Portable compact disc player

Service
Service
Service

AZ7780 AZ7880
AZ7781 AZ7881
AZ7782 AZ7882
AZ7783 AZ7883
AZ7784 AZ7884
all versions

Service Manual 1902

VICTORY PLATFORM 2A/3A

Service Manual

ESA
ESP

ReWritable COMPATIBLE

COMPACT disc DIGITAL AUDIO

TABLE OF CONTENTS

CLASS 1
LASER PRODUCT

Published by PW 9851 Service Audio Printed in The Netherlands Subject to modification

GB 4822 725 26028

CS 46 598

TECHNICAL SPECIFICATION

General

Dimensions (WxHxD) : 128x27.5x136.5mm
Weight without batteries : 207g

Power supply modes

DC-in socket : 3.0-6.0V
Primary batteries (2xLR6) : 1.75-3.6V
Rechargable batteries : 1.75-3.6V

Battery lifetime

BATTERY TYPE	ESA OFF	ESA ON
Primary batteries (2xLR6)	12hrs typ.	12hrs typ.
Accu-pack AY3361 (NiCd, 700mAh)	4hrs typ.	4hrs typ.

Battery empty detection

Battery empty level : 1.8V nom. +100/-50mV

Charge circuit

Charge current : 150mA nom. ±20%
Charge time for 80% AY3361 : 6.0hrs nom.
Max. charge time (µP controlled) : 8.0hrs nom.
Temperature protection : none

Current consumption

OPERATION MODE	DC-IN SUPPLY (4.5V)		BATT. SUPPLY (2.25V)	
	ESA OFF	ESA ON	ESA OFF	ESA ON
Play-mode	145mA typ.	165mA typ.	165mA typ.	165mA typ.
Jump-mode	450mA typ.	450mA typ.	450mA typ.	450mA typ.
Stand-by (excl. recharge)	15mA typ.		100µA typ.	

Shock resistance (ESA off)

+X/-X direction : ≥2.5g
+Y/-Y direction : ≥2.5g
+Z/-Z direction : ≥2.0g

Headphone out (measured with 16Ω load, ESA & DBB off)

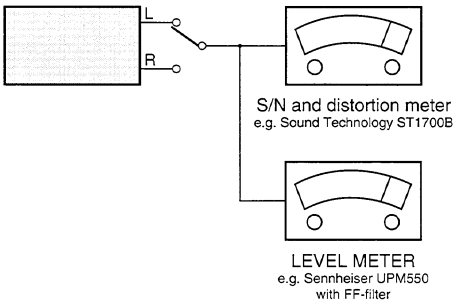
Output power (THD=10%)
/00/05 versions : 2x2.8mW (+1/-3dB)
all other versions : 2x12mW (+1/-3dB)
Frequency response (1mW) : 100Hz-20kHz within 6dB
S/N ratio (unwght) : >80dB (83dB typ.)
S/N ratio (A-wght) : >82dB (85dB typ.)
THD+N (1kHz, 1mW) : <1% (0.2% typ.)
Channel crosstalk (1kHz, no load) : <-24dB (-44dB typ.)
Channel unbalance (-40dB) : <5dB
Volume attenuation (1kHz) : >60dB

Laser

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

Measurement setup

Use Audio Signal disc SBC429 4822 397 30184

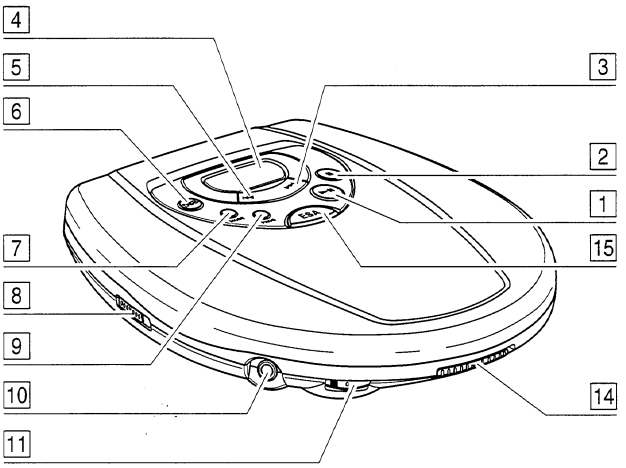


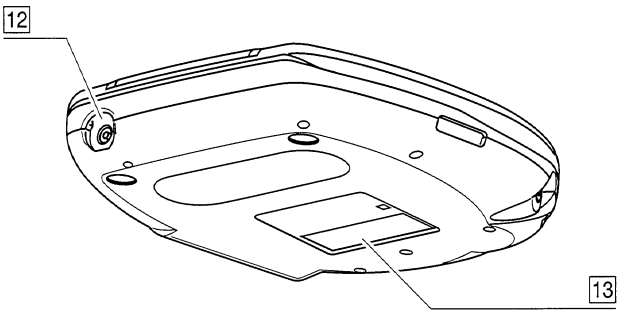
FEATURE OVERVIEW

FEATURES OF CD-PORTABLE FAMILY VICTORY 2A/3A	PLATFORM 2A					PLATFORM 3A				
	AZ7780	AZ7781	AZ7782	AZ7783	AZ7784	AZ7880	AZ7881	AZ7882	AZ7883	AZ7884
CD-REWRITABLE COMPATIBILITY	●	●	●	●	●	●	●	●	●	●
ELECTRONIC SHOCK ABSORPTION (ESA)	12s	12s [1]	12s	12s [1]	12s	45s	45s	45s	45s	45s
ESA DRAM SIZE	4Mbit	4Mbit [1]	4Mbit	4Mbit [1]	4Mbit	16Mbit	16Mbit	16Mbit	16Mbit	16Mbit
HOLD / RESUME FUNCTION	●/●	●/●	●/●	●/●	●/●	●/●	●/●	●/●	●/●	●/●
DBB STAGES	1	1	1	1	1	1	1	1	1	1
ACOUSTIC FEEDBACK	●	●	●	●	●	●	●	●	●	●
PROGRAM MEMORY	99	99	99	99	99	99	99	99	99	99
RECHARGE FUNCTION NiCd / NiMH	●/–	●/–	●/–	●/–	●/–	●/–	●/–	●/–	●/–	●/–
CORD REMOTE CONTROL PREPARED	–	–	–	–	●	–	–	–	–	●
LINE / DIGITAL OUTPUT	–/–	–/–	–/–	–/–	–/–	–/–	–/–	–/–	–/–	–/–

[1] /17 version only: Electronic Skip Protection (ESP) – 25s commercial value, 45s ESP real; 16MBit DRAM

CONNECTIONS AND CONTROLS





1 ▶II .....switches the set on, starts and interrupts CD play
2 ■.....stops CD play, erases a program, activates charging and switches the set off
3 ⏭ .....skips and searches forward
4 .....display
5 ⏮ .....skips and searches backward
6 DBB.....**D**YNAMIC **B**ASS **B**OOST switches the bass enhancement on/off
7 MODE .....selects the different playing possibilities: **SHUFFLE**, **SHUFFLE REPEAT ALL**, **REPEAT**, **REPEAT ALL** and SCAn
8 RESUME...stores the last position played
HOLD .....locks all buttons
OFF.....switches RESUME and HOLD off
9 PROG .....programs tracks and reviews the program
10 ∩.....3.5 mm headphone and remote control socket
11 VOL ◢.....adjusts the volume
12 4.5V DC ....socket for external power supply
13 .....typeplate
14 OPEN ▶ ....opens the CD lid
15 ESA.....**E**LECTRONIC **S**HOCK **A**BSORPTION ensures continuous playback regardless of vibrations and shocks

TROUBLESHOOTING (excerpt from the Instruction For Use)

Problem	Possible cause	Solution
No power, playback does not start	**Batteries**	
	Batteries inserted incorrectly	Insert the batteries correctly
	Batteries are empty	Change the batteries
	Contact pins are dirty	Clean them with a cloth
	Mains adapter	
	Loose connection	Connect the adapter securely
	In-car use	
	Cigarette lighter is not powered when ignition is off	Switch on ignition or insert batteries
nF d ISC **indication**	CD-RW (CD-R) is not recorded properly	Use FINALIZE on the CD Recorder to complete the recording
no d ISC **indication**	The CD is scratched badly or dirty	Replace or clean the CD
	CD is not or incorrectly inserted	Insert a CD, label upwards
	The laser lens is steamed up	Wait until the lens has cleared
HoLd **indication and/or no reaction to controls**	**HOLD is activated**	**Deactivate HOLD**
	Electrostatic discharge	Disconnect the set from power supply or take out the batteries for a few seconds

Problem	Possible cause	Solution
CD skips tracks	The CD is damaged or dirty	Replace or clean the CD
	RESUME, **SHUFFLE** or **PROGRAM** is active	Switch off **RESUME**, **SHUFFLE** or **PROGRAM**
No sound or bad sound quality	PAUSE is activated	Press ▶II
	Loose, wrong or dirty connections	Check and clean connections
	Volume is not adjusted	Adjust the volume
	Headphones worn the wrong way	Pay attention to the **L** (left) and **R** (right) indications
	Strong magnetic fields near the CD player	Change the player's position or connections
	In-car use	
	Adapter cassette is inserted incorrectly	Insert the adapter cassette correctly
	Temperature inside the car is too high/low	Let the CD player adjust to the temperature
	Cigarette lighter socket is dirty	Clean the cigarette lighter socket
	Wrong playback direction of the car cassette player's autoreverse feature	Change the autoreverse direction
Batt. charging on board does not work	Use of wrong batteries	Only use the Ni-Cd battery pack AY 3361
	Contacts are dirty	Clean them with a cloth

ACCESSORIES

ACCESSORIES FOR CD-PORTABLE FAMILY VICTORY PLATFORM 2A/3A		AZ7780	AZ7781				AZ7782		AZ7783					AZ7784		AZ7880	AZ7881		AZ7882		AZ7883	AZ7884				
		/17	/00	/05	/14	/17	/00	/11	/00	/01	/09	/10	/17	/00	/05	/17	/00	/17	/00	/14	/17	/00	/05	/11	/11H	/17
AY3170/00 AC/DC ADAPTOR	4822 219 10617		X				X		X					X			X		X			X				
AY3170/02 AC/DC ADAPTOR	4822 219 10676									X																
AY3170/05 AC/DC ADAPTOR	4822 219 10672			X											X								X		X	
AY3170/09 AC/DC ADAPTOR	4822 219 10679										X															
AY3170/10 AC/DC ADAPTOR	4822 219 10681											X														
AY3170/12 AC/DC ADAPTOR	4822 219 10671				X			X												X				X		
AY3170/17 AC/DC ADAPTOR	4822 219 10616	X				X							X			X		X			X					X
AY3263/00 POUCH	4822 600 10765	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	X	X	X	X	O
AY3361/00 BATTERY PACK NiCd	4822 138 10615	O	O	O	O	O	X	X	O	X	X	X	O	X	X	O	O	O	X	X	O	X	X	X	X	X
AY3501/00 CAR ADAPTOR CASSETTE	4822 397 10059		O	O	O		O	O	X	X	X	X		O	O		O		O	O	X	O	O	O	O	X
AY3501/37 CAR ADAPTOR CASSETTE	4822 397 10098	O				O							X			X		X								
AY3545/00 CAR DC/DC CONVERTER	4822 219 10033		O	O	O		O	O	X	X	X	X		O	O		O		O	O	X	O	O	O	O	X
AY3545/37 CAR DC/DC CONVERTER	4822 219 10183	O				O							X			X		X								
AY3677/00 EARPHONE	4822 242 11004		X	X	X		X	X	X	X	X	X					X		X	X						
AY3677/00S EARPHONE	4822 242 11021													X	X							X	X	X	X	
AY3682/00 HEADPHONE	4822 242 11003																				X					
AY3682/00S HEADPHONE	4822 242 11019																									X
AY3682/37 HEADPHONE	4822 242 10844	X				X							X			X		X								
AY3764/00 CORD REMOTE CONTROL	4822 219 10525													X	X							X	X	X	X	X
AY3860/00 ACTIVE SPEAKER BOX	4822 445 10513		O	O	O		O	O	O	O	O	O		O	O				O	O	O	O	O	O	O	O
AY3860/17 ACTIVE SPEAKER BOX	4822 445 10514	O				O							O			O	O	O								
AY3464 HIFI CORD (3.5mm → cinch, L-plug)	4822 320 11881	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	X	X	X	X	O

X....supplied with the set, O....optional available

SAFETY & WARNINGS

(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

(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.

(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.

(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, 1MΩ)		4822 320 11307
extendible cable (2m, 2MΩ, to connect wristband to connection box)		4822 320 11305
connecting cable (3m, 2MΩ, to connect table mat to connection box)		4822 320 11306
earth cable (1MΩ, to connect any product to mat or to connection box)		4822 320 11308
KIT ESD3 (combining all 6 prior products - small table mat)		4822 310 10671
wristband tester		4822 344 13999

(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 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.

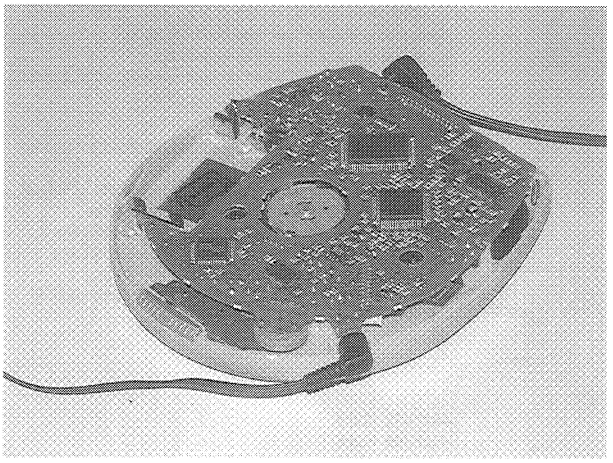
(FIN) Varoitus !
Avatussa laitteessa ja suojalukituksen ohitettaessa olet alttiina näkymättömälle laserisäteilylle. Älä katso säteeseen !

(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".

SERVICE HINTS

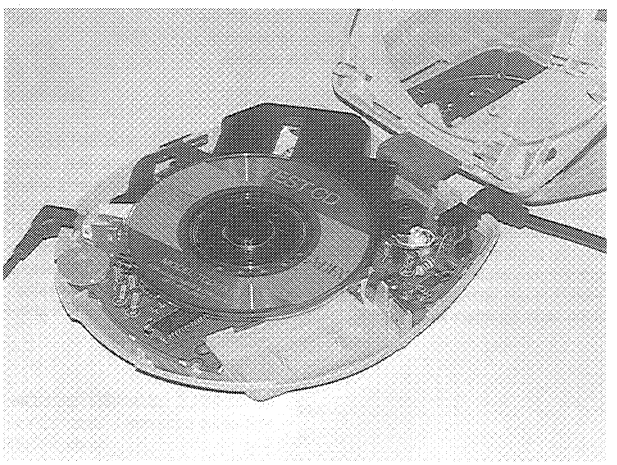
REPAIR POSITION COPPERSIDE



To get access to the copperside of the printed circuit board proceed as follows:

1. Remove the bottom screws (6x)
2. Lift the bottom-cabinet
3. Supply the unit via external DC-socket
4. Take care of door switch during measurement or enter service test program, radial test

REPAIR POSITION COMPONENTSIDE

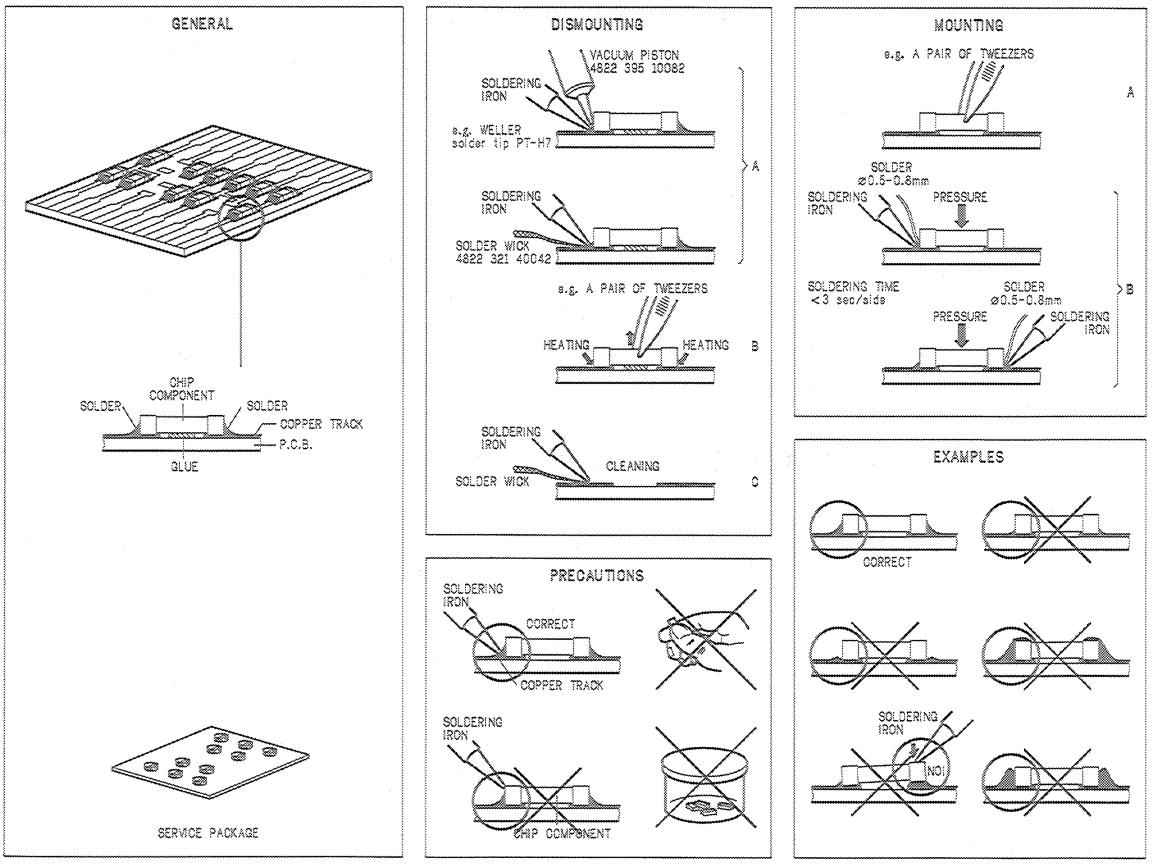


To get access to the componentside of the printed circuit board proceed as follows:

1. Remove the bottom screws (6x)
2. Open the CD-door
3. Lift the top-cabinet and put it backwards on the table
4. Supply the unit via the external DC-socket
5. Close the door-switch (i.e. adhesive tape) or enter service test program, radial test

The unit is now in a proper working position and can be turned in all directions necessary to get access for measurements.

HANDLING CHIP COMPONENTS

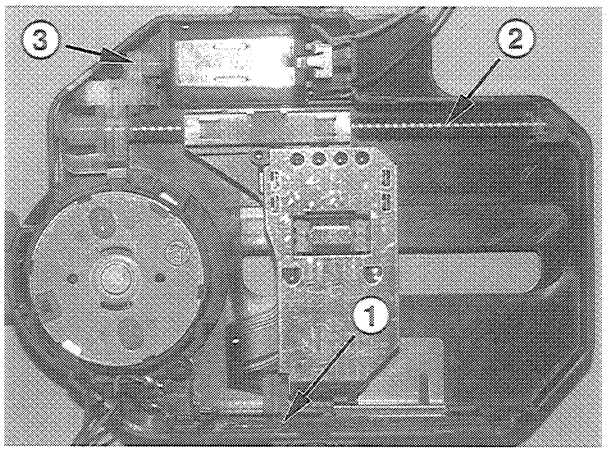


VAM2103 – DRIVE CLEANING & LUBRICATION

Lubrication of the CD-drive is only necessary in case of symptom "skipping tracks". The reason can be dirt which sticks to the grease or the grease is getting aged.

Use an acid-free synthetic grease – i.e. "Tribol 9890-2" or equivalent.

Before greasing the mechanism first remove the old grease from the mechanism. Use a cotton swab dipped in alcohol to clean the mechanism.



Cleaning the mechanism

1. Clean the lower and upper sledge guidance plane (optical pick-up).
2. Clean the spindle shaft.
3. Clean the area between the worm gear, idler wheel and clamping spring.

Lubricating the mechanism

1. Put one dot of grease onto the upper sledge guidance plane on each side of the sledge. Move the sledge to the inner and outer position to spread the grease.
   Put one dot of grease onto the lower sledge guidance plane on each side of the sledge. Move the sledge to the inner and outer position to spread the grease.
2. Put one dot of grease onto the spindle shaft on both sides of the sledge. Move the sledge to the inner and outer position to spread the grease.
3. Put one dot of grease between the worm gear and the clamping spring.

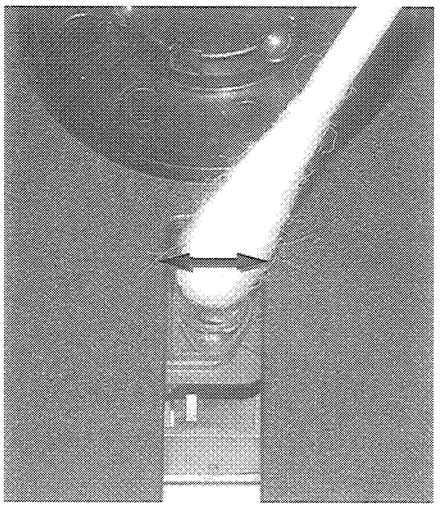
VAM2103 – LENS CLEANING

Before touching the lens it is advised to clean the surface of the lens by blowing clean air over it in order to avoid that little particles make scratches on the lens.

Because the material of the lens is synthetic and coated with a special anti-reflectivity layer, cleaning must be done with a non-aggressive cleaning fluid. It is advised to use "KODAK LENS CLEANER CAT 176 71 36", available in normal photo shops.

The actuator is a very precise mechanical component and may not be damaged in order to guarantee its full function. It is advised to clean the lens gently (don't press too hard) with a soft and clean cotton bud moistened with the special lens cleaner.

The direction of cleaning must be in the way as indicated in the picture below.



SERVICE TOOLS

Audio signal disc SBC429	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) **SBC426/SBC426A**	4822 397 30096

TRAINING MATERIAL

Portable CD 1994 – Principles of Electronic Shock Absorption System ESA, Key components 1994, Remote control system	4822 725 24941
Portable CD 1996 – Key components 1996, Battery charging, DC/DC-converter	4822 725 24986

ESD PROTECTION EQUIPMENT

For a list of available protection equipment see chapter "Safety & Warnings".

SERVICE TEST PROGRAM

1. PRELIMINARY SETUP

- To enter the service test program supply the set with mains, open the CD-door, hold the keys "MODE" and "NEXT" depressed while pressing "STOP".
- The display shows the software version of the built-in µP (i.e. "5 - 1 1"). Versions are counted from "0 0" onwards; that means the higher the number the newer the software.
- The program is now in the main menu – various tests can be entered by pressing the corresponding buttons (see flow chart on next page or detailed description of test programs below).
- To exit the service test program press the "STOP" button or disconnect the set from the power source.

2. DISPLAY TEST

Purpose: Check functionality of display and display driver.

- To enter the display test start service test program and press the "NEXT" button.
- The display shows test pattern1. All segments are activated for finding open circuits (see flow chart on next page).
- To jump to the next pattern press the "NEXT" button.
- The display shows test pattern2. All alternate pins (2, 4, ...) are activated for finding short circuits (see flow chart on next page).
- To jump back to test pattern1 press the "NEXT" button, to exit the display test and return to the main menu press the "STOP" button.

3. KEY TEST

Purpose: Check operation of keys.

- To enter the key test start service test program and press the "MODE" button.
- The display shows "- -".
- Hold key depressed and check corresponding key code on the display. Key codes can be found in table1 (see flow chart on next page).
- To exit the key test and return to the main menu press the "STOP" button.

4. PLAYBACK TEST WITH ERROR ANALYSIS

Purpose: Analyse errors that occur during playback and search for intermittent failures.

- To enter the playback test start service test program and press the "DBB" button and the "PLAY" button within 2 sec. Note that the playback test can only be entered if the CD-door is closed.
- The set now reads the TOC and starts the error analysis.

As long as the playback is free of errors the display shows track and time information like in normal play-mode. In case of an error a corresponding error code will be displayed. The meaning of this error code can be found in table2 (see flow chart on next page).

Note: Errors can either be *"fatal"* or *"non fatal"*. Fatal errors always stop the playback, non fatal errors only cause a short interruption of the music. Fatal errors are displayed as long as the set is connected to the power source, non fatal errors are displayed until a new error occurs or a button is pressed.

- To stop the playback test disconnect the set from the power source.

5. SERVO TEST

Purpose: Check door switch and inner switch, movement of slide and acceleration of discmotor.

- To enter the servo test start service test program and press the "PLAY" button.
- The display shows "5 *xy*".
  "*x*" indicates state of door switch;
  "*y*" indicates state of inner switch.
  x,y = "0" means switch is closed; " 1" means switch is open.

- To move slide outside hold the "NEXT" button depressed.
- To move slide inside hold the "PREV" button depressed.
- To accelerate the discmotor clockwise hold the "MODE" button depressed.
- To accelerate the discmotor counter-clockwise hold the "PROG" button depressed.
- To enter the focus test press the "PLAY" button, to exit the servo test and return to the main menu press the "STOP" button.

6. FOCUS TEST

Purpose: Check movement of lens and operation of focus servo in "normal" and "CD-RW compatible" mode.

> 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 "CD10" must be increased.
> The gain is switched via the HF-GAIN line (pin62 of CD10), the ADC-sensitivity is switched via software (µP → CD10).
> 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.

- The focus servo loop is switched on and the set starts searching the focus ("focus ramping"). As soon as the focus has been found the focus servo loop is closed and the state of the focus is monitored continuously.
- If the focus is OK the display shows " F", else "- F".
- The ESA-flag indicates the playback mode.
  ESA-flag off means "normal" playback mode (default setting).
  ESA-flag on means "CD-RW compatible" playback mode.
- To toggle between playback modes press the "DBB" button.
- To move slide outside hold the "NEXT" button depressed.
- To move slide inside hold the "PREV" button depressed.
- To accelerate the discmotor clockwise hold the "MODE" button depressed.
- To accelerate the discmotor counter-clockwise hold the "PROG" button depressed.
- In case the focus is OK the discmotor test can be entered by pressing the "PLAY" button, to exit the focus test and return to the main menu press the "STOP" button.

7. DISCMOTOR TEST

Purpose: Check speed regulation of discmotor.

- The speed regulation is switched on and the discmotor starts rotating. If the speed reaches 75% of the nom. speed the display shows " d", else "- d".
- In parallel also the state of the focus is monitored continuously (display " F" or "- F").
- In case the disc speed is OK and the focus is OK the radial test can be entered by pressing the "PLAY" button, to exit the discmotor test and return to the main menu press the "STOP" button.

8. RADIAL TEST

Purpose: Check if radial loop locks and an audio signal is audible at the headphone output.

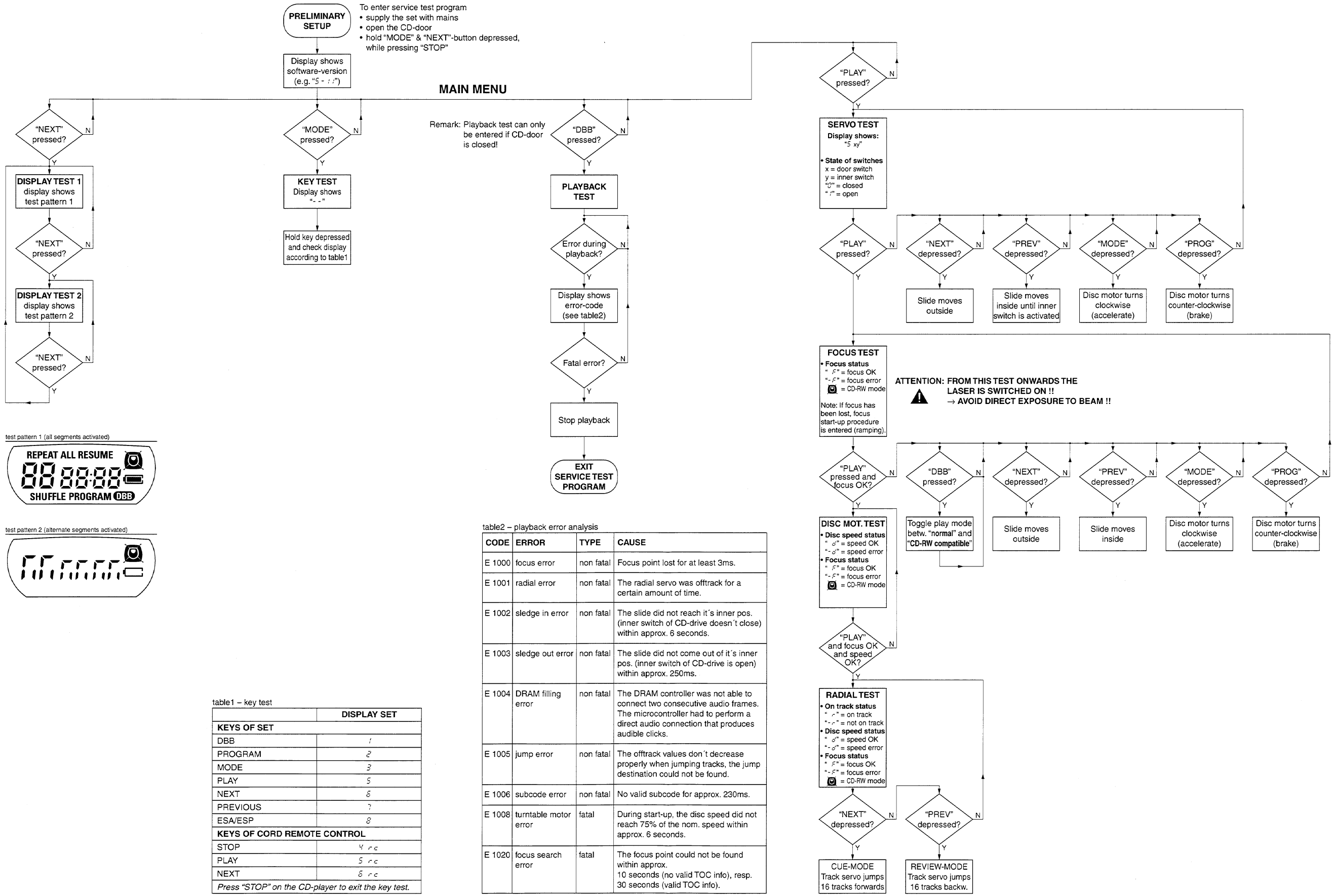
- The radial servo loop is switched on, mute is released and the audio signal is audible. If the system is on track the display shows " r", else "- r".
- In parallel also the disc speed (display " d" or "- d") and the state of the focus (display " F" or "- F") are monitored continuously.
  Note: In case of radial errors the audio output is muted and muting is not released automatically when the systems recovers from the error. "- r" remains on the display.
  To open mute again press the "NEXT" or "PREV" button.
- To jump 10 tracks outside press the "NEXT" button.
- To jump 10 tracks inside press the "PREV" button.
- To exit the radial test and return to the main menu press the "STOP" button, to exit the service test program disconnect the set from the power source.

Important remark:

In radial test mode data to the DRAM is written at 1.2 times the nominal speed, and read from the DRAM at nominal speed. Because writing is done faster than reading the DRAM gets full after a certain time.
In normal play mode the system would now wait until the DRAM is partly emptied again, jump backwards and resume filling at the last written position. However, in radial test mode the jumps would disturb measurements on the radial servo loop.
Therefore this function has been disabled and filling restarts immediately from the current position of the pick-up unit. As a result "jumps" are audible during playback.

3-2

SERVICE TEST PROGRAM – FLOW CHART



test pattern 1 (all segments activated)

test pattern 2 (alternate segments activated)

table1 – key test

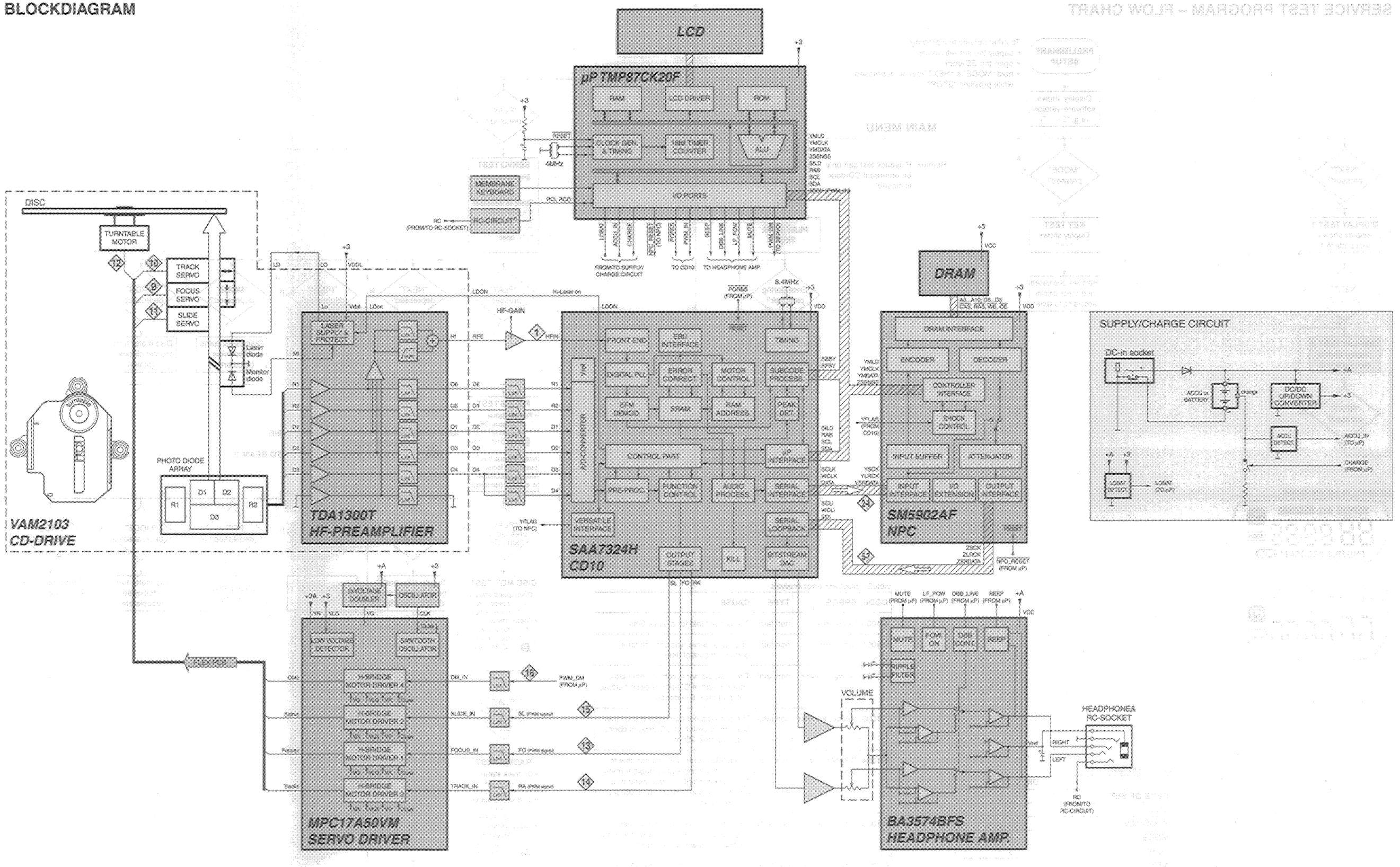
	DISPLAY SET
KEYS OF SET	
DBB	1
PROGRAM	2
MODE	3
PLAY	5
NEXT	6
PREVIOUS	7
ESA/ESP	8
KEYS OF CORD REMOTE CONTROL	
STOP	4 rc
PLAY	5 rc
NEXT	6 rc
Press "STOP" on the CD-player to exit the key test.	

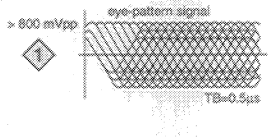
table2 – playback error analysis

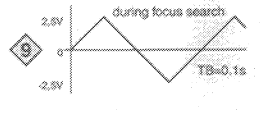
CODE	ERROR	TYPE	CAUSE
E 1000	focus error	non fatal	Focus point lost for at least 3ms.
E 1001	radial error	non fatal	The radial servo was offtrack for a certain amount of time.
E 1002	sledge in error	non fatal	The slide did not reach it´s inner pos. (inner switch of CD-drive doesn´t close) within approx. 6 seconds.
E 1003	sledge out error	non fatal	The slide did not come out of it´s inner pos. (inner switch of CD-drive is open) within approx. 250ms.
E 1004	DRAM filling error	non fatal	The DRAM controller was not able to connect two consecutive audio frames. The microcontroller had to perform a direct audio connection that produces audible clicks.
E 1005	jump error	non fatal	The offtrack values don´t decrease properly when jumping tracks, the jump destination could not be found.
E 1006	subcode error	non fatal	No valid subcode for approx. 230ms.
E 1008	turntable motor error	fatal	During start-up, the disc speed did not reach 75% of the nom. speed within approx. 6 seconds.
E 1020	focus search error	fatal	The focus point could not be found within approx. 10 seconds (no valid TOC info), resp. 30 seconds (valid TOC info).

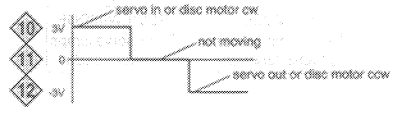
3-3

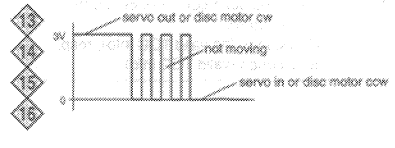
BLOCKDIAGRAM

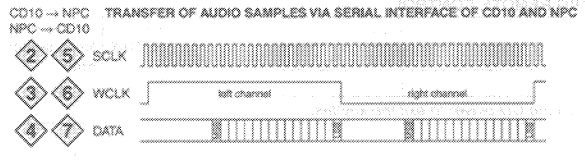






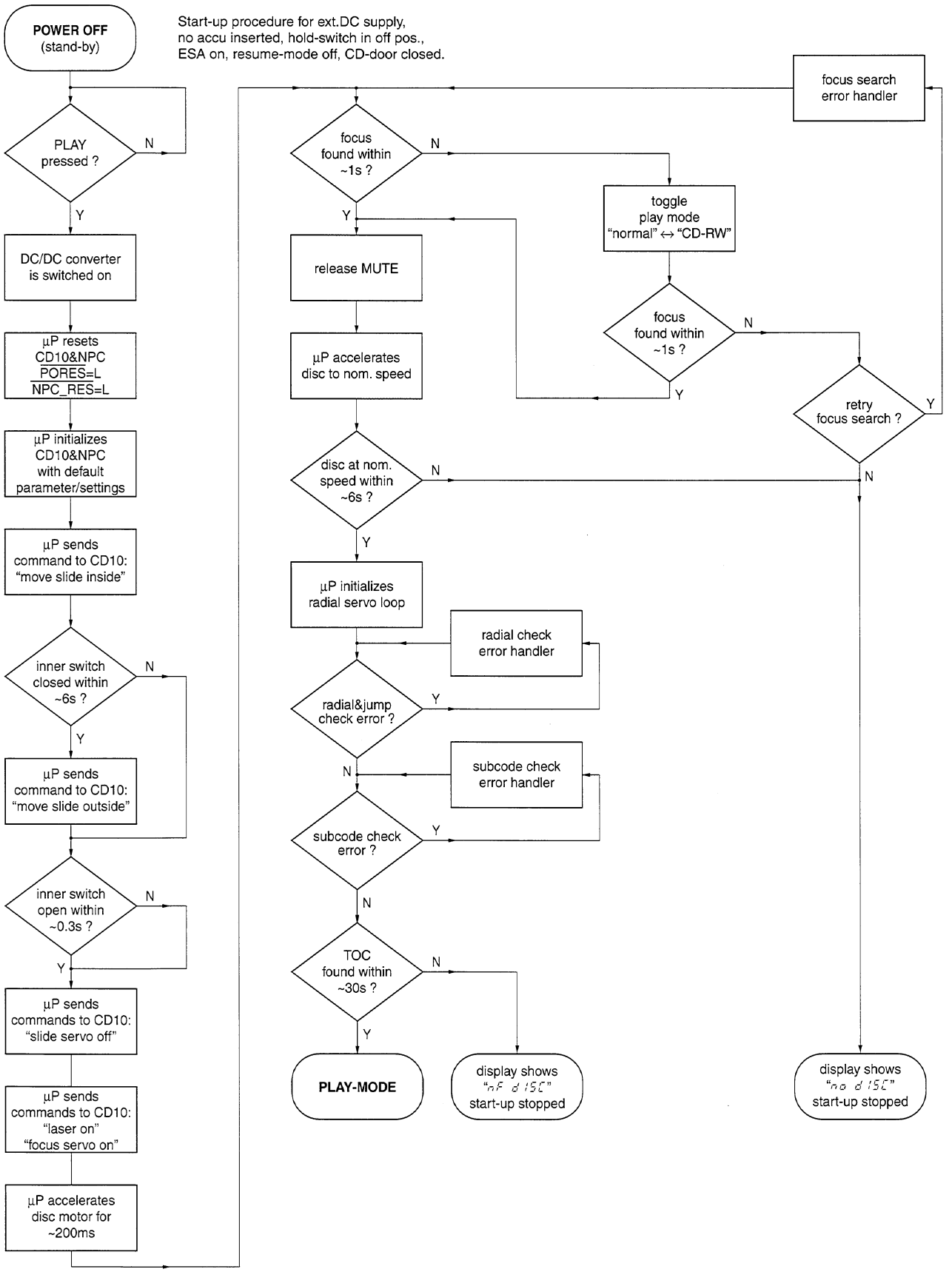






1) not on all versions

START-UP PROCEDURE – FLOW CHART



PIN DESCRIPTION OF INTEGRATED CIRCUITS

TDA1300T – HF-PREAMPLIFIER AND LASER SUPPLY CIRCUIT (part of CD-drive VAM2103)

Pin	*Name*	*Direction*	*Description*
1	O4	HF-preamp → CD10	output of current amplifier 4
2	O6	HF-preamp → CD10	output of current amplifier 6
3	O3	HF-preamp → CD10	output of current amplifier 3
4	O1	HF-preamp → CD10	output of current amplifier 1
5	O5	HF-preamp → CD10	output of current amplifier 5
6	O2	HF-preamp → CD10	output of current amplifier 2
7	LDON	CD10 → HF-preamp	control pin for switching the laser on/off
8	VDDL	laser power control → HF-preamp	laser supply voltage
9	VRFE	HF-preamp →	equalized output voltage of sum signal of amplifiers 1...4
10	VRF	not connected	unequalized output
11	HG	GND	control pin for gain switch
12	LS	CD10 → HF-preamp	control pin for double speed switch (switches equalization)
13	C	external connection	external capacitor (bandwidth of ALPC)
14	ADJ	→ HF-preamp	reference input
15	GND	GND	0V supply, substrate connection
16	LO	HF-preamp → laser diode	current output to laser diode
17	MI	monitor diode → HF-preamp	laser monitor diode input
18	VDD	+3	positive supply voltage
19	I2	GND	photo detector input 2 (not used)
20	I5	diode array → HF-preamp	photo detector input 5 (satellite)
21	I1	diode array → HF-preamp	photo detector input 1 (central)
22	I3	diode array → HF-preamp	photo detector input 3 (central)
23	I6	diode array → HF-preamp	photo detector input 6 (satellite)
24	I4	diode array → HF-preamp	photo detector input 4 (central)

MPC17A50VM – 4-CHANNEL H-BRIDGE SERVODRIVER

Pin	*Name*	*Direction*	*Description*
1	CGND	GND	ground (control part)
2	VLG	+3	power supply input (control part)
3	ERR2	CD10 → servo driver	error level input (slide error signal)
4	NI2	→ servo driver	filter capacitor connection in ABS amp circuit section
5	OP2	→ servo driver	filter capacitor connection in ABS amp circuit section
6	ERR1	CD10 → servo driver	error level input (focus error signal)
7	NI1	→ servo driver	filter capacitor connection in ABS amp circuit section
8	OP1	→ servo driver	filter capacitor connection in ABS amp circuit section
9	LIM	→ servo driver	limit control level signal input
10	VR	→ servo driver	control reference voltage input (VR=VLG/2)
11	CLK	→ servo driver	clock signal input
12	OP3	→ servo driver	filter capacitor connection in ABS amp circuit section
13	NI3	→ servo driver	filter capacitor connection in ABS amp circuit section
14	ERR3	CD10 → servo driver	error level input (radial error signal)
15	OP4	→ servo driver	filter capacitor connection in ABS amp circuit section
16	NI4	→ servo driver	filter capacitor connection in ABS amp circuit section
17	ERR4	µP → servo driver	error level input (motor speed error signal)
18	PHSW	GND	CH4 mode setup (if PHSW=high, CH4 operates half-bridge)
19	POL	not connected	CH4 polarity monitor output
20	CFL4	→ servo driver	pin for connecting filter for capacitor
21	CFL3	→ servo driver	pin for connecting filter for capacitor
22	OUT4A	servo driver → disc motor	H-bridge output A
23	OUT4B	servo driver → disc motor	H-bridge output B
24	VIN34	+A	CH3 and CH4 output stage power supply
25	OUT3B	servo driver → track actuator	H-bridge output B
26	PGND34	GND	CH3 and CH4 output stage ground
27	OUT3A	servo driver → track actuator	H-bridge output A
28	OUT1A	servo driver → focus actuator	H-bridge output A
29	PGND12	GND	CH1 and CH2 output stage ground
30	OUT1B	servo driver → focus actuator	H-bridge output B
31	VIN12	+A	CH1 and CH2 output stage power supply
32	OUT2B	servo driver → slide motor	H-bridge output B
33	OUT2A	servo driver → slide motor	H-bridge output A
34	CFL1	→ servo driver	pin for connecting filter for capacitor
35	CFL2	→ servo driver	pin for connecting filter for capacitor
36	VG	VG	power supply input (predriver circuit)

SAA7324 – DECODER, DIGITAL SERVO IC AND D/A-CONVERTER CD10 (low voltage version)

Pin	*Name*	*Direction*	*Description*
1	HFREF	→ CD10	comparator common mode input
2	HFIN	→ CD10	comparator signal input
3	ISLICE	CD10 →	current feedback from data slicer
4	VSSA1	GND	analog ground 1
5	VDDA1	+3	analog supply voltage 1
6	IREF	→ CD10	reference current output pin
7	VRIN	HF-preamp →	reference voltage for servo ADC's
8	D1	HF-preamp → CD10	unipolar current input (central diode signal input)
9	D2	HF-preamp → CD10	unipolar current input (central diode signal input)
10	D3	HF-preamp → CD10	unipolar current input (central diode signal input)
11	D4	HF-preamp → CD10	unipolar current input (central diode signal input)
12	R1	HF-preamp → CD10	unipolar current input (satellite diode signal input)
13	R2	HF-preamp → CD10	unipolar current input (satellite diode signal input)
14	VSSA2	GND	analog ground 2
15	CROUT	CD10 → X-TAL	crystal/resonator output
16	CRIN	X-TAL → CD10	crystal/resonator input
17	VDDA2	+3	analog supply voltage 2
18	LN	CD10 →	DAC left channel differential output - negative
19	LP	CD10 →	DAC left channel differential output - positive
20	VNEG	→ CD10	DAC negative reference input
21	VPOS	→ CD10	DAC positive reference input
22	RN	CD10 →	DAC right channel differential output - negative
23	RP	CD10 →	DAC right channel differential output - positive
24	SELPLL	+3	selects whether internal clock multiplier PLL is used
25	TEST1	GND	test control input 1; this pin should be tied low
26	CL16	CD10 →	16.9344 MHz system clock output
27	DATA	CD10 → NPC	serial data output (3-state)
28	WCLK	CD10 → NPC	word clock output (3-state)
29	SCLK	CD10 → NPC	serial bit clock output (3-state)
30	EF	CD10 →	C2 error flag output (3-state)
31	TEST2	GND	test control input 2; this pin should be tied low
32	KILL	CD10 →	kill output (programmable; open-drain)
33	VSSD1	GND	digital ground 2
34	V2/V3		versatile I/O: input versatile pin 2 or output versatile pin 3 (open-drain)
35	WCLI	NPC → CD10	word clock input (for data loopback to DAC)
36	SDI	NPC → CD10	serial data input (for data loopback to DAC)
37	SCLI	NPC → CD10	serial bit clock input (for data loopback to DAC)
38	RESETn	µP → CD10	power-on reset input (active low)
39	SDA	µP ↔ CD10	microcontroller interface data I/O line (open-drain output)
40	SCL	µP → CD10	microcontroller interface clock line input
41	RAB	µP → CD10	microcontroller interface R/W and load control line input (4-wire bus mode)
42	SILD	µP → CD10	microcontroller interface R/W and load control line input (4-wire bus mode)
43	STATUS	CD10 → µP	servo interrupt request line/decoder status register output (open-drain)
44	TEST3	GND	test control input 3; this pin should be tied low
45	RCK	→ CD10	subcode clock input
46	SUB	CD10 →	P-to-W subcode bits output (3-state)
47	SFSY	CD10 → µP	subcode frame sync output (3-state)
48	SBSY	CD10 → NPC	subcode block sync output (3-state)
49	CL11/4	CD10 →	11.2896 MHz or 4.2336 MHz (for microcontroller) clock output
50	VSSD2	GND	digital ground 3
51	DOBM	CD10 →	bi-phase mark output (externally buffered; 3-state)
52	VDDD1P	+3	digital supply voltage 2 for periphery
53	CFLG	CD10 →	correction flag output (open-drain)
54	RA	CD10 → servo driver	radial actuator output
55	FO	CD10 → servo driver	focus actuator output
56	SL	CD10 → servo driver	slide control output
57	VDDD2C	+3	digital supply voltage 3 for core
58	VSSD3	GND	digital ground 4
59	MOTO1	CD10 →	motor output 1; versatile (3-state)
60	MOTO2	CD10 →	motor output 2; versatile (3-state)
61	V4	CD10 →	versatile output pin 4
62	V5	CD10 →	versatile output pin 5
63	V1	→ CD10	versatile input pin 1
64	LDON	CD10 →	laser drive on output (open-drain)

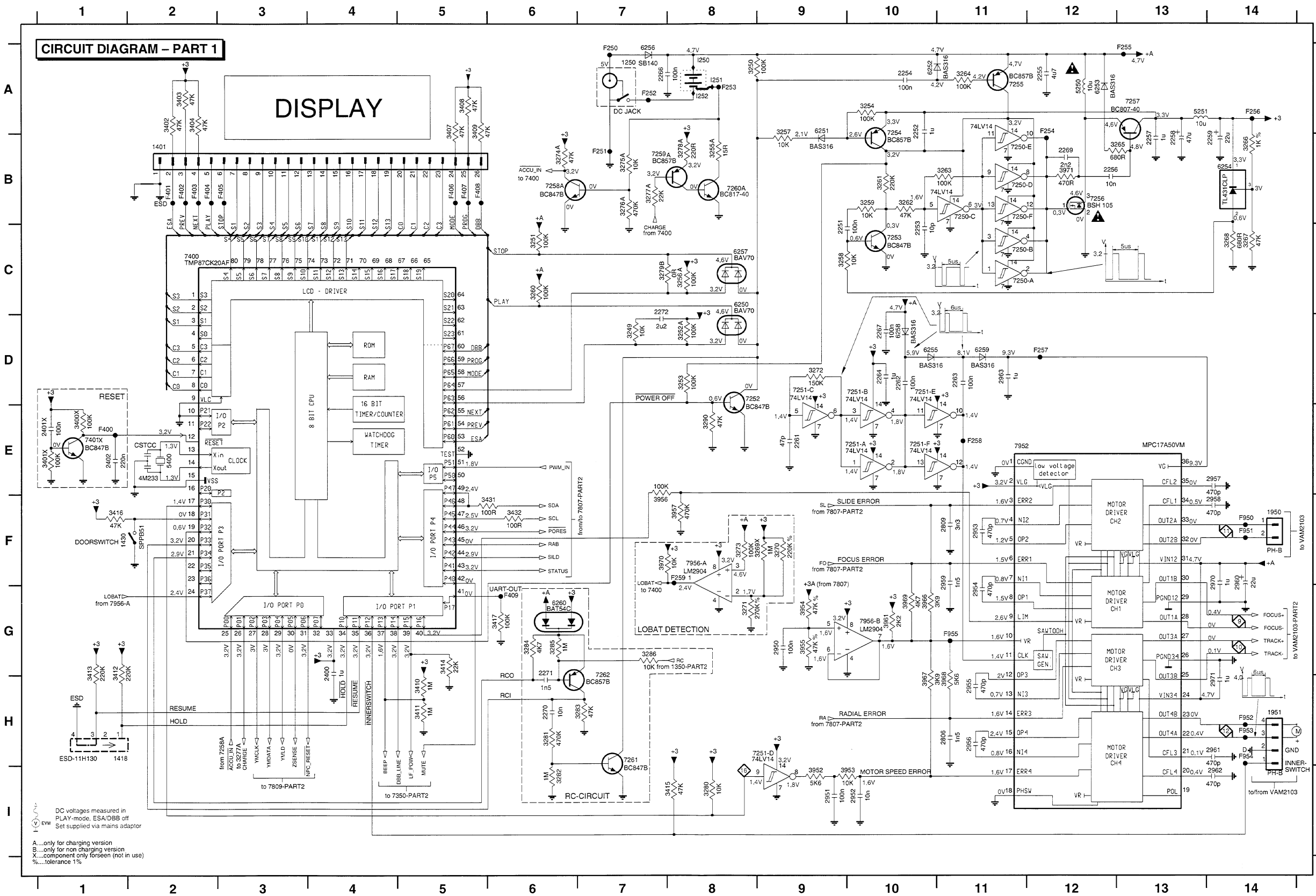
SM5902AF – COMPRESSION-TYPE ANTI-SHOCK MEMORY CONTROLLER NPC

Pin	*Name*	*Direction*	*Description*
1	VDD	+3	supply voltage
2	UC1	NPC ↔	µP interface extension I/O line 1
3	UC2	NPC ↔	µP interface extension I/O line 2
4	UC3	NPC ↔	µP interface extension I/O line 3
5	UC4	NPC ↔	µP interface extension I/O line 4
6	UC5	NPC ↔	µP interface extension I/O line 5
7	DIT	NPC → optical output	digital audio interface output
8	TEST2	+3	test pin
9	CLK	CD10 → NPC	16.9344MHz clock input
10	VSS	GND	ground
11	YSRDATA	CD10 → NPC	audio serial data input
12	YLRCK	CD10 → NPC	audio serial L/R clock input
13	YSCK	CD10 → NPC	audio serial bit clock input
14	ZSCK	NPC → CD10	audio serial bit clock output
15	ZLRCK	NPC → CD10	audio serial L/R clock output
16	ZSRDATA	NPC → CD10	audio serial data output
17	YFLAG	CD10 → NPC	signal processor IC RAM overflow flag
18	YFCLK	GND	crystal-controlled frame clock input
19	YBLKCK	CD10 → NPC	subcode block clock signal output
20	RESET	µP → NPC	system reset input (active low)
21	ZSENSE	NPC → µP	µP interface status output
22	VDD2	+3	supply voltage
23	YDMUTE	GND	forced mute input
24	YMLD	µP → NPC	µP interface latch clock input
25	YMDATA	µP → NPC	µP interface serial data input
26	YMCLK	µP → NPC	µP interface shift clock input
27	OE	NPC → DRAM	DRAM OE control output (active low)
28	CAS	NPC → DRAM	DRAM CAS control output (active low)
29	D2	NPC ↔ DRAM	DRAM data input/output 2
30	D3	NPC ↔ DRAM	DRAM data input/output 3
31	D0	NPC ↔ DRAM	DRAM data input/output 0
32	D1	NPC ↔ DRAM	DRAM data input/output 1
33	WE	NPC → DRAM	DRAM WE control output (active low)
34	RAS	NPC → DRAM	DRAM RAS control output (active low)
35	A9	NPC → DRAM	DRAM address output 9
36	A8	NPC → DRAM	DRAM address output 8
37	A7	NPC → DRAM	DRAM address output 7
38	A6	NPC → DRAM	DRAM address output 6
39	A5	NPC → DRAM	DRAM address output 5
40	A4	NPC → DRAM	DRAM address output 4
41	A0	NPC → DRAM	DRAM address output 0
42	A1	NPC → DRAM	DRAM address output 1
43	A2	NPC → DRAM	DRAM address output 2
44	A3	NPC → DRAM	DRAM address output 3

4-1

CIRCUIT DIAGRAM – PART 1

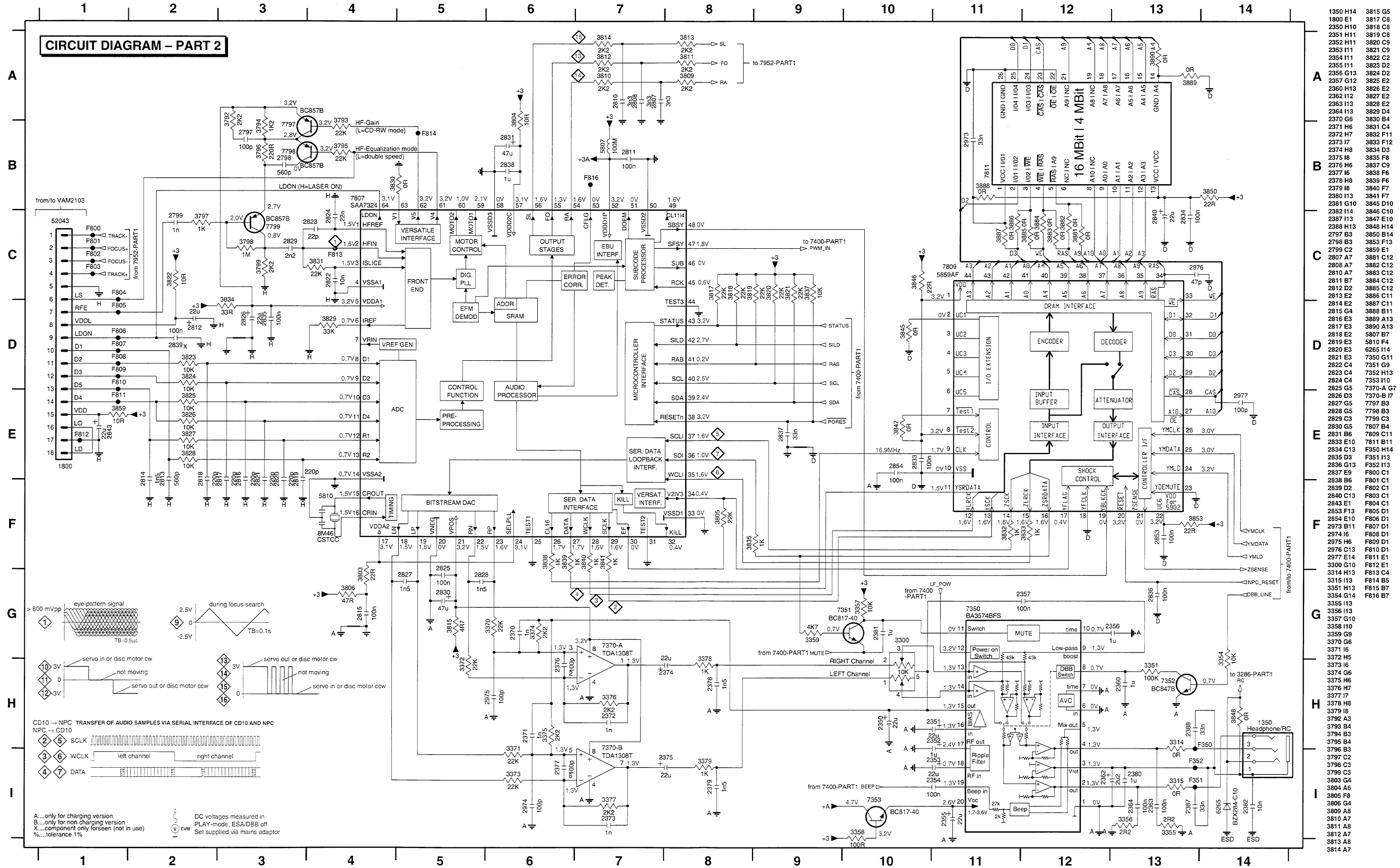
DISPLAY



1250 A7	3968 H11		
1401 B2	3969 G10		
1418 H1	3970 F7		
1430 F1	3971 B12		
1950 F14	5250 A12		
1951 H14	5251 A13		
2251 C9	5400 E2		
2252 A10	6250 C8		
2253 C10	6251 A9		
2254 A10	6252 A10		
2255 A12	6253 A12		
2256 B12	6254 B14		
2257 B13	6255 D10		
2258 B13	6256 A7		
2259 B14	6257 C8		
2261 E9	6258 D10		
2262 D10	6259 D11		
2263 D11	6260 G6		
2264 D10	7250-A C11		
2266 A8	7250-B C11		
2267 D10	7250-C B11		
2269 B12	7250-D B11		
2270 H6	7250-E B11		
2271 G6	7250-F B11		
2272 C7	7251-A E10		
2400 G4	7251-B D10		
2401 E1	7251-C D9		
2402 E1	7251-D H8		
2806 H11	7251-E D10		
2809 F11	7251-F E10		
2950 G9	7252 D8		
2951 I9	7253 C10		
2952 I10	7254 A10		
2953 F11	7255 A11		
2954 G11	7256 B12		
2955 H11	7257 A13		
2956 H11	7258 B6		
2957 E14	7259 B7		
2958 F14	7260 B8		
2959 F11	7261 H7		
2960 F14	7262 H7		
2961 H14	7400 C2		
2962 I14	7401 E1		
2963 D11	7952 E11		
2970 F14	7956-A F8		
2971 H14	7956-B G10		
3249 D7	F250 A7		
3250 A8	F251 B7		
3251 C6	F252 A7		
3252 D8	F253 A8		
3253 D8	F254 A12		
3254 A10	F255 A13		
3255 B8	F256 A14		
3256 C8	F257 D12		
3257 B9	F258 E11		
3258 C9	F259 F8		
3259 B10	F400 E1		
3260 C6	F401 B2		
3261 B10	F402 B2		
3262 B10	F403 B2		
3263 B11	F404 B2		
3264 A11	F405 B3		
3265 B13	F406 B5		
3266 B14	F407 B5		
3267 C14	F408 B5		
3268 C14	F409 G6		
3269 F9	F950 F14		
3270 F9	F951 F14		
3271 G8	F952 H14		
3272 D9	F953 H14		
3273 F8	F954 H14		
3274 B6	F955 G11		
3275 B7	I250 A8		
3276 B7	I251 A8		
3277 B7	I252 A8		
3278 B8			
3279 C7			
3280 I8			
3281 H6			
3282 I6			
3283 H7			
3284 G6			
3285 G6			
3286 G7			
3290 E8			
3400 E1			
3401 E1			
3402 A2			
3403 A2			
3404 A2			
3407 A5			
3408 A5			
3409 A5			
3410 H5			
3411 H5			
3412 G1			
3413 G1			
3414 G5			
3415 I8			
3416 F1			
3417 G6			
3431 F6			
3432 F6			
3952 I9			
3953 I10			
3954 G9			
3955 G9			
3956 F7			
3957 F8			
3961 G10			
3966 G10			
3967 H10			

4-2

CIRCUIT DIAGRAM – PART 2



1350 H14 3815 G5
1800 E1 3817 C8
2350 H10 3818 C8
2351 H11 3819 C8
2352 H11 3820 C9
2353 I11 3821 C9
2354 I11 3822 C2
2355 I11 3823 D2
2356 G13 3824 D2
2357 G12 3825 E2
2360 H13 3826 E2
2362 I12 3827 E2
2363 I13 3828 E2
2364 I13 3829 D4
2370 G6 3830 B4
2371 H6 3831 C4
2372 H7 3832 F11
2373 I7 3833 F12
2374 H8 3834 D3
2375 I8 3835 F8
2376 H6 3837 C9
2377 I6 3838 F6
2378 H8 3839 F6
2379 I8 3840 F7
2380 I13 3841 F7
2381 G10 3845 D10
2382 I14 3846 C10
2387 I13 3847 E10
2388 H13 3848 H14
2797 B3 3850 B14
2798 B3 3853 F13
2799 C2 3859 E1
2807 A7 3861 C12
2808 A7 3862 C12
2810 A7 3883 C12
2811 B7 3884 C12
2812 D2 3885 C12
2813 E2 3886 C11
2814 E2 3887 C11
2815 G4 3888 B11
2816 E3 3889 A13
2817 E3 3890 A13
2818 E2 5807 B7
2819 E3 5810 F4
2820 E3 6265 I14
2821 E3 7350 G11
2822 C4 7351 G9
2823 C4 7352 H13
2824 C4 7353 I10
2825 G5 7370-A G7
2826 D3 7370-B I7
2827 G5 7797 B3
2828 G5 7798 B3
2829 C3 7799 C3
2830 G5 7807 B4
2831 B6 7809 C11
2833 E10 7811 B11
2834 C13 F350 H14
2835 D3 F351 I13
2836 G13 F352 I13
2837 E9 F800 C1
2838 B6 F801 C1
2839 D2 F802 C1
2840 C13 F803 C1
2843 E1 F804 C1
2853 F13 F805 D1
2854 E10 F806 D1
2973 B11 F807 D1
2974 I6 F808 D1
2975 H6 F809 D1
2976 C13 F810 D1
2977 E14 F811 E1
3300 G10 F812 E1
3314 H13 F813 C4
3315 I13 F814 B5
3351 H13 F815 B7
3354 G14 F816 B7
3355 I13
3356 I13
3357 G10
3358 I10
3359 G9
3370 G6
3371 I6
3372 H5
3373 I6
3374 G6
3375 H6
3376 H7
3377 I7
3378 H8
3379 I8
3792 A3
3793 B4
3794 B3
3795 B4
3796 B3
3797 C2
3798 C3
3799 C3
3803 G4
3804 A6
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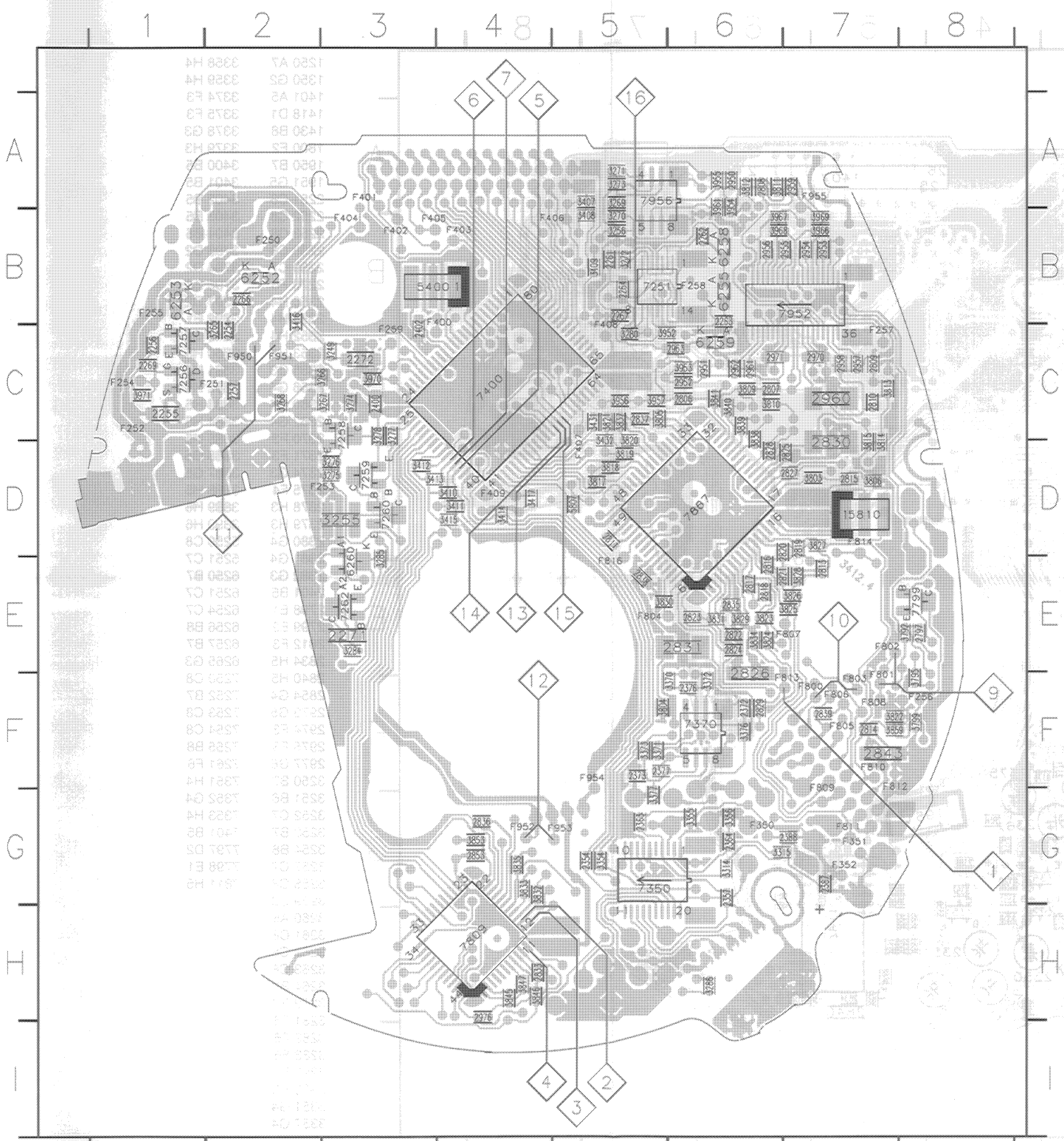
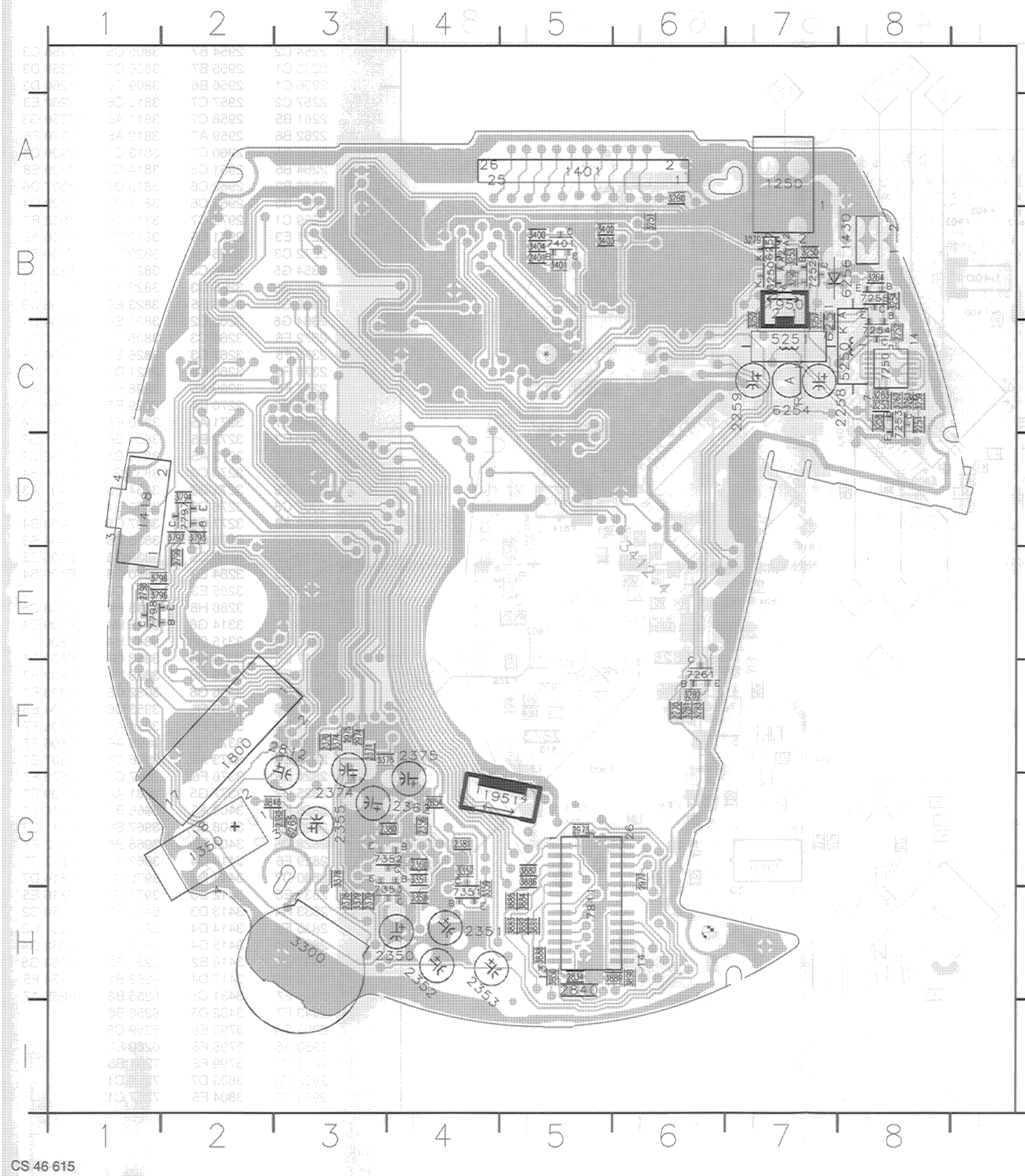
3806 G4
3809 A8
3810 A7
3811 A8
3812 A7
3813 A8
3814 A7

4-3



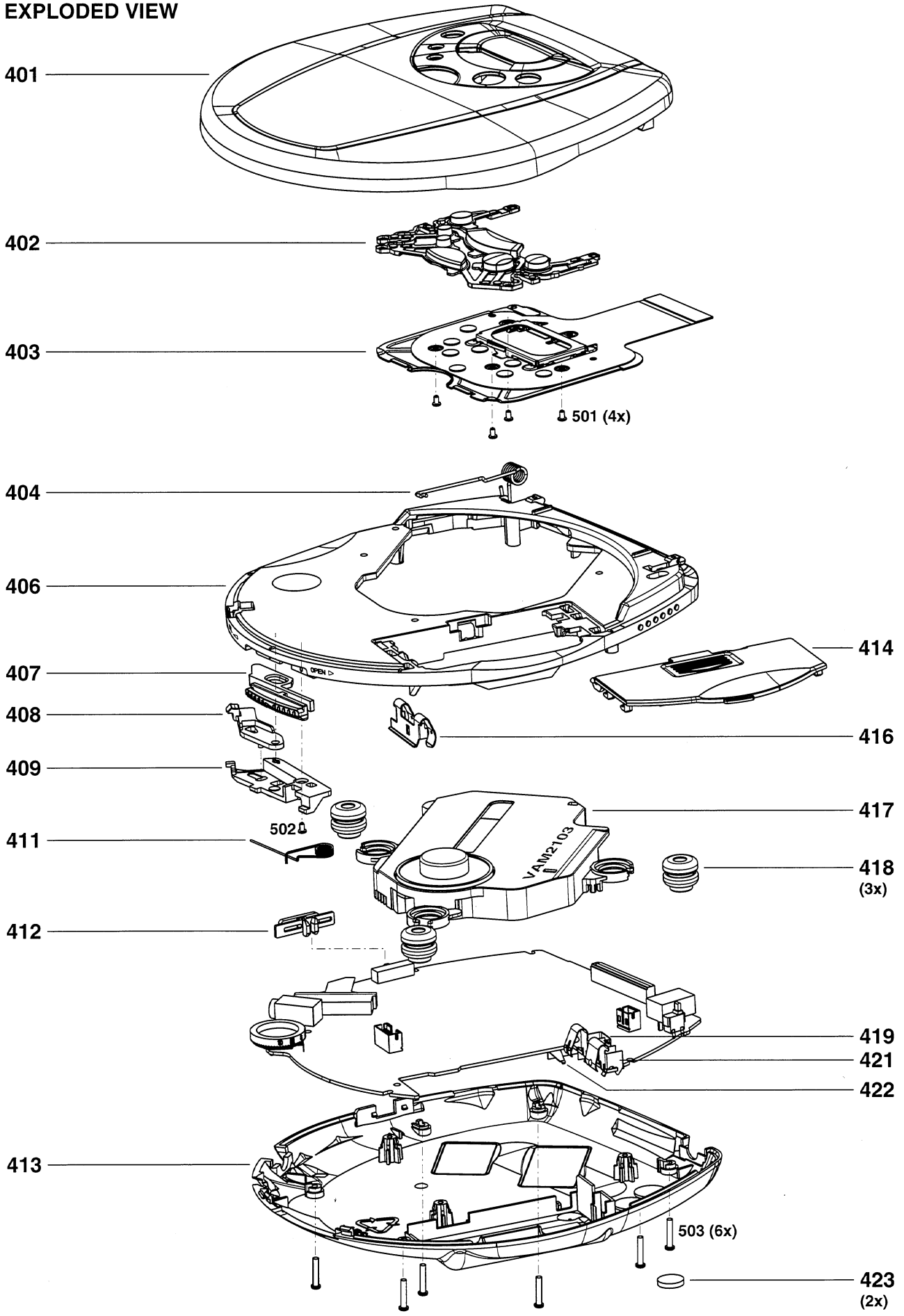
2254 C2	2954 B7	3805 C5	7258 C3
2255 C1	2955 B7	3806 D7	7259 D3
2256 C1	2956 B6	3809 C6	7260 D3
2257 C2	2957 C7	3810 C6	7262 E3
2261 B5	2958 C7	3811 A6	7350 G5
2262 B6	2959 A7	3812 A6	7370 F6
2263 B6	2960 C7	3813 C7	7400 C4
2264 B5	2961 C6	3814 D7	7799 E8
2266 B2	2962 C6	3815 D7	7807 D6
2267 B5	2963 C6	3817 D5	7809 H4
2269 C1	2970 C7	3818 D5	7952 B7
2271 E3	2971 C6	3819 D5	7956 A5
2272 C3	2976 H4	3820 D5	F250 B2
2354 G5	3249 C3	3821 C5	F251 C2
2357 G6	3255 D3	3822 F7	F252 C1
2363 G5	3256 B5	3823 E6	F253 D3
2364 G6	3265 C2	3824 E6	F254 C1
2372 F6	3266 C3	3825 E7	F255 B1
2373 F5	3267 C3	3826 E7	F256 F8
2376 F6	3268 C2	3827 D7	F257 C7
2377 F5	3269 A5	3828 E7	F258 B6
2387 G7	3270 B5	3829 E6	F259 C3
2388 G7	3271 A5	3830 E5	F350 G6
2400 C3	3272 B5	3831 E6	F351 G7
2402 C3	3273 A5	3832 G4	F352 G7
2797 E8	3274 C3	3833 G4	F400 B4
2806 C6	3275 D3	3834 E6	F401 A3
2807 C6	3276 D3	3835 G4	F402 B3
2808 A6	3277 C3	3837 C5	F403 B4
2809 C7	3278 C3	3838 C6	F404 B3
2810 C7	3280 C5	3839 C6	F405 B3
2811 D5	3284 E3	3840 C6	F406 B4
2813 E7	3285 E3	3841 C6	F407 D5
2814 F7	3286 H6	3845 H4	F408 C5
2815 D7	3314 G6	3846 H4	F409 D4
2816 E6	3315 G6	3847 H4	F800 F7
2817 E6	3354 G5	3853 G4	F801 F7
2818 E6	3355 G6	3859 F7	F802 E7
2819 D7	3356 G6	3952 C5	F803 F7
2820 D6	3370 F6	3953 C6	F804 E5
2821 E6	3371 F5	3954 A6	F805 F7
2822 E6	3372 F6	3955 A6	F806 F7
2823 E6	3373 F5	3956 C5	F807 E7
2824 E6	3376 F6	3957 C5	F808 F7
2825 D7	3377 G5	3961 A6	F809 F7
2826 F6	3407 A5	3966 B7	F810 F7
2827 D7	3408 B5	3967 B6	F811 G7
2828 D6	3409 B5	3968 B6	F812 F7
2829 F6	3410 D4	3969 B7	F813 F7
2830 D7	3411 D4	3970 C3	F814 D7
2831 E6	3412 D3	3971 C1	F816 E5
2833 H4	3413 D3	5400 B3	F950 C2
2835 E6	3414 D4	5807 D5	F951 C2
2836 G4	3415 D4	5810 D7	F952 G4
2837 C5	3416 B2	6252 B2	F953 G5
2838 E5	3417 D4	6253 B1	F954 F5
2839 F7	3431 C5	6255 B6	F955 A7
2843 F7	3432 D5	6258 B6	
2853 G4	3792 E8	6259 C6	
2950 A6	3795 F8	6260 E3	
2951 C6	3799 F8	7251 B5	
2952 C6	3803 D7	7256 C1	
2953 B7	3804 F5	7257 C1	

4-4



1250 A7	3358 H4
1350 G2	3359 H4
1401 A5	3374 F3
1418 D1	3375 F3
1430 B8	3378 G3
1800 F2	3379 H3
1950 B7	3400 B5
1951 G5	3401 B5
2251 C8	3402 B5
2252 C8	3403 B5
2253 C8	3404 B5
2258 C8	3793 D2
2259 C7	3794 D2
2270 F6	3796 E1
2350 H4	3797 D2
2351 H4	3798 E1
2352 H4	3848 G2
2353 H4	3850 H5
2355 G3	3881 H5
2356 G4	3882 H5
2360 G4	3883 H5
2362 G4	3884 H5
2370 F3	3885 H5
2371 F3	3886 G5
2374 G3	3887 G5
2375 F4	3888 H5
2378 H3	3889 H6
2379 H3	3890 H6
2380 G4	5250 C8
2381 G4	5251 C7
2382 G3	6250 B7
2401 B5	6251 C7
2798 E1	6254 C7
2799 E2	6256 B8
2812 F3	6257 B7
2834 H5	6265 G3
2840 H5	7250 C8
2854 G4	7252 B7
2973 G5	7253 C8
2974 F3	7254 C8
2975 F3	7255 B8
2977 G6	7261 F6
3250 B7	7351 H4
3251 B6	7352 G4
3252 C7	7353 H4
3253 B7	7401 B5
3254 B8	7797 D2
3257 C7	7798 E1
3258 C8	7811 H5
3259 C8	
3260 A6	
3261 C8	
3262 C8	
3263 C8	
3264 B8	
3279 B7	
3281 F6	
3282 F6	
3283 F6	
3290 B7	
3300 H3	
3351 G4	
3357 G4	

EXPLODED VIEW



MECHANICAL PARTSLIST

401	4822 443 11139	SERVICE ASSY DOOR-CD-2 AZ7781, AZ7782, AZ7783, AZ7784, not for /17
401	4822 443 11141	SERVICE ASSY DOOR-CD-2-MVX AZ7781, AZ7783, only for /17
401	4822 443 11156	SERVICE ASSY DOOR CD-3 AZ7881, AZ7882, AZ7884, not for /17
401	4822 443 11142	SERVICE ASSY DOOR-CD-3 /17PH AZ7883, AZ7884, only for /17
401	4822 443 11162	SERVICE ASSY DOOR-CD-2-MVX-G AZ7780, only for /17
401	4822 443 11158	SERVICE ASSY DOOR-CD-3-MVX-25 AZ7880, only for /17
401	4822 443 11157	SERVICE ASSY DOOR-CD-3-MVX-45 AZ7881, only for /17
402	4822 410 12205	BUTTON SET (ESA), not for /17
402	4822 410 12212	BUTTON SET (ESP), only for /17
403	4822 360 10434	SERVICE ASSY MEMBRANE-LCD-2
404	4822 492 11723	SPRING-OPEN-LONG
406	4822 449 80305	CABINET-2-S-PRI
407	4822 463 11238	SLIDER-OPEN-2
408	4822 402 11238	LEVER-OPEN-2
409	4822 816 11248	HOLDER-OPEN-2
411	4822 492 11722	SPRING-SLIDER-OPEN-2
412	4822 463 11239	SLIDER-RESUME-2
413	4822 442 01677	BOTTOM-2-S, not for /00/05
413	4822 442 01676	BOTTOM-2-S-PRI, only for /00/05
414	4822 443 11133	DOOR-BATTERY
416	4822 492 11724	SPRING-BATTERY-SHORT
417	4822 691 10665	VAM2103 CD-DRIVE
418	4822 402 10897	DAMPER CD-DRIVE
419	4822 492 11517	SPRING-BATTERY-MINUS
421	4822 492 11516	SPRING-BATTERY-PLUS
422	4822 492 11616	SPRING-CHARGE
423	4822 462 41819	RUBBER-FOOT

ELECTRICAL PARTSLIST

MISCELLANEOUS

1250	4822 265 10626	SOCKET, EXT. SUPPLY
1350	4822 265 11247	SOCKET, HEADPHONE HSJ1537
1350	4822 265 11565	SOCKET, HEADPHONE/RC HSJ1637
1401	4822 267 11032	CONNECTOR 26P, FLEXFOIL-LCD
1418	4822 277 21643	SWITCH-SLIDE, HOLD/RESUME
1430	4822 276 12889	SWITCH, CD-DOOR
1800	4822 265 11576	CONNECTOR 18P, VAM2103

CAPACITORS

2251 ©	4822 126 14305	100nF	10%	16V
2252 ©	4822 126 14472	1µF	10%	10V
2253 ©	4822 122 33741	10pF	10%	50V
2254 ©	4822 126 14305	100nF	10%	16V
2255 ©	4822 126 14083	4,7µF	20%	10V
2256 ©	5322 126 11583	10nF	10%	63V
2257 ©	4822 126 14472	1µF	10%	10V
2258	4822 124 12362	47µF	20%	4V
2259	4822 124 40998	22µF	20%	6,3V
2261 ©	4822 122 33777	47pF	5%	63V
2262 ©	4822 126 14305	100nF	10%	16V
2263 ©	4822 126 14305	100nF	10%	16V
2264 ©	4822 126 14472	1µF	10%	10V
2266 ©	4822 126 14305	100nF	10%	16V
2267 ©	4822 126 14305	100nF	10%	16V
2269 ©	4822 126 14238	2,2nF	10%	50V
2270 ©	5322 126 11583	10nF	10%	63V
2271 ©	4822 126 13344	1,5nF	5%	63V
2350	4822 124 40998	22µF	20%	6,3V
2351	4822 124 40998	22µF	20%	6,3V
2352	4822 124 22651	1µF	20%	50V
2353	4822 124 40998	22µF	20%	6,3V
2354 ©	4822 126 14305	100nF	10%	16V
2355	4822 124 40998	22µF	20%	6,3V
2356 ©	4822 126 14472	1µF	10%	10V
2357 ©	4822 126 14305	100nF	10%	16V
2360 ©	4822 126 13836	1µF	20%	16V
2362	4822 124 22652	2,2µF	20%	50V
2363 ©	4822 126 14305	100nF	10%	16V
2364 ©	4822 126 14305	100nF	10%	16V
2370 ©	5322 126 11578	1nF	10%	63V
2371 ©	5322 126 11578	1nF	10%	63V
2372 ©	5322 126 11578	1nF	10%	63V
2373 ©	5322 126 11578	1nF	10%	63V
2374	4822 124 40998	22µF	20%	6,3V
2375	4822 124 40998	22µF	20%	6,3V
2376 ©	4822 126 11759	100pF	5%	50V
2377 ©	4822 126 11759	100pF	5%	50V
2378 ©	4822 126 14247	1,5nF	10%	50V
2379 ©	4822 126 14247	1,5nF	10%	50V
2380 ©	4822 126 14472	1µF	10%	10V
2381 ©	4822 126 14472	1µF	10%	10V
2382 ©	5322 126 11583	10nF	10%	63V
2387 ©	4822 126 14549	33nF	10%	16V
2388 ©	4822 126 14549	33nF	10%	16V
2400 ©	4822 126 14472	1µF	10%	10V
2402 ©	4822 126 13561	220nF	10%	16V
2798 ©	4822 126 14249	560pF	10%	50V
2799 ©	5322 126 11578	1nF	10%	63V
2806 ©	4822 126 14247	1,5nF	10%	50V
2807 ©	5322 126 11579	3,3nF	10%	63V
2808 ©	5322 126 11579	3,3nF	10%	63V

CAPACITORS

2809 ©	5322 126 11579	3,3nF	10%	63V
2810 ©	5322 126 11579	3,3nF	10%	63V
2811 ©	4822 126 14305	100nF	10%	16V
2812	4822 124 40998	22µF	20%	6,3V
2813 ©	4822 126 14249	560pF	10%	50V
2814 ©	4822 126 14247	1,5nF	10%	50V
2815 ©	4822 126 14305	100nF	10%	16V
2816 ©	4822 126 13883	220pF	5%	50V
2817 ©	4822 126 13883	220pF	5%	50V
2818 ©	4822 126 13883	220pF	5%	50V
2819 ©	4822 126 13883	220pF	5%	50V
2820 ©	4822 126 13883	220pF	5%	50V
2821 ©	4822 126 13883	220pF	5%	50V
2822 ©	5322 126 11583	10nF	10%	63V
2823 ©	4822 122 33761	22pF	5%	50V
2824 ©	4822 126 14494	22nF	10%	25V
2825 ©	4822 126 14305	100nF	10%	16V
2826 ©	4822 124 12107	22µF	20%	4V
2827 ©	4822 126 14247	1,5nF	10%	50V
2828 ©	4822 126 14247	1,5nF	10%	50V
2829 ©	4822 126 14238	2,2nF	10%	50V
2830 ©	4822 124 12111	47µF	20%	4V
2833 ©	4822 126 14305	100nF	10%	16V
2834 ©	4822 126 14305	100nF	10%	16V
2835 ©	4822 126 14305	100nF	10%	16V
2836 ©	4822 126 14305	100nF	10%	16V
2837 ©	4822 126 14549	33nF	10%	16V
2838 ©	4822 126 14472	1µF	10%	10V
2839 ©	4822 126 14305	100nF	10%	16V
2840 ©	4822 124 12107	22µF	20%	4V
2843 ©	4822 124 12107	22µF	20%	4V
2853 ©	4822 126 14305	100nF	10%	16V
2854 ©	4822 126 14305	100nF	10%	16V
2950 ©	4822 126 14305	100nF	10%	16V
2951 ©	4822 126 14305	100nF	10%	16V
2952 ©	5322 126 11583	10nF	10%	63V
2953 ©	4822 126 14509	470pF	10%	50V
2954 ©	4822 126 14509	470pF	10%	50V
2955 ©	4822 126 14509	470pF	10%	50V
2956 ©	4822 126 14509	470pF	10%	50V
2957 ©	4822 126 14509	470pF	10%	50V
2958 ©	4822 126 14509	470pF	10%	50V
2959 ©	4822 126 14247	1,5nF	10%	50V
2960 ©	4822 124 12145	22µF	20%	6,3V
2961 ©	4822 126 14509	470pF	10%	50V
2962 ©	4822 126 14509	470pF	10%	50V
2963 ©	4822 126 14472	1µF	10%	10V
2970 ©	4822 126 14472	1µF	10%	10V
2971 ©	4822 126 14472	1µF	10%	10V
2973 ©	4822 126 14305	100nF	10%	16V
2974 ©	4822 126 11759	100pF	5%	50V
2975 ©	4822 126 11759	100pF	5%	50V
2976 ©	4822 122 33777	47pF	5%	63V
2977 ©	4822 126 11759	100pF	5%	50V

RESISTORS

3250 ©	4822 051 30104	100kΩ	5%	0,06W
3251 ©	4822 051 30104	100kΩ	5%	0,06W
3252 ©	4822 051 30104	100kΩ	5%	0,06W
3253 ©	4822 051 30104	100kΩ	5%	0,06W
3254 ©	4822 051 30104	100kΩ	5%	0,06W
3255 ©	4822 117 12972	15Ω	5%	1W
3256 ©	4822 051 30104	100kΩ	5%	0,06W
3257 ©	4822 051 30103	10kΩ	5%	0,06W

RESISTORS

3258 ©	4822 051 30103	10kΩ	5%	0,06W
3259 ©	4822 051 30103	10kΩ	5%	0,06W
3260 ©	4822 051 30104	100kΩ	5%	0,06W
3261 ©	4822 051 30224	220kΩ	5%	0,0625W
3262 ©	4822 051 30473	47kΩ	5%	0,06W
3263 ©	4822 051 30104	100kΩ	5%	0,06W
3264 ©	4822 051 30104	100kΩ	5%	0,06W
3265 ©	4822 051 30681	680Ω	5%	0,06W
3266 ©	4822 117 13611	1kΩ	1%	0,0625W
3267 ©	4822 051 30473	47kΩ	5%	0,06W
3268 ©	4822 051 30681	680Ω	5%	0,06W
3270 ©	4822 117 12891	220kΩ	1%	0,0625W
3271 ©	4822 117 12889	270kΩ	1%	0,0625W
3272 ©	4822 051 30154	150kΩ	5%	0,0625W
3273 ©	4822 051 30104	100kΩ	5%	0,06W
3274 ©	4822 051 30473	47kΩ	5%	0,06W
3275 ©	4822 051 30103	10kΩ	5%	0,06W
3276 ©	4822 051 30474	470kΩ	5%	0,0625W
3277 ©	4822 051 30223	22kΩ	5%	0,06W
3278 ©	4822 051 30221	220Ω	5%	0,06W
3280 ©	4822 051 30103	10kΩ	5%	0,06W
3281 ©	4822 051 30474	470kΩ	5%	0,0625W
3282 ©	4822 051 30105	1MΩ	5%	0,0625W
3283 ©	4822 051 30473	47kΩ	5%	0,06W
3284 ©	4822 051 30472	4,7kΩ	5%	0,06W
3285 ©	4822 051 30105	1MΩ	5%	0,0625W
3286 ©	4822 051 30103	10kΩ	5%	0,06W
3290 ©	4822 051 30473	47kΩ	5%	0,06W
3300	4822 101 11932	POTMETER 2x10kΩ CX2		
3314 ©	4822 051 30008	CHIP JUMPER 0603		
3314 ©	4822 117 12971	15Ω	5%	0,0625W
3315 ©	4822 051 30008	CHIP JUMPER 0603		
3315 ©	4822 117 12971	15Ω	5%	0,0625W
3351 ©	4822 051 30104	100kΩ	5%	0,06W
3354 ©	4822 051 30103	10kΩ	5%	0,06W
3355 ©	4822 117 13613	2,2Ω	5%	0,0625W
3356 ©	4822 117 13613	2,2Ω	5%	0,0625W
3357 ©	4822 051 30103	10kΩ	5%	0,06W
3358 ©	4822 051 30101	100Ω	5%	0,06W
3359 ©	4822 051 30472	4,7kΩ	5%	0,06W
3370 ©	4822 051 30223	22kΩ	5%	0,06W
3371 ©	4822 051 30223	22kΩ	5%	0,06W
3372 ©	4822 051 30223	22kΩ	5%	0,06W
3373 ©	4822 051 30223	22kΩ	5%	0,06W
3374 ©	4822 051 30222	2,2kΩ	5%	0,06W
3375 ©	4822 051 30222	2,2kΩ	5%	0,06W
3376 ©	4822 051 30222	2,2kΩ	5%	0,06W
3377 ©	4822 051 30222	2,2kΩ	5%	0,06W
3378 ©	4822 051 30102	1kΩ	5%	0,06W
3379 ©	4822 051 30102	1kΩ	5%	0,06W
3402 ©	4822 051 30473	47kΩ	5%	0,06W
3403 ©	4822 051 30473	47kΩ	5%	0,06W
3404 ©	4822 051 30473	47kΩ	5%	0,06W
3407 ©	4822 051 30473	47kΩ	5%	0,06W
3408 ©	4822 051 30473	47kΩ	5%	0,06W
3409 ©	4822 051 30473	47kΩ	5%	0,06W
3410 ©	4822 051 30105	1MΩ	5%	0,0625W
3411 ©	4822 051 30105	1MΩ	5%	0,0625W
3412 ©	4822 051 30224	220kΩ	5%	0,0625W
3413 ©	4822 051 30224	220kΩ	5%	0,0625W
3414 ©	4822 051 30223	22kΩ	5%	0,06W
3415 ©	4822 051 30473	47kΩ	5%	0,06W
3416 ©	4822 051 30473	47kΩ	5%	0,06W
3417 ©	4822 051 30104	100kΩ	5%	0,06W

RESISTORS

3431©	4822 051 30101	100Ω	5%	0,06W
3432©	4822 051 30101	100Ω	5%	0,06W
3793©	4822 051 30223	22kΩ	5%	0,06W
3794©	4822 117 11817	1,2kΩ	1%	0,0625W
3795©	4822 051 30223	22kΩ	5%	0,06W
3796©	4822 051 30221	220Ω	5%	0,06W
3797©	4822 051 30102	1kΩ	5%	0,06W
3798©	4822 051 30105	1MΩ	5%	0,0625W
3799©	4822 051 30222	2,2kΩ	5%	0,06W
3803©	4822 117 12139	22Ω	5%	0,0625W
3804©	4822 051 30109	10Ω	5%	0,06W
3805©	4822 051 30223	22kΩ	5%	0,06W
3806©	4822 051 30479	47Ω	5%	0,06W
3809©	4822 051 30222	2,2kΩ	5%	0,06W
3810©	4822 051 30222	2,2kΩ	5%	0,06W
3811©	4822 051 30222	2,2kΩ	5%	0,06W
3812©	4822 051 30222	2,2kΩ	5%	0,06W
3813©	4822 051 30222	2,2kΩ	5%	0,06W
3814©	4822 051 30222	2,2kΩ	5%	0,06W
3815©	4822 117 13608	4,7Ω	5%	0,0625W
3817©	4822 051 30223	22kΩ	5%	0,06W
3818©	4822 051 30223	22kΩ	5%	0,06W
3819©	4822 051 30223	22kΩ	5%	0,06W
3820©	4822 051 30223	22kΩ	5%	0,06W
3821©	4822 051 30223	22kΩ	5%	0,06W
3822©	4822 051 30109	10Ω	5%	0,06W
3823©	4822 051 30103	10kΩ	5%	0,06W
3824©	4822 051 30103	10kΩ	5%	0,06W
3825©	4822 051 30103	10kΩ	5%	0,06W
3826©	4822 051 30103	10kΩ	5%	0,06W
3827©	4822 051 30103	10kΩ	5%	0,06W
3828©	4822 051 30103	10kΩ	5%	0,06W
3829©	4822 051 30333	33kΩ	5%	0,06W
3830©	4822 051 30008	CHIP JUMPER 0603		
3831©	4822 051 30223	22kΩ	5%	0,06W
3832©	4822 051 30102	1kΩ	5%	0,06W
3833©	4822 051 30102	1kΩ	5%	0,06W
3834©	4822 051 30339	33Ω	5%	0,0625W
3835©	4822 051 30102	1kΩ	5%	0,06W
3837©	4822 051 30103	10kΩ	5%	0,06W
3838©	4822 051 30102	1kΩ	5%	0,06W
3839©	4822 051 30102	1kΩ	5%	0,06W
3840©	4822 051 30102	1kΩ	5%	0,06W
3841©	4822 051 30102	1kΩ	5%	0,06W
3845©	4822 051 30008	CHIP JUMPER 0603		
3846©	4822 117 12139	22Ω	5%	0,0625W
3847©	4822 051 30008	CHIP JUMPER 0603		
3848©	4822 051 30008	CHIP JUMPER 0603		
3850©	4822 117 12139	22Ω	5%	0,0625W
3853©	4822 117 12139	22Ω	5%	0,0625W
3859©	4822 051 30109	10Ω	5%	0,06W
3881©	4822 051 30008	CHIP JUMPER 0603		
3882©	4822 051 30008	CHIP JUMPER 0603		
3883©	4822 051 30008	CHIP JUMPER 0603		
3884©	4822 051 30008	CHIP JUMPER 0603		
3885©	4822 051 30008	CHIP JUMPER 0603		
3886©	4822 051 30008	CHIP JUMPER 0603		
3887©	4822 051 30008	CHIP JUMPER 0603		
3888©	4822 051 30008	CHIP JUMPER 0603		
3889©	4822 051 30008	CHIP JUMPER 0603		
3890©	4822 051 30008	CHIP JUMPER 0603		
3952©	4822 051 30562	5,6kΩ	5%	0,0625W
3953©	4822 051 30103	10kΩ	5%	0,06W
3954©	4822 117 12925	47kΩ	1%	0,0625W

RESISTORS

3955©	4822 117 12925	47kΩ	1%	0,0625W
3956©	4822 051 30104	100kΩ	5%	0,06W
3957©	4822 051 30474	470kΩ	5%	0,0625W
3961©	4822 051 30222	2,2kΩ	5%	0,06W
3966©	4822 051 30392	3,9kΩ	5%	0,06W
3967©	4822 051 30392	3,9kΩ	5%	0,06W
3968©	4822 051 30562	5,6kΩ	5%	0,0625W
3969©	4822 051 30472	4,7kΩ	5%	0,06W
3970©	4822 051 30103	10kΩ	5%	0,06W
3971©	4822 051 30471	470Ω	5%	0,0625W

COILS

5250	4822 157 51462	10µH 10%
5251	4822 157 51462	10µH 10%
5400©	4822 242 10845	CER. RES. 4,23MHz
5807©	4822 157 11781	FILTER, 100MHz
5810©	4822 242 81546	CER. RES. 8,4672MHz

DIODES

6250©	5322 130 34331	BAV70
6251©	4822 130 83757	BAS216
6252©	4822 130 83757	BAS216
6253©	4822 130 83757	BAS216
6255©	4822 130 83757	BAS216
6256	5322 130 81917	SB140
6257©	5322 130 34331	BAV70
6258©	4822 130 83757	BAS216
6259©	4822 130 83757	BAS216
6260©	4822 130 82594	BAT54C
6265©	4822 130 10794	BZX284-C10

TRANSISTORS

7252©	4822 130 60511	BC847B
7253©	4822 130 60511	BC847B
7254©	5322 130 60508	BC857B
7255©	5322 130 60508	BC857B
7256©	4822 130 11549	BSH105
7257©	5322 130 60123	BC807-40
7258©	4822 130 60511	BC847B
7259©	5322 130 60508	BC857B
7260©	4822 130 42615	BC817-40
7261©	4822 130 60511	BC847B
7262©	5322 130 60508	BC857B
7351©	4822 130 42615	BC817-40
7352©	4822 130 60511	BC847B
7353©	4822 130 42615	BC817-40
7797©	5322 130 60508	BC857B
7798©	5322 130 60508	BC857B
7799©	5322 130 60508	BC857B

INTEGRATED CIRCUITS

6254	4822 209 81397	TL431CLPST
7250©	4822 209 17289	74LV14PW
7251©	4822 209 17289	74LV14PW
7350©	4822 209 16083	BA3574BFS HEADPHONE AMP.
7370©	4822 209 33165	TDA1308T/N1 OPAMP
7400©	4822 209 17291	TMP87CK20/AZ7781-AF.2
7807©	4822 209 17285	SAA7324H CD10
7809©	4822 209 16086	SM5859AF NPC
7809©	4822 209 16211	SM5902AF NPC
7811©	4822 209 16518	HYB314400BJ-60 4Mbit
7811©	4822 209 16545	HYB3117405B 16Mbit DRAM
7952©	4822 209 16085	MPC17A50VM SERVO DRIVER
7956©	5322 209 12343	LM2904D