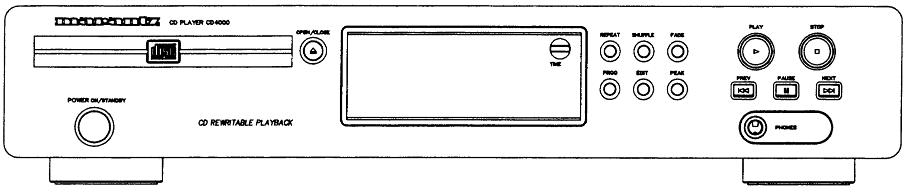
Service Manual

CD4000/N1B, /K1B
/N2B, /K2B
CD Player



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

marantz®

- CD4000 -

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CD4000

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KOREA
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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.

990521A.O

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

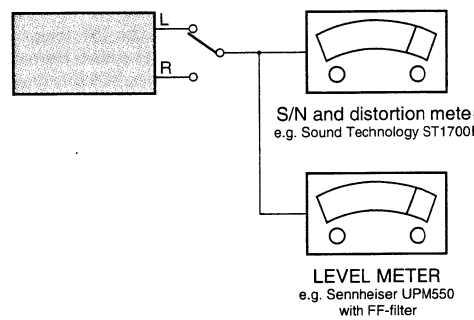
Output level (1kHz, 0dB)	: ≥5VRMS
Unbalance left-right	: ≤1,2dB
Output impedance	: 120Ω
Load impedance	: 32Ω - 600Ω
Output power	: 25mW at 32Ω : 52mW at 120Ω : 29mW at 600Ω

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

ESD

(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.

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

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

(NL) WAARSCHUWING
Alle IC´s en vele andere halfgeleiders zijn gevoelig voor electrostatische ontladingen (ESD).
Onzorgvuldig behandelen tijdens reparatie kan de levensduur drastisch doen vermindern. Zorg ervoor dat u tijdens reparatie via een polsband met weerstand verbonden bent met hetzelfde potentiaal als de massa van het apparaat.
Houd componenten en hulpmiddelen ook op ditzelfde potentiaal.

(I) AVVERTIMENTO
Tutti IC e parecchi semi-conduttori sono sensibili alle scariche statiche (ESD).
La loro longevità potrebbe essere fortemente ridatta in caso di non osservazione della più grande cauzione alla loro manipolazione. Durante le riparationi occorre quindi essere collegato allo stesso potenziale che quello della massa delápparecchio tramite un braccialetto a resistenza.
Assicurarsi che i componenti e anche gli utensili con quali si lavora siano anche a questo potenziale.

(GB) 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, 1M)		4822 320 11307
extendible cable (2m, 2M , to connect wristband to connection box)		4822 320 11305
connecting cable (3m, 2M , to connect table mat to connection box)		4822 320 11306
earth cable (1M , 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

AVAILABLE JIG for FR980

Extension PCB and wire kit	4822 395 10815

SAFETY

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

(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 ⚠

(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 oorspronkeliijke 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 ricambiago identici a quelli specificati.
Componenty di sicurezza sono marcati con ⚠

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

CLASS 1
LASER PRODUCT

(S) Varning !
Osynlig laserstrålning när apparaten är öppnad och spärren är urkopplad. Betrakta ej strålen.

(DK) Advarsel !
Usynlig laserstråling ved åbning når sikkerhedsafbrydere er ude af funktion. Undgå udsaettelse for stråling.

(SF) Varoitus !
Avatussa laitteessa ja suojalukituksen ohitettaessa olet alttiina näkymättömälle laserisäteilylle. Älä katso säteeseen !

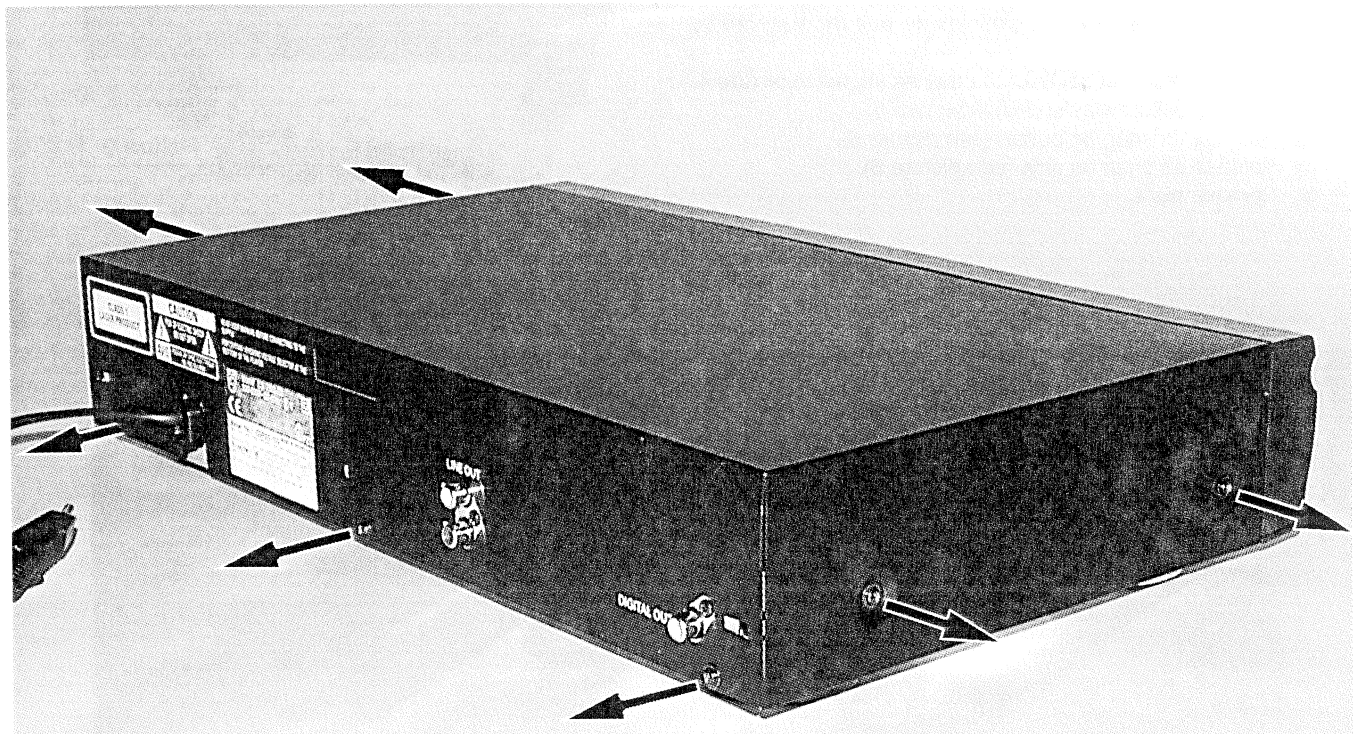
(GB)
After servicing and before returning the set to customer perform a leakage current measurement test from all exposed metal parts to earth ground, to assure no shock hazard exists.
The leakage current must not exceed 0.5mA.

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

MECHANICAL INSTRUCTIONS

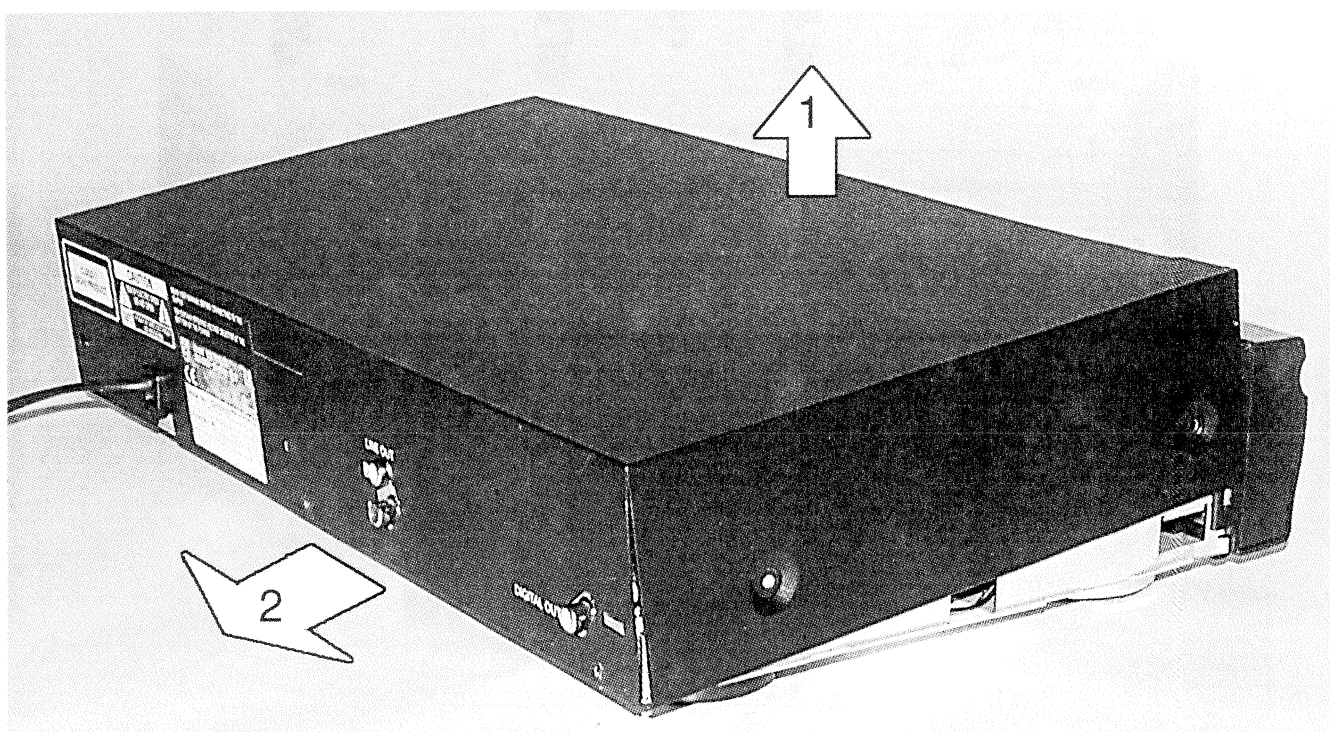
Dismantling Top Cover

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



picture 1

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

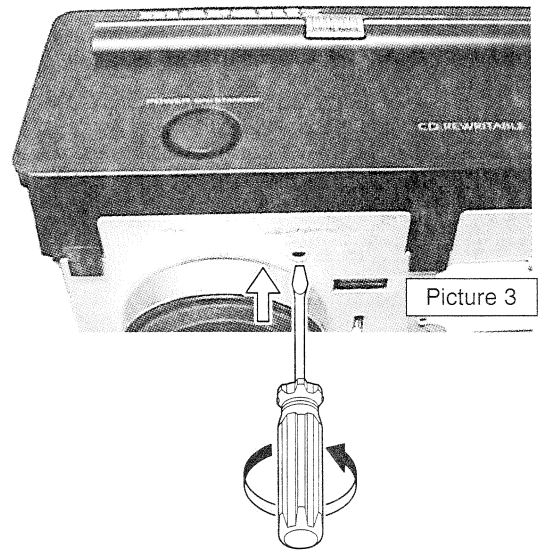


picture 2

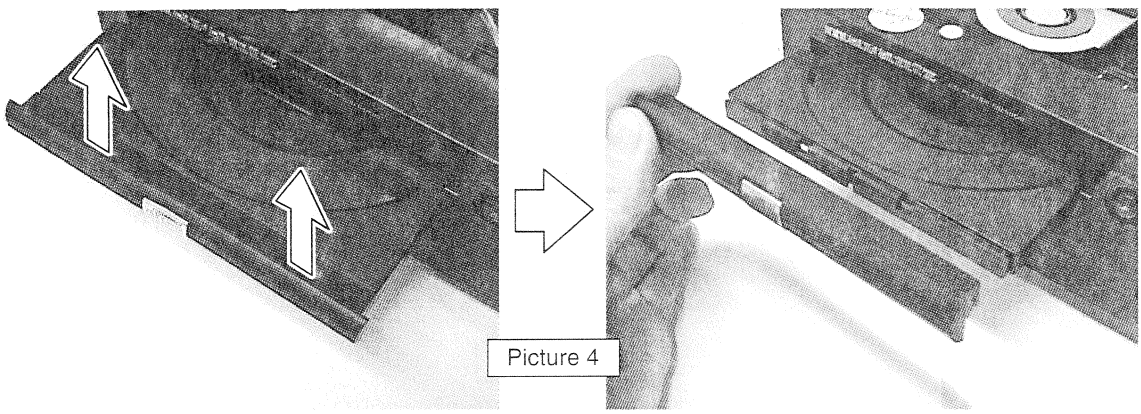
MECHANICAL INSTRUCTION

Dismantling Front

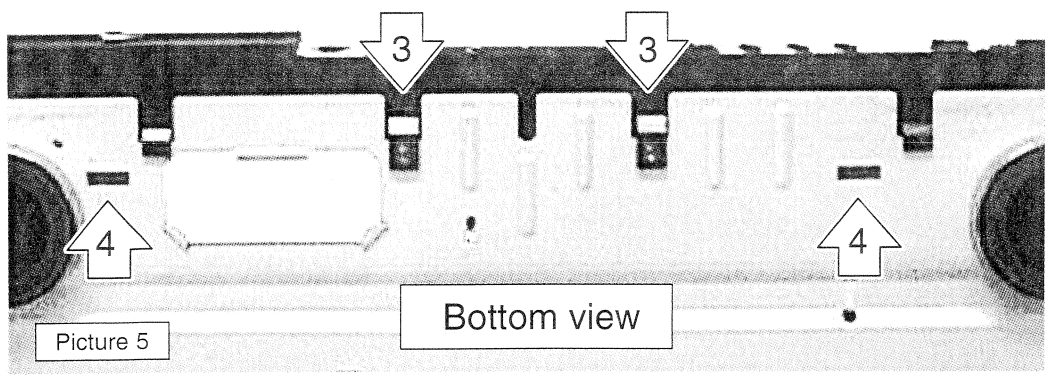
1) Press open/close button to open the tray. If the tray doesnít work, turn counterclockwise a small screwdriver into the hole as shown in picture 3. Then the tray comes out. After the first centimeter it is possible to pull the tray out by hand.
2) Release the door cover of the tray as shown in picture 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.



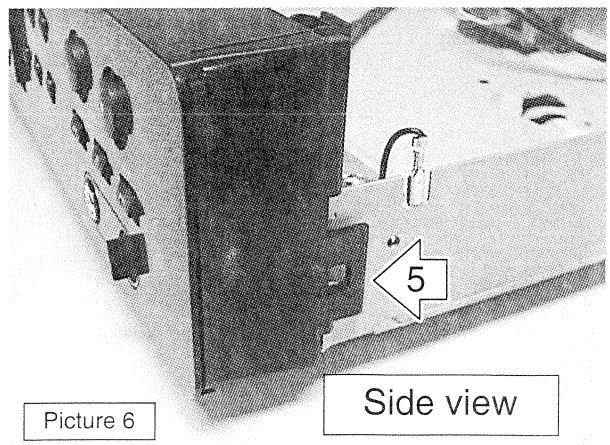
Picture 3



Picture 4



Picture 5



Picture 6

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.

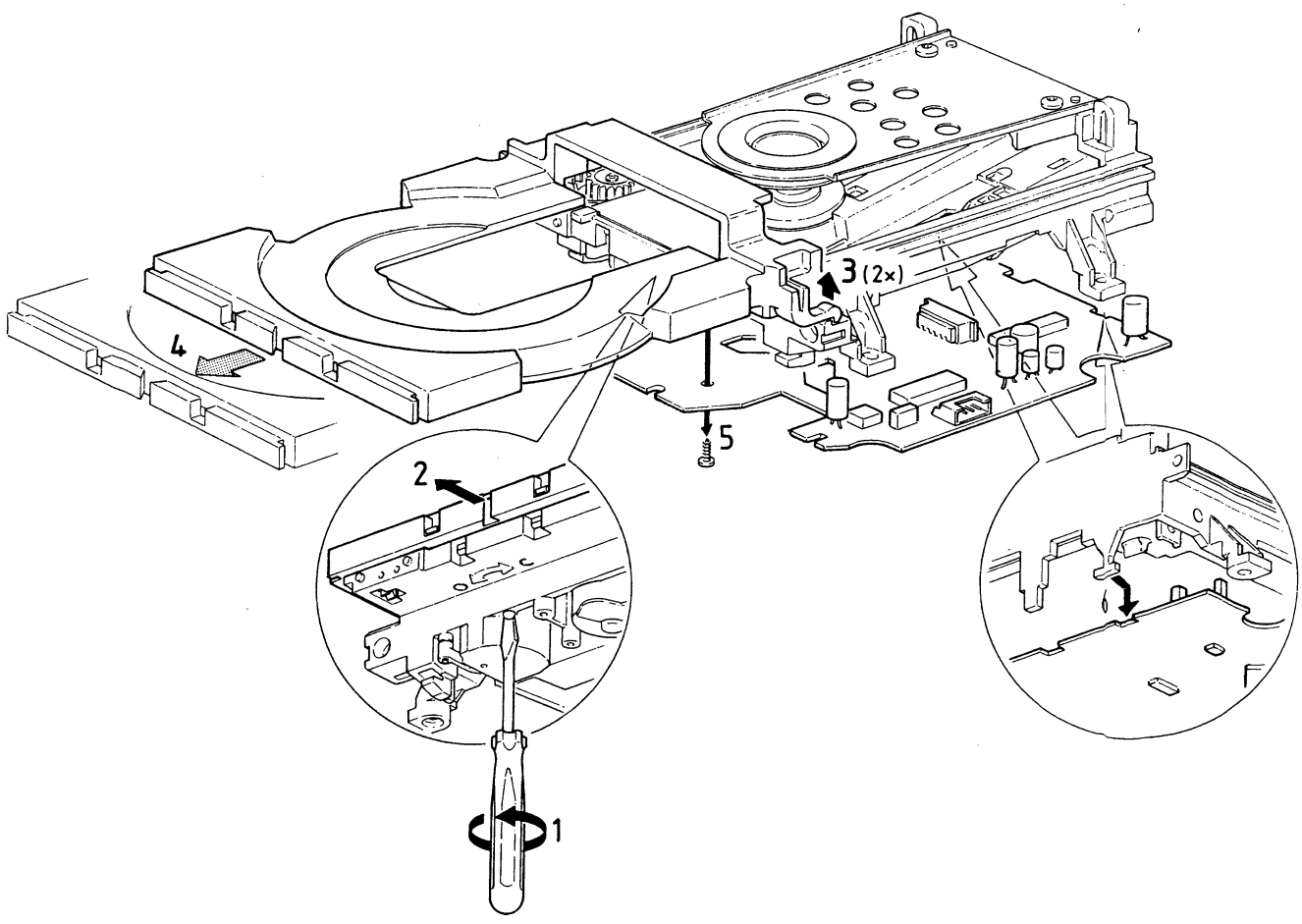


Fig. 1

Assembly of gear

a) Use a pin (e.g. a paperclip) to align the cam wheel (a) withthe gear wheel (b). See Fig. 2.

b) Fix the wheels with the small plastic whashers.

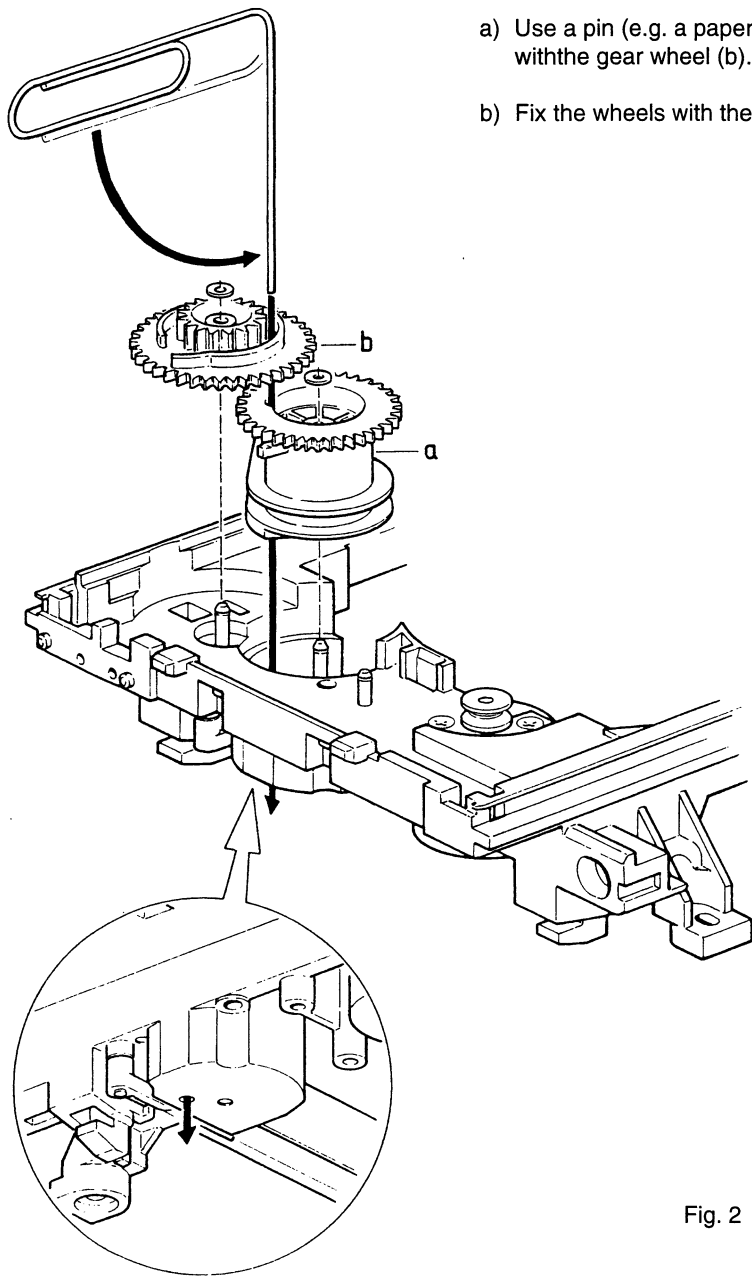


Fig. 2

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 whasher.

e) Mount the driving belt.

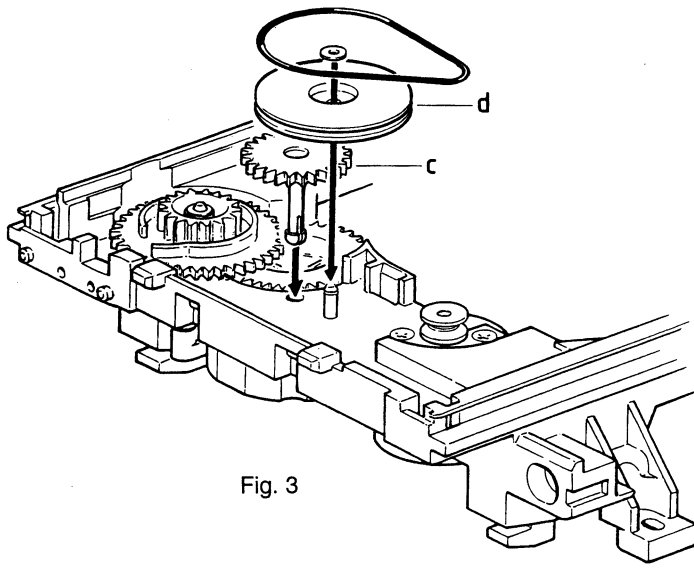


Fig. 3

f) Mount the pinion guiding assy and the cover as shown in Fig. 4.

g) Turn the gear wheel (b) counter clockwise to endposition.

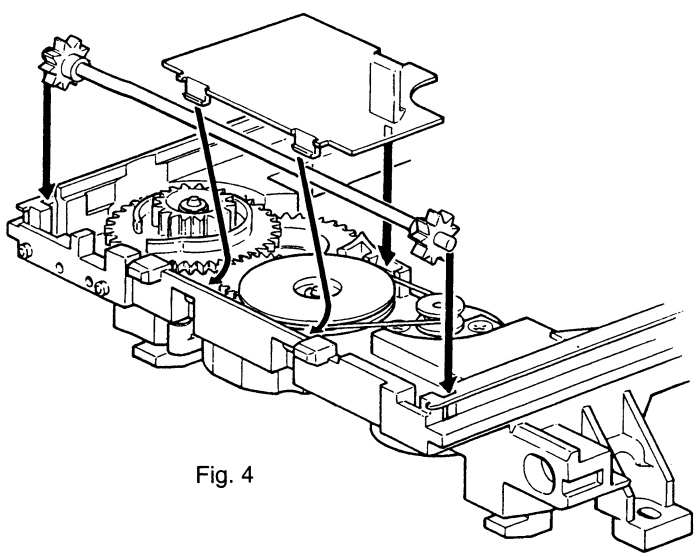


Fig. 4

h) Mount the CD Mechanism as shown in Fig. 5.

i) Mount the tray (Align the tray to the chassis and push it inside).

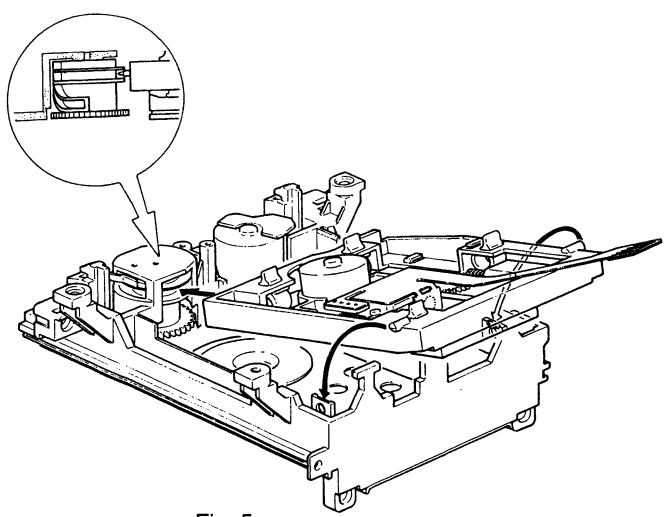


Fig. 5

Check if tray mechanism works correctly!

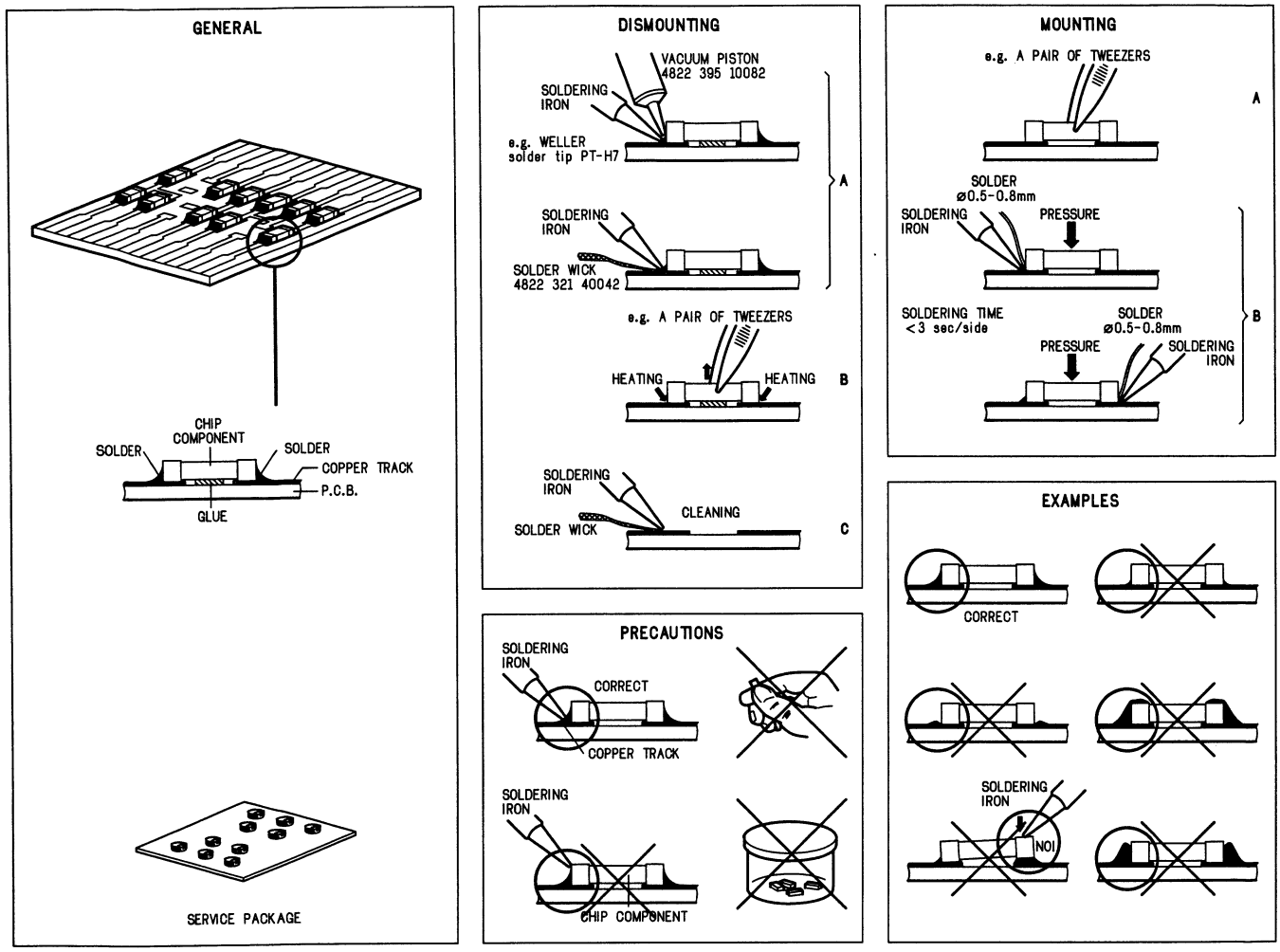
1) Turn the gear wheel (b) clockwise to its endposition (Use a small screwdriver as shown in Fig. 1 point 1).

   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 endposition.

   The CD Mechanism has to move to its lower position first and then the tray has to move outside.

HANDLING CHIP COMPONENTS



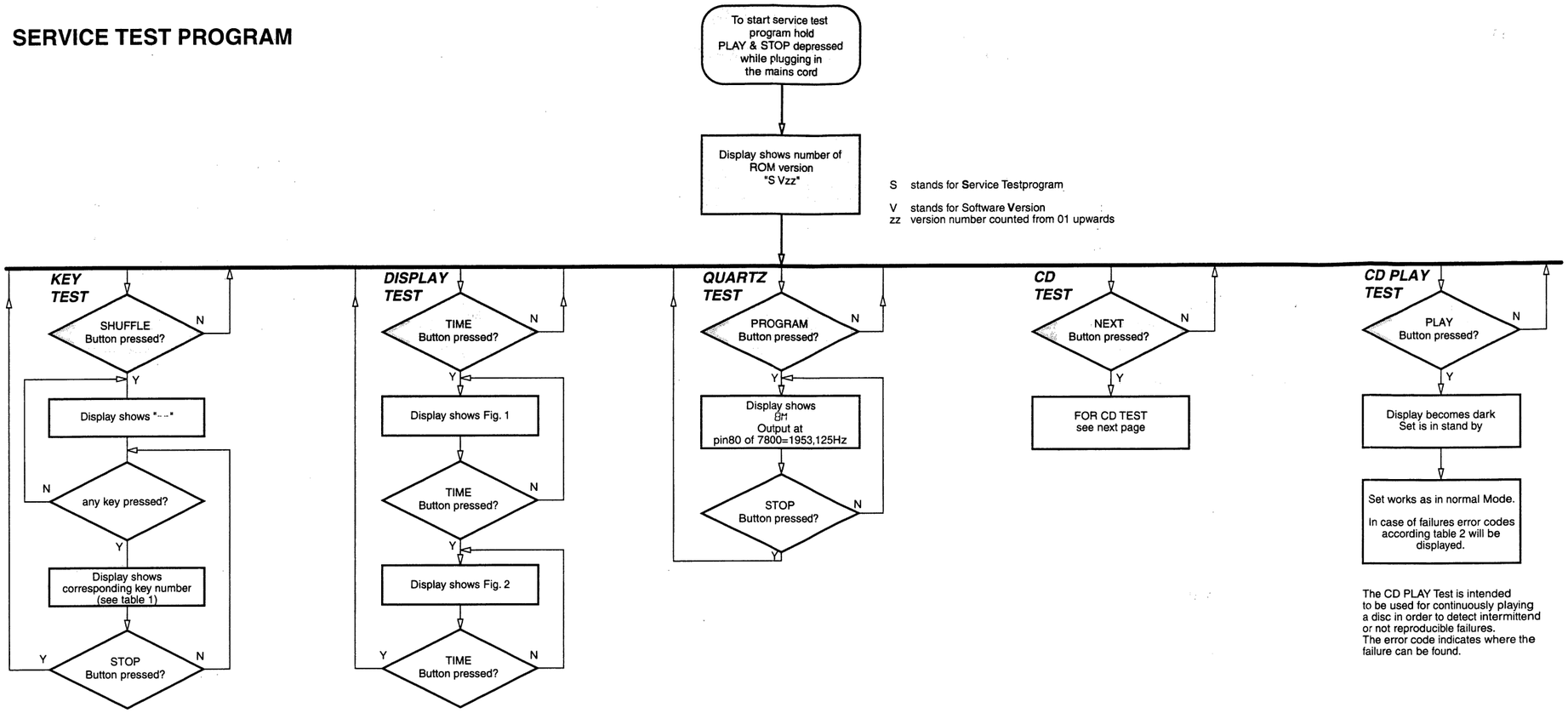
SERVICE TOOLS

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

5-2

SERVICE TEST PROGRAM



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

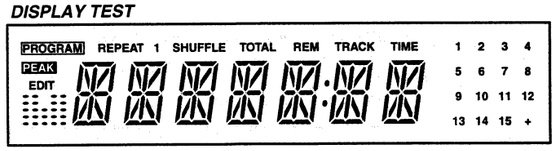


Fig. 1

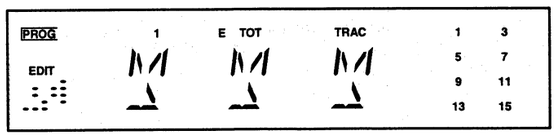


Fig. 2

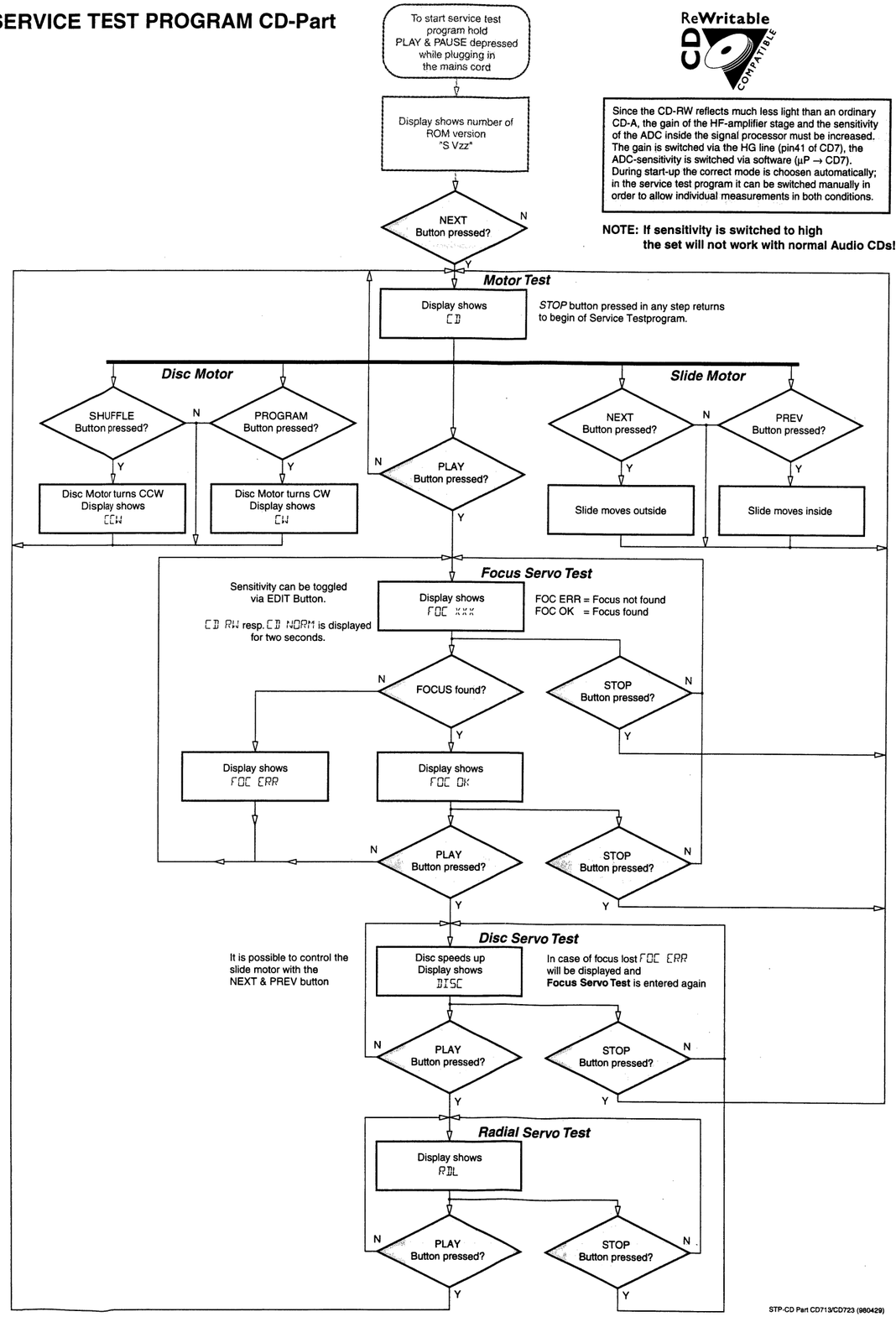
CD PLAY TEST

Error number	Type	Description
1000	W	**Focus error** Triggered when the focus could not be found within a certain time when starting up the CD or when the focus is lost for a certain time during playing the CD.
1001	W	**Radial error** Triggered when the radial servo is not on track for a certain time during playing the CD.
1002	W	**Slide in error** 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	**Slide out error** 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	**Jump error** Generated when the jump destination could not be found within a certain time.
1006	W	**Subcode error** No valid subcode for a certain time.
1007	W	**PLL error** The Phase -Lock-Loop could not lock within a certain time.
1008	W	**Turntable motor error** Generated when the CD could not reach 75% of speed during starting up within a certain time. Disc motor problem
1020	F	**Focus search error** 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

SERVICE TEST PROGRAM CD-Part



ReWritable CD COMPATIBLE

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 choosen 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!

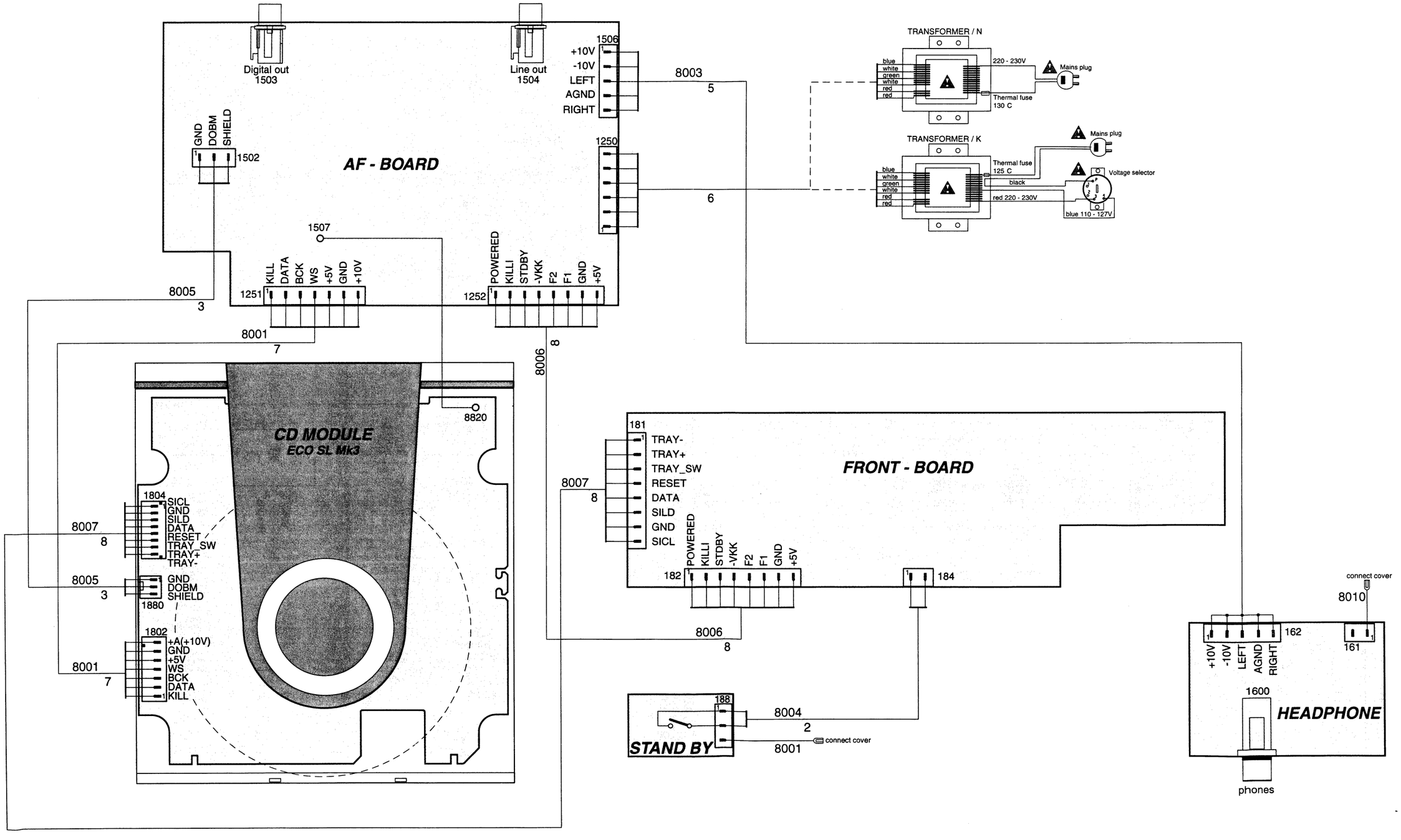
Abbreviations CD Part

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
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)

6-1

WIRING DIAGRAM



7-1

AF Board / Supply part

TRANSFORMER /N

MAINS PLUG

220 - 230V

Thermal Fuse 130 C

blue
white
green
white
red
red

MAINS PLUG

TRANSFORMER /K

Thermal Fuse 125 C

black

red 220 - 240V

blue 110-127V

blue
white
green
white
red
red

1250

EH-B

F560
F561 5V~
F562
F563
F564 9,5V~
F565 9,5V~

1255 T630mA

1256 T630mA

3251 470R
3252 470R
3253 22K
3254 4K7
3255 2K2
3256 1K
3557 6R8
3260 5R6

6251 BZX55-C4V7
6252 1N4003
6250 BZX79-C27
6257 1N4003
6258 1N4003
6259 BZX79-C3V9

7250 BC327-40
7252 BC558C

7251 L7805CV

2250 470n
2251 220u
2252 22n
2253 22n
2254 4m7
2255 100n
2256 22n
2257 22n
2258 3m3
2259 220u

6253 1N4003GP
6254 1N4003GP
6255 1N4003GP
6256 1N4003GP

6260 1N4003

F566
F567
F568

F1
F2
5V~

-31,4V
-27,8V
-28,5V
-27,8V
-VKK

10,7V
+10V
10,2V
5,6V
+5V
0,6V
-10V
-11,7V

3,4V
3,9V
-8,3V
KILLI
KILLP
POWERED

TO/FROM AF BOARD / DAC PART

EVM

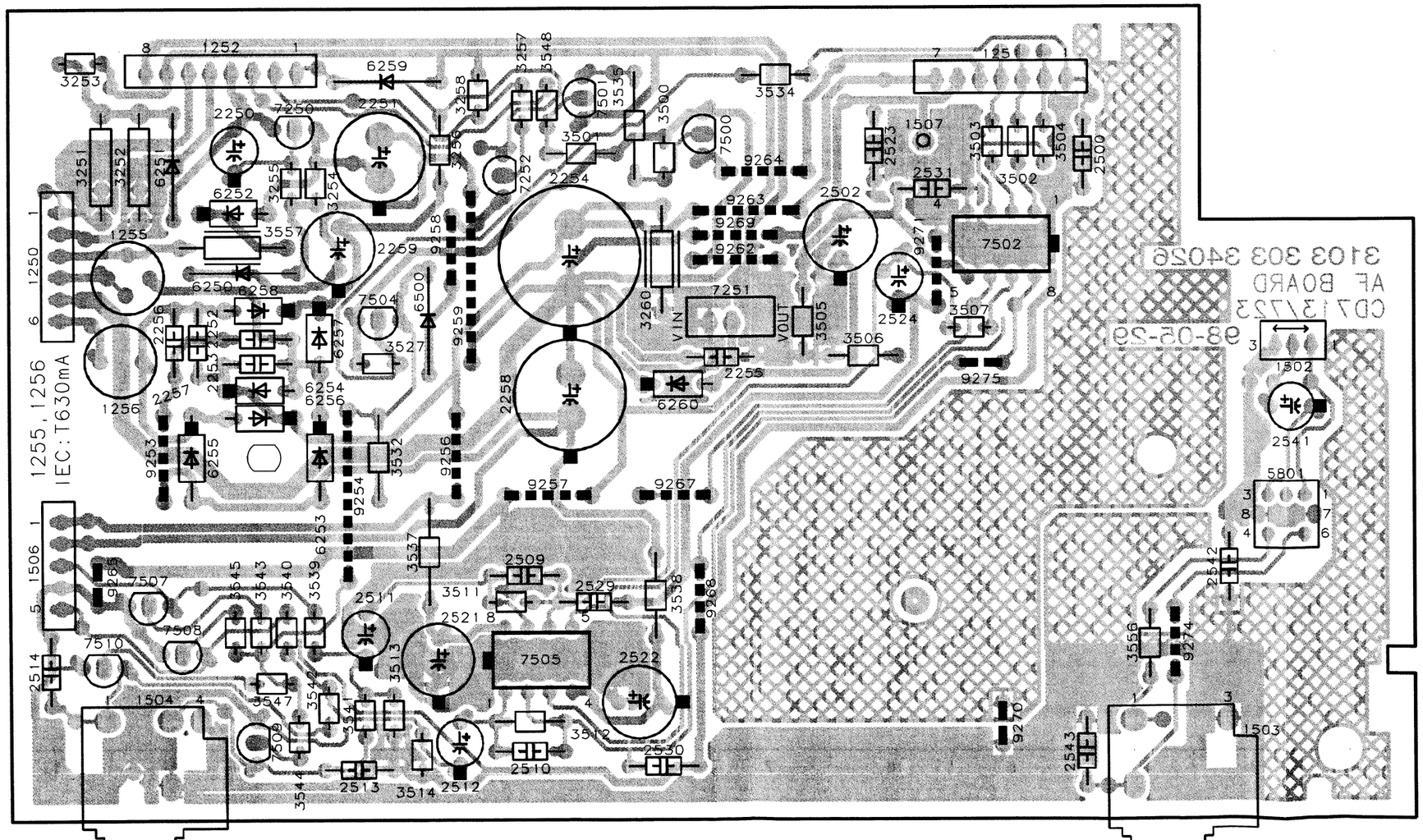
DC voltages measured in Play mode

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

7-2

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	

AF Board Componentside view



E
B
C

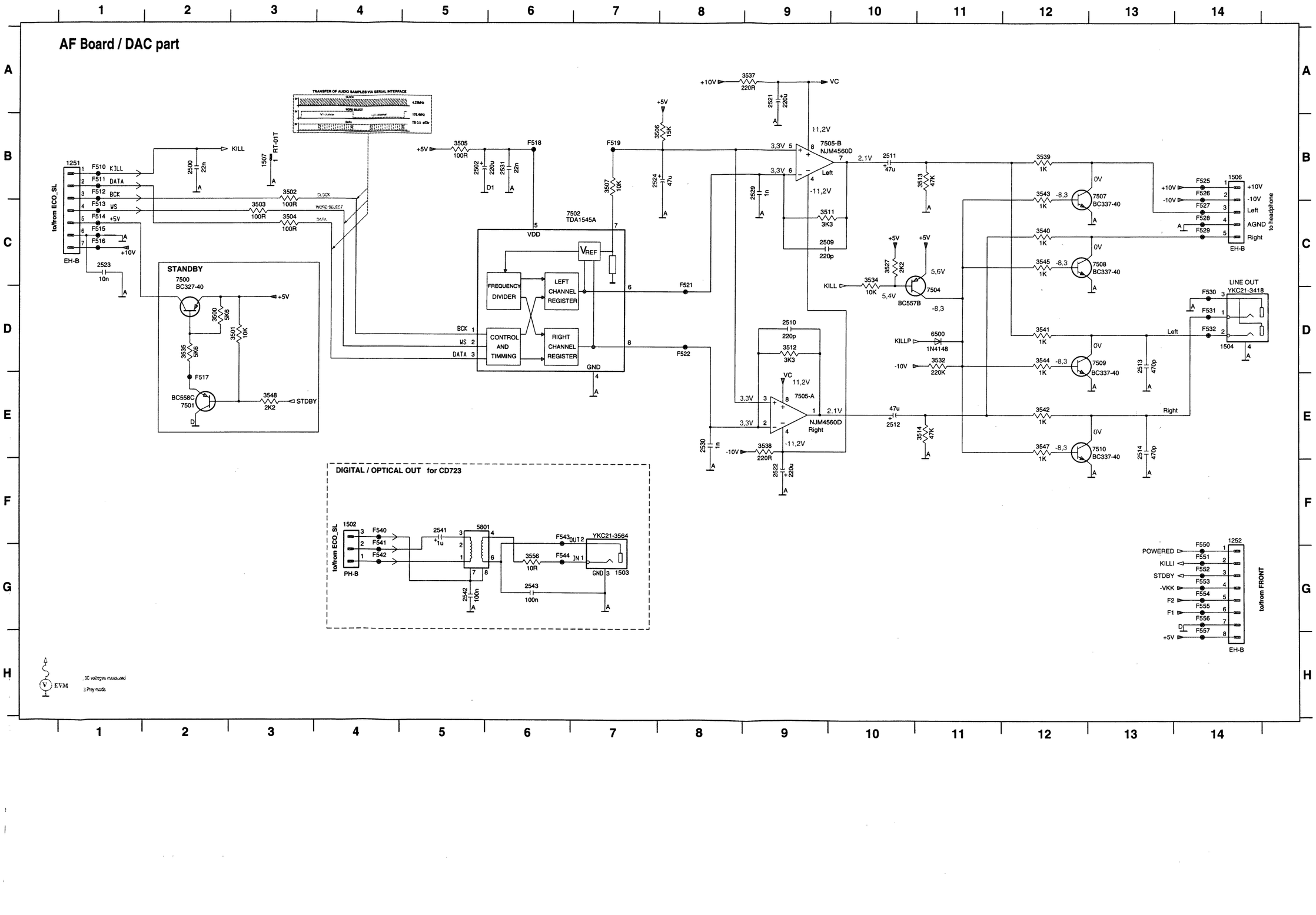
This assembly drawing shows a summary of all possible versions.
For components used in a specific version
see schematic diagram respectively partslist.

AF Board stage .6 19990505

7-3

1251 B1 1252 F14 1502 F4 1503 G7 1504 D14 1506 B14 1507 B3 2500 B2 2502 B5 2509 C9 2510 D9 2511 B10 2512 E10 2513 D13 2514 E13 2521 A9 2522 F9 2523 C1 2524 B7 2529 B9 2530 E8 2531 B6 2541 F5 2542 G5 2543 G6 3500 D2 3501 D3 3502 B3 3503 C3 3504 C3 3505 B5 3506 B7 3507 B7 3511 C9 3512 D9 3513 B11 3514 E11 3527 C10 3532 D11 3534 C10 3535 D2 3537 A9 3538 E9 3539 B12 3540 C12 3541 D12 3542 E12 3543 B12 3544 D12 3545 C12 3547 E12 3548 E3 3556 G6 5801 F5 6500 D11 7500 C2 7501 E2 7502 C6 7504 D11 7505-A E9 7505-B B9 7507 B13 7508 C13 7509 D13 7510 E13 F510 B1 F511 B1 F512 B1 F513 C1 F514 C1 F515 C1 F516 C1 F517 E2 F518 B6 F519 B7 F521 D8 F522 D8 F525 B14 F526 B14 F527 C14 F528 C14 F529 C14 F530 D14 F531 D14 F532 D14 F540 F4 F541 G4 F542 G4 F543 F6 F544 G6 F550 G14 F551 G14 F552 G14 F553 G14 F554 G14 F555 G14 F556 G14 F557 H14

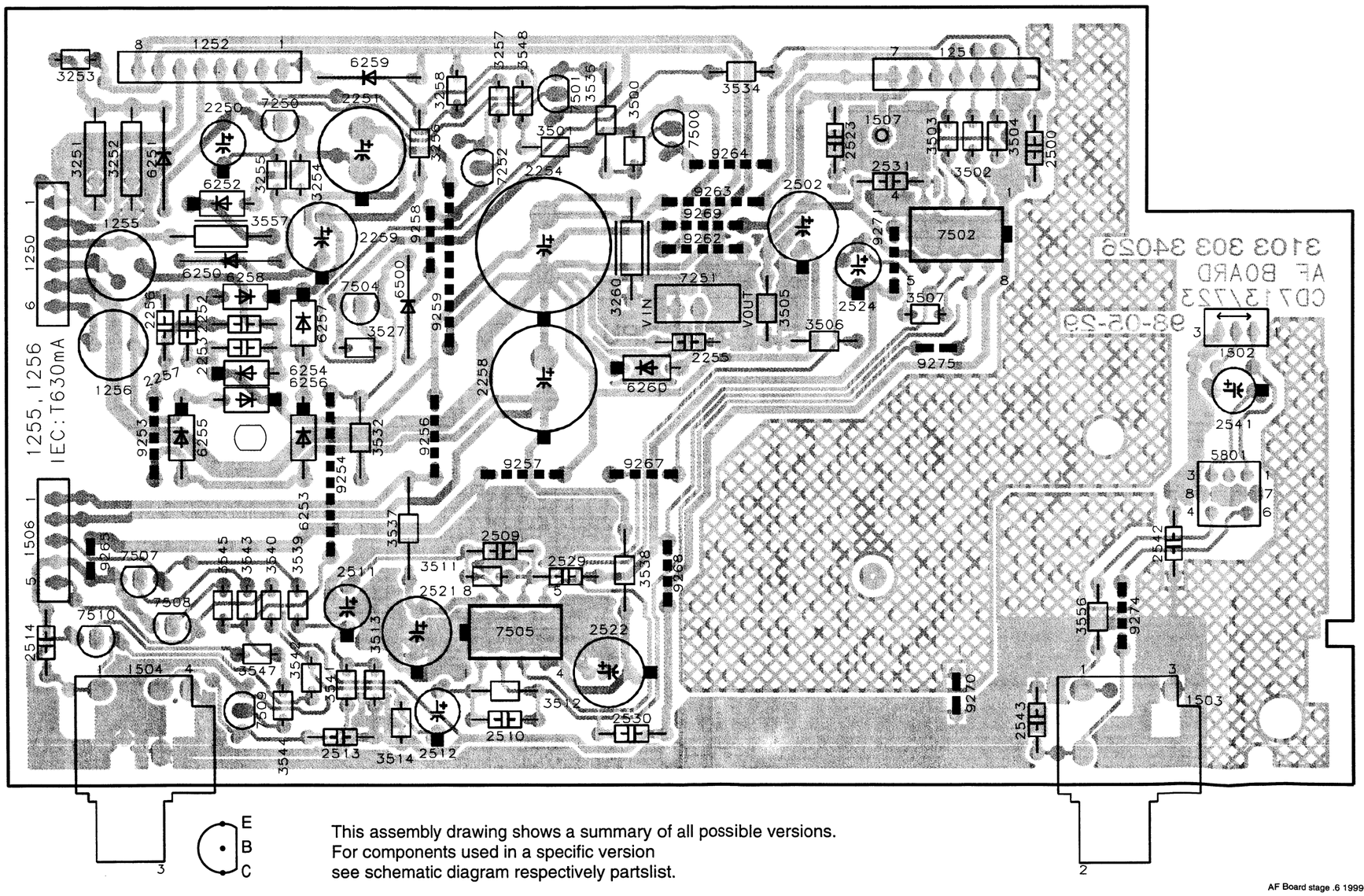
AF Board / DAC part



7-4

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	

AF Board Componentside view



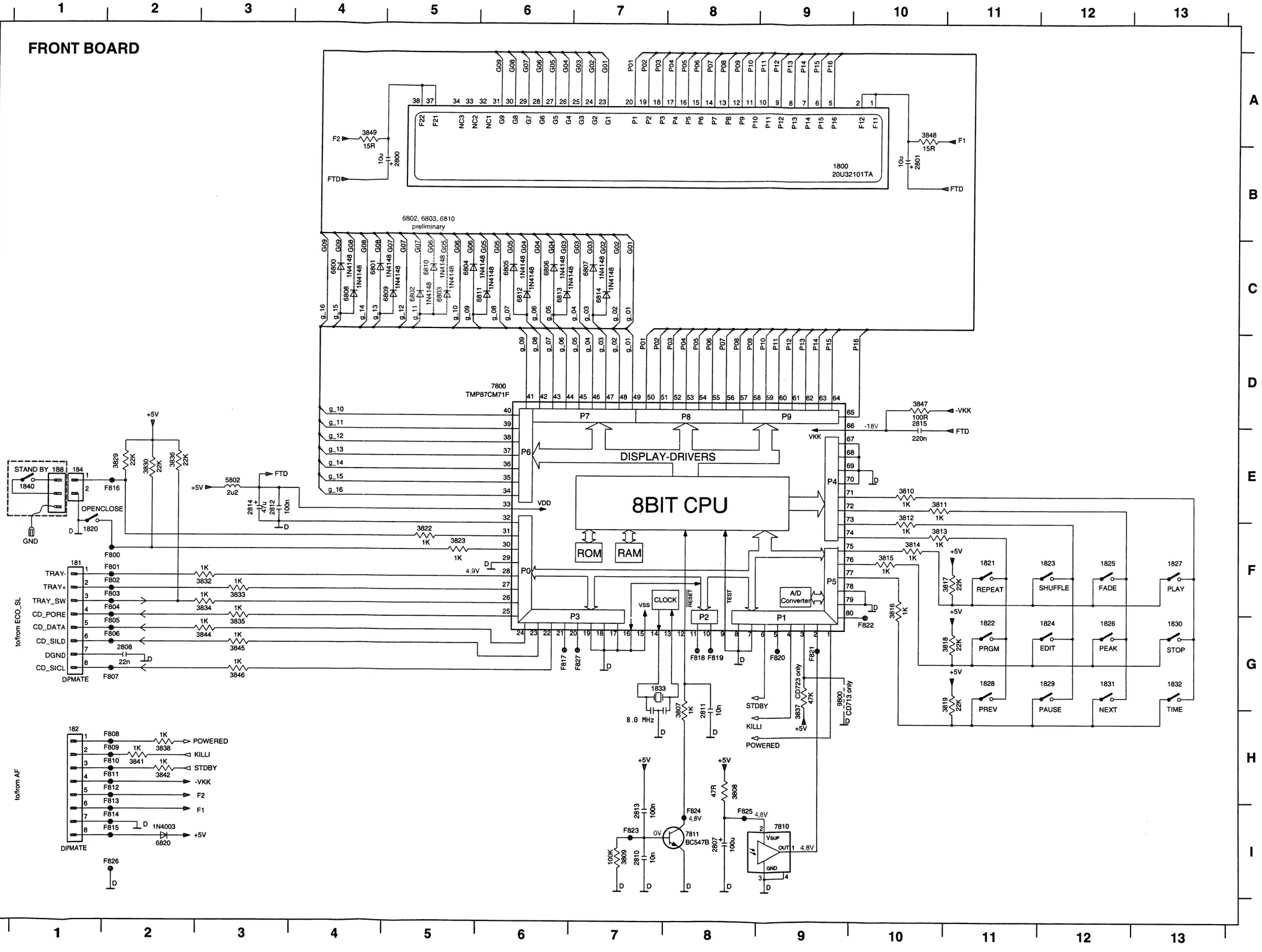
E
B
C

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

AF Board stage .6 19990505

7-5

FRONT BOARD

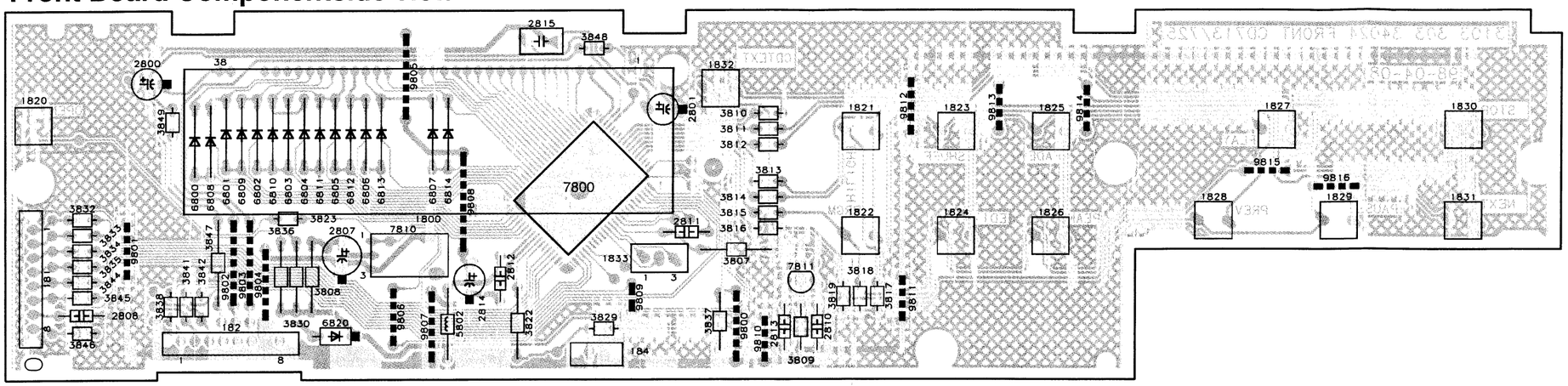


181 F1 F810 H2
182 H1 F811 H2
184 E1 F812 H2
1800 B9 F813 I2
1820 F1 F814 I2
1821 F11 F815 I2
1822 G11 F816 E2
1823 F12 F817 G6
1824 G12 F818 G8
1825 F12 F819 G8
1826 G12 F820 G9
1827 F13 F821 G9
1828 G11 F822 G10
1829 G12 F823 I7
1830 G13 F824 I8
1831 G12 F825 I8
1832 G13 F826 I2
1833 G7 F827 G7
2800 B5
2801 B10
2807 I8
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 I8
9800 G9
F800 F2
F801 F2
F802 F2
F803 F2
F804 F2
F805 G2
F806 G2
F807 G2
F808 H2
F809 H2

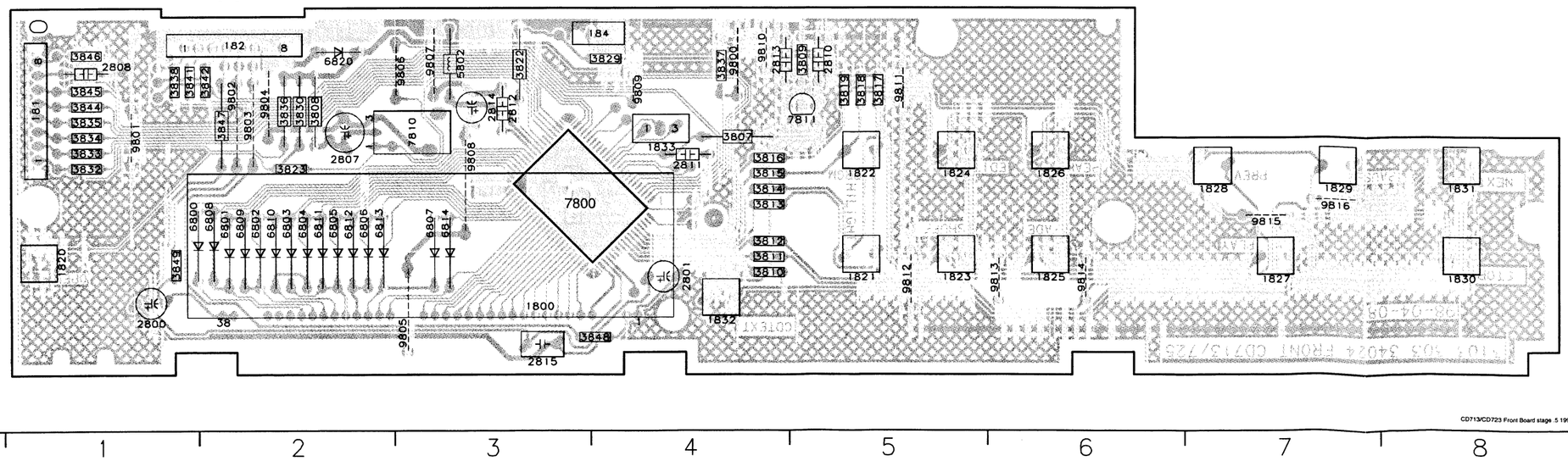
7-6

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	

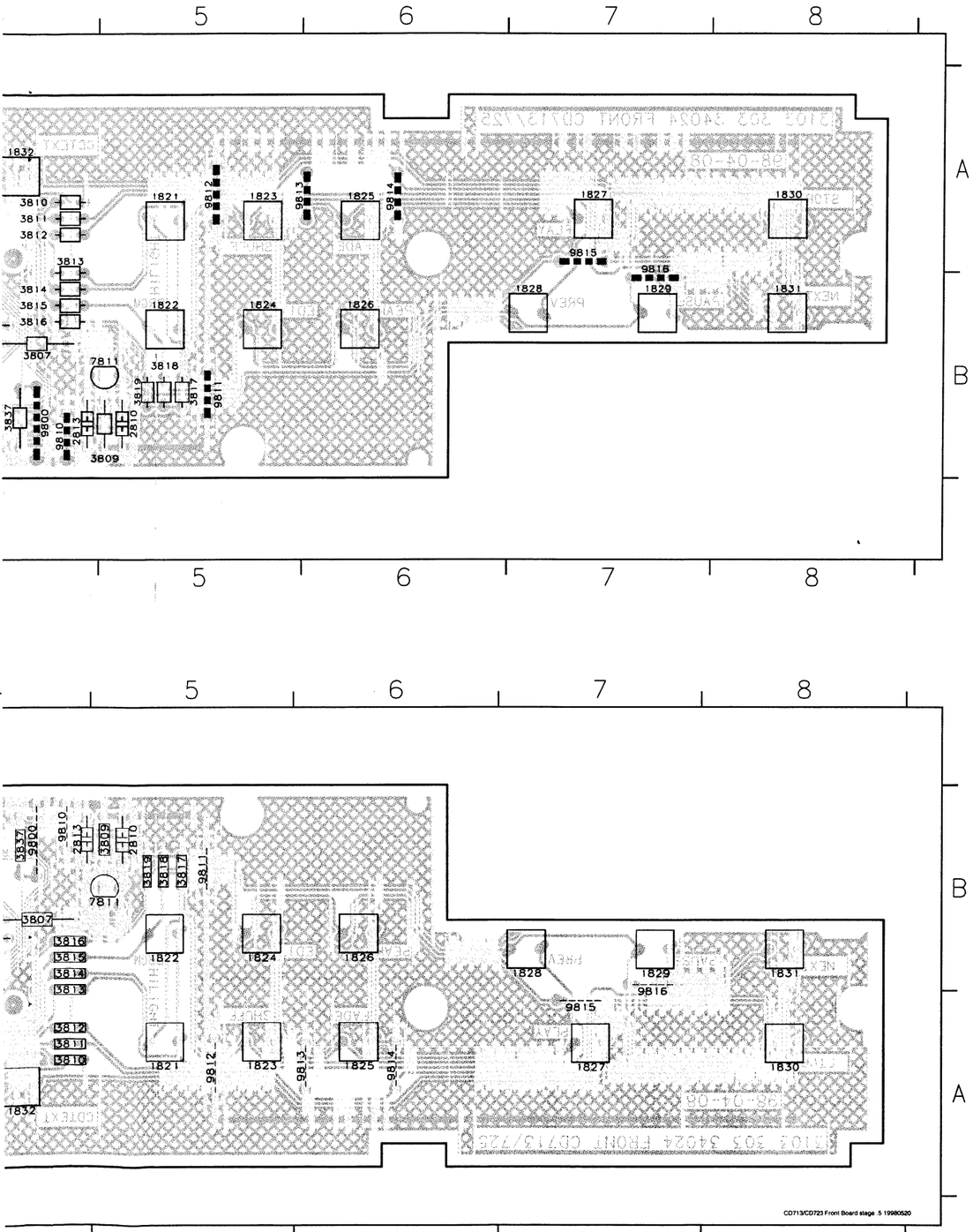
Front Board Componentside view

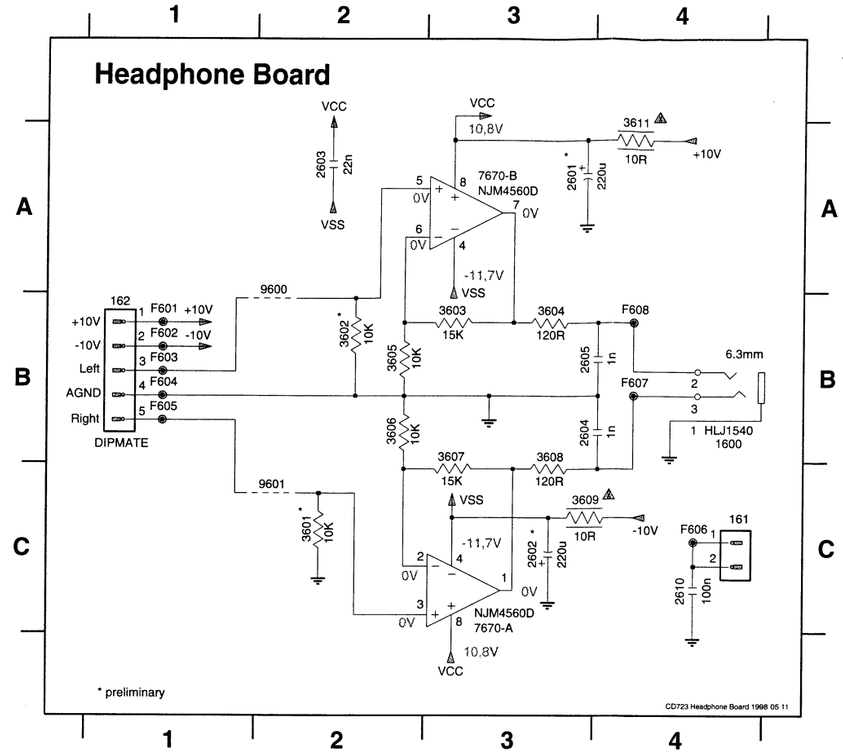


Front Board Copperside view

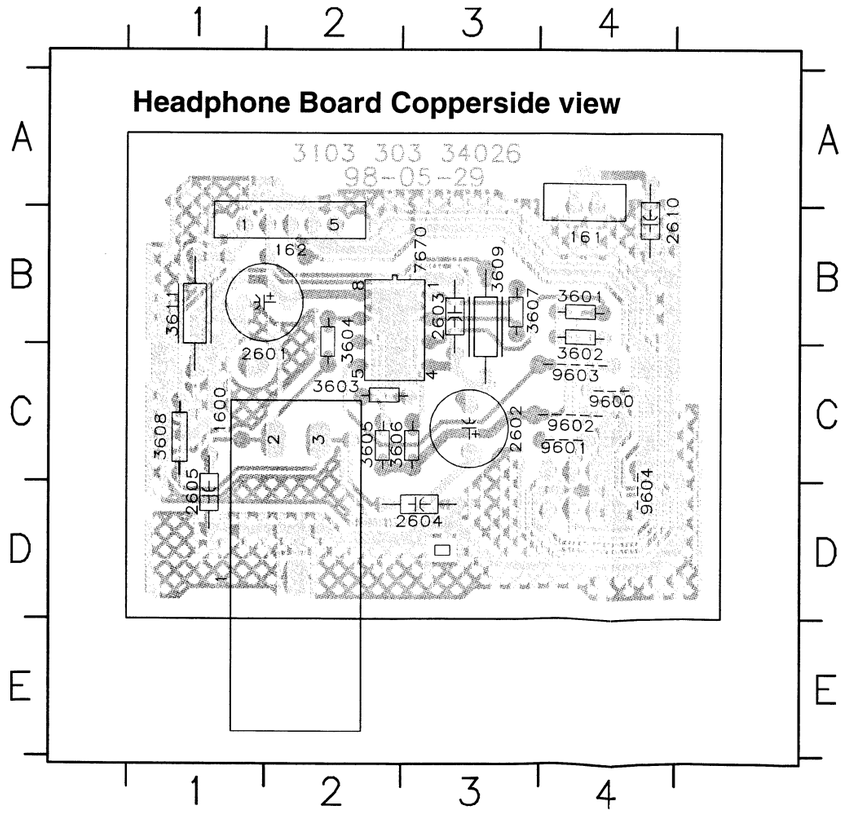


23 B2	3836 B2	3846 B1	6802 A2	6809 A2	7800 A3	9804 B2	9811 B5
29 B4	3837 B4	3847 B2	6803 A2	6810 A2	7810 B3	9805 A3	9812 A5
30 B2	3838 B1	3848 A3	6804 A2	6811 A2	7811 B5	9806 B2	9813 A6
32 B1	3841 B1	3849 A1	6805 A2	6812 A2	9800 B4	9807 B3	9814 A6
33 B1	3842 B1	5802 B3	6806 A2	6813 A2	9801 B1	9808 B3	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	9810 B4	



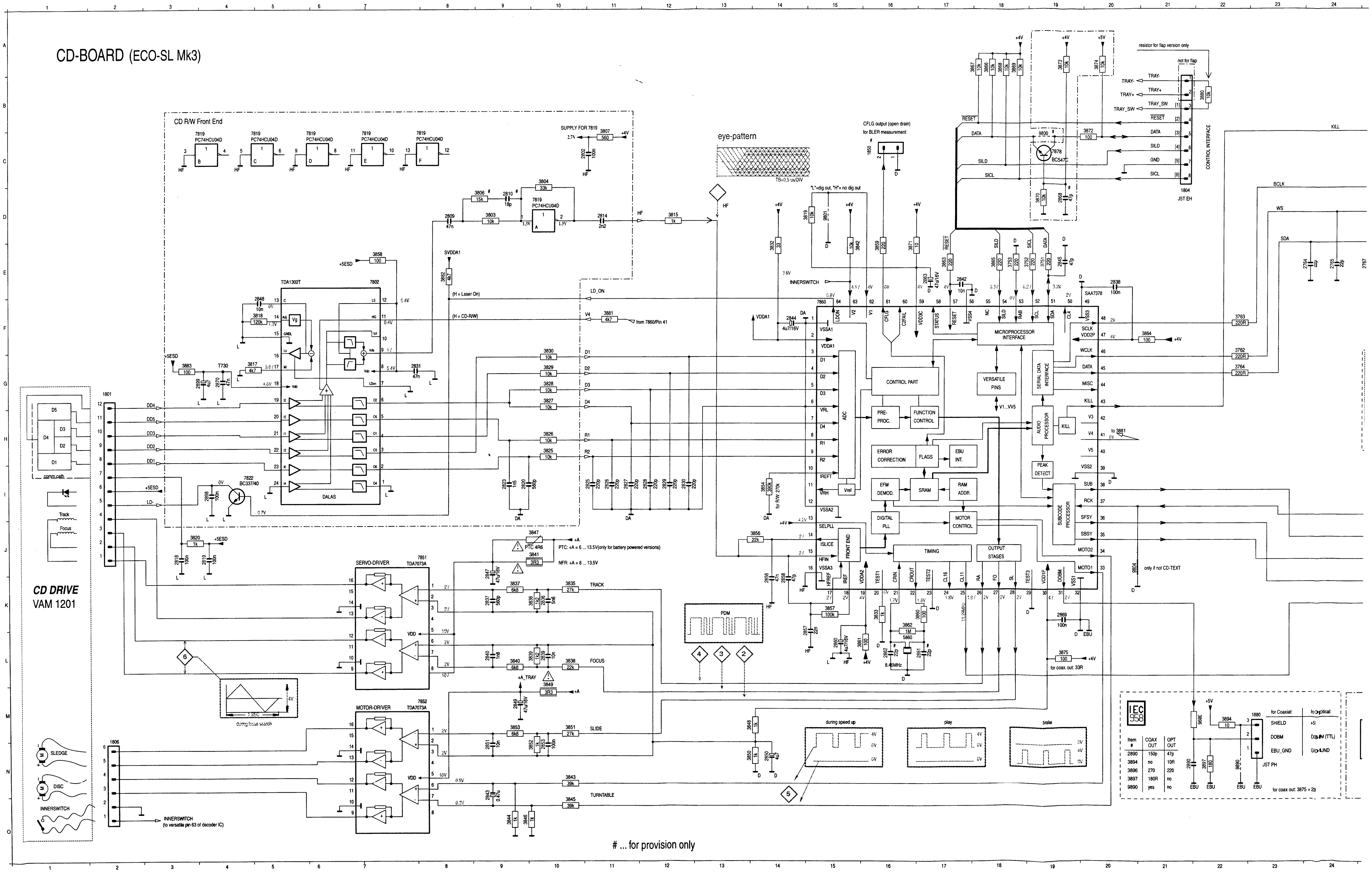


161	C4
162	B1
1600	B4
2601	A3
2602	C3
2603	A2
2604	B3
2605	B3
2610	C4
3601	C2
3602	B2
3603	B3
3604	B3
3605	B2
3606	B2
3607	B3
3608	B3
3609	C3
3611	A4
7670-A	C3
7670-B	A3
9600	B2
9601	C2

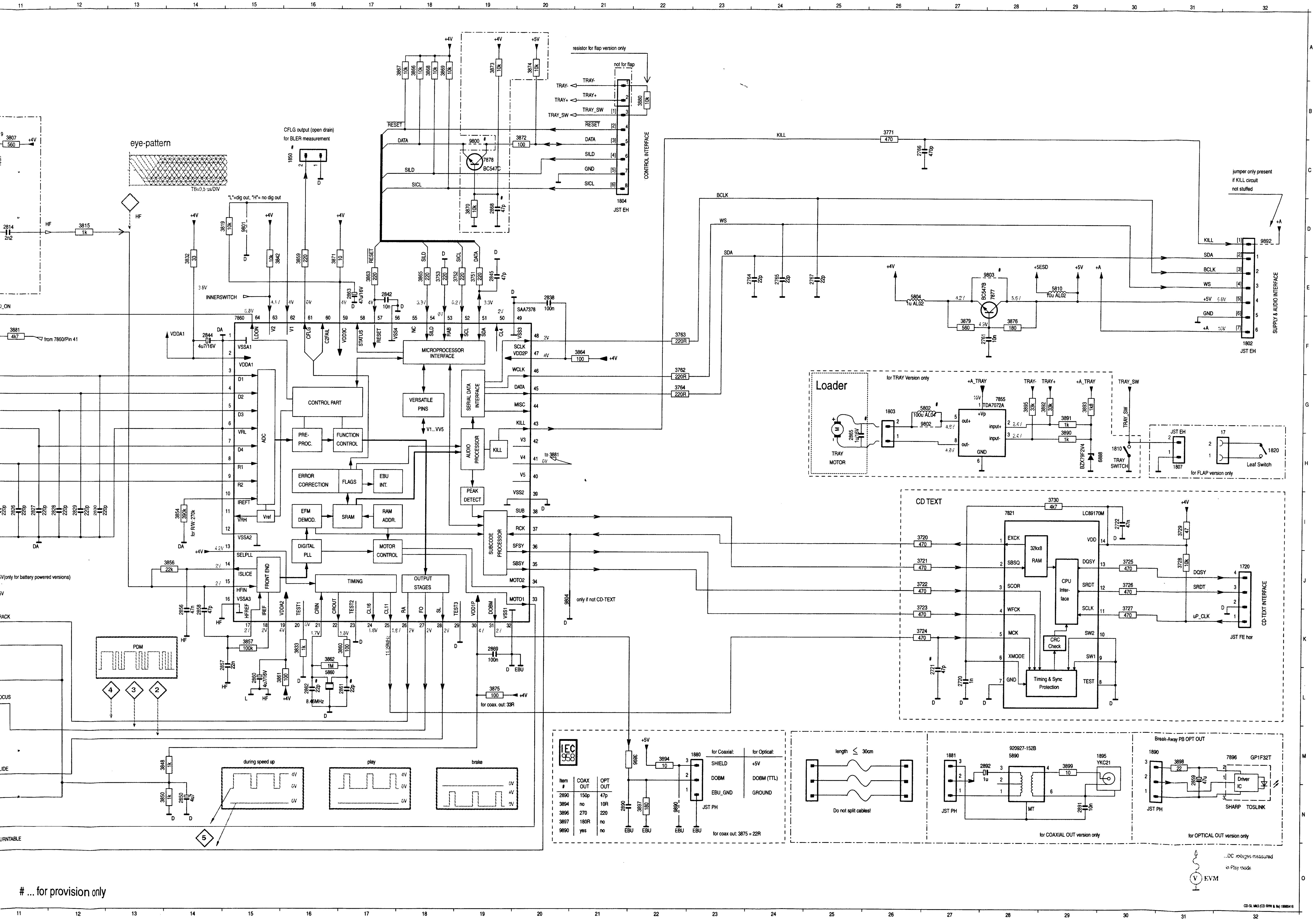


161	B4
162	B2
1600	D2
2601	B2
2602	C3
2603	B3
2604	D3
2605	D1
2610	B4
3600	D4
3601	B4
3602	B4
3603	C2
3604	B2
3605	D2
3606	D3
3607	B3
3608	C1
3609	B3
3611	B1
7670	B3
9600	C4
9601	C4
9602	C4
9603	C4
9604	D4

7-7

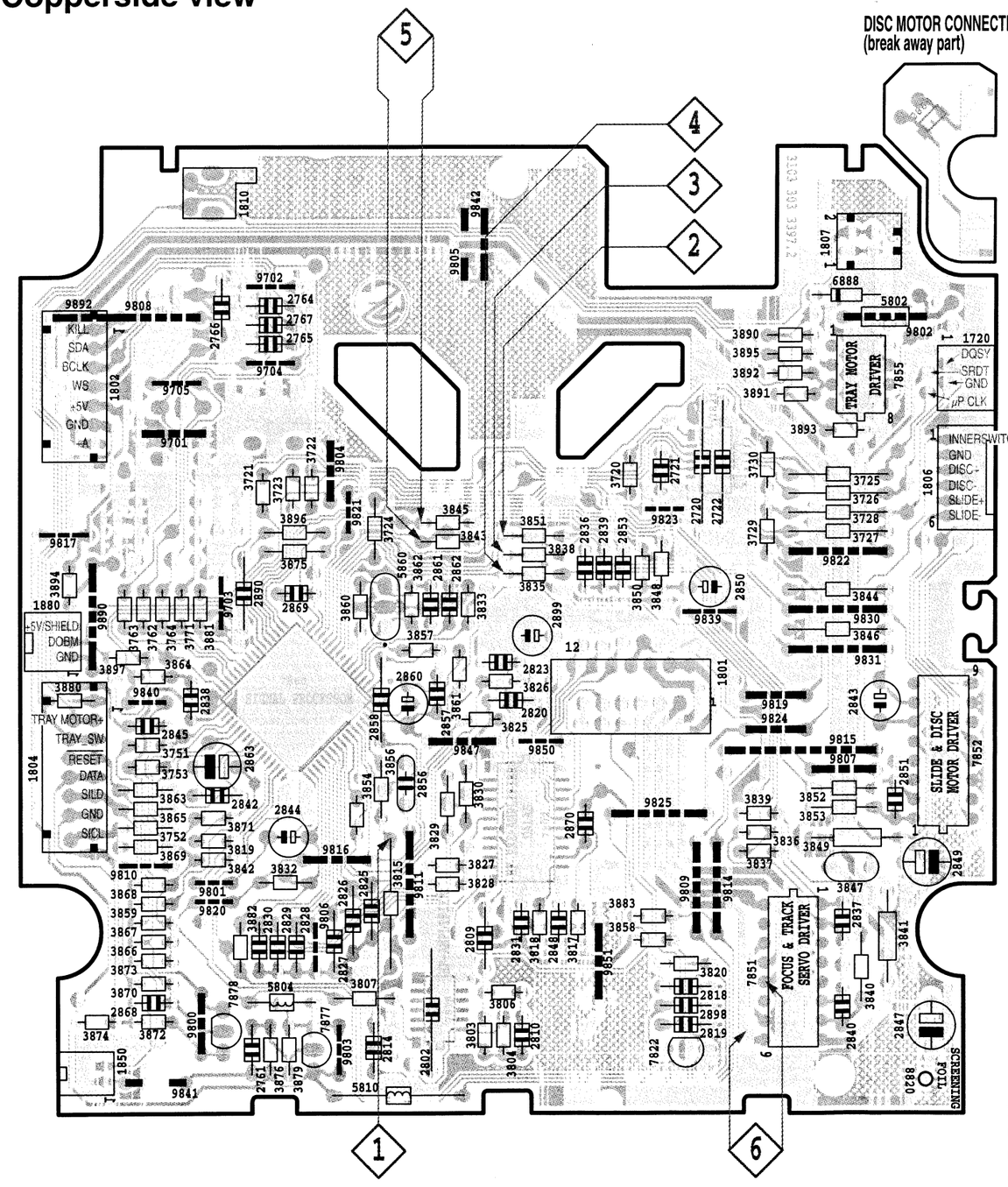

CD-BOARD (ECO-SL Mk3)
CD R/W Front End
SUPPLY FOR 7819
eye-pattern
CFLG output (open drain) for BLER measurement
resistor for flap version only
not for flap
CONTROL INTERFACE
TDA1302T
DALAS
SAA7378
MICROPROCESSOR INTERFACE
CONTROL PART
VERSATILE PINS
SERIAL DATA INTERFACE
PRE-PROC.
FUNCTION CONTROL
AUDIO PROCESSOR
KILL
ERROR CORRECTION
FLAGS
EBU INT.
PEAK DETECT
EFM DEMOD.
SRAM
RAM ADDR.
SUBCODE PROCESSOR
DIGITAL PLL
MOTOR CONTROL
FRONT END
TIMING
OUTPUT STAGES
SERVO-DRIVER
MOTOR-DRIVER
TDA7073A
TRACK
FOCUS
SLIDE
TURNTABLE
PTC: +A = 6 ... 13.5V(only for battery powered versions)
NFR: +A = 8 ... 13.5V
PDM
during speed up
play
brake
during focus search
CD DRIVE
VAM 1201
SLEDGE
DISC
INNERSWITCH
INNERSWITCH (to versatile pin 63 of decoder IC)
only if not CD-TEXT
for coax out: 33R
for Coaxial:
for optical:
SHIELD
DOBM
EBU_GND
JST PH
for coax out: 3875 = 22
... for provision only

Item #	COAX OUT	OPT OUT
2890	150p	47p
3894	no	10R
3896	270	220
3897	180R	no
9890	yes	no



eye-pattern
CFLG output (open drain) for BLER measurement
"L"=dig out, "H"= no dig out
INNERSWITCH
SAA7378
MICROPROCESSOR INTERFACE
CONTROL PART
VERSATILE PINS
SERIAL DATA INTERFACE
PRE-PROC.
FUNCTION CONTROL
AUDIO PROCESSOR
KILL
ERROR CORRECTION
FLAGS
EBU INT.
PEAK DETECT
EFM DEMOD.
SRAM
RAM ADDR.
SUBCODE PROCESSOR
DIGITAL PLL
MOTOR CONTROL
FRONT END
TIMING
OUTPUT STAGES
ADC
Vref
PDM
during speed up
play
brake
resistor for flap version only
not for flap
CONTROL INTERFACE
JST EH
KILL
BCLK
WS
SDA
jumper only present if KILL circuit not stuffed
SUPPLY & AUDIO INTERFACE
Loader
for TRAY Version only
TRAY MOTOR
TDA7072A
TRAY SWITCH
for FLAP version only
Leaf Switch
CD TEXT
LC89170M
32kx8 RAM
CPU Inter-face
CRC Check
Timing & Sync Protection
CD-TEXT INTERFACE
JST FE hor
only if not CD-TEXT
for coax. out: 33R
IEC 958
for Coaxial:
for Optical:
for coax out: 3875 = 22R
length ≤ 30cm
Do not split cables!
for COAXIAL OUT version only
Break-Away PB OPT OUT
SHARP TOSLINK
for OPTICAL OUT version only
DC voltages measured in Play mode
... for provision only

ECO Short Loader Mk3
Copperside view

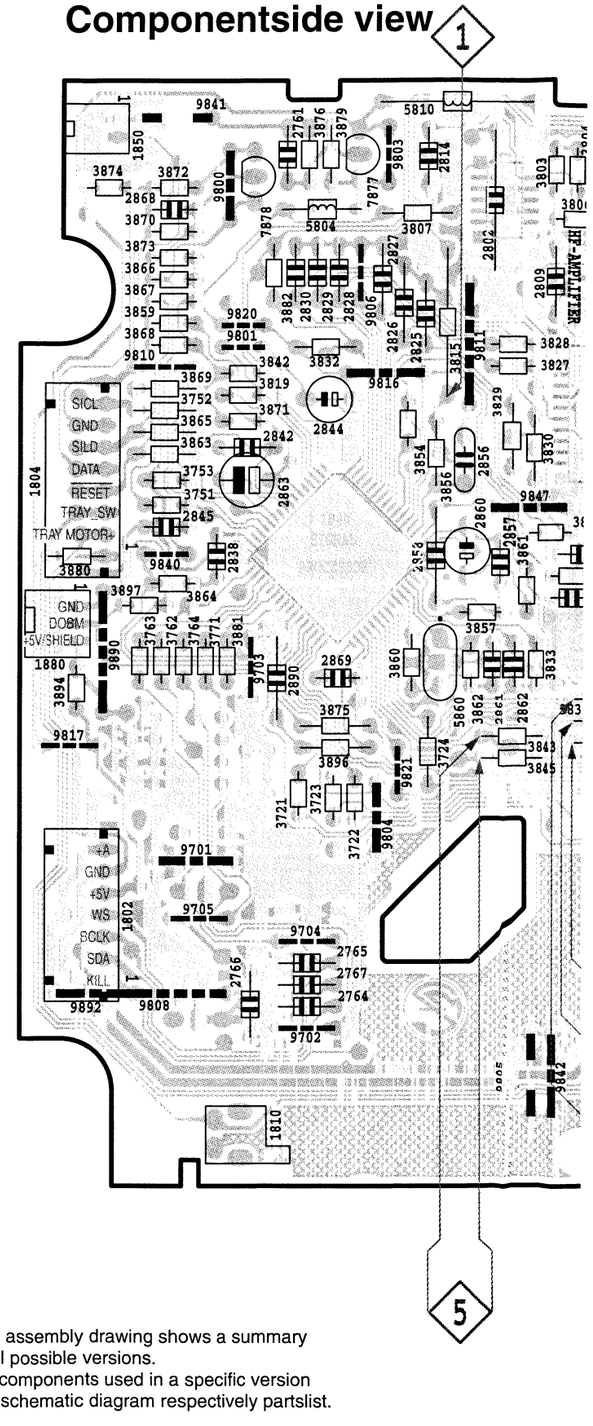


ECO SL Mk3 (R/W&lls) Layout stage .2 (19980330)

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	E4	6888	B2
2857	D4	7802	opt.
2858	D4	7814	opt.
2859	opt.	7822	F3
2860	D4	7851	F2
2861	D4	7852	D1
2862	D4	7855	C2
2863	E5	7860	opt.
2865	opt.	7877	F5
2868	F5	7878	F5
2869	D5	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		

7-8

Componentside view

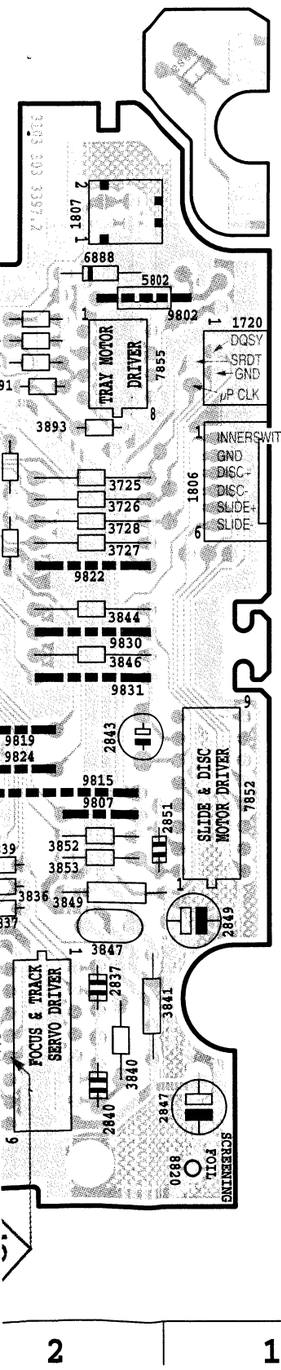


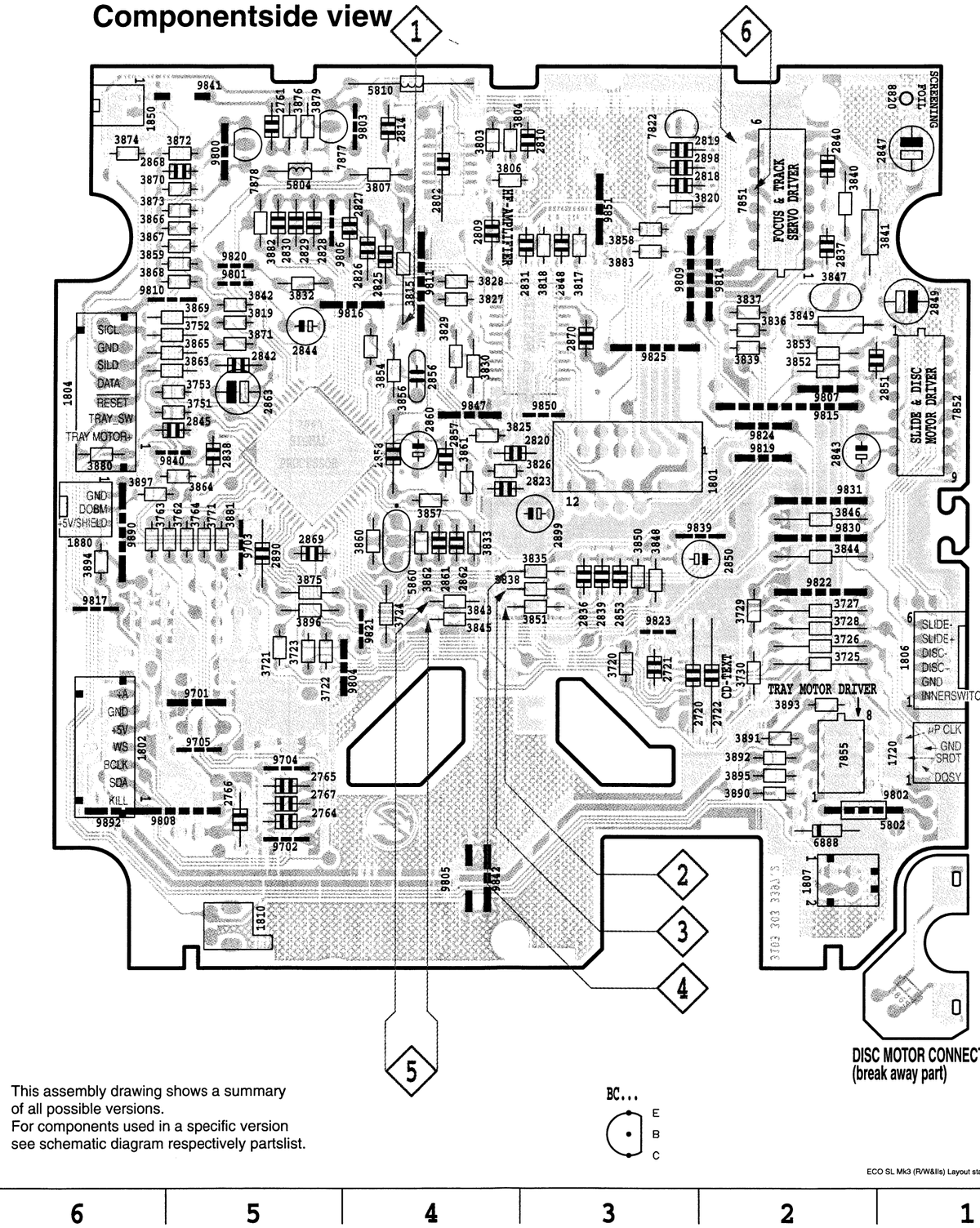
This assembly drawing shows a summary
of all possible versions.
For components used in a specific version
see schematic diagram respectively partslist.

7-8

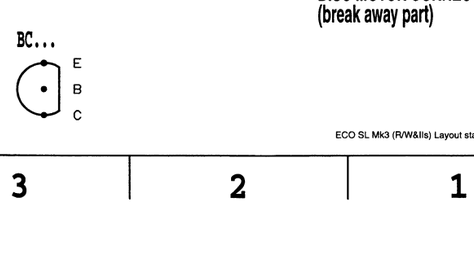
Componentside view

DISC MOTOR CONNECTION
(break away part)





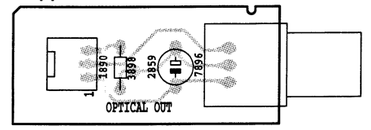
DISC MOTOR CONNECTION
(break away part)



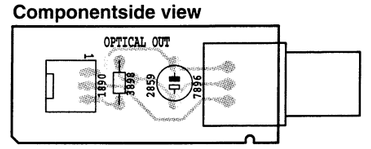
This assembly drawing shows a summary
of all possible versions.
For components used in a specific version
see schematic diagram respectively partslist.

ECO SL Mk3 (R/W&IIs) Layout stage .2 (19980330)

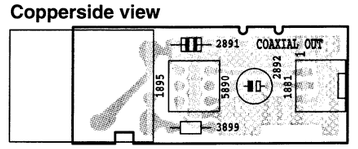
OPTIONAL
FOR SETS WITH OPTICAL OUT
Copperside view



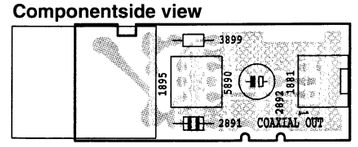
Componentside view



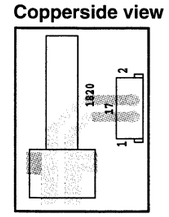
OPTIONAL
FOR SETS WITH COAXIAL OUT
Copperside view



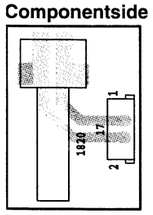
Componentside view



OPTIONAL
FOR FLAP LOADERS
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	E4	6888 B2
2857	D4	7802 opt.
2858	D4	7819 opt.
2859 opt.		7822 F3
2860	D4	7851 F2
2861	D4	7852 D1
2862	D4	7855 C2
2863	E5	7860 opt.
2865 opt.		7877 F5
2868	F5	7878 F5
2869	D5	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	

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)

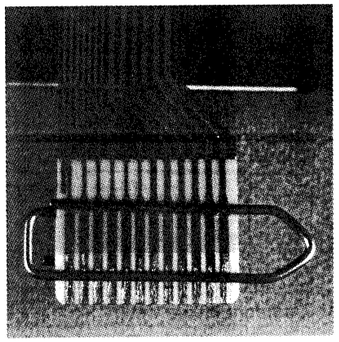


fig.1

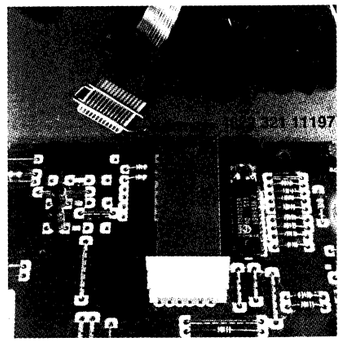


fig.2

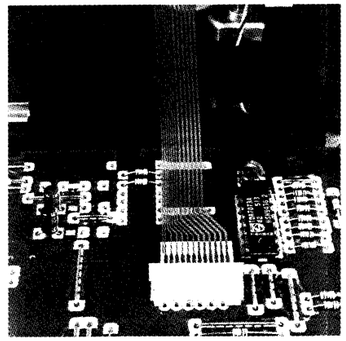
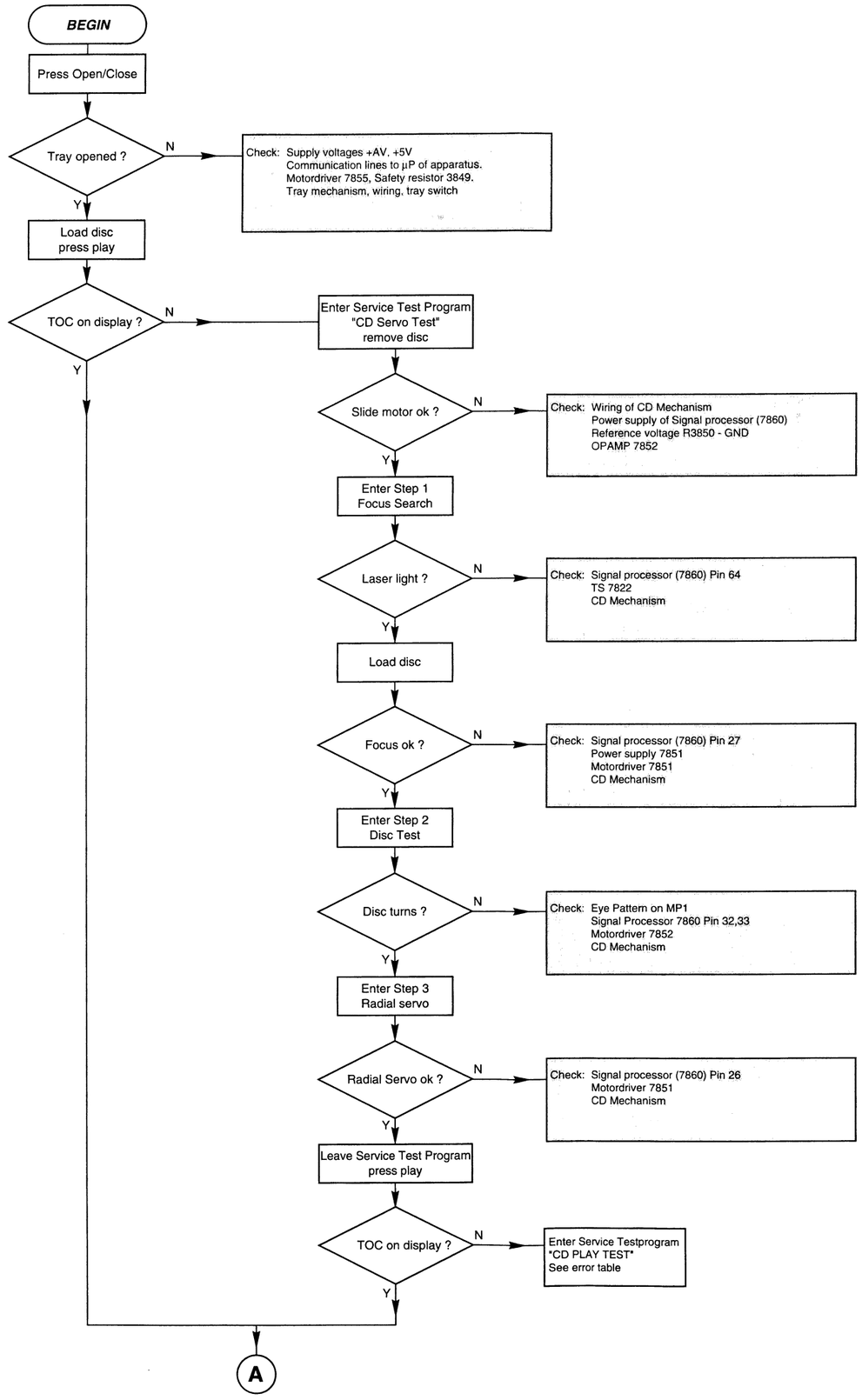
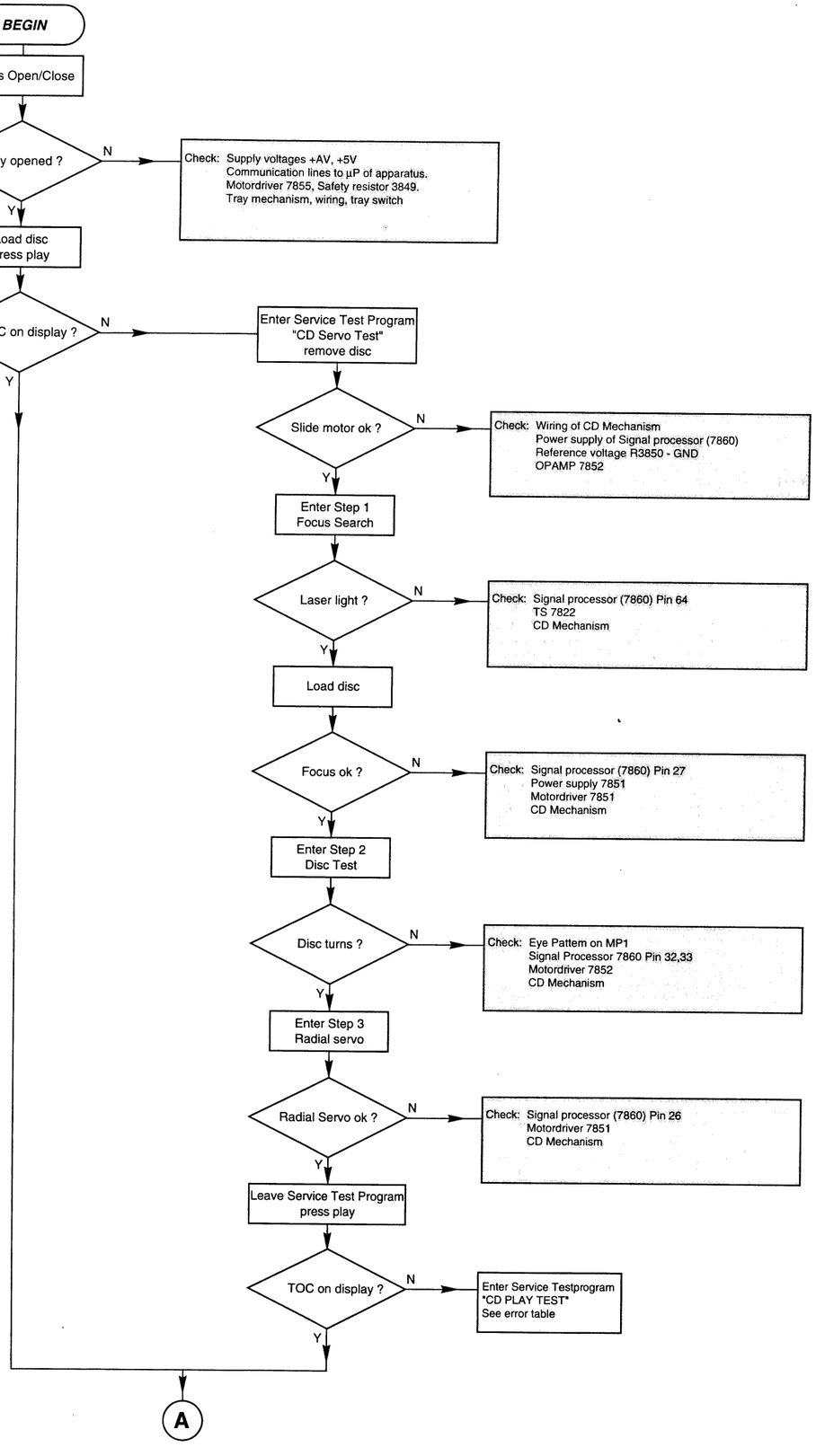


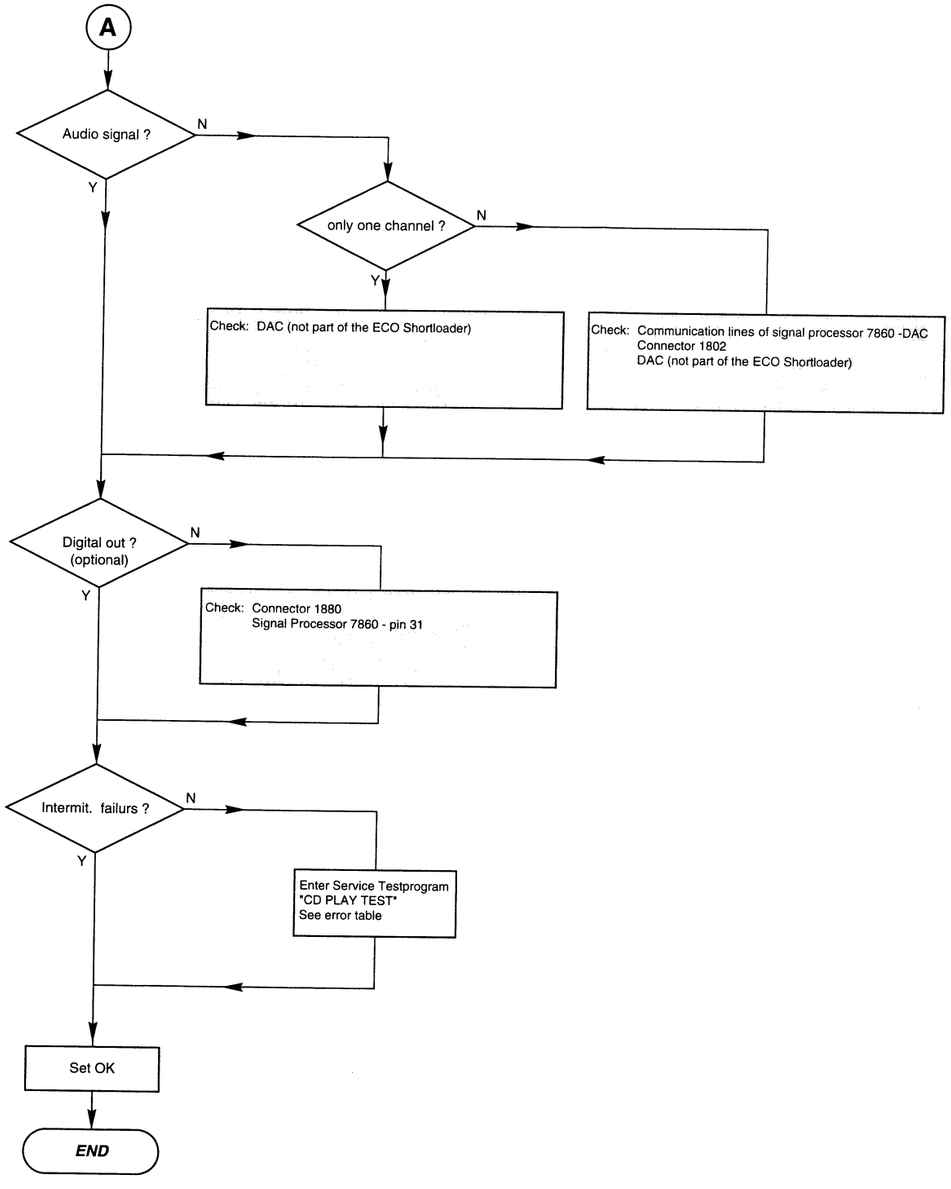
fig.3

Remarks




BEGIN
Press Open/Close
Tray opened ?
N
Check: Supply voltages +AV, +5V
Communication lines to µP of apparatus.
Motordriver 7855, Safety resistor 3849.
Tray mechanism, wiring, tray switch
Y
Load disc
press play
TOC on display ?
N
Enter Service Test Program
"CD Servo Test"
remove disc
Y
Slide motor ok ?
N
Check: Wiring of CD Mechanism
Power supply of Signal processor (7860)
Reference voltage R3850 - GND
OPAMP 7852
Y
Enter Step 1
Focus Search
Laser light ?
N
Check: Signal processor (7860) Pin 64
TS 7822
CD Mechanism
Y
Load disc
Focus ok ?
N
Check: Signal processor (7860) Pin 27
Power supply 7851
Motordriver 7851
CD Mechanism
Y
Enter Step 2
Disc Test
Disc turns ?
N
Check: Eye Pattern on MP1
Signal Processor 7860 Pin 32,33
Motordriver 7852
CD Mechanism
Y
Enter Step 3
Radial servo
Radial Servo ok ?
N
Check: Signal processor (7860) Pin 26
Motordriver 7851
CD Mechanism
Y
Leave Service Test Program
press play
TOC on display ?
N
Enter Service Testprogram
CD PLAY TEST
See error table
Y
A

7-9

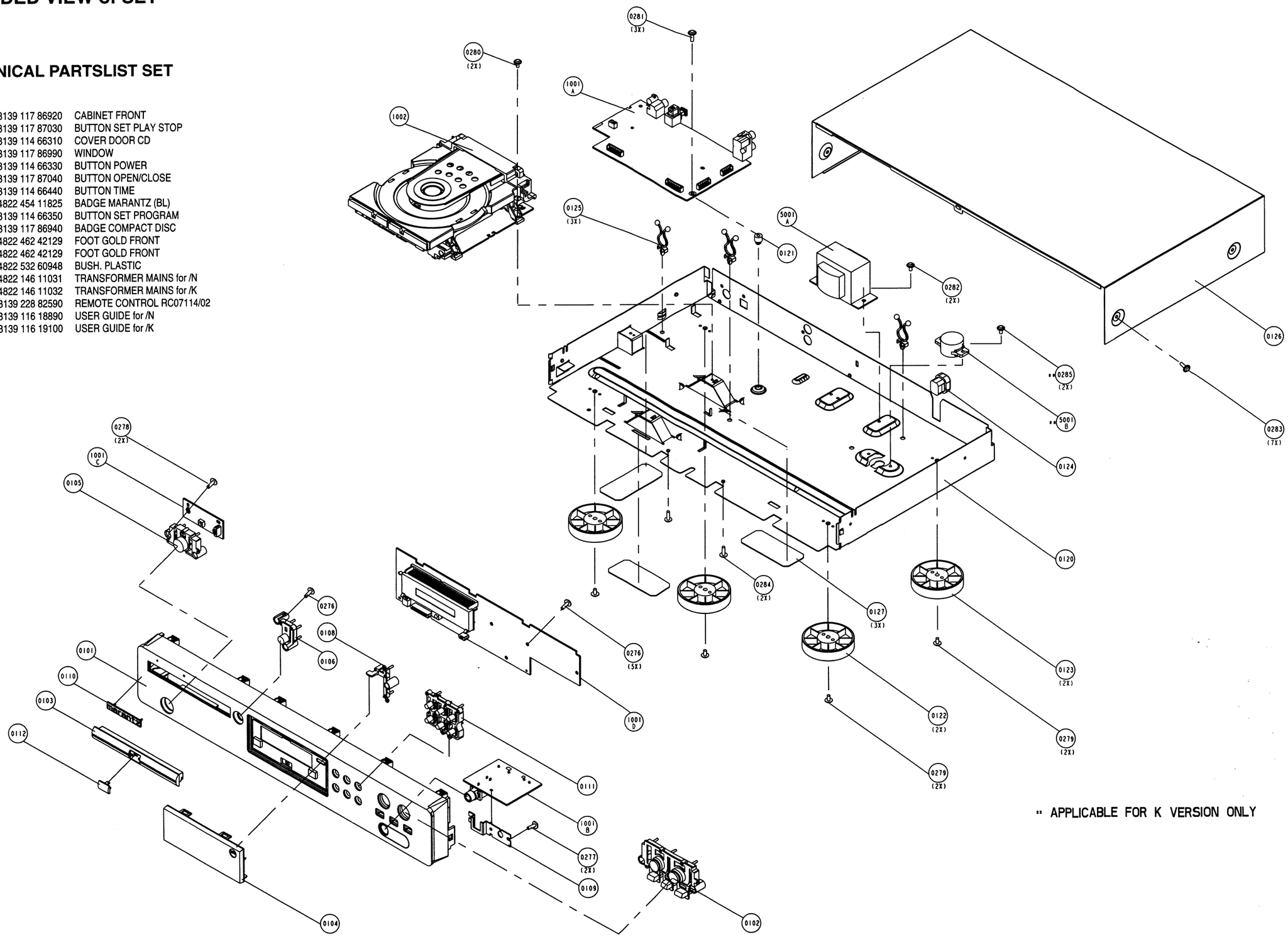

A
Audio signal ?
N
Y
only one channel ?
N
Y
Check: DAC (not part of the ECO Shortloader)
Check: Communication lines of signal processor 7860 -DAC
Connector 1802
DAC (not part of the ECO Shortloader)
Digital out ?
(optional)
N
Y
Check: Connector 1880
Signal Processor 7860 - pin 31
Intermit. failurs ?
N
Y
Enter Service Testprogram
CD PLAY TEST
See error table
Set OK
END

10-1

EXPLODED VIEW of SET

MECHANICAL PARTSLIST SET

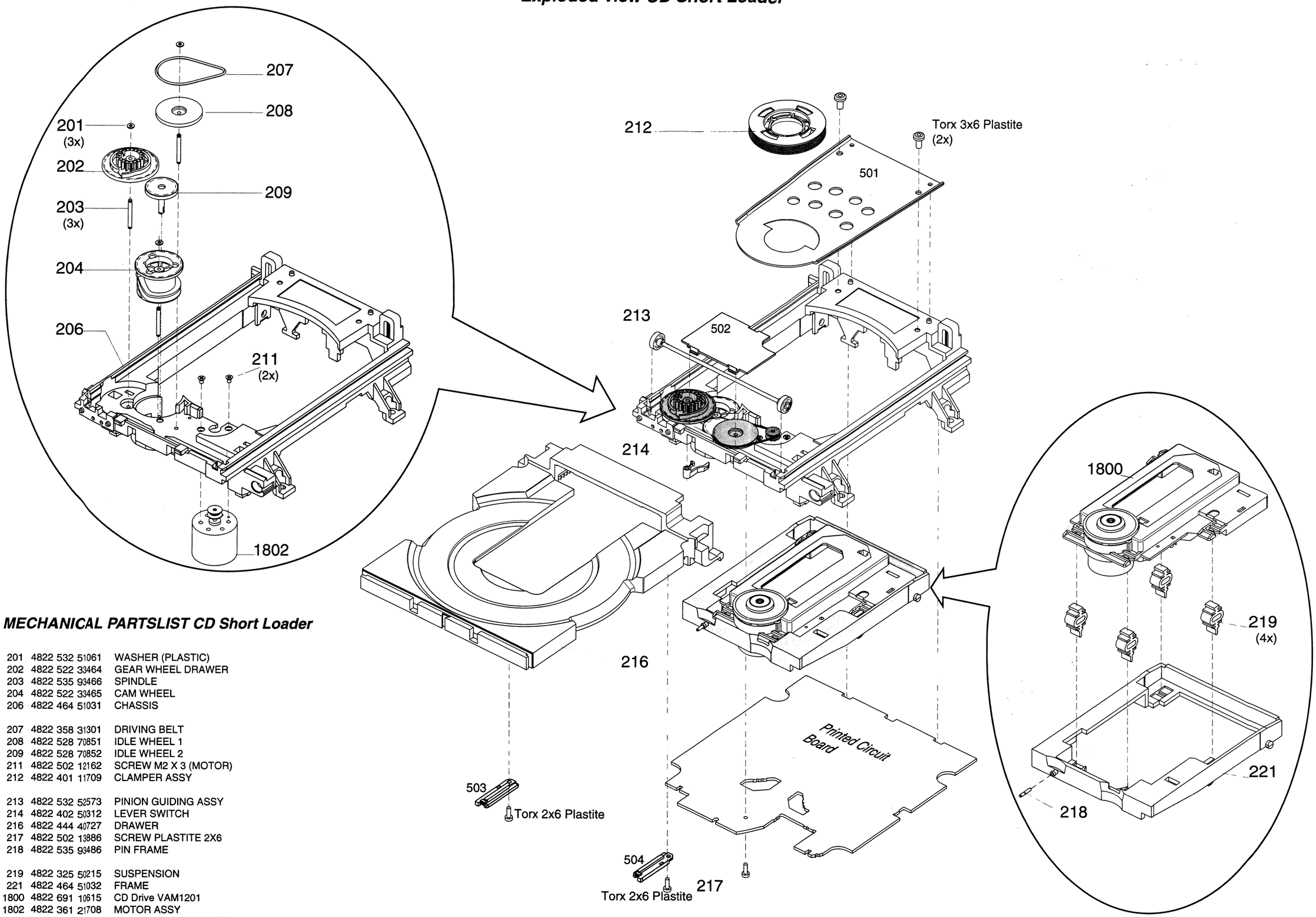
0101		3139 117 86920	CABINET FRONT
0102		3139 117 87030	BUTTON SET PLAY STOP
0103		3139 114 66310	COVER DOOR CD
0104		3139 117 86990	WINDOW
0105		3139 114 66330	BUTTON POWER
0106		3139 117 87040	BUTTON OPEN/CLOSE
0108		3139 114 66440	BUTTON TIME
0110		4822 454 11825	BADGE MARANTZ (BL)
0111		3139 114 66350	BUTTON SET PROGRAM
0112		3139 117 86940	BADGE COMPACT DISC
0122		4822 462 42129	FOOT GOLD FRONT
0123		4822 462 42129	FOOT GOLD FRONT
0124		4822 532 60948	BUSH. PLASTIC
5001	▲	4822 146 11031	TRANSFORMER MAINS for /N
5001	▲	4822 146 11032	TRANSFORMER MAINS for /K
		3139 228 82590	REMOTE CONTROL RC07114/02
		3139 116 18890	USER GUIDE for /N
		3139 116 19100	USER GUIDE for /K



** APPLICABLE FOR K VERSION ONLY

10-2

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

CS 53 127

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	0,47µF	20%	50V
2844	4822 124 22726	4,7µF	20%	35V
2845	4822 122 33848	47pF	5%	50V
2847	4822 124 40433	47µF	20%	25V
2848	4822 121 51387	10nF	20%	16V
2849	4822 124 40433	47µF	20%	25V
2850	4822 124 22726	4,7µF	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	4,7µF	20%	35V
2861	4822 122 33191	22pF	5%	50V
2862	4822 122 33191	22pF	5%	50V
2863	4822 124 81286	47µF	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	4,7µF	20%	35V

RESISTORS

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

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

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

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

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	4,7µF	20%	35V
2801	4822 124 22726	4,7µF	20%	35V
2803	4822 126 11585	22nF	20%	25V
2807	4822 124 40207	100µF	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	47µF	20%	25V
2815	4822 121 42408	220nF	5%	63V

RESISTORS

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

RESISTORS

3844	4822 050 11002	1kΩ	5%	0,2W
3845	4822 050 11002	1kΩ	5%	0,2W
3846	4822 050 11002	1kΩ	5%	0,2W
3847	4822 116 52175	100Ω	5%	0,5W
3848	4822 116 52182	15Ω	5%	0,5W
3849	4822 116 52182	15Ω	5%	0,5W

COILS

1833	4822 242 72066	CERAMIC FILTER 8,0MHz
5802	4822 156 21721	2,2µH

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

INTEGRATED CIRCUITS

7800©	4822 209 16738	TMP87CM71-83770 MICROPROCESSOR