

Service
Service
Service



Service Manual



TABLE OF CONTENTS

Handling Chip Components and Safety1 - 1

Technical Specification & Measurement Setup2 - 1

Service tools2 - 1

Service Measurement.....2 - 2

Connections and controls3 - 1 3 -2

Instructions for use3 - 3 3 -4

Block Diagram4 - 1

Wiring Diagram4 - 2

Pins description and Block diagram of IC.....5 - 1 5 - 2

CD Board

circuit diagram6 - 1

layout diagram.....6 - 2 6 - 3

Tuner Board

circuit diagram7 - 1

layout diagram7 - 2

Tuner adjustment7 - 2

Front Board

circuit diagram8 - 1

layout diagram8 - 2

Power Board

circuit diagram9 - 1

layout diagram9 - 2

Exploded view10 - 1

Mechanical partslist10 - 2

Electrical partslist11 - 1 11 - 2



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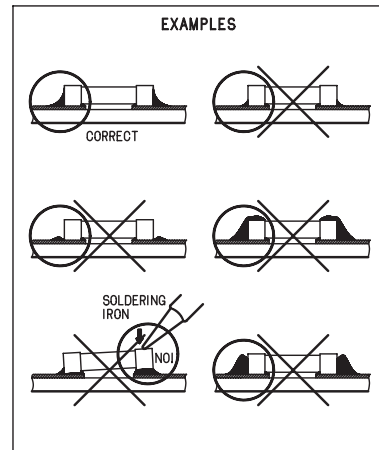
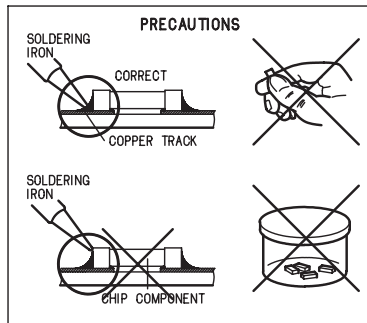
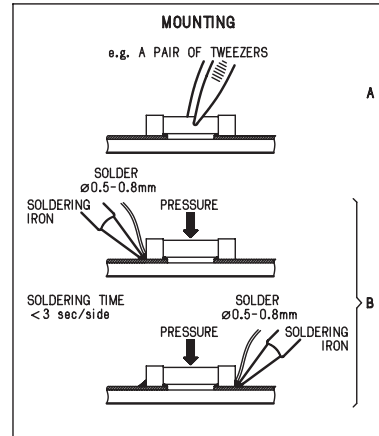
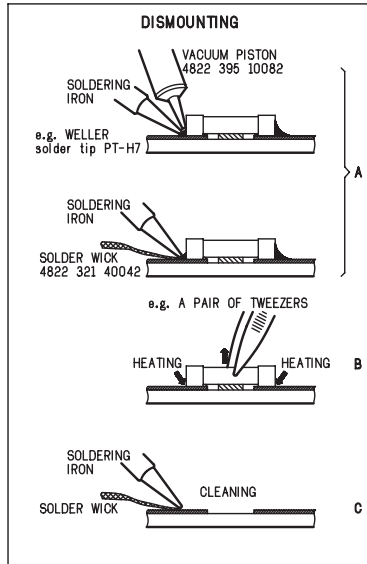
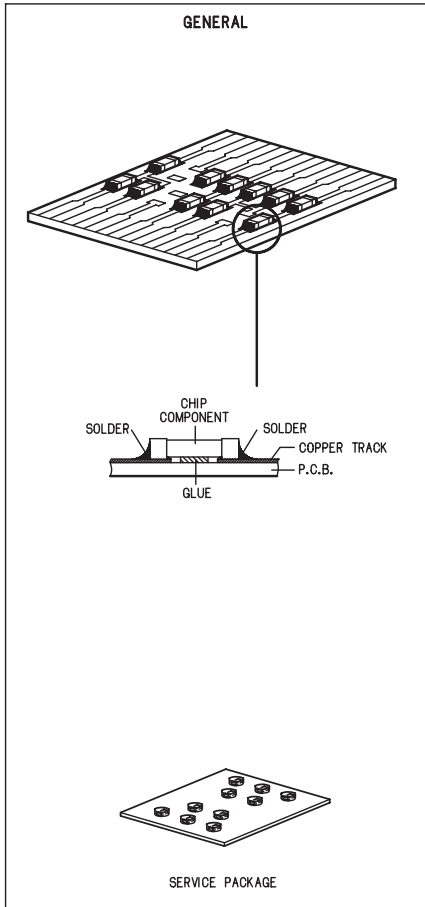
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PHILIPS

HANDLING CHIP COMPONENTS



(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.



(NL) WAARSCHUWING
Alle IC's en vele andere halfgeleiders zijn gevoelig voor electrostatische ontladingen (ESD).
Onzorgvuldig behandelen tijdens reparatie kan de levensduur drastisch doen verminderen. 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 dit zelfde potentiaal.

(F) ATTENTION
Tous les IC et beaucoup d'autres semi-conducteurs sont sensibles aux décharges statiques (ESD). Leur longévité pourrait être considérablement écourtée par le fait qu'aucune précaution n'est prise à leur manipulation.
Lors de réparations, s'assurer de bien être relié au même potentiel que la masse de l'appareil et enfilez le bracelet sert 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).
Unvorsichtige 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.

(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 riparazioni occorre quindi essere collegato allo stesso potenziale che quello della massa dell'apparecchio tramite un bracciale a resistenza.
Assicurarsi che i componenti e anche gli utensili con quali si lavora siano anche a questo potenziale.

(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 ▲

SAFETY



(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 ricambio identici a quelli specificati.
Componenti di sicurezza sono marcati con ▲

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



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

(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.

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

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

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

TECHNICAL SPECIFICATIONS

GENERAL

Mains voltage	-/00C : 230 V
	/05 : 240V
Mains frequency	-/00C/05 : 50 Hz
Battery	main set : 9 V (R14 x 6)
Power consumption	: < 20 W (max.)
Dimension (W x H x D)	: 294 x 145 x 245 mm
Weight	: 2.4 Kg

AMPLIFIER

Output power	mains : 2 x 1 W
	battery : 2 x 1 W
Speaker impedance	: 2 x 8 ohm
Frequency response	: 100 Hz - 10 kHz (± 3 dB)

COMPACT DISC

Frequency response	: 100 Hz - 10 kHz \pm 2dB
S/N ratio	: 60 dB
Channel difference	1 kHz : 2 dB
Channel crosstalk	1 kHz : 40 dB
Laser wavelength	: 780 \pm 20 nm
Laser light power	: < 0.5 mW

TUNER - FM SECTION

Tuning range	: 87.5 - 108 MHz
IF frequency	: 10.7 MHz \pm 0.2 MHz
Sensitivity	: 20 dBf at 26dB S/N
Selectivity	: 30 dB at 300kHz
IF rejection	: 50 dB
Image rejection	: 20 dB
Crosstalk	: 20 dB

TUNER - AM SECTION

Tuning range	MW : 531 - 1602 kHz
IF frequency	: 450 kHz \pm 1 kHz
Sensitivity	MW : 4500 μ V/m at 26dB S/N
Selectivity	MW : 16 dB
IF rejection	MW : 60 dB
Image rejection	MW : 28 dB

SERVICE TOOLS

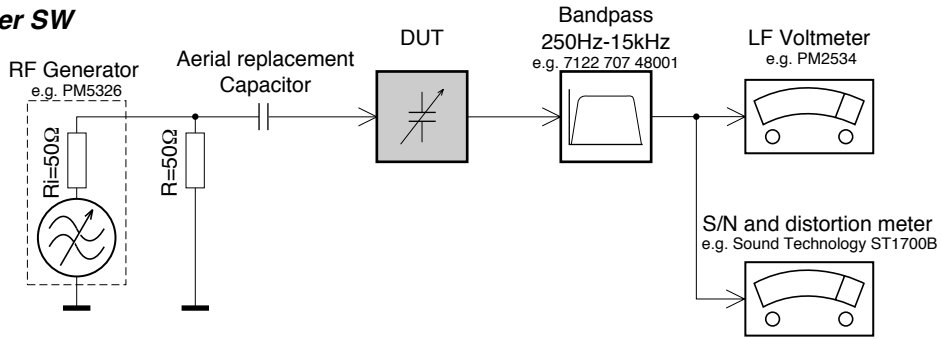
Audio signal disc SBC 429.....	4822 397 30184
Playability test disc SBC 444.....	4822 397 30245
Test disc 5 (disc without errors) +	
Test disc 5A (disc with dropout errors, black spots and fingerprints)	
SBC 426/426A.....	4822 397 30096
Burn in test disc (65 min. 1kHz signal at -30 dB level without "pause").....	4822 397 30155

AVAILABLE ESD PROTECTION EQUIPMENT

anti-static table mat large 1200x650x1.25mm	4822 466 10953
small 600x650x1.25m	4822 466 10958
anti-static wristband	4822 395 10223
connection box (3 press stud connections, 1M Ω)	4822 320 11307
extendible cable (2m, 2M Ω , to connect wristband to connection box)	4822 320 11305
connecting cable (3m, 2M Ω , to connect table mat to connection box)	4822 320 11306
earth cable (1M Ω , 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

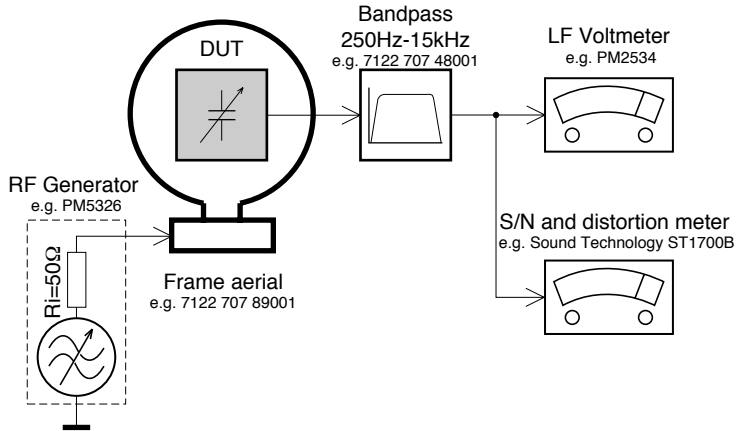
SERVICE MEASUREMENT

Tuner SW



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).

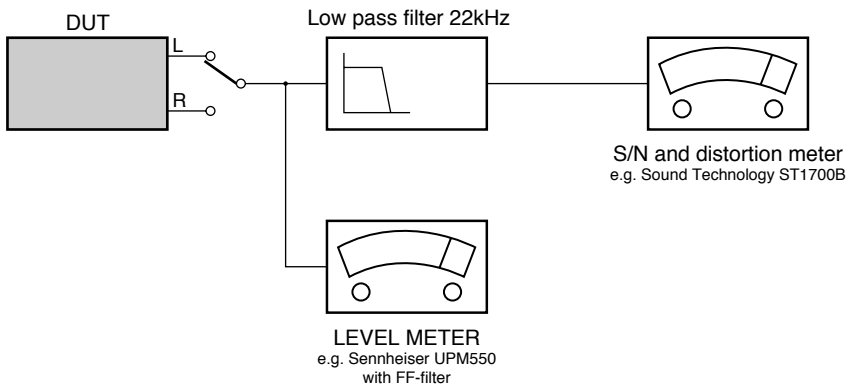
Tuner AM (MW,LW)



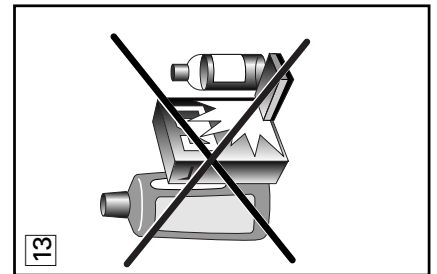
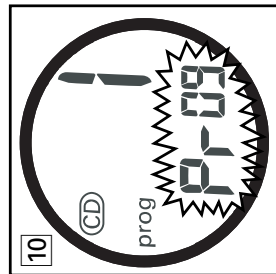
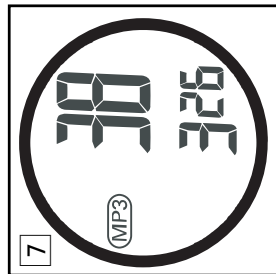
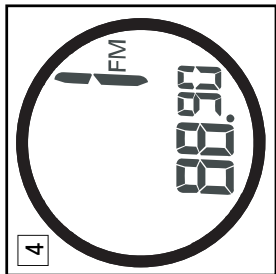
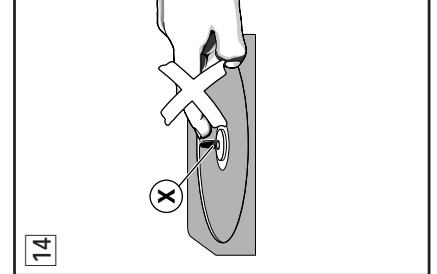
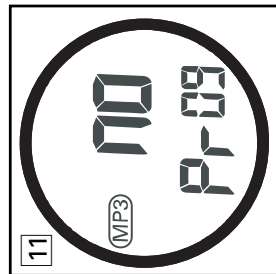
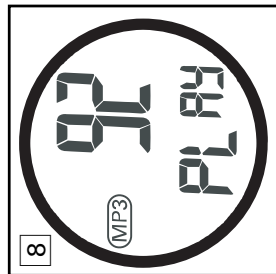
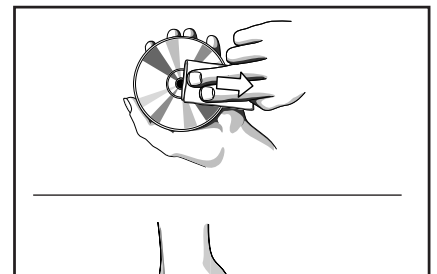
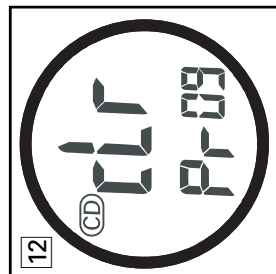
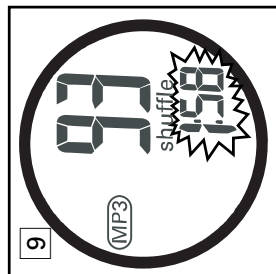
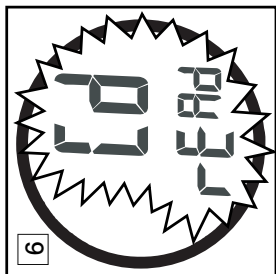
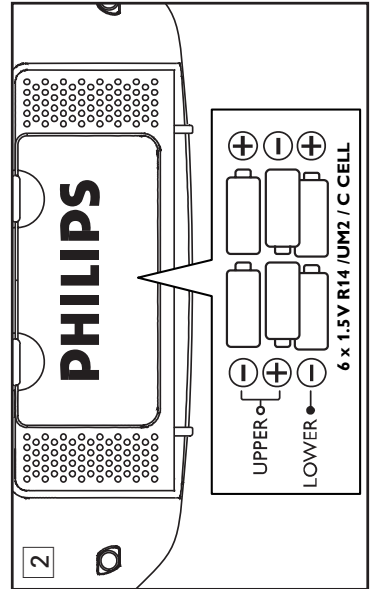
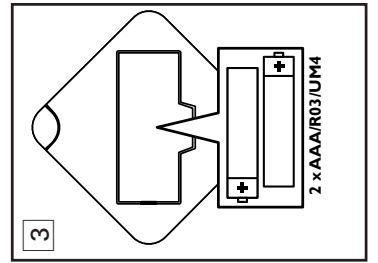
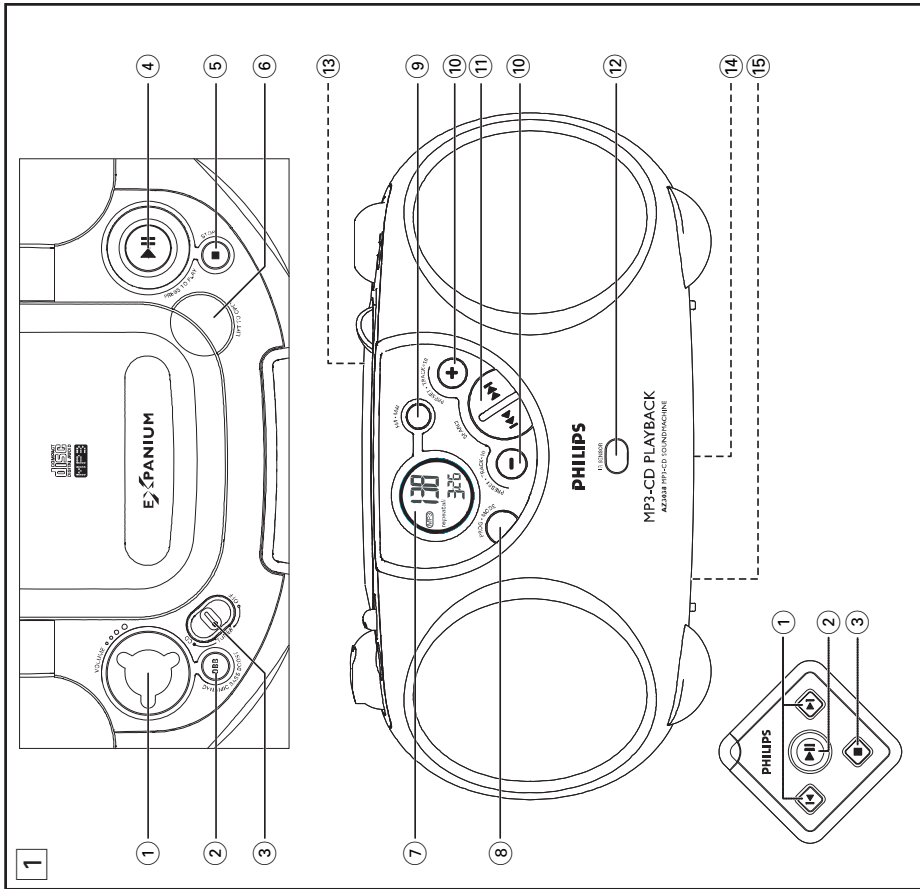
To avoid atmospheric interference all AM-measurements have to be carried out in a Faraday«s cage.

CD

Use Audio Signal Disc SBC429 4822 397 30184 (replaces test disc 3)
L.P.F. = 13th order filter 4822 395 30204



CONNECTIONS AND CONTROLS



Top and front panels (See 1)

- ① **VOLUME**
– adjusts volume level
- ② **DBB** (Dynamic Bass Boost)
– enhances bass response
- ③ **Source selector**
– selects source of sound **CD** or **TUNER**. Also the power off switch
- ④ **PRESS TO PLAY ▶▶**
– starts or pauses MP3-CD/ CD playback
- ⑤ **STOP ■**
– stops MP3-CD/ CD playback; erases a MP3-CD/ CD programme
- ⑥ **LIFT TO OPEN**
– opens/ closes the CD door
- ⑦ **Display**
– shows the CD player and tuner functions
- ⑧ **PROG•MODE**
MP3-CD: – programmes and reviews programmed track numbers;
– plays tracks MP3-CD/ CD/ programme in random order;
– repeats a track/ MP3-CD/ CD / programme

Tuner:
– programmes tuner preset stations

⑨ **FM•MW**

– selects FM/ MW (AM) waveband

⑩ **PRESET•TRACK –, +10**

MP3-CD: fast skips to the next/ previous 10 MP3-CD tracks

Tuner: selects a preset station (down, up)

⑪ **SEARCH ◀◀, ▶▶**

MP3-CD: skips or searches a passage/track backwards or forward

Tuner: tunes to a station (up, down)

⑫ **IR sensor**

– infrared for remote control

Back Panel (See 1)

- ⑬ **Telescopic aerial**
– to improve FM reception
- ⑭ **Battery door**
– to open battery compartment
- ⑮ **AC MAINS**
– inlet for mains lead

Remote Control

- ① ◀▶ | – skips to the next/ previous track
- ② ▶▶ | – to start or interrupt MP3-CD/CD playback
- ③ ■ – to stop playback; to erase a programme

Power Supply

Whenever convenient, use the power supply if you want to conserve battery life. Make sure you remove the plug from the set and wall outlet before inserting batteries.

For users in the U.K.: please follow the instructions in the box, Important notes for users in the U.K.

Batteries (not included) (see 2)

Open the battery compartment and insert six batteries, type R-14, UMJ-2 or C-cells, (preferably alkaline) with the correct polarity as indicated by the "+" and "-" symbols inside the compartment.

Remote control (see 3)

Insert 2 batteries, type AAA, R03 or UM4 (preferably alkaline).

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

Incorrect use of batteries can cause electrolyte leakage and will corrode the compartment or cause the batteries to burst. Therefore:

- Do not mix battery types: e.g. alkaline with carbon zinc. Only use batteries of the same type for the set.
- When inserting new batteries, do not try to mix old batteries with the new ones.
- Remove the batteries if the set is not to be used for a long time.

Using AC Power

- 1 Check if the power voltage, as shown on the type plate located on the bottom of the set, corresponds to your local power supply. If it does not, consult your dealer or service centre.
- 2 Connect the power cord to the AC MAINS inlet and the wall outlet. The power supply is now connected and ready for use.
- 3 To switch off completely, unplug the power cord from the wall outlet.
 - Unplug the power cord from the wall outlet to protect your set during heavy thunderstorms.

The typeplate is located on the bottom of the set.

Switching power on/off: Save energy

Whether you are using mains or battery supply, to avoid unnecessary energy consumption always adjust the source selector to off.

General operation

- 1 To select your sound source adjust the source selector to **CD/TUNER/OFF**.
- 2 Adjust the sound with the **VOLUME** and **DBB** (Dynamic Bass Boost) controls.
- 3 To switch off the set, adjust the source selector to off position.

Note: When the set is switched off the tuner presets will be retained in the set's memory.

Radio reception

- 1 Adjust the source selector to **TUNER**.
→ Display: shows **TU** briefly.
- 2 Press **FM•MW** once or more to select the desired waveband.
→ Display: shows your waveband and the preset number and the frequency of a preset station if already programmed (See 4).
- 3 Press and hold down ◀◀ or ▶▶ briefly to tune to a radio station. Release when the frequency in the display starts to change.
→ The radio automatically tunes to a radio station of sufficient reception. Display shows **5r**ch during automatic tuning.
– If you want to stop automatic tuning, press ◀◀ or ▶▶ briefly.

– For **FM**, pull out the telescopic aerial. Incline and turn the aerial. Reduce its length if the signal is too strong (very close to a transmitter).

– For **MW (AM)** the set is provided with a built-in aerial so the telescopic aerial is not needed. Direct the aerial by turning the whole set.

Programming radio stations

You can store up to a total of 32 radio stations in the memory.

- 1 Tune to your desired station (see Radio Reception).
- 2 Press **PROG•MODE** to activate programming.
→ Display: **Pr** flashes.
- 3 Press **PRESET•TRACK –, +10** once or more to allocate a number from 1 to 32 to this station.
- 4 Press **PROG•MODE** again to confirm the setting.
→ Display: **Pr** disappears, the preset number and the frequency of the preset station are shown.
- 5 Repeat steps 1-4 to store other stations.
 - You can erase a preset station by storing another frequency in its place.

INSTRUCTIONS FOR USE

DIGITAL TUNER

Autostore

Autostore automatically starts programming radio stations from preset 1. Available stations are programmed in order of waveband reception strength: FM, followed by MW (LW). Any previous presets e.g. manually programmed will be erased.

- Press **PROG•MODE** for 5 seconds or more to activate autostore programming. (If you want to stop autostore programming, press **PROG•MODE** briefly again.)

The display shows **FliTe**, **prog** blinks, followed by the radio station details when stored (See [5]). After all stations are stored, the first preset station will then automatically play.

MP3-CD/CD Player

General information

- Supported formats:
 - Disc format: ISO 9660, Joliet, finalized multisection
 - MP3 music files
 - MP3 bit rate (data rate): 32-320 kbps and variable bit rate
 - Total number of music files maximum: 999
 - Some encoder software offer an option to protect music files, i.e. the files can only be played on the computer which created them. If you burn such files on a CD-ROM, you cannot play them on this unit. Make sure to deactivate the protection option in the encoder software before creating the music files. In this case you are responsible for adherence to all local or international copyrights.

MP3-CD

- Make sure the file names of the MP3 files end with .mp3
- This set does not play/ support the following:
- UDF disc format.
 - Non-finalized discs.
 - Recordings created on e.g. DirectCD, Packet Writing and Package Writing.
 - Playlist files e.g. m3u, pls of WMA, AAC, Winamp, Sonic, RealJukebox, MS MediaPlayer 7.0, MusicMatch.

MP3-CD/ CD PLAYER

Display indication for CD functions

- **[d]** **CD** : CD door open
- **[d]** **RF** : when reading disc contents (See [6])
- **[CD]** : icon throughout CD operation
- **[MP3]** : icon throughout MP3-CD operation
- In stop mode: total track number and total play back time (CDs); or total album and track number for MP3-CD and mixed format CDs (See [7])
- **Pt** **R** : and the current track number at the beginning of a track (See [8])
- During CD playback: elapsed playback time of current track and current track number
- **Pause**: elapsed playback time flashes (See [9])
- **Shuffle/ repeat** modes: when the respective mode is activated
- **prog** when CD programme active; **Pr** **03** also appears briefly when you store a track (See [10]).
- **no** **SEL** or **no** **Pr** **03** : programme activated but no tracks selected (See [11]).
- **FULL** : programme memory full
- **Clr** **Pr** **03** : programme cancelled (See [12])
- **Err** **d** **SE** or **no** **d** **SE** : no disc/ error in CD operation/ CD-R(W) is blank or the disc is not finalized (see Troubleshooting).

MP3-CD/ CD playback

- This unit can play:
- all pre-recorded audio CDs
 - all finalized audio CDR(W)s
 - MP3-CDs (CD-ROMs with MP3 files)
- 1 Adjust the source selector to CD.
 - Display: shows **[d]** **RF** briefly (See [6]).
 - 2 To open the CD door, lift the CD door at the edge marked **LIFT TO OPEN**.
 - 3 Insert a disc with the printed side facing up and press the CD door gently close.
 - 4 Press **▶II** on the set to start playback.
 - 5 To pause playback press **▶II**. To resume, press **▶II** again.
 - 6 To stop CD playback, press **STOP** **[■]**.

MP3-CD/ CD PLAYER

Note: CD play will also stop when:

- you open the CD compartment;
- you select TUNER source;
- the CD has reached to the end.

Selecting a different track

During playback you can use the buttons **◀** or **▶** (or in MP3-CD, press **PRESET•TRACK -**, **+10**) to select a particular track.

If you have selected a track number in the stop or pause position, press **▶II** to start playback.

- Press **▶** once briefly for the next track, or press repeatedly until the desired track number appears in the display.
- Press **◀** once briefly to return to the beginning of a current track.
- Press **◀** more than once briefly for a previous track.

- Press **PRESET•TRACK -**, **+10** once or more to fast skip to the previous/ next 10 tracks.

Finding a passage within a track

- 1 Press and hold down **◀◀** or **▶▶**.
 - 2 When you recognize the passage you want release **◀◀** or **▶▶**.
- Normal playback resumes.
- Note: During playback of a CD, MP3-CD, programme or when SHUFFLE/REPEAT is active, searching is only possible within a track.

Different play modes: Shuffle and Repeat

PROG•MODE allows you to select various play modes. The modes can be selected or changed during playback of an entire CD/ CD programme in the following sequence:

- shuffle** – all tracks are played in random order
- shuffle repeat all** – repeats the entire disc in random order
- repeat all** – plays the whole disc continuously
- repeat** – plays the current track continuously

- 1 During playback, select your play mode by pressing **PROG•MODE** once or more until the desired play mode is shown.

Display: your selected mode flashes 2 seconds before playback

- You can use **◀** or **▶** (or in MP3-CD, press **PRESET•TRACK -**, **+10**) to skip tracks during the shuffle/ repeat modes.
- The shuffle/ repeat play options can be combined and used with a programme: e.g. shuffle/ repeat all repeats the entire disc/ programme in random order.

- 2 To return to normal playback press **PROG•MODE** until the shuffle/ repeat modes are no longer shown.

- You can also press **[■]** to quit the play mode.

Programming track numbers

You may store up to 20 tracks in the desired sequence. If you like, store any track more than once.

- 1 In the **STOP** mode, press **◀** or **▶** (or in MP3-CD, press **PRESET•TRACK -**, **+10**) for your desired track

- 2 When your chosen track number appears, press **PROG•MODE** once to store the track.

- Display shows **Pr** **03**, your selected track number, and the accumulated programming time. If you attempt to programme without first selecting a track number, **no** **Pr** **03** is shown.
- 3 Repeat steps 1 to 2 to select and store all desired tracks in this way.

- FULL** is displayed if you attempt to programme more than 20 tracks.

- 4 To play your programme, press **▶II**.

Reviewing your set programme

- In the **STOP** mode, press and hold down **PROG•MODE** for more than one second. Display shows all your stored track numbers in sequence.

MP3-CD/ CD PLAYER

Erasing a programme

You can erase the contents of the memory by:

- opening the CD door;
 - selecting **TUNER** source;
 - pressing **■** (twice during playback or in the stop position).
- Display: shows **CLR P-09** briefly when programme is cancelled. (See [12])

Precautions & General Maintenance (See [13])

- Place the set on a hard and flat surface so that the system does not tilt.
- Do not expose the set, batteries or CDs to humidity, rain, sand or excessive heat caused by heating equipment or direct sunlight.
- Do not cover the set. Adequate ventilation with a minimum gap of 6 inches between the ventilation holes and surrounding surfaces is necessary to prevent heat build-up.
- The mechanical parts of the set contain self-lubricating bearings and must not be oiled or lubricated.
- To clean the set, use a soft dry cloth. Do not use any cleaning agents containing alcohol, ammonia, benzene or abrasives as these may harm the housing.

MAINTENANCE

CD player and CD handling (See [14])

- The lens of the CD player should never be touched!
- Sudden changes in the surrounding temperature can cause condensation to form and the lens of your CD player to cloud over. Playing a CD is then not possible. Do not attempt to clean the lens but leave the set in a warm environment until the moisture evaporates.
- Always close the CD door to keep the CD compartment dust-free. To clean, dust the compartment with a soft dry cloth.
- To clean the CD, wipe in a straight line from the centre towards the edge using a soft, lint-free cloth. Do not use cleaning agents as they may damage the disc.
- Never write on a CD or attach any stickers to it.

TROUBLESHOOTING

Troubleshooting

If a fault occurs, first check the points listed below before taking the set for repair. Do not open the set as there is a risk of electric shock. If you are unable to remedy a problem by following these hints, consult your dealer or service centre.

WARNING: Under no circumstances should you try to repair the set yourself, as this will invalidate the guarantee.

- *Problem*
- *Solution*

No sound /power

- *Volume not adjusted*
- Adjust the **VOLUME**
- *Power cord not securely connected*
- Connect the AC power cord properly
- *Batteries dead/ incorrectly inserted*
- Insert (fresh) batteries correctly

Display does not function does not function properly/ No reaction to operation of any of the controls

- *Electrostatic discharge*
- Switch off and unplug the set. Reconnect after a few seconds

MP3-CD/ CD playback does not work

- *No disc inserted*
- Insert a disc
- *Disc badly scratched or dirty*
- Replace/ clean disc. (see Maintenance)
- *Laser lens steamed up*
- Wait until lens has recovered to room temperature
- *CD-R(W) is blank or the disc is not finalized*
- Use a finalized CD-R(W)
- *Incompatible format used for MP3*
- Check if your disc format is ISO 9860, Joliet, finalized multiseSSION
- *Not all known encrypted and protected CDs are compatible*
- Make sure to deactivate the protection option in the encoder software before creating the music files

The disc skips tracks

- *Disc damaged or dirty*
- Replace or clean disc
- *Shuffle or a programme is active*
- Quit shuffle/ programme mode(s)

Sound skips during MP3 playback

- *MP3 file made at compression level exceeding 320kbps*
- Use a lower compression level to record CD tracks into MP3 format

Cannot find desired MP3 title

- *Wrong file extension/ used*
- Change file extension to .MP3

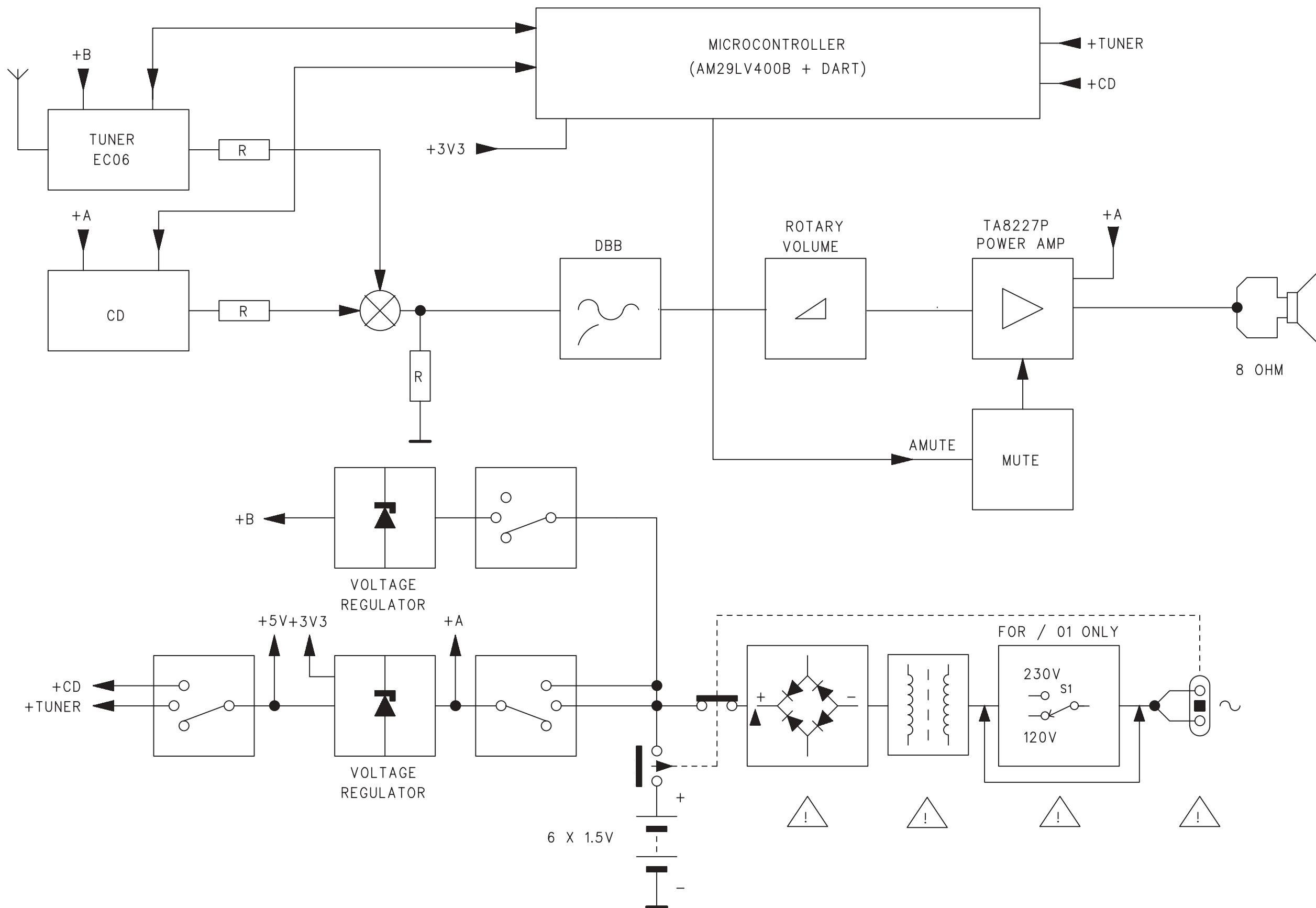
Environmental information

All unnecessary packing material has been omitted. The packing can be easily separated into three materials: cardboard, polystyrene and plastic.

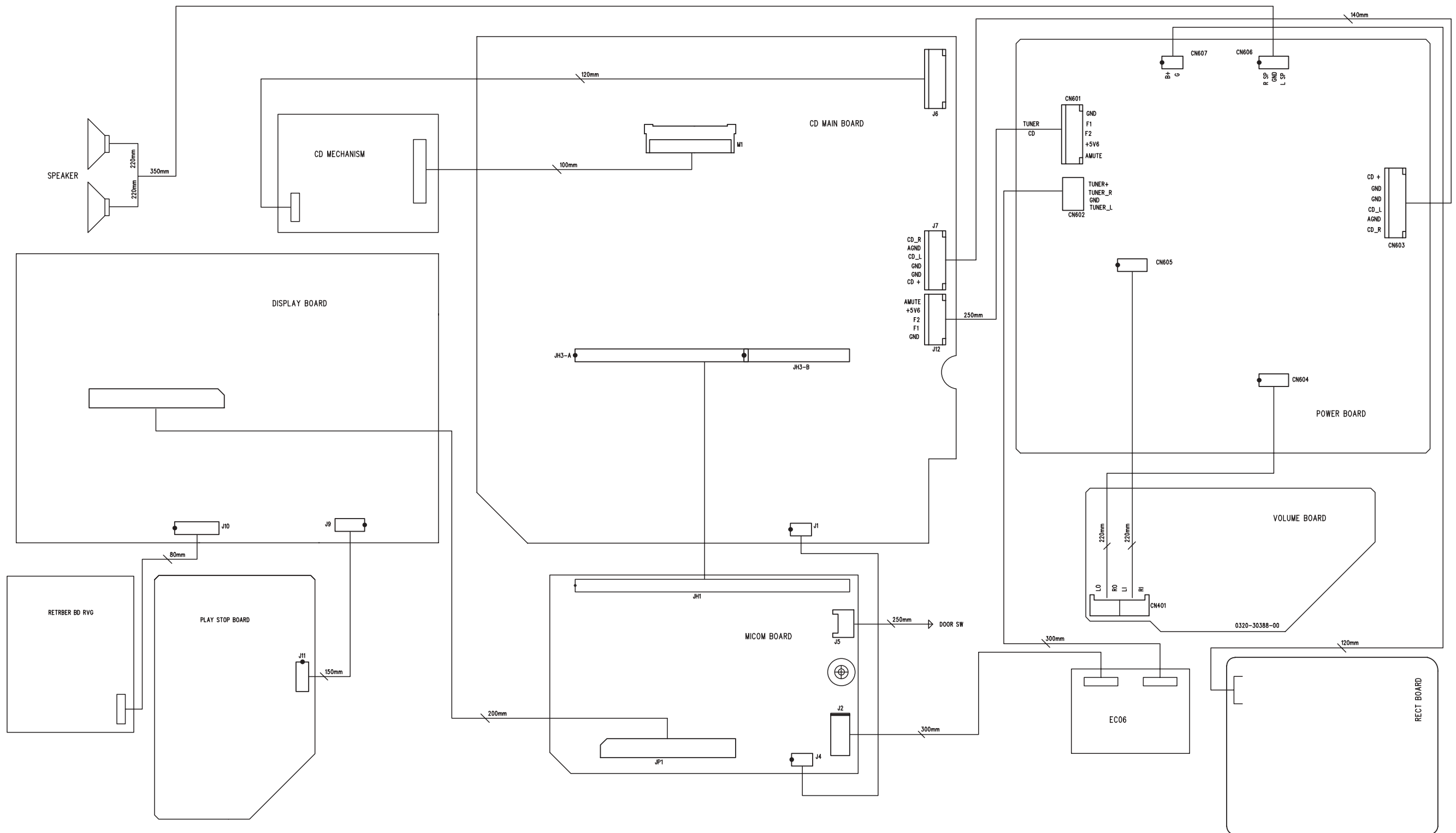
Your set consists of materials which can be recycled if disassembled by a specialized company. Please observe the local regulations regarding the disposal of packing materials, dead batteries and old equipment.

For more detail on operation instruction please visit Philips Audio internet site : <http://www.audio.philips.com>

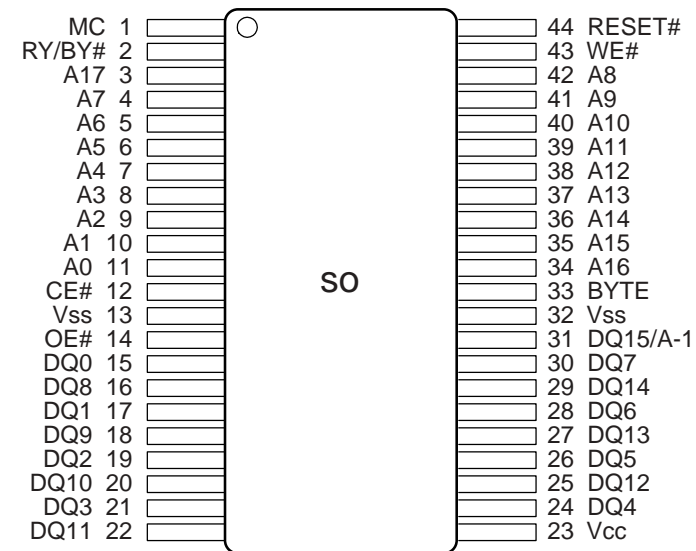
BLOCK DIAGRAM



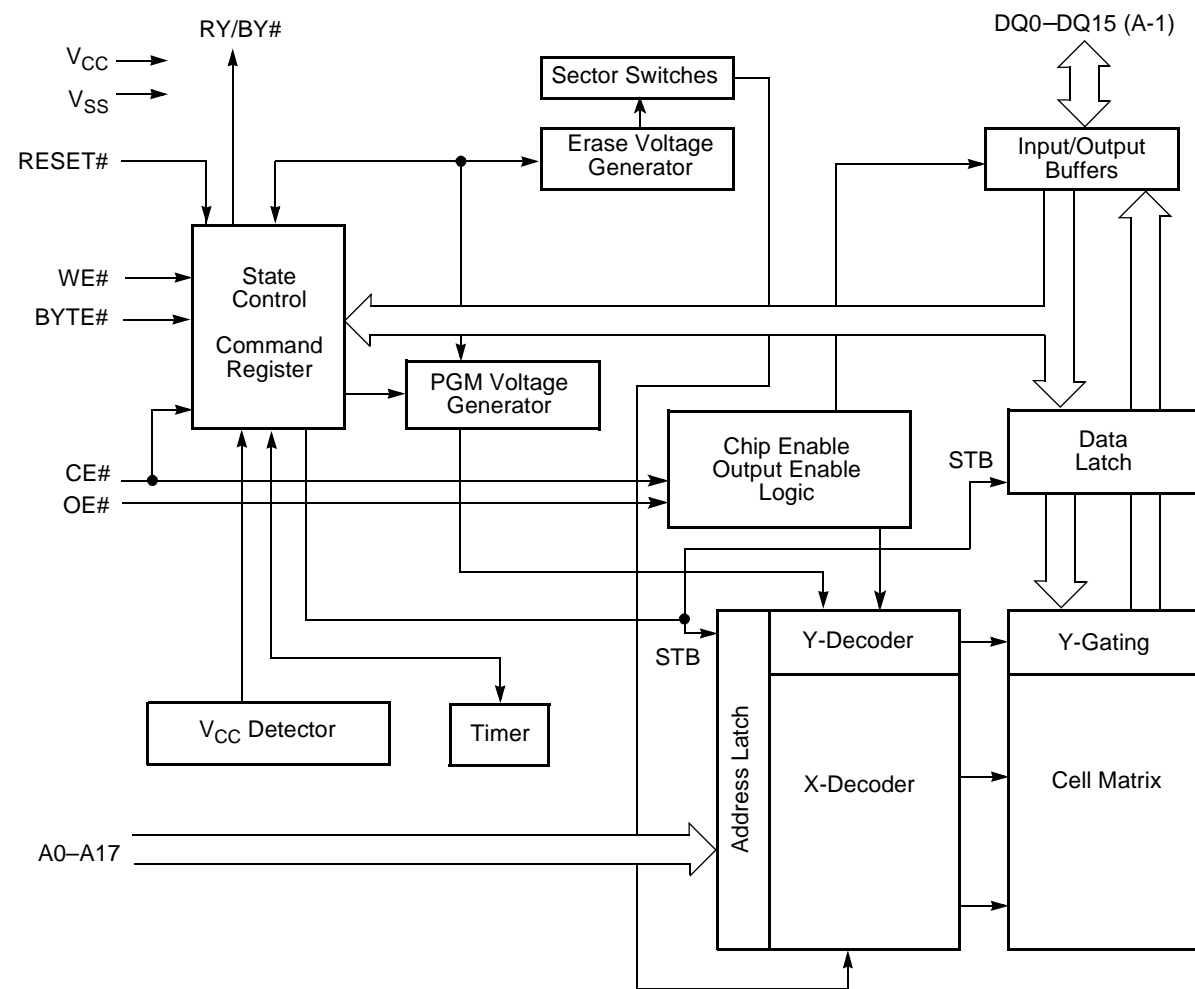
WIRING DIAGRAM



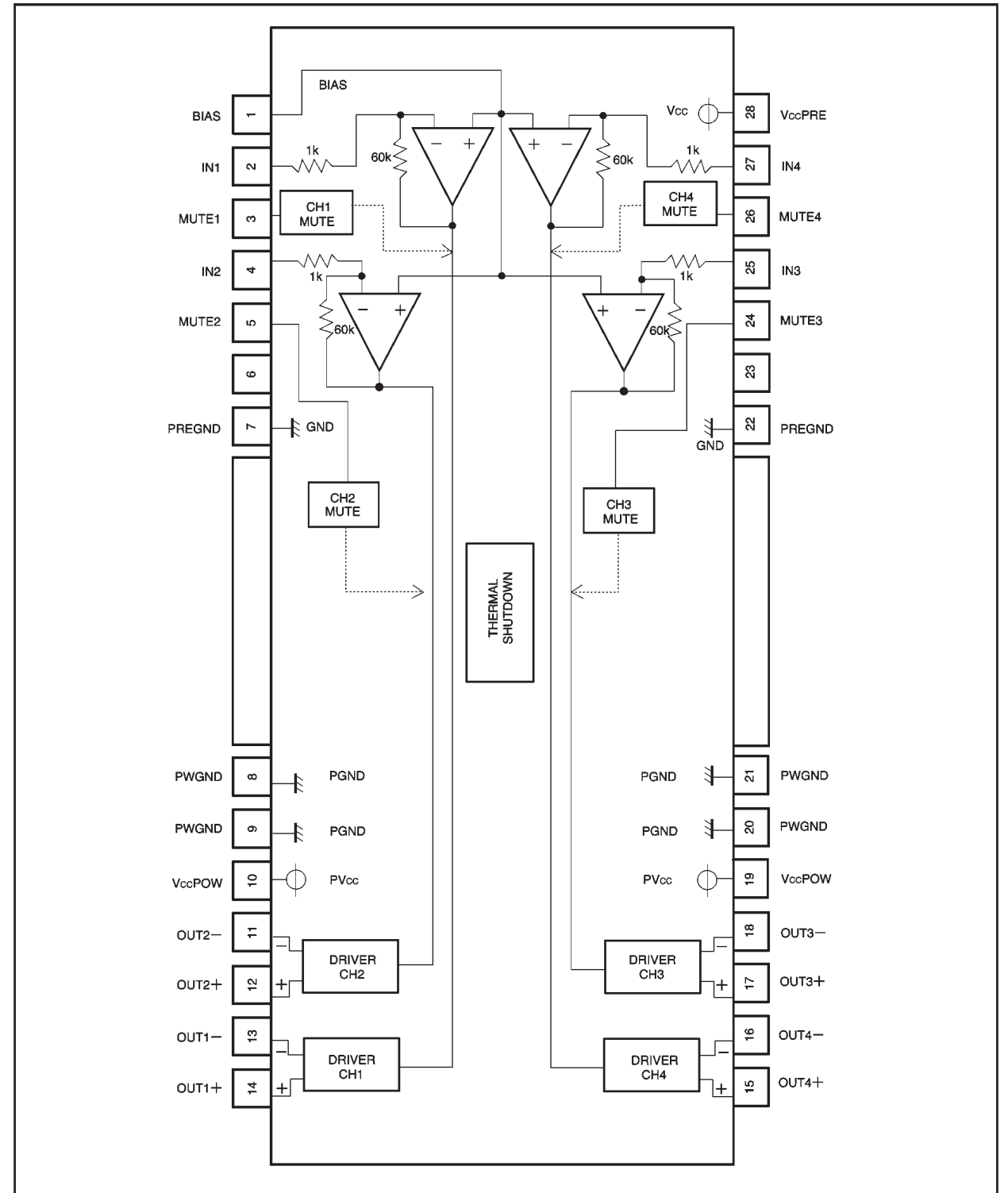
**PINS DESCRIPTION OF IC
29ILV400B**



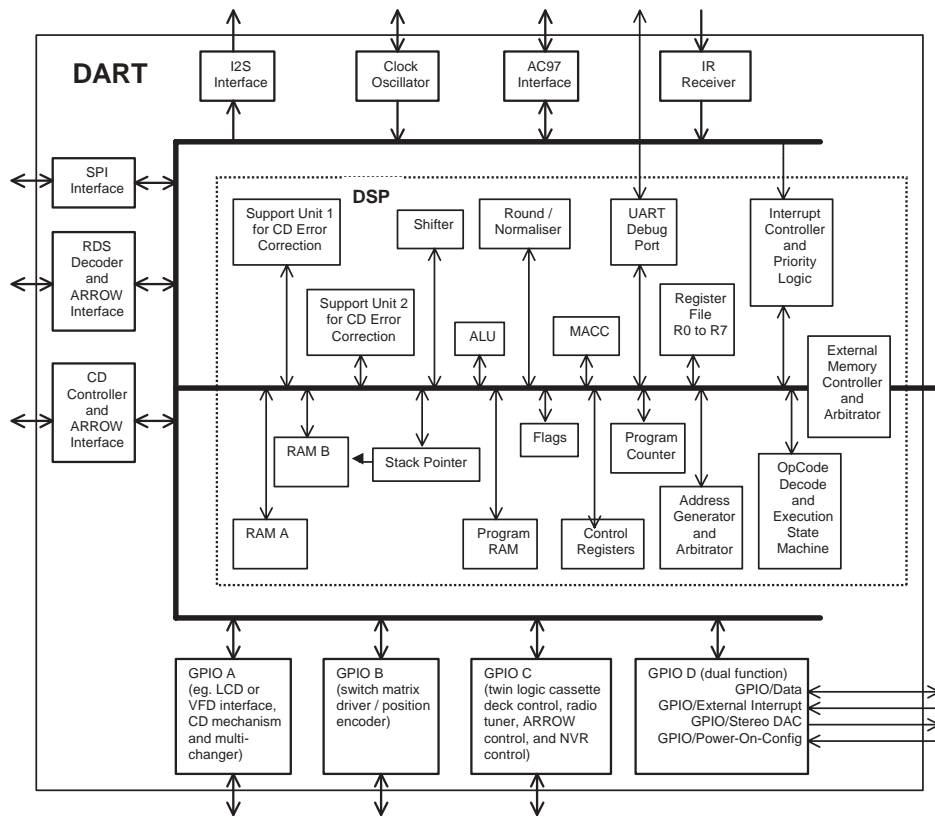
BLOCK DIAGRAM



**BLOCK DIAGRAM OF IC
BA6892FP**

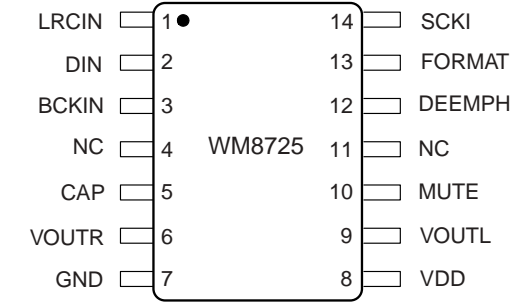


**BLOCK DIAGRAM AND PINS DESCRIPTION
GSL88301**

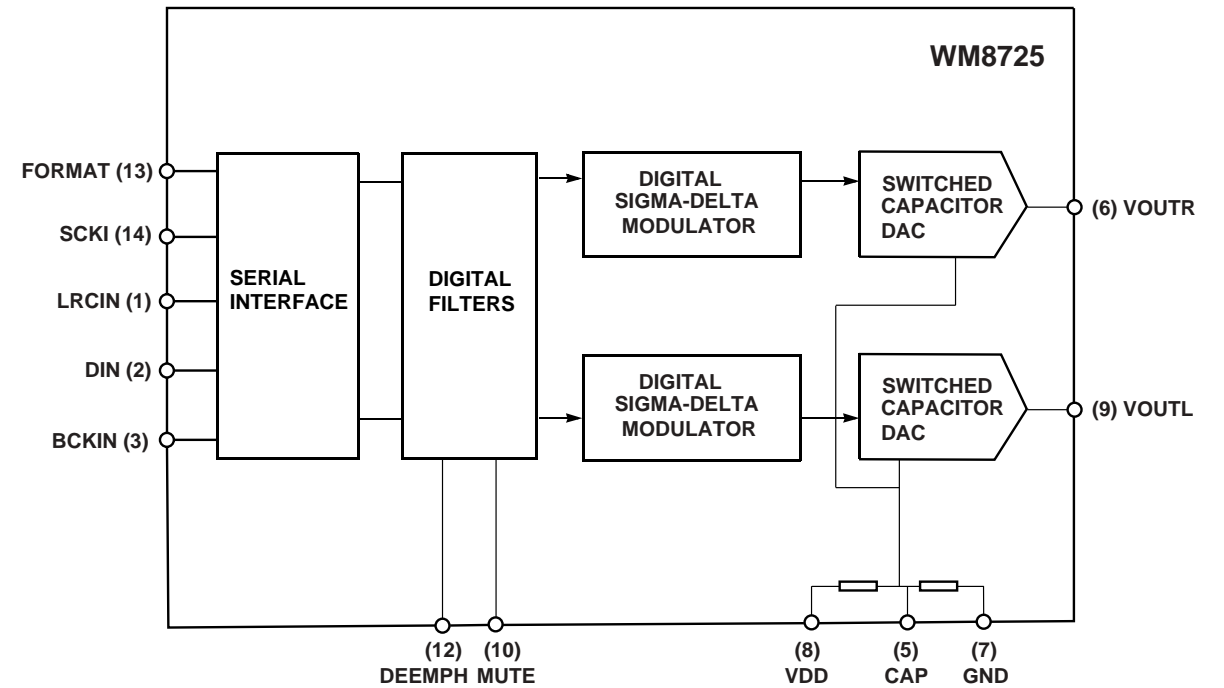


Pin	Name	I/O	Function
2-9	XD15-8	I/O	Data Bus bit 15-8 / GPIO D bit 15-8
11-18	XD7-0	I/O	Data Bus bit 7-0
19-43	A0-18	O	Address Bus bit 0-18
44	WEL0	O	Memory Write Enable
45	WEL1	O	Memory Write Enable
46	OEL	O	Memory Output Enable
47	SCSL	O	SRAM Chip Select
48	RASL	O	DRAM Row Address Strobe
49	UCASL	O	DRAM Column Address Strobe
50	LCASL	O	DRAM Column Address Strobe
51	BCSL	O	BootROM Chip Select
53-58	GPIO0-5	I/O	GPIO A bit 0-5
60	XTLIN	I	External Crystal
61	XTLOUT	O	External Crystal
63-73	GPIO6-15	I/O	GPIO A bit 6-15
75-85	GPIO16-23	I/O	GPIO B bit 0-7
86-93	GPIO24-31	I/O	GPIO B bit 8-15
95-112	GPIO32-47	I/O	GPIO C bit 0-15
113	GPIO48	I/O	GPIO D bit 0
116	GPIO49	I/O	GPIO D bit 1 / Left DAC
117	GPIO50	I/O	GPIO D bit 2 / Right DAC
118	GPIO51	I/O	GPIO D / External Interrupt
119	GPIO52	I/O	GPIO D / BootROM Width
123	GPIO53	I/O	GPIO D / Clock Divide Ratio
124	GPIO54	I/O	GPIO D / Clock Divide Ratio
125	GPIO55	I/O	GPIO D / Clock Divide Ratio
126	RFIN	I	CD Raw Data
127	FE_IN	I	CD Focus Error
128	RE_IN	I	CD Radial Error
129	CA_IN	I	CD Central Aperture
130	FOCUS	O	CD Focus
131	TRACK	O	CD Tracking
132	SPINDLE	O	CD Spindle
133	SLED	O	CD Sled
134	REF	O	CD DAC Reference
135	MPX_IN	I	RDS Bitstream Data
136	LASER	O	CD Laser Enable
138	ADC_CLK	O	11MHz Sigma Delta Clock
140	SCLK	O	SPI Clock
141	MOSI	O	SPI Data Out
142	MISO	I	SPI Data In
143	ERESETL	I	Reset
144	AC97CLK	O	22MHz Clock
145	SYNC	O	Sync Pulse
146	SDOUT	O	Serial Data Out
147	BITCLK	I	11 MHz Bit Clock
148	SDATAIN	I	Serial Data In
150	RXD	I	UART DATA In
151	TXD	O	UART DATA Out
152	I2SWS	O	I2S Word Select
153	I2SCLK	O	I2S Clock Out
154	I2SDATA	O	I2S Data Out
156	IRIN	I	Infra Red (IR) Detector
157	TEST0	I	(No Connection)
158	TEST1	I	(No Connection)
1, 20, 29, 40, 52, 74, 81, 100, 114, 120, 137, 149, 155			Vdd
10, 21, 41, 42, 59, 62, 65, 79, 80, 94, 101, 115, 121, 122, 139, 159, 160			Vss

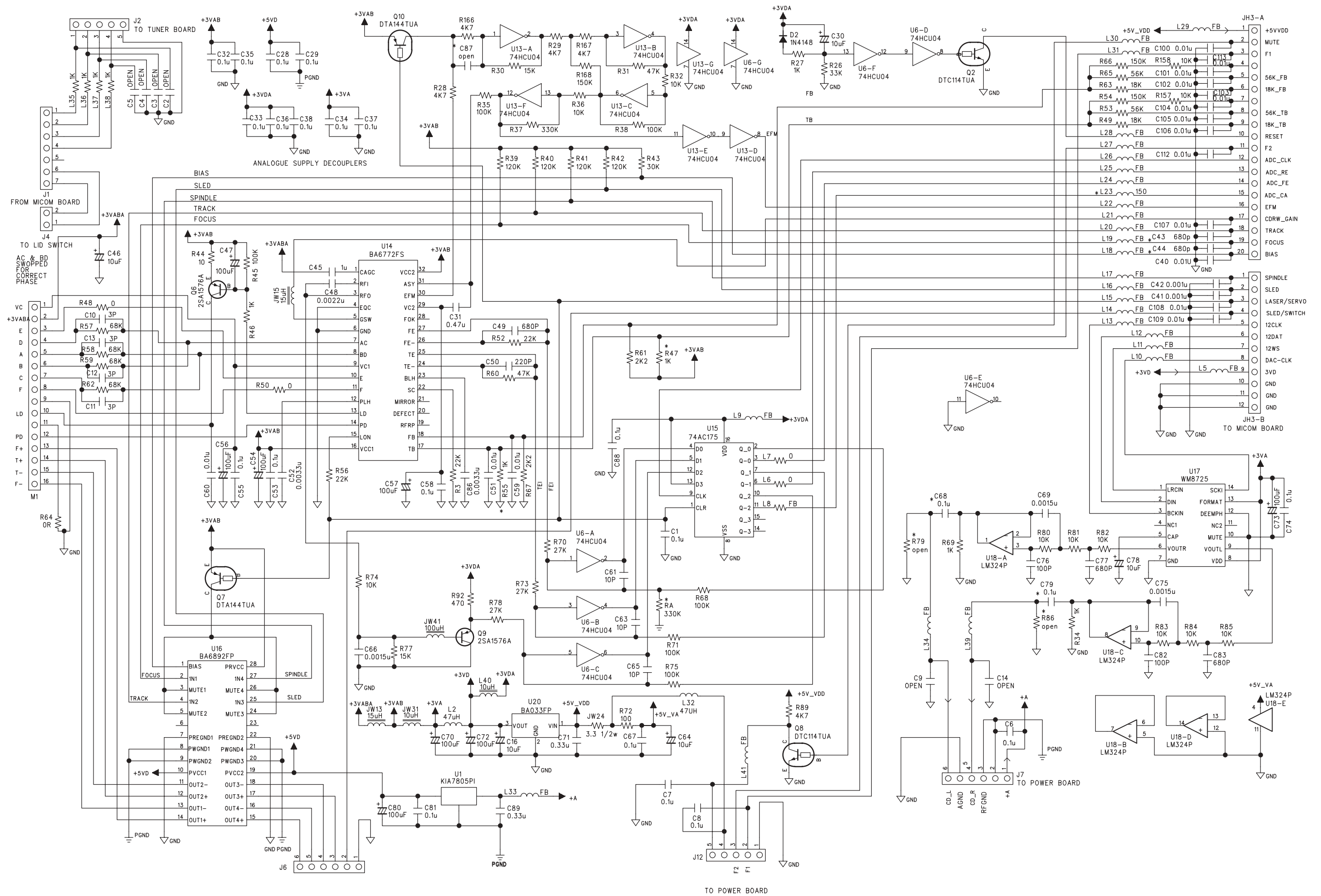
**PINS DESCRIPTION OF IC
WM8725**



BLOCK DIAGRAM

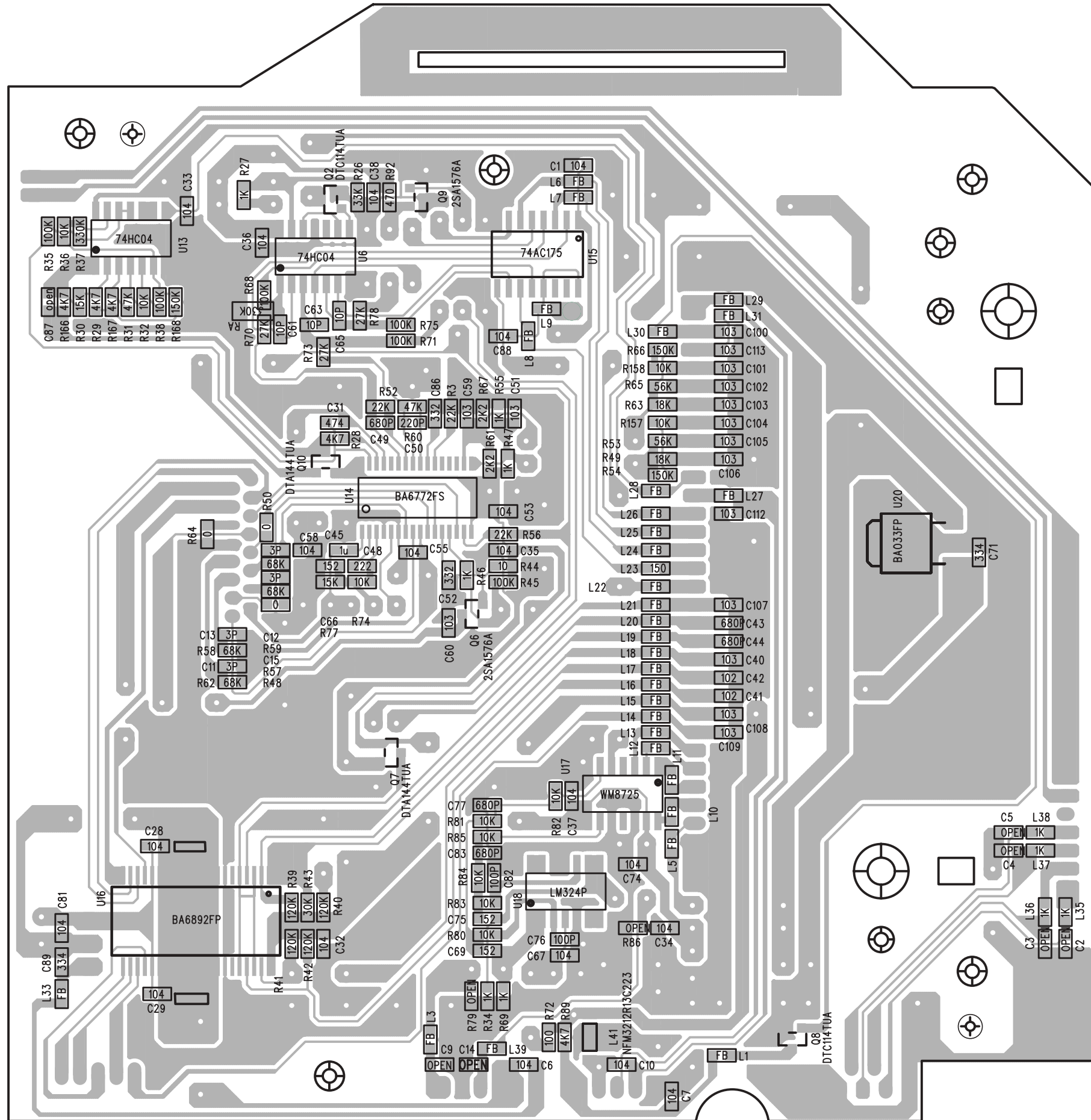


CD BOARD - CIRCUIT DIAGRAM

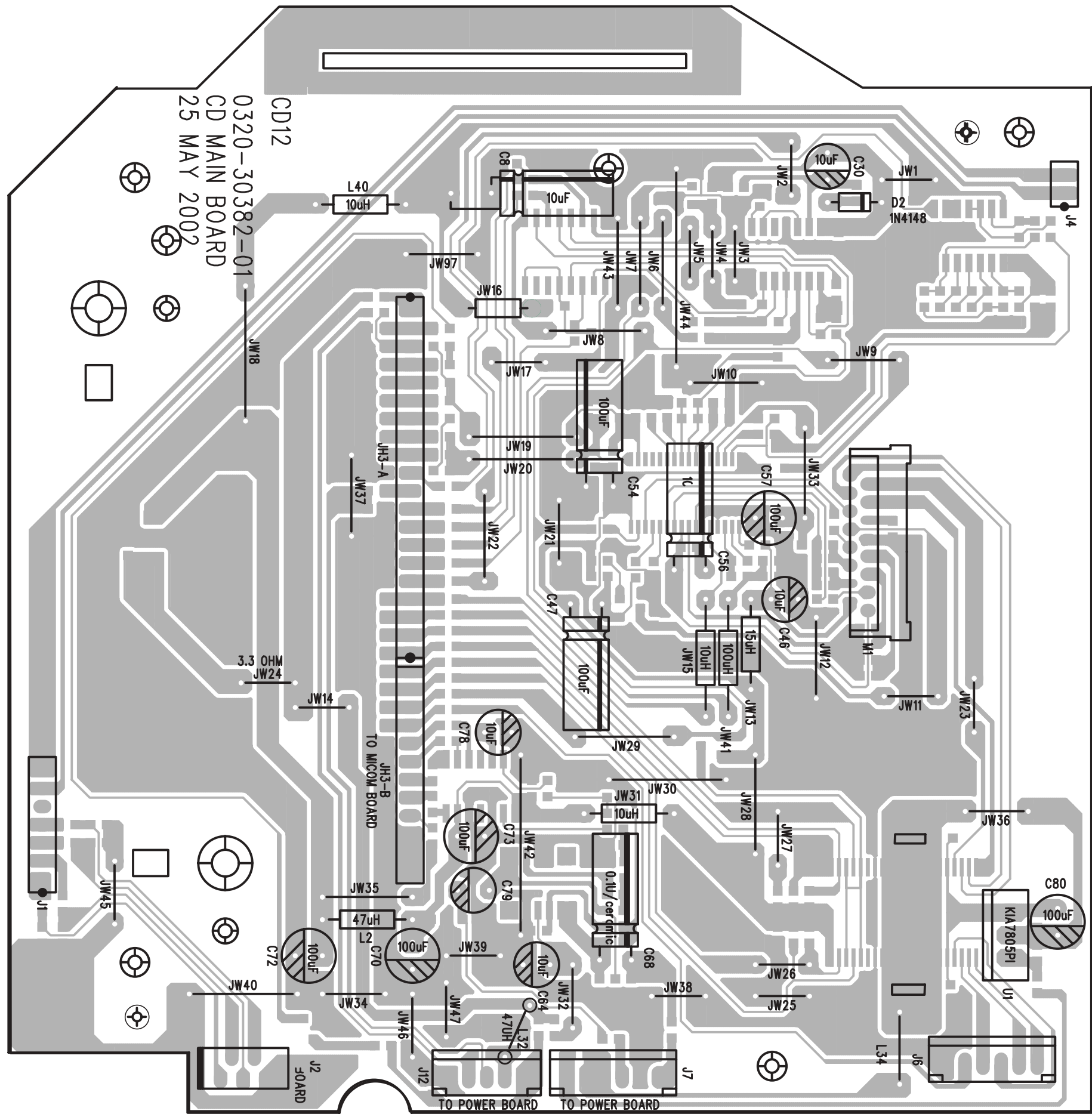


TO POWER BOARD

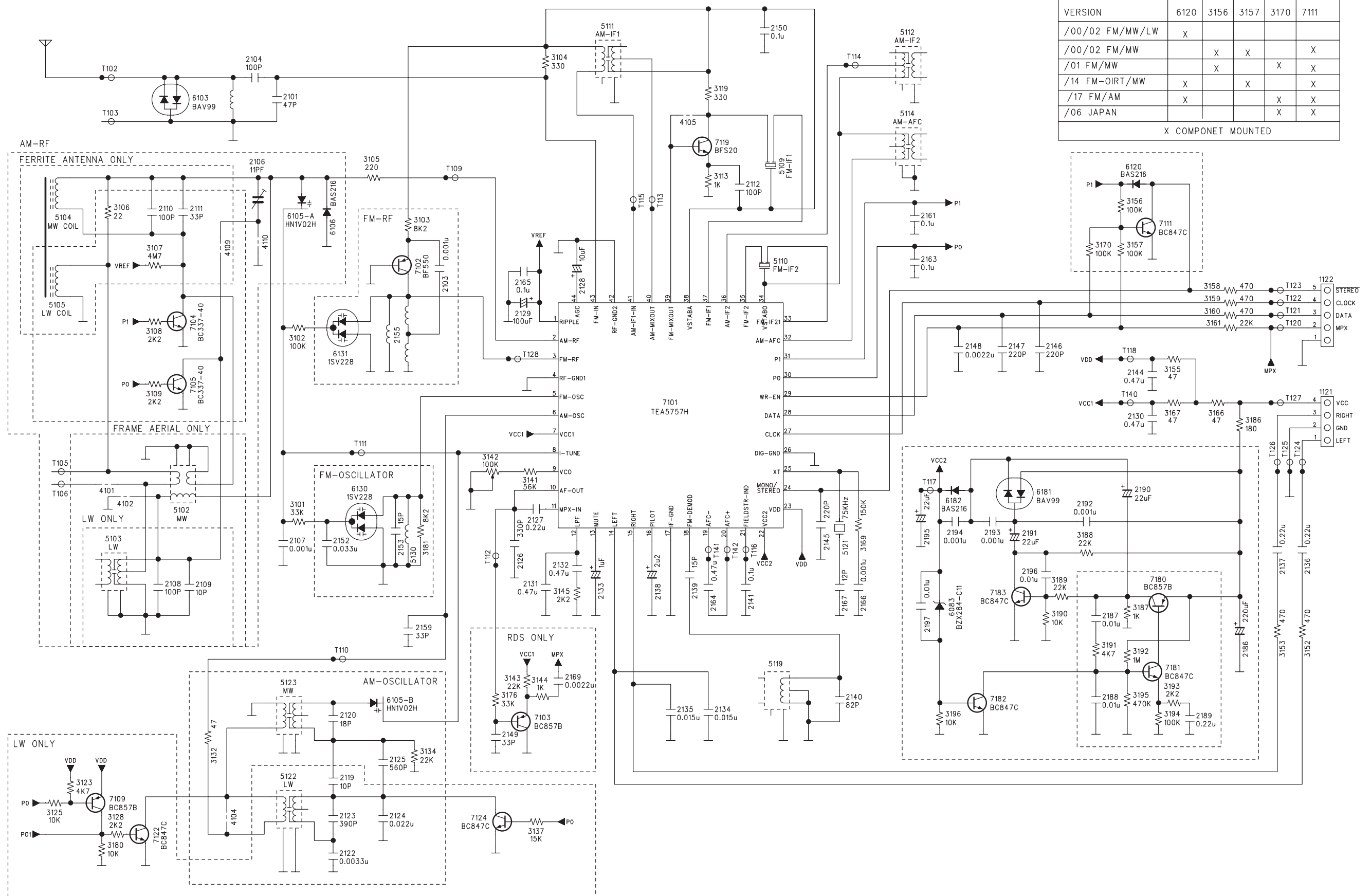
CD BOARD - LAYOUT DIAGRAM



CD BOARD - LAYOUT DIAGRAM

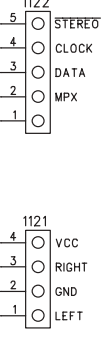


TUNER BOARD - CIRCUIT DIAGRAM



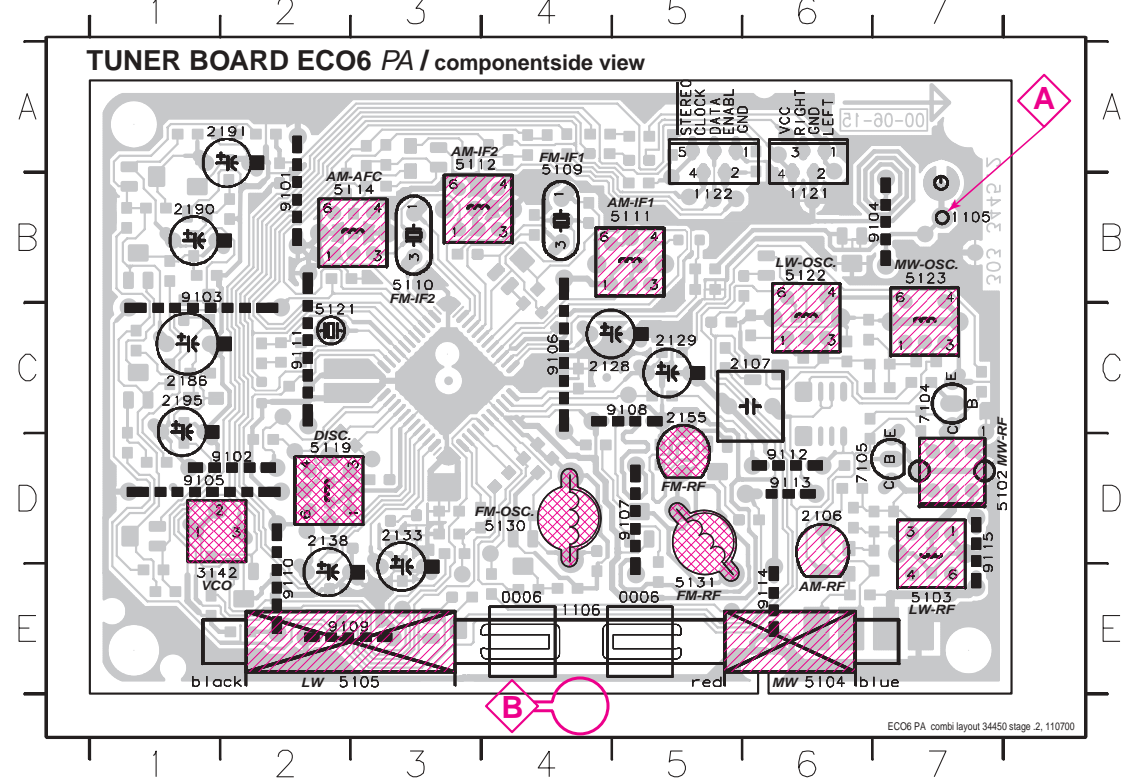
VERSION	6120	3156	3157	3170	7111
/00/02 FM/MW/LW	X				
/00/02 FM/MW		X	X		X
/01 FM/MW		X		X	X
/14 FM-OIRT/MW	X		X		X
/17 FM/AM	X			X	X
/06 JAPAN				X	X

X COMPONENT MOUNTED

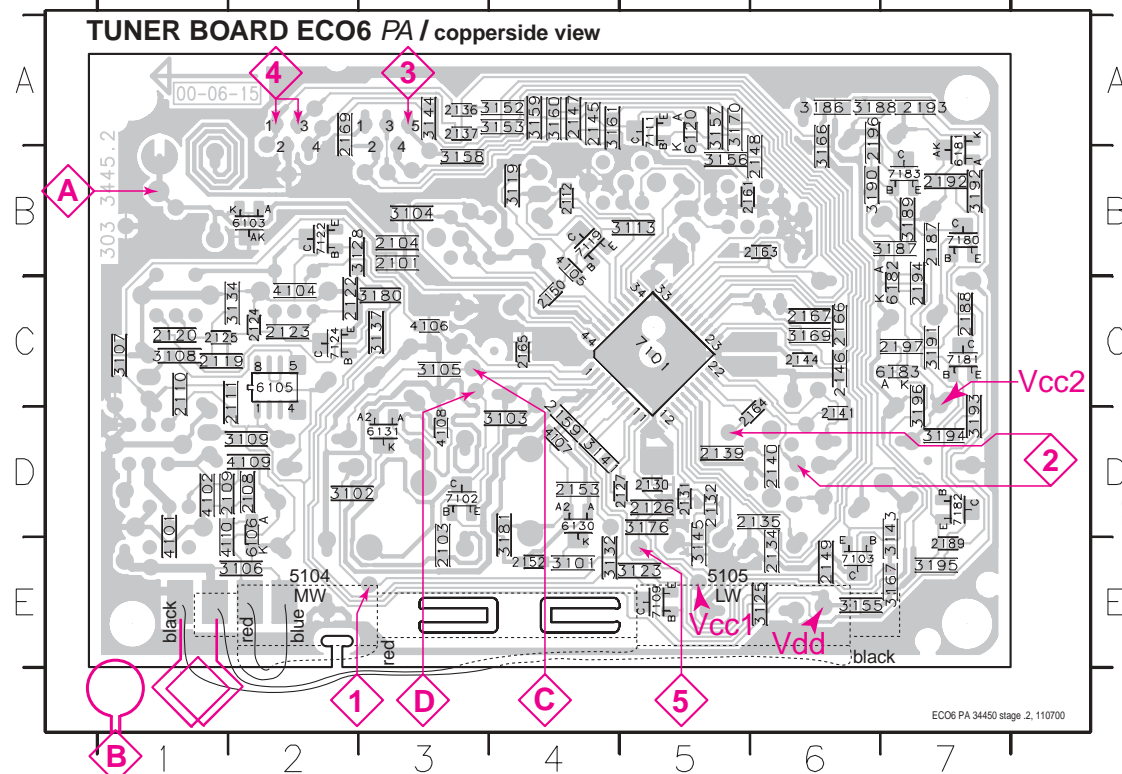


TUNER BOARD - LAYOUT DIAGRAM

1105 B7 2106 D6 2129 C5 2155 C5 2191 A2 5102 D7 5110 B3 5114 B3 5122 B6 5131 E5 9101 B2 9104 B7 9107 D5 9110 E2 9113 D6
 1121 B6 2107 C6 2133 D3 2186 C1 2195 C1 5103 E7 5111 B4 5119 D2 5123 B7 7104 C7 9102 D2 9105 D1 9108 C5 9111 C2 9114 E6
 1122 B5 2128 C4 2138 D2 2190 B1 3142 E1 5109 B4 5112 B3 5121 C2 5130 D4 7105 D6 9103 B1 9106 C4 9109 E2 9112 D6 9115 D7



2101 B3 2119 C1 2130 D5 2140 D6 2150 C4 2166 C6 2194 C7 3106 E2 3128 B2 3152 A4 3161 A4 3186 A6 3194 D7 4107 D4 6130 D4 7109 E5 7183 B7
 2103 E3 2120 C1 2131 D5 2141 D6 2152 E4 2167 C6 2196 A6 3107 C1 3132 E4 3153 A4 3166 B6 3187 B7 3195 E7 4108 D3 6131 D3 7111 A5
 2104 B3 2122 C2 2132 D5 2144 C6 2153 D4 2169 A2 2197 C7 3108 C1 3134 C2 3155 E6 3167 E7 3188 A6 3196 C7 4109 D2 6181 B7 7119 B5
 2108 D2 2123 C2 2134 E6 2145 A4 2154 D4 2168 B7 3109 D2 3137 C3 3156 B5 3169 C6 3189 B7 4101 D1 4110 D1 6182 C7 7122 B2
 2109 D1 2124 C2 2135 D6 2146 C6 2161 B5 2188 C7 3102 D2 3113 B5 3141 D4 3157 A5 3170 A5 3190 B6 4102 D1 6103 B2 6183 C7 7124 C2
 2110 C1 2125 C1 2136 A3 2147 A4 2163 B6 2189 E7 3103 D4 3119 B5 3143 D7 3158 B3 3176 D5 3191 C7 4104 C2 6105 C2 7101 C5 7180 B7
 2111 C2 2126 D5 2137 A3 2148 B6 2164 D6 2192 B7 3104 B3 3123 E5 3144 A3 3159 A4 3180 C3 3192 B7 4105 B4 6106 D2 7102 D3 7181 C7
 2112 B4 2127 D5 2139 D5 2149 E6 2165 C4 2193 A7 3105 C3 3125 E6 3145 E5 3160 A4 3181 D4 3193 D7 4106 C3 6120 A5 7103 E6 7182 D7



These assembly drawings show a summary of all possible versions.
 For components used in a specific version see schematic diagram respectively partslist.

TUNER ADJUSTMENT TABLE (ECO6 FM/MW- and FM/MW/LW - versions with ferrite antenna)

Waverange	Input frequency	Input	Tuned to	Adjust	Output	Scope/Voltmeter
VARICAP ALIGNMENT						
FM 87.5 - 108MHz (65.81 - 74, 87.5 - 108MHz)			108MHz	5130		8V ±0.2V
			87.5MHz (65.81MHz)	check		4.3V ±0.5V (1.2V ±0.5V)
MW FM/AM-version, 10kHz grid 530 - 1700kHz			1700kHz	5123		8V ±0.2V
			530kHz	check		1.1V ±0.4V
FM/MW-version, 9kHz grid 531 - 1602kHz			1602kHz	5123	1	6.9V ±0.2V
			531kHz	check		1.1V ±0.4V
LW 153 - 279kHz			279kHz	5122		8V ±0.2V
			153kHz	check		1.1V ±0.4V
MW FM/MW/LW- version, 9kHz grid 531 - 1602kHz			1602kHz	5123		8V ±0.2V
			531kHz	check		1.1V ±0.4V
FM IF						
FM	10.7MHz, 45mV continuous wave	D		5119	2	0 ± 3 mV DC
FM RF						
FM 87.5 - 108MHz (65.81 - 74, 87.5 - 108MHz)	108MHz	A mod=1kHz Δf=±22.5kHz	108MHz	2155	4	MAX
	87.5MHz (65.81MHz)		87.5MHz (65.81MHz)	5131		
VCO						
FM	98MHz, 1mV continuous wave	A	98MHz	3142	3	152kHz ±1kHz ¹⁾
AM IF						
MW	450kHz connect pin 6 of IC 7101 (AM Osc.) with 2.2kΩ to Vcc	C Δf=±10kHz V _{RF} = 0.5mV (as low as possible) see remark 2)		5111	5	
				5112		
AM AFC MW	continuous wave V _{RF} = 2mV	C		5114	2	0 ± 2 mV DC
AM RF ³⁾						
LW	198kHz	B	198kHz	5105 LW ferrite coil	5	
MW FM/MW/LW- and FM/MW-version (9kHz grid) 531 - 1602kHz	1494kHz		2106			
	558kHz		5104 MW ferrite coil			
MW FM/AM-version, 10kHz grid 530 - 1700kHz	1500kHz		2106			
	560kHz	5104 MW ferrite coil				

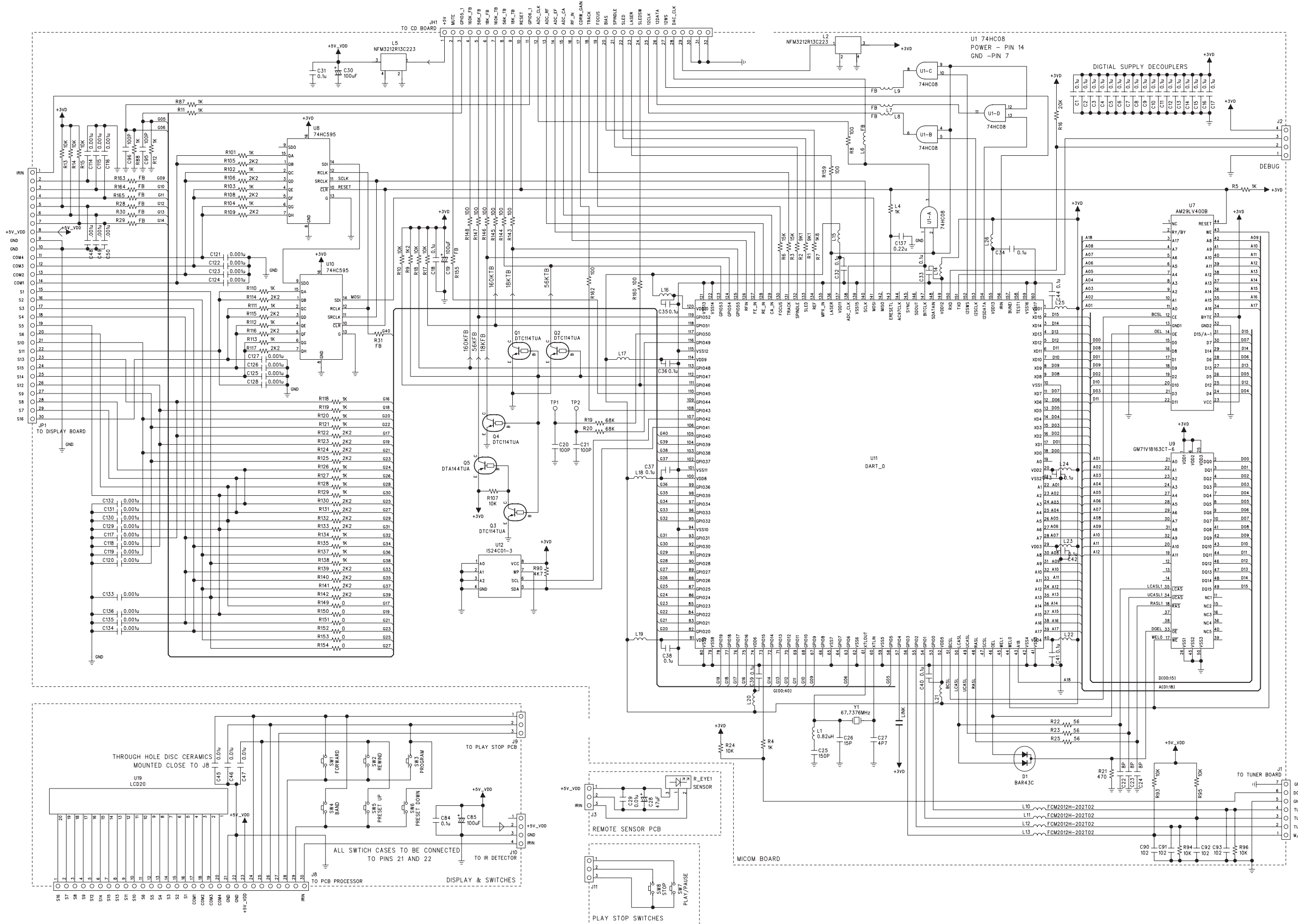
Use Service Testprogram. By selecting the TUNER TEST test frequencies will be stored as preset frequencies automatically.

¹⁾ If sensitivity of frequency counter is too low adjust to max. channel separation ²⁾ RC network serves for damping the IF-filter while adjusting the other one.
 (input signal: stereo left 90% + 9%, adjust output on right channel to minimum)

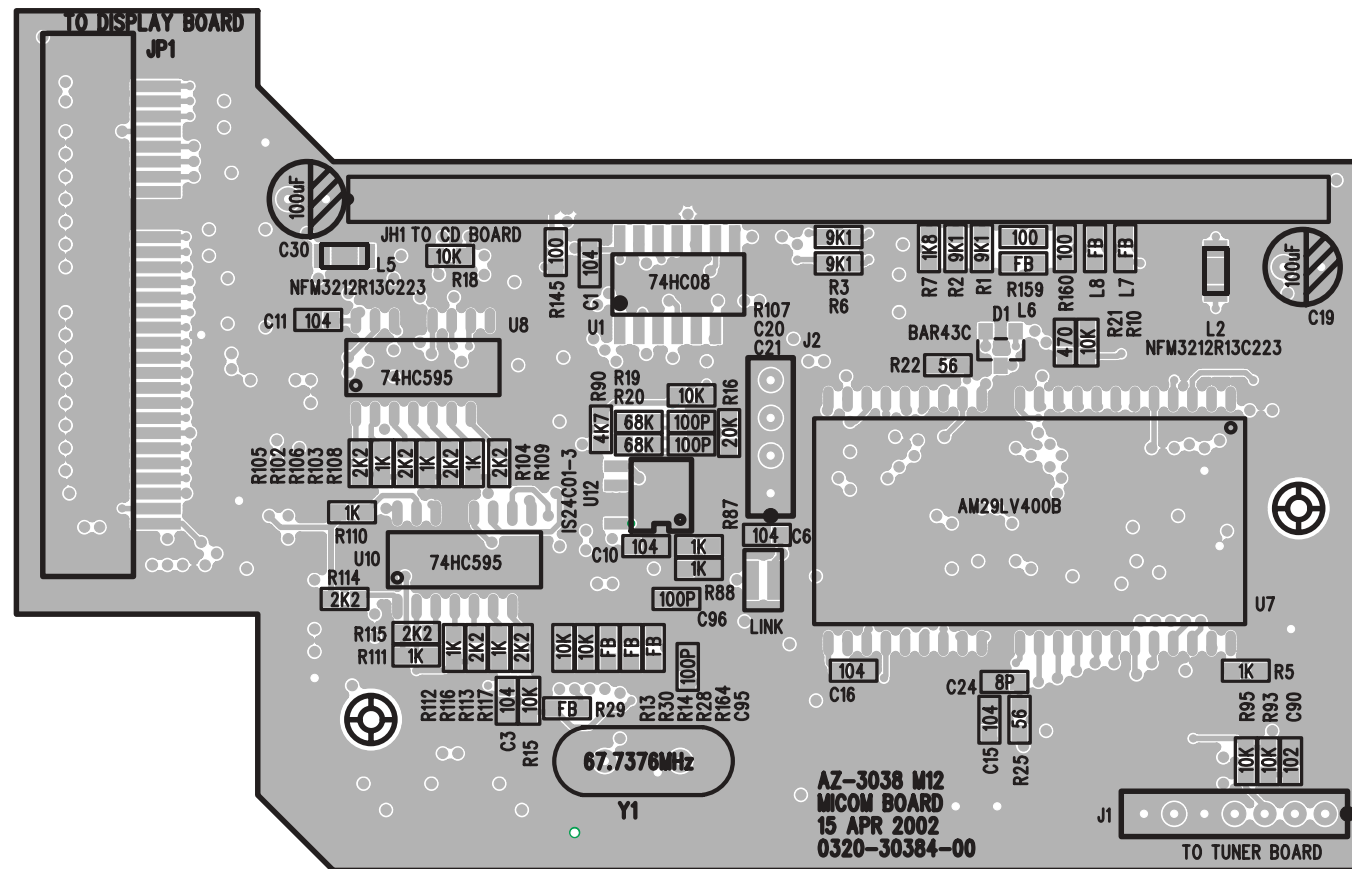
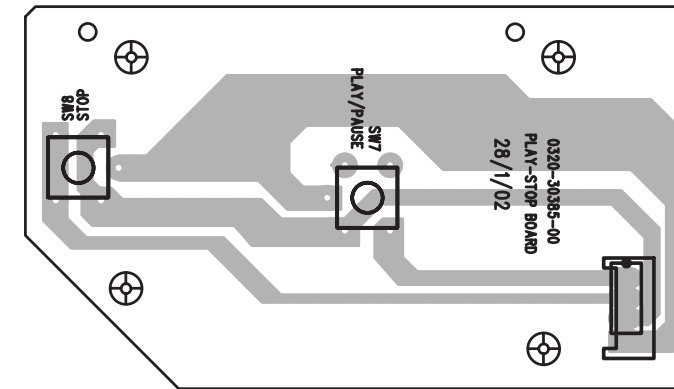
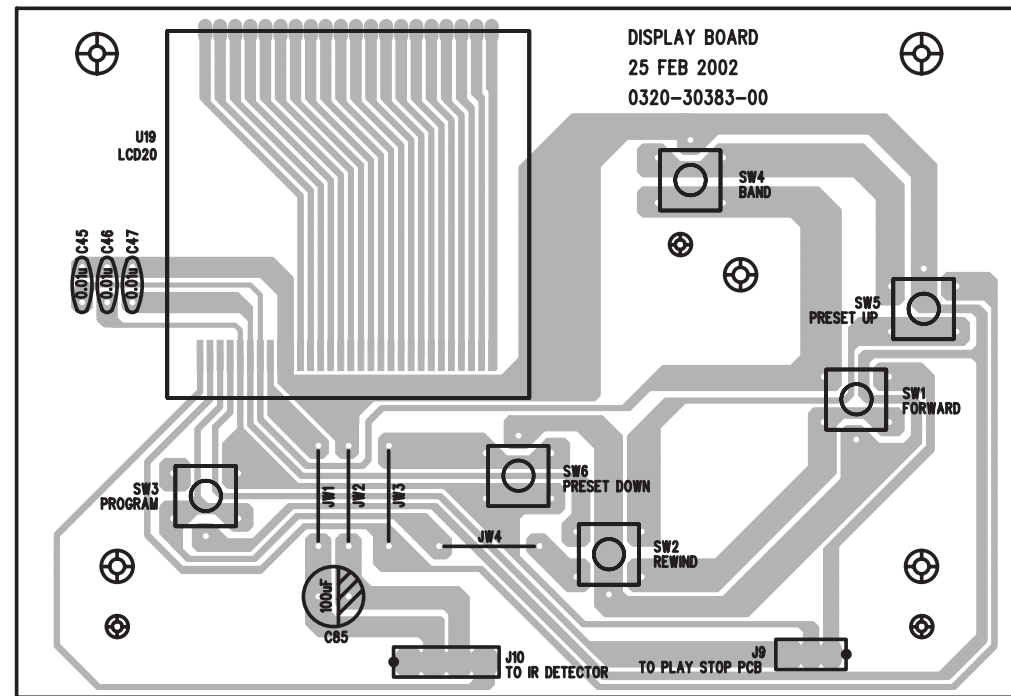
³⁾ LW has to be aligned before MW.

↑ Repeat

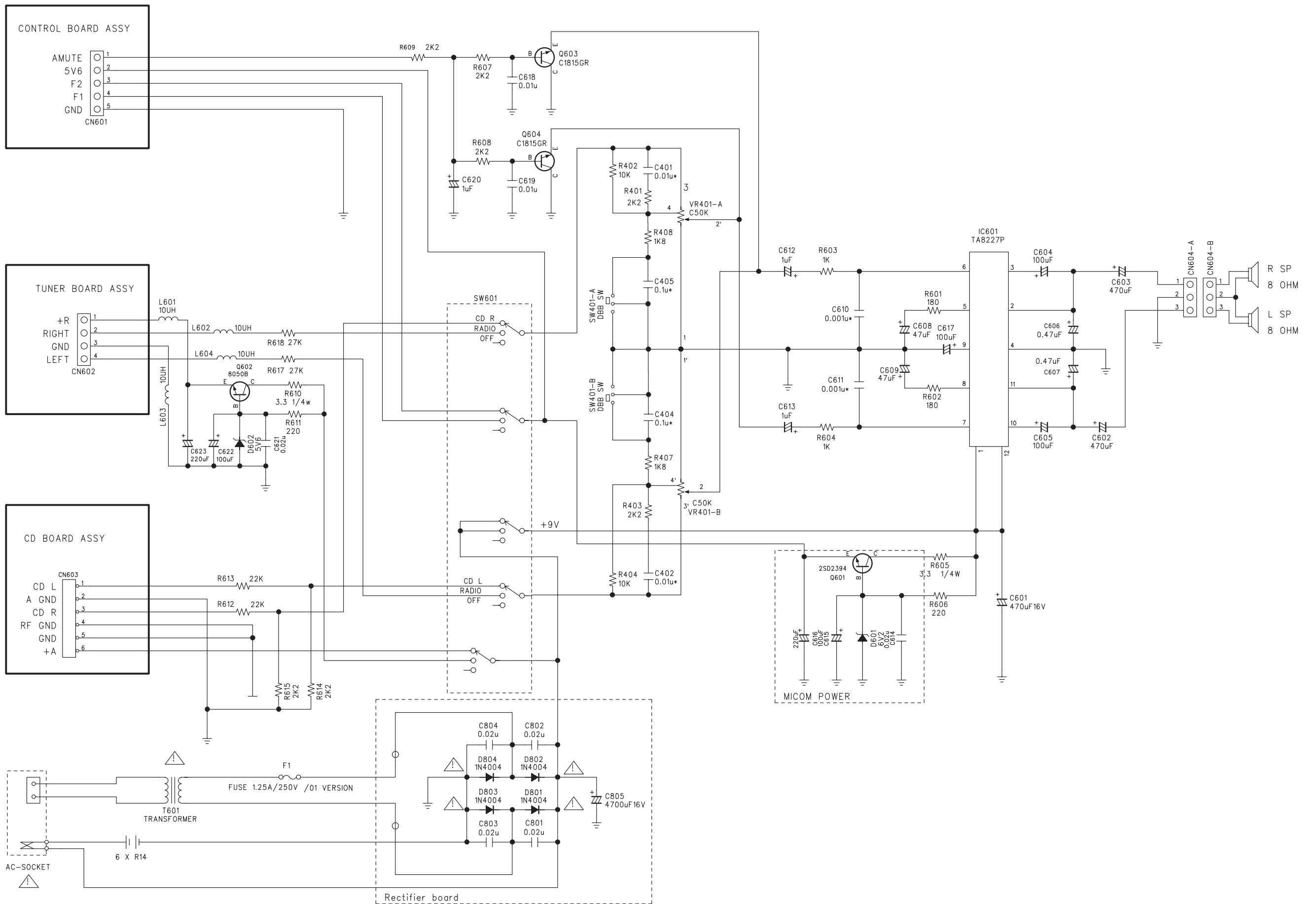
FRONT BOARD - CIRCUIT DIAGRAM



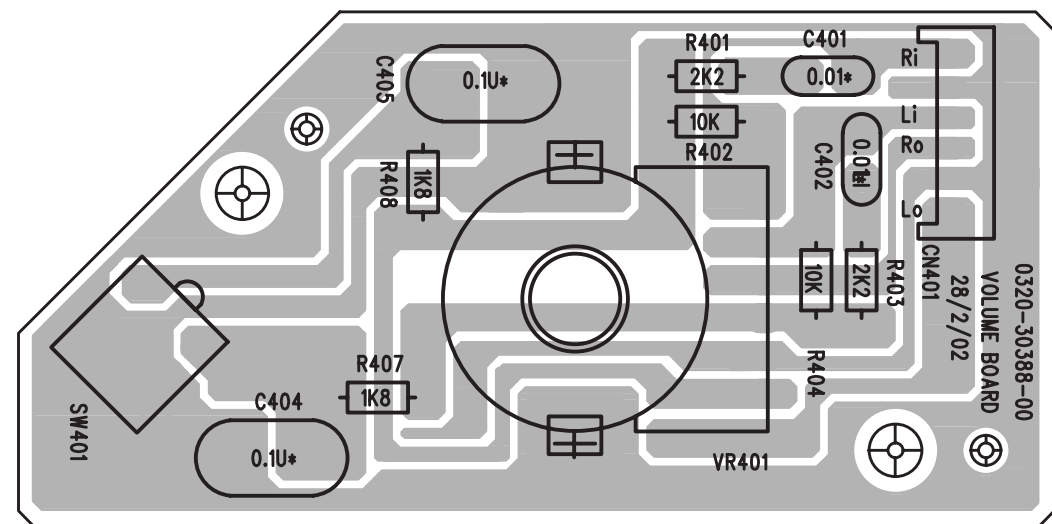
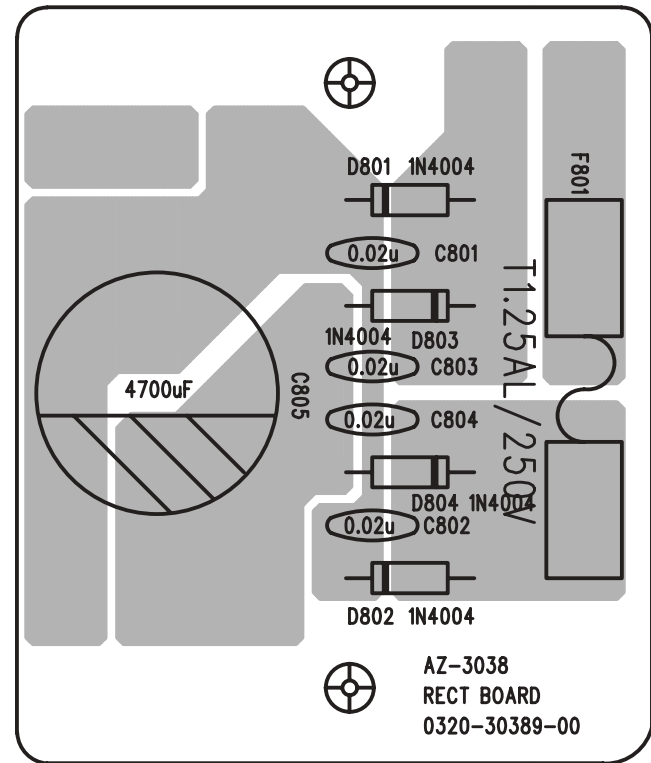
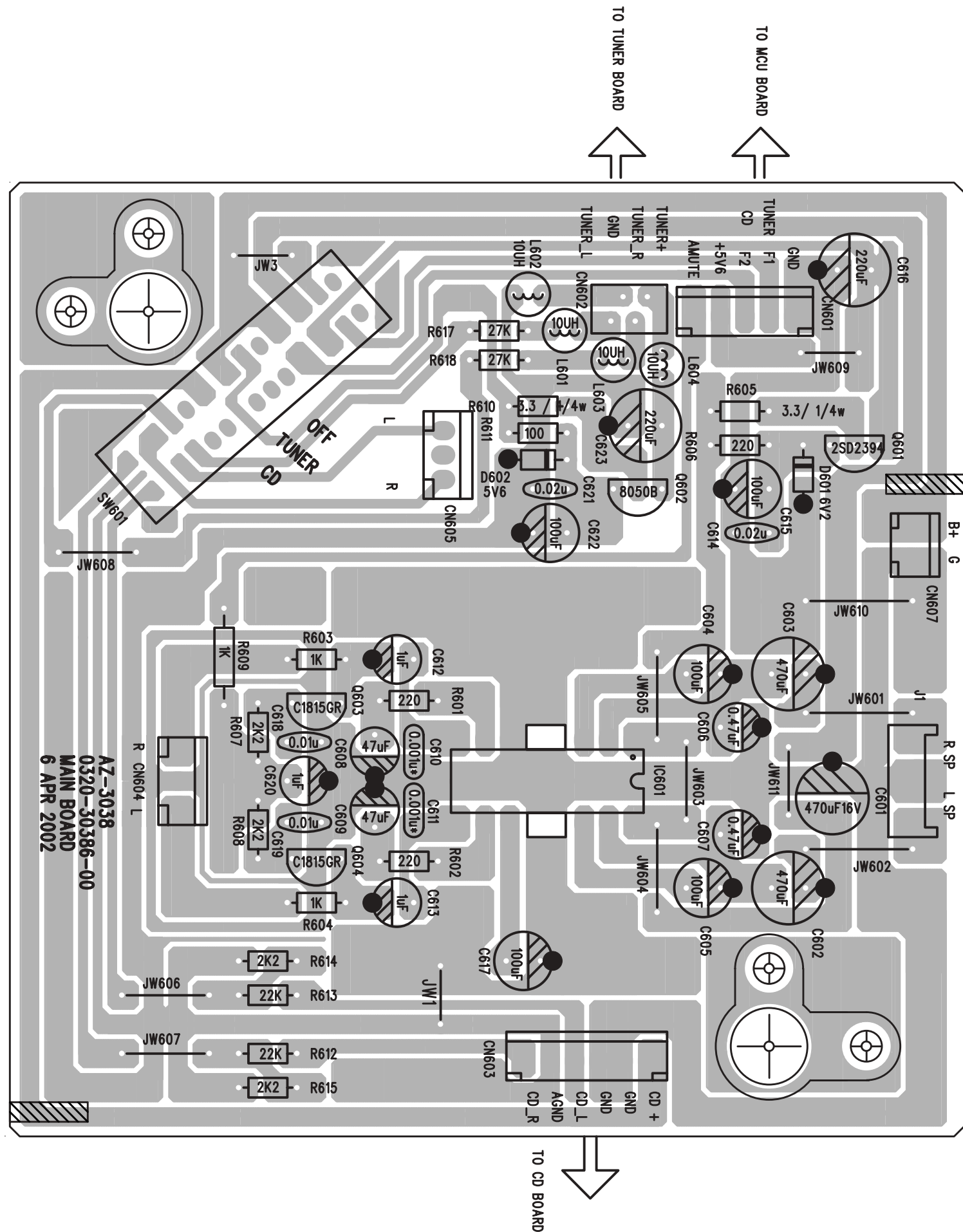
FRONT BOARD - LAYOUT DIAGRAM



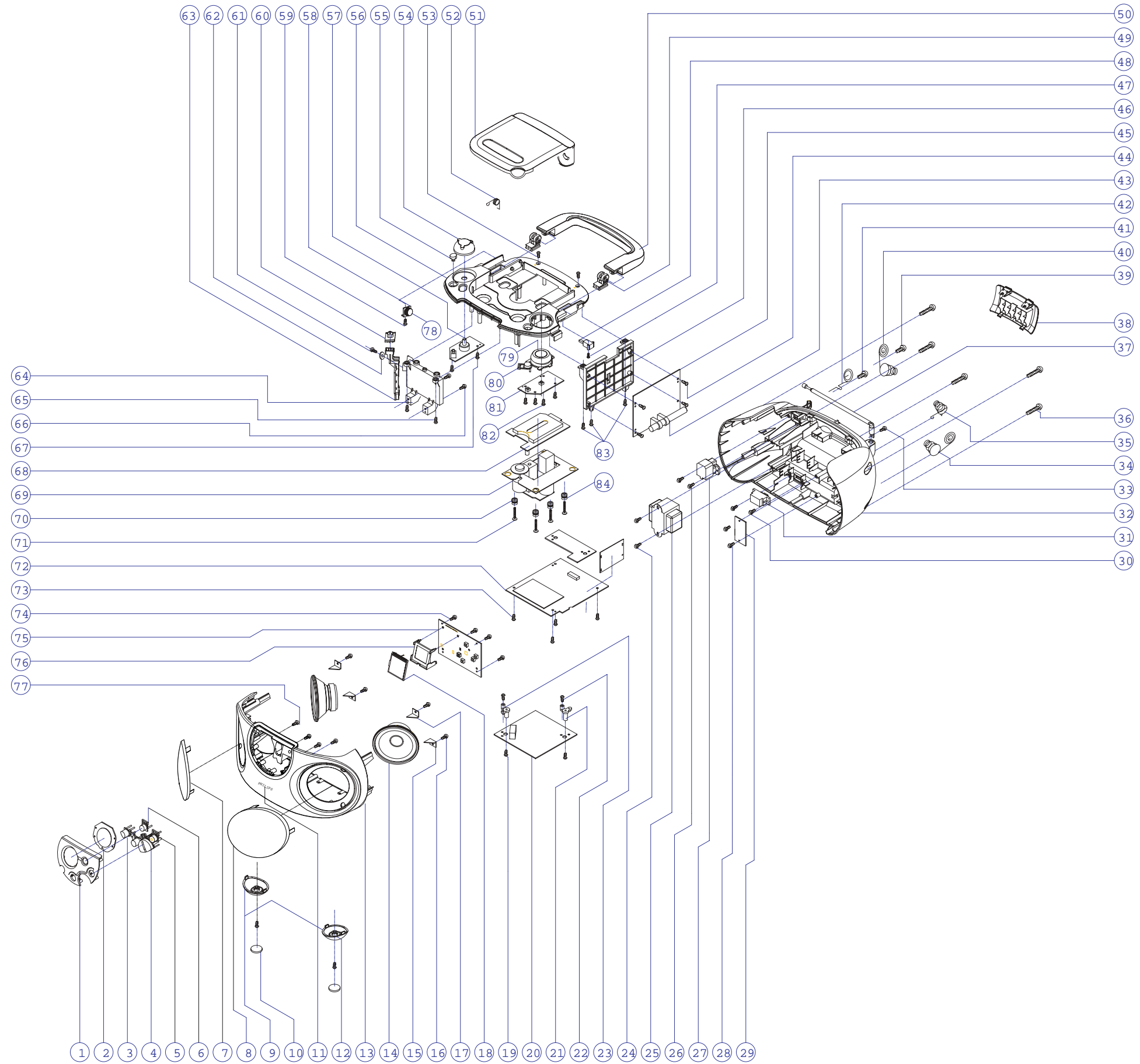
POWER BOARD - CIRCUIT DIAGRAM



POWER BOARD - LAYOUT DIAGRAM



EXPLODED VIEW DIAGRAM - CABINET



MECHANICAL PARTSLIST

1	9965 000 13405	FRONT CONTROL PANEL
3	9965 000 13407	FUNCTION KNOB
4	9965 000 13409	CD SEARCH +/-KEY
5	9965 000 13408	TUNING UP KNOB
6	9965 000 13410	BAND KNOB
9	9965 000 13413	FEET RIGHT (BLACK)
10	9965 000 11807	RUBBER FOOT STAND
12	9965 000 13412	FEET LEFT (BLACK)
13	9965 000 13414	FRONT CABINET ASSY
32	9965 000 16732	REAR CABINET
35	9965 000 11809	BATT. CONTACT SPRING (-VE)
37	4822 303 14022	AERIAL, TELESCOPIC
38	9965 000 13406	BATTERY DOOR
40	9965 000 11810	BATT. CONTACT SPRING (+/-)
42	9965 000 11808	BATT. CONTACT SPRING (+VE)
49	9965 000 13417	HANDLE BRACKET
50	9965 000 13404	HANDLE
51	9965 000 13399	CD DOOR
52	9965 000 04923	CD DOOR SPRING
54	9965 000 11797	VOLUME KNOB (SILVER)
55	9965 000 11800	DBB KNOB (BRIGHT SILVER)
56	9965 000 13400	CD TRAY
58	9965 000 11804	CD DOOR GEAR HOLDER
60	9965 000 13411	SOURCE SELECT KEY
63	9965 000 11805	SWITCH LEVER
68	4822 442 01905	LENS COVER
69	9965 000 13418	CDM MCD1B-SC
70	4822 529 10387	DAMPER - RUBBER (40 DEG)
76	9965 000 11806	LCD BRACKET
78	9965 000 04921	CD DOOR GEAR
79	9965 000 11798	PLAY/PAUSE KEY (BRIGHT SILVER)
80	9965 000 11799	STOP KEY (BRIGHT SILVER)
84	4822 529 10386	DAMPER - RUBBER (30 DEG)
	9965 000 16733	REMOTE ASS'Y (SBJT50001)
	2422 070 98151	MAINSCORD EUR /00C
	4822 321 11199	MAINSCORD BS /05

ELECTRICAL PARTSLIST - TUNER BOARD**- MISCELLANEOUS -**

1106	4822 158 60645	FERRITE BAR
2106	2020 800 00191	CTRM 100V 3P-11P N450
2155	2020 800 00191	CTRM 100V 3P-11P N450
3142	4822 100 12159	VAR. RES. 100K 30%

- COILS & FILTERS -

5104	2422 535 91074	MW ANT COIL
5109	4822 242 70665	SFE10,7MS3-A
5110	4822 242 70665	SFE10,7MS3-A
5111	2422 549 44023	AM IFT-1
5112	4822 157 70302	F7MCS-12216N
5114	4822 157 70302	F7MCS-12216N
5119	9965 000 10687	FM RF COIL
5121	4822 242 10261	CRYSTAL 75KHZ
5123	9965 000 13419	AM OSC COIL
5130	9965 000 13420	FM OSC COIL
5131	9965 000 13420	FM OSC COIL

- DIODES -

6103	5322 130 34337	BAV99
6105	4822 130 83075	HN1V02H-B
6120	9340 255 30135	BAS216
6130	4822 130 82833	1SV228
6131	4822 130 82833	1SV228
6181	5322 130 34337	BAV99
6182	9340 255 30135	BAS216
6183	9965 000 13421	BZX284-C11

- IC & TRANSISTORS -

7101	9965 000 13422	TEA5757H/V1
7102	4822 130 42131	BF550
7111	5322 130 42755	BC847C
7180	4822 130 60373	BC856B
7181	5322 130 42755	BC847C
7182	5322 130 42755	BC847C
7183	5322 130 42755	BC847C

ELECTRICAL PARTSLIST - CONTROL AND SWITCH BOARD**- MISCELLANEOUS -**

	9322 155 82667	IR RECEIVER TSOP2236
LCD20	9965 000 13425	LCD DISPLAY 91766TR
SW1	9965 000 13424	TACT SWITCH TC-0113X
SW2	9965 000 13424	TACT SWITCH TC-0113X
SW3	9965 000 13424	TACT SWITCH TC-0113X

- MISCELLANEOUS -

SW4	9965 000 13424	TACT SWITCH TC-0113X
SW5	9965 000 13424	TACT SWITCH TC-0113X
SW6	9965 000 13424	TACT SWITCH TC-0113X
SW7	9965 000 13424	TACT SWITCH TC-0113X
SW8	9965 000 13424	TACT SWITCH TC-0113X

ELECTRICAL PARTSLIST - POWER BOARD AND MISCELLANEOUS**- DIODES -**

D601	9965 000 11835	ZENER DIODE 5.6V 1/2W
D602	9965 000 11836	ZENER DIODE 6.2V 1/2W
D801	5322 130 34574	1N4004G
D802	5322 130 34574	1N4004G
D803	5322 130 34574	1N4004G
D804	5322 130 34574	1N4004G

- IC & TRANSISTORS -

IC601	4822 209 31544	TA8227P
Q601	9965 000 16738	2SD2394
Q602	4822 130 63422	8050B
Q603	4822 130 41319	2SC1815BL
Q604	4822 130 41319	2SC1815BL

- MISCELLANEOUS -

F801	4822 070 32001	FUSE 200MA
L601	4822 157 71363	10 μ H 035N
L602	4822 157 71363	10 μ H 035N
SW401	4822 276 13972	PUSH SWITCH
SW601	9965 000 11837	SLIDE SW SST-63D01
VR401	9965 000 11838	ROTARY VOL. B50K
	9965 000 16734	FFC CABLE 30P/300MM BD
	9965 000 13443	FFC CABLE 4P/300MM AD
	9965 000 11839	SPEAKER 3" (77MM)
△	9965 000 08577	AC SOCKET TC08-115-02
△	9965 000 16739	AC TRANS. (VDE) AC230V
△	2422 070 98151	MAINS CORD EUR 1M5

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

ELECTRICAL PARTSLIST MICOM (MICROCOMPUTER) BOARD

- COILS & FILTERS -

L1	9965 000 13437	FER. CORE FCI2012-R82K
L2	9965 000 13436	FIL. NFM3212R13C223R
L3	9965 000 13436	FIL. NFM3212R13C223R
L4	9965 000 13436	FIL. NFM3212R13C223R
L5	9965 000 13436	FIL. NFM3212R13C223R
L6	9965 000 09641	FIX IND. FCM1608K-601
L10	9965 000 13438	FCM2012H-202T02
L11	9965 000 13438	FCM2012H-202T02
L12	9965 000 13438	FCM2012H-202T02
L13	9965 000 13438	FCM2012H-202T02
Y1	9965 000 13442	CRYSTAL 67.7376MHZ

- DIODES -

D1	4822 130 82594	BAT54C
----	----------------	--------

- IC & TRANSISTORS -

Q1	9965 000 13427	DTC114TUA
Q3	9965 000 13427	DTC114TUA
Q4	9965 000 13427	DTC114TUA
Q5	9965 000 13426	DTA114TUA
U1	9965 000 16736	74HC08D
U7	9965 000 13441	AM29LV400BB-90SC
U8	9965 000 13439	74HC595D
U9	9965 000 16737	GM71V18163CT-6
U10	9965 000 13439	74HC595D
U11	9965 000 13440	GSL88301 D/A PROC.
U12	9965 000 04931	M24C01-WMN6

CD MAIN BOARD

- COILS & FILTERS -

JW15	4822 157 71363	10 μ H 035N
JW31	4822 157 71363	10 μ H 035N
JW41	4822 157 71363	10 μ H 035N
JW43	4822 157 71363	10 μ H 035N
L1	9965 000 09641	FIX IND. FCM1608K-601
L2	4822 157 70805	47 μ H
L38	9965 000 09641	FIX IND. FCM1608K-601
L40	4822 157 71363	10 μ H 035N

- DIODES -

D2	4822 130 30621	1N4148
----	----------------	--------

- IC & TRANSISTORS -

Q2	9965 000 13427	DTC114TUA
Q6	9965 000 13428	2SA1576A
Q7	9965 000 13426	DTA114TUA
Q8	9965 000 13427	DTC114TUA
Q9	9965 000 13428	2SA1576A
Q10	9965 000 13426	DTA114TUA
U1	9965 000 13429	KIA7805P
U2	9965 000 03397	BA033FP 3.3V
U6	4822 209 17174	74HCU04D
U13	4822 209 17174	74HCU04D
U14	9965 000 13430	BA6772FS
U15	4822 209 70985	PC74HC175P
U16	9965 000 13431	BA6892FP
U17	9965 000 13432	WM8725
U18	5322 209 61473	LM324M
U20	9965 000 03397	BA033FP 3.3V

- MISCELLANEOUS -

	9965 000 13433	FFC CABLE 5P/200MM AD
	9965 000 13434	FFC CABLE 16P/85MM AD
JW34	\triangle 9965 000 16735	3.3R FUSIBLE RESISTOR
	9965 000 04935	CD DOOR SWITCH

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