Portable compact disc player

AZT 9500
AZT 9505
all versions

Service
Service
Service

PRODUCT FAMILY FOCUS – TUNER

Service Manual

TABLE OF CONTENTS

CLASS 1
LASER PRODUCT

Published by LX 0219 Service Audio Printed in The Netherlands Subject to modification

GB 3140 785 32010

PHILIPS

TECHNICAL SPECIFICATION

General

Dimensions (WxHxD) : 128x34x139.5mm
Weight without batteries : 220g

Laser

Output power : <5mW (3mW typ.)
Wavelength : 780nm

Shock resistance

+X/-X direction : ≥2.5g
+Y/-Y direction : ≥2.5g
+Z/-Z direction : ≥2.0g

Power supply modes

SUPPLY MODE	Voltage range	
	CD	Tuner
DC-IN socket	2.5 - 6.0V	
Primary batteries 2 x LR6	1.6 - 3.6V	1.9 - 3.6V
Rechargable batteries AY3362 (1200mAh)	1.6 - 3.6V	1.9 - 3.6V

Battery lifetime

BATTERY TYPE	CD MODE ESP OFF	CD MODE ESP ON	TUNER MODE
Primary batteries 2 x LR6	≥12h (18h typ.)	≥12h (18h typ.)	≥50h (70h typ.)
Rechargable batteries AY3362 (1200mAh)	≥7h (10h typ.)	≥7h (10h typ.)	≥25h (35h typ.)

Battery level detection – CD mode

DETECTION LEVEL	Primary batteries	Rechargable batteries
Battery empty	1.8V +100/-50mV	1.8V +100/-50mV
Battery weak 1	battery empty level + 0.75V ±100mV	battery empty level + 0.7V ±100mV
Battery weak 2	battery empty level + 0.45V ±100mV	battery empty level + 0.5V ±100mV
Battery weak 3	battery empty level + 0.3V ±100mV	battery empty level + 0.3V ±100mV

Battery level detection – Tuner mode

DETECTION LEVEL	Primary batteries	Rechargable batteries
Battery empty	2.0V +100/-50mV	2.0V +100/-50mV
Battery weak 1	battery empty level + 0.7V ±100mV	battery empty level + 0.5V ±100mV
Battery weak 2	battery empty level + 0.45V ±100mV	battery empty level + 0.35V ±100mV
Battery weak 3	battery empty level + 0.2V ±100mV	battery empty level + 0.2V ±100mV

Current consumption

OPERATION MODE	DC-IN SUPPLY (4.5V)		BATT. SUPPLY (2.25V)	
	ESP OFF	ESP ON	ESP OFF	ESP ON
CD Play mode	110mA typ.	100mA typ.	130mA typ.	120mA typ.
CD Jump mode	220mA typ.	220mA typ.	300mA typ.	400mA typ.
TUNER mode	30mA typ.		30mA typ.	
Stand-by (excl. recharge)	15mA typ.		350µA typ.	

Charge section (not on all versions)

Charge current : 250mA ±10%
Charge time for 80% AY3362 : 4.0h nom.
Max. charge time (µP controlled) : 7h
Temperature protection : 50°C ±5°C

Tuner (not on all versions)

	FM	AM
Tuning range	87.5-108MHz	531-1602kHz 530-1700kHz for /17
IF	10.7MHz	450kHz
Sensitivity 26dB S/N, m=30% -3dB limiting point	≤22dBf (15dBf typ.) ≤26dBf (15dBf typ.)	≤5mV/m (3mV/m typ.)
Frequency grid	100kHz 50kHz for /17	9kHz 10kHz for /17
Distortion	≤7% (2% typ.) rf=1mV, Δf=75kHz	≤7% (2% typ.) rf=1mV, m=80%
Image rejection ratio	≥20dB (25dB typ.)	≥28dB (40dB typ.)

Headphone out (measured with 16Ω load, DBB/ESP off)

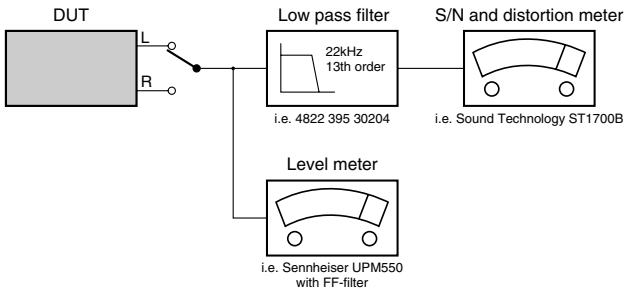
Output power (THD=10%)
/17 version only : 2x6mW (+1/-3dB)
all other versions : 2x2.5mW (+1/-3dB)
Frequency response CD (1mW) : 100Hz-20kHz within 6dB
Frequency response AM (1mW) : 100Hz-1.5kHz within 6dB
Frequency response FM (1mW) : 100Hz-12.5kHz within 6dB
S/N ratio CD (unwght) : ≥78dB (81dB typ.)
S/N ratio CD (A-wght) : ≥82dB (84dB typ.)
S/N ratio AM (A-wght) : ≥40dB (45dB typ.)
S/N ratio FM (A-wght) : ≥45dB (55dB typ.)
THD+N CD (1kHz, 1mW) : ≤1% (0.2% typ.)
THD+N AM/FM (1kHz, 1mW) : ≤7% (2% typ.)
Channel crosstalk (1kHz, no load) : ≤-24dB (-44dB typ.)
Channel unbalance (-40dB) : ≤5dB
Volume attenuation (1kHz) : ≥60dB

Dynamic Bass Boost DBB

DBB STAGE	Frequency response		
	63kHz	1kHz	10kHz
DBB	+8dB ±2dB	0dB ±2dB	0dB ±2dB

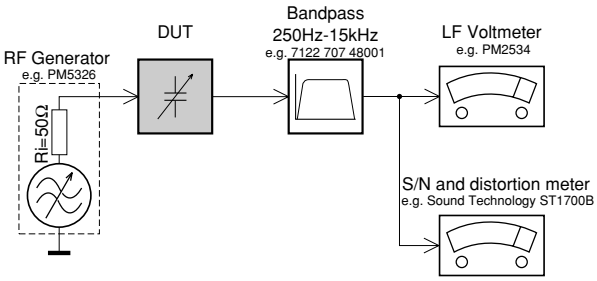
Measurement setup CD

Use Audio Signal disc SBC429 4822 397 30184



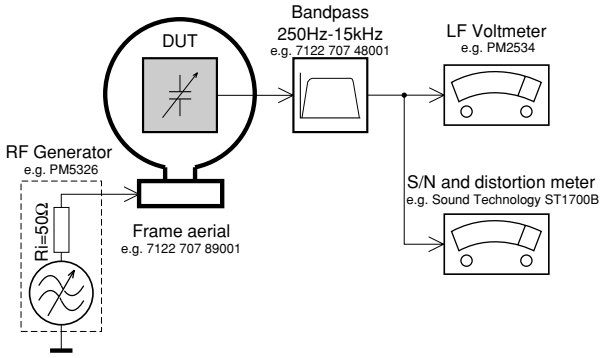
Measurement setup FM

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



Measurement setup AM

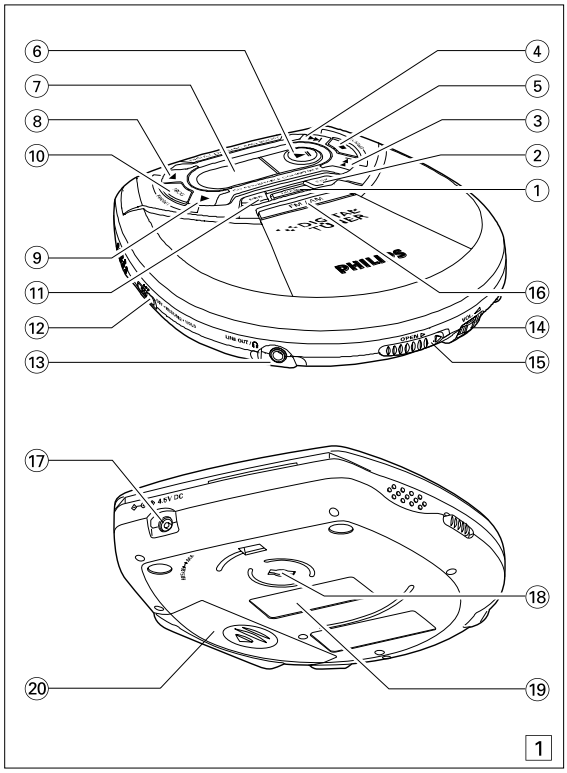
To avoid admospheric interference all AM measurements have to be carried out in a Farraday's cage.
Use bandpass filter (or at least a high pass filter with 250Hz) to eliminate hum (50Hz, 100Hz).

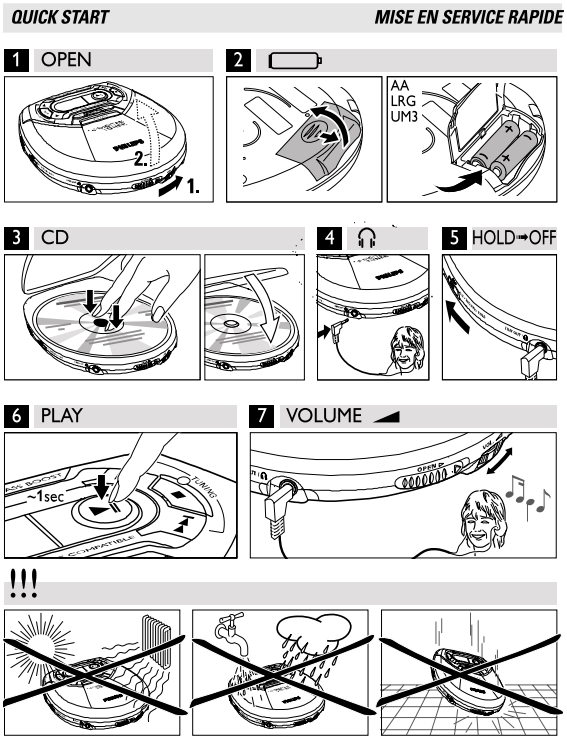


FEATURE OVERVIEW

FEATURES OF CD-PORTABLE PRODUCT FAMILY ÒULTRA - TUNERÓ	**AZT9500** (all versions)
TUNER FM / MW	● / ●
CD-REWRITABLE COMPATIBILITY	●
ELECTRONIC SKIP PROTECTION	45s
ESP DRAM SIZE	16Mbit
HOLD / RESUME FUNCTION	● / ●
DBB STAGES	1
ACOUSTIC FEEDBACK	●
PROGRAM MEMORY	99
RECHARGE FUNCTION NiCd / NiMH	● / ●
CORD REMOTE CONTROL PREPARED	-
DISPLAY BACKLIGHT	-
LINE / DIGITAL OUTPUT	- / -

CONNECTIONS AND CONTROLS





ACCESSORIES

ACCESSORIES FOR CD-PORTABLE PRODUCT FAMILY "FOCUS - TUNER"		AZT9500				AZT9505
		/00C	/05Z	/11	/17	/17
AYT3170/00 AC/DC Adaptor	3140 118 32710	**X**				
AYT3170/02 AC/DC Adaptor	3140 118 32720			**X**		
AYT3170/05 AC/DC Adaptor	3140 118 33010		**X**			
AYT3170/17 AC/DC Adaptor	3140 118 32750				**O**	**O**
AY3362/00 Rechargable battery NiMH	3103 308 84120	**X**	**X**	**X**		
AY3464 HiFi cord (3.5mm - cinch)	4822 320 11881	**O**	**O**	**O**	**O**	**O**
AY3501/00 Car Adaptor Cassette	4822 397 10059	**O**	**O**	**O**	**O**	**X**
AY3545/00 Car DC/DC Converter	4822 219 10033	**O**	**O**	**O**	**O**	**X**
HE205/77 Stereo Earphone	9082 100 00615	**X**	**X**	**X**		
HL351/77 Sterso Headphone	9082 100 00639				**X**	**X**
BELT CLIP	3103 304 70250	**X**	**X**	**X**	**X**	**X**

INSTRUCTION FOR USE

CONTROLS (see figure 1)

① MODE .....selects the different playing possibilities: **SHUFFLE**, **SHUFFLE REPEAT ALL**, **REPEAT**, **REPEAT ALL** and SCAN
② ESP.....**E**LECTRONIC **S**KIP **P**ROTECTION ensures continuous CD playback regardless of vibrations and shocks
③ ⏮ .....skips and searches CD tracks backwards, tunes to radio stations downwards
④ ⏭ .....skips and searches CD tracks forwards, tunes to radio stations upwards
⑤ ■.....stops CD play, clears a CD program or switches the player off
⑥ ▶II.....switches the player on, starts or pauses CD play
⑦ .....display
⑧ PRESET ▲.....selects the next preset station
⑨ PRESET ▼.....selects the previous preset station
⑩ PROGRAM .....programs CD tracks and radio stations, reviews the program
⑪ DBB.....DIGITAL **D**YNAMIC **B**ASS **B**OOST switches the bass enhancement on and off. This button also switches acoustic feedback (the beep) on/off when it is pressed for more than 2 seconds
⑫ RESUME .....stores the last position of a CD track played
HOLD.....**locks all buttons**
OFF.....switches RESUME and HOLD off
⑬ LINE OUT/🎧.....3.5 mm headphone socket and socket to connect the player to another analogue audio input of an additional appliance, remote control socket.
⑭ VOL ◢ .....adjusts the volume
⑮ OPEN ▶ .....opens the CD lid
⑯ FM/ MW.....switches the radio on, selects a waveband
⑰ 4.5V DC.....socket for external power supply
⑱ .....belt clip holder
⑲ .....typeplate
⑳ .....battery compartment

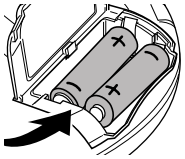
Batteries (supplied or optionally available)

You can use the following batteries with this CD-player:

- normal batteries type **LR6**, **UM3** or **AA** (preferably Philips), or
- alkaline batteries type **LR6**, **UM3** or **AA** (preferably Philips).

Notes:– Old and new or different types of batteries should not be combined.
– Remove batteries if they are empty or if the player is not going to be used for a long time.

Inserting batteries



1 Push OPEN ▶ to open the CD lid.
2 Open the battery compartment and insert either 2 normal or alkaline batteries.

Battery indication

The approximate power level of your batteries is shown in the display.

Battery full
Battery two-thirds full
Battery one-third full
Battery dead or empty. When the batteries are dead or empty, the symbol flashes, bAtt is displayed, and the beep tone sounds repeatedly.

Average playing time of batteries under normal conditions

Battery type	ESP on	Power Save
Normal	5 hours	6 hours
Alkaline	22 hours	25 hours
Rechargeable ECO-PLUS NiMH battery	9 hours	10 hours

Batteries contain chemical substances, so they should be disposed of properly.

ECO-PLUS NiMH battery information (for versions supplied with the rechargeable ECO-PLUS NiMH battery AY 3362)

Recharging works only on players supplied with the rechargeable ECO-PLUS NiMH battery AY 3362.

Recharging the ECO-PLUS NiMH battery on board

1 Insert the rechargeable ECO-PLUS NiMH battery AY 3362.
2 Connect the mains adapter to the 4.5V DC socket of the player and then to the wall socket.
→ is pulsing.

- Recharging stops after a maximum of 7 hours, or when you start playback.

3 When the battery is fully recharged, and FULL appear briefly in the display, before the display switches off.

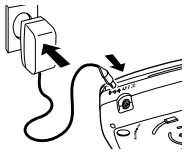
Notes: – It is normal for the batteries to become warm during recharging.
– If the batteries become too warm, recharging will be interrupted for approximately 30 minutes and Hot is displayed.
– To ensure proper recharging on board, take care that contacts are clean.
– Use only the ECO-PLUS NiMH battery AY 3362.

Handling instructions

- Recharging already charged or half-charged batteries will shorten their lifetime. We therefore recommend that you let the rechargeable ECO-PLUS NiMH battery run till it is completely empty before you recharge it.
- To avoid a short circuit, do not let the battery touch any metal object.
- If the battery becomes empty soon after recharging, then either its contacts are dirty or it has reached the end of its lifetime.

Mains adapter (supplied or optionally available)

Use only the AYT 3170 adapter (4.5 V / 300 mA direct current, positive pole to the center pin). Any other product may damage the player.

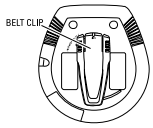


1 Make sure the local voltage corresponds to the power adapter's voltage.
2 Connect the power adapter to the 4.5V DC socket of the player and to the wall socket.

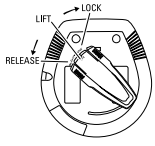
Note: Always disconnect the adapter when you are not using it.

Belt Clip (not on all versions)

1 To attach the belt clip to the CD-player, position the shaped grip (found on the back of the belt clip) so that it fits into the belt clip hole of the CD-player.



2 Turn the clip to LOCK as indicated on the set.
3 To detach, gently lift the belt clip and turn to RELEASE as indicated on the set.



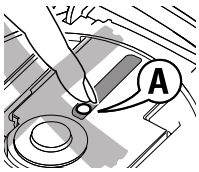
Environmental information

- All redundant packing material has been omitted. We have done our utmost to make the packaging easily separable into two materials: cardboard (box) and polyethylene (bags, protective foam sheet).
- Your set consists of materials which can be recycled if disassembled by a specialized company. Please observe the local regulations regarding the disposal of packing materials, dead batteries and old equipment.

INSTRUCTION FOR USE

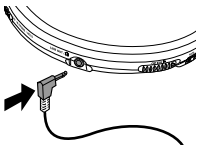
GENERAL INFORMATION

CD player and CD handling



- *Do not touch the lens Ⓐ of the CD player.*
- *Do not expose the unit, batteries or CDs to humidity, rain, sand or excessive heat (caused by heating equipment or direct sunlight).*
- *You can clean the CD player with a soft, slightly dampened, lint-free cloth. Do not use any cleaning agents as they may have a corrosive effect.*
- *To clean the CD, wipe it in a straight line from the center toward the edge using a soft, lint-free cloth. A cleaning agent may damage the disc! Never write on a CD or attach a sticker to it.*
- *The lens may cloud over when the unit is moved suddenly from cold to warm surroundings. Playing a CD is not possible then. Leave the CD player in a warm environment until the moisture has evaporated.*
- *Active mobile phones in the vicinity of the CD player may cause malfunctions.*
- *Avoid dropping the unit as this may cause damage.*

Headphones HE205



- *Connect the supplied headphones to the LINE OUT/🎧 jack of the player.*

Note: LINE OUT/🎧 can also be used for connecting the player to your HiFi system (with a signal lead) or to your car radio (with a cassette adapter or signal lead). In both cases, the volume of the player must be set to position 8.

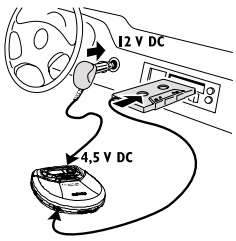
IMPORTANT!

Hearing safety: Do not play your headphones at a high volume. Hearing experts advise that continuous use at high volume can permanently damage your hearing.

Traffic safety: Do not use headphones while driving a vehicle. It may create a hazard and it is illegal in many countries. Even if your headphones are an open-air type designed to let you hear outside sounds, do not turn up the volume so high that you cannot hear what is going on around you.

In-car use (connections supplied or optionally available)

Only use the AY 3545 (4822 219 10033) or AY 3548 (3140 118 71890) car voltage converter (4.5 V DC, positive pole to the center pin) and the AY 3501 cassette car adapter. Any other product may damage the set.



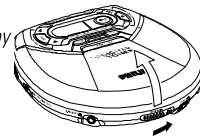
1. *Put the set on a horizontal, vibration-free and stable surface. Make sure it is in a safe place, where the set is neither a danger nor an obstacle to the driver and the passengers.*
2. *Plug the voltage converter into the cigarette lighter jack* ***(only for 12 V car battery, negative grounding)****, then connect the wired end with 4.5V DC input jack on the set.*
3. *If necessary, clean the cigarette lighter jack to obtain a good electrical contact.*
4. *Turn down the volume and connect the cassette adapter plug to LINE OUT/🎧 on the set.*
5. *Carefully insert the cassette adapter into the car radio's cassette compartment.*
6. *Make sure the cord does not hinder your driving.*
7. *Set VOL ◢ on the set to position 8. Start playback on the set and adjust the sound with the car radio controls.*

- ***Always remove the voltage converter from the cigarette lighter jack- when the set is not in use.***

Note: If your car radio has a LINE IN jack, it is better to use it for the car radio connection instead of the cassette.adapter. Connect the signal lead to this LINE IN jack and to LINE OUT/🎧 on the set.

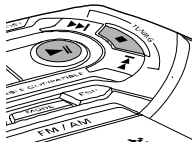
CD PLAY

Playing a CD



This CD-player can play all kinds of ***Audio Discs*** *such as CD-Recordables and CD-Rewritables. Do not try to play a CD-ROM, CDi, VCD, DVD or computer CD.*

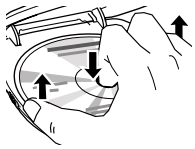
1. *Push the OPEN▶ slider to open the player.*
2. *Insert an audio CD, printed side up, by pressing the CD onto the hub.*
3. *Close the player by pressing the lid down.*



4. *Press ▶II to switch the player on and start playback.*
   → *The current track number and elapsed playing time are displayed.*

- *You can pause playback by pressing ▶II.*
  → *The time at which playback was paused starts flashing.*
- *You can continue playback by pressing ▶II again.*

5. *Press ■ to stop playback.*
   → *The total number of tracks and the total playing time of the CD are displayed.*
6. *Press ■ again to switch the player off.*



- *To remove the CD, hold it by its edge and press the hub gently while lifting the CD.*

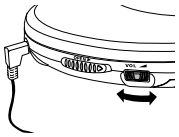
Note: If there is no activity, the set will automatically switch off after a while to save energy.

Playback information

- *If a CD-Recordable (CD-R) or a CD-Rewritable (CD-RW) is not recorded properly, nFd15C is displayed, indicating that the CD has not been finalized. In that case, use FINALIZE on your CD recorder to complete the recording.*
- *When playing a CD-Rewritable (CD-RW), please note that it takes 3–15 seconds after pressing ▶II for sound reproduction to start.*
- *Playback will stop if you open the CD lid.*
- *While the CD is read, 1-:-- flashes in the display.*

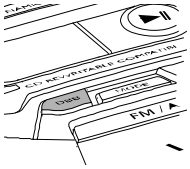
Volume and bass

Volume adjustment



- *Adjust the volume by using VOL ◢.*

Bass adjustment



- *Press DBB to switch the bass enhancement on or off.*
  → DBB *is shown if the bass enhancement is activated.*

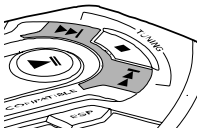
INSTRUCTION FOR USE

FEATURES

Selecting a track and searching

Selecting a track during playback

- *Briefly press ⏮ or ⏭ once or several times to skip to the current, previous or next track.*
  → *Playback continues with the selected track, and the track's number is displayed.*



Selecting a track when playback is stopped

1 *Briefly press ⏮ or ⏭ once or several times to select the desired track. The track number is displayed.*

2 *Press ⏯ to start CD play.*
→ *Playback starts with the selected track.*

Searching for a passage during playback

1 *Keep ⏮ or ⏭ pressed to find a particular passage in a backward or forward direction.*
→ *Searching starts while playback continues at low volume. After 2 seconds the search speeds up.*

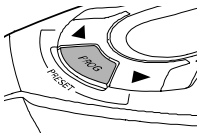
2 *Release the button when you reach the desired passage.*
→ *Playback continues from this position.*

Notes: – *If the player is in SCAN mode (see MODE chapter), searching is not possible.*
– *In shuffle, shuffle repeat all or repeat mode (see MODE chapter), or while playing a program, searching is only possible within the particular track.*

This set complies with the radio interference requirements of the European Community.

Programming track numbers

You can store up to 30 tracks to play in a program. A single track may be stored more than once in the program.



1 *While playback is stopped, select a track with ⏮ or ⏭.*

2 *Press PROGRAM to store the track.*
→ **program** *lights up; the track number programmed and P with the total number of stored tracks are displayed.*

3 *Select and store all desired tracks in this way.*

4 *Press ⏯ to start playback of your selected tracks.*
→ **program** *is shown and playback starts.*

- *You can review the program by pressing PROGRAM for more than 2 seconds.*
  → *The display shows all the stored tracks in sequence.*

Notes: – *If you press PROGRAM and there is no track selected,* no prog *is displayed.*

– *If you try to store more than 30 tracks,* FULL *is displayed.*

Clearing the program

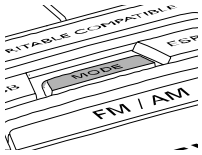
- *While playback is stopped, press ■ to clear program.*
  → CLEAr *is displayed once,* **program** *goes off, and the program is cleared.*

Note:The program will also be cleared if the power supply is interrupted, or if the CD-player lid is opened, or if the set switches off automatically.

FEATURES

Selecting different playing possibilities–MODE

It is possible to play tracks in random order, to repeat a single track or the entire CD, and to play the first few seconds of each track.



1 *Press MODE during playback as often as required in order to activate one of the following 'modes'. The active mode is shown in the display.*
→ **shuffle** *: All tracks of the CD are played in random order until all of them have been played once.*
→ **shuffle repeat all** *: All tracks of the CD are played repeatedly in random order.*

→ **repeat** *: The current track is played repeatedly.*
→ **repeat all** *: The entire CD is played repeatedly.*
→ SCAN *: The first 10 seconds of each of the remaining tracks are played in sequence.*

2 *Playback starts in the chosen mode after 2 seconds.*

- *To return to normal playback, press MODE repeatedly until the display shows no active modes.*

ESP / Power Save Mode

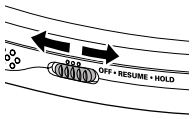
With a conventional portable CD-player you might have experienced that the music stopped e.g. when you were jogging. The ***E****LECTRONIC* ***S****KIP* ***P****ROTECTION prevents loss of sound caused by light vibrations and shocks. Continuous playback is ensured. However ESP does not prevent playback interruptions during vigorous running. It also does not protect the unit against any damage caused by dropping! In this set ESP is default ON. It is possible to set ESP off. and enter the Power Save Mode.(PS). PS helps to extend battery lifetime for longer playback.*

- *Press ESP once.*
  → ESP *disappears.*
- *Press ESP again .*
  → PS *is displayed once*

ESP on ➟ ESP off ➟ Power Save ➟ESP on

RESUME and HOLD

You can interrupt playback and continue (even after an extended period of time) from the position where playback stopped (RESUME) and you can lock all buttons of the set so that no action will be executed (HOLD). Use the RESUME–HOLD–OFF slider for these functions.



RESUME – continuing from where you have stopped

1 *Switch the slider to RESUME during playback to activate RESUME.*
→ **resume** *is shown.*

2 *Press ■ whenever you want to stop playback.*

3 *Press ⏯ whenever you want to resume playback.*
→ **resume** *is shown and playback continues from where you have stopped.*

- *To deactivate RESUME, switch the slider to OFF.*
  → **resume** *goes off.*

HOLD – locking all buttons

You can lock the buttons of the set by switching the slider to HOLD. Now, when a key is pressed, no action will be executed. This is of use, for example, when transporting the player in a bag. With HOLD activated, you can avoid accidental activation of other functions.

1 *Switch the slider to HOLD to activate HOLD.*
→ *All buttons are locked.* HoLd *is shown when you press any button.*

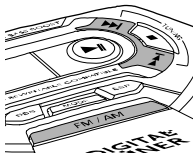
2 *To deactivate HOLD, switch the slider to OFF.*

Note: If you deactivate HOLD by switching the slider to RESUME, you will be activating the RESUME function.

INSTRUCTION FOR USE

FEATURES

Radio Play



You can tune to any FM or MW station automatically or manually. Stereo stations are indicated by **ST**.

1 *Press FM/ MW to switch the radio on.*

2 *Press FM/ MW repeatedly if necessary to select the desired waveband.*
→ *FM or MW is shown.*

Tuning to radio stations automatically

1 *Keep ⏮ or ⏭ pressed for at least 1 second.*
→ *The radio tunes to a station with sufficient strength and radio play starts. The current waveband and frequency are displayed.*

2 *Repeat searching until you find the desired radio station.*

Tuning to radio stations manually

1 *Keep ⏮ or ⏭ pressed.*

2 *Release ⏮ or ⏭, then briefly press ⏮ or ⏭ again when you are close to the desired frequency.*

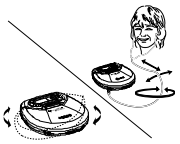
3 *Briefly press ⏮ or ⏭ repeatedly until you reach the desired frequency.*
→ *Radio play starts. The current waveband and frequency are displayed.*

- *To switch from radio play to CD play, press ▶II.*
- *Press ■ to switch the radio off.*

Note: In case of interferences in stereo mode, press. MODE to switch to mono.

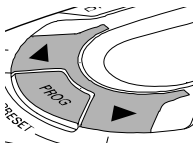
Antennas

- *FM: The headphone wire is used as an FM antenna. If necessary, move it for optimum reception.*
- *MW: The internal MW antenna is directed by turning the player.*

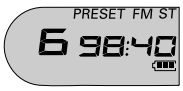


Storing radio stations

You can store up to 30 radio stations. Select a preset number 1-24 FM stations and a number 1-6 for MW station.



1 *Tune to a desired radio station and press PROGRAM.*
2 *Press ▲ or ▼ repeatedly if necessary to select the number that should be assigned to this radio station.*
3 *Press PROGRAM while PRESET is blinking to confirm the storage.*
→ *PRESET, the waveband, the frequency and the preset number of the stored station are displayed.*



4 *Store all desired stations this way.*

Note: Already stored stations can be recognized by the indicator PRESET and the preset number.

Tuning to a stored radio station

1 *Select the waveband.*
2 *Press ▲ or ▼ repeatedly if necessary to select the preset number of the desired radio station.*
→ *Radio play starts. PRESET, the waveband, the frequency and the preset number of the stored station are displayed.*

TROUBLESHOOTING

Troubleshooting

***WARNING:** Under no circumstances should you try to repair the set yourself as this will invalidate the warranty. If a fault occurs, first check the points listed, before taking the unit for repair. If you are unable to solve a problem by following these hints, consult your dealer or service center.*

The CD player has no power, or playback does not start
- *Check that your batteries are not dead or empty, that they are inserted correctly, that the contact pins are clean.*
- *Your adapter connection may be loose. Connect it securely.*
- *For in-car use, check that the car ignition is on. Also check player's batteries.*

The indication nod,SC is displayed
- *Check that the CD is clean and correctly inserted (label-side upward).*
- *If your lens has steamed up, wait a few minutes for this to clear.*

The indication nF d,SC is displayed
- *CD-RW (CD-R) was not recorded properly. Use FINALIZE on your CD-recorder.*

The indication HOLD is on and/or there is no reaction to controls
- *If HOLD is activated, then deactivate it.*
- *Electrostatic discharge. Disconnect power or remove batteries for a few seconds.*

The CD skips tracks
- *The CD is damaged or dirty. Replace or clean the CD.*
- *RESUME, SHUFFLE or PROGRAM is active. Switch off whichever is on.*

Troubleshooting

No sound or bad sound quality.
- *PAUSE might be active. Press ▶II.*
- *Loose, wrong or dirty connections. Check and clean connections.*
- *Volume might not be appropriately adjusted. Adjust the volume.*
- *Strong magnetic fields. Check player's position and connections. Also keep away from active mobile phones.*
- *For in-car use, check that the cassette adapter is inserted correctly, that the car cassette player's playback direction is correct (press autoreverse to change), and that the cigarette lighter jack is clean. Allow time for temperature change.*

CAUTION
Use of controls or adjustments or performance of procedures other than herein may result in hazardous radiation exposure or other unsafe operation.

SAFETY & WARNINGS

ESD

(GB) WARNING
All ICs and many other semiconductors 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 wristband with resistance. Keep components and tools at this potential.

(F) ATTENTION
Tous les IC et beaucoup d´autres semi-conducteurs sont sensibles aux décharges statiques (ESD). Leur longévite pourrait être considérablement écourtée par le fait qu´aucune précaution nést prise à leur manipulation.
Lors de réparations, s´assurer de bien être relié au même potentiel que la masse de l´appareil et enfileer le bracelet serti d´une résistance de sécurité.
Veiller à ce que les composants ainsi que les outils que l´on utilise soient également à ce potentiel.

(D) WARNUNG
Alle ICs und viele andere Halbleiter sind empfindlich gegenüber elektrostatischen Entladungen (ESD).
Unsorgfältige Behandlung im Reparaturfall kann die Lebensdauer drastisch reduzieren.
Sorgen Sie dafür, daß Sie im Reparaturfall über ein Pulsarmband mit Widerstand mit dem Massepotential des Gerätes verbunden sind.
Halten Sie Bauteile und Hilfsmittel ebenfalls auf diesem Potential.

(NL) WAARSCHUWING
Alle IC´s en vele andere halfgeleiders zijn gevoelig voor electrostatische ontladingen (ESD).
Onzorgvuldig behandelen tijdens reparatie kan de levensduur drastisch doen vermindern. Zorg ervoor dat u tijdens reparatie via een polsband met weerstand verbonden bent met hetzelfde potentiaal als de massa van het apparaat.
Houd componenten en hulpmiddelen ook op ditzelfde potentiaal.

(I) AVVERTIMENTO
Tutti IC e parecchi semi-conduttori sono sensibili alle scariche statiche (ESD).
La loro longevità potrebbe essere fortemente ridatta in caso di non osservazione della più grande cauzione alla loro manipolazione. Durante le riparationi occorre quindi essere collegato allo stesso potenziale che quello della massa delápparecchio tramite un braccialetto a resistenza.
Assicurarsi che i componenti e anche gli utensili con quali si lavora siano anche a questo potenziale.

(GB) AVAILABLE ESD PROTECTION EQUIPMENT :

anti-static table mat	large 1200x650x1.25mm	4822 466 10953
	small 600x650x1.25mm	4822 466 10958
anti-static wristband		4822 395 10223
connection box (3 press stud connections, 1MΩ)		4822 320 11307
extendible cable (2m, 2MΩ, to connect wristband to connection box)		4822 320 11305
connecting cable (3m, 2MΩ, to connect table mat to connection box)		4822 320 11306
earth cable (1MΩ, to connect any product to mat or to connection box)		4822 320 11308
KIT ESD3 (combining all 6 prior products - small table mat)		4822 310 10671
wristband tester		4822 344 13999

SAFETY

(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 ⚠

(F)
Les normes de sécurité exigent que l`appareil soit remis à l`état d`origine et que soient utilisées les pièces de rechange identiques à celles spécifiées.
Les composants de sécurité sont marqués ⚠

(D)
Bei jeder Reparatur sind die geltenden Sicherheitsvorschriften zu beachten. Der Originalzustand des Gerätes darf nicht verändert werden. Für Reparaturen sind Originalersatzteile zu verwenden.
Sicherheitsbauteile sind durch das Symbol ⚠ markiert.

(NL)
Veiligheidsbepalingen vereisen, dat het apparaat in zijn oorspronkelijke toestand wordt teruggebracht en dat onderdelen, identiek aan de gespecificeerde, worden toegepast.
De Veiligheidsonderdelen zijn aangeduid met het symbool ⚠

(I)
Le norme di sicurezza estigono che l´apparecchio venga rimesso nelle condizioni originali e che siano utilizzati i pezzi di ricambiago identici a quelli specificati.
Componenty di sicurezza sono marcati con ⚠

(GB) **DANGER**: Invisible laser radiation when open.
AVOID DIRECT EXPOSURE TO BEAM.

CLASS 1
LASER PRODUCT

(S) Varning !
Osynlig laserstrålning när apparaten är öppnad och spärren är urkopplad. Betrakta ej strålen.

(DK) Advarsel !
Usynlig laserstråling ved åbning når sikkerhedsafbrydere er ude af funktion. Undgå udsaettelse for stråling.

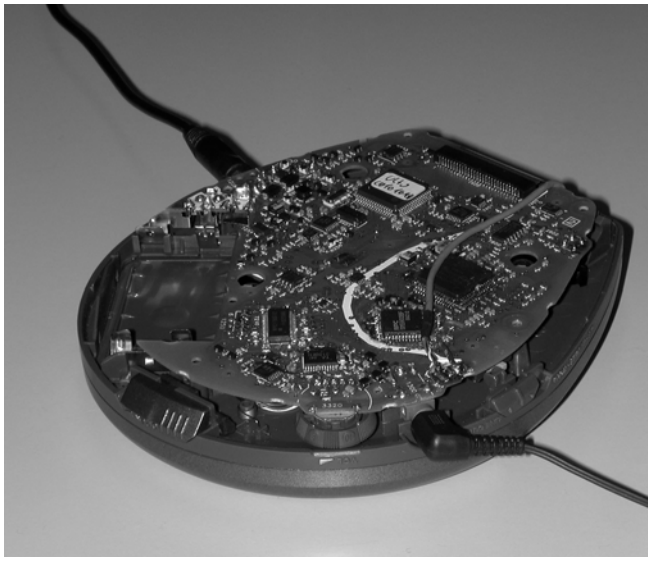
(FIN) Varoitus !
Avatussa laitteessa ja suojalukituksen ohitettaessa olet alttiina näkymättömälle laserisäteilylle. Älä katso säteeseen !

(GB)
After servicing and before returning the set to customer perform a leakage current measurement test from all exposed metal parts to earth ground, to assure no shock hazard exists.
The leakage current must not exceed 0.5mA.

(F)
"Pour votre sécurite, ces documents doivent être utilisés par des spécialistes agréés, seuls habilités à réparer votre appareil en panne".

SERVICE HINTS

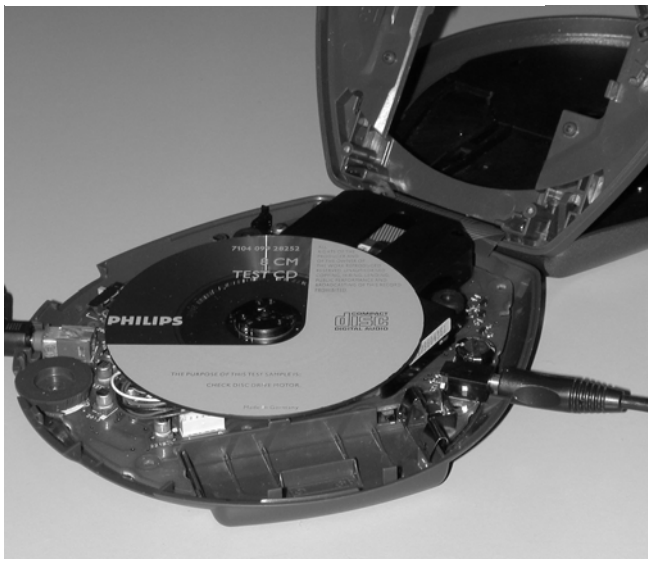
REPAIR POSITION COPPERSIDE



To get access to the copperside of the printed board assembly proceed as follows:

1. Remove the bottom screws(6x)
2. Lift the bottom -cabinet
3. Supply the unit via external DC-sochet
4. Take care that the door switch is closed during measurements

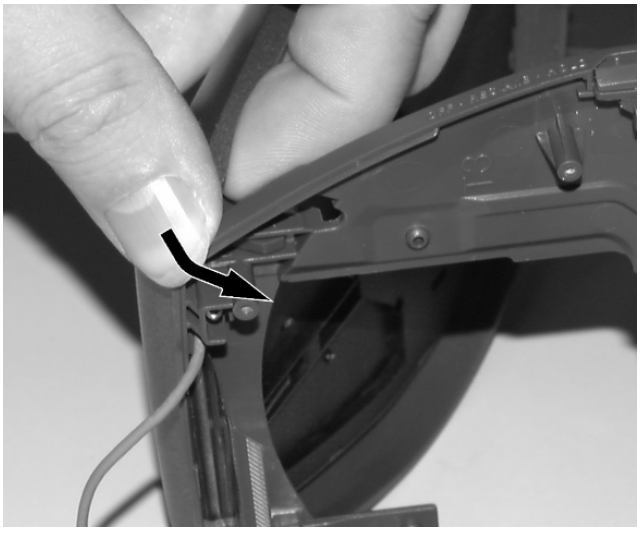
REPAIR POSITION COMPONENTSIDE

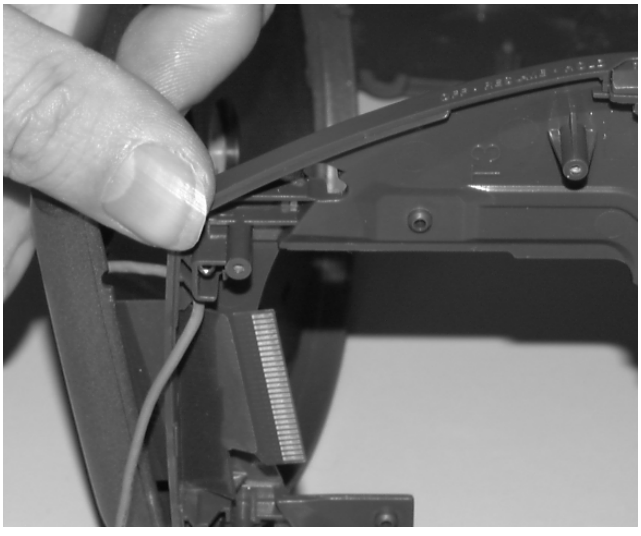


To get access to the compomentside of the printed board assembly proceed as followed;

1. Remove the bottom screws(6x)
2. Open the CD-door
3. Lift the top-cabinet and put it backwards on the table
4. Supply the unit via the external DC-socket
5. Take care that the door switch is closed during measurements

DISMANTLING THE CD-DOOR



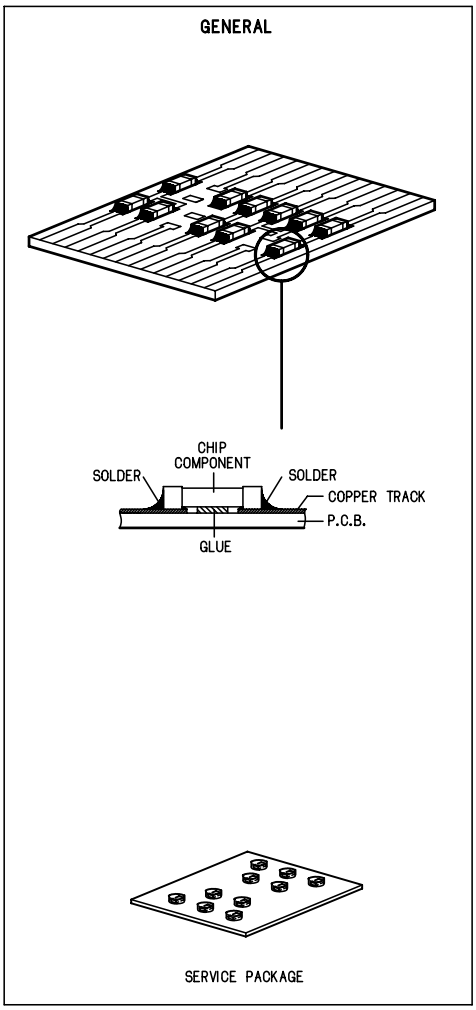


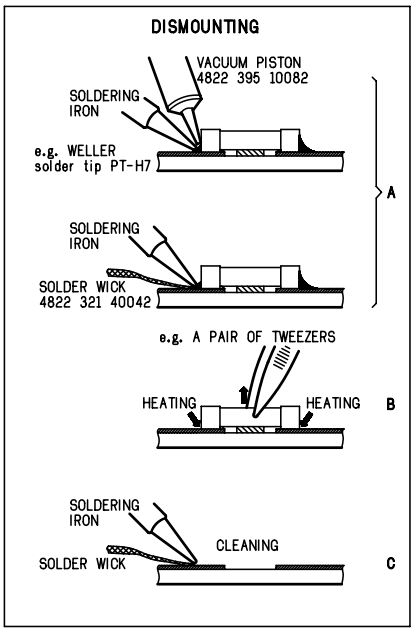
To dismantle the CD-door proceed as follows:

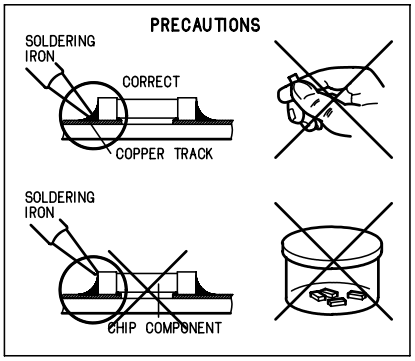
1. Dismantle bottom and printed board/drive assembly
2. Disconnect membrance keyboard (flex-foil connector on copperside of printed board
3. Bend the cabinet rightwards downwards as indicated in the picture above

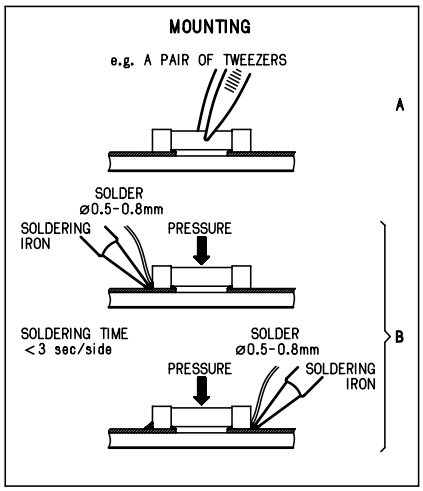
Remark:Do not use screwdrivers or tools like that.
Sharp edges could damage hinge or cabinet part.

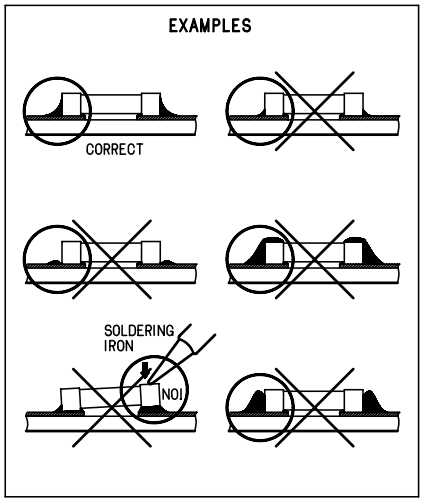
HANDLING CHIP COMPONENTS











SERVICE TOOLS

Audio signal disc SBC429	4822 397 30184
Playability test disc SBC444	4822 397 30245
Test disc 5 (disc without errors) + **Test disc 5A**(disc with dropout errors black spots and fingerprints) **SBC426/ SBC426A**	4822 397 30096

ESD PROTECTION EQUIPMEN**T**

Anti-static table mat large 1200x650x1.25mm	4822 466 10953
small 600x650x1.25mm	4822 466 10958
Anti-static wristband	4822 395 10223
Connection box (3press stud connections,1MΩ)	4822 320 11307
Extendible cable (2m,2MΩ ,to connect wristband to connection box)	4822 320 11305
Connecting cable (3m,2MΩ ,to connect table mat to connection box)	4822 320 11306
Earth cable (1MΩ , to connect any product to mat or to connection box)	4822 320 11308
KIT ESD3(combining all 6 prior products - small table mat)	4822 310 10671
Wristband tester	4822 344 13999

PIN DESCRIPTION OF INTEGRATED CIRCUITS

TZA1024 – HF-PREAMPLIFIER AND LASER SUPPLY CIRCUIT

Pin	*Name*	*Direction*	*Description*
1	LD	HF-preamp → CD-drive	current output to laser diode
2	VCCL	+2.6V	laser supply voltage
3	CFIL	→ HF-preamp	external filter capacitor
4	MON	CD-drive → HF-preamp	laser monitor diode input
5	DIN	CD-drive → HF-preamp	central diode input
6	GND	GND	ground
7	PWRON	CD10 → HF-preamp	power-on select input
8	CMFB	+2.6V / 2	common mode feedback voltage input
9	RFFB	→ HF-preamp	external RF feedback resistor
10	RFEQO	HF-preamp →	RF amplifier output
11	CDRW	CD10 → HF-preamp	gain select input for CDDA/CDRW
12	EQSEL	CD10 → HF-preamp	equalizer/speed select input
13	VCC2	+2.6V	supply voltage
14	RGADJ	GND	external laser supply gain adjust resistor

SC111259FTA – SERVO DRIVER & POWER MANAGEMENT IC

Pin	*Name*	*Direction*	*Description*
1	SLEEP	µP → servo driver	sleep input
2	WAKW	µP → servo driver	wake input
3	VR	+VR	reference voltage input (motor driver)
4	ERR4	CD10 → servo driver	control signal input (slide error signal)
5	CF4	→ servo driver	phase correction capacitor connect (CH4)
6	CF3	→ servo driver	phase correction capacitor connect (CH3)
7	ERR3	CD10 → servo driver	control signal input (radial error signal)
8	ERR2	CD10/µP → servo driver	control signal input (disc speed error signal)
9	CF2	→ servo driver	phase correction capacitor connect (CH2)
10	CF1	→ servo driver	phase correction capacitor connect (CH1)
11	ERR1	CD10 → servo driver	control signal input (focus error signal)
12	OUT1A	servo driver → CD-drive	positive drive output (CH1)
13	PGND1	GND	H-bridge driver ground
14	OUT1B	servo driver → CD-drive	negative drive output (CH1)
15	VIN12	+A	CH1 and CH2 H-bridge driver supply voltage
16	OUT2B	servo driver → CD-drive	negative drive output (CH2)
17	PGND2	GND	H-bridge driver ground
18	OUT2A	servo driver → CD-drive	positive drive output (CH2)
19	OUT3A	servo driver → CD-drive	positive drive output (CH3)
20	PGND2	GND	H-bridge driver ground
21	OUT3B	servo driver → CD-drive	negative drive output (CH3)
22	VIN34	+A	CH3 and CH4 H-bridge driver supply voltage
23	OUT4B	servo driver → CD-drive	negative drive output (CH4)
24	PGND4	GND	H-bridge driver ground
25	OUT4A	servo driver → CD-drive	positive drive output (CH4)
26	VG	+VG	charge pump output
27	C2H	→ servo driver	charge pump capacitor connect
28	C1H	→ servo driver	charge pump capacitor connect
29	C1L	→ servo driver	charge pump capacitor connect
30	C2L	→ servo driver	charge pump capacitor connect
31	VIN	battery → servo driver	battery supply voltage
32	RSTB	servo driver →	reset block output
33	CHGSW	servo driver → charge circuit	transistor drive output for battery charger
34	RS	charge circuit → servo driver	OpAmp non-inverting input for battery charger
35	INM2	→ servo driver	error amplifier inverting input
36	RF2	→ servo driver	error amplifier output
37	DCIN	+DC	DC power supply from AC/DC adaptor
38	VDET	servo driver →	DCIN over voltage and VIN low voltage detect output
39	VREF	servo driver →	Voltage reference circuit output
40	DTC	→ servo driver	max. duty control voltage input for power management
41	VOUT	servo driver → DC/DC converter	PWM output for power management
42	VC	→ servo driver	power management power supply
43	CGND	GND	internal ground
44	RF1	servo driver →	OpAmp output for power management
45	INM1	→ servo driver	OpAmp inverting input for power management
46	CLK	→ servo driver	clock input
47	OE	µP → servo driver	output enable for motor drivers
48	CHGON	µP → servo driver	charge enable for battery charger

SAA7324 – DECODER, DIGITAL SERVO IC AND D/A-CONVERTER CD10 (low voltage version)

Pin	*Name*	*Direction*	*Description*
1	HFREF	→ CD10	comparator common mode input
2	HFIN	→ CD10	comparator signal input
3	ISLICE	CD10 →	current feedback from data slicer
4	VSSA1	GND	analog ground 1
5	VDDA1	+2.6V	analog supply voltage 1
6	IREF	CD10 →	reference current output pin
7	VRIN	CD10 →	reference voltage for servo ADC's
8	D1	CD-drive → CD10	unipolar current input (central diode signal input)
9	D2	CD-drive → CD10	unipolar current input (central diode signal input)
10	D3	CD-drive → CD10	unipolar current input (central diode signal input)
11	D4	CD-drive → CD10	unipolar current input (central diode signal input)
12	R1	CD-drive → CD10	unipolar current input (satellite diode signal input)
13	R2	CD-drive → CD10	unipolar current input (satellite diode signal input)
14	VSSA2	GND	analog ground 2
15	CROUT	CD10 → X-TAL	crystal/resonator output
16	CRIN	X-TAL → CD10	crystal/resonator input
17	VDDA2	+2.6V	analog supply voltage 2
18	LN	CD10 →	DAC left channel differential output - negative
19	LP	CD10 →	DAC left channel differential output - positive
20	VNEG	GND	DAC negative reference input
21	VPOS	+2.6V	DAC positive reference input
22	RN	CD10 →	DAC right channel differential output - negative
23	RP	CD10 →	DAC right channel differential output - positive
24	SELPLL	CD10 →	selects whether internal clock multiplier PLL is used
25	TEST1	GND	test control input 1; this pin should be tied low
26	CL16	CD10 → DSP	16.9344 MHz system clock output
27	DATA	CD10 → NPC or CD10 → DSP	serial data output (3-state)
28	WCLK	CD10 → NPC or CD10 → DSP	word clock output (3-state)
29	SCLK	CD10 → NPC or CD10 → DSP	serial bit clock output (3-state)
30	EF	CD10 → NPC	C2 error flag output (3-state)
31	TEST2	GND	test control input 2; this pin should be tied low
32	KILL	CD10 →	kill output (programmable; open-drain)
33	VSSD1	GND	digital ground 2
34	V2/V3	CD10 → NPC	versatile I/O: input versatile pin 2 or output versatile pin 3 (open-drain)
35	WCLI	NPC → CD10 or DSP → CD10	word clock input (for data loopback to DAC)
36	SDI	NPC → CD10 or DSP → CD10	serial data input (for data loopback to DAC)
37	SCLI	NPC → CD10 or DSP → CD10	serial bit clock input (for data loopback to DAC)
38	RESETn	µP → CD10	power-on reset input (active low)
39	SDA	µP ↔ CD10	microcontroller interface data I/O line (open-drain output)
40	SCL	µP → CD10	microcontroller interface clock line input
41	RAB	µP → CD10	microcontroller interface R/W and load control line input (4-wire bus mode)
42	SILD	µP → CD10	microcontroller interface R/W and load control line input (4-wire bus mode)
43	STATUS	CD10 →	servo interrupt request line/decoder status register output (open-drain)
44	TEST3	GND	test control input 3; this pin should be tied low
45	RCK	→ CD10	subcode clock input
46	SUB	CD10 →	P-to-W subcode bits output (3-state)
47	SFSY	CD10 → µP	subcode frame sync output (3-state)
48	SBSY	CD10 → NPC	subcode block sync output (3-state)
49	CL11/4	CD10 → DSP	11.2896 MHz or 4.2336 MHz (for microcontroller) clock output
50	VSSD2	GND	digital ground 3
51	DOBM	CD10 →	bi-phase mark output (externally buffered; 3-state)
52	VDDD1P	+2.6V	digital supply voltage 2 for periphery
53	CFLG	CD10 →	correction flag output (open-drain)
54	RA	CD10 → servo driver	radial actuator output
55	FO	CD10 → servo driver	focus actuator output
56	SL	CD10 → servo driver	slide control output
57	VDDD2C	+2.6V	digital supply voltage 3 for core
58	VSSD3	GND	digital ground 4
59	MOTO1	CD10 → servo driver	motor output 1; versatile (3-state)
60	MOTO2	CD10 →	motor output 2; versatile (3-state)
61	V4	CD10 → HF-preamp	versatile output pin 4
62	V5	CD10 → HF-preamp	versatile output pin 5
63	V1	innerswitch → CD10	versatile input pin 1
64	LDON	CD10 → HF-preamp	laser drive on output (open-drain)

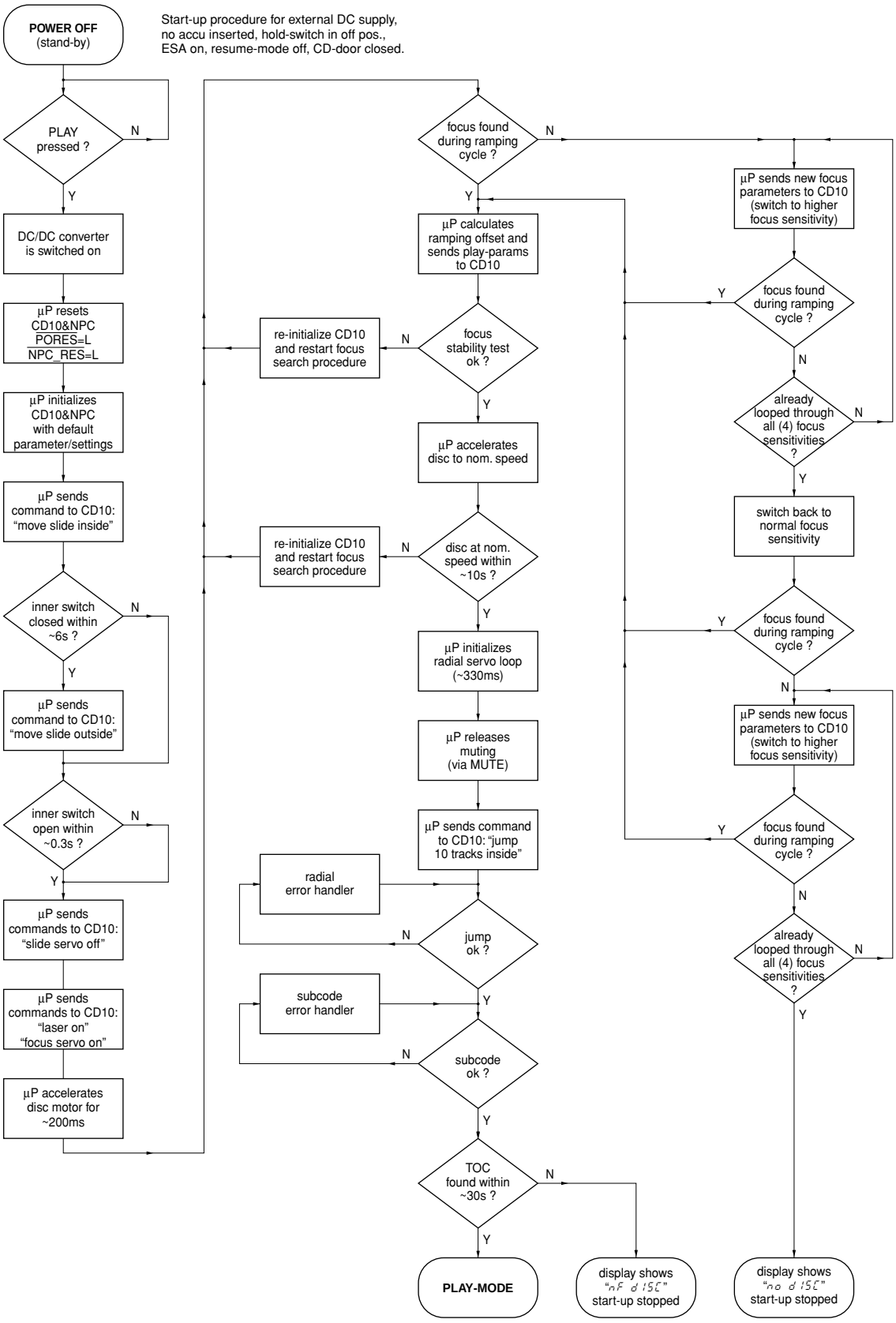
SM5907AF – COMPRESSION-TYPE ANTI-SHOCK MEMORY CONTROLLER NPC

Pin	*Name*	*Direction*	*Description*
1	VDD2	+2.6V	supply voltage
2	UC1	NPC ↔	µP interface extension I/O line 1
3	UC2	NPC ↔	µP interface extension I/O line 2
4	UC3	NPC ↔	µP interface extension I/O line 3
5	UC4	NPC ↔	µP interface extension I/O line 4
6	UC5	NPC ↔	µP interface extension I/O line 5
7	NACS3	NPC → DRAM	DRAM2 CAS control
8	TEST2	+2.6V	test pin
9	CLK	CD10 → NPC	16.9344MHz clock input
10	VSS	GND	ground
11	YSRDATA	CD10 → NPC	audio serial data input
12	YLRCK	CD10 → NPC	audio serial L/R clock input
13	YSCK	CD10 → NPC	audio serial bit clock input
14	ZSCK	NPC → CD10	audio serial bit clock output
15	ZLRCK	NPC → CD10	audio serial L/R clock output
16	ZSRDATA	NPC → CD10	audio serial data output
17	YFLAG	CD10 → NPC	signal processor IC RAM overflow flag
18	YFCLK	GND	crystal-controlled frame clock input
19	YBLKCK	CD10 → NPC	subcode block clock signal output
20	RESET	µP → NPC	system reset input (active low)
21	ZSENSE	NPC →	µP interface status output
22	VDD1	+2.6V	supply voltage
23	YDMUTE	→ NPC	forced mute input
24	YMLD	µP → NPC	µP interface latch clock input
25	YMDATA	µP → NPC	µP interface serial data input
26	YMCLK	µP → NPC	µP interface shift clock input
27	A10/NCAS2	NPC → DRAM	DRAM OE control output (active low)
28	CAS	NPC → DRAM	DRAM CAS control output (active low)
29	D2	NPC ↔ DRAM	DRAM data input/output 2
30	D3	NPC ↔ DRAM	DRAM data input/output 3
31	D0	NPC ↔ DRAM	DRAM data input/output 0
32	D1	NPC ↔ DRAM	DRAM data input/output 1
33	WE	NPC → DRAM	DRAM WE control output (active low)
34	RAS	NPC → DRAM	DRAM RAS control output (active low)
35	A9	NPC → DRAM	DRAM address output 9
36	A8	NPC → DRAM	DRAM address output 8
37	A7	NPC → DRAM	DRAM address output 7
38	A6	NPC → DRAM	DRAM address output 6
39	A5	NPC → DRAM	DRAM address output 5
40	A4	NPC → DRAM	DRAM address output 4
41	A0	NPC → DRAM	DRAM address output 0
42	A1	NPC → DRAM	DRAM address output 1
43	A2	NPC → DRAM	DRAM address output 2
44	A3	NPC → DRAM	DRAM address output 3

TA2120FN – Stereo Headphone Amplifier

Pin	*Name*	*Direction*	*Description*
1	DBB NF	→ headphone-amp	NF of DBB amplifier
2	ADD OUT	headphone-amp →	output of ADD amplifier
3	RF IN	→ headphone-amp	terminal for ripple filter circuit
4	PWC	→ headphone-amp	center amplifier on/off switch (open = on)
5	VCC	+HP (+A)	positive supply voltage
6	B	headphone-amp → HP-socket	output of power amplifier
7	C	headphone-amp → HP-socket	output of center amplifier
8	A	headphone-amp → HP-socket	output of power amplifier
9	GND	GND	ground of power amplifier
10	MIX OUT	headphone-amp →	output of power amplifier (mixed)
11	ALC IN	→ headphone-amp	input terminal for ALC detector circuit
12	ALC DET	→ headphone-amp	smoothing for ALC detection (GND = ALC off, open = ALC ON)
13	ATT	→ headphone-amp	power amplifier gain switch (open/VCC = ATT off, GND = ATT on)
14	IN A	→ headphone-amp	input of power amplifier
15	IN B	→ headphone-amp	input of power amplifier
16	GND	GND	ground of input stage in power amplifier
17	BEEP IN	µP → headphone-amp	input terminal for beep sound
18	MUTE TC	→ headphone-amp	terminal for mute smoothing
19	MUTE SW	µP → headphone-amp	power mute switch (GND/open = mute off, VCC = mute on)
20	POWER	→ headphone-amp	power switch (VCC = power on, GND/open = power off)
21	BIAS	headphone-amp →	BIAS voltage
22	BIAS IN	→ headphone-amp	filter terminal for BIAS circuit
23	DBB SW	µP → headphone-amp	DBB on/off switch (open/VCC = DBB on, GND = DBB off)
24	DBB OUT	headphone-amp →	Output of DBB amplifier (terminal for filter)

START-UP PROCEDURE -CHART



SERVICE TEST PROGRAM

1. PRELIMINARY SETUP
- To enter the service test program disconnect the AC/DC adaptor and remove batteries, open the CD-door and hold the buttons "PLAY" & "PREV" depressed while turning power on (i.e. connecting the AC/DC adaptor).
- The display shows the software version of the built-in µP (i.e. "5-25"). Versions are counted from "00" onwards; that means the higher the number the newer the software.
- The program is now in the main menu – various tests can be entered by pressing the corresponding buttons (see flow chart on next page or detailed description of available tests below).
- To exit the service test program press the "STOP" button or disconnect the set from the power source.

2. DISPLAY TEST
Purpose: Check functionality of display and display driver.
- To enter the display test start the service test program and press the "NEXT" button.
- The display shows test pattern1. All segments are activated for finding open circuits (see flow chart on next page).
- To jump to the next pattern press the "NEXT" button.
- The display shows test pattern2. All alternate pins (2, 4, ...) are activated for finding short circuits (see flow chart on next page).
- To jump back to test pattern1 press the "NEXT" button, to exit the display test and return to the main menu press the "STOP" button.

3. KEY TEST
Purpose: Check operation of keys and cord remote control.
- To enter the key test start the service test program and press the "MODE" button.
- The display shows "- -".
- Hold key depressed and check corresponding key code on the display. Key codes can be found in table1 (see flow chart on next page).
- To exit the key test and return to the main menu press the "STOP" button.

4. PLAYBACK TEST WITH ERROR ANALYSIS
Purpose: Analyze errors that occur during playback and search for intermittent failures.
- To enter the playback test start the service test program and press the "BASS" button.
- To start the error analysis press the "PLAY" button. Note that the playback test can only be entered if the CD-door is closed.
- The set will read the TOC and start playback.

As long as the playback is free of errors the display shows track and time information like in normal play-mode. In case of errors corresponding error codes will be displayed. The meaning of these error codes can be found in table2 (see flow chart on next page).

Note: Errors can either be *"fatal"* or *"non fatal"*. Fatal errors always stop the playback, non fatal errors only cause a short interruption of the music. Fatal errors are displayed as long as the set is connected to the power source, non fatal errors are displayed until a new error occurs or a button is pressed.

- To stop the playback test disconnect the set from the power source.

5. SERVO TEST
Purpose: Check door switch, inner switch of CD-drive, movement of slide and acceleration of discmotor.
- To enter the servo test start the service test program and press the "PLAY" button.
- The display shows "Cd xy".
  "*x*" indicates state of door switch;
  "*y*" indicates state of inner switch.
  x,y = "0" means switch is closed; "1" means switch is open.
- To move slide outside hold the "NEXT" button depressed.
- To move slide inside hold the "PREV" button depressed.
- To accelerate the discmotor clockwise hold the "MODE" button depressed.
- To accelerate the discmotor counter-clockwise hold the "PROG" button depressed.
- To enter the focus test press the "PLAY" button, to exit the servo test and return to the main menu press the "STOP" button.

6. FOCUS TEST
Purpose: Check movement of lens and operation of focus servo for CDDA and CDRW discs.

> Since the CDRW reflects much less light than an ordinary CDDA, the gain of the HF-amplifier stage and the sensitivity of the ADC inside the Decoder&Digital Servo IC "CD10" must be adapted accordingly.
> The gain is switched via the CDRW input of the HF-preamplifier.
> The ADC-sensitivity is set via software parameters (sent from µP to "CD10"). In total, there are 4 sensitivity modes available: 1 for CDDA and 3 for CDRW. The modes are listed in table3 (see next page).
> In normal play-mode, the correct focus sensitivity is choosen automatically during start-up (see "Start-up procedure" on previous page).
> In the service test program, the sensitivity can be choosen manually in order to allow individual measurements in several modes.

- The focus servo loop is switched on and the set starts searching the focus ("focus ramping"). As soon as the focus has been found the focus servo loop is closed and the state of the focus is monitored continuously.
- If the focus is OK the display shows " F x", else "-F x".
  "x" indicates the sensitivity mode. Details can be found in table3 (see flow chart on next page).
- To toggle between sensitivity modes press the "BASS" button.
- To move slide outside hold the "NEXT" button depressed.
- To move slide inside hold the "PREV" button depressed.
- To accelerate the discmotor clockwise hold the "MODE" button depressed.
- To accelerate the discmotor counter-clockwise hold the "PROG" button depressed.
- In case the focus is OK the discmotor test can be entered by pressing the "PLAY" button, to exit the focus test and return to the main menu press the "STOP" button.

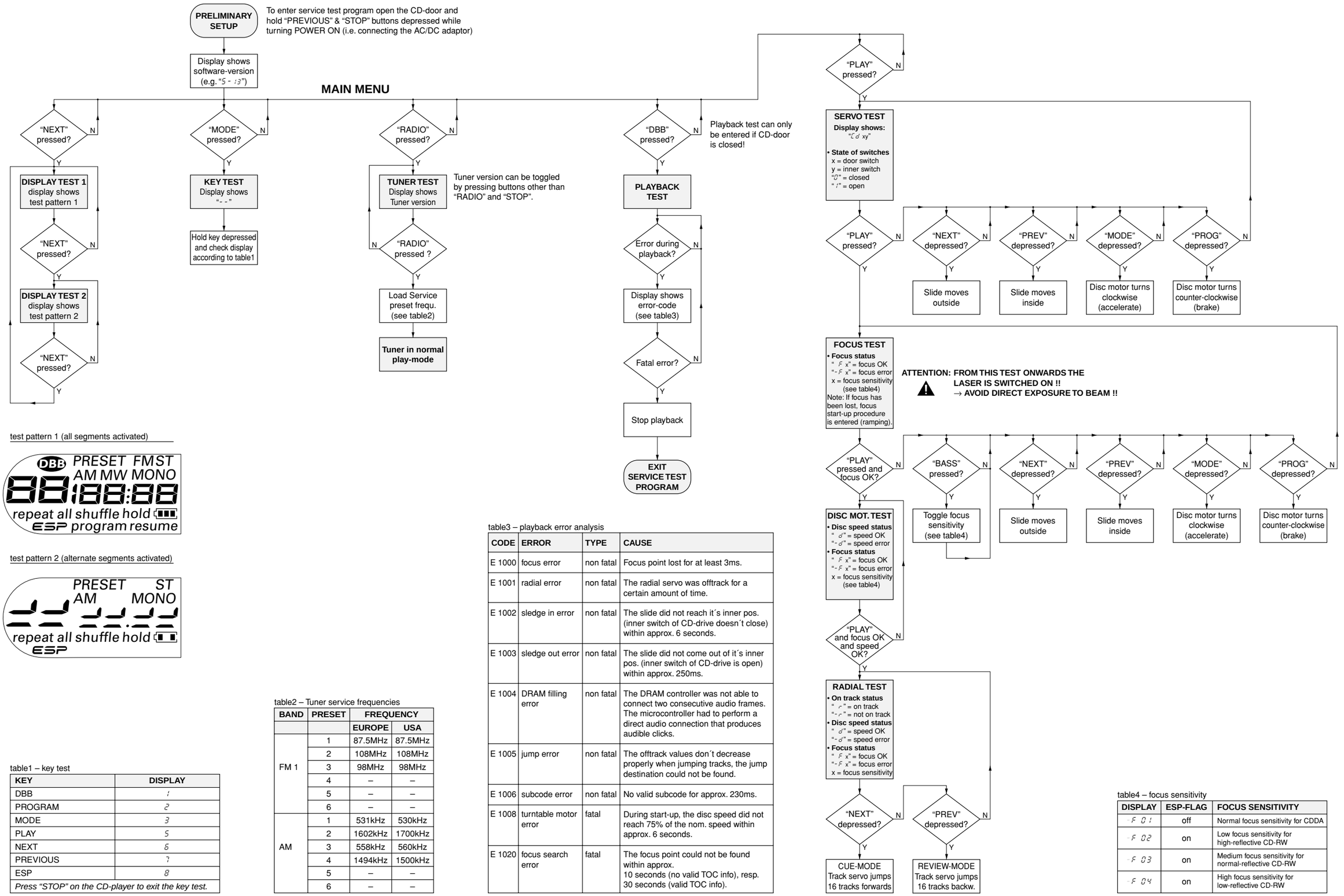
7. DISCMOTOR TEST
Purpose: Check speed regulation of discmotor.
- The speed regulation is switched on and the discmotor starts rotating. If the speed reaches 75% of the nom. speed the display shows " d", else "-d".
- In parallel also the state of the focus is monitored continuously (display " F x" or "-F x").
- In case the disc speed is OK and the focus is OK the radial test can be entered by pressing the "PLAY" button, to exit the discmotor test and return to the main menu press the "STOP" button.

8. RADIAL TEST
Purpose: Check if radial loop locks and an audio signal is audible at the headphone output.
- The radial servo loop is switched on, mute is released and the audio signal is audible. If the system is on track the display shows " r", else "-r".
- In parallel also the disc speed (display " d" or "-d") and the state of the focus (display " F x" or "-F x") are monitored continuously.
  Note: In case of radial errors the audio output is muted and muting is not released automatically when the systems recovers from the error. "-r" remains on the display.
  To open mute again press the "NEXT" or "PREV" button.
- To jump 16 tracks outside press the "NEXT" button.
- To jump 16 tracks inside press the "PREV" button.
- To exit the radial test and return to the main menu press the "STOP" button, to exit the service test program disconnect the set from the power source.

Important remark:
In radial test mode data to the DRAM is written at 1.2 times the nominal speed, and read from the DRAM at nominal speed. Because writing is done faster than reading the DRAM gets full after a certain time.
In normal play mode the system would now wait until the DRAM is partly emptied again, jump backwards and resume filling at the last written position. However, in radial test mode the jumps would disturb measurements on the radial servo loop.
Therefore this function has been disabled and filling restarts immediately from the current position of the pick-up unit. As a result "jumps" are audible during playback.

3 -6

SERVICE TEST PROGRAM - FLOW CHART



test pattern 1 (all segments activated)

test pattern 2 (alternate segments activated)

table1 – key test

KEY	DISPLAY
DBB	1
PROGRAM	2
MODE	3
PLAY	5
NEXT	6
PREVIOUS	7
ESP	8
Press “STOP” on the CD-player to exit the key test.	

table2 – Tuner service frequencies

BAND	PRESET	FREQUENCY	
		EUROPE	USA
FM 1	1	87.5MHz	87.5MHz
	2	108MHz	108MHz
	3	98MHz	98MHz
	4	–	–
	5	–	–
	6	–	–
AM	1	531kHz	530kHz
	2	1602kHz	1700kHz
	3	558kHz	560kHz
	4	1494kHz	1500kHz
	5	–	–
	6	–	–

table3 – playback error analysis

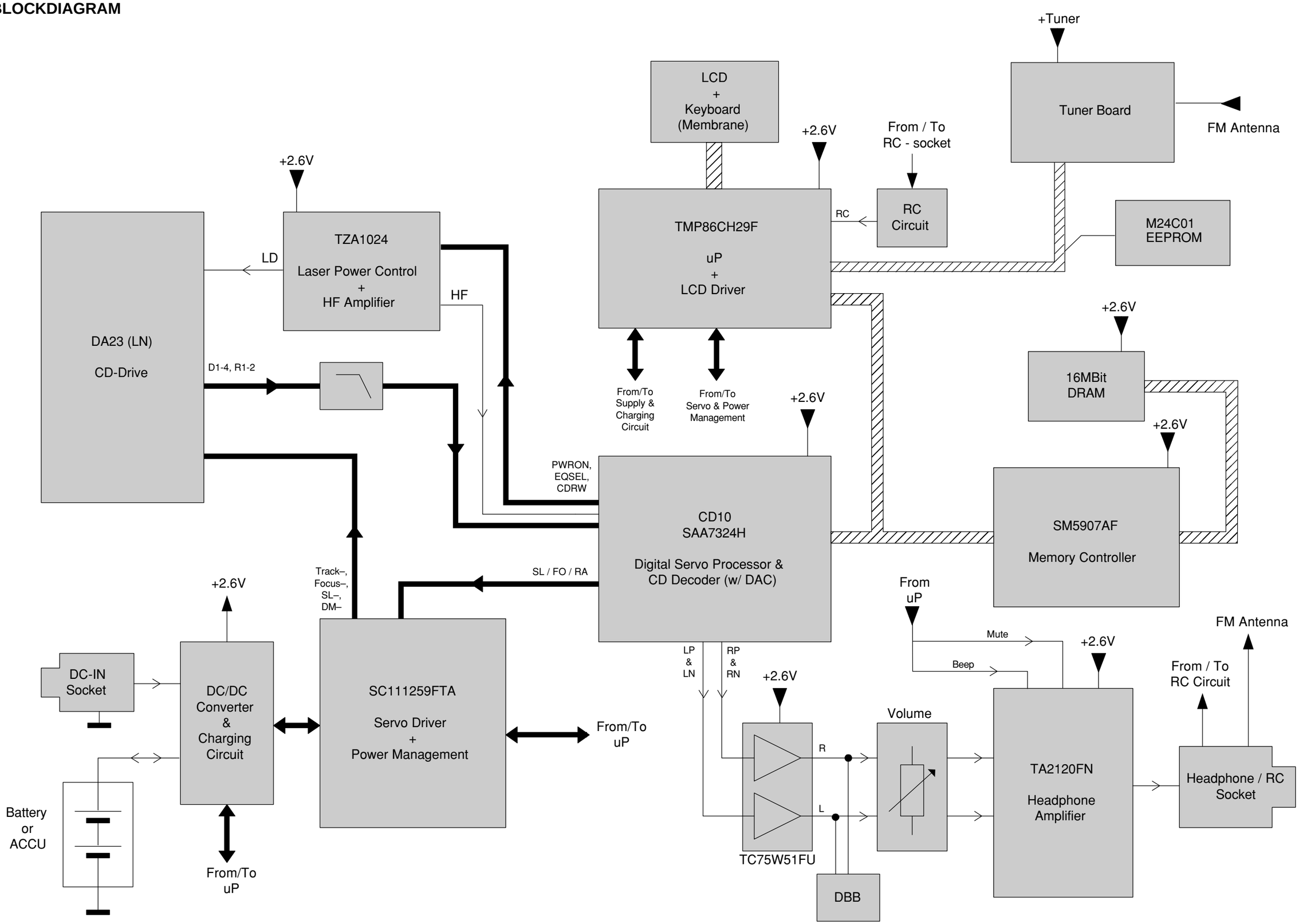
CODE	ERROR	TYPE	CAUSE
E 1000	focus error	non fatal	Focus point lost for at least 3ms.
E 1001	radial error	non fatal	The radial servo was offtrack for a certain amount of time.
E 1002	sledge in error	non fatal	The slide did not reach it´s inner pos. (inner switch of CD-drive doesn´t close) within approx. 6 seconds.
E 1003	sledge out error	non fatal	The slide did not come out of it´s inner pos. (inner switch of CD-drive is open) within approx. 250ms.
E 1004	DRAM filling error	non fatal	The DRAM controller was not able to connect two consecutive audio frames. The microcontroller had to perform a direct audio connection that produces audible clicks.
E 1005	jump error	non fatal	The offtrack values don´t decrease properly when jumping tracks, the jump destination could not be found.
E 1006	subcode error	non fatal	No valid subcode for approx. 230ms.
E 1008	turntable motor error	fatal	During start-up, the disc speed did not reach 75% of the nom. speed within approx. 6 seconds.
E 1020	focus search error	fatal	The focus point could not be found within approx. 10 seconds (no valid TOC info), resp. 30 seconds (valid TOC info).

table4 – focus sensitivity

DISPLAY	ESP-FLAG	FOCUS SENSITIVITY
F 01	off	Normal focus sensitivity for CDDA
F 02	on	Low focus sensitivity for high-reflective CD-RW
F 03	on	Medium focus sensitivity for normal-reflective CD-RW
F 04	on	High focus sensitivity for low-reflective CD-RW

3 - 7

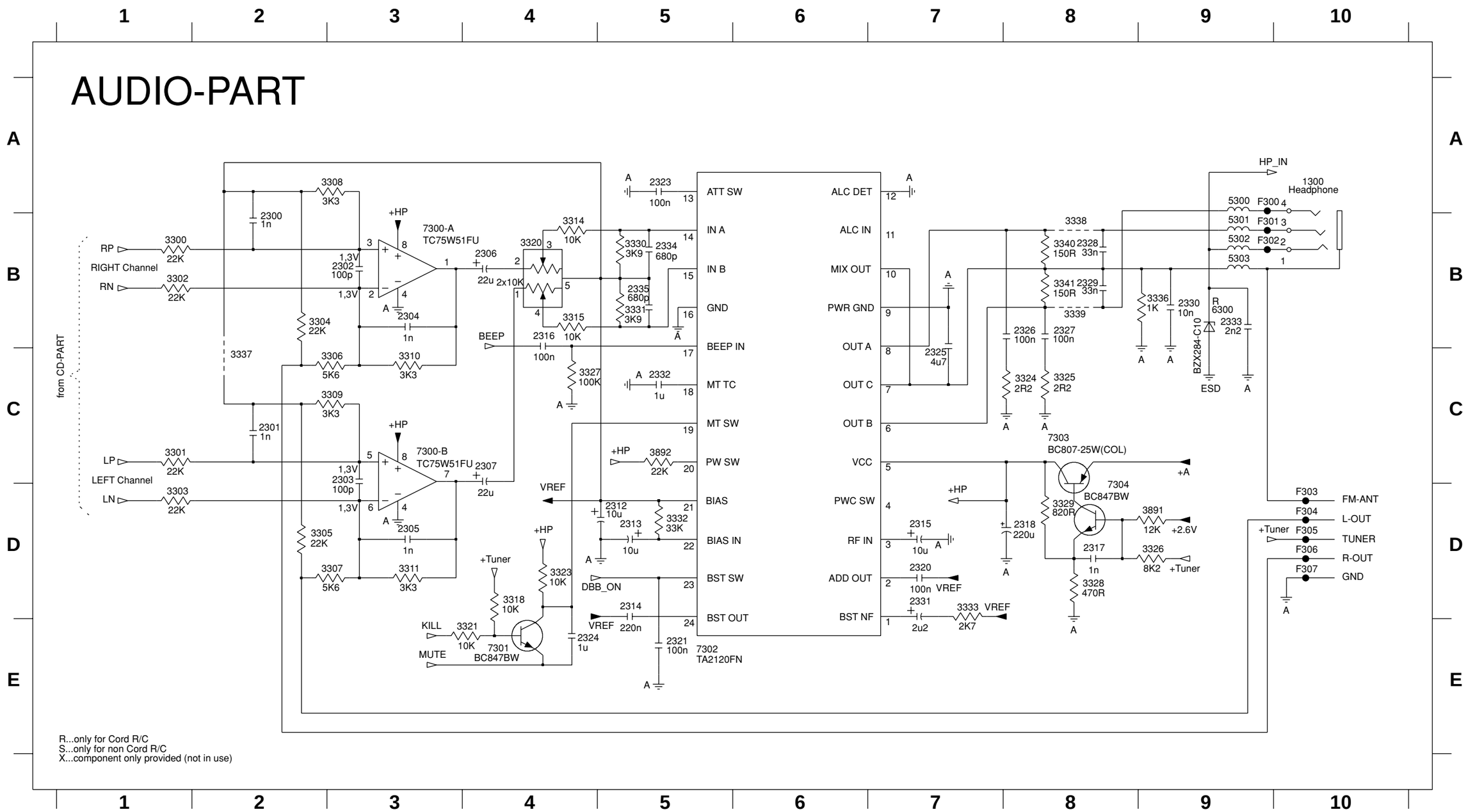
BLOCKDIAGRAM



4 -1

CIRCUIT DIAGRAM

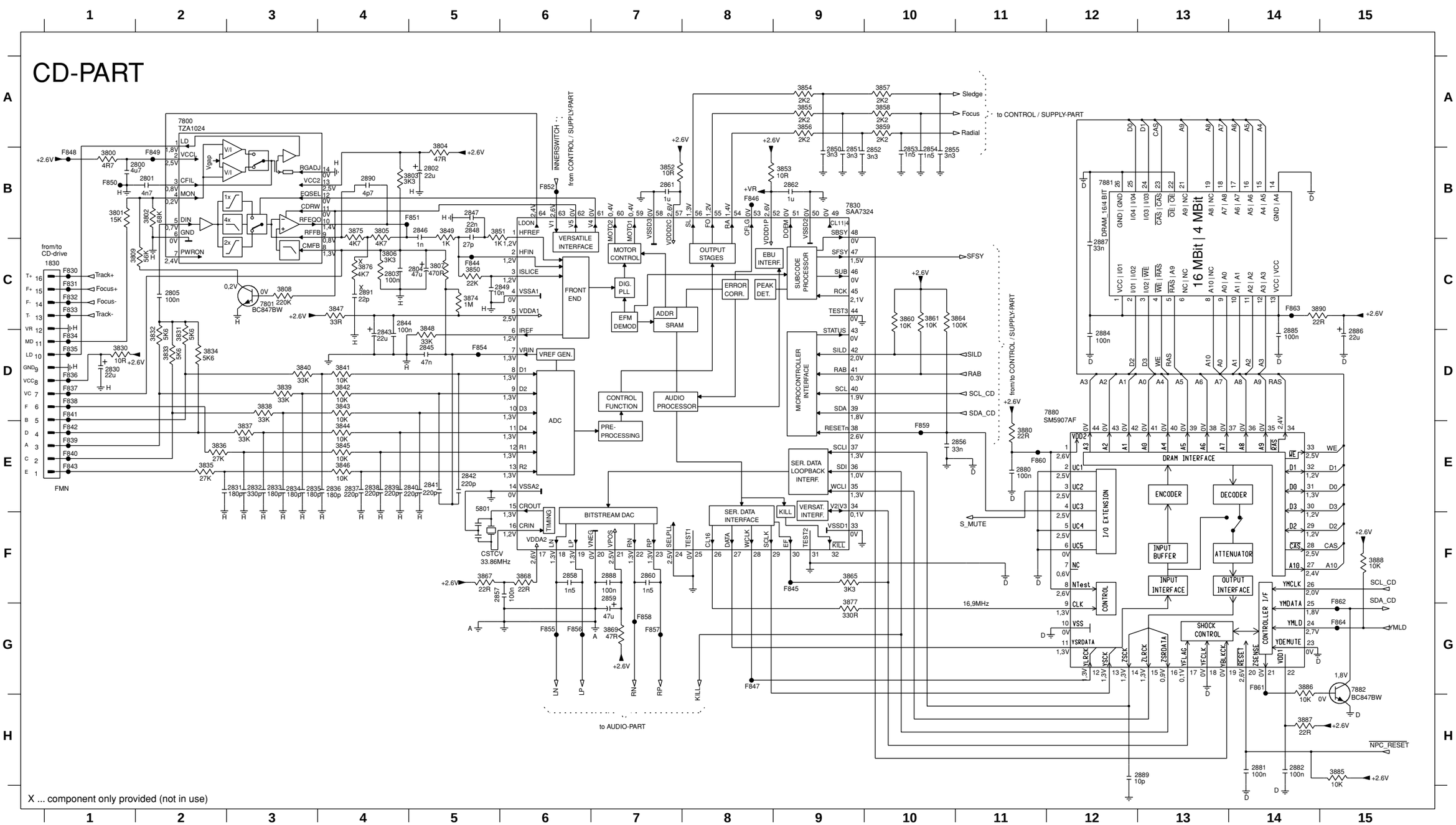
1300 A10	2304 B3	2313 D5	2318 D7	2325 B7	2330 B9	2335 B5	3304 B2	3309 C3	3318 D4	3325 C8	3330 B5	3337 C2	3891 D9	5303 B9	7302 E5	F302 B9	F307 D10
2300 B2	2305 D3	2314 D5	2320 D7	2326 B7	2331 D7	3300 B1	3305 D2	3310 C3	3320 B4	3326 D9	3331 B5	3338 B8	3892 C5	6300 B9	7303 C8	F303 D10	
2301 C2	2306 B4	2315 D7	2321 E5	2327 B8	2332 C5	3301 C1	3306 C3	3311 D3	3321 E4	3327 C4	3332 D5	3339 B8	5300 A9	7300-A B3	7304 D8	F304 D10	
2302 B3	2307 C4	2316 B4	2323 A5	2328 B8	2333 B9	3302 B1	3307 D3	3314 B4	3323 D4	3328 D8	3333 D7	3340 B8	5301 B9	7300-B C3	F300 A9	F305 D10	
2303 D3	2312 D4	2317 D8	2324 E4	2329 B8	2334 B5	3303 D1	3308 A3	3315 B4	3324 C7	3329 D8	3336 B8	3341 B8	5302 B9	7301 E4	F301 B9	F306 D10	



4 - 2

CIRCUIT DIAGRAM

1830 D1	2804 C5	2833 E3	2838 E4	2843 D4	2848 B5	2853 B10	2858 F6	2880 E11	2886 D15	2891 C4	3804 B5	3809 C2	3834 D2	3839 D3	3844 E4	3849 B5	3854 A9	3859 A10	3867 F5	3876 C4	3887 H14	7801 C3	F830 C1	F835 D1	F840 E1	F845 F9	F850 B1	F856 G6	F861 G14
2800 B1	2805 C2	2834 E3	2839 E4	2844 D4	2849 C5	2854 B10	2859 G7	2881 H14	2887 C12	3800 B1	3805 B4	3830 D1	3835 E2	3840 D3	3845 E4	3850 C5	3855 A9	3860 C10	3868 F6	3877 G9	3888 F15	7830 D7	F831 C1	F836 D1	F841 D1	F846 B8	F851 B4	F857 G7	F862 G15
2801 B2	2830 D1	2835 E3	2840 E5	2845 D5	2850 B9	2855 B10	2860 F7	2882 H14	2888 F7	3801 B1	3806 C4	3831 D2	3836 E2	3841 D4	3846 E4	3851 B5	3856 A9	3861 C10	3869 G7	3880 E11	3890 C14	7880 F13	F832 C1	F837 D1	F842 E1	F847 G8	F852 B6	F858 G7	F863 C14
2802 B5	2831 E2	2836 E4	2841 E5	2846 B5	2851 B9	2856 E10	2861 B7	2884 D12	2889 H12	3802 B2	3807 C5	3832 D2	3837 E3	3842 D4	3847 C4	3852 B7	3857 A10	3864 C10	3874 C5	3885 H15	5801 F5	7881 B14	F833 C1	F838 D1	F843 E1	F848 B1	F854 D5	F859 E10	F864 G15
2803 C4	2832 E3	2837 E4	2842 E5	2847 B5	2852 B9	2857 F6	2862 B9	2885 D14	2890 B4	3803 B4	3808 C3	3833 D2	3838 D3	3843 D4	3848 D5	3853 B8	3858 A10	3865 F9	3875 B4	3886 G14	7800 B3	7882 G15	F834 D1	F839 E1	F844 C5	F849 B2	F855 G6	F860 E11	

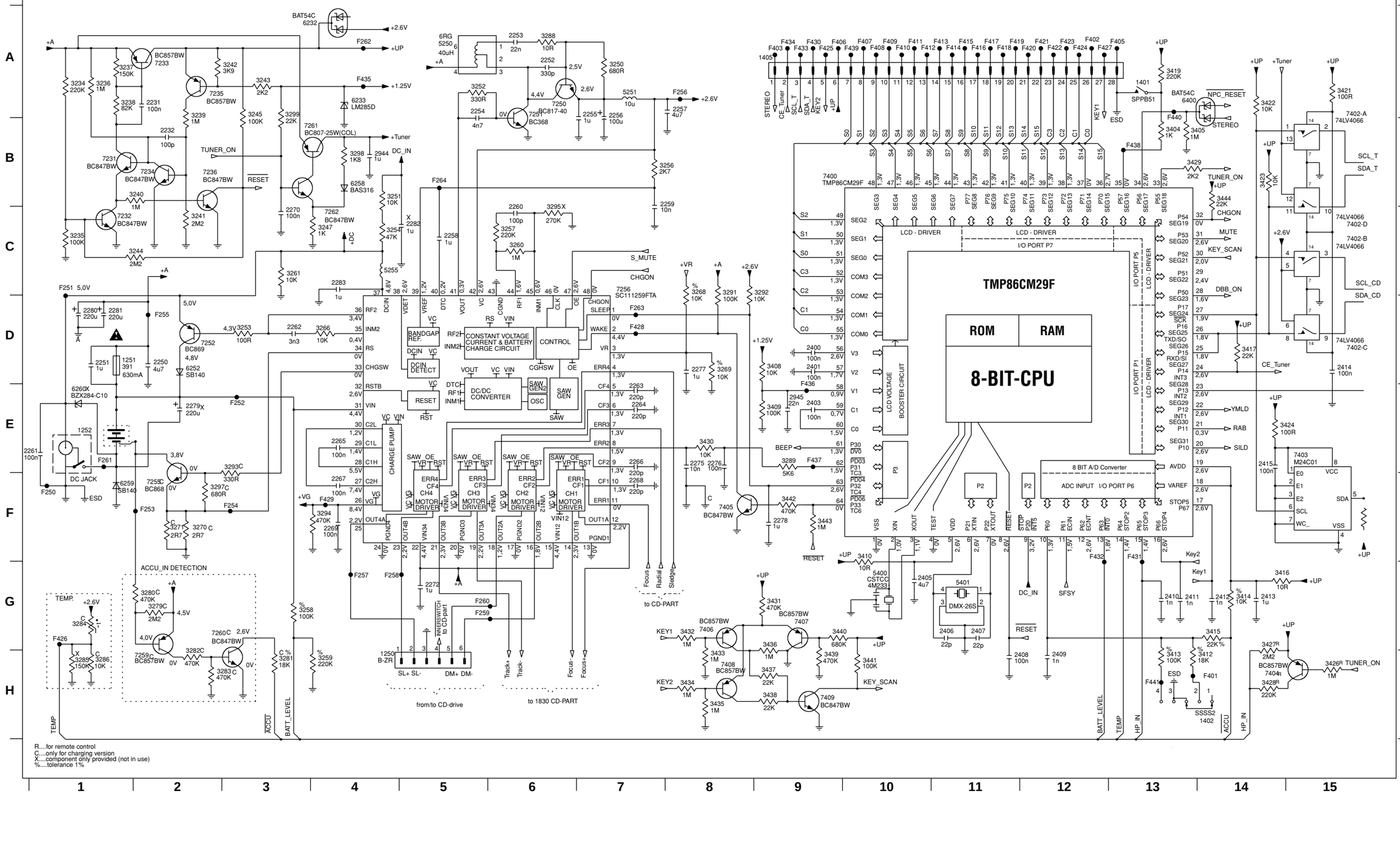


4 - 3

CIRCUIT DIAGRAM

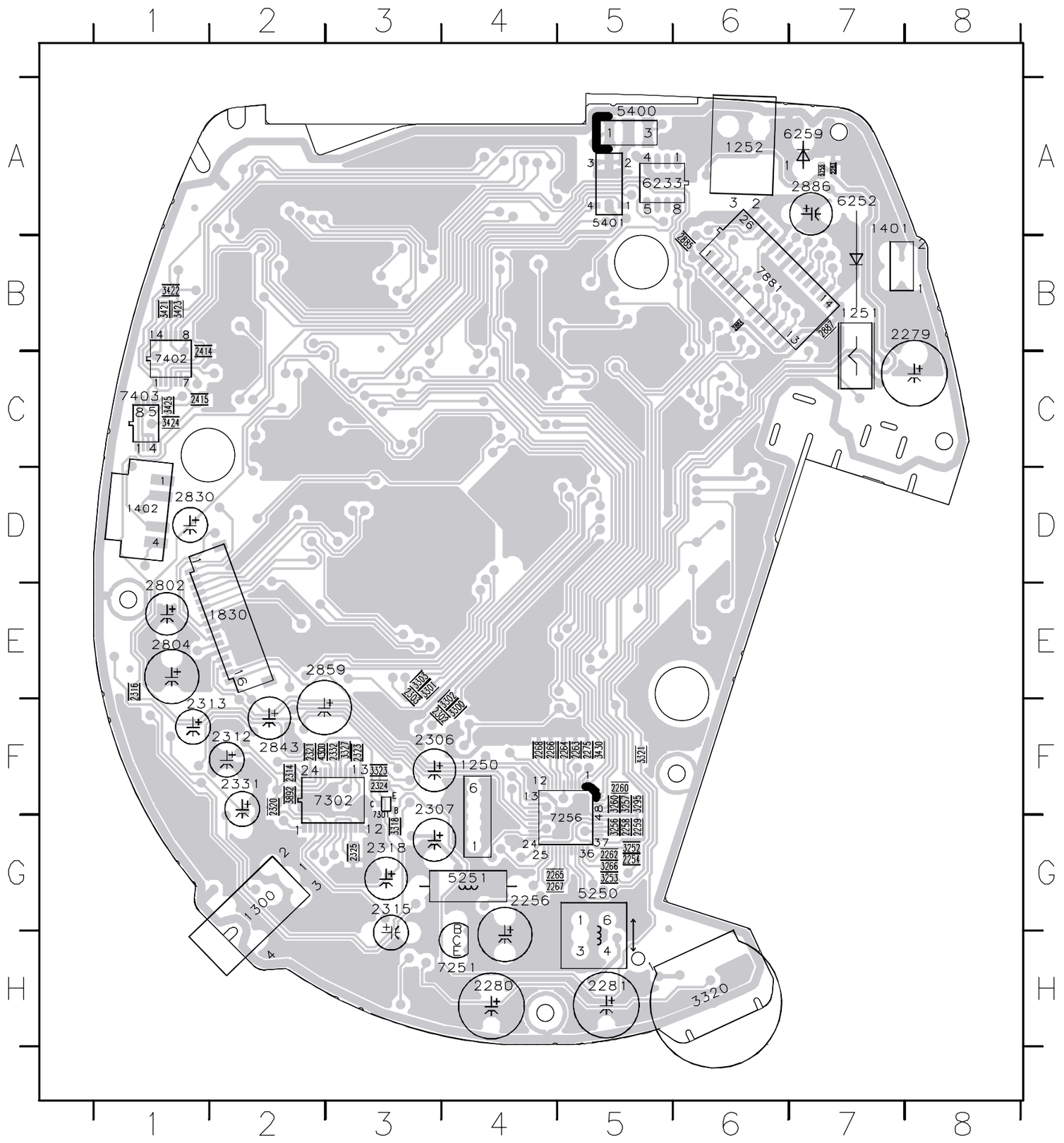
CONTROL / SUPPLY-PART

1250 H4 1251 D1 1252 E1 1401 A13 1402 H14 1405 A9 2231 A2 2232 B2
2250 D2 2251 D1 2252 A6 2253 A6 2254 A5 2255 B6 2256 B7 2257 A7
2258 C5 2259 C7 2260 C6 2261 E1 2262 D3 2263 E7 2264 E7 2265 E4
2266 E7 2267 F4 2268 F7 2269 F4 2270 C3 2272 G5 2275 E8 2276 E8
2277 D8 2278 F9 2279 E2 2280 D1 2281 D1 2282 C4 2283 C4 2400 D9
2401 D9 2403 E9 2405 G10 2406 G11 2407 G11 2408 H11 2409 H12 2410 G13
2411 G13 2412 G14 2413 G14 2414 D15 2415 E14 2944 B4 2945 E9 3234 A1
3235 C1 3236 A1 3237 A1 3238 A1 3239 B2 3240 B2 3241 C2 3242 A2
3243 A3 3244 C2 3245 B3 3247 C3 3250 A7 3251 B4 3252 A5 3253 D3
3254 C4 3256 B7 3257 C6 3258 G3 3259 H3 3260 C6 3261 C3 3266 D4
3268 D8 3269 D8 3270 F2 3271 F2 3279 G2 3280 G1 3281 H3 3282 H2
3283 H2 3284 G1 3285 H1 3286 H1 3288 A6 3289 E9 3291 D8 3292 D8
3293 E3 3294 F3 3295 C6 3297 F2 3298 B4 3299 B3 3404 B13 3405 B13
3408 D9 3409 E9 3410 F10 3412 H13 3413 H13 3414 G14 3415 G14 3416 G14
3417 D14 3419 A13 3421 A15 3422 A14 3423 B14 3424 E14 3425 F15 3426 H15
3427 G14 3428 H14 3429 B13 3430 E8 3431 G9 3432 G8 3433 H8 3434 H8
3435 H8 3436 G9 3437 H9 3438 H9 3439 H9 3440 G9 3441 H10 3442 F9
3443 F9 3444 B14 5250 A5 5251 A7 5255 C4 5400 G10 5401 G11 6232 A4
6233 A4 6252 D2 6258 B4 6259 F1 6260 E1 6400 A13 7231 B1 7232 C1
7233 A2 7234 B2 7235 A3 7236 B2 7250 A6 7251 A6 7252 D2 7255 F2
7256 C7 7259 H2 7260 G2 7261 B3 7262 C4 7400 B9 7402-A A15 7402-B C15
7402-C D15 7402-D C15 7403 E15 7404 H14 7405 F8 7406 G8 7407 G9
7408 H8 7409 H9 F250 F1 F251 C1 F252 E3 F253 F2 F254 F3 F255 D2
F256 A8 F257 G4 F258 G4 F259 G5 F260 G5 F261 E1 F262 A4 F263 D7
F264 B5 F401 H14 F402 A12 F403 A9 F405 A13 F406 A9 F407 A10 F408 A10
F409 A10 F410 A10 F411 A10 F412 A10 F413 A11 F414 A11 F415 A11
F416 A11 F417 A11 F418 A11 F419 A11 F420 A12 F421 A12 F422 A12
F423 A12 F424 A12 F425 A9 F426 G1 F427 A12 F428 D7 F429 F4 F430 A9
F431 F13 F432 F12 F433 A9



4 -4

MAIN BOARD LAYOUT DIAGRAM - COMPONENT SIDE VIEW



1250	F4	3425	C1
1251	B7	3430	F5
1252	A6	3892	F2
1300	G2	4300	F2
1401	A7	5250	G5
1402	D1	5251	G4
1830	E2	5255	A7
2254	G5	5400	A5
2256	G4	5401	A5
2258	G5	6233	A5
2259	G5	6252	A7
2260	F5	6259	A7
2262	G5	7251	H4
2263	F5	7256	G5
2264	F5	7301	G3
2265	G4	7302	F3
2266	F4	7402	C1
2267	G4	7403	C1
2268	F4	7881	B6
2275	F5		
2279	B8		
2280	H4		
2281	H5		
2283	A7		
2302	F3		
2303	E3		
2306	F3		
2307	F3		
2312	F2		
2313	F1		
2314	F2		
2315	G3		
2316	E1		
2318	G3		
2320	F2		
2321	F2		
2323	F3		
2324	F3		
2325	G3		
2331	F2		
2332	F3		
2414	C1		
2415	C1		
2802	E1		
2804	E1		
2830	D1		
2843	F2		
2859	E3		
2884	B6		
2885	B6		
2886	A7		
2887	B7		
3252	G5		
3253	G5		
3256	G5		
3257	F5		
3260	F5		
3266	G5		
3295	F5		
3300	F4		
3301	E3		
3302	F4		
3303	E3		
3318	G3		
3320	H6		
3321	F5		
3323	F3		
3327	F3		
3421	B1		
3422	B1		
3423	B1		
3424	C1		

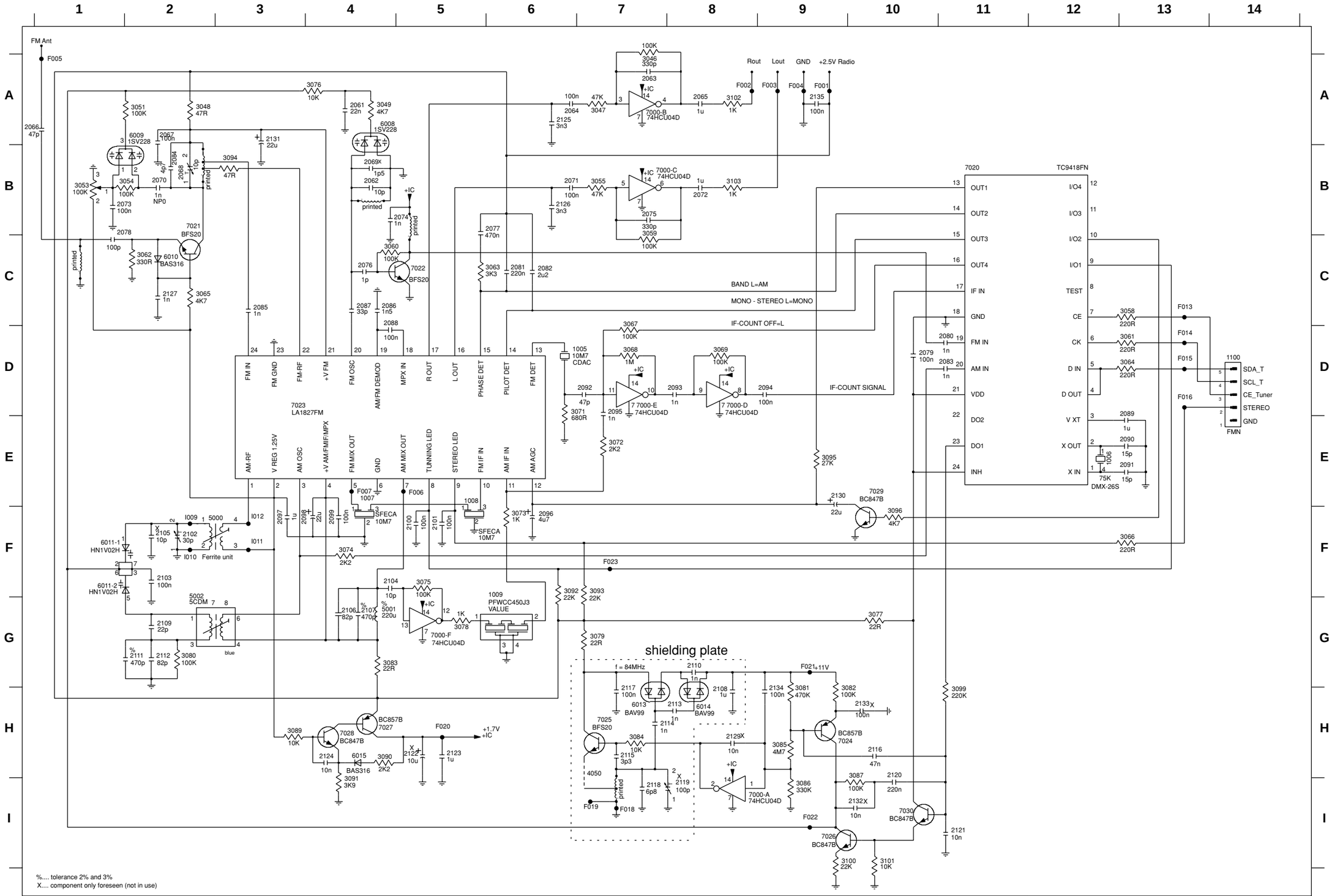
4 - 5

MAIN BOARD LAYOUT DIAGRAM - COPPER SIDE VIEW

1405	A6	2853	F5	3315	H6	3841	D6	7400	B6					
2231	C4	2854	F5	3324	F6	3842	D6	7404	B7					
2232	C4	2855	F4	3325	F7	3843	D6	7405	B5					
2250	F4	2856	E4	3326	F6	3844	D6	7406	C7					
2251	C2	2857	C5	3328	G6	3845	D6	7407	C7					
2252	H4	2858	D4	3329	G6	3846	D6	7408	C6					
2253	G4	2860	D4	3330	H7	3847	E7	7409	D7					
2255	H5	2861	E5	3331	H6	3848	E7	7800	D7					
2257	G5	2862	F5	3332	F7	3849	E6	7801	E7					
2261	A2	2880	B2	3333	F7	3850	E6	7830	E5					
2269	G5	2881	C3	3336	F7	3851	E6	7880	B3					
2270	B5	2882	C3	3337	F7	3852	E6	7882	B4					
2272	G5	2888	D4	3338	G6	3853	F4							
2276	B5	2889	D3	3339	F7	3854	E5							
2277	F4	2890	E6	3340	G7	3855	E5							
2278	B5	2891	E6	3341	F7	3856	E5							
2282	A4	2944	A4	3404	B7	3857	F5							
2300	F6	2945	B5	3405	A7	3858	F5							
2301	E6	3234	C3	3408	B5	3859	F5							
2304	F6	3235	D4	3409	B5	3860	E4							
2305	F6	3236	C4	3410	C5	3861	E4							
2317	F6	3237	C4	3412	D8	3864	E4							
2326	F6	3238	C3	3413	D8	3865	D4							
2327	F7	3239	C4	3414	D7	3867	C5							
2328	G6	3240	C4	3415	D7	3868	D5							
2329	G7	3241	C4	3416	C7	3869	C4							
2330	G7	3242	B4	3417	C7	3874	E7							
2333	G7	3243	B4	3419	B7	3875	E6							
2334	G6	3244	C4	3426	B7	3876	E6							
2335	G6	3245	C4	3427	B7	3877	D4							
2400	B6	3247	B5	3428	B7	3880	B2							
2401	B5	3250	G5	3429	B7	3885	B4							
2403	B5	3251	A4	3431	C6	3886	C4							
2405	C5	3254	A3	3432	C6	3887	B4							
2406	C5	3258	F4	3433	C7	3888	A4							
2407	C5	3259	F4	3434	C6	3890	A3							
2408	C6	3261	A3	3435	D6	3891	F6							
2409	C6	3268	F4	3436	D7	4200	A3							
2410	C6	3269	F4	3437	D7	4201	A3							
2411	C6	3270	G4	3438	D6	5252	A3							
2412	C7	3271	G4	3439	C7	5253	A3							
2413	D7	3279	C3	3440	C7	5300	G7							
2800	D8	3280	D3	3441	C7	5301	G6							
2801	D8	3281	C4	3442	B5	5302	G7							
2803	E7	3282	D4	3443	B5	5303	G7							
2805	D7	3283	D4	3444	C5	5801	D5							
2831	D6	3284	E3	3800	D8	6232	A4							
2832	D6	3285	C5	3801	E8	6258	B4							
2833	D6	3286	C5	3802	E8	6260	A3							
2834	D6	3288	G4	3803	E7	6300	G7							
2835	D6	3289	B5	3804	E8	6400	B7							
2836	D6	3291	B5	3805	E6	7231	C3							
2837	D5	3292	B5	3806	E7	7232	C4							
2838	D5	3293	G4	3807	E7	7233	C4							
2839	D5	3294	G5	3808	E7	7234	C4							
2840	D5	3297	G4	3809	E8	7235	B4							
2841	D5	3298	A4	3830	D8	7236	C4							
2842	D6	3299	B4	3831	D6	7250	H5							
2844	D5	3304	F6	3832	D6	7252	A3							
2845	E7	3305	F6	3833	D6	7255	G4							
2846	E6	3306	F6	3834	D7	7259	D4							
2847	E6	3307	E6	3835	D6	7260	C4							
2848	E6	3308	F6	3836	D6	7261	A5							
2849	E6	3309	E6	3837	D6	7262	B5							
2850	E6	3310	F6	3838	D6	7300	F6							
2851	E5	3311	E6	3839	D6	7303	G6							
2852	F5	3314	H6	3840	D6	7304	F6							

5 - 1

TUNER BOARD - CIRCUIT DIAGRAM

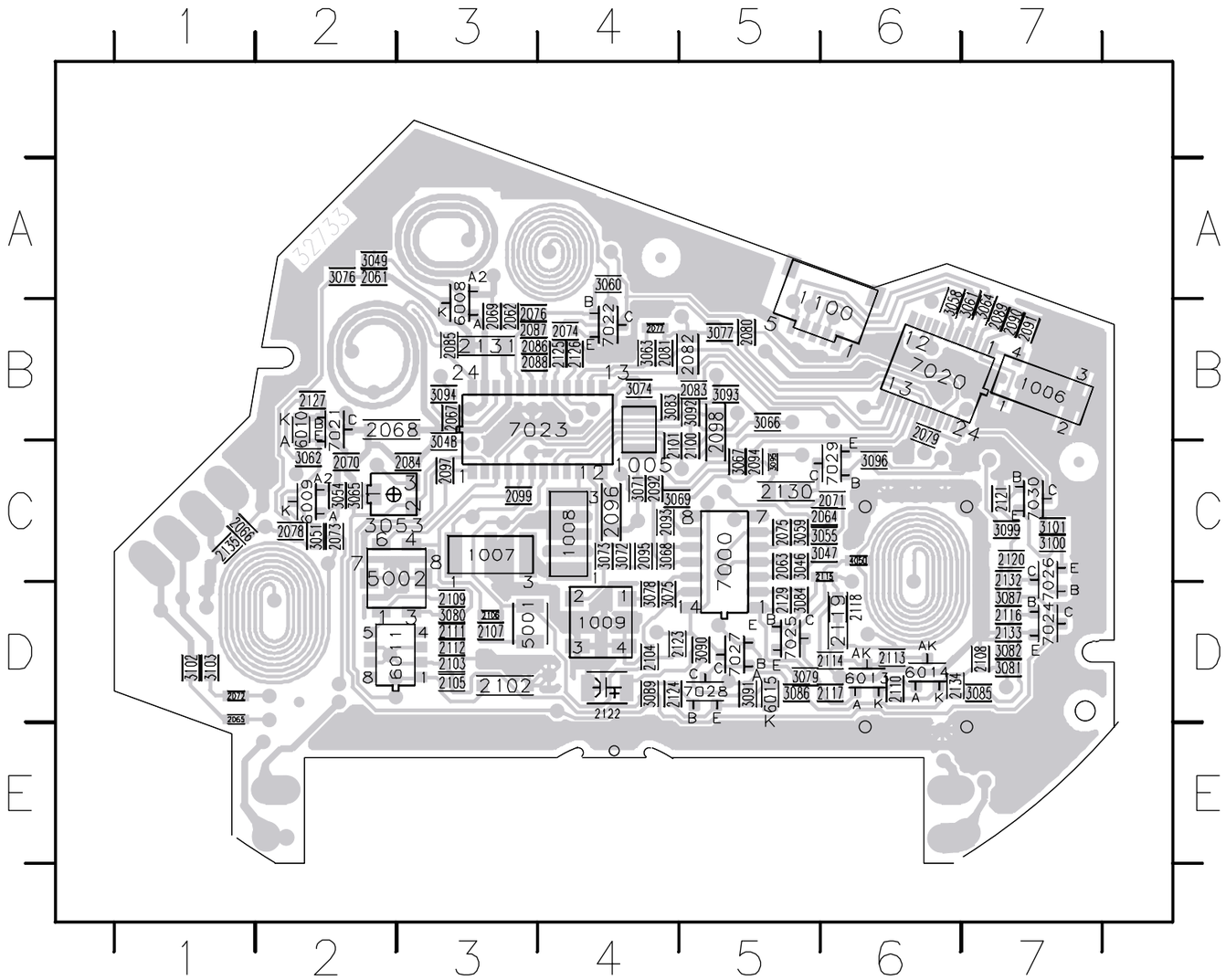


1005 D6	3085 H9
1006 E12	3086 I9
1007 E4	3087 I10
1008 E5	3089 H3
1009 G6	3090 H4
1100 D14	3091 I4
2061 A4	3092 F6
2062 B4	3093 F7
2063 A7	3094 B3
2064 A6	3095 E9
2065 A8	3096 F10
2066 A1	3099 H11
2067 A2	3100 I9
2068 B2	3101 I10
2069 B4	3102 A8
2070 B2	3103 A9
2071 B6	4050 H7
2072 B8	5001 G4
2073 B1	5002 G2
2074 B4	6008 A4
2075 B7	6009 A2
2076 C4	6010 C2
2077 B5	6011-1 F1
2078 B1	6011-2 F1
2079 D10	6013 H7
2080 D11	6014 H8
2081 C6	6015 H4
2082 C6	7000-A I9
2083 D11	7000-B A7
2084 B2	7000-C B7
2085 C3	7000-D D8
2086 C4	7000-E D7
2087 C4	7000-F G5
2088 C4	7020 B11
2089 D13	7021 B2
2090 E13	7022 C5
2091 E13	7023 D3
2092 D7	7024 H9
2093 D8	7025 H7
2094 D8	7026 I9
2095 D7	7027 H4
2096 F6	7028 H4
2097 F3	7029 F10
2098 F4	7030 I10
2099 F4	F001 A9
2100 F5	F002 A8
2101 F5	F003 A9
2102 F2	F004 A9
2103 F2	F005 A1
2104 F4	F006 E5
2105 F2	F007 E4
2106 G4	F013 C13
2107 G4	F014 D13
2108 H8	F015 D13
2109 G2	F016 D13
2110 G8	F018 I7
2111 G1	F019 I7
2112 G2	F020 H5
2113 H8	F021 G9
2114 H7	F022 I9
2115 H7	F023 F7
2116 H10	I009 F2
2117 H7	I010 F2
2118 I7	I011 F3
2119 I7	I012 F3
2120 H10	
2121 I11	
2122 H5	
2123 H5	
2124 H4	
2125 A6	
2126 B6	
2127 C2	
2129 H8	
2130 E9	
2131 A3	
2132 I10	
2133 H10	
2134 H9	
2135 A9	
3046 A7	
3047 A7	
3048 A2	
3049 A4	
3051 A1	
3053 B1	
3054 B2	
3055 B7	
3058 C13	
3059 C7	
3060 C4	
3061 D13	
3062 C2	
3063 C5	
3064 D13	
3065 C2	
3066 F13	
3067 D7	
3068 D7	
3069 D8	
3071 D6	
3072 E7	
3073 F6	
3074 F4	
3075 F5	
3076 A4	
3077 G10	
3078 G5	
3079 G7	
3080 G2	
3081 H9	
3082 H9	
3083 G4	
3084 H7	

5 - 2

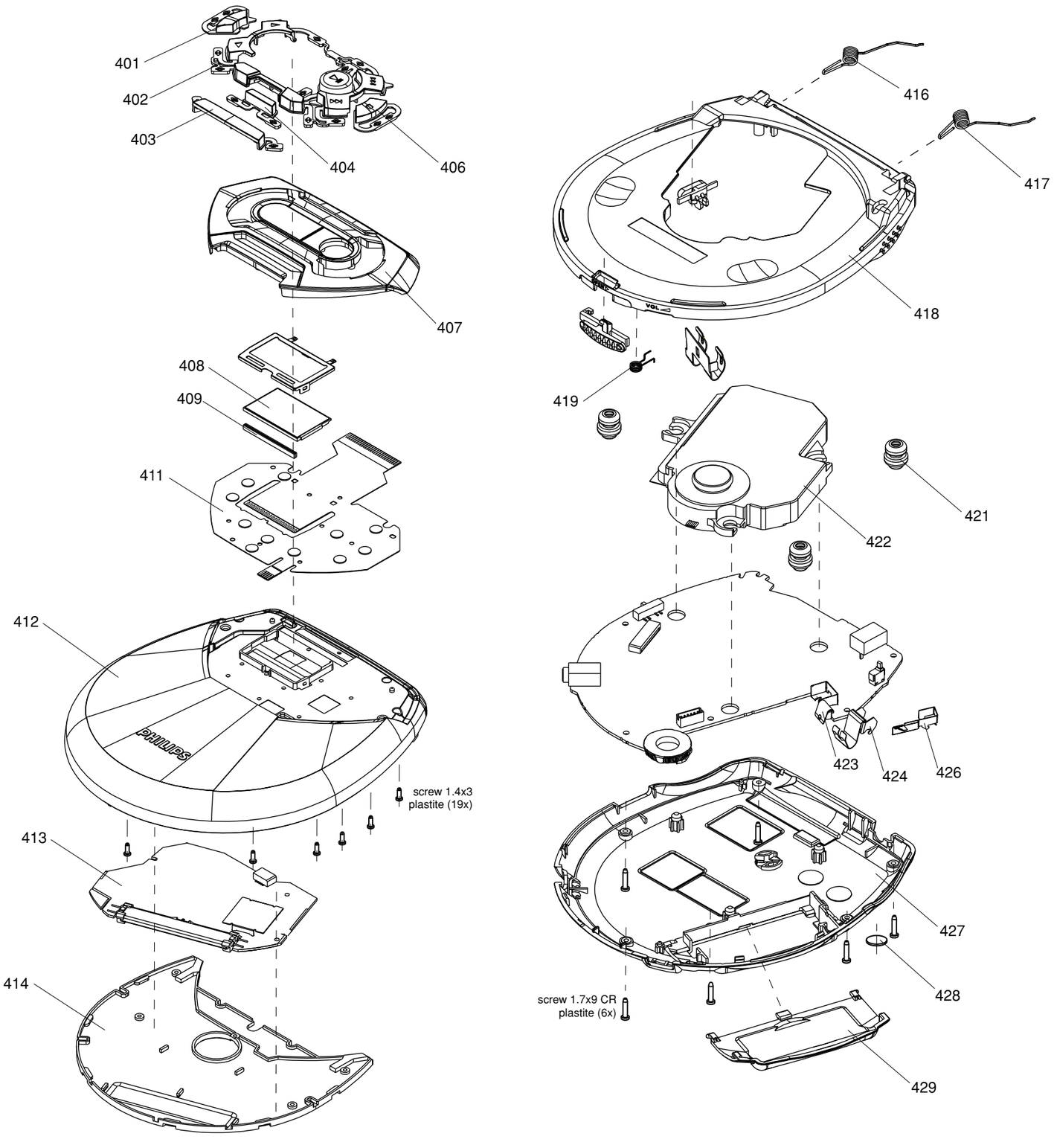
TUNER BOARD LAYOUT

The tuner is not intended to be repaired on component level.
An adjusted printed board assembly is available with codenumber 3140 118 84860.
Circuit diagram and printed board is published for orientation only.



1005	C4	2092	C4	2130	C5	3082	D7	7027	D5
1006	B7	2093	C4	2131	B3	3083	B4	7028	D5
1007	C3	2094	C5	2132	C7	3084	D5	7029	C6
1008	C4	2095	C4	2133	D7	3085	D7	7030	C7
1009	D4	2096	C4	2134	D6	3086	D5		
1100	B6	2097	C3	2135	C1	3087	D7		
2061	A2	2098	B5	3046	C5	3089	D4		
2062	B3	2099	C3	3047	C6	3090	D5		
2063	C5	2100	C5	3048	C3	3091	D5		
2064	C6	2101	C4	3049	A2	3092	B5		
2065	D1	2102	D3	3051	C2	3093	B5		
2066	C1	2103	D3	3053	C2	3094	B3		
2067	B3	2104	D4	3054	C2	3095	C5		
2068	B2	2105	D3	3055	C6	3096	C6		
2069	B3	2106	D3	3058	B6	3099	C7		
2070	C2	2107	D3	3059	C5	3100	C7		
2071	C6	2108	D7	3060	A4	3101	C7		
2072	D1	2109	D3	3061	B7	3102	D1		
2073	C2	2110	D6	3062	C2	3103	D1		
2074	B4	2111	D3	3063	B4	4050	C6		
2075	C5	2112	D3	3064	B7	5001	D3		
2076	B3	2113	D6	3065	C2	5002	C2		
2077	B4	2114	D6	3066	B5	6008	B3		
2078	C2	2115	C6	3067	C5	6009	C2		
2079	B6	2116	D7	3068	C4	6010	B2		
2080	B5	2117	D6	3069	C4	6011	D2		
2081	B4	2118	D6	3071	C4	6013	D6		
2082	B5	2119	D6	3072	C4	6014	D6		
2083	B5	2120	C7	3073	C4	6015	D5		
2084	C3	2121	C7	3074	B4	7000	C5		
2085	B3	2122	D4	3075	D4	7020	B6		
2086	B3	2123	D4	3076	A2	7021	B2		
2087	B3	2124	D4	3077	B5	7022	B4		
2088	B3	2125	B4	3078	D4	7023	B3		
2089	B7	2126	B4	3079	D5	7024	D7		
2090	B7	2127	B2	3080	D3	7025	D5		
2091	B7	2129	D5	3081	D7	7026	C7		

EXPLODED VIEW DIAGRAM - CABINET



MECHANICAL PARTSLIST - CABINET

401	3140 114 41540	HOLDER
402	3140 114 41520	BUTTONSET-FOCUS-T
403	3140 114 42770	BUTTON-FM/MW (for-/00C/05Z)
403	3140 114 44120	BUTTON-FM/AM (for-/11/17)
404	3140 114 41550	BUTTON-MODE (FOCUS-TUNER)
406	3140 114 41530	BUTTON-STOP
407	3140 117 62540	PANEL-FOCUS-T-ASSY-1(for-/00C/05Z)
407	3140 117 63190	PANEL-FOCUS-T-ASSY-2(for-/11/17)
408	3140 110 51360	LCD - FOCUS - T
409	3140 114 42150	ZEBRA-STRIP-FOCUS-T
411	3140 113 32710	MEMBRANE-KEYBOARD-FOCUS-T
412	3140 117 62530	DOOR-CD-FOCUS-T-ASSY-1
413	3140 118 84860	PBAS 8 FOCUS TUNER BOARD
414	3140 117 63640	CABINET-ASSY-FOCUS-TUNER
416	3140 111 22060	SPRING-OPEN-LEFT-FOCUS-T
417	3140 111 22070	SPRING-OPEN-RIGHT-FOCUS-T
418	3103 304 69540	COVER-BOTTOM
419	3103 301 06500	SPRING-SLIDER-OPEN-2
421	3103 304 69590	SUSPENSION
422	3103 309 05320	CD DA23LNPH DRIVE ASSY
423	3103 301 45620	SPRING-BATTERY-PLUS
424	3103 301 45610	SPRING-BATTERY-MINUS
426	3103 301 45630	SPRING-BATTERY-CHARGE
427	3103 308 11960	BOTTOM-ASSY-2
428	4822 462 41819	RUBBER FOOT
429	3103 304 71270	DOOR-BATTERY

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

ELECTRICAL PARTSLIST - MAIN BOARD

- MISCELLANEOUS -

1250	2422 025 12272	CONNECTOR 6P
1251	2422 086 10946	FUSE M 630MA 65V
1252	2422 026 05086	DC SOCKET
1300	2422 026 05204	HEADPHONE SOCKET
1401	4822 276 12889	SWITCH SPPB51
1402	4822 277 21705	SWITCH
1405	2422 025 16853	CONNECTOR 28P FFC
1830	4822 267 11027	CONNECTOR 16P FFC

- CAPACITORS -

2231	2238 586 59812	100nF +80-20% Y5V 50V
2232	2020 552 94427	100pF 5% NP0 50V
2250	2020 552 96305	100pF 5% NP0 50V
2251	3198 017 41050	1µF 20% Y5V 10V
2252	4822 126 14241	330pF 10% NP0 50V
2253	4822 126 14494	22nF 10% X7R 25V
2254	4822 126 13193	4,7nF 10% X7R 63V
2255	3198 017 41050	1µF 20% Y5V 10V
2256	4822 124 23432	100µF 20% 10V
2257	2020 552 96305	4,7U +80-20% Y5V 10V
2258	3198 017 41050	1µF 20% Y5V 10V
2259	5322 126 11583	10nF 10% X7R 50V
2260	2020 552 94427	100pF 5% NP0 50V
2261	2238 586 59812	100nF +80-20% Y5V 50V
2262	5322 126 11579	3,3nF 10% X7R 63V
2263	4822 126 13883	220pF 5% 50V
2264	4822 126 13883	220pF 5% 50V
2265	2238 586 59812	100nF +80-20% Y5V 50V
2266	4822 126 13883	220pF 5% 50V
2267	2238 586 59812	100nF +80-20% Y5V 50V
2268	4822 126 13883	220pF 5% 50V
2269	2238 586 59812	100nF +80-20% Y5V 50V
2270	2238 586 59812	100nF +80-20% Y5V 50V
2272	3198 017 41050	1µF 20% Y5V 10V
2275	5322 126 11583	10nF 10% X7R 50V
2276	2238 586 59812	100nF +80-20% Y5V 50V
2277	3198 017 41050	1µF 20% Y5V 10V
2278	3198 017 41050	1µF 20% Y5V 10V
2279	3198 029 12210	220µF 20% 10V
2280	3198 029 12210	220µF 20% 10V
2281	3198 029 12210	220µF 20% 10V
2300	3198 016 31020	1nF 10% NP0 25V
2301	3198 016 31020	1nF 10% NP0 25V
2302	2020 552 94427	100pF 5% NP0 50V
2303	2020 552 94427	100pF 5% NP0 50V
2304	3198 016 31020	1nF 10% NP0 25V
2305	3198 016 31020	1nF 10% NP0 25V
2306	4822 124 40998	22µF 20% 6,3V
2307	4822 124 40998	22µF 20% 6,3V
2312	4822 124 11947	10µF 20% 16V

- CAPACITORS -

2313	4822 124 11947	10µF 20% 16V
2314	4822 126 13879	220nF +80-20% 16V
2315	4822 124 11947	10µF 20% 16V
2316	2238 586 59812	100nF +80-20% Y5V 50V
2317	3198 016 31020	1nF 10% NP0 25V
2318	4822 124 40998	22µF 20% 6,3V
2320	2238 586 59812	100nF +80-20% Y5V 50V
2321	2238 586 59812	100nF +80-20% Y5V 50V
2323	2238 586 59812	100nF +80-20% Y5V 50V
2324	4822 126 14043	1µF +80-20% Y5V 16V
2325	2020 552 96305	4,7U +80-20% Y5V 10V
2326	2238 586 59812	100nF +80-20% Y5V 50V
2327	2238 586 59812	100nF +80-20% Y5V 50V
2328	4822 126 14549	33nF 10% X7R 16V
2329	4822 126 14549	33nF 10% X7R 16V
2330	5322 126 11583	10nF 10% X7R 50V
2331	4822 124 22652	2,2µF 20% 50V
2332	3198 017 41050	1µF 20% Y5V 10V
2333	4822 126 14238	2,2nF 10% X7R 50V
2334	4822 126 13909	680pF 10% X7R 50V
2335	4822 126 13909	680pF 10% X7R 50V
2400	2238 586 59812	100nF +80-20% Y5V 50V
2401	2238 586 59812	100nF +80-20% Y5V 50V
2403	2238 586 59812	100nF +80-20% Y5V 50V
2405	2020 552 96305	4,7U +80-20% Y5V 10V
2406	4822 122 33761	22pF 5% NP0 50V
2407	4822 122 33761	22pF 5% NP0 50V
2408	2238 586 59812	100nF +80-20% Y5V 50V
2409	3198 016 31020	1nF 10% NP0 25V
2410	3198 016 31020	1nF 10% NP0 25V
2411	3198 016 31020	1nF 10% NP0 25V
2412	3198 016 31020	1nF 10% NP0 25V
2413	3198 017 41050	1µF 20% Y5V 10V
2414	2238 586 59812	100nF +80-20% Y5V 50V
2415	2238 586 59812	100nF +80-20% Y5V 50V
2800	2020 552 96305	4,7U +80-20% Y5V 10V
2801	4822 126 13193	4,7nF 10% X7R 63V
2802	4822 124 41796	22µF 20% 6,3V
2803	2238 586 59812	100nF +80-20% Y5V 50V
2804	4822 124 80483	47µF 20% 6,3V
2805	2238 586 59812	100nF +80-20% Y5V 50V
2830	4822 124 40998	22µF 20% 6,3V
2831	4822 126 14508	180pF 5% NP0 50V
2832	4822 126 14241	330pF 10% NP0 50V
2833	4822 126 14508	180pF 5% NP0 50V
2834	4822 126 14508	180pF 5% NP0 50V
2835	4822 126 14508	180pF 5% NP0 50V
2836	4822 126 14508	180pF 5% NP0 50V
2837	4822 126 13883	220pF 5% 50V
2838	4822 126 13883	220pF 5% 50V

ELECTRICAL PARTSLIST - MAIN BOARD

- CAPACITORS -

2839	4822 126 13883	220pF 5% 50V
2840	4822 126 13883	220pF 5% 50V
2841	4822 126 13883	220pF 5% 50V
2842	4822 126 13883	220pF 5% 50V
2843	4822 124 40998	22µF 20% 6,3V
2844	2238 586 59812	100nF +80-20% Y5V 50V
2845	3198 017 34730	47nF 10% X7R 16V
2846	5322 126 11578	1nF 10% X7R 50V
2847	4822 126 14494	22nF 10% X7R 25V
2848	4822 126 11669	27pF 5% 50V
2849	5322 126 11583	10nF 10% X7R 50V
2850	5322 126 11579	3,3nF 10% X7R 63V
2851	5322 126 11579	3,3nF 10% X7R 63V
2852	5322 126 11579	3,3nF 10% X7R 63V
2853	4822 126 14247	1,5nF 10% X7R 50V
2854	4822 126 14247	1,5nF 10% X7R 50V
2855	5322 126 11579	3,3nF 10% X7R 63V
2856	4822 126 14549	33nF 10% X7R 16V
2857	2238 586 59812	100nF +80-20% Y5V 50V
2858	4822 126 13344	1,5nF 5% 63V
2859	4822 124 81286	47µF 20% 6,3V
2860	4822 126 13344	1,5nF 5% 63V
2861	3198 017 41050	1µF 20% Y5V 10V
2862	3198 017 41050	1µF 20% Y5V 10V
2880	2238 586 59812	100nF +80-20% Y5V 50V
2881	2238 586 59812	100nF +80-20% Y5V 50V
2882	2238 586 59812	100nF +80-20% Y5V 50V
2885	2238 586 59812	100nF +80-20% Y5V 50V
2886	4822 124 41796	22µF 20% 6,3V
2887	4822 126 14549	33nF 10% X7R 16V
2888	2238 586 59812	100nF +80-20% Y5V 50V
2889	4822 122 33741	10pF 10% NP0 50V
2890	4822 126 13887	4,7pF 1% 50V
2944	3198 017 41050	1µF 20% Y5V 10V
2945	4822 126 14494	22nF 10% X7R 25V

- RESISTORS -

3234	4822 117 12891	220K 1%
3235	4822 117 13632	100K 1% 0,62W
3236	4822 051 30105	1M 5% 0,062W
3237	4822 051 30154	150K 5% 0,062W
3238	4822 117 12864	82K 5% 0,6W
3239	4822 051 30105	1M 5% 0,062W
3240	4822 051 30105	1M 5% 0,062W
3241	3198 021 32250	2,2M 5%
3242	4822 051 30392	3,9K 5% 0,063W
3243	4822 051 30222	2,2K 5% 0,062W

- RESISTORS -

3244	3198 021 32250	2,2M 5%
3245	4822 117 13632	100K 1% 0,62W
3247	4822 051 30102	1K 5% 0,062W
3250	4822 051 30681	680R 5% 0,062W
3252	4822 051 30331	330R 5% 0,062W
3253	4822 051 30221	220R 5% 0,062W
3254	4822 117 12925	47K 1% 0,063W
3256	4822 051 30272	2,7K 5% 0,062W
3257	4822 117 12891	220K 1%
3258	4822 117 13632	100K 1% 0,62W
3259	4822 117 12891	220K 1%
3260	4822 051 30105	1M 5% 0,062W
3261	4822 051 30103	10K 5% 0,062W
3266	4822 051 30103	10K 5% 0,062W
3268	4822 051 30103	10K 5% 0,062W
3269	4822 051 30103	10K 5% 0,062W
3270	2322 702 70278	2,7R 5% RC21
3271	2322 702 70278	2,7R 5% RC21
3279	3198 021 32250	2,2M 5%
3280	4822 051 30474	470K 5% 0,062W
3281	4822 051 30183	18K 5% 0,062W
3282	4822 051 30474	470K 5% 0,062W
3283	4822 051 30474	470K 5% 0,062W
3284	2322 615 13103	NTC 10K 5% 0,21W
3286	4822 051 30103	10K 5% 0,062W
3288	4822 051 30109	10R 5% 0,062W
3289	4822 051 30562	5,6K 5% 0,063W
3291	4822 117 13632	100K 1% 0,62W
3292	4822 051 30103	10K 5% 0,062W
3293	4822 051 30331	330R 5% 0,062W
3294	4822 051 30474	470K 5% 0,062W
3297	4822 051 30681	680R 5% 0,062W
3298	4822 117 12903	1,8K 1% 0,063W
3299	4822 051 30223	22K 5% 0,062W
3300	4822 051 30223	22K 5% 0,062W
3301	4822 051 30223	22K 5% 0,062W
3302	4822 051 30223	22K 5% 0,062W
3303	4822 051 30223	22K 5% 0,062W
3304	4822 051 30223	22K 5% 0,062W
3305	4822 051 30223	22K 5% 0,062W
3306	4822 051 30562	5,6K 5% 0,063W
3307	4822 051 30562	5,6K 5% 0,063W
3308	4822 051 30332	3,3K 5% 0,062W
3309	4822 051 30332	3,3K 5% 0,062W
3310	4822 051 30332	3,3K 5% 0,062W
3311	4822 051 30332	3,3K 5% 0,062W
3314	4822 051 30103	10K 5% 0,062W
3315	4822 051 30103	10K 5% 0,062W
3318	4822 051 30103	10K 5% 0,062W
3320	3103 308 53680	POTMETER 2X10K

ELECTRICAL PARTSLIST - MAIN BOARD

- RESISTORS -

3321	4822 051 30103	10K 5% 0,062W
3323	4822 051 30103	10K 5% 0,062W
3324	4822 117 13613	2,2R 5%
3325	4822 117 13613	2,2R 5%
3326	4822 117 12902	8,2K 1% 0,063W
3327	4822 117 13632	100K 1% 0,62W
3328	4822 051 30471	470R 5% 0,062W
3329	4822 117 12968	820R 5% 0,62W
3330	4822 051 30392	3,9K 5% 0,063W
3331	4822 051 30392	3,9K 5% 0,063W
3332	4822 051 30333	33K 5% 0,062W
3333	4822 051 30272	2,7K 5% 0,062W
3336	4822 051 30102	1K 5% 0,062W
3337	4822 051 30008	0R JUMPER (0603)
3338	4822 117 13608	4,7R 5% 0,0016W
3339	4822 117 13608	4,7R 5% 0,0016W
3340	4822 051 30151	150R 5% 0,062W
3341	4822 051 30151	150R 5% 0,062W
3404	4822 051 30102	1K 5% 0,062W
3405	4822 051 30105	1M 5% 0,062W
3408	4822 051 30103	10K 5% 0,062W
3409	4822 117 13632	100K 1% 0,62W
3410	4822 051 30109	10R 5% 0,062W
3412	4822 051 30183	18K 5% 0,062W
3413	4822 117 13632	100K 1% 0,62W
3414	4822 051 30103	10K 5% 0,062W
3415	5322 117 13022	22K 1% 0,063W
3416	4822 051 30109	10R 5% 0,062W
3417	4822 051 30223	22K 5% 0,062W
3419	4822 117 12891	220K 1%
3421	4822 051 30101	100R 5% 0,062W
3422	4822 051 30103	10K 5% 0,062W
3423	4822 051 30103	10K 5% 0,062W
3424	4822 051 30101	100R 5% 0,062W
3425	4822 051 30223	22K 5% 0,062W
3429	4822 051 30222	2,2K 5% 0,062W
3430	4822 051 30103	10K 5% 0,062W
3431	4822 051 30474	470K 5% 0,062W
3432	4822 051 30105	1M 5% 0,062W
3433	4822 051 30105	1M 5% 0,062W
3434	4822 051 30105	1M 5% 0,062W
3435	4822 051 30105	1M 5% 0,062W
3436	4822 051 30105	1M 5% 0,062W
3437	4822 051 30223	22K 5% 0,062W
3438	4822 051 30223	22K 5% 0,062W
3439	4822 051 30474	470K 5% 0,062W
3440	4822 051 30684	680K 5% 0,062W
3441	4822 117 13632	100K 1% 0,62W
3442	4822 051 30474	470K 5% 0,062W
3443	4822 051 30105	1M 5% 0,062W

- RESISTORS -

3444	4822 051 30103	10K 5% 0,062W
3800	4822 117 13608	4,7R 5% 0,0016W
3801	4822 051 30153	15K 5% 0,062W
3802	4822 051 30683	68K 5% 0,062W
3803	4822 051 30332	3,3K 5% 0,062W
3804	4822 051 30479	47R 5% 0,062W
3805	4822 051 30472	4,7K 5% 0,062W
3806	4822 051 30332	3,3K 5% 0,062W
3807	4822 051 30471	470R 5% 0,062W
3808	4822 117 12891	220K 1%
3809	4822 051 30563	56K 5% 0,062W
3830	4822 051 30109	10R 5% 0,062W
3831	4822 051 30562	5,6K 5% 0,063W
3832	4822 051 30562	5,6K 5% 0,063W
3833	4822 051 30562	5,6K 5% 0,063W
3834	4822 051 30562	5,6K 5% 0,063W
3835	4822 051 30273	27K 5% 0,062W
3836	4822 051 30273	27K 5% 0,062W
3837	4822 051 30333	33K 5% 0,062W
3838	4822 051 30333	33K 5% 0,062W
3839	4822 051 30333	33K 5% 0,062W
3840	4822 051 30333	33K 5% 0,062W
3841	4822 051 30103	10K 5% 0,062W
3842	4822 051 30103	10K 5% 0,062W
3843	4822 051 30103	10K 5% 0,062W
3844	4822 051 30103	10K 5% 0,062W
3845	4822 051 30103	10K 5% 0,062W
3846	4822 051 30103	10K 5% 0,062W
3847	4822 051 30339	33R 5% 0,062W
3848	4822 051 30333	33K 5% 0,062W
3849	4822 051 30102	1K 5% 0,062W
3850	4822 051 30223	22K 5% 0,062W
3851	4822 051 30102	1K 5% 0,062W
3852	4822 051 30109	10R 5% 0,062W
3853	4822 051 30109	10R 5% 0,062W
3854	4822 051 30222	2,2K 5% 0,062W
3855	4822 051 30222	2,2K 5% 0,062W
3856	4822 051 30222	2,2K 5% 0,062W
3857	4822 051 30222	2,2K 5% 0,062W
3858	4822 051 30222	2,2K 5% 0,062W
3859	4822 051 30222	2,2K 5% 0,062W
3860	4822 051 30103	10K 5% 0,062W
3861	4822 051 30103	10K 5% 0,062W
3864	4822 117 13632	100K 1% 0,62W
3865	4822 051 30332	3,3K 5% 0,062W
3867	4822 117 12139	22R 5% 0,062W
3868	4822 117 12139	22R 5% 0,062W
3869	4822 051 30479	47R 5% 0,062W
3874	4822 051 30105	1M 5% 0,062W
3875	4822 051 30472	4,7K 5% 0,062W

ELECTRICAL PARTSLIST - MAIN BOARD

- RESISTORS -

3877	4822 051 30331	330R 5% 0,062W
3880	4822 117 12139	22R 5% 0,062W
3885	4822 051 30103	10K 5% 0,062W
3886	4822 051 30103	10K 5% 0,062W
3887	4822 117 12139	22R 5% 0,062W
3888	4822 051 30103	10K 5% 0,062W
3890	4822 117 12139	22R 5% 0,062W
3891	4822 051 30123	12K 5% 0,062W
3892	4822 051 30223	22K 5% 0,062W
4300	4822 051 30008	0R JUMPER (0603)

- COILS & FILTERS -

5250	2422 536 00141	TRANSFORMER 6RG
5251	4822 157 51462	10µH 10%
5300	3198 018 35670	FXD IND 0,56µH 10%
5301	3198 018 35670	FXD IND 0,56µH 10%
5302	3198 018 35670	FXD IND 0,56µH 10%
5303	3198 018 35670	FXD IND 0,56µH 10%
5400	4822 242 10845	FILTER CSTCC4.23MG002
5401	4822 242 10971	CRYSTAL 32,768KHZ
5801	2422 540 98546	FILTER 33M8XCSTCV*J

- DIODES -

6232	4822 130 82594	BAT54C
6233	4822 130 70064	LM285D-1.2
6252	5322 130 81917	SB140
6258	4822 130 11397	BAS316
6259	5322 130 81917	SB140
6300	4822 130 10794	BZX284-C10
6400	4822 130 82594	BAT54C

- IC & TRANSISTORS -

7231	3198 010 42310	BC847BW
7232	3198 010 42310	BC847BW
7233	3198 010 42320	BC857BW
7234	3198 010 42310	BC847BW
7235	3198 010 42320	BC857BW
7236	3198 010 42310	BC847BW
7250	4822 130 42615	BC817-40
7251	5322 130 44647	BC368
7252	4822 130 60142	BC869
7255	5322 130 61569	BC868
7256	9322 160 31669	SC111259FTA
7259	3198 010 42320	BC857BW
7261	3198 010 44350	BC807-25W
7262	3198 010 42310	BC847BW
7300	9322 142 72685	TC75W51FU
7301	3198 010 42310	BC847BW
7302	9322 142 97668	TA2120FN
7303	3198 010 44350	BC807-25W
7304	3198 010 42310	BC847BW
7400	3140 110 51431	TMP86CM29F-AZT9500.1
7402	9351 750 10118	74LV4066PW
7403	9322 143 49668	M24C01-RDW6
7405	3198 010 42310	BC847BW
7406	3198 010 42320	BC857BW
7407	3198 010 42320	BC857BW
7408	3198 010 42320	BC857BW
7409	3198 010 42310	BC847BW
7800	4822 209 17286	TZA1024T/N1
7801	3198 010 42310	BC847BW
7830	9352 641 80557	SAA7324H/M2B
7880	9322 169 78671	SM5907AF
7881	9322 175 89668	MSM51V17405F-60SJ
7882	3198 010 42310	BC847BW

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