

Service
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Service Manual



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PHILIPS

TECHNICAL SPECIFICATION**General:**

Mains voltage : 220V-230V / 50Hz for /00 /04 /14
 230V-240V / 50Hz for /05 /10
 110V-127V / 220V-240V /50Hz switchable for /01 /11 /11H
 120V / 60Hz for /17

Battery : 9V (6xR20)

Power consumption : $\leq 15W$ at maximum output power, ($\leq 11W$ at $1/8 P_{max}$)
 $\leq 5W$ (typ. 2W) with source switch in *tape/off*

Amplifier:

Power stage protection : temperature and shortcircuit

Output power mains : 2 x 1,4W_{rms} -1dB at 4 Ω D=10%
 battery : 2 x 2W_{rms} -1dB at 4 Ω D=10%

Headphone : 3,5mm stereo jack, $\geq 20mW$ at 32 Ω ($\approx 0,8V$ at 32 Ω) D=10%

Frequency response : 30Hz - 16kHz (typ. at volume set to -20dB, CD mode 0dB signal level \Rightarrow use SBC429)

Tone control DBB : +12dB $\pm 3dB$ at 100Hz (volume set to -20dB)

Tuner:

	FM	MW
Tuning range	87,5 - 108 MHz	522 - 1607 kHz (520 - 1730 kHz for /17)
IF	10,7 MHz ± 20 kHz	468 kHz ± 3 kHz
Sensitivity Mono: 26dB S/N, m=30% -3 dB limiting point	$\leq 4 \mu V$ ($\leq 2\mu V$ typ.) $\leq 5 \mu V$ ($\leq 2\mu V$ typ.)	$\leq 4mV/m$ ($\leq 1,5mV/m$ typ.)
AFC capture range	$\pm 300kHz$ typ.	
Distortion	$\leq 7%$ ($\leq 1%$ typ.) RF=1mV $\Delta f=75kHz$	$\leq 7%$ ($\leq 2,5%$ typ.) RF=100mV/m m=80%
Image rejection ratio	$\geq 20dB$ (26dB typ.)	$\geq 28dB$
Channel separation at 1kHz	$\geq 20dB$ (25dB typ.)	

CD: To be measured on phone socket with 100k Ω load.

Frequency response : 30 - 16.000 Hz -4dB
 Signal/Noise ratio : $\geq 60dB$
 Distortion : 0.2% typ. at 1 kHz
 Channel difference : $\leq 3dB$ at 1 kHz
 Channel crosstalk : 40dB typ.
 De emphasis : 0 or 15/50 μs switched automatically by subcode on the disc

Laser
 Output power : 500 μW
 Wave length : 780 ± 20 nm

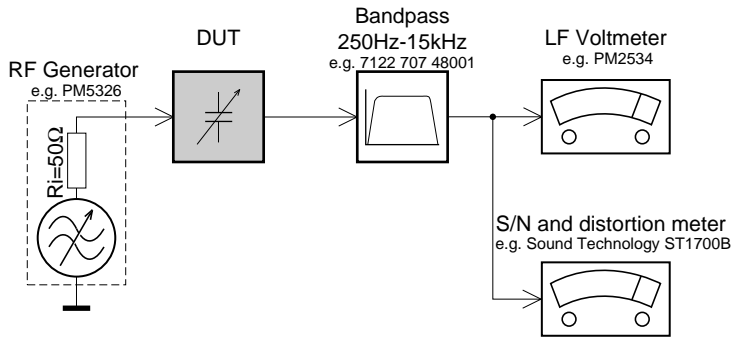
Recorder: To be measured on phone socket with 100k Ω load.

Tape speed : 4,76cm/s $\pm 3%$
 Wow & Flutter : $\leq 0,5%$ weighted
 Winding speed : 120s for C60 cassette
 Erase / Bias system : permanent magnetic erase head / AC 65 $\pm 5kHz$
 Distortion at 250 nWb/m : $\leq 7%$
 Signal/Noise ratio (FF weighted) : $\geq 40dB$
 (A - weighted) : $\geq 43dB$
 Channel difference at PB : $\leq 5dB$
 Channel difference overall : $\leq 5dB$
 Channel separation : $\geq 15dB$ at 1kHz
 Track separation : $\geq 55dB$ at 1kHz

Frequency response IEC I
 Pb : 125Hz - 8000Hz (within 8dB)
 overall : 250Hz - 6300Hz (within 8dB)

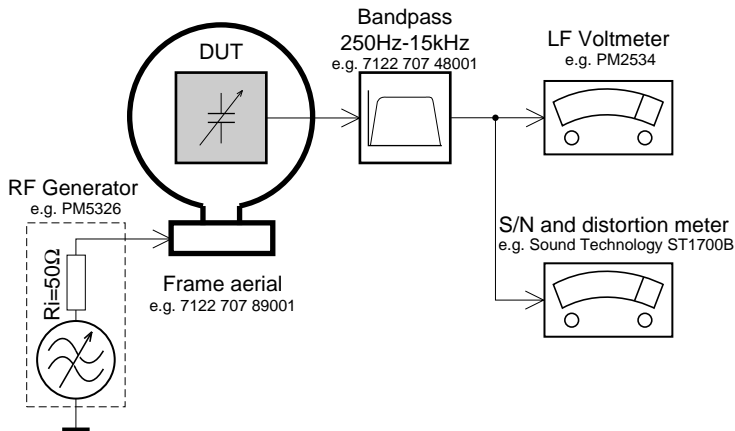
note: set is not prepared to play or record IEC II Chrome cassettes!

Tuner FM



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

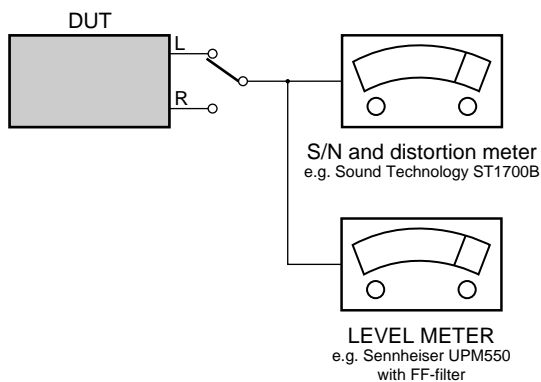
Tuner AM (MW,LW)



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).

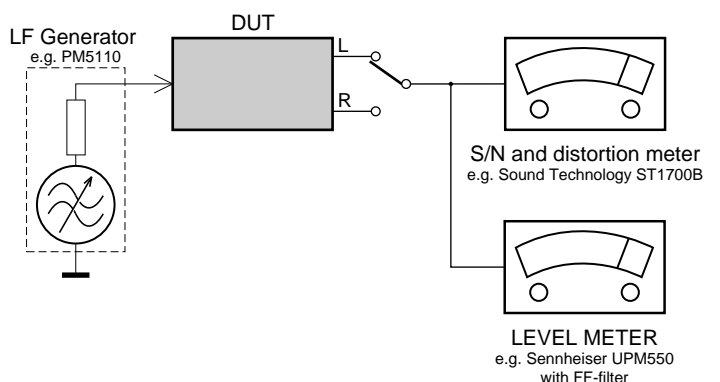
CD

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

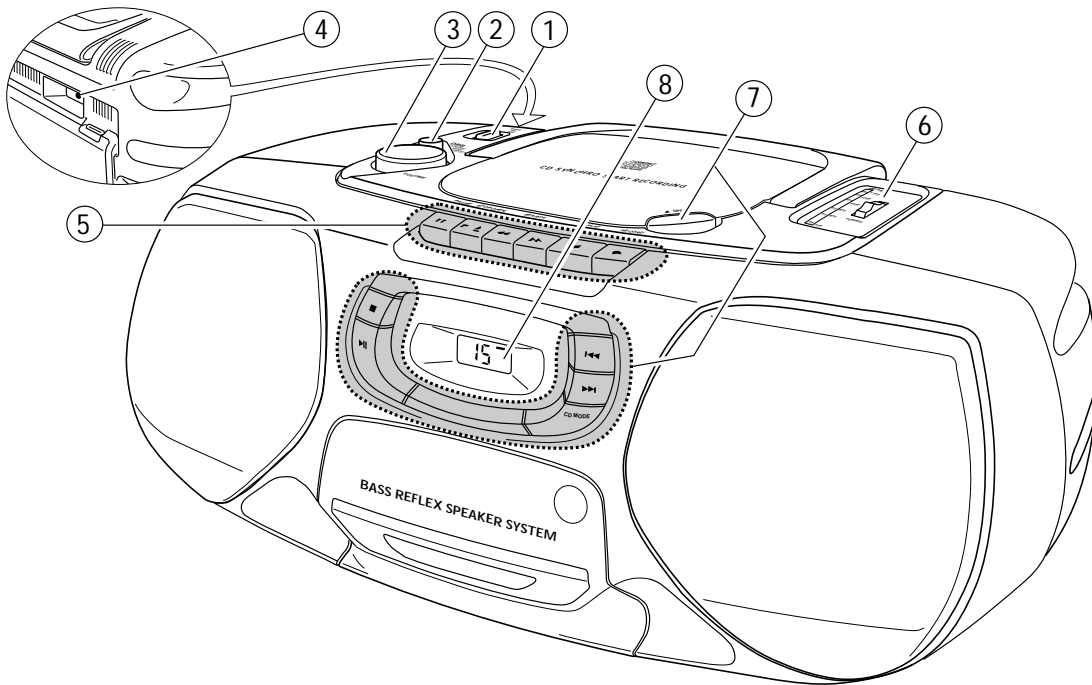


RECORDER

Use Universal Test Cassette Fe SBC420 4822 397 30071



CONNECTIONS & CONTROLS



BASIC FUNCTIONS

- ① POWER:
CD, TAPE, BAND.....selects the sound source
- ② DBB.....enhances the bass
- ③ VOLUMEadjusts the volume level
- ④3.5mm headphone socket (back of the set)

Note: Connecting the headphones will switch off the speakers.

⑤ CASSETTE RECORDER

- PAUSEinterrupts recording or playback
- STOP-OPEN ..stops the tape and opens the cassette compartment
- SEARCHrewinds the tape
- SEARCHfast forwards the tape
- PLAYstarts playback
- RECORDstarts recording

RADIO

- ⑥ TUNINGtunes to radio stations
- ① BAND: FM, MW ...selects the wave band

⑦ CD PLAYER

- OPENopens the CD compartment
-stops CD play and erases the program
-starts and interrupts CD play
-skips and searches forward
-skips and searches backward
- CD MODE.....selects the different CD playing modes and programs tracks

- ⑧ Display

INSTRUCTION FOR USE

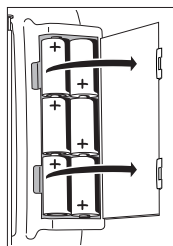
POWER SUPPLY

Batteries (optional)

Open the battery compartment of the set and insert 6 batteries, type **R20, UM-1** or **D**-cells (preferably alkaline).

Remove batteries if they are flat or if the set is not going to be used for a long time.

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



English

Mains

1 Check whether the mains voltage as shown on the type plate corresponds to your local mains voltage. If it does not, consult your dealer or service organisation. **The type plate is located on the bottom of the set.**

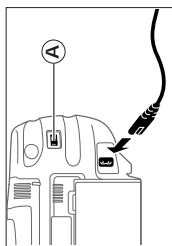
2 If the set is equipped with a VOLTAGE selector (A), set this selector to the local mains voltage.

3 Connect the mains cable to the AC MAINS socket and the wall socket. This switches on the mains supply. **The mains cable is inside the battery compartment.**

The battery supply will be switched off when the set is connected to the mains. To change over to battery supply, pull out the plug from the unit's AC MAINS socket.

To disconnect the set from the mains completely, remove the mains plug from the wall socket.

For users in the U.K.: please follow the instructions on page 2.

**Environmental information**

All redundant packing 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 polyethylene (bags, protective foam sheet).

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

5

BASIC FUNCTIONS

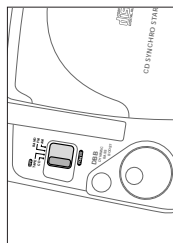
RADIO

Switching the set on and off

Set the POWER slider to the desired sound source: CD, TAPE, or BAND (for radio).

The set is switched off when the POWER slider is set to **OFF/TAPE** and the keys of the tape deck are released.

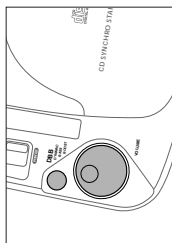
Note: If you use batteries, switch the set off after use. This will avoid unnecessary power consumption.

**Adjusting volume and sound**

Adjust the volume using the VOLUME control.

Increase and decrease the bass level by pressing **DBB**.

The bass level can also be emphasised if you place the set against wall or shelf. Do not cover any vents; leave sufficient room around the unit for ventilation.

**Radio – tuning to radio stations**

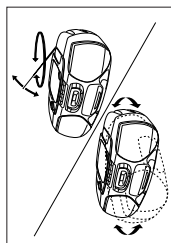
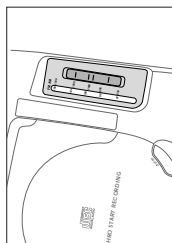
1 Set the POWER slider to FM or MW to select the desired wave band.

2 Tune to the desired radio station by using the TUNING wheel.

Improving RADIO reception

For **FM** stations, pull out the telescopic antenna. To improve the signal, incline and turn the antenna. Reduce its length if the signal is too strong (very close to a transmitter).

For **MW** stations, direct the built-in antenna by turning the whole set. The telescopic antenna is not needed.

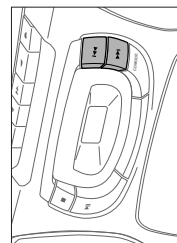


6

INSTRUCTION FOR USE

CD PLAYER

Search backward and forward

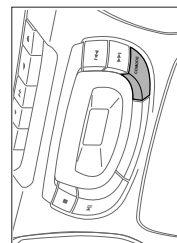


Selecting another track
Briefly press the search backward or search forward button once/several times to skip to the beginning of the current, previous or subsequent track(s).
During CD play:
CD play continues automatically with the selected track.
When CD play is stopped:
Press search forward to start CD play.
→ Display indication: the selected track number.

Searching for a passage during CD play
1 Hold down the search backward or search forward button to find a particular passage in a forward or backward direction.
→ CD play continues at a low volume.

2 Release the button when you have reached the desired passage.
Note: In the different CD modes or when playing a program, searching is only possible within the particular track.

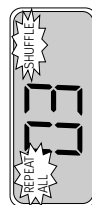
CD MODE: Shuffle and Repeat



1 During CD play press CD MODE repeatedly to cause the display to show the different playing modes.
→ **SHUFFLE:** All tracks of the CD (or program) are played in random order.
→ **SHUFFLE REPEAT ALL:** All tracks of the CD (or program) are played repeatedly in random order.
→ **REPEAT:** The current track is played repeatedly.
→ **REPEAT ALL:** The entire CD (or program) is played repeatedly.

2 After 2 seconds of flashing display indication, CD play starts in the chosen mode.

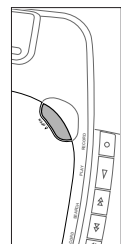
3 To return to normal CD play, press CD MODE until the display indication disappears.



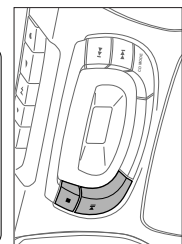
English

CD PLAYER

Playing a CD



1 Set the POWER slider to CD.
2 Press OPEN to open the CD compartment.
3 Insert an audio CD (printed side up) and close the CD compartment.
→ The CD player starts and scans the contents list of the CD. Then, the CD player stops. Display indication: the total number of tracks.



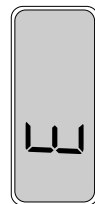
4 Press the stop button to start CD play.
→ Display indication: the current track number.



5 Press the stop button to stop CD play.
→ Display indication: the total number of tracks.

You can interrupt CD play by pressing CD MODE. Continue CD play by pressing the button again.
→ Display indication: the current track number (flashing).
Note: CD play will also stop if:
– you open the CD compartment,
– the end of the CD is reached, or
– you move the POWER slider.

If you make a mistake when operating the CD player, or if the CD player cannot read the CD, the display shows E or no. (See "TROUBLESHOOTING".)



If you press CD MODE and there is no CD inserted, the display shows no.



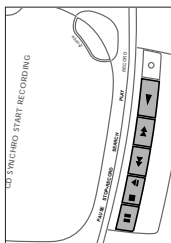
English

INSTRUCTION FOR USE

CASSETTE RECORDER

Playing a cassette

- 1 Set the POWER slider to TAPE.
- 2 Press STOP-OPEN $\square \blacktriangle$ to open the cassette compartment.
- 3 Insert a recorded cassette with the open side upwards and close the cassette compartment.
- 4 Press PLAY \blacktriangleleft to start playback.
- 5 Press \blacktriangleright or \blacktriangleleft to rewind or fast forward the tape.
- 6 To stop the tape, press STOP-OPEN $\square \blacktriangle$.



Note: The keys are released at the end of the tape.

General information on recording

Recording is permissible insofar as copyright or other rights of third parties are not infringed upon.

For recording on this set you should use a cassette of the type NORMAL (IEC type I). This deck is not suitable for recording on cassettes of the type CHROME (IEC type II) or METAL (IEC type IV).

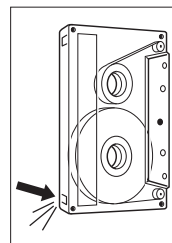
The recording level is set automatically. The controls VOLUME and DBB do not affect the recording.

At the very beginning and end of the tape, no recording will take place in the 7 seconds during which the leader tape passes the recorder heads.

Protecting tapes from accidental erasure

Keep the cassette side to be protected in front of you and snap off the left tab. Now, recording on this side is no longer possible.

To record again on this side of the cassette, cover the opening with a piece of adhesive tape.



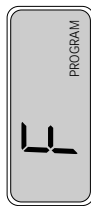
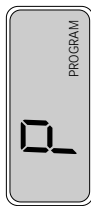
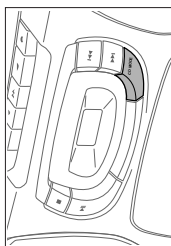
CD PLAYER

CD MODE: Programming track numbers

You can select a number of tracks and store these in the memory in the desired sequence. You can store any track more than once. A maximum of 20 tracks can be stored in the memory.

- 1 When CD play is stopped, select the desired track with \blacktriangleleft or \blacktriangleright .
- 2 As soon as the number of the desired track is displayed, press CD MODE to store the track in the memory.
→ PROGRAM appears on the display, P lights up briefly, then the number of the stored track is shown.
- 3 Select and store all desired tracks in this way.
- 4 You can review your settings by pressing and holding CD MODE for more than 1 second.
→ The display shows all stored track numbers in sequence.

If you try to store more than 20 tracks, the display shows F.



Playing the program

Press \blacktriangleright to play the program.



Erasing the program

From the stop position, press \square .

- $\sigma\sigma$ lights up briefly, PROGRAM disappears and your program is erased.

Note: The program will also be erased if you:

- Interrupt the power supply,
- open the CD compartment, or
- move the POWER slider.



English

English

CASSETTE RECORDER

English

Recording from the CD player – CD synchro start

- 1 Set the POWER slider to CD.
- 2 Insert a CD and, if desired, program the track numbers.
- 3 Press STOP-OPEN $\square \triangle$ to open the cassette compartment.
- 4 Insert a blank, unprotected, cassette and close the cassette compartment.
- 5 Press RECORD \circ to start recording.
→ Playing of the CD or program starts automatically.
- 6 For brief interruptions, press PAUSE III . Press the PAUSE III key again to resume recording.
- 7 To stop recording, press STOP-OPEN $\square \triangle$.

Note: the recording can be started from different positions:
 – if the CD player is in pause mode, recording will start from this very position (use \ll or \gg);
 – if the CD player is in stop mode, recording will start from the beginning of the CD or program.

Recording from the radio

- 1 Tune to the desired radio station (see "RADIO").
- 2 Press STOP-OPEN $\square \triangle$ to open the cassette compartment.
- 3 Insert a blank, unprotected, cassette and close the cassette compartment.
- 4 Press RECORD \circ to start recording.
- 5 For brief interruptions, press PAUSE III . To resume recording press the PAUSE III key again.
- 6 To stop recording, press STOP-OPEN $\square \triangle$.

11

TROUBLESHOOTING

English

WARNING
 If a fault occurs, first check the points listed below before taking the set for repair.

Under no circumstance should you try to repair the set yourself as this will invalidate the guarantee.
 If you are unable to solve a problem by following these hints, consult your dealer or service center.

Problem	Possible cause	Solution
No sound, no power	VOLUME is not adjusted. Headphones are connected. Mains cable is not securely connected. Batteries are flat. Batteries are inserted incorrectly.	Adjust volume. Disconnect headphones. Connect mains cable properly. Insert fresh batteries. Insert batteries correctly.
No reaction to operation of any keys	Trying to change over from mains to battery supply without removing the plug. Electrostatic discharge.	Remove the mains plug from the unit's AC MAINS socket. Disconnect the set from power supply, reconnect after a few seconds.
Poor radio reception	Weak radio signal.	Direct the antenna for optimum reception.
no or £ indication	Interference caused by electrical equipment like TVs, computers, engines, etc. The CD is badly scratched or dirty. No CD is inserted. The CD is inserted upside down. The laser lens is steamed up.	Keep the radio away from electrical equipment. Replace or clean the CD. Insert a CD. Insert CD with label facing up. Wait until the lens has cleared.
The CD skips tracks	The CD is damaged or dirty. SHUFFLE or PROGRAM is active.	Replace or clean the CD. Switch off SHUFFLE or PROGRAM .
Poor cassette sound quality	Dust and dirt on the heads, capstans or pressure rollers. Use of unsuitable cassette types (METAL or CHROME) for recording.	Clean heads, capstans, and pressure rollers. Only use NORMAL type cassettes for recording.
Recording does not work	Cassette tab(s) may be snapped off.	Apply a piece of adhesive tape over the opening.

13

WARNINGS & SAFETY

ⒼB WARNING

All ICs and many other semiconductors are susceptible to electrostatic discharges (ESD). Careless handling during repair can reduce life drastically.

When repairing, make sure that you are connected with the same potential as the mass of the set via a wristband with resistance. Keep components and tools at this potential.

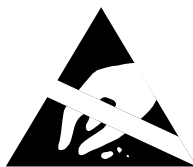
Ⓕ F ATTENTION

Tous les IC et beaucoup d'autres semi-conducteurs sont sensibles aux décharges statiques (ESD). Leur longévité pourrait être considérablement écourtée par le fait qu'aucune précaution n'est prise à leur manipulation.

Lors de réparations, s'assurer de bien être relié au même potentiel que la masse de l'appareil et enfilez le bracelet muni d'une résistance de sécurité.

Veiller à ce que les composants ainsi que les outils que l'on utilise soient également à ce potentiel.

ESD



ⒼL 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.

Ⓘ AVVERTIMENTO

Tutti IC e parecchi semi-conduttori sono sensibili alle scariche statiche (ESD).

La loro longevità potrebbe essere fortemente ridotta 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.

Ⓕ D WARNUNG

Alle ICs und viele andere Halbleiter sind empfindlich gegenüber elektrostatischen Entladungen (ESD).

Unvorsichtige Behandlung im Reparaturfall kann die Lebensdauer drastisch reduzieren.

Sorgen Sie dafür, daß sie im Reparaturfall über ein Pulsarmband mit Widerstand mit dem Massepotential des Gerätes verbunden sind.


Halten Sie Bauteile und Hilfsmittel ebenfalls auf diesem Potential.

ⒼB AVAILABLE ESD PROTECTION EQUIPMENT :

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


ⒼB

Safety regulations require that the set be restored to its original condition and that parts which are identical with those specified be used.

Safety components are marked by the symbol 

Ⓕ F

Les normes de sécurité exigent que l'appareil soit remis à l'état d'origine et que soient utilisées les pièces de rechange identiques à celles spécifiées.

Les composants de sécurité sont marqués 

SAFETY




Ⓕ D

Bei jeder Reparatur sind die geltenden Sicherheitsvorschriften zu beachten. Der Originalzustand des Gerätes darf nicht verändert werden. Für Reparaturen sind Originalersatzteile zu verwenden.


Sicherheitsbauteile sind durch das Symbol  markiert.

ⒼL

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

Ⓘ

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

Componenti di sicurezza sono marcati con 

ⒼB **DANGER:** Invisible laser radiation when open. AVOID DIRECT EXPOSURE TO BEAM.



Ⓕ S Varning !

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

Ⓕ DK Advarsel !

Usynlig laserstrålning ved åbning når sikkerhedsafbrydere er ude af funktion. Undgå udsættelse for stråling.

Ⓕ SF Varoitus !

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

ⒼB

After servicing and before returning the set to customer perform a leakage current measurement test from all exposed metal parts to earth ground, to assure no shock hazard exists.

The leakage current must not exceed 0.5mA.

Ⓕ F

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

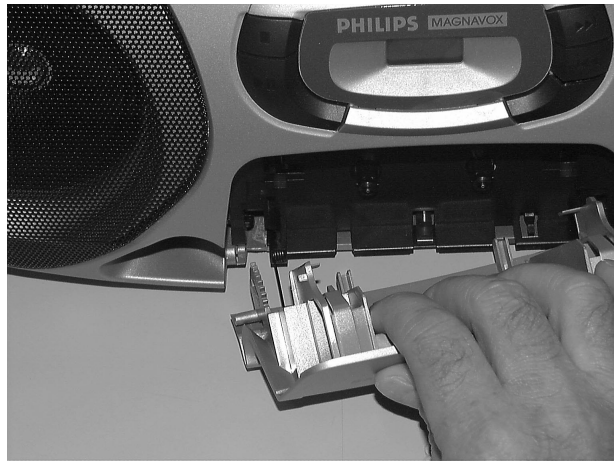
DISMANTLING INSTRUCTIONS

Dismantling of the Cassette Door



picture 1

- Open cassette door.
- Release left catch by pressing it inwards with a screwdriver as shown in picture 1.
- Pull door on left side up as shown in picture 2.
- Right catch will now be released automatically.



picture 2

Dismantling of the CD Door



picture 3

- Open CD door.
- Release left catch by pressing it inwards with a screwdriver as shown in picture 3.
- Pull door on left side up as shown in picture 4.
- Right catch will now be released automatically.



picture 4

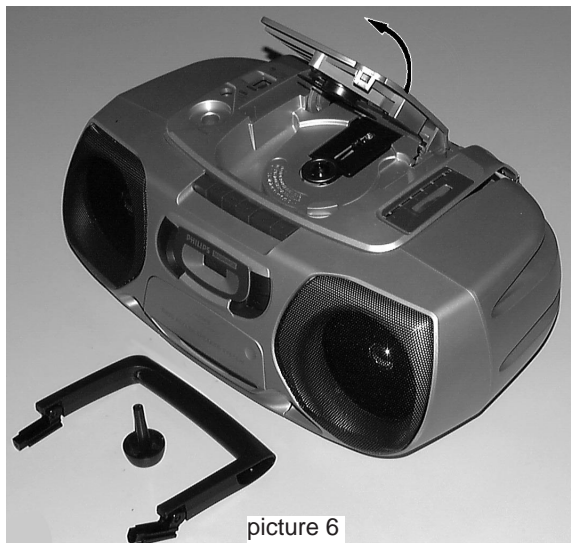
DISMANTLING INSTRUCTIONS

Dismantling the Top Cabinet

- Loosen 6 screws as shown in picture 5.
- Remove handle by pulling it backwards.



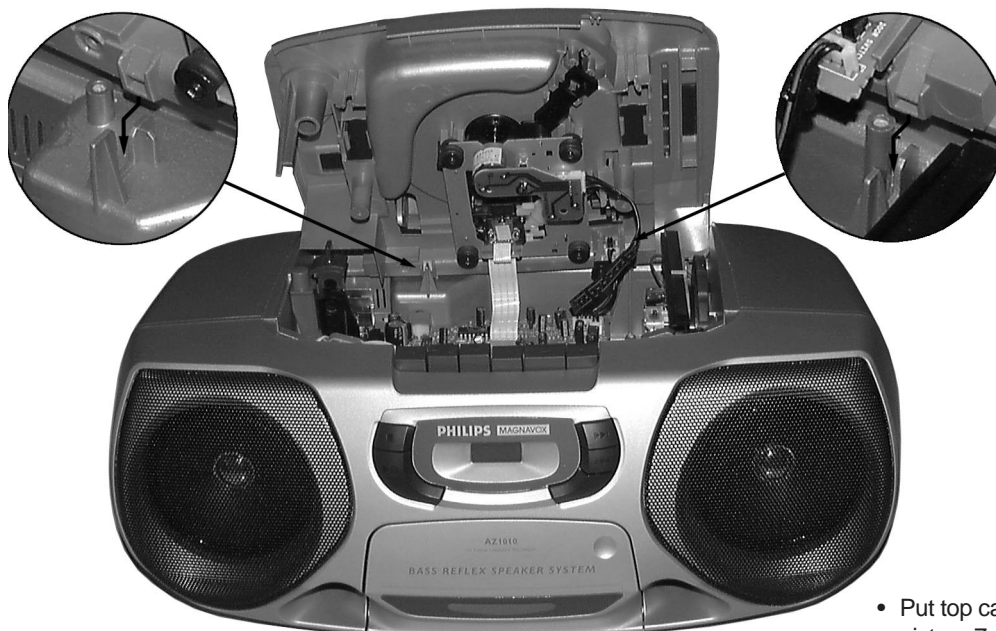
picture 5



picture 6

- Pull volume knob off.
- Pull Top cabinet on rear side up first.
- Move it backwards to release lugs on front side.
- Pull Top cabinet up.

Attention: Take care of flex wire to CD drive!

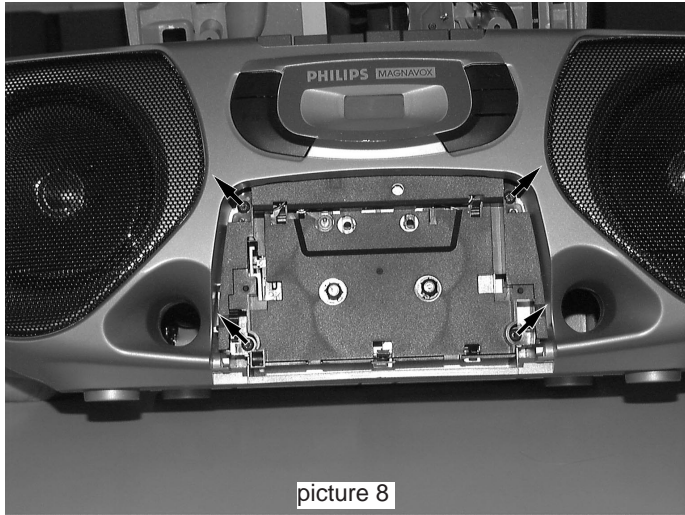


picture 7

- Put top cabinet in rest position as shown in picture 7.

DISMANTLING INSTRUCTIONS

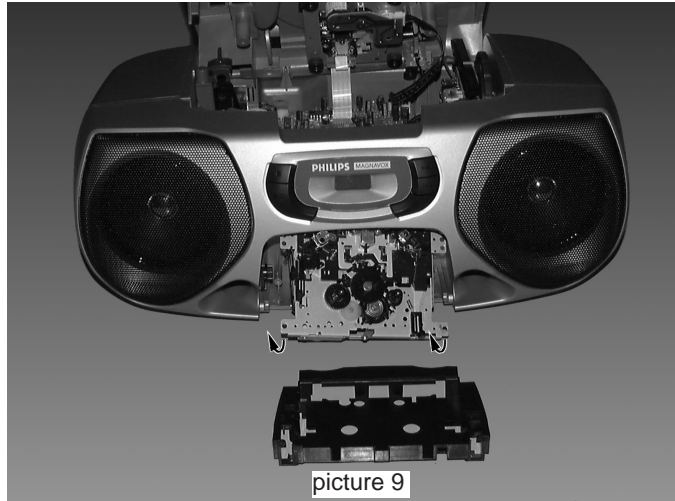
Dismantling of the Tape Transport



picture 8

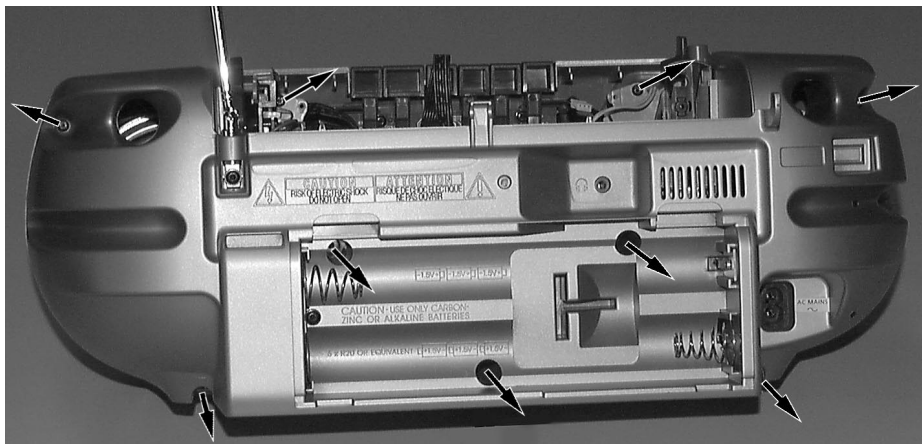
- Dismantle top cabinet as described page before.
- Remove cassette door as described in chapter 3-1.
- Loosen 4 screws as shown in picture 8.
- Put ornamental cover away.
- Fetch tape transport through cassette compartment out as shown in picture 9.

For service position see chapter *SERVICE HINTS*.



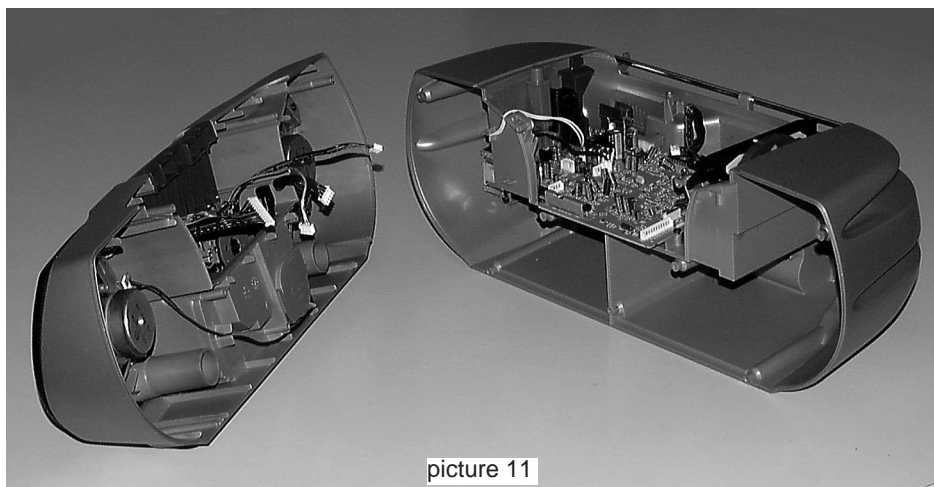
picture 9

Separation Front - Rear Cabinet



picture 10

- Loosen 9 screws as shown in picture 10.
- Plug cables to front-board, tape transport and transformer off.
- Pull front- and rear cabinet apart.



picture 11

SERVICE HINTS

SERVICE TOOLS

TORX T10 screwdriver with shaftlength 150mm	4822 395 50423
TORX screwdriver set SBC 163	4822 295 50145
Audio signal disc SBC 429	4822 397 30184
Playability test disc SBC444	4822 397 30245
Test disc 5 (disc without errors) +	
Test disc 5A (disc with dropout errors, black spots and fingerprints)	
SBC 426/426A	4822 397 30096
Burn in test disc (65 min. 1kHz signal at -30dB level without "pause") ..	4822 397 30155
Universal test cassette Fe SBC 420	4822 397 30071

HANDLING CHIP COMPONENTS

GENERAL

DISMOUNTING

MOUNTING

EXAMPLES

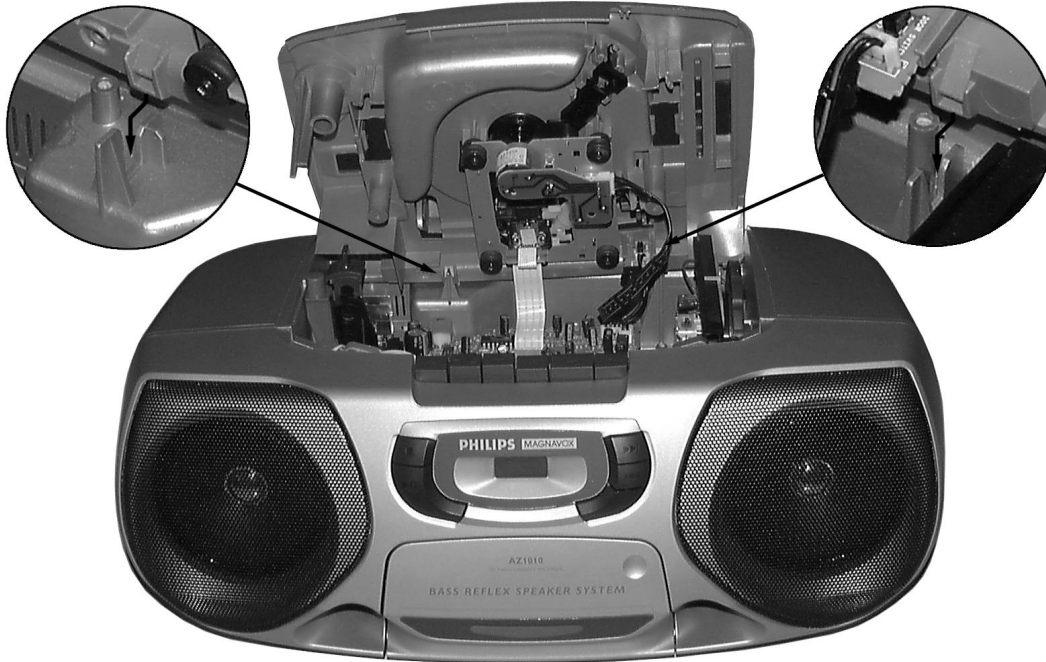
PRECAUTIONS

SERVICE HINTS

General Service position

For repairs on:

- CD failures
- Rec/Pb-amplifier
- Power-amplifier
- Power supply
- Tuner Board

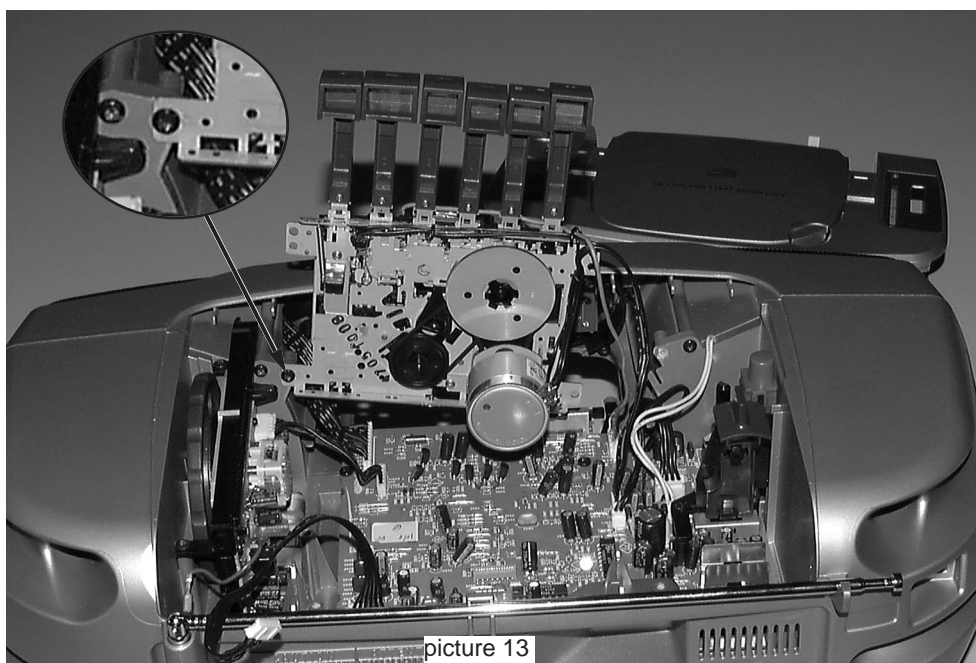


picture 12

Service position Tape Transport

For repairs on the Tape Transport or for adjustment of the tape speed:

- Dismantle tape transport as described in chapter 3-3.
- Fix tape transport on cabinet with one screw as shown in picture 13.
- Connect cables on Combi Board again.

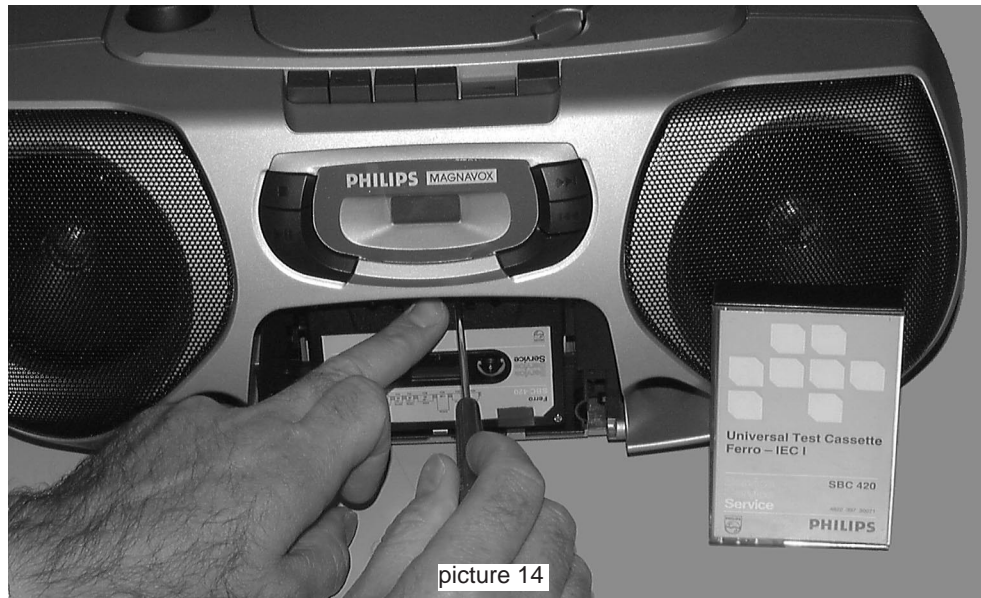


picture 13

SERVICE HINTS

Alignment of AZIMUTH

- Remove cassette door as described in chapter 3-1.
- Insert testcassette SBC420 (4822 397 30071) directly into cassette compartment and play 10kHz part.
- Adjust right hand screw for max. output and left channel = right channel.

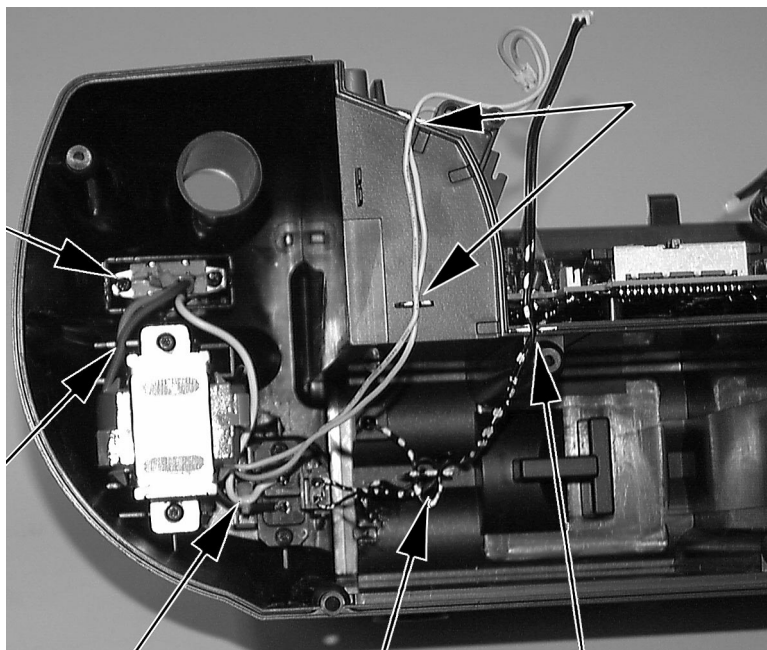


picture 14

Details wire routing of mains transformer

Wire routing has to be carried out as shown in picture 15 in order to:

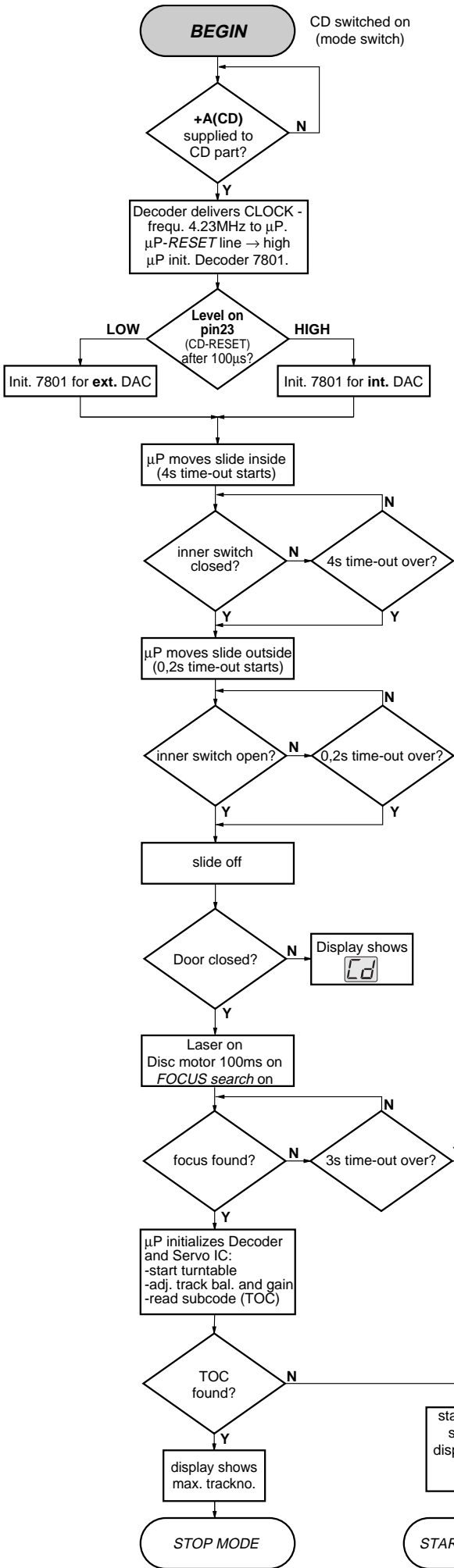
- fulfil safety requirements and
- obtain tight speaker boxes



picture 15

CD STARTUP PROCEDURE

3-7



Remark: To check focus servo, slide servo, track servo and turntable use service test program

-> - Battery empty?
-> - check +A,
-> - mode switch o.k.?

-> check: - +A(CD), +B(CD), +LASER, +M,
-> - time constant of reset circuit
-> - Pin 32 of µP 7800 HIGH ?
-> - Pin 30 of µP 7800, if 4.23 MHz o.k.

.....> check: - door switch

.....> check: - Laser light on ?
 Check pin 38 of 7803 and LASER CONTROL circuit
 - Focus Servo

.....> check: - Motor control pin 27 of Decoder 7801 and Disc Motor driver 7805
 - HF Signal by using service testprogram

SERVO PROCESSOR M62475FP

Pin	Name	Direction	Description
1-3	A, B, C	Diode array → Servo processor	Current input (central photo diode signal input)
4-5	E, F	Diode array → Servo processor	Current input (satellite photo diode signal input)
6	SGT	Servo processor → Track error ampl. input	Signal generator output to track servo, sends 1700Hz for adjustment procedure
7	TE -	-	Inverting input of track error amplifier
8	TEGain	-	Gain control pin of track error amplifier
9	TG1	-	Track Gain 1 - switch: controls the gain of the track servo amplifier
10	TE out	-	Track Error amplifier output
11	TC/Shock	-	Track Cross/Shock detector input
12	TS +	-	Non inverting input of track servo amplifier
13	TG2	not connected	Track Gain 2 - switch: controls the gain of the track servo amplifier
14	TS -	-	Inverting input of track servo amplifier
15	TS out	Servo processor → Servo driver	Output of track servo amplifier
16	SS +	-	Non inverting input of slide servo amplifier
17	SS -	-	Inverting input of slide servo amplifier
18	Slide out	Servo processor → Motor driver	Output of slide servo amplifier
19	DET.FILTER	-	Pin for connection of DETection FILTer capacitor of <i>ADJUST LOGIC</i>
20	BIAS	Servo processor → external electronic	Reference Voltage output $V_{cc}/2$ of internal BIAS-generator
21	GND	-	Ground connection pin (negative supply)
22	MLA/DIS	μP → Servo processor	Serial interface Microprocessor LAtch control / DISCharge control for adjustment
23	JP1/SG	μP → Servo processor	Serial interface Jump control line / Signal Generator input line for adjustment
24	MCK	μP → Servo processor	Serial interface Clock input line
25	MSD	μP → Servo processor	Serial interface Data input line
26	D _{out}	Servo processor → μP	Serial interface Data output line
27	CLPF	-	Pin for connection of Low Pass Filter capacitor for <i>ADJUST LOGIC</i>
28	I _{REF}	-	Reference current input
29	V _{CC}	-	Positive supply connection pin (4V - 5.5V)
30	FS _{OUT}	Servo processor → Servo driver	Output of focus servo amplifier
31	FS -	-	Inverting input of focus servo amplifier
32	FEGain	-	Gain control pin of focus error amplifier
33	FE -	-	Inverting input of focus error amplifier
34	SGF	Servo processor → Focus error ampl. input	Signal generator output to focus servo, sends 1300Hz for adjust. procedure
35	C _{FSR}	-	Charge capacitor for Focus Search triangle-generator
36	ALPC +	-	Non inverting input of Automatic Laser Power Control amplifier
37	ALPC -	-	Inverting input of Automatic Laser Power Control amplifier
38	ALPC _{OUT}	Servo processor → Laser driver	Output of Automatic Laser Power Control amplifier
39	MRC	-	Connection pin for capacitor of Mirror detector
40	HF	Servo processor → Decoder	Output of HF amplifier
41	HFI	-	Inverting input of HF amplifier
42	ABC	-	Sum output of amplified A, B and C input (central photo diode signal input) to external ac-coupling capacitor

SIGNAL PROCESSOR M65824FP

Pin	Name	Direction	Description
1	Anal. V _{SS}	-	Analog system ground
2	ADJCLK	not connected	Clock output for servo adjustment; f=88.2kHz
3	LOCK	not connected	Lock monitor / low disc rotation output
4	CKSEL	-	System clock selection. Low=8.4672MHz, high=16.9344MHz
5	RESET	μP → Signal processor	System reset (low level = active)
6	C423	Signal processor → μP	4.2336MHz clock output
7	C846	not connected	8.4672MHz clock output
8	XI	X-Tal → Signal processor	Crystal oscillator input
9	DVSS	-	Digital system ground
10	XO	Signal processor → X-Tal	Crystal oscillator output
11	TEST	-	Normal / Test selection input. Testmode = high
12	SBCO	not connected	Subcode serial output
13	SCCK	-	Shift clock input for subcode data read
14	SYCLK	not connected	Frame lock status output. Lock = high
15	EFFK	not connected	EFM frame clock output. Duty = 50%
16	KILLB	not connected	Digital silence mute output. Digital zero = low
17	EST1	not connected	Error monitor output 1
18	EST2	not connected	Error monitor output 2
19	HF	Servo processor → Signal processor	HF signal input
20	TLC	-	Slice level control signal output
21	LPF	-	PLL loop filter
22	Dig.V _{DD}	-	Digital interface power supply
23	DSPS	-	Digital system power supply
24	SBQS	not connected	Interrupt signal to read out subcode Q data. Read = low
25	CRCF	not connected	Subcode Q-channel Cyclic Redundance Check Flag output. CRC o.k.=high level
26	SCAND	not connected	Subcode sync signal detection. Sync = high
27	PWM	Signal processor → Motor driver	Disc motor driving (Pulse Width Modulation) output
28	DVDD2	-	Digital interface power supply 2
29	DVSS2	-	Digital system ground2
30	MCK	μP → Signal processor	μP interface shift Clock input
31	MSD	μP ↔ Signal processor	μP interface Serial Data I/O line
32	MLAB	μP → Signal processor	μP interface Latch clock input (internal 22k pull up resistor)
33	EXP1	→ Signal processor	Versatile input pin (internal 4.7k pull up resistor)
34	EXP2	→ Signal processor	Versatile input pin (internal 4.7k pull up resistor)
35	CGREF	→ Signal processor	Charge-pump for LPF reference current input
36	AMPREF	not connected	Op-amp for LPF reference voltage setting
37	L _{OUT} /DO	Signal processor →	Audio signal output (left channel) / Ext. DAC mode: Audio serial data output
38	LNEG	not connected	Charge pump output (left channel) / Ext. DAC mode: Wordclock output
39	R _{OUT} /DSCK	Signal processor →	Audio signal output (right channel) / Ext. DAC mode: Data shift clock output
40	RNEG/LRCK	Signal processor →	Charge pump output (right channel) / Ext. DAC mode: L/R clock output
41	IREF	-	Current reference
42	Anal. V _{DD}	-	Analog System power supply

NOTES

SERVICE TESTPROGRAM

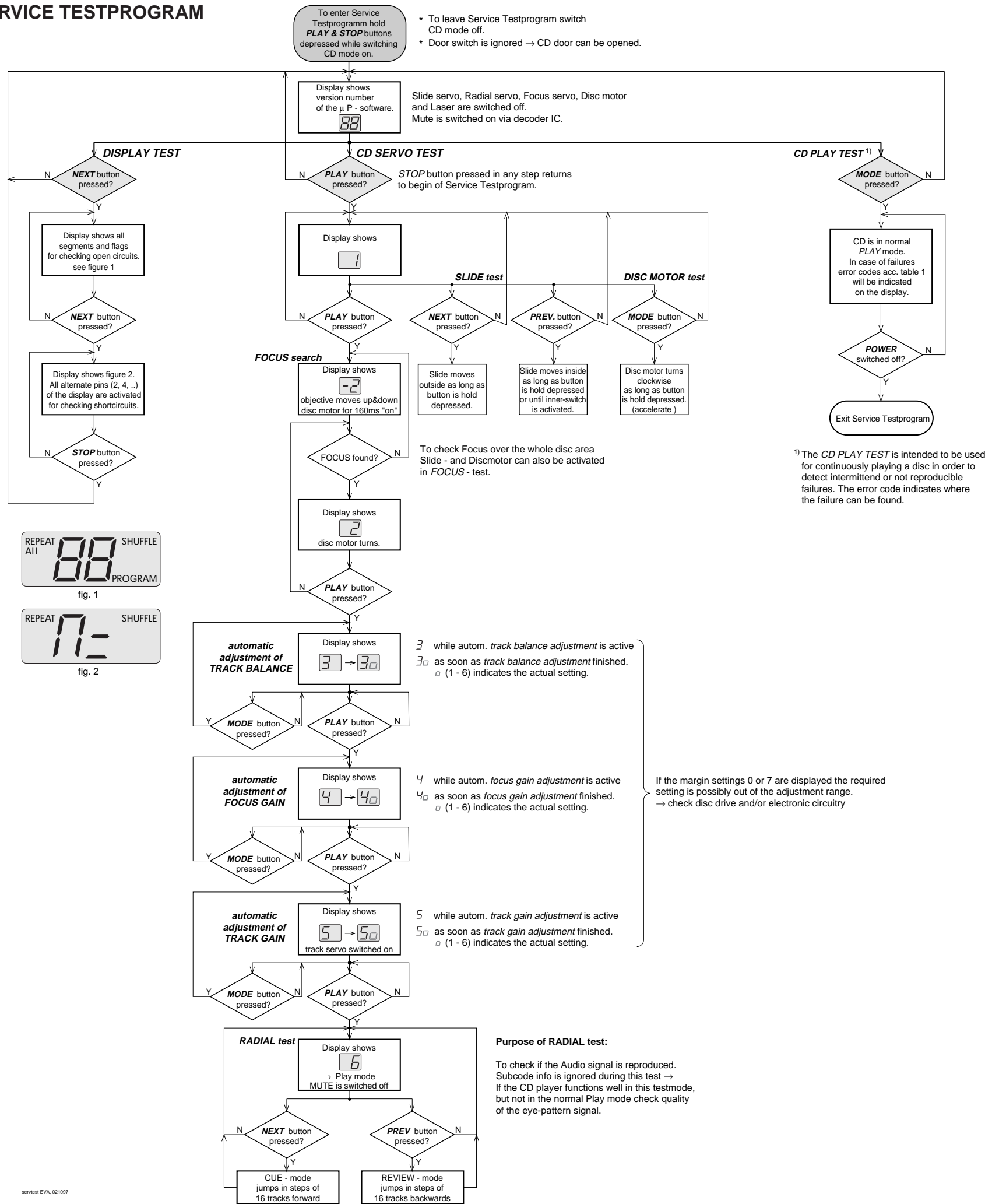


fig. 1



fig. 2

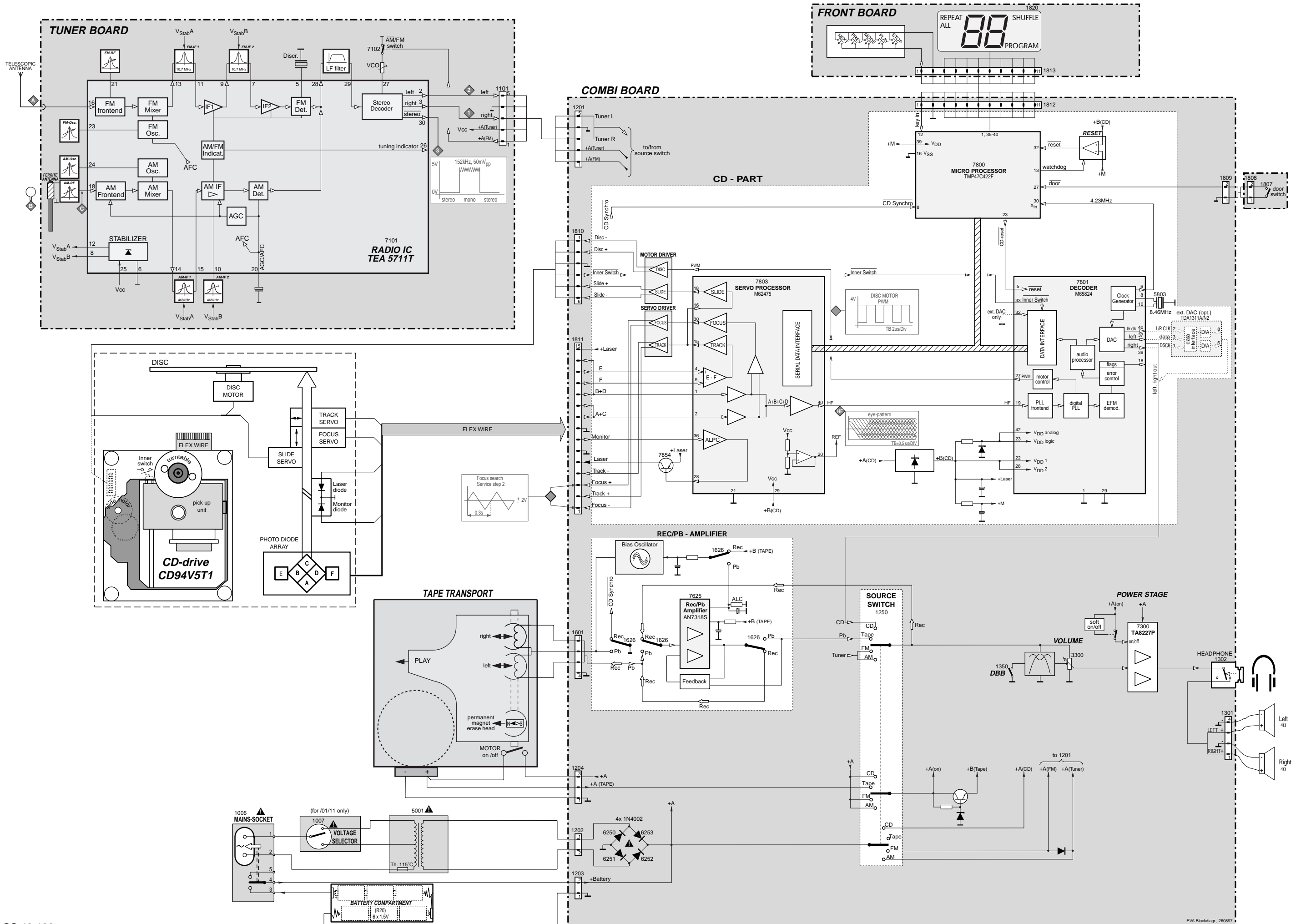
CD ERROR codes

Error number	Error description	Error type
E0	Focus Error Triggered when the focus is lost for more than 250ms during playing the CD.	W
E2	Slide-in error Generated when the inner-switch did not close within approx. 4s when the pick up is moved inside. Inner-switch or slide motor problems.	W
E3	Slide-out error Generated when the inner-switch did not open within approx. 250ms when the pick up is moved from the inner position outside. Inner-switch or slide motor problems.	W
E5	Jump error. Triggered when the servo processor counts too less tracks in a defined time during JUMPS. This can be caused by a disturbed HF-signal (the tracks cannot be recognized exactly), slide motor problems, track servo problems or scratched discs.	W
E6	Subcode Error No valid subcode for 300ms during PLAY.	W
E7	PLL lock error When the PLL did not lock after 10 retries then this warning message is generated and the servo is stopped and restarted (as if the user would have pressed STOP and then PLAY immediately) to recover.	W
F0	Focus Search Error Triggered when the focus could not be found within 3s when starting up the CD.	F
F2	Fatal Subcode Error No valid subcode for more than 4s during PLAY.	F

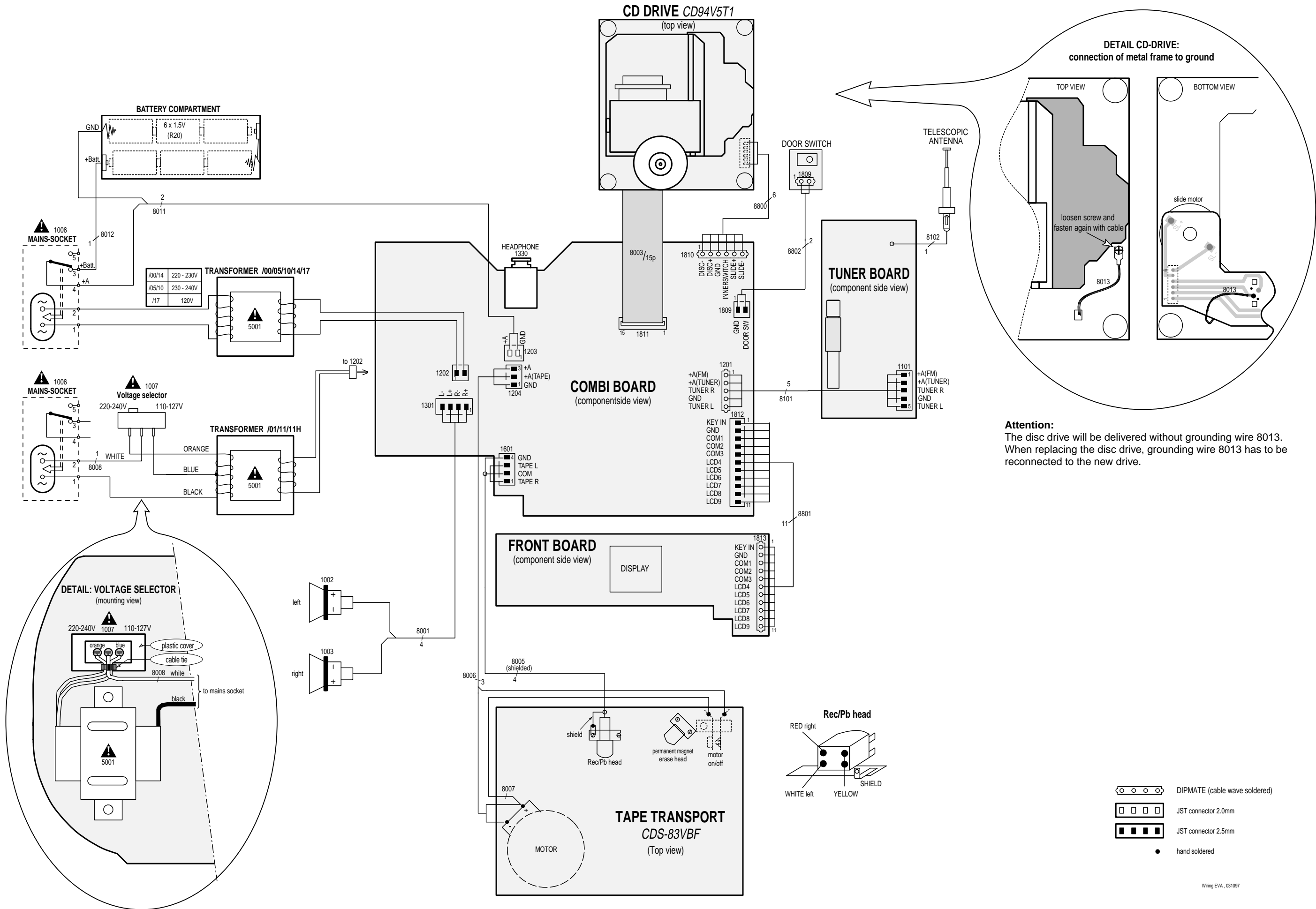
table 1

Error type: W = Warning → set continues operation, message remains on the display until next error occurs or any key is pressed.

F = Fatal Error → set stops operation, message remains on the display. (The set can only be operated again via a reset)

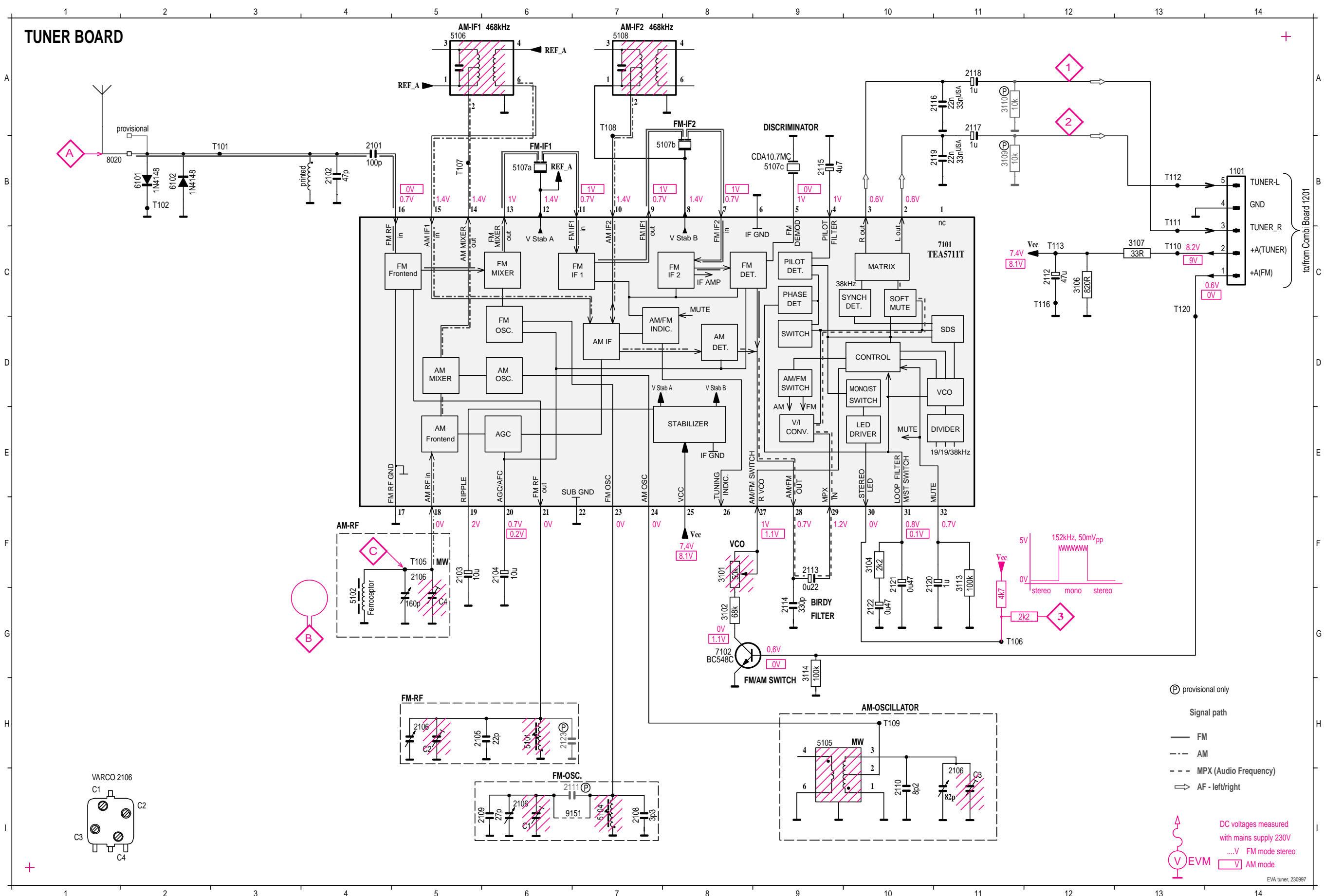


WIRING DIAGRAM



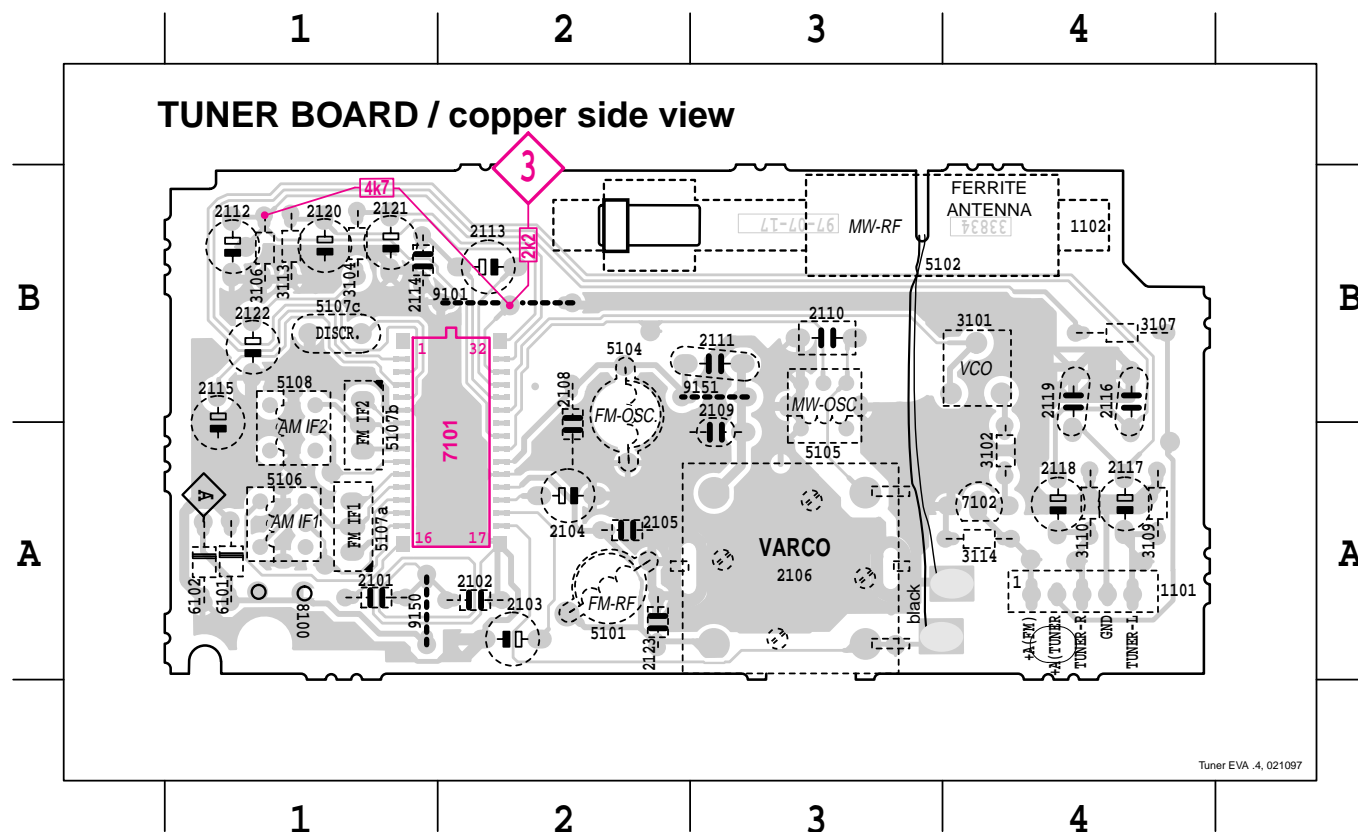
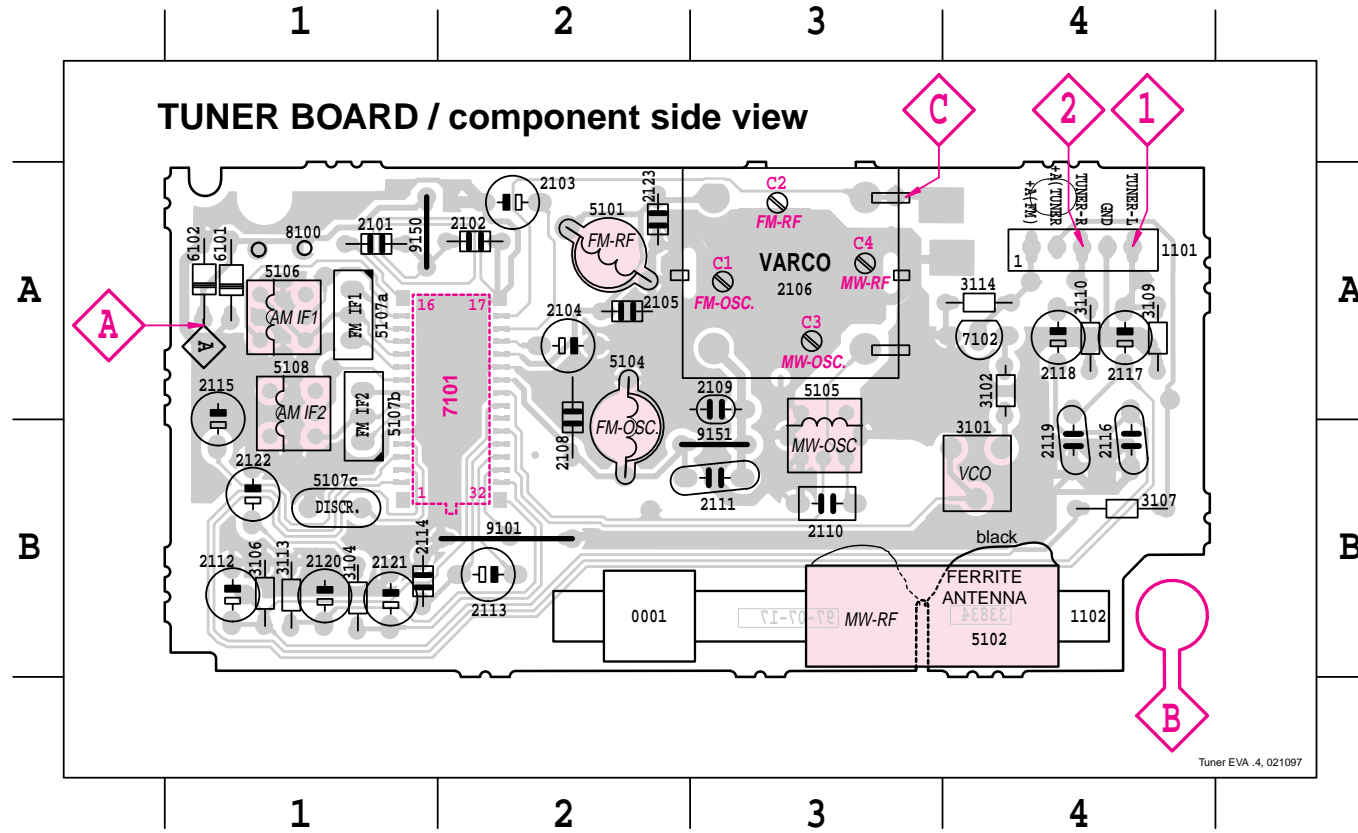
- DIPMATE (cable wave soldered)
- JST connector 2.0mm
- JST connector 2.5mm
- hand soldered

TUNER BOARD



- 1101 B14
- 2101 B 4
- 2102 B 4
- 2103 F 5
- 2104 F 6
- 2105 H 5
- 2106 I 6
- 2106 I11
- 2106 F 5
- 2108 I 7
- 2109 I 6
- 2110 I10
- 2111 I 7
- 2112 C12
- 2113 F 9
- 2114 G 9
- 2115 B 9
- 2116 A11
- 2117 A11
- 2118 A11
- 2119 B11
- 2120 F10
- 2121 F10
- 2122 G10
- 2123 H 6
- 3101 F 8
- 3102 G 8
- 3104 F10
- 3106 C12
- 3107 C13
- 3109 B11
- 3110 A11
- 3113 F11
- 3114 G 9
- 5101 H 6
- 5102 G 4
- 5104 I 7
- 5105 I 9
- 5106 A 5
- 5107a B 6
- 5107b B 8
- 5107c B 9
- 5108 A 7
- 6101 B 2
- 6102 B 2
- 7101 C11
- 7102 G 8
- 9151 I 6

0001 B 2	2104 A 2	2111 B 3	2117 A 4	2123 A 2	3109 A 4	5104 B 2	5108 A 1	9101 B 2
1101 A 4	2105 A 2	2112 B 1	2118 A 4	3101 B 4	3110 A 4	5105 B 3	6101 A 1	9150 A 1
1102 B 4	2106 A 3	2113 B 2	2119 B 4	3102 A 4	3113 B 1	5106 A 1	6102 A 1	9151 B 3
2101 A 1	2108 A 2	2114 B 1	2120 B 1	3104 B 1	3114 A 4	5107a A 1	7101 A 2	
2102 A 2	2109 A 3	2115 A 1	2121 B 1	3106 B 1	5101 A 2	5107b A 1	7102 A 4	
2103 A 2	2110 B 3	2116 B 4	2122 B 1	3107 B 4	5102 B 4	5107c B 1	8100 A 1	

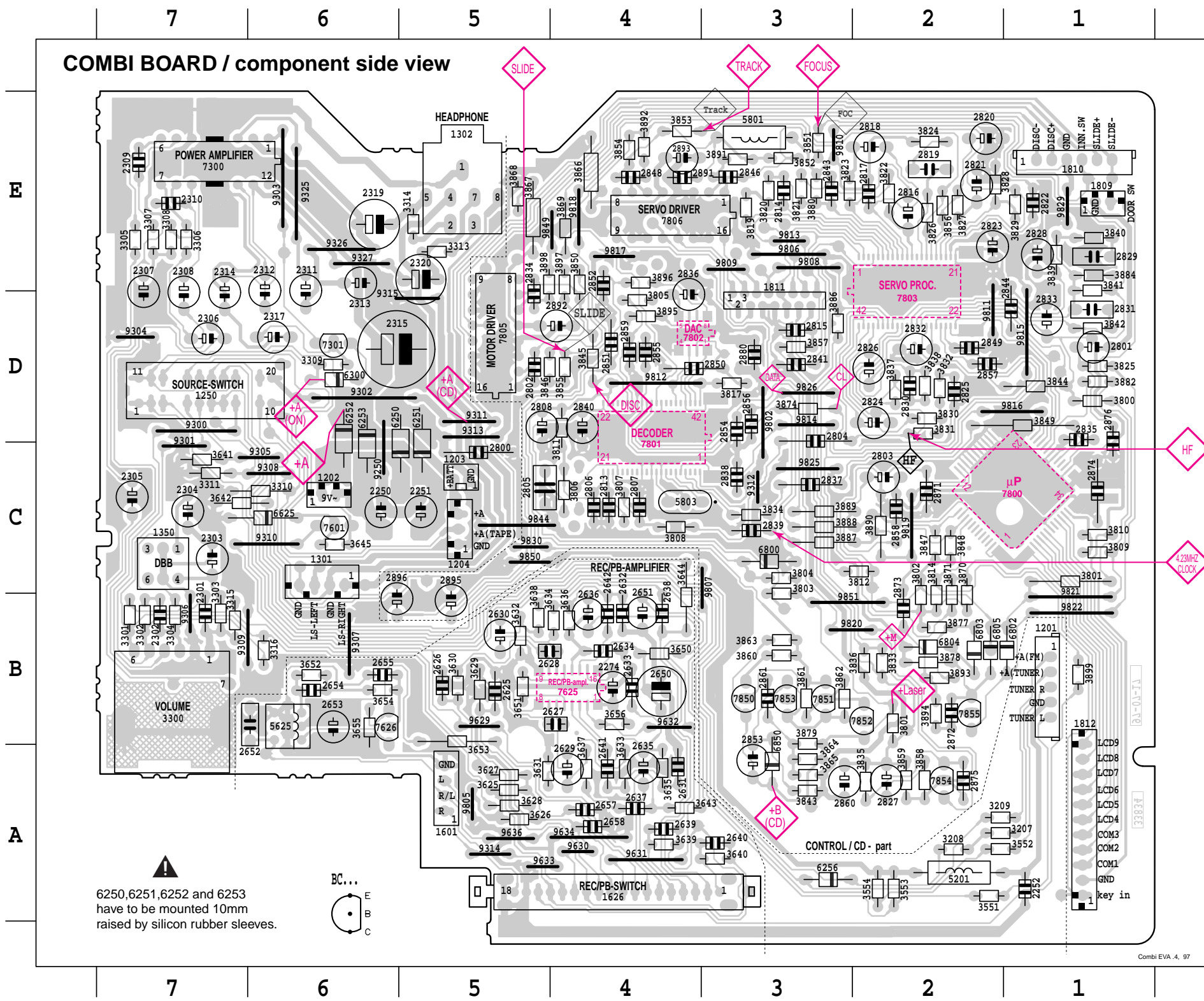


TUNER ADJUSTMENT TABLE

Waverange	Input Frequency	Input	Set tuned to	Adjust	Measure on	Scope / Counter
OSCILLATOR						
FM ¹⁾ 87,5 - 108 MHz	87,35 MHz	A	lower band end	5104	1 or 2	
	108,25 MHz	$\Delta f = \pm 500\text{kHz}$ $V_{RF} = 100\mu\text{V}$	upper band end	2106 C1	1 or 2	
MW 525 - 1607 kHz (530 - 1710 kHz) ²⁾	512 kHz (525 kHz)	C	lower band end	5105	1 or 2	
	1635 kHz (1720 kHz)	$\Delta f = \pm 30\text{kHz}$ $V_{RF} = 100\mu\text{V}$	upper band end	2106 C3	1 or 2	
FM - RF						
FM 87,5 - 108 MHz	87,5 MHz	A	87,5 MHz	5101	1 or 2	
	108 MHz	$\Delta f = \pm 500\text{kHz}$ $V_{RF} = 10\mu\text{V}$	108 MHz	2106 C2	1 or 2	
VCO						
FM	98 MHz	A continuous wave $V_{RF} = 1\text{ mV}$	98 MHz	3101	3	 $152 \pm 1\text{ kHz}$ ³⁾
AM - IF						
MW	468 kHz connect pin 24 of IC 7101 (AM Osc) with short wire to ground	C $\Delta f = \pm 15\text{kHz}$ $V_{RF} = 10\text{mV}$	IC 7101 10 	5106	1 or 2	
			IC 7101 14 	5108	1 or 2	
AM - RF						
MW	560 kHz	B $\Delta f = \pm 30\text{kHz}$ V_{RF} as low as possible	560 kHz	5102 (ferroceptor coil)	1 or 2	
	1500 kHz		1500 kHz	2106 C4	1 or 2	

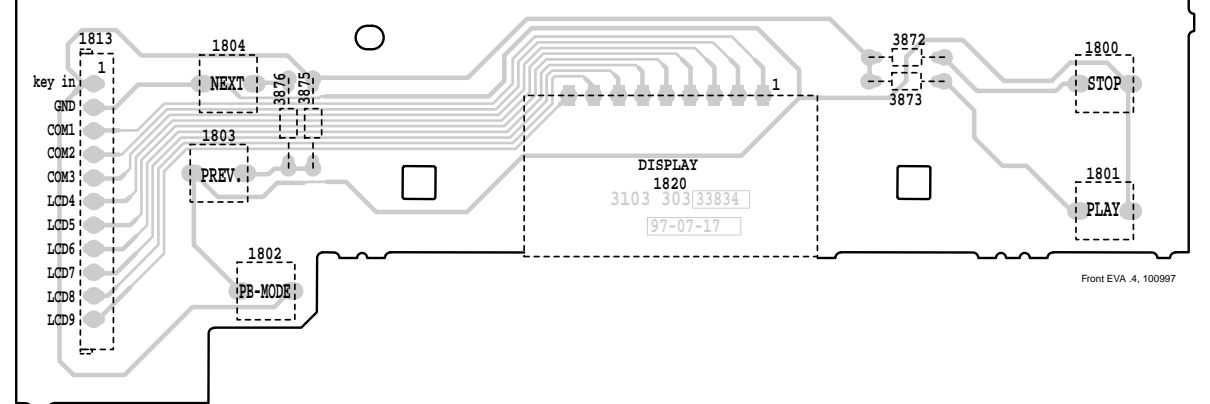
↑ repeat

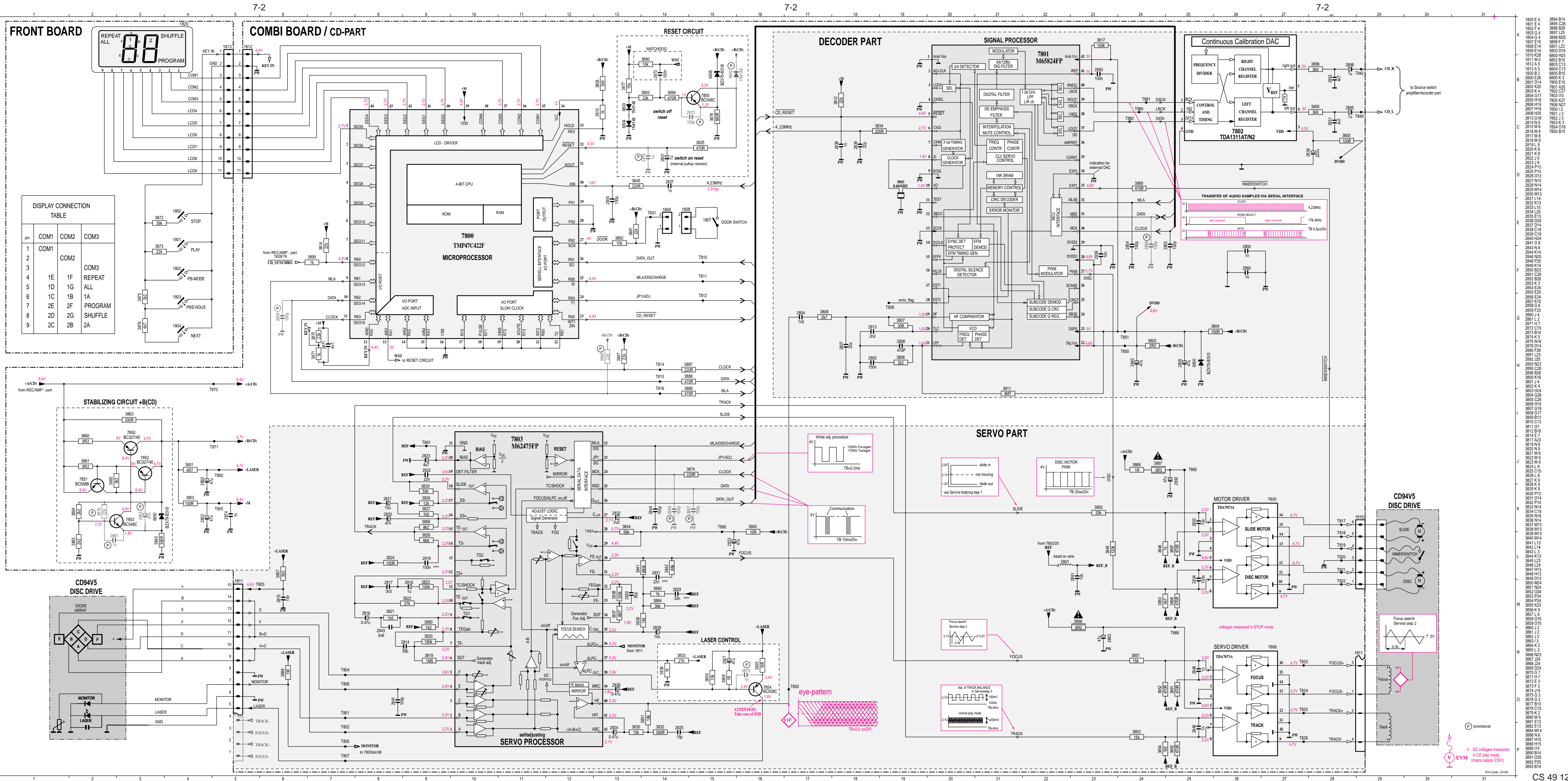
- 1) Check if capacitor 2109 stands upright before starting adjustments.
- 2) for USA /17
- 3) If sensitivity of frequency counter is too low adjust to max. channel separation (input signal: stereo left 90% + 9%, adjust output on right channel to minimum).
- 4) RC-network serves for damping the IF-filter while adjusting the other one.



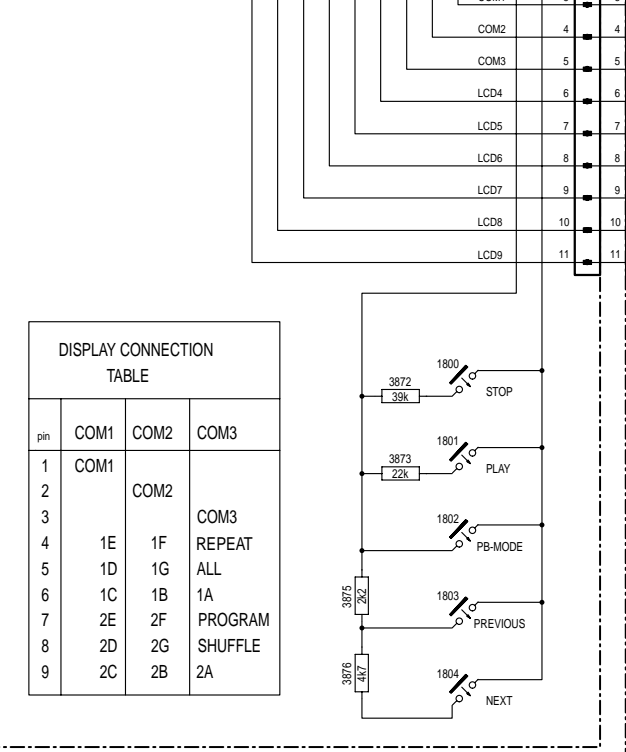
1201 B 1	2815 D 3	3315 B 7	3843 A 3	7800 C 1
1202 C 6	2816 E 2	3316 B 6	3844 D 1	7801 D 4
1203 C 5	2817 E 2	3551 A 2	3845 D 4	7802 D 4
1204 C 5	2818 E 2	3552 A 2	3846 D 5	7803 D 2
1250 D 7	2819 E 2	3553 A 2	3847 C 2	7805 D 5
1301 C 6	2820 E 2	3554 A 2	3848 C 2	7806 E 4
1302 E 5	2821 E 2	3625 A 5	3849 D 1	7850 B 3
1350 C 7	2822 E 1	3626 A 5	3850 E 4	7851 B 3
1601 A 5	2823 E 2	3627 A 5	3851 E 3	7852 B 2
1626 A 4	2824 D 2	3628 A 5	3852 E 3	7853 B 3
1809 E 1	2825 D 2	3629 B 5	3853 E 4	7854 A 2
1810 E 1	2826 D 2	3630 B 5	3854 E 4	7855 B 2
1811 D 3	2827 A 2	3631 A 5	3855 D 4	9250 C 6
1812 A 1	2828 E 1	3632 B 5	3856 E 2	9300 D 7
2250 C 6	2829 E 1	3633 A 4	3857 D 3	9301 C 7
2251 C 5	2830 D 2	3634 B 4	3858 A 2	9302 D 6
2252 A 1	2831 D 1	3635 A 4	3859 A 2	9303 E 6
2274 B 4	2832 D 2	3636 B 4	3860 B 3	9304 D 7
2301 B 7	2833 D 1	3637 A 4	3861 B 3	9305 C 6
2302 B 7	2834 D 5	3638 B 5	3862 B 3	9306 B 7
2303 C 7	2835 D 1	3639 A 4	3863 B 3	9307 B 6
2304 C 7	2836 D 4	3640 A 3	3864 A 3	9308 C 6
2305 C 7	2837 C 3	3641 C 7	3865 A 3	9309 B 6
2306 D 7	2838 C 3	3642 C 7	3866 E 4	9310 C 6
2307 D 7	2839 C 3	3643 A 4	3867 E 5	9311 D 5
2308 D 7	2840 D 4	3644 B 4	3868 E 5	9312 C 3
2309 E 7	2841 D 3	3645 C 6	3869 E 4	9313 D 5
2310 E 7	2843 E 3	3650 A 4	3870 B 2	9314 A 5
2311 E 6	2844 D 1	3651 B 5	3871 B 2	9315 D 5
2312 E 6	2846 E 3	3652 B 6	3874 D 3	9325 E 6
2313 E 6	2848 E 4	3653 B 5	3877 B 2	9326 E 6
2314 D 7	2849 D 2	3654 B 6	3878 B 2	9327 E 6
2315 D 6	2850 D 4	3655 B 6	3879 B 3	9629 B 5
2317 D 6	2851 D 4	3656 B 4	3880 E 3	9630 A 4
2319 E 6	2852 E 4	3800 D 1	3881 C 1	9631 A 4
2320 E 5	2853 A 3	3801 B 2	3882 D 1	9632 B 4
2625 B 5	2854 D 3	3802 B 2	3884 E 1	9633 A 5
2626 B 5	2855 D 4	3803 C 3	3886 D 3	9634 A 4
2627 B 4	2856 D 3	3804 B 3	3887 C 3	9636 A 5
2628 B 5	2857 D 2	3805 D 4	3888 C 3	9802 D 3
2629 A 4	2858 C 2	3806 C 4	3889 C 3	9805 A 5
2630 B 5	2859 D 4	3807 C 4	3890 C 2	9806 E 3
2631 A 4	2860 A 3	3808 C 4	3891 E 3	9807 C 3
2632 B 4	2861 B 3	3809 C 1	3892 E 4	9808 E 3
2633 B 4	2871 C 2	3810 C 1	3893 B 2	9809 E 3
2634 B 4	2872 B 2	3811 D 4	3894 B 2	9810 E 3
2635 A 4	2873 B 2	3812 C 2	3895 D 4	9811 D 2
2636 B 4	2874 C 1	3814 B 2	3896 E 4	9812 D 4
2637 A 4	2875 A 2	3817 D 3	3897 E 4	9813 E 3
2638 B 4	2876 D 1	3819 C 3	3898 E 5	9814 D 3
2639 A 4	2880 D 3	3820 E 3	3899 B 1	9815 D 1
2640 A 3	2891 E 4	3821 E 3	5201 A 2	9816 D 1
2641 A 4	2892 D 4	3822 E 2	5625 B 6	9817 E 4
2642 B 4	2893 E 4	3823 E 3	5801 E 3	9818 E 4
2650 B 4	2895 B 5	3824 E 2	5803 C 4	9819 C 2
2651 B 4	2896 B 6	3825 D 1	6250 C 5	9820 B 3
2652 B 6	3207 A 2	3826 E 2	6251 C 5	9821 B 1
2653 B 6	3208 A 2	3827 E 2	6252 D 6	9822 B 1
2654 B 6	3209 A 2	3828 E 2	6253 C 6	9825 C 3
2655 B 6	3300 B 7	3829 E 1	6256 A 3	9826 D 3
2657 A 4	3301 B 7	3830 D 2	6300 D 6	9829 E 1
2658 A 4	3302 B 7	3831 D 2	6625 C 6	9830 C 5
2800 C 5	3303 B 7	3832 D 2	6800 C 3	9844 C 5
2801 D 1	3304 B 7	3833 B 2	6802 B 1	9849 E 4
2802 D 5	3305 E 7	3834 C 3	6803 B 2	9850 C 5
2803 C 2	3306 E 7	3835 A 2	6804 B 2	9851 B 3
2804 D 3	3307 E 7	3836 B 2	6805 B 2	
2805 C 5	3308 E 7	3837 D 2	6850 A 3	
2806 C 4	3309 D 6	3838 D 2	7300 E 7	
2807 C 4	3310 C 6	3839 E 1	7301 D 6	
2808 D 5	3311 C 7	3840 E 1	7601 C 6	
2813 C 4	3313 E 5	3841 E 1	7625 B 4	
2814 E 3	3314 E 5	3842 D 1	7626 B 6	

FRONT BOARD / copper side view



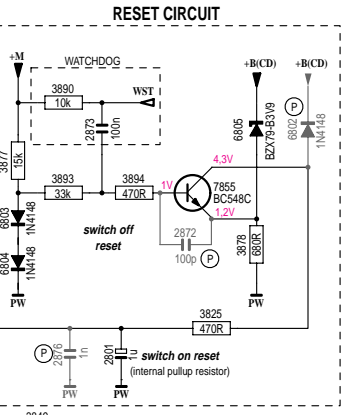
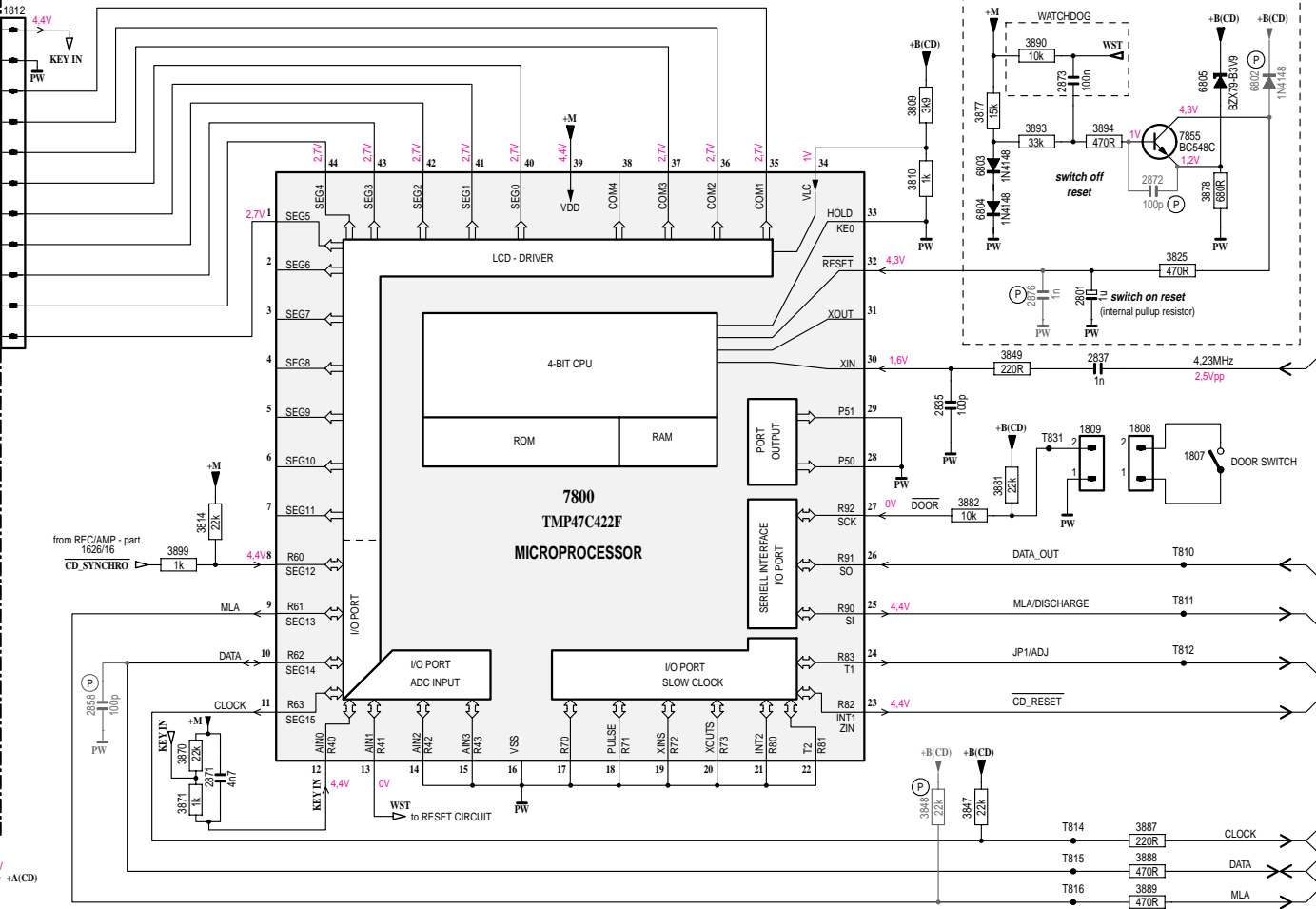


FRONT BOARD

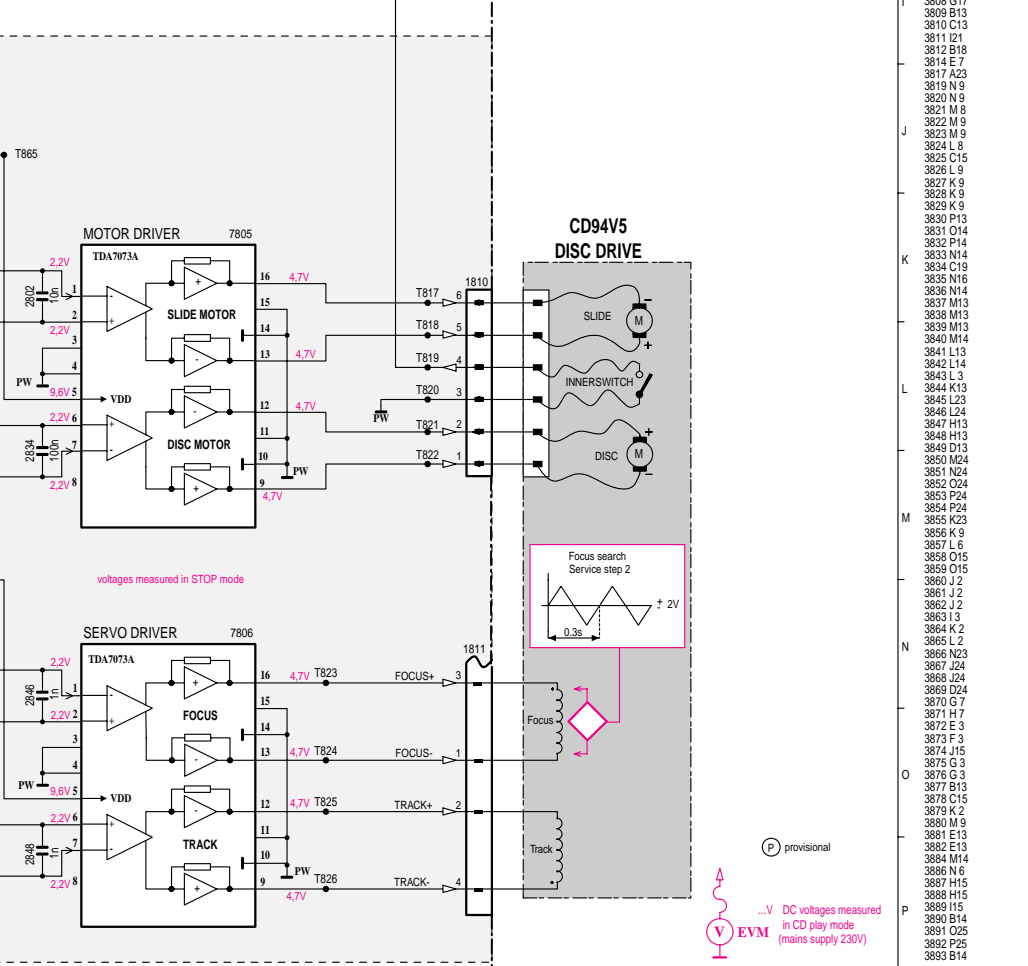
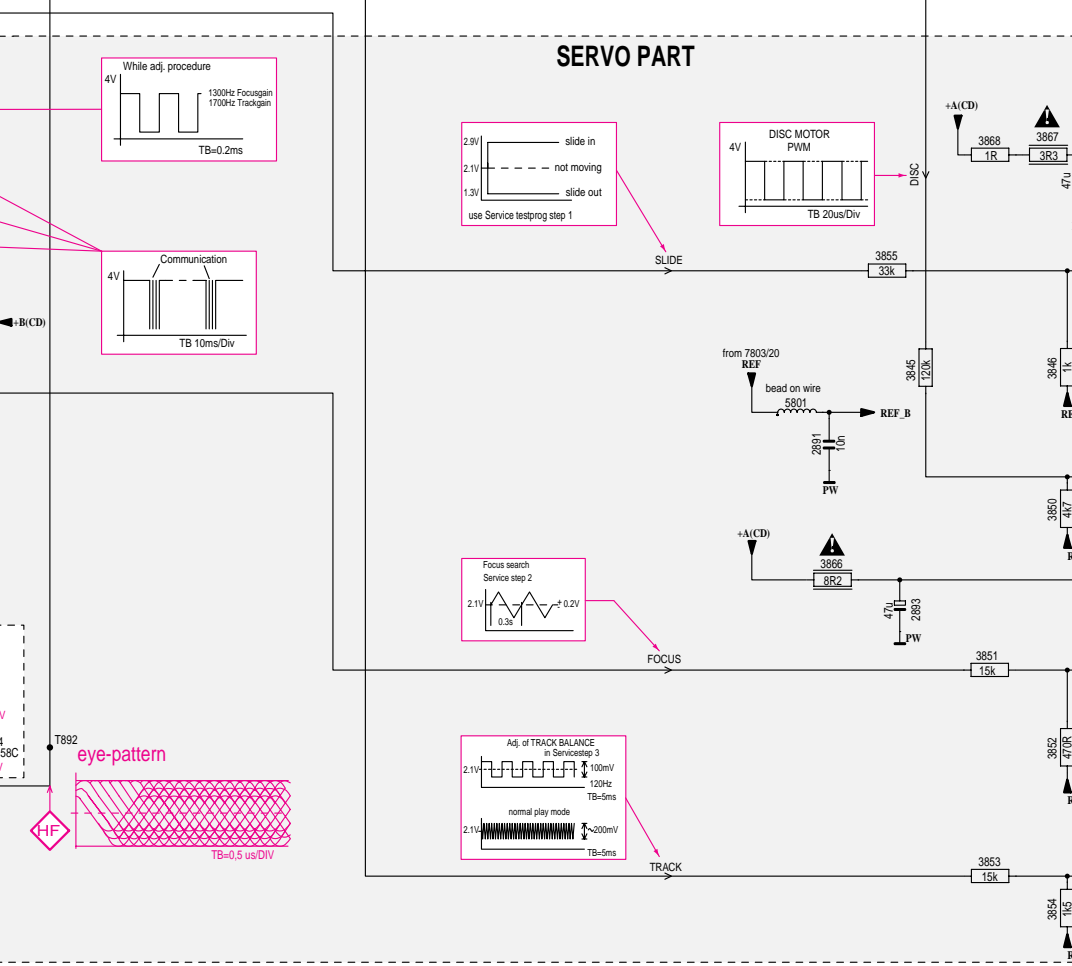
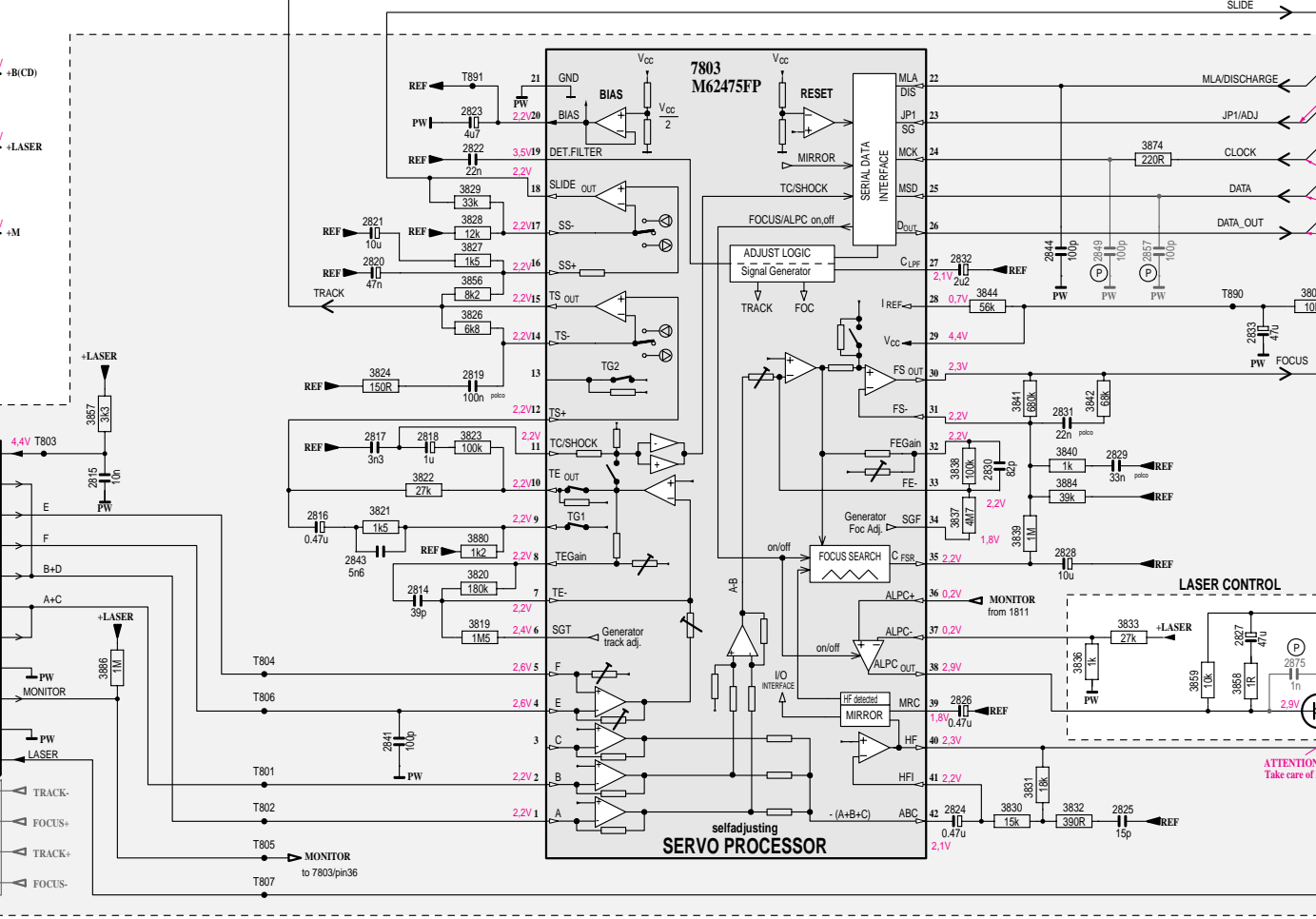
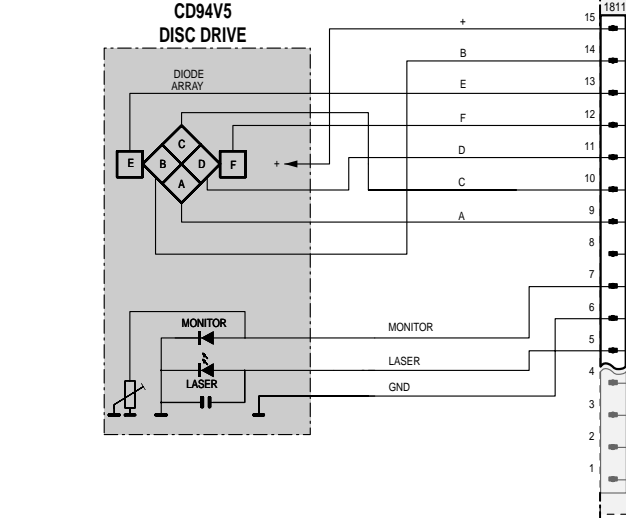
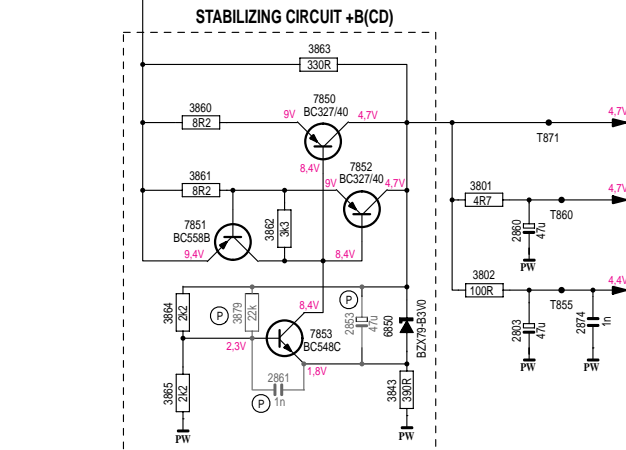
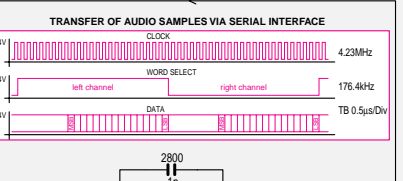
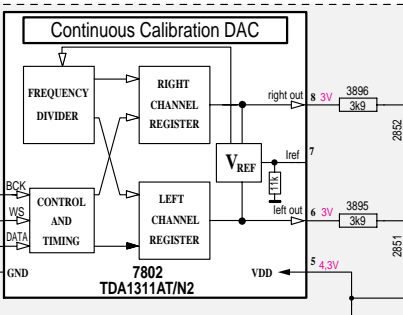
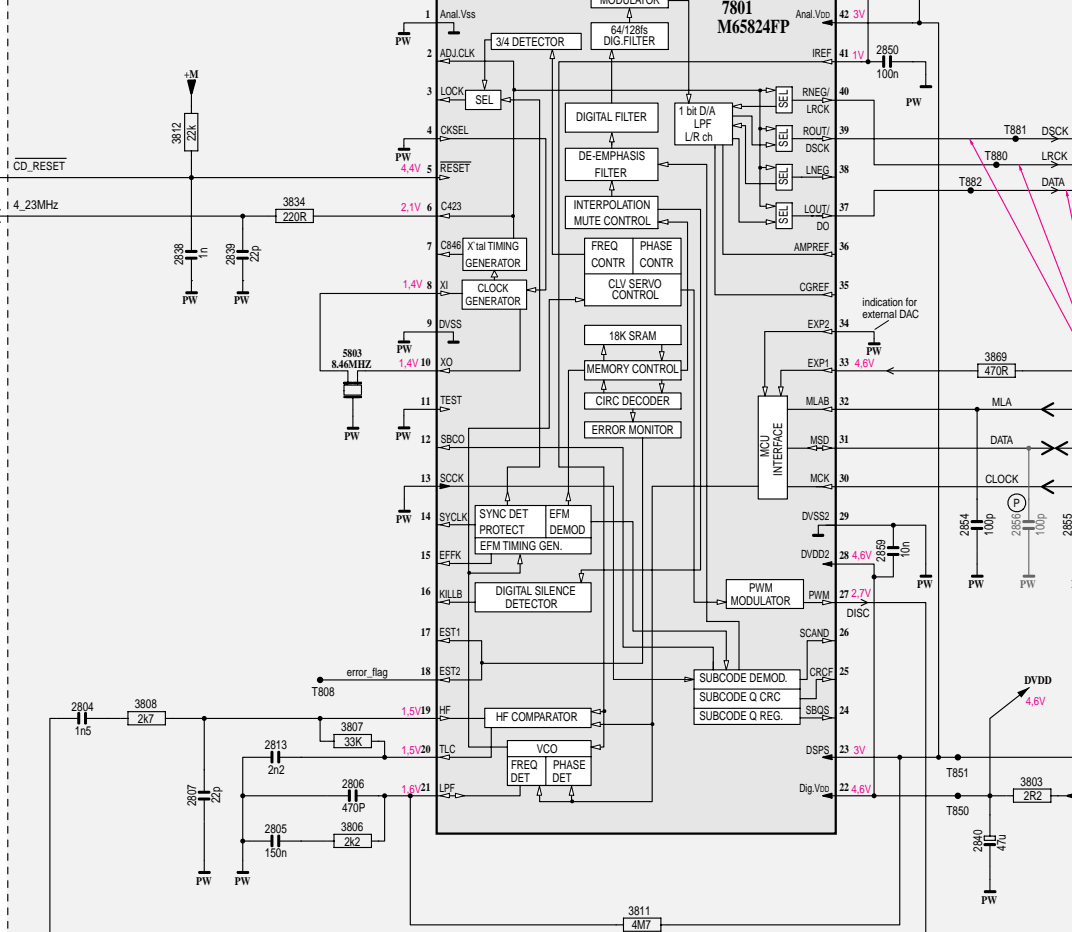


pin	COM1	COM2	COM3
1	COM1		
2		COM2	
3			COM3
4	1E	1F	REPEAT
5	1D	1G	ALL
6	1C	1B	1A
7	2E	2F	PROGRAM
8	2D	2G	SHUFFLE
9	2C	2B	2A

COMBI BOARD / CD-PART



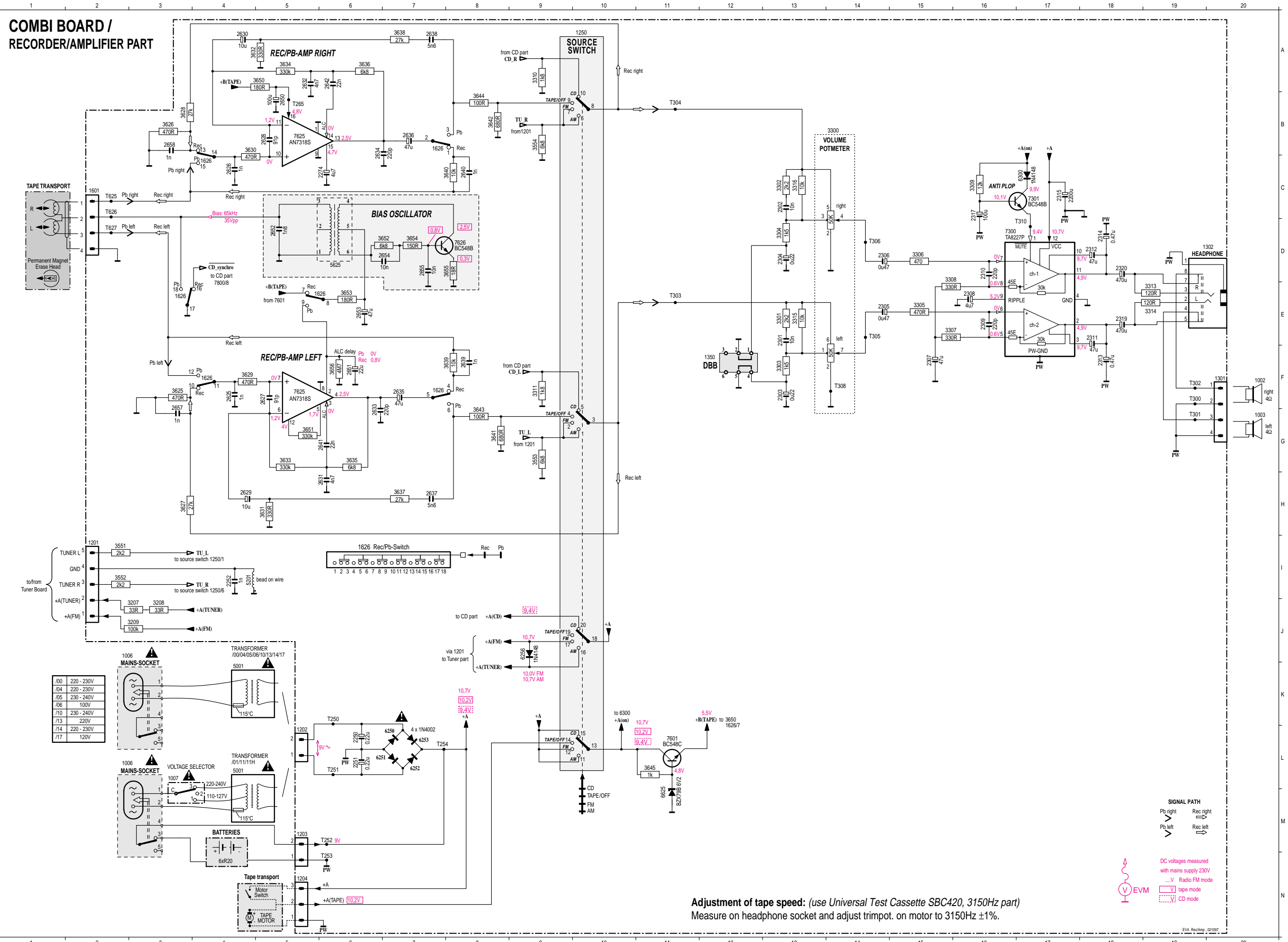
DECODER PART



- 3894 B14
- 1801 E 4
- 3895 C 28
- 1802 G 4
- 3896 B 28
- 1803 G 4
- 3897 L 25
- 1807 E 15
- 3898 M 28
- 1808 E 14
- 5801 L 22
- 1810 K 28
- 6800 H 25
- 1811 M 5
- 7803 D 19
- 1812 A 5
- 6804 C 13
- 1813 A 5
- 7800 E 10
- 2800 E 26
- 6850 K 3
- 2801 D 14
- 7800 E 10
- 2802 K 25
- 7801 A 20
- 2803 A 4
- 7802 C 27
- 2804 G 11
- 7803 D 19
- 2805 H 18
- 7805 K 27
- 2806 H 19
- 7806 N 27
- 2807 H 18
- 7850 J 3
- 2808 M 8
- 2809 M 8
- 2810 M 8
- 2811 M 8
- 2812 M 8
- 2813 M 8
- 2814 M 8
- 2815 M 8
- 2816 M 8
- 2817 M 8
- 2818 M 8
- 2819 L 9
- 2820 L 9
- 2821 K 8
- 2822 L 9
- 2823 L 9
- 2824 P 13
- 2825 P 14
- 2826 O 13
- 2827 M 15
- 2828 N 14
- 2829 M 14
- 2830 M 13
- 2831 L 14
- 2832 M 13
- 2833 L 15
- 2834 L 25
- 2835 L 13
- 2836 D 28
- 2837 D 14
- 2838 C 18
- 2839 C 18
- 2840 M 8
- 2841 O 8
- 2842 A 8
- 2843 K 14
- 2844 K 14
- 2845 M 25
- 2846 M 25
- 2847 F 29
- 2848 K 14
- 2849 K 14
- 2850 G 23
- 2851 C 28
- 2852 K 3
- 2853 K 3
- 2854 E 24
- 2855 E 25
- 2856 E 24
- 2857 M 15
- 2858 G 6
- 2859 F 23
- 2860 L 14
- 2861 L 2
- 2862 L 7
- 2863 C 15
- 2864 K 5
- 2865 N 16
- 2866 D 14
- 2867 F 26
- 2868 L 23
- 2869 L 25
- 2870 L 2
- 2871 L 2
- 2872 C 15
- 2873 B 14
- 2874 K 5
- 2875 N 16
- 2876 D 14
- 2877 F 26
- 2878 L 23
- 2879 L 25
- 2880 F 26
- 2881 C 14
- 2882 L 25
- 2883 N 23
- 2884 C 28
- 2885 B 28
- 2886 K 16
- 2887 M 14
- 2888 K 4
- 2889 K 4
- 2890 K 4
- 2891 K 4
- 2892 K 4
- 2893 K 4
- 2894 G 26
- 2895 C 28
- 2896 H 19
- 2897 G 19
- 2898 G 17
- 2899 B 13
- 2900 C 13
- 2901 C 13
- 2902 L 12
- 2903 L 7
- 2904 A 23
- 2905 N 9
- 2906 M 8
- 2907 M 8
- 2908 M 8
- 2909 M 8
- 2910 M 8
- 2911 M 8
- 2912 M 8
- 2913 M 8
- 2914 M 8
- 2915 M 8
- 2916 M 8
- 2917 M 8
- 2918 M 8
- 2919 M 8
- 2920 M 8
- 2921 M 8
- 2922 M 8
- 2923 M 8
- 2924 M 8
- 2925 M 8
- 2926 M 8
- 2927 M 8
- 2928 M 8
- 2929 M 8
- 2930 M 8
- 2931 M 8
- 2932 M 8
- 2933 M 8
- 2934 M 8
- 2935 M 8
- 2936 M 8
- 2937 M 8
- 2938 M 8
- 2939 M 8
- 2940 M 8
- 2941 M 8
- 2942 M 8
- 2943 M 8
- 2944 M 8
- 2945 M 8
- 2946 M 8
- 2947 M 8
- 2948 M 8
- 2949 M 8
- 2950 M 8
- 2951 M 8
- 2952 M 8
- 2953 M 8
- 2954 M 8
- 2955 M 8
- 2956 M 8
- 2957 M 8
- 2958 M 8
- 2959 M 8
- 2960 M 8
- 2961 M 8
- 2962 M 8
- 2963 M 8
- 2964 M 8
- 2965 M 8
- 2966 M 8
- 2967 M 8
- 2968 M 8
- 2969 M 8
- 2970 M 8
- 2971 M 8
- 2972 M 8
- 2973 M 8
- 2974 M 8
- 2975 M 8
- 2976 M 8
- 2977 M 8
- 2978 M 8
- 2979 M 8
- 2980 M 8
- 2981 M 8
- 2982 M 8
- 2983 M 8
- 2984 M 8
- 2985 M 8
- 2986 M 8
- 2987 M 8
- 2988 M 8
- 2989 M 8
- 2990 M 8
- 2991 M 8
- 2992 M 8
- 2993 M 8
- 2994 M 8
- 2995 M 8
- 2996 M 8
- 2997 M 8
- 2998 M 8
- 2999 M 8
- 3000 M 8

...V DC voltages measured in CD play mode (main supply 230V)

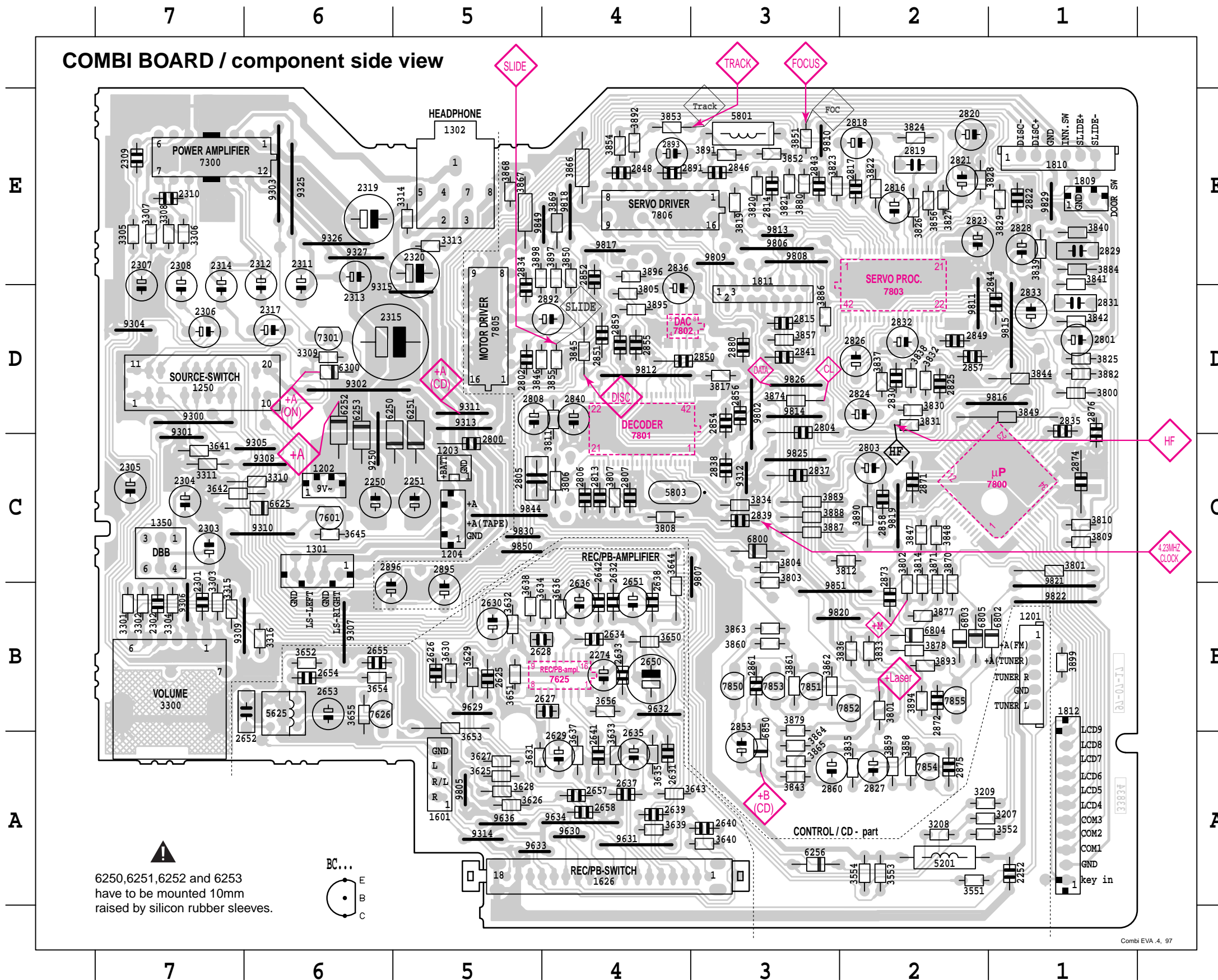
COMBI BOARD / RECORDER/AMPLIFIER PART



Adjustment of tape speed: (use Universal Test Cassette SBC420, 3150Hz part)
 Measure on headphone socket and adjust trimpt. on motor to 3150Hz ±1%.

- 1201 I 2
- 1202 K 5
- 1203 M 5
- 1204 N 5
- 1250 F10
- 1250 B10
- 1250 L10
- 1250 J10
- 1301 G20
- 1302 E19
- 1350 F12
- 1601 C 2
- 1626 B 7
- 1626 F 7
- 1626 E 6
- 1626 F 4
- 1626 C 4
- 1626 E 3
- 2250 L 6
- 2251 L 6
- 2252 I 4
- 2274 C 6
- 2291 E 3
- 2302 C13
- 2303 F13
- 2304 D13
- 2306 E14
- 2307 F15
- 2308 E16
- 2309 E16
- 2310 D16
- 2311 E18
- 2312 D18
- 2313 F18
- 2314 D18
- 2315 C17
- 2317 C16
- 2319 E17
- 2320 D18
- 2625 F 4
- 2626 C 4
- 2627 F 5
- 2628 H 4
- 2629 H 4
- 2630 H 4
- 2631 H 6
- 2632 A 5
- 2633 G 5
- 2634 B 6
- 2635 F 7
- 2636 B 7
- 2637 H 7
- 2638 A 7
- 2639 F 8
- 2641 G 6
- 2642 A 6
- 2643 B 5
- 2651 F 6
- 2652 D 5
- 2653 E 6
- 2654 D 7
- 2657 G 3
- 2658 B 3
- 3207 J 3
- 3208 J 3
- 3209 J 3
- 3300 C14
- 3300 E14
- 3301 L13
- 3302 C13
- 3303 F13
- 3304 D13
- 3306 E15
- 3306 D15
- 3307 E15
- 3308 D15
- 3309 C16
- 3310 A 9
- 3311 F 9
- 3313 E19
- 3314 E19
- 3315 E13
- 3316 C13
- 3551 I 2
- 3552 I 2
- 3553 G 9
- 3554 B 9
- 3625 F 3
- 3626 B 3
- 3627 H 3
- 3628 B 3
- 3629 B 4
- 3631 H 5
- 3632 A 5
- 3633 G 5
- 3634 A 5
- 3635 G 6
- 3636 A 6
- 3637 H 7
- 3638 A 7
- 3639 F 8
- 3641 C 8
- 3641 G 8
- 3642 B 8
- 3644 B 8
- 3644 E 8
- 3645 L11
- 3650 A 5
- 3651 G 5
- 3652 D 7
- 3653 E 6
- 3654 D 7
- 3655 D 8
- 3656 F 6
- 5201 I 4
- 5225 D 6
- 6250 L 7
- 6251 L 6
- 6252 L 7
- 6253 L 7
- 6256 J 9
- 6300 C17
- 6625 M11
- 7300 D16
- 7301 C17
- 7601 L11
- 7625 F 5
- 7626 B 5
- 7626 D 8

COMBI BOARD / component side view

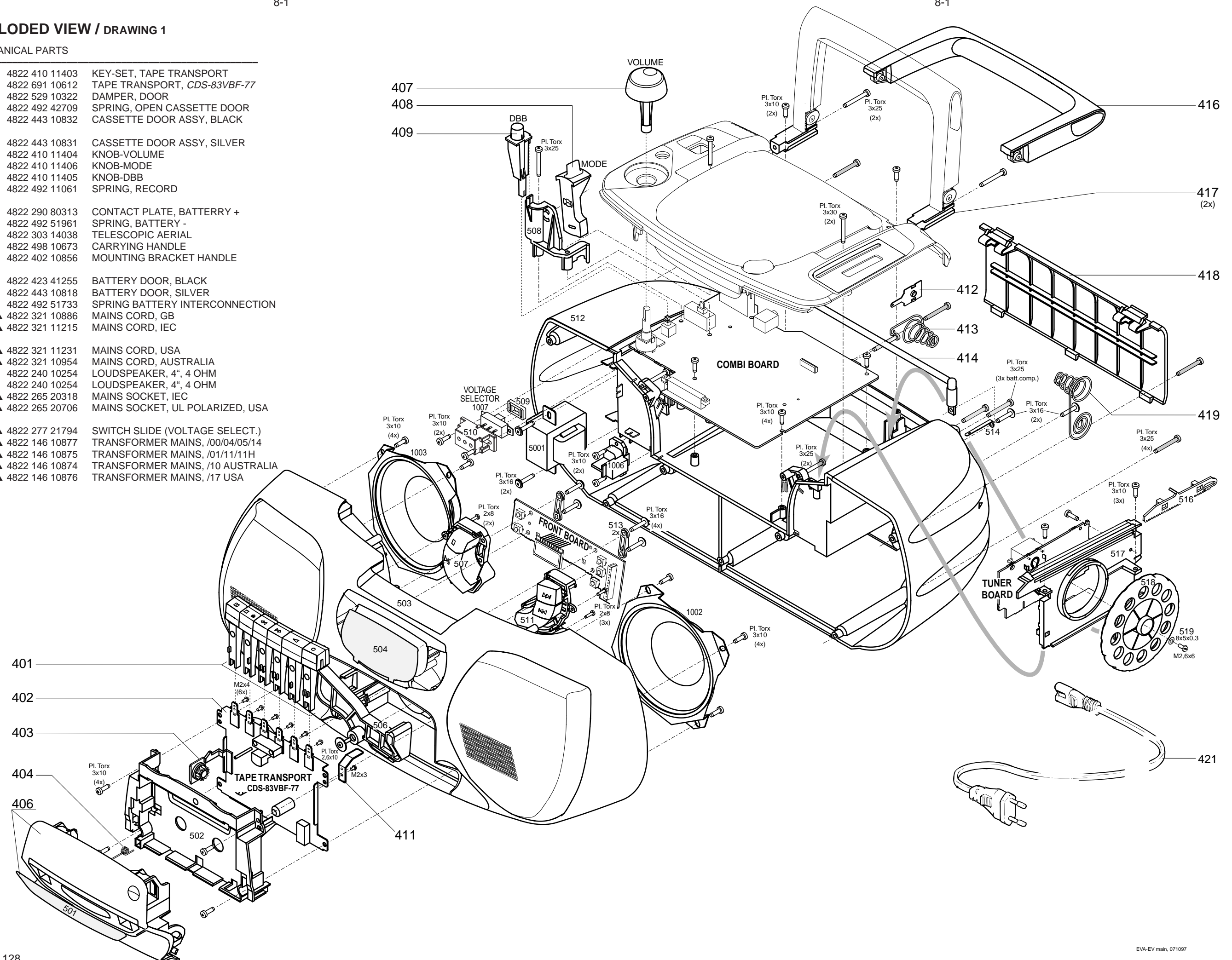


1201 B 1	2815 D 3	3315 B 7	3843 A 3	7800 C 1
1202 C 6	2816 E 2	3316 B 6	3844 D 1	7801 D 4
1203 C 5	2817 E 2	3551 A 2	3845 D 4	7802 D 4
1204 C 5	2818 E 2	3552 A 2	3846 D 5	7803 D 2
1250 D 7	2819 E 2	3553 A 2	3847 C 2	7805 D 5
1301 C 6	2820 E 2	3554 A 2	3848 C 2	7806 E 4
1302 E 5	2821 E 2	3625 A 5	3849 D 1	7850 B 3
1350 C 7	2822 E 1	3626 A 5	3850 E 4	7851 B 3
1601 A 5	2823 E 2	3627 A 5	3851 E 3	7852 B 2
1626 A 4	2824 D 2	3628 A 5	3852 E 3	7853 B 3
1809 E 1	2825 D 2	3629 B 5	3853 E 4	7854 A 2
1810 E 1	2826 D 2	3630 B 5	3854 E 4	7855 B 2
1811 D 3	2827 A 2	3631 A 5	3855 D 4	9250 C 6
1812 A 1	2828 E 1	3632 B 5	3856 E 2	9300 D 7
2250 C 6	2829 E 1	3633 A 4	3857 D 3	9301 C 7
2251 C 5	2830 D 2	3634 B 4	3858 A 2	9302 D 6
2252 A 1	2831 D 1	3635 A 4	3859 A 2	9303 E 6
2274 B 4	2832 D 2	3636 B 4	3860 B 3	9304 D 7
2301 B 7	2833 D 1	3637 A 4	3861 B 3	9305 C 6
2302 B 7	2834 D 5	3638 B 5	3862 B 3	9306 B 7
2303 C 7	2835 D 1	3639 A 4	3863 B 3	9307 B 6
2304 C 7	2836 D 4	3640 A 3	3864 A 3	9308 C 6
2305 C 7	2837 C 3	3641 C 7	3865 A 3	9309 B 6
2306 D 7	2838 C 3	3642 C 7	3866 E 4	9310 C 6
2307 D 7	2839 C 3	3643 A 4	3867 E 5	9311 D 5
2308 D 7	2840 D 4	3644 B 4	3868 E 5	9312 C 3
2309 E 7	2841 D 3	3645 C 6	3869 E 4	9313 D 5
2310 E 7	2843 E 3	3650 B 4	3870 B 2	9314 A 5
2311 E 6	2844 D 1	3651 B 5	3871 B 2	9315 D 5
2312 E 6	2846 C 3	3652 B 6	3874 D 3	9325 E 6
2313 E 6	2848 E 4	3653 B 5	3877 B 2	9326 E 6
2314 D 7	2849 D 2	3654 B 6	3878 B 2	9327 E 6
2315 D 6	2850 D 4	3655 B 6	3879 B 3	9629 B 5
2317 D 6	2851 D 4	3656 B 4	3880 E 3	9630 A 4
2319 E 6	2852 E 4	3800 D 1	3881 C 1	9631 A 4
2320 E 5	2853 A 3	3801 B 2	3882 D 1	9632 B 4
2625 B 5	2854 D 3	3802 B 2	3884 E 1	9633 A 5
2626 B 5	2855 D 4	3803 B 3	3886 D 3	9634 A 4
2627 B 4	2856 D 3	3804 C 3	3887 C 3	9636 A 5
2628 B 5	2857 D 2	3805 D 4	3888 C 3	9802 D 3
2629 A 4	2858 C 2	3806 C 4	3889 C 3	9805 A 5
2630 B 5	2859 D 4	3807 C 4	3890 C 2	9806 E 3
2631 A 4	2860 A 3	3808 C 4	3891 E 3	9807 C 3
2632 B 4	2861 B 3	3809 C 1	3892 E 4	9808 E 3
2633 B 4	2871 C 2	3810 C 1	3893 B 2	9809 E 3
2634 B 4	2872 B 2	3811 D 4	3894 B 2	9810 E 3
2635 A 4	2873 B 2	3812 C 2	3895 D 4	9811 D 2
2636 B 4	2874 C 1	3814 B 2	3896 E 4	9812 D 4
2637 A 4	2875 A 2	3817 D 3	3897 E 4	9813 E 3
2638 B 4	2876 D 1	3819 E 3	3898 E 5	9814 D 3
2639 A 4	2880 D 3	3820 E 3	3899 B 1	9815 D 1
2640 A 3	2891 E 4	3821 E 3	5201 A 2	9816 D 1
2641 A 4	2892 D 4	3822 E 2	5625 B 6	9817 E 4
2642 B 4	2893 E 4	3823 E 3	5801 E 3	9818 E 4
2650 B 4	2895 B 5	3824 E 2	5803 C 4	9819 C 2
2651 B 4	2896 B 6	3825 D 1	6250 C 5	9820 B 3
2652 B 6	3207 A 2	3826 E 2	6251 C 5	9821 B 1
2653 B 6	3208 A 2	3827 E 2	6252 D 6	9822 B 1
2654 B 6	3209 A 2	3828 E 2	6253 C 6	9825 C 3
2655 B 6	3300 B 7	3829 E 1	6256 A 3	9826 D 3
2657 A 4	3301 B 7	3830 D 2	6300 D 6	9829 E 1
2658 A 4	3302 B 7	3831 D 2	6625 C 6	9830 C 5
2800 C 5	3303 B 7	3832 D 2	6800 C 3	9844 C 5
2801 D 1	3304 B 7	3833 B 2	6802 B 1	9849 E 4
2802 D 5	3305 E 7	3834 C 3	6803 B 2	9850 C 5
2803 C 2	3306 E 7	3835 A 2	6804 B 2	9851 B 3
2804 D 3	3307 E 7	3836 B 2	6805 B 2	
2805 C 5	3308 E 7	3837 D 2	6850 A 3	
2806 C 4	3309 D 6	3838 D 2	7300 E 7	
2807 C 4	3310 C 6	3839 E 1	7301 D 6	
2808 D 5	3311 C 7	3840 E 1	7601 C 6	
2813 C 4	3313 E 5	3841 E 1	7625 B 4	
2814 E 3	3314 E 5	3842 D 1	7626 B 6	

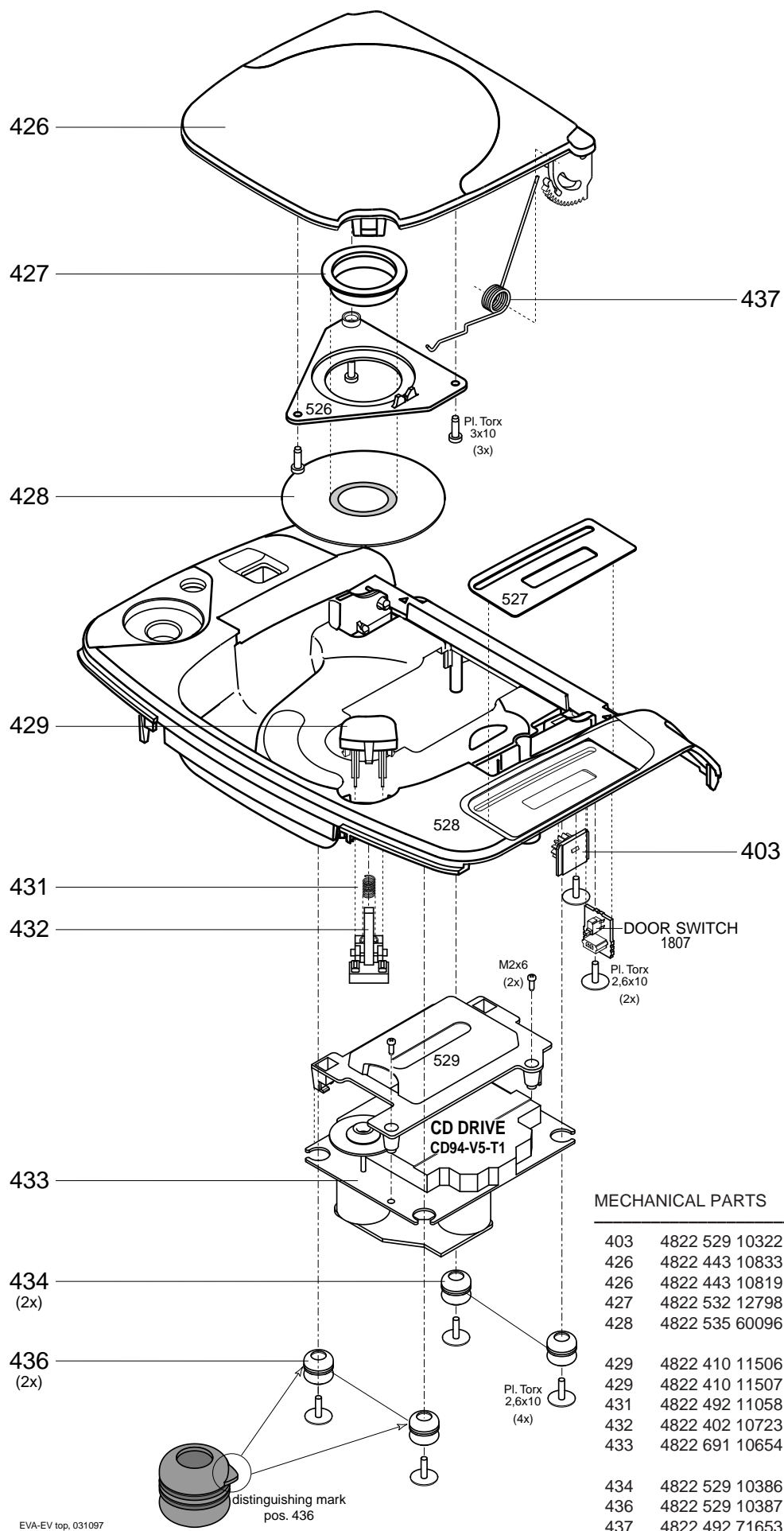
EXPLODED VIEW / DRAWING 1

MECHANICAL PARTS

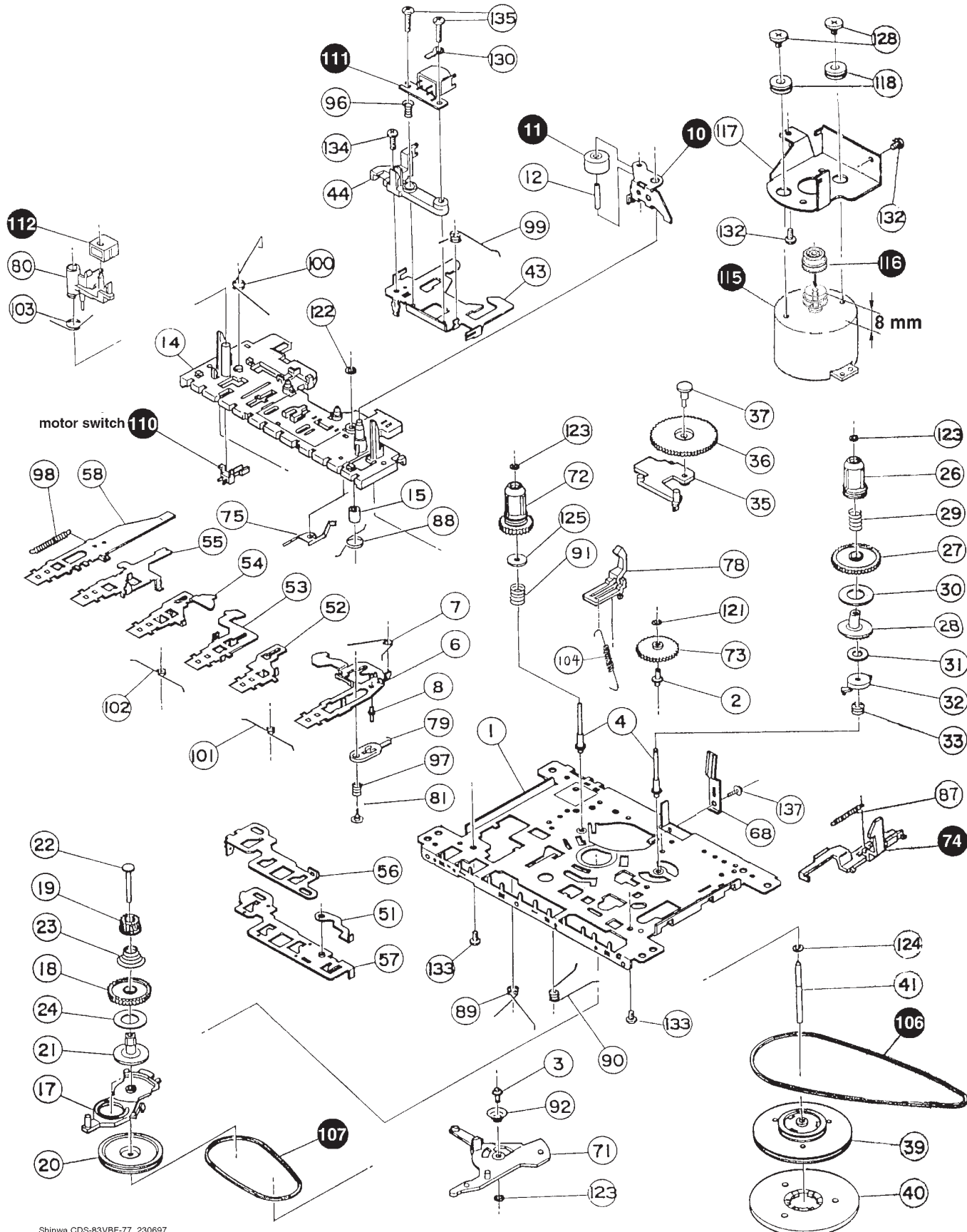
401	4822 410 11403	KEY-SET, TAPE TRANSPORT
402	4822 691 10612	TAPE TRANSPORT, CDS-83VBF-77
403	4822 529 10322	DAMPER, DOOR
404	4822 492 42709	SPRING, OPEN CASSETTE DOOR
406	4822 443 10832	CASSETTE DOOR ASSY, BLACK
406	4822 443 10831	CASSETTE DOOR ASSY, SILVER
407	4822 410 11404	KNOB-VOLUME
408	4822 410 11406	KNOB-MODE
409	4822 410 11405	KNOB-DBB
411	4822 492 11061	SPRING, RECORD
412	4822 290 80313	CONTACT PLATE, BATTERY +
413	4822 492 51961	SPRING, BATTERY -
414	4822 303 14038	TELESCOPIC AERIAL
416	4822 498 10673	CARRYING HANDLE
417	4822 402 10856	MOUNTING BRACKET HANDLE
418	4822 423 41255	BATTERY DOOR, BLACK
418	4822 443 10818	BATTERY DOOR, SILVER
419	4822 492 51733	SPRING BATTERY INTERCONNECTION
421 ▲	4822 321 10886	MAINS CORD, GB
421 ▲	4822 321 11215	MAINS CORD, IEC
421 ▲	4822 321 11231	MAINS CORD, USA
421 ▲	4822 321 10954	MAINS CORD, AUSTRALIA
1002	4822 240 10254	LOUDSPEAKER, 4", 4 OHM
1003	4822 240 10254	LOUDSPEAKER, 4", 4 OHM
1006 ▲	4822 265 20318	MAINS SOCKET, IEC
1006 ▲	4822 265 20706	MAINS SOCKET, UL POLARIZED, USA
1007 ▲	4822 277 21794	SWITCH SLIDE (VOLTAGE SELECT.)
5001 ▲	4822 146 10877	TRANSFORMER MAINS, /00/04/05/14
5001 ▲	4822 146 10875	TRANSFORMER MAINS, /01/11/11H
5001 ▲	4822 146 10874	TRANSFORMER MAINS, /10 AUSTRALIA
5001 ▲	4822 146 10876	TRANSFORMER MAINS, /17 USA



EXPLODED VIEW / DRAWING 2



EXPLODED VIEW TAPE TRANSPORT



Shinwa CDS-83VBF-77, 230697

Only those parts of which a service code number is stated are normal service parts.

4822 691 10612	TAPE TRANSPORT CDS-83VBF-77	110 4822 278 90721	LEAF SWITCH, MOTOR ON/OFF
10 4822 528 70849	PINCH ROLLER ARM	111 4822 249 30218	REC/PB-HEAD, MS18R-AKONI
11 4822 528 70695	PINCH ROLLER ASSY	112 4822 249 40306	ERASE HEAD, TDK6PA
74 4822 403 70968	EJECT HOOK	115 4822 361 21656	MOTOR, EG-530AD-9B
106 4822 358 31325	MAIN BELT	116 4822 528 81497	MOTOR PULLEY
107 4822 358 31124	SUB BELT		

ELECTRICAL PARTSLIST

MECHANICAL PARTS

0001 4822 256 90463 HOLDER FERRITE BAR

MISCELLANEOUS

1250 4822 277 11739 SWITCH SLIDE, MODE
 1302 4822 267 31468 SOCKET HEADPHONE 3,5mm Jack
 1350 4822 276 12648 SWITCH PUSH, DBB
 1626 4822 277 11504 SWITCH SLIDE, REC/PB
 1800 4822 276 13114 TACT SWITCH

1801 4822 276 13114 TACT SWITCH
 1802 4822 276 13114 TACT SWITCH
 1803 4822 276 13114 TACT SWITCH
 1804 4822 276 13114 TACT SWITCH
 1807 4822 276 12889 DOOR SWITCH

1820 4822 135 00151 LCD

CAPACITORS

2101 4822 122 33195 100pF 10% 50V
 2102 4822 122 33848 47pF 5% 50V
 2103 4822 124 40248 10µF 20% 63V
 2104 4822 124 40248 10µF 20% 63V
 2105 4822 122 33191 22pF 5% 50V

2106 4822 125 50681 VARCO TUNING
 2108 4822 126 13508 3p3 10% 50V
 2109 4822 126 13674 27pF 5% N330
 2110 4822 126 12229 8,2pF N750 50V
 2112 4822 124 41397 47µF 20% 25V

2113 4822 126 13581 0,22µF 20% 50V
 2114 4822 126 12787 330pF 10% 50V
 2115 4822 124 40246 4,7µF 20% 63V
 2116 4822 121 43144 22nF 10% 50V
 2116 4822 121 43145 33nF 10% 50V

2117 4822 124 40242 1µF 20% 63V
 2118 4822 124 40242 1µF 20% 63V
 2119 4822 121 43144 22nF 10% 50V
 2119 4822 121 43145 33nF 10% 50V
 2120 4822 124 40242 1µF 20% 63V

2121 4822 124 40239 0,47µF 20% 63V
 2122 4822 124 40239 0,47µF 20% 63V
 2250 4822 124 40746 0,22µF 20% 63V
 2251 4822 124 40746 0,22µF 20% 63V
 2252 4822 122 33197 1nF 10% 50V

2274 4822 124 40246 4,7µF 20% 63V
 2301 4822 121 51387 10nF 20% 16V
 2302 4822 121 51387 10nF 20% 16V
 2303 4822 124 40746 0,22µF 20% 63V
 2304 4822 124 40746 0,22µF 20% 63V

2305 4822 124 41407 0,47µF 20% 63V
 2306 4822 124 41407 0,47µF 20% 63V
 2307 4822 124 40433 47µF 20% 25V
 2308 4822 124 40246 4,7µF 20% 63V
 2309 4822 122 10466 220pF 10% 50V

2310 4822 122 10466 220pF 10% 50V
 2311 4822 124 40433 47µF 20% 25V
 2312 4822 124 40433 47µF 20% 25V
 2313 4822 124 41407 0,47µF 20% 63V
 2314 4822 124 41407 0,47µF 20% 63V

2315 4822 123 14025 2200µF 20% 16V
 2317 4822 124 81029 100µF 20% 25V
 2319 4822 124 41997 470µF 20% 10V
 2320 4822 124 41997 470µF 20% 10V
 2625 4822 122 33197 1nF 10% 50V

2626 4822 122 33197 1nF 10% 50V

CAPACITORS

2627 4822 126 13507 91pF 5% 50V
 2628 4822 126 13507 91pF 5% 50V
 2629 4822 124 41579 10µF 20% 50V
 2630 4822 124 41579 10µF 20% 50V
 2631 4822 126 11714 4,7nF 20% 16V

2632 4822 126 11714 4,7nF 20% 16V
 2633 4822 122 10466 220pF 10% 50V
 2634 4822 122 10466 220pF 10% 50V
 2635 4822 124 40433 47µF 20% 25V
 2636 4822 124 40433 47µF 20% 25V

2637 4822 126 13098 5,6nF 20% 16V
 2638 4822 126 13098 5,6nF 20% 16V
 2639 4822 122 33197 1nF 10% 50V
 2640 4822 122 33197 1nF 10% 50V
 2641 4822 126 11585 22nF 20% 50V

2642 4822 126 11585 22nF 20% 50V
 2650 4822 124 41584 100µF 20% 10V
 2651 4822 124 41596 22µF 20% 50V
 2652 4822 121 43054 1,8nF 10% 50V
 2653 4822 124 40433 47µF 20% 25V

2654 4822 121 51387 10nF 20% 16V
 2655 4822 121 51387 10nF 20% 16V
 2657 4822 122 33197 1nF 10% 50V
 2658 4822 122 33197 1nF 10% 50V
 2800 4822 122 33197 1nF 10% 50V

2801 4822 124 40242 1µF 20% 63V
 2802 4822 121 51387 10nF 20% 16V
 2803 4822 124 40433 47µF 20% 25V
 2804 4822 126 12878 1,5nF 10% 16V
 2805 4822 121 41854 150nF 10% 63V

2806 4822 122 33519 470pF 10% 50V
 2807 4822 122 33191 22pF 5% 50V
 2808 4822 124 40433 47µF 20% 25V
 2813 4822 126 12339 2,2nF 10% 16V
 2814 4822 126 13677 39pF 5% 50V

2815 4822 121 51387 10nF 20% 16V
 2816 4822 124 41407 0,47µF 20% 63V
 2817 4822 122 10577 3,3nF 10% 16V
 2818 4822 124 40242 1µF 20% 63V
 2819 5322 121 42386 100nF 5% 63V

2820 4822 121 43526 47nF 5% 100V
 2821 4822 124 41579 10µF 20% 50V
 2822 4822 126 11585 22nF 20% 50V
 2823 4822 124 40246 4,7µF 20% 63V
 2824 4822 124 41407 0,47µF 20% 63V

2825 4822 122 10462 15pF 5% 50V
 2826 4822 124 41407 0,47µF 20% 63V
 2827 4822 124 40433 47µF 20% 25V
 2828 4822 124 41579 10µF 20% 50V
 2829 5322 121 42489 33nF 5% 100V

2830 4822 122 10319 82pF 5% 50V
 2831 4822 121 41856 22nF 5% 250V
 2832 4822 124 41576 2,2µF 20% 50V
 2833 4822 124 40433 47µF 20% 25V
 2834 4822 126 12882 100nF 20% 50V

2835 4822 122 33195 100pF 10% 50V
 2836 4822 124 12068 220µF 20% 10V
 2837 4822 122 33197 1nF 10% 50V
 2838 4822 122 33197 1nF 10% 50V
 2839 4822 122 33191 22pF 5% 50V

2840 4822 124 40433 47µF 20% 25V
 2841 4822 122 33195 100pF 10% 50V
 2843 4822 126 13098 5,6nF 20% 16V

ELECTRICAL PARTSLIST

CAPACITORS

2844	4822 122 33195	100pF	10%	50V
2846	4822 122 33197	1nF	10%	50V
2848	4822 122 33197	1nF	10%	50V
2850	4822 126 12882	100nF	20%	50V
2851	4822 126 11714	4,7nF	20%	

2852	4822 126 11714	4,7nF	20%	
2854	4822 122 33195	100pF	10%	50V
2855	4822 122 33195	100pF	10%	50V
2856	4822 122 33195	100pF	10%	50V
2859	4822 121 51387	10nF	20%	16V

2860	4822 124 40433	47μF	20%	25V
2871	4822 126 11714	4,7nF	20%	
2873	4822 126 12882	100nF	20%	50V
2874	4822 122 33197	1nF	10%	50V
2880	4822 122 33197	1nF	10%	50V

2891	4822 121 51387	10nF	20%	16V
2892	4822 124 40433	47μF	20%	25V
2893	4822 124 40433	47μF	20%	25V
2895	4822 124 40242	1μF	20%	63V
2896	4822 124 40242	1μF	20%	63V

RESISTORS

3101	4822 100 20167	50kΩ TRIMPOT.	LIN.	
3102	4822 116 52297	68kΩ	5%	0,5W
3104	4822 116 52256	2,2kΩ	5%	0,16W
3106	4822 116 52231	820Ω	5%	0,5W
3107	4822 116 52191	33Ω	5%	0,5W

3113	4822 116 52234	100kΩ	5%	0,5W
3114	4822 116 52234	100kΩ	5%	0,5W
3207	4822 116 52191	33Ω	5%	0,5W
3208	4822 116 52191	33Ω	5%	0,5W
3209	4822 116 52234	100kΩ	5%	0,5W

2x50kΩ LIN., VOLUME POTMETER

3300	4822 101 11826	2x50kΩ LIN.,	VOLUME POTMETER	
3301	4822 116 52256	2,2kΩ	5%	0,16W
3302	4822 116 52256	2,2kΩ	5%	0,16W
3303	4822 116 52243	1,5kΩ	5%	0,16W
3304	4822 116 52243	1,5kΩ	5%	0,16W

3305	4822 116 83883	470Ω	5%	0,16W
3306	4822 116 83883	470Ω	5%	0,16W
3307	4822 116 52219	330Ω	5%	0,5W
3308	4822 116 52219	330Ω	5%	0,5W
3309	4822 116 52238	12kΩ	5%	0,5W

3310	4822 116 52249	1,8kΩ	5%	0,16W
3311	4822 116 52249	1,8kΩ	5%	0,16W
3313	4822 116 52206	120Ω	5%	0,5W
3314	4822 116 52206	120Ω	5%	0,5W
3315	4822 116 83864	10kΩ	5%	0,5W

3316	4822 116 83864	10kΩ	5%	0,5W
3551	4822 116 52256	2,2kΩ	5%	0,16W
3552	4822 116 52256	2,2kΩ	5%	0,16W
3553	4822 116 83961	6,8kΩ	5%	0,16W
3554	4822 116 83961	6,8kΩ	5%	0,16W

3625	4822 116 83883	470Ω	5%	0,16W
3626	4822 116 83883	470Ω	5%	0,16W
3627	4822 116 52264	27kΩ	5%	0,5W
3628	4822 116 52264	27kΩ	5%	0,5W
3629	4822 116 83883	470Ω	5%	0,16W

3630	4822 116 83883	470Ω	5%	0,16W
3631	4822 116 52219	330Ω	5%	0,5W
3632	4822 116 52219	330Ω	5%	0,5W
3633	4822 116 52272	330kΩ	5%	0,5W
3634	4822 116 52272	330kΩ	5%	0,5W

3635	4822 116 83961	6,8kΩ	5%	0,16W
3636	4822 116 83961	6,8kΩ	5%	0,16W

RESISTORS

3637	4822 116 52264	27kΩ	5%	0,5W
3638	4822 116 52264	27kΩ	5%	0,5W
3639	4822 116 83864	10kΩ	5%	0,5W
3640	4822 116 83864	10kΩ	5%	0,5W
3641	4822 116 52228	680Ω	5%	0,5W

3642	4822 116 52228	680Ω	5%	0,5W
3643	4822 116 52175	100Ω	5%	0,5W
3644	4822 116 52175	100Ω	5%	0,5W
3645	4822 050 11002	1kΩ	5%	0,2W
3650	4822 116 52213	180Ω	5%	0,5W

3651	4822 116 52272	330kΩ	5%	0,5W
3652	4822 116 83961	6,8kΩ	5%	0,16W
3653	4822 116 52213	180Ω	5%	0,5W
3654	4822 116 83868	150Ω	5%	0,5W
3655	4822 116 52184	18Ω	5%	0,5W

3656	4822 111 30893	4,7MΩ	5%	0,2W
3800	4822 116 52176	10Ω	5%	0,5W
3801	4822 050 24708	4,7Ω	1%	0,6W
3802	4822 116 52175	100Ω	5%	0,5W
3803	4822 116 81154	2,2Ω	5%	0,5W

3804	4822 116 83868	150Ω	5%	0,5W
3805	4822 116 52175	100Ω	5%	0,5W
3806	4822 116 52256	2,2kΩ	5%	0,16W
3807	4822 116 52271	33kΩ	5%	0,16W
3808	4822 116 52263	2,7kΩ	5%	0,5W

3809	4822 116 52276	3,9kΩ	5%	0,5W
3810	4822 050 11002	1kΩ	5%	0,2W
3811	4822 111 30893	4,7MΩ	5%	0,2W
3812	4822 116 52257	22kΩ	5%	0,5W
3814	4822 116 52257	22kΩ	5%	0,5W

3817	4822 116 52234	100kΩ	5%	0,5W
3819	4822 117 11825	1,5MΩ	5%	0,4W
3820	4822 116 52252	180kΩ	5%	0,5W
3821	4822 116 52243	1,5kΩ	5%	0,16W
3822	4822 116 52264	27kΩ	5%	0,5W

3823	4822 116 52234	100kΩ	5%	0,5W
3824	4822 116 83868	150Ω	5%	0,5W
3825	4822 116 83883	470Ω	5%	0,16W
3826	4822 116 83961	6,8kΩ	5%	0,16W
3827	4822 116 52243	1,5kΩ	5%	0,16W

3828	4822 116 52238	12kΩ	5%	0,5W
3829	4822 116 52271	33kΩ	5%	0,16W
3830	4822 116 52244	15kΩ	5%	0,5W
3831	4822 116 52251	18kΩ	5%	0,5W
3832	4822 116 52222	390Ω	5%	0,16W

3833	4822 116 52264	27kΩ	5%	0,5W
3834	4822 116 83872	220Ω	5%	0,5W
3835	4822 116 52184	18Ω	5%	0,5W
3836	4822 050 11002	1kΩ	5%	0,2W
3837	4822 111 30893	4,7MΩ	5%	0,2W

3838	4822 116 52234	100kΩ	5%	0,5W
3839	4822 116 52235	1MΩ	5%	0,5W
3840	4822 050 11002	1kΩ	5%	0,2W
3841	4822 116 52298	680kΩ	5%	0,5W
3842	4822 116 52297	68kΩ	5%	0,5W

3843	4822 116 52222	390Ω	5%	0,16W
3844	4822 116 52291	56kΩ	5%	0,5W
3845	4822 116 52239	120kΩ	5%	0,5W
3846	4822 050 11002	1kΩ	5%	0,2W
3847	4822 116 52257	22kΩ	5%	0,5W

3849	4822 116 83872	220Ω	5%	0,5W
3850	4822 116 52283	4,7kΩ	5%	0,5W
3851	4822 116 52244	15kΩ	5%	0,5W
3852	4822 116 83883	470Ω	5%	0,16W

ELECTRICAL PARTSLIST

RESISTORS

3853	4822 116 52244	15kΩ	5%	0,5W
3854	4822 116 52243	1,5kΩ	5%	0,16W
3855	4822 116 52271	33kΩ	5%	0,16W
3856	4822 116 52303	8,2kΩ	5%	0,5W
3857	4822 116 52269	3,3kΩ	5%	0,5W
3858	4822 116 80176	1Ω	5%	0,5W
3859	4822 116 83864	10kΩ	5%	0,5W
3860	4822 050 18208	8,2Ω	1%	0,4W
3861	4822 050 18208	8,2Ω	1%	0,4W
3862	4822 116 52269	3,3kΩ	5%	0,5W
3863	4822 116 52219	330Ω	5%	0,5W
3864	4822 116 52256	2,2kΩ	5%	0,16W
3865	4822 116 52256	2,2kΩ	5%	0,16W
3866 ▲	4822 052 10828	8,2Ω	5%	0,3W
3867 ▲	4822 052 10338	3,3Ω	NFR25	
3868	4822 116 80176	1Ω	5%	0,5W
3869	4822 116 83883	470Ω	5%	0,16W
3870	4822 116 52257	22kΩ	5%	0,5W
3871	4822 050 11002	1kΩ	5%	0,2W
3872	4822 116 83882	39kΩ	5%	0,5W
3873	4822 116 52257	22kΩ	5%	0,5W
3874	4822 116 83872	220Ω	5%	0,5W
3875	4822 116 52256	2,2kΩ	5%	0,16W
3876	4822 116 52283	4,7kΩ	5%	0,5W
3877	4822 116 52244	15kΩ	5%	0,5W
3878	4822 116 52228	680Ω	5%	0,5W
3880	4822 116 52207	1,2kΩ	5%	0,5W
3881	4822 116 52257	22kΩ	5%	0,5W
3882	4822 116 83864	10kΩ	5%	0,5W
3884	4822 116 83882	39kΩ	5%	0,5W
3886	4822 116 52235	1MΩ	5%	0,5W
3887	4822 116 83872	220Ω	5%	0,5W
3888	4822 116 83883	470Ω	5%	0,16W
3889	4822 116 83883	470Ω	5%	0,16W
3890	4822 116 83864	10kΩ	5%	0,5W
3891	4822 116 83883	470Ω	5%	0,16W
3892	4822 116 83883	470Ω	5%	0,16W
3893	4822 116 52271	33kΩ	5%	0,16W
3894	4822 116 83883	470Ω	5%	0,16W
3895	4822 116 52276	3,9kΩ	5%	0,5W
3896	4822 116 52276	3,9kΩ	5%	0,5W
3897	4822 116 83883	470Ω	5%	0,16W
3898	4822 116 83883	470Ω	5%	0,16W
3899	4822 050 11002	1kΩ	5%	0,2W

COILS

1102	4822 526 10176	FERRITE BAR 5X13X55MM
5101	4822 157 70513	RF COIL 3,5 TURNS
5102	4822 157 70731	COIL, FERR. ANT. (w/o FERRITE BAR)
5104	4822 156 30947	RF COIL 1,5 TURNS
5105	4822 157 71145	COIL VAR., MW-OSC.
5106	4822 157 70499	AM-IF FILTER, 468kHz
5107	4822 242 81154	FILTER KIT, FM-IF
5108	4822 156 11146	AM-IF FILTER, 468kHz
5201	4822 526 10494	FERRITE BEAD
5625	4822 157 10371	BIAS OSC. COIL VAR. 100kHz
5801	4822 526 10494	FERRITE BEAD
5803	4822 242 73557	CERAMIC RES. 8,46MHz

DIODES

6101	4822 130 30621	1N4148
6102	4822 130 30621	1N4148
6250 ▲	4822 130 31878	1N4003G
6251 ▲	4822 130 31878	1N4003G

DIODES

6252 ▲	4822 130 31878	1N4003G
6253 ▲	4822 130 31878	1N4003G
6256	4822 130 30621	1N4148
6300	4822 130 30621	1N4148
6625	4822 130 34167	BZX79-B6V2
6800	4822 130 31881	BZX79-B3V0
6803	4822 130 30621	1N4148
6804	4822 130 30621	1N4148
6805	4822 130 31981	BZX79-C3V9
6850	4822 130 31881	BZX79-B3V0

TRANSISTORS

7102	4822 130 44196	BC548C
7301	4822 130 40937	BC548B
7601	4822 130 44196	BC548C
7626	4822 130 40937	BC548B
7850	4822 130 41327	BC327-40
7851	4822 130 44197	BC558B
7852	4822 130 41327	BC327-40
7853	4822 130 44196	BC548C
7854	5322 130 60068	BC558C
7855	4822 130 44196	BC548C

INTEGRATED CIRCUITS

7101 ©	4822 209 32746	TEA5711T/N2, RADIO IC
7300	4822 209 31544	TA8227P, POWER AMPLIFIER IC
7625 ©	4822 209 32918	AN7318S, Rec/Pb-AMPLIFIER IC
7800 ©	4822 209 15932	TMP47C422F-AZ1010.1, µ-PROC.
7801 ©	4822 209 15952	M65824FP, SIGNAL PROCESSOR IC
7802 ©	4822 209 32196	TDA1311AT/N2, DAC
7803 ©	4822 209 90496	M62475FP, SERVO PROCESSOR IC
7805	4822 209 32852	TDA7073A/N2, MOTOR DRIVER
7806	4822 209 32852	TDA7073A/N2, SERVO DRIVER