MP3 3 CDC Mini System

FWM15 /21/22/25

Service
Service
Service

Service Manual

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

TABLE OF CONTENTS

CLASS 1
LASER PRODUCT

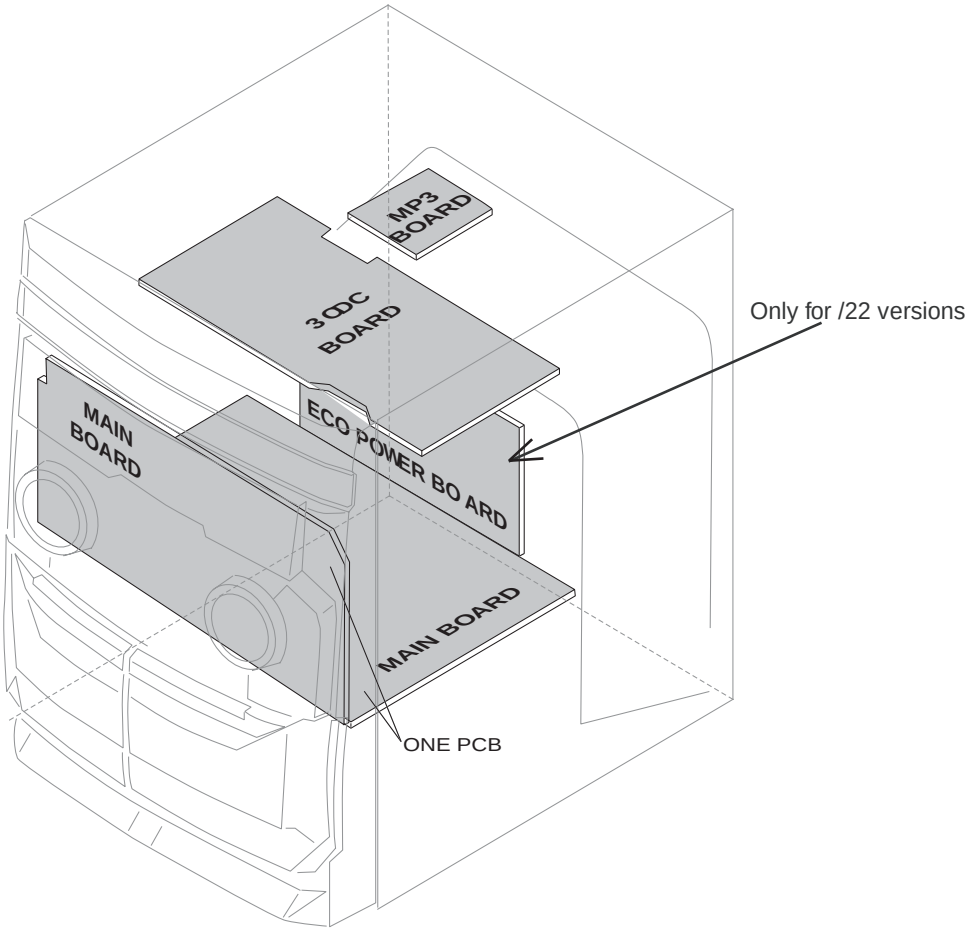
Published by LX 0535 Service Audio Printed in The Netherlands Subject to modification

GB 3141 785 30131

Version 1.1

PHILIPS

LOCATION OF PRINTED CIRCUIT BOARDS



VERSION VARIATIONS:

Type /Versions: / Features & Board in used:	FWM15							
	/21	/22						
Incredible Surround								
Karaoke								
News								
RDS								
Rotary Encoder (volume control)								
Jog Shuttle								
Voltage Selector	x							
Aux Input								
Digital Output								
Headphone Socket	x	x						
Line Output								
Subwoofer Output								
Surround Output								
Matrix Surround Loudspeakers								
Standby - Clock Display	x	x						
Standby - Dark								
ECO Power Standby (Clock Display Off)		x						
ECO6 Tuner Board - System Cenelec		x						
ECO6 Tuner Board - System Non-Cenelec	x							

SPECIFICATIONS

GENERAL:

Mains voltage : 110-127V/220-240V Switchable for /21
230V ± 10% for /22/25

Mains frequency : 50/60Hz /21
50Hz /22/25

Power consumption : ≤ 15W at Standby /21
≤ 11W at Standby /22/25
≤ 0.5W at ECO Standby /22/25
25W Active /21
30W Active /22/25

Clock accuracy : < 4 seconds per day

Dimension centre unit : 265 x 310 x 330mm

Weight (w/o speakers) : 4.6Kg

TUNER:

FM

Tuning range : 87.5-108MHz
Grid : 50kHz
IF frequency : 10.7MHz ± 20kHz
Aerial input : 75!&coaxial
Sensitivity at 26dB S/N : < 22∝V
Selectivity at 300kHz bandwidth : > 25dB
Image rejection,98MHz : > 40dB /21
> 80dB /22/25
Distortion at RF=1mV, dev. 75kHz : < 3%
-3dB Limiting point : < 23.5∝V
Crosstalk at RF=1mV, dev. 40kHz : > 18dB

MW

Tuning range : 530-1700kHz /21
: 531-1602kHz /22/25
Grid : 10kHz /21
: 9kHz /22/25
IF frequency : 450kHz ± 1kHz
Aerial input : Frame aerial, 18.1 ∝H
Sensitivity at 26dB S/N : < 4.4mV/M
Selectivity at 300kHz bandwidth : > 18dB
IF rejection : > 45dB
Image rejection : > 28dB
Distortion at RF=50mV, m=80% : < 5%

AMPLIFIER:

Output power [1] : 2 x 10W RMS
Frequency response within -3dB : 50Hz-15kHz
Dynamic Bass Boost : DBB1, DBB2, DBB3, DBB Off [2]
Digital Sound Control : Jazz, Techno, Optimal, Rock [2]
Headphone output at 32W : 900mV ± 1dB (max Vol.)
Impedance headphones : 32Ω--1000Ω

CASSETTE RECORDER:

Frequency response : 80 - 12500Hz (8dB)
Number of track : 2 x 2 stereo
Tape speed : 4.76 cm/sec +2.5/-1.5%
Wow and flutter : < 0.40% DIN
Fast-wind/rewind time C60 : 130 sec
Bias system : 75kHz ± 5kHz
Rec/Pb frequency response within 8dB : 80Hz - 10kHz
Signal to noise ratio (A-weighted) : ≥ 48dBA

COMPACT DISC:

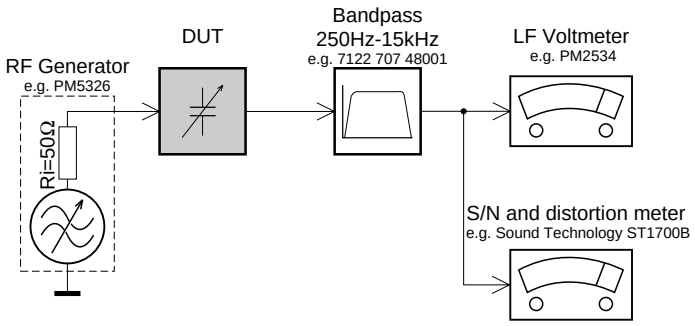
Measurement done at output conn. of the CDC module.
Frequency response within ± 1.5dB : 20Hz - 20kHz
Output level (in Vrms) : 550mV, Z_{out} = 100Ω
Signal/Noise ratio (A-weighted) : > 75dBA
Distortion at 1kHz : < 0.003%
Channel unbalance at 1kHz : ±1dB
Channel separation at 1kHz : > 60dB
De-emphasis : 0 or 15/50 mS (Switched by subcode on the disc)

[1] 4Ω, 1 kHz, 10% THD

[2] Frequency response in each setting is software controlled.

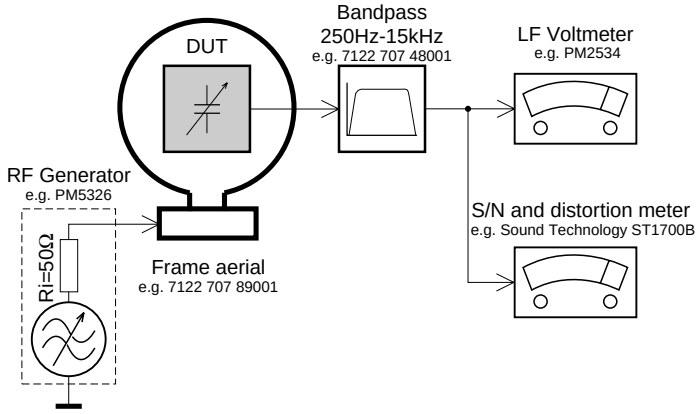
MEASUREMENT SETUP

Tuner FM



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

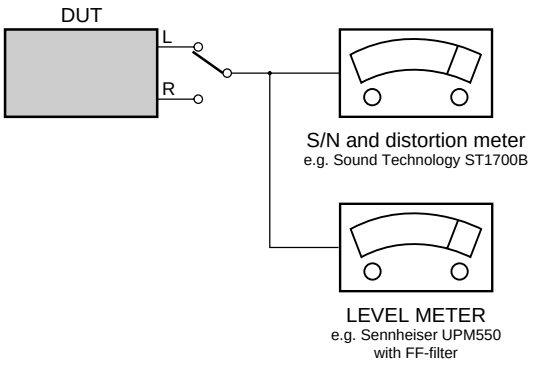
Tuner AM (MW,LW)



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

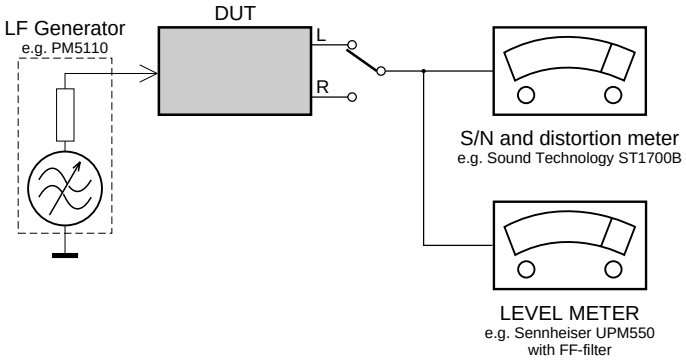
CD

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



Recorder

Use Universal Test Cassette **CrO2** SBC419 4822 397 30069
or Universal Test Cassette **Fe** SBC420 4822 397 30071



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

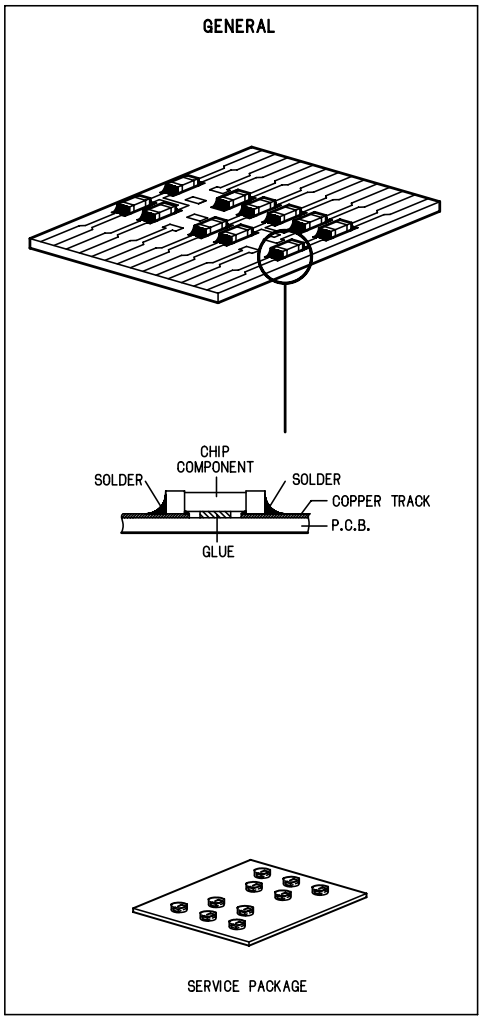
Compact Disc:

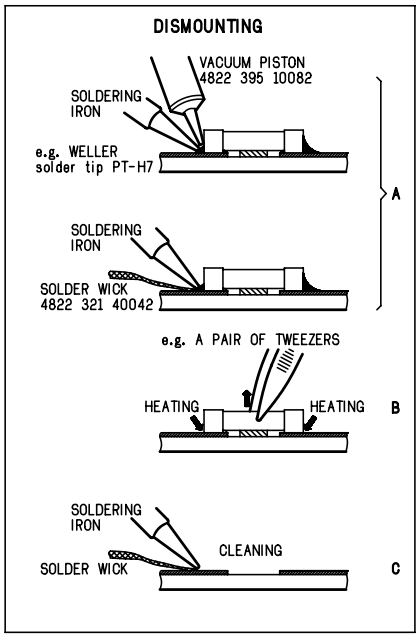
SBC426/426A Test disc 5 + 5A 4822 397 30096
SBC442 Audio Burn-in Test disc 1kHz 4822 397 30155
SBC429 Audio Signals disc 4822 397 30184
Dolby Pro-logic Test Disc 4822 395 10216

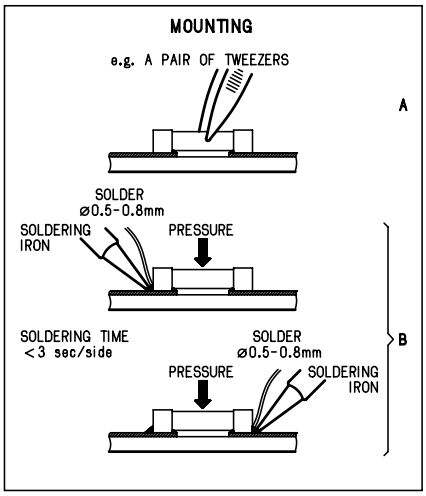
ESD Equipment:

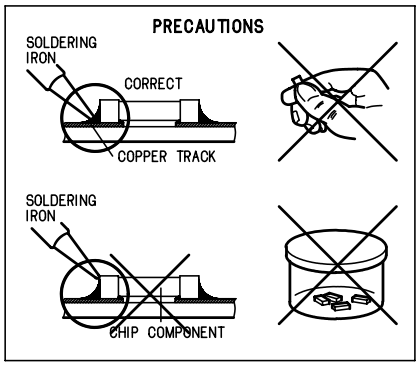
Anti-static table mat - large 1200x650x1.25mm ... 4822 466 10953
Anti-static table mat - small 600x650x1.25mm 4822 466 10958
Anti-static wristband 4822 395 10223
Connector box (1MΩ) 4822 320 11307
Extension cable
(to connect wristband to conn. box) 4822 320 11305
Connecting cable
(to connect table mat 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

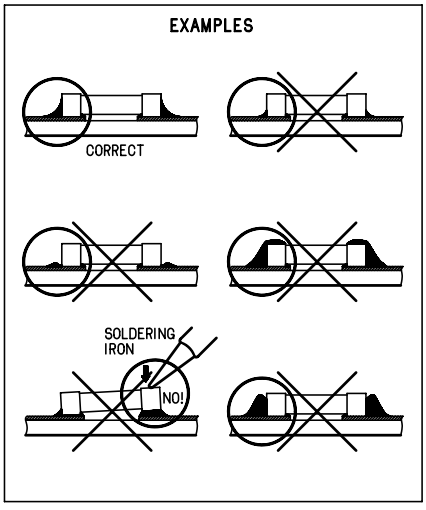
HANDLING CHIP COMPONENTS











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.

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.

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.

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 !

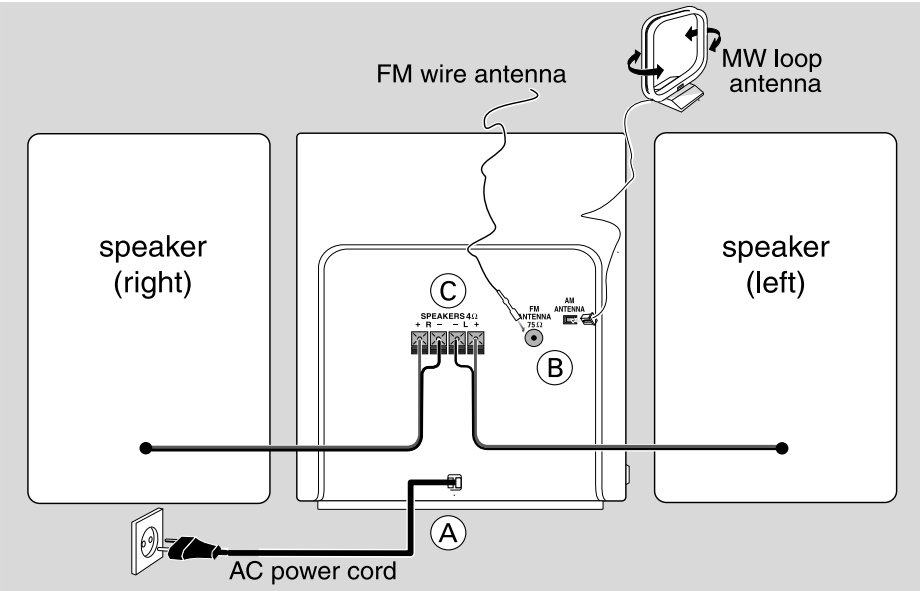
Osynlig laserstrålning när apparaten är öppnad och spärren är urkopplad. Betrakta ej strålen.

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.



Rear connections

The type plate is located at the rear of the system.
For users in the U.K.: please follow the instructions on page 2.

Ⓐ Power

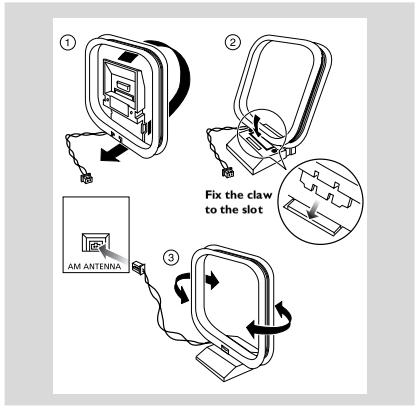
Before connecting the AC power cord to the wall outlet, ensure that all other connections have been made.

WARNING!
– For optimal performance, use only the original power cable.
– Never make or change any connections with the power switched on.

Ⓑ Antennas Connection

Connect the supplied AM loop antenna and FM antenna to the respective terminals. Adjust the position of the antenna for optimal reception.

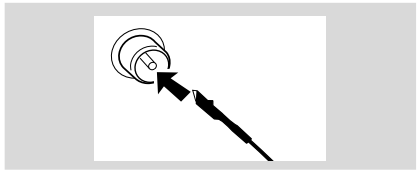
MW Antenna



Position the antenna as far as possible from a TV, VCR or other radiation source.

Preparations

FM Antenna

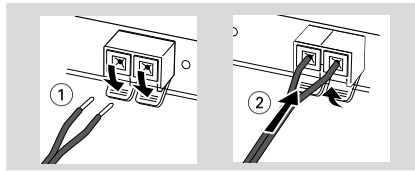


For better FM stereo reception, connect an outdoor FM antenna to the FM ANTENNA terminal.

Ⓒ Speakers Connection

Front Speakers

Connect the speaker wires to the SPEAKERS terminals, right speaker to "R" and left speaker to "L", coloured (marked) wire to "+" and black (unmarked) wire to "−".

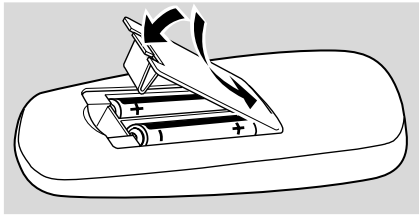


Fully insert the stripped portion of the speaker wire into the terminal as shown.

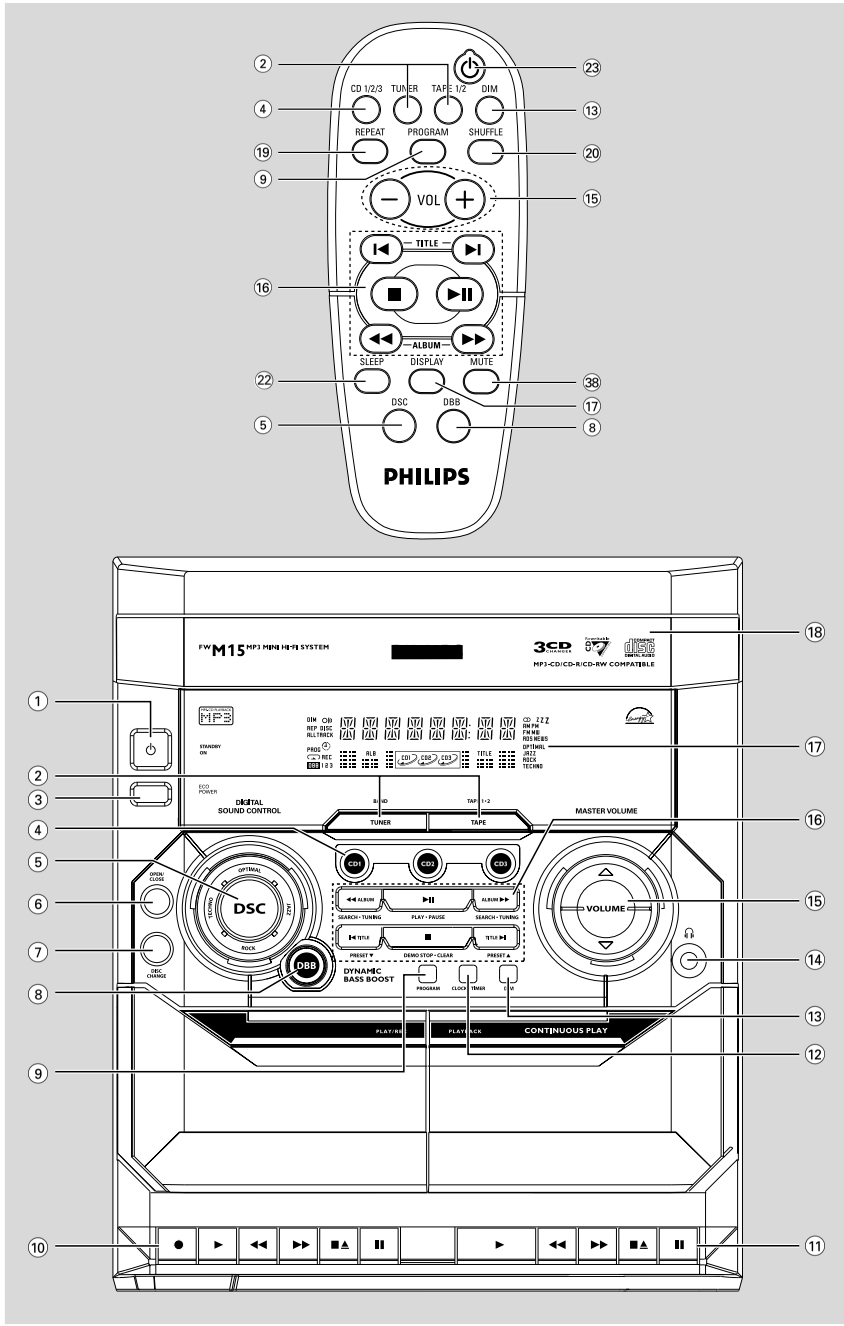
Notes:
– For optimal sound performance, use the supplied speakers.
– Do not connect more than one speaker to any one pair of + / − speaker terminals.
– Do not connect speakers with impedance lower than the speakers supplied. Please refer to the SPECIFICATIONS section of this manual.

Inserting batteries into the remote control

Insert two batteries type R03 or AAA (not supplied) into the remote control with the correct polarity as indicated by the "+" and "−" symbols inside the battery compartment.



CAUTION!
– Remove batteries if they are exhausted or will not be used for a long time.
– Do not use old and new or different types of batteries in combination.
– Batteries contain chemical substances, so they should be disposed off properly.



Controls

Controls on the system and remote control

① **STANDBY ON** ⏻
– to switch the system on or to standby mode.

② **TUNER** (BAND)
– to select waveband : FM or MW.

TAPE (TAPE 1•2)
– to select tape mode.

③ **ECO POWER**
– to switch the system on or to Eco Power standby mode.

④ **CD 1/ CD 2/ CD 3 (CD 1/2/3)**
– to select disc tray 1, 2 or 3.

⑤ **DSC (DIGITAL SOUND CONTROL)**
– to select the desired sound effect : JAZZ, ROCK, TECHNO or OPTIMAL.

⑥ **CD OPEN/CLOSE**
– to open or close the disc tray.

⑦ **DISC CHANGE**
– to change disc(s).

⑧ **DBB (DYNAMIC BASS BOOST)**
– to select the desired bass boost level.

⑨ **PROGRAM**
for CD ..... to programme disc tracks.
for Tuner ..... to programme preset radio stations.
for Clock ..... to select 12- or 24-hour clock mode.

⑩ **Tape deck 1 operation**
● ..... to start recording.
▶ ..... to start playback.
◀◀ / ▶▶ ..... to rewind or fast forward.
■⏏ ..... to stop playback/recording or to open the tape door.
⏸ ..... to interrupt playback or recording.

⑪ **Tape deck 2 operation**
▶ ..... to start playback.
◀◀ / ▶▶ ..... to rewind or fast forward.
■⏏ ..... to stop playback or to open the tape door.
⏸ ..... to interrupt playback.

⑫ **CLOCK•TIMER**
– to view the clock, set the clock or set the timer.

⑬ **DIM**
– to select different brightness for the display screen : DIM 1, DIM 2, DIM 3 or DIM OFF.

⑭ 🎧
– to connect headphones.

⑮ **MASTER VOLUME (VOL + / −)**
– to increase or decrease the volume.

⑯ **Mode Selection**

PLAY•PAUSE ▶⏸
for CD/MP3-CD…to start or interrupt playback.
for Plug & Play…*(on the system only)* to initiate and start plug & play mode.

SEARCH•TUNING ◀◀ (ALBUM)
SEARCH•TUNING ▶▶ (ALBUM)
for MP3-CD ..... to select previous/next album.
for CD ..... to search backward/forward.
for Tuner ..... to tune to a lower or higher radio frequency.
for Clock ..... *(on the system only)* to set the hour.

STOP•CLEAR / DEMO STOP ■
for CD/MP3-CD…to stop playback or to clear a programme.
for Tuner ..... *(on the system only)* to stop programming or to erase a selected preset.
for Demo ..... *(on the system only)* to activate/ deactivate the demonstration.
for Clock ..... *(on the system only)* to exit clock setting or cancel timer.
for Plug & Play…*(on the system only)* to exit plug & play mode.

Controls

PREV ⏮ / PRESET ▼ (TITLE)
NEXT ⏭ / PRESET▲ (TITLE)
for MP3-CD ..... to select previous/next title.
for CD ..... to skip to the beginning of the, previous, or next track.
for Tuner ..... to select a preset radio station.
for Clock ..... *(on the system only)* to set the minute.

⑰ **Display screen**
– to view the current status of the system.

⑱ **Disc tray**

⑲ **REPEAT**
– to playback track(s)/disc(s)/programme repeatedly.

⑳ **SHUFFLE**
– to playback all available tracks/programme of the current disc in random order.

㊳ **MUTE**
– to interrupt or resume sound reproduction.

SLEEP
– to activate/deactivate or set the sleep timer.

㉓ ⏻
– to switch the system to standby mode.
– to switch the system to Eco Power standby mode.

Notes for remote control:
– First, select the source you wish to control by pressing one of the source select keys on the remote control (CD 1/2/3 or TUNER, for example).
– Then select the desired function (▶, ⏮, ⏭, for example).

Important notes for users in the U.K.

Mains plug
This apparatus is fitted with an approved 13 Amp plug. To change a fuse in this type of plug proceed as follows:

1 Remove fuse cover and fuse.

2 Fix new fuse which should be a BS1362 5 Amp, A.S.T.A. or BSI approved type.

3 Refit the fuse cover.

If the fitted plug is not suitable for your socket outlets, it should be cut off and an appropriate plug fitted in its place.
If the mains plug contains a fuse, this should have a value of 5 Amp. If a plug without a fuse is used, the fuse at the distribution board should not be greater than 5 Amp.

Note: The severed plug must be disposed of to avoid a possible shock hazard should it be inserted into a 13 Amp socket elsewhere.

How to connect a plug
The wires in the mains lead are coloured with the following code: blue = neutral (N), brown = live (L).

As these colours may not correspond with the colour markings identifying the terminals in your plug, proceed as follows:
– Connect the blue wire to the terminal marked N or coloured black.
– Connect the brown wire to the terminal marked L or coloured red.
– Do not connect either wire to the earth terminal in the plug, marked E (or ⏚) or coloured green (or green and yellow).

Before replacing the plug cover, make certain that the cord grip is clamped over the sheath of the lead - not simply over the two wires.

Copyright in the U.K.
Recording and playback of material may require consent. See Copyright Act 1956 and The Performer's Protection Acts 1958 to 1972.

Italia

DICHIARAZIONE DI CONFORMITA'

Si dichiara che l'apparecchio FWM15 Philips risponde alle prescrizioni dell'art. 2 comma 1 del D.M. 28 Agosto 1995 n. 548.

Fatto a Eindhoven

Philips Consumer Electronics
Philips, Glaslaan 2
5616 JB Eindhoven, The Netherlands

Norge

Typeskilt finnes på apparatens underside.

Observer: Nettbryteren er sekundert innkoplet. Den innebygde netdelen er derfor ikke frakoplet nettet så lenge apparatet er tilsluttet nettkontakten.

For å redusere faren for brann eller elektrisk støt, skal apparatet ikke utsettes for regn eller fuktighet.

CAUTION

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

Maintenance

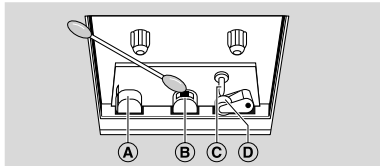
Cleaning the Cabinet
Use a soft cloth slightly moistened with a mild detergent solution. Do not use a solution containing alcohol, spirits, ammonia or abrasives.

Cleaning Discs

When a disc becomes dirty, clean it with a cleaning cloth. Wipe the disc from the centre out. Do not wipe in circular motion.
Do not use solvents such as benzene, thinner, commercially available cleaners, or antistatic spray intended for analogue records.

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

Cleaning the Heads and the Tape Paths
To ensure good recording and playback quality, clean the heads Ⓐ and Ⓑ, the 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 also can clean the heads by playing a cleaning tape once.



Demagnetising the heads
Use a demagnetising tape available at your dealer.

Troubleshooting

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

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

Problem	Solution
"NO DISC" is displayed.	Insert a disc. Check if the disc is inserted upside down. Wait until the moisture condensation at the lens has cleared. Replace or clean the disc, see "Maintenance".
"DISC NOT FINALIZED" is displayed.	Use a finalised CD-RW or CD-R.
Radio reception is poor.	If the signal is too weak, adjust the antenna or connect an external antenna for better reception. Increase the distance between the Mini HiFi System and your TV or VCR.
Recording or playback cannot be made.	Clean deck parts, see "Maintenance". Use only NORMAL (IEC I) tape. Apply a piece of adhesive tape over the missing tab space.
The system does not react when buttons are pressed.	Remove and reconnect the AC power plug and switch on the system again.
Sound cannot be heard or is of poor quality.	Adjust the volume. Disconnect the headphones. Check that the speakers are connected correctly. Check if the stripped speaker wire is clamped.
The left and right sound outputs are reversed.	Check the speaker connections and location.
The remote control does not function properly.	Select the source (CD 1/2/3 or TUNER, for example) before pressing the function button (⏚, 👤, 🔌). Reduce the distance between the remote control and the system. Insert the batteries with their polarities (+ / − signs) aligned as indicated. Replace the batteries. Point the remote control directly towards the IR sensor.
The timer is not working.	Set the clock correctly. Press and hold CLOCK•TIMER to switch on the timer. If recording or tape dubbing is in progress, stop recording.
Not all lighted buttons are showing light.	Press DIM to select DIM OFF display mode.
The Clock/Timer setting is erased.	Power has been interrupted or the power cord has been disconnected. Reset the clock/timer.
The system displays features automatically.	Press and hold ▷ on the system to switch off the demonstration.

DISMANTLING INSTRUCTIONS

Dismantling of the Lens Cassette

1) Uncatch 4 catches along the edge of the Cassette door (pos 5) as shown in figure 1 and 2 to remove the Lens cassette (pos 2).

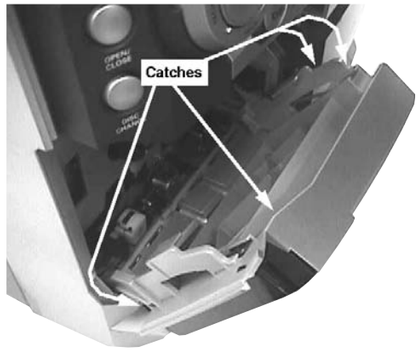


Figure 1

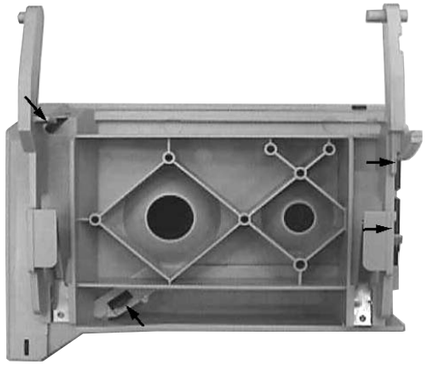


Figure 2: Left Cassette door

Dismantling the 3CDC Module

1) Loosen the 4 screws, slide Cover top (pos 30) towards the rear and remove it upwards.
2) Loosen 3 screws slide the Panel right (pos 26) towards the rear and remove it outwards. Do likewise for the Panel left (pos 27).
3) Push the gear slowly towards the front as shown in figure 3 until the CDC tray starts to move out of the Front Cabinet (pos 8). The CDC tray is now disengage and can be pulled out completely.
4) Remove the Cover Tray (pos 29) as shown in figure 4.
5) Loosen 4 screws A to remove the CDC Module (pos 28) as shown in figure 3.

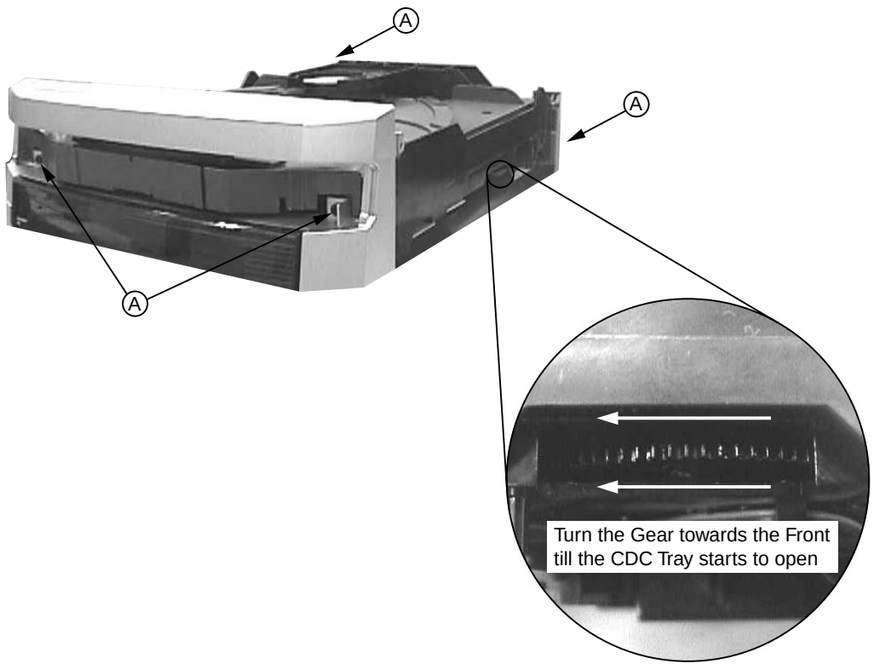


Figure 3

3-1

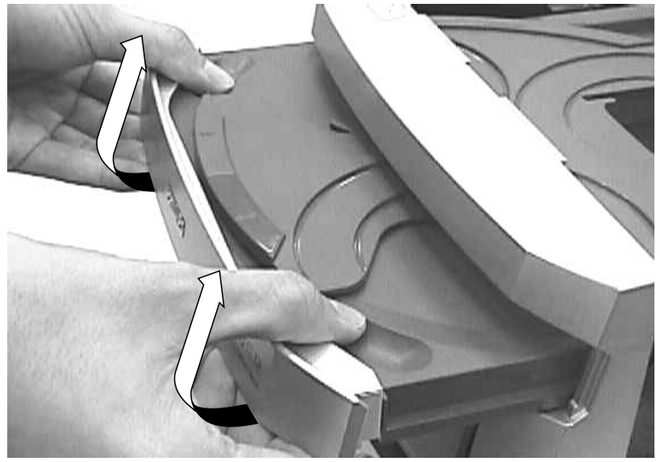


Figure 4

Dismantling of the Panel Rear

1) Loosen 6 screws C on the Panel rear (pos 24).
2) Press the 2 catches C1 inwards and dismantle the Panel rear by pulling it towards the rear.

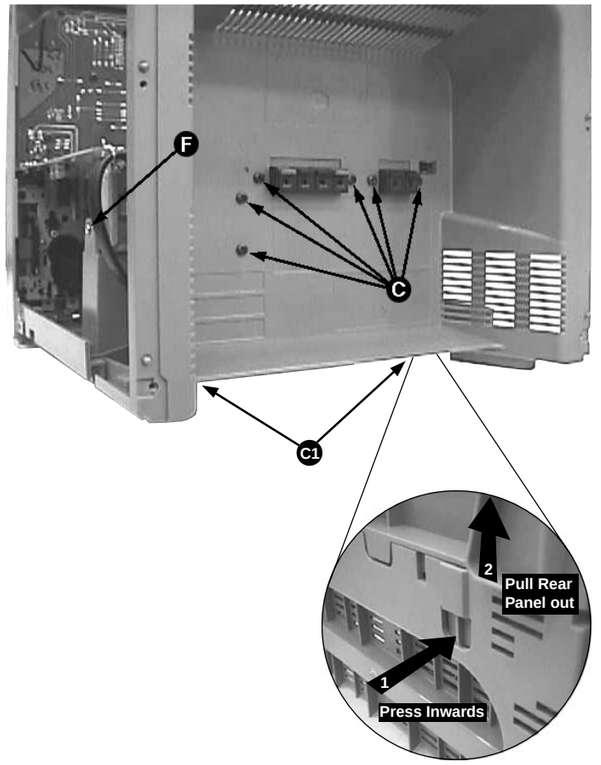


Figure 5

Dismantling of the Front Panel and Bottom Panel assembly

1) Remove 8 screws D mounting the Front board.
2) Remove 1 screw E supporting the bracket, Combi board (pos 33) to the Panel front (pos 8).
3) Remove 1 screw F (see figure 5) mounting the Mains transformer body to the Panel Bottom (pos 25).

   Note: Care must be taken not to damage the board because of the heavy Mains transformer.

4) The Front and Combi boards together with the Mains transformer can now be remove.
5) Loosen 6 screws G and eject both cassette doors to remove the Tape mechanism (pos 12).

   Note: During re-assembly of the Tape mechanism and Front board care must be taken to ensure the wires are properly dressed and not touching any moving parts on the Tape mechanism.

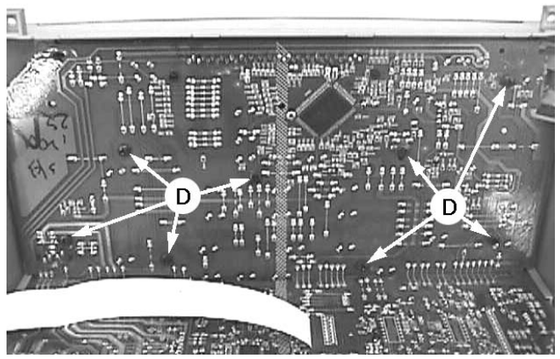


Figure 6

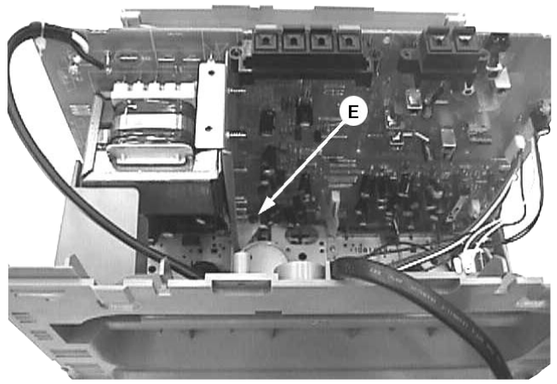


Figure 7

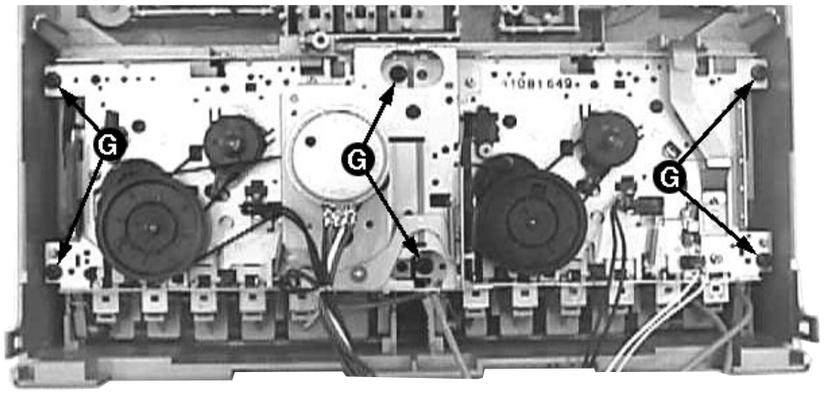


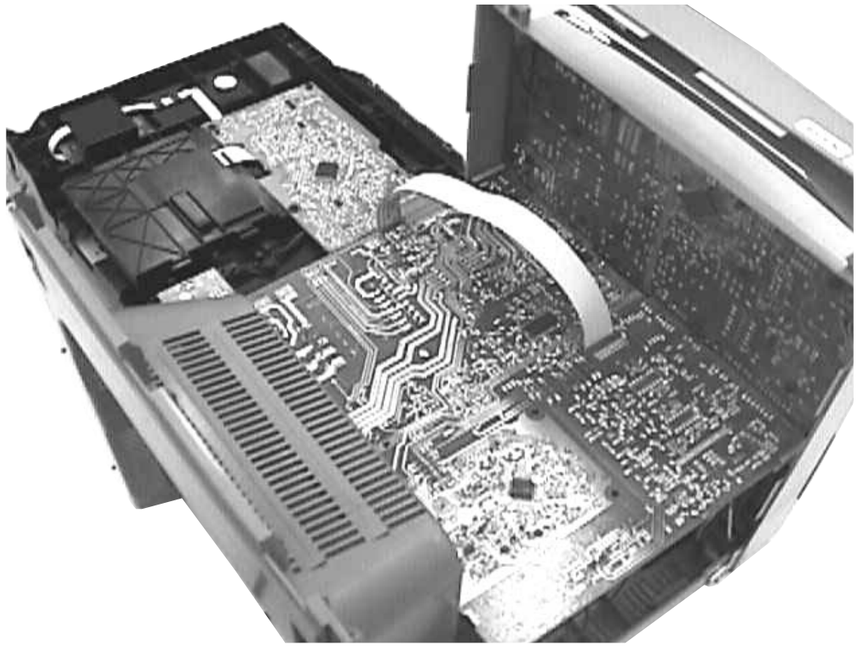
Figure 8

3-2

Service pos A

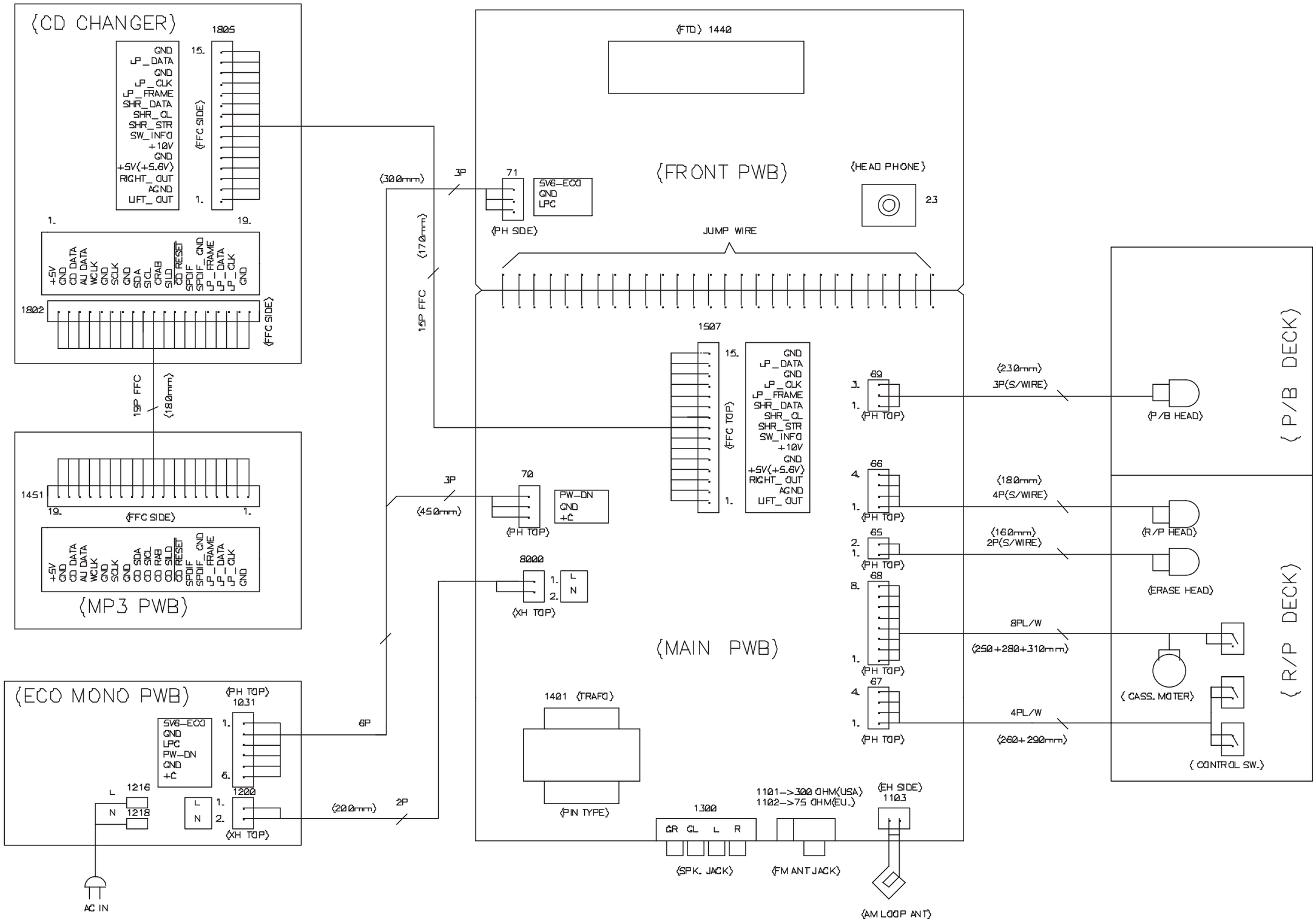
Note: After re-assembly, it is very important to ensure the wires from the Tape mechanism are routed properly to ensure that they do not touch/obstruct all moving parts.

Service pos B



4 - 1

SET BLOCK DIAGRAM

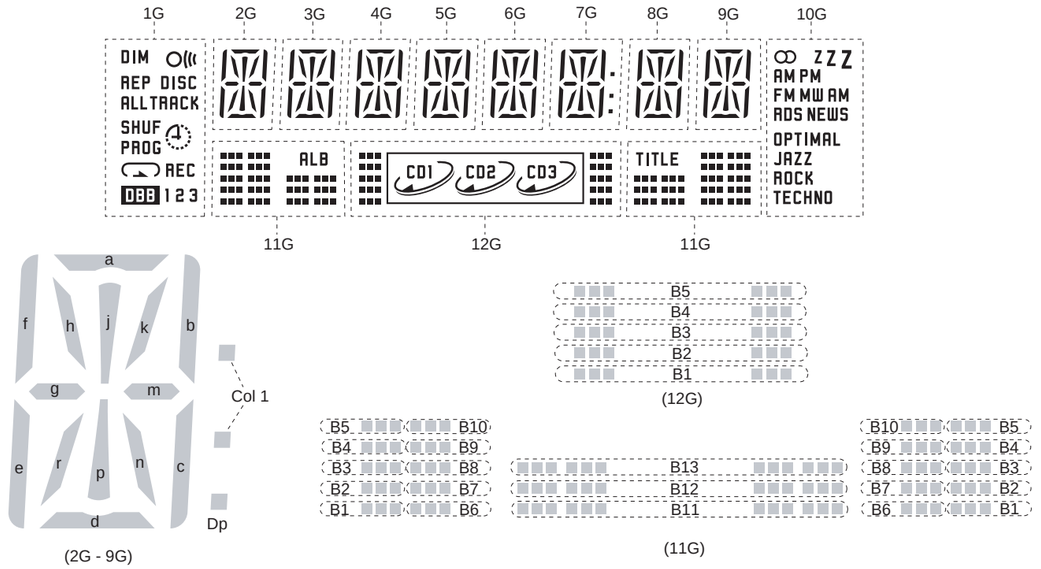


MAIN BOARDS

TABLE OF CONTENTS

6 - 1

FTD DISPLAY PIN CONNECTIONS



	12G	11G	10G	9G	8G	7G	6G	5G	4G	3G	2G	1G
P1	B1	B1	∞	a	a	a	a	a	a	a	a	DIM
P2	B2	B2	Z	h	h	h	h	h	h	h	h	○((
P3	B3	B3	Z	j , p	j , p	j , p	j , p	j , p	j , p	j , p	j , p	REP
P4	B4	B4	Z	k	k	k	k	k	k	k	k	DISC
P5	B5	B5	AM	b	b	b	b	b	b	b	b	ALL
P6	CD1	B6	PM	f	f	f	f	f	f	f	f	TRACK
P7	CD2	B7	FM	m	m	m	m	m	m	m	m	SHUF
P8	CD3	B8	MW	g	g	g	g	g	g	g	g	PROG
P9	↙	B9	AM	c	c	c	c	c	c	c	c	◷
P10	◆	B10	RDS	e	e	e	e	e	e	e	e	▭
P11	●	B11	NEWS	r	r	r	r	r	r	r	r	→
P12	▭	B12	OPTIMAL	n	n	n	n	n	n	n	n	REC
P13	-	B13	JAZZ	d	d	d	d	d	d	d	d	DBB
P14	-	ALB	ROCK	-	-	Col	-	-	-	-	-	1
P15	-	TITLE	TECHNO	-	-	Dp	-	-	-	-	-	2
P16	-	-	-	-	-	-	-	-	-	-	-	3

FTD DISPLAY PIN NO.	39	38	37	36	35	34	33	32	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
FUNCTION	F2	-	-	-	1G	2G	3G	4G	5G	6G	7G	8G	9G	10G	11G	12G	-	-	-	P1	P2	P3	P4	P5	P6	P7	P8	P9	P10	P11	P12	P13	P14	P15	P16	-	-	-	F1

TAPE ADJUSTMENTS & MEASUREMENTS

	TEST CASSETTE	RECORDER MODE	MEASURE ON	READ ON	ADJUST with	ADJUST to
General						
ADJUST MOTOR SPEED	SBC420 (4822 397 30071) 3150Hz	PLAY deck A or B	◇11 or ◇12 LEFT RIGHT or headphone socket	frequency counter	3758	3150Hz ±1%
CHECK WOW & FLUTTER	SBC420 (4822 397 30071) 3150Hz	PLAY deck A or B	◇11 or ◇12 LEFT RIGHT or headphone socket	W&F-meter	check only	≤0.4 % DIN or ≤0.35 % CCIR
ADJUST AZIMUTH	SBC420 (4822 397 30071) 10kHz	PLAY deck A PLAY deck B	◇11 ◇12 LEFT RIGHT or headphone socket	mV-meter or oscilloscope	left hand screw	max. output level & left=right
Playback						
CHECK PLAYBACK FREQUENCY RESPONSE	SBC420 (4822 397 30071)	PLAY deck A PLAY deck B	◇11 or ◇12 LEFT RIGHT	mV-meter	Check	limits see fig.1
Recording						
PRE-ADJUST BIAS	FERRO	RECORD	◇15	mV-meter	5701	$14V_{rms}$ ($40V_{pp}$)
CHECK OVERALL FREQUENCY RESPONSE Input signal: 3mV 100Hz, 250Hz, 1kHz, 10kHz via ◇13 or ◇14	FERRO	RECORD				
	RECORDED CASSETTE	PLAY	◇11 or ◇12 LEFT RIGHT	mV-meter	check only	limits see fig.2
CHECK DISTORTION Input signal: 300mV 1kHz via ◇13 or ◇14	FERRO	RECORD				
	RECORDED CASSETTE	PLAY	◇11 or ◇12 LEFT RIGHT	THD-meter	check only	≤5%

Remark: If high frequencies are not within lower limit, decrease bias and re-measure.
If distortion is too high increase bias and re-measure.

adj. ECO MTF DD AS, 110399

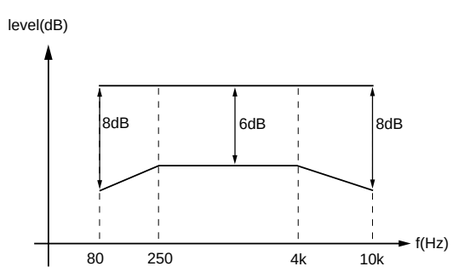


figure. 1

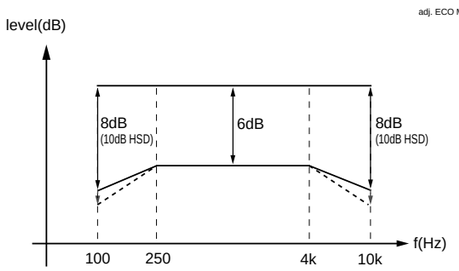


figure. 2

TUNER ADJUSTMENT TABLE (**ECO6** 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, 45mV continuous wave	◇D	IC 7101 pin 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 mod=1kHz Δf=±22.5kHz	108MHz	2155	◇4	MAX
	87.5MHz (65.81MHz)		87.5MHz (65.81MHz)	5131		
VCO						
FM	98MHz, 1mV continuous wave	◇A	98MHz	3142	◇3	152kHz ±1kHz [1]
AM IF						
MW	450kHz connect pin 6 of IC 7101 (AM Osc.) with 3.3kΩ to Vcc	◇C Δf=±10kHz V_{RF} = 0.5mV (as low as possible)	IC 7101 pin 36 100nF 220R	5111	◇5	max. f_o symmetric
			IC 7101 pin 40 100nF 220R see remark [2]	5112		
AM AFC **MW**		◇C continuous wave V_{RF} = 2mV		5114	◇2	0 ± 2 mV DC
AM RF [3]						
MW [4] FM/MW/LW- and FM/MW-version (9kHz grid) 531 - 1602kHz	1494kHz	◇B Δf = ±30kHz V_{RF} as low as possible	1494kHz	2106	◇5	max. f_o symmetric
	558kHz		558kHz	5102		
LW	198kHz		198kHz	5103		
MW FM/AM-version, 10kHz grid 530 - 1700kHz	1500kHz		1500kHz	2106		
	560kHz		560kHz	5102		

ECO6, Sys + PA with frame aerial, 070799

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

[1] If sensitivity of frequency counter is too low adjust to max. channel separation (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.

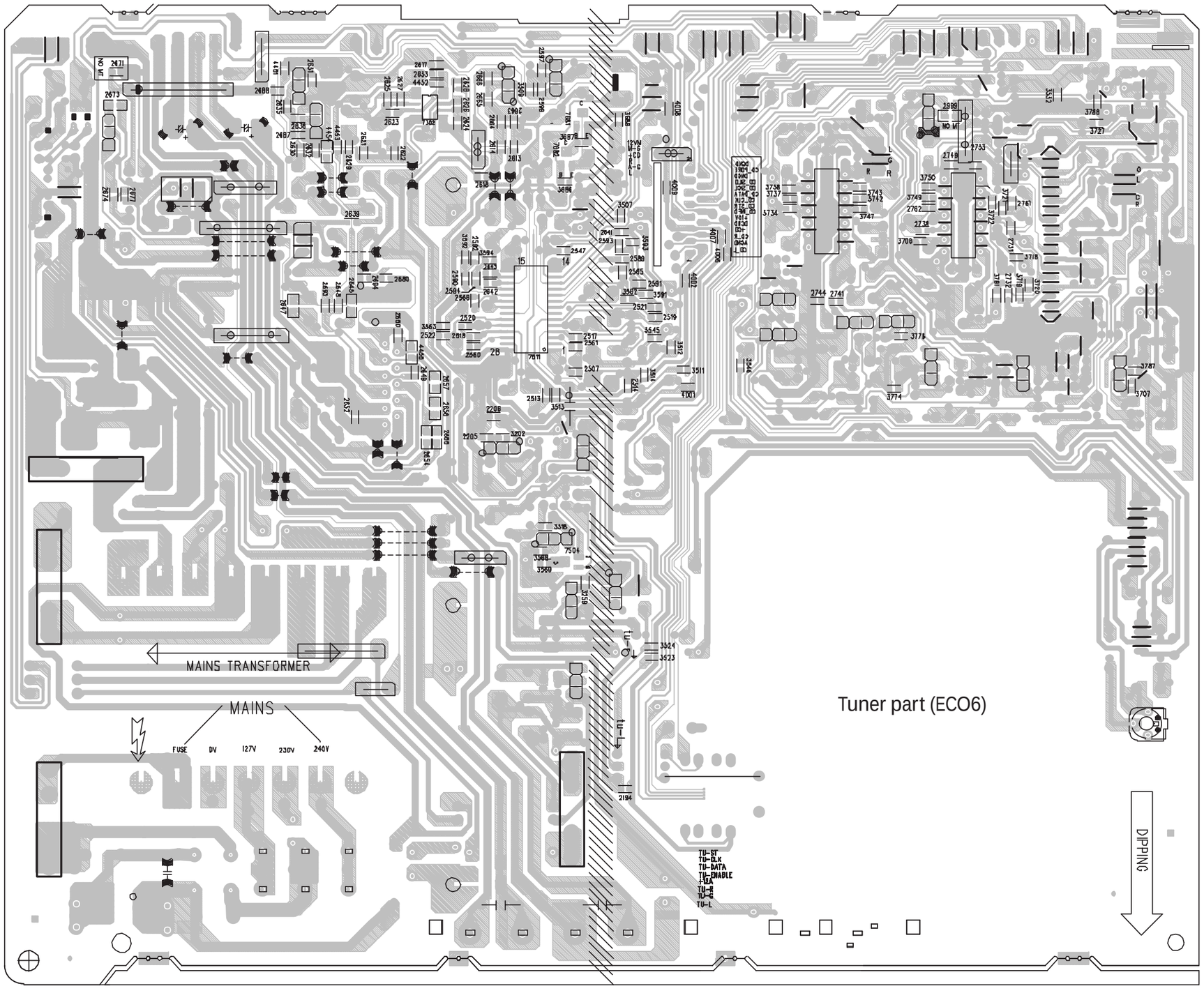
[3] For AM RF adjustments the original frame antenna has to be used !

[4] MW has to be aligned before LW.

↕ Repeat

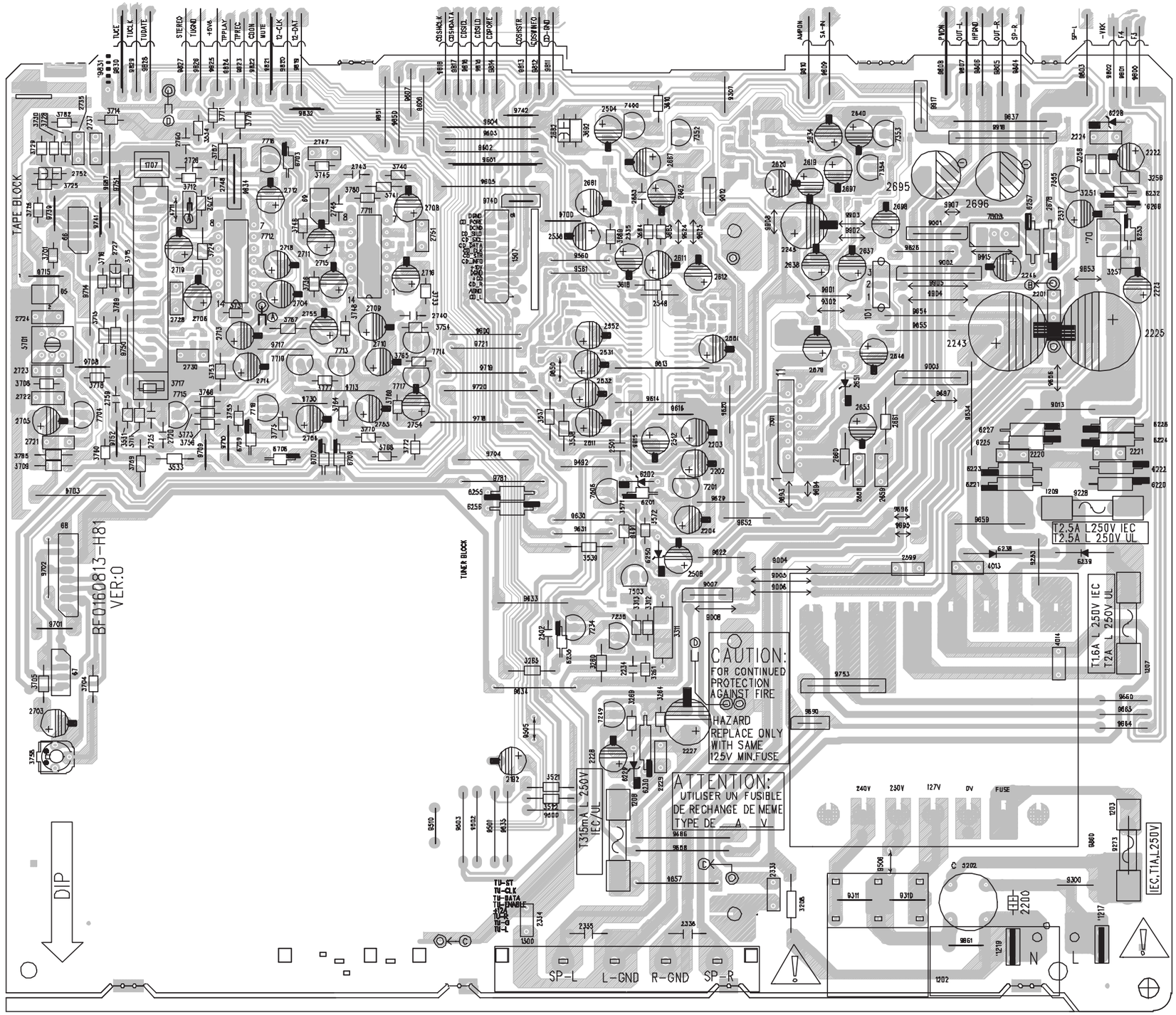
6 - 3

LAYOUT DIAGRAM - MAIN BOARD(only f or -/ 21)
(CASSETTE, MAINS, AMPLIFIER PART)



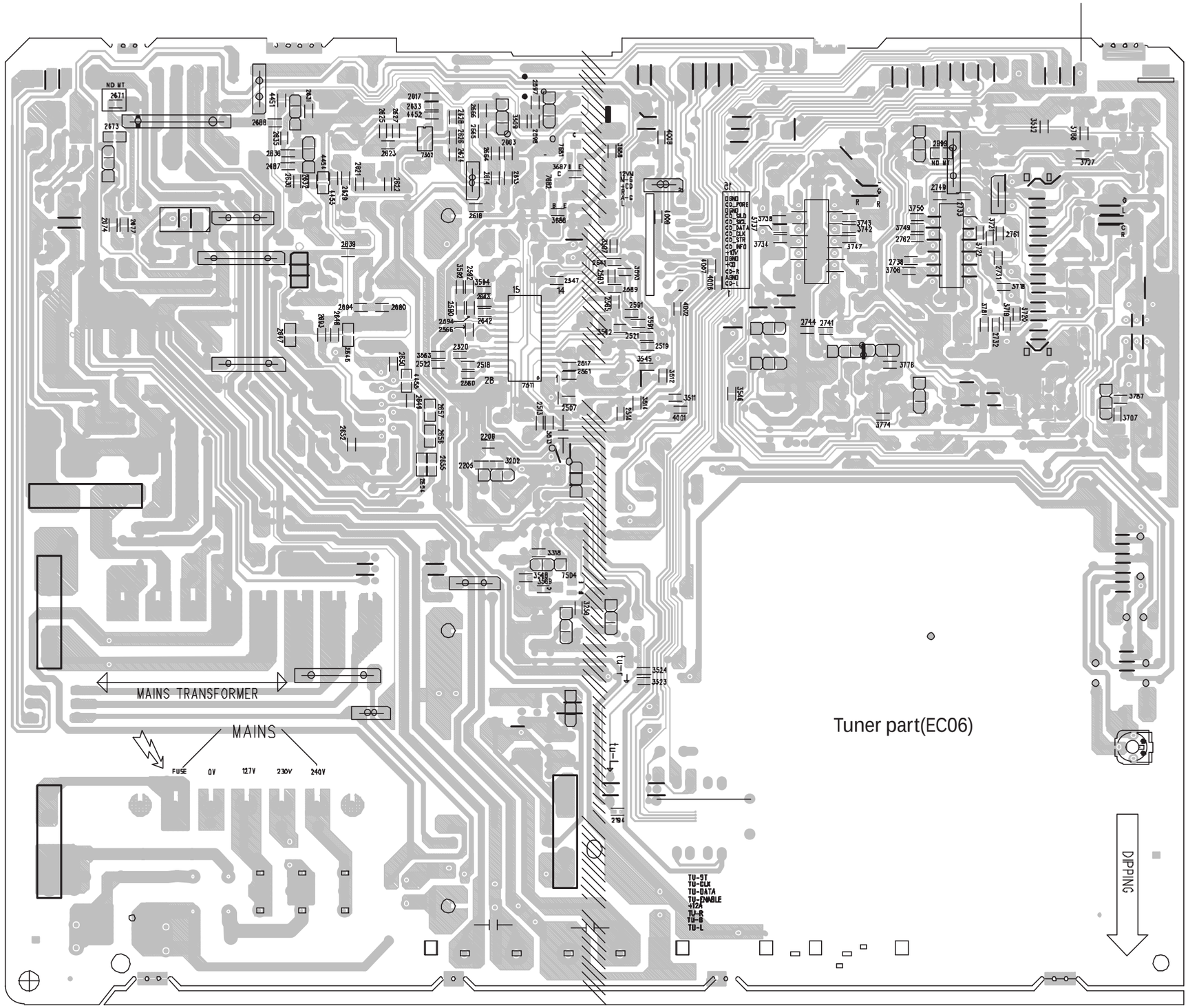
6 - 4

LAYOUT DIAGRAM - MAIN BOARD(only f or -/ 21)
(CASSETTE, MAINS, AMPLIFIER PART)



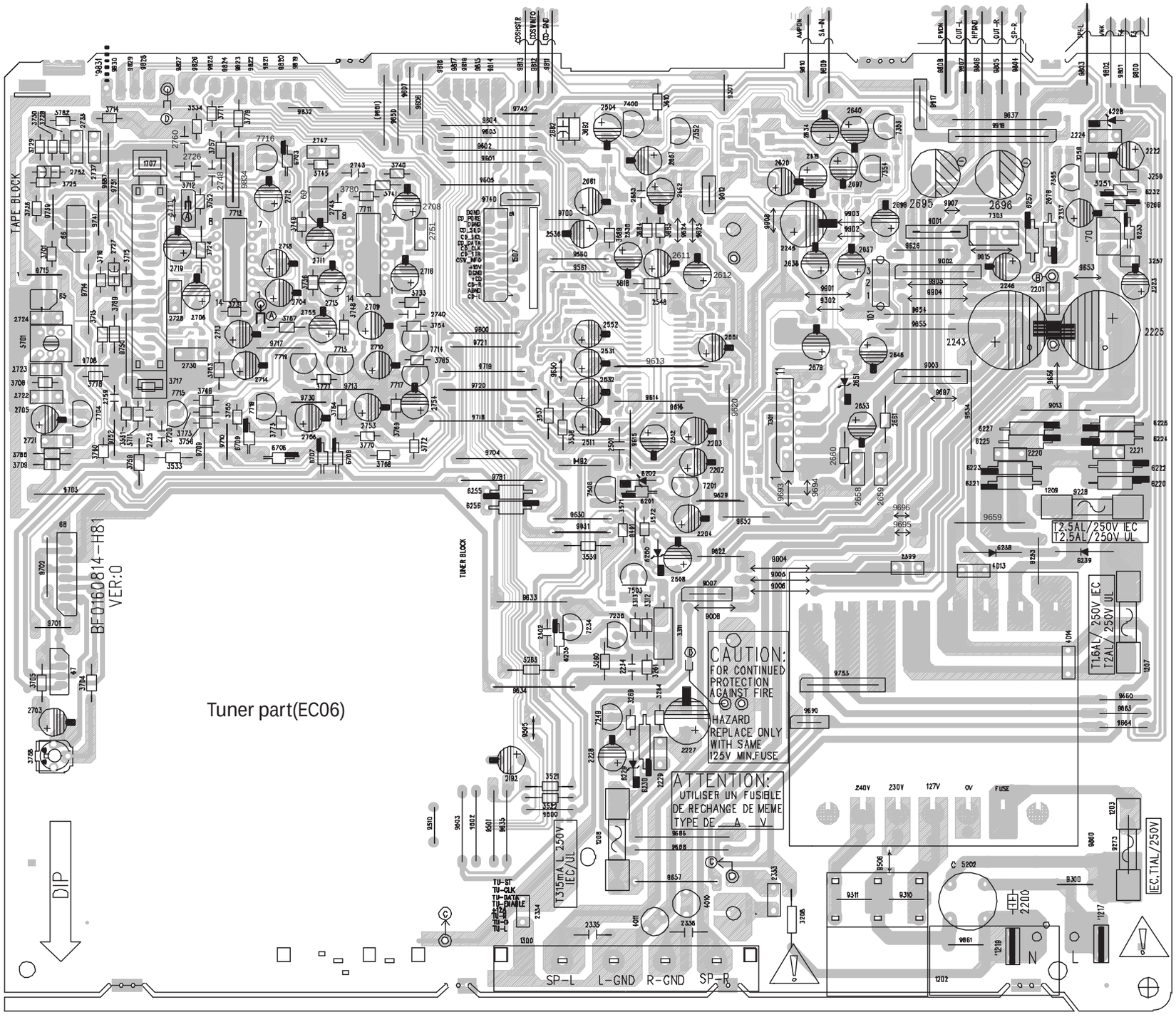
6 - 5

CLAYOUT DIAGRAM - MAIN BOARD(only f or -/ 22)
(CASSETTE, MAINS, AMPLIFIER PART)



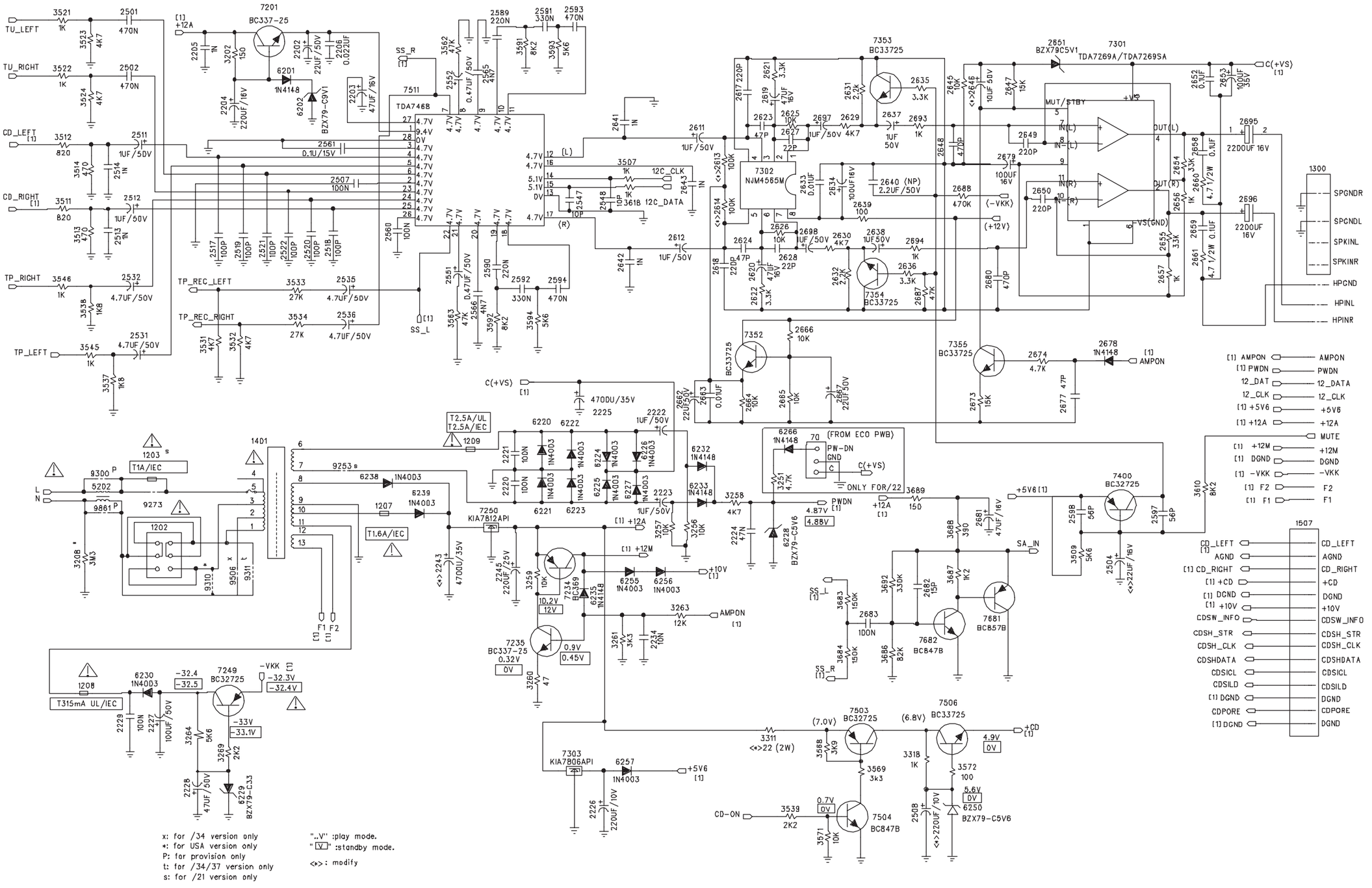
6 - 6

LAYOUT DIAGRAM - MAIN BOARD(only f or -/ 22)
(CASSETTE, MAINS, AMPLIFIER PART)



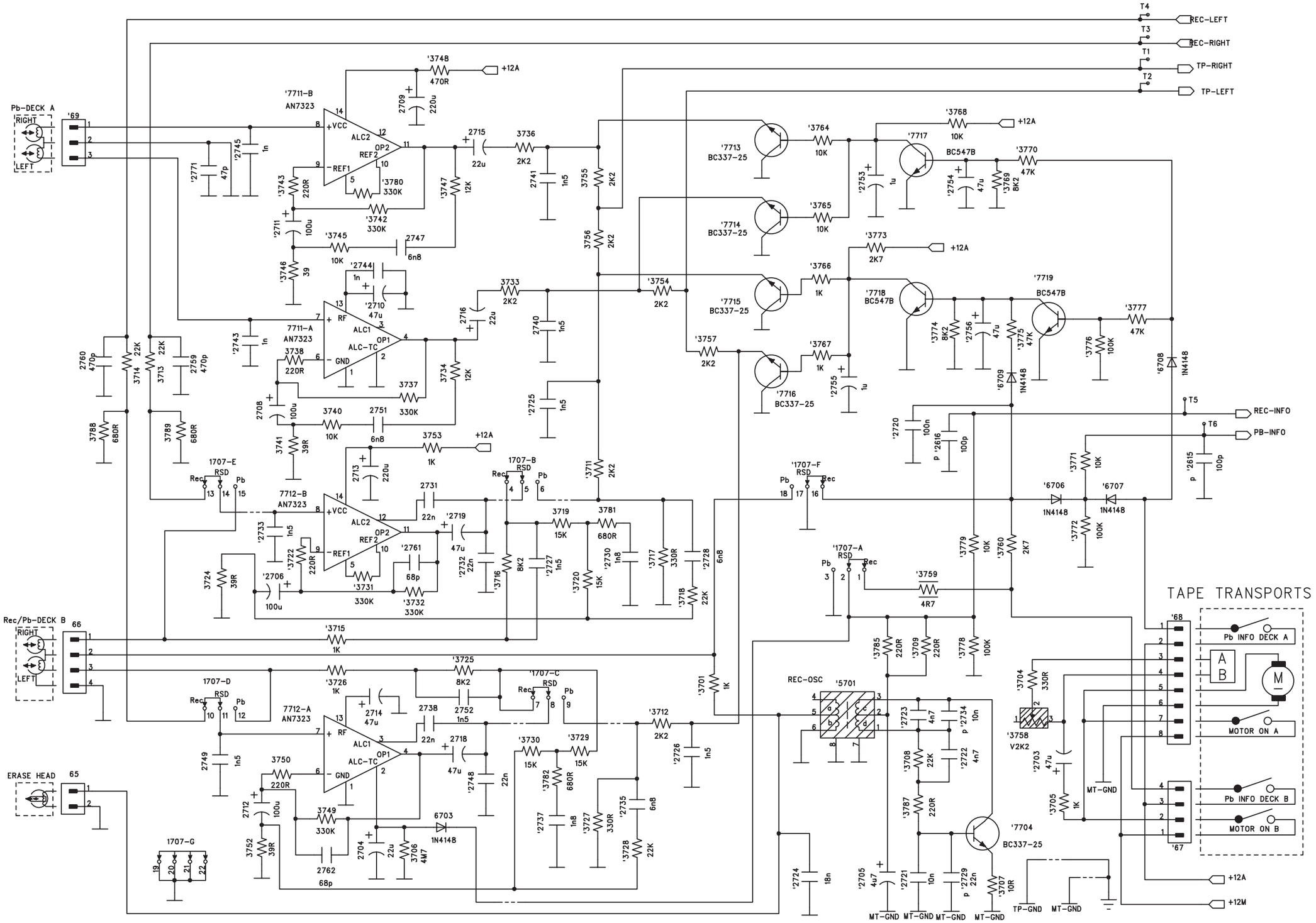
6 - 7

CIRCUIT DIAGRAM - MAIN BOARD



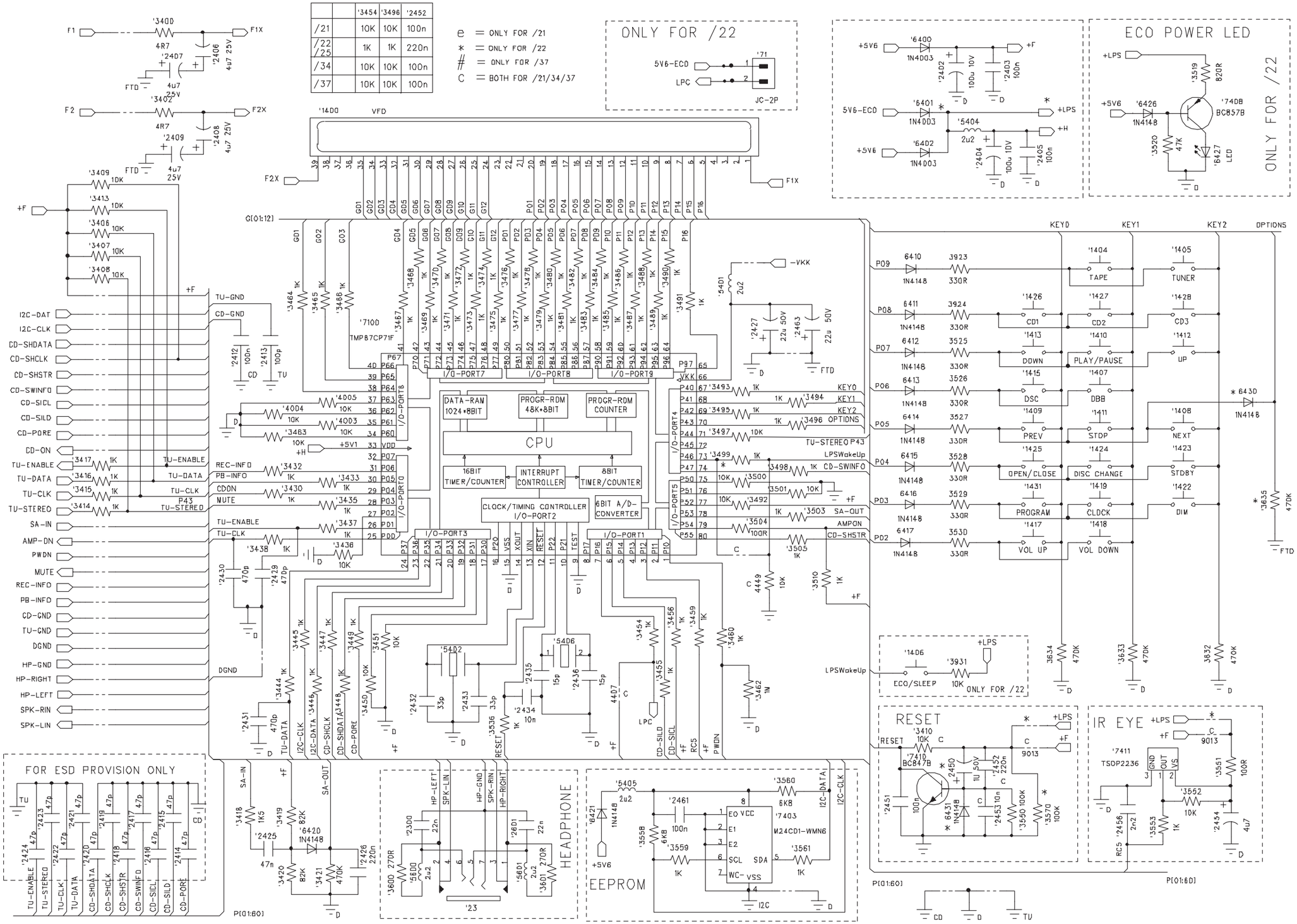
6 - 8

CIRCUIT DIAGRAM - MAIN BOARD
TAPE PART



6 - 9

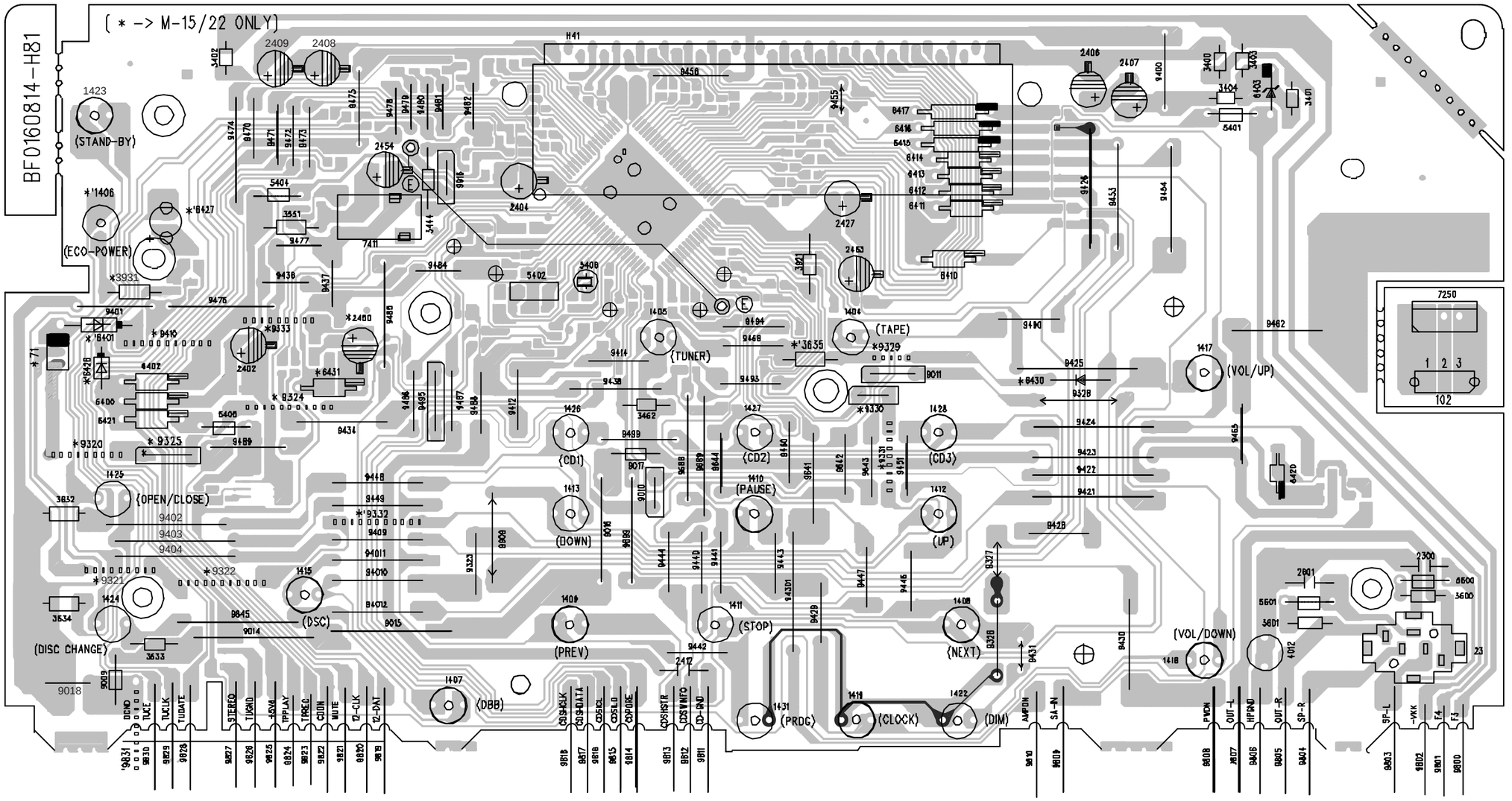
CIRCUIT DIAGRAM - MAIN BOARD
FRONT PART



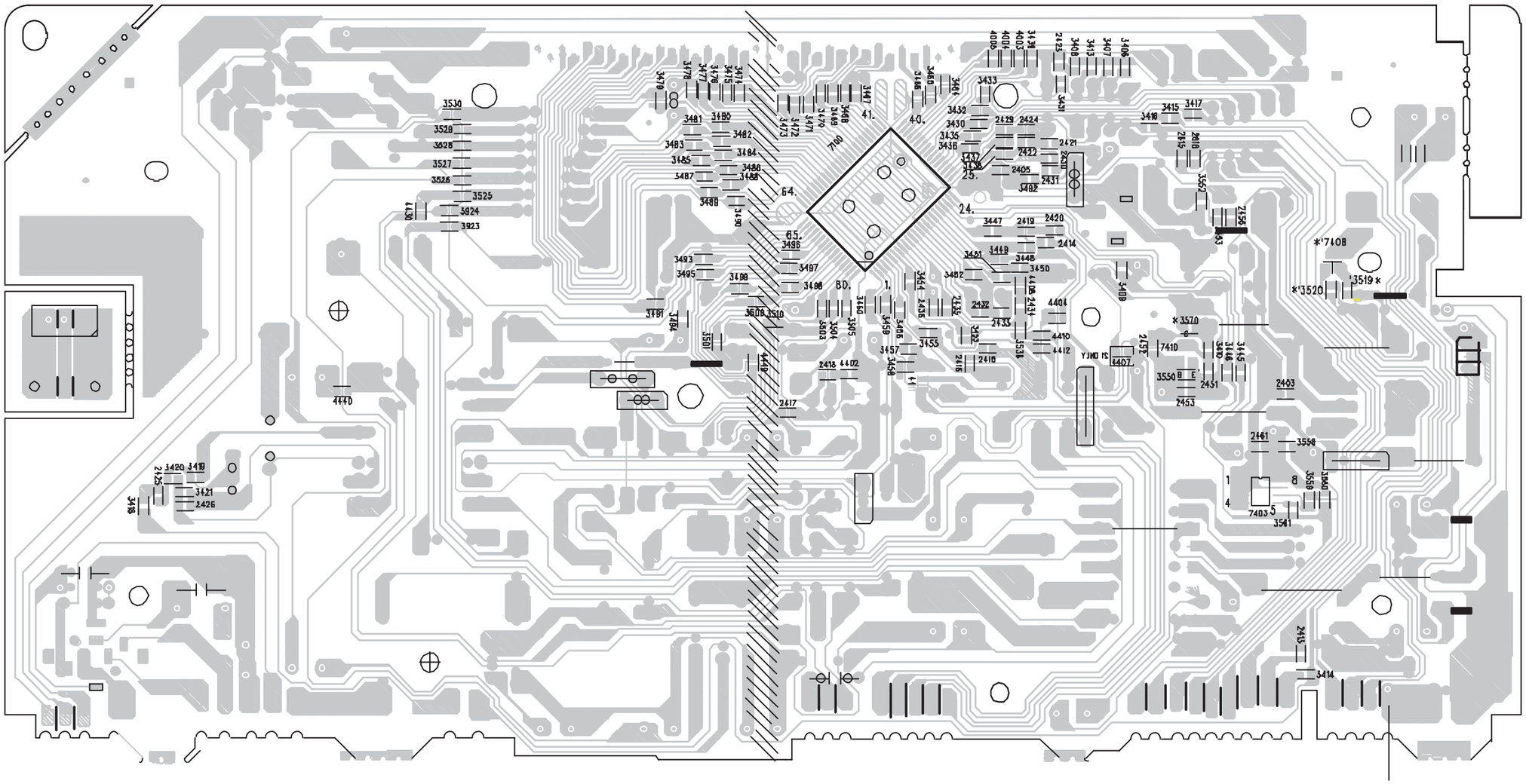
		'3454	'3496	'2452
/21		10K	10K	100n
/22 /25		1K	1K	220n
/34		10K	10K	100n
/37		10K	10K	100n

6 - 10

LAYOUT DIAGRAM - MAIN BOARD
FRONT PART



LAYOUT DIAGRAM - MAIN BOARD
FRONT PART



6-12

TUNER BOARD ECO6 / SYSTEMS NON CENELEC

VERSION PROGRAMMING COMPONENTS

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

X component mounted

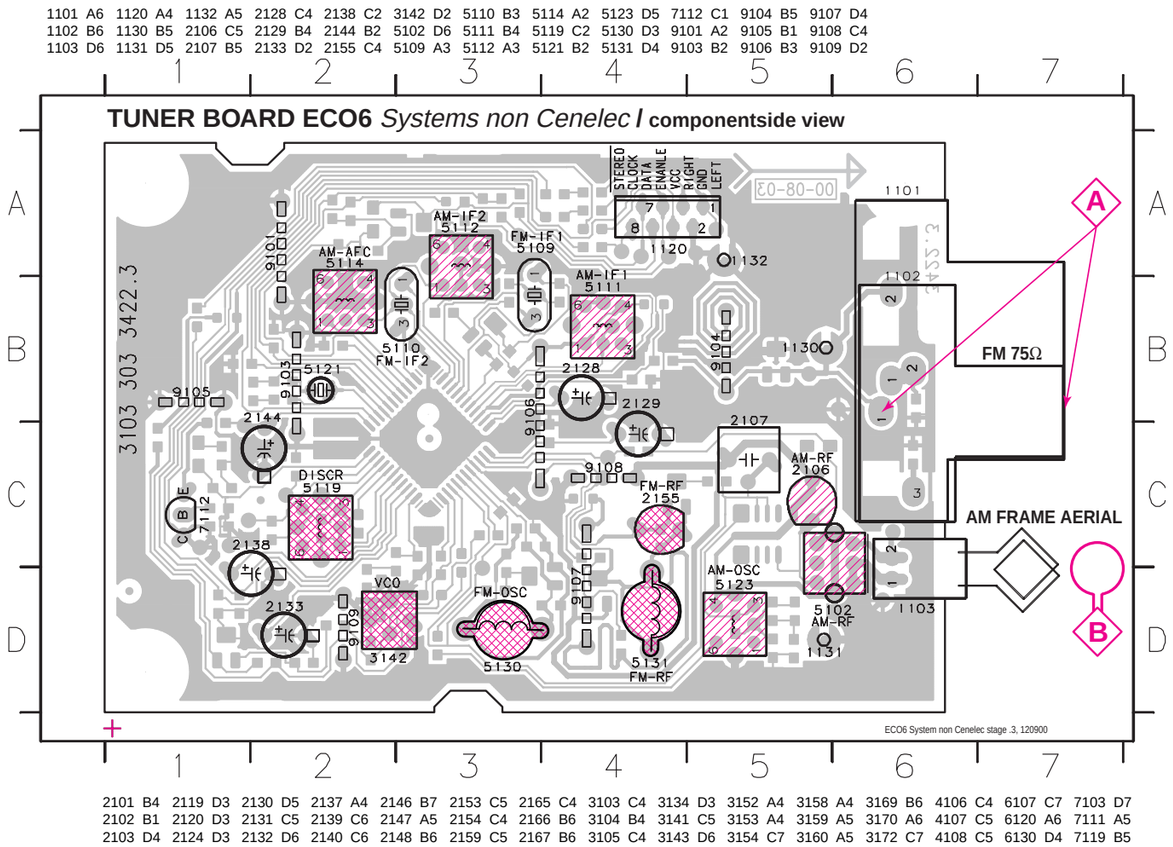
LEGEND

ⓟ...for provision only
USA ... for USA version only
E-EU ... for East European version only
J ... for Japanese version only

...V FM mode stereo
[...V] MW mode
[...V] LW mode
EVM voltages measured while set is tuned to a strong transmitter

Signal path
FM
AM
MPX (Audio Frequency)
AF - left/right

ECO6 Sys-non Cenelec, 000911



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

6-13

TUNER ADJUSTMENT TABLE (ECO6 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, 45mV continuous wave	◇D	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 mod=1kHz Δf=±22.5kHz	108MHz	2155	◇4	MAX
	87.5MHz (65.81MHz)		87.5MHz (65.81MHz)	5131		
VCO						
FM	98MHz, 1mV continuous wave	◇A	98MHz	3142	◇3	152kHz ±1kHz 1)
AM IF						
MW	450kHz connect pin 6 of IC 7101 (AM Osc.) with 3.3kΩ to Vcc	◇C Δf=±10kHz V_{RF} = 0.5mV (as low as possible)	IC 7101 36 220R 100nF	5111	◇5	max. f_o symmetric
			IC 7101 40 220R 100nF see remark 2)	5112		
AM AFC **MW**		◇C continuous wave V_{RF} = 2mV		5114	◇2	0 ± 2 mV DC
AM RF 3)						
MW 4) FM/MW/LW- and FM/MW-version (9kHz grid) 531 - 1602kHz	1494kHz	◇B Δf = ±30kHz V_{RF} as low as possible	1494kHz	2106	◇5	max. f_o symmetric
	558kHz		558kHz	5102		
LW	198kHz		198kHz	5103		
MW FM/AM-version, 10kHz grid 530 - 1700kHz	1500kHz		1500kHz	2106		
	560kHz		560kHz	5102		

ECO6, Sys + PA with frame aerial, 070799

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

1) If sensitivity of frequency counter is too low adjust to max. channel separation (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

Electrical Partslist *ECO6* *SYSTEMS NON-CENELEC*

6-14

MISCELLANEOUS

1101	2422 015 19376	SOCKET 2P CLICKFIT	USA only
1102	4822 267 10283	SOCKET COAX, IEC 75Ω	not USA
1103	4822 265 31184	JST CONNECTOR 2 POLE	
1120	4822 265 11515	FFC SOCKET, 8P	

CAPACITORS

2101 ©	4822 126 13692	47pF	1%	63V	
2102 ©	4822 126 13838	100nF	10%	50V	not USA
2103 ©	5322 122 31647	1nF	10%	63V	
2104 ©	5322 122 32531	100pF	5%	50V	
2105 ©	4822 126 13838	100nF	10%	50V	USA only
2106	2020 800 00191	3-11pF TRIMCAP.,N450			
2107	4822 121 51319	1µF	20%	50V	
2120 ©	4822 126 13689	18pF	1%	63V	
2124 ©	5322 122 32654	22nF	10%	63V	
2125 ©	2020 552 96199	560pF	1%	50V	
2126 ©	5322 122 31863	330pF	5%	50V	
2127 ©	4822 126 14076	220nF	20%	25V	
2128	4822 124 40248	10µF	20%	63V	
2129	4822 124 41584	100µF	20%	10V	
2130 ©	5322 122 32654	22nF	10%	63V	
2131 ©	4822 126 13482	470nF	20%	16V	
2132 ©	4822 126 13482	470nF	20%	16V	
2133	4822 124 21913	1µF	20%	63V	
2134 ©	4822 126 13188	15nF	5%	63V	not USA
2134 ©	5322 122 32654	22nF	10%	63V	USA only
2135 ©	4822 126 13188	15nF	5%	63V	not USA
2135 ©	5322 122 32654	22nF	10%	63V	USA only
2136 ©	4822 126 14076	220nF	20%	25V	
2137 ©	4822 126 14076	220nF	20%	25V	
2138	4822 124 22652	2,2µF	20%	50V	
2139 ©	4822 126 14236	15pF	5%	50V	
2140 ©	4822 126 13695	82pF	1%	63V	
2141 ©	4822 126 13838	100nF	10%	50V	
2143 ©	4822 126 14076	220nF	20%	25V	
2144	4822 124 21913	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 122 33127	2,2nF	10%	63V	
2149 ©	5322 122 32659	33pF	5%	50V	RDS only
2150 ©	4822 126 13838	100nF	10%	50V	
2152 ©	4822 126 12105	33nF	5%	63V	not for East Europe
2152 ©	5322 116 80853	560pF	5%	63V	for East Europe only
2153 ©	4822 126 13486	15pF	2%	63V	not for East Europe
2153 ©	4822 122 33926	12pF	2%	50V	for East Europe only
2155	2020 800 00191	3-11pF TRIMCAP.,N450			
2159 ©	5322 122 32659	33pF	5%	50V	
2164 ©	4822 126 13482	470nF	20%	16V	
2165 ©	4822 126 13838	100nF	10%	50V	
2166 ©	5322 122 31647	1nF	10%	63V	
2167 ©	4822 122 33926	12pF	5%	50V	
2169 ©	4822 122 33127	2,2nF	10%	63V	RDS only

RESISTORS

3101 ©	4822 051 20333	33kΩ	5%	0,1W	
3102 ©	4822 117 10837	100kΩ	1%	0,1W	
3103 ©	4822 051 20822	8,2kΩ	5%	0,1W	
3104 ©	4822 117 13577	330Ω	1%	0,1W	
3105 ©	4822 117 11503	220Ω	5%	0,1W	
3132 ©	4822 051 20479	47Ω	5%	0,1W	
3134 ©	4822 051 20223	22kΩ	5%	0,1W	
3141 ©	4822 117 11148	56kΩ	1%	0,1W	
3142	4822 100 12159	TRIMPOT. 100kΩ			

RESISTORS

3143 ©	4822 051 20223	22kΩ	5%	0,1W	RDS only
3144 ©	4822 051 10102	1kΩ	2%	0,25W	RDS only
3145©	4822 117 11449	2,2kΩ	1%	0,1W	
3146 ©	4822 051 20229	22Ω	5%	0,1W	
3152 ©	4822 051 20471	470Ω	5%	0,1W	
3153 ©	4822 051 20471	470Ω	5%	0,1W	
3154 ©	4822 117 13577	330Ω	1%	0,1W	
3155 ©	4822 117 11503	220Ω	5%	0,1W	
3156 ©	4822 117 10837	100kΩ	1%	0,1W	
3157 ©	4822 117 10837	100kΩ	1%	0,1W	
3158 ©	4822 051 20471	470Ω	5%	0,1W	
3159 ©	4822 051 20471	470Ω	5%	0,1W	
3160 ©	4822 051 20471	470Ω	5%	0,1W	
3161 ©	4822 051 20223	22kΩ	5%	0,1W	
3167 ©	4822 051 20121	120Ω	5%	0,1W	
3168 ©	4822 051 20121	120Ω	5%	0,1W	
3169 ©	4822 051 20154	150kΩ	5%	0,1W	
3170 ©	4822 117 10837	100kΩ	1%	0,1W	
3172 ©	4822 051 20562	5,6kΩ	5%	0,1W	
3176 ©	4822 051 20333	33kΩ	5%	0,1W	RDS only
3181 ©	4822 051 10102	1kΩ	2%	0,25W	
4103 ©	4822 051 20008	CHIP JUMPER 0805			
4106 ©	4822 051 20008	CHIP JUMPER 0805			
4107 ©	4822 051 20008	CHIP JUMPER 0805			
4108 ©	4822 051 20008	CHIP JUMPER 0805			

COILS

5102	4822 157 71634	RF-COIL MW
5109	4822 242 70665	FM-IF FILTER 10,7MHz
5110	4822 242 70665	FM-IF FILTER 10,7MHz
5111	2422 549 44023	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 COIL
5121	4822 242 10261	QUARTZ 75kHz
5123	2422 549 44108	RF-COIL, AM-OSCILLATOR
5130	4822 157 11843	RF COIL 1,5 TURNS
5131	4822 157 11843	RF COIL 1,5 TURNS

DIODES

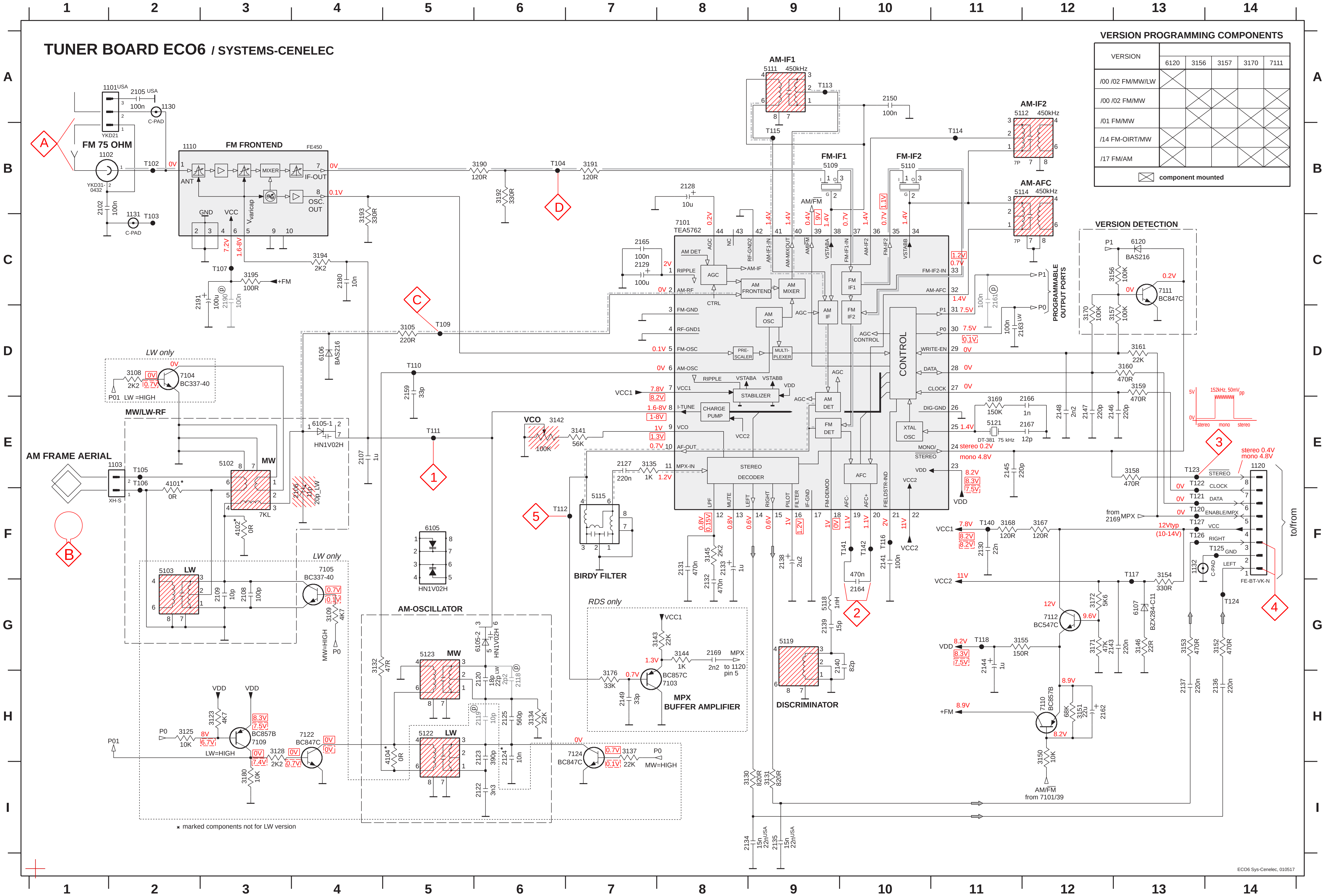
6103 ©	5322 130 34337	BAV99
6105 ©	4822 130 83075	HN1V02H
6106 ©	4822 130 83757	BAS216
6107 ©	9340 386 90115	BZX284-C11
6120 ©	4822 130 83757	BAS216
6130 ©	4822 130 82833	1SV228
6131 ©	4822 130 82833	1SV228

TRANSISTORS

7102	4822 130 42131	BF550	
7103 ©	5322 130 42756	BC857C	RDS only
7111 ©	5322 130 42755	BC847C	
7112	4822 130 44503	BC547C	

INTEGRATED CIRCUITS

7101 ©	9351 740 80557	TEA5757H/V1, RADIO IC



1101	A2	5121	E11
1102	B1	5122	H5
1103	E2	5123	G5
1110	B2	6105-1	E4
1120	E14	6105-2	G6
1130	A2	6106	D4
1131	C2	6107	G13
1132	F13	6120	C13
2102	B1	7101	C8
2105	A2	7103	H8
2106	E3	7104	D2
2107	E4	7105	F4
2108	G3	7109	H3
2109	G3	7110	H12
2118	H6	7111	C13
2119	H6	7112	G12
2120	H6	7122	H4
2122	I6	7124	H7
2123	H6	T102	B2
2124	H6	T103	B2
2125	H6	T104	B6
2127	E7	T105	E2
2128	B8	T106	E2
2129	C7	T107	C3
2130	F11	T109	D5
2131	F8	T110	D5
2132	F8	T111	E5
2133	F8	T112	F7
2134	I8	T113	A9
2135	I9	T114	B11
2136	H14	T116	F10
2137	H13	T117	F13
2138	F9	T118	G11
2139	G9	T120	F13
2140	G9	T121	F13
2141	F10	T122	E13
2143	G12	T123	E13
2144	G11	T124	G14
2145	E11	T125	F14
2146	E12	T126	F13
2147	E12	T127	F13
2148	E12	T140	F11
2149	H7	T141	F10
2150	A10	T142	F10
2159	D5		
2161	C11		
2162	H12		
2163	D11		
2164	G10		
2165	C7		
2166	E11		
2167	E11		
2169	G8		
2180	C4		
2190	C3		
2191	C3		
3105	D5		
3108	D2		
3109	G4		
3123	H3		
3125	H2		
3128	H3		
3130	I9		
3131	I9		
3132	G4		
3134	H6		
3135	E7		
3137	H7		
3141	E7		
3142	E6		
3143	G7		
3144	G8		
3145	F8		
3146	G13		
3150	H12		
3151	H12		
3152	G14		
3153	G13		
3154	F13		
3155	G12		
3156	C12		
3157	D12		
3158	E13		
3159	D13		
3160	D13		
3161	D13		
3167	F12		
3168	F11		
3169	E11		
3170	D12		
3171	G12		
3172	G12		
3176	H7		
3180	I3		
3190	B6		
3191	B7		
3192	B6		
3193	B4		
3194	C4		
3195	C3		
4101	E2		
4102	F3		
4104	H5		
5102	E3		
5103	F2		
5109	B9		
5110	B10		
5111	A9		
5112	A11		
5114	B11		
5115	E7		
5118	G9		
5119	G9		

LEGEND

* ... only assembled in FM/AM-version
(p)...for provision only
USA ... for USA version only
LW ... for LW version only

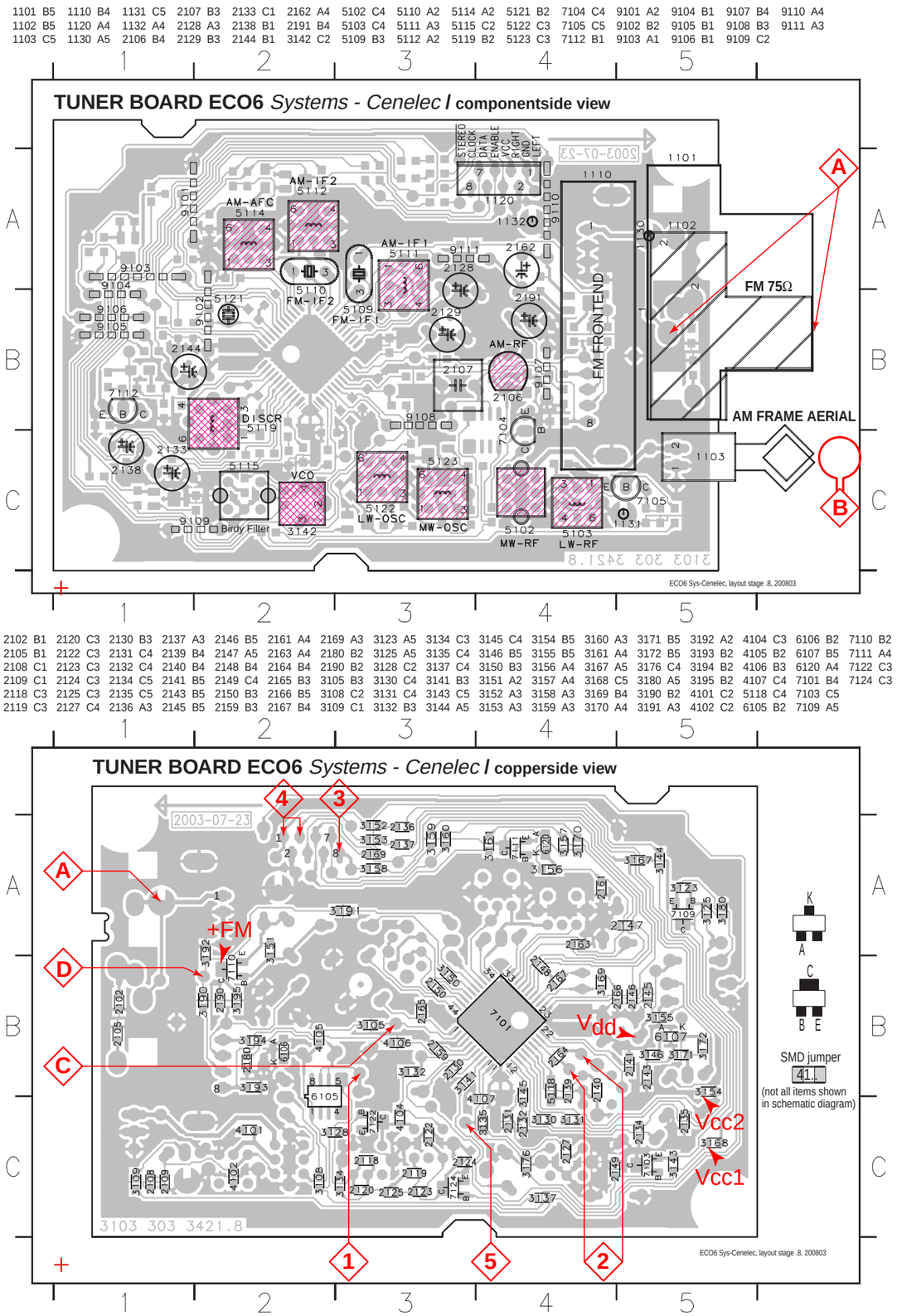
SMD jumper: 41xx 0R

EVM

...V FM mode stereo
...V MW mode
...V LW mode
voltages measured while set is tuned to a strong transmitter

Signal path

- FM
- AM
- MPX (Audio Frequency)
- AF - left/right



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

TUNER ADJUSTMENT TABLE (**ECO6 Cenelec** 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 (50kHz grid)			108MHz	check	◇1	8V ±1.2V
			87.5MHz	check		1.6V ±0.5V
MW 531 - 1602kHz (9kHz grid)			1602kHz	5123		8V ±0.2V 3-band 6.9V ±0.2V 2-band
			531kHz	check		1.1V ±0.4V
LW 153 - 279kHz (3kHz grid)			279kHz	5122		8V ±0.2V
			153kHz	check		1.1V ±0.4V
FM - IF						
FM	10.7MHz, 45mV continuous wave	◇D	IC 7101 21 — shortcircuit to block AFC — 2141	5119	◇2	0mV ±3mV
FM - VCO						
FM	98MHz, 1mV continuous wave	◇A	98MHz	3142	◇3	152kHz ±1kHz 1)
FM RF (channel separation)	Note: The FM-frontend unit has already been adjusted by the factory and needs therefore no further adjustments for service purposes.					
FM	98MHz, 1mV 90% Left + 9% pilot mod=1kHz	◇A	98MHz	IF coil inside FM frontend 1110	◇4	right channel min.
AM IF						
MW	450kHz connect pin 6 of IC 7101 (AM Osc.) with 3.3kΩ to Vcc	◇C Δf = ±10kHz V_{RF} = 0.5mV (as low as possible)	IC 7101 36 — 100nF — 220R	5111	◇5	max. / f_o symmetric
			IC 7101 40 — 100nF — 220R (see remark 2)	5112		
AM AFC **MW**		◇C continuous wave V_{RF} = 2mV		5114	◇2	0mV ±2mV
AM RF 3)						
MW	1494kHz	◇B Δf = ±30kHz V_{RF} as low as possible	1494kHz	2106	◇5	max. / f_o symmetric
	558kHz		558kHz	5102		
LW	198kHz		198kHz	5103		

ECO6 Sys Cenelec, 190599

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

1) If sensitivity of frequency counter is too low adjust to max. channel separation (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! MW has to be aligned before LW.

↕ Repeat

Electrical Partslist *ECO6* SYSTEMS-CENELEC

6-17

MISCELLANEOUS

1101	2422 015 19376	SOCKET CLICKFIT 2P	USA only
1102	4822 267 10283	SOCKET COAX, IEC 75Ω	not USA
1103	4822 265 31184	JST CONNECTOR, 2 POLE	
1110	2422 542 90071	FM FRONTEND	
1120	4822 265 11515	FFC SOCKET, 8P	

CAPACITORS

2102 ©	4822 126 13838	100nF	10%	50V	not USA
2105 ©	4822 126 13838	100nF	10%	50V	USA only
2106	2020 800 00204	TRIMCAP. 4,2 - 20pF, N750			LW only
2106	2020 800 00191	TRIMCAP. 3 - 11pF, N450			FM/AM only
2107	4822 121 51319	1µF	20%	50V	
2108 ©	5322 122 32531	100pF	5%	50V	LW only
2109 ©	5322 122 32448	10pF	5%	50V	LW only
2120 ©	4822 126 13689	18pF	1%	63V	FM/AM only
2120 ©	5322 122 32658	22pF	5%	50V	LW only
2122 ©	4822 122 33891	3,3nF	10%	63V	LW only
2123 ©	2020 552 93494	390pF	1%	50V	LW only
2124 ©	4822 122 33177	10nF	20%	50V	FM/AM only
2125 ©	2020 552 96199	560pF	1%	50V	
2127 ©	4822 126 14076	220nF	20%	25V	
2128	4822 124 40248	10µF	20%	63V	
2129	4822 124 41584	100µF	20%	10V	
2130 ©	5322 122 32654	22nF	10%	63V	
2131 ©	4822 126 13482	470nF	20%	16V	
2132 ©	4822 126 13482	470nF	20%	16V	
2133	4822 124 21913	1µF	20%	63V	
2134 ©	3198 017 31530	15nF	10%	50V	not USA
2134 ©	5322 122 32654	22nF	10%	63V	USA only
2135 ©	3198 017 31530	15nF	10%	50V	not USA
2135 ©	3198 017 32230	22nF	10%	25V	USA only
2136 ©	4822 126 14076	220nF	20%	25V	
2137 ©	4822 126 14076	220nF	20%	25V	
2138	4822 124 22652	2,2µF	20%	50V	
2139 ©	4822 126 14236	15pF	5%	50V	
2140 ©	4822 126 13695	82pF	1%	63V	
2141 ©	4822 126 13838	100nF	10%	50V	
2143 ©	4822 126 14076	220nF	20%	25V	
2144	4822 124 21913	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 122 33127	2,2nF	10%	63V	
2149 ©	5322 122 32659	33pF	5%	50V	RDS only
2150 ©	4822 126 13838	100nF	10%	50V	
2159 ©	5322 122 31151	22µF	20%	50V	
2163 ©	4822 126 13838	100nF	10%	50V	LW only
2164 ©	4822 126 13482	470nF	20%	16V	
2165 ©	4822 126 13838	100nF	10%	50V	
2166 ©	5322 122 31647	1nF	10%	63V	
2167 ©	4822 122 33926	12pF	5%	50V	
2169 ©	4822 122 33127	2,2nF	10%	63V	RDS only
2180 ©	3198 017 31030	10nF	10%	50V	
2190 ©	4822 126 13838	100nF	10%	50V	
2191	4822 124 40178	100µF	20%	10V	

RESISTORS

3105 ©	4822 117 11503	220Ω	5%	0,1W	
3108 ©	4822 117 11449	2,2kΩ	1%	0,1W	LW only
3109 ©	4822 051 20472	4,7kΩ	5%	0,1W	LW only
3123 ©	4822 051 20472	4,7kΩ	5%	0,1W	LW only
3125 ©	4822 117 10833	10kΩ	1%	0,1W	LW only
3128 ©	4822 117 11449	2,2kΩ	1%	0,1W	LW only
3130 ©	3198 021 38210	820Ω	5%	0,06W	
3131 ©	3198 021 38210	820Ω	5%	0,06W	
3132 ©	4822 051 20479	47Ω	5%	0,1W	
3134 ©	4822 051 20223	22kΩ	5%	0,1W	
3135 ©	3198 021 31020	1kΩ	5%	0,06W	
3137 ©	4822 051 20223	22kΩ	5%	0,1W	LW only
3141 ©	4822 117 11148	56kΩ	1%	0,1W	
3142	4822 100 12159	TRIMPOT. 100kΩ			
3143 ©	4822 051 20223	22kΩ	5%	0,1W	RDS only
3144 ©	4822 051 10102	1kΩ	2%	0,25W	RDS only
3145 ©	4822 117 11449	2,2kΩ	1%	0,1W	
3146 ©	4822 051 20229	22Ω	5%	0,1W	
3150 ©	4822 117 10833	10kΩ	1%	0,1W	
3151 ©	4822 051 20683	68kΩ	5%	0,1W	
3152 ©	4822 051 20471	470Ω	5%	0,1W	
3153 ©	4822 051 20471	470Ω	5%	0,1W	
3154 ©	4822 117 13577	330Ω	1%	0,1W	
3155 ©	4822 117 10353	150Ω	5%	0,1W	
3156 ©	4822 117 10837	100kΩ	1%	0,1W	
3157 ©	4822 117 10837	100kΩ	1%	0,1W	
3158 ©	4822 051 20471	470Ω	5%	0,1W	
3159 ©	4822 051 20471	470Ω	5%	0,1W	
3160 ©	4822 051 20471	470Ω	5%	0,1W	
3161 ©	4822 051 20223	22kΩ	5%	0,1W	
3167 ©	4822 051 20121	120Ω	5%	0,1W	
3168 ©	4822 051 20121	120Ω	5%	0,1W	
3169 ©	4822 051 20154	150kΩ	5%	0,1W	
3170 ©	4822 117 10837	100kΩ	1%	0,1W	
3171 ©	4822 117 10834	47kΩ	1%	0,1W	
3172 ©	4822 051 20562	5,6kΩ	5%	0,1W	
3176 ©	4822 051 20333	33kΩ	5%	0,1W	RDS only
3180 ©	4822 117 10833	10kΩ	1%	0,1W	LW only
3190 ©	4822 051 20121	120Ω	5%	0,1W	
3191 ©	4822 051 20121	120Ω	5%	0,1W	
3192 ©	4822 117 13577	330Ω	1%	0,1W	
3193 ©	4822 117 13577	330Ω	1%	0,1W	
3194 ©	4822 117 11449	2,2kΩ	1%	0,1W	
3195 ©	4822 051 20101	100Ω	5%	0,1W	
4101 ©	4822 051 20008	CHIP JUMPER 0805			FM/AM only
4102 ©	4822 051 20008	CHIP JUMPER 0805			FM/AM only
4104 ©	4822 051 20008	CHIP JUMPER 0805			FM/AM only
4105 ©	4822 051 20008	CHIP JUMPER 0805			
4106 ©	4822 051 20008	CHIP JUMPER 0805			
4107 ©	4822 051 20008	CHIP JUMPER 0805			

COILS

5102	4822 157 71634	RF-COIL MW	
5103	2422 549 44107	RF-COIL LW	LW only
5109	4822 157 71639	FM-IF FILTER 10,7MHz	
5110	4822 242 70665	FM-IF FILTER 10,7MHz	
5111	2422 549 44023	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	
5118 ©	2422 535 95881	100nH	
5119	4822 157 11443	DISCRIMINATOR COIL	
5121	4822 242 10261	QUARTZ 75kHz	
5122	2422 549 44108	RF-COIL, LW-OSCILLATOR	LW only
5123	2422 549 44108	RF-COIL, MW-OSCILLATOR	

DIODES

6105 ©	4822 130 83075	HN1V02H	
6106 ©	4822 130 83757	BAS216	
6107 ©	9340 386 90115	BZX284-C11	
6120 ©	4822 130 83757	BAS216	

TRANSISTORS

7103 ©	5322 130 42756	BC857C	RDS only
7104	9322 003 64676	TBC337-40	LW only
7105	9322 003 64676	TBC337-40	LW only
7109 ©	4822 130 60373	BC856B	LW only
7110 ©	4822 130 60373	BC856B	
7111 ©	5322 130 42755	BC847C	
7112	4822 130 44503	BC547C	
7122 ©	5322 130 42755	BC847C	LW only
7124 ©	5322 130 42755	BC847C	LW only

INTEGRATED CIRCUITS

7101	4822 209 90315	TEA5762H/V1, RADIO IC

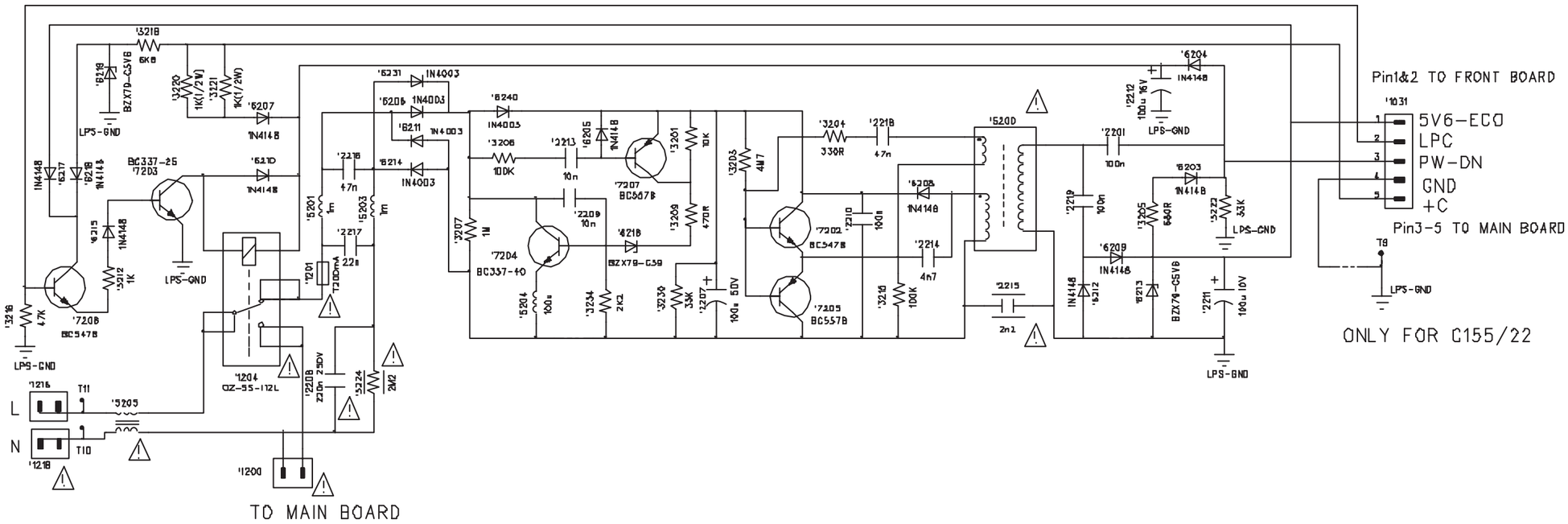
7-1

ECO POWER BOARD

TABLE OF CONTENTS

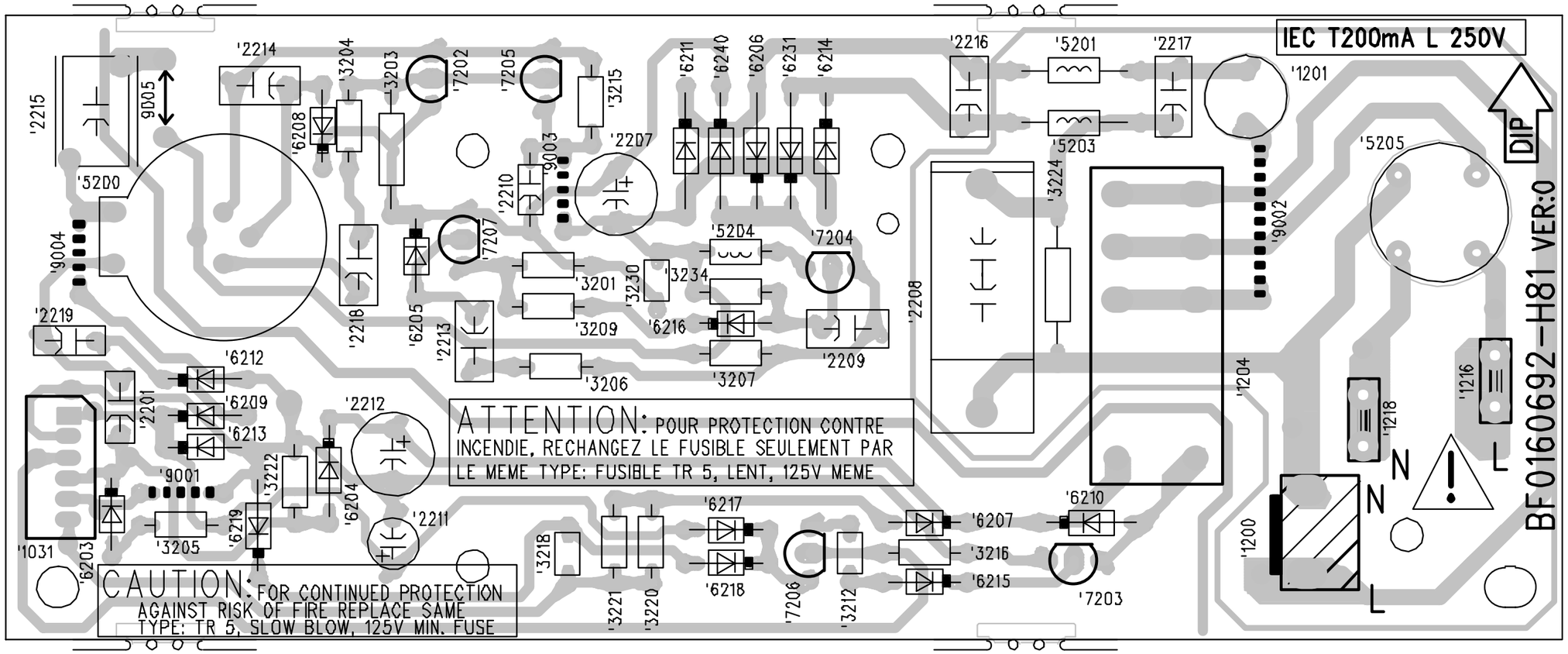
7 - 2

CIRCUIT DIAGRAM - ECO POWER BOARD



7 - 3

LAYOUT DIAGRAM - ECO POWER BOARD



7-4

ELECTRICAL PARTS LIST - ECO POWER PART

- MISCELLANEOUS -

1201	⚠	4822 071 52001	FUSE 19372(200MA)
1204	⚠	9965 000 16270	RELAY DC 12V 5A
5200		9965 000 16272	ST.BY TRANSFORMER

- CAPACITORS -

2208	9965 000 16271	CAP MPP 275V 220NF
2215	4822 126 14088	2,2NF 20% 250V

- RESISTORS -

3203	4822 050 24705	4M70 1% 0,6W
3224	4822 053 21225	2M20 5% 0,5W

- COILS & FILTERS -

5201	9965 000 16273	FIX 1MH TP=52MM
5203	9965 000 16273	FIX 1MH TP=52MM
5204	9965 000 16274	FIXED IND 100UH TP=52MM
5205 ⚠	9965 000 11379	FILTER MAINS 400UH

- DIODES -

6203	4822 130 30621	1N4148
6204	4822 130 30621	1N4148
6205	4822 130 30621	1N4148
6206	4822 130 31878	1N4003G
6207	4822 130 30621	1N4148
6208	4822 130 30621	1N4148
6209	4822 130 30621	1N4148
6210	4822 130 30621	1N4148
6211	4822 130 31878	1N4003G
6212	4822 130 30621	1N4148
6213	4822 130 34173	BZX79-C5V6
6214	4822 130 31878	1N4003G
6215	4822 130 30621	1N4148
6216	4822 130 34145	BZX79-B39
6217	4822 130 30621	1N4148
6218	4822 130 30621	1N4148
6219	4822 130 34173	BZX79-C5V6
6231	4822 130 31878	1N4003G
6240	4822 130 31878	1N4003G

- IC & TRANSISTORS -

7202	4822 130 40959	BC547B

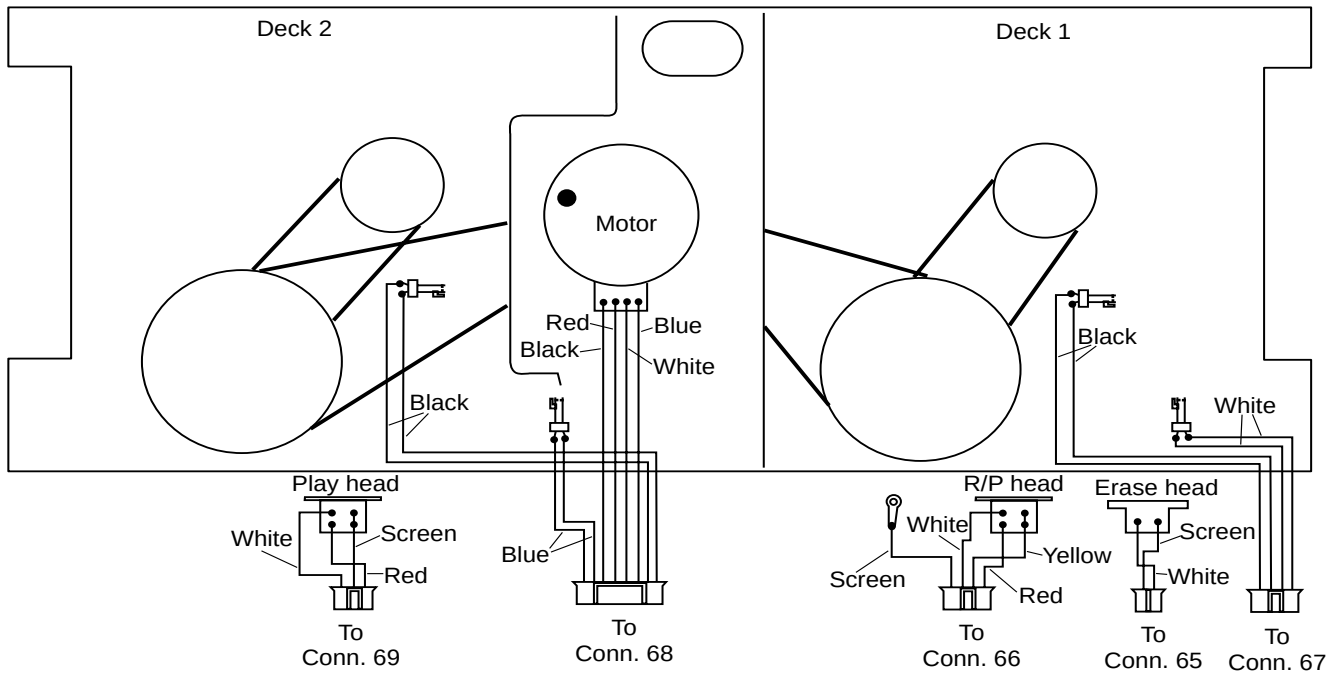
- IC & TRANSISTORS -

7203	4822 130 40981	BC337-25
7204	4822 130 41344	BC337-40
7205	4822 130 44568	BC557B
7206	4822 130 40959	BC547B
7207	4822 130 44568	BC557B

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

TAPE MECHANISM

TAPE MECHANISM WIRING

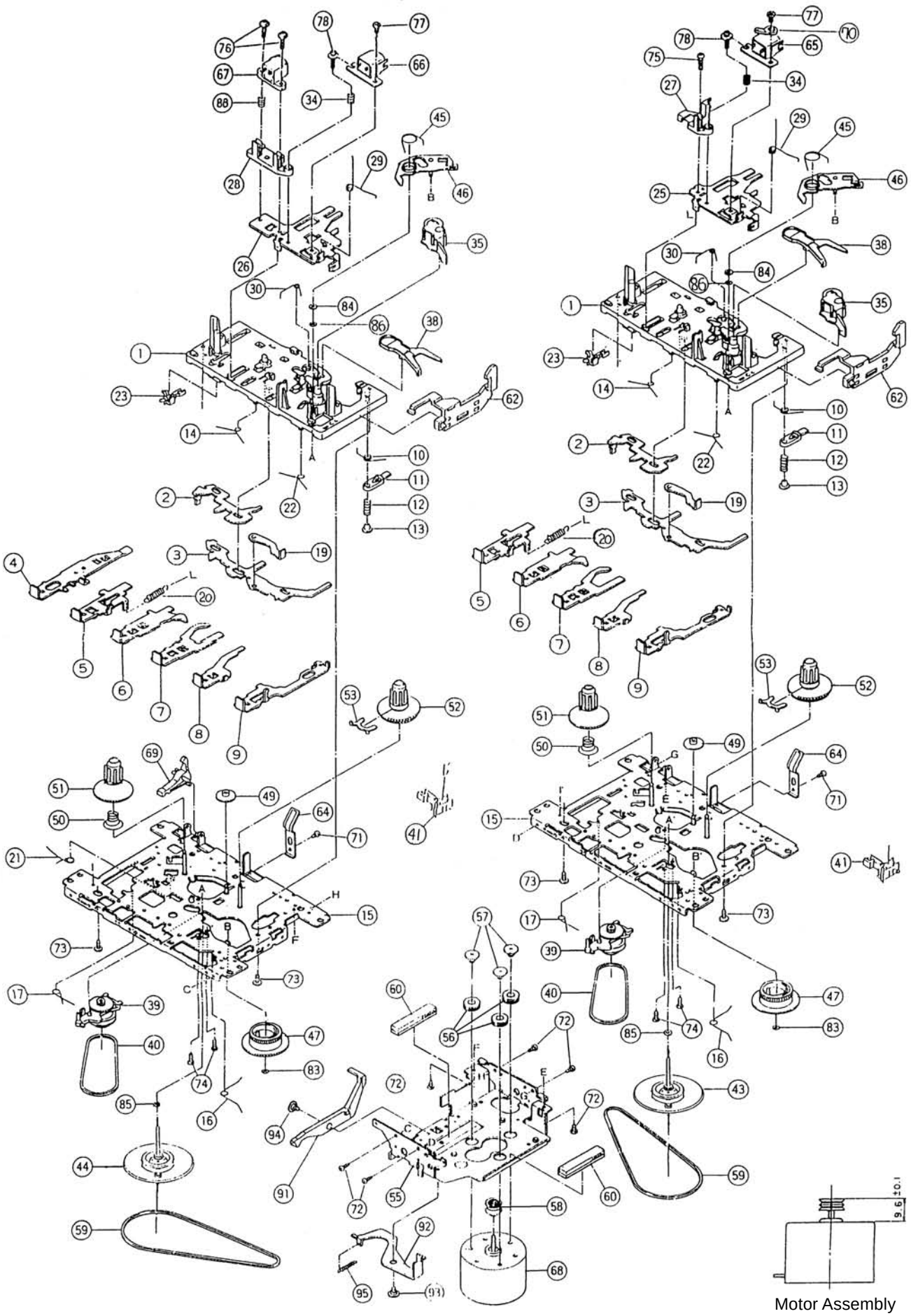


MECHANICAL PARTS LIST - TAPE MECHANISM

23	4822 278 90596	LEAF SWITCH
35	4822 403 40513	PINCH ROLLER ARM ASSEMBLY
40	4822 358 30921	RF BELT (SMALL)
41	4822 278 90744	LEAF SWITCH MSW-17820MVD
58	4822 528 81415	MOTOR PULLEY
59	9965 000 11410	MAIN BELT (BIG)
65	9965 000 11411	PLAY HEAD AP-4211L(S3)
66	9965 000 11411	REC/PB HEAD AP-4211L(S3)
67	9965 000 11412	ERASE HEAD
68	9965 000 11413	MOTOR M9T12U20-T

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

EXPLODED VIEW



Motor Assembly

3CDC-LC-MP3CD2002

(3 Disc Carousel Changer+MP3 Board) Layout stage .2

TABLE OF CONTENTS

Service hints

CAUTION

CHARGED CAPACITORS ON THE SERVO BOARD MAY DAMAGE THE CD DRIVE ELECTRONICS WHEN CONNECTING A NEW CD 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 CD mechanism:
1. Disconnect flexfoil cable from the old CD drive
2. Put a paperclip on the flexfoil to short-circuit the contacts (fig.1)
3. Remove the old CD drive
4. Remove paperclip from the flexfoil and connect it to the new drive
5. Position the new CD drive in its studs
6. Remove solder joint from the Laserunit

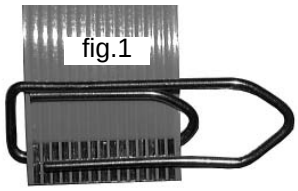
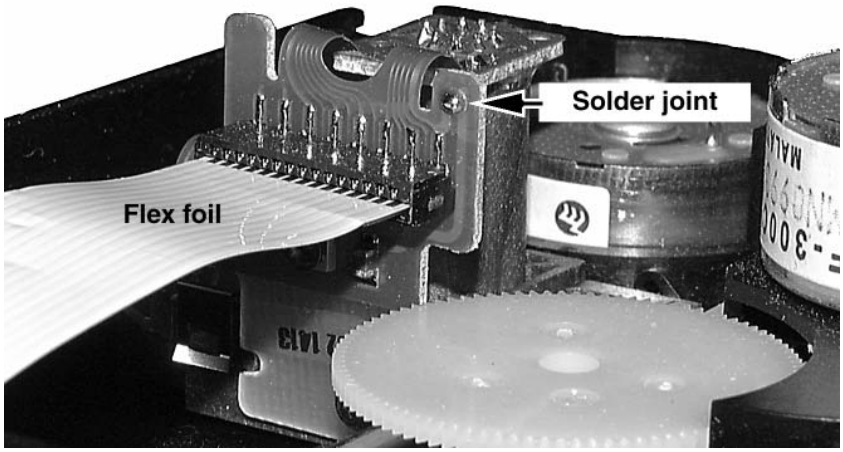


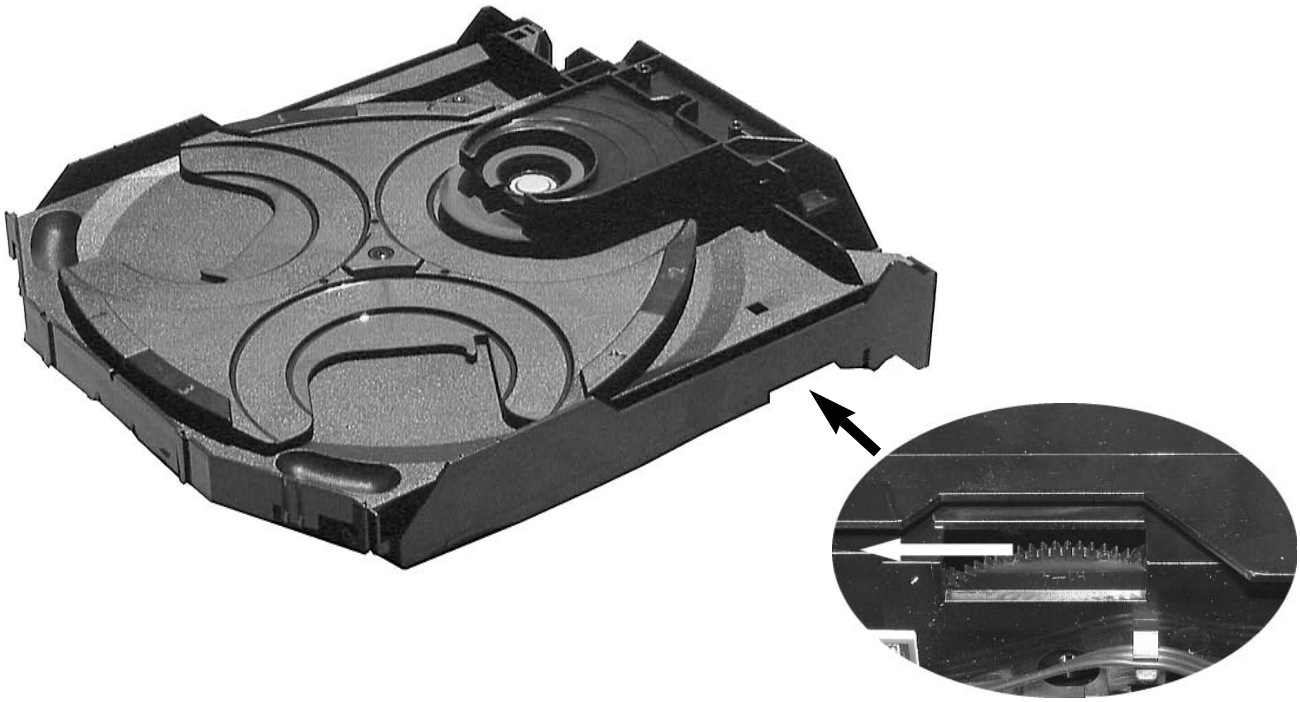
fig.1

Attention: The laser diode of this CD drive is protected against ESD by a solder joint which shortcircuits the laserdiode to ground.
For proper functionality of the CD drive this solder joint must be removed **after** connection the drive to the set.



Emergency open

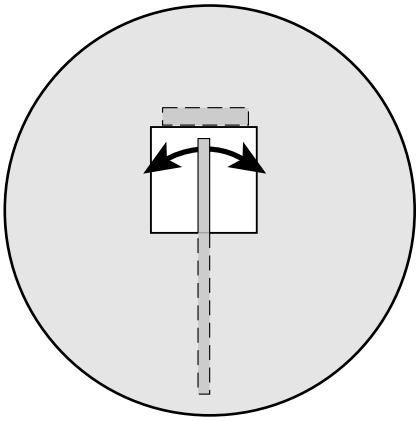
In case of a Supply fault, the tray can be opened manually.
1. Remove the top cover of the set to get access to the Changer Module.
2. Turn gearwheel clockwise (as shown in picture below).



Service hints

Dismantling of Tray

1. Open the tray.
2. Release 2x catch as shown in fig. 2 and Detail A
3. Pull tray out.



Detail A

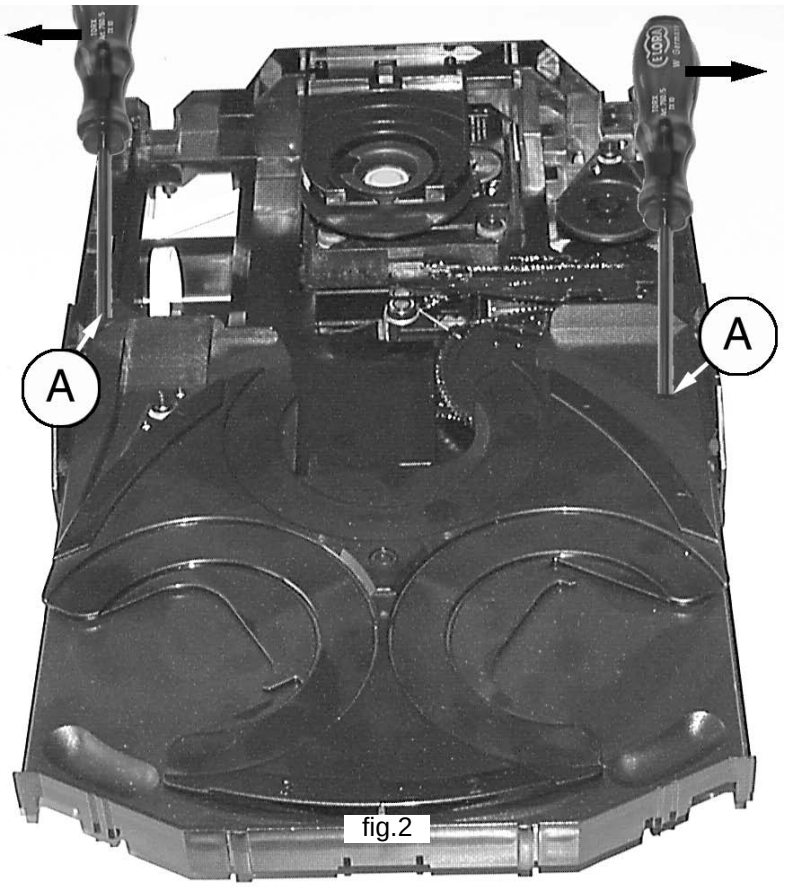
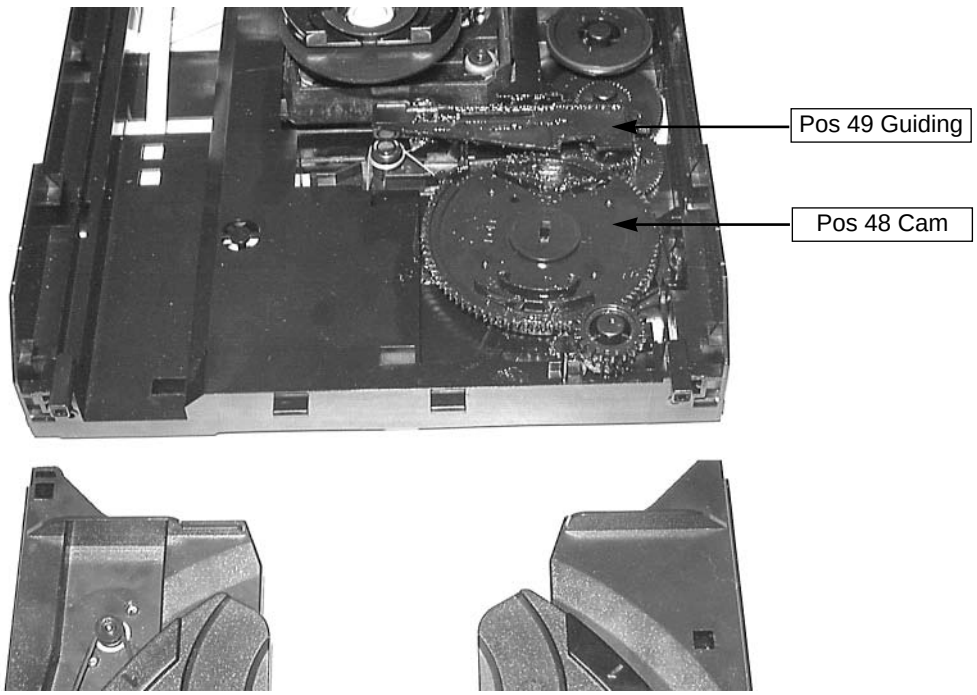


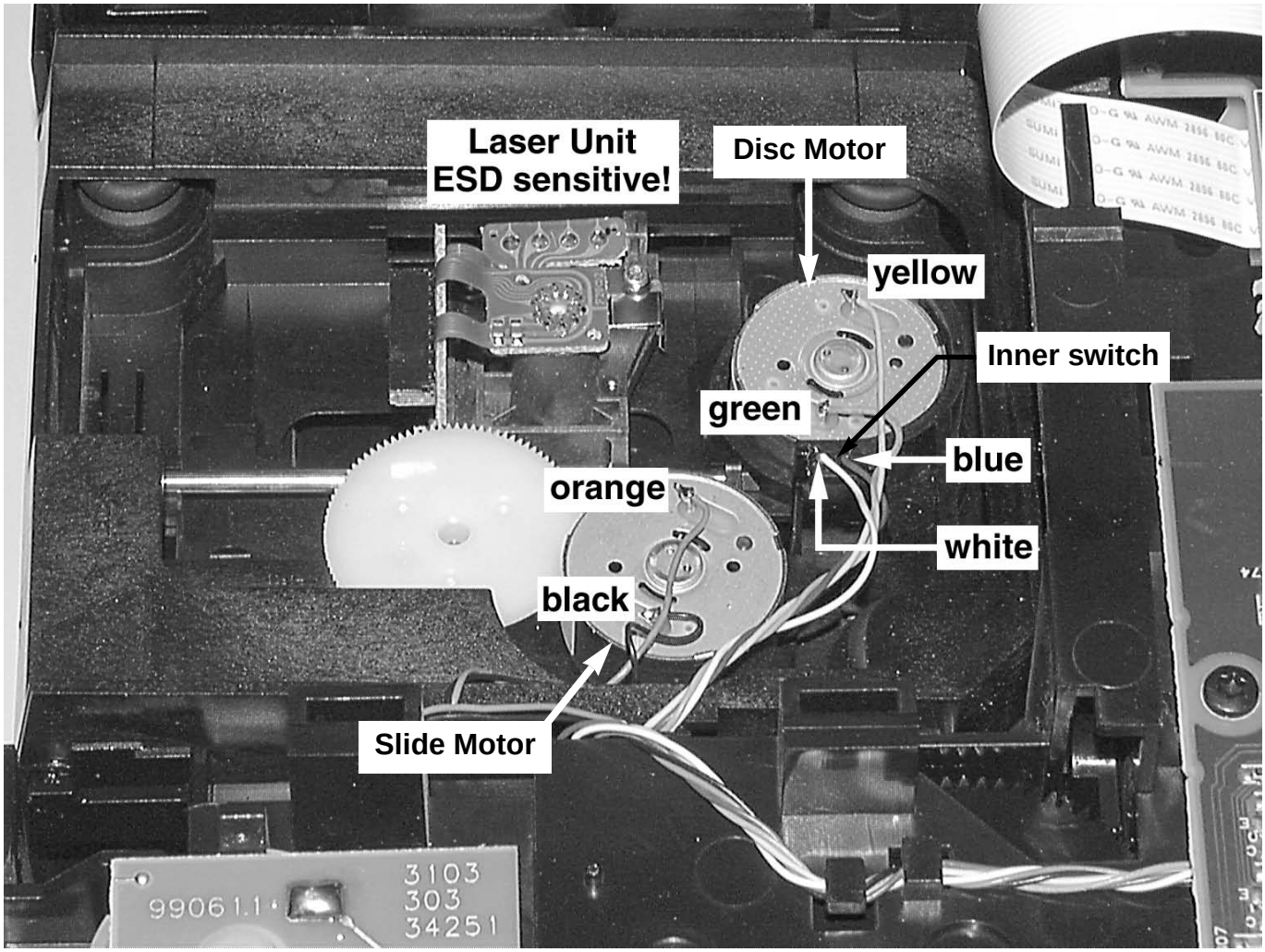
fig.2

Assembling of Tray

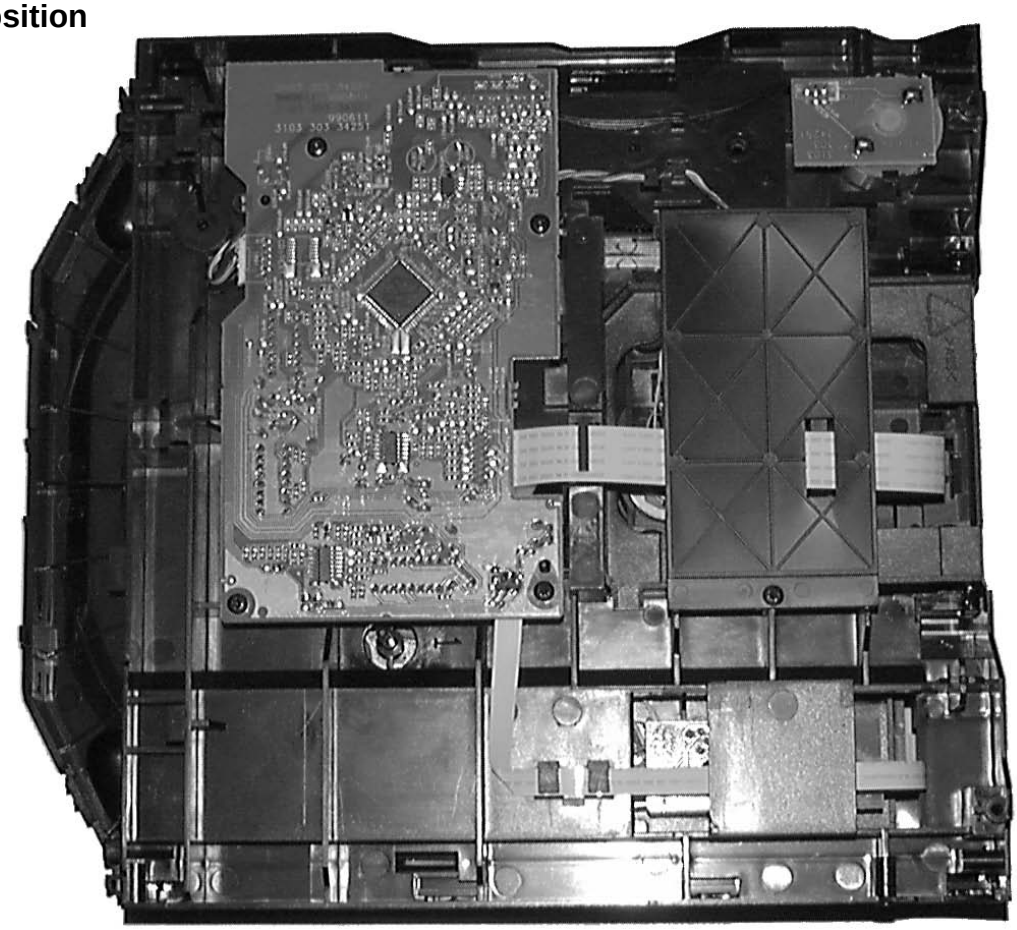
1. Turn Cam (pos. 48) clockwise to end position.
2. If necessary - move Guiding (pos. 49) to the right end position.
3. Insert the Tray.



Wiring



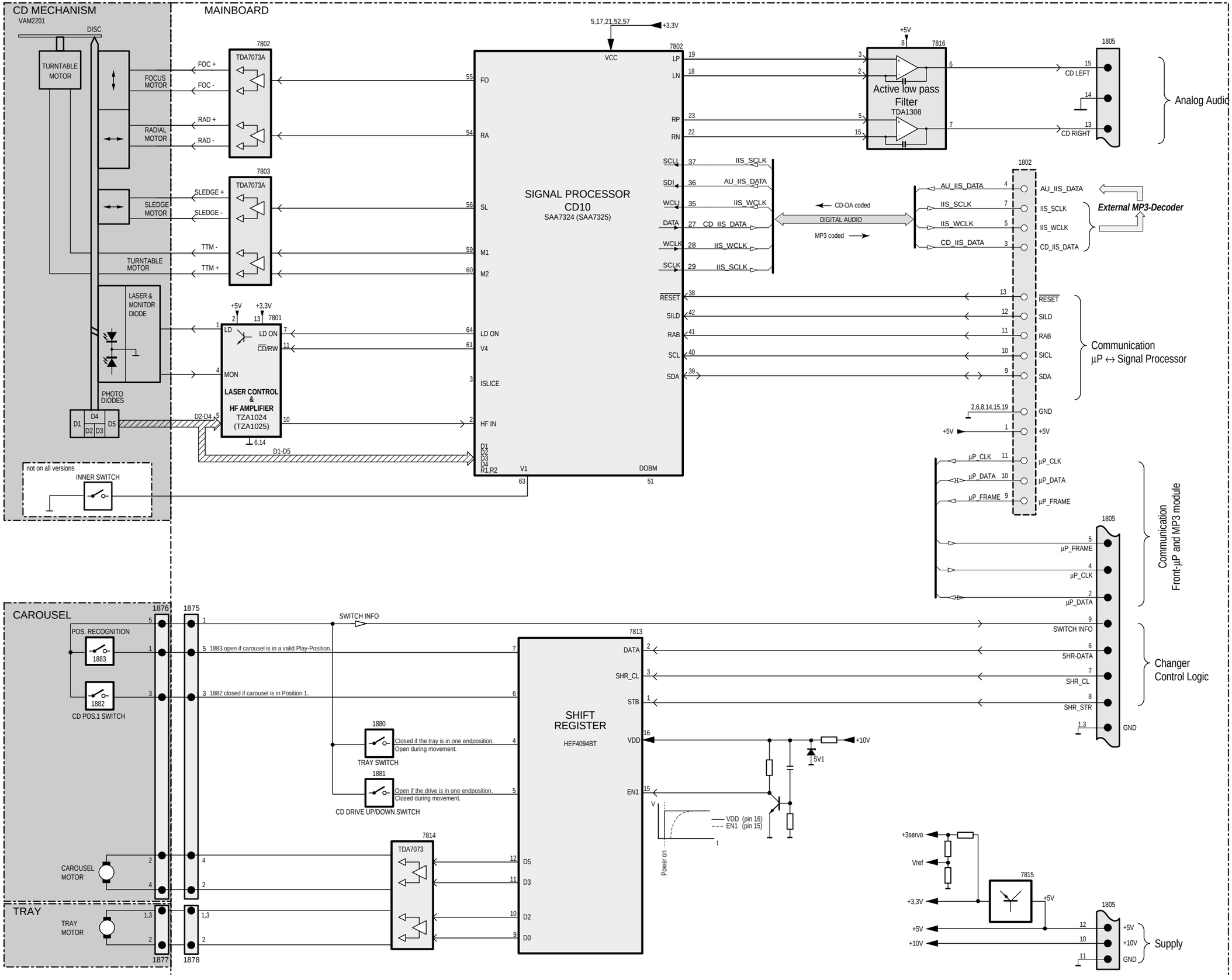
Service Position



10-5

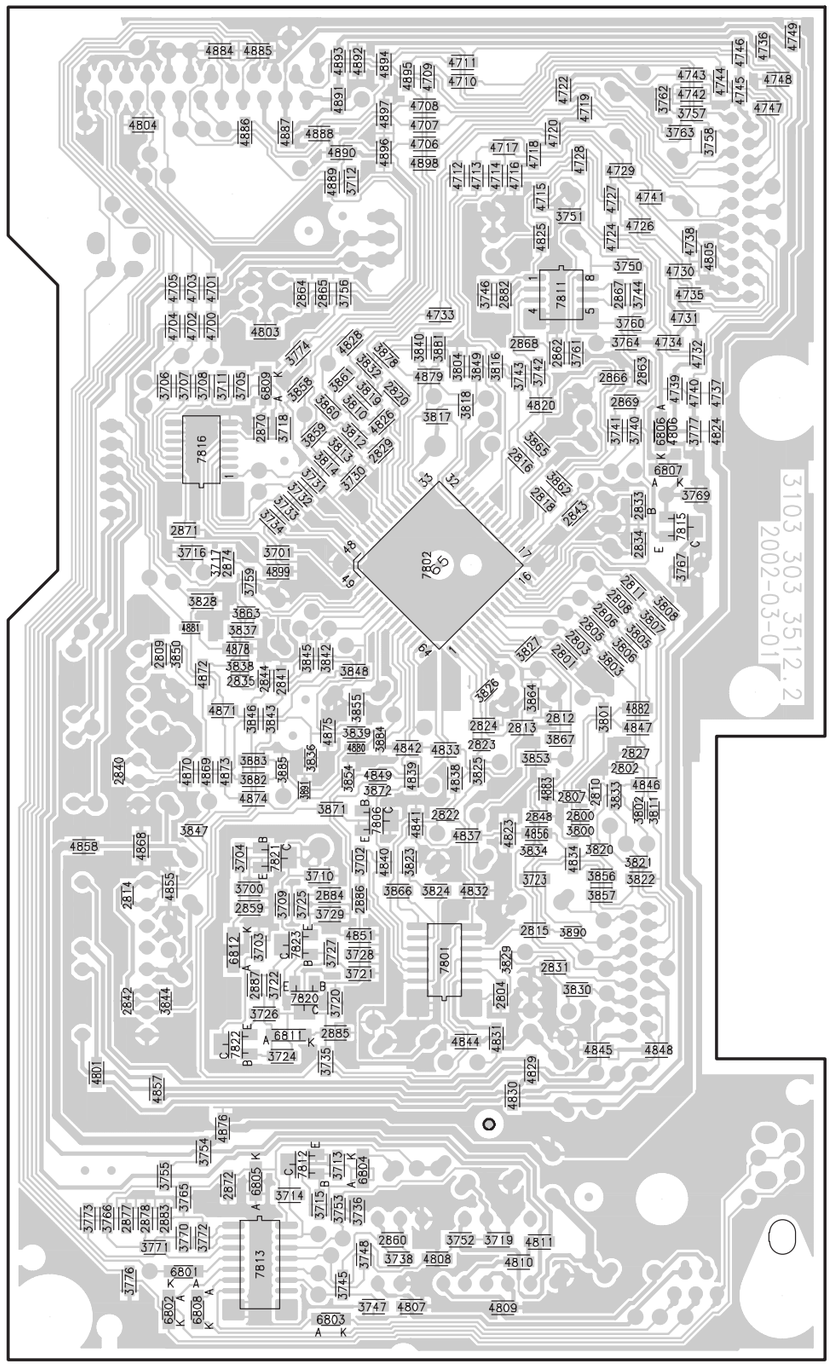
Blockdiagram

BLOCK DIAGRAM 3CDC-LC MP3 Version



10-6

3CDC-LC-MP3CD2002 Copperside view



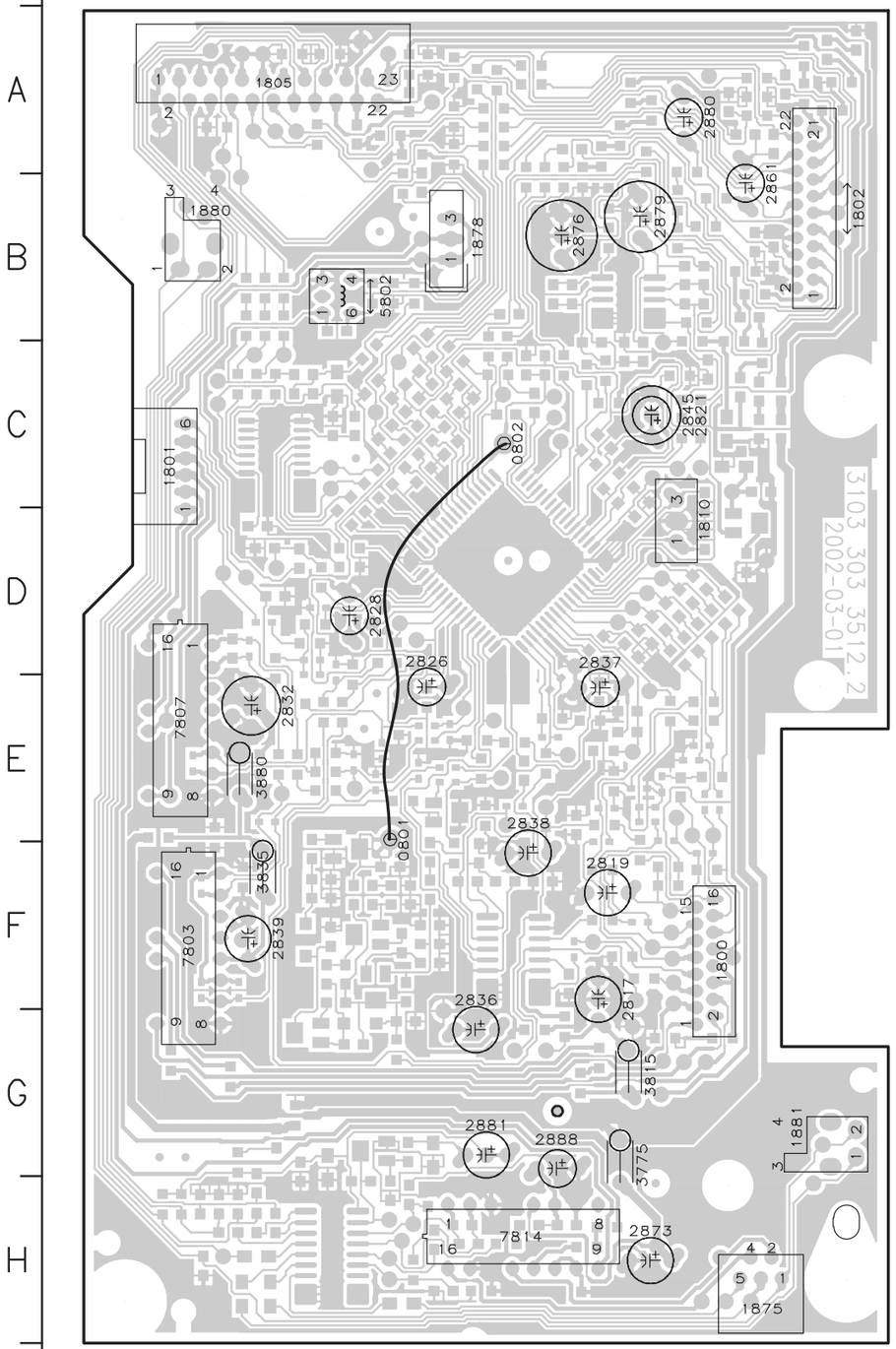
This assembly drawing shows a summary
of all possible versions.
For components used in a specific version
see schematic diagram respectively partslist.

3CDC-LC-MP3CD2002 Layout stage .2 2002-05-27

Mapping

Copperside								Componentside	
2800	E4	3730	C3	3848	D3	4823	E3	1451	B5
2801	D4	3731	C2	3849	C3	4824	C5	1455	A4
2802	E4	3732	C2	3850	D1	4825	B4	2450	C1
2803	D4	3733	C2	3853	E4	4826	C3	2451	B1
2804	F3	3734	D2	3854	E3	4828	C3	2452	C2
2805	D4	3735	G2	3855	E3	4829	G4	2453	B1
2806	D4	3736	H3	3856	F4	4830	G3	2454	B1
2807	E4	3738	H3	3857	F4	4831	G3	2455	D2
2808	D4	3740	C4	3858	C2	4832	F3	2457	A2
2809	D1	3741	C4	3859	C2	4833	E3	2461	D4
2810	E4	3742	C4	3860	C2	4834	F4	2463	A3
2811	D4	3743	C4	3861	C2	4837	E3	2464	D4
2812	E4	3744	B4	3862	C4	4838	E3	2465	D4
2813	E4	3745	H2	3863	D2	4839	E3	2466	A3
2814	F1	3746	B3	3864	E4	4840	F3	2467	B4
2815	F4	3747	H3	3865	C4	4841	E3	2468	B4
2816	C4	3748	H3	3866	F3	4842	E3	2469	B4
2818	C4	3750	B4	3867	E4	4844	G3	2472	D3
2820	C3	3751	B4	3871	E2	4845	G4	3450	C1
2822	E3	3752	H3	3872	E3	4846	E4	3451	B1
2823	E3	3753	H2	3878	C3	4847	E4	3454	D2
2824	E3	3754	G2	3881	C3	4848	G4	3465	C1
2827	E4	3755	G1	3882	E2	4849	E3	3467	A3
2829	C3	3756	B2	3883	E2	4851	F3	3468	A3
2831	F4	3757	A5	3884	E3	4855	F1	3469	C4
2833	C4	3758	A5	3885	E2	4856	E4	3470	D3
2834	D4	3759	D2	3890	F4	4857	G1	3471	C4
2835	D2	3760	B4	3891	E2	4858	E1	3473	C4
2840	E1	3761	C4	4700	B2	4868	E1	3474	A3
2841	D2	3762	A4	4701	B2	4869	E2	3475	C4
2842	F1	3763	A4	4702	B2	4870	E2	3476	C4
2843	D4	3764	C4	4703	B2	4871	E2	3477	B4
2844	D2	3765	H2	4704	B1	4872	D2	3479	A2
2848	E4	3766	H1	4705	B1	4873	E2	3480	C4
2859	F2	3767	D4	4706	A3	4874	E2	3481	C4
2860	H3	3769	C5	4707	A3	4875	E2	3484	B4
2862	C4	3770	H2	4708	A3	4876	G2	3490	A4
2863	C4	3771	H1	4709	A3	4878	D2	3494	A2
2864	B2	3772	H2	4710	A3	4879	C3	3496	A4
2865	B2	3773	H1	4711	A3	4880	E3	3499	C1
2866	C4	3774	C2	4712	B3	4881	D2	4450	A4
2867	B4	3776	H1	4713	B3	4882	E4	6451	D4
2868	C4	3777	C5	4714	B3	4883	E4	7451	B3
2869	C4	3800	E4	4715	B4	4884	A2	7456	D4
2870	C2	3801	E4	4716	B3	4885	A2	7458	D1
2871	D2	3802	E4	4717	A3	4886	A2		
2872	G2	3803	D4	4718	A4	4887	A2		
2874	D2	3804	C3	4719	A4	4888	A2		
2877	H1	3805	D4	4720	A4	4889	B2		
2878	H1	3806	D4	4722	A4	4890	A2		
2882	B3	3807	D4	4724	B4	4891	A2		
2883	H1	3808	D4	4726	B4	4892	A3		
2884	F2	3810	C3	4727	B4	4893	A2		
2885	G2	3811	E4	4728	A4	4894	A3		
2886	F3	3812	C3	4729	A4	4895	A3		
2887	F2	3813	C2	4730	B4	4896	A3		
3700	F2	3814	C2	4731	B4	4897	A3		
3701	D2	3816	C3	4732	C5	4898	A3		
3702	F3	3817	C3	4733	B3	4899	D2		
3703	F2	3818	C3	4734	C4	6801	H2		
3704	F2	3819	C3	4735	B5	6802	H1		
3705	C2	3820	E4	4736	A5	6803	H2		
3706	C1	3821	F4	4737	C5	6804	G3		
3707	C2	3822	F4	4738	B5	6805	G2		
3708	C2	3823	F3	4739	C4	6806	C4		
3709	F2	3824	F3	4740	C5	6807	C4		
3710	F2	3825	E3	4741	B4	6808	H2		
3711	C2	3826	E3	4742	A5	6809	C2		
3712	B3	3827	D4	4743	A5	6811	G2		
3713	G2	3828	D2	4744	A5	6812	F2		
3714	H2	3829	F3	4745	A5	7801	F3		
3715	H2	3830	F4	4746	A5	7802	D3		
3716	D2	3832	C3	4747	A5	7806	E3		
3717	D2	3833	E4	4748	A5	7811	B4		
3718	C2	3834	E4	4749	A5	7812	G2		
3719	H3	3836	E2	4801	G1	7813	H2		
3720	F2	3837	D2	4803	B2	7815	D4		
3721	F3	3838	D2	4804	A1	7816	C2		
3722	F2	3839	E3	4805	B5	7820	F2		
3723	F4	3840	C3	4806	C4	7821	F2		
3724	G2	3842	D2	4807	H3	7822	G2		
3725	F2	3843	E2	4808	H3	7823	F2		
3726	F2	3844	F1	4809	H3				
3727	F2	3845	D2	4810	H4				
3728	F3	3846	E2	4811	H4				
3729	F2	3847	E2	4820	C4				

3CDC-LC-MP3CD2002 Components seen from Copperside



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

3CDC-LC-MP3CD2002 Layout stage .2 2002-05-27

10-7

3CDC-LC
mainboard
part 1

Laser power control
HF-Amplifier

TZA1024/ TZA1025

Signal Processor

Active Low Pass

Internal Supply

Servo driver

Motor driver

Changer Control Logic

CD Drive

Mitsumi
MCD-1b
MCD-2

Sanyo
DA11T3CN

SANYO DA11T3CN
MITSUMI MCD 1b

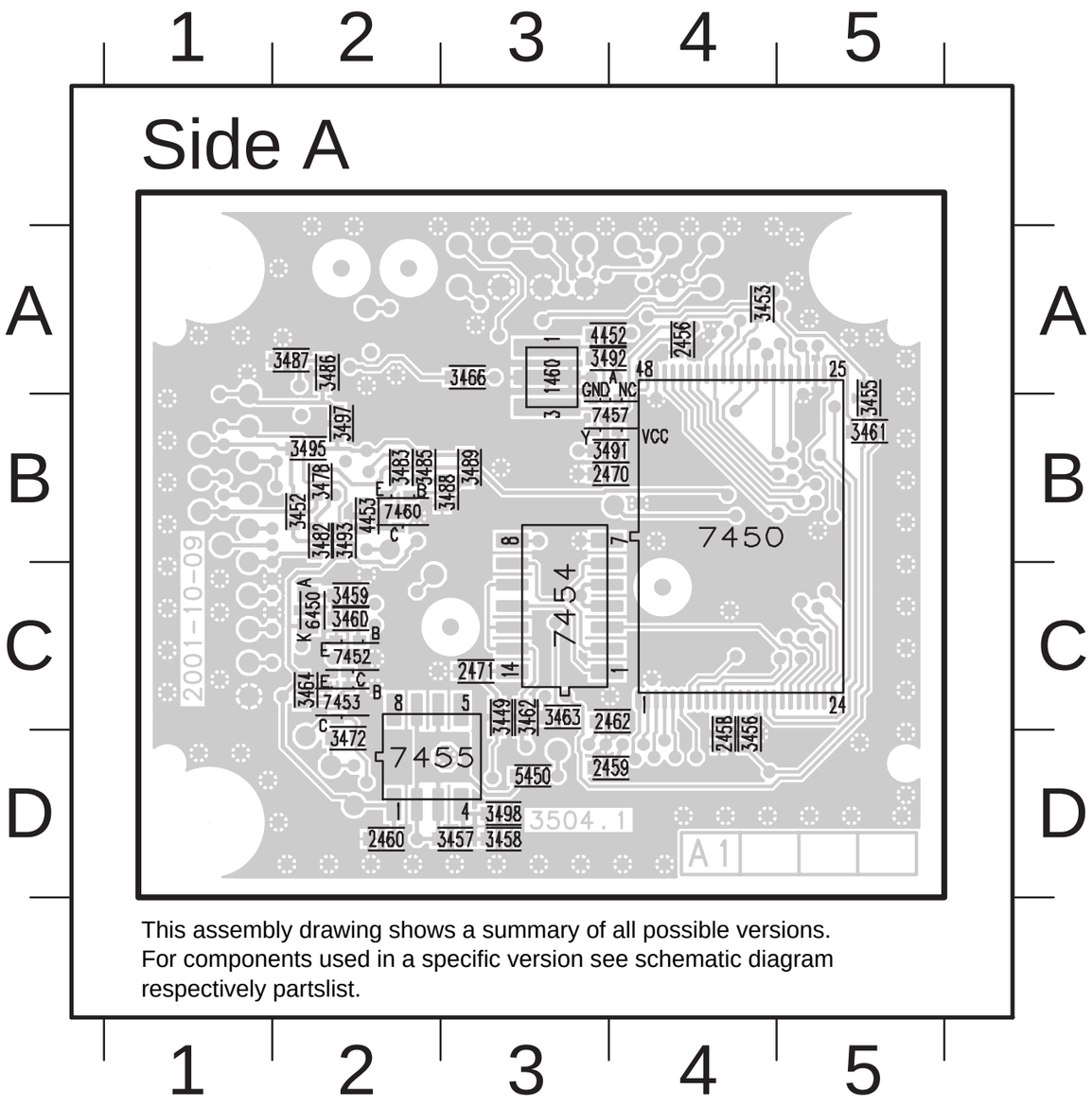
Connection to MP3CD2002 Board

Connection to Front / Combi Board

DC voltages measured in *PLAY MODE* with following conditions:
"+10V" = 10V
"+5V" = 5V

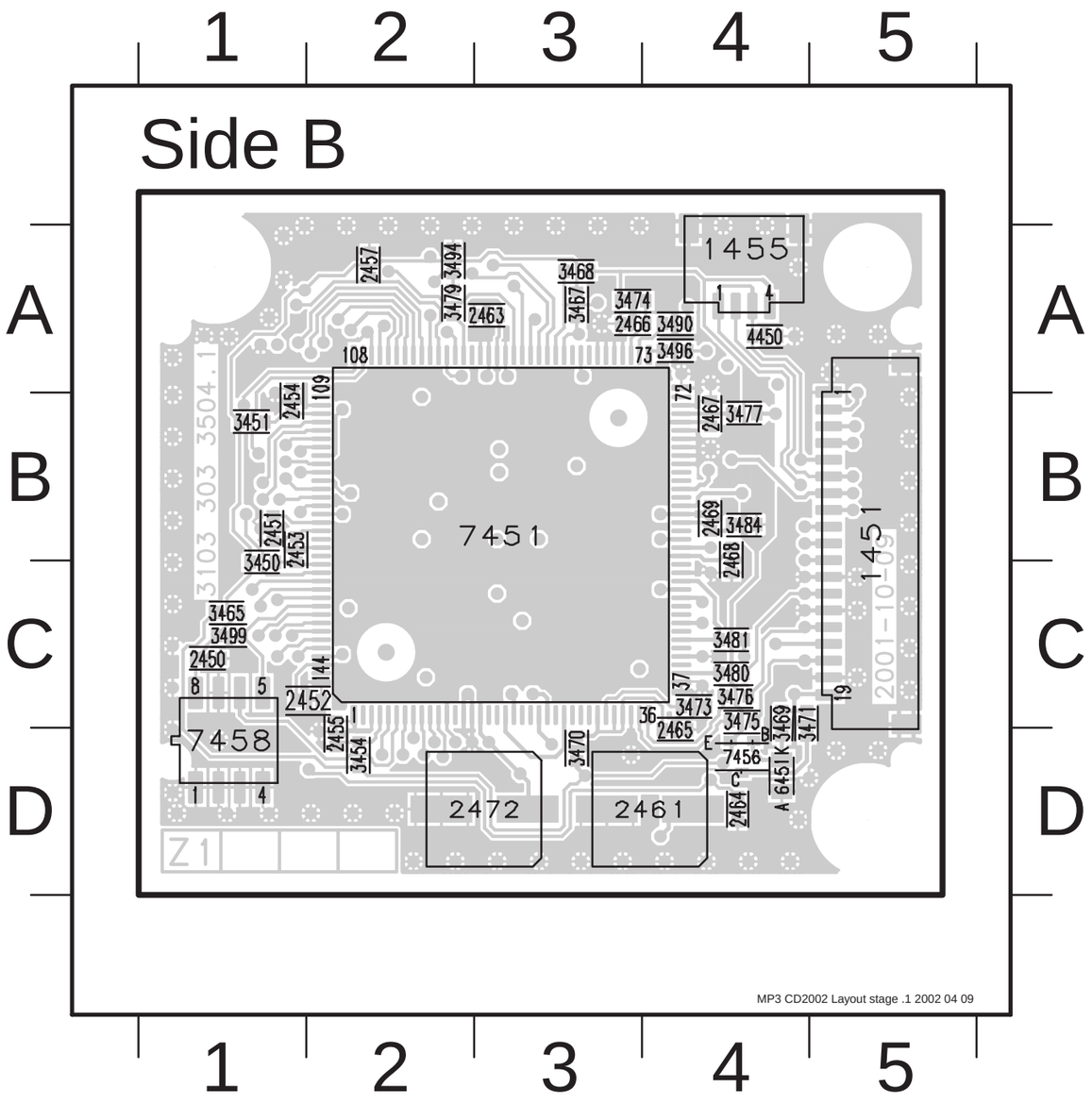
10-8

1460 A3	3449 C3	3460 C2	3482 B2	3492 A3	6450 C2
2456 A4	3452 B2	3461 B5	3483 B2	3493 B2	7450 B4
2458 D4	3453 A4	3462 C3	3485 B2	3495 B2	7452 C2
2459 D4	3455 B5	3463 C3	3486 A2	3497 B2	7453 C2
2460 D2	3456 D4	3464 C2	3487 A2	3498 D3	7454 C3
2462 C4	3457 D3	3466 A3	3488 B3	4452 A3	7455 D2
2470 B4	3458 D3	3472 D2	3489 B3	4453 B2	7457 B4
2471 C3	3459 C2	3478 B2	3491 B4	5450 D3	7460 B2



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

1451 B5	2457 A2	2469 B4	3469 C4	3479 A2	4450 A4
1455 A4	2461 D4	2472 D3	3470 D3	3480 C4	6451 D4
2450 C1	2463 A3	3450 C1	3471 C4	3481 C4	7451 B3
2451 B1	2464 D4	3451 B1	3473 C4	3484 B4	7456 D4
2452 C2	2465 D4	3454 D2	3474 A3	3490 A4	7458 D1
2453 B1	2466 A3	3465 C1	3475 C4	3494 A2	
2454 B1	2467 B4	3467 A3	3476 C4	3496 A4	
2455 D2	2468 B4	3468 A3	3477 B4	3499 C1	



10-9

MP3-CD-2002

DSP

For Flash version: TMS320VC5416
For ROM version: TMS320VC5406

7451

Text version only

only for FLASH version

Flash EPROM

Voltage stabilisation

for 5V front uP

.... only for FLASH version
∗ .... only for ROM version

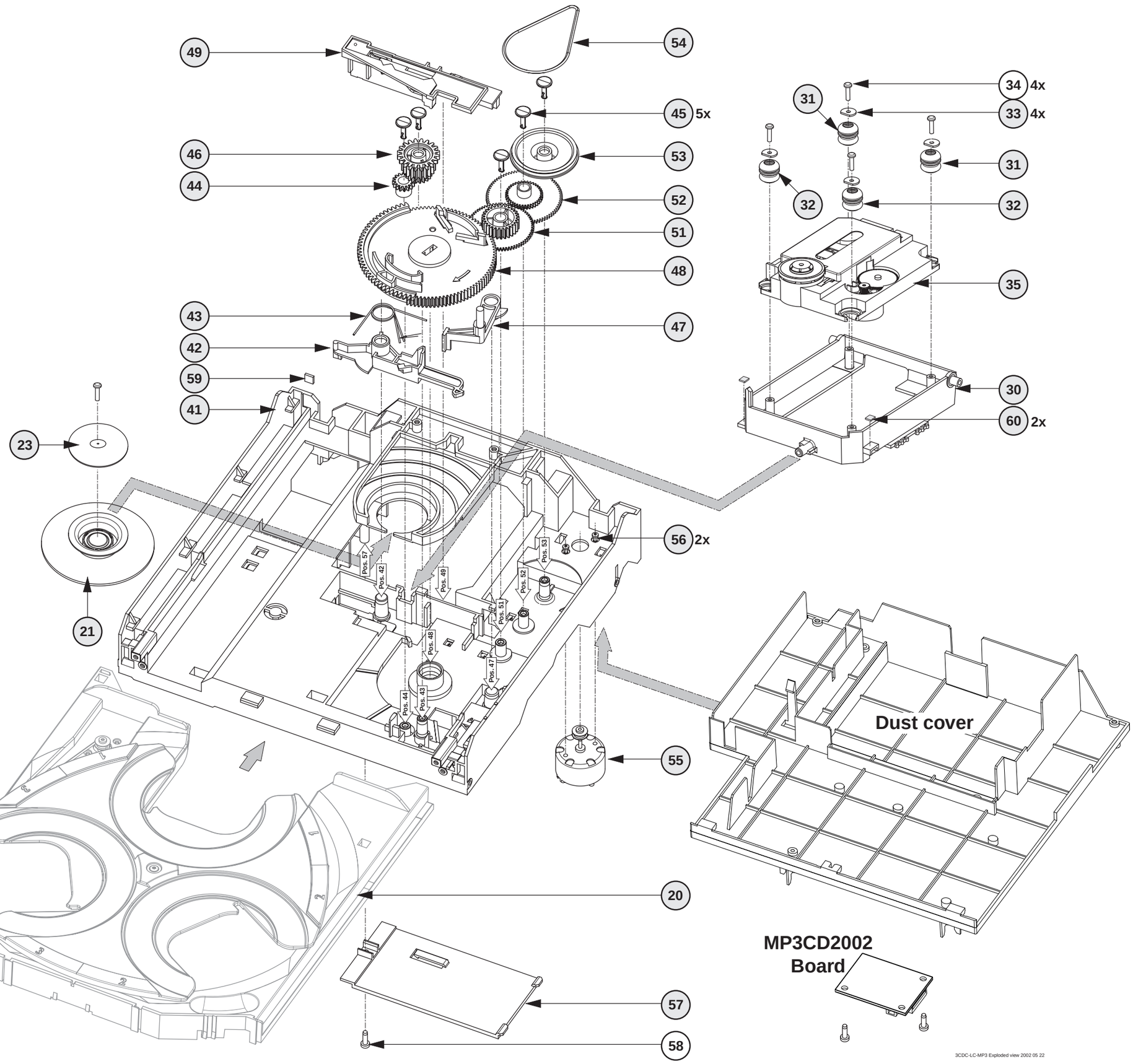
2451 B5
2452 B2
2453 B4
2454 B7
2455 C2
2456 C12
2457 D9
2458 C10
2459 D2
2460 E13
2461 D12
2462 D2
2463 D8
2464 G12
2465 G2
2466 G8
2467 H6
2468 H4
2469 H5
2470 D9
2471 E11
2472 D1
3449 E11
3450 A4
3451 B7
3452 H3
3453 A12
3454 C1
3455 C9
3456 C10
3457 D13
3458 D14
3459 F13
3460 F13
3461 E12
3462 E2
3463 F1
3464 F13
3465 A2
3466 H8
3467 F8
3468 F8
3469 E13
3470 F1
3471 E13
3472 H9
3473 G2
3474 G8
3475 G2
3476 H2
3477 H7
3478 B6
3479 H8
3480 H2
3481 H3
3482 H5
3483 H6
3484 H5
3485 I11
3486 I13
3487 I12
3488 I12
3489 I12
3490 H8
3491 D9
3492 F9
3493 H12
3494 H8
3495 H11
3496 H8
3497 I13
3498 D14
3499 A2
4450 C13
4452 F9
4453 I11
5450 B3
6450 E13
6451 E13
7450 A10
7451 D5
7452 F13
7453 F12
7454-A G11
7454-B F11
7454-C F11
7454-D G11
7455 D13
7456 E12
7457 E9
7458 A1
7460 I12

10-10

EXPLODED VIEW (3CDC-LC MODULE)

MECHANICAL PARTS ***Loader***

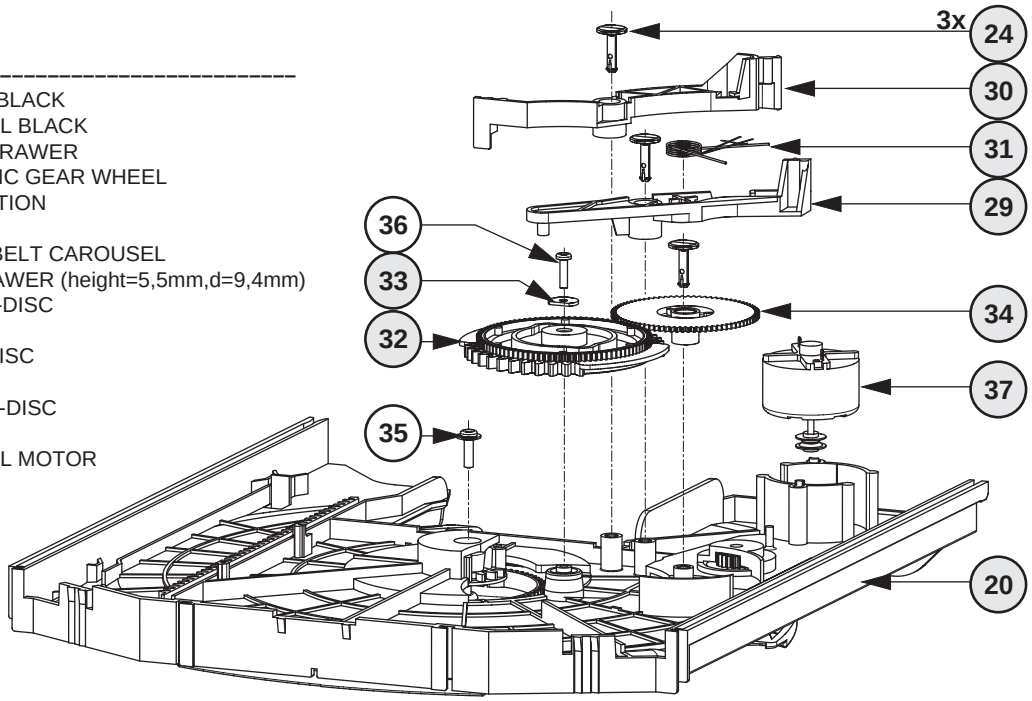
20	3103 304 66500	DRAWER BLACK
21	3140 114 29070	PRESSURE RING-DA11
23	3140 111 21270	METAL RING-DA11
30	3103 304 66560	SUPPORT
31	4822 529 10386	RUBBER DAMPER CD DRIVE, REAR
32	4822 529 10387	RUBBER DAMPER CD DRIVE, FRONT
33	3103 304 06970	WASHER
35	3103 309 05350	CD DRIVE MCD1B
41	3103 304 66480	FRAME
42	3103 304 66540	BRACKET-GUIDING
43	3103 301 06460	SPRING-GUIDING
44	3103 304 06890	GEAR-3
45	3103 304 06980	NAIL FIXATION
46	3103 304 06880	GEAR-2
47	3103 304 66530	BRACKET-LOAD
48	3103 304 06910	CAM
49	3103 304 66510	GUIDING
51	3103 304 06900	GEAR-4
52	3103 304 06870	GEAR-1
53	3103 304 06960	PULLEY-FRAME
54	3103 304 66910	DRIVING-BELT-DRAWER
55	4822 361 10753	TRAY MOTOR
56	4822 502 12548	SCREW M2,6X3,5
57	3103 304 69880	COVER-DA11
59	4822 466 12146	RUBBER



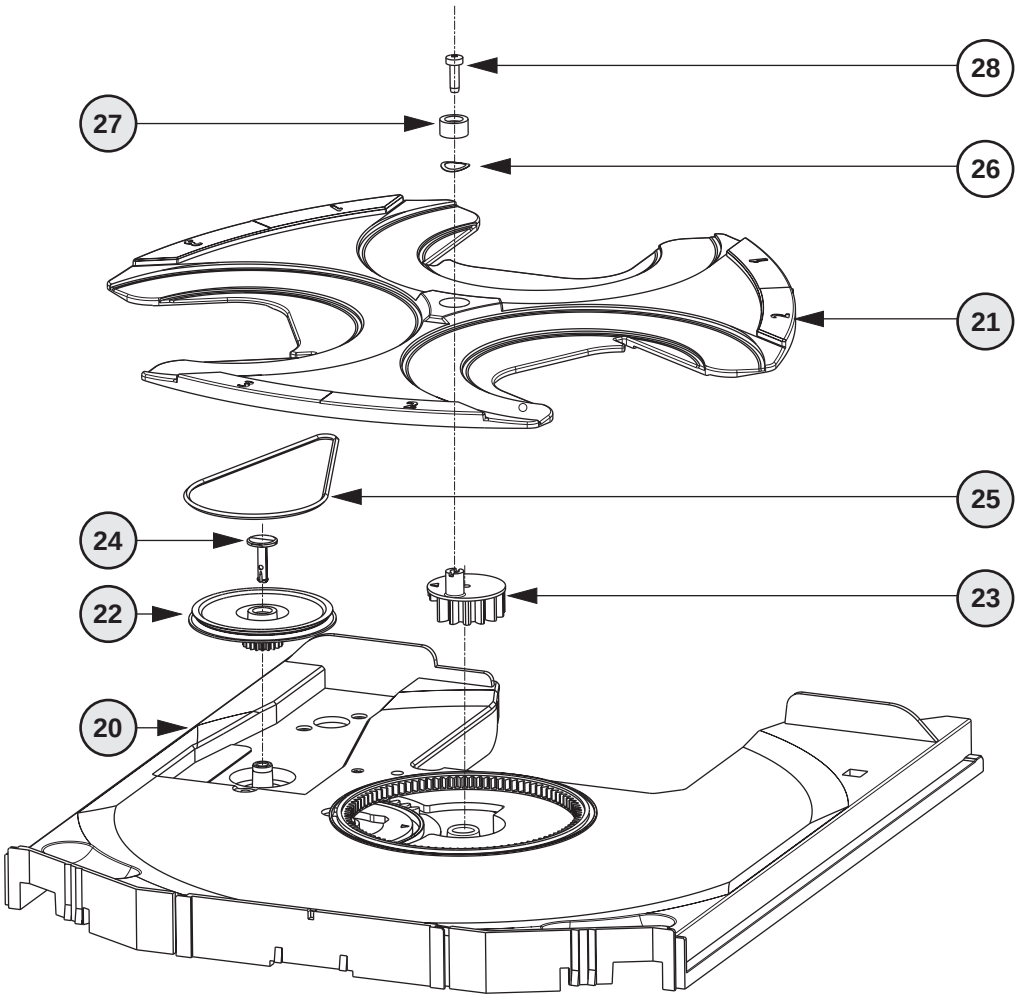
Drawer bottom view

MECHANICAL PARTS ***Drawer***

20	3103 304 66500	DRAWER BLACK
21	3103 304 66490	CAROUSEL BLACK
22	3103 304 06860	PULLEY-DRAWER
23	3103 304 06850	ECCENTRIC GEAR WHEEL
24	3103 304 06980	NAIL FIXATION
25	3103 304 66850	DRIVING BELT CAROUSEL
27	4822 532 12365	BUSH DRAWER (height=5,5mm,d=9,4mm)
29	3103 304 66550	BRACKET-DISC
30	3103 304 66520	TUMBLER
31	3103 301 06470	SPRING-DISC
32	3103 304 06920	CONTROL-DISC
34	3103 304 06870	GEAR-1
37	4822 361 10753	CAROUSEL MOTOR



Drawer top view



X spare part

Y non spare part

3CDC-LC Drawer assy 1999 09 13

ELECTRICAL PARTSLIST 3CDC-LC MODULE

MISCELLANEOUS

37	4822 361 10753	CAROUSEL MOTOR
55	4822 361 10753	TRAY MOTOR
1800	2422 025 17389	FFC-CONNECTOR 16Pin
1805	4822 265 10979	FFC-CONNECTOR 15Pin
1875	4822 267 10958	FFC-CONNECTOR 5Pin
1876	2422 025 08332	FFC-CONNECTOR 5Pin
1880	4822 276 13503	SWITCH
1881	4822 276 13503	SWITCH
1882	4822 276 13503	SWITCH
1883	4822 276 13503	SWITCH
8001	3103 308 93070	FLEX FOIL CABLE 19P, 170mm BD
8002	3103 308 91990	FLEXFOIL CABLE, 5P, 200mm AD
8005	3103 308 92930	FLEX FOIL CABLE 16P 170mm 1:n

CAPACITORS

2800 ©	4822 122 33753	150pF	5%	50V
2801 ©	4822 126 13883	220pF	5%	50V
2802 ©	4822 122 33753	150pF	5%	50V
2803 ©	4822 126 13883	220pF	5%	50V
2804 ©	4822 126 13193	4,7nF	10%	63V
2805 ©	4822 126 13883	220pF	5%	50V
2806 ©	4822 126 13883	220pF	5%	50V
2807 ©	4822 126 14241	330pF		50V
2808 ©	4822 126 13883	220pF	5%	50V
2809 ©	4822 126 13879	220nF	20%	16V
2810 ©	4822 126 14508	180pF	5%	50V
2811 ©	4822 126 13883	220pF	5%	50V
2812 ©	3198 024 44730	47nF	5%	50V
2813 ©	4822 122 33177	10nF	20%	50V
2814 ©	4822 126 14247	1,5nF	10%	50V
2815 ©	4822 126 14076	220nF	20%	25V
2816 ©	4822 126 13344	1,5nF	5%	63V
2817	4822 124 40769	4,7µF	20%	100V
2818 ©	4822 126 13344	1,5nF	5%	63V
2819	4822 124 40769	4,7µF	20%	100V
2820 ©	5322 126 11578	1nF	10%	63V
2821	4822 124 42383	220µF	20%	4V
2822 ©	4822 126 14238	2,2nF	10%	50V
2823 ©	4822 126 11785	47pF	5%	50V
2824 ©	5322 122 32654	22nF	10%	63V
2826	4822 124 12362	47µF	20%	4V
2827 ©	4822 122 33753	150pF	5%	50V
2828	4822 124 12362	47µF	20%	4V
2829 ©	4822 126 11669	27pF	10%	50V
2832	4822 124 40433	47µF	20%	25V
2833 ©	2222 867 15339	33pF	5%	50V
2835 ©	3198 024 44730	47nF	5%	50V
2836	4822 124 40769	4,7µF	20%	100V
2837	4822 124 22726	4,7µF	20%	35V
2838	4822 124 40248	10µF	20%	63V
2839	4822 124 40433	47µF	20%	25V
2840 ©	4822 126 14585	100nF	10%	50V
2841 ©	4822 122 33216	270pF	5%	50V
2842 ©	4822 126 14238	2,2nF	10%	50V
2843 ©	4822 126 14585	100nF	10%	50V
2844 ©	4822 122 33216	270pF	5%	50V
2848 ©	4822 122 33753	150pF	5%	50V
2860 ©	4822 126 14494	22nF	10%	25V
2861	4822 124 11947	10µF	20%	16V
2862 ©	4822 126 13883	220pF	5%	50V
2863 ©	4822 126 13883	220pF	5%	50V
2865 ©	5322 122 32654	22nF	10%	63V
2866 ©	4822 126 13751	47nF	10%	50V

CAPACITORS

2867 ©	4822 126 13883	220pF	5%	50V
2868 ©	2020 552 94427	100pF	5%	50V
2869 ©	2020 552 94427	100pF	5%	50V
2872 ©	3198 024 44730	47nF	5%	50V
2873	4822 124 80231	47µF	20%	16V
2876	4822 124 12245	220µF	20%	16V
2877 ©	4822 126 14226	82pF		50V
2878 ©	4822 126 13883	220pF	5%	50V
2879	4822 124 12245	220µF	20%	16V
2880	4822 124 11947	10µF	20%	16V
2881	4822 124 40769	4,7µF	20%	100V
2882 ©	4822 126 13883	220pF	5%	50V
2888	4822 124 11947	10µF	20%	16V

RESISTORS

3713 ©	4822 051 30223	22kΩ	5%	0,06W
3714 ©	4822 051 30103	10kΩ	5%	0,06W
3715 ©	4822 117 13632	100kΩ	1%	0,06W
3719 ©	4822 051 30392	3,9kΩ	5%	0,06W
3723 ©	4822 051 20273	27kΩ	5%	0,1W
3730 ©	4822 051 20333	33kΩ	5%	0,1W
3736 ©	4822 117 12925	47kΩ	1%	0,06W
3738 ©	4822 051 30271	270Ω	5%	0,06W
3740 ©	4822 051 20223	22kΩ	5%	0,1W
3741 ©	4822 051 20223	22kΩ	5%	0,1W
3742 ©	4822 051 20223	22kΩ	5%	0,1W
3743 ©	4822 051 20223	22kΩ	5%	0,1W
3744 ©	4822 051 30103	10kΩ	5%	0,06W
3745 ©	4822 117 10833	10kΩ	1%	0,1W
3746 ©	4822 051 30103	10kΩ	5%	0,06W
3747 ©	4822 117 12925	47kΩ	1%	0,06W
3748 ©	4822 051 30103	10kΩ	5%	0,06W
3750 ©	4822 051 30102	1kΩ	5%	0,06W
3751 ©	4822 051 30102	1kΩ	5%	0,06W
3752 ©	4822 117 13632	100kΩ	1%	0,06W
3753 ©	4822 117 13632	100kΩ	1%	0,06W
3754 ©	4822 051 30221	220Ω	5%	0,06W
3755 ©	4822 117 11503	220Ω	5%	0,1W
3757 ©	4822 117 11373	100Ω	1%	0,1W
3758 ©	4822 051 30101	100Ω	5%	0,06W
3760 ©	4822 117 10833	10kΩ	1%	0,1W
3761 ©	4822 051 30103	10kΩ	5%	0,06W
3762 ©	4822 051 30223	22kΩ	5%	0,06W
3763 ©	4822 051 30223	22kΩ	5%	0,06W
3764 ©	4822 117 11373	100Ω	1%	0,1W
3765 ©	4822 051 30103	10kΩ	5%	0,06W
3766 ©	4822 117 10833	10kΩ	1%	0,1W
3767 ©	4822 051 30339	33Ω	5%	0,06W
3769 ©	4822 051 30101	100Ω	5%	0,06W
3770 ©	4822 051 30102	1kΩ	5%	0,06W
3771 ©	4822 051 30102	1kΩ	5%	0,06W
3772 ©	4822 051 30471	470Ω	5%	0,06W
3773 ©	4822 117 10833	10kΩ	1%	0,1W
3774 ©	4822 117 11373	100Ω	1%	0,1W
3775 ⚠	4822 052 10338	3,3Ω	5%	NFR25
3776 ©	4822 051 30103	10kΩ	5%	0,06W
3800 ©	4822 051 30273	27kΩ	5%	0,06W
3801 ©	4822 117 10833	10kΩ	1%	0,1W
3802 ©	4822 051 30273	27kΩ	5%	0,06W
3803 ©	4822 117 10833	10kΩ	1%	0,1W
3805 ©	4822 051 30103	10kΩ	5%	0,06W
3806 ©	4822 051 30103	10kΩ	5%	0,06W
3807 ©	4822 051 30103	10kΩ	5%	0,06W
3808 ©	4822 051 30103	10kΩ	5%	0,06W

ELECTRICAL PARTSLIST 3CDC-LC MODULE

RESISTORS

3810 ©	4822 051 30471	470Ω	5%	0,06W	
3811 ©	4822 051 30273	27kΩ	5%	0,06W	
3812 ©	4822 051 20471	470Ω	5%	0,1W	
3813 ©	4822 051 20471	470Ω	5%	0,1W	
3814 ©	4822 051 20471	470Ω	5%	0,1W	
3815 ▲	4822 052 10478	4,7Ω	5%	NFR25	
3816 ©	4822 051 20471	470Ω	5%	0,1W	
3817 ©	4822 051 30471	470Ω	5%	0,06W	
3818 ©	4822 051 30471	470Ω	5%	0,06W	
3819 ©	4822 051 20471	470Ω	5%	0,1W	
3820 ©	4822 051 30332	3,3kΩ	5%	0,06W	
3821 ©	4822 051 30332	3,3kΩ	5%	0,06W	
3822 ©	4822 051 20332	3,3kΩ	5%	0,1W	
3823 ©	4822 051 30102	1kΩ	5%	0,06W	
3824 ©	4822 051 30102	1kΩ	5%	0,06W	
3825 ©	4822 051 10102	1kΩ	2%	0,25W	
3826 ©	4822 051 30223	22kΩ	5%	0,06W	
3827 ©	4822 051 20273	27kΩ	5%	0,1W	
3829 ©	4822 117 13608	4,7Ω	5%	0,06W	
3830 ©	4822 051 20223	22kΩ	5%	0,1W	
3833 ©	4822 051 30223	22kΩ	5%	0,06W	
3834 ©	4822 051 30223	22kΩ	5%	0,06W	
3835 ▲	4822 052 10338	3,3Ω	5%	NFR25	
3836 ©	4822 117 12903	1,8kΩ	1%	0,06W	
3837 ©	4822 051 10102	1kΩ	2%	0,25W	
3838 ©	4822 051 30102	1kΩ	5%	0,06W	
3839 ©	4822 117 13632	100kΩ	1%	0,06W	
3840 ©	4822 051 20471	470Ω	5%	0,1W	
3842 ©	4822 117 10834	47kΩ	1%	0,1W	
3843 ©	4822 051 20333	33kΩ	5%	0,1W	
3844 ©	4822 051 30472	4,7kΩ	5%	0,06W	
3845 ©	4822 117 10834	47kΩ	1%	0,1W	
3846 ©	4822 051 20333	33kΩ	5%	0,1W	
3847 ©	4822 051 30682	6,8kΩ	5%	0,06W	
3848 ©	3198 021 52240	220kΩ	5%	0,1W	
3849 ©	4822 051 30472	4,7kΩ	5%	0,06W	
3850 ©	4822 051 30682	6,8kΩ	5%	0,06W	
3853 ©	4822 051 20471	470Ω	5%	0,1W	
3854 ©	4822 117 11373	100Ω	1%	0,1W	
3855 ©	4822 117 12971	15Ω	5%	0,06W	
3856 ©	4822 117 12521	68Ω	1%	0,1W	
3857 ©	4822 117 12521	68Ω	1%	0,1W	
3861 ©	4822 051 30103	10kΩ	5%	0,06W	
3862 ©	4822 051 20121	120Ω	5%	0,1W	
3863 ©	4822 051 30339	33Ω	5%	0,06W	
3864 ©	4822 051 30101	100Ω	5%	0,06W	
3865 ©	4822 051 30121	120Ω	5%	0,06W	
3866 ©	4822 051 30103	10kΩ	5%	0,06W	
3871 ©	4822 051 20683	68kΩ	5%	0,1W	
3872 ©	4822 051 30472	4,7kΩ	5%	0,06W	
3878 ©	4822 117 11503	220Ω	5%	0,1W	
3880 ▲	4822 052 10338	3,3Ω	5%	NFR25	
3881 ©	4822 117 11503	220Ω	5%	0,1W	
3882 ©	4822 117 10837	100kΩ	1%	0,1W	
3883 ©	4822 051 10102	1kΩ	2%	0,25W	
3890 ©	4822 051 30332	3,3kΩ	5%	0,06W	
3891 ©	4822 051 30472	4,7kΩ	5%	0,06W	
4700 ©	4822 051 20008	CHIP JUMPER 0805			
4701 ©	4822 051 20008	CHIP JUMPER 0805			
4702 ©	4822 051 20008	CHIP JUMPER 0805			
4703 ©	4822 051 20008	CHIP JUMPER 0805			
4704 ©	4822 051 20008	CHIP JUMPER 0805			
4705 ©	4822 051 20008	CHIP JUMPER 0805			
4706 ©	4822 051 20008	CHIP JUMPER 0805			

RESISTORS

4707 ©	4822 051 20008	CHIP JUMPER 0805
4708 ©	4822 051 20008	CHIP JUMPER 0805
4709 ©	4822 051 20008	CHIP JUMPER 0805
4710 ©	4822 051 20008	CHIP JUMPER 0805
4711 ©	4822 051 20008	CHIP JUMPER 0805
4712 ©	4822 051 20008	CHIP JUMPER 0805
4713 ©	4822 051 20008	CHIP JUMPER 0805
4714 ©	4822 051 20008	CHIP JUMPER 0805
4715 ©	4822 051 20008	CHIP JUMPER 0805
4716 ©	4822 051 20008	CHIP JUMPER 0805
4717 ©	4822 051 30008	CHIP JUMPER 0603
4718 ©	4822 051 20008	CHIP JUMPER 0805
4719 ©	4822 051 20008	CHIP JUMPER 0805
4720 ©	4822 051 20008	CHIP JUMPER 0805
4722 ©	4822 051 20008	CHIP JUMPER 0805
4724 ©	4822 051 20008	CHIP JUMPER 0805
4726 ©	4822 051 20008	CHIP JUMPER 0805
4727 ©	4822 051 20008	CHIP JUMPER 0805
4728 ©	4822 051 20008	CHIP JUMPER 0805
4729 ©	4822 051 20008	CHIP JUMPER 0805
4730 ©	4822 051 20008	CHIP JUMPER 0805
4731 ©	4822 051 30008	CHIP JUMPER 0603
4732 ©	4822 051 20008	CHIP JUMPER 0805
4733 ©	4822 051 30008	CHIP JUMPER 0603
4734 ©	4822 051 20008	CHIP JUMPER 0805
4735 ©	4822 051 20008	CHIP JUMPER 0805
4736 ©	4822 051 30008	CHIP JUMPER 0603
4737 ©	4822 051 30008	CHIP JUMPER 0603
4738 ©	4822 051 30008	CHIP JUMPER 0603
4739 ©	4822 051 30008	CHIP JUMPER 0603
4740 ©	4822 051 30008	CHIP JUMPER 0603
4741 ©	4822 051 20008	CHIP JUMPER 0805
4742 ©	4822 051 20008	CHIP JUMPER 0805
4743 ©	4822 051 20008	CHIP JUMPER 0805
4744 ©	4822 051 30008	CHIP JUMPER 0603
4745 ©	4822 051 20008	CHIP JUMPER 0805
4746 ©	4822 051 20008	CHIP JUMPER 0805
4747 ©	4822 051 20008	CHIP JUMPER 0805
4748 ©	4822 051 20008	CHIP JUMPER 0805
4749 ©	4822 051 30008	CHIP JUMPER 0603
4801 ©	4822 051 20008	CHIP JUMPER 0805
4804 ©	4822 051 20008	CHIP JUMPER 0805
4806 ©	4822 051 20008	CHIP JUMPER 0805
4807 ©	4822 051 20008	CHIP JUMPER 0805
4808 ©	4822 051 20008	CHIP JUMPER 0805
4809 ©	4822 051 20008	CHIP JUMPER 0805
4810 ©	4822 051 20008	CHIP JUMPER 0805
4811 ©	4822 051 20008	CHIP JUMPER 0805
4820 ©	4822 051 20008	CHIP JUMPER 0805
4823 ©	4822 051 30008	CHIP JUMPER 0603
4824 ©	4822 051 30008	CHIP JUMPER 0603
4825 ©	4822 051 20008	CHIP JUMPER 0805
4826 ©	4822 051 20008	CHIP JUMPER 0805
4828 ©	4822 051 30008	CHIP JUMPER 0603
4829 ©	4822 051 20008	CHIP JUMPER 0805
4830 ©	4822 051 20008	CHIP JUMPER 0805
4831 ©	4822 051 20008	CHIP JUMPER 0805
4832 ©	4822 051 30008	CHIP JUMPER 0603
4833 ©	4822 051 20008	CHIP JUMPER 0805
4834 ©	4822 051 20008	CHIP JUMPER 0805
4837 ©	4822 051 20008	CHIP JUMPER 0805
4838 ©	4822 051 30008	CHIP JUMPER 0603
4839 ©	4822 051 20008	CHIP JUMPER 0805
4840 ©	4822 051 20008	CHIP JUMPER 0805

ELECTRICAL PARTSLIST 3CDC-LC MODULE

RESISTORS

4841	©	4822 051 20008	CHIP JUMPER 0805
4842	©	4822 051 20008	CHIP JUMPER 0805
4844	©	4822 051 20008	CHIP JUMPER 0805
4845	©	4822 051 20008	CHIP JUMPER 0805
4846	©	4822 051 20008	CHIP JUMPER 0805
4847	©	4822 051 20008	CHIP JUMPER 0805
4848	©	4822 051 20008	CHIP JUMPER 0805
4849	©	4822 051 30008	CHIP JUMPER 0603
4851	©	4822 051 30008	CHIP JUMPER 0603
4855	©	4822 051 20008	CHIP JUMPER 0805
4856	©	4822 051 20008	CHIP JUMPER 0805
4857	©	4822 051 20008	CHIP JUMPER 0805
4858	©	4822 051 20008	CHIP JUMPER 0805
4868	©	4822 051 20008	CHIP JUMPER 0805
4869	©	4822 051 20008	CHIP JUMPER 0805
4870	©	4822 051 20008	CHIP JUMPER 0805
4871	©	4822 051 20008	CHIP JUMPER 0805
4872	©	4822 051 20008	CHIP JUMPER 0805
4873	©	4822 051 20008	CHIP JUMPER 0805
4874	©	4822 051 20008	CHIP JUMPER 0805
4875	©	4822 051 20008	CHIP JUMPER 0805
4876	©	4822 051 20008	CHIP JUMPER 0805
4878	©	4822 051 20008	CHIP JUMPER 0805
4879	©	4822 051 20008	CHIP JUMPER 0805
4880	©	4822 051 20008	CHIP JUMPER 0805
4882	©	4822 051 20008	CHIP JUMPER 0805
4883	©	4822 051 20008	CHIP JUMPER 0805
4884	©	4822 051 20008	CHIP JUMPER 0805
4885	©	4822 051 20008	CHIP JUMPER 0805
4886	©	4822 051 20008	CHIP JUMPER 0805
4887	©	4822 051 30008	CHIP JUMPER 0603
4888	©	4822 051 20008	CHIP JUMPER 0805
4889	©	4822 051 20008	CHIP JUMPER 0805
4890	©	4822 051 20008	CHIP JUMPER 0805
4891	©	4822 051 30008	CHIP JUMPER 0603

RESISTORS

4892	©	4822 051 20008	CHIP JUMPER 0805
4893	©	4822 051 20008	CHIP JUMPER 0805
4894	©	4822 051 20008	CHIP JUMPER 0805
4895	©	4822 051 20008	CHIP JUMPER 0805
4896	©	4822 051 20008	CHIP JUMPER 0805
4897	©	4822 051 20008	CHIP JUMPER 0805
4898	©	4822 051 20008	CHIP JUMPER 0805
4899	©	4822 051 20008	CHIP JUMPER 0805

COILS

1810		2422 540 98519	RESONATOR 8,467MHz

DIODES

6801	©	4822 130 11397	BAS316
6802	©	4822 130 11397	BAS316
6803	©	4822 130 11397	BAS316
6804	©	4822 130 11397	BAS316
6805	©	9340 548 52115	BZX284-C5V1
6807	©	9322 129 34685	BZX284-C3V9
6808	©	4822 130 11397	BAS316
6809	©	9322 129 34685	BZX284-C3V9

TRANSISTORS

7806	©	5322 130 60159	BC846B
7812	©	5322 130 60159	BC846B
7815	©	5322 130 60159	BC846B

INTEGRATED CIRCUITS

7801	©	9352 622 36118	TZA1025T/V2 HF-Amplifier
7802	©	9352 641 80557	SAA7324H/M2B,"CD10" SIGN.PROC.
7803		4822 209 32852	TDA7073A/N2
7807		4822 209 32852	TDA7073A/N2
7811	©	4822 209 33165	TDA1308T/N1
7813	©	5322 209 11306	HEF4094BT, SHIFT REGISTER
7814		4822 209 32852	TDA7073A/N2

ELECTRICAL PARTSLIST MP3CD2002 MODULE

MISCELLANEOUS

	3103 308 67020	**complete MP3CD2002 Module**
1451	2422 025 17303	FLEX FOIL CONNECTOR 19P

CAPACITORS

2450 ©	2238 586 59812	100nF	10%	50V
2451 ©	3198 017 41050	1µF	20%	10V
2452 ©	3198 017 41050	1µF	20%	10V
2453 ©	2238 586 59812	100nF	10%	50V
2454 ©	2238 586 59812	100nF	10%	50V
2455 ©	2238 586 59812	100nF	10%	50V
2456 ©	2238 586 59812	100nF	10%	50V
2457 ©	5322 126 11583	10nF	10%	63V
2458 ©	5322 126 11583	10nF	10%	63V
2459 ©	3198 017 41050	1µF	20%	10V
2460 ©	2238 586 59812	100nF	10%	50V
2461 ©	4822 124 81059	220µF	20%	4V
2462 ©	3198 017 41050	1µF	20%	10V
2463 ©	3198 017 41050	1µF	20%	10V
2464 ©	2238 586 59812	100nF	10%	50V
2465 ©	2238 586 59812	100nF	10%	50V
2466 ©	2238 586 59812	100nF	10%	50V
2467 ©	3198 017 41050	1µF	20%	10V
2468 ©	3198 017 41050	1µF	20%	10V
2469 ©	2238 586 59812	100nF	10%	50V
2470 ©	2238 586 59812	100nF	10%	50V
2471 ©	2238 586 59812	100nF	10%	50V

RESISTORS

3449 ©	4822 051 30101	100Ω	5%	0,06W
3450 ©	4822 117 12971	15Ω	5%	0,06W
3451 ©	4822 117 12971	15Ω	5%	0,06W
3452 ©	4822 051 30101	100Ω	5%	0,06W
3453 ©	4822 051 30109	10Ω	5%	0,06W
3454 ©	4822 117 12971	15Ω	5%	0,06W
3455 ©	4822 051 30102	1kΩ	5%	0,06W
3456 ©	4822 051 30102	1kΩ	5%	0,06W
3457 ©	5322 117 13051	680Ω	1%	0,063W
3458 ©	5322 117 13061	180Ω	1%	0,063W
3459 ©	4822 051 30221	220Ω	5%	0,06W
3460 ©	4822 051 30102	1kΩ	5%	0,06W
3461 ©	4822 051 30479	47Ω	5%	0,06W
3462 ©	4822 051 30101	100Ω	5%	0,06W
3463 ©	4822 051 30101	100Ω	5%	0,06W
3464 ©	4822 051 30103	10kΩ	5%	0,06W
3465 ©	4822 051 30101	100Ω	5%	0,06W
3466 ©	4822 051 30471	470Ω	5%	0,06W
3467 ©	4822 051 30103	10kΩ	5%	0,06W
3468 ©	4822 051 30103	10kΩ	5%	0,06W
3469 ©	4822 051 30101	100Ω	5%	0,06W
3470 ©	4822 117 12971	15Ω	5%	0,06W
3471 ©	4822 051 30339	33Ω	5%	0,06W
3472 ©	4822 051 30154	150kΩ	5%	0,06W
3473 ©	4822 117 13632	100kΩ	1%	0,06W

RESISTORS

3474 ©	4822 117 12971	15Ω	5%	0,06W
3475 ©	4822 051 30101	100Ω	5%	0,06W
3476 ©	4822 051 30101	100Ω	5%	0,06W
3477 ©	4822 051 30471	470Ω	5%	0,06W
3478 ©	4822 051 30471	470Ω	5%	0,06W
3479 ©	4822 051 30471	470Ω	5%	0,06W
3480 ©	4822 051 30101	100Ω	5%	0,06W
3481 ©	4822 051 30101	100Ω	5%	0,06W
3482 ©	4822 051 30471	470Ω	5%	0,06W
3483 ©	4822 051 30101	100Ω	5%	0,06W
3484 ©	4822 117 12971	15Ω	5%	0,06W
3486 ©	4822 051 30101	100Ω	5%	0,06W
3488 ©	4822 117 13632	100kΩ	1%	0,06W
3489 ©	4822 051 30103	10kΩ	5%	0,06W
3490 ©	4822 051 30101	100Ω	5%	0,06W
3491 ©	4822 051 30479	47Ω	5%	0,06W
3492 ©	4822 051 30105	1MΩ	5%	0,06W
3493 ©	4822 051 30103	10kΩ	5%	0,06W
3494 ©	4822 051 30103	10kΩ	5%	0,06W
3495 ©	4822 051 30103	10kΩ	5%	0,06W
3497 ©	4822 051 30103	10kΩ	5%	0,06W
3498 ©	4822 051 30332	3,3kΩ	5%	0,06W
3499 ©	4822 051 30103	10kΩ	5%	0,06W
4450 ©	4822 051 30008	CHIP JUMPER 0603		

COILS

1460	4822 242 10989	CER.RES. 16,9MHz
5450 ©	4822 157 11074	100µH

DIODES

6450 ©	4822 130 11411	BZX284-C3V3
6451 ©	4822 130 11366	BZX284-C3V9
7454	4822 130 34174	BZX79-B4V7

TRANSISTORS

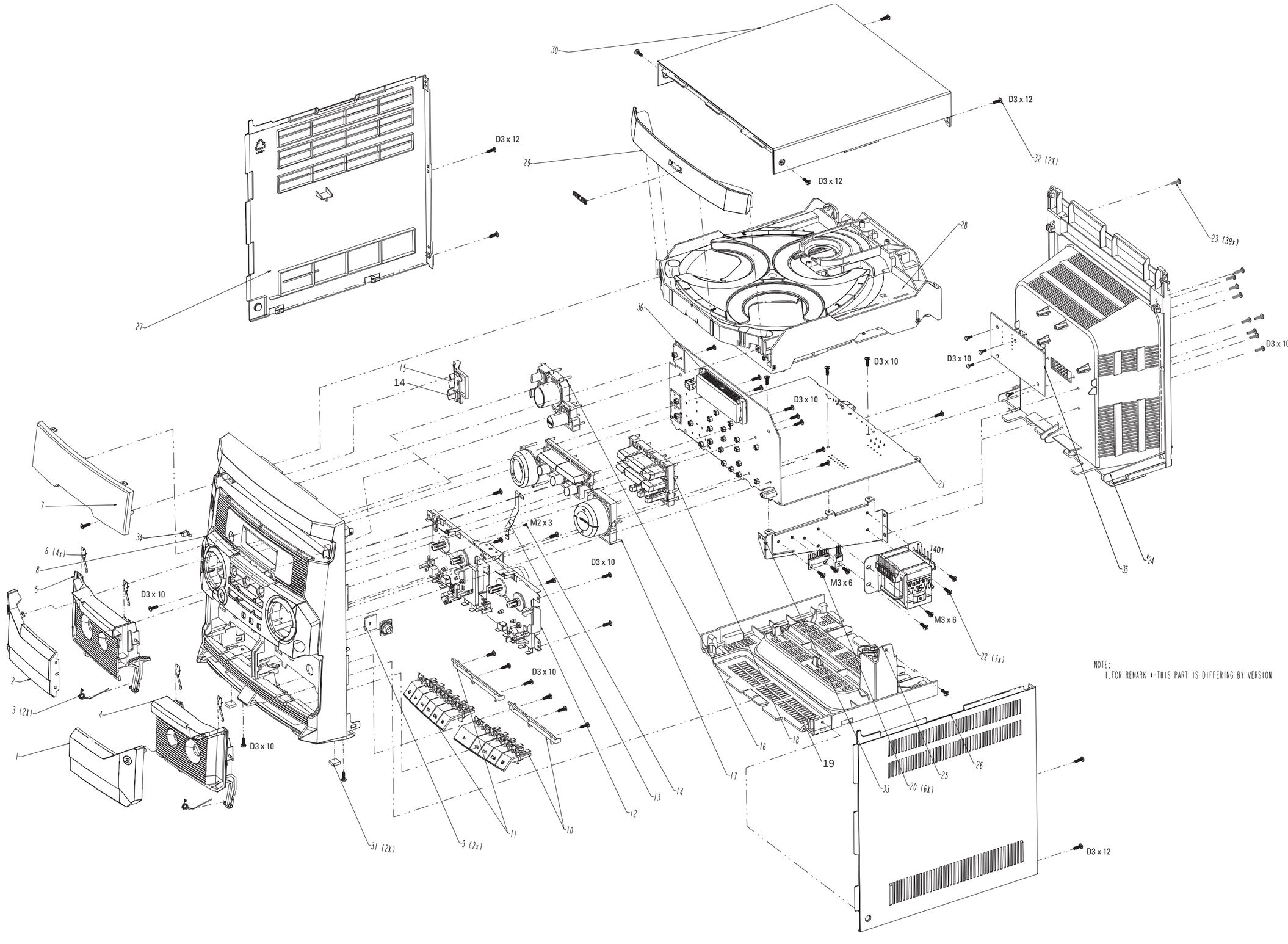
7452 ©	3198 010 42310	BC847BW
7453 ©	3198 010 42310	BC847BW
7456 ©	3198 010 42310	BC847BW
7460 ©	3198 010 42310	BC847BW

INTEGRATED CIRCUITS

7450 ©	not available	please order complete MP3 module
7451 ©	not available	please order complete MP3 module
7455 ©	4822 209 17108	LM317LD Voltage Regulator
7457 ©	9352 456 50115	HC1G04, Inverter
7458 ©	9322 130 41668	M24C64, EEPROM
	3103 308 67020	**complete MP3CD2002 Module**

11 - 1

EXPLODED VIEW DIAGRAM



NOTE:
1.FOR REMARK *-THIS PART IS DIFFERING BY VERSION

MECHANICAL PARTSLIST

1	9940 000 01015	LENS CASS RIGHT
2	9940 000 01014	LENS CASS LEFT
3	9965 000 11170	CASSETTE DOOR SPRING
4	9940 000 01013	DOOR CASS RIGHT
5	9940 000 01012	DOOR CASS LEFT
6	9965 000 11173	SPRING LEAF
7	9940 000 01011	WINDOW DISPLAY -/22/25
7	9940 000 01042	WINDOW DISPLAY -/21
8	9940 000 00999	FRONT CABINET -/22/25
8	9940 000 01038	FRONT CABINET -/21
9	4822 529 10322	DAMPER ASSY
10	9940 000 01003	CASSETTE-KEY RIGHT
11	9940 000 01002	CASSETTE-KEY LEFT
12	9940 000 00998	CASS DECK
13	9965 000 22393	SPRING RECORD
14	9940 000 01019	KEY POWER ECO -/22/25
15	9940 000 01041	BUTTON SET POWER -/21
15	9940 000 01008	BUTTON SET POWER -/22/25
16	9940 000 01006	BUTTON SET DBB
17	9940 000 01007	BUTTON SET MODE
18	9940 000 01009	BUTTON SET CONTROL
19	9940 000 01005	PANEL BOTTOM
24	9940 000 01004	PANEL REAR -/22/25
24	9940 000 01039	PANEL REAR -/21
26	9940 000 01017	PANEL RIGHT
27	9940 000 01016	PANEL LEFT
28	9940 000 01022	3CDC ASSY
29	9940 000 01001	DOOR-CD
30	9940 000 01018	COVER-TOP
31	9965 000 16259	FOOT RUBBER-2
	9940 000 00995	REMOTE CONTROL M15
	9940 000 00996	SPK BOX 10W FWM15/22/25
	9940 000 01036	SPK BOX 10W FWM15/21
	9940 000 01025	CD DA12T3 ASSY
	9965 000 11157	FM ANTENNA WIRE
	2422 549 45067	ANT AM LOOP LAN-006 B
⚠	9940 000 00997	POWER TRANSFORMER 240V -/22/25
⚠	9940 000 01037	POWER TRANSFORMER 120V/240V -/21
	9965 000 11188	FLEX CABLE 15PIN 1,25MM 35CM
⚠	9965 000 11189	AC CORD SET -/21/22
⚠	9940 000 01319	AC CORD SET -/25

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

ELECTRICAL PARTSLIST

- MISCELLANEOUS -

23		9965 000 18353	HEADPHONE JACK
1101		9965 000 11365	FM ANTENNA SOCKET
1110		2422 542 90071	FM FRONTEND FE450-G01
1201	⚠	4822 071 52001	FUSE 19372
1204		9940 000 01032	RELAY 1P 12V 16A
1207	⚠	9965 000 11349	FUSE 1,6A 250V
1208	⚠	9965 000 11350	FUSE 315mA 250V
1209	⚠	9940 000 01026	FUSE T 2.5AL 250V
1300		9965 000 16263	SPEAKER TERMINAL 4P
1400		9965 000 11374	FTD DISPLAY HNA-12SS09T
1404		4822 276 13775	PUSH-SWITCH
1405		4822 276 13775	PUSH-SWITCH
1406		4822 276 13775	PUSH-SWITCH
1407		4822 276 13775	PUSH-SWITCH
1408		4822 276 13775	PUSH-SWITCH
1409		4822 276 13775	PUSH-SWITCH
1410		4822 276 13775	PUSH-SWITCH
1411		4822 276 13775	PUSH-SWITCH
1412		4822 276 13775	PUSH-SWITCH
1413		4822 276 13775	PUSH-SWITCH
1415		4822 276 13775	PUSH-SWITCH
1417		4822 276 13775	PUSH-SWITCH
1418		4822 276 13775	PUSH-SWITCH
1419		4822 276 13775	PUSH-SWITCH
1422		4822 276 13775	PUSH-SWITCH
1423		4822 276 13775	PUSH-SWITCH
1424		4822 276 13775	PUSH-SWITCH
1425		4822 276 13775	PUSH-SWITCH
1426		4822 276 13775	PUSH-SWITCH
1427		4822 276 13775	PUSH-SWITCH
1428		4822 276 13775	PUSH-SWITCH
1431		4822 276 13775	PUSH-SWITCH
1707		9965 000 11378	SWITCH SLIDE
2107		9965 000 11223	CAP MPOL 1µF/50V
2200		9965 000 17110	CER.CAP Y2 250V 3.3nF
2208		9965 000 16271	CAP MPP 275V 220nF
2215		4822 126 14497	2,2nF 20% 250V
2225		9940 000 01029	ELEC CAP 4700µF/35V
2243		9940 000 01029	ELEC CAP 4700µF/35V
2695		9940 000 01028	ELEC CAP 2200µF/16V
2696		9940 000 01028	ELEC CAP 2200µF/16V
3142		4822 100 12159	100KR 30%
3203		4822 050 24705	4,7MR 1% 0,6W
3224		4822 053 21225	2,2MR 5% 0,5W
3311		9940 000 01027	OXIDE METAL RES 22R 2W
3462		9965 000 16265	1MR 1/4W TP=52mm
3706		4822 051 20475	4,7MR 5% 0,1W
3758		9965 000 11362	POTENTIAL METER 2,2KR
3759	⚠	9965 000 11286	RES FUSE 4,7R 1/4W
4001		9940 000 01034	FERRITE BEAD 1KR 100MHZ

ELECTRICAL PARTSLIST

- MISCELLANEOUS -

4002	9940 000 01034	FERRITE BEAD 1KR 100MHZ
4006	9940 000 01034	FERRITE BEAD 1KR 100MHZ
4007	9940 000 01034	FERRITE BEAD 1KR 100MHZ
4008	9940 000 01034	FERRITE BEAD 1KR 100MHZ
4009	9940 000 01034	FERRITE BEAD 1KR 100MHZ
5102	4822 157 71634	MW AERIAL
5109	9965 000 16266	CER FIL SFE10.7MJ A1
5110	4822 242 70665	SFE10,7MS3-A
5111	2422 549 44023	IND VAR 7MM 7PY 450KHZ
5112	4822 157 70302	F7MCS-12216N
5114	4822 157 70302	F7MCS-12216N
5115	9965 000 16267	BIRDIE COIL
5118	9965 000 16268	IND FXD SM 0,1µH 5%
5119	4822 157 11443	2,4µH 10M7
5121	4822 242 10261	T6252F00
5123	2422 549 44108	IND VAR 7MM 7PY 796KHZ
5200	9965 000 16272	ST.BY TRANSFORMER
5201	9965 000 16273	FIX 1MH TP=52mm
5202	4822 157 11832	400µH 3A
5203	9965 000 16273	FIX 1MH TP=52mm
5205	9965 000 11379	FILTER MAINS 400µH
5402	9965 000 11372	CRYSTAL 8MHZ
5406	9965 000 11373	CRYSTAL 32,768KHZ
5701	4822 157 10371	COIL
6105	4822 130 83075	HN1V02H-B
6106	4822 130 11397	BAS316
6107	9340 386 90115	BZX284-C11
7100	9940 000 01033	MCU FOR TMP87CS71BFG-6B30
7101	9351 772 20557	TEA5762H/V1
7250	9965 000 16574	KIA7812API TO220 ST 3P 12V
7301	9940 000 03398	TDA7269SA
7302	9322 180 21668	NJM4565M
7303	9940 000 01031	KIA7806API
7403	9322 131 04668	M24C01-WMN6
7411	9965 000 11375	SENSOR RECEIVER
7511	9322 150 74668	TDA7468D
7711	4822 209 17498	AN7323
7712	4822 209 17498	AN7323
	9940 000 01043	POWER VOLTAGE SW -/21
	9322 179 76676	LED VS LTL-816EELC

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

REVISION LIST

Version 1.0 (3141 785 30130)

* Initial Release FWM15/21/22/25

Version 1.1 (3141 785 30131)

* Page 12-2 : Electrical Partslist - Update
  - Change pos. 7301 9322 111 64687 IC TDA7269A
    to pos. 7301 9940 000 03398 IC TDA7269SA