

Service
Service
Service



Service Manual



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Published by GD 1151 Service Audio Subject to modification

3141 785 37120

Version 1.0



PHILIPS

VERSION VARIATION

Type /Versions:		AZ1750
Board in used:	Service policy	/12 (APMEA)
CONTROL BOARD		M/C
TUNER BOARD		M/C
MAIN BOARD		M/C
Type /Versions:		AZ1750
Features	Feature diffrence	/12
RDS		
VOLTAGE SELECTOR		
ECO STANDBY - DARK		
<p>* TIPS : C -- Component Lever Repair. M -- Module Lever Repair √ -- Used</p>		

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Subscr.



	3Description	Pos.	Description	Pos.
		1	SPEAKER GRALLE (LIFT)	
		2	TOP CABINET	
		3	FRONT CABINET	
		4	BACK CABINET	
		5	POWER KNOB	
		6	DISPLAY LENS	
		7	TUNING KONB	
		8	OPEN KNOB	
		9	CD FUNCTION KNOB	
		10	DBB KNOB	
		11	VOL KNIB	
		12	FUNCTION PUSH KNOB	
		13	PROG KNOB	
		14	SPEAKER GRALLE (RIGHT)	
	15	CD DOOR		
Battery location				

CABINET			
Dimensions with Boxes (W x D x H): 416x131x236 mm	Material	ABS/HIPS	33
Dimensions without Boxes: 416x131x236 mm (W x D x H)	Finishing:		34
Weight (including packing):. 1.8 kg	Unit in Mastercarton:	N/A	35
Weight (excluding packing and batteries): 1.5kg	Units in Dealercarton:	1 set	36

INTERCONNECTION POSSIBILITIES			
Pos.	Connection/Function	Connector type	Electrical data (input or R.O.P)
37	DC Jack		
38	Aux in jack		
39			
40			
41			
42			
43			
44			
45			
46			

ACCESSORIES :	
(1) AC CORD	47

REMARKS :

2011-04-01		1	CD/FM/MP3-LINK	SET SPECIFICATION		
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		3				
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General description: AZ1750- PORTABLE CD SOUNDMACHINE TUNER										1	
LIFETIME : 5 YEARS (ACC. TO UAN-D1611)										2	
PERFORMANCE CLASSES :											
	TUNER	SUPPLY, AMPLIFIER	SPEAKER BOXES	RECORDER	CLOCK	CD	DCC	TELEPHONE	REC. PLAYER		
I	X	X		X						3	
II						X				4	
III										5	
SAFETY REQUIREMENTS:										6	
IEC 60065:2001(SEVENTH EDITION)+AI:2005-----SAFETY											
RADIATION, IMMUNITY REQUIREMENTS: (EMC)										7	
EN55013:2001+A1:2003+A2:2006;EN55020:2007 EN61000-3-2:2006+A2:2009;EN61000-3-3:2008											
EN61000-4-5:2006; EN61000-4-11:2004											
CLIMATIC REQUIREMENTS: (acc. to UAN-D1590)										8	
All climates: -10 °C till +50 °C (Functional); Set has to be pre-conditioned for 2 hour, except CD function											
For all measurements: 25 °C										9	
POWER SUPPLY:											
MAINS (AC) operation					DC (int. or ext.) operation / Backup Buffer						
Voltage selection:					Battery type:						10
Selection: See table below											11
Frequency:					External DC: YES						12
POWER CONSUMPTION:											
Standby: Less than <0.5W					Standby:						13
Maximum: 7 W					Maximum:						14
General:											
Q and R according to production division rules :					Q ≤ 1% (Major), Q ≤ 4% (Minor)						
Measured according to:					R < 3% (CE52)						
DERIVED VERSIONS:										APPROBATION	
Version	Voltage on typeplate	Tolerance	Frequency	Tuner							
12	230V ± 10%, 50Hz	± 10%	50Hz	FM,							
REMARKS:										16	
TUNER PART											
TECHNICAL description:											

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		(circuitry)	FM	(active components)				FM	
	RF			SA2111		SA2111		1	
	IF			SA2111		SA2111		2	
	Detector		QD					3	
	Decoder					SA2111		4	
GENERAL part:									
	WAVE RANGE			TOLERANCES			TUNING		
	FM	87.5MHz - 0.3 MHz				1MHz		5	
		108MHz + 0.5 MHz				1MHz		6	
								7	
								8	
								9	
								10	
AERIAL:									
				FM telescope	-	540 mm		12	
	FM	wire	: N/A	Execution	-	Rotational 180°		13	
INDICATORS:									
	Pointer stroke:			Execution pointer:				14	
	Knob indication over:			Field Strength:				15	
ELECTRICAL DATA:									
	AM:	nom.	limit	FM:	nom.	limit			
				-3dB limiting point	20	26 dBf		16	
				Amplification reserve	0	-4 dB		17	
				AFC holding range	-			18	
				Distortion (RF 1mV, Δf 67.5kHz)	1	7 %		19	
				Stereo -46dB quieting	48	52		20	
								21	
								22	
				Cross-talk (RF 1mV, Δf 40kHz, 1kHz)	25	20 dB		23	
				IF				24	
	wave range	Sensitivity for 50mW		noise limited sensitivity (26dB)		Image rejection	IF rejection	large signal	
	FM	nom.		18		24	55	122dB f	25
		lim.		22		20	50	111dB f	26
									27
									28
									29
									30
									31
	unit	μV/m	μV	dBf	dBμV/m	dBf	dB	dB	mV/m
REMARKS:									

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SUPPLY, AF-AMPLIFIER & LOUDSPEAKER (Boxes) PART:

TECHNICAL description:		Power supply	Tone Control	AF-Amplifier	Loudspeaker	
Active components				UTC8227		1
Passive components					2 X 8Ω, 2W	3
						4
GENERAL part:						
Aux in jack type		Ø 3.5mm				5
Loudspeaker filter, high pass		None				6
Loudspeaker filter, low pass		None				7
Power stage protection		Temperature – YES; Short circuit – YES				8
Public address		No				9
INDICATORS:						
Output power or VU-meter		No				11
Frequency response		No				12
Low power (battery)		No				13
						14
ELECTRICAL DATA:						
TONE/EQUALIZER/DBB						
DSC		Balance control			No	15
		Mechanical noise (ISO 1996)				16
		Noise overall (ISO)				17
		Channel difference at -46dB			Type: < 3 dB	18
		Hum (vol.max.-20dB to vol.min.)			Limit: 2mV	19
		Residual noise(volume min)			Limit: 2mV	20
DBB on (Vol.max.-20dB): 100Hz, +6dB (±2dB) w.r.t. 1kHz at DBB on				DBB has no dynamic, fixed to 6dB		21
DBB off (Vol.max.-20dB): 100Hz, -2dB (±2dB) w.r.t. 1kHz at DBB on						22
Input sens.:Nom.	500	mV				23
for 50mW Limit:	600	mV				24
Line outp.: Nom.		mV				25
voltage Limit:		mV				26
OUTPUT POWER:						
Mains operation:	D=10%	2 X 1W 8Ω		Limit: -1dB		27
						28
Music power (MPO) / (PMPO):	(acc. to DIN45324)					29
Short term maximum output power:	-		(acc. to IEC 60268-15)			30
Long term maximum output power:	-		(acc. to IEC 60268-15)			31
Headphone output voltage/power:	n.a.					32
Bandwidth FTC – 1dB at:	n.a.		(acc. to FTC/16/1/D/432)			33
Bandwidth DIN – 3dB at:	-		(acc. to IEC 60268-15)			34
Frequency response at Vol. max – 20dB:	typ. 60Hz to 20kHz (±3dB)					35
LOUDSPEAKER (output):						
Low pass crossover frequency:	-	kHz	tolerance:		Hz	36
High pass crossover frequency:	-	kHz	tolerance:		Hz	37
Short term maximum output power:	-	W	(acc. to IEC 60268-15)			38
Long term maximum output power:	-	W	(acc. to IEC 60268-15)			39
Frequency response at:	- -	Hz			kHz	41
REMARKS:						
27 : Measured in Tuner mode;						
28: CD or Tape mode.						

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		CD/FM/MP3-LINK		SET SPECIFICATION			
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TAPE function: (ECO-MTF-PA-SD-MS (FE) Module)

General description:

					1
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Mechanical specification:

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					10
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					18
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					20

Indicators:

Recording level	No	21
Play back level	No	22
Tape counter	No	23

Electrical data:

Bias system FM/AM		24
RIF switch	No	25
Erase system FM/AM		26
Erasing damping		27
Channel separation (IEC1)		28
Track separation (IEC1)		29
Frequency response (PB)		30
SNR 250nWb/m		31
Signal/hiss 250nWb/m		32
Signal/hum 250nWb/m		33
Channel difference (PB)		34
Distortion 250nWb/m		35
ALC attack time		36
ALC release time		37
Crosstalk	Between forward to reverse track	38

REMARKS: 31: * not according to PQR clause 18.5 class I
 31: ** Chromium performance not fulfilled

Amplification Reserve for Tape = 1dB ±2dB
 For details, please see specification SH-190 of ECO-MTF-PA-SD (3140 117 14890).

CD-PART: (CD MECHAISM-DA11B3VF)(SANYO)

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Technical description:					
	Input	Output	Motor/control	Logic control	1
Active components			MMSA9258(Mitsumi)	BU24530	2
Passive components					3
	Signal processing		HF-preamplifier	Servoprocessor	4
Active components				BU24530	5
Passive components					6
Indicators/Display/Keys:					
Display: Digits LCD for Track No. display					7
Keys: one 4-position slider switch, 6 tact switches on unit, 6 for CD-: Play, Stop, Previous/Search down, Next/Search up, Program/Program review, CD-modes (Repeat/Shuffle)					8
Playability: (acc. To AR 30-05-239)					
	Limit	Typical	Testdisc		9
Wedge	500 μm	700 μm	TNO 7,9 of SBC 444A (7104 099 24990)		10
Eccentric	150 μm	200 μm	TNO 1,24 of 200μm disc (7104 099 24960)		11
Fingerprint	No audible defect		TNO 11of Subchassis 8A		12
Black dot	500 μm	600 μm	TNO 13 of SBC 444A (7104 099 24990)		13
Skew 0.6mm	No audible defect		TNO 1,6 of 0.6mm skew (7104 099 28260)		14
Bad HF track	No audible defect		TNO 8 of Subchassis 8A		15
Heavy fingerprint	No track jumps/plops		TNO 10 of Subchassis 8A		16
Playback position	Horizontal, Normal position (Set is located on a flat surface, floor)				17
- Playback of above mentioned tracks possible without track loss or audible defects. - Double black dot, max. diameter, thin/thick disk is according to PQR or AR 30-05-239) - This unit can playback (only) CD-R or CD-RW discs. For performance specification, please refer to module specification of CD99 (3103 308 52190)					18
Shock resistance: (acc. to AR 13-A6-CD-068)					
± Z axis	4.5 G				19
± X or Y axis	4.5 G				20
Acoustical noise:					
Mode: Play/Pause	35 dBA max. (45 dbA in Search mode)				21
Mode: Jump (Next)	45 dBA max.				22
AUDIO part: (Measured with Audio Signals Disc-1, 7104 078 04911 on Speakers or Headphone socket with nom. load)					
	Typ.	Limit		23	
Output level (TNO1)				24	
SNR unwt'd.	60 dB	48 dB		25	
SNR wtd. dBA	65 dBA	57 dBA		26	
Crosstalk (1kHz)	40 dB	26 dB		27	
Crosstalk (10kHz)	30 dB	16 dB		28	
Frequency response	+9dB	±2dB at 100Hz		29	
Vol.max.-20dB (DBB on)	+5dB	±3dB at 10kHz			
THD (1kHz, -6 dB)	0.2 %	2 %		30	
THD (10 kHz, -20 dB)	< 1 %	< 3 %		31	
Channel difference	2 dB	3 dB		32	
Frequency accuracy	-	+/-0.5 %		33	
De-emphasis	15μs / 50μs Switchable via Subcode information				34
REMARKS:					
- Amplification reserve for CD = +2dB (±2dB); Ref. Level for CD is a 0dB track instead of a -6dB track.					35

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Feature Specification of MP3 CD

CODEC / COMPRESSION Format Compatibility					
MP3	X				35
MPEG 2.5	X				36
MP3 Pro	X				37
WMA	X				38
AAC	X				39
Playback CAPACITY					
Maximum number of tracks per CD	X				40
Maximum number of albums per CD	X				41
DISC TYPE					
CD-RW	√				42
CD-R	√				43
8 cm	√				44
12 cm	√				45
DISC SIZE (MB)					
185	√				46
225	√				47
650	√				48
680	√				49
700	√				50
ISO-9660 + Joliet					
ISO-9660 + Joliet	X				51
Joliet	X				52
UDF (Direct CD from	X				53
ID3	X				54
Packet writing	X				55
Multi-session CDDA					
Multi-session CDDA	X				56
Multi-session MP3	X				57
Closed session	√				58
Open session	√				59
Finalized disc	√				60
Unfinalized disc	√				61
CDDA + MP3/WMA					
CDDA + MP3/WMA	X				62
MP3/WMA + CDDA	X				63
MP3/WMA + CDDA + MP3/WMA	X				64
CDDA + MP3/WMA + CDDA					
CDDA + MP3/WMA + CDDA	X				65
Video + CDDA	X				66
CDDA + Data	X				67
MP3/WMA + Data	X				68

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BITRATE (kbps)						
64 -192		X				70
8 – 320		X				71
Variable		X				72
Sampling RATE (kHz)						
8		X				73
11.025		X				74
12		X				75
16		X				76
22.05		X				77
24		X				78
32		X				79
44.1		X				80
48		X				81
96		X				82
UPGRADE ABILITY						
MP3		X				83
MP3 Pro		X				84
WMA		X				85
AAC		X				86
SOUND						
Single Channel		√				87
Dual Channel		√				88
Stereo & joint Stereo		√				89
Intensity Stereo		√				90
MS Stereo		√				91
LANGUAGE SUPPORT						
English		X				92
Chinese		X				93
Playlist Compatibility						
WinAmp		X				94
Realjukebox		X				95
MS Mediaplayer		X				96
MusicMatch		X				97

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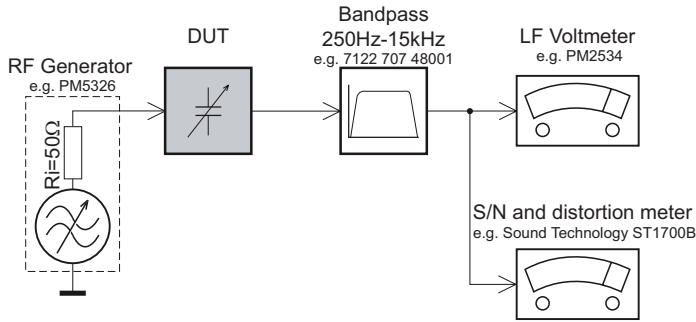
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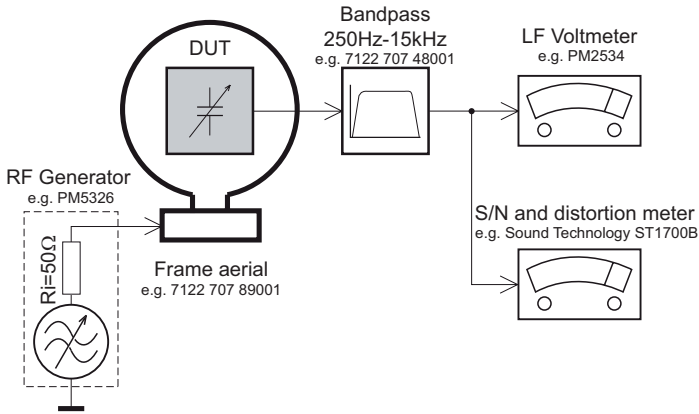
MEASUREMENT SETUP

Tuner FM



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

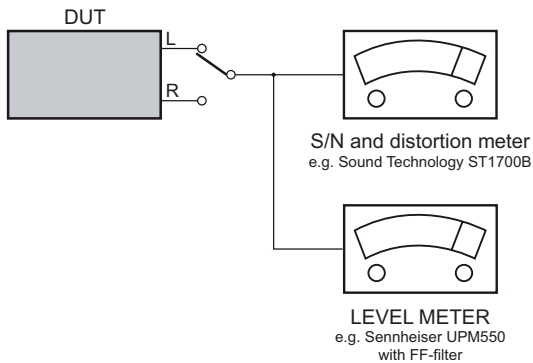
Tuner AM (MW,LW)



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 250Hz) to eliminate hum (50Hz, 100Hz).

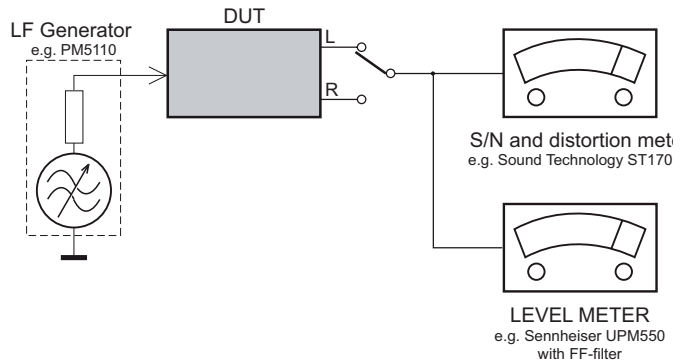
CD

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



Recorder

Use Universal Test Cassette Cr02 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".

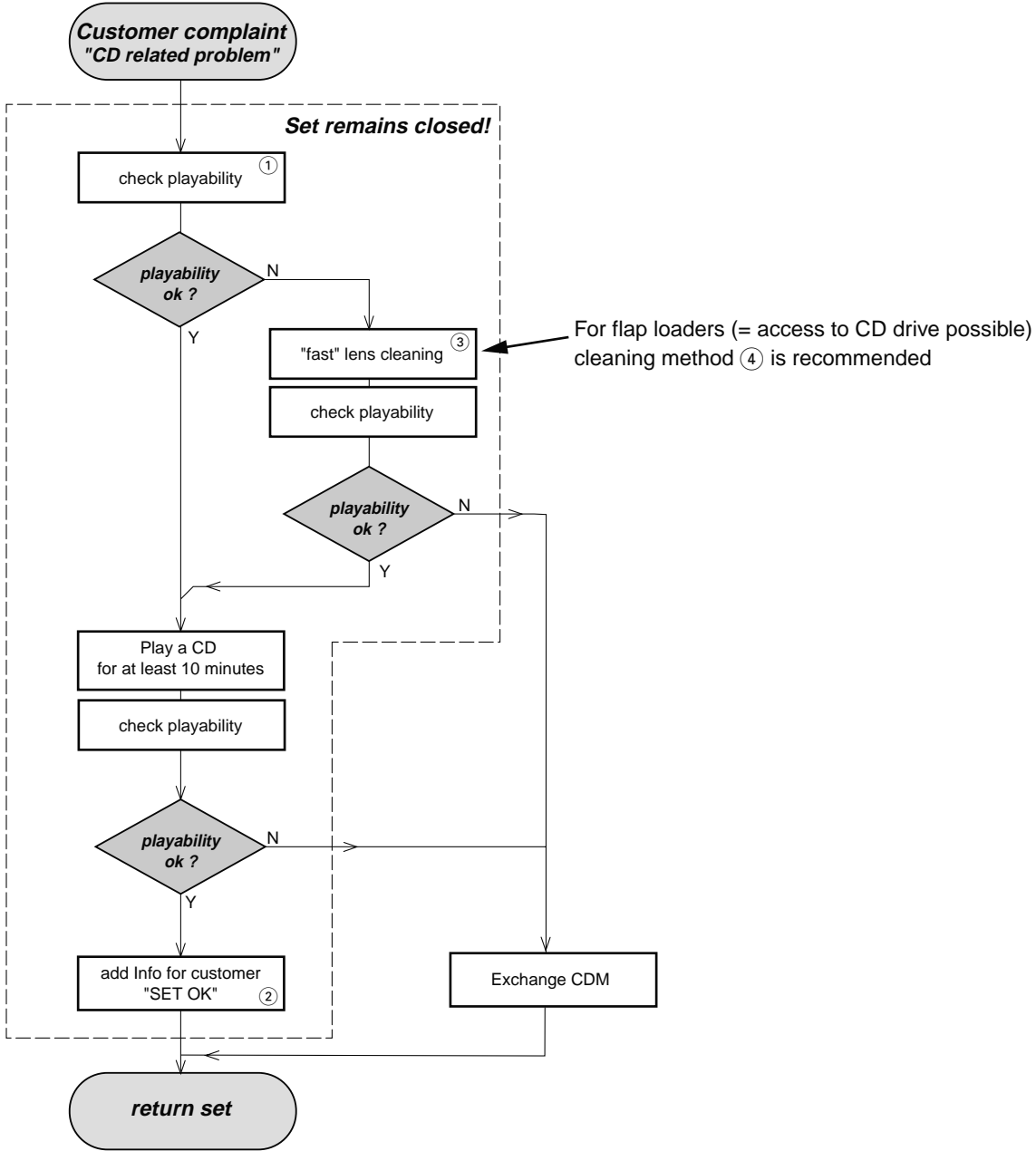
For additional questions please contact your local repair-helpdesk.

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



For flap loaders (= access to CD drive possible) cleaning method ④ is recommended

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 Disc7104 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 ≥ 10 seconds
 Black dot from 00:50 to 01:10
- jump forward/backward (search) within a reasonable time

For all other sets
 use CD-DA SBC 444A4822 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 ≥ 10 seconds
 Fingerprint ≥ 10 seconds
 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

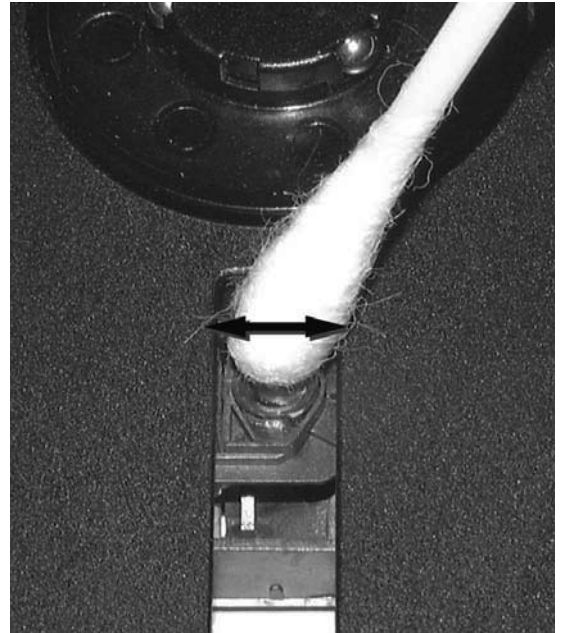
LIQUID LENS CLEANING

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.

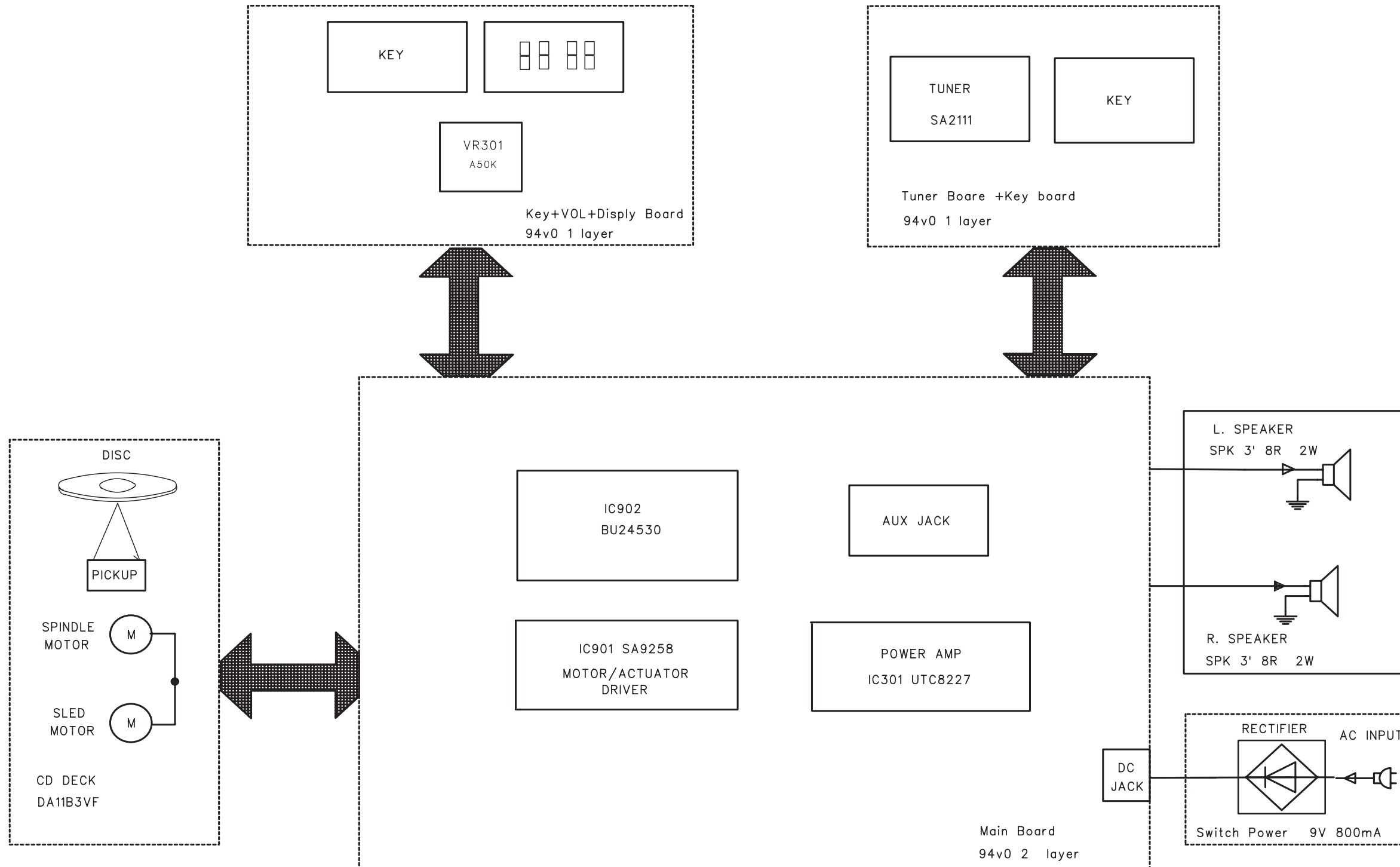
Because the material of the lens is synthetic and coated with a special anti-reflectivity layer, cleaning must be done with a non-aggressive cleaning fluid. It is advised to use "Cleaning Solvent"

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.

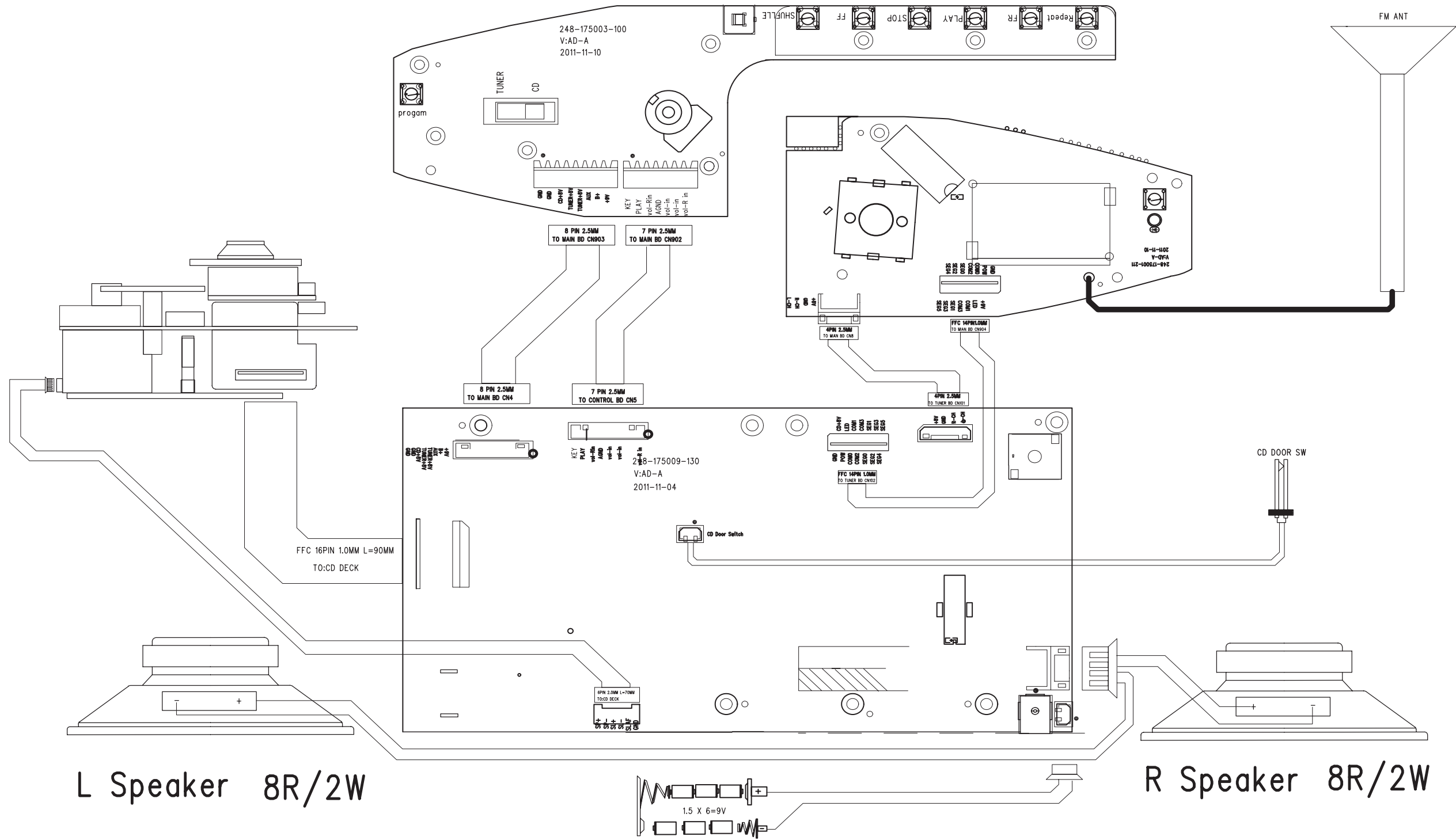
The direction of cleaning must be in the way as indicated in the picture below.



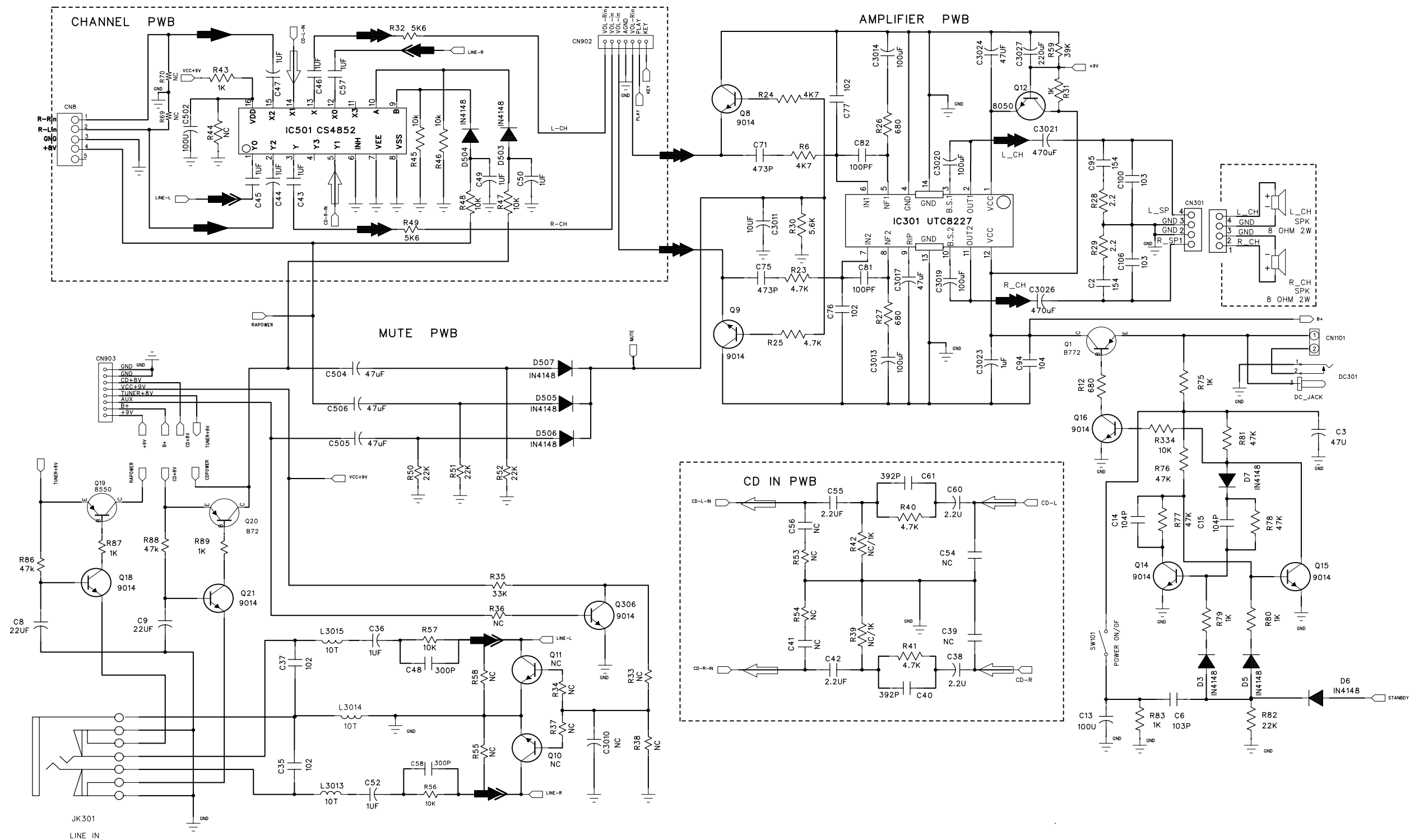
BLOCK DIAGRAM



SET WIRING DIAGRAM

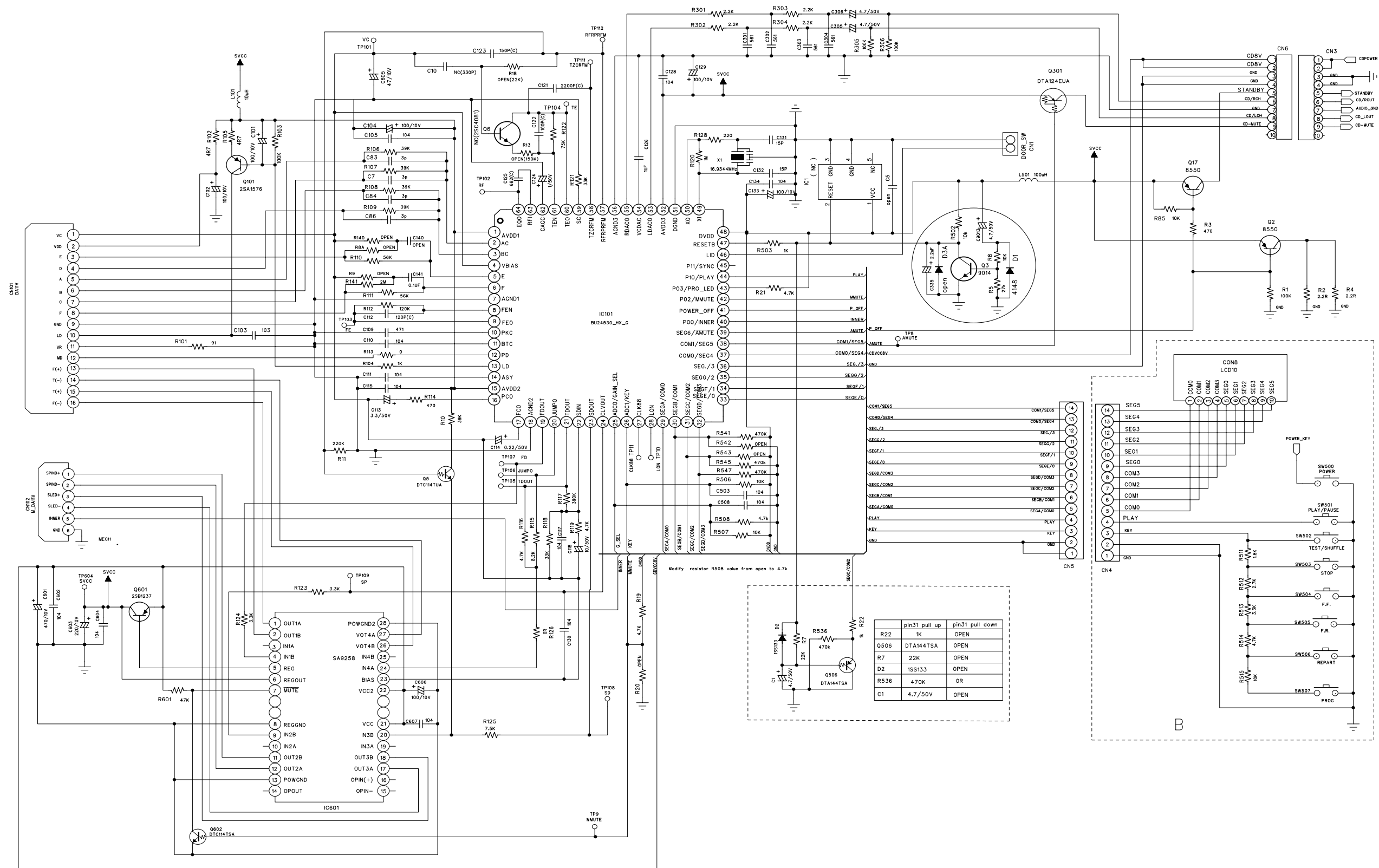


CIRCUIT DIAGRAM-MAIN BOARD/TUNER BOARD/CONTROL BOARD PART 1



LINE IN JACK PWB

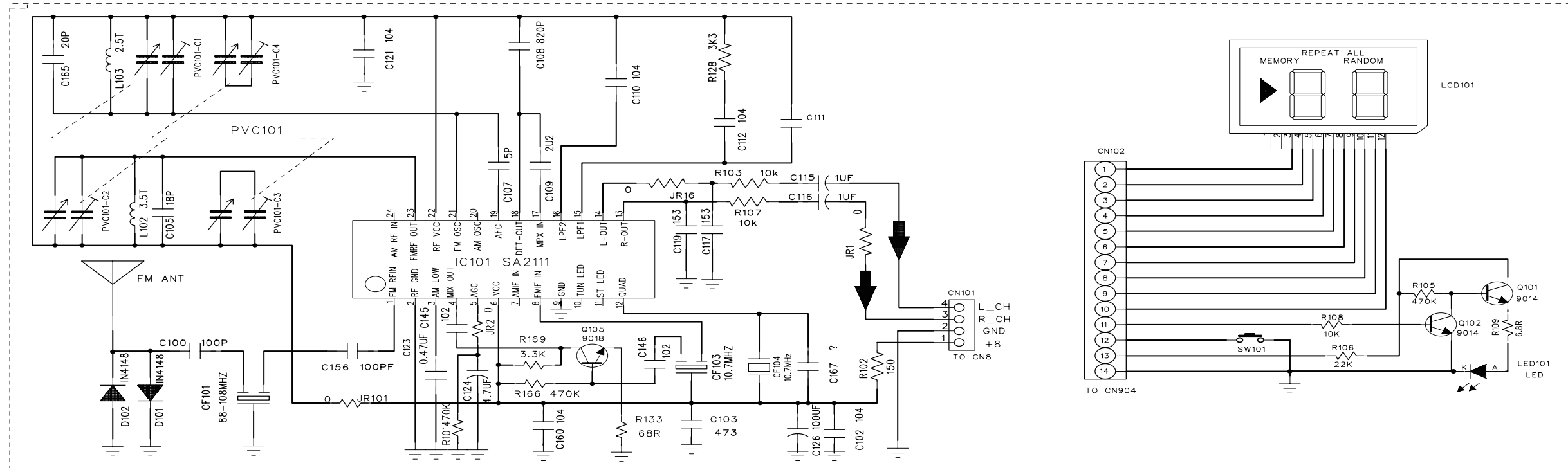
**CIRCUIT DIAGRAM-MAIN BOARD/TUNER BOARD/CONTROL BOARD
PART 2**



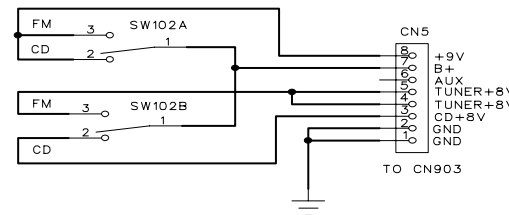
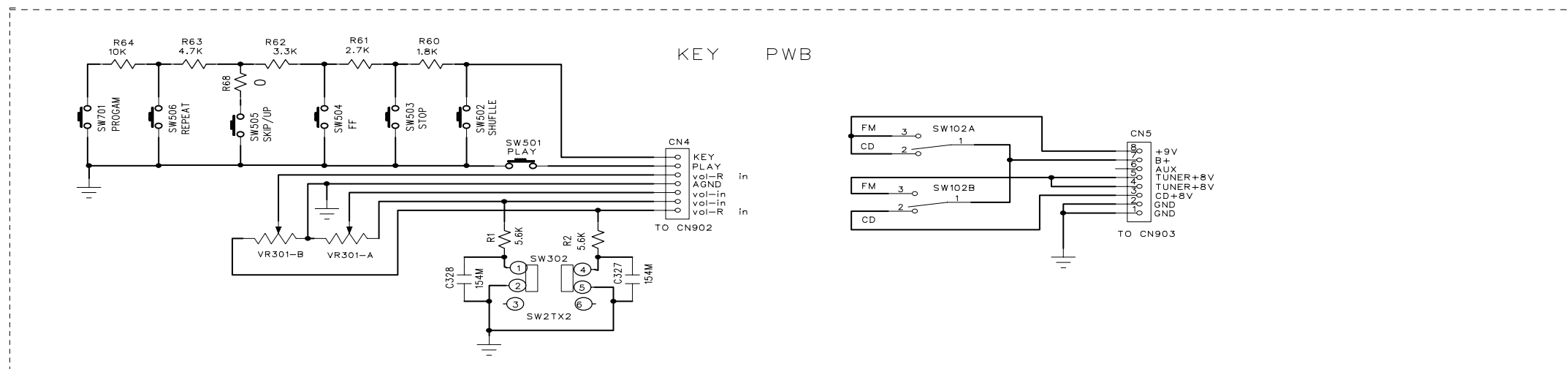
CIRCUIT DIAGRAM-MAIN BOARD/TUNER BOARD/CONTROL BOARD PART 3

TUNER PWB

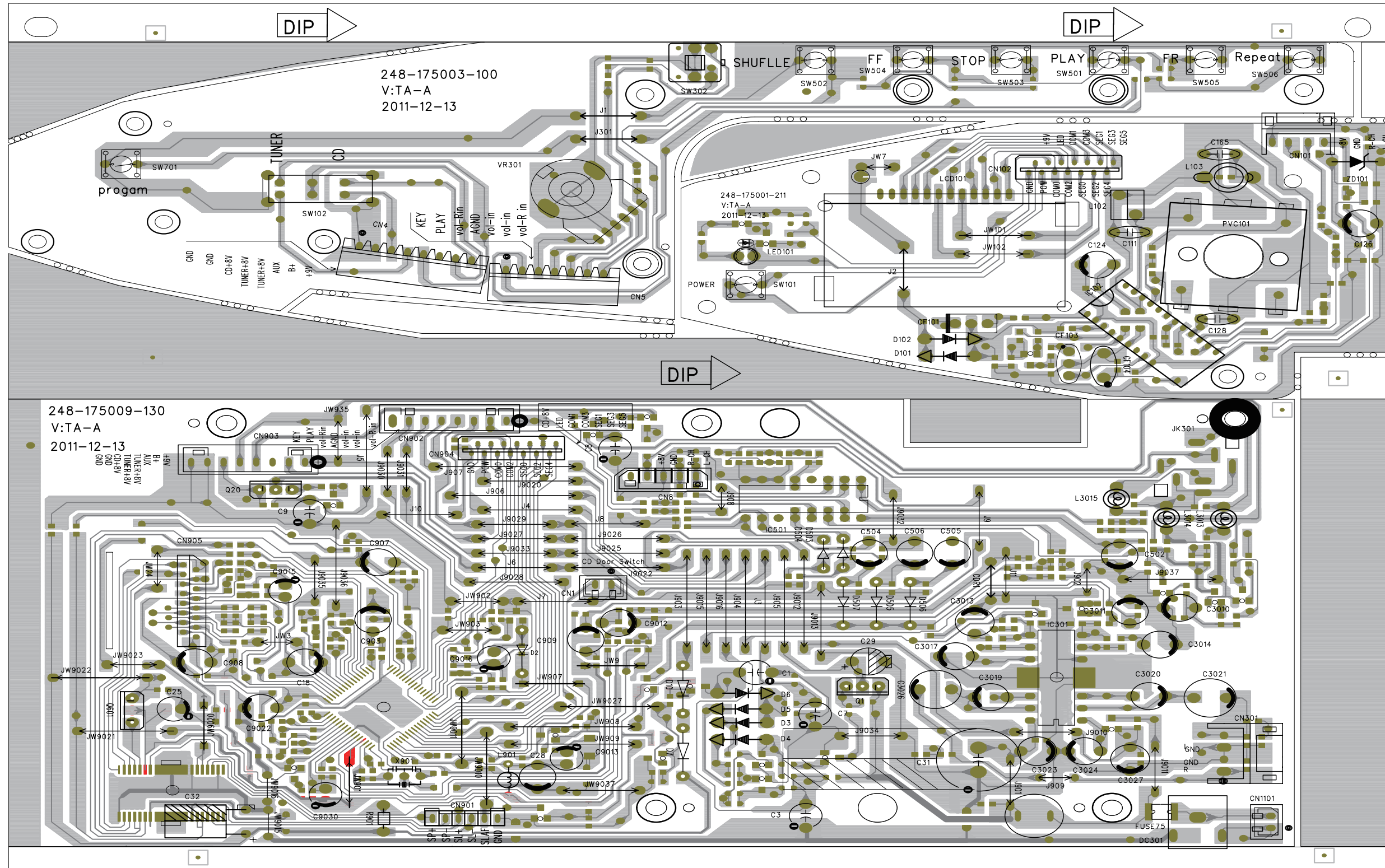
DISPLAY PWB



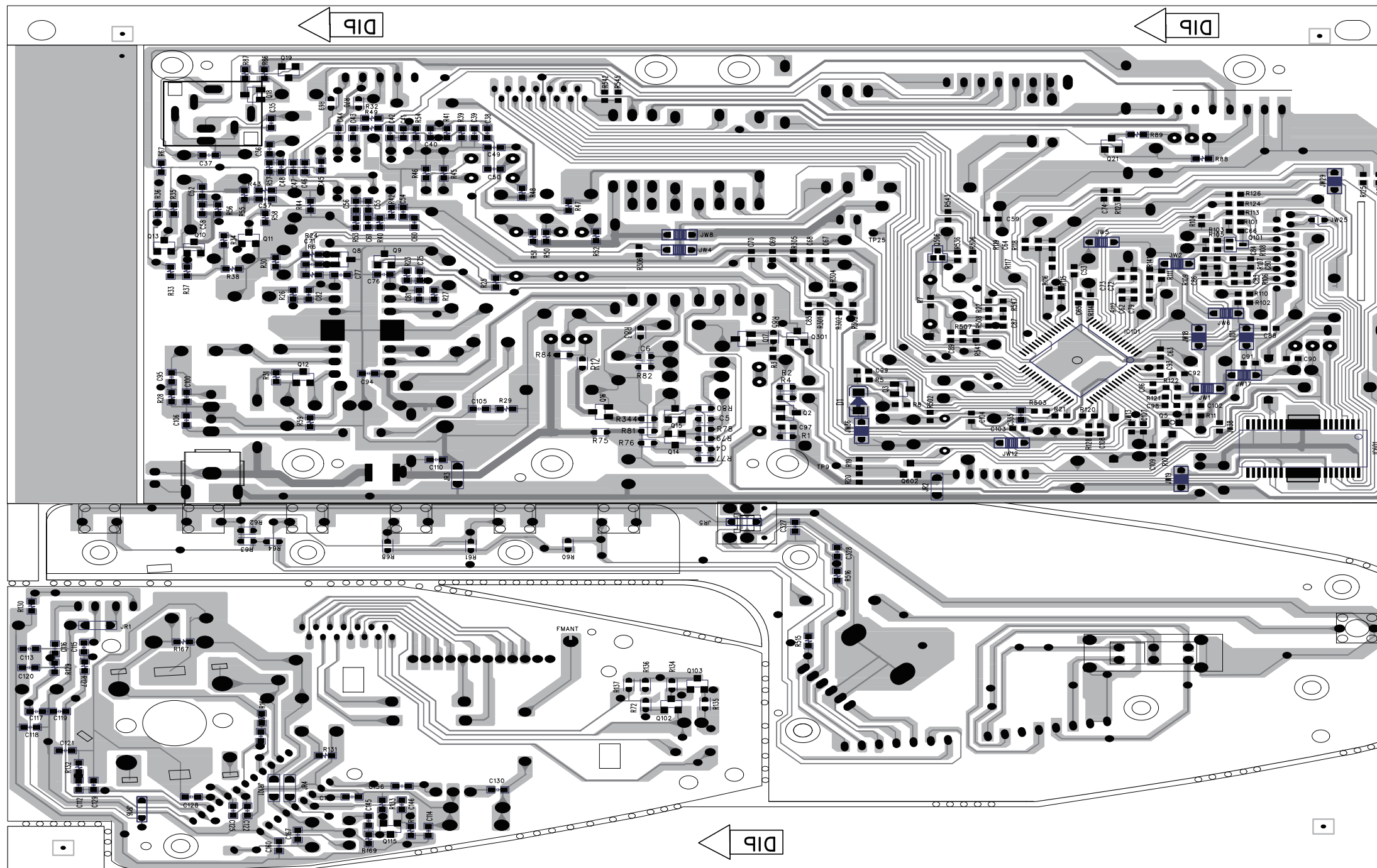
KEY PWB



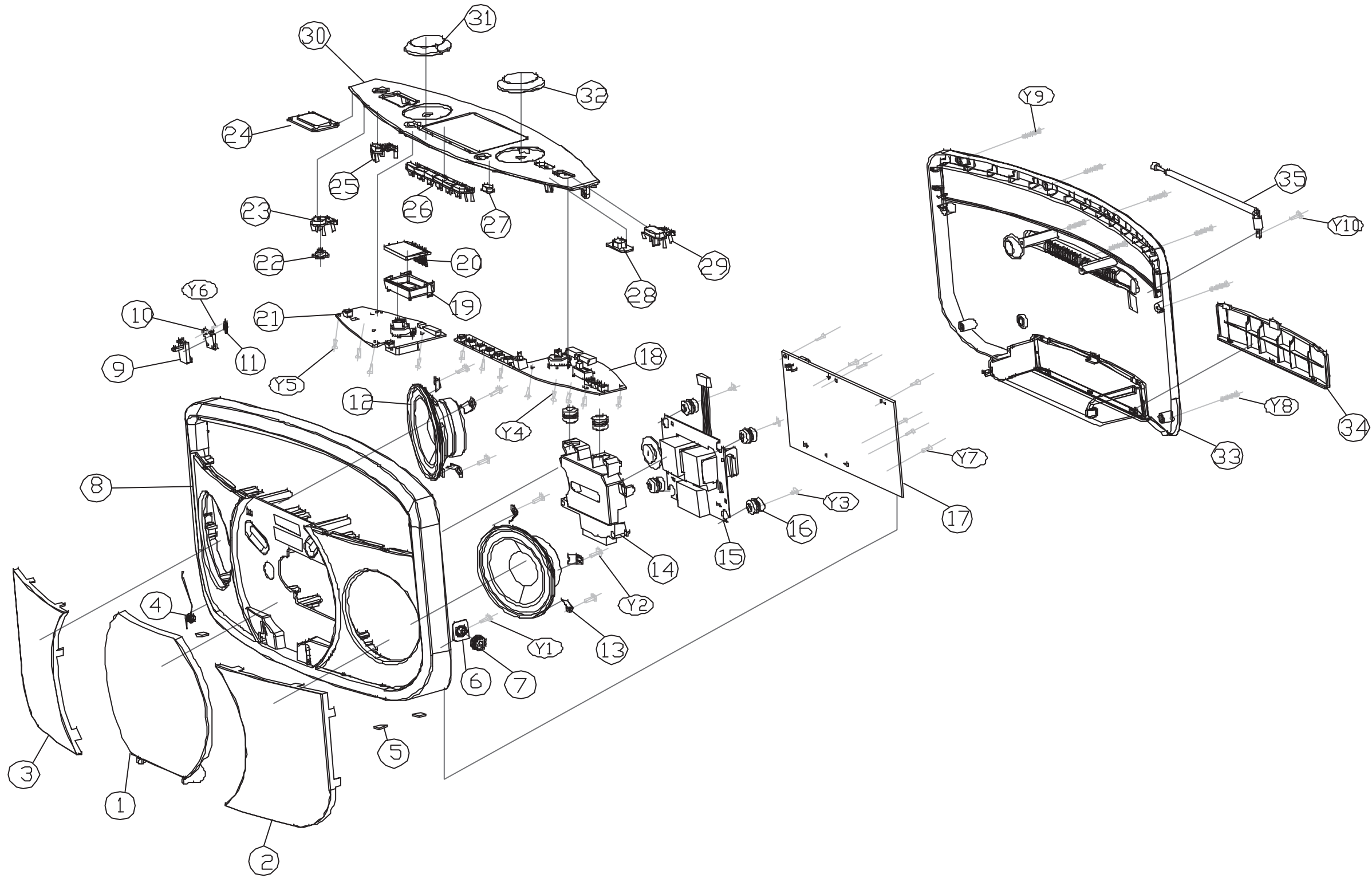
Layout DIAGRAM-MAIN BOARD/TUNER BOARD/CONTROL BOARD
TOP SIDE VIEW



Layout DIAGRAM-MAIN BOARD/TUNER BOARD/CONTROL BOARD
BOTTOM SIDE VIEW



EXPLODED VIEW



Revision list

Version1.0 (3141 785 37120)
*Initial Release