

Service
Service
Service



Service Manual



TABLE OF CONTENTS

	Page
Service news letter	1-1...1-4
Location of PC Boards	1-5
Versions Variation & Package	1-5
Specifications	1-6
Repair Instructions	2
Disassembly Instructions & Service positions	3
Block & Wiring Diagram	4
Control Board	5
Main Board	6
Power Board	7
Mechanical Exploded View & Parts.....	9
Service partlist.....	10
Factory partlist.....	11

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PHILIPS

Published by:
Service Department Audio



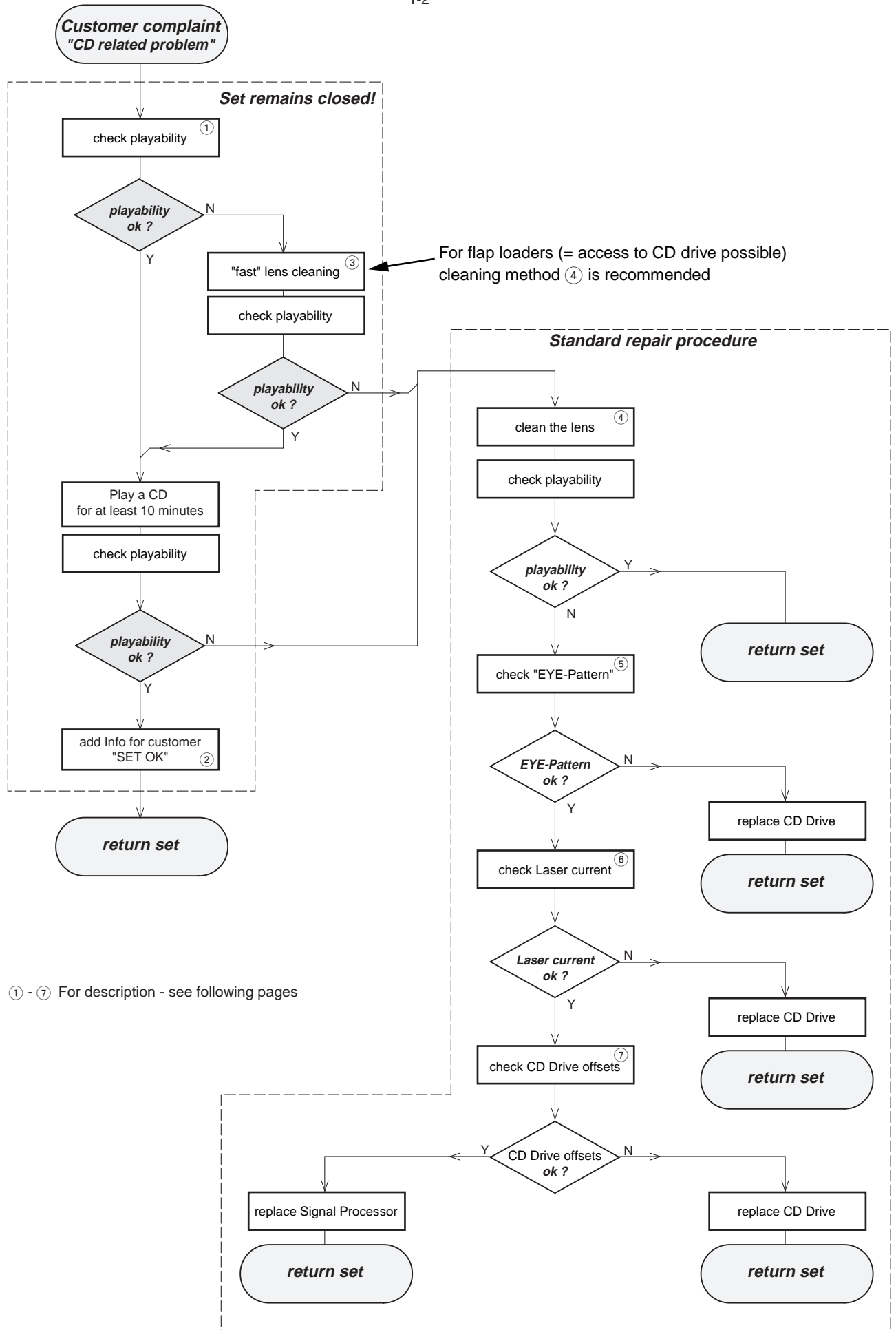
BUSINESS CREATION UNIT AUDIO

SERVICE NEWSLETTER

General Information

This special edition contains instructions on CD-applications with playability problems (i.e. skipping tracks). The information shows how to check the playability of the set, how to clean the lens, and how to measure if some important drive parameters like jitter, laser current and offset values are (still) within the specification.

Background for this information are extensive analyses on replaced CD-drives. It has been found that a lot of replaced drives were not defective at all, respectively were replaced for the wrong reason. We are convinced that the procedures on the next pages will help to reduce the number of erroneously replaced drives drastically and request you to deploy the instructions to the workshops urgently.



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.

③

FAST LENS CLEANING (dry brush)

Use lens cleaning CD
 SBC AC3009082 100 00043

Insert the lens cleaning CD, press PLAY and follow the voice guide's instructions on the CD.

④

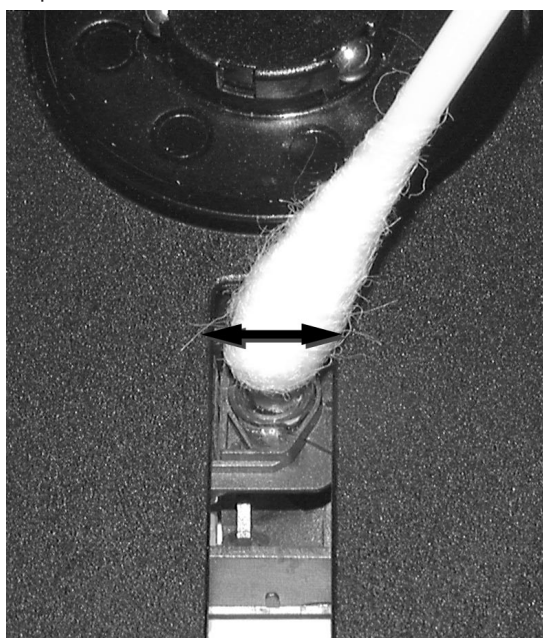
LIQUID LENS CLEANING

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 B4-No2", available with codenumber 4822 389 10026.

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.

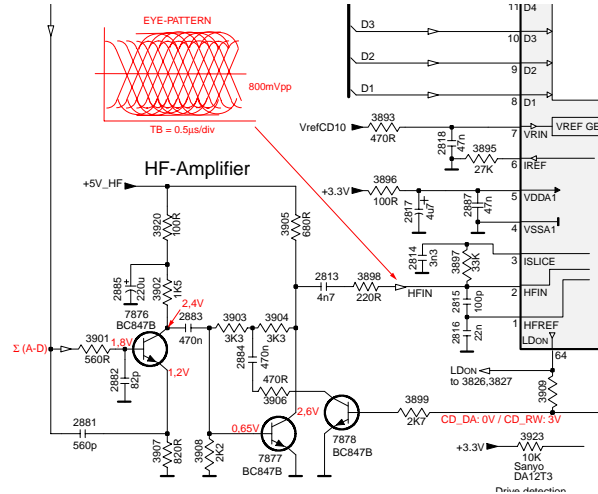
The direction of cleaning must be in the way as indicated in the picture below.



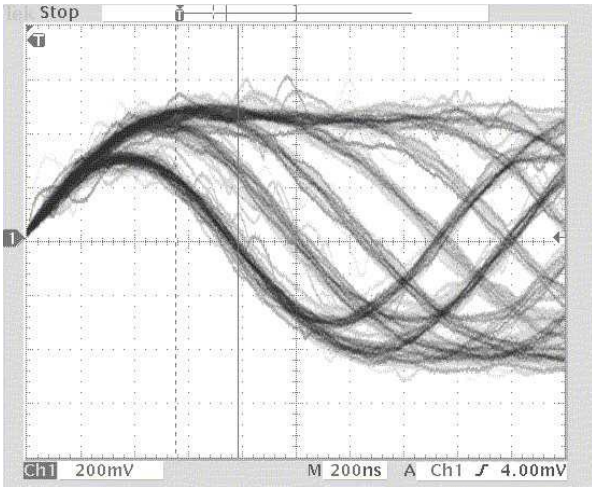
5

EYE-PATTERN SIGNAL – JITTER MEASUREMENT

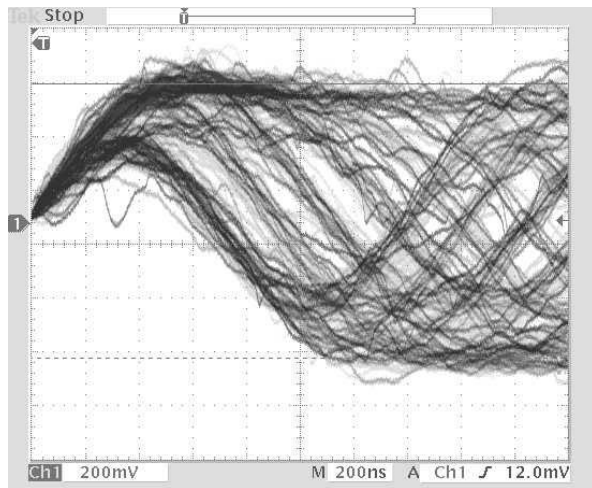
Measure the signal on the input of the Signal processor using an **analog** oscilloscope. Please find the exact measuring point in your Service Manual.



See below examples of the signal. Amplitude should read at least 700mVpp using SBC444A.



good



bad

If the oscilloscope shows a signal like the 'bad' one, and/or the amplitude decreases within 1 minute - the CD drive has to be replaced.

6

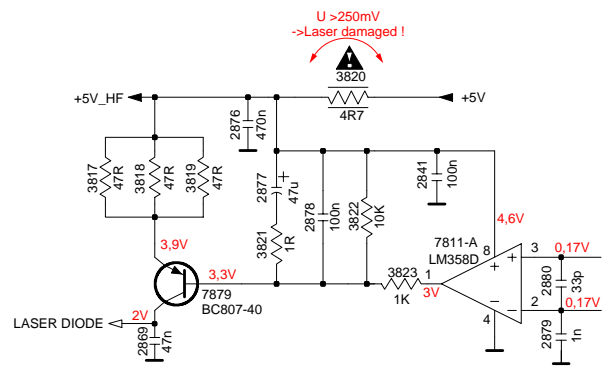
CD DRIVE – LASER CURRENT MEASUREMENT

The laser current can be measured as a voltage drop on a resistor. The resistor is marked in every Service Manual. The value depends on the type of CD drive.

	typical value	most probably defect
VAMxxxx	: 150-230mV	≥350mV
MCDxx	: 170-230mV	≥300mV
DA1x	: 210-250mV	≥350mV
DA2x	: 175-200mV	≥250mV

Use SBC444A (CD-DA) for measurement.

Laser power control



7

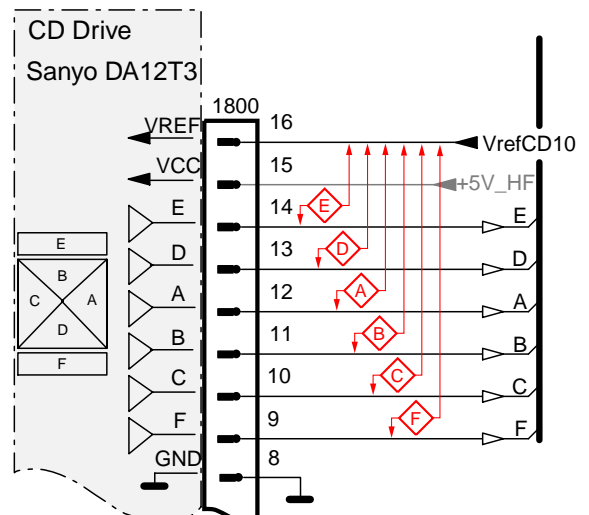
CD DRIVE – OFFSET MEASUREMENT

The photodiodes of the CD-drive may have an offset. These offsets have to be compensated by the signal processor. High offsets can lead to poor playability of some CDs (skipping tracks).

To measure the offset values, start the **Service Test Program** - section "Focus Test" without a CD.

The offsets can be measured with a DC Millivoltmeter directly on the connector (see drawing below). Pin numbering varies from drive to drive.

The values from diode A-D should read 0±10mV. Diodes E and F are less critical.



If one of the offsets is higher than ±10mV the CD drive has to be replaced. Otherwise replace the Signal Processor.

SPECIFICATION

AMPLIFIER SECTION

Output power	1800 W PMPO
Stereo mode	2 x 50 W RMS
Frequency Response	50 Hz - 18 kHz / ± 3 dB
Signal-to-Noise Ratio.....	> 62dB (A-WEIGHED)
Input Sensitivity	
AUX In	600 mV
Output Sensitivity	
Headphone	25 mV + 1dB
Line Out	(CD mode)2 + 0.2 V

TUNER SECTION

Tuning Range	
.....	FM 87.5 – 108 MHz (50 kHz steps)
.....	MW 531 – 1602 kHz (9 kHz steps)
.....	MW 530 – 1700 kHz (10 kHz steps)
Signal-to-Noise Ratio	FM ≥ 50 dB
.....	MW ≥ 35 dB

TAPE SECTION

Frequency Response	
Normal tape	80 – 12500 Hz (+8 dB)
Signal-to-Noise Ratio	
Normal tape	≥ 45 dBA
JIS and WTD	$\leq 0.3\%$

DVD SECTION

Laser Type	Semiconductor
Disc Diameter	12cm / 8cm
Video Decoding	MPEG-2 / MPEG-1/ Divx 3/4/5/6, Ultra
Video DAC	12 Bits
Signal System	PAL / NTSC
Video Format	4:3 / 16:9
Video S/N	56 dB (minimum)
Composite Video Output	1.0 Vp-p, 75 Ω
S-Video Output	Y - 1.0 Vp-p, 75 Ω
.....	C - 0.286 Vp-p, 75 Ω
Audio DAC	24 Bits / 96 kHz
Frequency Response	4 Hz - 20 kHz (44.1kHz)
.....	4 Hz - 44 kHz (48kHz)

MAIN UNIT

Power Supply Rating	110 - 240 V
.....	50/60HZ Switchable
Power Consumption	
Active.....	50 W
Standby	<10 W
Dimensions (w x d x h).....	265x 335 x 310 (mm)
Weight	3.91 kg
Packaging Dimensions (w x d x h)	
.....	569 x497 x 413(mm)
Gross weight	13.1g

SPEAKERS

Front speakers	
System	2-way, Bass reflex
Impedance.....	8 Ω
Speaker drivers	13 cm woofer, 5cm tweeter
Frequency response.....	55 Hz – 20 kHz
Dimensions (w x d x h).....	
.....	222 x 223 x 310 (mm)
Weight	3.02kg/each

Specifications subject to change without prior notice

System , Region Code , etc. Setting Prochure

1)System Reset

- press "Setup " button on R/C,TV will show the preference page
- select the menu using the ▼ and ► on R/C
- go preference page to do ssystem reset

2)Region Code Change

- press the "stop" button on R/C in open model
- press "7" "3" "4" "4" "6" "6" on R/C, then, TV will show the current region code.

3	APAC
4	Australia ,NZ , Latam

3)Version Control Change

- In open model, press "1" "5" "9" on R/C
- press "ok" button to confirm
- TV will show message as below:

Current model **185-98**
 Mtk Ver:07.04.17.01 region : 3
 Mcu Ver:1.28 Servo: 6A.52.00.00
 8032: 05.00.06.05 RISC: 05.00.06.05
 IF current model does not match you set use down arrow
 key on the remote to change

4)Password Change

- press "Setup " button on R/C,TV show the preference page
 - select the menu using the ▼ and ► on R/C
 - go preference page select "password" to change
- * 000000 is default password supplied.

5)Check on the Sofeware Version

- open the CD Door
- press "display" button on R/C
- TV will show the version on screen

6)Upgrading new sofeware

- open the CD Door,then insert the CD-R program disc
- close the DOOR
- TV will show:

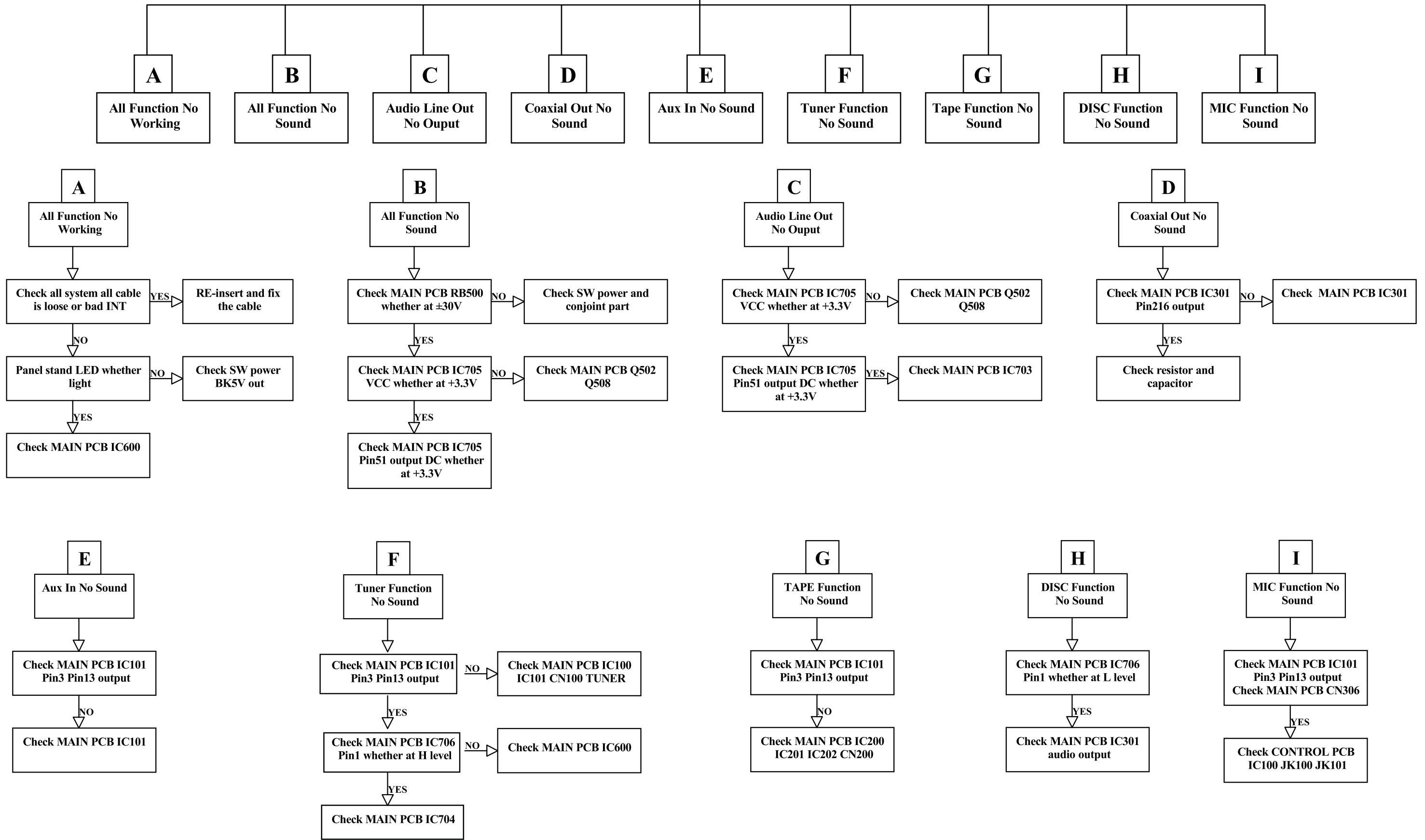
"loading"
 pop message"upgrading"
 "writing" about 2 minutes
 "done "

* the latest upgraded is in version VER 07.04.17.01

CAUTION!

This information is confidential and may not be distributed .Only a qualified service person should reprogram the region code.

MAIN UNIT REPAIR CHART



Dismantling the DVD Module

1) Loosen 2 screws "A" at both sides as shown in figure 1 & remove 6 screws "B" as shown in figure 2 to remove top & side cover

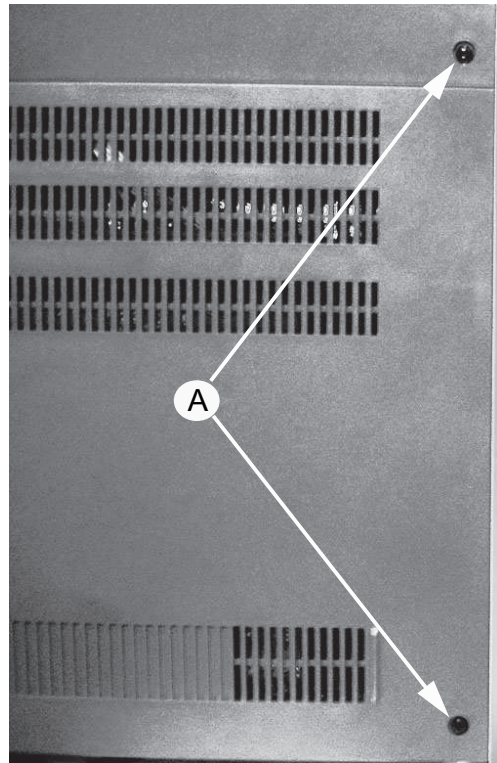


figure 1

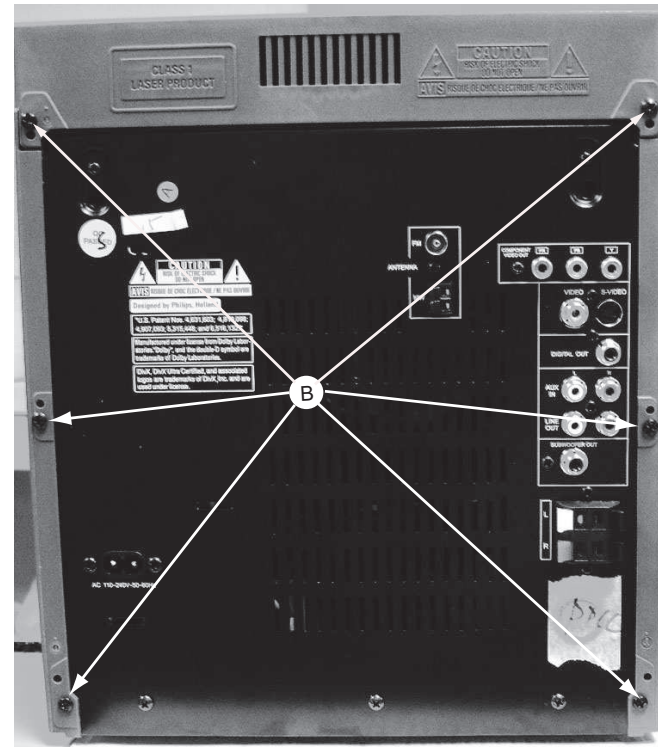


figure 2

- 2) Push the gear slowly towards the front as shown in figure 3 until the DVD tray move out of the front cabinet. now the DVD tray is disengaged and can be pulled out completely.
- 3) Remove the cover Tray as shown in figure 4.
- 4) Loosen the 4 screw "C" as shown in figure 5 to remove DVD loader bracket
- 5) Loosen the 4 screws "D" at DVD loader as shown in figure 6

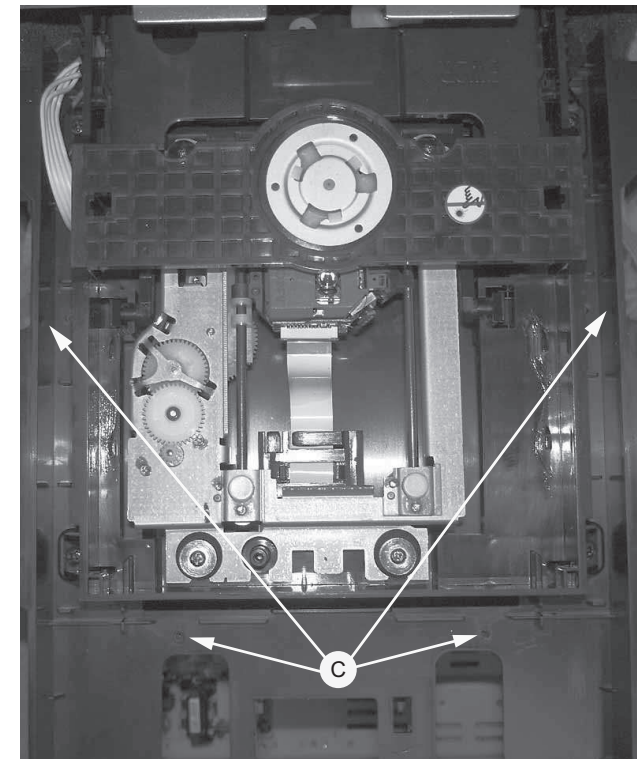


figure 5

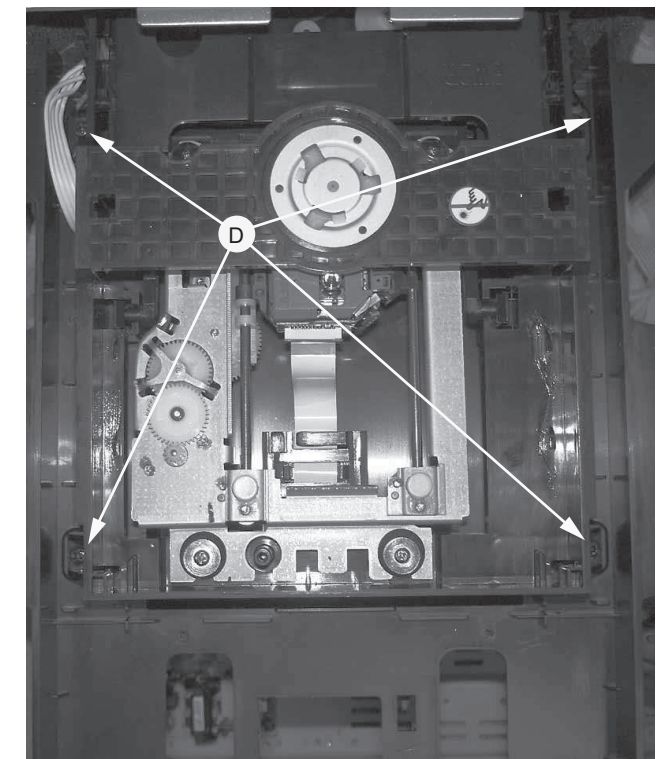


figure 6

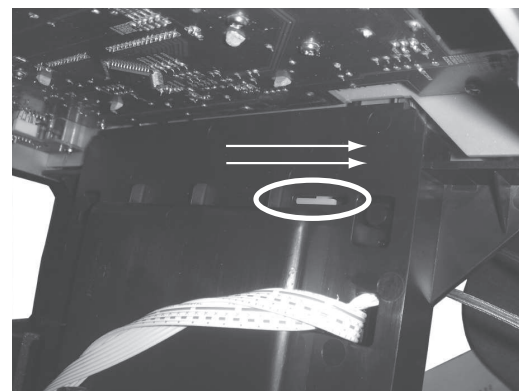


figure 3

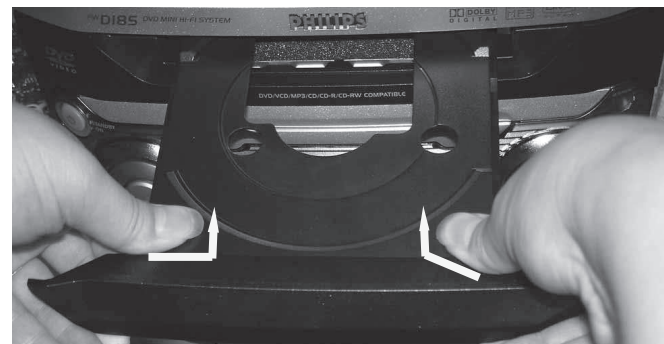


figure4

Dismantling the Power Board

1) Loosen 4 screws "D" on the top of board as shown in figure 7

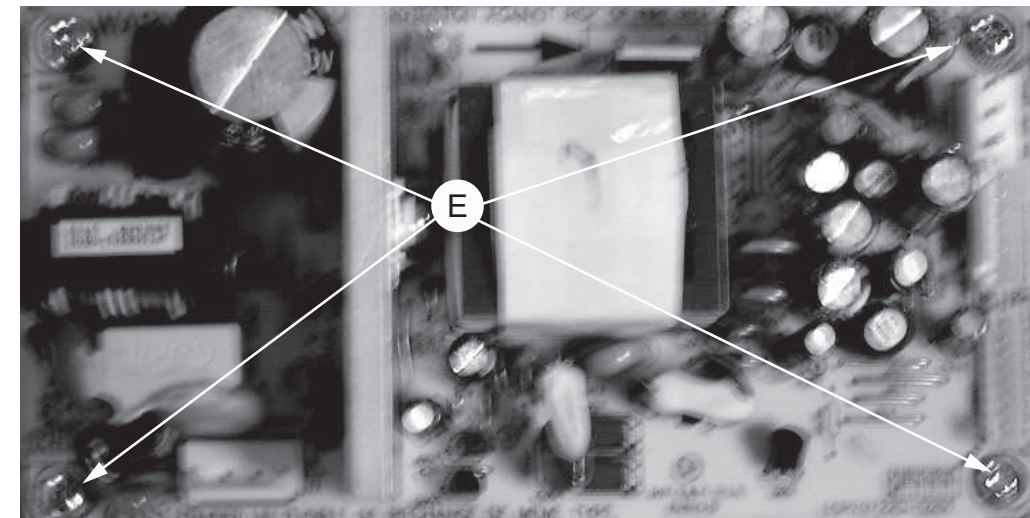


figure 7

Dismantling the Main Board

- 1) Loosen 7 screws "F" at back panel as shown in figure 8
- 2) Loosen 1 screw "G" at bottom panel as shown in figure 9
- 3) Loosen 1 screw "H" on the board as shown in figure 10

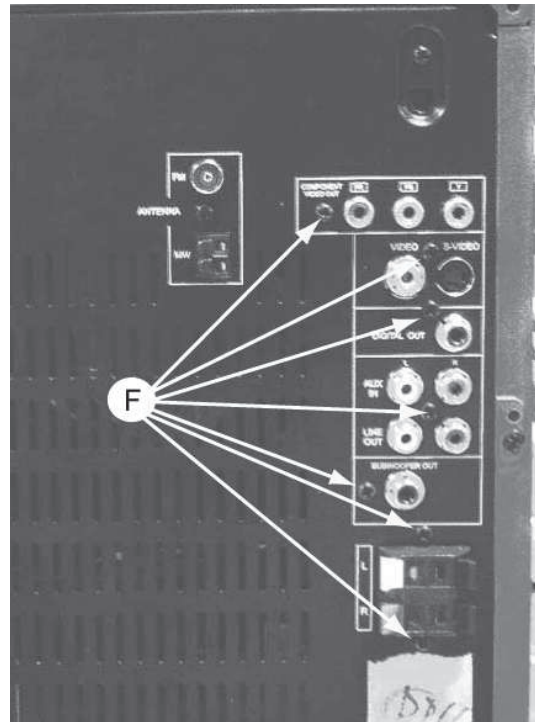


figure 8

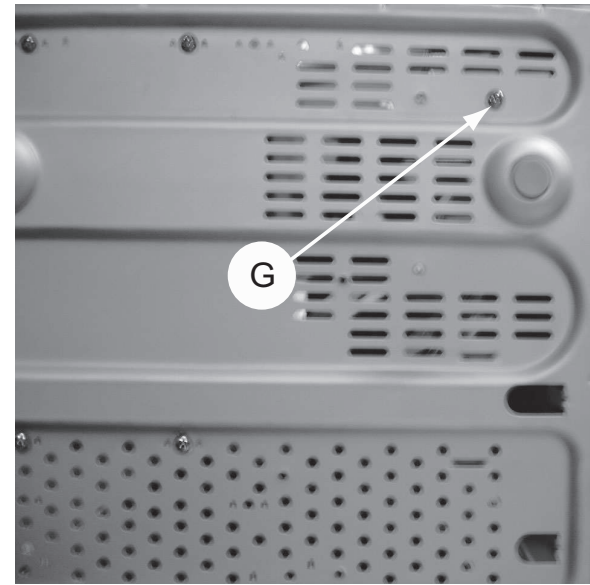


figure 9

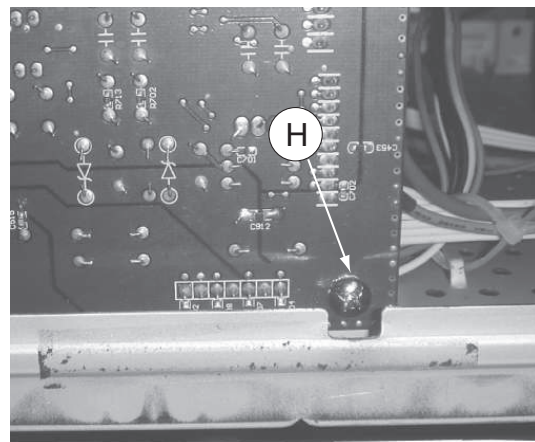


figure 10

Dismantling the Control Board

- 1) Loosen 17 screws "I" on the Board as shown in figure 11

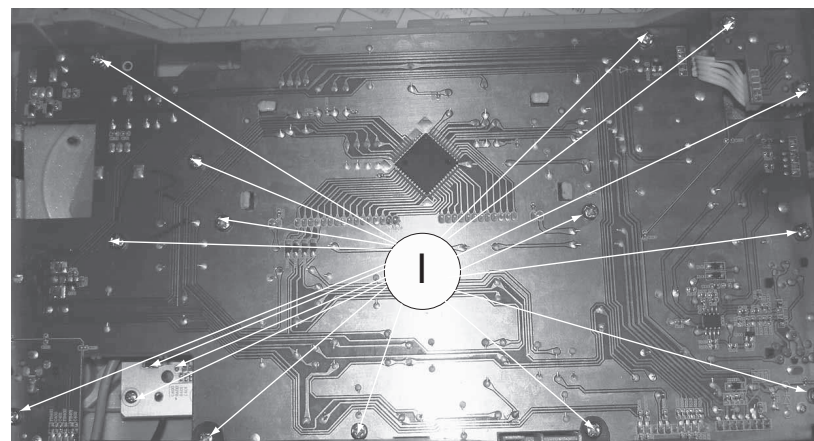
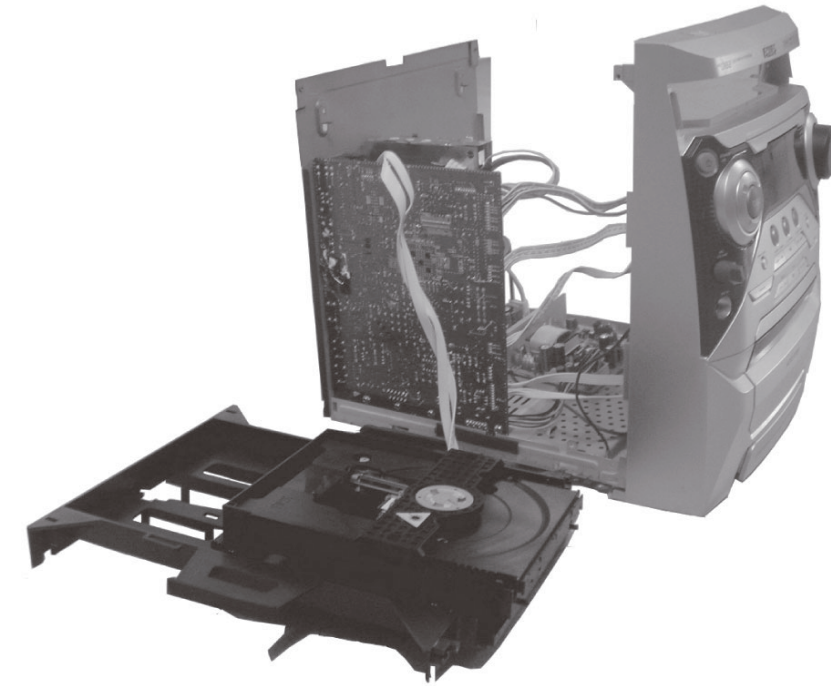
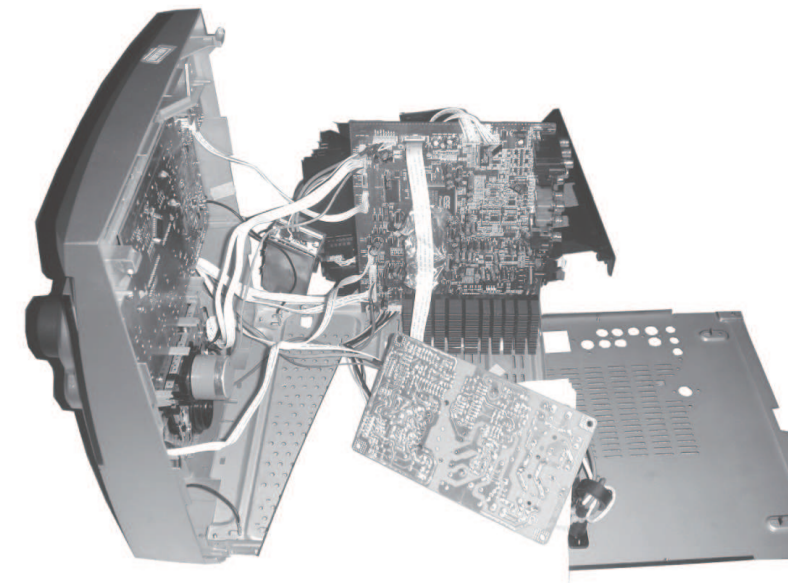


figure 11

SERVICE POSITION



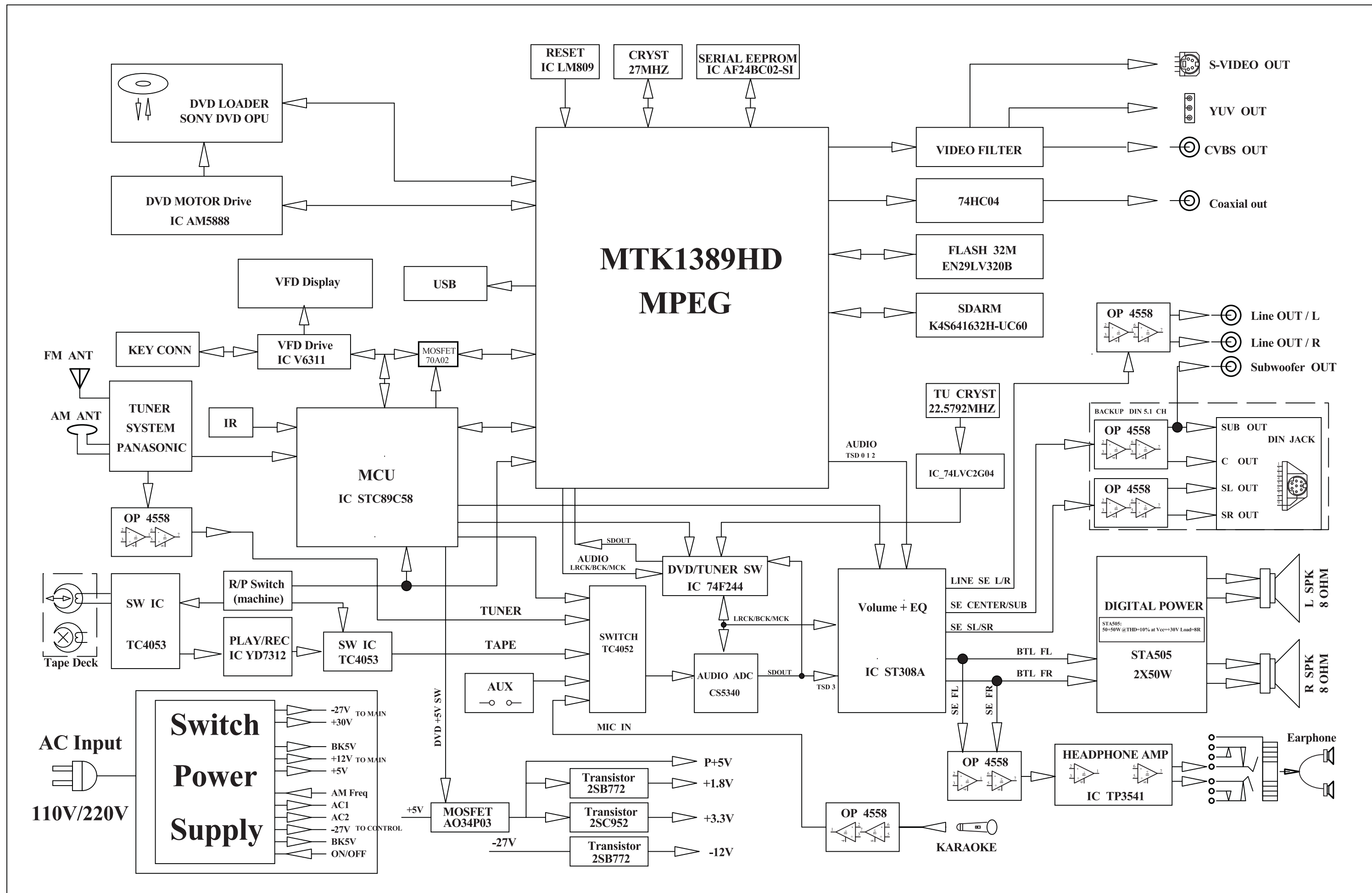
service A



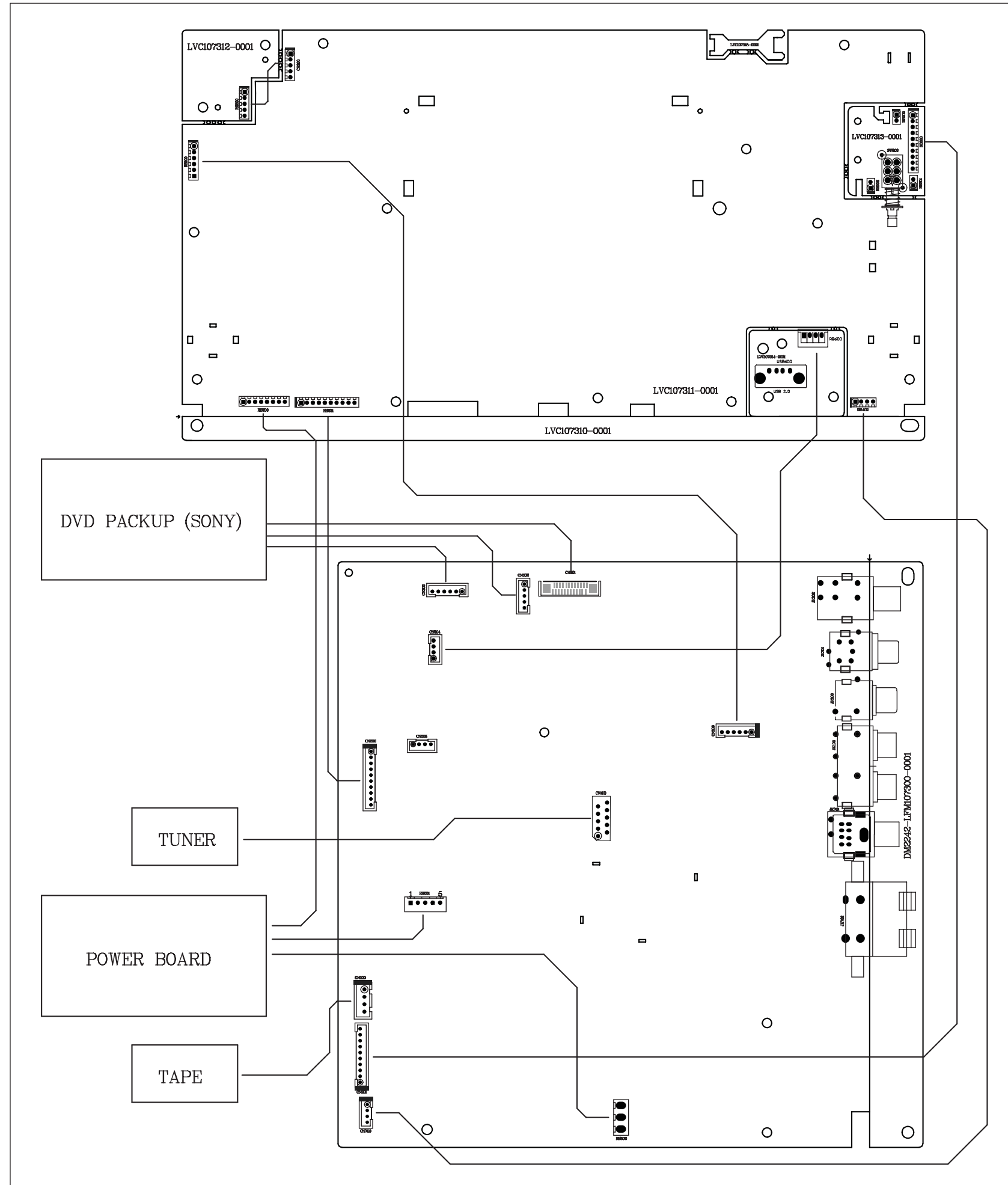
service B

Note: After re-assembly ,it is very important to ensure the wires are properly inserted into their respective sockets and routed not to touch or obstruct any moving parts.

BLOCK DIAGRAM



WIRING DIAGRAM

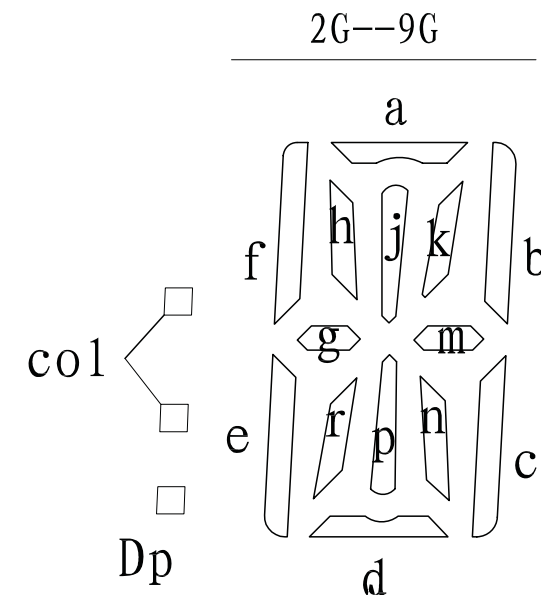
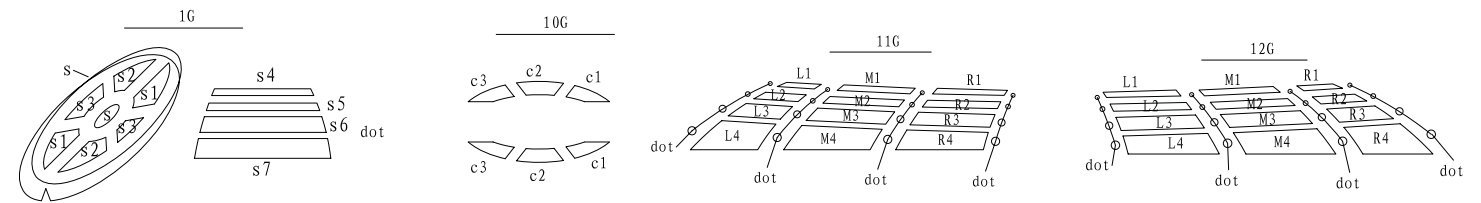
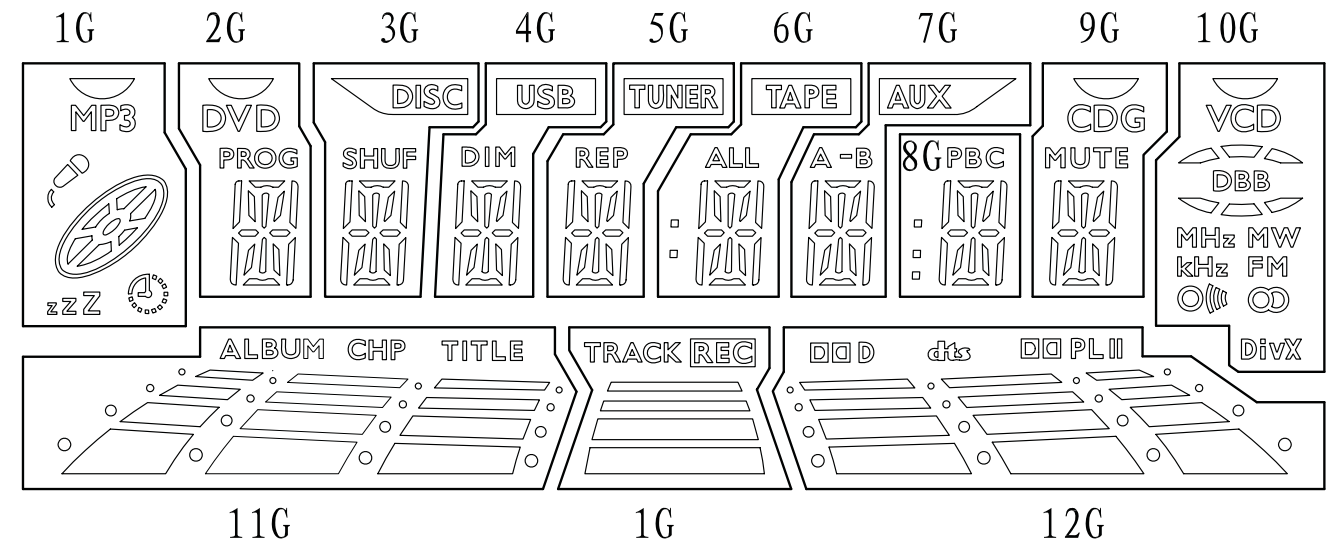


CONTROL BOARD

TABLE OF CONTENTS

FTD Display Pin Assignment..... 5-1
 Circuit Diagram..... 5-2
 PCB Layout Top & Bottom View..... 5-3

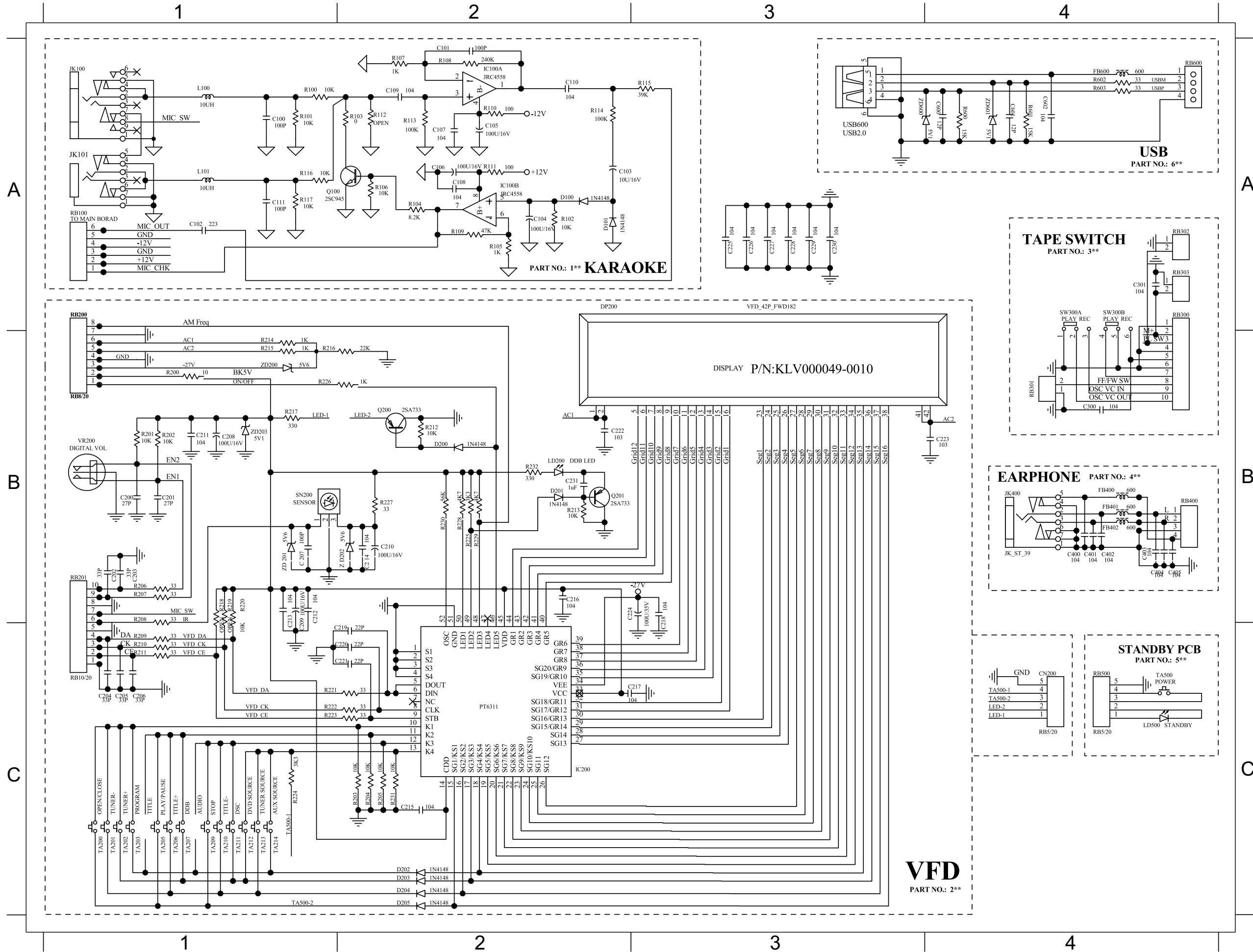
FTD DISPLAY PIN ASSIGNMENT

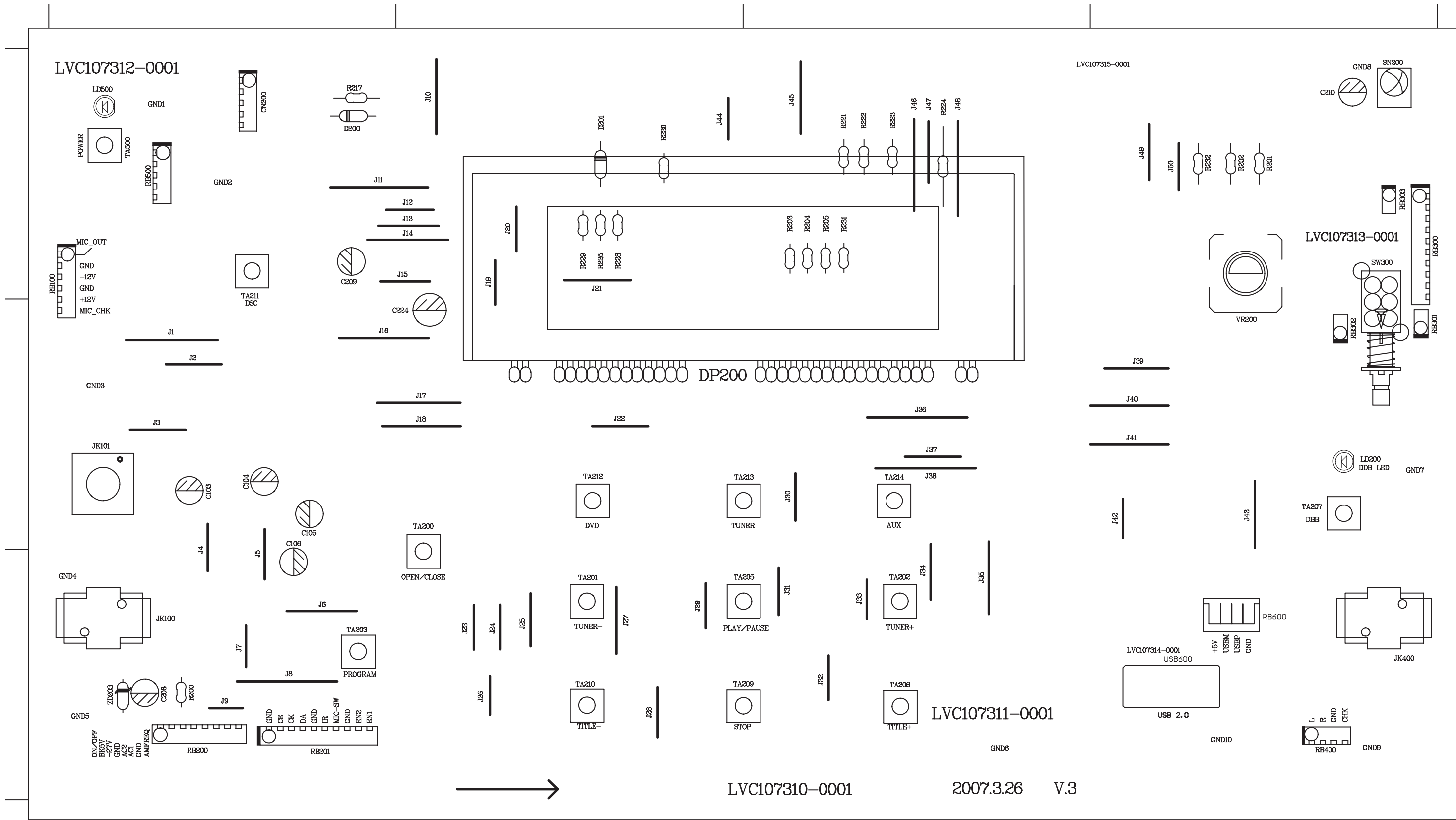


PIN CONNECTION

管脚序号 (Pin NO.)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17-22	23	24
连接 (Connection)	F1	F1	NP	NP	12G	11G	10G	9G	8G	7G	6G	5G	4G	3G	2G	1G	NX	P1	P2
管脚序号 (Pin NO.)	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	
连接 (Connection)	P3	P4	P5	P6	P7	P8	P9	P10	P11	P12	P13	P14	P15	P16	NP	NP	F2	F2	

注 (Notes) : Fn: 灯丝 (Filament Pin) nG: 栅极 (Grid Pin) Pn: 阳极 (Anode Pin)
 NP: 无引出脚 (No Pin) NX: 无连脚 (No Entened Pin)

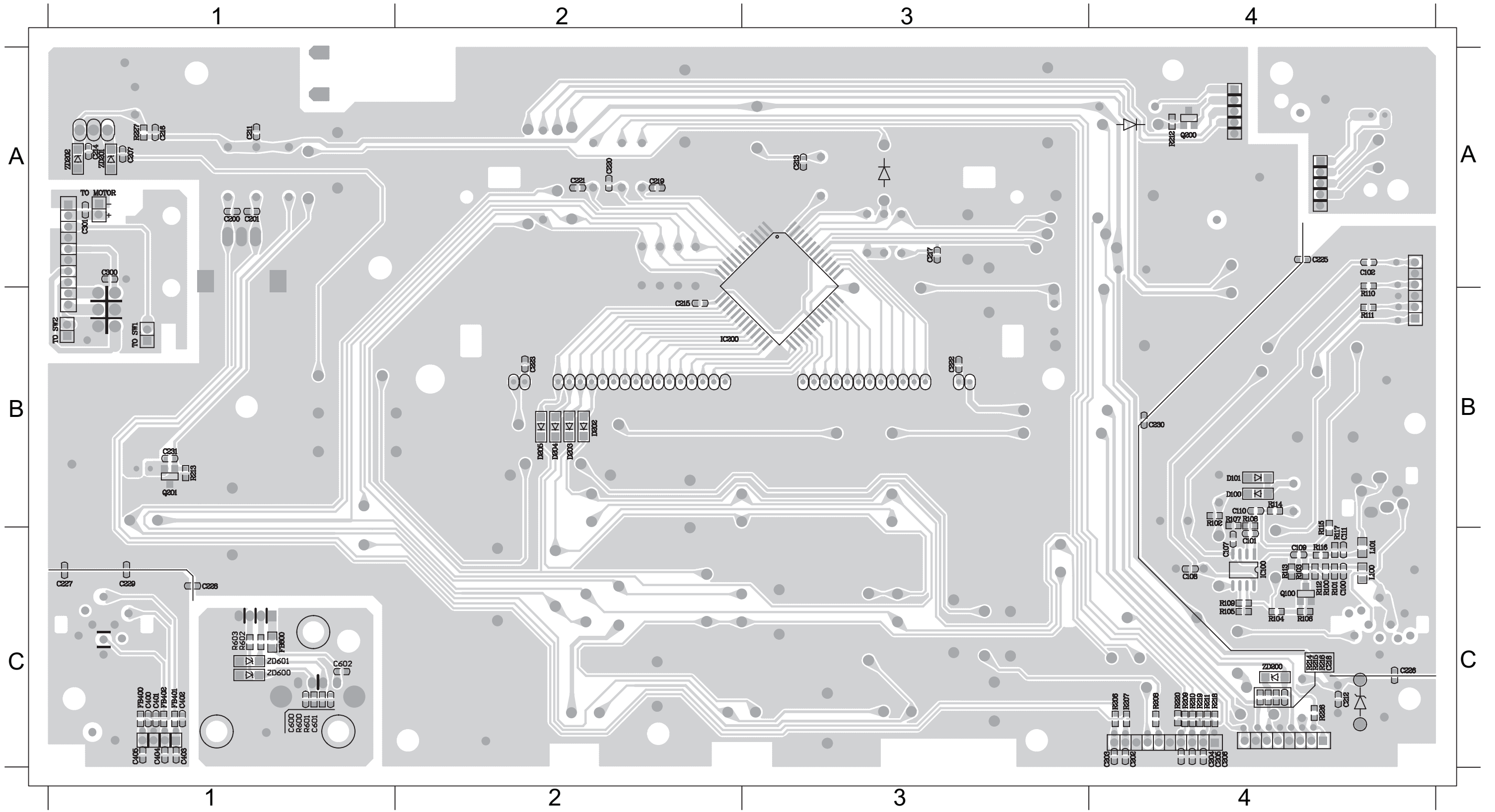




PCB LAYOUT - BOTTOM VIEW

5 - 4

5 - 4

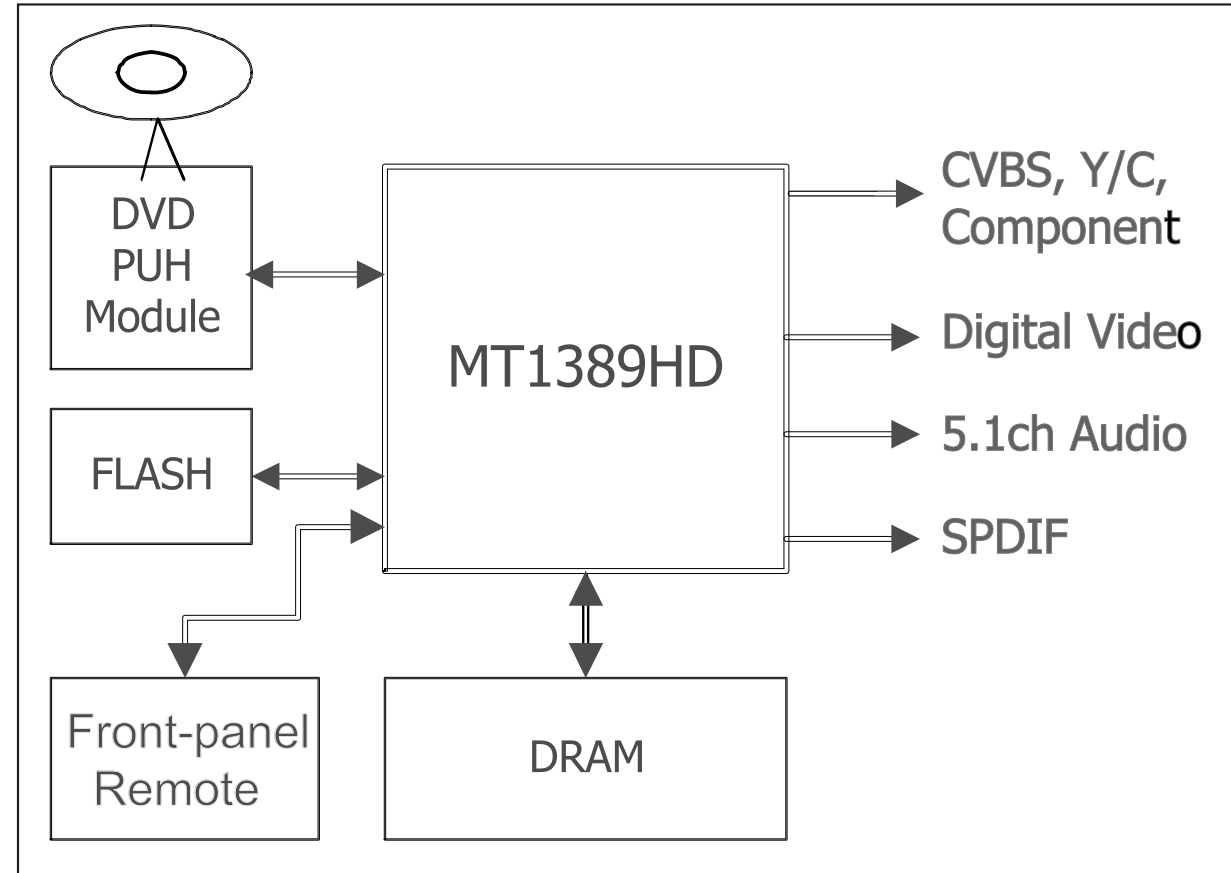


MAIN BOARD

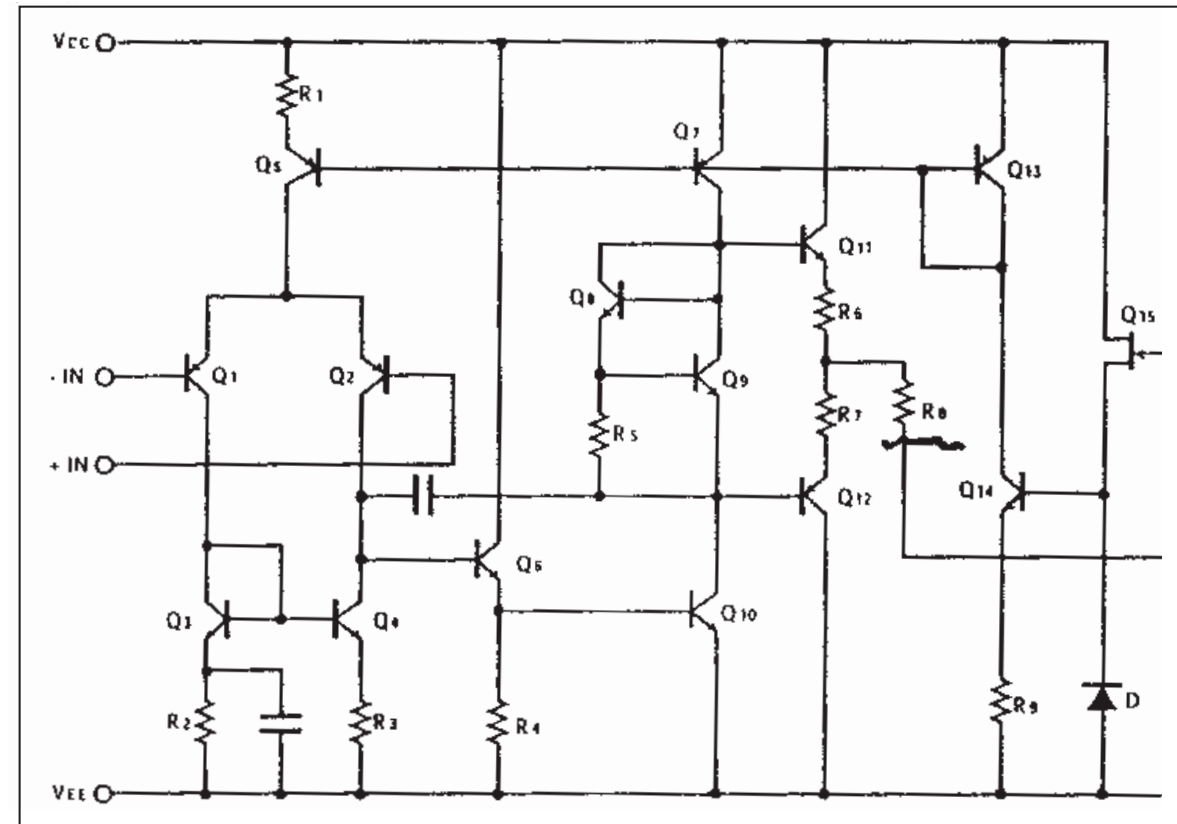
TABLE OF CONTENTS

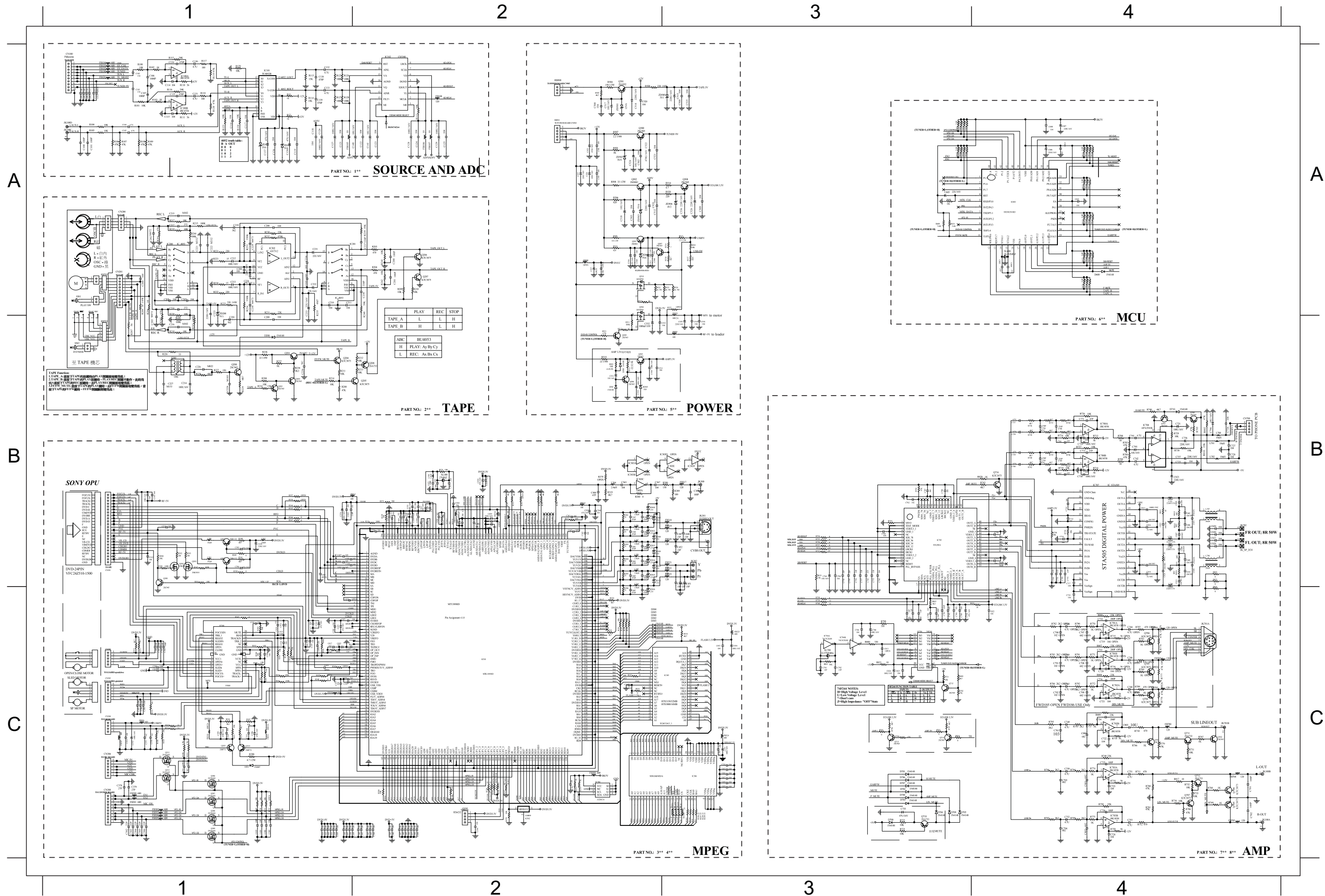
Internal IC Diagram6-1
 Circuit Diagram.....6-2
 PCB Layout Top View6-3
 PCB Layout Bottom View6-4

INTERNAL IC DIAGRAM-MT1389 FXT ⁶⁻¹



INTERNAL IC DIAGRAM-CO4558A

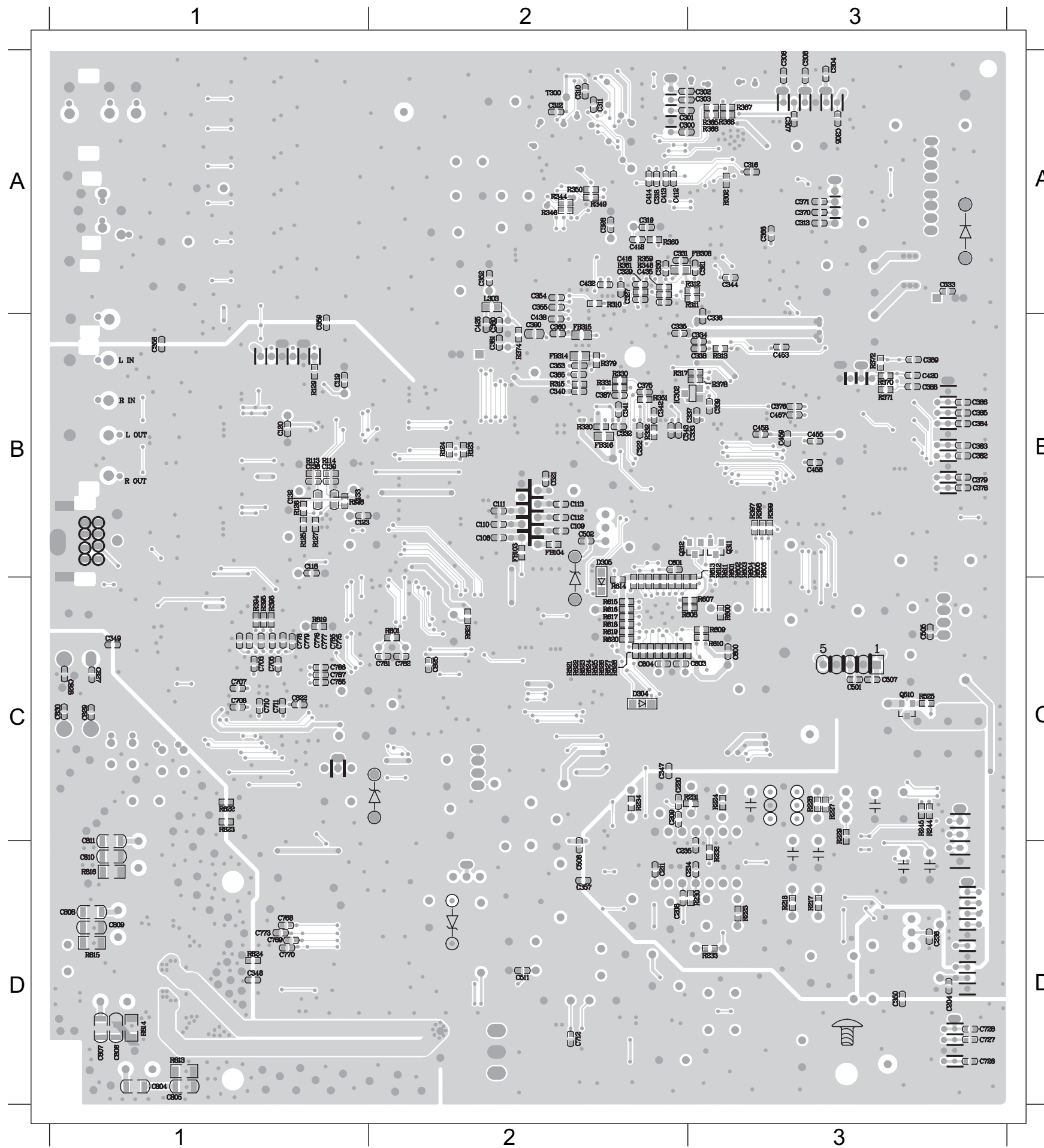




PCB Layout Bottom View

6 - 4

6 - 4

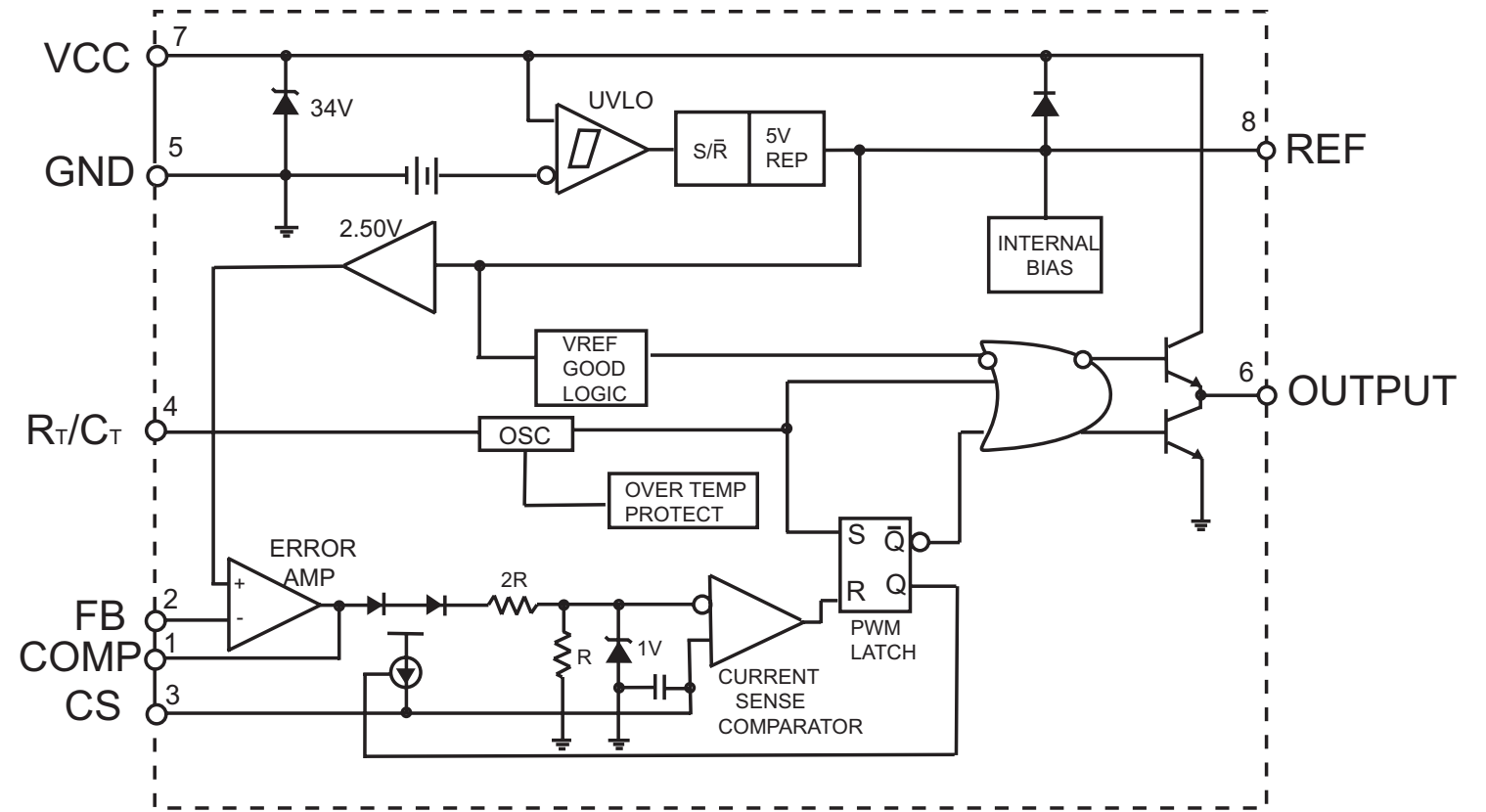


POWER BOARD

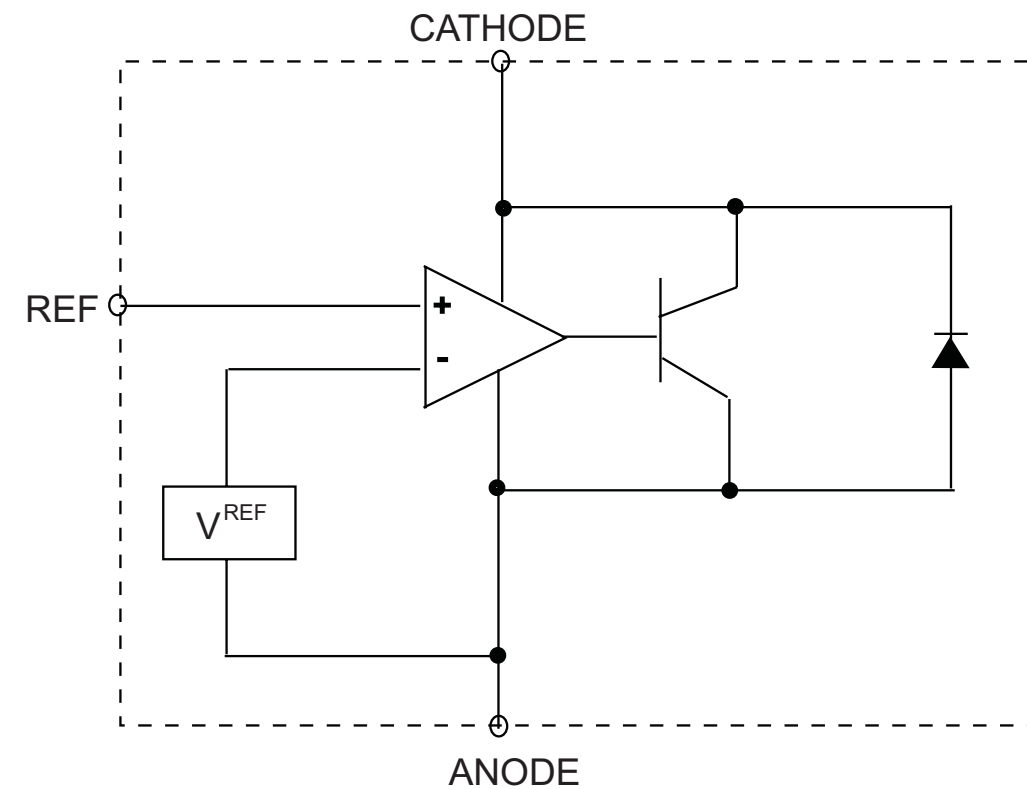
TABLE OF CONTENTS

IC Diagram 7-1
 Circuit Diagram 7-2
 PCB Layout Top View 7-3
 PCB Layout Bottom View 7-4

INTERNAL IC DIAGRAM -AP3843



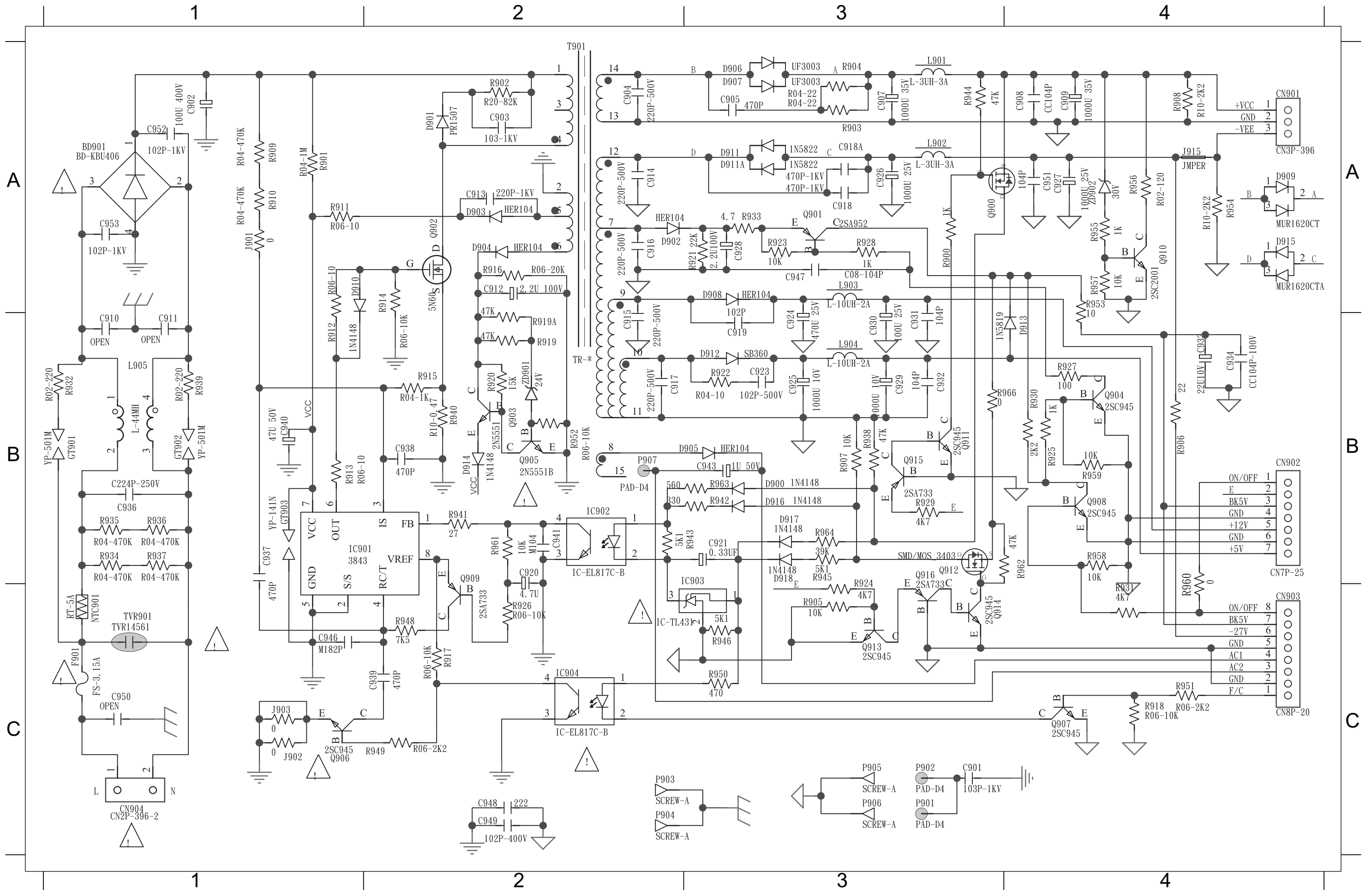
INTERNAL IC DIAGRAM -AZ431

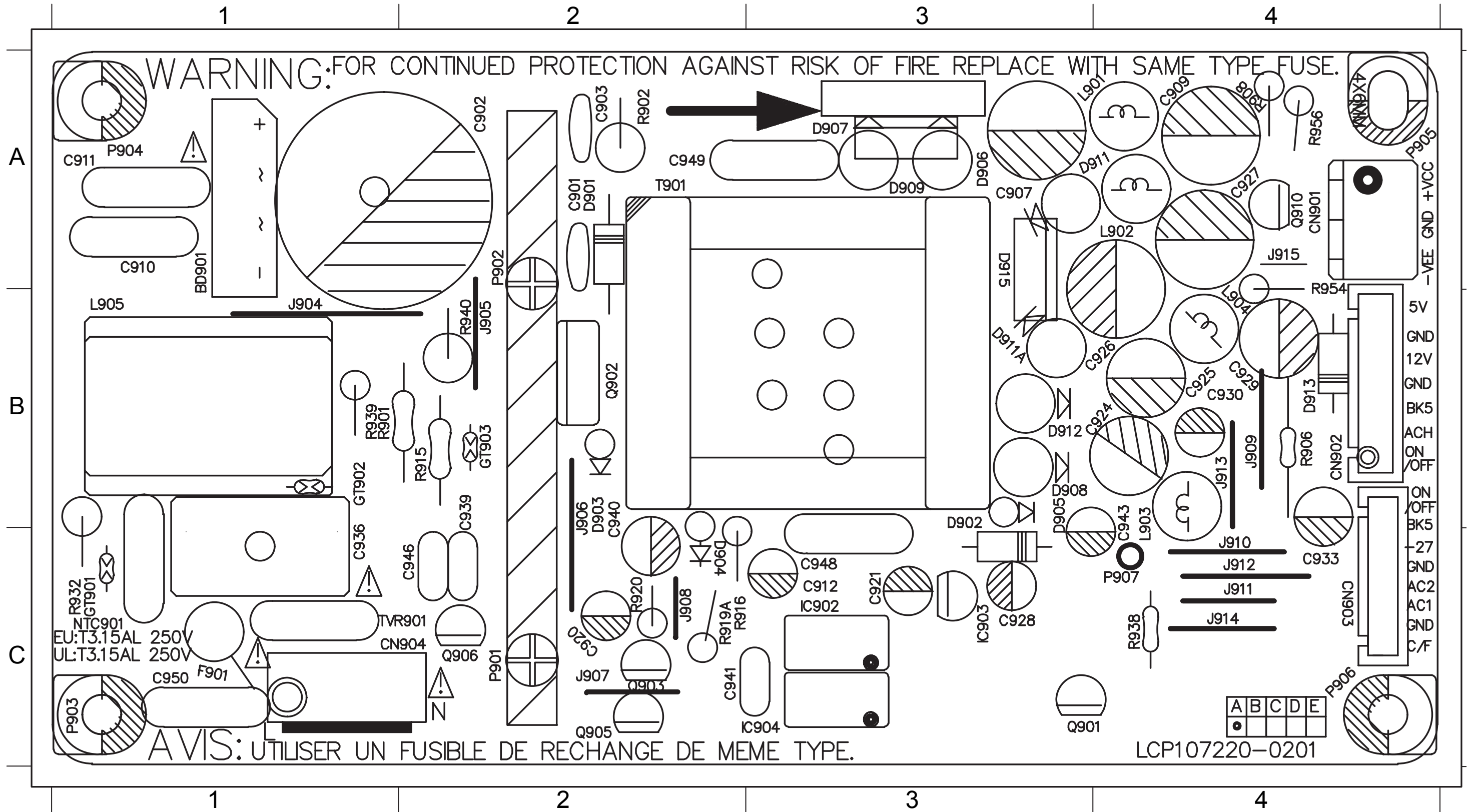


CIRCUIT DIAGRAM

7-2

7-2

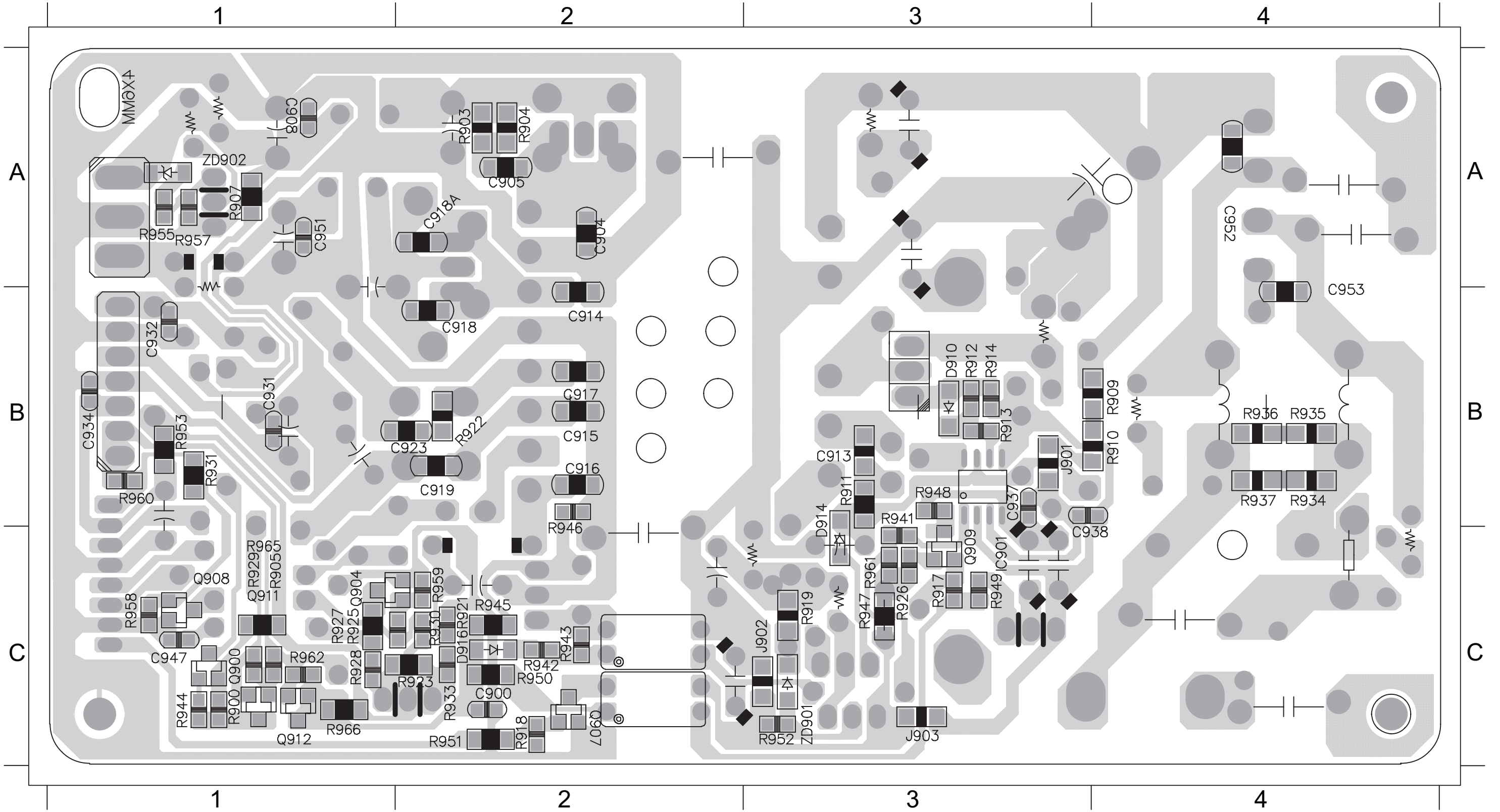




PCB LAYOUT - BOTTOM VIEW

7-4

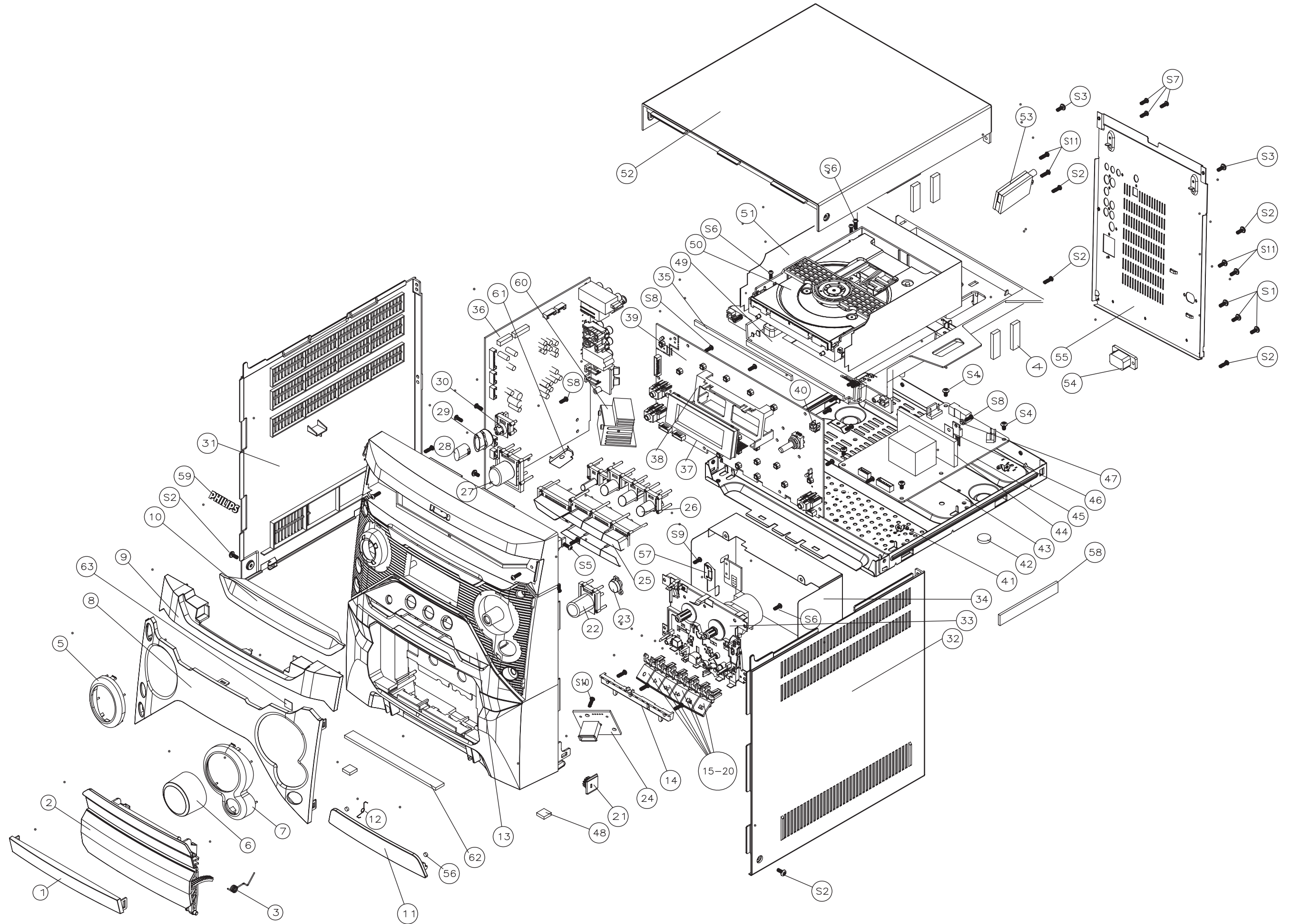
7-4



Mechanical Exploded View

9 - 1

9 - 1



ASSEMBLY AND PACKING

RC	996510004179	REMOTE CONTROL 43 KEY
SPK	996510019952	MAIN SPK ASSY 80HM 50Wx2
VIDEO	996500020577	RCA CABLE 1500MM OD2.6MM BLK
YUV	994000000924	RCA CABLE 1500MM
AM	996510001621	LOOP ANT
AUDIE	996500023267	RCA CABLE 1200MM BLK OD2.6X5.2
1	994000005296	CASSETTE DOOR LENS
2	996510004302	CASSETTE DOOR BPD101118-0002
5	996510004168	KEY DECORATIVE RING
6	996510004306	VOLUME KNOB BPK105089-0002
7	996510004169	VOLUME DECORATIVE RING
8	996510004167	DISPLAY LENS SAN 1x1
9	996510010126	CDC DOOR WITH DIVX LOGO
10	996510004300	DVD DOOR L185.8xW19.5xD23.7mm
11	994000005276	CASS KEY DOOR
13	996510019944	FRONT CABINET L265xH309mm 94HB
14	996510004316	CASS KEY HOLDER BPK160039-1001
15	996510004305	CASS KEY RECORD BPK100039-1001
16	996510004310	CASS KEY PLAY BPK110039-1001
17	996510004312	CASS KEY REWIND BPK120039-1001
18	996510004313	CASS KEY F.FORWORD
19	996510004314	CASS KEY STOP BPK140039-1001
20	996510004315	CASS KEY PAUS BPK150039-1001
22	996510004309	MAX BUTTON BPK108114-0002
23	994000005299	POWER BUTTON BASE
25	996510004311	PROGRAM KEYS BPK118112-0002
26	996510004307	CONTROL KEYS BPK108112-0002
27	996510004308	PLAY BUTTON BPK108113-0002
28	996510019946	POWER BUTTON ABS 1x4 94HB
29	994000005297	RING POWER LENS
30	994000005298	POWER BUTTON BASE
31	996510017479	PANEL LEFT HIPSMOULD
32	996510008237	PANEL RIGHT
33	994000005272	TAPE DECK CS-21SC-820DTL
38	996510004304	VFD BRACKET L103.4xW38.3xD27.8
42	994000005305	RUBBER FOOT D14XT3.0MM W/ADV
43	996510004172	BOTTOM CABINET GSE100604-2001
45	996510019949	POWER PCB ASSY
48	996500022119	FOOT RUBBER
49	994000005278	DVD BRACKET
50	996510011374	DVD Loader assy
52	996510008219	TOP COVER
53	996510001690	TUNER PACK
55	996510004173	REAR PANEL GSE100605-0101
56	996510004170	RUBBER PAD SILICON RUBBER
63	996510019943	SENSOR FILT PVC L64XW27XT0.1mm
64	996510011368	PWR CORD 2P /98 (/94/98)
64	996500041278	MAINS CORD 2P 2M SAA (/79)
TM	996510004177	T ANTENNA FEMALE PLUG (/94/98)
CN100	996510009891	FFC CABLE 10P 160mm P=1.25mm
CN301	996510019948	FFC CBL 24P 280mm UL20624
FM	996510008251	FM ANT

Electronic-Main board

IC100	996500029611	IC 8P CO4558A SO8 CERAMATE LF
IC101	996510009894	IC 16P CD4052BM SOIC TI 4-CH
IC102	994000005212	IC 16 PIN CS5340-CZ
IC200	996500029612	IC 16 PIN TC4053BFN TOSHIBA
IC201	996500029612	IC 16 PIN TC4053BFN TOSHIBA
IC202	994000005213	IC 14P AN7312 MEI
IC300	996510010380	Motor Drive IC
IC301	996510012540	IC256PMT1389DXE/HDLQFPMEDIATEK
IC302	994000005209	IC 3P AZ809NSTR-E1 SOT23
IC304	996510004289	IC 8P TU24C16CS2 SOIC TURBO
IC305	996510019953	IC 48P KH29LV320CBTC-70G TSOP
IC306	996510004115	IC 54P AS81F641642C-6P TSOPII
IC600	996510018660	IC 44P MPC89E58AF PQFP (PROD)
IC700	996500029611	IC 8P CO4558A SO8 CERAMATE LF
IC702	996500029611	IC 8P CO4558A SO8 CERAMATE LF
IC703	996500029611	IC 8P CO4558A SO8 CERAMATE LF
IC704	996510004292	ROHSIC6P SN74LVC2G04DBV
IC705	996510004293	IC 64P STA308A TQFP ST
IC706	994000000838	IC 20PIN 74F244
IC707	996510004294	IC 36 PIN STA505 50Wx2
IC708	996500026923	IC 8 PIN APA3541-TRL SOP-8 HEA
JK100	996510004283	RCA JACK 4P AUDIO
JK300	996500017363	RCA JACK 1P W/GND P
JK301	996500023599	RCA+DIN JK 1RCA+4P DIN YEL
JK302	994000000857	RCA JACK 3P R-B-G
JK701	994000005202	RCA JACK 1 P
JK702	994000000862	SPK JACK 4P RED-WHT-BLK-BLK
Q200	996510000615	XISTR NPN 2SC945P
Q201	996500026939	XISTR PNP 2SA952 NEC PB<1000P
Q202	996510004282	XISTR NPN SMT (2SC945)
Q203	996510004282	XISTR NPN SMT (2SC945)
Q204	996510000578	XISTR NPN KTC3875-Y
Q205	996510000578	XISTR NPN KTC3875-Y
Q206	996510000578	XISTR NPN KTC3875-Y
Q207	996510000578	XISTR NPN KTC3875-Y
Q208	994000000921	XISTR PNP 2SA812 HFE:200-400
Q300	996510004282	XISTR NPN SMT (2SC945)
Q301	996500026927	XISTR PNP 2SB1132RT100 ROHM HF
Q302	996500026927	XISTR PNP 2SB1132RT100 ROHM HF
Q303	996510004117	FET 2SK3018 30V/0.1A SC-70
Q304	996510004117	FET 2SK3018 30V/0.1A SC-70
Q305	996500026946	XISTR PNP 2SB772P/Q NEC PB<10
Q306	996500041281	FET 2N7002 60V/115MA
Q307	996500041281	FET 2N7002 60V/115MA
Q308	996500041281	FET 2N7002 60V/115MA
Q309	996500041281	FET 2N7002 60V/115MA
Q310	996500026946	XISTR PNP 2SB772P/Q NEC PB<10
Q311	996500041281	FET 2N7002 60V/115MA
Q312	996500041281	FET 2N7002 60V/115MA
Q500	996510000615	XISTR NPN 2SC945P
Q501	996500026939	XISTR PNP 2SA952 NEC PB<1000P
Q502	996500028742	XISTR NPN 2SD882P PB<1000PPM
Q504	996500041969	FET AO3403 ALPHA -30V/-2.6A

Electronic-Main board

Q505	996510004282	XISTR NPN SMT (2SC945)
Q506	996510004282	XISTR NPN SMT (2SC945)
Q508	996510000615	XISTR NPN 2SC945P
Q509	996510004282	XISTR NPN SMT (2SC945)
Q510	996500041969	FET AO3403 ALPHA -30V/-2.6A
Q700	996510004282	XISTR NPN SMT (2SC945)
Q701	996510004282	XISTR NPN SMT (2SC945)
Q702	996510004282	XISTR NPN SMT (2SC945)
Q703	996510004282	XISTR NPN SMT (2SC945)
Q707	996510000578	XISTR NPN KTC3875-Y
Q708	996510000578	XISTR NPN KTC3875-Y
Q709	996510000578	XISTR NPN KTC3875-Y
Q710	994000000921	XISTR PNP 2SA812 HFE:200-400
Q711	994000000921	XISTR PNP 2SA812 HFE:200-400
Q712	994000000921	XISTR PNP 2SA812 HFE:200-400
Q713	996510004282	XISTR NPN SMT (2SC945)
Q714	996510004282	XISTR NPN SMT (2SC945)
Q715	996510004282	XISTR NPN SMT (2SC945)
Q716	996510000578	XISTR NPN KTC3875-Y
XL300	994000005201	CRYST 27MHZ +/-20PPM H=3.5MM
XL600	996500041961	XTAL 18.432MHz 30ppm 20PF
XL700	996510004284	CRYSTAL 22.5792MHz 20ppm
ZD100	994000005476	DIODE ZENER 5.6V 0.5W 5% MOT
ZD100	996500019397	CHIP ZENER 5.6V 5% 0.5W
ZD101	994000005476	DIODE ZENER 5.6V 0.5W 5% MOT
ZD101	996500019397	CHIP ZENER 5.6V 5% 0.5W
ZD200	996500021177	CHIP ZENR5.1V5%0.5W(E1)SOD-123
ZD300	996500026931	CHIP ZENER 7.5V 0.05 0.5W (F1)
ZD301	996500026931	CHIP ZENER 7.5V 0.05 0.5W (F1)
ZD302	996500026931	CHIP ZENER 7.5V 0.05 0.5W (F1)
ZD303	996500026931	CHIP ZENER 7.5V 0.05 0.5W (F1)
ZD304	996500026931	CHIP ZENER 7.5V 0.05 0.5W (F1)
ZD305	996500026931	CHIP ZENER 7.5V 0.05 0.5W (F1)
ZD306	996500026931	CHIP ZENER 7.5V 0.05 0.5W (F1)
ZD307	996500026931	CHIP ZENER 7.5V 0.05 0.5W (F1)
ZD308	996500026931	CHIP ZENER 7.5V 0.05 0.5W (F1)
ZD309	996500026931	CHIP ZENER 7.5V 0.05 0.5W (F1)
ZD310	996500026931	CHIP ZENER 7.5V 0.05 0.5W (F1)
ZD311	996500026931	CHIP ZENER 7.5V 0.05 0.5W (F1)
ZD500	996500021177	CHIP ZENR5.1V5%0.5W(E1)SOD-123
ZD501	994000005204	DIODE ZENR 12.6-13.1V 0.5W
ZD502	996510004285	DIODE ZENR 9.7-10.1V 0.5W
ZD503	994000005476	DIODE ZENER 5.6V 0.5W 5% MOT
ZD505	994000005265	CHIP ZENER 3.9V 5% 0.5W
ZD506	996510004286	DIODE ZENR 4.1-4.3V 0.5W

Electronic-CTR+STANDBY+REC.+USB+MOOR PCB

DP200	996510004128	VFD 42P 70x22MM KLV000049-0011
IC100	996500029611	IC 8P CO4558A SO8 CERAMATE LF
IC200	996500041280	IC 52P ET16311 VFD DRIVER
JK100	994000005256	KARAOKE JACK D3.5MM 9P
JK101	996510004129	KARAOKE JACK D3.6MM 7P
JK400	994000005257	PHONE JACK D3.5
LD200	994000001561	LED 3DIA SUPER RED LENS
LD500	996500012537	LED 3 DIA RED ROUND
Q100	996510004282	XISTR NPN SMT (2SC945)
Q200	994000000921	XISTR PNP 2SA812 HFE:200-400
Q201	994000000921	XISTR PNP 2SA812 HFE:200-400
SN200	994000005259	IRT RECEIV. IRM-2638F4
SW300	996510004106	PUSH SW DC50V/0.3A
TA200	996500038754	TACT SWITCH
TA201	996500038754	TACT SWITCH
TA202	996500038754	TACT SWITCH
TA203	996500038754	TACT SWITCH
TA205	996500038754	TACT SWITCH
TA206	996500038754	TACT SWITCH
TA207	996500038754	TACT SWITCH
TA209	996500038754	TACT SWITCH
TA210	996500038754	TACT SWITCH
TA211	996500038754	TACT SWITCH
TA212	996500038754	TACT SWITCH
TA213	996500038754	TACT SWITCH
TA214	996500038754	TACT SWITCH
TA500	996500038754	TACT SWITCH
USB600	996510004281	USB CONECTOR 4P CJU040010-0003
ZD200	994000005476	DIODE ZENER 5.6V 0.5W 5% MOT
ZD201	994000005476	DIODE ZENER 5.6V 0.5W 5% MOT
ZD202	994000005476	DIODE ZENER 5.6V 0.5W 5% MOT
ZD203	996500026942	DIODE ZENR 5.0-5.2V 0.5W
ZD600	996500021177	CHIP ZENR5.1V5%0.5W(E1)SOD-123
ZD601	996500021177	CHIP ZENR5.1V5%0.5W(E1)SOD-123

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