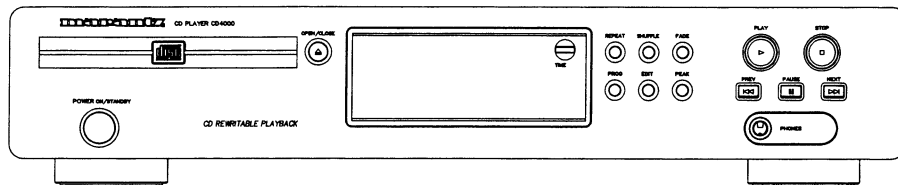


# Service Manual

CD4000/N1B, /K1B  
/N2B, /K2B

CD Player

CD4000



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Please use this service manual with referring to the user guide (D.F.U) without fail.

# marantz®

- CD4000 -

272W85; 10 AO  
3120 78; 00040  
First Issue; 1999.06

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The following information must be supplied to eliminate delays in processing your order :

1. Complete address
2. Complete part numbers and quantities required
3. Description of parts
4. Model number for which part is required
5. Way of shipment
6. Signature : any order form or Fax. must be signed, otherwise such part order will be considered as null and void.

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UTAMA, 47400 PETALING JAYA  
SELANGOR DARUL EHSAN, MALAYSIA  
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JAPAN 228-8505  
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営業本部 〒150-0022  
東京都渋谷区恵比寿南1-11-9

#### KOREA

**MK ENTERPRISES LTD.**  
ROOM 604/605, ELECTRO-OFFICETEL, 16-58,  
3GA, HANGANG-RO, YONGSAN-KU, SEOUL  
KOREA  
PHONE : +822 - 3232 - 155  
FAX : +822 - 3232 - 154

### SHOCK, FIRE HAZARD SERVICE TEST :

**CAUTION :** After servicing this appliance and prior to returning to customer, measure the resistance between either primary AC cord connector pins ( with unit NOT connected to AC mains and its Power switch ON ), and the face or Front Panel of product and controls and chassis bottom.

Any resistance measurement less than 1 Megohms should cause unit to be repaired or corrected before AC power is applied, and verified before it is return to the user/customer.

Ref. UL Standard No. 1492.

In case of difficulties, do not hesitate to contact the Technical Department at above mentioned address.

## TECHNICAL SPECIFICATION

### General

Dimensions (WxHxD) : 435 x 86 x 265mm  
Weight : 2,9kg

### Accessories

Instruction for use : 3139 116 18890 for /N  
: 3139 116 19100 for /K

Remote control : 3139 228 82590

### Mains voltage

/N : 220-230V(±10%) 50Hz  
/K : 110-120V/220-230V(±10%) 50/60Hz

### Power consumption

stand by : ≤5W  
operating : approx. 8W

### Audio performance

Number of channels : 2  
Output voltage (Line out) : 2VRMS ±3dB  
Unbalance left-right : ≤1dB  
Frequency response : 20Hz-20kHz ≤0,4dB  
Signal to noise ratio : 98 dB typ.  
Dynamic range : 95dB typ. at 1kHz  
THD : ≤0,0063% at 1kHz  
Channel separation : 85dB typ. at 1kHz

### Headphone output

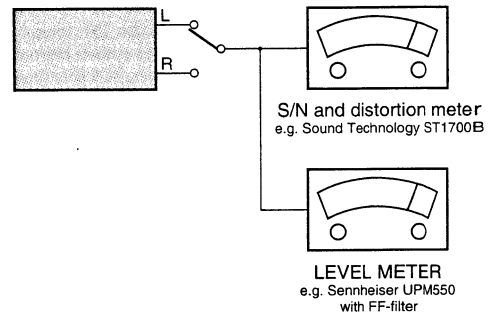
Output level (1kHz, 0dB) : ≥5VRMS  
Unbalance left-right : ≤1,2dB  
Output impedance : 120Ω  
Load impedance : 32Ω - 600Ω  
Output power : 25mW at 32Ω  
: 52mW at 120Ω  
: 29mW at 600Ω

### Laser

Output power : <5mW (3mW typ.)  
Wavelength : 780nm

### Measurement setup

Use Audio Signal disc SBC429 4822 397 30184



## RC 5 Commands

System code = 20

Command	Code	Command	Code	Command	Code
KEY "0"	0	KEY "9"	9	SHUFFLE	28
KEY "1"	1	PLAY	53	SCAN	43
KEY "2"	2	STOP	54	REPEAT	29
KEY "3"	3	PAUSE	48	FADE	120
KEY "4"	4	TIME	11	VOLUME UP	16
KEY "5"	5	PREVIOUS	33	VOLUME DOWN	17
KEY "6"	6	REVIEW	50	STAND BY	12
KEY "7"	7	CUE	52	MUTE	13
KEY "8"	8	PROGRAM	36	NEXT	32

**(GB) WARNING**

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

**ESD****(F) ATTENTION**

Tous les IC et beaucoup d'autres semi-conducteurs sont sensibles aux décharges statiques (ESD). Leur longévité pourrait être considérablement écourtée par le fait qu'aucune précaution n'est prise à leur manipulation.  
Lors de réparations, s'assurer de bien être relié au même potentiel que la masse de l'appareil et enfilez le bracelet sert d'une résistance de sécurité.  
Veiller à ce que les composants ainsi que les outils que l'on utilise soient également à ce potentiel.

**(D) WARNUNG**

Alle ICs und viele andere Halbleiter sind empfindlich gegenüber elektrostatischen Entladungen (ESD).  
Unvorsichtige Behandlung im Reparaturfall kann die Lebensdauer drastisch reduzieren.  
Sorgen Sie dafür, daß sie im Reparaturfall über ein Pulsarmband mit Widerstand mit dem Massepotential des Gerätes verbunden sind.  
Halten Sie Bauteile und Hilfsmittel ebenfalls auf diesem Potential.

**(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 del apparecchio tramite un braccialetto a resistenza.  
Assicurarsi che i componenti e anche gli utensili con quali si lavora siano anche a questo potenziale.

**(GB) AVAILABLE ESD PROTECTION EQUIPMENT :**

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

**AVAILABLE JIG for FR980**

Extension PCB and wire kit 4822 395 10815

**(GB)**

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

**(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.

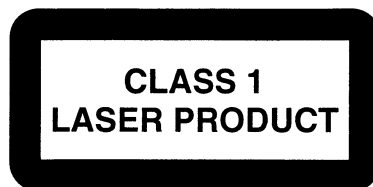
**(NL)**

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

**(I)**

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

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

**(S) Varning !**

Osynlig laserstråling när apparaten är öppnad och spårren är urkopplad. Betrakta ej strålen.

**(DK) Advarsel !**

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

**(SF) Varoitus !**

Avatussa laitteessa ja suojaletkituksen ohitettaessa olet alttiina näkyvämmälle laserisäteilylle. Älä katso säteeseen !

**(GB)**

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

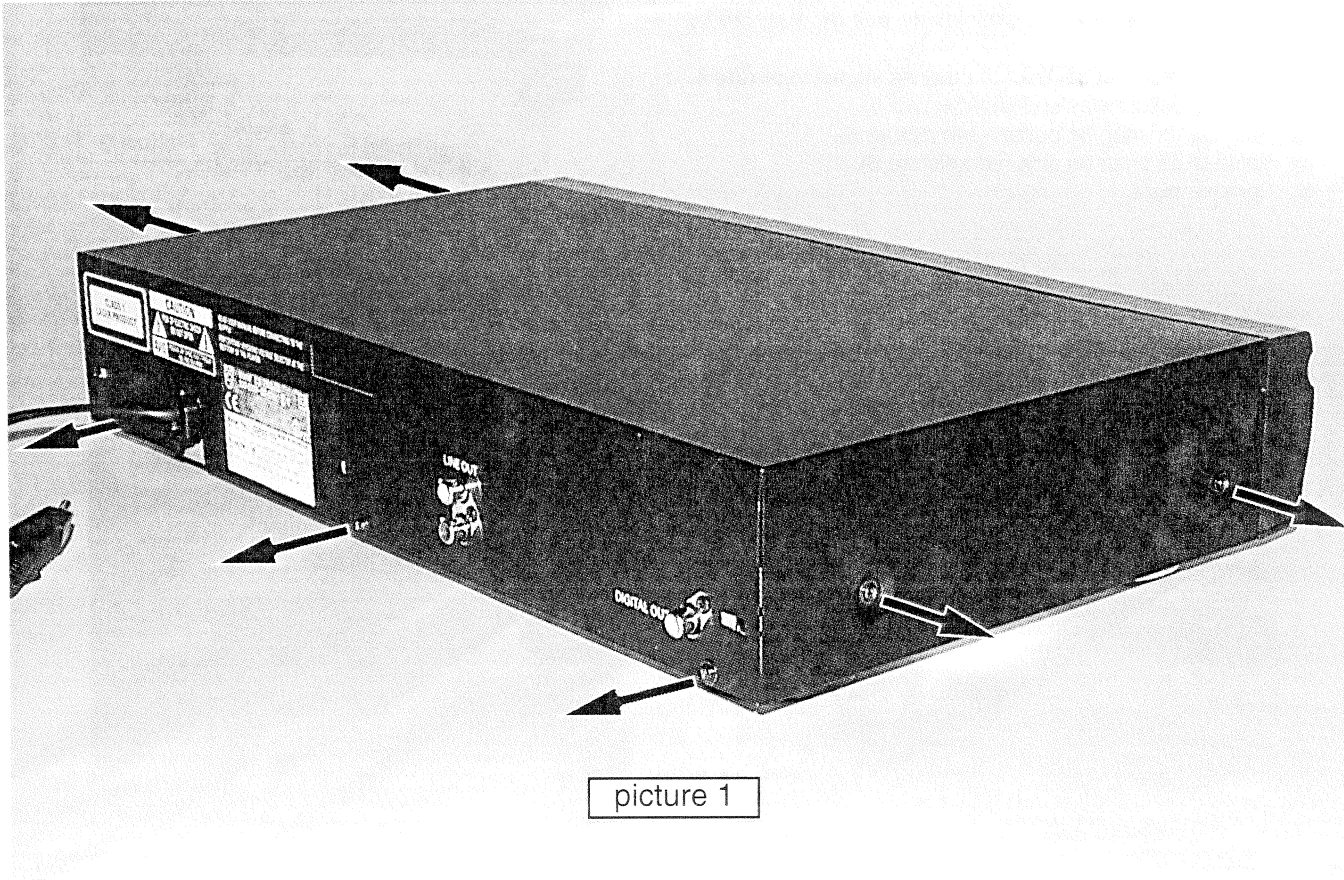
**(F)**

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

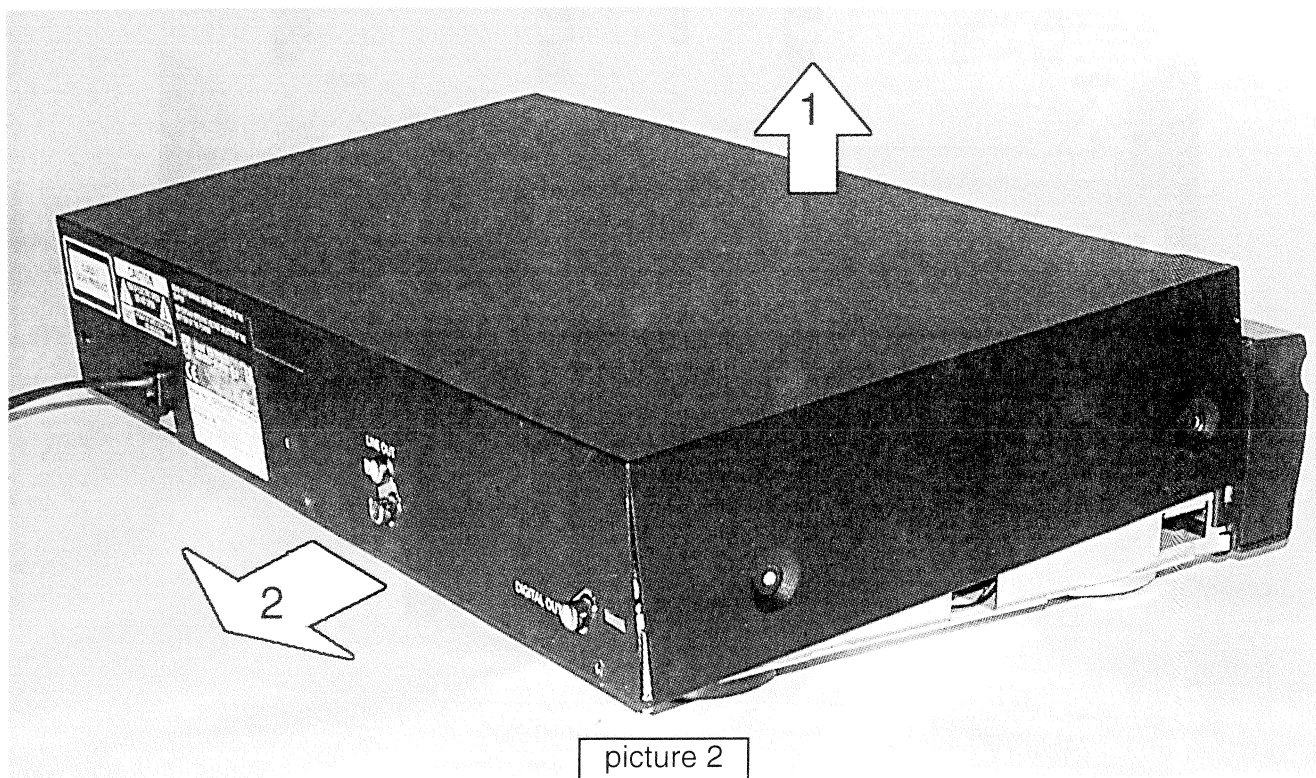
## MECHANICAL INSTRUCTIONS

### Dismantling Top Cover

- 1) Loosen 7x screw as shown in picture 1.



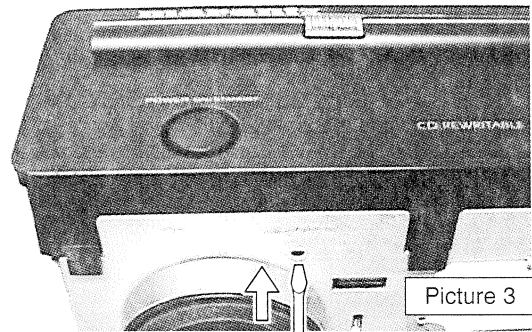
- 2) Lift top cover as shown in picture 2.
- 3) Remove top cover.



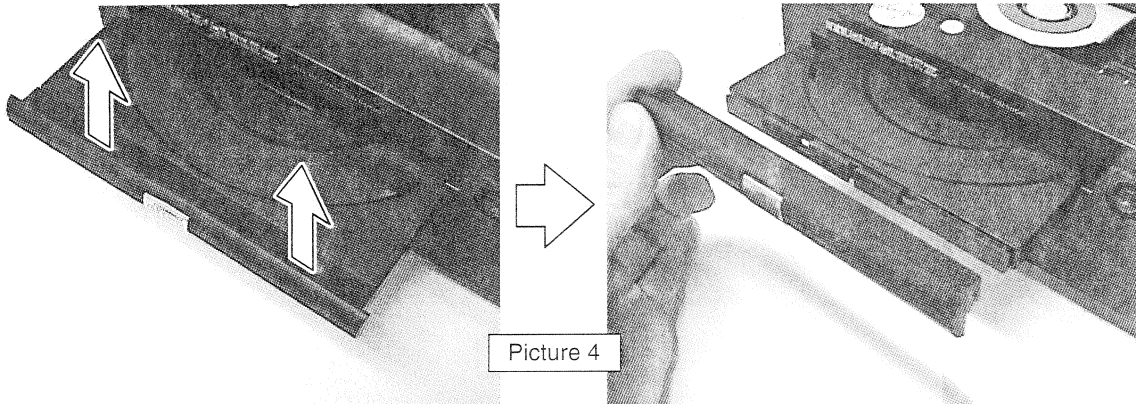
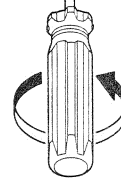
## MECHANICAL INSTRUCTION

### Dismantling Front

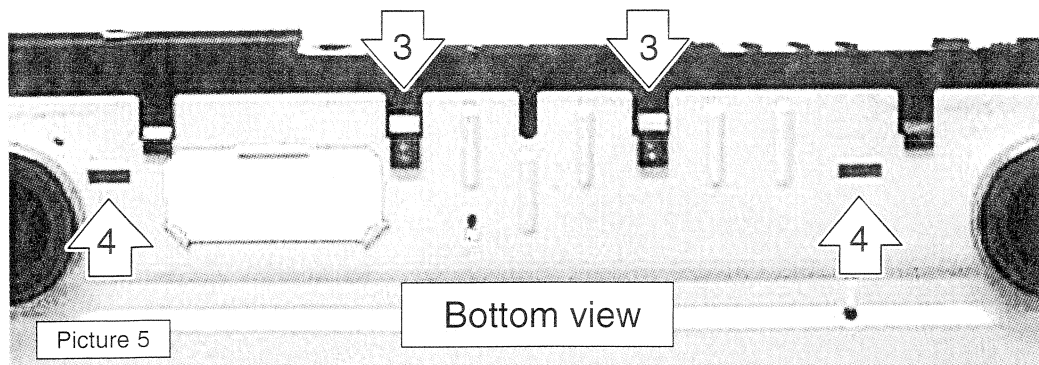
- 1) Press open/close button to open the tray. If the tray doesn't work, turn counterclockwise a small screwdriver into the hole as shown in picture 3. Then the tray comes out. After the first centimeter it is possible to pull the tray out by hand.
- 2) Release the door cover of the tray as shown in picture 4.
- 3) Loosen 2x screw as shown in picture 5.
- 4) Release 2x snap on button (see picture 5).
- 5) Release 2x snap on side (see picture 6).
- 6) Remove front.



Picture 3

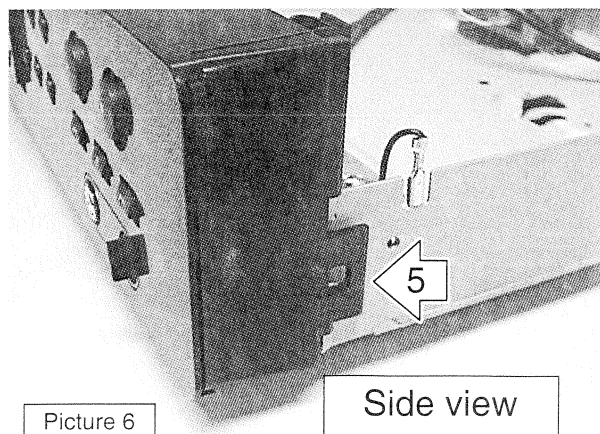


Picture 4



Picture 5

Bottom view



Picture 6

Side view

## Dismantling hints CD Short Loader

### Dismantling the tray

- a) Press open/close button to open the tray. If the tray doesn't work, use a small screwdriver as shown in Fig.1 point 1 to move the tray outside. After the first centimetre it is possible to pull the tray out by hand.
- b) Release two snaps and remove tray.

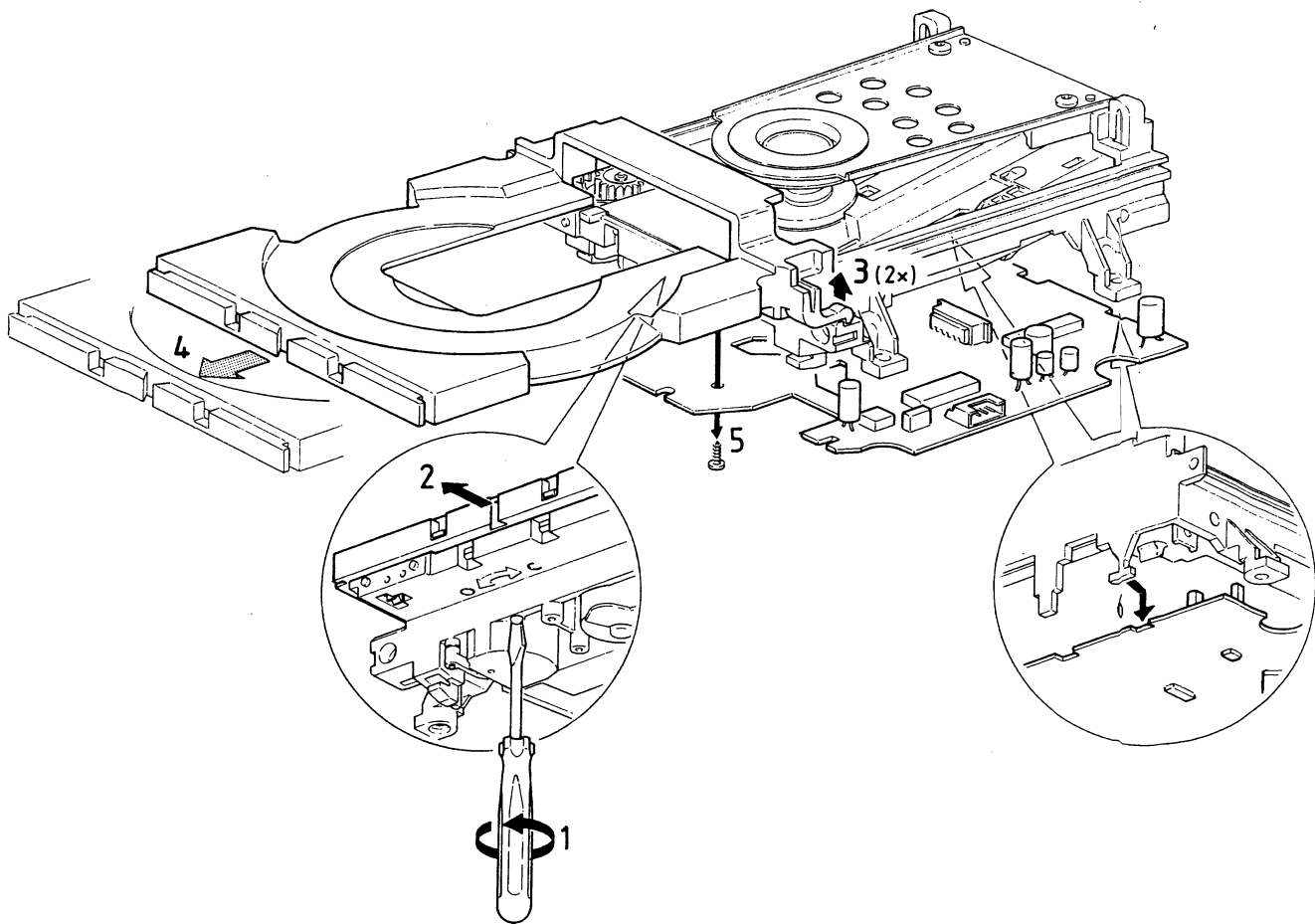


Fig. 1

**Assembly of gear**

- a) Use a pin (e.g. a paperclip) to align the cam wheel (a) with the gear wheel (b). See Fig. 2.
- b) Fix the wheels with the small plastic washers.

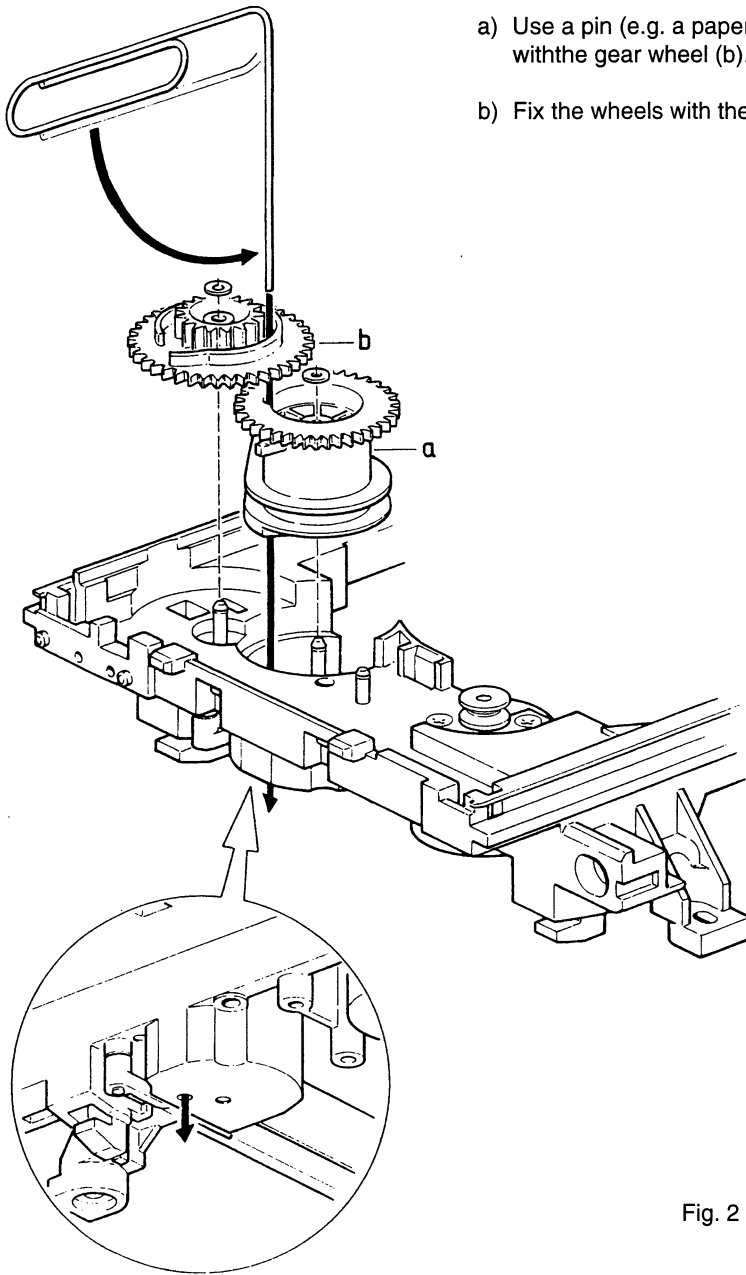


Fig. 2



- c) Mount idle wheel 2 (c) and idle wheel 1 (d) in any position. See Fig. 3.
- d) Fix the idle wheel 1 (d) with the small plastic washer.
- e) Mount the driving belt.

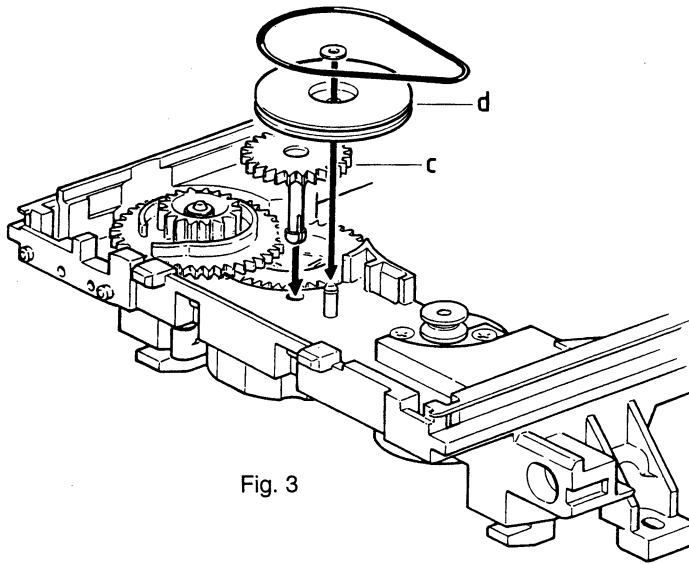


Fig. 3

- f) Mount the pinion guiding assy and the cover as shown in Fig. 4.
- g) Turn the gear wheel (b) counter clockwise to end position.

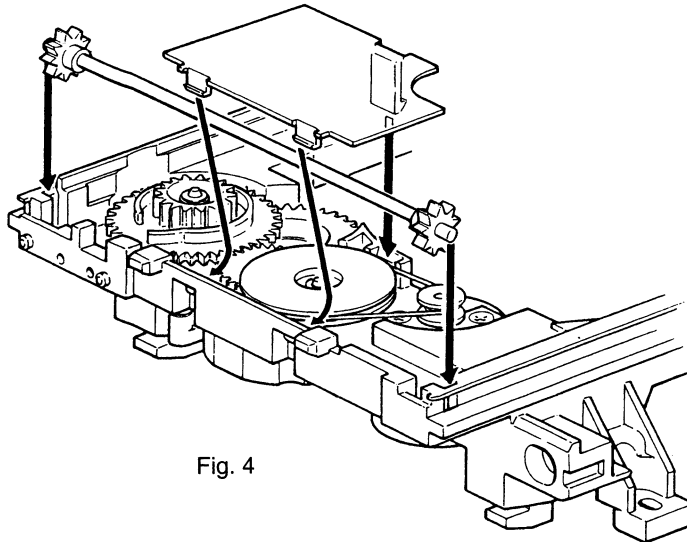


Fig. 4

- h) Mount the CD Mechanism as shown in Fig. 5.
- i) Mount the tray (Align the tray to the chassis and push it inside).

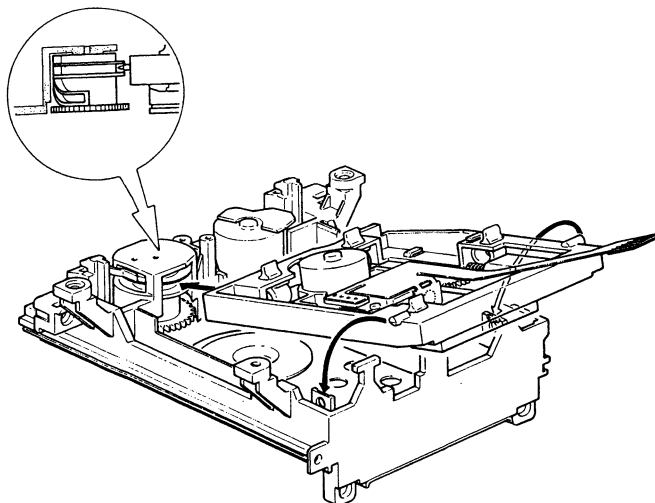
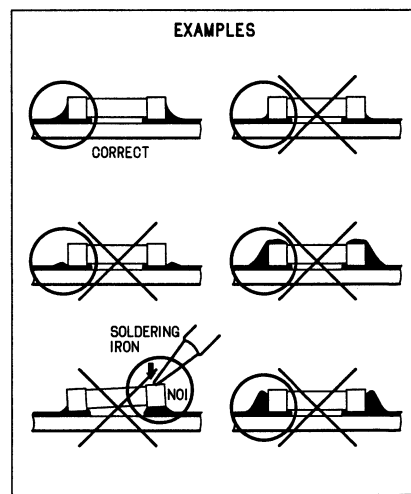
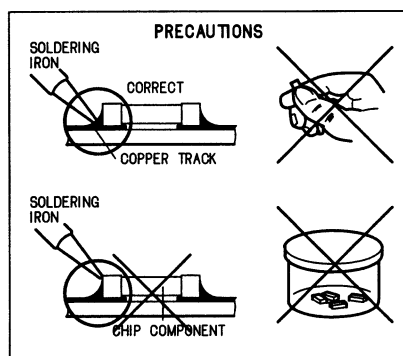
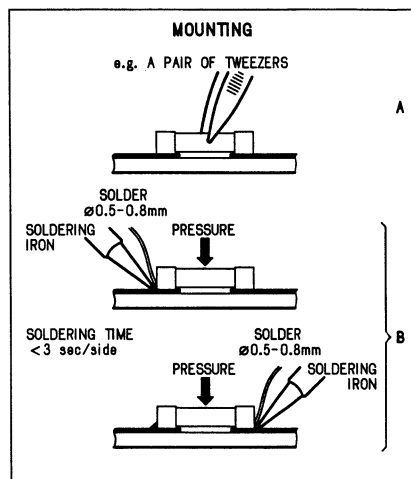
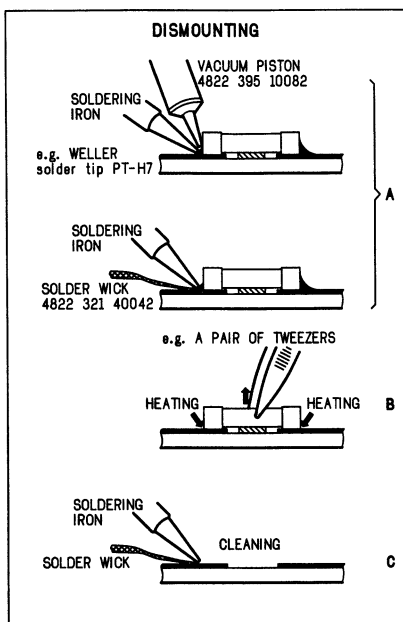
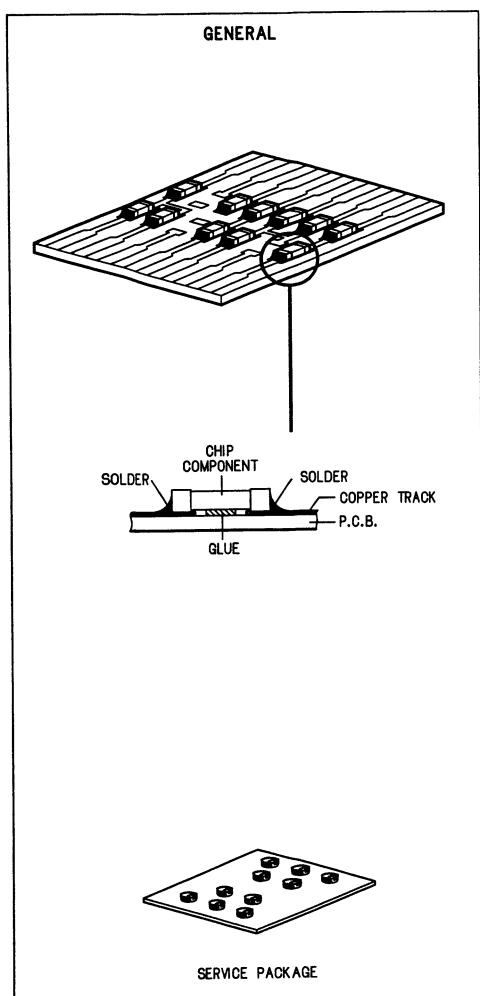


Fig. 5

**Check if tray mechanism works correctly!**

- 1) Turn the gear wheel (b) clockwise to its end position (Use a small screwdriver as shown in Fig. 1 point 1).  
The tray has to move to inner position first and then the CD mechanism has to move to its upper position.
- 2) Turn the gear wheel (b) counter clockwise to its end position.  
The CD Mechanism has to move to its lower position first and then the tray has to move outside

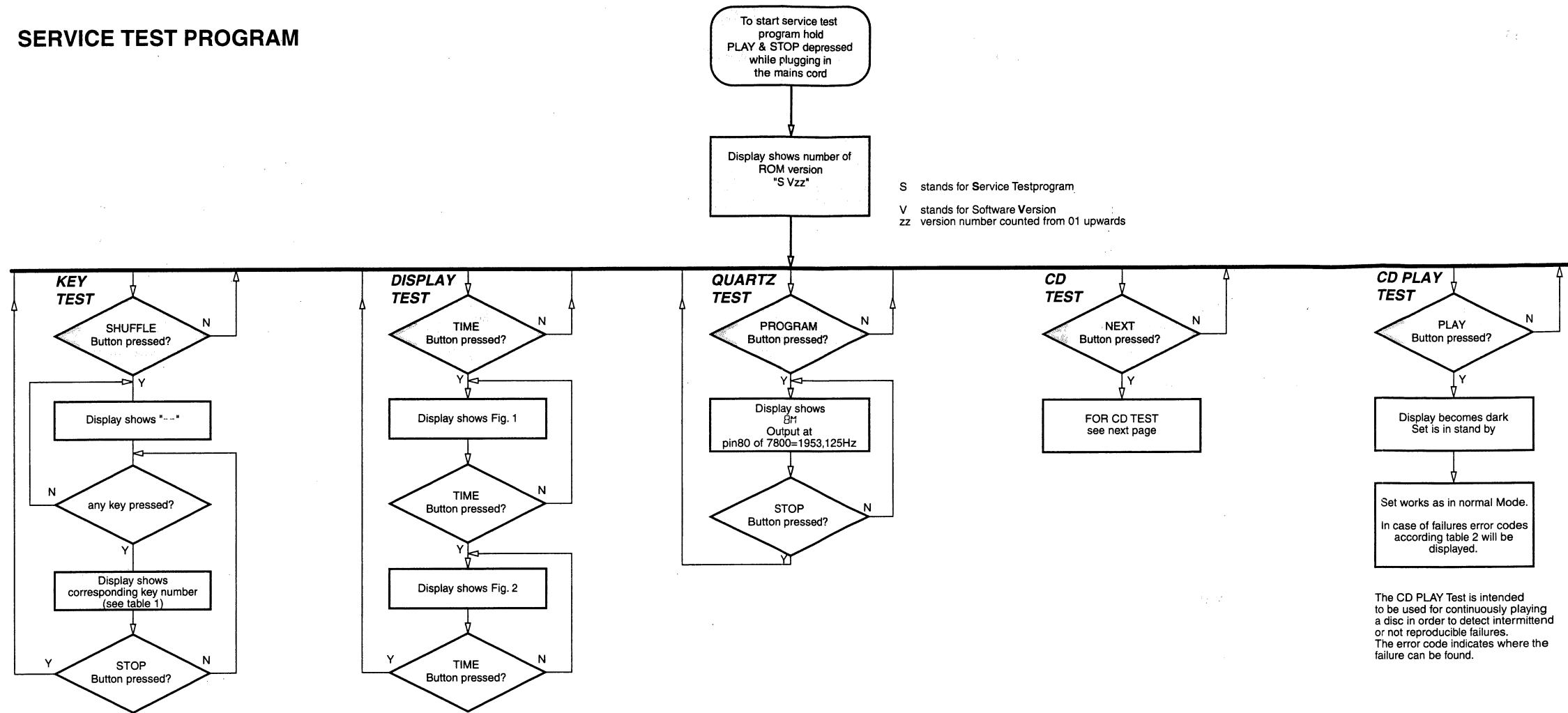
# HANDLING CHIP COMPONENTS



## 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

# SERVICE TEST PROGRAM



The CD PLAY Test is intended to be used for continuously playing a disc in order to detect intermittent or not reproducible failures. The error code indicates where the failure can be found.

KEY TEST

Key	Number	Key	Number	Key	Number
Next	1	Shuffle	7	Fade	13
Previous	2	Scan	8	Time	14
Play	3	Program	9	CD-Text	15
Stop	EXIT	Peak search	10	Scroll	16
Open/Close	5	Repeat	11	Stand by	17
Edit	6	Pause	12	any RC button	RC

Table 1

DISPLAY TEST

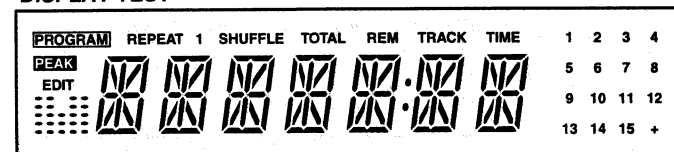


Fig. 1

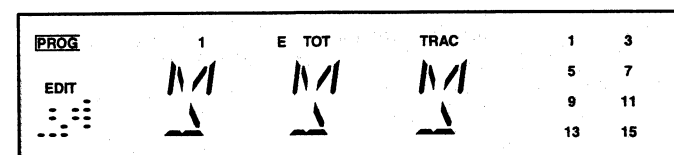


Fig. 2

CD PLAY TEST

Error number	Type	Description
1000	W	<b>Focus error</b> Triggered when the focus could not be found within a certain time when starting up the CD or when the focus is lost for a certain time during playing the CD.
1001	W	<b>Radial error</b> Triggered when the radial servo is not on track for a certain time during playing the CD.
1002	W	<b>Slide in error</b> Generated when the slide did not reach its inner position (innerswitch is closed) before 6 seconds have passed by. Innerswitch or slide motor problem.
1003	W	<b>Slide out error</b> Generated when the slide did not come out of its inner position (innerswitch is open) before 250ms have passed by. Innerswitch or slide motor problem.
1005	W	<b>Jump error</b> Generated when the jump destination could not be found within a certain time.
1006	W	<b>Subcode error</b> No valid subcode for a certain time.
1007	W	<b>PLL error</b> The Phase -Lock-Loop could not lock within a certain time.
1008	W	<b>Turntable motor error</b> Generated when the CD could not reach 75% of speed during starting up within a certain time. Disc motor problem
1020	F	<b>Focus search error</b> Focus point has not been found within a certain time.

Table 2

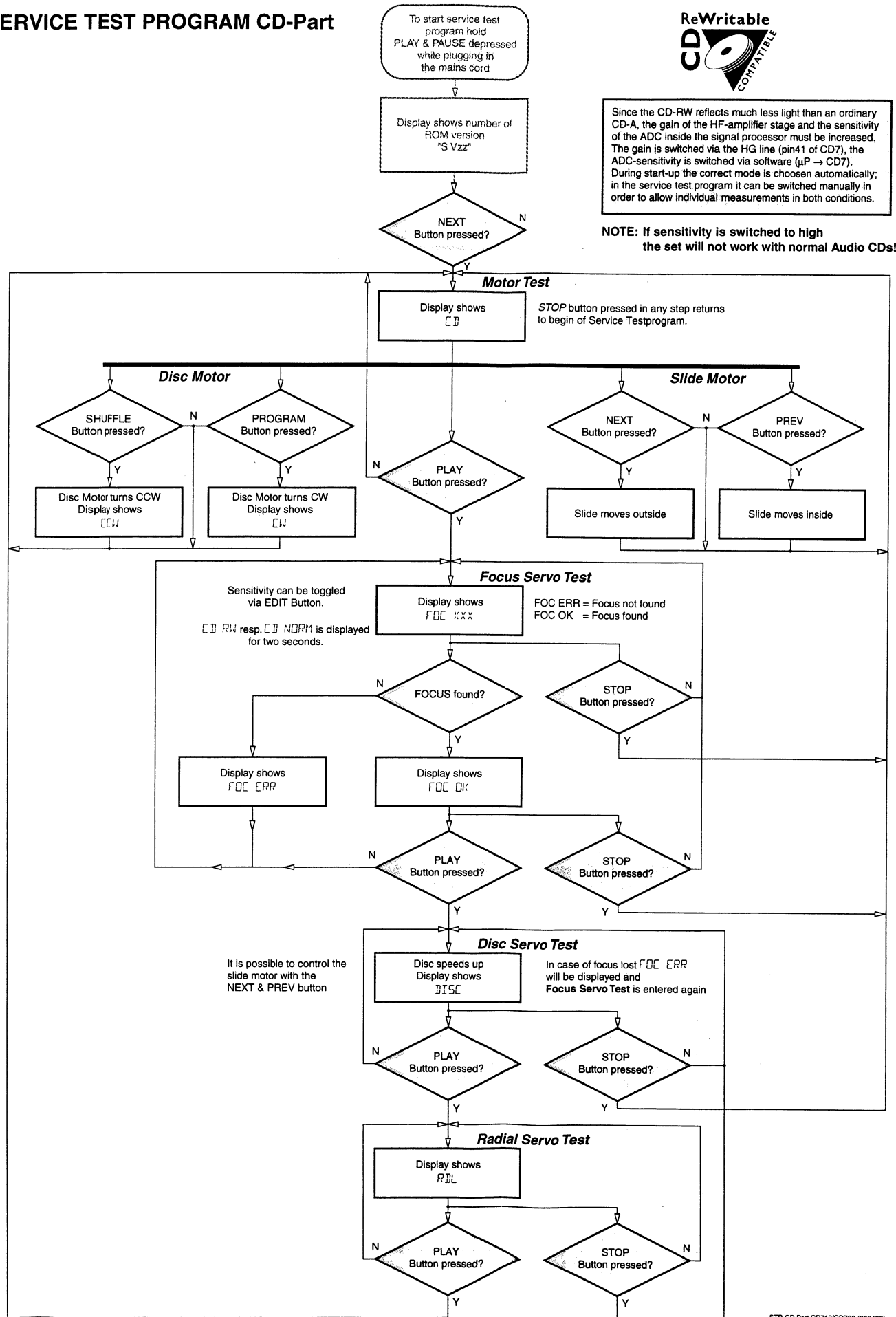
W = Warning  
Error number remains on display till next warning/error  
F = Fatal error  
Set stops playing → Error number remains on display

### Abbreviations CD Part

#### SAA7372 – DECODER AND DIGITAL SERVO IC CD7

Pin	Name	Direction	Description
1	VSSA1	GND	supply (analog) of CD7
2	VDDA1	+4V	supply (analog) of CD7
3	D1	HF-preamp → CD7	unipolar current input (central diode signal input)
4	D2	HF-preamp → CD7	unipolar current input (central diode signal input)
5	D3	HF-preamp → CD7	unipolar current input (central diode signal input)
6	VRL	GND	reference input for ADC
7	D4	HF-preamp → CD7	unipolar current input (central diode signal input)
8	R1	HF-preamp → CD7	unipolar current input (satellite diode signal input)
9	R2	HF-preamp → CD7	unipolar current input (satellite diode signal input)
10	IREFT	→ CD7	current reference for calibration ADC
11	VRH	not connected	reference output from ADC
12	VSSA2	GND	supply (analog) of CD7
13	SELPLL	+4V	selects whether internal clock multiplier PLL is used
14	ISLICE	CD7 →	current feedback from data slicer
15	HFIN	→ CD7	comparator signal input
16	VSSA3	GND	supply (analog) of CD7
17	HFREF	→ CD7	comparator common mode input
18	IREF	→ CD7	reference current pin (nom. VDD/2)
19	VDDA2	+4V	supply (analog) of CD7
20	TEST1	GND	test control input
21	CRIN	X-Tal → CD7	crystal/resonator input
22	CDOUT	X-Tal → CD7	crystal/resonator output
23	TEST2	GND	test control input
24	CL16	not connected	16.9344MHz system clock output
25	CL11	not connected	11.2896MHz or 5.6448MHz clock output (3-state)
26	RA	CD7 → servo driver	radial actuator output
27	FO	CD7 → servo driver	focus actuator output
28	SL	CD7 → servo driver	slide actuator output
29	TEST3	GND	test control input
30	VDD1P	+4V	supply (digital) of CD7
31	DOBM	CD7 → digital output	bi-phase mark output (3-state)
32	VSS1	GND	supply (digital) of CD7
33	MOTO1	CD7 → servo driver	motor output1 of CD7; versatile (3-state)
34	MOTO2	CD7 → servo driver	motor output2 of CD7; versatile (3-state)
35	SBSY	not connected	subcode block sync (3-state)
36	SFSY	not connected	subcode frame sync (3-state)
37	RCK	GND	subcode clock input
38	SUB	not connected	P to W subcode bits (3-state)
39	VSS2	GND	supply (digital) of CD7
40	V5	not connected	versatile output pin of CD7
41	V4	not connected	versatile output pin of CD7
42	V3	not connected	versatile output pin of CD7 (open drain)
43	KILL	CD7 →	kill output; programmable (open drain)
44	MISC	not connected	C2 error flag; output only defined in CD-ROM modes (3-state)
45	DATA	CD7 → DAC	serial data output (3-state)
46	WCLK	CD7 → DAC	word clock output (3-state)
47	VDD2P	+4V	supply (digital) of CD7
48	BCLK	CD7 → DAC	serial bit clock output (3-state)
49	VSS3	GND	supply (digital) of CD7
50	CL4	not connected	4.2336MHz μP clock output
51	SDA	μP → CD7	μP interface data I/O line (open drain output)
52	SCL	μP → CD7	μP interface clock line
53	RAB	μP → CD7	μP interface R/W and load control line
54	SILD	μP → CD7	μP interface R/W and load control line
55	NC	no connection	no connection
56	VSS4	GND	supply (digital) of CD7
57	RESET	μP → CD7	power-on reset input (active low)
58	STATUS	not connected	servo interrupt request line/CD7 status register output (open drain)
59	VDD3C	+4V	supply core (digital)
60	C2FAIL	not connected	indication of correction failure (open drain)
61	CFLG	not connected	correction flag output (open drain)
62	V1	→ CD7	versatile input pin
63	V2	→ CD7	versatile input pin
64	LDON	CD7 → 7820	laser drive on output (open drain)

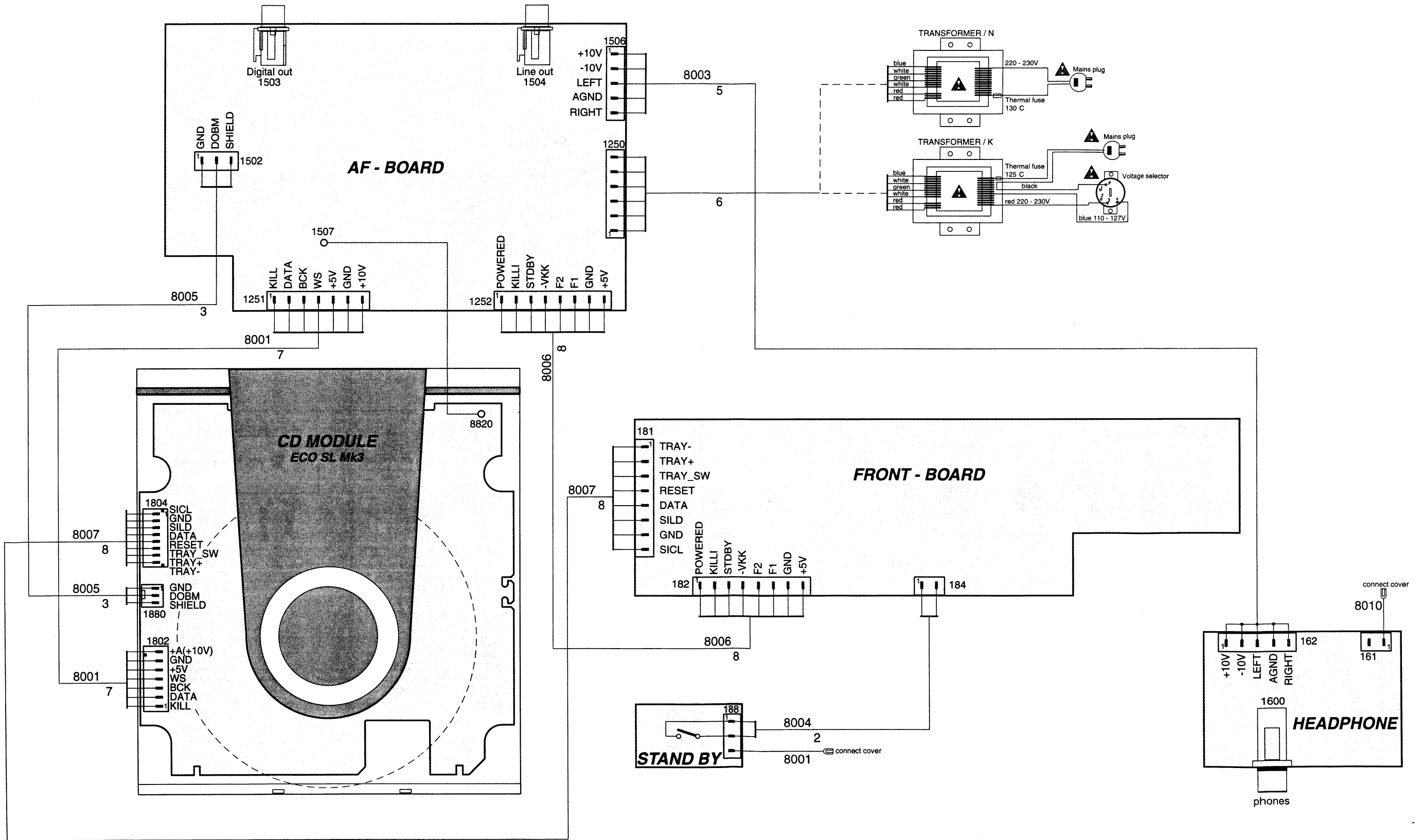
### SERVICE TEST PROGRAM CD-Part



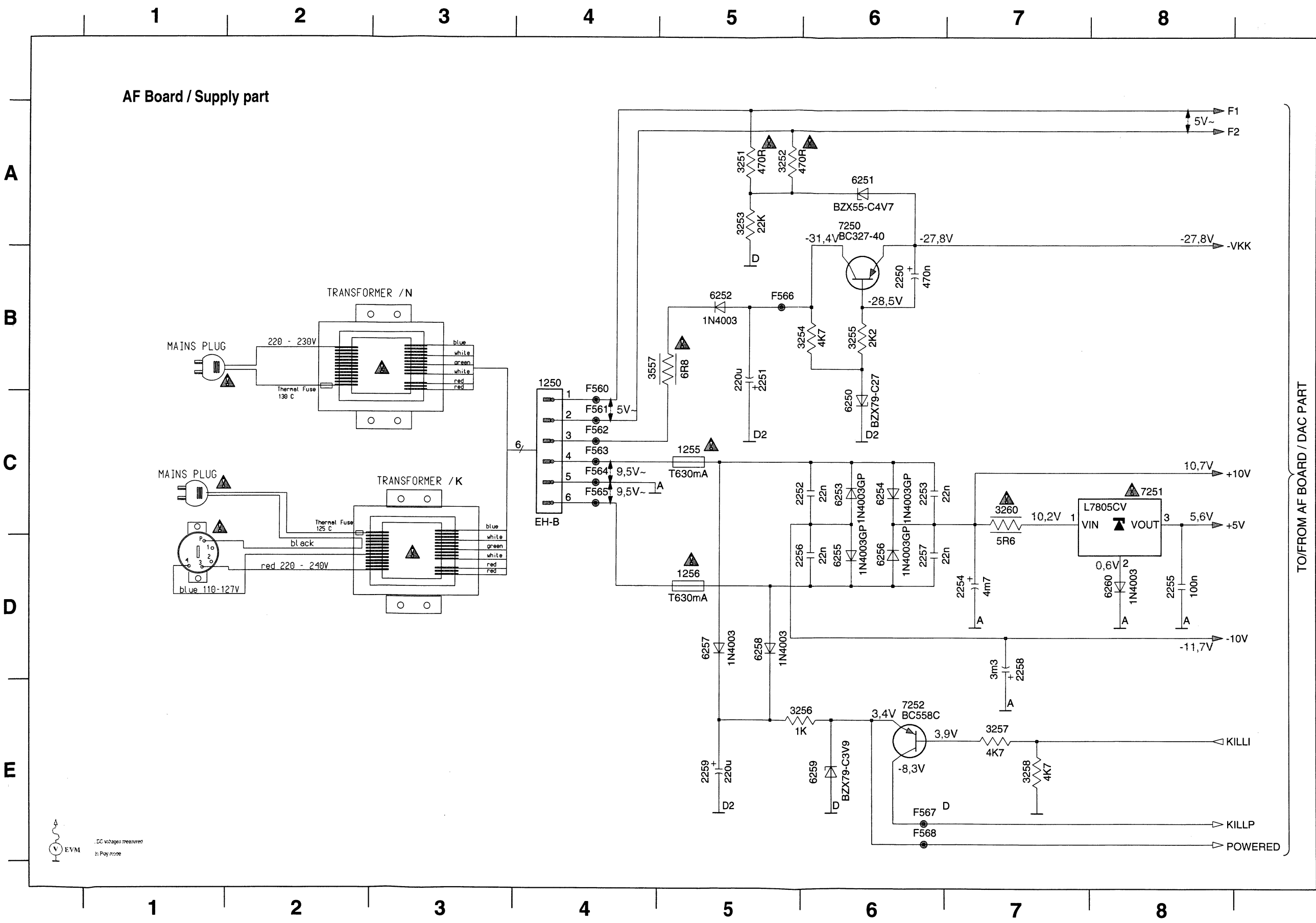
Since the CD-RW reflects much less light than an ordinary CD-A, the gain of the HF-amplifier stage and the sensitivity of the ADC inside the signal processor must be increased. The gain is switched via the HG line (pin41 of CD7), the ADC-sensitivity is switched via software (μP → CD7). During start-up the correct mode is chosen automatically; in the service test program it can be switched manually in order to allow individual measurements in both conditions.

**NOTE: If sensitivity is switched to high the set will not work with normal Audio CDs!**

# WIRING DIAGRAM



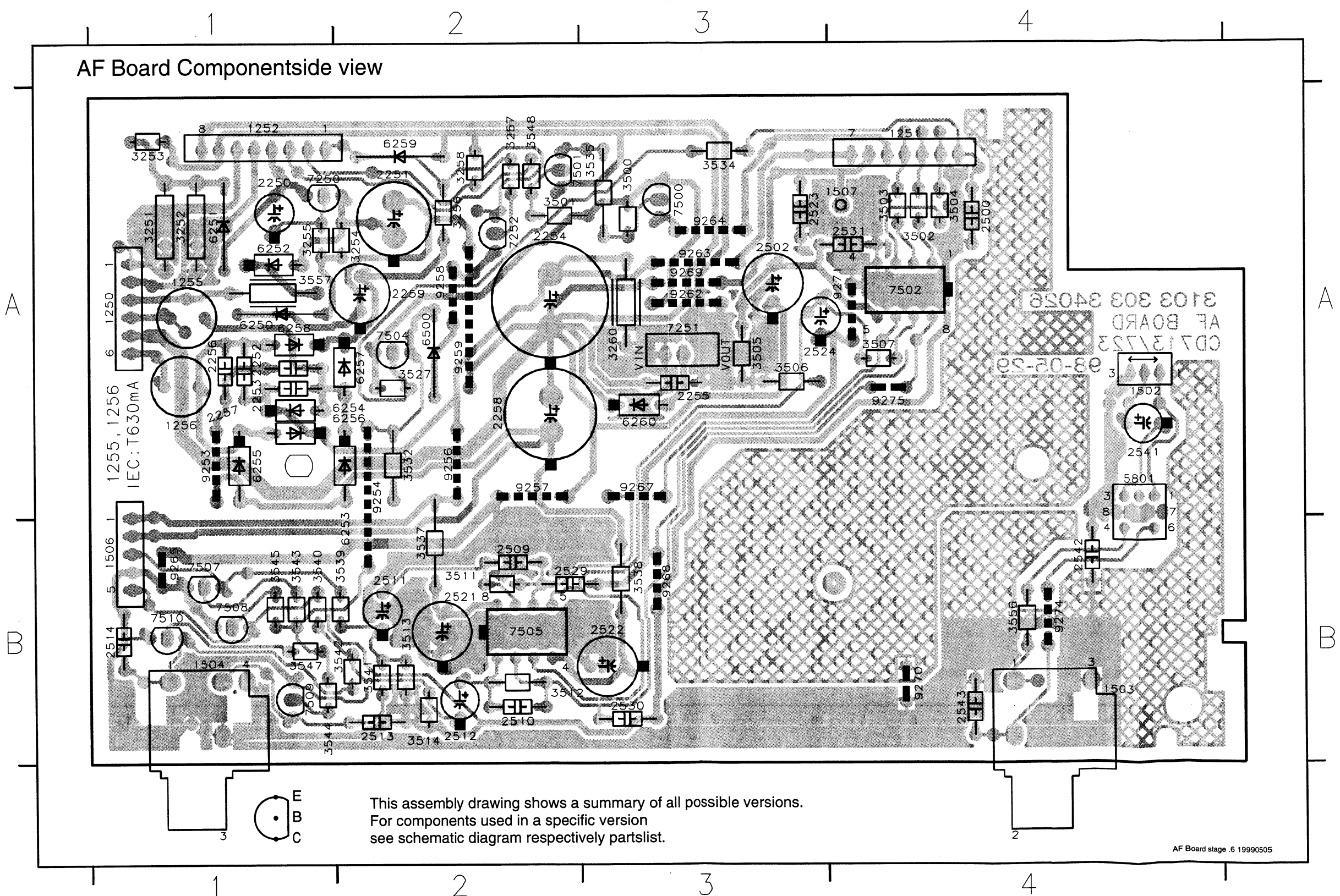
# AF Board / Supply part



- 1250 B4
- 1255 C5
- 1256 D5
- 2250 B6
- 2251 B5
- 2252 C6
- 2253 C6
- 2254 D7
- 2255 D8
- 2256 D6
- 2257 D6
- 2258 D7
- 2259 E5
- 3251 A5
- 3252 A5
- 3253 A5
- 3254 B6
- 3255 B6
- 3256 E6
- 3257 E7
- 3258 E7
- 3260 C7
- 3557 B4
- 6250 C6
- 6251 A6
- 6252 B5
- 6253 C6
- 6254 C6
- 6255 D6
- 6256 D6
- 6257 D5
- 6258 D5
- 6259 E6
- 6260 D8
- 7250 A6
- 7251 C8
- 7252 E6
- F560 C4
- F561 C4
- F562 C4
- F563 C4
- F564 C4
- F565 C4
- F566 B5
- F567 E6
- F568 E6

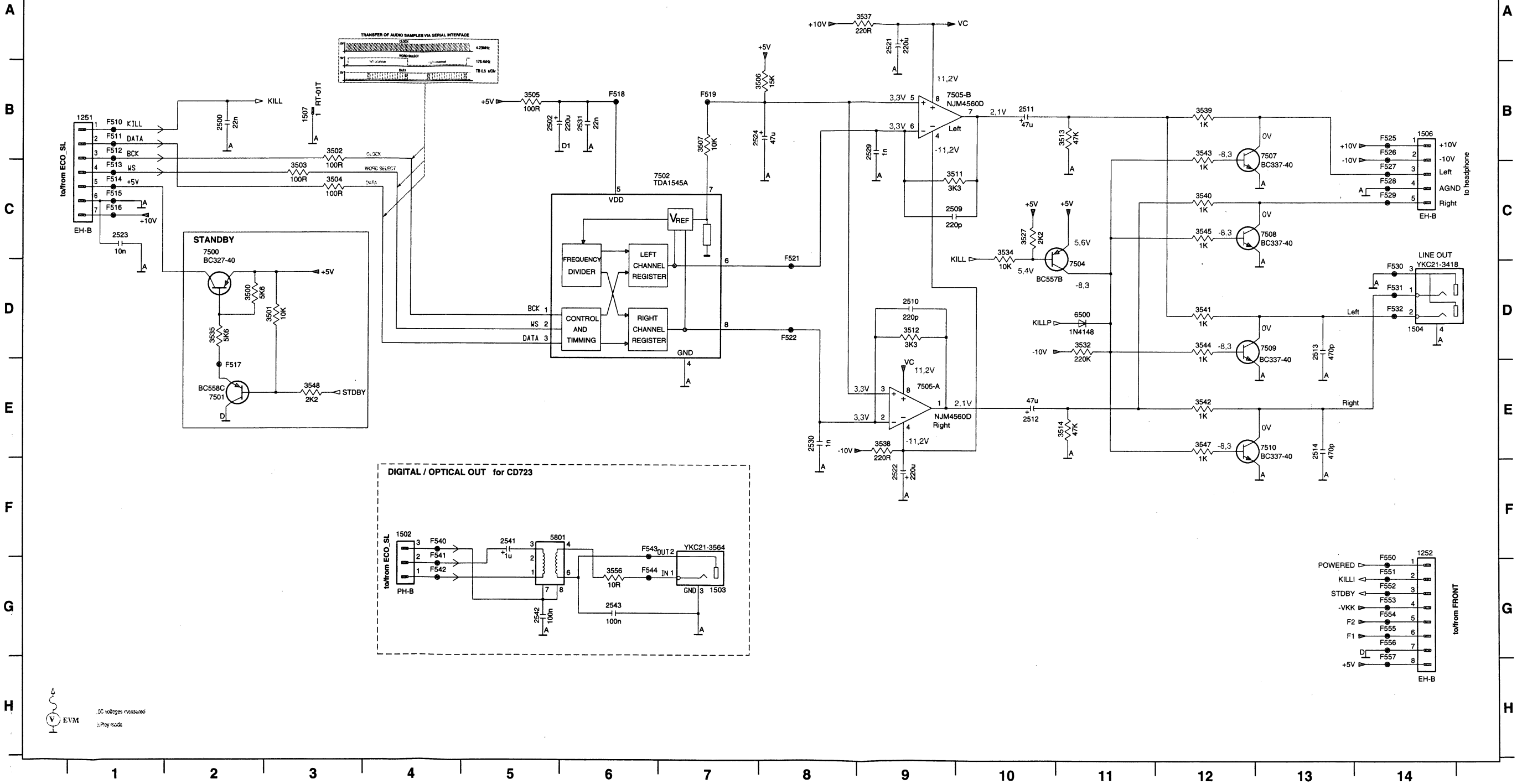
EVM  
 .DC voltages measured  
 in Poly note

1250 A1	2250 A1	2500 A4	2523 A3	3253 A1	3503 A4	3532 A2	3544 B1	6253 B2	7251 A3	7510 B1	9265 B1
1251 A4	2251 A2	2502 A3	2524 A3	3254 A2	3504 A4	3534 A3	3545 B1	6254 A2	7252 A2	9253 A1	9267 A3
1252 A1	2252 A1	2509 B2	2529 B2	3255 A1	3505 A3	3535 A3	3547 B1	6255 A1	7500 A3	9254 A2	9268 B3
1255 A1	2253 A1	2510 B2	2530 B3	3256 A2	3506 A3	3537 B2	3548 A2	6256 A2	7501 A2	9256 A2	9269 A3
1256 A1	2254 A2	2511 B2	2531 A4	3257 A2	3507 A4	3538 B3	3556 B4	6257 A2	7502 A4	9257 A2	9270 B4
1502 A4	2255 A3	2512 B2	2541 A4	3258 A2	3511 B2	3539 B2	3557 A1	6258 A1	7504 A2	9258 A2	9271 A4
1503 B4	2256 A1	2513 B2	2542 B4	3260 A3	3512 B2	3540 B1	5801 A4	6259 A2	7505 B2	9259 A2	9274 B4
1504 B1	2257 A1	2514 B1	2543 B4	3500 A3	3513 B2	3541 B2	6250 A1	6260 A3	7507 B1	9262 A3	9275 A4
1506 B1	2258 A2	2521 B2	3251 A1	3501 A2	3514 B2	3542 B2	6251 A1	6500 A2	7508 B1	9263 A3	
1507 A4	2259 A2	2522 B3	3252 A1	3502 A4	3527 A2	3543 B1	6252 A1	7250 A1	7509 B1	9264 A3	



1251 B1	1504 D14	2502 B5	2512 E10	2522 F9	2530 E8	3500 D2	3504 C3	3511 C9	3527 C10	3537 A9	3541 D12	3545 C12	5801 F5	7502 C6	7507 B13	F510 B1	F514 C1	F518 B6	F525 B14	F529 C14	F540 F4	F544 G6	F553 G14	F557 H14
1252 F14	1506 B14	2509 C9	2513 D13	2523 C1	2531 B6	3501 D3	3505 B5	3512 D9	3532 D11	3538 E9	3542 E12	3547 E12	5500 D11	7504 D11	7508 C13	F511 B1	F515 C1	F519 B7	F526 B14	F530 D14	F541 G4	F550 G14	F554 G14	
1502 F4	1507 B3	2510 D8	2514 E13	2524 B7	2541 F5	3502 B3	3506 B7	3513 B11	3534 C10	3539 B12	3543 B12	3548 E3	7500 C2	7505-A E9	7509 D13	F512 B1	F516 C1	F521 D8	F527 C14	F531 D14	F542 G4	F551 G14	F555 G14	
1503 G7	2500 B2	2511 B10	2521 A9	2529 B9	2542 G5	3503 C3	3507 B7	3514 E11	3535 D2	3540 C12	3544 D12	3556 G6	7501 E2	7505-B B9	7510 E13	F513 C1	F517 E2	F522 D8	F528 C14	F532 D14	F543 F6	F552 G14	F556 G14	
					2543 G6																			

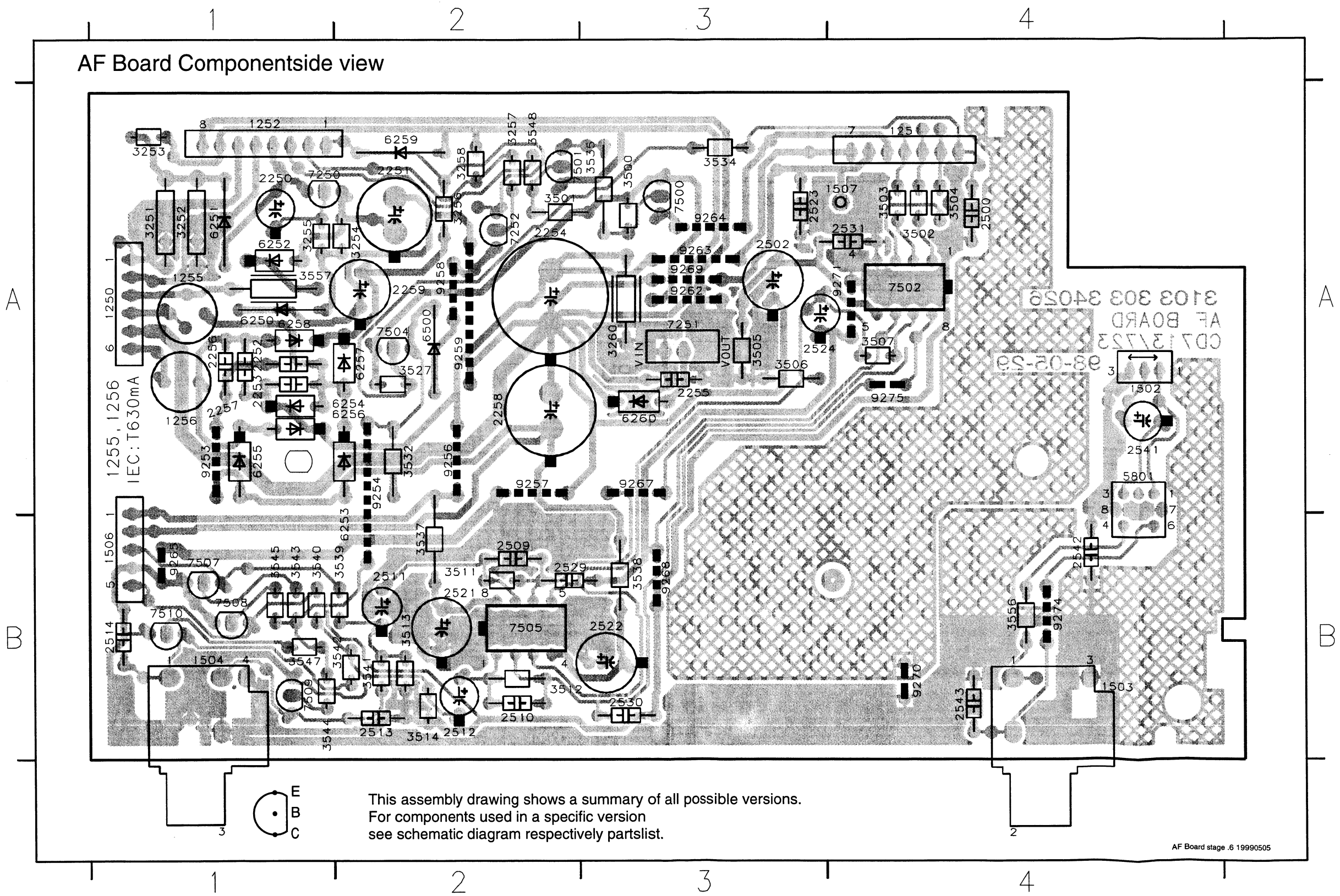
### AF Board / DAC part



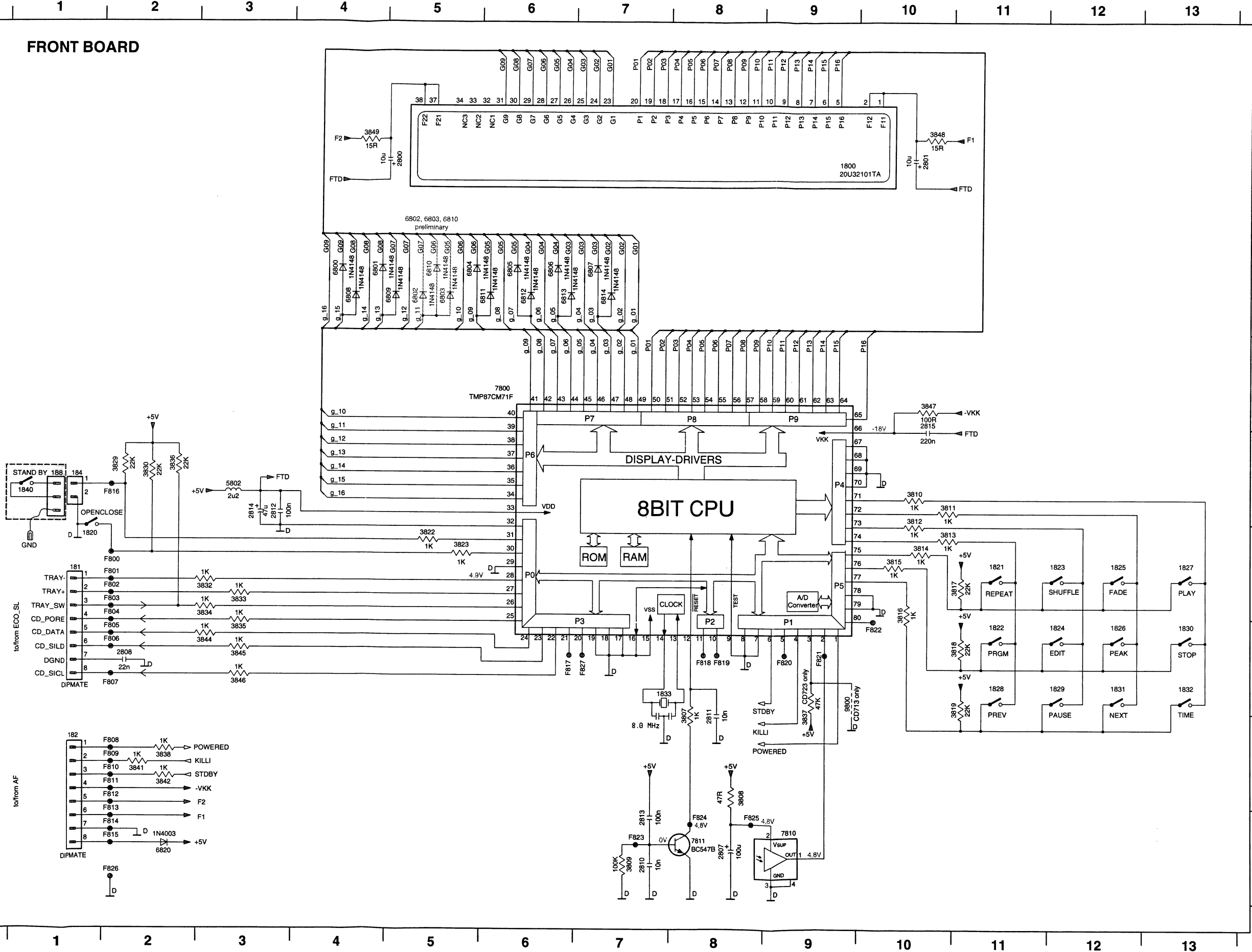
EVM  
 DC voltages measured  
 Play mode



1250	A1	2250	A1	2500	A4	2523	A3	3253	A1	3503	A4	3532	A2	3544	B1	6253	B2	7251	A3	7510	B1	9265	B1
1251	A4	2251	A2	2502	A3	2524	A3	3254	A2	3504	A4	3534	A3	3545	B1	6254	A2	7252	A2	9253	A1	9267	A3
1252	A1	2252	A1	2509	B2	2529	B2	3255	A1	3505	A3	3535	A3	3547	B1	6255	A1	7500	A3	9254	A2	9268	B3
1255	A1	2253	A1	2510	B2	2530	B3	3256	A2	3506	A3	3537	B2	3548	A2	6256	A2	7501	A2	9256	A2	9269	A3
1256	A1	2254	A2	2511	B2	2531	A4	3257	A2	3507	A4	3538	B3	3556	B4	6257	A2	7502	A4	9257	A2	9270	B4
1502	A4	2255	A3	2512	B2	2541	A4	3258	A2	3511	B2	3539	B2	3557	A1	6258	A1	7504	A2	9258	A2	9271	A4
1503	B4	2256	A1	2513	B2	2542	B4	3260	A3	3512	B2	3540	B1	5801	A4	6259	A2	7505	B2	9259	A2	9274	B4
1504	B1	2257	A1	2514	B1	2543	B4	3500	A3	3513	B2	3541	B2	6250	A1	6260	A3	7507	B1	9262	A3	9275	A4
1506	B1	2258	A2	2521	B2	3251	A1	3501	A2	3514	B2	3542	B2	6251	A1	6500	A2	7508	B1	9263	A3		
1507	A4	2259	A2	2522	B3	3252	A1	3502	A4	3527	A2	3543	B1	6252	A1	7250	A1	7509	B1	9264	A3		



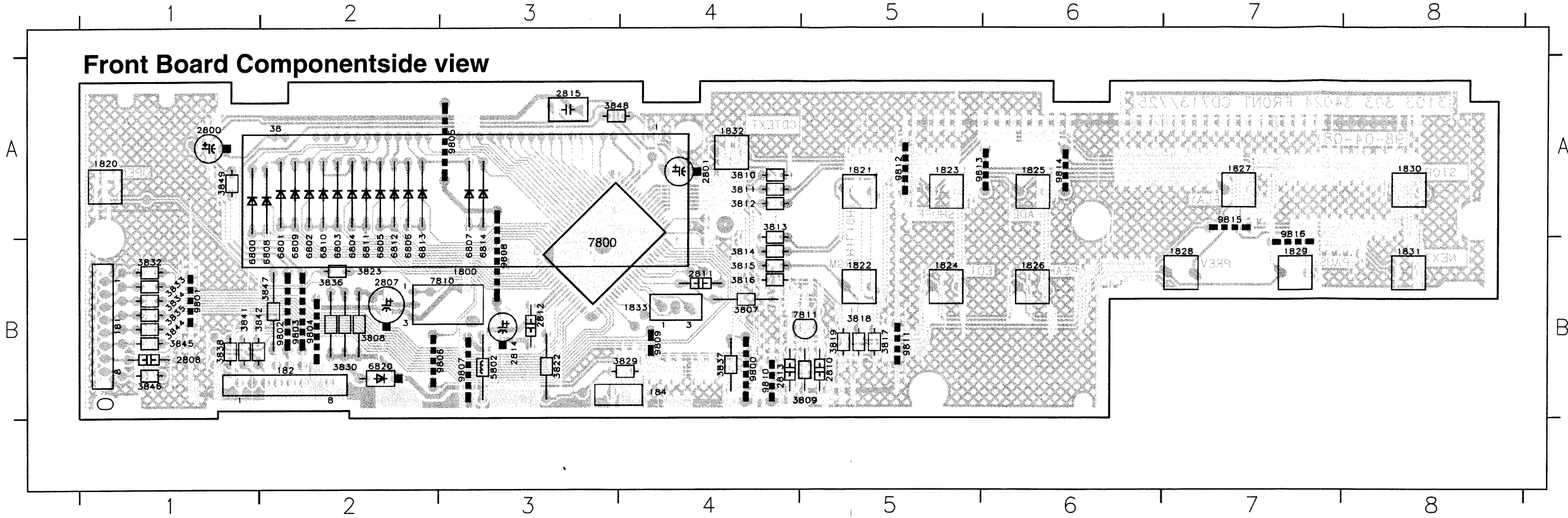
# FRONT BOARD



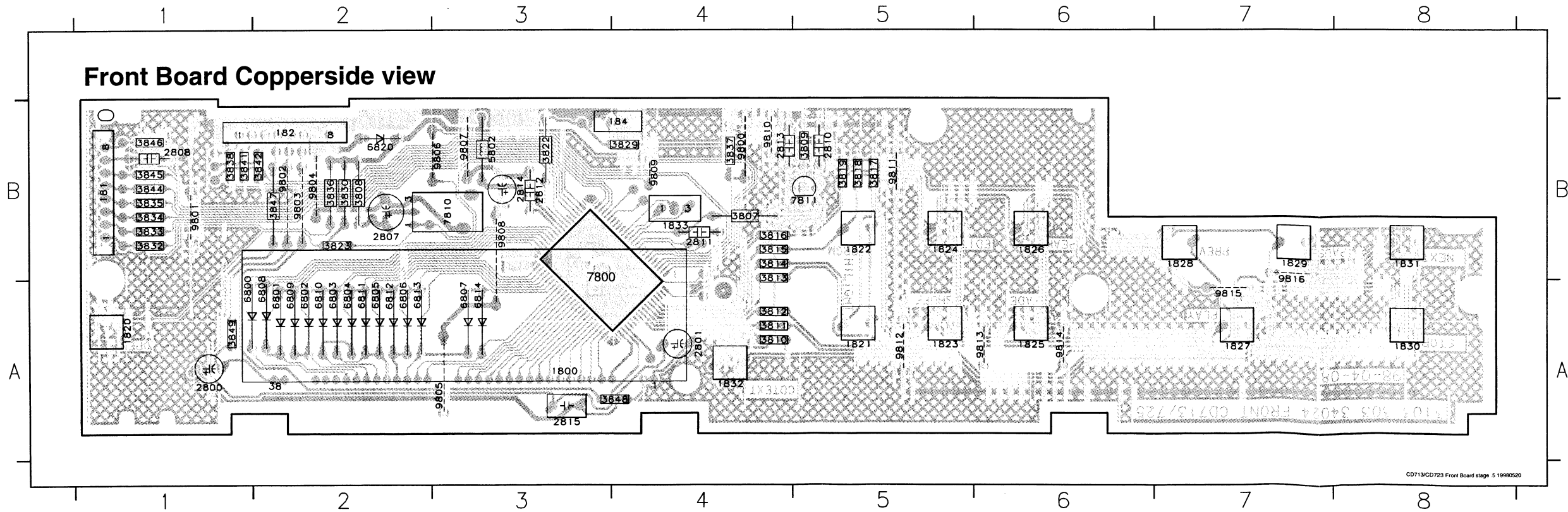
- 181 F1
- 182 H1
- 184 E1
- 1800 B9
- 1820 F1
- 1821 F11
- 1822 G11
- 1823 F12
- 1824 G12
- 1825 F12
- 1826 G12
- 1827 F13
- 1828 G11
- 1829 G12
- 1830 G13
- 1831 G12
- 1832 G13
- 1833 G7
- 2800 B5
- 2801 B10
- 2807 B8
- 2808 G2
- 2810 I7
- 2811 H8
- 2812 E3
- 2813 I7
- 2814 E3
- 2815 D10
- 3807 H8
- 3808 H8
- 3809 I7
- 3810 E10
- 3811 E10
- 3812 E10
- 3813 F10
- 3814 F10
- 3815 F10
- 3816 F10
- 3817 F11
- 3818 G11
- 3819 G11
- 3822 F5
- 3823 F5
- 3829 E2
- 3830 E2
- 3832 F3
- 3833 F3
- 3834 F3
- 3835 G3
- 3836 E2
- 3837 G9
- 3838 H2
- 3841 H2
- 3842 H2
- 3844 G3
- 3845 G3
- 3846 G3
- 3847 D10
- 3848 A10
- 3849 A4
- 5802 E3
- 6800 C4
- 6801 C4
- 6802 C5
- 6803 C5
- 6804 C5
- 6805 C6
- 6806 C6
- 6807 C7
- 6808 C4
- 6809 C5
- 6810 C5
- 6811 C6
- 6812 C6
- 6813 C6
- 6814 C7
- 6820 I2
- 7800 D6
- 7810 I9
- 7811 B8
- 9800 G9
- F800 F2
- F801 F2
- F802 F2
- F803 F2
- F804 F2
- F805 G2
- F806 G2
- F807 G2
- F808 H2
- F809 H2
- F810 H2
- F811 H2
- F812 H2
- F813 I2
- F814 I2
- F815 I2
- F816 E2
- F817 G6
- F818 G8
- F819 G8
- F820 G9
- F821 G9
- F822 G10
- F823 I7
- F824 I8
- F825 I8
- F826 I2
- F827 G7

181 B1	1823 A5	1830 A8	2808 B1	3807 B4	3814 B4	3823 B2	3836 B2	3846 B1	6802 A2	6809 A2	7800 A3	9804 B2	9811 B5
182 B2	1824 B5	1831 B8	2810 B5	3808 B2	3815 B4	3829 B4	3837 B4	3847 B2	6803 A2	6810 A2	7810 B3	9805 A3	9812 A5
184 B3	1825 A6	1832 A4	2811 B4	3809 B5	3816 B4	3830 B2	3838 B1	3848 A3	6804 A2	6811 A2	7811 B5	9806 B2	9813 A6
1800 A3	1826 B6	1833 B4	2812 B3	3810 A4	3817 B5	3832 B1	3841 B1	3849 A1	6805 A2	6812 A2	9800 B4	9807 B3	9814 A6
1820 A1	1827 A7	2800 A1	2813 B4	3811 A4	3818 B5	3833 B1	3842 B1	5802 B3	6806 A2	6813 A2	9801 B1	9808 B3	9815 A7
1821 A5	1828 B7	2801 A4	2814 B3	3812 A4	3819 B5	3834 B1	3844 B1	6800 A1	6807 A3	6814 A3	9802 B2	9809 B4	9816 B7
1822 B5	1829 B7	2807 B2	2815 A3	3813 B4	3822 B3	3835 B1	3845 B1	6801 A2	6808 A2	6820 B2	9803 B2	9810 B4	

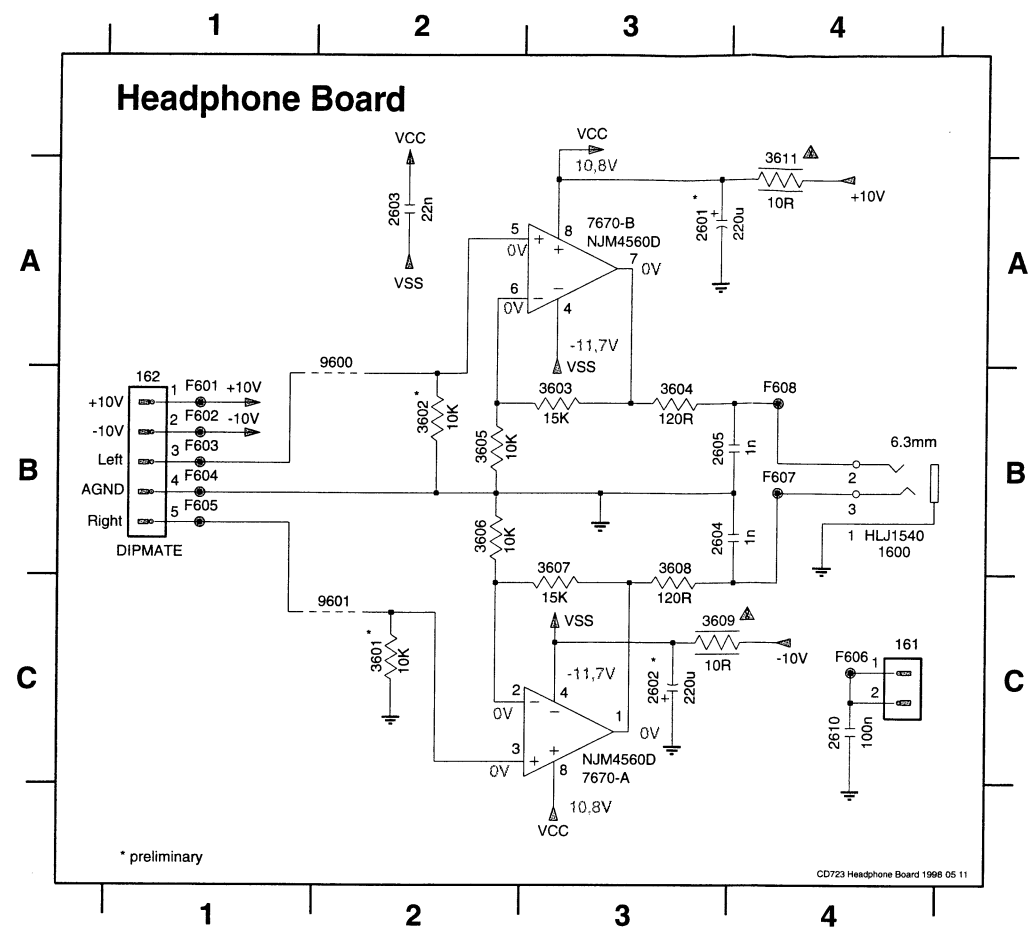
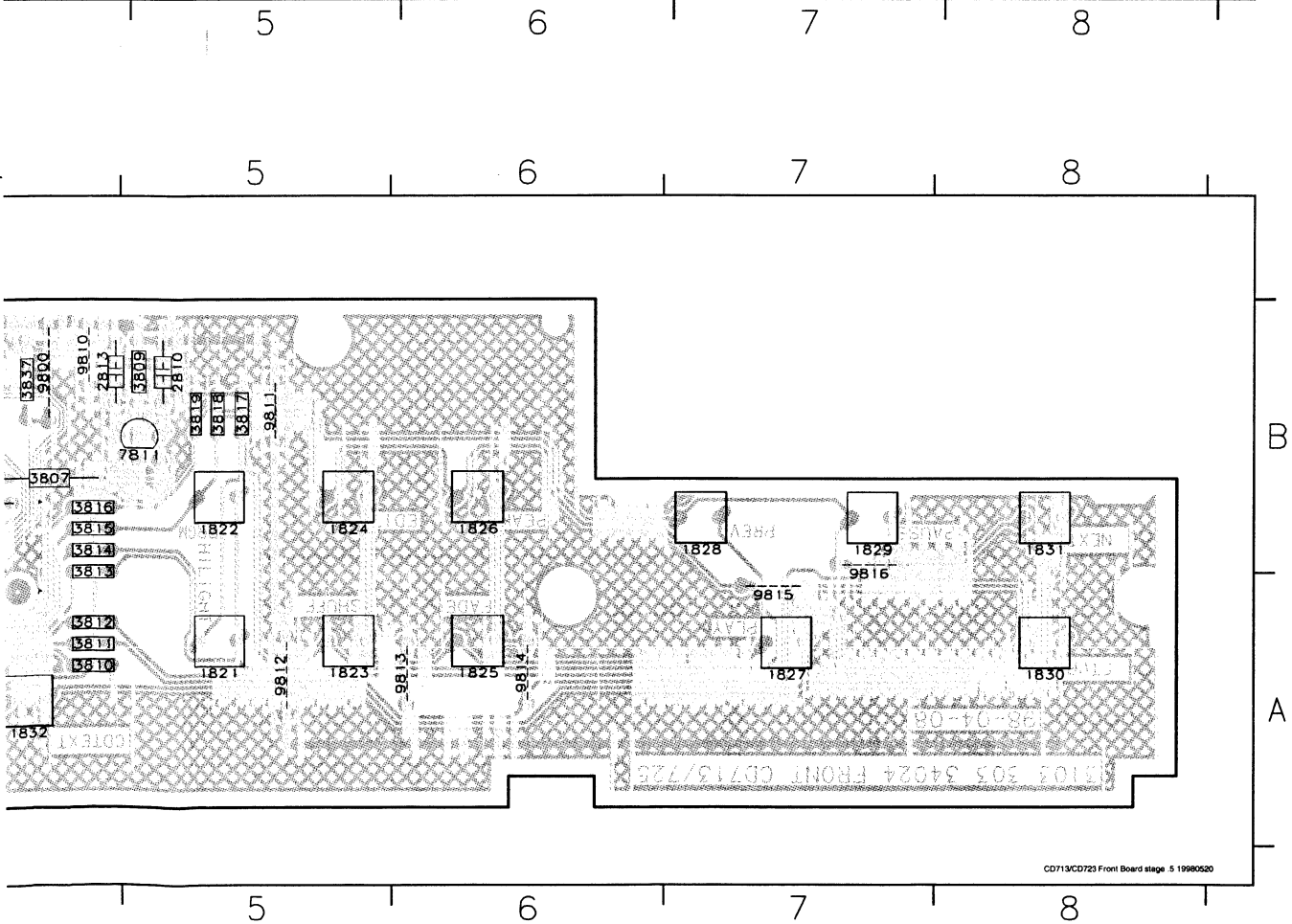
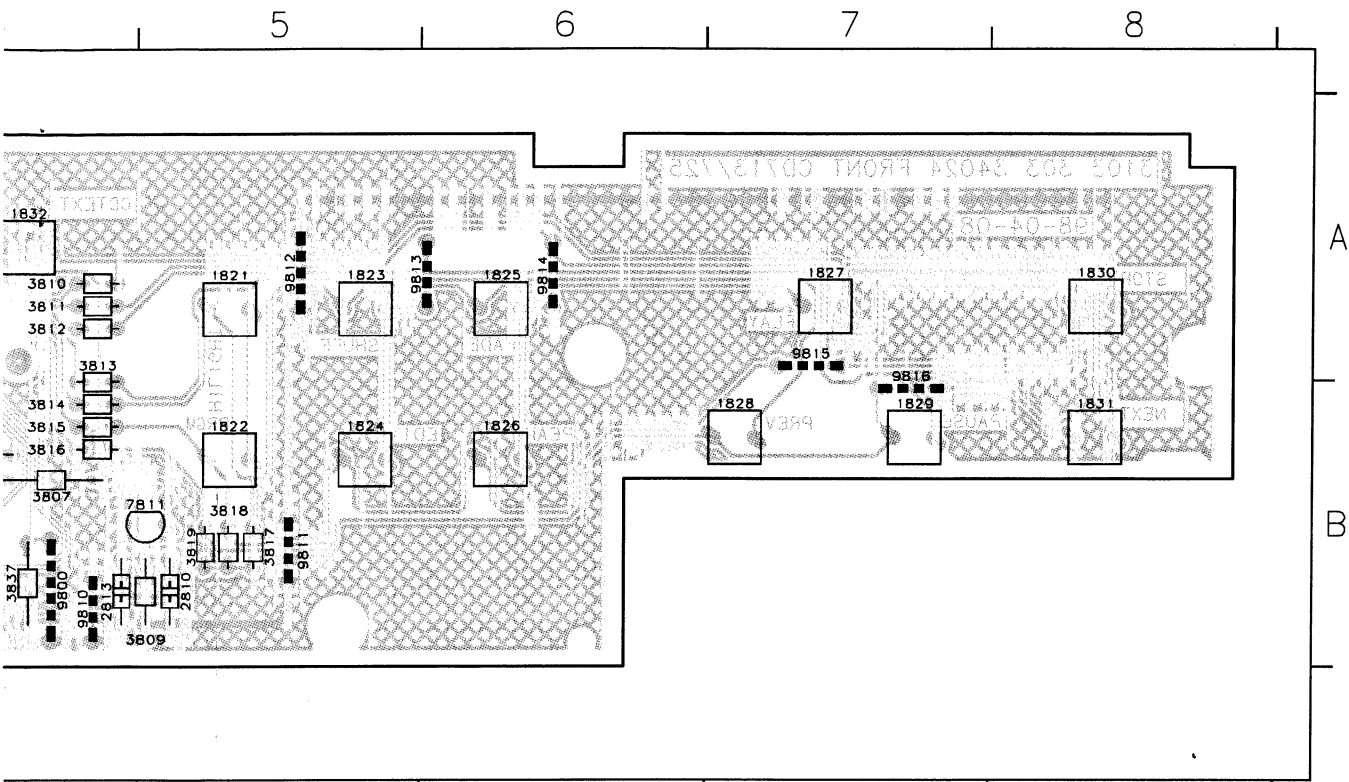
Front Board Componentside view



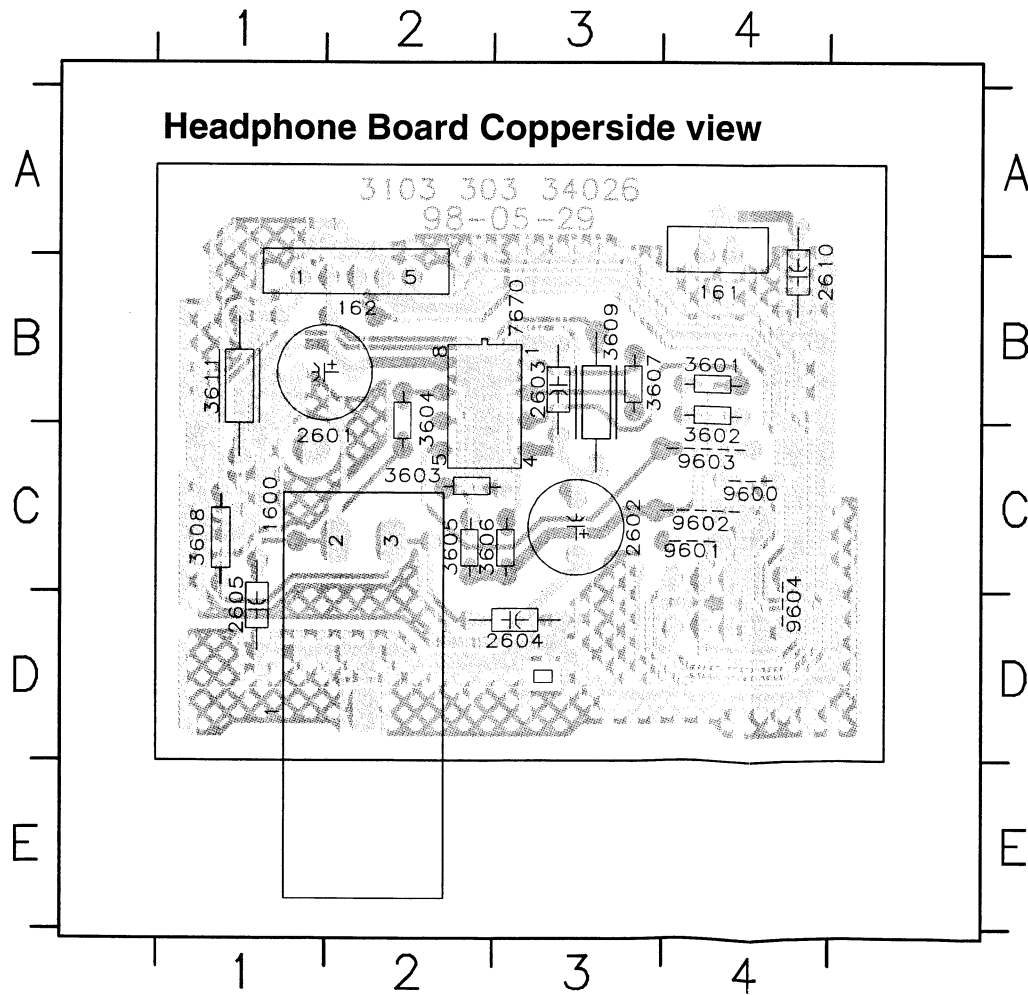
Front Board Copperside view



23 B2	3836 B2	3846 B1	6802 A2	6809 A2	7800 A3	9804 B2	9811 B5
29 B4	3837 B4	3847 B2	6803 A2	6810 A2	7810 B3	9805 A3	9812 A5
30 B2	3838 B1	3848 A3	6804 A2	6811 A2	7811 B5	9806 B2	9813 A6
32 B1	3841 B1	3849 A1	6805 A2	6812 A2	9800 B4	9807 B3	9814 A6
33 B1	3842 B1	5802 B3	6806 A2	6813 A2	9801 B1	9808 B3	9815 A7
34 B1	3844 B1	6800 A1	6807 A3	6814 A3	9802 B2	9809 B4	9816 B7
35 B1	3845 B1	6801 A2	6808 A2	6820 B2	9803 B2		

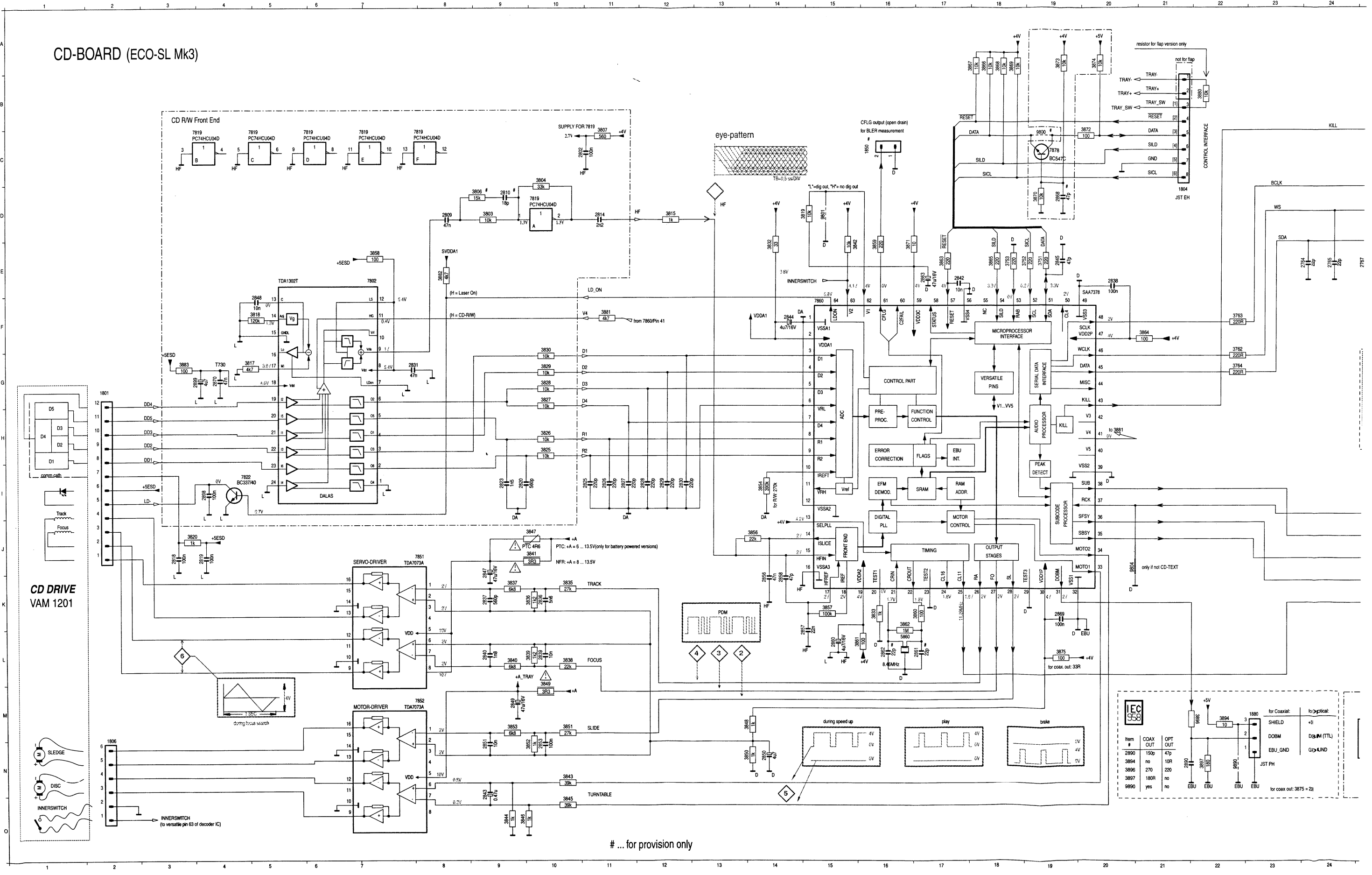


- 161 C4
- 162 B1
- 1600 B4
- 2601 A3
- 2602 C3
- 2603 A2
- 2604 B3
- 2605 B3
- 2610 C4
- 3601 C2
- 3602 B2
- 3603 B3
- 3604 B3
- 3605 B2
- 3606 B2
- 3607 B3
- 3608 B3
- 3609 C3
- 3611 A4
- 7670-A C3
- 7670-B A3
- 9600 B2
- 9601 C2

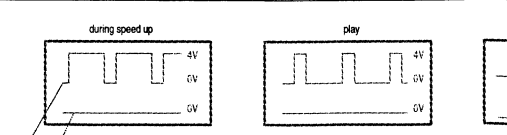
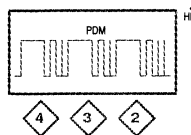
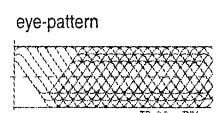


- 161 B4
- 162 B2
- 1600 D2
- 2601 B2
- 2602 C3
- 2603 B3
- 2604 D3
- 2605 D1
- 2610 B4
- 3600 D4
- 3601 B4
- 3602 B4
- 3603 C2
- 3604 B2
- 3605 D2
- 3606 D3
- 3607 B3
- 3608 C1
- 3609 B3
- 3611 B1
- 7670 B3
- 9600 C4
- 9601 C4
- 9602 C4
- 9603 C4
- 9604 D4

# CD-BBOARD (ECO-SL Mk3)



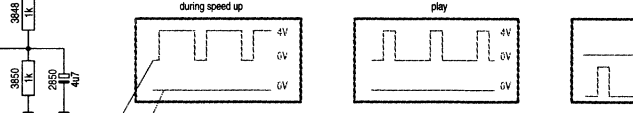
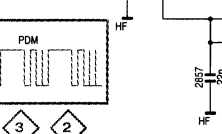
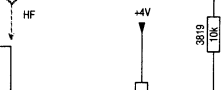
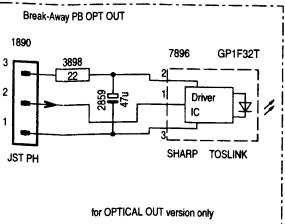
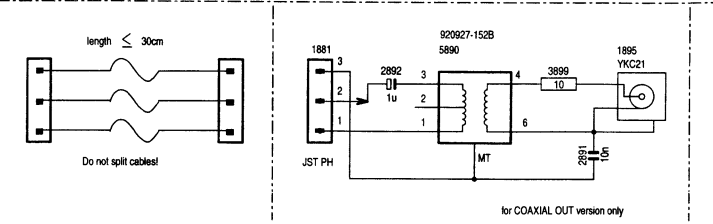
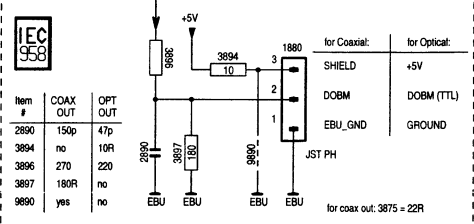
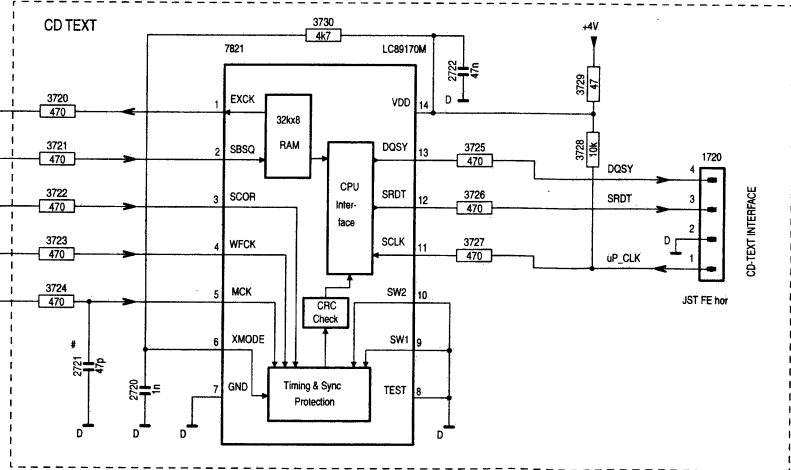
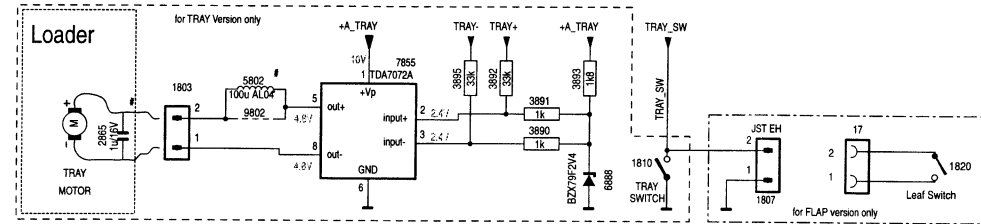
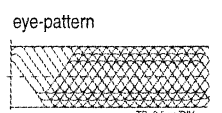
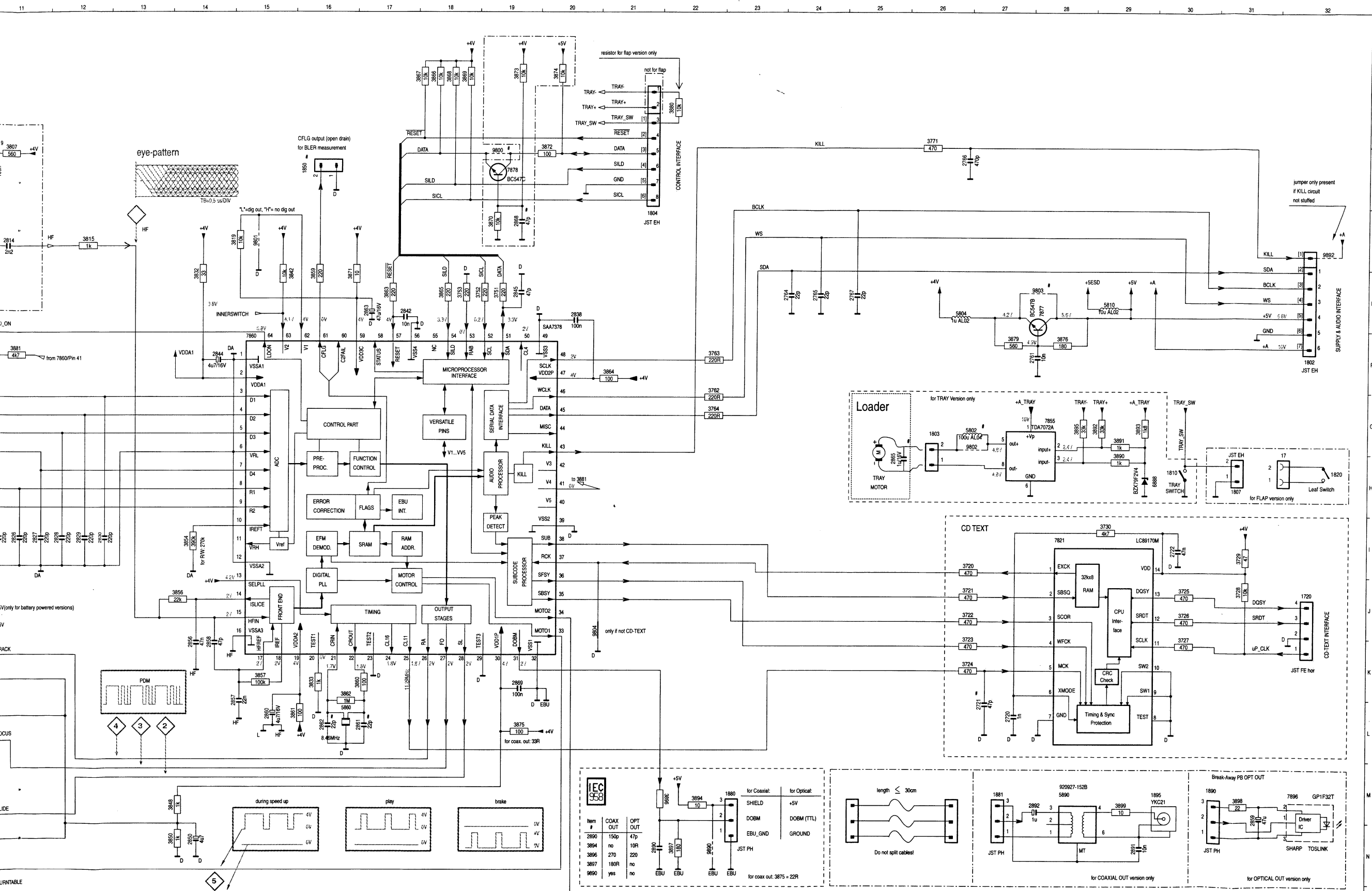
CD DRIVE VAM 1201



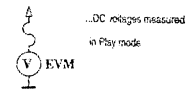
Item #	COAX OUT	OPT OUT	for Coaxial:	for Optical:
2890	150p	47p	SHIELD	+5
3894	no	10R	DOBM	DOBM (TTL)
3896	270	220	EBU_GND	GR_GND
3897	180R	no	JST PH	
9890	yes	no	EBU	EBU

for coax out: 3875 = 28

# ... for provision only

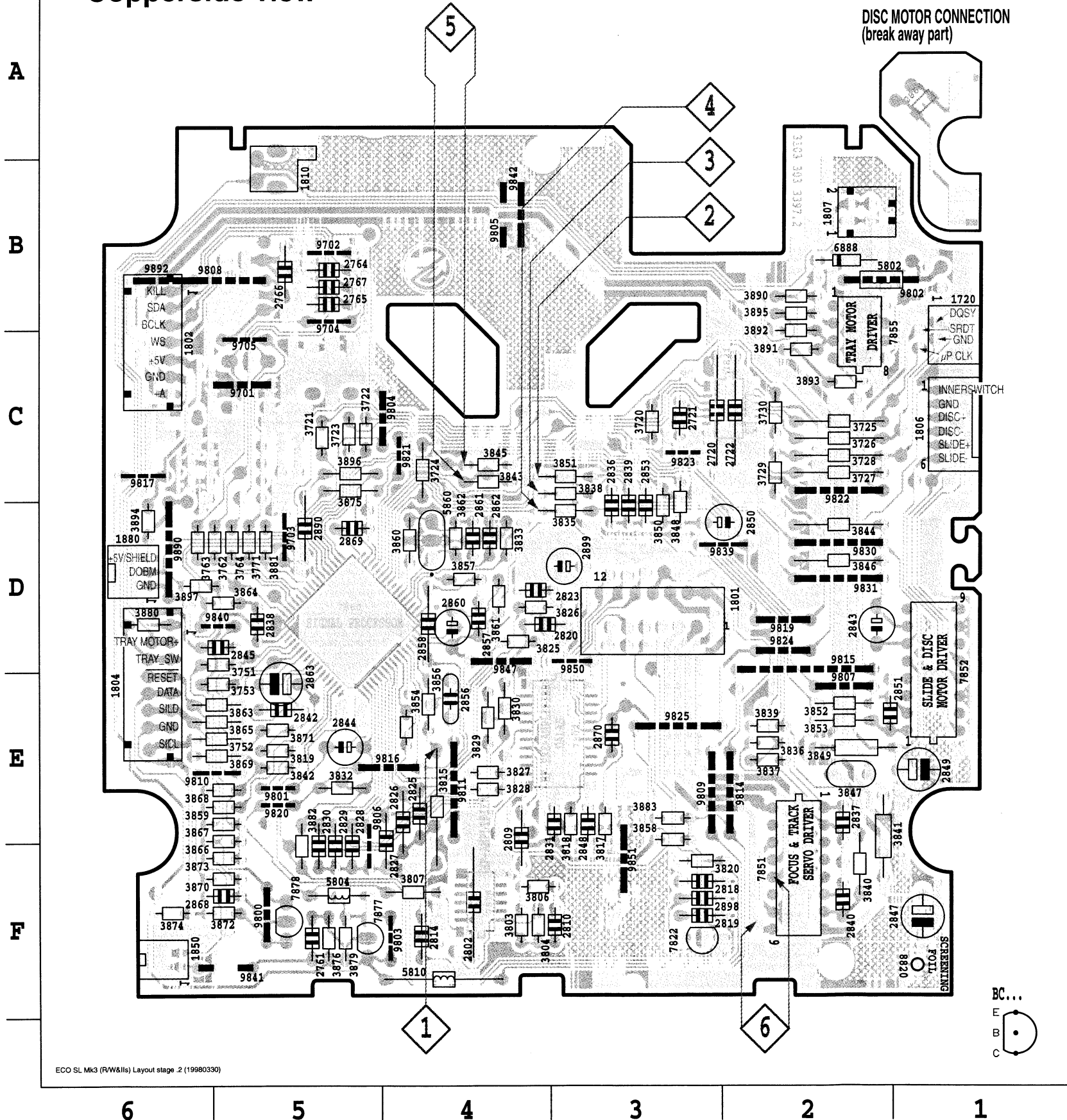


# ... for provision only

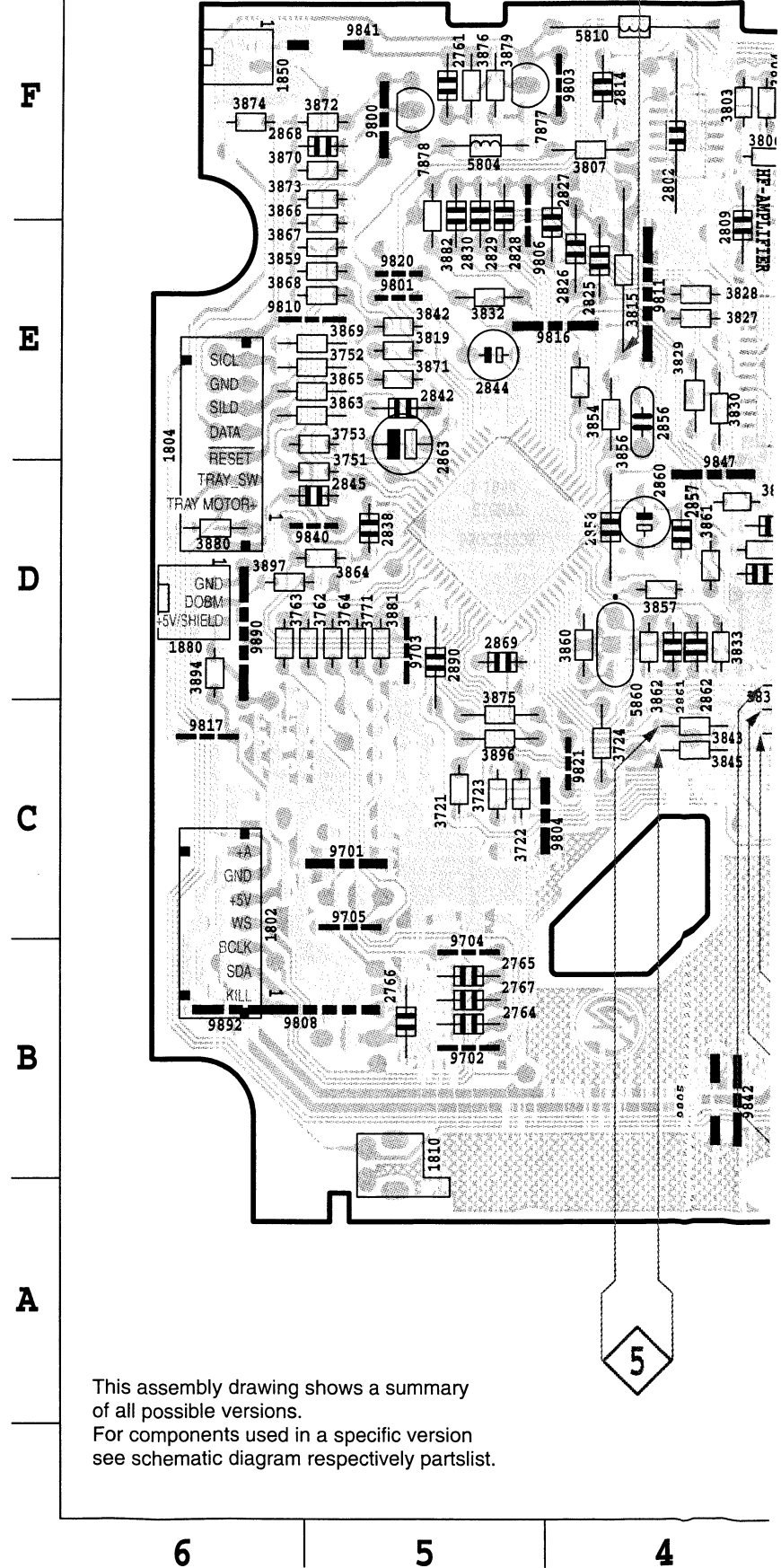


# ECO Short Loader Mk3 Copperside view

# Componentside view

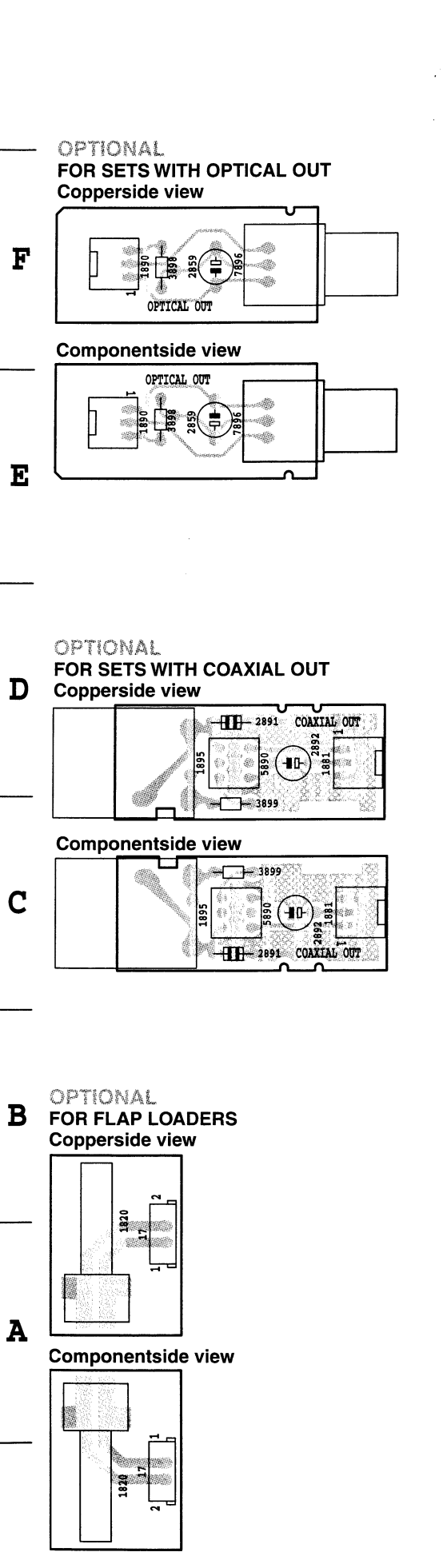
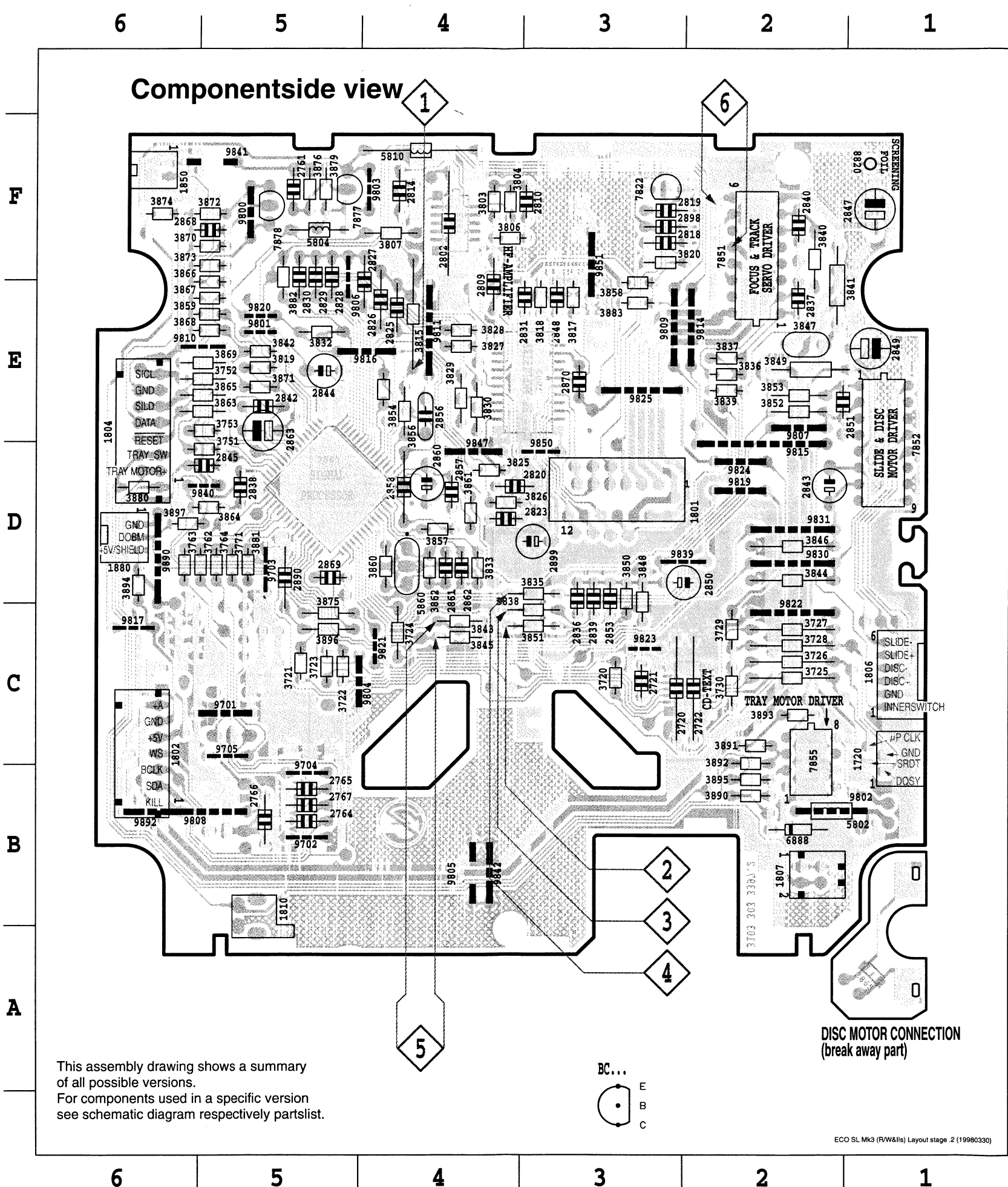
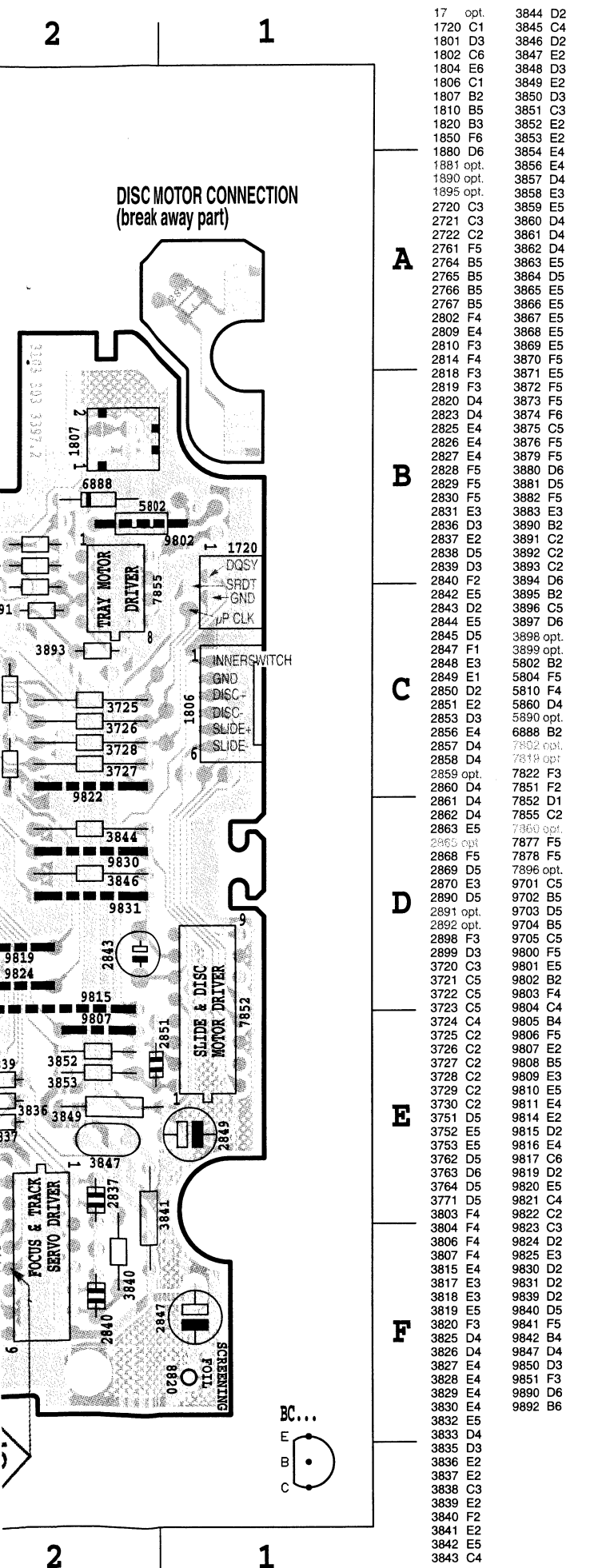


17	opt.	3844	D2
1720	C1	3845	C4
1801	D3	3846	D2
1802	C6	3847	E2
1804	E6	3848	D3
1806	C1	3849	E2
1807	B2	3850	D3
1810	B5	3851	C3
1820	B3	3852	E2
1850	F6	3853	E2
1880	D6	3854	E4
1881	opt.	3856	E4
1890	opt.	3857	D4
1895	opt.	3858	E3
2720	C3	3859	E5
2721	C3	3860	D4
2722	C2	3861	D4
2761	F5	3862	D4
2764	B5	3863	E5
2765	B5	3864	D5
2766	B5	3865	E5
2767	B5	3866	E5
2802	F4	3867	E5
2809	E4	3868	E5
2810	F3	3869	E5
2814	F4	3870	F5
2818	F3	3871	E5
2819	F3	3872	F5
2820	D4	3873	F5
2823	D4	3874	F6
2825	E4	3875	C5
2826	E4	3876	F5
2827	E4	3879	F5
2828	F5	3880	D6
2829	F5	3881	D5
2830	F5	3882	F5
2831	E3	3883	E3
2836	D3	3890	B2
2837	E2	3891	C2
2838	D5	3892	C2
2839	D3	3893	C2
2840	F2	3894	D6
2842	E5	3895	B2
2843	D2	3896	C5
2844	E5	3897	D6
2845	D5	3898	opt.
2847	F1	3899	opt.
2848	E3	5802	B2
2849	E1	5804	F5
2850	D2	5810	F4
2851	E2	5860	D4
2853	D3	5890	opt.
2856	F4	6888	B2
2857	D4	7822	F3
2858	D4	7851	F2
2859	opt.	7852	D1
2860	D4	7855	C2
2861	D4	7860	opt.
2862	D4	7877	F5
2863	E5	7878	F5
2865	opt.	7896	opt.
2870	E3	9701	C5
2890	D5	9702	B5
2891	opt.	9703	D5
2892	opt.	9704	B5
2898	F3	9705	C5
2899	D3	9800	F5
3720	C3	9801	E5
3721	C5	9802	B2
3722	C5	9803	F4
3723	C5	9804	C4
3724	C4	9805	B4
3725	C2	9806	F5
3726	C2	9807	E2
3727	C2	9808	B5
3728	C2	9809	E3
3729	C2	9810	E5
3730	C2	9811	E4
3751	D5	9814	E2
3752	E5	9815	D2
3753	E5	9816	E4
3762	D5	9817	C6
3763	D6	9819	D2
3764	D5	9820	E5
3771	D5	9821	C4
3803	F4	9822	C2
3804	F4	9823	C3
3806	F4	9824	D2
3807	F4	9825	E3
3815	E4	9830	D2
3817	E3	9831	D2
3818	E3	9839	D2
3819	E5	9840	D5
3820	F3	9841	F5
3825	D4	9842	B4
3826	D4	9847	D4
3827	E4	9850	D3
3828	E4	9851	F3
3829	E4	9890	D6
3830	E4	9892	B6
3832	E5		
3833	D4		
3835	D3		
3836	E2		
3837	E2		
3838	C3		
3839	E2		
3840	F2		
3841	E2		
3842	E5		
3843	C4		



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

ECO SL Mk3 (RW&lls) Layout stage 2 (19980330)





**WARNING**

**CHARGED CAPACITORS ON THE SERVO BOARD MAY DAMAGE THE CDM-ELECTRONICS WHEN CONNECTING A NEW CDM MECHANISM. THAT'S WHY, BESIDES THE SAFETY MEASURES LIKE**

- SWITCH OFF POWER SUPPLY
- ESD PROTECTION

**ADDITIONAL ACTIONS MUST BE TAKEN BY THE REPAIR TECHNICIAN.**

The following steps have to be done when replacing the CDM mechanism:

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

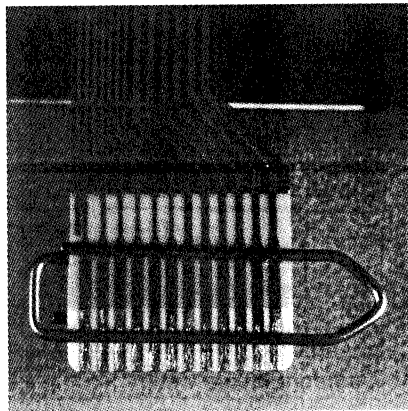


fig.1

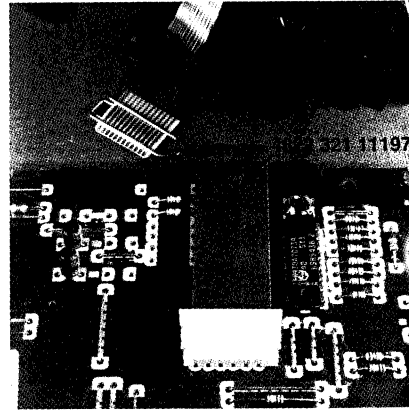


fig.2

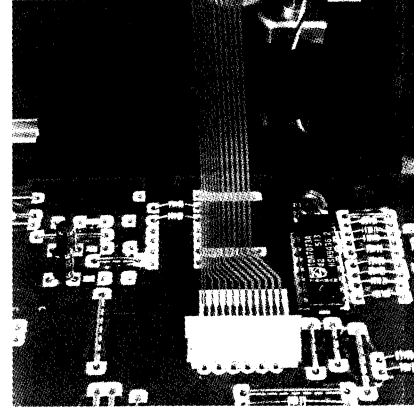
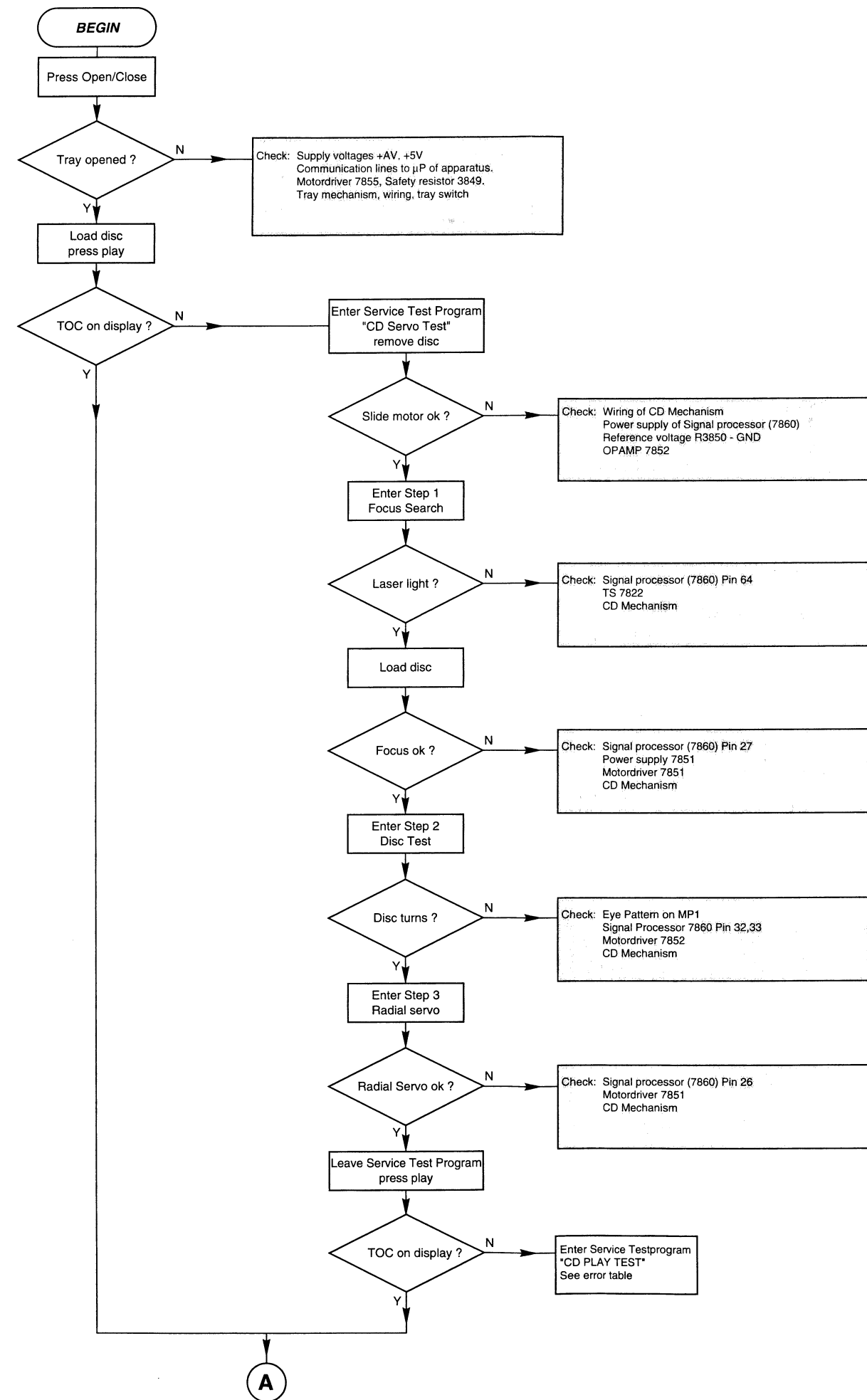
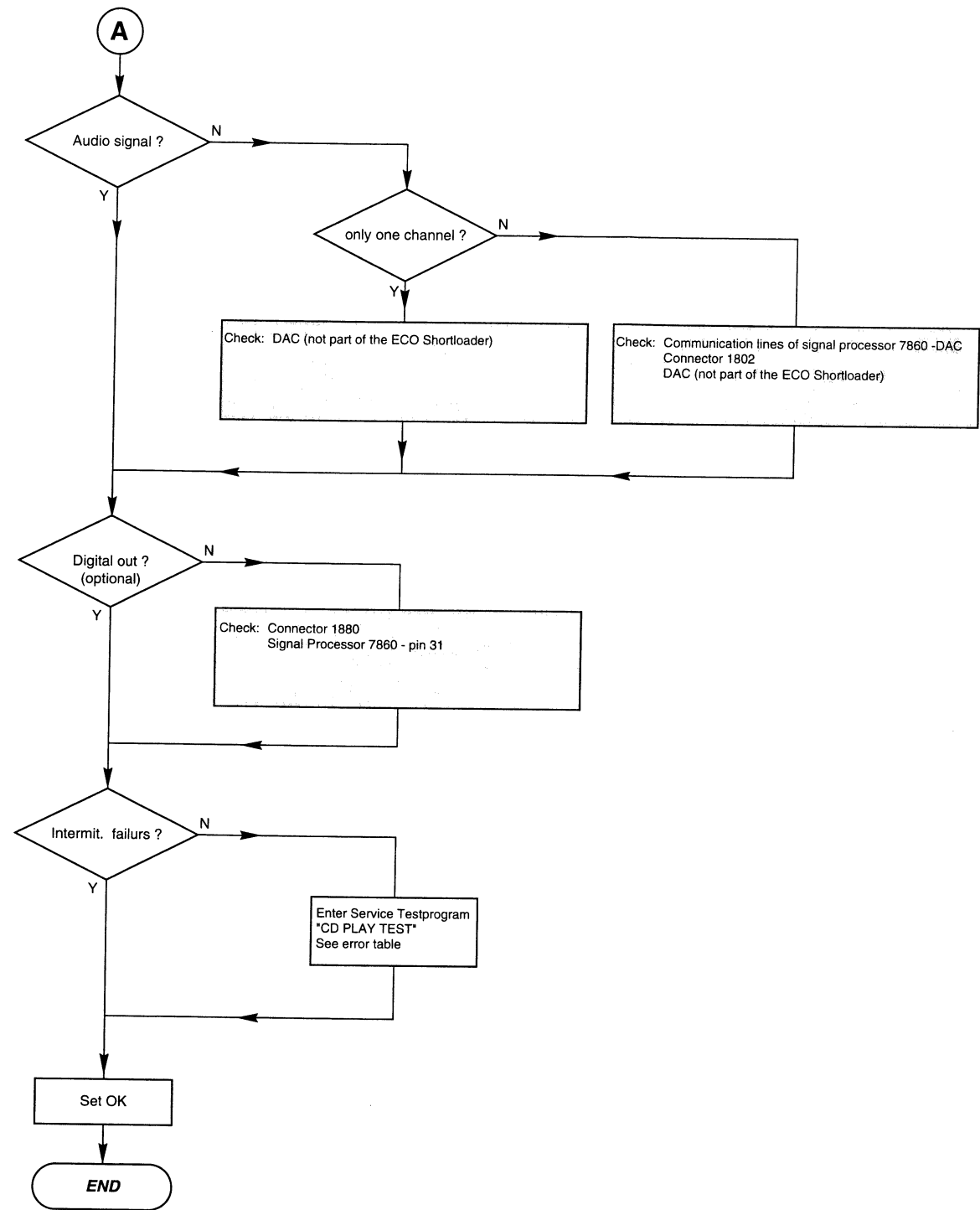
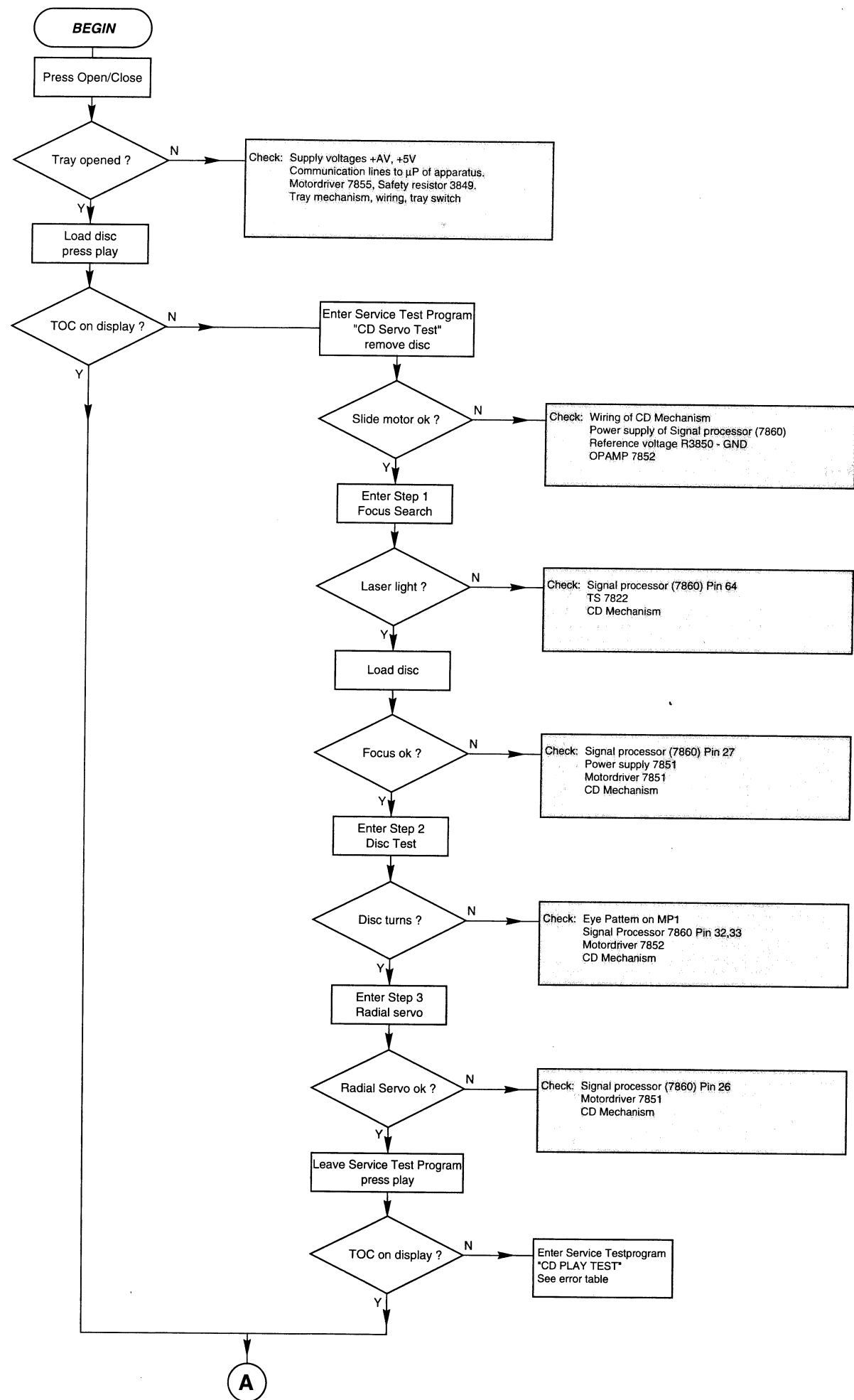


fig.3

Remarks

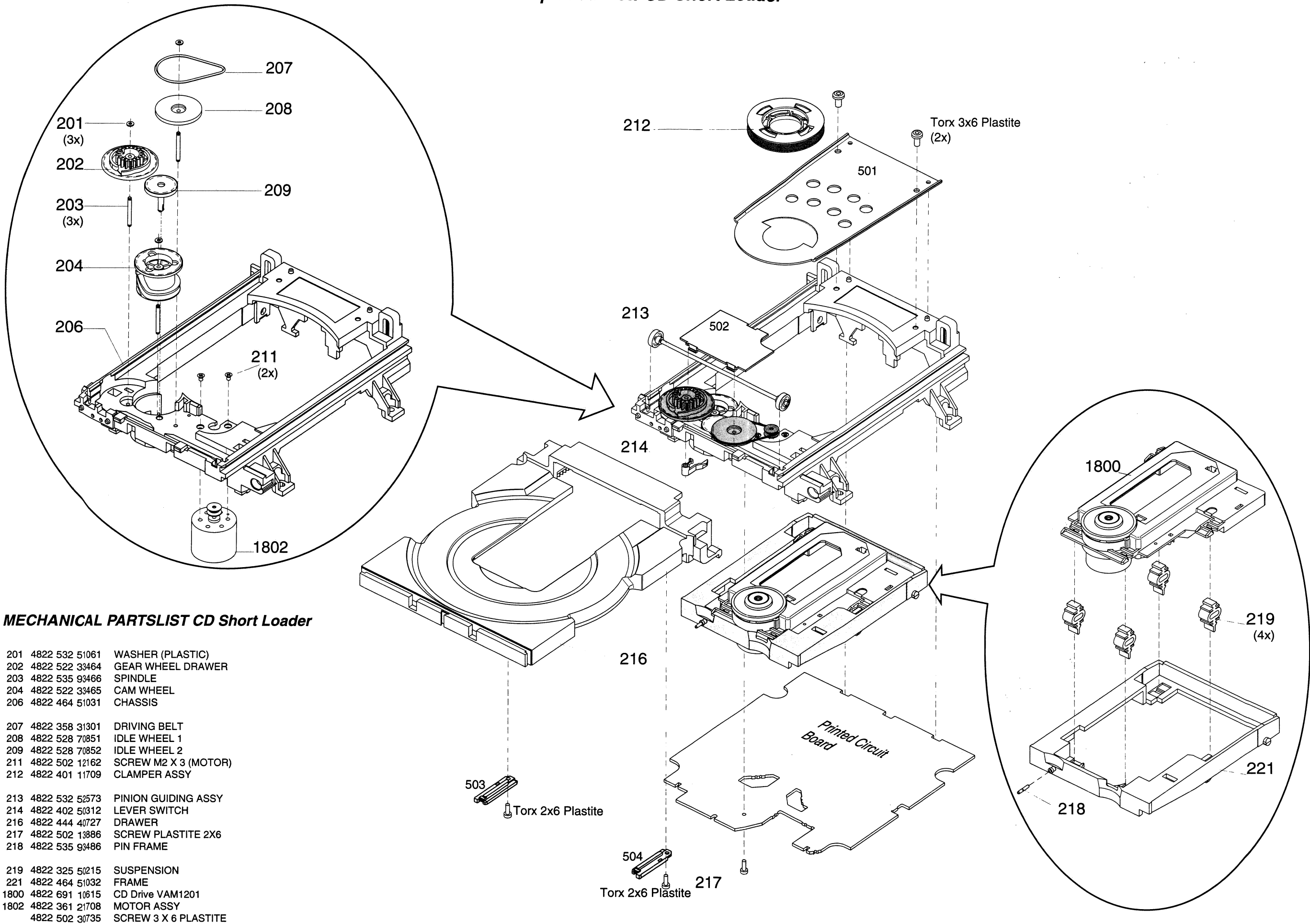
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**Exploded view CD Short Loader**



**MECHANICAL PARTSLIST CD Short Loader**

201	4822 532 51061	WASHER (PLASTIC)
202	4822 522 33464	GEAR WHEEL DRAWER
203	4822 535 93466	SPINDLE
204	4822 522 33465	CAM WHEEL
206	4822 464 51031	CHASSIS
207	4822 358 31301	DRIVING BELT
208	4822 528 70851	IDLE WHEEL 1
209	4822 528 70852	IDLE WHEEL 2
211	4822 502 12162	SCREW M2 X 3 (MOTOR)
212	4822 401 11709	CLAMPER ASSY
213	4822 532 52573	PINION GUIDING ASSY
214	4822 402 50312	LEVER SWITCH
216	4822 444 40727	DRAWER
217	4822 502 13886	SCREW PLASTITE 2X6
218	4822 535 93486	PIN FRAME
219	4822 325 50215	SUSPENSION
221	4822 464 51032	FRAME
1800	4822 691 10615	CD Drive VAM1201
1802	4822 361 21708	MOTOR ASSY
	4822 502 30735	SCREW 3 X 6 PLASTITE

**ELECTRICAL PARTSLIST CD BOARD****MISCELLANEOUS**

1800	4822 691 10615	CD DRIVE VAM1201
1801	4822 267 51453	CON. FLEX FOIL 12 PIN SIDE ENTRY
1810	4822 276 13503	SWITCH

**CAPACITORS**

2761	4822 121 51387	10nF	20%	16V
2764	4822 122 33191	22pF	5%	50V
2765	4822 122 33191	22pF	5%	50V
2766	4822 126 12878	1,5nF	10%	16V
2767	4822 122 33191	22pF	5%	50V
2802	4822 126 12882	100nF	20%	50V
2809	4822 126 12785	47nF	10%	50V
2814	4822 126 12339	2,2nF	10%	16V
2818	4822 126 12882	100nF	20%	50V
2819	4822 126 12882	100nF	20%	50V
2820	4822 122 10459	560pF	10%	50V
2823	4822 126 12878	1,5nF	10%	16V
2825	4822 122 10466	220pF	10%	50V
2826	4822 122 10466	220pF	10%	50V
2827	4822 122 10466	220pF	10%	50V
2828	4822 122 10466	220pF	10%	50V
2829	4822 122 10466	220pF	10%	50V
2830	4822 122 10466	220pF	10%	50V
2831	4822 126 12785	47nF	10%	50V
2836	4822 126 13098	5,6nF	20%	16V
2837	4822 122 10459	560pF	10%	50V
2838	4822 126 12882	100nF	20%	50V
2839	4822 121 51387	10nF	20%	16V
2840	4822 122 10576	1,8nF	10%	16V
2842	4822 121 51387	10nF	20%	16V
2843	5322 124 41948	0,47 $\mu$ F	20%	50V
2844	4822 124 22726	4,7 $\mu$ F	20%	35V
2845	4822 122 33848	47pF	5%	50V
2847	4822 124 40433	47 $\mu$ F	20%	25V
2848	4822 121 51387	10nF	20%	16V
2849	4822 124 40433	47 $\mu$ F	20%	25V
2850	4822 124 22726	4,7 $\mu$ F	20%	35V
2851	4822 121 51387	10nF	20%	16V
2853	4822 126 12882	100nF	20%	50V
2856	4822 121 70619	22nF	10%	50V
2857	4822 126 11585	22nF	20%	50V
2858	4822 122 33848	47pF	5%	50V
2860	4822 124 22726	4,7 $\mu$ F	20%	35V
2861	4822 122 33191	22pF	5%	50V
2862	4822 122 33191	22pF	5%	50V
2863	4822 124 81286	47 $\mu$ F	20%	16V
2869	4822 126 12882	100nF	20%	50V
2870	4822 126 12785	47nF	10%	50V
2890	4822 122 33849	150pF	10%	50V
2898	4822 126 12882	100nF	20%	50V
2899	4822 124 22726	4,7 $\mu$ F	20%	35V

**RESISTORS**

3751	4822 116 83872	220 $\Omega$	5%	0,5W
3752	4822 116 83872	220 $\Omega$	5%	0,5W
3753	4822 116 83872	220 $\Omega$	5%	0,5W
3762	4822 116 83872	220 $\Omega$	5%	0,5W
3763	4822 116 83872	220 $\Omega$	5%	0,5W
3764	4822 116 83872	220 $\Omega$	5%	0,5W
3771	4822 116 83883	470 $\Omega$	5%	0,16W
3803	4822 116 83864	10k $\Omega$	5%	0,5W
3804	4822 116 52257	22k $\Omega$	5%	0,5W
3807	4822 116 52226	560 $\Omega$	5%	0,5W
3815	4822 050 11002	1k $\Omega$	5%	0,2W
3817	4822 116 52283	4,7k $\Omega$	5%	0,5W
3818	4822 116 52239	120k $\Omega$	5%	0,5W
3820	4822 050 11002	1k $\Omega$	5%	0,2W
3825	4822 116 83864	10k $\Omega$	5%	0,5W
3826	4822 116 83864	10k $\Omega$	5%	0,5W
3827	4822 116 83864	10k $\Omega$	5%	0,5W
3828	4822 116 83864	10k $\Omega$	5%	0,5W
3829	4822 116 83864	10k $\Omega$	5%	0,5W
3830	4822 116 83864	10k $\Omega$	5%	0,5W
3832	4822 116 52191	33 $\Omega$	5%	0,5W
3833	4822 050 11002	1k $\Omega$	5%	0,2W
3835	4822 116 52264	27k $\Omega$	5%	0,5W
3836	4822 116 52207	1,2k $\Omega$	5%	0,5W
3837	4822 116 83961	6,8k $\Omega$	5%	0,16W
3838	4822 116 52257	22k $\Omega$	5%	0,5W
3839	4822 116 52207	1,2k $\Omega$	5%	0,5W
3840	4822 116 83961	6,8k $\Omega$	5%	0,16W
3841	▲ 4822 052 10338	3,3 $\Omega$		NFR25
3842	4822 116 83864	10k $\Omega$	5%	0,5W
3843	4822 116 83882	39k $\Omega$	5%	0,5W
3844	4822 050 11002	1k $\Omega$	5%	0,2W
3845	4822 116 83882	39k $\Omega$	5%	0,5W
3846	4822 050 11002	1k $\Omega$	5%	0,2W
3848	4822 050 11002	1k $\Omega$	5%	0,2W
3849	▲ 4822 052 10338	3,3 $\Omega$		NFR25
3850	4822 050 11002	1k $\Omega$	5%	0,2W
3851	4822 116 52264	27k $\Omega$	5%	0,5W
3852	4822 050 11002	1k $\Omega$	5%	0,2W
3853	4822 116 83961	6,8k $\Omega$	5%	0,16W
3854	4822 116 83878	270k $\Omega$	5%	0,5W
3856	4822 116 52257	22k $\Omega$	5%	0,5W
3857	4822 116 52234	100k $\Omega$	5%	0,5W
3858	4822 116 52175	100 $\Omega$	5%	0,5W
3859	4822 116 83872	220 $\Omega$	5%	0,5W
3860	4822 116 52175	100 $\Omega$	5%	0,5W
3861	4822 116 52175	100 $\Omega$	5%	0,5W
3862	4822 116 52235	1M $\Omega$	5%	0,5W

**ELECTRICAL PARTSLIST CD BOARD****RESISTORS**

3863	4822 116 83872	220Ω	5%	0,5W
3864	4822 116 52175	100Ω	5%	0,5W
3865	4822 116 83872	220Ω	5%	0,5W
3866	4822 116 83864	10kΩ	5%	0,5W
3867	4822 116 83864	10kΩ	5%	0,5W
3868	4822 116 83864	10kΩ	5%	0,5W
3869	4822 116 83864	10kΩ	5%	0,5W
3870	4822 116 83864	10kΩ	5%	0,5W
3871	4822 116 52176	10Ω	5%	0,5W
3872	4822 116 52175	100Ω	5%	0,5W
3873	4822 116 83864	10kΩ	5%	0,5W
3874	4822 116 83864	10kΩ	5%	0,5W
3875	4822 116 52191	33Ω	5%	0,5W
3876	4822 116 52213	180Ω	5%	0,5W
3879	4822 116 52226	560Ω	5%	0,5W
3881	4822 116 52283	4,7kΩ	5%	0,5W
3882	4822 116 52283	4,7kΩ	5%	0,5W
3883	4822 116 52175	100Ω	5%	0,5W
3890	4822 050 11002	1kΩ	5%	0,2W
3891	4822 050 11002	1kΩ	5%	0,2W
3892	4822 116 52271	33kΩ	5%	0,16W
3893	4822 116 52249	1,8kΩ	5%	0,16W
3895	4822 116 52271	33kΩ	5%	0,16W
3896	4822 116 83876	270Ω	5%	0,16W
3897	4822 116 52213	180Ω	5%	0,5W

**COILS**

5804	4822 157 53302	1μH
5810	4822 157 11517	10μH
5860	4822 242 10566	CRYSTAL 8.4672MHz

**DIODES**

6888	4822 130 80655	BZX79-F2V4
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**TRANSISTORS**

7822	4822 130 41344	BC337-40
7877	4822 130 40959	BC547B
7878	4822 130 44503	BC547C

**INTEGRATED CIRCUITS**

7802©	4822 209 12636	TDA1302T/N1
7819©	5322 209 11517	PC74HCU04T
7851	4822 209 32852	TDA7073A/N2
7852	4822 209 32852	TDA7073A/N2
7855©	4822 209 31519	TDA7072A
7860©	4822 209 12752	SAA7378GP

**ELECTRICAL PARTSLIST HEADPHONE BOARD****MISCELLANEOUS**

1600	4822 267 31453	HEADPHONE SOCKET 6,3mm
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**CAPACITORS**

2603	4822 126 11585	22nF	20%	50V
2604	4822 122 33197	1nF	10%	50V
2605	4822 122 33197	1nF	10%	50V
2610	4822 126 12882	100nF	20%	50V

**RESISTORS**

3603	4822 116 52244	15kΩ	5%	0,5W
3604	4822 116 52206	120Ω	5%	0,5W
3605	4822 050 21003	10kΩ	1%	0,6W
3606	4822 050 21003	10kΩ	1%	0,6W
3607	4822 116 52244	15kΩ	5%	0,5W
3608	4822 116 52206	120Ω	5%	0,5W
3609▲	4822 052 10109	10Ω	5%	NFR
3611▲	4822 052 10109	10Ω	5%	NFR

**INTEGRATED CIRCUITS**

7670	4822 209 83274	NJM4560D
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**ELECTRICAL PARTSLIST SET****MISCELLANEOUS**

5001▲	4822 146 11031	TRANSFORMER MAINS for /N
5001▲	4822 146 11032	TRANSFORMER MAINS for /K
	3139 228 82590	RC07114/02 (Remote Control)

**ELECTRICAL PARTSLIST AF BOARD****MISCELLANEOUS**

1255 ▲	4822 071 56301	FUSE T 630mA/250V
1256 ▲	4822 071 56301	FUSE T 630mA/250V
1503	4822 267 31729	CINCH SOCKET
1504	4822 265 20553	CINCH SOCKET

**CAPACITORS**

2250	4822 124 41407	0,47μF	20%	63V
2251	4822 124 11769	220μF	20%	50V
2252	4822 126 11585	22nF	20%	50V
2253	4822 126 11585	22nF	20%	50V
2254	4822 124 11878	4700μF	20%	16V
2255	4822 126 12882	100nF	20%	50V
2256	4822 126 11585	22nF	20%	50V
2257	4822 126 11585	22nF	20%	50V
2258	4822 124 40784	3300μF	20%	16V
2259	4822 124 80144	220μF	20%	25V
2500	4822 126 11585	22nF	20%	50V
2502	4822 124 80144	220μF	20%	25V
2509	4822 122 10466	220pF	10%	50V
2510	4822 122 10466	220pF	10%	50V
2511	4822 124 40433	47μF	20%	25V
2512	4822 124 40433	47μF	20%	25V
2513	4822 122 33519	470pF	10%	50V
2514	4822 122 33519	470pF	10%	50V
2521	4822 124 22263	220μF	20%	25V
2522	4822 124 22263	220μF	20%	25V
2523	4822 121 51387	10nF	20%	16V
2524	4822 124 40433	47μF	20%	25V
2529	4822 122 33197	1nF	10%	50V
2530	4822 122 33197	1nF	10%	50V
2531	4822 126 11585	22nF	20%	50V
2541	4822 124 21913	1μF	20%	63V
2543	4822 126 12882	100nF	20%	50V

**RESISTORS**

3251 ▲	4822 053 10471	470Ω	5%	1W
3252 ▲	4822 053 10471	470Ω	5%	1W
3253	4822 116 52257	22kΩ	5%	0,5W
3254	4822 116 52283	4,7kΩ	5%	0,5W
3255	4822 116 52256	2,2kΩ	5%	0,16W
3256	4822 050 11002	1kΩ	5%	0,2W
3257 ▲	4822 116 52283	4,7kΩ	5%	0,5W
3258	4822 116 52283	4,7kΩ	5%	0,5W
3259	4822 052 10478	4,7Ω	5%	NFR
3260 ▲	4822 052 10568	5,6Ω	5%	0,33W
3500	4822 116 52289	5,6kΩ	5%	0,16W
3501	4822 050 21003	10kΩ	1%	0,6W
3502	4822 116 52175	100Ω	5%	0,5W
3503	4822 116 52175	100Ω	5%	0,5W
3504	4822 116 52175	100Ω	5%	0,5W
3505	4822 116 52175	100Ω	5%	0,5W
3506	4822 116 52244	15kΩ	5%	0,5W
3507	4822 050 21003	10kΩ	1%	0,6W
3511	4822 116 52269	3,3kΩ	5%	0,5W
3512	4822 116 52269	3,3kΩ	5%	0,5W

**RESISTORS**

3513	4822 116 83884	47kΩ	5%	0,16W
3514	4822 116 83884	47kΩ	5%	0,16W
3527	4822 116 52256	2,2kΩ	5%	0,16W
3532	4822 116 83874	220kΩ	5%	0,5W
3534	4822 050 21003	10kΩ	1%	0,6W
3535	4822 116 52289	5,6kΩ	5%	0,16W
3537	4822 116 83872	220Ω	5%	0,5W
3538	4822 116 52207	1,2kΩ	5%	0,5W
3539	4822 050 11002	1kΩ	5%	0,2W
3540	4822 050 11002	1kΩ	5%	0,2W
3541	4822 050 11002	1kΩ	5%	0,2W
3542	4822 050 11002	1kΩ	5%	0,2W
3543	4822 050 11002	1kΩ	5%	0,2W
3544	4822 050 11002	1kΩ	5%	0,2W
3545	4822 050 11002	1kΩ	5%	0,2W
3547	4822 050 11002	1kΩ	5%	0,2W
3548	4822 116 52256	2,2kΩ	5%	0,16W
3556	4822 116 52176	10Ω	5%	0,5W
3557 ▲	4822 052 10688	6,8Ω	5%	0,33W

**COILS**

5801	4822 156 31058	100μH
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**DIODES**

6250	4822 130 34379	BZX79-C27
6251	4822 130 34174	BZX79-B4V7
6252	4822 130 31878	1N4003G
6253	4822 130 31878	1N4003G
6254	4822 130 31878	1N4003G
6255	4822 130 31878	1N4003G
6256	4822 130 31878	1N4003G
6257	4822 130 31878	1N4003G
6258	4822 130 31878	1N4003G
6259	4822 130 31981	BZX79-C3V9
6260	4822 130 31878	1N4003G
6500	4822 130 30621	1N4148

**TRANSISTORS**

7250	4822 130 41327	BC327-40
7252	5322 130 60068	BC558C
7500	4822 130 41327	BC327-40
7501	5322 130 60068	BC558C
7504	4822 130 44568	BC557B
7507	4822 130 41344	BC337-40
7508	4822 130 41344	BC337-40
7509	4822 130 41344	BC337-40
7510	4822 130 41344	BC337-40

**INTEGRATED CIRCUITS**

7251 ▲	4822 209 80817	L7805CV
7502	4822 209 31147	TDA1545A/N2 DAC
7505	4822 209 83274	NJM4560D

**ELECTRICAL PARTSLIST FRONT BOARD****MISCELLANEOUS**

1800	3139 110 51970	DISPLAY
1820	4822 276 13114	TACT SWITCH
1821	4822 276 13114	TACT SWITCH
1822	4822 276 13114	TACT SWITCH
1823	4822 276 13114	TACT SWITCH
1824	4822 276 13114	TACT SWITCH
1825	4822 276 13114	TACT SWITCH
1826	4822 276 13114	TACT SWITCH
1827	4822 276 13114	TACT SWITCH
1828	4822 276 13114	TACT SWITCH
1829	4822 276 13114	TACT SWITCH
1830	4822 276 13114	TACT SWITCH
1831	4822 276 13114	TACT SWITCH
1832	4822 276 13114	TACT SWITCH
1840	4822 276 13114	TACT SWITCH
7810	4822 130 10165	GP1U28XP, IR EYE

**CAPACITORS**

2800	4822 124 22726	4,7 $\mu$ F	20%	35V
2801	4822 124 22726	4,7 $\mu$ F	20%	35V
2803	4822 126 11585	22nF	20%	25V
2807	4822 124 40207	100 $\mu$ F	20%	25V
2808	4822 126 11585	22nF	20%	50V
2810	4822 121 51387	10nF	20%	16V
2811	4822 121 51387	10nF	20%	16V
2812	4822 126 12882	100nF	20%	50V
2813	4822 126 12882	100nF	20%	50V
2814	4822 124 40433	47 $\mu$ F	20%	25V
2815	4822 121 42408	220nF	5%	63V

**RESISTORS**

3807	4822 050 11002	1k $\Omega$	5%	0,2W
3808	4822 116 52195	47 $\Omega$	5%	0,5W
3809	4822 116 52234	100k $\Omega$	5%	0,5W
3810	4822 050 11002	1k $\Omega$	5%	0,2W
3811	4822 050 11002	1k $\Omega$	5%	0,2W
3812	4822 050 11002	1k $\Omega$	5%	0,2W
3813	4822 050 11002	1k $\Omega$	5%	0,2W
3814	4822 050 11002	1k $\Omega$	5%	0,2W
3815	4822 050 11002	1k $\Omega$	5%	0,2W
3816	4822 050 11002	1k $\Omega$	5%	0,2W
3817	4822 116 52257	22k $\Omega$	5%	0,5W
3818	4822 116 52257	22k $\Omega$	5%	0,5W
3819	4822 116 52257	22k $\Omega$	5%	0,5W
3820	4822 116 52182	15 $\Omega$	5%	0,5W
3821	4822 116 52182	15 $\Omega$	5%	0,5W
3822	4822 050 11002	1k $\Omega$	5%	0,2W
3823	4822 050 11002	1k $\Omega$	5%	0,2W
3829	4822 116 52257	22k $\Omega$	5%	0,5W
3830	4822 116 52257	22k $\Omega$	5%	0,5W
3832	4822 050 11002	1k $\Omega$	5%	0,2W
3833	4822 050 11002	1k $\Omega$	5%	0,2W
3834	4822 050 11002	1k $\Omega$	5%	0,2W
3835	4822 050 11002	1k $\Omega$	5%	0,2W
3836	4822 116 52257	22k $\Omega$	5%	0,5W
3837	4822 116 83884	47k $\Omega$	5%	0,16W
3838	4822 050 11002	1k $\Omega$	5%	0,2W
3841	4822 050 11002	1k $\Omega$	5%	0,2W
3842	4822 050 11002	1k $\Omega$	5%	0,2W

**RESISTORS**

3844	4822 050 11002	1k $\Omega$	5%	0,2W
3845	4822 050 11002	1k $\Omega$	5%	0,2W
3846	4822 050 11002	1k $\Omega$	5%	0,2W
3847	4822 116 52175	100 $\Omega$	5%	0,5W
3848	4822 116 52182	15 $\Omega$	5%	0,5W
3849	4822 116 52182	15 $\Omega$	5%	0,5W

**COILS**

1833	4822 242 72066	CERAMIC FILTER 8,0MHZ
5802	4822 156 21721	2,2 $\mu$ H

**DIODES**

6800	4822 130 30621	1N4148
6801	4822 130 30621	1N4148
6804	4822 130 30621	1N4148
6805	4822 130 30621	1N4148
6806	4822 130 30621	1N4148
6807	4822 130 30621	1N4148
6808	4822 130 30621	1N4148
6809	4822 130 30621	1N4148
6811	4822 130 30621	1N4148
6812	4822 130 30621	1N4148
6813	4822 130 30621	1N4148
6814	4822 130 30621	1N4148
6820	4822 130 31878	1N4003G

**TRANSISTORS**

7811	4822 130 40959	BC547B
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**INTEGRATED CIRCUITS**

7800©	4822 209 16738	TMP87CM71-83770 MICROPROCESSOR
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