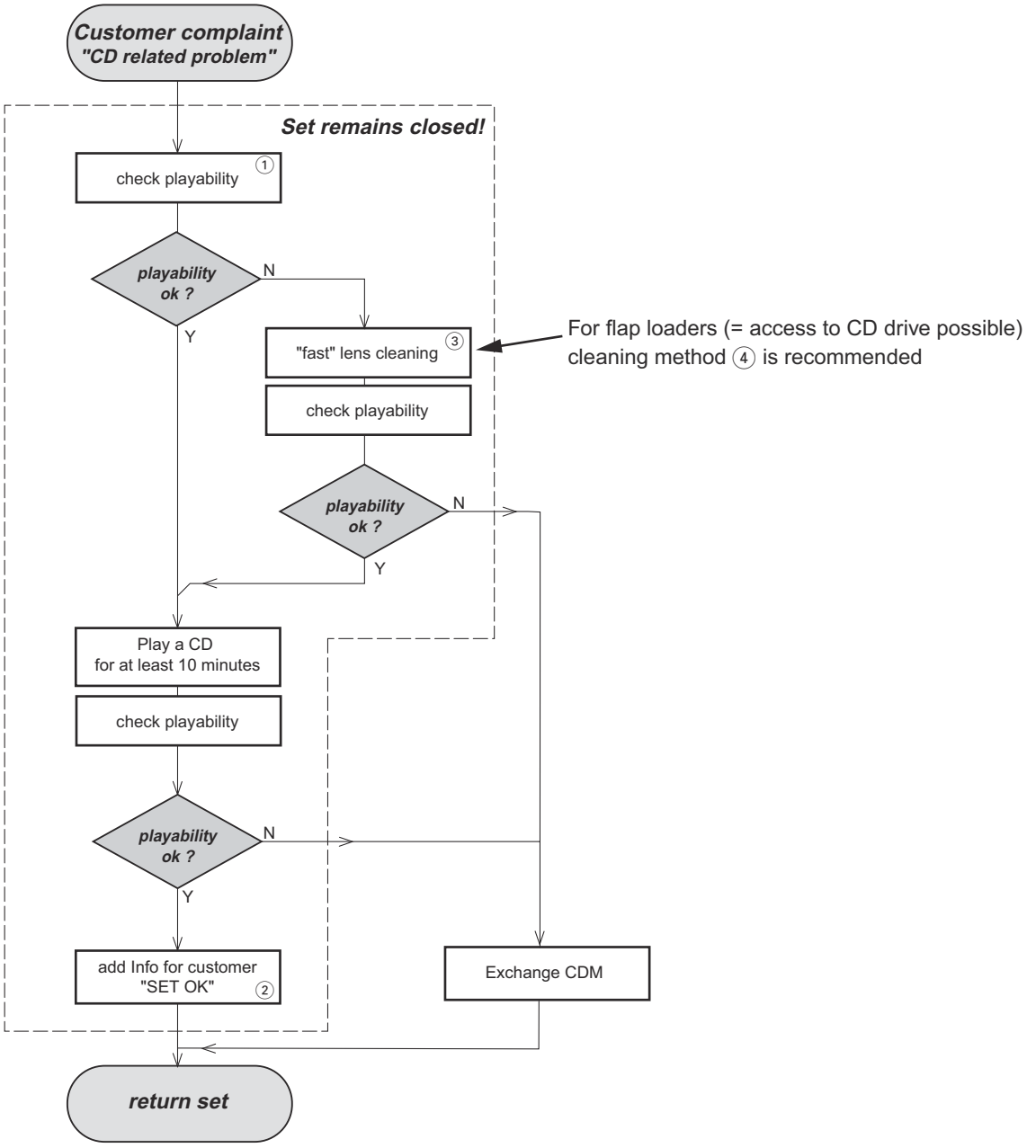
Safety regulations require that after a repair, the set must be returned in its original condition. Pay in particular attention to the following points:

- 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.

INSTRUCTIONS ON CD PLAYABILITY



① - ④ For description - see following pages

INSTRUCTIONS ON CD PLAYABILITY

(1)

PLAYABILITY CHECK

For sets which are compatible with **CD-RW** discs
use CD-RW Printed Audio Disc.....7104 099 96611
TR 3 (Fingerprint)
TR 8 (600µ Black dot) **maximum at 01:00**

- playback of these two tracks without audible disturbance
  playing time for: Fingerprint ≥10seconds
  Black dot from 00:50 to 01:10
- jump forward/backward (search) within a reasonable time

For all other sets
use CD-DA SBC 444A.....4822 397 30245
TR 14 (600µ Black dot) **maximum at 01:15**
TR 19 (Fingerprint)
TR 10 (1000µ wedge)

- playback of all these tracks without audible disturbance
  playing time for: 1000µ wedge ≥10seconds
  Fingerprint ≥10seconds
  Black dot from 01:05 to 01:25
- jump forward/backward (search) within a reasonable time

(2)

CUSTOMER INFORMATION

It is proposed to add an addendum sheet to the set which informs the customer that the set has been checked carefully - but no fault was found.
The problem was obviously caused by a scratched, dirty or copy-protected CD. In case problems remain, the customer is requested to contact the workshop directly.
The lens cleaning (method (3)) should be mentioned in the addendum sheet.

The final wording in national language as well as the printing is under responsibility of the Regional Service Organizations.

(4)

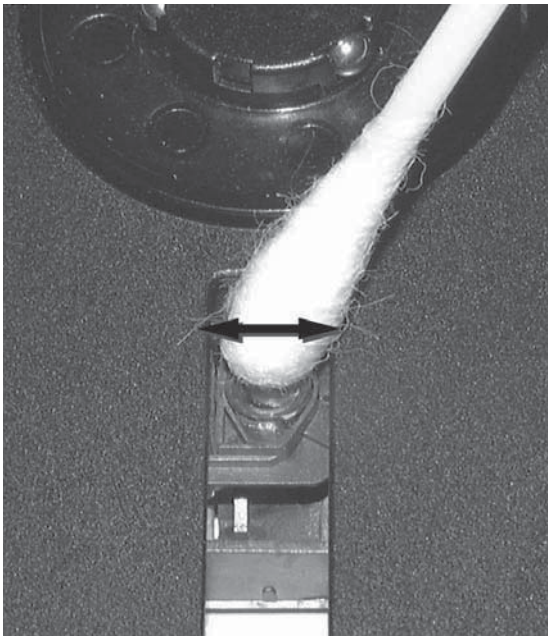
LIQUID LENS CLEANING

Before touching the lens it is advised to clean the surface of the lens by blowing clean air over it. This to avoid that little particles make scratches on the lens.

Because the material of the lens is synthetic and coated with a special anti-reflectivity layer, cleaning must be done with a non-aggressive cleaning fluid. It is advised to use “Cleaning Solvent

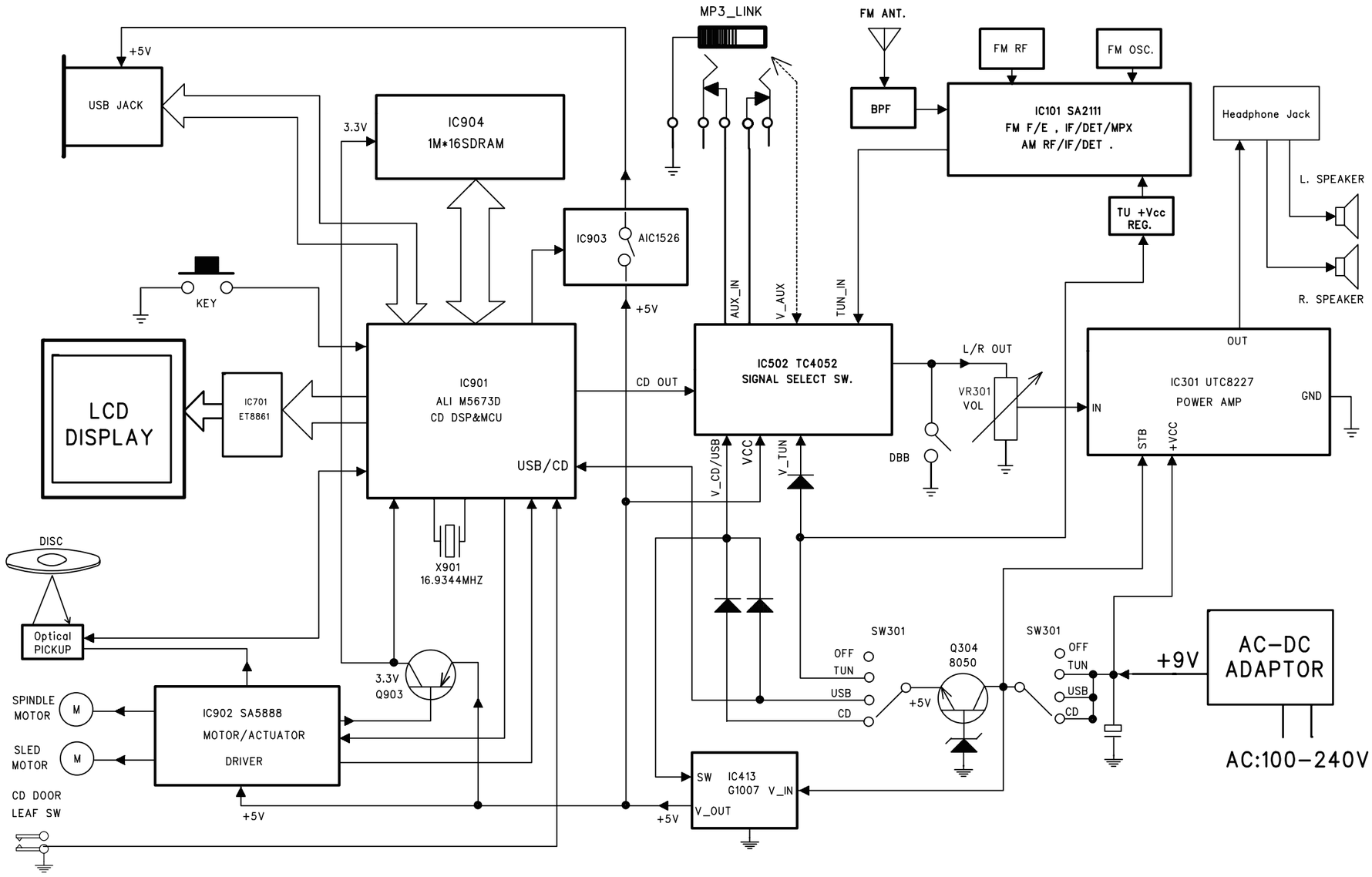
The actuator is a very precise mechanical component and may not be damaged in order to guarantee its full function. Clean the lens gently (don’t press too hard) with a soft and clean cotton bud moistened with the special lens cleaner.

The direction of cleaning must be in the way as indicated in the picture below.



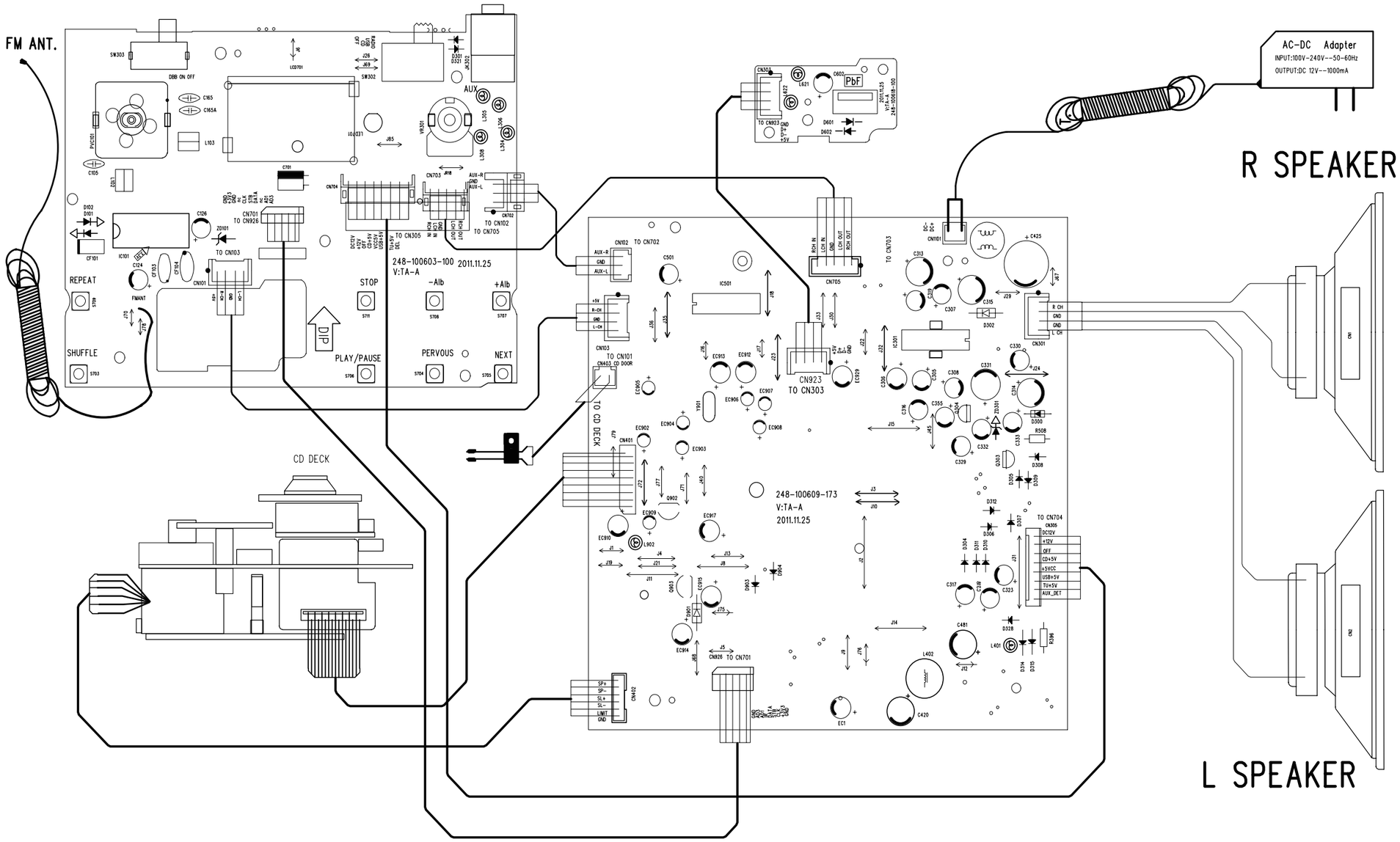
3 - 1

BLOCK DIAGRAM



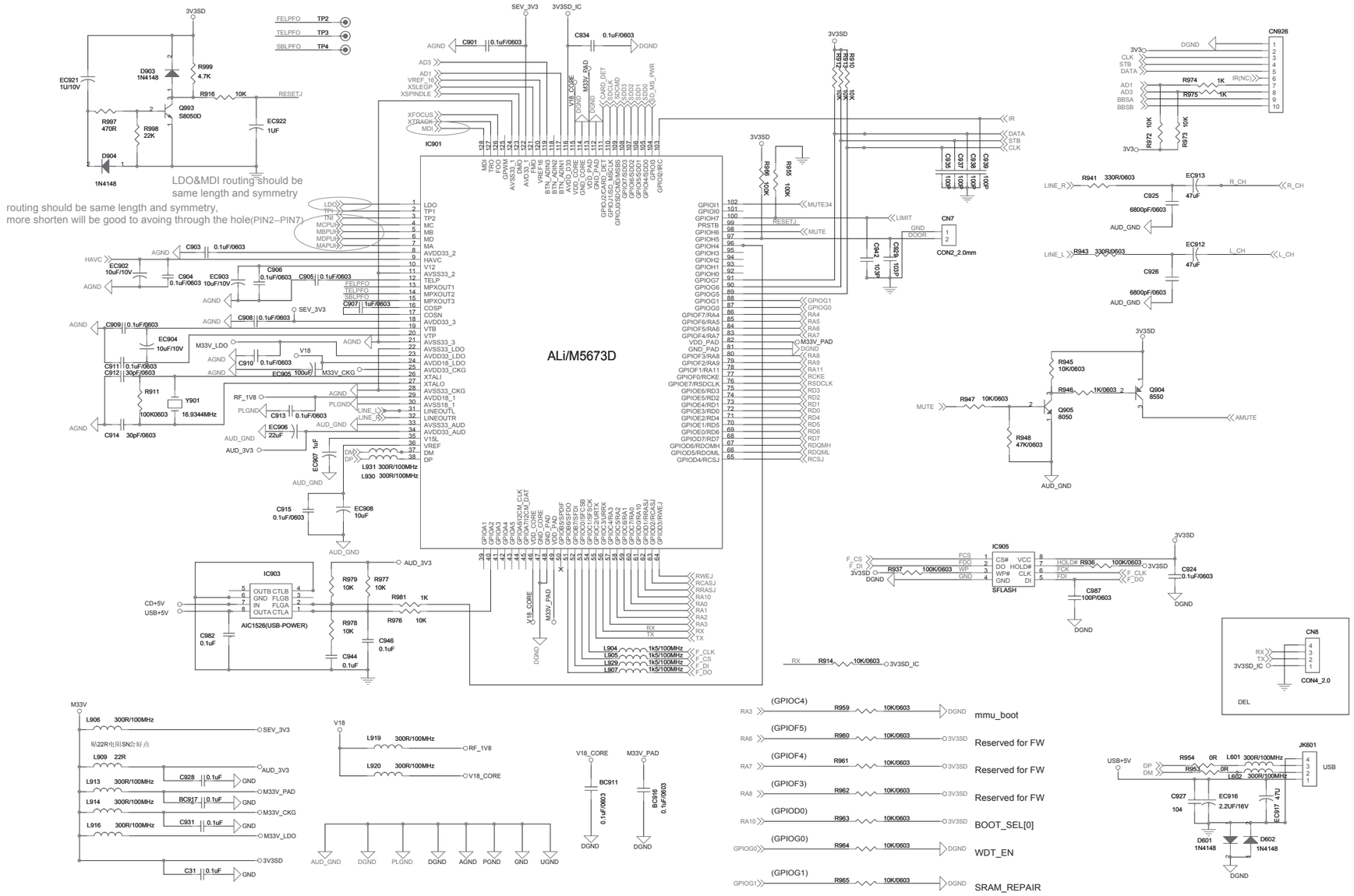
4 - 1

WIRING DIAGRAM



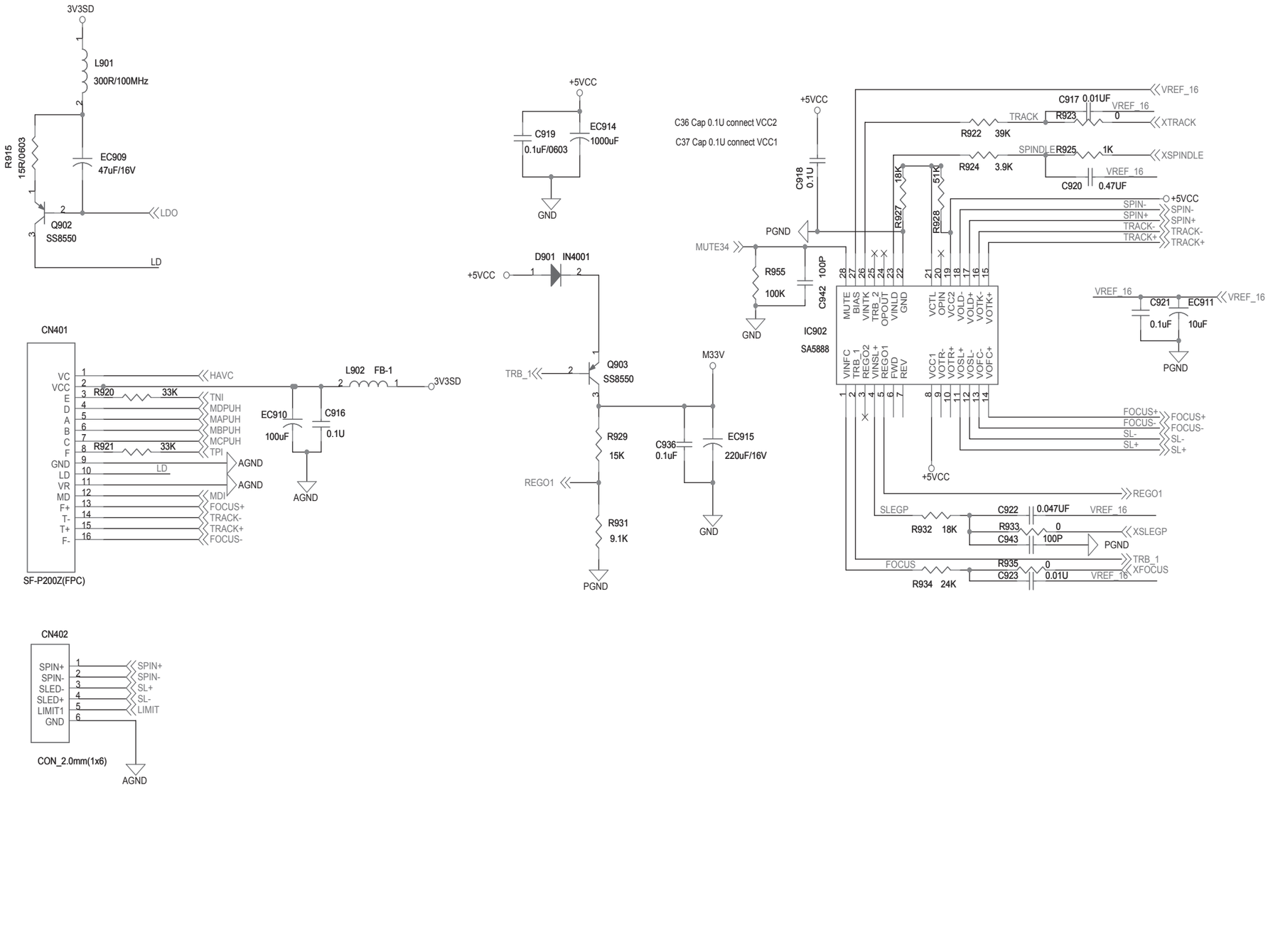
5 - 1

CIRCUIT DIAGRAM-MAIN BOARD
PART 1



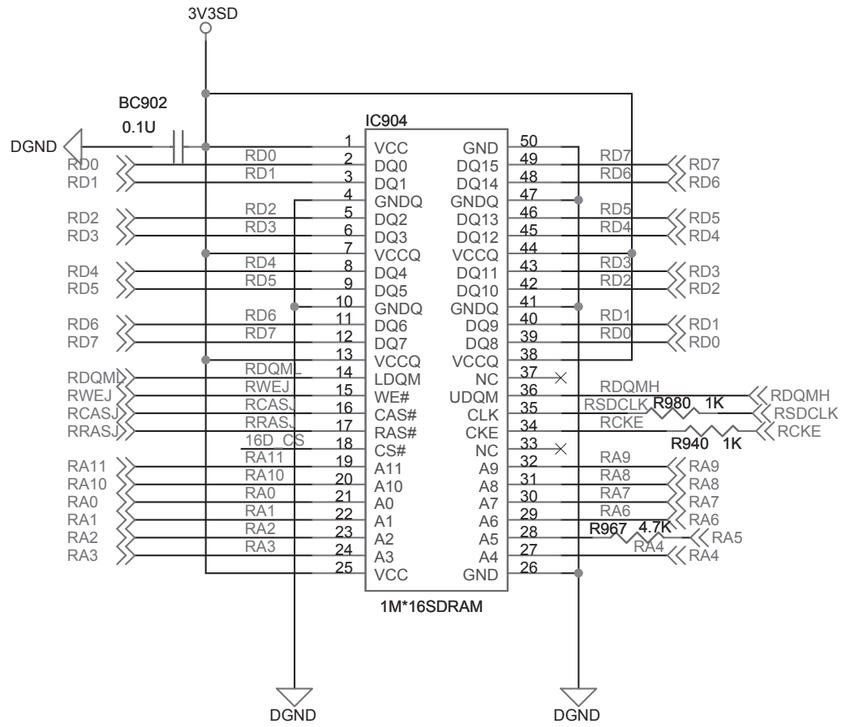
5 - 2

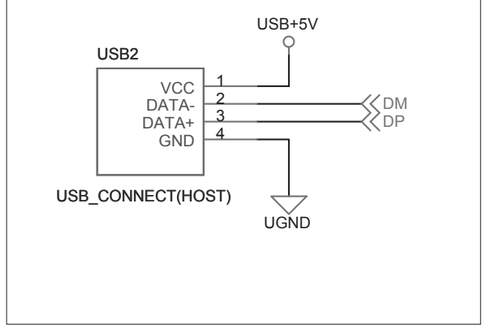
CIRCUIT DIAGRAM-MAIN BOARD
PART 2



5 - 3

CIRCUIT DIAGRAM-MAIN BOARD
PART 3



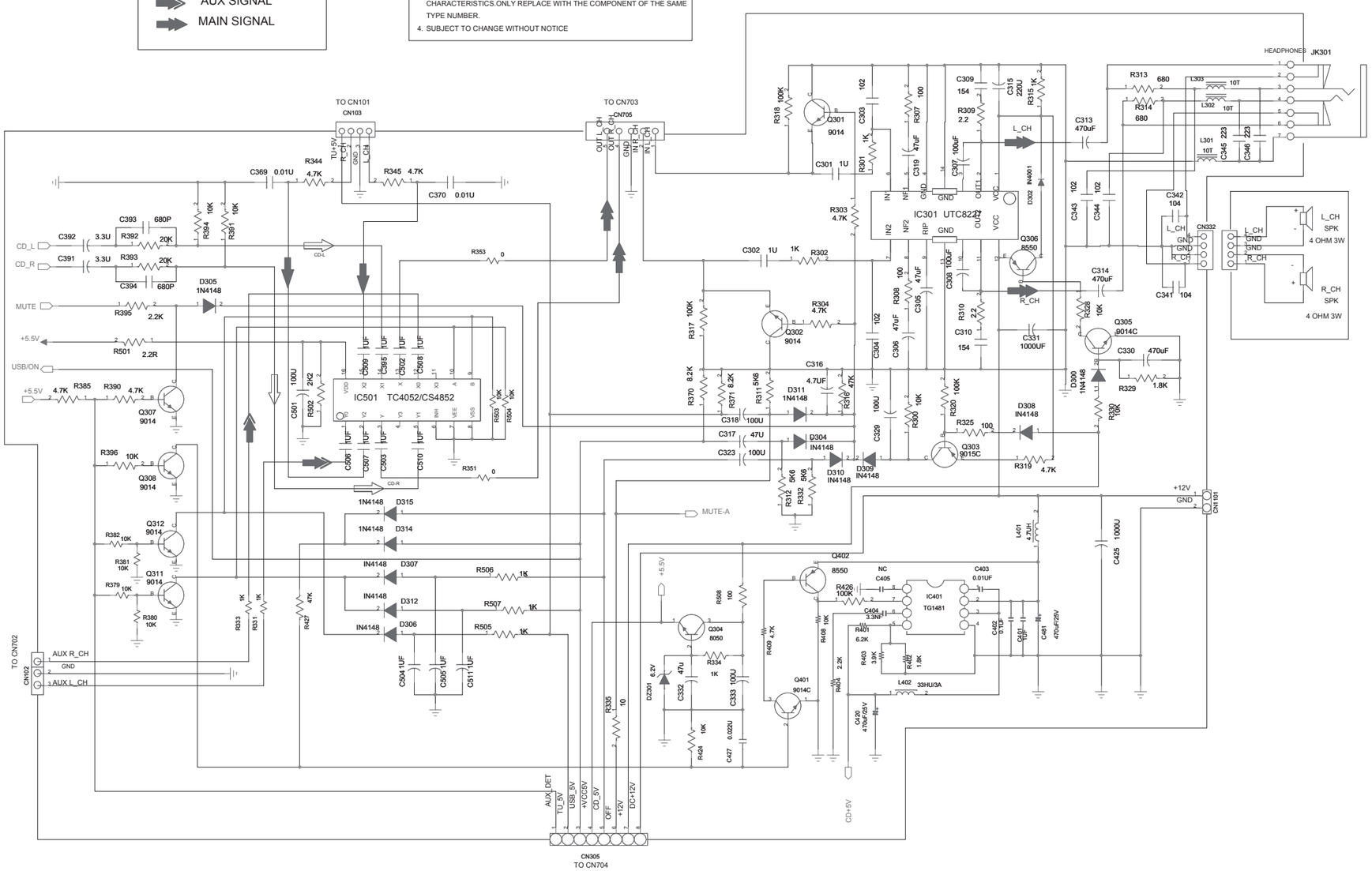


5 - 4

CIRCUIT DIAGRAM-MAIN BOARD
PART 4

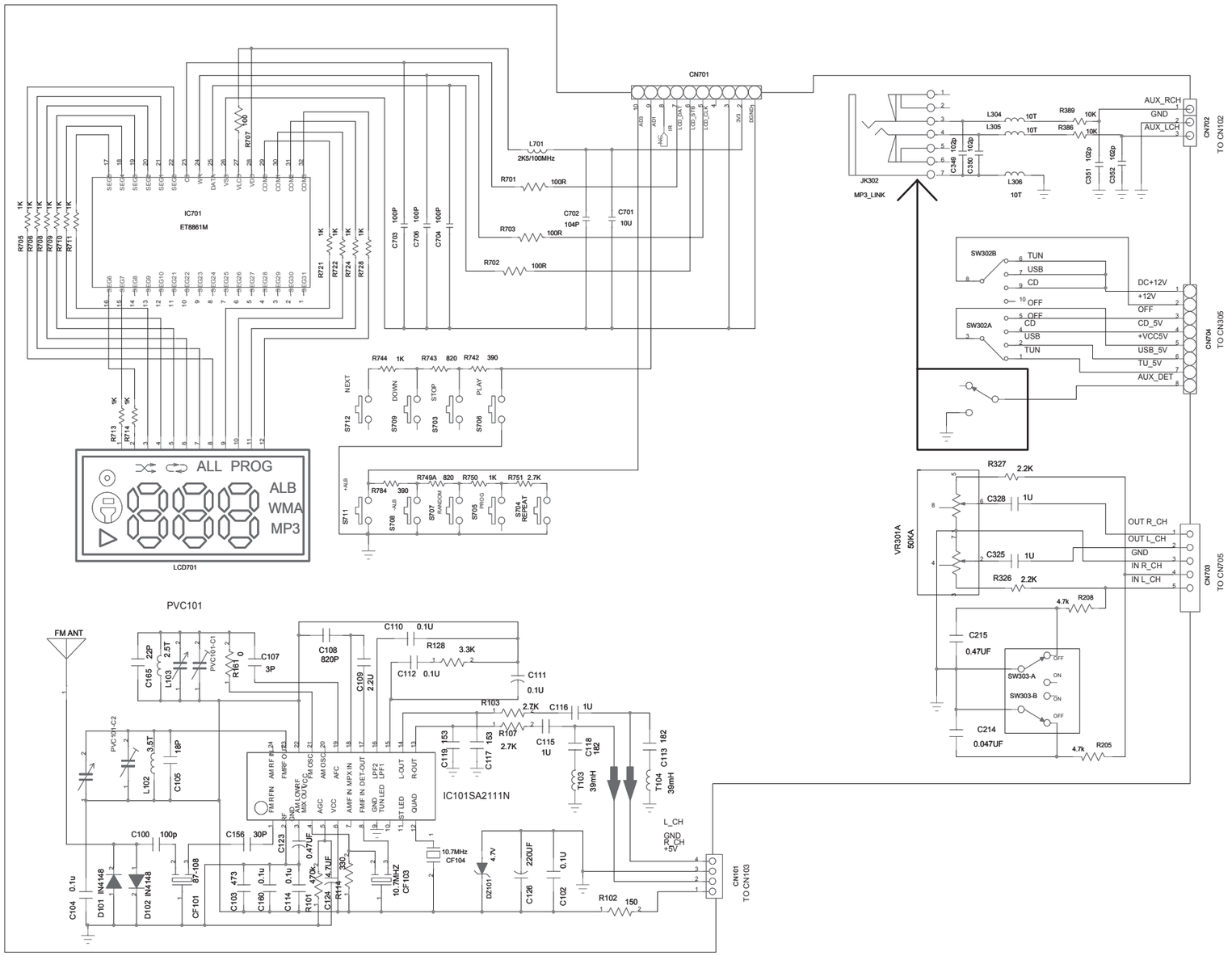
RADIO SIGNAL
CD SIGNAL
AUX SIGNAL
MAIN SIGNAL

1. DISCONNECT POWER CORD BEFORE SERVING
2. RECOMMEND THE UNIT BE OPERATED BY DC 12V VOLTS DURING TROUBLE SHOOTING
3. COMPONENTS MARKED WITH ⚠ HAVE CRITICAL CHARACTERISTICS.ONLY REPLACE WITH THE COMPONENT OF THE SAME TYPE NUMBER.
4. SUBJECT TO CHANGE WITHOUT NOTICE



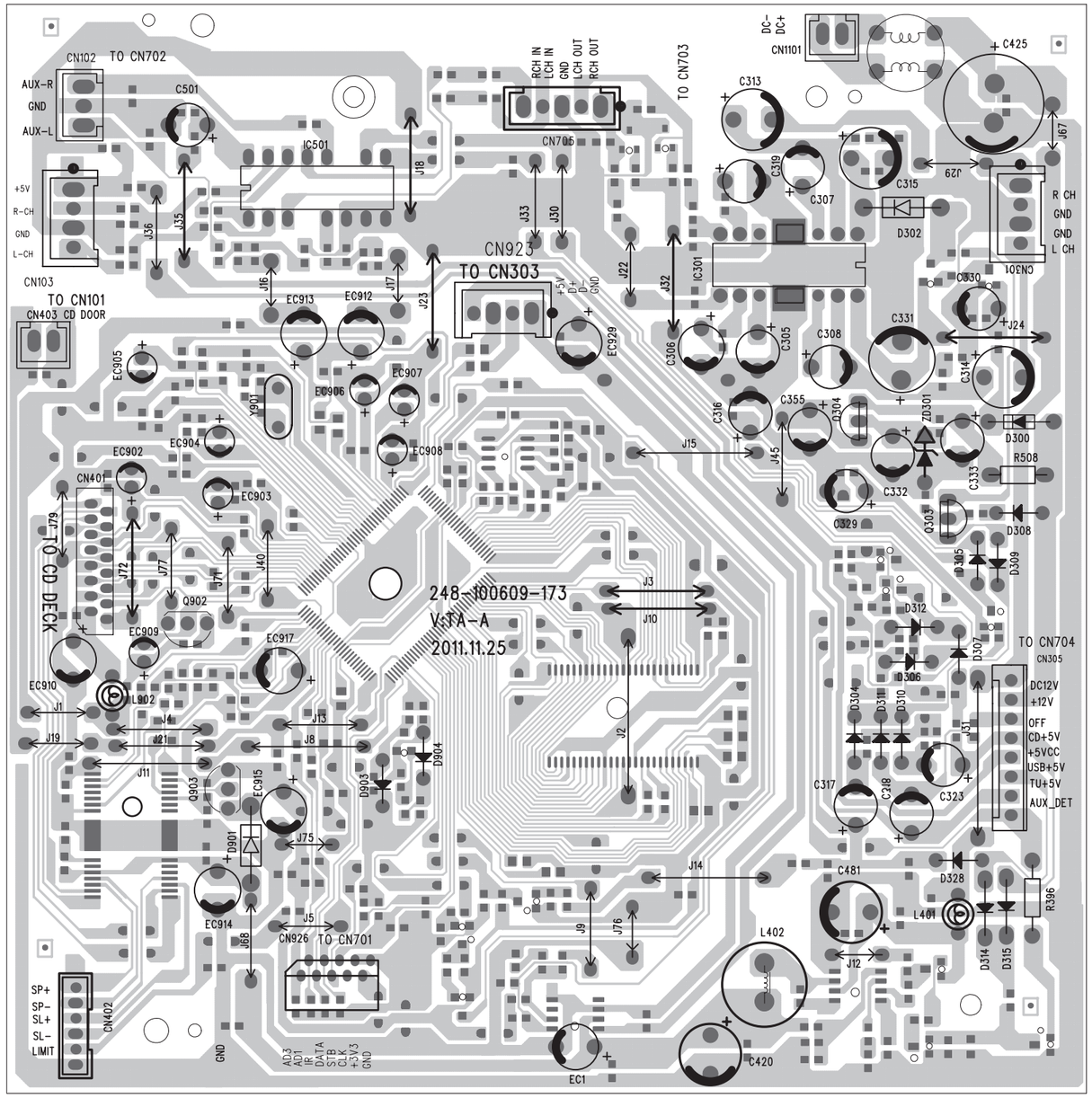
5 - 5

CIRCUIT DIAGRAM-DISPLAY BOARD/TUNER BOARD



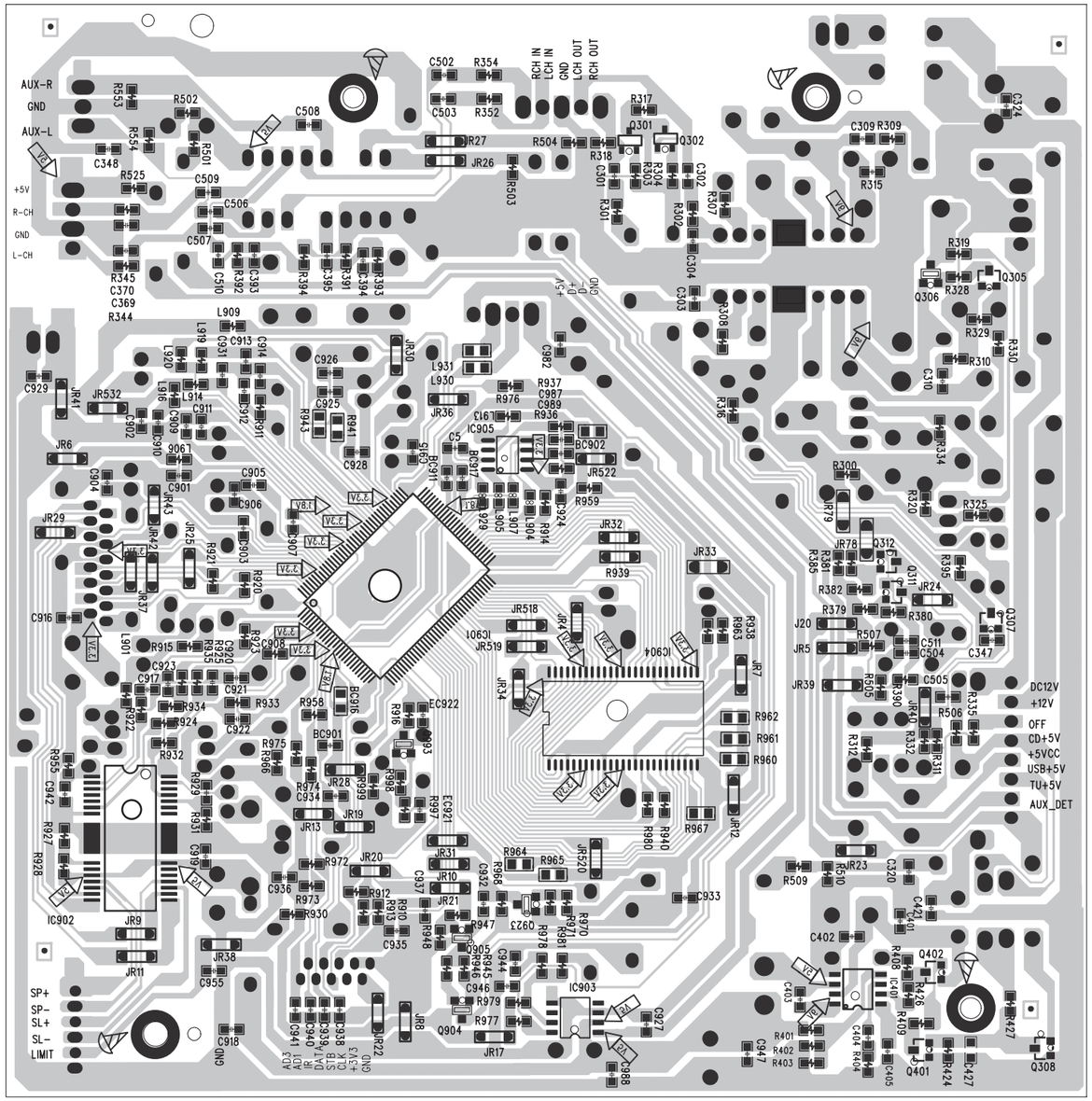
6 - 1

LAYOUT DIAGRAM-MAIN BOARD
TOP SIDE VIEW



6 - 2

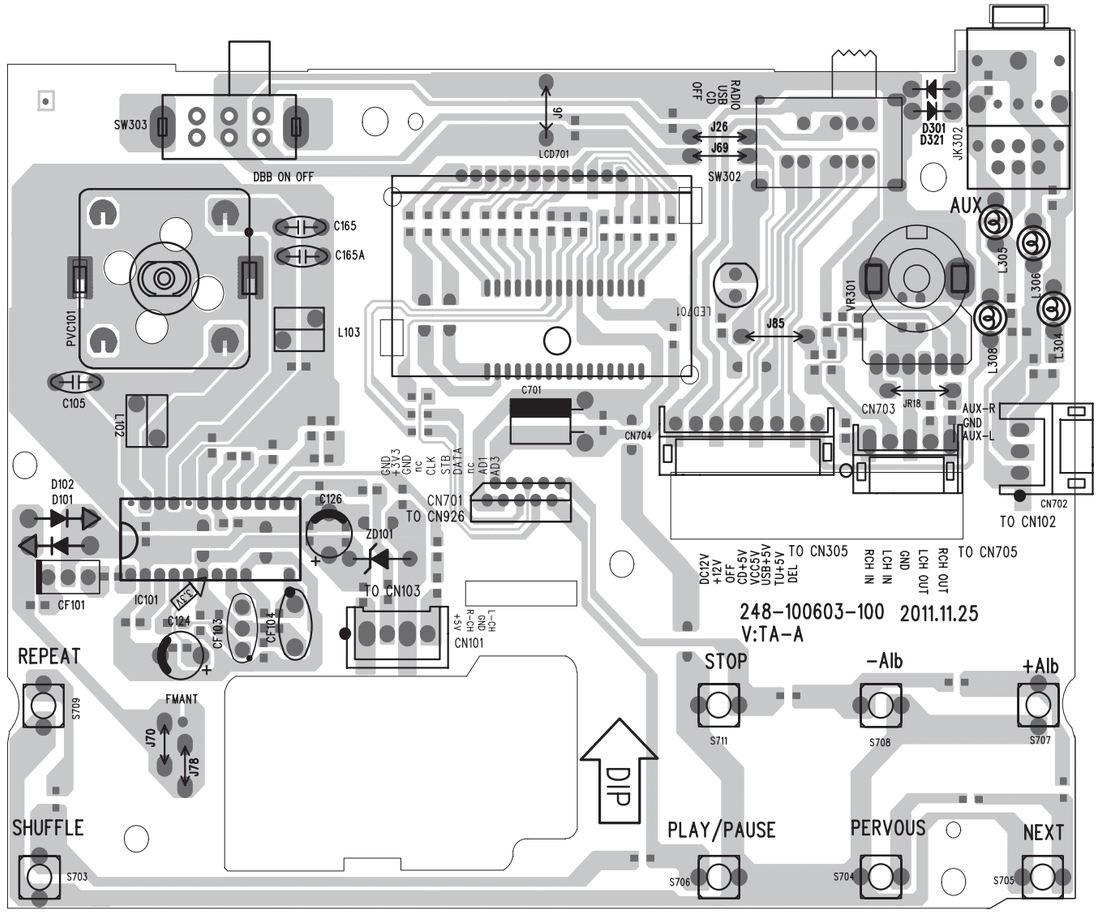
LAYOUT DIAGRAM-MAIN BOARD
BOTTOM SIDE VIEW



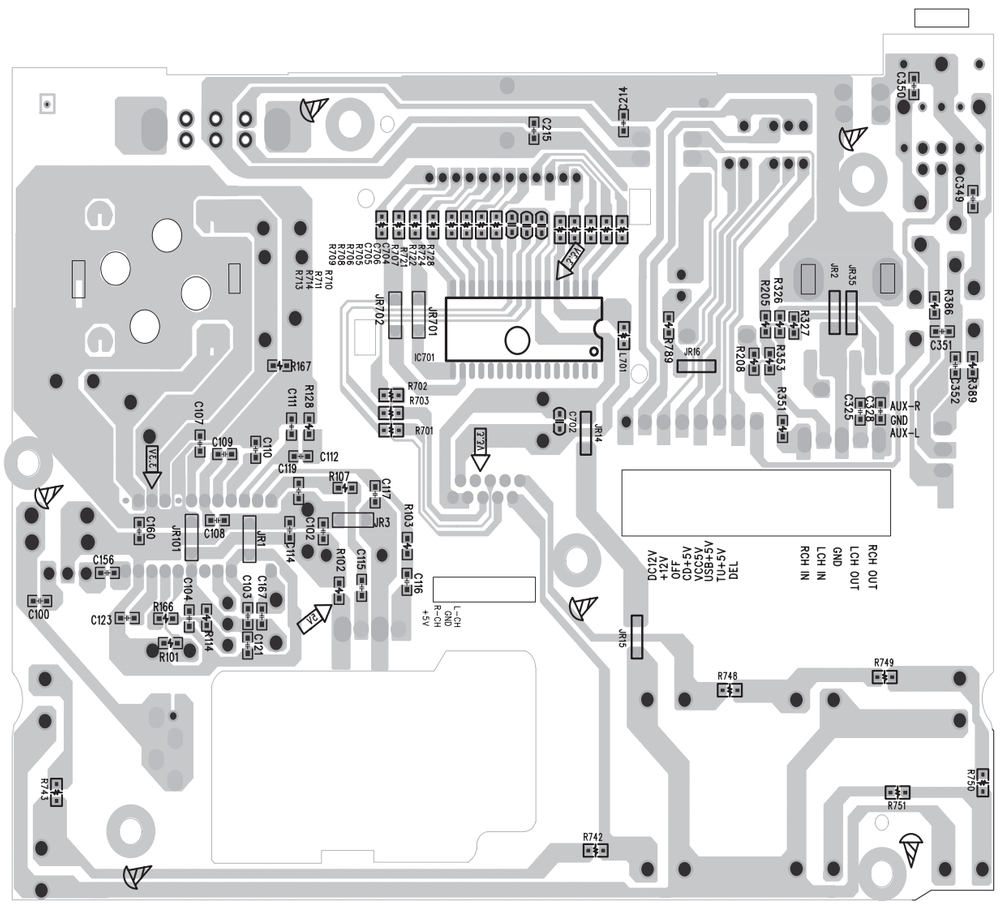
6 - 3

LAYOUT DIAGRAM-TUNER & DISPLAY BOARD

TOP SIDE VIEW



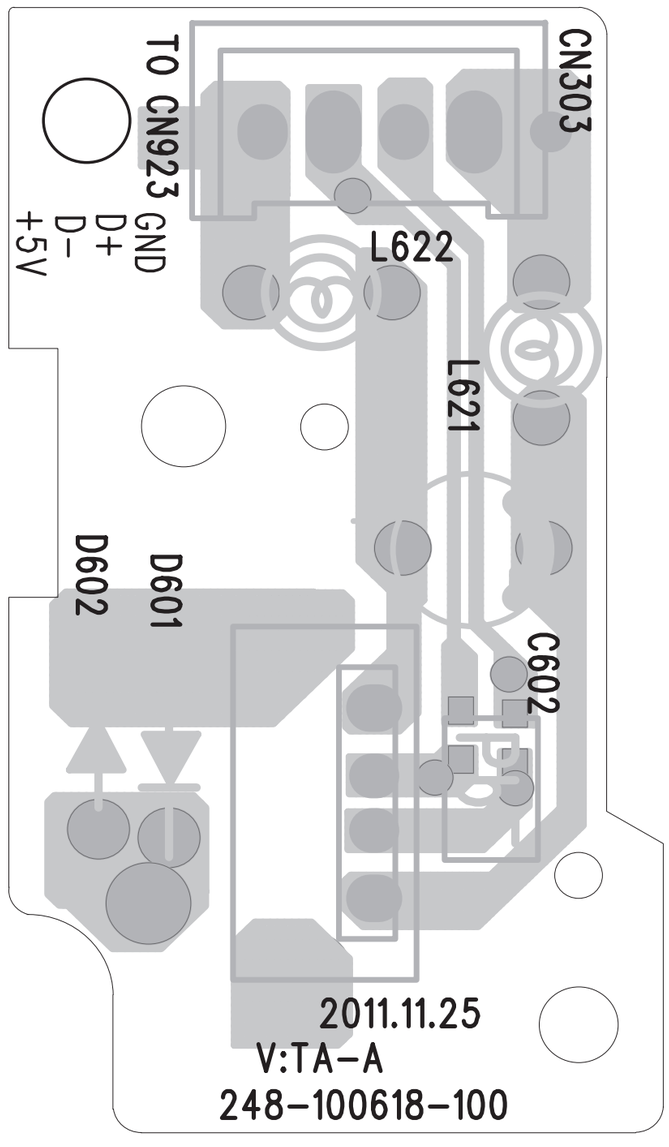
BOTTOM SIDE VIEW



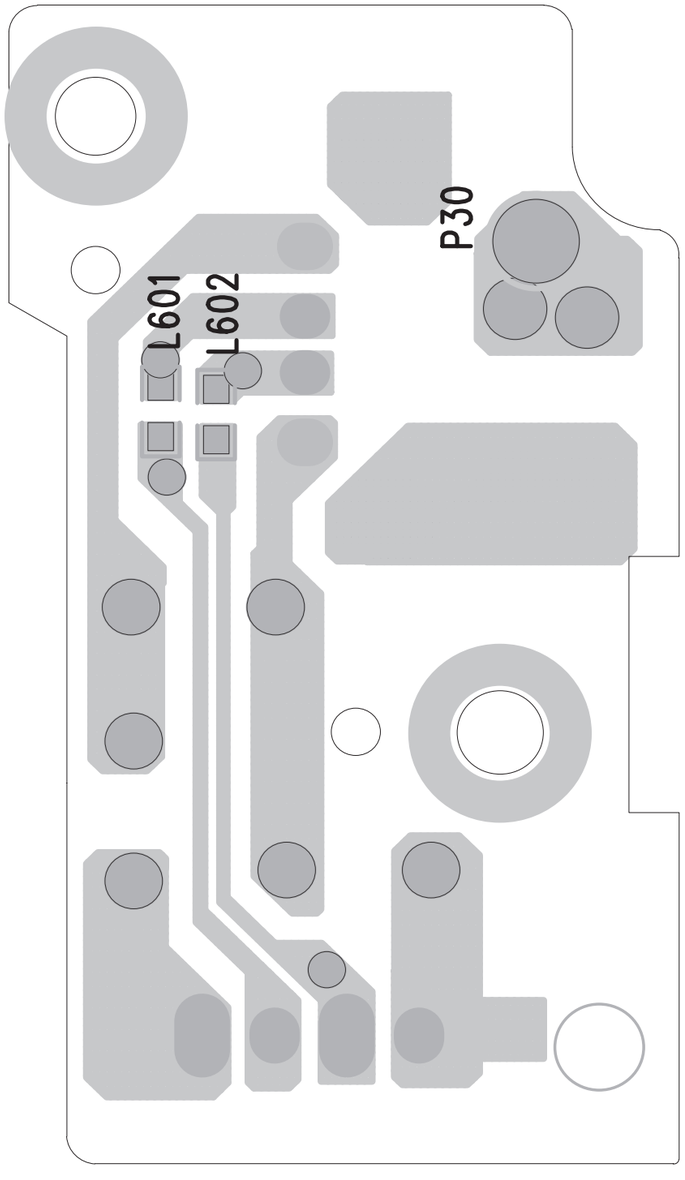
6 - 4

LAYOUT DIAGRAM-USB BOARD

TOP SIDE VIEW

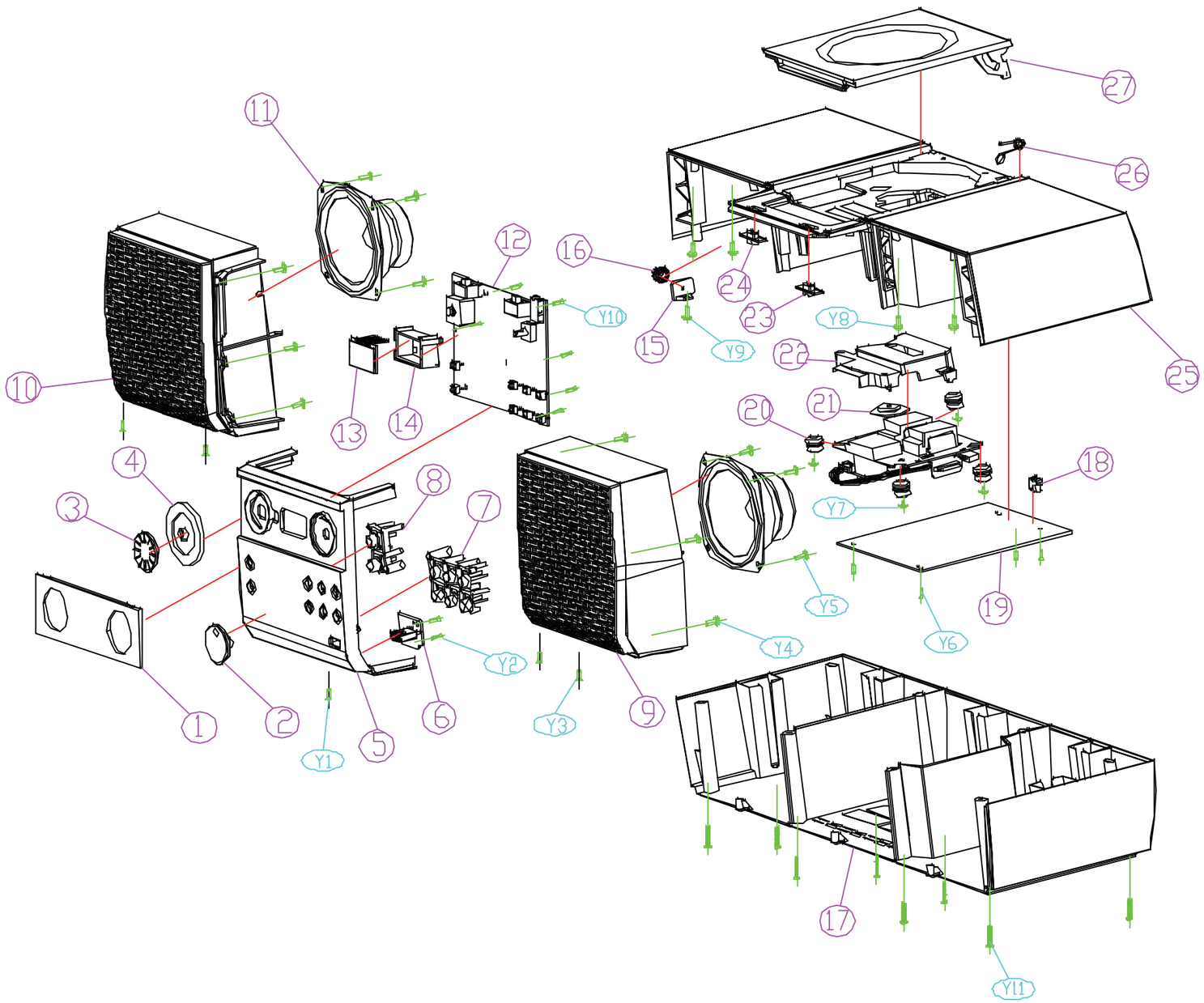


BOTTOM SIDE VIEW



7 - 1

EXPLODED VIEW



Revision List

Version 1.0
* Initial Release

Version 1.1
* Add /93 version

Version 1.2
* Add /51 version

Version 1.3
* Add /77 version on wk1218