

Service
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Service Manual

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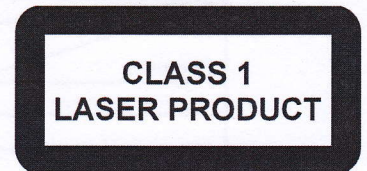


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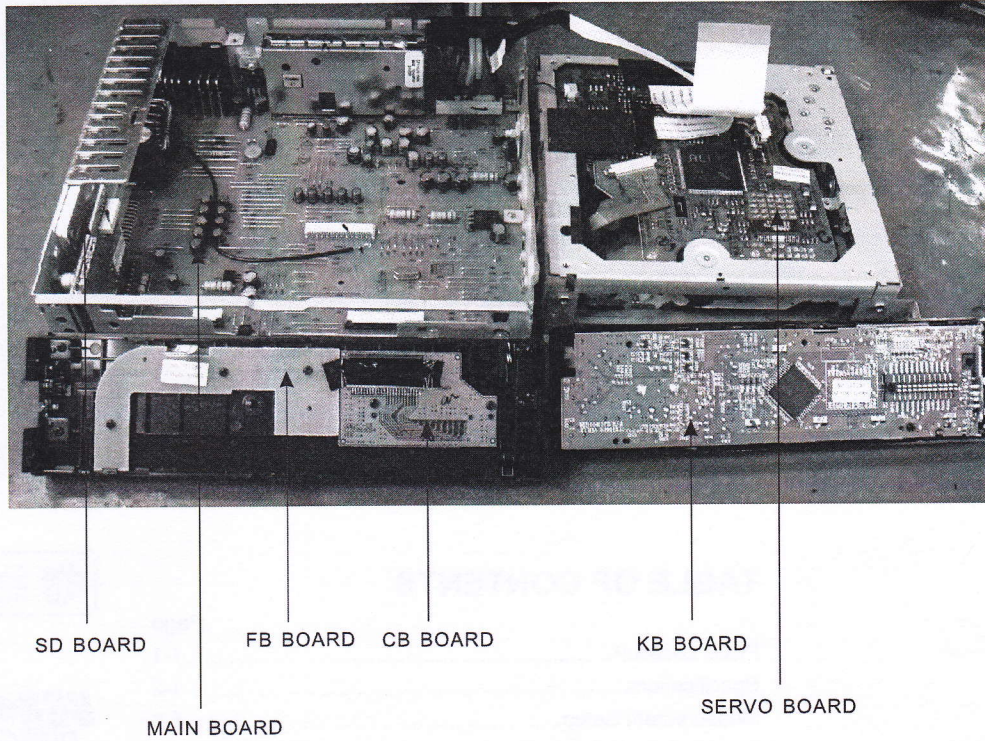
© 3141 785 33212

Version 1.2



PHILIPS

Location of PCBS



VERSION VARIATIONS:

Type/Versions		CEM220													
		Service policy		/55	/78	/98									
Board inused:															
SD BOARD		C	C	C											
FB BOARD		C	C	C											
KB BOARD		C	C	C											
CB BOARD		C	C	C											
MAIN BOARD		C	C	C											
SERVO BOARD		M	M	M											
Type/Versions		CEM220													
		Feature difference		/55	/78	/98									
Features															
<p>* TIPS:C--Component Lever Repair. M--Module Lever Repair √ --Used</p>															

SPECIFICATIONS**■ General**

Power supply:	12V DC(11V-16-), negative ground
Fuse:	15V
Suitable speaker impedance:	4-8Ω
Maximum power output:	45W×4channels
Continuous power output:	22W×4channels(4Ω 10% T. H. D)
Pre-Amp output voltage:	2.0V(USB play mode; 1kHz, 0dB, 10kΩ load)
Subwoofer output voltage:	2.0V(USB play mode; 61kHz, 0dB, 10kΩ load)
Aux-in level:	≥500mV
Dimensions(W×H×D):	188×58×128MM
Wight:	1.0kg

■ Radio

Frequency range -FM	87.5-108.0MHz(Eur) 87.5-107.9MHz(Ame)
Frequency range -AM(MW)	522-1620kHz(Eur) 530-1710MHz(Ame)
Usable sensitivity -FM	8uV
Usable sensitivity -AM(MW)(S/N=20dB)	30uV
Frequency response	30Hz-15kHz
Stereo separation	30db(1kHz)
Signal/noise ratio	>55dB

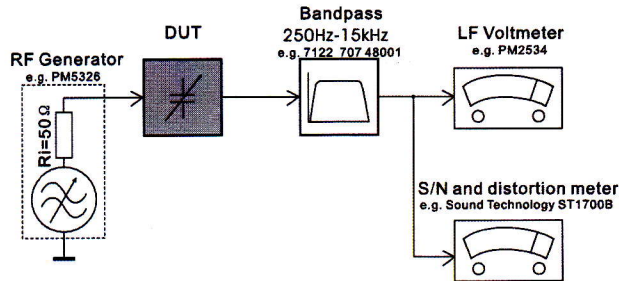
■ Components

Car audio system	1
Remote control	1
Rubber cushion	1
Disassembly tool	2
Front panel	1
Carrying case for front panel	1
Trim plate	2
Screw	4
User manual	1
Quick start guide	1

Note: Specifications and design are subject to change
without notice for product improvements.

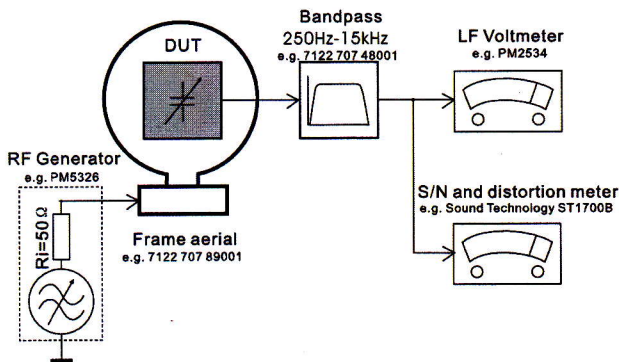
MEASUREMENT SETUP

Tuner FM



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

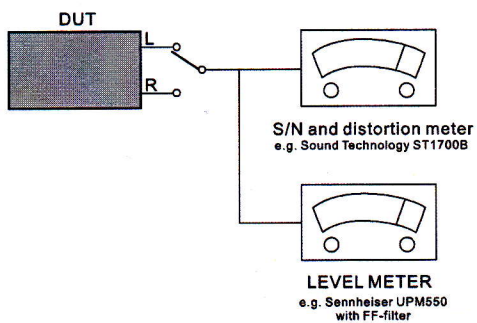
Tuner AM (MW,LW)



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).

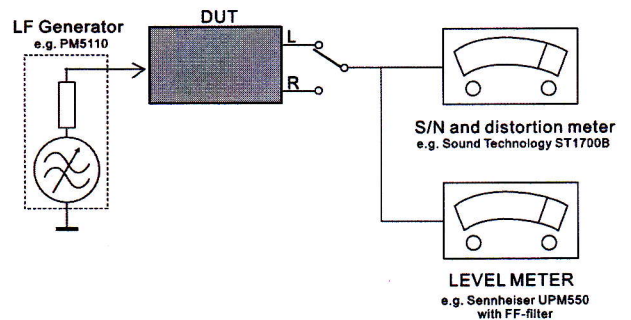
CD

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



Cassette

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 Δ .

**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".

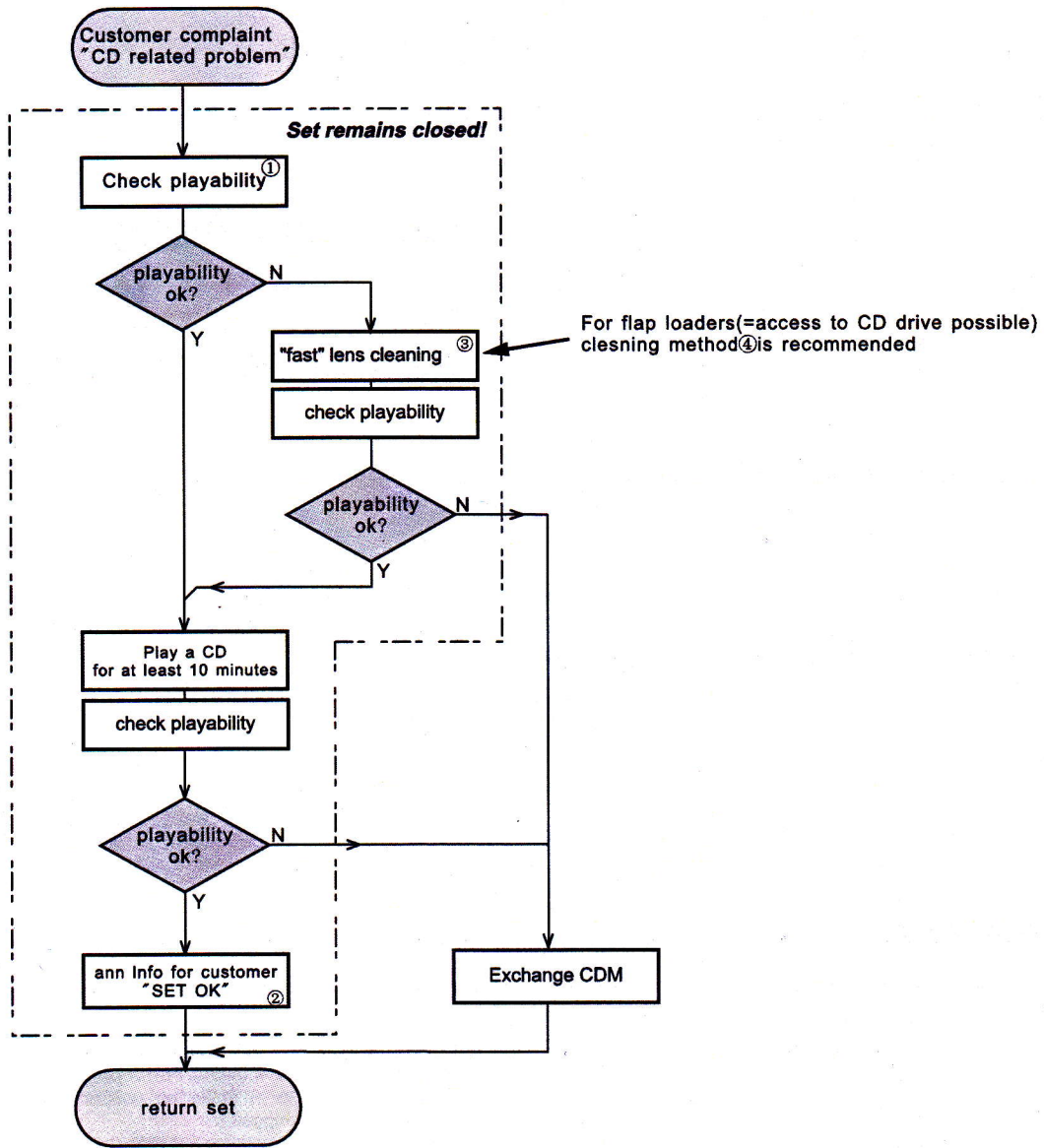
For additional questions please contact your local repair-helpdesk.

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



①-④For 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

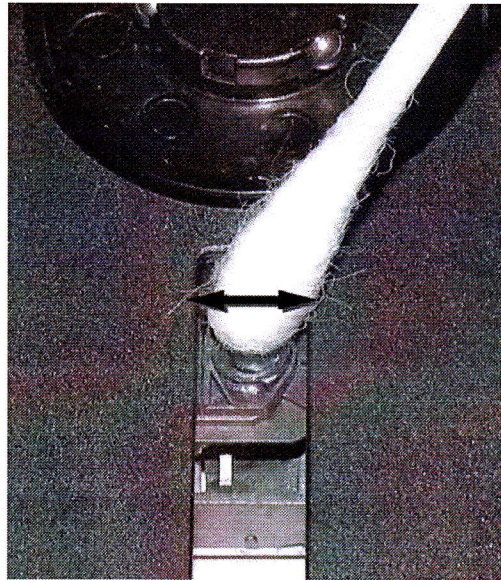
LIQUID LENS CLEANING

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"

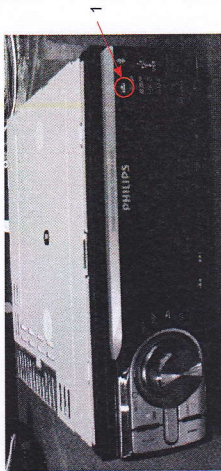
The actuator is a very precise mechanical component and may not be damaged in order to guarantee its full function. Clean the lens gently (don't press too hard) with a soft and clean cotton bud moistened with the special lens cleaner.

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

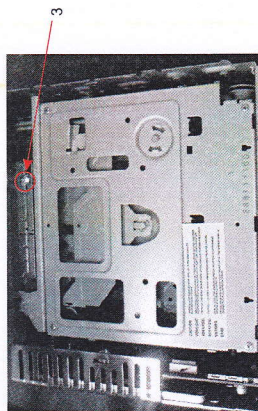


2-1

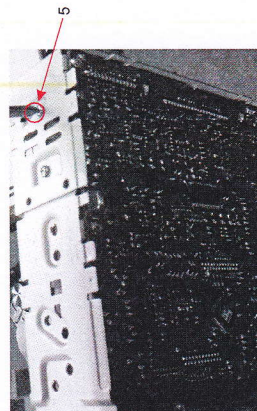
Disassembly Diagram



1. Remove the mounting sleeve with the removal keys. Press **↔** key and remove the front panel.

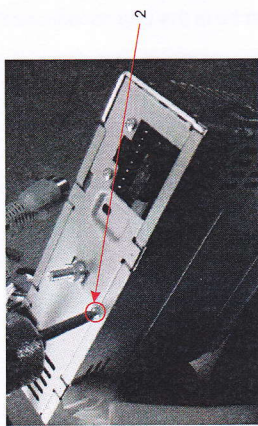


4. Remove the screw 3 as shown.

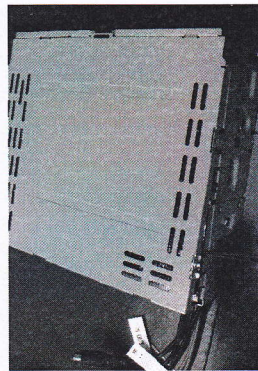


7. Remove the screw 5 with a screw driver.

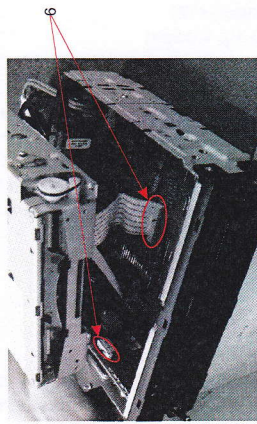
2-1



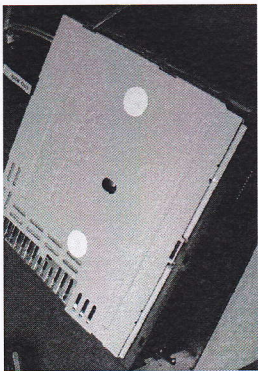
2. Remove the two screws on the back side of the unit with a screw driver.



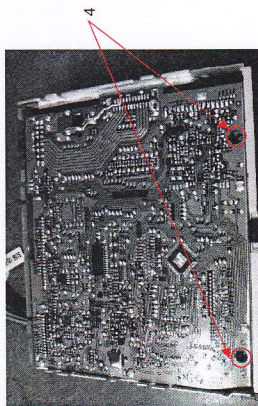
5. Remove the bottom cover with a tool.



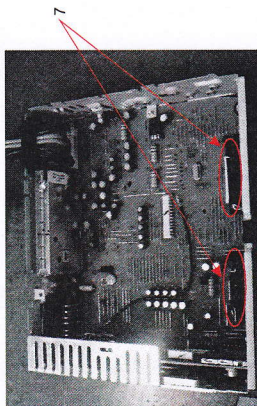
8. Remove the connectors 6, and then remove the mechanism core.



3. Remove the upper cover with a tool.



6. Remove the screws 4 with a screw driver.

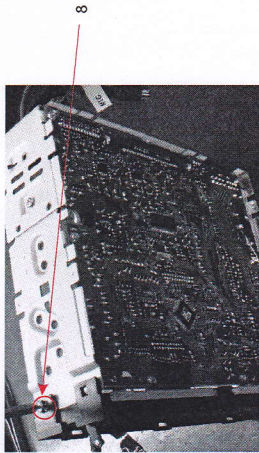


9. Remove the adhesive tapes 7.

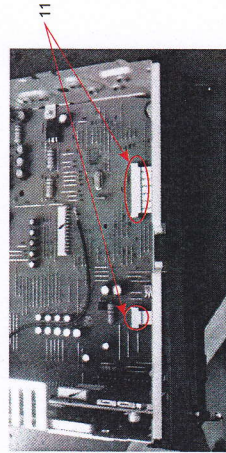


2-2

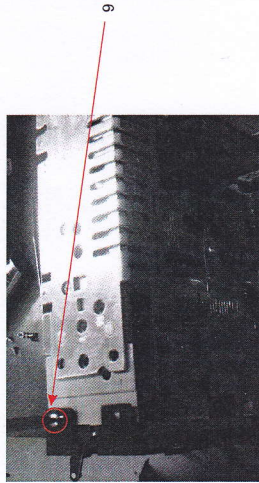
Disassembly Diagram



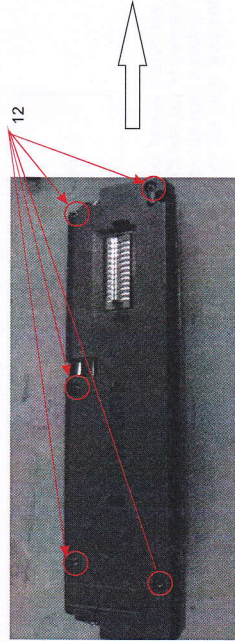
10. Remove the screw 8 .



13. Remove the connectors 11, and then remove the bracket with a tool.

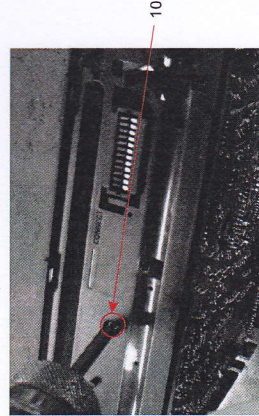


11. Remove the screw 9 .

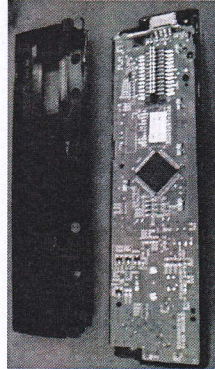


14. Remove the screws 12.

2-2



12. Remove the screw 10 .



Software version check & upgrade

1. Check Servo software version

In USB/SD/Disc mode, press DISP + 6 simultaneously for 2 sec, LCD display is as below:

VS-104

102 is the servo software version

2. Check MCU software version

In tuner mode, press DISP + 6 simultaneously for 2 sec, LCD display is as below:

VM-103

101 is the MCU software version

3. Check BT software version

In tuner mode, press DISP + 5 simultaneously for 2 sec, LCD display is as below:

VBT-177

177 is the MCU software version

Upgrade software

1. Copy servo software "BOOT.AL1" and "nemo.bin" into USB memory, plug the USB memory into USB socket. Device upgrade servo software automatically, Don't power off or disconnect power during the upgrade, LCD show:

SERVO UPGRADING...DONT' PWR OFF

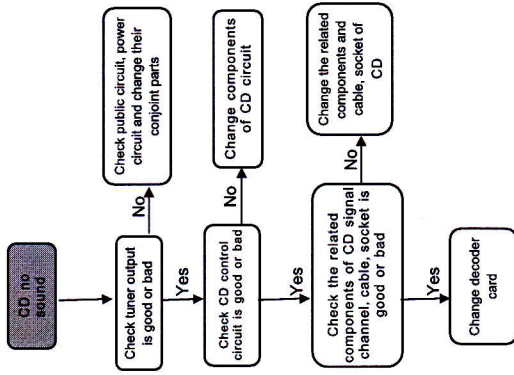
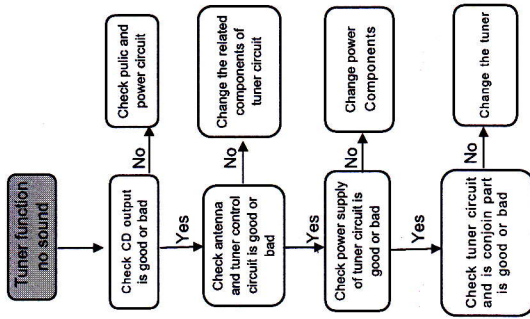
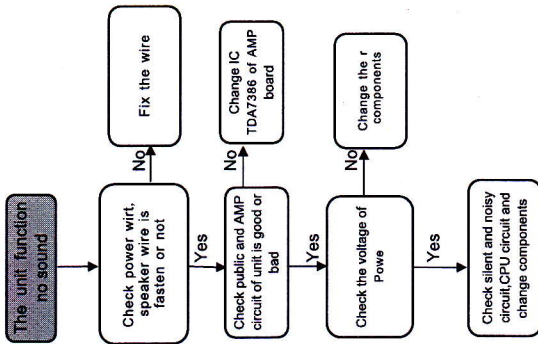
Around 1 minute, servo software upgrade completed and device change to radio mode automatically

2. Delete the servo software in the USB and copy the MCU software "CEM250MCU" (for CEM250) into USB memory, plug the USB memory into USB socket. Device upgrade MB software automatically. Don't power off or disconnect power during the upgrade, LCD show:

MCU UPG

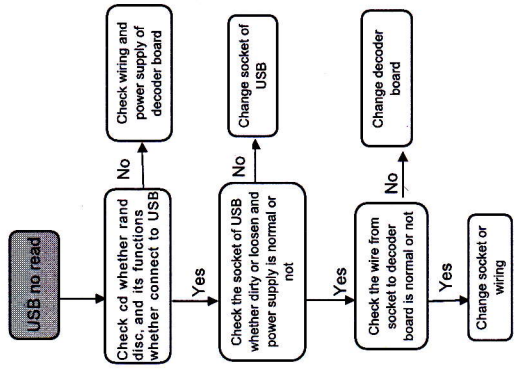
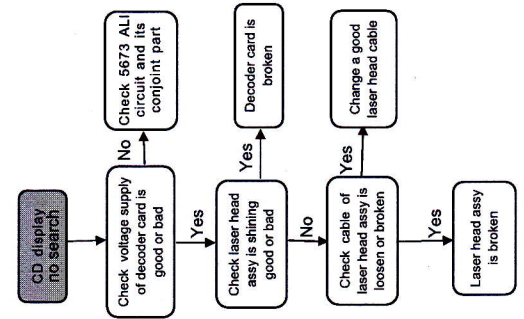
Around 1 minute, MB software upgrade completed and device power off automatically, disconnect the USB memory.

Malfunction check chart



3-2

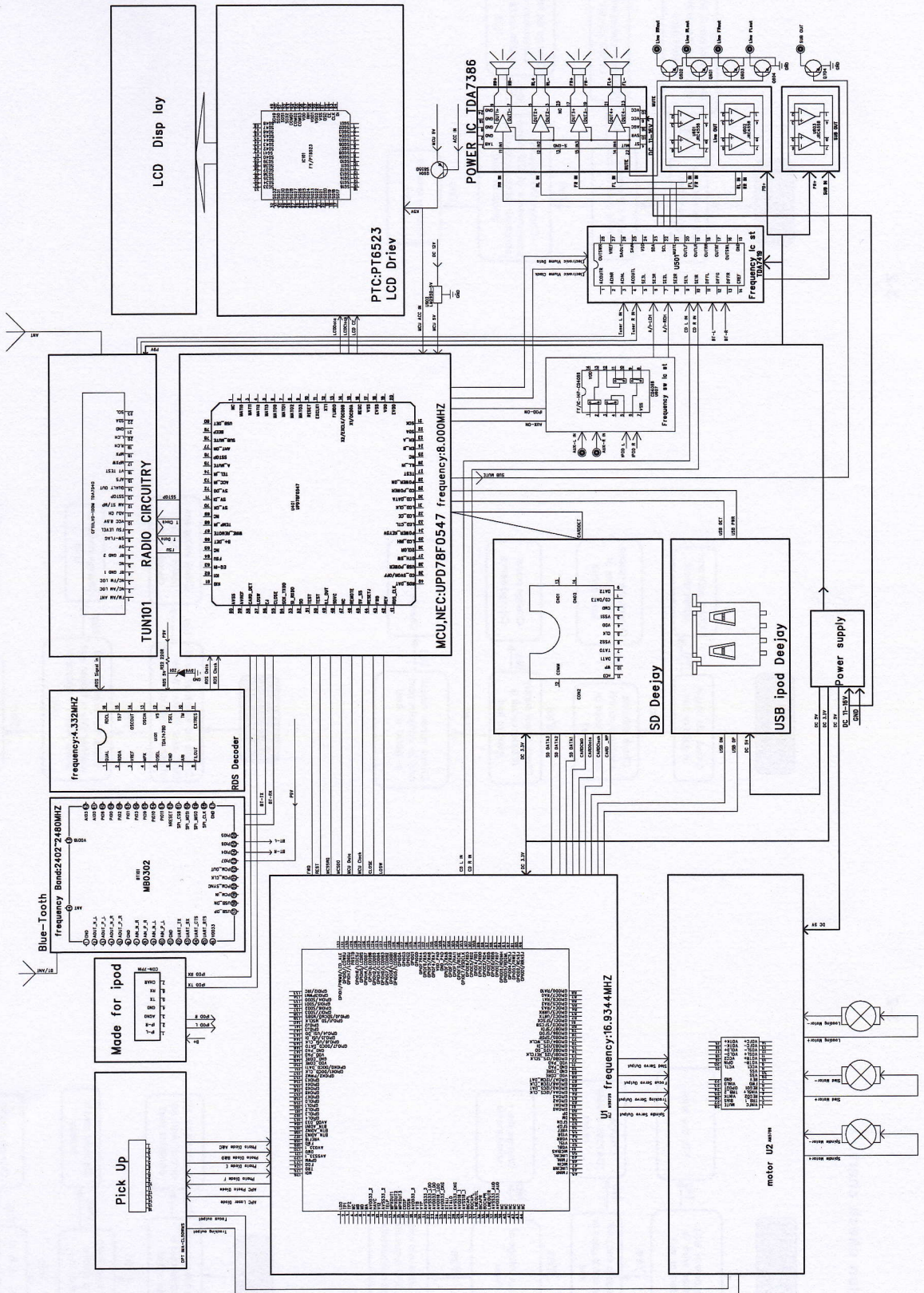
3-2



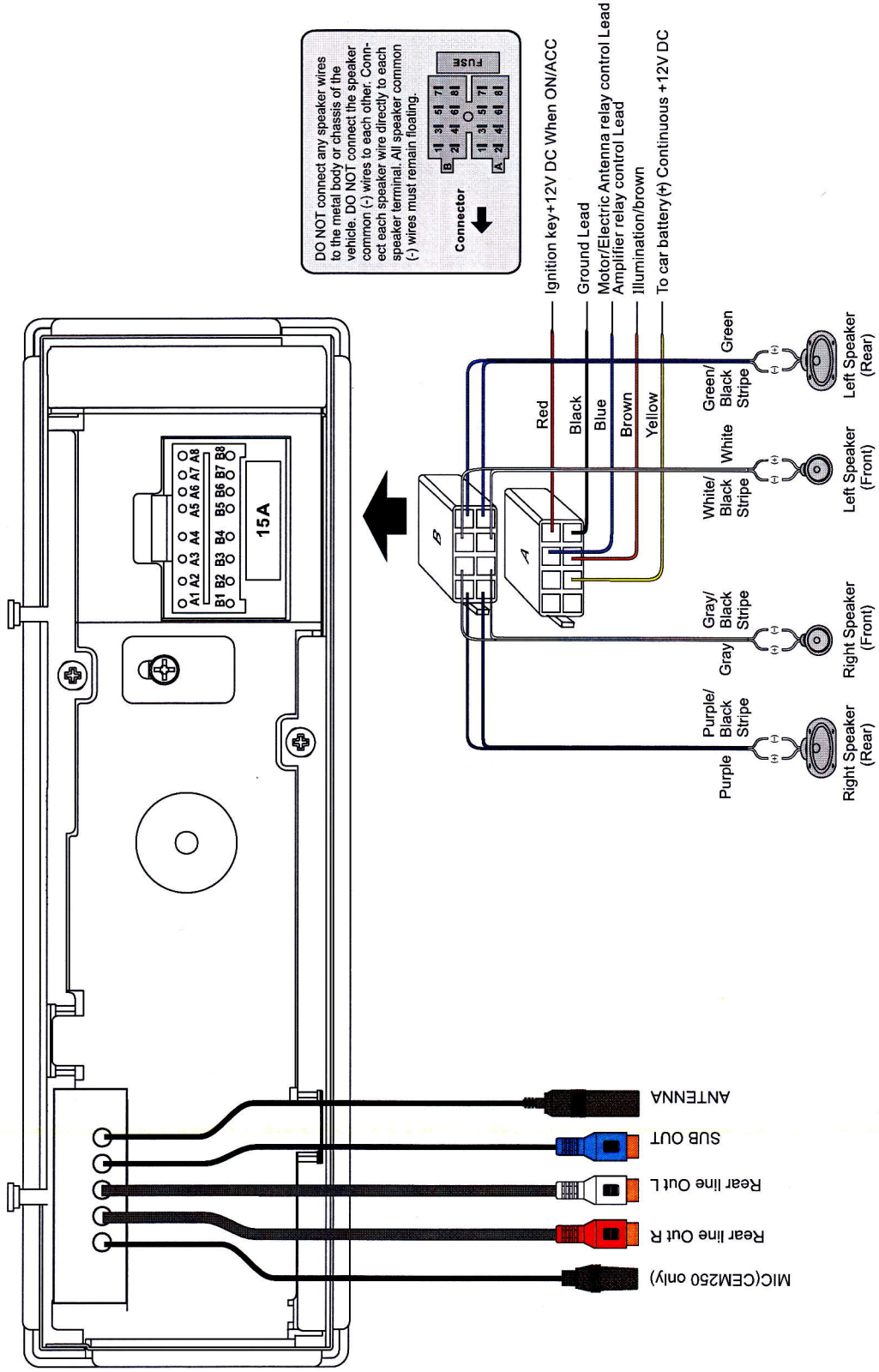
SET BLOCK DIAGRAM

4-1

4-1



WIRING DIAGRAM



ANTENNA
 SUB OUT
 Rear line Out L
 Rear line Out R
 MIC(CEM250 only)

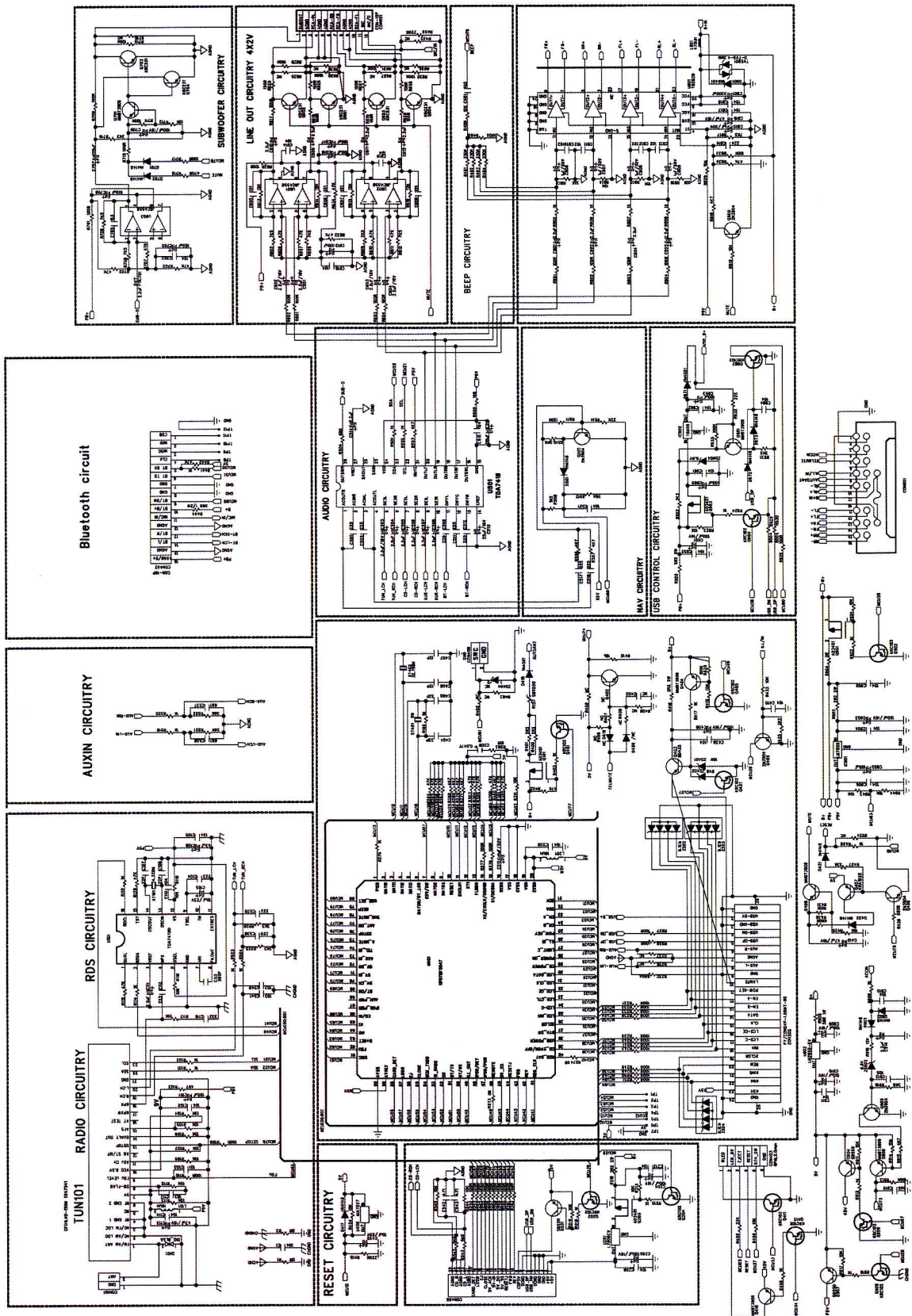
Ignition key+12V DC When ON/ACC
 Ground Lead
 Motor/Electric Antenna relay control Lead
 Amplifier relay control Lead
 Illumination/brown
 To car battery(+) Continuous +12V DC

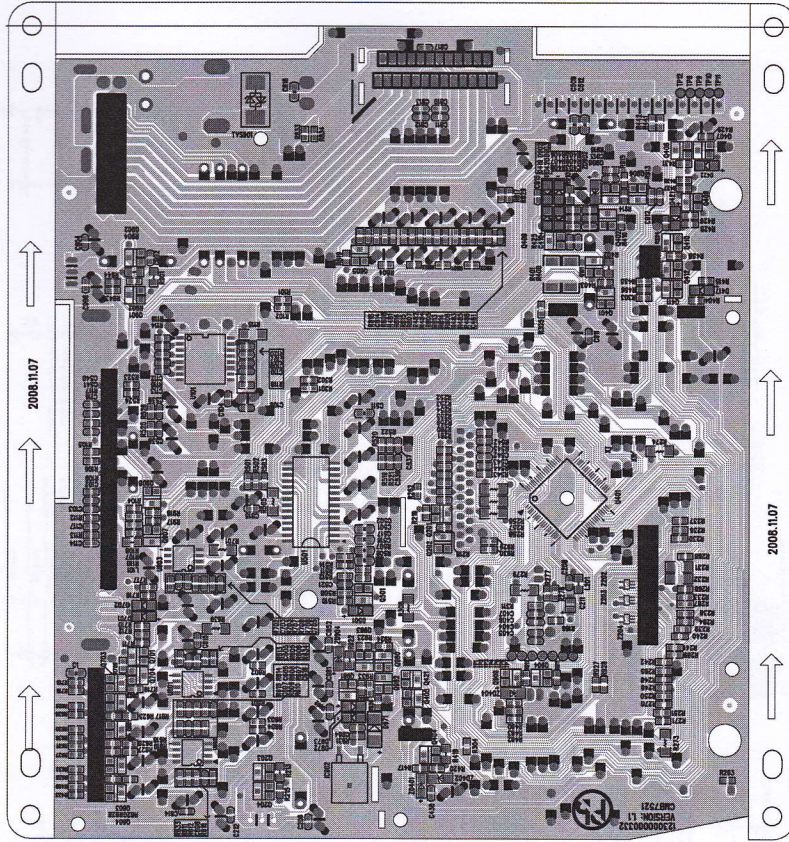
DO NOT connect any speaker wires to the metal body or chassis of the vehicle. DO NOT connect the speaker common (-) wires to each other. Connect each speaker wire directly to each speaker terminal. All speaker common (-) wires must remain floating.

Connector

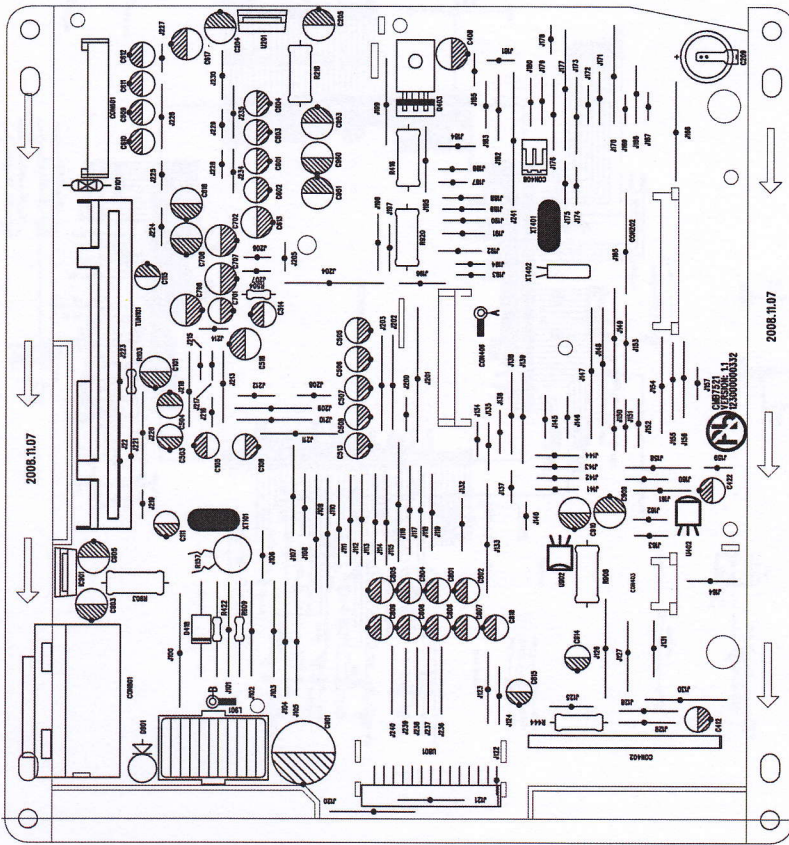
Right Speaker (Rear)
 Right Speaker (Front)
 Left Speaker (Front)
 Left Speaker (Rear)

MAIN BOARD-CIRCUIT DIAGRAM



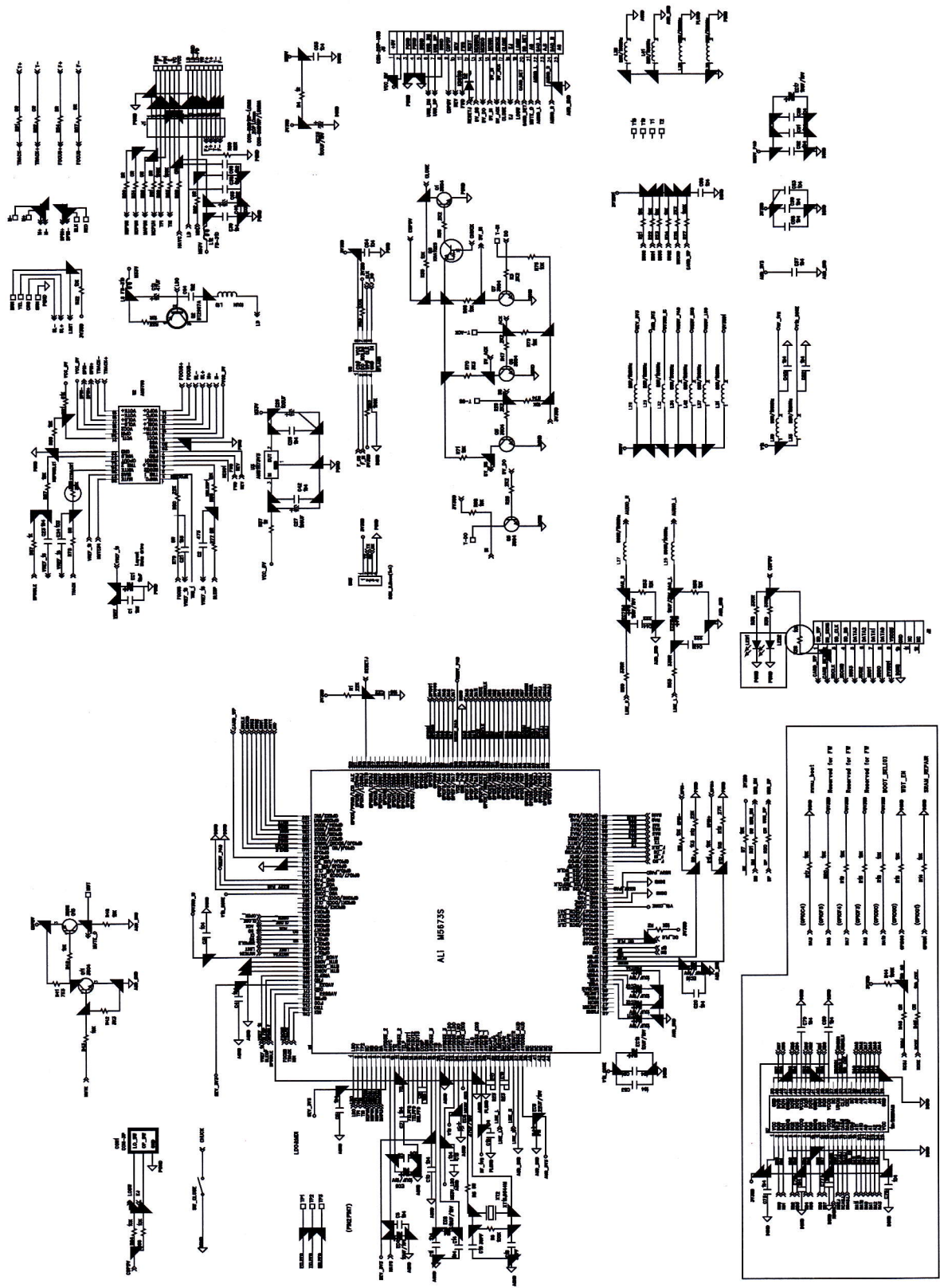


6-2
MAIN BOARD-PCB LAYOUT TOP/BOTTOM VIEW



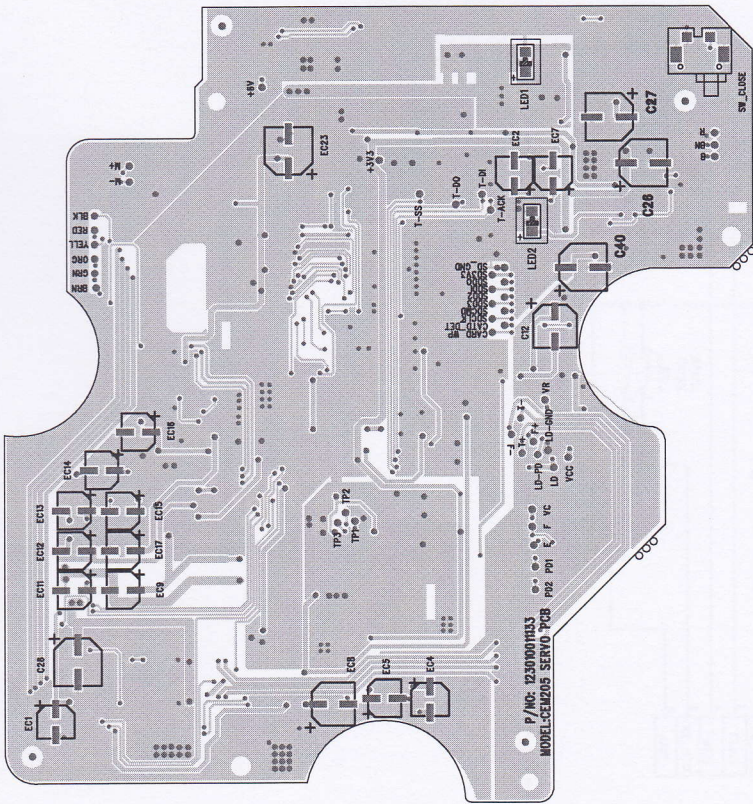
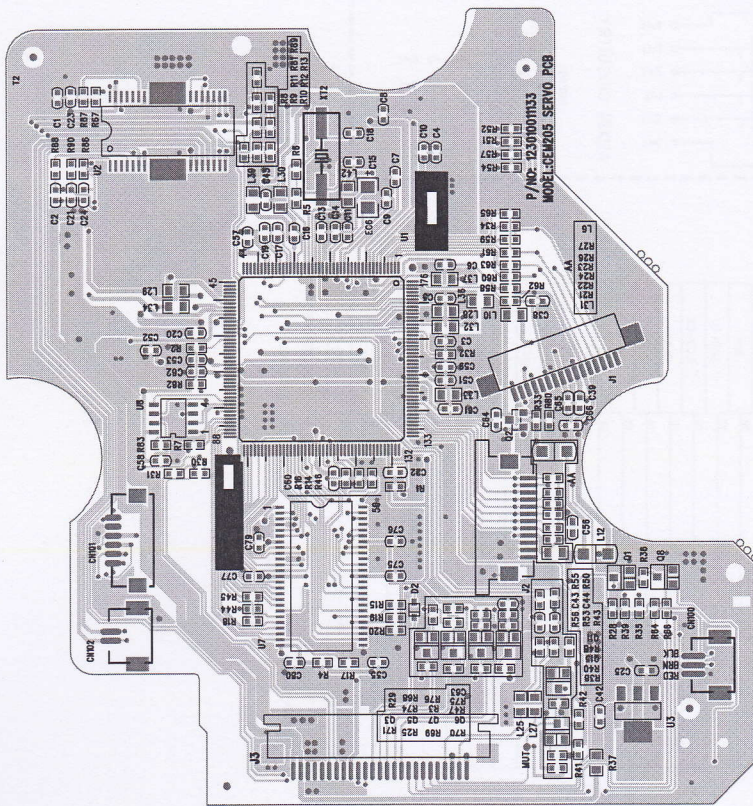
SERVO BOARD-CIRCUIT DIAGRAM

7-1

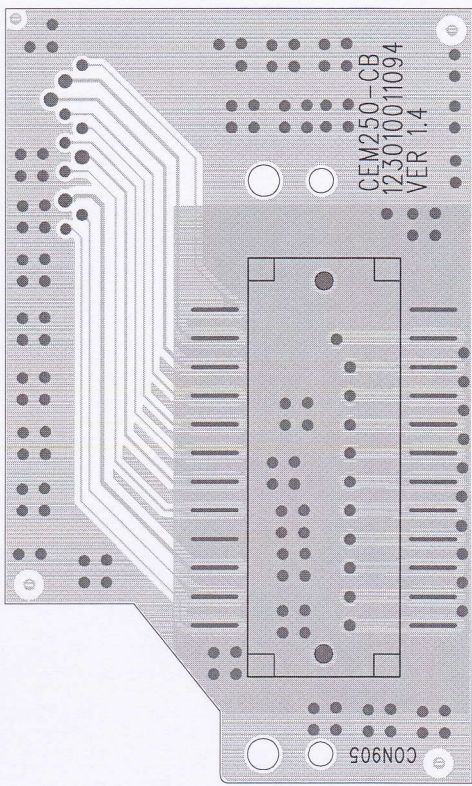


7-1

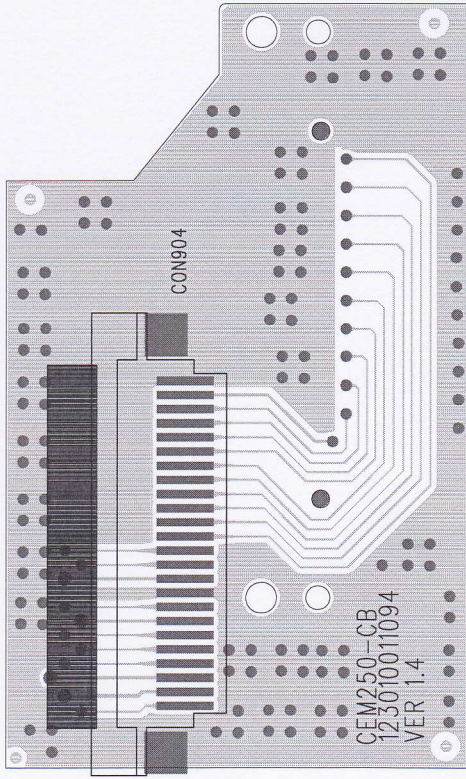
SERVO BOARD-LAYOUT DIAGRAM TOP/BOTTOM VIEW



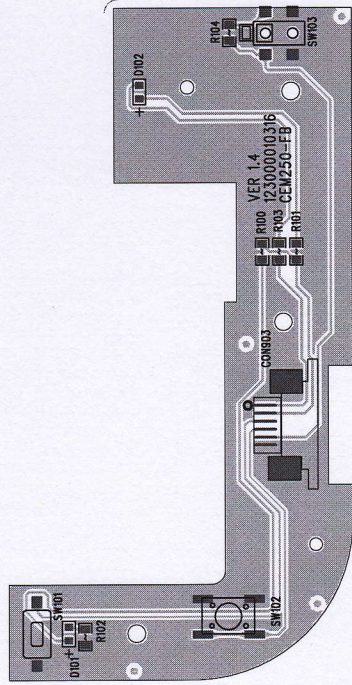
8-2
CB BOARD-PCB LAYOUT TOP/BOTTOM VIEW



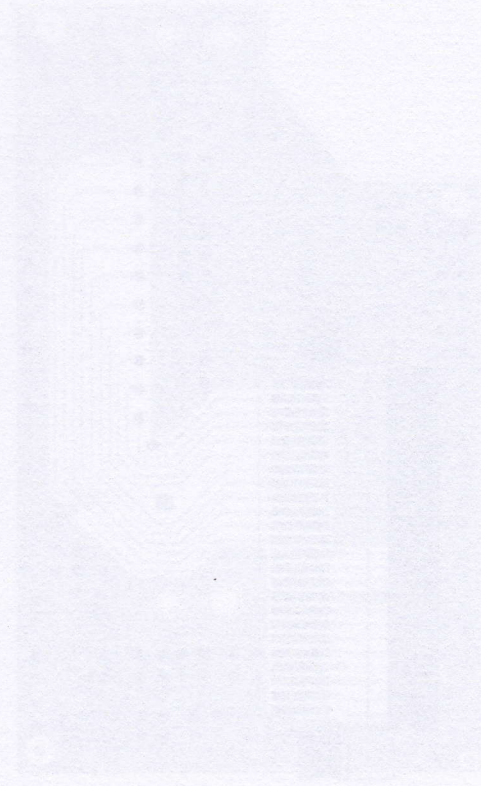
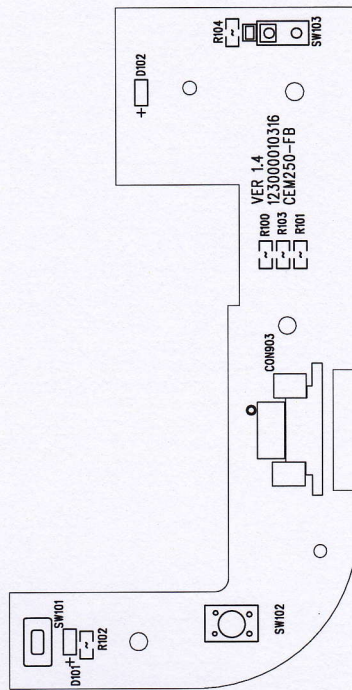
8-2

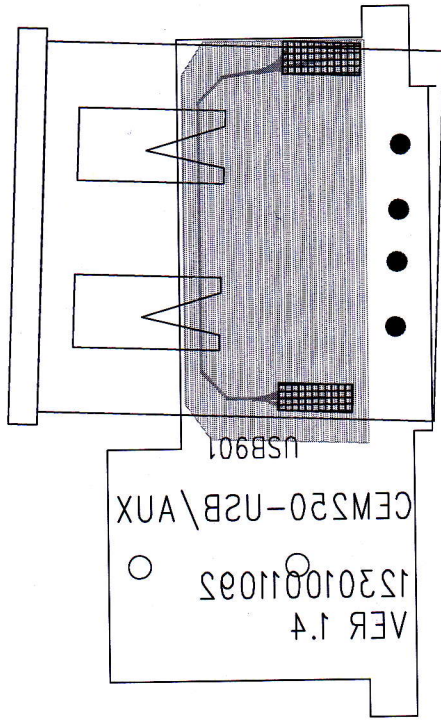


8-3

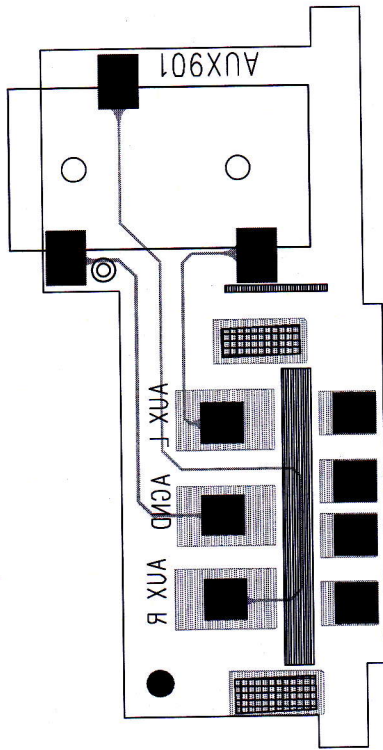


8-3
FB BOARD-PCB LAYOUT TOP/BOTTOM VIEW





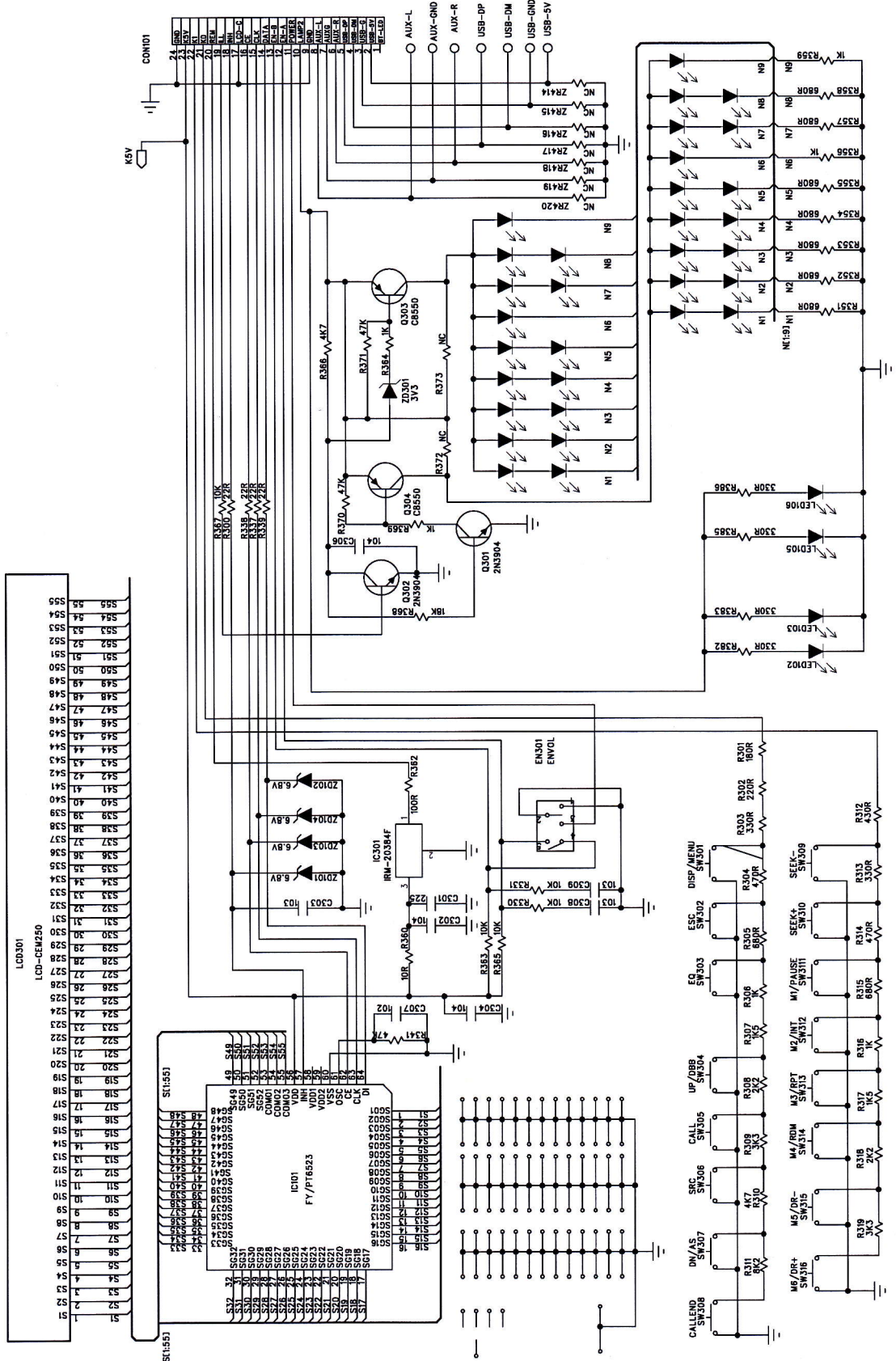
USB BOARD-PCB LAYOUT TOP/BOTTOM VIEW



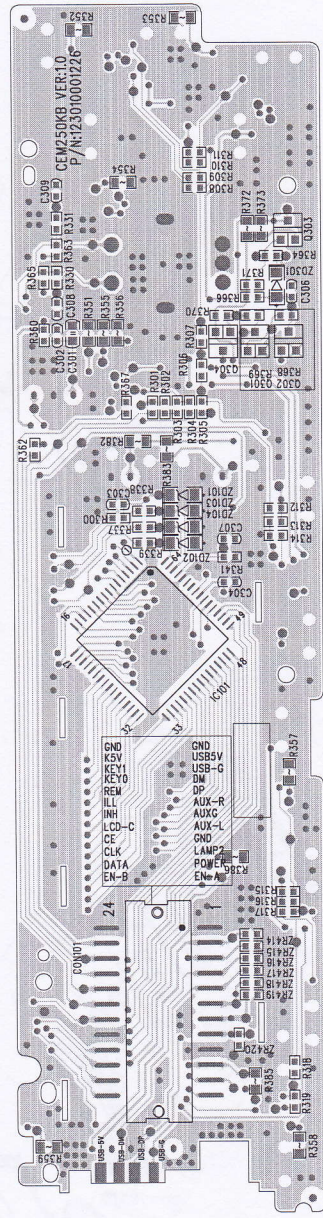
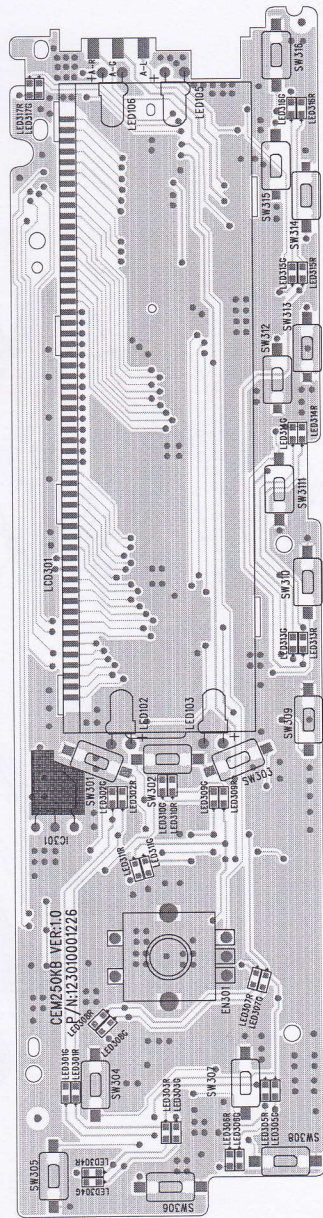
KB BOARD-CIRCUIT DIAGRAM

10-1

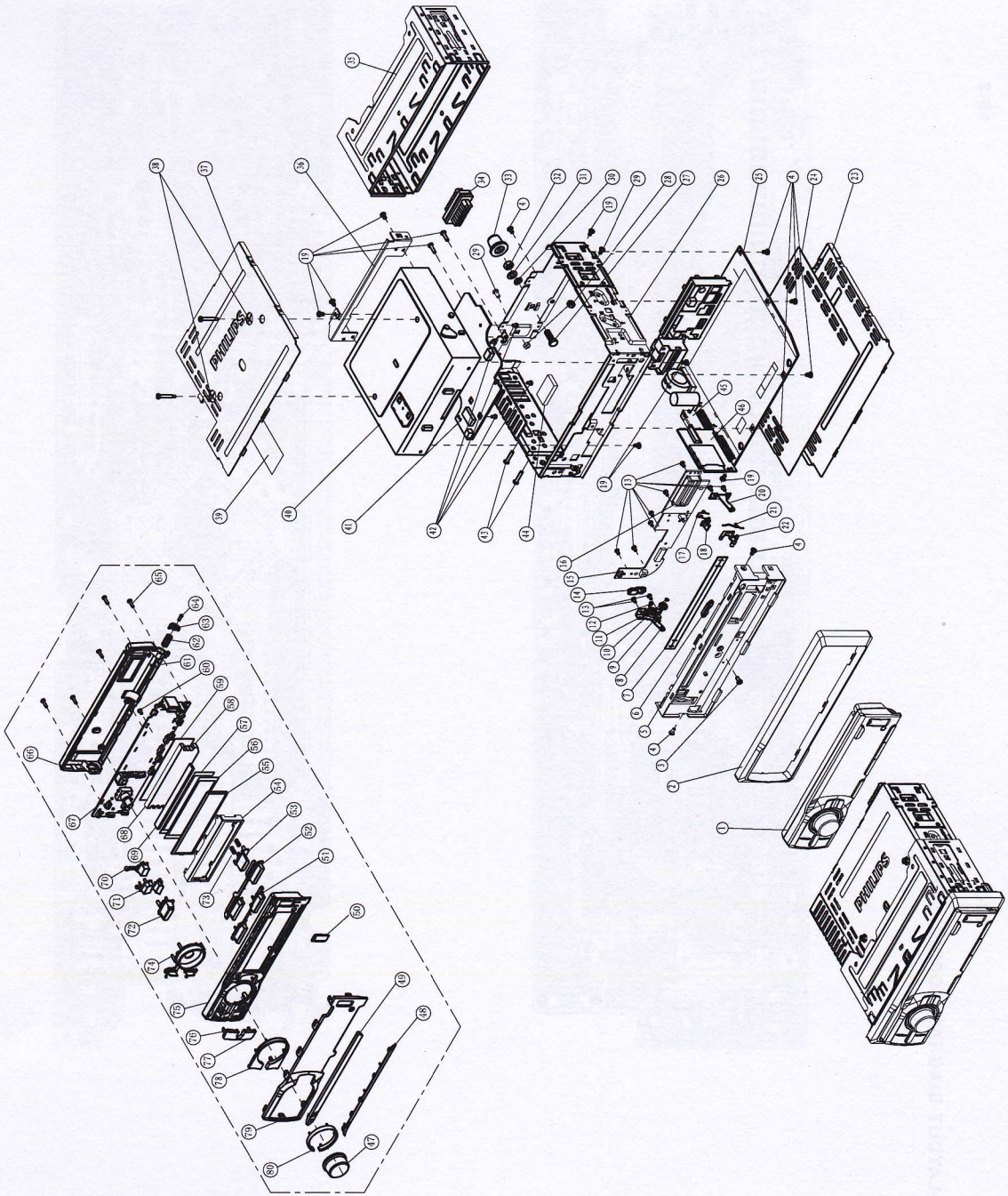
10-1



KB BOARD-LAYOUT DIAGRAM TOP/BOTTOM VIEW



11-1



11-1

EXPLODED VIEW-MAIN UNIT

MECHANICAL & ACCESSORIES PARTS LIST (only for CEM220/98)

Loc.	12NC	Description
MAIN UNIT		
4	966510020872	1 BUTTON
5	966510020879	3 BUUTTON
6	966510019781	LIGHT GUIDE
9	966510019642	CMU700 GEAR
11	966510019641	CMU706 DAMPER
14	966510019782	EJECT BUTTON
17	966510019643	CMB752 SPRING 2 D0.4
18	966510019639	CMB752 LOCKER
21	966510027661	CMB752 SPRING 1 D0.6
22	966510019638	CMB752 HANDSPIKE
25	966510027878	CEM250 MAIN BOARD
40	966510027884	SERVO BOARD ASSM&CDM
47	966510019808	KNOB ENCODER
48	966510020863	DECORAT DOWN
49	966510020807	DECORAT UP
50	966510019615	USB COVER
53	966510027861	OPEN BUTTON
65	966510024811	REAR PANEL
66	966510027888	FRONT PANEL ASSY
69	966510020876	RETURN BUTTON
71	966510020868	SOURCE BUTTON
73	966510025021	LLGUIDE
74	966510027848	FRONT PANEL
75	966510027879	UP BUTTON
76	966510027885	DOWN BUTTON
77	966510020911	DBB SCAN BUTTON
78	966510020908	LENS BLK PHILIPS
79	966510019809	RING
C	966510019729	FFC 6P 1.0mm 35mm TYPE A
D	966510019786	FFC 2P 1.0mm 32mm TYPE C
F	966510027694	I/O CMB752 16P ACC/ILL INSPK

ELECTRICAL PARTS LIST (only for CEM220/98)

Loc.	12NC	Description
MAIN PCB ASSY		
C209	966510027872	CAP
C211	966510019874	TAN CAP 2.2uF 10V A
C901	966510019789	E CAP 3300uF 20%
CON202	966510027864	F SOCKET 24P
CON403	966510027845	F SOCKET 6P
CON406	966510020864	FFC SOCKET 25P 1.0mm
CON601	966510027883	SOCKET 14P 2.0m
CON801	966520035474	SOCKET 16P 3.5mm
CON905	966510025585	SOCKET 24P 2.0mm
D101	966510019561	LIGHTNING DIODE YP-701M 700V
D418	966510027875	REC DIODE
D901	966510027865	REC DIODE
FUS	966510019849	FUSE ATC-515A 32V
I3901	966510020507	IC L7809CV TO-220 ST
I3902	966510019574	IC L78M06CTD-TR TO-252 ST
L101	966510019795	INDUCTOR 10uH
L201	966510019795	INDUCTOR 10uH
L401	966510019795	INDUCTOR 10uH
L901	966510019555	CHOKE 200uH 1A 30%
Q101	966510019572	MOSFET AO3401
Q201	966510019569	TRANSISTOR KTC850
Q202	966510019566	TRANSISTOR KRC102(NPN)
Q203	966510019572	MOSFET AO3401

MECHANICAL & ACCESSORIES PARTS LIST (only for CEM220/98)

Loc.	12NC	Description
MAIN PCB ASSY		
U801	966510019650	IC E-TDA7386 FLEXIWATT25 ST
U902	966510019557	IC LM2950-5V TO-92 HTC
XT401	966510019563	TCXO 8.000M 20ppm 32pf
XT402	966510019558	TCXO 32.768K 20ppm 12.5pf
Z202	966510027664	ESD DIODE 200W 24A 5G
Z203	966510019580	ESD DIODE PG05GBUSV 200W 24A
Z204	966510027664	ESD DIODE 200W 24A 5G
Z205	966510027664	ESD DIODE 200W 24A 5G
Z206	966510027664	ESD DIODE 200W 24A 5G
ZD401	966510027871	ZENER DIODE
ZD402	966510019863	ZENER DIODE 6V8 1/2W 1206
ZD902	966510019863	ZENER DIODE 6V8 1/2W 1206
ZD904	966510019863	ZENER DIODE 6V8 1/2W 1206
KEY PCB ASSY		
CON101	966510027852	CONNECTOR 24P
EN301	966510019674	ENCODER EVEJBBF2020B H20.0
IC101	966510019609	IC PT6523HQ LQFP-64 PTC
IC301	966510019583	PHOTO DIODE 638AF4.5V 1.1A
LC301	966510019876	LCD CEM220 ETN NEGATIVE
LED102	966510019820	LED WHITE D3 20mA
LED103	966510019820	LED WHITE D3 20mA
LED106	966510019820	LED WHITE D3 20mA
LED301R	966510027684	LED R 19-22/R68HC-C03/2T-YUG
LED301G	966510019821	LED BLUE SBS-0604BC-T3
LED302G	966510027684	LED BLUE SBS-0604BC-T3
LED302R	966510027684	LED R 19-22/R68HC-C03/2T-YUG
LED303R	966510027684	LED R 19-22/R68HC-C03/2T-YUG
LED304G	966510027684	LED R 19-22/R68HC-C03/2T-YUG
LED304R	966510027684	LED R 19-22/R68HC-C03/2T-YUG
LED305G	966510019821	LED BLUE SBS-0604BC-T3
LED305R	966510027684	LED R 19-22/R68HC-C03/2T-YUG
LED306R	966510027684	LED R 19-22/R68HC-C03/2T-YUG
LED307G	966510019821	LED BLUE SBS-0604BC-T3
LED307R	966510027684	LED R 19-22/R68HC-C03/2T-YUG
LED308G	966510019821	LED BLUE SBS-0604BC-T3
LED308R	966510027684	LED R 19-22/R68HC-C03/2T-YUG
LED309G	966510019821	LED BLUE SBS-0604BC-T3
LED309R	966510027684	LED R 19-22/R68HC-C03/2T-YUG
LED310G	966510019821	LED BLUE SBS-0604BC-T3
LED310R	966510027684	LED R 19-22/R68HC-C03/2T-YUG
LED311G	966510019821	LED BLUE SBS-0604BC-T3
LED311R	966510027684	LED R 19-22/R68HC-C03/2T-YUG
LED313G	966510019821	LED BLUE SBS-0604BC-T3
LED313R	966510027684	LED R 19-22/R68HC-C03/2T-YUG
LED314G	966510019821	LED BLUE SBS-0604BC-T3
LED314R	966510027684	LED R 19-22/R68HC-C03/2T-YUG
LED315G	966510019821	LED BLUE SBS-0604BC-T3
LED315R	966510027684	LED R 19-22/R68HC-C03/2T-YUG
LED316G	966510019821	LED BLUE SBS-0604BC-T3
LED316R	966510027684	LED R 19-22/R68HC-C03/2T-YUG
LED317R	966510027684	LED R 19-22/R68HC-C03/2T-YUG
Q301	966510019571	TRANSISTOR 2N3904(NPN)
Q302	966510019571	TRANSISTOR 2N3904(NPN)
Q303	966510019569	TRANSISTOR KTC8550

Loc.	12NC	Description
MAIN PCB ASSY		
Q204	966510019566	TRANSISTOR KRC102(NPN)
Q401	966510019566	TRANSISTOR KRC102(NPN)
Q403	966510019566	TRANSISTOR BRD435 TO-126C
Q404	966510019570	TRANSISTOR MMBT3906L1T1(PNP)
Q405	966510019566	TRANSISTOR KRC102(NPN)
Q406	966510019571	TRANSISTOR 2N3904(NPN)
Q407	966510019871	TR KRA102S(PNP) SOT-23
Q408	966510019570	TRANSISTOR MMBT3906L1T1(PNP)
Q409	966510019571	TRANSISTOR 2N3904(NPN)
Q410	966510019570	TRANSISTOR MMBT3906L1T1(PNP)
Q411	966510019566	TRANSISTOR KRC102(NPN)
Q412	966510019566	TRANSISTOR KRC102(NPN)
Q413	966510019572	MOSFET AC3401
Q414	966510019566	TRANSISTOR KRC102(NPN)
Q421	966510019566	TRANSISTOR KRC102(NPN)
Q422	966510019570	TRANSISTOR MMBT3906L1T1(PNP)
Q423	966510019566	TRANSISTOR KRC102(NPN)
Q425	966510019571	TRANSISTOR 2N3904(NPN)
Q426	966510019791	TR S8050(NPN) TO-92
Q501	966510019571	TRANSISTOR 2N3904(NPN)
Q601	966510019567	TRANSISTOR KRC231S(NPN)
Q602	966510019567	TRANSISTOR KRC231S(NPN)
Q603	966510019567	TRANSISTOR KRC231S(NPN)
Q604	966510019567	TRANSISTOR KRC231S(NPN)
Q701	966510019570	TRANSISTOR MMBT3906L1T1(PNP)
Q703	966510019567	TRANSISTOR KRC231S(NPN)
Q704	966510019571	TRANSISTOR KRC231S(NPN)
Q805	966510019571	TRANSISTOR 2N3904(NPN)
Q902	966510019572	MOSFET AC3401
Q903	966510019566	TRANSISTOR KRC102(NPN)
Q904	966510019569	TRANSISTOR KTC8550
Q905	966510019571	TRANSISTOR 2N3904(NPN)
Q906	966510019570	TRANSISTOR MMBT3906L1T1(PNP)
Q907	966510019569	TRANSISTOR KTC8550
Q908	966510019566	TRANSISTOR KRC102(NPN)
Q909	966510019566	TRANSISTOR KRC102(NPN)
Q980	966510019566	TRANSISTOR KRC102(NPN)
Q981	966510019570	TRANSISTOR MMBT3906L1T1(PNP)
Q982	966510019566	TRANSISTOR KRC102(NPN)
R157	966510019561	THEFMAIL RES GBX050 PTC
R224	966510019564	V-RES EZJZ1V8000AA 3pf DC18V
R230	966510019564	V-RES EZJZ1V8000AA 3pf DC18V
R236	966510019564	V-RES EZJZ1V8000AA 3pf DC18V
R237	966510019564	V-RES EZJZ1V8000AA 3pf DC18V
R433	966510019564	V-RES EZJZ1V8000AA 3pf DC18V
R635	966510019564	V-RES EZJZ1V8000AA 3pf DC18V
R636	966510019564	V-RES EZJZ1V8000AA 3pf DC18V
R718	966510019564	V-RES EZJZ1V8000AA 3pf DC18V
R929	966510019564	V-RES EZJZ1V8000AA 3pf DC18V
R930	966510019564	V-RES EZJZ1V8000AA 3pf DC18V
TUN101	966510020516	TUNER KST-CF111LVD-178F
TVS901	966510019577	TVS DIODE SMCJ33CA 1500W
U201	966510019792	IC L7806CV TO-220 ST
U401	966510019579	IC UPD78F0547 LOFP-1212 NEC
U402	966510019553	IC KIA7027 TO-92 KEC
U403	966510019621	IC AMS1117-3V3 SOT-223 AMS
U501	966510019566	IC TDA7419TR SOP8 NJRC
U601	966510019573	IC NJM4558M SOP8 NJRC
U603	966510019573	IC NJM4558M SOP8 NJRC
U604	966510019573	IC NJM4558M SOP8 NJRC

ELECTRICAL PARTS LIST (only for CEM220/98)

Loc.	12NC	Description
MAIN PCB ASSY		
C209	966510027872	CAP
C211	966510019874	TAN CAP 2.2uF 10V A
C901	966510019789	E CAP 3300uF 20%
CON202	966510027864	F SOCKET 24P
CON403	966510027845	F SOCKET 6P
CON406	966510020864	FFC SOCKET 25P 1.0mm
CON601	966510027883	SOCKET 14P 2.0m
CON801	966520035474	SOCKET 16P 3.5mm
CON905	966510025585	SOCKET 24P 2.0mm
D101	966510019561	LIGHTNING DIODE YP-701M 700V
D418	966510027875	REC DIODE
D901	966510027865	REC DIODE
FUS	966510019849	FUSE ATC-515A 32V
I3901	966510020507	IC L7809CV TO-220 ST
I3902	966510019574	IC L78M06CTD-TR TO-252 ST
L101	966510019795	INDUCTOR 10uH
L201	966510019795	INDUCTOR 10uH
L401	966510019795	INDUCTOR 10uH
L901	966510019555	CHOKE 200uH 1A 30%
Q101	966510019572	MOSFET AO3401
Q201	966510019569	TRANSISTOR KTC850
Q202	966510019566	TRANSISTOR KRC102(NPN)
Q203	966510019572	MOSFET AO3401

MECHANICAL & ACCESSORIES PARTS LIST (only for CEM220/98)

Loc.	12NC	Description
KEY PCB ASSY		
Q304	996510019569	TRANSISTOR KTC8550
SW301	996510020874	TACT SW 4.3mm 250gf
SW302	996510020874	TACT SW 4.3mm 250gf
SW303	996510020874	TACT SW 4.3mm 250gf
SW304	996510020874	TACT SW 4.3mm 250gf
SW305	996510020874	TACT SW 4.3mm 250gf
SW306	996510020874	TACT SW 4.3mm 250gf
SW307	996510020874	TACT SW 4.3mm 250gf
SW308	996510020874	TACT SW 4.3mm 250gf
SW309	996510020874	TACT SW 4.3mm 250gf
SW310	996510020874	TACT SW 4.3mm 250gf
SW311	996510020874	TACT SW 4.3mm 250gf
SW312	996510020874	TACT SW 4.3mm 250gf
SW313	996510020874	TACT SW 4.3mm 250gf
SW314	996510020874	TACT SW 4.3mm 250gf
SW315	996510020874	TACT SW 4.3mm 250gf
SW316	996510020874	TACT SW 4.3mm 250gf
ZD101	996510019863	ZENER DIODE 6V8 1/2W 1206
ZD102	996510019863	ZENER DIODE 6V8 1/2W 1206
ZD103	996510019863	ZENER DIODE 6V8 1/2W 1206
ZD104	996510019863	ZENER DIODE 6V8 1/2W 1206
ZD301	996510019862	ZENER DIODE 3.3V 1/2W
ZR414	996510019564	V-RES EZJZ1V800AA 3pf DC18V
ZR415	996510019564	V-RES EZJZ1V800AA 3pf DC18V
ZR416	996510019564	V-RES EZJZ1V800AA 3pf DC18V
ZR417	996510019564	V-RES EZJZ1V800AA 3pf DC18V
ZR418	996510019564	V-RES EZJZ1V800AA 3pf DC18V
ZR419	996510019564	V-RES EZJZ1V800AA 3pf DC18V
ZR420	996510019564	V-RES EZJZ1V800AA 3pf DC18V

Loc.	12NC	Description
SERVO PCB ASSY		
U3	996510019621	IC AMS1117-3V3 SOT-223 AMS
U403	996510019621	IC AMS1117-3V3 SOT-223 AMS
U604	996510019573	IC NJM4558M SOP8 NJRC
U7	996510019620	IC IS42S16100-7T SOP ISSI
U8	996510019619	IC EN25P20-100GCP 2M-BIT SOP8
XT2	996510019618	TCXO 16.9344M 10ppm 20pf
FRONT PCB ASSY		
CON903	996510027867	F SOCKET 6P
D101	996510019823	LED RED FC-1608SEK-624C
D102	996510019823	LED RED FC-1608SEK-624C
LONG PCB ASSY		
CON904	996510027853	F SOCKET 24P
USB901	996510027859	SOCKET 4P
USB PCB ASSY		
AUX901	996510019630	SOCKET 3P 6.0mm EARPHONE
USB901	996510019688	USB SOCKET 4P 2.5mm

SERVO PCB ASSY

A	996510019825	FFC 12P 1.00mm 160mm B TYPE
B	996510019826	FFC 28P 1.0mm 120mm TYPE A
CN100	996510027858	SOCKET 3P 1.25mm
CN101	996510027859	SOCKET 6P
CN102	996510027856	SOCKET 2P
CON402	996510027844	CONNATOR 16P
CON803	996510019576	FPC SOCKET 12P 1.0mm DIP90
D2	996510019617	SCHTTKY DIODE R6551 0.5A 20V
E6	996510019709	TAN.CAP 10uF 10V 20% A
J1	996510027849	F SOCKET 16P
J2	996510027846	FFC SOCKET 12P
J3	996510019794	FFC SOCKET 25P 1.0mm
Q1	996510019571	TRANSISTOR 2N3904(NPN)
Q2	996510019569	TRANSISTOR KTC8550
Q3	996510019571	TRANSISTOR 2N3904(NPN)
Q413	996510019572	MOSFET AO3401
Q414	996510019566	TRANSISTOR KRC102(NPN)
Q5	996510019571	TRANSISTOR 2N3904(NPN)
Q6	996510019571	TRANSISTOR 2N3904(NPN)
Q7	996510019571	TRANSISTOR 2N3904(NPN)
Q8	996510019671	TR KRA 102S(PNP) SOT-23
SD901	996510019625	12P 2.5MM SD/MMC SOCKET
SWCL	996510019722	END-SENSE SW ESE11MH1
U1	996510019622	IC M5673S LOFP-176PIN ALI
U2	996510019717	IC AM5766FM MOTOR DRIVER

- Note:**
- 1) Only these parts mentioned in the list are normal service parts.
 - 2) For Key Board & Main Board & Servo Board, module level repair can be a service option also.
 - 3) For CD Mechanism must be ordered with Servo board, the combined part is with code number 996510027884
 - 4) For Key Board module, please order 996510027888_FRONT PANEL ASSY which contains Key Board.