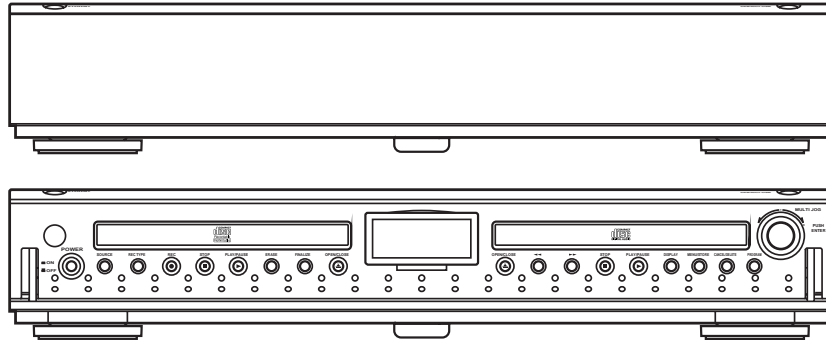


Service Manual

DR2100/N1S, /C1S

CD Recorder



REMARK : This service manual explains them by extracting specifications designed for the model DR2100 only. The explanation for CD-R module "MAR775" (Loader : CDL4009' + CD-R Main board) is not mentioned on this service manual.

The CD-R module information is described in the service manual of CD-R modules <MAR770/MAR775>.

TABLE OF CONTENTS

MAIN UNIT

1.	SERVICING THE DR2100	1
2.	TECHNICAL SPECIFICATION	3
3.	WARNINGS	4
4.	SERVICE HINTS AND TOOLS	5
5.	SERVICE MODE	6
6.	DIAGNOSTIC SOFTWARE	7
7.	FAULTFINDING TREES	11
8.	FAULTFINDING GUIDE	17
9.	WIRING DIAGRAM	30
10.	BLOCK DIAGRAM	33
11.	SCHEMATIC DIAGRAM AND PARTS LOCATION	35
12.	EXPLODED VIEW AND PARTS LIST	41
13.	ELECTRICAL PARTS LIST	44

MAR1250 (CD MODULE)

2.1	WIRING DIAGRAM	2-1
2.2	SCHEMATIC DIAGRAM	2-3
2.3	PARTS LOCATION	2-11
2.4	EXPLODED VIEW AND PARTS LIST	2-15
2.5	ELECTRICAL PARTS LIST	2-17

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

marantz®

DR2100

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Using superior design and selected high grade components, **MARANTZ** company has created the ultimate in stereo sound. Only original **MARANTZ** parts can insure that your **MARANTZ** product will continue to perform to the specifications for which it is famous.

Parts for your **MARANTZ** equipment are generally available to our National Marantz Subsidiary or Agent.

ORDERING PARTS :

Parts can be ordered either by mail or by Fax.. In both cases, the correct part number has to be specified.

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

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

USA

MARANTZ AMERICA, INC.
440 MEDINAH ROAD
ROSELLE, ILLINOIS 60172
USA
PHONE : 630 - 307 - 3100
FAX : 630 - 307 - 2687

EUROPE / TRADING

MARANTZ EUROPE B.V.
P.O.BOX 80002, BUILDING SFF2
5600 JB EINDHOVEN
THE NETHERLANDS
PHONE : +31 - 40 - 2732241
FAX : +31 - 40 - 2735578

BRAZIL

PHILIPS DA AMAZONIA IND. ELET. ITDA
CENTRO DE INFORMACOES AO
CEP 04698-970
SAO PAULO, SP, BRAZIL
PHONE : 0800 - 123123(Discagem Direta Gratuita)
FAX : +55 11 534. 8988

PROFESSIONAL AMERICAS

SUPERSCOPE TECHNOLOGIES, INC.
MARANTZ PROFESSIONAL PRODUCTS
2640 WHITE OAK CIRCLE, SUITE A
AURORA, ILLINOIS 60504 USA
PHONE : 630 - 820 - 4800
FAX : 630 - 820 - 8103

PROFESSIONAL AUSTRALIA

TECHNICAL AUDIO GROUP PTY, LTD
558 DARLING STREET,
BALMAIN, NSW 2041,
AUSTRALIA
PHONE : 61 - 2 - 9810 - 5300
FAX : 61 - 2 - 9810 - 5355

CANADA

LENBROOK INDUSTRIES LIMITED
633 GRANITE COURT,
PICKERING, ONTARIO L1W 3K1
CANADA
PHONE : 905 - 831 - 6333
FAX : 905 - 831 - 6936

AUSTRALIA

QualiFi Pty Ltd,
24 LIONEL ROAD,
MT. WAVERLEY VIC 3149
AUSTRALIA
PHONE : +61 - (0)3 - 9543 - 1522
FAX : +61 - (0)3 - 9543 - 3677

THAILAND

MRZ STANDARD CO.,LTD
746 - 754 MAHACHAI ROAD.,
WANGBURAPAPIROM, PHRANAKORN,
BANGKOK, 10200 THAILAND
PHONE : +66 - 2 - 222 9181
FAX : +66 - 2 - 224 6795

SINGAPORE

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130 JOO SENG ROAD
#03-02 OLIVINE BUILDING
SINGAPORE 368357
PHONE : +65 858 5535 / +65 381 8621
FAX : +65 858 6078

NEW ZEALAND

WILDASH AUDIO SYSTEMS NZ
14 MALVERN ROAD MT ALBERT
AUCKLAND NEW ZEALAND
PHONE : +64 - 9 - 8451958
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TAIWAN

PAI- YUING CO., LTD.
6 TH FL NO, 148 SUNG KIANG ROAD,
TAIPEI, 10429, TAIWAN R.O.C.
PHONE : +886 - 2 - 25221304
FAX : +886 - 2 - 25630415

MALAYSIA

WO KEE HONG ELECTRONICS SDN. BHD.
SUITE 8.1, LEVEL 8, MENARA GENESIS,
NO. 33, JALAN SULTAN ISMAIL,
50250 KUALA LUMPUR, MALAYSIA
PHONE : +60 3 - 2457677
FAX : +60 3 - 2458180

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35- 1, 7- CHOME, SAGAMIONO
SAGAMIHARA - SHI, KANAGAWA
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東京都渋谷区恵比寿南1-11-9

KOREA

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

SHOCK, FIRE HAZARD SERVICE TEST :

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

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

Ref. UL Standard No. 1492.

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

1. Servicing the DR2100

1.1 INTRODUCTION:

The DR2100 is the consumer version of a CD recorder, this means that the SCMS (Serial Copy Management System) is included. The DR2100 can only record on the Audio CDRs (Consumer Use).

The DR2100 is suitable for recording and playback of CD-RW discs (CD-Re Writable disc).

Playback & Recording and Disc

Disc Player/Recorder	CD	CDR				CD-RW				SCMS
		Consumer Disc		Professional Disc		Consumer Disc		Professional Disc		
		Finalized	non Finalized	Finalized	non Finalized	Finalized	non Finalized	Finalized	non Finalized	
Audio CD Player Current products Ex:CD-17	P	P	no	P	no	no	no	no	no	-
Audio CD Player CD-RW playback Ex:CD-17MK II	P	P	no	P	no	P	no	P	no	-
CD-RW Recorder For Professional Ex:CDR630/640	P	P	P/R	P	P/R	P/R	P/R	P/R	P/R	no
CD-RW Recorder For Consumer Ex:DR2100	P	P	P/R	P	P	P/R	P/R	P	P	YES

Consumer : For Digital Audio

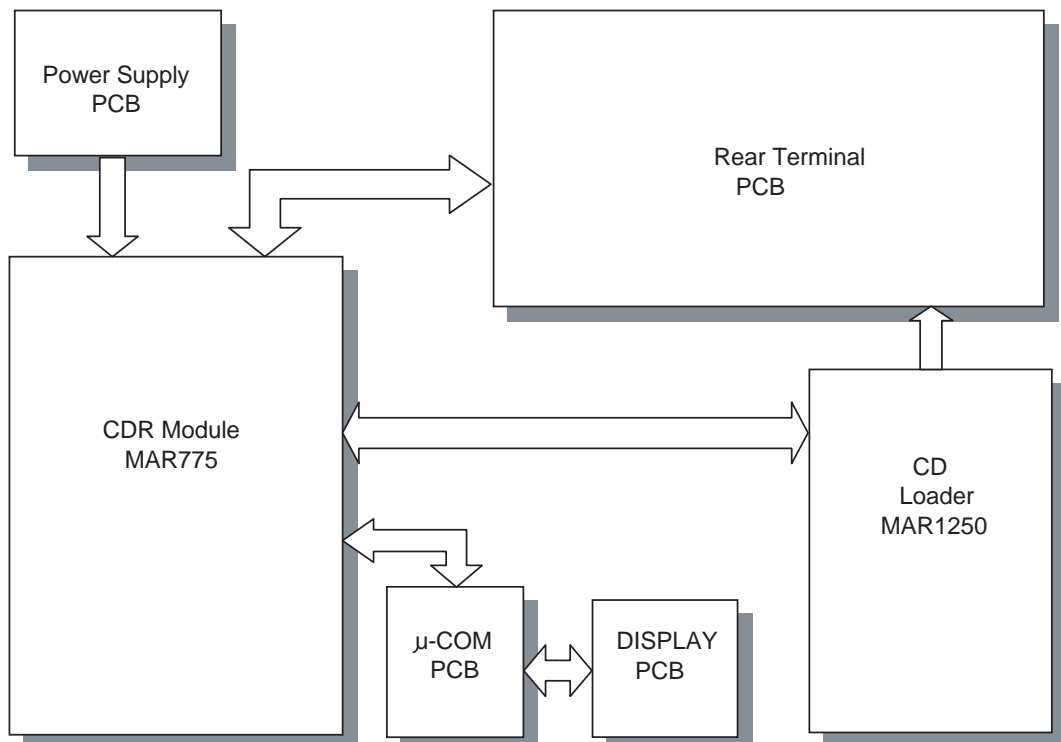
Professional : For General use (Including PC)

P : Playback

R : Recording

1.2 OPENING THE PRODUCT :

The product can be opened by removing the top cover (6 screws). Once the product is opened one can have access to the several PCB's and the main module.



Below the several PCB's and it function and service policy will be discussed:

1.2.1 CDR loader (CDR main module CDL4009 or MAR775):

This complete CDR loader is considered as not repairable in the field. therefore this module will be repaired centrally. A module exchange procedure will be set up for this purpose. The module can be removed from the product by removing 4 screws and the transformer and loosening the connectors.

This module is the complete CD recorder, it contains the following parts:

CD Mechanism (CDM4009). Underneath this mechanism a PCB is mounted which is adjusted to the mechanism (laser current settings are stored in EEPROM).

Loader Assy. This mechanical assy takes care for the tray control.

Main PCB. This PCB takes care that the (analog or digital) signal to be recorded is converted into a suitable signal which can be recorded on the disc.

Digital signals with an other sampling frequency than 44.1kHz will be converted in the sample rate converter (DASP) to 44.1kHz.

Analog signals will be first converted into a digital converter by the AD converter.

This PCB also takes care that the signal from the CD (playback) is converted into a suitable digital signal (or analog via the DA converter).

The main microprocessor controls the several functions of this PCB.

1.2.2 Power Supply PCB.

This PCB contains the Power SW, which is jointed the Power bottom on the front panel. This PCB consists of power supply part. The power supply part delivers the several voltages for the different PCB in the DR2100. On this power supply one fuse (primary side) is mounted on this PCB. All parts are available as spare parts.

1.2.3 Terminal PCB.

This PCB contains input and output terminals. All parts are available as spare parts.

1.2.4 Display Board.

This PCB contains the Display, which informs the user about the status of the recording/playback process and it also takes care for scanning the keys on the front panel. The information from the keys is fed via a I²C connection to the main microprocessor on the CDR loader module. Information which needs to be displayed is also fed via this I²C line from the main microprocessor on the CDR loader module to the display controller.

The parts for this PCB are available as service parts so this PCB can be repairable up to component level.

IMPORTANT

In case of replace the CD-R module "MAR775", the initialization is necessary. Please initialize the CD-R module with following orders.

1. Press the POWER button (POWER ON) while depressing FINALIZE button and REC TYPE button together.
2. LCD Display shows;
WAIT → PGM PROTOCOL → PGM PORT END
3. Press the POWER button (POWER OFF).

Then the CD-R module set up to DR2100 own status.

2 TECHNICAL SPECIFICATIONS

GENERAL

System	Compact disc digital audio
Number of channels	2 (stereo)
Applicable discs	CD, CD-R (digital audio), CD-RW (digital audio)
Power Requirement	AC 110 V - 240V 50 / 60 Hz
Power Consumption	20 W
Operating Temperature	5 - 35 °C
Dimension (MAX)	
Width	420 mm
Height	76 mm
Depth	309 mm
Weight	4.4 kg

AUDIO

Frequency Response	20 Hz - 20 kHz
Playback S/N	100 dB
Playback Dynamic Range	96 dB
Playback Total Harmonic Distortion	0.003 %
Recording S/N	90 dB
Recording Dynamic Range	92 dB
Recording Total Harmonic Distortion	0.006 %
Digital Coaxial Output	0.5 V (p-p) / 75 ohms
Analog Output Voltage	2 V RMS
Digital Optical Output	- 20 dBm

Recording values for line input

Digital Coaxial Input (automatic sample rate conversion)	11 - 56 kHz
Digital Optical Input (automatic sample rate conversion)	11 - 56 kHz
Analog Input	600 mVrms / 50 kohms

Specifications subject to change without prior notice.

3. 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.

(F) ATTENTION

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

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

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

(D) WARNUNG

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

Unvorsichtige Behandlung im Reparaturfall kann die Lebensdauer drastisch reduzieren.

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

Halten Sie Bauteile und Hilfsmittel ebenfalls auf diesem Potential.

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 verminderen. Zorg ervoor dat u tijdens reparatie via een polsband met weerstand verbonden bent met hetzelfde potentiaal als de massa van het apparaat.

Houd componenten en hulpmiddelen ook op hetzelfde potentiaal.

(I) AVVERTIMENTO

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

La loro longevità potrebbe essere fortemente ridotta in caso di non osservazione della più grande cauzione alla loro manipolazione. Durante le riparazioni occorre quindi essere collegato allo stesso potenziale che quello della massa dell'apparecchio tramite un bracciale 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

(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

(NL)

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

(I)

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

Componenti di sicurezza sono marcati con

U : VERSION



N : VERSION



(GB)

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

(S) Varning !

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

(DK) Advarsel !

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

(SF) Varoitus !

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

(GB)

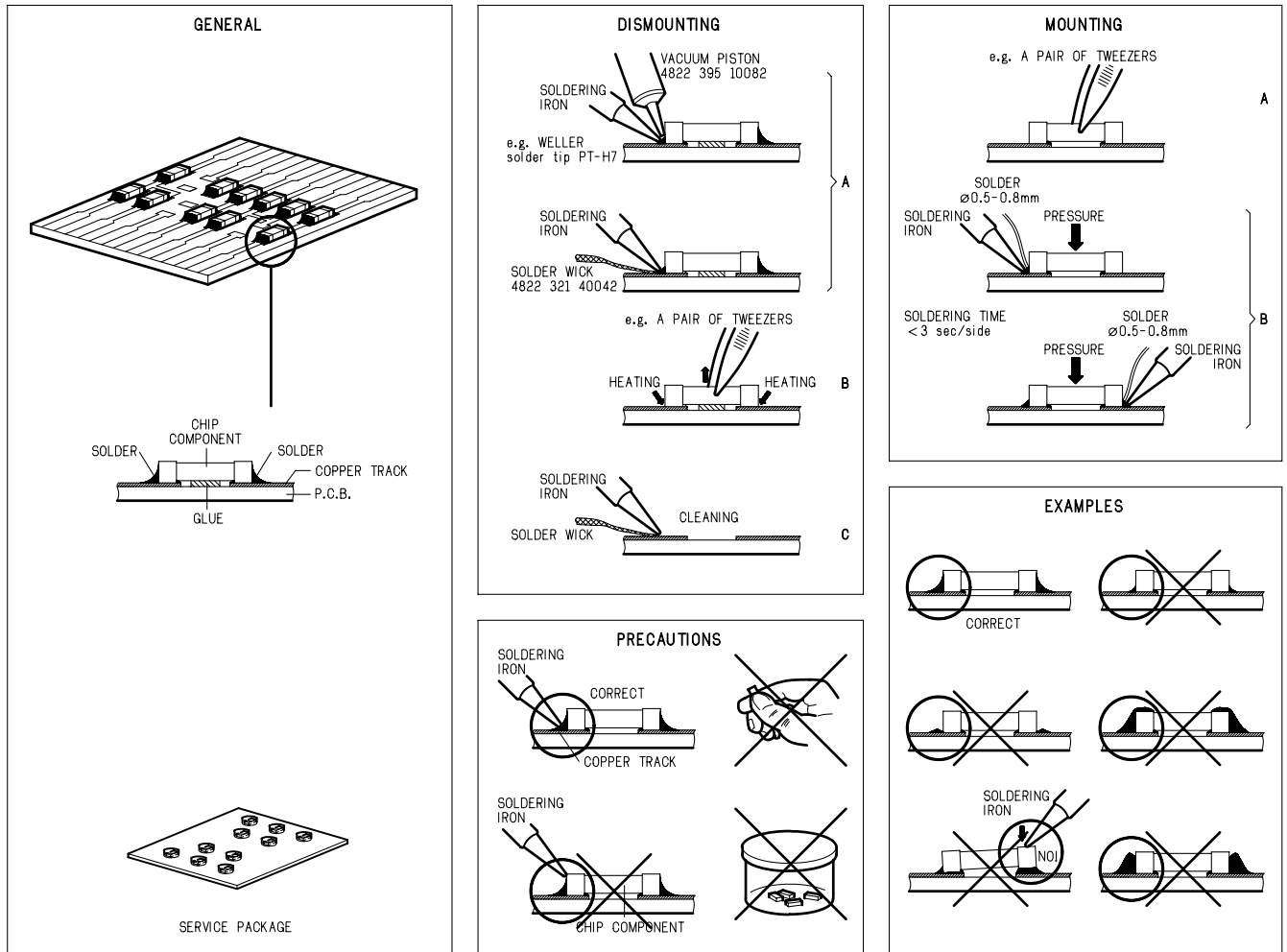
After servicing and before returning the set to customer perform a leakage current measurement test from all exposed metal parts to earth ground, to assure no shock hazard exists.

The leakage current must not exceed 0.5mA.

(F)

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

4. SERVICE HINTS AND TOOLS

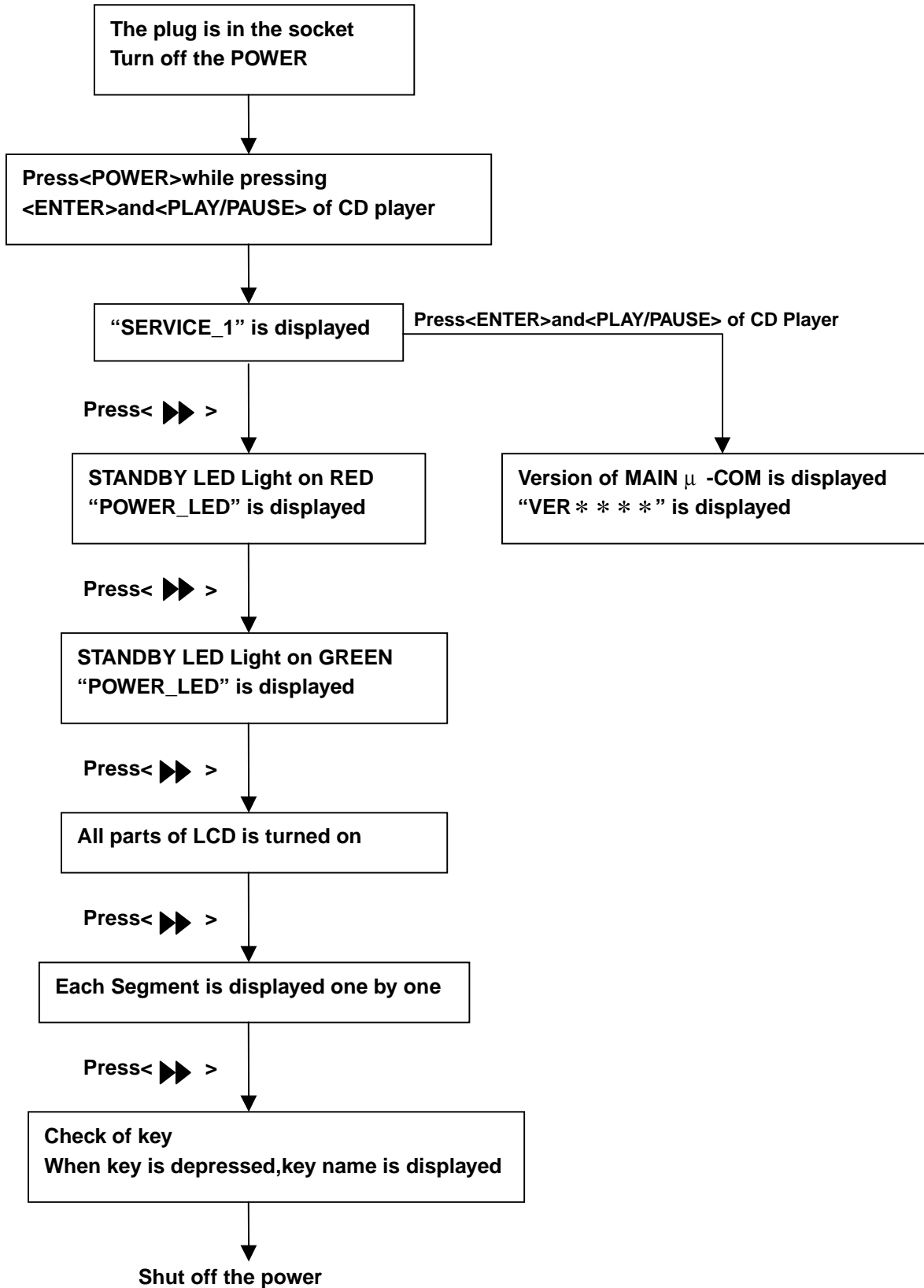


SERVICE TOOLS

The tools listed below are standard test tools that can be used for repairing and testing Marantz CD Players & Recorders.

Audio signals disc	4822 397 30184
Disc without errors (SBC444)+	
Disc with DO errors, black spots and fingerprints (SBC444A)	4822 397 30245
Disc (65 min 1kHz) without no pause	4822 397 30155
Max. diameter disc (58.0 mm)	4822 397 60141
Torx screwdrivers	
Set (straight)	4822 395 50145
Set (square)	4822 395 50132
13th order filter	4822 395 30204
Hexagon socket screw button (No. 1.5)	

5. SERVICE MODE



6. DIAGNOSTICS SOFTWARE

6.1 Dealer mode

The purpose of the dealer mode is to prevent people taking out the CD inside the player at exhibitions, showrooms etc.. This mode disables the open/close function of the player. The dealer mode can be switched on and off pressing keys [OPEN/CLOSE] and [STOP] of the CDR player simultaneously while switching on the unit. The dealer mode is stored in the flash memory and can only be changed by executing the above actions.

6.2.2 Requirements to perform the test

Working keyboard to start up the test.
Working local display to check the output messages.

6.2 Dealer diagnostics

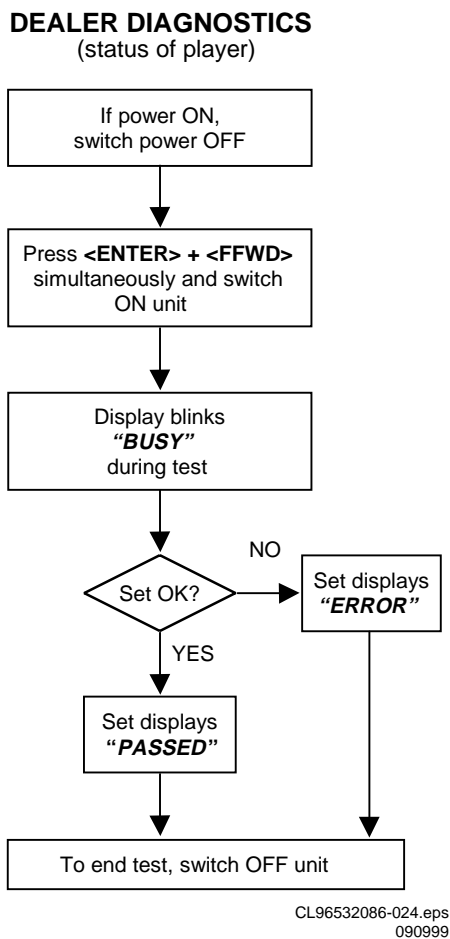


Figure 6-1

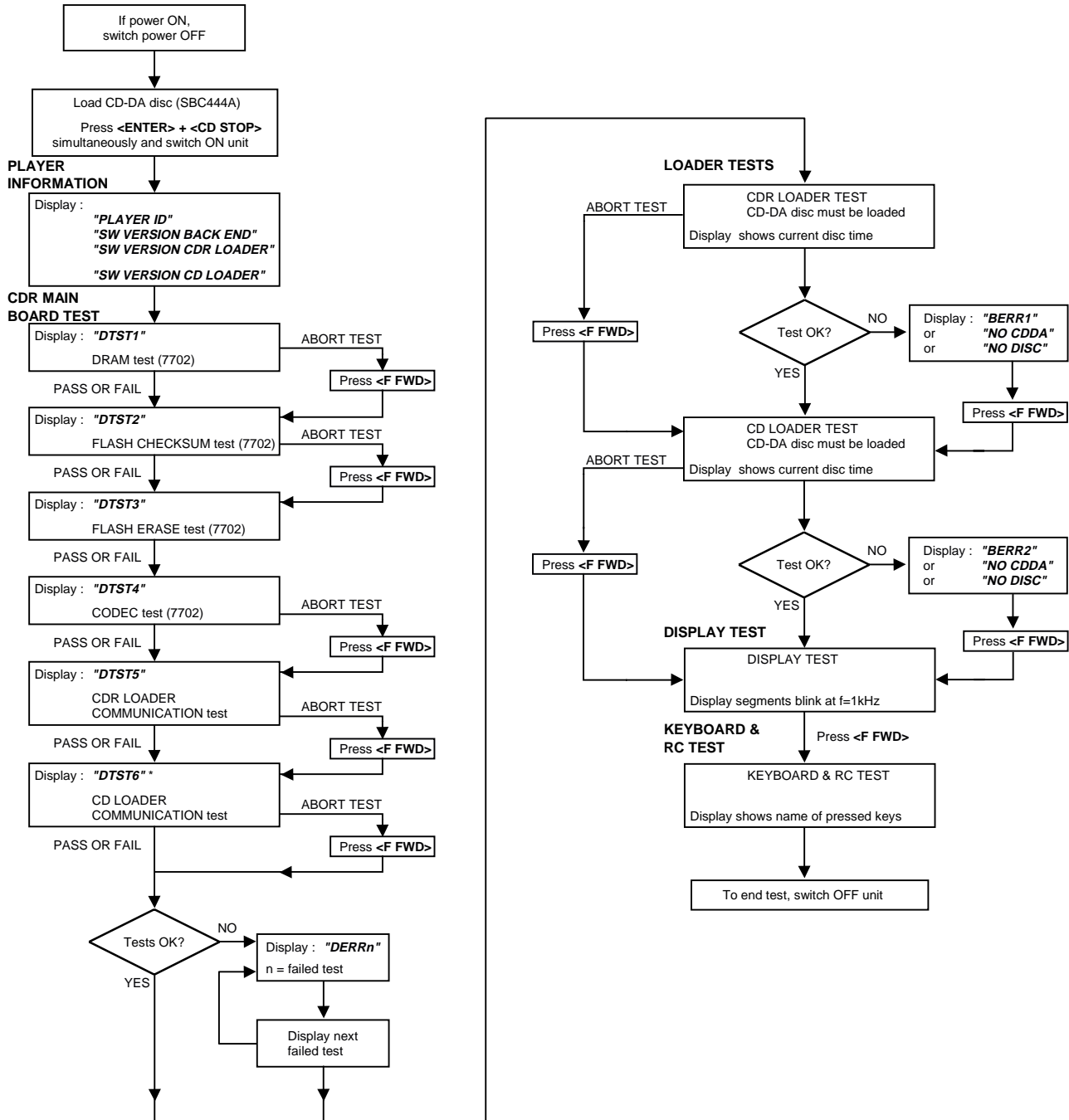
6.2.1 Description

The intention of the dealer diagnostics is to give an indication of the CDR player status. An inexperienced, even non-technical dealer will/can perform the test. Tests are executed automatically without need for external tools or disassembly of the unit. This test checks the CDR main board using the same tests as the electrical service diagnostics program. Only the result of the test, "PASSED" or "ERROR", will be shown on the display. Pressing keys [F FWD] and [REWIND] simultaneously while switching on the unit, starts the test. Switching off the unit ends the test.

6.3 Electrical service diagnostics

ELECTRICAL SERVICE DIAGNOSTICS

(software versions, test for defective components)



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080999

Figure 6-2

6.3.1 Description

The intention of the electrical service diagnostics is to show the software versions present in the player and to direct the dealer towards defective internal units. The units are : the CDR main board, the CDR loader, the CD loader in case of a DR6050 and the keyboard/display board. A sequence of tests is executed automatically. Some of the tests can be aborted or skipped without the result being taken into account. External tools or disassembly of the unit is not necessary to get the diagnostic information. Pressing keys [ENTER] and [CD STOP] simultaneously while switching on the unit, starts the test. Switching off the unit ends the test.

6.3.2 Requirements to perform the test

- Working keyboard to start up the test.
- Working local display to check the output messages.
- A CD-DA disc with a minimum of 3 tracks in all trays to perform the disc test.

6.3.3 Description of the tests

Player information

In this part of the test the following important information can be checked without removing the cover :

- Recorder ID.
- SW-version back end of player.
- SW-version CDR loader.
- SW-version CD loader.

CDR main board test

[F FWD] key. The message "DERRn" will be displayed with n indicating the faulty test number.

If one of the tests is aborted with the [F FWD] key, no error message will be displayed for this test. The flash data erase test ("DTST3") can not be aborted !

The CDR main board test consists out of :

DRAM test

Display : "DTST1". The DRAM used for buffer management is tested by writing, reading and verifying test patterns.

Flash checksum test

Display : "DTST2". This test checks the checksum of the player's SW stored in the flash.

Flash data erase

Display : "DTST3". During this test, all temporary information (CDtxt) in the flash is erased.

CODEC (ADC/DAC) test

Display : "DTST4". This test checks the CODEC IC by writing, reading and verifying test patterns.

CDR communication test

Display : "DTST5". The communication between the host processor (DASP) and the CDR loader via the DSA-R-bus is tested.

CD communication test

Display : "DTST6"). The communication between the host processor (DASP) and the CD loader is tested.

Loader tests

These tests determine if the CDR loader and the CD loader in case of a DR2100 work correctly. A CD-DA disc with a minimum of 3 tracks needs to be inserted in both loaders. A

disc test is executed to check focus control, disc motor control, radial control and jump grooves control. The disc test is performed by audio play-back of 5 seconds at the beginning, middle and end of the disc.

CDR loader test

During the test, the current disc time is shown. In case of an error the message "BERR1" will be displayed and the [F FWD] key must be pressed to continue with the following test. Pressing the [F FWD] key also aborts this test.

CD loader test

During the test, the current disc time is shown. In case of an error the message "BERR2" will be displayed and the [F FWD] key must be pressed to continue with the following test. Pressing the [F FWD] key also aborts this test.

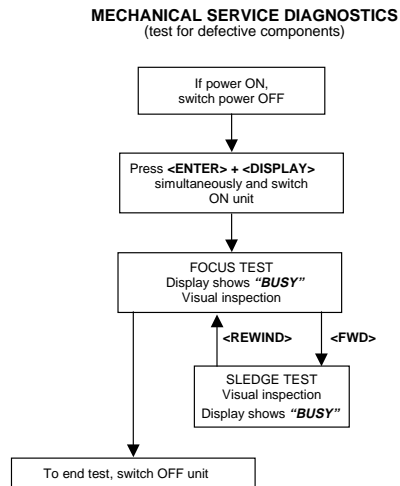
Display test

All segments will blink at a frequency of 1 Hz. Pressing the [F FWD] key will start the next test because the user has to check for himself if all segments work properly.

Keyboard and remote control tests

The test will give the user the ability to test every key without executing the function assigned to it. Therefore, the user needs to press every key on the keyboard and the remote control. The display will show the name of the key being pressed. Pressing more than one key at once will give an unpredictable result except for the service combinations : [ENTER] + [DISPLAY], [ENTER] + [CD STOP], [ENTER] + [F FWD], [ENTER] + [MENU], [ENTER] + [CANCEL], [ENTER] + [CD PLAY].

6.4 Mechanical service diagnostics



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Figure 6-3

6.4.1 Description

No external tools are required to perform this test. The cover needs to be removed because the user has to check the movements of the tray, focus and sledge visually. Pressing keys [ENTER] and [DISPLAY] simultaneously while switching on the unit, starts the test. Switching off the unit ends the test. In case of a DR2100, one can check the CD loader mechanics in the same way by pressing the above key combination on the CD player keys.

6.4.2 Requirements to perform the test

Working keyboard to cycle through the tests and to start up the test.

Working local display to check the output messages.

6.4.3 Description of the tests

Focus control test

The focussing lens is continuously moving up and down. The display reads "BUSY".

Sledge control test

After pressing [F FWD] the sledge continuously moves up and down. Pressing [REWIND] stops the sledge at the position it is in and the focus control test resumes. The display reads "BUSY".

6.5 DC-erase service mode

6.5.1 Description

This test is initiated by pressing [ENTER] and [MENU/STORE] simultaneously while switching on the unit. The player will erase a complete CD-RW disc (including PMA and ATIP lead out area) at speed N=2. The display shows the countdown of the remaining time required for the operation to complete. The format is "ER mm:ss", where "mm" are the remaining minutes and "ss" the remaining seconds. After completion the message "PASSED" is shown, and the player has to be switched off and on again to start up in normal operating mode. Switching off the unit before completion of the test, leaves the disc in an unpredictable state. In such case only a complete DC-erase procedure can recover the CD-RW disc.

6.5.2 Requirements to perform the test

Functional CDR player.

A CD-RW audio disc must be present in the tray.

DC ERASE SERVICE MODE (erasure of complete CD-RW)

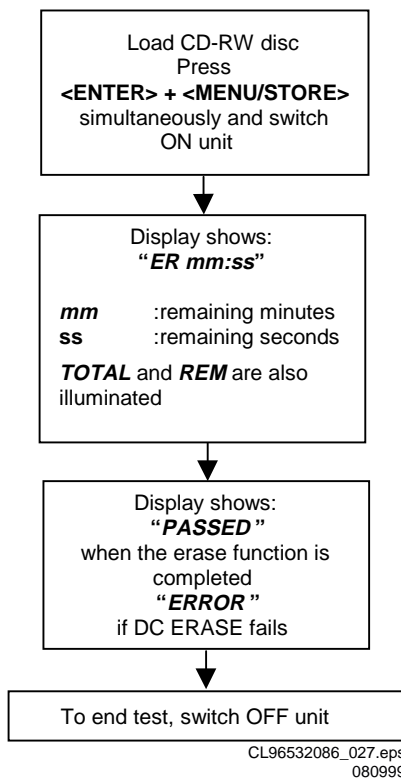


Figure 6-4

7. Faultfinding trees

7.1 CDR-Module (MAR775)

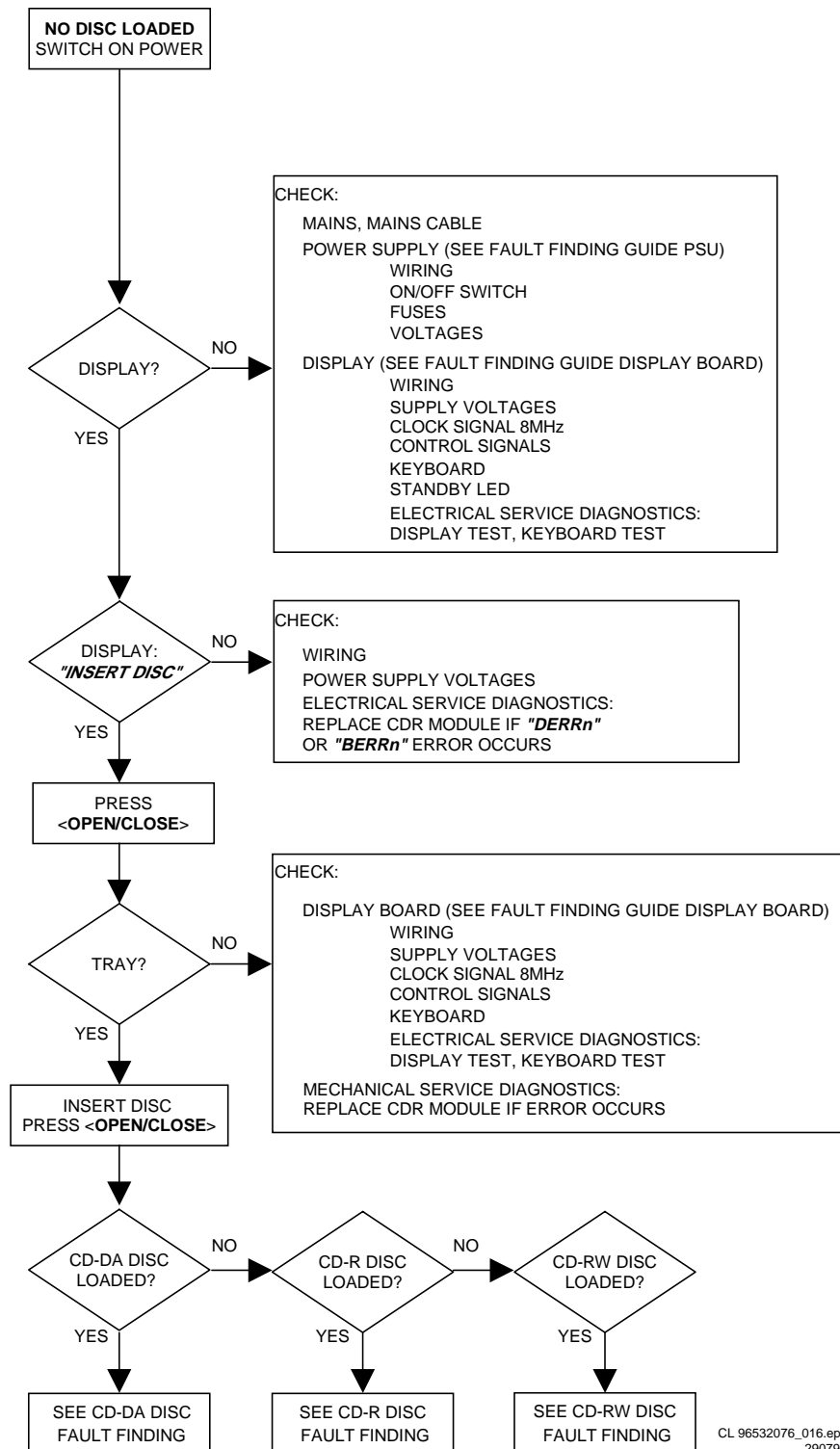
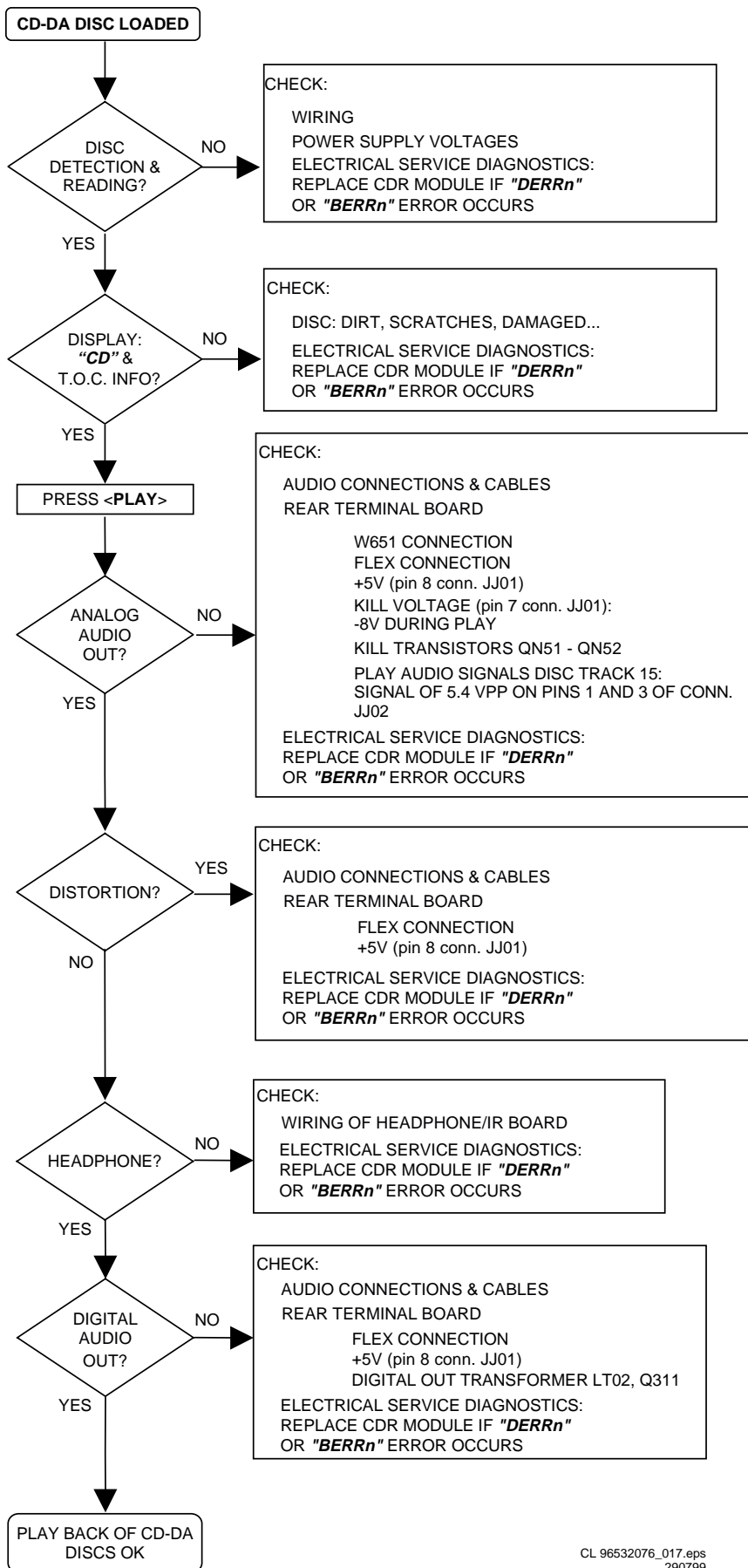


Figure 7-1



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290799

Figure 7-2

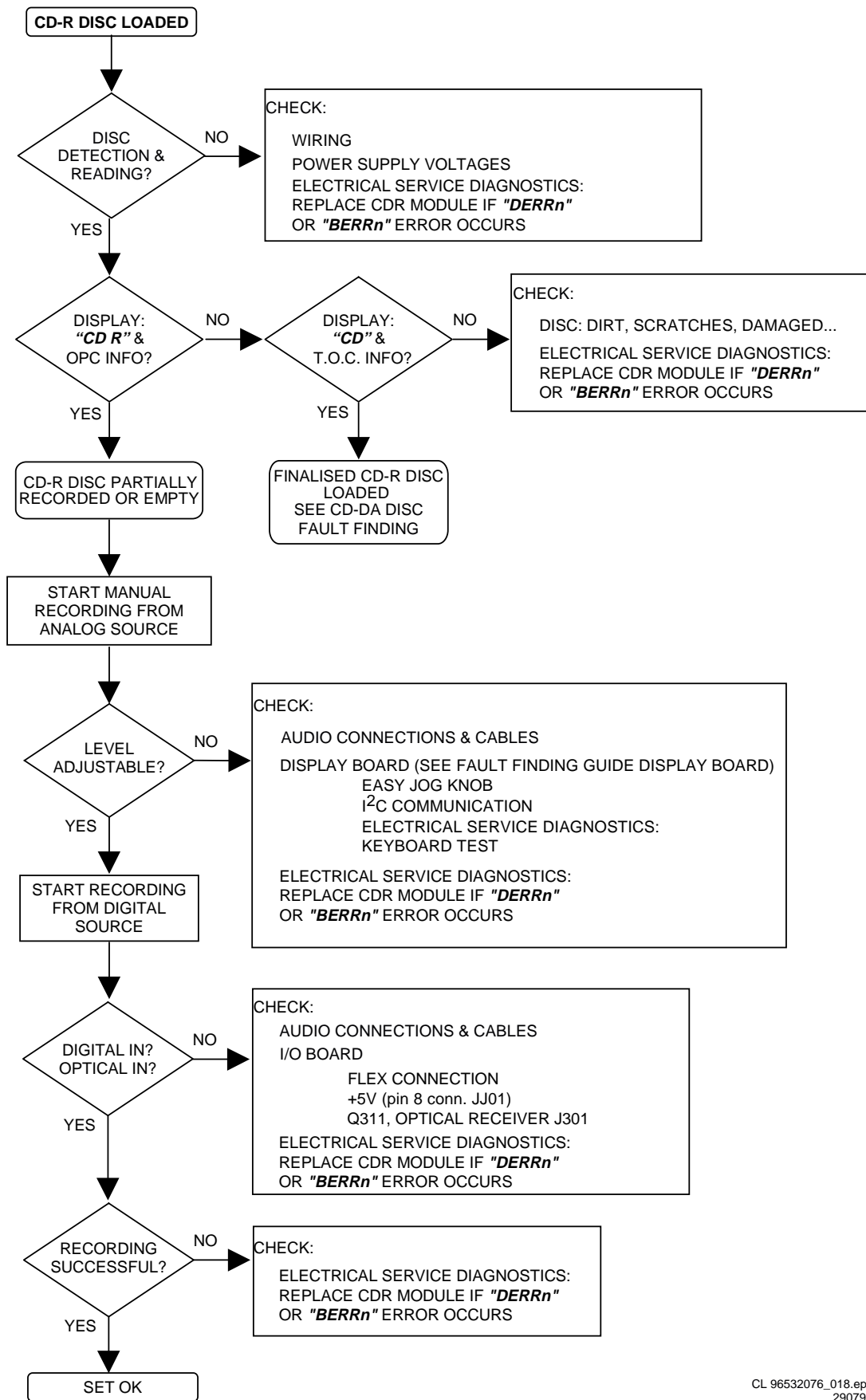
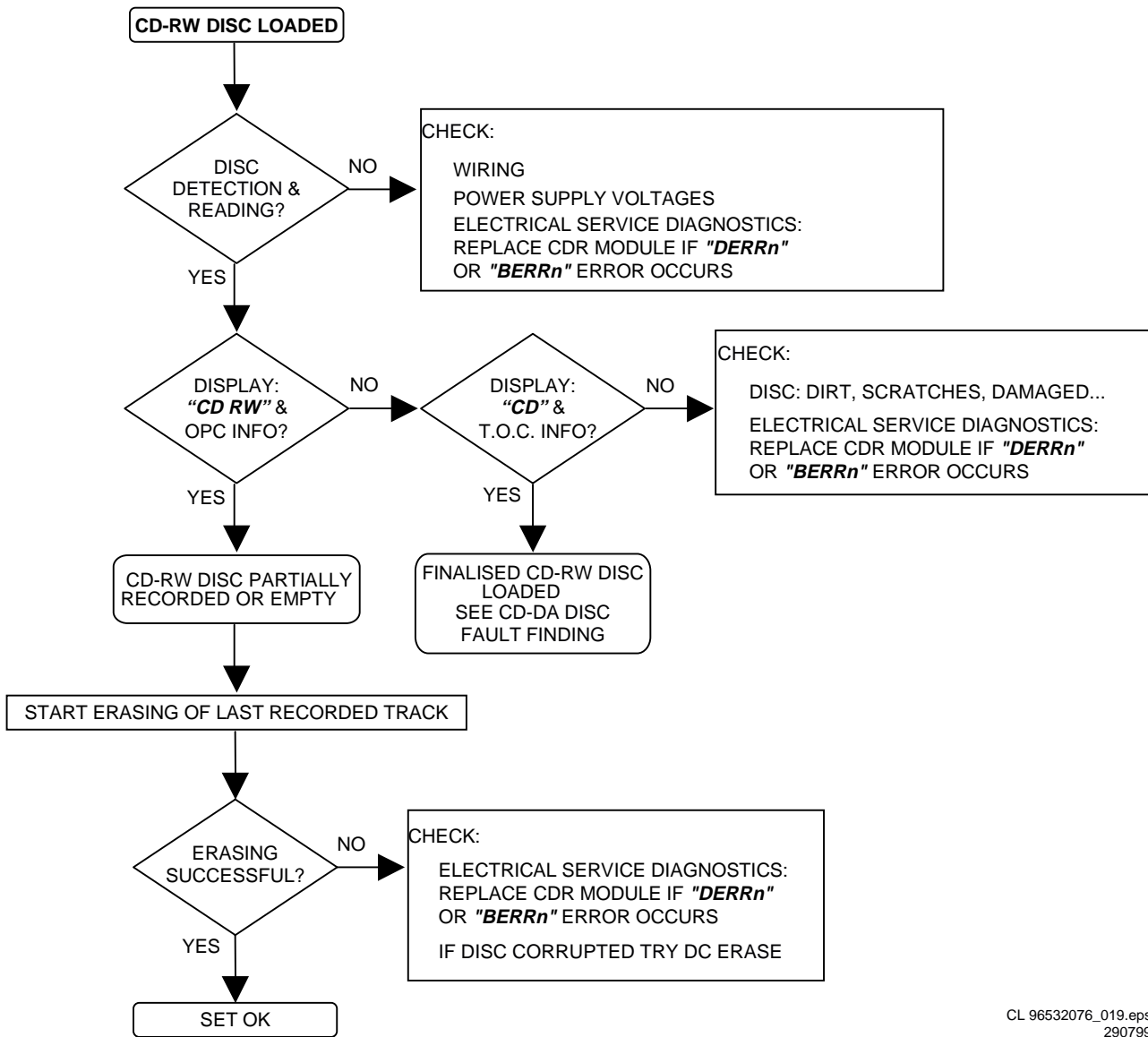


Figure 7-3

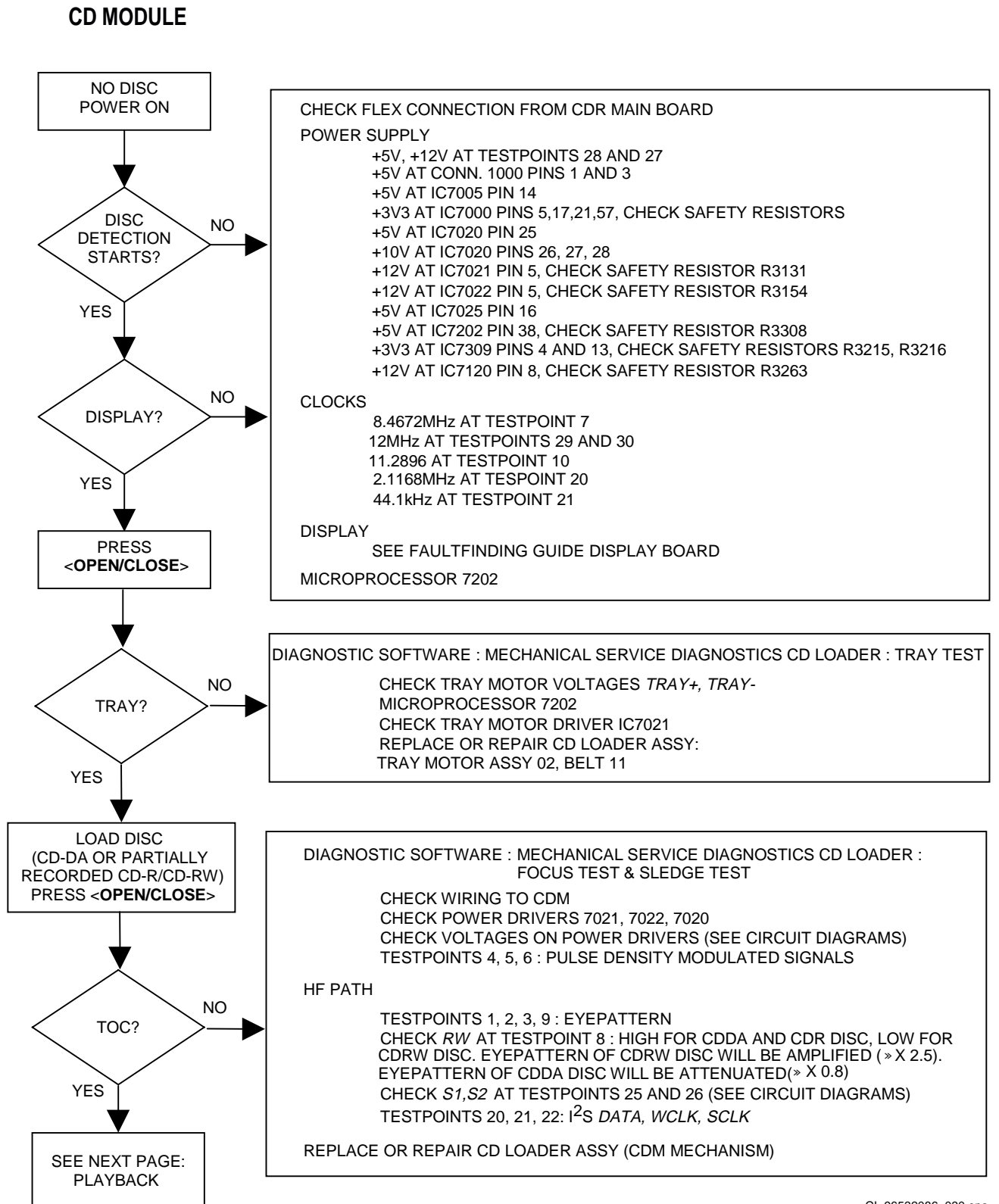
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CL 96532076_019.eps
290799

Figure 7-4

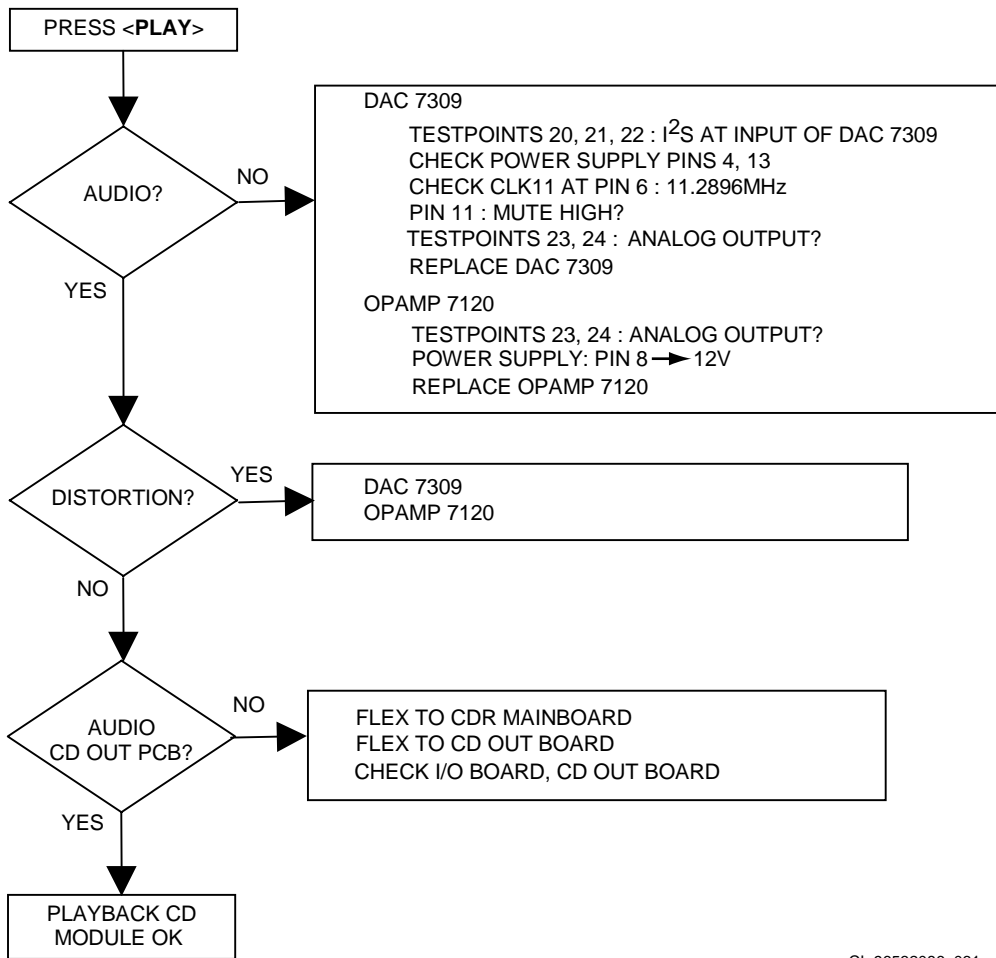
7.2 CD Module



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080999

Figure 7-5

CD MODULE PLAYBACK



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080999

Figure 7-6

8. Faultfinding Guide

8.1 Display Board

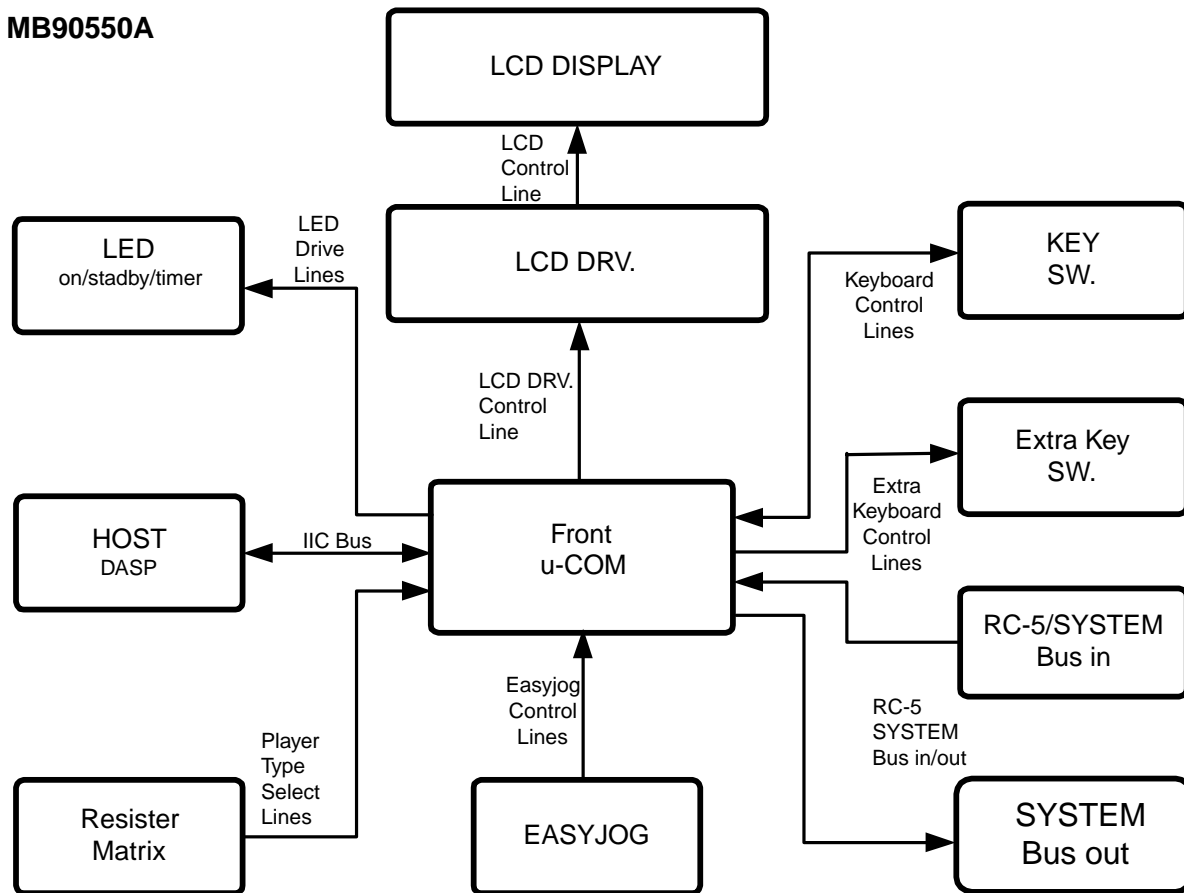
8.1.1 Description of display board

General description

The display board has three major parts : the LCD(Liquid Crystal Display), the display controller and the keyboard. The display controller is controlled by the DASP master processor on the CDR main board. The communication protocol used is I2C. So all the information between DASP and display controller goes via the SDA or I2C DATA and SCL or I2C CLK lines. Communication is always initiated by the DASP on the CDR main board. Unlike the previous generations of CDR players, the interrupt generated by the display controller at key-press or reception of remote control is not used. Instead, the DASP polls the display controller for these events.

Block Diagram around μ -Com

MB90550A



Key Input

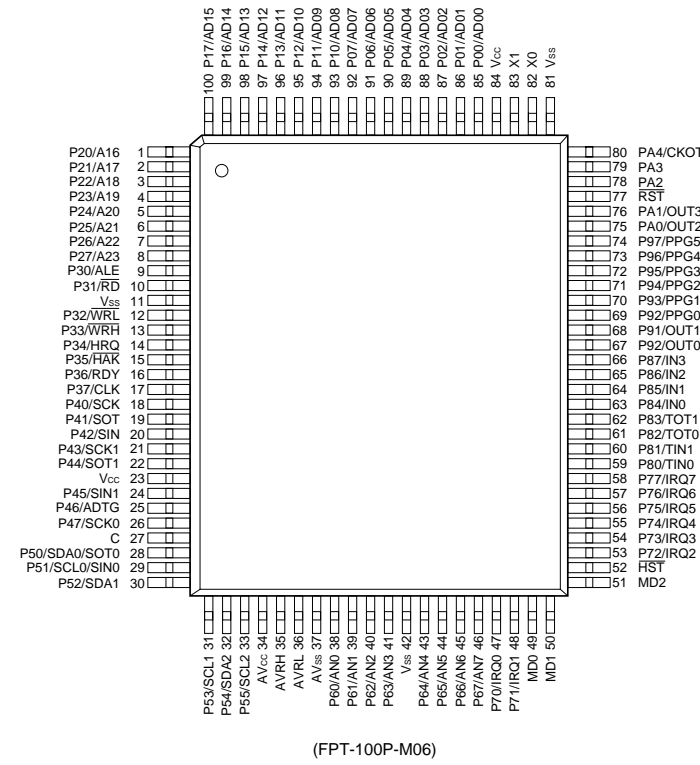
Each key is detected by changing the voltage level shown below.

	$3.5V \leq \sim <4.5V$	$2.5V \leq \sim <3.5V$	$1.5V \leq \sim <2.5V$	$0.5V \leq \sim <1.5V$	$\sim <0.5V$
KEY0 (P38)	PROGRAM	CANCEL/DELITE	MENU/STORE	DISPLAY	DOOR OPEN
KEY1(P39)	CD PLAY/PAUSE	CD STOP (CD SELECT)	CD/CDR FF	CD/CDR REW	CD TRAY OPEN/CLOSE
KEY2(P40)	SOURCE	REC TYPE	REC	CDR STOP (CDR SELECT)	STAND BY
KEY3(P41)	CDR PLAY/PAUSE	ERASE	FINALISE	CDR TRAY OPEN/CLOSE	ENTER

If this recorder is STANDBY state, the power will be recovered when the key is pressed. Stop Key can be work to select either CDR or CD.

Figure 8-1

Pin Configuration



μ -COM DESCRIPTION

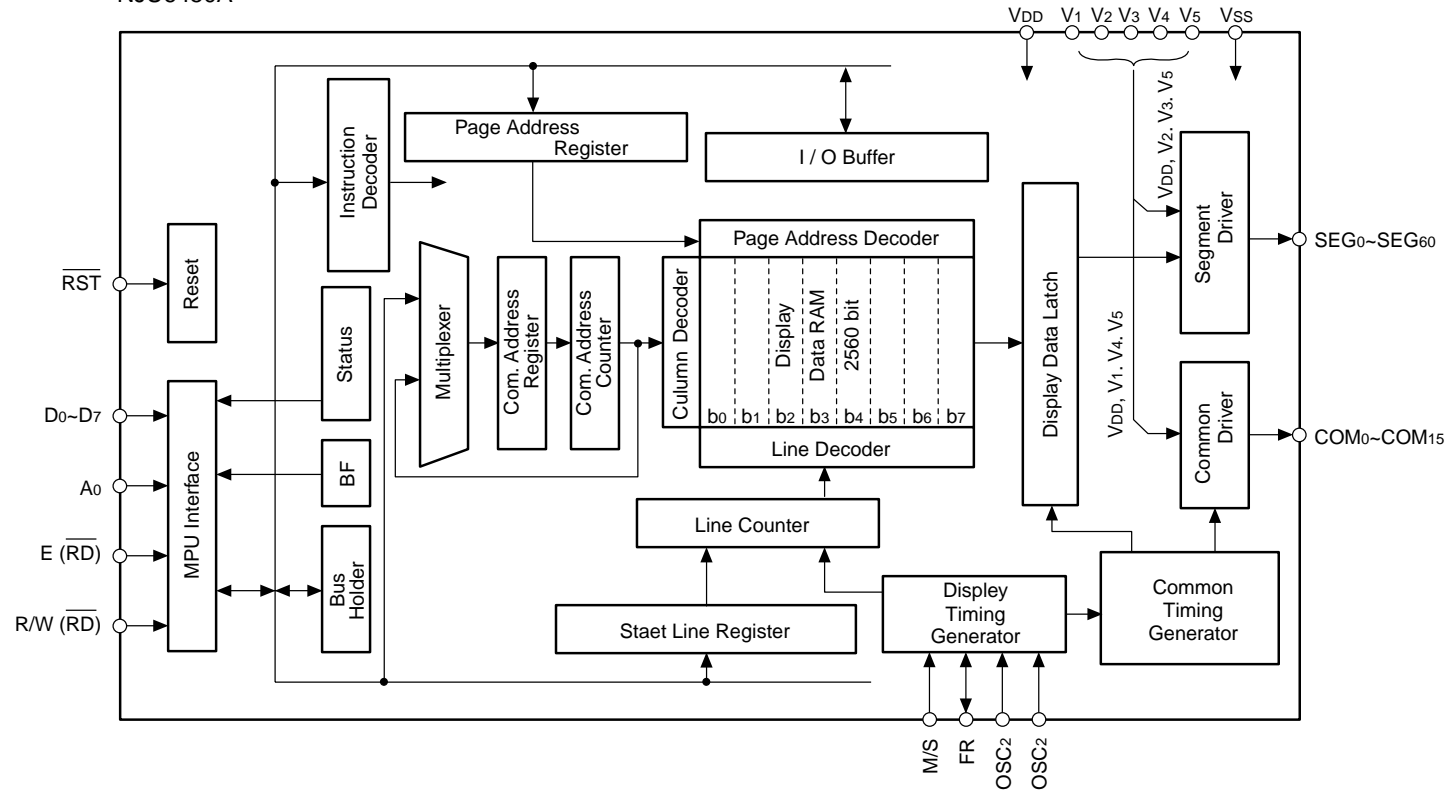
Pin	PORT	SIGNAL	I/O	DESCRIPTION	DESCRIPTION
1	P20/A16	LCD_DIM	O	LCD back light of DIMMER Control	See DIMMER Control
2	P21/A17	LCD_BL	O	LCD backlight ON/OFF	See DIMMER Control
3	P22/A18	POWER_LED	O	Power ON LED	Active H
4	P23/A19	STB_LED	O	Standby LED	Active H
5	P24/A20	SYS_SW	I	System Bus Switch	SYSTEM bus = H
6	P25/A21	SYS_MUTE	O	SYSTEM LINE OUT OF MUTE is activate	Active H
7	P26/A22	STB_MUTE	O	Power On < - > MUTE when STANDBY	Active H
8	P27/A23	CDR/Through	O	To switch AUDIO OUT	DR; H, Through; L
9	P30/ALE	N.C.	I		
10	P31/RD	N.C.	I		
11	VSS	GND	I		
12	P32/WRL	N.C.	I		
13	P33/WRH	N.C.	I		
14	P34/HRQ	N.C.	I		
15	P35/HAK	N.C.	I		
16	P36/RDY	POWER_ON	O	Power Control	Power ON; H
17	P37/CLK	N.C.	I		
18	P40/SCK	TCK.	I/O	To connect Flash Writer	
19	P41/SOT	SYS_OUT TRXD	O	SYSTEM Control bus OUTPUT To connect Flash Writer	
20	P42/SIN	SYS_IN TTXD	I	SYSTEM Control bus or IR/RC5 Input To connect Flash Writer	
21	P43/SCK1	N.C.	I		
22	P44/SOT1	N.C.	I		
23	VCC	+5STB	--	VCC	
24	P45/SIN1	N.C.	I		
25	P46/ADTG	N.C.	I		
26	P47/SCK0	N.C.	I		
27	C	C			
28	P50/SDA0/SOT0	ROM_SDA	I/O	SERIAL DATA to EEPROM	
29	P51/SOL0/SIN0	ROM_SCL	O	SERIAL DATA to EEPROM	
30	P52/SDA1	IIC_DATA	I/O	DATA Communication to CDR Module IIC Interface	
31	P53/SCL1	IIC_CLK	I/O	CLK Communication to CDR Module IIC Interface	
32	P54/SDA2	N.C.	I		
33	P55/SCL2	N.C.	I		
34	AVCC	+5STB	--	VCC	
35	AVRH	+5STB	--	VCC	
36	AVRL	GND			
37	AVSS	GND			
38	P60/AN0	KEY_IN_0	I	KEY 0 INPUT	
39	P61/AN1	KEY_IN_1	I	KEY 1 INPUT	
40	P62/AN2	KEY_IN_2	I	KEY 2 INPUT	
41	P63/AN3	KEY_IN_3	I	KEY 3 INPUT	
42	VSS	GND			
43	P64/AN4	N.C.	I		
44	P65/AN5	N.C.	I		
45	P66/AN6	N.C.	I		
46	P67/AN7	N.C.	I		
47	P70/IRQ0	LT1	I	RESET signal from CDR	Active H
48	P71/IRQ1	N.C.	I		
49	MD0	TMODE	I	To changing CPU Mode	PULL UP
50	MD1	MD1	I	To changing CPU Mode	PULL UP
51	MD2	TAUX3	I	To changing CPU Mode	PULL DOWN
52	HST	HST	I	STANDBY input signal by hardware	PULL UP
53	P72/IRQ2	D MOTOR_REV	O	Door REV Motor ON	Active H
54	P73/IRQ3	D MOTOR_FWD	O	Door FWD Motor ON	Active H
55	P74/IRQ4	D OPEN_SW	I	Door Open	Active L
56	P75/IRQ5	D CLOSE_SW	I	Door Close	Active L
57	P76/IRQ6	JOG_A	I	JOG A	
58	P77/IRQ7	JOG_B	I	JOG B	
59	P80/TIN0	INT.	I	INTERRUPT signal from CDR Module	
60	P81/TIN1	N.C.	I		
61	P82/TOT0	N.C.	I		
62	P83/TOT1	N.C.	I		
63	P84/IN0	IR_IN	I	Control bus INPUT either IR/RC5 or SYSTEM	
64	P85/IN1	IN_SW	I	CDR_CD tray hardware SW.	Active : H / Passive : L
65	P86/IN2	CDR_IN	I	CDR Tray IN	Active L
66	P87/IN3	CD_IN	I	CD Tray IN	Active L
67	P90/OUT0	N.C.	I		
68	P91/OUT1	N.C.	I		
69	P92/PPG0	N.C.	I		
70	P93/PPG1	N.C.	I		
71	P94/PPG2	N.C.	I		
72	P95/PPG3	N.C.	I		
73	P96/PPG4	N.C.	I		
74	P97/PPG5	N.C.	I		
75	PA0/OUT2	N.C.	I		
76	PA1/OUT3	N.C.	I		
77	RST	CPU_RST	I	CPU RESET signal	Low (PULL UP)
78	PA2	N.C.	I		
79	PA3	N.C.	I		
80	PA4/CKOT	N.C.	I		
81	VSS	GND			
82	X0	8MHz X'tal			
83	X1	8MHz X'tal			
84	VCC	+5STB	--	VCC	
85	P00/AD00	TAUX	I	To Flash Writer	
86	P01/AD01	---	I	To change CPU mode	PULL UP
87	P02/AD02	RST	O	LCD Driver RESET	Active L
88	P03/AD03	LCD_W/R	O	WR OUTPUT to LCD Driver	Active L
89	P04/AD04	LCD_RD	O	RD OUTPUT to LCD Driver	Active L
90	P05/AD05	A0	O	LCD Driver mode	See NJU6450 Data Sheet
91	P06/AD06	N.C.	I		
92	P07/AD07	N.C.	I		
93	P10/AD08	D0	I/O	To LCD Driver	
94	P11/AD09	D1	I/O	To LCD Driver	
95	P12/AD10	D2	I/O	To LCD Driver	
96	P13/AD11	D3	I/O	To LCD Driver	
97	P14/AD12	D4	I/O	To LCD Driver	Active L
98	P15/AD13	D5	I/O	To LCD Driver	Active L
99	P16/AD14	D6	I/O	To LCD Driver	Active L
100	P17/AD15	D7	I/O	To LCD Driver	See NJU6450 Data Sheet

Dimmer Control

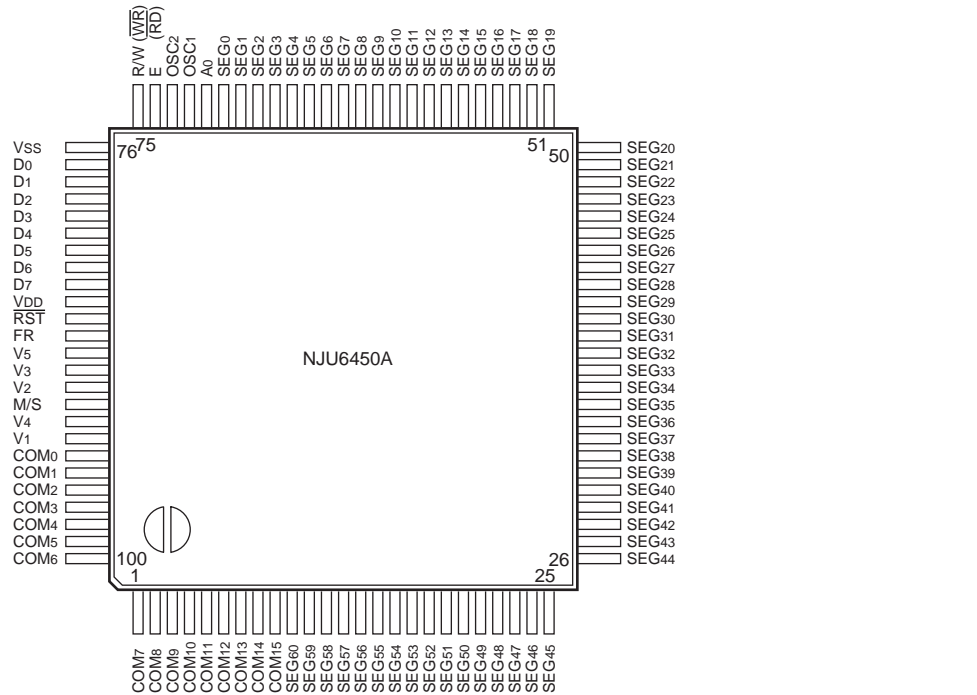
The μ -controller, MB90F553A/MB90553A adjust the brightness of LCD back light by receiving signal from IR or SYSTEM BUS.

Mode	LCD_DIM (1Pin)	LCD_BL (2Pin)
Backlight OFF	Low	Low
Backlight ON	Low	High
Dimmer ON	High	Low

Block Diagram
NJU6450A



Pin Configuration



Chip Size 4860um x 4160um(Chip Center X=0um,Y=0um)

No.	Terminal Name	X=(um)	Y=(um)
1	COM ₅	-2130	-1865
2	COM ₆	-1970	-1865
3	COM ₇	-1810	-1865
4	COM ₈	-1650	-1865
5	COM ₉	-1490	-1865
6	COM ₁₀	-1330	-1865
7	COM ₁₁	-1190	-1865
8	COM ₁₂	-1050	-1865
9	COM ₁₃	- 910	-1865
10	COM ₁₄	- 770	-1865
11	COM ₁₅	- 630	-1865
12	SEG ₆₀	- 490	-1865
13	SEG ₅₉	- 350	-1865
14	SEG ₅₈	- 210	-1865
15	SEG ₅₇	- 70	-1865
16	SEG ₅₆	70	-1865
17	SEG ₅₅	210	-1865
18	SEG ₅₄	350	-1865
19	SEG ₅₃	490	-1865
20	SEG ₅₂	630	-1865
21	SEG ₅₁	770	-1865
22	SEG ₅₀	910	-1865
23	SEG ₄₉	1050	-1865
24	SEG ₄₈	1190	-1865
25	SEG ₄₇	1330	-1865
26	SEG ₄₆	1490	-1865
27	SEG ₄₅	1650	-1865
28	SEG ₄₄	1810	-1865
29	SEG ₄₃	1970	-1865
30	SEG ₄₂	2130	-1865
31	SEG ₄₁	2213	-1354
32	SEG ₄₀	2213	-1214
33	SEG ₃₉	2213	-1074
34	SEG ₃₈	2213	- 934
35	SEG ₃₇	2213	- 794
36	SEG ₃₆	2213	- 654
37	SEG ₃₅	2213	- 514
38	SEG ₃₄	2213	- 374
39	SEG ₃₃	2213	- 234
40	SEG ₃₂	2213	- 94
41	SEG ₃₁	2213	46
42	SEG ₃₀	2213	186
43	SEG ₂₉	2213	326
44	SEG ₂₈	2213	466
45	SEG ₂₇	2213	606
46	SEG ₂₆	2213	746
47	SEG ₂₅	2213	886
48	SEG ₂₄	2213	1026
49	SEG ₂₃	2213	1166
50	SEG ₂₂	2213	1306

* Pad Size 92um x 92um

No.	Terminal Name	X=(um)	Y=(um)
51	SEG ₂₁	2130	1865
52	SEG ₂₀	1970	1865
53	SEG ₁₉	1810	1865
54	SEG ₁₈	1650	1865
55	SEG ₁₇	1490	1865
56	SEG ₁₆	1330	1865
57	SEG ₁₅	1190	1865
58	SEG ₁₄	1050	1865
59	SEG ₁₃	910	1865
60	SEG ₁₂	770	1865
61	SEG ₁₁	630	1865
62	SEG ₁₀	490	1865
63	SEG ₉	350	1865
64	SEG ₈	210	1865
65	SEG ₇	70	1865
66	SEG ₆	- 70	1865
67	SEG ₅	- 210	1865
68	SEG ₄	- 350	1865
69	SEG ₃	- 490	1865
70	SEG ₂	- 630	1865
71	SEG ₁	- 770	1865
72	SEG ₀	- 910	1865
73	A ₀	-1050	1865
74	OSC ₁	-1190	1865
75	OSC ₂	-1330	1865
76	E	-1490	1865
77	R/W	-1650	1865
78	V _{SS}	-1810	1865
79	DB ₀	-1970	1865
80	DB ₁	-2130	1865
81	DB ₂	-2213	1330
82	DB ₃	-2213	1190
83	DB ₄	-2213	1050
84	DB ₅	-2213	910
85	DB ₆	-2213	770
86	DB ₇	-2213	630
87	V _{DD}	-2213	490
88	RST	-2213	350
89	FR	-2213	210
90	V ₅	-2213	70
91	V ₃	-2213	- 70
92	V ₂	-2213	- 210
93	M/S	-2213	- 350
94	V ₄	-2213	- 490
95	V ₁	-2213	- 630
96	COM ₀	-2213	- 770
97	COM ₁	-2213	- 910
98	COM ₂	-2213	-1050
99	COM ₃	-2213	-1190
100	COM ₄	-2213	-1330

8.1.2 Test instructions

Clock signal

As clock driver for the display controller, a resonator of 8 MHz (XY01) is used. The signal can be measured at pins 8 and 9 of the display controller : 8 MHz \pm 5%.

I2C DATA/I2C CLK

These lines connect to the DASP master processor via respectively pin 5 and pin 7 of conn. JU02. When there is no communication, they should have the high level (+5V). The oscillogram below gives an indication of how these signals should look like.

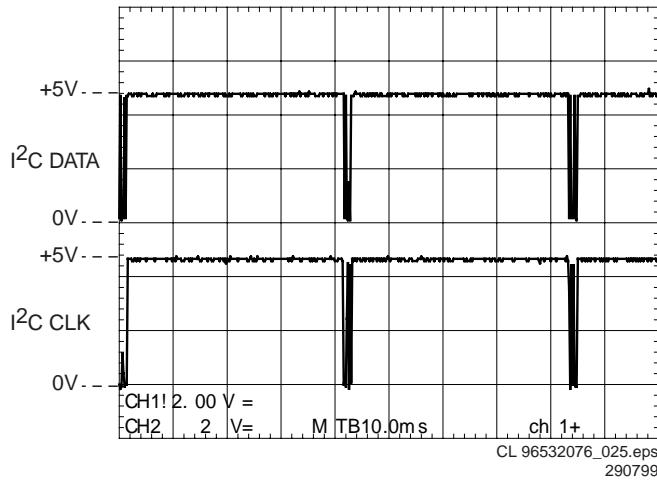


Figure 8-2 'I2C signals'

IR receiver - remote control

In the DR2100 the IR receiver RPM6934 (ZY83, ZY84) is mounted on the display board. In all versions the IR receiver connects to the display controller. The signal coming from the receiver can be checked at pin 3 of conn. JU05. This signal is normally high (+5V). When the remote control is being operated, pulses mixed in with the +5V can be measured. The oscillogram gives an indication of how the signal looks like with the RC being operated.

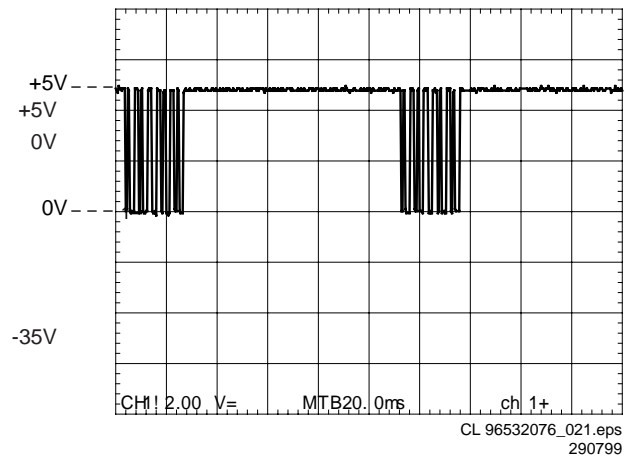
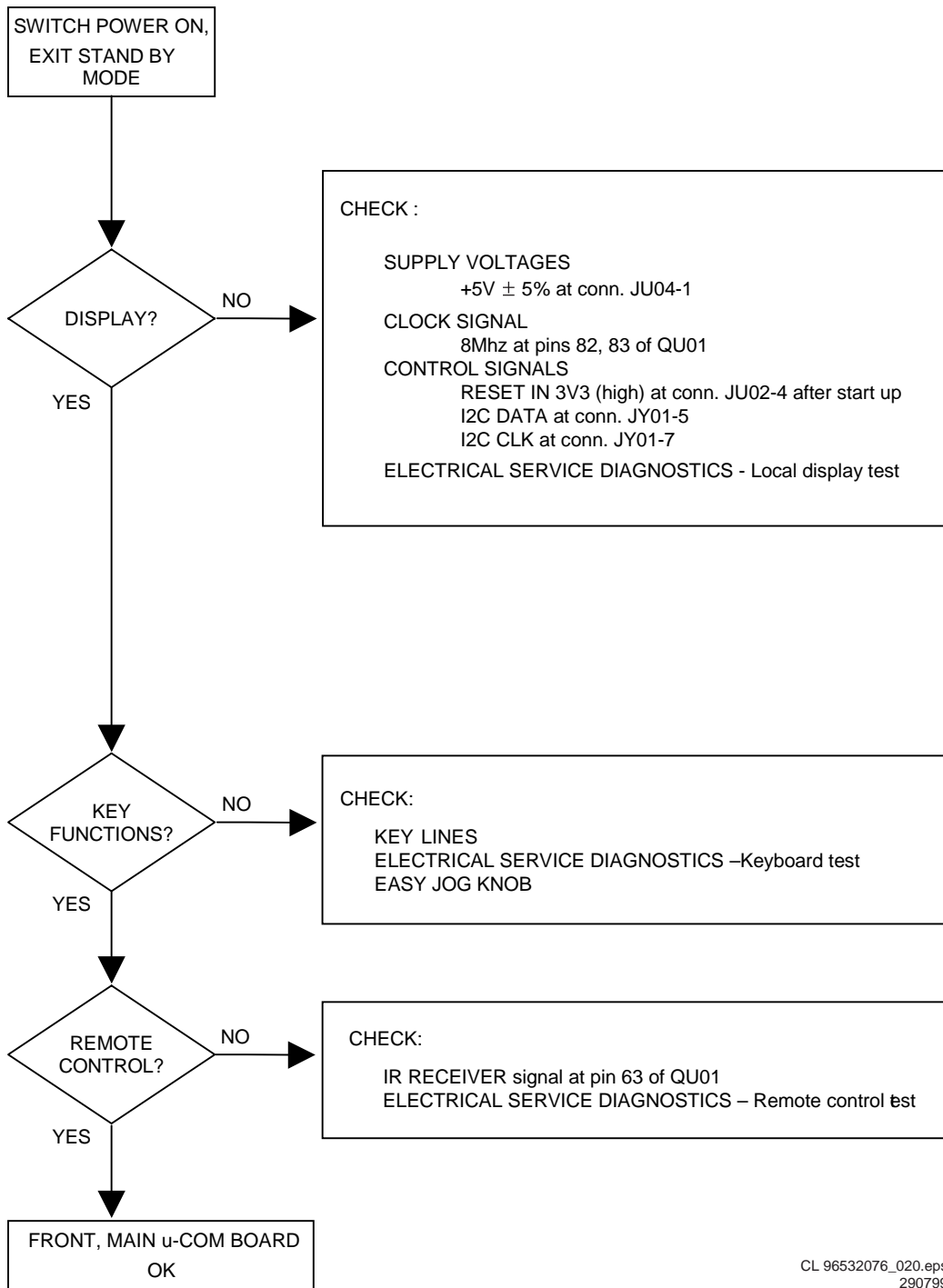


Figure 8-3 'IR receiver signal'

8.1.3 Display board troubleshooting guide



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Figure 8-4 Display board troubleshooting'

8.2 Power Supply Unit P816

8.2.1 Troubleshooting P816

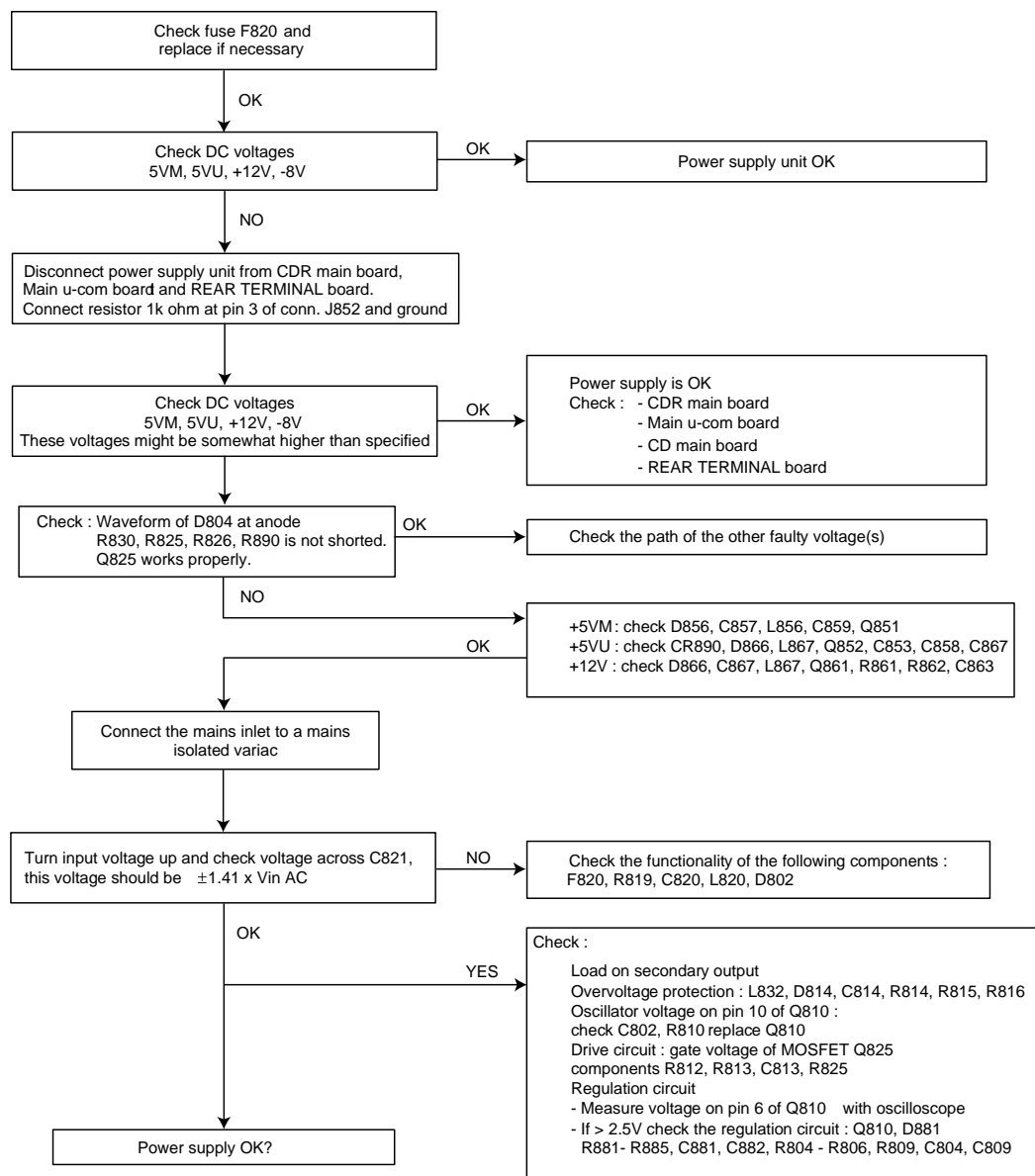


Figure 8-5

8.3 CD Main Board

The CD main board is built around the compact disc mechanism MAR1250 and a loader 1250. The CDM delivers diode signals and an unequalised high frequency signal. These signals are necessary inputs for the decoder CD10. Based on these signals the decoder will control the disc. The decoder is able to control the sledge, focus motor, radial motor and turn table. When everything is "locked", the decoder delivers a digital output according to IEC958 standard, subcode to the microprocessor and I2S for reproducing analog audio signals by means of a D/A converter.

The microprocessor controls the CD10 and is slave of the master processor on the CDR main board in the DR2100. Both processors communicate via a DSA connection (data, strobe and acknowledge).

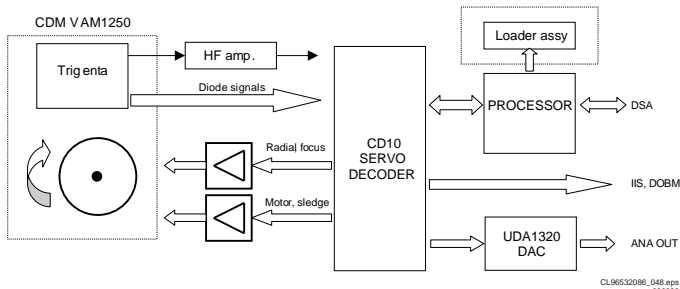


Figure 8-6

8.3.1 Supply Voltages

Description

The CD main board receives +5V and +12V from the CDR main board via respectively pin 16 and pin 15 of connector 1208. The +5V is split up into +5VHF and +5V. The +5VHF is used mainly for the diode currents and the HF-amplifier. The +5V is used for the digital part of the board. On the board a +3V3 is made from the +5V for the decoder CD10 and an A3V3 for the DAC UDA1320. The +12V is split up into A12V for the audio output stage and +12V for the power drivers of the CDM.

Measurements

Connect following supplies to next pins :

- +5V + 5% to pin 16 of connector 1208.
- +12V + 5% to pin 15 of connector 1208.
- Ground reference to pin 17 of connector 1208.

Keep microprocessor 7202 in reset by forcing pin 7 of connector 1208 to +5V. Check the following voltages :

Point	Voltage
Position 1000 pins 1,3	+5V ± 5%
Position 7000 pins 5,17,21,57	+3.3V ± 5%
Position 7005 pin 14	+5V ± 5%
Position 7020 pins 25	+5V ± 5%
Position 7020 pins 26,27,28	+10 ±10%
Position 7021 pin 5	+12V ±10
Position 7022 pin 5	+12V ±10
Position 7025 pin 16	+5V ± 5%
Position 7202 pin 38	+5V ± 5% (other appl. 3V3 possible)
Position 7309 pins 4,13	+3V3 ± 5%
Position 7120 pin 8	+12V ± 10

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Figure 8-7

8.3.2 Clock Signals

Description

The microprocessor has its own Xtal or resonator of 12MHz. The CD10 needs a clock of 8.4672MHz + 100ppm. This speed also relates to the disc speed. To avoid locking problems between the two drives in the CDR775, both drives run on the same clock. Therefore the CD main board gets the clock for the decoder from the CDR main board via pin 2 of connector 1208. The DAC needs a system clock to drive its internal digital filters and to clock the I2S signals from the decoder. In our case this is 11.2896MHz (CL11) generated by the CD10.

Measurements

Connect the power supply as described above in "1.1.1. Supply Voltages".

Connect on pin 2 of position 1208 a clock signal of 8.4672 MHz (100ppm minimum rise time of 50ns and at TTL level (0V and +5V). Keep microprocessor 7202 in reset by forcing pin 7 at position 1208 to +5V. Release the reset. Now, the processor will reset the CD10 for at least 75 µs. The output clock CL11 should be available now at pin 42 of the CD10.

Check the following frequencies :

Point	Frequency
Position 7000 pin 16	8.4672 MHz ±100ppm
Position 7202 pins 14,15	12MHz ±5%
Position 7309 pin 6	11.2896 MHz ±100ppm
Position 7309 pin 1	2.1168 MHz ±100ppm
Position 7309 pin2	44.1kHz ±100ppm

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Figure 8-8

8.3.3 CD10 Decoder/Servo SAA7324 (7000)

Description

The CD10 is a single chip combining the functions of a CD decoder, digital servo and bitstream DAC. The decoder/servo part is based on the CD7. The decoding part supports a full audio specification and can operate at single speed (n=1) and double speed (n=2).

Block Diagram

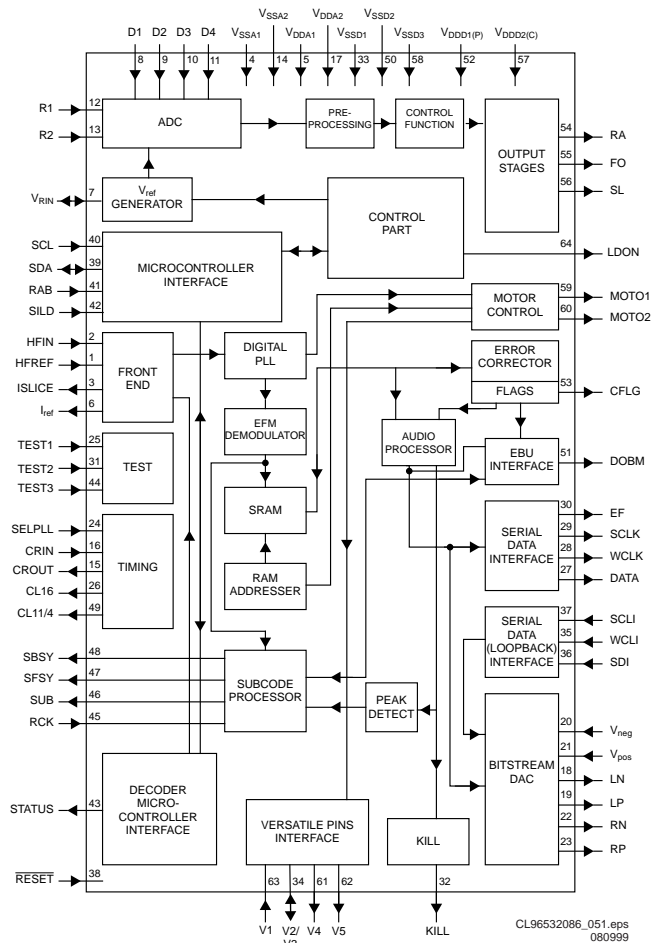


Figure 8-9

Pin Configuration

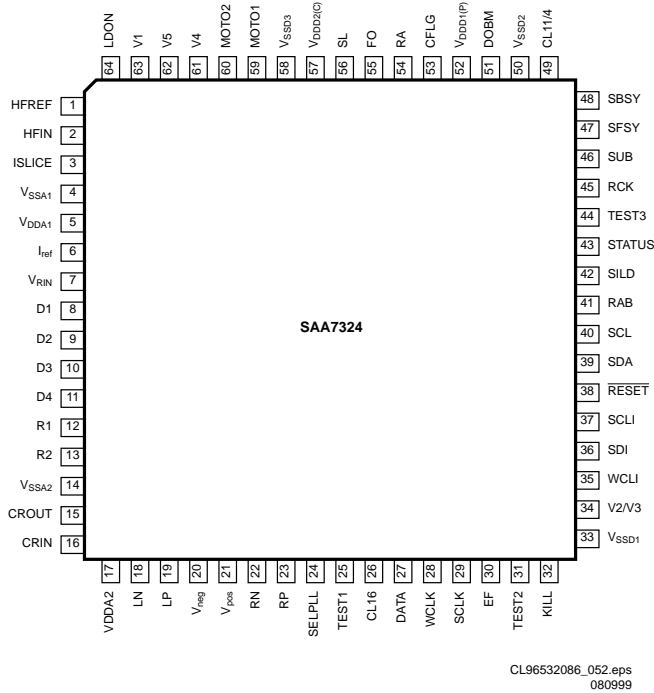


Figure 8-10

8.3.4 TDA7073A Power Drivers (7021, 7022)

Description

The TDA7073A is a dual power driver circuit for servo systems with a single supply. In this configuration it is used to drive the sledge, tray, focus and radial.

Measurements

Keep microprocessor 7202 in reset by forcing pin 7 of connector 1208 to +5V. Connect the power supply as described above in "1.1.1. Supply Voltages". Check the following voltages :

Pin	Location	Value
5	7021	12V ± 10%
5	7022	12V ± 10%
1	7022	1.65V ± 10%
2	7022	1.65V ± 10%
6	7022	1.65V ± 10%
7	7022	1.65V ± 10%
1	7021	5.0 ± 10%
2	7021	5.0 ± 10%
6	7021	1.65V ± 10%
7	7021	1.65V ± 10%

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Figure 8-11

Pin	Location		Value DC
9	7022	FOC	5.8V ± 10%
12	7022	FOC	5.8V
13	7022	RAD	5.8V
16	7022	RAD	5.8V
9	7021	SLE	5.8V
12	7021	SLE	5.8V
13	7021	TRAY-	5.8V
16	7021	TRAY+	5.8V

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Figure 8-12

8.3.5 BA6856FP Turn Table Motor Driver (7020)

Description

This component is a 3 phase, full wave pseudo linear driving system with inbuilt Hall Bias circuit and 3 phase parallel output.

Measurements

Keep processor 7202 in reset by forcing pin 7 of connector 1208 to +5V. The outputs 9, 10, 11 of connector 1006 are 0V. Pin 21 of the motor driver 7020 is 2.5V ± 10%.

Pin 22 of the motor driver 7020 is 2.5V ± 10%.

Pin 23 of the motor driver 7020 is 0V.

Pin 19 of the motor driver 7020 is 5V ± 10%.

Put the processor out of reset to continue the measurement. Check MOT1 at pin 59 of CD10. The duty cycle of the output should be 50%. Check wave form at pin 11 of 7005-D : amplitude 5V + 5% duty cycle 50%.

The motor driver 7020 can be measured dynamically by connecting a hall motor to the application panel. Apply a pulse of 1V 10Hz and 15% duty cycle to pin 22 (Ec) as input value with reference to pin 21 (Ecr=2.5V). Measure the output signals on the driver. This will give as response a square wave on pin 17 and pin 18. When a positive voltage is applied, the square wave on pin 17 will go ahead of the square wave on pin 18. All signals will have a value as shown in the truth table. Check the following output signals :

Motor controller truth table

Input conditions conn 1006 pin						Outputs conn 1006			Test points on driver		
6	8	4	7	3	2	9	10	11	18	17	16
U+	U-	V+	V-	W+	W-	UCOIL	VCOIL	WCOIL	HALL_U	HALL_V	HALL_W
L	M	H	M	M	M	6V	0V	0V	0V	5V	
H	M	L	M	M	M	0V	6V	6V	5V	0V	
M	M	L	M	H	M	0V	6V	0V		0V	5V
M	M	H	M	L	M	6V	0V	6V		5V	0V
H	M	M	M	L	M	0V	0V	6V	5V		0V
L	M	M	M	H	M	6V	6V	0V	0V		5V

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Figure 8-13

Hall-elements input signal voltage levels

Input voltage	Level	Tolerance	Unit
H	2.8	0.1	V
M	2.5	0.1	V
L	2.2	0.1	V

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Figure 8-14

8.3.6 Tray Control

Description

The tray control consists of a TDA7073A power driver (7021) controlled by the processor 7202 via pin 19 TRAYIN and pin 20 TRAYOUT. If pin 20 is low and pin 19 high, the TRAY+ signal at pin 16 of 7021 is forced to +8V and the TRAY- signal at pin 13 of 7021 to GND : the tray will open. If pin 20 is high and pin 19 low, TRAY+ becomes GND and TRAY- becomes +8V : the tray will close. If pin 19 and 20 of the processor have the same value, TRAY+ and TRAY- will have the same value as well : the tray stops moving.

Measurements

Keep processor 7202 in reset by forcing pin 7 of connector 1208 to +5V. Connect a load of 15 Ω , 7W between pin 3 and 4 of connector 1002. Check the voltage over the load with TRAY+ (pin 3) as positive reference. Check also the levels of pins 19 and 20 of the processor.

U TRAY+,TRAY- = <100mV

Pin 20 = +5V

Pin 19 = +5V

Force pin 20 of the processor to ground, and check the voltages.

U TRAY+,TRAY- = -6.5V(10%)

Pin 20 = +0V

Pin 19 = +5V

Force pin 19 of the processor to ground as well and check the levels again.

U TRAY+,TRAY- = <100mV

Pin 20 = +0V

Pin 19 = +0V

Release pin 20 of the processor and check the levels.

U TRAY+,TRAY- = 6.5V(10%)

Pin 20 = +5V

Pin 19 = +0V

Release pin 19 of the processor and check the levels again:

U TRAY+,TRAY- = <100mV

Pin 20 = +5V

Pin 19 = +5V

8.3.7 HF Path

Description

The pre-amplified HF-signal is presented to both n=1 and n=2 amplifier circuits. The mux/demux switches via software and micro processor controlled S1 and S2 lines between either one of the amplified n=1 or n=2 signals. The signal will then follow

another amplification and filtering circuit. The filtering again is controlled by the S1 and S2 lines, dependent on whether the disc starts up (speed n=1, S1 and S2 Low), disc plays at speed n=1 (S1 Low, S2 High) or disc plays at speed n=2 (S1 and S2 High).

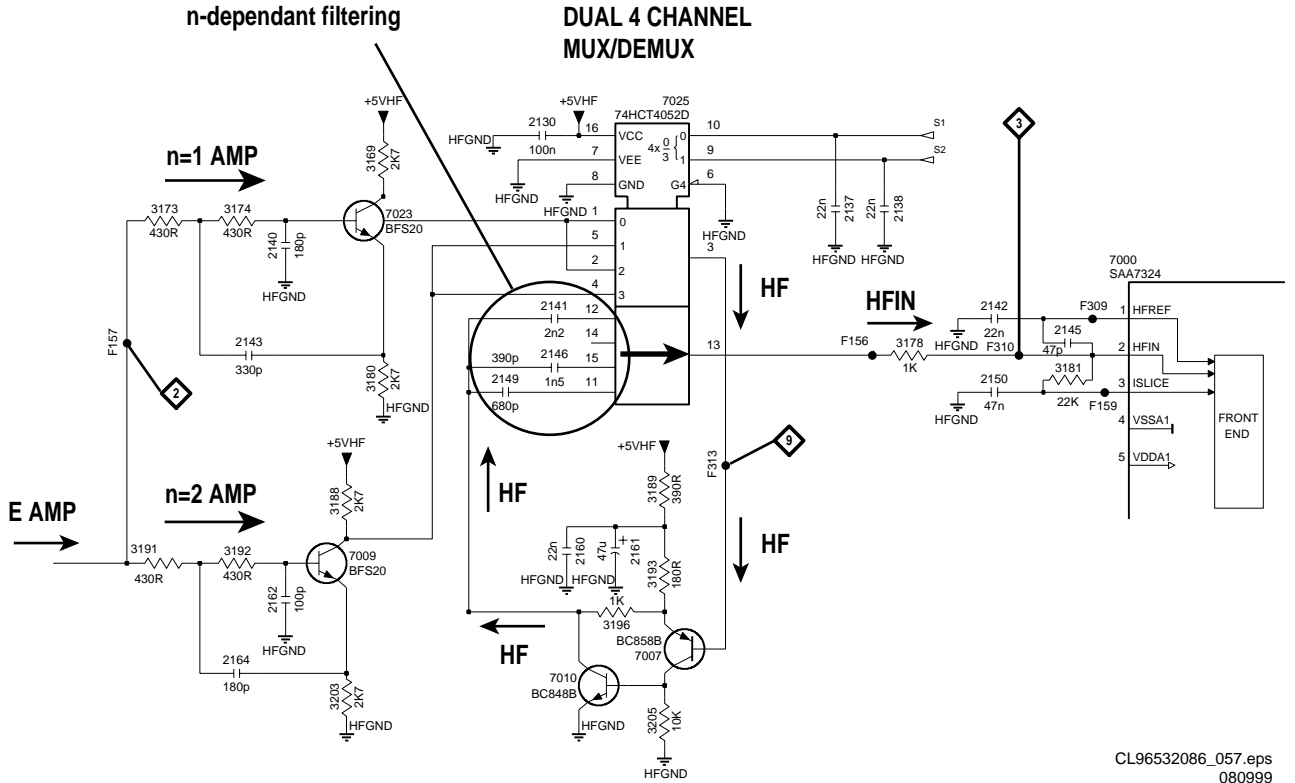


Figure 8-15

DC Settings

Set the power and reset connections as described above in "1.1.1. Supply Voltages". Check the following voltages :

Force	Pin	Location	Measure
	Emitter	7006	2.4 ± 10%
S1 and S2 "HIGH"	Collector	7010	1.9 ± 10%
S1 and S2 "LOW"	Collector	7010	1.9 ± 10%
S1 and S2 "HIGH"	13	7025	1.6 ± 10%
S1 and S2 "LOW"	13	7025	1.6 ± 10%
S1 and S2 "HIGH"	3	7025	3.2 ± 10%
S1 and S2 "LOW"	3	7025	3.2 ± 10%

CL96532086_058.eps
080999

Figure 8-16

Transfer Characteristics

Set the power and reset connections as described above in "1.1.1. Supply Voltages". Connect a function generator via a serial resistor of 1k5 to pin 4 of connector 1000. Use the

function generator as a sine wave generator with output level of 1V_{tt}. Check this AC value with an AC mV-meter connected to the input (pin 2) of the CD10 (7000) :

Frequencies	S1 and S2 "low"		S1 and S2 "high"	
	Input V _{AC}	Pin 2 at 7000	Input V _{AC}	Pin 2 at 7000
300 Hz	200mV	< 100mV ± 20%	200mV	< 100mV ± 20%
10 kHz	200mV	295mV ± 20%	200mV	330mV ± 20%
100 kHz	200mV	310 mV ± 20%	200mV	330 mV ± 20%
300 kHz	200mV	385 mV ± 20%	200mV	335 mV ± 20%
800 kHz	200mV	655 mV ± 20%	200mV	485 mV ± 20%
1.5 MHz	200mV	1.1V ± 20%	200mV	760 mV ± 20%
3MHz	200mV	1.1V ± 20%	200mV	1.1V ± 20%

CL96532086_059.eps
080999

Figure 8-17

HFDET Setting

Set the power and reset connections as described above in "1.1.1. Supply Voltages". Connect a function generator via a serial resistor of 1k5 to pin 4 of connector 1000. Use the

function generator as a sine wave generator with output level of 500 kHz, 1V_{tt}. Check this AC value with an AC mV-meter :

Location	Voltage DC		Voltage AC
	No HF	HF	
F190	4.8V ± 20%	4.8V ± 20%	175mV ± 20%
F192	< 100mV	1.1V ± 20%	-
F206	4.9V ± 20%	150mV ± 20%	-

CL96532086_060.eps
080999

Figure 8-18

8.3.8 Audio Part - DAC

Description

The DAC used, is the UDA1320 bit stream, continuous calibration. I2S signals from various formats can be entered at pins 1,2 and 3. If these signals are in phase with the delivered system clock at pin 6, the DAC will reproduce analog output signals at pins 14 and 16. 0dB level is 0.85V_{rms}. These analog signals are at 1.65V_{dc} level.

The DAC has features which can be checked on the input pins. Mute will switch off the analog signals. De-emphasis is not used, since this is done in the decoder. Attenuation of -12dB is not used because this is also done in the decoder.

I2S

I2S is a kind of digital audio format, consisting out of 3 lines : CLOCK, WORDSELECT and DATA.

WORD-SELECT

Word select (WS) indicates whether the data-sample is from the left or the right audio-channel. It has the same frequency as the sample rate of the digital audio signal. This can be 32, 44.1 or 48kHz. Normal polarity is low for a left sample and high for a right sample. So within the low state of the WS-line the data bits for the left channel are transferred, and within the high state the data bits of the right channel are transferred.

CLOCK

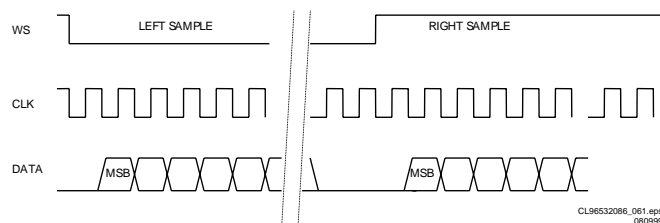
The CLOCK signal (CLK) indicates when DataTips must be set, and when DataTips must be read. The frequency depends on the speed of the I2S-bus, but is always a factor of the frequency of the WS-signal. It can be 48x, 64x, 96, 128x... .In our case it is 48x the sample rate frequency = 2.1168MHz. The

signal is in phase with the WS-signal. Transition of the WS always happens on a falling edge of the CLK.

DATA

DATA contains all data-bits. Data bits are set by the transmitting device, and read by the receiving device. The position of the DATA-bits within the WS-signal is very important. There are several formats for this. In our case we always use Philips I2S format, no Japanese or Sony format. The number of data-bits per channel depends on the used devices.

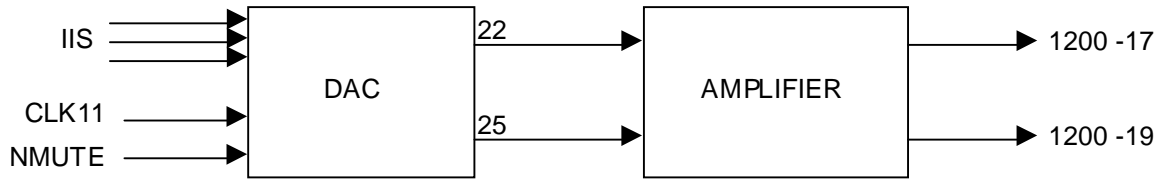
Timing of the I2S-bus, in case of Philips I2S is shown in the next figure :



CL96532086_061.eps
080999

Figure 8-19

Measurements



CL96532086_062.eps
080999

Figure 8-20

Keep processor 7202 in reset by forcing pin 7 of connector 1208 to +5V. This puts the processor outputs in tristate. Check the reset at pin 4 of processor 7202 to make sure that the processor is in reset.

Now, force port 0-4 pin 33 at 7202 to 0V to set the decoder outputs (SCLK, WCLK, DATA, and CL11).

Check the MUTE pin 11 at 7309 : this pin should be low.

Connect via an I2S generator I2S-signals to the DAC :

Pin 1 at 7309: SLCK.

Pin 2 at 7309: WCLK.

Pin 3 at 7309: DATA.

Connect also the SYSCLK pin 6 at position 7309 to a clock signal of 11.2896 MHz \pm 100ppm.

Generate an I2S signal equivalent with a sine wave of 1kHz at 0dB for both left and right channels.

Check if 0.8 VRMS at pins 14 and 16 at location 7209 with a DC of 1.65VDC.

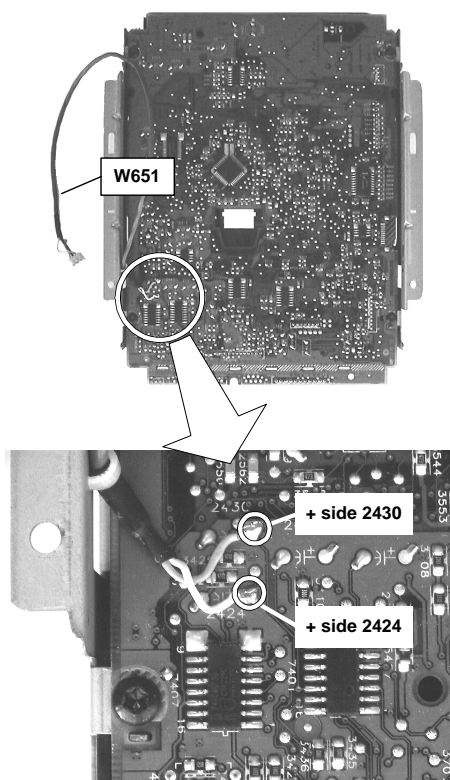
Check if 1.7 VRMS \pm 2 dB at connector pins 1 and 3 at location 1209.

Force MUTE Pin 11 at 7309 high.

Measure again at pins 1 and 3 at location 1209 : both signals should be at -90 dB.

9. WIRING DIAGRAM

DISMOUNTING ADDITIONAL CABLES

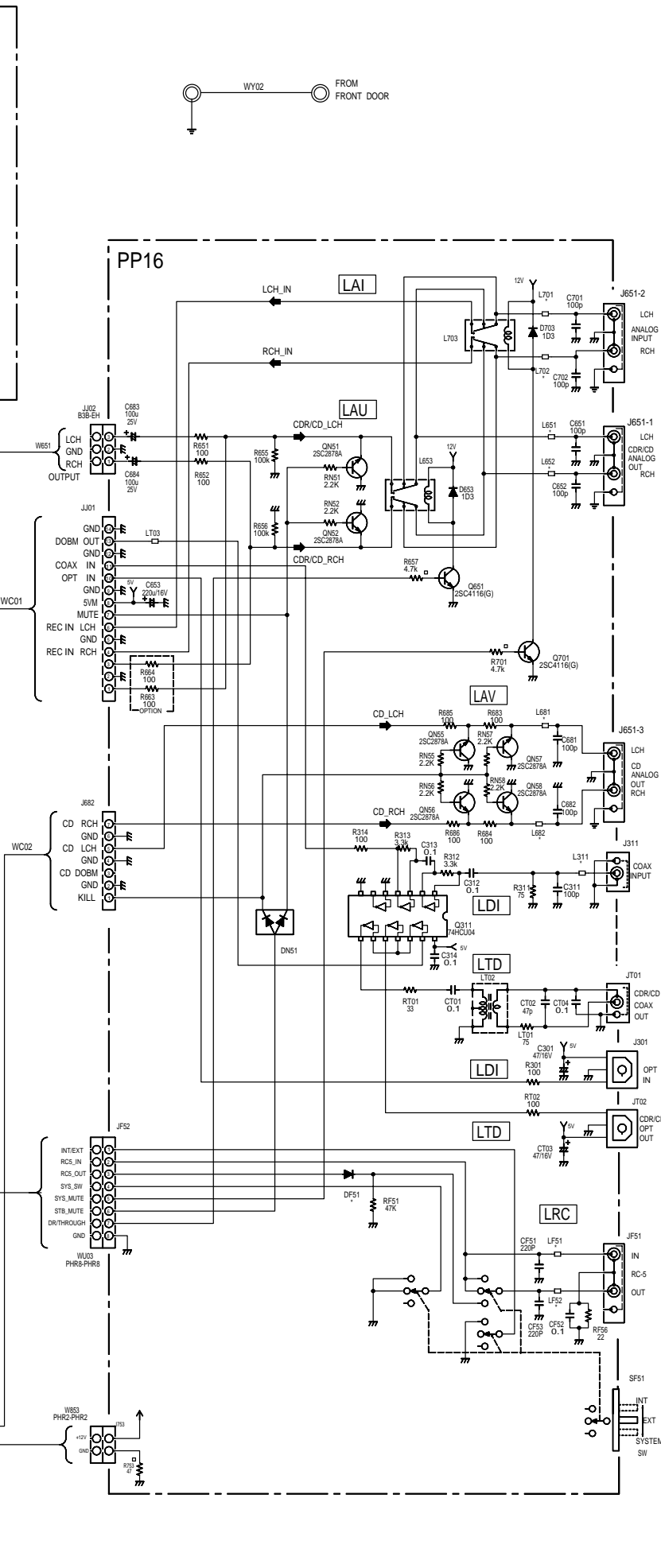
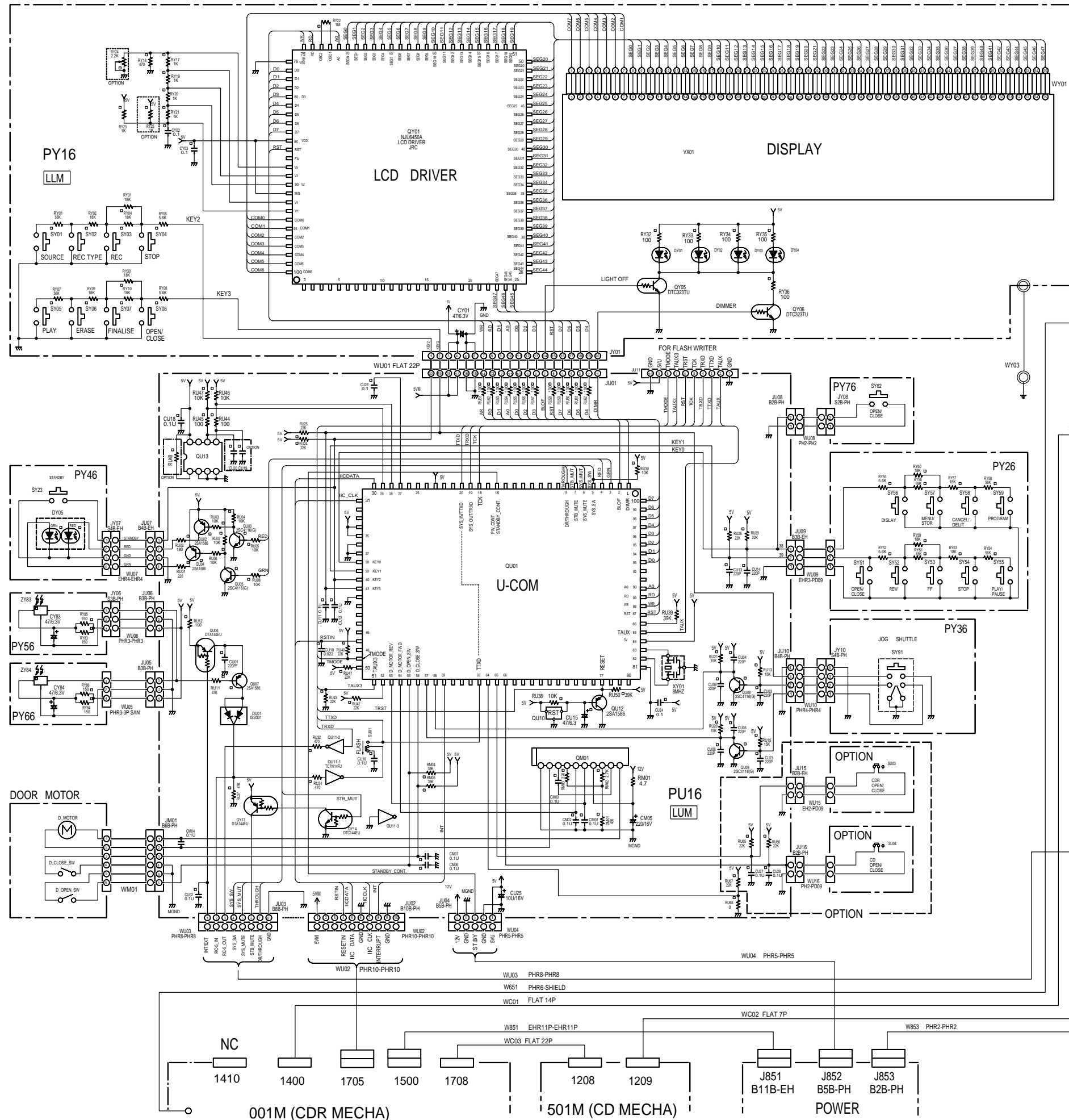


De-soldering and remove cables **W651** from the loader PCB.

REMARK When replace the CDR module MAR775 to the new one. It is necessary to add removed cables at same positions as follows;

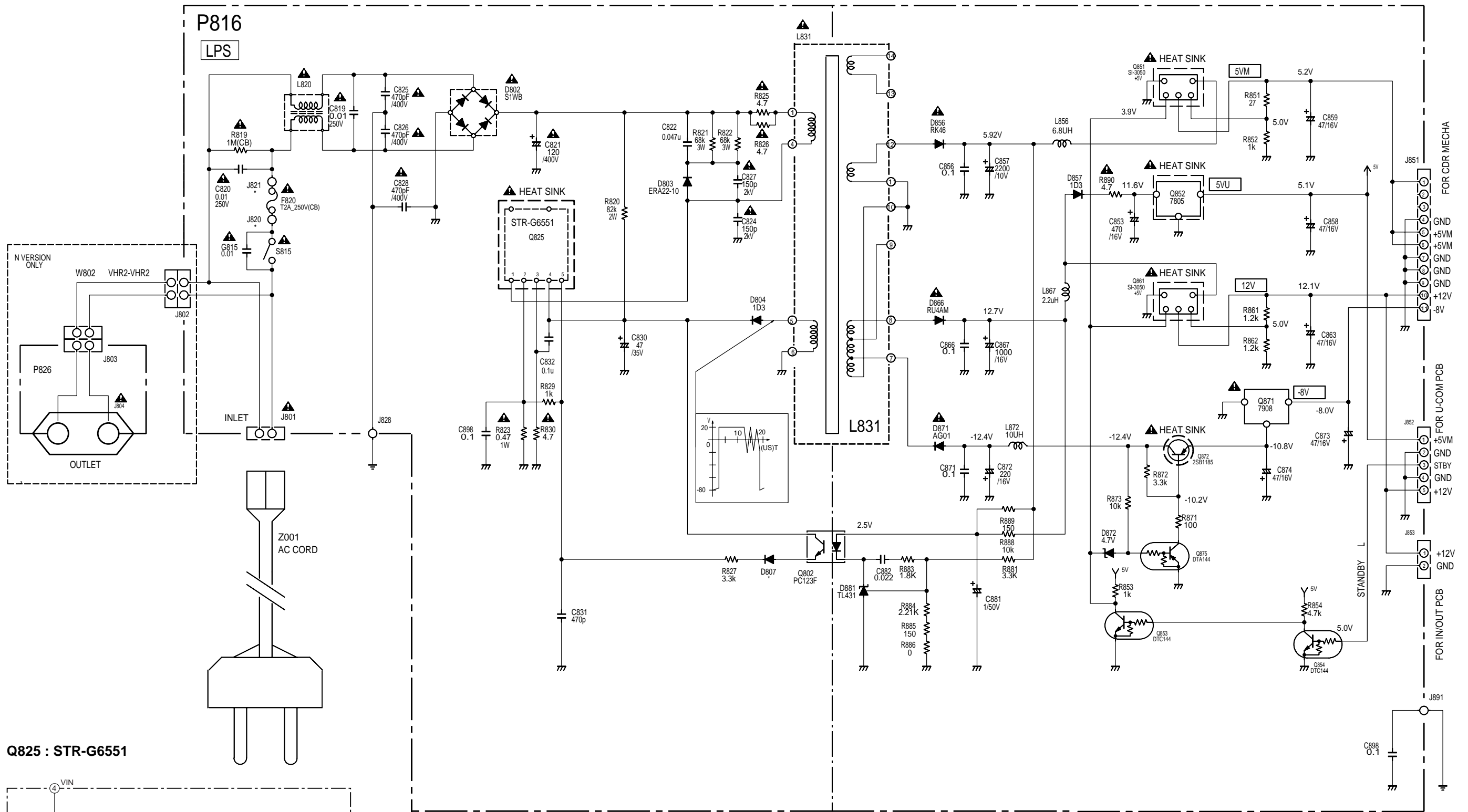
- ◆ WHITE ■■■■ + side lead of capacitor 2424
- ◆ PINK ■■■■ + side lead of capacitor 2430

11. SCHEMATIC DIAGRAM AND PARTS LOCATION

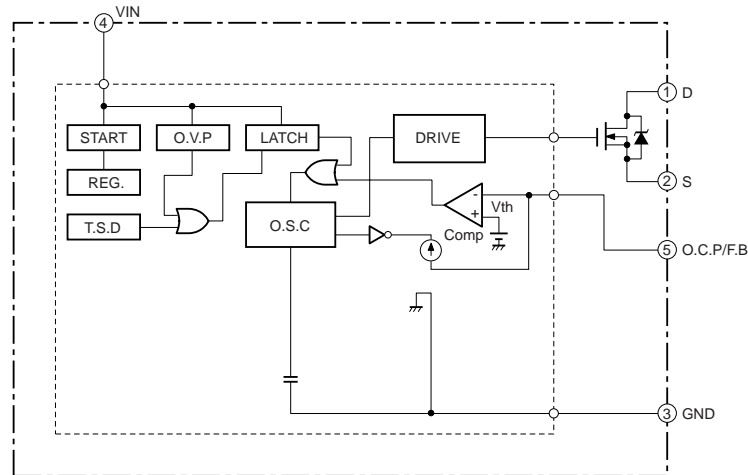


P816

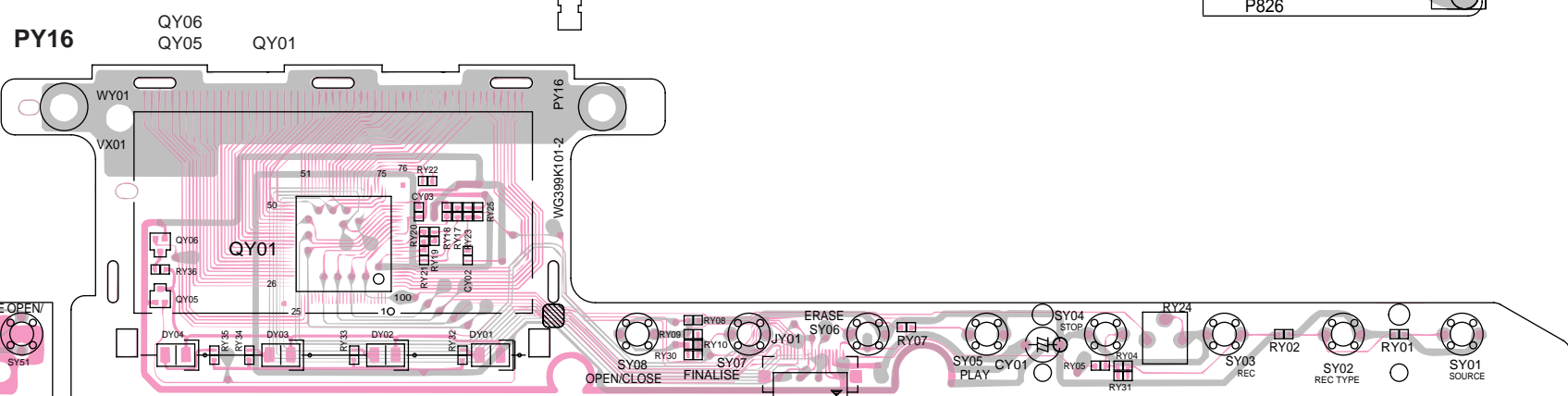
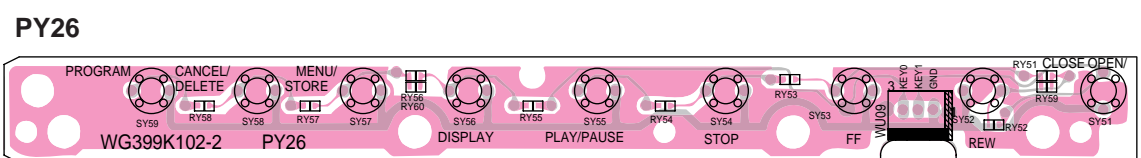
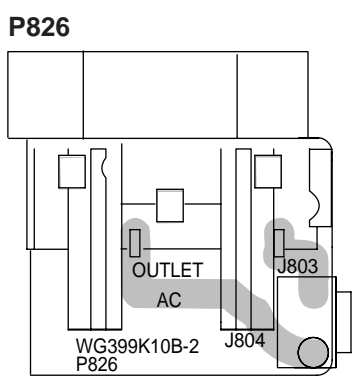
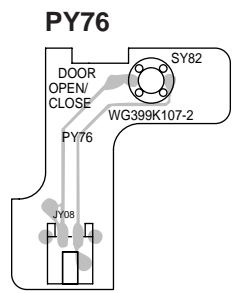
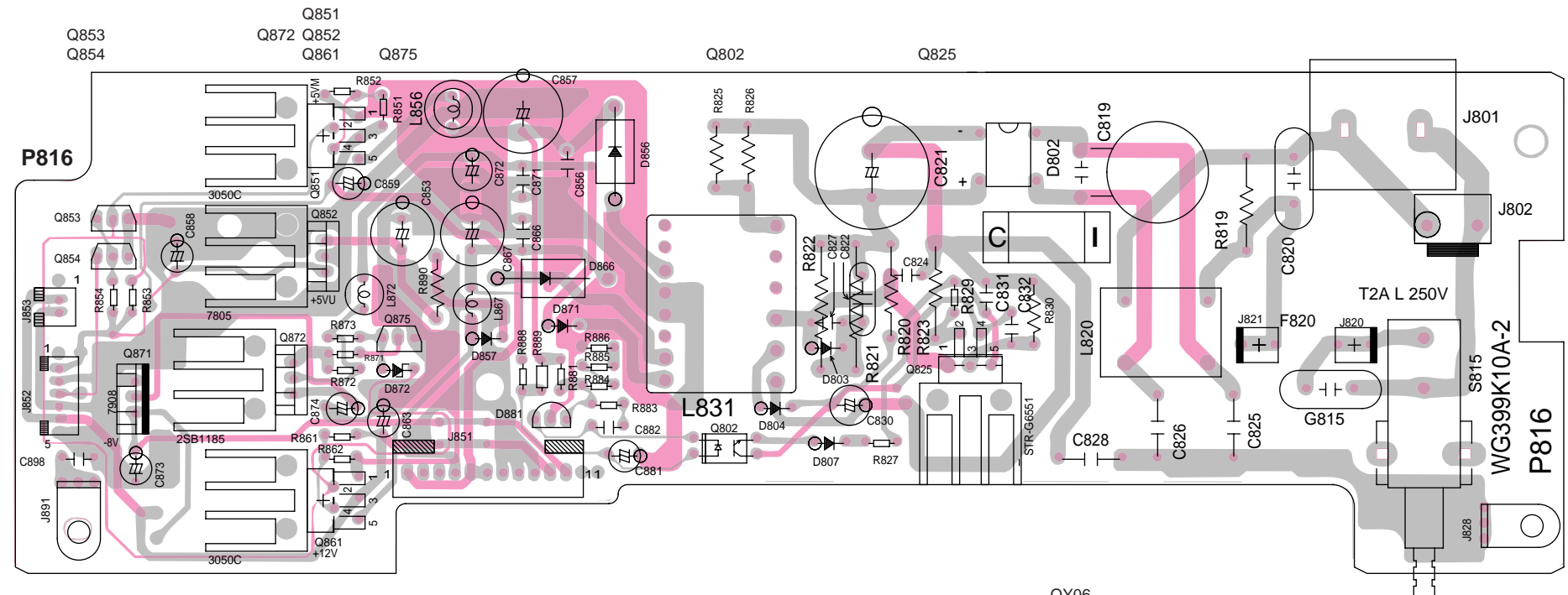
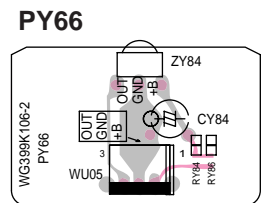
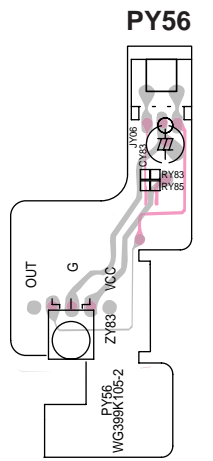
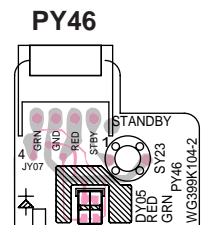
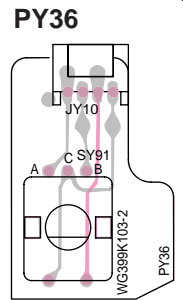
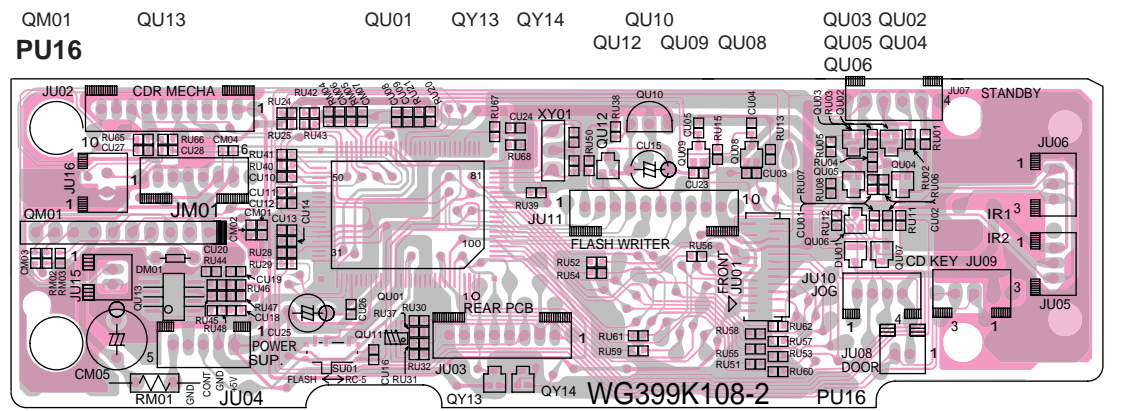
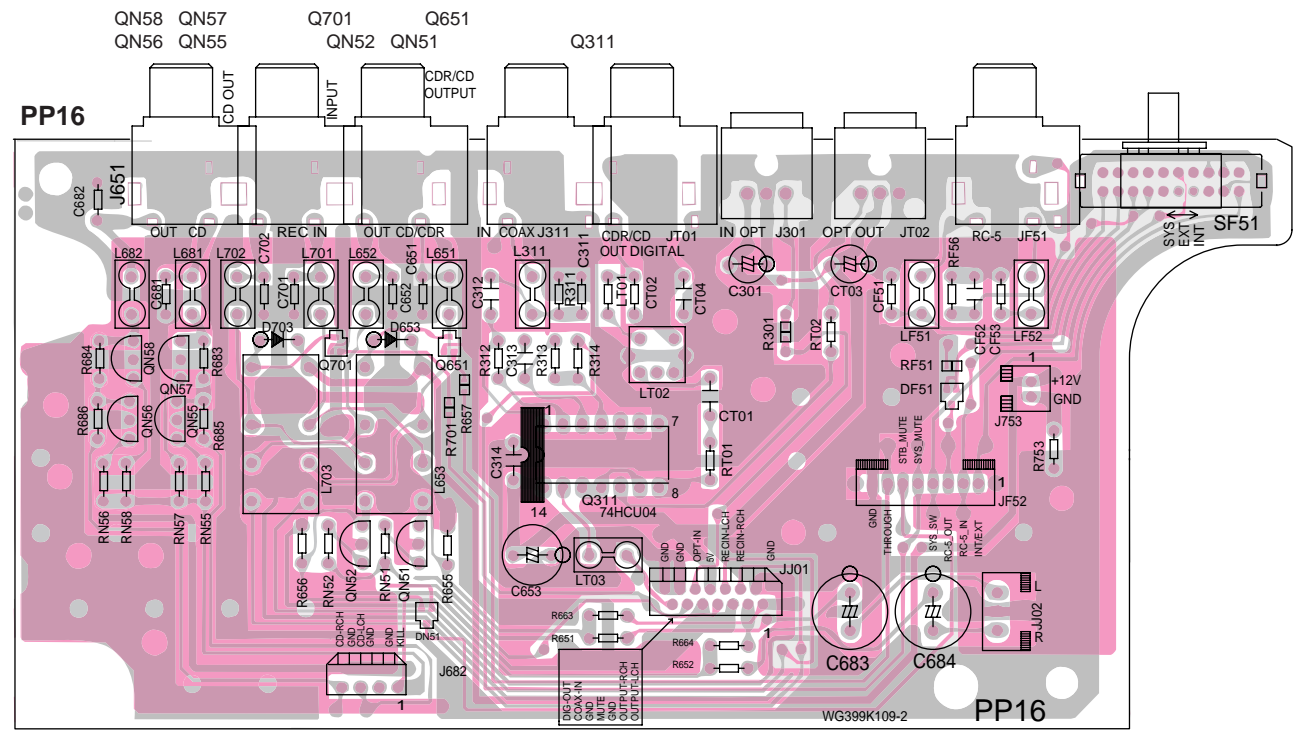
LPS



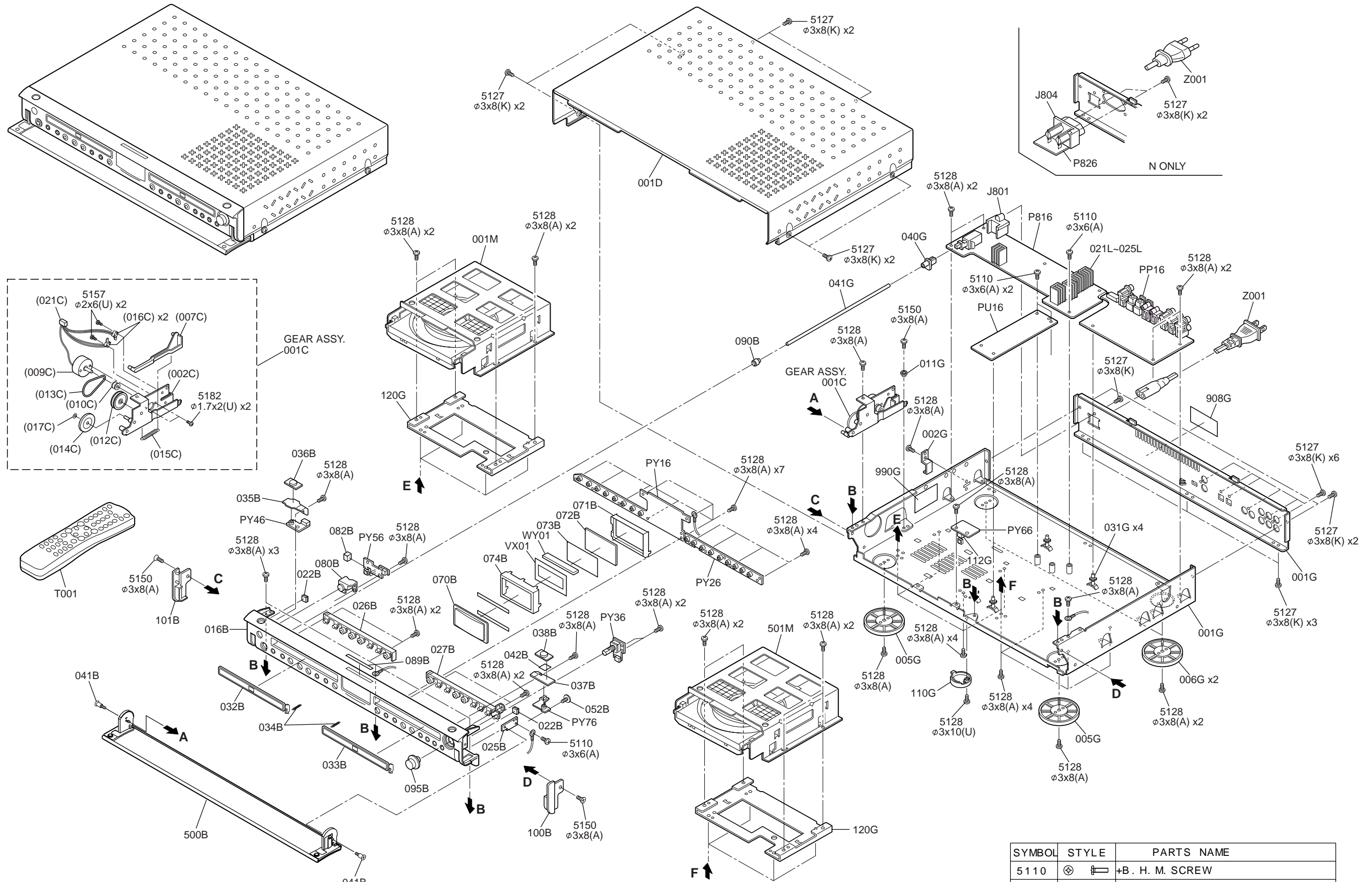
Q825 : STR-G6551



MEASURED WHEN IT PLAYED AT 230VAC



12. EXPLODED VIEW AND PARTS LIST



SYMBOL	STYLE	PARTS NAME
5110		+B. H. M. SCREW
5127		+B. H. TAP TITE SCREW(W /)
5128		+B. H. TAP TITE SCREW(B TYPE)
5150		+F. H. TAP TITE SCREW(B TYPE)
5157		+P. H. TAP TITE SCREW(S TYPE)
5182		+P. H. M. SCREW(MI NUTE)

MARK	MATERI AL/ FINISH
(A)	STEEL/ CHROMATE
(U)	STEEL/ BLACK
(K)	STEEL/ NI CKEL

POS. NO	VERS. COLOR	PART NO. (PCS)	DESCRIPTION	PART NO. (MJI)
016B		9965 000 08190	FRONT PANEL	399K248010
022B		4822 526 20213	MAGNET ASSY	271K305500
026B		9965 000 08191	BUTTON FOR CDR	399K270020
027B		9965 000 08192	BUTTON FOR CD	399K270030
032B		9965 000 08196	TRY ESCUTCHEON CDR	399K063010
033B		9965 000 08197	TRY ESCUTCHEON CD	399K063020
034B		9965 000 08198	TRY ESCUTCHEON SPRING	399K115010
035B		9965 000 08205	STANDBY BUTTON	327J270010
036B		9965 000 08206	STANDBY BUTTON LENS	327J355010
037B		9965 000 08207	OPEN/CLOSE BUTTON	399K270040
038B		9965 000 08208	OPEN/CLOSE BUTTON LENS	327J355020
041B		9965 000 08209	DOOR SCREW NI	327J010110
070B		9965 000 08210	LCD WINDOW	399K158010
080B		9965 000 08211	IR LENS FOR FRONT PANEL	327J355030
089B		9965 000 08212	MARANTZ BADGE	327J251110
090B		9965 000 08213	POWER BUTTON	399K270010
095B		9965 000 08214	EASY JOG KNOB	399K154010
100B		9965 000 08215	SIDE BUSHING R	327J259010
101B		9965 000 08216	SIDE BUSHING L	327J259020
500B		9965 000 08180	ESCUTCHEON DOOR PANEL ASSY	399K063500
001C		4822 522 33389	GEAR ASSY	446T058500
007C		4822 404 21283	LEVER	446T354010
008C		9965 000 00694	D.C MOTOR ASSY	*MM000630R
009C		4822 361 11027	D.C MOTOR	MM00200010
012C		4822 528 40363	PULLEY	446T262020
013C		4822 358 31264	BELT	446T264010
014C		4822 522 33388	GEAR	446T058010
015C		4822 492 33411	SPRING	446T115010
016C		4822 271 30768	MINI LEAF SW	SM01011530
017C		4822 462 71954	STOPPER WASHER	204K114210
005G		9965 000 08217	LEG FRONT	271K057270
006G		9965 000 08218	LEG REAR	271K057280
040G		9965 000 08219	POWER BUTTON LINK	399K121010
041G		9965 000 08220	SHAFT POWER BUTTON	399K112010
110G		9965 000 01079	IR LENS MAIN CHASSIS BUTTOM	282J355020
001M			MECHANISM CD-RW MODULE MAR775	388K304500
501M			MECHANISM CD MODULE MAR1250	388K304600
			PACKING	
001T	C1S		USER GUIDE C	399K851350
001T	N1S	9965 000 08221	USER GUIDE EURO	399K851310
T001		9965 000 08237	REMOTE CONTROLLER RC2100DR	ZK399K0010
▲ Z001	C1S		MAINS CORD 250V 2.5A	ZC02009020
▲ Z001	N1S	4822 321 11211	MAINS CORD 250V 2.5A	ZC02003150
			NOT STANDARD SPARE PARTS	
001S			PACKING CASE	399K801010
002S			CUSHION L SIDE	399K809010
003S			CUSHION R SIDE	399K809020
013S			CUSHION FOR SET TOP SIDE	327J809110

13. ELECTRICAL PARTS LIST

ASSIGNMENT OF COMMON PARTS CODES.

RESISTORS

R*** : 1) GD05 x x x 140, Carbon film fixed resistor, ±5% 1/4W
 R*** : 2) GD05 x x x 160, Carbon film fixed resistor, ±5% 1/6W
 ↓ Resistance value

Examples
 ① Resistance value
 0.1Ω 001 10Ω 100 1kΩ 102 100kΩ 104
 0.5Ω 005 18Ω 180 2.7kΩ 272 680kΩ 684
 1Ω 010 100Ω 101 10kΩ 103 1MΩ 105
 6.8Ω 068 390Ω 391 22kΩ 223 4.7MΩ 475

Note : Please distinguish 1/4W from 1/6W by the shape of parts used actually.

CAPACITORS



C*** : CERAMIC CAP.
 3) DD1 x x x x 370, Ceramic capacitor
 ↓ Disc type
 ↓ Temp. coeff. P350~N1000, 50V
 ↓ Capacity value
 ↓ Tolerance

Examples
 ② Tolerance (Capacity deviation)
 ±0.25 pF 0
 ±0.5 pF 1
 ±5 % 5
 Tolerance of COMMON PARTS handled here are as follows :
 0.5 pF - 5 pF ± 0.25 pF
 6 pF - 10 pF ± 0.5 pF
 12 pF - 560 pF ... ± 5 %

③ Capacity value
 0.5 pF 005 3 pF 030 100 pF 101
 1 pF 010 10 pF 100 220 pF 221
 1.5 pF 015 47 pF 470 560 pF 561

C*** : CERAMIC CAP.
 4) DK16 x x x 300, High dielectric constant ceramic capacitor
 ↓ Disc type
 ↓ Temp. chara. 2B4, 50V
 ↓ Capacity value

Examples
 ④ Capacity value
 100 pF 101 1000 pF 102 10000 pF 103
 470 pF 471 2200 pF 222

C*** : 5) ELECTROLY CAP. (), 6) FILM CAP ()
 5) EA x x x x x 10, Electrolytic capacitor
 ↓ One-way lead type, Tolerance ±20%
 ↓ Working voltage
 ↓ Capacity value

Examples
 ⑤ Capacity value
 0.1 μF 104 4.7 μF 475 100 μF 107
 0.33 μF 334 10 μF 106 330 μF 337
 1 μF 105 22 μF 226 1100 μF 118
 2200 μF 228

⑥ Working voltage
 6.3 V 006 25 V 025
 10 V 010 35 V 035
 16 V 016 50 V 050

6) DF15 x x x 350 → Plastic film capacitor
 DF15 x x x 310 → One-way type, Mylar ±5% 50V
 DF16 x x x 310 → Plastic film capacitor
 ↓ One-way type, Mylar ±10% 50V
 ↓ Capacity value

Examples
 ⑦ Capacity value
 0.001 μF (1000 pF) 102 0.1 μF 104
 0.0018 μF 182 0.56 μF 564
 0.01 μF 103 1 μF 105
 0.015 μF 153

NOTE 1) The above CODES (R***, R***, C***, C*** and C***) are omitted on the schematic diagram in some case.
 2) On the occasion, be confirmed the common parts on the parts list.
 3) Refer to "Common Parts List" for the other common parts (RI05, DD4, DK4).

NOTE ON SAFETY FOR FUSIBLE RESISTOR :

The suppliers and their type numbers of fusible resistors are as follows ;

1. KOA Corporation
 Part No.(MJI) Type No.(KOA) Description
 NH05 x x x 140 RF25S x x x x Ω J ±5% (1/4W)
 NH05 x x x 120 RF50S x x x x Ω J ±5% (1/2W)
 NH85 x x x 110 RF73B2A x x x x Ω J ±5% (1/10W)
 NH95 x x x 140 RF73B2E x x x x Ω J ±5% (1/4W)
 ↓ ↓
 * Resistance value Resistance value(0.1Ω - 10k Ω)



2. Matsushita Electronic Components Co., Ltd
 Part No.(MJI) Type No.(MEC) Description
 NF05 x x x 140 ERD-2FCJ x x x (±5% 1/4W)
 RF05 x x x 140 ↓
 NF02 x x x 140 ERD-2FCG x x x (±2% 1/4W)
 RF02 x x x 140 ↓
 * Resistance value

Examples
 * Resistance value
 0.1Ω 001 10Ω 100 1kΩ 102 100kΩ 104
 0.5Ω 005 18Ω 180 2.7kΩ 272 680kΩ 684
 1Ω 010 100Ω 101 10kΩ 103 1MΩ 105
 6.8Ω 068 390Ω 391 22kΩ 223 4.7MΩ 475


ABBREVIATION AND MARKS

ANT. : ANTENNA	BATT. : BATTERY
CAP. : CAPACITOR	CER. : CERAMIC
CONN. : CONNECTING	DIG. : DIGITAL
HP : HEADPHONE	MIC. : MICROPHONE
μ-PRO : MICROPROCESSOR	REC. : RECORDING
RES. : RESISTOR	SPK : SPEAKER
SW : SWITCH	TRANSF. : TRANSFORMER
TRIM. : TRIMMING	TRS. : TRANSISTOR
VAR. : VARIABLE	X' TAL : CRYSTAL

NOTE ON SAFETY:

Symbol  Fire or electrical shock hazard. Only original parts should be used to replaced any part marked with symbol  Any other component substitution (other than original type), may increase risk of fire or electrical shock hazard.

安全上の注意 :

 がついている部品は、安全上重要な部品です。必ず指定されている部品番号の部品を使用して下さい。

POS. NO	VERS. COLOR	PART NO. (PCS)	DESCRIPTION	PART NO. (MJI)	POS. NO	VERS. COLOR	PART NO. (PCS)	DESCRIPTION	PART NO. (MJI)
RU12		4822 051 30101	CHIP 100 Ω ±5% 1/16W	NN05101610	RY09		4822 116 83819	18k Ω ±5% 1/16W	NN05183610
RU13		4822 051 30153	CHIP 15k Ω ±5% 1/16W	NN05153610	RY10		4822 116 83819	18k Ω ±5% 1/16W	NN05183610
RU15		4822 051 30153	CHIP 15k Ω ±5% 1/16W	NN05153610	RY17		4822 051 30102	1k Ω ±5% 1/16W	NN05102610
RU20		4822 051 30153	CHIP 15k Ω ±5% 1/16W	NN05153610	RY18		4822 051 30471	470 Ω ±5% 1/16W	NN05471610
RU21		4822 051 30153	CHIP 15k Ω ±5% 1/16W	NN05153610	RY19		4822 051 30102	1k Ω ±5% 1/16W	NN05102610
RU24		4822 051 30223	CHIP 22k Ω ±5% 1/16W	NN05223610	RY20		4822 051 30102	1k Ω ±5% 1/16W	NN05102610
RU25		4822 051 30223	CHIP 22k Ω ±5% 1/16W	NN05223610	RY21		4822 051 30102	1k Ω ±5% 1/16W	NN05102610
RU28		4822 051 30223	CHIP 22k Ω ±5% 1/16W	NN05223610	RY22		4822 051 30105	1M Ω ±5% 1/16W	NN05105610
RU29		4822 051 30223	CHIP 22k Ω ±5% 1/16W	NN05223610	RY23		4822 051 30102	1k Ω ±5% 1/16W	NN05102610
RU30		4822 051 30103	CHIP 10k Ω ±5% 1/16W	NN05103610	RY30		4822 116 83819	18k Ω ±5% 1/16W	NN05183610
RU31		4822 051 30471	CHIP 470 Ω ±5% 1/16W	NN05471610	RY31		4822 116 83819	18k Ω ±5% 1/16W	NN05183610
RU32		4822 051 30471	CHIP 470 Ω ±5% 1/16W	NN05471610	RY32				
RU37		4822 051 30473	CHIP 47k Ω ±5% 1/16W	NN05473610	}		4822 051 30101	100 Ω ±5% 1/16W	NN05101610
RU38		4822 051 30103	CHIP 10k Ω ±5% 1/16W	NN05103610	RY36				
RU39		4822 051 30393	CHIP 39k Ω ±5% 1/16W	NN05393610					
RU40									
}		4822 051 30223	CHIP 22k Ω ±5% 1/16W	NN05223610	DY01				
RU43					}				
RU44		4822 051 30101	CHIP 100 Ω ±5% 1/16W	NN05101610	DY04		9965 000 08222	L.E.D. NSCW100AT WHITE LED	HI10002980
RU45		4822 051 30101	CHIP 100 Ω ±5% 1/16W	NN05101610					
RU46		4822 051 30103	CHIP 10k Ω ±5% 1/16W	NN05103610	QY01		9965 000 08223	IC NJU6450A LCD DRIVER	HC10215090
RU47		4822 051 30103	CHIP 10k Ω ±5% 1/16W	NN05103610	QY05		9965 000 08224	SEMICON.COMP DTC323TU	BA20080210
RU50		4822 051 30393	CHIP 39k Ω ±5% 1/16W	NN05393610	QY06		9965 000 08224	SEMICON.COMP DTC323TU	BA20080210
RU51									
}		4822 051 30101	CHIP 100 Ω ±5% 1/16W	NN05101610					
RU62					JY01		9965 000 08233	JACK FH12-20S-0.5SH	YJ07009440
RU68		4822 116 82487	CHIP 0 Ω ±5% 1/16W	NN05000610	SY01				
					}				
			PU16-SEMICONDUCTORS		SY08		4822 276 14009	PUSH SWITCH SKQNAE H/5MM 160GF	SP01013310
DM01		9965 000 08231	RES. 430 Ω ±5% 1/6W	GD05431160					
DU01		4822 130 83715	CHIP DIODE 1SS301 DAN202U	HZ21005000	VX01		9965 000 08225	DISPLAY UNIT LCD	HQ21202800
QM01		4822 209 30193	IC LB1641 MOTOR DRIVER	HC10279030					
QU01		9965 000 08234	IC PROGRAMMED MICROPROCESSOR	*HU100480R				PY26-CD KEY CIRCUIT BOARD	
								PY26-RESISTORS CHIP	
QU02		4822 130 61554	CHIP TRS. 2SA1586 (Y GR)	HX115862B0	RY51		4822 116 83819	18k Ω ±5% 1/16W	NN05183610
QU03		4822 130 61541	CHIP TRS. 2SC4116	HX341162B0	RY52		4822 116 83215	5.6k Ω ±5% 1/16W	NN05562610
QU04		4822 130 61554	CHIP TRS. 2SA1586 (Y GR)	HX115862B0	RY53		4822 116 83819	18k Ω ±5% 1/16W	NN05183610
QU05		4822 130 61541	CHIP TRS. 2SC4116	HX341162B0	RY54		4822 051 30563	56k Ω ±5% 1/16W	NN05563610
QU06		4822 130 61199	SEMICON.COMP DTA144EU	BA10014210	RY55		4822 116 83215	5.6k Ω ±5% 1/16W	NN05562610
QU07		4822 130 61554	CHIP TRS. 2SA1586 (Y GR)	HX115862B0	RY56		4822 116 83819	18k Ω ±5% 1/16W	NN05183610
QU08		4822 130 61541	CHIP TRS. 2SC4116	HX341162B0	RY57		4822 116 83819	18k Ω ±5% 1/16W	NN05183610
QU09		4822 130 61541	CHIP TRS. 2SC4116	HX341162B0	RY58		4822 051 30563	56k Ω ±5% 1/16W	NN05563610
QU10		4822 209 15921	IC RESET IC S-806D-Z	HC10077530	RY59		4822 116 83819	18k Ω ±5% 1/16W	NN05183610
QU11		5322 209 13487	IC TC7W14FU 932206827682	HC10442050	RY60		4822 116 83819	18k Ω ±5% 1/16W	NN05183610
QU12		4822 130 61554	CHIP TRS. 2SA1586 (Y GR)	HX115862B0					
QU13		9965 000 08235	IC AT24C04N-10SI-2.5	HC10033990					
					SY51				
QY13		4822 130 61199	SEMICON.COMP DTA144EU	BA10014210	}		4822 276 14009	PUSH SWITCH SKQNAE H/5MM 160GF	SP01013310
QY14		4822 130 60856	SEMICON.COMP DTC144EC	BA20021210	SY59				
JU01		9965 000 08232	JACK FH12-20S-0.5SV	YJ07022170					
SU01		4822 277 21748	SLIDE SWITCH SSSS8-12B-12	SS01020900	SY91		9965 000 05915	ROTARY SWITCH EC11B ENCODER	SR03030030
XY01		4822 242 72066	CERAMIC VIB. CST8.0MHz	FQ08004010					
			PY16-FRONT CIRCUIT BOARD						
			PY16-CAPACITORS						
CY01		4822 124 21901	ELECT 47μF 6.3V	EJ47600610	DY05		4822 130 70023	L.E.D. SML-020MVTT89 LED	HI10096210
CY02		4822 126 11687	CER. 0.1μF +80 -20% 25V F	DK98104200					
CY03		4822 126 11687	CER. 0.1μF +80 -20% 25V F	DK98104200	SY23		4822 276 14009	PUSH SWITCH SKQNAE H/5MM 160GF	SP01013310
			PY16-RESISTORS CHIP						
RY01		4822 051 30563	56k Ω ±5% 1/16W	NN05563610					
RY02		4822 116 83819	18k Ω ±5% 1/16W	NN05183610					
RY04		4822 116 83819	18k Ω ±5% 1/16W	NN05183610	CY83		4822 124 21901	ELECT CAP. 47μF 6.3V	EJ47600610
RY05		4822 116 83215	5.6k Ω ±5% 1/16W	NN05562610					
RY07		4822 051 30563	56k Ω ±5% 1/16W	NN05563610	RY83		4822 051 30151	CHIP RES. 150 Ω ±5% 1/16W	NN05151610
RY08		4822 116 83215	5.6k Ω ±5% 1/16W	NN05562610	RY85		4822 051 30151	CHIP RES. 150 Ω ±5% 1/16W	NN05151610

POS. NO	VERS. COLOR	PART NO. (PCS)	DESCRIPTION	PART NO. (MJI)	POS. NO	VERS. COLOR	PART NO. (PCS)	DESCRIPTION	PART NO. (MJI)
ZY83		4822 130 11494	PHOTO UNIT IR SENSOR RPM6936-V4	HW10004210	R***			P816-RESISTORS(COMMON) CARBON FILM FIXED RES. ±5% 1/6W : R827 R829 R851-R854 R861 R862 R871 R872 R873 R881 R883 R885 R888	
CY84		4822 124 21901	PY66-IR SENSOR CIRCUIT BOARD ELECT CAP. 47µF 6.3V	EJ47600610				P816-SEMICONDUCTORS DIODE S1WB(A)60 30A 600V DIODE ERA22-10 DIODE 1D3 1A 200V DIODE 1SS176 MA165 1SS254 30V 0.1A	
RY84 RY86		4822 051 30151 4822 051 30151	CHIP RES. 150 Ω ±5% 1/16W CHIP RES. 150 Ω ±5% 1/16W	NN05151610 NN05151610	▲ D802 ▲ D803 ▲ D804 D807		4822 130 32748 4822 130 81244 4822 130 82421 4822 130 32362	HD20031290 HD20008130 HD20002710 HD20002000	
ZY84		4822 130 11515	PHOTO UNIT RPM6936 IR RECEIVER 36KHz	HW10005210	▲ D856 D857		4822 130 11074 4822 130 82421	HD20050080 HD20002710	
SY82		4822 276 14009	PY76-OPEN/CLOSE KEY CIRCUIT BOARD PUSH SWITCH SKQNAE H/5MM 160GF	SP01013310	▲ D866 ▲ D871 D872 ▲ D881		9965 000 06383 9965 000 00388 4822 130 10667 9965 000 06384	HD20051080 HD20049080 HD30471000 HC33036590	
▲ C819		9965 000 06706	CER. 0.01µF	DK17103910	▲ Q802		4822 130 10431	HW10032320	
▲ C820		9965 000 06706	CER. 0.01µF	DK17103910	▲ Q825		9965 000 05142	HC10008080	
▲ C821		9965 000 04981	ELECT 120µF 400V	EA12740070	▲ Q851		9965 000 04991	HC10006080	
▲ C822		4822 126 13091	FILM 0.047µF 250V	DF16473640	▲ Q852		4822 209 31631	HC38905090	
▲ C824		9965 000 04982	CER. 150pF 2KV	DK16151910	Q853		4822 130 60588	BA20001000	
▲ C825		9965 000 04980	CER. 470pF ±10% 250V	DK17471520	Q854		4822 130 60588	BA20001000	
▲ C826		9965 000 04980	CER. 470pF ±10% 250V	DK17471520	▲ Q861		9965 000 04991	HC10006080	
▲ C827		9965 000 04982	CER. 150pF 2KV	DK16151910	▲ Q871		4822 209 14624	HC39908090	
▲ C828		9965 000 04980	CER. 470pF ±10% 250V	DK17471520	▲ Q872		4822 130 62548	HT211852B0	
C830		4822 124 80772	ELECT 47µF M 35V	OA47603520	Q875		4822 130 61227	BA10001000	
C831		4822 121 42327	FILM 470pF J M 50V	DF15471350	▲ F820		4822 070 32001	FS10200850	
C832		4822 122 40617	CER. 0.1µF +80 -20% 50V	DD38104010	▲ G815		9965 000 06706	DK17103910	
C853		4822 124 22277	ELECT 470µF M 16V	OA47701620	▲ J801		9965 000 08227	YJ04002490	
C856		4822 122 40617	CER. 0.1µF +80 -20% 50V	DD38104010	▲ L820		4822 157 70398	LC22260130	
C857		9965 000 06379	ELECT 2200µF 10V RJB	EF228010P0	▲ L831		9965 000 08229	TS12900020	
C858		4822 124 41539	ELECT 47µF M 16V	OA47601620	L856		9965 000 06388	LC16820110	
C859		4822 124 41539	ELECT 47µF M 16V	OA47601620	L867		9965 000 06389	LC12220190	
C863		4822 124 41539	ELECT 47µF M 16V	OA47601620	L872		4822 157 62266	LC11033900	
C866		4822 122 40617	CER. 0.1µF +80 -20% 50V	DD38104010	▲ S815		9965 000 05921	SP01012480	
C867		9965 000 06381	ELECT 1000µF 16V RJB	EF108016P0					
C871		4822 122 40617	CER. 0.1µF +80 -20% 50V	DD38104010					
C872		9965 000 06382	ELECT 220µF 16V RJB	EF227016P0					
C873		4822 124 41539	ELECT 47µF M 16V	OA47601620					
C874		4822 124 41539	ELECT 47µF M 16V	OA47601620					
C881		4822 124 41543	ELECT 1µF M 50V	OA10505020					
C882		4822 122 30103	CER. 0.022µF 50V	DK18223310					
C898		4822 122 40617	CER. 0.1µF +80 -20% 50V	DD38104010					
▲ R819		9965 000 00502	P816-RESISTORS 1M Ω ±5% 1W RCR60 L15	RC05105010					
▲ R820		4822 053 11823	METAL 82k Ω ±5% 2W	NK05823020					
▲ R821		4822 116 82107	METAL 68k Ω ±5% 3W	NK05683030					
▲ R822		4822 116 82107	METAL 68k Ω ±5% 3W	NK05683030					
▲ R823		9965 000 00402	METAL 0.47 Ω ±5% 2W	NL05472020					
▲ R825		4822 111 90967	FUSE 47 Ω ±5% 1/4W	NF05047140					
▲ R826		4822 111 90967	FUSE 47 Ω ±5% 1/4W	NF05047140					
▲ R830		4822 111 90967	FUSE 47 Ω ±5% 1/4W	NF05047140					
R884		4822 050 22212	2.21k Ω ±1% 1/6W	GM11622110					
R886		9965 000 07401	0 Ω ±5% 1/6W	GD05000160					
R889		4822 052 10151	150 Ω ±5% 1/6W	GG05151160					
▲ R890		4822 111 90967	FUSE 47 Ω ±5% 1/4W	NF05047140					
					▲ J804	N1	9965 000 08228	P826-AC OUTLET CIRCUIT BOARD JACK 1P AC OUTLET S2-770T-210	YJ04002500

Service Manual

MAR1250

CD Module

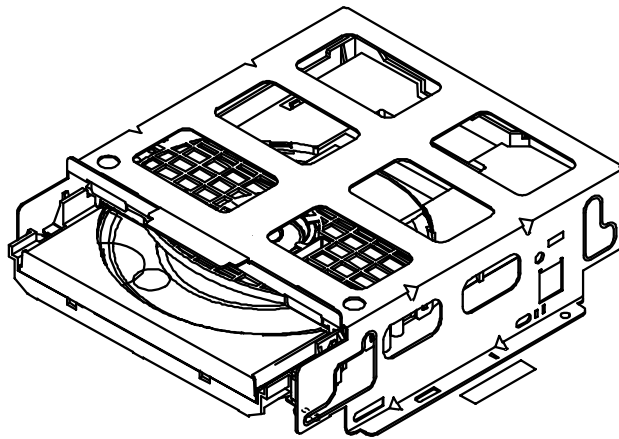


TABLE OF CONTENTS

SECTION	PAGE
2. MAR1250 (CD MODULE)	
2.1 WIRING DIAGRAM	2-1
2.2 SCHEMATIC DIAGRAM	2-3
2.3 PARTS LOCATION	2-11
2.4 EXPLODED VIEW AND PARTS LIST	2-15
2.5 ELECTRICAL PARTS LIST	2-17

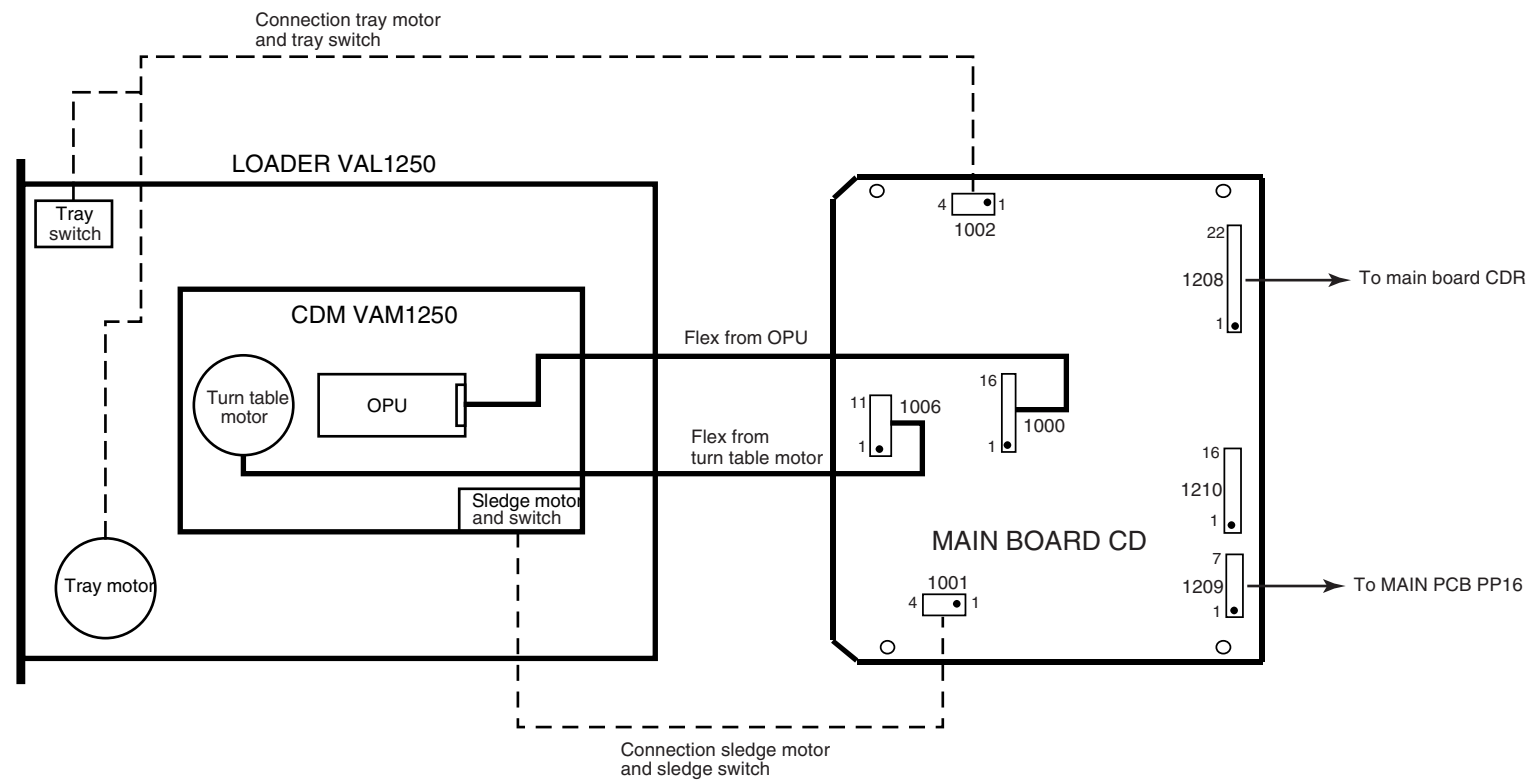
Please use this service manual with referring to the user guide (D.F.U.) without fail.

修理の際は、必ず取扱説明書を準備し操作方法を確認の上作業を行ってください。

marantz®

MAR1250

**2.1 WIRING DIAGRAM
CD LOADER VAL1250**



CONNECTOR 1006

- 1 HALL +
- 2 W-
- 3 W+
- 4 V+
- 5 HALL-
- 6 U+
- 7 V-
- 8 U-
- 9 UCOIL
- 10 VCOIL
- 11 WCOIL

CONNECTOR 1000

- 1 VSUB
- 2 HFGND
- 3 VDD
- 4 RF
- 5 LDON
- 6 R2
- 7 R1
- 8 D4/D3
- 9 D2
- 10 D1
- 11 FTC
- 12 RW
- 13 FOC+
- 14 FOC-
- 15 RAD+
- 16 RAD-

CONNECTOR 1002

- 1 HOMESW
- 2 SGND
- 3 TRAY+
- 4 TRAY-

CONNECTOR 1001

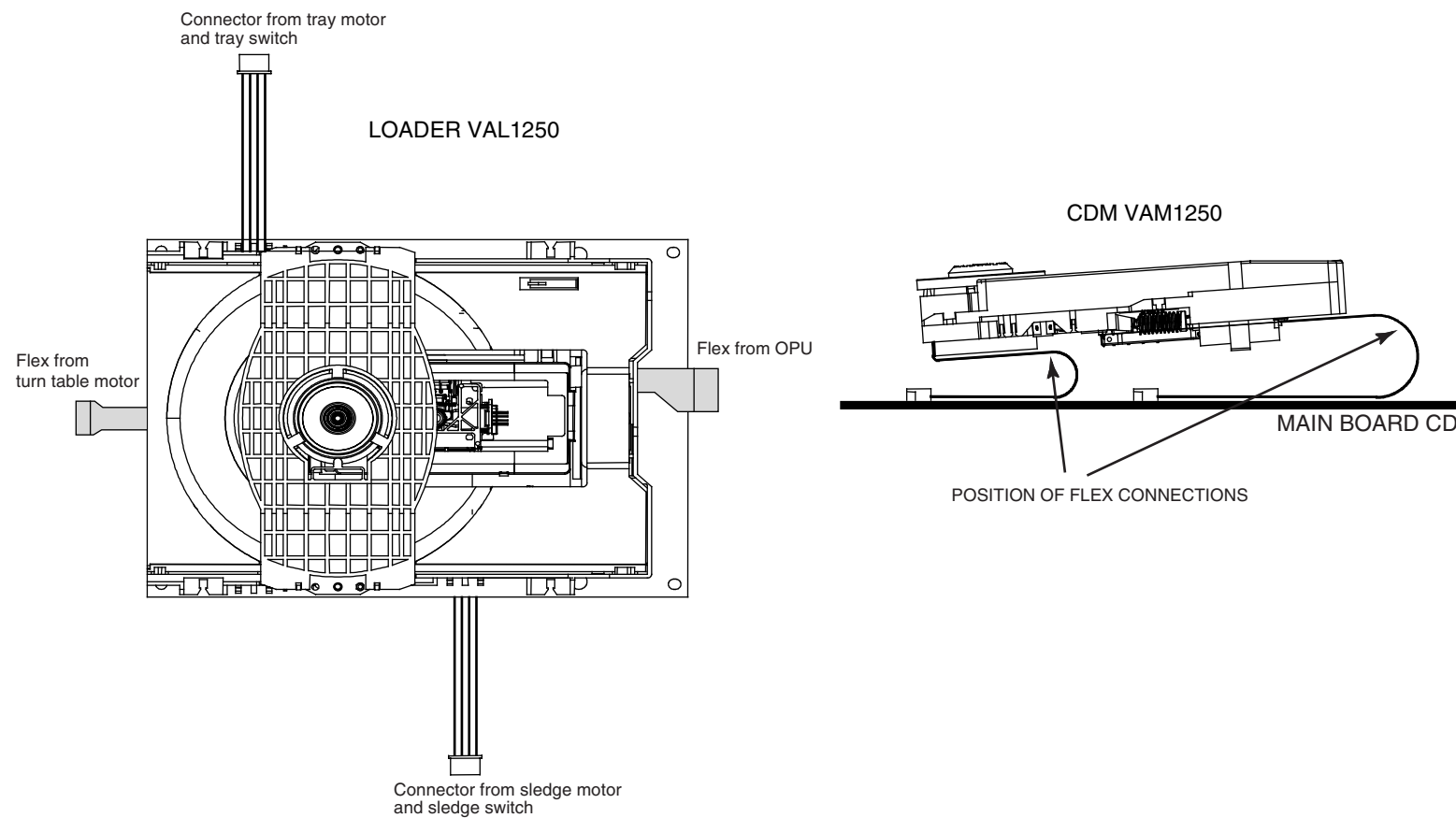
- 1 HOMESW
- 2 SGND
- 3 SL-
- 4 SL+

CONNECTOR 1209

- 1 AUDIO R (RIGHT_CD)
- 2 GND
- 3 AUDIO L (LEFT_CD)
- 4 GND
- 5 DOBM5_CD (DOBM_CD)
- 6 GND
- 7 KILL

CONNECTOR 1208

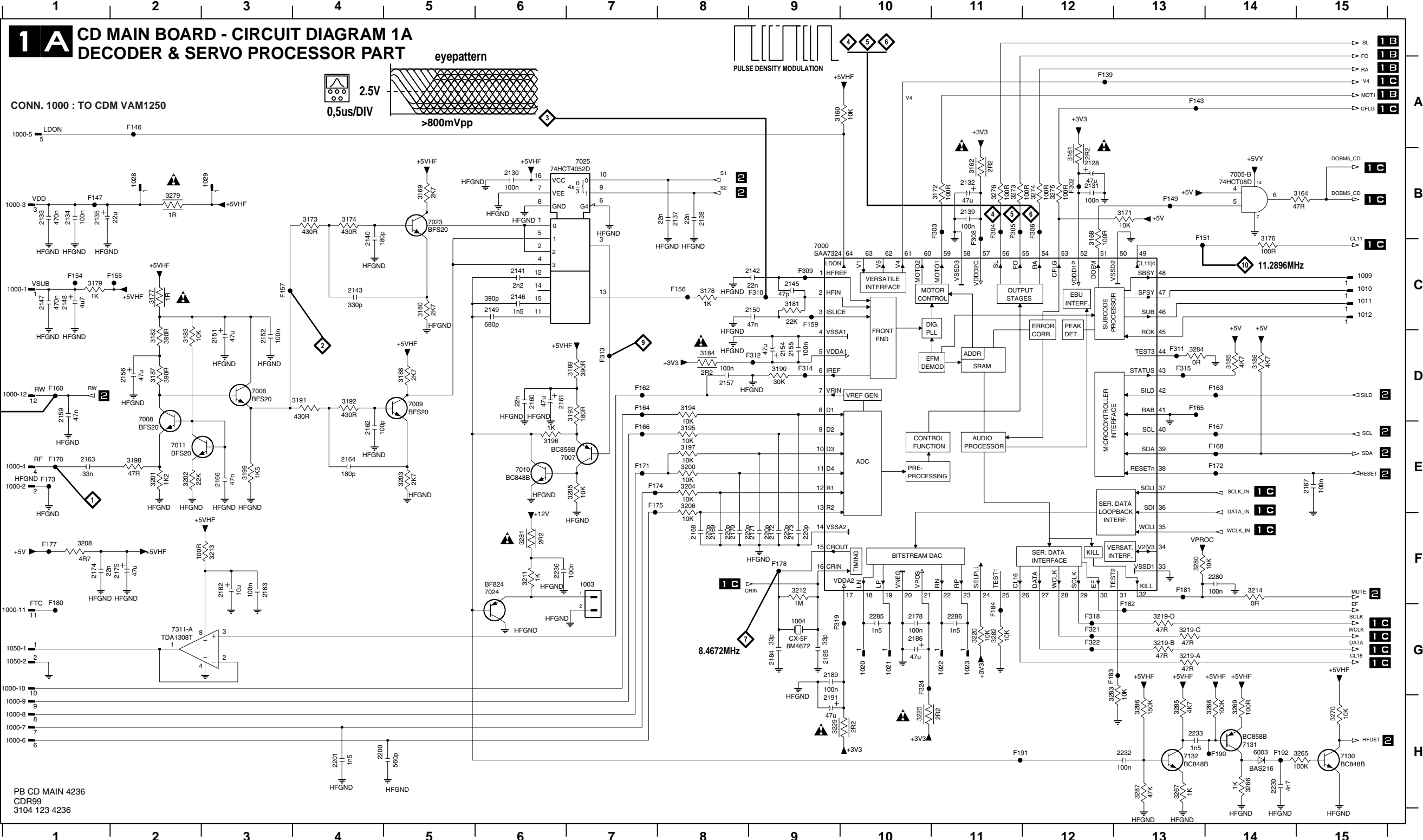
- 1 GND
- 2 CRIN (SYS_CLK_8W)
- 3 KILL
- 4 AUDIO R (RIGHT_IN_CD)
- 5 GND
- 6 AUDIO L (LEFT_IN_CD)
- 7 DSA_RST (SYS_RESET)
- 8 DOBM (DOBM_CD)
- 9 GND
- 10 SCLK (I²S_BCLK_CD)
- 11 GND
- 12 WCLK (I²S_WS_CD)
- 13 DATA (I²S_DATA_CD)
- 14 GND
- 15 +12V
- 16 +5V
- 17 GND
- 18 DSA_ACK (DSA_ACK_CD)
- 19 DSA_STROBE (DSA_STR_CD)
- 20 GND
- 21 DSA_DATA (DSA_DATA_CD)
- 22 GND



2.2 SCHEMATIC DIAGRAM

CD Diagram 1A

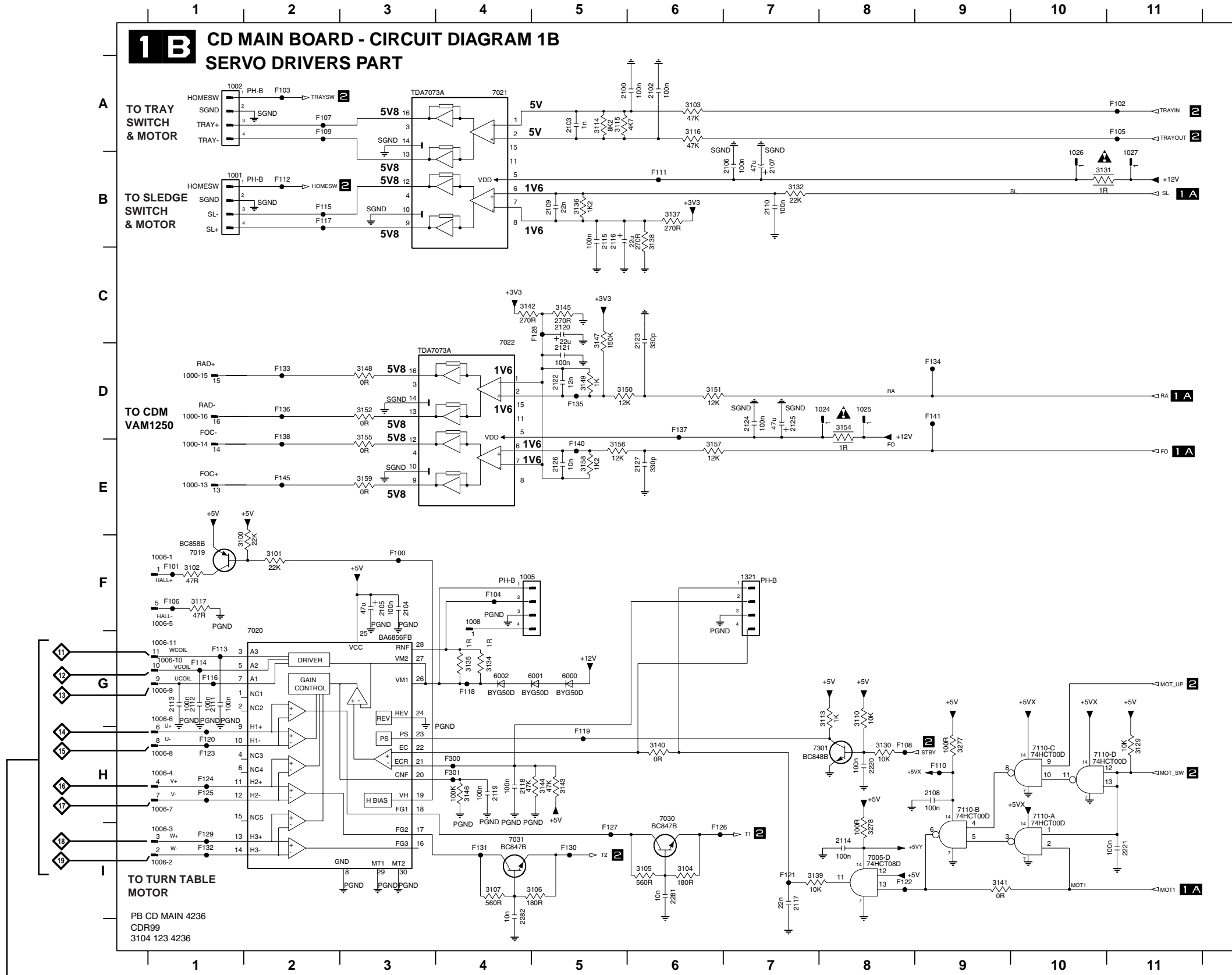
1000-1 C1	1000-7 H1	1020 G10	2130 B6	2139 B11	2148 C1	2159 D1	2169 F8	2183 F3	2232 H13	3164 B15	3178 C8	3187 D2	3196 E6	3205 E7	3219-C G13	3269 H14	3282 G11	7006 D3	7130 H15	F151 C13	F164 D7	F174 E7	F190 H14	F309 C9	F321 G12
1000-10 G1	1000-8 H1	1021 G10	2130 B6	2139 B11	2149 C6	2160 D6	2170 F8	2184 G9	2233 H13	3168 B12	3179 C1	3188 D5	3197 E8	3206 E8	3219-D G13	3270 H15	3283 G12	7007 E7	7131 H14	F154 C1	F165 D13	F175 E7	F191 H11	F310 C9	F322 G12
1000-11 G1	1000-9 H1	1022 G11	2131 B12	2140 C4	2150 C9	2161 D6	2171 F9	2185 G9	2236 F6	3169 B5	3180 C5	3189 D7	3198 E2	3208 F1	3220 G11	3273 B11	3284 D13	7008 E2	7132 H13	F155 C2	F166 E7	F177 F1	F192 H14	F311 D13	F324 G10
1000-12 D1	1003 F7	1023 G11	2132 B11	2141 C6	2151 D3	2162 E4	2172 F9	2186 G10	2280 F14	3171 B13	3181 C9	3190 D9	3199 E3	3211 F6	3225 H10	3274 B12	3285 H13	7009 D5	7311-A G2	F156 C8	F167 E14	F178 F9	F302 B12	F312 D9	
1000-2 E1	1004 G9	1028 B2	2133 B1	2142 C9	2152 D3	2163 E1	2173 F9	2189 G9	2285 G10	3172 B11	3182 D2	3191 D4	3200 E8	3212 F9	3229 H9	3275 B12	3286 H13	7010 E6	F139 A12	F157 C3	F168 E14	F179 G1	F303 B11	F313 D7	
1000-3 B1	1009 C15	1029 B3	2134 B1	2143 C4	2154 D9	2164 F1	2174 F1	2191 H9	2286 G11	3173 B4	3183 D2	3192 D4	3201 E2	3213 F3	3226 H15	3276 B11	3287 H13	7011 E2	F143 A13	F159 C9	F170 E1	F181 F13	F304 B11	F314 D9	
1000-4 E1	1010 C15	1050-1 G1	2135 B1	2145 C9	2155 D9	2166 E3	2175 F2	2200 H4	3160 A9	3174 B4	3184 D8	3193 D7	3202 E2	3214 F14	3226 H14	3279 B2	6003 H4	7023 B5	F146 A2	F160 D1	F171 E7	F182 G13	F305 B11	F315 D13	
1000-5 A1	1011 C15	1050-2 G1	2137 B8	2146 C6	2156 D2	2167 E4	2178 G10	2201 H4	3161 B12	3176 C14	3185 D14	3194 D8	3203 E5	3214 F14	3227 H13	3280 F13	7000 C9	7024 F6	F147 B1	F162 D7	F172 E14	F183 G12	F306 B11	F318 G12	
1000-6 H1	1012 C15	2128 B12	2138 B8	2147 C1	2157 D8	2168 F8	2182 F3	2230 H14	3162 B11	3177 C2	3186 D14	3195 E8	3204 E8	3219-B G13	3268 H14	3281 F6	7005-B B14	7025 B7	F149 B13	F163 D14	F173 E1	F184 G11	F308 B11	F319 G9	



PB CD MAIN 4236
CDR99
3104 123 4236

CD diagram 1B

1B CD MAIN BOARD - CIRCUIT DIAGRAM 1B
SERVO DRIVERS PART



Input conditions conn 1006 pin				Outputs conn 1006			Test points on driver				
6	8	4	7	3	2	9	10	11	18	17	16
U+	U-	V+	V-	W+	W-	UCOIL	VCOIL	WCOIL	HALL U	HALL V	HALL W
L	M	H	M	M	M	6V	0V	0V	0V	5V	5V
H	M	L	M	M	M	0V	6V	6V	5V	0V	0V
M	M	L	M	H	M	0V	6V	0V	0V	0V	5V
M	M	H	M	L	M	6V	0V	6V	6V	5V	0V
H	M	M	M	L	M	0V	0V	6V	5V	0V	0V
L	M	M	M	H	M	6V	6V	0V	0V	5V	5V

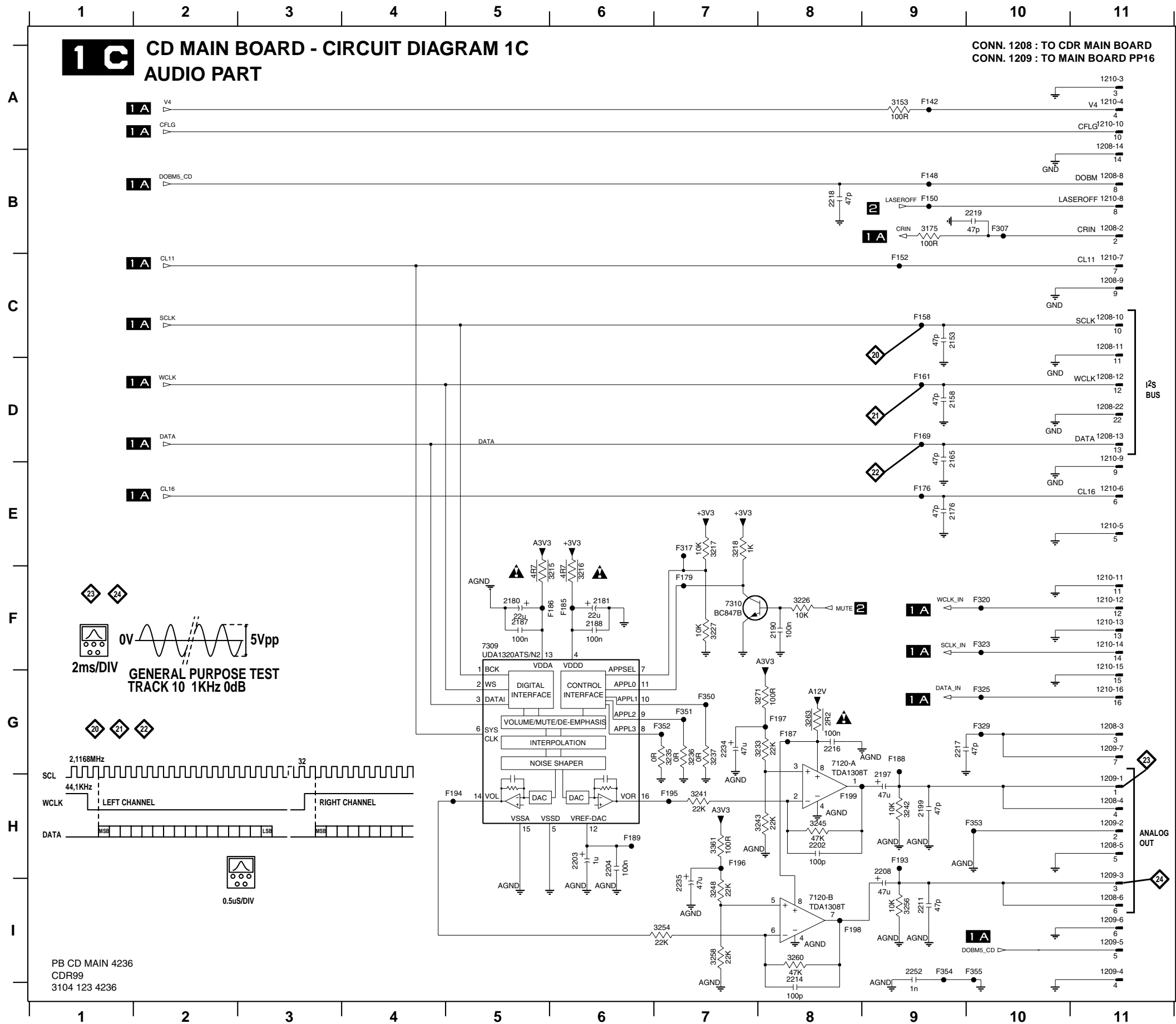
Input voltage	Level	Tolerance	Unit
H	2.8	0.1	V
M	2.5	0.1	V
L	2.2	0.1	V

- 1000-13 E1
- 1000-14 E1
- 1000-15 D1
- 1000-16 D1
- 1001 B1
- 1002 A1
- 1005 F1
- 1006-1 F1
- 1006-10 G1
- 1006-11 G1
- 1006-2 I1
- 1006-3 I1
- 1006-4 H1
- 1006-5 F1
- 1006-6 G1
- 1006-7 H1
- 1006-8 H1
- 1006-9 G1
- 1008 F4
- 1024 D8
- 1025 D8
- 1026 B10
- 1027 B11
- 1200 A5
- 1202 A6
- 1203 A5
- 1204 F3
- 1205 F3
- 1206 B7
- 1207 B7
- 1208 H9
- 1209 B5
- 1210 B7
- 1211 G1
- 1212 G1
- 1213 G1
- 1214 I8
- 1215 B5
- 1216 B5
- 1217 I7
- 1218 H4
- 1219 H4
- 1220 C5
- 1221 D5
- 1222 D5
- 1223 C6
- 1224 D7
- 1225 D7
- 1226 E5
- 1227 E6
- 1228 H8
- 2221 I11
- 2281 I6
- 2282 I4
- 3100 F1
- 3101 F2
- 3102 F1
- 3103 A6
- 3104 I6
- 3105 I6
- 3106 I5
- 3107 I4
- 3110 G8
- 3113 G8
- 3114 A5
- 3115 A5
- 3116 A6
- 3117 F1
- 3129 H11
- 3130 H8
- 3131 B10
- 3132 B7
- 3134 G4
- 3135 G4
- 3136 B5
- 3137 B6
- 3138 B6
- 3139 I7
- 3140 H6
- 3141 I9
- 3142 C4
- 3143 H5
- 3144 H5
- 3145 C5
- 3146 H4
- 3147 C5
- 3148 D3
- 3149 D5
- 3150 D5
- 3151 D6
- 3152 D3
- 3154 D8
- 3155 E3
- 3156 E5
- 3157 E6
- 3158 E5
- 3159 E3
- 3277 H9
- 3278 I8
- 6000 G5
- 6001 G5
- 6002 G4
- 7005-D I8
- 7019 F1
- 7020 G2
- 7021 A4
- 7022 D4
- 7030 H6
- 7031 I4
- 7110-A H10
- 7110-B H9
- 7110-C H10
- 7110-D H11
- 7301 H8
- F100 F3
- F101 F1
- F102 A11
- F103 A2
- F104 F4
- F105 A11
- F106 F1
- F107 A2
- F108 H8
- F109 A2
- F110 H9
- F111 B6
- F112 B2
- F113 G1
- F114 G1
- F115 B2
- F116 G1
- F117 B2
- F118 G4
- F119 H5
- F120 H1
- F121 I7
- F122 I8
- F123 H1
- F124 H1
- F125 H1
- F126 I6
- F127 I5
- F128 C5
- F129 I1
- F130 I5
- F131 I4
- F132 I1
- F133 D2
- F134 D9
- F135 D5
- F136 D2
- F137 H6
- F138 D2
- F140 E5
- F141 D9
- F142 E2
- F300 H4
- F301 H4

CD diagram 1C

1C CD MAIN BOARD - CIRCUIT DIAGRAM 1C
AUDIO PART

CONN. 1208 : TO CDR MAIN BOARD
CONN. 1209 : TO MAIN BOARD PP16

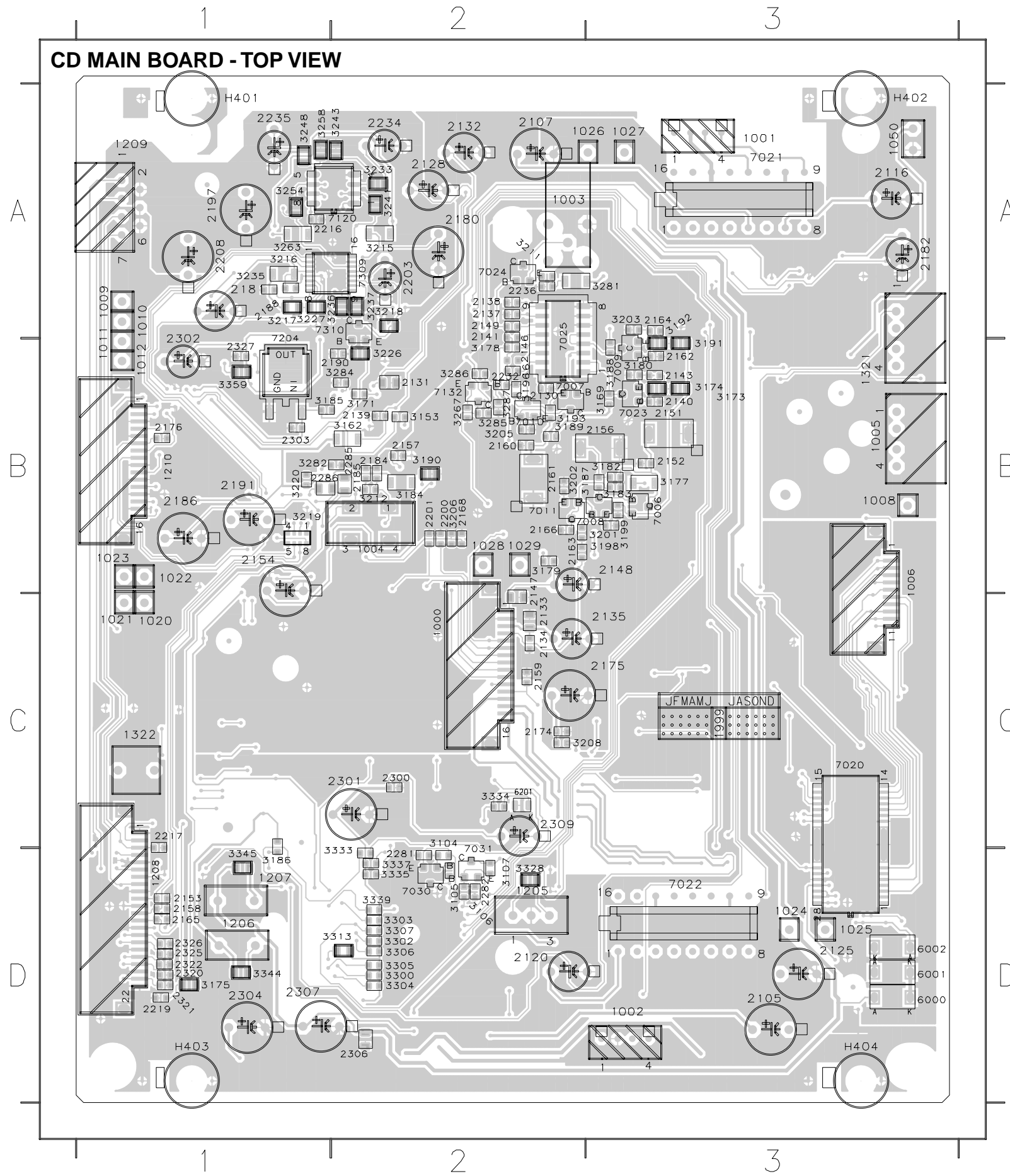


1208-10 C11	F325 G10
1208-11 C11	F329 G10
1208-12 D11	F350 G7
1208-13 D11	F351 G7
1208-14 A11	F352 G7
1208-2 B11	F353 H10
1208-22 D11	F354 I9
1208-3 G11	F355 I10
1208-4 H11	
1208-5 H11	
1208-6 I11	
1208-8 B11	
1208-9 C11	
1209-1 H11	
1209-2 H11	
1209-3 H11	
1209-4 I11	
1209-5 I11	
1209-6 I11	
1209-7 G11	
1210-10 A11	
1210-11 F11	
1210-12 F11	
1210-13 F11	
1210-14 F11	
1210-15 F11	
1210-16 G11	
1210-3 A11	
1210-4 A11	
1210-5 E11	
1210-6 E11	
1210-7 C11	
1210-8 B11	
1210-9 D11	
2153 C9	
2158 D9	
2165 D9	
2176 E9	
2180 F5	
2181 F6	
2187 F5	
2188 F6	
2190 F8	
2197 H9	
2199 H9	
2202 H8	
2203 H6	
2204 H6	
2208 H9	
2211 I9	
2214 I8	
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2217 G9	
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2219 B10	
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2252 I9	
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3175 B9	
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3216 F6	
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3218 E7	
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3227 F7	
3233 G8	
3235 G7	
3236 G7	
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3241 H7	
3242 H9	
3243 H8	
3245 H8	
3248 I7	
3254 I7	
3256 I9	
3258 I7	
3260 I8	
3263 G8	
3271 G8	
3361 H7	
7120-A G8	
7120-B I8	
7309 F5	
7310 F7	
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F148 B9	
F150 B9	
F152 C9	
F158 C9	
F161 D9	
F169 D9	
F176 E9	
F179 E9	
F185 F6	
F186 F5	
F187 G8	
F188 G9	
F189 H6	
F193 H9	
F194 H5	
F195 H7	
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F197 G8	
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F199 H8	
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F317 E7	
F320 F10	
F323 F10	

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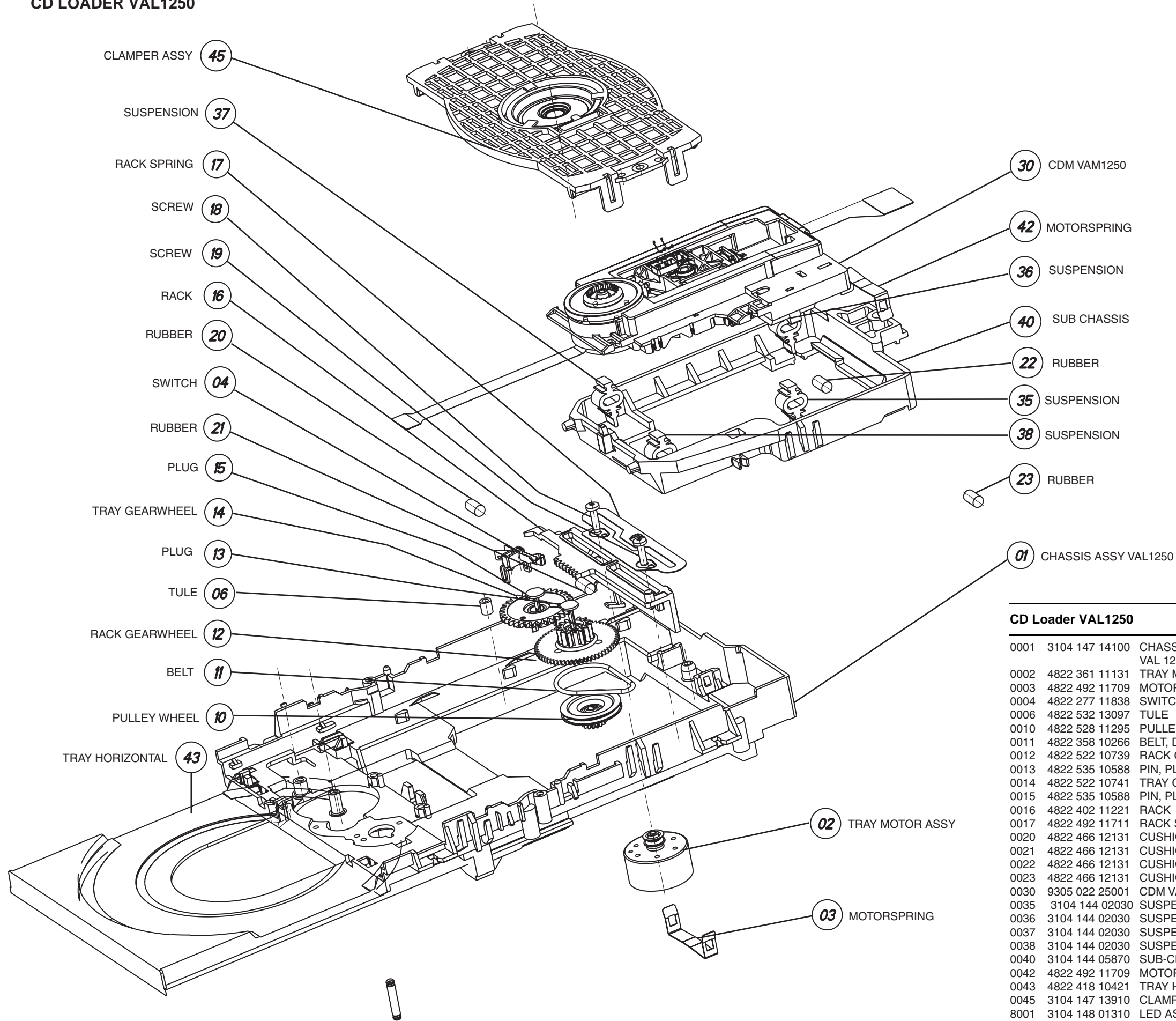
2.3 PARTS LOCATION

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**2.4 EXPLODED VIEW
CD LOADER VAL1250**



CD Loader VAL1250

0001	3104 147 14100	CHASSIS ASSY LOADER VAL 1250
0002	4822 361 11131	TRAY MOTOR ASSY
0003	4822 492 11709	MOTOR SPRING
0004	4822 277 11838	SWITCH
0006	4822 532 13097	TULE
0010	4822 528 11295	PULLEY WHEEL
0011	4822 358 10266	BELT, DRIVING
0012	4822 522 10739	RACK GEAR WHEEL
0013	4822 535 10588	PIN, PLASTIC
0014	4822 522 10741	TRAY GEAR WHEEL
0015	4822 535 10588	PIN, PLASTIC
0016	4822 402 11221	RACK
0017	4822 492 11711	RACK SPRING
0020	4822 466 12131	CUSHION RUBBER
0021	4822 466 12131	CUSHION RUBBER
0022	4822 466 12131	CUSHION RUBBER
0023	4822 466 12131	CUSHION RUBBER
0030	9305 022 25001	CDM VAM 1250
0035	3104 144 02030	SUSPENSION
0036	3104 144 02030	SUSPENSION
0037	3104 144 02030	SUSPENSION
0038	3104 144 02030	SUSPENSION
0040	3104 144 05870	SUB-CHASIS
0042	4822 492 11709	MOTOR SPRING
0043	4822 418 10421	TRAY HORIZONTAL
0045	3104 147 13910	CLAMPER ASSY VAL 1250
8001	3104 148 01310	LED ASSY 4P

2.5 ELECTRICAL PARTS LIST

2147	4822 126 13482	470nF 80/20% 16V	3116	4822 117 10834	47k 1% 0.1W
2148	4822 124 22726	4.7µF 35V	3117	4822 051 20479	47Ω 5% 0.1W
2149	3198 016 36810	0603 25V 680P COL R	3130	4822 117 10833	10k 1% 0.1W
2150	4822 126 12105	50V 33nF PM5	3131▲	4822 117 11151	1Ω 5%
2151	5322 124 11919	47µF 20% 6.3V	3132	4822 051 20223	22k 5% 0.1W
2152	4822 126 14305	100nF 10% 16V 0603	3134	4822 051 20108	1Ω 5% 0.1W
2153	4822 122 33777	47pF 5% 63V	3135	4822 051 20108	1Ω 5% 0.1W
2154	4822 124 81286	47µF 20% 16V	3136	4822 051 20122	1k2 5% 0.1W
2155	4822 126 14585	100nF 10% 50V	3137	4822 117 11504	270Ω 1% 0.1W
2156	5322 124 11919	47µF 20% 6.3V	3138	4822 117 11504	270Ω 1% 0.1W
2157	4822 126 14305	100nF 10% 16V 0603	3139	4822 117 10833	10k 1% 0.1W
2158	4822 122 33777	47pF 5% 63V	3140	4822 051 20008	0Ω jumper . (0805)
2159	3198 017 34730	0603 16V 47nF COL	3141	4822 051 20008	0Ω jumper . (0805)
2160	4822 126 14494	22nF 10% 25V 0603	3142	4822 117 11504	270Ω 1% 0.1W
2161	5322 124 11919	47µF 20% 6.3V	3143	4822 117 10834	47k 1% 0.1W
2162	4822 122 31765	100pF 2% 63V	3144	4822 117 10834	47k 1% 0.1W
2163	4822 126 14549	33nF 16V O6O3	3145	4822 117 11504	270Ω 1% 0.1W
2164	4822 126 14508	180pF 5% 50V 0603	3146	4822 117 10837	100k 1% 0.1W
2165	4822 122 33777	47pF 5% 63V	3148	4822 051 20008	0Ω jumper . (0805)
2166	3198 017 34730	0603 16V 47nF COL	3149	4822 051 10102	1k 2% 0.25W
2167	4822 126 14585	100nF 10% 50V	3150	4822 117 11383	12k 1% 0.1W
2168	4822 126 13883	220pF 5% 50V	3151	4822 117 11383	12k 1% 0.1W
2169	5322 126 10794	220pF 5% 63V	3152	4822 051 20008	0Ω jumper . (0805)
2170	5322 126 10794	220pF 5% 63V	3153	4822 051 30101	100Ω 5% 0.062W
2171	5322 126 10794	220pF 5% 63V	3154▲	4822 117 11151	1Ω 5%
2172	5322 126 10794	220pF 5% 63V	3155	4822 051 20008	0Ω jumper . (0805)
2173	5322 126 10794	220pF 5% 63V	3156	4822 117 11383	12k 1% 0.1W
2174	4822 126 14494	22nF 10% 25V 0603	3157	4822 117 11383	12k 1% 0.1W
2175	4822 124 81286	47µF 20% 16V	3158	4822 051 20122	1k2 5% 0.1W
2176	4822 122 33777	47pF 5% 63V	3159	4822 051 20008	0Ω jumper . (0805)
2178	4822 126 14585	100nF 10% 50V	3160	4822 117 10833	10k 1% 0.1W
2180	4822 124 41796	22µF 20% 16V	3161▲	4822 117 11748	2Ω2 1206 5% FUSE
2181	4822 124 41796	22µF 20% 16V	3162▲	4822 117 11748	2Ω2 1206 5% FUSE
2184	4822 126 14225	56pF 5% 50V 0603	3164	4822 051 20479	47k 5% 0.1W
2185	4822 126 14225	56pF 5% 50V 0603	3168	4822 051 20101	100Ω 5% 0.1W
2186	4822 124 81286	47µF 20% 16V	3169	4822 051 30272	2k7 5% 0.062W
2187	4822 126 14585	100nF 10% 50V	3171	4822 051 30103	10k 5% 0.062W
2188	4822 126 14305	100nF 10% 16V 0603	3172	4822 051 20101	100Ω 5% 0.1W
2189	4822 126 14585	100nF 10% 50V	3173	4822 117 11452	430Ω 1% 0.1W
2191	4822 124 81286	47µF 20% 16V	3174	4822 117 11452	430Ω 1% 0.1W
2197	4822 124 81286	47µF 20% 16V	3176	4822 051 20101	100Ω 5% 0.1W
2199	4822 126 13692	47pF 1% 63V	3177▲	4822 117 11151	1Ω 5%
2200	4822 126 14249	56pF 10% 50V CASE0603	3178	4822 051 30102	1k 5% 0.062W
2201	4822 126 14247	0603 50V 1N5 COL R	3179	4822 051 30102	1k 5% 0.062W
2202	5322 122 32531	100pF 5% 50V	3180	4822 051 30272	2k7 5% 0.062W
2203	4822 124 22726	4.7µF 35V	3181	4822 051 20223	22k 5% 0.1W
2204	4822 126 14585	100nF 10% 50V	3182	4822 051 30391	390Ω 5% 0.062W
2208	4822 124 81286	47µF 20% 16V	3183	4822 051 30103	10k 5% 0.062W
2211	4822 126 13692	47pF 1% 63V	3184▲	4822 117 11748	2Ω2 1206 5% FUSE
2214	5322 122 32531	100pF 5% 50V	3185	4822 051 30472	4k7 5% 0.062W
2216	4822 126 14305	100nF 10% 16V 0603	3186	4822 051 30472	4k7 5% 0.062W
2217	4822 122 33777	47pF 5% 63V	3187	4822 051 30391	390Ω 5% 0.062W
2218	4822 126 13692	47pF 1% 63V	3188	4822 051 30272	2k7 5% 0.062W
2220	4822 126 14585	100nF 10% 50V	3189	4822 051 30391	390Ω 5% 0.062W
2230	5322 126 10223	4.7nF 10% 63V	3190	4822 117 11456	30k 1% 0.1W
2232	4822 126 14305	100nF 10% 16V 0603	3191	4822 117 11452	430Ω 1% 0.1W
2233	5322 122 31865	1.5nF 10% 63V	3192	4822 117 11452	430Ω 1% 0.1W
2234	4822 124 12362	47µF 4V 20%	3193	4822 051 30181	180Ω 5% 0.062W
2235	4822 124 12362	47µF 4V 20%	3194	4822 051 20008	0Ω jumper . (0805)
2252	5322 122 31647	1nF 10% 63V	3195	4822 051 20008	0Ω jumper . (0805)
2280	4822 126 14585	100nF 10% 50V	3196	4822 051 30102	1k 5% 0.062W
2285	5322 122 31865	1.5nF 10% 63V	3197	4822 117 10833	10k 1% 0.1W
2286	5322 122 31865	1.5nF 10% 63V	3198	4822 051 30479	47Ω 5% 0.062W
2300	4822 126 14305	100nF 10% 16V 0603	3199	4822 051 30152	1k5 5% 0.062W
2301	4822 124 81286	47µF 20% 16V	3200	4822 117 10833	10k 1% 0.1W
2302	4822 124 11947	10µF 20% 16V	3201	4822 117 11817	1k2 1% 1/16W
2303	4822 126 14305	100nF 10% 16V 0603	3202	4822 051 30223	22k 5% 0.062W
2304	4822 124 40196	220µF 20% 16V	3203	4822 051 30272	2k7 5% 0.062W
2306	4822 126 12102	330nF 10% 16V	3204	4822 051 20008	0Ω jumper . (0805)
2307	4822 124 40207	100µF 20% 25V	3205	4822 051 30103	10k 5% 0.062W
2320	4822 122 33777	47pF 5% 63V	3206	4822 051 30008	0Ω jumper
2321	4822 122 33777	47pF 5% 63V	3208	4822 117 13608	4.7Ω 5% 0603 0.0016W
2322	4822 122 33777	47pF 5% 63V	3212	4822 051 30105	1M 5% 0.062W
2325	4822 126 14305	100nF 10% 16V 0603	3214	4822 051 20008	0Ω jumper . (0805)
2326	4822 126 14305	100nF 10% 16V 0603	3215▲	4822 117 11748	2Ω2 1206 5% FUSE
2327	4822 126 14305	100nF 10% 16V 0603	3216▲	4822 117 11152	4Ω7 5%
			3217	4822 117 10833	10k 1% 0.1W
			3218	4822 051 10102	1k 2% 0.25W
			3219	4822 117 13509	4X47Ω 5% 1206 NETWORK
			3220	4822 051 30103	10k 5% 0.062W
			3225▲	4822 117 11748	2Ω2 1206 5% FUSE
			3226	4822 117 10833	10k 1% 0.1W
			3229▲	4822 117 11748	2Ω2 1206 5% FUSE
			3233	4822 117 10354	22k 1% 0.1W
			3235	4822 051 30008	0Ω jumper
			3236	4822 051 20008	0Ω jumper . (0805)
			3237	4822 051 20008	0Ω jumper . (0805)
			3241	4822 117 10354	22k 1% 0.1W
			3242	4822 117 10833	10k 1% 0.1W
			3243	4822 117 10834	47k 1% 0.1W
			3245	4822 117 10834	47k 1% 0.1W
2147	4822 126 13482	470nF 80/20% 16V			
2148	4822 124 22726	4.7µF 35V			
2149	3198 016 36810	0603 25V 680P COL R			
2150	4822 126 12105	50V 33nF PM5			
2151	5322 124 11919	47µF 20% 6.3V			
2152	4822 126 14305	100nF 10% 16V 0603			
2153	4822 122 33777	47pF 5% 63V			
2154	4822 124 81286	47µF 20% 16V			
2155	4822 126 14585	100nF 10% 50V			
2156	5322 124 11919	47µF 20% 6.3V			
2157	4822 126 14305	100nF 10% 16V 0603			
2158	4822 122 33777	47pF 5% 63V			
2159	3198 017 34730	0603 16V 47nF COL			
2160	4822 126 14494	22nF 10% 25V 0603			
2161	5322 124 11919	47µF 20% 6.3V			
2162	4822 122 31765	100pF 2% 63V			
2163	4822 126 14549	33nF 16V O6O3			
2164	4822 126 14508	180pF 5% 50V 0603			
2165	4822 122 33777	47pF 5% 63V			
2166	3198 017 34730	0603 16V 47nF COL			
2167	4822 126 14585	100nF 10% 50V			
2168	4822 126 13883	220pF 5% 50V			
2169	5322 126 10794	220pF 5% 63V			
2170	5322 126 10794	220pF 5% 63V			
2171	5322 126 10794	220pF 5% 63V			
2172	5322 126 10794	220pF 5% 63V			
2173	5322 126 10794	220pF 5% 63V			
2174	4822 126 14494	22nF 10% 25V 0603			
2175	4822 124 81286	47µF 20% 16V			
2176	4822 122 33777	47pF 5% 63V			
2178	4822 126 14585	100nF 10% 50V			
2180	4822 124 41796	22µF 20% 16V			
2181	4822 124 41796	22µF 20% 16V			
2184	4822 126 14225	56pF 5% 50V 0603			
2185	4822 126 14225	56pF 5% 50V 0603			
2186	4822 124 81286	47µF 20% 16V			
2187	4822 126 14585	100nF 10% 50V			
2188	4822 126 14305	100nF 10% 16V 0603			
2189	4822 126 14585	100nF 10% 50V			
2191	4822 124 81286	47µF 20% 16V			
2197	4822 124 81286	47µF 20% 16V			
2199	4822 126 13692	47pF 1% 63V			
2200	4822 126 14249	56pF 10% 50V CASE0603			
2201	4822 126 14247	0603 50V 1N5 COL R			
2202	5322 122 32531	100pF 5% 50V			
2203	4822 124 22726	4.7µF 35V			
2204	4822 126 14585	100nF 10% 50V			
2208	4822 124 81286	47µF 20% 16V			
2211	4822 126 13692	47pF 1% 63V			
2214	5322 122 32531	100pF 5% 50V			
2216	4822 126 14305	100nF 10% 16V 0603			
2217	4822 122 33777	47pF 5% 63V			
2218	4822 126 13692	47pF 1% 63V			
2220	4822 126 14585	100nF 10% 50V			
2230	5322 126 10223	4.7nF 10% 63V			
2232	4822 126 14305	100nF 10% 16V 0603			
2233	5322 122 31865	1.5nF 10% 63V			
2234	4822 124 12362	47µF 4V 20%			
2235	4822 124 12362	47µF 4V 20%			
2252	5322 122 31647	1nF 10% 63V			
2280	4822 126 14585	100nF 10% 50V			
2285	5322 122 31865	1.5nF 10% 63V			
2286	5322 122 31865	1.5nF 10% 63V			
2300	4822 126 14305	100nF 10% 16V 0603			
2301	4822 124 81286	47µF 20% 16V			
2302	4822 124				

3248	4822 117 10354	22k 1% 0.1W
3254	4822 117 10354	22k 1% 0.1W
3256	4822 117 10833	10k 1% 0.1W
3258	4822 117 10834	47k 1% 0.1W
3260	4822 117 10834	47k 1% 0.1W
3263▲	4822 117 11748	2Ω 1206 5% FUSE
3265	4822 117 10837	100k 1% 0.1W
3266	4822 051 10102	1k 2% 0.25W
3267	4822 051 30102	1k 5% 0.062W
3268	4822 117 10837	100k 1% 0.1W
3269	4822 051 20101	100Ω 5% 0.1W
3270	4822 117 10833	10k 1% 0.1W
3271	4822 051 20101	100Ω 5% 0.1W
3273	4822 051 20101	100Ω 5% 0.1W
3274	4822 051 20101	100Ω 5% 0.1W
3275	4822 051 20101	100Ω 5% 0.1W
3276	4822 051 20101	100Ω 5% 0.1W
3277	4822 051 20101	100Ω 5% 0.1W
3278	4822 051 20008	0Ω jumper . (0805)
3279▲	4822 117 11151	1Ω 5%
3280	4822 117 10833	10k 1% 0.1W
3282	4822 051 30103	10k 5% 0.062W
3283	4822 117 10833	10k 1% 0.1W
3284	4822 051 30008	0Ω jumper
3285	4822 051 30472	4k7 5% 0.062W
3286	4822 051 30154	150k 5% 0.062W
3287	4822 117 12925	47k 1% 0.063W 0603
3300	4822 051 30103	10k 5% 0.062W
3302	4822 051 30103	10k 5% 0.062W
3303	4822 051 30103	10k 5% 0.062W
3304	4822 051 30103	10k 5% 0.062W
3305	4822 051 30103	10k 5% 0.062W
3306	4822 051 30103	10k 5% 0.062W
3307	4822 051 30103	10k 5% 0.062W
3308▲	4822 117 11748	2Ω 1206 5% FUSE
3310	4822 051 10102	1k 2% 0.25W
3312	4822 051 10102	1k 2% 0.25W
3313	4822 117 10833	10k 1% 0.1W
3314	4822 117 10833	10k 1% 0.1W
3318	4822 051 20101	100Ω 5% 0.1W
3319	4822 051 20101	100Ω 5% 0.1W
3320	4822 051 20101	100Ω 5% 0.1W
3328	4822 051 20105	1M 5% 0.1W
3331	4822 051 20101	100Ω 5% 0.1W
3333	4822 051 30101	100Ω 5% 0.062W
3335	4822 051 30103	10k 5% 0.062W
3337	4822 051 30103	10k 5% 0.062W
3339	4822 051 30103	10k 5% 0.062W
3342	4822 117 10833	10k 1% 0.1W
3350	4822 051 10102	1k 2% 0.25W
3352	4822 051 20008	0Ω jumper . (0805)
3353	4822 051 20101	100Ω 5% 0.1W
3354	4822 051 20101	100Ω 5% 0.1W
3355	4822 051 20101	100Ω 5% 0.1W
3356	4822 051 20101	100Ω 5% 0.1W
3357	4822 051 20008	0Ω jumper . (0805)
3359	4822 051 20008	0Ω jumper . (0805)
3360	4822 051 20008	0Ω jumper . (0805)
3361	4822 051 20101	100Ω 5% 0.1W

7301	4822 130 60511	BC847B
7309	4822 209 17237	UDA1320ATS
7310	4822 130 60511	BC847B



6000	4822 130 11382	BYG50D
6001	4822 130 11382	BYG50D
6002	4822 130 11382	BYG50D
6003	4822 130 83757	BAS216



7000	4822 209 17285	SAA7324H
7005	9337 143 50653	74HCT08
7006	5322 130 42718	BFS20
7007	4822 130 60373	BC856B
7008	5322 130 42718	BFS20
7009	5322 130 42718	BFS20
7010	4822 130 60511	BC847B
7011	5322 130 42718	BFS20
7019	4822 130 60373	BC856B
7020	4822 209 16877	BA6856FP
7021	4822 209 32852	TDA7073A/N2
7022	4822 209 32852	TDA7073A/N2
7023	5322 130 42718	BFS20
7025	9337 153 10118	IC SM 74HCT4052D (PHSE) R
7120	4822 209 30095	LM833D
7130	4822 130 60511	BC847B
7131	4822 130 60373	BC856B
7132	4822 130 60511	BC847B
7203	4822 130 60511	BC847B
7204	4822 209 17398	LD1117DT33