CD Sound Machine

AZ6188

all versions

Service
Service
Service

Service Manual

MP3-CD PLAYBACK MP3 | ReWritable CD COMPATIBLE | COMPACT disc DIGITAL AUDIO

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CLASS 1
LASER PRODUCT

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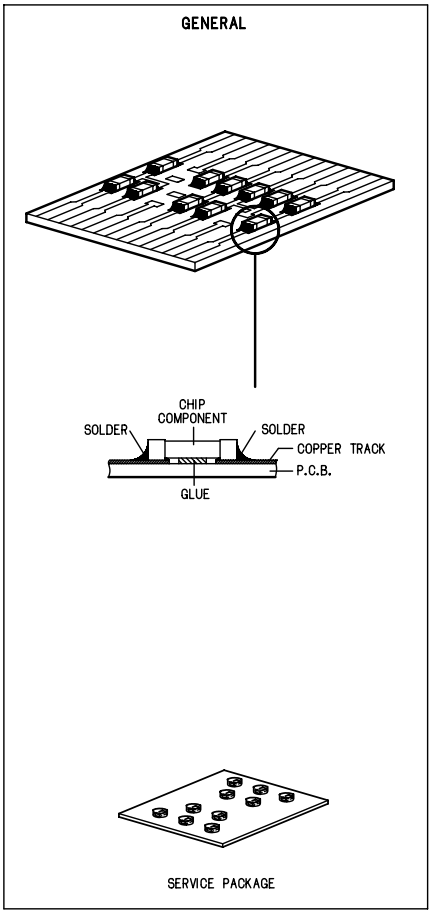
Published by LX 0432 Service Audio Printed in The Netherlands Subject to modification

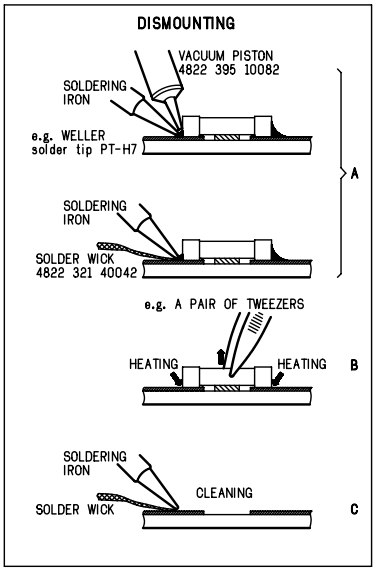
GB 3140 785 32800

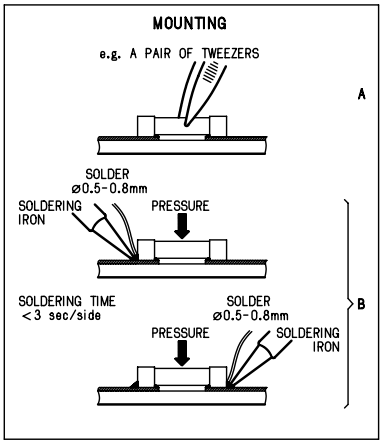
version 1. 0

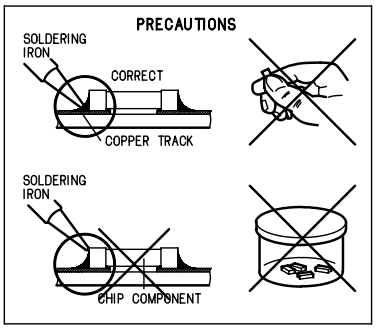
PHILIPS

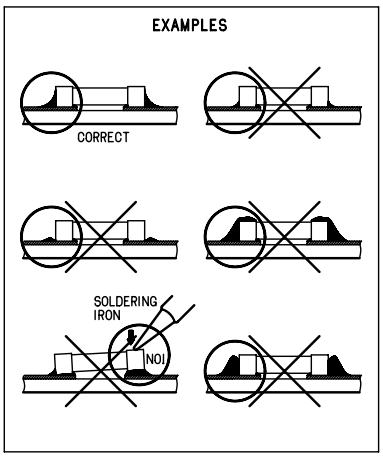
HANDLING CHIP COMPONENTS











(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.

ESD

(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.

(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.

(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.

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 ⚠

(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 ⚠

(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 ⚠

(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 ⚠

(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.

CLASS 1
LASER PRODUCT

(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.

(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" .

TECHNICAL SPECIFICATIONS

GENERAL

Mains voltage	-/01	:	120 / 230 V
Mains frequency -	-/01	:	50 / 60 Hz
Battery		:	9 V (R14 x 6)
Power consumption		:	<35 W
Dimension (W x H x D)		:	400 x 235 x 173mm
Weight		:	3 Kg

AMPLIFIER

Output power	mains	:	2 x 1 W
	battery	:	2 x 1 W
Speaker impedance		:	2 x 8 ohm
Frequency response		:	60 Hz - 20 kHz (±3dB)

TUNER - FM SECTION

Tuning range	:	87.35 - 108.25 MHz
IF frequency	:	10.7 MHz ± 0.2 MHz
Sensitivity	:	<22 dB at 26dB S/N
Selectivity	:	>20 dB at 300kHz
IF rejection	:	>50 dB
Image rejection	:	>20 dB

TUNER - AM SECTION

Tuning range	:	512 - 1635 kHz
IF frequency	:	468 kHz ± 3 kHz
Sensitivity(nom.)	:	1500 µV/m at 26dB S/N
Selectivity(nom.)	:	20 dB
IF rejection(nom.)	:	70 dB
Image rejection(nom.)	:	32 dB

CASSETTE RECORDER

Number of tracks		:	stereo
Tape speed		:	4.76 cm/sec
Wow & flutter		:	< 0.35% JIS WTD
Fast wind/rewind C60		:	<130 sec.
Frequency response	P/B	:	125 - 8000 Hz
S/N ratio		:	36 dB

COMPACT DISC

S/N ratio		:	60 dB typ.
Channel difference	1 kHz	:	2 dB lim.
Channel crosstalk	1 kHz	:	45 dB typ.
THD	1 kHz	:	<1.5 %

SERVICE TOOLS

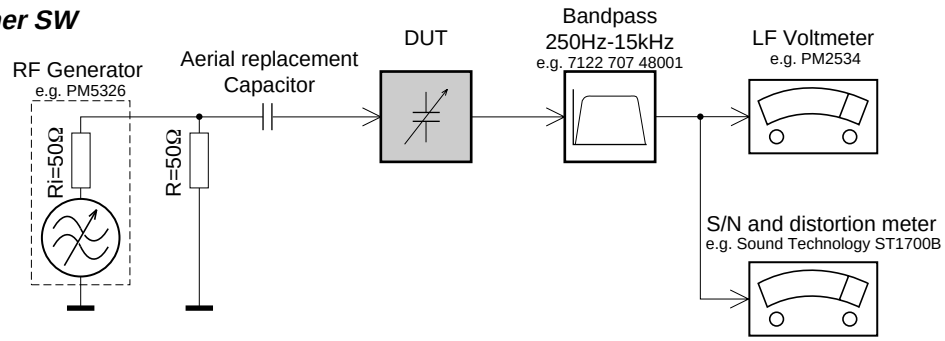
Audio signal disc SBC 429 ..... 4822 397 30184
Playability test disc SBC 444 ..... 4822 397 30245
Test disc 5 (disc without errors) +
Test disc 5A (disc with dropout errors, black spots and fingerprints)
SBC 426/426A 4822 397 30096
Burn in test disc (65 min. 1kHz signal at -30 dB level without “pause”)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

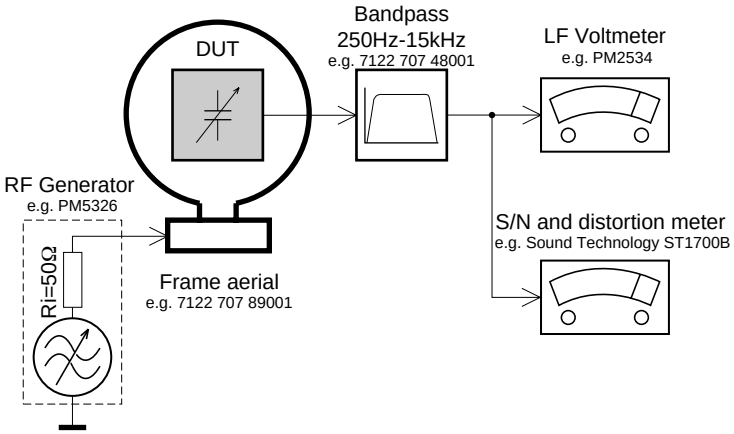
SERVICE MEASUREMENT

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).

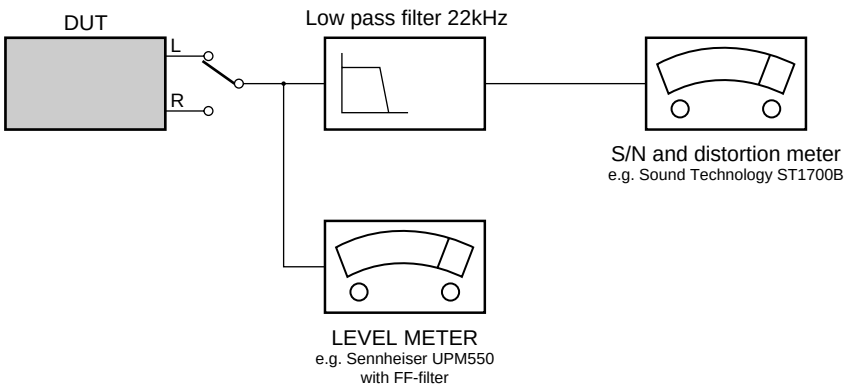
Tuner AM (MW, LW)

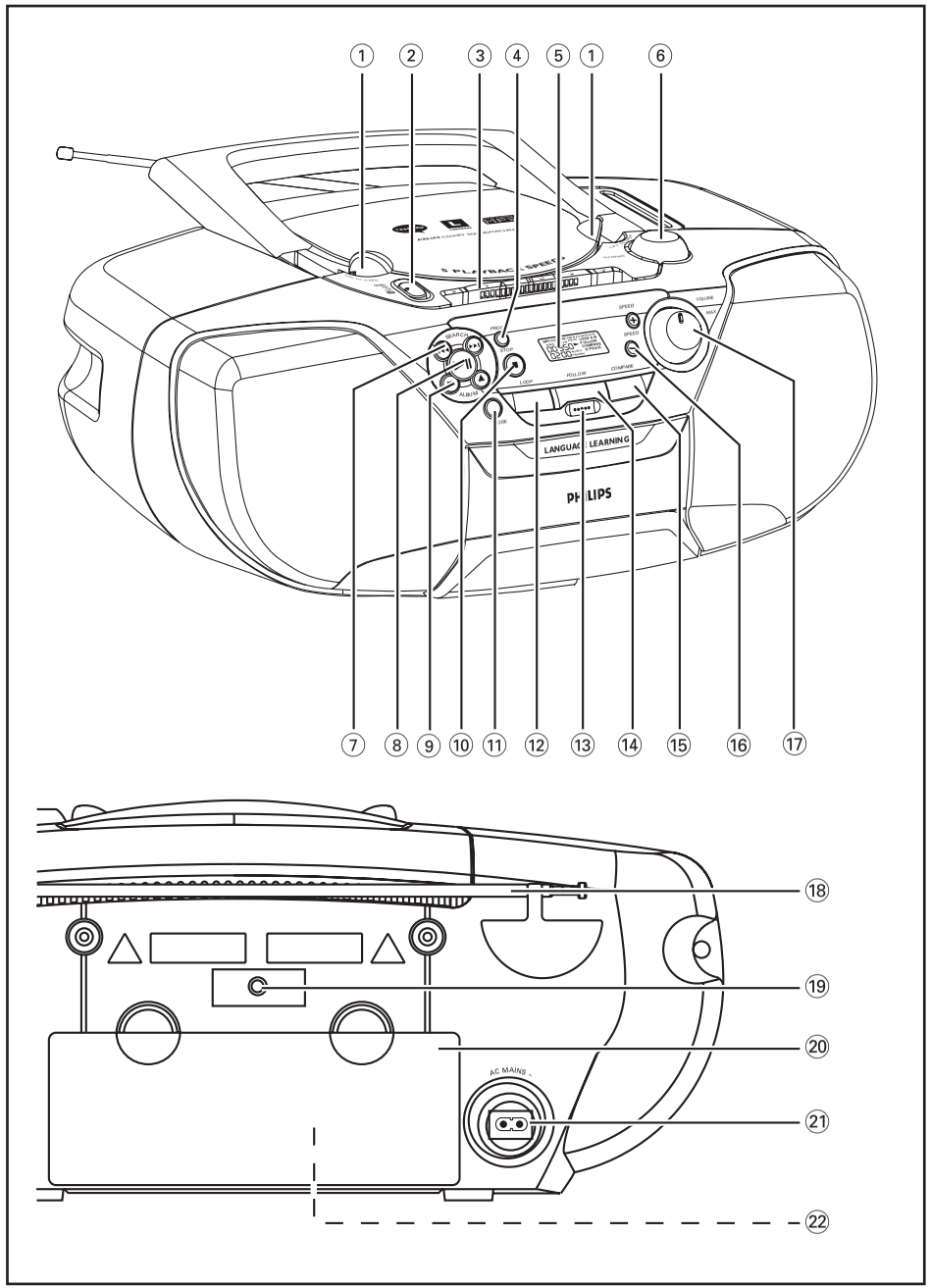


To avoid atmospheric interference all AM-measurements have to be carried out in a Faraday«s cage.

CD

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





CONTROLS

TOP AND FRONT PANEL

① **LIFT TO OPEN** - to open the CD door.
② **Source selector** - POWER ON/OFF switch and to select source of sound source: **CD•MP3/MW/FM/TAPE(OFF).**
③ **Cassette keys:**
PAUSE II - to interrupt recording or playback.
STOP•OPEN ■ ▲ - To stop the tape and to open the cassette holder.
SEARCH ◀◀ or **▶▶** - to fast wind/rewind the tape.
PLAY ◀ - to start playback.
RECORD ● - to start recording.
④ **PROG -**
- to program disc tracks in CD/MP3 playback mode.
- to set Point B for A-B playback in the language learning mode.

⑤ **LCD Display** - to show the MP3 functions and disc status.
⑥ **TUNING** - to tune to radio stations
⑦ **SEARCH ⏮** or **⏭**
- to skip or search a passage or a track
- In the language learning mode, to set Auto Loop, Follow, Compare, and adjust the number of sentence breaks.

⑧ **PLAY•PAUSE ▶II**
- to start or interrupt CD playback
- to clear recorded contents in language learning mode

⑨ **ALBUM ▲/▼**
- to.select the desired album up or down in MP3 CD playback mode.
- to adjsut the repeat times in the language learning mode.

⑩ **STOP ■** - to stop playback
⑪ **MODE**
- to select REPEAT, REPEAT ALL, SHUFFLE or SHUFFLE ALL in the music mode.
- to toggle between LANG ON and LANG OFF modes.
- to toggle between AUTO and MANU in the language learning mode.

⑫ **LOOP** - to activate the LOOP language learning mode.
⑬ **MIC** - to input voice in the recording mode.
⑭ **FOLLOW** - to activate the FOLLOW language learning mode.
⑮ **COMPARE** - to activate the COMPARE language learning mode
⑯ **SPEED + / -** - to select the desired playing speed in the language learning mode.
⑰ **VOLUME** - to adjust volume level.

BACK PANEL

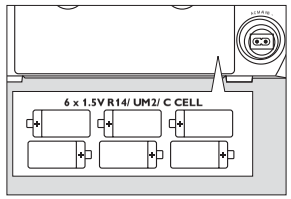
⑱ **Telescopic aerial** - to improve FM radio reception
⑲ 🎧 - 3.5mm stereo headphone socket
Note: The speakers will be muted when the headphones are connected to the set.
⑳ **Battery door** - to open the battery compartment
㊳ **AC MAINS ~** - socket for mains lead
Voltage selector *(inside battery compartment, some versions only)* - Adjust to match the local volatage 110/220V before plugging in the set

POWER SUPPLY

BATTERIES (NOT SUPPLIED)

Whenever convenient, use the mains supply if you want to conserve battery life. The battery supply will be switched off when the set is connected to the mains. Make sure you remove the plug from the set and wall outlet before inserting batteries.

Batteries



1. Open the battery compartment and insert six batteries, type **R14**, **UM2** or **C-cells**, (**preferably alkaline**) with the correct polarity as indicated by the "+" and "-" symbols inside the compartment.

2. Replace the compartment door, making sure the batteries are firmly and correctly in place.

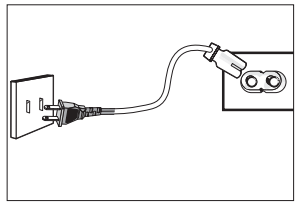
3. Remove the batteries if they are exhausted or if they will not be used for a long period.

– 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 zinc carbonate.
– When inserting new batteries, replace all at the same time.

Notes :
– The battery supply is switched off when the set is connected to the mains.

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

MAINS

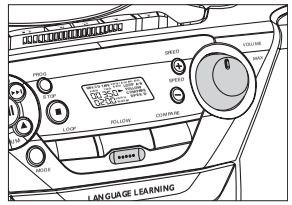


1. Check if the mains voltage as shown on the type plate (on the bottom of the set) matches your local mains voltage. If it does not, consult your dealer or service organization.
2. If your set is equipped with a voltage selector, adjust the selector so that it matches with the local power supply.
3. Connect the mains lead to the **AC MAINS ~** socket and the wall socket.
The set is now ready for use.
4. To switch off the mains supply completely, pull the mains plug out of the wall socket.
Disconnect the mains lead when you change over to battery supply, or to protect the set during heavy thunderstorms.

The type plate is located on the bottom of the set.

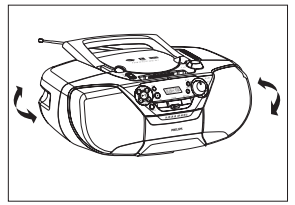
TUNER OPERATION

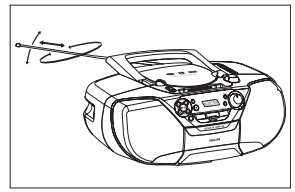
GENERAL OPERATION



1. To switch on the set, adjust the source selector.
2. Adjust the sound using the **VOLUME** control.
3 To switch off the set, adjust the source selector to the **TAPE/OFF** position, with the cassette keys released.

RADIO RECEPTION





1 Set the source selector to **FM** or **MW**.
2. Adjust the sound using the **VOLUME** control.
3. Tune to a radio station using the **TUNING** knob.
– For FM, pull out the telescopic aerial. To improve FM-reception, incline and turn the aerial. Reduce its length if the FM-signal is too strong.
– For MW, the set is provided with a built-in aerial, so the telescopic aerial is not needed. Direct the aerial by turning the whole set.
4. To switch off, set the source selector to the **TAPE/OFF** position (with the cassette keys released).

CAUTION

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

Environmental information

Any unnecessary packaging material has been omitted. We have done our utmost to make the packaging easily separable into three mono 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 packaging materials, exhausted batteries and old equipment.

DISCS FOR PLAYBACK

This set can play all digital audio CD, finalised digital audio CD-Recordable (CDR) discs and finalised digital audio CD-Rewritable (CDRW) discs.

Following MP3-CD formats are supported:

- ISO 9660 or ISO 9660 + Joliet format - Max. 30 characters
- Max. Track number is 400
- Max. nested directory is 8 levels
- The max. album number is 99
- The max. MP3 programme track number is 20
- The max. length of each track is 99 minutes 59 seconds
- The player can play mixed mode disc of CD / MP3-CD
- Supported VBR bit-rate
- Supported sampling frequencies for MP3 disc : 8 kHz to 48 kHz (44.1kHz preferably)
- Supported bit-rates of MP3 disc are: 32 - 320 kbps (128 kbps preferably)

Following formats are not supported

- The files like *.WMA, *AAC, *.DLF, *.M3U, *.PLS, MP3 PRO
- Non-session closed discs

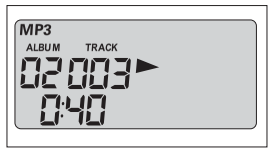
LOADING A DISC

1. Set the source selector to **CD**.
2. Lift to open the CD door.
   "OPEN" will be displayed
3. Insert a disc with the label side facing up.
4. Close the CD door.
   Playback starts from the first track.
   The number and elapsed playing time of the first track are displayed.
   "no dISC" will be displayed if no disc is inserted or any error occurs in CD operation.

CD/MP3-CD

For MP3-CD only

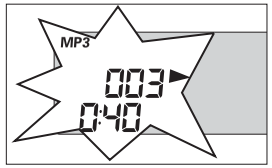
Playback starts from the first track of the first album.
The MP3 icon album number and the elapsed playing time of the track are displayed.



Notes :- *To ensure good system performance, wait until the disc is completely read before proceeding.*

- *For MP3-CD, the disc reading time may exceed 1 minute due to the large number of songs compiled in one disc.*

PLAYING A NORMAL DISC



1. Press ▶II to start playback.
   The current track number and ▶ appear on the display.
   - To interrupt playback, press ▶II.
     ▶ and the current track number will appear, the elapsed playing time will flashing.
   - To resume playback, press ▶II again.
2. To stop playback, press ■.

SELECTING A DESIRED TRACK/PASSAGE

To select a desired track

- Press **SEARCH** ⏮ or ⏭ repeatedly until the desired track appears on the display.
- If playback is stopped, press ▶II to resume playback.

To search for a particular passage during playback

- Press and hold **SEARCH** ⏮ or ⏭ until you reach the beginning of your desired passage

For MP3-CD only

To select a desired album

- Press **ALBUM** ▲ or ▼ until the desired album number appears on the display.

To select a desired track

- Press **SEARCH** ⏮ or ⏭ repeatedly to select a desired track from the current album.

To select and play another track during playback

1. Press **SEARCH** ⏮ or ⏭ repeatedly to select another track.
   The selected track will appear on the display and playback continues.

PROGRAMMING TRACKS

Programming tracks of disc is possible when playback is stopped. Up to 20 tracks can be stored in the memory in any order.

1. Press ■ to stop playback.

2. Press **SEARCH** ⏮ or ⏭ to select the desired track, or for MP3-CD playback press **ALBUM** ▲ / ▼ to select the desired album .

3. Press **PROG** to store the select track. "XX" represents the track number.

• Repeat steps **1** to **3** to store other tracks.

4. Press ■ to end programme setting.
PROGRAM will remain on the display.
You can press ⏮ or ⏭ to view the programmed tracks.

5. Press ▶II to play the programmed tracks.

• If you press **MODE** during program playback to activate **REPEAT** or **REPEAT ALL** function.
REPEAT/REPEAT ALL icon and **PROGRAM** will appear on the display.

6. Press twice to clear the programme.
PROGRAM will disappear from the display, and CLEAR will appear, followed by the number of total tracks and the total playing time.

Note: *-You can also press PROG to program tracks during normal playback*

MODE

REPEAT

1. In the playback, pause or stop mode, press **MODE** to enable the **REPEAT** play function.
REPEAT - to repeat the current track.
REPEAT ALL - to repeat the whole disc
REPEAT ALBUM - to repeat the current album .

2. To exit the repeat mode, press **MODE** until the **REPEAT/REPEAT ALL** icon disappears.

Notes : *- The Shuffle and Repeat play modes cannot be combined for playback.*
- The Repeat play mode is cancelled when you press the STOP button.

SHUFFLE

You can play all the tracks in a random order.

1. In the playback, pause or stop mode, press **MODE** to enable the SHUFFLE function.
SHUFFLE will appear on the display.

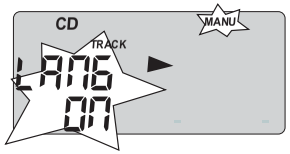
2. To exit the shuffle mode, press ■ or **MODE** until **SHUFFLE/SHUFFLE ALL** disappears.

LANGUAGE LEARNING

This set features language learning functions based on CD, MP3-CD and tape playback modes.
To select your desired playback source, please adjust the source selector to TAPE, FM, MW or CD-PM3.

MUSIC MODE AND LANGUAGE LEARNING MODE

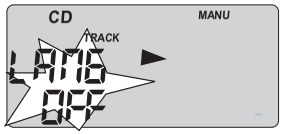
When the set is start for the first time, the set is in the music mode.
In this case, you can play CD, MP3-CD or tape.



Note : *- CD playback is not in the compressed playback mode, therefore the sound quality is not affected, but the language learning function is not activated.*

• Press and hold **MODE**, and **LANG ON** and **MANU** are displayed.
The language learning function is activated.

Notes : *- In the language leaning mode, you can press MODE to toggle between manual and auto.*
- To provide the 120-second repeat function in the CD playback mode, all the data in the CD will be first compressed and stored in the SD RAM for subsequent playback, therefore the sound quality might be slightly affected.
*- Once in the language learning mode, **LANG ON** will disappear and **MANU** will remain flashing.*



• Press and hold **MODE** again and **LANG OFF** is displayed.
The language learning function is deactivated.
Both **LANG ON** and **MANU** disappear.

STORE THE CONTENTS PLAYED, AND START MANUAL LOOP, FOLLOW OR COMPARE (LOOP, FOLLOW, COMPARE)

In the language learning mode, the contents played will be automatically stored in a Synchronous Dynamic Random Access Memory (SD RAM).

The storage periods are different according to different playback sources:

Playback source	Storage period
Tape	440 seconds
CD	120 seconds
MP3 128bpc	440 seconds

Notes : *- For MP3-CDs of different bit rates, the storage periods may also be different. A smaller bit rate implies longer storage time. A greater bit rate implies shorter storage time. (64bps = 960 seconds, 320bps = 240 seconds).*
- When the SD RAM is full, the latest contents will overwrite the older data in the principle of "First -in and first-out".

LANGUAGE LEARNING

- Press **LOOP**, **FOLLOW** or **COMPARE** to start the manual loop, follow or compare mode for the contents stored.

HOW TO SELECT A PASSAGE FOR LANGUAGE LEARNING?

In CD or MP3-CD mode, when a track (or a text) has started,
Press and hold **SEARCH** ⏮ or **SEARCH** ⏭ to go to the beginning of your desired track and then release the button; OR

- Wait until playback goes to the beginning of your desired track, and press **PLAY/PAUSE** ⏯ to interrupt the playback, and then release this button to continue playback.

In this case, the set will clear all contents in its SD RAM and start recording the contents to be used for language learning.

Note : *- After a new track (or text) is played, the set will automatically clear the old contents and start recording from the current playing time. This is to avoid interference between two tracks (or two texts).*

- At the end of your desired track, press **LOOP**, **FOLLOW** or **COMPARE** to activate manual **LOOP**, **FOLLOW** or **COMPARE** mode.

In the tape playback mode, Press **PLAY** ▶ and the set will record the contents being played automatically.

- During tape playback, press **PLAY/PAUSE** ⏯.
  The contents previously stored will be cleared and the set starts to record new contents.

Therefore, if you want to select a passage for language learning, you can operate as per the following steps:

1. Stop tape playback (press ■, and then press **SEARCH** ⏮ or **SEARCH** ⏭ to go to the beginning of your desired passage. Release the key and then press **PLAY** ▶.
The set automatically starts to record the contents being played.

2. Press **PLAY/PAUSE** ⏯ at the beginning of your desired track.
The set clears the contents previously stored and starts to record new contents being played automatically.

3. At the end of your desired passage, press **LOOP**, **FOLLOW** or **COMPARE** to start manual Loop, Follow and Compare.

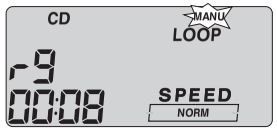
MANUAL LOOP

- In the language learning mode, press **LOOP** to start manual loop
  LOOP appears on the display.
  The set will repeat the contents recorded and stored in the SD RAM. The repeat times is set as 3 by default

LANGUAGE LEARNING

After three times, the set will resume to the normal playback mode and the next passage will be played and recorded in the SD RAM.

- During manual loop, you can press **ALBUM ▲/▼** to change the repeat times (3 times by default and 9 times at most).
  r9 is displayed.



- During manual loop, you can press **PLAY/PAUSE** ⏯.
  The repeat stops. The next passage will be played normally.
- During manual loop, you can press **LOOP** to repeat the current passage (at the set repeat times).
- Press **FOLLOW** or **COMPARE** to activate the language learning function for the current passage.

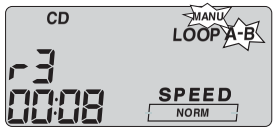
Language Learning in **A-B** mode

During manual loop, you can set Point A and Point B and repeat the contents between the two points.

How to set A-B mode?

SET POINT A

- Press and hold **SEARCH** ⏮ or **SEARCH** ⏭ to go to the beginning of your desired passage, and release the button. This stop point is Point A.
  The icon **A-B** blinks on the display.



- When playback goes to the end of your desired passage, press **PROG**.

This point is Point B.
After **A-B** is set, the contents between Point A and Point B will be played repeatedly.

Repeat Times

- The number of repeat times is the value manually set previously.
- After the last repeat, the system will quit the **A-B** mode and the manual repeat mode. Normal playback then starts from the next passage. The contents played are recorded in the SD RAM synchronously.

Notes : *- During **A-B** playback, you can press **ALBUM ▲/▼** to change the repeat times (3 times by default and 9 times at most).*
*- During **A-B** playback, you can press **PLAY/PAUSE** ⏯ to interrupt **A-B** mode and quit the manual repeat mode, and start the next passage at the same time.*
*- During **A-B** playback, you can press **LOOP** to quit A-B mode to repeat the whole passage (at the repeat times previously set); You can also press **FOLLOW** or **COMPARE** to quit **A-B** mode to start follow or compare for the current passage.*

LANGUAGE LEARNING

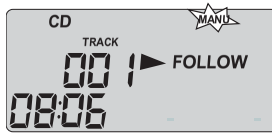
AUTO LOOP

• In the manual Loop mode, you can press **MODE** to start Auto Loop.
AUTO flashes on the display.

Notes: - *The current manual repeat will stop and will detect the sentence intervals from the next passage for automatic sentence break, and repeat one sentence or several sentences automatically.*
- *In the Auto Loop mode (during normal playback or repeat), you can press **SEARCH** ⏮ or **SEARCH** ⏭ to change the number of sentence breaks (1 by default or 9 at most).*
- *You can press ALBUM ▲/▼ to change the repeat times.*
- *During Auto Loop, you can press **PLAY/PAUSE** ⏯ to skip from the current passage to the next passage, OR*
- *Press LOOP to repeat the current passage (at the times previously set), OR*
- *Press FOLLOW or COMPARE to start Follow or Compare for the current passage, and enter the Auto Follow or Auto Compare mode.*
- *During normal playback in the Auto Loop mode, you can press FOLLOW or COMPARE to activate Auto Follow or Auto Compare.*
- *In the Auto Loop mode, you cannot activate the A-B language learning function*

MANUAL FOLLOW

In the language learning mode, you can press **FOLLOW** to start Manual Follow.
FOLLOW appears on the display.
The set will play the recorded content for 1 time and then start recording.
Playback and recording can be repeated (for 1 time by default).
After 1 time of follow, the set will start normal playback automatically.



Notes : - *The recording time equals the playback time. The whole process (playback + recording) will be repeated at the time previously set.*
-- *After recording, normal playback will start from the next passage and will be recorded into the SD RAM automatically.*
-- *During playback and recording, you can press **ALBUM ▲/▼** to change the repeat times (1 time by default or 9 at most).*
-- *During Follow and recording, you can press **PLAY/PAUSE** ⏯ to quit Follow and start the normal playback of the next passage.*
-- *You can also press **LOOP** or **COMPARE** to quit the Follow mode and start Loop or Compare for the current passage.*

A-B FOLLOW

Please refer to the **A-B** repeat operation procedure for the CD or Tape Loop mode.

LANGUAGE LEARNING

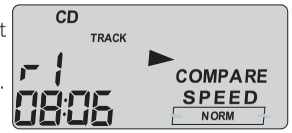
AUTO FOLLOW

• In the manual Follow mode, press **MODE** to switch to auto follow from manual follow.
AUTO flashes on the display.

Notes : - *The set will quit the ongoing manual follow and start from the next passage to detect the interval between sentences during playback, so that one or several sentences will be repeated in the auto follow mode.*
- *During auto follow (during normal playback or follow), you can press **SEARCH** ⏮ or **SEARCH** ⏭ to change the number of sentence breaks (1 by default or 9 at most).*
- *Press **ALBUM** ▲/▼ to change the repeat times.*
- *During auto follow, you can press **PLAY/PAUSE** ⏯ to skip to the next passage to start the normal playback of the next passage and break sentences automatically.*
- *You can press LOOP to repeat the contents of the current passage (at the times previously set).*
- *Or press FOLLOW or COMPARE to repeat the contents of the current passage in the follow or compare mode, and activate auto follow or compare functions.*
- *During normal playback in the auto follow mode, you can press LOOP or COMPARE to switch to the auto loop or auto compare mode.*
- *In the Auto Follow mode, you cannot activate the A-B language learning function.*

MANUAL COMPARE

• In the language learning mode, press **COMPARE** to enter the manual compare mode.
COMPARE appears on the display.
The set will play the recorded content for 1 time and then start recording.
Playback and recording can be repeated (for 1 time by default).
After 1 time of compare playback, the set will start normal playback automatically.



Notes : - *The recording time equals the playback time.*
- *After recording, the original sound will be repeated once, followed by the recorded sound. The compare process (repeated playback + playback of original sound) will repeat at the times already set.*
- *Once the normal playback is resumed, the next passage will start and will be recorded in the SD RAM synchronously.*
- *During manual compare playback, recording, playback or repeated playback, you can press **ALBUM** ▲/▼ to change the repeat times (1 time by default and 9 times at most).*
- *During manual compare playback, recording, playback or repeated playback, you can press **PLAY/PAUSE** ⏯ to exit the compare playback mode and play the next passage normally.*
- *Or you can press **COMPARE** to repeat the compare playback for the ongoing passage (at the times already set).*
- *You can press **LOOP** or **FOLLOW** to start the loop or follow for the current passage.*

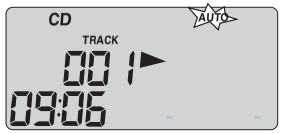
LANGUAGE LEARNING

A-B COMPARE

Please refer to the **A-B** repeat operation procedure for the CD or Tape Loop mode.

AUTO COMPARE

- In the manual compare mode, press **MODE** to start Auto compare.



AUTO flashes on the display.
The set will quit the ongoing manual compare and start from the next passage to detect the interval between sentences during playback, so that one or several sentences will be repeated in the auto compare mode.
During auto compare (during normal playback or compare), you can press ***SEARCH*** ⏮ *or* ***SEARCH*** ⏭ to change the number of sentence breaks (1 by default or 9 at most).
Press **ALBUM ▲/▼** to change the repeat times.
During auto compare, recording, repeated playback or recorded sound playback, you can press **PLAY/PAUSE ⏯** to skip to the next passage to start the normal playback of the next passage and break sentences automatically.
You can press **COMPARE** to repeat the contents of the current passage (at the times already set).
Or press **LOOP** or **FOLLOW** to repeat the contents of the current passage in the loop or follow mode, and activate auto loop or compare functions.
During auto compare mode, you can press **LOOP** or **FOLLOW** to switch to the auto loop or auto follow mode.

CHANGING PLAYBACK SPEED

In any language learning mode, you can press **SPEED+/-** to change the playback speed.
Five speeds are available: 0.5x, 0.75x, normal, 1.25x and 1.5x.

Note : *- This feature is not available in the music playback mode.*

LANGUAGE LEARNING

A-B COMPARE

Please refer to the **A-B** repeat operation procedure for the CD or Tape Loop mode.

AUTO COMPARE

- In the manual compare mode, press **MODE** to start Auto compare.

AUTO flashes on the display.
The set will quit the ongoing manual compare and start from the next passage to detect the interval between sentences during playback, so that one or several sentences will be repeated in the auto compare mode.
During auto compare (during normal playback or compare), you can press ***SEARCH*** ⏮ *or* ***SEARCH*** ⏭ to change the number of sentence breaks (1 by default or 9 at most).
Press **ALBUM ▲/▼** to change the repeat times.
During auto compare, recording, repeated playback or recorded sound playback, you can press **PLAY/PAUSE ⏯** to skip to the next passage to start the normal playback of the next passage and break sentences automatically.
You can press **COMPARE** to repeat the contents of the current passage (at the times already set).
Or press **LOOP** or **FOLLOW** to repeat the contents of the current passage in the loop or follow mode, and activate auto loop or compare functions.
During auto compare mode, you can press **LOOP** or **FOLLOW** to switch to the auto loop or auto follow mode.

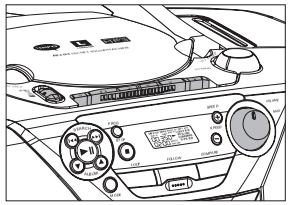
CHANGING PLAYBACK SPEED

In any language learning mode, you can press **SPEED+/-** to change the playback speed.
Five speeds are available: 0.5x, 0.75x, normal, 1.25x and 1.5x.

Note : *- This feature is not available in the music playback mode.*

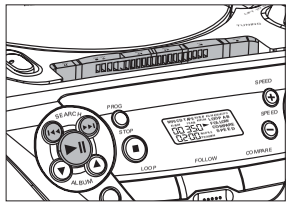
CASSETTE RECORDER

RECORDING FROM THE RADIO



1. Set the source selector to **FM** or **MW**.
2. Tune to the desired radio station using the TUNING knob.
3. Press **STOP•OPEN ■ ▲** to open the cassette holder.
4. Insert a blank tape.
5. Press **RECORD ●** to start recording.
6. For brief interruptions, press **PAUSE II**. To resume recording, press **PAUSE II** again.
7. To stop recording, press **STOP•OPEN ■ ▲**

SYNCHRO START CD RECORDING



1. Set the source selector to **CD•MP3**.
2. Insert a CD and if desired, programme track numbers.
3. Press **STOP•OPEN ■ ▲** to open the cassette holder.
4. Insert a blank cassette.
5. Press **RECORD ●** to start recording.
   Playback starts automatically from the beginning of the programme. It is not necessary to start the CD player separately.
6. For brief interruptions, press **PAUSE II**. To resume recording, press **PAUSE II** again.
7. To stop recording, press **STOP•OPEN ■ ▲**

To select and record a particular passage within a track

1. Press and hold **SEARCH** ⏮ or ⏭ to select a passage.
2. Press **PLAY/PAUSE ▶II**.
   Recording will start from this exact point when you press **RECORD ●** and PLAY ◀

INTERRUPT RECORDING SYNCHRONOUSLY

1. During recording from the CD/MP3 source, if playback is paused or stopped, tape recording will also paused automatically.
2. When you press **PLAY/PAUSE ▶II** to resume playback, tape recording will also be resumed syncrhonously.

TROUBLESHOOTING

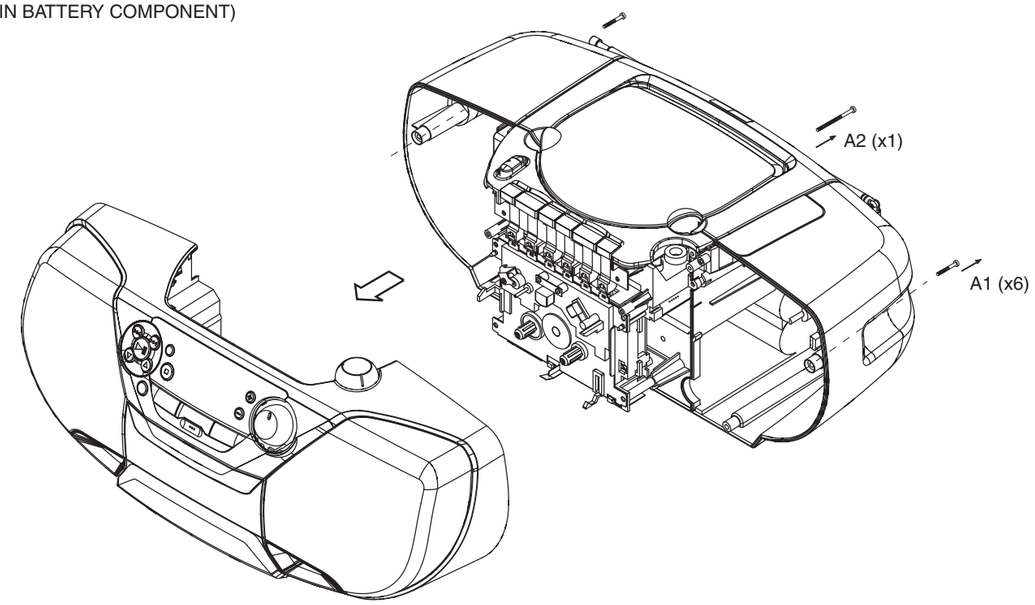
If a fault occurs, first check the points listed below before taking the set for repair. If you are unable to remedy a problem by following these hints, consult your dealer or service centre.

WARNING: ***Do not open the set as there is a risk of electric shock. Under no circumstances should you try to repair the set yourself, as this will invalidate the guarantee.***

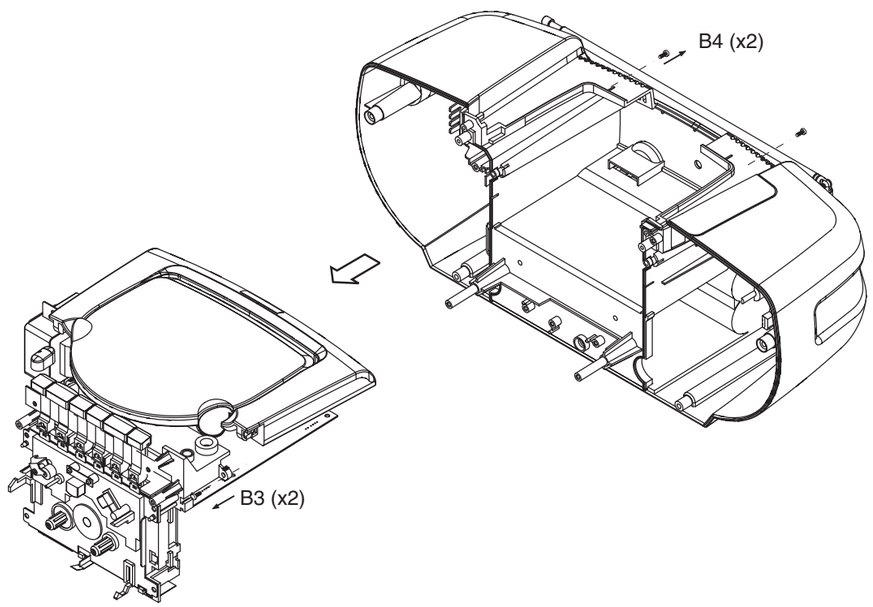
Problem	Solution
"NO DISC" is displayed	– Insert a disc and check if the disc is upside down. – Wait until the moisture condensation at the lens has cleared. – Replace or clean the disc, see "Maintenance" – Use a readable disc or an MP3-CD recorded in the correct format.
Radio reception is poor	– If the signal is too weak, adjust the antenna for better reception. – Increase the distance between the Receiver and your TV or VCR.
Recording or playback cannot be made	– Clean deck parts, see "Maintenance". – Use only NORMAL (IEC I) tape. – Apply a piece of adhesive tape over the missing tab space.
The system does not react when the buttons are pressed /The set does not work / No display on LCD.	– Slide the source selector to TAPE/OFF. Remove the AC power plug and reconnect it 30 seconds later and then switch on the system again.
Sound cannot be heard or is of poor quality	– Adjust the volume. – Make sure the MP3-CD was recorded within 32-320 kbps (128kbps preferably) with sampling frequencies at 8 - 48 kHz (44.1kHz preferably).
Loop, Follow or Compare is not available	– Check if the language learning mode is activated. Press and hold MODE until LANG ON appears on the display. Then the language learning is activated.
The set does not break sentences automatically	– The CD disc may be scraped. Please replace the disc with a new one. – If in the tape mode, the tape quality may be poor. Please use a good tape.
The playing speed cannot be changed	– The playing speed can be changed only in the language learning mode. – Please activate Loop, Follow or Compare function in the language learning mode first.

DISASSEMBLY DIAGRAM

A. REMOVE FRONT CABINET ASSEMBLY
- REMOVE SCREWS A1 (3X20) 6 PCS
- REMOVE SCREW A3 (3X54) 1PS
  (IN BATTERY COMPONENT)

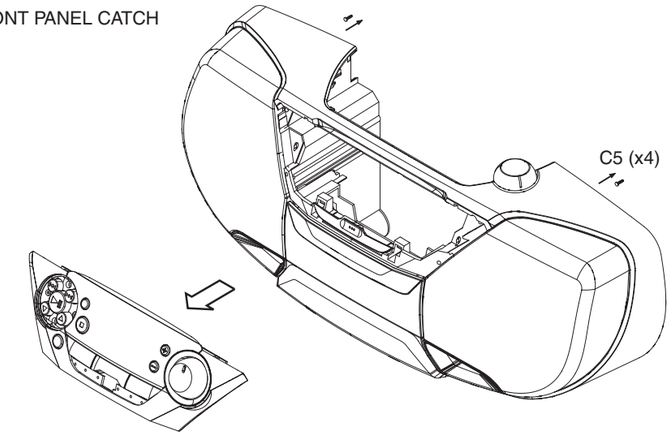


B. REMOVE CD TRAY ASSEMBLY
- REMOVE SCREWS B3 (3X8) 2PCS
- REMOVE SCREWS B4 (3X8) 2PCS

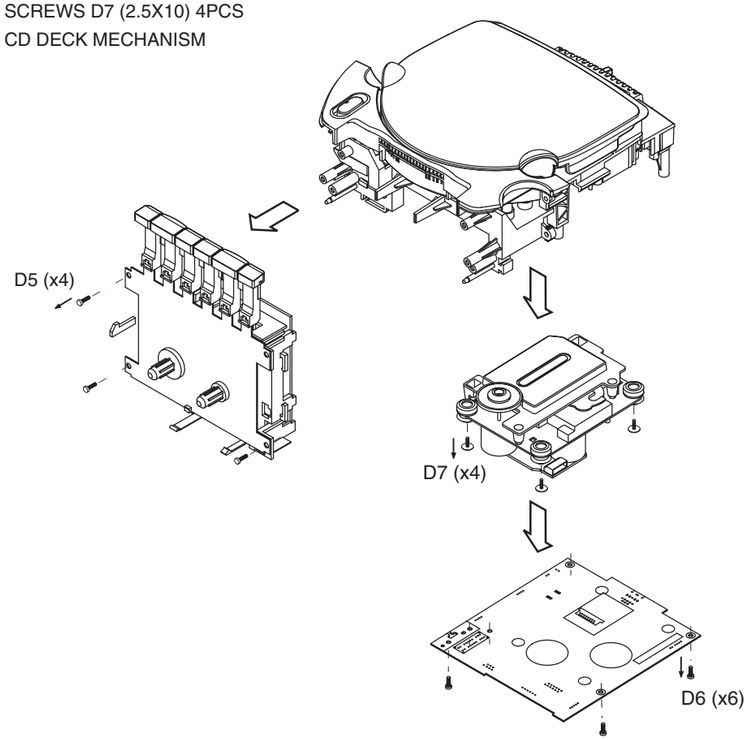


4 - 1

C. REMOVE FRONT PANEL ASSY
- REMOVE SCREWS C5 (2.5X8) 4 PCS
  (BESIDE SPEAKER)
- RELEASE FRONT PANEL CATCH

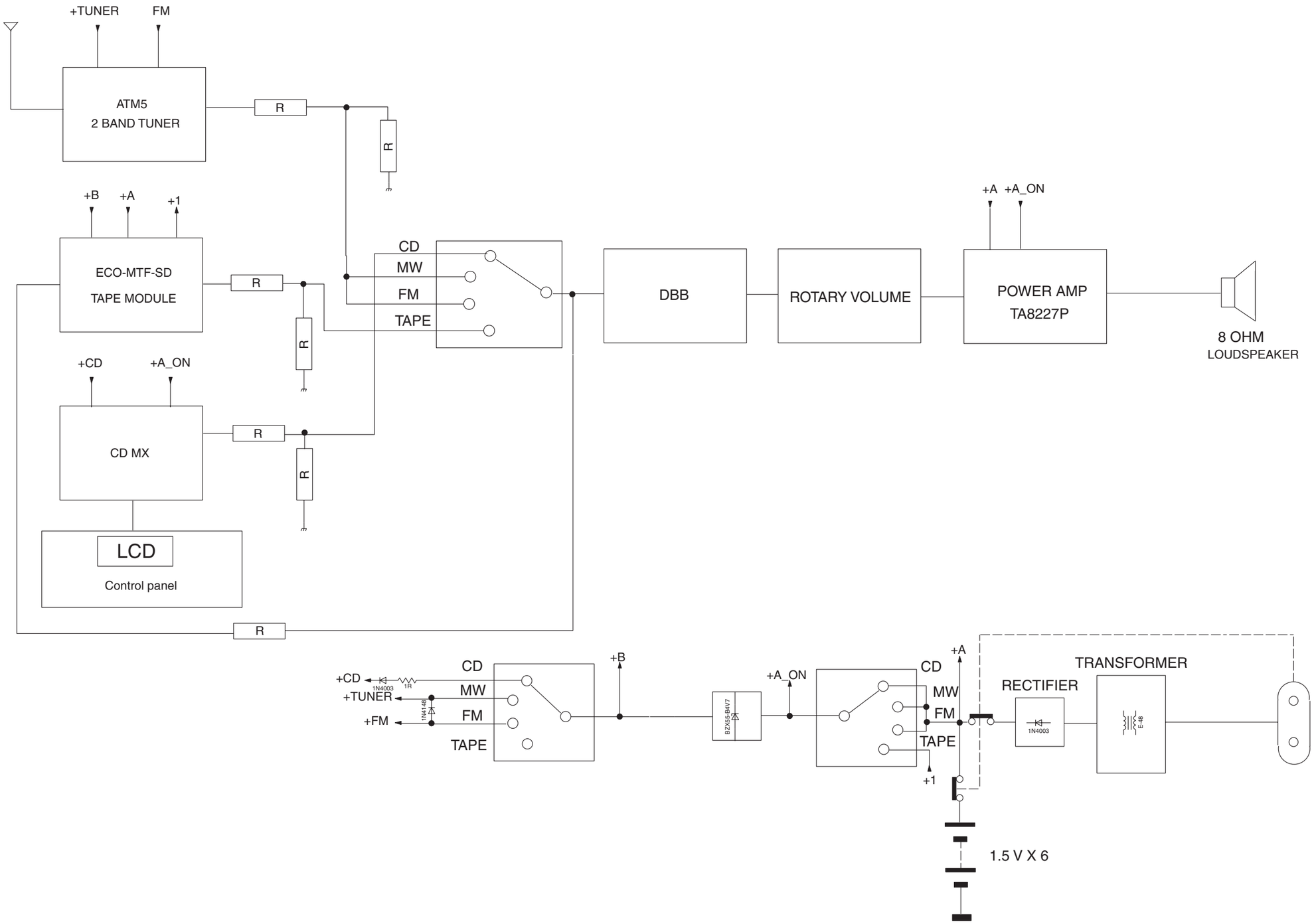


D. REMOVE CD DECK MECHANISM
- REMOVE SCREWS D5 (3X10) 4 PCS
- REMOVE CASSETTE DECK
- REMOVE SCREWS D6 (3X12) 6 PCS
- REVOVE COMBI BOARD
- REMOVE SCREWS D7 (2.5X10) 4PCS
- REMOVE CD DECK MECHANISM



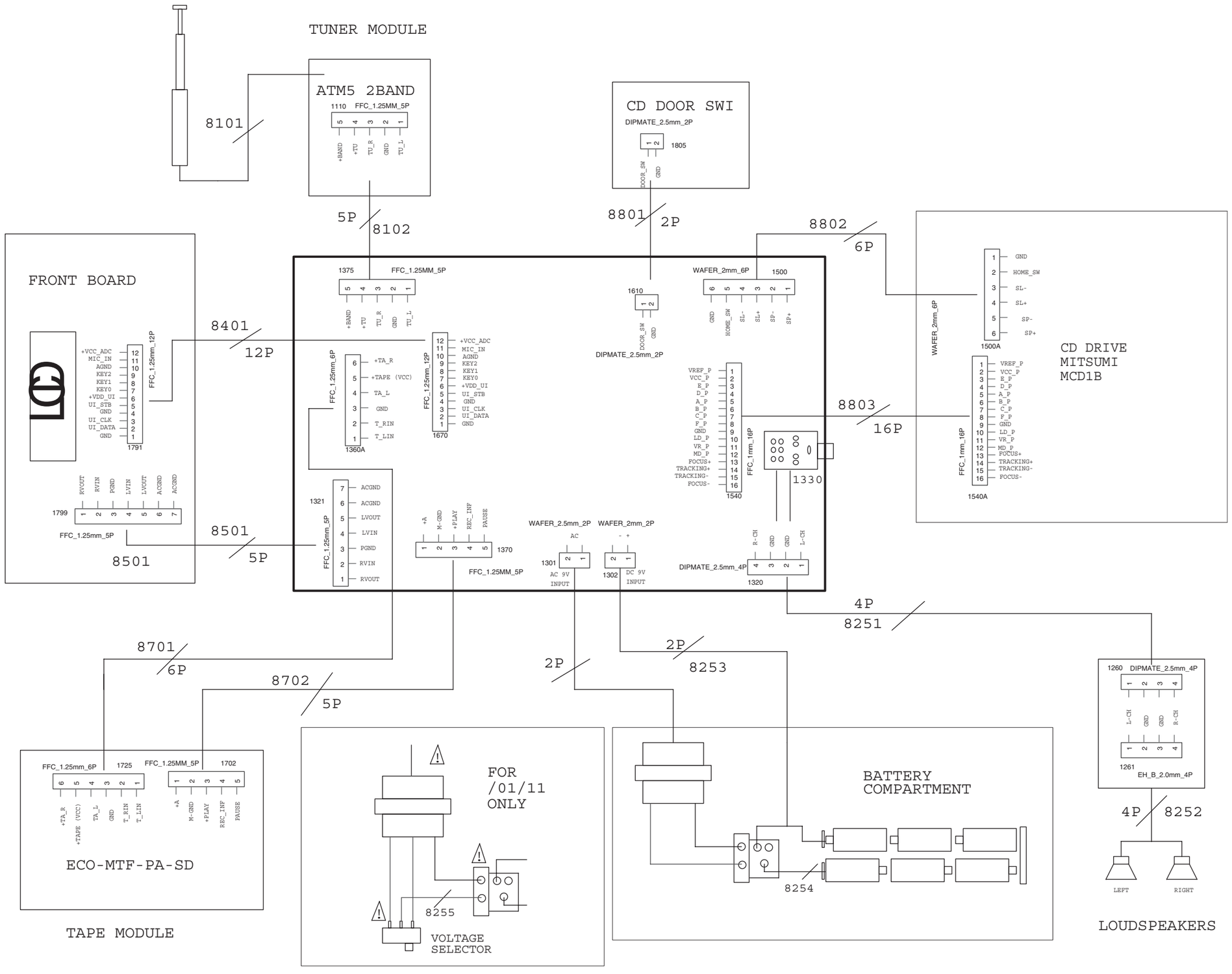
5 - 1

BLOCK DIAGRAM



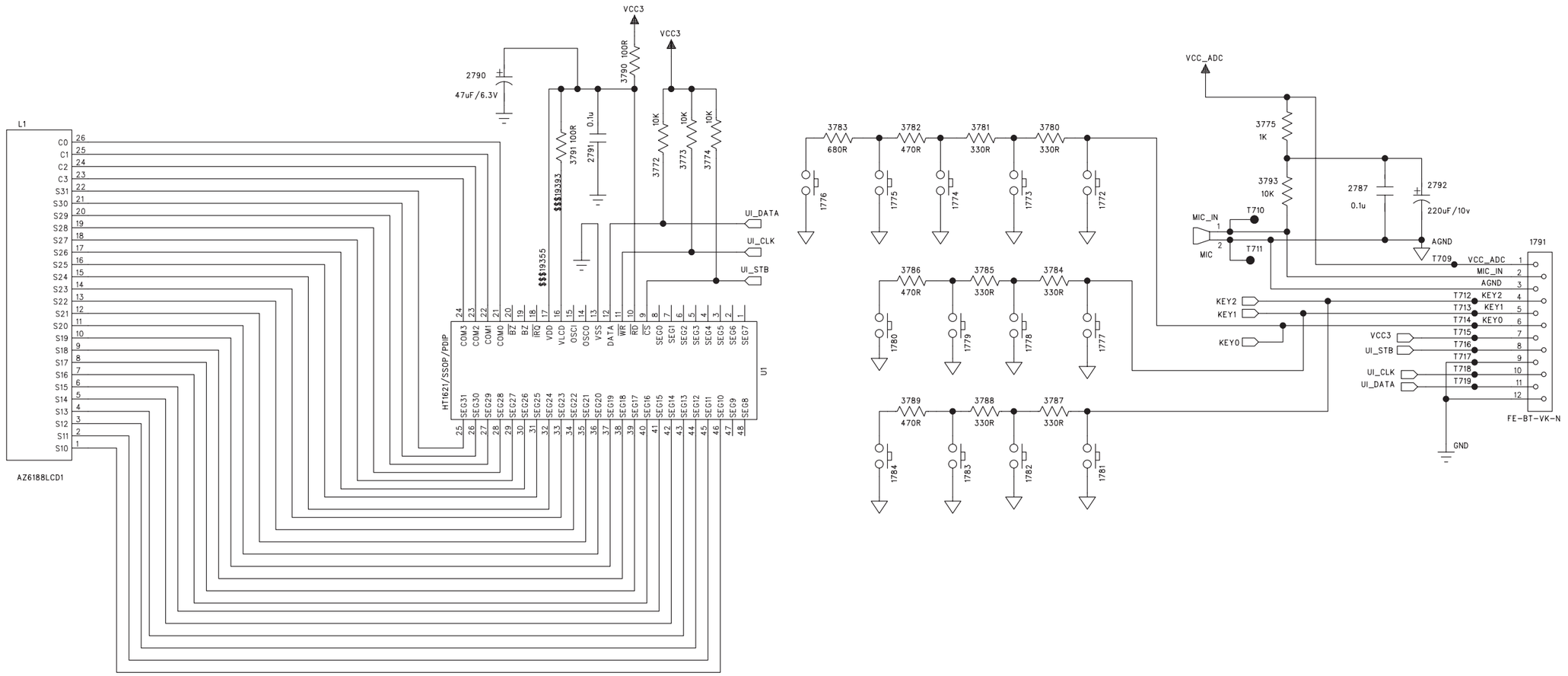
5 - 2

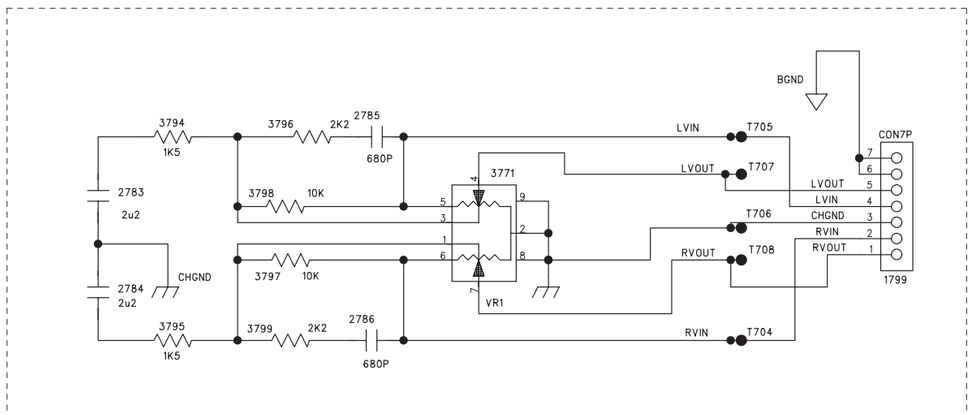
WIRING DIAGRAM



6 - 1

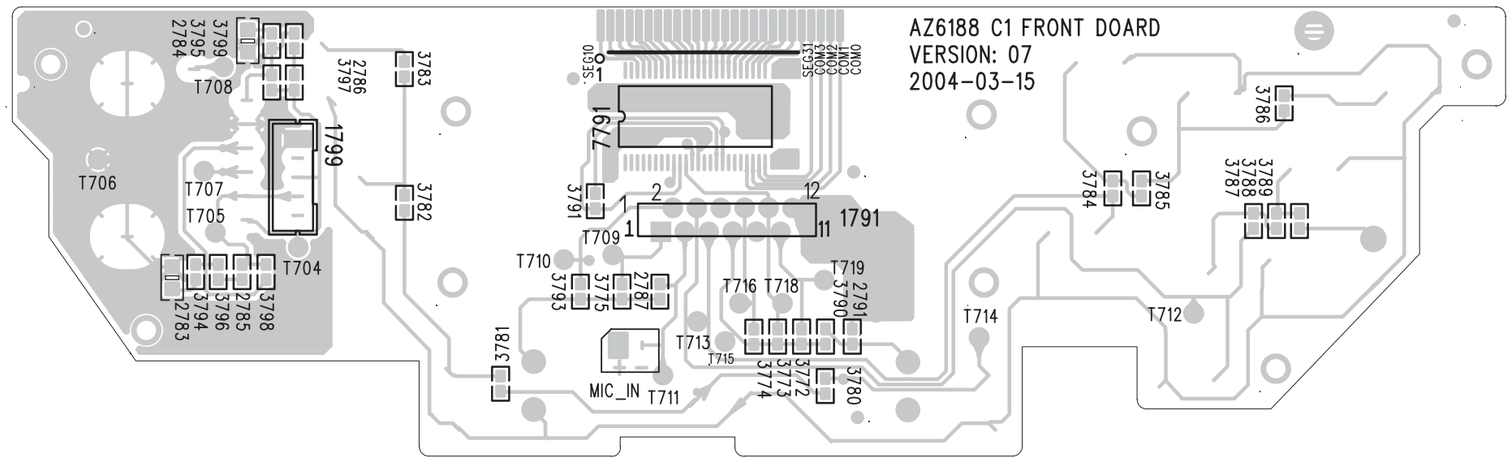
FRONT BOARD - CIRCUIT DIAGRAM

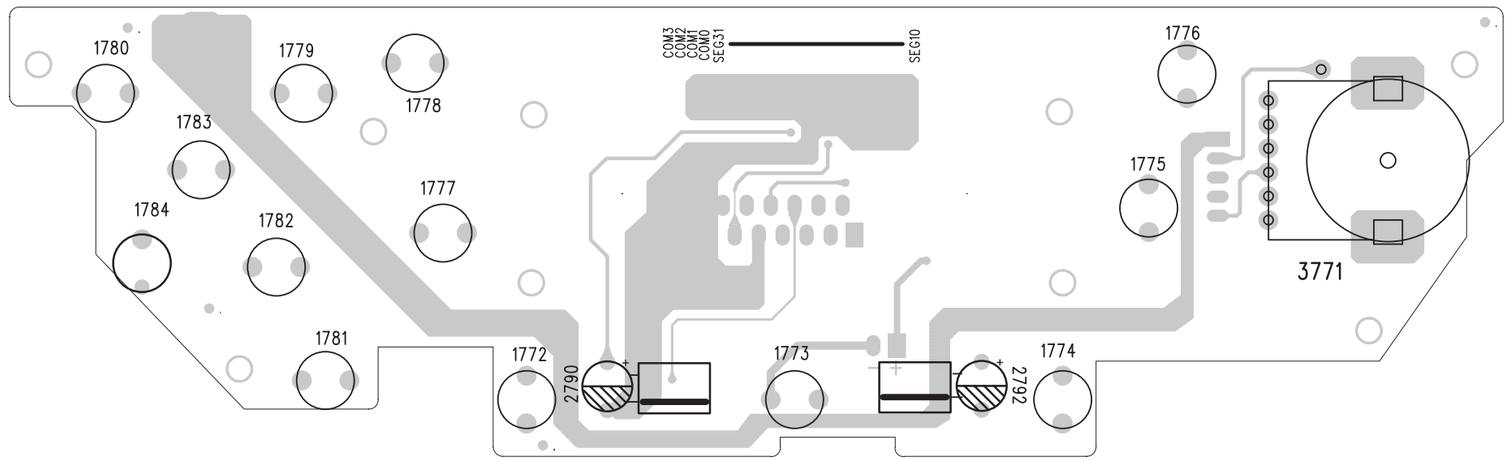




6 - 2

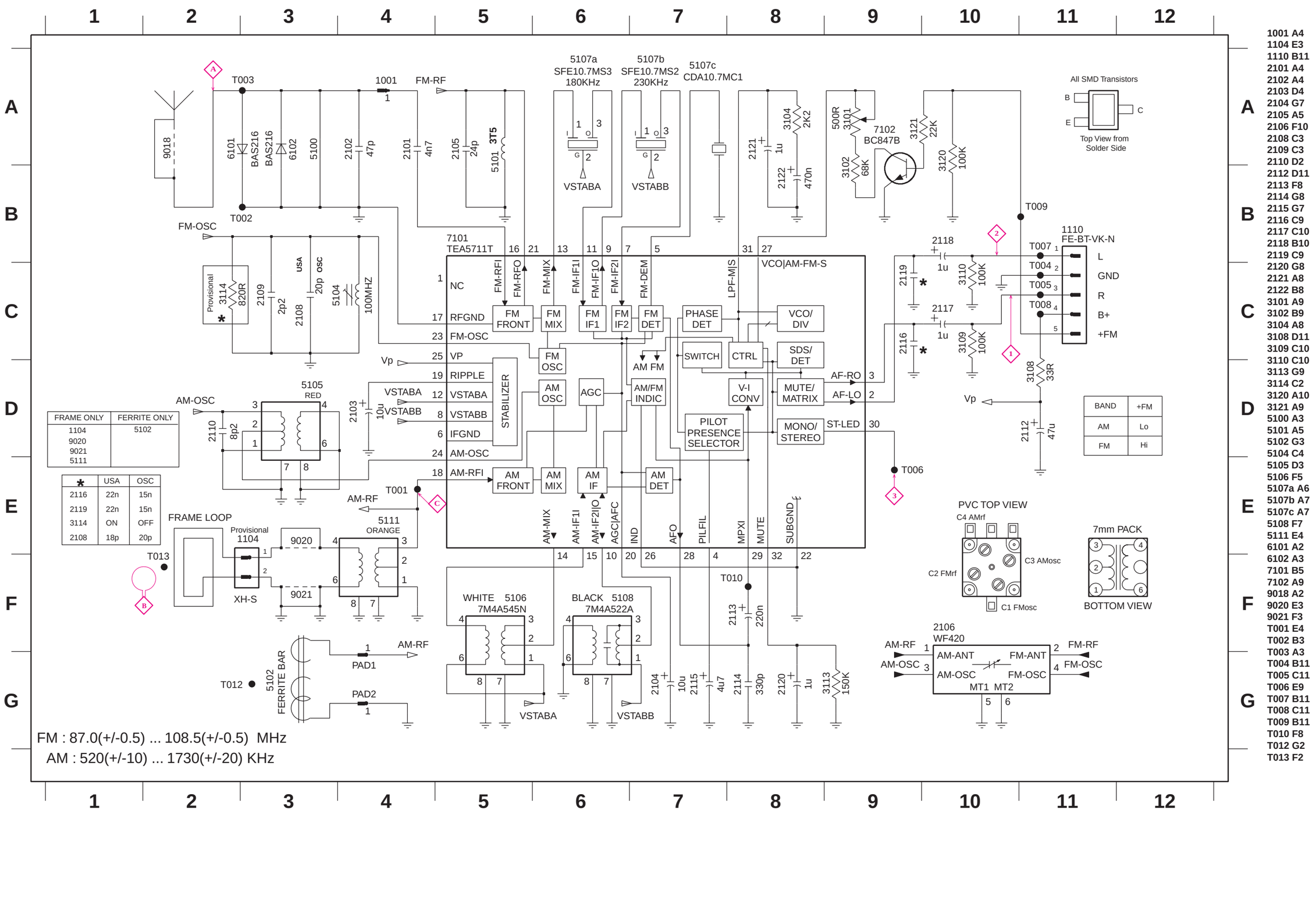
FRONT BOARD - LAYOUT DIAGRAM





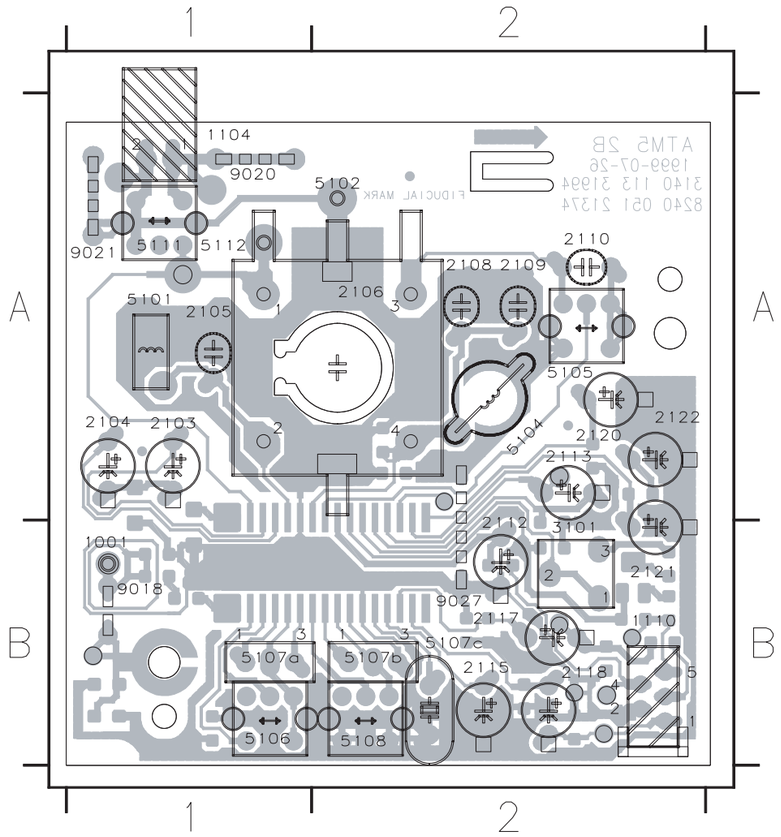
7 - 1

TUNER BOARD ATMS - CIRCUIT DIAGRAM

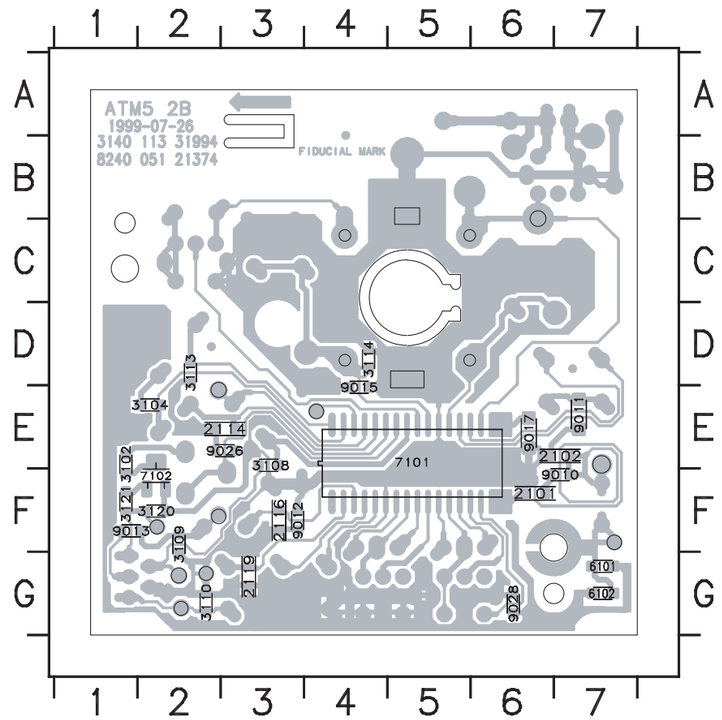


1001 A4
1104 E3
1110 B11
2101 A4
2102 A4
2103 D4
2104 G7
2105 A5
2106 F10
2108 C3
2109 C3
2110 D2
2112 D11
2113 F8
2114 G8
2115 G7
2116 C9
2117 C10
2118 B10
2119 C9
2120 G8
2121 A8
2122 B8
3101 A9
3102 B9
3104 A8
3108 D11
3109 C10
3110 C10
3113 G9
3114 C2
3120 A10
3121 A9
5100 A3
5101 A5
5102 G3
5104 C4
5105 D3
5106 F5
5107a A6
5107b A7
5107c A7
5108 F7
5111 E4
6101 A2
6102 A3
7101 B5
7102 A9
9018 A2
9020 E3
9021 F3
T001 E4
T002 B3
T003 A3
T004 B11
T005 C11
T006 E9
T007 B11
T008 C11
T009 B11
T010 F8
T012 G2
T013 F2

TUNER BOARD ATM5 - LAYOUT DIAGRAM



1001	E1	2122	D6
1104	A2	3101	E6
1110	F6	5101	C1
2103	D2	5102	B3
2104	D1	5104	D5
2105	C2	5105	C6
2106	C3	5106	G2
2108	B5	5107a	F3
2109	B5	5107b	F4
2110	B6	5107c	F4
2112	E5	5108	G3
2113	D6	5111	B1
2115	F5	5112	B2
2117	F5	9018	F1
2118	G6	9020	A2
2120	C6	9021	A1
2121	E6	9027	D5



2101	F6	3102	E1
2102	E7	3104	E2
2114	E3	3108	E3
2116	F3	3109	F2
2119	G3	3110	G2
		3113	D2
		3114	D4
		3120	F2
		3121	F1
		6101	G7
		6102	G7
		7101	E5
		7102	F2
		9010	F7
		9011	E7
		9012	F3
		9013	F1
		9015	E4
		9017	E6
		9026	E3
		9028	G6

TUNER ADJUSTMENT TABLE

Waverange	Input Frequency	Input	Set tuned to	Adjust	Measure on	Scope / Counter
OSCILLATOR						
FM 87,5 - 108 MHz	87,35 MHz 108,25 MHz	A Δf = ±500kHz V_{RF} = 100µV	lower band end upper band end	5104 2106 C1	1 or 2	f_o
MW 525 - 1607 kHz (530 - 1710 kHz) [1]	512 kHz (520 kHz) 1635 kHz (1730 kHz)	C Δf = ±30kHz V_{RF} = 100µV	lower band end upper band end	5105 2106 C3	1 or 2	f_o
FM - RF						
FM 87,5 - 108 MHz	87,5 MHz 108 MHz	A Δf = ±500kHz V_{RF} = 10µV	87,5 MHz 108 MHz	5101 2106 C2	1 or 2	max.
VCO						
FM	98 MHz	A continuous wave V_{RF} = 1 mV	98 MHz	3101	3 7101 pin 30 2k2 4k7 V_{cc}	152 ±1 kHz
AM - IF						
AM	468 kHz connect pin 24 of IC 7101 (AM Osc) with short wire to ground	C Δf = ±15kHz V_{RF} = 10mV	IC 7101 10 100nF 220R IC 7101 14 100nF 220R see remark [2]	5106 5108	1 or 2	max. f_o symmetric
AM -RF						
MW	560 kHz 1500 kHz	B Δf = ±30kHz V_{RF} as low as possible	560 kHz 1500 kHz	5111 2106 C4	1 or 2	max. symmetric

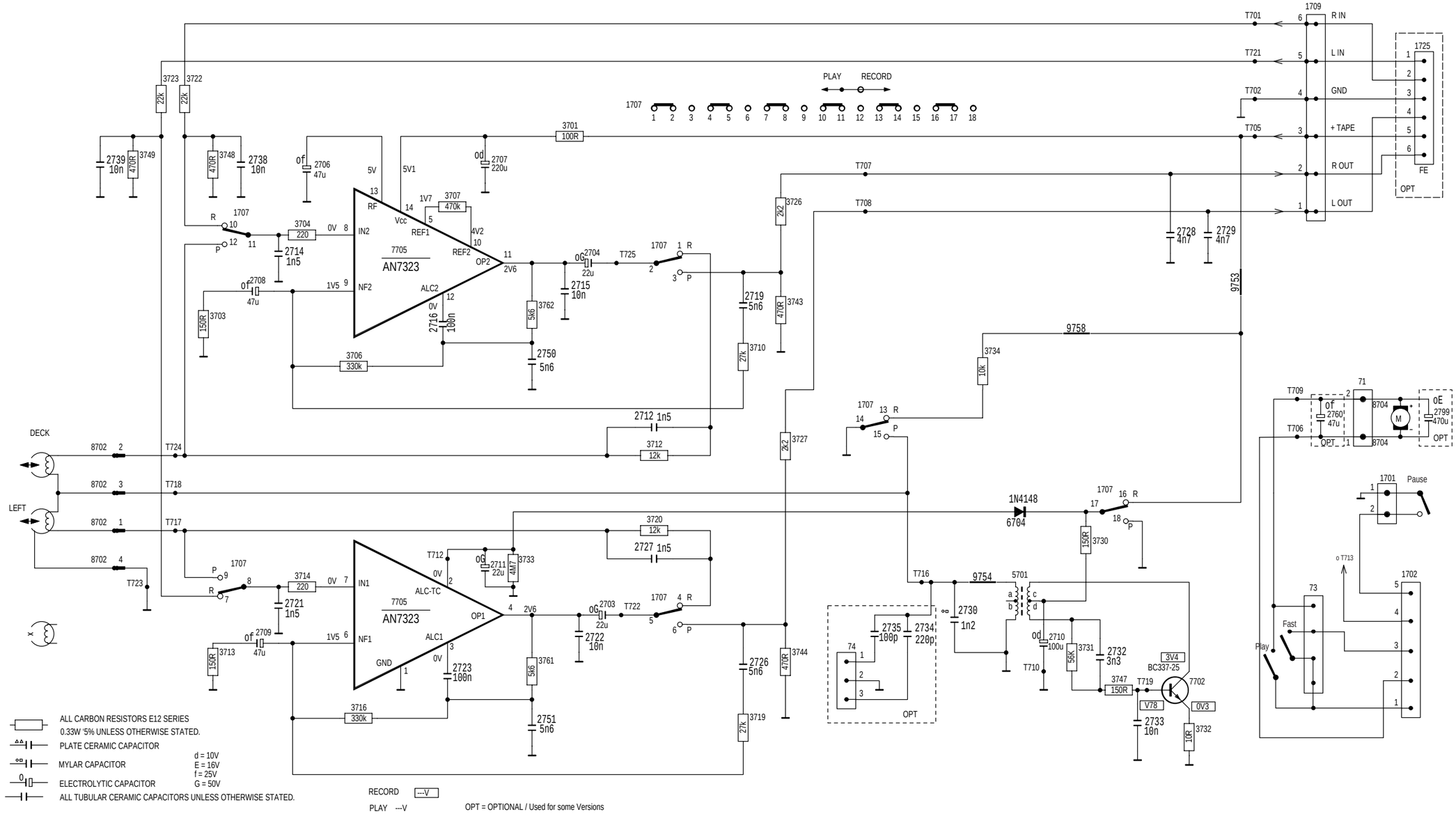
repeat

[1] for USA /17

[2] RC-network serves for damping the IF-filter while adjusting the other one.

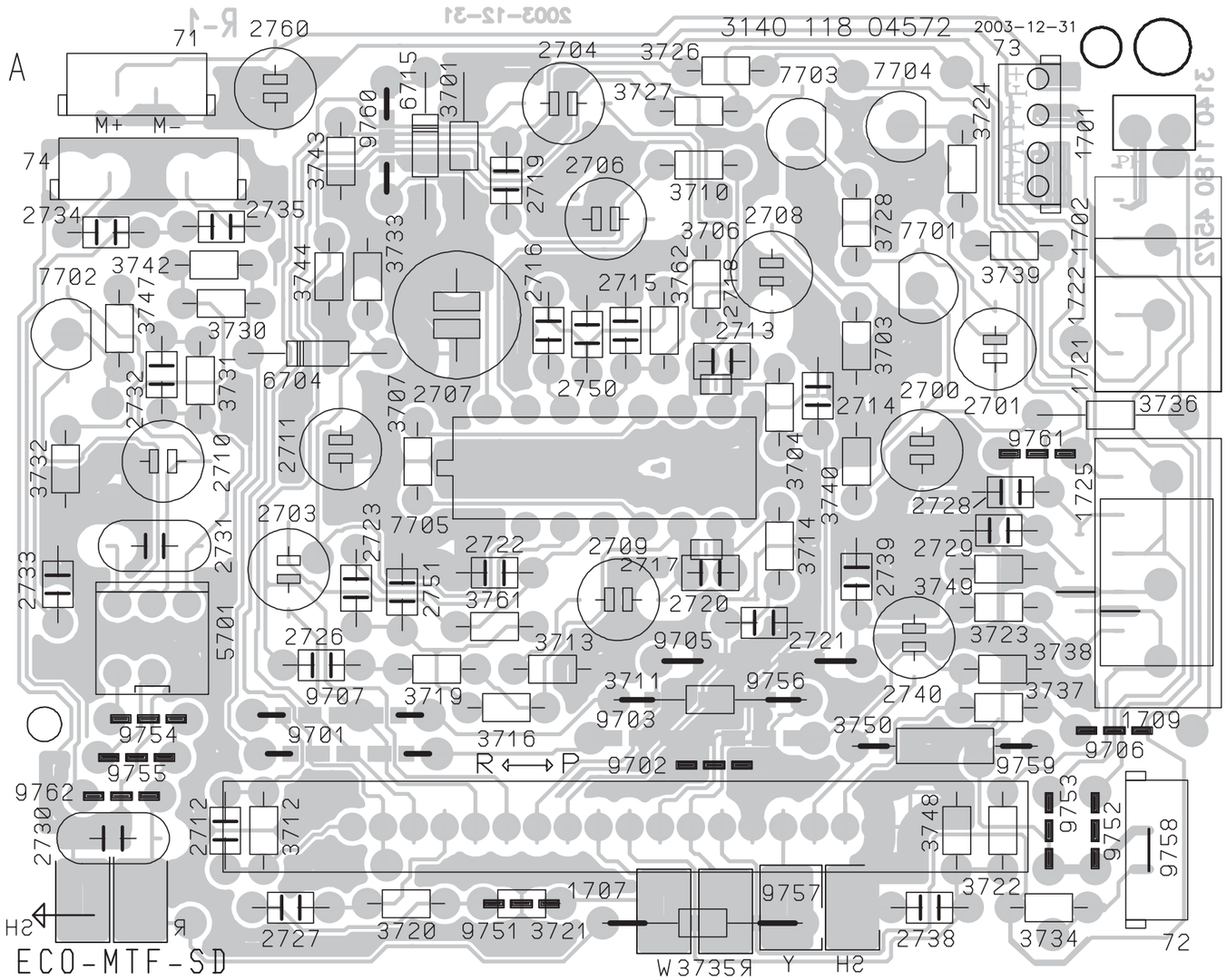
8 - 1

RECORDER BOARD- CIRCUIT DIAGRAM



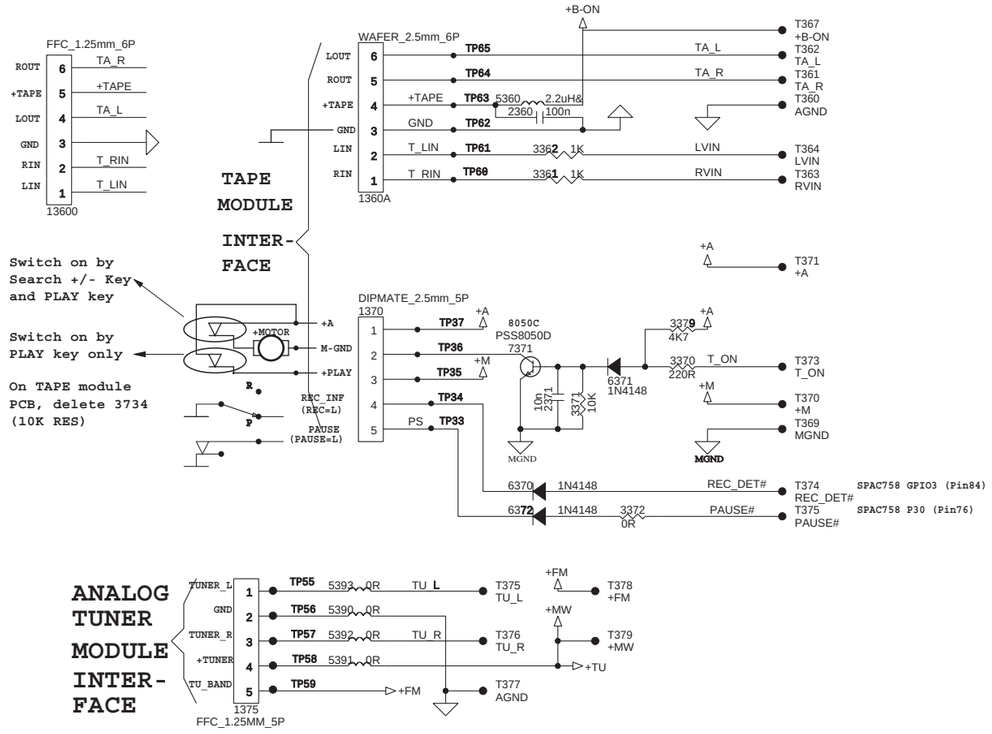
8 - 2

RECORDER BOARD - LAYOUT DIAGRAM



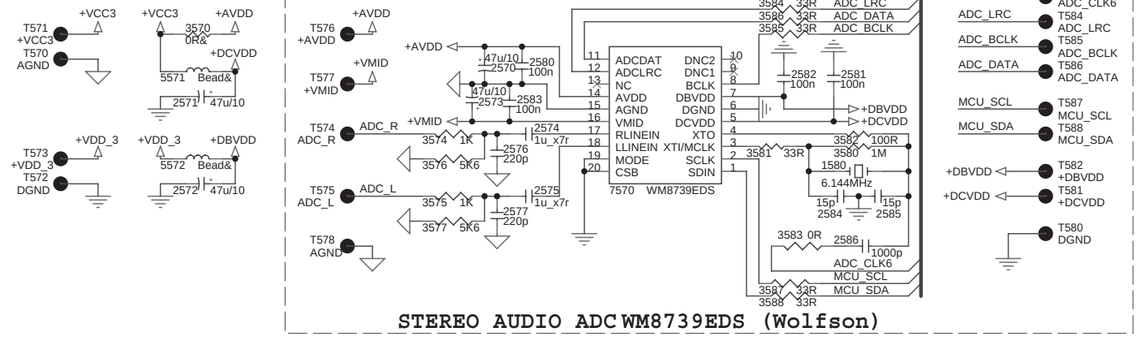
9 - 1

COMBI BOARD - CIRCUIT DIAGRAM
PART 1



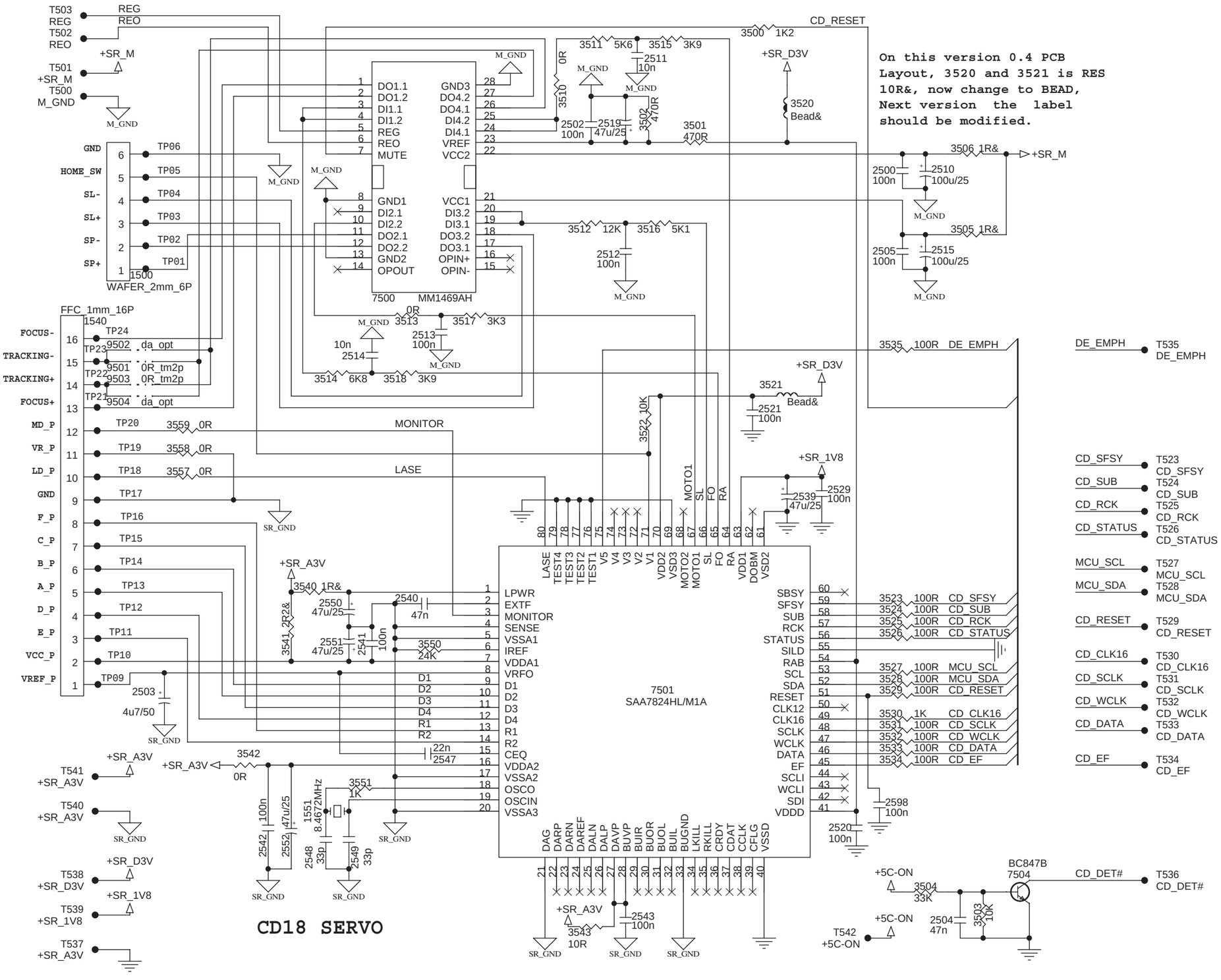
Ver0.5: 1. 1370 change to 5Pins WAREF for +A, M-GND,+PALY and REC_DET#, PAUSE#

2. TAPE module should be chagned to support Power on by PLAY Key, and PAUSE Key detect.



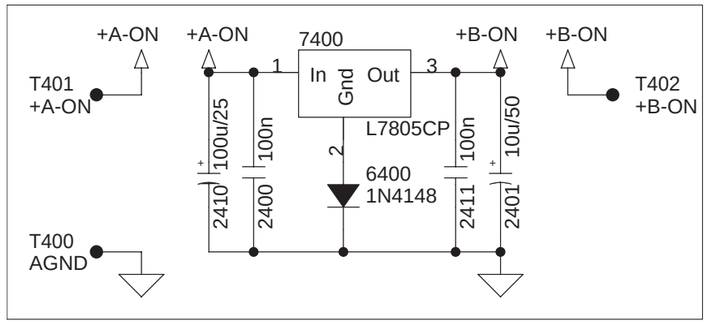
9 - 2

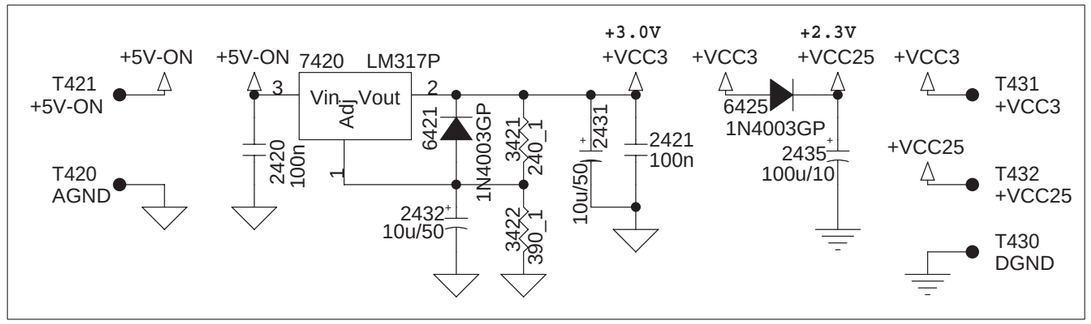
COMBI BOARD - CIRCUIT DIAGRAM
PART 2

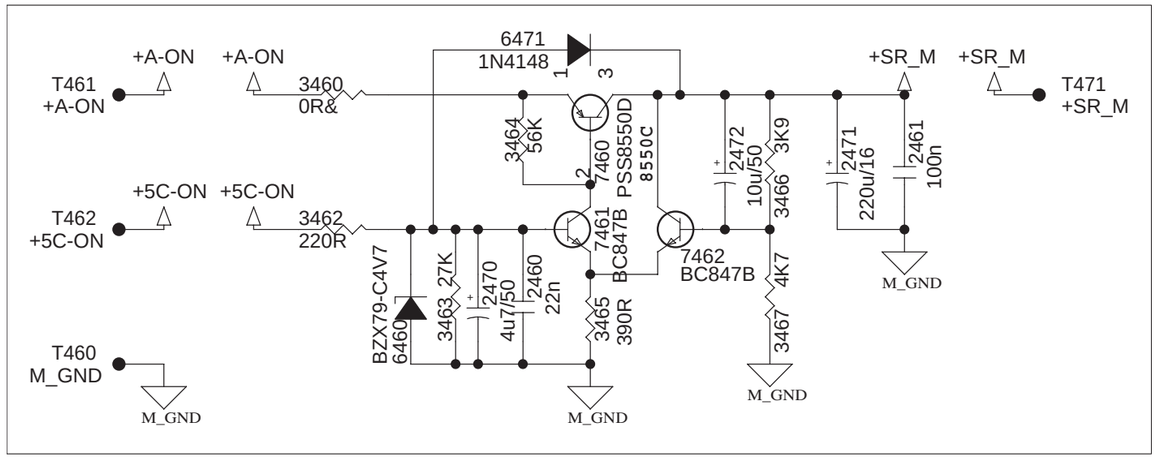


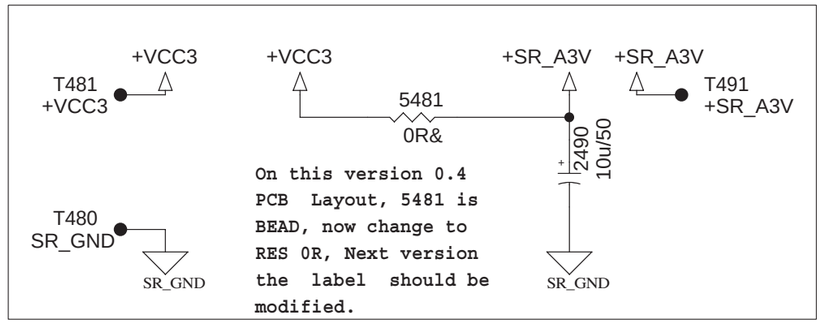
9 - 3

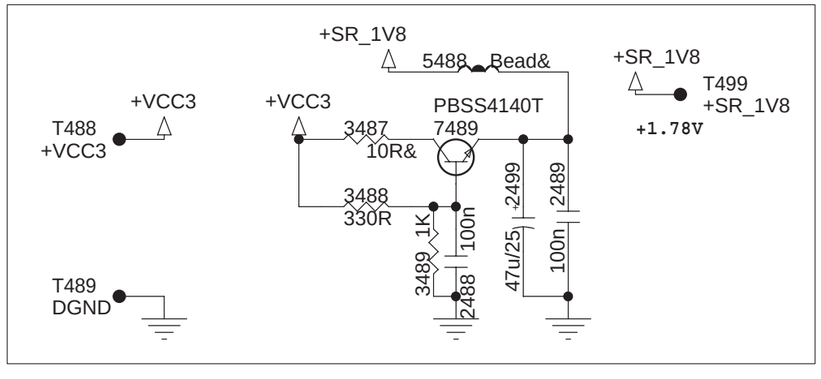
COMBI BOARD - CIRCUIT DIAGRAM
PART 3

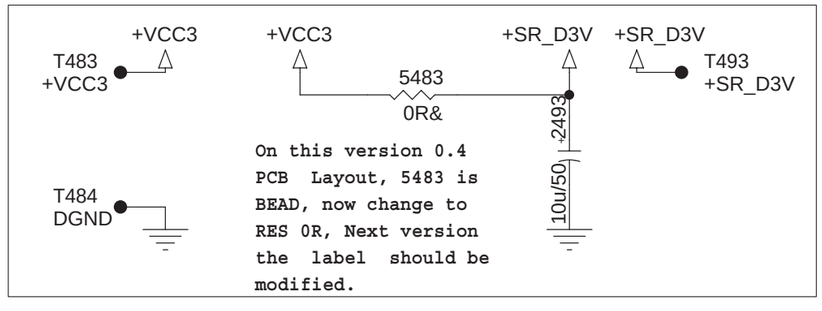






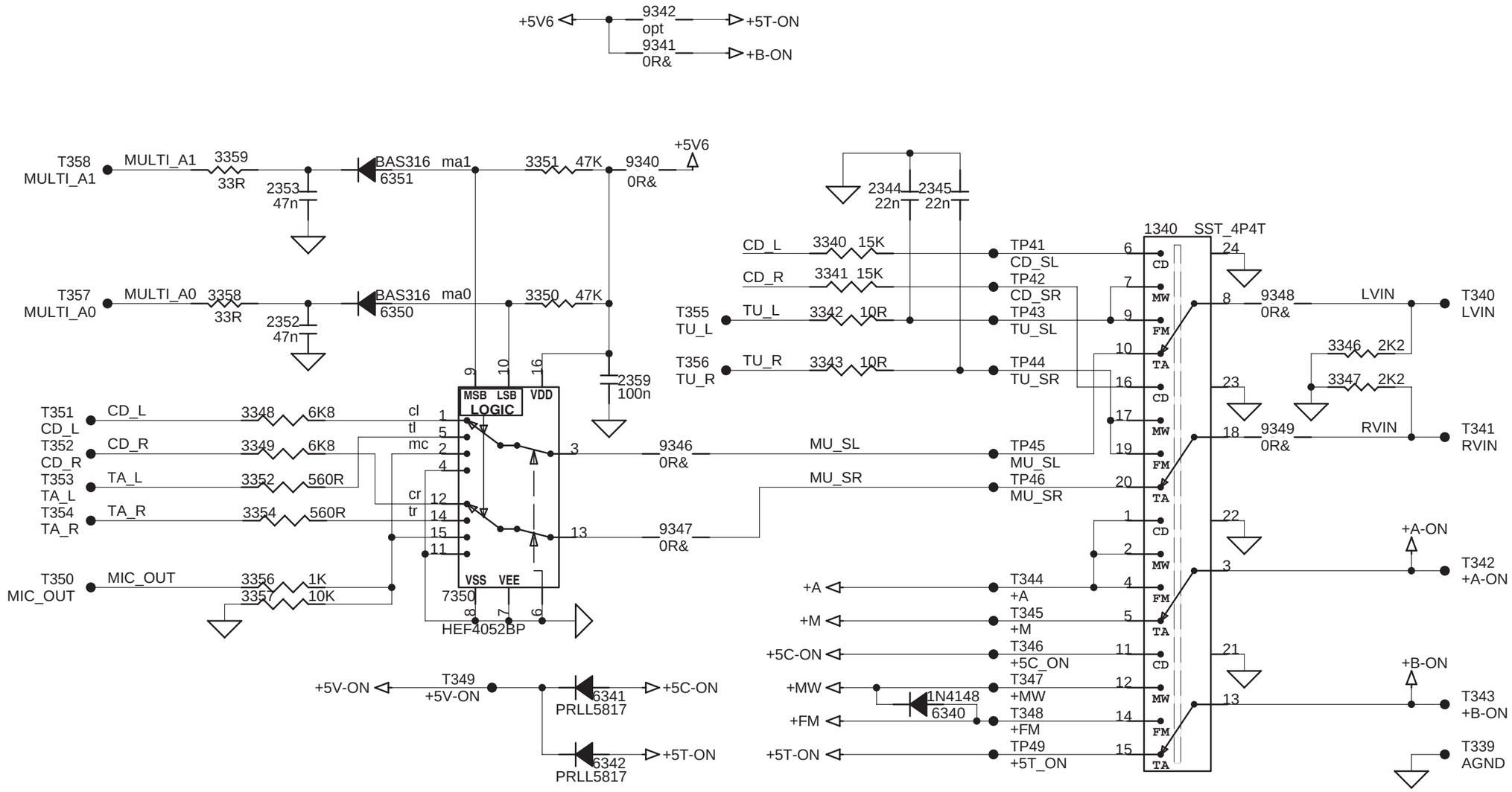






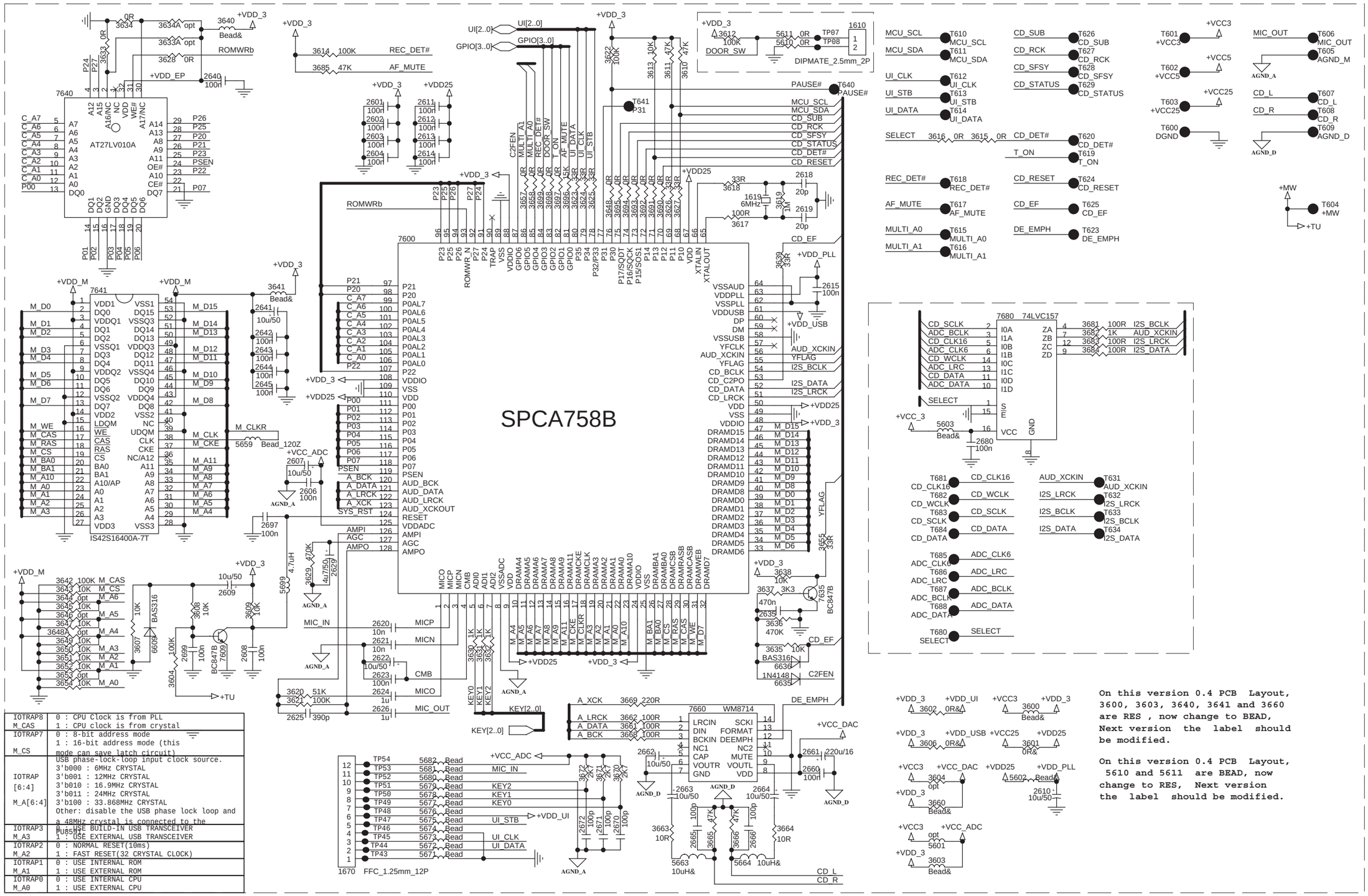
9 - 4

COMBI BOARD - CIRCUIT DIAGRAM
PART 4



9 - 5

COMBI BOARD - CIRCUIT DIAGRAM
PART 5



IOTRAP8 M_CAS	0 : CPU Clock is from PLL 1 : CPU clock is from crystal
IOTRAP7 M_CS	0 : 8-bit address mode 1 : 16-bit address mode (this mode can save latch circuit)
IOTRAP [6:4] M_A[6:4]	USB phase-lock-loop input clock source. 3'b000 : 6MHz CRYSTAL 3'b001 : 12MHz CRYSTAL 3'b010 : 16.9MHz CRYSTAL 3'b011 : 24MHz CRYSTAL 3'b100 : 33.868MHz CRYSTAL Other: disable the USB phase lock loop and a 48MHz crystal is connected to the
IOTRAP3 M_A3	0 : USE BUILD-IN USB TRANSCEIVER 1 : USE EXTERNAL USB TRANSCEIVER
IOTRAP2 M_A2	0 : NORMAL RESET(10ms) 1 : FAST RESET(32 CRYSTAL CLOCK)
IOTRAP1 M_A1	0 : USE INTERNAL ROM 1 : USE EXTERNAL ROM
IOTRAP0 M_A0	0 : USE INTERNAL CPU 1 : USE EXTERNAL CPU

On this version 0.4 PCB Layout, 3600, 3603, 3640, 3641 and 3660 are RES , now change to BEAD, Next version the label should be modified.

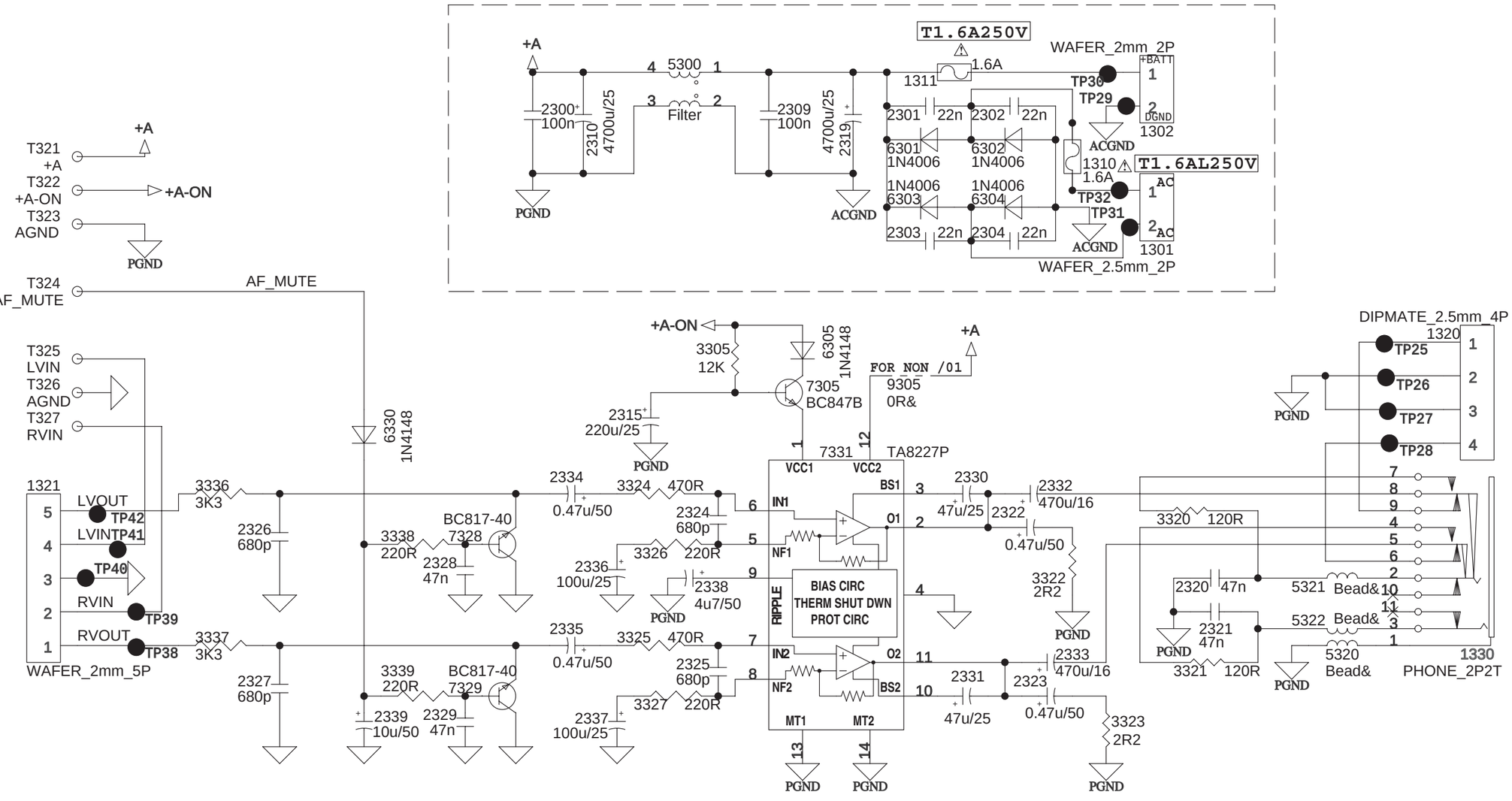
On this version 0.4 PCB Layout, 5610 and 5611 are BEAD, now change to RES, Next version the label should be modified.

Ver0.5: 1. Use SPCA758 P30 (Pin76) for TAPE PAUSE Key.

2. Add Pull-up RES 100K for TAPE PAUSE Key.

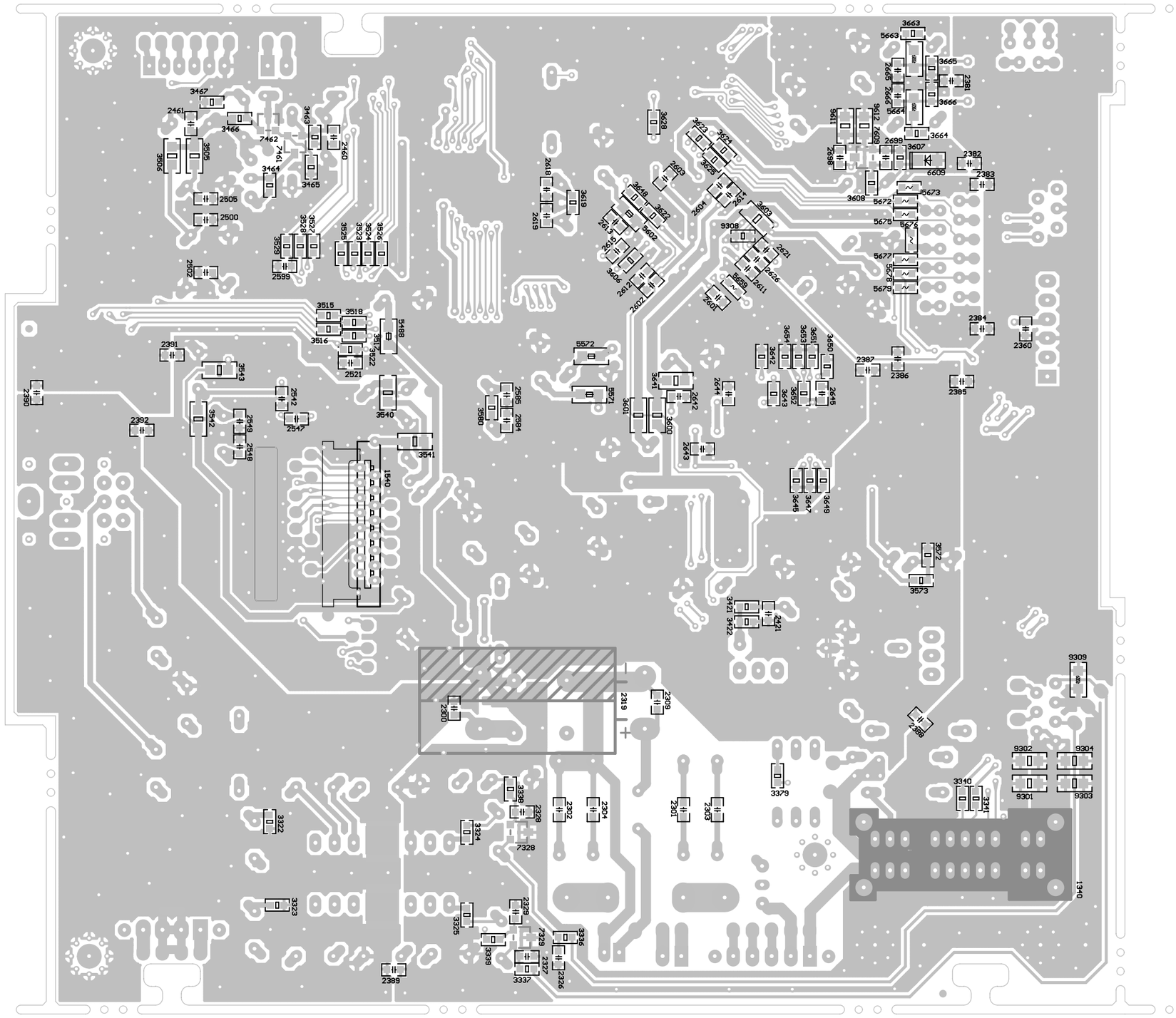
9 - 6

COMBI BOARD - CIRCUIT DIAGRAM
PART 6



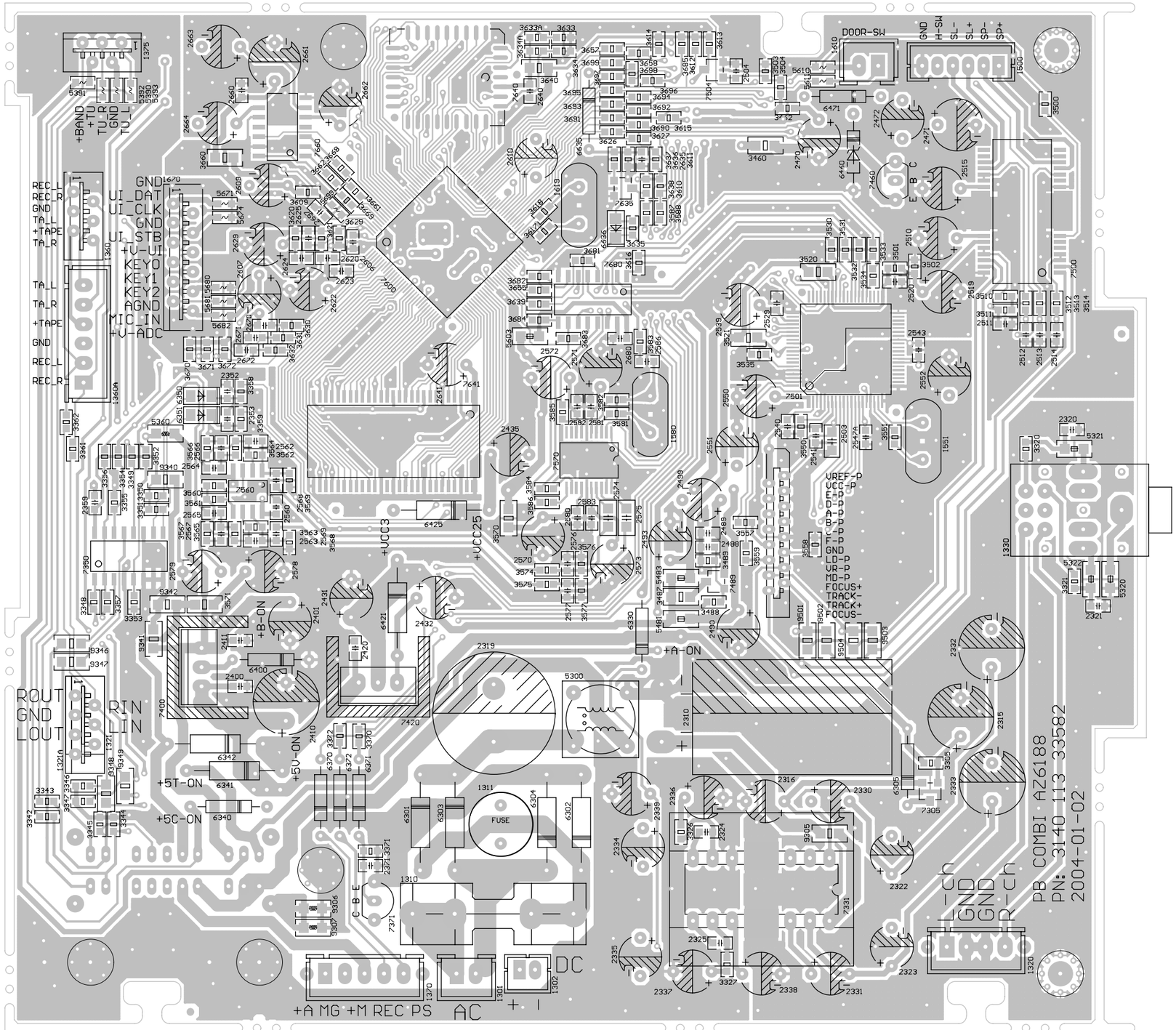
9 - 7

COMBI BOARD (Copper Side) - LAYOUT DIAGRAM



9 - 8

COMBI BOARD (Component Side) - LAYOUT DIAGRAM

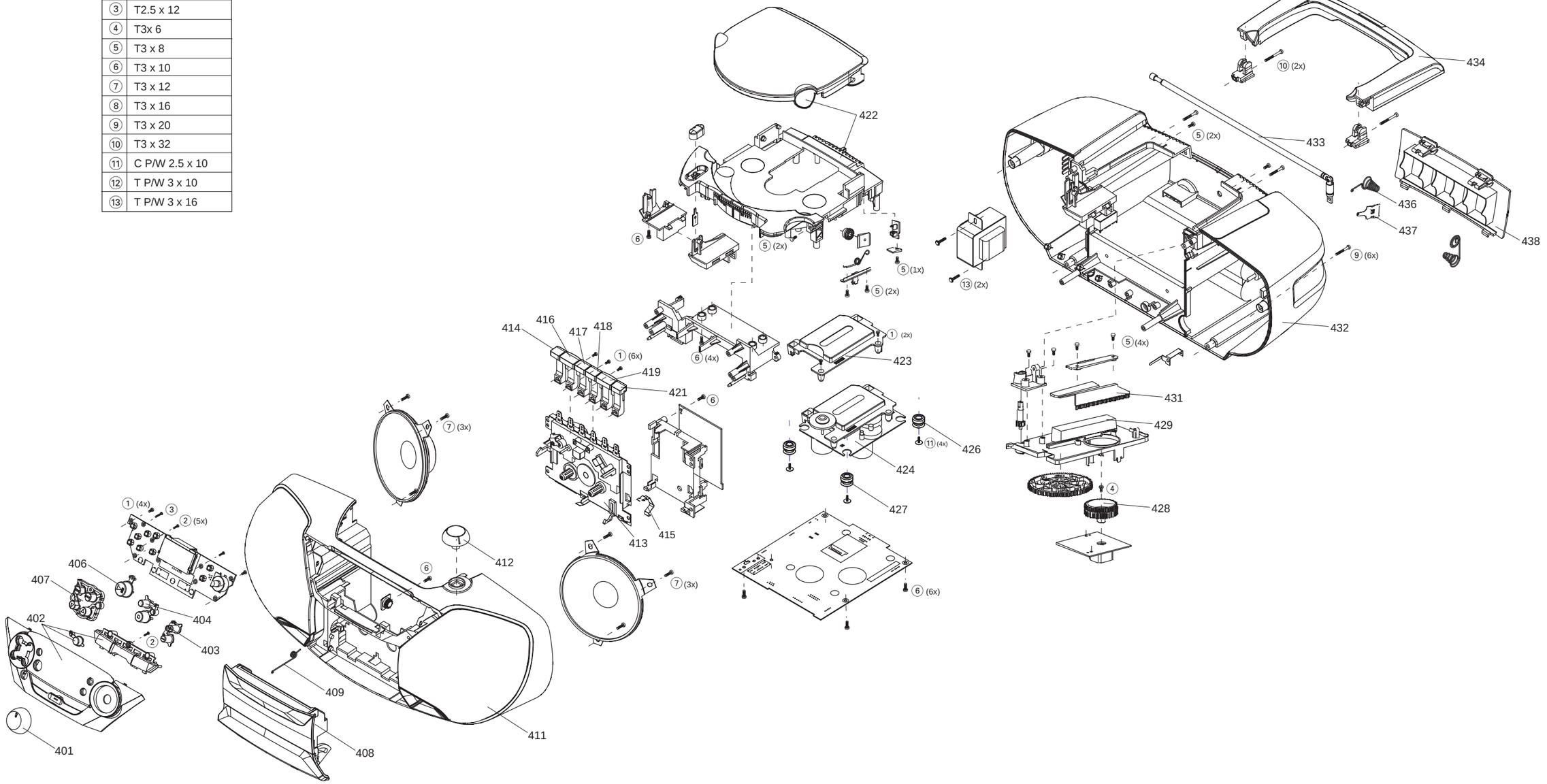


10 - 1

EXPLODED VIEW DIAGRAM

SCREW LIST :

①	M2.5x6
②	T2.5 x 8
③	T2.5 x 12
④	T3x 6
⑤	T3 x 8
⑥	T3 x 10
⑦	T3 x 12
⑧	T3 x 16
⑨	T3 x 20
⑩	T3 x 32
⑪	C P/W 2.5 x 10
⑫	T P/W 3 x 10
⑬	T P/W 3 x 16



MECHANICAL PARTSLIST

401	314011773371	VOLUME KNOB PNT
402	314011773151	FRONT PANEL ASSY
403	314011773412	SPEED+/- BUT PNT-AZ6188
404	314011773403	STOP/PROG BUT PNT-AZ6188
406	314011773391	PLAY KNOB PNT-AZ6188
407	314011773381	SEARCH/ALBUM BUT PNT-AZ6188
408	314011773131	CASS DOOR ASSY
409	314011101001	CASS DOOR SPRING
411	314011773091	FRONT CAB ASSY AZ6188
412	314011438941	TUNING KNOB
413	314011872251	TAPE DECK MECHANISM AZ6188
414	314011464001	CAS PAUSE-KEY BK
415	314011120804	SPRING-RECORDING
416	314011464011	CASS KEY(STOP)BK
417	314011464021	CASS KEY(F.F)BK
418	314011464031	CASS KEY(REW)BK
419	314011464041	CASS KEY(PLAY)BK
421	314011464051	CASS KEY REC BK
422	314011773111	CD TRAY ASSY AZ6188
423	310330466151	COVER-CD COMPATIBLE
424	242254945987	CD DRIVE DA11B3N (TSAJ) B
426	314011413892	DAMPER - RUBBER (30 DEG)
427	314011413902	DAMPER - RUBBER (35 DEGREES)
428	314011438761	GEAR PVC
429	314011438821	POINTER HOLDER
431	314011464241	POINTER AZ6188
432	314107750091	REAR ASSY AZ6188/01
433	314011871791	ROD ANTENNA
434	314011773141	HANDLE ASSY
436	314011101022	BATTERY SPRING"-"
437	314011121851	BATTERY CONTACT PLATE"+"
438	314011439091	BATTERY DOOR
	242207098151	MAINSCORD EUR 2A5 1M5 DET 2P B

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

10 - 2

ELECTRICAL PARTSLIST

- MISCELLANEOUS -

1007	314107830001	TFM POW EI-48
1008	242226400513	LSP 8R 3W
1009	242226400514	LSP 8R 3W
1011	242212700453	VOLTSEL 1P 2A H
1310	242208601218	FUSE 1,6A 250V
1311	242208610419	FUSE 1,6A 250V
1330	242202605602	SOC PHONE H 1P
1340	242212700538	SWITCH SLID
1551	242254301068	RES XTL 8MHZ4672 16P
1580	242254301439	RES XTL 6MHZ144 16P
1619	242254300873	RES XTL 6MHZ 16P
1707	242212802727	SWITCH PUSH 6P
1772	242212802917	SWIITCH-TACT
1773	242212802917	SWIITCH-TACT
1774	242212802917	SWIITCH-TACT
1775	242212802917	SWIITCH-TACT
1776	242212802917	SWIITCH-TACT
1777	242212802917	SWIITCH-TACT
1778	242212802917	SWIITCH-TACT
1779	242212802917	SWIITCH-TACT
1780	242212802917	SWIITCH-TACT
1781	242212802917	SWIITCH-TACT
1782	242212802917	SWIITCH-TACT
1783	242212802917	SWIITCH-TACT
1784	242212802917	SWIITCH-TACT
1790	314107850021	MICROPHONE
1806	242212000726	SWITCH-DET
2106	202080100022	CAP TUN 2XAM/2XFM
3771	212035490029	POTM CAR LIN 50KX2 E
5102	242253594985	IND FXD ANT 64µH 5%
5105	314011820011	MW OSC COIL 270µH RED
5106	314010733821	IFT-AM 7MM 146/5 180PH
5107	242254941126	FIL CERKIT 10MHZ7 KMFC5058-Z
5108	314010733591	IFT-AM 7MM 146T 180PH
5701	242254943582	IND VAR 7MM 7PA 100KHZ
7101	935068830118	IC SM TEA5711T/N2
7331	932206295682	IC TA8227P
7350	319801070290	IC SM HEF4052BT
7400	932202896682	IC L7805CP
7420	932212596687	IC LM317P
7500	932218855682	IC SM MM1469AH
7501	935272861157	IC SM SAA7824HL/M1A
7560	933984880668	IC SM LM358DT
7570	932220812668	IC SM WM8739EDS
7600	824000941891	IC SM SPCA758B
7640	932220839668	IC SM AT27LV010A-70JC
7641	932219938671	IS42S16400A-7T
7641	932216667668	MT48LC4M16A2TG-7E
7660	932220806668	WM8714ED
7660	932220807668	WM8725ED

- MISCELLANEOUS -

7680	935260898118	74LVC157AD
7705	932212960682	IC AN7323

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