Service
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Manual #1854
FW775P3701

Service Manual

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COMPACT disc DIGITAL AUDIO

CLASS 1
LASER PRODUCT

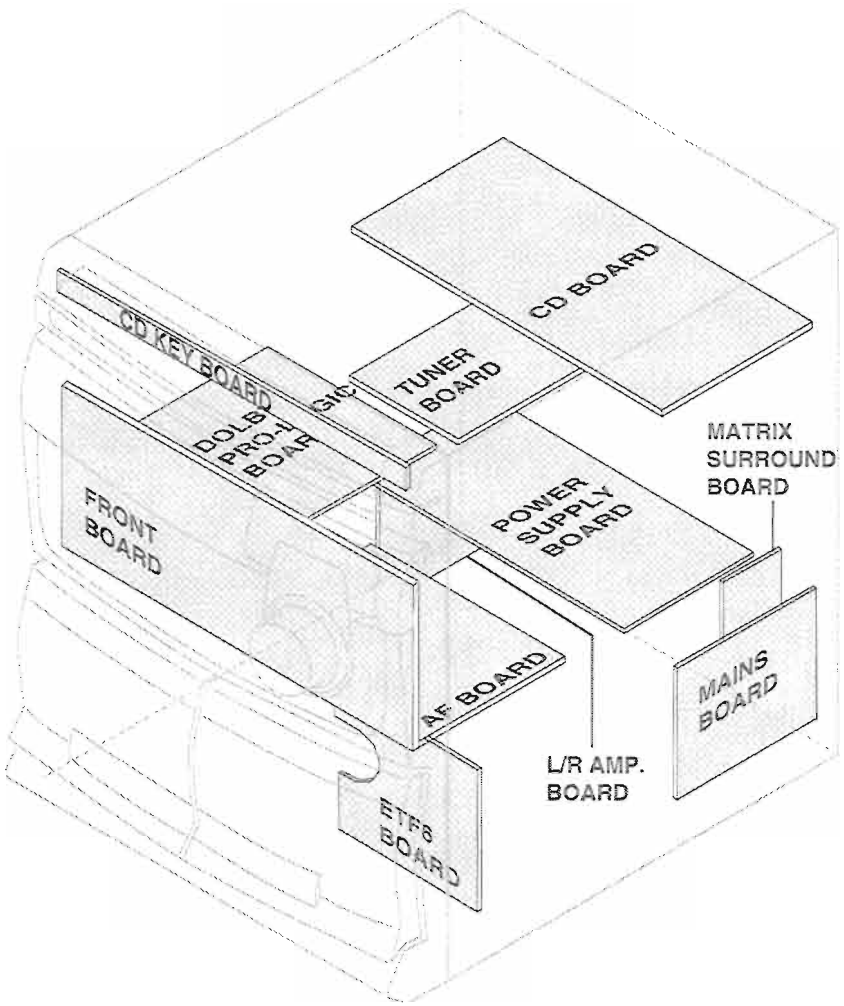
Published by KC 9814 Service Audio Printed in The Netherlands Subject to modification

GB 4822 725 25793

PCS 100 138

PHILIPS

LOCATION OF PRINTED CIRCUIT BOARDS



VERSION VARIATIONS:

Features & Board in used: / Versions:	/21 /21M	/22	/25	/26	/30	/33	/34	/37
Aux Input		x						x
Line Output		x						x
Subwoofer Output		x						x
Surround Output		x						x
Digital Output								
Dolby B								
RDS		x						
CD Text								
Karaoke Feature								
Tuner board - ECO5 Sys								x
Tuner board - Tuner 95		x						

SPECIFICATIONS

GENERAL:

Mains voltage : 100V for /26
110-127V/220-240V Switchable for /21/21M
120V for /37
220V for /33
220-230V for /22/34
230V for /25
230-240V for /30

Mains frequency : 50/60Hz
Power consumption : < 20W at clock mode FTD on
< 165W at 1/8 rated power out
Clock accuracy : < 4 seconds per day
Dimension centre unit : 265 x 310 x 374mm

TUNER:

FM

Tuning range : 87.5-108MHz
65.81-74MHz for /34
Grid : 50kHz (& 30kHz for /34)
IF frequency : 10.7MHz ± 25kHz
Aerial input : 75ohm coaxial
300ohm click fit for /37
Sensitivity at 26dB S/N : < 7µV
Selectivity at 600kHz bandwidth : > 50dB
Image rejection : > 25dB [> 75dB]
Distortion at RF=1mV, dev. 75kHz : < 3% [< 2%]
-3dB Limiting point : < 7µV
Crosstalk at RF=1mV, dev. 40kHz : > 18dB [> 26dB]

MW

Tuning range : 531-1602kHz
530-1700kHz for /21/21M/37
Grid : 9kHz
10kHz for /21/21M/37
IF frequency : 450kHz ± 1kHz
Aerial input : Frame aerial
Sensitivity at 26dB S/N : < 4.0mV/M
Selectivity at 18kHz bandwidth : > 18dB
IF rejection : > 45dB
Image rejection : > 28dB
Distortion at RF=50mV, m=80% : < 5% [< 7%]

LW

Tuning range : 153-279kHz
Grid : 3kHz
IF frequency : 450kHz ± 1kHz
Aerial input : Frame aerial
Sensitivity at 26dB S/N : [< 7.0mV/M]
Selectivity at 18kHz bandwidth : [> 24dB]
IF rejection : [> 26dB]
Image rejection : [> 35dB]
Distortion at RF=50mV, m=80% : [< 7%]

AMPLIFIER:

Output power DPL Mode (1kHz, 10% THD)
L & R : 2 x 120W RMS at 6 ohms
Center : 40W RMS at 12 ohms
Surround : 40W RMS at 2 x 6 ohms

Frequency response within -3dB : 60Hz-16kHz
Dynamic Bass Boost : BEAT, PUNCH, BLAST, DBB Off [1)]
Digital Sound Control : Classic,Rock,Techno,Optimal,Jazz [1)]
Incredible Surround : IS ON , IS Off [1)]
Dolby Pro-Logic : Dolby Surround
: Center Phantom
: Dolby 3 Stereo
: Stereo

Headphone output at 33 ohm (max. vol) : 0.7V ± 1dB

Input sensitivity
Aux/Line-in : 350mV ± 2dB at 600 ohm
Mic (For simple karaoke only) : 2.5mV ± 2dB at 600 ohm
Output sensitivity
Line-out : 500mV ± 2dB at 22 kohm
Sub-woofer (max. vol.) : 1.5V ± 2dB at 22 kohm
Surround Out (max. vol.) : 0.5V ± 2dB at 22 kohm

CASSETTE RECORDER:

Number of track : 2 x 2 stereo
Tape speed : 4.76 cm/sec ± 2%
1.6 x 4.76 cm/sec
Wow and flutter : < 0.4% DIN
Fast-wind/Rewind time C60 : 130 sec
Bias system : 75kHz ± 10kHz
Rec/Pb frequency response within 8dB : 80Hz - 12.5kHz
Signal to noise ratio (IEC I) : > 44dB
Signal to noise ratio (IEC II) : > 47dB

COMPACT DISC:

Measurement done at output conn. of the CDC module.
Frequency response within ± 1.5dB : 20Hz - 20kHz
Output level (in Vrms) : 550mV ± 2dB unloaded
Signal/Noise ratio (A-weighted) : > 80dBA
Distortion at 1kHz : < 0.5%
Channel difference at 1kHz : < 1dB
Channel crosstalk at 1kHz : > 45dB
De-emphasis : 0 or 15/50 mS (Switched by subcode on the disc)

[....] Values indicated are for "Tuner 95 Board" only

1) Frequency response in each setting is software controlled.

SERVICE AIDS

Service Tools:

Universal Torx driver holder	4822 395 91019
Torx bit T10 150mm	4822 395 50456
Torx driver set T6 - T20	4822 395 50145
Torx driver T10 extended	4822 395 50423

Cassette:

SBC419 Test cassette CrO2	4822 397 30069
SBC420 Test cassette Fe	4822 397 30071
MTT150 Dolby level 200nWb/M	4822 397 30271

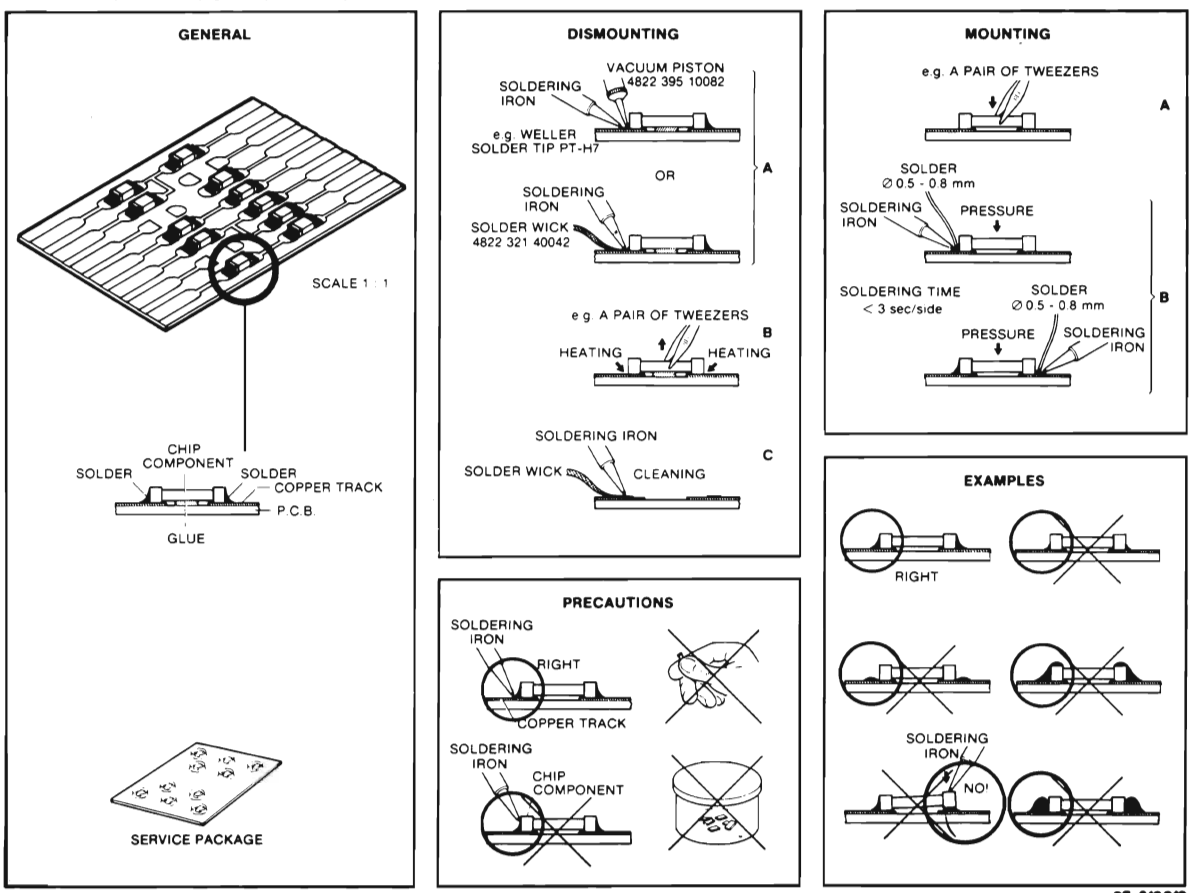
Compact Disc:

SBC426/426A Test disc 5 + 5A	4822 397 30096
SBC442 Audio Burn-in Test disc 1kHz	4822 397 30155
SBC429 Audio Signals disc	4822 397 30184
Dolby Pro-logic Test Disc	4822 395 10216

ESD Equipment:

Anti-static table mat - large 1200x650x1.25mm	4822 466 10953
Anti-static table mat - small 600x650x1.25mm	4822 466 10958
Anti-static wristband	4822 395 10223
Connector box (1MΩ)	4822 320 11307
Extension cable (to connect wristband to conn. box)	4822 320 11305
Connecting cable (to connect table mat to conn. box)	4822 320 11306
Earth cable (to connect product to mat or box)	4822 320 11308
Complete kit ESD3 (combining all above products)	4822 320 10671
Wristband tester	4822 344 13999

HANDLING CHIP COMPONENTS



27 012C12

ESD

(GB) **WARNING**

All ICs and many other semi-conductors are susceptible to electrostatic discharges (ESD).
Careless handling during repair can reduce life drastically.
When repairing, make sure that you are connected with the same potential as the mass of the set via a wrist wrap with resistance.
Keep components and tools also at this potential.

(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 ditzelfde 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 enfiler 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 kan die Lebensdauer drastisch reduzieren.
Veranlassen Sie, dass Sie im Reparaturfall über ein Pulsarmband mit Widerstand verbunden sind mit dem gleichen Potential wie die Masse des Gerätes.
Bauteile und Hilfsmittel auch auf dieses gleiche Potential halten.

(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 braccialetto 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.

(NL)
Veiligheidsbepalingen vereisen, dat het apparaat bij reparatie in zijn oorspronkelijke toestand wordt teruggebracht en dat onderdelen, identiek aan de gespecificeerde, worden toegepast.

(F)
Les normes de sécurité exigent que l'appareil soit remis à l'état d'origine et que soient utiliséés les piéces de rechange identiques à celles spécifiées.

(D)
Bei jeder Reparatur sind die geltenden Sicherheitsvorschriften zu beachten. Der Original zustand des Geräts darf nicht verändert werden; für Reparaturen sind Original-Ersatzteile zu verwenden.

(I)
Le norme di sicurezza esigono che l'apparecchio venga rimesso nelle condizioni originali e che siano utilizzati i pezzi di ricambio identici a quelli specificati.

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

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

(GB) **Warning !**

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.

(SF) **Varoitus !**

Avatussa laitteessa ja suojalukituksen ohitettaessa olet alttiina näkymättömälle laserisäteilylle. Älä katso säteeseen!

(DK) **Advarse !**

Usynlig laserstråling ved åbning når sikkerhedsafbrydere er ude af funktion. Undgå udsaettelse for stråling.

GENERAL INFORMATION

General Information

- ***The typeplate (which contains the serial number) is located at the rear of the system.***
- ***Recording is permissible if copyright or other rights of third parties are not infringed.***
- ***This product complies with the radio interference requirements of the European Community.***

Environmental Information

All unnecessary packaging material has been omitted. We have done our utmost to make the packaging easily separable into three mono-materials: cardboard (box), polystyrene foam (buffer) and polythene (bags, protective foam sheet).

Your system consists of materials which can be recycled and reused if disassembled by a specialized company. Please observe the local regulations regarding the disposal of packaging materials, exhausted batteries and old equipment.

Acknowledgement

DOLBY SURROUND
PRO • LOGIC

Dolby Pro-Logic and the double-D symbol ⧈ are trademarks of Dolby Laboratories Licensing Corporation. Manufactured under license from Dolby Laboratories Licensing Corporation.

Accessories (Supplied)

- Remote control
- Batteries (2 x AAA size) for remote control
- AM loop antenna
- FM antenna wire
- AC power cord
- For model FW775P only - Philips FB 5CS Surround package (includes 2 x surround rear speakers and 1 x center speaker)
- For model FW765P only - Philips FB 3CS Surround package (includes 2 x surround rear speakers and 1 x center speaker)

Accessories (Recommended)

- Philips FB 207W wireless surround speaker package (includes 2 x wireless surround rear speakers and 1 x center speaker and a transmitter unit).
- Philips FB 201 active subwoofer.
- Philips FB 202W wireless active subwoofer.

SAFETY INFORMATION

English

Safety Information

- Before operating the system, check that the operating voltage indicated on the typeplate (or the voltage indication beside the voltage selector) of your system is identical with the voltage of your local power supply. If not, please consult your dealer. The type plate is located at the rear of your system.
- When the system is switched on, do not move it around.
- Place the system on a solid base (e.g. a cabinet).
- Place the system in a location with adequate ventilation to prevent internal heat build-up in your system.
- The system incorporates a built-in safety feature that prevents over heating *(for model FW775P only)*.
- Do not expose the system to excessive moisture, rain, sand or heat sources.
- Under no circumstances should you repair the system yourself, as this will invalidate the warranty!
- If the system is brought directly from a cold to a warm location, or is placed in a very damp room, moisture may condense on the lens of the CD unit inside the system. Should this occur, the CD player will not operate normally. Leave the power on for about one hour with no disc in the system until normal playback is possible.
- Electrostatic discharge may cause unexpected problems. See whether these problems disappear if you unplug the AC power cord and plug it in again after a few seconds.
- **To disconnect the system from the power supply completely, remove the AC power plug from the wall socket.**

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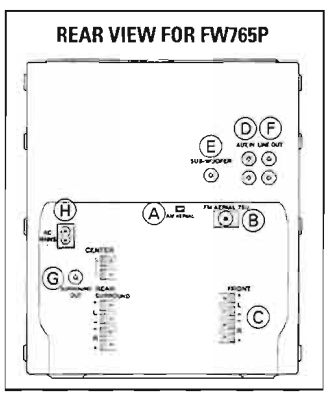
PREPARATION

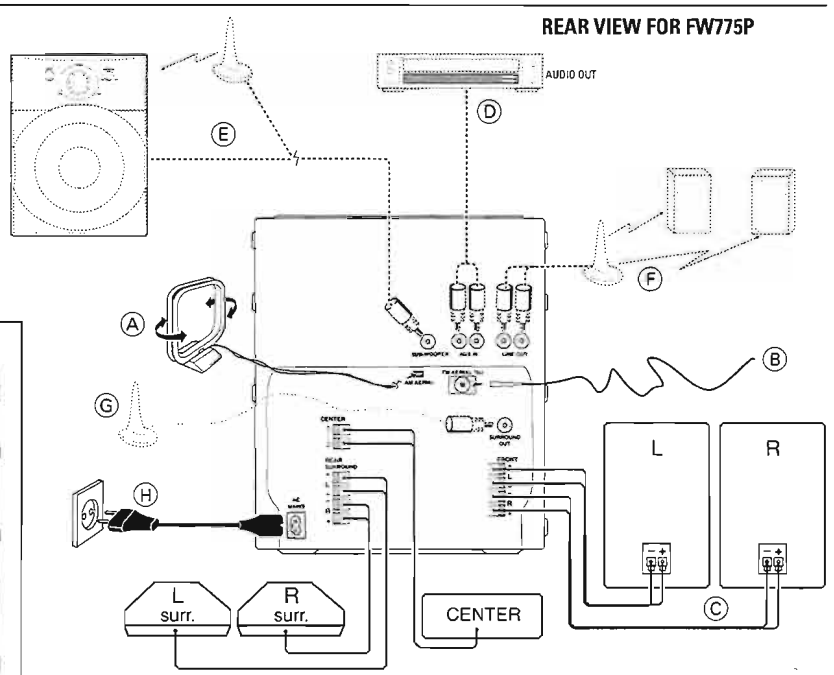
English

Rear Connections

REAR VIEW FOR FW765P



REAR VIEW FOR FW775P



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PREPARATION

English

Ⓐ AM Antenna Connection

Connect the supplied loop antenna to the AM AERIAL terminal. Place the AM loop antenna far away from the system and adjust its position for the best reception.

Ⓑ FM Wire Antenna Connection

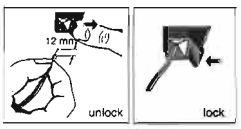
Connect the supplied FM wire antenna to the FM 75 Ω terminal. Adjust the position of the FM antenna for the best reception.

Outdoor Antenna

For better FM stereo reception connect an outdoor FM antenna to the FM AERIAL 75 Ω terminal using a 75 Ω coaxial wire.

Ⓒ Front Speakers' Connection

- Connect the right speaker to Front terminal R, with the red wire to + and the black wire to −.
- Connect the left speaker to Front terminal L, with the red wire to + and the black wire to −.
- Clip the stripped portion of the speaker wire as shown.



For Dolby Pro Logic Connection, see page 10.

Ⓓ Connecting other equipment to your system

You can connect the audio left and right OUT terminals of a TV, Laser Disc player, VCR or DVD player to the AUX IN terminals at the rear of the system.

Ⓔ Subwoofer Out Connection

You can connect either an optional active subwoofer (recommended model FB 201) or an optional wireless active subwoofer (recommended model FB 202W) to the SUBWOOFER OUT terminal. The wireless system uses a radio frequency transmitter. The subwoofer reproduces just the low bass effect (e.g. explosions, the rumble of spaceships, etc.). Be sure to follow the instructions supplied with the subwoofer.

Ⓕ Line Out *(wireless ready)*

You may install additional front active speakers away from the system (e.g. in another room) to reduce the inconvenience of running long speaker wires across rooms. You can place as many remote speakers as you like provided that they operate at the same radio frequency. Connect the wireless radio frequency transmitter to the LINE OUT terminals. Place the active speakers at your preferred location. Be sure to follow the instructions supplied with the active speakers.

Ⓖ Wireless Surround Out Connection

You may connect transmitter unit of the wireless rear speakers (recommended model FB 207W) to the SURROUND OUT terminal instead of the wired rear speakers. Be sure to follow the instructions supplied with the wireless rear speakers.

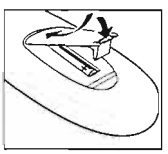
Note:

- *Availability of wireless transmitter and its peripherals are subjected to the approval of local authorities. Please check with respective local safety or approving authority.*

Ⓗ AC Power Supply

After all other connections have been made, connect the AC power cord to the system and to the wall outlet.

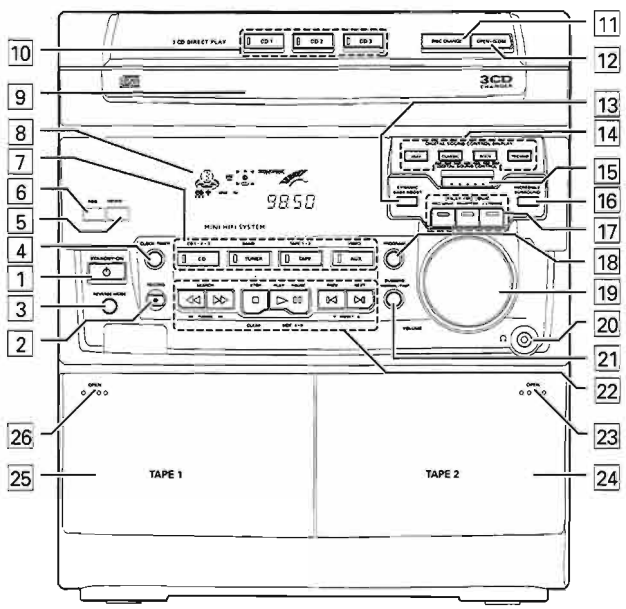
Inserting batteries into the Remote Control



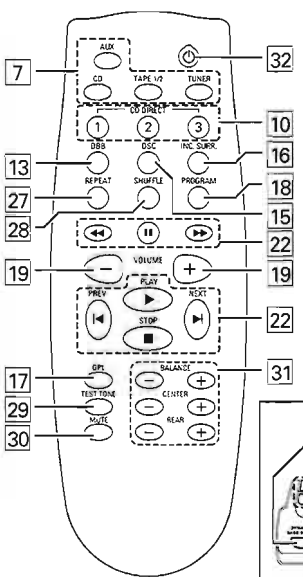
- Insert the batteries (Type R03 or AAA) into the remote control as shown in the battery compartment.
- To avoid damage from possible battery leakage, remove dead batteries or batteries that will not be used for a long time. For replacement, use type R03 or AAA batteries.

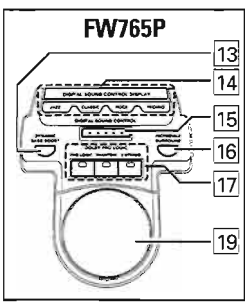
CONTROLS

English



FW775P





CONTROLS

English

Controls on the system and remote control

1 **STANDBY•ON**
- to switch the system on or to standby mode.
- to store radio stations automatically by pressing and holding for 2 seconds *(only in Standby or Demonstration mode).*

2 **RECORD**
- to start recording on tape deck 2 only.

3 **REVERSE MODE**
- to select the different playback mode on tape deck 2 only.

4 **CLOCK•TIMER**
- to view clock, set clock or timer.

5 **NEWS**
- to hear news at a preset time automatically.

6 **RDS**
- to select RDS data.

7 **SOURCE** : to select the following
- **CD (CD 1•2•3)** ..... to select CD mode. When in CD stop mode; to select respective disc tray.
- **TUNER (BAND)** ..... to select Tuner mode. When in Tuner mode; to select the waveband: FM, MW or LW.
- **TAPE (TAPE 1•2)** ..... to select Tape mode. When tape in stop mode; to select either tape deck 1 or 2.
- **AUX (VIDEO)** ..... to select external source (e.g. DVD, TV, Laser Disc or VCR sound).

8 **DISPLAY**
- to view the current setting of the system.

9 **CD CAROUSEL TRAY**

10 **3 CD DIRECT PLAY**
- to select a CD tray for playback.

11 **DISC CHANGE**
- to change CD(s).

12 **OPEN•CLOSE**
- to open or close the CD carousel tray.

13 **DYNAMIC BASS BOOST (DBB)**
- to select bass boost level (Beat, Punch, Blast).

14 **DIGITAL SOUND CONTROL DISPLAY PANEL**
- to view the selected DSC setting.

15 **DIGITAL SOUND CONTROL (DSC)**
- to select the desired sound effect : OPTIMAL, JAZZ, CLASSIC, ROCK or TECHNO.

16 **INCREDIBLE SURROUND**
- to switch on or off the surround sound effect.

17 **DOLBY PRO LOGIC (DPL)**
- to select the desired Dolby Pro Logic mode : DOLBY SURROUND, CENTER PHANTOM, DOLBY 3 STEREO or STEREO.

18 **PROGRAM**
- to program CD tracks in CD mode or preset radio stations in tuner mode.

19 **VOLUME**
- to adjust the volume level.

20 **HEADPHONES** 🎧
- to connect headphones jack.

21 **DUBBING**
- to dub a tape in normal or high speed.

22 **MODE SELECTION**

◀◀ SEARCH ▶▶ (◀◀ TUNING ▶▶)
- for CD ..... to search backward/forward.
- for TUNER ..... to tune to a lower or higher radio frequency.
- for TAPE ..... to rewind or fast forward on tape deck 2 only.

STOP ■ (CLEAR)
- for CD ..... to stop CD playback or clear a program.
- for TUNER ..... to stop programming.
- for TAPE ..... to stop playback or recording.

PLAY ▶ / PAUSE ❚❚ (SIDE A•B)
- for CD ..... to start or interrupt playback.
- for TAPE ..... to start playback; When playing in tape 2 mode, to change side.

PREV ⏮ / NEXT ⏭ (▼ PRESET ▲)
- for CD ..... to skip to the beginning of the current or previous/next track.
- for TUNER ..... to select a preset radio station in memory.

23 **OPEN**
- to open tape deck 2.

24 **TAPE DECK 2**

25 **TAPE DECK 1**

26 **OPEN**
- to open tape deck 1.

27 **REPEAT**
- to repeat a CD track.

28 **SHUFFLE**
- to play all the available discs and their tracks in random order.

CONTROLS

English

29 **TEST TONE**
- to check the sound level for Front Left, Front Right, Center and Surround speakers respectively.

30 **MUTE**
- to switch off the sound temporarily or to switch on again.

31 **DPL SOUND CONTROL**
- **BALANCE + / —** .... to balance the scund level of the Front Right and Left speakers.
- **CENTER + / —** ..... to adjust the sound level of the center speaker.
- **REAR + / —** ..... to adjust the sound level of the surround speakers.

32 ⏻
- to switch the system to standby mode.

Notes for remote control:
- *First select the source you wish to control by pressing one of the source select buttons on the remote control (e.g. CD, TUNER, TAPE 1/2 or AUX).*
- *Then select the desired function (PLAY, NEXT, etc.).*

DOLBY PRO LOGIC

Dolby Pro Logic

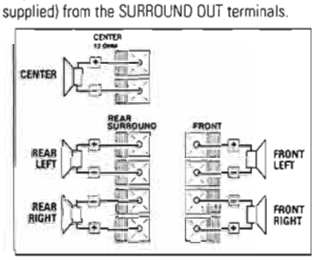
This state-of-the-art Dolby Pro Logic mini system enables you to experience and enjoy a Home Cinema sound ambience. The Pro Logic system allows more accurate definition of the individual sound sources. It produces greater sound separation between channels and provides pinpoint sound localisation. Pro Logic provides four outputs which are called Left, Center, Right and Surround (Rear). Front signals are produced from the pair of Left and Right speakers and a Center speaker. The surround signal is reproduced by two speakers placed at the rear of the listening area. Although the surround signal is mono, a pair of speakers is necessary to produce the correct diffused sound field.

This Pro Logic decoder enables you to decode the following mode : ***Dolby Surround, Center Phantom, Dolby 3 Stereo*** or normal ***Stereo***.

Setting up the Dolby Pro Logic system

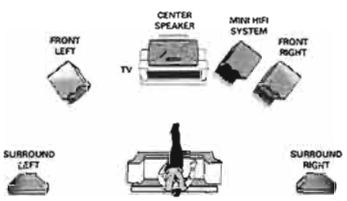
You need to do a proper set up in order for you to enjoy the Home Cinema sound to the fullest. First you need to do a complete speakers' connection.

5-Speakers Connection
- ***Front speakers :*** Connect the black wires to the black FRONT terminals and the red wires to the red FRONT terminals.
- ***Center speaker :*** Connect the black or non-marked wires to the black CENTER terminal and the blue or marked wires to the blue CENTER terminal.
- ***Rear (surround) speakers :*** Connect the black or non-marked wires to the black REAR terminals and the white or marked wires to the grey REAR terminals. You may also connect a pair of wireless rear speakers (not supplied) from the SURROUND OUT terminals.



Positioning the Speakers

To get the best surround sound effect, place the speakers as follow.



DOLBY PRO LOGIC

English

Front Left and Right Speakers
For best listening effect, it is recommended to have the Left and Right speakers to form an angle of approximately 45 degrees to the listener. The speakers are magnetic shielded. Should the magnetic field from the speakers affect the picture of the television, you should increase the separation distance.

Center Speaker
For best directional effect, try to have the center speaker at the same height as the left and right speakers and as close as possible to the screen. Place it directly above or beneath the television set. If you use speaker from other make ensure that it is magnetically shielded.

Rear (surround) Speakers
The surround speaker should be placed at normal listening ear level. It can also be mounted on the wall at the back of the room. Most important , sometimes you need to experiment creatively when placing the surround speakers in order to obtain the most ideal sound projection.

Test Tone

This feature enables you to adjust the Front Left, Front Right, Center and Surround sound level of the respective speakers in Dolby Pro Logic mode.

You must sit at the ideal sitting position and use the remote control to perform this operation.

1 Press **CD**, **TUNER**, **TAPE** or **AUX** to switch on the system.

2 Press **TEST TONE**.
→ A test signal is generated and it will move through the Left, Center, Right and Surround speakers respectively.
→ "TEST TONE" will be displayed and followed by "ADAPT BALANCE, CENTER AND REAR LEVEL" message.
→ The test signal will last for about 90 seconds.

3 Press the **BALANCE** − to adjust the desired sound level of front left speaker.
→ The display will show the sound level and "BAL L+xx".

4 Press the **BALANCE** + to adjust the desired sound level of front right speaker.
→ The display will show the sound level and "BAL R+xx".

5 Press the **CENTER** + or − to adjust the sound level of center speaker.
→ The display will show either "CENT +xx or -xx".

6 Press the **REAR** + or − to adjust the desired sound level of surround speaker.
→ The display will show either "REAR +xx or -xx".

7 Adjust the sound level of all the speakers until they are of the same apparent loudness. When you are satisfied with the setting, press **TEST TONE** again to switch off the test signal.

Note:
– *It is advisable to set the speakers' level at normal listening level. "xx" denotes the sound level.*

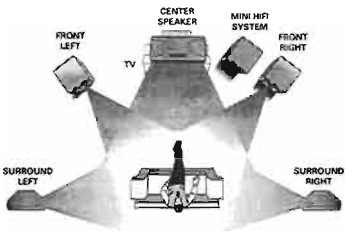
When you have completed the Dolby Pro Logic setup, you are ready to experience and enjoy a Home Cinema sound ambience.

- Press **DPL** on the remote control repeatedly to select and cycle through the various sound mode.

Dolby Surround → Center Phantom → Dolby 3 Stereo → Stereo → Dolby Surround ...

Dolby Surround

This setting is for a full Dolby Surround Pro Logic mode.



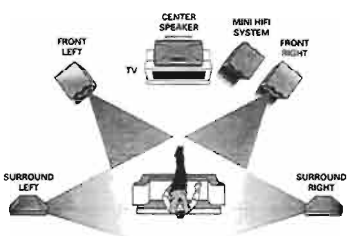
- Press **DPL** ***PRO LOGIC*** to select Dolby Surround mode.
→ The message "DOLBY SURROUND" will be displayed.

DOLBY PRO LOGIC

English

Dolby Center Phantom

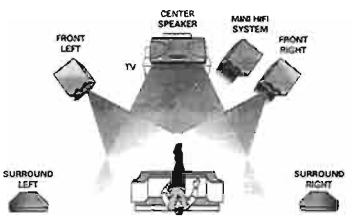
This setting is for use without the center speaker. It redistributes the center channel information to the left and right speakers providing conventional stereo across the front.



- Press **DPL** ***PHANTOM*** to select Dolby Pro Logic Center Phantom mode.
→ The message "CENTER PHANTOM" will be displayed.

Dolby 3 Stereo

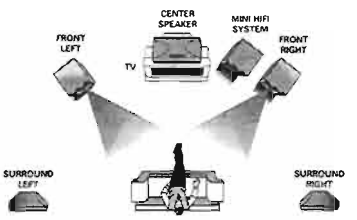
This setting is for use where full surround is not required, but a wide stereo sound is desirable. It only requires the left, right and center speakers.



- Press **DPL** ***3 STEREO*** to select Dolby 3 Stereo mode.
→ The message "DOLBY 3 STEREO" will be displayed.

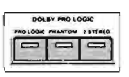
Normal Stereo

This setting is for normal stereo sound without Dolby Pro Logic. It only requires the left and right speakers.



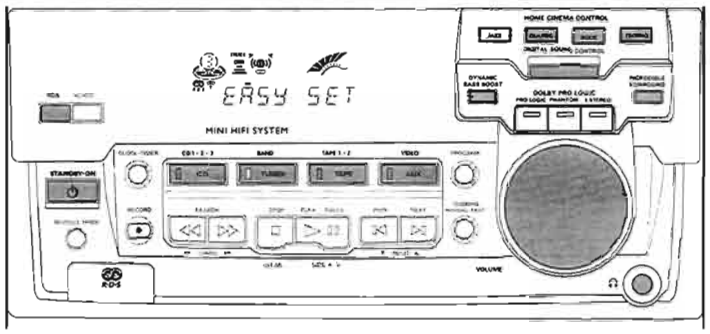
- Press **DPL** to select Stereo mode.
→ The message "STEREO" will be displayed.

Note:
– *When in DPL mode, pressing the respective DPL button on the system again (until the button is not lighted) will switch to normal stereo mode.*



Important!
1. To listen to the optimum Dolby Pro Logic sound effect, it is recommended to switch on DPL in combination with "Classic" and without Incredible Surround.
2. It is recommended to switch off Dolby Pro Logic when you do recording on a tape.

OPERATING THE SYSTEM



Important:
Before you begin operating the system, complete the preparation procedures.

Demonstration mode

The system has a demonstration mode that shows the various features offered by the system. ***Whenever the system is switched on from the wall socket, the demonstration mode will start automatically.***

Notes:
- *During demonstration mode, if you press any source (or standby-on) button, the system will switch to the respective (or standby) mode.*
- *When the system is switched to standby mode, 5 seconds later, the demonstration mode will begin again.*

To cancel demonstration mode
- Press and hold **STOP** ■ *(on the system only)* for ***3 seconds*** to stop the demonstration.
  → The demonstration mode will be switched off permanently.
  → The system will switch to standby mode. About 5 seconds later, the system will go into an economy power conservation mode *(for model FW775C only).*

Easy Set *(only in Standby or Demonstration mode)*

EASY SET allows you to store all available radio stations and RDS stations in a particular band (FM•MW•LW) automatically (see Easy Set under TUNER section).

Switching the system ON

- Press **STANDBY•ON** *(on the system only)*, **CD**, **TUNER**, **TAPE** or **AUX**.

You can also switch on the system by pressing any one of the 3 CD DIRECT PLAY buttons.

Switching the system to standby mode

- Press **STANDBY•ON** again.

Selecting the Source

- Press the respective source selection button: **CD**, **TUNER**, **TAPE** or **AUX**.
  → The display indicates the selected source.

Note:
- *For an external source, make sure you have connected the audio left and right OUT terminals of the external equipment (TV, VCR, Laser Disc or DVD player) to the AUX IN terminals.*

OPERATING THE SYSTEM

Sound Control

VOLUME ADJUSTMENT
Adjust **VOLUME** to increase or decrease the sound level.

For Personal Listening
Connect the headphones jack to the 🎧 socket at the front of the system. The speakers will be muted and DPL mode will be switched off.

DIGITAL SOUND CONTROL (DSC)
The DSC feature enables you to enjoy special sound effects that have preset equalizer settings, providing the best music reproduction.

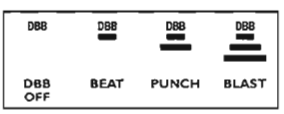
- Press **DIGITAL SOUND CONTROL (DSC)** to select **OPTIMAL**, **JAZZ**, **CLASSIC**, **ROCK** or **TECHNO**.
  → The Digital Sound Control display panel will light up respectively. At OPTIMAL setting, the DSC display panel does not light up.
  → "OPTIMAL, JAZZ, CLASSIC, ROCK or TECHNO" will be displayed.

Automatic DSC-DBB selection
The best setting for the DBB is automatically generated for the respective DSC selection. You can also manually select the DBB setting that best suits your listening environment.

DSC Selection	DBB Selection
Optimal	Punch
Jazz	Punch
Classic	Beat
Rock	Blast
Techno	Blast

DYNAMIC BASS BOOST (DBB)
The DBB mode enhances the bass response.

- Press **DBB** briefly to select the various level of bass boost.
  → The DBB button lights up.
  → "BEAT, PUNCH or BLAST" will be displayed.



To switch off DBB
- Press **DBB** briefly until the DBB button light is switched off.
  → "DBB OFF" will be displayed.

Note:
- *Some CDs or tapes might be recorded in high modulation. It may cause distortion at high volume. If this occurs, switch off Incredible Surround (if available), DBB level or reduce the volume.*

INCREDIBLE SURROUND
Normal stereo sound is determined by the distance between the front speakers. When Incredible Surround is switched on, it magnifies the virtual distance between the front speakers for an incredibly wide, enveloping, stereo effect.

- Press **INCREDIBLE SURROUND** to switch on.
  → The INCREDIBLE SURROUND button lights up.
  → "IS" will be displayed.

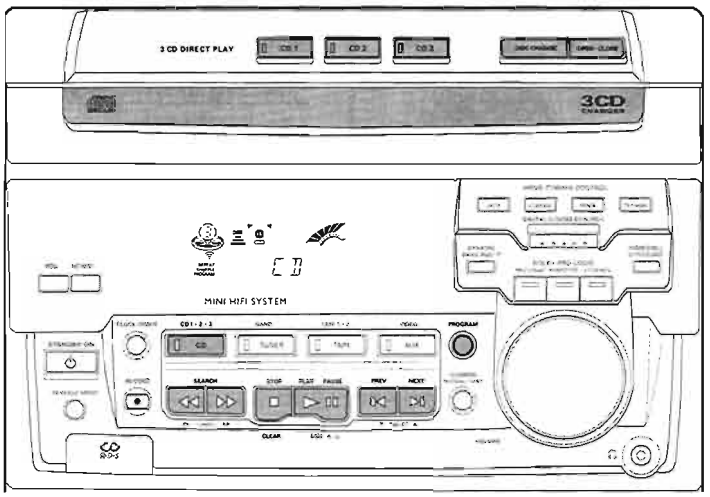
To switch off Incredible Surround
- Press **INCREDIBLE SURROUND** again.
  → The INCREDIBLE SURROUND button light is switched off.
  → "IS OFF" will be displayed.

MUTE *(only on remote control)*
This feature allows you to temporarily switch off the sound of the system without switching off the system when you require a moment of silence.

- Press **MUTE** on the remote control to switch off the sound.
  → "MUTE" will be displayed.
- Press **MUTE** again on the remote control or increase the **VOLUME** level to switch on the sound.

CD

English



Warning!

1) This system is designed for conventional CDs. Do not use any accessories like disc stabilizer rings or CD treatment sheets, etc., which may damage the CD mechanism.

2) Do not load more than one disc into each tray.

3) When the CD changer is loaded with CD(s), do not turn over or shake the system. This may jam the changer.

You can load up to three discs in the CD changer for continuous playback without interruption.

Loading the CD Changer

1 Press **CD** to select CD mode.
2 Press **OPEN•CLOSE**.
→ The CD compartment slides out.
3 Load a CD with the printed side up in the right tray.
• You can load another disc in the left tray.
• To load the third disc, press **DISC CHANGE**.
→ The CD changer carousel will rotate until the empty tray is at the right hand side and is ready for loading.
→ Playback will always start with the disc in the outer right disc tray.
4 Press **OPEN•CLOSE** to close the CD compartment.
→ The total number of tracks and playing time of the last selected disc appear on the display.

CD

English

3 CD Direct Play

• You can play a CD directly by pressing the corresponding **3 CD DIRECT PLAY (1 - 3)** button. The CD player will stop at the end of playback of the selected disc.
→ When the button is lighted, it indicates that there is a disc loaded in the disc tray.

Playing a CD

1 Press **PLAY ▶** to start playback.
→ The disc tray, track number and elapsed playing time of the current track appear on the display.
→ The LED on the respective 3 CD Direct Play button will be flashing.
• To interrupt playback, press **PAUSE ❚❚**.
→ The playing time flashes.
• To resume playback, press **PLAY ▶** again.
2 To stop playback, press **STOP ■**.

Note:
– *All the available discs will be played once, then stop. When the CD has stopped playing, the system will switch to the standby mode after 15 minutes if no button is pressed.*

Disc Change

You can change the outer 2 discs while the third inner disc is at the stop or playback mode.

1 Press **DISC CHANGE**.
→ The CD compartment slides out.
2 Replace the discs in the left and right disc trays.
• If you press **DISC CHANGE** again during playback, the CD will stop playing.
→ The CD carousel tray will rotate until the inner tray is at the right hand side and is ready for changing.
3 Press **OPEN•CLOSE** to close the CD compartment.

Selecting a desired track

Selecting a desired track at the stop mode
1 Press **PREV ⏮** or **NEXT ⏭** until the desired track appears on the display.
2 Press **PLAY ▶** to start playback.
→ The selected track number and elapsed playing time appear on the display.

Selecting a desired track during playback
1 Press **PREV ⏮** or **NEXT ⏭** until the desired track appears on the display.
→ The selected track number and elapsed playing time appear on the display.
• If you press **PREV ⏮** once it will skip to the beginning of the current track and play the track again.

Searching for a particular passage during playback

• Press and hold **◀◀** or **▶▶** until the desired passage is located.
→ The volume will be reduced.
• Playback returns to normal when **◀◀** or **▶▶** is released.

Programming Tracks

Programming tracks of a loaded CD is possible in the stop mode. The display will indicate the total tracks stored in the program. Up to 40 tracks can be stored in the memory in any order. When 40 tracks are stored and you attempt to store another track, the display will show "PROGRAM FULL".

1 Load the desired discs in the disc trays.
2 Press **PROGRAM** to start programming.
→ The PROGRAM flag starts flashing
3 Press the **CD (CD 1•2•3)** to select the desired disc.
4 Press **PREV ⏮** or **NEXT ⏭** to select the desired track.
5 Press **PROGRAM** to store the track.
• Repeat steps ***3*** to ***5*** to store other discs and tracks.
6 Press **STOP ■** once to end programming mode.
→ The total number of tracks programmed and total playing time appear on the display.

Notes:
– *If the total playing time is more than "99:59" or if one of the programmed tracks has a number greater than 30, then "- - : - - " appears in the display instead of the total playing time.*

– *During programming , If no button is pressed within 20 seconds, the system will exit program mode automatically.*

Playing the program

1 Press **PLAY** ▶ to start program playback.
→ "PLAY PROGRAM" will be displayed.
→ The track number and elapsed playing time of the current track will appear on the display.
• If you press **REPEAT** during program playback, the current track will be played repeatedly.
→ The REPEAT and PROGRAM flags will be displayed.
2 Press **STOP** ■ to stop program playback.

Note:
– *If you press any of the 3 CD DIRECT PLAY buttons, the system will play the selected disc or track and the stored program will be ignored temporarily. The PROGRAM flag will also temporarily disappear from the display and then reappear, when the playback for the selected disc ends.*

Reviewing the program

Reviewing of the program is only possible in the stop mode.
• Press **PREV** |◀ or **NEXT** ▶| repeatedly to review the programmed tracks.
• Press **STOP** ■ to exit review mode.

Erasing the program *(in the stop mode)*

• Press **CLEAR** on the system.
→ "PROGRAM CLEARED" will be displayed.

Note:
– *The program will be erased when the system is disconnected from the power supply. If the CD carousel is opened, the tracks belonging to the outer two trays will be erased and the display will show "CLEARED".*

Shuffle *(only on remote control)*

It will play all the available discs and their tracks in random order. Shuffle may also be used when tracks are programmed.

To shuffle all the discs and tracks
1 Press **SHUFFLE**.
→ "SHUFFLE" will be displayed.
→ The SHUFFLE flag, the disc and the track selected at random appear on the display.
• The discs and the tracks will now be played in random order until you press **STOP** ■ .
• If you press **REPEAT** during shuffling, the current track will be played repeatedly.
→ The REPEAT and SHUFFLE flags will be displayed.
2 Press **SHUFFLE** again to resume normal playback.
→ The SHUFFLE flag disappears from the display.

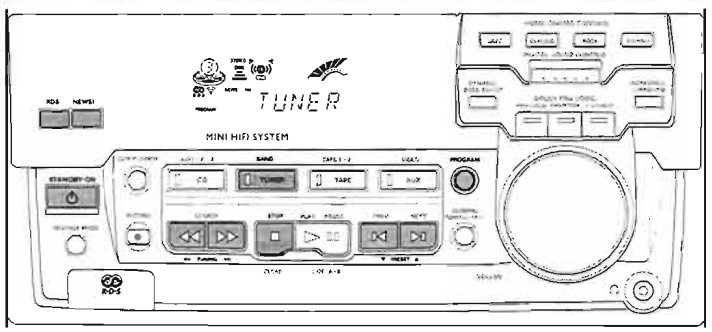
Note:
– *All the available discs will be played once, then stop.*

Repeat *(only on remote control)*

It will play the current track repeatedly.

1 Press **REPEAT** during playback.
→ "REPEAT TRACK" will be displayed.
→ The REPEAT flag and the track selected appear on the display.
• The track will now be played repeatedly until you press **STOP** ■ .
2 Press **REPEAT** again to resume normal playback.
→ The REPEAT flag disappears from the display.

TUNER



Easy Set *(only in Standby or Demonstration mode)*

EASY SET allows you to store all available radio stations and RDS stations in a particular band (FM•MW•LW) automatically.

1 Press and hold **STANDBY•ON** *(on the system only)* for 2 seconds.
→ "EASY SET" will be displayed and followed by "TUNER".
→ Easy set will start with the last active band.
→ All available radio stations with sufficient signal strength will be stored or until 40 presets are filled.
2 The system will search once again for the first available RDS station and to set the RDS time automatically.
• When searching RDS station;
→ "SEARCH RDS STATION" will be displayed. If no RDS station is available, the program will exit automatically.
→ After a station is found, "EASY SET" will be displayed and followed by "TIME".
• When searching RDS time;
→ "SEARCH RDS TIME" will be displayed.
→ When RDS time is read, "RDS TIME" will be displayed. The current time is displayed for 2 seconds and will be stored automatically.

Notes :
– *When EASY SET is used, all previously stored stations will be erased.*
– *The last preset station or the first available RDS will appear on the display when Easy Set is completed.*
– *If RDS station does not transmit RDS time within 90 seconds, the program will exit automatically and the display will show "NO RDS TIME".*

Tuning to Radio Stations

1 Press **TUNER** to select TUNER mode.
→ "TUNER" will be displayed.
→ The preset number, frequency and waveband appear on the display.
2 Press **TUNER (BAND)** again to select the desired waveband : FM, MW or LW.
3 Press **TUNING** ◀◀ or ▶▶ for more than one second, then release.
→ The display will show "SEARCH" until a radio station with sufficient signal strength is found.
• Repeat this procedure until the desired radio station is reached.
• To tune to a weak station, briefly press **TUNING** ◀◀ or ▶▶ until the display shows the desired frequency and/or when the best reception has been obtained.

Storing Preset Radio Stations

You can store up to 40 radio stations in the memory. When a preset radio station is selected, the preset number appears next to the frequency on the display.

Automatic programming

1 Press **TUNER**.
2 Press **TUNER (BAND)** again to select the desired waveband : FM, MW or LW.
3 Press **PROGRAM** for more than one second.
→ PROGRAM flag starts flashing and "AUTO" will be displayed.
→ Every available radio station will be stored automatically. The frequency and preset number will be displayed briefly.
→ The system will stop searching when all the available radio stations are stored or when the memory for 40 preset radio stations is used.
→ The system will remain tuned to the last stored preset radio station.

- Repeat the above procedure to store other preset stations for the other waveband. Remember to select the next available preset number before proceeding. If not, some of the preset radio stations may be erased.

Notes:
- *You can cancel the automatic programming by pressing PROGRAM or STOP ■ .*
- *If you want to reserve a section of preset numbers, for example preset numbers 1 to 9, select preset 10 before starting automatic programming: now only the preset numbers 10 to 40 will be programmed.*

Manual programming

1 Press **TUNER**.
2 Press **TUNER (BAND)** to select the desired waveband: FM, MW or LW.
3 Press **PROGRAM** for less than one second.
→ PROGRAM flag, the frequency and preset station number start flashing.
→ The next available preset number will be displayed for selection.
4 Press **TUNING ◀◀** or **▶▶** to tune to the desired frequency.
- When all 40 presets are stored, no preset number is shown.
→ The message "PROGRAM FULL" will be displayed.
- If you wish to store the radio station to another preset number, press **PRESET ▼** or **▲** to select the desired preset number.
5 Press **PROGRAM** again.
→ PROGRAM flag will stop flashing, and the radio station will be stored.

- Repeat the above procedure to store other preset radio stations.

Notes:
- *You can cancel the manual programming by pressing STOP ■ .*
- *During programming , If no button is pressed within 20 seconds, the system will exit program mode automatically.*

Tuning to Preset Radio Stations

English

- Press **PRESET ▼** or **▲** to select the desired preset number.
→ The preset number, frequency and waveband appear on the display.

English

Receiving RDS radio station

RDS (Radio Data System) is a broadcasting service that allows FM stations to send additional information along with the regular FM radio signal. This additional information can contain:

- **STATION NAME:** The station name is displayed.
- **FREQUENCY:** The frequency of the station is displayed.
- **PROGRAM TYPE:** The following program types exist and can be received by your tuner: News, Affairs, Info, Sport, Educate, Drama, Culture, Science, Varied, Pop M, Rock M, M.O.R. (middle of the road music), Light M, Classics, Other M, No type.
- **RADIO TEXT (RT):** text messages appear in the display.

When you have tuned to a RDS station, the RDS logo ( ) and the station name will appear on the display.

- The display normally shows the radio station name if available.
By repeatedly pressing **RDS** button you can change the type of display information:
→ The display shows in turn:
STATION NAME → FREQUENCY → PROGRAM TYPE → RADIO TEXT → STATION NAME ...

Note:
- *When you press the RDS button and the display shows "NO RDS", it indicates that either the tuned station is not transmitting RDS signal or it is a non RDS station.*

RDS Time

Some RDS station may be transmitting a real clock time at an interval of every minute.

Setting the time with RDS clock

1 Press **CLOCK•TIMER**.
→ "- - : - -" or current time appears on the display.
2 Press **CLOCK•TIMER** once more to enter clock setting mode.
→ "00:00" or current time starts flashing.
3 Press **RDS**.
→ The message "SEARCH RDS TIME" will be displayed.
→ If the station does not transmit RDS clock, "NO RDS TIME" will be displayed.
→ When the RDS clock is read, "RDS TIME" will be displayed. The current clock time is displayed for 2 seconds and will be stored automatically.

News *(only available in Radio Station with RDS)*

You can activate NEWS function in Standby or any source mode except Tuner mode. Once the News PTY (program type) is detected in a RDS station, it will switch to TUNER mode automatically.

To start NEWS function

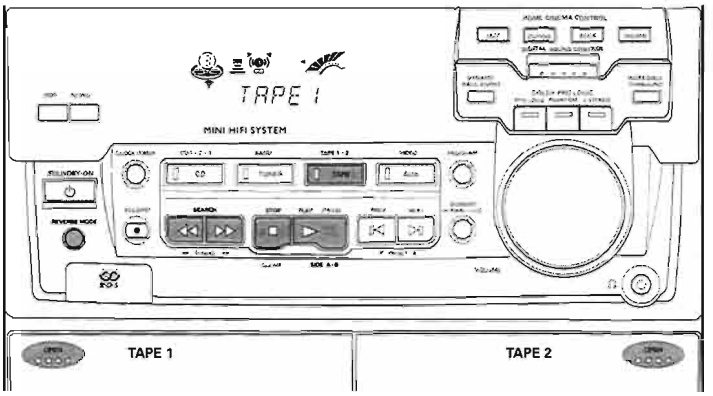
1 Press **NEWS**.
- The NEWS flag and "NEWS ON" will be displayed.
- It will search for the first available RDS station in the presets and wait for the News PTY (program type) to be available. During News PTY search :
→ If **NEWS** activate from Standby or Demo mode, the display will show "WAITING FOR NEWS".
→ If **NEWS** is activated from CD, Tape or Aux mode, the current source activity will be remain uninterrupted.
→ If no RDS station is found after the search, the News function will be switched off. The display will show "NO RDS NEWS" and NEWS flag will disappear from the display.
- When News transmission is detected, the system will switch to Tuner mode.
→ The NEWS flag starts flashing.
- After News has ended, the last selected source mode will be resumed.
→ The NEWS flag will disappear from the display.

To cancel NEWS function

- Press **NEWS** again.
→ The NEWS flag disappears and "NEWS OFF" will be displayed.
→ The last selected source mode will be resumed.

Notes:
- *During NEWS bulletin, you can press any available source button to cancel NEWS function and execute the relevant source mode.*
- *The NEWS works only once for each activation.*
- *If NEWS is activated from Standby or Demonstration mode, it switches to Tuner mode and the sound will be muted until News is available.*

TAPE



Loading a tape

- Press **OPEN**.
- The tape deck door opens.
- Load the tape with the open side downward and the full spool to the left.
- Close the tape deck door.

Tape Playback

1 Press **TAPE** to select TAPE mode.
→ "TAPE 1" or "TAPE 2" will be displayed.
- Press **TAPE** again to select either tape deck 1 or tape deck 2.

2 Load the tape into the desired tape deck.

3 Press **PLAY** ▶ to start playback.

3a *(For Tape Deck 2 only)*
Press **SIDE A•B** to switch playback between sides A and B.
→ The ◀ or ▶ (back or front) flag appears on the display, depending on the side selected.

3b *(For Tape Deck 2 only)*
Press **REVERSE MODE** to select the different type of playback mode *(see auto reverse playback)*.

4 Press **STOP** ■ to end playback.

Notes:
- *To change side before playback begins, use the SIDE button on the remote control.*
- *When the tape has stopped playing, the system will switch to the standby mode automatically after 15 minutes if no button is pressed.*

Auto Reverse Playback *(only on tape deck 2)*

- Press **REVERSE MODE** to select the different playback modes.

⇄ ..... recording or playback on one side of the tape. The tape stops at the end of one side.

⇉ ..... recording or playback on both sides of the tape. The tape then stops.

⇆ ..... continuous playback on both sides of the tape up to a maximum of 20 times per side unless you press **STOP** ■.

TAPE

Rewind/Fast Forward *(only on tape deck 2)*

At the stop mode

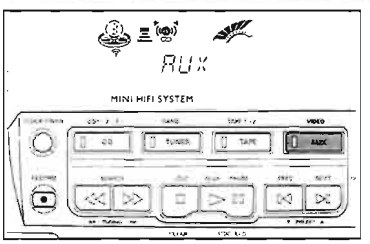
1 You can rewind or fast forward the tape by pressing ◀◀ or ▶▶ respectively.
→ "⟪ or ⟫" will be displayed depending on which button is pressed.
→ The tape will stop automatically at the end of the rewinding or fast forwarding.

2 Press **STOP** ■ to stop rewind or fast forward.

During playback
- Press and hold ◀◀ or ▶▶ respectively until the desired passage is located.
→ During searching, the sound is reduced to a low volume.
→ When you release ◀◀ or ▶▶, the tape continues playing.

Notes:
- *During rewinding or fast forwarding of a tape, it is possible to select another source (e.g. CD, TUNER or AUX mode).*
- *Check and tighten slack tape with a pencil before use. Slack tape may get jammed or may burst in the mechanism.*
- *C-120 tape is extremely thin and is easily deformed or damaged. It is not recommended for use in this system.*
- *Store the tapes at room temperature and do not put them too close to a magnetic field (for example, a transformer, TV or loudspeaker boxes).*

AUX



Selecting External Equipment

If you have connected the audio out terminals of the external equipment (TV, VCR, Laser Disc or DVD player) to the AUX IN terminals, you can hear the sound from the system.

- Press **AUX** to select the external mode.
→ "AUX" will be displayed.

Note:
- *All the sound control features (e.g. DSC, DBB, etc.) are available for selection.*

RECORDING

IT IS RECOMMENDED THAT YOU SWITCH OFF DOLBY PRO LOGIC WHEN RECORDING.

Notes:
- *For recording, use only tape of IEC type I (normal tape) or IEC type II (Chrome).*
- *The tape is secured at both ends with leader tape. At the beginning and end of tape, nothing will be recorded for six to seven seconds.*
- *The recording level is set automatically, regardless of the position of VOLUME, DBB or Incredible Surround.*
- *To prevent accidental recording, break out the tab on the left shoulder of the tape side you want to protect.*
- *If "CHECK TAPE" is displayed, the protection tab has been broken. Put a piece of clear adhesive tape over the opening. Do not cover the CrO_2 tape detection hole when covering the tab opening.*

One Touch Recording

- For One Touch Recording, as soon as you press **RECORD**, the current source will be recorded on tape deck 2.

1 Load a blank tape in tape deck 2.

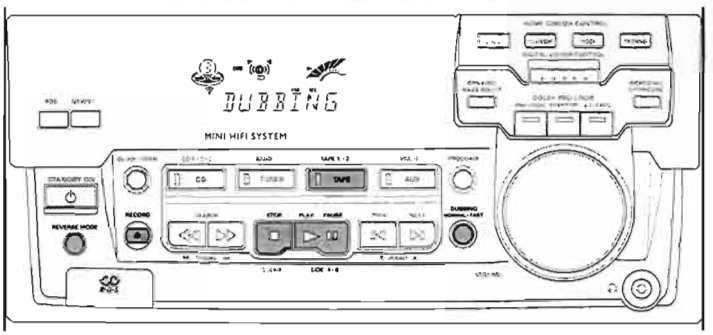
2 Press **RECORD** to start recording.
→ The REC flag starts flashing.

3 Press **STOP** ■ to stop recording.

Note:
- *When you press RECORD at TAPE mode, "SELECT OTHER SOURCE" will be displayed. One Touch Recording is not possible at TAPE mode.*

RECORDING

English



Recording from other sources *(only on tape deck 2)*

1 Press **TAPE** to select tape deck 2.
2 Load a blank tape into tape deck 2 with the open side downward.
3 Press **SIDE** on remote control to select the recording side.
→ The ◀ or ▶ (back or front) flag will be displayed, depending on the side selected.
4 Press **REVERSE MODE** to select the playback mode (⇄ or ⇉).
5 Press **CD**, **TUNER** or **AUX**.
• Start playback of the selected source.
6 Press **RECORD** to start recording.
→ The REC flag starts flashing.
7 Press **STOP** ■ to stop recording.

Notes:
– *Only ⇄ or ⇉ mode is available during recording.*
– *During recording, it is not possible to listen to another source.*

Dubbing tapes *(from tape deck 1 to tape deck 2)*

1 Press **TAPE** to select tape deck 2.
2 Load the prerecorded tape into tape deck 1 and a blank tape into tape deck 2.
→ Make sure that the tape in tape deck 1 has its full spool to the left.
3 Press **SIDE** on remote control to select the recording side.
4 Press **DUBBING** ***once*** for normal speed dubbing or ***twice*** *(within 2 seconds)* for high speed dubbing.
→ "NORMAL" (normal speed) or "FAST" (high speed) will be displayed and then followed by "DUBBING".
→ The HSD flag appears on the display for high speed dubbing.
• Dubbing will start immediately.
→ The REC flag starts flashing.
5 Press **STOP** ■ to stop dubbing.

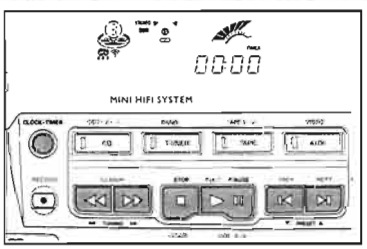
Notes:
– *At the end of side A, flip the tapes to side B and repeat the procedure.*
– *Dubbing of tapes is only possible from tape deck 1 to tape deck 2.*
– *To ensure good dubbing, use tapes of the same length.*
– *During high speed dubbing in Tape mode, the sound is reduced to a low volume.*
– *You can switch to other source while dubbing.*

CD Synchro Start Recording

1 Load a blank tape into tape deck 2 and a disc into the disc tray.
2 Press **CD** to select CD mode.
• You can program the tracks in the order you want them to be recorded (see Programming Tracks). If not, the tracks are recorded according to the selected disc.
3 Press **RECORD** to start recording.
→ The REC flag starts flashing.
• CD will start playback automatically.
4 Press **STOP** ■ to stop recording.

CLOCK TIMER

English



View Clock

You can view the clock (if it is set) at standby or any source mode. It will be displayed for about 7 seconds.

• Press **CLOCK•TIMER** briefly.
→ "10:25" (the current time) will be displayed.
→ "- - : - -" will be displayed if the clock is not set.

Clock setting

The clock is set in 24-hour mode, e.g. 00:00 or 23:59. Before setting the clock, you must be in the View Clock mode.

1 Press **CLOCK•TIMER** to select clock mode.
→ "00:00" or the current time starts flashing.
→ "◀◀, ▶▶, |◀, ▶|, ■ " light up.
2 Set the hour with ◀◀ or ▶▶.
3 Set the minute with |◀ or ▶|.
4 Press **CLOCK•TIMER** again to store the setting.
→ The clock starts running.
• To exit without storing the setting, press **STOP** ■.

Notes:
– *During clock setting, if no button is pressed within 90 seconds, the system will exit clock setting mode automatically.*
– *When power interruption occurs, the clock setting is erased.*
– *To set the time with RDS clock, see "RECEIVING RDS RADIO STATION" under TUNER section.*

Timer Setting

• The system can switch on to CD, TUNER or TAPE 1 mode automatically at a preset time. It can serve as an alarm to wake you up. After half an hour from the preset time, the system will return to the standby mode if no button is pressed.
• Before setting the timer, make sure the clock is set correctly.
• The timer has to be reset or started again for each subsequent preset time.
• **The volume of the timer will be at the last setting before the system is switched to standby mode.**

1 Press and hold **CLOCK•TIMER** for more than 2 seconds to select timer mode.
→ "ON 00:00" or the last set timer starts flashing. The TIMER flag will be displayed.
→ The last selected source is lighted while other available sources are flashing.
→ "◀◀, ▶▶, |◀, ▶|, ■ " light up.
2 Press **CD**, **TUNER** or **TAPE** to select the desired source.
• Before selecting CD or TAPE mode, make sure that a CD or tape is loaded respectively in the CD tray or tape deck 1.
3 Press ◀◀ or ▶▶ to set the hour for the timer to start.
4 Press |◀ or ▶| to set the minute for the timer to start.
5 Press **CLOCK•TIMER** again to store the start time and the selected source.
→ The TIMER is now set.
→ The TIMER flag remains on the display.
• To exit without storing the setting, press **STOP** ■.
• At the preset time, the TIMER will be activated.
→ The selected source will be played.
→ The TIMER flag disappears from the display.

Notes:
– *During timer setting, if no button is pressed within 90 seconds, the system will exit timer setting mode automatically.*
– *If the source selected is TUNER, the last tuned frequency will be switched on.*
– *If the source selected is CD, playback will begin with the first track of the last selected disc. If the CD trays are empty, the TUNER will be selected instead.*
– *If the source selected is TAPE 1, and if the preset time is reached during high speed dubbing, the TUNER will be selected instead.*

To cancel the TIMER
1 Press **CLOCK•TIMER** for more than 2 seconds.
2 Press **PAUSE** ❚❚ to cancel the timer.
→ "CANCEL" will be displayed.
→ The TIMER flag disappears from the display.

To start the TIMER again *(for the same time)*
1 Press **CLOCK•TIMER** for more than 2 seconds.
2 Press **CLOCK•TIMER** again to store the start time and the selected source.

English

MAINTENANCE

Maintenance

Cleaning the Cabinet
- Use a soft cloth slightly moistened with a mild detergent solution. Do not use a solution containing alcohol, spirits, ammonia or abrasives.

Cleaning Discs
- When a disc becomes dirty, clean it with a cleaning cloth. Wipe the disc from the center out.
- Do not use solvents such as benzine, thinner, commercially available cleaners, or antistatic spray intended for analog records.

Cleaning the CD lens
- After prolonged usage, dirt of dust may accumulate at the CD lens. To ensure good playback quality, clean the CD lens with Philips CD Lens Cleaner or any commercially available. Follow the instructions supplied with the Lens Cleaner.

Cleaning the Heads and the Tape Paths
- To ensure good recording and playback quality, clean the heads, capstan(s) and pressure roller(s) after every 50 hours of tape operation.
- Use a cotton swab slightly moistened with cleaning fluid or alcohol.
- You can also clean the heads by playing a cleaning tape through once.

Demagnetizing the heads
- Use a demagnetizing tape available at your dealer.

TROUBLESHOOTING

Warning! Under no circumstances should you try to repair the system yourself, as this will invalidate the warranty.

- If a fault occurs, check the points listed below before taking the system for repair.
- Should any problems persist after you have made these checks, consult your nearest dealer or service center.

CD Player Operation

"NO DISC" is displayed.
- The disc is inserted upside down.
→ *Place CD with printed side up.*
- Moisture condensation at the lens.
→ *Wait until lens has adjusted to normal room temperature.*
- There is no disc in the CD tray.
→ *Insert a CD.*
- The CD is dirty, badly scratched or warped.
→ *Clean or replace the CD.*
- The CD lens is dirty or dusty.
→ *See section under Maintenance.*

TROUBLESHOOTING

English

Radio Reception

Poor radio reception
- The signal strength is too weak.
→ *Adjust the antenna.*
- The TV or VCR is too close to the stereo system.
→ *Separate the stereo system from the TV or VCR.*
→ *Connect an external antenna for better reception.*

"NO RDS TEXT" is displayed.
- RDS text message is not available.
→ *Select another RDS station.*

Tape Deck Operation

"RECORDING ACTIVE" is displayed.
- A recording is in progress.
→ *Stop the recording or wait until it is finished.*

"TAPE DUBBING ONLY" is displayed.
- Tape dubbing is only possible in tape mode.
→ *Switch source to tape mode.*

Recording or playback cannot be made or there is a decrease in audio level.
- Dirty tape heads, capstans or pressure rollers.
→ *See section on tape deck maintenance.*
- Magnetic build-up in the record/playback head.
→ *Use demagnetizing tape.*

Recorded material sounds strange.
- Tape was recorded in one of the Dolby Pro Logic modes.
→ *Switch off Dolby Pro Logic mode when recording.*

General

System switches to standby mode automatically *(for model FW775 only).*
- The system is operating in an extremely hot environment or internal heat build-up is high.
→ *This is not a malfunction. The system incorporates a built-in safety feature that prevents overheating.*
→ *Let the system cool down, then switch on again.*

System does not react when any button is pressed.
- Electrostatic discharge.
→ *Press STANDBY-ON to switch the system off. Remove the AC power plug from the wall outlet, then reconnect and switch on the system again.*

No or poor sound.
- Volume is not turned up.
→ *Adjust VOLUME.*
- The headphones are connected.
→ *Disconnect the headphones.*
- Speakers are not connected or are connected wrongly.
→ *Check that the speakers are connected correctly.*
→ *Make sure that the stripped speaker wire is clamped.*

Reversed left and right sound.
- Speakers are incorrectly connected.
→ *Check the speaker connections and location.*

Lack of bass sound or apparently imprecise physical location of musical instruments.
- Speakers are incorrectly connected.
→ *Check the speaker connection for proper phasing, red/black wires to red/black terminals.*

Remote control has no effect on the system.
- Wrong source is selected.
→ *Select the source (CD, TUNER, etc.) before pressing the function button (PLAY, PREV/NEXT, etc.).*
- The distance to the system is too large.
→ *Reduce the distance.*
- Batteries are inserted incorrectly.
→ *Insert the batteries with their polarities (+/- signs) as indicated.*
- Batteries are exhausted.
→ *Replace the batteries.*

Timer not working.
- Timer is not switched on.
→ *Press CLOCK•TIMER on the system to switch on the timer.*
- Dubbing/recording is in progress.
→ *Stop dubbing/recording.*

System display features automatically and buttons flashing continuously.
- Demonstration mode is switched on.
→ *Press and hold STOP ■ for 3 seconds to switch off the demonstration mode.*

"UNPLUG HEADPHONES" is displayed.
- Headphones is connected.
→ *Disconnect the headphones.*

English

MAINTENANCE

Maintenance

Cleaning the Cabinet
- Use a soft cloth slightly moistened with a mild detergent solution. Do not use a solution containing alcohol, spirits, ammonia or abrasives.

Cleaning Discs
- When a disc becomes dirty, clean it with a cleaning cloth. Wipe the disc from the center out.
- Do not use solvents such as benzine, thinner, commercially available cleaners, or antistatic spray intended for analog records.

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- After prolonged usage, dirt of dust may accumulate at the CD lens. To ensure good playback quality, clean the CD lens with Philips CD Lens Cleaner or any commercially available. Follow the instructions supplied with the Lens Cleaner.

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- You can also clean the heads by playing a cleaning tape through once.

Demagnetizing the heads
- Use a demagnetizing tape available at your dealer.

TROUBLESHOOTING

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- Should any problems persist after you have made these checks, consult your nearest dealer or service center.

CD Player Operation

"NO DISC" is displayed.
- The disc is inserted upside down.
→ *Place CD with printed side up.*
- Moisture condensation at the lens.
→ *Wait until lens has adjusted to normal room temperature.*
- There is no disc in the CD tray.
→ *Insert a CD.*
- The CD is dirty, badly scratched or warped.
→ *Clean or replace the CD.*
- The CD lens is dirty or dusty.
→ *See section under Maintenance.*

TROUBLESHOOTING

English

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Poor radio reception
- The signal strength is too weak.
→ *Adjust the antenna.*
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- RDS text message is not available.
→ *Select another RDS station.*

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→ *Stop the recording or wait until it is finished.*

"TAPE DUBBING ONLY" is displayed.
- Tape dubbing is only possible in tape mode.
→ *Switch source to tape mode.*

Recording or playback cannot be made or there is a decrease in audio level.
- Dirty tape heads, capstans or pressure rollers.
→ *See section on tape deck maintenance.*
- Magnetic build-up in the record/playback head.
→ *Use demagnetizing tape.*

Recorded material sounds strange.
- Tape was recorded in one of the Dolby Pro Logic modes.
→ *Switch off Dolby Pro Logic mode when recording.*

General

System switches to standby mode automatically *(for model FW775 only).*
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- Electrostatic discharge.
→ *Press STANDBY-ON to switch the system off. Remove the AC power plug from the wall outlet, then reconnect and switch on the system again.*

No or poor sound.
- Volume is not turned up.
→ *Adjust VOLUME.*
- The headphones are connected.
→ *Disconnect the headphones.*
- Speakers are not connected or are connected wrongly.
→ *Check that the speakers are connected correctly.*
→ *Make sure that the stripped speaker wire is clamped.*

Reversed left and right sound.
- Speakers are incorrectly connected.
→ *Check the speaker connections and location.*

Lack of bass sound or apparently imprecise physical location of musical instruments.
- Speakers are incorrectly connected.
→ *Check the speaker connection for proper phasing, red/black wires to red/black terminals.*

Remote control has no effect on the system.
- Wrong source is selected.
→ *Select the source (CD, TUNER, etc.) before pressing the function button (PLAY, PREV/NEXT, etc.).*
- The distance to the system is too large.
→ *Reduce the distance.*
- Batteries are inserted incorrectly.
→ *Insert the batteries with their polarities (+/- signs) as indicated.*
- Batteries are exhausted.
→ *Replace the batteries.*

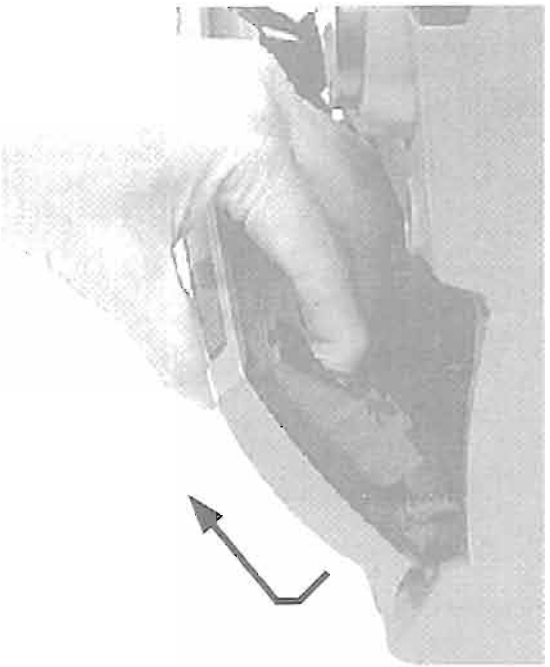
Timer not working.
- Timer is not switched on.
→ *Press CLOCK•TIMER on the system to switch on the timer.*
- Dubbing/recording is in progress.
→ *Stop dubbing/recording.*

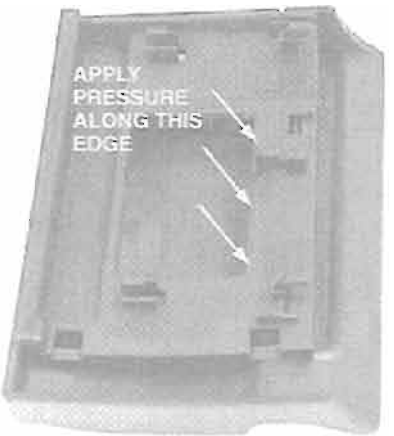
System display features automatically and buttons flashing continuously.
- Demonstration mode is switched on.
→ *Press and hold STOP ■ for 3 seconds to switch off the demonstration mode.*

"UNPLUG HEADPHONES" is displayed.
- Headphones is connected.
→ *Disconnect the headphones.*

DISMANTLING INSTRUCTIONS

Dismantling of the Cassette Cover

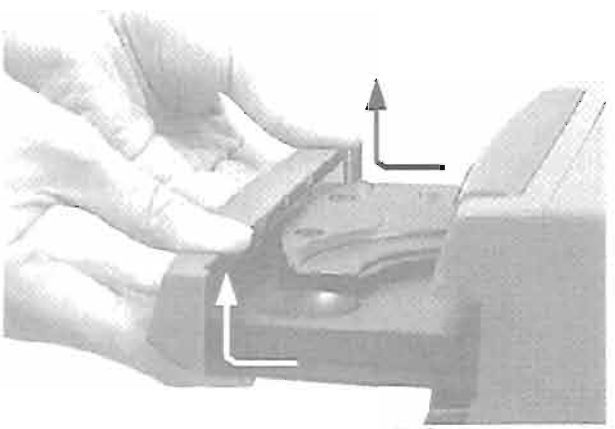




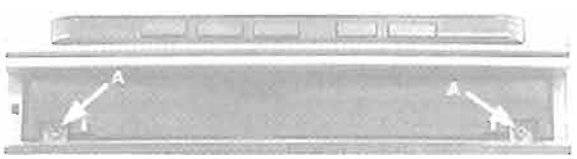
Cassette door

Dismantling of the CDC Module and Front Panel

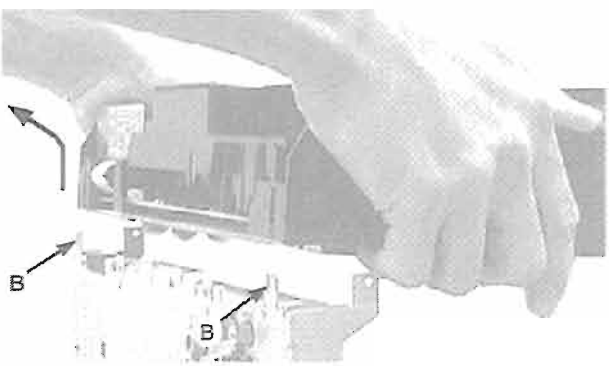
1) Loosen the 16 screws to remove the Cabinet Rear (pos 289).
   - 5 screws each on the left & right side of the Cabinet
   - 6 screws at the rear of the Cabinet
2) Remove the Plate EMC (pos 277).
3) Slide out the tray and remove the Cover Tray CDC (pos 205) as indicated.
4) Loosen the 2 screws A and 2 screws B to remove the CDC Module (pos 1104) as indicated.
5) Remove 1 screw N (see Rear Portion Picture) and lift the Bar Tuner (pos 272) out of the Rear Plate (pos 284).
6) Remove 1 screw (pos 287) at the bottom of the Bottom Plate to separate the Front Panel Assembly from the Bottom Plate (pos 286).



Remove Cover Tray CDC



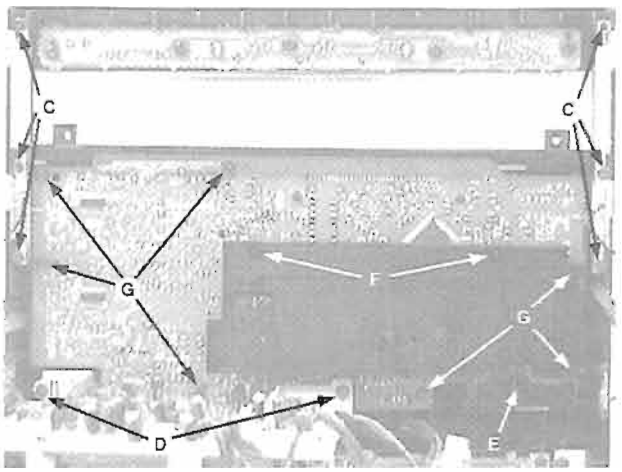
Front CDC



Remove CDC Module

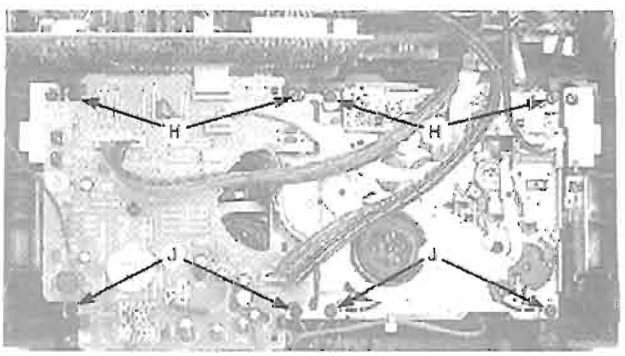
Dismantling of the Front Board

1) Remove 1 screw (pos 274) to loosen the Dolby Pro-logic Board (pos 1107) and lift the Bar Tuner (pos 272) out of the Plate Front (pos 266).
2) Remove 6 screws C as indicated to take out the CDC Left Bracket (pos 267) and CDC Right Bracket (pos 268).
3) Remove 2 screws D as indicated to loosen the AF Board (pos 1101).
4) Remove 1 screw E as indicated to loosen the Karaoke Board (only for set with Karaoke board).
5) Remove 2 screws F as indicated to lossen the Plate Front (pos 266) from the Front Board.
6) Remove 7 screws G as indicated to loosen the Front Board (pos 1102).



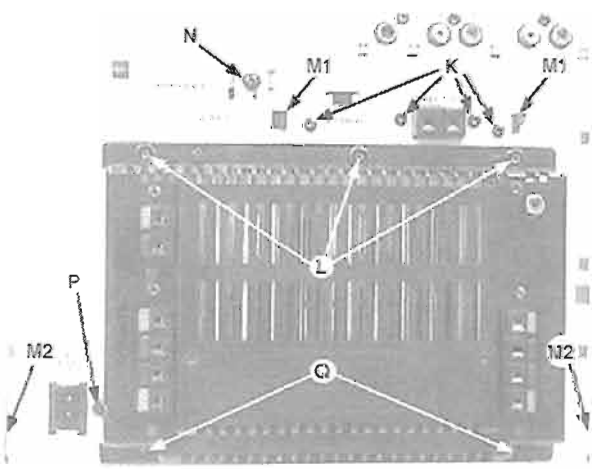
Dismantling of the ETF Module

1) Remove 8 screws (4 screws H and 4 screws J) as indicated to loosen the ETF6 Module (pos 1105).



Dismantling of Rear Portion

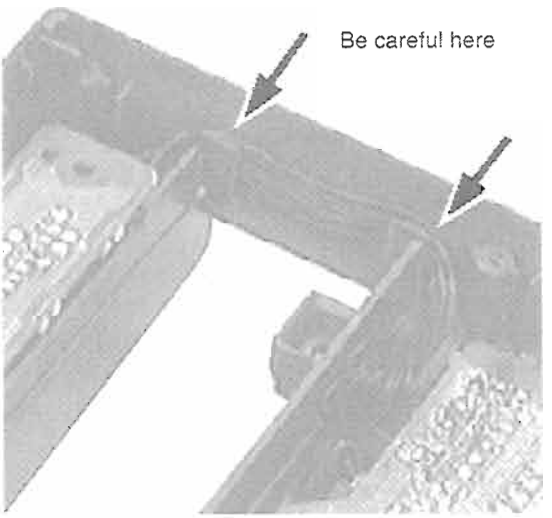
1) Remove 4 screws K and uncatch M1 to loosen the Tuner Board (pos 1100).
2) Remove 3 screws L and 1 screw P (if obstructed) and uncatch M2 to take out the Rear Plate (pos 284).
3) Remove 2 screws Q to free the Power Module (pos 1103) from the Bottom Plate assembly.



Repair Hints

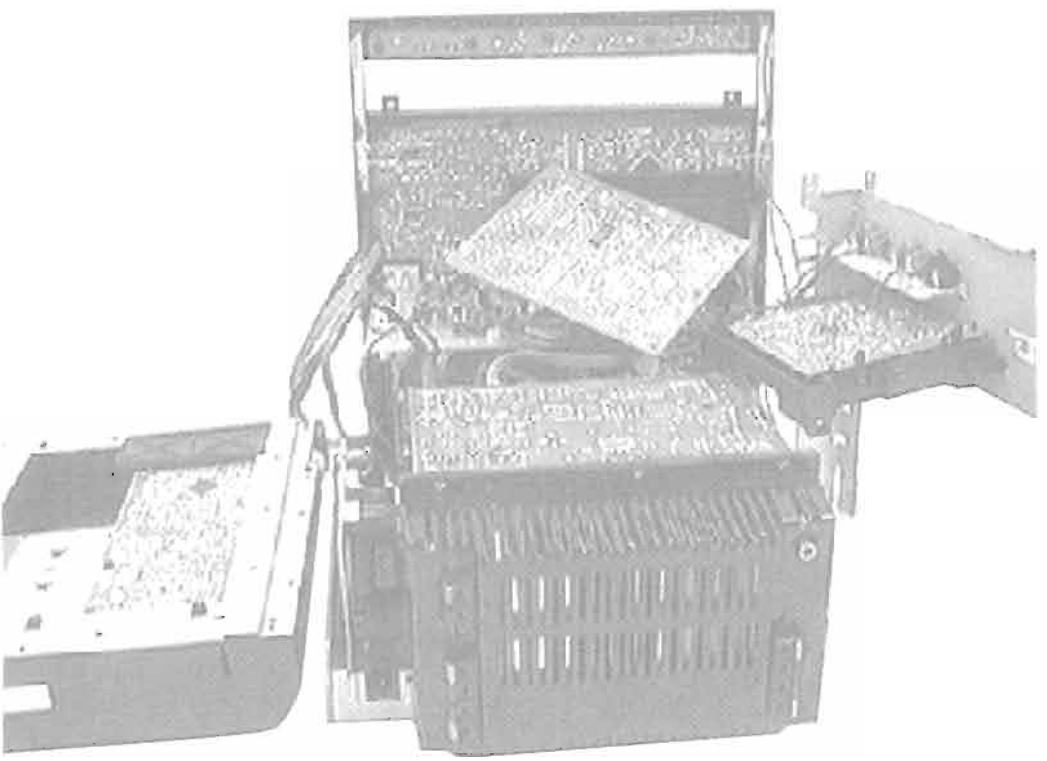
1) During re-assembly Front board, care should be taken to dress the thin bunch of wires (between Front board & CDC Key board) properly in the slots provided so that it will not be damaged by the CDC bracket (pos 267). See picture 1.

2) During repair it is possible to disconnect the Tuner board and CDC Module completely unless the fault is suspected to be in that area. This will not affect the performance of the rest of the set.

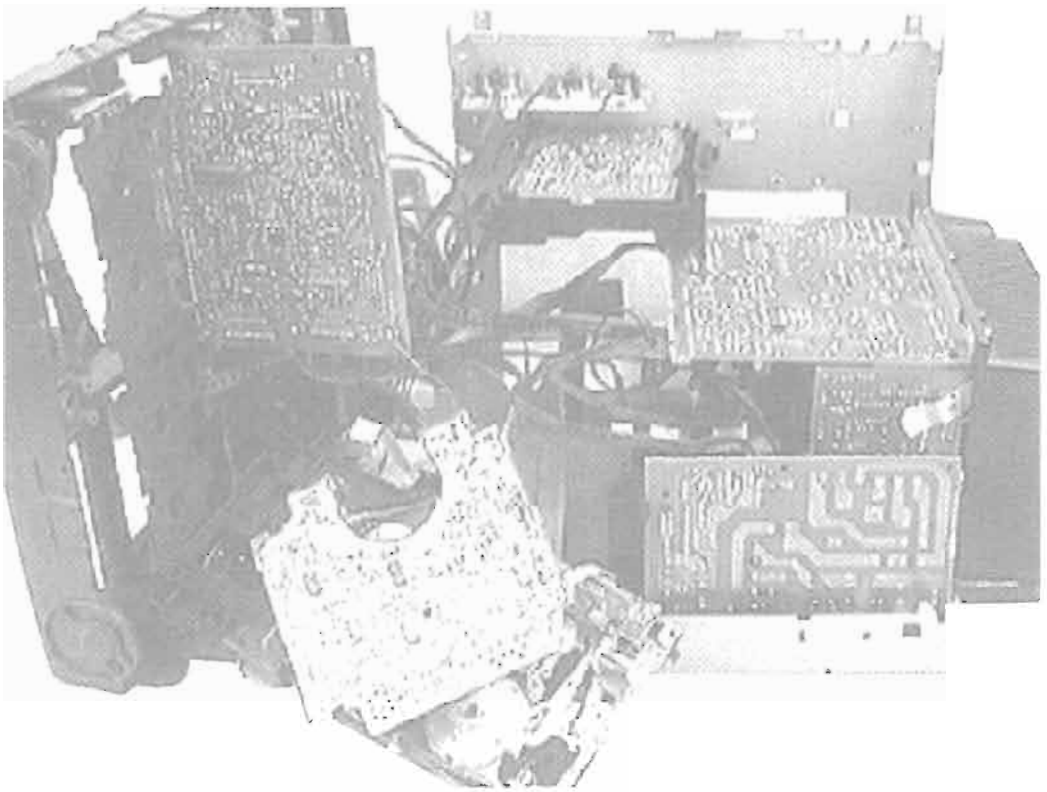


Picture 1

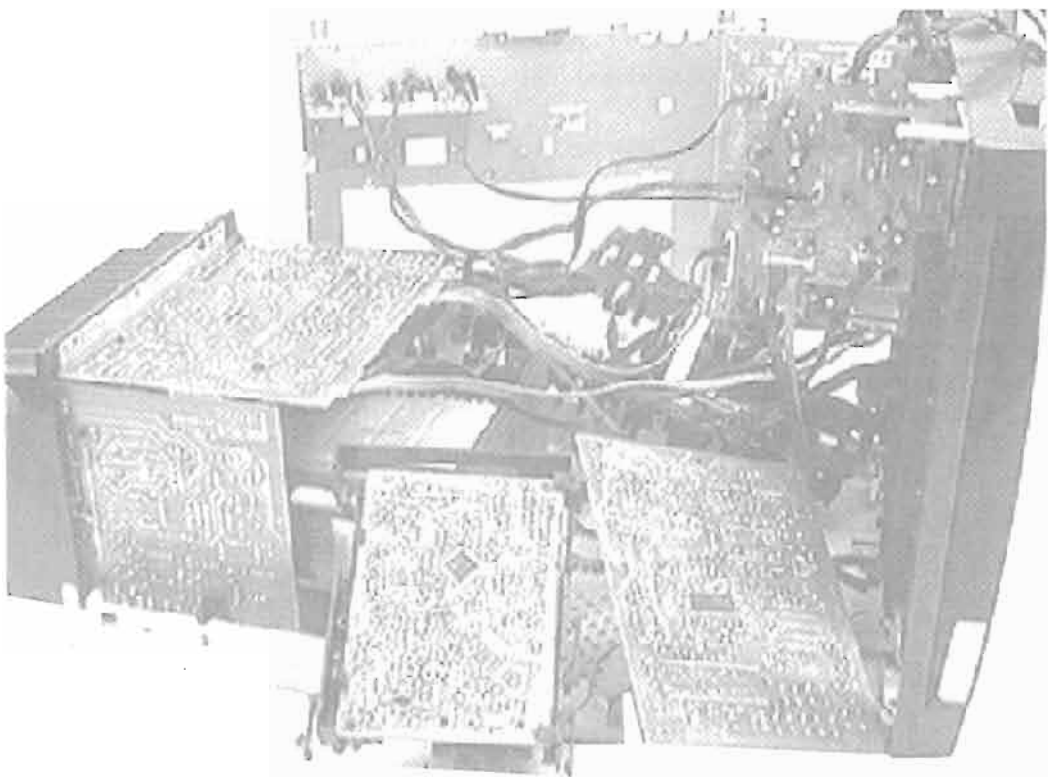
Service pos A



Service pos B

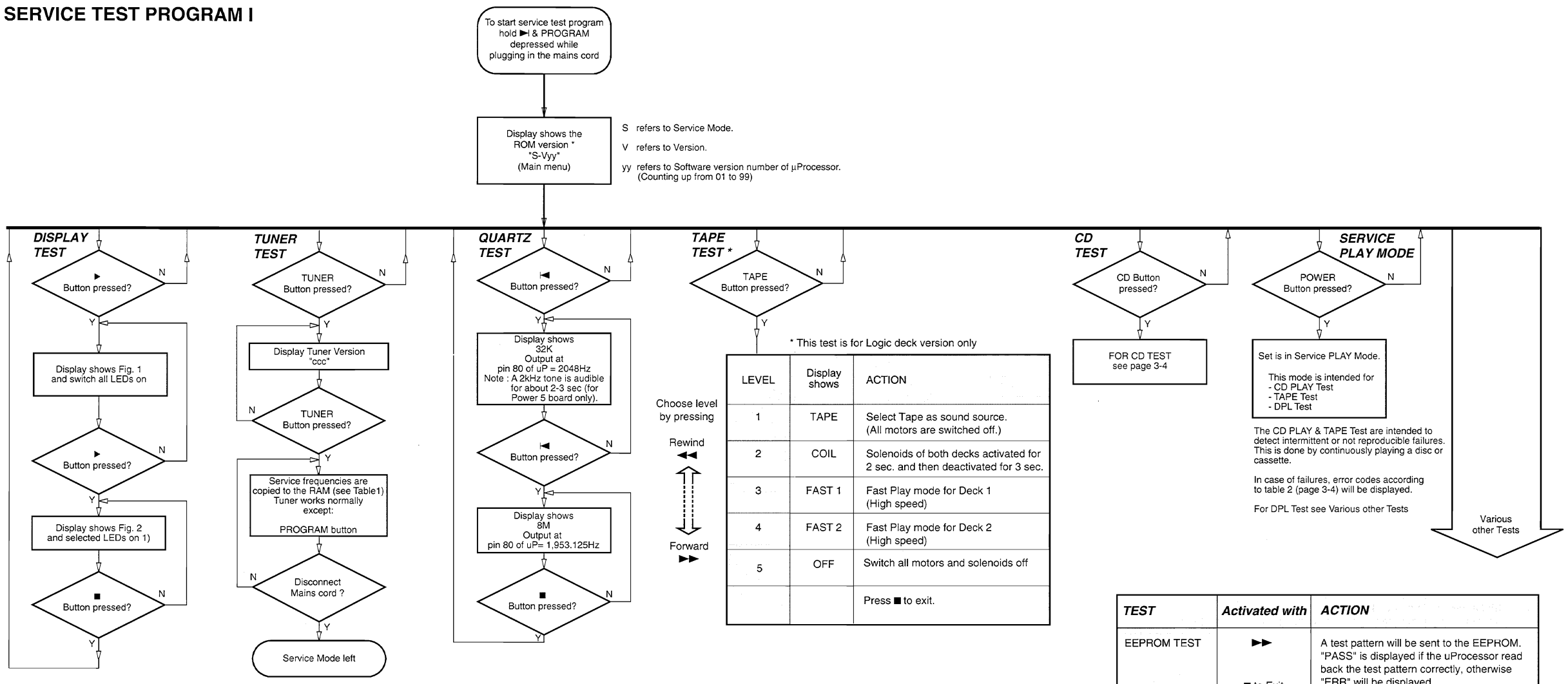


Service pos C



3-3

SERVICE TEST PROGRAM I



LEVEL	Display shows	ACTION
1	TAPE	Select Tape as sound source. (All motors are switched off.)
2	COIL	Solenoids of both decks activated for 2 sec. and then deactivated for 3 sec.
3	FAST 1	Fast Play mode for Deck 1 (High speed)
4	FAST 2	Fast Play mode for Deck 2 (High speed)
5	OFF	Switch all motors and solenoids off
		Press ■ to exit.

PRESET	Europe "EUR"	East Eur. 3-band "EAS"	East Eur. 2-band "EAS"	USA "USA"	Oversea "OSE"	Korea "KOR"	Japan "JAP"
1	87.5MHz	65.81MHz	65.81MHz	87.5MHz	87.5MHz	87.5MHz	76MHz
2	108MHz	108MHz	108MHz	108MHz	108MHz	108MHz	CH3 107.75MHz
3	531kHz	74MHz	74MHz	530kHz	531/530kHz	531kHz	90MHz
4	1602kHz	87.5MHz	87.5MHz	1700kHz	1602/1700kHz	1602kHz	CH1 95.75MHz
5	558kHz	531kHz	531kHz	560kHz	558/560kHz	558kHz	CH2 101.75MHz
6	1494kHz	1602kHz	1602kHz	1500kHz	1494/1500kHz	1494kHz	531kHz
7	153kHz	558kHz	558kHz	98MHz	87.5MHz	87.5MHz	1602kHz
8	279kHz	1494kHz	1494kHz	87.5MHz	87.5MHz	87.5MHz	558kHz
9	198kHz	153kHz	98MHz	87.5MHz	87.5MHz	87.5MHz	1494kHz
10	98MHz	279kHz	70.01MHz	87.5MHz	87.5MHz	87.5MHz	80MHz
11	87.5MHz	198kHz	65.81MHz	87.5MHz	98MHz	98MHz	76MHz

Table 1

East Europe TUNER IF offset correction

1) Input a reference frequency 87.5MHz from the generator.

2) Proceed to the Tuner Test Mode

3) Hold TUNER button down for > 3 seconds

4) The set will self-calibrate automatically and display "OFS-xx" when calibration is successful, otherwise it will display "00E".

xx : offset value between -3 to +3

Note: This has to be done whenever the Eeprom, Microprocessor or the components in the oscillator circuitry are replaced.

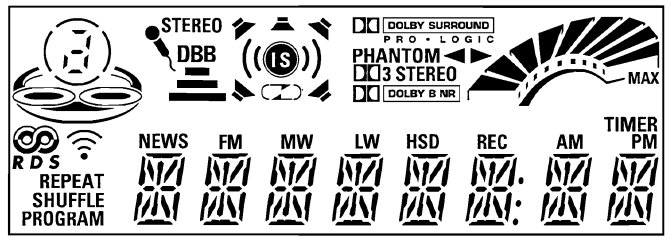
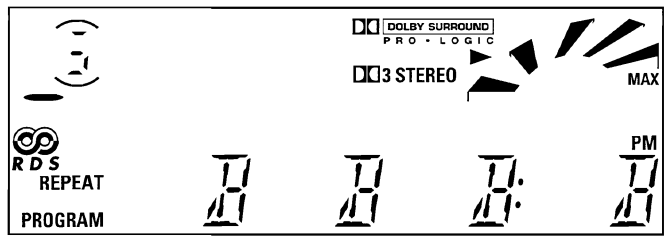


Figure 1



1) CDC1, CDC3, Tuner, Aux, Incredible Surround, Jazz, Rock, Center Phantom, ◄◄, ▶, I◄.

Figure 2

TEST	*Activated with*	*ACTION*
EEPROM TEST	►► ■ to Exit	A test pattern will be sent to the EEPROM. "PASS" is displayed if the uProcessor read back the test pattern correctly, otherwise "ERR" will be displayed.
EEPROM FORMAT	◄◄	Load default data. Display shows "NEW" for 1 second. ***Caution!*** ***All presets from the customer will be lost!!***
KEY TEST	▶I ■ to Exit	Key numbers according table 3 are shown on the display. (see Chapter 3-4)
FAST CLOCK TEST	CLOCK/TIMER	The clock is switched to fast mode. "FAST" is displayed for 1 sec. Press CLOCK/TIMER again to reset the clock to normal. "NORMAL" displayed for 1 sec.
VOLUME TEST	Volume Knob	Display shows volume value for 2 seconds. Volume increases or decreases in steps of 1 until 0 (Min.) or 40 (Max.) is reached.
DPL TEST (only possible in Service Play mode)	DPL	The set enters into Pro-logic install mode. The noise-source switches between Left, Center, Right and Rear speakers. Pro-logic settings cannot be install in this test.
LEAVE SERVICE TESTPROGRAM	Disconnect mains cord	

Error code	Type	Error Description
E1000	W	Focus Error Triggered when the focus could not be found within a certain time when starting up the CD or when the focus is lost for a certain time during play.
E1001	W	Radial Error Triggered when the radial servo is off-track for a certain time during play.
E1002	W	Sledge In Error The sledge did not reach its inner position (inner-switch is still close) before approximately 6 Sec. have passed. Inner-switch or sledge motor problem.
E1003	W	Sledge Out Error The sledge did not come out of its inner position (inner-switch is still open) before approximately 250 mSec. have passed by. Inner-switch or sledge motor problem.
E1005	W	Jump-offtrack error Triggered in normal play when the jump destination could not be found within a certain time.
E1006	W	Subcode Error (no subcode within time) Triggered when a new subcode was missing for a certain time during play.
E1007	W	PLL Error The Phase Lock Loop could not lock within a certain time.
E1008	W	Turntable Motor Error Generated when the CD could not reached 75% of speed during startup within a certain time. Discmotor problem.
E1020	F	Focus Search Error The focus point has not been found within a certain time.
E1070	W	The carousel switch is not open within time. This can happen when either the switch is defective and closed all the time, or when the carousel is blocked when located exactly at a disc position.
E1071	W	The carousel position switch did not close within a certain time. This can happen when the switch is defective and never closes electrically, or when the carousel is blocked in between two disc positions. The time-out is approximately 5 Sec.
E1079	W	The drawer could not enter the inside position is opening again. This can be caused because the drawer is blocked by something and cannot go fully inside, or the drawer switch is defective and does not close.
E2020	F	Head Movement Error Deck 1 Generated if the head does not reach the desired position within a certain time.
E2021	F	Head Movement Error Deck 2 Generated if the head does not reach the desired position within a certain time.

F = Fatal error & the set stop play function W = Warning

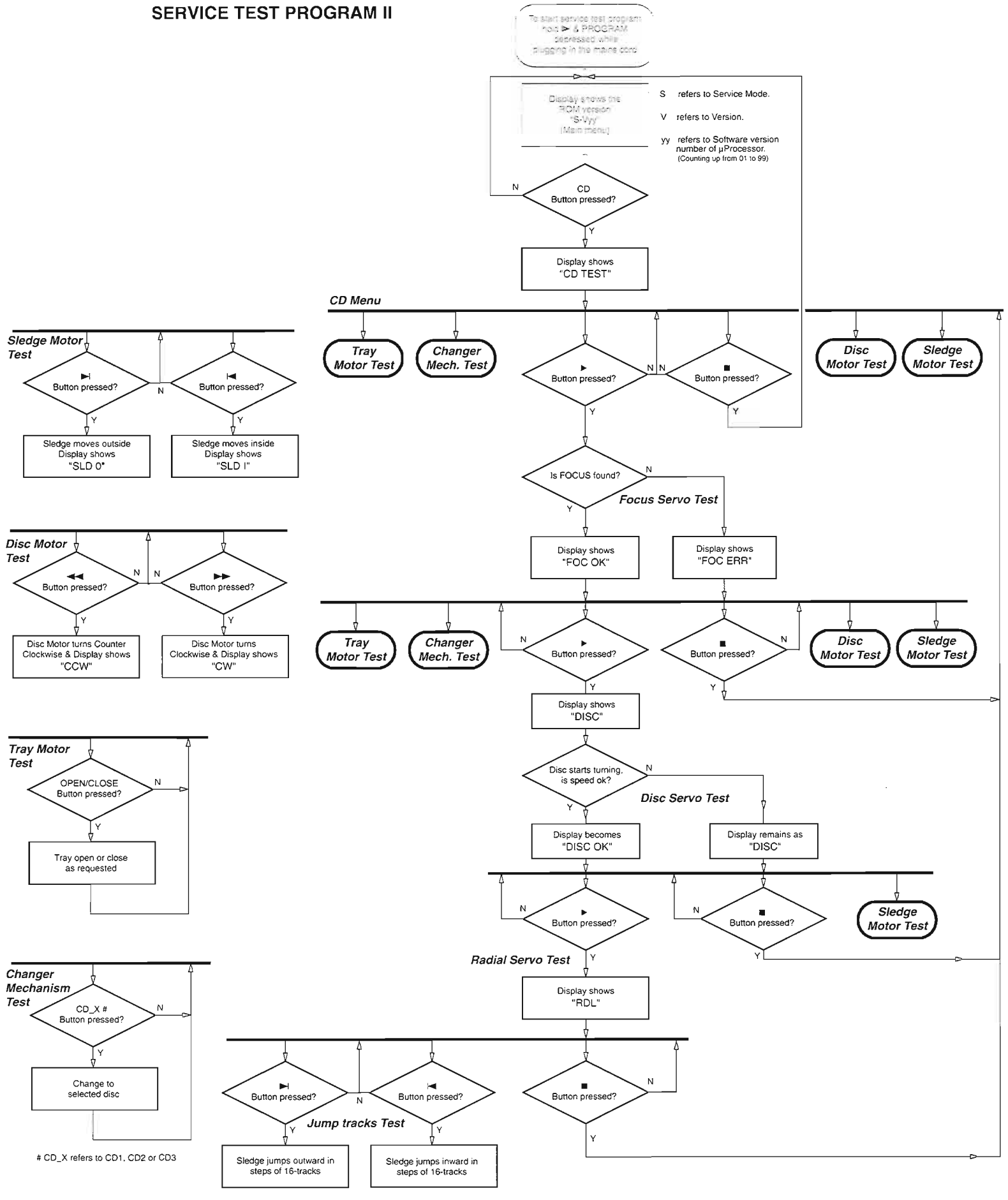
Table 2

Keys activated	Display shows	Keys activated	Display shows	Keys activated	Display shows
No Key pressed	--	PROLOGIC*	10	MODE*	21
Any Remote control key	RC	PHANTOM*	11	RECORD*	22
CD1*	1	3 STEREO*	12	◄◄	23
CD2*	2	INCREDIBLE SURROUND*	13	►►	24
CD3*	3	STANDBY-ON	14	■	Exit
DISC CHANGE	4	CLOCK / TIMER	15	►II	26
OPEN / CLOSE	5	CD	16	I◄	27
RDS*	6	TUNER	17	►I	28
NEWS*	7	TAPE	18	HSD	29
DSC	8	AUX	19		
DBB	9	PROGRAM	20		

* Not for all type/version

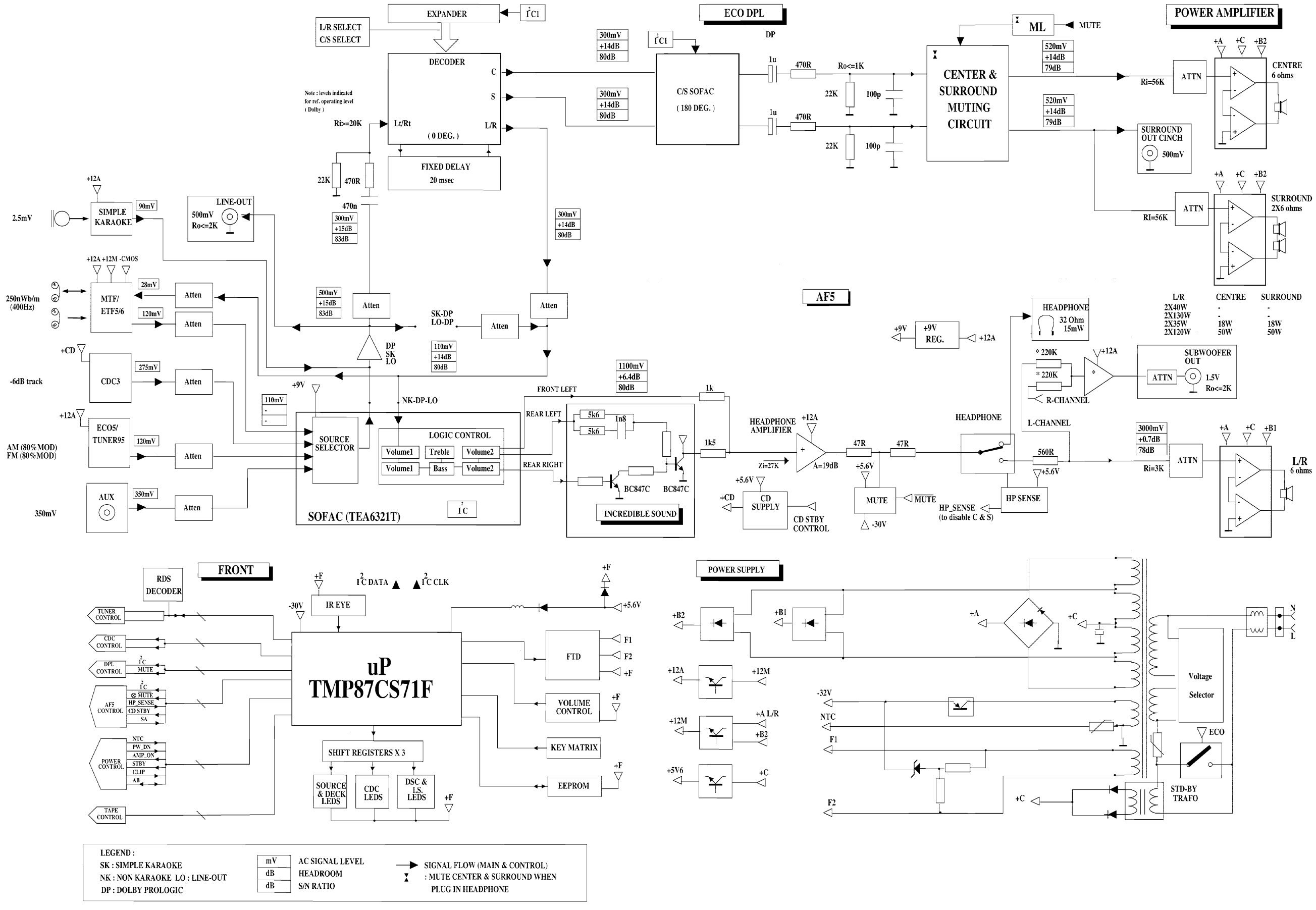
Table 3

SERVICE TEST PROGRAM II



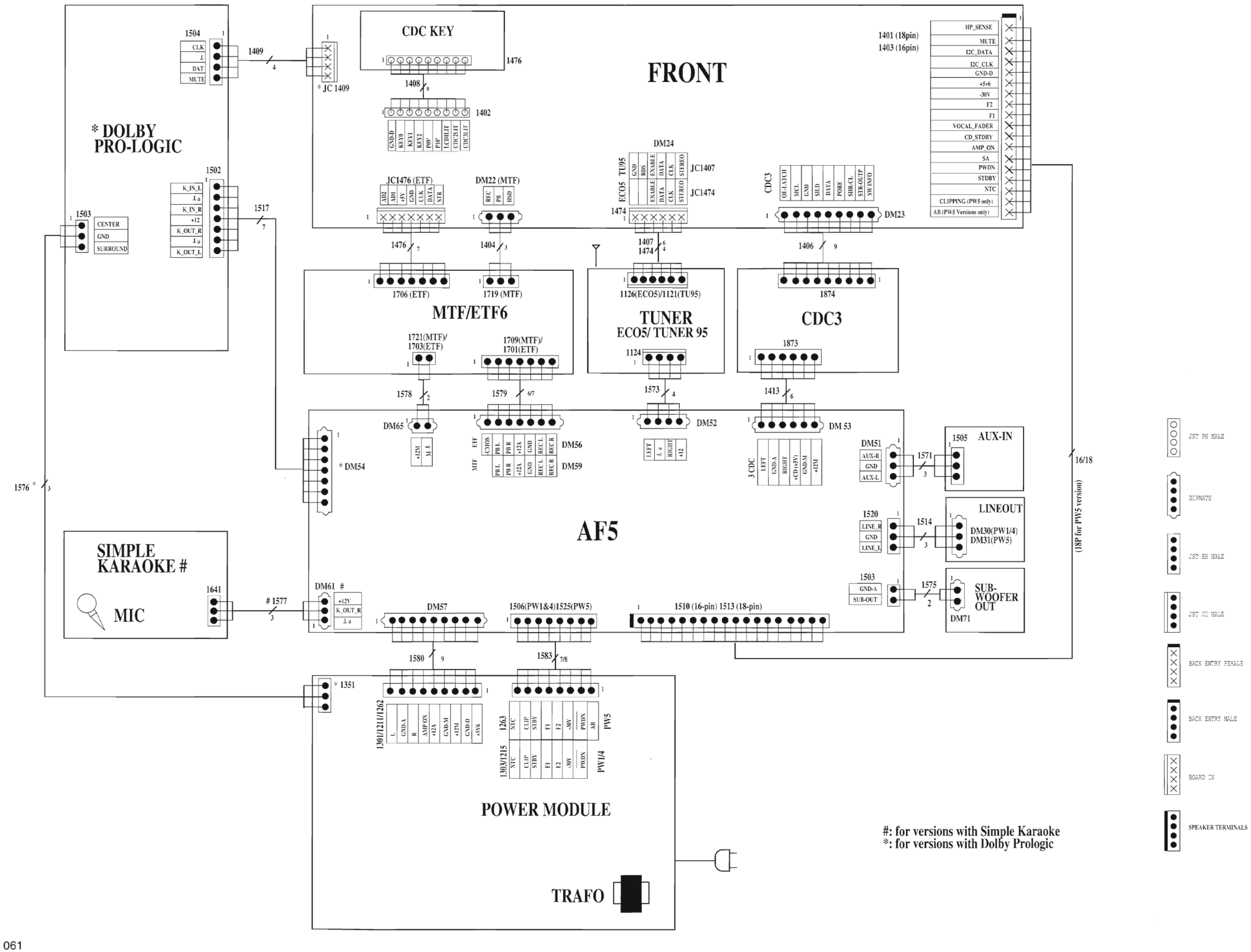
4-1

SET BLOCK DIAGRAM



5-1

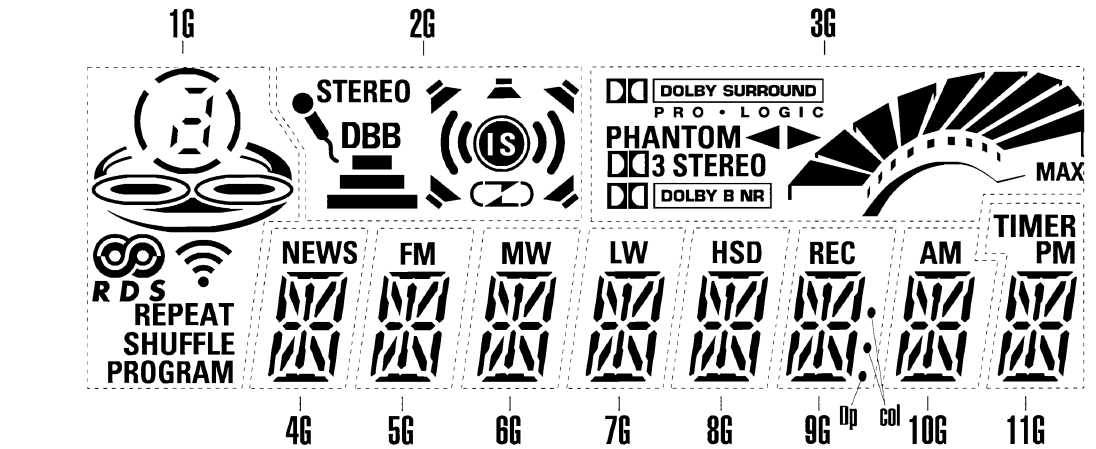
SET WIRING DIAGRAM

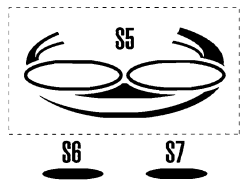


FRONT BOARD

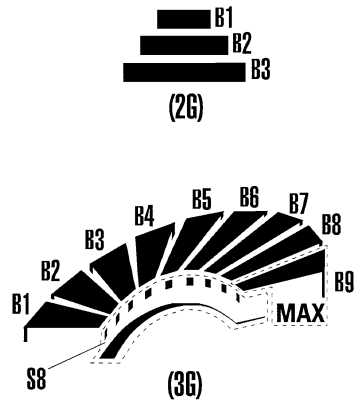
TABLE OF CONTENTS

LCD DISPLAY PIN CONNECTIONS

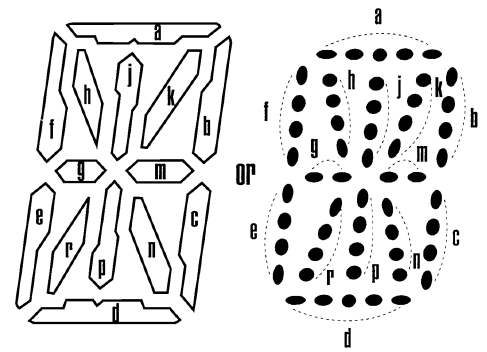




(1G)



(3G)



(4G~11G)

	1G	2G	3G	4G	5G	6G	7G	8G	9G	10G	11G
P1	S1	STEREO	DOLBY SURROUND PRO • LOGIC	a	a	a	a	a	a	a	a
P2	S2	DBB	PHANTOM	h	h	h	h	h	h	h	h
P3	S3	B1	3 STEREO	j , p	j , p	j , p	j , p	j , p	j , p	j , p	j , p
P4	S4	B2	DOLBY B NR	k	k	k	k	k	k	k	k
P5	a , g , d	B3	B1	b	b	b	b	b	b	b	b
P6	b		B2	f	f	f	f	f	f	f	f
P7	c		B3	m	m	m	m	m	m	m	m
P8	e		B4	g	g	g	g	g	g	g	g
P9	REPEAT		B5	c	c	c	c	c	c	c	c
P10	SHUFFLE		B6	e	e	e	e	e	e	e	e
P11	PROGRAM		B7	r	r	r	r	r	r	r	r
P12	S5		B8	n	n	n	n	n	n	n	n
P13	S6		B9	d	d	d	d	d	d	d	d
P14	S7		S8	NEWS	FM	MW	LW	HSD	REC	AM	TIMER
P15	RDS			-	-	-	-	-	col	-	PM
P16				-	-	-	-	-	Dp	-	-

Front Boards appl

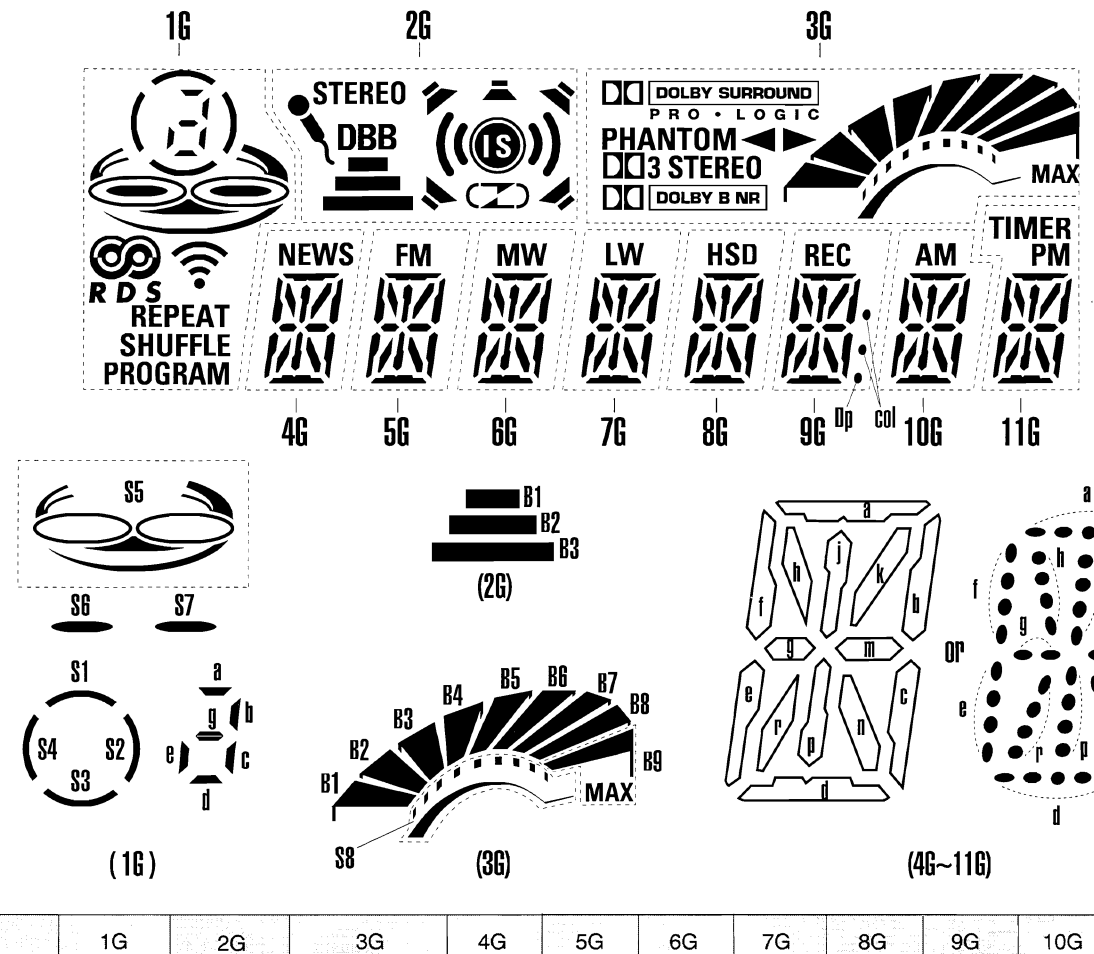
A50350	FV
A50460	FV
A50410	FV
A50420	FV
A50440	FV

Variations table fo

	A5
22	
1401	
1403	
1407	
1458	
1462,1463	
1474	
1476	
2415	
2420	
2421,2422	
2423	
2424	
2425	
2438	
3533	
3534	
3535	
3536	
3537,3538	
3539	
3544	
3603	
3604	
4421	
4610	
4611	
4612	
4613	
4614	
4615	
5415	
5417	
6003	
6007	
6010	
6031	
6054	
7405	

x = Item in use.

LCD DISPLAY PIN CONNECTIONS



	1G	2G	3G	4G	5G	6G	7G	8G	9G	10G	11G
P1	S1	STEREO	DOLBY SURROUND PRO • LOGIC	a	a	a	a	a	a	a	a
P2	S2	DBB	PHANTOM	h	h	h	h	h	h	h	h
P3	S3	B1	3 STEREO	j , p	j , p	j , p	j , p	j , p	j , p	j , p	j , p
P4	S4	B2	DOLBY B NR	k	k	k	k	k	k	k	k
P5	a , g , d	B3	B1	b	b	b	b	b	b	b	b
P6	b		B2	f	f	f	f	f	f	f	f
P7	c		B3	m	m	m	m	m	m	m	m
P8	e		B4	g	g	g	g	g	g	g	g
P9	REPEAT		B5	c	c	c	c	c	c	c	c
P10	SHUFFLE		B6	e	e	e	e	e	e	e	e
P11	PROGRAM		B7	r	r	r	r	r	r	r	r
P12	S5		B8	n	n	n	n	n	n	n	n
P13	S6		B9	d	d	d	d	d	d	d	d
P14	S7		S8	NEWS	FM	MW	LW	HSD	REC	AM	TIMER
P15	RDS			-	-	-	-	-	col	-	PM
P16				-	-	-	-	-	Dp	-	-

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Front Boards application

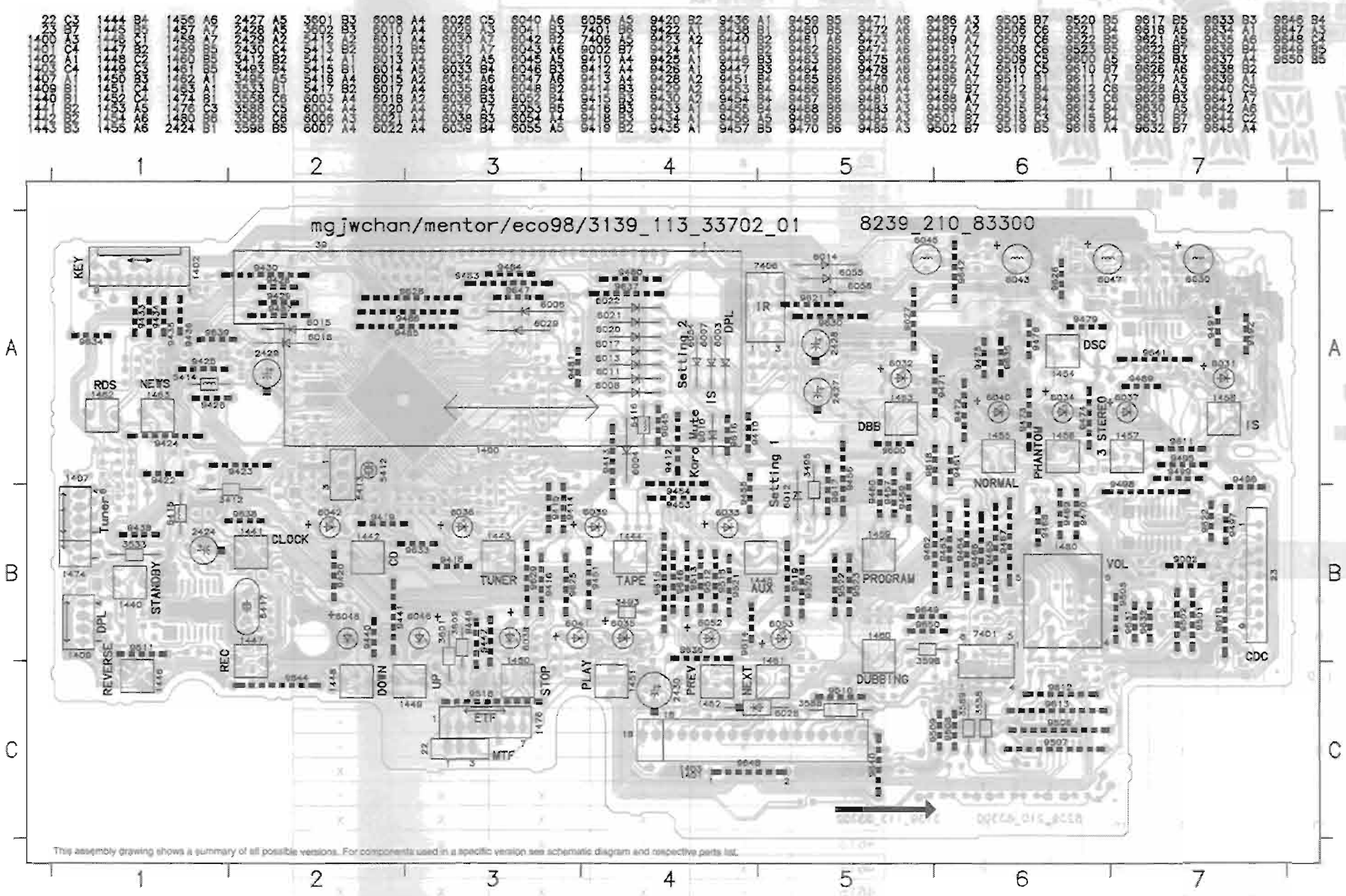
A50350	FW754P/37
A50460	FW765P/21/21M/33
A50410	FW775P/30/37
A50420	FW775P/22
A50440	FW765P/22/34 , FW795W/22

Variations table for Front Board

	A50350	A50460	A50410	A50420	A50440
22	x	-	-	-	-
1401	-	-	x	x	-
1403	x	x	-	-	x
1407	-	-	-	x	x
1458	-	x	x	x	x
1462,1463	-	-	-	x	x
1474	x	x	x	-	-
1476	-	x	x	x	x
2415	-	-	-	100pF	100pF
2420	-	-	-	47pF	47pF
2421,2422	-	-	-	47pF	47pF
2423	-	-	-	560pF	560pF
2424	-	-	-	2,2µF	2,2µF
2425	-	-	-	100nF	100nF
2438	-	-	-	560pF	560pF
3533	-	-	-	1k	1k
3534	-	-	-	220k	220k
3535	-	-	-	2k2	2k2
3536	10k	10k	10k	-	-
3537,3538	-	-	-	10k	10k
3539	10k	10k	10k	-	-
3544	-	220R	220R	220R	220R
3603	6k8	-	-	-	-
3604	8k2	-	-	-	-
4421	x	-	-	-	-
4610	-	-	-	x	x
4611	-	-	x	x	-
4612	-	x	x	x	x
4613	-	-	x	x	-
4614	x	-	-	-	-
4615	-	x	x	x	x
5415	-	-	-	x	x
5417	-	-	-	x	x
6003	x	-	x	x	-
6007	x	-	-	-	-
6010	-	x	-	-	-
6031	-	x	x	x	x
6054	-	-	x	x	-
7405	-	-	-	x	x

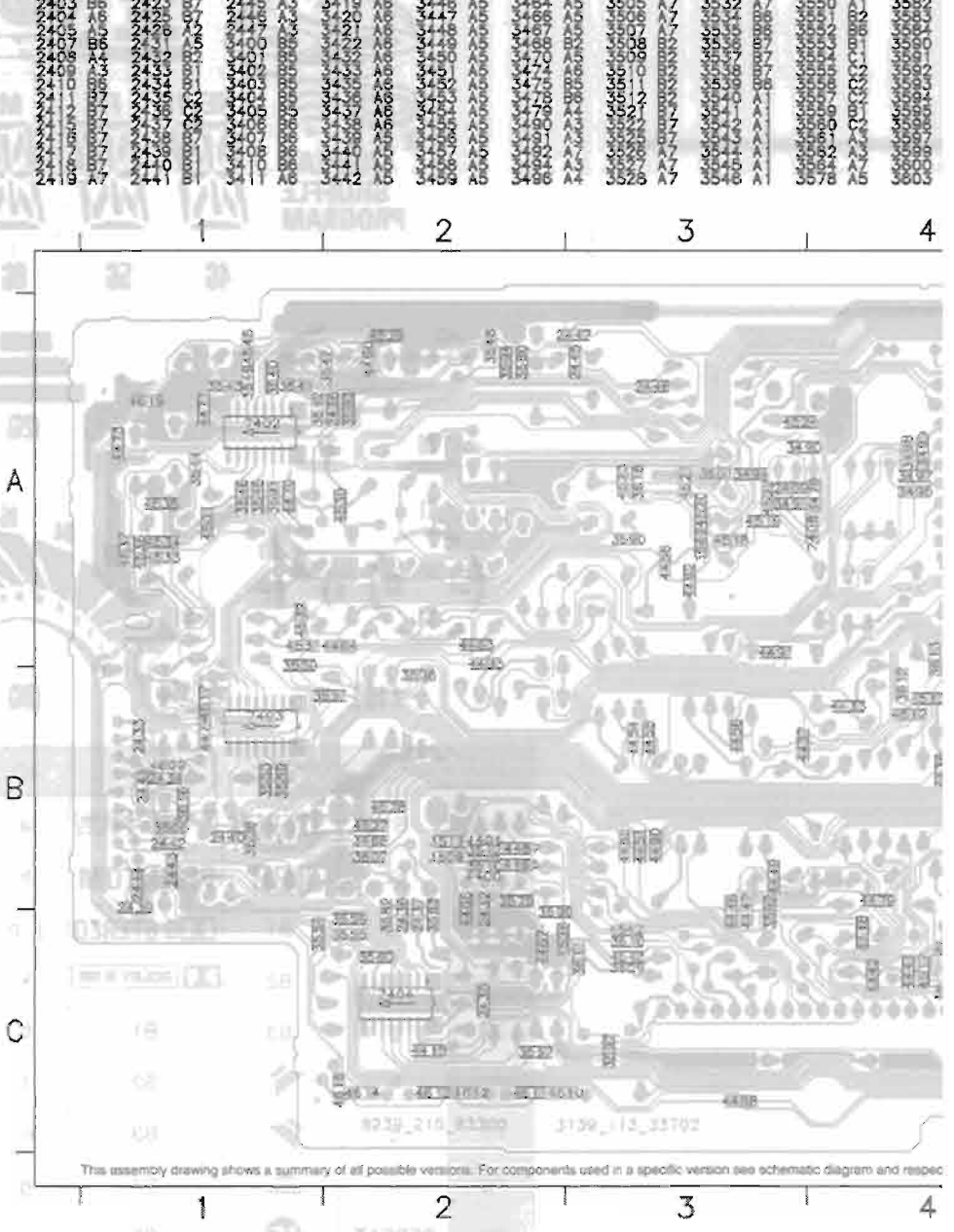
x = Item in use.

FRONT DISPLAY BOARD - COMPONENT VIEW



This assembly drawing shows a summary of all possible versions. For components used in a specific version see schematic diagram and respective parts list.

FRONT DISPLAY BOARD - COPPER SIDE VIEW



This assembly drawing shows a summary of all possible versions. For components used in a specific version see schematic diagram and respec

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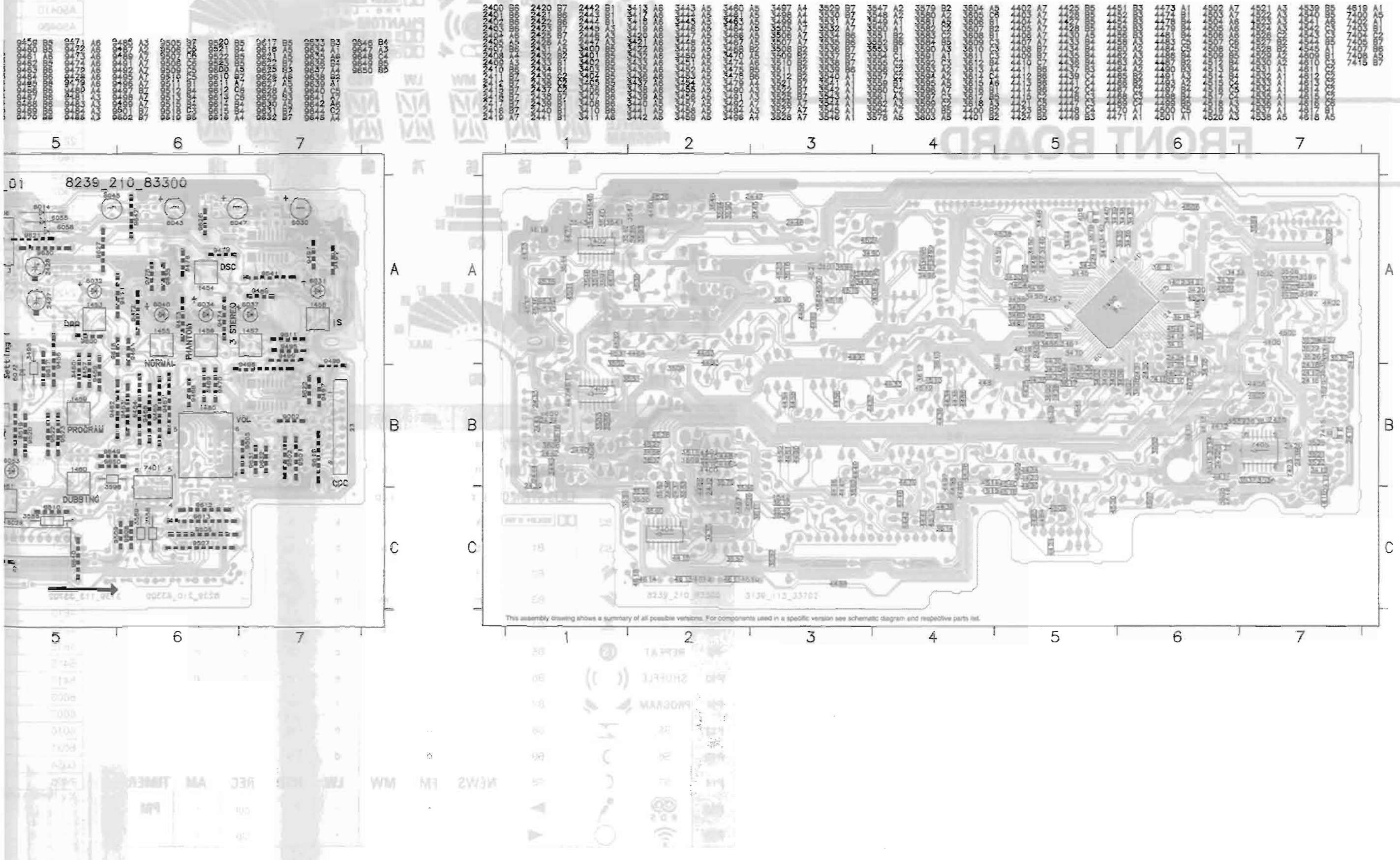
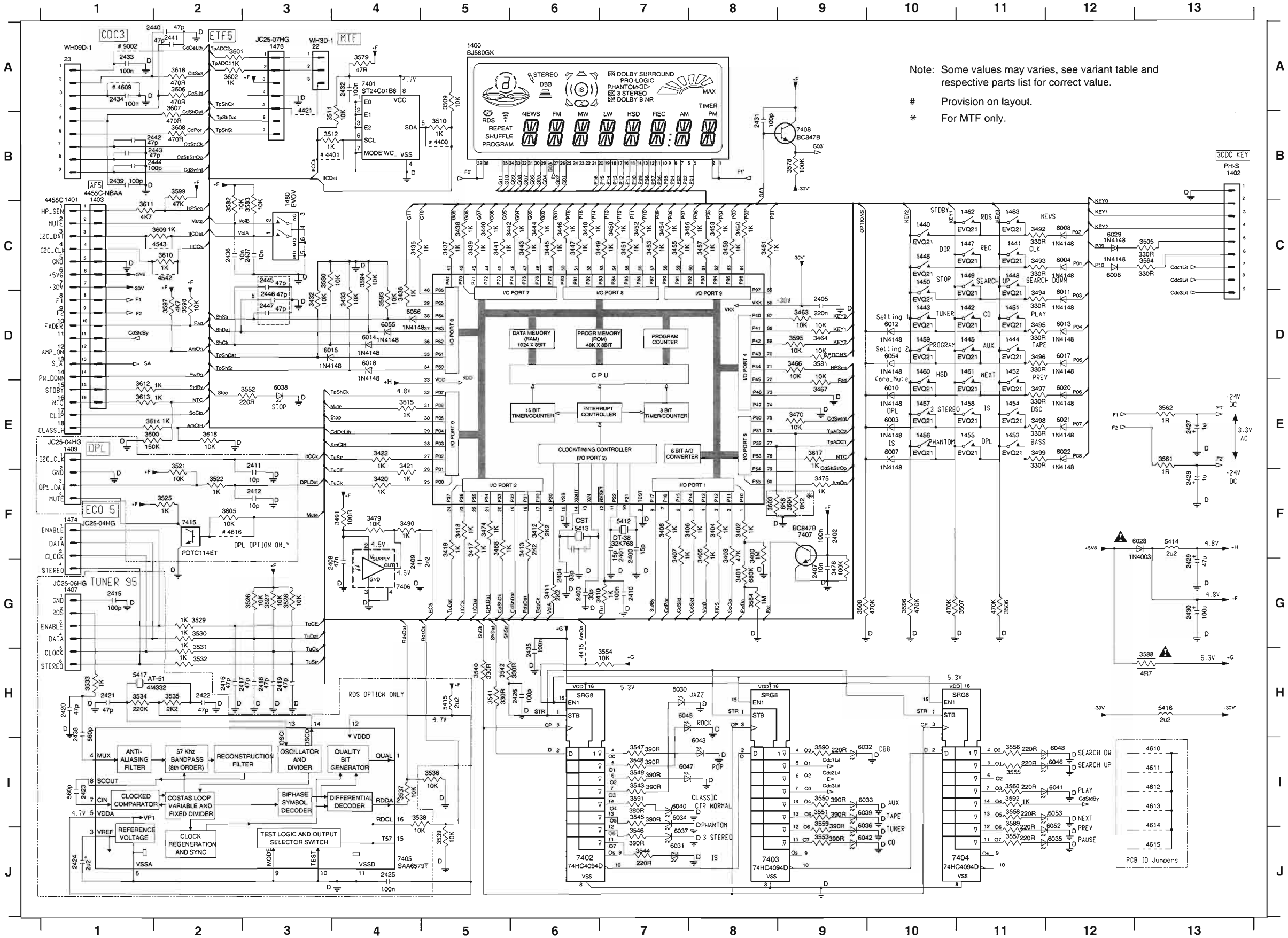
FRONT DISPLAY BOARD - COPPER SIDE VIEW



6-3

CIRCUIT DIAGRAM



22 A3	3453 C7	4421 B3	
23 A1	3454 C7	4542 C2	
1400 A5	3455 C7	4543 C2	
1401 C1	3456 C8	4609 A1	
1402 B13	3457 C8	4610 I13	
1403 C1	3458 C8	4611 I13	
1407 G1	3459 C8	4612 I13	
1409 E1	3460 C8	4613 I13	
1440 C10	3461 C8	4614 J13	
1441 C11	3463 D9	4615 J13	
1442 D11	3464 D9	4616 F2	
1443 D10	3466 D9	5412 F7	
1444 D11	3467 E9	5413 F6	
1445 D11	3468 F5	5414 F13	
1446 C10	3470 E9	5415 H5	
1447 C11	3474 F5	5416 H13	
1448 C11	3475 F9	5417 H1	
1449 C11	3478 G9	6003 E10	
1450 C10	3479 F4	6004 C12	
1451 D11	3490 F4	6006 C12	
1452 D11	3491 F4	6007 E10	
1453 E11	3492 C11	6008 C12	
1454 E11	3493 C11	6010 E10	
1455 E11	3494 D11	6011 D12	
1456 E10	3495 D11	6012 D10	
1457 E10	3496 D11	6013 D12	
1458 E11	3497 E11	6014 D4	
1459 D10	3498 E11	6015 D3	
1460 D10	3499 E11	6017 D12	
1461 D11	3505 C13	6018 D4	
1462 C11	3506 G11	6020 E12	
1463 C11	3507 G11	6021 E12	
1474 F1	3508 G9	6022 E12	
1476 A3	3509 A5	6028 F13	
1480 C3	3510 B5	6029 C12	
2400 F7	3511 B3	6030 H7	
2401 F7	3512 B3	6031 J7	
2402 F9	3521 E2	6032 I9	
2403 G6	3522 F2	6033 I9	
2404 G6	3525 F2	6034 I7	
2405 D9	3526 G3	6035 J12	
2407 G9	3527 G3	6036 I9	
2408 G3	3528 G3	6037 J7	
2409 G4	3529 G2	6038 E3	
2410 G7	3530 G2	6039 I9	
2411 E3	3531 G2	6040 I7	
2412 F3	3532 H2	6041 I12	
2415 G1	3533 H1	6042 J9	
2416 H2	3534 H1	6043 I8	
2417 H2	3535 H2	6045 H7	
2418 H3	3536 I5	6046 I12	
2419 H3	3537 I4	6047 I7	
2420 H1	3538 I4	6048 I12	
2421 H1	3539 J5	6052 I12	
2422 H2	3540 H5	6053 I12	
2423 I1	3541 H5	6054 D10	
2424 J1	3542 H5	6055 D4	
2425 J4	3543 I7	6056 D4	
2426 H6	3544 J7	7400 F4	
2427 E13	3545 I7	7401 A4	
2428 F13	3546 J7	7402 J6	
2429 G13	3547 I7	7403 J9	
2430 G13	3548 I7	7404 J11	
2431 B8	3549 I7	7405 J4	
2432 A4	3550 I9	7406 G4	
2433 A1	3551 I9	7407 F9	
2434 A1	3552 E3	7408 B9	
2435 H6	3553 J9	7415 F2	
2436 C2	3554 H7	9002 A1	
2437 C3	3555 I11		
2438 H1	3556 I11		
2439 B1	3557 J11		
2440 A1	3558 I11		
2441 A2	3559 I9		
2442 B2	3560 I11		
2443 B2	3561 E13		
2444 B2	3562 E13		
2445 C3	3564 C13		
2446 D3	3578 B9		
2447 D3	3579 A4		
3400 F8	3580 C3		
3401 G8	3581 D9		
3402 F8	3582 C2		
3403 F8	3583 C3		
3404 F8	3584 G8		
3405 F8	3588 H13		
3406 F8	3589 I11		
3407 F7	3590 I9		
3408 F7	3591 I7		
3410 G6	3592 I11		
3411 G6	3593 D4		
3412 F6	3594 C4		
3413 F6	3595 D9		
3417 F5	3596 G10		
3418 F5	3597 D2		
3419 F5	3598 D2		
3420 F4	3599 B2		
3421 E4	3600 E1		
3422 E4	3601 A2		
3432 D3	3602 A2		
3433 D4	3603 F8		
3435 C4	3604 F9		
3436 D4	3605 F2		
3437 C5	3606 A2		
3438 C5	3607 A2		
3439 C5	3608 B2		
3440 C5	3609 C2		
3441 C5	3610 C2		
3442 C6	3611 C1		
3443 C6	3612 E1		
3444 C6	3613 E1		
3445 C6	3614 E1		
3446 C6	3615 E4		
3447 C6	3616 A2		
3448 C6	3617 E9		
3449 C7	3618 E2		
3450 C7	4400 B5		
3451 C7	4401 B3		
3452 C7	4415 H6		

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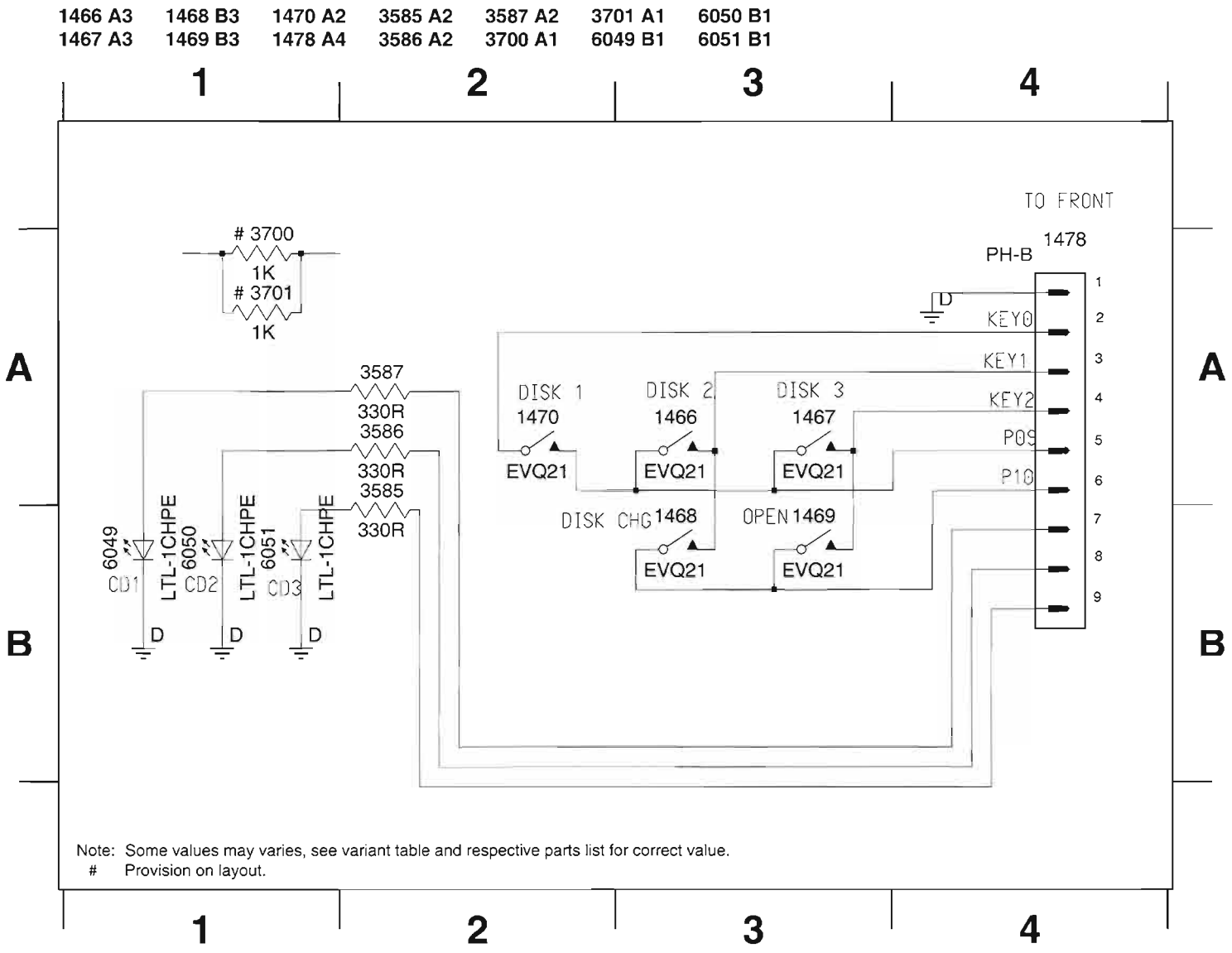
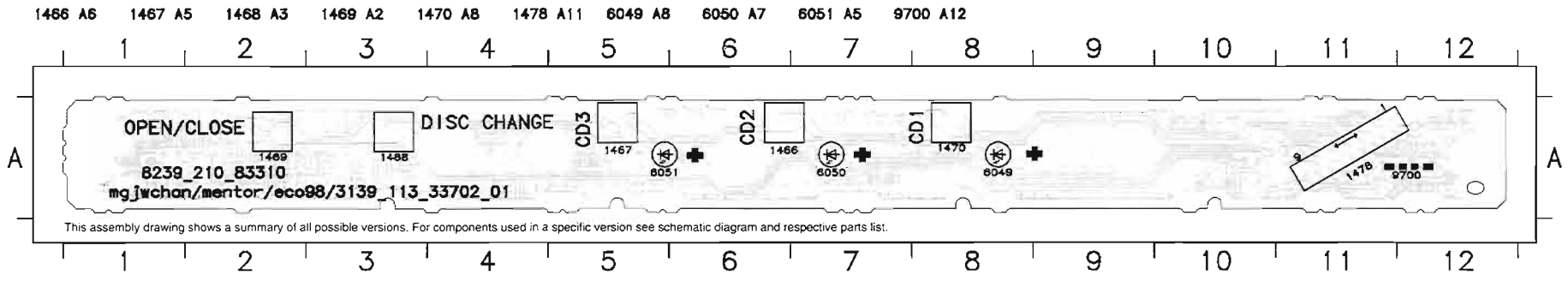
KEY-CDC PART

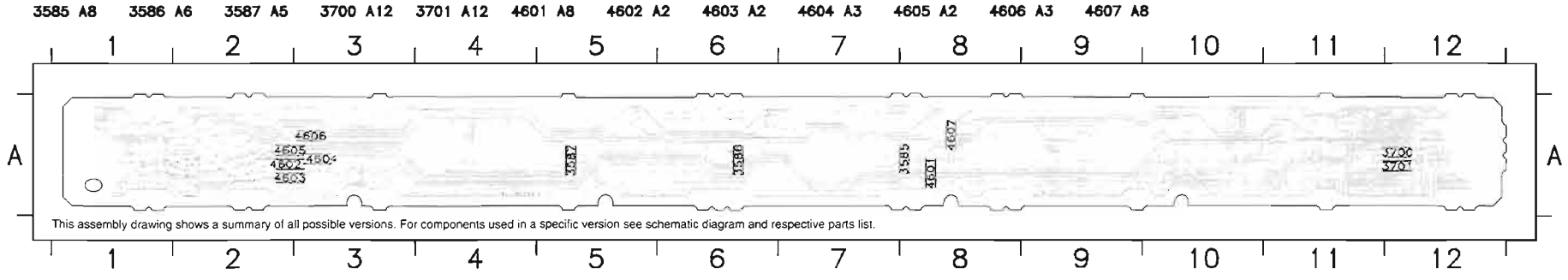
CIRCUIT DIAGRAM - KEY-CDC PART



KEY-CDC BOARD - COMPONENT VIEW



KEY-CDC BOARD - COPPER SIDE VIEW



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ELECTRICAL PARTS LIST - FRONT BOARD

ELECTRICAL PARTS LIST - FRONT BOARD

MISCELLANEOUS

1400	4822 135 00177	FTD Display (Dot Matrix)	
1401	4822 267 10736	Connector 18 pins	
1440	4822 276 13114	Tact Switch	
1441	4822 276 13114	Tact Switch	
1442	4822 276 13114	Tact Switch	
1443	4822 276 13114	Tact Switch	
1444	4822 276 13114	Tact Switch	
1445	4822 276 13114	Tact Switch	
1446	4822 276 13114	Tact Switch	
1447	4822 276 13114	Tact Switch	
1448	4822 276 13114	Tact Switch	
1449	4822 276 13114	Tact Switch	
1450	4822 276 13114	Tact Switch	
1451	4822 276 13114	Tact Switch	
1452	4822 276 13114	Tact Switch	
1453	4822 276 13114	Tact Switch	
1454	4822 276 13114	Tact Switch	
1455	4822 276 13114	Tact Switch	
1456	4822 276 13114	Tact Switch	
1457	4822 276 13114	Tact Switch	
1458	4822 276 13114	Tact Switch	
1459	4822 276 13114	Tact Switch	
1460	4822 276 13114	Tact Switch	
1461	4822 276 13114	Tact Switch	
1462	4822 276 13114	Tact Switch	
1463	4822 276 13114	Tact Switch	
1466	4822 276 13114	Tact Switch	
1467	4822 276 13114	Tact Switch	
1468	4822 276 13114	Tact Switch	
1469	4822 276 13114	Tact Switch	
1470	4822 276 13114	Tact Switch	
1480	4822 101 21261	Rot Encoder 24P	

CAPACITORS

2400	4822 122 32504	15pF 2% 50V	
2401	4822 122 32504	15pF 2% 50V	
2402	4822 126 10002	100nF 20% 25V	
2403	5322 122 32659	33pF 5% 50V	
2404	5322 122 32659	33pF 5% 50V	
2405	4822 126 13473	220nF +80/-20% 50V	
2407	4822 122 33177	10nF 20% 50V	
2408	4822 126 13751	47nF 10% 63V	
2409	4822 122 33175	2,2nF 20% 50V	
2410	4822 126 10002	100nF 20% 25V	
2411	5322 122 32448	10pF 5% 50V	
2412	5322 122 32448	10pF 5% 50V	
2415	5322 122 32531	100pF 5% 50V	
2416	4822 126 13692	47pF 1% 63V	
2417	4822 126 13692	47pF 1% 63V	
2418	4822 126 13692	47pF 1% 63V	
2419	4822 126 13692	47pF 1% 63V	
2420	4822 126 13692	47pF 1% 63V	
2421	4822 126 13692	47pF 1% 63V	
2422	4822 126 13692	47pF 1% 63V	
2423	4822 122 33173	560pF 10% 50V	
2424	4822 124 41576	2,2µF 20% 50V	
2425	4822 126 13296	100nF 10% 16V	
2426	5322 122 32531	100pF 5% 50V	
2427	4822 124 40242	1µF 20% 63V	
2428	4822 124 40242	1µF 20% 63V	
2429	4822 124 80483	47µF 20% 6,3V	
2430	4822 124 42446	100µF 20% 10V	
2431	5322 122 32531	100pF 5% 50V	
2432	4822 126 10002	100nF 20% 25V	
2433	4822 126 13296	100nF 10% 16V	
2434	4822 126 13296	100nF 10% 16V	
2435	4822 126 13296	100nF 10% 16V	
2436	4822 122 33177	10nF 20% 50V	
2437	4822 122 33177	10nF 20% 50V	
2438	4822 122 33173	560pF 10% 50V	
2439	5322 122 32531	100pF 5% 50V	
2440	4822 126 13692	47pF 1% 63V	
2441	4822 126 13692	47pF 1% 63V	
2442	4822 126 13692	47pF 1% 63V	
2443	4822 126 13692	47pF 1% 63V	
2444	5322 122 32531	100pF 5% 50V	

RESISTORS

3400	4822 051 20105	1M 5% 0,1W	
3401	4822 051 20684	680k 5% 0,1W	
3402	4822 051 10102	1k 2% 0,25W	
3403	4822 117 10834	47k 1% 0,1W	
3404	4822 051 10102	1k 2% 0,25W	
3405	4822 051 10102	1k 2% 0,25W	
3406	4822 051 10102	1k 2% 0,25W	
3407	4822 051 10102	1k 2% 0,25W	
3408	4822 051 10102	1k 2% 0,25W	
3410	4822 051 10102	1k 2% 0,25W	
3411	4822 117 11449	2k2 1% 0,1W	
3412	4822 116 52256	2k2 5% 0,5W	
3413	4822 117 11449	2k2 1% 0,1W	
3417	4822 051 10102	1k 2% 0,25W	
3418	4822 051 10102	1k 2% 0,25W	
3419	4822 051 10102	1k 2% 0,25W	
3420	4822 051 10102	1k 2% 0,25W	
3421	4822 051 10102	1k 2% 0,25W	
3422	4822 051 10102	1k 2% 0,25W	
3432	4822 117 10833	10k 1% 0,1W	
3433	4822 117 10833	10k 1% 0,1W	
3435	4822 051 10102	1k 2% 0,25W	
3436	4822 051 10102	1k 2% 0,25W	
3437	4822 051 10102	1k 2% 0,25W	
3438	4822 051 10102	1k 2% 0,25W	
3439	4822 051 10102	1k 2% 0,25W	
3440	4822 051 10102	1k 2% 0,25W	
3441	4822 051 10102	1k 2% 0,25W	
3442	4822 051 10102	1k 2% 0,25W	
3443	4822 051 10102	1k 2% 0,25W	
3444	4822 051 10102	1k 2% 0,25W	
3445	4822 051 10102	1k 2% 0,25W	
3446	4822 051 10102	1k 2% 0,25W	
3447	4822 051 10102	1k 2% 0,25W	
3448	4822 051 10102	1k 2% 0,25W	
3449	4822 051 10102	1k 2% 0,25W	
3450	4822 051 10102	1k 2% 0,25W	
3451	4822 051 10102	1k 2% 0,25W	
3452	4822 051 10102	1k 2% 0,25W	
3453	4822 051 10102	1k 2% 0,25W	
3454	4822 051 10102	1k 2% 0,25W	
3455	4822 051 10102	1k 2% 0,25W	
3456	4822 051 10102	1k 2% 0,25W	
3457	4822 051 10102	1k 2% 0,25W	
3458	4822 051 10102	1k 2% 0,25W	
3459	4822 051 10102	1k 2% 0,25W	
3460	4822 051 10102	1k 2% 0,25W	
3461	4822 051 10102	1k 2% 0,25W	
3463	4822 117 10833	10k 1% 0,1W	
3464	4822 117 10833	10k 1% 0,1W	
3466	4822 117 10833	10k 1% 0,1W	
3467	4822 117 10833	10k 1% 0,1W	
3468	4822 051 10102	1k 2% 0,25W	
3470	4822 117 10833	10k 1% 0,1W	
3474	4822 051 10102	1k 2% 0,25W	
3475	4822 051 10102	1k 2% 0,25W	
3478	4822 051 20104	100k 5% 0,1W	
3479	4822 117 10833	10k 1% 0,1W	
3490	4822 051 10102	1k 2% 0,25W	
3491	4822 051 20101	100R 5% 0,1W	
3492	4822 051 20331	330R 5% 0,1W	
3493	4822 116 52219	330R 5% 0,5W	
3494	4822 051 20331	330R 5% 0,1W	
3495	4822 116 52219	330R 5% 0,5W	
3496	4822 051 20331	330R 5% 0,1W	
3497	4822 051 20331	330R 5% 0,1W	
3498	4822 051 20331	330R 5% 0,1W	
3499	4822 051 20331	330R 5% 0,1W	
3505	4822 051 20331	330R 5% 0,1W	
3506	4822 051 20474	470k 5% 0,1W	
3507	4822 051 20474	470k 5% 0,1W	
3508	4822 051 20474	470k 5% 0,1W	
3509	4822 117 10833	10k 1% 0,1W	
3510	4822 051 10102	1k 2% 0,25W	
3511	4822 117 10833	10k 1% 0,1W	
3512	4822 051 10102	1k 2% 0,25W	
3521	4822 117 10833	10k 1% 0,1W	
3522	4822 051 10102	1k 2% 0,25W	
3525	4822 051 10102	1k 2% 0,25W	
3526	4822 117 10833	10k 1% 0,1W	
3527	4822 117 10833	10k 1% 0,1W	
3528	4822 117 10833	10k 1% 0,1W	
3529	4822 051 10102	1k 2% 0,25W	
3530	4822 051 10102	1k 2% 0,25W	
3531	4822 051 10102	1k 2% 0,25W	
3532	4822 051 10102	1k 2% 0,25W	
3533	4822 050 11002	1k 1% 0,4W	
3534	4822 051 20224	220k 5% 0,1W	
3535	4822 117 11449	2k2 1% 0,1W	
3536	4822 117 10833	10k 1% 0,1W	
3537	4822 117 10833	10k 1% 0,1W	
3538	4822 117 10833	10k 1% 0,1W	
3539	4822 117 10833	10k 1% 0,1W	
3540	4822 051 20331	330R 5% 0,1W	
3541	4822 051 20331	330R 5% 0,1W	
3542	4822 051 20331	330R 5% 0,1W	
3543	4822 051 20391	390R 5% 0,1W	
3544	4822 117 11503	220R 1% 0.1W	
3545	4822 051 20391	390R 5% 0,1W	
3546	4822 051 20391	390R 5% 0,1W	
3547	4822 051 20391	390R 5% 0,1W	
3548	4822 051 20391	390R 5% 0,1W	
3549	4822 051 20391	390R 5% 0,1W	
3550	4822 051 20391	390R 5% 0,1W	
3551	4822 051 20391	390R 5% 0,1W	
3552	4822 117 11503	220R 1% 0.1W	
3553	4822 051 20391	390R 5% 0,1W	
3554	4822 117 10833	10k 1% 0,1W	
3555	4822 117 11503	220R 1% 0.1W	
3556	4822 117 11503	220R 1% 0.1W	
3557	4822 117 11503	220R 1% 0.1W	
3558	4822 116 83872	220R 5% 0,5W	
3559	4822 051 20391	390R 5% 0,1W	
3560	4822 117 11503	220R 1% 0.1W	
3561	4822 051 20108	1R 5% 0,1W	
3562	4822 051 20108	1R 5% 0,1W	
3564	4822 051 20331	330R 5% 0,1W	
3578	4822 051 20104	100k 5% 0,1W	
3579	4822 051 20479	47R 5% 0,1W	
3580	4822 117 10833	10k 1% 0,1W	
3581	4822 117 10833	10k 1% 0,1W	
3582	4822 117 10833	10k 1% 0,1W	
3583	4822 117 10833	10k 1% 0,1W	
3584	4822 051 20105	1M 5% 0,1W	
3585	4822 051 20331	330R 5% 0,1W	
3586	4822 051 20331	330R 5% 0,1W	
3587	4822 051 20331	330R 5% 0,1W	
3588	4822 052 10478	△ 4R7 5% 0,33W	
3589	4822 116 83872	220R 5% 0,5W	
3590	4822 117 11503	220R 1% 0.1W	
3591	4822 051 20391	390R 5% 0,1W	
3592	4822 051 10102	1k 2% 0,25W	
3593	4822 117 10833	10k 1% 0,1W	
3594	4822 117 10833	10k 1% 0,1W	

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ELECTRICAL PARTS LIST - FRONT BOARD

ELECTRICAL PARTS LIST - FRONT BOARD

RESISTORS

3595	4822 117 10833	10k 1% 0,1W	4451	4822 051 20008	0R Jumper 0805	4522	4822 051 20008	0R Jumper 0805
3596	4822 051 20474	470k 5% 0,1W	4452	4822 051 20008	0R Jumper 0805	4523	4822 051 20008	0R Jumper 0805
3597	4822 051 20472	4k7 5% 0,1W	4454	4822 051 20008	0R Jumper 0805	4524	4822 051 20008	0R Jumper 0805
3598	4822 116 83864	10k 5% 0,5W	4455	4822 051 20008	0R Jumper 0805	4526	4822 051 20008	0R Jumper 0805
3599	4822 117 10834	47k 1% 0,1W	4456	4822 051 20008	0R Jumper 0805	4527	4822 051 20008	0R Jumper 0805
3600	4822 051 20154	150k 5% 0,1W	4458	4822 051 20008	0R Jumper 0805	4528	4822 051 20008	0R Jumper 0805
3601	4822 050 11002	1k 1% 0,4W	4460	4822 051 20008	0R Jumper 0805	4529	4822 051 20008	0R Jumper 0805
3602	4822 050 11002	1k 1% 0,4W	4462	4822 051 20008	0R Jumper 0805	4530	4822 051 20008	0R Jumper 0805
3606	4822 051 20471	470R 5% 0,1W	4463	4822 051 20008	0R Jumper 0805	4531	4822 051 20008	0R Jumper 0805
3607	4822 051 20471	470R 5% 0,1W	4464	4822 051 20008	0R Jumper 0805	4532	4822 051 20008	0R Jumper 0805
3608	4822 051 20471	470R 5% 0,1W	4465	4822 051 20008	0R Jumper 0805	4533	4822 051 20008	0R Jumper 0805
3609	4822 051 10102	1k 2% 0,25W	4466	4822 051 20008	0R Jumper 0805	4534	4822 051 20008	0R Jumper 0805
3610	4822 051 10102	1k 2% 0,25W	4467	4822 051 20008	0R Jumper 0805	4535	4822 051 20008	0R Jumper 0805
3611	4822 051 20472	4k7 5% 0,1W	4468	4822 051 20008	0R Jumper 0805	4536	4822 051 20008	0R Jumper 0805
3612	4822 051 10102	1k 2% 0,25W	4469	4822 051 20008	0R Jumper 0805	4537	4822 051 20008	0R Jumper 0805
3613	4822 051 10102	1k 2% 0,25W	4470	4822 051 20008	0R Jumper 0805	4538	4822 051 20008	0R Jumper 0805
3614	4822 051 10102	1k 2% 0,25W	4471	4822 051 20008	0R Jumper 0805	4539	4822 051 20008	0R Jumper 0805
3615	4822 051 10102	1k 2% 0,25W	4473	4822 051 20008	0R Jumper 0805	4540	4822 051 20008	0R Jumper 0805
3616	4822 051 20471	470R 5% 0,1W	4474	4822 051 20008	0R Jumper 0805	4541	4822 051 20008	0R Jumper 0805
3617	4822 051 10102	1k 2% 0,25W	4478	4822 051 20008	0R Jumper 0805	4544	4822 051 20008	0R Jumper 0805
4402	4822 051 20008	0R Jumper 0805	4479	4822 051 20008	0R Jumper 0805	4545	4822 051 20008	0R Jumper 0805
4403	4822 051 20008	0R Jumper 0805	4481	4822 051 20008	0R Jumper 0805	4601	4822 051 20008	0R Jumper 0805
4404	4822 051 20008	0R Jumper 0805	4483	4822 051 20008	0R Jumper 0805	4602	4822 051 20008	0R Jumper 0805
4405	4822 051 20008	0R Jumper 0805	4484	4822 051 20008	0R Jumper 0805	4603	4822 051 20008	0R Jumper 0805
4406	4822 051 20008	0R Jumper 0805	4486	4822 051 20008	0R Jumper 0805	4604	4822 051 20008	0R Jumper 0805
4407	4822 051 20008	0R Jumper 0805	4487	4822 051 20008	0R Jumper 0805	4605	4822 051 20008	0R Jumper 0805
4408	4822 051 20008	0R Jumper 0805	4490	4822 051 20008	0R Jumper 0805	4606	4822 051 20008	0R Jumper 0805
4409	4822 051 20008	0R Jumper 0805	4491	4822 051 20008	0R Jumper 0805	4607	4822 051 20008	0R Jumper 0805
4410	4822 051 20008	0R Jumper 0805	4493	4822 051 20008	0R Jumper 0805	4610	4822 051 20008	0R Jumper 0805
4411	4822 051 20008	0R Jumper 0805	4497	4822 051 20008	0R Jumper 0805	4611	4822 051 20008	0R Jumper 0805
4412	4822 051 20008	0R Jumper 0805	4498	4822 051 20008	0R Jumper 0805	4612	4822 051 20008	0R Jumper 0805
4413	4822 051 20008	0R Jumper 0805	4499	4822 051 20008	0R Jumper 0805	4613	4822 051 20008	0R Jumper 0805
4414	4822 051 20008	0R Jumper 0805	4500	4822 051 20008	0R Jumper 0805	4615	4822 051 20008	0R Jumper 0805
4423	4822 051 20008	0R Jumper 0805	4501	4822 051 20008	0R Jumper 0805	4616	4822 051 20008	0R Jumper 0805
4424	4822 051 20008	0R Jumper 0805	4502	4822 051 20008	0R Jumper 0805	4617	4822 051 20008	0R Jumper 0805
4425	4822 051 20008	0R Jumper 0805	4503	4822 051 20008	0R Jumper 0805	4618	4822 051 20008	0R Jumper 0805
4426	4822 051 20008	0R Jumper 0805	4504	4822 051 20008	0R Jumper 0805	4619	4822 051 20008	0R Jumper 0805
4427	4822 051 20008	0R Jumper 0805	4505	4822 051 20008	0R Jumper 0805			
4428	4822 051 20008	0R Jumper 0805	4506	4822 051 20008	0R Jumper 0805			
4430	4822 051 20008	0R Jumper 0805	4507	4822 051 20008	0R Jumper 0805			
4433	4822 051 20008	0R Jumper 0805	4508	4822 051 20008	0R Jumper 0805			
4434	4822 051 20008	0R Jumper 0805	4509	4822 051 20008	0R Jumper 0805			
4435	4822 051 20008	0R Jumper 0805	4512	4822 051 20008	0R Jumper 0805			
4436	4822 051 20008	0R Jumper 0805	4513	4822 051 20008	0R Jumper 0805			
4437	4822 051 20008	0R Jumper 0805	4514	4822 051 20008	0R Jumper 0805			
4439	4822 051 20008	0R Jumper 0805	4515	4822 051 20008	0R Jumper 0805			
4441	4822 051 20008	0R Jumper 0805	4516	4822 051 20008	0R Jumper 0805			
4442	4822 051 20008	0R Jumper 0805	4517	4822 051 20008	0R Jumper 0805			
4446	4822 051 20008	0R Jumper 0805	4518	4822 051 20008	0R Jumper 0805			
4447	4822 051 20008	0R Jumper 0805	4519	4822 051 20008	0R Jumper 0805			
4448	4822 051 20008	0R Jumper 0805	4520	4822 051 20008	0R Jumper 0805			
4449	4822 051 20008	0R Jumper 0805	4521	4822 051 20008	0R Jumper 0805			

COIL & FILTERS

5412	4822 242 70938	X'tal Resonator 32,768kHz
5413	4822 242 72066	Ceramic Resonator
5414	4822 157 11477	Fixed Inductor 2µ2 5%
5415	4822 157 11477	Fixed Inductor 2µ2 5%
5416	4822 157 11477	Fixed Inductor 2µ2 5%
5417	4822 242 72195	QUARZ 4,332 MHz

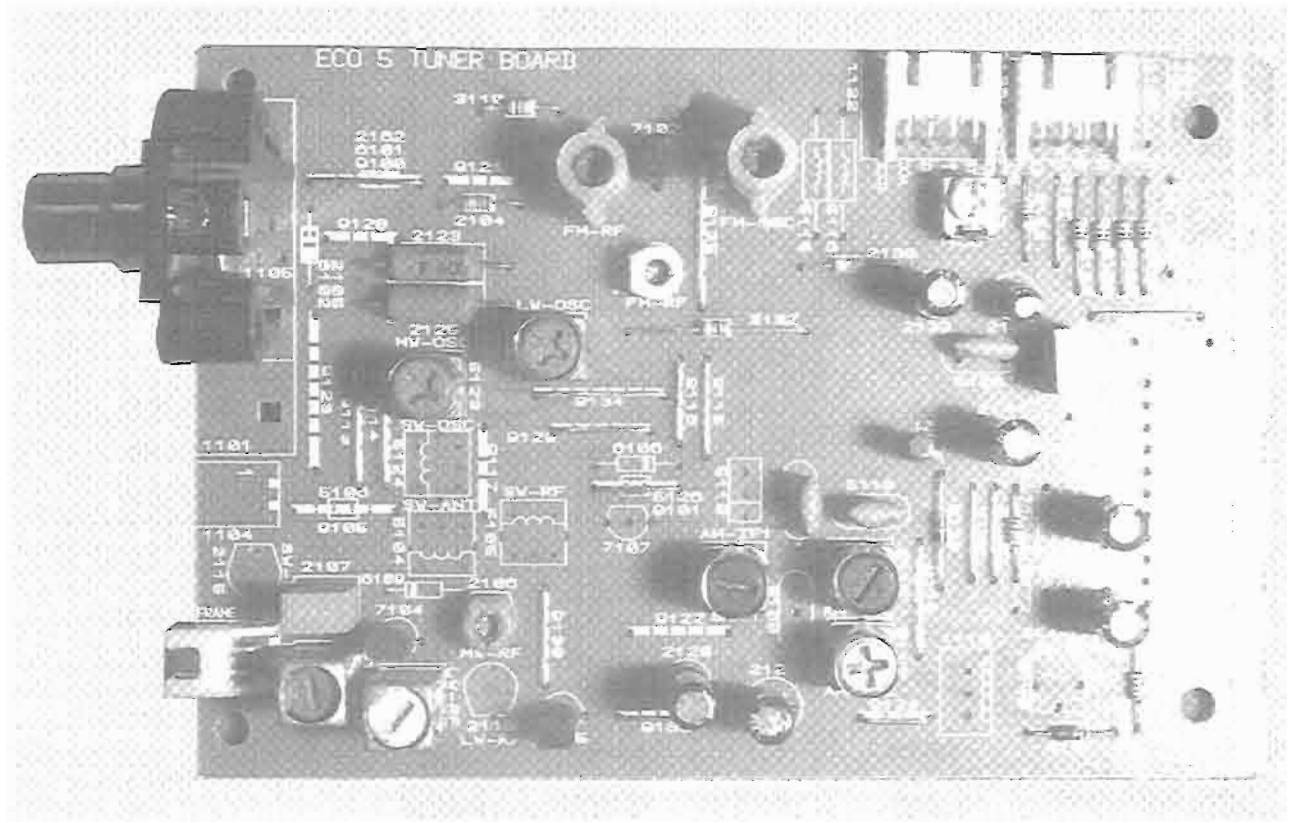
DIODES

6003	4822 130 30621	1N4148
6004	4822 130 30621	1N4148
6006	4822 130 30621	1N4148
6008	4822 130 30621	1N4148
6011	4822 130 30621	1N4148
6013	4822 130 30621	1N4148
6014	4822 130 30621	1N4148
6015	4822 130 30621	1N4148
6017	4822 130 30621	1N4148
6018	4822 130 30621	1N4148
6020	4822 130 30621	1N4148
6021	4822 130 30621	1N4148
6022	4822 130 30621	1N4148
6028	4822 130 31878 ⚠	1N4003G
6029	4822 130 30621	1N4148
6030	4822 130 83119	LTL-307C
6031	4822 130 10791	LTL-1CHGE
6032	4822 130 10791	LTL-1CHGE
6033	4822 130 10792	LTL-1CHPE
6034	4822 130 10792	LTL-1CHPE
6035	4822 130 10791	LTL-1CHGE
6036	4822 130 10792	LTL-1CHPE
6037	4822 130 10792	LTL-1CHPE
6038	4822 130 10791	LTL-1CHGE
6039	4822 130 10792	LTL-1CHPE
6040	4822 130 10792	LTL-1CHPE
6041	4822 130 10791	LTL-1CHGE
6042	4822 130 10792	LTL-1CHPE
6043	4822 130 83119	LTL-307C
6045	4822 130 83119	LTL-307C
6046	4822 130 10791	LTL-1CHGE
6047	4822 130 83119	LTL-307C
6048	4822 130 10791	LTL-1CHGE
6049	4822 130 10792	LTL-1CHPE
6050	4822 130 10792	LTL-1CHPE
6051	4822 130 10792	LTL-1CHPE
6052	4822 130 10791	LTL-1CHGE
6053	4822 130 10791	LTL-1CHGE
6054	4822 130 30621	1N4148
6055	4822 130 30621	1N4148
6056	4822 130 30621	1N4148

TRANSISTORS & INTEGRATED CIRCUITS

7400	4822 209 16489	TMP87CS71F - '775S51721'
7401	4822 209 31508	ST24C01B1
7402	4822 209 15449	74HC4094D
7403	4822 209 15449	74HC4094D
7404	4822 209 15449	74HC4094D
7405	4822 209 31981	SAA6579T
7406	4822 130 10165	GP1U28XP
7407	4822 130 60511	BC847B
7408	4822 130 60511	BC847B

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



TUNER BOARD ECO5

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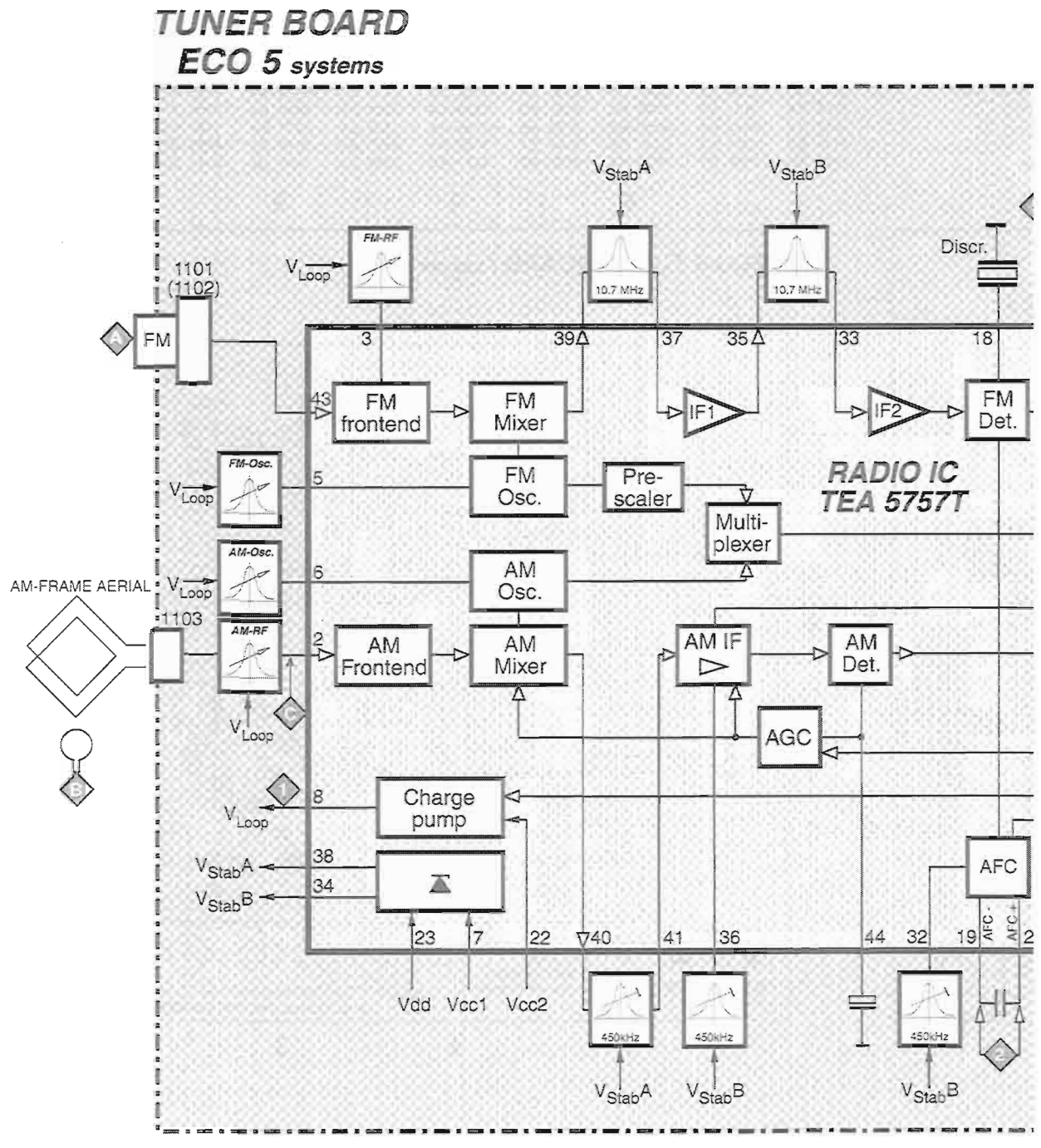
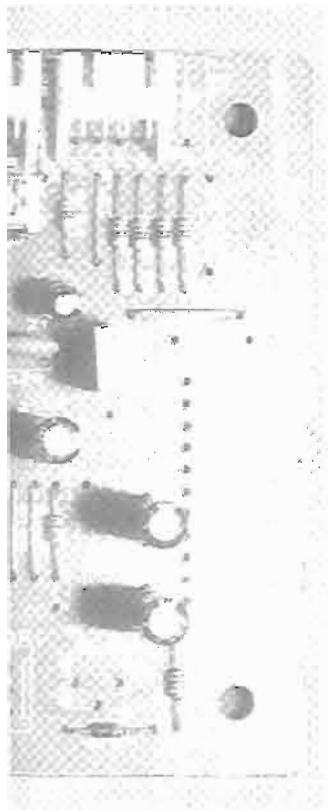
BLOCKDIAGRAM



7B-1

BLOCKDIAGRAM



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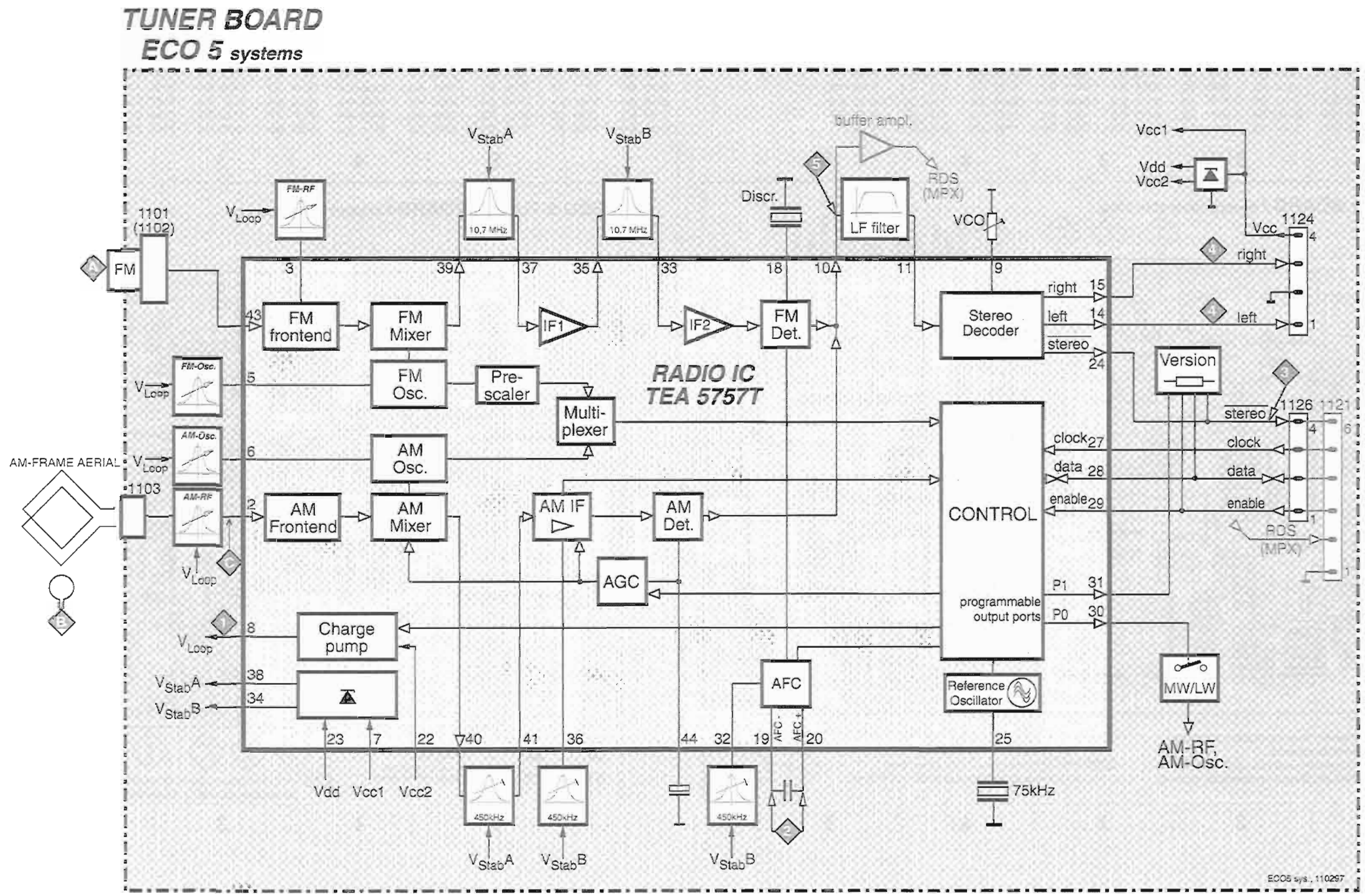

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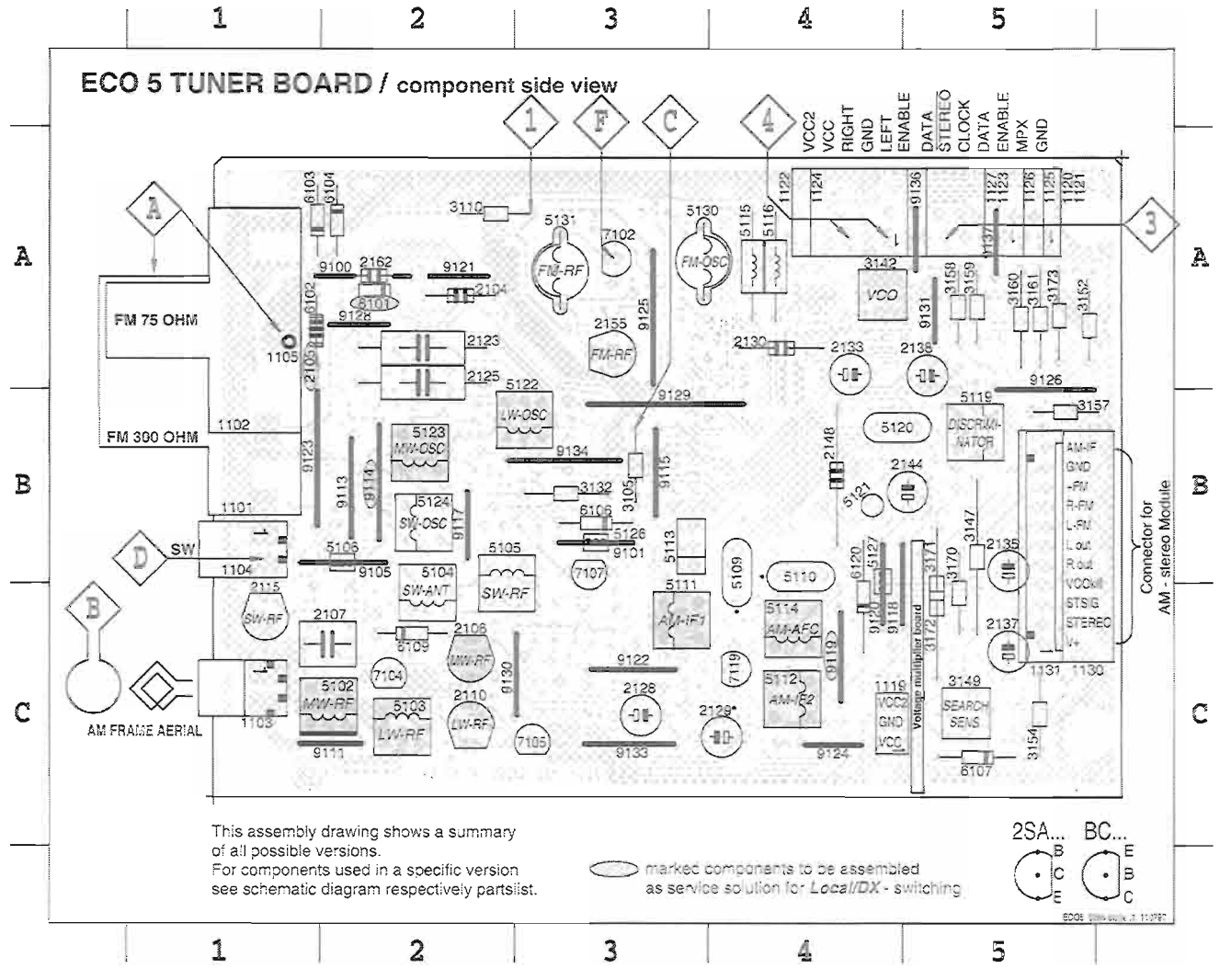
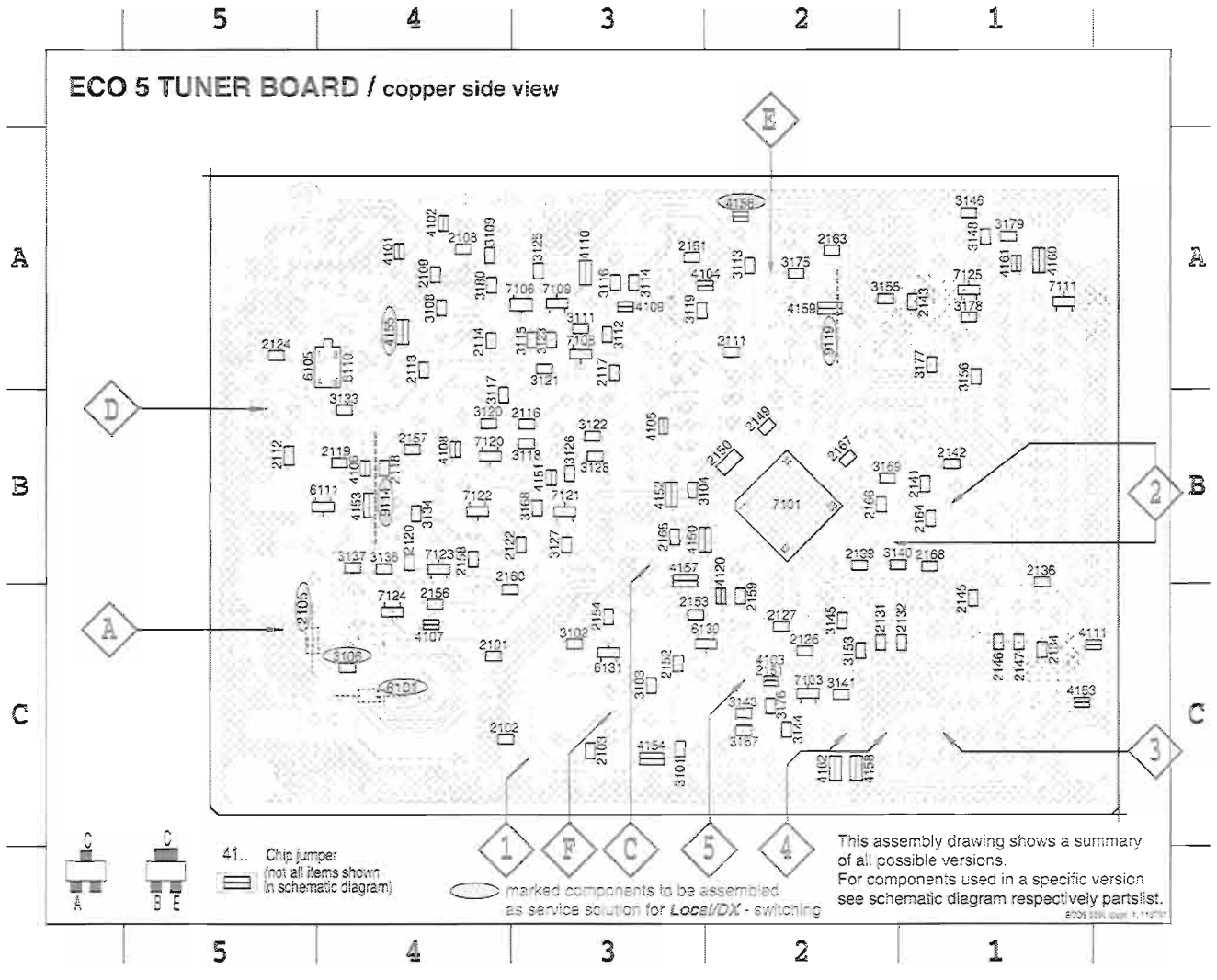
1101 A1	2106 C2	2137 C5	3149 C5	3173 A5	5114 C4	5130 A3	7104 C2	9117 B2	9129 B3		
1102 A1	2107 C2	2138 A5	3152 A5	5102 C2	5115 A4	5131 A3	7105 C3	9118 B4	9130 C3		
1103 C1	2110 C2	2144 B5	3154 C5	5103 C2	5116 A4	6101 A2	7107 B3	9119 C4	9131 A5		
1104 B1	2115 C1	2148 B4	3157 B5	5104 C2	5119 B5	6102 A1	7119 C4	9120 B4	9133 C3		
1105 A1	2123 A2	2155 A3	3158 A5	5105 B2	5120 B4	6103 A1	9100 A2	9121 A2	9134 B3		
1119 C5	2125 A2	2162 A2	3159 A5	5106 B2	5121 B4	6104 A2	9101 B3	9122 C3	9136 A5		
1120 A5	2128 C3	3105 B3	3160 A5	5109 B4	5122 B3	6106 B3	9105 B2	9123 B1	9137 A5		
1130 B5	2129 C4	3110 A2	3161 A5	5110 B4	5123 B2	6107 C5	9111 C2	9124 C4			
1131 B5	2130 A4	3132 B3	3170 C5	5111 C3	5124 B2	6109 C2	9113 B2	9125 A3			
2104 A2	2133 A4	3142 A4	3171 C5	5112 C4	5126 B3	6120 C4	9114 B2	9126 B5			
2105 A1	2135 B5	3147 B5	3172 C5	5113 B3	5127 B4	7102 A3	9115 B3	9128 A2			

2101 C4	2118 B4	2139 B2	2153 C3	2166 B2	3112 A3	3123 A3	3143 C2	3175 A2	4106 B4	4154 C3	6110 A4	7121 B3		
2102 C4	2119 B4	2141 B1	2154 C3	2167 B2	3113 A2	3125 A3	3144 C2	3176 C2	4107 C4	4155 A4	6111 B4	7122 B4		
2103 C3	2120 B4	2142 B1	2156 C4	2168 B1	3114 A3	3126 B3	3145 C2	3177 A1	4108 B4	4156 A2	6130 C2	7123 B4		
2108 A4	2122 B3	2143 A1	2157 B4	3101 C3	3115 A3	3127 B3	3146 A1	3178 A1	4109 A3	4157 B3	6131 C3	7124 C4		
2109 A4	2124 A5	2145 C1	2158 B4	3102 C3	3116 A3	3128 B3	3148 A1	3179 A1	4110 A3	4158 C2	7101 B2	7125 A1		
2111 A2	2126 C2	2146 C1	2159 C2	3103 C3	3117 B4	3133 B4	3153 C2	3180 A4	4111 C1	4159 A2	7103 C2			
2112 B5	2127 C2	2147 C1	2160 C4	3104 B3	3118 B3	3134 B4	3155 A2	4101 A4	4120 C2	4160 A1	7106 A3			
2113 A4	2131 C2	2149 B2	2161 A3	3106 C4	3119 A3	3136 B4	3156 A1	4102 A4	4150 B2	4161 A1	7108 A3			
2114 A4	2132 C1	2150 B2	2163 A2	3108 A4	3120 B4	3137 B4	3167 C2	4103 C2	4151 B3	4162 C1	7109 A3			
2116 B3	2134 C1	2151 C2	2164 B1	3109 A4	3121 A3	3140 B2	3168 B3	4104 A2	4152 B3	4163 C1	7111 A1			
2117 A3	2136 B1	2152 C3	2165 B3	3111 A3	3122 B3	3141 C2	3169 B2	4105 B3	4153 B4	6105 A4	7120 B4			





TUNER ADJUSTMEN

Waverange	Inpu
VARICAP ALIGNMENT	
FM 87.5 - 108MHz (65.81 - 74, 87.5 - 108MHz)	
MW FM/AM-version, 10kHz grid 530 - 1700kHz	
FM/MW-version, 9kHz grid 531 - 1602kHz	
LW 153 - 279kHz	
MW FM/MW/LW- version, 9kHz grid 531 - 1602kHz	
FM IF	
FM	10.7 conti
FM RF	
FM 87.5 - 108MHz (65.81 - 74, 87.5 - 108MHz)	
VCO	
FM	98 cont
AM IF	
MW	coni IC 71 with grc
AM AFC MW	
AM RF [3]	
MW [4] FM/MW/LW- and FM/MW-version (9kHz grid) 531 - 1602kHz	
LW	
MW FM/AM-version, 10kHz grid 530 - 1700kHz	

Use service test program. By selectin

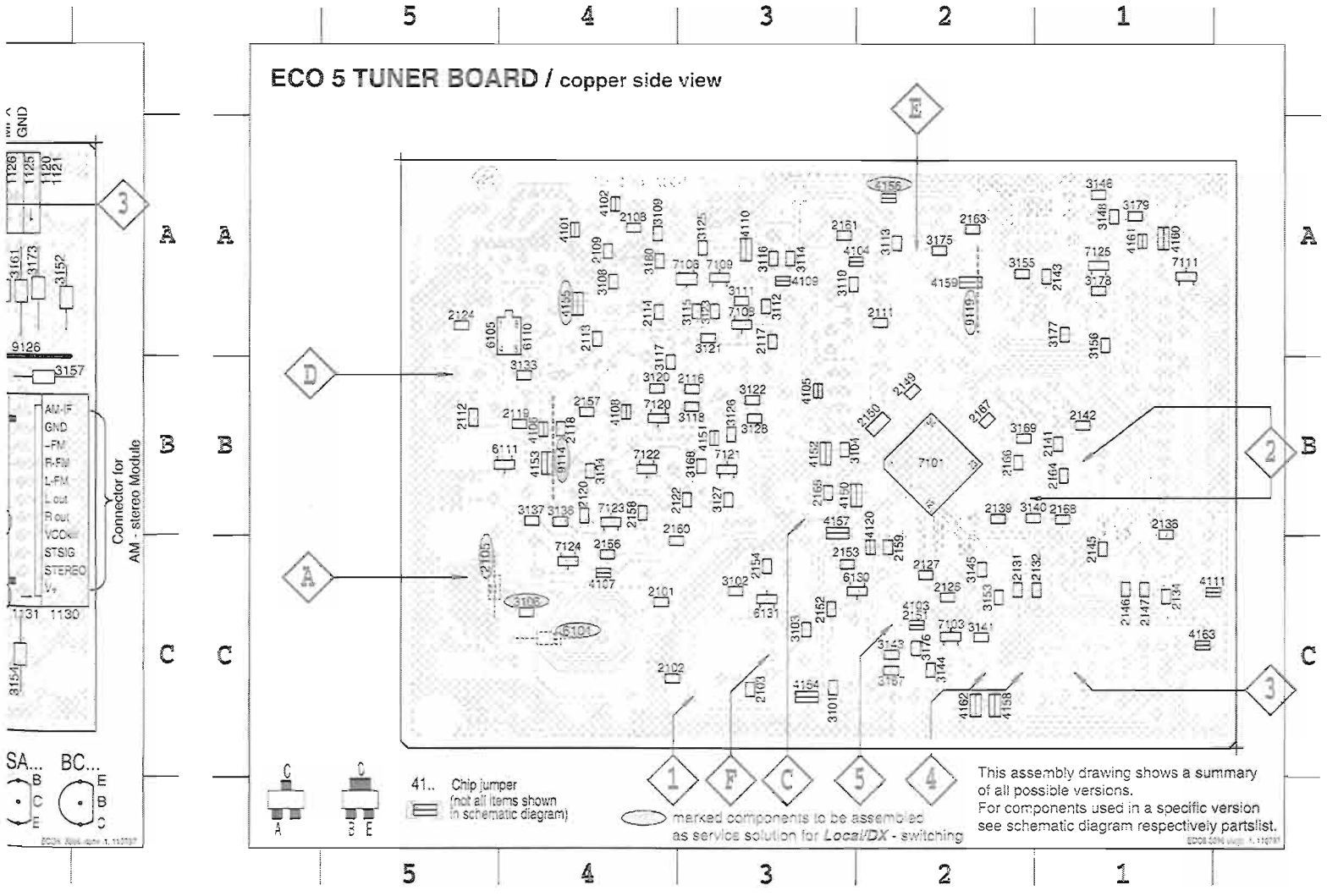
[1] If sensitivity of frequency counter is
(input signal: stereo left 90% + 9%.

[3] For AM RF adjustments the original

Repeat

7B-2

9129 B3	2101 C4	2118 B4	2139 B2	2153 C3	2166 B2	3112 A3	3123 A3	3143 C2	3175 A2	4106 B4	4154 C3	6110 A4	7121 B3
9130 C3	2102 C4	2119 B4	2141 B1	2154 C3	2167 B2	3113 A2	3125 A3	3144 C2	3176 C2	4107 C4	4155 A4	6111 B4	7122 B4
9131 A5	2103 C3	2120 B4	2142 B1	2156 C4	2168 B1	3114 A3	3126 B3	3145 C2	3177 A1	4108 B4	4156 A2	6130 C2	7123 B4
9133 C3	2108 A4	2122 B3	2143 A1	2157 B4	3101 C3	3115 A3	3127 B3	3146 A1	3178 A1	4109 A3	4157 B3	6131 C3	7124 C4
9134 B3	2109 A4	2124 A5	2145 C1	2158 B4	3102 C3	3116 A3	3128 B3	3148 A1	3179 A1	4110 A3	4158 C2	7101 B2	7125 A1
9136 A5	2111 A2	2126 C2	2146 C1	2159 C2	3103 C3	3117 B4	3133 B4	3153 C2	3180 A4	4111 C1	4159 A2	7103 C2	
9137 A5	2112 B5	2127 C2	2147 C1	2160 C4	3104 B3	3118 B3	3134 B4	3155 A2	4101 A4	4120 C2	4160 A1	7106 A3	
	2113 A4	2131 C2	2149 B2	2161 A3	3106 C4	3119 A3	3136 B4	3156 A1	4102 A4	4150 B2	4161 A1	7108 A3	
	2114 A4	2132 C1	2150 B2	2163 A2	3108 A4	3120 B4	3137 B4	3167 C2	4103 C2	4151 B3	4162 C1	7109 A3	
	2116 B3	2134 C1	2151 C2	2164 B1	3109 A4	3121 A3	3140 B2	3168 B3	4104 A2	4152 B3	4163 C1	7111 A1	
	2117 A3	2136 B1	2152 C3	2165 B3	3111 A3	3122 B3	3141 C2	3169 B2	4105 B3	4153 B4	6105 A4	7120 B4	



TUNER ADJUSTMENT TABLE (ECO5 FM/MW- and FM/MW/LW - versions with AM-frame aerial)

Waverange	Input frequency	Input	Tuned to	Adjust	Output	Scope/Voltmeter
VARICAP ALIGNMENT						
FM 87.5 - 108MHz (65.81 - 74, 87.5 - 108MHz)			108MHz	5130	1	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		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, 50mV continuous wave	F	IC 7101 21 shortcircuit to block AFC 2141	5119	2	0 ± 3 mV DC
FM RF						
FM 87.5 - 108MHz (65.81 - 74, 87.5 - 108MHz)	108MHz	A	108MHz	2155	4	MAX
	87.5MHz (65.81MHz)	mod=1kHz Δf=±22.5kHz	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 short wire to ground (pin 4)	C Δf=±15kHz V_{RF} = 3mV	IC 7101 36 220R 100nF	5111	4	max. to symmetric
			IC 7101 40 see remark 2) 220R 100nF	5112		
AM AFC **MW**		C continuous wave V_{RF} = 10mV		5114	2	0 ± 2 mV DC
AM RF [3]						
MW [4] FM/MW/LW- and FM/MW-version (9kHz grid) 531 - 1602kHz	1494kHz	B	1494kHz	2106	4	max. to symmetric
	558kHz		558kHz	5102		
LW	198kHz		198kHz	5103		
MW FM/AM-version, 10kHz grid 530 - 1700kHz	1500kHz	Δf = ±30kHz V_{RF} as low as possible	1500kHz	2106		
	560kHz		560kHz	5102		

Use service test program. 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 (input signal: stereo left 90% + 9%. adjust output on right channel to minimum)

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

3) For AM RF adjustments the original frame antenna has to be used !

4) MW has to be aligned before LW.

↓ Repeat
↑

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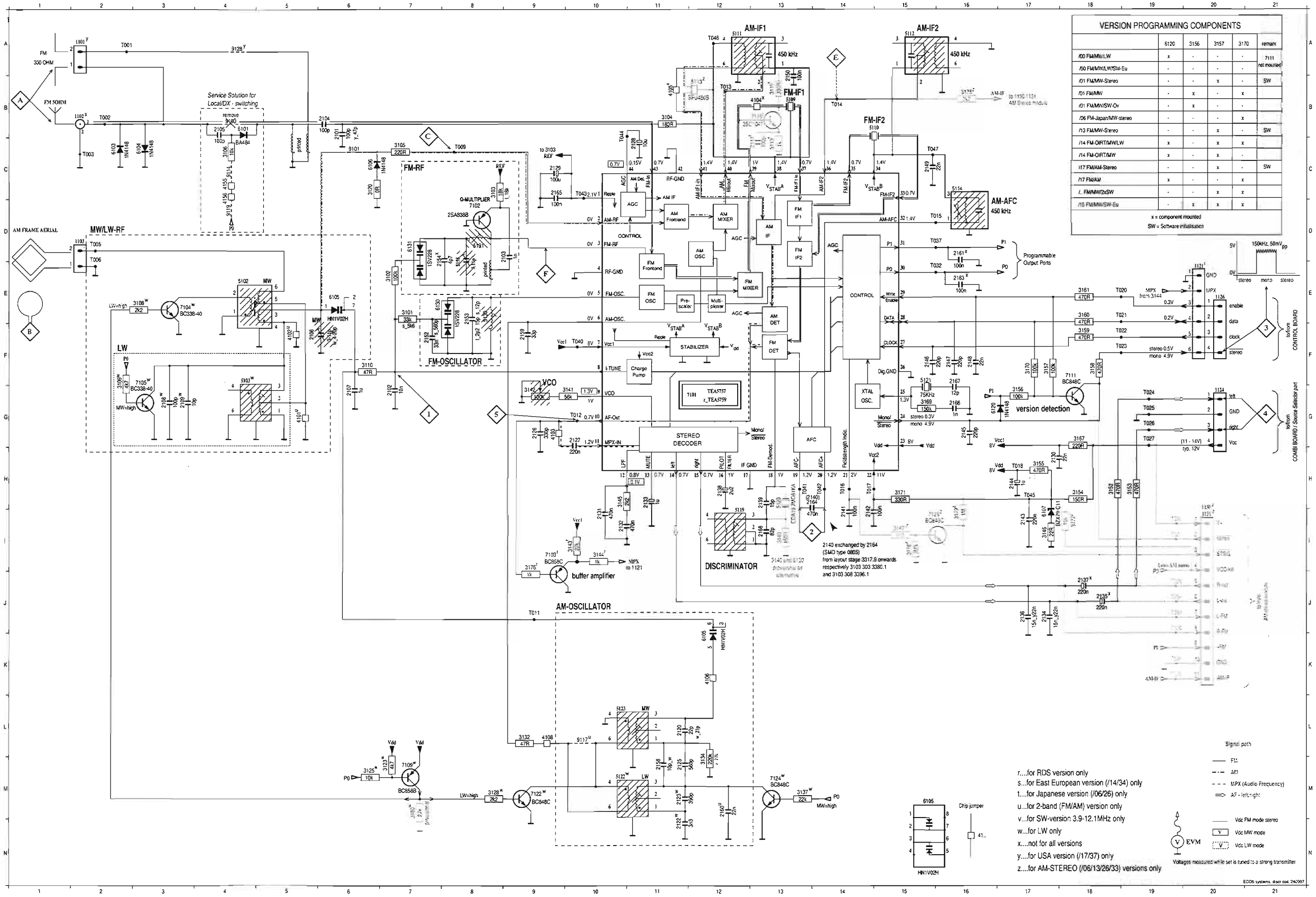
TUNER BOARD ECO5 / Systems



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ELECTRICAL PARTS LIST - ECO5 TUNER BOARD

ELECTRICAL PARTS LIST - ECO5 TUNER BOARD

MISCELLANEOUS

1101	4822 267 31505	Antenna Socket 300R	
1102	4822 267 10283	Antenna Socket Coax IEC 75R	

CAPACITORS

2101	5322 122 32531	100pF 5% 50V	
2101	4822 126 13692	47pF 1% 63V	for USA
2102	4822 122 33177	10nF 20% 50V	
2103	5322 122 34123	1nF 10% 50V	
2104	4822 122 33195	100pF 10% 50V	
2106	4822 125 50355	Trimmer 4-20pF	for LW version
2106	4822 125 60101	Trimmer 3-11pF 100V	
2107	4822 121 51319	1µF 10% 63V	
2108	5322 122 32531	100pF 5% 50V	for LW version
2109	5322 122 32448	10pF 5% 50V	for LW version
2120	4822 126 13691	27pF 1% 63V	for LW version
2120	5322 122 32658	22pF 5% 50V	
2122	4822 122 33891	3,3nF 10% 63V	for LW version
2125	4822 121 51381	560pF 5% 400V	
2126	5322 122 31863	330pF 5% 50V	
2127	4822 126 13473	220nF +80/-20% 50V	
2128	4822 124 41579	10µF 20% 50V	
2129	4822 124 41584	100µF 20% 10V	
2130	4822 126 11585	22nF+80/- 20% 25V	
2131	4822 122 33325	470nF 16V	
2132	4822 122 33325	470nF 16V	
2131	4822 126 13482	470nF +80/- 20% 16V	
2132	4822 126 13482	470nF +80/- 20% 16V	
2133	4822 124 40242	1µF 20% 63V	
2134	4822 126 13188	15nF 5% 63V	
2134	5322 122 32654	22nF 10% 63V	for USA
2135	4822 124 40746	0,22µF 20% 63V	
2136	4822 126 13188	15nF 5% 63V	
2136	5322 122 32654	22nF 10% 63V	for USA
2137	4822 124 40746	0,22µF 20% 63V	
2138	4822 124 41576	2,2µF 20% 50V	
2139	4822 126 14236	50V 15pF 5%	
2140	4822 121 51252	470nF 5% 63V	
2141	4822 126 10002	100nF 20% 25V	
2142	4822 126 10002	100nF 20% 25V	
2143	4822 126 13473	220nF +80/-20% 50V	
2144	4822 124 40242	1µF 20% 63V	
2145	4822 122 33575	220pF 5% 50V	
2146	4822 122 33575	220pF 5% 50V	
2147	4822 122 33575	220pF 5% 50V	
2148	4822 126 11585	22nF+80/- 20% 25V	
2149	5322 122 32654	22nF 10% 63V	
2150	4822 122 31947	100nF 20% 63V	
2152	5322 116 80853	560pF 5% 63V	for East. Europe
2152	4822 126 12105	33nF 5% 63V	
2153	4822 122 32139	12pF 2% 63V	for East. Europe
2153	4822 122 32504	15pF 2% 63V	
2155	4822 125 60101	Trimmer 3-11pF 100V	
2158	5322 122 32448	10pF 5% 50V	for LW version
2159	5322 122 32659	33pF 5% 50V	
2160	5322 122 32654	22nF 10% 63V	
2161	4822 126 10002	100nF 20% 25V	
2163	4822 126 10002	100nF 20% 25V	
2164	4822 126 13482	470nF +80/- 20% 16V	
2165	4822 126 10002	100nF 20% 25V	
2166	5322 122 34123	1nF 10% 50V	
2167	4822 122 32139	12pF 2% 63V	
2168	4822 126 13695	82pF 1% 63V	

RESISTORS

3101	4822 051 20562	5k6 5% 0,1W	for East. Europe
3101	4822 051 20333	33k 5% 0,1W	
3102	4822 051 20104	100k 5% 0,1W	
3103	4822 117 10965	18k 1% 0,1W	
3104	4822 117 11448	180R 1% 0,1W	
3105	4822 116 83872	220R 5% 0,5W	
3108	4822 117 11449	2k2 1% 0,1W	for LW version
3109	4822 051 20472	4k7 5% 0,1W	for LW version
3110	4822 116 52195	47R 5% 0,5W	
3120	4822 051 20008	0R Jumper 0805	
3123	4822 051 20472	4k7 5% 0,1W	for LW version
3125	4822 117 10833	10k 1% 0,1W	for LW version
3128	4822 117 11449	2k2 1% 0,1W	for LW version
3132	4822 116 52195	47R 5% 0,5W	
3134	4822 051 20224	220k 5% 0,1W	
3137	4822 051 20223	22k 5% 0,1W	for LW version
3140	4822 051 20008	0R Jumper 0805	
		5120=CDA10.7MG40K	
3140	4822 117 10353	150R 1% 0,1W	
		5120=CDA10.7MG61KA	
3141	4822 051 20563	56k 5% 0,1W	
3142	4822 100 11163	Trimmer 100k 30% 0,1W	
3143	4822 051 20223	22k 5% 0,1W	for RDS version
3144	4822 051 10102	1k 2% 0,25W	for RDS version
3145	4822 117 11449	2k2 1% 0,1W	
3146	4822 051 20229	22R 5% 0,1W	
3152	4822 116 83883	470R 5% 0,5W	
3153	4822 051 20471	470R 5% 0,1W	
3154	4822 116 83868	150R 5% 0,5W	
3155	4822 051 20471	470R 5% 0,1W	
3156	4822 051 20104	100k 5% 0,1W	for /21/30/33 only
3157	4822 116 52234	100k 5% 0,5W	for East. Europe
3158	4822 116 83883	470R 5% 0,5W	
3159	4822 116 83883	470R 5% 0,5W	
3160	4822 116 83883	470R 5% 0,5W	
3161	4822 116 83883	470R 5% 0,5W	
3167	4822 117 11503	220R 1% 0.1W	
3169	4822 051 20154	150k 5% 0,1W	
3170	4822 116 52234	100k 5% 0,5W	
3171	4822 116 52219	330R 5% 0,5W	
3176	4822 051 10102	1k 2% 0,25W	for RDS version
4101	4822 051 20008	0R Jumper 0805	for 2-Band only
4102	4822 051 20008	0R Jumper 0805	for 2-Band only
4103	4822 051 20008	0R Jumper 0805	
4104	4822 051 20008	0R Jumper 0805	
4105	4822 051 20008	0R Jumper 0805	
4106	4822 051 20008	0R Jumper 0805	
4108	4822 051 20008	0R Jumper 0805	
4111	4822 051 20008	0R Jumper 0805	
4120	4822 051 20008	0R Jumper 0805	
4150	4822 051 10008	0R Jumper 1206	
4151	4822 051 20008	0R Jumper 0805	
4152	4822 051 10008	0R Jumper 1206	
4153	4822 051 10008	0R Jumper 1206	
4154	4822 051 10008	0R Jumper 1206	
4155	4822 051 10008	0R Jumper 1206	
4156	4822 051 20008	0R Jumper 0805	
4157	4822 051 10008	0R Jumper 1206	
4158	4822 051 10008	0R Jumper 1206	
4159	4822 051 10008	0R Jumper 1206	
4162	4822 051 10008	0R Jumper 1206	

COILS & FILTERS

5102	4822 157 71634	MW RF Coil	
5103	4822 157 71635	LW RF Coil	for LW version
5109	4822 242 70665	Ceram Filter 10,7MHz	
5110	4822 242 70665	Ceram Filter 10,7MHz	
5111	4822 158 60511	AM-IF Filter 450kHz	
5112	4822 157 70302	AM-IF Filter 450kHz	
5114	4822 157 70302	AM-IF Filter 450kHz	
5119	4822 157 11443	Discriminator 10,7MHz	
5120	4822 242 82065	Cer. Disc. 10,7MG40K	
5120	4822 242 10251	Cer. Disc.10,7MG61KA-TF21	
5121	4822 242 10261	Quartz 75kHz	
5122	4822 157 60517	Osc. Coil LW	for LW version
5123	4822 157 60517	Osc. Coil MW	
5130	4822 156 30947	RF-Coil 1.5T	
5131	4822 156 30947	RF-Coil 1.5T	

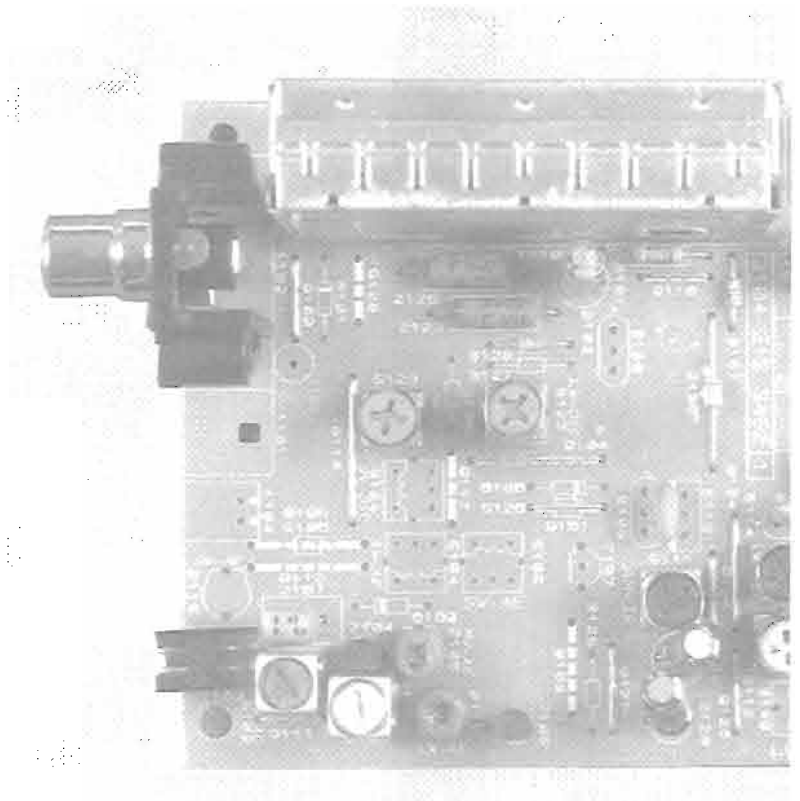
DIODES

6103	4822 130 30621	1N4148	
6104	4822 130 30621	1N4148	
6105	4822 130 83075	HN1V02H-B	
6106	4822 130 30621	1N4148	
6107	4822 130 34488	BZX79-B11	
6120	4822 130 30621	1N4148	not for /21/30/33
6130	4822 130 82833	1SV228	
6131	4822 130 82833	1SV228	

TRANSISTORS & INTEGRATED CIRCUITS

7101	4822 209 90924	TEA5757H/V1	
7102	4822 130 60093	2SA838B	
7103	4822 130 42513	BC858C	for RDS version
7104	5322 130 44779	BC338-40	for LW version
7105	5322 130 44779	BC338-40	for LW version
7109	5322 130 41983	BC858B	for LW version
7111	5322 130 42136	BC848C	
7122	5322 130 42136	BC848C	for LW version
7124	5322 130 42136	BC848C	for LW version

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



TUNER 95 BC

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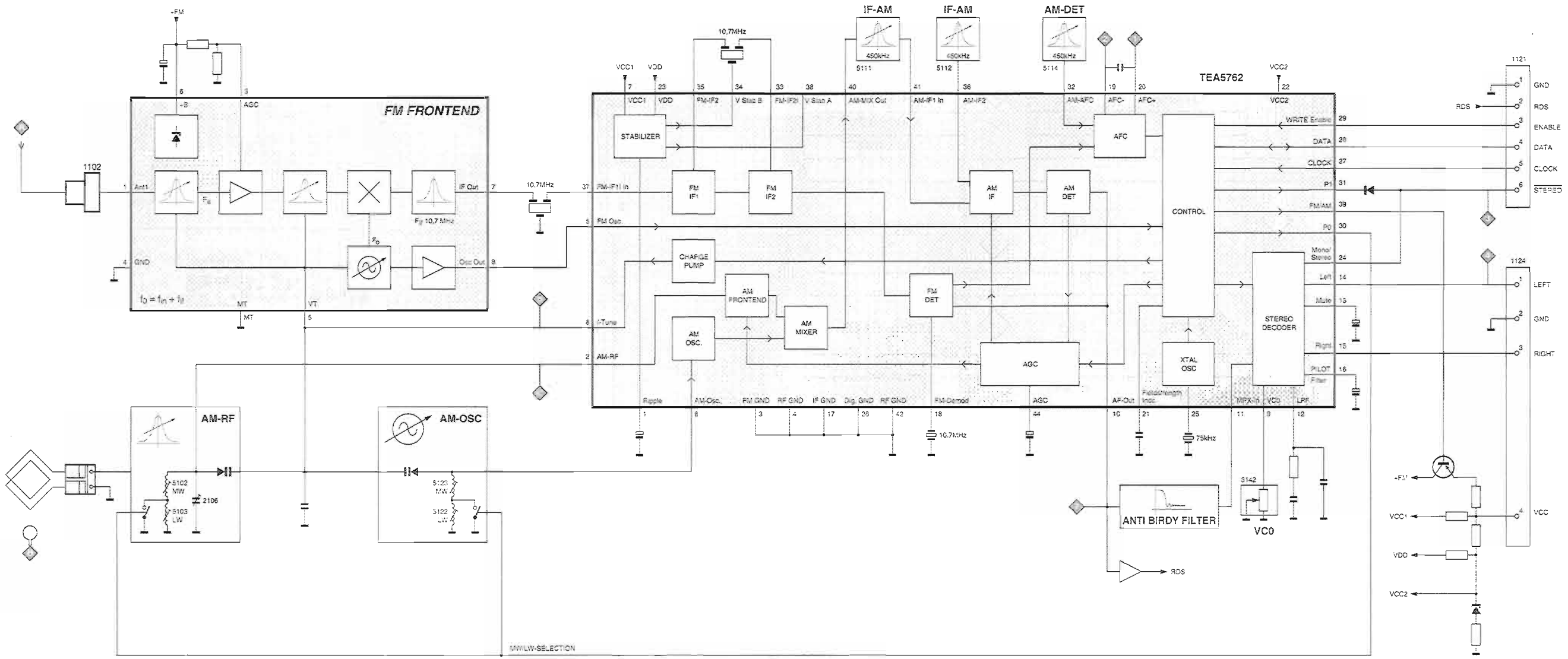
BLOCKDIAGRAM



TUNER 95 bis Adjustment Table (FM, MW, LW with Frame antenna)

Waverange	Input frequency	Input	Set tuned to	Adjust	Output	Scope / Voltmeter
VARICAP ALIGNMENT						
FM (50)			108 MHz	check		7 ... 9V
87.5 - 108 MHz			87.5 MHz	check		1.3 ... 2V
MW (9)			1602 kHz	5123		8.3V ± 0.2V
531 - 1602 kHz			531 kHz	check	◇6	1V ± 0.4V
LW (3)			279 kHz	5122		8.3V ± 0.2V
153 - 279 kHz			153 kHz	check		1V ± 0.4V
FM – DETECTION						
FM	98 MHz 1mV continuous wave *short pin 21 (IC7101) to ground*	◇A	98 MHz	5107	◇1 ◇2	0mV ± 3mV
FM – VCO						
FM	98 MHz 1 mV continuous wave	◇A	98 MHz	3142	◇3	152kHz ± 1 kHz
DISTORTION						
FM	98 MHz 1 mV 90 % L + 9 % pilot mod = 1kHz	◇A	98MHz	mixcoil inside Tuner 1110	◇4	Distortion minimum
AM – IF						
MW	450kHz Δf = 10kHz Low as possible Swept signal	◇C	MW	5111	◇7	symmetrical and max. height
				5112		
	450kHz continuous wave			5114	◇1 ◇2	0mV ± 2mV
AM - RF						
MW	558kHz Mod = 1kHz 30 % AM 1494 kHz	◇B	558kHz	5102	◇7	MAX
			1494kHz	2106		
LW	198kHz mod = 1kHz 30 % AM	*	198kHz	5103		MAX

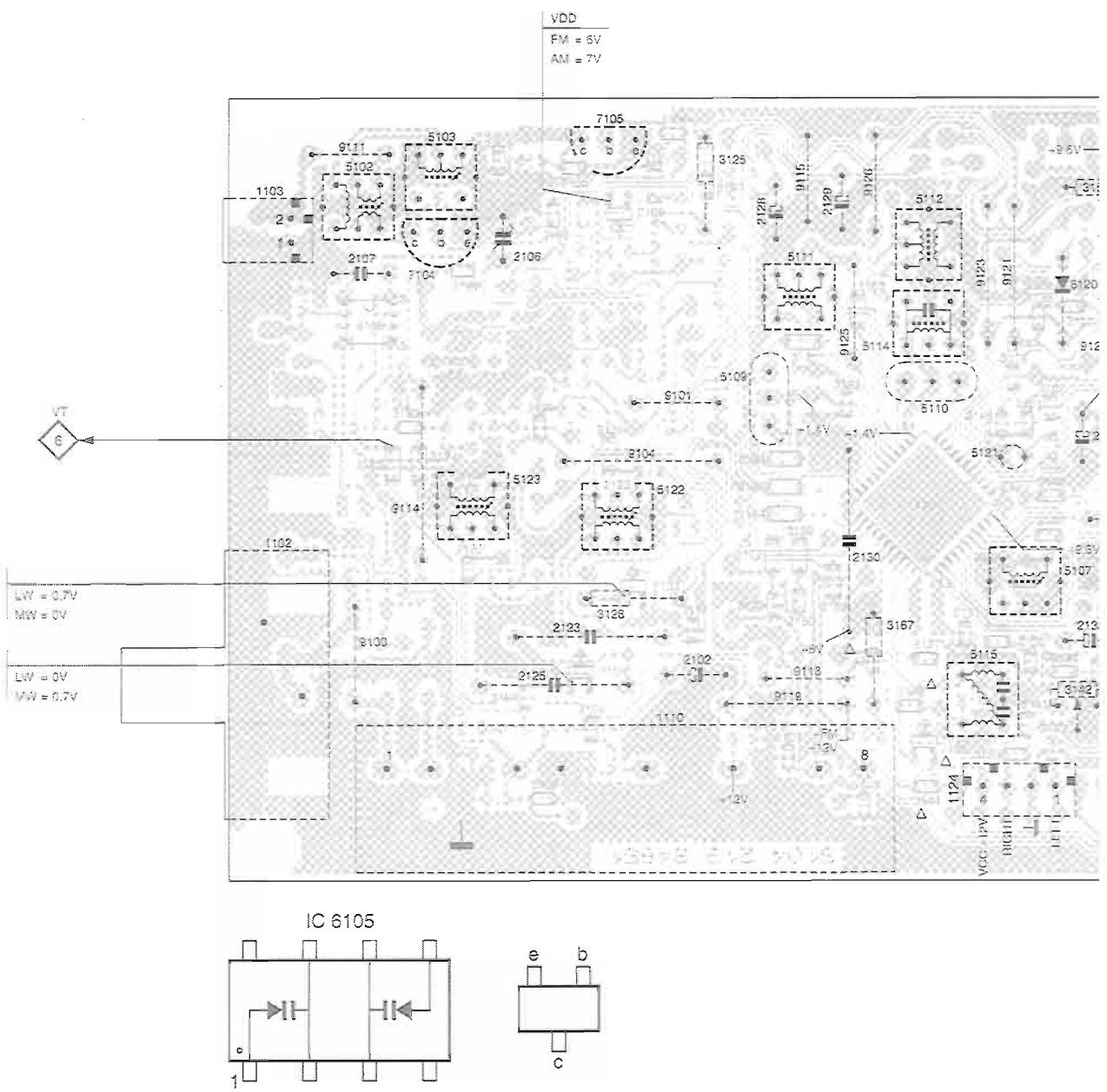
adjtable for 3104 217 04121/04341

* Signal send via a frame antenna
(..) = tuning grid in kHz

↕ repeat

1102	F4	2107	C4	2128	C7	2136	G10	2145	G11	2151	E9	3124	E5	3137	G5	3145	F9	3158	G11	3167	F8	3183	E7	5103	C5	5121
1103	C8	2108	C6	2129	C8	2137	E11	2147	G11	2152	C11	3125	C7	3138	D9	3146	B10	3159	G11	3169	D5	3184	E7	5107	F10	5122
1110	G7	2109	C5	2130	F8	2138	E10	2148	E9	3103	H6	3128	F6	3139	F8	3150	C11	3160	G11	3171	D11	3185	E7	5109	D7	5123
1121	H11	2120	F5	2131	F9	2140	F10	2150	F8	3104	G6	3129	E6	3140	H6	3151	C10	3161	G11	3172	F7	3186	G8	5110	E9	6105
1124	H9	2122	E6	2132	F9	2141	E10	2151	F9	3107	G7	3130	E6	3141	G9	3152	G8	3162	D9	3173	F7	3188	G11	5111	C6	6107
1125	G10	2123	F6	2133	F10	2142	E9	2152	F9	3108	C6	3131	C6	3142	G10	3153	G9	3163	F8	3175	D9	3192	D8	5112	C9	6120
2102	G7	2125	G5	2134	G10	2143	C10	2158	D10	3109	B7	3132	E5	3143	G8	3154	C10	3164	C11	3177	F7	3197	C7	5114	D8	7101
2106	C5	2127	F9	2135	G11	2144	E10	2160	E9	3123	E4	3134	E5	3144	H8	3155	C10	3165	D8	3181	D8	5102	C4	5115	G9	7103

TUNER 95 bis Combi: Copper side view



TUNER 95 bis
3104 217 04121/04341 bl. 110 - 01

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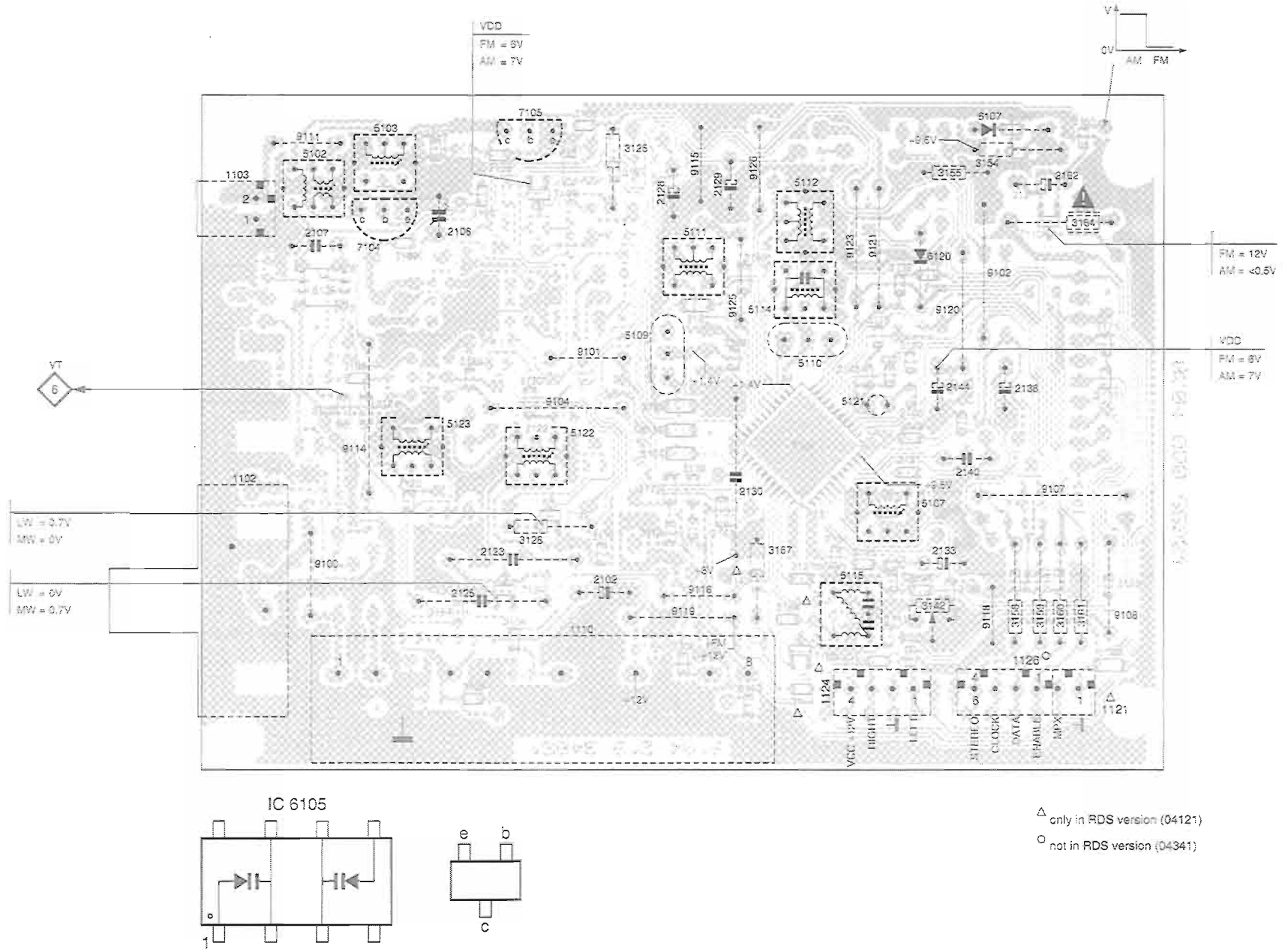
1102	F4	2107	C4	2128	C7	2136	G10	2145	G11	2161	E9	3124	E5	3137	G5	3145	F9	3158	G11	3167	F8	3183	E7	5103	C5	5121	E9	7104	D5	9102	D10	9116	G10
1103	C3	2108	C6	2129	C8	2137	E11	2147	G11	2162	C11	3125	C7	3138	D9	3146	B10	3159	G11	3169	D5	3184	E7	5107	F10	5122	E7	7105	B5	9104	E6	9119	G7
1110	G7	2109	C5	2130	F8	2138	E10	2148	E9	3103	H6	3128	F6	3139	F8	3150	C11	3160	G11	3171	D11	3185	E7	5109	D7	5123	E5	7109	C6	9107	F11	9120	D10
1121	H11	2120	F5	2131	F9	2140	F10	2150	F8	3104	G6	3129	E6	3140	H8	3151	C10	3161	G11	3172	F7	3186	G8	5110	E9	6105	D4	7110	D11	9108	G11	9121	D9
1124	H9	2122	E6	2132	F5	2141	E10	2151	F9	3107	G7	3130	E5	3141	G9	3152	G9	3162	D9	3173	F7	3188	G11	5111	C8	6107	B10	7122	F7	9111	C4	9123	D9
1126	G10	2123	F6	2133	F10	2142	E9	2152	F9	3108	C3	3131	C6	3142	G10	3153	G9	3163	F8	3178	D9	3192	D8	5112	C9	6120	D10	7124	G6	9114	E5	9125	D5
2102	G7	2125	G5	2134	G10	2143	C10	2158	D10	3109	B7	3132	E5	3143	G8	3154	C10	3164	C11	3177	F7	3197	C7	5114	D8	7101	E9	9100	F4	9115	C8	9126	C8
2106	C5	2127	F9	2135	G11	2144	E10	2160	E9	3123	E4	3134	E5	3144	H8	3155	C10	3165	D8	3181	D8	5102	C4	5115	G9	7103	G9	9101	E7	9116	G8		

TUNER 95 bis Combi: Copper side view

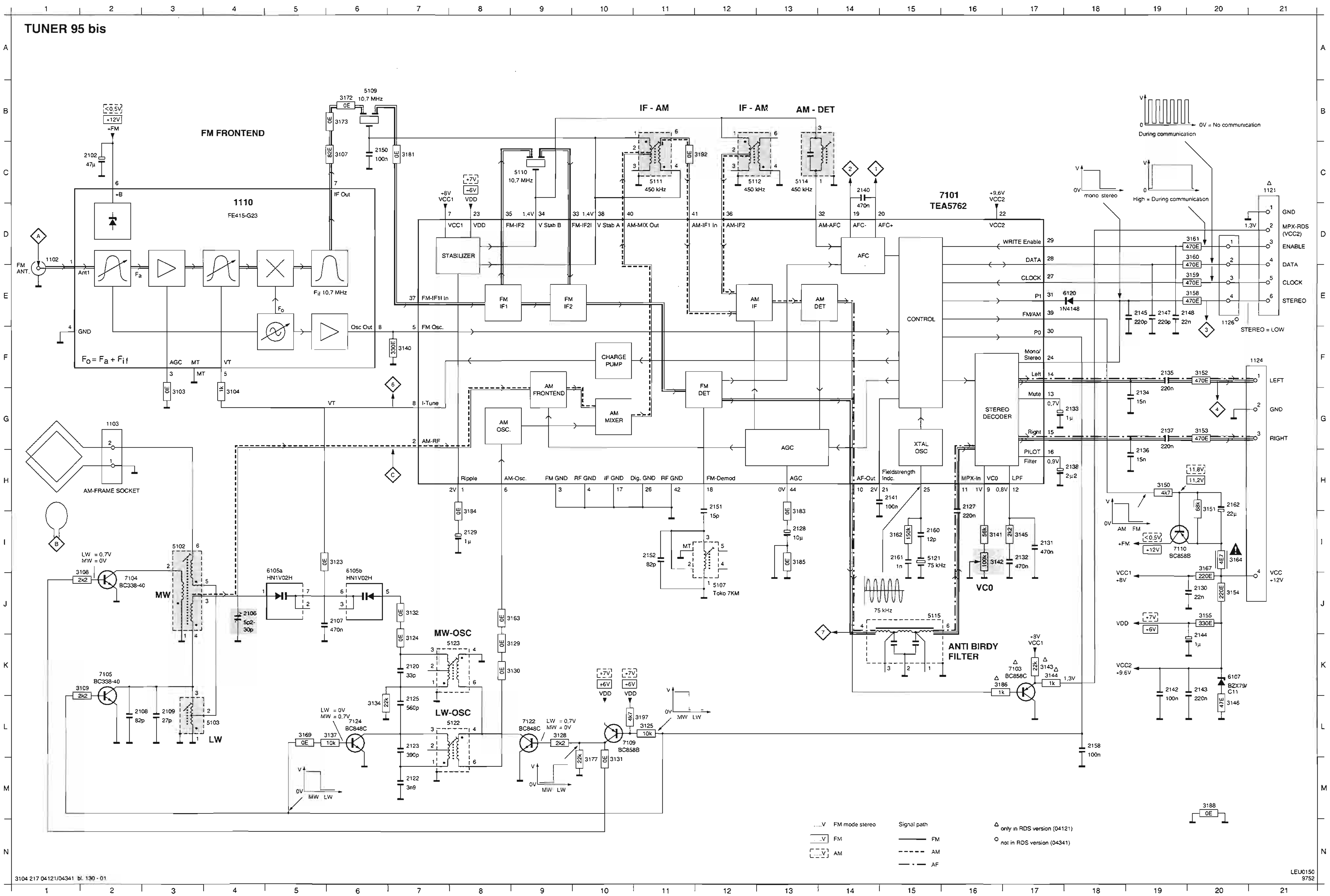


TUNER 95 bis
3104 217 04121/04341 bl. 110 - 01

LEU0148
9751

7D-3

1102	D1
1103	G2
1110	D4
1121	C21
1124	F21
1126	E20
2102	C2
2106	J4
2107	J6
2108	L2
2109	L3
2120	K7
2122	M7
2123	L7
2125	L7
2127	H16
2128	I13
2129	I8
2130	J20
2131	I17
2132	I17
2133	G18
2134	G19
2135	F19
2136	H19
2137	G19
2138	H18
2140	C14
2141	H15
2142	K19
2143	K20
2144	K20
2145	E19
2147	E19
2148	E19
2150	C6
2151	H12
2152	I11
2158	L18
2160	I15
2161	I15
2162	H20
3103	G3
3104	G4
3107	C6
3108	J1
3109	K1
3123	I6
3124	K7
3125	L11
3128	L9
3129	K8
3130	K8
3131	M10
3132	J7
3134	L6
3137	L5
3140	F7
3141	I16
3142	I16
3143	K17
3144	K17
3145	I17
3146	L20
3150	H19
3151	I20
3152	F20
3153	G20
3154	J20
3155	J20
3158	E19
3159	E19
3160	D19
3161	D19
3162	I15
3163	J8
3164	I20
3167	I20
3169	L5
3172	B6
3173	B6
3177	M10
3181	C7
3183	I13
3184	I8
3185	I13
3186	K16
3188	M20
3192	C12
3197	L11
5102	I3
5103	L4
5107	J12
5109	B6
5110	C9
5111	C11
5112	C12
5114	C13
5115	J15
5121	I15
5122	L7
5123	K7
6105a	I5
6105b	I6
6107	K20
6120	E17
7101	C15
7103	K17
7104	J2
7105	K2
7109	L10
7110	I19
7122	L9
7124	L6



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ELECTRICAL PARTS LIST - TUNER 95 BOARD

ELECTRICAL PARTS LIST - TUNER 95 BOARD

MISCELLANEOUS

1102	4822 267 10283	Socket Coaxial IEC 75R
1103	4822 265 31184	JST Connector 2 pin
1110	4822 210 10739	Frontend Assembly FE415-G23

CAPACITORS

2102	4822 124 40433	47µF 20% 25V
2106	4822 125 60102	Trimmer 5,2-30pF 100V
2107	4822 121 51252	470nF 5% 63V
2108	4822 126 13695	82pF 1% 63V
2109	4822 126 13691	27pF 1% 63V
2120	5322 122 32659	33pF 5% 50V
2122	5322 126 10465	3,9nF 10% 63V
2125	4822 121 10578	560P 1% 630V
2127	4822 122 32927	220nF +80/-20% 50V
2128	4822 124 41579	10µF 20% 50V
2129	4822 124 40242	1µF 20% 63V
2130	4822 126 11585	22nF +80/-20% 25V
2131	4822 122 33325	470nF 16V
2132	4822 122 33325	470nF 16V
2133	4822 124 40242	1µF 20% 63V
2134	4822 126 13188	15nF 5% 63V
2135	4822 122 32927	220nF +80/-20% 50V
2136	4822 126 13188	15nF 5% 63V
2137	4822 122 32927	220nF +80/-20% 50V
2138	4822 124 41576	2,2µF 20% 50V
2140	4822 121 51252	470nF 5% 63V
2141	4822 122 31947	100nF 20% 63V
2142	4822 122 31947	100nF 20% 63V
2143	4822 122 32927	220nF +80/-20% 50V
2144	4822 124 40242	1µF 20% 63V
2145	4822 122 33575	220pF 5% 50V
2147	4822 122 33575	220pF 5% 50V
2148	4822 122 33809	22nF 20% 50V
2150	4822 122 31947	100nF 20% 63V
2151	4822 126 14236	50V 15pF 5%
2152	4822 126 13695	82pF 1% 63V
2158	4822 122 31947	100nF 20% 63V
2160	4822 122 32139	12pF 2% 63V
2161	5322 122 34123	1nF 10% 50V
2162	4822 124 81151	22µF 50V

RESISTORS

3103	4822 051 20008	0R Jumper 0805
3104	4822 051 10102	1k 2% 0,25W
3107	4822 051 20829	82R 5% 0,1W
3108	4822 117 11449	2k2 1% 0,1W
3109	4822 117 11449	2k2 1% 0,1W
3123	4822 051 10008	0R 5% 0,25W
3124	4822 051 10008	0R 5% 0,25W
3125	4822 116 83864	10k 5% 0,5W
3128	4822 116 52256	2k2 5% 0,5W
3129	4822 051 20008	0R Jumper 0805
3130	4822 051 10008	0R 5% 0,25W
3131	4822 051 10008	0R 5% 0,25W
3132	4822 051 20008	0R Jumper 0805
3134	4822 051 20223	22k 5% 0,1W
3137	4822 117 10833	10k 1% 0,1W
3138	4822 051 20008	0R Jumper 0805
3139	4822 051 10008	0R 5% 0,25W
3140	4822 051 20331	330R 5% 0,1W
3141	4822 051 20563	56k 5% 0,1W
3142	4822 100 11163	Trimmer 100k 30% 0,1W
3143	4822 051 20223	22k 5% 0,1W
3144	4822 051 10102	1k 2% 0,25W
3145	4822 117 11449	2k2 1% 0,1W
3146	4822 051 20479	47R 5% 0,1W
3150	4822 051 20472	4k7 5% 0,1W
3151	4822 051 20683	68k 5% 0,1W
3152	4822 051 20471	470R 5% 0,1W
3153	4822 051 20471	470R 5% 0,1W
3154	4822 116 83872	220R 5% 0,5W
3155	4822 116 52219	330R 5% 0,5W
3158	4822 116 83883	470R 5% 0,5W
3159	4822 116 83883	470R 5% 0,5W
3160	4822 116 83883	470R 5% 0,5W
3161	4822 116 83883	470R 5% 0,5W
3162	4822 051 20224	220k 5% 0,1W
3163	4822 051 10008	0R 5% 0,25W
3164	4822 052 10478 ⚠	4R7 5% 0,33W
3165	4822 051 10008	0R 5% 0,25W
3167	4822 116 83872	220R 5% 0,5W
3169	4822 051 20008	0R Jumper 0805
3171	4822 051 20008	0R Jumper 0805
3172	4822 051 10008	0R 5% 0,25W
3173	4822 051 20008	0R Jumper 0805
3176	4822 051 20008	0R Jumper 0805
3177	4822 051 20223	22k 5% 0,1W
3181	4822 051 10008	0R 5% 0,25W
3183	4822 051 10008	0R 5% 0,25W
3184	4822 051 10008	0R 5% 0,25W
3185	4822 051 10008	0R 5% 0,25W
3186	4822 051 10102	1k 2% 0,25W
3188	4822 051 10008	0R 5% 0,25W
3192	4822 051 20008	0R Jumper 0805
3197	4822 051 20472	4k7 5% 0,1W

COILS & FILTERS

5102	4822 157 71634	MW AERIAL
5103	4822 157 71635	LW AERIAL
5107	4822 157 11443	FM Discriminator 10,7MHz
5109	4822 157 71639	Ceram Filter 10,7MHz
5110	4822 242 70665	Ceram Filter 10,7MHz
5111	4822 158 60511	AM-IF Filter 450kHz
5112	4822 157 70302	AM-IF Filter 450kHz
5114	4822 157 70302	AM-IF Filter 450kHz
5115	4822 157 71636	Anti-Birdy Filter
5121	4822 242 10261	X'tal Resonator 75kHz
5122	4822 157 60517	RF Coil AM
5123	4822 157 60517	RF Coil AM

DIODES

6105	4822 130 83075	HN1V02H-B
6107	4822 130 34488	BZX79-B11
6120	4822 130 30621	1N4148

TRANSISTORS & INTEGRATED CIRCUITS

7101	4822 209 90315	TEA5762H/V1
7103	4822 130 42513	BC858C
7104	5322 130 44779	BC338-40
7105	5322 130 44779	BC338-40
7109	5322 130 41983	BC858B
7110	5322 130 41983	BC858B
7122	5322 130 42136	BC848C
7124	5322 130 42136	BC848C

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

ETF6 TAPE MODULE

(Non-dolby Version)

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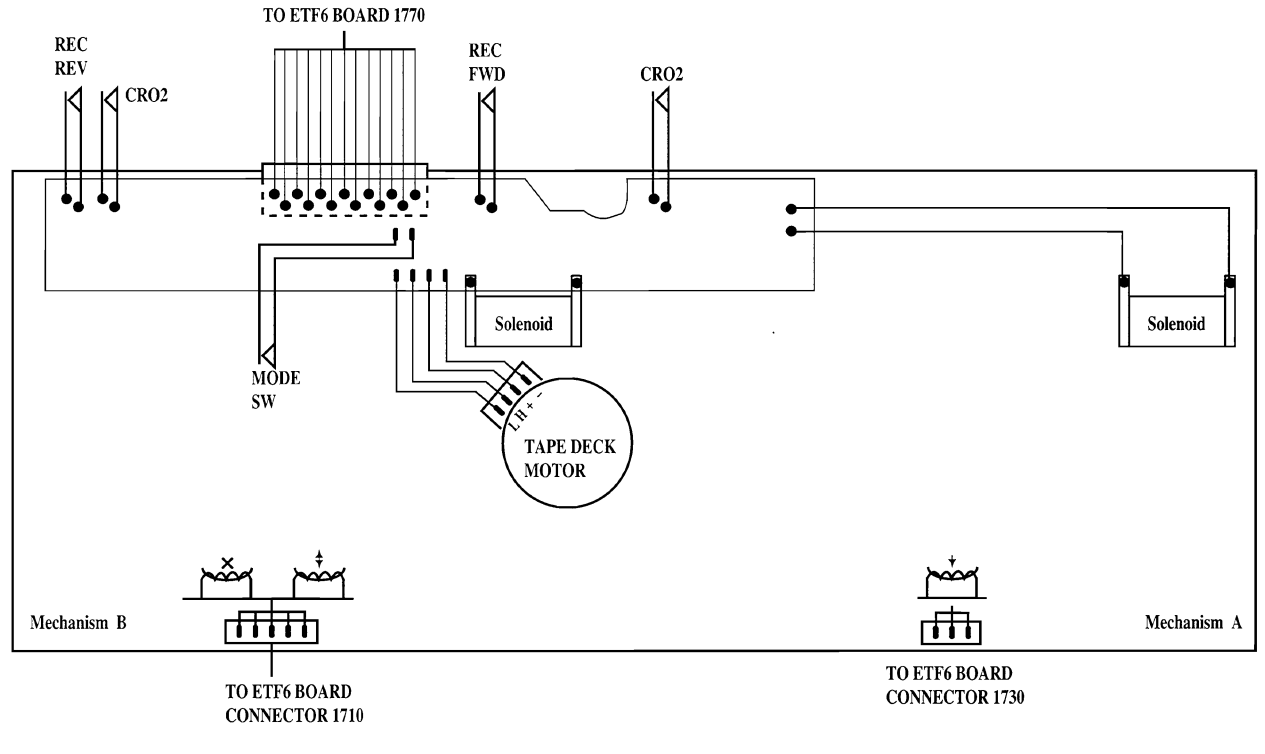
Tapedeck wiring (Double deck)



OPTIONS / VARIANTS TABLE

MODULE	ETF6	
VARIANT	**1**	**2**
NAME	**ND/DD/FR**	**ND/DD/FF**
Deck configuration	double	double
Autoreverse	yes (B)	no
Auto-replay	no	yes (B)
Motor configuration	single	single
Auto tape type selection	yes	yes
Dolby B type Noise Reduction	no	no
19 kHz pilot suppression	no	no
High speed dubbing	yes	yes

DB = Dolby B NR
DD = Double Deck
FF = Non-Autoreverse
FR = Autoreverse Deck B
ND = Non-Dolby
SD = Single Deck

Variations table for Analog Circuit

	Autoreverse	Non-autoreverse
	ND/DD/FR	ND/DD/FF
3723	12k	15k
3724	12k	15k
3743	1k2	1k
3744	1k2	1k
3769	12k	8k2
3772	4k7	5k6
3774	10k	8k2

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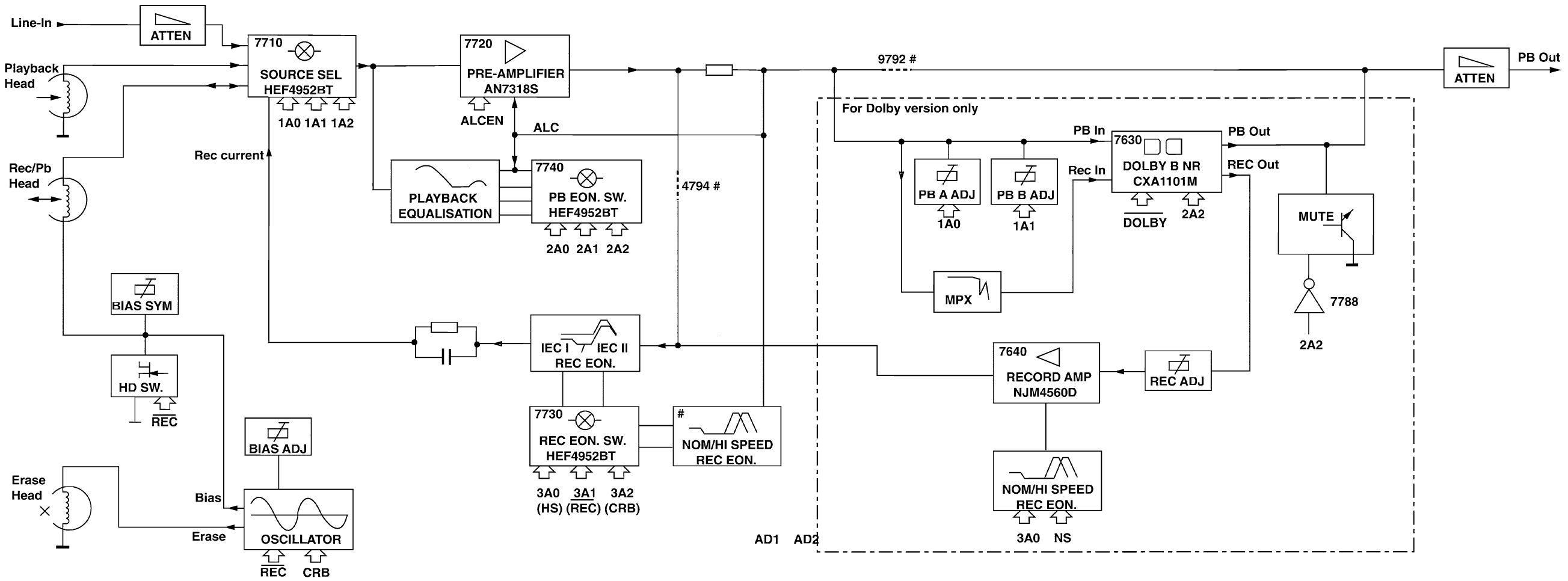
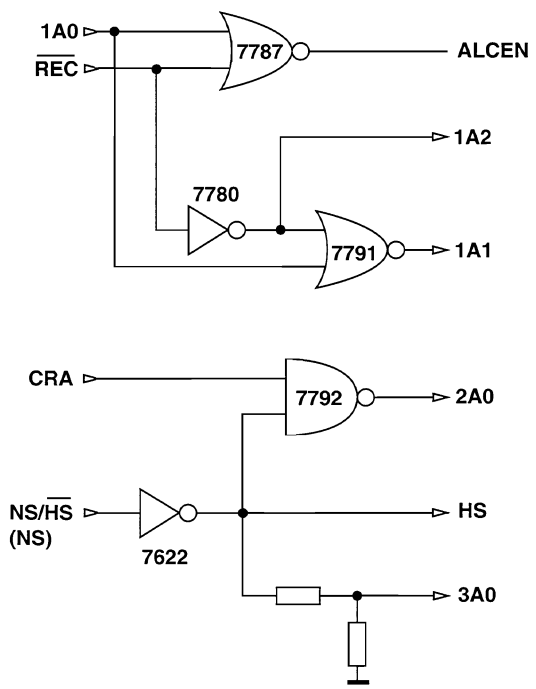
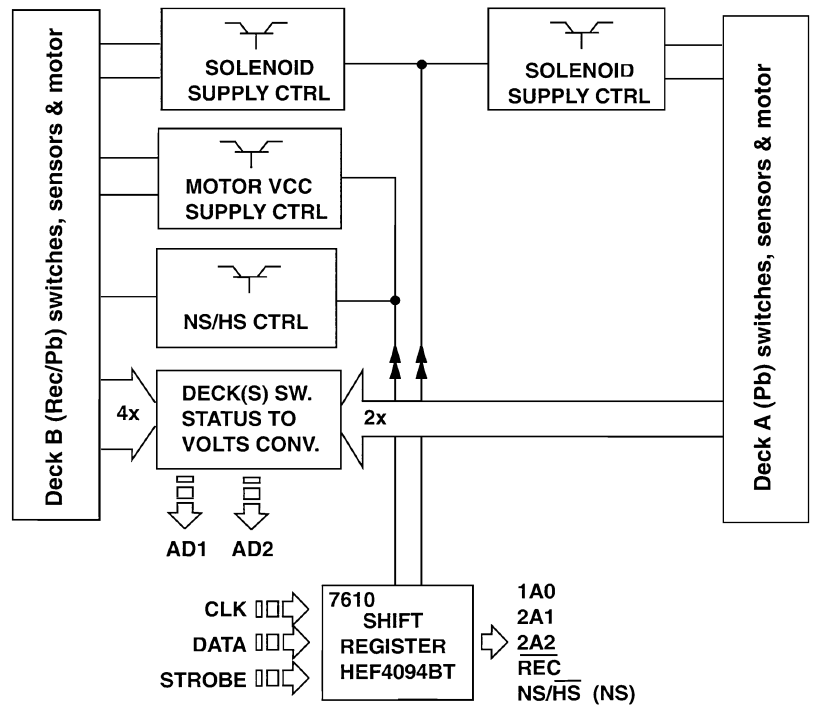
BLOCK DIAGRAM







NOTE: # For Non-dolby version only
Only 1 channel is presented.

MicroProcessor Control / Communication lines

Direct / Indirect Control lines from Shift Registers

Brief introduction

General

1. Playback Mode
   Signal from the playback head Deck A or Deck B is selected and fed through by the Mode Selector IC7710 (HEF4952B). The signal is amplified by amplifier IC7720 (AN7318S) before feeding to the IC7740 (HEF4952B) and then output to the AF Board through pins 5 and 6 of the connector 1701.

2. Recording Mode
   Recording Signal is selected and fed through by the Mode Selector IC7710 (HEF4952B) which is then amplified by the amplifier IC7720 (AN7318S). The amplified output signal will pass through IC7730 (HEF4952B) and then back to IC7710 (HEF4952B) before registered into the Rec/PB Head of Deck B.

3. Dubbing Mode
   In Dubbing mode, signal from the playback head Deck A is selected and fed through by the Mode Selector IC7710 (HEF4952B) which is then equalised for playback mode by the amplifier IC7720 (AN7318S) so that a flat response is obtained after the pre-amp. The equalised signal will then follow the same path as in the Recording mode.

4. Mode Selector
   The Mode Selector IC7710 (HEF4952B) caters for 4 inputs signal, namely Playback Signal from Deck A, Playback Signal from Deck B, Recording Signal and Dubbing Signal.

5. Amplifier PB/REC
   Amplifier IC7720 (AN7318S) is for the purpose of amplifying the Playback and Recording signal from the Mode Selector.

6. Automatic Level Control (ALC)
   ALC circuit consists of resistors (3765, 3766, 3767), capacitors (2762 , 2763) and control by transistor 7787 (BC847B). ALC limits the amplifier output to a constant value when input signal becomes too large, thus limiting recording current to below saturation level, to prevent recording distortion.

7. Muting Circuit (For Non-Dolby only)
   Switch S4 of the IC7740 (HEF4952B) is for the purpose of muting the output during Recording mode. During Recording mode, S4 is closed and shorted to the ground.

8. IC7740 (HEF4952B)
   The function of the IC7740 (HEF4952B) is to change time constant between 120us Ferro (IEC I) and 70us Chrome (IEC II) during playback mode. It will automatically determined whether the tape type is 120us Ferro (IEC I) or 70us Chrome (IEC II). This IC will switch to Flat Gain during the Recording mode.

9. IC7730 (HEF4952B)
   The function of the IC7730 (HEF4952B) is to change gain and time constant according to tape type and recording speed to boost recording current at higher frequency during recording to compensate for head loss. It will automatically determined whether the tape type is 120us Ferro (IEC I) or 70us Chrome (IEC II).

10. Bias Level
    Bias Level making use of the Variable resistor (3773) for adjusting the optimal level of the bias current for Ferro or Chrome.

11. Bias Symm (For Dolby only)
    Bias Symm making use of the Variable resistor (3785) to adjust the bias current for the left and the right channel to be equal.

12. PB Switch
    Playback Switch which consists of the FETs 7785 (For Dolby only) & 7786 (J111) is for the purpose of providing a virtual ground for the Rec/PB Head (Deck B) during Playback mode. During the Playback mode, the FETs are turn on and shorted pin 2 and 4 of connector 1720 to the ground. During Recording mode, the FETs are turn off to allow the oscillator signal to be superposition onto the Recording signal for recording.

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13. Motor Speed
    During High speed dubbing, a feedback signal from the uP through pin 03 of the IC7610 (HEF4094BT) will trigger the transistors 7622 (BC847B) and 7616 (BC857B) to cause a change in the voltage level between High and Low, thus changing the speed of the motor.

14. IC7610 (HEF4094BT)
    IC7610 (HEF4094BT) is a Shift Register use for issues the logic for cmos switch ICs (HEF4952B) via 1A0, 2A1 and 2A2. IC7610(HEF4094BT) also issues logic to On/Off SOL_A, SOL_B and MOT. Recording speed is also controlled by IC7610(HEF4094BT) via NS/HS.

Dolby Circuit (For sets with Dolby B NR only)

15. IC7630 (CXA1101M)
    IC7630 (CXA1101M) in the Dolby circuit is a Dolby Noise Reduction Type B IC for the Playback and Recording signal. Noise Reduction ON/OFF are controlled by $\overline{\text{DOLBY}}$, which is from CLK, direct from uP. After clocking in DATA, CLK is set to HIGH/LOW for NR OFF/ON.

16. 19kHz Filter
    The 19kHz filters 5631 & 5632 (LXD-210) in the Dolby circuit is for the purpose of filtering the 19kHz Pilot Tone (for Tuner signal only) of the Recording signal.

17. Level Adjust
    The Variable resistor 3635, 3636,3641 and 3642 in the Dolby circuit is for adjusting the playback level of the Dolby reference (400Hz , 200nWb/m). Transistor 7631, 7632 are ON to enable adjustment of 3641, 3642 during Playback Deck A. Transistor 7633, 7634 and 3635, 3636 are active for Playback Deck B.

18. Amplifier IC7640 (NJM4560M)
    The Amplifiers 7640A & 7640B (NJM4560M) in the Dolby circuit is for the purpose of amplified the Recording signal.

19. Muting Circuit
    The muting circuit which consists of transistors 7788, 7789 and 7790 (BC847B) is for the purpose of muting the output during Recording mode.

NOTATIONS & ABBREVIATIONS USED IN THIS DOCUMENT

CR	Chrome (IEC type II)
DB	Dolby NR type B
DD	Double Deck
DM	Double Motor
FE	Ferro (IEC type I)
FF	Non Auto Reverse
FR	Auto Reverse on Deck B
Gnd x	Ground x
HSD	High speed dubbing
ND	Non Dolby
NR	Noise Reduction
NSD	Normal speed dubbing
PB	Playback
REC	Record
S/A	Sub-assy
SD	Single Deck
SM	Single Motor

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CONNECTORS ASSIGNMENTS:

CONNECTOR 1701 — INTERCONNECTION TO AF5 BOARD

1	REC-R	Record input right
2	REC-L	Record input left
3	GND A	AF Ground
4	+12V	D.C. supply (+12V) in
5	TAPE-R	Playback output right
6	TAPE-L	Playback output left
7	-CMOS	Negative d.c. supply (-9V) for CMOS ICs

CONNECTOR 1703 — INTERCONNECTION TO AF5 BOARD

1	GND M	Motor Ground
2	+MOTOR	D.C. supply (+12V) for tape deck motor & solenoid

CONNECTOR 1706 — INTERCONNECTION TO FRONT BOARD

1	AD2	Deck sensing switches output voltage / Deck A EOT
2	AD1	Deck sensing switches output voltage / Deck B EOT
3	+5	DC supply +5V for ADC network
4	GND P	Control & Oscillator Ground
5	CLK	HEF4094BT shift register Clock line
6	DATA	HEF4094BT shift register Data line
7	STROBE	HEF4094BT shift register Strobe line

CONNECTOR 1710 — DECK B HEADS CONNECTON ***(For ETF6 only)***

1	B R/P HD L+	R/P Head left channel positive
2	B R/P HD R-	R/P Head right channel positive
3	CMN	R/P Head return ground
4	ERASE HEAD	Erase Head
5	GND A	Erase Head ground

CONNECTOR 1720 — DECK B HEADS CONNECTON ***(For ETF5 only)***

1	B R/P HD L+	R/P Head left channel positive
2	B R/P HD L-	R/P Head left channel negative
3	B R/P HD R+	R/P Head right channel positive
4	B R/P HD R-	R/P Head right channel negative
5	ERASE HEAD	Erase Head
6	GND A	Erase Head ground

CONNECTOR 1730 — DECK A HEAD CONNECTIONS ***(For Double Deck versions only)***

1	A PB HD R+	Pb Head right channel positive
2	GND A	Pb Head return ground shield
3	A PB HD L+	Pb Head left channel positive

CONNECTOR 1740 — DECK B CONTROL INTERFACE ***(For ETF5 Double Deck only)***

1	REC REW	Record tab protection status switch (reverse)	[open=on: close=off]
2	REC FWD	Record tab protection status switch (forward)	[open=on: close=off]
3	CrO2	Chrome tape detection switch	[open=Cr: close=Fe]
4	PHOTO B	Photo sensor output (tape movement indication)	
5	SOL B	Solenoid supply	
6	Vcc	Deck / Motor supply	
7	MODE	Mode switch (head engagement)	[open=off: close=engaged]
8	GND M	Deck / Motor ground	
9	H	H pin for motor	
10	L	L pin for motor	

CONNECTOR 1750 — DECK A CONTROL INTERFAC ***(For ETF5 Double Deck only)***

1	CrO2	Chrome tape detection switch	[open=Cr: close=Fe]
2	PHOTO A	Photo sensor output (tape movement indication)	
3	SOL A	Solenoid supply	
4	Vcc	Deck/Motor supply	
5	MODE	Mode switch (head engagement)	[open=off: close=engaged]
6	GND M	Deck/Motor ground	

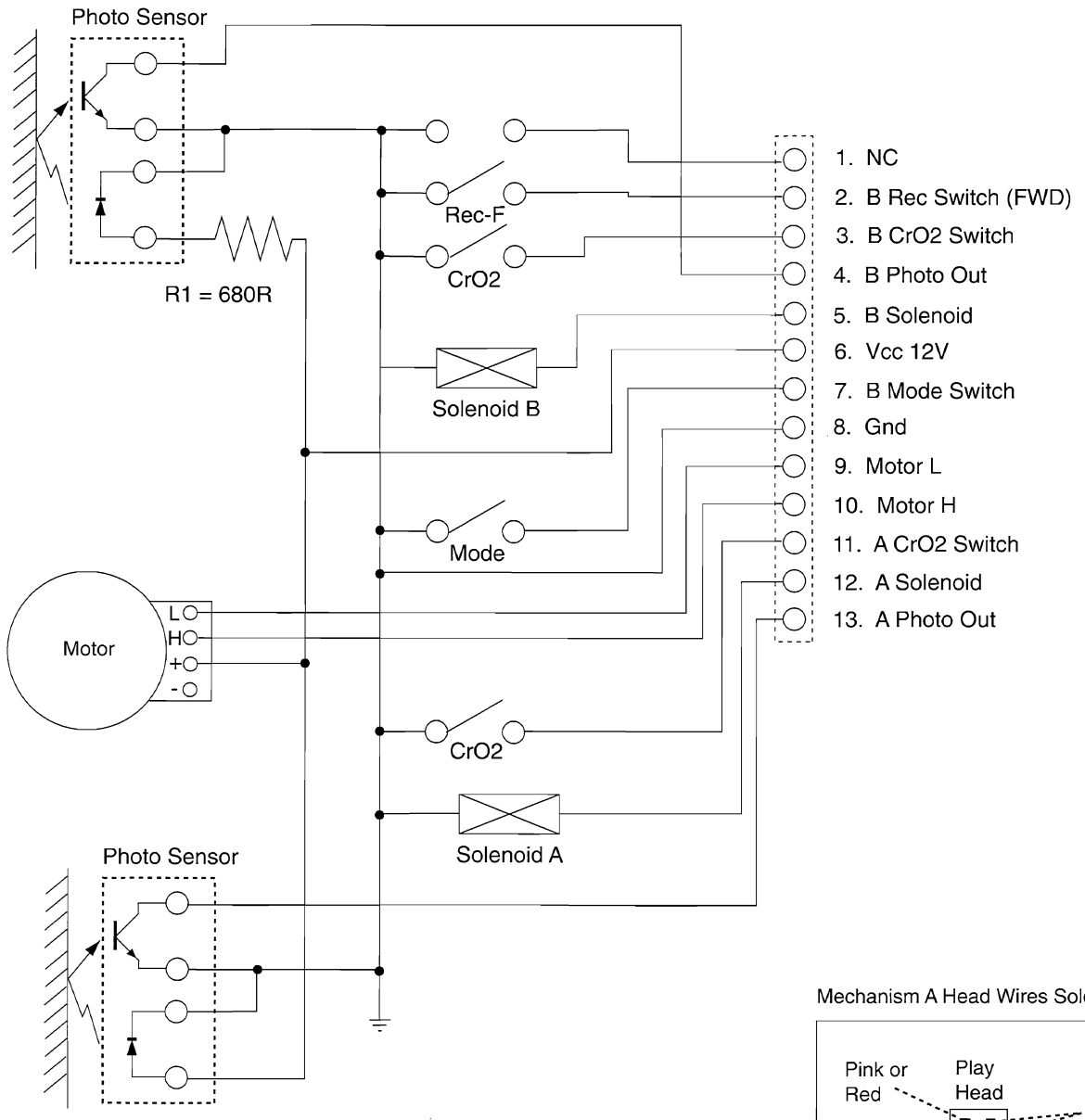
CONNECTOR 1760 — DECK B CONTROL INTERFACE ***(For ETF5 Single Deck only)***

1	REC REW	Record tab protection status switch (reverse)	[open=on: close=off]
2	REC FWD	Record tab protection status switch (forward)	[open=on: close=off]
3	CrO2	Chrome tape detection switch	[open=Cr: close=Fe]
4	PHOTO B	Photo sensor output (tape movement indication)	
5	SOL B	Solenoid supply	
6	Vcc	Deck / Motor supply	
7	MODE	Mode switch (head engagement)	[open=off: close=engaged]
8	GND M	Deck / Motor ground	

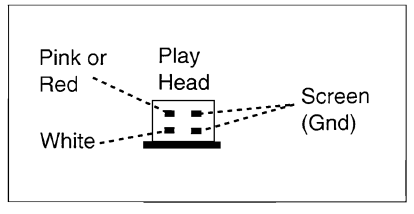
CONNECTOR 1770 — DECK B CONTROL INTERFACE ***(For ETF6 only)***

1	REC REW	Record tab protection status switch (reverse)	[open=on: close=off]
2	REC FWD	Record tab protection status switch (forward)	[open=on: close=off]
3	CrO2 B	Chrome tape detection switch deck B	[open=Cr: close=Fe]
4	PHOTO B	Photo sensor output (tape movement indication)	
5	SOL B	Solenoid supply for deck B	
6	Vcc	Deck / Motor supply	
7	MODE B	Mode switch (head engagement)	[open=off: close=engaged]
8	GND M	Deck / Motor ground	
9	L	L pin for motor	
10	H	H pin for motor	
11	CrO2 A	Chrome tape detection switch deck A	[open=Cr: close=Fe]
12	SOL A	Solenoid supply for deck A	
13	PHOTO A	Photo sensor output (tape movement indication)	

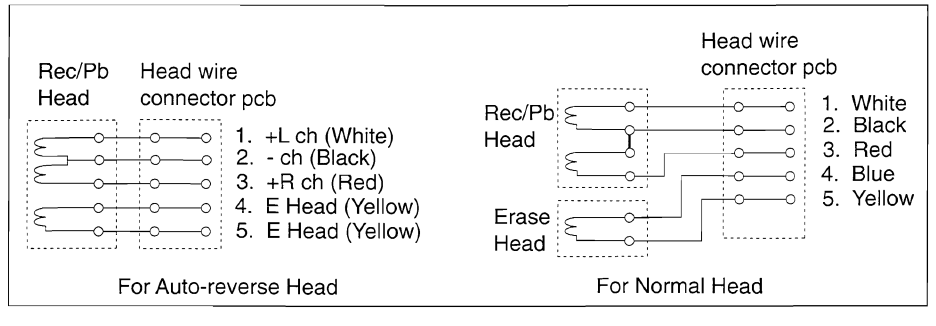
TAPE MECHANISM ELECTRONICS



Mechanism A Head Wires Soldering



Mechanism B Head Wires Soldering



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General

	TEST CASSETTE	RECORDER MODE	MEASURE ON	READ ON	ADJUST with	ADJUST to
ADJUST MOTOR SPEED						
HIGH SPEED	SBC420 (4822 397 30071) 3150Hz	DUBBING	1 or 2 LEFT RIGHT	frequency counter	3622 *	5040Hz ± 0.5%
NORMAL SPEED		PLAY B			3620	3150Hz ± 0.5%
		PLAY A			check	3150Hz -0.8/+1.8%
CHECK WOW & FLUTTER						
DECK A & B	SBC420 (4822 397 30071) 3150Hz	PLAY	1 or 2 LEFT RIGHT	W&F-meter	check only	≤0.4 % DIN or ≤0.35 % CCIR *
ADJUST AZIMUTH						
DECK A & B	SBC420 (4822 397 30071) 10kHz	PLAY FWD	1 or 2 LEFT RIGHT	mV-meter	left hand screw	max. output level & left=right
		PLAY REV #			right hand screw	

Playback

	TEST CASSETTE	RECORDER MODE	MEASURE ON	READ ON	ADJUST with	ADJUST to
ADJUST DOLBY PLAYBACK LEVEL *						
DECK A	TCC-130 (4822 397 30269) 200nWb/m	PLAY	7 or 8 LEFT RIGHT	mV-meter	3641(L), 3642(R)	548mV ±0.5dB
DECK B		PLAY FWD			3635(L), 3636(R)	
		PLAY REV #			Check	548mV ±1dB
CHECK PLAYBACK FREQUENCY RESPONSE						
PB. FREQ. RESP.	SBC420 (4822 397 30071)	PLAY	1 or 2 LEFT RIGHT	mV-meter	Check	limits see fig.1

* For Dolby version only

\# For Auto-reverse version only

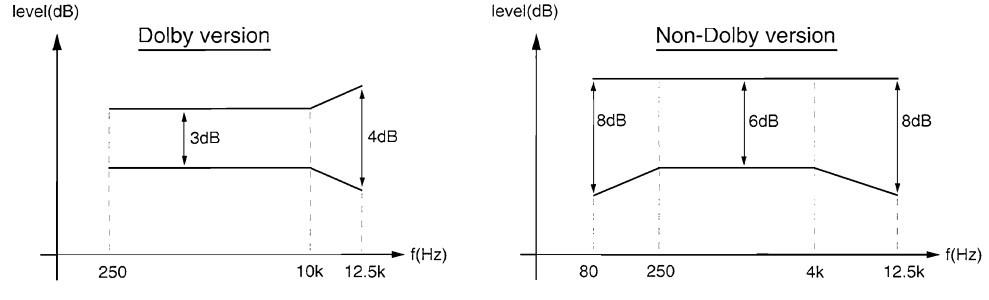


figure. 1

Recording

PRE-ADJUST
DECK B
CHECK OVER
Inject 3mV sign 100Hz, 250Hz, 10kHz, 12.5kHz via 3 or
Inject 1kHz 8.8 via 3 or 4
Remark: If high If dist
ADJUST DOL
Inject 400Hz 8.8 via 3 or 4
Remark: If mea

* For Dolby ver

level

General

	TEST CASSETTE	RECORDER MODE	MEASURE ON	READ ON	ADJUST with	ADJUST to
ADJUST MOTOR SPEED						
HIGH SPEED	SBC420 (4822 397 30071) 3150Hz	DUBBING	◇1 or ◇2 LEFT RIGHT	frequency counter	3622 *	5040Hz ± 0.5%
NORMAL SPEED		PLAY B			3620	3150Hz ± 0.5%
		PLAY A			check	3150Hz -0.8/+1.8%
CHECK WOW & FLUTTER						
DECK A & B	SBC420 (4822 397 30071) 3150Hz	PLAY	◇1 or ◇2 LEFT RIGHT	W&F-meter	check only	≤0.4 % DIN or ≤0.35 % CCIR *
ADJUST AZIMUTH						
DECK A & B	SBC420 (4822 397 30071) 10kHz	PLAY FWD	◇1 or ◇2 LEFT RIGHT	mV-meter	left hand screw	max. output level & left=right
		PLAY REV #			right hand screw	

Playback

	TEST CASSETTE	RECORDER MODE	MEASURE ON	READ ON	ADJUST with	ADJUST to
ADJUST DOLBY PLAYBACK LEVEL *						
DECK A	TCC-130 (4822 397 30269) 200nWb/m	PLAY	◇7 or ◇8 LEFT RIGHT	mV-meter	3641(L), 3642(R)	548mV ±0.5dB
DECK B		PLAY FWD			3635(L), 3636(R)	
		PLAY REV #			Check	548mV ±1dB
CHECK PLAYBACK FREQUENCY RESPONSE						
PB. FREQ. RESP.	SBC420 (4822 397 30071)	PLAY	◇1 or ◇2 LEFT RIGHT	mV-meter	Check	limits see fig.1

* For Dolby version only

\# For Auto-reverse version only

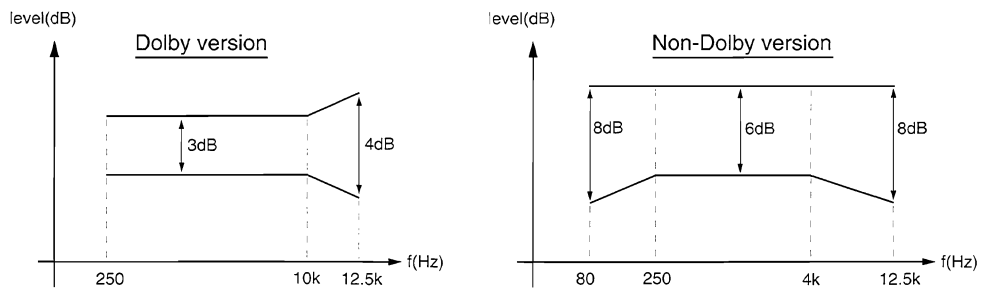
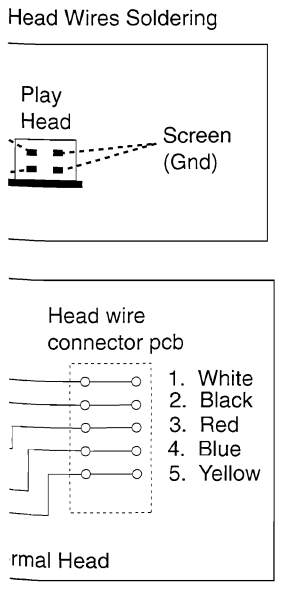


figure. 1



Recording

	TEST CASSETTE	RECORDER MODE	MEASURE ON	READ ON	ADJUST with	ADJUST to
PRE-ADJUST BIAS AND BIAS-SYMMETRY						
DECK B	CrO_2	RECORD	◇5 or ◇6 LEFT RIGHT	mV-meter	3773	995mV
					3785 *	left = right
	FERRO				check only	750mV ± 1.5dB
CHECK OVERALL FREQUENCY RESPONSE AND DISTORTION						
Inject 3mV signals 100Hz, 250Hz, 1kHz, 10kHz, 12.5kHz via ◇3 or ◇4	CrO_2	RECORD				
	RECORDED CASSETTE	PLAY	◇1 or ◇2 LEFT RIGHT	mV-meter	check only	limits see fig.2
Inject 1kHz 8.85mV via ◇3 or ◇4	CrO_2	RECORD				
	RECORDED CASSETTE	PLAY	◇1 or ◇2 LEFT RIGHT	THD-meter	check only	≤3%
Remark: If high frequencies are not within limits, decrease bias and re-measure. If distortion is too high increase bias and re-measure.						
ADJUST DOLBY RECORD LEVEL *						
Inject 400Hz 8.85mV via ◇3 or ◇4	CrO_2	RECORD	◇9 or ◇10 LEFT RIGHT	mV-meter	3655 & 3556	420mV
	RECORDED CASSETTE	PLAY	◇7 or ◇8 LEFT RIGHT	mV-meter	check	170mV ± 1dB
Remark: If measured value is out, re-adjust record level up or down slightly to attain play level.						

* For Dolby version only

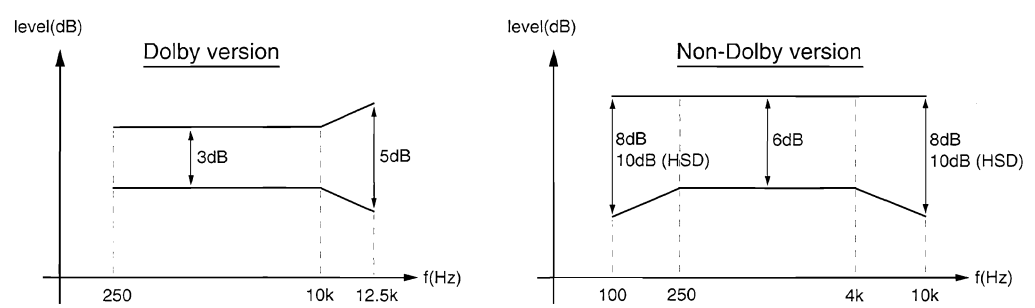
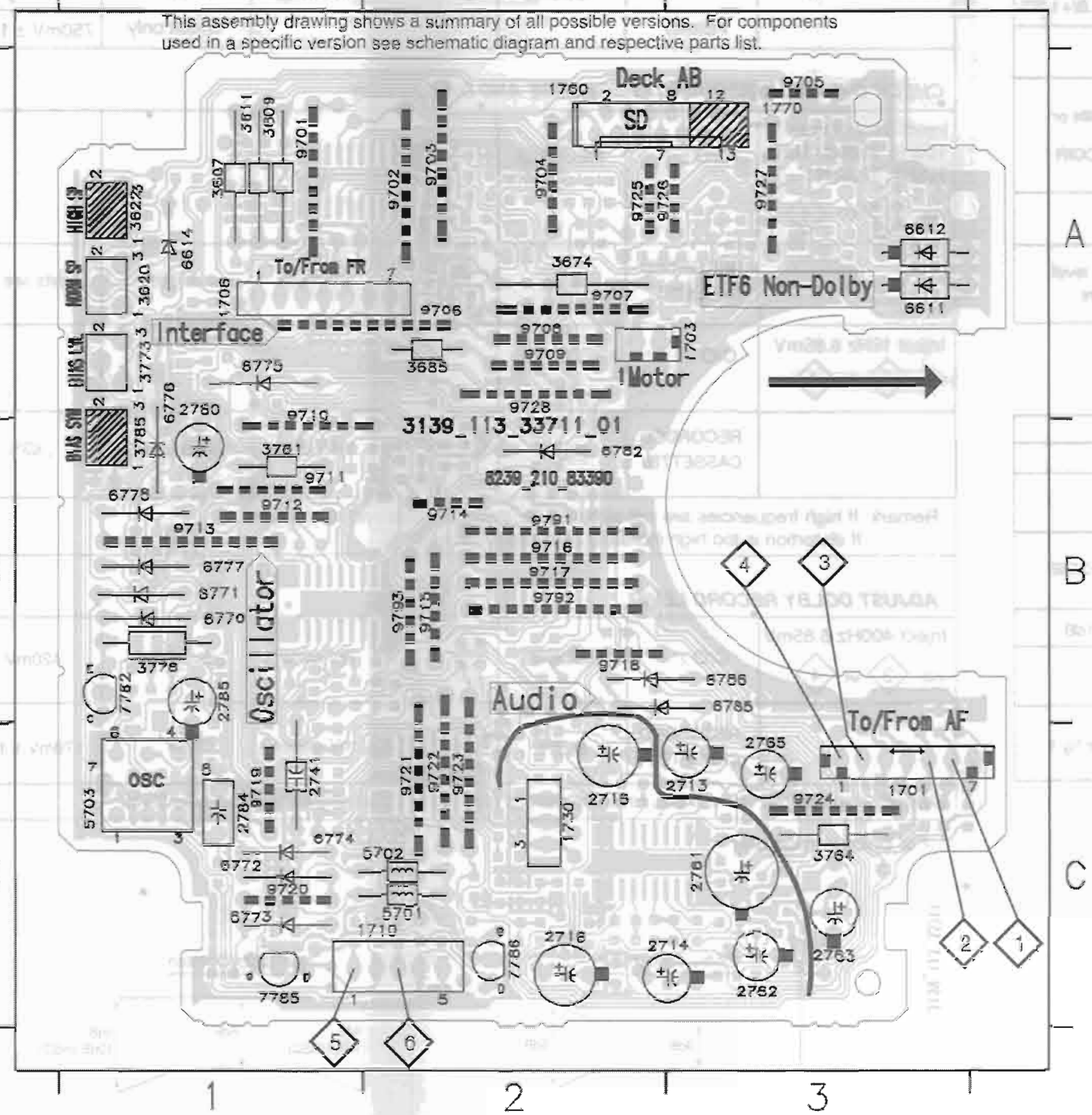


figure. 2

COMPONENT LAYOUT

This assembly drawing shows a summary of all possible versions. For components used in a specific version see schematic diagram and respective parts list.



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CHIP LAYOUT

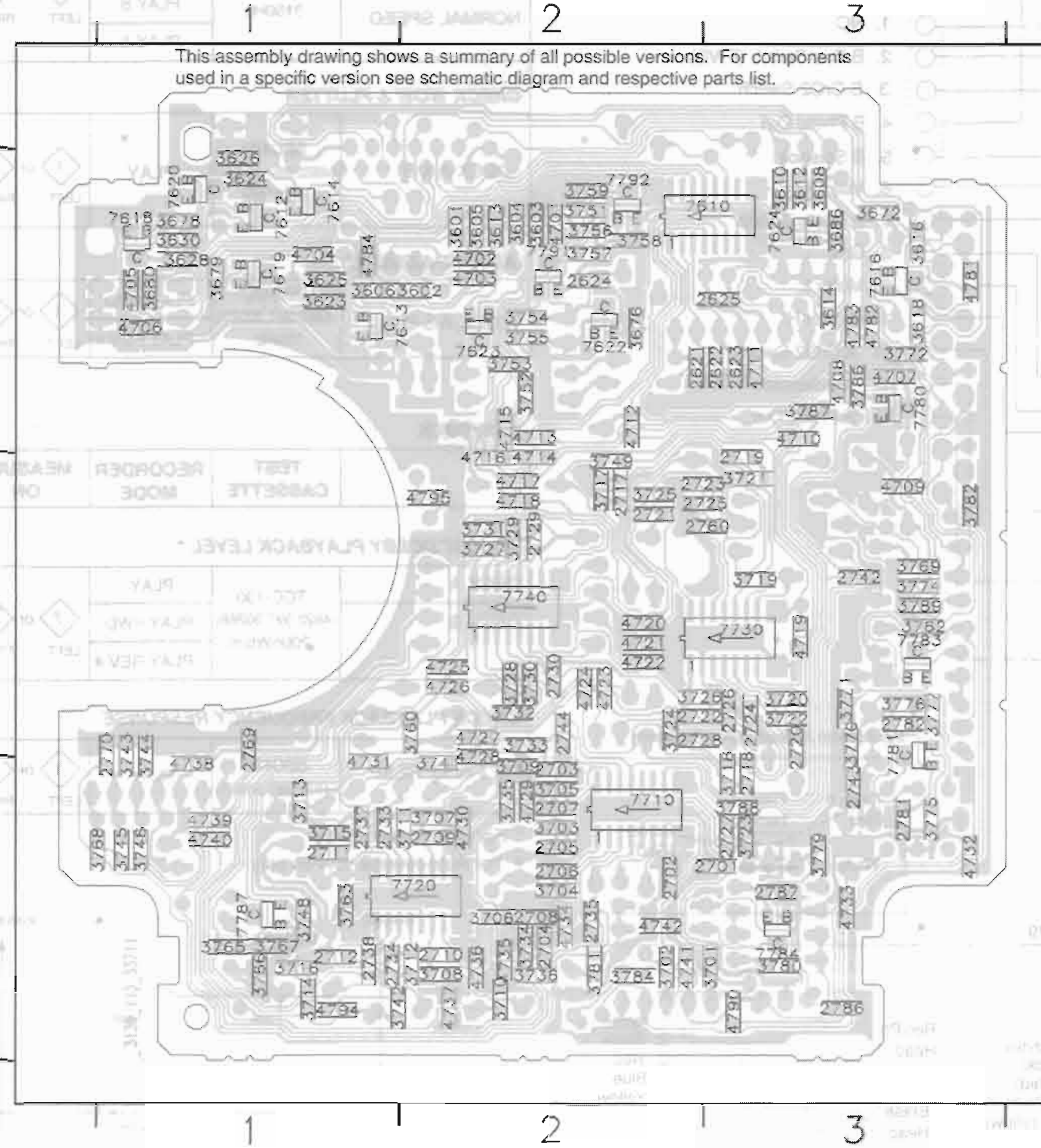
This assembly drawing shows a summary of all possible versions. For component used in a specific version see schematic diagram and respective parts list.

1701	C3	9720	C1
1703	A2	9721	C2
1706	A1	9722	C2
1710	C2	9723	C2
1730	C2	9724	C3
1770	A2	9725	A2
2713	B3	9726	A3
2714	C3	9727	A3
2715	B2	9728	A2
2716	B2	9791	B2
2741	C1	9792	B2
2761	C1	9793	B2
2762	C3		
2763	C3		
2765	C3		
2780	B1		
2784	B1		
2785	B1		
3607	A1		
3609	A1		
3611	A1		
3620	A1		
3622	A1		
3674	A2		
3685	A2		
3761	B1		
3764	C3		
3773	B1		
3785	B1		
5701	C2		
5702	C2		
5703	C1		
6611	A3		
6612	A3		
6614	A1		
6770	B1		
6771	B1		
6772	C1		
6773	C1		
6774	C1		
6775	C1		
6776	B1		
6777	B1		
6778	B1		
6782	B2		
6785	B2		
6786	B2		
7782	B1		
7785	C2		
7786	C2		
9701	A1		
9702	A2		
9703	A2		
9704	A2		
9705	A2		
9706	A2		
9707	A2		
9708	A2		
9709	A2		
9710	C1		
9711	C1		
9712	C1		
9713	C1		
9714	C1		
9715	C1		
9716	C1		
9717	C1		

1701	C3	9720	C1
1703	A2	9721	C2
1706	A1	9722	C2
1710	C2	9723	C3
1730	C2	9724	C3
1770	A2	9725	A2
2713	B3	9726	A3
2714	C3	9727	A3
2715	B2	9728	A2
2716	C2	9791	B2
2741	C1	9792	B2
2761	C3	9793	B2
2762	C3		
2763	C3		
2765	C3		
2780	B1		
2784	C1		
2785	B1		
3607	A1		
3609	A1		
3611	A1		
3620	A1		
3622	A1		
3674	A2		
3685	A2		
3761	B1		
3764	C3		
3773	A1		
3778	B1		
3785	B1		
5701	C2		
5702	C2		
5703	C1		
6611	A3		
6612	A3		
6614	A1		
6770	B1		
6771	B1		
6772	C1		
6773	C1		
6774	C1		
6775	A1		
6776	B1		
6777	B1		
6778	B1		
6782	B2		
6785	B2		
6786	B2		
7782	C1		
7785	C1		
7786	C2		
9701	A1		
9702	A2		
9703	A2		
9704	A2		
9705	A3		
9706	A2		
9707	A2		
9708	A2		
9709	A2		
9710	B1		
9711	B1		
9712	B1		
9713	B1		
9714	B2		
9715	B2		
9716	B2		
9717	B2		
9718	B2		
9719	C1		

CHIP LAYOUT

This assembly drawing shows a summary of all possible versions. For components used in a specific version see schematic diagram and respective parts list.



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2621	A2	3680	A1	3779	C3	7730	B3
2622	A3	3686	A3	3780	C3	7740	B2
2623	A3	3701	C3	3781	C2	7780	A3
2624	A2	3702	C2	3782	B3	7781	B3
2625	A3	3703	C2	3784	C2	7783	B3
2701	C3	3704	C2	3786	A3	7784	C3
2702	C2	3705	C2	3787	A3	7787	C1
2703	C2	3706	C2	3788	C3	7791	A2
2704	C2	3707	C2	3789	B3	7792	A2
2705	C2	3708	C2	4701	A2		
2706	C2	3709	C2	4702	A2		
2707	C2	3710	C2	4703	A2		
2708	C2	3711	C2	4704	A1		
2709	C2	3712	C2	4705	A1		
2710	C2	3713	C1	4706	A1		
2711	C1	3714	C1	4707	A3		
2712	C1	3715	C1	4708	A3		
2717	B2	3716	C1	4709	B3		
2718	C3	3717	B2	4710	A3		
2719	B3	3718	C3	4711	A3		
2720	B3	3719	B3	4712	A2		
2721	B2	3720	B3	4713	A2		
2722	B2	3721	B3	4714	B2		
2723	B2	3722	B3	4715	A2		
2724	B3	3723	C3	4716	B2		
2725	B3	3724	B2	4717	B2		
2726	B3	3725	B2	4718	B2		
2727	C3	3726	B2	4719	B3		
2728	B2	3727	B2	4720	B2		
2729	B2	3728	B2	4721	B2		
2730	B2	3729	B2	4722	B2		
2731	B2	3730	B2	4723	B2		
2732	B2	3731	B2	4724	B2		
2733	C1	3732	B2	4725	B2		
2734	C1	3733	B2	4726	B2		
2735	C2	3734	C2	4727	B2		
2737	C1	3735	C2	4728	C2		
2738	C1	3736	C2	4729	C2		
2742	B3	3741	C2	4730	C2		
2743	C3	3742	C1	4731	C1		
2760	B3	3743	B1	4732	C3		
2769	B1	3744	B1	4733	C3		
2770	B1	3745	C1	4734	C2		
2781	C3	3746	C1	4735	C2		
2782	B3	3748	C1	4736	C2		
2786	C3	3749	B2	4737	C2		
2787	C3	3751	A2	4738	C1		
3601	A2	3752	A2	4739	C1		
3602	A2	3753	A2	4740	C1		
3603	A2	3754	A2	4741	C2		
3604	A2	3755	A2	4742	C2		
3605	A2	3756	A2	4781	A3		
3606	A1	3757	A2	4782	A3		
3608	A3	3758	A2	4783	A3		
3610	A3	3759	A2	4784	A1		
3612	A3	3760	B2	4790	C3		
3613	A2	3762	B3	4794	C1		
3614	A3	3763	C1	7610	A3		
3616	A3	3765	C1	7612	A1		
3618	A3	3766	C1	7613	A2		
3623	A1	3767	C1	7614	A1		
3624	A1	3768	C1	7616	A3		
3625	A1	3769	B3	7618	A1		
3626	A1	3770	B3	7619	A1		
3628	A1	3771	B3	7620	A1		
3630	A1	3772	A3	7622	A2		
3672	A3	3774	B3	7623	A2		
3676	A2	3775	C3	7624	A3		
3678	A1	3776	B3	7710	C2		
3679	A1	3777	B3	7720	C2		

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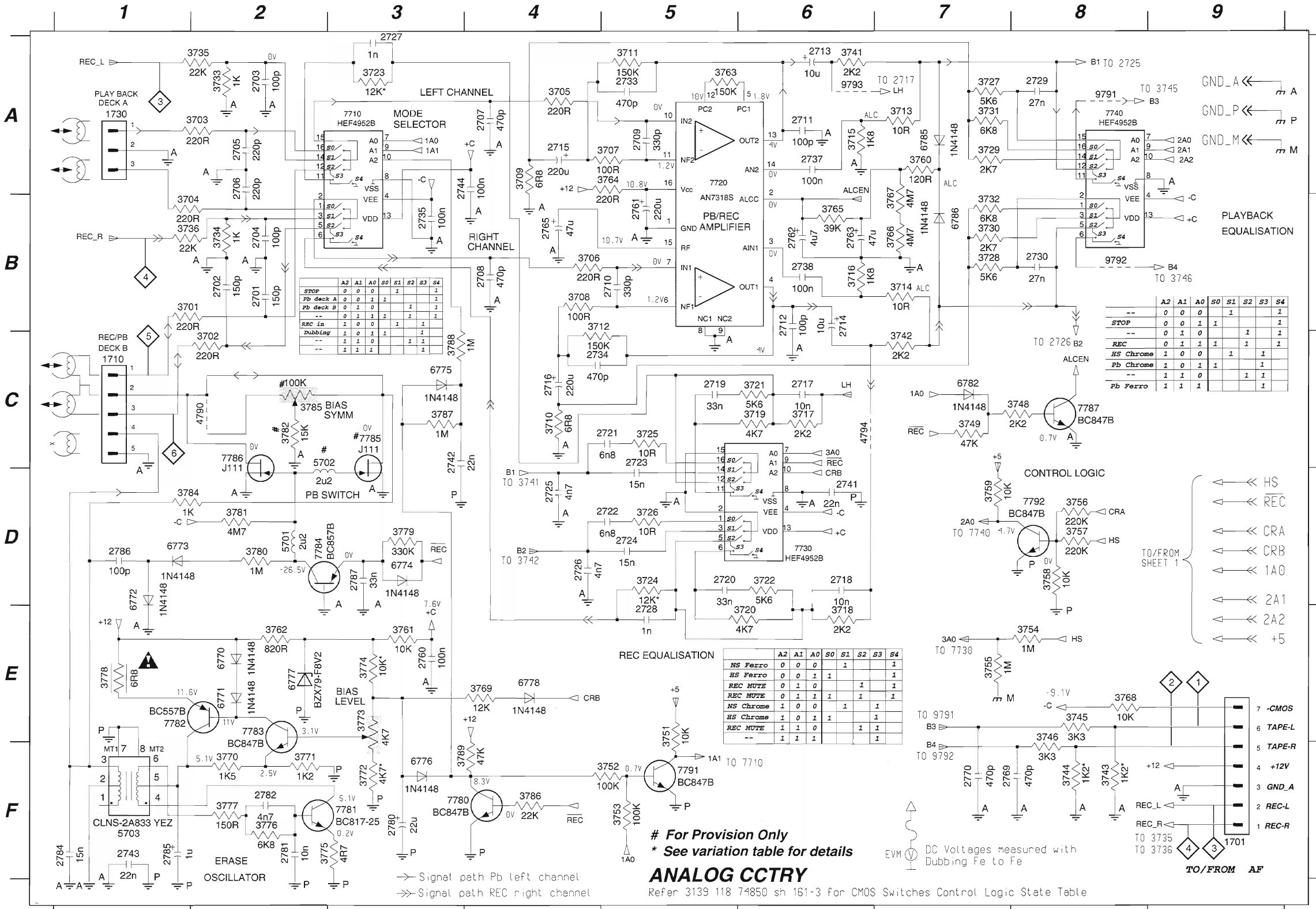
ANALOG CIRCUIT



	A2	A1	A0	S0	S1	S2	S3	S4
STOP	0	0	0		1			1
Pb deck A	0	0	1	1				1
Pb deck B	0	1	0			1		1
--	0	1	1	1		1		1
REC in	1	0	0		1		1	
Dubbing	1	0	1	1			1	
--	1	1	0			1	1	
--	1	1	1				1	

	A2	A1	A0	S0	S1	S2	S3	S4
--	0	0	0		1			1
STOP	0	0	1	1				1
--	0	1	0			1		1
REC	0	1	1	1		1		1
HS Chrome	1	0	0		1		1	
Pb Chrome	1	0	1	1			1	
--	1	1	0			1	1	
Pb Ferro	1	1	1				1	

	A2	A1	A0	S0	S1	S2	S3	S4
NS Ferro	0	0	0		1			1
HS Ferro	0	0	1	1				1
REC MUTE	0	1	0			1		1
REC MUTE	0	1	1	1		1		1
NS Chrome	1	0	0		1		1	
HS Chrome	1	0	1	1			1	
REC MUTE	1	1	0			1	1	
--	1	1	1				1	

1701 F9	3722 D6	6786 B7
1710 C1	3723 A3	7710 A3
1730 A1	3724 D5	7720 A5
2701 B2	3725 C5	7730 D6
2702 B2	3726 D5	7740 A8
2703 A2	3727 A7	7780 F4
2704 B2	3728 B7	7781 F3
2705 A2	3729 A7	7782 E1
2706 A2	3730 B7	7783 E2
2707 A4	3731 A7	7784 D2
2708 B4	3732 B7	7785 C3
2709 A5	3733 A2	7786 C2
2710 B5	3734 B2	7787 C8
2711 A6	3735 A2	7791 F5
2712 B6	3736 B1	7792 D8
2713 A6	3741 A6	9791 A8
2714 B6	3742 C7	9792 B8
2715 A4	3743 F8	9793 A6
2716 C4	3744 F8	
2717 C6	3745 E8	
2718 D6	3746 E8	
2719 C5	3748 C8	
2720 D5	3749 C7	
2721 C5	3751 E5	
2722 D5	3752 F5	
2723 C5	3753 F5	
2724 D5	3754 E8	
2725 D4	3755 E7	
2726 D4	3756 D8	
2727 A3	3757 D8	
2728 E5	3758 D8	
2729 A8	3759 D7	
2730 B8	3760 A7	
2733 A5	3761 E3	
2734 C4	3762 E2	
2735 B3	3763 A5	
2737 A6	3764 A5	
2738 B6	3765 B6	
2741 D6	3766 B7	
2742 C3	3767 B7	
2743 F1	3768 E8	
2744 A3	3769 E4	
2760 E3	3770 F2	
2761 B5	3771 F2	
2762 B6	3772 F3	
2763 B6	3773 E3	
2765 B4	3774 E3	
2769 F7	3775 F2	
2770 F7	3776 F2	
2780 F3	3777 F2	
2781 F2	3778 E1	
2782 F2	3779 D3	
2784 F1	3780 D2	
2785 F1	3781 D2	
2786 D1	3782 C2	
2787 D3	3784 D1	
3701 B1	3785 C2	
3702 C2	3786 F4	
3703 A2	3787 C3	
3704 B1	3788 C3	
3705 A4	3789 F3	
3706 B4	4790 C2	
3707 A5	4794 C6	
3708 B4	5701 D2	
3709 A4	5702 C2	
3710 C4	5703 F1	
3711 A5	6770 E2	
3712 B4	6771 E2	
3713 A7	6772 D1	
3714 B7	6773 D1	
3715 A6	6774 D3	
3716 B6	6775 C3	
3717 C6	6776 F3	
3718 E6	6777 E2	
3719 C6	6778 E4	
3720 E6	6782 C7	
3721 C6	6785 A7	

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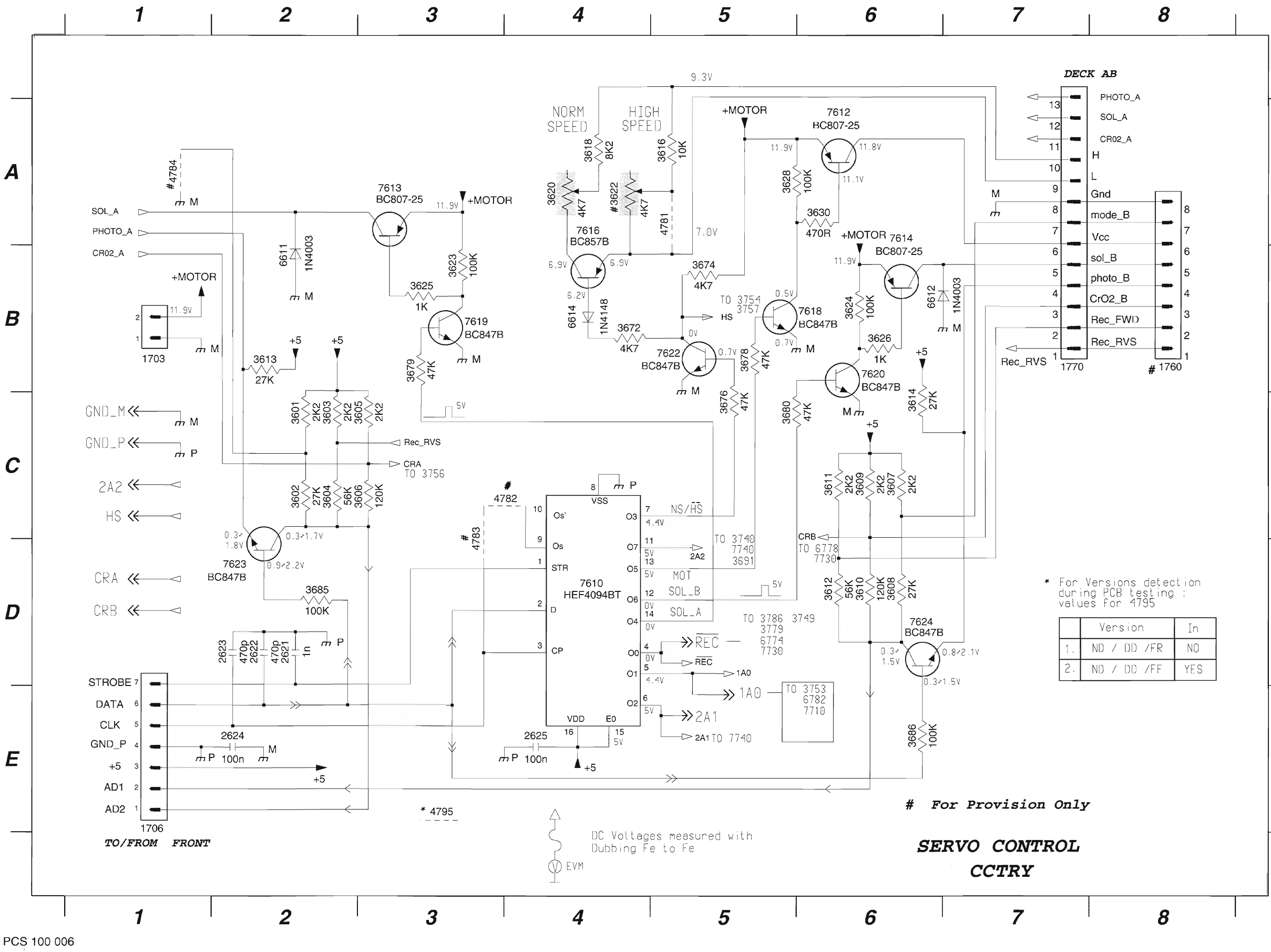
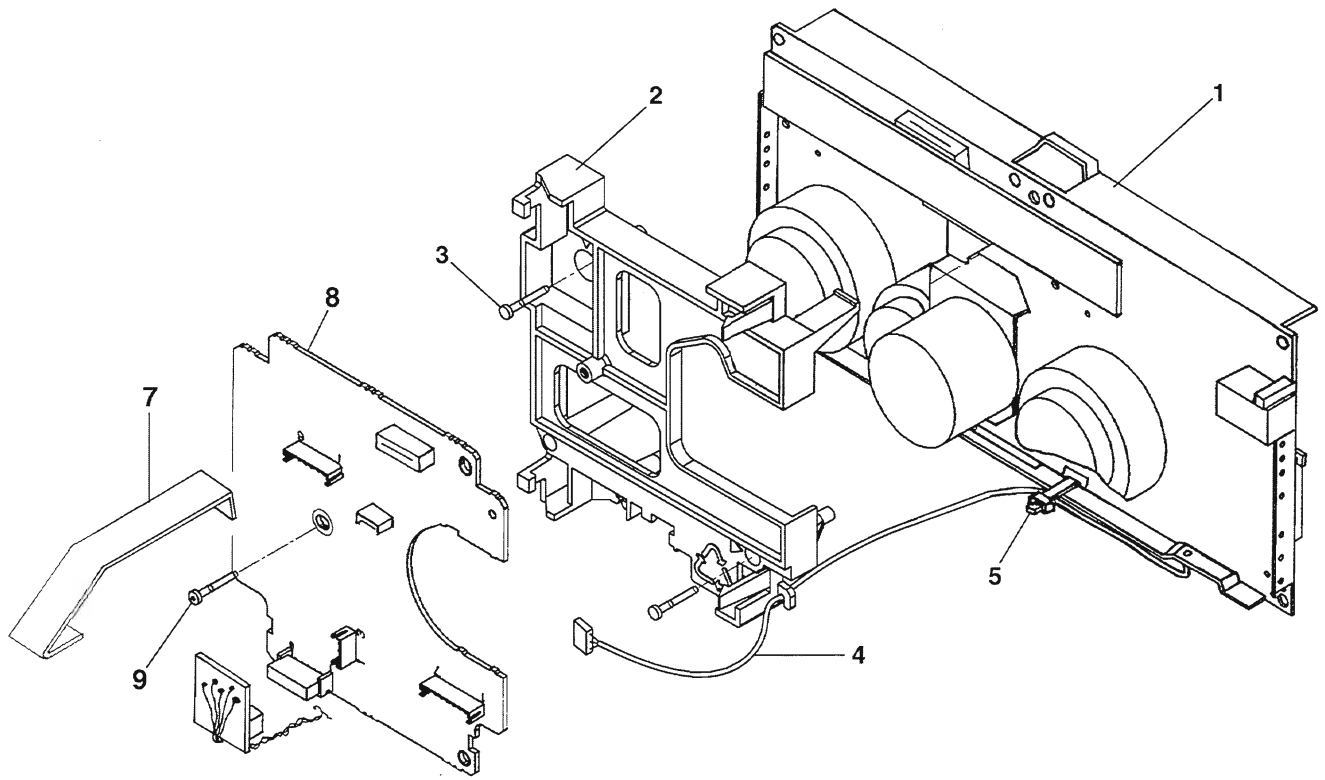
SERVO CONTROL CIRCUIT



* For Versions detection during PCB testing : values for 4795

	Version	In
1.	ND / DD /FR	NO
2.	ND / DD /FF	YES

1703 B1
1706 E1
1760 B8
1770 B7
2621 D2
2622 D2
2623 D2
2624 E2
2625 E4
3601 C2
3602 C2
3603 C2
3604 C2
3605 C3
3606 C3
3607 C6
3608 D6
3609 C6
3610 D6
3611 C6
3612 D6
3613 B2
3614 C6
3616 A5
3618 A4
3620 A4
3622 A4
3623 B3
3624 B6
3625 B3
3626 B6
3628 A5
3630 A6
3672 B4
3674 B5
3676 C5
3678 B5
3679 B3
3680 C5
3685 D2
3686 E6
4781 A5
4782 C4
4783 C3
4784 A1
4795 E3
6611 B2
6612 B6
6614 B4
7610 D4
7612 A6
7613 A3
7614 A6
7616 A4
7618 B6
7619 B3
7620 B6
7622 B5
7623 D2
7624 D6



ETF6 TAPE MODULE EXPLODED VIEW

1	4822 691 10673	Autoreverse Mech. CWC44FR02
1	4822 691 10672	Non-Autoreverse Mech. CWC44FF01
3	-	Screw M2 x 16
7	4822 320 12245	Flex Cable 13 pin 7,5 cm
9	-	Screw D3 x 10

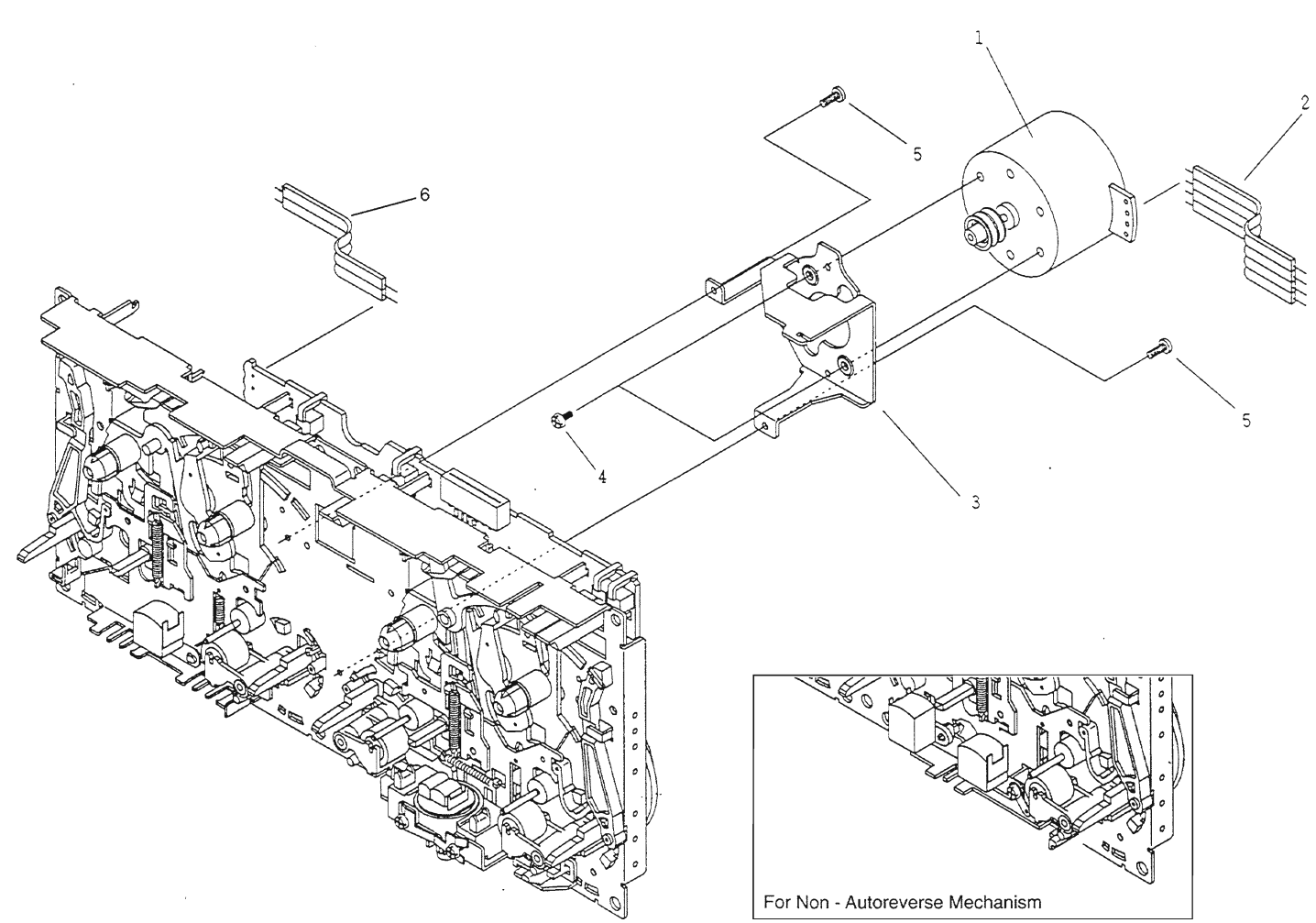
Note: Only the parts mentioned in this list are normal service spare parts.

9-9

TAPE MECHANISM - MOTOR EXPLODED VIEW

1	4822 361 11055	Motor Assembly
4	-	Screw M2,6 x 4
5	-	Screw M2 x 3

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



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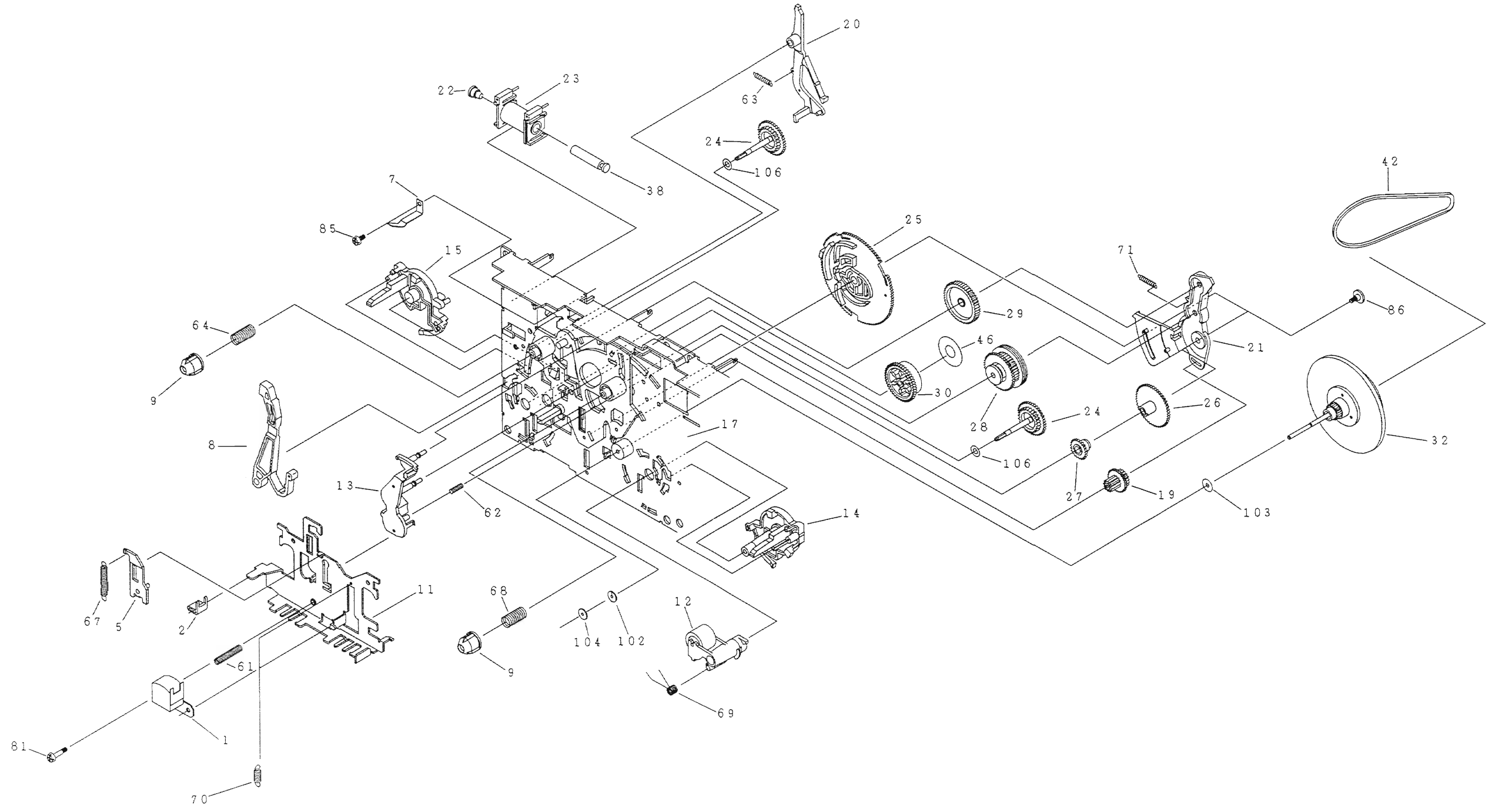
TAPE MECHANISM A - PLAY



MECHANICAL PARTS - PLAY MECHANISM

1	4822 249 10397	MS15RAA2N1
12	4822 402 10972	Pinch Arm Assembly Right
23	4822 157 11498	Coil Assembly
32	4822 528 11244	Flywheel Assembly RV
42	4822 358 10168	Belt AF
69	4822 492 11542	Spring
102	4822 532 12931	Washer
103	4822 532 12932	Washer
104	4822 532 12933	Washer

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

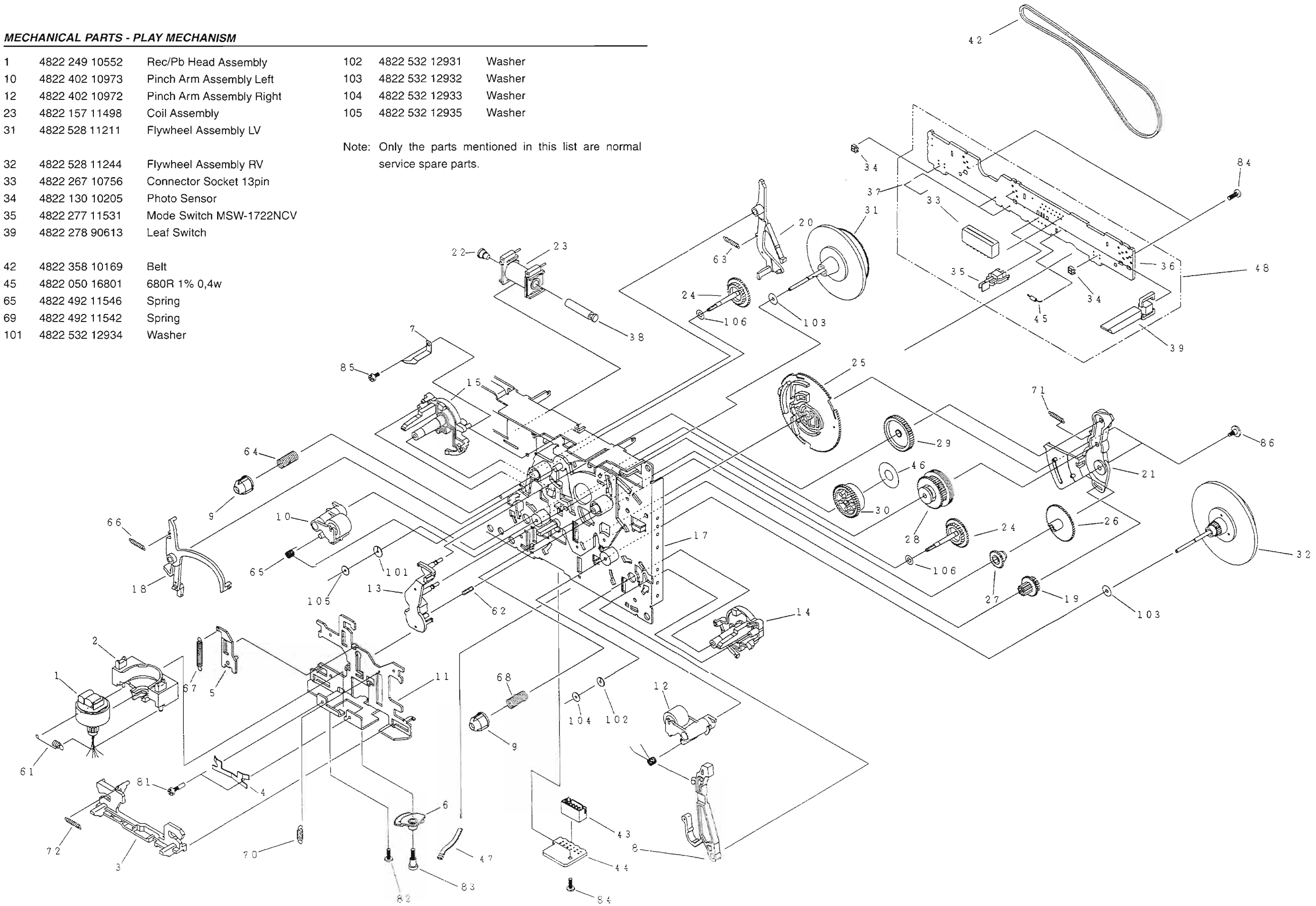
TAPE MECHANISM B - RECORD/PLAYBACK

(Autoreverse Version)

MECHANICAL PARTS - PLAY MECHANISM

1	4822 249 10552	Rec/Pb Head Assembly
10	4822 402 10973	Pinch Arm Assembly Left
12	4822 402 10972	Pinch Arm Assembly Right
23	4822 157 11498	Coil Assembly
31	4822 528 11211	Flywheel Assembly LV
32	4822 528 11244	Flywheel Assembly RV
33	4822 267 10756	Connector Socket 13pin
34	4822 130 10205	Photo Sensor
35	4822 277 11531	Mode Switch MSW-1722NCV
39	4822 278 90613	Leaf Switch
42	4822 358 10169	Belt
45	4822 050 16801	680R 1% 0,4w
65	4822 492 11546	Spring
69	4822 492 11542	Spring
101	4822 532 12934	Washer
102	4822 532 12931	Washer
103	4822 532 12932	Washer
104	4822 532 12933	Washer
105	4822 532 12935	Washer

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



9-12

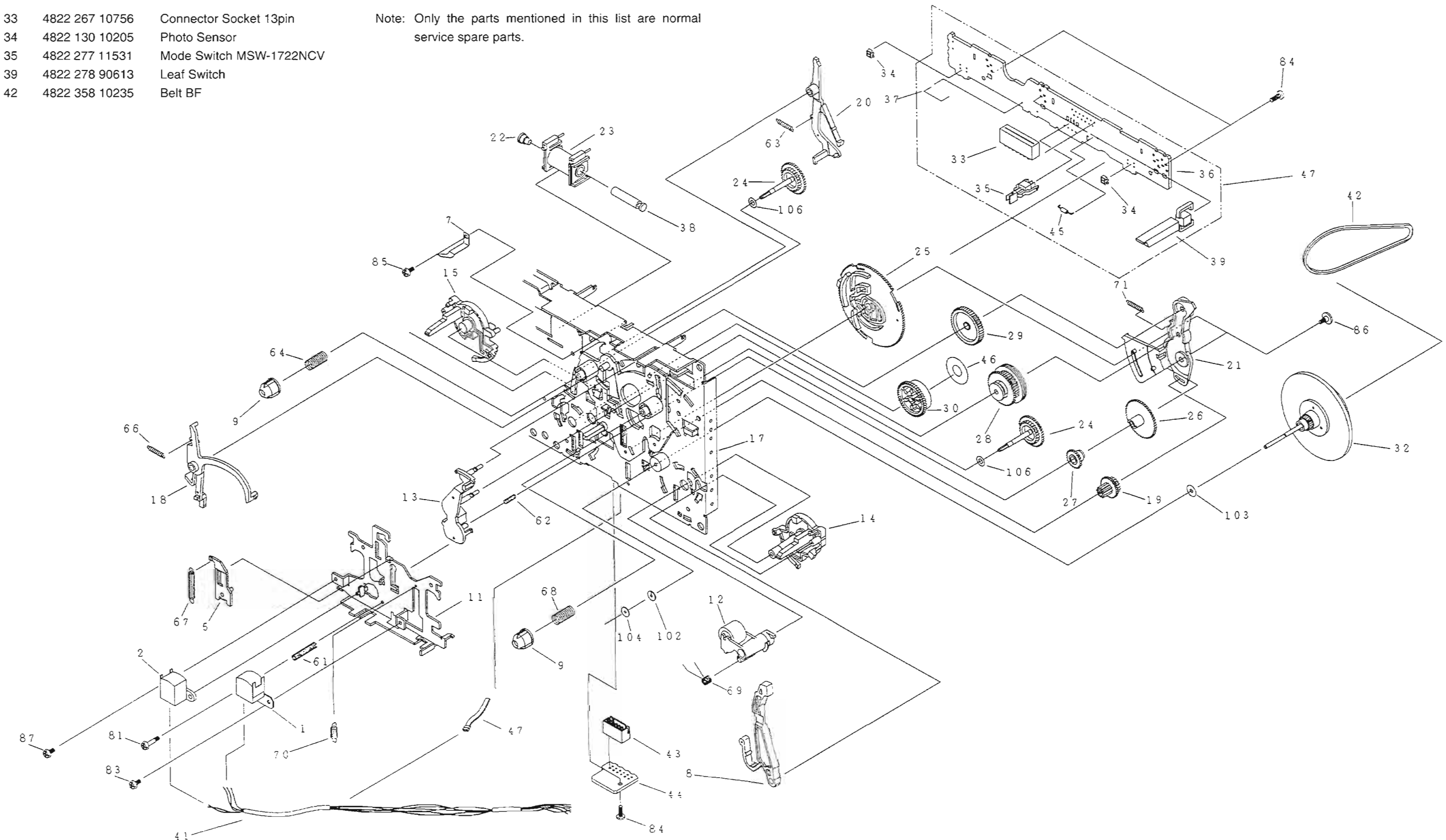
TAPE MECHANISM B - RECORD/PLAYBACK

(Non-Autoreverse Version)

MECHANICAL PARTS - PLAY MECHANISM

1	4822 249 10397	Rec/Pb Head Assembly	45	4822 050 16801	680R 1% 0,4w
2	4822 249 40303	Erase Head	69	4822 492 11542	Spring
12	4822 402 10972	Pinch Arm Assembly Right	102	4822 532 12931	Washer
23	4822 157 11498	Coil Assembly	103	4822 532 12932	Washer
32	4822 528 11244	Flywheel Assembly RV	104	4822 532 12933	Washer
33	4822 267 10756	Connector Socket 13pin			
34	4822 130 10205	Photo Sensor			
35	4822 277 11531	Mode Switch MSW-1722NCV			
39	4822 278 90613	Leaf Switch			
42	4822 358 10235	Belt BF			

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



9-13

ELECTRICAL PARTS LIST - ETF6 NON-DOLBY BOARD

ELECTRICAL PARTS LIST - ETF6 NON-DOLBY BOARD

MISCELLANEOUS

1770	4822 267 10738	Flex Cable Socket 13Pin

CAPACITORS

2621	5322 122 34123	1nF 10% 50V
2622	5322 122 34099	470pF 10% 63V
2623	5322 122 34099	470pF 10% 63V
2624	4822 126 13296	100nF 10% 16V
2625	4822 126 13296	100nF 10% 16V
2701	5322 122 33538	150pF 2% 63V
2702	5322 122 33538	150pF 2% 63V
2703	5322 122 32531	100pF 5% 50V
2704	5322 122 32531	100pF 5% 50V
2705	4822 122 33575	220pF 5% 50V
2706	4822 122 33575	220pF 5% 50V
2707	5322 122 34099	470pF 10% 63V
2708	5322 122 34099	470pF 10% 63V
2709	5322 122 31863	330pF 5% 50V
2710	5322 122 31863	330pF 5% 50V
2711	5322 122 32531	100pF 5% 50V
2712	5322 122 32531	100pF 5% 50V
2713	4822 124 41579	10µF 20% 50V
2714	4822 124 41579	10µF 20% 50V
2715	4822 124 40196	220µF 20% 16V
2716	4822 124 40196	220µF 20% 16V
2717	4822 122 33177	10nF 20% 50V
2718	4822 122 33177	10nF 20% 50V
2719	4822 126 12105	33nF 5% 63V
2720	4822 126 12105	33nF 5% 63V
2721	5322 122 31866	6,8nF 10% 63V
2722	5322 122 31866	6,8nF 10% 63V
2723	4822 126 13188	15nF 5% 63V
2724	4822 126 13188	15nF 5% 63V
2725	5322 126 10223	4,7nF 10% 63V
2726	5322 126 10223	4,7nF 10% 63V
2727	5322 122 34123	1nF 10% 50V
2728	5322 122 34123	1nF 10% 50V
2729	4822 122 32541	27nF 10% 63V
2730	4822 122 32541	27nF 10% 63V
2733	5322 122 34099	470pF 10% 63V
2734	5322 122 34099	470pF 10% 63V
2735	4822 126 13296	100nF 10% 16V
2737	4822 126 13296	100nF 10% 16V
2738	4822 126 13296	100nF 10% 16V
2741	4822 126 11585	22nF +80/-20% 25V
2742	5322 122 32654	22nF 10% 63V
2743	5322 122 32654	22nF 10% 63V
2744	4822 126 13296	100nF 10% 16V
2760	4822 126 13296	100nF 10% 16V
2761	4822 124 22263	220µF 20% 25V
2762	4822 124 40246	4,7µF 20% 63V
2763	4822 124 40433	47µF 20% 25V
2765	4822 124 40433	47µF 20% 25V
2769	5322 122 34099	470pF 10% 63V
2770	5322 122 34099	470pF 10% 63V
2780	4822 124 81151	22µF 50V
2781	4822 122 33177	10nF 20% 50V
2782	5322 126 10223	4,7nF 10% 63V
2784	4822 121 51305	15nF 10% 50V
2785	4822 124 40242	1µF 20% 63V
2786	5322 122 32531	100pF 5% 50V
2787	4822 126 12105	33nF 5% 63V

RESISTORS

3601	4822 117 11449	2k2 1% 0,1W
3602	4822 051 20273	27k 5% 0,1W
3603	4822 117 11449	2k2 1% 0,1W
3604	4822 051 20563	56k 5% 0,1W
3605	4822 117 11449	2k2 1% 0,1W
3606	4822 051 20124	120k 5% 0,1W
3607	4822 116 52256	2k2 5% 0,5W
3608	4822 051 20273	27k 5% 0,1W
3609	4822 116 52256	2k2 5% 0,5W
3610	4822 051 20124	120k 5% 0,1W
3611	4822 116 52256	2k2 5% 0,5W
3612	4822 051 20563	56k 5% 0,1W
3613	4822 051 20273	27k 5% 0,1W
3614	4822 051 20273	27k 5% 0,1W
3616	4822 117 10833	10k 1% 0,1W
3618	4822 051 20822	8k2 5% 0,1W
3620	5322 100 11542	Trimmer 4k7 30% 0,1W
3623	4822 051 20104	100k 5% 0,1W
3624	4822 051 20104	100k 5% 0,1W
3625	4822 051 10102	1k 2% 0,25W
3626	4822 051 10102	1k 2% 0,25W
3628	4822 051 20104	100k 5% 0,1W
3630	4822 051 20471	470R 5% 0,1W
3672	4822 051 20472	4k7 5% 0,1W
3674	4822 116 52283	4k7 5% 0,5W
3676	4822 117 10834	47k 1% 0,1W
3678	4822 117 10834	47k 1% 0,1W
3679	4822 117 10834	47k 1% 0,1W
3680	4822 117 10834	47k 1% 0,1W
3685	4822 116 52234	100k 5% 0,5W
3686	4822 051 20104	100k 5% 0,1W
3701	4822 117 11503	220R 1% 0.1W
3702	4822 117 11503	220R 1% 0.1W
3703	4822 117 11503	220R 1% 0.1W
3704	4822 117 11503	220R 1% 0.1W
3705	4822 117 11503	220R 1% 0.1W
3706	4822 117 11503	220R 1% 0.1W
3707	4822 051 20101	100R 5% 0,1W
3708	4822 051 20101	100R 5% 0,1W
3709	4822 051 20688	6R8 5% 0,1W
3710	4822 051 20688	6R8 5% 0,1W
3711	4822 051 20154	150k 5% 0,1W
3712	4822 051 20154	150k 5% 0,1W
3713	4822 051 20109	10R 5% 0,1W
3714	4822 051 20109	10R 5% 0,1W
3715	4822 051 20182	1k8 5% 0,1W
3716	4822 051 20182	1k8 5% 0,1W
3717	4822 117 11449	2k2 1% 0,1W
3718	4822 117 11449	2k2 1% 0,1W
3719	4822 051 20472	4k7 5% 0,1W
3720	4822 051 20472	4k7 5% 0,1W
3721	4822 051 20562	5k6 5% 0,1W
3722	4822 051 20562	5k6 5% 0,1W
3723	4822 117 11383	12k 1% 0,1W For Autoreverse
3723	4822 051 20153	15k 5% 0,1W For Non-autorev.
3724	4822 117 11383	12k 1% 0,1W For Autoreverse
3724	4822 051 20153	15k 5% 0,1W For Non-autorev.
3725	4822 051 20109	10R 5% 0,1W
3726	4822 051 20109	10R 5% 0,1W
3727	4822 051 20562	5k6 5% 0,1W
3728	4822 051 20562	5k6 5% 0,1W
3729	4822 117 12955	2k7 1% 0,1W
3730	4822 117 12955	2k7 1% 0,1W
3731	4822 117 11507	6k8 1% 0,1W
3732	4822 117 11507	6k8 1% 0,1W
3733	4822 051 10102	1k 2% 0,25W
3734	4822 051 10102	1k 2% 0,25W
3735	4822 051 20223	22k 5% 0,1W
3736	4822 051 20223	22k 5% 0,1W
3741	4822 117 11449	2k2 1% 0,1W
3742	4822 117 11449	2k2 1% 0,1W
3743	4822 051 20122	1k2 5% 0,1W For Autoreverse
3743	4822 051 10102	1k 2% 0,25W For Non-autorev.
3744	4822 051 20122	1k2 5% 0,1W For Autoreverse
3744	4822 051 10102	1k 2% 0,25W For Non-autorev.
3745	4822 051 20332	3k3 5% 0,1W
3746	4822 051 20332	3k3 5% 0,1W
3748	4822 117 11449	2k2 1% 0,1W
3749	4822 117 10834	47k 1% 0,1W
3751	4822 117 10833	10k 1% 0,1W
3752	4822 051 20104	100k 5% 0,1W
3753	4822 051 20104	100k 5% 0,1W
3754	4822 051 20105	1M 5% 0,1W
3755	4822 051 20105	1M 5% 0,1W
3756	4822 051 20224	220k 5% 0,1W
3757	4822 051 20224	220k 5% 0,1W
3758	4822 117 10833	10k 1% 0,1W
3759	4822 117 10833	10k 1% 0,1W
3760	4822 051 20121	120R 5% 0,1W
3761	4822 116 83864	10k 5% 0,5W
3762	4822 117 11454	820R 1% 0,1W
3763	4822 051 20154	150k 5% 0,1W
3764	4822 116 83872	220R 5% 0,5W
3765	4822 051 20393	39k 5% 0,1W
3766	4822 051 20475	4M7 5% 0,1W
3767	4822 051 20475	4M7 5% 0,1W
3768	4822 117 10833	10k 1% 0,1W
3769	4822 117 11383	12k 1% 0,1W
3769	4822 051 20822	8k2 5% 0,1W
3770	4822 117 11139	1k5 1% 0,1W
3771	4822 051 20122	1k2 5% 0,1W
3772	4822 051 20472	4k7 5% 0,1W For Autoreverse
3772	4822 051 20562	5k6 5% 0,1W For Non-autorev.
3773	5322 100 11542	Trimmer 4k7 30% 0,1W
3774	4822 117 10833	10k 1% 0,1W For Autoreverse
3774	4822 051 20822	8k2 5% 0,1W For Non-autorev.
3775	4822 051 20478	4R7 5% 0,1W
3776	4822 117 11507	6k8 1% 0,1W
3777	4822 117 10353	150R 1% 0,1W
3778	4822 052 10688 ⚠	6R8 5% 0,33W
3779	4822 051 20334	330k 5% 0,1W
3780	4822 051 20105	1M 5% 0,1W
3781	4822 051 20475	4M7 5% 0,1W
3784	4822 051 10102	1k 2% 0,25W
3786	4822 051 20223	22k 5% 0,1W
3787	4822 051 20105	1M 5% 0,1W
3788	4822 051 20105	1M 5% 0,1W
3789	4822 117 10834	47k 1% 0,1W
4701	4822 051 20008	0R Jumper 0805
4702	4822 051 20008	0R Jumper 0805
4703	4822 051 20008	0R Jumper 0805
4704	4822 051 20008	0R Jumper 0805
4705	4822 051 20008	0R Jumper 0805
4706	4822 051 20008	0R Jumper 0805
4707	4822 051 20008	0R Jumper 0805
4708	4822 051 20008	0R Jumper 0805
4709	4822 051 20008	0R Jumper 0805
4710	4822 051 20008	0R Jumper 0805
4711	4822 051 20008	0R Jumper 0805
4712	4822 051 20008	0R Jumper 0805
4713	4822 051 20008	0R Jumper 0805
4714	4822 051 20008	0R Jumper 0805
4715	4822 051 20008	0R Jumper 0805
4716	4822 051 20008	0R Jumper 0805
4717	4822 051 20008	0R Jumper 0805
4718	4822 051 20008	0R Jumper 0805
4719	4822 051 20008	0R Jumper 0805
4720	4822 051 20008	0R Jumper 0805
4721	4822 051 20008	0R Jumper 0805
4722	4822 051 20008	0R Jumper 0805
4723	4822 051 20008	0R Jumper 0805
4724	4822 051 20008	0R Jumper 0805
4725	4822 051 20008	0R Jumper 0805
4726	4822 051 20008	0R Jumper 0805
4727	4822 051 20008	0R Jumper 0805

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ELECTRICAL PARTS LIST - ETF6 NON-DOLBY BOARD

RESISTORS

4728	4822 051 20008	0R Jumper 0805
4729	4822 051 20008	0R Jumper 0805
4730	4822 051 20008	0R Jumper 0805
4731	4822 051 20008	0R Jumper 0805
4732	4822 051 20008	0R Jumper 0805
4733	4822 051 20008	0R Jumper 0805
4734	4822 051 20008	0R Jumper 0805
4735	4822 051 20008	0R Jumper 0805
4736	4822 051 20008	0R Jumper 0805
4737	4822 051 20008	0R Jumper 0805
4738	4822 051 20008	0R Jumper 0805
4739	4822 051 20008	0R Jumper 0805
4740	4822 051 20008	0R Jumper 0805
4741	4822 051 20008	0R Jumper 0805
4742	4822 051 20008	0R Jumper 0805
4781	4822 051 20008	0R Jumper 0805
4790	4822 051 20008	0R Jumper 0805
4794	4822 051 20008	0R Jumper 0805
4795	4822 051 20008	0R Jumper 0805

COILS & FILTERS

5701	4822 156 21721	Coil 2,2µH 10%
5703	4822 156 20946	Osc Coil 100kHz

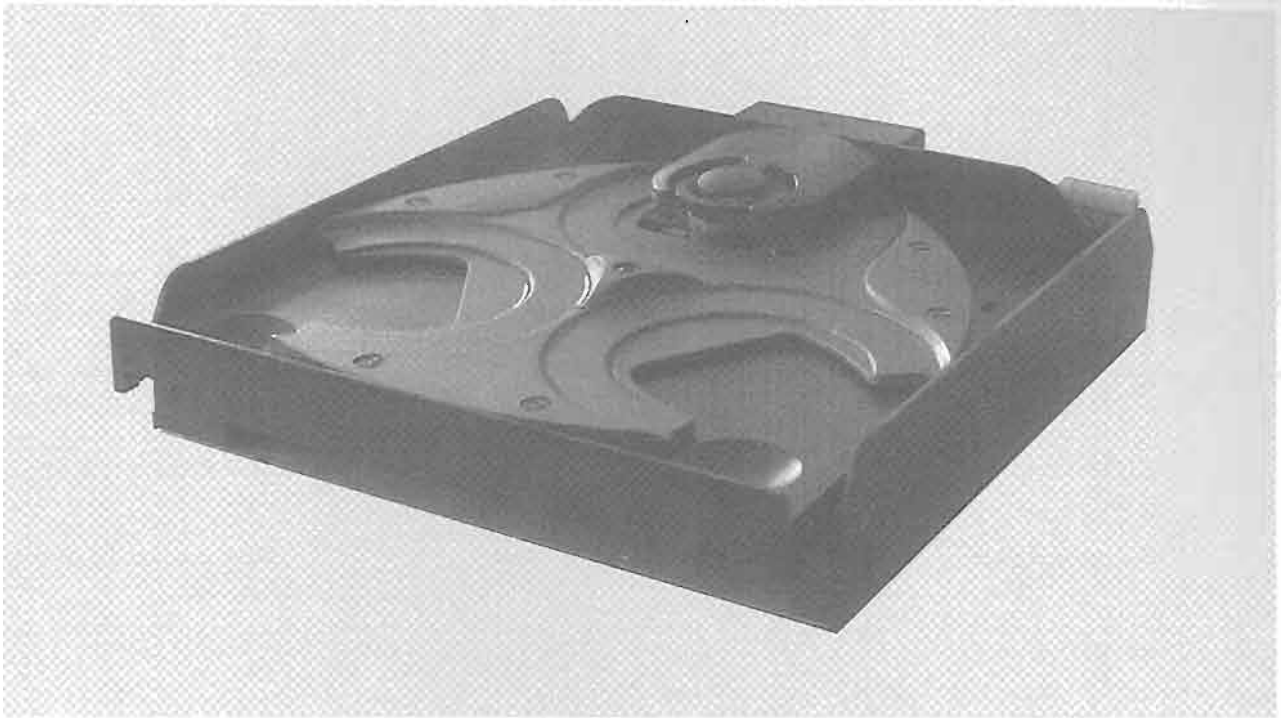
DIODES

6611	4822 130 31878	1N4003G
6612	4822 130 31878	1N4003G
6614	4822 130 30621	1N4148
6770	4822 130 30621	1N4148
6771	4822 130 30621	1N4148
6772	4822 130 30621	1N4148
6773	4822 130 30621	1N4148
6774	4822 130 30621	1N4148
6775	4822 130 30621	1N4148
6776	4822 130 30621	1N4148
6777	4822 130 34382	BZX79-F8V2
6778	4822 130 30621	1N4148
6782	4822 130 30621	1N4148
6785	4822 130 30621	1N4148
6786	4822 130 30621	1N4148

TRANSISTORS & INTEGRATED CIRCUITS

7610	5322 209 11306	HEF4094BT
7612	5322 130 60845	BC807-25
7613	5322 130 60845	BC807-25
7614	5322 130 60845	BC807-25
7616	5322 130 60508	BC857B
7618	4822 130 60511	BC847B
7619	4822 130 60511	BC847B
7620	4822 130 60511	BC847B
7622	4822 130 60511	BC847B
7623	4822 130 60511	BC847B
7624	4822 130 60511	BC847B
7710	4822 209 32919	HEF4952BT
7720	4822 209 32918	AN7318S
7730	4822 209 32919	HEF4952BT
7740	4822 209 32919	HEF4952BT
7780	4822 130 60511	BC847B
7781	4822 130 42804	BC817-25
7782	4822 130 44568	BC557B
7783	4822 130 60511	BC847B
7784	5322 130 60508	BC857B
7786	4822 130 63494	J111
7787	4822 130 60511	BC847B
7791	4822 130 60511	BC847B
7792	4822 130 60511	BC847B

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



3CDC Module

(3 Disc Carrousel Changer)

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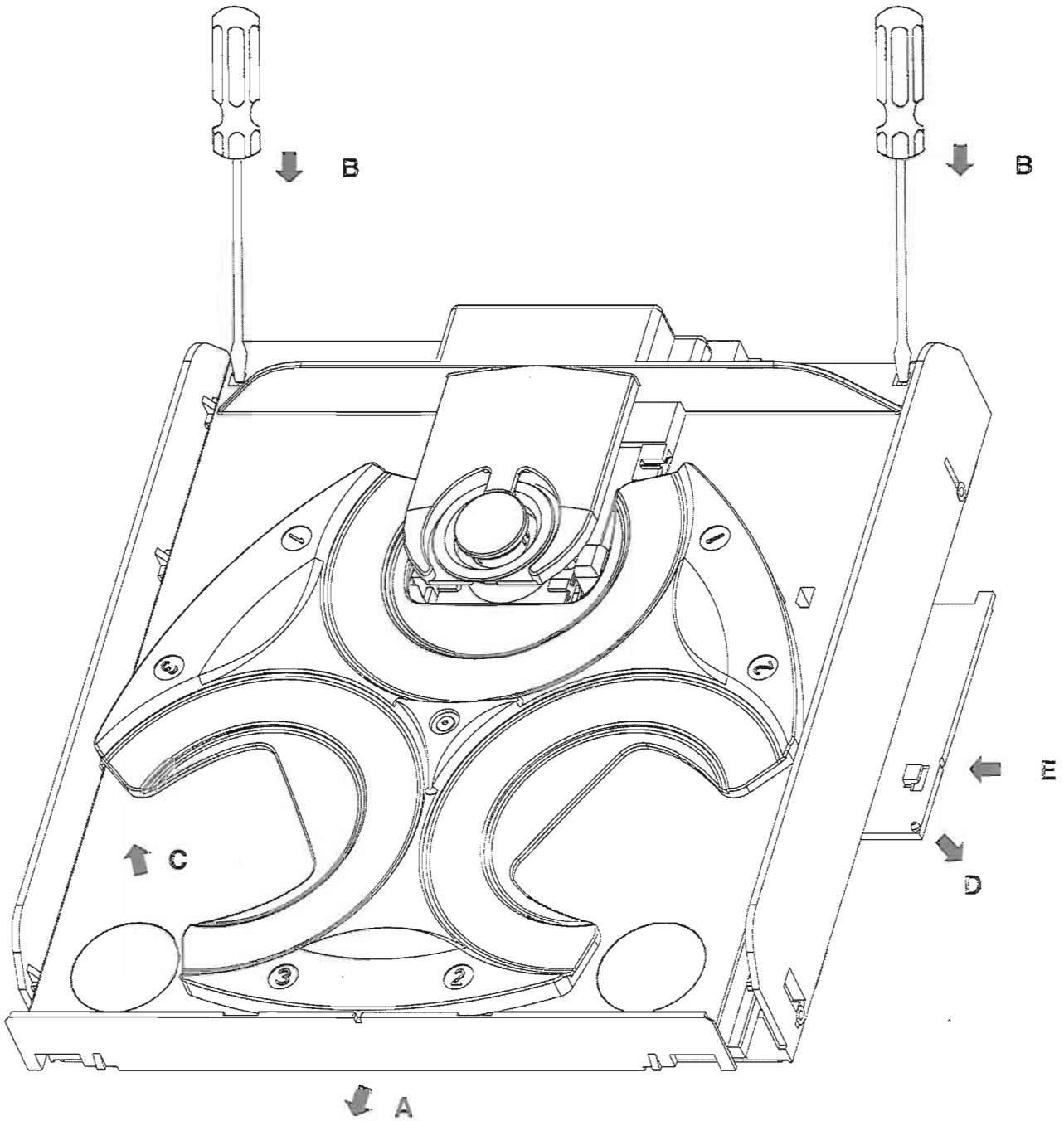
Demounting Hints



Demounting of Drawer

→ **A** Pull drawer outwards
→ **B** Unlock drawer with screwdriver
→ **C** Lift drawer to demount from chassis

Demounting of Flex Plate

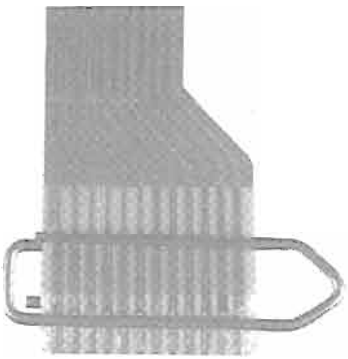
→ **D** Lift plate to unlock pin from bottom plate
→ **E** Move plate inwards to demount from bottom plate

Servicing Hints

Replacement of CD Drive

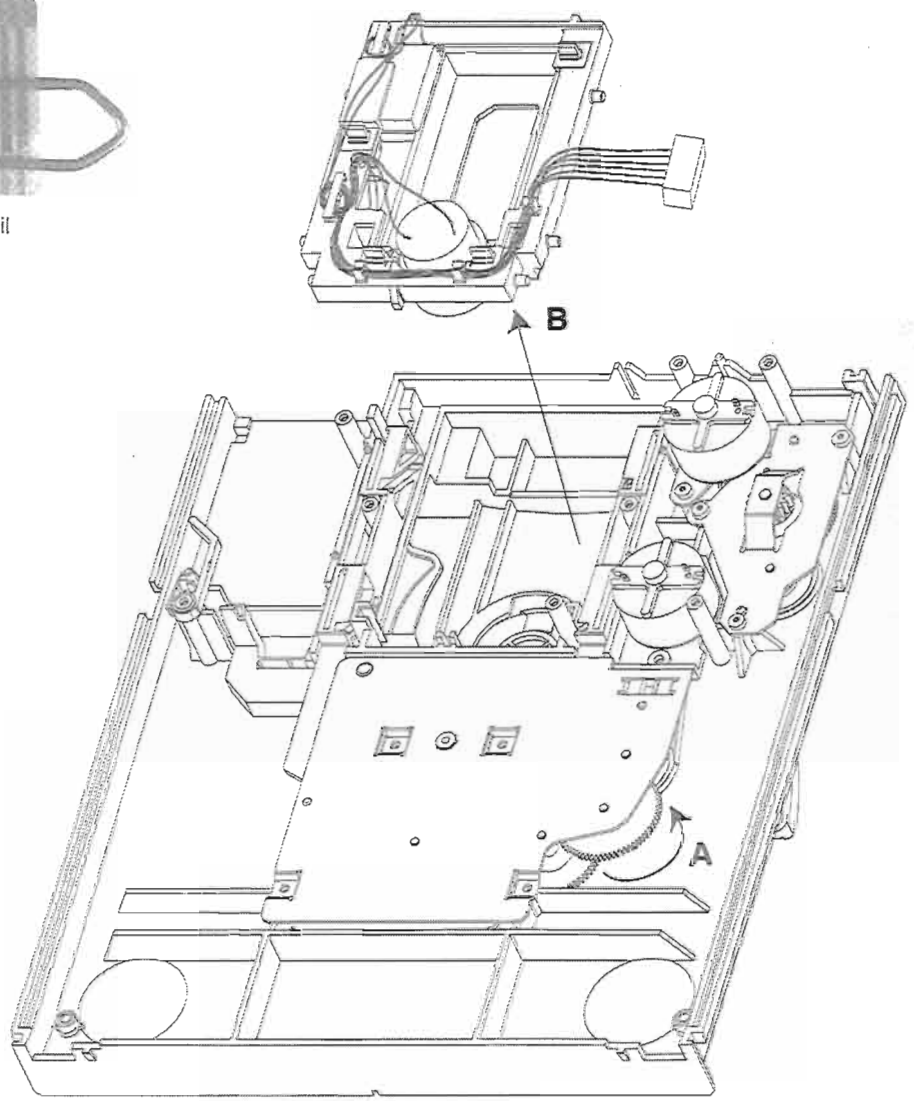
See also exploded view of changer mechanism.

1. Demount flex plate (pos 140).
2. Demount printed circuit board: remove 6 screws and desolder lips of tray motor and carrousel motor.
3. Disconnect flexfoil and JST connector of CD drive from Printed circuit board. Shortcircuit the flexfoil with a paperclip to protect the laser against ESD.



CD drive flex foil

4. Remove 2 screws (pos 107,108) and demount CD drive lockings (pos 105,106).
5. Turn gearwheel (pos 42) of disc change mechanism by finger to move CD drive support in upper position as shown in picture below Ⓐ.
6. Demount CD drive support (pos 95) Ⓑ.
7. Replace CD drive (pos 100). The wire tree of JST connector has to be desoldered and resoldered on the new CD drive again.

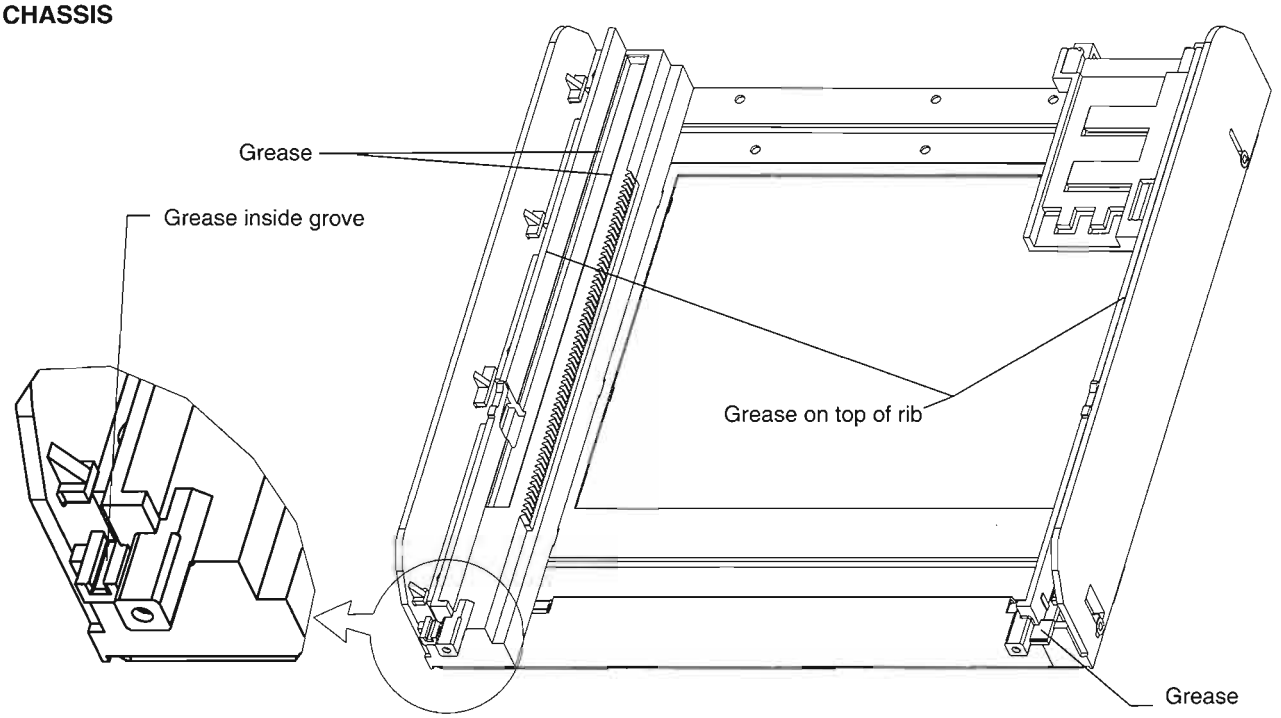


Mounting of Carrousel

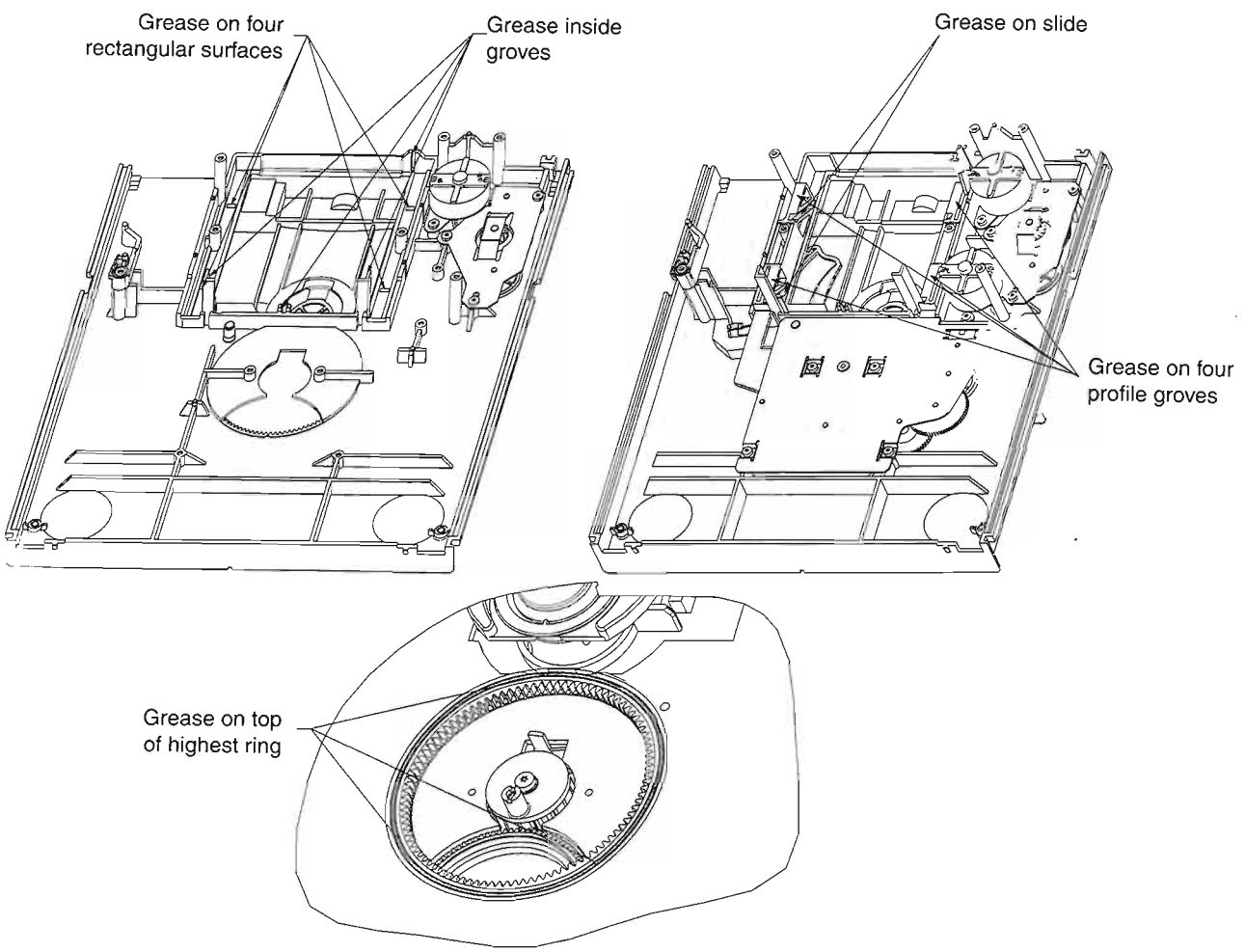
1. Turn gearwheel (pos 42) of disc change mechanism by finger until CD drive is in play position.
2. Mount carrousel (pos 115) so that disc is positioned right on turntable. Carrousel position number doesn't matter.

Lubrication Instructions

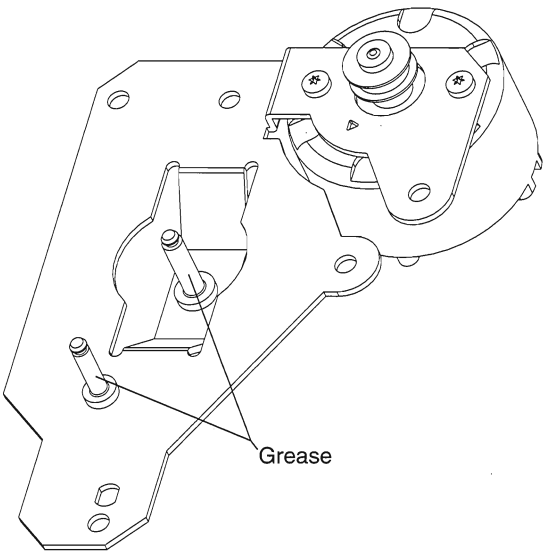
CHASSIS



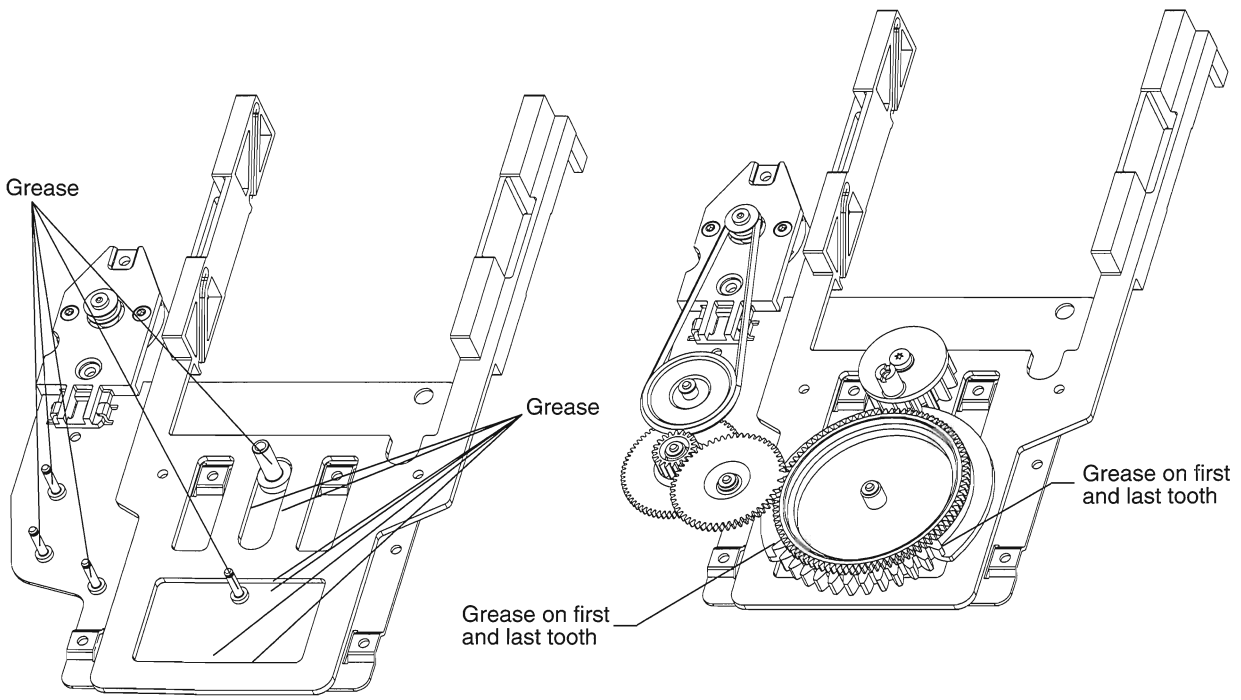
DRAWER



DRAWER MECHANISM



DISC CHANGE MECHANISM



Use only grease **Polylub GLY 801** service codenumber 4822 390 10136

WARNING

CHARGED CAPACITORS ON THE SERVO BOARD MAY DAMAGE THE CD DRIVE ELECTRONICS WHEN CONNECTING A NEW CDM MECHANISM. THAT´S WHY, BESIDES THE SAFETY MEASURES LIKE
- ***SWITCH OFF POWER SUPPLY***
- ***ESD PROTECTION***

ADDITIONAL ACTIONS MUST BE TAKEN BY THE REPAIR TECHNICIAN.

The following steps have to be done when replacing the CDM mechanism:
1. Disconnect old CD drive flexfoil from printed board
2. Connect paperclip to CD drive flexfoil to short-circuit flexfoil (fig.1)
3. Short-circuit printed board with **brass-sheet (4822 321 11197)** plugged into the flexfoil connector (fig.2)
4. Remove old CD drive mechanism
5. Position new CD mechanism in its studs
6. Remove short-circuit from printed board connector
7. Remove short-circuit from flexfoil of new CD drive
8. Connect new flexfoil to print connector (fig.3)

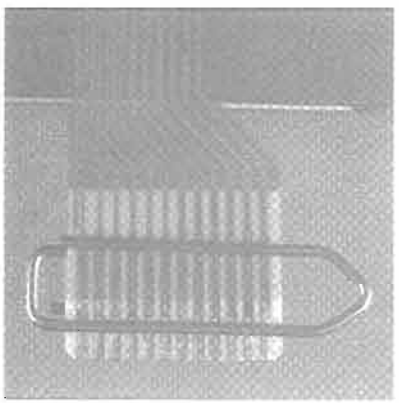


fig.1

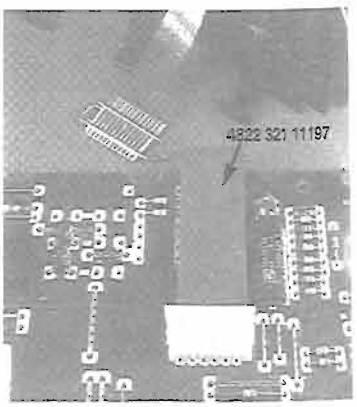


fig.2

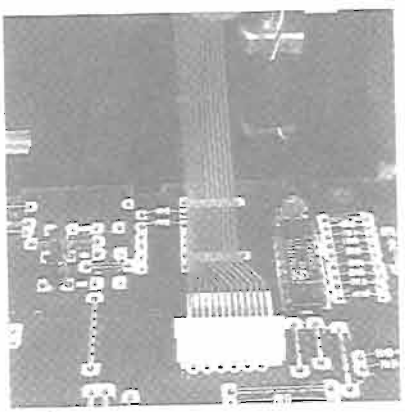
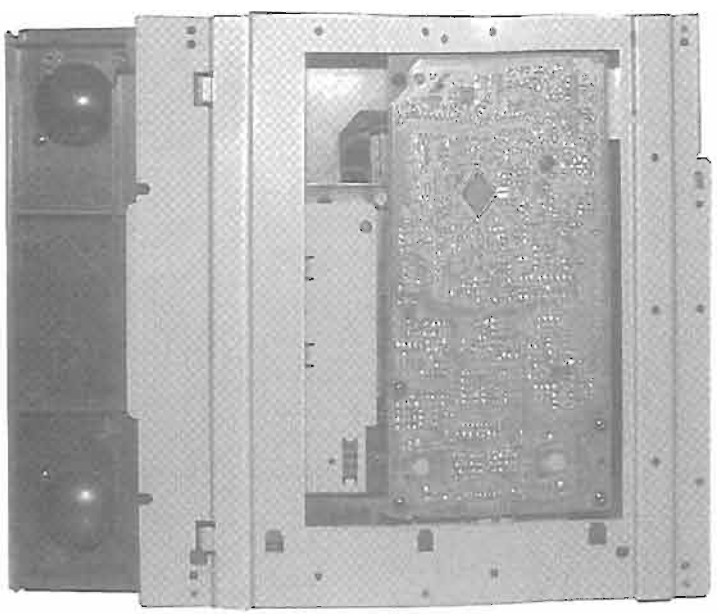


fig.3

Service Position



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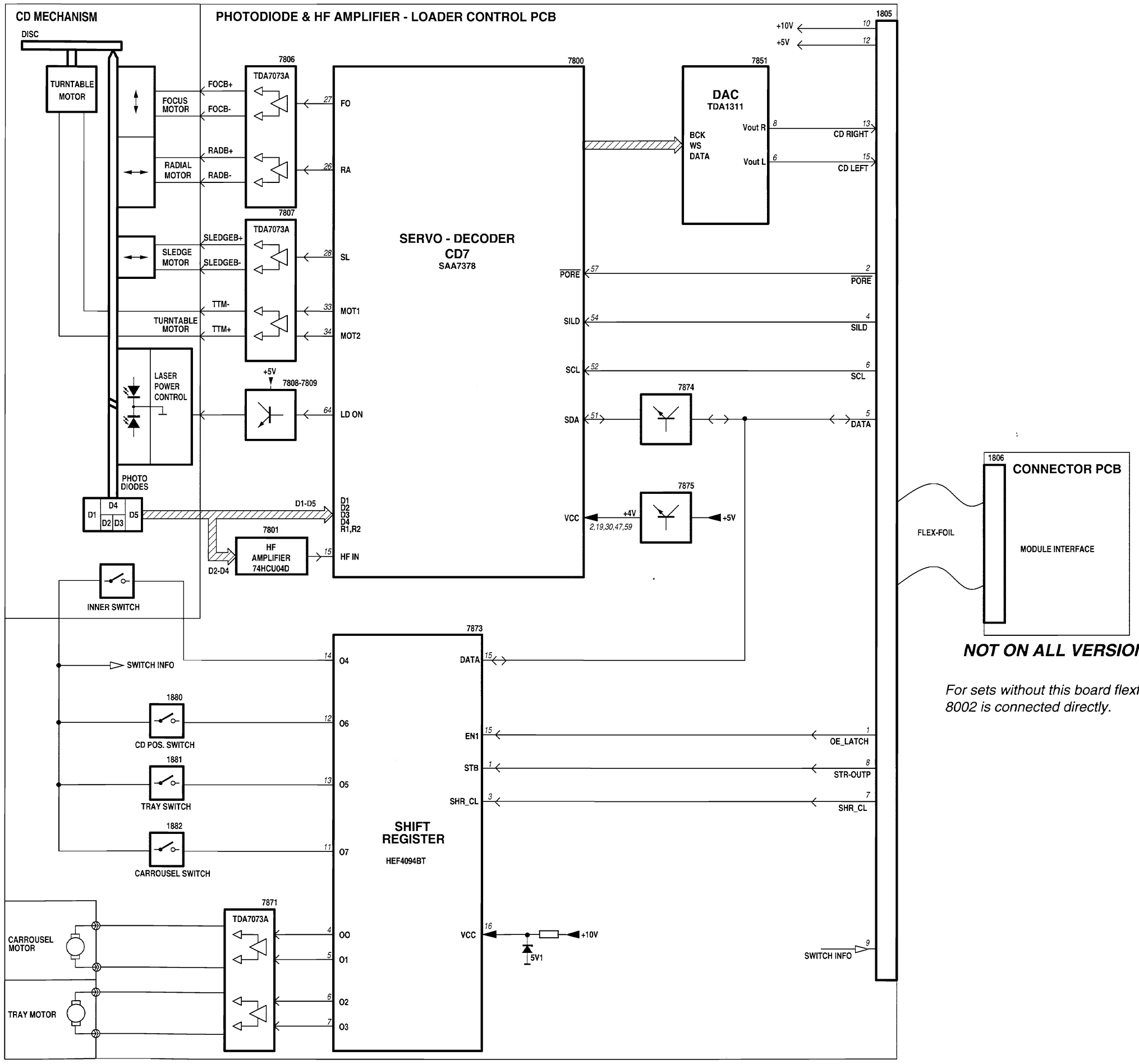
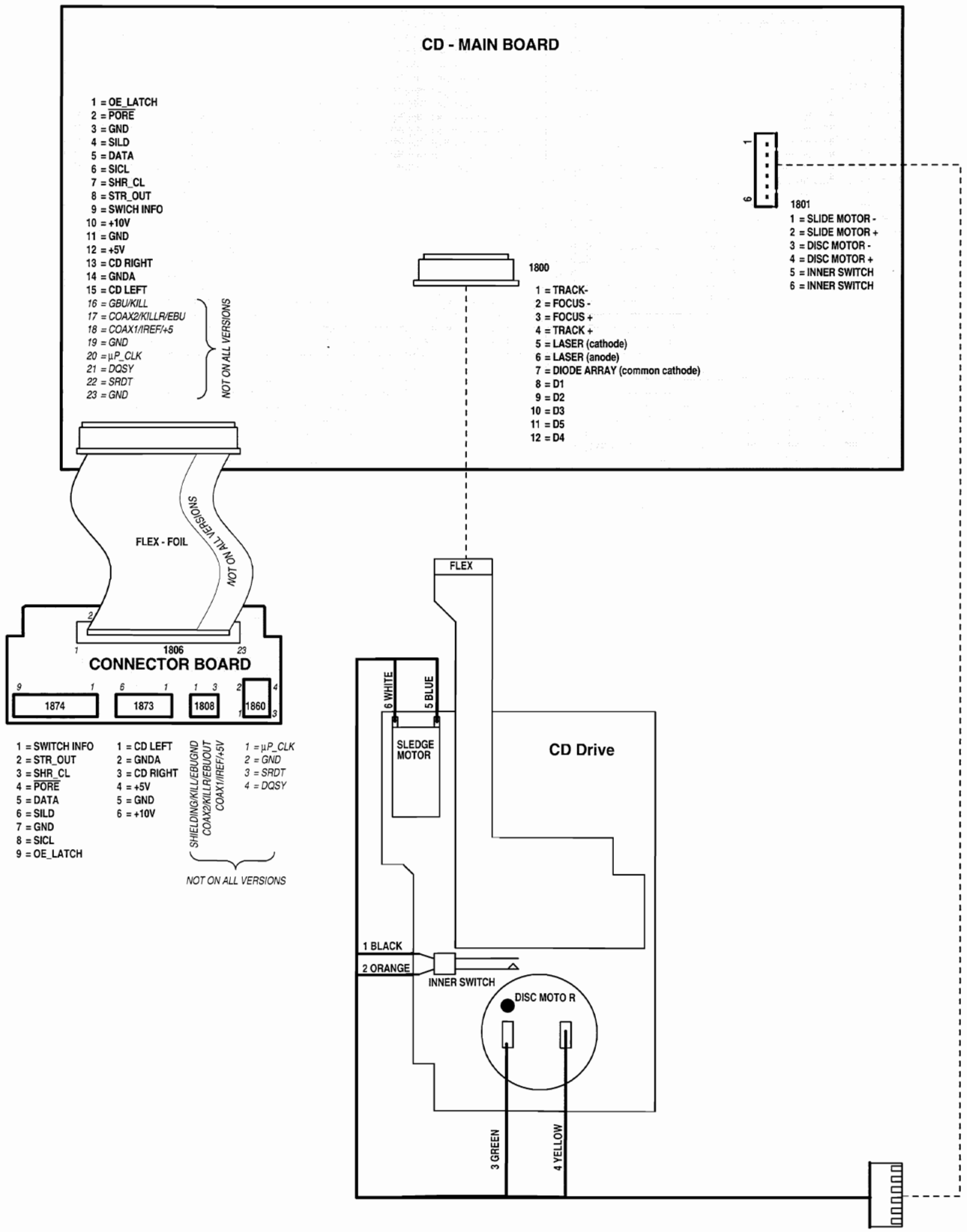
Blockdiagram



NOT ON ALL VERSIONS

For sets without this board flexfoil 8002 is connected directly.

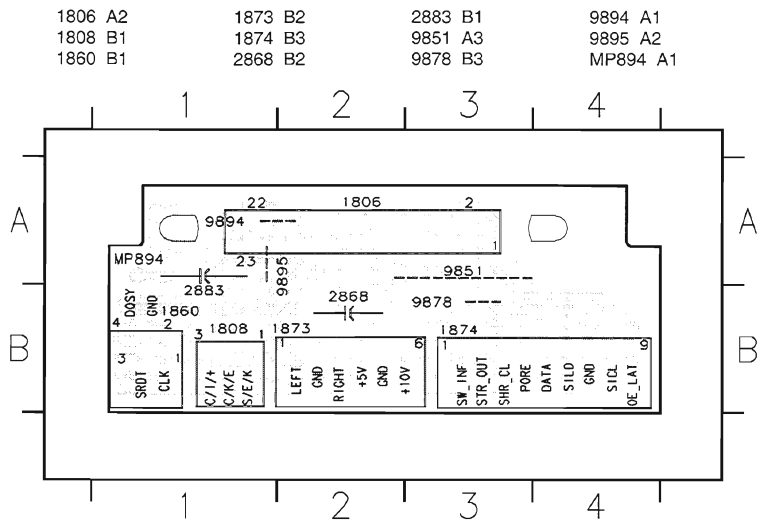
Wiring diagram



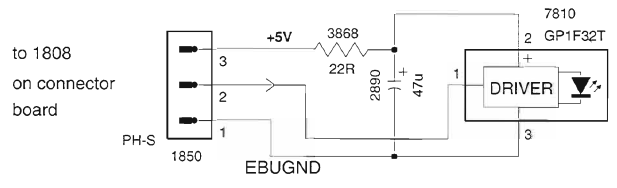
10-8

Remarks

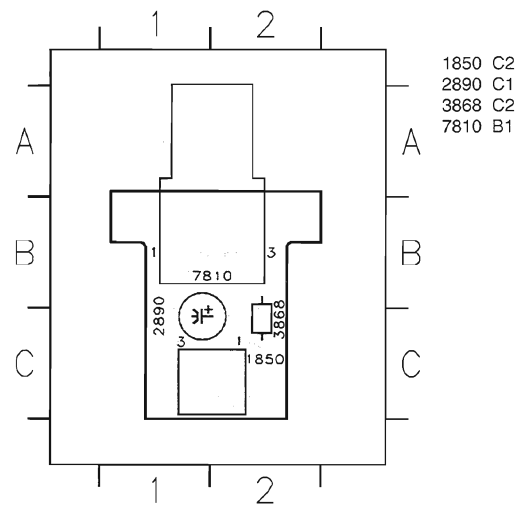
Connector Board Copperside view



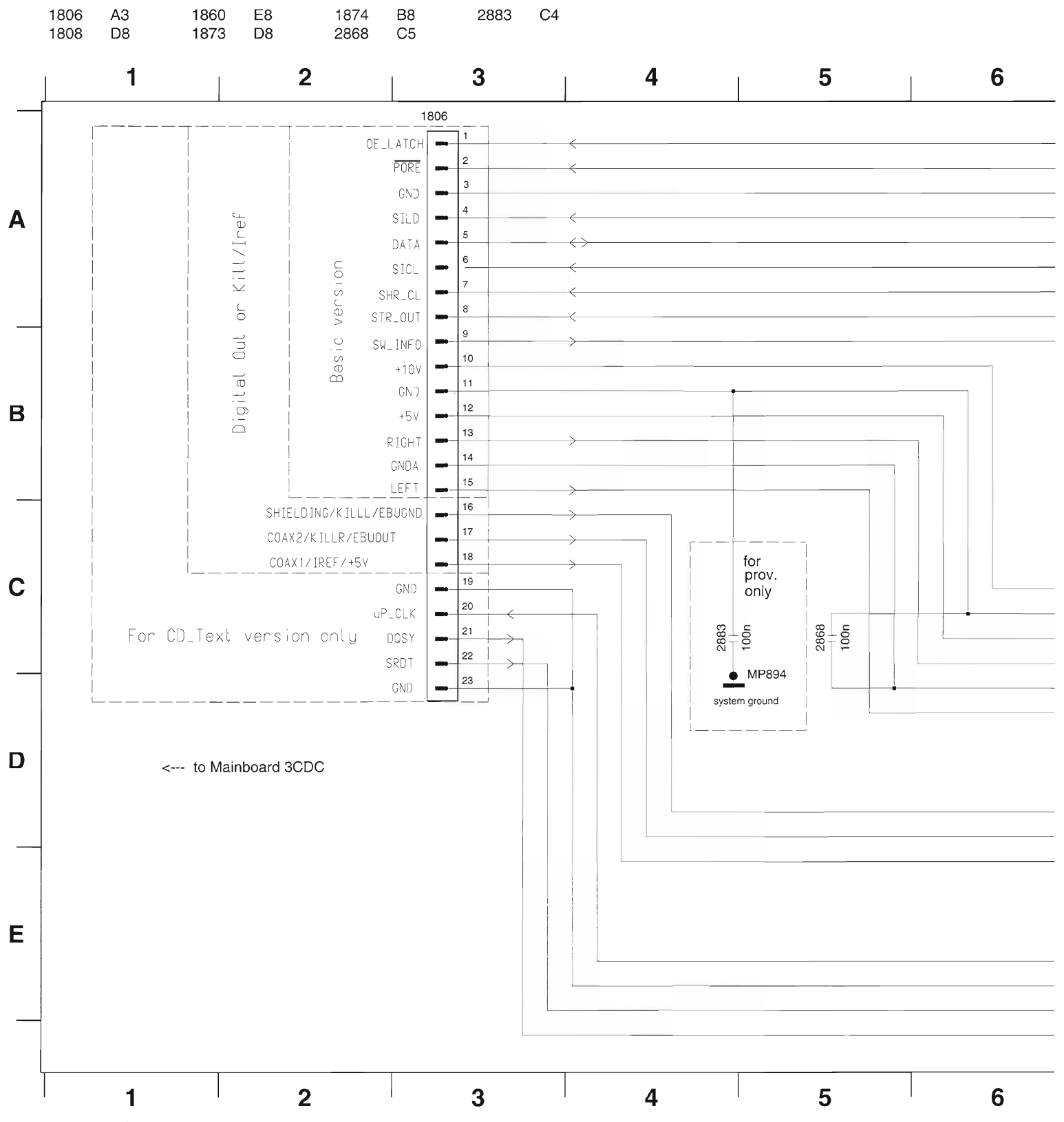
Circuit Diagram Optical out



Component Layout Optical out



Circuit diagram Connector Board

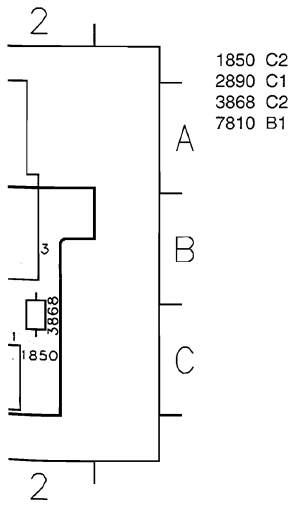


10-9

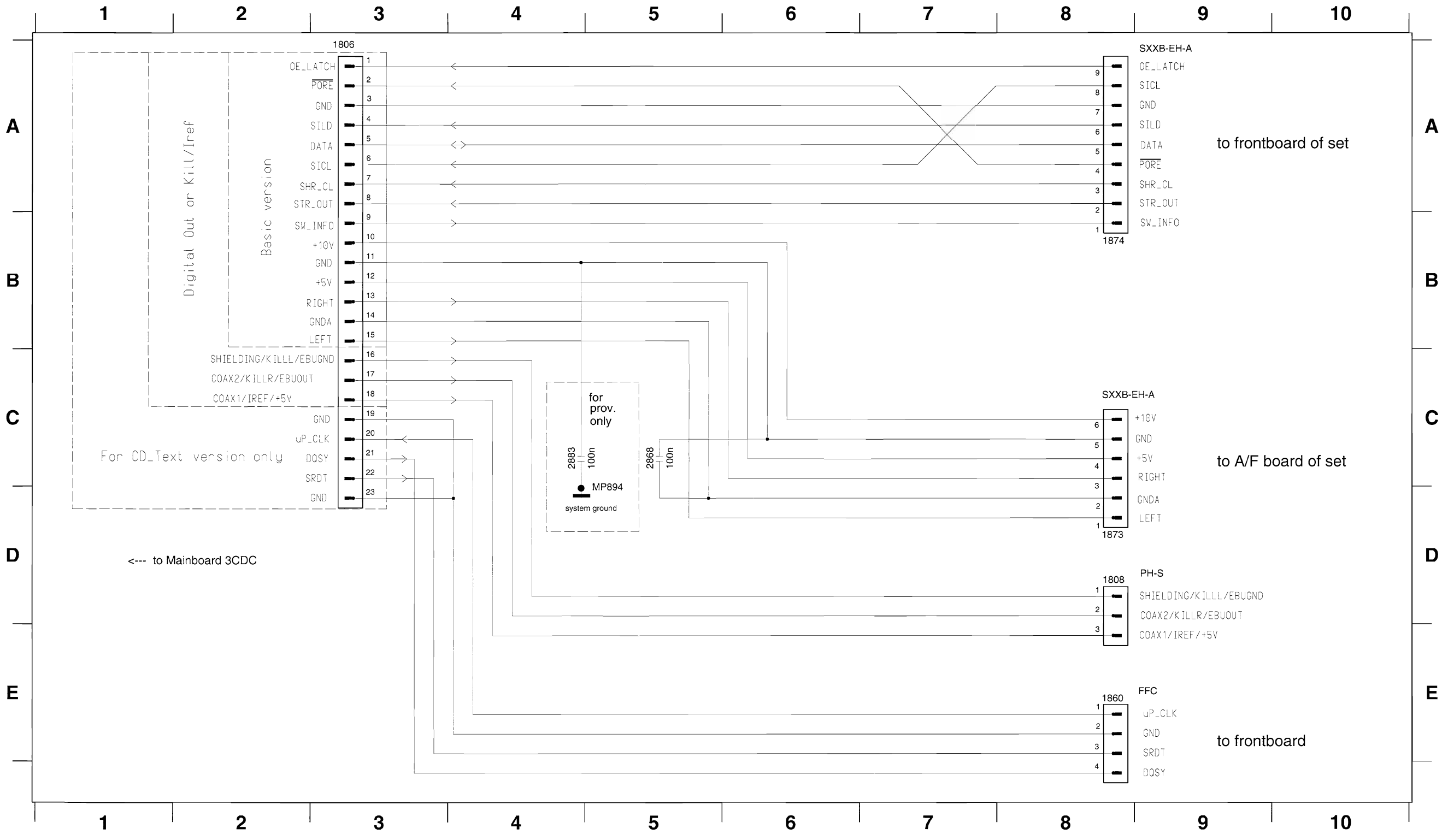
Circuit diagram Connector Board

1806 A3
1808 D8
1860 E8
1873 D8
1874 B8
2868 C5
2883 C4

Optical out



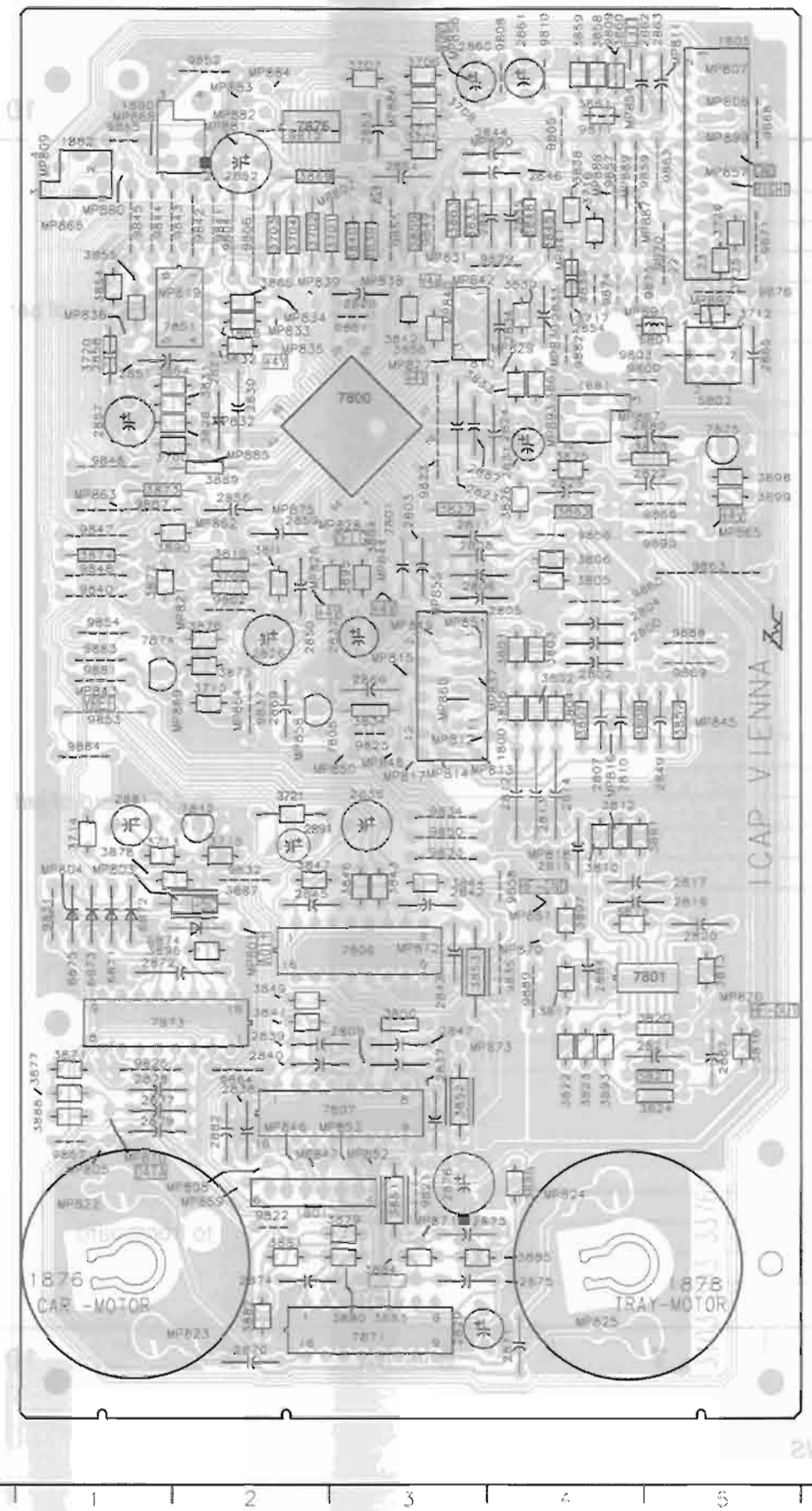
1850 C2
2890 C1
3868 C2
7810 B1



NOT ON ALL VERSIONS

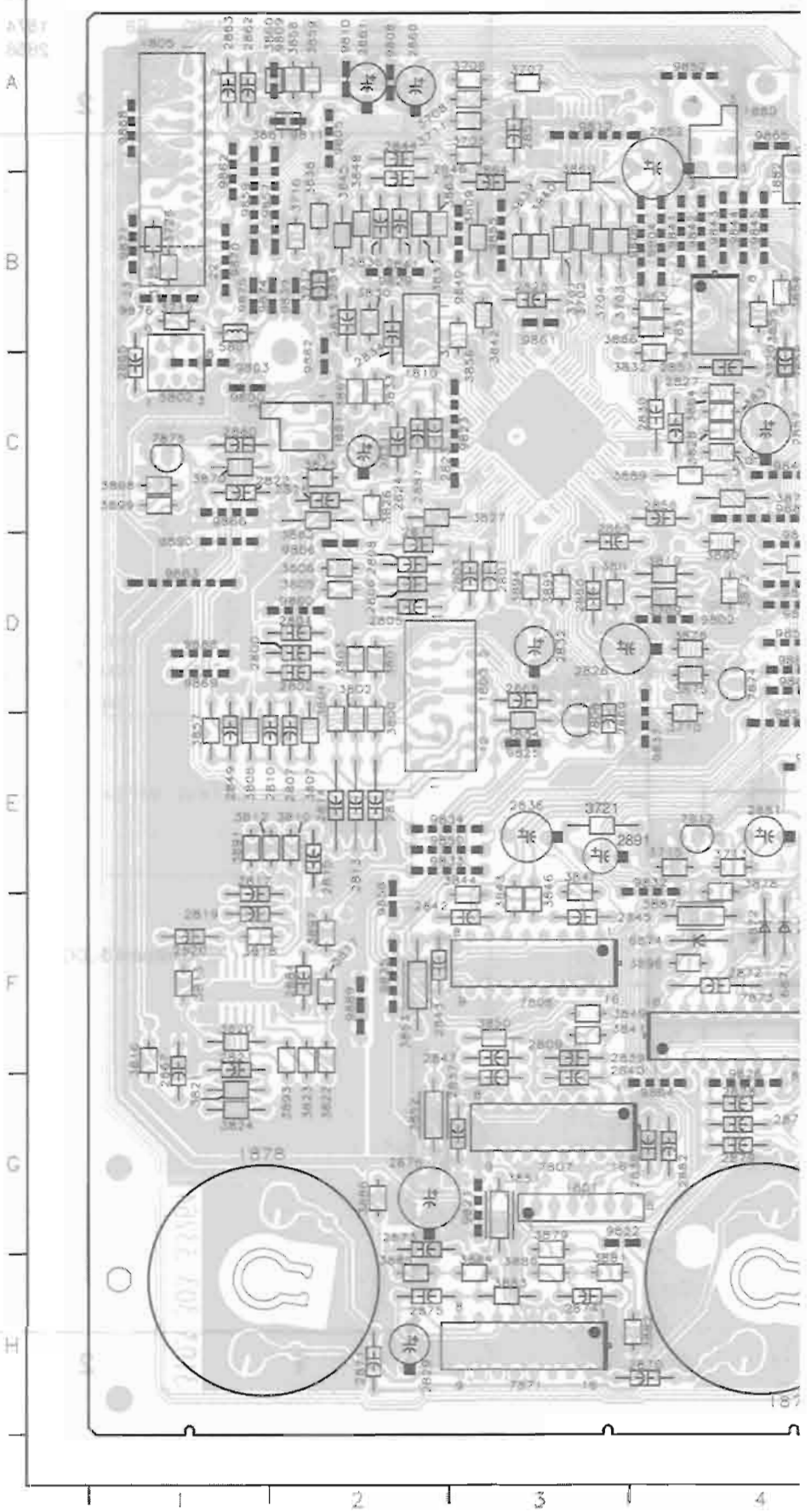
10-10

Copper side view



1800	E3	2869	E2	3841	G2	7874	E1
1801	H2	2870	I2	3842	B3	7875	C5
1805	B5	2871	I4	3843	F3	9800	C4
1810	C3	2872	G2	3844	F3	9802	D2
1876	I1	2873	H3	3845	B4	9803	C5
1878	I4	2874	I2	3846	F3	9804	B2
1880	B2	2875	I3	3847	F2	9805	A4
1881	C4	2876	H3	3848	B4	9806	B2
1882	B1	2877	G1	3849	G2	9808	A4
2800	D4	2878	G1	3850	G3	9809	A4
2801	D3	2879	H1	3851	H3	9810	A4
2802	E4	2880	C5	3852	G3	9811	A4
2803	D3	2881	F1	3853	G3	9812	A2
2804	D4	2882	H2	3854	B1	9821	H3
2805	D3	2884	G4	3855	B1	9822	H2
2806	D3	2887	C3	3856	C3	9823	C3
2807	E4	3700	C1	3857	E5	9825	E3
2808	D3	3701	B3	3858	A4	9826	G1
2809	G3	3702	B2	3859	A4	9829	B4
2810	E4	3703	B2	3860	A4	9831	F1
2811	D3	3704	B2	3861	A4	9832	F2
2812	F4	3705	A3	3862	D4	9833	F3
2813	F4	3706	A3	3863	B3	9834	F3
2814	F4	3707	A3	3864	C1	9835	G4
2815	F4	3708	A3	3865	B2	9837	E2
2817	F4	3709	D2	3866	C2	9839	B4
2819	F4	3710	E2	3867	C4	9840	D1
2820	F5	3711	A3	3869	B2	9841	B2
2821	G5	3712	B5	3870	C5	9842	B2
2822	D5	3713	F1	3871	G1	9843	B2
2823	C3	3714	F1	3872	D1	9844	B1
2824	C4	3715	F2	3873	D1	9845	B1
2825	D4	3716	B4	3874	D1	9846	C1
2826	D2	3717	B4	3875	E2	9847	D1
2827	C2	3720	C1	3876	E2	9848	D1
2828	B3	3725	B5	3877	G1	9849	B3
2829	I3	3726	B5	3878	F2	9850	F3
2830	C2	3800	E4	3879	H3	9852	A2
2831	C4	3801	E4	3880	H3	9853	E1
2832	E3	3802	E4	3881	H2	9854	D1
2833	B4	3803	E4	3882	I2	9855	B3
2834	C3	3804	E4	3883	I3	9856	D4
2835	B4	3805	D4	3884	H3	9857	B4
2836	F3	3806	D4	3885	H3	9858	F4
2837	H3	3807	E4	3886	H4	9859	B4
2838	H2	3808	E4	3887	F2	9860	D4
2839	G2	3809	B3	3888	H1	9861	B3
2840	G2	3810	F4	3889	C2	9862	B5
2841	B3	3811	D2	3890	D1	9863	D5
2842	F3	3812	F4	3891	F4	9864	G2
2843	G3	3813	G5	3893	G4	9865	A1
2844	B4	3816	G5	3894	D3	9866	D5
2845	F2	3817	G4	3895	D3	9867	H1
2846	B4	3818	F4	3896	G2	9868	A5
2847	G3	3819	D2	3897	F4	9869	E5
2849	E5	3820	G5	3898	D5	9870	B5
2850	D2	3821	G5	3899	D5	9871	B5
2851	C1	3822	G4	5801	B5	9874	B4
2852	A2	3823	G4	5802	C5	9875	B4
2853	A3	3824	G5	6871	F1	9876	B5
2854	B4	3825	C4	6872	F1	9881	E1
2856	D2	3826	D4	6873	F1	9882	C4
2857	C1	3827	D3	6874	F2	9883	E1
2858	C1	3828	C1	6875	F1	9884	E1
2859	D2	3830	B4	7800	C2	9887	D1
2860	A3	3831	C1	7801	G4	9888	E5
2861	A4	3832	C2	7806	G3	9889	G4
2862	A4	3833	C4	7807	H3	9890	D5
2863	A5	3834	E3	7808	E2		
2864	B3	3837	B3	7812	F2		
2865	C5	3838	B4	7851	B2		
2866	E3	3839	B3	7871	I3		
2867	G5	3840	B3	7873	G1		

Component side view



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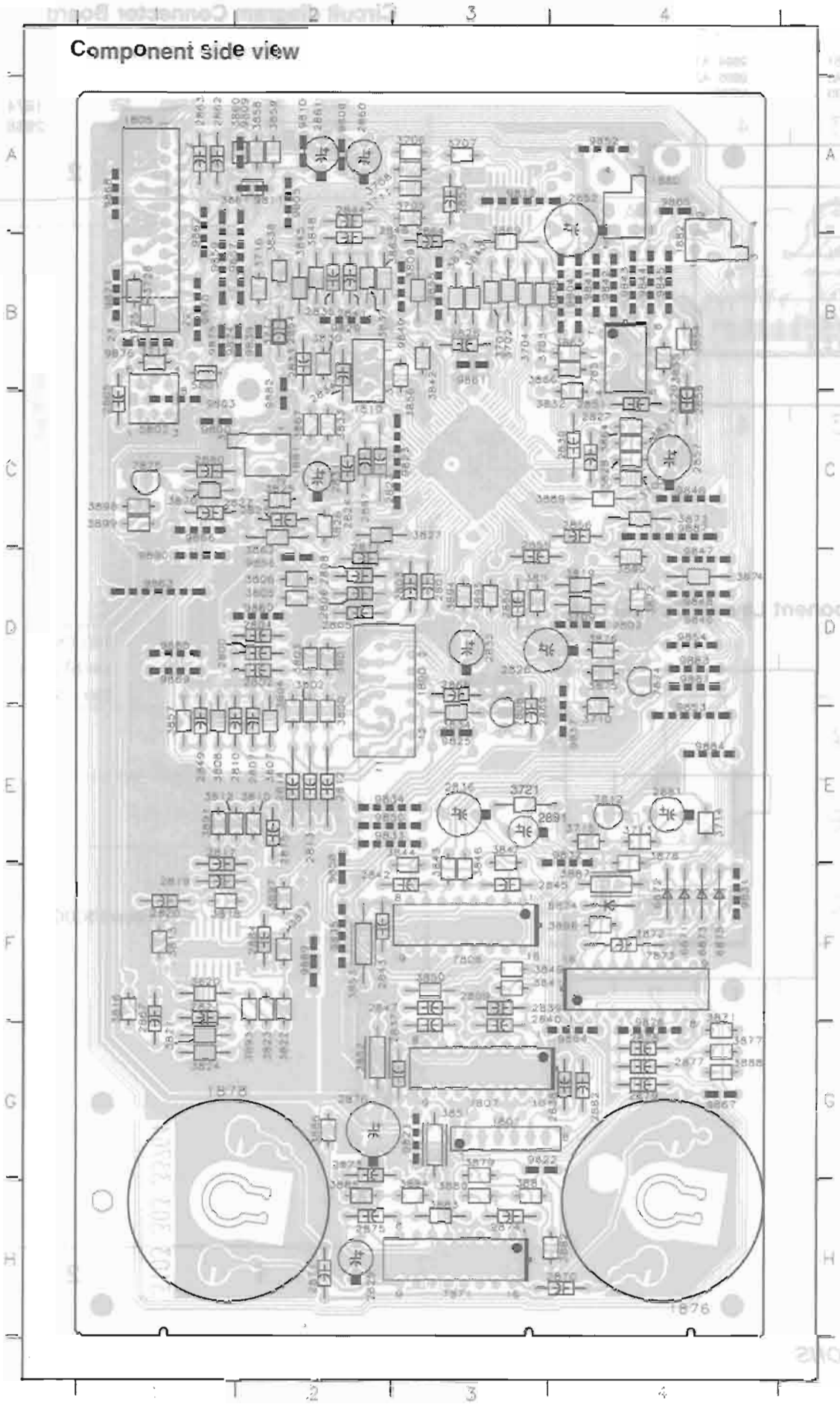
1801 H2	2870 I2	3842 B3	7875 C5
1805 B5	2871 I4	3843 F3	9800 C4
1810 C3	2872 G2	3844 F3	9802 D2
1876 I1	2873 H3	3845 B4	9803 C5
1878 I4	2874 I2	3846 F3	9804 B2
1880 B2	2875 I3	3847 F2	9805 A4
1881 C4	2876 H3	3848 B4	9806 B2
1882 B1	2877 G1	3849 G2	9808 A4
2800 D4	2878 G1	3850 G3	9809 A4
2801 D3	2879 H1	3851 H3	9810 A4
2802 E4	2880 C5	3852 G3	9811 A4
2803 D3	2881 F1	3853 G3	9812 A2
2804 D4	2882 H2	3854 B1	9821 H3
2805 D3	2884 G4	3855 B1	9822 H2
2806 D3	2887 G3	3856 C3	9823 C3
2807 E4	3700 D1	3857 E5	9825 E3
2808 D3	3701 B3	3858 A4	9826 G1
2809 G3	3702 B2	3859 A4	9829 B4
2810 E4	3703 B2	3860 A4	9831 F1
2811 D3	3704 B2	3861 A4	9832 F2
2812 F4	3705 A3	3862 D4	9833 F3
2813 F4	3706 A3	3863 B3	9834 F3
2814 F4	3707 A3	3864 C1	9835 G4
2815 F4	3708 A3	3865 B2	9837 E2
2817 F4	3709 D2	3866 C2	9839 B4
2819 F4	3710 E2	3867 C4	9840 D1
2820 F5	3711 A3	3869 B2	9841 B2
2821 G5	3712 B5	3870 C5	9842 B2
2822 D5	3713 F1	3871 G1	9843 B2
2823 C3	3714 F1	3872 D1	9844 B1
2824 C4	3715 F2	3873 D1	9845 B1
2825 D4	3716 B4	3874 D1	9846 C1
2826 D2	3717 B4	3875 E2	9847 D1
2827 C2	3720 C1	3876 E2	9848 D1
2828 B3	3725 B5	3877 G1	9849 B3
2829 I3	3726 B5	3878 F2	9850 F3
2830 C2	3800 E4	3879 H3	9852 A2
2831 C4	3801 E4	3880 H3	9853 E1
2832 E3	3802 E4	3881 H2	9854 D1
2833 B4	3803 E4	3882 I2	9855 B3
2834 C3	3804 E4	3883 I3	9856 D4
2835 B4	3805 D4	3884 H3	9857 B4
2836 F3	3806 D4	3885 H3	9858 F4
2837 H3	3807 E4	3886 H4	9859 B4
2838 H2	3808 E4	3887 F2	9860 D4
2839 G2	3809 B3	3888 H1	9861 B3
2840 G2	3810 F4	3889 C2	9862 B5
2841 B3	3811 D2	3890 D1	9863 D5
2842 F3	3812 F4	3891 F4	9864 G2
2843 G3	3813 G5	3893 G4	9865 A1
2844 B4	3816 G5	3894 D3	9866 D5
2845 F2	3817 G4	3895 D3	9867 H1
2846 B4	3818 F4	3896 G2	9868 A5
2847 G3	3819 D2	3897 F4	9869 E5
2849 E5	3820 G5	3898 D5	9870 B5
2850 D2	3821 G5	3899 D5	9871 B5
2851 C1	3822 G4	5801 B5	9874 B4
2852 A2	3823 G4	5802 C5	9875 B4
2853 A3	3824 G5	6871 F1	9876 B5
2854 B4	3825 C4	6872 F1	9881 E1
2856 D2	3826 D4	6873 F1	9882 C4
2857 C1	3827 D3	6874 F2	9883 E1
2858 C1	3828 C1	6875 F1	9884 E1
2859 D2	3830 B4	7800 C2	9887 D1
2860 A3	3831 C1	7801 G4	9888 E5
2861 A4	3832 C2	7806 G3	9889 G4
2862 A4	3833 C4	7807 H3	9890 D5
2863 A5	3834 E3	7808 E2	
2864 B3	3837 B3	7812 F2	
2865 C5	3838 B4	7851 B2	
2866 E3	3839 B3	7871 I3	
2867 G5	3840 B3	7873 G1	

Component side view

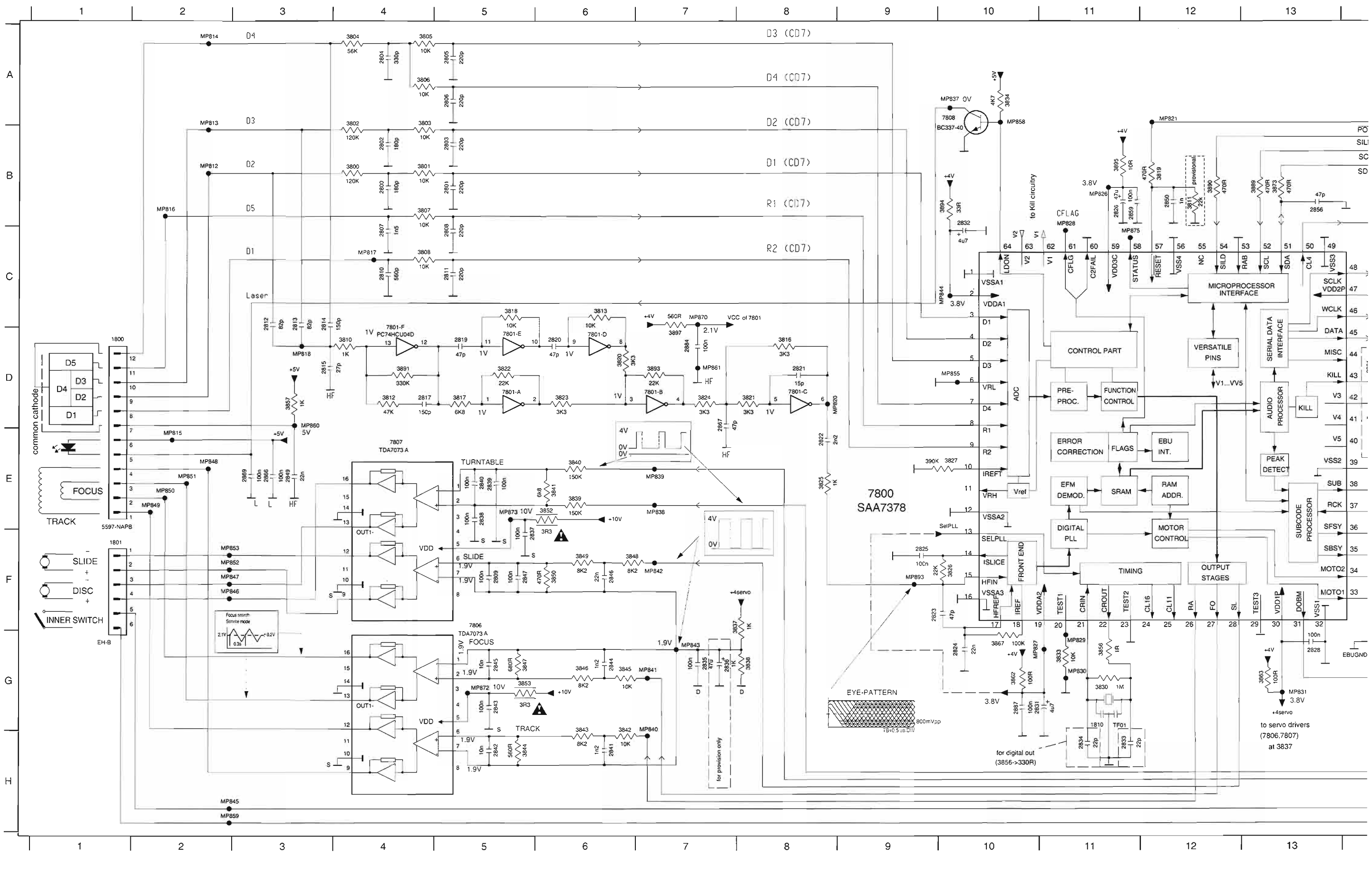


10-10

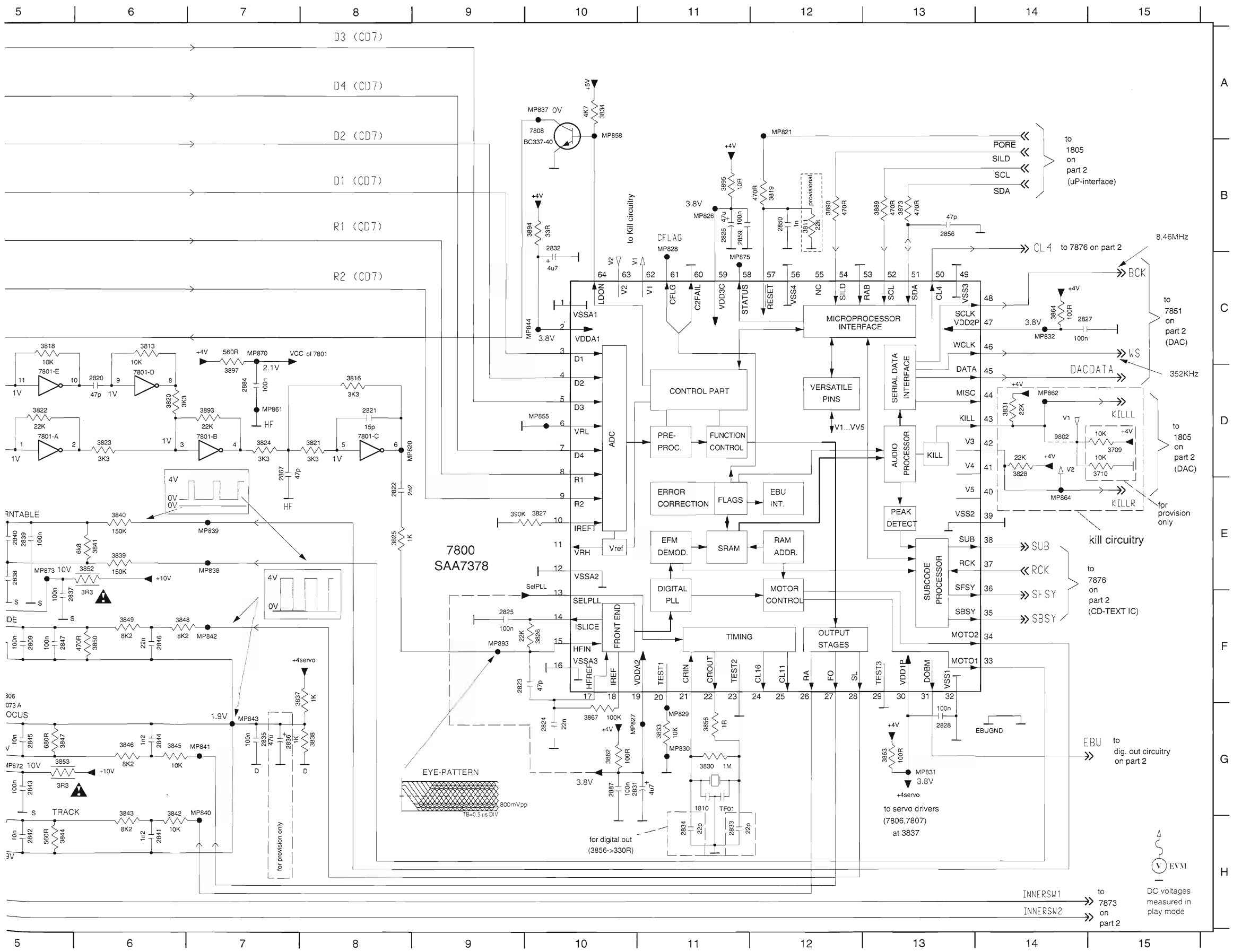
1800 D3	2869 E3	3841 F3	9800 C1
1801 G3	2870 H4	3842 B3	9802 D4
1805 A1	2871 H2	3843 F3	9803 C1
1810 B2	2872 F4	3844 F3	9804 B4
1876 H4	2873 G2	3845 B2	9805 A2
1878 H1	2874 H3	3846 F3	9806 B4
1880 B4	2875 H2	3847 E3	9808 A2
1881 C2	2876 G3	3848 B2	9809 A2
1882 B4	2877 G4	3849 F3	9810 A2
2800 D2	2878 G4	3850 F3	9811 A2
2801 D3	2879 G4	3851 G3	9812 A3
2802 D2	2880 C1	3852 G2	9821 G3
2803 D3	2881 E4	3853 F2	9822 G3
2804 D2	2882 G4	3854 B4	9823 C3
2805 D2	2884 F2	3855 B4	9825 E3
2806 D2	2887 C2	3856 B3	9826 G4
2807 E2	3700 C4	3857 E1	9829 B2
2808 D2	3701 B3	3858 A2	9831 F4
2809 F3	3702 B3	3859 A2	9832 E4
2810 E2	3703 B3	3860 A2	9833 E2
2811 D2	3704 B3	3861 A2	9834 E2
2812 E2	3705 A3	3862 C2	9835 F2
2813 E2	3706 A3	3863 B2	9837 E4
2814 E2	3707 A3	3864 C4	9839 B2
2815 E2	3708 A3	3865 B4	9840 D4
2817 F1	3709 D4	3866 B4	9841 B4
2819 F1	3710 E4	3867 C2	9842 B4
2820 F1	3711 A3	3869 B3	9843 B4
2821 G1	3712 B1	3870 C1	9844 B4
2822 C1	3713 E4	3871 G4	9845 B4
2823 C2	3714 E4	3872 D4	9846 C4
2824 C2	3715 E4	3873 C4	9847 D4
2825 C2	3716 B2	3874 D4	9848 D4
2826 D3	3717 B2	3875 D4	9849 B3
2827 C4	3720 C4	3876 D4	9850 E2
2828 B3	3725 B1	3877 G4	9852 A4
2829 H2	3726 B1	3878 E4	9853 E4
2830 C4	3800 E2	3879 G3	9854 D4
2831 C2	3801 D2	3880 H3	9855 B3
2832 D3	3802 E2	3881 H3	9856 D2
2833 B2	3803 D2	3882 H4	9857 B2
2834 B2	3804 E2	3883 H3	9858 F2
2835 B2	3805 D2	3884 H3	9859 B1
2836 E3	3806 D2	3885 H2	9860 D2
2837 G2	3807 E2	3886 G2	9861 B3
2838 G4	3808 E1	3887 F4	9862 A1
2839 F3	3809 B3	3888 G4	9863 D1
2840 F3	3810 E2	3889 C4	9864 G4
2841 B2	3811 D3	3890 D4	9865 A4
2842 F3	3812 E2	3891 E1	9866 C1
2843 F2	3813 F1	3893 F2	9867 G4
2844 B2	3816 F1	3894 D3	9868 A1
2845 F3	3817 F2	3895 D3	9869 D1
2846 B2	3818 F1	3896 F4	9870 B1
2847 F3	3819 D4	3897 F2	9871 B1
2849 E1	3820 F1	3898 C1	9874 B2
2850 D3	3821 G1	3899 C1	9875 B1
2851 C4	3822 F2	5801 B1	9876 B1
2852 A4	3823 F2	5802 C1	9881 D4
2853 A3	3824 G1	6871 F4	9882 C2
2854 B2	3825 C2	6872 F4	9883 D4
2856 C4	3826 C2	6873 F4	9884 E4
2857 C4	3827 C2	6874 F4	9887 C4
2858 C4	3828 C4	6875 F4	9888 D1
2859 C3	3830 B2	7806 F3	9889 F2
2860 A2	3831 C4	7807 G3	9890 D1
2861 A2	3832 C4	7808 E3	
2862 A1	3833 C2	7812 E4	
2863 A1	3834 E3	7851 B4	
2864 B3	3837 B2	7871 H3	
2865 C1	3838 B2	7873 F4	
2866 E3	3839 B3	7874 D4	
2867 F1	3840 B3	7875 C1	

10-11

Circuit Diagram Main Board part1



10-11



1800 D1	3812 D4	MP826 B11
1801 F1	3813 C6	MP827 G10
1810 G11	3816 D8	MP828 B11
2800 B4	3817 D5	MP829 G11
2801 B5	3818 C5	MP830 G11
2802 B4	3819 B12	MP831 G13
2803 B5	3820 D6	MP832 C14
2804 A4	3821 D8	MP837 B10
2805 A5	3822 D5	MP838 E6
2806 A5	3823 D6	MP839 E6
2807 C4	3824 D7	MP840 G7
2808 C5	3825 E8	MP841 G7
2809 F5	3826 F10	MP842 F7
2810 C4	3827 E10	MP843 G7
2811 C5	3828 D14	MP844 C10
2812 C3	3830 G11	MP845 H3
2813 C3	3831 D14	MP846 F2
2814 C3	3833 G11	MP847 F2
2815 D3	3834 B10	MP848 E2
2817 D4	3837 F8	MP849 E2
2819 D5	3838 G8	MP850 E2
2820 D6	3839 E6	MP851 E2
2821 D8	3840 E6	MP852 F2
2822 E8	3841 E6	MP853 F2
2823 F9	3842 G6	MP855 D10
2824 G9	3843 G6	MP858 B10
2825 F9	3844 H5	MP859 H3
2826 B11	3845 G6	MP860 D3
2827 C14	3846 G6	MP861 D7
2828 G13	3847 G5	MP862 D14
2831 G10	3848 F6	MP864 E14
2832 B10	3849 F6	MP870 C7
2833 H11	3850 F6	MP872 G5
2834 H11	3852 E6	MP873 E5
2835 G7	3853 G5	MP875 C11
2836 G7	3856 G11	MP893 F9
2837 F5	3857 D3	
2838 E5	3862 G10	
2839 E5	3863 G13	
2840 E5	3864 C14	
2841 H6	3867 G10	
2842 H5	3873 B13	
2843 G5	3889 B13	
2844 G6	3890 B12	
2845 G5	3891 D4	
2846 F6	3893 D7	
2847 F5	3894 B10	
2849 E3	3895 B11	
2850 B12	3897 D7	
2856 B13	7800 E9	
2859 B11	7801-A D5	
2866 E3	7801-B D7	
2867 D7	7801-C D8	
2869 E3	7801-D D6	
2884 D7	7801-E D5	
2887 G10	7801-F D4	
3709 D15	7806 G5	
3710 D15	7807 E4	
3800 B4	7808 B10	
3801 B4	9802 D14	
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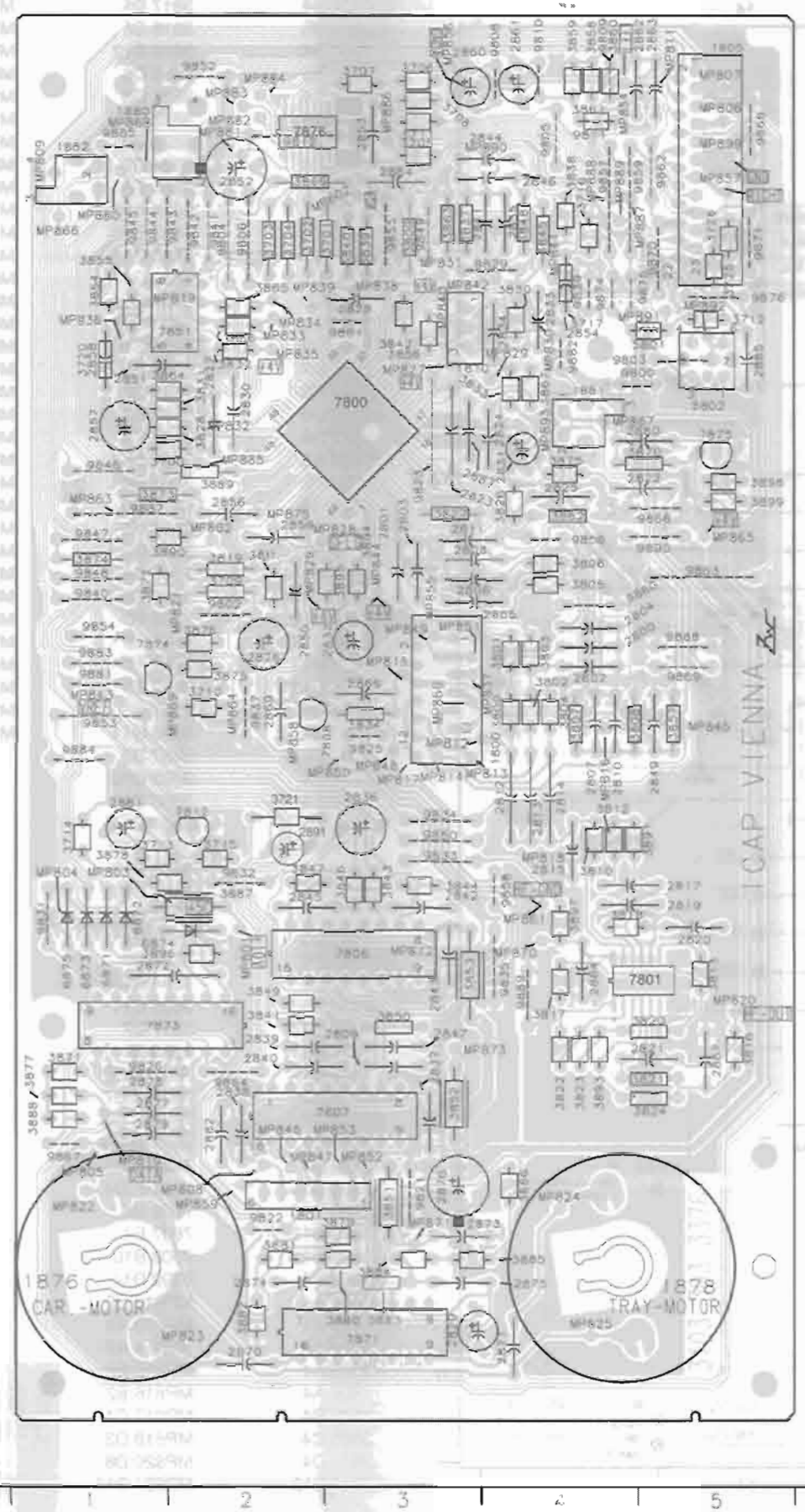
3803 A4	MP813 A2	
3804 A4	MP814 A2	
3805 A4	MP815 E2	
3806 A4	MP816 B2	
3807 B4	MP817 C4	
3808 C4	MP818 D3	
3810 D4	MP820 D8	
3811 B12	MP821 B12	

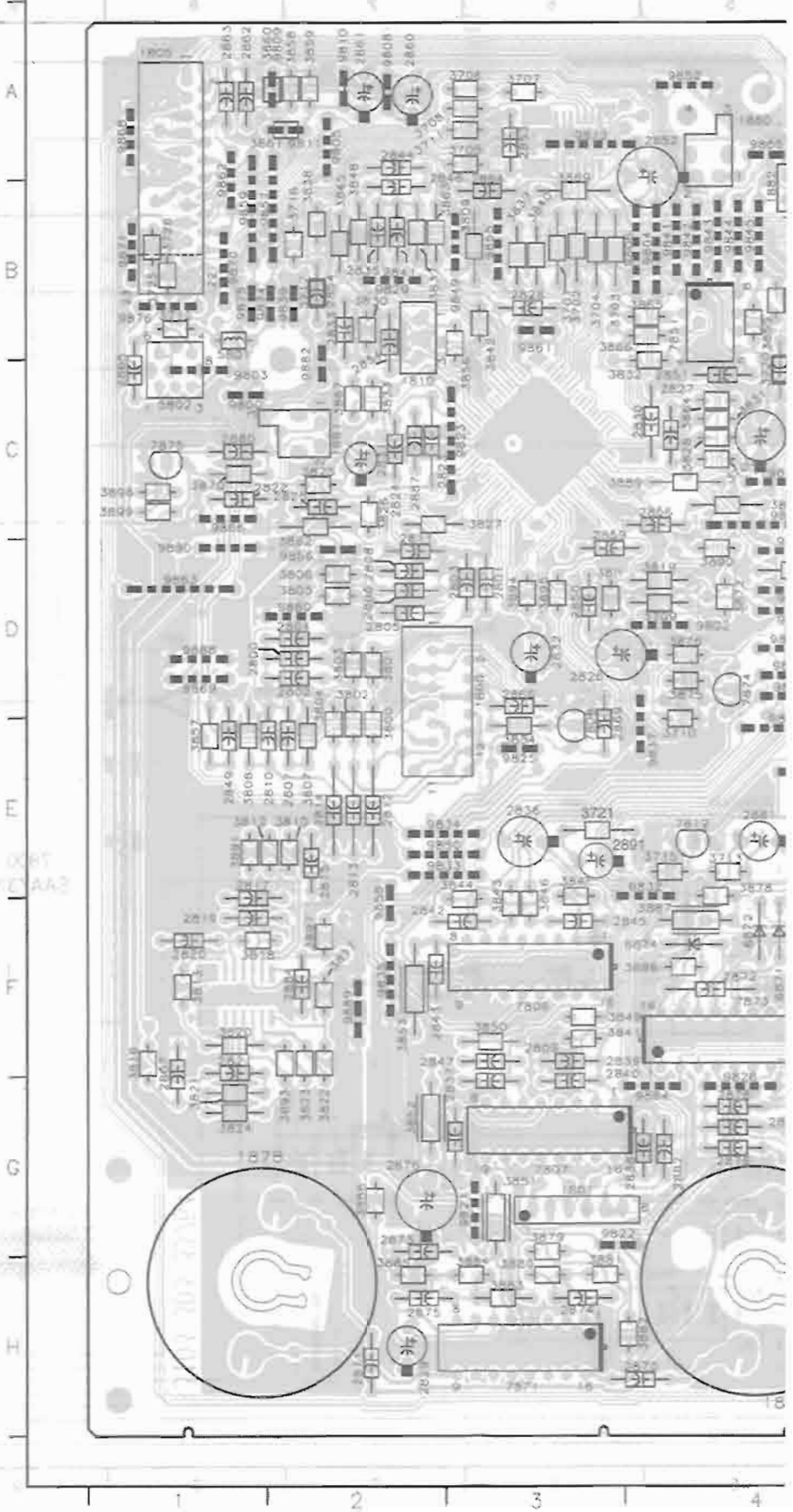
10-12

Copper side view



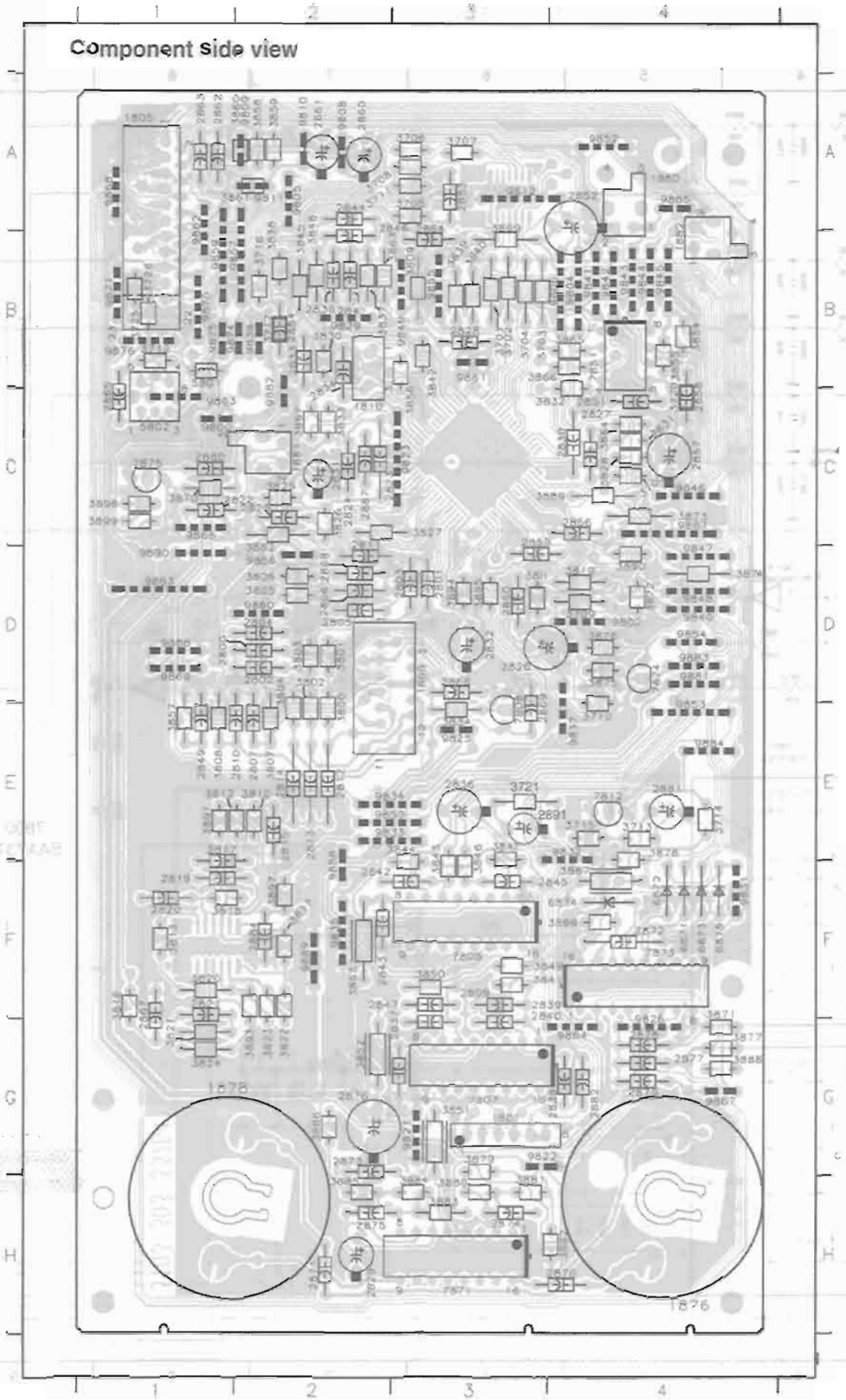
1800	E3	2869	E2	3841	G2	7874	E1
1801	H2	2870	I2	3842	B3	7875	C5
1805	B5	2871	I4	3843	F3	9800	C4
1810	C3	2872	G2	3844	F3	9802	D2
1876	I1	2873	H3	3845	B4	9803	C5
1878	I4	2874	I2	3846	F3	9804	B2
1880	B2	2875	I3	3847	F2	9805	A4
1881	C4	2876	H3	3848	B4	9806	B2
1882	B1	2877	G1	3849	G2	9808	A4
2800	D4	2878	G1	3850	G3	9809	A4
2801	D3	2879	H1	3851	H3	9810	A4
2802	E4	2880	C5	3852	G3	9811	A4
2803	D3	2881	F1	3853	G3	9812	A2
2804	D4	2882	H2	3854	B1	9821	H3
2805	D3	2884	G4	3855	B1	9822	H2
2806	D3	2887	C3	3856	C3	9823	C3
2807	E4	3700	C1	3857	E5	9825	E3
2808	D3	3701	B3	3858	A4	9826	G1
2809	G3	3702	B2	3859	A4	9829	B4
2810	E4	3703	B2	3860	A4	9831	F1
2811	D3	3704	B2	3861	A4	9832	F2
2812	F4	3705	A3	3862	D4	9833	F3
2813	F4	3706	A3	3863	B3	9834	F3
2814	F4	3707	A3	3864	C1	9835	G4
2815	F4	3708	A3	3865	B2	9837	E2
2817	F4	3709	D2	3866	C2	9839	B4
2819	F4	3710	E2	3867	C4	9840	D1
2820	F5	3711	A3	3869	B2	9841	B2
2821	G5	3712	B5	3870	C5	9842	B2
2822	D5	3713	F1	3871	G1	9843	B2
2823	C3	3714	F1	3872	D1	9844	B1
2824	C4	3715	F2	3873	D1	9845	B1
2825	D4	3716	B4	3874	D1	9846	C1
2826	D2	3717	B4	3875	E2	9847	D1
2827	C2	3720	C1	3876	E2	9848	D1
2828	B3	3725	B5	3877	G1	9849	B3
2829	I3	3726	B5	3878	F2	9850	F3
2830	C2	3800	E4	3879	H3	9852	A2
2831	C4	3801	E4	3880	H3	9853	E1
2832	E3	3802	E4	3881	H2	9854	D1
2833	B4	3803	E4	3882	I2	9855	B3
2834	C3	3804	E4	3883	I3	9856	D4
2835	B4	3805	D4	3884	H3	9857	B4
2836	F3	3806	D4	3885	H3	9858	F4
2837	H3	3807	E4	3886	H4	9859	B4
2838	H2	3808	E4	3887	F2	9860	D4
2839	G2	3809	B3	3888	H1	9861	B3
2840	G2	3810	F4	3889	C2	9862	B5
2841	B3	3811	D2	3890	D1	9863	D5
2842	F3	3812	F4	3891	F4	9864	G2
2843	G3	3813	G5	3893	G4	9865	A1
2844	B4	3816	G5	3894	D3	9866	D5
2845	F2	3817	G4	3895	D3	9867	H1
2846	B4	3818	F4	3896	G2	9868	A5
2847	G3	3819	D2	3897	F4	9869	E5
2849	E5	3820	G5	3898	D5	9870	B5
2850	D2	3821	G5	3899	D5	9871	B5
2851	C1	3822	G4	5801	B5	9874	B4
2852	A2	3823	G4	5802	C5	9875	B4
2853	A3	3824	G5	6871	F1	9876	B5
2854	B4	3825	C4	6872	F1	9881	E1
2856	D2	3826	D4	6873	F1	9882	C4
2857	C1	3827	D3	6874	F2	9883	E1
2858	C1	3828	C1	6875	F1	9884	E1
2859	D2	3830	B4	7800	C2	9887	D1
2860	A3	3831	C1	7801	G4	9888	E5
2861	A4	3832	C2	7806	G3	9889	G4
2862	A4	3833	C4	7807	H3	9890	D5
2863	A5	3834	E3	7808	E2		
2864	B3	3837	B3	7812	F2		
2865	C5	3838	B4	7851	B2		
2866	E3	3839	B3	7871	I3		
2867	G5	3840	B3	7873	G1		

Component side view



10-12

Component side view



1800	E3	2869	E2	3841	G2	7874	E1	1800	D3	2869	E3	3841	F3	9800	C1
1801	H2	2870	I2	3842	B3	7875	C5	1801	G3	2870	H4	3842	B3	9802	D4
1805	B5	2871	I4	3843	F3	9800	C4	1805	A1	2871	H2	3843	F3	9803	C1
1810	C3	2872	G2	3844	F3	9802	D2	1810	B2	2872	F4	3844	F3	9804	B4
1876	I1	2873	H3	3845	B4	9803	C5	1876	H4	2873	G2	3845	B2	9805	A2
1878	I4	2874	I2	3846	F3	9804	B2	1878	H1	2874	H3	3846	F3	9806	B4
1880	B2	2875	I3	3847	F2	9805	A4	1880	B4	2875	H2	3847	E3	9808	A2
1881	C4	2876	H3	3848	B4	9806	B2	1881	C2	2876	G3	3848	B2	9809	A2
1882	B1	2877	G1	3849	G2	9808	A4	1882	B4	2877	G4	3849	F3	9810	A2
2800	D4	2878	G1	3850	G3	9809	A4	2800	D2	2878	G4	3850	F3	9811	A2
2801	D3	2879	H1	3851	H3	9810	A4	2801	D3	2879	G4	3851	G3	9812	A3
2802	E4	2880	C5	3852	G3	9811	A4	2802	D2	2880	C1	3852	G2	9821	G3
2803	D3	2881	F1	3853	G3	9812	A2	2803	D3	2881	E4	3853	F2	9822	G3
2804	D4	2882	H2	3854	B1	9821	H3	2804	D2	2882	G4	3854	B4	9823	C3
2805	D3	2884	G4	3855	B1	9822	H2	2805	D2	2884	F2	3855	B4	9825	E3
2806	D3	2887	C3	3856	C3	9823	C3	2806	D2	2887	C2	3856	B3	9826	G4
2807	E4	3700	C1	3857	E5	9825	E3	2807	E2	3700	C4	3857	E1	9829	B2
2808	D3	3701	B3	3858	A4	9826	G1	2808	D2	3701	B3	3858	A2	9831	F4
2809	G3	3702	B2	3859	A4	9829	B4	2809	F3	3702	B3	3859	A2	9832	E4
2810	E4	3703	B2	3860	A4	9831	F1	2810	E2	3703	B3	3860	A2	9833	E2
2811	D3	3704	B2	3861	A4	9832	F2	2811	D2	3704	B3	3861	A2	9834	E2
2812	F4	3705	A3	3862	D4	9833	F3	2812	E2	3705	A3	3862	C2	9835	F2
2813	F4	3706	A3	3863	B3	9834	F3	2813	E2	3706	A3	3863	B2	9837	E4
2814	F4	3707	A3	3864	C1	9835	G4	2814	E2	3707	A3	3864	C4	9839	B2
2815	F4	3708	A3	3865	B2	9837	E2	2815	E2	3708	A3	3865	B4	9840	D4
2817	F4	3709	D2	3866	C2	9839	B4	2817	F1	3709	D4	3866	B4	9841	B4
2819	F4	3710	E2	3867	C4	9840	D1	2819	F1	3710	E4	3867	C2	9842	B4
2820	F5	3711	A3	3869	B2	9841	B2	2820	F1	3711	A3	3869	B3	9843	B4
2821	G5	3712	B5	3870	C5	9842	B2	2821	G1	3712	B1	3870	C1	9844	B4
2822	D5	3713	F1	3871	G1	9843	B2	2822	C1	3713	E4	3871	G4	9845	B4
2823	C3	3714	F1	3872	D1	9844	B1	2823	C2	3714	E4	3872	D4	9846	C4
2824	C4	3715	F2	3873	D1	9845	B1	2824	C2	3715	E4	3873	C4	9847	D4
2825	D4	3716	B4	3874	D1	9846	C1	2825	C2	3716	B2	3874	D4	9848	D4
2826	D2	3717	B4	3875	E2	9847	D1	2826	D3	3717	B2	3875	D4	9849	B3
2827	C2	3720	G1	3876	E2	9848	D1	2827	C4	3720	C4	3876	D4	9850	E2
2828	B3	3725	B5	3877	G1	9849	B3	2828	B3	3725	B1	3877	G4	9852	A4
2829	I3	3726	B5	3878	F2	9850	F3	2829	H2	3726	B1	3878	E4	9853	E4
2830	D2	3800	E4	3879	H3	9852	A2	2830	C4	3800	E2	3879	G3	9854	D4
2831	C4	3801	E4	3880	H3	9853	E1	2831	C2	3801	D2	3880	H3	9855	B3
2832	E3	3802	E4	3881	H2	9854	D1	2832	D3	3802	E2	3881	H3	9856	D2
2833	B4	3803	E4	3882	I2	9855	B3	2833	B2	3803	D2	3882	H4	9857	B2
2834	C3	3804	E4	3883	I3	9856	D4	2834	B2	3804	E2	3883	H3	9858	F2
2835	B4	3805	D4	3884	H3	9857	B4	2835	B2	3805	D2	3884	H3	9859	B1
2836	F3	3806	D4	3885	H3	9858	F4	2836	E3	3806	D2	3885	H2	9860	D2
2837	H3	3807	E4	3886	H4	9859	B4	2837	G2	3807	E2	3886	G2	9861	B3
2838	H2	3808	E4	3887	F2	9860	D4	2838	G4	3808	E1	3887	F4	9862	A1
2839	G2	3809	B3	3888	H1	9861	B3	2839	F3	3809	B3	3888	G4	9863	D1
2840	G2	3810	F4	3889	C2	9862	B5	2840	F3	3810	E2	3889	C4	9864	G4
2841	B3	3811	D2	3890	D1	9863	D5	2841	B2	3811	D3	3890	D4	9865	A4
2842	F3	3812	F4	3891	F4	9864	G2	2842	F3	3812	E2	3891	E1	9866	C1
2843	G3	3813	G5	3893	G4	9865	A1	2843	F2	3813	F1	3893	F2	9867	G4
2844	B4	3816	G5	3894	D3	9866	D5	2844	B2	3816	F1	3894	D3	9868	A1
2845	F2	3817	G4	3895	D3	9867	H1	2845	F3	3817	F2	3895	D3	9869	D1
2846	B4	3818	F4	3896	G2	9868	A5	2846	B2	3818	F1	3896	F4	9870	B1
2847	G3	3819	D2	3897	F4	9869	E5	2847	F3	3819	D4	3897	F2	9871	B1
2849	E5	3820	G5	3898	D5	9870	B5	2849	E1	3820	F1	3898	C1	9874	B2
2850	D2	3821	G5	3899	D5	9871	B5	2850	D3	3821	G1	3899	C1	9875	B1
2851	C1	3822	G4	5801	B5	9874	B4	2851	C4	3822	F2	5801	B1	9876	B1
2852	A2	3823	G4	5802	C5	9875	B4	2852	A4	3823	F2	5802	C1	9881	D4
2853	A3	3824	G5	6871	F1	9876	B5	2853	A3	3824	G1	6871	F4	9882	C2
2854	B4	3825	C4	6872	F1	9881	E1	2854	B2	3825	C2	6872	F4	9883	D4
2856	D2	3826	D4	6873	F1	9882	C4	2856	C4	3826	C2	6873	F4	9884	E4
2857	C1	3827	D2	6874	F2	9883	E1	2857	C4	3827	C2	6874	F4	9887	C4
2858	C1	3828	C1	6875	F1	9884	E1	2858	C4	3828	C4	6875	F4	9888	D1
2859	D2	3830	B4	7800	C2	9887	D1	2859	C3	3830	B2	7806	F3	9889	F2
2860	A3	3831	C1	7801	G4	9888	E5	2860	A2	3831	C4	7807	G3	9890	D1
2861	A4	3832	C2	7806	G3	9889	G4	2861	A2	3832	C4	7808	E3		
2862	A4	3833	C4	7807	H3	9890	D5	2862	A1	3833	C2	7812	E4		
2863	A5	3834	E3	7808	E2			2863	A1	3834	E3	7851	B4		
2864	B3	3837	B3	7812	F2			2864	B3	3837	B2	7871	H3		
2865	C5	3838	B4	7851	B2			2865	C1	3838	B2	7873	F4		
2866	E3	3839	B3	7871	I3			2866	E3	3839	B3	7874	D4		
2867	G5	3840	B4	7873	G1			2867	F1	3840	B3	7875	C1		

10-13

Circuit Diagram Main Board part2

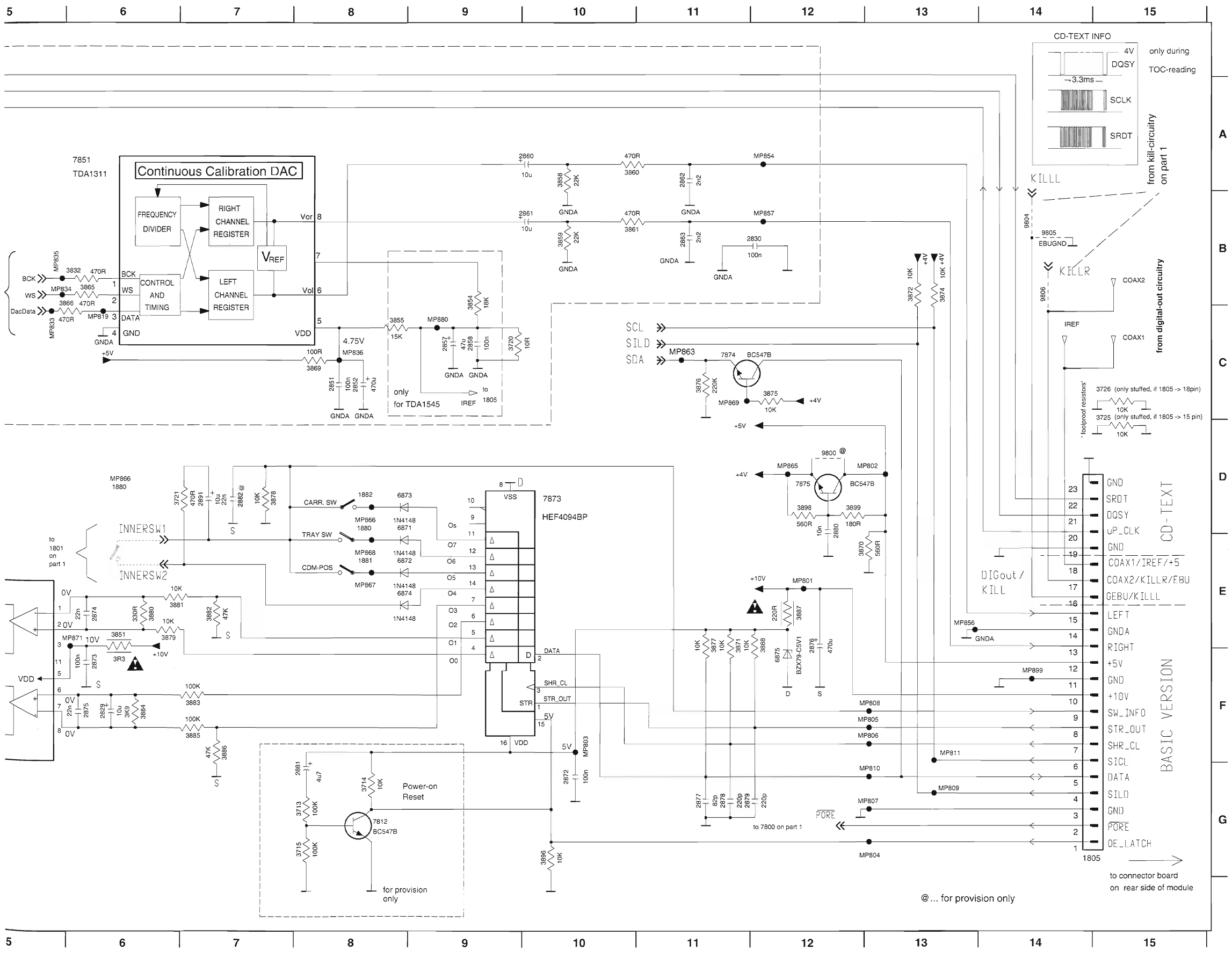
CD-Text circuitry

digital out circuitry

ITEM	OPT_OUT	COAX_OUT
5802	NO	YES
5801	YES	NO
9803	YES	NO
3809	YES	YES
3717	YES	NO
3716	NO	YES
3712	NO	YES
2865	NO	YES
2864	YES	YES
2854	NO	YES

@... for provision only

10-13



1805 G14	3876 C11	MP871 E6
1876 E3	3877 E11	MP880 C9
1878 F3	3878 D7	MP881 A2
1880 D8	3879 E6	MP882 A2
1881 E8	3880 E6	MP883 B2
1882 D8	3881 E6	MP884 B2
2829 F6	3882 E7	MP885 B2
2830 B12	3883 F7	MP886 A4
2851 C8	3884 F6	MP887 B4
2852 C8	3885 F7	MP888 B4
2853 B2	3886 F7	MP889 B4
2854 C2	3887 E12	MP890 C2
2857 C9	3888 E12	MP891 D4
2858 C9	3896 G10	MP892 D4
2860 A10	3898 D12	MP899 F14
2861 B10	3899 D12	
2862 A11	5801 C4	
2863 B11	5802 C3	
2864 D2	6871 D8	
2865 D3	6872 E8	
2870 E4	6873 D8	
2871 F4	6874 E8	
2872 G10	6875 F12	
2873 F6	7812 G8	
2874 E6	7851 A6	
2875 F6	7871 E5	
2876 E12	7873 D10	
2877 G11	7874 C11	
2878 G11	7875 D12	
2879 G11	7876 A2	
2880 D12	9800 D12	
2881 G8	9803 C3	
2882 D7	9804 B14	
3700 B2	9805 B14	
3701 B2	9806 B14	
3702 B2	9808 A10	
3703 A2	9809 A10	
3704 A2	9810 B10	
3705 A2	9811 B10	
3706 A4	9812 A2	
3707 B4	MP801 E12	
3708 B4	MP802 D13	
3711 A4	MP803 F10	
3712 C3	MP804 G13	
3713 G8	MP805 F13	
3714 G8	MP806 F13	
3715 G8	MP807 G13	
3716 D2	MP808 F13	
3717 C2	MP809 G13	
3720 C9	MP810 G13	
3725 D15	MP811 F13	
3726 C15	MP819 C6	
3809 C2	MP822 E4	
3832 B6	MP823 E4	
3851 E6	MP824 F4	
3854 B9	MP825 F4	
3855 C8	MP833 C5	
3858 A10	MP834 B5	
3859 B10	MP835 B5	
3860 A10	MP836 C8	
3861 B10	MP854 A12	
3865 B6	MP856 E13	
3866 C6	MP857 B12	
3869 C8	MP863 C11	
3870 E12	MP865 D12	
3871 E11	MP866 D8	
3872 B13	MP867 E8	
3874 B13	MP868 E8	
3875 C12	MP869 C11	

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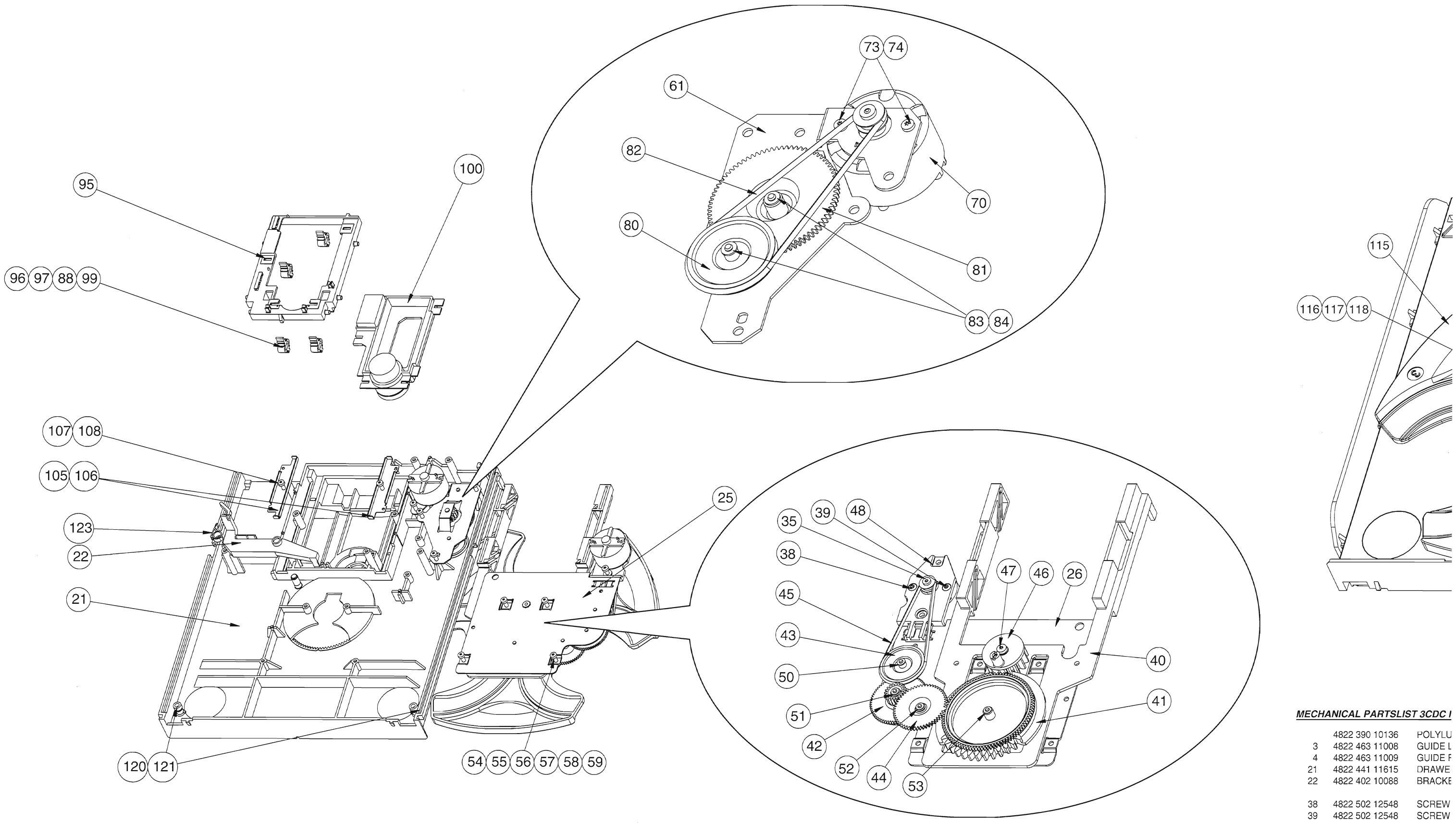
EXPLODED VIEW (3CDC MODULE)



MECHANICAL PARTSLIST 3CDC I

	4822 390 10136	POLYLU
3	4822 463 11008	GUIDE L
4	4822 463 11009	GUIDE F
21	4822 441 11615	DRAWE
22	4822 402 10088	BRACKE
38	4822 502 12548	SCREW
39	4822 502 12548	SCREW
40	4822 463 11011	SLIDE
41	4822 522 10509	CONTR(
42	4822 522 10492	GEAR W

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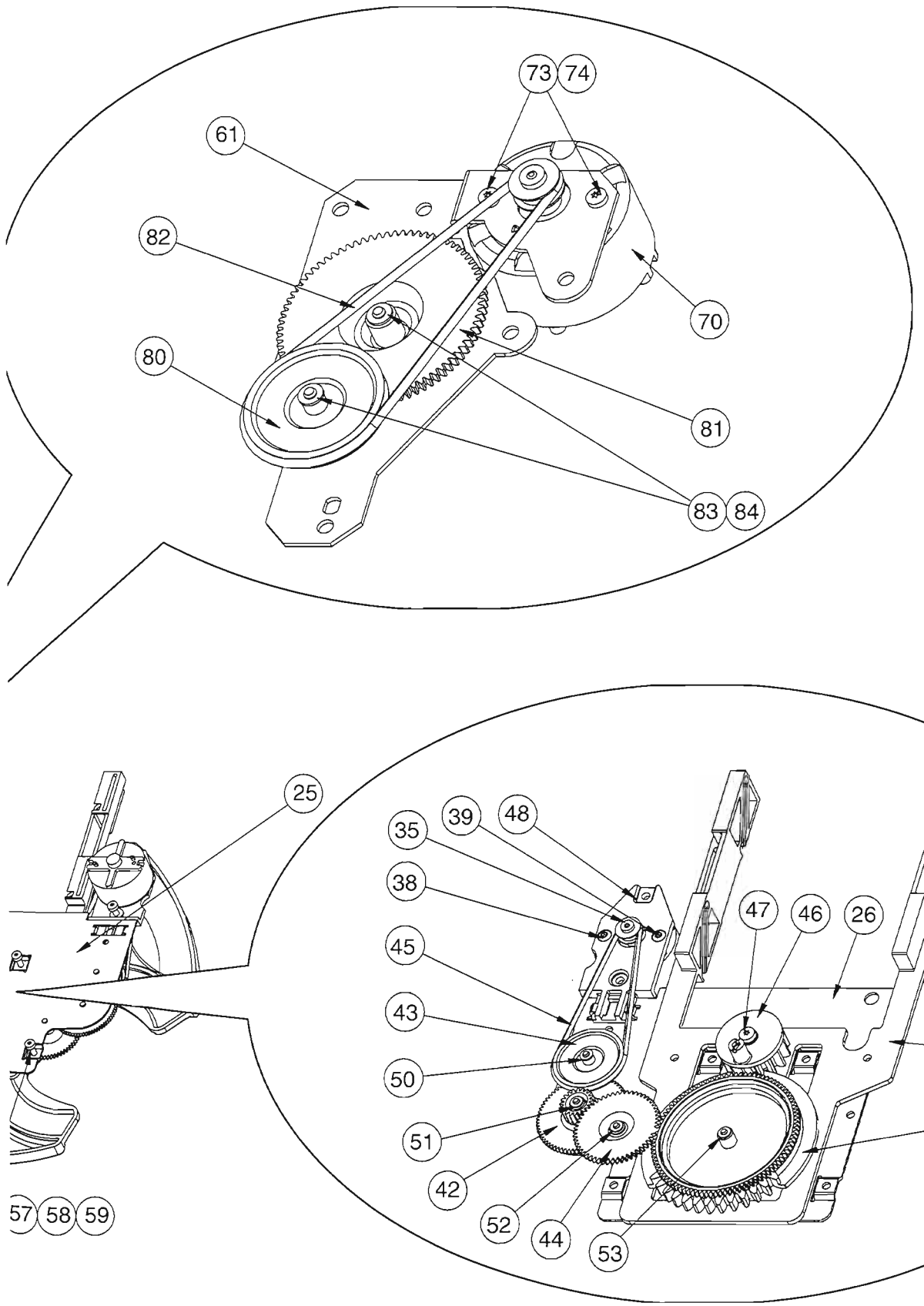
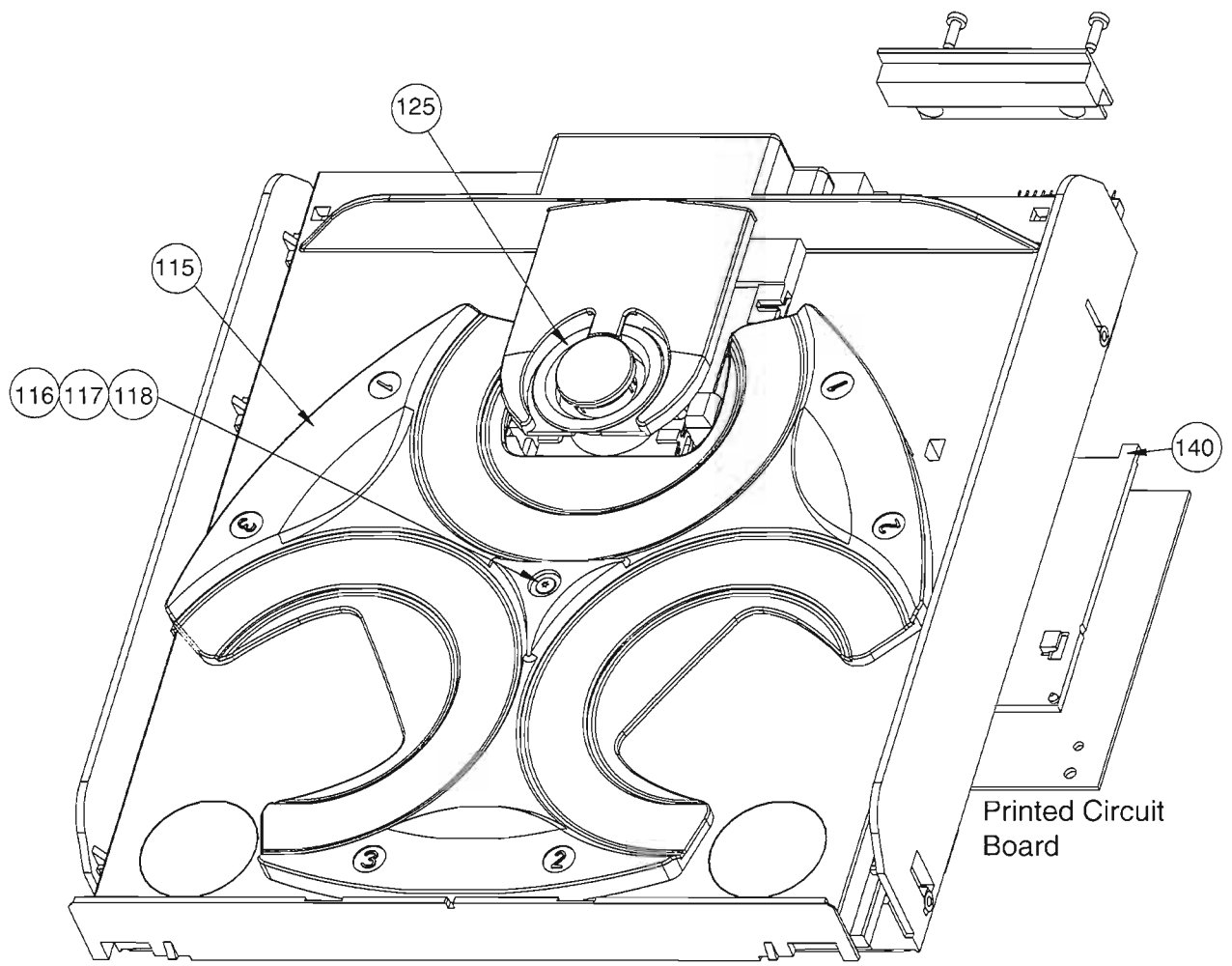
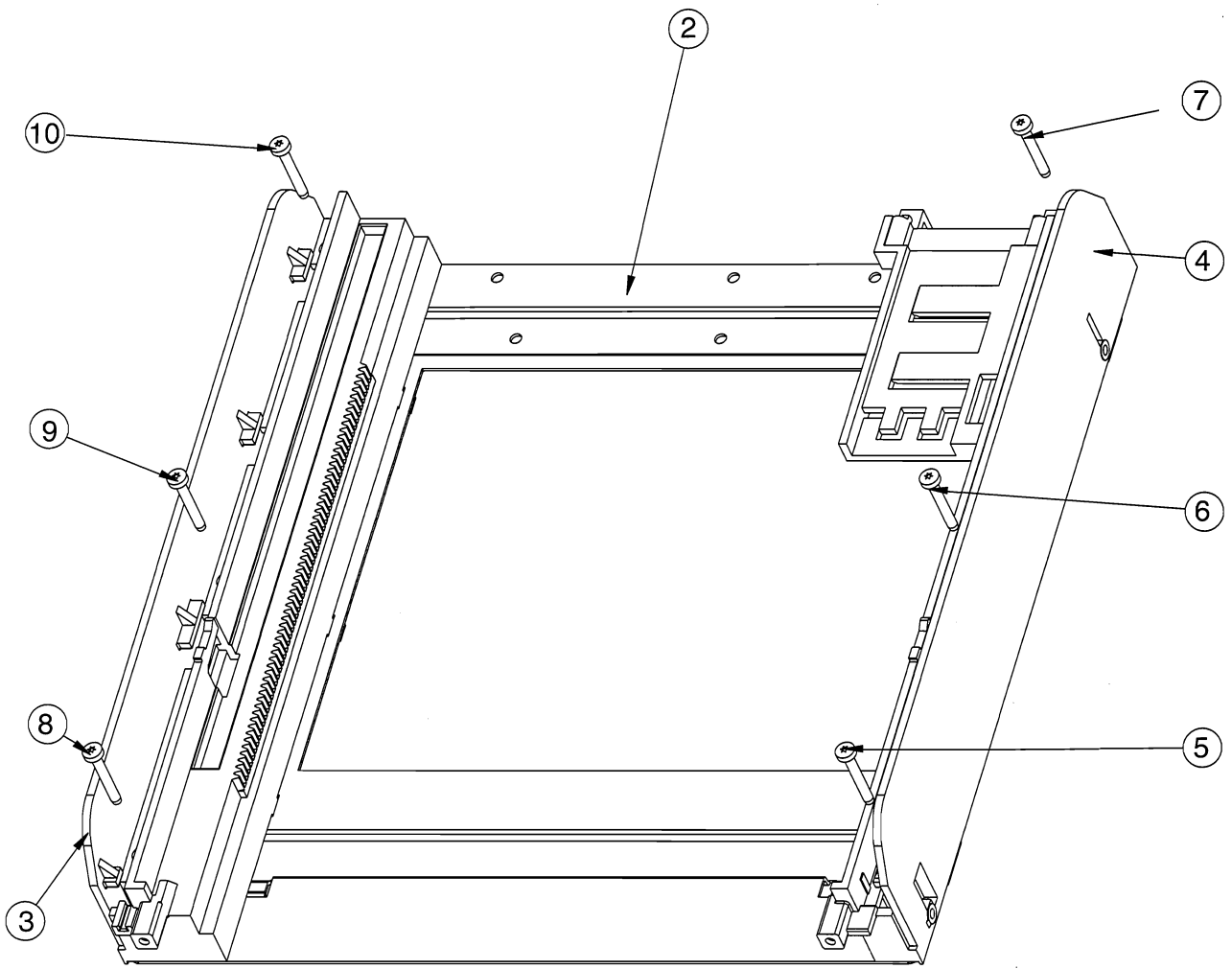




MECHANICAL PARTSLIST 3CDC MODULE

	4822 390 10136	POLYLUB GLY801 (GREASE)	43	4822 528 10937	PULLEY
3	4822 463 11008	GUIDE LEFT	44	4822 522 10493	IDLER WHEEL
4	4822 463 11009	GUIDE RIGHT	45	4822 358 10115	BELT
21	4822 441 11615	DRAWER	46	4822 466 10735	ECCENTRIC GEAR WHEEL
22	4822 402 10088	BRACKET TUMBLER	50	4822 532 12364	WASHER
38	4822 502 12548	SCREW M2,6X3,5	51	4822 532 12364	WASHER
39	4822 502 12548	SCREW M2,6X3,5	52	4822 532 12364	WASHER
40	4822 463 11011	SLIDE	53	4822 532 12364	WASHER
41	4822 522 10509	CONTROL DISC	35	4822 361 10753	CARROUSEL MOTOR
42	4822 522 10492	GEAR WHEEL	70	4822 361 10753	CARROUSEL MOTOR



MECHANICAL PARTSLIST 3CDC MODULE

73	4822 502 12548	SCREW M2,6X3,5
74	4822 502 12548	SCREW M2,6X3,5
80	4822 528 10937	PULLEY
81	4822 522 10494	GEAR DRAWER
82	4822 358 10115	BELT
83	4822 532 12364	WASHER
84	4822 532 12364	WASHER
95	4822 404 10894	SUPPORT
96	4822 325 50215	SUSPENSION
97	4822 325 50215	SUSPENSION
98	4822 325 50215	SUSPENSION
99	4822 325 50215	SUSPENSION
100	4822 691 10615	CD DRIVE VAM1201
115	4822 466 10736	CARROUSEL
117	4822 532 12365	BUSH DRAWER
120	4822 532 51756	GROMMET
121	4822 532 51756	GROMMET
123	4822 402 10085	SWITCH BRACKET
125	4822 401 11708	DISC CLAMP
140	4822 466 10734	PLATE

ELECTRICAL PARTSLIST 3CDC MODULE

MISCELLANEOUS

1800	4822 267 51453	Flex Foil connector 12pin
1805	4822 265 10979	Flex Foil connector 15pin
1805	4822 265 11182	Flex Foil connector 23pin
1805	4822 265 11184	Flex Foil connector 18pin
1806	4822 265 10981	Flex Foil connector 15pin
1806	4822 267 10757	Flex Foil connector 23pin top entry
1806	4822 265 11185	Flex Foil connector 18pin top entry
1860	4822 265 11183	Flex Foil connector 4pin side entry
1880	4822 276 13503	Switch
1881	4822 276 13503	Switch
1882	4822 276 13503	Switch
8002	4822 320 11974	Flex Foil 15pin length= 190mm
8002	4822 320 12229	Flex Foil 18pin length= 190mm
8002	4822 320 12231	Flex Foil 23pin length= 190mm
8002	4822 320 12232	Flex Foil 15pin length= 480mm

CAPACITORS

2800	4822 126 10053	180pF	10%	50V
2801	4822 122 10466	220pF	10%	50V
2802	4822 126 10053	180pF	10%	50V
2803	4822 122 10466	220pF	10%	50V
2804	4822 126 12787	330pF	10%	50V
2805	4822 122 10466	220pF	10%	50V
2806	4822 122 10466	220pF	10%	50V
2807	4822 126 12878	1,5nF	10%	16V
2808	4822 122 10466	220pF	10%	50V
2809	4822 126 12882	100nF	20%	50V
2810	4822 122 10459	560pF	10%	50V
2811	4822 122 10466	220pF	10%	50V
2812	4822 122 10319	82pF	5%	50V
2813	4822 122 10319	82pF	5%	50V
2814	4822 122 33849	150pF	10%	50V
2815	4822 122 33192	27pF	5%	50V
2817	4822 122 33849	150pF	10%	50V
2819	4822 122 33848	47pF	5%	50V
2820	4822 122 33848	47pF	5%	50V
2821	4822 122 10462	15pF	5%	50V
2822	4822 126 12339	2,2nF	10%	16V
2823	4822 122 33848	47pF	5%	50V
2824	4822 126 11585	22nF	20%	50V
2825	4822 126 12882	100nF	20%	50V
2826	4822 124 23624	470µF	20%	16V
2827	4822 126 12882	100nF	20%	50V
2828	4822 126 12882	100nF	20%	50V
2829	4822 124 41579	10µF	20%	50V
2830	4822 126 12882	100nF	20%	50V
2831	4822 124 12032	4,7µF	20%	50V
2832	4822 124 12032	4,7µF	20%	50V
2833	4822 122 33191	22pF	5%	50V
2834	4822 122 33191	22pF	5%	50V
2835	4822 126 12882	100nF	20%	50V
2837	4822 126 12882	100nF	20%	50V
2838	4822 126 12882	100nF	20%	50V
2839	4822 126 12882	100nF	20%	50V
2840	4822 126 12882	100nF	20%	50V
2841	4822 122 10574	1,2nF	10%	16V
2842	4822 121 51387	10nF	20%	16V
2843	4822 126 12882	100nF	20%	50V
2844	4822 122 10574	1,2nF	10%	16V
2845	4822 121 51387	10nF	20%	16V
2846	4822 126 11585	22nF	20%	50V
2847	4822 126 12882	100nF	20%	50V

CAPACITORS

2849	4822 126 11585	22nF	20%	50V
2850	4822 122 33197	1nF	10%	50V
2851	4822 126 12882	100nF	20%	50V
2852	4822 124 80857	470µF	20%	16V
2853	4822 126 12882	100nF	20%	50V
2856	4822 122 33848	47pF	5%	50V
2859	4822 126 12882	100nF	20%	50V
2860	4822 124 41579	10µF	20%	50V
2861	4822 124 41579	10µF	20%	50V
2862	4822 126 12339	2,2nF	10%	16V
2863	4822 126 12339	2,2nF	10%	16V
2864	4822 122 33848	47pF	5%	50V
2866	4822 126 12882	100nF	20%	50V
2867	4822 122 33848	47pF	5%	50V
2868	4822 126 12882	100nF	20%	50V
2869	4822 126 12882	100nF	20%	50V
2870	4822 126 12882	100nF	20%	50V
2871	4822 126 11585	22nF	20%	50V
2872	4822 126 12882	100nF	20%	50V
2873	4822 126 12882	100nF	20%	50V
2874	4822 126 11585	22nF	20%	50V
2875	4822 126 11585	22nF	20%	50V
2876	4822 124 80857	470µF	20%	16V
2877	4822 122 10319	82pF	5%	50V
2878	4822 122 10466	220pF	10%	50V
2879	4822 122 10466	220pF	10%	50V
2880	4822 121 51387	10nF	20%	16V
2884	4822 126 12882	100nF	20%	50V
2887	4822 126 12882	100nF	20%	50V
2890	4822 124 23624	470µF	20%	16V
2891	4822 124 12125	10µF	20%	16V

RESISTORS

3700	4822 116 83883	470Ω	5%	0,16W
3701	4822 116 83883	470Ω	5%	0,16W
3702	4822 116 83883	470Ω	5%	0,16W
3703	4822 116 83883	470Ω	5%	0,16W
3704	4822 116 83883	470Ω	5%	0,16W
3705	4822 116 52195	47Ω	5%	0,5W
3706	4822 116 83883	470Ω	5%	0,16W
3707	4822 116 83883	470Ω	5%	0,16W
3708	4822 116 83883	470Ω	5%	0,16W
3710	4822 116 83864	10kΩ	5%	0,5W
3711	4822 116 83864	10kΩ	5%	0,5W
3717	4822 116 80176	1Ω	5%	0,5W
3720	4822 116 52176	10Ω	5%	0,5W
3721	4822 116 83883	470Ω	5%	0,16W
3725	4822 116 83864	10kΩ	5%	0,5W
3726	4822 116 83864	10kΩ	5%	0,5W
3800	4822 116 52239	120kΩ	5%	0,5W
3801	4822 116 83864	10kΩ	5%	0,5W
3802	4822 116 52239	120kΩ	5%	0,5W
3803	4822 116 83864	10kΩ	5%	0,5W
3804	4822 116 52291	56kΩ	5%	0,5W
3805	4822 116 83864	10kΩ	5%	0,5W
3806	4822 116 83864	10kΩ	5%	0,5W
3807	4822 116 83864	10kΩ	5%	0,5W
3808	4822 116 83864	10kΩ	5%	0,5W
3809	4822 116 52175	100Ω	5%	0,5W
3810	4822 050 11002	1kΩ	5%	0,2W
3812	4822 116 83884	47kΩ	5%	0,16W
3813	4822 116 83864	10kΩ	5%	0,5W
3816	4822 116 52269	3,3kΩ	5%	0,5W

ELECTRICAL PARTSLIST 3CDC MODULE

RESISTORS

3817	4822 116 83961	6,8kΩ	5%	0,16W
3818	4822 116 83864	10kΩ	5%	0,5W
3819	4822 116 83883	470Ω	5%	0,16W
3820	4822 116 52269	3,3kΩ	5%	0,5W
3821	4822 116 52269	3,3kΩ	5%	0,5W
3822	4822 116 52257	22kΩ	5%	0,5W
3823	4822 116 52269	3,3kΩ	5%	0,5W
3824	4822 116 52269	3,3kΩ	5%	0,5W
3825	4822 050 11002	1kΩ	5%	0,2W
3826	4822 116 52257	22kΩ	5%	0,5W
3827	4822 116 52278	390kΩ	5%	0,5W
3828	4822 116 52257	22kΩ	5%	0,5W
3830	4822 116 52235	1MΩ	5%	0,5W
3831	4822 116 52257	22kΩ	5%	0,5W
3832	4822 116 83883	470Ω	5%	0,16W
3833	4822 116 83864	10kΩ	5%	0,5W
3834	4822 116 52283	4,7kΩ	5%	0,5W
3837	4822 050 11002	1kΩ	5%	0,2W
3838	4822 050 11002	1kΩ	5%	0,2W
3839	4822 116 52245	150kΩ	5%	0,16W
3840	4822 116 52245	150kΩ	5%	0,16W
3841	4822 116 83961	6,8kΩ	5%	0,16W
3842	4822 116 83864	10kΩ	5%	0,5W
3843	4822 116 52303	8,2kΩ	5%	0,5W
3844	4822 116 52226	560Ω	5%	0,5W
3844	4822 116 83883	470Ω	5%	0,16W
3845	4822 116 83864	10kΩ	5%	0,5W
3846	4822 116 52303	8,2kΩ	5%	0,5W
3847	4822 116 52228	680Ω	5%	0,5W
3847	4822 116 83883	470Ω	5%	0,16W
3848	4822 116 52303	8,2kΩ	5%	0,5W
3849	4822 116 52303	8,2kΩ	5%	0,5W
3850	4822 116 83883	470Ω	5%	0,16W
3851	4822 052 10338	3,3Ω		NFR25
3852	4822 052 10338	3,3Ω		NFR25
3853	4822 052 10338	3,3Ω		NFR25
3856	4822 116 52219	330Ω	5%	0,5W
3856	4822 116 80176	1Ω	5%	0,5W
3857	4822 050 11002	1kΩ	5%	0,2W
3858	4822 116 52257	22kΩ	5%	0,5W
3859	4822 116 52257	22kΩ	5%	0,5W
3860	4822 116 83883	470Ω	5%	0,16W
3861	4822 116 83883	470Ω	5%	0,16W
3862	4822 116 52175	100Ω	5%	0,5W
3863	4822 116 52175	100Ω	5%	0,5W
3864	4822 116 52175	100Ω	5%	0,5W
3865	4822 116 83883	470Ω	5%	0,16W
3866	4822 116 83883	470Ω	5%	0,16W
3867	4822 116 52234	100kΩ	5%	0,5W
3868	4822 116 52191	33Ω	5%	0,5W
3869	4822 116 52175	100Ω	5%	0,5W
3870	4822 116 52226	560Ω	5%	0,5W
3871	4822 116 83864	10kΩ	5%	0,5W
3872	4822 116 83864	10kΩ	5%	0,5W
3873	4822 116 83883	470Ω	5%	0,16W
3874	4822 116 83864	10kΩ	5%	0,5W
3875	4822 116 83864	10kΩ	5%	0,5W
3876	4822 116 83874	220kΩ	5%	0,5W
3877	4822 116 83864	10kΩ	5%	0,5W
3878	4822 116 83864	10kΩ	5%	0,5W

RESISTORS

3879	4822 116 83864	10kΩ	5%	0,5W
3880	4822 116 52219	330Ω	5%	0,5W
3881	4822 116 83864	10kΩ	5%	0,5W
3882	4822 116 83884	47kΩ	5%	0,16W
3883	4822 116 52234	100kΩ	5%	0,5W
3884	4822 116 52276	3,9kΩ	5%	0,5W
3885	4822 116 52234	100kΩ	5%	0,5W
3886	4822 116 83884	47kΩ	5%	0,16W
3887	4822 052 10221	220Ω	5%	
3888	4822 116 83864	10kΩ	5%	0,5W
3889	4822 116 83883	470Ω	5%	0,16W
3890	4822 116 83883	470Ω	5%	0,16W
3891	4822 116 52272	330kΩ	5%	0,5W
3893	4822 116 52257	22kΩ	5%	0,5W
3894	4822 116 52191	33Ω	5%	0,5W
3895	4822 116 52176	10Ω	5%	0,5W
3896	4822 116 83864	10kΩ	5%	0,5W
3897	4822 116 52226	560Ω	5%	0,5W
3898	4822 116 52226	560Ω	5%	0,5W
3899	4822 116 52213	180Ω	5%	0,5W

COILS

1810	4822 242 10849	CRYSTAL 8MHz
1810	4822 242 73557	CERAMIC RES. 8,46MHz
5801	4822 157 11477	2,2µH

DIODES

6871	4822 130 30621	1N4148
6872	4822 130 30621	1N4148
6873	4822 130 30621	1N4148
6874	4822 130 30621	1N4148
6875	4822 130 34233	BZX79-B5V1

TRANSISTORS

7808	4822 130 41344	BC337-40
7874	4822 130 40959	BC547B
7875	4822 130 40959	BC547B

INTEGRATED CIRCUITS

7800©	4822 209 12752	SAA7378GP (Signal Processor CD7)
7801©	5322 209 11517	PC74HCU04T (HF Amplifier)
7806	4822 209 32852	TDA7073A/N2 (Servo Driver)
7807	4822 209 32852	TDA7073A/N2 (Motor Driver)
7810	4822 130 10845	OPTICAL OUT UNIT
7851	4822 209 32421	TDA1311A/N2(DAC)
7871	4822 209 32852	TDA7073A/N2 (Motor Driver)
7873	5322 209 10421	HEF4094BP (Shift Register)
7876	4822 209 16143	LC89170M (CD Text)

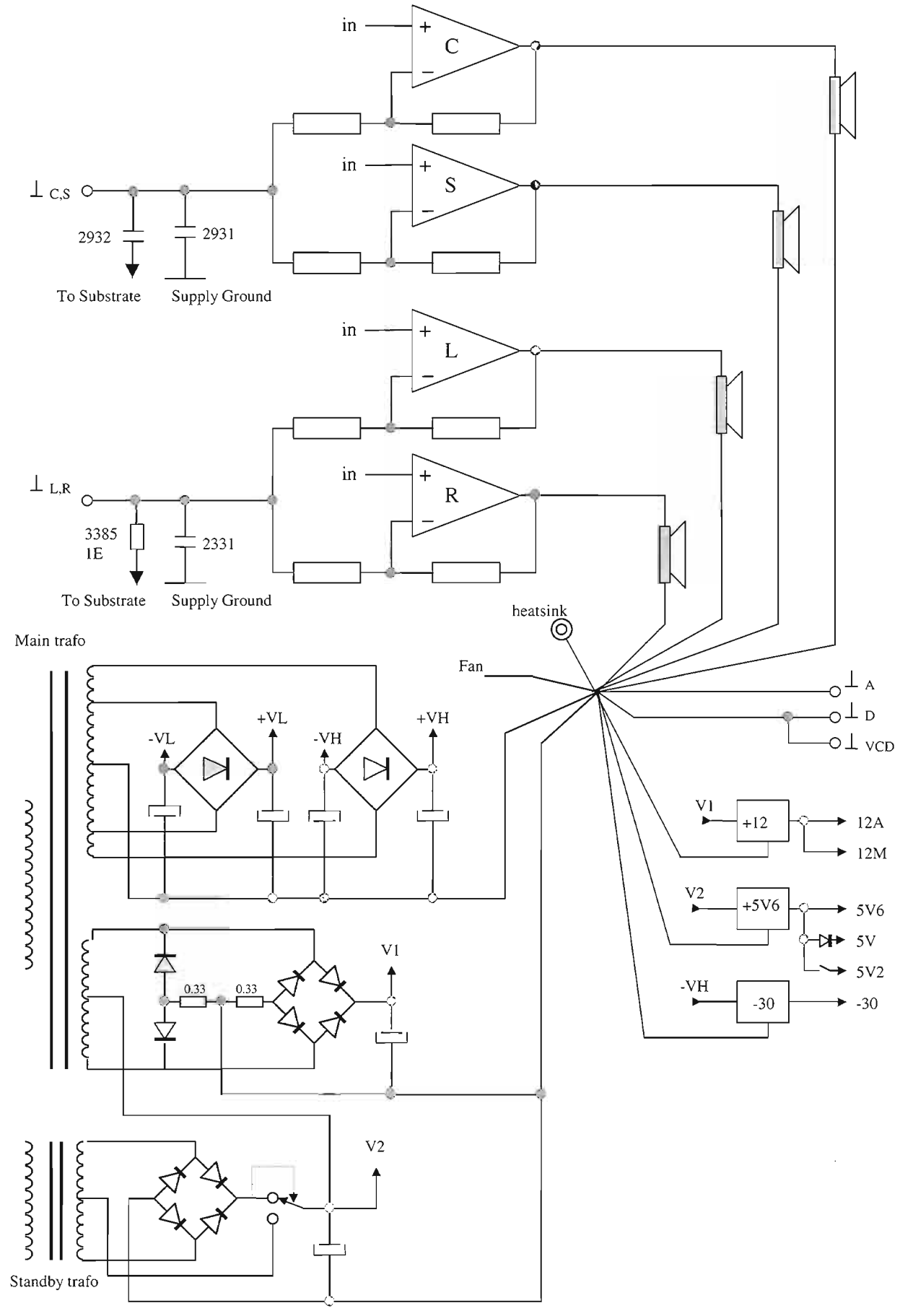
POWER 5 MODULE

(4-Channel version)

TABLE OF CONTENTS

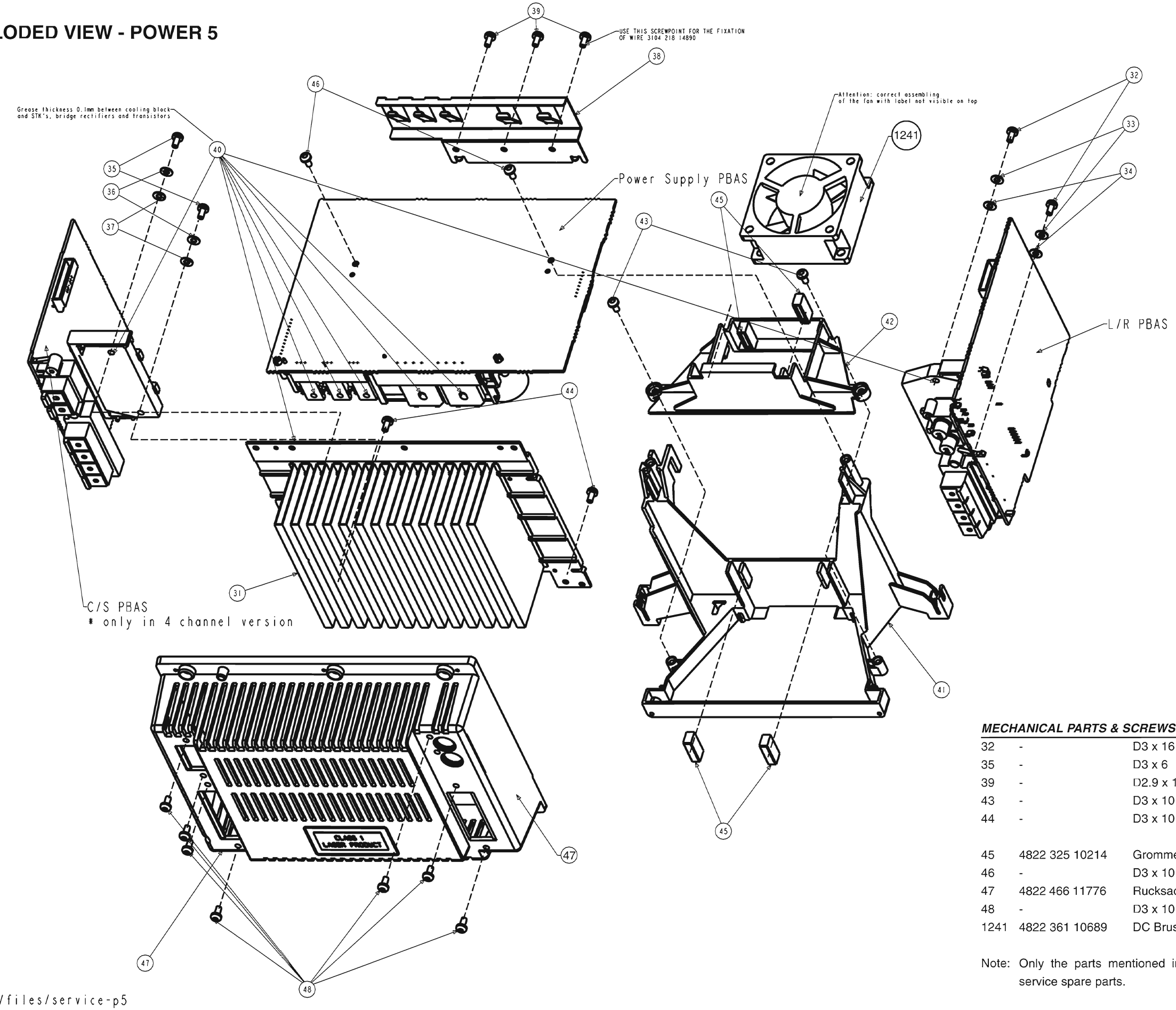
11-1

GROUND PLAN MASSA



11-2

EXPLODED VIEW - POWER 5



power5/files/service-p5

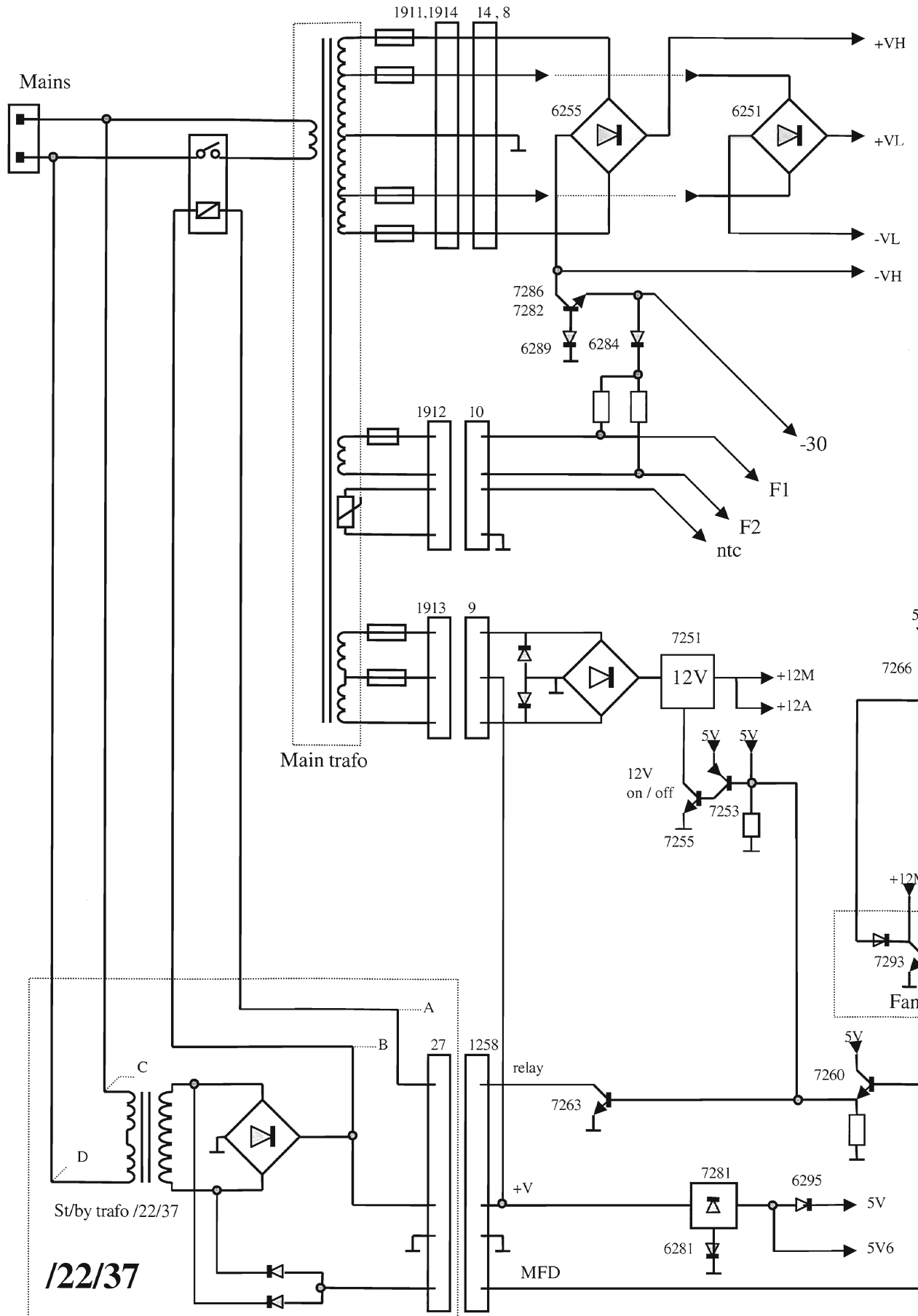
PCS 100 043

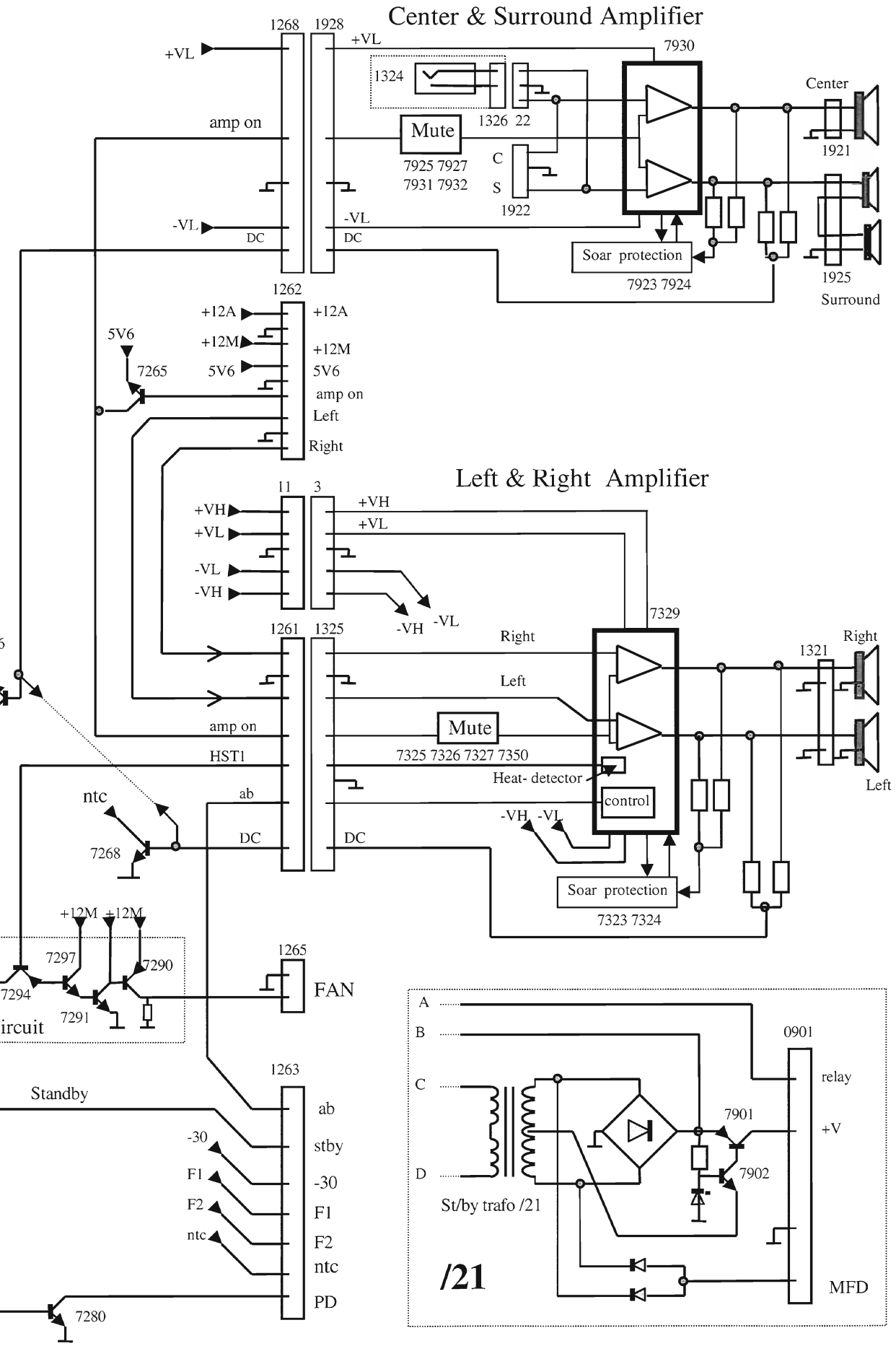
MECHANICAL PARTS & SCREWS LIST

32	-	D3 x 16
35	-	D3 x 6
39	-	D2.9 x 13
43	-	D3 x 10
44	-	D3 x 10
45	4822 325 10214	Grommet
46	-	D3 x 10
47	4822 466 11776	Rucksack P5
48	-	D3 x 10
1241	4822 361 10689	DC Brushless Fan

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

Blockdiagram powermodule





WIRING

Mains Boar

Mains in

1910

*190

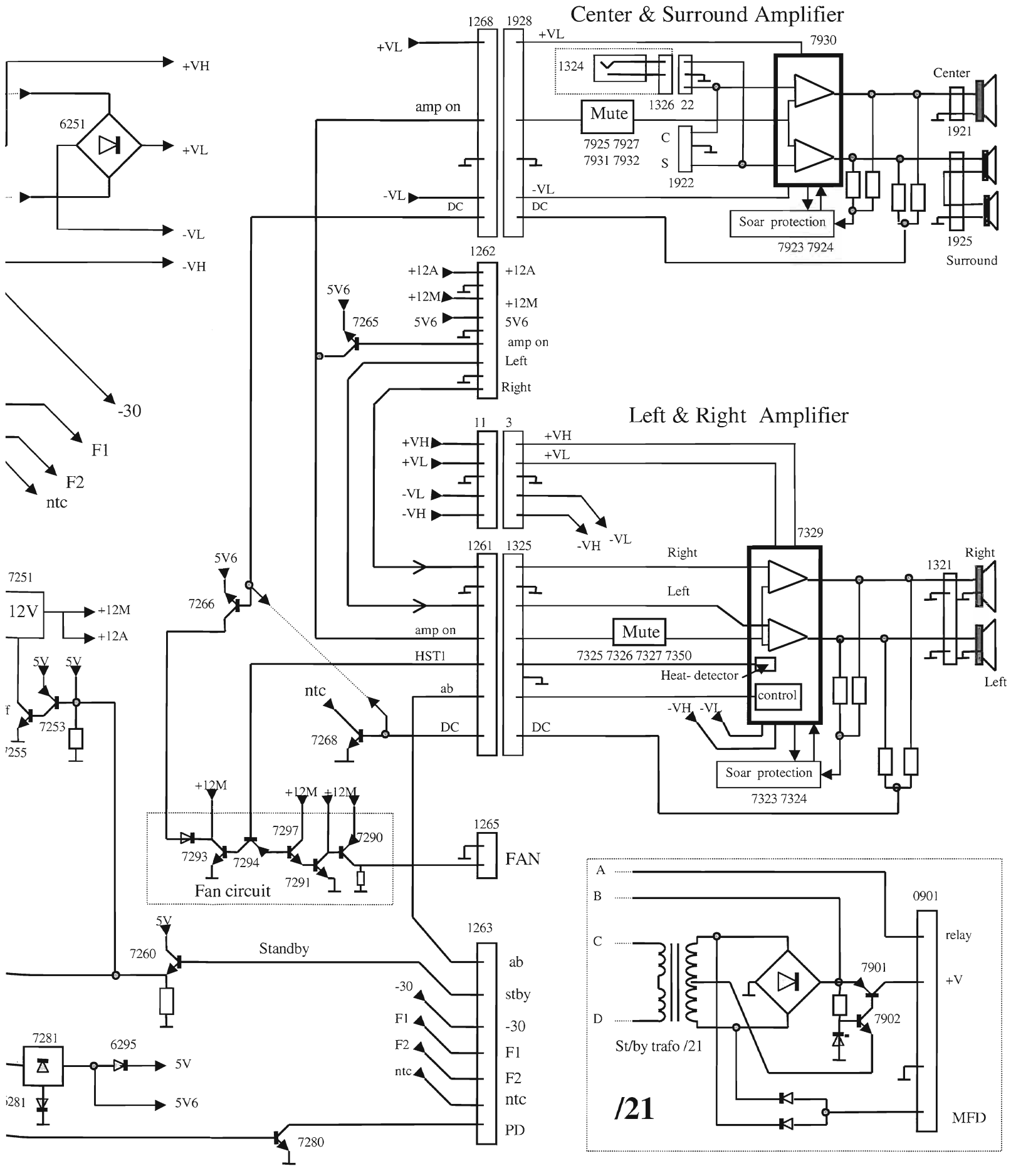
27

ab : disable
HST : heat
MFD : mai

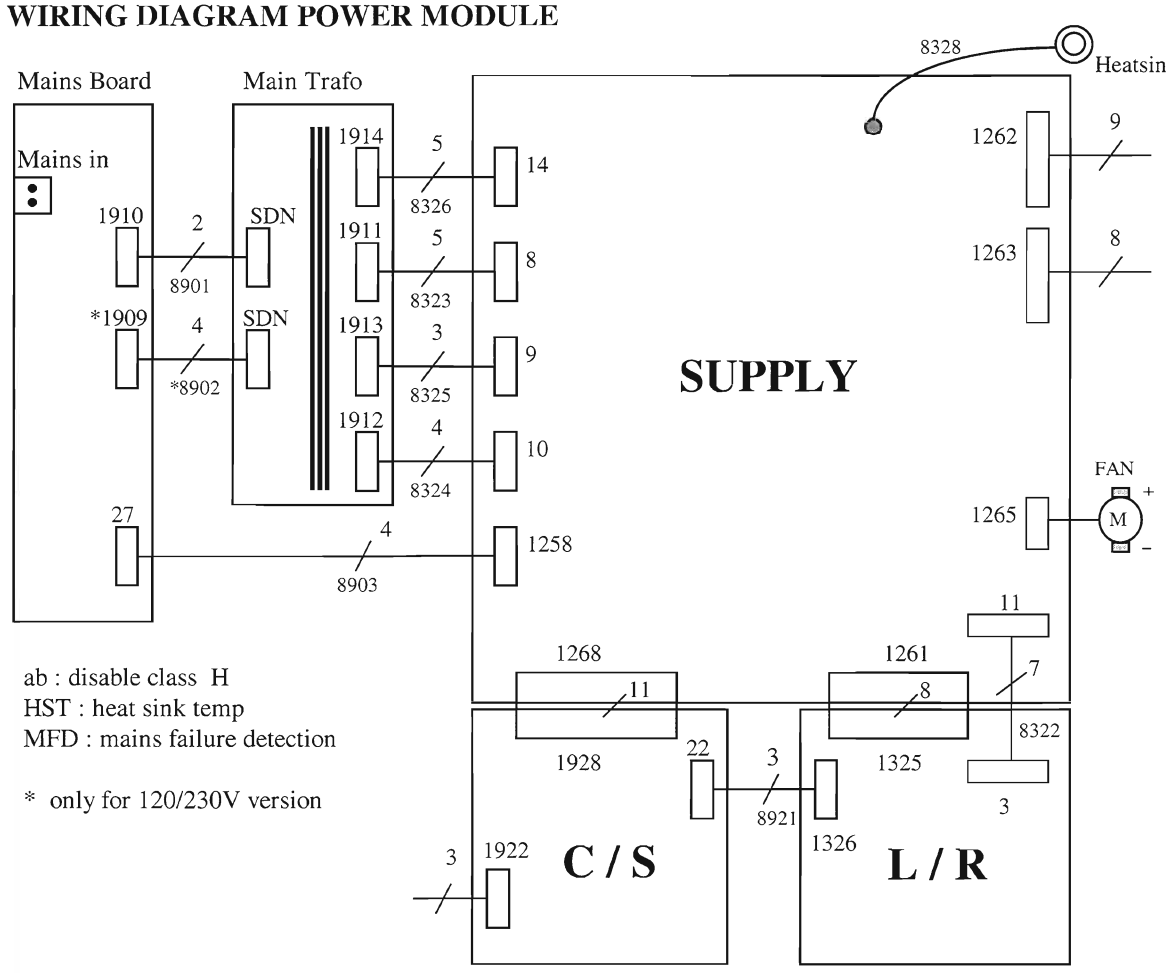
* only for

Informa
1268 to 19
1: NC 2: NC 3: AMP O 4: DC 5: +VL 6: +VL 7: GNDC 8: GND 9: GNDS 10: -VL 11: -VL

1265
1 : + 2: -



WIRING DIAGRAM POWER MODULE



ab : disable class H
HST : heat sink temp
MFD : mains failure detection

* only for 120/230V version

Information indicator on connectors:

1268 to 1928	1262	1263	1261 to 1325
1: NC 2: NC 3: AMP OFF 4: DC 5: +VL 6: +VL 7: GNDC 8: GND 9: GNDS 10: -VL 11: -VL	1: +5.6V 2: GNDD 3: +12M 4: GNDA 5: +12A 6: AMP ON 7: Rin 8: GND 9: Lin	1: ab 2: PD 3: -30 4: F2 5: F1 6: ST.BY 7: CLIP 8: NTC	1: ab 2: DC 3: AMP OFF 4: L 5: GND 6: R 7: HST1 8: NC

11 to 3	1264	1911 to 8	1914 to 14	1912 to 10	1909
1: + VH 2: + VL 3: GNDL 4: GND 5: GNDR 6: - VL 7: - VH	1: 5.2V 2: 5V 3: GND 4: GND 5: +12M 6: VCD	1: AC2 2: AC1 3: GND 4: AC1' 5: AC2'	1: AC2 2: AC1 3: GND 4: AC1' 5: AC2'	1: F1 2: F2 3: NTC 4: GND	1: 0VA 2: 120VB 3: 10VB 4: 0VB

1265	1910	1922	1326 to 22	1913 to 9	1258 to 27
1 : + 2: -	1 : ACA 2: FUSE	1: Surround 2: GND 3: Center	1: Surround 2: GND 3: Center	1: AC3 2: AC4 3: AC5	1: REL 2: MFD 3: +V 4: GND

11-4

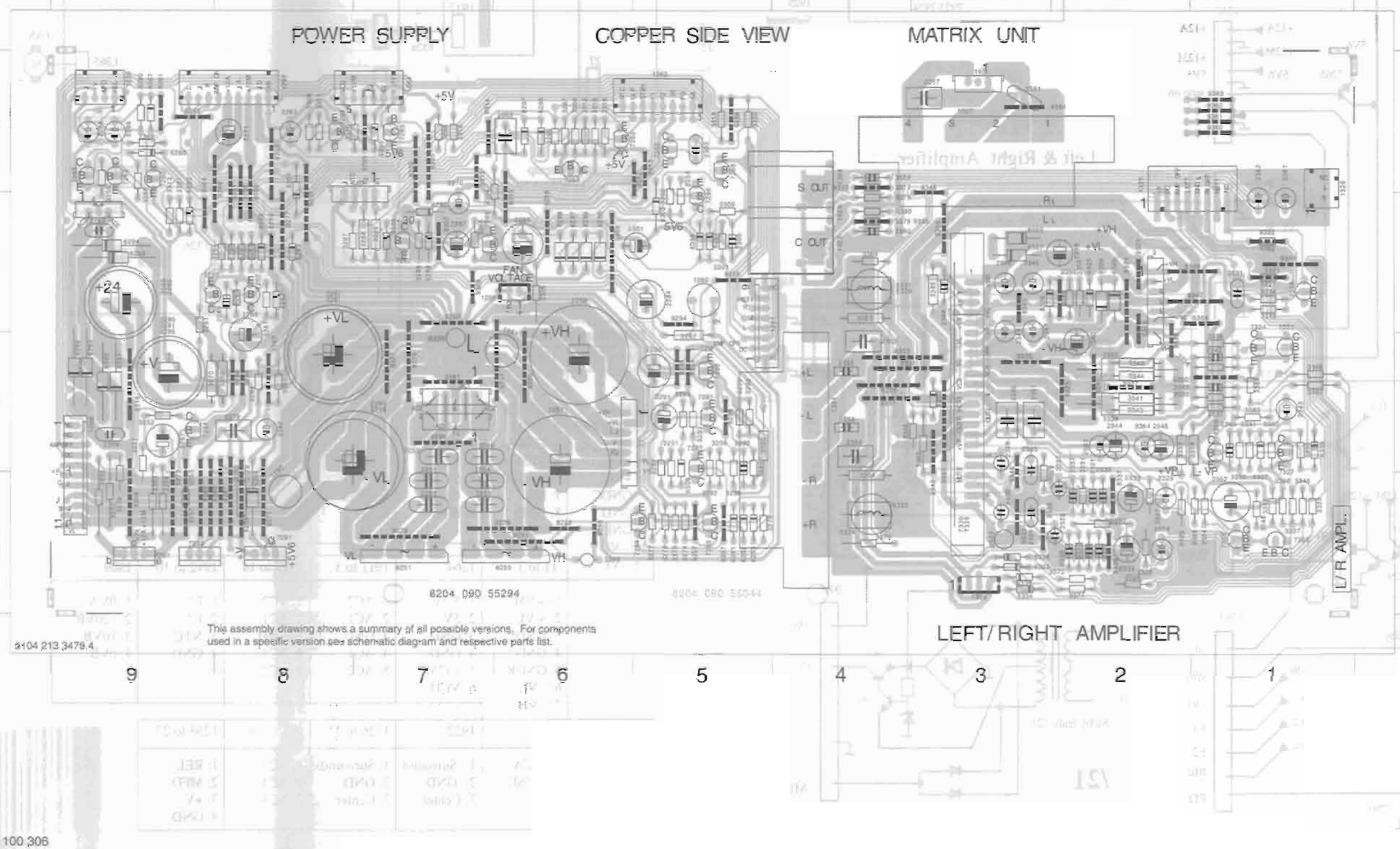
PS & L/R AMP. BOARD LAYOUT

MAINS BOARD LAY

POWER SUPPLY

COPPER SIDE VIEW

MATRIX UNIT



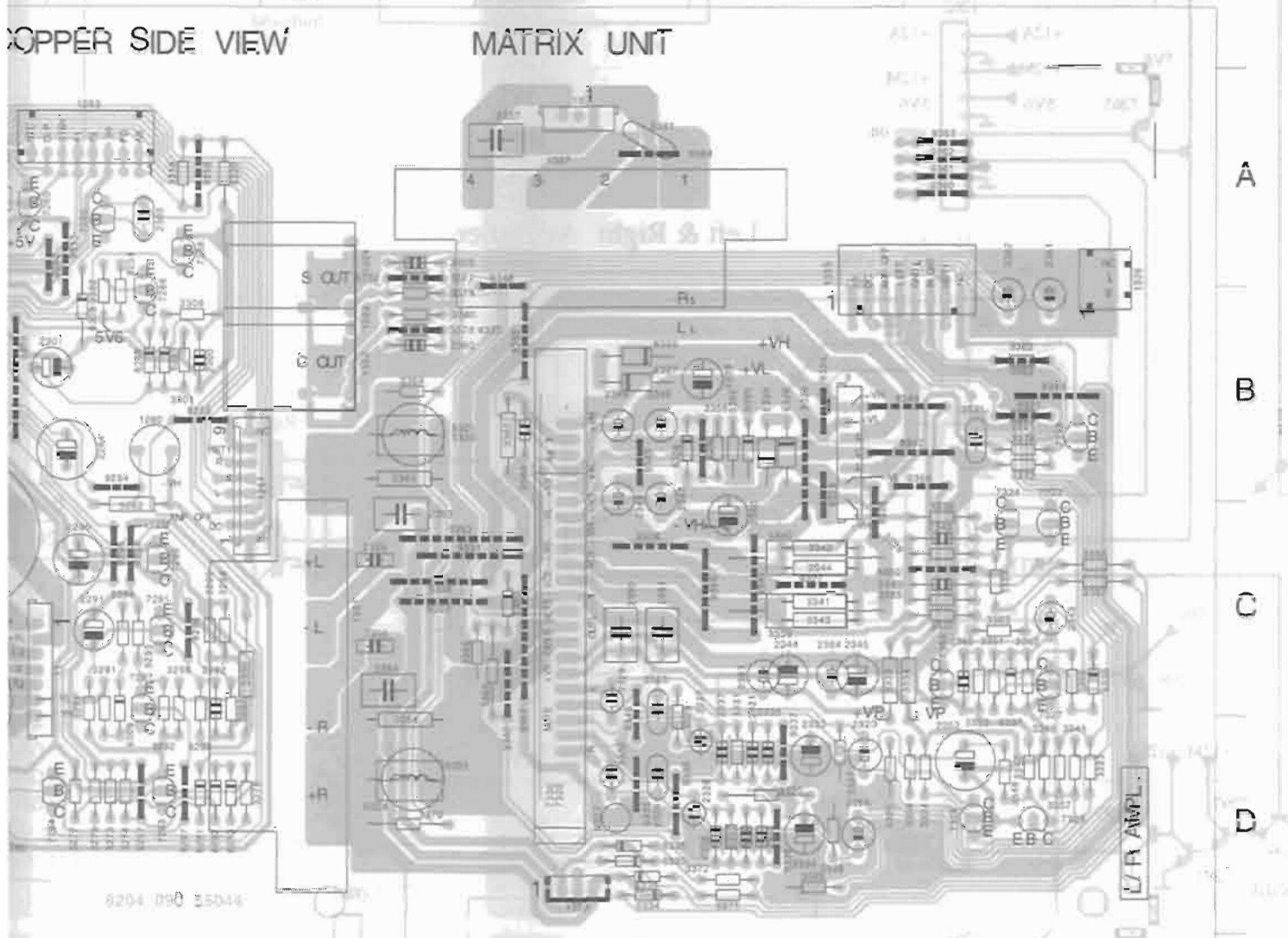
This assembly drawing shows a summary of all possible versions. For components used in a spesific version see schematic diagram and respective parts list.

3104 213 3479.4

LEFT/ RIGHT AMPLIFIER

COPPER SIDE VIEW

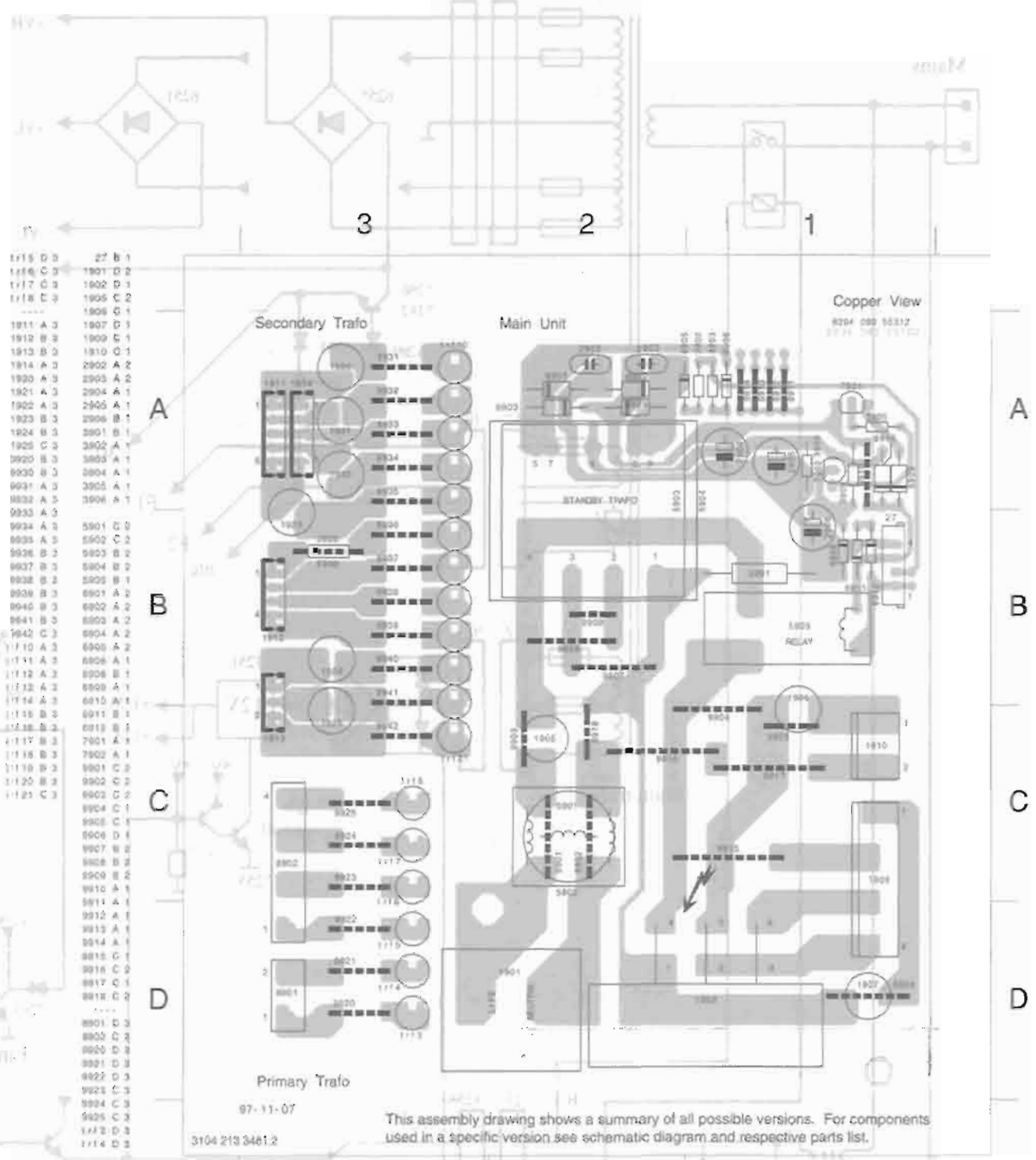
MATRIX UNIT



LEFT/RIGHT AMPLIFIER

5 4 3 2 1

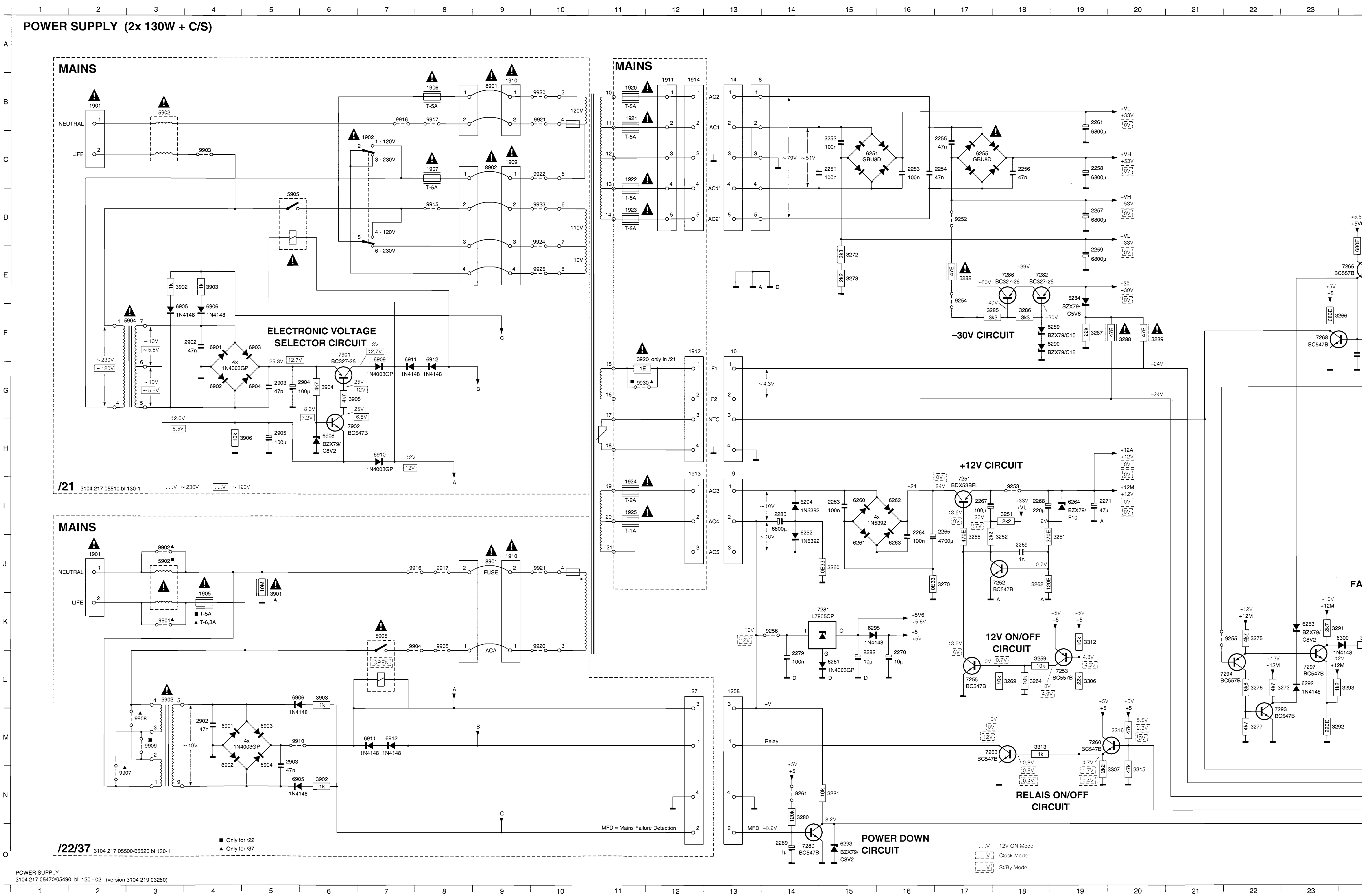
MAINS BOARD LAYOUT



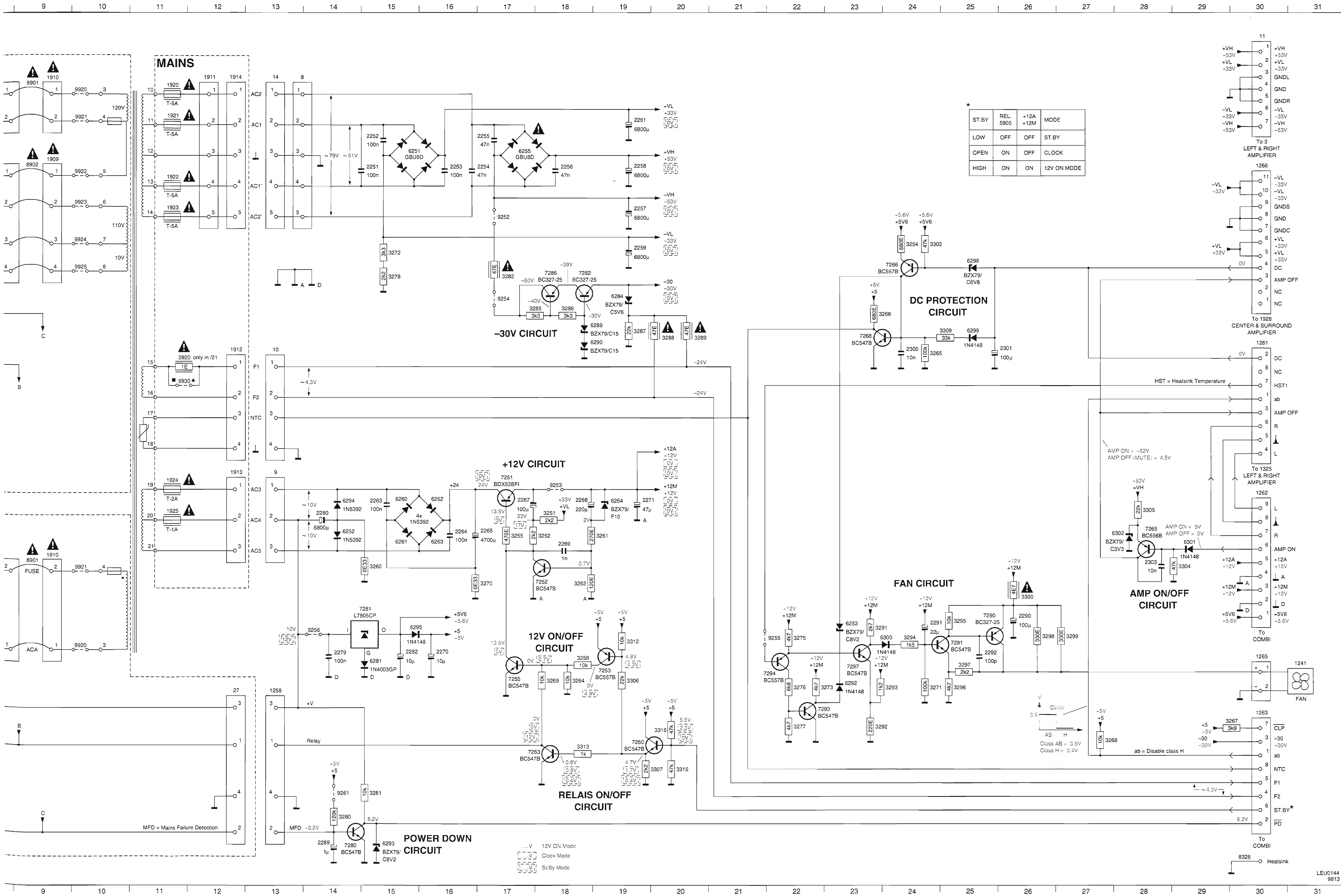
This assembly drawing shows a summary of all possible versions. For components used in a specific version see schematic diagram and respective parts list.

3 2 1

POWER SUPPLY (2x 130W + C/S)



POWER SUPPLY
3104 217 05470/05490 bl. 130 - 02 (version 3104 219 03260)



*

ST.BY	REL. 5905	+12A +12M	MODE
LOW	OFF	OFF	ST.BY
OPEN	ON	OFF	CLOCK
HIGH	ON	ON	12V ON MODE

8	B13	3904	G6
9	H13	3905	G6
10	F13	3906	H4
11	A30	3920	F11
14	B13	5902	J3
27	L12	5902	B3
1241	L31	5903	L3
1258	L13	5904	F2
1261	F30	5905	D5
1262	I30	5905	K7
1263	M30	6251	C15
1265	L30	6252	I14
1268	C30	6253	K23
1901	J2	6255	C17
1901	B2	6260	I15
1902	C7	6261	J15
1905	K4	6262	I16
1906	B8	6263	J16
1907	C8	6264	I19
1909	C9	6281	L15
1910	J9	6284	E19
1910	B9	6289	F18
1911	B12	6290	F18
1912	F12	6292	L23
1913	H12	6293	O15
1914	B12	6294	I14
1920	B11	6295	K15
1921	B11	6298	E25
1922	C11	6299	F25
1923	D11	6300	K23
1924	I11	6301	J29
1925	I11	6302	J27
2251	C15	6901	F4
2252	C15	6901	M4
2253	C16	6902	G4
2254	C17	6902	N4
2255	C17	6903	M5
2256	C18	6903	F5
2257	D19	6904	N5
2258	C19	6904	G5
2259	E19	6905	N5
2261	B19	6905	F3
2263	I15	6906	L5
2264	I16	6906	F4
2265	I17	6908	H6
2267	I17	6909	F7
2268	I18	6910	H7
2269	J18	6911	M7
2270	L16	6911	F7
2271	I19	6912	M7
2279	L14	6912	F8
2280	I14	7251	I17
2282	L15	7252	J18
2289	O14	7253	L19
2290	K26	7255	L17
2291	K24	7260	M19
2292	L25	7263	M17
2300	F24	7265	I28
2301	F26	7266	E24
2303	J28	7268	F23
2902	F4	7280	O14
2902	M4	7281	K14
2903	G5	7282	E18
2903	M5	7286	E18
2904	G5	7290	K25
2905	H5	7291	K25
3251	I18	7293	M22
3252	J18	7294	L21
3254	E24	7297	L23
3255	J17	7901	F6
3259	L18	7902	H6
3260	J15	8328	O30
3261	J19	8901	J9
3262	J18	8901	B9
3264	L18	8902	C9
3265	F24	9252	D17
3266	F23	9253	I18
3267	M29	9254	E17
3268	M27	9255	K22
3269	L18	9256	K14
3270	J17	9261	N14
3271	L24	9901	K3
3272	E15	9902	J3
3273	L22	9903	C4
3275	K22	9904	K7
3276	L22	9905	K8
3277	M22	9907	N2
3278	E15	9908	M3
3280	N14	9909	M3
3281	N15	9910	M5
3282	E17	9915	D8
3285	F17	9916	B7
3286	F18	9916	J7
3287	F19	9917	B8
3288	F20	9917	J8
3289	F20	9920	B10
3291	K23	9920	K10
3292	M23	9921	J10
3293	L24	9921	B10
3294	K24	9922	C10
3295	K25	9923	D10
3296	L25	9924	D10
3297	L25	9925	E10
3298	K26	9930	G11
3299	K27		
3300	K26		
3302	E24		
3304	J29		
3305	I28		
3306	L19		
3307	N20		
3309	F24		
3312	K19		
3313	M18		
3315	N20		
3316	M20		
3901	K5		
3902	N6		
3902	E3		
3903	L6		
3903	E4		

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LEFT & RIGHT AMPLIFIER (2x 130W)

CENTER & SURROUND AMPLIFIER (50W + 50W)

Value NTC in STK.	
Temperature heatsink (°C)	Value NTC
25	10k
30	8k2
35	6k7
40	5k5
45	4k6
50	3k8
55	3k2
60	2k7
65	2k3
70	1k9
75	1k7
80	1k4
85	1k2
90	1k0
95	0k9
100	0k8
105	0k7
110	0k6
115	0k5

3	A2	3927	J8
0022	H2	3928	L8
1321	B18	3929	I9
1324	F3	3930	N9
1325	D2	3931	H10
1326	F2	3932	N10
1921	J18	3933	M2
1922	J2	3934	N2
1925	L18	3935	O13
1928	K2	3936	O12
2321	A8	3937	N13
2322	F8	3938	N11
2323	B6	3940	O11
2324	D6	3941	O13
2325	B7	3945	M4
2326	E7	3946	M5
2327	A8	3947	M6
2328	G8	3948	L6
2329	B8	3963	J15
2330	E8	3964	L15
2331	F2	3965	J15
2333	B7	3966	L15
2334	G7	3967	K16
2335	A8	3968	M16
2336	F8	3969	K17
2341	G11	3970	K17
2342	G10	3977	M5
2343	F4	3978	L7
2344	B3	3979	O8
2345	C3	3980	N8
2346	C15	3981	N6
2347	D15	3982	N5
2348	B2	3983	O6
2349	C2	3984	O5
2350	B3	3985	O8
2351	C3	3993	K16
2352	F6	3994	M16
2353	B16	5321	B15
2354	E16	5322	E15
2355	B18	5921	J15
2356	E18	5922	L15
2359	G2	6325	C15
2361	F2	6326	D15
2363	G6	6333	B17
2923	J8	6334	E16
2924	L8	6337	G4
2925	J9	6339	G5
2926	L9	6360	A3
2927	I9	6921	M4
2928	N9	6939	N5
2929	J9	6941	N16
2930	L9	6942	N16
2931	J2	7323	G11
2932	K14	7324	G10
2933	I9	7325	E5
2934	N9	7326	F7
2936	N7	7327	F5
2937	H10	7329	A11
2938	N10	7350	G6
2939	O11	7923	N13
2940	O14	7924	N12
2944	N3	7925	L6
2945	O3	7927	N8
2946	N2	7930	I12
2950	N3	7931	N6
2951	O3	7932	N7
2952	M7	9325	G9
2953	J16	9327	G12
2954	L16	9949	J16
2955	J17	9950	L16
2956	L17		
2957	N5		
3321	B6		
3322	D6		
3323	F6		
3324	G7		
3325	C6		
3326	E6		
3327	C7		
3328	E7		
3329	A7		
3330	G7		
3331	A8		
3332	F8		
3333	B2		
3334	C2		
3335	G11		
3336	G9		
3337	G11		
3338	G9		
3339	G12		
3340	G8		
3345	E3		
3346	F4		
3347	F5		
3348	E5		
3350	G5		
3351	G4		
3352	G4		
3353	G5		
3355	C14		
3356	D14		
3357	F4		
3358	E6		
3363	B15		
3364	E15		
3365	B15		
3366	E15		
3367	C17		
3368	F16		
3369	C17		
3370	E17		
3377	F2		
3379	G3		
3383	C17		
3384	F16		
3385	C15		
3921	J7		
3922	L7		
3925	J8		
3926	L8		

LEFT & RIGHT & CENTER & SURROUND AMPLIFIER
3104 217 05470/05490 bl. 130 - 01 (version 3104 219 03260)

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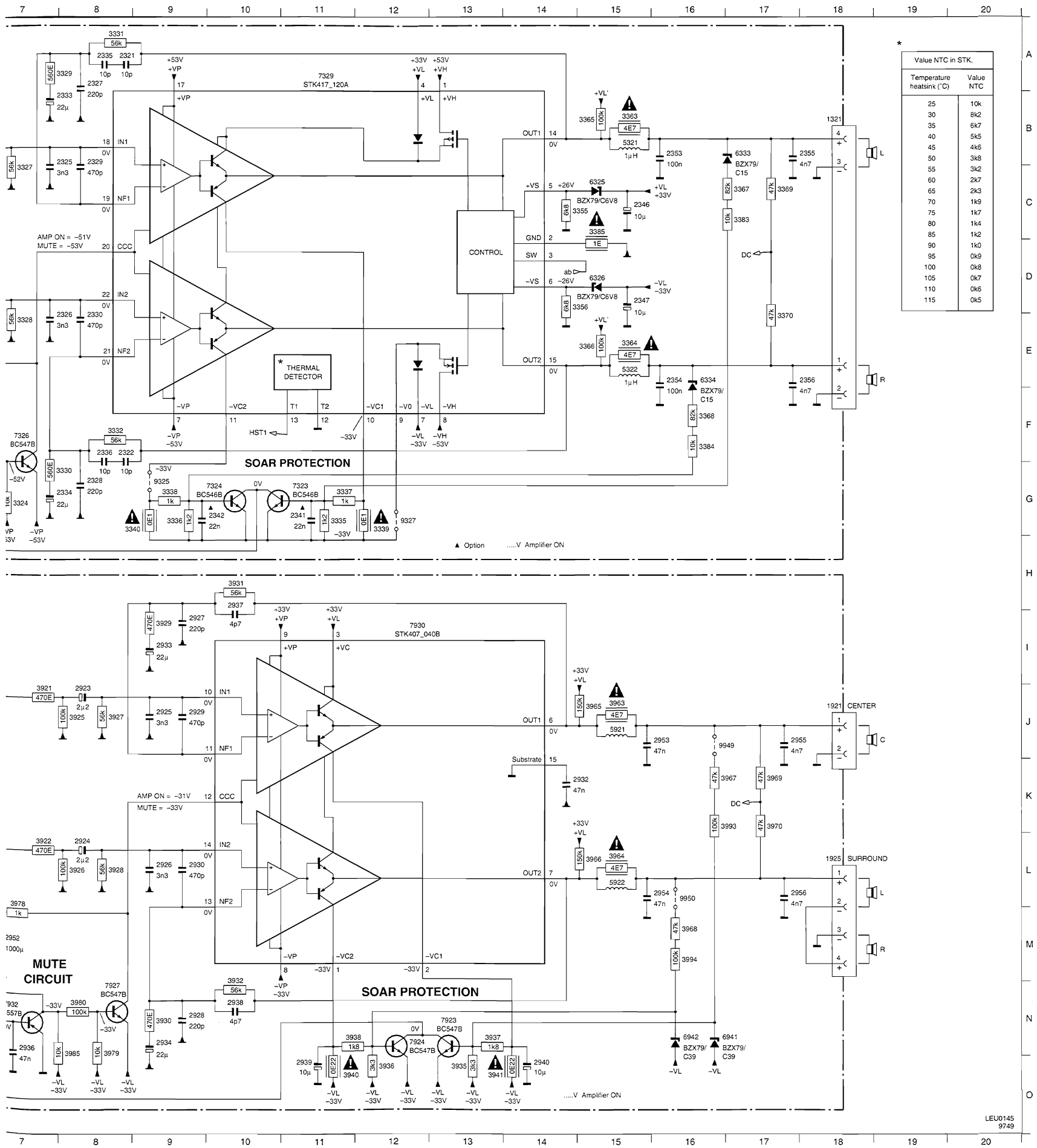

Value NTC in STK.	
Temperature heatsink (°C)	Value NTC
25	10k
30	8k2
35	6k7
40	5k5
45	4k6
50	3k8
55	3k2
60	2k7
65	2k3
70	1k9
75	1k7
80	1k4
85	1k2
90	1k0
95	0k9
100	0k8
105	0k7
110	0k6
115	0k5

3	A2	3927	J8
0022	H2	3928	L8
1321	B18	3929	I9
1324	F3	3930	N9
1325	D2	3931	H10
1326	F2	3932	N10
1921	J18	3933	M2
1922	J2	3934	N2
1925	L18	3935	O13
1928	K2	3936	O12
2321	A8	3937	N13
2322	F8	3938	N11
2323	B6	3940	O11
2324	D6	3941	O13
2325	B7	3945	M4
2326	E7	3946	M5
2327	A8	3947	M6
2328	G8	3948	L6
2329	B8	3963	J15
2330	E8	3964	L15
2331	F2	3965	J15
2333	B7	3966	L16
2334	G7	3967	K16
2335	A8	3968	M16
2336	F8	3969	K17
2341	G11	3970	K17
2342	G10	3977	M5
2343	F4	3978	L7
2344	B3	3979	O8
2345	C3	3980	N8
2346	C15	3981	N6
2347	D15	3982	N5
2348	B2	3983	O6
2349	C2	3984	O5
2350	B3	3985	O8
2351	C3	3993	K16
2352	F6	3994	M16
2353	B16	5321	B15
2354	E16	5322	E15
2355	B18	5921	J15
2356	E18	5922	L15
2359	G2	6325	C15
2361	F2	6326	D15
2365	G6	6333	B17
2923	J8	6334	E16
2924	L8	6337	G4
2925	J9	6339	G5
2926	L9	6360	A3
2927	I9	6921	M4
2928	N9	6939	N5
2929	J9	6941	N16
2930	L9	6942	N16
2931	J2	7323	G11
2932	K14	7324	G10
2933	I9	7325	E5
2934	N9	7326	F7
2936	N7	7327	F5
2937	H10	7329	A11
2938	N10	7350	G6
2939	O11	7923	N13
2940	O14	7924	N12
2944	N3	7925	L6
2945	O3	7927	N8
2946	N2	7930	I12
2950	N3	7931	N6
2951	O3	7932	N7
2952	M7	9325	G9
2953	J16	9327	G12
2954	L16	9949	J16
2955	J17	9950	L16
2956	L17		
2957	N5		
3321	B6		
3322	D6		
3323	F6		
3324	G7		
3325	C6		
3326	E6		
3327	C7		
3328	E7		
3329	A7		
3330	G7		
3331	A8		
3332	F8		
3333	B2		
3334	C2		
3335	G11		
3336	G9		
3337	G11		
3338	G9		
3339	G12		
3340	G8		
3345	E3		
3346	F4		
3347	F5		
3348	E5		
3350	G5		
3351	G4		
3352	G4		
3353	G5		
3355	C14		
3356	D14		
3357	F4		
3358	E6		
3363	B15		
3364	E15		
3365	B15		
3366	E15		
3367	C17		
3368	F16		
3369	C17		
3370	E17		
3377	F2		
3379	G3		
3383	C17		
3384	F16		
3385	C15		
3921	J7		
3922	L7		
3925	J8		
3926	L8		

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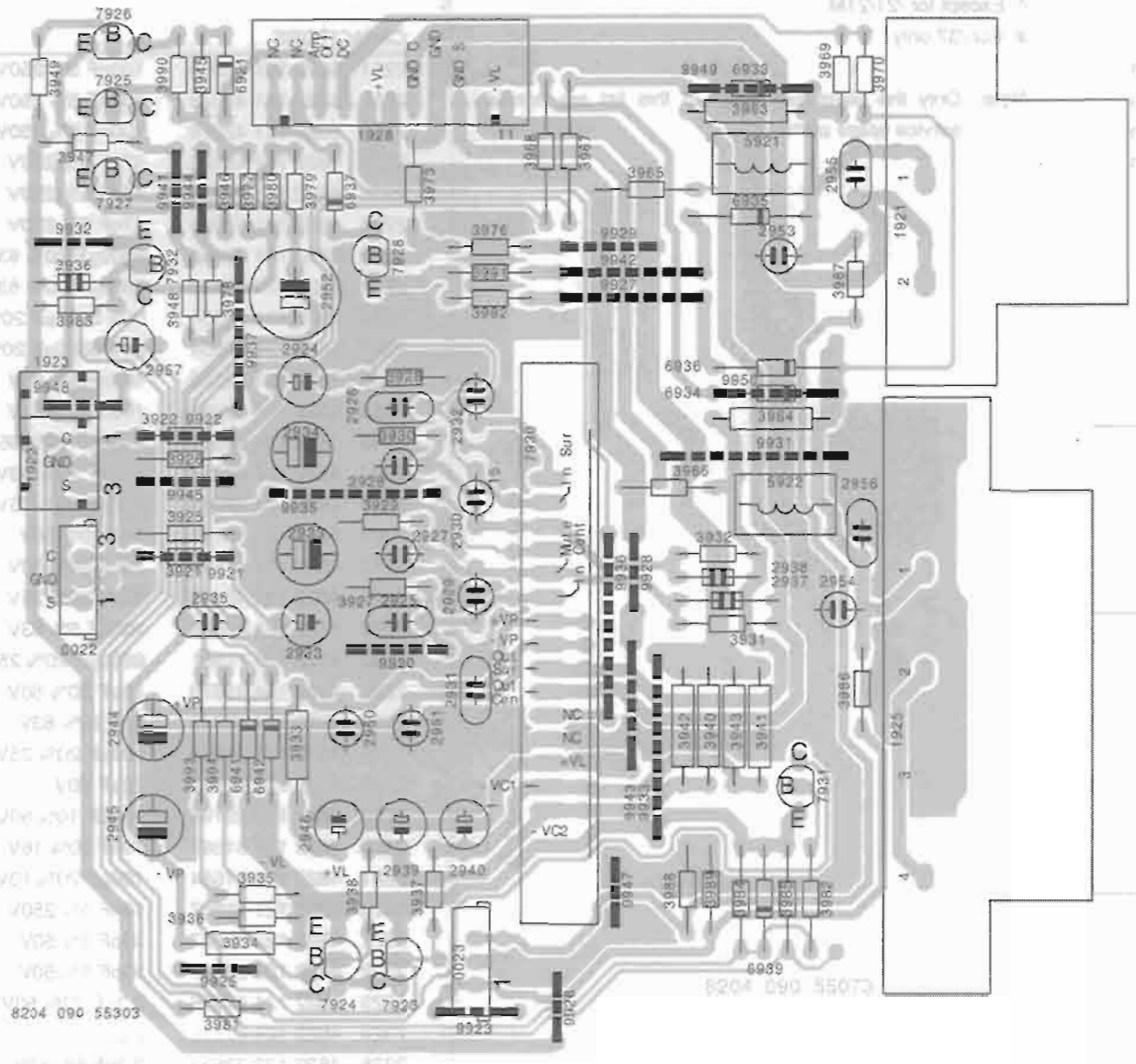
CENTER / SURROUND AMPLIFIER BOARD LAYOUT

9925	C 3	3945	A 3	0022	B 3
9926	C 2	3946	A 3	0023	C 2
9927	A 2	3947	A 3	1921	A 1
9928	B 2	3948	A 3	1922	B 3
9929	A 2	3949	A 3	1923	B 3
9930	B 2	3963	A 1	1925	C 1
9931	B 1	3964	B 1	1928	A 2
9932	A 3	3965	A 2	2923	B 3
9933	C 2	3966	B 2	2924	B 3
9935	B 3	3967	A 2	2925	B 2
9936	B 2	3968	A 2	2926	B 2
9937	A 3	3969	A 1	2927	B 2
9941	A 3	3970	A 1	2928	B 2
9942	A 2	3973	A 2	2929	B 2
9943	C 2	3976	A 2	2930	B 2
9944	A 3	3977	A 3	2931	B 2
9945	B 3	3978	A 3	2932	B 2
9947	C 2	3979	A 3	2933	B 3
9948	B 3	3980	A 3	2934	B 3
9949	A 1	3981	C 3	2935	B 3
9950	B 1	3982	C 1	2936	A 3
----		3983	A 3	2937	B 1
		3984	C 1	2938	B 1
		3985	C 1	2939	C 2
		3986	B 1	2940	C 2
		3987	A 1	2944	C 3
		3988	C 2	2945	C 3
		3989	C 1	2946	C 3
		3990	A 3	2950	C 3
		3991	A 2	2951	C 2
		3992	A 2	2952	A 3
		3993	C 3	2953	A 1
		3994	C 3	2954	B 1
		5921	A 1	2955	A 1
		5922	B 1	2956	B 1
		6921	A 3	2957	A 3
		6933	A 1	3921	B 3
		6934	B 1	3922	B 3
		6935	A 1	3925	B 3
		6936	A 1	3926	B 3
		6937	A 3	3927	B 2
		6939	C 1	3928	B 2
		6941	C 3	3929	B 2
		6942	C 3	3930	B 2
		7923	C 2	3931	B 1
		7924	C 3	3932	B 1
		7925	A 3	3933	C 3
		7926	A 3	3934	C 3
		7927	A 3	3935	C 3
		7928	A 3	3936	C 3
		7930	C 2	3937	C 2
		7931	C 1	3938	C 3
		7932	A 3	3940	C 1
		9921	B 3	3941	C 1
		9922	B 3	3942	C 2
		9923	C 2	3943	C 1

3 2 1

C/S AMPLIFIER COPPER SIDE VIEW



This assembly drawing shows a summary of all possible versions. For components used in a specific version see schematic diagram and respective parts list.

3104 213 3480.3

3 2 1

ELECTRICAL PARTS LIST - MAINS BOARD

MISCELLANEOUS

27	4822 265 30734	⚠	Connector 4 pin
1901	4822 265 31015	⚠	Mains Socket
1901#	4822 265 31016	⚠	Mains Socket
1902*	4822 272 10269	⚠	Voltage selector
1905^	4822 071 55002	⚠	Fuse T5A 250V
1905#	4822 252 51123	⚠	Fuse T6,3A 250V
1906*	4822 071 55002	⚠	Fuse T5A 250V
1907*	4822 071 55002	⚠	Fuse T5A 250V
1909*	4822 267 10728	⚠	Primary Connector 4 pin
1910	4822 265 20723	⚠	Primary Connector 2 pin
1911	4822 267 10734		Secondary Connector 5 pin
1912	4822 267 10565		Secondary Connector 4 pin
1913	4822 267 10735		Secondary Connector 3 pin
1914	4822 267 10734		Secondary Connector 5 pin
1920	4822 071 55002	⚠	Fuse T5A 250V
1921	4822 071 55002	⚠	Fuse T5A 250V
1922	4822 071 55002	⚠	Fuse T5A 250V
1923	4822 071 55002	⚠	Fuse T5A 250V
1924	4822 071 52502	⚠	Fuse T2,5A 250V
1925	4822 071 51602	⚠	Fuse T1,6A 250V

CAPACITORS

2902	4822 121 43526	47nF 5% 250V
2903	4822 121 43526	47nF 5% 250V
2904*	4822 124 40255	100µF 20% 63V
2905*	4822 124 81029	100µF 20% 25V

RESISTORS

3901#	4822 053 21106	⚠	10M 5% 0,5W
3902	4822 050 11002		1k 1% 0,4W
3903	4822 050 11002		1k 1% 0,4W
3904*	4822 116 52283		4k7 5% 0,5W
3905*	4822 116 52283		4k7 5% 0,5W
3906*	4822 116 83864		10k 5% 0,5W
3920*	4822 052 10108	⚠	1R 5% 0,33W

COILS & RELAYS

5902	4822 157 10417	⚠	Mains Choke 6A /21
5903^	4822 146 10437	⚠	Standby Transformer
5904*	4822 146 10466	⚠	Standby Transformer
5905	4822 280 10299	⚠	Relay 1P 9V 15A

DIODES

6901	4822 130 31878	1N4003G
6902	4822 130 31878	1N4003G
6903	4822 130 31878	1N4003G
6904	4822 130 31878	1N4003G
6905	4822 130 30621	1N4148
6906	4822 130 30621	1N4148
6908*	4822 130 34382	BZX79-B8V2
6909*	4822 130 31878	1N4003G
6910*	4822 130 31878	1N4003G
6911	4822 130 30621	1N4148
6912	4822 130 30621	1N4148

TRANSISTORS & INTEGRATED CIRCUITS

7901*	4822 130 41246	BC327-25
7902*	4822 130 40959	BC547B

* For /21/21M only

^ Except for /21/21M

\# For /37 only

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

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ELECTRICAL PARTS LIST - PS & L/R AMP. BOARD

MISCELLANEOUS

1258	4822 267 10567	Connector 4 pin
1261	4822 267 10745	Connector 8 pin Vert
1263	4822 267 10573	Connector 8 pin
1268	4822 267 10746	Connector 11 pin
1321	4822 267 31176	Loudspeaker Socket L/R
1324	4822 265 10913	Cinch Socket
1325	4822 267 10747	Connector 8 pin
1326	4822 267 10748	Connector 3 pin

CAPACITORS

2251	5322 121 42578	100nF 5% 250V
2252	5322 121 42578	100nF 5% 250V
2253	5322 121 42578	100nF 5% 250V
2254	4822 121 43526	47nF 5% 250V
2255	4822 121 43526	47nF 5% 250V
2256	4822 121 43526	47nF 5% 250V
2257	4822 124 12132	6800µF 20% 63V
2258	4822 124 12132	6800µF 20% 63V
2259	4822 124 11504	50V 6800µF 20%
2261	4822 124 11504	50V 6800µF 20%
2263	5322 121 42386	100nF 5% 63V
2264	5322 121 42386	100nF 5% 63V
2265	4822 124 80563	4700µF 20% 35V
2267	4822 124 40255	100µF 20% 63V
2268	4822 124 22263	220µF 20% 25V
2269	4822 122 33197	1nF 10% 50V
2270	4822 124 41579	10µF 20% 50V
2271	4822 124 40433	47µF 20% 25V
2279	5322 121 42386	100nF 5% 63V
2280	4822 124 11581	6800µF 20% 25V
2282	4822 124 41579	10µF 20% 50V
2289	4822 124 40242	1µF 20% 63V
2290	4822 124 81029	100µF 20% 25V
2291	4822 124 81151	22µF 50V
2292	4822 122 33195	100pF 10% 50V
2300	4822 121 51387	10nF 20% 16V
2301	4822 124 41584	100µF 20% 10V
2303	4822 121 41857	10nF 5% 250V
2321	4822 122 33847	10pF 5% 50V
2322	4822 122 33847	10pF 5% 50V
2323	4822 124 41576	2,2µF 20% 50V
2324	4822 124 41576	2,2µF 20% 50V
2325	4822 122 33532	3,3nF 5% 50V
2326	4822 122 33532	3,3nF 5% 50V
2327	5322 122 32334	220pF 10% 100V
2328	5322 122 32334	220pF 10% 100V
2329	5322 122 32311	470pF 10% 100V
2330	5322 122 32311	470pF 10% 100V
2331	5322 122 32261	4,7nF 10% 100V
2333	4822 124 81151	22µF 50V
2334	4822 124 81151	22µF 50V
2335	4822 122 33847	10pF 5% 50V
2336	4822 122 33847	10pF 5% 50V
2341	4822 126 11585	22nF +80/-20% 25V
2342	4822 126 11585	22nF +80/-20% 25V
2343	4822 124 41579	10µF 20% 50V
2344	4822 124 80068	22µF 20% 100V
2345	4822 124 80068	22µF 20% 100V
2346	4822 124 41579	10µF 20% 50V
2347	4822 124 41579	10µF 20% 50V
2348	4822 124 81043	10µF 20% 100V
2349	4822 124 81043	10µF 20% 100V
2350	5322 121 42386	100nF 5% 63V
2351	5322 121 42386	100nF 5% 63V
2352	4822 124 80556	1000µF 20% 10V
2353	5322 121 42386	100nF 5% 63V
2354	5322 121 42386	100nF 5% 63V
2355	5322 122 32261	4,7nF 10% 100V
2356	5322 122 32261	4,7nF 10% 100V
2359	4822 122 33195	100pF 10% 50V
2361	4822 124 40242	1µF 20% 63V
2365	4822 126 11585	22nF +80/-20% 25V

RESISTORS

3251	4822 116 52256		2k2 5% 0,5W
3252	4822 116 52256		2k2 5% 0,5W
3254	4822 116 52228		680R 5% 0,5W
3255	4822 116 83883		470R 5% 0,5W
3259	4822 116 83864		10k 5% 0,5W
3260	4822 117 11342		0R33 5% 2W
3261	4822 116 83876		270R 5% 0,5W
3262	4822 116 52206		120R 5% 0,5W
3264	4822 116 83864		10k 5% 0,5W
3265	4822 116 52234		100k 5% 0,5W
3266	4822 116 52228		680R 5% 0,5W
3267	4822 116 52276		3k9 5% 0,5W
3268	4822 116 83864		10k 5% 0,5W
3269	4822 116 83864		10k 5% 0,5W
3270	4822 117 11342		0R33 5% 2W
3271	4822 116 52234		100k 5% 0,5W
3272	4822 116 52269		3k3 5% 0,5W
3273	4822 116 52283		4k7 5% 0,5W
3275	4822 116 52283		4k7 5% 0,5W
3276	4822 116 83961		6k8 5%
3277	4822 116 52283		4k7 5% 0,5W
3278	4822 116 52256		2k2 5% 0,5W
3280	4822 116 52239		120k 5% 0,5W
3281	4822 116 83864		10k 5% 0,5W
3282	4822 052 10479	⚠	47R 5% 0,33W
3285	4822 116 52269		3k3 5% 0,5W
3286	4822 116 52269		3k3 5% 0,5W
3287	4822 116 52257		22k 5% 0,5W
3288	4822 052 10479	⚠	47R 5% 0,33W
3289	4822 052 10479	⚠	47R 5% 0,33W

ELECTRICAL PARTS LIST - PS & L/R AMP. BOARD

RESISTORS

3291	4822 116 52263		2k7 5% 0,5W
3292	4822 116 83872		220R 5% 0,5W
3293	4822 116 52207		1k2 5% 0,5W
3294	4822 116 52243		1k5 5% 0,5W
3295	4822 116 83864		10k 5% 0,5W
3296	4822 116 52283		4k7 5% 0,5W
3297	4822 116 52256		2k2 5% 0,5W
3298	4822 116 52219		330R 5% 0,5W
3299	4822 116 52219		330R 5% 0,5W
3300	4822 052 10478	⚠	4R7 5% 0,33W
3302	4822 116 83884		47k 5% 0,5W
3304	4822 116 83884		47k 5% 0,5W
3305	4822 116 52257		22k 5% 0,5W
3306	4822 116 52257		22k 5% 0,5W
3307	4822 116 52256		2k2 5% 0,5W
3309	4822 116 52271		33k 5% 0,5W
3312	4822 116 83864		10k 5% 0,5W
3313	4822 050 11002		1k 1% 0,4W
3315	4822 116 83884		47k 5% 0,5W
3316	4822 116 83884		47k 5% 0,5W
3321	4822 116 83864		10k 5% 0,5W
3322	4822 116 83864		10k 5% 0,5W
3323	4822 116 52234		100k 5% 0,5W
3324	4822 116 83864		10k 5% 0,5W
3325	4822 050 11002		1k 1% 0,4W
3326	4822 050 11002		1k 1% 0,4W
3327	4822 116 52291		56k 5% 0,5W
3328	4822 116 52291		56k 5% 0,5W
3329	4822 116 52226		560R 5% 0,5W
3330	4822 116 52226		560R 5% 0,5W
3331	4822 116 52291		56k 5% 0,5W
3332	4822 116 52291		56k 5% 0,5W
3333	4822 052 10479	⚠	47R 5% 0,33W
3334	4822 052 10479	⚠	47R 5% 0,33W
3335	4822 116 52207		1k2 5% 0,5W
3336	4822 116 52207		1k2 5% 0,5W
3337	4822 050 11002		1k 1% 0,4W
3338	4822 050 11002		1k 1% 0,4W
3339	4822 113 80633	⚠	0R1 5% 3W
3340	4822 113 80633	⚠	0R1 5% 3W
3345	4822 116 52234		100k 5% 0,5W
3346	4822 116 83864		10k 5% 0,5W
3347	4822 116 52271		33k 5% 0,5W
3348	4822 116 83872		220R 5% 0,5W
3350	4822 050 11002		1k 1% 0,4W
3351	4822 116 52234		100k 5% 0,5W
3352	4822 116 52234		100k 5% 0,5W
3353	4822 116 52257		22k 5% 0,5W
3355	4822 116 83961		6k8 5%
3356	4822 116 83961		6k8 5%
3357	4822 116 52234		100k 5% 0,5W
3358	4822 050 11002		1k 1% 0,4W
3363	4822 053 10478	⚠	4R7 5% 1W
3364	4822 053 10478	⚠	4R7 5% 1W
3365	4822 116 52234		100k 5% 0,5W
3366	4822 116 52234		100k 5% 0,5W
3367	4822 116 52304		82k 5% 0,5W
3368	4822 116 52304		82k 5% 0,5W
3369	4822 116 83884		47k 5% 0,5W
3370	4822 116 83884		47k 5% 0,5W
3377	4822 050 11002		1k 1% 0,4W
3379	4822 116 52234		100k 5% 0,5W
3383	4822 116 83864		10k 5% 0,5W
3384	4822 116 83864		10k 5% 0,5W
3385	4822 052 10108	⚠	1R 5% 0,33W

COILS

5321	4822 157 70599	Ind. Fxd Bead EMI
5322	4822 157 70599	Ind. Fxd Bead EMI

DIODES

6251	4822 130 11139		GBU8D
6252	5322 130 80686		1N5392
6253	4822 130 34382		BZX79-B8V2
6255	4822 130 11139	⚠	GBU8D
6260	5322 130 80686		1N5392
6261	5322 130 80686		1N5392
6262	5322 130 80686		1N5392
6263	5322 130 80686		1N5392
6264	4822 130 61219		BZX79-F10
6281	4822 130 31878		1N4003GP
6284	4822 130 34173		BZX79-C5V6
6289	4822 130 34281		BZX79/C15
6290	4822 130 34281		BZX79/C15
6292	4822 130 30621		1N4148
6293	4822 130 34382		BZX79-C8V2
6294	5322 130 80686		1N5392
6295	4822 130 30621		1N4148
6298	4822 130 34278		BZX79-C6V8
6299	4822 130 30621		1N4148
6300	4822 130 30621		1N4148
6301	4822 130 30621		1N4148
6302	5322 130 31504		BZX79-C3V3
6325	4822 130 34278		BZX79-C6V8
6326	4822 130 34278		BZX79-C6V8
6333	4822 130 34281		BZX79-C15
6334	4822 130 34281		BZX79-C15
6337	4822 130 30621		1N4148
6339	4822 130 30621		1N4148
6360	4822 130 34281		BZX79-C15

TRANSISTORS & INTEGRATED CIRCUITS

7251	4822 130 10812		BDX53BFI
7252	4822 130 40959		BC547B
7253	4822 130 44568		BC557B
7255	4822 130 40959		BC547B
7260	4822 130 40959		BC547B
7263	4822 130 40959		BC547B
7265	4822 130 41691		BC556B
7266	4822 130 44568		BC557B
7268	4822 130 40959		BC547B
7280	4822 130 40959		BC547B
7281	4822 209 31841		L7805CP
7282	4822 130 41246		BC327-25
7286	4822 130 41246		BC327-25
7290	4822 130 41246		BC327-25
7291	4822 130 40959		BC547B
7293	4822 130 40959		BC547B
7294	4822 130 44568		BC557B
7297	4822 130 40959		BC547B
7323	4822 130 44461		BC546B
7324	4822 130 44461		BC546B
7325	4822 130 40959		BC547B
7326	4822 130 40959		BC547B
7327	4822 130 44461		BC546B
7329	4822 209 16165		STK417-120A
7350	4822 130 41691		BC556B

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

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ELECTRICAL PARTS LIST - CENTER/SURROUND AMP. BOARD

MISCELLANEOUS

1921	4822 265 10464	Loudspeaker Socket Cen
1922	4822 267 10748	connector 3 pin
1925	4822 265 10912	Loudspeaker Socket Surr
1928	4822 267 10749	Connector 11 pin

CAPACITORS

2923	4822 124 41576	2,2µF 20% 50V
2924	4822 124 41576	2,2µF 20% 50V
2925	4822 122 33532	3,3nF 5% 50V
2926	4822 122 33532	3,3nF 5% 50V
2927	5322 122 32334	220pF 10% 100V
2928	5322 122 32334	220pF 10% 100V
2929	5322 122 32311	470pF 10% 100V
2930	5322 122 32311	470pF 10% 100V
2931	5322 122 32261	4,7nF 10% 100V
2932	4822 122 33449	47nF 30% 50V
2933	4822 124 81151	22µF 50V
2934	4822 124 81151	22µF 50V
2936	4822 126 12785	47nF TUB 50V
2937	4822 122 10465	4,7pF 10% 50V
2938	4822 122 10465	4,7pF 10% 50V
2939	4822 124 41579	10µF 20% 50V
2940	4822 124 41579	10µF 20% 50V
2944	5322 124 41381	22µF 20% 50V
2945	5322 124 41381	22µF 20% 50V
2946	4822 124 41579	10µF 20% 50V
2950	4822 122 33449	47nF 30% 50V
2951	4822 122 33449	47nF 30% 50V
2952	4822 124 80556	1000µF 20% 10V
2953	4822 122 33449	47nF 30% 50V
2954	4822 122 33449	47nF 30% 50V
2955	5322 122 32261	4,7nF 10% 100V
2956	5322 122 32261	4,7nF 10% 100V
2957	4822 124 41579	10µF 20% 50V

RESISTORS

3921	4822 116 83883		470R 5% 0,5W
3922	4822 116 83883		470R 5% 0,5W
3925	4822 116 52234		100k 5% 0,5W
3926	4822 116 52234		100k 5% 0,5W
3927	4822 116 52291		56k 5% 0,5W
3928	4822 116 52291		56k 5% 0,5W
3929	4822 116 83883		470R 5% 0,5W
3930	4822 116 83883		470R 5% 0,5W
3931	4822 116 52291		56k 5% 0,5W
3932	4822 116 52291		56k 5% 0,5W
3933	4822 052 10479	⚠	47R 5% 0,33W
3934	4822 052 10479	⚠	47R 5% 0,33W
3935	4822 116 52269		3k3 5% 0,5W
3936	4822 116 52269		3k3 5% 0,5W
3937	4822 116 52249		1k8 5% 0,5W
3938	4822 116 52249		1k8 5% 0,5W
3940	4822 117 11744	⚠	0R22 5% 1W
3941	4822 117 11744	⚠	0R22 5% 1W
3945	4822 116 52234		100k 5% 0,5W
3946	4822 116 83864		10k 5% 0,5W
3947	4822 116 52271		33k 5% 0,5W
3948	4822 116 83872		220R 5% 0,5W
3963	4822 053 10478	⚠	4R7 5% 1W
3964	4822 053 10478	⚠	4R7 5% 1W
3965	4822 116 52245		150k 5% 0,5W
3966	4822 116 52245		150k 5% 0,5W
3967	4822 116 83884		47k 5% 0,5W
3968	4822 116 83884		47k 5% 0,5W
3969	4822 116 83884		47k 5% 0,5W
3970	4822 116 83884		47k 5% 0,5W
3977	4822 116 52234		100k 5% 0,5W
3978	4822 050 11002		1k 1% 0,4W
3979	4822 116 83864		10k 5% 0,5W
3980	4822 116 52234		100k 5% 0,5W
3981	4822 116 83864		10k 5% 0,5W
3982	4822 116 52234		100k 5% 0,5W
3983	4822 116 83883		470R 5% 0,5W
3984	4822 116 52234		100k 5% 0,5W
3985	4822 116 83864		10k 5% 0,5W
3993	4822 116 52234		100k 5% 0,5W
3994	4822 116 52234		100k 5% 0,5W

COILS

5921	4822 157 62255	Coil 18,5 Turns
5922	4822 157 62255	Coil 18,5 Turns

DIODES

6921	4822 130 30621	1N4148
6939	4822 130 30621	1N4148
6941	4822 130 34145	BZX79-B39
6942	4822 130 34145	BZX79-B39

TRANSISTORS & INTEGRATED CIRCUITS

7923	4822 130 40959	BC547B
7924	4822 130 40959	BC547B
7925	4822 130 40959	BC547B
7927	4822 130 40959	BC547B
7930	4822 209 16166	STk407-040B
7931	4822 130 40959	BC547B
7932	4822 130 44568	BC557B

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

AF5 BOARD

TABLE OF CONTENTS

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BRIEF INTRODUCTION OF THE AF5 BOARD

The AF5 Board consists of the following features :

a. SOFAC IC
SOFAC IC TEA6321 (7553) which includes functions such as source selection, loudness control, dynamic bass control, treble control, front/rear volume control and muting function. Sound features such as DBB, DSC and IS are controllable via I²C data from the microprocessor.

The SOFAC IC caters for 4 input sources, namely tuner, tape, CD and AUX. It also has a MONO input which is tied to ground via 100n. In our application , software will switch the input source to MONO input during STANDBY mode and some other occasions where noise from other input sources is undesirable.

Note that the input to the SOFAC IC must be ac coupled to prevent 'plop' noise. Input networks are included to provide appropriate attenuation for various sources.

b. KARAOKE MIC. MIXING
Karaoke Mic. Mixing can be configured to cater for one of the following :
NK : Non Karaoke.
SK : Simple Karaoke which caters for mic. mixing with additional mic. amplifier board.
FK : Full Karaoke with vocal fader and echo effect with additional karaoke board.

c. DOLBY PRO LOGIC (DPL) INTERFACE
DPL Interface can be configured to cater for DPL and also DPL with one of the karaoke functions.

d. LINE OUT
Line Out with JST XH connector for connection to LINE OUT cinch socket.

e. SUB-WOOFER OUTPUT
Sub-Woofer Output with cinch socket for connection to active sub-woofer speaker.

f. INCREDIBLE SURROUND
Incredible Surround effect using transistor circuit BC847C (7517, 7518, 7519, 7520) to create phase shifting and spatial effect.

g. HEADPHONE AMPLIFIER
Headphone Amplifier using Op-Amp. NJM4556AM (7501).

h. CD STANDBY SWITCH
CD Standby control circuit using transistors BC327-40 (7515) and BC847C (7516) which switches on the supply to CD servo control IC , HF circuit and the laser light pen in CD mode only.

i. HEADPHONE SENSING CIRCUIT
Headphone Sensing circuit to mute centre and surround channels in DPL application.

j. ATTENUATION NETWORK
Attenuation network is provided at the output of the AF5 Board for interfacing with the power board of different output power.

AF5 Boards appli

A50170	FW53
A50180	FW53
A50340	FW75
A50400	FW77
A50430	FW76
A50510	FW56

Variations table fo

DM30	
DM31	
DM54,1517	
DM56	
DM59	
DM61,1577	
1506	
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1530,1531	
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3530	
3563,3564	
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3597,3598	
3605,3606	
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3661,3662	
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3675	
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4525,4580	
4527	
4572	
4573	
4600,4602	
4611,4612	
4623	
6501	
9507	
9589	
9623,9624	

x = Item in use.

BRIEF INTRODUCTION OF THE AF5 BOARD

The AF5 Board consists of the following features :

a. SOFAC IC

SOFAC IC TEA6321 (7553) which includes functions such as source selection, loudness control, dynamic bass control, treble control, front/rear volume control and muting function. Sound features such as DBB, DSC and IS are controllable via I²C data from the microprocessor.

The SOFAC IC caters for 4 input sources, namely tuner, tape, CD and AUX. It also has a MONO input which is tied to ground via 100n. In our application , software will switch the input source to MONO input during STANDBY mode and some other occasions where noise from other input sources is undesirable.

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CD Standby control circuit using transistors BC327-40 (7515) and BC847C (7516) which switches on the supply to CD servo control IC , HF circuit and the laser light pen in CD mode only.

i. HEADPHONE SENSING CIRCUIT

Headphone Sensing circuit to mute centre and surround channels in DPL application.

j. ATTENUATION NETWORK

Attenuation network is provided at the output of the AF5 Board for interfacing with the power board of different output power.

12-1

AF5 Boards application

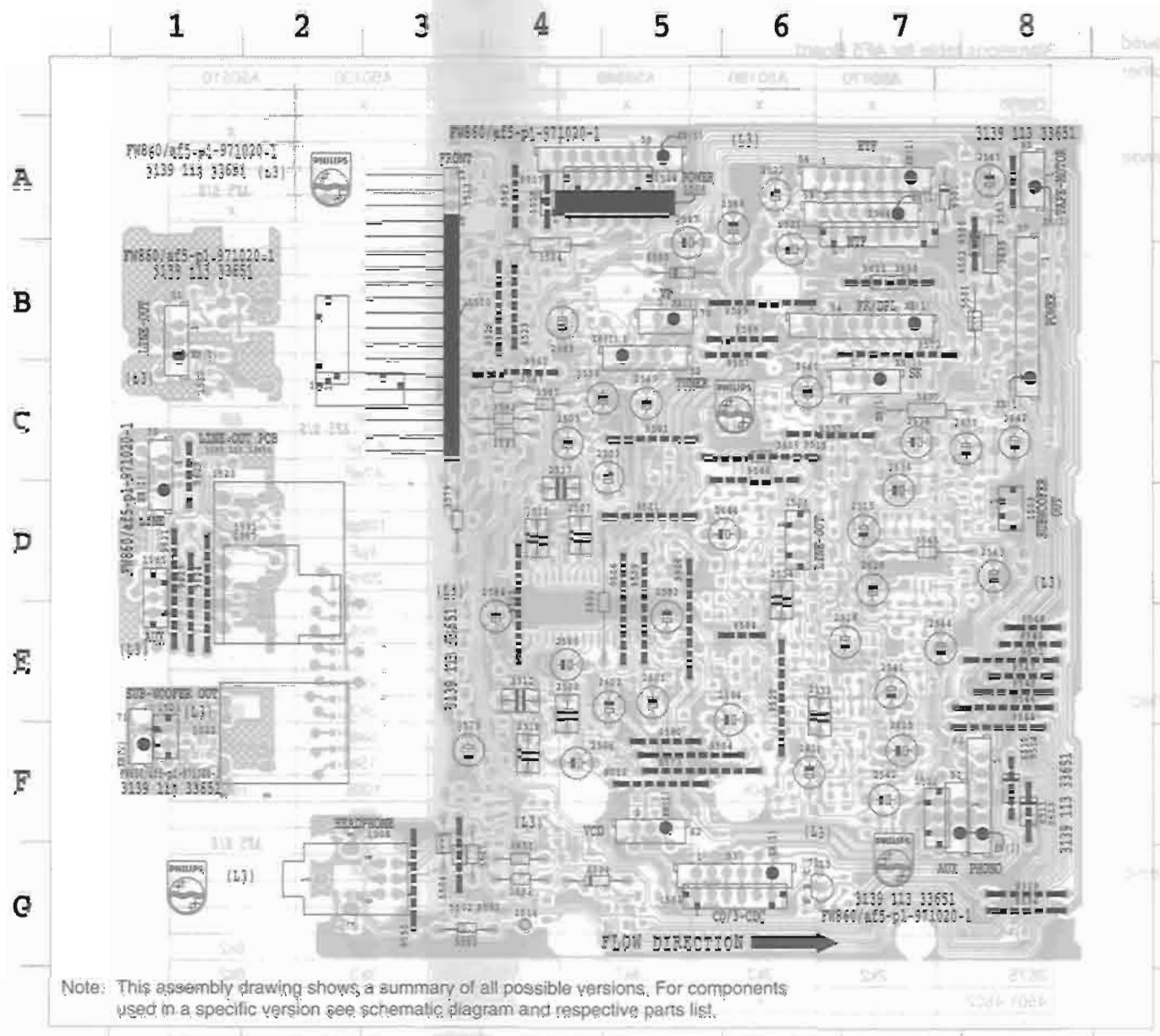
A50170	FW530C/21/21M , FW535C/21/21M , FW570C/21/21M/33 , FW575C/21/21M/33 , FW538/21
A50180	FW530C/22/34/37 , FW535C/22/30/34 , FW550C/22 , FW570C/22/37 , FW538/22 , FW72/37
A50340	FW754P/37
A50400	FW775P/22/37
A50430	FW765P/22/34 , FW795W/22
A50510	FW560C/37

Variations table for AF5 Board

	A50170	A50180	A50340	A50400	A50430	A50510
DM30	x	x	x	-	x	-
DM31	-	-	-	x	-	x
DM54,1517	-	-	x	x	x	-
DM56	x	x	-	x	x	-
DM59	-	-	x	-	-	x
DM61,1577	x	-	-	-	-	-
1506	x	x	x	-	x	-
1510	x	x	x	-	x	-
1513	-	-	-	x	-	x
1523	x	x	x	-	x	-
1525	-	-	-	x	-	x
1530,1531	-	-	-	x	-	x
1579	7P	7P	6P	7P	7P	6P
2521,2522	4.7µF	4.7µF	0.47µF	4.7µF	4.7µF	0.47µF
2585	47µF	47µF	-	47µF	47µF	-
2586	-	-	-	100nF	-	100nF
2603	-	-	100pF	100pF	100pF	-
2643	-	-	1µF	1µF	1µF	-
2652,2653	22nF	22nF	22nF	-	22nF	-
3501,3502	100R	100R	100R	10k	100R	10k
3519,3520	-	-	6k8	6k8	6k8	-
3521,3522	15k	-	-	-	-	-
3523,3524	8k2	8k2	47k	8k2	8k2	47k
3525,3526	3k3	3k3	39k	3k3	3k3	39k
3529	-	-	5k6	5k6	5k6	-
3530	-	-	15k	15k	15k	-
3563,3564	150k	150k	100k	100k	100k	100k
3589	5k6	5k6	-	5k6	5k6	-
3597,3598	-	-	27k	27k	27k	-
3605,3606	1k5	-	2k2	2k2	2k2	-
3645,3646	-	-	1k8	1k8	1k8	-
3661,3662	5k6	-	-	-	-	-
3674	8k2	8k2	15k	15k	15k	8k2
3675	2k2	3k3	4k7	8k2	3k3	8k2
4501,4502	-	x	-	-	-	x
4525,4580	x	-	-	-	-	-
4527	-	-	x	x	x	-
4572	x	-	x	x	x	-
4573	-	x	x	x	x	x
4600,4602	-	-	-	x	-	x
4611,4612	x	-	x	x	x	-
4623	-	x	x	x	x	x
6501	x	x	-	x	x	-
9507	x	x	-	-	x	-
9589	x	x	x	x	x	x
9623,9624	-	-	-	x	-	x

x = Item in use.

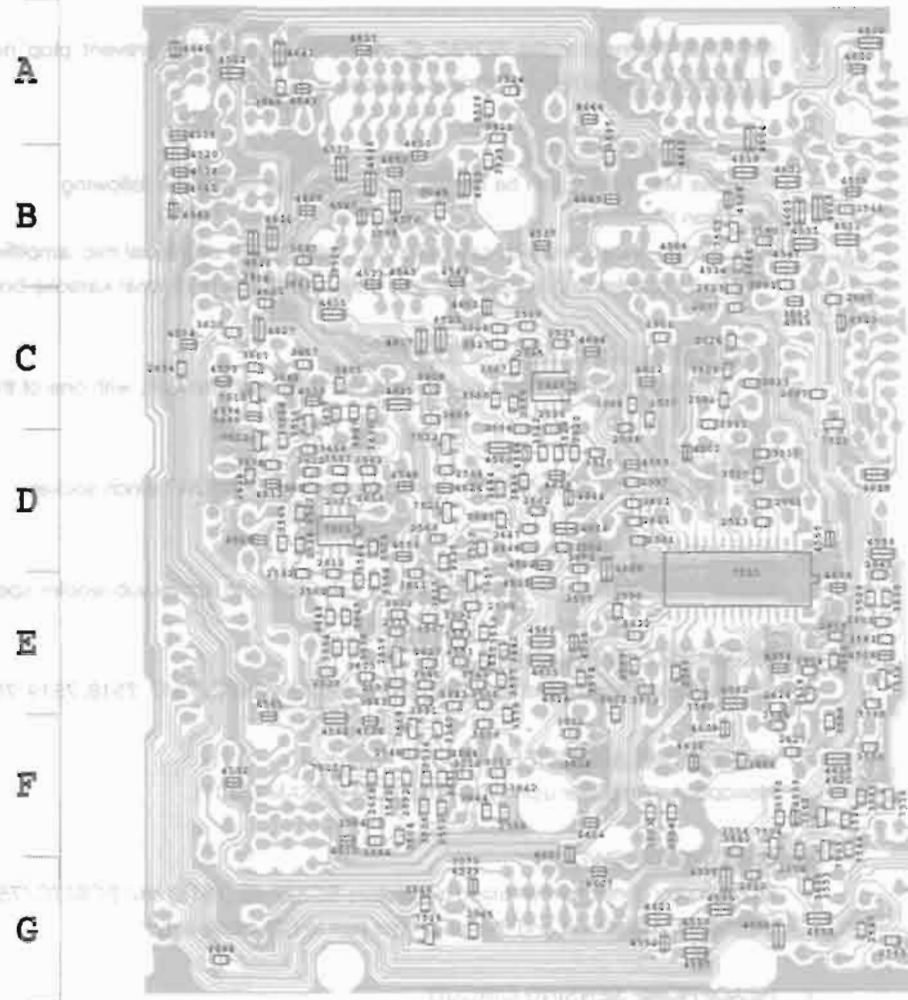
COMPONENT LAYOUT



30	C 1	2580	E 4	9536	G 8
31	B 1	2582	E 5	9537	C 6
51	F 7	2583	B 4	9544	F 8
52	B 5	2584	E 4	9545	E 8
53	G 6	2585	A 8	9546	E 8
54	B 7	2587	B 5	9547	E 8
56	A 7	2588	A 6	9548	E 8
57	B 8	2601	E 5	9549	E 8
58	A 5	2602	E 5	9551	G 3
59	A 7	2615	F 7	9554	F 5
60	F 8	2616	F 6	9557	B 6
61	C 7	2620	D 7	9561	C 4
62	F 5	2634	C 7	9562	A 4
65	A 8	2635	C 8	9563	A 8
70	B 5	2636	D 7	9566	B 6
71	F 1	2642	C 8	9569	B 6
1501	G 6	2644	D 6	9571	E 8
1503	D 8	2645	C 6	9572	B 7
1504	A 7	3502	E 5	9573	F 5
1505	D 1	3547	C 4	9580	F 5
1506	A 5	3565	D 7	9581	C 5
1507	E 2	3567	G 3	9584	E 6
1508	G 2	3579	D 3	9589	C 6
1510	B 3	3582	C 4	9590	B 8
1512	F 7	3583	C 4	9591	G 3
1513	B 3	3584	B 4	9601	B 7
1516	G 4	3587	C 4	9620	C 1
1520	D 6	3607	C 6	9621	D 1
1521	F 1	3631	G 4	9623	E 1
1522	F 2	3632	G 4	9624	D 1
1523	D 2	3635	B 8		
1524	A 5	3637	C 7		
1525	A 5	3690	B 7		
1530	B 2	5501	B 8		
1531	C 2	5502	G 3		
2503	C 5	5503	G 3		
2504	E 6	5504	G 3		
2505	C 4	6501	A 7		
2506	F 4	6502	B 8		
2507	D 4	6503	B 5		
2508	E 4	6504	G 4		
2511	D 4	6510	F 8		
2512	E 4	6511	F 8		
2515	D 7	7515	G 6		
2516	E 7	9503	E 4		
2517	D 4	9506	E 5		
2518	F 4	9507	A 4		
2521	B 6	9508	E 5		
2522	A 6	9509	E 5		
2533	E 6	9511	D 5		
2534	D 6	9513	F 8		
2541	E 7	9514	F 8		
2542	F 7	9515	C 6		
2543	D 8	9518	F 5		
2544	E 7	9519	G 8		
2549	C 5	9523	B 4		
2550	C 5	9524	B 4		
2575	F 3	9525	E 6		

Note: This assembly drawing shows a summary of all possible versions. For components used in a specific version see schematic diagram and respective parts list.

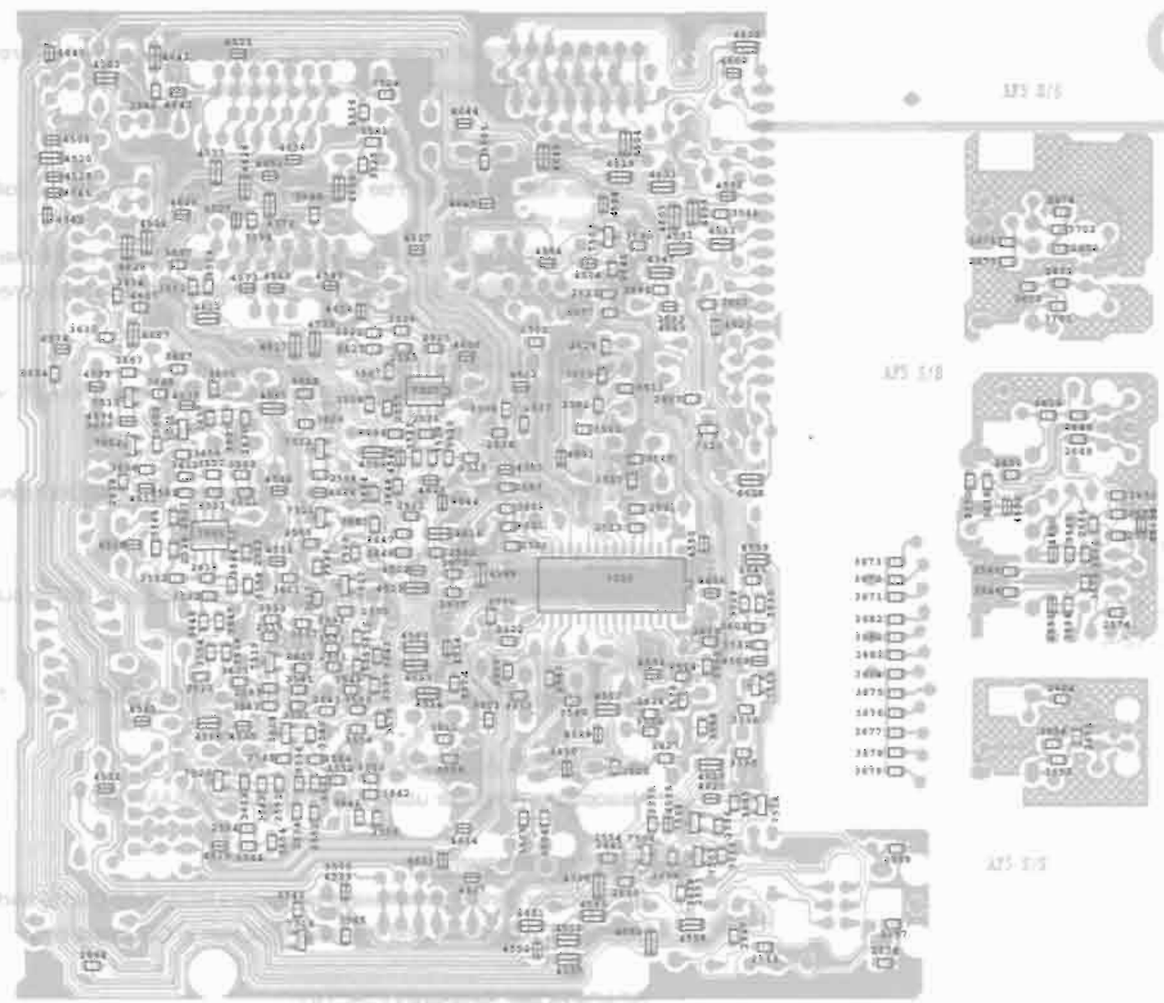
CHIP LAYOUT



Note: This assembly drawing shows a summary of all possible versions. For components used in a specific version see schematic diagram and respective parts list.

CHIP LAYOUT

30 C 1	2580 E 4	9536 G 8
31 B 1	2582 E 5	9537 C 6
51 F 7	2583 B 4	9544 F 8
52 B 5	2584 E 4	9545 E 8
53 G 6	2585 A 8	9546 E 8
54 B 7	2587 B 5	9547 E 8
56 A 7	2588 A 6	9548 E 8
57 B 8	2601 E 5	9549 E 8
58 A 5	2602 E 5	9551 G 3
59 A 7	2615 F 7	9554 F 5
60 F 8	2616 F 4	9557 B 6
61 C 7	2620 D 7	9561 C 4
62 F 8	2624 C 7	9562 A 4
65 A 8	2635 C 8	9563 A 8
70 B 5	2636 D 7	9566 B 6
71 F 1	2642 C 8	9569 B 6
1501 G 6	2644 D 6	9571 E 8
1503 D 8	2645 C 6	9572 B 7
1504 A 7	3502 E 5	9573 F 5
1505 D 1	3547 C 4	9580 F 5
1506 A 5	3565 D 7	9581 C 5
1507 E 4	3567 G 3	9584 E 6
1508 G 2	3579 D 3	9589 C 6
1510 B 3	3582 C 4	9590 B 8
1512 F 7	3583 C 4	9591 G 3
1513 B 3	3584 B 4	9601 B 7
1516 G 4	3587 C 4	9620 C 1
1520 D 8	3607 C 4	9621 D 1
1521 F 1	3631 G 4	9623 E 1
1522 F 2	3632 G 4	9624 D 1
1523 D 2	3635 B 8	
1524 A 8	3637 C 7	
1525 A 8	3690 B 7	
1530 B 2	5501 B 8	
1531 C 2	5502 G 3	
2503 G 5	5503 G 3	
2504 E 6	5504 G 3	
2505 C 4	6501 A 7	
2506 F 4	6502 B 8	
2507 D 4	6503 B 5	
2508 E 4	6504 G 4	
2511 D 4	6510 F 8	
2512 B 4	6511 F 8	
2515 D 7	7515 G 5	
2516 E 7	9503 E 4	
2517 D 4	9506 E 5	
2518 F 4	9507 A 4	
2521 B 6	9508 E 5	
2522 A 6	9509 E 5	
2533 B 6	9511 D 5	
2534 D 6	9513 F 8	
2541 E 7	9514 F 8	
2542 F 7	9515 C 6	
2543 D 8	9518 F 5	
2544 E 7	9519 G 8	
2549 C 5	9523 B 4	
2550 C 8	9524 B 4	
2579 F 3	9525 E 6	



Note: This assembly drawing shows a summary of all possible versions. For components used in a specific version see schematic diagram and respective parts list.

12-2

2501 C 4	2618 F 7	3528 D 6	3596 F 4	4502 D 6	4574 C 8	7514 F 3
2502 D 6	2619 E 4	3529 E 3	3597 B 7	4506 A 8	4580 D 6	7516 G 7
2513 D 4	2621 D 5	3530 E 3	3598 B 7	4508 G 4	4593 C 8	7517 E 6
2514 E 4	2622 E 5	3531 F 6	3601 D 5	4509 E 3	4594 C 8	7518 F 7
2519 E 7	2623 C 4	3532 E 6	3602 E 5	4510 G 5	4600 A 3	7519 E 7
2520 E 7	2624 E 4	3533 E 6	3603 E 7	4511 B 4	4601 B 4	7520 F 7
2523 D 6	2625 C 4	3534 F 7	3604 F 7	4512 D 8	4602 A 3	7521 D 6
2524 F 6	2626 C 4	3535 E 6	3605 C 4	4513 F 7	4603 B 4	7522 D 6
2525 C 6	2627 F 4	3536 F 7	3606 F 4	4514 B 4	4604 A 4	7523 C 4
2526 C 6	2630 C 7	3537 E 6	3608 C 6	4515 E 6	4605 B 4	7553 E 4
2527 D 7	2632 F 1	3538 E 7	3609 C 6	4517 B 6	4606 C 5	45658 D 1
2528 D 7	2637 C 7	3539 D 6	3611 E 7	4518 D 8	4607 G 5	
2529 D 7	2638 D 8	3540 F 6	3612 D 7	4519 B 4	4608 E 4	
2531 D 7	2641 B 4	3541 E 7	3613 E 6	4520 B 8	4609 F 4	
2532 E 7	2643 E 3	3542 F 7	3618 D 2	4521 A 7	4610 F 5	
2535 E 6	2646 D 6	3543 E 7	3619 C 1	4522 A 8	4611 C 7	
2536 F 6	2647 D 6	3544 F 7	3633 C 8	4523 C 4	4612 B 6	
2537 C 5	2648 D 1	3545 G 6	3634 C 8	4524 E 6	4613 C 6	
2538 C 5	2649 C 1	3546 G 7	3636 D 8	4525 C 6	4614 F 5	
2539 E 6	2650 D 2	3548 B 4	3639 G 4	4526 E 5	4615 E 6	
2540 F 7	2651 D 2	3549 E 6	3640 F 4	4527 B 7	4616 D 6	
2545 D 2	2652 D 1	3550 F 6	3641 E 6	4528 B 8	4617 C 7	
2546 E 2	2653 D 1	3551 E 7	3642 F 6	4529 G 6	4618 D 3	
2547 G 3	2654 C 8	3552 F 6	3643 E 6	4530 C 7	4619 F 4	
2548 G 3	2671 B 1	3553 E 7	3644 F 6	4531 B 4	4620 F 4	
2551 E 6	2672 B 1	3554 E 7	3645 B 6	4532 F 8	4621 G 5	
2552 F 6	2673 B 1	3555 E 6	3646 D 6	4533 B 7	4622 B 8	
2553 G 4	2674 B 1	3556 F 6	3647 E 7	4534 B 4	4623 D 6	
2554 F 4	2675 B 2	3557 D 7	3648 E 7	4535 F 7	4624 D 8	
2555 C 6	2676 B 2	3558 E 7	3652 F 1	4539 F 4	4625 C 7	
2557 G 2	2677 C 4	3559 E 5	3654 F 1	4541 B 8	4626 B 8	
2558 F 2	2678 G 2	3560 E 5	3655 C 7	4542 B 8	4627 C 8	
2559 E 5	3501 C 5	3561 D 7	3656 D 8	4543 B 6	4628 B 7	
2560 E 5	3503 F 5	3562 E 7	3657 C 7	4544 D 6	4629 B 7	
2561 D 4	3504 F 5	3563 D 7	3658 D 7	4545 B 7	4630 B 7	
2562 E 4	3505 B 5	3564 E 7	3661 B 7	4546 D 6	4631 F 6	
2563 D 6	3506 C 5	3566 D 8	3662 D 6	4547 B 4	4632 C 5	
2564 D 6	3507 C 6	3568 G 8	3663 D 6	4548 D 7	4640 A 8	
2573 D 1	3508 C 6	3569 F 4	3664 D 6	4549 C 4	4641 A 8	
2574 E 1	3509 C 6	3570 F 4	3666 C 8	4550 D 4	4642 A 7	
2581 D 5	3510 D 5	3571 D 1	3667 C 8	4551 D 7	4643 B 5	
2586 D 1	3511 C 5	3572 E 1	3668 C 8	4552 G 5	4644 A 5	
2590 E 5	3512 F 5	3573 D 5	3671 E 2	4553 D 5	4645 B 5	
2591 E 6	3513 C 4	3574 E 5	3672 E 2	4554 E 4	4650 D 1	
2592 F 7	3514 F 5	3575 G 6	3673 D 2	4555 G 4	4651 E 1	
2593 E 7	3515 D 4	3577 E 5	3674 E 2	4556 B 4	4652 D 2	
2594 F 7	3516 F 4	3578 F 6	3675 E 2	4557 G 5	4653 B 7	
2595 C 6	3517 D 4	3580 B 4	3676 E 2	4558 G 4	4657 C 8	
2596 C 6	3518 E 4	3581 E 3	3677 F 2	4559 D 3	7501 D 7	
2597 D 5	3519 B 7	3585 F 3	3678 F 2	4560 E 6	7502 D 8	
2603 E 3	3520 D 5	3586 E 3	3679 F 2	4561 F 8	7503 F 4	
2604 E 1	3521 C 6	3588 F 4	3680 E 2	4562 F 7	7504 F 4	
2607 C 4	3522 D 6	3589 A 8	3681 E 2	4563 E 4	7505 B 4	
2609 F 4	3523 A 6	3591 B 4	3682 E 2	4564 B 5	7507 C 6	
2610 G 4	3524 A 6	3592 C 4	3701 C 1	4565 G 4	7510 C 8	
2611 D 7	3525 B 6	3593 D 1	3702 B 1	4569 D 5	7511 C 7	
2612 E 7	3526 A 6	3594 E 1	3907 C 7	4572 B 7	7512 F 4	
2617 E 7	3527 C 6	3595 F 3	4501 D 5	4573 B 7	7513 E 3	

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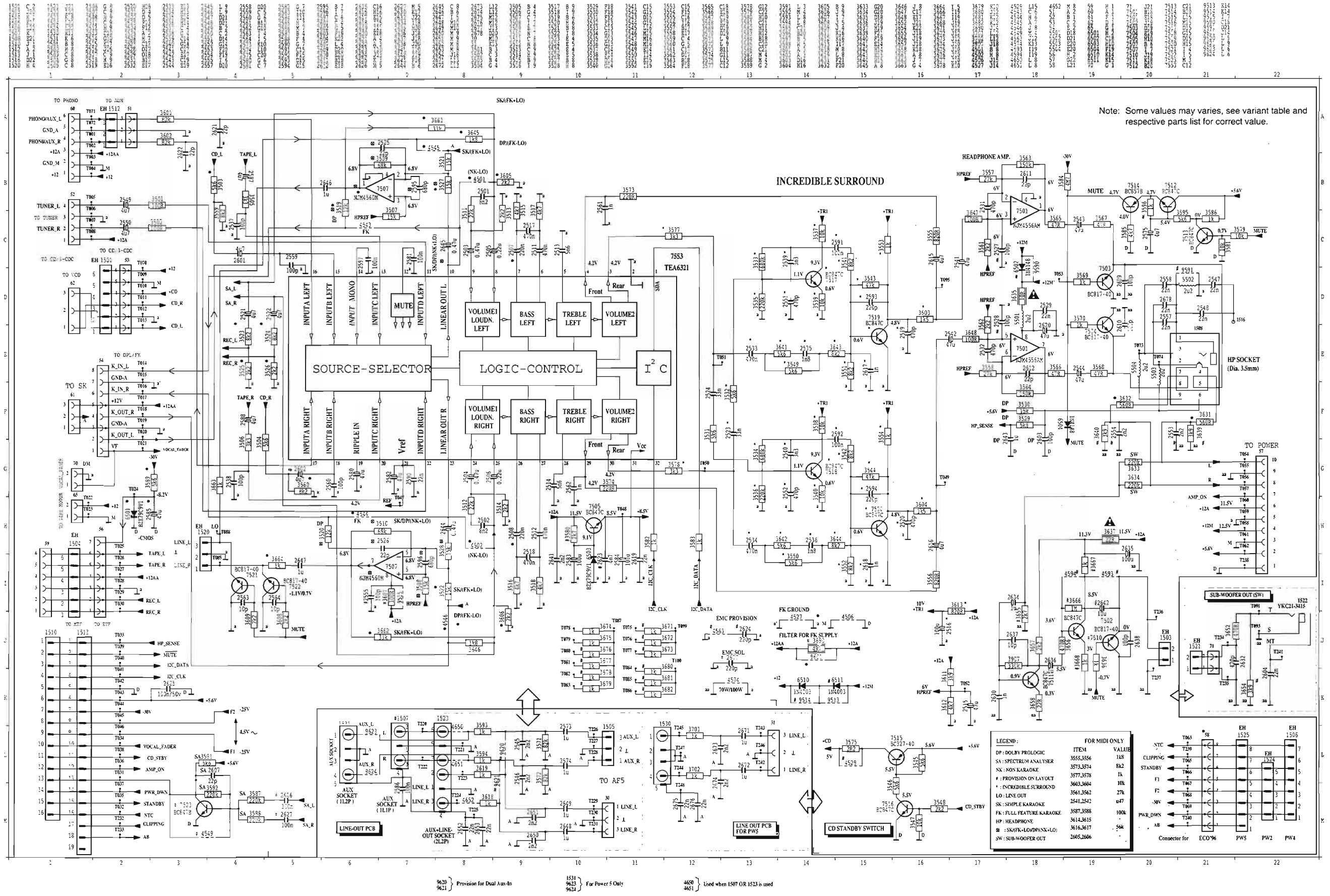
CIRCUIT DIAGRAM



9620 / 9621 } Provision for Dual Aux-In
1531 / 9623 / 9624 } For Power 5 Only
4650 / 4651 } Used when 1507 OR 1523 is used

12-4

ELECTRICAL PARTS LIST - AF5 BOARD

ELECTRICAL PARTS LIST - AF5 BOARD

MISCELLANEOUS

1508	4822 267 40898	Headphone Socket
1513	4822 267 10737	Connector 18 pins
1522	4822 267 31729	Cinch Socket - Sub-Woofer out
1530	4822 267 20452	Cinch Socket - Line-out
1531	4822 267 20452	Cinch Socket - Aux

CAPACITORS

2501	4822 126 10525	8,2nF 10% 63V
2502	4822 126 10525	8,2nF 10% 63V
2503	4822 124 41407	0,47µF 20% 63V
2504	4822 124 41407	0,47µF 20% 63V
2505	4822 124 40746	0,22µF 20% 63V
2506	4822 124 40746	0,22µF 20% 63V
2507	4822 121 42408	220nF 5% 63V
2508	4822 121 42408	220nF 5% 63V
2511	4822 121 51252	470nF 5% 63V
2512	4822 121 51252	470nF 5% 63V
2513	4822 122 32646	5,6nF 10% 50V
2514	4822 122 32646	5,6nF 10% 50V
2515	4822 124 81029	100µF 20% 25V
2516	4822 124 81029	100µF 20% 25V
2517	4822 121 51252	470nF 5% 63V
2518	4822 121 51252	470nF 5% 63V
2519	5322 122 32268	470pF 10% 50V
2520	5322 122 32268	470pF 10% 50V
2521	4822 124 40246	4,7µF 20% 63V
2522	4822 124 40246	4,7µF 20% 63V
2523	4822 126 12105	33nF 5% 63V
2524	4822 126 12105	33nF 5% 63V
2525	5322 122 32658	22pF 5% 50V
2526	5322 122 32658	22pF 5% 50V
2529	5322 122 32654	22nF 10% 63V
2531	5322 122 32268	470pF 10% 50V
2532	5322 122 32268	470pF 10% 50V
2533	4822 121 51252	470nF 5% 63V
2534	4822 121 51252	470nF 5% 63V
2535	4822 126 10847	1,8nF 10% 63V
2536	4822 126 10847	1,8nF 10% 63V
2537	5322 122 32531	100pF 5% 50V
2538	5322 122 32531	100pF 5% 50V
2539	4822 122 33891	3,3nF 10% 63V
2540	4822 122 33891	3,3nF 10% 63V
2541	4822 124 41751	47µF 20% 50V
2542	4822 124 41751	47µF 20% 50V
2543	4822 124 41751	47µF 20% 50V
2544	4822 124 41751	47µF 20% 50V
2545	5322 122 32268	470pF 10% 50V
2546	5322 122 32268	470pF 10% 50V
2547	5322 122 32654	22nF 10% 63V
2548	4822 126 10002	100nF 20% 25V
2549	4822 124 40246	4,7µF 20% 63V
2550	4822 124 40246	4,7µF 20% 63V
2551	5322 122 32268	470pF 10% 50V
2552	5322 122 32268	470pF 10% 50V
2557	5322 122 32654	22nF 10% 63V
2558	5322 122 32654	22nF 10% 63V
2559	5322 122 32531	100pF 5% 50V
2560	5322 122 32531	100pF 5% 50V
2561	5322 122 34123	1nF 10% 50V
2562	5322 122 34123	1nF 10% 50V
2563	5322 122 32448	10pF 5% 50V
2564	5322 122 32448	10pF 5% 50V
2573	4822 126 13836	1µF 16V
2574	4822 126 13836	1µF 16V
2575	4822 124 40246	4,7µF 20% 63V
2580	4822 124 41751	47µF 20% 50V
2581	4822 126 10002	100nF 20% 25V
2582	4822 124 41751	47µF 20% 50V
2583	4822 124 81029	100µF 20% 25V
2584	4822 124 81029	100µF 20% 25V
2585	4822 124 41751	47µF 20% 50V
2586	4822 126 13838	100nF +80/-20% 50V
2587	4822 124 40246	4,7µF 20% 63V
2588	4822 124 40246	4,7µF 20% 63V
2590	5322 122 32654	22nF 10% 63V
2591	4822 126 10002	100nF 20% 25V
2592	4822 126 10002	100nF 20% 25V
2593	4822 122 33575	220pF 5% 50V
2594	4822 122 33575	220pF 5% 50V
2595	4822 122 32535	680pF 10% 63V
2596	4822 122 32535	680pF 10% 63V
2597	4822 126 10002	100nF 20% 25V
2601	4822 124 40246	4,7µF 20% 63V
2602	4822 124 40246	4,7µF 20% 63V
2603	5322 122 32531	100pF 5% 50V
2604	5322 122 32654	22nF 10% 63V
2609	5322 122 32531	100pF 5% 50V
2610	5322 122 32531	100pF 5% 50V
2611	5322 122 32658	22pF 5% 50V
2612	5322 122 32658	22pF 5% 50V
2615	4822 124 40246	4,7µF 20% 63V
2616	4822 124 40246	4,7µF 20% 63V
2617	5322 122 34123	1nF 10% 50V
2618	5322 122 34123	1nF 10% 50V
2619	5322 122 32654	22nF 10% 63V
2620	4822 124 40433	47µF 20% 25V
2621	5322 122 32658	22pF 5% 50V
2622	5322 122 32658	22pF 5% 50V
2623	5322 126 10223	4,7nF 10% 63V
2625	4822 126 10002	100nF 20% 25V
2630	5322 122 34123	1nF 10% 50V
2632	5322 122 32268	470pF 10% 50V
2634	4822 124 40242	1µF 20% 63V
2635	4822 124 81029	100µF 20% 25V
2636	4822 124 40242	1µF 20% 63V
2637	5322 122 32448	10pF 5% 50V
2638	5322 122 32531	100pF 5% 50V
2641	4822 122 33175	2,2nF 20% 50V
2643	4822 126 13836	1µF 16V
2644	4822 124 41407	0,47µF 20% 63V
2645	4822 124 41407	0,47µF 20% 63V
2646	4822 126 13836	1µF 16V
2647	4822 126 13836	1µF 16V
2654	4822 122 33575	220pF 5% 50V
2671	4822 126 13836	1µF 16V
2672	4822 126 13836	1µF 16V
2673	4822 122 33175	2,2nF 20% 50V
2674	4822 122 33175	2,2nF 20% 50V
2675	5322 122 32654	22nF 10% 63V
2676	5322 122 32654	22nF 10% 63V
2678	5322 122 32654	22nF 10% 63V

RESISTORS

3501	4822 117 10833	10k 1% 0,1W
3502	4822 116 83864	10k 5% 0,5W
3503	4822 051 20562	5k6 5% 0,1W
3504	4822 051 20562	5k6 5% 0,1W
3505	4822 051 20332	3k3 5% 0,1W
3506	4822 051 20332	3k3 5% 0,1W
3507	4822 051 20153	15k 5% 0,1W
3508	4822 051 20153	15k 5% 0,1W
3509	4822 051 20683	68k 5% 0,1W
3510	4822 051 20683	68k 5% 0,1W
3511	4822 051 20223	22k 5% 0,1W
3512	4822 051 20223	22k 5% 0,1W
3513	4822 117 11449	2k2 1% 0,1W
3514	4822 117 11449	2k2 1% 0,1W
3515	4822 051 20472	4k7 5% 0,1W
3516	4822 051 20472	4k7 5% 0,1W
3517	4822 051 20472	4k7 5% 0,1W
3518	4822 051 20472	4k7 5% 0,1W
3519	4822 117 11507	6k8 1% 0,1W
3520	4822 117 11507	6k8 1% 0,1W
3523	4822 051 20822	8k2 5% 0,1W
3524	4822 051 20822	8k2 5% 0,1W
3525	4822 051 20332	3k3 5% 0,1W
3526	4822 051 20332	3k3 5% 0,1W
3527	4822 051 20153	15k 5% 0,1W
3528	4822 051 20153	15k 5% 0,1W
3529	4822 051 20562	5k6 5% 0,1W
3530	4822 051 20153	15k 5% 0,1W
3531	4822 051 20562	5k6 5% 0,1W
3532	4822 051 20562	5k6 5% 0,1W
3533	4822 051 20684	680k 5% 0,1W
3534	4822 051 20684	680k 5% 0,1W
3535	4822 051 20224	220k 5% 0,1W
3536	4822 051 20224	220k 5% 0,1W
3537	4822 117 10833	10k 1% 0,1W
3538	4822 117 10833	10k 1% 0,1W
3539	4822 117 10833	10k 1% 0,1W
3540	4822 117 10833	10k 1% 0,1W
3541	4822 051 20822	8k2 5% 0,1W
3542	4822 051 20822	8k2 5% 0,1W
3543	4822 117 10834	47k 1% 0,1W
3544	4822 117 10834	47k 1% 0,1W
3545	4822 051 20562	5k6 5% 0,1W
3546	4822 051 20562	5k6 5% 0,1W
3547	4822 116 83864	10k 5% 0,5W
3548	4822 117 11449	2k2 1% 0,1W
3549	4822 051 20562	5k6 5% 0,1W
3550	4822 051 20562	5k6 5% 0,1W
3551	4822 051 20822	8k2 5% 0,1W
3552	4822 051 20822	8k2 5% 0,1W
3553	4822 051 10102	1k 2% 0,25W
3554	4822 051 10102	1k 2% 0,25W
3555	4822 117 11454	820R 1% 0,1W
3556	4822 117 11454	820R 1% 0,1W
3557	4822 051 20273	27k 5% 0,1W
3558	4822 051 20273	27k 5% 0,1W
3559	4822 051 20822	8k2 5% 0,1W
3560	4822 051 20822	8k2 5% 0,1W
3561	4822 051 20153	15k 5% 0,1W
3562	4822 051 20153	15k 5% 0,1W
3563	4822 051 20104	100k 5% 0,1W
3564	4822 051 20104	100k 5% 0,1W
3565	4822 116 52195	47R 5% 0,5W
3566	4822 051 20479	47R 5% 0,1W
3567	4822 116 52195	47R 5% 0,5W
3568	4822 051 20479	47R 5% 0,1W
3569	4822 051 10102	1k 2% 0,25W
3570	4822 051 10102	1k 2% 0,25W
3571	4822 117 11149	82k 1% 0,1W
3572	4822 117 11149	82k 1% 0,1W
3573	4822 117 11503	220R 1% 0.1W
3574	4822 117 11503	220R 1% 0.1W
3575	4822 051 20228	2R2 5% 0,1W
3577	4822 051 20472	4k7 5% 0,1W
3578	4822 051 20472	4k7 5% 0,1W
3579	4822 116 83864	10k 5% 0,5W
3581	4822 117 10833	10k 1% 0,1W
3582	4822 050 11002	1k 1% 0,4W
3583	4822 050 11002	1k 1% 0,4W
3584	4822 050 24705	4M7 1% 0,6W
3585	4822 051 20472	4k7 5% 0,1W

ELECTRICAL PARTS LIST - AF5 BOARD

RESISTORS

3586	4822 051 10102		1k 2% 0,25W
3589	4822 051 20562		5k6 5% 0,1W
3593	4822 051 10102		1k 2% 0,25W
3594	4822 051 10102		1k 2% 0,25W
3595	4822 051 20562		5k6 5% 0,1W
3597	4822 051 20273		27k 5% 0,1W
3598	4822 051 20273		27k 5% 0,1W
3601	4822 117 11149		82k 1% 0,1W
3602	4822 117 11149		82k 1% 0,1W
3603	4822 117 11139		1k5 1% 0,1W
3604	4822 117 11139		1k5 1% 0,1W
3605	4822 117 11449		2k2 1% 0,1W
3606	4822 117 11449		2k2 1% 0,1W
3608	4822 117 11449		2k2 1% 0,1W
3609	4822 117 11449		2k2 1% 0,1W
3611	4822 051 20392		3k9 5% 0,1W
3612	4822 051 20472		4k7 5% 0,1W
3613	4822 117 11454		820R 1% 0,1W
3631	4822 116 52226		560R 5% 0,5W
3632	4822 116 52226		560R 5% 0,5W
3633	4822 051 20224		220k 5% 0,1W
3634	4822 051 20224		220k 5% 0,1W
3635	4822 052 10109	⚠	10R 5% 0,33W
3636	4822 051 10102		1k 2% 0,25W
3637	4822 052 10229	⚠	22R 5% 0,33W
3641	4822 051 20562		5k6 5% 0,1W
3642	4822 051 20562		5k6 5% 0,1W
3643	4822 051 20822		8k2 5% 0,1W
3644	4822 051 20822		8k2 5% 0,1W
3645	4822 051 20182		1k8 5% 0,1W
3646	4822 051 20182		1k8 5% 0,1W
3647	4822 051 20101		100R 5% 0,1W
3648	4822 051 20101		100R 5% 0,1W
3652	4822 051 20471		470R 5% 0,1W
3654	4822 051 20392		3k9 5% 0,1W
3656	4822 051 20471		470R 5% 0,1W
3657	4822 117 11449		2k2 1% 0,1W
3658	4822 051 20229		22R 5% 0,1W
3663	4822 051 10102		1k 2% 0,25W
3664	4822 051 10102		1k 2% 0,25W
3674	4822 051 20153		15k 5% 0,1W
3675	4822 051 20822		8k2 5% 0,1W
3701	4822 051 10102		1k 2% 0,25W
3702	4822 051 10102		1k 2% 0,25W
3907	4822 051 20334		330k 5% 0,1W
4506	4822 051 20008		0R Jumper 0805
4508	4822 051 10008		0R Jumper 1206
4509	4822 051 20008		0R Jumper 0805
4510	4822 051 10008		0R Jumper 1206
4512	4822 051 20008		0R Jumper 0805
4513	4822 051 20008		0R Jumper 0805
4514	4822 051 20008		0R Jumper 0805
4515	4822 051 10008		0R Jumper 1206
4517	4822 051 20008		0R Jumper 0805
4518	4822 051 20008		0R Jumper 0805
4519	4822 051 10008		0R Jumper 1206
4520	4822 051 10008		0R Jumper 1206
4521	4822 051 20008		0R Jumper 0805
4522	4822 051 10008		0R Jumper 1206
4523	4822 051 20008		0R Jumper 0805
4524	4822 051 10008		0R Jumper 1206
4526	4822 051 20008		0R Jumper 0805
4527	4822 051 20008		0R Jumper 0805
4528	4822 051 20008		0R Jumper 0805
4530	4822 051 20008		0R Jumper 0805
4531	4822 051 10008		0R Jumper 1206
4532	4822 051 20008		0R Jumper 0805
4533	4822 051 10008		0R Jumper 1206
4534	4822 051 20008		0R Jumper 0805
4535	4822 051 20008		0R Jumper 0805
4539	4822 051 20008		0R Jumper 0805
4541	4822 051 20008		0R Jumper 0805
4542	4822 051 20008		0R Jumper 0805
4548	4822 051 20008		0R Jumper 0805
4550	4822 051 20008		0R Jumper 0805
4551	4822 051 20008		0R Jumper 0805
4552	4822 051 20008		0R Jumper 0805
4553	4822 051 20008		0R Jumper 0805
4554	4822 051 20008		0R Jumper 0805
4555	4822 051 10008		0R Jumper 1206
4556	4822 051 20008		0R Jumper 0805
4557	4822 051 10008		0R Jumper 1206
4558	4822 051 10008		0R Jumper 1206
4559	4822 051 10008		0R Jumper 1206
4560	4822 051 10008		0R Jumper 1206
4561	4822 051 20008		0R Jumper 0805
4562	4822 051 10008		0R Jumper 1206
4569	4822 051 10008		0R Jumper 1206
4572	4822 051 10008		0R Jumper 1206
4573	4822 051 20008		0R Jumper 0805
4593	4822 051 20008		0R Jumper 0805
4594	4822 051 20008		0R Jumper 0805
4600	4822 051 20008		0R Jumper 0805
4601	4822 051 10008		0R Jumper 1206
4602	4822 051 10008		0R Jumper 1206
4603	4822 051 10008		0R Jumper 1206
4604	4822 051 10008		0R Jumper 1206
4606	4822 051 20008		0R Jumper 0805
4607	4822 051 20008		0R Jumper 0805
4608	4822 051 20008		0R Jumper 0805
4609	4822 051 20008		0R Jumper 0805
4610	4822 051 20008		0R Jumper 0805

ELECTRICAL PARTS LIST - AF5 BOARD

RESISTORS

4611	4822 051 10008	0R Jumper 1206
4612	4822 051 10008	0R Jumper 1206
4613	4822 051 20008	0R Jumper 0805
4614	4822 051 20008	0R Jumper 0805
4615	4822 051 10008	0R Jumper 1206
4616	4822 051 10008	0R Jumper 1206
4617	4822 051 10008	0R Jumper 1206
4618	4822 051 10008	0R Jumper 1206
4622	4822 051 10008	0R Jumper 1206
4623	4822 051 20008	0R Jumper 0805
4624	4822 051 20008	0R Jumper 0805
4625	4822 051 10008	0R Jumper 1206
4626	4822 051 10008	0R Jumper 1206
4628	4822 051 10008	0R Jumper 1206
4629	4822 051 20008	0R Jumper 0805
4630	4822 051 20008	0R Jumper 0805
4631	4822 051 20008	0R Jumper 0805
4632	4822 051 20008	0R Jumper 0805
4640	4822 051 20008	0R Jumper 0805
4641	4822 051 10008	0R Jumper 1206
4642	4822 051 20008	0R Jumper 0805
4643	4822 051 10008	0R Jumper 1206
4644	4822 051 20008	0R Jumper 0805
4645	4822 051 20008	0R Jumper 0805
4653	4822 051 20008	0R Jumper 0805
4657	4822 051 20008	0R Jumper 0805

COILS & FILTERS

5501	4822 157 11477	Fixed Inductor 2µ2 5%
5502	4822 157 11477	Fixed Inductor 2µ2 5%
5503	4822 157 11477	Fixed Inductor 2µ2 5%
5504	4822 157 11477	Fixed Inductor 2µ2 5%

DIODES

6501	4822 130 30862	BZX79-B9V1
6503	4822 130 30862	BZX79-B9V1
6504	4822 130 30621	1N4148
6510	4822 130 31878	1N4003G
6511	4822 130 31878	1N4003G

TRANSISTORS & INTEGRATED CIRCUITS

7501	4822 209 31378	NJM4556MB
7502	4822 130 42804	BC817-25
7503	4822 130 42804	BC817-25
7504	4822 130 42804	BC817-25
7505	5322 130 42755	BC847C
7507	4822 209 83357	NJM4560M
7511	5322 130 42755	BC847C
7512	5322 130 42755	BC847C
7513	5322 130 42755	BC847C
7514	5322 130 60508	BC857B
7515	4822 130 41246	BC327-25
7516	5322 130 42755	BC847C
7517	5322 130 42755	BC847C
7518	5322 130 42755	BC847C
7519	5322 130 42755	BC847C
7520	5322 130 42755	BC847C
7521	5322 130 42755	BC847C
7522	5322 130 42755	BC847C
7553	4822 209 33652	TEA6321T/V1

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

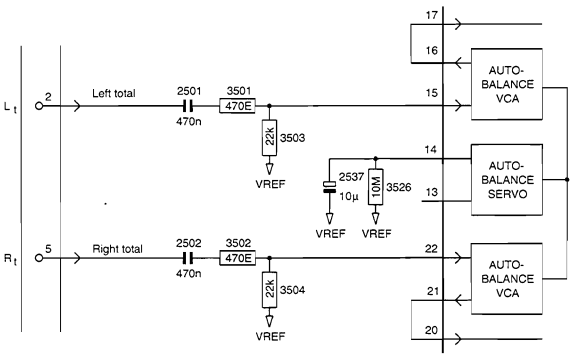
DOLBY PRO-LOGIC

TABLE OF CONTENTS

CIRCUIT DESCRIPTION

1 - Automatic balance control circuit:

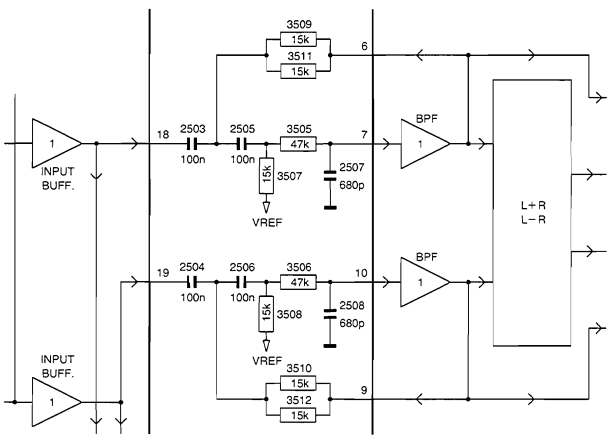
The first section in the Dolby Proloic decoder IC7501 (MC69032) is Auto balance circuit, to correct input balance errors between Lt and Rt. signals.



This is vital to ensure that the following matrix stage givesoptimal results.
The previons generation (Dolby surround) haed an external Left & Right balance control.
To be able to set to correct balance the customer must first switch off the center speaker and select a dialogue.
Then Left & Right can be set for minimum dialogue coming out of the Left & Right speakers.
Now through the automatically balance circuit (internally implemented) the center mode off is not needed anymore (but is still possible with this device).
FW670: No center mode OFF feature.

2 - Adaptive matrix stage

(The heart of the active decoder)

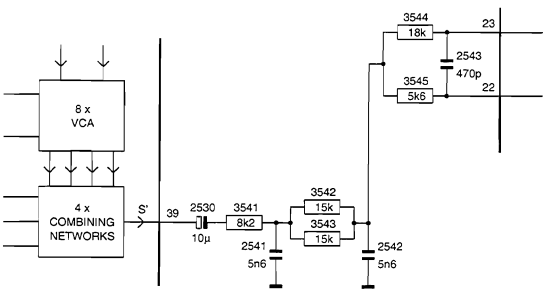


The complex matrix stage splits-up the encoded Lt - Rt signals into Left, Right, Center (L=R) and Surround (L-R) signals
The function of this circuit is to analyse continuously the two channel audio input to determine the direction and relative magnitude of the encoded soundfield (improving directional location).

3 - Filters in surround path .

The first block in the surround path is an ANTI ALIAS filter, to prevent spurious beat product occurring as a result of the sampling process in the time delay stage.

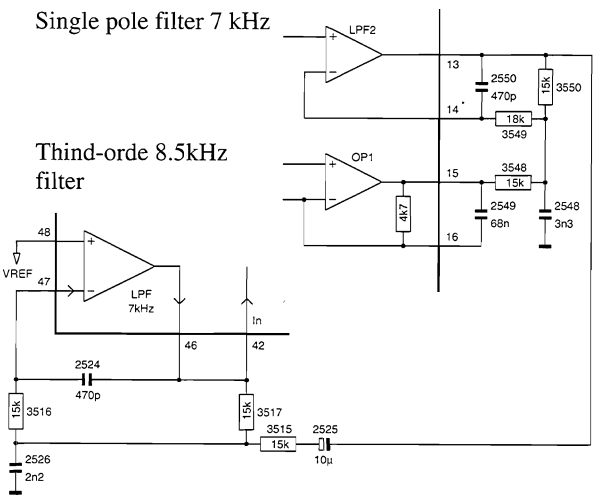
ANTI ALIAS filter,



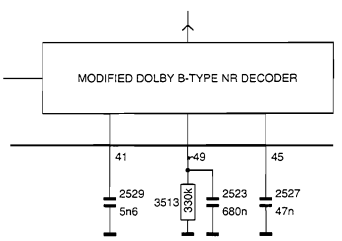
The next filter must have at least a 12 dB per octave slope above the breaking point.
A single pole filter at 7kHz is followed by a third-order filter at 8.5kHz, together giving the proper cut off frequency and steeper roll-off for rejection of BBD clock signals. (**B**ucket - **B**rigade - **D**evices)

Single pole filter 7 kHz

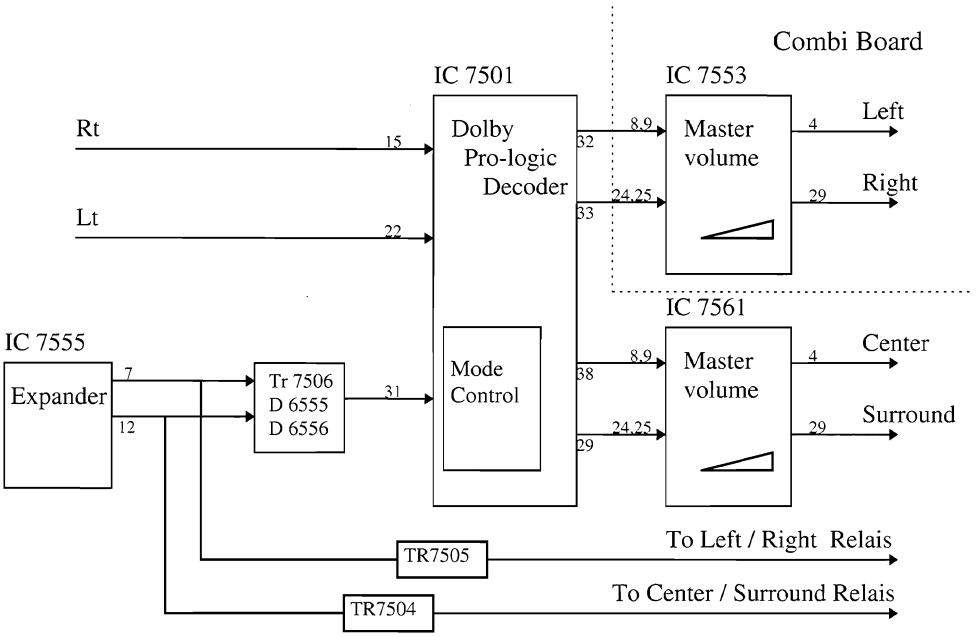
Thind-orde 8.5kHz filter



Modified Dolby B type NR (Noise Reduction) decoder is used to reduce the signal to noise ratio in the surround channel and the leakage of high frequency components from the front into the surround channel
Modified Dolby B type NR decoder stage makes correct Dolby B decoding possible



4 - Mode control circuit



The decoded signals, left,right,center,surround can be switched into the following modes:

Channel mode:

2 channel mode :

original stereo mode (Left and Right output)
- pin7 = high, pin12 = low IC 7555
- pin 31 = low IC 7501

3 channel mode :

No surround speaker available (L,R,C)
The surround information is equally added to the left and right outputs.
-pin 7= low, pin 12 high IC 7555
-pin31 = open input IC 7501 (typical 2...3V)

4 channel mode :

Pro-logic --> all four outputs are used (L,R C,S)
-pin7 = high, pin 12 high IC 7555
-pin31 = high IC 7501

Center mode:

center mode Wide :

Full frequency range in center channel 20Hz.....20kHz. The customer needs a better specified center speaker for this mode (with woofer)

center mode Normal :

-3 dB breakpoint (roll off) at 100Hz, frequency response 100 Hz.....20kHz .The customer can place a simple center speaker . To prevent loss of Bass center information these bass < 100Hz is equally added to the left and right full wave speakers.

center mode Phantom :

No center speaker available. To prevent loss of center information these center information (20Hz.....20kHz) is equally added to the left and right speakers.

TEST CD DOLBY PROLOGIC TEST DESCRIPTION

- The intention of this description is to explain the most important performance measurements for **DPL** (**D**olby **P**ro-**L**ogic) sets for service.

- Test instruments (recommended) :
  - Dolby Prologic test CD 4822 395 10216
  - AC mv meters (4x) L, C, R, S
  - Oscilloscope (double beam)
  - Distortion meter
  - CD player.

WARNING: Be sure that the ground connection (-) of each instrument is <u>not</u> connecteded with the safety earth ⊥ connection. To avoid damage to output amplifiers (balance type) Use only cinch (input) ground connection

STARTING CONDITION :

- Replace the loudspeakers for all four output amplifiers with loud resistors according the output impedance for each amplifier (or use 8 Ω as standard loudresistor).
- Set volume to min. position
- Switch off all features like ASP setting, DBB etc...
- Set "TONE CONTROL" in "FLAT" mode.
- Select the "PRO LOGIC" mode.
- Select "WIDE" mode for Centre channel in sets with this options.
- Set time delay in Surround channel at 20 msec. in sets with variable time delay.
- Dolby Prologic test CD in CD player.

SERVICE TEST DESCRIPTION

Test 1 : *Output and balance setting for all four channels*

Select track 2 :

Adjust L, C, R and S for ≈ 1W output on the loudresistor with master volume. Adjust with L/R balance and Centre/Surround "TRIM" all four channels to equal level (equal meter readings)

Note: 1Watt output corresponds with 2.83V across 8 Ω

$P = U^2/R \rightarrow U = \sqrt{P \times R} = \sqrt{1 \times 8} = 2{,}83V$

Test 2 : *Frequency response for Left and Right channel*

Requirement : -3 dB points at ≤ 50 Hz and ≥ 15 kHz

Select track 3:

measure (and note) the overall gain of Left channel across the load resistor.

Select track 4:

measure (and note) the overall gain on Right channel across the load resistor.

Test 3 : *Frequency response for Center channel*

<u>2 possibilitie :</u>

1- Center mode "wide" requirements : -3 dB at ≤ 50 Hz and > 15 kHz (same as L/R requirements)

2- Center mode "normal" requirements : -3 dB point at ± 100 Hz and ≥ 15 kHz (the difference is the roll-off behaviour of the bass frequencies).

Select track 5 :

measure (and note) the overall gain of Center channel across the load resistor in "wide" mode (only in sets with this option) and repeat this measurement in "normal" mode.

Test 4 : *Frequency response for Surround channel*

Surround requirements : -3 dB point at ≤ 100 Hz and ± 7 kHz (6 kHz ... 8 kHz)

The difference is the roll-off behaviour of the high treble frequencies.

Select track 6 :

measure (and note) the overall gain of Surround channel across the loud resistor.

Test 5 : *Modified Dolby B type NR decoding freq. response of the Surround channel*
Requirement : Roll off behaviour at ± 5 kHz related to 100 Hz. In this case use 100 Hz as 0 dB reference gain.
Select track 14:
measure (and note) the overall gain of Surround channel across the load resistor.
Note : The output level on track 14 = -35 dB below the 1W output reference of the Surround channel.

Test 6 :*Total harmonic distortion measurements for Left, Center, Right, Surround channels for 1 Watt output*
Note : If necessary use a special CD test filter 20 Hz ... 20 kHz between the output channel and the distortion meter to prevent spurrious products out of audio waves (> 20 kHz) from to the CD player in test.
Select track 3 :
Measure distortion at 1 kHz across the Left channel.
Output load resistor : requirement THD < 0,3 %
Select track 4 :
Measure distortion at 1 kHz across the Right channel.
Output load resistor : requirement THD < 0,3 %
Select track 5 :
Measure distortion at 1 kHz across the Center channel.
Output load resistor : requirements THD < 0,3 %
Center mode "wide" (if exists) and repeat for center mode "normal"
Select track 6 :
Measure distortion at 1 kHz across the Surround channel load resistor.
Note : time delay setting = 20 msec.
Requirement THD = < 0,5 %

Test 7: *Signal to noise measurements for Left output amplifier*
Select track 3 :
Use 1W output at 1 kHz on the Left channel output loud resistor as 0 dB reference.
Select track 13 :
(silence) and measure the S/Nratio.
Requirements for Left channel ≤ -65 dB

Test 8 : *Signal to noise measurements for Right output amplifier*
Select track 4 :
Use 1W output at 1 kHz on the Right channel output loud resistor as 0 dB reference.
Select track 13 :
(silence) and measure the S/N ratio.
Requirement for Right channel ≤ -65 dB

Test 9 : *Signal to noise measurements for Center output amplifier*
Select track 5 :
Uuse 1W output at 1 kHz on the Center channel (normal or wide mode)
Select track 13 :
(silence) and measure the S/N ratio.
Requirement for Center channel (normal or wide mode) ≤ -65 dB

Test 10 : *Signal to noise measurements for Surround output amplifier*
Select track 6 :
Use 1W output at 1 kHz on the Surround channel output loud resistor as 0 dB reference.
Select track 13 :
(silence) and measure the S/N ratio.
Requirement for Surround channel ≤ -55 dB (in all positions between 15 msec ... 30 msec in sets with variable time delay).

Cross-talk (channel separation) between adjacent and opposite channels
2 possibilities :
1- Centre mode "wide" (if exists)(use 1 kHz tone)

Test 11a:
Select track 3 :
For 1 kHz in Left channel and measure the crosstalk in Center, Right, Surround.
Requirement : < -25 dB

Test 12a :
Select track 4 for 1 kHz in Right channel and measure the crosstalk in Surround , Left, Center.
Requirement : < -25 dB

Test 13a :

Select track 5 :
For 1 kHz in Center channel and measure the crosstalk in Left, Right, Surround.
Requirement : < -25 dB

Test 14a :

Select track 6 :
For 1 kHz in Surround channel and measure the crosstalk in Left, Center, Right.
Requirement : < -25 dB

2- Centre mode "normal" (use 3 kHz or 1 kHz tone)

Test 11b :

Select track 3 :
For 3 kHz in Left channel and measure the crosstalk in Center, Right, Surround
Requirement : < -25 dB

Test 12b :

Select track 4 :
For 3 kHz in Right channel and measure the crosstalk in Surround, Left, Center
Requirement : < -25 dB

Test 13b :

Select track 5 :
For 3 kHz in Centre channel and measure the crosstalk in Left, Right, Surround
Requirement : < -25 dB

Test 14b :

Select track 6 :
For 1 kHz in Surround channel and measure the crosstalk in Left, Center, Right
Requirement : < -25 dB

Inputs overload test (headroom to visible clipping)

General :

Before starting these tests set Master Volume -15 dB lower to make a new output reference (1W on loudresistors).
Requirement : check on scope for no visible signal clipping or measure THD <1,5 %

Test 15 :

Select track 7 :
Check the Left output signal between 20 Hz ... 20 kHz

Test 16 :

Select track 8 :
Check the Right output signal between 20 Hz ... 20 kHz

Test 17 :

Select track 9 :
Check the Center output signal
CENTER "NORMAL" between 100 Hz ... 20 kHz
CENTER "WIDE" between 20 Hz ... 20 kHz

Test 18 :

Select track 11 :
Check the Surround output signal between 50 Hz ... 7 kHz

Test 19 :*Center Mode Check*

Select Center "Normal" mode
a - Select track 5 at 1 kHz :
Adjust the Center output again with master volume for 1W output as 0 dB reference.
b - Select on track 5 the 100 Hz :
Signal to check the roll-off behaviour at -3 dB on the Center output
c - Select on track 5 the 50 Hz :
Signal and measure on the Left and Right output channels.
The lost 50 Hz signal on the Center output is equally splitted and added to the L and R channels.

Test 20 : *Center Mode Check*

Select Center "wide" mode (if exists)
Repeat test 19 a,b and c
The difference is no roll off behaviour at 100 Hz (Center) and no splitted bass (50 Hz signal) added to L and R channel.

Test 21 : *Center Mode Check*

Select Center mode phantom
Select track 5 (20 Hz ... 20 kHz) :
No output signals on the Center output or at least minimum -40 dB related to 1W outputs.
Measure now on the Left and Right output channels : the lost Center signals are equally splitted and added to these left and right channels (- 3 dB)

Test 22 : *3 CH mode control*

Select track 6 (100 Hz ... 7 kHz):
No output signals on the Surround output channel or at least minimum -40 dB related to 1W output.
Measure now at the Left and Right output channels : the lost Surround signals are equally splitted and added to the Left and Right output channels (-3 dB)

Test 23 : *2 CH mode control (stereo)*

Select track 5 :
No output on Centre output channel
Select track 6 :
No output on Surround output channel

Test 24 : *Time delay control in Surround channel*

- Principle description encoded burst signal spots (see fig. 1)
  1- Tone burst 1 kHz during 1 msec with interval time at 20 msec are given at the same time to the L_t; R_t inputs (in phase 0°)
  2- The next tone burst is given at the same time to the L_t R_t input, but in reverse phase to the R_t input (180°).
  These 2 tone bursts are repeated continuously during 2 minutes.
- Principle description decoded signal spots in Center/Surround channel
  - In case of 20 msec time delay mode the results are shown in fig. 1 in Center and Surround channel.
    The center spots in Center channel can be used as "Marker" spots (trigger signal) → repeated every 40 msec.
    The delayed surround spots occur at the same time as the center spots (markers)
  - When time delay mode is changed to 15 msec the delayed surround spots move to the left with respect to the centre mark spots.
  - When time delay mode is changed to 25 msec or 30 msec the delayed surround spots move to the right with respect to the center spots.
  - In case of no time delay ! (faulty condition) the surround spots fall just between 2 center markers spots (20 msec)
- **How to check with a double beam scope**

WARNING: Be sure that the ground connection (-) of each instrument is not connecteded with the safety earth ⊥ connection. To avoid damage to output amplifiers (balance type) Use only cinch (input) ground connection

- Select Pro Logic mode "wide" or "normal" (phantom in case of no Center output.)
- Select 20 msec time delay in Surround channel.
- Adjust scope at 5 msec/division and trigger at A input
- Connect input A to Center channel (or L or R in case of phantom mode)
- Connect input B to Surround channel
- Adjust trigger level and the X position to set pulse A in the middle of the scope . see fig.2 (if L or R used in phantom mode choose the largest (amplitude) pulse. see fig 3

Select track 24:
Pulse A = 20 msec marker
Pulse B = delayed surround signal pulse

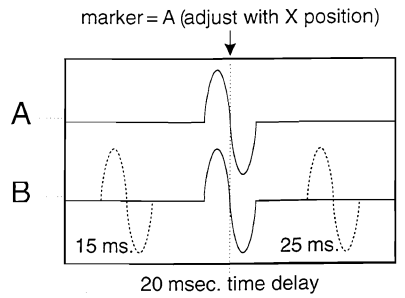


Fig. 2

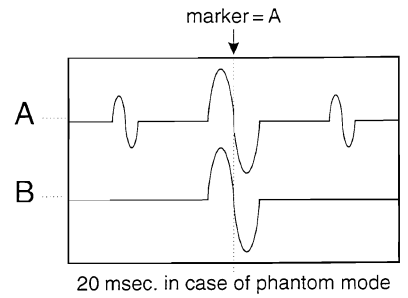


Fig. 3

Tone burst

Change time delay to 15 msec (only in versions with variable delay).
he surround pulse in channel B moves to the left with respect to side from center marker (channel A) position.
Change time delay to 25 or 30 msec (versions with variable delay).
The surround pulse in channel B moves to the right with respect to center marker (channel A) position.

Time delay with track 6

Alternative methode :
The functional operation of the time delay can be made visible with a lisajous figure, with an single beam scope.
Connect X-direction on Surround output
Connect Y-direction on Left or Right output/input.
Note : be careful and use only 1 ground connected to scope.
Select track 6 (surround test) :
Make the lisajous figure visible on the scope (amplitude adjust) see fig. 4

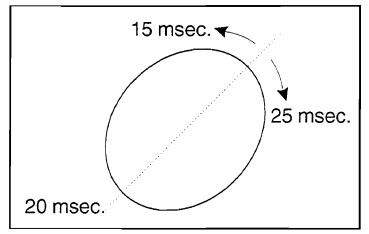
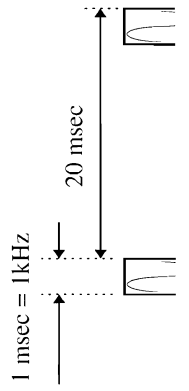


Fig. 4

Note : in sets with variable time delay the ellipse of the lisajous figure must be always open. Changing the time delay changes the direction of the circle accordingly.



:tputs.
ıally splitted and added to

d to 1W output.
ıually splitted and added to

ne time to the L_t; R_t inputs

se to the R_t input (180°).

round channel.
repeated every 40 msec.

ıe left with respect to the

s move to the right with

nter markers spots (20

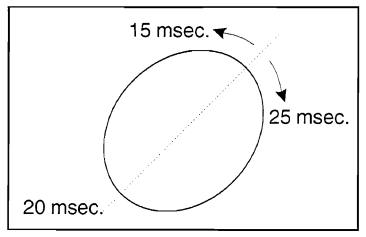
necteded with the safety
type) Use only cinch

fig.2 (if L or R used in

Change time delay to 15 msec (only in versions with variable delay).
he surround pulse in channel B moves to the left with respect to side from center marker (channel A) position.
Change time delay to 25 or 30 msec (versions with variable delay).
The surround pulse in channel B moves to the right with respect to center marker (channel A) position.

Time delay with track 6

Alternative methode :
The functional operation of the time delay can be made visible with a lisajous figure, with an single beam scope.
Connect X-direction on Surround output
Connect Y-direction on Left or Right output/input.
Note : be careful and use only 1 ground connected to scope.
Select track 6 (surround test) :
Make the lisajous figure visible on the scope (amplitude adjust) see fig. 4



Lisajous out of phase
Time delay = OK

Fig. 4

Note : in sets with variable time delay the ellipse of the lisajous figure must be always open. Changing the time delay changes the direction of the circle accordingly.

13-5

Tone burst to check time delay in Surround channel

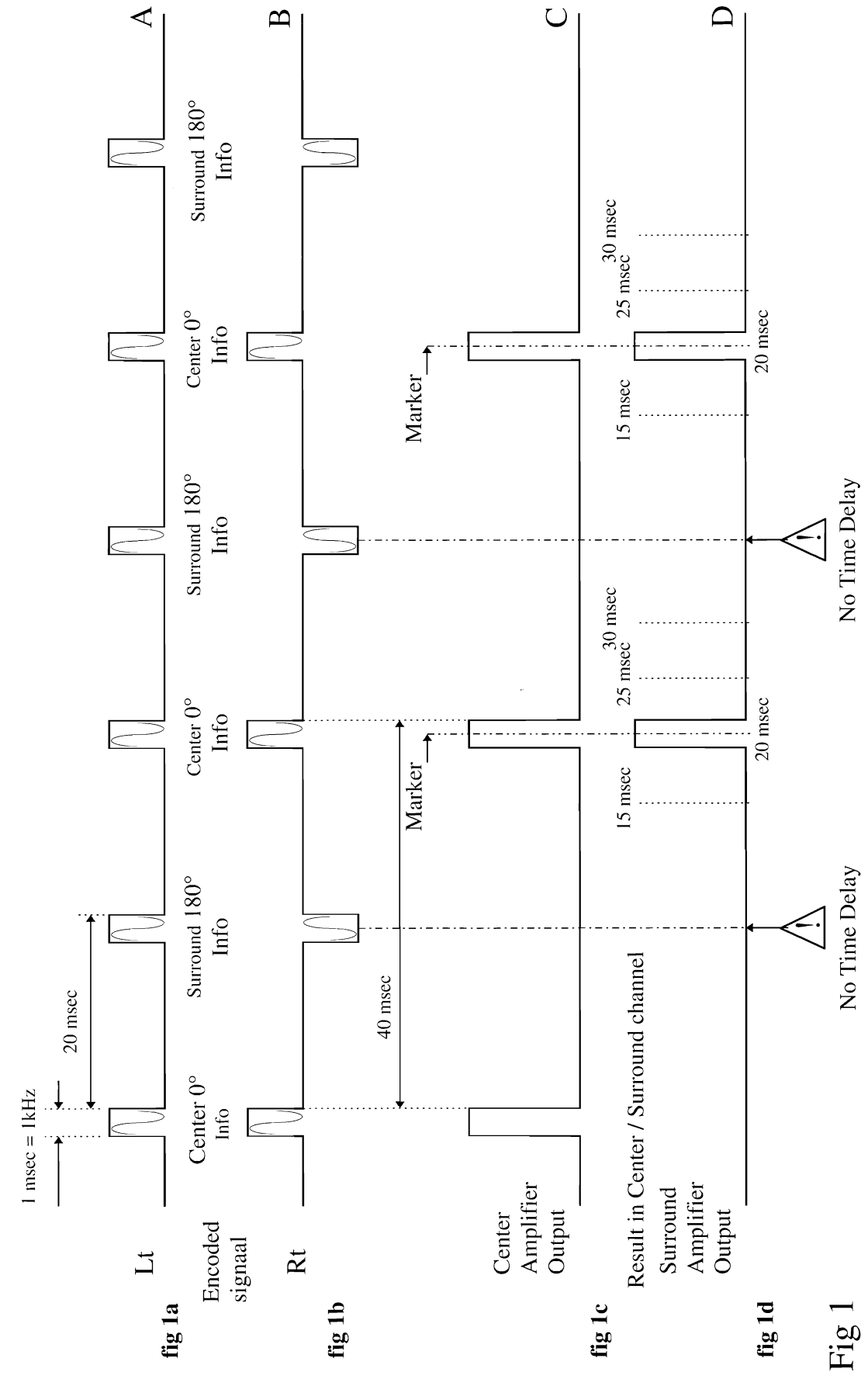


Fig 1

13-6

DOLBY PROLOGIC DECODER

DECODER

DELAY

EXPANDER

NOISE SEQUENCER
NOISE SEQUENCER
AUTO-BALANCE VCA
AUTO-BALANCE SERVO
AUTO-BALANCE VCA
INPUT BUFF.
INPUT BUFF.
BPF
BPF
L+R L−R
4 x FULL WAVE RECTIFIER
2 x LOG-DIFFERENCE AMPLIFIER
2 x DUAL-TIME CONSTANST AND TRESHOLD SWITCH
2 x POLRITY SPLITTER
8 x VCA
4 x COMBINING NETWORKS
OPERATION AND CENTER MODE CONTROL
MODIFIED DOLBY B-TYPE NR DECODER
LPF 7kHz
IREF
VREF
ADM MODULATOR
AUTO RESET
MOD
OP1
LPF1
DELAY TIME CONTROL
MAIN CONTROL LOGIC
MODE CONTROL
BASS CENTER
TREBLE CENTER
VOLUME 1 LOUDN. CENTER
BASS SURR.
TREBLE SURR.
VOLUME 1 LOUDN. SURR.
LOGIC CONTROL
AUTO RESET
INPUT FILTER
I²C-BUS CONTROL
SHIFT REGISTER
I/O PORTS
Read
Write
8 Bit
Center mode "on/off"
Center mode "normal"
Mode select
Center
Surround
L/R
C/S
MS

* Not in karaoke version
△ Not in 05150/05170 (Power 4) version
□ Only in 05150/05170 (Power 4) version

DOLBY PROLOGIC DECODER ECO/KARAOKE
3104 217 04470/04800/05150/05170 bl. 130 - 01 wk807 for pt 6 pcb

13-6

DECODER

DELAY

SOFAC

OPERATION AND CENTER MODE CONTROL

MODIFIED DOLBY B-TYPE NR DECODER

NOISE SEQUENCER OPERATION CONTROL

Noise	IC 7501		
	pin 23	pin 24	pin 25
Off	H	X	X
Left channel	L	L	L
Center channel	L	L	H
Right channel	L	H	L
Surround	L	H	H

OPERATION MODE CONTROL

Mode	IC 7555		IC 7501	Connector 1503	
	pin 7	pin 12	pin 31	pin 4	pin 5
2 Channel L - R	H	L	L	≤200mV	≥3,5V
3 Channel L - R - C	L	H	Z	≥3,5V	≥3,5V
4 Channel Prologic	H	H	H	≥3,5V	≥3,5V
Headphone	L	L	L	≤200mV	≤200mV

CENTER CHANNEL OPERATION MODE CONTROL

Center mode	IC 7555		
	pin 9	pin 10	pin 11
Off [1]	X	X	L
Normal	H	L	H
Wide [2]	L	H	H
Phanton	H	H	H

[1] = Only in versions with Center "on/off" mode option
[2] = Only in versions with "Wide" option

DC LEVELS

H = min ≤ 3,9V max 5,5V
L = max ≥ 0,8V
X = don't care
Z = open input (typecal 2....3V)

Left signal path
Center signal path
Surround path
Surround delay path

Relay ON	Relay OFF
+4.5V	0V
+4.5V	0V

Line to activated Left/Right amplifier relais
Line to activated Center/Surround amplifier relais

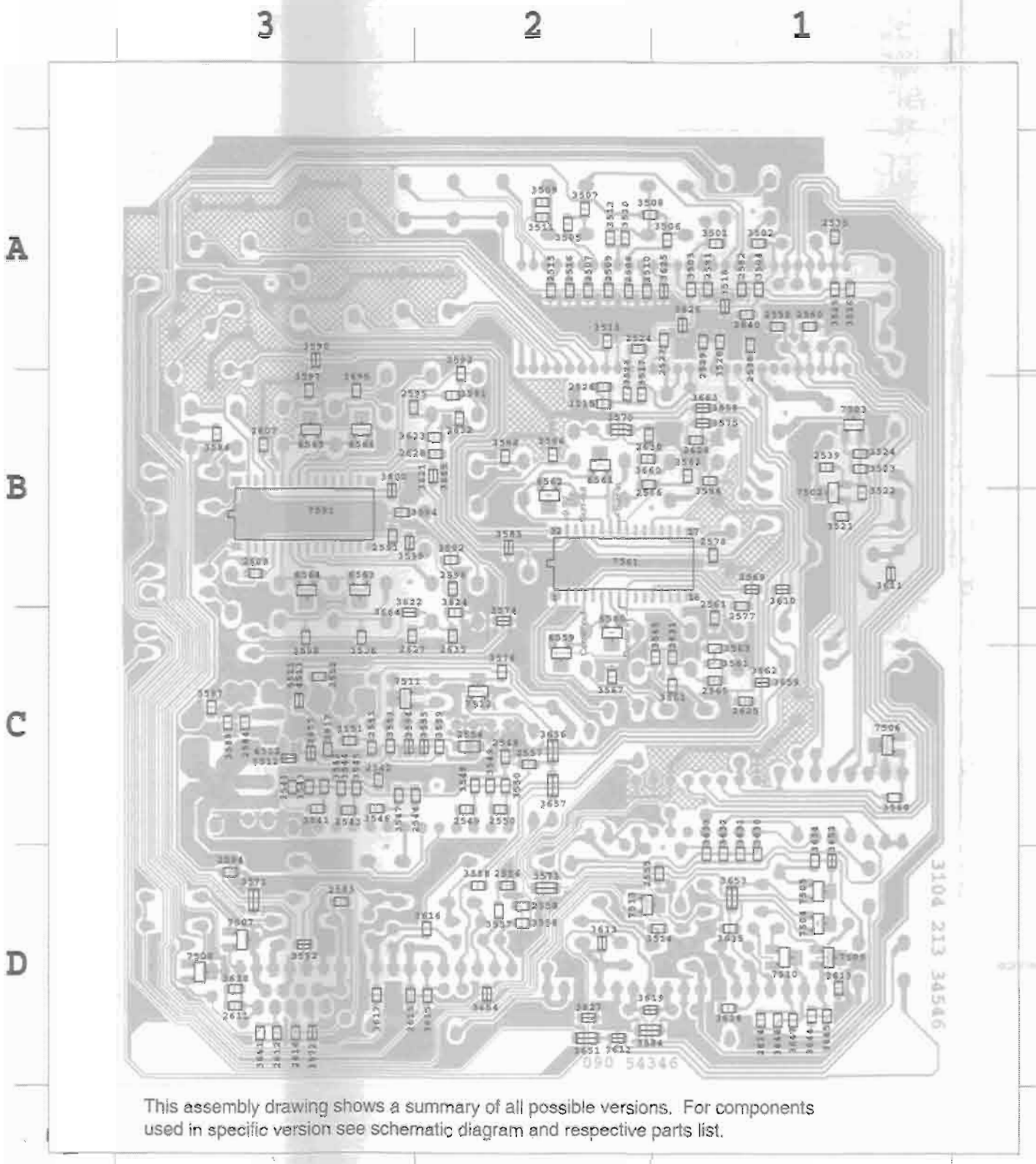
△ Not in 05150/05170 (Power 4) version
□ Only in 05150/05170 (Power 4) version

To 1323 POWER BOARD

LEU0137
9711

1502	A1	3542	H20
1503	I30	3543	H20
1504	J1	3544	D20
1505	J30	3545	D20
1507	H5	3546	B23
2501	D4	3547	B22
2502	F4	3548	E27
2503	D12	3549	E27
2504	E12	3550	E28
2505	D12	3551	G23
2506	E12	3553	F21
2507	D13	3554	F21
2508	E13	3559	H22
2509	B15	3560	L12
2510	B15	3561	L22
2511	B17	3562	M22
2512	B17	3563	L23
2513	B17	3564	M23
2514	B18	3565	K22
2515	B16	3566	N22
2516	B16	3567	J22
2517	C19	3568	O22
2518	D19	3586	B2
2519	D19	3587	D3
2520	D19	3588	C2
2521	E19	3589	B2
2522	E19	3599	G3
2523	J12	3600	G3
2524	J9	3610	J18
2525	J11	3611	J18
2526	K8	3612	G4
2527	J12	3613	G4
2528	J17	3615	O2
2529	J11	3616	N2
2530	H19	3619	G5
2531	A2	3631	N7
2532	H8	3632	N7
2534	B7	3633	N7
2535	B8	3634	N8
2536	B8	3635	L16
2537	E8	3636	L16
2538	A4	3637	K12
2539	I8	3644	J28
2540	B6	3645	J29
2541	H19	3646	J29
2542	H20	3647	O28
2543	D21	3648	O29
2544	B22	3649	N29
2545	H22	3662	L21
2546	C21	3663	M21
2547	H25	3664	G4
2548	F28	3665	G4
2549	F27	4511	B25
2550	D27	4512	C5
2553	B26	5510	H23
2554	H23	5511	A25
2555	K4	5512	C5
2559	H8	5903	G2
2560	G8	5904	G2
2561	J26	6555	L12
2562	J24	6556	L12
2563	O24	6557	L17
2564	B4	6567	B3
2565	L22	6568	D3
2566	M22	7501	A11
2567	L23	7502	H7
2568	M23	7504	L15
2569	L23	7505	K16
2570	M23	7506	K12
2571	K23	7509	K30
2572	N23	7510	N30
2573	K23	7513	J2
2574	N23	7541	C21
2575	J23	7555	K3
2576	O23	7561	L26
2577	J25	7585	B3
2578	O25	7586	C3
2579	J28	9505	G5
2580	O28		
2581	E5		
2582	F5		
2583	E3		
2584	C2		
2585	B4		
2586	B3		
2587	C4		
2588	C3		
2589	B3		
2590	D3		
2594	D2		
2609	G3		
2610	G3		
2613	J29		
2614	O29		
2615	M2		
2616	F3		
2617	B25		
2630	M22		
2631	L22		
3501	D4		
3502	F4		
3503	E5		
3504	F5		
3505	D13		
3506	E13		
3507	D13		
3508	E13		
3509	C13		
3510	F13		
3511	C13		
3512	F13		
3513	J11		
3514	K2		
3515	J10		
3516	J8		
3517	J10		
3520	J15		
3521	I7		
3522	I7		
3525	B7		
3526	E8		
3541	H19		

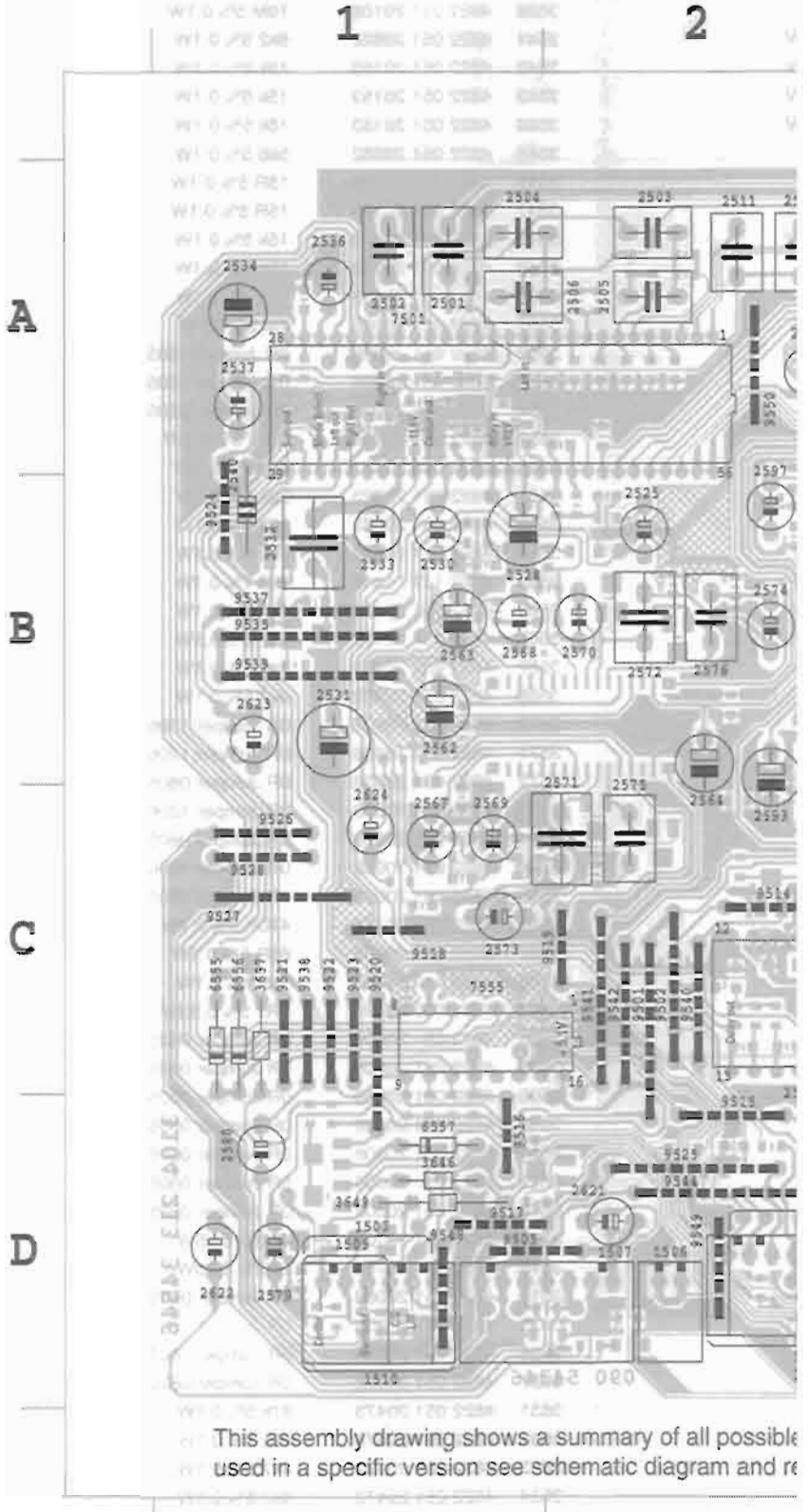
CHIP LAYOUT



This assembly drawing shows a summary of all possible versions. For components used in specific version see schematic diagram and respective parts list.

2507 A 2	2633 C 2	3572 D 3	3661 C 1
2508 A 2	2640 A 1	3573 D 2	3662 C 1
2509 A 2	3501 A 1	3574 C 2	3663 B 1
2510 A 2	3502 A 1	3575 B 1	3664 C 3
2515 A 2	3503 A 1	3576 C 2	3665 B 2
2516 A 2	3504 A 1	3584 D 2	3695 B 3
2524 A 2	3505 A 2	3585 B 2	4511 C 3
2526 B 2	3506 A 1	3586 B 3	4512 C 3
2527 A 1	3507 A 2	3587 C 3	5511 C 3
2529 A 1	3508 A 2	3588 C 3	5512 C 3
2535 A 1	3509 A 2	3590 A 3	6559 C 2
2538 A 1	3510 A 2	3591 B 2	6560 C 2
2539 B 1	3511 A 2	3592 B 2	6561 B 2
2541 C 3	3512 A 2	3593 B 2	6562 B 2
2542 C 3	3513 A 2	3594 B 3	6563 B 3
2543 C 3	3514 D 1	3596 C 3	6564 B 3
2544 C 2	3515 B 2	3597 B 3	6565 B 3
2548 C 2	3516 B 2	3598 C 3	6566 B 3
2549 C 2	3517 B 2	3599 B 3	7502 B 1
2550 C 2	3518 A 1	3600 B 3	7503 B 1
2551 C 3	3520 A 1	3610 B 1	7504 D 1
2552 C 3	3521 B 1	3611 B 1	7505 D 1
2554 C 2	3522 B 1	3612 D 2	7506 C 1
2555 D 1	3523 B 1	3613 D 2	7507 D 3
2556 D 2	3524 B 1	3615 D 2	7508 D 3
2557 C 2	3525 A 1	3616 D 2	7509 D 1
2558 D 2	3526 A 1	3617 D 3	7510 D 1
2559 A 1	3541 C 3	3619 D 2	7511 C 3
2560 A 1	3542 C 3	3621 B 2	7512 C 2
2561 C 1	3543 C 3	3622 C 3	7513 D 2
2565 C 1	3544 C 3	3623 B 2	7561 B 2
2566 B 2	3545 C 3	3624 C 2	7591 B 3
2577 B 1	3546 C 3	3625 A 1	
2578 B 1	3547 C 3	3626 A 1	
2581 A 1	3548 C 2	3627 D 2	
2582 A 1	3549 C 2	3630 D 1	
2583 D 3	3550 C 2	3631 D 1	
2584 C 3	3551 C 3	3632 D 1	
2591 B 3	3552 D 3	3633 D 1	
2594 D 3	3553 C 3	3634 D 1	
2595 B 3	3554 C 3	3635 D 1	
2596 B 2	3555 C 2	3636 D 1	
2607 B 3	3556 D 2	3638 D 3	
2608 B 3	3557 D 2	3641 D 3	
2611 D 3	3558 D 2	3644 D 1	
2612 D 3	3559 C 2	3645 D 1	
2613 D 1	3560 C 1	3647 D 1	
2614 D 1	3561 C 1	3648 D 1	
2615 D 3	3562 B 1	3651 D 2	
2616 D 3	3563 C 1	3652 D 1	
2617 C 3	3564 B 1	3653 D 1	
2625 C 1	3565 C 1	3654 D 2	
2626 B 1	3566 B 2	3655 C 3	
2627 C 3	3567 C 2	3656 C 2	
2628 B 2	3568 B 2	3657 C 2	
2630 B 2	3569 B 1	3658 B 1	
2631 C 1	3570 B 2	3659 C 1	
2632 B 2	3571 D 3	3660 B 2	

COMPONENT LAYOUT



This assembly drawing shows a summary of all possible
used in a specific version see schematic diagram and re

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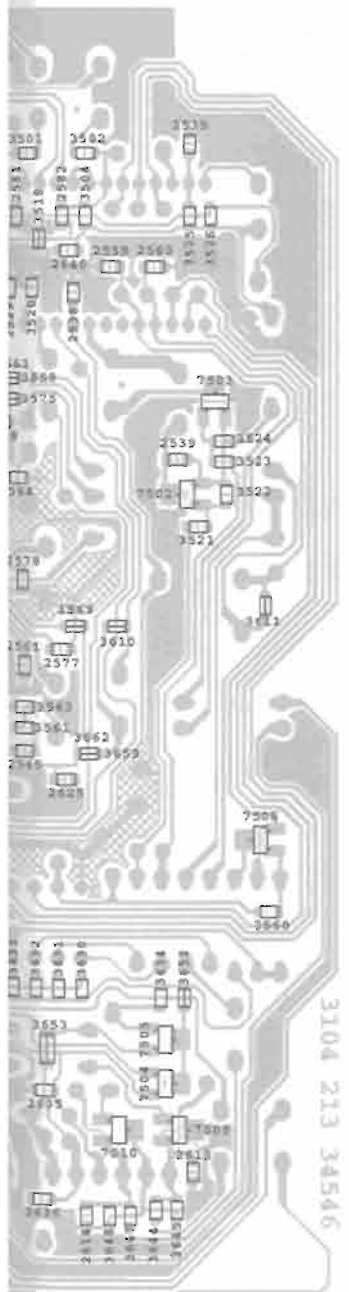
COMPONENT LAYOUT



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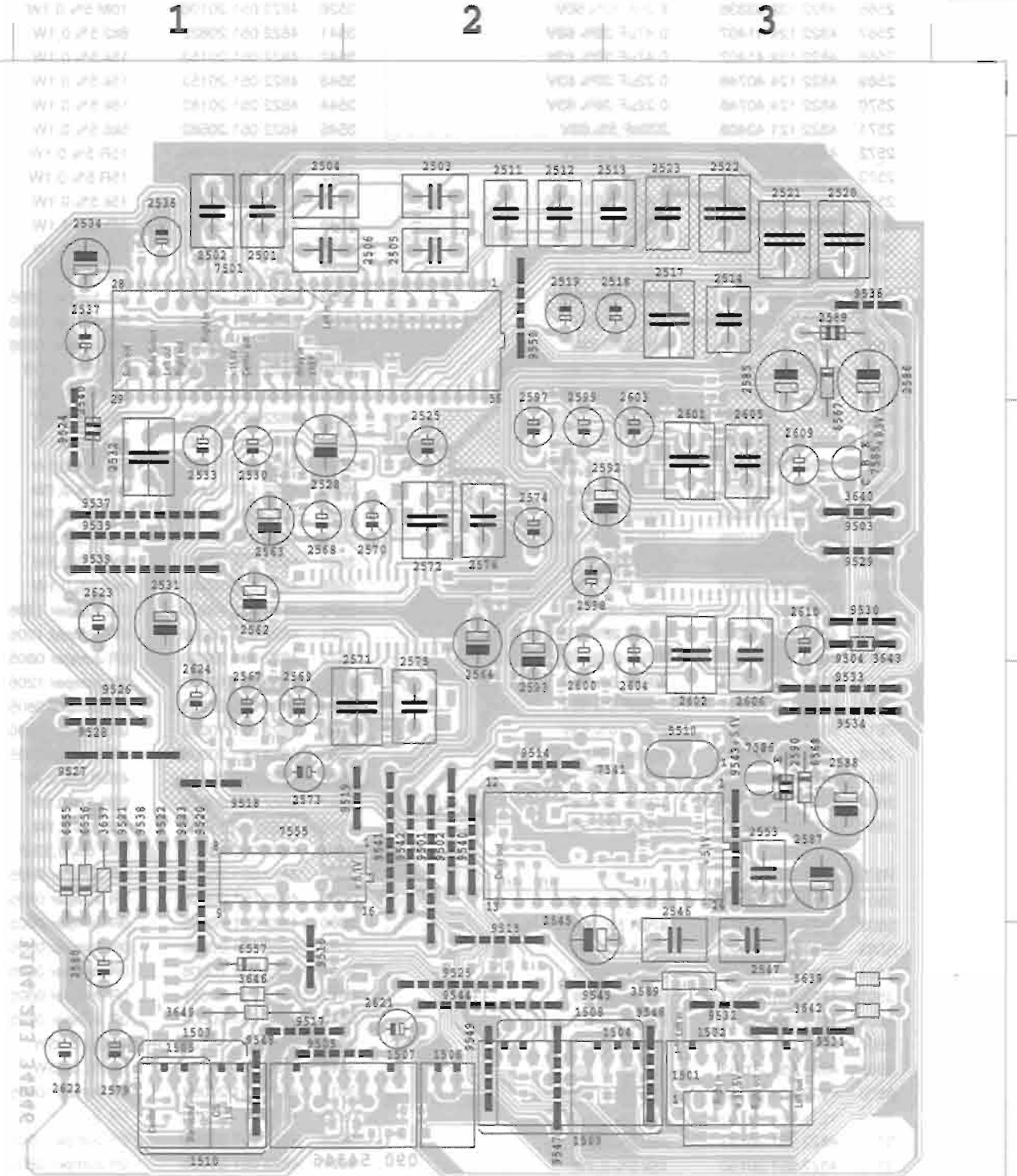
st.

2507 A 2	2633 C 2	3572 D 3	3661 C 1
2508 A 2	2640 A 1	3573 D 2	3662 C 1
2509 A 2	3501 A 1	3574 C 2	3663 B 1
2510 A 2	3502 A 1	3575 B 1	3664 C 3
2515 A 2	3503 A 1	3576 C 2	3665 B 2
2516 A 2	3504 A 1	3584 D 2	3695 B 3
2524 A 2	3505 A 2	3585 B 2	4511 C 3
2526 B 2	3506 A 1	3586 B 3	4512 C 3
2527 A 1	3507 A 2	3587 C 3	5511 C 3
2529 A 1	3508 A 2	3588 C 3	5512 C 3
2535 A 1	3509 A 2	3590 A 3	6559 C 2
2538 A 1	3510 A 2	3591 B 2	6560 C 2
2539 B 1	3511 A 2	3592 B 2	6561 B 2
2541 C 3	3512 A 2	3593 B 2	6562 B 2
2542 C 3	3513 A 2	3594 B 3	6563 B 3
2543 C 3	3514 D 1	3596 C 3	6564 B 3
2544 C 2	3515 B 2	3597 B 3	6565 B 3
2548 C 2	3516 B 2	3598 C 3	6566 B 3
2549 C 2	3517 B 2	3599 B 3	7502 B 1
2550 C 2	3518 A 1	3600 B 3	7503 B 1
2551 C 3	3520 A 1	3610 B 1	7504 D 1
2552 C 3	3521 B 1	3611 B 1	7505 D 1
2554 C 2	3522 B 1	3612 D 2	7506 C 1
2555 D 1	3523 B 1	3613 D 2	7507 D 3
2556 D 2	3524 B 1	3615 D 2	7508 D 3
2557 C 2	3525 A 1	3616 D 2	7509 D 1
2558 D 2	3526 A 1	3617 D 3	7510 D 1
2559 A 1	3541 C 3	3619 D 2	7511 C 3
2560 A 1	3542 C 3	3621 B 2	7512 C 2
2561 C 1	3543 C 3	3622 C 3	7513 D 2
2565 C 1	3544 C 3	3623 B 2	7561 B 2
2566 B 2	3545 C 3	3624 C 2	7591 B 3
2577 B 1	3546 C 3	3625 A 1	
2578 B 1	3547 C 3	3626 A 1	
2581 A 1	3548 C 2	3627 D 2	
2582 A 1	3549 C 2	3630 D 1	
2583 D 3	3550 C 2	3631 D 1	
2584 C 3	3551 C 3	3632 D 1	
2591 B 3	3552 D 3	3633 D 1	
2594 D 3	3553 C 3	3634 D 1	
2595 B 3	3554 C 3	3635 D 1	
2596 B 2	3555 C 2	3636 D 1	
2607 B 3	3556 D 2	3638 D 3	
2608 B 3	3557 D 2	3641 D 3	
2611 D 3	3558 D 2	3644 D 1	
2612 D 3	3559 C 2	3645 D 1	
2613 D 1	3560 C 1	3647 D 1	
2614 D 1	3561 C 1	3648 D 1	
2615 D 3	3562 B 1	3651 D 2	
2616 D 3	3563 C 1	3652 D 1	
2617 C 3	3564 B 1	3653 D 1	
2625 C 1	3565 C 1	3654 D 2	
2626 B 1	3566 B 2	3655 C 3	
2627 C 3	3567 C 2	3656 C 2	
2628 B 2	3568 B 2	3657 C 2	
2630 B 2	3569 B 1	3658 B 1	
2631 C 1	3570 B 2	3659 C 1	
2632 B 2	3571 D 3	3660 B 2	



This assembly drawing shows a summary of all possible versions. For components used in a specific version see schematic diagram and respective parts list.

1501 D 3	2587 C 3	9527 C 1
1502 D 3	2588 C 3	9528 C 1
1503 D 1	2589 A 3	9529 B 3
1504 D 3	2590 C 3	9530 B 3
1505 D 1	2592 B 3	9531 D 3
1506 D 2	2593 B 2	9532 D 3
1507 D 2	2597 B 2	9533 C 3
1508 D 2	2598 B 2	9534 C 3
1509 D 2	2599 B 2	9535 B 1
1510 D 1	2600 B 2	9536 A 3
2501 A 1	2601 B 3	9537 B 1
2502 A 1	2602 B 3	9538 C 1
2503 A 2	2603 B 3	9539 B 1
2504 A 1	2604 B 3	9540 C 2
2505 A 2	2605 B 3	9541 C 2
2506 A 1	2606 B 3	9542 C 2
2511 A 2	2609 B 3	9543 C 3
2512 A 2	2610 B 3	9544 D 2
2513 A 3	2621 D 2	9545 D 2
2514 A 3	2622 D 1	9546 D 3
2517 A 3	2623 B 1	9547 D 2
2518 A 3	2624 C 1	9548 D 1
2519 A 2	3589 D 3	9549 D 2
2520 A 3	3637 C 1	9550 A 2
2521 A 3	3639 D 3	
2522 A 3	3640 B 3	
2523 A 3	3642 D 3	
2525 B 2	3643 B 3	
2528 B 1	3646 D 1	
2530 B 1	3649 D 1	
2531 B 1	5510 C 3	
2532 B 1	6555 C 1	
2533 B 1	6556 C 1	
2534 A 1	6557 D 1	
2536 A 1	6567 A 3	
2537 A 1	6568 C 3	
2540 B 1	7501 A 1	
2545 D 2	7541 C 3	
2546 D 3	7555 C 1	
2547 D 3	7585 B 3	
2553 C 3	7586 C 3	
2562 B 1	9501 C 2	
2563 B 1	9502 C 2	
2564 B 2	9503 B 3	
2567 C 1	9504 B 3	
2568 B 1	9505 D 1	
2569 C 1	9514 C 2	
2570 B 2	9515 D 2	
2571 C 2	9516 D 1	
2572 B 2	9517 D 1	
2573 C 1	9519 C 2	
2574 B 2	9520 C 1	
2575 C 2	9521 C 1	
2576 B 2	9522 C 1	
2579 D 1	9523 C 1	
2580 D 1	9524 B 1	
2585 A 3	9525 D 2	
2586 A 3	9526 C 1	

ELECTRICAL PARTS LIST - DOLBY PRO-LOGIC BOARD

CAPACITORS

2501	4822 121 51252	470nF 5% 63V
2502	4822 121 51252	470nF 5% 63V
2503	5322 121 42386	100nF 5% 63V
2504	5322 121 42386	100nF 5% 63V
2505	5322 121 42386	100nF 5% 63V
2506	5322 121 42386	100nF 5% 63V
2507	4822 122 32535	680pF 10% 63V
2508	4822 122 32535	680pF 10% 63V
2509	4822 126 12944	47nF 10% 50V
2510	4822 126 12944	47nF 10% 50V
2511	5322 121 42386	100nF 5% 63V
2512	5322 121 42386	100nF 5% 63V
2513	5322 121 42386	100nF 5% 63V
2514	5322 121 42386	100nF 5% 63V
2515	5322 122 32654	22nF 10% 63V
2516	5322 122 32654	22nF 10% 63V
2517	4822 121 42408	220nF 5% 63V
2518	4822 124 40246	4,7µF 20% 63V
2519	4822 124 40246	4,7µF 20% 63V
2520	4822 121 42408	220nF 5% 63V
2521	4822 121 42408	220nF 5% 63V
2522	4822 121 42408	220nF 5% 63V
2523	5322 121 42498	680nF 5% 63V
2524	5322 122 34099	470pF 10% 63V
2525	4822 124 41579	10µF 20% 50V
2526	4822 122 33175	2,2nF 20% 50V
2527	4822 126 12944	47nF 10% 50V
2528	4822 124 40196	220µF 20% 16V
2529	4822 122 32646	5,6nF 10% 50V
2530	4822 124 41579	10µF 20% 50V
2531	4822 124 81029	100µF 20% 25V
2532	4822 121 42408	220nF 5% 63V
2534	4822 124 41596	22µF 20% 50V
2535	5322 126 10223	4,7nF 10% 63V
2536	4822 124 41579	10µF 20% 50V
2537	4822 124 41579	10µF 20% 50V
2538	4822 122 33177	10nF 10% 50V
2539	5322 126 10794	220pF 5% 63V
2540	4822 122 10466	220pF 10% 50V
2541	4822 122 32646	5,6nF 10% 50V
2542	4822 122 32646	5,6nF 10% 50V
2543	5322 122 34099	470pF 10% 63V
2544	4822 126 13805	68nF 10 16V
2545	4822 124 40433	47µF 20% 25V
2546	5322 121 42386	100nF 5% 63V
2547	5322 121 42386	100nF 5% 63V
2548	4822 122 33891	3,3nF 10% 63V
2549	4822 126 13805	68nF 10% 16V
2550	5322 122 34099	470pF 10% 63V
2553	5322 121 42386	100nF 5% 63V
2554	4822 126 14083	4,7µF +80/-20% 10V
2555	4822 126 12944	47nF 10% 50V
2559	5322 122 34099	470pF 10% 63V
2560	5322 122 34099	470pF 10% 63V
2561	4822 122 33177	10nF 20% 50V
2562	4822 124 40433	47µF 20% 25V
2563	4822 124 41584	100µF 20% 10V
2564	4822 124 41584	100µF 20% 10V
2565	4822 122 33336	8,2nF 10% 50V
2566	4822 122 33336	8,2nF 10% 50V
2567	4822 124 41407	0,47µF 20% 63V
2568	4822 124 41407	0,47µF 20% 63V
2569	4822 124 40746	0,22µF 20% 63V
2570	4822 124 40746	0,22µF 20% 63V
2571	4822 121 42408	220nF 5% 63V
2572	4822 121 42408	220nF 5% 63V
2573	4822 124 41407	0,47µF 20% 63V
2574	4822 124 41407	0,47µF 20% 63V
2575	4822 121 51252	470nF 5% 63V
2576	4822 121 51252	470nF 5% 63V
2577	4822 122 32646	5,6nF 10% 50V
2578	4822 122 32646	5,6nF 10% 50V
2579	4822 124 40242	1µF 20% 63V
2580	4822 124 40242	1µF 20% 63V
2581	5322 122 34099	470pF 10% 63V
2582	5322 122 34099	470pF 10% 63V
2583	5322 122 34099	470pF 10% 63V
2584	5322 126 10223	4,7nF 10% 63V
2585	4822 124 81029	100µF 20% 25V
2586	4822 124 81029	100µF 20% 25V
2587	4822 124 81029	100µF 20% 25V
2588	4822 124 81029	100µF 20% 25V
2589	4822 122 33197	1nF 10% 50V
2590	4822 122 33197	1nF 10% 50V
2594	4822 122 33177	10nF 10% 50V
2609	4822 124 40246	4,7µF 20% 63V
2610	4822 124 40246	4,7µF 20% 63V
2613	5322 122 32531	100pF 5% 50V
2614	5322 122 32531	100pF 5% 50V
2615	5322 122 32654	22nF 10% 63V
2616	5322 122 34099	470pF 10% 63V
2617	4822 126 13296	100nF 10% 16V
2630	5322 122 32531	100pF 5% 50V
2631	5322 122 32531	100pF 5% 50V

RESISTORS

3501	4822 051 20471	470R 5% 0,1W
3502	4822 051 20471	470R 5% 0,1W
3503	4822 051 20223	22k 5% 0,1W
3504	4822 051 20223	22k 5% 0,1W
3505	4822 051 20473	47k 5% 0,1W
3506	4822 051 20473	47k 5% 0,1W
3507	4822 051 20153	15k 5% 0,1W
3508	4822 051 20153	15k 5% 0,1W
3509	4822 051 20153	15k 5% 0,1W
3510	4822 051 20153	15k 5% 0,1W
3511	4822 051 20153	15k 5% 0,1W
3512	4822 051 20153	15k 5% 0,1W
3513	4822 051 20334	330k 5% 0,1W
3514	4822 117 10833	10k 1% 0,1W
3515	4822 051 20153	15k 5% 0,1W
3516	4822 051 20153	15k 5% 0,1W
3517	4822 051 20153	15k 5% 0,1W
3518	4822 051 20008	0R Jumper 0805
3520	4822 051 20104	100k 5% 0,1W
3521	4822 117 10833	10k 1% 0,1W
3522	4822 117 10833	10k 1% 0,1W
3525	4822 051 20104	100k 5% 0,1W
3526	4822 051 20106	10M 5% 0,1W
3541	4822 051 20822	8k2 5% 0,1W
3542	4822 051 20153	15k 5% 0,1W
3543	4822 051 20153	15k 5% 0,1W
3544	4822 051 20183	18k 5% 0,1W
3545	4822 051 20562	5k6 5% 0,1W
3546	4822 051 20159	15R 5% 0,1W
3547	4822 051 20159	15R 5% 0,1W
3548	4822 051 20153	15k 5% 0,1W
3549	4822 051 20183	18k 5% 0,1W
3550	4822 051 20153	15k 5% 0,1W
3551	4822 051 20105	1M 5% 0,1W
3552	4822 051 20008	0R Jumper 0805
3553	4822 051 20008	0R Jumper 0805
3554	4822 051 20008	0R Jumper 0805
3559	4822 051 20334	330k 5% 0,1W
3560	4822 051 20473	47k 5% 0,1W
3561	4822 051 20223	22k 5% 0,1W
3562	4822 051 20223	22k 5% 0,1W
3563	4822 117 11449	2k2 1% 0,1W
3564	4822 117 11449	2k2 1% 0,1W
3565	4822 051 20472	4k7 5% 0,1W
3566	4822 051 20472	4k7 5% 0,1W
3567	4822 051 20472	4k7 5% 0,1W
3568	4822 051 20472	4k7 5% 0,1W
3570	4822 051 10008	0R Jumper 1206
3571	4822 051 10008	0R Jumper 1206
3572	4822 051 20008	0R Jumper 0805
3573	4822 051 10008	0R Jumper 1206
3574	4822 051 20008	0R Jumper 0805
3584	4822 051 10008	0R Jumper 1206
3585	4822 051 20008	0R Jumper 0805
3586	4822 051 20471	470R 5% 0,1W
3587	4822 051 20689	68R 5% 0,1W
3588	4822 117 11139	1k5 1% 0,1W
3589	4822 052 10478	⚠ 4R7 5% 0,33W
3590	4822 051 20008	0R Jumper 0805
3599	4822 051 20008	0R Jumper 0805
3600	4822 051 20008	0R Jumper 0805
3610	4822 051 20008	0R Jumper 0805
3611	4822 051 20008	0R Jumper 0805
3612	4822 051 20008	0R Jumper 0805
3613	4822 051 20008	0R Jumper 0805
3615	4822 051 10102	1k 2% 0,25W
3616	4822 051 10102	1k 2% 0,25W
3619	4822 051 20008	0R Jumper 0805
3625	4822 051 20008	0R Jumper 0805
3626	4822 051 20008	0R Jumper 0805
3627	4822 051 20008	0R Jumper 0805
3631	4822 051 20473	47k 5% 0,1W
3632	4822 051 20473	47k 5% 0,1W
3633	4822 051 20472	4k7 5% 0,1W
3634	4822 051 20472	4k7 5% 0,1W
3635	4822 051 20104	100k 5% 0,1W
3636	4822 051 20104	100k 5% 0,1W
3637	4822 116 52256	2k2 5% 0,5W
3644	4822 051 20471	470R 5% 0,1W
3645	4822 051 20223	22k 5% 0,1W
3646	4822 050 11002	1k 1% 0,4W
3647	4822 051 20471	470R 5% 0,1W
3648	4822 051 20223	22k 5% 0,1W
3649	4822 050 11002	1k 1% 0,4W
3651	4822 051 10008	0R Jumper 1206
3652	4822 051 20008	0R Jumper 0805)
3653	4822 051 10008	0R Jumper 1206
3654	4822 051 20008	0R Jumper 0805
3655	4822 051 20008	0R Jumper 0805
3656	4822 051 10008	0R Jumper 1206
3657	4822 051 10008	0R Jumper 1206
3662	4822 051 20008	0R Jumper 0805
3663	4822 051 20008	0R Jumper 0805
3664	4822 051 20008	0R Jumper 0805
3665	4822 051 20008	0R Jumper 0805
5465	4822 051 20008	0R Jumper 0805

COILS & FILTERS

5510	4822 242 81525	Ceram Resonator 2MHz
5511	4822 157 10586	Coil 2,2µH 10%
5512	4822 157 10586	Coil 2,2µH 10%

DIODES

6555	4822 130 30621	1N4148
6556	4822 130 30621	1N4148
6557	4822 130 30621	1N4148
6567	4822 130 61219	BZX79-B10
6568	4822 130 34173	BZX79-C5V6

TRANSISTORS & INTEGRATED CIRCUITS

7501	4822 209 12986	M69032P
7502	5322 130 60508	BC857B
7504	5322 130 60511	BC847B
7505	5322 130 60511	BC847B
7506	5322 130 60511	BC847B
7509	5322 130 60511	BC847B
7510	5322 130 60511	BC847B
7513	5322 130 60508	BC857B
7541	4822 209 15107	M65843AP
7555	5322 209 10883	PCF8574P
7561	4822 209 33652	TEA6321T/V1
7585	4822 130 40937	BC548B
7586	4822 130 40937	BC548B

NOTE: Only the parts mentioned in this list are normal service spare parts.

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ELECTRICAL PARTS LIST - DOLBY PRO-LOGIC BOARD

3526	4822 051 20106	10M 5% 0,1W	
3541	4822 051 20822	8k2 5% 0,1W	
3542	4822 051 20153	15k 5% 0,1W	
3543	4822 051 20153	15k 5% 0,1W	
3544	4822 051 20183	18k 5% 0,1W	
3545	4822 051 20562	5k6 5% 0,1W	
3546	4822 051 20159	15R 5% 0,1W	
3547	4822 051 20159	15R 5% 0,1W	
3548	4822 051 20153	15k 5% 0,1W	
3549	4822 051 20183	18k 5% 0,1W	
3550	4822 051 20153	15k 5% 0,1W	
3551	4822 051 20105	1M 5% 0,1W	
3552	4822 051 20008	0R Jumper 0805	
3553	4822 051 20008	0R Jumper 0805	
3554	4822 051 20008	0R Jumper 0805	
3559	4822 051 20334	330k 5% 0,1W	
3560	4822 051 20473	47k 5% 0,1W	
3561	4822 051 20223	22k 5% 0,1W	
3562	4822 051 20223	22k 5% 0,1W	
3563	4822 117 11449	2k2 1% 0,1W	
3564	4822 117 11449	2k2 1% 0,1W	
3565	4822 051 20472	4k7 5% 0,1W	
3566	4822 051 20472	4k7 5% 0,1W	
3567	4822 051 20472	4k7 5% 0,1W	
3568	4822 051 20472	4k7 5% 0,1W	
3570	4822 051 10008	0R Jumper 1206	
3571	4822 051 10008	0R Jumper 1206	
3572	4822 051 20008	0R Jumper 0805	
3573	4822 051 10008	0R Jumper 1206	
3574	4822 051 20008	0R Jumper 0805	
3584	4822 051 10008	0R Jumper 1206	
3585	4822 051 20008	0R Jumper 0805	
3586	4822 051 20471	470R 5% 0,1W	
3587	4822 051 20689	68R 5% 0,1W	
3588	4822 117 11139	1k5 1% 0,1W	
3589	4822 052 10478	⚠ 4R7 5% 0,33W	
3590	4822 051 20008	0R Jumper 0805	
3599	4822 051 20008	0R Jumper 0805	
3600	4822 051 20008	0R Jumper 0805	
3610	4822 051 20008	0R Jumper 0805	
3611	4822 051 20008	0R Jumper 0805	
3612	4822 051 20008	0R Jumper 0805	
3613	4822 051 20008	0R Jumper 0805	
3615	4822 051 10102	1k 2% 0,25W	
3616	4822 051 10102	1k 2% 0,25W	
3619	4822 051 20008	0R Jumper 0805	
3625	4822 051 20008	0R Jumper 0805	
3626	4822 051 20008	0R Jumper 0805	
3627	4822 051 20008	0R Jumper 0805	
3631	4822 051 20473	47k 5% 0,1W	
3632	4822 051 20473	47k 5% 0,1W	
3633	4822 051 20472	4k7 5% 0,1W	
3634	4822 051 20472	4k7 5% 0,1W	
3635	4822 051 20104	100k 5% 0,1W	
3636	4822 051 20104	100k 5% 0,1W	
3637	4822 116 52256	2k2 5% 0,5W	
3644	4822 051 20471	470R 5% 0,1W	
3645	4822 051 20223	22k 5% 0,1W	
3646	4822 050 11002	1k 1% 0,4W	
3647	4822 051 20471	470R 5% 0,1W	
3648	4822 051 20223	22k 5% 0,1W	
3649	4822 050 11002	1k 1% 0,4W	
3651	4822 051 10008	0R Jumper 1206	
3652	4822 051 20008	0R Jumper 0805)	
3653	4822 051 10008	0R Jumper 1206	
3654	4822 051 20008	0R Jumper 0805	
3655	4822 051 20008	0R Jumper 0805	
3656	4822 051 10008	0R Jumper 1206	
3657	4822 051 10008	0R Jumper 1206	
3662	4822 051 20008	0R Jumper 0805	
3663	4822 051 20008	0R Jumper 0805	
3664	4822 051 20008	0R Jumper 0805	
3665	4822 051 20008	0R Jumper 0805	
5465	4822 051 20008	0R Jumper 0805	

COILS & FILTERS

5510	4822 242 81525	Ceram Resonator 2MHz
5511	4822 157 10586	Coil 2,2µH 10%
5512	4822 157 10586	Coil 2,2µH 10%

DIODES

6555	4822 130 30621	1N4148
6556	4822 130 30621	1N4148
6557	4822 130 30621	1N4148
6567	4822 130 61219	BZX79-B10
6568	4822 130 34173	BZX79-C5V6

TRANSISTORS & INTEGRATED CIRCUITS

7501	4822 209 12986	M69032P
7502	5322 130 60508	BC857B
7504	5322 130 60511	BC847B
7505	5322 130 60511	BC847B
7506	5322 130 60511	BC847B
7509	5322 130 60511	BC847B
7510	5322 130 60511	BC847B
7513	5322 130 60508	BC857B
7541	4822 209 15107	M65843AP
7555	5322 209 10883	PCF8574P
7561	4822 209 33652	TEA6321T/V1
7585	4822 130 40937	BC548B
7586	4822 130 40937	BC548B

NOTE: Only the parts mentioned in this list are normal service spare parts.

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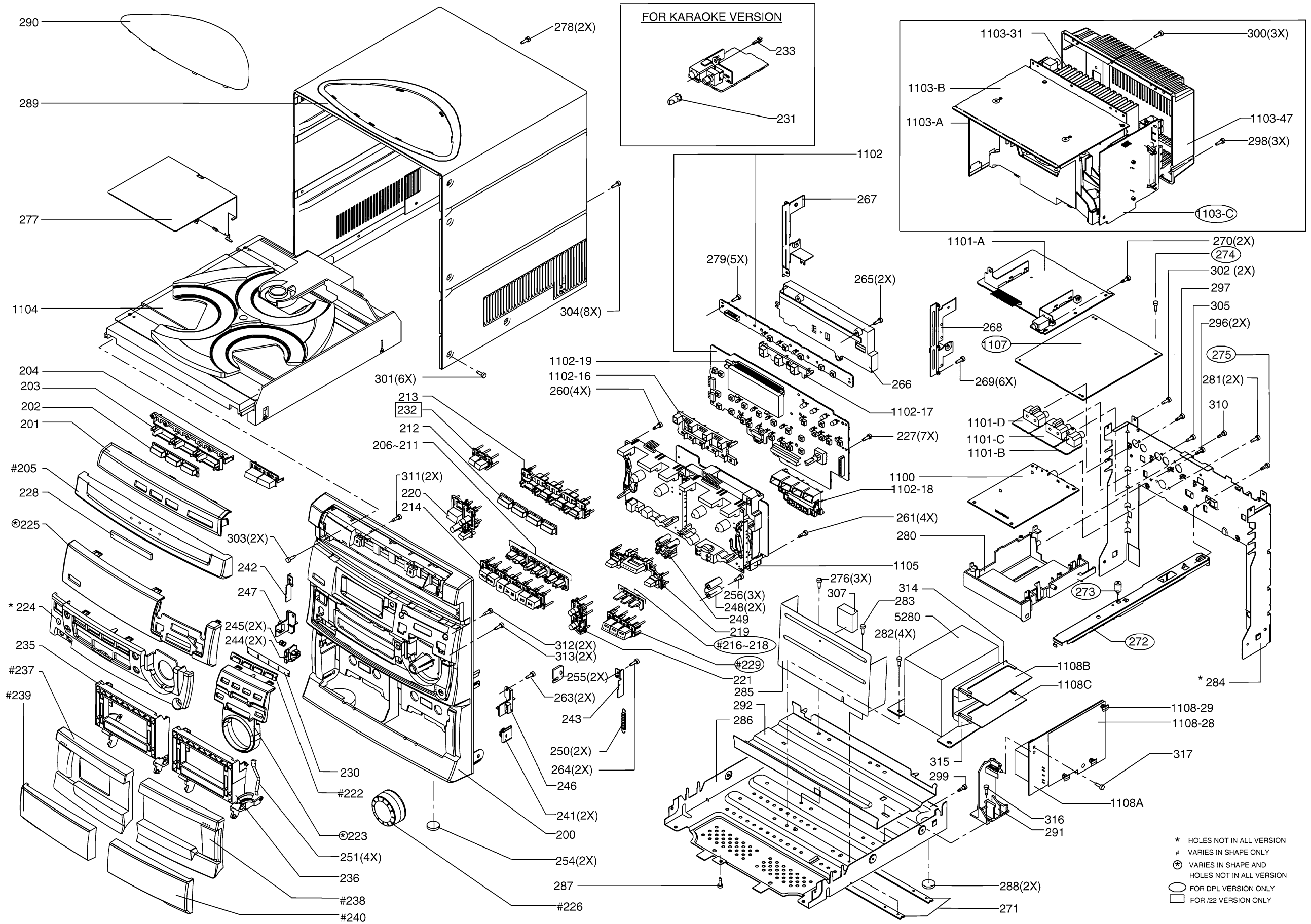
FOR KARAOKE VERSION
233
231
290
289
277
1104
278(2X)
304(8X)
301(6X)
204
203
202
201
#205
228
*225
303(2X)
242
247
* 224
245(2X)
244(2X)
235
#237
#239
230
#222
*223
251(4X)
236
#238
#240
213
232
212
206~211
311(2X)
220
214
312(2X)
313(2X)
#229
221
255(2X)
263(2X)
243
250(2X)
264(2X)
246
241(2X)
200
254(2X)
#226
1102
267
279(5X)
265(2X)
266
1102-19
1102-16
260(4X)
1102-17
227(7X)
1102-18
261(4X)
1105
256(3X)
248(2X)
249
219
#216~218
287
1103-31
300(3X)
1103-B
1103-A
1103-47
298(3X)
1103-C
1101-A
270(2X)
274
302 (2X)
297
305
296(2X)
268
1107
269(6X)
275
281(2X)
310
1101-D
1101-C
1101-B
1100
280
273
272
276(3X)
307
314
283
5280
282(4X)
285
292
286
1108B
1108C
* 284
1108-29
1108-28
317
315
299
1108A
316
291
288(2X)
271
* HOLES NOT IN ALL VERSION
# VARIES IN SHAPE ONLY
* VARIES IN SHAPE AND HOLES NOT IN ALL VERSION
FOR DPL VERSION ONLY
FOR /22 VERSION ONLY

MECHANICAL & ACCESSORIES PARTS LIST - MAIN UNIT

200	4822 459 04889	Cabinet Front
201	4822 450 10442	Window CDC
202	4822 410 11645	Button Set CDC
203	4822 464 10372	Frame Button Set CDC
204	4822 410 11646	Button Set Open/Close
205	4822 442 01226	Cover Tray CDC /37
205	4822 442 01246	Cover Tray CDC /22
212	4822 410 11647	Button Set Source Select
213	4822 464 10373	Frame Button Source Select
214	4822 410 11648	Button Set Control
219	4822 410 11649	Button Set DSC/DBB 1
220	4822 410 11651	Button Set Power
221	4822 410 11652	Button Set PROG/HSD
223	4822 426 10594	Panel Control DPL 1
224	4822 454 13283	Orn Display DPL /37
224	4822 454 13296	Orn Display /22
225	4822 450 10459	Window Display /37
225	4822 450 10478	Window Display /22
226	4822 410 11697	Knob Volume
228	4822 454 13265	Badge (Ph-Mag) Assembly /37
228	4822 454 13035	Badge Philips /22
229	4822 410 11702	Button Set DPL 1
232	4822 410 11698	Button RDS/NEWS
235	4822 443 10488	Door Cassette Right
236	4822 443 10487	Door Cassette Left
237	4822 442 01227	Cover Cassette Left
238	4822 442 01228	Cover Cassette Right
239	4822 381 11937	Lens Cassette Left
240	4822 381 11938	Lens Cassette Right
241	4822 529 10322	Damper Assy
244	4822 402 10621	Push-Catch
245	4822 492 11344	Spring Compression
250	4822 492 11345	Spring Tension
251	4822 492 42787	Spring Cassette
254	4822 462 40683	Plate (Foot)
288	4822 462 40683	Plate (Foot)
289	4822 426 10584	Cabinet Rear
290	4822 450 10429	Window CDC
291	4822 402 10962	Bracket Mains
349	4822 445 10727	Center Speaker /37
349	4822 445 10728	Surround Speaker /37
349	4822 445 10718	Center Speaker /22
349	4822 445 10719	Surround Speaker /22
350	4822 445 10729	LS Pair To Left /37
350	4822 445 10731	LS Pair To Right /37
350	4822 445 10751	LS Pair To Left /22
350	4822 445 10752	LS Pair To Right /22
351	4822 320 11094	FM Aerial /37
351	4822 303 50063	FM Aerial /22
356	4822 219 10447	Remote Control /37
356	4822 219 10457	Remote Control /22
384	4822 303 50082	AM Frame Aerial
385	4822 321 10882 ⚠	Mains Cord /37
385	4822 321 10249 ⚠	Mains Cord /22
387	4822 736 15937	Instruction For Use /37
387	4822 736 15982	Instruction For Use /22
5280	4822 146 10941 ⚠	Mains Transformer /37
5280	4822 146 10929 ⚠	Mains Transformer /22

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

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SCREW LISTS - MAIN UNIT

227	D3 x 12
256	D3 x 30
260	D3 x 12
261	D3 x 30
263	D3 x 12
264	D3 x 12
265	D3 x 12
269	D3 x 12
270	D3 x 10
274	D3 x 16
275	M3 x 6
276	M3 x 6
278	M3 x 10
279	D3 x 12
281	D3 x 12
282	M3 x 6
283	M3 x 6
287	M3 x 10
296	D3 x 12
297	D3 x 12
298	M3 x 10
299	D3 x 10
300	M3 x 10
301	M3 x 10
302	D3 x 10
303	D3 x 10
304	M3 x 10
305	D3 x 12
310	D3 x 12
311	D3 x 10
312	D3 x 10
313	D3 x 10
316	M3 x 10
317	D3 x 10